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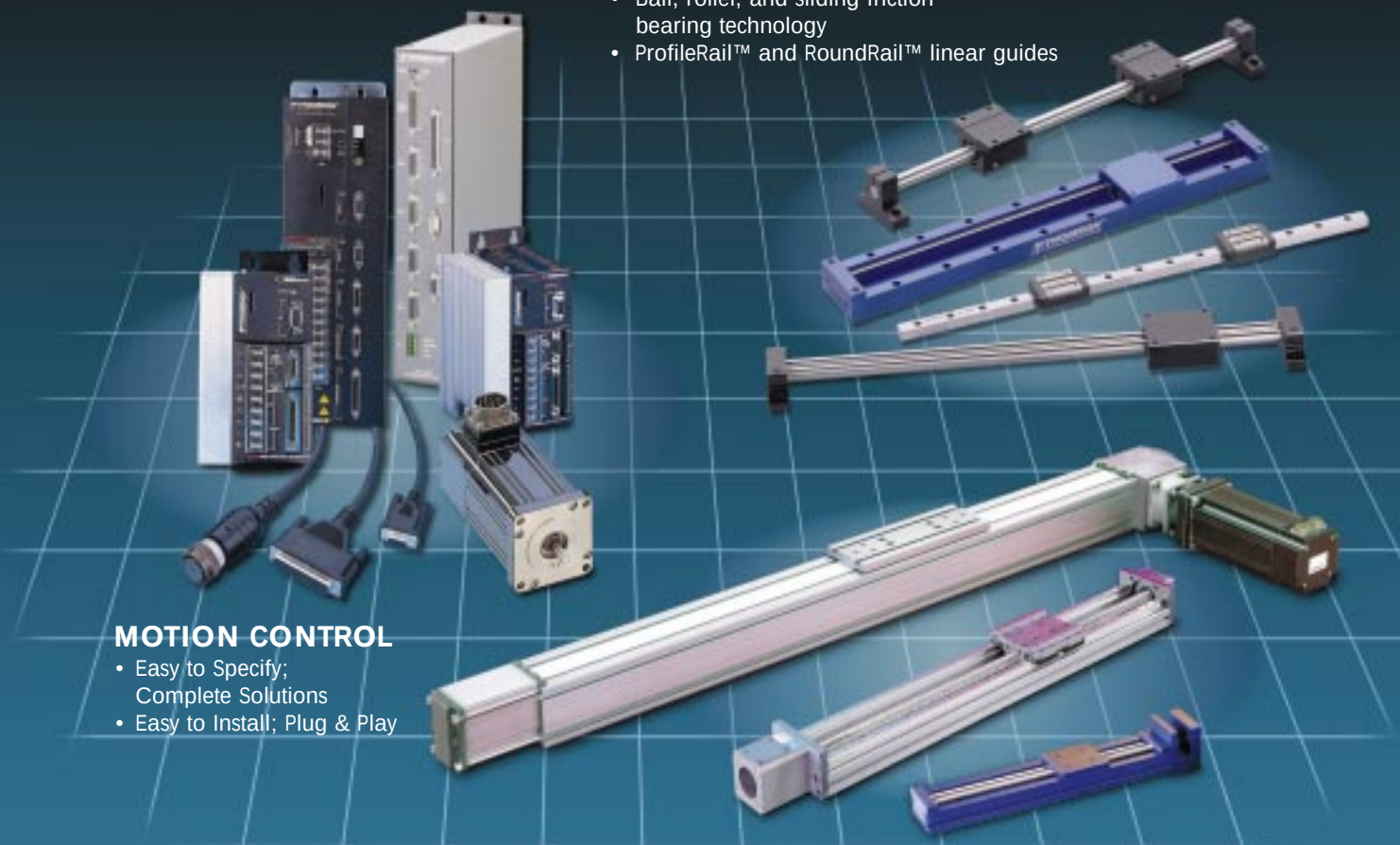
LINEAR MOTION and CONTROL SOLUTIONS

Engineering Guide for Linear Guides, Systems, Slides & Stages and Motion Control



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- Ball, roller, and sliding friction bearing technology
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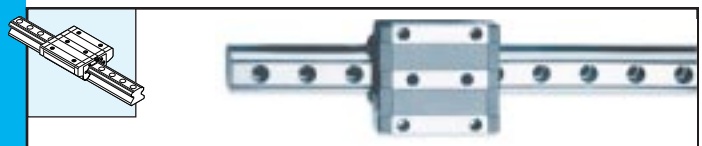
First in Linear Motion and Control Technology

Part Number Index (Alphabetical)

Part Number Index (Alphabetical)

LINEAR GUIDES PRODUCT SELECTOR



LINEAR GUIDE NUMBER 1
Extremely High Rigidity, High Accuracy
- Dynamic Load Capacity: up to 40,700 lb_f per carriage
- Maximum Speed: 6.5 ft/sec
- Maximum Acceleration: 5g
- Mounting: continuously supported, dual rail

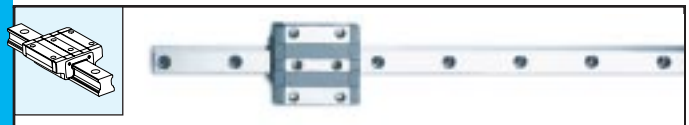
Page 11

AccuMax* Linear Guide

LINEAR GUIDE NUMBER 6
Fully Supported, Industry Standard Dimensions
- Dynamic Load Capacity: up to 54,800 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: continuously supported, dual rail

Page 61

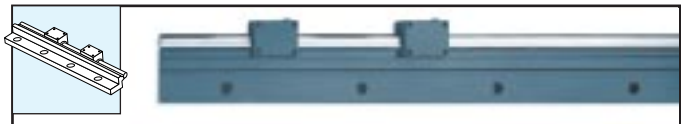
Continuous Support Linear Guide



LINEAR GUIDE NUMBER 2
High Rigidity, Industry Standard Envelope
- Dynamic Load Capacity: up to 21,800 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: continuously supported, single or dual rail

Page 17

AccuGlide* Linear Guide



LINEAR GUIDE NUMBER 7
Side Mounted for Multiple Orientations
- Dynamic Load Capacity: up to 2,480 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: continuously supported, dual rail

Page 75

Side Mounted Linear Guide

LINEAR GUIDE NUMBER 3
Low Profile, Compact Design
- Dynamic Load Capacity: up to 2,700 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: continuously supported, single or dual rail

Page 29

AccuGlide (Mini) Linear Guide

LINEAR GUIDE NUMBER 8
Low Profile, Enhanced Sealing
- Dynamic Load Capacity: up to 12,320 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: continuously supported, dual rail

Page 83

Bolt From Bottom Linear Guide

LINEAR GUIDE NUMBER 4
Low Cost, Compliant Structure, Industry Standard Envelope
- Dynamic Load Capacity: up to 5,620 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: continuously supported, dual rail

Page 35

T-Series* Linear Guide

LINEAR GUIDE NUMBER 9
End Supported, Industry Standard Dimension
- Dynamic Load Capacity: up to 12,320 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: end supported, dual rail

Page 97

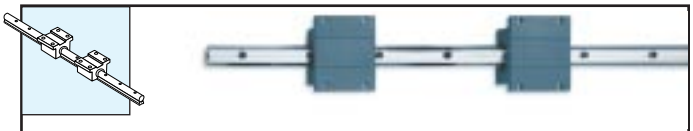
End Support Linear Guide

LINEAR GUIDE NUMBER 5
Corrosive/Contaminated Environments
- Dynamic Load Capacity: up to 12,000 lb_f per carriage
- Maximum Speed: 6.67 ft/sec‡
- Maximum Acceleration: unlimited‡
- Mounting: continuously or end supported, dual rail

‡Load, speed and acceleration are dependent variables

Page 41

FluoroNyliner* Linear Guide



LINEAR GUIDE NUMBER 10
Low Profile, Easy to Install
- Dynamic Load Capacity: up to 12,320 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: continuously supported, dual rail

Page 123

Smart Rail* Linear Guide

For Application Engineering assistance contact the Thomson Technical HelpLine at 1-800-554-8466.

LINEAR GUIDE NUMBER 11
Contaminated Environments, High Shock Loads
- Dynamic Load Capacity: up to 70,000 lb_f per carriage
- Maximum Speed: 100 ft/sec
- Maximum Acceleration: 14g
- Mounting: continuously supported, dual rail

Page 137

RoundWay* Linear Guide

LINEAR GUIDE NUMBER 12
Unpack and Install
- Dynamic Load Capacity: up to 2,480 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: continuously supported, single axis assembly

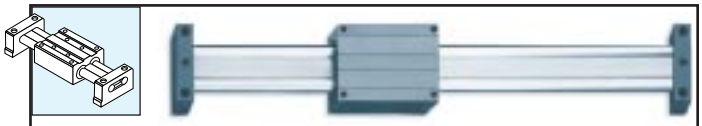
Page 145

Dual Shaft Rail* Linear Guide

LINEAR GUIDE NUMBER 13
Unpack and Install
- Dynamic Load Capacity: up to 50 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: end supported, single axis assembly

Page 153

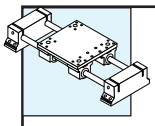
Twin Shaft* Linear Guide



LINEAR GUIDE NUMBER 14
Unpack and Install
- Dynamic Load Capacity: up to 3,000 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: end supported, single axis assembly

Page 159

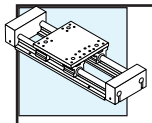
Twin Shaft Web* Linear Guide



LINEAR GUIDE NUMBER 15
Unpack and Install
- Dynamic Load Capacity: up to 12,320 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: end supported, single axis assembly

Page 167

Double End Support Linear Guide



LINEAR GUIDE NUMBER 16
Unpack and Install
- Dynamic Load Capacity: up to 12,320 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: continuously supported, single axis assembly

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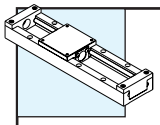
Double Continuous Support Linear Guide



LINEAR GUIDE NUMBER 17
Unpack and Install
- Dynamic Load Capacity: up to 33 lb_f per carriage
- Maximum Speed: 10 ft/sec
- Maximum Acceleration: 5g
- Mounting: continuously supported, single axis assembly

Page 175

MicroStage* Linear Guide

LINEAR GUIDES

Page 178

Installation Guidelines

LINEAR GUIDES

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Engineering Support

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NEW

E-Series
- 1-piece, low cost, shaft rail assembly for sliding contact guides

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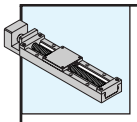
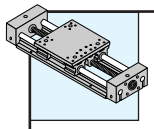
PRODUCT SELECTOR



A miniature lead screw actuated double race continuously supported linear motion system available with:
- pre-aligned LinearRace* ways
- the segmented Super Ball Bushing* bearing
- an integral lead screw assembly
- nominal sizes of 25mm and 33mm overall heights
- screw leads from .25 inch to 1.2 inch

Page 245

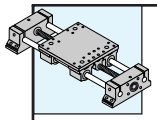
MicroStage* MS



A ball screw actuated double race continuously supported system available with:
- pre-aligned and continuously supported LinearRace ways
- the Super Smart Ball Bushing bearing
- an integral ball screw assembly
- nominal sizes from 1/2 inch to 1 1/2 inch shaft diameters
- ball screw leads from .200 inch to 1.875 inch

Page 234

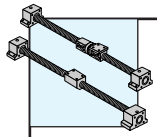
SuperSlide 2EB



A ball screw actuated double race end supported system available with:
- pre-aligned LinearRace ways
- the Super Smart Ball Bushing* bearing
- an integral ball screw assembly
- nominal sizes from 1/2 inch to 1 1/2 inch shaft diameters
- ball screw leads from .200 inch to 1.875 inch

Page 224

SuperSlide* 2AB



A linear actuation system with integral end supports available with:
- integral end supports for a fixed/simple mounting arrangement
- angular contact thrust bearings for high axial load capacity
- nominal sizes from 1/2 inch to 1 1/2 inch screw diameters
- ball screw leads from .200 inch to 1.875 inch
- ball nut mounting heights that adapt to appropriately sized linear guides

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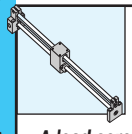
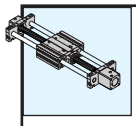
Ball Screw Assemblies-Model BSA



A lead screw actuated welded double race end supported system available with:
- pre-aligned and welded LinearRace ways
- the segmented Super Ball Bushing bearing
- an integral lead screw assembly
- screw leads from .100 inch to 1.00 inch
- end supports for use when bridging or spanning a gap

Page 226

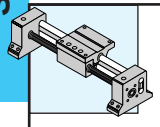
Twin Shaft* SuperSlide 2BB



A ball screw actuated double race end supported system in metric dimensions available with:
- pre-aligned LinearRace ways
- the Super Smart Ball Bushing bearing
- an integral ball screw assembly
- 20mm nominal size shaft diameter
- ball screw leads from 5mm to 20mm

Page 256

SuperSlide 2NB



A ball screw actuated welded double race end supported system available with:
- pre-aligned and welded LinearRace ways
- the Super Smart Ball Bushing bearing
- an integral ball screw assembly
- nominal sizes in 1/2, 3/4, and 1.00 inch shaft diameters
- end supports for use when bridging or spanning a gap

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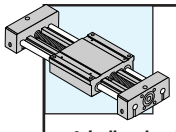
Twin Shaft Web* SuperSlide 2CB



A ball or lead screw actuated double race continuously supported system in metric dimensions available with:
- pre-aligned and continuously supported LinearRace ways
- the Super Smart Ball Bushing bearing
- an integral ball screw assembly
- nominal sizes in 1/2, 3/4, and 1.00 inch shaft diameters
- 5mm ball screw lead

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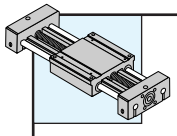
Dual Shaft Rail* SuperSlide 2DB - Metric



A ball or lead screw actuated double race continuously supported system available with:
- pre-aligned and continuously supported LinearRace ways
- the Super Smart Ball Bushing bearing
- an integral ball screw assembly
- nominal sizes in 1/2, 3/4, and 1.00 inch shaft diameters
- ball screw leads from .200 inch to 1.00 inch

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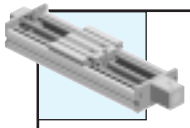
Dual Shaft Rail* SuperSlide 2DB



A ball screw actuated double race contiuously supported system in metric dimensions available with:
- pre-aligned and continuously supported LinearRace ways
- the Super Smart Ball Bushing bearing
- an integral ball screw assembly
- 12mm and 16mm nominal size shaft diameters
- ball screw leads from 5mm to 20mm

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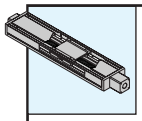
SuperSlide 2RB

For Application Engineering assistance contact the Thomson Technical HelpLine at 1-800-554-8466.



A ball screw actuated double linear ball guide contiuously supported system in metric dimensions available with:
- pre-aligned and continuously supported AccuGlide* linear ball guides
- an integral ball screw assembly
- 10mm and 20mm nominal size systems
- ball screw leads from 5mm to 25mm

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AccuSlide* 2HB

- motor couplings and motor adaptor blocks
- protective bellows
- radial mount ball screw shaft extender
- QuickSlide* with manual brake
- limit switch packages
- TEB spring set brakes
- TBC7 brake controller
- Hand wheels
- T-nuts

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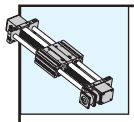
Accessories



A belt driven double race end supported system in metric dimensions available with:
- pre-aligned LinearRace* ways
- the Super Smart Ball Bushing* bearing
- an integral belt drive assembly
- a NemaTRUE* planetary gearhead in 4 standard ratios
- 20mm nominal size shaft diameter

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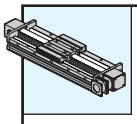
SuperSlide 2NE

SuperSlide ball screw actuated systems
Inch size
System selection requirements

Page 310

Engineering Support-Inch



A belt driven double race contiuously supported system in metric dimensions available with:
- pre-aligned and continuously supported LinearRace ways
- the Super Smart Ball Bushing bearing
- an integral belt drive assembly
- a NemaTRUE* planetary gearhead in 4 standard ratios
- 12mm and 16mm nominal size shaft diameters

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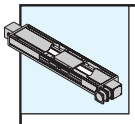
SuperSlide 2RE

SuperSlide ball screw actuated systems
Metric size
System selection requirements

Page 327

Engineering Support-Metric



A belt driven double linear ball guide contiuously supported system in metric dimensions available with:
- pre-aligned and continuously supported AccuGlide linear ball guides
- an integral belt drive assembly
- a NemaTRUE planetary gearhead in 4 standard ratios
- 10mm and 20mm nominal size systems

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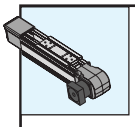
AccuSlide 2HE

SuperSlide belt actuated systems
Metric size
System selection requirements

Page 342

Engineering Support-Metric



A belt driven single linear ball guide system for heavy duty overhung load or gantry applications available with:
- a base assembly that is designed to be its own support structure
- pre-aligned and continuously supported AccuGlide linear ball guides
- an integral belt drive assembly
- an AccuTRUE* planetary gearhead in 3 standard ratios

Page 284

Turbo Module* 2GE

Turbo module belt actuated systems
Metric size
System selection requirements

Page 359

Engineering Support-Metric

- High performance, stand alone, multi axis servo and stepper motor controller
- Performs point to point motion, linear and circular interpolation, contouring, electronic gearing, electronic cam, and jogging
- Powerful yet simple instruction set supports multitasking, user variables and arrays, arithmetic and logic functions, position latch, event triggers, error handling and more.
- Servo Setup Kit* software for Windows® provides communications, program editing, tuning and diagnostics
- All optoisolated I/O

Page 385

TMC 2000 MOTION CONTROLLER

- A complete servo axis that operates either with a motion controller or as a smart stand alone drive
- Includes a matched BLX brushless motor, OMNIDRIVE* digital servo drive, professionally molded cables, OMNI LINK* setup software, and documentation for a fast and worry free installation
- The latest technology and most rugged design for a high performance industrial quality turn key motion control solution

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AXI-PAK* Complete Servo Axis Package

- Fully digital “smart” brushless servo amplifier with integrated power supply
- Configurable for analog input, step and direction, serial link, encoder follower, electronic gearing.
- Indexing option for stand alone positioning capabilities
- Available in 0.5, 1, 2, 3, 7.5, and 15 kW continuous power ratings
- Included OMNI LINK setup and diagnostic software

Page 413

OMNIDRIVE Digital Servo Drives

- Superior magnetic and thermal design gives exceptional performance and the highest torque per frame size
- Standard IP65 sealing, MS style fluid tight connectors, oversize bearings, and thermal switch ensure a long and worry free service life
- A variety of frame sizes and winding configurations are available to suit your precise application needs
- Internal bearing mounted commutating encoder provides precision and reliability
- Available with planetary gearheads and internal brakes

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BLX Brushless Servo Motors

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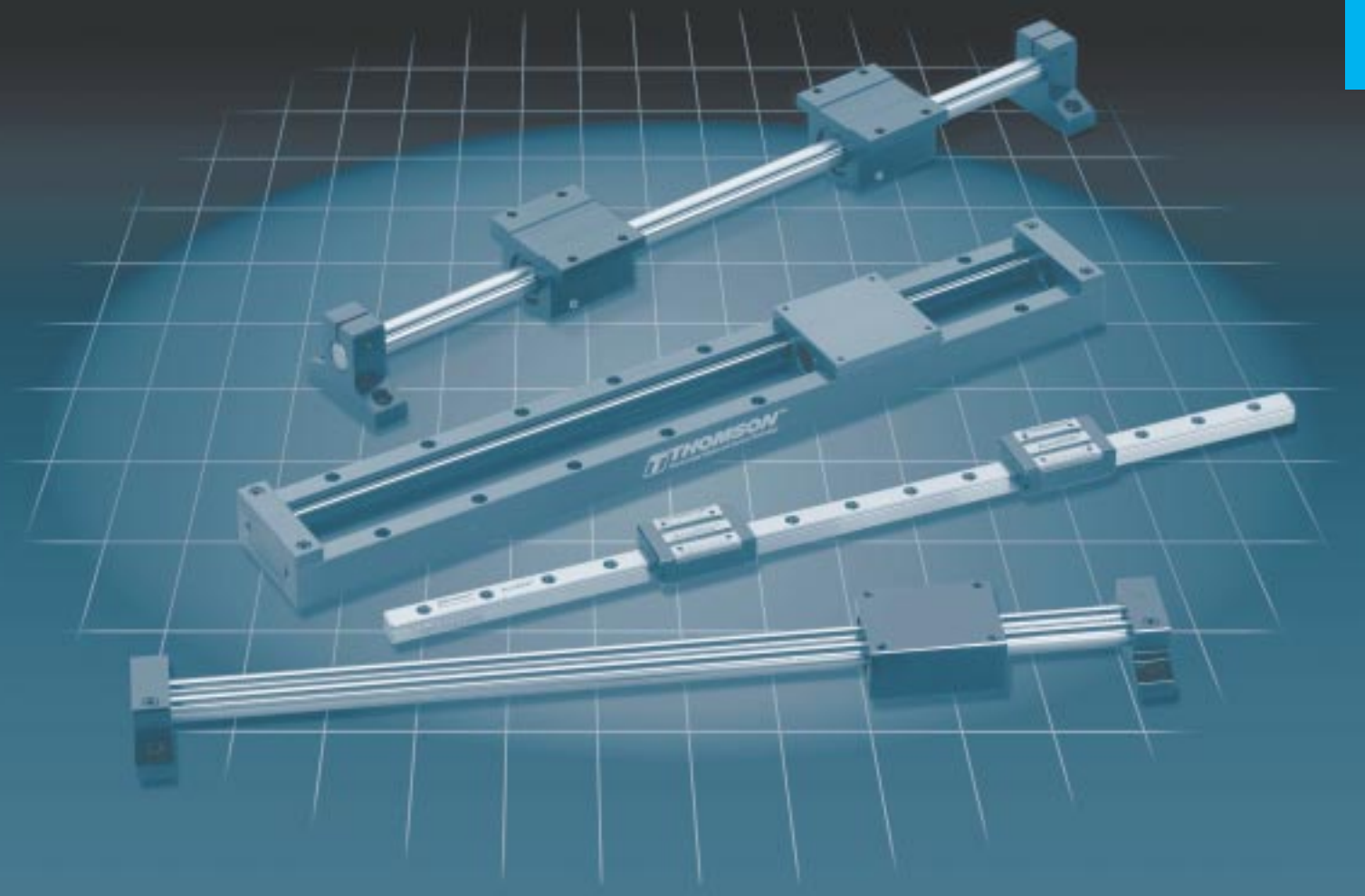
For Application Engineering assistance contact the Thomson Technical HelpLine at 1-800-554-8466.

THOMSON INDUSTRIES, INC.

LINEAR GUIDE SOLUTIONS

Engineering Guide for Linear Guides



LINEAR GUIDES

- Ball, roller, and sliding friction bearing technology
- ProfileRail* and RoundRail* linear guides

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Linear Guide Selection Criteria:

- Load/Life
- Travel Accuracy
- Rigidity
- Smoothness of Travel
- Speed & Acceleration
- Envelope
- Environment
- Cost of Product
- Cost of Installation
- Cost of Replacement

Application Selector Guide

	Linear Guide																
Application Criteria	AccuMax*	AccuGlide*	AccuGlide (mini)	T-Series*	FluoroNyliner*	Continuous Support	Side Mounted	Bolt From Bottom	End Support	Smart Rail*	RoundWay*	Dual Shaft Rail	Twin Shaft*	Twin Shaft Web*	Double End Support	Double Continuous Support	MicroStage*
High Loads	✔	✔		✔	✔	✔		✔		✔	✔	✔		✔			
Equivalent Load in All Directions	✔	✔						✔						✔			
Ultra Compactness			✔				✔						✔				✔
High Travel Accuracy	✔	✔														✔	
High Rigidity	✔	✔								✔							
Extreme Smoothness			✔			✔	✔	✔	✔	✔		✔	✔	✔	✔	✔	✔
End Supported									✔				✔	✔ ✔			
Single Rail		✔	✔									✔	✔				
Harsh Environment					✔			✔			✔						
Low Cost Installation (multiple rail)				✔	✔	✔	✔		✔	✔	✔						
Complete Axis Solution												✔	✔	✔	✔	✔	✔
Page No.	**11**	**17**	**29**	**35**	**41**	**61**	**75**	**83**	**97**	**123**	**137**	**145**	**153**	**159**	**167**	**171**	**175**

Application Examples:

- Machine Tools
- Packaging Machinery
- Automotive Assembly Equipment
- Semiconductor Equipment
- Medical Equipment
- Food Processing Equipment

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Linear Guide Selection Process:

The selection of a type of linear guide will greatly effect machine performance and overall cost.

For example, selecting a guide with too much rigidity will decrease the allowable installation tolerances, therefore greatly increasing surface preparation costs. If the costs are not incurred by properly preparing the mounting surface, the guide will run rough and need to be replaced more frequently due to a reduced life.

In order to meet the widely varying demands of today's applications, proper selection from a broad product range will optimize performance and reduce costs. The following selection process will assist you in choosing the appropriate linear guide for your application. **See Engineering Section for more details**. (page 185)

- Review the Linear Guide Selection Criteria on page 8, considering all criteria for the application.
- Using the Application Selection Guide on page 8, select the appropriate type of guide.
- Determine the load on the most heavily loaded carriage or bearing.
- Calculate the minimum required dynamic load rating, Cmin, for the bearing life required between replacements.
- Select the size which offers the load rating, C, equal to or greater than the minimum required dynamic load rating, Cmin.
- If the guide selected offers various preload levels, select a preload based upon the allowable bearing deflection.
- If the guide selected offers various accuracy classes, select an accuracy class based upon the required travel accuracy.
- Determine the need for accessories/options.
- Select the appropriate part number.

If you require any assistance selecting the appropriate linear guide for your application, please contact Thomson's Application Engineering Group:

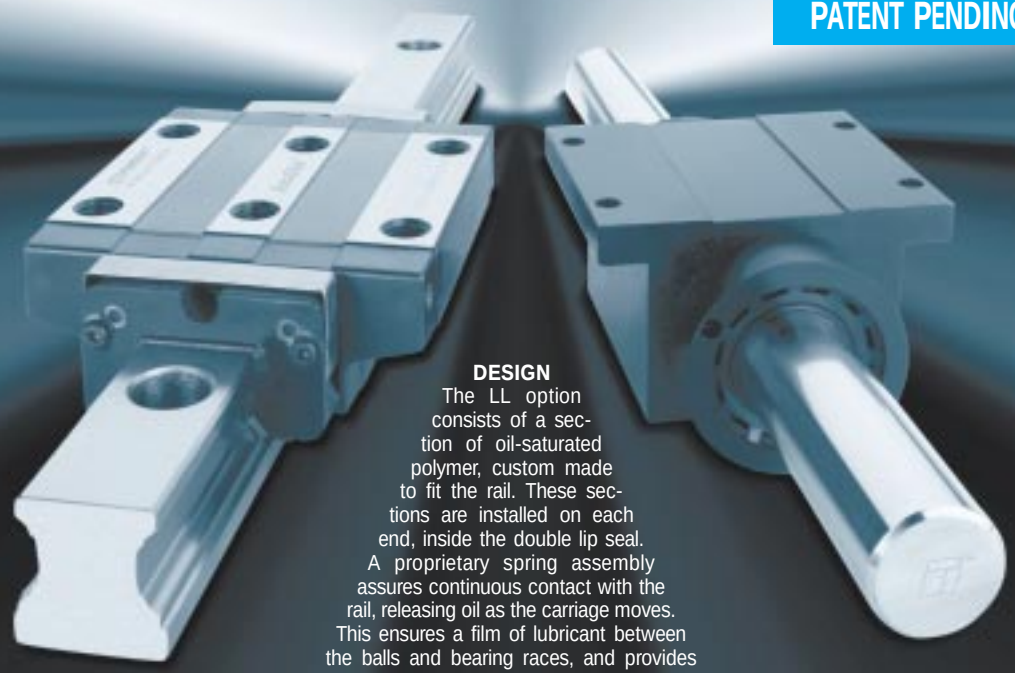
In North America: (800) 554-8466
In Europe: (44) 1271 334 500
Elsewhere: (516) 883-8937

Maintenance-Free

The new LL Option can provide maintenance-free operation and enhanced protection for a broad range of applications.

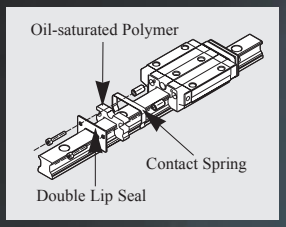
- Only Thomson offers both RoundRail* and ProfileRail* self-lubricating linear guides
- Reduces system cost by eliminating the need for expensive lubrication systems
- Clean, self-lubricating applicator eliminates oil-related contamination
- Increases bearing life by offering enhanced protection

PATENT PENDING



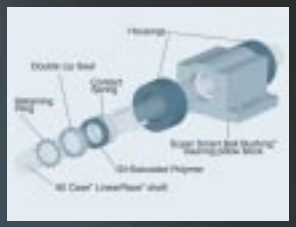
DESIGN

The LL option consists of a section of oil-saturated polymer, custom made to fit the rail. These sections are installed on each end, inside the double lip seal. A proprietary spring assembly assures continuous contact with the rail, releasing oil as the carriage moves. This ensures a film of lubricant between the balls and bearing races, and provides enhanced protection, maintaining long-term running efficiency.



PERFORMANCE

Thomson has incorporated a proven oil-saturated polymer used for over 10 years to lubricate radial bearings. This product has a successful track record in applications ranging from food processing to automotive assembly.



See Page 210 for technical data.

All Thomson Industries Manufacturing Locations are ISO 9000 Certified and Automotive Facilities Operate to QS-9000 Standards Three-time Winner General Motors Supplier of the Year

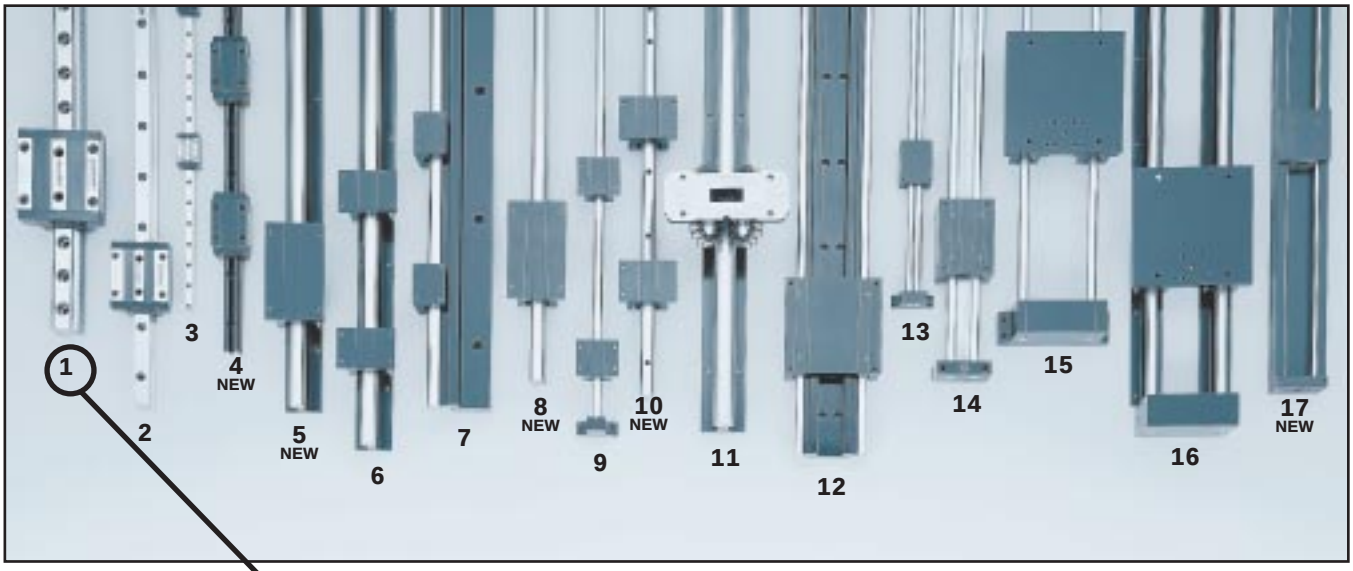
ISO 9000

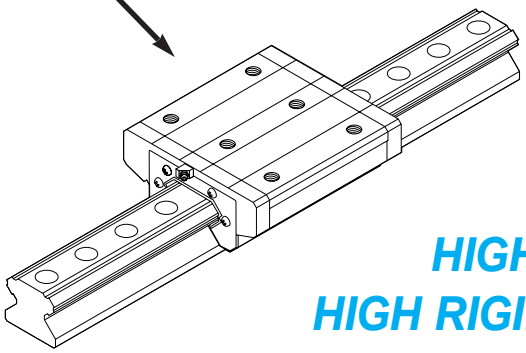
THOMSON® First in Linear Motion and Control Technology

THOMSON INDUSTRIES, INC.
2 Channel Drive • Port Washington, NY 11050 USA
☎ **1 (800) 554-8466 • Fax: 1 (516) 883-9039**
Internet: www.thomsonindustries.com • E-mail: thomson@thomsonmail.com
LinearFax*: 1 (800) 55-4-THOMSON • Employment Opportunities Fax: 1 (516) 883-4109

THOMSON® First in Linear Motion and Control Technology

AccuMax Linear Roller Guides #1





HIGH LOADS, EXTREME PRECISION, HIGH RIGIDITY

Thomson AccuMax* Linear Roller Guides Offer:

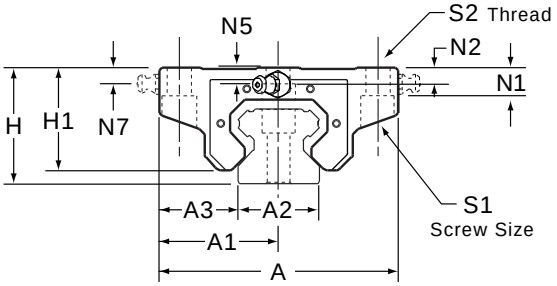
- Approximately twice the load capacity of equally-sized linear ball guides. This improvement in bearing capacity provides 10X increase in bearing life; costly service and maintenance is reduced
- Approximately twice the rigidity of equally-sized linear ball guides for a dramatic improvement in machine tool accuracy
- The Arcuate Advantage*, a patented design which utilize cylindrical roller elements on continuously crowned races, ensuring reliable bearing performance
- Four easily accessible lubrication points
- An industry-standard envelope for drop-in replacement of most linear ball guide systems… the added performance benefits are realized immediately

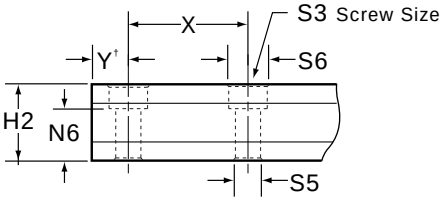
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuMax

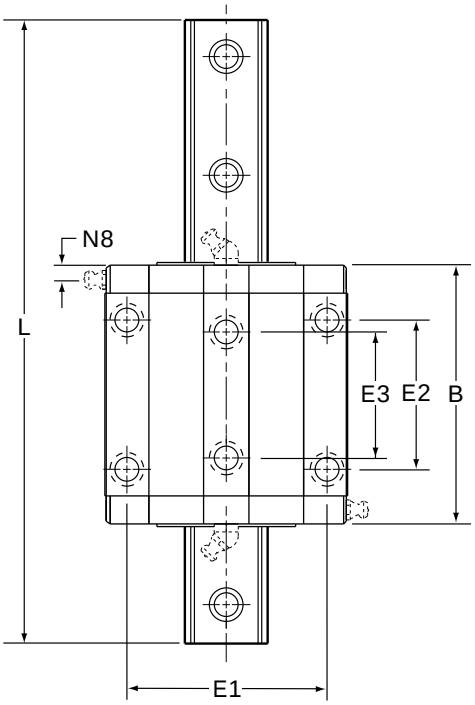
Linear Guide #1

Extremely High Rigidity, High Accuracy

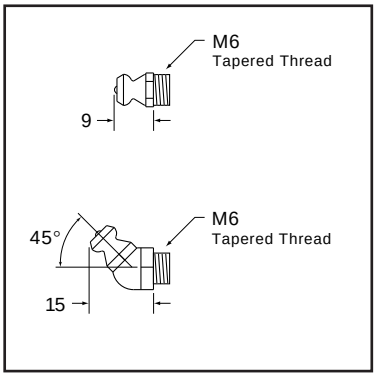




† "Y" dimension will be equal on both ends unless specified by customer.



Supplied
Lubrication Fittings



NOTE: AccuMax linear guides are normally not recommended for single rail applications. Contact the Thomson Technical Helpline at 1-800-554-THOMSON for immediate application assistance.

AccuMax* Linear Guide Series

(mm)																
Size	A	A1	A2	A3	H	H1	H2	B	E1	E2	E3	S1	S2	S3	S5	S6
35	100	50	34	33	48	42,5	31	109	82	62	52	M8	M10	M8	9	15
45	120	60	45	37,5	60	53	38,5	137	100	80	60	M10	M12	M12	14	20
55	140	70	53	43,5	70	62,5	45,5	163	116	95	70	M12	M14	M14	16	24
65**	170	85	63	53,5	90	80	56,5	200	142	110	82	M14	M16	M16	18	26

**Note: Contact Factory for availability.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dynamic Load and Moment Ratings

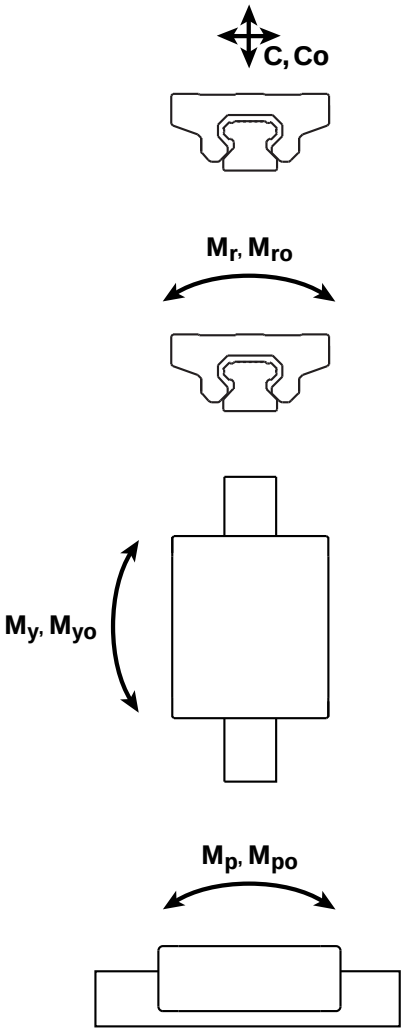
C = Dynamic load rating

M_p = Dynamic pitch moment rating

M_r = Dynamic roll moment rating

M_y = Dynamic yaw moment rating

The dynamic load and moment ratings are based upon a 100 km travel life. In order to compare with bearings rated for 50 km, divide the dynamic capacity of the bearing rated for 50 km by 1.26.



Static Load and Moment Capacities

Co = Static load capacity, N

M_{po} = Static pitch moment capacity, Nm

M_{ro} = Static roll moment capacity, Nm

M_{yo} = Static yaw moment capacity, Nm

The static load and moment capacities are the maximum radial load and moment load that should be applied to the bearing while there is no relative motion between the carriage and rail.

Bearing Travel Life Calculation

$L = (C/F)^{10/3} \times 100$ km

where:

L = travel life, km

C = dynamic load rating, N

F = applied dynamic load, N

$$C_{min} = F\left(\frac{L}{100}\right)^{1/3}$$

where:

C_{min} = minimum required dynamic load rating, N

F = applied dynamic load, N

L = required travel life, km

Operating Parameters

Maximum Velocity = 2 m/s

Maximum Acceleration = 50 m/s^2

Maximum Temperature = 80 °C

AccuMax* Linear Guide Series

(mm)									Load Rating	N (lbf)	Moment Rating	Nm (lbf-ft)			MASS Carriage	MASS Rail
Size	N1	N2	N5	N6	N7	N8	X	L_{max}‡	C(@100km)	C_o	M_p, M_y	M_{po}, M_{yo}	M_r	M_{ro}	kg	kg/m
35	12	7	7	21	7	7	40	3 000	46 600 (10,500)	79 500 (17,850)	195 (145)	480 (355)	590 (435)	1 010 (745)	1,5	7,5
45	16	9,5	7	24,5	7	8,5	52,5	3 000	80 000 (18,000)	132 400 (29,750)	425 (315)	935 (690)	990 (730)	1 690 (1,250)	2,8	11,2
55	21	10,5	8	29,5	8	10,25	60	3 000	115 700 (26,000)	191 100 (42,950)	770 (570)	1 615 (1,190)	1 470 (1,080)	2 510 (1,850)	4,7	16,3
65**	23	15	9,5	34,5	9,5	10,5	75	3 000	181 000 (47,000)	281 000 (63,150)	1 530 (1,130)	3 150 (2,320)	3 860 (2,850)	5 970 (4,400)	7,2	22,5

‡ Maximum rail length in one section. Multiple sections can be butted for longer lengths.

**Note: Contact Factory for availability.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuMax*

Linear Guide #1

Part Number Description and Specification

Carriage

Type	Description
CM	AccuMax

CM 35 AA C S

Carriage Suffix
(See chart below)

Size: 35, 45, 55, 65**

Style	Description
AA	Standard

Preload Designation	Description
B	Approx. 0,03 C†
C	Approx. 0,08 C†
D	Approx. 0,13 C†

Accuracy Class
P = Precision
S = Super Precision
U = Ultra Precision

† Where C=Dynamic Load Capacity
**Contact Factory for Availability

Rail

Type	Description
RM	AccuMax

RM 35 S LXXXX Y= (See Note 1 below)

Rail Suffix
(See chart below)

Size: 35, 45, 55, 65**

Accuracy Class
P = Precision
S = Super Precision
U = Ultra Precision

Rail Length
XXXX (mm)

**Contact Factory for Availability

Assembly

Type	Description
AM	AccuMax

AM 35 A 2 S C LXXXX S Y=
(See Note 1 Below)

Carriage Suffix
(See chart & Note 2 below

Size: 35, 45, 55, 65**

Style	Description
A	Standard

# of Carriages

Seal Configuration
S = Full Seals
U = End Seals

Rail Length
(mm)

Rail Suffix
(See chart & Note 2 below)

Accuracy Class
P = Precision S = Super Precision
U = Ultra Precision

Preload Designation	Description
B	Light Preload
C	Medium Preload
D	Heavy Preload

**Available in AA, CE Styled Carriage Only, Preloads A & B Only.

Note 1 - Y= Distance from end of rail to center of 1st mounting hole

Note 2 - For assembly with modified carriage or rail only, use M000 as suffix for non-modified component.

Product Options	Suffix	
	Carriage	Rail
Armoloy® Plating	-A	-A
Bellows Attachment Clips	-C2C2	-R3R3
Self-Lubricating	-LL	-
Double Seals	-KK	-
Scrapers	-ZZ	-
Self-Lubricating & Scrapers	-LLZZ	-
Double Seals & Scrapers	-KKZZ	-
Low Drag Seals (End Seals Only)	-LDS-	-
Other Modifications (Dowel Holes, Special Lube Points, Special Lubricants, Other)	MXXX	-MXXX
	Contact factory	

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Figure 1 - Dimensions H and A3

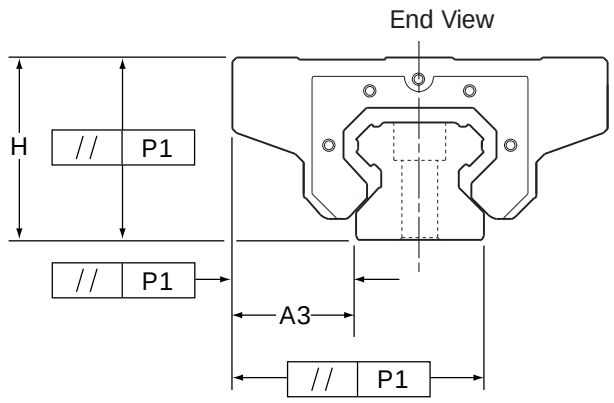


Figure 2 - Running Parallelism

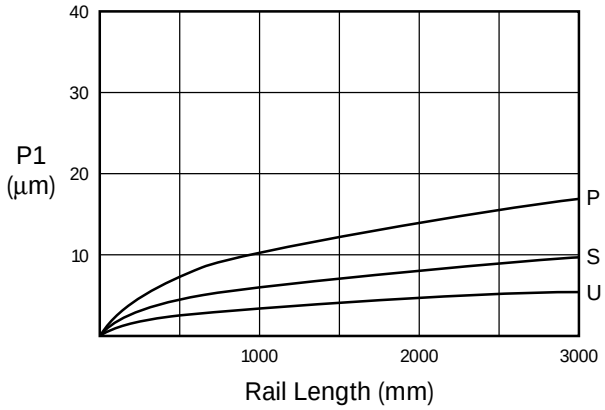


Table 1 - Tolerances (µm)

	Accuracy Classes		
	P Precision	**S Super Precision**	**U Ultra Precision**
1. Assembly Accuracy Dim. H and A3 (measured at middle of carriage at any point along rail)	±20	±10	±5
2. Pair Variation Max variation in dimensions H and A3 measured on multiple carriages mounted on the same rail (measured at middle of carriage at same position on rail)	7	5	3
3. Running Parallelism (applies to the system)	See Figures 1 and 2		

Table 2 - Preload/Accuracy Combinations

	Preload		
Accuracy Class	**approx. 0,03 C†**	**approx. 0,08 C†**	**approx. 0,13 C†**
P, S, U	B	C	D

†Where C=Dynamic Load Capacity

Table 3 - Calculations

To determine proper carriage size:

$$C_{min} = F \cdot \left(\frac{L}{100}\right)^{3/10}$$

C_{min} = minimum required dynamic load capacity of carriage (N)

F = equivalent load on carriage (N)

L = required travel life (km)

To determine travel life:

$$L = \left(\frac{C}{F}\right)^{10/3} \cdot 100$$

L = normal travel life (km)

C = rated dynamic load capacity of carriage (N)

F = equivalent load on carriage (N)

Table 4 - Conversions

1 lb_f = 4,448 N
1 kg_f = 9,8 N
1 km = 39,370 inches
1 Nm = 0.7376 lb_f-ft

Operating Parameters

Maximum Velocity = 2 m/s
Maximum Acceleration = 50 m/s^2
Maximum Temperature = 80 °C

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

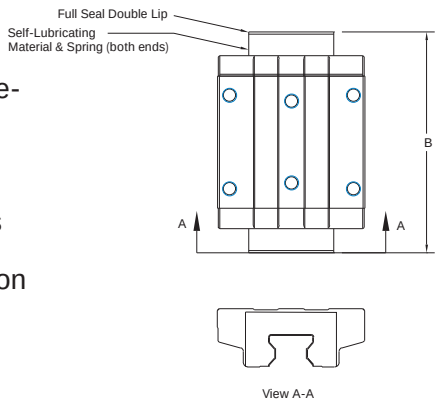
AccuMax Linear Roller Guide Accessories

-LL Self-Lubricating Option

The new LL Option provides maintenance-free operation and enhanced bearing protection.

- Eliminates the need for expensive lubrication system in most applications
- Increases effective bearing life by increasing protection from contamination
- Environmentally friendly

NOTE: Carriage drag with the -LL option will be approximately 2x the seal drag.

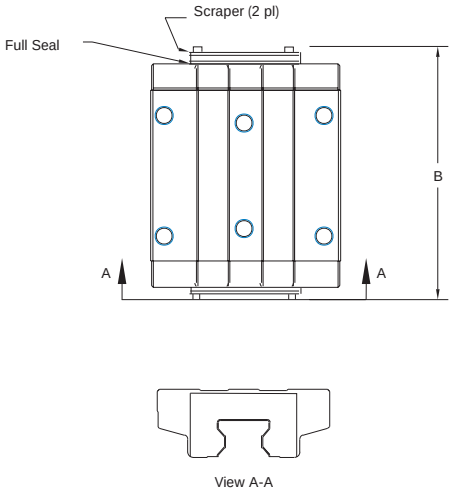


AccuMax Carriage Part#	B (mm)
CM35..-LL	Contact Factory
CM45..-LL	Contact Factory
CM55..-LL	Contact Factory

To order: Add -LL suffix to the end of the carriage part number (i.e. CM35AACP-LL).

Scraper Option

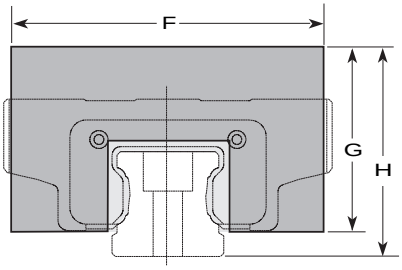
Scrapers for AccuMax* linear guide-carriages are manufactured from hard-ened steel, approximately 1mm thick, and match the profile of the rail within 0.080mm. A scraper is attached to each end of the carriage outside the standard double lip seal.



AccuMax Carriage Part#	B (mm)
CM35..-ZZ	121
CM45..-ZZ	151
CM55..-ZZ	176

To order: Add -ZZ suffix to the end of the carriage part number (i.e. CM35AABP-ZZ).

Bellows (Way Covers) Option



Materials Specifications

Type B = Polyurethane coated polyester, maximum ambient temperature = 80 ºC (175 ºF)
Type C = Teflon® coated fiberglass, maximum ambient temperature = 260 ºC (500 ºF)
Type W = Silcone coated Aramid®, maximum ambient temperature = 149 ºC (300 ºF)

To Order: Add -C2C2 Suffix to carriage for attachment clips
Add -R3R3 Suffix to rail for end machining and attachment clips

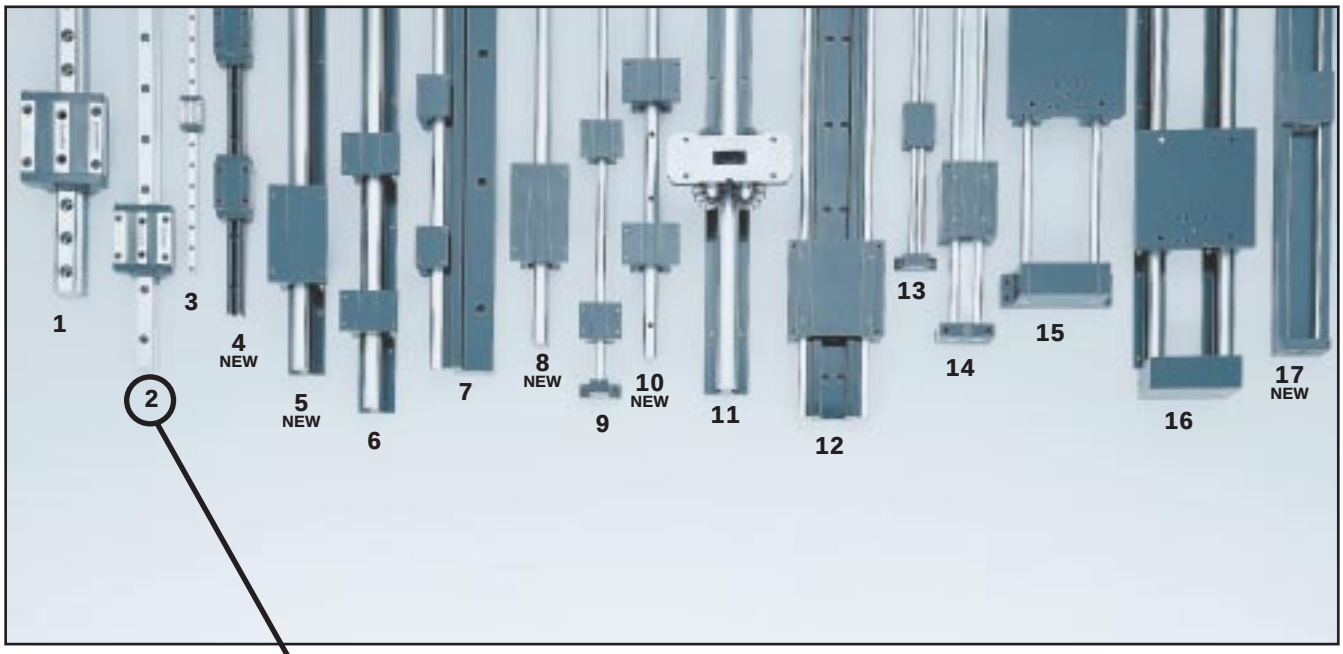
		Low Profile Bellows Type B				High Compression Bellows Type C				Walk-On Bellows Type W			
Part Number	Rail Size	F	G	H	CR	F	G	H	CR	F	G	H	CR
BM35❶ LXXXX	35	64	41.3	47.5	0.15	84	49.5	57.5	0.07	77	42	48	0.19
BM45❶ LXXXX	45	76.8	51	58	0.15	96.8	58	68	0.07	101	53	61	0.15
BM55❶ LXXXX	55	92.5	60	68	0.10	112.5	65	78	0.06	111	60	70	0.15

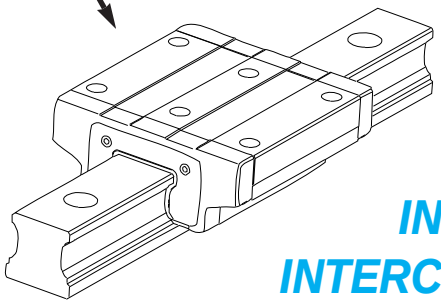
❶ Bellows Type
XXXX = Bellows Extended Length (mm)

NOTE: Type B (Low Profile Bellows) is below the carriage top, Type C and Type W are above the carriage top.
CR = Compression Ratio (bellows compressed length divided by the bellows extended length).

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuGlide Linear Ball Guides #2





INDUSTRY STANDARD ENVELOPE, INTERCHANGEABLE COMPONENTS

Thomson AccuGlide* Linear Ball Guides Offer:

- Interchangeability in all accuracy classes and preloads, eliminating the need to prematch carriages and rails —ordering is simplified and downtime is minimized
- Four easily accessible lubrication points
- A continuous full length wiper mounted on the carriage to exclude contaminants and retain lubrication
- A reduced lead time for all accuracy classes and preloads
- Product availability from over 1800 authorized distributor locations, worldwide
- An industry-standard envelope for interchangeability with existing ball guide systems. This provides a U.S. manufactured source, with off-the-shelf availability

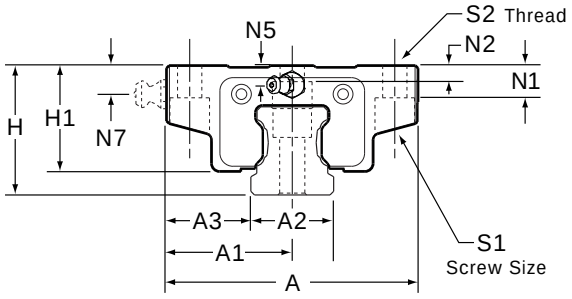
FOR ACTUATED SYSTEMS CONTAINING THIS TYPE OF LINEAR GUIDE,
SEE PAGES 260, 274, and 284

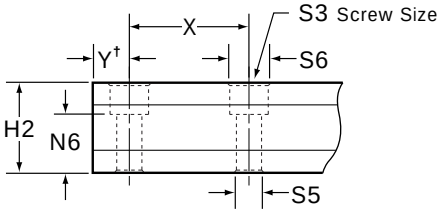
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuGlide

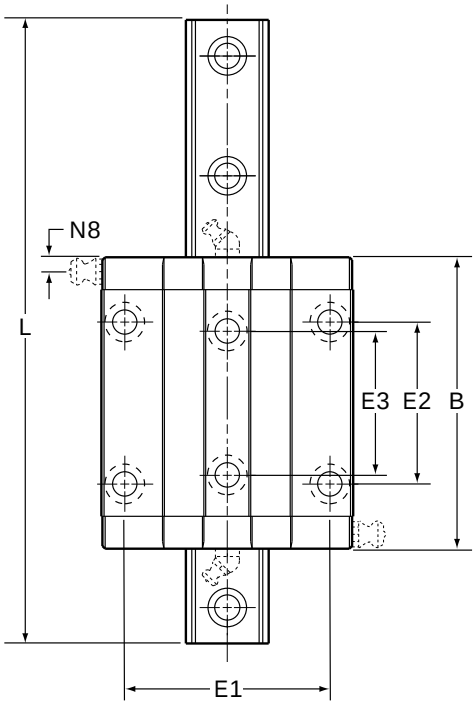
Linear Guide #2 (Standard)

High Rigidity, Industry Standard Envelope

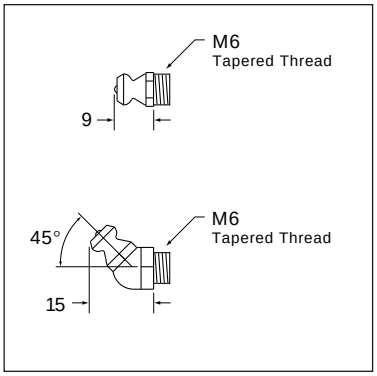




† "Y" dimension will be equal on both ends unless specified by customer.



Supplied
Lubrication Fittings



AccuGlide* Linear Guide Series "AA" – Standard

Drop-in replacement for type HSR A, B, CA, & CB style guides manufactured by THK Co., LTD. (Japan)

(mm)																
Size	A	A1	A2	A3	H	H1	H2	B	E1	E2	E3	S1	S2	S3	S5	S6
15**	47	23,5	15	16	24	20,9	15	57	38	30	26	M4	M5	M4	4,5	7,5
20	63	31,5	20	21,5	30	25	18	80	53	40	35	M5	M6	M5	6	9,5
25	70	35	23	23,5	36	29,5	24,5	86	57	45	40	M6	M8	M6	7	10,7
30	90	45	28	31	42	35	28,25	100	72	52	44	M8	M10	M8	9	15
35	100	50	34	33	48	40	32	109	82	62	52	M8	M10	M8	9	15
45	120	60	45	37,5	60	50	40	139	100	80	60	M10	M12	M12	14	20
55	140	70	53	43,5	70	57	46	163	116	95	70	M12	M14	M14	16	24

**Note: Contact Factory for availability.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dynamic Load and Moment Ratings

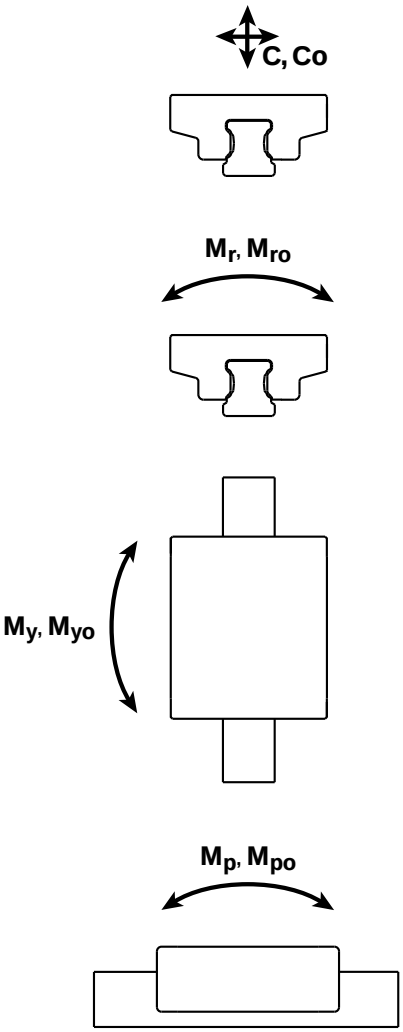
C = Dynamic load rating

M_p = Dynamic pitch moment rating

M_r = Dynamic roll moment rating

M_y = Dynamic yaw moment rating

The dynamic load and moment capacities are based upon a 100 km travel life. In order to compare with bearings rated for 50 km, divide the dynamic capacity of the bearing rated for 50 km by 1.26.



Static Load and Moment Capacities

Co = Static load capacity, N

M_{po} = Static pitch moment capacity, Nm

M_{ro} = Static roll moment capacity, Nm

M_{yo} = Static yaw moment capacity, Nm

The static load and moment capacities are the maximum radial load and moment load that should be applied to the bearing while there is no relative motion between the carriage and rail.

Bearing Travel Life Calculation

L = $(C/F)^3$ x 100 km

where:

L = travel life, km

C = dynamic load rating, N

F = applied dynamic load, N

$$C_{min} = F \left(\frac{L}{100}\right)^{1/3}$$

where:

C_{min} = minimum required dynamic load rating, N

F = applied dynamic load, N

L = required travel life, km

Operating Parameters

Maximum Velocity = 3 m/s

Maximum Acceleration = 50 m/s^2

Maximum Temperature = 80 °C

AccuGlide* Linear Guide Series "AA" – Standard

(mm)									Load Rating†	N (lbf)	Moment Rating		Nm (lbf-ft)		MASS Carriage	MASS Rail
Size	N1	N2	N5	N6	N7	N8	X	L_{max}‡	C(@100km)	C_o	M_p, M_y	M_{po}, M_{yo}	M_r	M_{ro}	kg	kg/m
15**	7,2	3,5	4	9,2	5,8	4	60	3 000	6 000 (1,350)	13 500 (3,030)	31 (23)	71 (53)	57 (43)	130 (98)	0,23	1,4
20	9,75	6,25	5	9,5	7,5	6	60	3 000	13 000 (2,990)	21 000 (4,720)	52 (39)	125 (92)	150 (112)	245 (180)	0,55	2,4
25	9	4,5	5	16	8	5,5	60	3 000	18 200 (4,100)	28 000 (6,290)	86 (65)	195 (145)	260 (190)	400 (295)	0,75	3,2
30	10,75	5	6,3	16,3	8	7,6	80	3 000	24 800 (5,600)	37 000 (8,320)	150 (110)	300 (220)	450 (330)	650 (480)	1,30	5,0
35	14	4,5	6,3	20	10	6,8	80	3 000	32 000 (7,200)	47 000 (10,550)	240 (180)	460 (340)	730 (540)	1 010 (745)	1,85	6,8
45	15	8	7,4	24	14	9,5	105	3 000	52 500 (11,800)	76 000 (17,100)	470 (350)	900 (665)	1 450 (1,090)	2 070 (1,530)	3,40	10,5
55	17,75	10,25	9,3	27	14,5	11,6	120	3 000	77 000 (17,300)	107 000 (24,050)	820 (615)	1 510 (1,110)	2 430 (1,830)	3 385 (2,500)	5,65	16,2

‡ Maximum rail length in one section. Multiple sections can be butted for longer lengths.

† Load Ratings per DIN 636

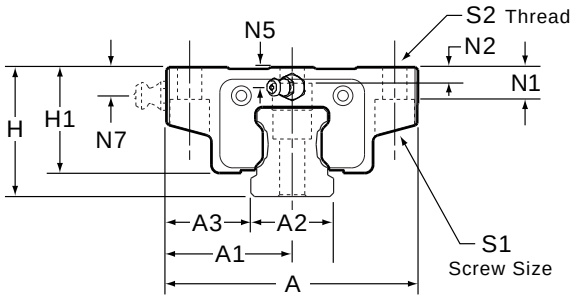
**Note: Contact Factory for availability.

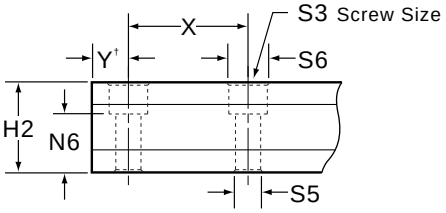
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuGlide

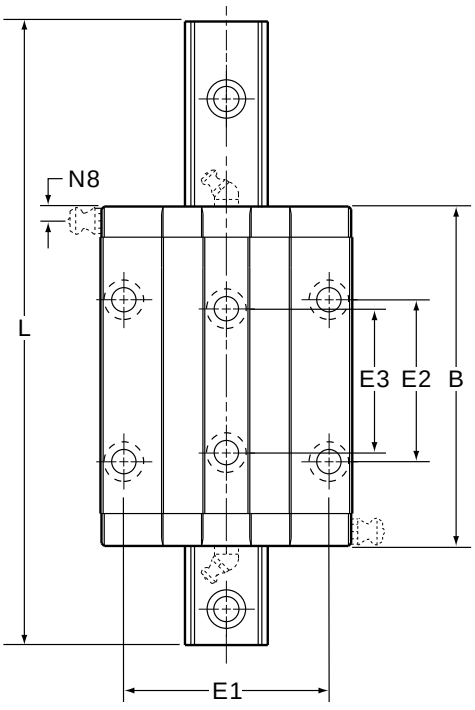
Linear Guide #2 (Standard Long)

High Rigidity, Industry Standard Envelope

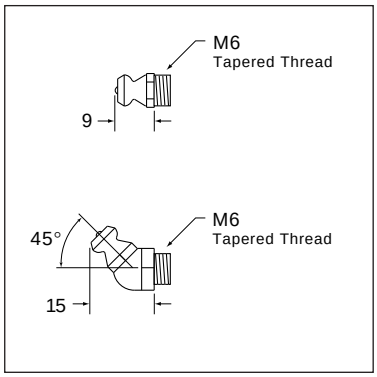




† "Y" dimension will be equal on both ends unless specified by customer.



Supplied
Lubrication Fittings



AccuGlide* Linear Guide Series "BA" – Standard Long

Drop-in replacement for type HSR LA, LB, HA, & HB style guides manufactured by THK Co., LTD. (Japan)

(mm)																
Size	A	A1	A2	A3	H	H1	H2	B	E1	E2	E3	S1	S2	S3	S5	S6
20	63	31,5	20	21,5	30	25	18	102	53	40	35	M5	M6	M5	6	9,5
25	70	35	23	23,5	36	29,5	24,5	105	57	45	40	M6	M8	M6	7	10,7
30	90	45	28	31	42	35	28,25	122	72	52	44	M8	M10	M8	9	15
35	100	50	34	33	48	40	32	134	82	62	52	M8	M10	M8	9	15
45	120	60	45	37,5	60	50	40	171	100	80	60	M10	M12	M12	14	20
55	140	70	53	43,5	70	57	46	201	116	95	70	M12	M14	M14	16	24

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dynamic Load and Moment Ratings

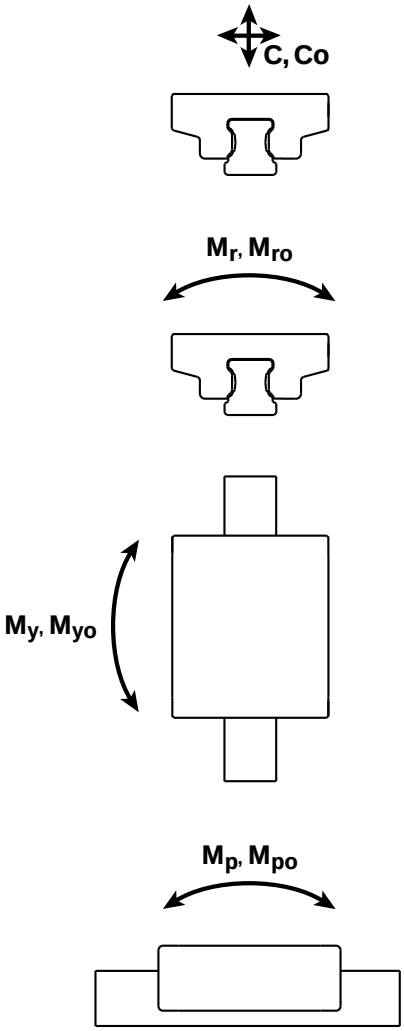
C = Dynamic load rating

M_p = Dynamic pitch moment rating

M_r = Dynamic roll moment rating

M_y = Dynamic yaw moment rating

The dynamic load and moment ratings are based upon a 100 km travel life. In order to compare with bearings rated for 50 km, divide the dynamic capacity of the bearing rated for 50 km by 1.26.



Static Load and Moment Capacities

Co = Static load capacity

M_{po} = Static pitch moment capacity

M_{ro} = Static roll moment capacity

M_{yo} = Static yaw moment capacity

The static load and moment capacities are the maximum radial load and moment load that should be applied to the bearing while there is no relative motion between the carriage and rail.

Bearing Travel Life Calculation

L = $(C/F)^3$ x 100 km

where:

L = travel life, km

C = dynamic load rating, N

F = applied dynamic load, N

$$C_{min} = F\left(\frac{L}{100}\right)^{1/3}$$

where:

C_{min} = minimum required dynamic load rating, N

F = applied dynamic load, N

L = required travel life, km

Operating Parameters

Maximum Velocity = 3 m/s

Maximum Acceleration = 50 m/s^2

Maximum Temperature = 80 °C

AccuGlide* Linear Guide Series "BA" – Standard Long

(mm)									Load Rating†	N (lbf)	Moment Rating	Nm (lbf-ft)			MASS Carriage	MASS Rail
Size	N1	N2	N5	N6	N7	N8	X	$L_{max‡}$	C(@100km)	C_o	M_p, M_y	M_{po}, M_{yo}	M_r	M_{ro}	kg	kg/m
20	9,75	6,25	5	9,5	7,5	6	60	3 000	17 400 (3,900)	30 000 (6,740)	64 (48)	160 (120)	210 (160)	350 (260)	0,71	2,4
25	9	4,5	5	16	8	5,5	60	3 000	22 700 (5,100)	39 000 (8,770)	102 (77)	255 (190)	320 (240)	550 (405)	1,00	3,2
30	10,75	5	6,3	16,3	8	7,6	80	3 000	31 000 (7,000)	50 000 (11,250)	170 (130)	390 (290)	550 (410)	900 (665)	1,60	5,0
35	14	4,5	6,3	20	10	6,8	80	3 000	40 200 (9,050)	66 000 (14,850)	270 (205)	600 (445)	870 (650)	1 410 (1,040)	2,45	6,8
45	15	8	7,4	24	14	9,5	105	3 000	66 000 (14,800)	106 000 (23,850)	550 (410)	1 180 (870)	1 780 (1,330)	2 850 (2,100)	4,50	10,5
55	17,75	10,25	9,3	27	14,5	11,6	120	3 000	97 000 (21,800)	148 000 (33,250)	965 (710)	1 970 (1,450)	3 050 (2,250)	4 670 (3,440)	7,50	16,2

‡ Maximum rail length in one section. Multiple sections can be butted for longer lengths.

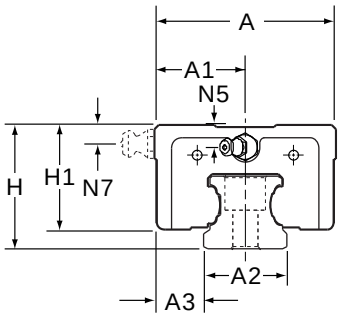
† Load Ratings per DIN 636

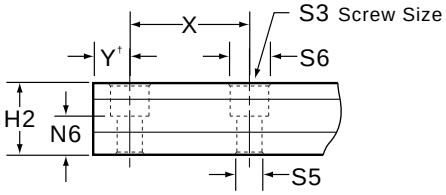
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuGlide

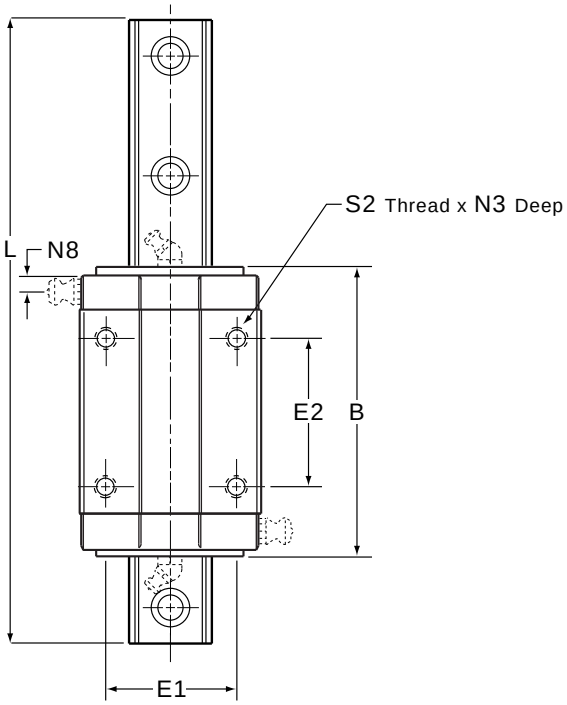
Linear Guide #2 (Narrow & Narrow High)

High Rigidity, Industry Standard Envelope

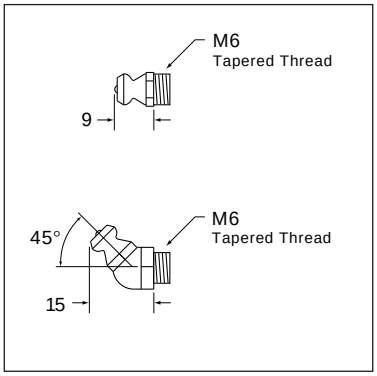




† "Y" dimension will be equal on both ends unless specified by customer.



Supplied
Lubrication Fittings



AccuGlide* Linear Guide Series "CE" – Narrow
AccuGlide Linear Guide Series "EE" – Narrow High

‡ "EE" style is a drop-in replacement for type HSR R & TR style guides manufactured by THK Co., LTD. (Japan).

(mm)																
					CE		EE ‡									
Size	A	A1	A2	A3	H	H1	H	H1	H2	B	E1	E2	S2	S3	S5	S6
15**	34	17	15	9,5	24	20,9	24	20,9	15	57	26	26	M4	M4	4,5	7,5
20	44	22	20	12	30	25	30	25	18	80	32	36	M5	M5	6	9,5
25	48	24	23	12,5	36	29,5	40	33,5	24,5	86	35	35	M6	M6	7	10,7
30	60	30	28	16	42	35	45	38	28,25	100	40	40	M8	M8	9	15
35	70	35	34	18	48	40	55	47	32	109	50	50	M8	M8	9	15
45	86	43	45	20.5	60	50	70	60	40	139	60	60	M10	M12	14	20
55	100	50	53	23,5	70	57	80	67	46	163	75	75	M12	M14	16	24

**Note: Contact Factory for availability.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dynamic Load and Moment Ratings

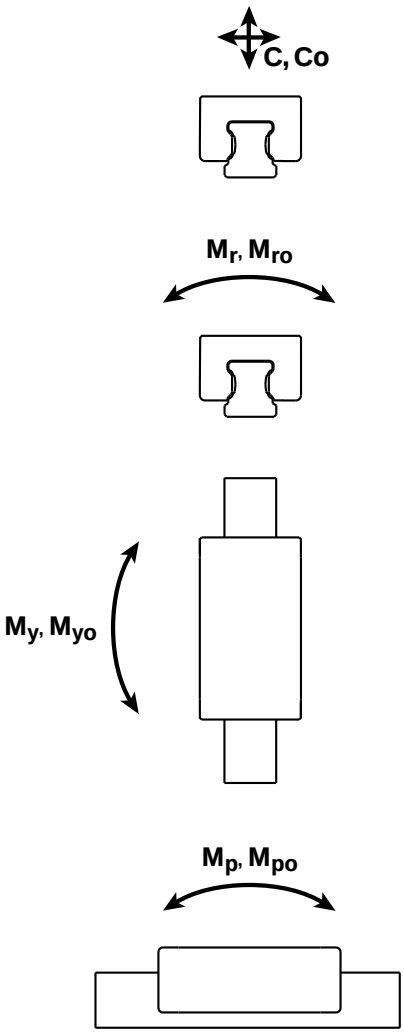
C = Dynamic load rating

M_p = Dynamic pitch moment rating

M_r = Dynamic roll moment rating

M_y = Dynamic yaw moment rating

The dynamic load and moment ratings are based upon a 100 km travel life. In order to compare with bearings rated for 50 km, divide the dynamic capacity of the bearing rated for 50 km by 1.26.



Static Load and Moment Capacities

Co = Static load capacity

M_{po} = Static pitch moment capacity

M_{ro} = Static roll moment capacity

M_{yo} = Static yaw moment capacity

The static load and moment capacities are the maximum radial load and moment load that should be applied to the bearing while there is no relative motion between the carriage and rail.

Bearing Travel Life Calculation

$L = (C/F)^3 \times 100$ km

where:

L = travel life, km

C = dynamic load rating, N

F = applied dynamic load, N

$$C_{min} = F\left(\frac{L}{100}\right)^{1/3}$$

where:

C_{min} = minimum required dynamic load rating, N

F = applied dynamic load, N

L = required travel life, km

Operating Parameters

Maximum Velocity = 3 m/s

Maximum Acceleration = 50 m/s^2

Maximum Temperature = 80 °C

AccuGlide* Linear Guide Series "CE" – Narrow
AccuGlide Linear Guide Series "EE" - Narrow High

(mm)								Load Rating†	N (lbf)	Moment Rating	Nm (lbf-ft)			MASS Carriage	MASS Rail
Size	N3	N5	N6	N7	N8	X	L_{max}‡	C(@100km)	C_o	M_p, M_y	M_{po}, M_{yo}	M_r	M_{ro}	kg	kg/m
15**	4	4	9,2	n/a	n/a	60	3 000	6 000 (1,350)	13 500 (3,030)	31 (23)	71 (53)	57 (43)	130 (98)	0,20	1,4
20	6	5	9,5	n/a	n/a	60	3 000	13 000 (2,990)	21 000 (4,720)	52 (39)	125 (92)	150 (112)	245 (180)	0,40	2,4
25	9	5	16	5,3	5,5	60	3 000	18 200 (4,100)	28 000 (6,290)	86 (65)	195 (145)	260 (190)	400 (295)	0,55	3,2
30	12	6,3	16,3	6,3	7,6	80	3 000	24 800 (5,600)	37 000 (8,320)	150 (110)	300 (220)	450 (330)	650 (480)	0,90	5,0
35	13	6,3	20	6,3	8,2	80	3 000	32 000 (7,200)	47 000 (10,550)	240 (180)	460 (340)	730 (540)	1 010 (745)	1,20	6,8
45	18	7,3	24	7,3	9	105	3 000	52 500 (11,800)	76 000 (17,100)	470 (350)	900 (665)	1 450 (1,090)	2 070 (1,530)	2,30	10,5
55	18,7	9,3	27	9,3	11,6	120	3 000	77 000 (17,300)	107 000 (24,050)	820 (615)	1 510 (1,110)	2 430 (1,830)	3 385 (2,500)	3,80	16,2

‡ Maximum rail length in one section. Multiple sections can be butted for longer lengths.
† Load Ratings per DIN 636

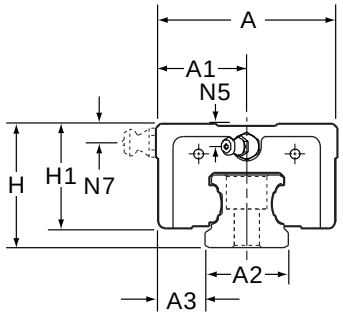
**Note: Contact Factory for availability.

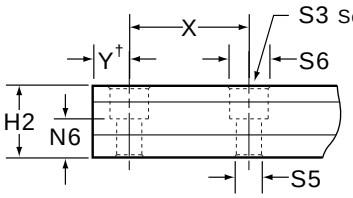
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuGlide

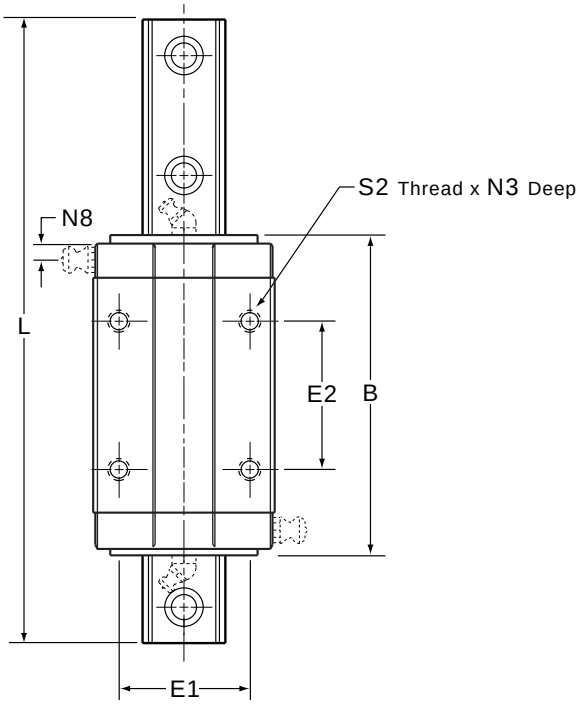
Linear Guide #2 (Narrow Long)

High Rigidity, Industry Standard Envelope

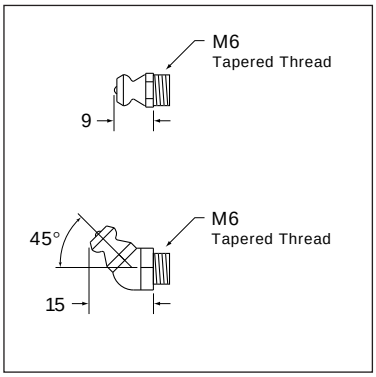




† "Y" dimension will be equal on both ends unless specified by customer.



Supplied
Lubrication Fittings



AccuGlide* Linear Guide Series "DE" – Narrow Long
AccuGlide Linear Guide Series "HE" – Narrow Long High

‡ "HE" style is a drop-in replacement for type HSR LR & HTR style guides manufactured by THK Co., LTD. (Japan).

(mm)																
					DE		HE ‡									
Size	A	A1	A2	A3	H	H1	H	H1	H2	B	E1	E2	S2	S3	S5	S6
20	44	22	20	12	30	25	30	25	18	102	32	50	M5	M5	6	9,5
25	48	24	23	12,5	36	29,5	36	29,5	24,5	105	32	50	M6	M6	7	10,7
30	60	30	28	16	42	35	45	38	28,25	122	40	60	M8	M8	9	15
35	70	35	34	18	48	40	55	47	32	134	50	72	M8	M8	9	15
45	86	43	45	20.5	60	50	70	60	40	171	60	80	M10	M12	14	20
55	100	50	53	23,5	70	57	80	67	46	201	75	95	M12	M14	16	24

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dynamic Load and Moment Ratings

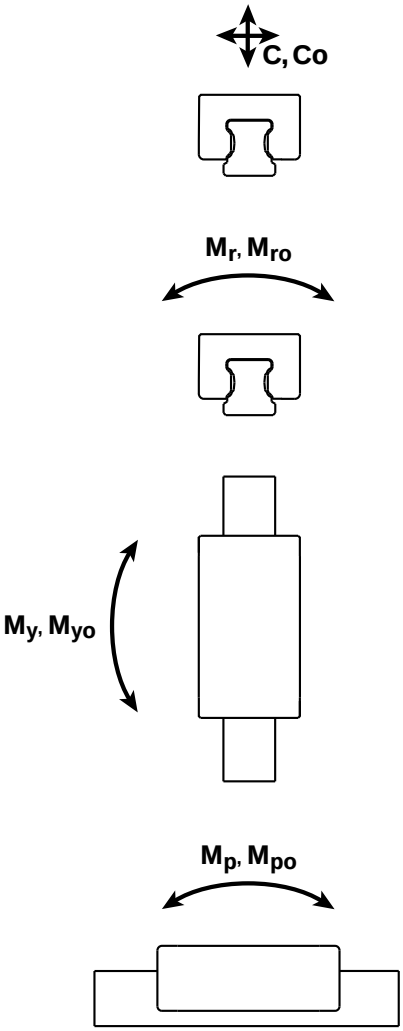
C = Dynamic load rating

M_p = Dynamic pitch moment rating

M_r = Dynamic roll moment rating

M_y = Dynamic yaw moment rating

The dynamic load and moment ratings are based upon a 100 km travel life. In order to compare with bearings rated for 50 km, divide the dynamic capacity of the bearing rated for 50 km by 1.26.



Static Load and Moment Capacities

Co = Static load capacity

M_{po} = Static pitch moment capacity

M_{ro} = Static roll moment capacity

M_{yo} = Static yaw moment capacity

The static load and moment capacities are the maximum radial load and moment load that should be applied to the bearing while there is no relative motion between the carriage and rail.

Bearing Travel Life Calculation

L = $(C/F)^3$ x 100 km

where:

L = travel life, km

C = dynamic load rating, N

F = applied dynamic load, N

$$C_{min} = F \left(\frac{L}{100}\right)^{1/3}$$

where:

C_{min} = minimum required dynamic load rating, N

F = applied dynamic load, N

L = required travel life, km

Operating Parameters

Maximum Velocity = 3 m/s

Maximum Acceleration = 50 m/s^2

Maximum Temperature = 80 °C

AccuGlide* Linear Guide Series "DE" – Narrow Long
AccuGlide Linear Guide Series "HE" – Narrow Long High

(mm)								Load Rating† N (lbf)		Moment Rating Nm (lbf-ft)				MASS Carriage Rail	
Size	N3	N5	N6	N7	N8	X	$L_{max‡}$	C(@100km)	C_o	M_p, M_y	M_{po}, M_{yo}	M_r	M_{ro}	kg	kg/m
20	6	5	9,5	n/a	n/a	60	3 000	17 400 (3,900)	30 000 (6,740)	64 (48)	160 (120)	210 (160)	350 (260)	0,50	2,4
25	9	5	16	5,3	5,5	60	3 000	22 700 (5,100)	39 000 (8,770)	102 (77)	255 (190)	320 (240)	550 (405)	0,70	3,2
30	12	6,3	16,3	6,3	7,6	80	3 000	31 000 (7,000)	50 000 (11,250)	170 (130)	390 (290)	550 (410)	900 (665)	1,10	5,0
35	13	6,3	20	6,3	8,2	80	3 000	40 200 (9,050)	66 000 (14,850)	270 (205)	600 (445)	870 (650)	1 410 (1,040)	1,70	6,8
45	18	7,3	24	7,3	9	105	3 000	66 000 (14,800)	106 000 (23,850)	550 (410)	1 180 (870)	1 780 (1,330)	2 850 (2,100)	3,10	10,5
55	18,7	9,3	27	9,3	11,6	120	3 000	97 000 (21,800)	148 000 (33,250)	965 (710)	1 970 (1,450)	3 050 (2,250)	4 670 (3,440)	4,80	16,2

‡ Maximum rail length in one section. Multiple sections can be butted for longer lengths.
† Load Ratings per DIN 636

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuGlide*
Linear Guide #2
Part Number Description and Specification

Carriage

Type	Description
CG	AccuGlide

CG 25 AA A N

Size: 15**, 20, 25, 30, 35, 45, 55

Carriage Suffix (See Chart Below)

Style	Description
AA	Standard
BA	Standard Long
CE	Narrow
DE	Narrow Long
EE	Narrow High
HE	Narrow High Long

Preload Designation	Description
A	Clearance
B	Approx. 0,03 C†
C	Approx. 0,08 C†
D	Approx. 0,13 C†

Accuracy Class
N = Normal P = Precision
H = High S = Super
U = Ultra Precision

†Where C=Dynamic Load Capacity
**Available in AA & CE Styled Carriage Only and Preloads A & B Only.

Rail

Type	Description
RG	AccuGlide

RG 25 N LXXXX Y= (See Note 1 Below)

Size: 15, 20, 25, 30, 35, 45, 55

Rail Suffix (See Chart Below)

Accuracy Class
N = Normal P = Precision
H = High S = Super
U = Ultra Precision

Rail Length
XXXX (mm)

Assembly

Type	Description
AG	AccuGlide Assembly

AG 25 A 2 S B LXXXX N Y=

Size: 15**, 20, 25, 30, 35, 45, 55

Style	Description
A	Standard
B	Standard Long
C	Narrow
D	Narrow Long
E	Narrow High
H	Narrow High Long

# of Carriages

Seal Configuration
S = Full Seals
U = End Seals

Preload Designation	Description
A	Clearance
B	Light Preload
C	Medium Preload
D	Heavy Preload

Rail Length (mm)

Carriage Suffix (See chart & Note 2 below)

Rail Suffix (See chart & Note 2 below)

Accuracy Class
N = Normal P = Precision
H = High S = Super Precision
U = Ultra Precision

Y= (See Note 1 Below)

**Available in AA & CE Styled Carriage Only and Preloads A & B Only.

Note 1 - Y= Distance from end of rail to center of 1st mounting hole

Note 2 - For assembly with modified carriage or rail only, use M000 as suffix for non-modified component.

Note 3 - For a Ball Screw Actuated System using AccuGlide* linear guides, see page 260 in the Systems section of this catalog.

Note 4 - For a Belt Actuated System using AccuGlide* linear guides, see page 274 and 284 in the Systems section of this catalog.

Product Options	Suffix	
	Carriage	Rail
Armoloy® Plating	-A	-A
Bellows Attachment Clips	-C2C2	-R3R3
Self-Lubricating	-LL	-
Double Seals	-KK	-
Scrapers	-ZZ	-
Self-Lubricating & Scrapers	-LLZZ	-
Double Seals & Scrapers	-KKZZ	-
Low Drag Seals (End Seals Only)	-LDS	-
Other Modifications (Dowel Holes, Special Lube Points, Special Lubricants, Other)	-MXXX	-MXXX
	Contact Factory	

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Figure 1 - Running Parallelism

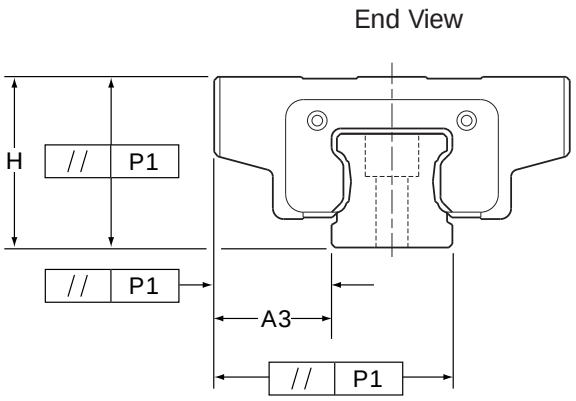


Figure 2 - Running Parallelism

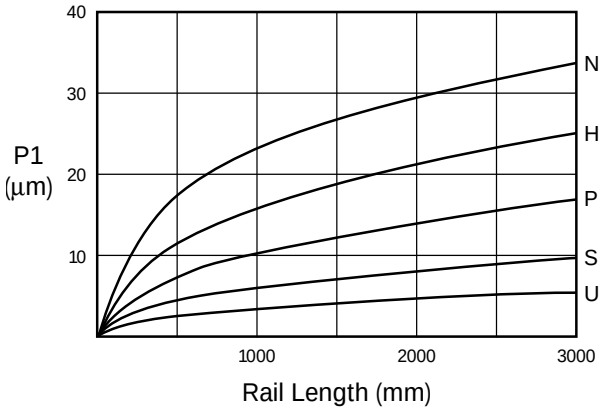


Table 1 - Tolerances (µm)

	Accuracy Classes				
	N Normal	**H High**	**P Precision**	**S Super Precision**	**U Ultra Precision**
1. Dim. H and A3 (measured at middle of carriage at any point along rail)	±100	±40	±20	±10	±5
2. Max variation in dimensions H and A3 measured on multiple carriages mounted on the same rail (measured at middle of carriage at same position on rail)	30	15	7	5	3
3. Parallelism (applies to the system)	See Figures 1 and 2				

Table 3 - Calculations

To determine proper carriage size:

$$C_{min} = F \cdot \left(\frac{100}{L}\right)^{1/3}$$

C_{min} = minimum required dynamic load capacity of carriage (N)

F = equivalent load on carriage (N)

L = required travel life (km)

To determine travel life:

$$L = \left(\frac{C}{F}\right)^{3} \cdot 100$$

L = normal travel life (km)

C = rated dynamic load capacity of carriage (N)

F = equivalent load on carriage (N)

Table 4 - Conversions

1 lb_f = 4,448 N
1 kg_f = 9,8 N
1 km = 39,370 inches
1 Nm = 0.7376 lb_f-ft

Table 2 - Preload/Accuracy Combinations

Accuracy Class	**Clearance up to 10 µm**	**Preload**		
		approx. 0,03 C†	**approx. 0,08 C†**	**approx. 0,13 C†**
P,S,U	---	B	C	D
N,H	A	B	C	---

† Where C=Dynamic Load Rating

Operating Parameters

Maximum Velocity = 3 m/s
Maximum Acceleration = 50 m/s^2
Maximum Temperature = 80 °C

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

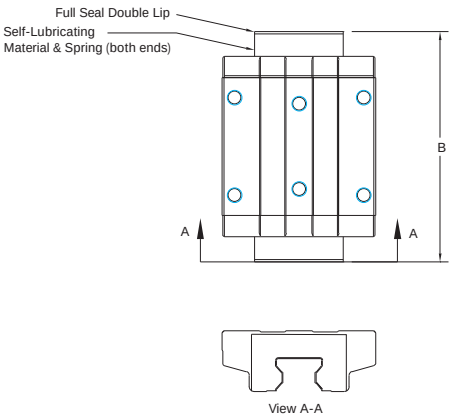
AccuGlide Linear Ball Guide Accessories

-LL Self-Lubricating Option

The new LL Option provides maintenance-free operation and enhanced bearing protection.

- Eliminates the need for expensive lubrication system in most applications
- Increases effective bearing life by increasing protection from contamination
- Environmentally friendly

NOTE: Carriage drag with the -LL option will be approximately 2x the seal drag.



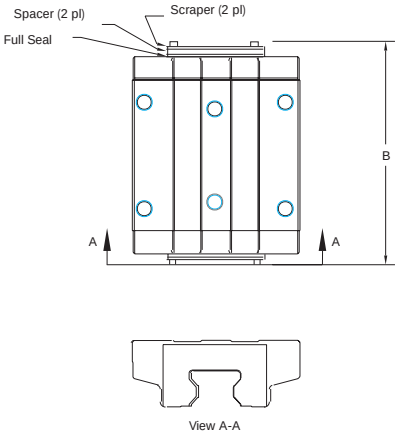
AccuGlide Carriage Part#	B (mm)
CG15..-LL	75
CG20..-LL	106
CG25..-LL	110
CG30..-LL	128
CG35..-LL	140
CG45..-LL	178
CG55..-LL	208

Note: AA style carriage shown. Length (B) for CE style carriages is the same.

To order: Add -LL suffix to the end of the carriage part number (i.e. CG25AAAN-LL). -LL option is available on AA and CE style carriages only.

Scraper Option

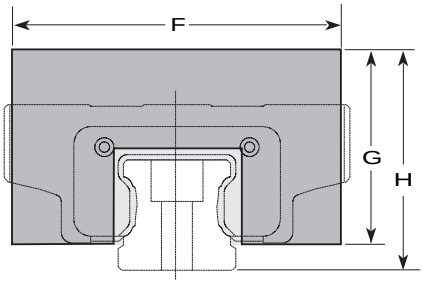
Scrapers for AccuGlide* linear guide carriages are manufactured from hardened steel, approximately 1mm thick, and match the profile of the rail within 0.080mm. A scraper is attached to each end of the carriage outside the standard double lip seal.



AccuGlide Carriage Part#	B (mm) AA & CE	B (mm) BA & DE
CG15..-ZZ	68	N/A
CG20..-ZZ	90	112
CG25..-ZZ	96	115
CG30..-ZZ	110	132
CG35..-ZZ	121	146
CG45..-ZZ	151	183
CG55..-ZZ	176	214

To order: Add -ZZ suffix to the end of the carriage part number (i.e. CG25AAAN-ZZ).

Bellows (Way Covers) Option



Materials Specifications

Type B = Polyurethane coated polyester, maximum ambient temperature = 80 ºC (175 ºF)
Type C = Teflon® coated fiberglass, maximum ambient temperature = 260 ºC (500 ºF)
Type W = Silcone coated Aramid®, maximum ambient temperature = 149 ºC (300 ºF)

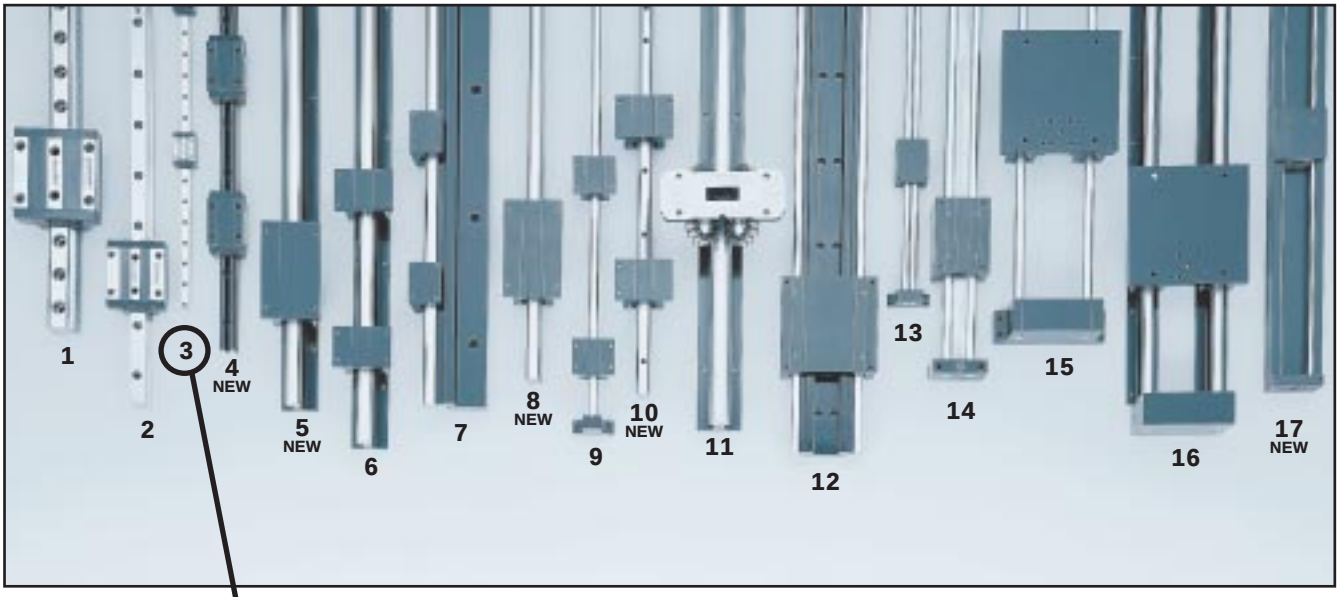
To Order: Add -C2C2 Suffix to carriage for attachment clips
Add -R3R3 Suffix to rail for end machining and attachment clips

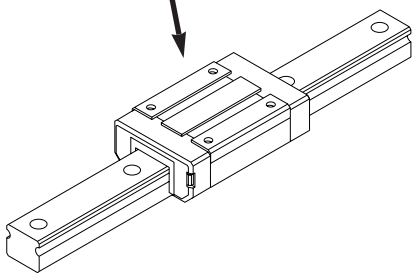
		Low Profile Bellows Type B				High Compression Bellows Type C				NEW Walk-On Bellows Type W			
Part Number	Rail Size	F	G	H	CR	F	G	H	CR	F	G	H	CR
BG15❶LXXXX	15	45	23	26	0.17	59	33	36	0.10	55	30	31	0.19
BG20❶LXXXX	20	41.6	24	29	0.17	61.6	34	39	0.10	61	33	34	0.19
BG25❶LXXXX	25	43.7	29	35.5	0.17	63.7	39	45.5	0.10	65	36	40.5	0.19
BG30❶LXXXX	30	51.2	33.3	40.25	0.17	71.5	43.3	50.25	0.10	70	39	44.2	0.19
BG35❶LXXXX	35	64	39.5	47.5	0.15	84	49.5	57.5	0.07	77	42	48	0.19
BG45❶LXXXX	45	76.8	48	58	0.15	96.8	58	68	0.07	101	53	61	0.15
BG55❶LXXXX	55	92.5	55	68	0.10	112.5	65	78	0.06	111	60	70	0.15

❶ Bellows Type
XXXX = Bellows Extended Length (mm)

NOTE: Type B (Low Profile Bellows) is below the carriage top, Type C and Type W are above the carriage top.
CR = Compression Ratio (bellows compressed length divided by the bellows extended length).

AccuGlide Miniature Linear Ball Guides #3





ULTRA COMPACT, HIGH ROLL MOMENT CAPACITY

Thomson AccuGlide* Miniature Linear Ball Guides offer:

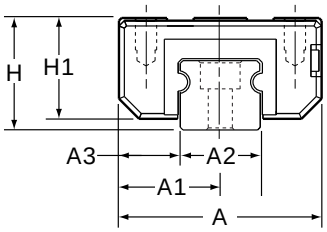
- A superior, patented ball control design for smooth, quiet, low friction linear motion even at high speeds
- A patented full length integral wiper which protects important bearing components from contaminants…effective system life is maximized
- A Gothic Arch design, which provides high roll moment capacity...an important requirement for stand-alone applications
- A wear-resistant, engineered polymer retainer which reduces system inertia and noise
- An American manufacturing source with off-the-shelf availability for all accuracy classes and preload levels
- Worldwide availability from over 1800 authorized distributor locations

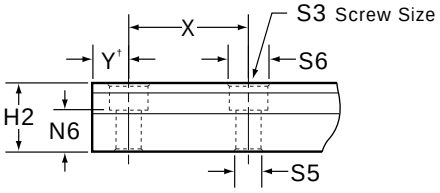
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuGlide

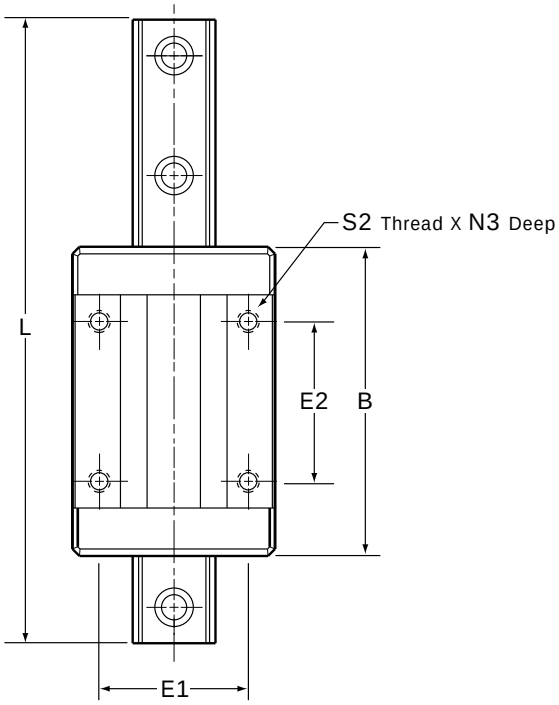
Linear Guide #3 (Miniature Series)

Low Profile, Compact Design





† "Y" dimension will be equal on both ends unless specified by customer.



NOTE:

The AccuGlide linear guide Miniature Series carriages do not have retained balls. Removing the carriage from the rail without an arbor will result in the balls falling out.

AccuGlide* Linear Guide Miniature Series

(mm)														
Size	A	A1	A2	A3	H	H1	H2	B	E1	E2	S2	S3	S5	S6
10	26	13	10	8	15	13	9	40	17	20	M2,5	M2,5	3	5,5
15	38	19	15	11,5	21	19	13	58	28	30	M4	M4	4,5	8
20	50	25	20	15	28	25,6	18	76	37	40	M5	M5	5,5	9,5

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dynamic Load and Moment Ratings

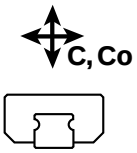
C = Dynamic load rating

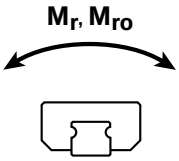
M_p = Dynamic pitch moment rating

M_r = Dynamic roll moment rating

M_y = Dynamic yaw moment rating

The dynamic load and moment ratings are based upon a 100 km travel life. In order to compare with bearings rated for 50 km, divide the dynamic capacity of the bearing rated for 50 km by 1.26.





Static Load and Moment Capacities

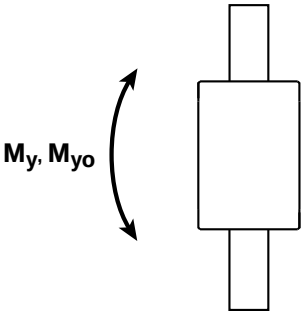
Co = Static load capacity

M_{po} = Static pitch moment capacity

M_{ro} = Static roll moment capacity

M_{yo} = Static yaw moment capacity

The static load and moment capacities are the maximum radial load and moment load that should be applied to the bearing while there is no relative motion between the carriage and rail.



Bearing Travel Life Calculation

$L = (C/F)^3 \times 100$ km

where:

L = travel life, km

C = dynamic load rating, N

F = applied dynamic load, N

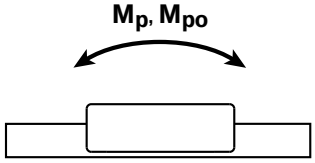
$$C_{min} = F\left(\frac{L}{100}\right)^{1/3}$$

where:

C_{min} = minimum required dynamic load rating, N

F = applied dynamic load, N

L = required travel life, km



Operating Parameters

Maximum Velocity = 3 m/s

Maximum Acceleration = 50 m/s^2

Maximum Temperature = 80 °C

AccuGlide* Linear Guide Miniature Series

(mm)					Load Rating	N (lbf)	Moment Rating	Nm (lbf-ft)			MASS Carriage	MASS Rail
Size	N3	N6	X	L_{max}‡	C(@100km)	C_o	M_p, M_y	M_{po}, M_{yo}	M_r	M_{ro}	kg	kg/m
10	4,5	5,5	25	1 500	2 820 (635)	5 300 1,190	10 (7)	20 (15)	15 (11)	28 (21)	0,045	0,65
15	6	7,5	40	1 500	6 375 (1,430)	15 200 (3,420)	35 (26)	66 (49)	51 (38)	96 (71)	0,141	1,42
20	8	9,5	60	3 000	11 870 (2,670)	23 000 (5,170)	75 (55)	140 (105)	125 (92)	235 (175)	0,345	2,55

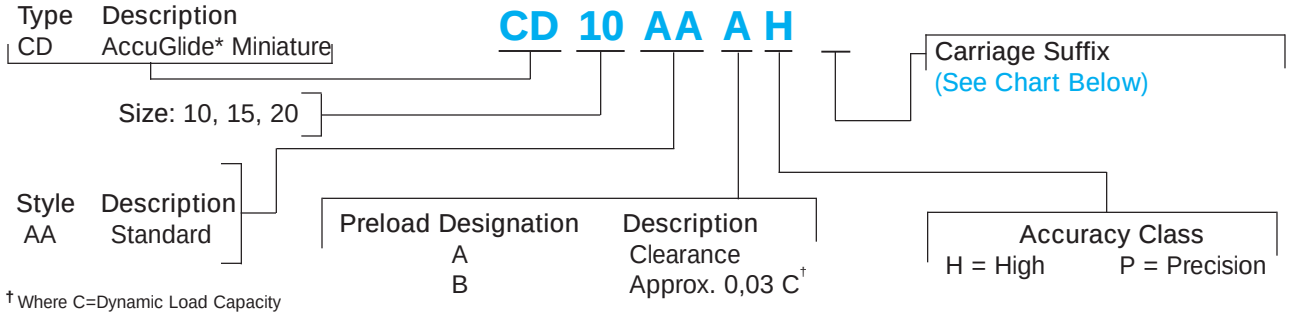
‡ Maximum rail length in one section. Multiple sections can be butted for longer lengths.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Linear Guide #3

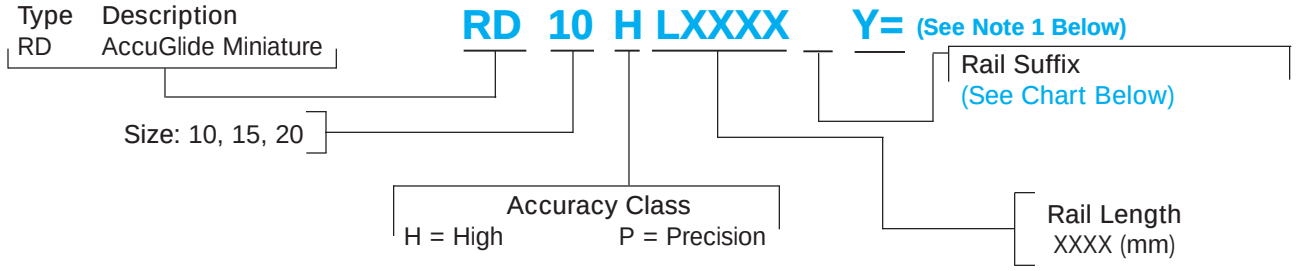
Part Number Description and Specification

Miniature Carriage

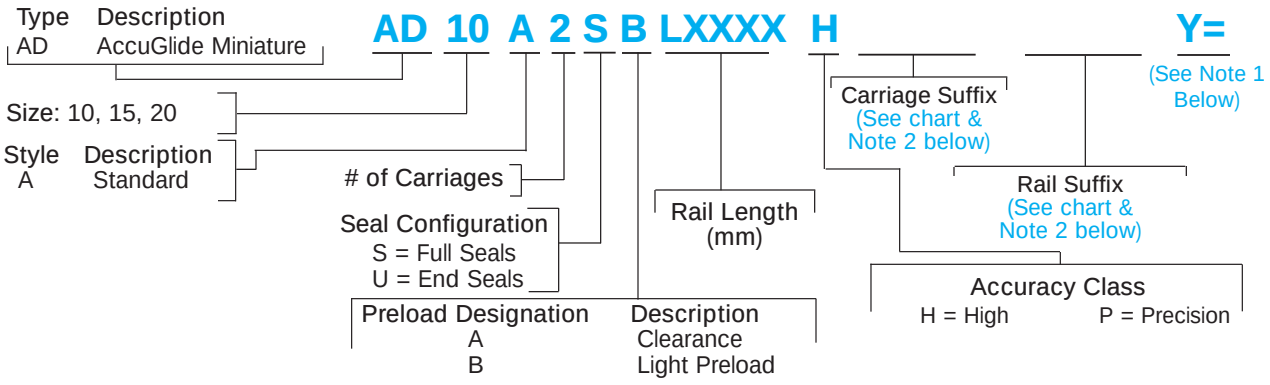


† Where C=Dynamic Load Capacity

Miniature Rail



Miniature Assembly



**Available in AA & CE Styled Carriage Only and Preloads A & B Only.

Note 1 - Y= Distance from end of rail to center of 1st mounting hole

Note 2 - For assembly with modified carriage or rail only, use M000 as suffix for non-modified component.

	Suffix	
Product Options	**Carriage**	**Rail**
Armoloy® Plating	-A	-A
Self-Lubricating	-LL	-
Low Drag Seals (End Seals Only)	-LDS	-
Other Modifications (Dowel Holes, Special Lube Points, Special Lubricants, Other)	-MXXX (Contact Factory)	

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Figure 1 - Dimensions H and A3

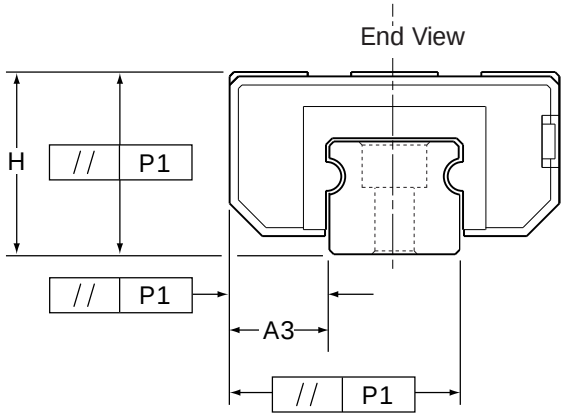


Figure 2 - Running Parallelism

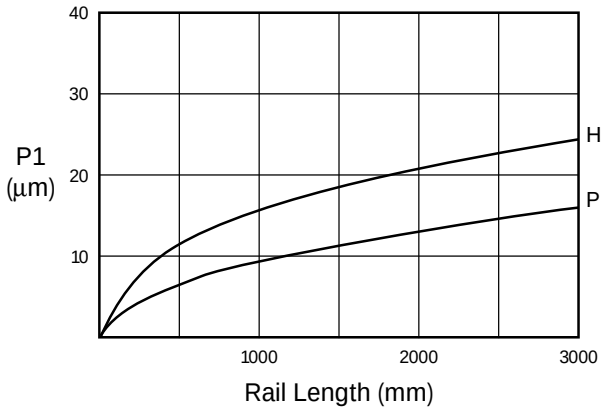


Table 1 - Tolerances (µm)

	Accuracy Classes	
	H High	**P** Precision
1. Dim. H and A3 (measured at middle of carriage at any point along rail)	±40	±20
2. Max variation in dimensions H and A3 measured on multiple carriages mounted on the same rail (measured at middle of carriage at same position on rail)	15	7
3. Parallelism (applies to the system)	See Figures 1 and 2	

Table 2 - Preload/Accuracy Combinations

Accuracy Class	Preload	
	Clearance up to 10 µm	Light approximately 0,03 C†
P	—	B
H	A	B

†Where C=Dynamic Load Rating

Table 3 - Calculations

To determine proper carriage size:

$$C_{min} = F \bullet \left(\frac{L}{100}\right)^{1/3}$$

C_{min} = minimum required dynamic load capacity of carriage (N)

F = equivalent load on carriage (N)

L = required travel life (km)

To determine travel life:

$$L = \left(\frac{C}{F}\right)^{3} \bullet 100$$

L = normal travel life (km)

C = rated dynamic load capacity of carriage (N)

F = equivalent load on carriage (N)

Table 4 - Conversions

1 lb_f = 4,448 N
1 kg_f = 9,8 N
1 km = 39,370 inches
1 Nm = 0.7376 lb_f - ft

Operating Parameters

Maximum Velocity = 3 m/s
Maximum Acceleration = 50 m/s^2
Maximum Temperature = 80 °C

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

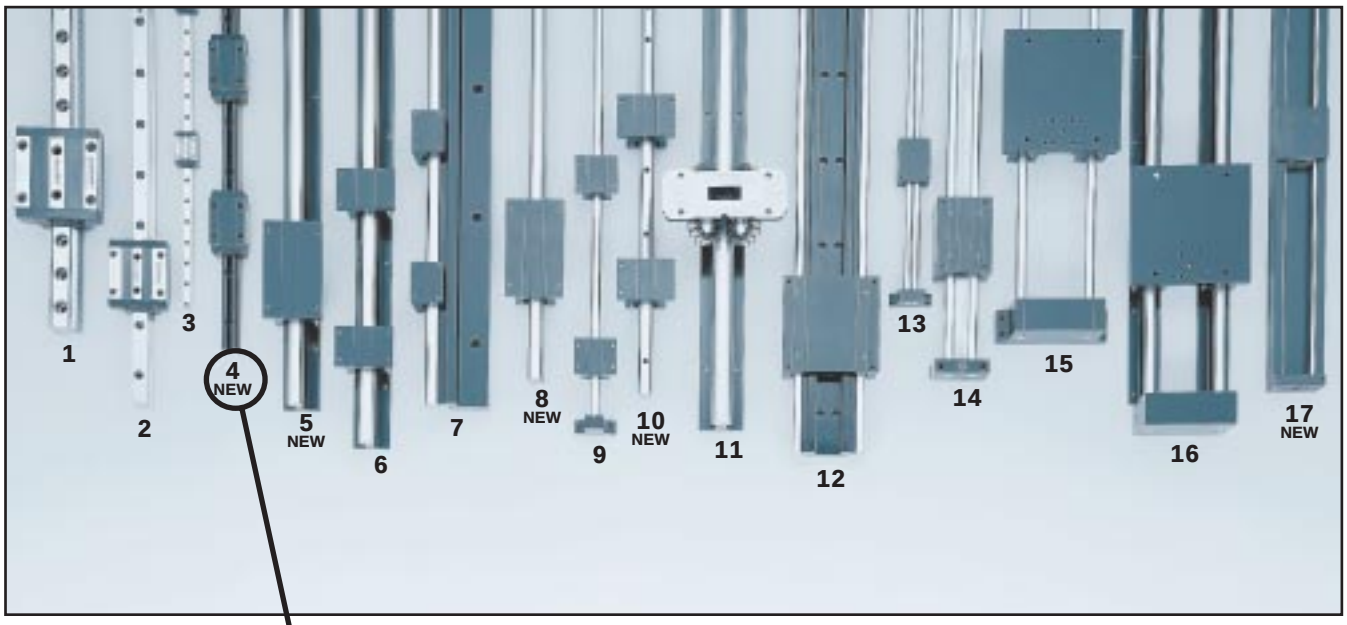
PROJECT TITLE:

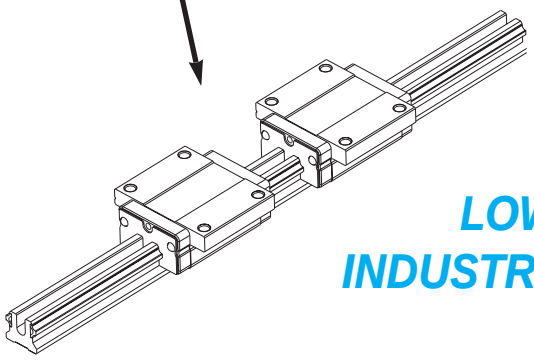
APPLICATION WORKSHEET

NOTES

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuGlide* T-Series* Linear Ball Guides #4





LOW COST, COMPLIANT, INDUSTRY STANDARD ENVELOPE

Low Cost, High Loads, Reduced Weight

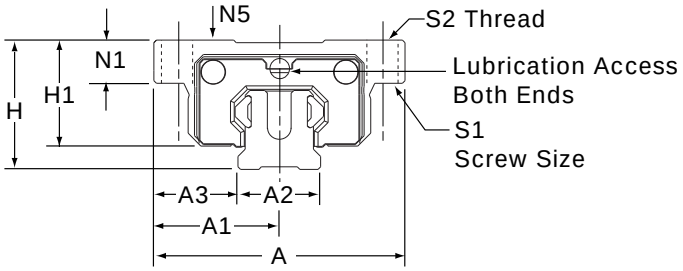
- Low purchase price
- Easy, low cost installation. T-Series is approx. 5 times more forgiving of bed preparation errors than all steel profile rail linear guides
- High loads up to 25 000 N (5,620 lbf)
- Longer travel life. Proprietary design decreases induced loads caused by installation errors
- 60% lower inertia of traveling guides in multi-axis systems
- N-grade radial runout accuracy of 33 µm (0.0015 in.) over a 3 m (10 ft) length
- Drop-in replacement with industry-standard envelope and hole pattern
- Long life/easy maintenance with two lubrication ports per carriage and full seals
- Less downtime with quick-turnaround from a U.S. supplier

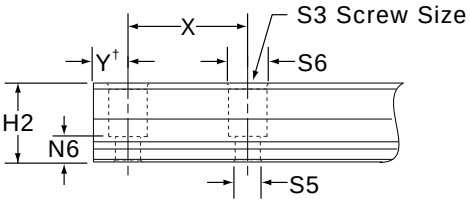
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuGlide T-Series

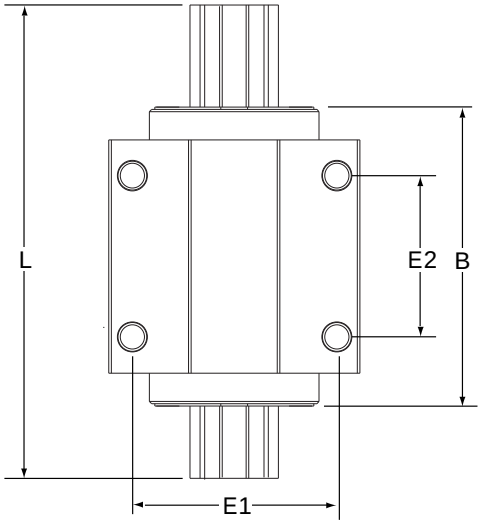
Linear Guide #4 (“A” Style)

Low Cost, Compliant Structure, Industry Standard Envelope

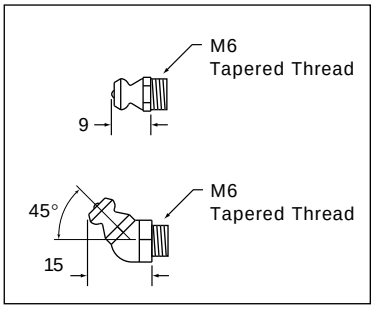




†- Will be equal on both ends, unless otherwise specified.



Supplied Lubrication Fittings



Dimensional replacement for type HSR A, B, CA, & CB style guides manufactured by THK Co.,LTD. (Japan). Thomson AccuGlide T-Series linear guide is approximately 4x more compliant.

AccuGlide* T-Series* Linear Guides “A” Style

(mm)															
Size	A	A1	A2	A3	H	H1	H2	B	E1	E2	S1	S2	S3	S5	S6
15	47	23,5	15	16	24	19,3	15	58	38	30	M4	M5	M4	4,5	7,5
20	63	31,5	20	21,5	30	25	18	76	53	40	M5	M6	M5	5,8	9,5
25	70	35	23	23,5	36	29,5	22	88	57	45	M6	M8	M6	7	10,7
30	90	45	28	31	42	35	26	103	72	52	M8	M10	M8	9	14
35	100	50	34	33	48	40	29	117	82	62	M8	M10	M8	9	14

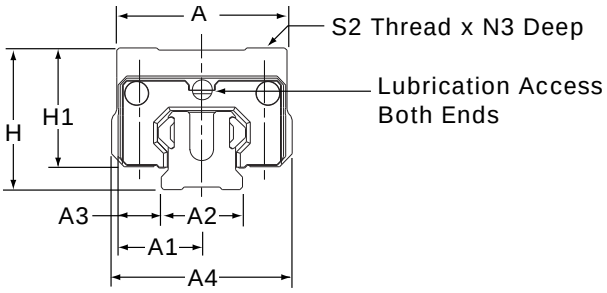
(mm)						Load Ratings N (lbf)		MASS	
Size	N1	N5	N6	X	L_{max}	C (@100km)	C_o	Carriage kg	Rail kg/m
15	7,7	4,3	7,4	60	5750	5 000 (1,125)	7 050 (1,575)	0,10	0,50
20	10	6,25	7,5	60	5750	9 000 (2,025)	11 000 (2,475)	0,22	0,79
25	12	8	10	60	5750	13 000 (2,925)	15 000 (3,375)	0,30	1,06
30	14	5,8	11	80	5750	20 000 (4,500)	23 000 (5,170)	0,52	1,67
35	15,26	6,6	11	80	5750	25 000 (5,620)	28 000 (6,295)	0,74	2,27

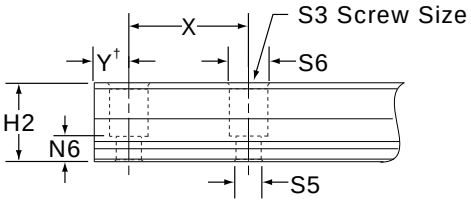
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuGlide T-Series

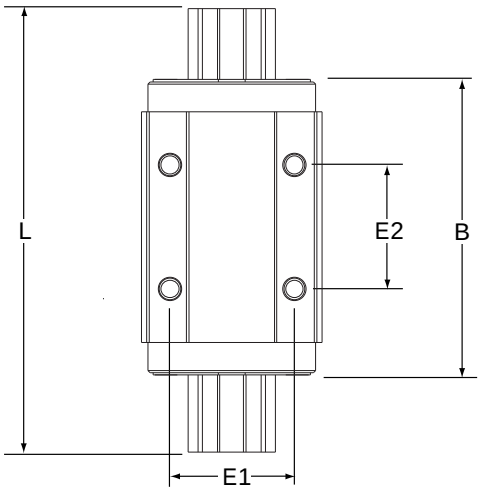
Linear Guide #4 (“E” Style)

Low Cost, Compliant Structure, Industry Standard Envelope

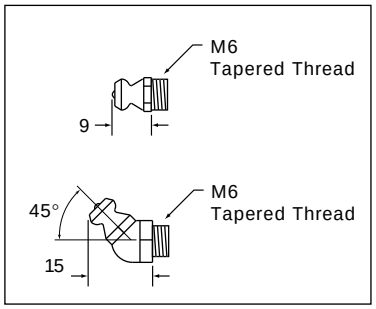




†- Will be equal on both ends, unless otherwise specified.



Supplied
Lubrication Fittings



Dimensional replacement for type HSR R & TR style guides manufactured by THK Co., LTD. (Japan). Thomson AccuGlide T-Series linear guide is approximately 4x more compliant.

AccuGlide* T-Series* Linear Guide “E” Style

(mm)															
Size	A	A1	A2	A3	A4	H	H1	H2	B	E1	E2	S2	S3	S5	S6
15	28	14	15	9,5	33,7	28	23,3	15	58	26	26	M4	M4	4,5	7,5
20	44	22	20	12	41,5	30	25	18	76	32	36	M5	M5	5,8	9,5
25	48	24	23	12,5	50,9	40	33,5	22	88	35	35	M6	M6	7	10,7
30	60	30	28	16	61,1	45	38	26	103	40	40	M8	M8	9	14
35	70	35	34	18	68,0	55	47	29	117	50	50	M8	M8	9	14

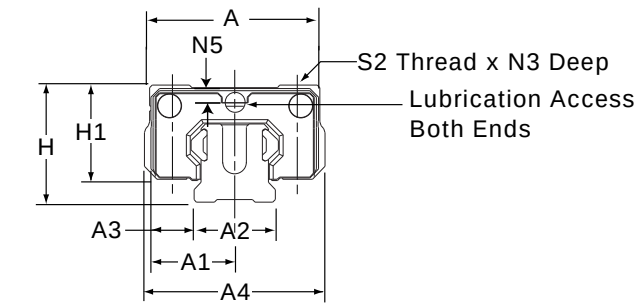
(mm)						Load RATINGS N (lbf)		MASS Carriage Rail	
Size	N3	N5	N6	X	L_{max}	C (@100km)	Co	kg	kg/m
15	5	8,3	7,4	60	5 750	5 000 (1,125)	7 000 (1,575)	0,10	0,50
20	6	6,25	7,5	60	5 750	9 000 (2,025)	11 000 (2,475)	0,22	0,79
25	8	12	10	60	5 750	13 000 (2,925)	15 000 (3,375)	0,30	1,06
30	10	8,8	11	80	5 750	20 000 (4,500)	23 000 (5,170)	0,52	1,67
35	12	13,6	11	80	5 750	25 000 (5,620)	28 000 (6,295)	0,74	2,27

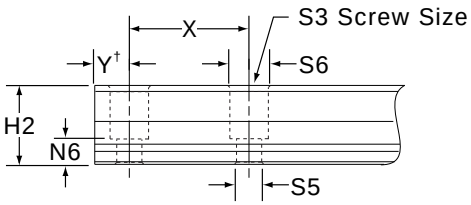
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuGlide T-Series

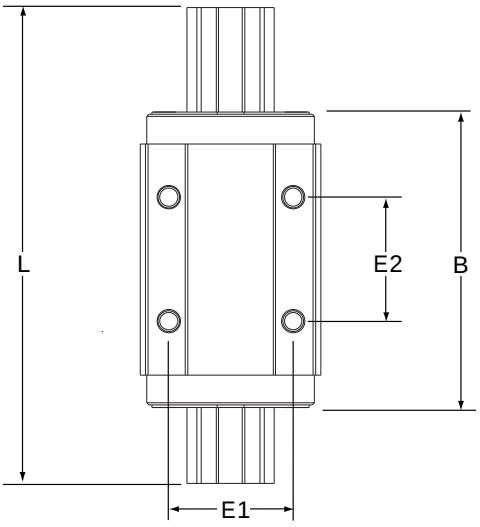
Linear Guide #4 (“F” Style)

Low Cost, Compliant Structure, Industry Standard Envelope

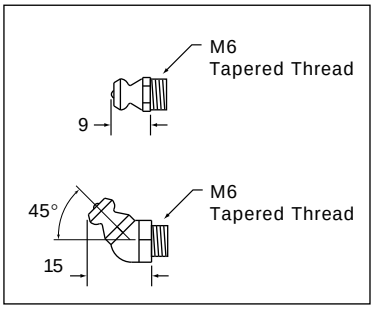




†- Will be equal on both ends, unless otherwise specified.



Supplied
Lubrication Fittings



Dimensional replacement for type SR W style guides manufactured by THK Co., LTD. (Japan). Thomson AccuGlide T-Series linear guide is approximately 4x more compliant.

AccuGlide* T-Series* Linear Guide “F” Style

(mm)															
Size	A	A1	A2	A3	A4	H	H1	H2	B	E1	E2	S2	S3	S5	S6
15	34	17	15	16	33,7	24	19,3	15	58	26	26	M4	M4	4,5	7,5
20	42	21	20	11	41,5	28	23	18	76	32	32	M5	M5	5,8	9,5
25	48	24	23	12,5	51,0	33	26,5	22	88	35	35	M6	M6	7	10,7
30	60	30	28	16	61,1	42	35	26	103	40	40	M8	M8	9	14
35	70	35	34	18	68,0	48	40	29	117	50	50	M8	M8	9	14

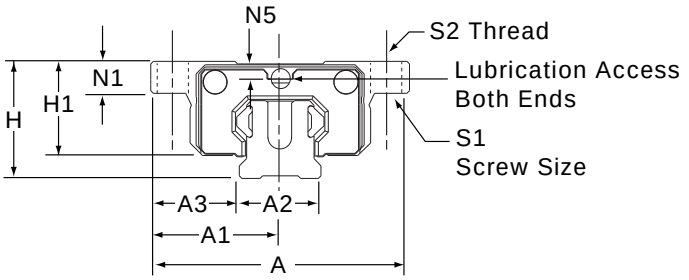
(mm)						Load Ratings N (lbf)		Mass Carriage	Rail
Size	N3	N5	N6	X	L_{max}	C (@100km)	C_o	kg	kg/m
15	7	4,3	7,4	60	5 750	5 000 (1,125)	7 050 (1,575)	0,10	0,50
20	6	4,25	7,5	60	5 750	9 000 (2,025)	11 000 (2,475)	0,22	0,79
25	8	5	10	60	5 750	13 000 (2,925)	15 000 (3,375)	0,30	1,06
30	8	5,8	11	80	5 750	20 000 (4,500)	23 000 (5,170)	0,52	1,67
35	12	6,6	11	80	5 750	25 000 (5,620)	28 000 (6,295)	0,74	2,27

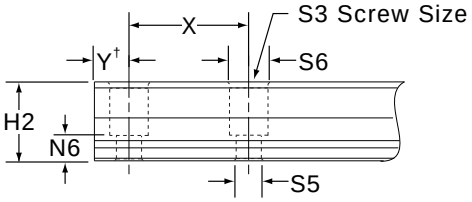
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

AccuGlide T-Series

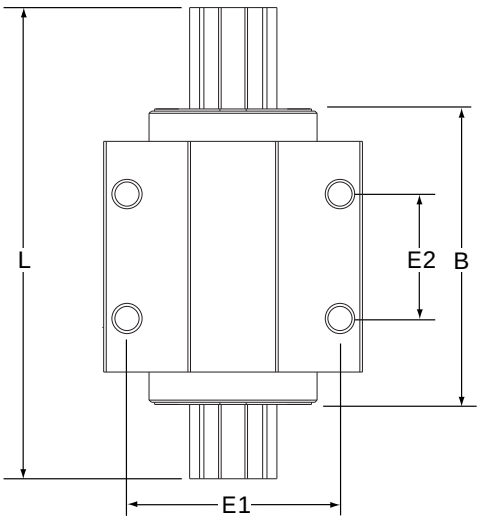
Linear Guide #4 (“G” Style)

Low Cost, Compliant Structure, Industry Standard Envelope

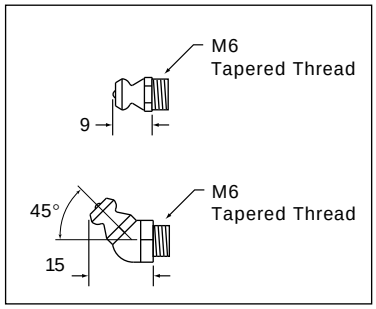




†- Will be equal on both ends, unless otherwise specified.



Supplied
Lubrication Fittings



Dimensional Replacement for type SR TB style guides manufactured by THK Co., LTD. (Japan). Thomson AccuGlide T-Series linear guide is approximately 4x more compliant.

AccuGlide* T-Series* Linear Guide “G” Style

(mm)															
Size	A	A1	A2	A3	H	H1	H2	B	E1	E2	S1	S2	S3	S5	S6
15	52	26	15	16	24	19,3	15	58	41	26	M4	M5	M4	4,5	7,5
20	59	29,5	20	19,5	28	23	18	76	49	32	M5	M6	M5	5,8	9,5
25	73	36,5	23	25	33	26,5	22	88	60	35	M6	M8	M6	7	10,7
30	90	45	28	31	42	35	26	103	72	40	M8	M10	M8	9	14
35	100	50	34	33	48	40	29	117	82	50	M8	M10	M8	9	14

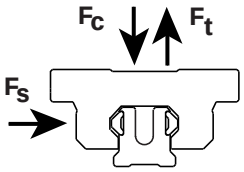
(mm)						Load Ratings N (lbf)		Mass Carriage	Mass Rail
Size	N1	N5	N6	X	L_{max}	C (@100km)	C_o	kg	kg/m
15	7,7	4,3	7,4	60	5 750	5 000 (1,125)	7 050 (1,575)	0,10	0,50
20	8	4,25	7,5	60	5 750	9 000 (2,025)	11 000 (2,475)	0,22	0,79
25	9	5	10	60	5 750	13 000 (2,925)	15 000 (3,375)	0,30	1,06
30	14	5,8	11	80	5 750	20 000 (4,500)	23 000 (5,170)	0,52	1,67
35	15,26	6,6	11	80	5 750	25 000 (5,620)	28 000 (6,295)	0,74	2,27

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dynamic Load Rating

C = Dynamic load rating

The dynamic load rating is based upon a 100 km travel life. In order to compare with bearings rated for 50 km, divide the dynamic rating of the bearing rated for 50 km by 1.26.



Operating Parameters

Maximum Velocity = 3 m/s

Maximum Acceleration = 50 m/s^2

Maximum Temperature = 80 °C

Static Load Capacity

C_o = Static load capacity

The static load capacity is the maximum radial load that should be applied to the bearing while there is no relative motion between the carriage and rail.

	Dynamic Load Rating	Load Limit
F_c	C	C
F_t	C	0.6C
F_s	C	0.6C

Bearing Travel Life Calculation

L = $(C/F)^3$ x 100 km

where:

L = travel life, km

C = dynamic load rating, N

F = applied dynamic load, N

AccuGlide* T-Series* Linear Guide Part Number Descriptions and Specifications

AT 20 A 2 L XXXX Y= (See Note 3 Below)

Type
AT — AccuGlide T-Series

Rail Size: 20, 25, 30, 35

Carriage Type
A = Interchange for THK HSR A, B, CA, & CB
E = Interchange for THK HSR R & TR
F = Interchange for THK SR W
G = Interchange for THK SR TB

No. of Carriages Per Rail

Rail Length
LXXXX (mm)

Suffix (See Chart Below)

How to determine AccuGlide T-Series Linear Guide Part Number:

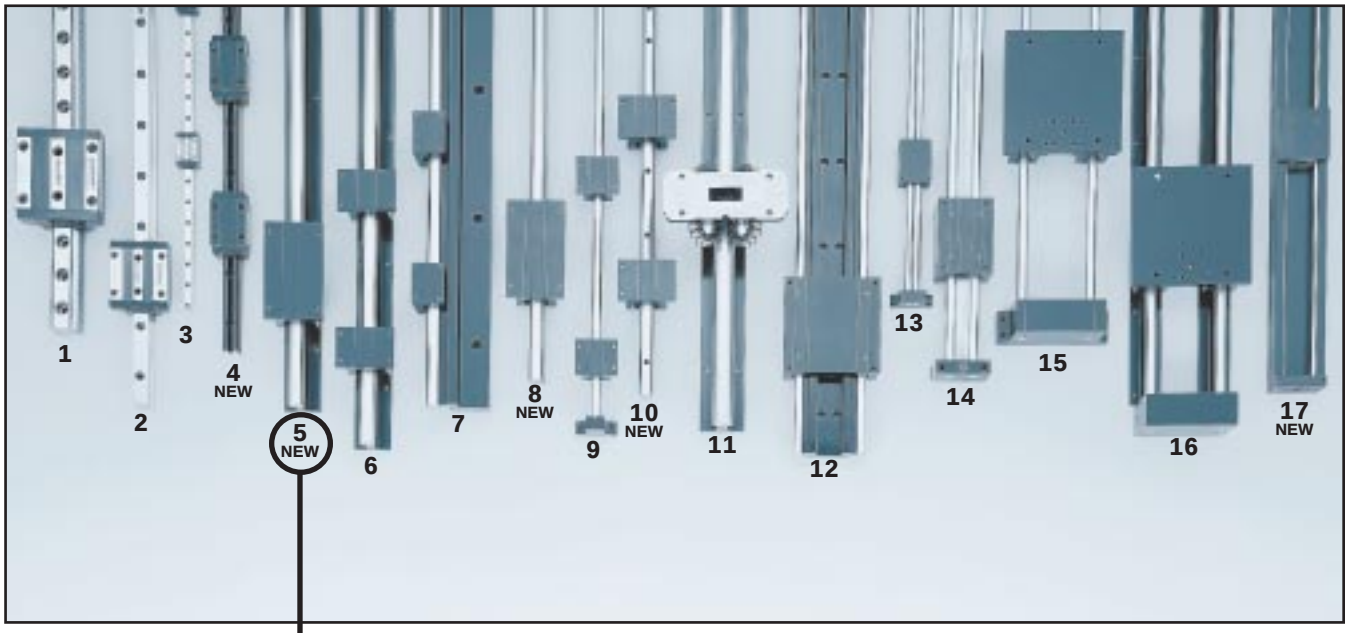
1. Based on load calculations and life requirements, determine the proper AccuGlide T-Series linear guide size.
2. Select the assembly part number.
3. The “Y” dimension (distance from rail end to first mounting hole) will be equal on both ends, unless otherwise specified.

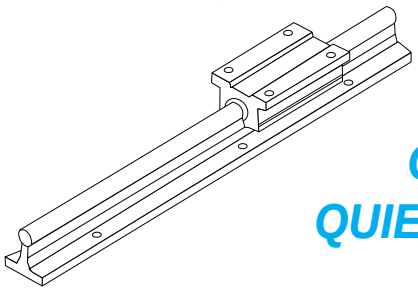
Product Options	Part Number Suffix
Armoloy® Plating	A
Low Drag Seals	LDS
Other Modifications (Dowel Holes, Special Lube Points, Special Lubricants, Other)	SXXX (Contact Factory)

NOTE: Carriages are dimensionally matched to rails during assembly.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner Linear Guides #5





CORROSION RESISTANT, SMOOTH, QUIET, INDUSTRY STANDARD ENVELOPE

FluoroNyliner* Linear Guides Offer:

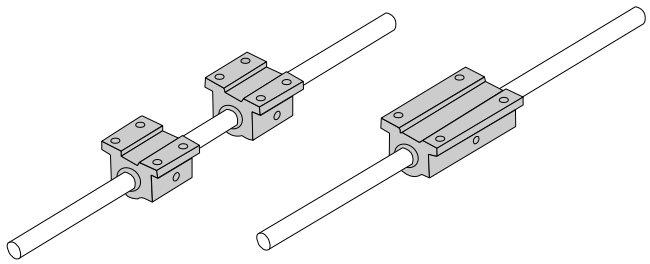
- Thomson's new FluoroNyliner Bushing bearings that are made from the most advanced polymer components to achieve maximum performance levels
- Contamination resistance. The FluoroNyliner Linear Guides are practically immune to adverse environments, such as water wash-down conditions and magnetic interference
- Self-Aligning Pillow Blocks for ease of use
- Increased bearing load capacities (or 'PV' ratings) and obtainable travel life, when used with Thomson stainless steel, 60 Case* Linear Race* shaft, when compared to competitive assemblies
- Specification conformance with FDA and non-lubricated applications
- Use in linear and rotary motion applications
- Operates in temperatures from -400 ˚F (-240 ˚C) to 550 ˚F (270 ˚C).

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner 1VA

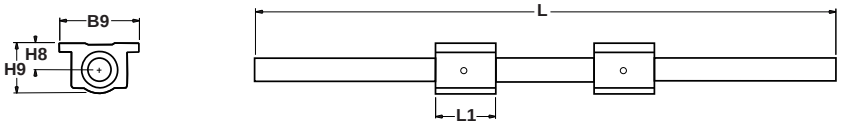
Linear Guide #5

Corrosive/Contaminated Environments

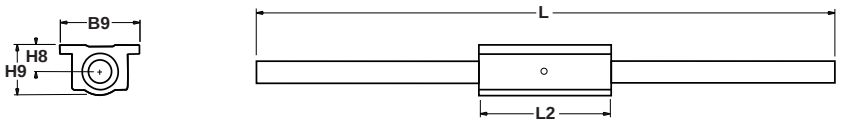


INCH

Single Unsupported Linear Guide with 2 Pillow Blocks



Single Unsupported Linear Guide with 1 Twin Pillow Block



FluoroNyliner* Linear Guide 1VA Single Unsupported with 2 Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	L1	H8	H9	B9	Pillow Block
1VA-06-AOO	.375	1.31	.500	.94	1.75	FNYBUPB06A-XS
1VA-08-AOO	.500	1.69	.687	1.25	2.00	FNYBUPB08A-XS
1VA-10-AOO	.625	1.94	.875	1.63	2.50	FNYBUPB10A-XS
1VA-12-AOO	.750	2.06	.937	1.75	2.75	FNYBUPB12A-XS
1VA-16-AOO	1.000	2.81	1.187	2.19	3.25	FNYBUPB16A-XS
1VA-20-AOO	1.250	3.63	1.500	2.81	4.00	FNYBUPB20A-XS
1VA-24-AOO	1.500	4.00	1.750	3.25	4.75	FNYBUPB24A-XS

FluoroNyliner Linear Guide 1VA Single Unsupported with 1 Twin Pillow Block (Dimensions in inches)

Part Number	Nominal Diameter	L2	H8	H9	B9	Pillow Block
1VA-06-BOO	.375	2.75	.500	.94	1.75	FNYBUTWN06A-XS
1VA-08-BOO	.500	3.50	.687	1.25	2.00	FNYBUTWN08A-XS
1VA-10-BOO	.625	4.00	.875	1.63	2.50	FNYBUTWN10A-XS
1VA-12-BOO	.750	4.50	.937	1.75	2.75	FNYBUTWN12A-XS
1VA-16-BOO	1.000	6.00	1.187	2.19	3.25	FNYBUTWN16A-XS
1VA-20-BOO	1.250	7.50	1.500	2.81	4.00	FNYBUTWN20A-XS
1VA-24-BOO	1.500	9.00	1.750	3.25	4.75	FNYBUTWN24A-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for deflection calculations.

Maximum Operating Parameters per Bearing

Characteristic	Limit
Liner Temperature Range	-240 ˚C to 288 ˚C (-400 ˚F to 550 ˚F)
Velocity, dry	42.7 m/min. Continuous
Velocity, dry	122 m/min. Intermittent
Velocity, lubricated	122 m/min. Continuous
Pressure	10.35 MPa
PV	21 MPa/m/min

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner* Linear Guide 1VA Benefits:

- Requires only one part number to specify entire Linear Guide.
- Design flexibility with custom end supports.
- Used in end supported applications when spanning or bridging a gap.

FluoroNyliner Linear Guide 1VA Components:

- 2 self-aligning FluoroNyliner Bushing bearing pillow blocks or 1 self-aligning FluoroNyliner bushing bearing Twin Pillow block.
- 1 Stainless Steel 60 Case* LinearRace* shaft.

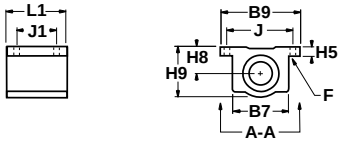
Specifying a Thomson Linear Guide:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

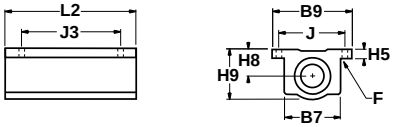
1VA-12-AOO L24

- 1VA — Linear Guide Designation
- 12 — Nominal Diameter
- AOO — Type of Bearing Block
- L24 — Linear Guide Length

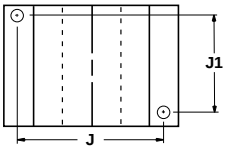
FluoroNyliner Linear Guide Pillow Block Dimensions



FluoroNyliner Linear Guide Twin Pillow Block Dimensions



Pillow Block Mounting Hole Position for Size .375



View A-A

Self-Aligning Pillow Blocks (Dimensions in inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B7	J	J1	F		Wt. lb
										Bolt	Hole	
FNYBUPB06A-XS	.375	.131	.94	.500	.19	1.75	1.12	1.44	.88[2]	#6	.16	.13
FNYBUPB08A-XS	.500	1.69	1.25	.687	.25	2.00	1.38	1.69	1.00	#6	.16	.20
FNYBUPB10A-XS	.625	1.94	1.63	.875	.28	2.50	1.75	2.125	1.125	#8	.19	.50
FNYBUPB12A-XS	.750	2.06	1.75	.937	.31	2.75	1.88	2.38	1.25	#8	.19	.62
FNYBUPB16A-XS	1.000	2.81	2.19	1.187	.38	3.25	2.38	2.88	1.75	#10	.22	1.24
FNYBUPB20A-XS	1.250	3.63	2.81	1.500	.43	4.00	3.00	3.50	2.00	#10	.22	2.57
FNYBUPB24A-XS	1.500	4.00	3.25	1.750	.50	4.75	3.50	4.12	2.50	¼	.28	3.94

Housing Material: Aluminum Alloy Black Anodized
[2]Two mounting holes as shown in view A-A for size .375

Self-Aligning Twin Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
FNYBUTWN06A-XS	.375	2.75	2.25	.25
FNYBUTWN08A-XS	.500	3.50	2.50	.40
FNYBUTWN10A-XS	.625	4.00	3.00	1.00
FNYBUTWN12A-XS	.750	4.50	3.50	1.24
FNYBUTWN16A-XS	1.000	6.00	4.50	2.48
FNYBUTWN20A-XS	1.250	7.50	5.50	5.14
FNYBUTWN24A-XS	1.500	9.00	6.50	8.08

Housing Material: Aluminum Alloy Black Anodized

Performance Note: For detailed explanations of FluoroNyliner Linear Guide Dynamic and Static Load Capacities, Frictional Characteristics, Wear Rates, Speeds, and Life Expectancy please contact Thomson Linear Guides Applications Engineering department.

Product Note: FluoroNyliner linear guides are shipped free of all lubricants. It is the responsibility of the product user to determine lubricant compatibility with the FluoroNyliner bearing material.

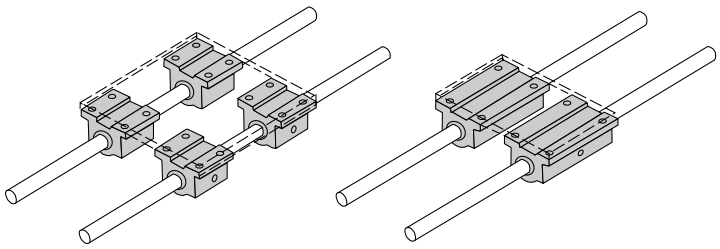
Product Options: FluoroNyliner linear guides are available with various inner race materials and platings to accommodate different environments.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner 1VB

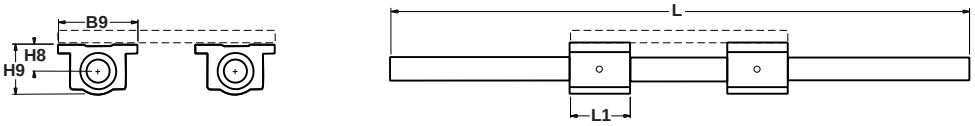
Linear Guide #5

Corrosive/Contaminated Environments

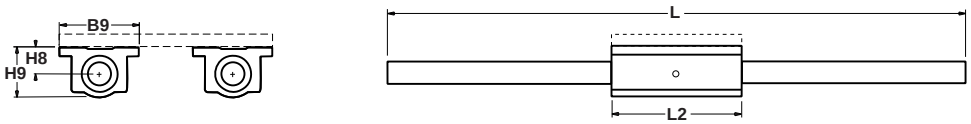


INCH

Double Unsupported Linear Guide with 4 Pillow Blocks



Double Unsupported Linear Guide with 2 Twin Pillow Blocks



FluoroNyliner* Linear Guide 1VB Double Unsupported with 4 Pillow Blocks						(Dimensions in inches)
Part Number	Nominal Diameter	L1	H8	H9	B9	Pillow Block
1VB-06-AOO	.375	1.31	.500	.94	1.75	FNYBUPB06A-XS
1VB-08-AOO	.500	1.69	.687	1.25	2.00	FNYBUPB08A-XS
1VB-10-AOO	.625	1.94	.875	1.63	2.50	FNYBUPB10A-XS
1VB-12-AOO	.750	2.06	.937	1.75	2.75	FNYBUPB12A-XS
1VB-16-AOO	1.000	2.81	1.187	2.19	3.25	FNYBUPB16A-XS
1VB-20-AOO	1.250	3.63	1.500	2.81	4.00	FNYBUPB20A-XS
1VB-24-AOO	1.500	4.00	1.750	3.25	4.75	FNYBUPB24A-XS

FluoroNyliner Linear Guide 1VB Double Unsupported with 2 TWIN Pillow Blocks						(Dimensions in inches)
Part Number	Nominal Diameter	L2	H8	H9	B9	Pillow Block
1VB-06-BOO	.375	2.75	.500	.94	1.75	FNYBUTWN06A-XS
1VB-08-BOO	.500	3.50	.687	1.25	2.00	FNYBUTWN08A-XS
1VB-10-BOO	.625	4.00	.875	1.63	2.50	FNYBUTWN10A-XS
1VB-12-BOO	.750	4.50	.937	1.75	2.75	FNYBUTWN12A-XS
1VB-16-BOO	1.000	6.00	1.187	2.19	3.25	FNYBUTWN16A-XS
1VB-20-BOO	1.250	7.50	1.500	2.81	4.00	FNYBUTWN20A-XS
1VB-24-BOO	1.500	9.00	1.750	3.25	4.75	FNYBUTWN24A-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for deflection calculations.

Maximum Operating Parameters per Bearing

Characteristic	Limit
Liner Temperature Range	-240˚ C to 288˚ C (-400˚ F to 550˚ F)
Velocity, dry	42.7 m/min. Continuous
Velocity, dry	122 m/min. Intermittent
Velocity, lubricated	122 m/min. Continuous
Pressure	10.35 MPa
PV	21 MPa/m/min

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner* Linear Guide 1VB Benefits:

- Allows for custom table mounting.
- Design flexibility for custom end supports.
- Double LinearRace* shaft configuration resists torque.
- Used in end supported applications when spanning or bridging a gap.

FluoroNyliner Linear Guide 1VB Components:

- 4 self-aligning FluoroNyliner Bushing bearing pillow blocks or 2 self-aligning FluoroNyliner Bushing bearing Twin Pillow blocks.
- 2 Stainless Steel 60 Case* LinearRace shafts.

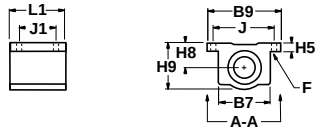
Specifying a Thomson Linear Guide:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

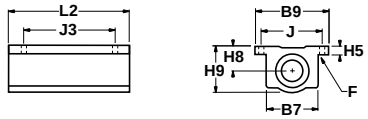
1VB-12-AOO L24

- 1VB — Linear Guide Designation
- 12 — Nominal Diameter
- AOO — Type of Bearing Block
- L24 — Linear Guide Length

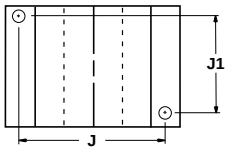
FluoroNyliner Linear Guide Pillow Block Dimensions



FluoroNyliner Linear Guide Twin Pillow Block Dimensions



Pillow Block Mounting Hole Position for Size .375



View A-A

Self-Aligning Pillow Blocks (Dimensions in inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B7	J	J1	F		Wt. lb.
										Bolt	Hole	
FNYBUPB06A-XS	.375	.131	.94	.500	.19	1.75	1.12	1.44	.88[2]	#6	.16	.13
FNYBUPB08A-XS	.500	1.69	1.25	.687	.25	2.00	1.38	1.69	1.00	#6	.16	.20
FNYBUPB10A-XS	.625	1.94	1.63	.875	.28	2.50	1.75	2.125	1.125	#8	.19	.50
FNYBUPB12A-XS	.750	2.06	1.75	.937	.31	2.75	1.88	2.38	1.25	#8	.19	.62
FNYBUPB16A-XS	1.000	2.81	2.19	1.187	.38	3.25	2.38	2.88	1.75	#10	.22	1.24
FNYBUPB20A-XS	1.250	3.63	2.81	1.500	.43	4.00	3.00	3.50	2.00	#10	.22	2.57
FNYBUPB24A-XS	1.500	4.00	3.25	1.750	.50	4.75	3.50	4.12	2.50	¼	.28	3.94

Housing Material: Aluminum Alloy Black Anodized
[2]Two mounting holes as shown in view A-A for size .375

Self-Aligning Twin Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
FNYBUTWN06A-XS	.375	2.75	2.25	.25
FNYBUTWN08A-XS	.500	3.50	2.50	.40
FNYBUTWN10A-XS	.625	4.00	3.00	1.00
FNYBUTWN12A-XS	.750	4.50	3.50	1.24
FNYBUTWN16A-XS	1.000	6.00	4.50	2.48
FNYBUTWN20A-XS	1.250	7.50	5.50	5.14
FNYBUTWN24A-XS	1.500	9.00	6.50	8.08

Housing Material: Aluminum Alloy Black Anodized

Performance Note: For detailed explanations of FluoroNyliner Linear Guide Dynamic and Static Load Capacities, Frictional Characteristics, Wear Rates, Speeds, and Life Expectancy please contact Thomson Linear Guides Applications Engineering department.

Product Note: FluoroNyliner linear guides are shipped free of all lubricants. It is the responsibility of the product user to determine lubricant compatibility with the FluoroNyliner bearing material.

Product Options: FluoroNyliner linear guides are available with various inner race materials and platings to accommodate different environments.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner 1VC

Linear Guide #5

with Table Top

Corrosive/Contaminated Environments

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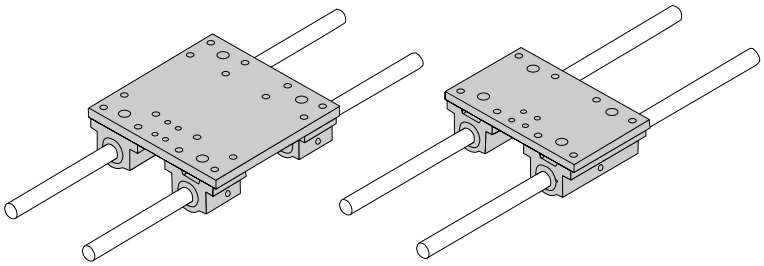
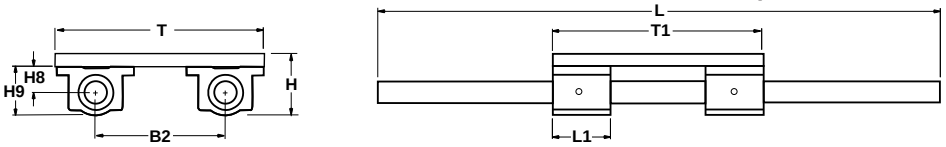
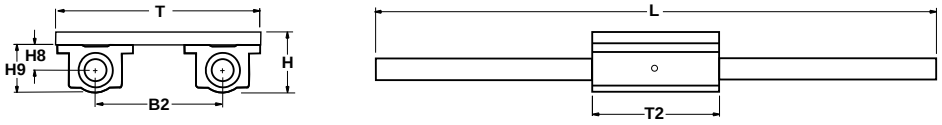


Double Unsupported Linear Guide with 4 Pillow Blocks and Size B Table Top



Double Unsupported Linear Guide with 2 Twin Pillow Blocks and Size A Table Top



FluoroNyliner* Linear Guide 1VC Double Unsupported with 4 Pillow Blocks and Table Top (Size B) (Dimensions in inches)

Part Number	Nom. Dia.	L1	H	B2	H8	H9	T	T1	Pillow Block
1VC-06-AOB	.375	1.31	1.19	2.50	.500	.94	4.50	4.50	FNYBUPB06A-XS
1VC-08-AOB	.500	1.69	1.63	3.25	.687	1.25	5.50	5.50	FNYBUPB08A-XS
1VC-10-AOB	.625	N\A	N\A	N\A	N\A	N\A	N\A	N\A	FNYBUPB10A-XS
1VC-12-AOB	.750	2.06	2.25	4.50	.937	1.75	7.50	7.50	FNYBUPB12A-XS
1VC-16-AOB	1.000	2.81	2.69	5.50	1.187	2.19	9.00	9.00	FNYBUPB16A-XS
1VC-20-AOB	1.250	3.63	3.56	6.75	1.500	2.81	11.00	11.00	FNYBUPB20A-XS
1VC-24-AOB	1.500	4.00	4.00	8.00	1.750	3.25	13.00	13.00	FNYBUPB24A-XS

FluoroNyliner Linear Guide 1VC Double Unsupported with 2 Twin Pillow Blocks and Table Top (Size A) (Dimensions in inches)

Part Number	Nom. Dia.	H	B2	H8	H9	T	T2	Pillow Block
1VC-06-BOA	.375	1.19	2.50	.500	.94	4.50	2.75	FNYBUTWN06A-XS
1VC-08-BOA	.500	1.63	3.25	.687	1.25	5.50	3.50	FNYBUTWN08A-XS
1VC-10-BOA	.625	N\A	N\A	N\A	N\A	N\A	N\A	FNYBUTWN10A-XS
1VC-12-BOA	.750	2.25	4.50	.937	1.75	7.50	4.50	FNYBUTWN12A-XS
1VC-16-BOA	1.000	2.69	5.50	1.187	2.19	9.00	6.00	FNYBUTWN26A-XS
1VC-20-BOA	1.250	3.56	6.75	1.500	2.81	11.00	7.50	FNYBUTWN20A-XS
1VC-24-BOA	1.500	4.00	8.00	1.750	3.25	13.00	9.00	FNYBUTWN24A-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for deflection calculations.

Maximum Operating Parameters per Bearing

Characteristic	Limit
Liner Temperature Range	-240˚ C to 288˚ C (-400˚ F to 550˚ F)
Velocity, dry	42.7 m/min. Continuous
Velocity, dry	122 m/min. Intermittent
Velocity, lubricated	122 m/min. Continuous
Pressure	10.35 MPa
PV	21 MPa/m/min

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner* Linear Guide 1VC Benefits:

- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- Includes Ball Screw Assembly attachment holes for ease of assembly and actuation.
- Used in end supported applications when spanning or bridging a gap.

FluoroNyliner Linear Guide 1VC Components:

- 4 self-aligning FluoroNyliner Bushing bearing pillow blocks or 2 self-aligning FluoroNyliner Bushing bearing Twin Pillow blocks.
- 2 stainless steel 60 Case* LinearRace* shafts.
- 1 mounting table top with work piece and Ball Screw Assembly attachment holes.

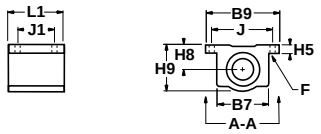
Specifying a Thomson Linear Guide
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

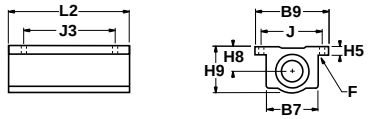
1VC-12-AOB L24

- 1VC — Linear Guide Designation
- 12 — Nominal Diameter
- AO — Type of Bearing Block
- B — Type of Table Top
- L24 — Linear Guide Length

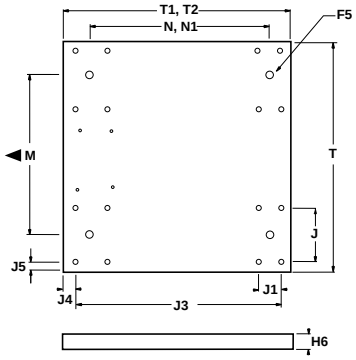
FluoroNyliner Linear Guide Pillow Block Dimensions



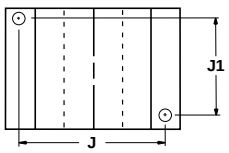
FluoroNyliner Linear Guide Twin Pillow Block Dimensions



Mounting Table Top



Pillow Block Mounting Hole Position for Sizes .375



View A-A

Self-Aligning Pillow Blocks

(Dimensions in inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B7	J	J1	F		Wt. lb.
										Bolt	Hole	
FNYBUPB06A-XS	.375	.131	.94	.500	.19	1.75	1.12	1.44	.88[2]	#6	.16	.13
FNYBUPB08A-XS	.500	1.69	1.25	.687	.25	2.00	1.38	1.69	1.00	#6	.16	.20
FNYBUPB10A-XS	.625	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FNYBUPB12A-XS	.750	2.06	1.75	.937	.31	2.75	1.88	2.38	1.25	#8	.19	.62
FNYBUPB16A-XS	1.000	2.81	2.19	1.187	.38	3.25	2.38	2.88	1.75	#10	.22	1.24
FNYBUPB20A-XS	1.250	3.63	2.81	1.500	.43	4.00	3.00	3.50	2.00	#10	.22	2.57
FNYBUPB24A-XS	1.500	4.00	3.25	1.750	.50	4.75	3.50	4.12	2.50	¼	.28	3.94

Housing Material: Aluminum Alloy Black Anodized
[2]Two mounting holes as shown in view A-A for size .375

Self-Aligning Twin Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb.
FNYBUTWN06A-XS	.375	2.75	2.25	.25
FNYBUTWN08A-XS	.500	3.50	2.50	.40
FNYBUTWN10A-XS	.625	4.00	3.00	1.00
FNYBUTWN12A-XS	.750	4.50	3.50	1.24
FNYBUTWN16A-XS	1.000	6.00	4.50	2.48
FNYBUTWN20A-XS	1.250	7.50	5.50	5.14
FNYBUTWN24A-XS	1.500	9.00	6.50	8.08

Housing Material: Aluminum Alloy Black Anodized

Performance Note: For detailed explanations of FluoroNyliner Linear Guide Dynamic and Static Load Capacities, Frictional Characteristics, Wear Rates, Speeds, and Life Expectancy please contact Thomson Linear Guides Applications Engineering department.

Product Note: FluoroNyliner linear guides are shipped free of all lubricants. It is the responsibility of the product user to determine lubricant compatibility with the FluoroNyliner bearing material.

Product Options: FluoroNyliner linear guides are available with various inner race materials and platings to accommodate different environments.

Mounting Table Top

(Dimensions in inches)

Nominal Diameter	All Table Tops					Table Top Size **B**					Table Top Size **A**				
	T	M	J	H6	F5	T1	J1	J4	J5	N	T2	J3	J4	J5	N1
.375	4.5	2.50	1.44	.250	#10-32	4.5	.88[2]	.22	.28	3.75	2.75	2.25	.25	.28	2.0
.500	5.5	3.25	1.69	.375	1/4-20	5.5	1.00	.34	.28	4.50	3.50	2.50	.50	.31	2.5
.625	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
.750	7.5	4.50	2.38	.500	5/16-18	7.5	1.25	.41	.31	6.00	4.50	3.50	.50	.31	3.0
1.000	9.0	5.50	2.88	.500	3/8-16	9.0	1.75	.53	.31	7.00	6.00	4.50	.75	.31	4.0
1.250	11.0	6.75	3.50	.750	1/2-13	11.0	2.00	.82	.38	8.50	7.50	5.50	1.00	.38	5.0
1.500	13.0	8.00	4.12	.750	1/2-13	13.0	2.50	.75	.44	10.00	9.00	6.50	1.25	.44	6.0

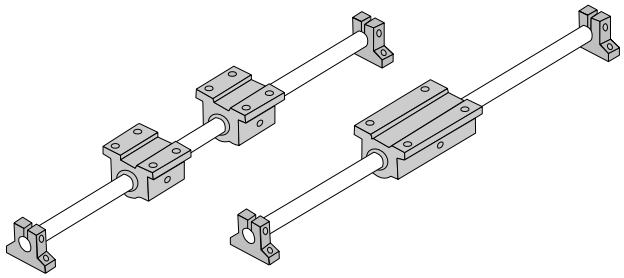
Carriage Material: Aluminum Alloy Black Anodized
[2]Two mounting holes as shown in view A-A for size .375

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner 1VA

Linear Guide #5

Corrosive/Contaminated Environments



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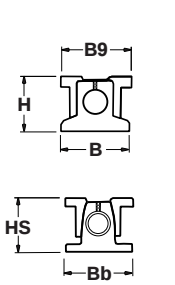
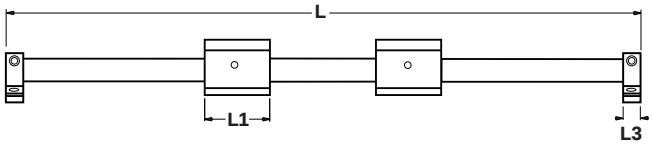
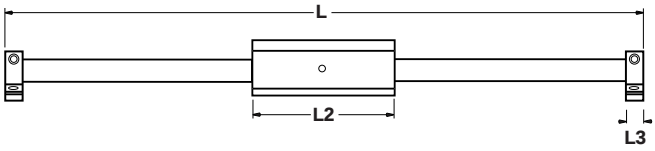


Linear Guide 1VA with Type SB End Support Block

Single End Supported Linear Guide with 2 Pillow Blocks



Single End Supported Linear Guide with 1 Twin Pillow Block



FluoroNyliner* Linear Guide 1VA Single End Supported with 2 Pillow Blocks (Dimensions in inches)

Part Number		Nominal	L1	L3	H	HS	B	Bb	B9	Pillow	Shaft Support	
W/ Type ASB Shaft Support	W/ Type SB Shaft Support	Diameter								Block	Type ASB	Type SB
1VA-06-AHO	**–**	.375	1.31	.56	1.062	–	1.63	–	1.75	FNYBUPB06A-XS	ASB-6-XS	–
1VA-08-AHO	**1VA-08-AJO**	.500	1.69	.63	1.562	1.687	2.00	2.00	2.00	FNYBUPB08A-XS	ASB-8-XS	SB-8-XS
–	**1VA-10-AJO**	.625	1.94	.67	–	1.875	–	2.50	2.50	FNYBUPB10A-XS		SB-10-XS
1VA-12-AHO	**1VA-12-AJO**	.750	2.06	.75	2.062	2.187	2.50	2.75	2.75	FNYBUPB12A-XS	ASB-12-XS	SB-12-XS
1VA-16-AHO	**1VA-16-AJO**	1.000	2.81	1.00	2.562	2.687	3.25	3.25	3.25	FNYBUPB16A-XS	ASB-16-XS	SB-16-XS
–	**1VA-20-AJO**	1.250	3.63	1.13	–	3.250	–	–	4.00	FNYBUPB20A-XS	–	SB-20-XS
1VA-24-AHO	**1VA-24-AJO**	1.500	4.00	1.25	3.750	3.750	4.75	4.75	4.75	FNYBUPB24A-XS	ASB-24-XS	SB-24-XS

FluoroNyliner Linear Guide 1VA Single End Supported with 1 Twin Pillow Block (Dimensions in inches)

Part Number		Nom.	L2	L3	H	HS	B	Bb	B9	Max.	Pillow	Shaft Support	
W/ Type ASB Shaft Support	W/ Type SB Shaft Support	Dia.								Stroke Length	Block	Type ASB	Type SB
1VA-06-BHO	**–**	.375	2.75	.56	1.062	–	1.63	–	1.75	L-(3.88)	FNYBUTWN06A-XS	ASB-6-XS	–
1VA-08-BHO	**1VA-08-BJO**	.500	3.50	.63	1.562	1.687	2.00	2.00	2.00	L-(4.75)	FNYBUTWN08A-XS	ASB-8-XS	SB-8-XS
–	**1VA-10-BJO**	.625	4.00	.69	–	1.875	–	2.50	2.50	L-(5.38)	FNYBUTWN10A-XS	–	SB-10-XS
1VA-12-BHO	**1VA-12-BJO**	.750	4.50	.75	2.062	2.187	2.50	2.75	2.75	L-(6.00)	FNYBUTWN12A-XS	ASB-12-XS	SB-12-XS
1VA-16-BHO	**1VA-16-BJO**	1.000	6.00	1.00	2.562	2.687	3.25	3.25	3.25	L-(8.00)	FNYBUTWN16A-XS	ASB-16-XS	SB-16-XS
–	**1VA-20-BJO**	1.250	7.50	1.13	–	3.250	–	4.00	4.00	L-(9.75)	FNYBUTWN20A-XS	–	SB-20-XS
1VA-24-BHO	**1VA-24-BJO**	1.500	9.00	1.25	3.750	3.750	4.75	4.75	4.75	L-(11.50)	FNYBUTWN24A-XS	ASB-24-XS	SB-24-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for deflection calculations.

Maximum Operating Parameters per Bearing

Characteristic	Limit
Liner Temperature Range	-240˚ C to 288˚ C (-400˚ F to 550˚ F)
Velocity, dry	42.7 m/min. Continuous
Velocity, dry	122 m/min. Intermittent
Velocity, lubricated	122 m/min. Continuous
Pressure	10.35 MPa
PV	21 MPa/m/min

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner Linear Guide 1VA Benefits:

- Requires only one part number to specify entire linear guide.
- Available with 60 Case* LinearRace* shaft end support blocks in either light weight aluminum or rigid iron materials.
- Used to provide increased stability or torque resistance in linear system applications.

FluoroNyliner Linear Guide 1VA Components:

- 2 self-aligning FluoroNyliner Bushing bearing pillow blocks or 1 self-aligning FluoroNyliner Bushing bearing twin pillow block.
- 1 stainless steel 60 Case LinearRace shaft.
- 2 shaft end support blocks.

Specifying a Thomson Linear Guide

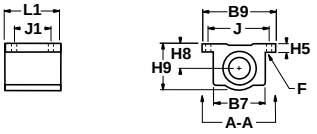
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

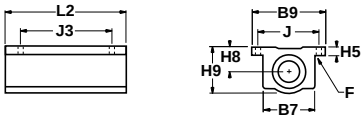
1VA-12-AHO L24

- 1VA — Linear Guide Designation
- 12 — Nominal Diameter
- AH — Type of Bearing Block
- O — Type of Support
- L24 — Linear Guide Length

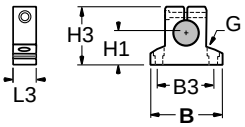
FluoroNyliner Linear Guide Pillow Block Dimensions



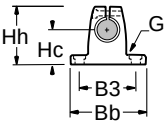
FluoroNyliner Linear Guide Twin Pillow Block Dimensions



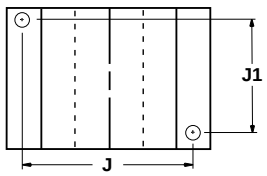
Type ASB LinearRace Shaft End Support Block



Type SB LinearRace Shaft End Support Block



Pillow Block Mounting Hole Position for Size .375



View A-A

Self-Aligning Pillow Blocks

(Dimensions in inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B7	J	J1	F		Wt. lb
										Bolt	Hole	
FNYBUPB06A-XS	.375	.131	.94	.500	.19	1.75	1.12	1.44	.88[2]	#6	.16	.13
FNYBUPB08A-XS	.500	1.69	1.25	.687	.25	2.00	1.38	1.69	1.00	#6	.16	.20
FNYBUPB10A-XS	.625	1.94	1.63	.875	.28	2.50	1.75	2.125	1.125	#8	.19	.50
FNYBUPB12A-XS	.750	2.06	1.75	.937	.31	2.75	1.88	2.38	1.25	#8	.19	.62
FNYBUPB16A-XS	1.000	2.81	2.19	1.187	.38	3.25	2.38	2.88	1.75	#10	.22	1.24
FNYBUPB20A-XS	1.250	3.63	2.81	1.500	.43	4.00	3.00	3.50	2.00	#10	.22	2.57
FNYBUPB24A-XS	1.500	4.00	3.25	1.750	.50	4.75	3.50	4.12	2.50	¼	.28	3.94

Housing Material: Aluminum Alloy Black Anodized

[2]Two mounting holes as shown in view A-A for size .375

Self-Aligning Twin Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb.
FNYBUTWN06A-XS	.375	2.75	2.25	.25
FNYBUTWN08A-XS	.500	3.50	2.50	.40
FNYBUTWN10A-XS	.625	4.00	3.00	1.00
FNYBUTWN12A-XS	.750	4.50	3.50	1.24
FNYBUTWN16A-XS	1.000	6.00	4.50	2.48
FNYBUTWN20A-XS	1.250	7.50	5.50	5.14
FNYBUTWN24A-XS	1.500	9.00	6.50	8.08

Housing Material: Aluminum Alloy Black Anodized

Performance Note: For detailed explanations of FluoroNyliner Linear Guide Dynamic and Static Load Capacities, Frictional Characteristics, Wear Rates, Speeds, and Life Expectancy please contact Thomson Linear Guides Applications Engineering department.

Product Note: FluoroNyliner linear guides are shipped free of all lubricants. It is the responsibility of the product user to determine lubricant compatibility with the FluoroNyliner bearing material.

Product Options: FluoroNyliner linear guides are available with various inner race materials and platings to accommodate different environments.

Type ASB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	L3	H3	H1	B	B3	G		Wt. lb
							Bolt	Hole	
ASB-06-XS	.375	.56	1.00	.562	1.62	1.25	#6	.16	.08
ASB-08-XS	.500	.63	1.48	.875	2.00	1.50	#8	.19	.11
ASB-10-XS	.625	–	–	–	–	–	–	–	–
ASB-12-XS	.750	.75	1.95	1.125	2.50	2.00	#10	.22	.22
ASB-16-XS	1.000	1.00	2.48	1.375	3.25	2.50	¼	.28	.44
ASB-24-XS	1.500	1.250	3.50	2.000	4.75	3.50	5⁄16	.34	1.16

End Support Material: Aluminum Alloy Black Anodized

Type SB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	L3	Hh	Hc	Bb	B3	G		Wt. lb
							Bolt	Hole	
SB-8-XS	.500	.63	1.62	1.000	2.00	1.50	#8	.19	.3
SB-10-XS	.625	.69	1.75	1.00	2.50	1.875	#10	.22	.4
SB-12-XS	.750	.75	2.12	1.250	2.75	2.00	#10	.22	.5
SB-16-XS	1.000	1.00	2.56	1.500	3.25	2.50	¼	.28	1.0
SB-20-XS	1.250	1.13	3.00	1.750	4.00	3.00	5⁄16	.34	2.0
SB-24-XS	1.500	1.25	3.50	2.000	4.75	3.50	5⁄16	.34	2.6

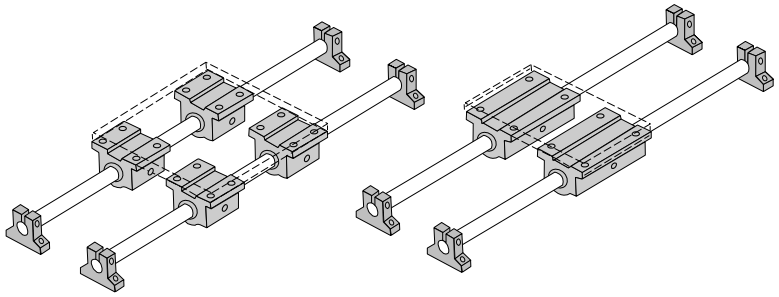
Material: Iron

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner 1VB

Linear Guide #5

Corrosive/Contaminated Environments



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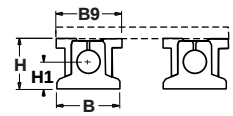
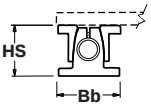
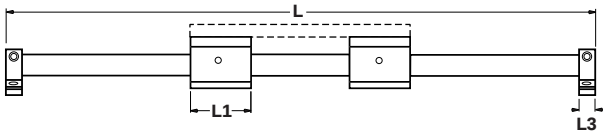


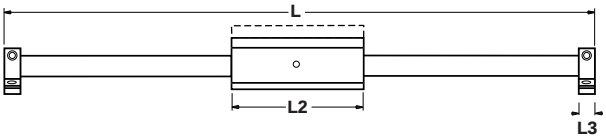


Linear Guide 1VB with Type SB End Support Block

Double End Supported Linear Guide with 4 Pillow Blocks



Double End Supported Linear Guide with 2 Twin Pillow Blocks



FluoroNyliner* Linear Guide 1VB Double End Supported with 4 Pillow Blocks (Dimensions in inches)

Part Number		Nominal	L1	L3	H	HS	B	Bb	B9	Pillow	Shaft Support	
W/ Type ASB Shaft Support	W/ Type SB Shaft Support	Diameter								Block	Type ASB	Type SB
1VB-06-AHO	**–**	.375	1.31	.56	1.062	–	1.63	–	1.75	FNYBUPB06A-XS	ASB-6-XS	–
1VB-08-AHO	**1VB-08-AJO**	.500	1.69	.63	1.562	1.687	2.00	2.00	2.00	FNYBUPB08A-XS	ASB-8-XS	SB-8-XS
–	**1VB-10-AJO**	.625	1.94	.69	–	1.875	–	2.50	2.50	FNYBUPB10A-XS	–	SB-10-XS
1VB-12-AHO	**1VB-12-AJO**	.750	2.06	.75	2.062	2.187	2.50	2.75	2.75	FNYBUPB12A-XS	ASB-12-XS	SB-12-XS
1VB-16-AHO	**1VB-16-AJO**	1.000	2.81	1.00	2.562	2.687	3.25	3.25	3.25	FNYBUPB16A-XS	ASB-16-XS	SB-16-XS
–	**1VB-20-AJO**	1.250	3.63	1.13	–	3.250	–	–	4.00	FNYBUPB20A-XS	–	SB-20-XS
1VB-24-AHO	**1VB-24-AJO**	1.500	4.00	1.25	3.750	3.750	4.75	4.75	4.75	FNYBUPB24A-XS	ASB-24-XS	SB-24-XS

FluoroNyliner Linear Guide 1VB Double End Supported with 2 Twin Pillow Blocks (Dimensions in inches)

Part Number		Nom.	L2	L3	H	HS	B	Bb	B9	Max.	Pillow	Shaft Support	
W/ Type ASB Shaft Support	W/ Type SB Shaft Support	Dia.								Stroke Length	Block	Type ASB	Type SB
1VB-06-BHO	**–**	.375	2.75	.56	1.062	–	1.63	–	1.75	L-(3.88)	FNYBUTWN06A-XS	ASB-6-XS	–
1VB-08-BHO	**1VB-08-BJO**	.500	3.50	.63	1.562	1.687	2.00	2.00	2.00	L-(4.75)	FNYBUTWN08A-XS	ASB-8-XS	SB-8-XS
–	**1VB-10-BJO**	.625	4.00	.69	–	1.875	–	2.50	2.50	L-(5.38)	FNYBUTWN10A-XS	–	SB-10-XS
1VB-12-BHO	**1VB-12-BJO**	.750	4.50	.75	2.062	2.187	2.50	2.75	2.75	L-(6.00)	FNYBUTWN12A-XS	ASB-12-XS	SB-12-XS
1VB-16-BHO	**1VB-16-BJO**	1.000	6.00	1.00	2.562	2.687	3.25	3.25	3.25	L-(8.00)	FNYBUTWN16A-XS	ASB-16-XS	SB-16-XS
–	**1VB-20-BJO**	1.250	7.50	1.13	–	3.250	–	4.00	4.00	L-(9.75)	FNYBUTWN20A-XS	–	SB-20-XS
1VB-24-BHO	**1VB-24-BJO**	1.500	9.00	1.25	3.750	3.750	4.75	4.75	4.75	L-(11.50)	FNYBUTWN24A-XS	ASB-24-XS	SB-24-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection. See Engineering Section (pg 204) for deflection calculations.

Maximum Operating Parameters per Bearing

Characteristic	Limit
Liner Temperature Range	-240˚ C to 288˚ C (-400˚ F to 550˚ F)
Velocity, dry	42.7 m/min. Continuous
Velocity, dry	122 m/min. Intermittent
Velocity, lubricated	122 m/min. Continuous
Pressure	10.35 MPa
PV	21 MPa/m/min

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner* Linear Guide 1VB Benefits:

- Requires only one part number to specify entire linear guide.
- Available with 60 Case* LinearRace* shaft end support blocks in either light weight aluminum or rigid iron materials.
- Used in end supported applications when spanning or bridging a gap.

FluoroNyliner Linear Guide 1VB Components:

- 4 self-aligning FluoroNyliner Bushing bearing pillow blocks or 2 self-aligning FluoroNyliner Bushing bearing twin pillow blocks.
- 2 stainless steel 60 Case LinearRace shafts.
- 4 shaft end support blocks.

Specifying a Thomson Linear Guide:

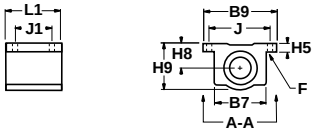
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

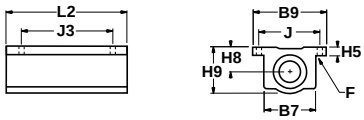
1VB-12-AHO L24

- 1VB — Linear Guide Designation
- 12 — Nominal Diameter
- AH — Type of Bearing Block
- O — Type of Support
- L24 — Linear Guide Length

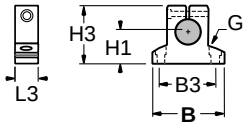
FluoroNyliner Linear Guide Pillow Block Dimensions



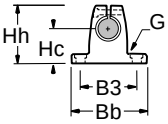
FluoroNyliner Linear Guide Twin Pillow Block Dimensions



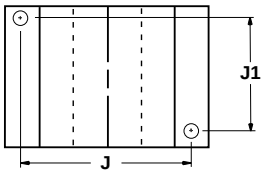
Type ASB LinearRace Shaft End Support Block



Type SB LinearRace Shaft End Support Block



Pillow Block Mounting Hole Position for Size .375



View A-A

Self-Aligning Pillow Blocks

(Dimensions in inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B7	J	J1	F		Wt. lb
										Bolt	Hole	
FNYBUPB06A-XS	.375	.131	.94	.500	.19	1.75	1.12	1.44	.88[2]	#6	.16	.13
FNYBUPB08A-XS	.500	1.69	1.25	.687	.25	2.00	1.38	1.69	1.00	#6	.16	.20
FNYBUPB10A-XS	.625	1.94	1.63	.875	.28	2.50	1.75	2.125	1.125	#8	.19	.50
FNYBUPB12A-XS	.750	2.06	1.75	.937	.31	2.75	1.88	2.38	1.25	#8	.19	.62
FNYBUPB16A-XS	1.000	2.81	2.19	1.187	.38	3.25	2.38	2.88	1.75	#10	.22	1.24
FNYBUPB20A-XS	1.250	3.63	2.81	1.500	.43	4.00	3.00	3.50	2.00	#10	.22	2.57
FNYBUPB24A-XS	1.500	4.00	3.25	1.750	.50	4.75	3.50	4.12	2.50	¼	.28	3.94

Housing Material: Aluminum Alloy Black Anodized

[2]Two mounting holes as shown in view A-A for size .375

Self-Aligning Twin Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
FNYBUTWN06A-XS	.375	2.75	2.25	.25
FNYBUTWN08A-XS	.500	3.50	2.50	.40
FNYBUTWN10A-XS	.625	4.00	3.00	1.00
FNYBUTWN12A-XS	.750	4.50	3.50	1.24
FNYBUTWN16A-XS	1.000	6.00	4.50	2.48
FNYBUTWN20A-XS	1.250	7.50	5.50	5.14
FNYBUTWN24A-XS	1.500	9.00	6.50	8.08

Housing Material: Aluminum Alloy Black Anodized

Performance Note: For detailed explanations of FluoroNyliner Linear Guide Dynamic and Static Load Capacities, Frictional Characteristics, Wear Rates, Speeds, and Life Expectancy please contact Thomson Linear Guides Applications Engineering department.

Product Note: FluoroNyliner linear guides are shipped free of all lubricants. It is the responsibility of the product user to determine lubricant compatibility with the FluoroNyliner bearing material.

Product Options: FluoroNyliner linear guides are available with various inner race materials and platings to accommodate different environments.

Type ASB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	L3	H3	H1	B	B3	G		Wt. lb
							Bolt	Hole	
ASB-06-XS	.375	.56	1.00	.562	1.62	1.25	#6	.16	.08
ASB-08-XS	.500	.63	1.48	.875	2.00	1.50	#8	.19	.11
ASB-10-XS	.625	–	–	–	–	–	–	–	–
ASB-12-XS	.750	.75	1.95	1.125	2.50	2.00	#10	.22	.22
ASB-16-XS	1.000	1.00	2.48	1.375	3.25	2.50	¼	.28	.44
ASB-24-XS	1.500	1.250	3.50	2.000	4.75	3.50	5⁄16	.34	1.16

End Support Material: Aluminum Alloy Black Anodized

Type SB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	L3	Hh	Hc	Bb	B3	G		Wt. lb
							Bolt	Hole	
SB-8-XS	.500	.63	1.62	1.000	2.00	1.50	#8	.19	.3
SB-10-XS	.625	.69	1.75	1.00	2.50	1.875	#10	.22	.4
SB-12-XS	.750	.75	2.12	1.250	2.75	2.00	#10	.22	.5
SB-16-XS	1.000	1.00	2.56	1.500	3.25	2.50	¼	.28	1.0
SB-20-XS	1.250	1.13	3.00	1.750	4.00	3.00	5⁄16	.34	2.0
SB-24-XS	1.500	1.25	3.50	2.000	4.75	3.50	5⁄16	.34	2.6

Material: Iron

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

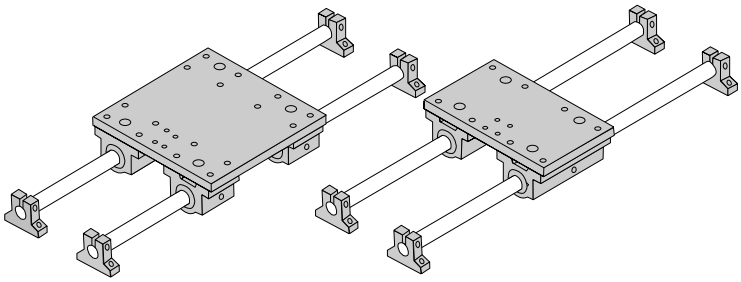
FluoroNyliner 1VC

Linear Guide #5

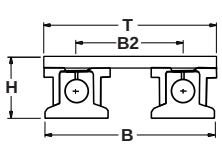
with Table Top

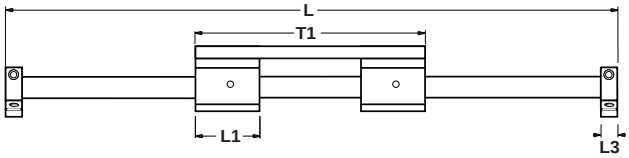
Corrosive/Contaminated Environments

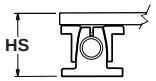
INCH



Double End Supported Linear Guide with 4 Pillow Blocks and Size B Table Top

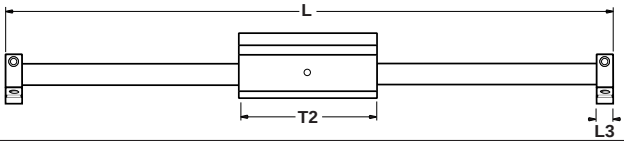






Linear Guide 1VC with Type SB End Support Block

Double End Supported Linear Guide with 2 Twin Pillow Blocks and Size A Table Top



FluoroNyliner* Linear Guide 1VC Double End Supported with 4 Pillow Blocks and Table Top (Size B) (Dimensions in inches)

Part Number		Nom.	L1	L3	H	HS	B	B2	T	T1	Max.	Pillow	Shaft Support	
W/Type ASB Shaft Support	W/Type SB Shaft Support	Dia.									Stroke Length	Block	Type ASB	Type SB
1VC-06-AHB	**–**	.375	1.31	.56	1.312	–	4.13	2.50	4.50	4.50	L-(5.62)	FNYBUPB06A-XS	ASB-6-XS	–
1VC-08-AHB	**1VC-08-AJB**	.500	1.69	.63	1.937	2.062	5.25	3.25	5.50	5.50	L-(6.76)	FNYBUPB08A-XS	ASB-8-XS	SB-8-XS
–	**1VC-10-AJB**	.625	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	FNYBUPB10A-XS	N/A	N/A
1VC-12-AHB	**1VC-12-AJB**	.750	2.06	.75	2.562	2.687	7.00	4.50	7.50	7.50	L-(9.0)	FNYBUPB12A-XS	ASB-12-XS	SB-12-XS
1VC-16-AHB	**1VC-16-AJB**	1.000	2.81	1.00	3.062	3.187	8.75	5.50	9.00	9.00	L-(11.0)	FNYBUPB16A-XS	ASB-16-XS	SB-16-XS
–	**1VC-20-AJB**	1.250	3.63	1.13	–	4.000	–	6.75	11.00	11.00	L-(13.26)	FNYBUPB20A-XS	–	SB-20-XS
1VC-24-AHB	**1VC-24-AJB**	1.500	4.00	1.25	4.500	4.500	12.75	8.00	13.00	13.00	L-(15.5)	FNYBUPB24A-XS	ASB-24-XS	SB-24-XS

FluoroNyliner Linear Guide 1VC Double End Supported with 2 Twin Pillow Blocks and Table Top (Size A) (Dimensions in inch)

Part Number		Nom.	T2	L3	H	HS	B	B2	T	Max.	Pillow	Shaft Support	
W/ Type ASB Shaft Support	W/ Type SB Shaft Support	Dia.								Stroke Length	Block	Type ASB	Type SB
1VC-06-BHA	**–**	.375	2.75	.56	1.132	–	4.13	2.50	4.50	L-(3.88)	FNYBUTWN06A-XS	ASB-6-XS	–
1VC-08-BHA	**1VC-08-BJA**	.500	3.50	.63	1.937	2.062	5.25	3.25	5.50	L-(4.75)	FNYBUTWN08A-XS	ASB-8-XS	SB-8-XS
–	**1VC-10-BJA**	.625	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	FNYBUTWN10A-XS	N/A	N/A
1VC-12-BHA	**1VC-12-BJA**	.750	4.50	.75	2.562	2.687	7.00	4.50	7.50	L-(6.00)	FNYBUTWN12A-XS	ASB-12-XS	SB-12-XS
1VC-16-BHA	**1VC-16-BJA**	1.000	6.00	1.00	3.062	3.187	8.75	5.50	9.00	L-(8.00)	FNYBUTWN16A-XS	ASB-16-XS	SB-16-XS
–	**1VC-20-BJA**	1.250	7.50	1.13	–	4.000	–	6.75	11.00	L-(9.75)	FNYBUTWN20A-XS	–	SB-20-XS
1VC-24-BHA	**1VC-24-BJA**	1.500	9.00	1.25	4.500	4.500	12.75	8.00	13.00	L-(11.50)	FNYBUTWN24A-XS	ASB-24-XS	SB-24-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection. See Engineering Section (pg 204) for deflection calculations.

Performance Note: For detailed explanations of FluoroNyliner Linear Guide Dynamic and Static Load Capacities, Frictional Characteristics, Wear Rates, Speeds, and Life Expectancy please contact Thomson Linear Guides Applications Engineering department.

Product Note: FluoroNyliner linear guides are shipped free of all lubricants. It is the responsibility of the product user to determine lubricant compatibility with the FluoroNyliner bearing material.

Product Options: FluoroNyliner linear guides are available with various inner race materials and platings to accommodate different environments.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner* Linear Guide 1VC Benefits:

- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- Includes Ball Screw Assembly attachment holes for ease of assembly and actuation.
- Available with 60 Case* LinearRace* shaft end support blocks in either light weight aluminum or rigid iron materials.

FluoroNyliner Linear Guide 1VC Components:

- 4 self-aligning FluoroNyliner Bushing bearing pillow blocks or 2 self-aligning FluoroNyliner Bushing bearing twin pillow blocks.
- 2 Stainless Steel 60 Case LinearRace shafts.
- 4 Shaft End Support Blocks.
- 1 mounting table top with work piece and Ball Screw Assembly attachment holes.

Specifying a Thomson Linear Guide:

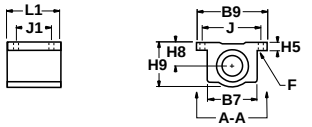
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

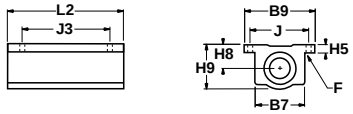
1VC-12-AHB L24

- 1VC — Linear Guide Designation
- 12 — Nominal Diameter
- AHB — Type of Bearing Block
- L — Linear Guide Length
- 24 — Type of Table Top
- Type of Support

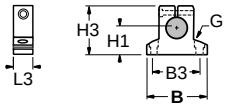
FluoroNyliner Linear Guide Pillow Block Dimensions



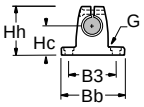
FluoroNyliner Linear Guide Twin Pillow Block Dimensions



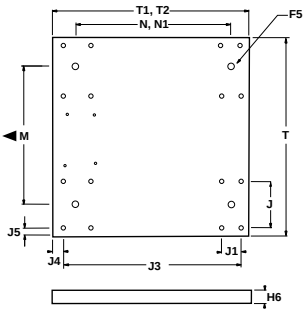
Type ASB LinearRace Shaft End Support Block



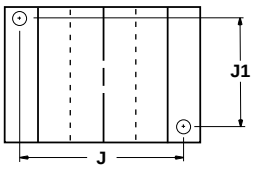
Type SB LinearRace Shaft End Support Block



Mounting Table Top



Pillow Block Mounting Hole Position for Size .375



View A-A

Self-Aligning Pillow Blocks (Dimensions in inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B7	J	J1	F		Wt. lb
										Bolt	Hole	
FNYBUPB06A-XS	.375	.131	.94	.500	.19	1.75	1.12	1.44	.88[2]	#6	.16	.13
FNYBUPB08A-XS	.500	1.69	1.25	.687	.25	2.00	1.38	1.69	1.00	#6	.16	.20
FNYBUPB10A-XS	.625	–	–	–	–	–	–	–	–	–	–	–
FNYBUPB12A-XS	.750	2.06	1.75	.937	.31	2.75	1.88	2.38	1.25	#8	.19	.62
FNYBUPB16A-XS	1.000	2.81	2.19	1.187	.38	3.25	2.38	2.88	1.75	#10	.22	1.24
FNYBUPB20A-XS	1.250	3.63	2.81	1.500	.43	4.00	3.00	3.50	2.00	#10	.22	2.57
FNYBUPB24A-XS	1.500	4.00	3.25	1.750	.50	4.75	3.50	4.12	2.50	¼	.28	3.94

Housing Material: Aluminum Alloy Black Anodized

[2]Two mounting holes as shown in view A-A for size .375

Self-Aligning Twin Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb.
FNYBUTWN06A-XS	.375	2.75	2.25	.25
FNYBUTWN08A-XS	.500	3.50	2.50	.40
FNYBUTWN10A-XS	.625	–	–	–
FNYBUTWN12A-XS	.750	4.50	3.50	1.24
FNYBUTWN16A-XS	1.000	6.00	4.50	2.48
FNYBUTWN20A-XS	1.250	7.50	5.50	5.14
FNYBUTWN24A-XS	1.500	9.00	6.50	8.08

Housing Material: Aluminum Alloy Black Anodized

Type ASB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	L3	H3	H1	B	B3	G		Wt. lb
							Bolt	Hole	
ASB-06-XS	.375	.56	1.00	.562	1.62	1.25	#6	.16	.08
ASB-08-XS	.500	.63	1.48	.875	2.00	1.50	#8	.19	.11
ASB-10-XS	.625	–	–	–	–	–	–	–	–
ASB-12-XS	.750	.75	1.95	1.125	2.50	2.00	#10	.22	.22
ASB-16-XS	1.000	1.00	2.48	1.375	3.25	2.50	¼	.28	.44
ASB-24-XS	1.500	1.250	3.50	2.000	4.75	3.50	5/16	.34	1.16

End Support Material: Aluminum Alloy Black Anodized

Type SB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	L3	Hh	Hc	Bb	B3	G		Wt. lb
							Bolt	Hole	
SB-8-XS	.500	.63	1.62	1.000	2.00	1.50	#8	.19	.3
SB-10-XS	.625	.69	1.75	1.00	2.50	1.875	#10	.22	.4
SB-12-XS	.750	.75	2.12	1.250	2.75	2.00	#10	.22	.5
SB-16-XS	1.000	1.00	2.56	1.500	3.25	2.50	¼	.28	1.0
SB-20-XS	1.250	1.13	3.00	1.750	4.00	3.00	5/16	.34	2.0
SB-24-XS	1.500	1.25	3.50	2.000	4.75	3.50	5/16	.34	2.6

Material: Iron

Mounting Table Top (Dimensions in inches)

Nominal Diameter	All Table Tops					Table Top Size **B**					Table Top Size **A**				
	T	M	J	H6	F5	T1	J1	J4	J5	N	T2	J3	J4	J5	N1
.375	4.5	2.50	1.44	.250	#10-32	4.5	.88[2]	.22	.28	3.75	2.75	2.25	.25	.28	2.0
.500	5.5	3.25	1.69	.375	1/4-20	5.5	1.00	.34	.28	4.50	3.50	2.50	.50	.31	2.5
.625	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
.750	7.5	4.50	2.38	.500	5/16-18	7.5	1.25	.41	.31	6.00	4.50	3.50	.50	.31	3.0
1.000	9.0	5.50	2.88	.500	3/8-16	9.0	1.75	.53	.31	7.00	6.00	4.50	.75	.31	4.0
1.250	11.0	6.75	3.50	.750	1/2-13	11.0	2.00	.82	.38	8.50	7.50	5.50	1.00	.38	5.0
1.500	13.0	8.00	4.12	.750	1/2-13	13.0	2.50	.75	.44	10.00	9.00	6.50	1.25	.44	6.0

Carriage Material: Aluminum Alloy Black Anodized.

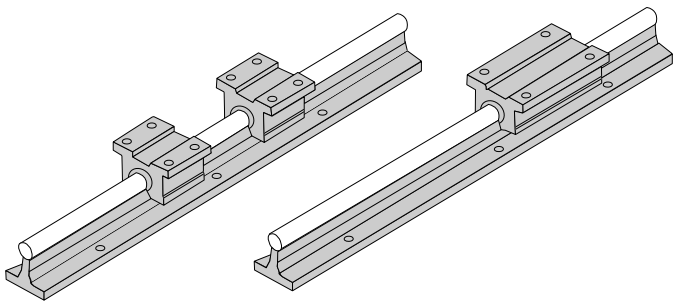
[2]Two mounting holes as shown in view A-A for size .375

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner 1VA

Linear Guide #5

Corrosive/Contaminated Environments



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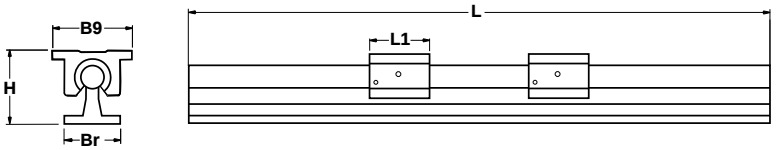
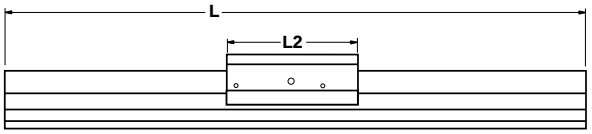
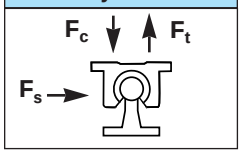
Single Continuously Supported Linear Guide with 2 Pillow Blocks



Single Continuously Supported System with 1 Twin Pillow Block



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	PV	PV
F_t	0.3PV	0.3PV
F_S	0.6PV	0.6PV

Dynamic Load Rating
PV value used in life calculation.
Load Limit
Maximum allowable PV applied to bearing.

FluoroNyliner* Linear Guide 1VA Single Continuously Supported with 2 Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	L1	H	Br	B9	Pillow Block	Shaft Support Rail Assembly
1VA-08-FAO	.50	1.50	1.812	1.50	2.00	FNYBUPBO08A-XS	SRA-8-XS-SS
1VA-12-FAO	.75	1.88	2.437	1.75	2.75	FNYBUPBO12A-XS	SRA-12-XS-SS
1VA-16-FAO	1.00	2.63	2.937	2.13	3.25	FNYBUPBO16A-XS	SRA-16-XS-SS
1VA-20-FAO	1.25	3.38	3.625	2.50	4.00	FNYBUPBO20A-XS	SRA-20-XS-SS
1VA-24-FAO	1.50	3.75	4.250	3.00	4.75	FNYBUPBO24A-XS	SRA-24-XS-SS

FluoroNyliner Linear Guide 1VA Single Continuously Supported with 1 Twin Pillow Block (Dimensions in inches)

Part Number	Nominal Diameter	L2	H	Br	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1VA-08-HAO	.50	3.5	1.812	1.50	2.00	L-(3.5)	FNYBUTWNO08A-XS	SRA-8-XS-SS
1VA-12-HAO	.75	4.5	2.437	1.75	2.75	L-(4.5)	FNYBUTWNO10A-XS	SRA-12-XS-SS
1VA-16-HAO	1.00	6.0	2.937	2.13	3.25	L-(6.0)	FNYBUTWNO16A-XS	SRA-16-XS-SS
1VA-20-HAO	1.25	7.5	3.625	2.50	4.00	L-(7.5)	FNYBUTWNO20A-XS	SRA-20-XS-SS
1VA-24-HAO	1.50	9.0	4.250	3.00	4.75	L-(9.0)	FNYBUTWNO24A-XS	SRA-24-XS-SS

Maximum Operating Parameters per Bearing

Characteristic	Limit
Liner Temperature Range	-240˚ C to 288˚ C (-400˚ F to 550˚ F)
Velocity, dry	42.7 m/min. Continuous
Velocity, dry	122 m/min. Intermittent
Velocity, lubricated	122 m/min. Continuous
Pressure	10.35 MPa
PV	21 MPa/m/min

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner* Linear Guide 1VA Benefits:

- Requires only one part number to specify the entire linear guide.
- Used as a load support, transport, and guidance solution.
- Used in continuously supported applications when rigidity is required.

FluoroNyliner Linear Guide 1VA Components:

- 2 self-aligning FluoroNyliner* Bushing bearing open pillow blocks or 1 self-aligning FluoroNyliner Bushing bearing open twin pillow block.
- 1 stainless steel 60 Case* linearRace* shaft support rail assembly.

Specifying this Thomson Linear Guide:

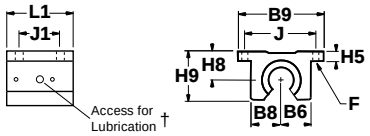
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

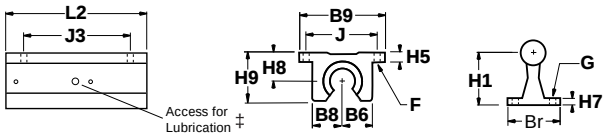
1VA-12-FAO L24

- 1VA: Linear Guide Designation
- 12: Nominal Diameter
- F: Type of Bearing Block
- A: Type of Support
- O: Linear Guide Length
- L24: Linear Guide Length

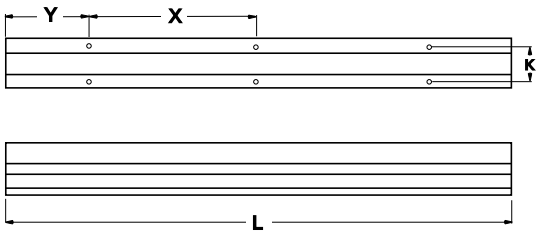
FluoroNyliner Linear Guide Pillow Block Dimensions



FluoroNyliner Linear Guide Twin Pillow Block Dimensions



Type SRA LinearRace Shaft Support Rail Assembly



Self-Aligning Pillow Blocks (Dimensions in inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B8	B7	J	J1	F		Wt. lb
											Bolt	Hole	
FNYBUPBO08A-XS	.50	1.50	1.12	.687	.25	2.00	.75	.69	1.69	1.00	#6	.16	.20
FNYBUPBO12A-XS	.75	1.88	1.56	.937	.31	2.75	1.00	.94	2.38	1.25	#8	.19	.51
FNYBUPBO16A-XS	1.00	2.63	2.00	1.187	.38	3.25	1.25	1.19	2.88	1.75	#10	.22	1.03
FNYBUPBO20A-XS	1.25	3.38	2.56	1.500	.43	4.00	1.63	1.50	3.50	2.00	#10	.22	2.15
FNYBUPBO24A-XS	1.50	3.75	2.94	1.750	.50	4.75	1.88	1.75	4.12	2.50	1/4	.28	3.29

Housing Material: Aluminum Alloy Black Anodized

Self-Aligning Twin Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb.
FNYBUTWNO08A-XS	.500	3.50	2.50	.40
FNYBUTWNO12A-XS	.750	4.50	3.50	1.02
FNYBUTWNO16A-XS	1.00	6.00	4.50	2.06
FNYBUTWNO20A-XS	1.25	7.50	5.50	4.30
FNYBUTWNO24A-XS	1.50	9.00	6.50	6.88

Housing Material: Aluminum Alloy Black Anodized

Performance Note: For detailed explanations of FluoroNyliner Linear Guide Dynamic and Static Load Capacities, Frictional Characteristics, Wear Rates, Speeds, and Life Expectancy please contact Thomson Linear Guides Applications Engineering department.

Product Note: FluoroNyliner linear guides are shipped free of all lubricants. It is the responsibility of the product user to determine lubricant compatibility with the FluoroNyliner bearing material.

Product Options: FluoroNyliner linear guides are available with various inner race materials and platings to accommodate different environments.

Type SRA LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

Part Number	Nom. Dia.	H1	H7	Br	K	X	Y	G		Wt. lb/ft
								Bolt	Hole	
SRA-8-XS-SS	.50	1.125	.19	1.50	1.00	4	2	#6	.17	1.26
SRA-12-XS-SS	.75	1.500	.25	1.75	1.25	6	3	#10	.22	2.50
SRA-16-XS-SS	1.00	1.750	.25	2.13	1.50	6	3	1/4	.28	4.06
SRA-20-XS-SS	1.25	2.125	.31	2.50	1.88	6	3	5/16	.34	6.30
SRA-24-XS-SS	1.50	2.500	.38	3.00	2.25	8	4	5/16	.34	8.60

LinearRace Support Rail Material: Aluminum Alloy Black Anodized

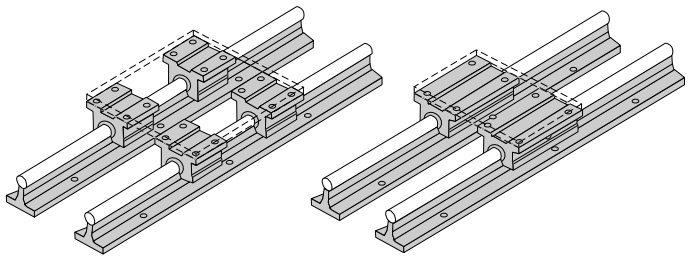
Maximum length of LinearRace Shaft Support Rail is 72 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guide** Application Engineering department.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner 1VB

Linear Guide #5

Corrosive/Contaminated Environments



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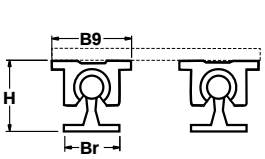
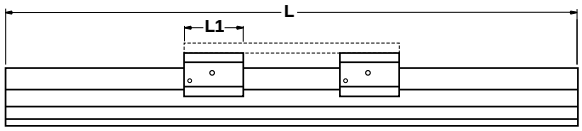
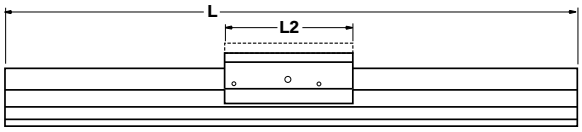


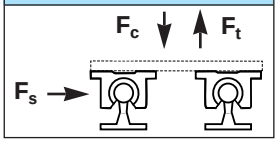
Double Continuously Supported Linear Guide with 4 Pillow Blocks



Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	PV	PV
F_t	0.3PV	0.3PV
F_S	0.6PV	0.6PV

Dynamic Load Rating
PV value used in life calculation.
Load Limit
Maximum allowable PV applied to bearing.

FluoroNyliner* Linear Guide 1VB Double Continuously Supported with 4 Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	L1	H	Br	B9	Pillow Block	Shaft Support Rail Assembly
1VB-08-FAO	.50	1.50	1.812	1.50	2.00	FNYBUPBO08A-XS	SRA-8-XS-SS
1VB-12-FAO	.75	1.88	2.437	1.75	2.75	FNYBUPBO12A-XS	SRA-12-XS-SS
1VB-16-FAO	1.00	2.63	2.937	2.13	3.25	FNYBUPBO16A-XS	SRA-16-XS-SS
1VB-20-FAO	1.25	3.38	3.625	2.50	4.00	FNYBUPBO20A-XS	SRA-20-XS-SS
1VB-24-FAO	1.50	3.75	4.250	3.00	4.75	FNYBUPBO24A-XS	SRA-24-XS-SS

FluoroNyliner Linear Guide 1VB Double Continuously Supported with 2 Twin Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	L2	H	Br	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1VB-08-HAO	.50	3.5	1.812	1.50	2.00	L-(3.5)	FNYBUTWNO08A-XS	SRA-8-XS-SS
1VB-12-HAO	.75	4.5	2.437	1.75	2.75	L-(4.5)	FNYBUTWNO12A-XS	SRA-12-XS-SS
1VB-16-HAO	1.00	6.0	2.937	2.13	3.25	L-(6.0)	FNYBUTWNO16A-XS	SRA-16-XS-SS
1VB-20-HAO	1.25	7.5	3.625	2.50	4.00	L-(7.5)	FNYBUTWNO20A-XS	SRA-20-XS-SS
1VB-24-HAO	1.50	9.0	4.250	3.00	4.75	L-(9.0)	FNYBUTWNO24A-XS	SRA-24-XS-SS

Maximum Operating Parameters per Bearing

Characteristic	Limit
Liner Temperature Range	-240˚ C to 288˚ C (-400˚ F to 550˚ F)
Velocity, dry	42.7 m/min. Continuous
Velocity, dry	122 m/min. Intermittent
Velocity, lubricated	122 m/min. Continuous
Pressure	10.35 MPa
PV	21 MPa/m/min

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner* Linear Guide 1VB Benefits:

- Requires only one part number to specify the entire linear guide.
- Allows for custom table mounting.
- Used in continuously supported applications when rigidity is required.

FluoroNyliner Linear Guide 1VB Components:

- 4 self-aligning FluoroNyliner* Bushing bearing open pillow blocks or 2 self-aligning FluoroNyliner Bushing bearing open twin pillow blocks.
- 2 Stainless Steel 60 Case* LinearRace* Shaft Support Rail Assemblies.

Specifying a Thomson Linear Guide:

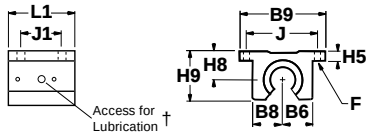
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

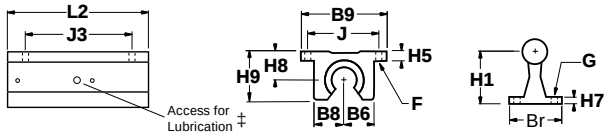
1VB-12-FAO L24

- Linear guide Designation
- Nominal Diameter
- Type of Bearing Block
- Type of Support
- Linear Guide Length

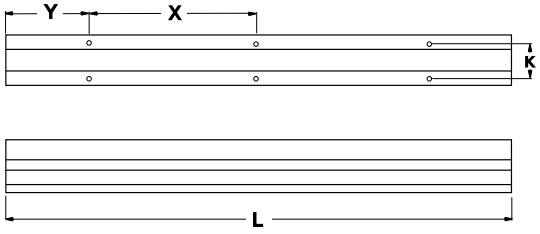
FluoroNyliner Linear Guide Pillow Block Dimensions



FluoroNyliner Linear Guide Twin Pillow Block Dimensions



Type SRA LinearRace Shaft Support Rail Assembly



Self-Aligning Pillow Blocks

(Dimensions in inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B8	B7	J	J1	F		Wt. lb
											Bolt	Hole	
FNYBUPBO08A-XS	.50	1.50	1.12	.687	.25	2.00	.75	.69	1.69	1.00	#6	.16	.20
FNYBUPBO12A-XS	.75	1.88	1.56	.937	.31	2.75	1.00	.94	2.38	1.25	#8	.19	.51
FNYBUPBO16A-XS	1.00	2.63	2.00	1.187	.38	3.25	1.25	1.19	2.88	1.75	#10	.22	1.03
FNYBUPBO20A-XS	1.25	3.38	2.56	1.500	.43	4.00	1.63	1.50	3.50	2.00	#10	.22	2.15
FNYBUPBO24A-XS	1.50	3.75	2.94	1.750	.50	4.75	1.88	1.75	4.12	2.50	1/4	.28	3.29

Housing Material: Aluminum Alloy Black Anodized

Self-Aligning Twin Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb.
FNYBUTWNO08A-XS	.500	3.50	2.50	.40
FNYBUTWNO12A-XS	.750	4.50	3.50	1.02
FNYBUTWNO16A-XS	1.00	6.00	4.50	2.06
FNYBUTWNO20A-XS	1.25	7.50	5.50	4.30
FNYBUTWNO24A-XS	1.50	9.00	6.50	6.88

Housing Material: Aluminum Alloy Black Anodized

Performance Note: For detailed explanations of FluoroNyliner Linear Guide Dynamic and Static Load Capacities, Frictional Characteristics, Wear Rates, Speeds, and Life Expectancy please contact Thomson Linear Guides Applications Engineering department.

Product Note: FluoroNyliner linear guides are shipped free of all lubricants. It is the responsibility of the product user to determine lubricant compatibility with the FluoroNyliner bearing material.

Product Options: FluoroNyliner linear guides are available with various inner race materials and platings to accommodate different environments.

Type SRA LinearRace Shaft Support Rail Assembly

(Dimensions in Inches)

Part Number	Nom. Dia.	H1	H7	Br	K	X	Y	G		Wt. lb/ft
								Bolt	Hole	
SRA-8-XS-SS	.50	1.125	.19	1.50	1.00	4	2	#6	.17	1.26
SRA-12-XS-SS	.75	1.500	.25	1.75	1.25	6	3	#10	.22	2.50
SRA-16-XS-SS	1.00	1.750	.25	2.13	1.50	6	3	1/4	.28	4.06
SRA-20-XS-SS	1.25	2.125	.31	2.50	1.88	6	3	5/16	.34	6.30
SRA-24-XS-SS	1.50	2.500	.38	3.00	2.25	8	4	5/16	.34	8.60

LinearRace Support Rail Material: Aluminum Alloy Black Anodized

Maximum length of LinearRace shaft support rail is 72 inches. If longer continuous one-piece LinearRace Support Rails are required, contact the Thomson Linear Guide Application Engineering department.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

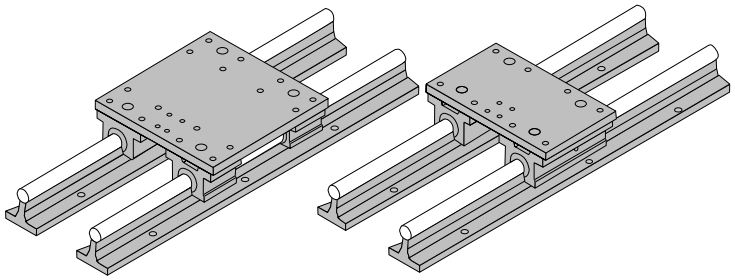
FluoroNyliner 1VC

Linear Guide #5

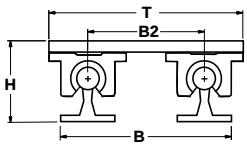
with Table Top

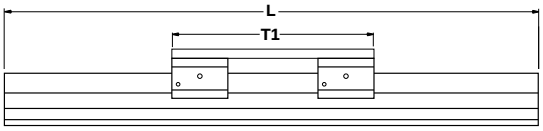
Corrosive/Contaminated Environments

INCH

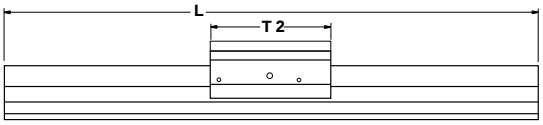


Double Continuously Supported Linear Guide with 4 Pillow Blocks and Size B Table Top

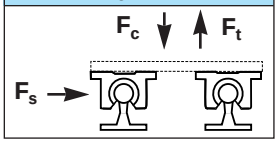




Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks and Size A Table Top



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	PV	PV
F_t	0.3PV	0.3PV
F_S	0.6PV	0.6PV

Dynamic Load Rating
PV value used in life calculation.

Load Limit
Maximum allowable PV applied to bearing.

FluoroNyliner* Linear Guide 1VC Double Continuously Supported with 4 Pillow Blocks and Table Top (size B) (Dimensions in inches)

Part Number	Nominal Diameter	T1	T	H	B	B2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1VC-08-FAB	.50	5.5	5.5	2.187	4.75	3.25	L-(5.5)	FNYBUPBO08A-XS	SRA-8-XS-SS
1VC-12-FAB	.75	7.5	7.5	2.937	6.25	4.50	L-(7.5)	FNYBUPBO12A-XS	SRA-12-XS-SS
1VC-16-FAB	1.00	9.0	9.0	3.437	7.63	5.50	L-(9.0)	FNYBUPBO16A-XS	SRA-16-XS-SS
1VC-20-FAB	1.25	11.0	11.0	4.375	9.25	6.75	L-(11.0)	FNYBUPBO20A-XS	SRA-20-XS-SS
1VC-24-FAB	1.50	13.0	13.0	5.000	11.00	8.00	L-(13.0)	FNYBUPBO24A-XS	SRA-24-XS-SS

FluoroNyliner Linear Guide 1VC Double Continuously Supported with 2 Twin Pillow Blocks and Table Top (size A) (Dimensions in inches)

Part Number	Nom. Dia.	T2	T	H	B	B2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1VC-08-HAA	.50	3.5	5.5	2.187	4.75	3.25	L-(3.5)	FNYBUTWNO08A-XS	SRA-8-XS-SS
1VC-12-HAA	.75	4.5	7.5	2.937	6.25	4.50	L-(4.5)	FNYBUTWNO12A-XS	SRA-12-XS-SS
1VC-16-HAA	1.00	6.0	9.0	3.437	7.63	5.50	L-(6.0)	FNYBUTWNO16A-XS	SRA-16-XS-SS
1VC-20-HAA	1.25	7.5	11.0	4.375	9.25	6.75	L-(7.5)	FNYBUTWNO20A-XS	SRA-20-XS-SS
1VC-24-HAA	1.50	9.0	13.0	5.000	11.00	8.00	L-(9.0)	FNYBUTWNO24A-XS	SRA-24-XS-SS

Maximum Operating Parameters per Bearing

Characteristic	Limit
Liner Temperature Range	-240˚ C to 288˚ C (-400˚ F to 550˚ F)
Velocity, dry	42.7 m/min. Continuous
Velocity, dry	122 m/min. Intermittent
Velocity, lubricated	122 m/min. Continuous
Pressure	10.35 MPa
PV	21 MPa/m/min

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

FluoroNyliner* Linear Guide 1VC Benefits:

- Requires only one part number to specify the entire linear guide.
- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- Includes Ball Screw Assembly attachment holes for ease of assembly and actuation.
- Used in continuously supported applications when rigidity is required.

FluoroNyliner Linear Guide 1VC Components:

- 4 self-aligning FluoroNyliner polymer linear guides open type pillow blocks or 2 self-aligning FluoroNyliner open twin pillow blocks.
- 2 stainless steel 60 Case* LinearRace* Shaft Support Rail Assemblies.
- 1 mounting table top with work piece and Ball Screw Assembly attachment holes.

Specifying a Thomson Linear Guide:

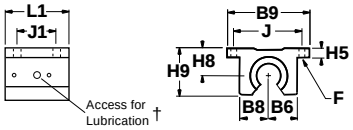
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

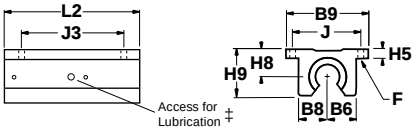
1VC-12-FAB L24

- 1VC — Linear Guide Designation
- 12 — Nominal Diameter
- F — Type of Bearing Block
- A — Type of Table Top
- B — Type of Support
- L24 — Linear Guide Length

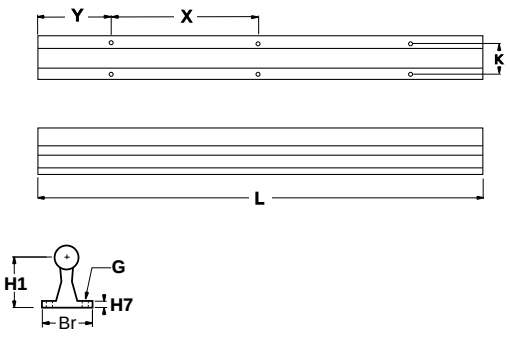
FluoroNyliner Linear Guide Pillow Block Dimensions



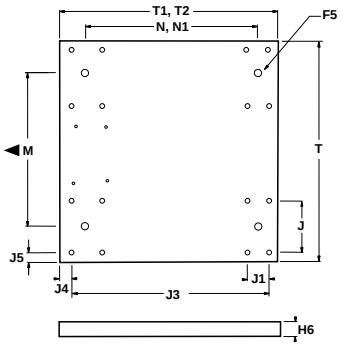
FluoroNyliner Linear Guide Twin Pillow Block Dimensions



Type SRA LinearRace Shaft Support Rail Assembly



Mounting Table Top



Self-Aligning Pillow Blocks (Dimensions in inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B8	B6	J	J1	F Bolt	F Hole	Wt. lb
FNYBUPBO08A-XS	.50	1.50	1.12	.687	.25	2.00	.75	.69	1.69	1.00	#6	.16	.20
FNYBUPBO12A-XS	.75	1.88	1.56	.937	.31	2.75	1.00	.94	2.38	1.25	#8	.19	.51
FNYBUPBO16A-XS	1.00	2.63	2.00	1.187	.38	3.25	1.25	1.19	2.88	1.75	#10	.22	1.03
FNYBUPBO20A-XS	1.25	3.38	2.56	1.500	.43	4.00	1.63	1.50	3.50	2.00	#10	.22	2.15
FNYBUPBO24A-XS	1.50	3.75	2.94	1.750	.50	4.75	1.88	1.75	4.12	2.50	¼	.28	3.29

Housing Material: Aluminum Alloy Black Anodized

Self-Aligning Twin Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
FNYBUTWNO08A-XS	.50	3.5	2.5	.40
FNYBUTWNO12A-XS	.75	4.5	3.5	1.02
FNYBUTWNO16A-XS	1.00	6.0	4.5	2.06
FNYBUTWNO20A-XS	1.25	7.5	5.5	4.30
FNYBUTWNO24A-XS	1.50	9.0	6.5	6.88

Housing Material: Aluminum Alloy Black Anodized

Type SRA LinearRace Shaft Support Rail Assembly (Dimensions in inches)

Part Number	Nom. Dia.	H1	H7	Br	K	X	Y	G Bolt	G Hole	Wt. lb/ft
SRA- 8-XS-SS	.50	1.125	.19	1.50	1.00	4	2	#6	.17	1.26
SRA-12-XS-SS	.75	1.500	.25	1.75	1.25	6	3	#10	.22	2.50
SRA-16-XS-SS	1.00	1.750	.25	2.13	1.50	6	3	¼	.28	4.06
SRA-20-XS-SS	1.25	2.125	.31	2.50	1.88	6	3	5/16	.34	6.30
SRA-24-XS-SS	1.50	2.500	.38	3.00	2.25	8	4	5/16	.34	8.60

LinearRace Shaft Support Rail Material: Aluminum Alloy Black Anodized

Maximum length of LinearRace Shaft Support Rail is 72 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guides** application engineering department.

Mounting Table Top (Dimensions in inches)

Nominal Diameter	All Table Tops T	M	J	H6	F5	Table Top Size **B** T1	J1	J4	J5	N	Table Top Size **A** T2	J3	J4	J5	N1
.50	5.5	3.25	1.69	.375	1/4-20	5.5	1.00	.34	.28	4.5	3.5	2.5	.50	.31	2.5
.75	7.5	4.50	2.38	.500	5/16-18	7.5	1.25	.41	.31	6.0	4.5	3.5	.50	.31	3.0
1.00	9.0	5.50	2.88	.500	3/8-16	9.0	1.75	.53	.31	7.0	6.0	4.5	.75	.31	4.0
1.25	11.0	6.75	3.50	.750	1/2-13	11.0	2.00	.82	.38	8.5	7.5	5.5	1.00	.38	5.0
1.50	13.0	8.00	4.12	.750	1/2-13	13.0	2.50	.75	.44	10.0	9.0	6.5	1.25	.44	6.0

Material: Aluminum Alloy Black Anodized

Performance Note: For detailed explanations of FluoroNyliner Linear Guide Dynamic and Static Load Capacities, Frictional Characteristics, Wear Rates, Speeds, and Life Expectancy please contact Thomson Linear Guides Applications Engineering department.

Product Note: FluoroNyliner linear guides are shipped free of all lubricants. It is the responsibility of the product user to determine lubricant compatibility with the FluoroNyliner bearing material.

Product Options: FluoroNyliner linear guides are available with various inner race materials and platings to accommodate different environments.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

PROJECT TITLE:

APPLICATION WORKSHEET

NOTES

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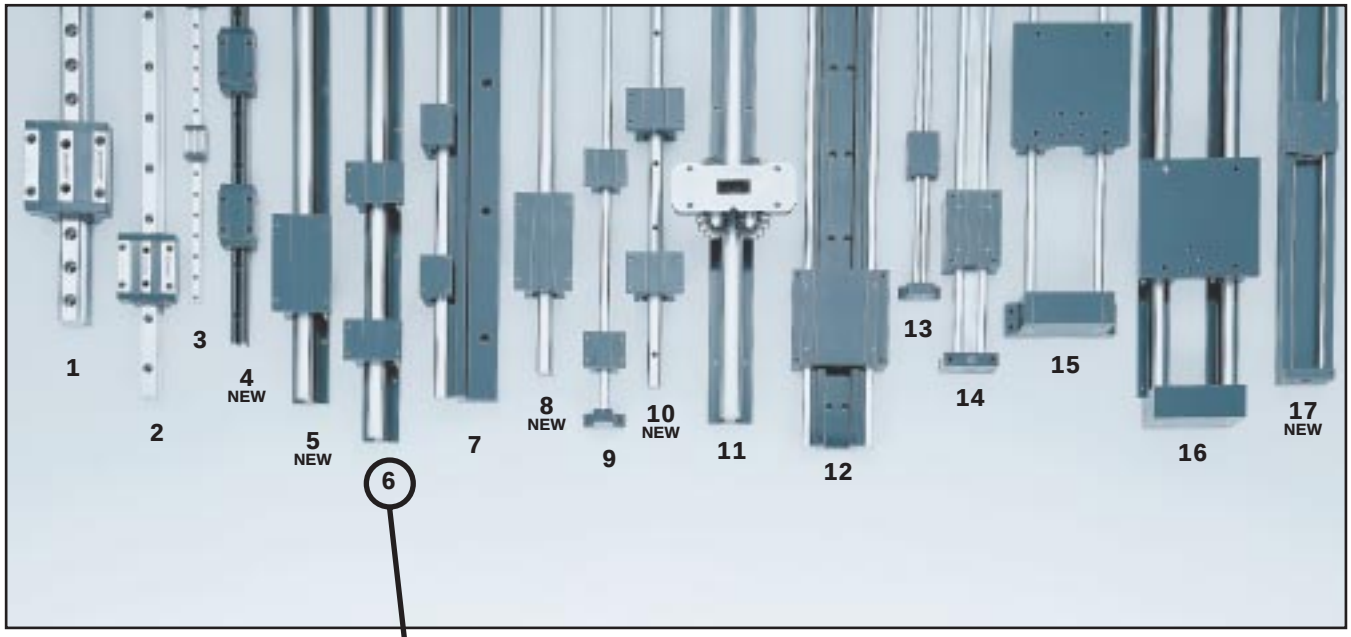
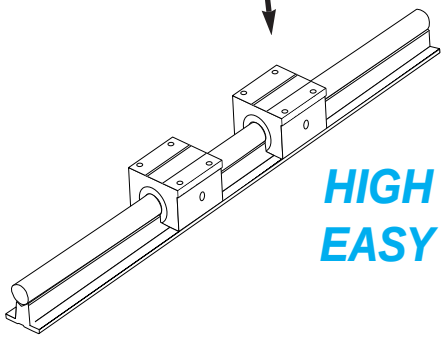
Continuous Support Linear Ball Guides #6





HIGH SPEED, SMOOTH OPERATION, EASY TO INSTALL

Continuous Support Linear Ball Guides Offer:

- Increased life within the same envelope. RoundRail* linear guides feature the new patented Super Smart Ball Bushing* bearings for up to 216X the life or 6X the load capacity of conventional bearings
- Cost savings: save time and money preparing your mounting surfaces before bolting down RoundRail linear guides
- Superior performance. Continuously supported for maximum (down- & side-) load applications without concerns for shaft deflection
- The RoundRail Advantage*. The inherent self-aligning-in-all-directions design of the Super Smart Ball Bushing bearing allows for ultra smooth travel when mounted to wider toleranced prepared surfaces
- Unlimited travel lengths without concerns for machined reference edges or butt joint alignment
- The Super Smart Ball Bushing bearing…the most technologically advanced and most robust linear bearing in the world
- Corrosion resistant versions for maximum performance in harsh environments.

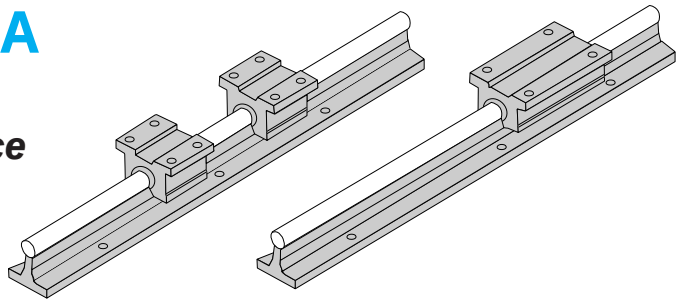
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuous Support 1CA

Linear Guide #6

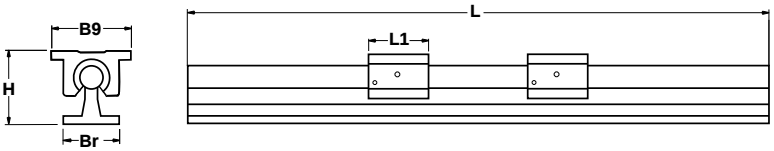
Fully Supported, Highest Performance

Industry Standard Dimensions

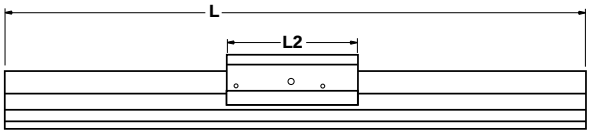


INCH

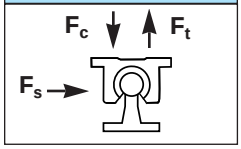
Single Continuously Supported Linear Guide with 2 Pillow Blocks



Single Continuously Supported Linear Guide with 1 Twin Pillow Block



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.5C
F_S	C	0.5C

Dynamic Load Rating
Load value used in life calculation.
Load Limit
Maximum allowable load applied to bearing.

Continuously Supported Linear Guide 1CA Single with 2 Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	L1	H	Br	B9	Pillow Block	Shaft Support Rail Assembly
1CA-08-FAO	.50	1.50	1.812	1.50	2.00	**SPB-8-OPN-XS**	**SRA-8-XS**
1CA-12-FAO	.75	1.88	2.437	1.75	2.75	**SSUPBO-12-XS**	**SRA-12-XS**
1CA-16-FAO	1.00	2.63	2.937	2.13	3.25	**SSUPBO-16-XS**	**SRA-16-XS**
1CA-20-FAO	1.25	3.38	3.625	2.50	4.00	**SSUPBO-20-XS**	**SRA-20-XS**
1CA-24-FAO	1.50	3.75	4.250	3.00	4.75	**SSUPBO-24-XS**	**SRA-24-XS**

Continuously Supported Linear Guide 1CA Single with 1 Twin Pillow Block (Dimensions in inches)

Part Number	Nominal Diameter	L2	H	Br	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1CA-08-HAO	.50	3.5	1.812	1.50	2.00	L-(3.5)	**TWN-8-OPN-XS**	**SRA-8-XS**
1CA-12-HAO	.75	4.5	2.437	1.75	2.75	L-(4.5)	**SSUTWNO-12-XS**	**SRA-12-XS**
1CA-16-HAO	1.00	6.0	2.937	2.13	3.25	L-(6.0)	**SSUTWNO-16-XS**	**SRA-16-XS**
1CA-20-HAO	1.25	7.5	3.625	2.50	4.00	L-(7.5)	**SSUTWNO-20-XS**	**SRA-20-XS**
1CA-24-HAO	1.50	9.0	4.250	3.00	4.75	L-(9.0)	**SSUTWNO-24-XS**	**SRA-24-XS**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuously Supported Linear Guide 1CA Benefits:

- Requires only one part number to specify the entire linear guide.
- Used as a load support, transport, and guidance solution.
- Used in continuously supported applications when rigidity is required.

Continuously Supported Linear Guides 1CA Components:†

- 2 Super Smart Ball Bushing* open type pillow blocks or 1 Super Smart Ball Bushing open twin pillow blocks.
- 1 60 Case* LinearRace* shaft Support Rail Assembly.

Specifying this Thomson Linear Guide:

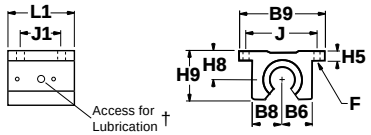
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

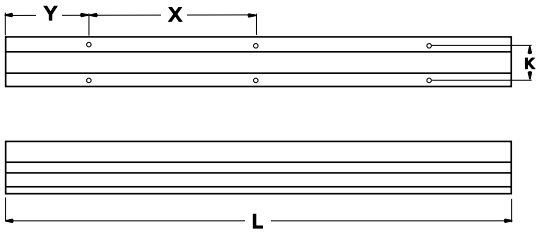
1CA-12-FAO L24

- Linear Guide Designation
- Nominal Diameter
- Type of Bearing Block
- Type of Support
- Linear Guide Length

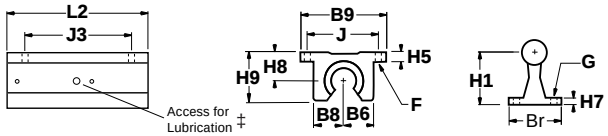
Type SSUPBO Open Type Super Smart Ball Bushing Pillow Block
Type SPB-OPN Open Type Ball Bushing Pillow Block



Type SRA LinearRace Shaft Support Rail Assembly



Type SSUTWN Open Type Super Smart Ball Bushing Twin Pillow Block
Type TWN-OPN Open Type Ball Bushing Twin Pillow Block



‡ Size .500 inch has oil lubricant fitting.
Sizes .625 and above have ¼-28 access for lubrication.

Type SPB-OPN and SSUPBO Pillow Blocks (Dimensions in Inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B8	B6	J	J1	F		Wt. lb
											Bolt	Hole	
SPB-8-OPN-XS	.50	1.50	1.12	.687	.25	2.00	.75	.69	1.69	1.00	#6	.16	.20
SSUPBO-12-XS	.75	1.88	1.56	.937	.31	2.75	1.00	.94	2.38	1.25	#8	.19	.51
SSUPBO-16-XS	1.00	2.63	2.00	1.187	.38	3.25	1.25	1.19	2.88	1.75	#10	.22	1.03
SSUPBO-20-XS	1.25	3.38	2.56	1.500	.43	4.00	1.63	1.50	3.50	2.00	#10	.22	2.15
SSUPBO-24-XS	1.50	3.75	2.94	1.750	.50	4.75	1.88	1.75	4.12	2.50	¼	.28	3.29

Housing Material: Aluminum Alloy Black Anodized

Type TWN-OPN and SSUTWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
TWN-8-OPN-XS	.50	3.5	2.5	.40
SSUTWNO-12-XS	.75	4.5	3.5	1.02
SSUTWNO-16-XS	1.00	6.0	4.5	2.06
SSUTWNO-20-XS	1.25	7.5	5.5	4.30
SSUTWNO-24-XS	1.50	9.0	6.5	6.88

Housing Material: Aluminum Alloy Black Anodized

Type SRA LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

Part Number	Nom. Dia.	H1	H7	Br	K	X	Y	G		Wt. lb/ft
								Bolt	Hole	
SRA-8-XS	.50	1.125	.19	1.50	1.00	4	2	#6	.17	1.26
SRA-12-XS	.75	1.500	.25	1.75	1.25	6	3	#10	.22	2.50
SRA-16-XS	1.00	1.750	.25	2.13	1.50	6	3	¼	.28	4.06
SRA-20-XS	1.25	2.125	.31	2.50	1.88	6	3	5⁄16	.34	6.30
SRA-24-XS	1.50	2.500	.38	3.00	2.25	8	4	5⁄16	.34	8.60

LinearRace Shaft Support Rail Material:
Aluminum Alloy Black Anodized

Maximum length of LinearRace Shaft Support Rail is 72 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guides** Application Engineering department.

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1CA-08-FAO	290	SPB-8-OPN-XS	145
1CA-12-FAO	1800	SSUPBO-12-XS	900
1CA-16-FAO	3000	SSUPBO-16-XS	1500
1CA-20-FAO	3730	SSUPBO-20-XS	1865
1CA-24-FAO	6160	SSUPBO-24-XS	3080

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1CA-08-HAO	290	TWN-8-OPN-XS	290
1CA-12-HAO	1800	SSUTWNO-12-XS	1800
1CA-16-HAO	3000	SSUTWNO-16-XS	3000
1CA-20-HAO	3730	SSUTWNO-20-XS	3730
1CA-24-HAO	6160	SSUTWNO-24-XS	6160

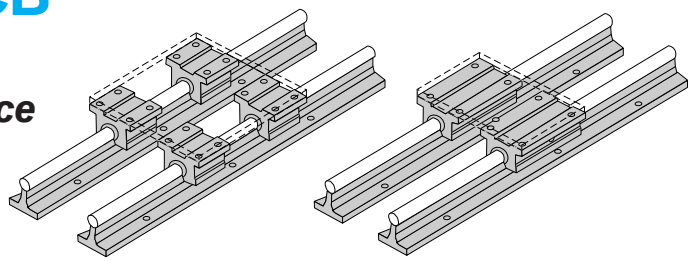
† Super Ball Bushing* bearings are used in .500 inch size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuous Support 1CB

Linear Guide #6

Fully Supported, Highest Performance
Industry Standard Dimensions



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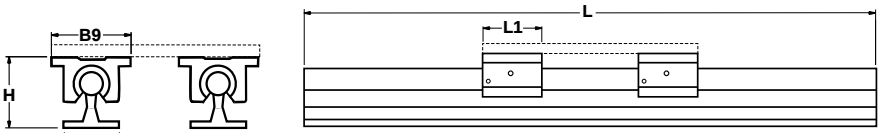
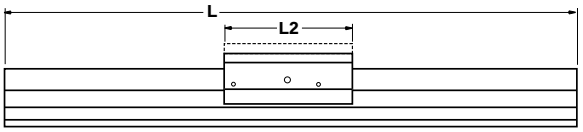
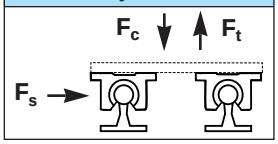
Double Continuously Supported Linear Guide with 4 Pillow Blocks



Double Continuously Supported System with 2 Twin Pillow Blocks



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.5C
F_S	C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Continuously Supported Linear Guide 1CB Double with 4 Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	L1	H	Br	B9	Pillow Block	Shaft Support Rail Assembly
1CB-08-FAO	.50	1.50	1.812	1.50	2.00	**SPB-8-OPN-XS**	**SRA-8-XS**
1CB-12-FAO	.75	1.88	2.437	1.75	2.75	**SSUPBO-12-XS**	**SRA-12-XS**
1CB-16-FAO	1.00	2.63	2.937	2.13	3.25	**SSUPBO-16-XS**	**SRA-16-XS**
1CB-20-FAO	1.25	3.38	3.625	2.50	4.00	**SSUPBO-20-XS**	**SRA-20-XS**
1CB-24-FAO	1.50	3.75	4.250	3.00	4.75	**SSUPBO-24-XS**	**SRA-24-XS**

Continuously Supported Linear Guide 1CB Double with 2 Twin Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	L2	H	Br	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1CB-08-HAO	.50	3.5	1.812	1.50	2.00	L-(3.5)	**TWN-8-OPN-XS**	**SRA-8-XS**
1CB-12-HAO	.75	4.5	2.437	1.75	2.75	L-(4.5)	**SSUTWNO-12-XS**	**SRA-12-XS**
1CB-16-HAO	1.00	6.0	2.937	2.13	3.25	L-(6.0)	**SSUTWNO-16-XS**	**SRA-16-XS**
1CB-20-HAO	1.25	7.5	3.625	2.50	4.00	L-(7.5)	**SSUTWNO-20-XS**	**SRA-20-XS**
1CB-24-HAO	1.50	9.0	4.250	3.00	4.75	L-(9.0)	**SSUTWNO-24-XS**	**SRA-24-XS**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuously Supported Linear Guide 1CB Benefits:

- Requires only one part number to specify the entire linear guide.
- Allows for custom table mounting.
- Used in continuously supported applications when rigidity is required.

Continuously Supported Linear Guide 1CB Components: †

- 4 Super Smart Ball Bushing* open type pillow blocks or 2 Super Smart Ball Bushing open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Support Rail Assemblies.

Specifying a Thomson Linear Guide:

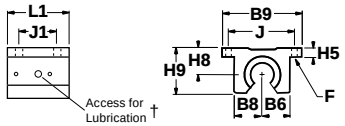
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

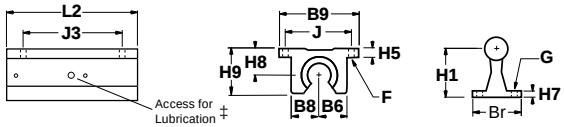
1CB-12-FAO L24

- Linear Guide Designation
- Nominal Diameter
- Type of Bearing Block
- Type of Support
- Linear Guide Length

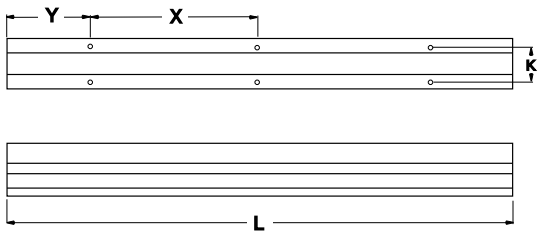
Type SSUPBO Open Type Super Smart Ball Bushing Pillow Block
Type SPB-OPN Open Type Ball Bushing Pillow Block



Type SSUTWN Open Type Super Smart Ball Bushing Twin Pillow Block
Type TWN-OPN Open Type Ball Bushing Twin Pillow Block



Type SRA LinearRace Shaft Support Rail Assembly



‡ Size .500 inch has oil lubricant fitting.
Sizes .625 and above have ¼-28 access for lubrication.

Type SPB-OPN and SSUPBO Pillow Blocks (Dimensions in Inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B8	B6	J	J1	F		Wt. lb
											Bolt	Hole	
SPB-8-OPN-XS	.50	1.50	1.12	.687	.25	2.00	.75	.69	1.69	1.00	#6	.16	.20
SSUPBO-12-XS	.75	1.88	1.56	.937	.31	2.75	1.00	.94	2.38	1.25	#8	.19	.51
SSUPBO-16-XS	1.00	2.63	2.00	1.187	.38	3.25	1.25	1.19	2.88	1.75	#10	.22	1.03
SSUPBO-20-XS	1.25	3.38	2.56	1.500	.43	4.00	1.63	1.50	3.50	2.00	#10	.22	2.15
SSUPBO-24-XS	1.50	3.75	2.94	1.750	.50	4.75	1.88	1.75	4.12	2.50	¼	.28	3.29

Housing Material: Aluminum Alloy Black Anodized

Type TWN-OPN and SSUTWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
TWN-8-OPN-XS	.50	3.5	2.5	.40
SSUTWNO-12-XS	.75	4.5	3.5	1.02
SSUTWNO-16-XS	1.00	6.0	4.5	2.06
SSUTWNO-20-XS	1.25	7.5	5.5	4.30
SSUTWNO-24-XS	1.50	9.0	6.5	6.88

Housing Material: Aluminum Alloy Black Anodized

Type SRA LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

Part Number	Nom. Dia.	H1	H7	Br	K	X	Y	G		Wt. lb/ft
								Bolt	Hole	
SRA-8-XS	.50	1.125	.19	1.50	1.00	4	2	#6	.17	1.26
SRA-12-XS	.75	1.500	.25	1.75	1.25	6	3	#10	.22	2.50
SRA-16-XS	1.00	1.750	.25	2.13	1.50	6	3	¼	.28	4.06
SRA-20-XS	1.25	2.125	.31	2.50	1.88	6	3	5⁄16	.34	6.30
SRA-24-XS	1.50	2.500	.38	3.00	2.25	8	4	5⁄16	.34	8.60

LinearRace Shaft Support Rail Material:
Aluminum Alloy Black Anodized

Maximum length of LinearRace Shaft Support Rail is 72 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guide** Application Engineering department.

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1CB-08-FAO	580	SPB-8-OPN-XS	145
1CB-12-FAO	3600	SSUPBO-12-XS	900
1CB-16-FAO	6000	SSUPBO-16-XS	1500
1CB-20-FAO	7460	SSUPBO-20-XS	1865
1CB-24-FAO	12320	SSUPBO-24-XS	3080

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1CB-08-HAO	580	TWN-8-OPN-XS	290
1CB-12-HAO	3600	SSUTWNO-12-XS	1800
1CB-16-HAO	6040	SSUTWNO-16-XS	3020
1CB-20-HAO	7460	SSUTWNO-20-XS	3730
1CB-24-HAO	12320	SSUTWNO-24-XS	6160

† Super Ball Bushing* bearings are used in .500 inch size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuous Support 1CC

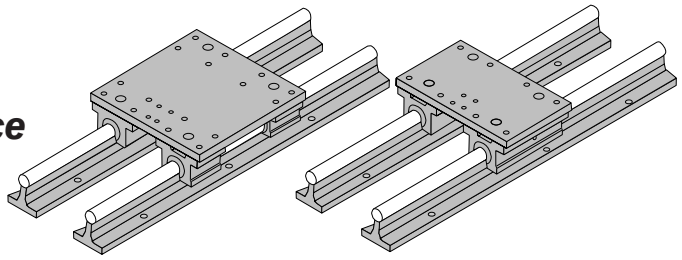
Linear Guide #6

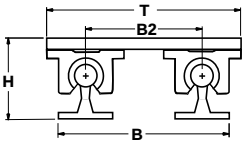
with Table Top

Fully Supported, Highest Performance

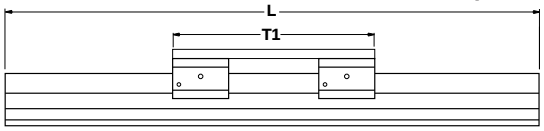
Industry Standard Dimensions

INCH

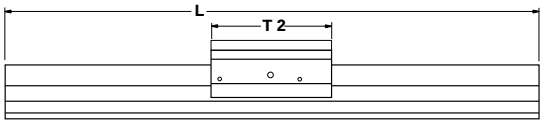




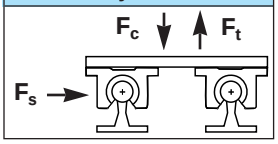
Double Continuously Supported Linear Guide with 4 Pillow Blocks and Size B Table Top



Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks and Size A Table Top



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.5C
F_S	C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Continuously Supported Linear Guide 1CC Double with 4 Pillow Blocks and Table Top (Size B) (Dimensions in inches)

Part Number	Nominal Diameter	T1	T	H	B	B2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1CC-08-FAB	.50	5.5	5.5	2.187	4.75	3.25	L-(5.5)	**SPB-8-OPN-XS**	**SRA-8-XS**
1CC-12-FAB	.75	7.5	7.5	2.937	6.25	4.50	L-(7.5)	**SSUPBO-12-XS**	**SRA-12-XS**
1CC-16-FAB	1.00	9.0	9.0	3.437	7.63	5.50	L-(9.0)	**SSUPBO-16-XS**	**SRA-16-XS**
1CC-20-FAB	1.25	11.0	11.0	4.375	9.25	6.75	L-(11.0)	**SSUPBO-20-XS**	**SRA-20-XS**
1CC-24-FAB	1.50	13.0	13.0	5.000	11.00	8.00	L-(13.0)	**SSUPBO-24-XS**	**SRA-24-XS**

Continuously Supported Linear Guide 1CC Double with 2 Twin Pillow Blocks and Table Top (Size A) (Dimensions in inches)

Part Number	Nom. Dia.	T2	T	H	B	B2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1CC-08-HAA	.50	3.5	5.5	2.187	4.75	3.25	L-(3.5)	**TWN-8-OPN-XS**	**SRA-8-XS**
1CC-12-HAA	.75	4.5	7.5	2.937	6.25	4.50	L-(4.5)	**SSUTWNO-12-XS**	**SRA-12-XS**
1CC-16-HAA	1.00	6.0	9.0	3.437	7.63	5.50	L-(6.0)	**SSUTWNO-16-XS**	**SRA-16-XS**
1CC-20-HAA	1.25	7.5	11.0	4.375	9.25	6.75	L-(7.5)	**SSUTWNO-20-XS**	**SRA-20-XS**
1CC-24-HAA	1.50	9.0	13.0	5.000	11.00	8.00	L-(9.0)	**SSUTWNO-24-XS**	**SRA-24-XS**

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1CC-08-FAB	580	SPB-8-OPN-XS	145
1CC-12-FAB	3600	SSUPBO-12-XS	900
1CC-16-FAB	6000	SSUPBO-16-XS	1500
1CC-20-FAB	7460	SSUPBO-20-XS	1865
1CC-24-FAB	12320	SSUPBO-24-XS	3080

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1CC-08-HAA	580	TWN-8-OPN-XS	290
1CC-12-HAA	3600	SSUTWNO-12-XS	1800
1CC-16-HAA	6040	SSUTWNO-16-XS	3020
1CC-20-HAA	7460	SSUTWNO-20-XS	3730
1CC-24-HAA	12320	SSUTWNO-24-XS	6160

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuously Supported Linear Guide 1CC Benefits:

- Requires only one part number to specify the entire linear guide.
- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- Includes Ball Screw Assembly attachment holes for ease of assembly and actuation
- Used in continuously supported applications when rigidity is required.

Continuously Supported Linear Guide 1CC Components:†

- 4 Super Smart Ball Bushing* open type pillow blocks or 2 Super Smart Ball Bushing open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Support Rail Assemblies.
- 1 mounting table top with work piece and Ball Screw Assembly attachment holes.

Specifying a Thomson Linear Guide:

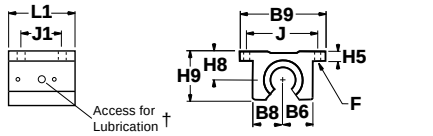
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

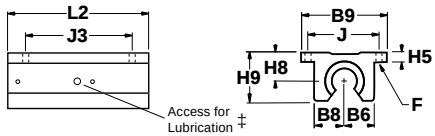
1CC-12-FAB L24

- 1CC — Linear Guide Designation
- 12 — Nominal Diameter
- F — Type of Bearing Block
- A — Type of Table Top
- B — Type of Support
- L24 — Linear Guide Length

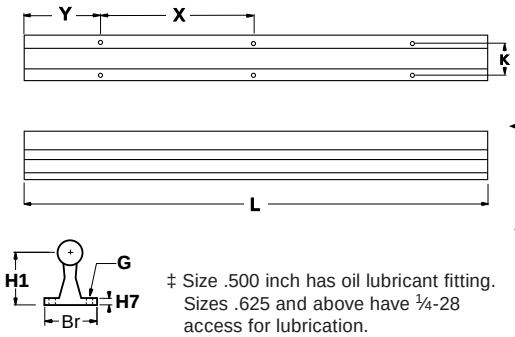
Type SSUPBO Open Type Super Smart Ball Bushing Pillow Block
Type SPB Open Type Ball Bushing Pillow Block



Type SSUTWNO Open Type Super Smart Ball Bushing Twin Pillow Block
Type TWN-OPN Open Type Ball Bushing Twin Pillow Block

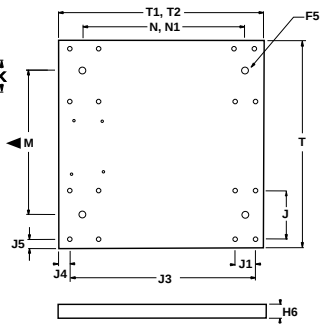


Type SRA LinearRace Shaft Support Rail Assembly



‡ Size .500 inch has oil lubricant fitting. Sizes .625 and above have ¼-28 access for lubrication.

Mounting Table Top



Type SPB-OPN and SSUPBO Pillow Blocks (Dimensions in Inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B8	B6	J	J1	F		Wt. lb
											Bolt	Hole	
SPB-8-OPN-XS	.50	1.50	1.12	.687	.25	2.00	.75	.69	1.69	1.00	#6	.16	.20
SSUPBO-12-XS	.75	1.88	1.56	.937	.31	2.75	1.00	.94	2.38	1.25	#8	.19	.51
SSUPBO-16-XS	1.00	2.63	2.00	1.187	.38	3.25	1.25	1.19	2.88	1.75	#10	.22	1.03
SSUPBO-20-XS	1.25	3.38	2.56	1.500	.43	4.00	1.63	1.50	3.50	2.00	#10	.22	2.15
SSUPBO-24-XS	1.50	3.75	2.94	1.750	.50	4.75	1.88	1.75	4.12	2.50	¼	.28	3.29

Housing Material: Aluminum Alloy Black Anodized

Type TWN-OPN and SSUTWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
TWN-8-OPN-XS	.50	3.5	2.5	.40
SSUTWNO-12-XS	.75	4.5	3.5	1.02
SSUTWNO-16-XS	1.00	6.0	4.5	2.06
SSUTWNO-20-XS	1.25	7.5	5.5	4.30
SSUTWNO-24-XS	1.50	9.0	6.5	6.88

Housing Material: Aluminum Alloy Black Anodized

Type SRA LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

Part Number	Nom. Dia.	H1	H7	Br	K	X	Y	G		Wt. lb/ft
								Bolt	Hole	
SRA-8-XS	.50	1.125	.19	1.50	1.00	4	2	#6	.17	1.26
SRA-12-XS	.75	1.500	.25	1.75	1.25	6	3	#10	.22	2.50
SRA-16-XS	1.00	1.750	.25	2.13	1.50	6	3	¼	.28	4.06
SRA-20-XS	1.25	2.125	.31	2.50	1.88	6	3	5⁄16	.34	6.30
SRA-24-XS	1.50	2.500	.38	3.00	2.25	8	4	5⁄16	.34	8.60

LinearRace Shaft Support Rail Material: Aluminum Alloy Black Anodized

Maximum length of LinearRace Shaft Support Rail is 72 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guide** Application Engineering department.

Mounting Table Top (Dimensions in inches)

Nominal Diameter	All Table Tops					Table Top Size **B**					Table Top Size **A**				
	T	M	J	H6	F5	T1	J1	J4	J5	N	T2	J3	J4	J5	N1
.50	5.5	3.25	1.69	.375	¼-20	5.5	1.00	.34	.28	4.5	3.5	2.5	.50	.31	2.5
.75	7.5	4.50	2.38	.500	5⁄16-18	7.5	1.25	.41	.31	6.0	4.5	3.5	.50	.31	3.0
1.00	9.0	5.50	2.88	.500	3⁄8-16	9.0	1.75	.53	.31	7.0	6.0	4.5	.75	.31	4.0
1.25	11.0	6.75	3.50	.750	½-13	11.0	2.00	.82	.38	8.5	7.5	5.5	1.00	.38	5.0
1.50	13.0	8.00	4.12	.750	½-13	13.0	2.50	.75	.44	10.0	9.0	6.5	1.25	.44	6.0

Material: Aluminum Alloy Black Anodized

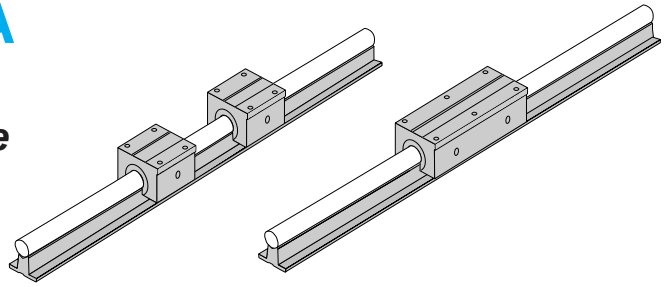
† Super Ball Bushing* bearings are used in .500 inch size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuous Support 1PA

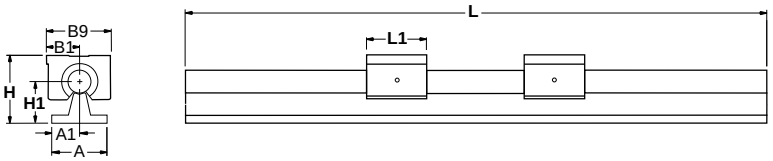
Linear Guide #6

Fully Supported, Highest Performance
Industry Standard Dimensions

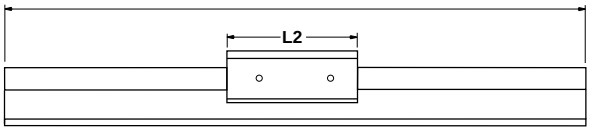


METRIC

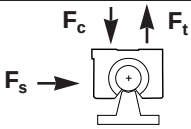
Single Continuously Supported Linear Guide with 2 Pillow Blocks



Single Continuously Supported Linear Guide with 1 Twin Pillow Block



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	C
F_t	0.5C	0.5C
F_s	C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Continuously Supported Linear Guide 1PA Single with 2 Pillow Blocks (Dimensions in mm)

Part Number	Nominal Diameter	L1	H	H1	A	A1	B1	B9	Pillow Block	Shaft Support Rail Assembly
1PA-M12-LWO	12	39	46	28	43	21,5	21,5	43	SPPBO-M12-XS	SRA-M12-XS
1PA-M16-LWO	16	43	52	30	48	24,0	26,5	53	SSEPBO-M16-XS	SRA-M16-XS
1PA-M20-LWO	20	54	63	38	56	28,0	30,0	60	SSEPBO-M20-XS	SRA-M20-XS
1PA-M25-LWO	25	67	72	42	60	30,0	39,0	78	SSEPBO-M25-XS	SRA-M25-XS
1PA-M30-LWO	30	79	88	53	74	37,0	43,5	87	SSEPBO-M30-XS	SRA-M30-XS
1PA-M40-LWO	40	91	105	60	78	39,0	54,0	108	SSEPBO-M40-XS	SRA-M40-XS

Continuously Supported Linear Guide 1PA Single with 1 Twin Pillow Block (Dimensions in mm)

Part Number	Nominal Diameter	L2	H	H1	A	A1	B1	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1PA-M12-MWO	12	76	46	28	43	21,5	21,5	43	L-(76)	SPTWNO-M12-XS	SRA-M12-XS
1PA-M16-MWO	16	84	52	30	48	24,0	26,5	53	L-(84)	SSETWNO-M16-XS	SRA-M16-XS
1PA-M20-MWO	20	104	63	38	56	28,0	30,0	60	L-(104)	SSETWNO-M20-XS	SRA-M20-XS
1PA-M25-MWO	25	130	72	42	60	30,0	39,0	78	L-(130)	SSETWNO-M25-XS	SRA-M25-XS
1PA-M30-MWO	30	152	88	53	74	37,0	43,5	87	L-(152)	SSETWNO-M30-XS	SRA-M30-XS
1PA-M40-MWO	40	176	105	60	78	39,0	54,0	108	L-(176)	SSETWNO-M40-XS	SRA-M40-XS

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuously Supported Linear Guide 1PA Benefits:

- Requires only one part number to specify the entire linear guide.
- Used as load support, transport and guidance solution.
- Used in continuously supported applications when rigidity is required.

Continuously Supported Linear Guide 1PA Components:†

- 2 Super Smart Ball Bushing* open type pillow blocks or 1 Super Smart Ball Bushing open type twin pillow block.
- 1 60 Case* LinearRace* shaft Support Rail Assembly.

Specifying this Thomson Linear Guide:

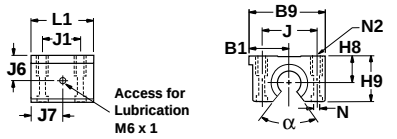
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

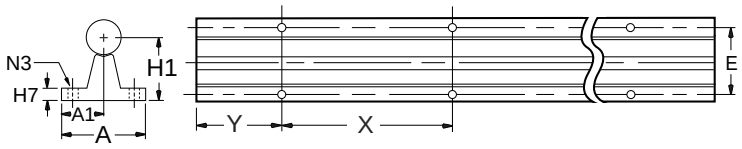
1PA-M12-LWO L600

- 1PA — Linear Guide Designation
- M12 — Nominal Diameter
- LWO — Type of Bearing Block
- L600 — Linear Guide Length
- Type of Support

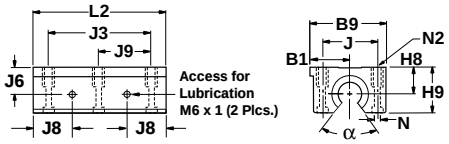
Type SSEPBO Open Type Super Smart Ball Bushing Pillow Block



Type SRA LinearRace Shaft Support Rail Assembly



Type SSETWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type SSEPBO Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J6	J7	J	J1	N Dia.	N2	α Deg	Mass kg
SPPBO-M12-XS	12	39	18	28	21,5	43	16,7	19,5	32	23	4,3	M5	66	0,11
SSEPBO-M16-XS	16	43	22	35	26,5	53	22,0	21,5	40	26	5,3	M6	66	0,17
SSEPBO-M20-XS	20	54	25	41	30,0	60	25,0	27,0	45	32	6,6	M8	60	0,30
SSEPBO-M25-XS	25	67	30	50	39,0	78	31,5	33,5	60	40	8,4	M10	60	0,57
SSEPBO-M30-XS	30	79	35	60	43,5	87	33,0	39,5	68	45	8,4	M10	60	0,87
SSEPBO-M40-XS	40	91	45	77	54,0	108	43,5	45,5	86	58	10,5	M12	60	1,62

Housing Material: Aluminum Alloy Grey Anodized

Type SSETWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SPTWNO-M12-XS	12	76	56	19,5	28	0,22
SSETWNO-M16-XS	16	84	64	21,5	32	0,34
SSETWNO-M20-XS	20	104	76	27,0	38	0,63
SSETWNO-M25-XS	25	130	94	33,6	47	1,18
SSETWNO-M30-XS	30	152	106	39,5	53	1,70
SSETWNO-M40-XS	40	176	124	45,5	62	3,18

Housing Material: Aluminum Alloy Grey Anodized

Type SRA LinearRace Shaft Support Rail Assembly (Dimensions in mm)

Part Number	Nom. Dia.	H1	H7	A	A1	E	X	Y	N3 Dia.	Mass kg/m
SRA-M12-XS	12	28	5	43	21,5	29	75	37,5	4,5	4,1
SRA-M16-XS	16	30	5	48	24,0	33	100	50	5,5	6,2
SRA-M20-XS	20	38	6	56	28,0	37	100	50	6,6	9,5
SRA-M25-XS	25	42	6	60	30,0	42	120	60	6,6	13,7
SRA-M30-XS	30	53	8	74	37,0	51	150	75	8,6	20,0
SRA-M40-XS	40	60	8	78	39,0	55	200	100	8,6	32,5

LinearRace Shaft Support Rail Material: Aluminum Alloy Grey Anodized

Maximum length of LinearRace Shaft Support Rail is 600 mm. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guides** application engineering department.

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1PA-M12-LWO	1500	SPPBO-M12-XS	750
1PA-M16-LWO	4400	SSEPBO-M16-XS	2200
1PA-M20-LWO	8000	SSEPBO-M20-XS	4000
1PA-M25-LWO	13400	SSEPBO-M25-XS	6700
1PA-M30-LWO	16600	SSEPBO-M30-XS	8300
1PA-M40-LWO	27400	SSEPBO-M40-XS	13700

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1PA-M12-MWO	1220	SPTWNO-M12-XS	1500
1PA-M16-MWO	4400	SSETWNO-M16-XS	4400
1PA-M20-MWO	8000	SSETWNO-M20-XS	8000
1PA-M25-MWO	13400	SSETWNO-M25-XS	13400
1PA-M30-MWO	16600	SSETWNO-M30-XS	16600
1PA-M40-MWO	27400	SSETWNO-M40-XS	27400

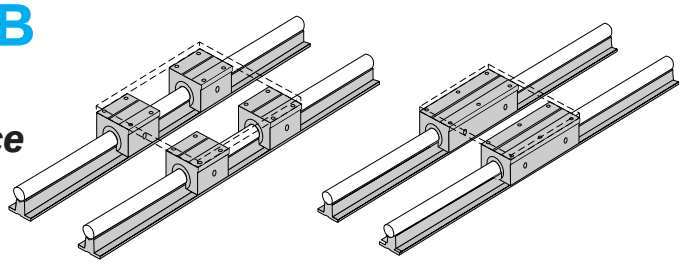
† Super Plus Ball Bushing* bearings are used in 12 mm size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuous Support 1PB

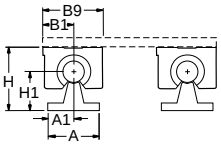
Linear Guide #6

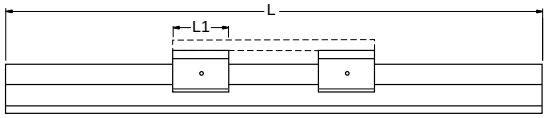
Fully Supported, Highest Performance
Industry Standard Dimensions



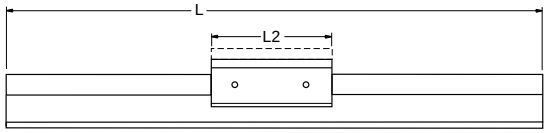
METRIC

Double Continuously Supported Linear Guide with 4 Pillow Blocks

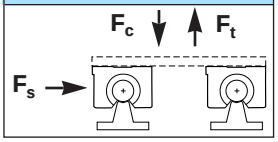




Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.5C
F_S	C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Continuously Supported Linear Guide 1PB Double with 4 Pillow Blocks (Dimensions in mm)

Part Number	Nominal Diameter	L1	H	H1	A	A1	B1	B9	Pillow Block	Shaft Support Rail Assembly
1PB-M12-LWO	12	39	46	28	43	21,5	21,5	43	SPPBO-M12-XS	SRA-M12-XS
1PB-M16-LWO	16	43	52	30	48	24,0	26,5	53	SSEPBO-M16-XS	SRA-M16-XS
1PB-M20-LWO	20	54	63	38	56	28,0	30,0	60	SSEPBO-M20-XS	SRA-M20-XS
1PB-M25-LWO	25	67	72	42	60	30,0	39,0	78	SSEPBO-M25-XS	SRA-M25-XS
1PB-M30-LWO	30	79	88	53	74	37,0	43,5	87	SSEPBO-M30-XS	SRA-M30-XS
1PB-M40-LWO	40	91	105	60	78	39,0	54,0	108	SSEPBO-M40-XS	SRA-M40-XS

Continuously Supported Linear Guide 1PB Double with 2 Twin Pillow Blocks (Dimensions in mm)

Part Number	Nominal Diameter	L2	H	H1	A	A1	B1	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1PB-M12-MWO	12	76	46	28	43	21,5	21,5	43	L-(76)	SPTWNO-M12-XS	SRA-M12-XS
1PB-M16-MWO	16	84	52	30	48	24,0	26,5	53	L-(84)	SSETWNO-M16-XS	SRA-M16-XS
1PB-M20-MWO	20	104	63	38	56	28,0	30,0	60	L-(104)	SSETWNO-M20-XS	SRA-M20-XS
1PB-M25-MWO	25	130	72	42	60	30,0	39,0	78	L-(130)	SSETWNO-M25-XS	SRA-M25-XS
1PB-M30-MWO	30	152	88	53	74	37,0	43,5	87	L-(152)	SSETWNO-M30-XS	SRA-M30-XS
1PB-M40-MWO	40	176	105	60	78	39,0	54,0	108	L-(176)	SSETWNO-M40-XS	SRA-M40-XS

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuously Supported Linear Guide 1PB Benefits:

- Requires only one part number to specify the entire linear guide.
- Allows for custom table mounting
- Used in continuously supported applications when rigidity is required.

Continuously Supported Linear Guide 1PB Components:†

- 4 Super Smart Ball Bushing* open type pillow blocks or 2 Super Smart Ball Bushing open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Support Rail Assemblies.

Specifying a Thomson Linear Guide:

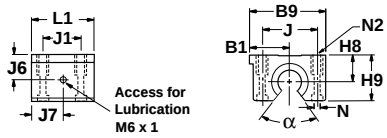
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

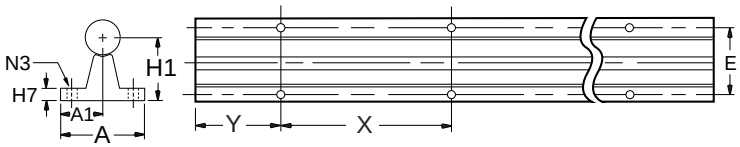
1PB-M12-LWO L600

- 1PB — Linear Guide Designation
- M12 — Nominal Diameter
- LWO — Type of Bearing Block
- L — Type of Support
- 600 — Linear Guide Length

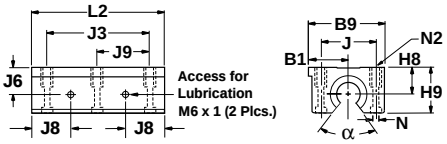
Type SSEPBO Open Type Super Smart Ball Bushing Pillow Block



Type SRA LinearRace Shaft Support Rail Assembly



Type SSETWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type SSEPBO Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J6	J7	J	J1	N Dia.	N2	α Deg	Mass kg
SPPBO-M12-XS	12	39	18	28	21,5	43	16,7	19,5	32	23	4,3	M5	66	0,11
SSEPBO-M16-XS	16	43	22	35	26,5	53	22,0	21,5	40	26	5,3	M6	66	0,17
SSEPBO-M20-XS	20	54	25	41	30,0	60	25,0	27,0	45	32	6,6	M8	60	0,30
SSEPBO-M25-XS	25	67	30	50	39,0	78	31,5	33,5	60	40	8,4	M10	60	0,57
SSEPBO-M30-XS	30	79	35	60	43,5	87	33,0	39,5	68	45	8,4	M10	60	0,87
SSEPBO-M40-XS	40	91	45	77	54,0	108	43,5	45,5	86	58	10,5	M12	60	1,62

Housing Material: Aluminum Alloy Grey Anodized

Type SSETWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SPTWNO-M12-XS	12	76	56	19,5	28	0,22
SSETWNO-M16-XS	16	84	64	21,5	32	0,34
SSETWNO-M20-XS	20	104	76	27,0	38	0,63
SSETWNO-M25-XS	25	130	94	33,6	47	1,18
SSETWNO-M30-XS	30	152	106	39,5	53	1,70
SSETWNO-M40-XS	40	176	124	45,5	62	3,18

Housing Material: Aluminum Alloy Grey Anodized

Type SRA LinearRace Shaft Support Rail Assembly (Dimensions in mm)

Part Number	Nom. Dia.	H1	H7	A	A1	E	X	Y	N3 Dia.	Mass kg/m
SRA-M12-XS	12	28	5	43	21,5	29	75	37,5	4,5	4,1
SRA-M16-XS	16	30	5	48	24,0	33	100	50	5,5	6,2
SRA-M20-XS	20	38	6	56	28,0	37	100	50	6,6	9,5
SRA-M25-XS	25	42	6	60	30,0	42	120	60	6,6	13,7
SRA-M30-XS	30	53	8	74	37,0	51	150	75	8,6	20,0
SRA-M40-XS	40	60	8	78	39,0	55	200	100	8,6	32,5

LinearRace Shaft Support Rail Material: Aluminum Alloy Grey Anodized

Maximum length of LinearRace Shaft Support Rail is 600 mm. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guide** application engineering department.

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1PB-M12-LWO	3000	SPPBO-M12-XS	750
1PB-M16-LWO	8800	SSEPBO-M16-XS	2200
1PB-M20-LWO	16000	SSEPBO-M20-XS	4000
1PB-M25-LWO	26800	SSEPBO-M25-XS	6700
1PB-M30-LWO	33200	SSEPBO-M30-XS	8300
1PB-M40-LWO	54800	SSEPBO-M40-XS	13700

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1PB-M12-MWO	2440	SPTWNO-M12-XS	1500
1PB-M16-MWO	8800	SSETWNO-M16-XS	4400
1PB-M20-MWO	16000	SSETWNO-M20-XS	8000
1PB-M25-MWO	26800	SSETWNO-M25-XS	13400
1PB-M30-MWO	33200	SSETWNO-M30-XS	16600
1PB-M40-MWO	54800	SSETWNO-M40-XS	27400

† Super Plus Ball Bushing* bearings are used in 12 mm size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-55-4-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuous Support 1PC

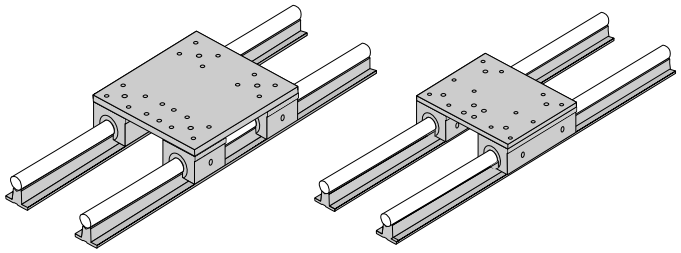
Linear Guide #6

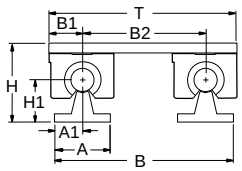
with Table Top

Fully Supported,

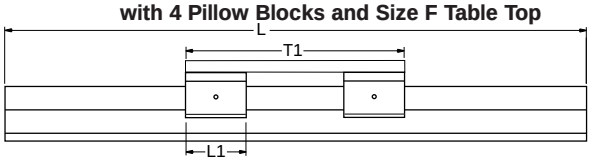
Industry Standard Dimensions

METRIC

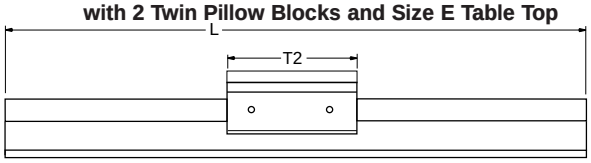




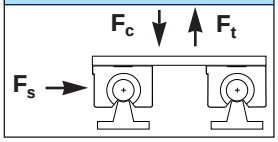
Double Continuously Supported Linear Guide with 4 Pillow Blocks and Size F Table Top



Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks and Size E Table Top



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.5C
F_s	C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Continuously Supported Linear Guide 1PC Double with 4 Pillow Blocks and Table Top (Size F) (Dimensions in mm)

Part Number	Nom. Dia.	L1	H	H1	A	A1	B	B1	B2	T	T1	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1PC-M12-LWF	12	39	56	28	43	21,5	98	22,5	55	100	100	L-(100)	SPPBO-M12-XS	SRA-M12-XS
1PC-M16-LWF	16	43	65	30	48	24,0	118	27,5	70	125	125	L-(125)	SSEPBO-M16-XS	SRA-M16-XS
1PC-M20-LWF	20	54	79	38	56	28,0	166	32,0	110	175	175	L-(175)	SSEPBO-M20-XS	SRA-M20-XS
1PC-M25-LWF	25	67	92	42	60	30,0	203	42,5	140	225	225	L-(225)	SSEPBO-M25-XS	SRA-M25-XS
1PC-M30-LWF	30	79	108	53	74	37,0	254	47,5	180	275	275	L-(275)	SSEPBO-M30-XS	SRA-M30-XS
1PC-M40-LWF	40	91	130	60	78	39,0	288	57,5	210	325	325	L-(325)	SSEPBO-M40-XS	SRA-M40-XS

Continuously Supported Linear Guide 1PC Double with 2 Twin Pillow Blocks and Table Top (Size E) (Dimensions in mm)

Part Number	Nom. Dia.	H	H1	A	A1	B	B1	B2	T	T2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1PC-M12-MWE	12	56	28	43	21,5	98	22,5	55	100	76	L-(76)	SPTWNO-M12-XS	SRA-M12-XS
1PC-M16-MWE	16	65	30	48	24,0	118	27,5	70	125	84	L-(84)	SSETWNO-M16-XS	SRA-M16-XS
1PC-M20-MWE	20	79	38	56	28,0	166	32,5	110	175	104	L-(104)	SSETWNO-M20-XS	SRA-M20-XS
1PC-M25-MWE	25	92	42	60	30,0	203	42,5	140	225	130	L-(130)	SSETWNO-M25-XS	SRA-M25-XS
1PC-M30-MWE	30	108	53	74	37,0	254	47,5	180	275	152	L-(152)	SSETWNO-M30-XS	SRA-M30-XS
1PC-M40-MWE	40	130	60	78	39,0	288	57,5	210	325	176	L-(176)	SSETWNO-M40-XS	SRA-M40-XS

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1PC-M12-LWF	3000	SPPBO-M12-XS	750
1PC-M16-LWF	8800	SSEPBO-M16-XS	2200
1PC-M20-LWF	16000	SSEPBO-M20-XS	4000
1PC-M25-LWF	26800	SSEPBO-M25-XS	6700
1PC-M30-LWF	33200	SSEPBO-M30-XS	8300
1PC-M40-LWF	54800	SSEPBO-M40-XS	13700

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1PC-M12-MWE	2440	SPTWNO-M12-XS	1500
1PC-M16-MWE	8800	SSETWNO-M16-XS	4400
1PC-M20-MWE	16000	SSETWNO-M20-XS	8000
1PC-M25-MWE	26800	SSETWNO-M25-XS	13400
1PC-M30-MWE	33200	SSETWNO-M30-XS	16600
1PC-M40-MWE	54800	SSETWNO-M40-XS	27400

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuously Supported Linear Guide 1PC Benefits:

- Requires only one part number to specify the entire linear guide.
- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- Includes Ball Screw Assembly attachment holes for ease of assembly and actuation.
- Used in continuously supported applications when rigidity is required.

Continuously Supported Linear Guide 1PC Components:†

- 4 Super Smart Ball Bushing* open type pillow blocks or 2 Super Smart Ball Bushing open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Support Rail Assemblies.
- 1 mounting table top with work piece and Ball Screw Assembly attachment holes.

Specifying a Thomson Linear Guide:

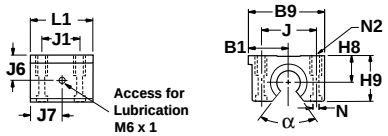
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

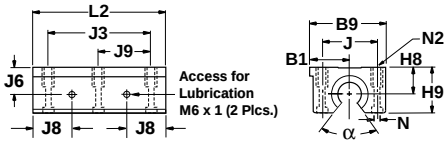
1PC-M12-LWF L600

- 1PC — Linear Guide Designation
- M12 — Nominal Diameter
- LWF — Type of Bearing Block
- L600 — Linear Guide Length
- T — Type of Table Top
- S — Type of Support

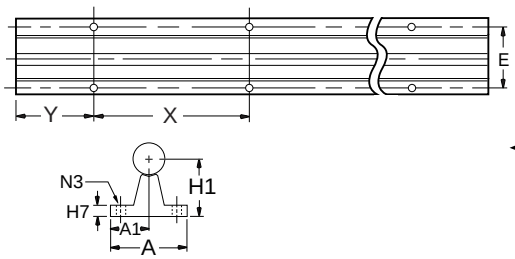
Type SSEPBO Open Type Super Smart Ball Bushing Pillow Block



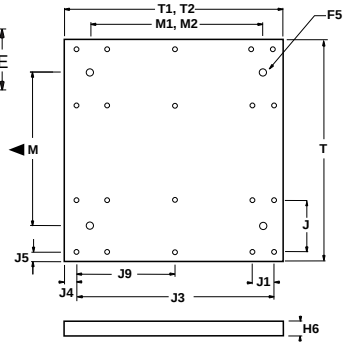
Type SSETWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type SRA LinearRace Shaft Support Rail Assembly



Mounting Table Top



Type SSEPBO Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J6	J7	J	J1	N Dia.	N2	α Deg	Mass kg
SPPBO-M12-XS	12	39	18	28	21,5	43	16,7	19,5	32	23	4,3	M5	66	0,11
SSEPBO-M16-XS	16	43	22	35	26,5	53	22,0	21,5	40	26	5,3	M6	66	0,17
SSEPBO-M20-XS	20	54	25	41	30,0	60	25,0	27,0	45	32	6,6	M8	60	0,30
SSEPBO-M25-XS	25	67	30	50	39,0	78	31,5	33,5	60	40	8,4	M10	60	0,57
SSEPBO-M30-XS	30	79	35	60	43,5	87	33,0	39,5	68	45	8,4	M10	60	0,87
SSEPBO-M40-XS	40	91	45	77	54,0	108	43,5	45,5	86	58	10,5	M12	60	1,62

Housing Material: Aluminum Alloy Grey Anodized

Type SSETWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SPTWNO-M12-XS	12	76	56	19,5	28	0,22
SSETWNO-M16-XS	16	84	64	21,5	32	0,34
SSETWNO-M20-XS	20	104	76	27,0	38	0,63
SSETWNO-M25-XS	25	130	94	33,6	47	1,18
SSETWNO-M30-XS	30	152	106	39,5	53	1,70
SSETWNO-M40-XS	40	176	124	45,5	62	3,18

Housing Material: Aluminum Alloy Grey Anodized

Type SRA LinearRace Shaft Support Rail Assembly (Dimensions in mm)

Part Number	Nom. Dia.	H1	H7	A	A1	E	X	Y	N3 Dia.	Mass kg/m
SRA-M12-XS	12	28	5	43	21,5	29	75	37,5	4,5	4,1
SRA-M16-XS	16	30	5	48	24,0	33	100	50	5,5	6,2
SRA-M20-XS	20	38	6	56	28,0	37	100	50	6,6	9,5
SRA-M25-XS	25	42	6	60	30,0	42	120	60	6,6	13,7
SRA-M30-XS	30	53	8	74	37,0	51	150	75	8,6	20,0
SRA-M40-XS	40	60	8	78	39,0	55	200	100	8,6	32,5

LinearRace Shaft Support Rail Material: Aluminum Alloy Grey Anodized

Maximum length of LinearRace Shaft Support Rail is 600 mm. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guide** application engineering department.

Mounting Table Top (Dimensions in mm)

System	All Table Tops					Table Top Size **F**					Table Top Size **E**					
	T	M	J	H6	F5[2]	T1	J1	J4	J5	M1	T2	J3	J4	J5	J9	M2
1PC-M12	100	55	32	10	M6	100	23	8,0	6,5	55	76	56	10	6,5	28	40
1PC-M16	125	70	40	13	M6	125	26	10,0	7,5	70	84	64	10	7,5	32	45
1PC-M20	175	110	45	16	M8	175	32	11,0	10,0	110	104	76	14	10,0	38	55
1PC-M25	225	140	60	20	M8	225	40	13,5	12,5	140	130	94	18	12,5	47	65
1PC-M30	275	180	68	20	M8	275	45	17,0	13,5	180	152	106	23	13,5	53	75
1PC-M40	325	210	86	25	M10	325	58	16,5	14,5	210	176	124	26	14,5	62	85

Material: Aluminum Alloy Grey Anodized

[2] Customer Mounting hole.

† Super Plus Ball Bushing* bearings are used in 12 mm size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Continuous Support Ball Guide Accessories

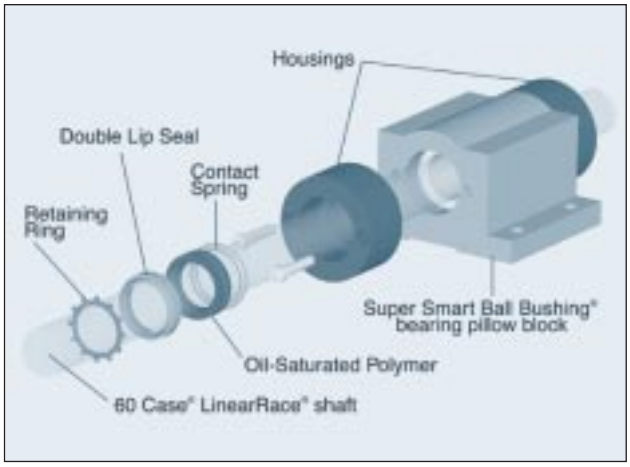
NEW

-LL Self-Lubricating Option‡

The new LL Option provides maintenance-free operation and enhanced bearing protection.

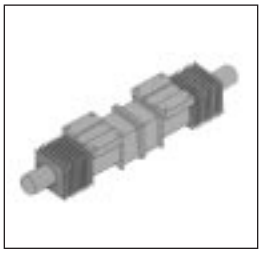
- Eliminates the need for expensive lubrication system in most applications
- Increases effective bearing life by increasing protection from contamination
- Environmentally friendly

NOTE: Carriage drag with the -LL option will be approximately 2x the seal drag.



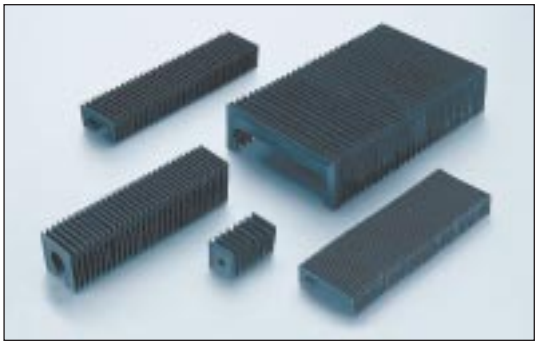
‡ See page 210 for technical data.

Bellows (Way Covers) Option



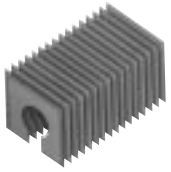
This illustration describes the proper usage for stationary and moveable bellows for System 1CA.

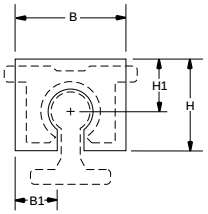
Stationary Protective Bellows are designed to fit between two fixed pillow blocks and underneath the profile of the carrriage mounting top.



BEL-1C†

For Systems 1CA, 1CB, 1CC, 2EA, 2EB



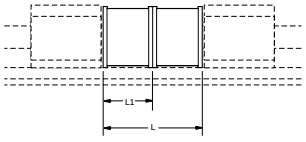


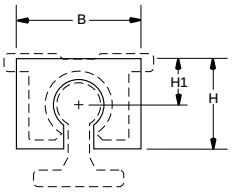
BEL-1C Moveable Protective Bellows

Part Number	Nom. Shaft Dia.	Dimension (in.) H	H1	B	CR
BEL-1C-08	1/2	1.375	.968	2.062	.088
BEL-1C-12	3/4	1.812	1.062	2.312	.120
BEL-1C-16	1	2.375	1.218	2.625	.088
BEL-1C-24	1 1/2	3.125	1.531	3.125	.088

SBEL-1C†

For Systems 1CA, 1CB, 1CC, 2EA, 2EB





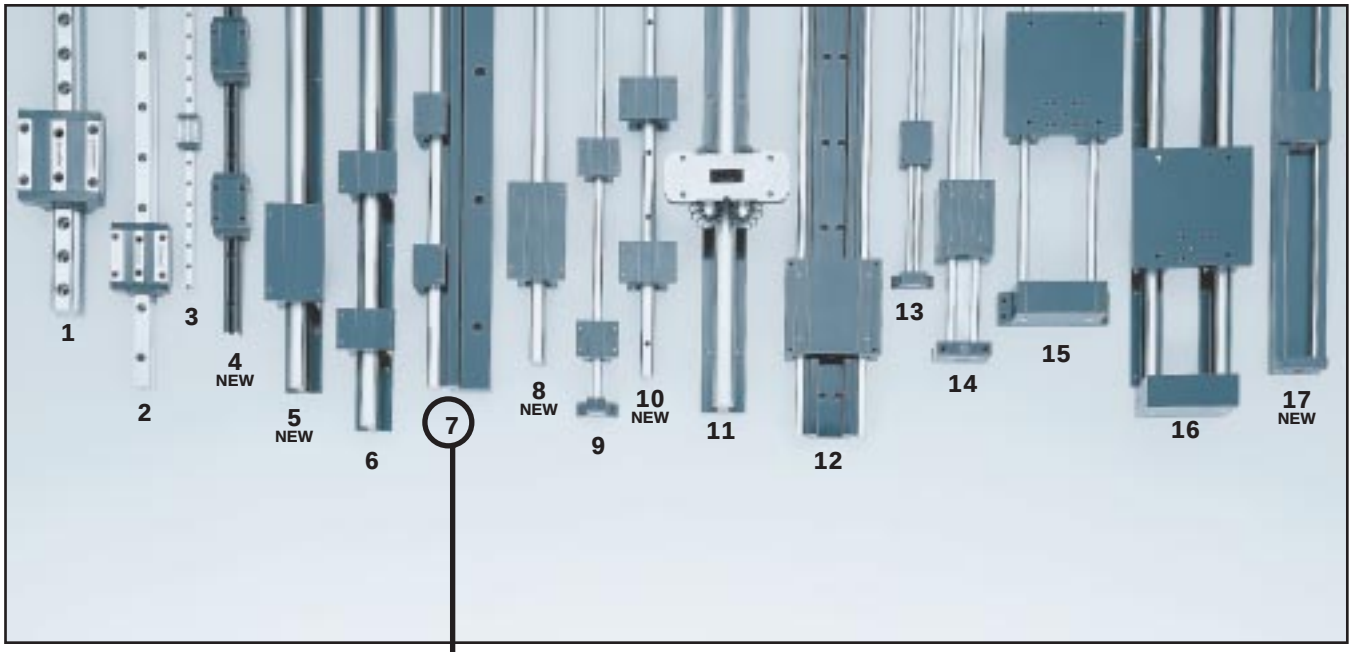
SBEL-1C Stationary Protective Bellows

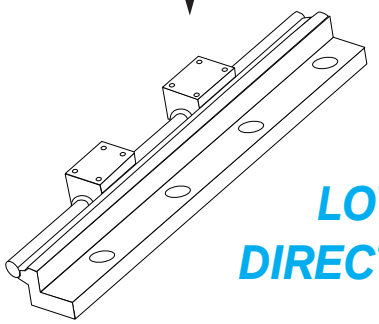
Part Number	Nom. Shaft Dia.	Dimension (in.) H	H1	B
SBEL-1C-08	1/2	1.125	0.656	2.062
SBEL-1C-12	3/4	1.625	0.843	2.281
SBEL-1C-16	1	2.250	1.031	2.625
SBEL-1C-24	1 1/2	3.062	1.531	3.125

† **Each moveable bellows comes with 1 section of bellows and 2 pairs of Velcro® Fasteners.**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Side Mounted Linear Ball Guides #7





LOW PROFILE, HIGH LOADS IN ALL DIRECTIONS, EASY TO INSTALL

Side Mounted Linear Ball Guides Offer:

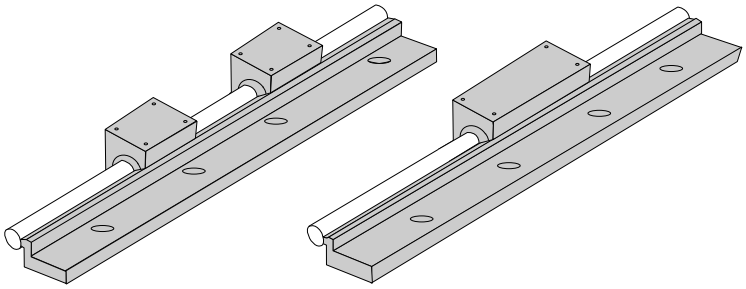
- Increased life within the same envelope. RoundRail* linear guides feature the new patented Super Smart Ball Bushing* bearings for up to 216X the life or 6X the load capacity of conventional bearings
- Cost savings: save time and money preparing your mounting surfaces before bolting down RoundRail linear guides
- Side mounted geometry for increased mounting flexibility
- Superior performance. Continuously supported for maximum (down- & side-) load applications without concerns for shaft deflection
- The RoundRail Advantage*. The inherent self-aligning-in-all-directions design of the Super Smart Ball Bushing bearing allows for ultra smooth travel when mounted to wider toleranced prepared surfaces
- Unlimited travel lengths without concerns for machined reference edges or butt joint alignment
- The Super Smart Ball Bushing bearing… the most technologically advanced and most robust linear bearing in the world
- Corrosion resistant versions for maximum performance in harsh environments.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

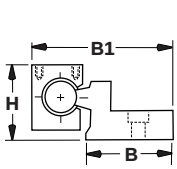
Side Mounted 1DA

Linear Guide #7

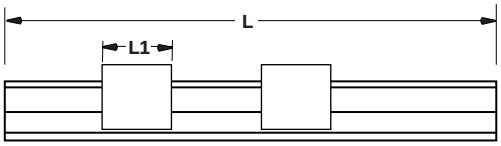
Side Mounted for Low Profile



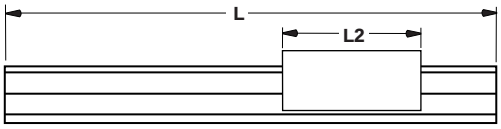
INCH



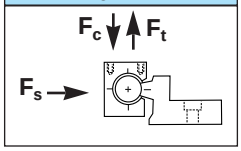
Single Side Mounted Linear Guide with 2 Pillow Blocks



Single Side Mounted Linear Guide with 1 Twin Pillow Block



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	0.5C
F_t	0.5C	0.5C
F_s	C	C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Side Mounted Linear Guide 1DA Single Side Mounted with 2 Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	H	B	B1	L1	Pillow Block	Shaft Support Rail Assembly
1DA-08-JOO	.50	1.562	1.44	2.61	1.50	**SPB-8-OPN-MOD**	**SSRA-8**
1DA-12-JOO	.75	2.062	1.94	3.55	1.88	**SSUPBO-12-MOD**	**SSRA-12**
1DA-16-JOO	1.00	2.562	2.44	4.49	2.63	**SSUPBO-16-MOD**	**SSRA-16**

Side Mounted Linear Guide 1DA Single Side Mounted with 1 Twin Pillow Block (Dimensions in inches)

Part Number	Nominal Diameter	H	B	B1	L2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1DA-08-KOO	.50	1.562	1.44	2.61	3.5	L-(3.5)	**TWN-8-OPN-MOD**	**SSRA-8**
1DA-12-KOO	.75	2.062	1.94	3.55	4.5	L-(4.5)	**SSUTWNO-12-MOD**	**SSRA-12**
1DA-16-KOO	1.00	2.562	2.44	4.49	6.0	L-(6.0)	**SSUTWNO-16-MOD**	**SSRA-16**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Side Mounted Linear Guide 1DA Benefits:

- Continuously supported design increases rigidity and provides for unlimited linear guide travel lengths.
- Versatile Side Support Rail Assembly geometry for optimizing mounting ability.
- Side mounted design provides an increase in pull-off load capacity.

Side Mounted Linear Guide 1DA Components: †

- 2 Super Smart Ball Bushing* modified open type pillow blocks or 1 Super Smart Ball Bushing modified open type twin pillow block.
- 1 60 Case* LinearRace* shaft Side Mounted Support Rail Assembly.

Specifying this Thomson Linear Guide:

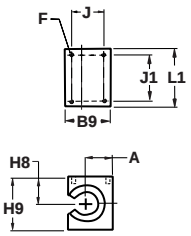
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

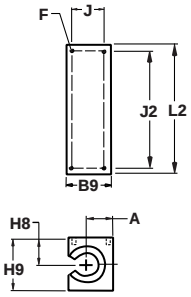
1DA-12-JOO L24

- Linear Guide Designation
- Nominal Diameter
- Type of Bearing Block
- Linear Guide Length
- Type of Support

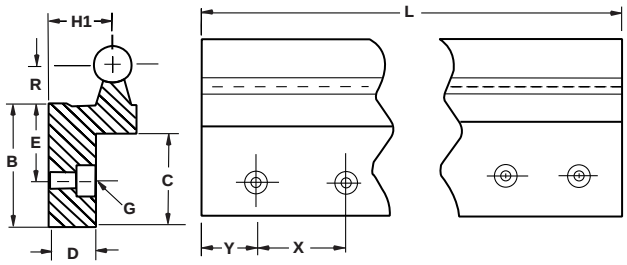
Type SSUPBO-MOD Open Type Pillow Block
Type SPB-OPN-MOD Open Type Pillow Block



Type SSUTWNO-MOD Pillow Block
Type TWN-OPN-MOD Pillow Block



Type SSRA Side Mounted LinearRace Shaft Support Rail Assembly



Type SPB-OPN-MOD and SSUPBO-MOD Pillow Block (Dimensions in inches)

Part Number	Nom. Dia.	H8	H9	A	B9	L1	J	J1	F	Wt. lb
SPB-08-OPN-MOD	.50	.687	1.44	.67	1.12	1.50	.812	1.250	#8-32	.18
SSUPBO-12-MOD	.75	.937	1.94	.92	1.56	1.88	1.187	1.562	#10-32	.45
SSUPBO-16-MOD	1.00	1.187	2.44	1.17	2.00	2.63	1.438	2.250	1/4-20	.98

Housing Material: Aluminum Alloy Black Anodized

Type TWN-OPN-MOD and SSUTWNO-MOD Pillow Blocks

Part Number	Nom. Dia.	L2	J2	Wt. lb
TWN-8-OPN-MOD	.50	3.5	3.00	.39
SSUTWNO-12-MOD	.75	4.5	4.00	1.00
SSUTWNO-16-MOD	1.00	6.0	5.25	2.11

Housing Material: Aluminum Alloy Black Anodized

Type SSRA Side Mounted LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

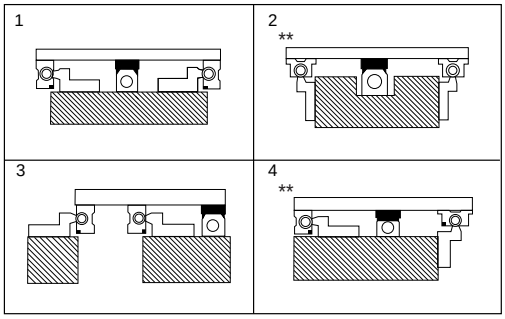
Part Number	Nom. Dia.	H1	B	R	E	D	C	X	Y(1)	G		Wt. lb/ft
										Bolt	Hole	
SSRA-08	.500	.875	1.44	.500	1.00	.49	1.06	4	2	1/4	.28	2.05
SSRA-12	.750	1.125	1.94	.688	1.31	.75	1.44	6	3	5/16	.34	4.00
SSRA-16	1.000	1.375	2.44	.875	1.63	.88	1.81	6	3	3/8	.41	6.25

(1) For standard lengths
LinearRace Shaft Support Rail Material: Aluminum Black Anodized

Maximum length of LinearRace Shaft Support Rail is 72 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guides** Application Engineering department.

Mounting Configurations

The following mounting configurations depict ideas for combining the Side Mounted Continuously Supported Linear Guides into your linear motion application. If you need further information, contact the Thomson Application Engineering Department.



**Pillow blocks shown are the standard SSUPBO or SPB-OPN style. To order System 1DA with standard pillow blocks, order the Side Mounted Shaft Rail Assembly (SSRA) and the SSUPBO or SPB-OPN separately.

Dynamic Load Rating (C) Matrix (4 million inches travel)

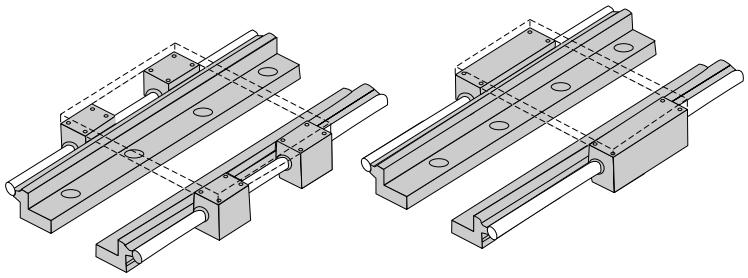
Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1DA-08-JOO	240	SPB-8-OPN-MOD	120
1DA-12-JOO	1600	SSUPBO-12-MOD	800
1DA-16-JOO	2700	SSUPBO-16-MOD	1350
1DA-08-KOO	240	TWN-8-OPN-MOD	240
1DA-12-KOO	1600	SSUTWNO-12-MOD	1600
1DA-16-KOO	2700	SSUTWNO-16-MOD	2700

† Super Ball Bushing* bearings are used in .500 inch size pillow blocks.

Side Mounted 1DB

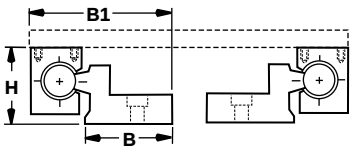
Linear Guide #7

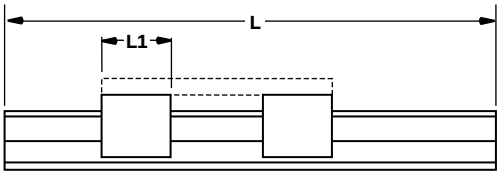
Side Mounted for Low Profile



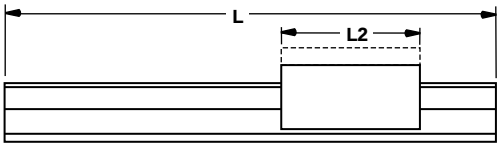
INCH

Double Side Mounted Linear Guide with 4 Pillow Blocks

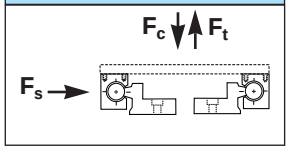




Double Side Mounted Linear Guide with 2 Twin Pillow Blocks



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	0.5C
F_t	0.5C	0.5C
F_S	C	C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Side Mounted Linear Guide 1DB Double Side Mounted with 4 Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	H	B	B1	L1	Pillow Block	Shaft Support Rail Assembly
1DB-08-JOO	.50	1.562	1.44	2.61	1.50	**SPB-8-OPN-MOD**	**SSRA-8**
1DB-12-JOO	.75	2.062	1.94	3.55	1.88	**SSUPBO-12-MOD**	**SSRA-12**
1DB-16-JOO	1.00	2.562	2.44	4.49	2.63	**SSUPBO-16-MOD**	**SSRA-16**

Side Mounted Linear Guide 1DB Double Side Mounted with 2 Twin Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	H	B	B1	L2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1DB-08-KOO	.50	1.562	1.44	2.61	3.5	L-(3.5)	**TWN-8-OPN-MOD**	**SSRA-8**
1DB-12-KOO	.75	2.062	1.94	3.55	4.5	L-(4.5)	**SSUTWNO-12-MOD**	**SSRA-12**
1DB-16-KOO	1.00	2.562	2.44	4.49	6.0	L-(6.0)	**SSUTWNO-16-MOD**	**SSRA-16**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Side Mounted Linear Guide 1DB Benefits:

- Requires only one part number to order the entire Linear Guide.
- Continuously supported design increases rigidity and provides for unlimited system travel lengths.
- Low profile, side mounted design allows for compact machines.
- Side mounted design provides an increase in pull off load capacity.
- Allows for custom table mounting.

Side Mounted Linear Guide 1DB Components: †

- 4 Super Smart Ball Bushing* modified open type pillow blocks or 2 Super Smart Ball Bushing modified open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Side Mounted Support Rail Assemblies.

Specifying a Thomson Linear Guide:

1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

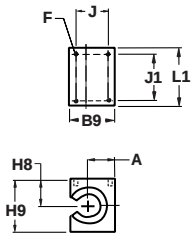
Part Numbering System

1DB-12-JOO L24

- 1DB — Linear Guide Designation
- 12 — Nominal Diameter
- JOO — Type of Bearing Block
- L24 — Linear Guide Length
- Type of Support

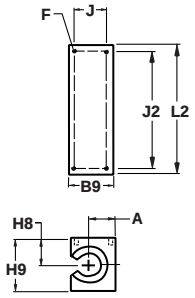
Type SSUPBO-MOD Open Type Pillow Block

Type SPB-OPN-MOD Open Type Pillow Block

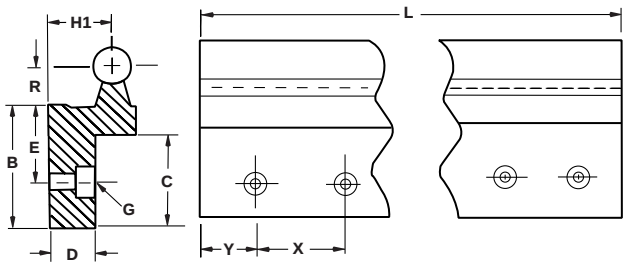


Type SSUTWNO-MOD Pillow Block

Type TWN-OPN-MOD Pillow Block



Type SSRA Side Mounted LinearRace Shaft Support Rail Assembly



Type SPB-OPN-MOD and SSUPBO-MOD Pillow Block (Dimensions in Inches)

Part Number	Nom. Dia.	H8	H9	A	B9	L1	J	J1	F	Wt. lb
SPB-8-OPN-MOD	.50	.687	1.44	.67	1.12	1.50	.812	1.250	#8-32	.18
SSUPBO-12-MOD	.75	.937	1.94	.92	1.56	1.88	1.187	1.562	#10-32	.45
SSUPBO-16-MOD	1.00	1.187	2.44	1.17	2.00	2.63	1.438	2.250	1/4-20	.98

Housing Material: Aluminum Alloy Black Anodized

Type TWN-OPN-MOD and SSUTWNO-MOD Pillow Blocks

Part Number	Nom. Dia.	L2	J2	Wt. lb
TWN-8-OPN-MOD	.50	3.5	3.00	.39
SSUTWNO-12-MOD	.75	4.5	4.00	1.00
SSUTWNO-16-MOD	1.00	6.0	5.25	2.11

Housing Material: Aluminum Alloy Black Anodized

Type SSRA Side Mounted LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

Part Number	Nom. Dia.	H1	B	R	E	D	C	X	Y(1)	G		Wt. lb/ft
										Bolt	Hole	
SSRA-08	.50	.875	1.44	.500	1.00	.49	1.06	4	2	1/4	.28	2.05
SSRA-12	.75	1.125	1.94	.688	1.31	.75	1.44	6	3	5/16	.34	4.00
SSRA-16	1.00	1.375	2.44	.875	1.63	.88	1.81	6	3	3/8	.41	6.25

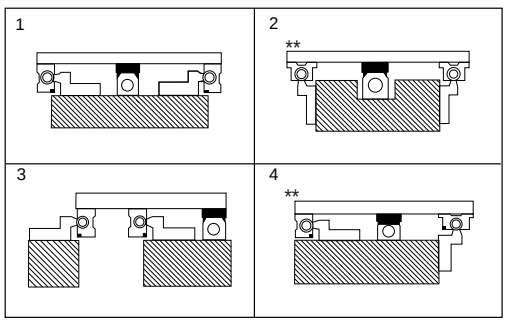
(1) For standard lengths

LinearRace Shaft Support Rail Material: Aluminum Black Anodized

Maximum length of LinearRace Shaft Support Rail is 72 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guides** Application Engineering department.

Mounting Configurations

The following mounting configurations depict ideas for combining the Side Mounted Continuously Supported linear guides into your linear motion application. If you need further information, contact the Thomson Application Engineering Department.



**Pillow blocks shown are the standard SSUPBO or SPB-OPN style. To order System 1DA with standard pillow blocks, order the Side Mounted Shaft Rail Assembly (SSRA) and the SSUPBO or SPB-OPN separately.

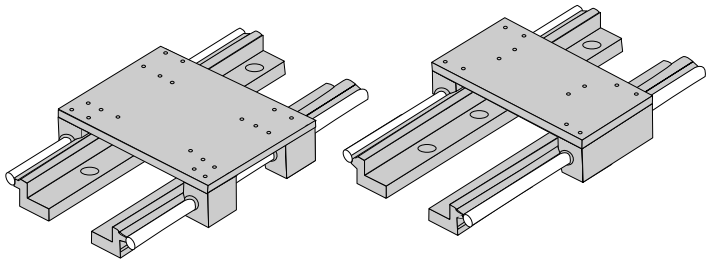
Dynamic Load Rating (C) Matrix (4 million inches travel)

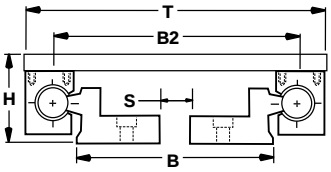
Linear Guide Assembly Part No.	Dynamic Load Rating, C (lbf) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lbf)
1DB-08-JOO	480	SPB-8-OPN-MOD	120
1DB-12-JOO	3200	SSUPBO-12-MOD	800
1DB-16-JOO	5400	SSUPBO-16-MOD	1350
1DB-08-KOO	480	TWN-8-OPN-MOD	240
1DB-12-KOO	3200	SSUTWNO-12-MOD	1600
1DB-16-KOO	5400	SSUTWNO-16-MOD	2700

† Super Ball Bushing* bearings are used in .500 inch size pillow blocks.

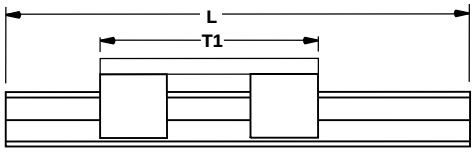
Side Mounted 1DC
Linear Guide #7
with Table Top
Side Mounted for Low Profile

INCH

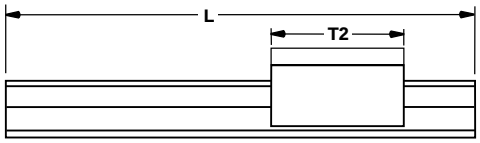




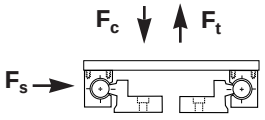
Double Side Mounted Linear Guide with 4 Pillow Blocks and Size D Table Top



Double Side Mounted Linear Guide with 2 Twin Pillow Blocks and Size C Table Top



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	0.5C
F_t	0.5C	0.5C
F_s	C	C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Side Mounted Linear Guide 1DC Double Side Mounted with 4 Pillow Blocks and Table Top (Size D) (Dimensions in inches)

Part Number	Nominal Diameter	H	T	T1	B	B2	S	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1DC-08-JOD	.50	2.062	7.25	5.50	4.63	5.63	1.75	L-(5.5)	**SPB-8-OPN-MOD**	**SSRA-8**
1DC-12-JOD	.75	2.562	9.75	7.50	6.13	7.50	2.25	L-(7.5)	**SSUTWNO-12-MOD**	**SSRA-12**
1DC-16-JOD	1.00	3.062	12.00	9.00	7.63	9.38	2.75	L-(9.0)	**SSUTWNO-16-MOD**	**SSRA-16**

Side Mounted Linear Guide 1DC Double Side Mounted with 2 Twin Pillow Blocks and Table Top (Size C) (Dimensions in inches)

Part Number	Nominal Diameter	H	T	T2	B	B2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1DC-08-KOC	.50	2.062	7.25	3.5	4.63	5.63	L-(3.5)	**TWN-8-OPN-MOD**	**SSRA-8**
1DC-12-KOC	.75	2.562	9.75	4.5	6.13	7.50	L-(4.5)	**SSUTWNO-12-MOD**	**SSRA-12**
1DC-16-KOC	1.00	3.062	12.00	6.0	7.63	9.38	L-(6.0)	**SSUTWNO-16-MOD**	**SSRA-16**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Side Mounted Linear Guide 1DC Benefits:

- Requires only one part number to order the entire linear guide.
- Continuously supported design increases rigidity and provides for unlimited system travel lengths.
- Low profile, side mounted design allows for compact machines.
- Side mounted design provides an increase in pull-off load capacity.
- Includes table top with standard tapped holes for quick and easy mounting of the work piece.

Side Mounted Linear Guide 1DC Components:

- 4 Super Smart Ball Bushing* modified open type pillow blocks or 2 Super Smart Ball Bushing modified open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Side Mounted Support Rail Assemblies.
- 1 mounting table top with work piece attachment holes.

Specifying a Thomson Linear Guide:

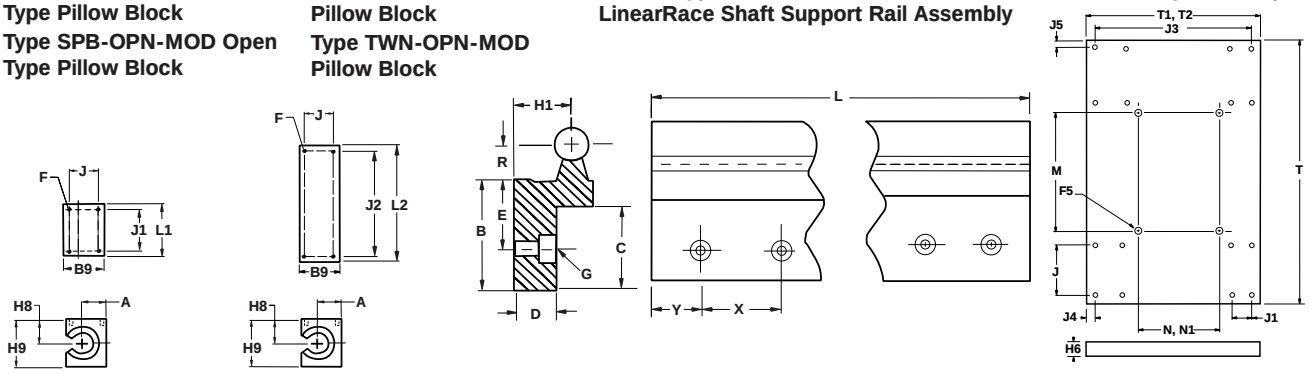
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

1DC-12-JOD L24

- 1DC — Linear Guide Designation
- 12 — Nominal Diameter
- JOD — Type of Bearing Block
- L24 — Linear Guide Length
- Type of Table Top
- Type of Support

Type SSUPBO-MOD Open Type Pillow Block
Type SPB-OPN-MOD Open Type Pillow Block
Type SSUTWNO-MOD Pillow Block
Type TWN-OPN-MOD Pillow Block
Type SSRA Side Mounted LinearRace Shaft Support Rail Assembly
Mounting Table Top



Type SPB-OPN-MOD and SSUPBO-MOD Pillow Block (Dimensions in Inches)

Part Number	Nom. Dia.	H8	H9	A	B9	L1	J	J1	F	Wt. lb
SPB-08-OPN-MOD	.50	.687	1.44	.67	1.12	1.50	.812	1.250	#8-32	.18
SSUPBO-12-MOD	.75	.937	1.94	.92	1.56	1.88	1.187	1.562	#10-32	.45
SSUPBO-16-MOD	1.00	1.187	2.44	1.17	2.00	2.63	1.438	2.250	1/4-20	.98

Type TWN-OPN-MOD and SSUTWNO-MOD Pillow Blocks

Part Number	Nom. Dia.	L2	J2	Wt. lb
TWN-8-OPN-MOD	.50	3.5	3.00	.39
SSUTWNO-12-MOD	.75	4.5	4.00	1.00
SSUTWNO-16--MOD	1.00	6.0	5.25	2.11

Type SSRA Side Mounted LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

Part Number	Nom. Dia.	H1	B	R	E	D	C	X	Y(1)	G		Wt. lb/ft
										Bolt	Hole	
SSRA-08	.500	.875	1.44	.500	1.00	.49	1.06	4	2	1/4	.28	2.05
SSRA-12	.750	1.125	1.94	.688	1.31	.75	1.44	6	3	5/16	.34	4.00
SSRA-16	1.000	1.375	2.44	.875	1.63	.88	1.81	6	3	3/8	.41	6.25

(1) For standard lengths
LinearRace Shaft Support Rail Material: Aluminum Black Anodized

Maximum length of LinearRace Shaft Support Rail is 72 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guide** Application Engineering department.

Mounting Table Top (Dimensions in inches)

Nominal Diameter	All Table Tops					Table Top Size **D**					Table Top Size **C**				
	T	M	J	H6	F5	T1	J1	J4	J5	N	T2	J3	J4	J5	N1(2)
.50	7.25	4.0	.81	.50	1/4-20	5.5	1.25	.25	.28	2.63	3.5	3.00	.25	.28	.75
.75	9.75	6.0	1.19	.50	5/16-18	7.5	1.56	.25	.38	3.50	4.5	4.00	.25	.38	1.00
1.00	12.00	6.0	1.44	.50	3/8-16	9.0	2.25	.34	.40	4.38	6.0	5.25	.38	.40	1.25

(2) Mounting hole spacing facilitates attachment of Dual Shaft Rail 2DA Linear Guide in an X-Y orientation.

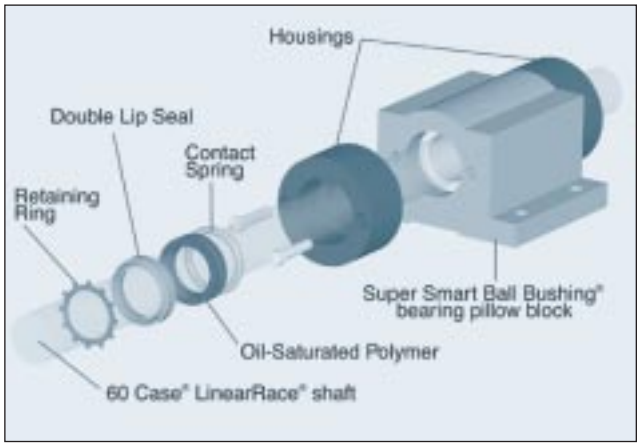
Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1DC-08-JOD	480	SPB-8-OPN-MOD	120
1DC-12-JOD	3200	SSUTWNO-12-MOD	800
1DC-16-JOD	5400	SSUTWNO-16-MOD	1350
1DC-08-KOC	480	TWN-8-OPN-MOD	240
1DC-12-KOC	3200	SSUTWNO-12-MOD	1600
1DC-16-KOC	5400	SSUTWNO-16-MOD	2700

† Super Ball Bushing* bearings are used in .500 inch size pillow blocks.

Side Mounted Linear Ball Guide Accessories

-LL Self-Lubricating Option‡



The new LL Option provides maintenance-free operation and enhanced bearing protection.

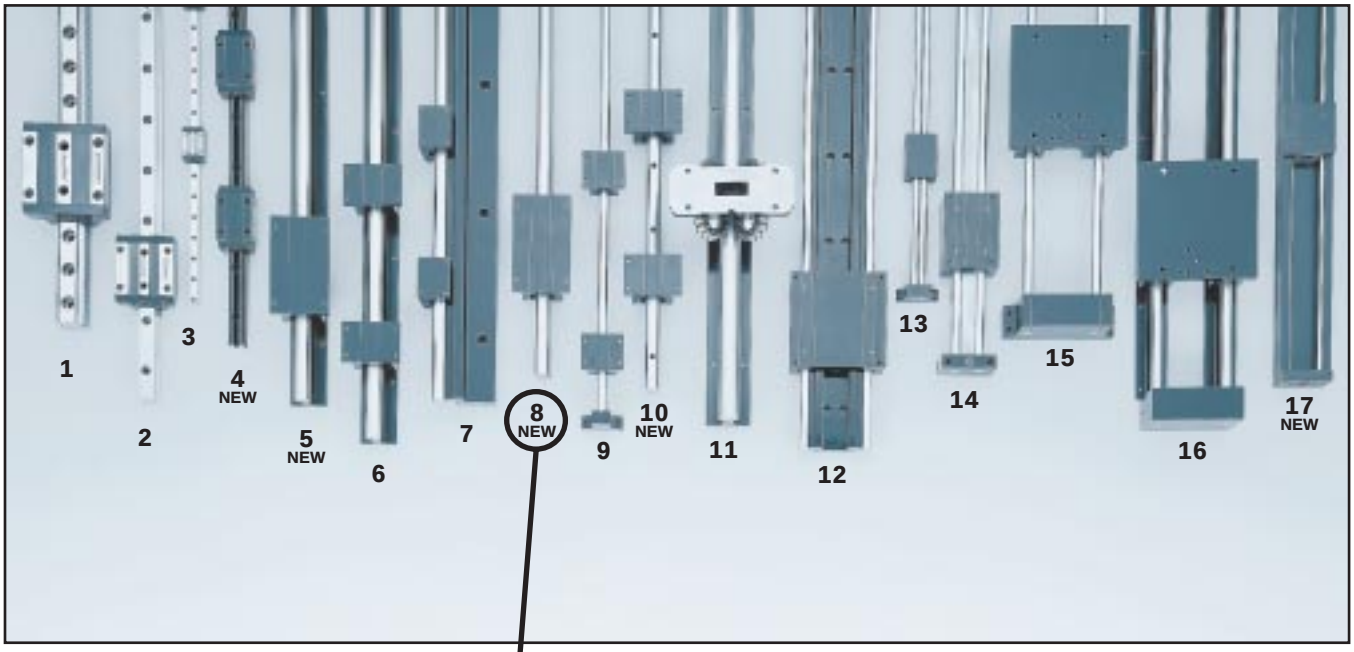
- Eliminates the need for expensive lubrication system in most applications
- Increases effective bearing life by increasing protection from contamination
- Environmentally friendly

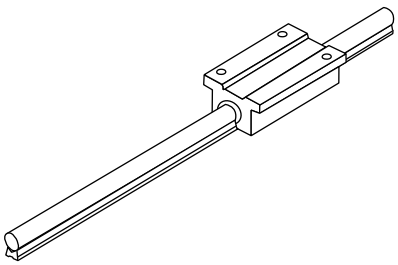
NOTE: Carriage drag with the -LL option will be approximately 2x the seal drag.

‡ See page 210 for technical data.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bolt From Bottom Linear Ball Guides #8





LOW PROFILE, SMOOTH OPERATION, BOLT FROM BOTTOM

Bolt From Bottom Linear Ball Guides Offer:

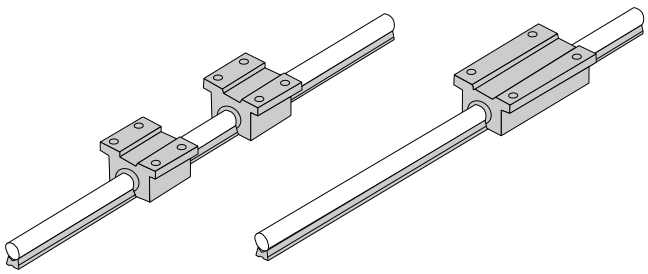
- Bolt from bottom design to ensure maximum sealing area between the Super Smart Ball Bushing* bearing and the 60 Case* LinearRace* shaft
- Increased life within the same envelope. RoundRail* linear guides feature the new patented Super Smart Ball Bushing bearings for up to 216X the life or 6X the load capacity of conventional bearings
- The RoundRail Advantage*. The inherent self-aligning-in-all-directions design of the Super Smart Ball Bushing bearing allows for ultra smooth travel when mounted to wider toleranced prepared surfaces
- Cost savings: save time and money preparing your mounting surfaces before bolting down RoundRail linear guides
- Superior performance. Continuously supported for maximum down load applications without concerns for shaft deflection
- Unlimited travel lengths without concerns for machined reference edges or butt joint alignment
- The Super Smart Ball Bushing bearing…the most technologically advanced and most robust linear bearing in the world
- Corrosion resistant versions for maximum performance in harsh environments.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bolt From Bottom 1GA

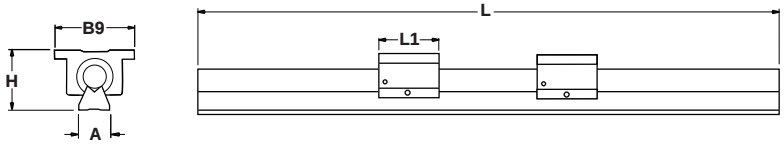
Linear Guide #8

Low Profile, Enhanced Sealing

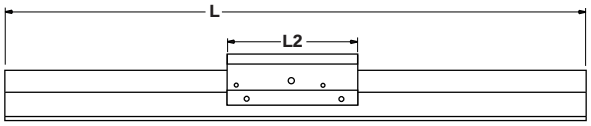


INCH

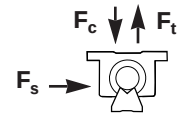
Single Continuously Supported Linear Guide with 2 Pillow Blocks



Single Continuously Supported Linear Guide with 1 Twin Pillow Block



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.5C
F_S	C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Bolt From Bottom Linear Guide 1GA Single Continuously Supported with 2 Pillow Blocks (Dimensions in inches)

Part Number	Nom. Dia.	L1	H	A	B9	Pillow Block	Shaft Support Rail Assembly
1GA-12-FBO	.75	1.88	1.687	.51	2.75	**SSUPBO-12-XS**	**ULSRA-12-XS**
1GA-16-FBO	1.00	2.63	2.187	.69	3.25	**SSUPBO-16-XS**	**ULSRA-16-XS**
1GA-20-FBO	1.25	3.38	2.687	.78	4.00	**SSUPBO-20-XS**	**ULSRA-20-XS**
1GA-24-FBO	1.50	3.75	3.125	.93	4.75	**SSUPBO-24-XS**	**ULSRA-24-XS**

Bolt From Bottom Linear Guide 1GA Single Continuously Supported with 1 Twin Pillow Block (Dimensions in inches)

Part Number	Nom. Dia.	L2	H	A	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1GA-12-HBO	.75	4.5	1.687	.51	2.75	L-(4.5)	**SSUTWNO-12-XS**	**ULSRA-12-XS**
1GA-16-HBO	1.00	6.0	2.287	.69	3.25	L-(6.0)	**SSUTWNO-16-XS**	**ULSRA-16-XS**
1GA-20-HBO	1.25	7.5	2.687	.78	4.00	L-(7.5)	**SSUTWNO-12-XS**	**ULSRA-20-XS**
1GA-24-HBO	1.50	9.0	3.125	.93	4.75	L-(9.0)	**SSUTWNO-24-XS**	**ULSRA-24-XS**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bolt From Bottom Linear Guide 1GA Benefits:

- Requires only one part number to specify the linear guide system.
- More mounting flexibility through bolt up from the bottom access.
- Used in continuously supported applications when rigidity is required.
- Lower overall linear guide height.

Bolt From Bottom Linear Guide 1GA Components:

- 2 Super Smart Ball Bushing* open type pillow blocks or 1 Super Smart Ball Bushing open twin pillow block.
- 1 60 Case* LinearRace* shaft Support Rail Assembly.

Specifying this Thomson Linear Guide:

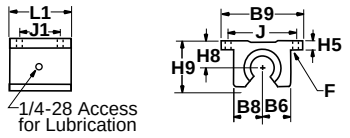
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length n inches, as a suffix to the part number.

Part Numbering System

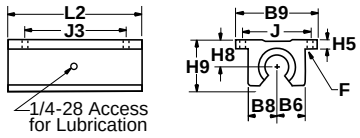
1GA-12-FBO L24

- 1GA — Linear Guide Designation
- 12 — Nominal Diameter
- FB — Type of Bearing Block
- O — Type of Support
- L24 — Linear Guide Length

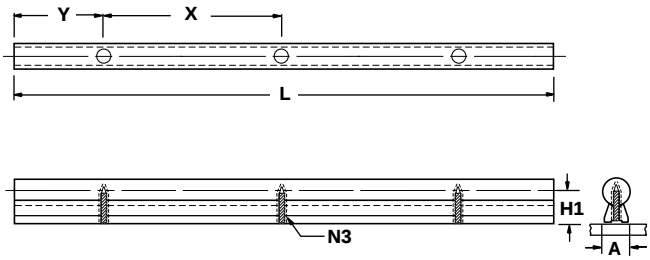
Type SSUPBO Open Type Super Smart Ball Bushing Pillow Block



Type SSUTWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type ULSRA Low Profile LinearRace Shaft Support Rail Assembly



Type SSUPBO Pillow Blocks (Dimensions in Inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B8	B6	J	J1	F		Wt. lb
											Bolt	Hole	
SSUPBO-12-XS	.75	1.88	1.56	.937	.31	2.75	1.00	.94	2.38	1.25	#8	.19	.51
SSUPBO-16-XS	1.00	2.63	2.00	1.187	.38	3.25	1.25	1.19	2.88	1.75	#10	.22	1.03
SSUPBO-20-XS	1.25	3.38	2.56	1.500	.43	4.00	1.63	1.50	3.50	2.00	#10	.22	2.15
SSUPBO-24-XS	1.50	3.75	2.94	1.750	.50	4.75	1.88	1.75	4.12	2.50	¼	.25	3.29

Housing Material: Aluminum Alloy Black Anodized

Type SSUTWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
SSUTWNO-12-XS	.75	4.5	3.5	1.02
SSUTWNO-16-XS	1.00	6.0	4.5	2.06
SSUTWNO-20-XS	1.25	7.5	5.5	4.30
SSUTWNO-24-XS	1.50	9.0	6.5	6.88

Housing Material: Aluminum Alloy Black Anodized

Type ULSRA Low Profile LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

Part Number	Nom. Dia.	H1	A	X	Y	N3	Wt. lb/ft
ULSRA-12-XS	.75	.750	.51	6	3	#10 - 32	2.09
ULSRA-16-XS	1.00	1.000	.69	6	3	¼ - 20	3.67
ULSRA-20-XS	1.25	1.187	.78	6	3	5/16 -18	5.86
ULSRA-24-XS	1.50	1.375	.93	8	4	⅜ -16	7.68

LinearRace Shaft Support Rail Material: Black Oxided Steel

Maximum length of LinearRace Shaft Support Rail is 144 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guides** Application Engineering department.

Dynamic Load Rating (C) Matrix (4 million inches travel)

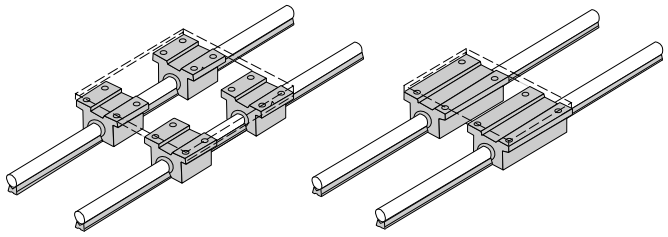
Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1GA-12-FBO	1800	SSUPBO-12-XS	900
1GA-16-FBO	3000	SSUPBO-16-XS	1500
1GA-20-FBO	3730	SSUPBO-20-XS	1865
1GA-24-FBO	6160	SSUPBO-24-XS	3080
1GA-12-HBO	1800	SSUTWNO-12-XS	1800
1GA-16-HBO	3020	SSUTWNO-16-XS	3020
1GA-20-HBO	3730	SSUTWNO-12-XS	3730
1GA-24-HBO	6160	SSUTWNO-24-XS	6160

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bolt From Bottom 1GB

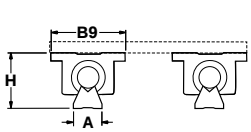
Linear Guide #8

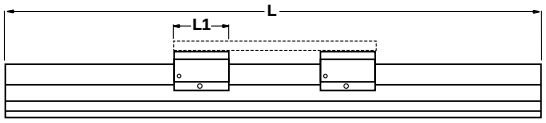
Low Profile, Enhanced Sealing



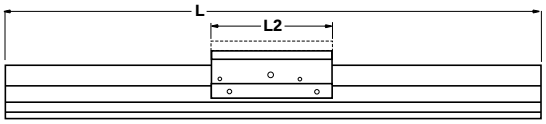
INCH

Double Continuously Supported Linear Guide with 4 Pillow Blocks

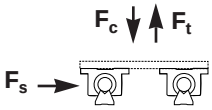




Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	C
F_t	0.5C	0.5C
F_s	C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Bolt From Bottom Linear Guide 1GB Double Continuously Supported with 4 Pillow Blocks (Dimensions in inches)

Part Number	Nom. Dia.	L1	H	A	B9	Pillow Block	Shaft Support Rail Assembly
1GB-12-FBO	.75	1.88	1.687	.51	2.75	**SSUPBO-12-XS**	**ULSRA-12-XS**
1GB-16-FBO	1.00	2.63	2.187	.69	3.25	**SSUPBO-16-XS**	**ULSRA-16-XS**
1GB-20-FBO	1.25	3.38	2.687	.78	4.00	**SSUPBO-20-XS**	**ULSRA-20-XS**
1GB-24-FBO	1.50	3.75	3.125	.93	4.75	**SSUPBO-24-XS**	**ULSRA-24-XS**

Bolt From Bottom Linear Guide 1GB Double Continuously Supported with 2 Twin Pillow Blocks (Dimensions in inches)

Part Number	Nom. Dia.	L2	H	A	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1GB-12-HBO	.75	4.5	1.687	.51	2.75	L-(4.5)	**SSUTWNO-12-XS**	**ULSRA-12-XS**
1GB-16-HBO	1.00	6.0	2.287	.69	3.25	L-(6.0)	**SSUTWNO-16-XS**	**ULSRA-16-XS**
1GB-20-HBO	1.25	7.5	2.687	.78	4.00	L-(7.5)	**SSUTWNO-20-XS**	**ULSRA-20-XS**
1GB-24-HBO	1.50	9.0	3.125	.93	4.75	L-(9.0)	**SSUTWNO-24-XS**	**ULSRA-24-XS**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bolt From Bottom Linear Guide 1GB Benefits:

- Requires only one part number to specify the entire linear guide.
- More mounting flexibility through bolt up from the bottom access.
- Used in continuously supported applications when rigidity is required.
- Lower overall linear guide height.

Bolt From Bottom Linear Guide 1GB Components:

- 4 Super Smart Ball Bushing* bearing open type pillow blocks or 2 Super Smart Ball Bushing open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Support Rail Assemblies.

Specifying a Thomson Linear Guide:

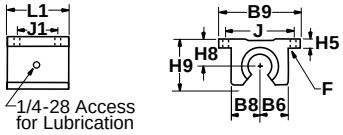
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

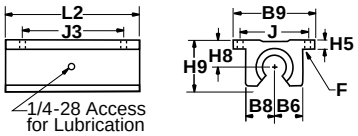
1GB-12-FBO L24

- 1GB — Linear Guide Designation
- 12 — Nominal Diameter
- FB — Type of Bearing Block
- O — Type of Support
- L24 — Linear Guide Length

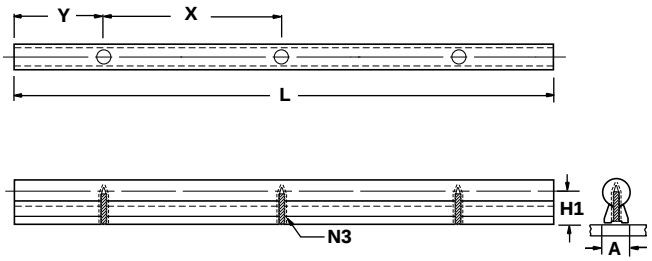
Type SSUPBO Open Type Super Smart Ball Bushing Pillow Block



Type SSUTWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type ULSRA Low Profile LinearRace Shaft Support Rail Assembly



Type SSUPBO Pillow Blocks (Dimensions in Inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B8	B6	J	J1	F		Wt. lb
											Bolt	Hole	
SSUPBO-12-XS	.75	1.88	1.56	.937	.31	2.75	1.00	.94	2.38	1.25	#8	.19	.51
SSUPBO-16-XS	1.00	2.63	2.00	1.187	.38	3.25	1.25	1.19	2.88	1.75	#10	.22	1.03
SSUPBO-20-XS	1.25	3.38	2.56	1.500	.43	4.00	1.63	1.50	3.50	2.00	#10	.23	2.15
SSUPBO-24-XS	1.50	3.75	2.94	1.750	.50	4.75	1.88	1.75	4.12	2.50	¼	.25	3.20

Housing Material: Aluminum Alloy Black Anodized

Type SSUTWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
SSUTWNO-12-XS	.75	4.5	3.5	1.02
SSUTWNO-16-XS	1.00	6.0	4.5	2.06
SSUTWNO-20-XS	1.25	7.5	5.5	4.30
SSUTWNO-24-XS	1.50	9.0	6.5	6.88

Housing Material: Aluminum Alloy Black Anodized

Type ULSRA Low Profile LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

Part Number	Nom. Dia.	H1	A	X	Y	N3	Wt. lb/ft
ULSRA-12-XS	.75	.750	.51	6	3	#10 - 32	2.09
ULSRA-16-XS	1.00	1.000	.69	6	3	¼ - 20	3.67
ULSRA-20-XS	1.25	1.187	.78	6	3	5/16 -18	5.86
ULSRA-24-XS	1.50	1.375	.93	8	4	⅜ -16	7.68

LinearRace Shaft Support Rail Material: Black Oxidized Steel

Maximum length of LinearRace Shaft Support Rail is 144 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guide** Application Engineering department.

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lbf) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lbf)
1GB-12-FBO	3600	SSUPBO-12-XS	900
1GB-16-FBO	6000	SSUPBO-16-XS	1500
1GB-20-FBO	7460	SSUPBO-20-XS	1865
1GB-24-FBO	12320	SSUPBO-24-XS	3080
1GB-12-HBO	3600	SSUTWNO-12-XS	1800
1GB-16-HBO	6040	SSUTWNO-16-XS	3020
1GB-20-HBO	7460	SSUTWNO-12-XS	3730
1GB-24-HBO	12320	SSUTWNO-24-XS	6160

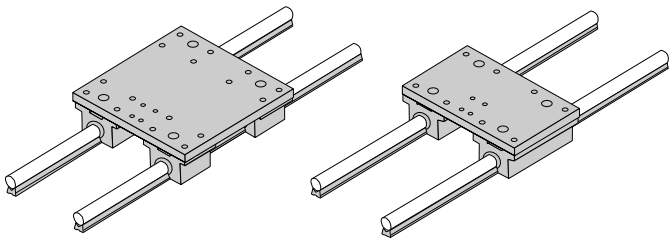
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bolt From Bottom 1GC

Linear Guide #8

with Table Top

Low Profile, Enhanced Sealing



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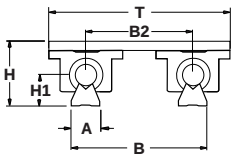
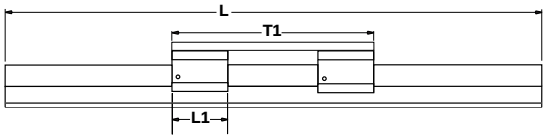
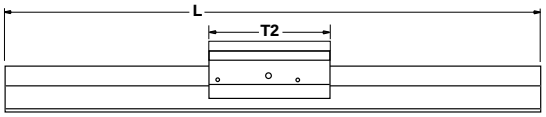


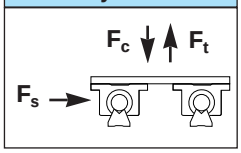
Double Continuously Supported Linear Guide with 4 Pillow Blocks and Size B Table Top



Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks and Size A Table Top



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.5C
F_S	C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Bolt From Bottom Linear Guide 1GC Double Continuously Supported with 4 Pillow Blocks and Table Top (Size B) (Dimensions in inches)

Part Number	Nom. Dia.	A	T1	T	H	H1	B	B2	L1	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1GC-12-FBB	.75	.51	7.5	7.5	2.187	.750	5.01	4.50	1.88	L-(7.5)	**SSUPBO-12-XS**	**ULSRA-12-XS**
1GC-16-FBB	1.00	.69	9.0	9.0	2.687	1.000	6.19	5.50	2.63	L-(9.0)	**SSUPBO-16-XS**	**ULSRA-16-XS**
1GC-20-FBB	1.25	.78	11.0	11.0	3.437	1.187	7.53	6.75	3.38	L-(11.0)	**SSUPBO-20-XS**	**ULSRA-20-XS**
1GC-24-FBB	1.50	.93	13.0	13.0	3.875	1.375	8.93	8.00	3.75	L-(13.0)	**SSUPBO-24-XS**	**ULSRA-24-XS**

Bolt From Bottom Linear Guide 1FC Double Continuously Supported with 2 Twin Pillow Blocks and Table Top (Size A) (Dimensions in inches)

Part Number	Nom. Dia.	A	T2	T	H	H1	B	B2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1GC-12-HBA	.75	.51	4.5	7.5	2.187	.750	5.01	4.50	L-(4.5)	**SSUTWNO-12-XS**	**ULSRA-12-XS**
1GC-16-HBA	1.00	.69	6.0	9.0	2.687	1.000	6.19	5.50	L-(6.0)	**SSUTWNO-16-XS**	**ULSRA-16-XS**
1GC-20-HBA	1.25	.78	7.5	11.0	3.437	1.187	7.53	6.75	L-(7.5)	**SSUTWNO-20-XS**	**ULSRA-20-XS**
1GC-24-HBA	1.50	.93	9.0	13.0	3.875	1.375	8.93	8.00	L-(9.0)	**SSUTWNO-24-XS**	**ULSRA-24-XS**

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1GC-12-FBB	3600	SSUPBO-12-XS	900
1GC-16-FBB	6000	SSUPBO-16-XS	1500
1GC-20-FBB	7460	SSUPBO-20-XS	1865
1GC-24-FBB	12320	SSUPBO-24-XS	3080
1GC-12-HBA	3600	SSUTWNO-12-XS	1800
1GC-16-HBA	6040	SSUTWNO-16-XS	3020
1GC-20-HBA	7460	SSUTWNO-12-XS	3730
1GC-24-HBA	12320	SSUTWNO-24-XS	6160

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bolt From Bottom Linear Guide 1GC Benefits:

- Requires only one part number to specify the entire linear guide.
- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- More mounting flexibility through bolt up from the bottom access.
- Used in continuously supported applications when rigidity is required.
- Lower overall linear guide height.

Bolt From Bottom Linear Guide 1GC Components:

- 4 Super Smart Ball Bushing* open type pillow blocks or 2 Super Smart Ball Bushing open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Support Rail Assemblies.
- 1 mounting table top with work piece attachment holes.

Specifying a Thomson Linear Guide:

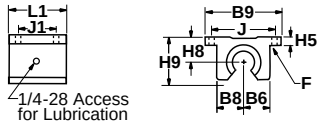
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

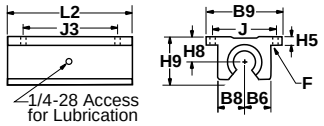
1GC-12-FBB L24

- 1GC — Linear Guide Designation
- 12 — Nominal Diameter
- F — Type of Bearing Block
- BB — Type of Support
- L24 — Linear Guide Length
- Type of Table Top

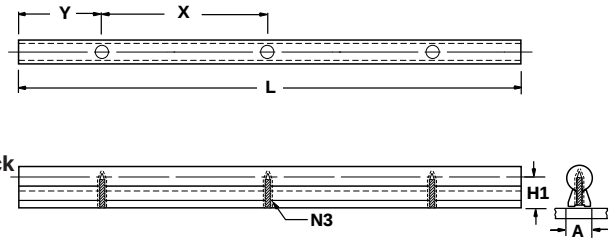
Type SSUPBO Open Type Ball Super Smart Bushing Pillow Block



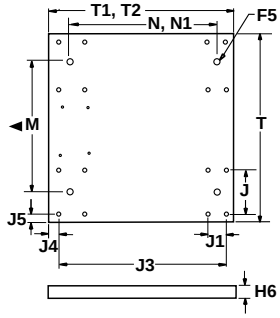
Type SSUTWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type ULSRA Low Profile LinearRace Shaft Support Rail Assembly



Mounting Table Top



Type SSUPBO Pillow Blocks (Dimensions in Inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B8	B6	J	J1	F Bolt	F Hole	Wt. lb
SSUPBO-12-XS	.75	1.88	1.56	.937	.31	2.75	1.00	.94	2.38	1.25	#8	.19	.51
SSUPBO-16-XS	1.00	2.63	2.00	1.187	.38	3.25	1.25	1.19	2.88	1.75	#10	.22	1.03
SSUPBO-20-XS	1.25	3.38	2.56	1.500	.43	4.00	1.63	1.50	3.50	2.00	#10	.23	2.15
SSUPBO-24-XS	1.50	3.75	2.94	1.750	.50	4.75	1.88	1.75	4.12	2.50	¼	.25	3.20

Housing Material: Aluminum Alloy Black Anodized

Type SSUTWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
SSUTWNO-12-XS	.75	4.5	3.5	1.02
SSUTWNO-16-XS	1.00	6.0	4.5	2.06
SSUTWNO-20-XS	1.25	7.5	5.5	4.30
SSUTWNO-24-XS	1.50	9.0	6.5	6.88

Housing Material: Aluminum Alloy Black Anodized

Type ULSRA Low Profile LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

Part Number	Nom. Dia.	H1	A	X	Y	N3	Wt. lb/ft
ULSRA-12-XS	.75	.750	.51	6	3	#10 - 32	2.09
ULSRA-16-XS	1.00	1.000	.69	6	3	¼ - 20	3.67
ULSRA-20-XS	1.25	1.187	.78	6	3	5/16 -18	5.86
ULSRA-24-XS	1.50	1.375	.93	8	4	⅜ -16	7.68

LinearRace Shaft Support Rail Material: Black Oxidized Steel

Maximum length of LinearRace Shaft Support Rail is 144 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guide** Application Engineering department.

Mounting Table Top (Dimensions in inches)

Nominal Diameter	All Table Tops					Table Top Size **B**					Table Top Size **A**				
	T	M	J	H6	F5(2)	T1	J1	J4	J5	N	T2	J3	J4	J5	N1
.75	7.5	4.50	2.38	.500	5/16-18	7.5	1.25	.41	.31	6.0	4.5	3.5	.50	.31	3.0
1.00	9.0	5.50	2.88	.500	3/8-16	9.0	1.75	.53	.31	7.0	6.0	4.5	.75	.31	4.0
1.25	11.0	6.75	3.50	.750	½-13	11.0	2.00	.82	.38	8.5	7.5	5.5	1.00	.38	5.0
1.50	13.0	8.00	4.12	.750	½-13	13.0	2.50	.75	.44	10.0	9.0	6.5	1.25	.44	6.0

Material: Aluminum Alloy Black Anodized
(2) Customer Mounting Hole

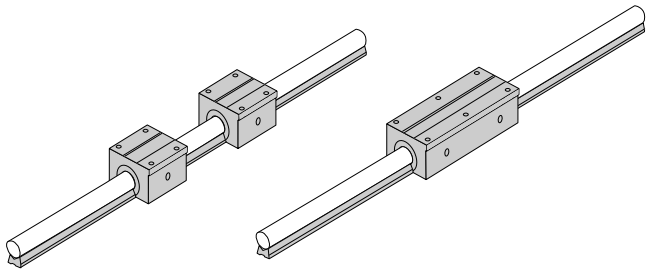
NOTE: To determine the proper Linear Guide size for your application refer to the Dynamic Load Rating (C) Matrix and substitiute 1GB with 1GC for Linear Guide assembly part number.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bolt From Bottom 1RA

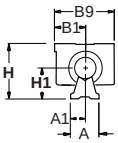
Linear Guide #8

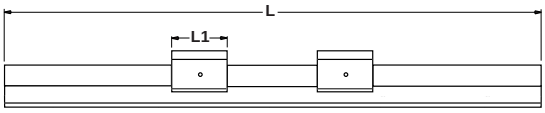
Low Profile, Enhanced Sealing



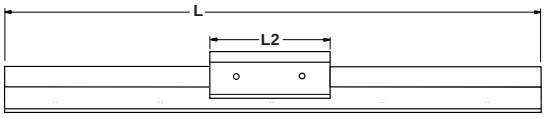
METRIC

Single Continuously Supported Linear Guide with 2 Pillow Blocks

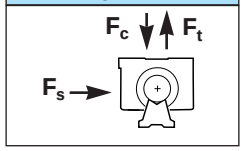




Single Continuously Supported Linear Guide with 1 Twin Pillow Block



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.5C
F_S	C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Bolt From Bottom Linear Guide 1RA Single Continuously Supported with 2 Pillow Blocks (Dimensions in mm)

Part Number	Nominal Diameter	L1	H	H1	A	A1	B1	B9	Pillow Block	Shaft Support Rail Assembly
1RA-M16-LLO	16	43	40	18	14	7,0	26,5	53	**SSEPBO-M16-XS**	**ULSRA-M16-XS**
1RA-M20-LLO	20	54	47	22	17	8,5	30,0	60	**SSEPBO-M20-XS**	**ULSRA-M20-XS**
1RA-M25-LLO	25	67	56	26	21	10,5	39,0	78	**SSEPBO-M25-XS**	**ULSRA-M25-XS**
1RA-M30-LLO	30	79	65	30	23	11,5	43,5	87	**SSEPBO-M30-XS**	**ULSRA-M30-XS**
1RA-M40-LLO	40	91	84	39	30	15,0	54,0	108	**SSEPBO-M40-XS**	**ULSRA-M40-XS**

Bolt From Bottom Linear Guide 1RA Single Continuously Supported with 1 Twin Pillow Block (Dimensions in mm)

Part Number	Nominal Diameter	L2	H	H1	A	A1	B1	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1RA-M16-MLO	16	84	40	18	14	7,0	26,5	53	L-(84)	**SSETWNO-M16-XS**	**ULSRA-M16-XS**
1RA-M20-MLO	20	104	47	22	17	8,5	30,0	60	L-(104)	**SSETWNO-M20-XS**	**ULSRA-M20-XS**
1RA-M25-MLO	25	130	56	26	21	10,5	39,0	78	L-(130)	**SSETWNO-M25-XS**	**ULSRA-M25-XS**
1RA-M30-MLO	30	152	65	30	23	11,5	43,5	87	L-(152)	**SSETWNO-M30-XS**	**ULSRA-M30-XS**
1RA-M40-MLO	40	176	84	39	30	15,0	54,0	108	L-(176)	**SSETWNO-M40-XS**	**ULSRA-M40-XS**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bolt From Bottom Linear Guide 1RA Benefits:

- Requires only one part number to specify the entire linear guide.
- Used to provide increased stability or torque resistance in linear system applications.
- Used in continuously supported applications when rigidity is required.
- Lower overall linear guide height.

Bolt From Bottom Linear Guide 1RA Components:

- 2 Super Smart Ball Bushing* open type pillow blocks or 1 Super Smart Ball Bushing open type twin pillow block.
- 1 60 Case* LinearRace* shaft Support Rail Assembly.

Specifying a Thomson Linear Guide:

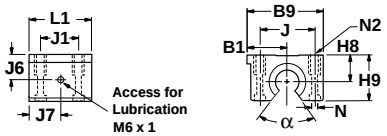
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

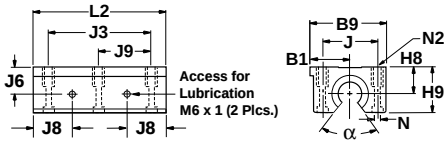
1RA-M16-LLO L600

- 1RA — Linear Guide Designation
- M16 — Nominal Diameter
- LLO — Type of Bearing Block
- L600 — Linear Guide Length
- (blank) — Type of Support

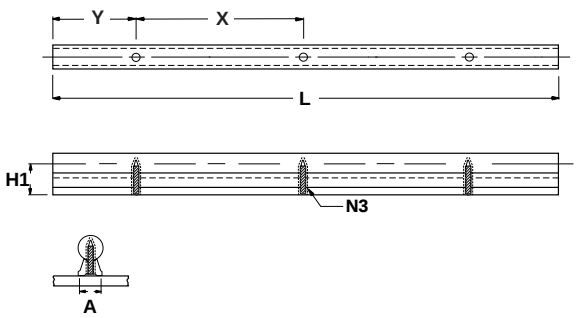
Type SSEPBO Open Type Super Smart Ball Bushing Pillow Block



Type SSETWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type ULSRA Low Profile LinearRace Shaft Support Rail Assembly



Type SSEPBO Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J6	J7	J	J1	N Dia.	N2	α Deg	Mass kg
SSEPBO-M16-XS	16	43	22	35	26,5	53	22,0	21,5	40	26	5,3	M6	66	0,17
SSEPBO-M20-XS	20	54	25	41	30,0	60	25,0	27,0	45	32	6,6	M8	60	0,30
SSEPBO-M25-XS	25	67	30	50	39,0	78	31,5	33,5	60	40	8,4	M10	60	0,57
SSEPBO-M30-XS	30	79	35	60	43,5	87	33,0	39,5	68	45	8,4	M10	60	0,87
SSEPBO-M40-XS	40	91	45	77	54,0	108	43,5	45,5	86	58	10,5	M12	60	1,62

Housing Material: Aluminum Alloy Grey Anodized

Type SSETWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SSETWNO-M16-XS	16	84	64	21,5	32	0,34
SSETWNO-M20-XS	20	104	76	27,0	38	0,63
SSETWNO-M25-XS	25	130	94	33,6	47	1,18
SSETWNO-M30-XS	30	152	106	39,5	53	1,70
SSETWNO-M40-XS	40	176	124	45,5	62	3,18

Housing Material: Aluminum Alloy Grey Anodized

Type ULSRA Low Profile LinearRace Shaft Support Rail Assembly (Dimensions in mm)

Part Number	Nominal Diameter	H1	A	A1	X	Y†	N3(1)	Mass kg/m
ULSRA-M16-XS	16	18	14	7,0	100	20	M3 x 30	3,6
ULSRA-M20-XS	20	22	17	8,5	100	30	M4 x 35	5,5
ULSRA-M25-XS	25	26	21	10,5	120	30	M5 x 45	8,5
ULSRA-M30-XS	30	30	23	11,5	150	40	M6 x 50	13,0
ULSRA-M40-XS	40	39	30	15,0	200	52,5	M10 x 65	21,0

LinearRace Shaft Support Rail Material: Black Oxided Steel

Maximum continuous length of LinearRace Shaft Support Rail is 3650 mm. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guides** Application Engineering department.

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1RA-M16-LLO	4400	SSEPBO-M16-XS	2200
1RA-M20-LLO	8000	SSEPBO-M20-XS	4000
1RA-M25-LLO	13400	SSEPBO-M25-XS	6700
1RA-M30-LLO	16600	SSEPBO-M30-XS	8300
1RA-M40-LLO	27400	SSEPBO-M40-XS	13700

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1RA-M16-MLO	4400	SSETWNO-M16-XS	4400
1RA-M20-MLO	8000	SSETWNO-M20-XS	8000
1RA-M25-MLO	13400	SSETWNO-M25-XS	13400
1RA-M30-MLO	16600	SSETWNO-M30-XS	16600
1RA-M40-MLO	27400	SSETWNO-M40-XS	27400

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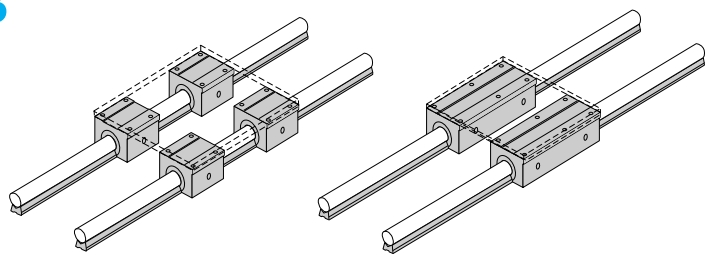
Bolt From Bottom 1RB

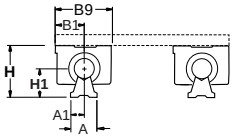
Linear Guide #8

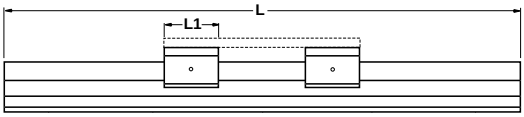
Low Profile, Enhanced Sealing



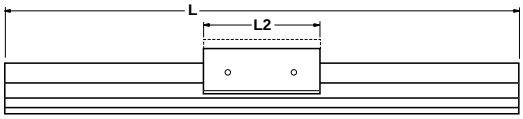
METRIC

Double Continuously Supported Linear Guide with 4 Pillow Blocks

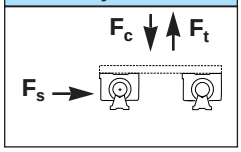




Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.5C
F_S	C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Bolt From Bottom Linear Guide 1RB Double Continuously Supported with 4 Pillow Blocks (Dimensions in mm)

Part Number	Nominal Diameter	L1	H	H1	A	A1	B1	B9	PillowBlock	Shaft Support Rail Assembly
1RB-M16-LLO	16	43	40	18	14	7,0	26,5	53	**SSEPBO-M16-XS**	**ULSRA-M16-XS**
1RB-M20-LLO	20	54	47	22	17	8,5	30,0	60	**SSEPBO-M20-XS**	**ULSRA-M20-XS**
1RB-M25-LLO	25	67	56	26	21	10,5	39,0	78	**SSEPBO-M25-XS**	**ULSRA-M25-XS**
1RB-M30-LLO	30	79	65	30	23	11,5	43,5	87	**SSEPBO-M30-XS**	**ULSRA-M30-XS**
1RB-M40-LLO	40	91	84	39	30	15,0	54,0	108	**SSEPBO-M40-XS**	**ULSRA-M40-XS**

Bolt From Bottom Linear Guide 1RB Double Continuously Supported with 2 Twin Pillow Blocks (Dimensions in mm)

Part Number	Nominal Diameter	L2	H	H1	A	A1	B1	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1RB-M16-MLO	16	84	40	18	14	7,0	26,5	53	L-(84)	**SSETWNO-M16-XS**	**ULSRA-M16-XS**
1RB-M20-MLO	20	104	47	22	17	8,5	30,0	60	L-(104)	**SSETWNO-M20-XS**	**ULSRA-M20-XS**
1RB-M25-MLO	25	130	56	26	21	10,5	39,0	78	L-(130)	**SSETWNO-M25-XS**	**ULSRA-M25-XS**
1RB-M30-MLO	30	152	65	30	23	11,5	43,5	87	L-(152)	**SSETWNO-M30-XS**	**ULSRA-M30-XS**
1RB-M40-MLO	40	176	84	39	30	15,0	54,0	108	L-(176)	**SSETWNO-M40-XS**	**ULSRA-M40-XS**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bolt From Bottom Linear Guide 1RB Benefits:

- Requires only one part number to specify the entire linear guide.
- Allows for custom table top mounting.
- Used in continuously supported applications when rigidity is required.
- Lower overall linear guide height.

Bolt From Bottom Linear Guide 1RB Components:

- 4 Super Smart Ball Bushing* open type pillow blocks or 2 Super Smart Ball Bushing open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Support Rail Assemblies.

Specifying a Thomson Linear Guide:

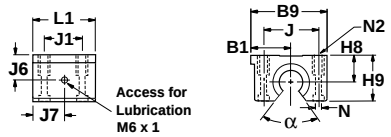
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

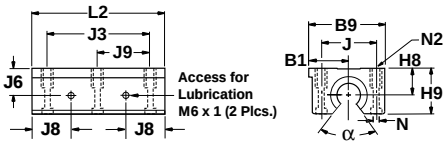
1RB-M16-LLO L600

- 1RB — Linear Guide Designation
- M16 — Nominal Diameter
- LLO — Type of Bearing Block
- L600 — Linear Guide Length
- L — Type of Support

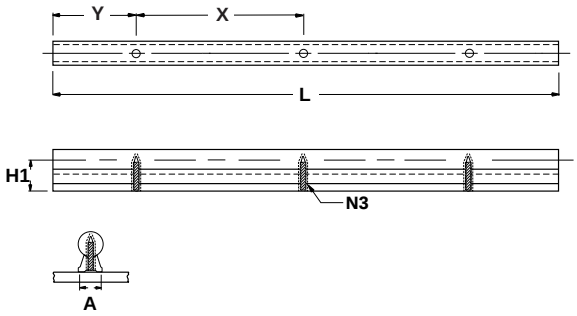
Type SSEPBO Open Type Super Smart Ball Bushing Pillow Block



Type SSETWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type ULSRA Low Profile LinearRace Shaft Support Rail Assembly



Type SSEPBO Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J6	J7	J	J1	N Dia.	N2	α Deg	Mass kg
SSEPBO-M16-XS	16	43	22	35	26,5	53	22,0	21,5	40	26	5,3	M6	66	0,17
SSEPBO-M20-XS	20	54	25	41	30,0	60	25,0	27,0	45	32	6,6	M8	60	0,30
SSEPBO-M25-XS	25	67	30	50	39,0	78	31,5	33,5	60	40	8,4	M10	60	0,57
SSEPBO-M30-XS	30	79	35	60	43,5	87	33,0	39,5	68	45	8,4	M10	60	0,87
SSEPBO-M40-XS	40	91	45	77	54,0	108	43,5	45,5	86	58	10,5	M12	60	1,62

Housing Material: Aluminum Alloy Grey Anodized

Type SSETWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SSETWNO-M16-XS	16	84	64	21,5	32	0,34
SSETWNO-M20-XS	20	104	76	27,0	38	0,63
SSETWNO-M25-XS	25	130	94	33,6	47	1,18
SSETWNO-M30-XS	30	152	106	39,5	53	1,70
SSETWNO-M40-XS	40	176	124	45,5	62	3,18

Housing Material: Aluminum Alloy Grey Anodized

Type ULSRA Low Profile LinearRace Shaft Support Rail Assembly (Dimensions in mm)

Part Number	Nominal Diameter	H1	A	A1	X	Y†	N3(1)	Mass kg/m
ULSRA-M16-XS	16	18	14	7,0	100	20	M3 x 30	3,6
ULSRA-M20-XS	20	22	17	8,5	100	30	M4 x 35	5,5
ULSRA-M25-XS	25	26	21	10,5	120	30	M5 x 45	8,5
ULSRA-M30-XS	30	30	23	11,5	150	40	M6 x 50	13,0
ULSRA-M40-XS	40	39	30	15,0	200	52,5	M10 x 65	21,0

LinearRace Shaft Support Rail Material: Black Oxided Steel

Maximum continuous length of LinearRace Shaft Support Rail is 3650 mm. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guides** Application Engineering department.

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1RB-M16-LLO	8800	SSEPBO-M16-XS	2200
1RB-M20-LLO	16000	SSEPBO-M20-XS	4000
1RB-M25-LLO	26800	SSEPBO-M25-XS	6700
1RB-M30-LLO	33200	SSEPBO-M30-XS	8300
1RB-M40-LLO	54800	SSEPBO-M40-XS	13700

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating C (N)
1RB-M16-MLO	8800	SSETWNO-M16-XS	4400
1RB-M20-MLO	16000	SSETWNO-M20-XS	8000
1RB-M25-MLO	26800	SSETWNO-M25-XS	13400
1RB-M30-MLO	33200	SSETWNO-M30-XS	16600
1RB-M40-MLO	54800	SSETWNO-M40-XS	27400

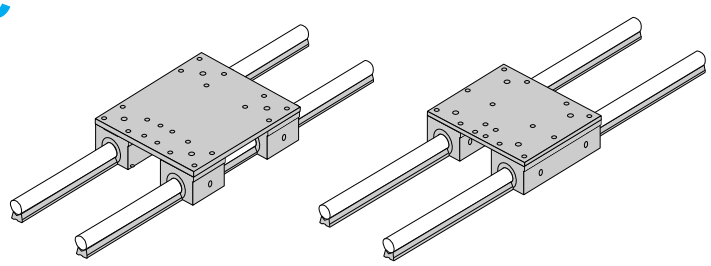
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bolt From Bottom 1RC

Linear Guide #8

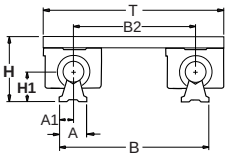
with Table Top

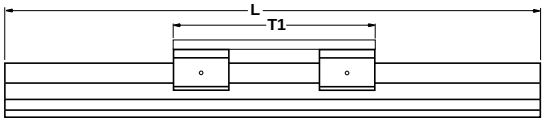
Low Profile, Enhanced Sealing



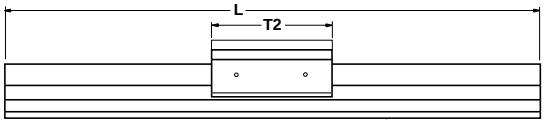
METRIC

Double Continuously Supported Linear Guide with 4 Pillow Blocks and Size F Table Top

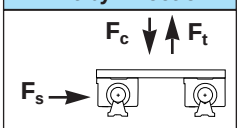




Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks and Size E Table Top



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	C
F_t	0.5C	0.5C
F_s	C	0.5C

Dynamic Load Rating
Load value used in life calculation.
Load Limit
Maximum allowable load applied to bearing.

Bolt From Bottom Linear Guide 1RC Double Continuously Supported with 4 Pillow Blocks and Table Top (Size F) (Dimensions in mm)

Part Number	Nom. Dia.	T1	T	H	H1	A	A1	B	B2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1RC-M16-LLF	16	125	125	53	18	14	7,0	86	70	L-(125)	**SSEPBO-M16-XS**	**ULSRA-M16-XS**
1RC-M20-LLF	20	175	175	63	22	17	8,5	132	110	L-(175)	**SSEPBO-M20-XS**	**ULSRA-M20-XS**
1RC-M25-LLF	25	225	225	76	26	21	10,5	168	140	L-(225)	**SSEPBO-M25-XS**	**ULSRA-M25-XS**
1RC-M30-LLF	30	275	275	85	30	23	11,5	211	180	L-(275)	**SSEPBO-M30-XS**	**ULSRA-M30-XS**
1RC-M40-LLF	40	325	325	109	39	30	15,0	247	210	L-(325)	**SSEPBO-M40-XS**	**ULSRA-M40-XS**

Bolt From Bottom Linear Guide 1RC Double Continuously Supported with 2 Twin Pillow Blocks and Table Top (Size E) (Dimensions in mm)

Part Number	Nom. Dia.	T2	T	H	H1	A	A1	B	B2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1RC-M16-MLE	16	84	125	53	18	14	7,0	86	70	L-(84)	**SSETWNO-M16-XS**	**ULSRA-M16-XS**
1RC-M20-MLE	20	104	175	63	22	17	8,5	132	110	L-(104)	**SSETWNO-M20-XS**	**ULSRA-M20-XS**
1RC-M25-MLE	25	130	225	76	26	21	10,5	168	140	L-(130)	**SSETWNO-M25-XS**	**ULSRA-M25-XS**
1RC-M30-MLE	30	152	275	85	30	23	11,5	211	180	L-(152)	**SSETWNO-M30-XS**	**ULSRA-M30-XS**
1RC-M40-MLE	40	176	325	109	39	30	15,0	247	210	L-(176)	**SSETWNO-M40-XS**	**ULSRA-M40-XS**

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1RC-M16-LLF	8800	SSEPBO-M16-XS	2200
1RC-M20-LLF	16000	SSEPBO-M20-XS	4000
1RC-M25-LLF	26800	SSEPBO-M25-XS	6700
1RC-M30-LLF	33200	SSEPBO-M30-XS	8300
1RC-M40-LLF	54800	SSEPBO-M40-XS	13700

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1RC-M16-MLE	8800	SSETWNO-M16-XS	4400
1RC-M20-MLE	16000	SSETWNO-M20-XS	8000
1RC-M25-MLE	26800	SSETWNO-M25-XS	13400
1RC-M30-MLE	33200	SSETWNO-M30-XS	16600
1RC-M40-MLE	54800	SSETWNO-M40-XS	27400

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bolt From Bottom Linear Guide 1RC Benefits:

- Requires only one part number to specify the entire linear guide.
- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- Includes Ball Screw Assembly attachment holes for ease of assembly and actuation.
- Used in continuously supported applications when rigidity is required.

Bolt From Bottom Linear Guide 1RC Components:

- 4 Super Smart Ball Bushing* open type pillow blocks or 2 Super Smart Ball Bushing open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Support Rail Assemblies.
- 1 mounting table top with work piece and Ball Screw Assembly attachment holes.

Specifying a Thomson Linear Guide:

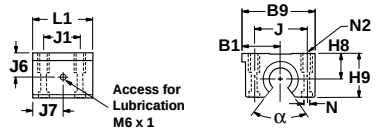
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

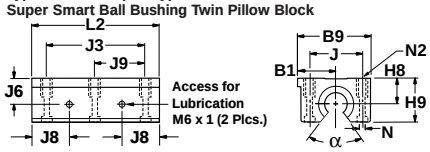
1RC-M16-MLE L600

- 1RC — Linear Guide Designation
- M16 — Nominal Diameter
- MLE — Type of Bearing Block
- L600 — Linear Guide Length
- T — Type of Table Top
- S — Type of Support

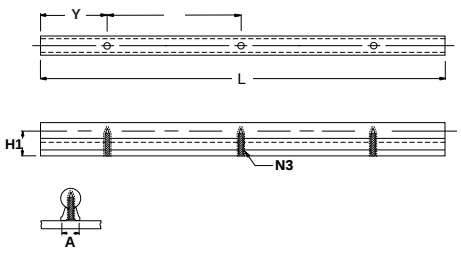
Type SSEPBO Open Type Super Smart Ball Bushing Pillow Block



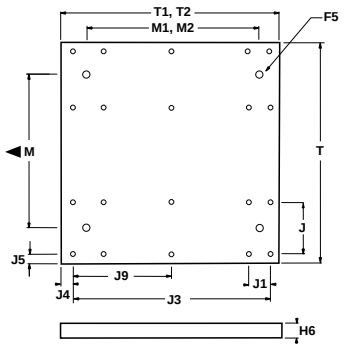
Type SSETWN Open Type Super Smart Ball Bushing Twin Pillow Block



Type ULSRA Low Profile LinearRace Shaft Support Rail Assembly



Mounting Table Top



Type SSEPBO Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J6	J7	J	J1	N Dia.	N2	α Deg	Mass kg
SSEPBO-M16-XS	16	43	22	35	26,5	53	22,0	21,5	40	26	5,3	M6	66	0,17
SSEPBO-M20-XS	20	54	25	41	30,0	60	25,0	27,0	45	32	6,6	M8	60	0,30
SSEPBO-M25-XS	25	67	30	50	39,0	78	31,5	33,5	60	40	8,4	M10	60	0,57
SSEPBO-M30-XS	30	79	35	60	43,5	87	33,0	39,5	68	45	8,4	M10	60	0,87
SSEPBO-M40-XS	40	91	45	77	54,0	108	43,5	45,5	86	58	10,5	M12	60	1,62

Housing Material: Aluminum Alloy Grey Anodized

Type SSETWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SSETWNO-M16-XS	16	84	64	21,5	32	0,34
SSETWNO-M20-XS	20	104	76	27,0	38	0,63
SSETWNO-M25-XS	25	130	94	33,6	47	1,18
SSETWNO-M30-XS	30	152	106	39,5	53	1,70
SSETWNO-M40-XS	40	176	124	45,5	62	3,18

Housing Material: Aluminum Alloy Grey Anodized

Type ULSRA Low Profile LinearRace Shaft Support Rail Assembly (Dimensions in mm)

Part Number	Nominal Diameter	H1	A	A1	X	Y†	N3(1)	Mass kg/m
ULSRA-M16-XS	16	18	14	7,0	100	20	M3 x 30	3,6
ULSRA-M20-XS	20	22	17	8,5	100	30	M4 x 35	5,5
ULSRA-M25-XS	25	26	21	10,5	120	30	M5 x 45	8,5
ULSRA-M30-XS	30	30	23	11,5	150	40	M6 x 50	13,0
ULSRA-M40-XS	40	39	30	15,0	200	52,5	M10 x 65	21,0

LinearRace Shaft Support Rail Material: Black Oxided Steel

Maximum continuous length of LinearRace Shaft Support Rail is 3650 mm. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guides** Application Engineering department.

Mounting Table Top (Dimensions in mm)

System	All Table Tops					Table Top Size **F**					Table Top Size **E**					
	T	M	J	H6	F5(2)	T1	J1	J4	J5	M1	T2	J3	J4	J5	J9	M2
1RC-M16	125	70	40	13	M6	125	26	10,0	7,5	70	84	64	10	7,5	32	45
1RC-M20	175	110	45	16	M8	175	32	11,0	10,0	110	104	76	14	10,0	38	55
1RC-M25	225	140	60	20	M8	225	40	13,5	12,5	140	130	94	18	12,5	47	65
1RC-M30	275	180	68	20	M8	275	45	17,0	13,5	180	152	106	23	13,5	53	75
1RC-M40	325	210	86	25	M10	325	58	16,5	14,5	210	176	124	26	14,5	62	85

Material: Aluminum Alloy Grey Anodized
(2) Customer Mounting Hole

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

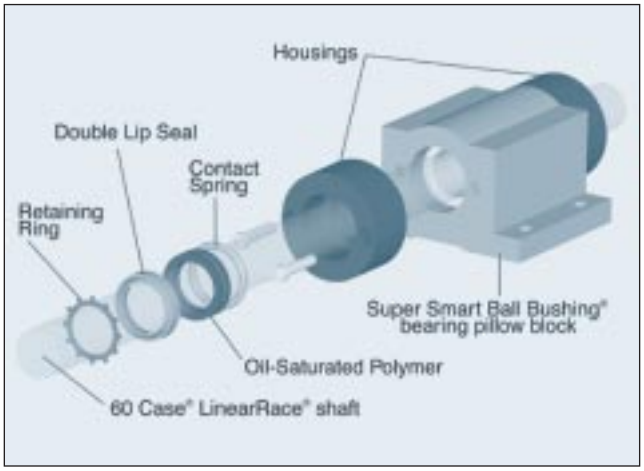
Bolt From Bottom Linear Ball Guide Accessories

-LL Self-Lubricating Option‡

The new LL Option provides maintenance-free operation and enhanced bearing protection.

- Eliminates the need for expensive lubrication system in most applications
- Increases effective bearing life by increasing protection from contamination
- Environmentally friendly

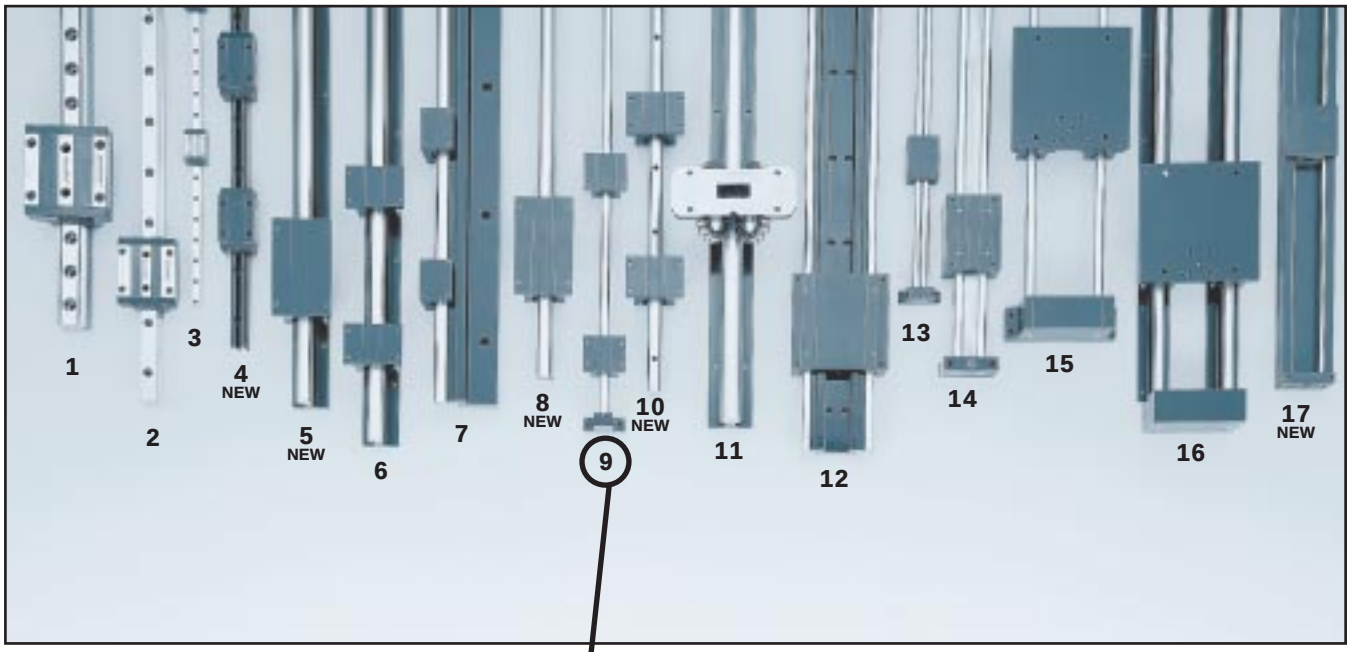
NOTE: Carriage drag with the -LL option will be approximately 2x the seal drag.

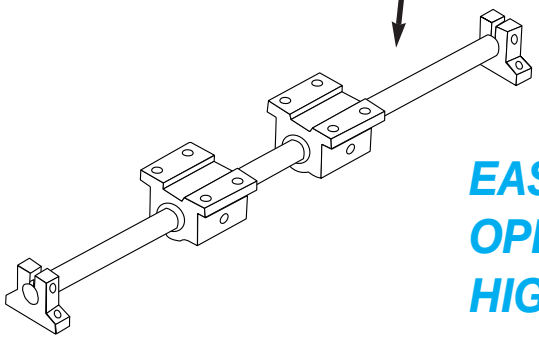


‡ See page 210 for technical data.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support Linear Ball Guides #9





EASY TO INSTALL, SMOOTH OPERATION, SELF-ALIGNING, HIGH SPEED

End Support Linear Ball Guides Offer:

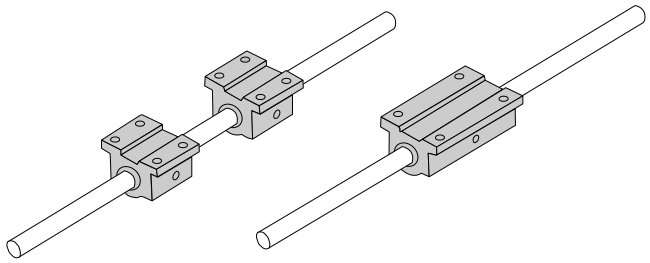
- Increased life within the same envelope. RoundRail* linear guides feature the new patented Super Smart Ball Bushing* bearings for up to 216X the life or 6X the load capacity of conventional bearings
- Cost savings: save time and money preparing your mounting surfaces before bolting down RoundRail linear guides
- End supported for gantry style or ‘bridge’ applications
- The RoundRail Advantage*. The inherent self-aligning-in-all-directions design of the Super Smart Ball Bushing bearing allows for ultra smooth travel when mounted to wider toleranced prepared surfaces
- The Super Smart Ball Bushing bearing… the most technologically advanced and most robust linear bearing in the world
- Corrosion resistant versions for maximum performance in harsh environments.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support 1AA

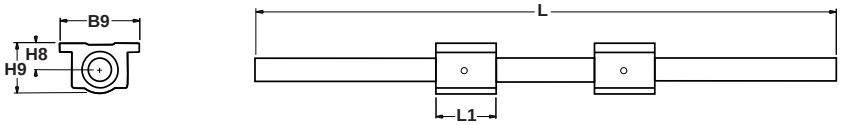
Linear Guide #9

Unsupported, Industry Standard Dimension

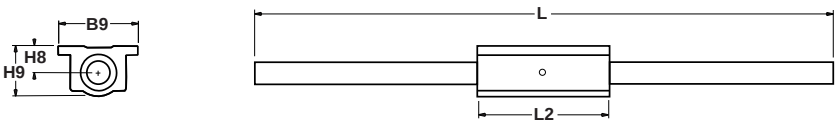


INCH

Single Unsupported Linear Guide with 2 Pillow Blocks



Single Unsupported Linear Guide with 1 Twin Pillow Block



End Support Linear Guide 1AA Single with 2 Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	L1	H8	H9	B9	Pillow Block
1AA-04-AOO	.250	1.19	.437	.81	1.63	SPB-4-XS
1AA-06-AOO	.375	1.31	.500	.94	1.75	SPB-6-XS
1AA-08-AOO	.500	1.69	.687	1.25	2.00	SSUPB-8-XS
1AA-12-AOO	.750	2.06	.937	1.75	2.75	SSUPB-12-XS
1AA-16-AOO	1.000	2.81	1.187	2.19	3.25	SSUPB-16-XS
1AA-20-AOO	1.250	3.63	1.500	2.81	4.00	SSUPB-20-XS
1AA-24-AOO	1.500	4.00	1.750	3.25	4.75	SSUPB-24-XS

End Support Linear Guide 1AA Single with 1 Twin Pillow Block (Dimensions in inches)

Part Number	Nominal Diameter	L2	H8	H9	B9	Pillow Block
1AA-04-BOO	.250	2.50	.437	.81	1.63	TWN-4-XS
1AA-06-BOO	.375	2.75	.500	.94	1.75	TWN-6-XS
1AA-08-BOO	.500	3.50	.687	1.25	2.00	SSUTWN-8-XS
1AA-12-BOO	.750	4.50	.937	1.75	2.75	SSUTWN-12-XS
1AA-16-BOO	1.000	6.00	1.187	2.19	3.25	SSUTWN-16-XS
1AA-20-BOO	1.250	7.50	1.500	2.81	4.00	SSUTWN-20-XS
1AA-24-BOO	1.500	9.00	1.750	3.25	4.75	SSUTWN-24-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support Linear Guide 1AA Benefits:

- Requires only one part number to specify entire linear guide.
- Design flexibility with custom end supports.
- Used in end supported applications when spanning or bridging a gap.

End Support Linear Guide 1AA Components: †

- 2 Super Smart Ball Bushing* pillow blocks or 1 Super Smart Ball Bushing twin pillow block.
- 1 60 Case* LinearRace* shaft.

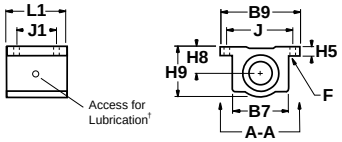
Specifying this Thomson Linear Guide:
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

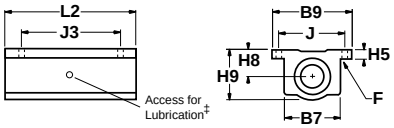
1AA-12-AOO L24

- 1AA — Linear Guide Designation
- 12 — Nominal Diameter
- AOO — Type of Bearing Block
- L24 — Linear Guide Length

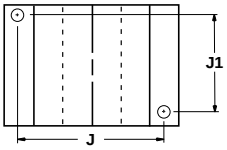
Type SSUPB Super Smart Ball Bushing Pillow Block
Type SPB Super Ball Bushing Pillow Block



Type SSUTWN Super Smart Ball Bushing Twin Pillow Block
Type TWN Super Ball Bushing Twin Pillow Block



Type SPB Super Ball Bushing Pillow Block Mounting Hole Position for Sizes .250 and .375



View A-A

‡ Sizes .250, .375 and .500 have oil lubricant fitting. Sizes .625 and above have 1/4-28 access for lubrication.

Type SPB and SSUPB Pillow Blocks (Dimensions in inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B7	J	J1	F		Wt. lb
										Bolt	Hole	
SPB-4-XS	.250	1.19	.81	.437	.19	1.63	1.00	1.31	.75[2]	#6	.16	.10
SPB-6-XS	.375	1.31	.94	.500	.19	1.75	1.12	1.44	.88[2]	#6	.16	.13
SSUPB-8-XS	.500	1.69	1.25	.687	.25	2.00	1.38	1.69	1.00	#6	.16	.20
SSUPB-12-XS	.750	2.06	1.75	.937	.31	2.75	1.88	2.38	1.25	#8	.19	.62
SSUPB-16-XS	1.000	2.81	2.19	1.187	.38	3.25	2.38	2.88	1.75	#10	.22	1.24
SSUPB-20-XS	1.250	3.63	2.81	1.500	.43	4.00	3.00	3.50	2.00	#10	.22	2.57
SSUPB-24-XS	1.500	4.00	3.25	1.750	.50	4.75	3.50	4.12	2.50	1/4	.28	3.94

Housing Material: Aluminum Alloy Black Anodized
[2]Two mounting holes as shown in view A-A for sizes .250 and .375

Type TWN and SSUTWN Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
TWN-4-XS	.250	2.50	2.00	.19
TWN-6-XS	.375	2.75	2.25	.25
SSUTWN-8-XS	.500	3.50	2.50	.40
SSUTWN-12-XS	.750	4.50	3.50	1.24
SSUTWN-16-XS	1.000	6.00	4.50	2.48
SSUTWN-20-XS	1.250	7.50	5.50	5.14
SSUTWN-24-XS	1.500	9.00	6.50	8.08

Housing Material: Aluminum Alloy Black Anodized

† Super Ball Bushing* bearings are used in .250 and .375 inch size pillow blocks.

Dynamic Load Capacity Matrix (4 million inches travel)

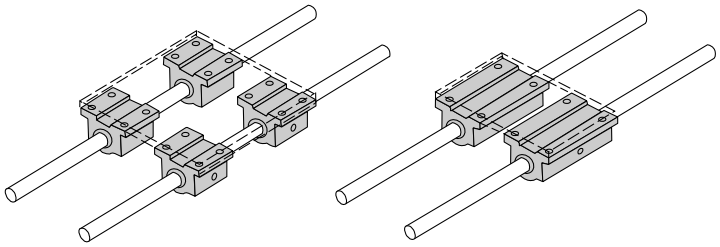
Linear Guide Assembly Part No.	Dynamic Load Capacity (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (lb_f)
1AA-04-AOO	100	SPB-4-XS	50
1AA-06-AOO	160	SPB-6-XS	80
1AA-08-AOO	800	SSUPB-8-XS	400
1AA-12-AOO	1800	SSUPB-12-XS	900
1AA-16-AOO	3000	SSUPB-16-XS	1500
1AA-20-AOO	3730	SSUPB-20-XS	1865
1AA-24-AOO	6160	SSUPB-24-XS	3080
1AA-04-BOO	100	TWN-4-XS	100
1AA-06-BOO	160	TWN-6-XS	160
1AA-08-BOO	800	SSUTWN-8-XS	800
1AA-12-BOO	1800	SSUTWN-12-XS	1800
1AA-16-BOO	3020	SSUTWN-16-XS	3020
1AA-20-BOO	3730	SSUTWN-20-XS	3730
1AA-24-BOO	6160	SSUTWN-24-XS	6160

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support 1AB

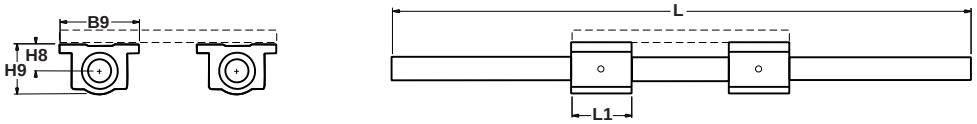
Linear Guide #9

Unsupported, Industry Standard Dimension

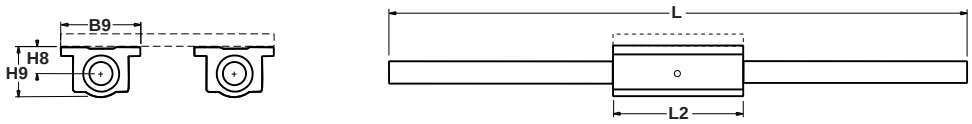


INCH

Double Unsupported Linear Guide with 4 Pillow Blocks



Double Unsupported Linear Guide with 2 Twin Pillow Blocks



End Support Linear Guide 1AB Double with 4 Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	L1	H8	H9	B9	Pillow Block
1AB-04-AOO	.250	1.19	.437	.81	1.63	SPB-4-XS
1AB-06-AOO	.375	1.31	.500	.94	1.75	SPB-6-XS
1AB-08-AOO	.500	1.69	.687	1.25	2.00	SSUPB-8-XS
1AB-12-AOO	.750	2.06	.937	1.75	2.75	SSUPB-12-XS
1AB-16-AOO	1.000	2.81	1.187	2.19	3.25	SSUPB-16-XS
1AB-20-AOO	1.250	3.63	1.500	2.81	4.00	SSUPB-20-XS
1AB-24-AOO	1.500	4.00	1.750	3.25	4.75	SSUPB-24-XS

End Support Linear Guide 1AB Double with 2 TWIN Pillow Blocks (Dimensions in inches)

Part Number	Nominal Diameter	L2	H8	H9	B9	Pillow Block
1AB-04-BOO	.250	2.50	.437	.81	1.63	TWN-4-XS
1AB-06-BOO	.375	2.75	.500	.94	1.75	TWN-6-XS
1AB-08-BOO	.500	3.50	.687	1.25	2.00	SSUTWN-8-XS
1AB-12-BOO	.750	4.50	.937	1.75	2.75	SSUTWN-12-XS
1AB-16-BOO	1.000	6.00	1.187	2.19	3.25	SSUTWN-16-XS
1AB-20-BOO	1.250	7.50	1.500	2.81	4.00	SSUTWN-20-XS
1AB-24-BOO	1.500	9.00	1.750	3.25	4.75	SSUTWN-24-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support Linear Guide 1AB Benefits:

- Allows for custom table mounting.
- Design flexibility for custom end supports.
- Double LinearRace* shaft configuration resists torque.
- Used in end supported applications when spanning or bridging a gap.

End Support Linear Guide 1AB Components: †

- 4 Super Smart Ball Bushing* pillow blocks or 2 Super Smart Ball Bushing twin pillow blocks.
- 2 60 Case* LinearRace shafts.

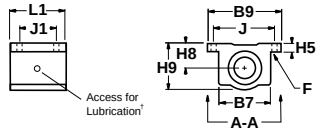
Specifying a Thomson Linear guide:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

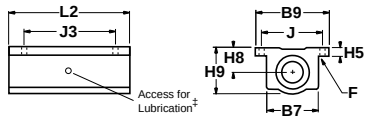
1AB-12-AOO L24

- 1AB — Linear Guide Designation
- 12 — Nominal Diameter
- AOO — Type of Bearing Block
- L24 — Linear Guide Length

Type SSUPB Super Smart Ball Bushing Pillow Block Type SPB Super Ball Bushing Pillow Block

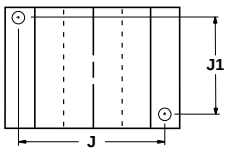


Type SSUTWN Super Smart Ball Bushing Twin Pillow Block
Type TWN Super Ball Bushing Twin Pillow Block



‡ Sizes .250, .375 and .500 have oil lubricant fitting. Sizes .625 and above have 1/4-28 access for lubrication.

Type SPB Super Ball Bushing Pillow Block Mounting Hole Position for Sizes .250 and .375



View A-A

Type SPB and SSUPB Pillow Blocks (Dimensions in inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B7	J	J1	F		Wt. lb
										Bolt	Hole	
SPB-4-XS	.250	1.19	.81	.437	.19	1.63	1.00	1.31	.75[2]	#6	.16	.10
SPB-6-XS	.375	1.31	.94	.500	.19	1.75	1.12	1.44	.88[2]	#6	.16	.13
SSUPB-8-XS	.500	1.69	1.25	.687	.25	2.00	1.38	1.69	1.00	#6	.16	.20
SSUPB-12-XS	.750	2.06	1.75	.937	.31	2.75	1.88	2.38	1.25	#8	.19	.62
SSUPB-16-XS	1.000	2.81	2.19	1.187	.38	3.25	2.38	2.88	1.75	#10	.22	1.24
SSUPB-20-XS	1.250	3.63	2.81	1.500	.43	4.00	3.00	3.50	2.00	#10	.22	2.57
SSUPB-24-XS	1.500	4.00	3.25	1.750	.50	4.75	3.50	4.12	2.50	1/4	.28	3.94

Housing Material: Aluminum Alloy Black Anodized
[2]Two mounting holes as shown in view A-A for sizes .250 and .375

Type TWN and SSUTWN Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
TWN-4-XS	.250	2.50	2.00	.19
TWN-6-XS	.375	2.75	2.25	.25
SSUTWN-8-XS	.500	3.50	2.50	.40
SSUTWN-12-XS	.750	4.50	3.50	1.24
SSUTWN-16-XS	1.000	6.00	4.50	2.48
SSUTWN-20-XS	1.250	7.50	5.50	5.14
SSUTWN-24-XS	1.500	9.00	6.50	8.08

Housing Material: Aluminum Alloy Black Anodized

† Super Ball Bushing* bearings are used in .250 and .375 inch size pillow blocks.

Dynamic Load Capacity Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (lb_f)
1AB-04-AOO	200	SPB-4-XS	50
1AB-06-AOO	320	SPB-6-XS	80
1AB-08-AOO	1600	SSUPB-8-XS	400
1AB-12-AOO	2600	SSUPB-12-XS	900
1AB-16-AOO	6000	SSUPB-16-XS	1500
1AB-20-AOO	7460	SSUPB-20-XS	1865
1AB-24-AOO	12320	SSUPB-24-XS	3080
1AB-04-BOO	200	TWN-4-XS	100
1AB-06-BOO	320	TWN-6-XS	160
1AB-08-BOO	1600	SSUTWN-8-XS	800
1AB-12-BOO	3600	SSUTWN-12-XS	1800
1AB-16-BOO	6040	SSUTWN-16-XS	3020
1AB-20-BOO	7460	SSUTWN-20-XS	3730
1AB-24-BOO	12320	SSUTWN-24-XS	6160

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support 1AC

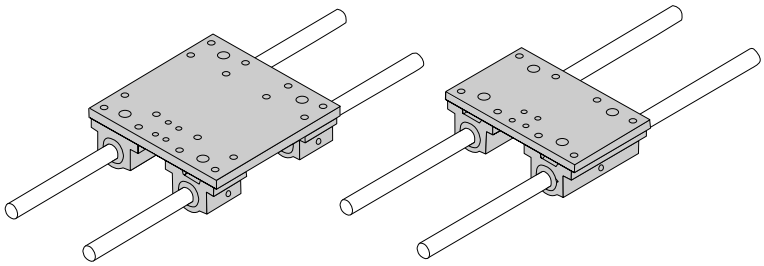
Linear Guide #9

with Table Top

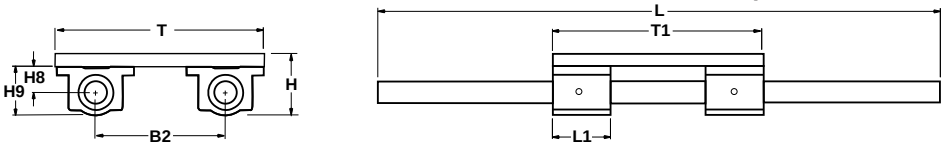
Unsupported,

Industry Standard Dimension

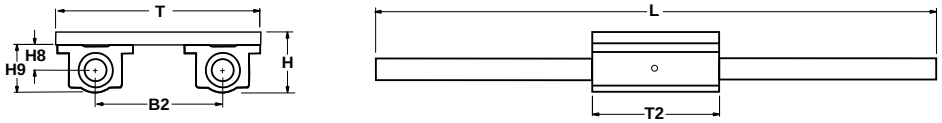
INCH



Double Unsupported Linear Guide with 4 Pillow Blocks and Size B Table Top



Double Unsupported Linear Guide with 2 Twin Pillow Blocks and Size A Table Top



End Support Linear Guide 1AC Double with 4 Pillow Blocks and Table Top (Size B) (Dimensions in inches)

Part Number	Nom. Dia.	L1	H	B2	H8	H9	T	T1	Pillow Block
1AC-04-AOB	.250	1.19	1.06	2.25	.437	.81	4.00	4.00	SPB-4-XS
1AC-06-AOB	.375	1.31	1.19	2.50	.500	.94	4.50	4.50	SPB-6-XS
1AC-08-AOB	.500	1.69	1.63	3.25	.687	1.25	5.50	5.50	SSUPB-8-XS
1AC-12-AOB	.750	2.06	2.25	4.50	.937	1.75	7.50	7.50	SSUPB-12-XS
1AC-16-AOB	1.000	2.81	2.69	5.50	1.187	2.19	9.00	9.00	SSUPB-16-XS
1AC-20-AOB	1.250	3.63	3.56	6.75	1.500	2.81	11.00	11.00	SSUPB-20-XS
1AC-24-AOB	1.500	4.00	4.00	8.00	1.750	3.25	13.00	13.00	SSUPB-24-XS

End Support Linear Guide 1AC Double with 2 Twin Pillow Blocks and Table Top (Size A) (Dimensions in inches)

Part Number	Nom. Dia.	H	B2	H8	H9	T	T2	Pillow Block
1AC-04-BOA	.250	1.06	2.25	.437	.81	4.00	2.50	TWN-4-XS
1AC-06-BOA	.375	1.19	2.50	.500	.94	4.50	2.75	TWN-6-XS
1AC-08-BOA	.500	1.63	3.25	.687	1.25	5.50	3.50	SSUTWN-8-XS
1AC-12-BOA	.750	2.25	4.50	.937	1.75	7.50	4.50	SSUTWN-12-XS
1AC-16-BOA	1.000	2.69	5.50	1.187	2.19	9.00	6.00	SSUTWN-16-XS
1AC-20-BOA	1.250	3.56	6.75	1.500	2.81	11.00	7.50	SSUTWN-20-XS
1AC-24-BOA	1.500	4.00	8.00	1.750	3.25	13.00	9.00	SSUTWN-24-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support Linear Guide 1AC Benefits:

- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- Includes Ball Screw Assembly attachment holes for ease of assembly and actuation.
- Used in end supported applications when spanning or bridging a gap.

End Support Linear Guide 1AC Components: †

- 4 Super Smart Ball Bushing* pillow blocks or 2 Super Smart Ball Bushing twin pillow blocks.
- 2 60 Case* LinearRace* shafts.
- 1 mounting table top with work piece and Ball Screw Assembly attachment holes.

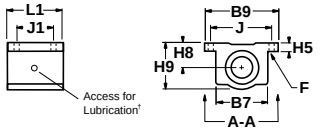
Specifying a Thomson Linear Guide:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

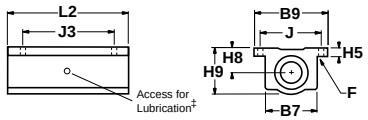
1AC-12-AOO L24

- 1AC — Linear Guide Designation
- 12 — Nominal Diameter
- AOO — Type of Bearing Block
- L24 — Linear Guide Length
- Type of Table Top

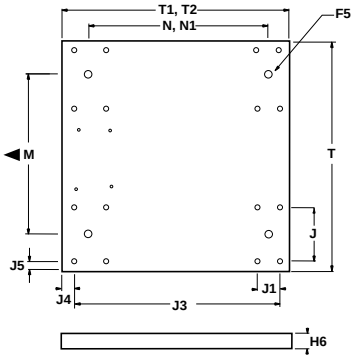
Type SSUPB Super Smart Ball Bushing Pillow Block
Type SPB Super Ball Bushing Pillow Block



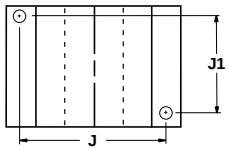
Type SSUTWN Super Smart Ball Bushing Twin Pillow Block
Type TWN Super Ball Bushing Twin Pillow Block



Mounting Table Top



Type SPB Super Ball Bushing Pillow Block Mounting Hole Position for Sizes .250 and .375



View A-A

‡ Sizes .250, .375 and .500 have oil lubricant fitting. Sizes, .625 and above have 1/4-28 access for lubrication.

Type SPB and SSUPB Pillow Blocks (Dimensions in inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B7	J	J1	F Bolt	F Hole	Wt. lb
SPB-4-XS	.250	1.19	.81	.437	.19	1.63	1.00	1.31	.75[2]	#6	.16	.10
SPB-6-XS	.375	1.31	.94	.500	.19	1.75	1.12	1.44	.88[2]	#6	.16	.13
SSUPB-8-XS	.500	1.69	1.25	.687	.25	2.00	1.38	1.69	1.00	#6	.16	.20
SSUPB-12-XS	.750	2.06	1.75	.937	.31	2.75	1.88	2.38	1.25	#8	.19	.62
SSUPB-16-XS	1.000	2.81	2.19	1.187	.38	3.25	2.38	2.88	1.75	#10	.22	1.24
SSUPB-20-XS	1.250	3.63	2.81	1.500	.43	4.00	3.00	3.50	2.00	#10	.22	2.57
SSUPB-24-XS	1.500	4.00	3.25	1.750	.50	4.75	3.50	4.12	2.50	1/4	.28	3.94

Housing Material: Aluminum Alloy Black Anodized
[2]Two mounting holes as shown in view A-A for sizes .250 and .375

Type TWN and SSUTWN Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
TWN-4-XS	.250	2.50	2.00	.19
TWN-6-XS	.375	2.75	2.25	.25
SSUTWN-8-XS	.500	3.50	2.50	.40
SSUTWN-12-XS	.750	4.50	3.50	1.24
SSUTWN-16-XS	1.000	6.00	4.50	2.48
SSUTWN-20-XS	1.250	7.50	5.50	5.14
SSUTWN-24-XS	1.500	9.00	6.50	8.08

Housing Material: Aluminum Alloy Black Anodized

Mounting Table Top (Dimensions in inches)

Nominal Diameter	All Table Tops T	M	J	H6	F5	Table Top Size **B** T1	J1	J4	J5	N	Table Top Size **A** T2	J3	J4	J5	N1
.250	4.0	2.25	1.31	.250	#8-32	4.0	.75[2]	.22	.22	3.50	2.50	2.00	.25	.22	2.0
.375	4.5	2.50	1.44	.250	#10-32	4.5	.88[2]	.22	.28	3.75	2.75	2.25	.25	.28	2.0
.500	5.5	3.25	1.69	.375	1/4-20	5.5	1.00	.34	.28	4.50	3.50	2.50	.50	.31	2.5
.750	7.5	4.50	2.38	.500	5/16-18	7.5	1.25	.41	.31	6.00	4.50	3.50	.50	.31	3.0
1.000	9.0	5.50	2.88	.500	3/8-16	9.0	1.75	.53	.31	7.00	6.00	4.50	.75	.31	4.0
1.250	11.0	6.75	3.50	.750	1/2-13	11.0	2.00	.82	.38	8.50	7.50	5.50	1.00	.38	5.0
1.500	13.0	8.00	4.12	.750	1/2-13	13.0	2.50	.75	.44	10.00	9.00	6.50	1.25	.44	6.0

Carriage Material: Aluminum Alloy Black Anodized.
[2]Two mounting holes as shown in view A-A for sizes .250 and .375

† Super Ball Bushing* bearings are used in .250 and .375 inch size pillow blocks.

Dynamic Load Capacity Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (lb_f)
1AC-04-AOB	200	SPB-4-XS	50
1AC-06-AOB	320	SPB-6-XS	80
1AC-08-AOB	1600	SSUPB-8-XS	400
1AC-12-AOB	3600	SSUPB-12-XS	900
1AC-16-AOB	6000	SSUPB-16-XS	1500
1AC-20-AOB	7460	SSUPB-20-XS	1865
1AC-24-AOB	12320	SSUPB-24-XS	3080

Dynamic Load Capacity Matrix (4 million inches travel)

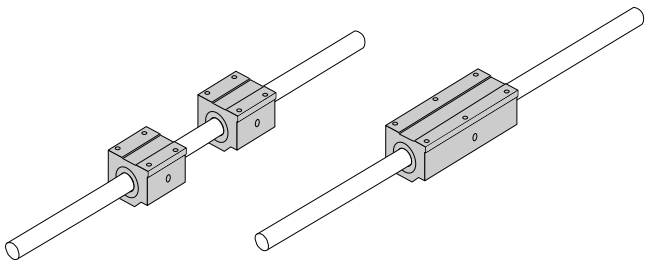
Linear Guide Assembly Part No.	Dynamic Load Capacity (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (lb_f)
1AC-04-BOA	200	TWN-4-XS	100
1AC-06-BOA	320	TWN-6-XS	160
1AC-08-BOA	1600	SSUTWN-8-XS	800
1AC-12-BOA	3600	SSUTWN-12-XS	1800
1AC-16-BOA	6040	SSUTWN-16-XS	3020
1AC-20-BOA	7460	SSUTWN-20-XS	3730
1AC-24-BOA	12320	SSUTWN-24-XS	6160

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support 1MA

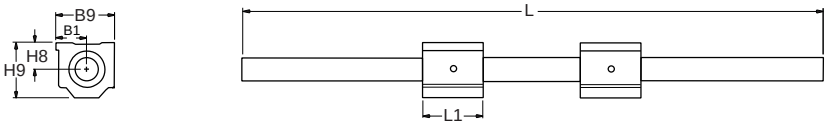
Linear Guide #9

Unsupported,
Industry Standard Dimension

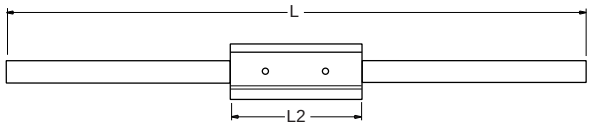


METRIC

Single Linear Guide with 2 Pillow Blocks



Single Linear Guide with 1 Twin Pillow Block



End Support Linear Guide 1MA Single with 2 Pillow Blocks (Dimensions in mm)

Part Number	Nominal Diameter	L1	H8	H9	B1	B9	Pillow Block
1MA-M08-NOO	8	32	15	28	17,5	35	SPPB-M08-XS
1MA-M12-NOO	12	39	18	35	21,5	43	SSEPB-M12-XS
1MA-M16-NOO	16	43	22	42	26,5	53	SSEPB-M16-XS
1MA-M20-NOO	20	54	25	50	30,0	60	SSEPB-M20-XS
1MA-M25-NOO	25	67	30	60	39,0	78	SSEPB-M25-XS
1MA-M30-NOO	30	79	35	70	43,5	87	SSEPB-M30-XS
1MA-M40-NOO	40	91	45	90	54,0	108	SSEPB-M40-XS

End Support Linear Guide 1MA Single with 1 Twin Pillow Block (Dimensions in mm)

Part Number	Nominal Diameter	L2	H8	H9	B1	B9	Pillow Block
1MA-M08-POO	8	62	15	28	17,5	35	SPTWN-M08-XS
1MA-M12-POO	12	76	18	35	21,5	43	SSETWN-M12-XS
1MA-M16-POO	16	84	22	42	26,5	53	SSETWN-M16-XS
1MA-M20-POO	20	104	25	50	30,0	60	SSETWN-M20-XS
1MA-M25-POO	25	130	30	60	39,0	78	SSETWN-M25-XS
1MA-M30-POO	30	152	35	70	43,5	87	SSETWN-M30-XS
1MA-M40-POO	40	176	45	90	54,0	108	SSETWN-M40-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support Linear Guide 1MA Benefits:

- Requires only one part number to specify entire linear guide.
- Design flexibility with custom end supports.
- Used in end supported applications when spanning or bridging a gap.

End Support Linear Guide 1MA Components: †

- 2 Super Smart Ball Bushing* pillow blocks or 1 Super Smart Ball Bushing twin pillow block.
- 1 60 Case* LinearRace* shaft.

Specifying this Thomson Linear Guide:

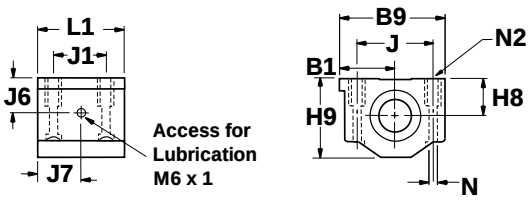
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters,as a suffix to the part number.

Part Numbering System

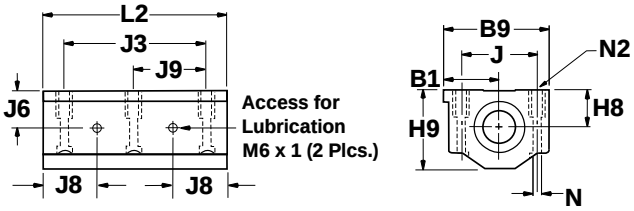
1MA-M12-NOO L600

- 1MA — Linear Guide Designation
- M12 — Nominal Diameter
- NOO — Type of Bearing Block
- L600 — Linear Guide Length

Type SPPB Super Plus Ball Bushing Pillow Block
Type SSEPB Super Smart Ball Bushing Pillow Block



Type SPTWN Super Plus Ball Bushing Twin Pillow Block
Type SSETWN Super Smart Ball Bushing Twin Pillow Block



Type SPPB and SSEPB Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J	J1	J6	J7	N Dia.	N2	Mass kg
SPPB-M08-XS	8	32	15	28	17,5	35	25	20	15	19,5	3,3	M4	0,07
SSEPB-M12-XS	12	39	18	35	21,5	43	32	23	18	23,0	4,3	M5	0,13
SSEPB-M16-XS	16	43	22	42	26,5	53	40	26	22	25,0	5,3	M6	0,20
SSEPB-M20-XS	20	54	25	50	30,0	60	45	32	25	30,5	6,6	M8	0,35
SSEPB-M25-XS	25	67	30	60	39,0	78	60	40	30	37	8,4	M10	0,66
SSEPB-M30-XS	30	79	35	70	43,5	87	68	45	35	43	8,4	M10	0,99
SSEPB-M40-XS	40	91	45	90	54,0	108	86	58	45	49	10,5	M12	1,83

Housing Material: Aluminum Alloy Grey Anodized

Type SPTWN and SSETWN Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SPTWN-M08-XS	8	62	50	19,5	25	0,15
SSETWN-M12-XS	12	76	56	23,0	28	0,27
SSETWN-M16-XS	16	84	64	25,0	32	0,41
SSETWN-M20-XS	20	104	76	30,5	38	0,73
SSETWN-M25-XS	25	130	94	37,0	47	1,37
SSETWN-M30-XS	30	152	106	43,0	53	2,04
SSETWN-M40-XS	40	176	124	49,0	62	3,73

Housing Material: Aluminum Alloy Grey Anodized

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (N)
1MA-M08-NOO	620	SPPB-M08-XS	310
1MA-M12-NOO	1300	SSEPB-M12-XS	650
1MA-M16-NOO	4400	SSEPB-M16-XS	2200
1MA-M20-NOO	8000	SSEPB-M20-XS	4000
1MA-M25-NOO	13400	SSEPB-M25-XS	6700
1MA-M30-NOO	16600	SSEPB-M30-XS	8300
1MA-M40-NOO	27400	SSEPB-M40-XS	13700
1MA-M08-POO	500	SPTWN-M08-XS	500
1MA-M12-POO	1060	SSETWN-M12-XS	1060
1MA-M16-POO	4400	SSETWN-M16-XS	4400
1MA-M20-POO	8000	SSETWN-M20-XS	8000
1MA-M25-POO	13400	SSETWN-M25-XS	13400
1MA-M30-POO	16600	SSETWN-M30-XS	16600
1MA-M40-POO	27400	SSETWN-M40-XS	27400

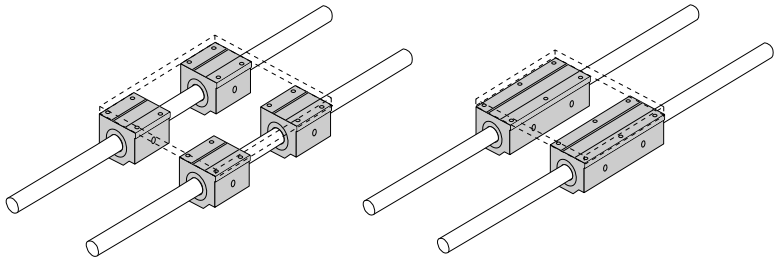
† Super Plus Ball Bushing* bearings are used in 8 mm size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support 1MB

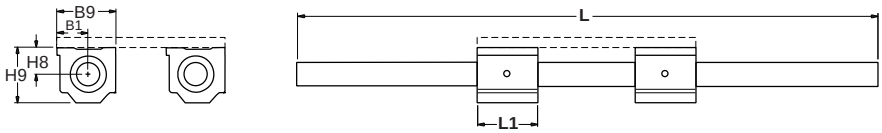
Linear Guide #9

Unsupported,
Industry Standard Dimension

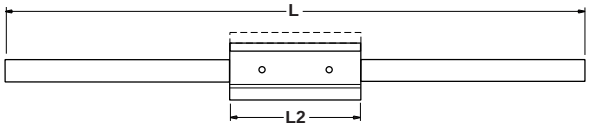


METRIC

Double Linear Guide with 4 Pillow Blocks



Double Linear Guide with 2 Twin Pillow Blocks



End Support Linear Guide 1MB Double with 4 Pillow Blocks (Dimensions in mm)

Part Number	Nominal Diameter	L1	H8	H9	B1	B9	Pillow Block
1MB-M08-NOO	8	32	15	28	17,5	35	SPPB-M08-XS
1MB-M12-NOO	12	39	18	35	21,5	43	SSEPB-M12-XS
1MB-M16-NOO	16	43	22	42	26,5	53	SSEPB-M16-XS
1MB-M20-NOO	20	54	25	50	30,0	60	SSEPB-M20-XS
1MB-M25-NOO	25	67	30	60	39,0	78	SSEPB-M25-XS
1MB-M30-NOO	30	79	35	70	43,5	87	SSEPB-M30-XS
1MB-M40-NOO	40	91	45	90	54,0	108	SSEPB-M40-XS

End Support Linear Guide 1MB Double with 2 Twin Pillow Blocks (Dimensions in mm)

Part Number	Nominal Diameter	L2	H8	H9	B1	B9	Pillow Block
1MB-M08-POO	8	62	15	28	17,5	35	SPTWN-M08-XS
1MB-M12-POO	12	76	18	35	21,5	43	SSETWN-M12-XS
1MB-M16-POO	16	84	22	42	26,5	53	SSETWN-M16-XS
1MB-M20-POO	20	104	25	50	30,0	60	SSETWN-M20-XS
1MB-M25-POO	25	130	30	60	39,0	78	SSETWN-M25-XS
1MB-M30-POO	30	152	35	70	43,5	87	SSETWN-M30-XS
1MB-M40-POO	40	176	45	90	54,0	108	SSETWN-M40-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support Linear Guide 1MB Benefits:

- Allows for custom table mounting.
- Design flexibility for custom end supports.
- Double LinearRace* shaft configuration resists torque.
- Used in end supported applications when spanning or bridging a gap.

End Support Linear Guide 1MB Components: †

- 4 Super Smart Ball Bushing* pillow blocks or 2 Super Smart Ball Bushing twin pillow blocks.
- 2 60 Case* LinearRace shafts.

Specifying a Thomson Linear Guide:

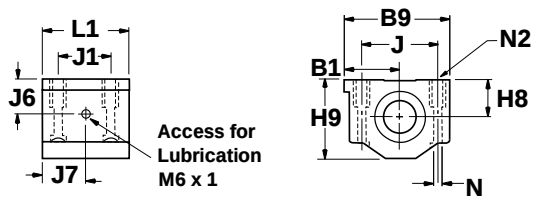
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters,as a suffix to the part number.

Part Numbering System

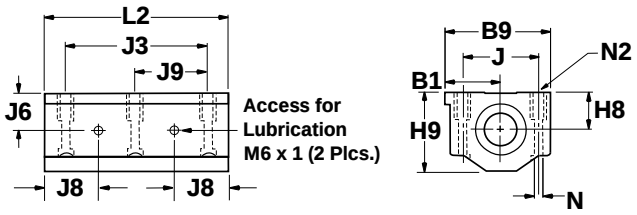
1MB-M12-NOO L600

- 1MB – Linear guide Designation
- M12 – Nominal Diameter
- NOO – Type of Bearing Block
- L600 – Linear guide Length

Type SPPB Super Plus Ball Bushing Pillow Block
Type SSEPB Super Smart Ball Bushing Pillow Block



Type SPTWN Super Plus Ball Bushing Twin Pillow Block
Type SSETWN Super Smart Ball Bushing Twin Pillow Block



Type SPPB and SSEPB Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J	J1	J6	J7	N Dia.	N2	Mass kg
SPPB-M08-XS	8	32	15	28	17,5	35	25	20	15	19,5	3,3	M4	0,07
SSEPB-M12-XS	12	39	18	35	21,5	43	32	23	18	23,0	4,3	M5	0,13
SSEPB-M16-XS	16	43	22	42	26,5	53	40	26	22	25,0	5,3	M6	0,20
SSEPB-M20-XS	20	54	25	50	30,0	60	45	32	25	30,5	6,6	M8	0,35
SSEPB-M25-XS	25	67	30	60	39,0	78	60	40	30	37,0	8,4	M10	0,66
SSEPB-M30-XS	30	79	35	70	43,5	87	68	45	35	43,0	8,4	M10	0,99
SSEPB-M40-XS	40	91	45	90	54,0	108	86	58	45	49,0	10,5	M12	1,83

Housing Material: Aluminum Alloy Grey Anodized

Type SPTWN and SSETWN Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SPTWN-M08-XS	8	62	50	19,5	25	0,15
SSETWN-M12-XS	12	76	56	23,0	28	0,27
SSETWN-M16-XS	16	84	64	25,0	32	0,41
SSETWN-M20-XS	20	104	76	30,5	38	0,73
SSETWN-M25-XS	25	130	94	37,0	47	1,37
SSETWN-M30-XS	30	152	106	43,0	53	2,04
SSETWN-M40-XS	40	176	124	49,0	62	3,73

Housing Material: Aluminum Alloy Grey Anodized

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (N)
1MB-M08-NOO	1240	SPPB-M08-XS	310
1MB-M12-NOO	2600	SSEPB-M12-XS	650
1MB-M16-NOO	8800	SSEPB-M16-XS	2200
1MB-M20-NOO	16000	SSEPB-M20-XS	4000
1MB-M25-NOO	26800	SSEPB-M25-XS	6700
1MB-M30-NOO	33200	SSEPB-M30-XS	8300
1MB-M40-NOO	54800	SSEPB-M40-XS	13700
1MB-M08-POO	1000	SPTWN-M08-XS	500
1MB-M12-POO	2120	SSETWN-M12-XS	1060
1MB-M16-POO	8800	SSETWN-M16-XS	4400
1MB-M20-POO	16000	SSETWN-M20-XS	8000
1MB-M25-POO	26800	SSETWN-M25-XS	13400
1MB-M30-POO	33200	SSETWN-M30-XS	16600
1MB-M40-POO	54800	SSETWN-M40-XS	27400

† Super Plus Ball Bushing* bearings are used in 8 mm size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support 1MC

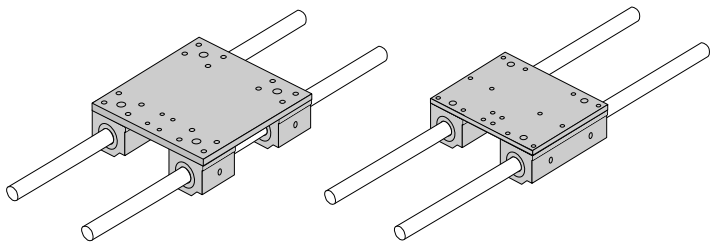
Linear Guide #9

with Table Top

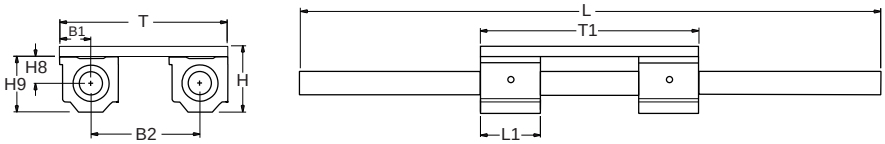
Unsupported,

Industry Standard Dimension

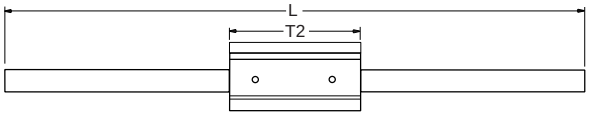
METRIC



Double Linear Guide with 4 Pillow Blocks and Size F Table Top



Double Linear Guide with 2 Twin Pillow Blocks and Size E Table Top



End Support Linear Guide 1MC Double with 4 Pillow Blocks and Table Top (Size F) (Dimensions in mm)

Part Number	Nominal Diameter	L1	H	H8	H9	B1	B2	B9	T	T1	Pillow Block
1MC-M08-NOF	8	32	38	15	28	17,5	50	35	85	85	SPPB-M08-XS
1MC-M12-NOF	12	39	45	18	35	21,5	57	43	100	100	SSEPB-M12-XS
1MC-M16-NOF	16	43	55	22	42	26,5	70	53	125	125	SSEPB-M16-XS
1MC-M20-NOF	20	54	66	25	50	30,0	110	60	175	175	SSEPB-M20-XS
1MC-M25-NOF	25	67	80	30	60	39,0	147	78	225	225	SSEPB-M25-XS
1MC-M30-NOF	30	79	90	35	70	43,5	188	87	275	275	SSEPB-M30-XS
1MC-M40-NOF	40	91	115	45	90	54,0	217	108	325	325	SSEPB-M40-XS

End Support Linear Guide 1MC Double with 2 Twin Pillow Blocks and Table Top (Size E) (Dimensions in mm)

Part Number	Nominal Diameter	H	H8	H9	B1	B2	B9	T	T2	Pillow Block
1MC-M08-POE	8	38	15	28	17,5	50	35	85	62	SPTWN-M08-XS
1MC-M12-POE	12	45	18	35	21,5	55	43	100	76	SSETWN-M12-XS
1MC-M16-POE	16	55	22	42	26,5	70	53	125	84	SSETWN-M16-XS
1MC-M20-POE	20	66	25	50	30,0	110	60	175	104	SSETWN-M20-XS
1MC-M25-POE	25	80	30	60	39,0	140	78	225	130	SSETWN-M25-XS
1MC-M30-POE	30	90	35	70	43,5	180	87	275	152	SSETWN-M30-XS
1MC-M40-POE	40	115	45	90	54,0	210	108	325	176	SSETWN-M40-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support Linear Guide 1MC Benefits:

- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- Includes Ball Screw Assembly attachment holes for ease of assembly and actuation.
- Used in end supported applications when spanning or bridging a gap.

End Support Linear Guide 1MC Components: †

- 4 Super Smart Ball Bushing* pillow blocks or 2 Super Smart Ball Bushing twin pillow blocks.
- 2 60 Case* LinearRace* shafts.
- 1 mounting table top with work piece and Ball Screw Assembly attachment holes.

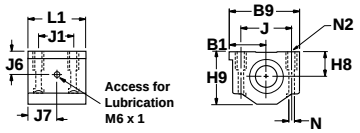
Specifying a Thomson Linear Guide:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

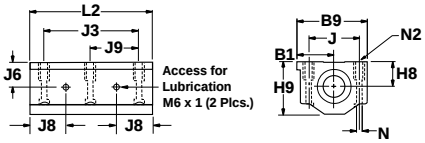
1MC-M12-NOF L600

- 1MC — Linear Guide Designation
- M12 — Nominal Diameter
- NOF — Type of Bearing Block
- L600 — Linear Guide Length
- Type of Table Top

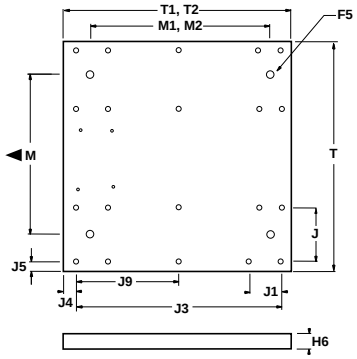
Type SPPB Super Plus Ball Bushing Pillow Block
Type SSEPB Super Smart Ball Bushing Pillow Block



Type SPTWN Super Plus Ball Bushing Twin Pillow Block
Type SSETWN Super Smart Ball Bushing Twin Pillow Block



Mounting Table Top



Type SPPB and SSEPB Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J	J1	J6	J7	N Dia.	N2	Mass kg
SPPB-M08-XS	8	32	15	28	17,5	35	25	20	15	19,5	3,3	M4	0,07
SSEPB-M12-XS	12	39	18	35	21,5	43	32	23	18	23,0	4,3	M5	0,13
SSEPB-M16-XS	16	43	22	42	26,5	53	40	26	22	25,0	5,3	M6	0,20
SSEPB-M20-XS	20	54	25	50	30,0	60	45	32	25	30,5	6,6	M8	0,35
SSEPB-M25-XS	25	67	30	60	39,0	78	60	40	30	37,0	8,4	M10	0,66
SSEPB-M30-XS	30	79	35	70	43,5	87	68	45	35	43,0	8,4	M10	0,99
SSEPB-M40-XS	40	91	45	90	54,0	108	86	58	45	49,0	10,5	M12	1,83

Housing Material: Aluminum Alloy Grey Anodized

Type SPTWN and SSETWN Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SPTWN-M08-XS	8	62	50	19,5	25	0,15
SSETWN-M12-XS	12	76	56	23,0	28	0,27
SSETWN-M16-XS	16	84	64	25,0	32	0,41
SSETWN-M20-XS	20	104	76	30,5	38	0,73
SSETWN-M25-XS	25	130	94	37,0	47	1,37
SSETWN-M30-XS	30	152	106	43,0	53	2,04
SSETWN-M40-XS	40	176	124	49,0	62	3,73

Housing Material: Aluminum Alloy Grey Anodized

Mounting Table Top (Dimensions in mm)

Nominal Diameter	All Table Tops					Table Top Size **F**					Table Top Size **E**					
	T	M	J	H6	F5[2]	T1	J1	J4	J5	M1	T2	J3	J4	J5	J9	M2
08	85	50	25	10	M6	85	20	6,0	5,0	50	62	50	6	5,0	25	35
12	100	55	32	10	M6	100	23	8,0	6,5	55	76	56	10	6,5	28	40
16	125	70	40	13	M6	125	26	10,0	7,5	70	84	64	10	7,5	32	45
20	175	110	45	16	M8	175	32	11,0	10,0	110	104	76	14	10,0	38	55
25	225	140	60	20	M8	225	40	13,5	12,5	140	130	94	18	12,5	47	65
30	275	180	68	20	M8	275	45	17,0	13,5	180	152	106	23	13,5	53	75
40	325	210	86	25	M10	325	58	16,5	14,5	210	176	124	26	14,5	62	85

Carriage Material: Aluminum Alloy Grey Anodized

[2] Customer Mounting hole.

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (N)
1MC-M08-NOF	1240	SPPB-M08-XS	310
1MC-M12-NOF	2600	SSEPB-M12-XS	650
1MC-M16-NOF	8800	SSEPB-M16-XS	2200
1MC-M20-NOF	16000	SSEPB-M20-XS	4000
1MC-M25-NOF	26800	SSEPB-M25-XS	6700
1MC-M30-NOF	33200	SSEPB-M30-XS	8300
1MC-M40-NOF	54800	SSEPB-M40-XS	13700

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (N)
1MC-M08-POE	1000	SPTWN-M08-XS	500
1MC-M12-POE	2120	SSETWN-M12-XS	1060
1MC-M16-POE	8800	SSETWN-M16-XS	4400
1MC-M20-POE	16000	SSETWN-M20-XS	8000
1MC-M25-POE	26800	SSETWN-M25-XS	13400
1MC-M30-POE	33200	SSETWN-M30-XS	16600
1MC-M40-POE	54800	SSETWN-M40-XS	27400

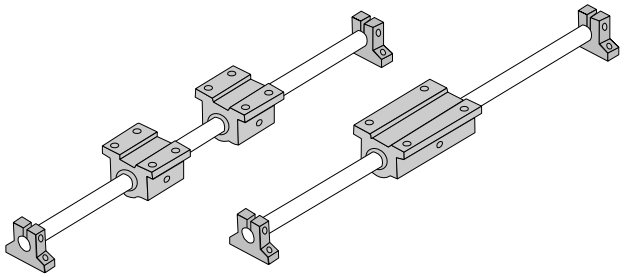
† Super Plus Ball Bushing* bearings are used in 8 mm size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support 1BA

Linear Guide #9

End Supported, Industry Standard Dimension



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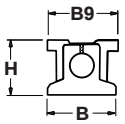
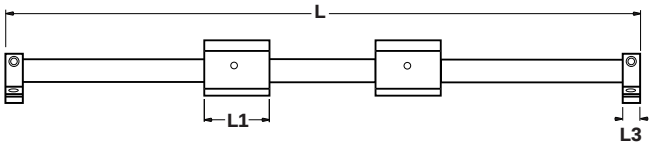
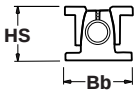
Type ASB
End Support Block



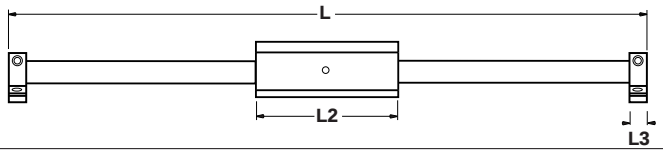
Single End Supported Linear Guide with 2 Pillow Blocks





Type SB
End Support Block

Single End Supported Linear Guide with 1 Twin Pillow Block



End Support Linear Guide 1BA with 2 Pillow Blocks (Dimensions in inches)

Part Number		Nominal	L1	L3	H	HS	B	Bb	B9	Pillow	Shaft Support	
W/ Type ASB Shaft Supports	W/ Type SB Shaft Supports	Diameter								Block	Type ASB	Type SB
1BA-04-AHO	**–**	.250	1.19	.50	.937	–	1.50	–	1.63	SPB-4-XS	ASB-4-XS	–
1BA-06-AHO	**–**	.375	1.31	.56	1.062	–	1.63	–	1.75	SPB-6-XS	ASB-6-XS	–
1BA-08-AHO	**1BA-08-AJO**	.500	1.69	.63	1.562	1.687	2.00	2.00	2.00	SSUPB-8-XS	ASB-8-XS	SB-8-XS
1BA-12-AHO	**1BA-12-AJO**	.750	2.06	.75	2.062	2.187	2.50	2.75	2.75	SSUPB-12-XS	ASB-12-XS	SB-12-XS
1BA-16-AHO	**1BA-16-AJO**	1.000	2.81	1.00	2.562	2.687	3.25	3.25	3.25	SSUPB-16-XS	ASB-16-XS	SB-16-XS
–	**1BA-20-AJO**	1.250	3.63	1.13	–	3.250	–	–	4.00	SSUPB-20-XS	–	SB-20-XS
1BA-24-AHO	**1BA-24-AJO**	1.500	4.00	1.25	3.750	3.750	4.75	4.75	4.75	SSUPB-24-XS	ASB-24-XS	SB-24-XS

End Support Linear Guide 1BA with 1 Twin Pillow Block (Dimensions in inches)

Part Number		Nom.	L2	L3	H	HS	B	Bb	B9	Max.	Pillow	Shaft Support	
W/ Type ASB Shaft Supports	W/ Type SB Shaft Supports	Dia.								Stroke Length	Block	Type ASB	Type SB
1BA-04-BHO	**–**	.250	2.50	.50	.937	–	1.50	–	1.63	L-(3.50)	TWN-4-XS	ASB-4-XS	–
1BA-06-BHO	**–**	.375	2.75	.56	1.062	–	1.63	–	1.75	L-(3.88)	TWN-6-XS	ASB-6-XS	–
1BA-08-BHO	**1BA-08-BJO**	.500	3.50	.63	1.562	1.687	2.00	2.00	2.00	L-(4.75)	SSUTWN-8-XS	ASB-8-XS	SB-8-XS
1BA-12-BHO	**1BA-12-BJO**	.750	4.50	.75	2.062	2.187	2.50	2.75	2.50	L-(6.00)	SSUTWN-12-XS	ASB-12-XS	SB-12-XS
1BA-16-BHO	**1BA-16-BJO**	1.000	6.00	1.00	2.562	2.687	3.25	3.25	3.25	L-(8.00)	SSUTWN-16-XS	ASB-16-XS	SB-16-XS
–	**1BA-20-BJO**	1.250	7.50	1.13	–	3.250	–	4.00	4.00	L-(9.75)	SSUTWN-20-XS	–	SB-20-XS
1BA-24-BHO	**1BA-24-BJO**	1.500	9.00	1.25	3.750	3.750	4.75	4.75	4.75	L-(11.50)	SSUTWN-24-XS	ASB-24-XS	SB-24-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support Linear Guide 1BA Benefits:

- Requires only one part number to specify entire linear guide.
- Available with 60 Case* LinearRace* Shaft end support blocks in either light weight aluminum or rigid iron materials.
- Used to provide increased stability or torque resistance in linear system applications.

End Support Linear Guide 1BA Components: †

- 2 Super Smart Ball Bushing* pillow blocks or 1 Super Smart Ball Bushing twin pillow block.
- 1 60 Case LinearRace shaft.
- 2 Shaft End Support Blocks.

Specifying this Thomson Linear Guide:

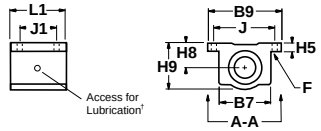
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

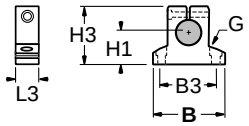
1BA-12-AHO L24

- 1BA — Linear Guide Designation
- 12 — Nominal Diameter
- AHO — Type of Bearing Block
- L24 — Linear Guide Length
- Type of Support

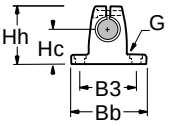
Type SSUPB Super Smart Ball Bushing Pillow Block
Type SPB Super Ball Bushing Pillow Block



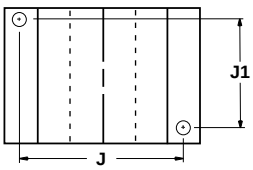
Type ASB LinearRace Shaft End Support Block



Type SB LinearRace Shaft End Support Block

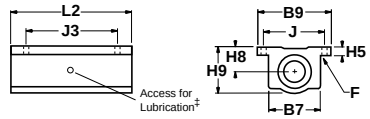


Type SPB Super Ball Bushing Pillow Block Mounting Hole Position for Sizes .250 and .375



View A-A

Type SSUTWN Super Smart Ball Bushing Twin Pillow Block
Type TWN Super Ball Bushing Twin Pillow Block



‡ Sizes .250, .375 and .500 have oil lubricant fitting.
Sizes .625 and above have ¼-28 access for lubrication.

Type SPB and SSUPB Pillow Blocks (Dimensions in Inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B7	J	J1	F Bolt	F Hole	Wt. lb
SPB-4-XS	.250	1.19	.81	.437	.19	1.63	1.00	1.31	.75(2)	#6	.16	.10
SPB-6-XS	.375	1.31	.94	.500	.19	1.75	1.12	1.44	.88(2)	#6	.16	.13
SSUPB-8-XS	.500	1.69	1.25	.687	.25	2.00	1.38	1.69	1.00	#6	.16	.20
SSUPB-12-XS	.750	2.06	1.75	.937	.31	2.75	1.88	2.38	1.25	#8	.19	.62
SSUPB-16-XS	1.000	2.81	2.19	1.187	.38	3.25	2.38	2.88	1.75	#10	.22	1.24
SSUPB-20-XS	1.250	3.63	2.81	1.500	.43	4.00	3.00	3.50	2.00	#10	.22	2.57
SSUPB-24-XS	1.500	4.00	3.25	1.750	.50	4.75	3.50	4.12	2.50	¼	.28	3.94

Housing Material: Aluminum Alloy Black Anodized
(2)Two mounting holes as shown in view A-A for sizes .250 and .375

Type TWN and SSUTWN Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
TWN-4-XS	.250	2.50	2.00	.19
TWN-6-XS	.375	2.75	2.25	.25
SSUTWN-8-XS	.500	3.50	2.50	.40
SSUTWN-12-XS	.750	4.50	3.50	1.24
SSUTWN-16-XS	1.000	6.00	4.50	2.48
SSUTWN-20-XS	1.250	7.50	5.50	5.14
SSUTWN-24-XS	1.500	9.00	6.50	8.08

Housing Material: Aluminum Alloy Black Anodized

Type ASB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	L3	H3	H1	B	B3	G Bolt	G Hole	Wt. lb
ASB-04-XS	.250	.50	.88	.500	1.50	1.12	#6	.16	.06
ASB-06-XS	.375	.56	1.00	.562	1.62	1.25	#6	.16	.08
ASB-08-XS	.500	.63	1.48	.875	2.00	1.50	#8	.19	.11
ASB-12-XS	.750	.75	1.95	1.125	2.50	2.00	#10	.22	.22
ASB-16-XS	1.000	1.00	2.48	1.375	3.25	2.50	¼	.28	.44
ASB-24-XS	1.500	1.250	3.50	2.000	4.75	3.50	5/16	.34	1.16

End Support Material: Aluminum Alloy Black Anodized

Type SB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	L3	Hh	Hc	Bb	B3	G Bolt	G Hole	Wt. lb
SB-8-XS	.500	.63	1.62	1.000	2.00	1.50	#8	.19	.3
SB-12-XS	.750	.75	2.12	1.250	2.75	2.00	#10	.22	.5
SB-16-XS	1.000	1.00	2.56	1.500	3.25	2.50	¼	.28	1.0
SB-20-XS	1.250	1.13	3.00	1.750	4.00	3.00	5/16	.34	2.0
SB-24-XS	1.500	1.25	3.50	2.000	4.75	3.50	5/16	.34	2.6

Material: Iron

Dynamic Load Capacity Matrix (4 million inches travel)

Linear Guide Assembly Part No.		Dynamic Load Capacity (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (lb_f)
1BA-04-AHO	–	100	SPB-4-XS	50
1BA-06-AHO	–	160	SPB-6-XS	80
1BA-08-AHO	**1BA-08-AJO**	800	SSUPB-8-XS	400
1BA-12-AHO	**1BA-12-AJO**	1800	SSUPB-12-XS	900
1BA-16-AHO	**1BA-16-AJO**	3000	SPSUB-16-XS	1500
–	**1BA-20-AJO**	3730	SSUPB-20-XS	1865
1BA-24-AHO	**1BA-24-AJO**	6160	SSUPB-24-XS	3080

Dynamic Load Capacity Matrix (4 million inches travel)

Linear Guide Assembly Part No.		Dynamic Load Capacity (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (lb_f)
1BA-04-BHO	–	100	TWN-4-XS	100
1BA-06-BHO	–	160	TWN-6-XS	160
1BA-08-BHO	**1BA-08-BJO**	800	SSUTWN-8-XS	800
1BA-12-BHO	**1BA-12-BJO**	1800	SSUTWN-12-XS	1800
1BA-16-BHO	**1BA-16-BJO**	3000	SPSTWN-16-XS	3020
–	**1BA-20-BJO**	3730	SSUTWN-20-XS	1865
1BA-24-BHO	**1BA-24-BJO**	6160	SSUTWN-24-XS	6160

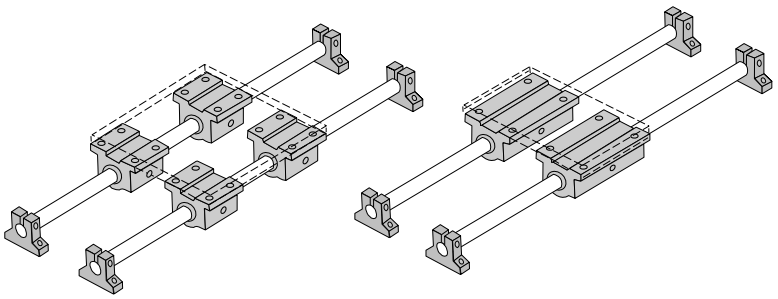
† Super Ball Bushing* bearings are used in .250 and .375 inch size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support 1BB

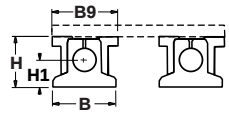
Linear Guide #9

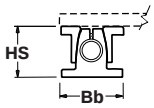
End Supported, Industry Standard Dimension



INCH

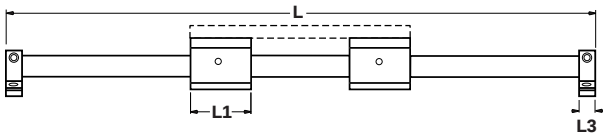
Type ASB
End Support Block



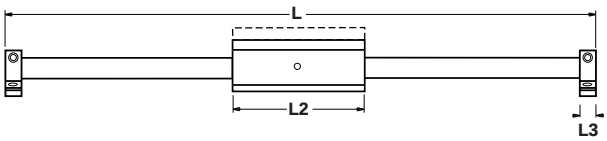


Type SB
End Support Block

Double End Supported Linear Guide with 4 Pillow Blocks



Double End Supported Linear Guide with 2 Twin Pillow Blocks



Maximum Stroke Length is determined by subtracting pillow block length **(L2)** and 2x support block length **(L3)** from total Linear Guide length **(L).**

End Support Linear Guide 1BB with 4 Pillow Blocks (Dimensions in inches)

Part Number		Nominal	L1	L3	H	HS	B	Bb	B9	Pillow	Shaft Support	
W/ Type ASB Shaft Supports	W/ Type SB Shaft Supports	Diameter								Block	Type ASB	Type SB
1BB-04-AHO	**–**	.250	1.19	.50	.937	–	1.50	–	1.63	SPB-4-XS	ASB-4-XS	–
1BB-06-AHO	**–**	.375	1.31	.56	1.062	–	1.63	–	1.75	SPB-6-XS	ASB-6-XS	–
1BB-08-AHO	**1BB-08-AJO**	.500	1.69	.63	1.562	1.687	2.00	2.00	2.00	SSUPB-8-XS	ASB-8-XS	SB-8-XS
1BB-12-AHO	**1BB-12-AJO**	.750	2.06	.75	2.062	2.187	2.50	2.75	2.75	SSUPB-12-XS	ASB-12-XS	SB-12-XS
1BB-16-AHO	**1BB-16-AJO**	1.000	2.81	1.00	2.562	2.687	3.25	3.25	3.25	SSUPB-16-XS	ASB-16-XS	SB-16-XS
–	**1BB-20-AJO**	1.250	3.63	1.13	–	3.250	–	–	4.00	SSUPB-20-XS	–	SB-20-XS
1BB-24-AHO	**1BB-24-AJO**	1.500	4.00	1.25	3.750	3.750	4.75	4.75	4.75	SSUPB-24-XS	ASB-24-XS	SB-24-XS

End Support Linear Guide 1BB with 2 Twin Pillow Blocks (Dimensions in inches)

Part Number		Nom.	L2	L3	H	HS	B	Bb	B9	Max.	Pillow	Shaft Support	
W/ Type ASB Shaft Supports	W/ Type SB Shaft Supports	Dia.								Stroke Length	Block	Type ASB	Type SB
1BB-04-BHO	**–**	.250	2.50	.50	.937	–	1.50	–	1.63	L-(3.50)	TWN-4-XS	ASB-4-XS	–
1BB-06-BHO	**–**	.375	2.75	.56	1.062	–	1.63	–	1.75	L-(3.88)	TWN-6-XS	ASB-6-XS	–
1BB-08-BHO	**1BB-08-BJO**	.500	3.50	.63	1.562	1.687	2.00	2.00	2.00	L-(4.75)	SSUTWN-8-XS	ASB-8-XS	SB-8-XS
1BB-12-BHO	**1BB-12-BJO**	.750	4.50	.75	2.062	2.187	2.50	2.75	2.50	L-(6.00)	SSUTWN-12-XS	ASB-12-XS	SB-12-XS
1BB-16-BHO	**1BB-16-BJO**	1.000	6.00	1.00	2.562	2.687	3.25	3.25	3.25	L-(8.00)	SSUTWN-16-XS	ASB-16-XS	SB-16-XS
–	**1BB-20-BJO**	1.250	7.50	1.13	–	3.250	–	4.00	4.00	L-(9.75)	SSUTWN-20-XS	–	SB-20-XS
1BB-24-BHO	**1BB-24-BJO**	1.500	9.00	1.25	3.750	3.750	4.75	4.75	4.75	L-(11.50)	SSUTWN-24-XS	ASB-24-XS	SB-24-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support Linear Guide 1BB Benefits:

- Requires only one part number to specify entire linear guide.
- Available with 60 Case* LinearRace* Shaft end support blocks in either light weight aluminum or rigid iron
- Used in end supported applications when spanning or bridging a gap.

End Support Linear Guide 1BB Components: †

- 4 Super Smart Ball Bushing* pillow blocks or Super Smart Ball Bushing twin pillow blocks.
- 2 60 Case LinearRace shafts.
- 4 Shaft End Support Blocks.

Specifying a Thomson Linear Guide:

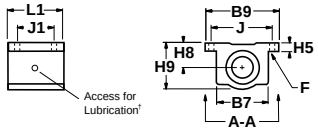
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

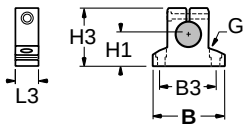
1BB-12-AHO L24

- 1BB — Linear Guide Designation
- 12 — Nominal Diameter
- AHO — Type of Bearing Block
- L24 — Linear Guide Length
- Type of Support

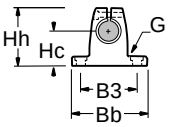
Type SSUPB Super Smart Ball Bushing Pillow Block
Type SPB Super Ball Bushing Pillow Block



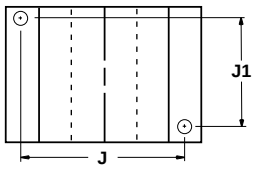
Type ASB LinearRace Shaft End Support Block



Type SB LinearRace Shaft End Support Block

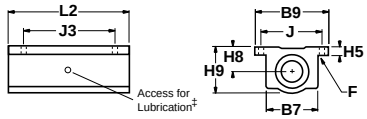


Type SPB Super Ball Bushing Pillow Block Mounting Hole Position for Sizes .250 and .375



View A-A

Type SSUTWN Super Smart Ball Bushing Twin Pillow Block
Type TWN Super Ball Bushing Twin Pillow Block



‡ Sizes .250, .375 and .500 have oil lubricant fitting.
Sizes .625 and above have ¼-28 access for lubrication.

Type SPB and SSUPB Pillow Blocks (Dimensions in Inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B7	J	J1	F Bolt	F Hole	Wt. lb
SPB-4-XS	.250	1.19	.81	.437	.19	1.63	1.00	1.31	.75[2]	#6	.16	.10
SPB-6-XS	.375	1.31	.94	.500	.19	1.75	1.12	1.44	.88[2]	#6	.16	.13
SSUPB-8-XS	.500	1.69	1.25	.687	.25	2.00	1.38	1.69	1.00	#6	.16	.20
SSUPB-12-XS	.750	2.06	1.75	.937	.31	2.75	1.88	2.38	1.25	#8	.19	.62
SSUPB-16-XS	1.000	2.81	2.19	1.187	.38	3.25	2.38	2.88	1.75	#10	.22	1.24
SSUPB-20-XS	1.250	3.63	2.81	1.500	.43	4.00	3.00	3.50	2.00	#10	.22	2.57
SSUPB-24-XS	1.500	4.00	3.25	1.750	.50	4.75	3.50	4.12	2.50	¼	.28	3.94

Housing Material: Aluminum Alloy Black Anodized
[2]Two mounting holes as shown in view A-A for sizes .250 and .375

Type TWN and SSUTWN Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
TWN-4-XS	.250	2.50	2.00	.19
TWN-6-XS	.375	2.75	2.25	.25
SSUTWN-8-XS	.500	3.50	2.50	.40
SSUTWN-12-XS	.750	4.50	3.50	1.24
SSUTWN-16-XS	1.000	6.00	4.50	2.48
SSUTWN-20-XS	1.250	7.50	5.50	5.14
SSUTWN-24-XS	1.500	9.00	6.50	8.08

Housing Material: Aluminum Alloy Black Anodized

Type ASB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	L3	H3	H1	B	B3	G Bolt	G Hole	Wt. lb
ASB-04-XS	.250	.50	.88	.500	1.50	1.12	#6	.16	.06
ASB-06-XS	.375	.56	1.00	.562	1.62	1.25	#6	.16	.08
ASB-08-XS	.500	.63	1.48	.875	2.00	1.50	#8	.19	.11
ASB-12-XS	.750	.75	1.95	1.125	2.50	2.00	#10	.22	.22
ASB-16-XS	1.000	1.00	2.48	1.375	3.25	2.50	¼	.28	.44
ASB-24-XS	1.500	1.250	3.50	2.000	4.75	3.50	5⁄16	.34	1.16

End Support Material: Aluminum Alloy Black Anodized

Type SB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	L3	Hh	Hc	Bb	B3	G Bolt	G Hole	Wt. lb
SB-8-XS	.500	.63	1.62	1.000	2.00	1.50	#8	.19	.3
SB-12-XS	.750	.75	2.12	1.250	2.75	2.00	#10	.22	.5
SB-16-XS	1.000	1.00	2.56	1.500	3.25	2.50	¼	.28	1.0
SB-20-XS	1.250	1.13	3.00	1.750	4.00	3.00	5⁄16	.34	2.0
SB-24-XS	1.500	1.25	3.50	2.000	4.75	3.50	5⁄16	.34	2.6

Material: Iron

Dynamic Load Capacity Matrix (4 million inches travel)

Linear Guide Assembly Part No.		Dynamic Load Capacity (lbf) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (lbf)
1BB-04-AHO	–	200	SPB-4-XS	50
1BB-06-AHO	–	320	SPB-6-XS	80
1BB-08-AHO	**1BB-08-AJO**	1600	SSUPB-8-XS	400
1BB-12-AHO	**1BB-12-AJO**	3600	SSUPB-12-XS	900
1BB-16-AHO	**1BB-16-AJO**	6000	SPSUB-16-XS	1500
–	**1BB-20-AJO**	7460	SSUPB-20-XS	1865
1BB-24-AHO	**1BB-24-AJO**	12320	SSUPB-24-XS	3080

Dynamic Load Capacity Matrix (4 million inches travel)

Linear Guide Assembly Part No.		Dynamic Load Capacity (lbf) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (lbf)
1BB-04-BHO	–	200	TWN-4-XS	100
1BB-06-BHO	–	320	TWN-6-XS	160
1BB-08-BHO	**1BB-08-BJO**	1600	SSUTWN-8-XS	800
1BB-12-BHO	**1BB-12-BJO**	3600	SSUTWN-12-XS	1800
1BB-16-BHO	**1BB-16-BJO**	6040	SPSTWN-16-XS	3020
–	**1BB-20-BJO**	7460	SSUTWN-20-XS	3730
1BB-24-BHO	**1BB-24-BJO**	12320	SSUTWN-24-XS	6160

† Super Ball Bushing* bearings are used in .250 and .375 inch pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

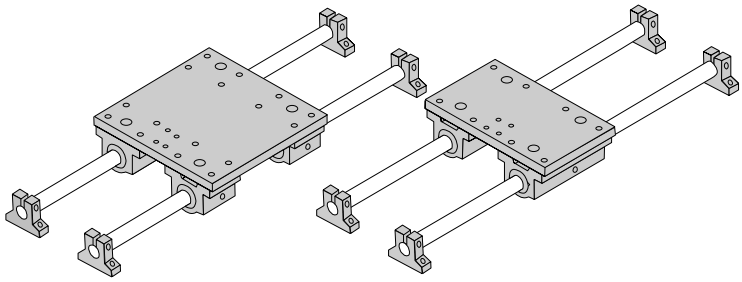
End Support 1BC

Linear Guide #9

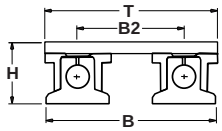
with Table Top

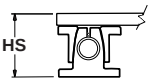
End Supported,
Industry Standard Dimension

INCH



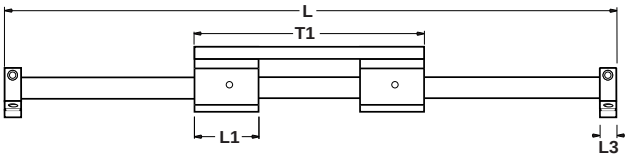
Type ASB
End Support Block



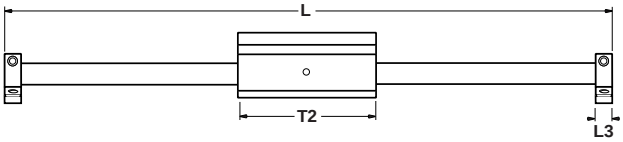


Type SB
End Support Block

Double End Supported Linear Guide with 4 Pillow Blocks and Size B Table Top



Double End Supported Linear Guide with 2 Twin Pillow Blocks and Size A Table Top



End Support Linear Guide 1BC with 4 Pillow Blocks and Table Top (Size B) (Dimensions in inch)

Part Number		Nom.	L1	L3	H	HS	B	B2	T	T1	Max.	Pillow	Shaft Support	
W/Type ASB Shaft Supports	W/Type SB Shaft Supports	Dia.									Stroke Length	Block	Type ASB	Type SB
1BC-04-AHB	**–**	.250	1.19	.50	1.187	–	3.75	2.25	4.00	4.00	L-(5.0)	SPB-4-XS	ASB-4-XS	–
1BC-06-AHB	**–**	.375	1.31	.56	1.312	–	4.13	2.50	4.50	4.50	L-(5.62)	SPB-6-XS	ASB-6-XS	–
1BC-08-AHB	**1BC-08-AJB**	.500	1.69	.63	1.937	2.062	5.25	3.25	5.50	5.50	L-(6.76)	SSUPB-8-XS	ASB-8-XS	SB-8-XS
1BC-12-AHB	**1BC-12-AJB**	.750	2.06	.75	2.562	2.687	7.00	4.50	7.50	7.50	L-(9.0)	SSUPB-12-XS	ASB-12-XS	SB-12-XS
1BC-16-AHB	**1BC-16-AJB**	1.000	2.81	1.00	3.062	3.187	8.75	5.50	9.00	9.00	L-(11.0)	SSUPB-16-XS	ASB-16-XS	SB-16-XS
–	**1BC-20-AJB**	1.250	3.63	1.13	–	4.000	–	6.75	11.00	11.00	L-(13.26)	SSUPB-20-XS	–	SB-20-XS
1BC-24-AHB	**1BC-24-AJB**	1.500	4.00	1.25	4.500	4.500	12.75	8.00	13.00	13.00	L-(15.5)	SSUPB-24-XS	ASB-24-XS	SB-24-XS

End Support Linear Guide 1BC with 2 Twin Pillow Blocks and Table Top (Size A) (Dimensions in inch)

Part Number		Nom.	T2	L3	H	HS	B	B2	T	Max.	Pillow	Shaft Support	
W/ Type ASB Shaft Supports	W/ Type SB Shaft Supports	Dia.								Stroke Length	Block	Type ASB	Type SB
1BC-04-BHA	**–**	.250	2.50	.50	1.187	–	3.75	2.25	4.00	L-(3.50)	TWN-4-XS	ASB-4-XS	–
1BC-06-BHA	**–**	.375	2.75	.56	1.132	–	4.13	2.50	4.50	L-(3.88)	TWN-6-XS	ASB-6-XS	–
1BC-08-BHA	**1BC-08-BJA**	.500	3.50	.63	1.937	2.062	5.25	3.25	5.50	L-(4.75)	SSUTWN-8-XS	ASB-8-XS	SB-8-XS
1BC-12-BHA	**1BC-12-BJA**	.750	4.50	.75	2.562	2.687	7.00	4.50	7.50	L-(6.00)	SSUTWN-12-XS	ASB-12-XS	SB-12-XS
1BC-16-BHA	**1BC-16-BJA**	1.000	6.00	1.00	3.062	3.187	8.75	5.50	9.00	L-(8.00)	SSUTWN-16-XS	ASB-16-XS	SB-16-XS
–	**1BC-20-BJA**	1.250	7.50	1.13	–	4.000	–	6.75	11.00	L-(9.75)	SSUTWN-20-XS	–	SB-20-XS
1BC-24-BHA	**1BC-24-BJA**	1.500	9.00	1.25	4.500	4.500	12.75	8.00	13.00	L-(11.50)	SSUTWN-24-XS	ASB-24-XS	SB-24-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support Linear Guide 1BC Benefits:

- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- Includes Ball Screw Assembly attachment holes for ease of assembly and actuation.
- Available with 60 Case* LinearRace* shaft end support blocks in either light weight aluminum or rigid iron materials.

End Support Linear Guide 1BC Components: †

- 4 Super Smart Ball Bushing* pillow blocks or 2 Super Smart Ball Bushing twin pillow blocks.
- 2 60 Case LinearRace shafts.
- 4 Shaft End Support Blocks.
- 1 mounting table top with work piece and Ball Screw Assembly attachment holes.

Specifying a Thomson Linear Guide:

1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

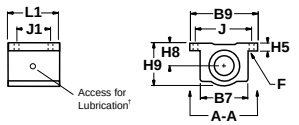
Part Numbering System

1BC-12-AHB L24

- 1BC — Linear Guide Designation
- 12 — Nominal Diameter
- AHB — Type of Bearing Block
- L24 — Linear Guide Length
- T — Type of Table Top
- S — Type of Support

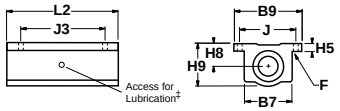
Type SSUPB Super Smart Ball Bushing Pillow Block

Type SPB Super Ball Bushing Pillow Block

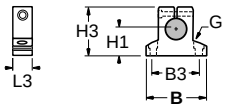


Type SSUTWN Super Smart Ball Bushing Twin Pillow Block

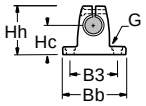
Type TWN Super Ball Bushing Twin Pillow Block



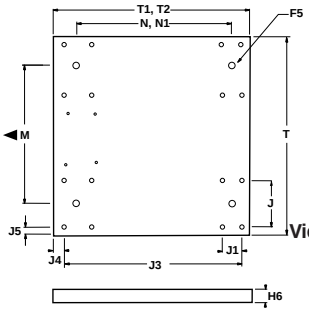
Type ASB LinearRace Shaft End Support Block



Type SB LinearRace Shaft End Support Block

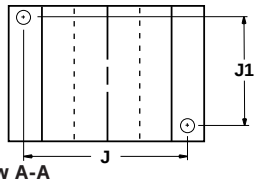


Mounting Table Top



Type SPB Super Ball Bushing Pillow Block

Mounting Hole Position for Sizes .250 and .375



‡ Sizes .250, .375 and .500 have oil lubricant fitting.
Sizes, .625 and above have 1/4-28 access for lubrication.

Type SPB and SSUPB Pillow Blocks (Dimensions in Inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B7	J	J1	F		Wt. lb
										Bolt	Hole	
SPB-4-XS	.250	1.19	.81	.437	.19	1.63	1.00	1.31	.75[2]	#6	.16	.10
SPB-6-XS	.375	1.31	.94	.500	.19	1.75	1.12	1.44	.88[2]	#6	.16	.13
SSUPB-8-XS	.500	1.69	1.25	.687	.25	2.00	1.38	1.69	1.00	#6	.16	.20
SSUPB-12-XS	.750	2.06	1.75	.937	.31	2.75	1.88	2.38	1.25	#8	.19	.62
SSUPB-16-XS	1.000	2.81	2.19	1.187	.38	3.25	2.38	2.88	1.75	#10	.22	1.24
SSUPB-20-XS	1.250	3.63	2.81	1.500	.43	4.00	3.00	3.50	2.00	#10	.22	2.57
SSUPB-24-XS	1.500	4.00	3.25	1.750	.50	4.75	3.50	4.12	2.50	1/4	.28	3.94

Housing Material: Aluminum Alloy Black Anodized
[2]Two mounting holes as shown in view A-A for sizes .250 and .375

Type TWN and SSUTWN Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
TWN-4-XS	.250	2.50	2.00	.19
TWN-6-XS	.375	2.75	2.25	.25
SSUTWN-8-XS	.500	3.50	2.50	.40
SSUTWN-12-XS	.750	4.50	3.50	1.24
SSUTWN-16-XS	1.000	6.00	4.50	2.48
SSUTWN-20-XS	1.250	7.50	5.50	5.14
SSUTWN-24-XS	1.500	9.00	6.50	8.08

Housing Material: Aluminum Alloy Black Anodized

Type ASB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	L3	H3	H1	B	B3	G		Wt. lb
							Bolt	Hole	
ASB-04-XS	.250	.50	.88	.500	1.50	1.12	#6	.16	.06
ASB-06-XS	.375	.56	1.00	.562	1.62	1.25	#6	.16	.08
ASB-08-XS	.500	.63	1.48	.875	2.00	1.50	#8	.19	.11
ASB-12-XS	.750	.75	1.95	1.125	2.50	2.00	#10	.22	.22
ASB-16-XS	1.000	1.00	2.48	1.375	3.25	2.50	1/4	.28	.44
ASB-24-XS	1.500	1.250	3.50	2.000	4.75	3.50	5/16	.34	1.16

End Support Material: Aluminum Alloy Black Anodized

Type SB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	L3	Hh	Hc	Bb	B3	G		Wt. lb
							Bolt	Hole	
SB-8-XS	.500	.63	1.62	1.000	2.00	1.50	#8	.19	.3
SB-12-XS	.750	.75	2.12	1.250	2.75	2.00	#10	.22	.5
SB-16-XS	1.000	1.00	2.56	1.500	3.25	2.50	1/4	.28	1.0
SB-20-XS	1.250	1.13	3.00	1.750	4.00	3.00	5/16	.34	2.0
SB-24-XS	1.500	1.25	3.50	2.000	4.75	3.50	5/16	.34	2.6

Material: Iron

Mounting Table Top (Dimensions in inches)

Nominal Diameter	All Table Tops					Table Top Size **B**					Table Top Size **A**				
	T	M	J	H6	F5	T1	J1	J4	J5	N	T2	J3	J4	J5	N1
.250	4.0	2.25	1.31	.250	#8-32	4.0	.75[2]	.22	.22	3.50	2.50	2.00	.25	.22	2.0
.375	4.5	2.50	1.44	.250	#10-32	4.5	.88[2]	.22	.28	3.75	2.75	2.25	.25	.28	2.0
.500	5.5	3.25	1.69	.375	1/4-20	5.5	1.00	.34	.28	4.50	3.50	2.50	.50	.31	2.5
.750	7.5	4.50	2.38	.500	5/16-18	7.5	1.25	.41	.31	6.00	4.50	3.50	.50	.31	3.0
1.000	9.0	5.50	2.88	.500	3/8-16	9.0	1.75	.53	.31	7.00	6.00	4.50	.75	.31	4.0
1.250	11.0	6.75	3.50	.750	1/2-13	11.0	2.00	.82	.38	8.50	7.50	5.50	1.00	.38	5.0
1.500	13.0	8.00	4.12	.750	1/2-13	13.0	2.50	.75	.44	10.00	9.00	6.50	1.25	.44	6.0

Carriage Material: Aluminum Alloy Black Anodized
[2]Two mounting holes as shown in view A-A for sizes .250 and .375

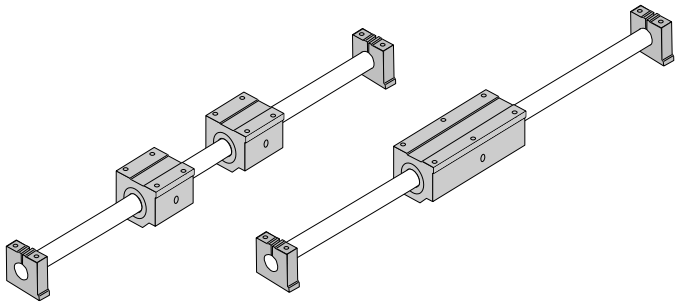
† Super Ball Bushing* bearings are used in .250 and .375 inch size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support 1NA

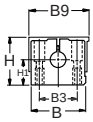
Linear Guide #9

End Supported, Industry Standard Dimension

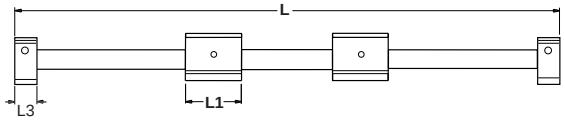


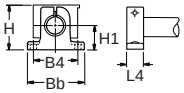
METRIC

Type ASB
End Support Block



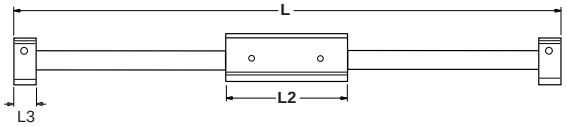
Supported Linear Guide with 2 Pillow Blocks





Type SB
End Support Block

Supported Linear Guide with 1 Twin Pillow Block



Maximum Stroke Length is determined by subtracting pillow block length **(L2)** and 2x support block length **(L3)** or **(L4)** from total Linear Guide length **(L)**.

End Support Linear Guide 1NA with 2 Pillow Blocks (Dimensions in mm)

Part Number		Nom.	L1	L3	L4	H	H1	B	Bb	B9	Pillow	Shaft Support	
W/ Type ASB Shaft Supports	W/ Type SB Shaft Supports	Dia.									Block	Type ASB	Type SB
1NA-M08-NMO	**1NA-M08-NNO**	8	32	18	10	30	15	32	32	35	SPPB-M08-XS	ASB-M08-XS	SB-M08-XS
1NA-M12-NMO	**1NA-M12-NNO**	12	39	20	12	38	20	43	42	43	SSEPB-M12-XS	ASB-M12-XS	SB-M12-XS
1NA-M16-NMO	**1NA-M16-NNO**	16	43	24	16	47	25	53	50	53	SSEPB-M16-XS	ASB-M16-XS	SB-M16-XS
1NA-M20-NMO	**1NA-M20-NNO**	20	54	30	20	55	30	60	60	60	SSEPB-M20-XS	ASB-M20-XS	SB-M20-XS
1NA-M25-NMO	**1NA-M25-NNO**	25	67	38	25	65	35	78	74	78	SSEPB-M25-XS	ASB-M25-XS	SB-M25-XS
1NA-M30-NMO	**1NA-M30-NNO**	30	79	40	28	75	40	87	84	87	SSEPB-M30-XS	ASB-M30-XS	SB-M30-XS
1NA-M40-NMO	**1NA-M40-NNO**	40	91	48	32	95	50	108	108	108	SSEPB-M40-XS	ASB-M40-XS	SB-M40-XS

End Support Linear Guide 1NA with 1 Twin Pillow Block (Dimensions in mm)

Part Number		Nom.	L2	L3	L4	H	H1	B	Bb	B9	Pillow	Shaft Support	
W/ Type ASB Shaft Supports	W/ Type SB Shaft Supports	Dia.									Block	Type ASB	Type SB
1NA-M08-PMO	**1NA-M08-PNO**	8	62	18	10	30	15	32	32	35	SPTWN-M08-XS	ASB-M08-XS	SB-M08-XS
1NA-M12-PMO	**1NA-M12-PNO**	12	76	20	12	38	20	43	42	43	SSETWN-M12-XS	ASB-M12-XS	SB-M12-XS
1NA-M16-PMO	**1NA-M16-PNO**	16	84	24	16	47	25	53	50	53	SSETWN-M16-XS	ASB-M16-XS	SB-M16-XS
1NA-M20-PMO	**1NA-M20-PNO**	20	104	30	20	55	30	60	60	60	SSETWN-M20-XS	ASB-M20-XS	SB-M20-XS
1NA-M25-PMO	**1NA-M25-PNO**	25	130	38	25	65	35	78	74	78	SSETWN-M25-XS	ASB-M25-XS	SB-M25-XS
1NA-M30-PMO	**1NA-M30-PNO**	30	152	40	28	75	40	87	84	87	SSETWN-M30-XS	ASB-M30-XS	SB-M30-XS
1NA-M40-PMO	**1NA-M40-PNO**	40	176	48	32	95	50	108	108	108	SSETWN-M40-XS	ASB-M40-XS	SB-M40-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support Linear Guide 1NA Benefits:

- Requires only one part number to specify entire linear guide.
- Available with 60 Case* LinearRace* shaft end support blocks in either light weight aluminum or rigid iron materials.
- Used as a load support, transport and guidance solution.

End Support Linear Guide 1NA Components: †

- 2 Super Smart Ball Bushing* pillow blocks or 1 Super Smart Ball Bushing twin pillow block.
- 1 60 Case LinearRace shaft.

Specifying a Thomson Linear Guide:

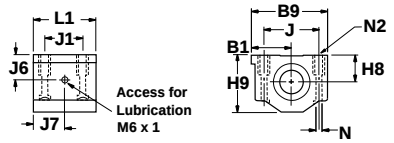
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

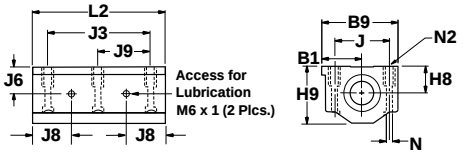
1NA-M12-NMO L600

- 1NA — Linear Guide Designation
- M12 — Nominal Diameter
- N — Type of Bearing Block
- MO — Type of Support
- L600 — Linear Guide Length

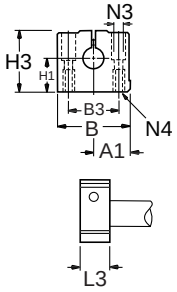
Type SPPB Super Plus Ball Bushing Pillow Block
Type SSEPB Super Smart Ball Bushing Pillow Block



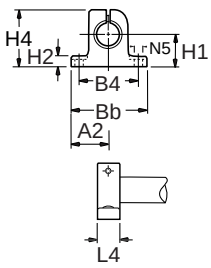
Type SPTWN Super Plus Ball Bushing Twin Pillow Block
Type SSETWN Super Smart Ball Bushing Twin Pillow Block



Type ASB LinearRace Shaft End Support Block



Type SB LinearRace Shaft End Support Block



Type SPPB and SSEPB Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J	J1	J6	J7	N Dia.	N2	Mass kg
SPPB-M08-XS	8	32	15	28	17,5	35	25	20	15	19,5	3,3	M4	0,07
SSEPB-M12-XS	12	39	18	35	21,5	43	32	23	18	23,0	4,3	M5	0,13
SSEPB-M16-XS	16	43	22	42	26,5	53	40	26	22	25,0	5,3	M6	0,20
SSEPB-M20-XS	20	54	25	50	30,0	60	45	32	25	30,5	6,6	M8	0,35
SSEPB-M25-XS	25	67	30	60	39,0	78	60	40	30	37,0	8,4	M10	0,66
SSEPB-M30-XS	30	79	35	70	43,5	87	68	45	35	43,0	8,4	M10	0,99
SSEPB-M40-XS	40	91	45	90	54,0	108	86	58	45	49,0	10,5	M12	1,83

Housing Material: Aluminum Alloy Grey Anodized

Type SPTWN and SSETWN Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SPTWN-M08-XS	8	62	50	19,5	25	0,15
SSETWN-M12-XS	12	76	56	23,0	28	0,27
SSETWN-M16-XS	16	84	64	25,0	32	0,41
SSETWN-M20-XS	20	104	76	30,5	38	0,73
SSETWN-M25-XS	25	130	94	37,0	47	1,37
SSETWN-M30-XS	30	152	106	43,0	53	2,04
SSETWN-M40-XS	40	176	124	49,0	62	3,73

Housing Material: Aluminum Alloy Grey Anodized

Type ASB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	A1	B	B3	H1	H3	L3	N3 Dia.	N4	Mass kg
ASB-M08-XS	8	16,0	32	22	15	28	18	3,5	M4	0,04
ASB-M12-XS	12	21,5	43	30	20	36	20	5,3	M6	0,10
ASB-M16-XS	16	26,5	53	38	25	43	24	6,6	M8	0,15
ASB-M20-XS	20	30,0	60	42	30	51	30	8,4	M10	0,23
ASB-M25-XS	25	39,0	78	56	35	61	38	10,5	M12	0,41
ASB-M30-XS	30	43,5	87	64	40	71	40	10,5	M12	0,53
ASB-M40-XS	40	54,0	108	82	50	88	48	13,5	M16	0,99

End Support Material: Aluminum Alloy Grey Anodized

Type SB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	A2	B4	Bb	H1	H2	H4	L4	N5 Dia.	Mass kg
SB-M08-XS	8	16	25	32	15	5,2	27	10	4,5	0,03
SB-M12-XS	12	21	32	42	20	5,5	35	12	5,5	0,06
SB-M16-XS	16	25	40	50	25	6,5	42	16	5,5	0,11
SB-M20-XS	20	30	45	60	30	8,0	50	20	5,5	0,21
SB-M25-XS	25	37	60	74	35	9,0	58	25	6,6	0,35
SB-M30-XS	30	42	68	84	40	10,0	68	28	9,0	0,52
SB-M40-XS	40	54	86	108	50	12,0	86	32	11,0	0,92

End Support Material: Iron

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.		Dynamic Load Capacity (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (N)
1NA-M08-NMO	**1NA-M08-NNO**	620	SPPB-M08-XS	310
1NA-M12-NMO	**1NA-M12-NNO**	1300	SSEPB-M12-XS	650
1NA-M16-NMO	**1NA-M16-NNO**	4400	SSEPB-M16-XS	2200
1NA-M20-NMO	**1NA-M20-NNO**	8000	SSEPB-M20-XS	4000
1NA-M25-NMO	**1NA-M25-NNO**	13400	SSEPB-M25-XS	6700
1NA-M30-NMO	**1NA-M30-NNO**	16600	SSEPB-M30-XS	8300
1NA-M40-NMO	**1NA-M40-NNO**	27400	SSEPB-M40-XS	13700

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.		Dynamic Load Capacity (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (N)
1NA-M08-PMO	**1NA-M08-PNO**	500	SPTWN-M08-XS	500
1NA-M12-PMO	**1NA-M12-PNO**	1060	SSETWN-M12-XS	1060
1NA-M16-PMO	**1NA-M16-PNO**	4400	SSETWN-M16-XS	4400
1NA-M20-PMO	**1NA-M20-PNO**	8000	SSETWN-M20-XS	8000
1NA-M25-PMO	**1NA-M25-PNO**	13400	SSETWN-M25-XS	13400
1NA-M30-PMO	**1NA-M30-PNO**	16600	SSETWN-M30-XS	16600
1NA-M40-PMO	**1NA-M40-PNO**	27400	SSETWN-M40-XS	27400

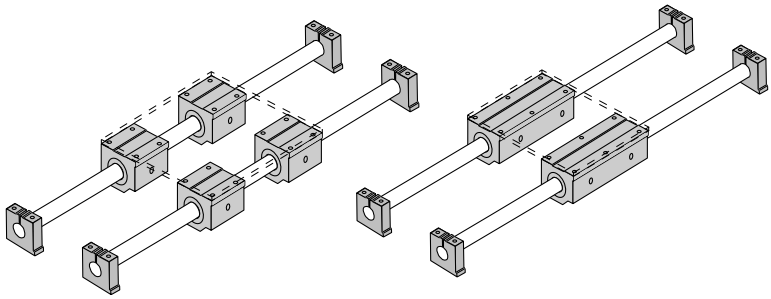
† Super Plus Ball Bushing* bearings are used in 8 mm size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support 1NB

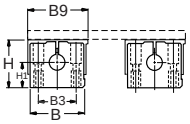
Linear Guide #9

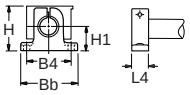
End Supported, Industry Standard Dimension



METRIC

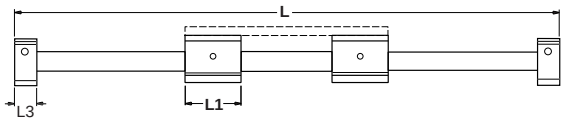
Type ASB
End Support Block



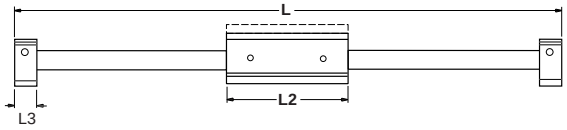


Type SB
End Support Block

Double End Supported Linear Guide with 4 Pillow Blocks



Double End Supported Linear Guide with 2 Twin Pillow Blocks



End Support Linear Guide 1NB with 4 Pillow Blocks (Dimensions in mm)

Part Number		Nom. Dia.	L1	L3	L4	H	H1	B	Bb	B9	Pillow Block	Shaft Support	
W/ Type ASB Shaft Supports	W/ Type SB Shaft Supports											Type ASB	Type SB
1NB-M08-NMO	**1NB-M08-NNO**	8	32	18	10	30	15	32	32	35	SPPB-M08-XS	ASB-M08-XS	SB-M08-XS
1NB-M12-NMO	**1NB-M12-NNO**	12	39	20	12	38	20	43	42	43	SSEPB-M12-XS	ASB-M12-XS	SB-M12-XS
1NB-M16-NMO	**1NB-M16-NNO**	16	43	24	16	47	25	53	50	53	SSEPB-M16-XS	ASB-M16-XS	SB-M16-XS
1NB-M20-NMO	**1NB-M20-NNO**	20	54	30	20	55	30	60	60	60	SSEPB-M20-XS	ASB-M20-XS	SB-M20-XS
1NB-M25-NMO	**1NB-M25-NNO**	25	67	38	25	65	35	78	74	78	SSEPB-M25-XS	ASB-M25-XS	SB-M25-XS
1NB-M30-NMO	**1NB-M30-NNO**	30	79	40	28	75	40	87	84	87	SSEPB-M30-XS	ASB-M30-XS	SB-M30-XS
1NB-M40-NMO	**1NB-M40-NNO**	40	91	48	32	95	50	108	108	108	SSEPB-M40-XS	ASB-M40-XS	SB-M40-XS

End Support Linear Guide 1NB with 2 Twin Pillow Blocks (Dimensions in mm)

Part Number		Nom. Dia.	L2	L3	L4	H	H1	B	Bb	B9	Pillow Block	Shaft Support	
W/ Type ASB Shaft Supports	W/ Type SB Shaft Supports											Type ASB	Type SB
1NB-M08-PMO	**1NB-M08-PNO**	8	62	18	10	30	15	32	32	35	SPTWN-M08-XS	ASB-M08-XS	SB-M08-XS
1NB-M12-PMO	**1NB-M12-PNO**	12	76	20	12	38	20	43	42	43	SSETWN-M12-XS	ASB-M12-XS	SB-M12-XS
1NB-M16-PMO	**1NB-M16-PNO**	16	84	24	16	47	25	53	50	53	SSETWN-M16-XS	ASB-M16-XS	SB-M16-XS
1NB-M20-PMO	**1NB-M20-PNO**	20	104	30	20	55	30	60	60	60	SSETWN-M20-XS	ASB-M20-XS	SB-M20-XS
1NB-M25-PMO	**1NB-M25-PNO**	25	130	38	25	65	35	78	74	78	SSETWN-M25-XS	ASB-M25-XS	SB-M25-XS
1NB-M30-PMO	**1NB-M30-PNO**	30	152	40	28	75	40	87	84	87	SSETWN-M30-XS	ASB-M30-XS	SB-M30-XS
1NB-M40-PMO	**1NB-M40-PNO**	40	176	48	32	95	50	108	108	108	SSETWN-M40-XS	ASB-M40-XS	SB-M40-XS

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support Linear Guide 1NB Benefits:

- Requires only one part number to specify entire linear guide.
- Available with 60 Case* LinearRace* shaft end support blocks in either light weight aluminum or rigid iron materials.
- Used in end supported applications when spanning or bridging a gap.

End Support Linear Guide 1NB Components: †

- 4 Super Smart Ball Bushing* pillow blocks or 2 Super Smart Ball Bushing twin pillow blocks.
- 2 60 Case LinearRace shafts.

Specifying a Thomson Linear guide:

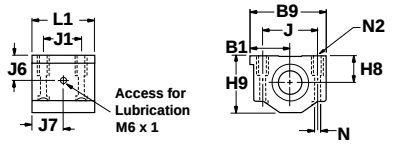
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

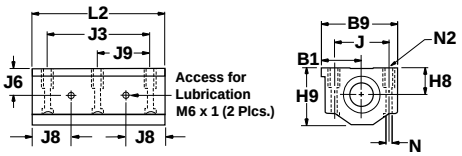
1NB-M12-NMO L600

- Linear Guide Designation
- Nominal Diameter
- Type of Bearing Block
- Linear Guide Length
- Type of Support

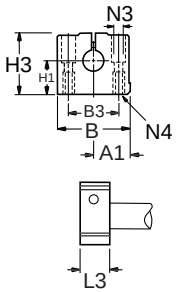
Type SPPB Super Plus Ball Bushing Pillow Block
Type SSEPB Super Smart Ball Bushing Pillow Block



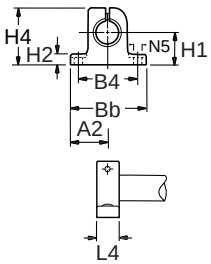
Type SPTWN Super Plus Ball Bushing Twin Pillow Block
Type SSETWN Super Smart Ball Bushing Twin Pillow Block



Type ASB LinearRace Shaft End Support Block



Type SB LinearRace Shaft End Support Block



Type SPPB and SSEPB Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J	J1	J6	J7	N Dia.	N2	Mass kg
SPPB-M08-XS	8	32	15	28	17,5	35	25	20	15	19,5	3,3	M4	0,07
SSEPB-M12-XS	12	39	18	35	21,5	43	32	23	18	23,0	4,3	M5	0,13
SSEPB-M16-XS	16	43	22	42	26,5	53	40	26	22	25,0	5,3	M6	0,20
SSEPB-M20-XS	20	54	25	50	30,0	60	45	32	25	30,5	6,6	M8	0,35
SSEPB-M25-XS	25	67	30	60	39,0	78	60	40	30	37,0	8,4	M10	0,66
SSEPB-M30-XS	30	79	35	70	43,5	87	68	45	35	43,0	8,4	M10	0,99
SSEPB-M40-XS	40	91	45	90	54,0	108	86	58	45	49,0	10,5	M12	1,83

Housing Material: Aluminum Alloy Grey Anodized

Type SPTWN and SSETWN Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SPTWN-M08-XS	8	62	50	19,5	25	0,15
SSETWN-M12-XS	12	76	56	23,0	28	0,27
SSETWN-M16-XS	16	84	64	25,0	32	0,41
SSETWN-M20-XS	20	104	76	30,5	38	0,73
SSETWN-M25-XS	25	130	94	37,0	47	1,37
SSETWN-M30-XS	30	152	106	43,0	53	2,04
SSETWN-M40-XS	40	176	124	49,0	62	3,73

Housing Material: Aluminum Alloy Grey Anodized

Type ASB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	A1	B	B3	H1	H3	L3	N3 Dia.	N4	Mass kg
ASB-M08-XS	8	16,0	32	22	15	28	18	3,5	M4	0,04
ASB-M12-XS	12	21,5	43	30	20	36	20	5,3	M6	0,10
ASB-M16-XS	16	26,5	53	38	25	43	24	6,6	M8	0,15
ASB-M20-XS	20	30,0	60	42	30	51	30	8,4	M10	0,23
ASB-M25-XS	25	39,0	78	56	35	61	38	10,5	M12	0,41
ASB-M30-XS	30	43,5	87	64	40	71	40	10,5	M12	0,53
ASB-M40-XS	40	54,0	108	82	50	88	48	13,5	M16	0,99

End Support Material: Aluminum Alloy Grey Anodized

Type SB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	A2	B4	Bb	H1	H2	H4	L4	N5 Dia.	Mass kg
SB-M08-XS	8	16	25	32	15	5,2	27	10	4,5	0,03
SB-M12-XS	12	21	32	42	20	5,5	35	12	5,5	0,06
SB-M16-XS	16	25	40	50	25	6,5	42	16	5,5	0,11
SB-M20-XS	20	30	45	60	30	8,0	50	20	5,5	0,21
SB-M25-XS	25	37	60	74	35	9,0	58	25	6,6	0,35
SB-M30-XS	30	42	68	84	40	10,0	68	28	9,0	0,52
SB-M40-XS	40	54	86	108	50	12,0	86	32	11,0	0,92

End Support Material: Iron

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.		Dynamic Load Capacity (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (N)
1NB-M08-NMO	**1NB-M08-NNO**	1240	SPPB-M08-XS	310
1NB-M12-NMO	**1NB-M12-NNO**	2600	SSEPB-M12-XS	650
1NB-M16-NMO	**1NB-M16-NNO**	8800	SSEPB-M16-XS	2200
1NB-M20-NMO	**1NB-M20-NNO**	16000	SSEPB-M20-XS	4000
1NB-M25-NMO	**1NB-M25-NNO**	26800	SSEPB-M25-XS	6700
1NB-M30-NMO	**1NB-M30-NNO**	33200	SSEPB-M30-XS	8300
1NB-M40-NMO	**1NB-M40-NNO**	54800	SSEPB-M40-XS	13700

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.		Dynamic Load Cap Capacity (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (N)
1NB-M08-PMO	**1NB-M08-PNO**	1000	SPTWN-M08-XS	500
1NB-M12-PMO	**1NB-M12-PNO**	2120	SSETWN-M12-XS	1060
1NB-M16-PMO	**1NB-M16-PNO**	8800	SSETWN-M16-XS	4400
1NB-M20-PMO	**1NB-M20-PNO**	16000	SSETWN-M20-XS	8000
1NB-M25-PMO	**1NB-M25-PNO**	26800	SSETWN-M25-XS	13400
1NB-M30-PMO	**1NB-M30-PNO**	33200	SSETWN-M30-XS	16600
1NB-M40-PMO	**1NB-M40-PNO**	54800	SSETWN-M40-XS	27400

† Super Plus Ball Bushing* bearings are used in 8 mm size pillow blocks.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

End Support 1NC

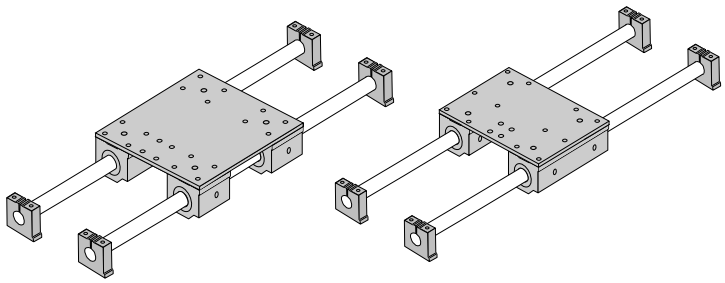
Linear Guide #9

with Table Top

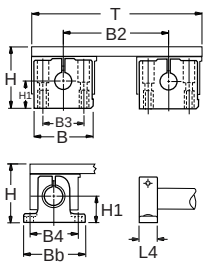
End Supported,

Industry Standard Dimension

METRIC

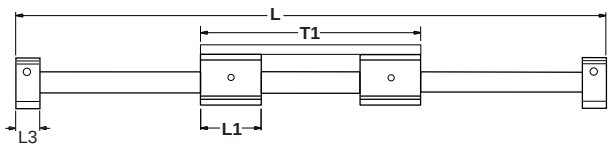


Type ASB
End Support Block

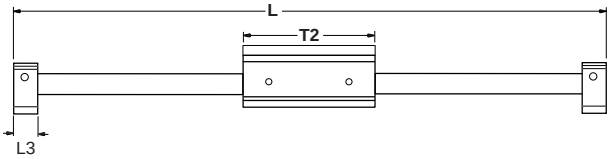


Type SB
End Support Block

Double End Supported Linear Guide with 4 Pillow Blocks and Size F Table Top



Double End Supported Linear Guide with 2 Twin Pillow Blocks and Size E Table Top



End Support Linear Guide 1NC with 4 Pillow Blocks and Table Top (Size F) (Dimensions in mm)

Part Number		Nom.	L1	L3	L4	H	H1	B	Bb	B2	B9	T	T1	Pillow	Shaft Support	
W/ Type ASB Shaft Supports	W/ Type SB Shaft Supports	Dia.												Block	Type ASB	Type SB
1NC-M08-NMF	**1NC-M08-NNF**	8	32	18	10	40	15	32	32	50	35	85	85	SPPB-M08-XS	ASB-M08-XS	SB-M08-XS
1NC-M12-NMF	**1NC-M12-NNF**	12	39	20	12	48	20	43	42	55	43	100	100	SSEPB-M12-XS	ASB-M12-XS	SB-M12-XS
1NC-M16-NMF	**1NC-M16-NNF**	16	43	24	16	60	25	53	50	70	53	125	125	SSEPB-M16-XS	ASB-M16-XS	SB-M16-XS
1NC-M20-NMF	**1NC-M20-NNF**	20	54	30	20	71	30	60	60	110	60	175	175	SSEPB-M20-XS	ASB-M20-XS	SB-M20-XS
1NC-M25-NMF	**1NC-M25-NNF**	25	67	38	25	85	35	78	74	140	78	225	225	SSEPB-M25-XS	ASB-M25-XS	SB-M25-XS
1NC-M30-NMF	**1NC-M30-NNF**	30	79	40	28	95	40	87	84	180	87	275	275	SSEPB-M30-XS	ASB-M30-XS	SB-M30-XS
1NC-M40-NMF	**1NC-M40-NNF**	40	91	48	32	120	50	108	108	210	108	325	325	SSEPB-M40-XS	ASB-M40-XS	SB-M40-XS

End Support Linear Guide 1NC with 2 Twin Pillow Blocks and Table Top (Size E) (Dimension in mm)

Part Number		Nom.	L3	L4	H	H1	B	Bb	B2	B9	T	T2	Pillow	Shaft Support	
W/ Type ASB Shaft Supports	W/ Type SB Shaft Supports	Dia.											Block	Type ASB	Type SB
1NC-M08-PME	**1NC-M08-PNE**	8	18	10	40	15	32	32	50	35	85	62	SPTWN-M08-XS	ASB-M0B8-XS	SB-M08-XS
1NC-M12-PME	**1NC-M12-PNE**	12	20	12	48	20	43	43	55	43	100	76	SSETWN-M12-XS	ASB-M12-XS	SB-M12-XS
1NC-M16-PME	**1NC-M16-PNE**	16	24	16	60	25	53	53	70	53	125	84	SSETWN-M16-XS	ASB-M16-XS	SB-M16-XS
1NC-M20-PME	**1NC-M20-PNE**	20	30	20	71	30	60	60	110	60	175	104	SSETWN-M20-XS	ASB-M20-XS	SB-M20-XS
1NC-M25-PME	**1NC-M25-PNE**	25	38	25	85	35	78	74	140	78	225	130	SSETWN-M25-XS	ASB-M25-XS	SB-M25-XS
1NC-M30-PME	**1NC-M30-PNE**	30	40	28	95	40	87	84	180	87	275	152	SSETWN-M30-XS	ASB-M30-XS	SB-M30-XS
1NC-M40-PME	**1NC-M40-PNE**	40	48	32	120	50	108	108	210	108	325	176	SSETWN-M40-XS	ASB-M40-XS	SB-M40-XS

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.		Dynamic Load Capacity (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (N)
1NC-M08-NMF	**1NC-M08-NNF**	1240	SPPB-M08-XS	310
1NC-M12-NMF	**1NC-M12-NNF**	2600	SSEPB-M12-XS	650
1NC-M16-NMF	**1NC-M16-NNF**	8800	SSEPB-M16-XS	2200
1NC-M20-NMF	**1NC-M20-NNF**	16000	SSEPB-M20-XS	4000
1NC-M25-NMF	**1NC-M25-NNF**	26800	SSEPB-M25-XS	6700
1NC-M30-NMF	**1NC-M30-NNF**	33200	SSEPB-M30-XS	8300
1NC-M40-NMF	**1NC-M40-NNF**	54800	SSEPB-M40-XS	13700

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.		Dynamic Load Cap Capacity (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (N)
1NC-M08-PME	**1NC-M08-PNE**	1000	SPTWN-M08-XS	500
1NC-M12-PME	**1NC-M12-PNE**	2120	SSETWN-M12-XS	1060
1NC-M16-PME	**1NC-M16-PNE**	8800	SSETWN-M16-XS	4400
1NC-M20-PME	**1NC-M20-PNE**	16000	SSETWN-M20-XS	8000
1NC-M25-PME	**1NC-M25-PNE**	26800	SSETWN-M25-XS	13400
1NC-M30-PME	**1NC-M30-PNE**	33200	SSETWN-M30-XS	16600
1NC-M40-PME	**1NC-M40-PNE**	54800	SSETWN-M40-XS	27400

End Support Linear Guide 1NC Benefits:

- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- Includes Ball Screw Assembly attachment holes for ease of assembly and actuation.
- Available with 60 Case* LinearRace* shaft end support blocks in either light weight aluminum or rigid iron materials.

End Support Linear Guide 1NC Components: †

- 4 Super Smart Ball Bushing* pillow blocks or 2 Super Smart Ball Bushing twin pillow blocks.
- 2 60 Case LinearRace shafts.
- 1 mounting table top with work piece and Ball Screw Assembly attachment holes.

Specifying a Thomson Linear guide:

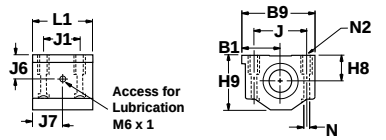
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

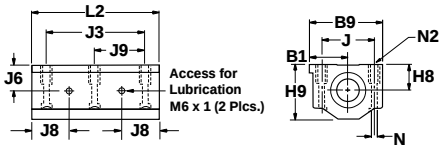
1NC-12-NMF L600

- 1NC — Linear Guide Designation
- 12 — Nominal Diameter
- N — Type of Bearing Block
- M — Type of Table Top
- F — Type of Support
- L600 — Linear Guide Length

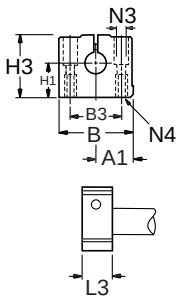
Type SPPB Super Plus Ball Bushing Pillow Block
Type SSEPB Super Smart Ball Bushing Pillow Block



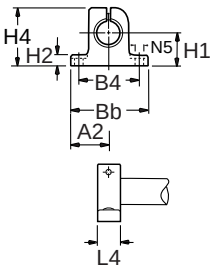
Type SPTWN Super Plus Ball Bushing Twin Pillow Block
Type SSETWN Super Smart Ball Bushing Twin Pillow Block



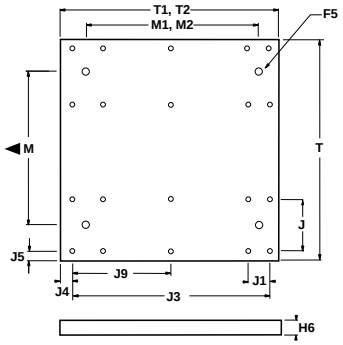
Type ASB LinearRace Shaft End Support Block



Type SB LinearRace Shaft End Support Block



Mounting Table Top



Type SPPB and SSEPB Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J	J1	J6	J7	N Dia.	N2	Mass kg
SPPB-M08-XS	8	32	15	28	17,5	35	25	20	15	19,5	3,3	M4	0,07
SSEPB-M12-XS	12	39	18	35	21,5	43	32	23	18	23,0	4,3	M5	0,13
SSEPB-M16-XS	16	43	22	42	26,5	53	40	26	22	25,0	5,3	M6	0,20
SSEPB-M20-XS	20	54	25	50	30,0	60	45	32	25	30,5	6,6	M8	0,35
SSEPB-M25-XS	25	67	30	60	39,0	78	60	40	30	37,0	8,4	M10	0,66
SSEPB-M30-XS	30	79	35	70	43,5	87	68	45	35	43,0	8,4	M10	0,99
SSEPB-M40-XS	40	91	45	90	54,0	108	86	58	45	49,0	10,5	M12	1,83

Housing Material: Aluminum Alloy Grey Anodized

Type SPTWN and SSETWN Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SPTWN-M08-XS	8	62	50	19,5	25	0,15
SSETWN-M12-XS	12	76	56	23,0	28	0,27
SSETWN-M16-XS	16	84	64	25,0	32	0,41
SSETWN-M20-XS	20	104	76	30,5	38	0,73
SSETWN-M25-XS	25	130	94	37,0	47	1,37
SSETWN-M30-XS	30	152	106	43,0	53	2,04
SSETWN-M40-XS	40	176	124	49,0	62	3,73

Housing Material: Aluminum Alloy Grey Anodized

Type ASB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	A1	B	B3	H1	H3	L3	N3 Dia.	N4	Mass kg
ASB-M08-XS	8	16,0	32	22	15	28	18	3,5	M4	0,04
ASB-M12-XS	12	21,5	43	30	20	36	20	5,3	M6	0,10
ASB-M16-XS	16	26,5	53	38	25	43	24	6,6	M8	0,15
ASB-M20-XS	20	30,0	60	42	30	51	30	8,4	M10	0,23
ASB-M25-XS	25	39,0	78	56	35	61	38	10,5	M12	0,41
ASB-M30-XS	30	43,5	87	64	40	71	40	10,5	M12	0,53
ASB-M40-XS	40	54,0	108	82	50	88	48	13,5	M16	0,99

End Support Material: Aluminum Alloy Grey Anodized

Type SB LinearRace Shaft End Support Block

Part Number	Nom. Dia.	A2	B4	Bb	H1	H2	H4	L4	N5 Dia.	Mass kg
SB-M08-XS	8	16	25	32	15	5,2	27	10	4,5	0,03
SB-M12-XS	12	21	32	42	20	5,5	35	12	5,5	0,06
SB-M16-XS	16	25	40	50	25	6,5	42	16	5,5	0,11
SB-M20-XS	20	30	45	60	30	8,0	50	20	5,5	0,21
SB-M25-XS	25	37	60	74	35	9,0	58	25	6,6	0,35
SB-M30-XS	30	42	68	84	40	10,0	68	28	9,0	0,52
SB-M40-XS	40	54	86	108	50	12,0	86	32	11,0	0,92

End Support Material: Iron

Mounting Table Top (Dimensions in mm)

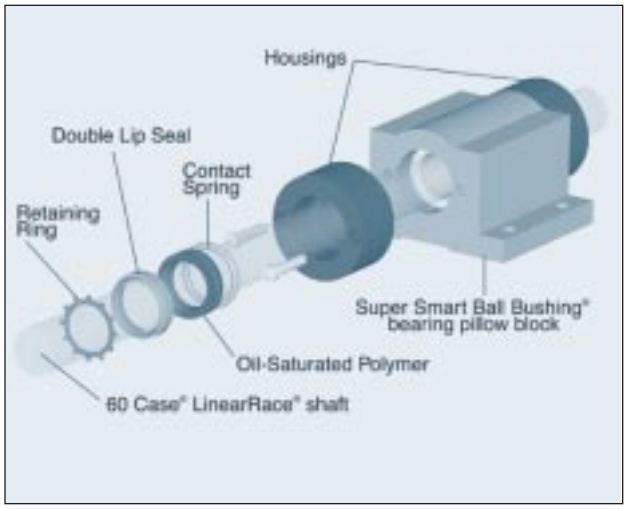
System	All Table Tops					Table Top Size **F**					Table Top Size **E**					
	T	M	J	H6	F5[2]	T1	J1	J4	J5	M1	T2	J3	J4	J5	J9	M2
1NC-M08	85	50	25	10	M6	85	20	6,0	5,0	50	62	50	6	5,0	25	35
1NC-M12	100	55	32	10	M6	100	23	8,0	6,5	55	76	56	10	6,5	28	40
1NC-M16	125	70	40	13	M6	125	26	10,0	7,5	70	84	64	10	7,5	32	45
1NC-M20	175	110	45	16	M8	175	32	11,0	10,0	110	104	76	14	10,0	38	55
1NC-M25	225	140	60	20	M8	225	40	13,5	12,5	140	130	94	18	12,5	47	65
1NC-M30	275	180	68	20	M8	275	45	17,0	13,5	180	152	106	23	13,5	53	75
1NC-M40	325	210	86	25	M10	325	58	16,5	14,5	210	176	124	26	14,5	62	85

Material: Aluminum Alloy Grey Anodized
[2] Customer Mounting hole.

† Super Plus Ball Bushing* bearings are used in 8 mm size pillow blocks.

End Support Linear Ball Guide Accessories

-LL Self-Lubricating Option‡



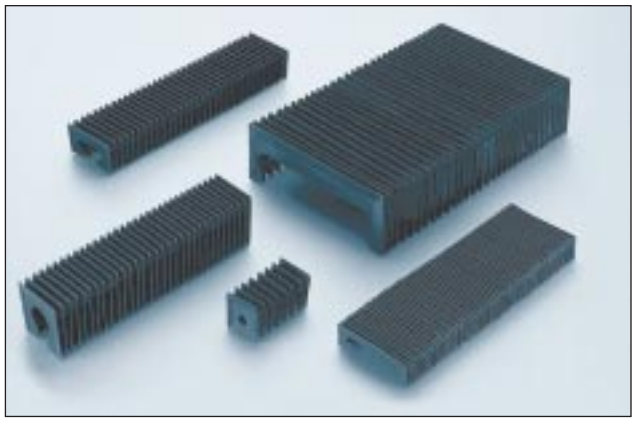
The new LL Option provides maintenance-free operation and enhanced bearing protection.

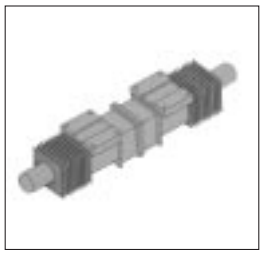
- Eliminates the need for expensive lubrication system in most applications
- Increases effective bearing life by increasing protection from contamination
- Environmentally friendly

NOTE: Carriage drag with the -LL option will be approximately 2x the seal drag.

‡ See page 210 for technical data.

Bellows (Way Covers) Option



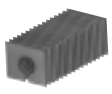


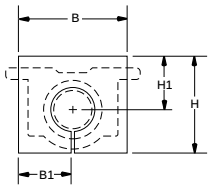
This illustration describes the proper usage for stationary and moveable bellows for System 1AA.

Stationary Protective Bellows are designed to fit between two fixed pillow blocks and underneath the profile of the carrriage mounting top.

BEL-1B†

For Systems 1AA, 1AB, 1AC, 1BA, 1BB, 1BC, 2AA, 2AB



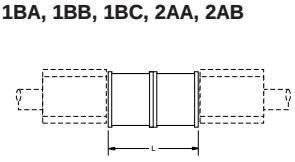


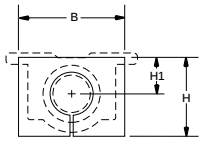
BEL-1B Moveable Protective Bellows

Part Number	Nom. Shaft Dia.	Dimension (in.)			CR
		H	H1	B	
BEL-1B-04	1/4	1.187	.906	1.812	.163
BEL-1B-06	3/8	1.312	.968	1.937	.108
BEL-1B-08	1/2	1.687	1.156	2.062	.163
BEL-1B-12	3/4	2.000	1.156	2.312	.108
BEL-1B-16	1	2.375	1.281	2.625	.163
BEL-1B-24	1 1/2	3.062	1.531	3.125	.108

SBEL-1B†

For Systems 1AA, 1AB, 1AC, 1BA, 1BB, 1BC, 2AA, 2AB



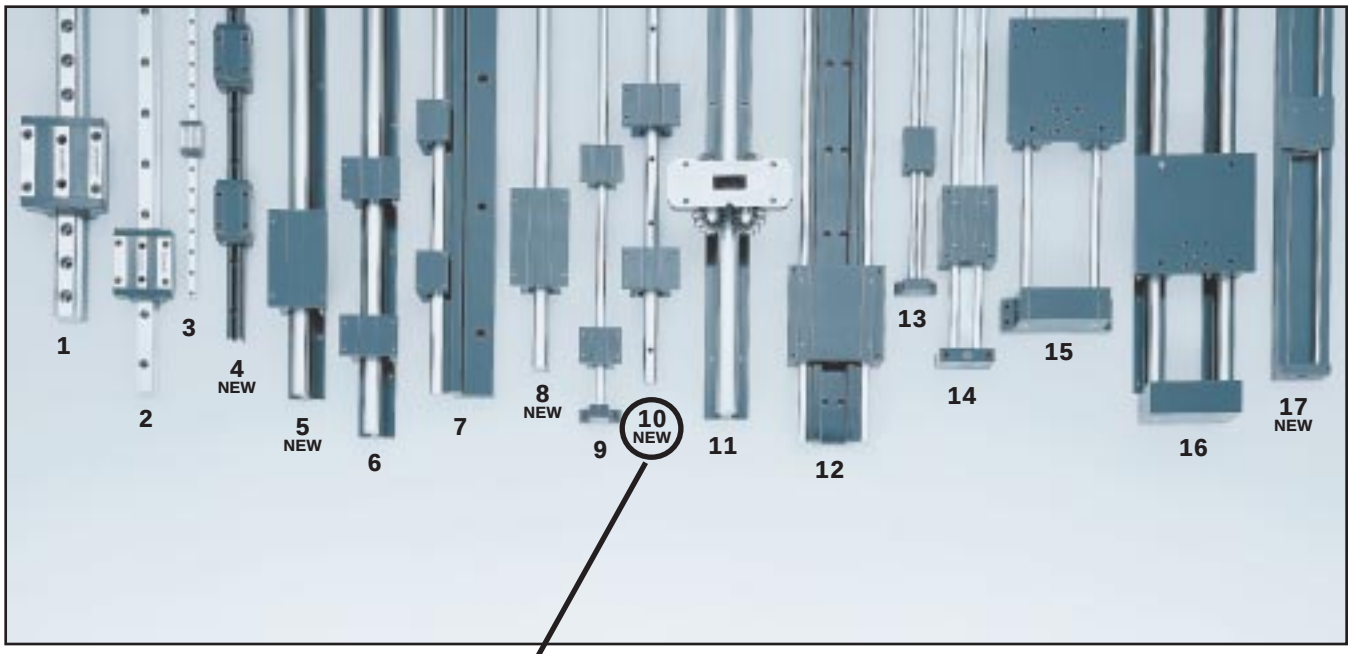


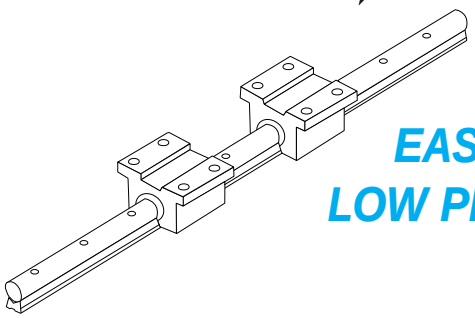
SBEL-1B Stationary Protective Bellows

Part Number	Nom. Shaft Dia.	Dimension (in.)		
		H	H1	B
SBEL-1B-08	1/2	1.281	0.656	2.062
SBEL-1B-12	3/4	1.822	0.906	2.312
SBEL-1B-16	1	2.281	1.031	2.625
SBEL-1B-24	1 1/2	3.031	1.531	3.125

† Each moveable bellows comes with 1 section of bellows and 2 pairs of Velcro® Fasteners.

Smart Rail Linear Ball Guides #10





EASY INSTALLATION, LOW PROFILE, SMOOTH, HIGH LOAD

Smart Rail* Linear Ball Guides Offer:

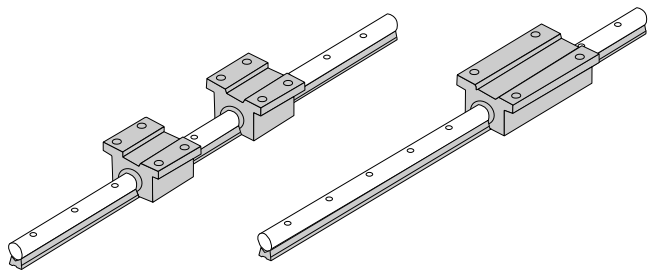
- Bolt down from the top mounting for quick and easy installation
- Increased life within the same envelope. RoundRail* linear guides feature the new patented Super Smart Ball Bushing* bearings for up to 216X the life or 6X the load capacity of conventional bearings
- Cost savings: save time and money preparing your mounting surfaces before bolting down RoundRail linear guides
- Maximum performance. Fully supported for maximum down load applications without concerns for shaft deflection
- The RoundRail Advantage*. The inherent self-aligning-in-all-directions design of the Super Smart Ball Bushing bearing allows for ultra smooth travel when mounted to wider toleranced prepared surfaces
- Unlimited travel lengths without concerns for machined reference edges or butt joint alignment
- The Super Smart Ball Bushing bearing… the most technologically advanced and most robust linear bearing in the world
- Corrosion resistant versions for maximum performance in harsh environments.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Smart Rail* 1FA

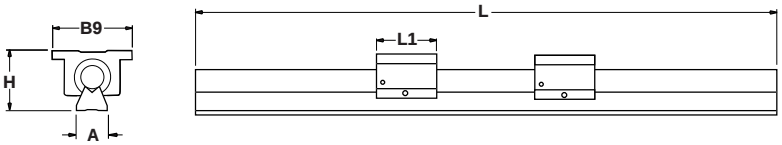
Linear Guide #10

Low Profile, Easy to Install

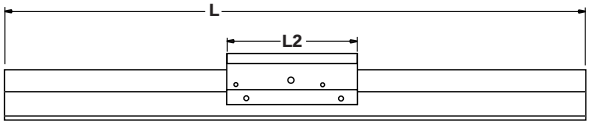


INCH

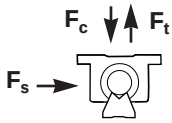
Single Continuously Supported Linear Guide with 2 Pillow Blocks



Single Continuously Supported Linear Guide with 1 Twin Pillow Block



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.25C
F_S	C	0.25C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Smart Rail Linear Guide 1FA Single Continuously Supported with 2 Pillow Blocks (Dimensions in inches)

Part Number	Nom.† Dia.	L1	H	A	B9	Pillow Block	Shaft Support Rail Assembly
1FA-12-FBO	.75	1.88	1.687	.51	2.75	**SSUPBO-12-XS**	**LSRA-12-XS**
1FA-16-FBO	1.00	2.63	2.187	.69	3.25	**SSUPBO-16-XS**	**LSRA-16-XS**
1FA-20-FBO	1.25	3.38	2.687	.78	4.00	**SSUPBO-20-XS**	**LSRA-20-XS**
1FA-24-FBO	1.50	3.75	3.125	.93	4.75	**SSUPBO-24-XS**	**LSRA-24-XS**

Smart Rail Linear Guide 1FA Single Continuously Supported with 1 Twin Pillow Block (Dimensions in inches)

Part Number	Nom.† Dia.	L2	H	A	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1FA-12-HBO	.75	4.5	1.687	.51	2.75	L-(4.5)	**SSUTWNO-12-XS**	**LSRA-12-XS**
1FA-16-HBO	1.00	6.0	2.287	.69	3.25	L-(6.0)	**SSUTWNO-16-XS**	**LSRA-16-XS**
1FA-20-HBO	1.25	7.5	2.687	.78	4.00	L-(7.5)	**SSUTWNO-12-XS**	**LSRA-20-XS**
1FA-24-HBO	1.50	9.0	3.125	.93	4.75	L-(9.0)	**SSUTWNO-24-XS**	**LSRA-24-XS**

† .625" diameter Smart Rail Linear Guide also available, contact factory for specifications.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Smart Rail* Linear Guide 1FA Benefits:

- Requires only one part number to specify the entire linear guide.
- More mounting flexibility through bolt down from the top access.
- Used in continuously supported applications when rigidity is required.
- Lower overall linear guide height.

Smart Rail Linear Guide 1FA Components:

- 2 Super Smart Ball Bushing* open type pillow blocks or 1 Super Smart Ball Bushing open twin pillow block.
- 1 60 Case* LinearRace* shaft Support Rail Assembly.

Specifying this Thomson Linear Guide:

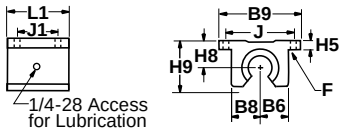
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

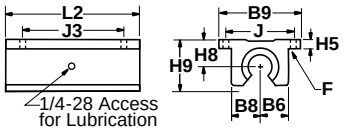
1FA-12-FBO L24

- Linear Guide Designation
- Nominal Diameter
- Type of Bearing Block
- Type of Support
- Linear Guide Length

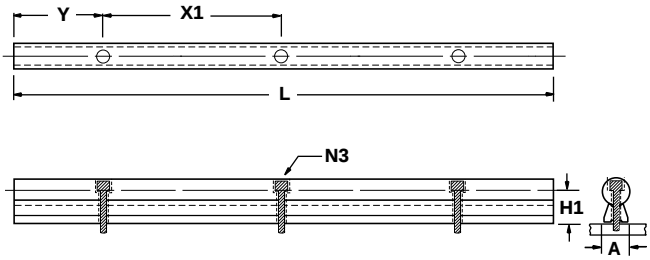
Type SSUPBO Open Type Super Smart Ball Bushing Pillow Block



Type SSUTWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type LSRA Low Profile LinearRace Shaft Support Rail Assembly



Type SSUPBO Pillow Blocks (Dimensions in Inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B8	B6	J	J1	F Bolt	F Hole	Wt. lb
SSUPBO-12-XS	.75	1.88	1.56	.937	.31	2.75	1.00	.94	2.38	1.25	#8	.19	.51
SSUPBO-16-XS	1.00	2.63	2.00	1.187	.38	3.25	1.25	1.19	2.88	1.75	#10	.22	1.03
SSUPBO-20-XS	1.25	3.38	2.56	1.500	.43	4.00	1.63	1.50	3.50	2.00	#10	.22	2.15
SSUPBO-24-XS	1.50	3.75	2.94	1.750	.50	4.75	1.88	1.75	4.12	2.50	1/4	.25	3.29

Housing Material: Aluminum Alloy Black Anodized

Type SSUTWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
SSUTWNO-12-XS	.75	4.5	3.5	1.02
SSUTWNO-16-XS	1.00	6.0	4.5	2.06
SSUTWNO-20-XS	1.25	7.5	5.5	4.30
SSUTWNO-24-XS	1.50	9.0	6.5	6.88

Housing Material: Aluminum Alloy Black Anodized

Type LSRA Low Profile LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

Part Number	Nom. Dia.	H1	A	X1	Y	N3(1)	Wt. lb/ft
LSRA-12-XS	.75	.750	.51	3	1.5	#6 - 32 x 1 1/4	2.09
LSRA-16-XS	1.00	1.000	.69	3	1.5	#10 - 32 x 1 1/2	3.67
LSRA-20-XS	1.25	1.187	.78	3	1.5	5/16 - 18 x 2	5.86
LSRA-24-XS	1.50	1.375	.93	4	2	3/8 - 16 x 2 1/2	7.68

LinearRace Shaft Support Rail Material: Black Oxided Steel

(1) Each system is shipped with attachment screws as noted by N3 and cap plugs. If a non-standard screw length is required, it must be user supplied.

Maximum length of LinearRace Shaft Support Rail is 144 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guides** Application Engineering department.

Dynamic Load Rating (C) Matrix (4 million inches travel)

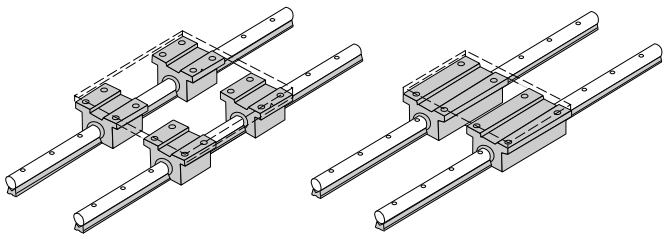
Linear Guide Assembly Part No.	Dynamic Load Rating, C (lbf) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lbf)
1FA-12-FBO	1800	SSUPBO-12-XS	900
1FA-16-FBO	3000	SSUPBO-16-XS	1500
1FA-20-FBO	3730	SSUPBO-20-XS	1865
1FA-24-FBO	6160	SSUPBO-24-XS	3080
1FA-12-HBO	1800	SSUTWNO-12-XS	1800
1FA-16-HBO	3020	SSUTWNO-16-XS	3020
1FA-20-HBO	3730	SSUTWNO-12-XS	3730
1FA-24-HBO	6160	SSUTWNO-24-XS	6160

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Smart Rail* 1FB

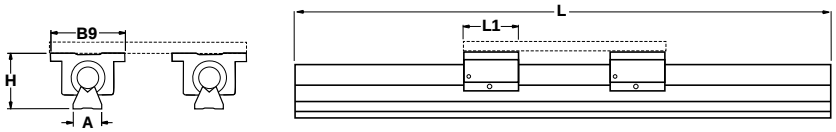
Linear Guide #10

Low Profile, Easy to Install

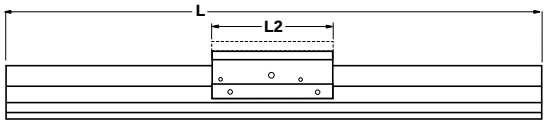


INCH

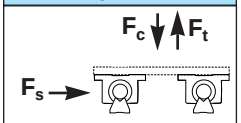
Double Continuously Supported Linear Guide with 4 Pillow Blocks



Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	C
F_t	0.5C	0.25C
F_s	C	0.25C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Smart Rail Linear Guide 1FB Double Continuously Supported with 4 Pillow Blocks (Dimensions in inches)

Part Number	Nom.† Dia.	L1	H	A	B9	Pillow Block	Shaft Support Rail Assembly
1FB-12-FBO	.75	1.88	1.687	.51	2.75	**SSUPBO-12-XS**	**LSRA-12-XS**
1FB-16-FBO	1.00	2.63	2.187	.69	3.25	**SSUPBO-16-XS**	**LSRA-16-XS**
1FB-20-FBO	1.25	3.38	2.687	.78	4.00	**SSUPBO-20-XS**	**LSRA-20-XS**
1FB-24-FBO	1.50	3.75	3.125	.93	4.75	**SSUPBO-24-XS**	**LSRA-24-XS**

Smart Rail Linear Guide 1FB Double Continuously Supported with 2 Twin Pillow Blocks (Dimensions in inches)

Part Number	Nom.† Dia.	L2	H	A	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1FB-12-HBO	.75	4.5	1.687	.51	2.75	L-(4.5)	**SSUTWNO-12-XS**	**LSRA-12-XS**
1FB-16-HBO	1.00	6.0	2.287	.69	3.25	L-(6.0)	**SSUTWNO-16-XS**	**LSRA-16-XS**
1FB-20-HBO	1.25	7.5	2.687	.78	4.00	L-(7.5)	**SSUTWNO-20-XS**	**LSRA-20-XS**
1FB-24-HBO	1.50	9.0	3.125	.93	4.75	L-(9.0)	**SSUTWNO-24-XS**	**LSRA-24-XS**

† .625" diameter Smart Rail Linear Guide also available, contact factory for specifications.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Smart Rail* Linear Guide 1FB Benefits:

- Requires only one part number to specify the entire linear guide.
- More mounting flexibility through bolt down from the top access.
- Used in continuously supported applications when rigidity is required.
- Lower overall linear guide height.

Smart Rail Linear Guide 1FB Components:

- 4 Super Smart Ball Bushing* open type pillow blocks or 2 Super Smart Ball Bushing open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Support Rail Assemblies.

Specifying a Thomson Linear Guide:

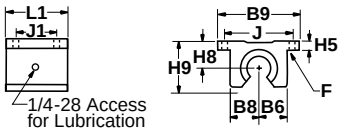
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

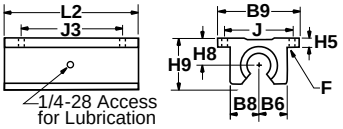
1FB-12-FBO L24

- 1FB — Linear Guide Designation
- 12 — Nominal Diameter
- FB — Type of Bearing Block
- O — Type of Support
- L24 — Linear Guide Length

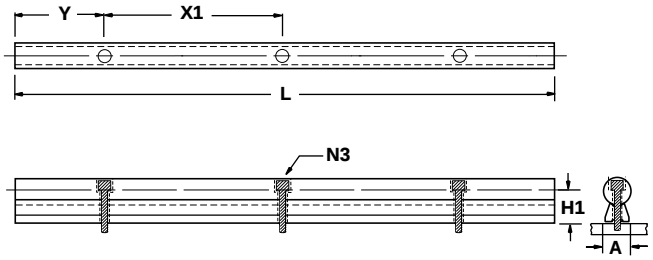
Type SSUPBO Open Type Super Smart Ball Bushing Pillow Block



Type SSUTWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type LSRA Low Profile LinearRace Shaft Support Rail Assembly



Type SSUPBO Pillow Blocks (Dimensions in Inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B8	B6	J	J1	F		Wt. lb
											Bolt	Hole	
SSUPBO-12-XS	.75	1.88	1.56	.937	.31	2.75	1.00	.94	2.38	1.25	#8	.19	.51
SSUPBO-16-XS	1.00	2.63	2.00	1.187	.38	3.25	1.25	1.19	2.88	1.75	#10	.22	1.03
SSUPBO-20-XS	1.25	3.38	2.56	1.500	.43	4.00	1.63	1.50	3.50	2.00	#10	.23	2.15
SSUPBO-24-XS	1.50	3.75	2.94	1.750	.50	4.75	1.88	1.75	4.12	2.50	¼	.25	3.20

Housing Material: Aluminum Alloy Black Anodized

Type SSUTWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
SSUTWNO-12-XS	.75	4.5	3.5	1.02
SSUTWNO-16-XS	1.00	6.0	4.5	2.06
SSUTWNO-20-XS	1.25	7.5	5.5	4.30
SSUTWNO-24-XS	1.50	9.0	6.5	6.88

Housing Material: Aluminum Alloy Black Anodized

Type LSRA Low Profile LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

Part Number	Nom. Dia.	H1	A	X1	Y	N3[1]	Wt. lb/ft
LSRA-12-XS	.75	.750	.51	3	1.5	#6 - 32 x 1 1/4	2.09
LSRA-16-XS	1.00	1.000	.69	3	1.5	#10 - 32 x 1 1/2	3.67
LSRA-20-XS	1.25	1.187	.78	3	1.5	5/16 - 18 x 2	5.86
LSRA-24-XS	1.50	1.375	.93	4	2	3/8 - 16 x 2 1/2	7.68

LinearRace Shaft Support Rail Material: Black Oxided Steel

[1] Each system is shipped with attachment screws as noted by N3 and cap plugs. If a non-standard screw length is required, it must be user supplied.

Maximum length of LinearRace Shaft Support Rail is 144 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guide** Application Engineering department.

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1FB-12-FBO	3600	SSUPBO-12-XS	900
1FB-16-FBO	6000	SSUPBO-16-XS	1500
1FB-20-FBO	7460	SSUPBO-20-XS	1865
1FB-24-FBO	12320	SSUPBO-24-XS	3080
1FB-12-HBO	3600	SSUTWNO-12-XS	1800
1FB-16-HBO	6040	SSUTWNO-16-XS	3020
1FB-20-HBO	7460	SSUTWNO-12-XS	3730
1FB-24-HBO	12320	SSUTWNO-24-XS	6160

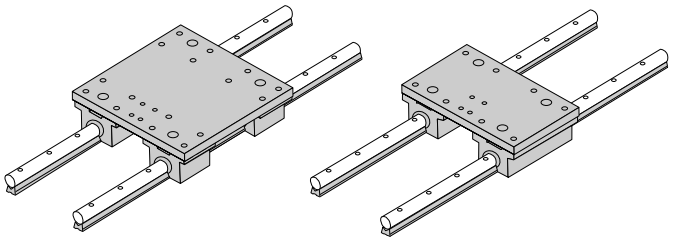
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Smart Rail* 1FC

Linear Guide #10

with Table Top

Low Profile, Easy to Install



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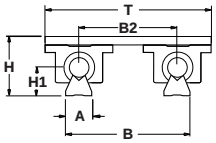
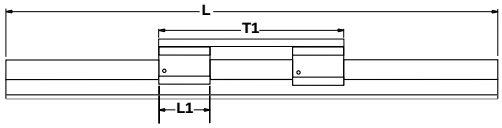
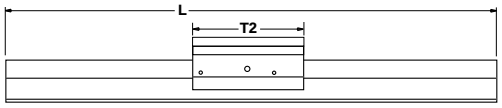


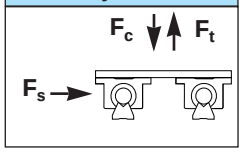
Double Continuously Supported Linear Guide with 4 Pillow Blocks and Size B Table Top



Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks and Size A Table Top



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.25C
F_S	C	0.25C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Smart Rail Linear Guide 1FC Double Continuously Supported with 4 Pillow Blocks and Table Top (Size B) (Dimensions in inches)

Part Number	Nom.† Dia.	A	T1	T	H	H1	B	B2	L1	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1FC-12-FBB	.75	.51	7.5	7.5	2.187	.750	5.01	4.50	1.88	L-(7.5)	**SSUPBO-12-XS**	**LSRA-12-XS**
1FC-16-FBB	1.00	.69	9.0	9.0	2.687	1.000	6.19	5.50	2.63	L-(9.0)	**SSUPBO-16-XS**	**LSRA-16-XS**
1FC-20-FBB	1.25	.78	11.0	11.0	3.437	1.187	7.53	6.75	3.38	L-(11.0)	**SSUPBO-20-XS**	**LSRA-20-XS**
1FC-24-FBB	1.50	.93	13.0	13.0	3.875	1.375	8.93	8.00	3.75	L-(13.0)	**SSUPBO-24-XS**	**LSRA-24-XS**

Smart Rail Linear Guide 1FC Double Continuously Supported with 2 Twin Pillow Blocks and Table Top (Size A) (Dimensions in inches)

Part Number	Nom.† Dia.	A	T2	T	H	H1	B	B2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1FC-12-HBA	.75	.51	4.5	7.5	2.187	.750	5.01	4.50	L-(4.5)	**SSUTWNO-12-XS**	**LSRA-12-XS**
1FC-16-HBA	1.00	.69	6.0	9.0	2.687	1.000	6.19	5.50	L-(6.0)	**SSUTWNO-16-XS**	**LSRA-16-XS**
1FC-20-HBA	1.25	.78	7.5	11.0	3.437	1.187	7.53	6.75	L-(7.5)	**SSUTWNO-20-XS**	**LSRA-20-XS**
1FC-24-HBA	1.50	.93	9.0	13.0	3.875	1.375	8.93	8.00	L-(9.0)	**SSUTWNO-24-XS**	**LSRA-24-XS**

† .625" diameter Smart Rail Linear Guide also available, contact factory for specifications.

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1FC-12-FBB	3600	SSUPBO-12-XS	900
1FC-16-FBB	6000	SSUPBO-16-XS	1500
1FC-20-FBB	7460	SSUPBO-20-XS	1865
1FC-24-FBB	12320	SSUPBO-24-XS	3080

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (lb_f)
1FC-12-HBA	3600	SSUTWNO-12-XS	1800
1FC-16-HBA	6040	SSUTWNO-16-XS	3020
1FC-20-HBA	7460	SSUTWNO-12-XS	3730
1FC-24-HBA	12320	SSUTWNO-24-XS	6160

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Smart Rail* Linear Guide 1FC Benefits:

- Requires only one part number to specify the entire linear guide.
- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- More mounting flexibility through bolt down from the top access.
- Used in continuously supported applications when rigidity is required.
- Lower overall linear guide height.

Smart Rail Linear Guide 1FC Components:

- 4 Super Smart Ball Bushing* open type pillow blocks or 2 Super Smart Ball Bushing open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Support Rail Assemblies.
- 1 mounting table top with work piece attachment holes.

Specifying a Thomson Linear Guide:

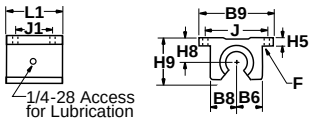
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

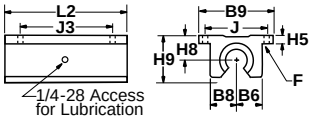
1FC-12-FBB L24

- 1FC — Linear Guide Designation
- 12 — Nominal Diameter
- FBB — Type of Bearing Block
- L24 — Linear Guide Length
- (T) — Type of Table Top
- (S) — Type of Support

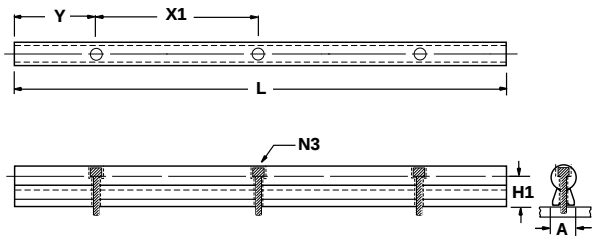
Type SSUPBO Open Type Ball Super Smart Bushing Pillow Block



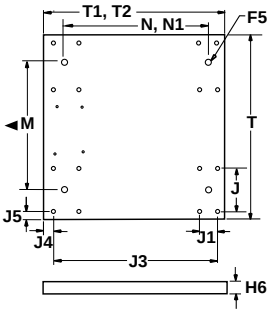
Type SSUTWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type LSRA Low Profile LinearRace Shaft Support Rail Assembly



Mounting Table Top



Type SSUPBO Pillow Blocks (Dimensions in Inches)

Part Number	Nom. Dia.	L1	H9	H8	H5	B9	B8	B6	J	J1	F Bolt	F Hole	Wt. lb
SSUPBO-12-XS	.75	1.88	1.56	.937	.31	2.75	1.00	.94	2.38	1.25	#8	.19	.51
SSUPBO-16-XS	1.00	2.63	2.00	1.187	.38	3.25	1.25	1.19	2.88	1.75	#10	.22	1.03
SSUPBO-20-XS	1.25	3.38	2.56	1.500	.43	4.00	1.63	1.50	3.50	2.00	#10	.23	2.15
SSUPBO-24-XS	1.50	3.75	2.94	1.750	.50	4.75	1.88	1.75	4.12	2.50	¼	.25	3.20

Housing Material: Aluminum Alloy Black Anodized

Type SSUTWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	Wt. lb
SSUTWNO-12-XS	.75	4.5	3.5	1.02
SSUTWNO-16-XS	1.00	6.0	4.5	2.06
SSUTWNO-20-XS	1.25	7.5	5.5	4.30
SSUTWNO-24-XS	1.50	9.0	6.5	6.88

Housing Material: Aluminum Alloy Black Anodized

Type LSRA Low Profile LinearRace Shaft Support Rail Assembly (Dimensions in Inches)

Part Number	Nom. Dia.	H1	A	X1	Y	N3[1]	Wt. lb/ft
LSRA-12-XS	.75	.750	.51	3	1.5	#6 - 32 x 1 1/4	2.09
LSRA-16-XS	1.00	1.000	.69	3	1.5	#10 - 32 x 1 1/2	3.67
LSRA-20-XS	1.25	1.187	.78	3	1.5	5/16 - 18 x 2	5.86
LSRA-24-XS	1.50	1.375	.93	4	2	3/8 - 16 x 2 1/2	7.68

LinearRace Shaft Support Rail Material: Black Oxided Steel

(1) Each system is shipped with attachment screws as noted by N3 and cap plugs. If a non-standard screw length is required, it must be user supplied.

Maximum length of LinearRace Shaft Support Rail is 144 inches. If longer continuous one-piece LinearRace Shaft Support Rails are required, contact the Thomson **Linear Guides** application engineering department.

Mounting Table Top (Dimensions in inches)

Nominal Diameter	All Table Tops T	M	J	H6	F5[2]	Table Top Size **B** T1	J1	J4	J5	N	Table Top Size **A** T2	J3	J4	J5	N1
.75	7.5	4.50	2.38	.500	5/16-18	7.5	1.25	.41	.31	6.0	4.5	3.5	.50	.31	3.0
1.00	9.0	5.50	2.88	.500	3/8-16	9.0	1.75	.53	.31	7.0	6.0	4.5	.75	.31	4.0
1.25	11.0	6.75	3.50	.750	½-13	11.0	2.00	.82	.38	8.5	7.5	5.5	1.00	.38	5.0
1.50	13.0	8.00	4.12	.750	1/2-13	13.0	2.50	.75	.44	10.0	9.0	6.5	1.25	.44	6.0

Material: Aluminum Alloy Black Anodized

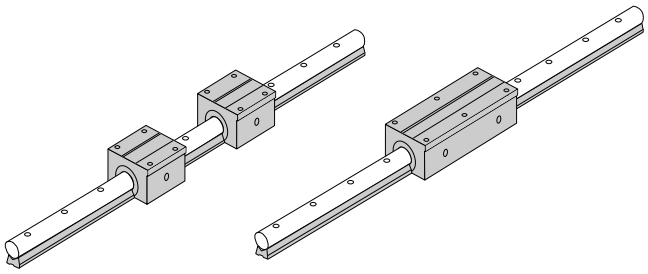
(2) Customer Mounting Hole

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Smart Rail* 1QA

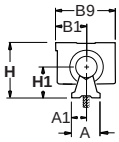
Linear Guide #10

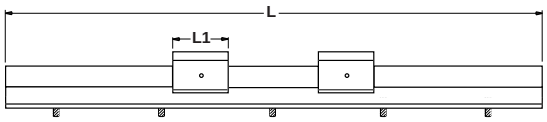
Low Profile, Easy to Install



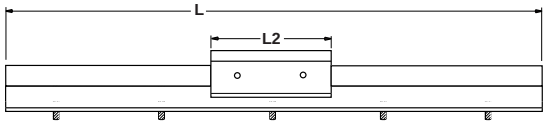
METRIC

Single Continuously Supported Linear Guide with 2 Pillow Blocks

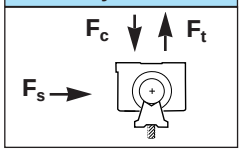




Single Continuously Supported Linear Guide with 1 Twin Pillow Block



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.25C
F_S	C	0.25C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Smart Rail Linear Guide 1QA Single Continuously Supported with 2 Pillow Blocks (Dimensions in mm)

Part Number	Nominal Diameter	L1	H	H1	A	A1	B1	B9	Pillow Block	Shaft Support Rail Assembly
1QA-M16-LLO	16	43	40	18	14	7,0	26,5	53	**SSEPBO-M16-XS**	**LSRA-M16-XS**
1QA-M20-LLO	20	54	47	22	17	8,5	30,0	60	**SSEPBO-M20-XS**	**LSRA-M20-XS**
1QA-M25-LLO	25	67	56	26	21	10,5	39,0	78	**SSEPBO-M25-XS**	**LSRA-M25-XS**
1QA-M30-LLO	30	79	65	30	23	11,5	43,5	87	**SSEPBO-M30-XS**	**LSRA-M30-XS**
1QA-M40-LLO	40	91	84	39	30	15,0	54,0	108	**SSEPBO-M40-XS**	**LSRA-M40-XS**

Smart Rail Linear Guide 1QA Single Continuously Supported with 1 Twin Pillow Block (Dimensions in mm)

Part Number	Nominal Diameter	L2	H	H1	A	A1	B1	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1QA-M16-MLO	16	84	40	18	14	7,0	26,5	53	L-(84)	**SSETWNO-M16-XS**	**LSRA-M16-XS**
1QA-M20-MLO	20	104	47	22	17	8,5	30,0	60	L-(104)	**SSETWNO-M20-XS**	**LSRA-M20-XS**
1QA-M25-MLO	25	130	56	26	21	10,5	39,0	78	L-(130)	**SSETWNO-M25-XS**	**LSRA-M25-XS**
1QA-M30-MLO	30	152	65	30	23	11,5	43,5	87	L-(152)	**SSETWNO-M30-XS**	**LSRA-M30-XS**
1QA-M40-MLO	40	176	84	39	30	15,0	54,0	108	L-(176)	**SSETWNO-M40-XS**	**LSRA-M40-XS**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Smart Rail* Linear Guide 1QA Benefits:

- Requires only one part number to specify the entire linear guide.
- More mounting flexibility through bolt down from the top access.
- Used in continuously supported applications when rigidity is required.
- Lower overall linear guide height.

Smart Rail Linear Guide 1QA Components:

- 2 Super Smart Ball Bushing* open type pillow blocks or 1 Super Smart Ball Bushing open type twin pillow block.
- 1 60 Case* LinearRace* shaft Support Rail Assembly.

Specifying this Thomson Linear Guide:

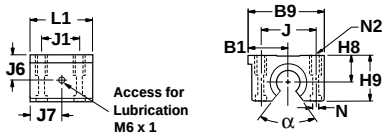
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

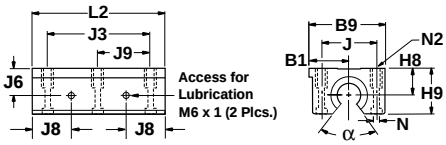
1QA-M16-LLO L600

- 1QA: Linear Guide Designation
- M16: Nominal Diameter
- LLO: Type of Bearing Block
- L: Linear Guide Length
- 600: Type of Support

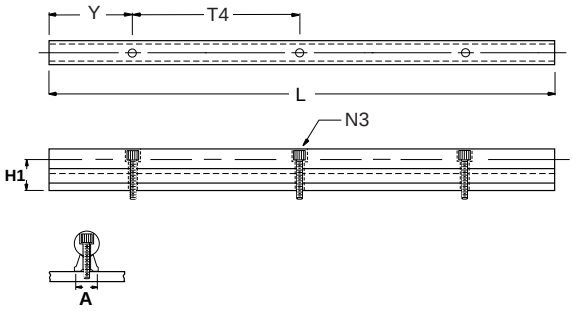
Type SSEPBO Open Type Super Smart Ball Bushing Pillow Block



Type SSETWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type LSRA Low Profile LinearRace Shaft Support Rail Assembly



Type SSEPBO Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J6	J7	J	J1	N Dia.	N2	α Deg	Mass kg
SSEPBO-M16-XS	16	43	22	35	26,5	53	22,0	21,5	40	26	5,3	M6	66	0,17
SSEPBO-M20-XS	20	54	25	41	30,0	60	25,0	27,0	45	32	6,6	M8	60	0,30
SSEPBO-M25-XS	25	67	30	50	39,0	78	31,5	33,5	60	40	8,4	M10	60	0,57
SSEPBO-M30-XS	30	79	35	60	43,5	87	33,0	39,5	68	45	8,4	M10	60	0,87
SSEPBO-M40-XS	40	91	45	77	54,0	108	43,5	45,5	86	58	10,5	M12	60	1,62

Housing Material: Aluminum Alloy Grey Anodized

Type SSETWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SSETWNO-M16-XS	16	84	64	21,5	32	0,34
SSETWNO-M20-XS	20	104	76	27,0	38	0,63
SSETWNO-M25-XS	25	130	94	33,6	47	1,18
SSETWNO-M30-XS	30	152	106	39,5	53	1,70
SSETWNO-M40-XS	40	176	124	45,5	62	3,18

Housing Material: Aluminum Alloy Grey Anodized

Type LSRA Low Profile LinearRace Shaft Support Rail Assembly (Dimensions in mm)

Part Number	Nominal Diameter	H1	A	A1	T4	Y	N3[1]	Mass kg/m
LSRA-M16-XS	16	18	14	7,0	40	20	M3 x 30	3,6
LSRA-M20-XS	20	22	17	8,5	60	30	M4 x 35	5,5
LSRA-M25-XS	25	26	21	10,5	60	30	M5 x 45	8,5
LSRA-M30-XS	30	30	23	11,5	80	40	M6 x 50	13,0
LSRA-M40-XS	40	39	30	15,0	105	52,5	M10 x 65	21,0

LinearRace Shaft Support Rail Material: Black Oxided Steel

[1] Each system is shipped with attachment screws as noted by N3 and cap plugs. If a non-standard screw length is required, it must be user supplied.

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1QA-M16-LLO	4400	SSEPBO-M16-XS	2200
1QA-M20-LLO	8000	SSEPBO-M20-XS	4000
1QA-M25-LLO	13400	SSEPBO-M25-XS	6700
1QA-M30-LLO	16600	SSEPBO-M30-XS	8300
1QA-M40-LLO	27400	SSEPBO-M40-XS	13700

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1QA-M16-MLO	4400	SSETWNO-M16-XS	4400
1QA-M20-MLO	8000	SSETWNO-M20-XS	8000
1QA-M25-MLO	13400	SSETWNO-M25-XS	13400
1QA-M30-MLO	16600	SSETWNO-M30-XS	16600
1QA-M40-MLO	27400	SSETWNO-M40-XS	27400

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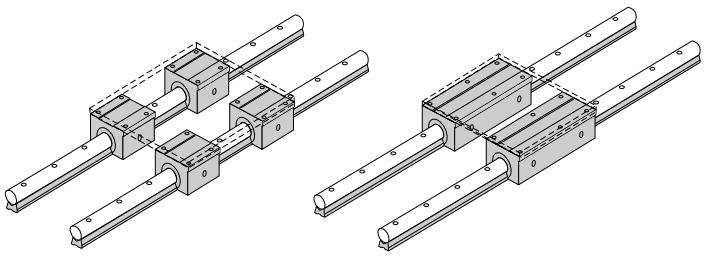
Smart Rail* 1QB

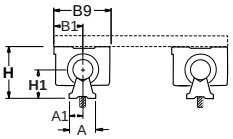
Linear Guide #10

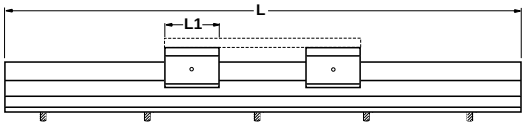
Low Profile, Easy to Install



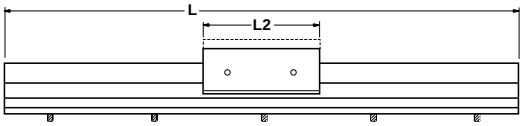
METRIC

Double Continuously Supported Linear Guide with 4 Pillow Blocks

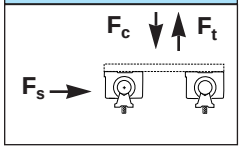




Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	C
F_t	0.5C	0.25C
F_s	C	0.25C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Smart Rail Linear Guide 1QB Double Continuously Supported with 4 Pillow Blocks (Dimensions in mm)

Part Number	Nominal Diameter	L1	H	H1	A	A1	B1	B9	Pillow Block	Shaft Support Rail Assembly
1QB-M16-LLO	16	43	40	18	14	7,0	26,5	53	**SSEPBO-M16-XS**	**LSRA-M16-XS**
1QB-M20-LLO	20	54	47	22	17	8,5	30,0	60	**SSEPBO-M20-XS**	**LSRA-M20-XS**
1QB-M25-LLO	25	67	56	26	21	10,5	39,0	78	**SSEPBO-M25-XS**	**LSRA-M25-XS**
1QB-M30-LLO	30	79	65	30	23	11,5	43,5	87	**SSEPBO-M30-XS**	**LSRA-M30-XS**
1QB-M40-LLO	40	91	84	39	30	15,0	54,0	108	**SSEPBO-M40-XS**	**LSRA-M40-XS**

Smart Rail Linear Guide 1QB Double Continuously Supported with 2 Twin Pillow Blocks (Dimensions in mm)

Part Number	Nominal Diameter	L2	H	H1	A	A1	B1	B9	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1QB-M16-MLO	16	84	40	18	14	7,0	26,5	53	L-(84)	**SSETWNO-M16-XS**	**LSRA-M16-XS**
1QB-M20-MLO	20	104	47	22	17	8,5	30,0	60	L-(104)	**SSETWNO-M20-XS**	**LSRA-M20-XS**
1QB-M25-MLO	25	130	56	26	21	10,5	39,0	78	L-(130)	**SSETWNO-M25-XS**	**LSRA-M25-XS**
1QB-M30-MLO	30	152	65	30	23	11,5	43,5	87	L-(152)	**SSETWNO-M30-XS**	**LSRA-M30-XS**
1QB-M40-MLO	40	176	84	39	30	15,0	54,0	108	L-(176)	**SSETWNO-M40-XS**	**LSRA-M40-XS**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Smart Rail* Linear Guide 1QB Benefits:

- Requires only one part number to specify the entire linear guide.
- Allows for custom table mounting.
- Used in continuously supported applications when rigidity is required.
- More mounting flexibility through bolt down from the top access.

Smart Rail Linear Guide 1QB Components:

- 4 Super Smart Ball Bushing* open type pillow blocks or 2 Super Smart Ball Bushing open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Support Rail Assemblies.

Specifying a Thomson Linear Guide:

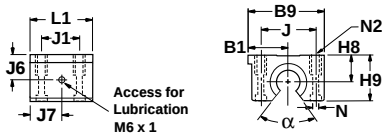
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

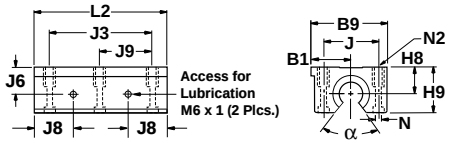
1QB-M16-LLO L600

- 1QB — Linear Guide Designation
- M16 — Nominal Diameter
- LLO — Type of Bearing Block
- L600 — Linear Guide Length
- Type of Support

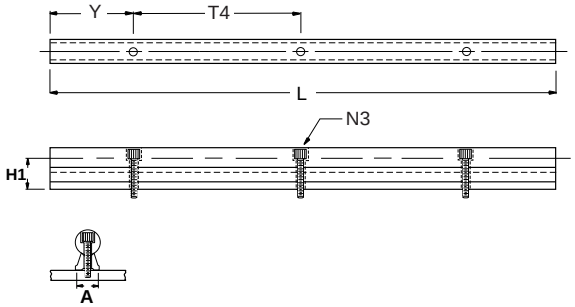
Type SSEPBO Open Type Super Smart Ball Bushing Pillow Block



Type SSETWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type LSRA Low Profile LinearRace Shaft Support Rail Assembly



Type SSEPBO Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J6	J7	J	J1	N Dia.	N2	α Deg	Mass kg
SSEPBO-M16-XS	16	43	22	35	26,5	53	22,0	21,5	40	26	5,3	M6	66	0,17
SSEPBO-M20-XS	20	54	25	41	30,0	60	25,0	27,0	45	32	6,6	M8	60	0,30
SSEPBO-M25-XS	25	67	30	50	39,0	78	31,5	33,5	60	40	8,4	M10	60	0,57
SSEPBO-M30-XS	30	79	35	60	43,5	87	33,0	39,5	68	45	8,4	M10	60	0,87
SSEPBO-M40-XS	40	91	45	77	54,0	108	43,5	45,5	86	58	10,5	M12	60	1,62

Housing Material: Aluminum Alloy Grey Anodized

Type SSETWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SSETWNO-M16-XS	16	84	64	21,5	32	0,34
SSETWNO-M20-XS	20	104	76	27,0	38	0,63
SSETWNO-M25-XS	25	130	94	33,6	47	1,18
SSETWNO-M30-XS	30	152	106	39,5	53	1,70
SSETWNO-M40-XS	40	176	124	45,5	62	3,18

Housing Material: Aluminum Alloy Grey Anodized

Type LSRA Low Profile LinearRace Shaft Support Rail Assembly (Dimensions in mm)

Part Number	Nominal Diameter	H1	A	A1	T4	Y	N3[1]	Mass kg/m
LSRA-M16-XS	16	18	14	7,0	40	20	M3 x 30	3,6
LSRA-M20-XS	20	22	17	8,5	60	30	M4 x 35	5,5
LSRA-M25-XS	25	26	21	10,5	60	30	M5 x 45	8,5
LSRA-M30-XS	30	30	23	11,5	80	40	M6 x 50	13,0
LSRA-M40-XS	40	39	30	15,0	105	52,5	M10 x 65	21,0

LinearRace Shaft Support Rail Material: Black Oxided Steel

[1] Each system is shipped with attachment screws as noted by N3 and cap plugs. If a non-standard screw length is required, it must be user supplied.

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1QB-M16-LLO	8800	SSEPBO-M16-XS	2200
1QB-M20-LLO	16000	SSEPBO-M20-XS	4000
1QB-M25-LLO	26800	SSEPBO-M25-XS	6700
1QB-M30-LLO	33200	SSEPBO-M30-XS	8300
1QB-M40-LLO	54800	SSEPBO-M40-XS	13700

Dynamic Load Rating (C) Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Rating, C (N)
1QB-M16-MLO	8800	SSETWNO-M16-XS	4400
1QB-M20-MLO	16000	SSETWNO-M20-XS	8000
1QB-M25-MLO	26800	SSETWNO-M25-XS	13400
1QB-M30-MLO	33200	SSETWNO-M30-XS	16600
1QB-M40-MLO	54800	SSETWNO-M40-XS	27400

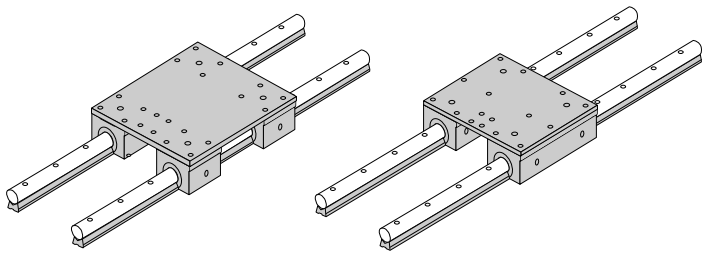
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Smart Rail* 1QC

Linear Guide #10

with Table Top

Low Profile, Easy to Install



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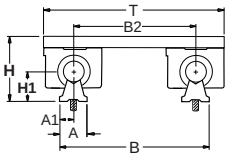
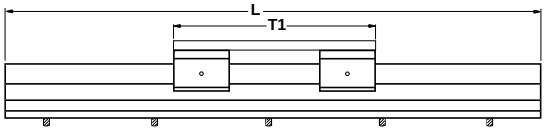
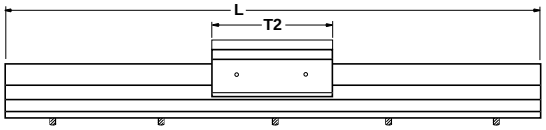


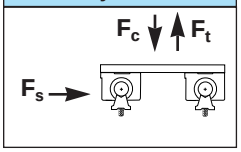
Double Continuously Supported Linear Guide with 4 Pillow Blocks and Size F Table Top



Double Continuously Supported Linear Guide with 2 Twin Pillow Blocks and Size E Table Top



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	C
F_t	0.5C	0.25C
F_s	C	0.25C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Smart Rail Linear Guide 1QC Double Continuously Supported with 4 Pillow Blocks and Table Top (Size F) (Dimensions in mm)

Part Number	Nom. Dia.	T1	T	H	H1	A	A1	B	B2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1QC-M16-LLF	16	125	125	53	18	14	7,0	86	70	L-(125)	**SSEPBO-M16-XS**	**LSRA-M16-XS**
1QC-M20-LLF	20	175	175	63	22	17	8,5	132	110	L-(175)	**SSEPBO-M20-XS**	**LSRA-M20-XS**
1QC-M25-LLF	25	225	225	76	26	21	10,5	168	140	L-(225)	**SSEPBO-M25-XS**	**LSRA-M25-XS**
1QC-M30-LLF	30	275	275	85	30	23	11,5	211	180	L-(275)	**SSEPBO-M30-XS**	**LSRA-M30-XS**
1QC-M40-LLF	40	325	325	109	39	30	15,0	247	210	L-(325)	**SSEPBO-M40-XS**	**LSRA-M40-XS**

Smart Rail Linear Guide 1QC Double Continuously Supported with 2 Twin Pillow Blocks and Table Top (Size E) (Dimensions in mm)

Part Number	Nom. Dia.	T2	T	H	H1	A	A1	B	B2	Maximum Stroke Length	Pillow Block	Shaft Support Rail Assembly
1QC-M16-MLE	16	84	125	53	18	14	7,0	86	70	L-(84)	**SSETWNO-M16-XS**	**LSRA-M16-XS**
1QC-M20-MLE	20	104	175	63	22	17	8,5	132	110	L-(104)	**SSETWNO-M20-XS**	**LSRA-M20-XS**
1QC-M25-MLE	25	130	225	76	26	21	10,5	168	140	L-(130)	**SSETWNO-M25-XS**	**LSRA-M25-XS**
1QC-M30-MLE	30	152	275	85	30	23	11,5	211	180	L-(152)	**SSETWNO-M30-XS**	**LSRA-M30-XS**
1QC-M40-MLE	40	176	325	109	39	30	15,0	247	210	L-(176)	**SSETWNO-M40-XS**	**LSRA-M40-XS**

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (N)
1QC-M16-LLF	8800	SSEPBO-M16-XS	2200
1QC-M20-LLF	16000	SSEPBO-M20-XS	4000
1QC-M25-LLF	26800	SSEPBO-M25-XS	6700
1QC-M30-LLF	33200	SSEPBO-M30-XS	8300
1QC-M40-LLF	54800	SSEPBO-M40-XS	13700

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (N) (Even Distribution)	Pillow Block Part No.	Pillow Block Dynamic Load Capacity (N)
1QC-M16-MLE	8800	SSETWNO-M16-XS	4400
1QC-M20-MLE	16000	SSETWNO-M20-XS	8000
1QC-M25-MLE	26800	SSETWNO-M25-XS	13400
1QC-M30-MLE	33200	SSETWNO-M30-XS	16600
1QC-M40-MLE	54800	SSETWNO-M40-XS	27400

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Smart Rail* Linear Guide 1QC Benefits:

- Requires only one part number to specify the entire linear guide.
- Includes table top with standard tapped holes for quick and easy mounting of the work piece.
- Includes Ball Screw Assembly attachment holes for ease of assembly and actuation.
- Used in continuously supported applications when rigidity is required.

Smart Rail Linear Guide 1QC Components:

- 4 Super Smart Ball Bushing* open type pillow blocks or 2 Super Smart Ball Bushing open type twin pillow blocks.
- 2 60 Case* LinearRace* shaft Support Rail Assemblies.
- 1 mounting table top with work piece and Ball Screw Assembly attachment holes.

Specifying a Thomson Linear Guide:

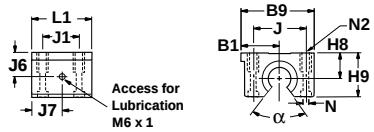
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

Part Numbering System

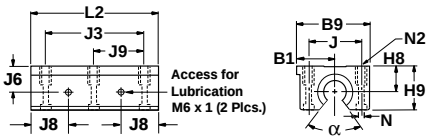
1QC-M16-MLE L600

- 1QC – Linear Guide Designation
- M16 – Nominal Diameter
- M – Type of Bearing Block
- L – Linear Guide Length
- 600 – Length
- E – Type of Table Top
- L – Type of Support

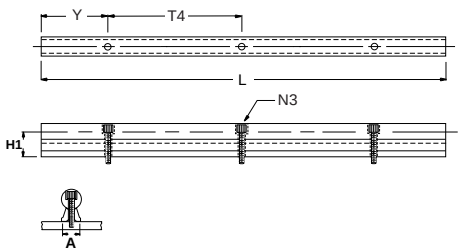
Type SSEPBO Open Type Super Smart Ball Bushing Pillow Block



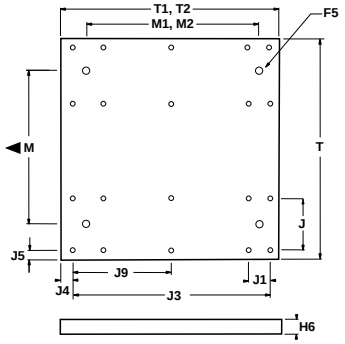
Type SSETWNO Open Type Super Smart Ball Bushing Twin Pillow Block



Type LSRA Low Profile LinearRace Shaft Support Rail Assembly



Mounting Table Top



Type SSEPBO Pillow Blocks (Dimensions in mm)

Part Number	Nom. Dia.	L1	H8	H9	B1	B9	J6	J7	J	J1	N Dia.	N2	α Deg	Mass kg
SSEPBO-M16-XS	16	43	22	35	26,5	53	22,0	21,5	40	26	5,3	M6	66	0,17
SSEPBO-M20-XS	20	54	25	41	30,0	60	25,0	27,0	45	32	6,6	M8	60	0,30
SSEPBO-M25-XS	25	67	30	50	39,0	78	31,5	33,5	60	40	8,4	M10	60	0,57
SSEPBO-M30-XS	30	79	35	60	43,5	87	33,0	39,5	68	45	8,4	M10	60	0,87
SSEPBO-M40-XS	40	91	45	77	54,0	108	43,5	45,5	86	58	10,5	M12	60	1,62

Housing Material: Aluminum Alloy Grey Anodized

Type SSETWNO Pillow Blocks

Part Number	Nom. Dia.	L2	J3	J8	J9	Mass kg
SSETWNO-M16-XS	16	84	64	21,5	32	0,34
SSETWNO-M20-XS	20	104	76	27,0	38	0,63
SSETWNO-M25-XS	25	130	94	33,6	47	1,18
SSETWNO-M30-XS	30	152	106	39,5	53	1,70
SSETWNO-M40-XS	40	176	124	45,5	62	3,18

Housing Material: Aluminum Alloy Grey Anodized

Type LSRA Low Profile LinearRace Shaft Support Rail Assembly (Dimensions in mm)

Part Number	Nominal Diameter	H1	A	A1	T4	Y	N3[1]	Mass kg/m
LSRA-M16-XS	16	18	14	7,0	40	20	M3 x 30	3,6
LSRA-M20-XS	20	22	17	8,5	60	30	M4 x 35	5,5
LSRA-M25-XS	25	26	21	10,5	60	30	M5 x 45	8,5
LSRA-M30-XS	30	30	23	11,5	80	40	M6 x 50	13,0
LSRA-M40-XS	40	39	30	15,0	105	52,5	M10 x 65	21,0

LinearRace Shaft Support Rail Material: Black Oxided Steel
(1) Each system is shipped with attachment screws as noted by N3 and cap plugs.
If a non-standard screw length is required, it must be user supplied.

Mounting Table Top (Dimensions in mm)

System	All Table Tops					Table Top Size **F**					Table Top Size **E**					
	T	M	J	H6	F5[2]	T1	J1	J4	J5	M1	T2	J3	J4	J5	J9	M2
1QC-M16	125	70	40	13	M6	125	26	10,0	7,5	70	84	64	10	7,5	32	45
1QC-M20	175	110	45	16	M8	175	32	11,0	10,0	110	104	76	14	10,0	38	55
1QC-M25	225	140	60	20	M8	225	40	13,5	12,5	140	130	94	18	12,5	47	65
1QC-M30	275	180	68	20	M8	275	45	17,0	13,5	180	152	106	23	13,5	53	75
1QC-M40	325	210	86	25	M10	325	58	16,5	14,5	210	176	124	26	14,5	62	85

Material: Aluminum Alloy Grey Anodized
(2) Customer Mounting Hole

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Smart Rail* Linear Ball Guide Accessories

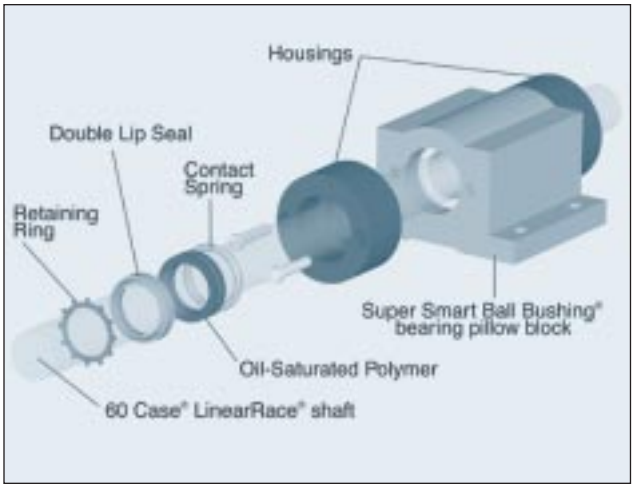
-LL Self-Lubricating Option‡

The new LL Option provides maintenance-free operation and enhanced bearing protection.

- Eliminates the need for expensive lubrication system in most applications
- Increases effective bearing life by increasing protection from contamination
- Environmentally friendly

NOTE: Carriage drag with the -LL option will be approximately 2x the seal drag.

‡ See Page 210 for technical data.



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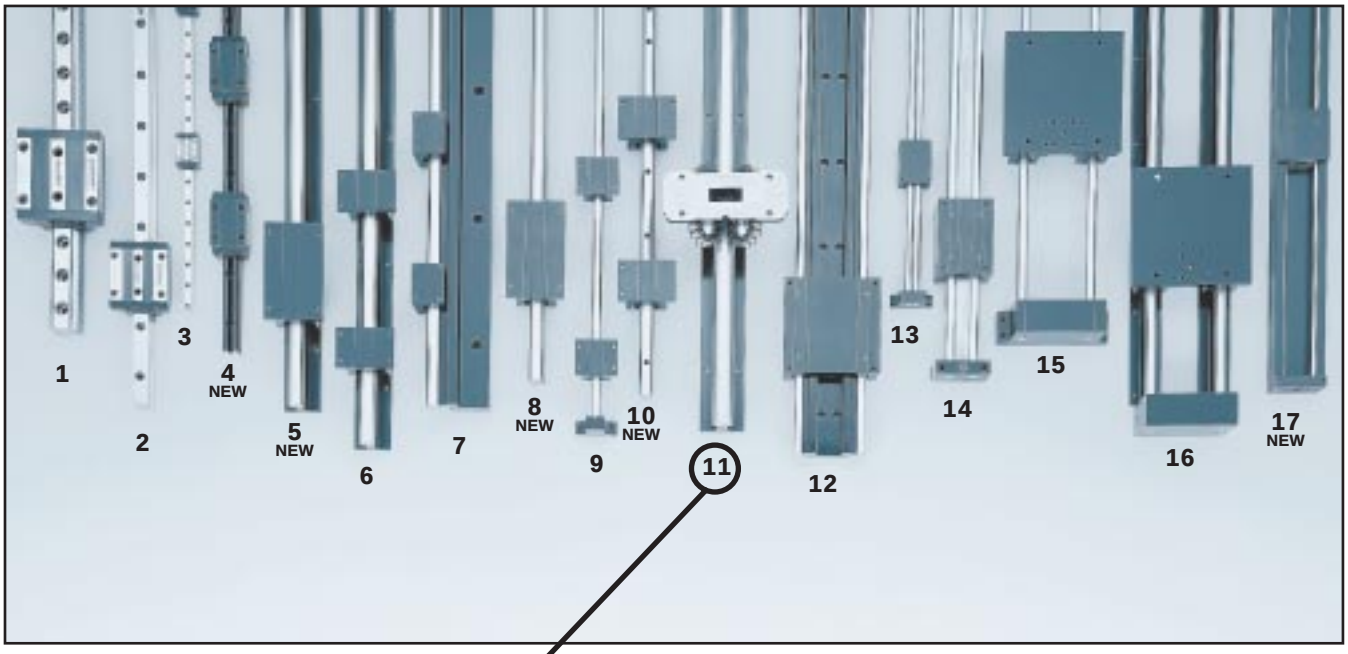
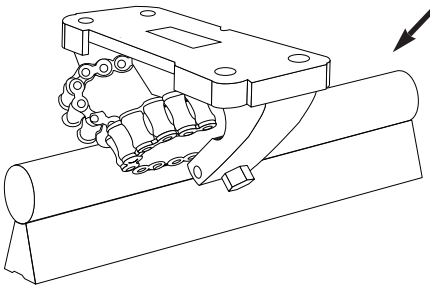
RoundWay Linear Roller Guides #11





HIGHEST LOADS, MOST RUGGED, HIGHEST SPEED AND ACCELERATION

RoundWay* Linear Roller Guides Offer:

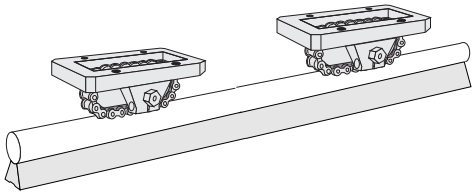
- Up to twenty times the load capacity of conventional linear ball bearings. This dramatic increase allows for more compact machine designs with a reduction in hardware costs
- Industry's highest load capacity. RoundWay Linear Roller bearings handle up to 35 tons/bearing and speeds up to 100 ft/second
- Virtual insensitivity to contamination without concerns of stroke length reduction from way covers
- A self-aligning capability that reduces installation time and cost by compensating for rail misalignment errors
- Interchangeable components for quick, cost-effective machine maintenance.
- Curved rollers running on a curved inner race which make this linear guide resistant to severe shock loads
- Corrosion resistant versions for maximum performance in harsh environments.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

RoundWay 1WA

Linear Guide #11
Single Type

Contaminated Environments,
High Shock Loads



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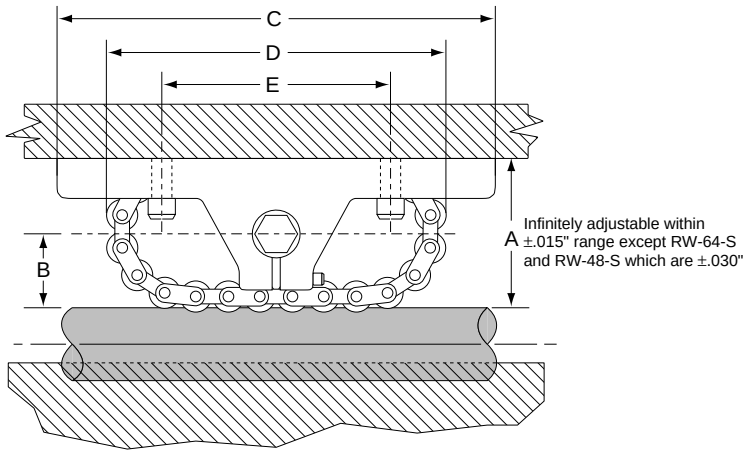
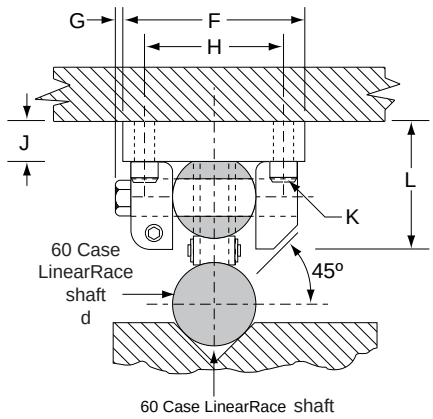




RoundWay* Linear Guide 1WA (Single Type) and 60 Case* LinearRace* Shaft (Dimensions in inches)

Part Number	Nom. Dia.	A	B	C	D	E	F	G	H	J	K		L	60 Case LinearRace shaft Dia. **d**	60 Case LinearRace shaft Max. Length‡	60 Case Solid LinearRace shaft lb/in	Bearing Mass lb	Dynamic(1) Load Capacity lb_f
											Bolt	Hole						
1WA-08-WCO	.500	1.00	.45	3.0	2.38	1.50	1.25	.19	.94	.31	#6	.16	.88	.4995/.4990	168	.06	.50	970
1WA-16-WCO	1.000	1.75	.80	5.0	3.75	2.50	2.13	.25	1.63	.50	#10	.25	1.50	.9995/.9990	180	.22	2.20	3020
1WA-24-WCO	1.500	2.50	1.15	6.5	5.38	3.50	2.88	.31	2.13	.63	5/16	.38	2.13	1.4994/1.4989	204	.50	5.60	6020
1WA-32-WCO	2.000	3.25	1.50	8.5	7.38	4.50	3.63	.38	2.75	.75	3/8	.44	2.88	1.9994/1.9987	204	.89	12.40	12360
1WA-48-WCO	3.000	5.00	2.30	13.0	11.00	7.00	6.00	.50	4.25	1.25	3/8	.69	4.25	2.9992/2.9983	204	2.00	48.00	24000
1WA-64-WCO	4.000	6.50	3.00	17.0	14.88	9.00	7.75	.50	5.50	1.50	3/4	.81	5.88	3.9988/3.9976	204	3.56	105.00	48000

(1) Dynamic Load Capacity is based on 10 million inches of travel.

‡ Maximum length of 60 Case LinearRace Shafts are indicated above. If longer 60 Case LinearRace Shafts Support Rails are required, contact the Thomson **Linear Guide** Application Engineering department.

ROUNDWAY LINEAR GUIDE PART NUMBER

1WA 24 W C O L ____

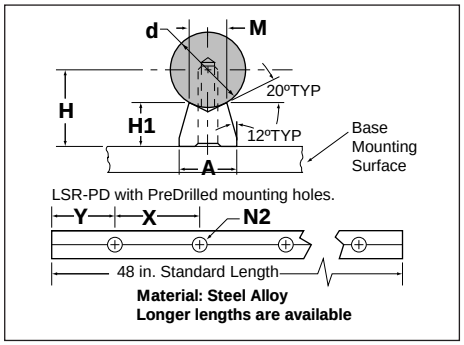
- **1WA** — **ROUNDWAY**
- **24** — **SIZE**: 08, 16, 24, 32, 48, 64
- **W** — **SUPPORT**
- **C** — **TYPE**
- **O** — **DESCRIPTION**: A = SRA, I = XSRA, C = ULSRA
- **L** — **LENGTH (IN.)**

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

60 Case* LinearRace* Shaft Support Rails and Assemblies

for Continuously Supported Applications

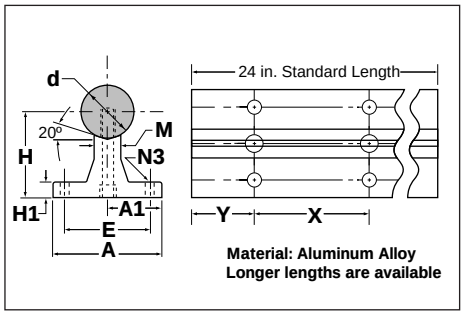
SUPPORT TYPE C



ULSRA Low Profile Shaft Support Rail Assemblies (Dimensions in inches)

Part Number	Nominal LinearRace Shaft Diameter d	H ±.002	H1	A	M	N2 Hole	N2 Bolt	X	Y
ULSRA-08-XS	.500	.562	.34	.37	.25	.17	#6-32	4	2
ULSRA-16-XS	1.000	1.000	.56	.69	.50	.28	¼-20	6	3
ULSRA-24-XS	1.500	1.375	.70	.93	.69	.41	⅜-16	8	4
ULSRA-32-XS	2.000	1.750	.85	1.18	.88	.53	½-13	8	4
ULSRA-48-XS	3.000	2.750	1.40	1.88	1.38	.81	¾-10	8	4
ULSRA-64-XS	4.000	3.500	1.75	2.50	1.88	1.06	1-8	8	4

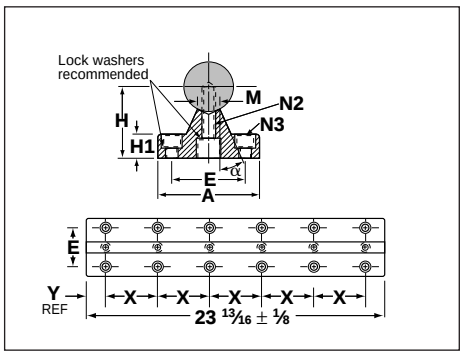
SUPPORT TYPE A



SRA LinearRace Shaft Support Rail Assemblies (Dimensions in inches)

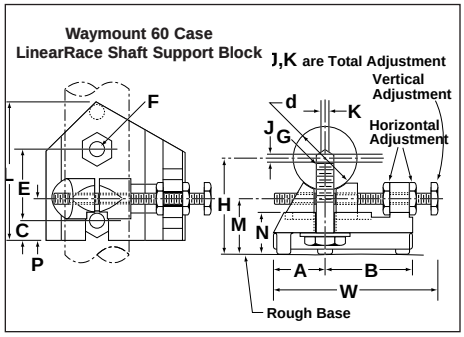
Assembly With Solid LinearRace	Nom. LinearRace Shaft Dia. d	H ±.002	H1	A	A1 ±.002	E	M	N3 Hole	N3 Bolt	Shaft Mounting Bolt N1	X	Y
SRA-08-XS	.500	1.125	.19	1.50	.750	1.00	.25	.17	#6	#6-32 x .88	4	2
SRA-16-XS	1.000	1.750	.25	2.13	1.063	1.50	.50	.28	¼	¼-20 x 1.50	6	3
SRA-24-XS	1.500	2.500	.38	3.00	1.500	2.25	.69	.34	5/16	⅜-16 x 2.50	8	4
SRA-32-XS	2.000	3.250	.50	3.75	1.875	2.75	.88	.41	⅜	½-13 x 2.50	8	4

SUPPORT TYPE I



XSRA LinearRace Support Rail Assemblies (Dimensions in inches)

Assy. With Solid LinearRace	Nominal LinearRace Shaft Diameter	H -.001 +.000	H1	A	E	M	N2 Hole	N2 Bolt	N2 Counterbore	N3 Hole	N3 Bolt	N3 Counterbore	a deg	X	Y
XSRA-32	2.000	2.750	1.00	4.50	3.13	.88	.56	½-13 x 2	1 x .75 DP	.56	.50	1 x .63 DP	15	4	1.97
XSRA-48	3.000	4.000	1.31	6.00	4.25	1.25	.81	¾-10 x 2.75	1.44 x 1.13 DP	.69	.63	1.25 x .75 DP	25	6	2.97



Waymount* LinearRace Shaft Support Block (Dimensions in inches)

Waymount Part Number	Nominal LinearRace Shaft Diameter d	L	H	W	A	B	C	E	F	G(4)	J	K	M	N	P	Weight lbf
WM-8	.500	1.50	1.06	1.75	.50	.88	.25	.75	.22	#8-32	.05	.09	.69	.50	.44	.20
WM-16	1.000	2.00	1.50	2.50	.75	1.25	.31	1.06	.28	¼-28	.06	.13	.81	.69	.69	.50
WM-24	1.500	2.50	2.00	3.50	1.19	1.63	.44	1.19	.34	5/16-24	.13	.13	1.00	.75	.75	1.10
WM-32	2.000	3.00	2.50	4.00	1.44	1.88	.50	1.38	.41	⅜-24	.13	.13	1.25	.94	1.00	1.80
WM-48	3.000	5.00	4.31	6.75	2.38	3.38	.75	2.63	.66	⅝-18	.13	.13	2.25	1.63	1.50	10.20
WM-64	4.000	6.50	5.44	8.50	3.00	4.25	1.00	3.13	.78	¾-16	.13	.13	2.75	2.00	2.00	21.20

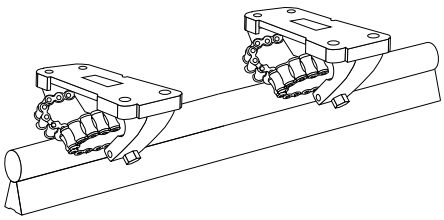
(4) Supplied with Waymount LinearRace Shaft support block

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

RoundWay 1WA

Linear Guide #11
Dual Type

Contaminated Environments, High Shock Loads



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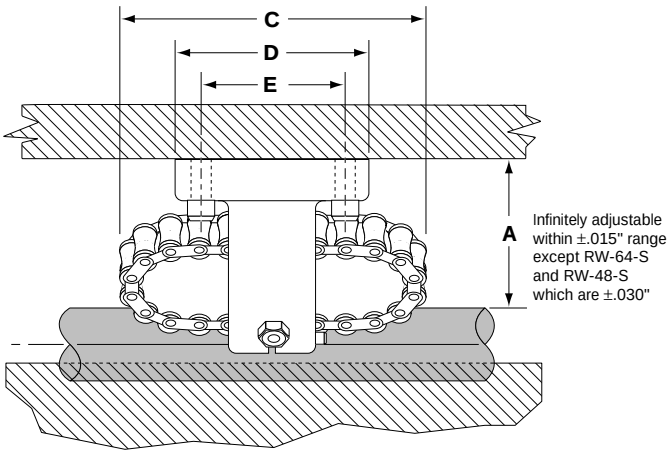
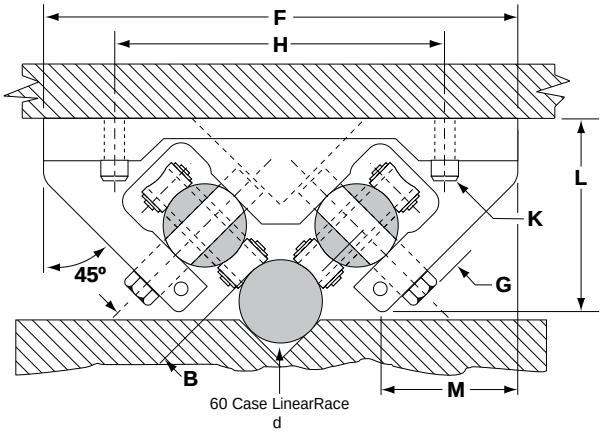




RoundWay* Linear Guide 1WA (Single Type) and 60 Case* LinearRace* Shaft (Dimensions in inches)

Part Number	Nom. Dia.	A	B	C	D	E	F	G	H	J	K		L	M	60* Case* LinearRace Shaft Dia. **d**	60 Case LinearRace Shaft Max. Length‡	60 Case Solid LinearRace shaft lb/in	Bearing Mass lb	Dyn.(1) Load Cap. lb_f
											Bolt	Hole							
1WA-08-VCO	.500	1.00	.45	1.38	2.38	1.00	3.00	.19	2.25	.31	#8	.19	1.38	.69	.4995/.4990	168	.06	1.10	1370
1WA-16-VCO	1.000	1.75	.80	2.25	3.75	1.63	5.75	.25	4.0	.50	#10	.25	2.38	1.56	.9995/.9990	180	.22	4.90	4300
1WA-24-VCO	1.500	2.50	1.15	2.75	5.38	2.00	7.88	.31	6.0	.63	5/16	.38	3.38	2.13	1.4994/1.4989	204	.50	11.70	8600
1WA-32-VCO	2.000	3.25	1.50	3.50	7.38	2.50	9.75	.38	7.5	.75	3/8	.44	4.38	2.50 4.25	1.9994/1.9987	204	.89	25.20	17500
1WA-48-VCO	3.000	5.00	2.30	5.50	11.00	4.00	15.50	.63	12.0	1.25	5/8	.69	7.00	5.00	2.9992/2.9983	204	2.00	90	35000
1WA-64-VCO	4.000	6.50	3.00	7.00	14.88	5.00	19.25	.75	15.0	1.50	3/4	.81	8.63		3.9988/3.9976	204	3.56	193	70000

(1) Dynamic Load Capacity is based on 10 million inches of travel.

‡ Maximum length of 60 Case LinearRace Shafts are indicated above. If longer 60 Case LinearRace Shafts Support Rails are required, contact the Thomson **Linear Guide** Application Engineering department.

ROUNDWAY LINEAR GUIDE PART NUMBER

1WA 24 V C O L

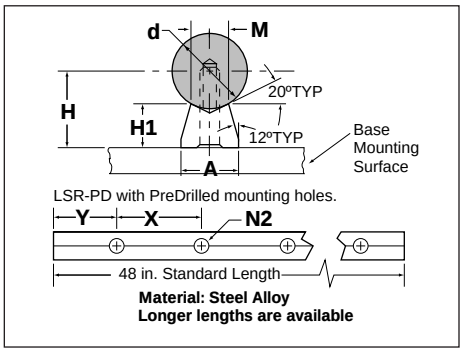
- **1WA** — ROUNDWAY
- **24** — SIZE: 08, 16, 24, 32, 48, 64
- **V** — SUPPORT TYPE: A, I, C
- **C** — DESCRIPTION: SRA, XSRA, ULSRA
- **O** — (blank)
- **L** — LENGTH (IN.)

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

60 Case* LinearRace* Shaft Support Rails and Assemblies

for Continuously Supported Applications

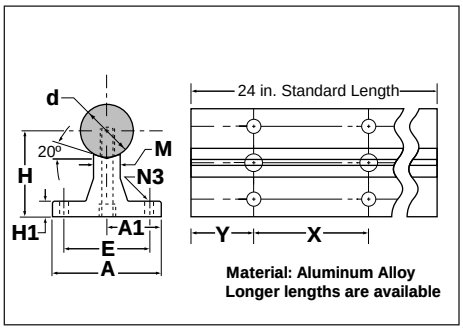
SUPPORT TYPE C



ULSRA Low Profile Shaft Support Rail Assemblies (Dimensions in inches)

Part Number	Nominal LinearRace Shaft Diameter **d**	H ±.002	H1	A	M	N2 Hole	N2 Bolt	X	Y
ULSRA-08-XS	.500	.562	.34	.37	.25	.17	#6-32	4	2
ULSRA-16-XS	1.000	1.000	.56	.69	.50	.28	¼-20	6	3
ULSRA-24-XS	1.500	1.375	.70	.93	.69	.41	⅜-16	8	4
ULSRA-32-XS	2.000	1.750	.85	1.18	.88	.53	½-13	8	4
ULSRA-48-XS	3.000	2.750	1.40	1.88	1.38	.81	¾-10	8	4
ULSRA-64-XS	4.000	3.500	1.75	2.50	1.88	1.06	1-8	8	4

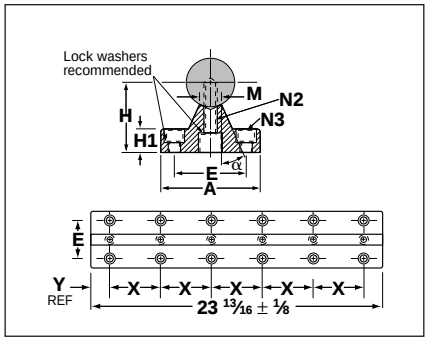
SUPPORT TYPE A



SRA LinearRace Shaft Support Rail Assemblies (Dimensions in inches)

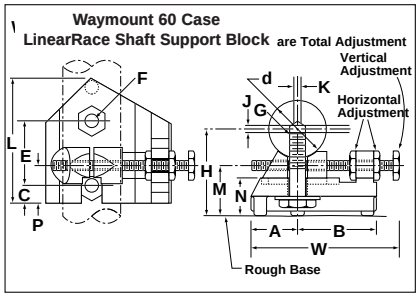
Assembly With Solid LinearRace	Nom. LinearRace Shaft Dia. **d**	H ±.002	H1	A	A1 ±.002	E	M	N3 Hole	N3 Bolt	Shaft Mounting Bolt N1	X	Y
SRA-08-XS	.500	1.125	.19	1.50	.750	1.00	.25	.17	#6	#6-32 x .88	4	2
SRA-16-XS	1.000	1.750	.25	2.13	1.063	1.50	.50	.28	¼	¼-20 x 1.50	6	3
SRA-24-XS	1.500	2.500	.38	3.00	1.500	2.25	.69	.34	5/16	⅜-16 x 2.50	8	4
SRA-32-XS	2.000	3.250	.50	3.75	1.875	2.75	.88	.41	⅜	½-13 x 2.50	8	4

SUPPORT TYPE I



XSRA LinearRace Shaft Support Rail Assemblies (Dimensions in inches)

Assy. With Solid LinearRace	Nominal LinearRace Shaft Diameter	H −.001 +.000	H1	A	E	M	N2 Hole	N2 Bolt	N2 Counterbore	N3 Hole	N3 Bolt	N3 Counterbore	a deg	X	Y
XSRA-32	2.000	2.750	1.00	4.50	3.13	.88	.56	½-13 x 2	1 x .75 DP	.56	.50	1 x .63 DP	15	4	1.97
XSRA-48	3.000	4.000	1.31	6.00	4.25	1.25	.81	¾-10 x 2.75	1.44 x 1.13 DP	.69	.63	1.25 x .75 DP	25	6	2.97



Waymount* LinearRace Shaft Support Block (Dimensions in inches)

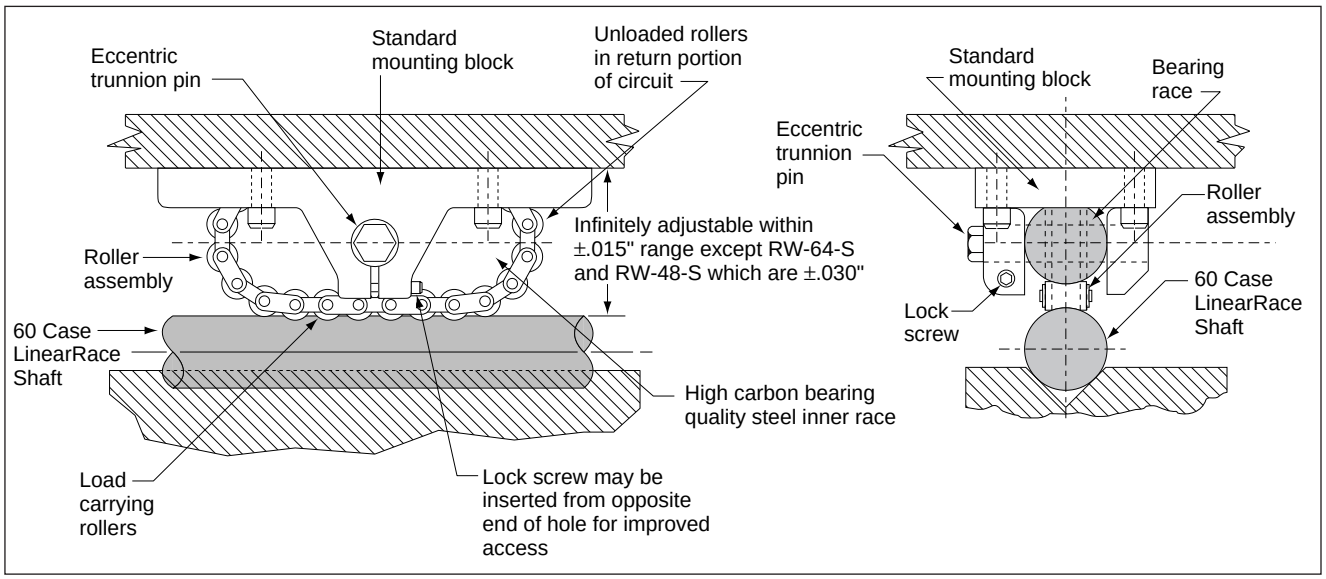
Waymount Part Number	Nominal LinearRace Shaft Dia. **d**	L	H	W	A	B	C	E	F	G(4)	J	K	M	N	P	Weight lbf
WM-8	.500	1.50	1.06	1.75	.50	.88	.25	.75	.22	8-32	.05	.09	.69	.50	.44	.20
WM-16	1.000	2.00	1.50	2.50	.75	1.25	.31	1.06	.28	¼-28	.06	.13	.81	.69	.69	.50
WM-24	1.500	2.50	2.00	3.50	1.19	1.63	.44	1.19	.34	5/16-24	.13	.13	1.00	.75	.75	1.10
WM-32	2.000	3.00	2.50	4.00	1.44	1.88	.50	1.38	.41	⅜-24	.13	.13	1.25	.94	1.00	1.80
WM-48	3.000	5.00	4.31	6.75	2.38	3.38	.75	2.63	.66	⅝-18	.13	.13	2.25	1.63	1.50	10.20
WM-64	4.000	6.50	5.44	8.50	3.00	4.25	1.00	3.13	.78	¾-16	.13	.13	2.75	2.00	2.00	21.20

(4) Supplied with Waymount LinearRace Shaft support block

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

RoundWay Linear Roller Bearings

RoundWay Operating Principle



Thomson invented the RoundWay* Linear roller bearing for use in high load, heavy duty applications. Each RoundWay bearing combines the high load capacity of hardened and ground steel recirculating rollers with a rigid malleable iron pillow block providing extremely high load capacity with smooth linear travel. The RoundWay linear roller bearing comes in both a single and dual version. A single RoundWay linear roller bearing does not resist side loads and is therefore always used in conjunction with a dual version.

Each RoundWay linear roller bearing is designed for use on 60 Case* LinearRace* shaft. The 60 Case LinearRace shaft can be continuously supported using type LSR, SR, or XSR 60 Case LinearRace shaft support rails or intermittently supported using the adjustable Waymount* LinearRace shaft supports type WM.

The RoundWay linear roller bearing consists of four basic parts: the bearing race, the roller assembly, the eccentric trunnion pin and the mounting block. The rolling elements of a RoundWay linear roller bearing are a series of concave rollers interconnected and linked by a chain assembly. As load is applied to the mounting block it is transferred through the bearing race and roller assembly to the supported 60 Case LinearRace shaft. Connecting the mounting block to the RoundWay bearing and roller assembly is an eccentric trunnion pin that allows the height of the RoundWay linear roller bearing to be adjusted to compensate for variations in the mounting surfaces or the build-up of tolerances between component elements. The eccentric trunnion pin can also be used to preload the RoundWay bearing by eliminating internal bearing clearance. After the eccentric trunnion pin has been adjusted it can be held in place by simply tightening the lock screw.

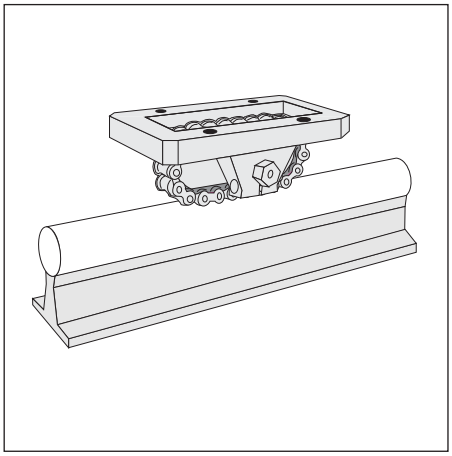
Self-Aligning

The RoundWay single and dual bearings are designed with a built-in self-aligning capability that absorbs misalignment caused by inaccuracies in carriage or base machining. The RoundWay single bearing has an additional built-in self-aligning capability that allows it to absorb misalignment caused by two slightly out of parallel 60 Case LinearRace shafts. This feature is realized when two RoundWay single bearings are mounted on one 60 Case LinearRace shaft and two dual RoundWay bearings are on a parallel 60 Case LinearRace shaft.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

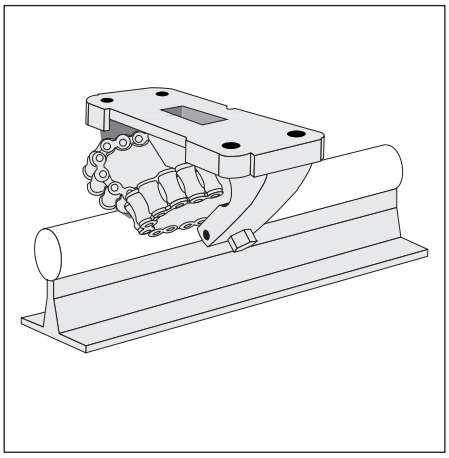
RoundWay Linear Roller Bearings

for Continuously Supported Applications



RoundWay* Linear Roller Bearing (Single Type)

- Available in ½ through 4 inch diameters.
- Load capacity range between 970 and 48,000 lb_f.
- Travel speeds up to 100 ft/s.
- Accelerations up to 450 ft/s^2.
- Can be adjusted to compensate for variations in the mounting surface.
- Self-aligning in all directions.
- Designed to compensate for two 60 Case* LinearRace* shafts that are slightly out of parallel
- Should always be used in conjunction with RoundWay Dual version.
- Can be mounted in a custom housing.
- Available with a two piece seal that retains lubrication while protecting the bearing from the ingress of dirt or contaminants.
- Easily mounted to carriage with four mounting bolts.



RoundWay Linear Roller Bearing (Dual Type)

- Available in ½ through 4 inch diameters.
- Load capacity range between 1370 and 70,000 lb_f.
- Travel speeds up to 100 ft/s.
- Accelerations up to 450 ft/s^2.
- Can be adjusted to compensate for variations in the mounting surface.
- Self-aligning in all directions.
- Available with a two piece seal that retains lubrication while protecting the bearing from the ingress of dirt or contaminants.
- Easily mounted to carriage with four mounting bolts.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

PROJECT TITLE:

APPLICATION WORKSHEET

NOTES

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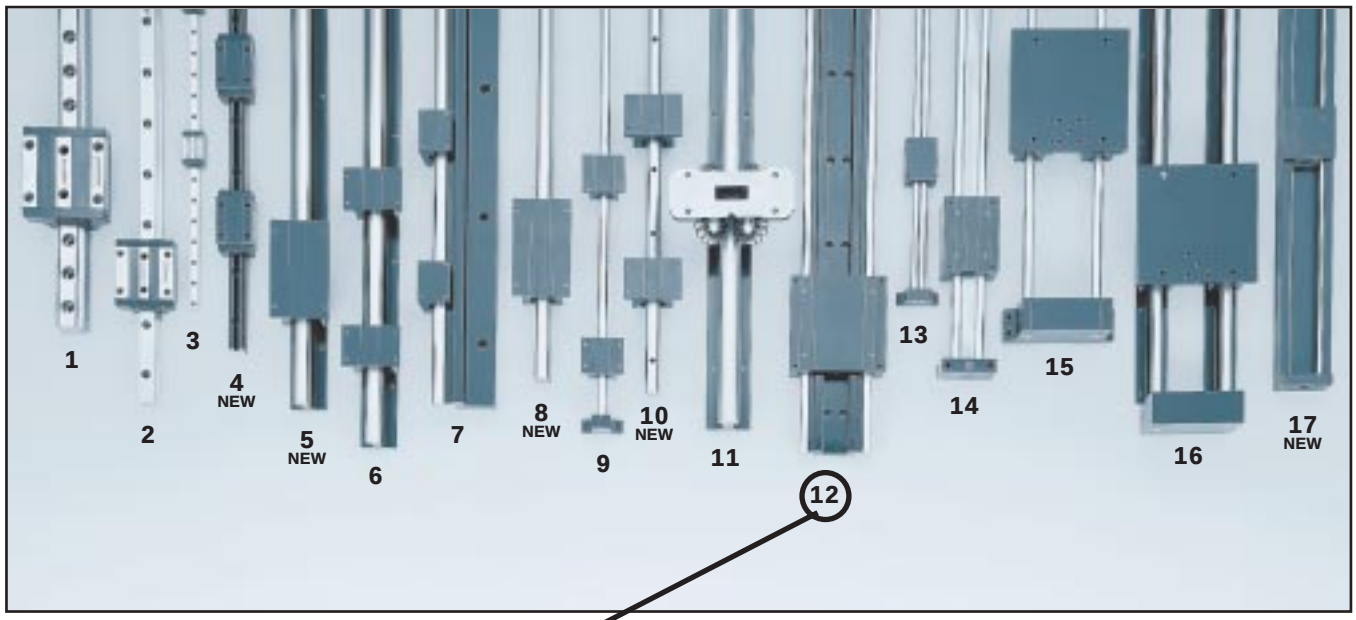
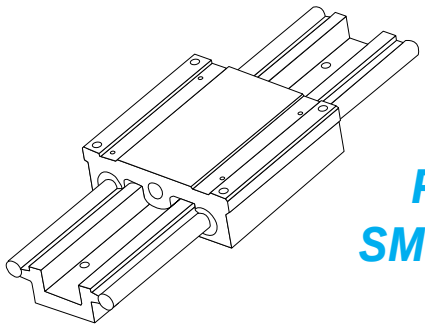
Dual Shaft Rail Linear Ball Guides #12





HIGH LOADS IN ALL DIRECTIONS, PRE-ALIGNED SHAFTS, SMOOTH OPERATION, EASY TO INSTALL

Dual Shaft Rail* Linear Ball Guides Offer:

- Increased life within the same envelope. RoundRail* linear guides feature the new patented Super Smart Ball Bushing* bearings for up to 216X the life or 6X the load capacity of conventional bearings
- Cost savings: save time and money preparing your mounting surfaces before bolting down RoundRail linear guides
- The RoundRail Advantage*. The inherent self-aligning-in-all-directions design of the Super Smart Ball Bushing bearing allows for ultra smooth travel when mounted to wider toleranced prepared surfaces
- Maximum performance. Fully supported for maximum (multidirectional) load applications without concerns for shaft deflection
- Unlimited travel lengths without concerns for machined reference edges or butt joint alignment
- The Super Smart Ball Bushing bearing… the most technologically advanced and most robust linear bearing in the world
- Pre-aligned 60 Case* LinearRace* shaft for quick and easy mounting
- Corrosion resistant versions for maximum performance in harsh environments.

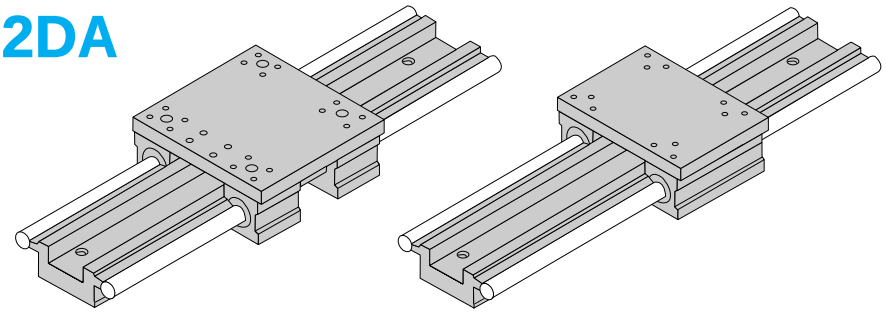
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dual Shaft Rail* 2DA

Linear Guide #12

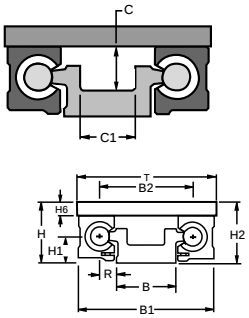
with Modular Carriage

Unpack and Install

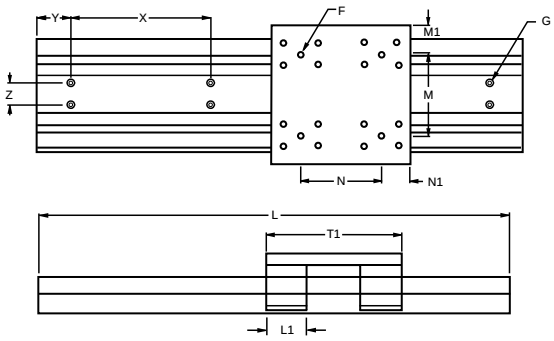


INCH

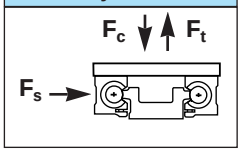
Linear Guide Cross Section



Dual Shaft Rail Linear Guide with Modular Full length Carriage



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	0.5C
F_t	C	0.5C
F_s	0.5C	0.5C

Dynamic Load Rating
Load value used in life calculation.
Load Limit
Maximum allowable load applied to bearing.

Dual Shaft Rail Linear Guide 2DA with Modular Full Length Carriage (Dimensions in inches)

Part Number	Nominal Diameter	L1	T1	H	H1	H2	H6	T	B	B1	R	B2
2DA-08-JOB	.50	1.50	4.5	2.062	.875	1.94	.50	4.5	2.00	4.37	.500	3.0
2DA-12-JOB	.75	1.88	6.0	2.562	1.125	2.44	.50	6.0	2.62	5.87	.688	4.0
2DA-16-JOB	1.00	2.63	7.5	3.062	1.375	2.97	.50	7.5	3.25	7.37	.875	5.0

Dual Shaft Rail Linear Guide 2DA with Modular Full Length Carriage (Dimensions in inches)

Part Number	C1	C	N	N1	M	M1	X	Y	Z	F	G		Max. Stroke Length	Carriage Part Number	Dual Shaft Rail Asmbly. Part No.
											Bolt	Hole			
2DA-08-JOB	1.25	1.07	4.0	.25	3.25	.63	4.0	2.0	.75	1/4-20	1/4	.28	L-(4.5)	DSRC-08-BB	DSRA-08
2DA-12-JOB	1.62	1.31	5.0	.50	4.50	.75	6.0	3.0	1.00	1/4-20	5/16	.34	L-(6.0)	DSRC-12-BB	DSRA-12
2DA-16-JOB	2.00	1.68	6.5	.50	5.50	1.00	6.0	3.0	1.25	1/4-20	3/8	.41	L-(7.5)	DSRC-16-BB	DSRA-16

Dual Shaft Rail Support Material: Black Anodized Aluminum Alloy
Maximum continuous length of support rails is 72". If longer continuous shaft support rails are required, please contact the Thomson Linear Guides Application Engineering department.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dual Shaft Rail* Linear Guide 2DA Benefits:

- Used in continuously supported applications when rigidity is required.
- Adaptable to any drive system.
- Pre-aligned and preassembled for immediate installation and use.
- Designed for medium to heavy loads.

Dual Shaft Rail Linear Guide 2DA Components: †

- 1 Dual LinearRace* shaft rail assembly.
- 1 modular carriage with 4 open type Super Smart Ball Bushing* pillow blocks.

Specifying this Thomson Linear Guide:

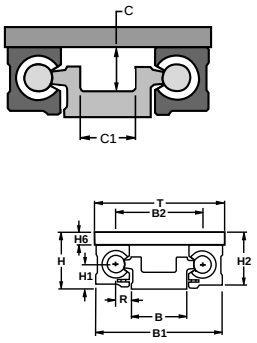
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

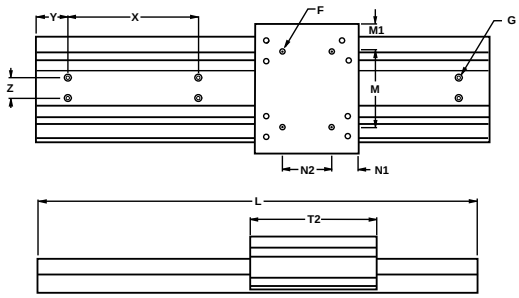
2DA-12-JOB L24

- 2DA-12-JOB: Linear Guide Designation / Nominal Diameter
- L24: Linear Guide Length / Type of Carriage

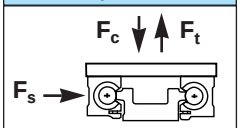
Linear Guide Cross Section



Dual Shaft Rail Linear Guide with Modular Short length Carriage



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	0.5C
F_t	C	0.5C
F_S	0.5C	0.5C

Dynamic Load Rating
Load value used in life calculation.
Load Limit
Maximum allowable load applied to bearing.

Dual Shaft Rail Linear Guide 2DA with Modular Short Length Carriage (Dimensions in inches)

Part Number	Nominal Diameter	L1	T2	H	H1	H2	H6	T	B	R	B1	B2
2DA-08-KOA	.500	1.50	3.5	2.062	.875	1.94	.50	4.5	2.00	.500	4.37	3.0
2DA-12-KOA	.750	1.88	4.5	2.562	1.125	2.44	.50	6.0	2.62	.688	5.87	4.0
2DA-16-KOA	1.000	2.63	6.0	3.062	1.375	2.97	.50	7.5	3.25	.875	7.37	5.0

Dual Shaft Rail Linear Guide 2DA with Modular Short Length Carriage (Dimensions in inches)

Part Number	C1	C	N1	N2	M	M1	X	Y	Z	F	G		Max. Stroke Length	Carriage Part Number	Dual Shaft Rail Asmbly. Part No.
											Bolt	Hole			
2DA-08-KOA	1.25	1.07	.250	3.00	3.25	.63	4.0	2.0	.75	1/4-20	1/4	.28	L-(3.5)	DSRC-08-BA	DSRA-08
2DA-12-KOA	1.62	1.31	.250	4.00	4.50	.75	6.0	3.0	1.00	1/4-20	5/16	.34	L-(4.5)	DSRC-12-BA	DSRA-12
2DA-16-KOA	2.00	1.68	.375	5.25	5.50	1.00	6.0	3.0	1.25	1/4-20	3/8	.41	L-(6.0)	DSRC-16-BA	DSRA-16

Dual Shaft Rail Support Material: Black Anodized Aluminum Alloy
Maximum continuous length of support rails is 72". If longer continuous shaft support rails are required, please contact the Thomson Linear Guides Application Engineering department.

† Super Ball Bushing bearings are used in .500 inch size carriages.

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Pillow Block Dynamic Load Rating, C (lb_f)	Dynamic Roll Moment Rating, C (in - lb_f)
2DA-08-JOB	480	120	720
2DA-12-JOB	3200	800	6400
2DA-16-JOB	5400	1350	13500
2DA-08-KOA	480	240*	720
2DA-12-KOA	3200	1600*	6400
2DA-16-KOA	5400	2700*	13500

* Twin Pillow Block

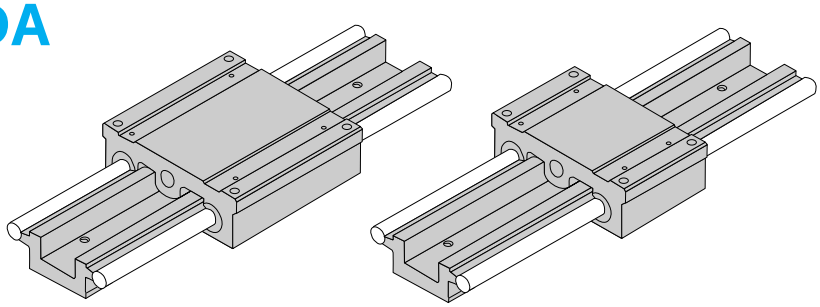
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dual Shaft Rail* 2DA

Linear Guide #12

with Integrated Carriage

Unpack and Install



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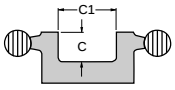
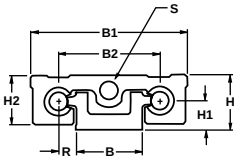
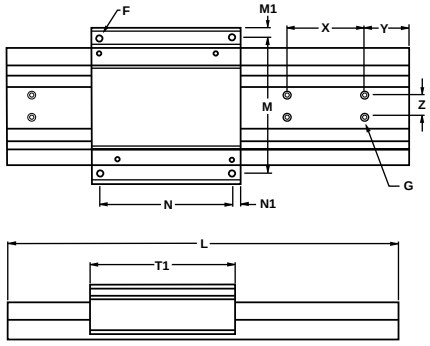


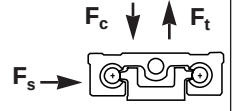
Rail Cross Section

Dual Shaft Rail Linear Guide with Integrated full length Carriage





Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	0.5C
F_t	C	0.5C
F_S	0.5C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Dual Shaft Rail Linear Guide 2DA with Integrated Carriage (Dimensions in inches)

Part Number	Nominal Diameter	T1	H	H1	H2	B	R	B1	B2	C	C1
2DA-08-OOB	.50	4.5	1.625	.875	1.43	2.00	.500	4.6	3.0	.64	1.25
2DA-12-OOB	.75	6.0	2.125	1.125	1.93	2.63	.688	6.1	4.0	.75	1.62
2DA-16-OOB	1.00	7.5	2.625	1.375	2.44	3.25	.875	7.6	5.0	.99	2.00

Dual Shaft Rail Linear Guide 2DA with Integrated Carriage (Dimensions in inches)

Part Number	N	N1	M	M1	X	Y	Z	S As Extruded	F	G Bolt	G Hole	Max. Stroke Length	Carriage Part Number	Dual Shaft Rail Asmbly. Part No.
2DA-08-OOB	4.00	.25	4.00	.30	4.0	2.0	.75	.50	#10-32	1/4	.28	L-(4.5)	DSRC-08-SB	DSRA-08
2DA-12-OOB	5.25	.37	5.25	.42	6.0	3.0	1.00	.70	1/4-20	5/16	.34	L-(6.0)	DSRC-12-SB	DSRA-12
2DA-16-OOB	6.75	.37	6.75	.42	6.0	3.0	1.25	.90	5/16-18	3/8	.41	L-(7.5)	DSRC-16-SB	DSRA-16

Dual Shaft Rail Support Material: Black Anodized Aluminum Alloy
Maximum continuous length of support rails is 72". If longer continuous shaft support rails are required, please contact the Thomson Linear Guides Application Engineering department.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dual Shaft Rail* Linear Guide 2DA Benefits:

- Used in continuously supported applications when rigidity is required.
- Adaptable to any drive system.
- Pre-aligned and preassembled for immediate installation and use.
- Designed for medium to heavy loads.

Dual Shaft Rail Linear Guide 2DA Components:†

- 1 Dual LinearRace* shaft rail assembly.
- 1 integrated carriage with 4 open type Super Smart Ball Bushing* bearings.

Specifying this Thomson Linear Guide:

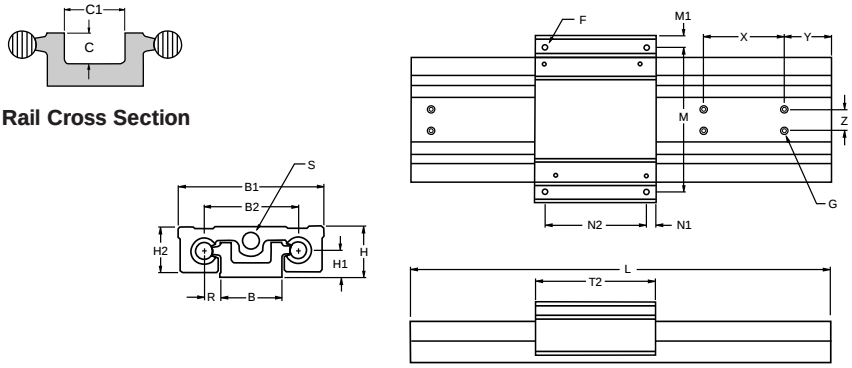
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

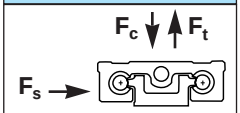
2DA-12-OOB L24

Linear Guide Designation — Nominal Diameter
Type of Carriage — Linear Guide Length

Dual Shaft Rail Linear Guide with Integrated short length Carriage



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	0.5C
F_t	C	0.5C
F_s	0.5C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Dual Shaft Rail Linear Guide 2DA with Integrated Carriage (Dimensions in inches)

Part Number	Nominal Diameter	T2	H	H1	H2	B	R	B1	B2	C	C1
2DA-08-OOA	.500	3.5	1.625	.875	1.43	2.00	.500	4.60	3.0	.64	1.25
2DA-12-OOA	.750	4.5	2.125	1.125	1.93	2.63	.688	6.10	4.0	.75	1.62
2DA-16-OOA	1.000	6.0	2.625	1.375	2.44	3.25	.875	7.60	5.0	.99	2.00

Dual Shaft Rail Linear Guide 2DA with Integrated Carriage (Dimensions in inches)

Part Number	N	N2	M	M1	X	Y	Z	S As Extruded	F	G Bolt	G Hole	Max. Stroke Length	Carriage Part Number	Dual Shaft Rail Asmbly. Part No.
2DA-08-OOA	.25	3.00	4.00	.30	4.0	2.0	.75	.50	#10-32	1/4	.28	L-(3.5)	DSRC-08-SA	DSRA-08
2DA-12-OOA	.37	3.75	5.25	.42	6.0	3.0	1.00	.70	1/4-20	5/16	.34	L-(4.5)	DSRC-12-SA	DSRA-12
2DA-16-OOA	.37	5.25	6.75	.42	6.0	3.0	1.25	.90	5/16-18	3/8	.41	L-(6.0)	DSRC-16-SA	DSRA-16

Dual Shaft Rail Support Material: Black Anodized Aluminum Alloy
Maximum continuous length of support rails is 72". If longer continuous shaft support rails are required, please contact the Thomson Linear Guides Application Engineering department.

† Super Ball Bushing* bearings are used in 500 inch size carriages

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lb_f) (Even Distribution)	Dynamic Roll Moment Rating, C (in - lb_f)
2DA-08-OOB	480	720
2DA-12-OOB	3200	6400
2DA-16-OOB	5400	13500
2DA-08-OOA	480	720
2DA-12-OOA	3200	6400
2DA-16-OOA	5400	13500

Note: Above load ratings used for life calculations. Load limit of assembly 50%.

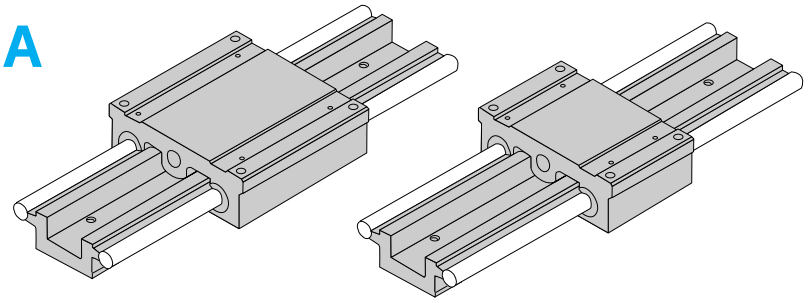
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dual Shaft Rail* 2DA

Linear Guide #12

with Integrated Carriage

Unpack and Install



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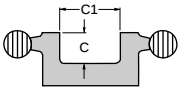
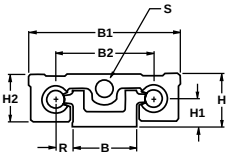
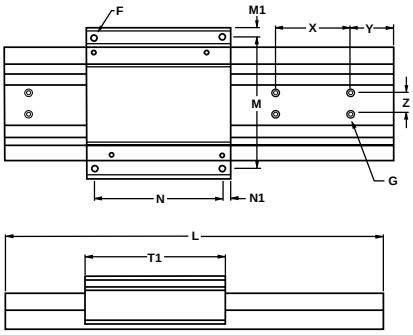


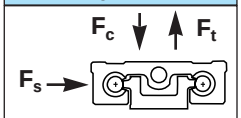
Dual Shaft Rail Support Cross Section



Dual Shaft Rail Linear Guide with Integrated Carriage (Full Length)



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	0.5C
F_t	C	0.5C
F_S	0.5C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Dual Shaft Rail Linear Guide 2DA with Integrated Carriage (Dimensions in mm)

Part Number	T1	H	H1	H2	B	R	B1	B2	C	C1
2DA-08-OOK	110	41	22,2	36,3	50,8	12,7	116,8	76,2	16	32
2DA-12-OOK	150	54	28,6	49,0	66,8	17,5	155	101,6	19	41
2DA-16-OOK	190	66	34,9	61,3	82,5	22,3	193	127	25	51

Dual Shaft Rail Linear Guide 2DA with Integrated Carriage (Dimensions in mm)

Part Number	N	N1	M	M1	X	Y	Z	S As Extruded	F	G	Max. Stroke Length	Carriage Part Number	Dual Shaft Rail Asmbly. Part No.
2DA-08-OOK	100	5	105	5,9	120	60	20	13	M5	M6	L-(110)	DSRC-08-SK	DSRA-08M
2DA-12-OOK	130	10	135	10,0	150	75	25	18	M6	M8	L-(150)	DSRC-12-SK	DSRA-12M
2DA-16-OOK	170	10	175	9,0	200	100	30	23	M8	M10	L-(190)	DSRC-16-SK	DSRA-16M

Maximum continuous length of 2DA LinearRace* shaft support rail is 1828 mm.
If longer continuous one-piece LinearRace Shaft support rails are required, contact the Thomson Systems Application Engineering Department.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Dual Shaft Rail* Linear Guide 2DA Benefits:

- Used in continuously supported applications when rigidity is required.
- Adaptable to any drive system.
- Pre-aligned and preassembled for immediate installation and use.
- Designed for medium to heavy loads.

Dual Shaft Rail Linear Guide 2DA Components:†

- 1 Dual LinearRace* shaft rail assembly
- 1 integrated carriage with 4 open type Super Smart Ball Bushing* bearings.

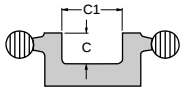
Specifying this Thomson Linear Guide:
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

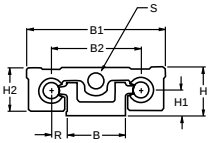
Part Numbering System

2DA-12-OOK L600

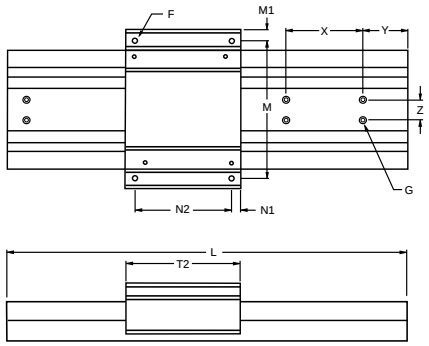
- 2DA — Linear Guide Designation
- 12 — Nominal Diameter
- OOK — Type of Carriage
- L600 — Linear Guide Length

Dual Shaft Rail Support Cross Section

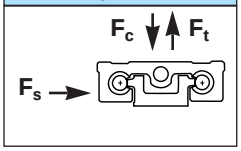




Dual Shaft Rail Linear Guide with Integrated Carriage (Short Length)



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	0.5C
F_t	C	0.5C
F_s	0.5C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Dual Shaft Rail Linear Guide 2DA with Integrated Carriage (Dimensions in mm)

Part Number	T2	H	H1	H2	B	R	B1	B2	C	C1
2DA-08-OOJ	85	41	22,2	36,3	50,8	12,7	116,8	76,2	16	32
2DA-12-OOJ	110	54	28,6	49,0	66,8	17,5	155	101,6	19	41,3
2DA-16-OOJ	150	66	34,9	61,2	82,4	22,3	193	127	25	50,8

Dual Shaft Rail Linear Guide 2DA with Integrated Carriage (Dimensions in mm)

Part Number	N1	N2	M	M1	X	Y	Z	S As Extruded	F	G	Max. Stroke Length	Carriage Part Number	Dual Shaft Rail Asmbly. Part No.
2DA-08-OOJ	5	75	105	5,9	120	60	20	13	M5	M6	L-(85)	DSRC-08-SJ	DSRA-08M
2DA-12-OOJ	10	90	135	10,0	150	75	25	18	M6	M8	L-(110)	DSRC-12-SJ	DSRA-12M
2DA-16-OOJ	10	130	175	9,0	200	100	30	23	M8	M10	L-(150)	DSRC-16-SJ	DSRA-16M

Maximum continuous length of 2DA LinearRace* Shaft support rail is 1828 mm. If longer continuous one-piece LinearRace shaft support rails are required, contact the Thomson Systems Application Engineering Department.

† Super Ball Bushing* bearings are used in 500 inch size carriages

Dynamic Load Rating (C) Matrix (100 km travel)

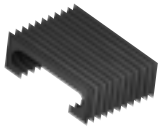
Linear Guide Assembly Part No.	Dynamic Load Rating, C (N) (Even Distribution)	Dynamic Roll Moment Rating, C (N • M)
2DA-08-OOK	2140	82
2DA-12-OOK	14250	725
2DA-16-OOK	24000	1525
2DA-08-OOJ	2140	82
2DA-12-OOJ	14250	725
2DA-16-OOJ	24000	1525

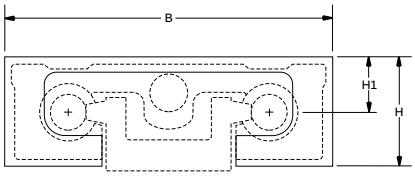
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Bellow (Way Covers) Option

BEL-2D

For Dual Shaft Web QuickSlide System 2DA† and SuperSlide System 2DB





BEL-2D Dual Shaft Rail Bellows

Part Number	Nom. Shaft Dia.	Dimension (in.)			CR
		H	H1	B	
BEL-2DA-08	1/2	1.50	0.85	4.60	.163
BEL-2DB-08	1/2	1.89	1.34	5.13	.163
BEL-2D-12	3/4	2.406	1.437	6.000	.163
BEL-2D-16	1	2.875	1.687	7.500	.108

Each moveable bellows comes with 1 section of bellowS and 2 mounting brackets and mounting screws.

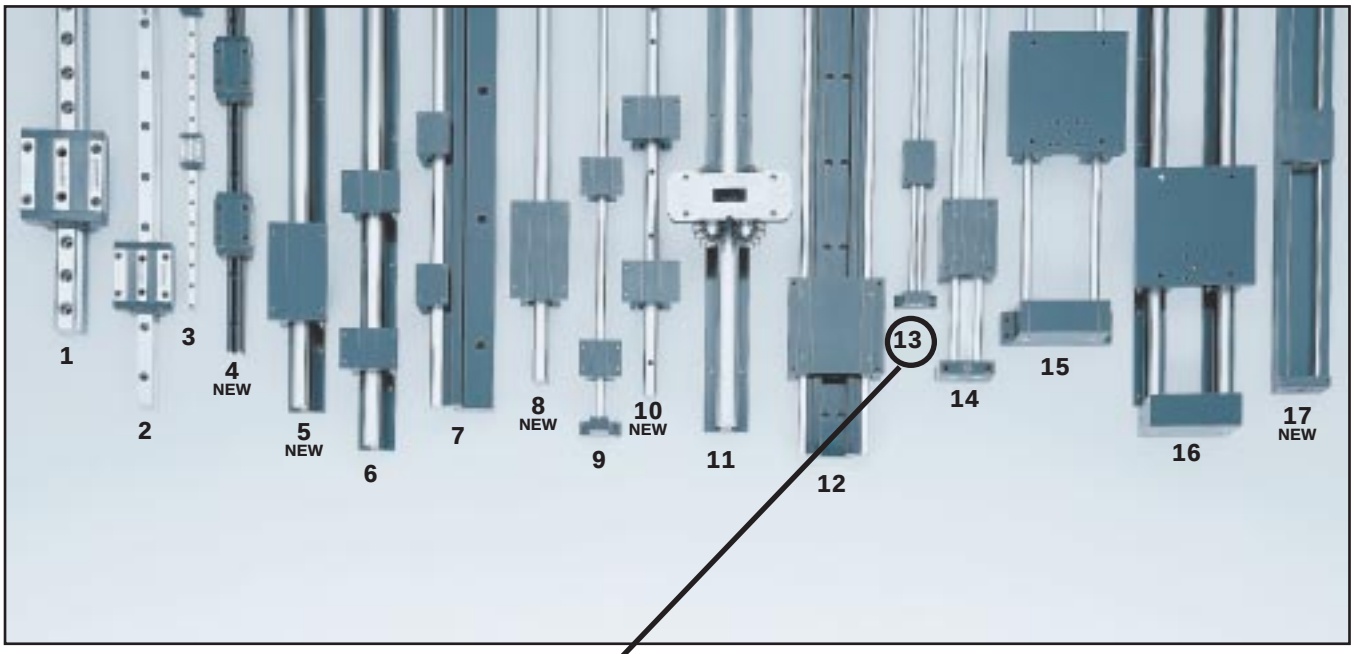
† Appropriate arrangements for afixing the Bellows at each end of the QuickSlide 2DA System are required.

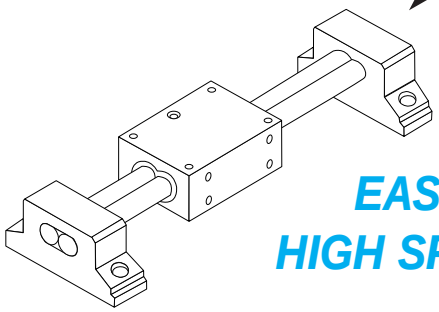
Note 1: For Dual Shaft Rail Linear Ball Guide with **Manual Brake** see page 294 in Systems section of this catalog

Note 2: For a **Ball Screw Actuated** version of a Dual Shaft Rail Linear Ball Guide, see page 230 and 258 in the Systems section of this catalog.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Twin Shaft Linear Ball Guides #13





EASY TO INSTALL, ULTRA COMPACT, HIGH SPEED, SMOOTH OPERATION

Twin Shaft* Linear Ball Guides Offer:

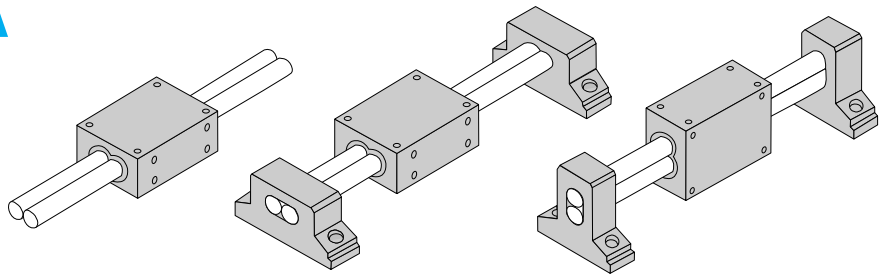
- Pre-aligned shafts, very compact, ultra smooth travel
- Pre-aligned shafts, end supported for gantry style or 'bridge' applications
- Available in horizontal and vertical orientations for increased mounting flexibility
- Compact, twin shaft design for use in applications with over turning loads
- End supported for quick and easy installation
- RoundRail* linear guides feature the new patented Super Smart Ball Bushing* bearing for up to 216X the life or 6X the load capacity of conventional bearings
- Cost savings: save time and money preparing your mounting surfaces before bolting down RoundRail linear guides
- Corrosion resistant versions for maximum performance in harsh environments.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

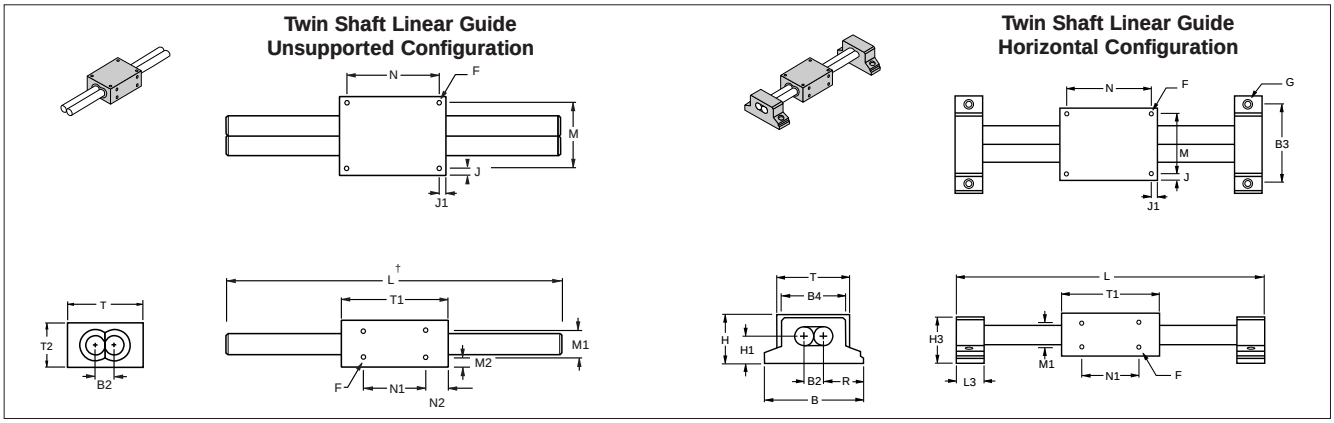
Twin Shaft* 2BA

Linear Guide #13

Unpack and Install



INCH



Twin Shaft Linear Guide Unsupported 2BA (Dimensions in inches)

Part Number	Nominal Diameter	T	T1	T2	B2	MAX. Stroke Length [1]
2BA-04-OOE	.250	1.25	1.75	.75	.25	L-(1.75)
2BA-06-OOE	.375	1.50	2.00	.87	.37	L-(2.00)
2BA-08-OOE	.500	2.00	2.75	1.25	.50	L-(2.75)

[1] Allowance must be made for user supplied end supports.

Twin Shaft Linear Guide End Supported 2BA (Horizontal Configuration) (Dimensions in inches)

Part Number	Nom. Dia.	L3	T	T1	T2	H	H1	H3	B	R	B3	B4	G		MAX. Stroke Length	End Support Part No.	Twin Shaft Part No.
													Bolt	Hole			
2BA-04-OPE	.250	.50	1.25	1.75	.75	.875	.50	.80	1.75	.750	1.38	1.05	#6	.17	L-(2.75)	TSB-04-H	TS-04
2BA-06-OPE	.375	.56	1.50	2.00	.87	1.000	.56	.94	2.00	.813	1.63	1.30	#6	.17	L-(3.12)	TSB-06-H	TS-06
2BA-08-OPE	.500	.62	2.00	2.75	1.25	1.375	.75	1.25	2.60	1.050	2.13	1.70	#8	.19	L-(4.00)	TSB-08-H	TS-08

Universal Carriage (Dimensions in inches)

Part Number	Nominal Diameter	T	T1	T2	N	N1	N2	M	M1	M2	J	J1	Mounting Screw F
TSC-04-U	.250	1.25	1.75	.75	1.375	1.00	.37	1.00	.50	.12	.13	.19	#6-32
TSC-06-U	.375	1.50	2.00	.87	1.62	1.25	.37	1.25	.62	.12	.13	.19	#6-32
TSC-08-U	.500	2.00	2.75	1.25	2.37	2.00	.37	1.62	.87	.18	.19	.19	#8-32

† Maximum Overall Length is 36 inches.

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Twin Shaft* Linear Guide 2BA Benefits:

- Used when spanning or bridging a gap.
- Twin welded LinearRace* shaft design resists torque.
- Compact low profile design allows for minimal machine size.
- Designed to move light loads with virtually frictionless travel.

Twin Shaft Linear Guide 2BA Components:

- Universal integrated, carriage with 4 special open type Super Ball Bushing* bearings.
- Twin welded 60 Case* LinearRace shafts.
- 2 vertical or horizontal double end supports.

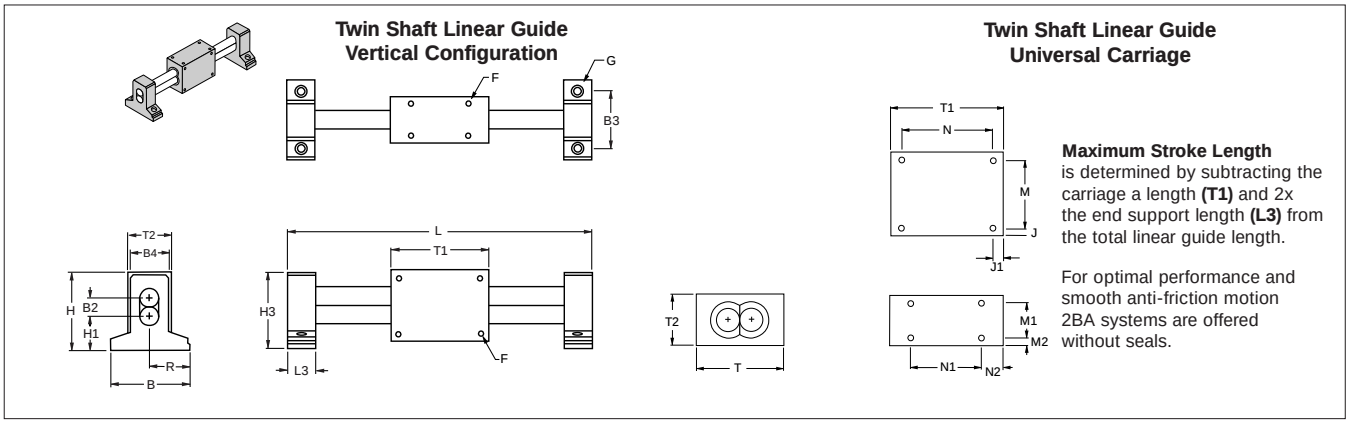
Specifying this Thomson Linear Guide:

1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

2BA-08-ONE L24

- Linear Guide Designation
- Nominal Diameter
- Type of Support
- Type of Carriage
- Linear Guide Length



Maximum Stroke Length is determined by subtracting the carriage a length **(T1)** and 2x the end support length **(L3)** from the total linear guide length.

For optimal performance and smooth anti-friction motion 2BA systems are offered without seals.

Twin Shaft Linear Guide End Supported 2BA (Vertical Configuration) (Dimensions in inches)

Part Number	Nom. Dia.	L3	T	T1	T2	H	B	H1	H3	R	B3	B4	G		Max. Stroke Length	End Support Part No.	Twin Shaft Part No.
													Bolt	Hole			
2BA-04-ONE	.250	.50	1.25	1.75	.75	1.375	1.50	.625	1.31	.750	1.13	.68	#6	.17	L-(2.75)	TSB-04-V	TS-04
2BA-06-ONE	.375	.56	1.50	2.00	.87	1.620	1.62	.688	1.56	.813	1.25	.80	#6	.17	L-(3.12)	TSB-06-V	TS-06
2BA-08-ONE	.500	.62	2.00	2.75	1.25	2.125	2.00	.875	2.00	1.000	1.50	1.10	#8	.19	L-(4.00)	TSB-08-V	TS-08

Dynamic Load Capacity Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (lb_f) (Even Distribution)	Dynamic Roll Moment Capacity (in - lb_f)
2BA-04-OOE	10	2.5
2BA-06-OOE	20	7.4
2BA-08-OOE	50	25
2BA-04-OPE	10	2.5
2BA-06-OPE	20	7.4
2BA-08-OPE	50	25

Dynamic Load Capacity Matrix (4 million inches travel)

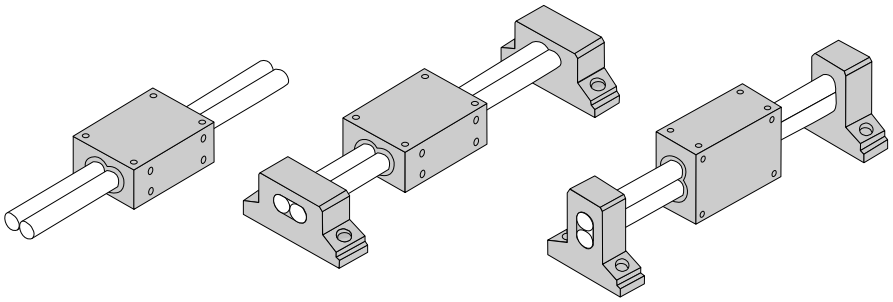
Linear Guide Assembly Part No.	Dynamic Load Capacity (lb_f) (Even Distribution)	Dynamic Roll Moment Capacity (in - lb_f)
2BA-04-ONE	10	2.5
2BA-06-ONE	20	7.4
2BA-08-ONE	50	25

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Twin Shaft* 2BA

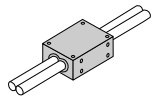
Linear Guide #13

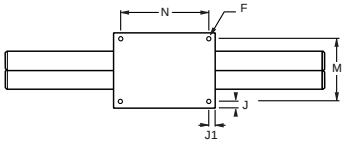
Unpack and Install

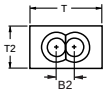


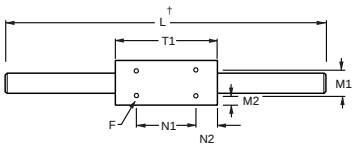
METRIC

Twin Shaft Linear Guide Unsupported Configuration (Type OOG)

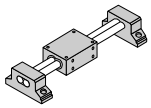


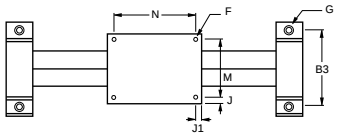


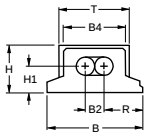


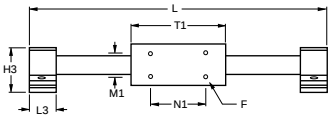


Twin Shaft Linear Guide Horizontal Configuration (Type ORG)









Twin Shaft Linear Guide Unsupported 2BA					(Dimensions in mm)
Part Number	T	T1	T2	B2	Max. Stroke Length [1]
2BA-04-OOG	31,8	45	19,1	6,34	L-(45)
2BA-06-OOG	38,1	50	22,2	9,50	L-(50)
2BA-08-OOG	50,8	70	31,8	12,70	L-(70)

[1] Allowance must be made for user supplied end supports.

Twin Shaft Linear Guide End Supported 2BA (Horizontal Configuration)															(Dimensions in mm)
Part Number	L3	T	T1	T2	H	H1	H3	B	R	B3	B4	G	Max. Stroke Length	End Support Part No.	Twin Shaft Part No.
2BA-04-ORG	15	31,8	45	19	22	12,5	20,1	44,3	19,0	35	26,7	M3	L-(75)	TSB-04-HM	TS-04
2BA-06-ORG	15	38,1	50	22,2	25	13,9	23,5	50	20,0	41	33	M3	L-(80)	TSB-06-HM	TS-06
2BA-08-ORG	15	50,8	70	31,8	35	19,1	31,8	65,5	26,5	54	43,2	M4	L-(100)	TSB-08-HM	TS-08

Universal Carriage												(Dimensions in mm)
Part Number	T	T1	T2	N	N1	N2	M	M1	M2	J	J1	Mounting Screw F
TSC-04-UM	31,8	45	19	35	25	10	24	12	3,5	3,9	5,0	M3
TSC-06-UM	38,1	50	22,2	40	30	10	30	15	3,6	4,0	5,0	M3
TSC-08-UM	50,8	70	31,8	60	50	10	40	22	4,9	5,4	5,0	M4

† Maximum Overall Length is 900 mm.

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Twin Shaft* Linear Guide 2BA Benefits:

- Used when spanning or bridging a gap.
- Twin welded LinearRace* shaft design resists torque.
- Compact low profile design allows for minimal machine size.
- Designed to move light loads with virtually frictionless travel.

Twin Shaft Linear Guide 2BA Components:

- Universal integrated carriage with 4 special open type Super Ball Bushing* bearings.
- Twin welded 60 Case* LinearRace shafts.
- 2 vertical or horizontal double end supports.

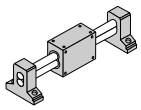
Specifying this Thomson Linear Guide:

1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

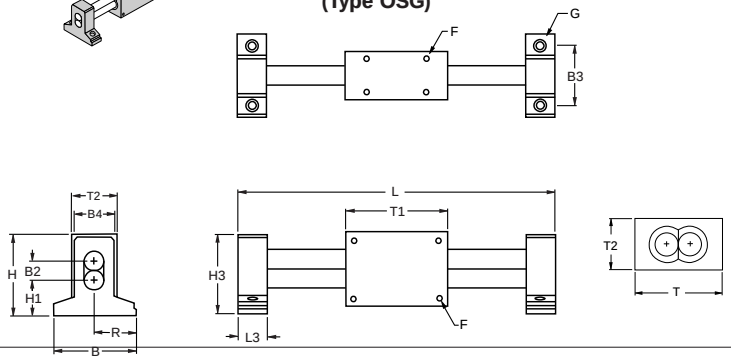
Part Numbering System

2BA-08-ORG L600

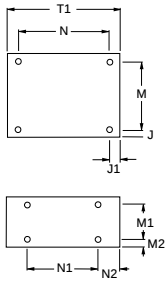
- 2BA — Linear Guide Designation
- 08 — Nominal Diameter
- ORG — Type of Support
- L — Type of Carriage
- 600 — Linear Guide Length



Twin Shaft Linear Guide Vertical Configuration (Type OSG)



Twin Shaft Linear Guide Universal Carriage (Type TSC)



Maximum Stroke Length is determined by subtracting the carriage a length **(T1)** and 2x the end support length **(L3)** from the total Linear Guide length.

For optimal performance and smooth anti-friction motion 2BA systems are offered without seals.

Twin Shaft Linear Guide End Supported 2BA (Vertical Configuration) (Dimensions in mm)

Part Number	L3	T	T1	T2	H	H1	H3	R	B	B3	B4	G	Max. Stroke Length	End Support Part No.	Twin Shaft Part No.
2BA-04-OSG	15	31,8	45	19	35	16	33,4	18,95	38	28	17,3	M3	L-(75)	TSB-04-VM	TS-04
2BA-06-OSG	15	38,1	50	22,2	40	16,2	38,4	20,25	40	31	20,3	M3	L-(80)	TSB-06-VM	TS-06
2BA-08-OSG	15	50,8	70	31,8	54	22,2	50,9	25,00	50	38	27,9	M4	L-(100)	TSB-08-VM	TS-08

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (N) (Even Distribution)	Dynamic Roll Moment Capacity (N • mm)
2BA-04-OOG	45	285
2BA-06-OOG	90	855
2BA-08-OOG	225	2860
2BA-04-ORG	45	285
2BA-06-ORG	90	855
2BA-08-ORG	225	2860

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (N) (Even Distribution)	Dynamic Roll Moment Capacity (N • mm)
2BA-04-OSG	45	285
2BA-06-OSG	90	855
2BA-08-OSG	225	2860

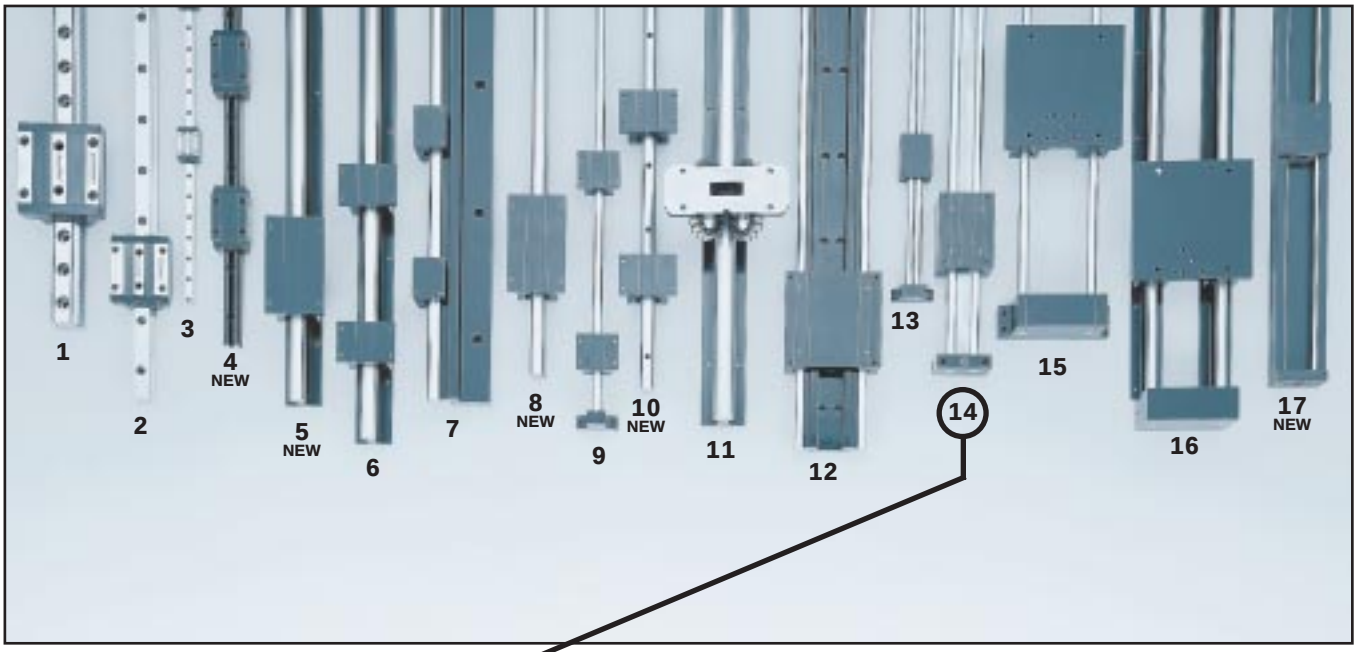
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

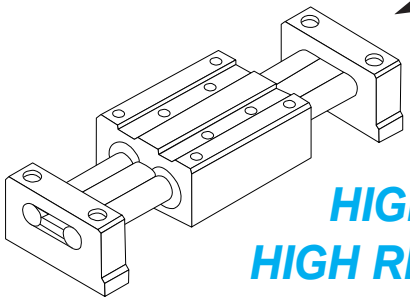
Twin Shaft Linear Ball Guide Accessories

Note: For a **Lead Screw Actuated** version of a Twin Shaft Linear Ball Guide, see page 226 in the systems section of this catalog.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Twin Shaft Web Linear Ball Guides #14





HIGH ROLL MOMENT TORQUE RESISTANCE, HIGH RIGIDITY, SMOOTH, EASY TO INSTALL

Twin Shaft Web* Linear Ball Guides Offer:

- Twin Shaft Web design for high roll moment capacity, high rigidity and ultra smooth travel
- Pre-aligned shafts, end supported for gantry style or 'bridge' applications
- Available in horizontal and vertical orientations for increased mounting flexibility
- End supported for quicker and easy installation
- The Super Smart Ball Bushing* bearing… the most technologically advanced and most robust linear bearing in the world
- The RoundRail Advantage*. The inherent self-aligning-in-all-directions design of the Super Smart Ball Bushing bearing allows for ultra smooth travel when mounted to wider toleranced prepared surfaces
- Cost savings: save time and money preparing your mounting surfaces before bolting down RoundRail* linear guides
- Corrosion resistant versions for maximum performance in harsh environments.

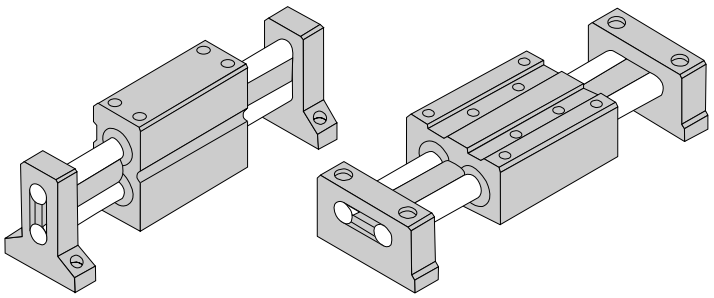
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Twin Shaft Web* 2CA

Linear Guide #14

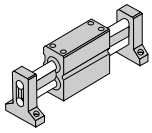
with Universal Carriage

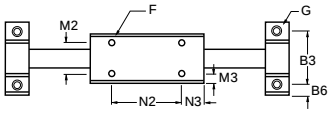
Unpack and Install

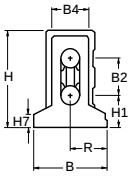


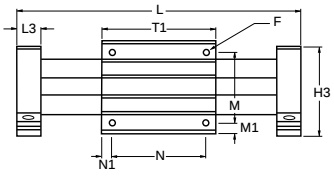
INCH

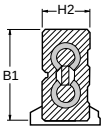
Twin Shaft Web Linear Guide with Universal Carriage (Vertical Configuration)











Twin Shaft Web Linear Guide End Supported 2CA (Vertical Configuration) (Dimensions in inches)

Part Number	Nominal Diameter	L3	H	H1	H3	H7	B	R	B2	B3	B4	B6	T1	N
2CA-08-OKE	.50	.63	2.750	.875	2.56	.38	2.25	1.125	1.13	1.63	1.12	.31	3.5	3.00
2CA-12-OKE	.75	.75	3.625	1.125	3.44	.56	3.00	1.500	1.50	2.25	1.63	.38	4.5	4.00
2CA-16-OKE	1.00	1.00	4.625	1.375	4.50	.75	4.00	2.000	2.00	3.00	2.25	.50	6.0	5.25

Twin Shaft Web Linear Guide End Supported 2CA (Vertical Configuration) (Dimensions in inches)

Part Number	N1	N2	N3	H2	B1	M	M1	M2	M3	F	G		Max. Stroke Length	Twin Shaft Web Part Number
											Bolt	Hole		
2CA-08-OKE	.25	2.5	.50	1.5	2.62	2.00	.31	.88	.31	#10-32	#10	.22	L-(4.75)	TSW-08
2CA-12-OKE	.25	3.5	.50	2.0	3.50	2.87	.31	1.38	.31	1/4-20	1/4	.28	L-(6.00)	TSW-12
2CA-16-OKE	.38	4.5	.75	2.5	4.50	3.62	.44	1.62	.44	5/16-18	5/16	.34	L-(8.00)	TSW-16

2CA (Vertical Configuration) Carriage and End Support Part No.

Linear Guide Part Number	Carriage Part Number	End Support Part Number
2CA-08-OKE	WC-08	WSB-08-V
2CA-12-OKE	WC-12	WSB-12-V
2CA-16-OKE	WC-16	WSB-16-V

Maximum Length is 72 inches.

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Twin Shaft Web* Linear Guide 2CA Benefits:

- Used when spanning or bridging a gap.
- Double LinearRace* shaft and welded integral web design maximizes torque and dramatically improves deflection characteristics.
- Pre-aligned for quick and easy installation.
- Designed to move medium loads with virtually frictionless travel.

Twin Shaft Web Linear Guide 2CA Components: †

- Universal integrated, carriage with 4 open type Super Smart Ball Bushing* bearings.
- Twin welded 60 Case* LinearRace shafts with integral web.
- 2 vertical or horizontal double end supports.

Specifying this Thomson Linear Guide:

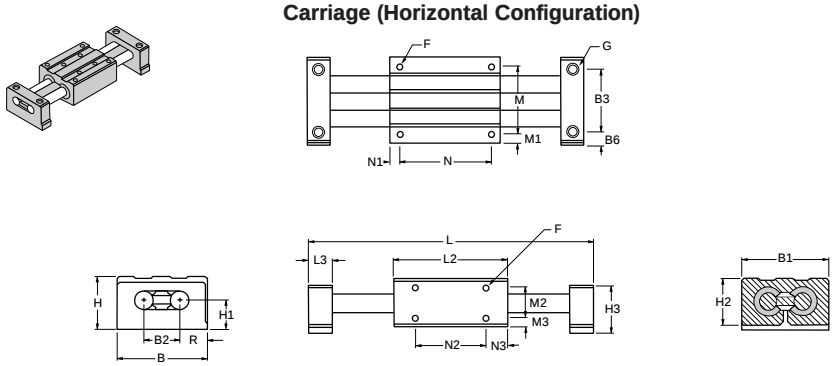
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

2CA-12-OME L24

- Linear Guide Designation
- Nominal Diameter
- Linear Guide Length
- Type of Carriage
- Type of Support

Twin Shaft Web Linear Guide with Universal Carriage (Horizontal Configuration)



Twin Shaft Web Linear Guide End Supported 2CA (Horizontal Configuration) (Dimensions in inches)

Part Number	Nominal Diameter	L3	H	H1	H3	B	R	B2	B3	B6	T1	N
2CA-08-OME	.50	.63	1.625	.875	1.5	2.62	.750	1.13	2.00	.31	3.5	3.00
2CA-12-OME	.75	.75	2.125	1.125	2.0	3.50	1.000	1.50	2.75	.37	4.5	4.00
2CA-16-OME	1.00	1.00	2.625	1.375	2.5	4.50	1.250	2.00	3.62	.50	6.0	5.25

Twin Shaft Web Linear Guide End Supported 2CA (Horizontal Configuration) (Dimensions in inches)

Part Number	N1	N2	N3	H2	B1	M	M1	M2	M3	F	G		Max. Stroke Length	Twin Shaft Web Part Number
											Bolt	Hole		
2CA-08-OME	.25	2.5	.50	1.5	2.62	2.00	.31	.88	.31	#10-32	#10	.22	L-(4.75)	TSW-08
2CA-12-OME	.25	3.5	.50	2.0	3.50	2.87	.31	1.38	.31	1/4-20	1/4	.28	L-(6.00)	TSW-12
2CA-16-OME	.38	4.5	.75	2.5	4.50	3.62	.44	1.62	.44	5/16-18	5/16	.34	L-(8.00)	TSW-16

2CA (Horizontal Configuration) Carriage and End Support Part No.

Linear Guide Part Number	Carriage Part Number	End Support Part Number
2CA-08-OME	WC-08	WSB-08-H
2CA-12-OME	WC-12	WSB-12-H
2CA-16-OME	WC-16	WSB-16-H

Dynamic Load Capacity Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (lb_f) (Even Distribution)	Dynamic Roll Moment Capacity (in - lb_f)
2CA-08-OKE	290	165
2CA-12-OKE	1800	1350
2CA-16-OKE	3000	3000
2CA-08-OME	290	165
2CA-12-OME	1800	1350
2CA-16-OME	3000	3000

† Super Ball Bushing* bearings are used in .500 inch size carriages.

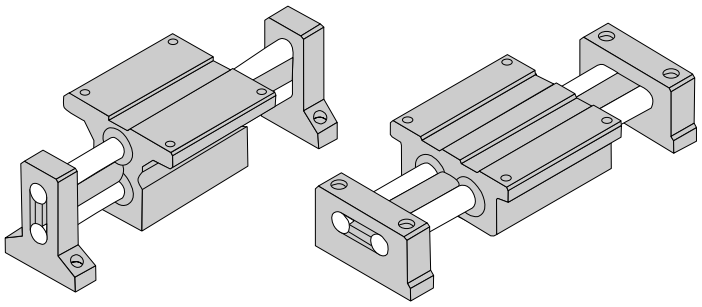
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Twin Shaft Web* 2CA

Linear Guide #14

with Flanged Carriage

Unpack and Install



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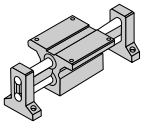
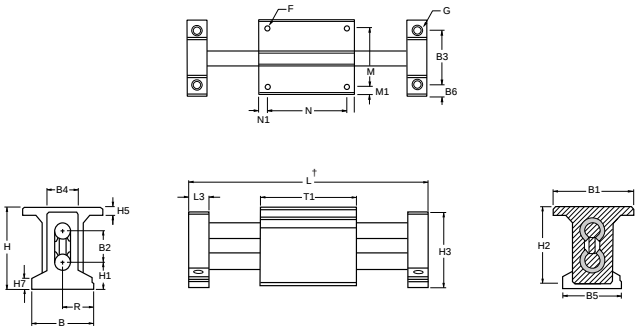


Twin Shaft Web Linear Guide with Flanged Carriage (Vertical Configuration)



Twin Shaft Web Linear Guide End Supported 2CA (Vertical Configuration) (Dimensions in inches)

Part Number	Nominal Diameter	L3	H	H1	H3	H7	B	R	B2	B3	B4	B6	T1	N
2CA-08-OKA	.50	.63	2.750	.875	2.56	.38	2.25	1.125	1.13	1.63	1.12	.31	3.5	3.00
2CA-12-OKA	.75	.75	3.625	1.125	3.44	.56	3.00	1.500	1.50	2.25	1.63	.38	4.5	4.00
2CA-16-OKA	1.00	1.00	4.625	1.375	4.50	.75	4.00	2.000	2.00	3.00	2.25	.50	6.0	5.25

Twin Shaft Web Linear Guide End Supported 2CA (Vertical Configuration) (Dimensions in inches)

Part Number	N1	H2	H5	B1	B5	M	M1	F	G		Max. Stroke Length	Twin Shaft Web Part Number
									Bolt	Hole		
2CA-08-OKA	.25	2.62	.37	3.5	1.5	3.00	.25	#10-32	#10	.22	L-(4.75)	TSW-08
2CA-12-OKA	.25	3.50	.50	4.5	2.0	4.00	.25	1/4-20	1/4	.28	L-(6.00)	TSW-12
2CA-16-OKA	.38	4.50	.62	6.0	2.5	5.25	.38	5/16-18	5/16	.34	L-(8.00)	TSW-16

2CA (Vertical Configuration) Flanged Carriage and End Support Part No.

Linear Guide Part Number	Carriage Part Number	End Support Part Number
2CA-08-OKA	FWC-08-V	WSB-08-V
2CA-12-OKA	FWC-12-V	WSB-12-V
2CA-16-OKA	FWC-16-V	WSB-16-V

† Maximum Overall Length is 72 inches.

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-55-4-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Twin Shaft Web* Linear Guide 2CA Benefits:

- Used when spanning or bridging a gap.
- Double LinearRace* Shaft and welded integral web design maximizes torque and dramatically improves deflection characteristics.
- Pre-aligned for quick and easy installation.
- Designed to move medium loads with virtually frictionless travel.
- Flanged carriage provides a larger mounting surface.

Twin Shaft Web Linear Guide 2CA Components: †

- Flanged integrated, carriage with 4 open type Super Smart Ball Bushing* bearings.
- Twin welded 60 Case* LinearRace shafts with integral web.
- 2 vertical or horizontal double end supports.

Specifying this Thomson Linear Guide:

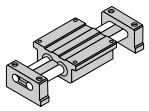
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

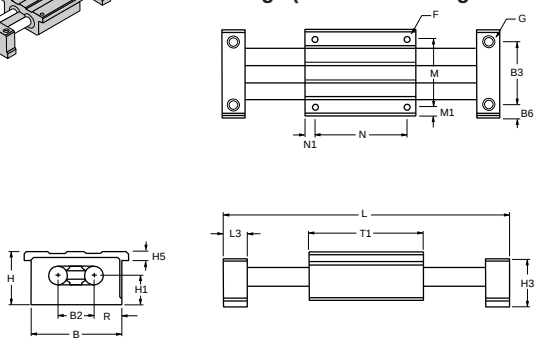
Part Numbering System

2CA-12-OKA L24

- 2CA — Linear Guide Designation
- 12 — Nominal Diameter
- OK — Type of Carriage
- A — Type of Support
- L24 — Linear Guide Length

Twin Shaft Web Linear Guide with Flanged Carriage (Horizontal Configuration)





Twin Shaft Web Linear Guide End Supported 2CA (Vertical Configuration) (Dimensions in inches)

Part Number	Nominal Diameter	L3	H	H1	H3	B	R	B2	B3	B6	T1	N
2CA-08-OMB	.50	.63	1.625	.875	1.5	2.62	.75	1.13	2.00	.31	3.5	3.00
2CA-12-OMB	.75	.75	2.125	1.125	2.0	3.50	1.00	1.50	2.75	.37	4.5	4.00
2CA-16-OMB	1.00	1.00	2.625	1.375	2.5	4.50	1.25	2.00	3.62	.50	6.0	5.25

Twin Shaft Web Linear Guide End Supported 2CA (Horizontal Configuration) (Dimensions in inches)

Part Number	N1	B1	B5	M	M1	H2	H5	F	G		Max. Stroke Length	Twin Shaft Web Part Number
									Bolt	Hole		
2CA-08-OMB	.25	3.5	2.62	3.00	.25	1.5	.37	#10-32	#10	.22	L-(4.75)	TSW-08
2CA-12-OMB	.25	4.5	3.50	4.00	.25	2.0	.50	1/4-20	1/4	.28	L-(6.00)	TSW-12
2CA-16-OMB	.38	6.0	4.50	5.25	.38	2.0	.62	5/16-18	5/16	.34	L-(8.00)	TSW-16

2CA (Horizontal Configuration) Flanged Carriage and End Support Part No.

Linear Guide Part Number	Carriage Part Number	End Support Part Number
2CA-08-OMB	FWC-08-H	WSB-08-H
2CA-12-OMB	FWC-12-H	WSB-12-H
2CA-16-OMB	FWC-16-H	WSB-16-H

Dynamic Load Capacity Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (lb_f) (Even Distribution)	Dynamic Roll Moment Capacity (in - lb_f)
2CA-08-OKA	290	165
2CA-12-OKA	1800	1350
2CA-16-OKA	3000	3000
2CA-08-OMB	290	165
2CA-12-OMB	1800	1350
2CA-16-OMB	3000	3000

† Super Ball Bushing* bearings are used in .500 inch size carriages.

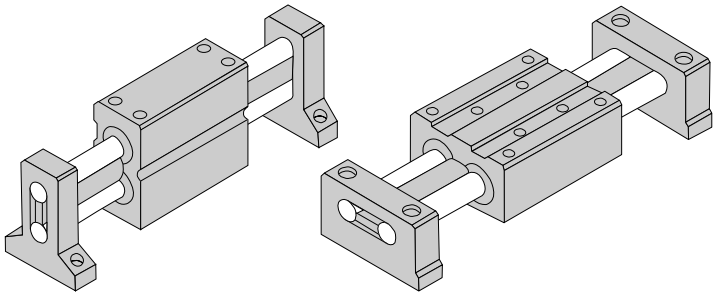
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Twin Shaft Web* 2CA

Linear Guide #14

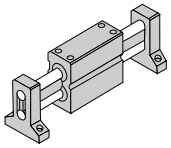
with Universal Carriage

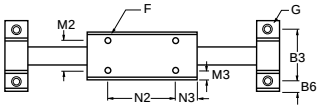
Unpack and Install

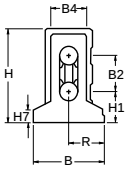


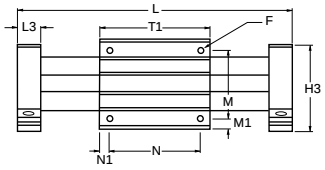
METRIC

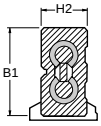
Twin Shaft Web Linear Guide with Universal Carriage Vertical Configuration











Twin Shaft Web Linear Guide End Supported 2CA (Vertical Configuration) (Dimensions in mm)

Part Number	L3	H	H1	H3	H7	B	R	B2	B3	B4	B6	T1	N
2CA-08-OTH	15	70	22,5	65,0	10,6	55	27,5	28,6	41	28,6	7,5	90	75
2CA-12-OTH	20	92	28,4	87,3	15,4	74	36,9	38,1	56	41,3	10	115	100
2CA-16-OTH	25	117	34,6	114,0	19,6	100	50,0	50,7	76	57,2	12,5	155	135

Twin Shaft Web Linear Guide End Supported 2CA (Vertical Configuration) (Dimensions in mm)

Part Number	N1	N2	N3	H2	B1	M	M1	M2	M3	F	G	Max. Stroke Length	Twin Shaft Web Part Number
2CA-08-OTH	7,5	60	15	38,1	66,6	50	8,3	25	6,6	M5	M5	L-(120)	TSW-08
2CA-12-OTH	7,5	85	15	50,8	88,9	75	7,0	35	7,9	M6	M6	L-(155)	TSW-12
2CA-16-OTH	10	115	20	63,3	114,1	90	12,0	45	9,0	M8	M8	L-(205)	TSW-16

2CA (Vertical Configuration) Carriage and End Support Part No.

Linear Guide Part Number	Carriage Part Number	End Support Part Number
2CA-08-OTH	**WC-08-SM**	**WSB-08-VM**
2CA-12-OTH	**WC-12-SM**	**WSB-12-VM**
2CA-16-OTH	**WC-16-SM**	**WSB-16-VM**

Maximum Length is 1800 mm.

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-55-4-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Twin Shaft Web* Linear Guide 2CA Benefits:

- Used when spanning or bridging a gap.
- Double LinearRace* shaft and welded integral web design maximizes torque and dramatically improves deflection characteristics.
- Prealigned for quick and easy installation.
- Designed to move medium loads with virtually frictionless travel.

Twin Shaft Web Linear Guide 2CA Components: †

- Universal integrated, carriage with 4 open type Super Smart Ball Bushing* bearings.
- Twin welded 60 Case* LinearRace shafts with integral web.
- 2 vertical or horizontal double end supports.

Specifying this Thomson Linear Guide:

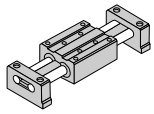
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number.

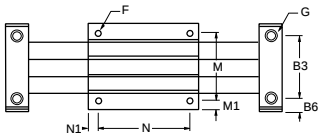
Part Numbering System

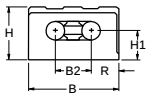
2CA-12-OWH L600

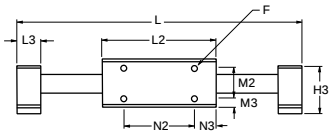
- 2CA — Linear Guide Designation
- 12 — Nominal Diameter
- OWH — Type of Support
- L — Linear Guide Length
- 600 — Length
- Type of Carriage

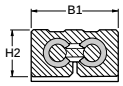
Twin Shaft Web Linear Guide with Universal Carriage Horizontal Configuration











Twin Shaft Web Linear Guide End Supported 2CA (Horizontal Configuration) (Dimensions in mm)

Part Number	L3	H	H1	H3	B	R	B2	B3	B6	T1	N
2CA-08-OWH	15	41	21,9	37,8	65,3	18,5	28,6	50	8	90	75
2CA-12-OWH	20	54	28,6	50,8	88	24,5	38,1	70	8,5	115	100
2CA-16-OWH	25	65	33,5	62,1	114	31,5	50,8	90	12	155	135

Twin Shaft Web Linear Guide End Supported 2CA (Horizontal Configuration) (Dimensions in mm)

Part Number	N1	N2	N3	H2	B1	M	M1	M2	M3	F	G	Max. Stroke Length	Twin Shaft Web Part Number
2CA-08-OWH	7,5	60	15	38,1	66,6	50	8,3	25	6,6	M5	M5	L-(120)	TSW-08
2CA-12-OWH	7,5	85	15	50,8	88,9	75	7,0	35	7,9	M6	M6	L-(155)	TSW-12
2CA-16-OWH	10,0	115	20	63,3	114,1	90	12,0	45	9,0	M8	M8	L-(205)	TSW-16

2CA (Horizontal Configuration) Carriage and End Support Part No.

Linear Guide Part Number	Carriage Part Number	End Support Part Number
2CA-08-OWH	**WC-08-SM**	**WSB-08-HM**
2CA-12-OWH	**WC-12-SM**	**WSB-12-HM**
2CA-16-OWH	**WC-16-SM**	**WSB-16-HM**

Dynamic Load Capacity Matrix (100 km travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (N) (Even Distribution)	Dynamic Roll Moment Capacity (N • M)
2CA-08-OTH	1290	18.5
2CA-12-OTH	8000	150
2CA-16-OTH	13,350	3385
2CA-08-OWH	1290	18.5
2CA-12-OWH	8000	150
2CA-16-OWH	13,350	340

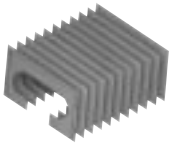
† Super Ball Bushing* bearings are used in .500 inch size carriages.

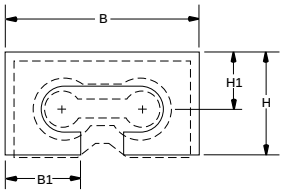
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Twin Shaft Web Linear Ball Guide Accessories

Bellows (Way Covers) Option

BEL-2C-H
For Horizontal Twin Shaft Web Quickslide* System 2CA



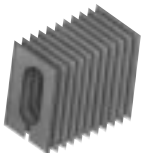


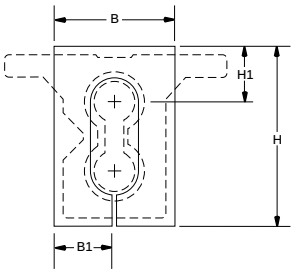
BEL-2C-H Moveable Protective Bellows

Part Number	Nom. Shaft Dia.	Dimension (in.)			CR
		H	H1	B	
BEL-2C-08-H	1/2	1.688	1.031	3.250	.108
BEL-2C-12-H	3/4	2.062	1.156	3.812	.108
BEL-2C-16-H	1	2.437	1.281	4.625	.108

Each moveable bellows comes with 1 section of bellows and 2 pairs of Velcro® Fasteners.

BEL-2C-V
For Vertical Twin Shaft Web Quickslide System 2CA





BEL-2C-V Moveable Protective Bellows

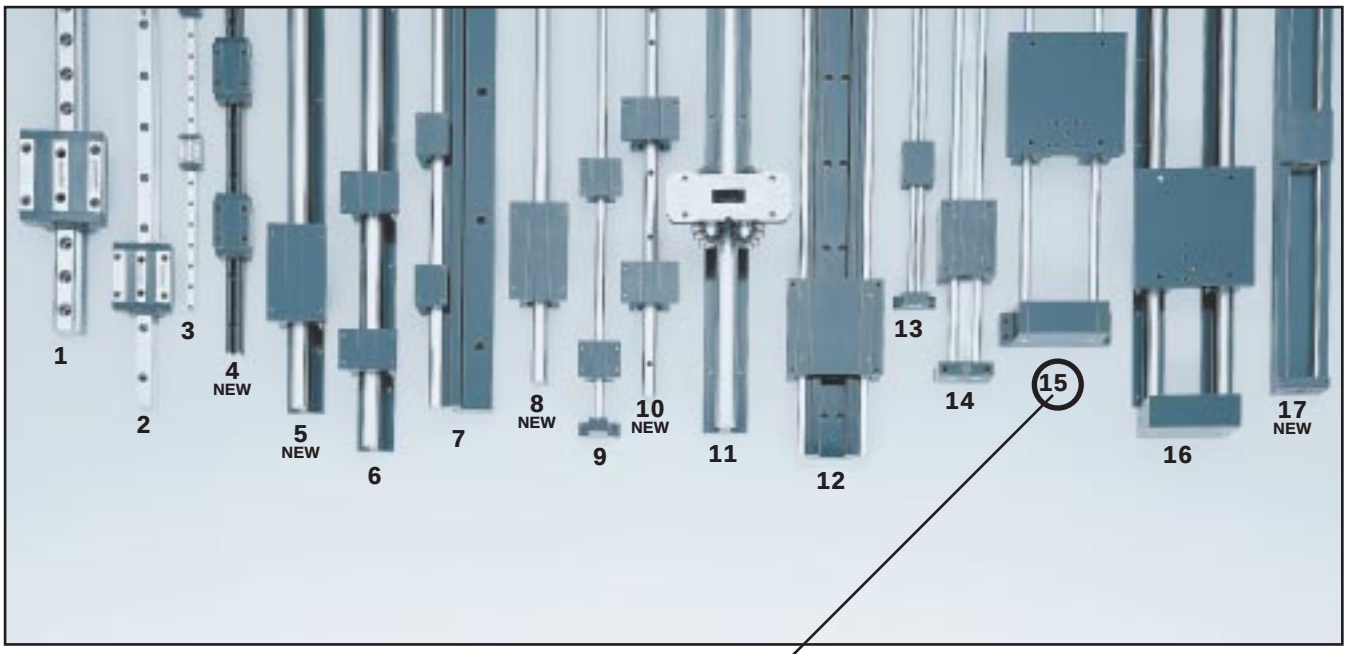
Part Number	Nom. Shaft Dia.	Dimension (in.)			CR
		H	H1	B	
BEL-2C-08-V	1/2	2.750	1.000	2.125	.163
BEL-2C-12-V	3/4	3.750	1.125	2.375	.163
BEL-2C-16-V	1	4.375	1.250	2.625	.108

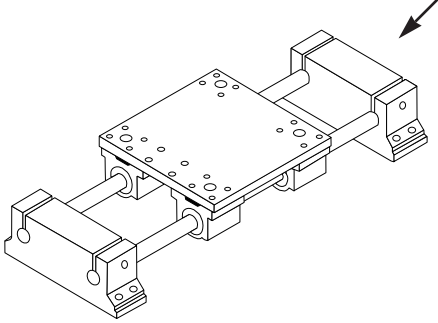
Each moveable bellows comes with 1 section of bellows and 2 pairs of Velcro® Fasteners.

Note: For a **Ball Screw Actuated** version of a Twin Shaft Web Linear Ball Guide, see page 228 in the systems section of this catalog.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Double End Support Linear Ball Guides #15





Double End Support Linear Ball Guides Offer:

- Increased life within the same envelope. RoundRail* linear guides feature the new patented Super Smart Ball Bushing* bearings for up to 216X the life or 6X the load capacity of conventional bearings
- Cost savings: save time and money preparing your mounting surfaces before bolting down RoundRail linear guides
- End supported for gantry style or ‘bridge’ applications
- The RoundRail Advantage*. The inherent self-aligning-in-all-directions design of the Super Smart Ball Bushing bearing allows for ultra smooth travel when mounted to wider toleranced prepared surfaces
- The Super Smart Ball Bushing bearing… the most technologically advanced and most robust linear bearing in the world
- Pre aligned 60 Case* LinearRace* shaft for quick and easy mounting

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

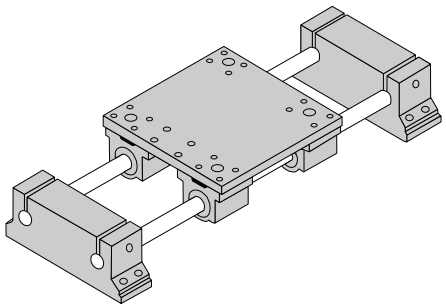
Double End Support 2AA

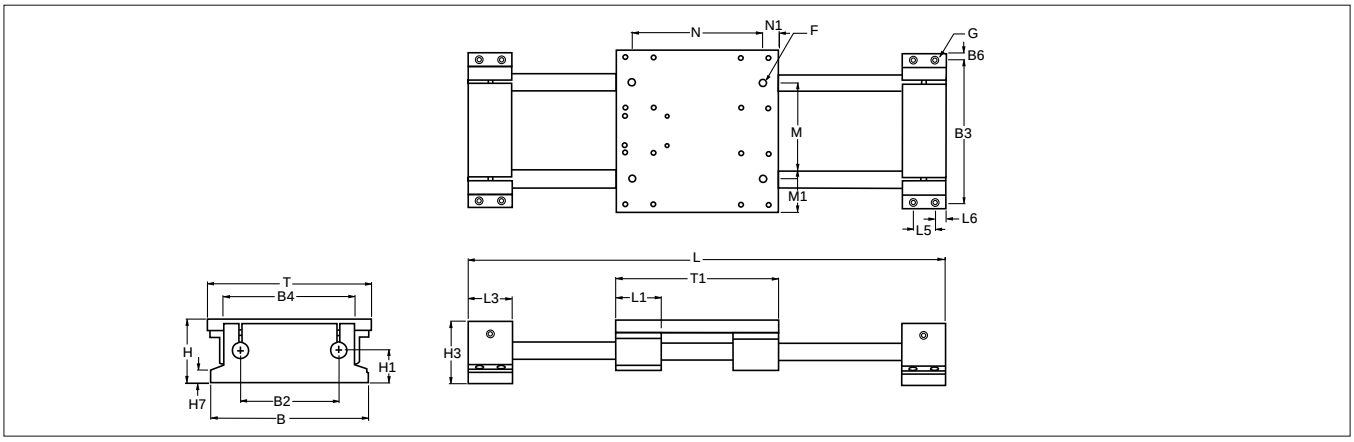
Linear Guide #15

with Intergrated End Supports and Carriage

Unpack and Install

INCH





Double End Support Linear Guide 2AA with Carriage (Dimensions in inches)

Part Number	Nominal Diameter	L1	L3	L5	L6	T1	H	H1	H3	H6	H7	H9
2AA-08-AXB	.50	1.69	1.5	.75	.38	5.5	2.187	1.13	2.37	.38	.48	1.25
2AA-12-AXB	.75	2.06	2.0	1.00	.50	7.5	2.937	1.50	2.70	.50	.60	1.75
2AA-16-AXB	1.00	2.81	2.2	1.20	.50	9.0	3.437	1.75	3.45	.50	.60	2.19
2AA-24-AXB	1.50	4.00	2.8	1.50	.65	13.0	5.000	2.50	5.00	.75	.81	3.25

Shaft Deflection Note:
Load limit may be below the dynamic load rating due to shaft deflection. Bearings can accommodate up to 1/2º deflection.
See Engineering Section (pg 204) for Deflection calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Double End Support Linear Guide 2AA Benefits:

- Used when spanning or bridging a gap.
- System is pre-aligned for quick and easy installation.
- Easily adaptable to any drive system.
- Single part number is all that is required to specify.

Double End Support Linear Guide 2AA Components: †

- 4 Super Smart Ball Bushing* pillow blocks.
- 2 60 Case* LinearRace* shafts.
- 2 integrated double end supports.
- 1 mounting carriage top.

Specifying this Thomson Linear Guide:

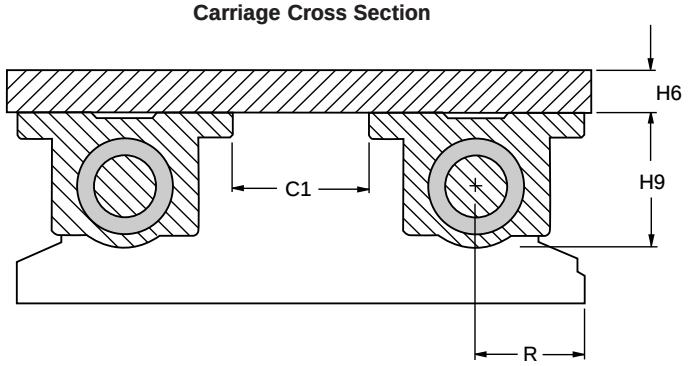
1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

2AA-12-AXB L24

- Linear Guide Designation
- Nominal Diameter
- Type of Bearing Block
- Type of Support
- Type of Carriage
- Linear Guide Length

Carriage Cross Section



Double End Support Linear Guide 2AA with Carriage (Dimensions in inches)

Part Number	B	R	T	B2	B3	B4	B6	C1	N	N1	M	M1	F	G		Max. Stroke Length
														Bolt	Hole	
2AA-08-AXB	5.3	1.025	5.5	3.25	4.8	4.25	.24	1.25	4.5	.50	3.25	1.13	1/4-20	#8	.19	L-(8.5)
2AA-12-AXB	7.2	1.350	7.5	4.50	6.7	6.00	.25	1.75	6.0	.75	4.50	1.50	5/16-18	#10	.22	L-(11.50)
2AA-16-AXB	8.7	1.600	9.0	5.50	8.0	7.25	.35	2.25	7.0	1.00	5.50	1.75	3/8-16	1/4	.28	L-(13.40)
2AA-24-AXB	13.0	2.500	13.00	8.00	12.0	10.75	.50	3.25	10.0	1.50	8.00	2.50	1/2-13	5/16	.34	L-(18.60)

Dynamic Load Capacity Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Capacity (lb_f) (Even Distribution)	Pillow Block Dynamic Load Capacity (lb_f)	Dynamic Roll Moment Capacity (in - lb_f)
2AA-08-AXB	800	200	1300
2AA-12-AXB	3600	900	8100
2AA-16-AXB	6000	1500	16,500
2AA-24-AXB	12320	3080	57,280

† Super Ball Bushing* bearings are used in .500 inch size carriages.

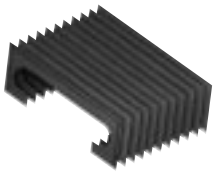
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

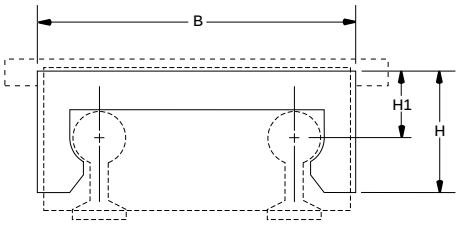
Double End Support Linear Ball Guide Accessories

Bellows (Way Covers) Option

BEL-2AE

For QuickSlide* Systems 2AA, 2EA and SuperSlide* Systems 2AB, 2EB





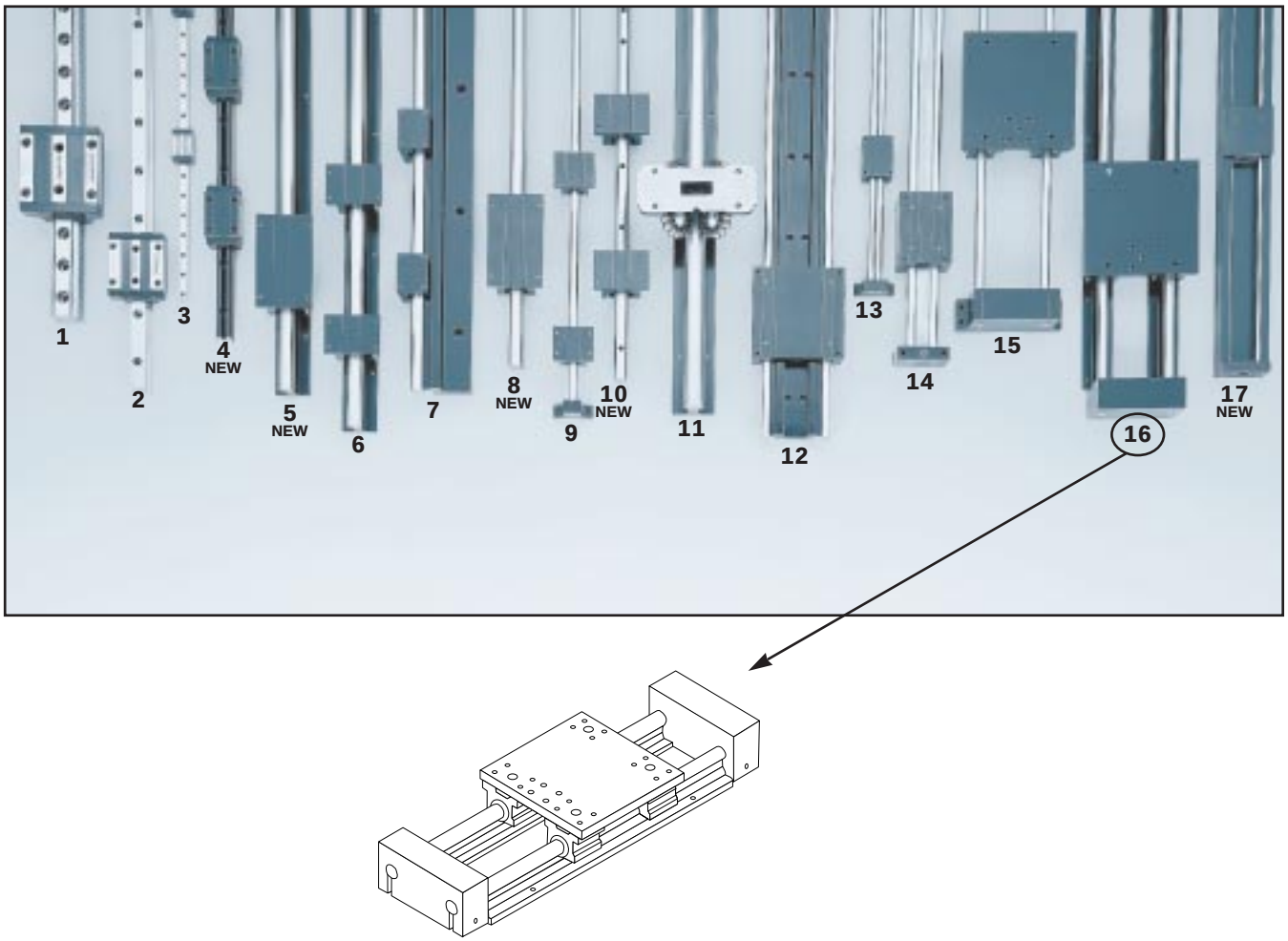
BEL-2AE Moveable Protective Bellows

Part Number	Nom. Shaft Dia.	Dimension (in.)			CR
		H	H1	B	
BEL-2AE-08	1/2	1.400	1.240	5.250	.163
BEL-2AE-12	3/4	2.098	1.348	6.850	.163
BEL-2AE-16	1	2.800	1.675	8.100	.163
BEL-2AE-24	1 1/2	4.200	2.435	11.180	.163

Note: For a **Ball Screw Actuated** version of a Double End Support Linear Ball Guide, see page 224 in the systems section of this catalog.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Double Continuous Support Linear Ball Guides #16



Double Continuous Support Linear Ball Guides Offer:

- Increased life within the same envelope. RoundRail* linear guides feature the new patented Super Smart Ball Bushing* bearings for up to 216X the life or 6X the load capacity of conventional bearings
- Maximum performance. Fully supported for maximum (multidirectional) load applications without concerns for shaft deflection
- The RoundRail Advantage*. The inherent self-aligning-in-all-directions design of the Super Smart Ball Bushing bearing allows for ultra smooth travel when mounted to wider toleranced prepared surfaces
- Unlimited travel lengths without concerns for machined reference edges or butt joint alignment
- The Super Smart Ball Bushing bearing…the most technologically advanced and most robust linear bearing in the world
- Pre aligned 60 Case* LinearRace* shaft for quick and easy mounting
- Cost savings: save time and money preparing your mounting surfaces before bolting down RoundRail linear guides.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

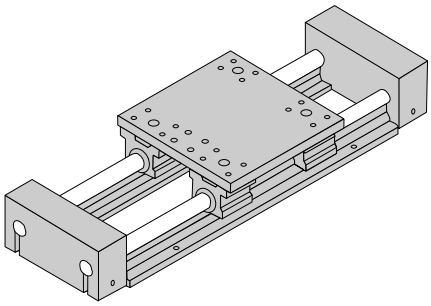
Double Continuous Support 2EA

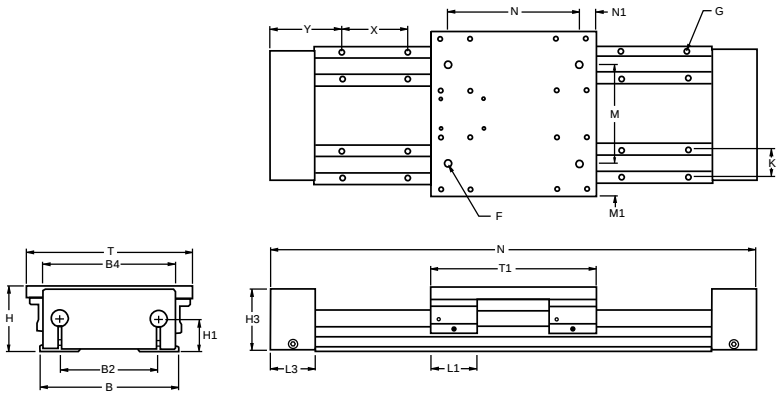
Linear Guide #16

with Integrated End Supports
and Carriage

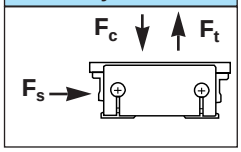
Unpack and Install

INCH





Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_C	C	C
F_t	0.5C	0.5C
F_S	C	0.5C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Double Continuously Supported Linear Guide 2EA with Carriage (Dimensions in inches)

Part Number	Nominal Diameter	L1	L3	T1	K	H	H1	H3	H6	H7	H9
2EA-08-FAB	.50	1.50	1.5	5.5	1.00	2.187	1.13	2.38	.38	.19	1.12
2EA-12-FAB	.75	1.88	2.0	7.5	1.25	2.937	1.50	2.75	.50	.25	1.56
2EA-16-FAB	1.00	2.63	2.2	9.0	1.50	3.437	1.75	3.37	.50	.25	2.00
2EA-24-FAB	1.50	3.75	2.8	13.0	2.25	5.000	2.50	4.87	.75	.30	2.94

Maximum continuous length of support rails is 24". If longer continuous shaft support rails are required, please contact the Thomson Linear Guides Application Engineering department.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Double Continuous Support Linear Guide 2EA Benefits:

- Used in continuously supported applications when rigidity is required.
- Adaptable to any drive system.
- Pre-aligned and preassembled for immediate installation and use.
- Designed for medium to heavy loads.

Double Continuous Support Linear Guide 2EA Components:

- 4 open type Super Smart Ball Bushing* pillow blocks.
- 2 60 Case* LinearRace* shaft assemblies.
- 2 integrated double end supports.
- 1 mounting table top.

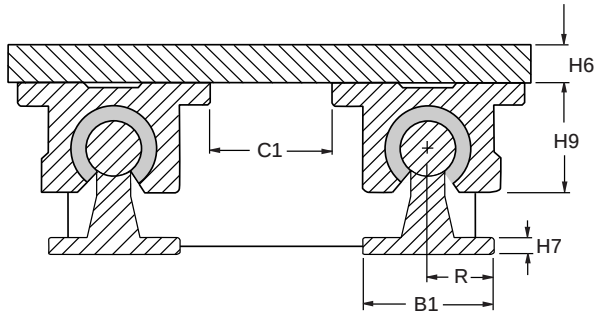
Specifying this Thomson Linear Guide:

1. Determine the proper Linear Guide for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number.

Part Numbering System

2EA-12-FAB L24

- Linear Guide Designation
- Nominal Diameter
- Type of Bearing Block
- Linear Guide Length
- Type of Carriage
- Type of Support



Double Continuously Supported Linear Guide 2EA with Carriage (Dimensions in inches)

Part Number	T	B	R	B1	B2	B4	C1	N	N1	M	M1	X	Y(1)	F	G		Max. Stroke Length
															Bolt	Hole	
2EA-08-FAB	5.5	4.75	.750	1.50	3.25	4.25	1.25	4.5	.50	3.25	1.13	4.0	2.0	1/4-20	#8	.19	L-(8.5)
2EA-12-FAB	7.5	6.25	.875	1.75	4.50	6.00	1.75	6.0	.75	4.50	1.50	6.0	3.0	5/16-18	#10	.22	L-(11.5)
2EA-16-FAB	9.0	7.63	1.062	2.12	5.50	7.25	2.25	7.0	1.00	5.50	1.75	6.0	3.0	3/8-16	1/4	.28	L-(13.4)
2EA-24-FAB	13.0	11.00	1.500	3.00	8.00	10.75	3.25	10.0	1.50	8.00	2.50	8.0	4.0	1/2-13	5/16	.34	L-(18.6)

(1) For 18, 30 ad 42 inch Standard lengths Y is 3.0

Maximum continuous length of support rails is 24". If longer continuous shaft support rails are required, please contact the Thomson Linear Guides Application Engineering department.

Dynamic Load Rating (C) Matrix (4 million inches travel)

Linear Guide Assembly Part No.	Dynamic Load Rating, C (lbs) (Even Distribution)	Pillow Block Dynamic Load Rating, C (lbs)
2EA-08-FAB	580	145
2EA-12-FAB	3600	900
2EA-16-FAB	6000	1500
2EA-24-FAB	12320	3080

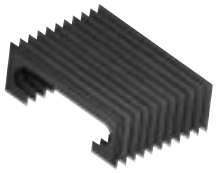
† Super Ball Bushing* bearings are used in .500 inch size carriages.

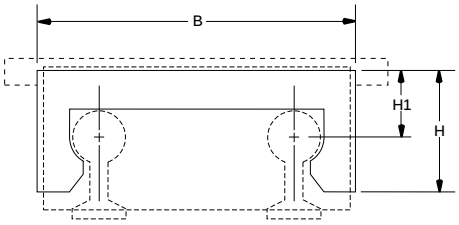
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Double Continuous Support Linear Ball Guide Accessories

Bellows (Way Covers) Option

BEL-2AE
For QuickSlide* Systems 2AA, 2EA and SuperSlide* Systems 2AB, 2EB





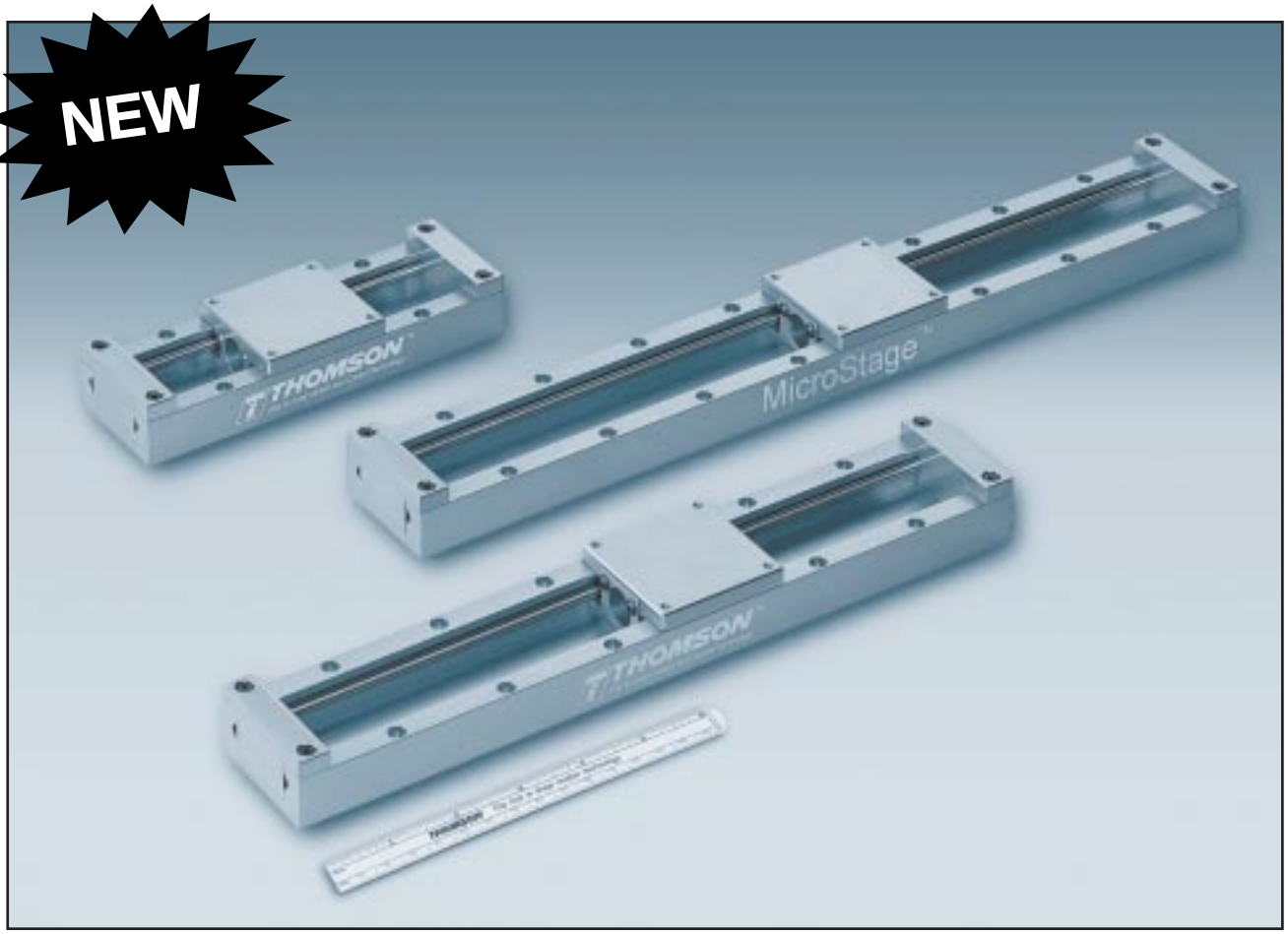
BEL-2AE Moveable Protective Bellows

Part Number	Nom. Shaft Dia.	Dimension (in.)			CR
		H	H1	B	
BEL-2AE-08	1/2	1.400	1.240	5.250	.163
BEL-2AE-12	3/4	2.098	1.348	6.850	.163
BEL-2AE-16	1	2.800	1.675	8.100	.163
BEL-2AE-24	1 1/2	4.200	2.435	11.180	.163

Note: For a **Ball Screw Actuated** version of a Double Continuous Support Linear Ball Guide, see page 234 in the systems section of this catalog.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

MicroStage Linear Ball Guides #17



MicroStage* Linear Guides Offer:

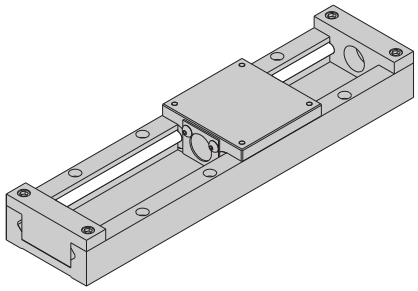
- Smooth precision Linear Motion. Thomson MicroStage linear guide features unique bearing segment design and offers a backlash free slide assembly without sacrificing load capacity or smoothness.
- Rugged but light-weight MicroStage linear guides are manufactured from aerospace alloys providing the optimum in strength and rigidity, while dramatically decreasing the mass of the system. This provides for lower inertia and higher performance than either built-in, or external actuators.
- Flexible mounting configuration. MicroStage linear guides offer hole patterns and T-slots that allow them to be easily interchanged and also provide simple X-Y mounting.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

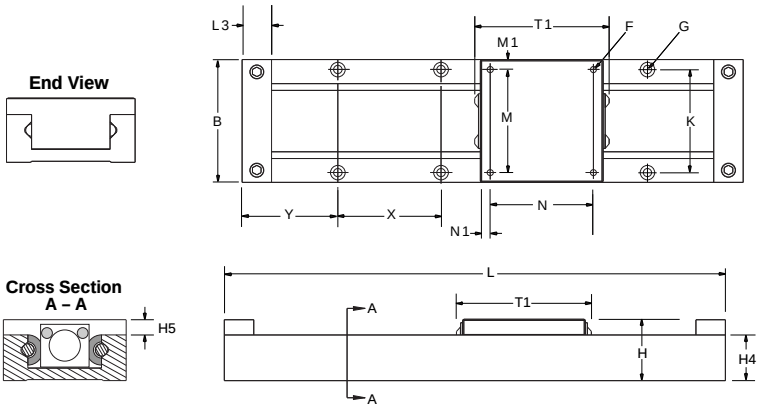
MicroStage* MS25

Linear Guide #17

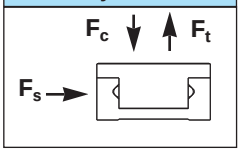
Unpack and Install



METRIC



Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	C
F_t	C	C
F_s	C	C

Dynamic Load Rating
Load value used in life calculation.
Load Limit
Maximum allowable load applied to bearing.

MicroStage Linear Guide MS25 (Dimensions in mm)

Part Number	B	F	G	H	H4	H5	K	L3
MS25	50	M3 x 0,5	M3 Screw	25	18,6	6	42	12

MicroStage Linear Guide MS25 (Dimensions in mm)

Part Number	N	N1	M	M1	T1	Base Mounting Hole		Load Rating
						X	Y	
MS25	42	4	42	4	55	42	39	425N

MicroStage Linear Guide MS25 (Dimensions in mm)

Part Number	Length (L)	Stroke	Weight (kg)
MS25-L120	120	41	0,31
MS25-L204	204	125	0,45
MS25-L288	288	209	0,59
MS25-L372	372	293	0,72

Part Numbering System

MS25-L120

Linear Guide Designation — Linear Guide Length

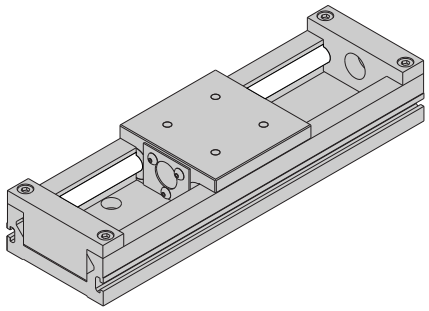
Note: For a Lead Screw Actuated version of a MicroStage Linear Ball Guide, see page 245 in the systems section of this catalog.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

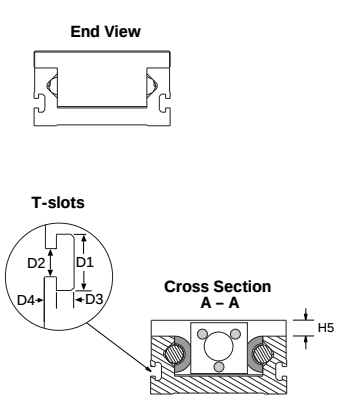
MicroStage* MS33

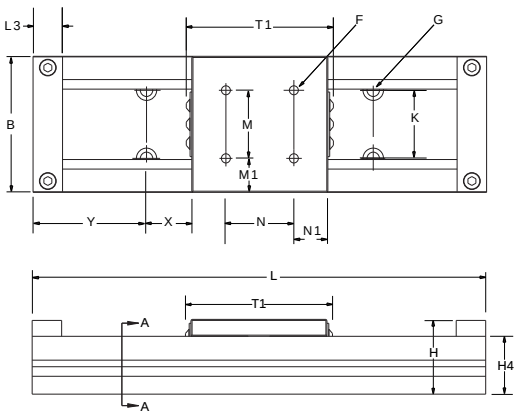
Linear Guide #17

Unpack and Install

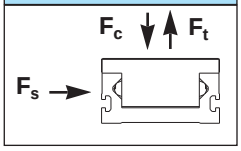


METRIC





Load Rating and Limit by Direction



	Dynamic Load Rating	Load Limit
F_c	C	C
F_t	C	C
F_s	C	C

Dynamic Load Rating
Load value used in life calculation.
Load Limit
Maximum allowable load applied to bearing.

MicroStage Linear Guide MS33										(Dimensions in mm)
Part Number	B	D1	D2	D3	D4	F	G	H	H4	H5
MS33	60	8,0	4,2	2,75	2	M5 x 0,8	M5 Screw	33	25,5	7

MicroStage Linear Guide MS33										(Dimensions in mm)
Part Number	K	L3	N	N1	M	M1	T1	Base Mounting Hole		Load Rating
								X	Y	
MS33	30	13	30	15	30	15	65	100	50	850N

MicroStage Linear Guide MS33 (Dimensions in mm)			
Part Number	Length (L)	Stroke	Weight (kg)
MS33-L200	200	109	0,74
MS33-L300	300	209	1,00
MS33-L400	400	309	1,27

Note: For a Lead Screw Actuated version of a MicroStage Linear Ball Guide, see page 245 in the systems section of this catalog.

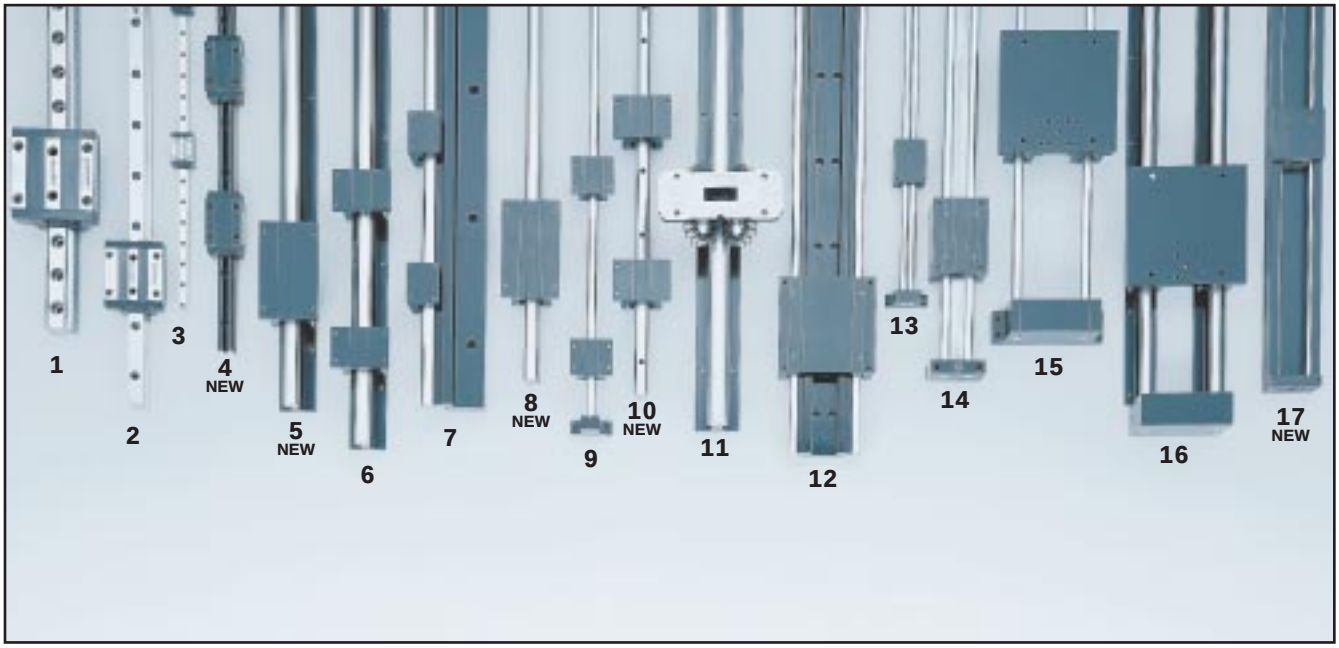
Part Numbering System

MS33-L200

Linear Guide Designation — Linear Guide Length

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Installation Guidelines



Installation Guidelines for :

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Installation Guidelines for Linear Guides #1–4

Surface Preparation

ProfileRail* bearings are generally mounted to structures that are inherently stiffer than the rail. For this reason, the bearings tend to assume the orientation of the surfaces to which they are fastened, through bearing deflection. When a deflection is imposed upon a bearing, especially a preloaded one, resultant forces occur. These forces are applied to the rolling elements and races, causing an increase in system friction and a decrease in system resolution, precision and life.

Various sources contribute to the overall error of the mounting surfaces. These include the surface flatness of the base surfaces, the location and parallelism of the reference surfaces, and the attendant errors of the bearing as described within the accuracy classes.

The surfaces that contact the base and reference edges may be milled, scraped, ground, or prepared by any other method that will produce a flat surface free of inconsistencies, which will tend to distort or skew the bearing. A simple stone may be used to remove high spots. Dirt and debris also contribute to the inaccuracies.

Associated with preload is a slight concavity of the carriage top surface. The preload is established when all the carriage screws are affixed to a planar surface, flattening the carriage base. Deviations from planarity of the carriage mounting surface will result in a preload change.

Mounting Tolerances

The tolerances found in Tables 1-3 are intended to yield an installation for which the associated derating is negligible. These specifications are based upon the assumption that the structures of the application are infinitely rigid and are based upon the bearing reactions only.

Rail Parallelism

A variation in the distance between the rails will induce a shear or side load on the bearings.

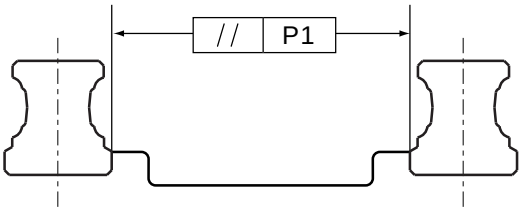


Figure 1

In order to reduce the effect of this shear load, tolerances for rail reference edge parallelism may be found in Table 1.

Table 1. Parallelism Between Multiple Rails, mm

Preload				
Bearing Type	Clearance	0,03 C†	0,08 C†	0,13 C†
AccuMax* linear guide				
35	–	0,008	0,005	0,003
45	–	0,010	0,007	0,004
55	–	0,012	0,008	0,005
65	–	0,014	0,010	0,007
AccuGlide* linear guide				
20	0,016	0,011	0,007	0,005
25	0,017	0,012	0,008	0,005
30	0,021	0,014	0,009	0,006
35	0,023	0,015	0,010	0,007
45	0,027	0,018	0,012	0,008
55	0,035	0,024	0,015	0,011
AccuGlide Miniature linear guide				
10	0,009	0,004	–	–
15	0,011	0,006	–	–
20	0,013	0,008	–	–
AccuGlide T-Series* linear guide				
20	–	0,045	–	–
25	–	0,050	–	–
30	–	0,055	–	–
35	–	0,060	–	–

†Where C=Dynamic Load Capacity

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-55-4-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Rail Vertical Offset

A vertical offset of the rails across the axis will induce a roll moment onto the carriages.

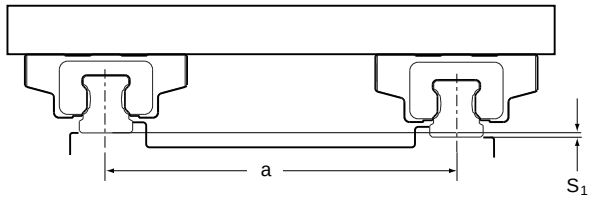


Figure 2

In order to reduce the effect of this roll moment, tolerances for the vertical offset may be found in Table 2. This tolerance describes the attributes of the mounting surface, perpendicular to the rail axis.

Table 2. Allowable Vertical Offsets Between Rails (S_1/a)

Preload				
Bearing Type	Clearance	0,03 C†	0,08 C†	0,13 C†
AccuMax* Linear Guide	–	0,0007	0,0005	0,0004
AccuGlide* Linear Guide	0,0006	0,0004	0,0003	0,0002
AccuGlide Miniature Linear Guide	0,0006	0,0004	–	–
AccuGlide T-Series* Linear Guide	.0020	-	–	–

†Where C=Dynamic Load Capacity

Vertical Carriage Offset

A vertical offset between fore and aft carriages will induce a pitch moment on the bearings.

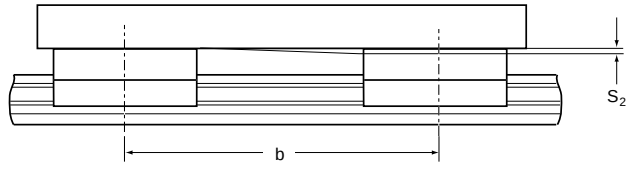


Figure 3

Lateral Carriage Offset

A lateral offset of the carriage reference edges will induce a yaw moment.

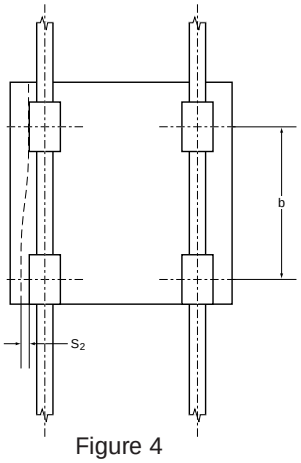


Figure 4

In order to reduce the effects of these pitch and yaw moments, tolerances may be found in Table 3. This tolerance describes the attributes of the mounting surface parallel to the rail axis, and the reference edge straightness.

Table 3. Allowable Carriage Offsets (S_2/b)

Preload			
Clearance	0,03 C†	0,08 C†	0,13 C†
0,00006	0,00005	0,00004	0,00003

†Where C=Dynamic Load Capacity

T-Series* Linear Guide	0,00012

NOTE: All mounting tolerances should be inclusive of the H and A3 tolerances. Thus, a lower accuracy class bearing may require a more accurate installation.

Mounting Hole Tolerances

The positional tolerance between the through holes in the rails is 0,5 mm.

The positional tolerance of the first rail mounting hole dimensioned from the datum end (called the "Y-dimension") is ±1,0 mm.

The overall rail length tolerance is ±2,0 mm.

The positional tolerance between the mounting holes in the carriages is 0,2 mm.

Reference Edge Specifications

The maximum shoulder heights and corner radii are listed in Table 4.

Figure 5. Shoulder Heights and Corner Radii

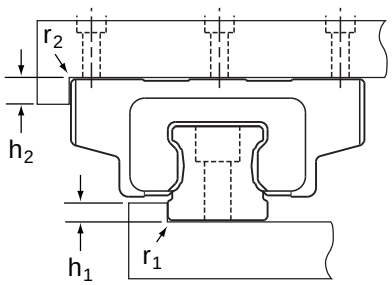


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Table 4. Shoulder heights and corner radii, mm

Guide Type	Rail		Carriage	
	h_1 max	r_1 max	h_2	r_2 max
AccuMax* linear guide				
30	4	0,8	6	0,5
35	5	0,8	8	0,8
45	6,5	1	9	1
55	7	1,2	10	1,2
65	9	1,5	12	1,2
AccuGlide* linear guide				
20	4	0,5	8	0,4
25	5,5	0,8	10	0,4
30	5,25	0,8	12	0,6
35	6	0,8	14	0,6
45	8,25	1,2	18	0,9
55	11	1,2	22	1,2
AccuGlide Miniature linear guide				
10	1,75	0,4	3,5	0,4
15	1,75	0,4	5	0,4
20	2	0,5	7	0,5
AccuGlide T-Series* linear guide				
20	3,9	0,4	10	0,3
25	5,5	0,5	12	0,4
30	5,9	0,7	14	0,5
35	5,9	0,8	15	0,6

Installation Procedure

Clean and inspect all mating surfaces for burrs, nicks, dirt, etc. A simple stone can be used to remove minor imperfections in the mounting surfaces.

Recommended Bolt Tightening Torque, Nm

Table 5

Bolt Size	Class 8.8	Class 12.9
M2.5	0,7	1,2
M4	2,8	4,6
M5	5,7	9,5
M6	9,5	16
M8	23	39
M10	46	77
M12	80	135
M14	129	215
M16	198	330

Rail Mounting

1. Carefully place the rail on the mounting surface.

2. Insert screws into the mounting holes and tighten lightly.

3. Clamp the reference edge of the rail against a locating edge on the mounting surface.

The locating edge can be a machined reference edge, a straight edge, a row of dowels or keys, or some other edge which the rail can be clamped against. It should be straight, either within the mounting tolerances shown in Table 3 or according to the application requirements, whichever is tighter.

4. Starting from the center of the rail, tighten each screw to the recommended tightening torque in Table 5.

5. If parallel rails are to be used, one of the following methods may be employed to obtain the parallelism recommended in Table 1.

a. 2 parallel locating edges
b. a gage block or parallel between the rails
c. the use of the top plate with the carriages mounted, to locate or “float” the second rail into place.

6. Repeat steps 1-4 to install the second rail.

7. Insert a rail plug into each counterbore in the rail. Carefully tap rail plugs into place using a soft material such as brass or wood. When properly installed, the rail plugs should be flush with the top surface of the rail. Do not countersink the rail plugs.

Note: Rail plugs are available and are shipped with all rails except for the AccuGlide* Miniature Linear Guide size 10.

8. If desired, rail tape can then be applied to the top of the rail. For sizes 35 and below, the rail tape may be used without the rail plugs.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

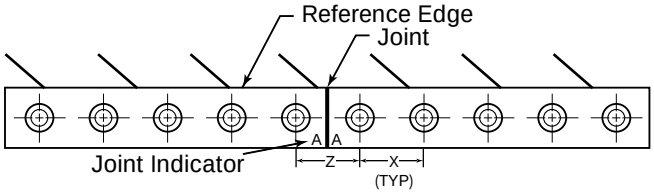
Butt Joints

For rails longer than the longest length available in one piece, a butt joint is required. A butt joint is formed by butting the end of two matched rails together. The ends of rails to be butt jointed are specially machined and marked with same letter (A, B, C, etc.).

We strongly recommend the use of a locating edge when using butt jointed rails. This will ensure proper alignment of the raceways across the joint.

For AccuGlide* and AccuGlide Miniature linear guide rails, the mounting hole spacing across the joint, Z, will be 1/2 the standard mounting hole spacing, X. For AccuMax* linear guide rails, the mounting hole spacing across the joint, Z, will be equal to the standard mounting hole spacing, X.

Figure 6. Butt jointed rails



Once mounted, a gap between the ends of the butt jointed rails of 0,5 mm or less is acceptable.

Carriage Mounting

1. Carefully place the table top on the carriages.

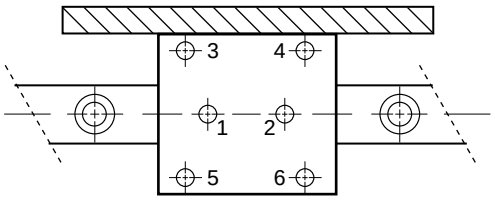
2. Insert the screws into the mounting holes and tighten lightly.

3. Clamp the reference edge of the carriages to locating edges under the top plate.

Note: This is only required if the location of the center of the top plate is critical to the application, or if the top plate is being used to position a second rail parallel.

4. Tighten each screw to the recommended tightening torque in Table 5. For carriages with six mounting screws, the tightening sequence shown in Figure 7 is recommended.

Figure 7. Recommended Tightening Sequence



5. Lubricate bearings.

Note: Extreme care should be taken when mounting the carriages to the rails. Forcing a carriage onto a rail can knock out rolling elements and/or damage the carriage and rail.

For large side forces, hard mounting is recommended to resist any translation. Some methods for hard mounting are the use of tapered gibs, retaining plates, or set screws in combination with machined reference edges. Other methods include the use of an epoxy/replicating material, dowels, and keys. Upon request, carriages and rails can be special machined to accommodate dowels or keys. Consult the factory for details.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Installation Guidelines for Linear Guides #5–11

Thomson Ball Bushing* bearings are manufactured to exceptionally close tolerances and offer smooth, virtually friction-free linear motion. The performance features of the bearings will only be realized, however, if care is taken during their installation.

Two areas of primary importance are the bearing alignment and the 60 Case* LinearRace* shaft parallelism. Two bearings are normally used on each 60 Case LinearRace shaft to assure smooth operation. The housing should be carefully aligned using the method given below. If a single twin-type housing is used, these procedures are not necessary.

It is also necessary to assure that the height from the housing mounting surface to the 60 Case LinearRace shaft is consistent within .001 in. Shimming may be necessary depending on the accuracy of the mounting surfaces to which the housings are bolted.

The housing can be mounted to the plate using the following procedure:

a. Prepare the table top with one side having an abutting surface.

b. Mount two housings with the reference edges located against the abutting surface and tighten the hold down bolts. Figure 1

c. Mount the second pair of housings on the opposite side of the carriage and tighten the bolts finger tight.

d. Insert a locating 60 Case LinearRace shaft of correct diameter and tolerance through these two housings and reference the distance from the abutting surface in [b] above, to this locating 60 Case LinearRace shaft. Figure 2

e. After appropriate alignment of this pair of housings, tighten bolts to secure housings to table top, now considered a “carriage assembly”.

Figure 1

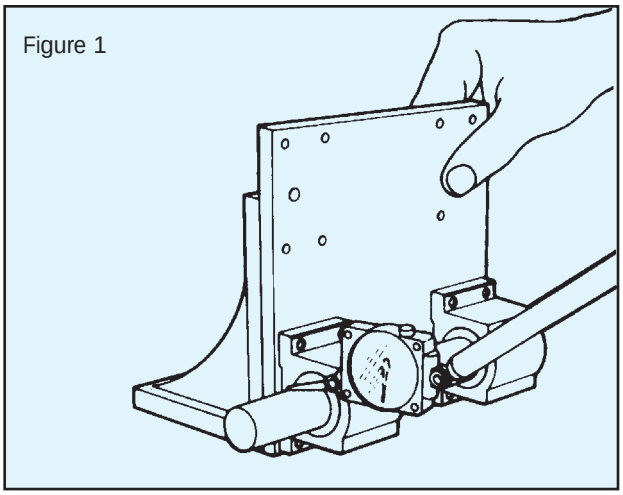


Figure 2

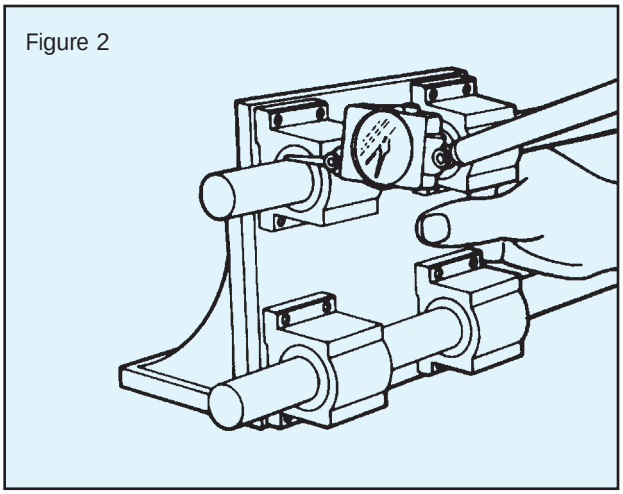
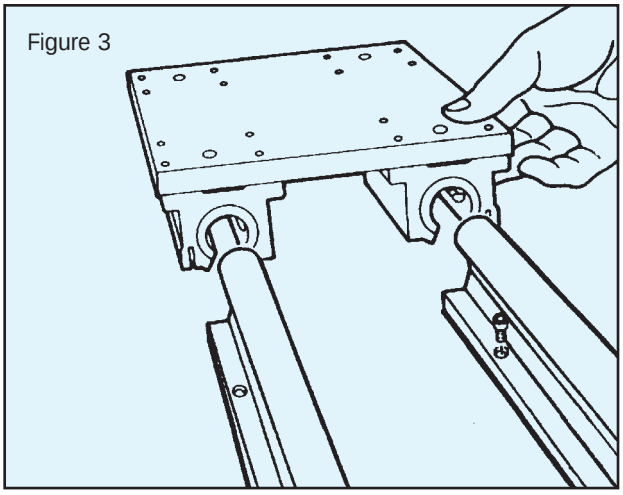


Figure 3



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After the carriage assembly is properly prepared, the 60 Case* LinearRace* shaft must be mounted to the surface. To achieve smooth, accurate motion, the 60 Case LinearRace shaft must be mounted parallel within .001 inch over the length of the stroke. This can be done by using the following procedure:

a. Mount one 60 Case LinearRace shaft (either end supported or continuously supported) to the surface with mounting bolts finger tight.

b. Using an aligning device such as a laser, auto-collimator or other optics, sight the 60 Case LinearRace shaft straight to .002”/ft or less and secure to mounting surface.

c. After this first 60 Case LinearRace shaft is fixed, the second 60 Case LinearRace shaft can be positioned and held down with bolts finger tight.

d. The carriage assembly is then mounted and its movement will pull this second 60 Case LinearRace shaft parallel to the first. Figures 3, 4

e. If the second 60 Case LinearRace shaft is then secured into position, the procedure is complete. Note that for continuously supported systems, this securing should be done when the carriage is close to the bolts. For end supported systems, the securing should be done when the carriage is at the ends of the 60 Case LinearRace shaft. Figure 5

f. An additional check can be done at this time to assure that the carriage assembly is tracking correctly (i.e., that the carriage assembly edge is moving parallel to the 60 Case LinearRace shaft). An indicator touching the carriage assembly edge should not vary, as the carriage assembly is moved along the 60 Case LinearRace shaft. Figure 6

Figure 4

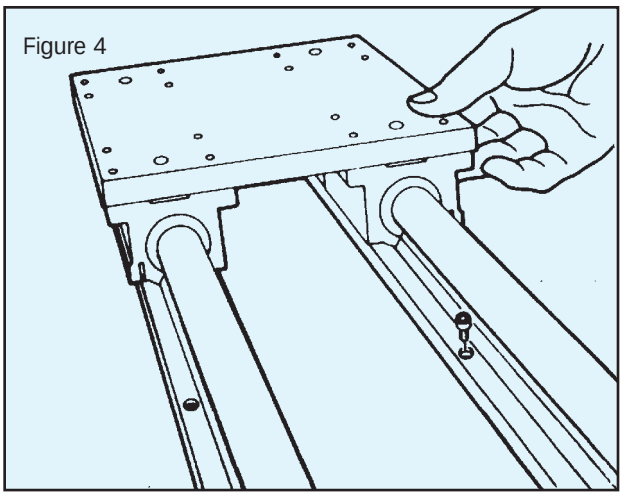


Figure 5

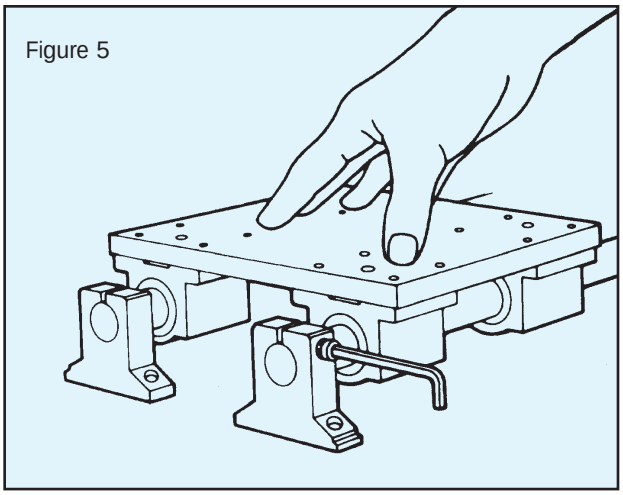
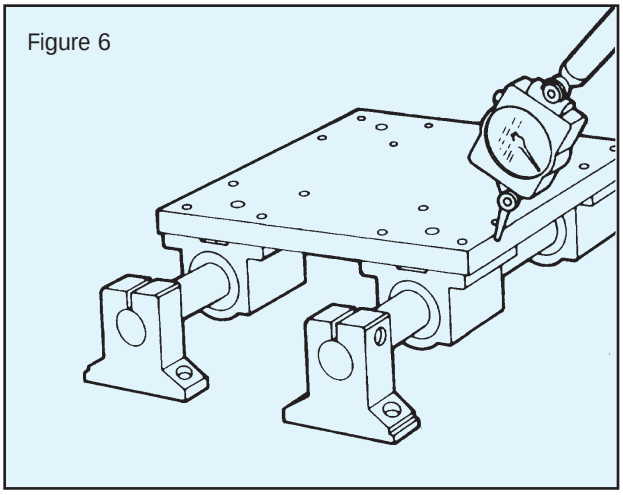


Figure 6



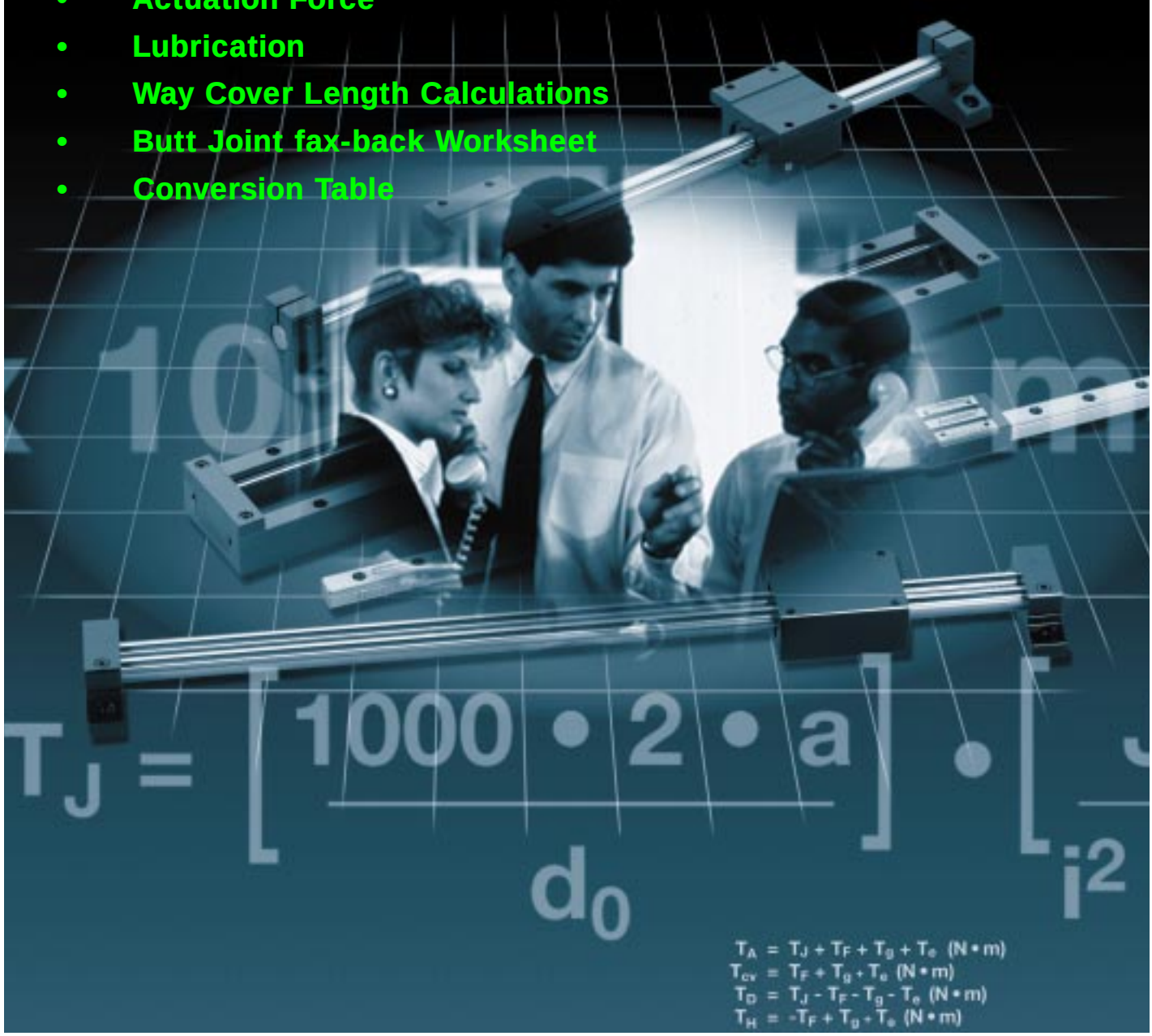
Installation Guidelines for Linear Guides #12–17

1. Remove linear guide from shipping package.
2. Fasten linear guide to mounting surface.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Linear Guide Engineering Section

- Linear Guide Selection
- Technology Overview
- Sizing & Defining Guide Characteristics
- Applied Loading Calculations
- Load Ratings: Rolling Element Guides
  Sliding Contact Guides
- Preloading & Linear Guide Deflection
- Accuracy Class
- Actuation Force
- Lubrication
- Way Cover Length Calculations
- Butt Joint fax-back Worksheet
- Conversion Table



Linear Guide Selection

The selection of the type of linear guide can greatly affect machine performance and overall cost. In order to meet the wide variety of demands created by today's applications, proper selection from a broad range of linear guides is required.

For example, selecting a guide with too much rigidity will decrease the allowable installation tolerances, therefore, greatly increasing surface preparation costs. If the mounting surface is not prepared properly, the guide will run rough, and need to be replaced more frequently due to an unexpected reduction in travel life.

Consider all criteria appropriate for the application. Selection criteria include:

- Rigidity
- Travel accuracy
- Travel life
- Smoothness of travel
- Speed & Acceleration
- Envelope
- Environment
- Cost of Product
- Cost of Installation
- Cost of Replacement

Selection of the most appropriate type of guide, should be based on quantitative/qualitative requirements and ranking by importance of the above selection criteria, as well as the following guidelines for the technology available.

Technology Overview

The performance of a linear guide is based upon contact type, rolling element type, inner race geometry (Round Rail and Profile Rail), and other characteristics such as self-aligning capabilities. It is important to recognize that the options available for each characteristic have performance attributes. The selection process should be focused on matching these attributes with the most critical requirements of the application. The following technology guidelines can be used to assist in selecting the most appropriate type of linear guide. For a detailed application analysis, contact the **Thomson Technical Helpline* at (800) 554-8466** or your local Thomson Linear Motion Specialist.

Linear Guide Contact Types: Rolling Element and Sliding Contact

Rolling Element Type Guide Advantages

- Better resolution, due to minimal difference between the static & dynamic coefficients of friction
- Reduced drive costs, due to a coefficient of friction approximately 100 times less than that of sliding contact.
- Higher speeds
- Predictable life due to minimal wear which also eliminates bearing play concerns

Linear Guides: 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17

Sliding Contact Type Guide Advantages

- Greater rigidity
- Better shock load capacity, due to maximum bearing surface contact
- Low corrosive materials, (i.e., aluminum and polymer) which provide greater reliability in extreme environmental conditions

Linear Guide: 5

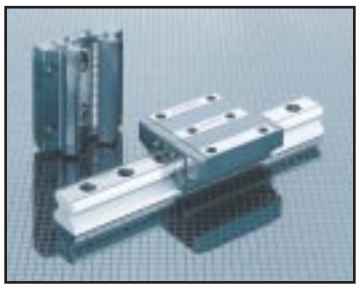
For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Linear Guide Rolling Element Types: Ball and Roller

Ball Type Guide Advantages:

- Less sensitivity to installation error
- Smoother operation due to minimized bearing surface contact

Linear Guides: **2, 3, 4, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17**

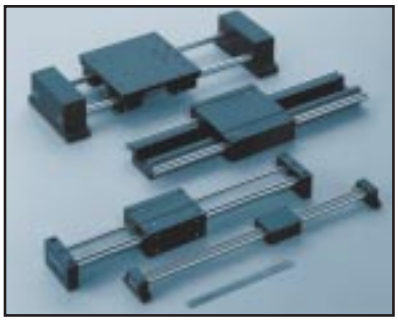


Roller Type Guide Advantages:

- Approximately 2X the load capacity (or 10X the life) vs. the same size ball guide
- Up to 2X the rigidity

Linear Guides: **1, 11**

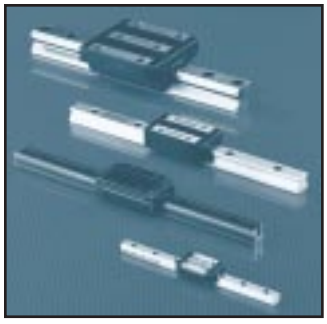
Linear Guide Inner Race Geometry Types: Round Rail and Profile Rail



Round Rail Type Guide Advantages:

- Greatly increased allowable installation tolerances yield lower installation cost. This results from the compliance offered by the RoundRail Advantage[1] and inherent self-aligning capabilities of the bearings..
- Smoother operation due to minimal bearing surface contact
- Higher profile allows easy access for the addition of an actuator
- End supported configurations for spanning gaps
- Lower replacement costs due to standard replaceable sub components

Linear Guides: **5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17**



Profile Rail Type Guide Advantages:

- Greater lateral rigidity, yielding minimal deflection
- Maximum bearing element surface contact enables maximized rigidity and load capacity for use in extremely critical applications (i.e, machine tools)
- Roll, pitch, and yaw moment capacity enables use in single rail/single carriage applications
- Better damping characteristics

Linear Guides: **1, 2, 3, 4**

[1] The RoundRail Advantage* describes the ability for this type of bearing technology to compensate for flatness errors of the mounting surface & top plate without any negative effects on the life of the bearings.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Sizing & Defining Guide Characteristics

The previous sections along with the “Application Selector Guide” (Page 8) should help narrow down the selection to one or two types of linear guides. From here, it is necessary to formulate the appropriate part number so that other comparisons, such as “Cost of Product” can be made.

The following 9 step procedure can be used to select the characteristics necessary to generate the appropriate part number:

1. Determine the load on the most heavily loaded carriage or bearing (see **Applied Loading Calculations**). Multiply by a safety factor if desired in your application.

2. Determine the minimum required travel life for the application based on the intended duty cycle.

3. Calculate the **Minimum Required Dynamic Load Rating**, C_{min} (see Page 192).

4. Select the size which offers the load rating, C, equal to or greater than the minimum required dynamic load rating, C_{min}. Also, consider **Dynamic Load Limit** and **Static Capacities**.

5. If the guide selected offers various preload† levels, select a preload based upon the allowable bearing deflection. Contact the factory for detailed deflection information. Some carriage or bearing **Deflection Charts** are provided in this catalog, (pg195 through 203).

6. If the guide selected offers various accuracy classes, select an accuracy class based upon the required travel accuracy.

7. Determine the need for accessories or options.

8. Calculate the guide length based upon the stroke and platten length. Remember to include additional length of accessories (i.e. self-lubricating option) and the stroke reduction caused by the use of bellows, if applicable.

9. Once the above characteristics have been determined, assign the appropriate part number based on the part numbering instructions located in the catalog section corresponding to the linear guide selected.

Note:

† Choosing a higher preload level will reduce the allowable installation tolerances. For this reason, the minimum preload which meets the applications requirements should be selected. If the highest preload level does not meet the deflection requirements, a larger size may be required.

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Applied Loading Calculations

The majority of applications utilize a four carriage or bearing and two rail design for stability. Shown are four typical configurations and calculations for the resultant loads applied to each bearing. Resultant loads are divided into a horizontal and a vertical components, which represent the static or constant velocity condition and account for gravity but not acceleration.

Use the appropriate configuration to determine the horizontal and vertical components of the resultant applied load on the most heavily loaded carriage or bearing. These values will be referred to henceforth as F_H & F_V, respectively.

Terms:

$\mathbf{d_0}$ = distance between centerlines of carriages or bearings (in) or (mm)

$\mathbf{d_1}$ = distance between centerlines of rails (in) or (mm)

$\mathbf{d_2}$ = distance from centerline of carriage or bearing to load action point (in) or (mm)

$\mathbf{d_3}$ = distance from centerline of carriage or bearing to load action point (in) or (mm)

W = Applied Load (lb_f) or (N)

$\mathbf{F_{NH}}$= Horizontal component of resultant applied load with respect to each carriage or bearing (lb_f) or (N)

$\mathbf{F_{NV}}$= Vertical component of resultant applied load with respect to each carriage or bearing (lb_f) or (N)

Reminder:

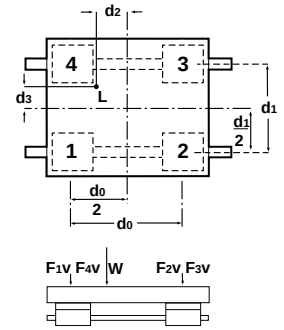
- Be sure to use consistent units (english or metric).
- Be sure to use the appropriate sign (positive or negative).
- A negative number is used when the actual force is in the opposite direction represented by the arrow.

$$F_{1v} = \frac{W}{4} + \left(\frac{W}{2} \bullet \frac{d_2}{d_0}\right) - \left(\frac{W}{2} \bullet \frac{d_3}{d_1}\right)$$

$$F_{2v} = \frac{W}{4} - \left(\frac{W}{2} \bullet \frac{d_2}{d_0}\right) - \left(\frac{W}{2} \bullet \frac{d_3}{d_1}\right)$$

$$F_{3v} = \frac{W}{4} - \left(\frac{W}{2} \bullet \frac{d_2}{d_0}\right) + \left(\frac{W}{2} \bullet \frac{d_3}{d_1}\right)$$

$$F_{4v} = \frac{W}{4} + \left(\frac{W}{2} \bullet \frac{d_2}{d_0}\right) + \left(\frac{W}{2} \bullet \frac{d_3}{d_1}\right)$$



Horizontal Application I

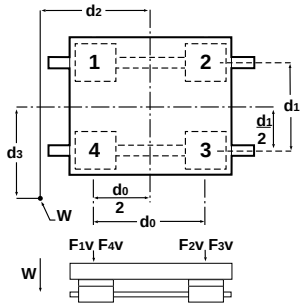
At the time of movement with uniform velocity or at the time of stop.

$$F_{1v} = \frac{W}{4} + \left(\frac{W}{2} \bullet \frac{d_2}{d_0}\right) - \left(\frac{W}{2} \bullet \frac{d_3}{d_1}\right)$$

$$F_{2v} = \frac{W}{4} - \left(\frac{W}{2} \bullet \frac{d_2}{d_0}\right) - \left(\frac{W}{2} \bullet \frac{d_3}{d_1}\right)$$

$$F_{3v} = \frac{W}{4} - \left(\frac{W}{2} \bullet \frac{d_2}{d_0}\right) + \left(\frac{W}{2} \bullet \frac{d_3}{d_1}\right)$$

$$F_{4v} = \frac{W}{4} + \left(\frac{W}{2} \bullet \frac{d_2}{d_0}\right) + \left(\frac{W}{2} \bullet \frac{d_3}{d_1}\right)$$



Horizontal Application II

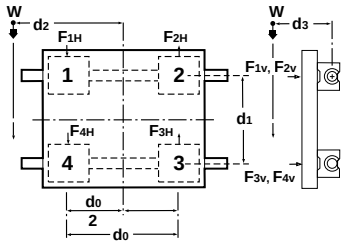
At the time of movement with uniform velocity or at the time of stop.

$$F_{1v} = F_{2v} = -\left(\frac{W}{2} \bullet \frac{d_3}{d_1}\right)$$

$$F_{3v} = F_{4v} = +\left(\frac{W}{2} \bullet \frac{d_3}{d_1}\right)$$

$$F_{1H} = F_{4H} = \frac{W}{4} + \left(\frac{W}{2} \bullet \frac{d_2}{d_0}\right)$$

$$F_{2H} = F_{3H} = \frac{W}{4} - \left(\frac{W}{2} \bullet \frac{d_2}{d_0}\right)$$



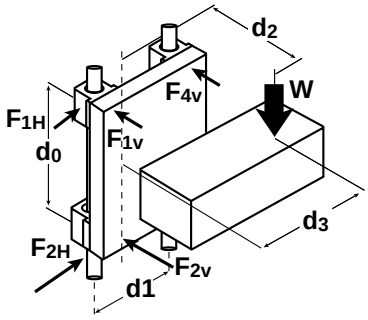
Side Mounted Application

At the time of movement with uniform velocity or at the time of stop.

$$F_{1v} = F_{4v} = -\left(\frac{W}{2} \bullet \frac{d_2}{d_0}\right)$$

$$F_{2v} = F_{3v} = +\left(\frac{W}{2} \bullet \frac{d_2}{d_0}\right)$$

$$F_{1H} = -F_{2H} = -F_{3H} = F_{4H} = \frac{W}{2} \bullet \frac{d_3}{d_0}$$



Vertical Application

At the time of movement with uniform velocity or at the time of stop.
At the time of start & stop, the load varies because of inertia.

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Equivalent Load†

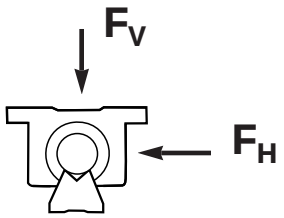
An equivalent load is used to consolidate applied load components into one value which can later be used to calculate the minimum required load rating and the expected life of the carriage/bearing selected.

For ProfileRail* Carriages & Closed RoundRail* Bearings:

$F_{EQ} = F_H + F_V$

F_{EQ} = Equivalent Load
F_H = Horizontal Component of Resultant Applied Load
F_V = Vertical Component of Resultant Applied Load

For Open RoundRail Bearings: ‡



When Fv is negative:

$F_{EQ} = F_H + (F_V/0.5)$

When Fv is positive:

$F_{EQ} = F_H + F_V$

For Single Carriage or Single Rail Configurations:

$F_{EQ} = F_H + F_V + (M/M_C) \times C$

M = Applied Moment Load
M_C = Dynamic Moment Capacity of Bearing
C = Dynamic Load Capacity of Bearing

For Preloaded Carriages [Only when $F_{EQ} < (3 \times F_p)$] :

Even with no external load applied, a preloaded bearing has a load on the races. A load greater than the externally applied load is present within a bearing with an externally applied load less than the preload end point. In order to calculate the loads on the load sets, the following formulae may be employed:

$F_{EQ} = F_p + 2/3\,(F_H + F_V)$

F_p = Initial Preload Force

(i.e., for 'B' Preload Designation F_p = .03 x C)

Equivalent Load

† Before calculating F_{EQ}, make sure that neither F_H or F_V exceeds the Dynamic Load Limit of the guide intended for use. (See **Dynamic Load Limit** on Page 192).

‡ The 0.5 value used accounts for a derating factor of the capacity during tensile loading. Therefore, when calculating expected life based on F_{EQ}, the Full Dynamic Load Rating (C) may be used.

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Mean Dynamic Load

In applications with loads of varying magnitude, a mean dynamic load should be calculated.

$$F_{EQ} = \sqrt[P]{F_{EQ1}^{P}\left(\frac{d1}{D}\right) + F_{EQ2}^{P}\left(\frac{d2}{D}\right) + \ldots + F_{EQn}^{P}\left(\frac{dn}{D}\right)}$$

Where: $F_{EQ1}..F_{EQn}$= equivalent dynamic loads for distances d1 through dn
D = total distance of stroke = d1+d2...+dm
P = 3 (linear guides w/Ball Type Rolling Elements)
10/3 (linear guides w/Roller Type Rolling Elements)

Load Ratings for Rolling Element Guides

Dynamic Load Rating, C, and Travel Life

The dynamic load rating, C, is the load at which when applied will yield the rated travel life. The rated travel life, Lr, for most linear guides is 100km for metric products and 4 million inches for inch products (the rated travel life is listed on the page with the dynamic load rating). For a given applied load, P, the dynamic load rating and rated travel life are used to calculate the travel life using the following load/life equation:

$$L = (C/F_{EQ})^{n} \times Lr$$

Where:

L = calculated travel life
C = dynamic load rating
F_{EQ}= equivalent applied load
n = 3 for ball guides, 10/3 for roller guides
L_r = rated travel life

Note: Some manufacturers dynamic load ratings are based upon a 50km life. To compare dynamic load ratings for guides with a 50km rated life with a 100km life, divide the 50km dynamic load rating by 1.26.

$$C_{100km} = C_{50km}/1.26$$

Some types of linear guides do not have the same dynamic load rating in all directions. The dynamic load rating for orthogonal load directions is shown as a percentage of C. (It is not necessary to use this percentage of C in the load/life equation provided that the **Equivalent Applied Load Section** has been adhered to, because the calculations for equivalent applied load already account for it.)

Calculating the Minimum Required Dynamic Load Rating, C_{min}

The load/life equation above can be rewritten to calculate the minimum required dynamic load rating which should be selected for a given applied load and minimum required travel life:

$C_{min} = P(L_m/L_r)^{1/n}$

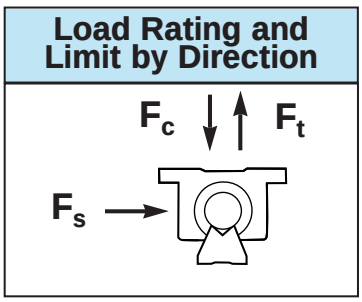
Where:

C_{min} = minimum required dynamic load rating
P = applied load
L_m = minimum required travel life
L_r = rated travel life
n = 3 for ball guides, 10/3 for roller guides

Note: Check that the applied load, P does not exceed the dynamic load limit.

Dynamic Load Limit

The dynamic load limit, is the maximum load which should be applied to the carriage/pillowblock. In some cases, the dynamic load capacity equals the dynamic load rating. In others, a limit shown as percentage of the dynamic load rating is the maximum load which should be applied. A dynamic load limit less then the dynamic load rating does not derate the life of the guide.



	Dynamic Load Rating	Load Limit
F_c	C	C
F_t	0.5C	0.25C
F_s	C	0.25C

Dynamic Load Rating
Load value used in life calculation.

Load Limit
Maximum allowable load applied to bearing.

Static Capacities

The static capacities are the maximum loads that should be applied to the bearing while there is no relative motion between the rolling elements and the raceways. The value C_0 is the static load capacity for a radial load acting orthogonal to the axis of travel. The values M_{ro}, M_{po}, and M_{yo} are the static roll, pitch, and yaw moment capacities.

It is important to analyze the application so that shock loads do not exceed these capacities. Exceeding these capacities may permanently deform the rolling elements and raceways. This type of damage will be realized by an increase in friction, noise, and vibration, as well as by an increase in clearance between the carriage and the rail.

Note: For systems experiencing repetitive shock loading less than the static load capacities, the bearing life should be determined by means of fatigue calculations.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Load Capacities for Sliding Contact Guides

Dynamic Load Rating, Pv, and Travel Life

For sliding contact linear guides, dynamic load ratings are represented as PV (Pressure•Velocity) ratings. To determine if the guide is adequately sized, the following variables must be examined:

Pressure (P)

$$P = \frac{F_{EQ}}{A}$$

Where: A = Projected Area = Shaft Diameter x Bearing Length

Velocity (V)

If motion is linear:

V = Travel speed of guide

If motion is rotational:

V = RPM x Shaft Diameter x 3.14

PV Value

PV = Pressure x Velocity

As well as a maximum PV rating, each sliding contact linear guide is also rated for maximum velocity and maximum pressure.

Wear Rates & Life Expectancy

I) **Wear rates:** The wear rates of a plain bearing are dependent upon a number of variables, including characteristics of the counter-face, velocity, lubrication, load and contamination. Tests conducted on FNYBEM-25 bearings operating in the linear mode at approximately 21 m/min, and at a pressure of approximately 0.23 MPa, demonstrated an average radial wear change of 0.028 mm, after 2 million meters of travel. This yields the following formula:

$$W_R = 14x(10^{-6})xT$$

Where:

W_R = Radial Wear (microns)

T = Travel (meters)

II) **Life expectancy:** The life expectancy may be calculated from the wear rate. This is normally associated with the allowable radial clearance for a given application. The absolute wear limit is the bearing material thickness, which is 0,71 mm.

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Preloading & Linear Guide Deflection

Preload

A preloaded bearing has a condition of interference between the races of the rails, the rolling elements, and the races of the carriage.

Preloading decreases the deflection due to external loads. This occurs because the contact reaction has already developed, eliminating much of the initial non-linear deflection associated with rolling elements.

The rolling element reactions within a preloaded bearing may be considered as having two components. One component acts in the direction of external load, and one component acts in the opposing direction in order to maintain static equilibrium. These components are referred to as load sets. As external load is applied, one load set increases in load, as the opposite load set decreases in load. At some point, the load on the decreasing load set becomes zero. This point, at which the preload is relieved, is called the preload end point. Preload end typically occurs when the external load is approximately three times the preload.

Preload end point : $F_{ext} = 3F_p$

where:

F_{ext} = externally applied load

F_p = preload

By definition, a preloaded bearing, loaded beyond the preload endpoint, has the same deflection characteristics of an unpreloaded bearing externally loaded to that percentage of its dynamic load capacity. A preload level is assigned as a percentage of the dynamic load capacity of the bearing.

Deflection Curves

The following pages contain deflection curves for linear guides typically selected when rigidity is critical. Note that the deflection decreases as the preload level is increased & also as the bearing size increases.

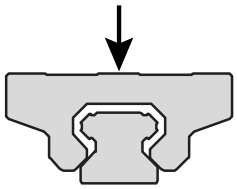
Curves shown are for the AA (standard) type carriages.

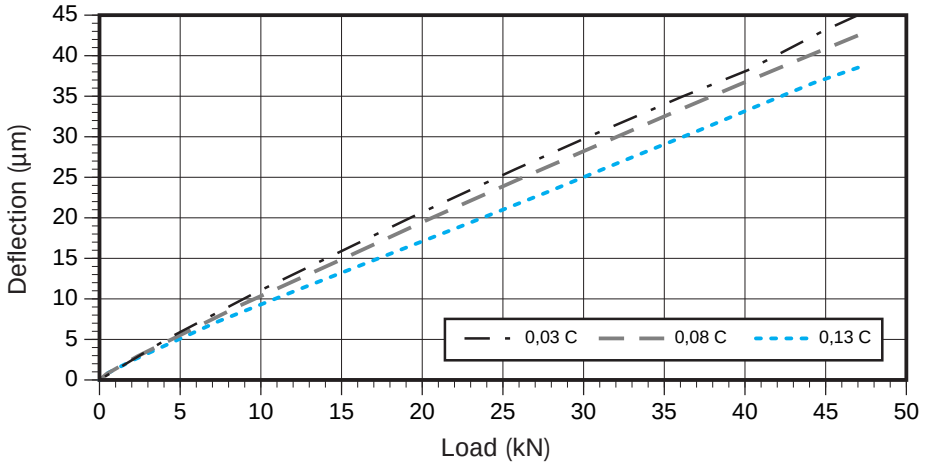
For deflection characteristics of guide types not shown, contact the Thomson Technical Helpline at (800) 554-8466.

Deflection vs. Applied Load

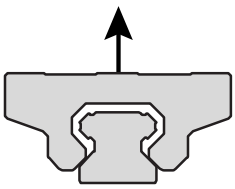
AccuMax* Linear Guide Size 35†

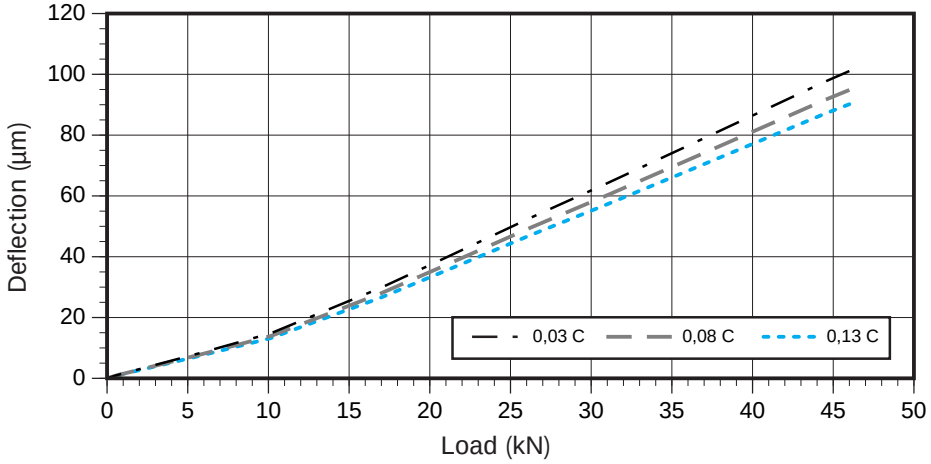
Compression



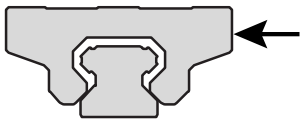


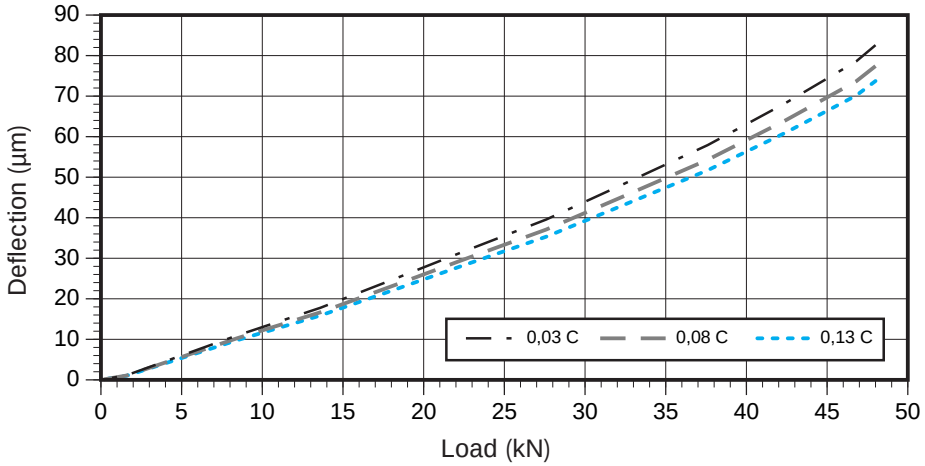
Tension





Shear





† Curves shown are for the AA (standard) type carriages.

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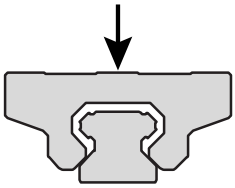
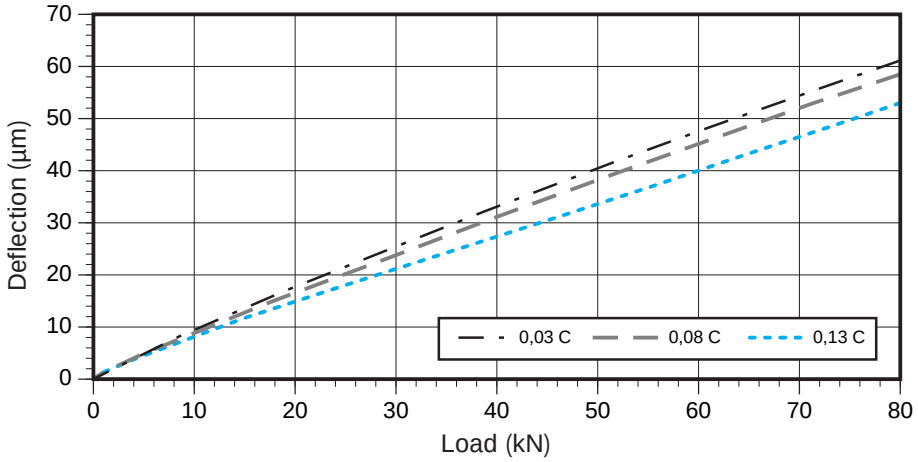
Deflection vs. Applied Load

AccuMax Linear Guide Size 45†*

Compression





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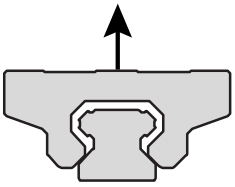
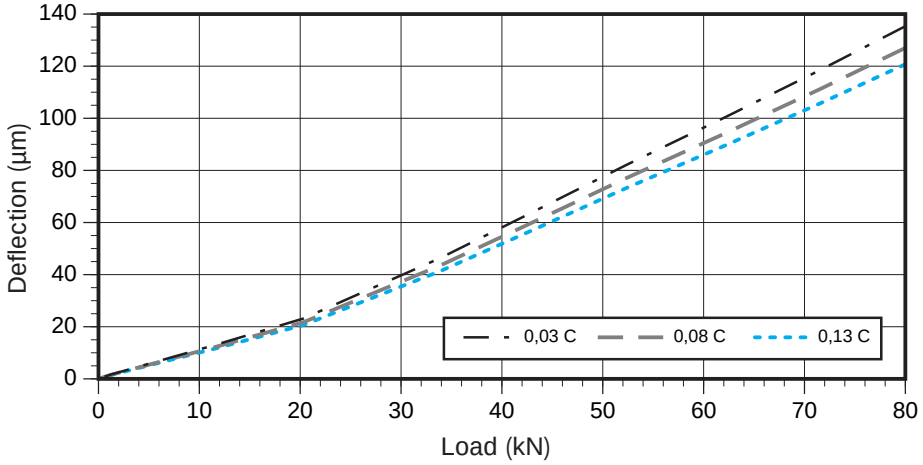
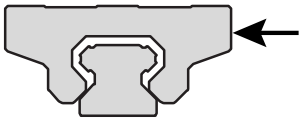
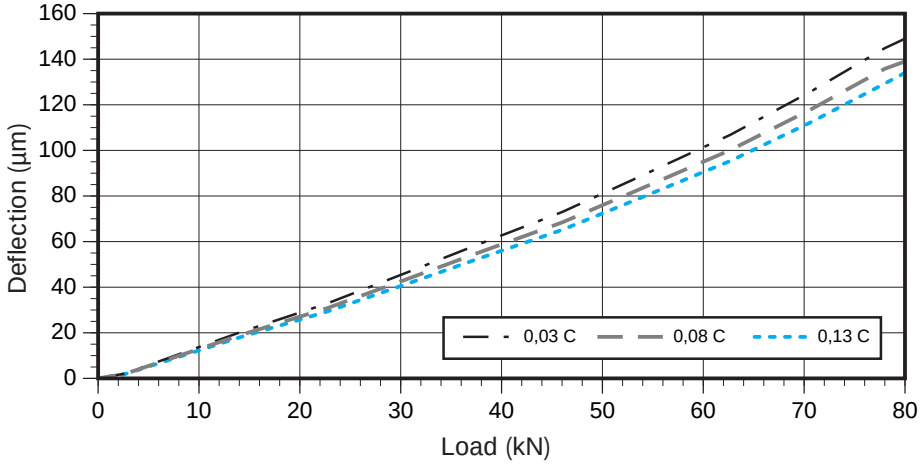




Shear





† Curves shown are for the AA (standard) type carriages.

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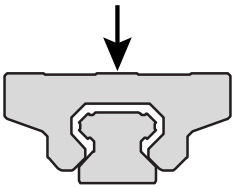
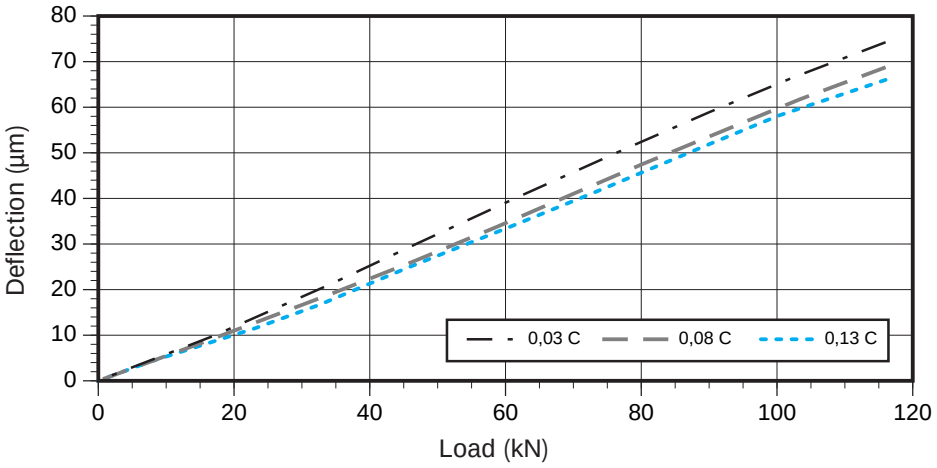
Deflection vs. Applied Load

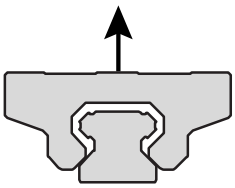
AccuMax Linear Guide Size 55†*

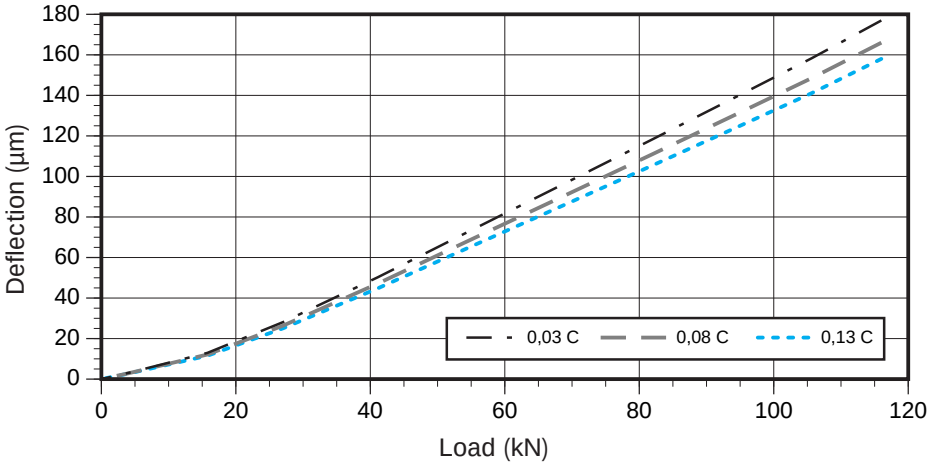
Compression





Tension





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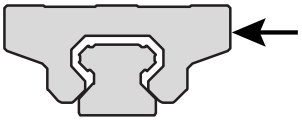

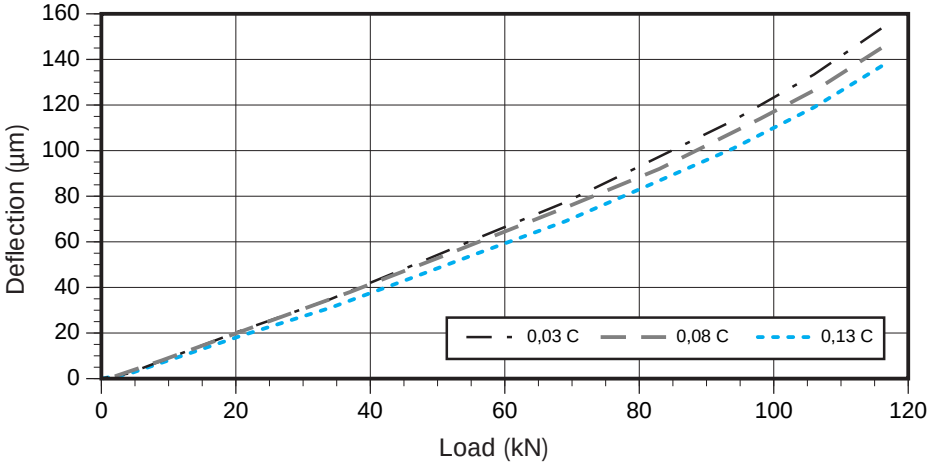

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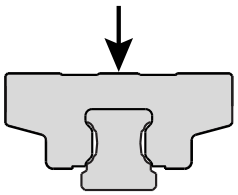
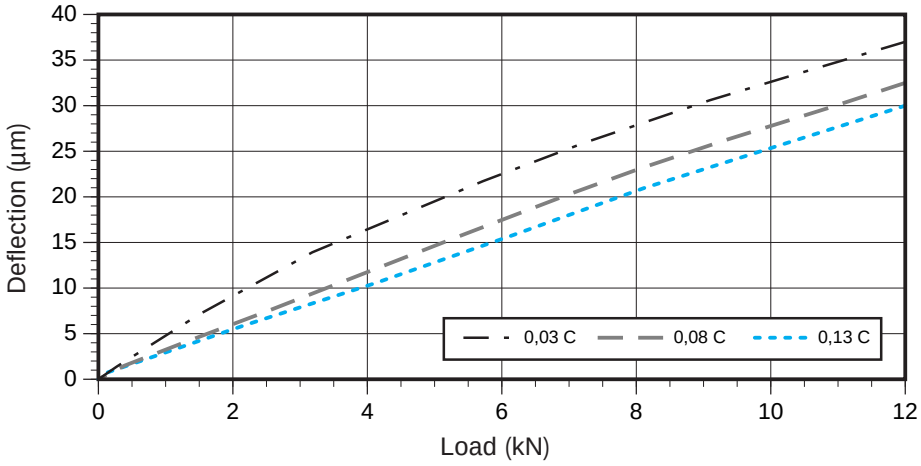
Deflection vs. Applied Load

AccuGlide Linear Guide Size 20†*

Compression





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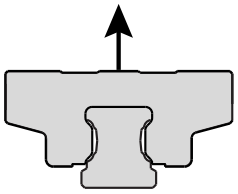

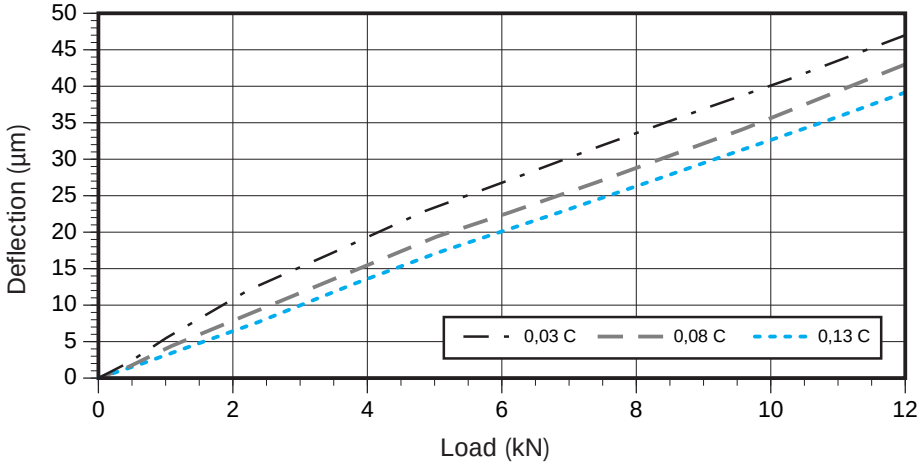

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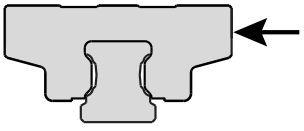

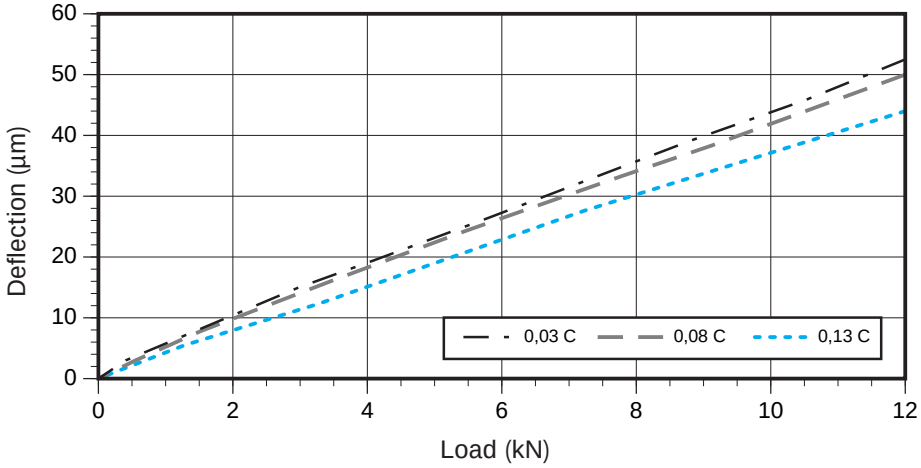

† Curves shown are for the AA (standard) type carriages.

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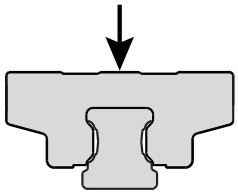
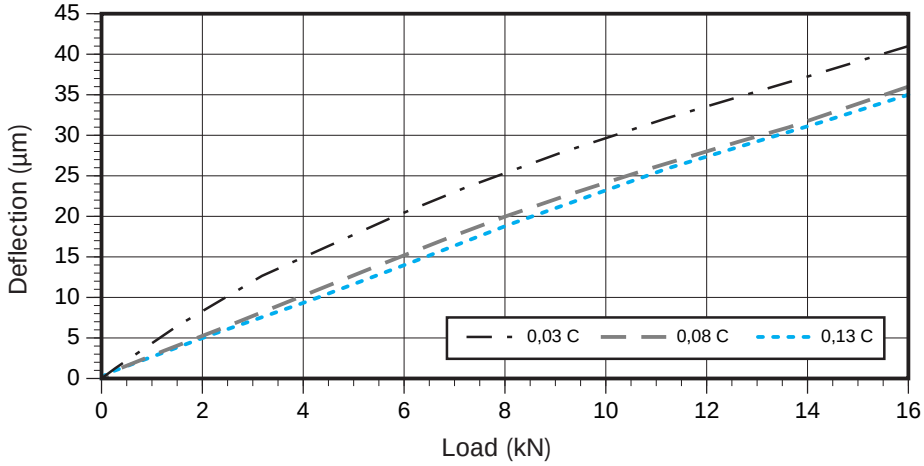
Deflection vs. Applied Load

AccuGlide Linear Guide Size 25†*

Compression





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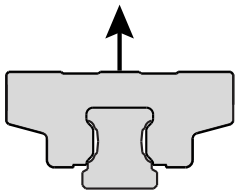

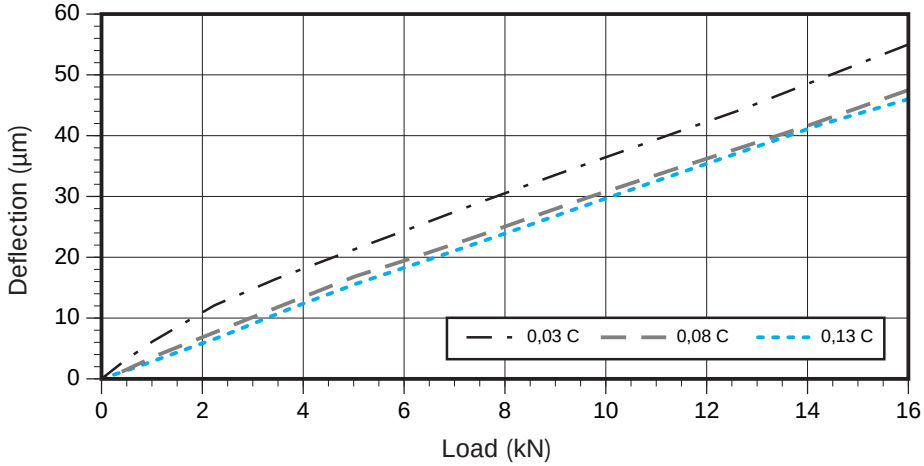

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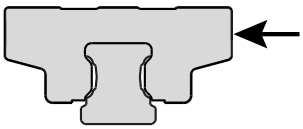

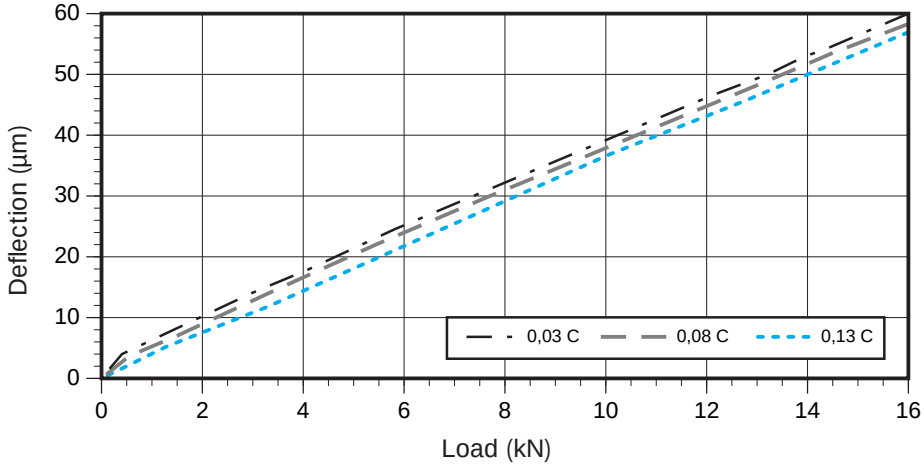

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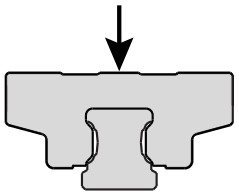
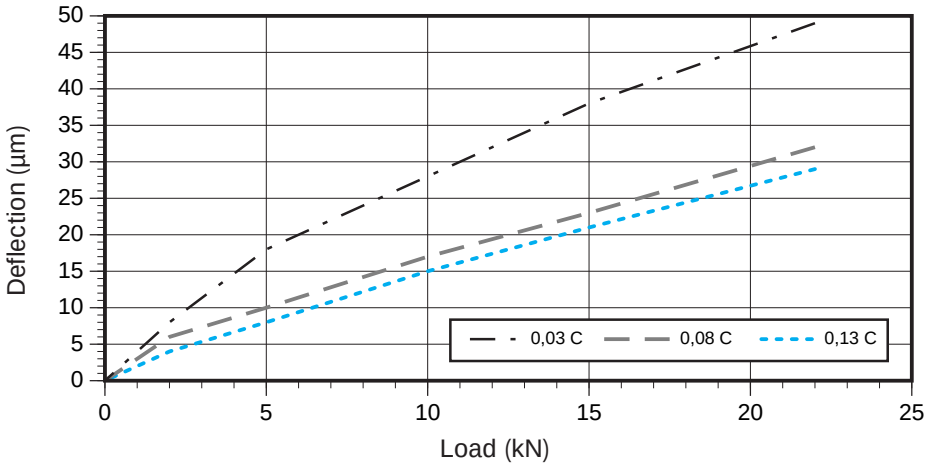
Deflection vs. Applied Load

AccuGlide Linear Guide Size 30†*

Compression





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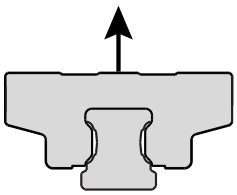

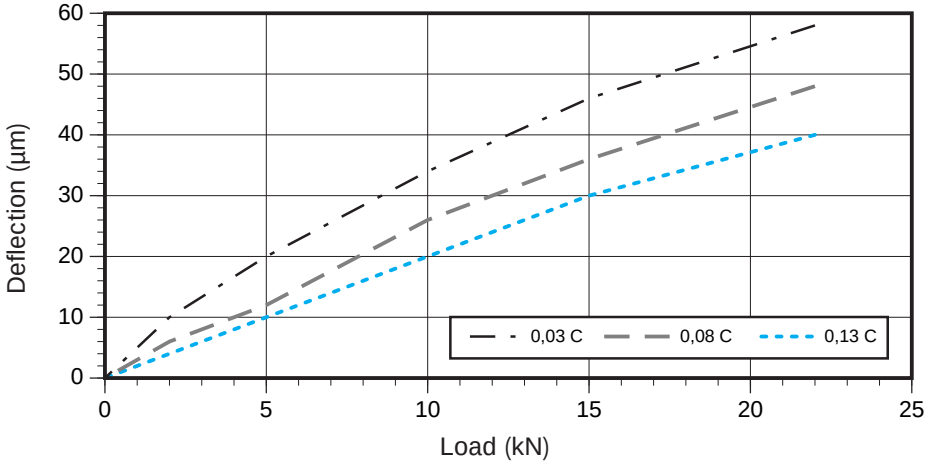

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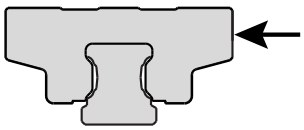

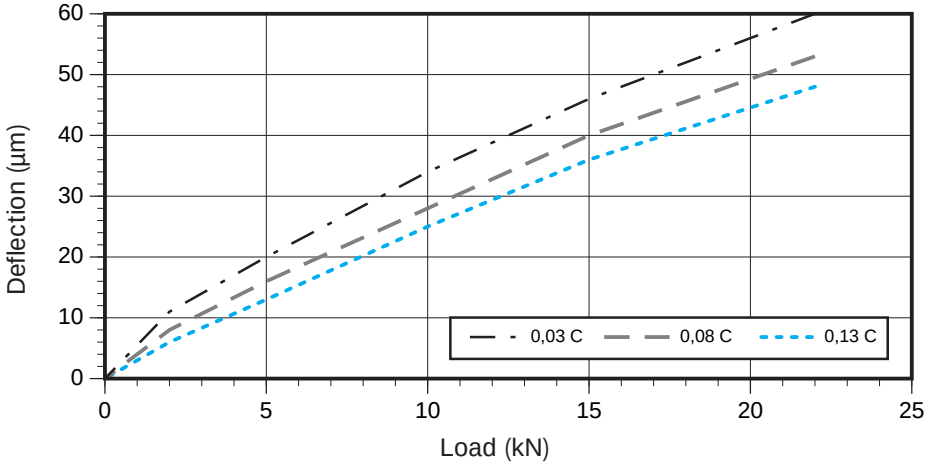

† Curves shown are for the AA (standard) type carriages.

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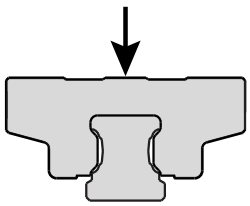
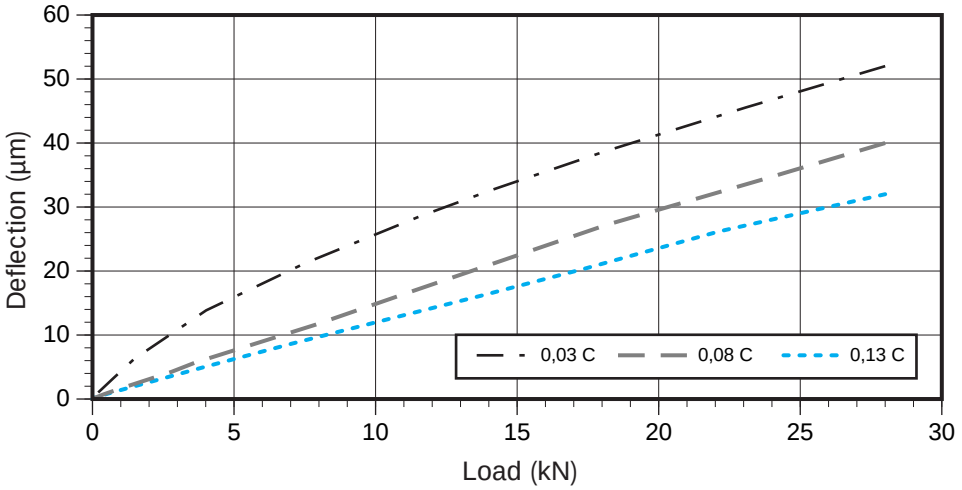
Deflection vs. Applied Load

AccuGlide* Linear Guide Size 35†

Compression





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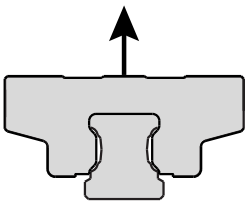

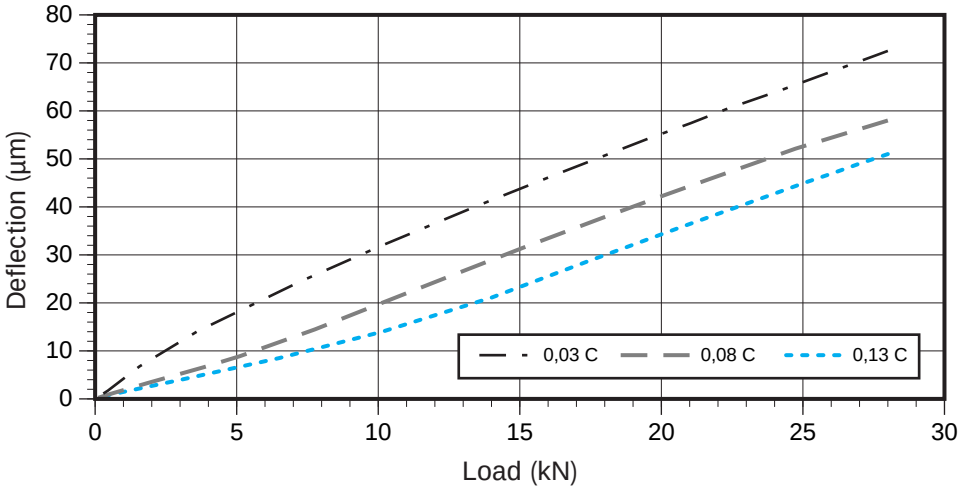

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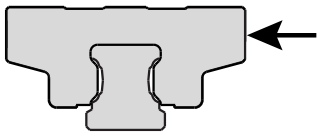

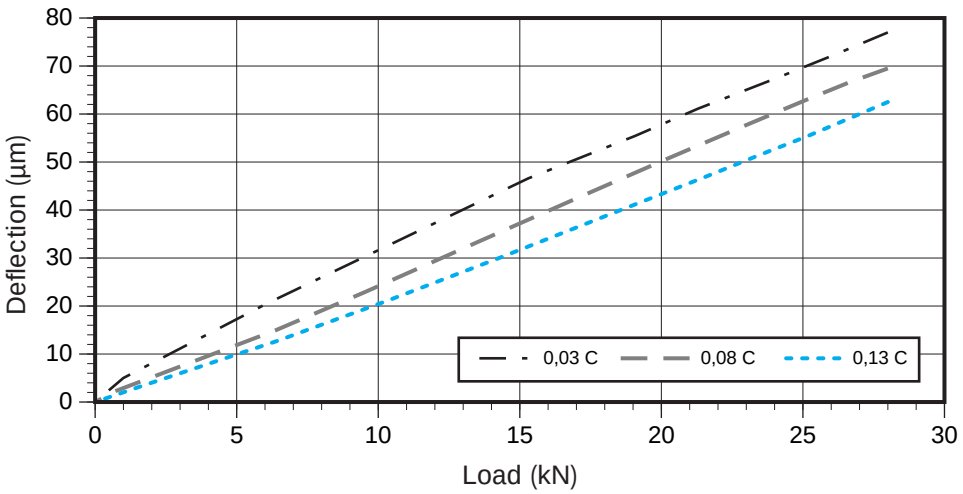

† Curves shown are for the AA (standard) type carriages.

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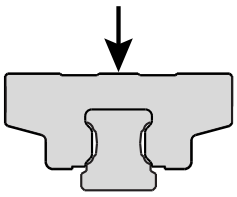
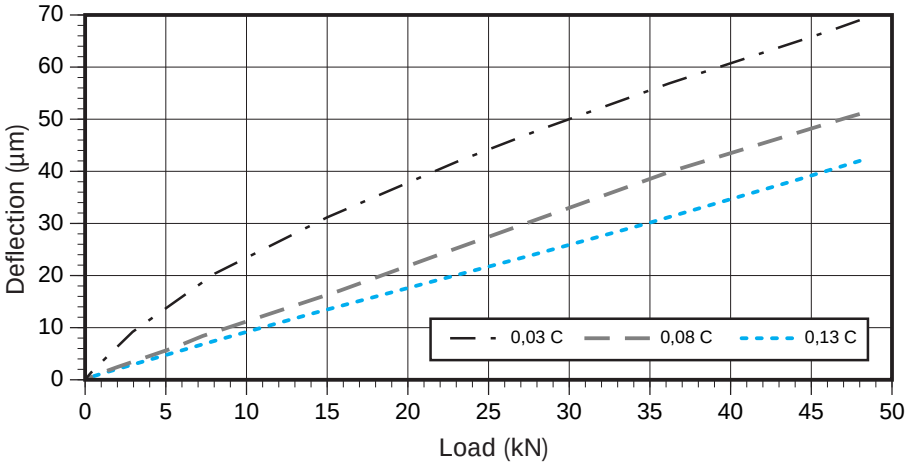
Deflection vs. Applied Load

AccuGlide Linear Guide Size 45†*

Compression





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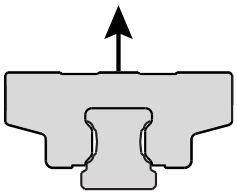

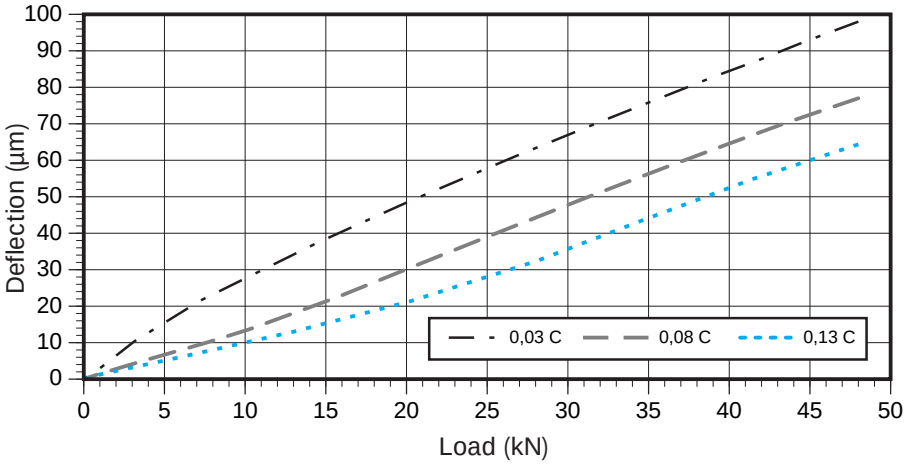

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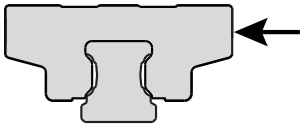

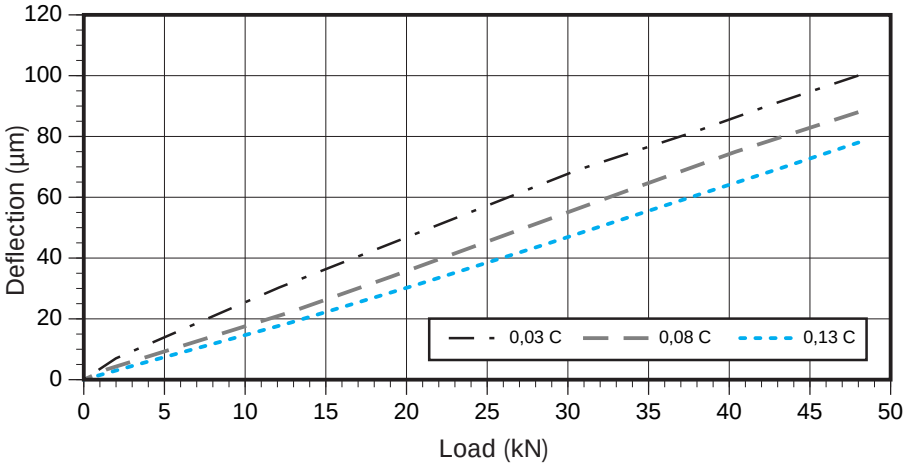

† Curves shown are for the AA (standard) type carriages.

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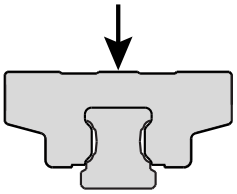
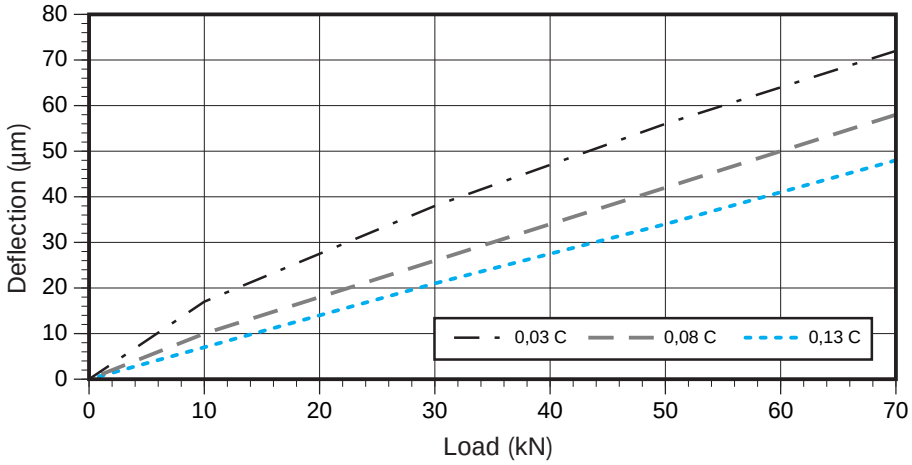
Deflection vs. Applied Load

AccuGlide Linear Guide Size 55†*

Compression





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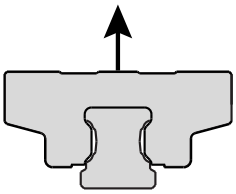

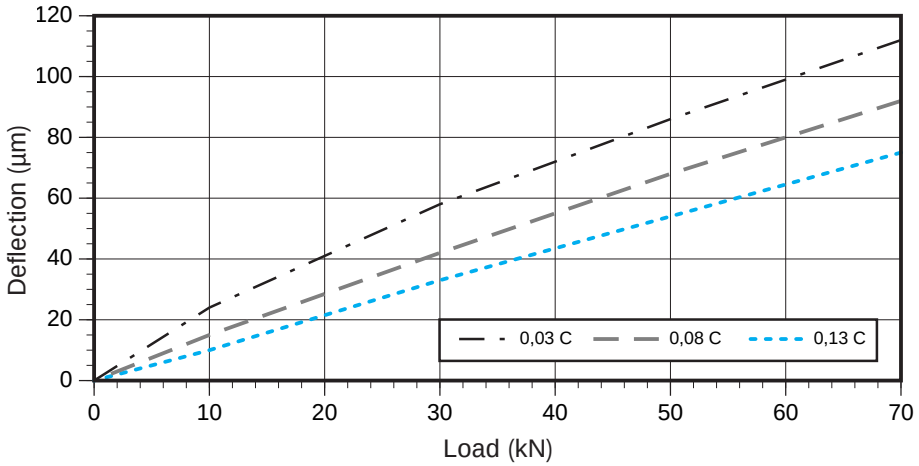

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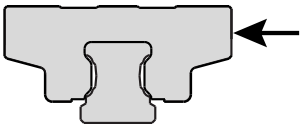

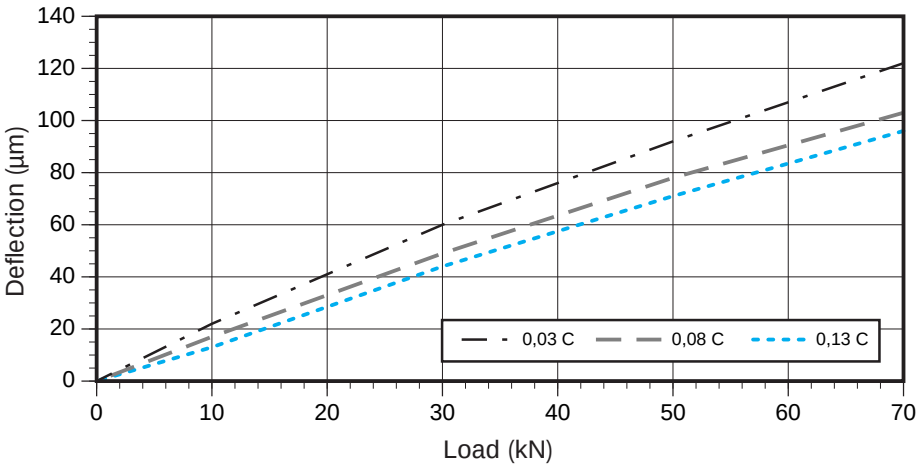

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End Supported Linear Guide Deflection

When a linear guide is used in an end supported configuration it is important to ensure that system deflections at the bearing locations are kept within performance limitations.

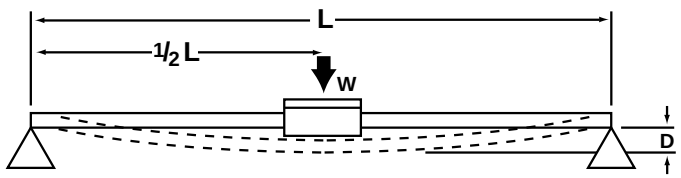
These equations give the deflection at the center of an end supported system. Linear guides with continuous support are not subject to the same types of deflection.

60 Case* LinearRace* Shaft Stiffness and Weights

Inch Size			Metric Size		
Diameter (in)	EI ($lb_f \cdot in^2$)	S (lb_f/in)	Diameter (mm)	EI ($N \cdot mm^2$)	S (N/mm)
1/4	5.8 x 10^3	0.014	8	3,83 x 10^7	0,0038
3/8	2.9 x 10^4	0.031	12	1,94 x 10^8	0,0087
1/2	9.2 x 10^4	0.055	16	6,12 x 10^8	0,0154
5/8	2.3 x 10^5	0.086	20	1,50 x 10^9	0,0240
3/4	4.7 x 10^5	0.125	25	3,65 x 10^9	0,0379
1	1.5 x 10^6	0.222	30	7,57 x 10^9	0,0542
1 1/4	3.6 x 10^6	0.348	40	2,39 x 10^{10}	0,0968
1 1/2	7.5 x 10^6	0.500			

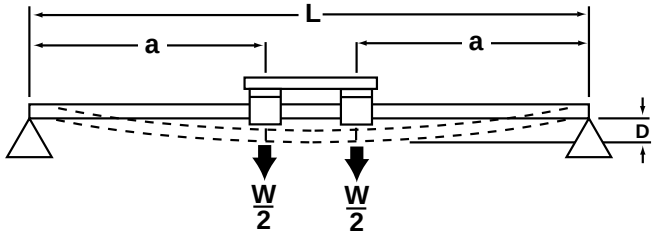
Simply Supported Linear Guide with One Block

DEFLECTION AT CENTER (D)



$$D = \frac{WL^3}{48EI} + \frac{5SL^4}{384EI}$$

Simply Supported Linear Guide with Two Blocks



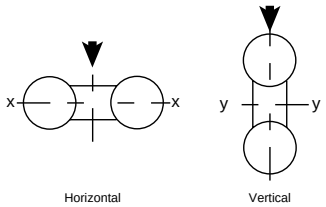
$$D = \frac{Wa(3L^2-4a^2)}{48EI} + \frac{5SL^4}{384EI}$$

Deflection for Twin Shaft Web* Linear Guide

Since the Twin Shaft Web rail has different stiffness depending on its orientation, an appropriate EI value must be used based upon the direction of loading. Select the orientation of your load from the figure below and then use the appropriate EI value in the deflection equation.

Values of EI

Shaft Dia. (in)	EI Horizontal (lb_f in^2)	EI Vertical (lb_f in^2)
1/2	1.9 x 10^5	3.7 x 10^6
3/4	9.4 x 10^5	1.5 x 10^7
1	3.0 x 10^6	4.7 x 10^7



LEGEND

D = Deflection (in) or (mm)
W = Load (lb_f) or (mm)
L = Length of unsupported 60 Case LinearRace shaft (in) or (mm)
a = Distance to first bearing with carriage at center position (in) or (mm)
S = Unit weight of LinearRace shaft (lb_f/in) or (N/mm)
E = Modulus of Elasticity (lb_f/in^2) of (N/mm^2)
I = Moment of inertia of area through diameter of LinearRace shaft (in^4) of (mm^4)

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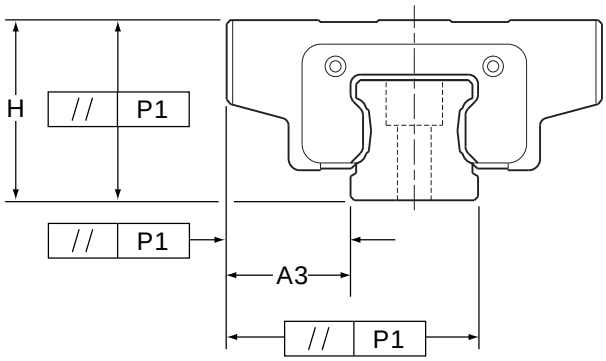
Accuracy Class

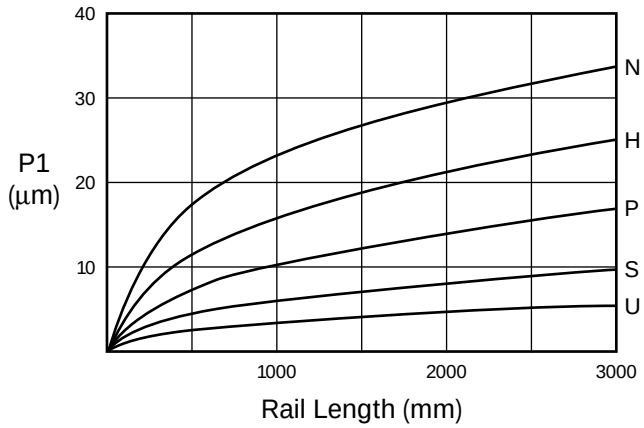
Three tolerances describe the accuracy of a ProfileRail bearing: Running Parallelism, Pair Variation, and Assembly Accuracy. These are measured from the rail base to the center of the carriage top (H), and from the rail reference edge to the center of the carriage reference edge (A3). (Figure 1)

Figure 1. Dimensions H and A3



Running Parallelism describes the tolerance on H and A3 as a function of axial travel, measured from one carriage down the length of rail (Figure 2). This is analogous to straightness of travel. As such, parallelism describes attributes of the rail only.

Figure 2. Running Parallelism



Assembly Accuracy [Table 1] describes the tolerance on H and A3 as a function of a carriage - rail assembly, measured from the nominal dimensions.

Pair Variation [Table 1] describes the tolerance on H and A3 as a function of carriages, measured with multiple carriages at the same position on a common rail. Pair variation describes carriage precision only.

Table 1. Tolerances on H and A3, µm

	Accuracy Class				
	N Normal	**H** High	**P** Precision	**S** Super Precision	**U** Ultra Precision
1. Assembly Accuracy Tolerance on dim. H and A3 (measured at middle of carriage at any point along rail)	±100	±40	±20	±10	±5
2. Pair Variation Max variation in dimensions H and A3 measured on multiple carriages mounted on the same rail (measured at middle of carriage at same position on rail)	30	15	7	5	3

The accuracy class selected will partially determine the accuracy of the system. Other factors such as mounting surface flatness and straightness also significantly affects system accuracy.

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Actuation Force

The force required to actuate a linear guide (F_A) has four basic components:

1. Frictional resistance (F_f)
2. Intrinsic resistance (D_{int})
3. Inertia of the moving components ($F_{inertia}$)
4. Viscose drag of the lubrication (D_l)

$$F_A = F_f + D_{int} + F_{inertia} + D_l$$

Frictional Resistance

Rolling Element Guides

Friction occurs in rolling element guides as a result of slipping of the rolling elements on the raceways. The frictional resistance can be calculated by means of the following equation:

$$F_f = \mu \times F_i$$

Where:

μ = coefficient of friction (dependent upon type of guide type, rolling element type and load)

F_i = force internal to the linear guide

The following table lists the coefficient of friction for different types of guides:

Round Rail		Profile Rail	
Ball Type	Roller Type	Ball Type	Roller Type
0.001 - 0.002	0.005 - 0.010	0.002 - 0.003	0.001 - 0.002

The value for the coefficient of friction is a function of the applied load. The coefficient of friction increases as load is applied. This is due to the increased contact area between the rolling elements and races.

The force internal to the linear guide is equal to the external force (F_{ext}) applied to the linear guide in non-preloaded guides, and preloaded guides loaded beyond 3 times the preload value (F_p).

$$F_i = F_{ext}$$

For preloaded guides loaded below a level of 3 times the preload value (F_p), the internal force can be approximated with the following equation:

$$F_i = 2F_p + 1/3\ F_{ext}$$

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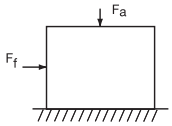
Sliding Contact Guide

I) **Static:** Tests performed on dry FNYBU-16 bearings indicate that the force required to initiate motion is dependent upon the applied load according to the following equation:

$F_f = 1.3 + 0.18\ F_a$



Where:

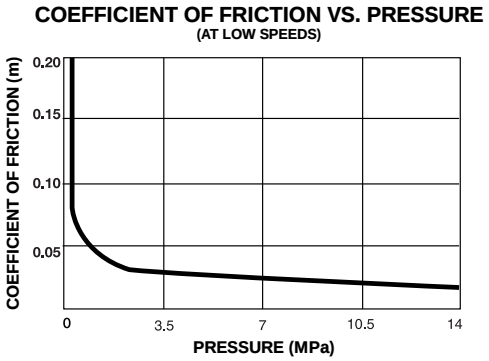
F_f = Friction force, static (Newtons)

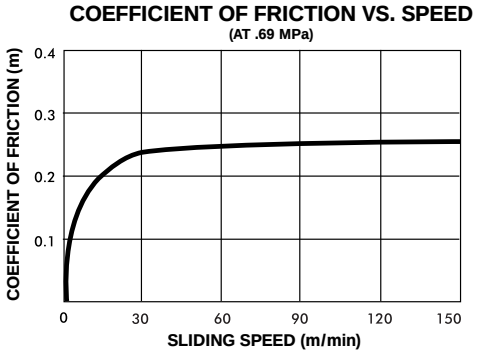
F_a = Applied force (Newtons)

Maximum Operating Parameters per Bearing

Characteristic	Limit
Liner Temperature Range	-240˚ C to 288˚ C (-400˚ F to 550˚ F)
Velocity, dry	42.7 m/min. Continuous
Velocity, dry	122 m/min. Intermittent
Velocity, lubricated	122 m/min. Continuous
Pressure	10.35 MPa
PV	21 MPa/m/min

II) **Dynamic:** The coefficient of friction is dependent upon both the pressure and the velocity.
Pressure: Coefficient of friction decreases rapidly with increase in pressure.
Velocity: Coefficient of friction increases with an increase in velocity, and quickly stabilizes. For example, at .69 MPa, the coefficient of friction is approximately 0.25 for velocities of 30.5 m/min and higher.





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Intrinsic Resistance

The intrinsic resistance is the measured actuation force required to move the guide at a constant velocity, without lubrication, regardless of load. It consists of the seal drag (larger component) and force required to circulate the rolling elements (smaller component). The intrinsic resistance can be assumed to be a constant for linear guides carrying more than 5% of their dynamic load rating (C). For guides loaded below that value, the force required to circulate the rolling elements will increase.

The following chart shows the intrinsic resistance, $\mathbf{D_{int}}$, for different types and sizes of linear guides.

AccuMax* linear guide

Size	Carriage Style AA D_{int} (N)
30	13,5
35	14,7
45	27,5
55	46,1
65	70,6

AccuGlide* Miniature linear guide

Size	Carriage Style AA D_{int} (N)
10	0,9
15	2,8
20	7

AccuGlide* linear guide

Size D_{int} (N)	Carriage Style AA, CE D_{int} (N)	Carriage Style BA, DE D_{int} (N)
20	5,5	7
25	7,5	10
30	12,5	15,5
35	18	24
45	33,5	44
55	55,5	73,5

Inertia of Moving Components

Inertia is directly related to the mass and acceleration by the following equation: $F_{inertia} = Ma$

Viscose Drag of the Lubrication

The viscose drag of the lubricant is dependent upon the visiosity of the lubricant selected.

For information on linear guides not shown, contact the Thomson Technical Hotline at (800) 554-8466

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Lubrication

Lubrication provides protection against wear, corrosion, heat, and friction. Application-specific variables, such as load, speed, and environmental conditions, determine the most suitable lubricant and lubrication schedule for that specific application.

Thomson's general lubricant recommendation for linear guides is a grade 2 grease. A maximum of one year or 100km, whichever comes first, between applications of lubricant is recommended. A grease with an extreme pressure additive should be used for guides loaded beyond 50 of their dynamic load rating (C). Oil can also be used and is recommended in applications where the bearings experience high speeds. Use the uppermost lubrication port on oil-lubricated bearings that are vertically oriented to ensure gravity-assisted lubricant dispersal.

Linear guide products are supplied with a light coating of preservative oil. This preservative oil is for storage purposes only and is not recommended as lubrication for the bearing. AccuGlide* Miniature Series carriages are shipped prelubricated with an EP2 grease should always be lubricated before use.

Lubrication Procedure

For best lubrication dispersal, the carriage should be moved on the rail while applying lubricant to ensure circulation to all internal bearing surfaces. It is not possible to over lubricate the bearings, as excess lubricant will merely exit the carriage under the seals.

Recommended initial volumes of lubricant for AccuMax and AccuGlide bearings are shown in Tables 2 and 3. The recommended volume for relubrication is 1/2 the initial volume.

Initial Lubricant Volume for AccuMax Bearings

Size	Carriage Style AA cm^3
30	6
35	10
45	20
55	38
65	60

Initial Lubricant Volume for AccuGlide Bearings

Size	Carriage Style AA, CE cm^3	Carriage Style BA, DE cm^3
20	4	6
25	6	8
30	10	12
35	14	18
45	30	38
55	54	66

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

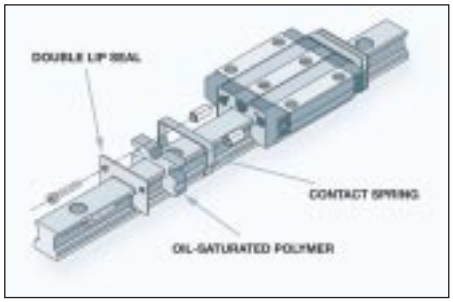
Self-Lubricating Linear Guides

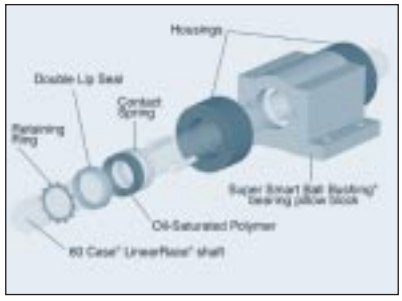
The self-lubricating option offers maintenance free operation and enhanced protection for a broad range of applications.

It offers:

- Reduced system cost by eliminating the need for designing, purchasing, and installing expensive lubrication systems.
- Environmentally friendly operation
- Increased bearing life by offering enhanced protection

Design





The self-lubricating option utilizes self-lubricating attachments at both ends of the carriage and includes an initial EP2 grease pack of the carriage. The self-lubricating attachments consist of a section of oil saturated polymer actively compressed by a contact spring, inside a double lip seal.

A contact spring assures continuous contact with the rail, releasing oil as the carriage moves. This ensures a film of lubricant between the rolling elements and races. When the carriage is at rest, oil is re-absorbed by the polymer.

Performance

The design has incorporated a proven oil-saturated polymer used for over 10 years to lubricate radial bearings. This method of lubrication has a successful track record in applications ranging from food processing to automotive assembly.

The graph below shows the theoretical L10 life expectancy and actual test results for the following two methods of lubrication:

1. Bearing with self-lubricating attachments only.
2. Bearing initially packed with EP2 grease only.

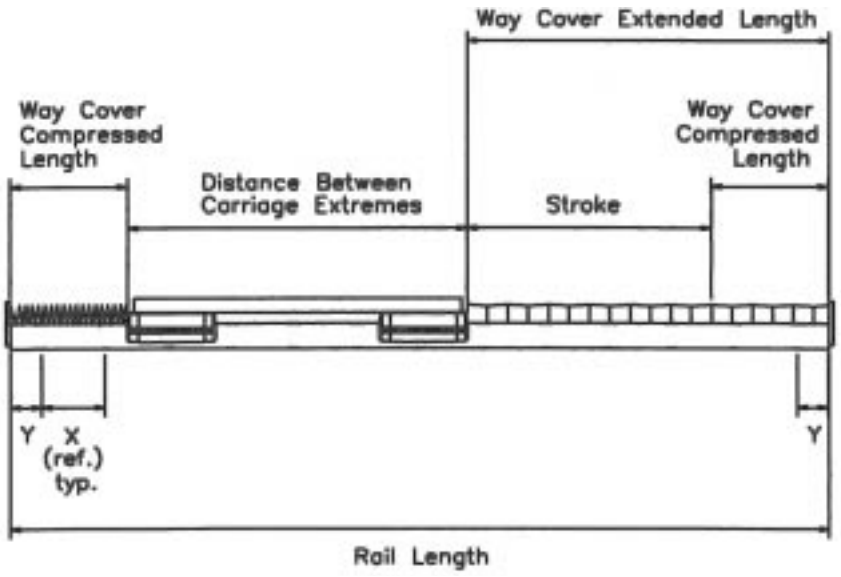
Testing Parameters

Stroke: 500 mm
Speed: 0,6 m/s

This chart illustrates how using the self-lubricating option, which combines the self-lubricating attachments and initial grease pack, will enable the bearing to achieve the L10 life expectancy under all loading condition. Note that for travel lives exceeding 30,000 km, recharging or replacing of the self-lubricating polymer is recommended.

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

Calculations for Way Cover Extended Length & Rail Length



Given the Stroke and Distance Between Carriage Extremes:

Way Cover Extended Length (mm) = Stroke (mm) / (1-CR). After dividing, round number up to the next increment of 5mm. This value is used as the length in the way cover part number when ordering.

Note: The Way Cover Extended Length will be cut to next vee at the factory.

Way Cover Compressed Length (mm) = Way Cover Extended Length (mm) - Stroke (mm)

Rail Length = Compressed Length + Extended Length + Distance Between Carriage Extremes.

Example:

Product: AccuGlide* Linear Guide Size 35
Stroke Length = 200mm
Distance Between Carriage Extremes = 520mm
Bellows Type = Walk-On

CR = 0.19 for size 35 AccuGlide Walk-on type bellows

Way Cover Extended Length = Stroke / (1-CR) = 200mm / (1-0.19) = 200mm / .81 = 246.91mm
Round up to next increment of 5mm, therefore, Way Cover Extended Length = 250 mm

Way Cover Compressed Length = Way Cover Extended Length - Stroke = 250mm - 200mm = 50mm

Rail Length = Compressed Length + Extended Length + Distance Between Carriage Extremes
= 50mm + 250mm + 520mm = 820mm

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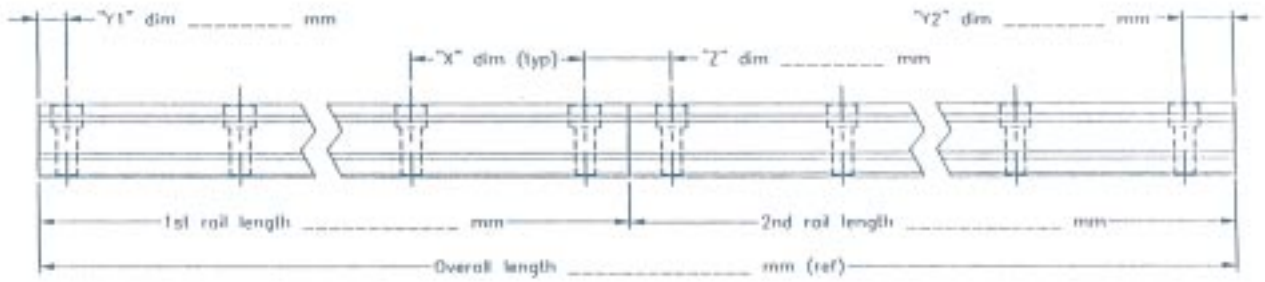
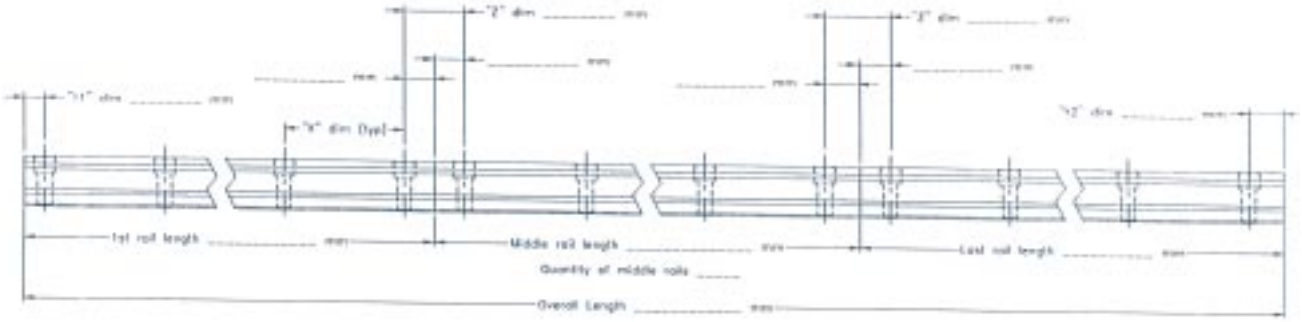
Specification sheet for the butting of 2 rails†

A butt joint will be require for rail lengths longer than the maximum shown in the chart below. If a butt joint is required, the 1st and 2nd rail lengths must each be less than the maximum shown. The “Y1” and “Y2” dimensions must be between the minimum and maximum shown below to avoid cutting into a mounting hole. The standard “Z” dimension should be used for best performance.



Specification sheet for the butting of 3 or more rails†



Linear Guide Product	“X” dim	Standard “Z” dim	Minimum “Y” dim	Maximum “Y” dim	Fastener size	Maximum length without a joint
AccuMini* 10	25	12.5	5	20	M2.5	1,500
AccuMini 15	40	20	7	33	M4	1,500
AccuMini 20	60	30	8	52	M5	3,000
AccuGlide* 15	60	30	8	52	M4	3,000
AccuGlide 20	60	30	8	52	M5	3,000
AccuGlide 25	60	30	8	52	M5	3,000
AccuGlide 30	80	40	10	70	M8	3,000
AccuGlide 35	80	40	10	70	M8	3,000
AccuGlide 45	105	52.5	13	92	M12	3,000
AccuGlide 55	120	60	15	105	M14	3,000
AccuMax* 35	40	40	10	30	M8	3,000
AccuMax 45	52.5	52.5	13	39.5	M12	3,000
AccuMax 55	60	60	15	45	M14	3,000
AccuMax 65*†	75	75	17	58	M16	3,000

† Contact Factory for Availability

For more information, or to place an order, please contact your local authorized Thomson distributor or Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at linearguides@thomsonmail.com.

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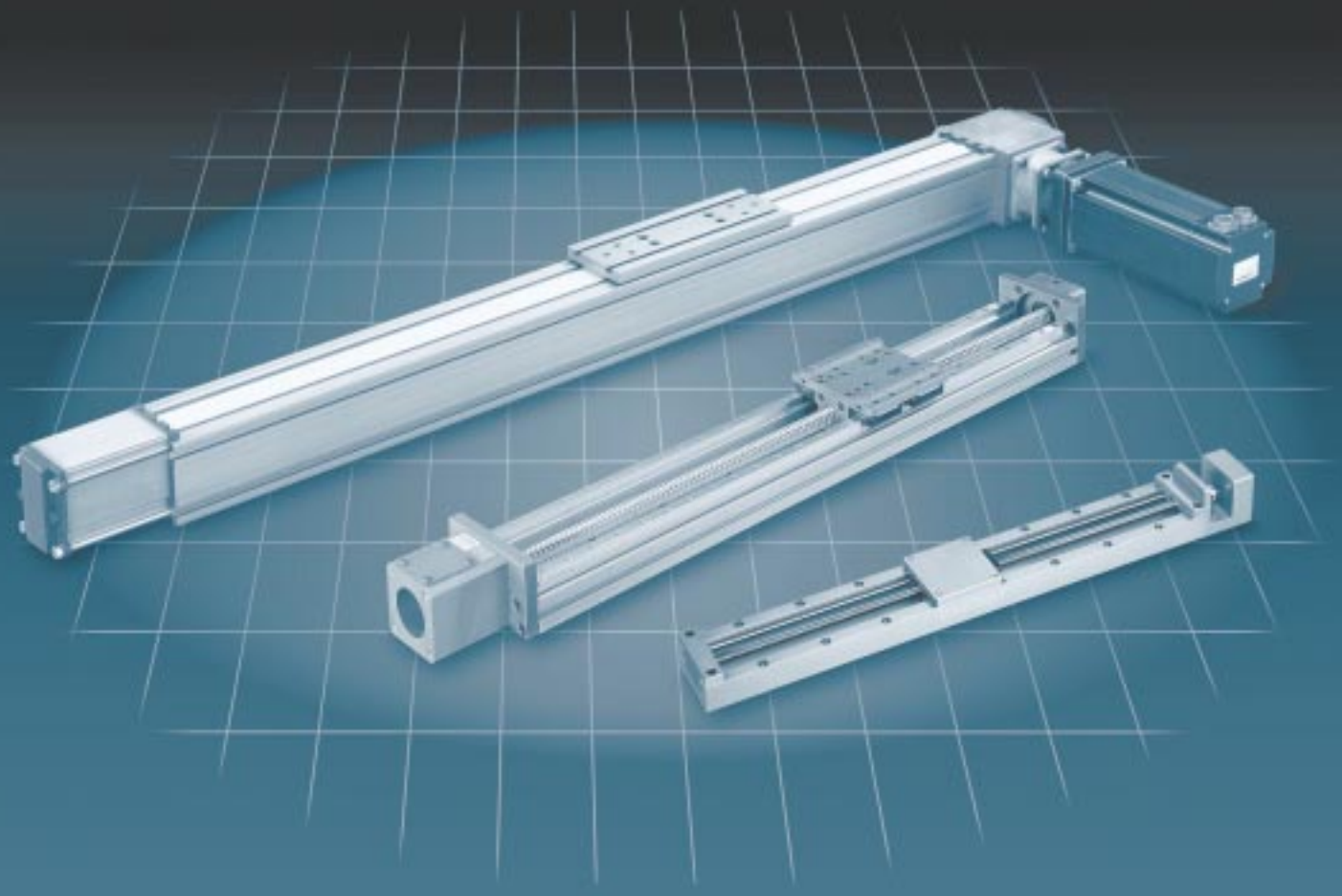

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- The most complete product line available

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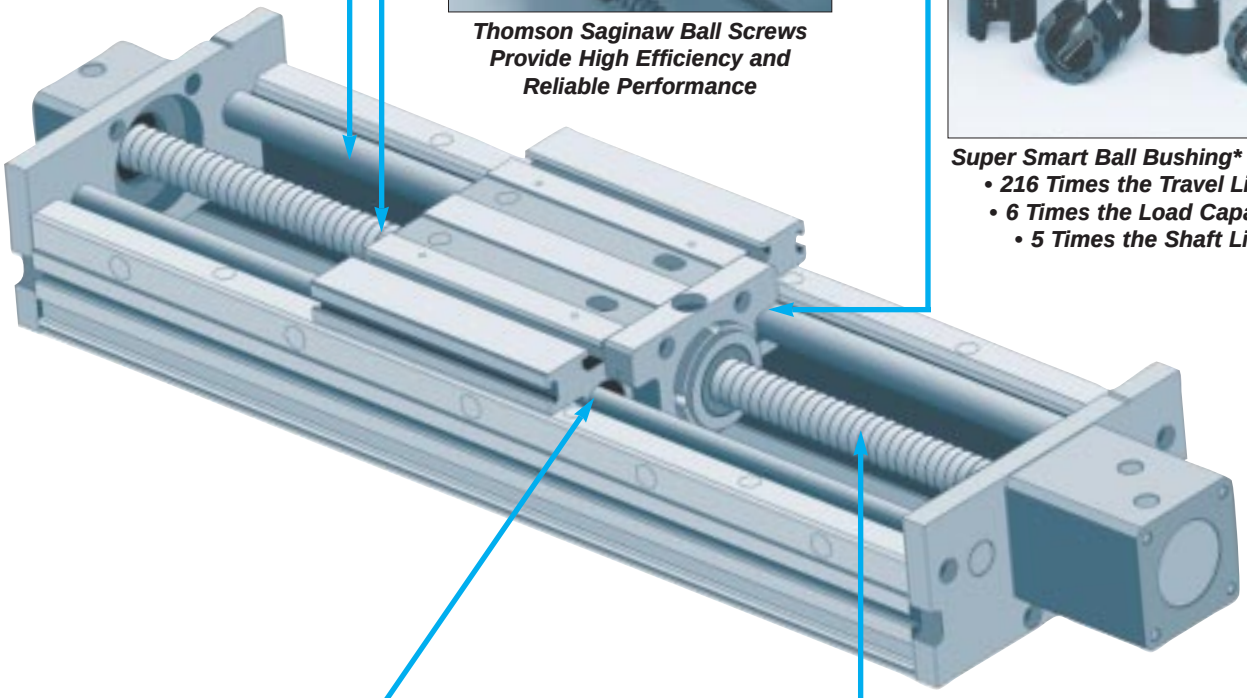
Thomson Saginaw Ball Screws Provide High Efficiency and Reliable Performance

Super Smart Ball Bushing bearing*
• 216 Times the Travel Life or
• 6 Times the Load Capacity
• 5 Times the Shaft Life



Thomson Precision Balls– Load Carrying Element for the Super Smart Ball Bushing Bearing

Thomson IBL Ball Screws for High Accuracy and Repeatability

Metric SuperSlide* 2RB Ball Screw Drive System

(See page 262 for more details)

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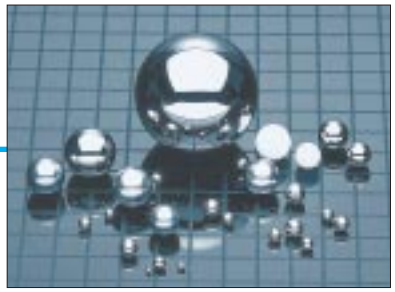
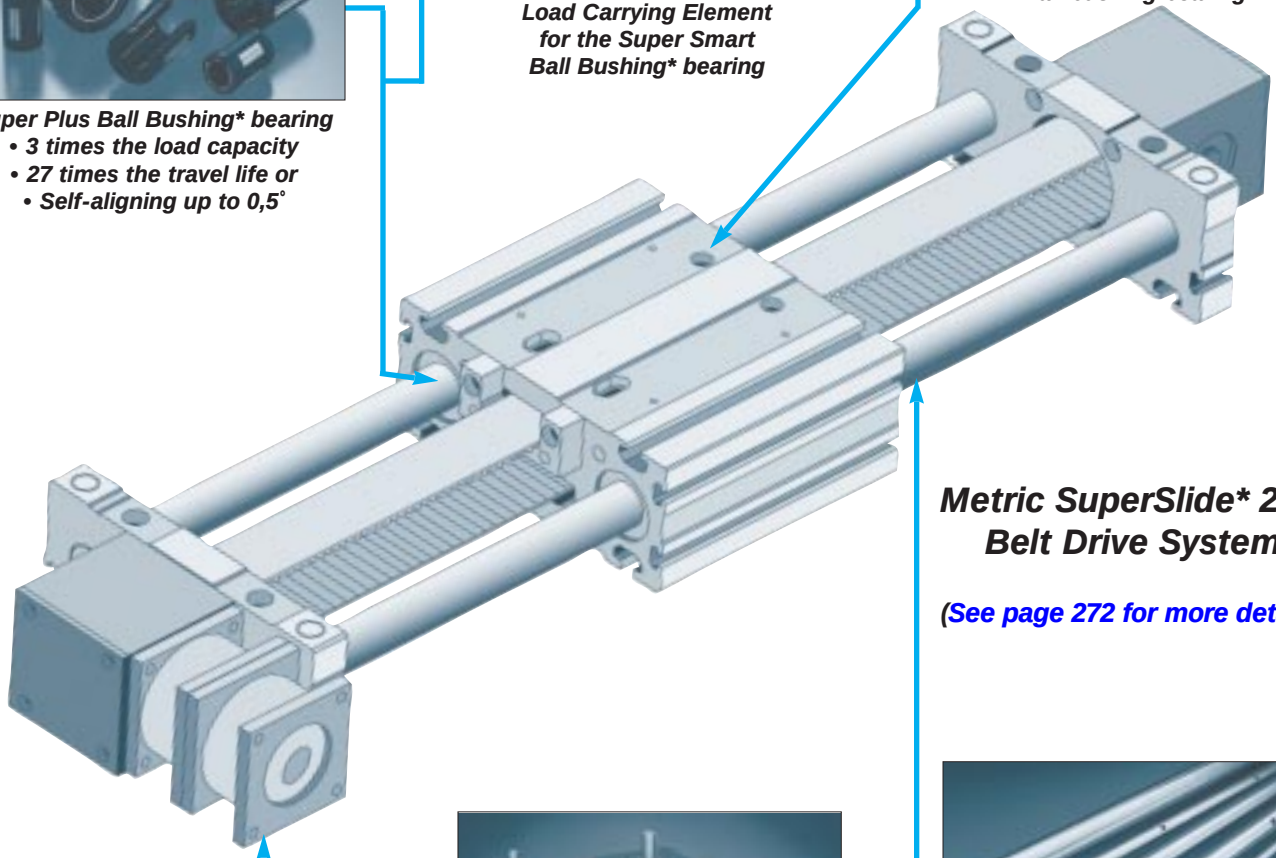
Super Plus Ball Bushing bearing*
• 3 times the load capacity
• 27 times the travel life or
• Self-aligning up to 0,5˚



Thomson Precision Balls—
Load Carrying Element
for the Super Smart
Ball Bushing bearing*

Thomson Nyliner Engineered*
Polymer Products Serve
as Lightweight and High Strength
Retainers for the Super Smart
Ball bushing bearing



Metric SuperSlide* 2NE
Belt Drive System

(See page 272 for more details)

*Thomson Micron NemaTRUE**
Planetary gearheads for Torque*
Multiplication and Inertia Matching

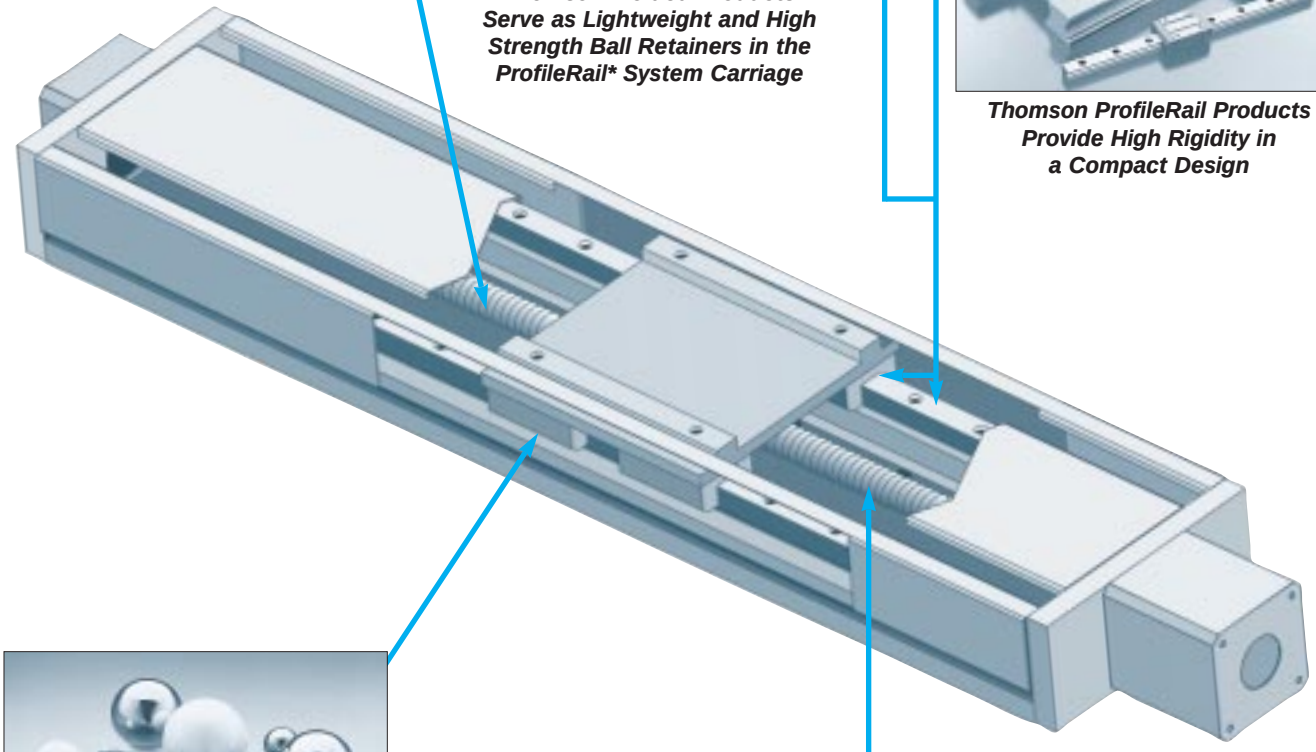
Thomson 60 Case Shafting*
*Provides Superior LinearRace**
Way Performance

Thomson Systems...Modular, Pre-engineered,

Thomson Saginaw Ball Screws Provide High Efficiency and Reliable Performance

Thomson Molded Products Serve as Lightweight and High Strength Ball Retainers in the ProfileRail System Carriage*

Thomson ProfileRail Products Provide High Rigidity in a Compact Design



Thomson Precision Balls— Load Carrying Elements for ProfileRail Systems and Ball Screw Assemblies

Thomson IBL Ball Screws for High Accuracy and Reliability

Metric AccuSlide 2HB Ball Screw Driven System*

See page 260 for more details

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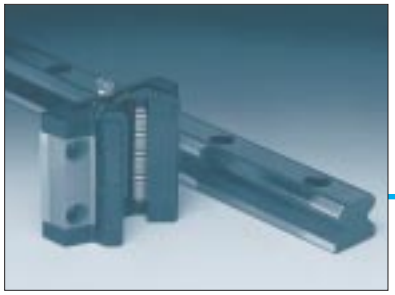
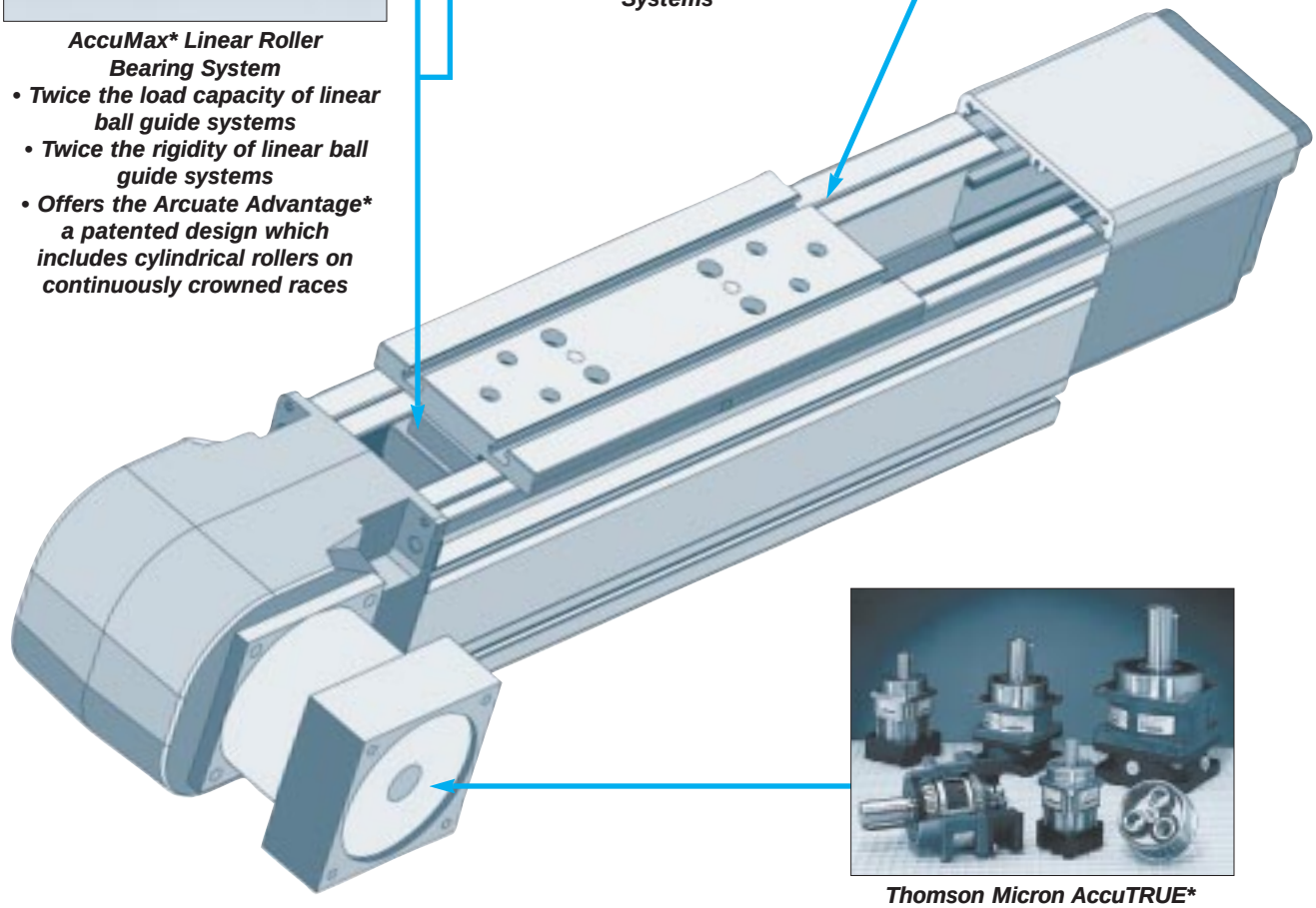


AccuMax Linear Roller Bearing System*
- *Twice the load capacity of linear ball guide systems*
- *Twice the rigidity of linear ball guide systems*
- *Offers the Arcuate Advantage* a patented design which includes cylindrical rollers on continuously crowned races*

Thomson Precision Balls—Load Carrying Elements for ProfileRail Linear Bearing Systems*

Thomson Nyliner Engineered Polymer Products Serve as Lightweight and High Strength Ball Retainers in the ProfileRail System Carriage*



Turbo Module* 2GE Belt Driven System

Thomson Micron AccuTRUE Planetary Gearheads for Torque Multiplication and Inertia Matching*

See page 279 for more details.

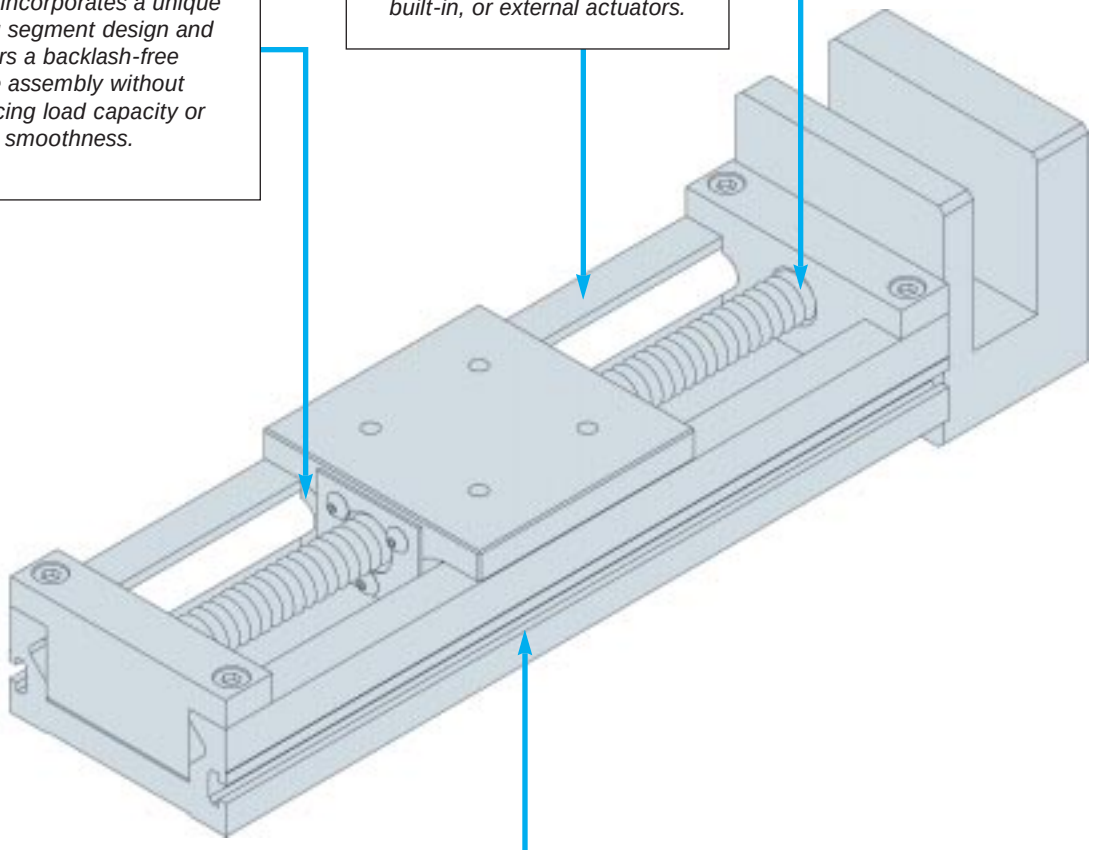
Thomson Systems . . . MicroStage*

Lead Screw Actuated Linear Motion System

Drive Options *A wide range of leads are available. A variety of motor control options are also available from Thomson. Integral motor adaptor and coupling are standard for easy connection of industry standard stepper and servo motors.*

Rugged, but lightweight construction *is manufactured from aluminum alloys to provide strength and rigidity. This unique design provides for lower inertia and higher performance versus either built-in, or external actuators.*

Smooth Precision Linear Motion *incorporates a unique bearing segment design and offers a backlash-free slide assembly without sacrificing load capacity or smoothness.*



See page 245 for more details.

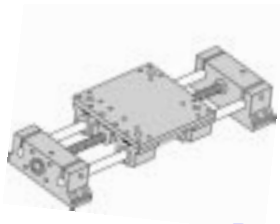
Flexible Mounting Configuration *MicroStage linear guides offer hole patterns and T-slots for easy interchange and simple X-Y mounting.*

For Application Engineering assistance contact the Thomson Technical HelpLine at 1-800-554-8466.

SuperSlide*
Ball Screw Actuated Systems

For End Supported Applications

2AB



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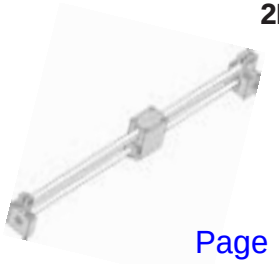
2BB



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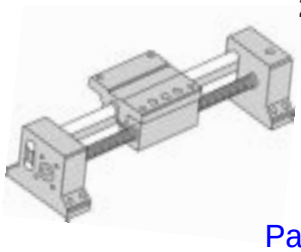
2CB



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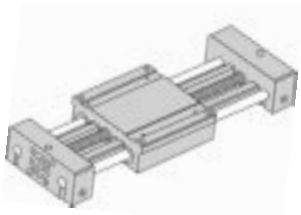
For Continuously Supported Applications

2DB



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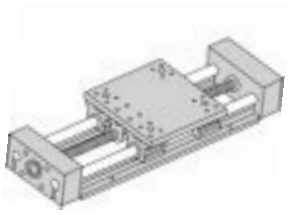
2EB



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Ball Screw Assemblies

Preloaded and Non-Preloaded

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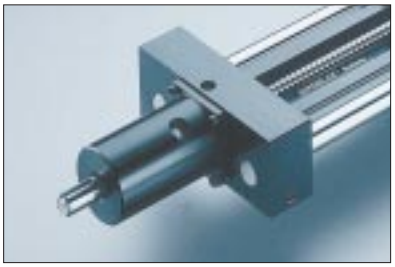
Accessories

Radial Mount Shaft Extender



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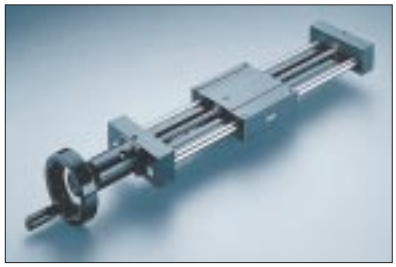
Hand Wheels



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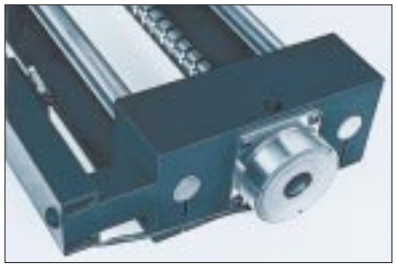
Brake Options



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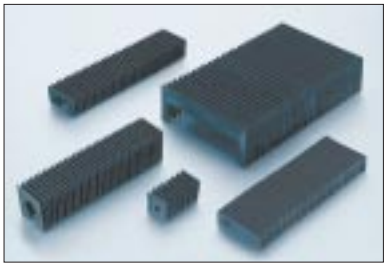
Protective Bellows



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Couplings and Motor Mounting Blocks

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Electric Brake Controller

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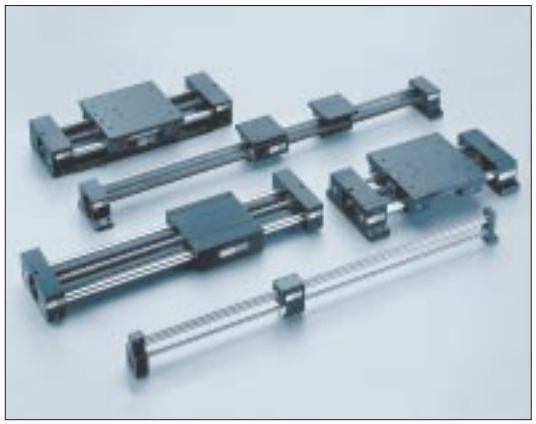


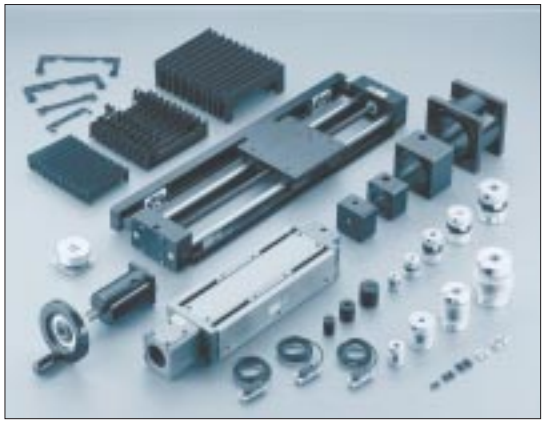
SuperSlide Ball Screw Actuated Systems

for End and Continuously Supported Applications

SuperSlide* Ball Screw Driven Systems are available in five configurations with over fifty different drive diameters and leads designed to meet the most stringent of applications. End supported systems are designed to be used when spanning or bridging a gap. Continuously supported systems are used when rigidity is required. Standard system positioning accuracy is less than .002 inch per foot and standard repeatability is less than .002 inch. Most SuperSlide systems are available with preloaded ball screw assemblies achieving repeatabilities as low as .0002 inch. All SuperSlide systems are available with polyurethane coated polyester bellows for corrosion resistant applications. Superslide systems are shipped in less than a week with special length systems shipped in less than two weeks. Available from over 1800 authorized distributor locations worldwide. (See page 221)

Ball Screw Assemblies

Ball Screw Assemblies are available in metric or inch sizes in over fifty diameters and lead combinations. Each Ball Screw Assembly consists of a ball screw, a ball screw nut with mounting surfaces and two mounting blocks equipped with sealed angular contact bearings. The motor end block is designed for mounting to NEMA 23, 34 and 42 standards. Inch size Ball Screw assemblies are available in sizes .500 x .200 through 1.500 x 1.875 in both preloaded and non-preloaded versions. Metric Ball Screw Assemblies are available in sizes 12 mm x 5 mm through 40 mm x 40 mm in both preloaded and non-preloaded versions. They are designed to easily mount to the carriage of Building Block System 1CC and can be modified to mount to any manually driven system. Standard Ball Screw Assembly positioning accuracy is better than .002 inch per foot (.025 mm per 300 mm) and standard repeatability is less than .002 inch (0.05 mm). Most Ball Screw Assembly Systems are available with preloaded ball screw assemblies achieving repeatabilities as low as .0002 inch (.005 mm). Standard Ball Screw Assemblies are shipped in less than a week with special length Assemblies shipped in less than two weeks. (See page 236)



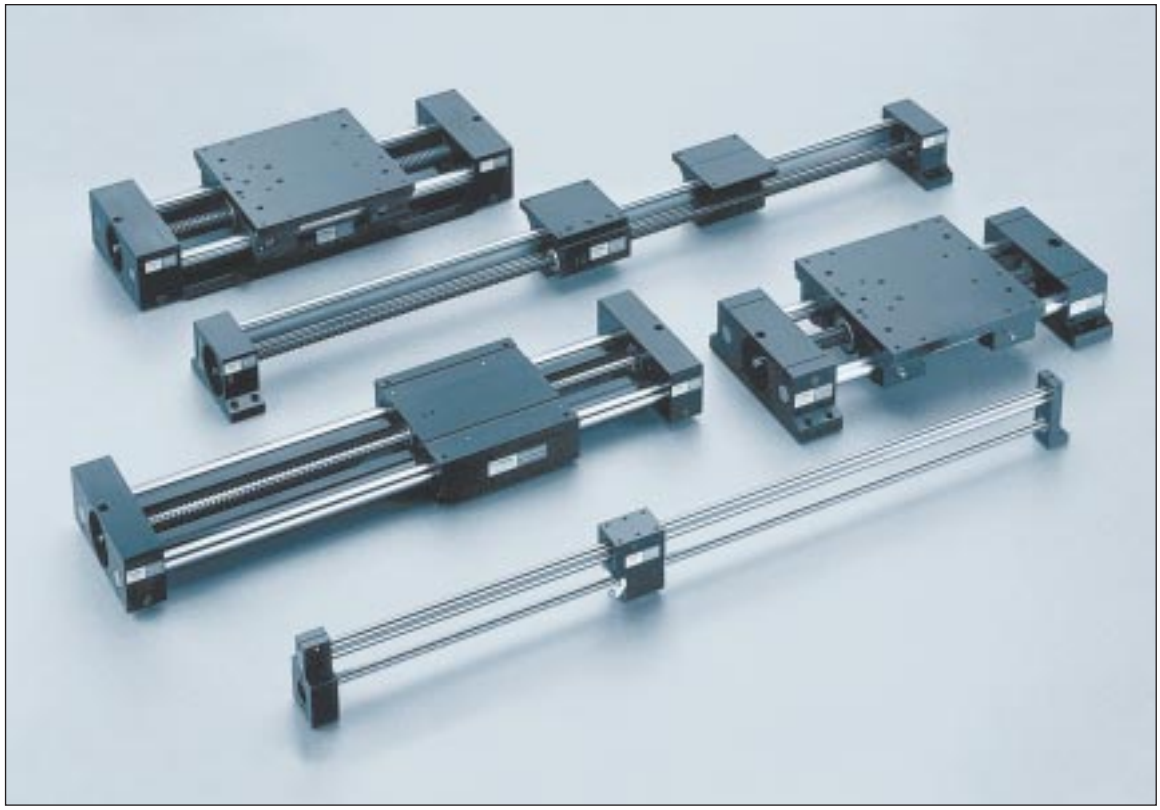
Accessories

Motor Couplings, and Motor Adaptor Blocks, Limit Switch Packages, Protective Shroud Covers, Radial Mount, Protective Bellows and Brake Options

The uniquely designed Radial Mount Ball screw shaft extender consists of an oversized shaft, a heavy duty radial bearing, a housing with a standard NEMA mounting face and an easy to mount coupling. The Radial Mount provides a dramatic increase in side or cantilever load capacity. All Protective Bellows are manufactured from a durable polyurethane coated polyester material which will protect your Linear Motion System from most contaminants or corrosive environments. The flexible convoluted folding construction reinforced with bonded integral stiffeners minimizes the reduction in system stroke length. Compact design eliminates work surface interference and assures uninterrupted movement of the carriage during operation. Brake Options are available in three versions. QuickSlide* 2DA Manual Brake System allows the system carriage to have infinite fixed positioning capability. The Electric Brake is used with all Superslide Systems and Ball Screw Assemblies. The Electric Brake is designed to engage when power is lost. The Electric Brake can be equipped with a controller option that interfaces directly with a PLC, switch, relay, computer, or controller output. Available from over 1800 authorized distributor locations worldwide. (See page 287)

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide
Ball Screw Actuated Systems



Thomson SuperSlide* Systems offer:

- A pre-engineered, pre-assembled linear motion system complete with prealigned LinearRace* ways and an integral ball screw assembly. A single part number specifies a complete system.
- A variety of highly efficient ball screw assemblies with diameters and leads designed to meet the most stringent motion control requirements.
- Available with the Super Smart Ball Bushing* bearings which provide up to twice the load capacity or eight times the travel life of standard Super Ball Bushing* bearing based systems.
- Positioning accuracy as low as .001 inch per foot with repeatability better than .0002 inch.
- An end supported or continuously supported version. End Supported Systems are used when spanning or bridging a gap. Continuously Supported Systems are used when rigidity is required.
- Easy integration to the TMC 1000 Motion Control options using the standard NEMA face mounted hole spacing. Motion control of exacting standards is realized immediately.
- Available with standard carriages that provide smooth and virtually frictionless linear movement.
- Four drilled and tapped holes for quick and easy mounting of the work piece to the carriage.
- Optional protective bellows, a black anodized coating, lubrication fittings and integral double acting seals for protection in corrosive environments.
- Travel speeds up to 10 ft/s with high positioning accuracy and repeatability.
- Available from over 1800 distributors worldwide.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

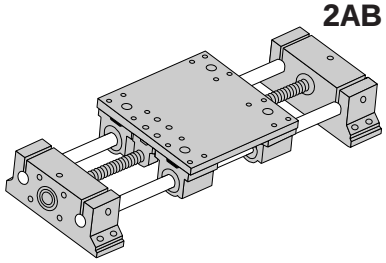
SuperSlide Solution Matrix

*SuperSlide**

Ball Screw Actuated Systems

For End Supported Applications

2AB

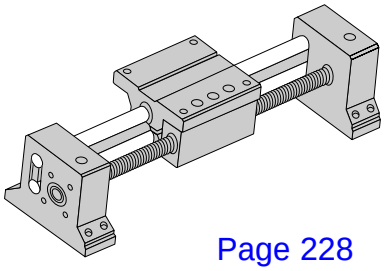


Page 224

2BB

Page 226

2CB



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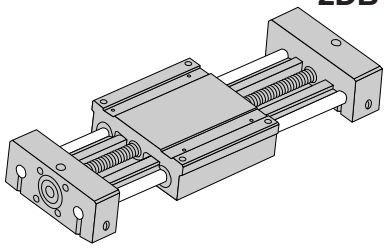
For Continuously Supported Applications

2DB



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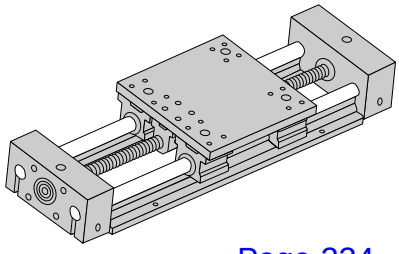
2EB



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For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* Ball Screw Actuated Systems Selection Criteria

Many variables influence the selection of a Linear Motion System. The best solution demands a thorough evaluation of the application; only then can design criteria be established. Issues such as envelope limitations, system load capacity, actuator load capacity, speed and acceleration, drive requirements, accuracy and repeatability, and operating environment are looked at from a broad perspective to determine the type of system, type of actuator, and whether the system need be built of special materials.

Typically, a ball screw actuated linear motion system is ideal for tight precision, highly repeatable, high load, moderate speed applications. Long lead ball screws are available for most style systems, but it is important to be mindful of the critical speed (first harmonic of the resonant ball screw whirling vibration) in longer stroke systems when attempting to reach higher linear velocities. If an application requires rigidity, then a fully supported system should be specified in lieu of an end supported type system. When zero backlash is required for the best repeatability, then a preloaded version ball screw assembly need be specified. For extremely heavy-duty applications, the AccuSlide (2HB series) system, with its use of ProfileRail type linear guides is adept at handling normal axis, overhung, or cantilever loads of increased magnitude. In environments that are corrosive or high temperature, special materials may be required and are available. Contact Application Engineering for details on special materials.

In order to determine the Ball Screw Actuated SuperSlide System that meets the needs of your application, it is first necessary to evaluate the following detail design criteria:

- System support requirements
- System stroke length
- Maximum allowable shaft deflection
- Required travel life
- Force on the most heavily loaded bearing
- Load correction factor
- Load/Life requirements - linear bearings
- Load/Life requirements - ball screws
- Motion (move) profile (velocity, acceleration)
- Maximum acceptable travel rate
- Torque considerations
- Size motor using torque/speed curves

A detailed explanation of the procedure for selecting a Ball Screw Actuated Linear Motion System is given on page 310 in the Engineering Support Section.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Superslide* 2AB

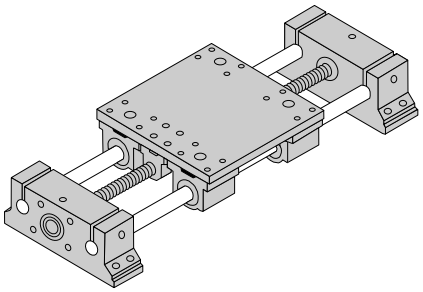
Double End Supported System

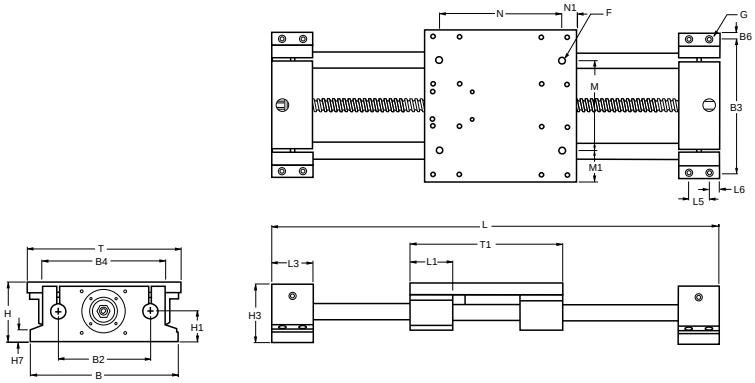
with Carriage and Integral Ball Screw Assembly

New... Super Smart

Ball Bushing* Bearing...

Now Available in Select Sizes





Maximum Stroke Length
is determined by subtracting the carriage length **(T1)** and 2x the end support length **(L3)** from the total system length.

Superslide 2AB with Carriage and Integral Ball Screw Assembly (Dimensions in inches)

Part Number	Nom. Dia.	Ball Screw Assembly	Accuracy in/ft	Repeatability in	L1	L3	L5	L6	T1	H	H1	H3	H6	H7
2AB-08-ARB-B	.50	12mm x 5mm **NP**	<.002	<.002	1.69	1.5	.75	.38	5.5	2.187	1.13	2.37	.38	.48
2AB-08-ARB-F		.500 x .200 **NP**	<.002	<.002										
2AB-08-ARB-V		.500 x .200 **P**	<.002	±.0002										
2AB-08-ARB-Q		.500 x .500 **P**	<.002	±.0002										
2AB-12-ARB-D	.75	20mm x 5mm **NP**	<.002	<.002	2.06	2.0	1.00	.50	7.5	2.937	1.50	2.70	.50	.60
2AB-12-ARB-G		.750 x .200 **NP**	<.002	<.002										
2AB-12-ARB-W		.750 x .200 **P**	<.002	±.0002										
2AB-12-ARB-L		.631 x 1.00 **P**	<.002	±.0002										
2AB-12-ARB-U		20mm x 20mm **NP**	<.002	<.002										
2AB-16-ARB-H		1.00 x .250 **P**	<.002	±.0002										
2AB-16-ARB-T	1.00	1.00 x 1.00 **P**	<.002	±.0002	2.81	2.2	1.20	.50	9.0	3.437	1.75	3.45	.50	.60
2AB-24-ARB-I		1.50 x .250 **P**	<.002	±.0002										
2AB-24-ARB-J	1.50	1.50 x 1.00 **P**	<.002	±.0002	4.00	2.8	1.5	.65	13.0	5.000	2.50	5.00	.75	.81
2AB-24-ARB-Z		1.50 x 1.875 **P**	<.002	±.0002										

< Indicates Less Than
P- Indicates preloaded ball screw.
NP- Indicates non-preloaded ball screw.
For Motion Control Options refer to the Motion Control Section, page 381.
To determine system **Torque Requirements** or Ball Screw travel life refer to the Engineering Support Appendix, see page 310.
For Bellows Way Covers, see page 291.
For Radial Mount Ball Screw Shaft Extenders, see page 292.
For Spring Set Electric Brakes, see page 304.

Thomson actuated systems utilize standard NEMA motor mounting configurations for each system size.

System	Motor Size
2AB-08	NEMA 23
2AB-12	NEMA 23
2AB-16	NEMA 34
2AB-24	NEMA 42

For motor coupling and motor mounting block specifications see the accessories section, page 288.

SuperSlide System 2AB Standard Lengths (Lengths in inches)

System	18	24	30	32	36	40	42	48	54	56	60	64	66	72	X	MAX
2AB-08	■	■	■		■										6	72
2AB-12	■	■	■		■		■	■							6	96
2AB-16	■	■	■		■		■	■	■		■		■	■	6	144
2AB-24		■		■		■		■		■		■		■	8	178

End supported systems are subject to shaft deflection based on load.
Each application must be checked for maximum allowable shaft deflection.

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in three to four weeks. Custom length systems are available and require four to six weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2AB Benefits:

- Used when spanning or bridging a gap.
- System is prealigned for quick and easy installation.
- Integrated Ball Screw Assembly with standard NEMA motor mounting.
- Single part number is all that is required to specify.
- Designed for medium loads.

SuperSlide 2AB Components:

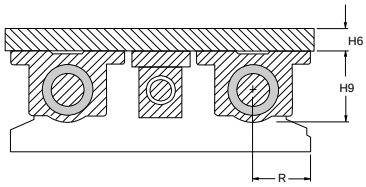
- 4 Super Smart* Ball Bushing* pillow blocks
- 2 60 Case* LinearRace* ways
- 2 Integrated double end supports with angular contact bearings
- 1 mounting carriage top

Specifying a Thomson System:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery).
4. Place your order with your local authorized Thomson distributor.

Part Numbering System

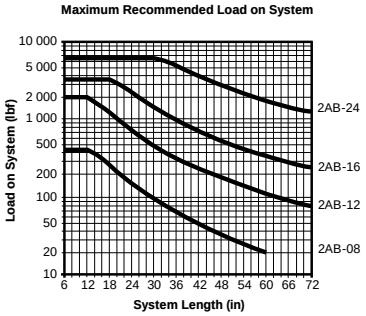
2AB-12-ARB-D L24

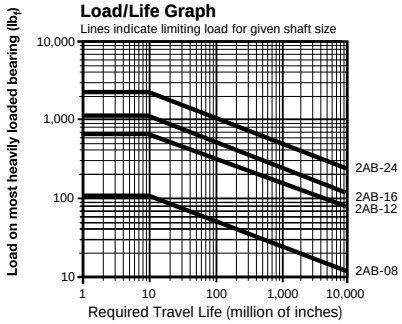
- System Designation
- Nominal Diameter
- Type of Bearing Block
- Type of Support
- Type of Carriage
- Ball Screw
- System Length



Determining the SuperSlide System for your application:

To determine the System which best meets your needs, calculate travel life vs. load based on your application criteria. Calculate the load on the most heavily loaded bearing and total travel life requirements from stroke length and duty cycle. Select the System with a rated load life above your plotted point.





SuperSlide 2AB with Carriage and Integral Ball Screw Assembly (Dimensions in inches)

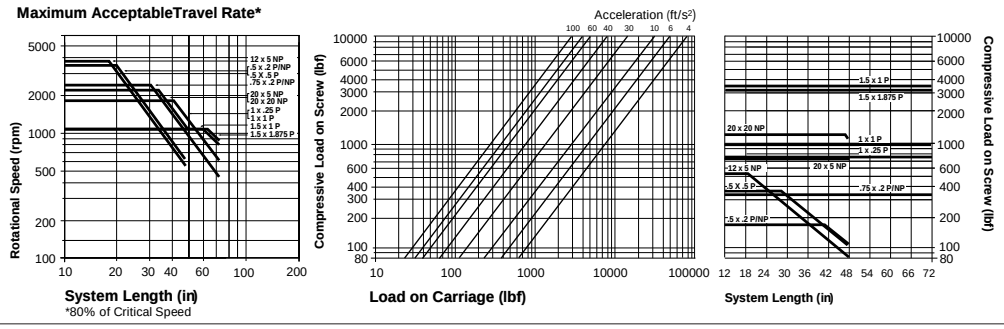
Part Number	H9	B	R	T	B2	B3	B4	B6	N	N1	M	M1	F	G		Max. Stroke Length
														Bolt	Hole	
2AB-08-ARB-B **2AB-08-ARB-F** **2AB-08-ARB-V** **2AB-08-ARB-Q**	1.25	5.3	1.025	5.5	3.25	4.8	4.25	.25	4.5	.50	3.25	1.13	1/4-20	#8	.19	L-(8.5)
2AB-12-ARB-D **2AB-12-ARB-G** **2AB-12-ARB-W** **2AB-12-ARB-L** **2AB-12-ARB-U**	1.75	7.2	1.350	7.5	4.50	6.7	6.0	.25	6.0	.75	4.5	1.50	5/16-18	#10	.22	L-(11.5)
2AB-16-ARB-T **2AB-16-ARB-H**	2.19	8.7	1.600	9.0	5.50	8.0	7.25	.35	7.0	1.00	5.5	1.75	3/8-16	1/4	.28	L-(13.4)
2AB-24-ARB-J **2AB-24-ARB-I** **2AB-12-ARB-Z**	3.25	13.0	2.500	13.0	8.00	12.0	10.75	.50	10.0	1.50	8.0	2.50	1/2-13	5/16	.34	L-(18.6)

The SuperSlide has a pre-designed **Maximum Acceptable Travel Rate**. Calculate maximum rotational speed (rpm) by dividing your required maximum linear speed (in/min) by the corresponding system ball screw lead (in/rev.). Enter the chart with the required system length and your maximum rotational speed. Select the system with a maximum acceptable travel rate curve above the plotted line.

Compressive load on the ball screw is a key factor in selecting the proper System. Using maximum load and acceleration requirements, plot compressive load on the left side of the chart. Using System length and compressive load. plot the maximum allowable compressive force on the right chart. Select the System with a rated maximum compressive force above your plotted point.

If you have questions concerning your system requirements, contact the Thomson **Systems** application engineering department.

Note: Ball screw should never exceed recommended critical speed.

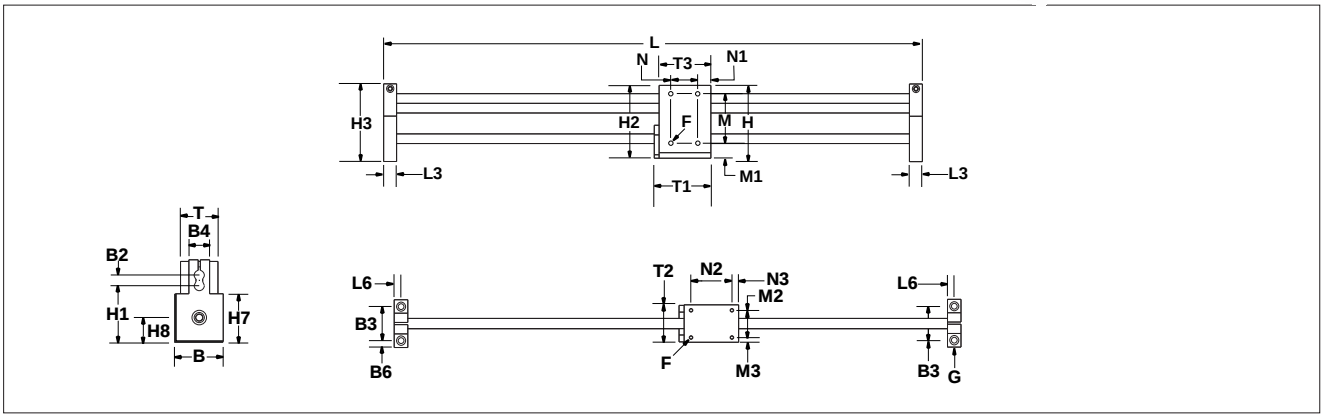


For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2BB

TwinRace* End Supported System

with Integrated Screw Actuator Assembly



SuperSlide 2BB TwinRace End Supported System with Integrated Screw Actuator Assembly (Dimensions in inches)															
Part Number	Nom. Dia.	Lead Screw	Accuracy in/ft	Repeatability in	H	T	T1	T2	T3	B	B2	B3	B4	B6	Motor size
2BB-06-0TH-AA	.375	.375 x .100 **P**	<.008	±.0002	2.938	1.38	2.19	1.38	2.0	1.75	.374	1.25	.75	.25	NEMA 17
2BB-06-0TH-AB		.375 x .250 **P**	<.008	±.0002											
2BB-06-0TH-AC		.375 x .500 **P**	<.008	±.0002											
2BB-06-0TH-AD		.375 x .750 **P**	<.008	±.0002											
2BB-06-0TH-AE		.375 x 1.00 **P**	<.008	±.0002											

< Indicates Less Than
P- Indicates preloaded lead screw.
For Motion Control Options refer to the Motion Control Section, see page 381.
To determine system **Torque Requirements** or Ball Screw travel life refer to the Engineering Support Appendix, page 310.
For information on Handwheels, see page 308.

SuperSlide System 2BB Standard Lengths (Lengths in inches)								
System	4	8	12	16	20	24	X	MAX
2BB-06	■	■	■	■	■	■	4	36

Maximum length for 2BB systems is 36". End supported systems are subject to shaft deflection based on load. Each application must be checked for maximum allowable shaft deflection.

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in two to three weeks. Custom length systems are available and require three to four weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2BB Benefits:

- Used when spanning or bridging a gap.
- Welded LinearRace* design provides torque resistance.
- Ultra compact design allows for minimal machine size.
- Integrated screw actuator assembly provides accurate movement of carriage.

SuperSlide 2BB Components:

- Universal integrated, carriage with 4 special open type Super Ball Bushing* bearings
- Welded Twin Shaft rail assembly
- 2 vertical end support blocks
- Integrated screw actuator assembly

Specifying a Thomson System:

1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.** Place your order with your local authorized Thomson distributor.

Part Numbering System

2BB-06-0TH-AA L24

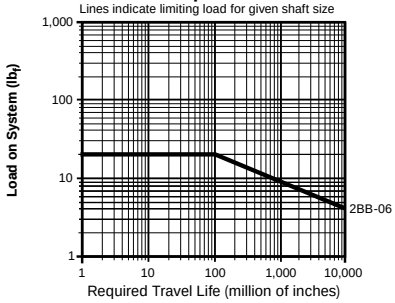
- System Designation
- Nominal Diameter
- Type of Support
- Type of Carriage
- Screw Type
- Screw Size
- System Length

Determining the SuperSlide System for your application:

To determine the System which best meets your needs, calculate travel life vs. load based on your application criteria. Calculate the load on the most heavily loaded bearing and total travel life requirements from stroke length and duty cycle. Select the System with a rated load life above your plotted point.

Load/Life Graph

Lines indicate limiting load for given shaft size



SuperSlide 2BB TwinRace* End Supported System with Integrated Screw Actuator Assembly (Dimensions in inches)

H1	H2	H3	H7	H8	L3	L6	M	M1	M2	M3	F	G	N	N1	N2	N3	Max. Stroke Length
2.057	2.81	3.00	1.75	.875	.625	.31	2.0	.41	1.00	.18	#16-32	#10	1.0	.50	1.5	.25	L-(3.44)

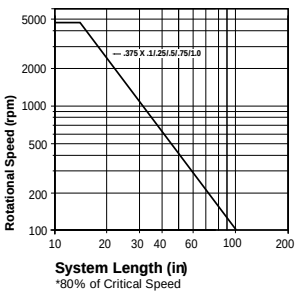
The SuperSlide has a pre-designed **Maximum Acceptable Travel Rate**. Calculate maximum rotational speed (rpm) by dividing your required maximum linear speed (in/min) by the corresponding system screw lead (in/rev.). Enter the chart with the required system length and your maximum rotational speed. Select the system with a maximum acceptable travel rate curve above the plotted line.

Compressive load on the lead screw is a key factor in selecting the proper System. Using maximum load and acceleration requirements, plot compressive load on the left side of the chart. Using System length and compressive load. plot the maximum allowable compressive force on the right chart. Select the System with a rated maximum compressive force above your plotted point.

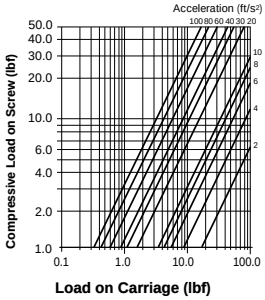
If you have questions concerning your system requirements, contact the Thomson **Systems** application engineering department.

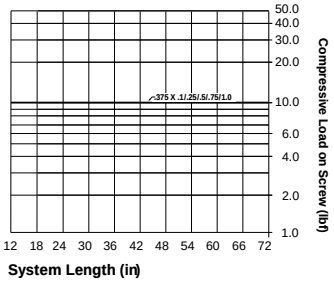
Note: Lead screw should never exceed recommended critical speed.

Maximum AcceptableTravel Rate*



*80% of Critical Speed





For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2CB

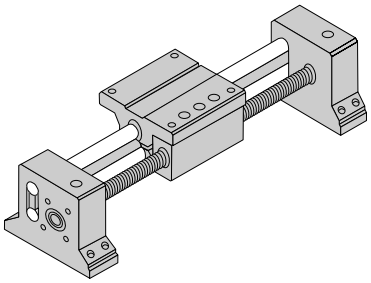
Twin Shaft Web End Supported System

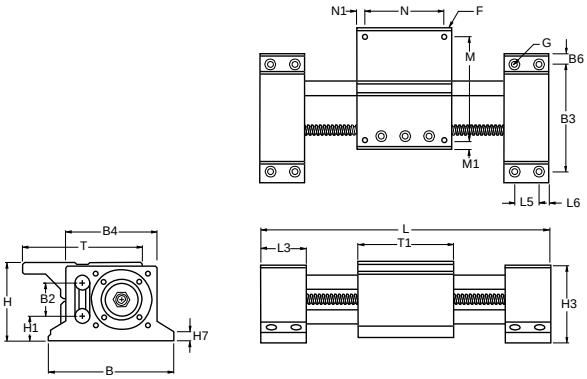
with Flanged Carriage and
Integral Ball Screw Assembly

New... Super Smart

Ball Bushing* Bearing...

Now Available in Select Sizes





Maximum Stroke Length
is determined by subtracting the carriage length **(T1)** and 2x the end support length **(L3)** from the total system length.

SuperSlide 2CB with Flanged Carriage and Integral Ball Screw Assembly (Dimensions in inches)

Part Number	Nom. Dia.	Ball Screw	Accuracy in/ft	Repeatability in	H	T	T1	B	R	B1	B2	B3	B4	B5	B6
2CB-08-OVA-B	.50	12mm x 5mm **NP**	<.002	<.002	2.750	3.5	3.5	4.25	1.125	4.87	1.13	3.62	3.12	1.5	.31
2CB-08-OVA-F		.500 x .200 **NP**	<.002	<.002											
2CB-08-OVA-V		.500 x .200 **P**	<.002	±.0002											
2CB-12-OVA-C	.75	16mm x 5mm **NP**	<.002	<.002	3.625	4.5	4.5	5.00	1.500	5.75	1.50	4.25	3.50	2.0	.38
2CB-16-OVA-G	1.00	.750 x .200 **NP**	<.002	<.002	4.625	6.0	6.0	6.62	2.000	7.62	2.00	5.62	4.87	2.5	.50
2CB-16-OVA-W	1.00	.750 x .200 **P**	<.002	±.0002											
2CB-16-OVA-D		20mm x 5mm **NP**	<.002	<.002											

< Indicates Less Than
P- Indicates preloaded ball screw.
NP- Indicates non-preloaded ball screw.
For Motion Control Options refer to the Motion Control Section, page 381.
To determine system **Torque Requirements** or Ball Screw travel life refer to the Engineering Support Appendix, page 310.
For Bellows Way Covers, see page 291.
For Radial Mount Ball Screw Shaft Extenders, see page 292.
For Spring Set electric brakes, see page 304.
For Handwheels, see page 308.

Thomson actuated systems utilize standard NEMA motor mounting configurations for each system size.

System	Motor Size
2CB-08	NEMA 23
2CB-12	NEMA 23
2CB-16	NEMA 34

For motor coupling and motor mounting block specifications see the accessories section, page 288

SuperSlide System 2CB Standard Lengths (Lengths in inches)

System	18	24	30	36	42	48	54	60	66	72	X	MAX
2CB-08	■	■	■								4	72
2CB-12	■	■	■	■	■	■					6	72
2CB-16	■	■	■	■	■	■	■	■	■	■	6	72

Maximum length of 2CB systems is 72". End supported systems are subject to shaft deflection based on load. Each application must be checked for maximum allowable shaft deflection.

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in three to four weeks. Custom length systems are available and require four to six weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2CB Benefits:

- Used when spanning or bridging a gap.
- Double LinearRace* and welded integral web design maximizes torque resistance and dramatically improves deflection characteristics.
- Prealigned for quick and easy installation.
- Designed to move medium loads with virtually frictionless travel.

SuperSlide 2CB Components:

- Universal integrated, carriage with 4 open type Super Smart Ball Bushing* bearings
- Twin welded 60 Case* LinearRace* with integral web
- 2 vertical double end supports with integral angular contact bearings
- 1 integrated ball screw assembly

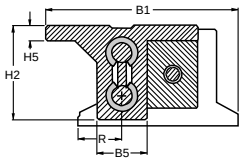
Specifying a Thomson System:

1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.** Place your order with your local authorized Thomson distributor.

Part Numbering System

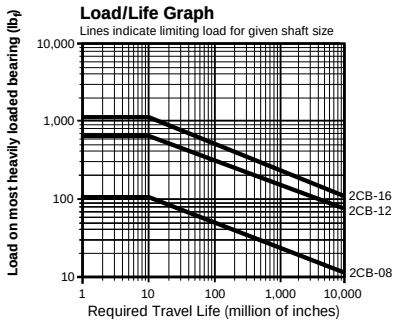
2CB-12-OVA-C L24

- System Designation
- Nominal Diameter
- Type of Support
- Type of Carriage
- Ball Screw
- System Length



Determining the SuperSlide System for your application:

To determine the System which best meets your needs, calculate **travel life vs. load** based on your application criteria. Calculate the load on the most heavily loaded bearing and total travel life requirements from stroke length and duty cycle. Select the system with a rated load life above your plotted point.



SuperSlide 2CB with Flanged Carriage and Integral Ball Screw Assembly (Dimensions in inches)

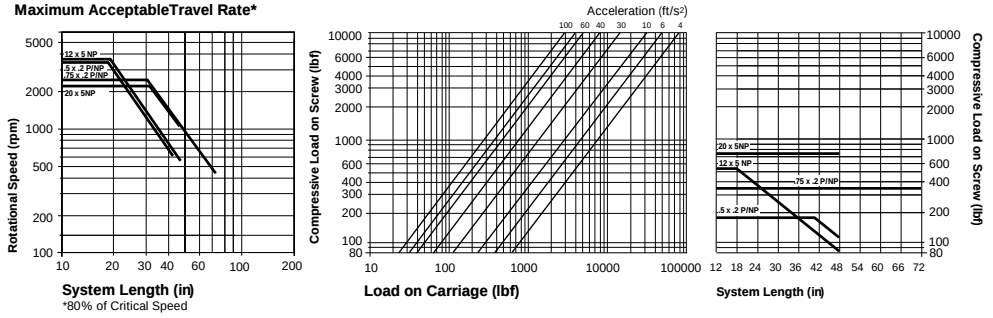
Part Number	L3	L5	L6	H1	H2	H3	H5	H7	N	N1	M	M1	F	G		Max. Stroke Length
														Bolt	Hole	
2CB-08-OVA-B **2CB-08-OVA-F** **2CB-08-OVA-V**	1.5	.88	.31	.88	2.62	2.62	.37	.44	3.00	.25	3.00	.25	#10-32	#10	.22	L-(6.5)
2CB-12-OVA-C	1.5	.75	.38	1.13	3.50	3.30	.50	.62	4.00	.25	4.00	.25	1/4-20	5/16	.34	L-(7.5)
2CB-16-OVA-G **2CB-16-OVA-W** **2CB-16-OVA-D**	2.0	1.00	.50	1.38	4.50	4.50	.62	.75	5.25	.38	5.25	.38	5/16-18	5/16	.34	L-(10.0)

The SuperSlide has a pre-designed **Maximum Acceptable Travel Rate**. Calculate maximum rotational speed (rpm) by dividing your required maximum linear speed (in/min) by the corresponding system ball screw lead (in/rev.). Enter the chart with the required system length and your maximum rotational speed. Select the system with a maximum acceptable travel rate curve above the plotted line.

Compressive load on the ball screw is a key factor in selecting the proper System. Using maximum load and acceleration requirements, plot compressive load on the left side of the chart. Using System length and compressive load. plot the maximum allowable compressive force on the right chart. Select the System with a rated maximum compressive force above your plotted point.

If you have questions concerning your system requirements, contact the Thomson **Systems** application engineering department.

Note: Ball screw should never exceed recommended critical speed.

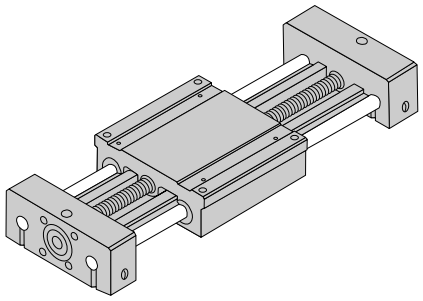


For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2DB

Continuously Supported System

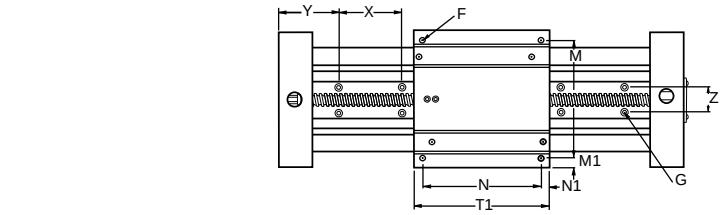
with Carriage and Integral Ball Screw Assembly

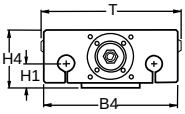


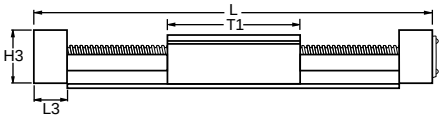
New... Super Smart

Ball Bushing* Bearing...

Now Available in Select Sizes







Maximum Stroke Length (without Bellows) is determined by subtracting the carriage length **(T1)** and 2x the end support length **(L3)** from the total system length.

SuperSlide 2DB with Carriage and Integral Ball Screw Assembly (Dimensions in inches)

Part Number	Nominal Diameter	Ball or Lead Screw (Dia. x Lead)	Accuracy in/ft	Repeatability in	T1	L3	H	H1	H2	H3	H4	B	R	T
2DB-08-OUB-AA	.50	.375 x .10 P	<.008	±.0002	4.5	1.25	1.625	.875	1.43	1.90	2.02	2.00	.500	4.600
2DB-08-OUB-AB		.375 x .25 P												
2DB-08-OUB-AC		.375 x .50 P												
2DB-08-OUB-AD		.375 x .75 P												
2DB-08-OUB-AE		.375 x 1.0 P												
2DB-12-OUB-B	.75	12mm x 5mm NP	<.002	<.002	6.0	1.50	2.125	1.125	1.93	2.37	2.62	2.63	.688	6.100
2DB-12-OUB-F		.500 x .200 NP	<.002	<.002										
2DB-12-OUB-V		.500 x .200 P	<.002	±.0002										
2DB-16-OUB-D	1.00	20mm x 5mm NP	<.002	<.002	7.5	2.00	2.625	1.375	2.45	3.37	3.49	3.25	.875	7.600
2DB-16-OUB-G		.750 x .200 NP	<.002	<.002										
2DB-16-OUB-W		.750 x .200 P	<.002	±.0002										

P- Indicates preloaded ball or lead screw. **NP**- Indicates non-preloaded ball screw.

For Motion Control Options refer to the Motion Control Section, see page 381.
To determine system **Torque Requirements** or Ball Screw travel life refer to the Engineering Support Appendix, see page 310.

SuperSlide 2DB with Carriage and Integral Ball Screw Assembly (Dimensions in inches)

Part Number	B2	B4	N	N1	M	M1	X	Y	Z	F	G		Max. Stroke Length
											Bolt	Hole	
2DB-08-OUB	3.0	4.5	4.00	.25	4.00	.31	4.0	2.0	.75	#10-32	1/4	.28	L-(7.0)
2DB-12-OUB	4.0	6.0	5.25	.37	5.25	.42	6.0	3.0	1.00	1/4-20	5/16	.34	L-(9.0)
2DB-16-OUB	5.0	7.0	6.75	.37	6.75	.42	6.0	3.0	1.25	5/16-18	3/8	.41	L-(11.5)

SuperSlide System 2DB Standard Lengths (Lengths in inches)

System	12	16	18	20	24	28	30	32	36	40	42	44	48	54	60	72	X	MAX
2DB-08	■	■		■	■	■		■	■	■		■		■	■		4	48
2DB-12			■		■		■		■			■		■			6	72
2DB-16			■		■		■		■			■		■	■		6	96

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in three to four weeks. Custom length systems are available and require four to six weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2DB Benefits:

- Used in continuously supported applications when rigidity is required.
- Pre-aligned and preassembled for immediate installation and use.
- Designed for medium to heavy loads.
- Integrated ball screw assembly with standard NEMA motor mounting.

SuperSlide 2DB Components:

- 1 Dual LinearRace* Rail Assembly
- 1 modular carriage with 4 open type Super Smart Ball Bushing* Pillow blocks.
- 1 integrated ball screw assembly

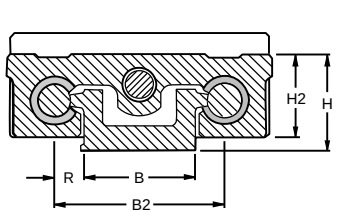
Specifying a Thomson System:

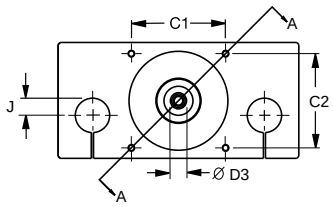
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.** Place your order with your local authorized Thomson distributor.

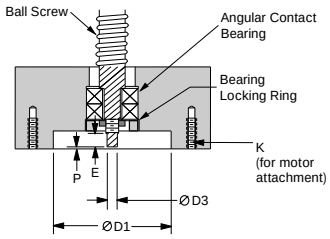
Part Numbering System

2DB-12-OUB-F L24

- System Designation
- Nominal Diameter
- Type of Bearing Block
- Type of Support
- Type of Carriage
- Ball Screw
- System Length





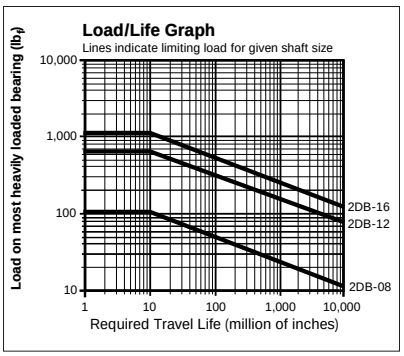


SuperSlide 2DB with Carriage and Integral Ball Screw Assembly (Dimensions in inches)								
Part Number	C1	C2	D1	D3	E	J	K	P
2DB-08-OUB-	1.75	1.25	1.50	.188	.300	.275	10-32	.05
2DB-12-OUB-	1.86	1.86	2.150	.250	.335	.300	10-32	.05
2DB-16-OUB-D	2.74	2.74	2.876	.375	.560	.425	10-32	.05

Maximum continuous length of support rails is 24". If longer continuous shaft support rails are required, contact the Thomson Systems application engineering department.

For Motor Adaptor and Motor Coupling information, see page 288.
For Bellows Way Covers, see page 291.
For Radial Mount Ball Screw Shaft Extenders, see page 292.
For Spring Set electric brakes, see page 304.
For Handwheels, see page 308.

Thomson actuated systems utilize standard NEMA motor mounting configurations for each system size.	
System	Motor Size
2DB-08	NEMA 23
2DB-12	NEMA 23
2DB-16	NEMA 23 or 34

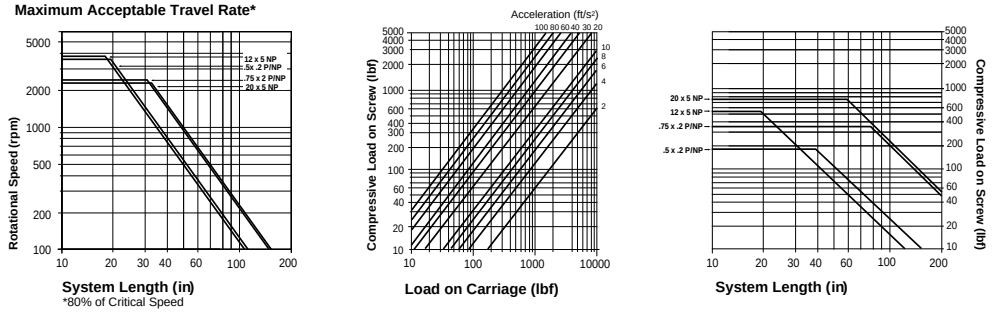


The SuperSlide has a pre-designed **Maximum Acceptable Travel Rate**. Calculate maximum rotational speed (rpm) by dividing your required maximum linear speed (in/min) by the corresponding system ball screw lead (in/rev.). Enter the chart with the required system length and your maximum rotational speed. Select the system with a maximum acceptable travel rate curve above the plotted line.

Compressive load on the ball screw is a key factor in selecting the proper System. Using maximum load and acceleration requirements, plot compressive load on the left side of the graph. Using System length and compressive load, plot the maximum allowable compressive force on the right chart. Select the System with a rated maximum compressive force above your plotted point.

If you have questions concerning your system requirements, contact the Thomson **Systems** application engineering department.

Note: Ball screw should never exceed recommended critical speed.



For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

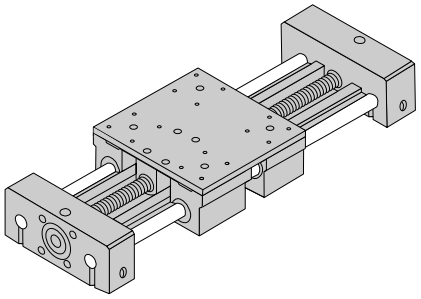
SuperSlide* 2DB

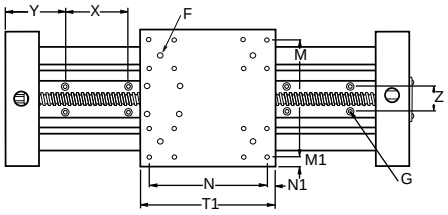
Continuously Supported System

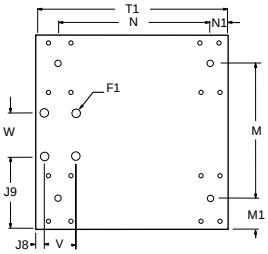
with Modular Carriage
and Integral Ball Screw Assembly

New... Super Smart Ball Bushing* Bearing...

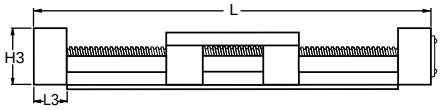
Now Available in Select Sizes







Maximum Stroke Length (without Bellows) is determined by subtracting the carriage length **(T1)** and 2x the end support length **(L3)** from the total system length.



SuperSlide 2DB with Modular Carriage and Integral Ball Screw Assembly (Dimensions in inches)

Part Number	Nominal Diameter	Ball Screw (Dia. x Lead)	Accuracy (in/ft)	Repeatability in	L3	H	H1	H2	H3	H4	B	R
2DB-12-JUB-Q	.75	.500 x .500 P	<.002	±.0002	1.5	2.562	1.125	2.44	2.37	2.62	2.63	.688
2DB-16-JUB-L	1.00	.631 x 1.000 P	<.002	±.0002	2.0	3.062	1.375	2.97	3.37	3.49	3.25	.875
2DB-16-JUB-R		.750 x .500 P	<.002	±.0002								

SuperSlide 2DB with Modular Carriage and Integral Ball Screw Assembly (Dimensions in inches)

Part Number	B2	B4	N	N1	M	M1	X	Y	Z	F	G		Max. Stroke Length
											Bolt	Hole	
2DB-12-JUB-Q	4.0	6.0	5.00	.50	4.5	.75	6.0	3.0	1.00	1/4-20	5/16	.34	L-(9.0)
2DB-16-JUB-L	5.0	7.0	6.50	.50	5.5	1.00	6.0	3.0	1.25	1/4-20	3/8	.41	L-(11.5)
2DB-16-JUB-R													

SuperSlide 2DB with Modular Carriage and Integral Ball Screw Assembly (Dimensions in inches)

Part Number	J8	J9	V	W	F1	T	T1	H6
2DB-12-JUB-Q	.44	2.53	1.00	.95	1/4-20	6.000	6.0	.50
2DB-16-JUB-L	.28	3.09	.50	1.33	1/4-20	7.500	7.5	.50
2DB-16-JUB-R								

P- Indicates preloaded ball screw.
For Motion Control Options refer to the Motion Control Section, page 381.
To determine system **Torque Requirements** or Ball Screw travel life refer to the Engineering Support Appendix, page 310.
For Motor Adaptor and Motor Coupling information, see page 288.

SuperSlide System 2DB Standard Lengths (Lengths in inches)

System	18	24	30	36	42	48	54	60	72	X	MAX
2DB-12	■	■	■	■	■	■				6	72
2DB-16	■	■	■	■	■	■	■	■	■	6	96

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in three to four weeks. Custom length systems are available and require four to six weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Superslide* 2DB Benefits:

- Used in continuously supported applications when rigidity is required.
- Pre-aligned and preassembled for immediate installation and use.
- Designed for medium to heavy loads.
- Integrated ball screw assembly with standard NEMA motor mounting.

Superslide 2DB Components:

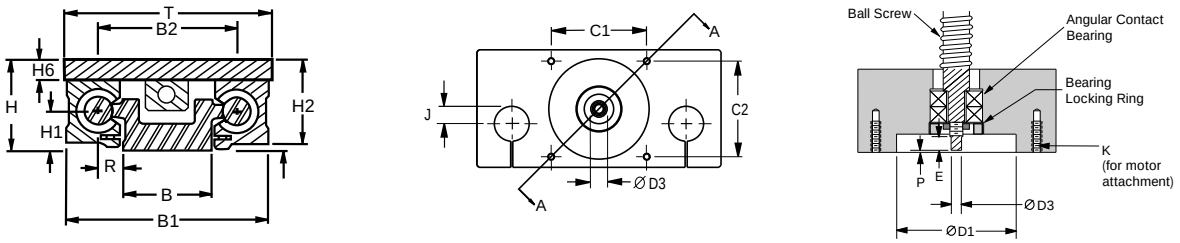
- 1 Dual LinearRace* Rail Assembly
- 1 modular carriage with 4 open type Super Smart Ball Bushing* Pillow blocks
- 1 integrated ball screw assembly

Specifying a Thomson System:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.** Place your order with your local authorized Thomson distributor.

Part Numbering System

2DB-12-JUB-Q L24

- System Designation
- Nominal Diameter
- Type of Bearing Block
- Type of Support
- Type of Carriage
- Ball Screw
- System Length



Superslide 2DB with Modular Carriage and Integral Ball Screw Assembly (Dimensions in inches)

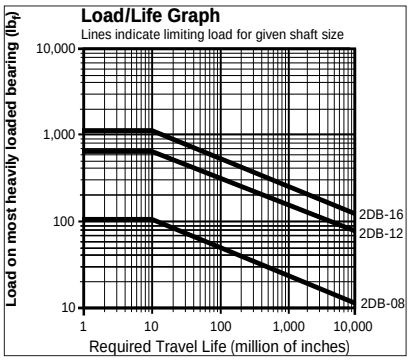
Part Number	C1	C2	D1	D3	E	J	K	P
2DB-12-JUB-Q	1.86	1.86	2.15	.250	.335	.300	10-32	.05
2DB-16-JUB-L	2.74	2.74	2.876	.375	.560	.425	10-32	.05
2DB-16-JUB-R								

Maximum continuous length of support rails is 24". If longer continuous shaft support rails are required, contact the Thomson Systems application engineering department.

For Bellows Way Covers, see page 291.
For Radial Mount Ball Screw Shaft Extenders, see page 292.
For Spring Set electric brakes, see page 304.
For Handwheels, see page 308.

Thomson actuated systems utilize standard NEMA motor mounting configurations for each system size.

System	Motor Size
2DB-12	NEMA 23
2DB-16	NEMA 23 or 34

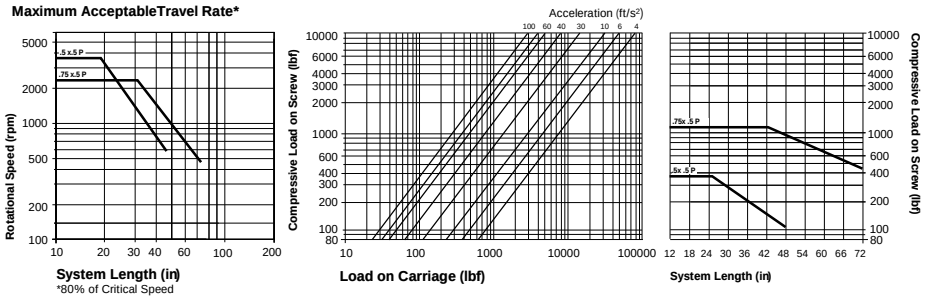


The SuperSlide has a pre-designed **Maximum Acceptable Travel Rate**. Calculate maximum rotational speed (rpm) by dividing your required maximum linear speed (in/min) by the corresponding system ball screw lead (in/rev.). Enter the chart with the required system length and your maximum rotational speed. Select the system with a maximum acceptable travel rate curve above the plotted line.

Compressive load on the ball screw is a key factor in selecting the proper System. Using maximum load and acceleration requirements, plot compressive load on the left side of the chart. Using System length and compressive load. plot the maximum allowable compressive force on the right chart. Select the System with a rated maximum compressive force above your plotted point.

If you have questions concerning your system requirements, contact the Thomson **Systems** application engineering department.

Note: Ball screw should never exceed recommended critical speed.

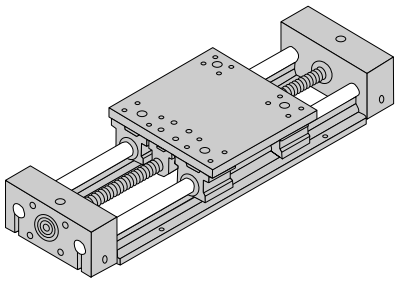


For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2EB

Double Continuously Supported System

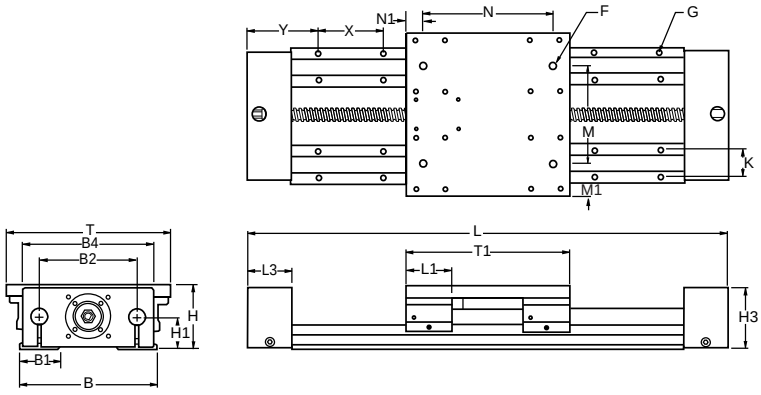
with Carriage and Integral Ball Screw Assembly



New... Super Smart

Ball Bushing* Bearing...

Now Available in Select Sizes



Maximum Stroke Length
is determined by subtracting the carriage length **(T1)** and 2x the end support length **(L3)** from the total system length.

SuperSlide 2EB with Carriage and Integral Ball Screw Assembly (Dimensions in inches)

Part Number	Nom. Dia.	Ball Screw	Accuracy in /ft	Repeatability	L1	L3	T1	K	H	H1	H3	H6	H7	H9
2EB-08-FTB-B	.50	12mm x 5mm **NP**	<.002	<.002	1.50	1.5	5.5	1.00	2.187	1.125	2.38	.38	.19	1.12
2EB-08-FTB-F		.500 x .200 **NP**	<.002	<.002										
2EB-08-FTB-V		.500 x .200 **P**	<.002	±.0002										
2EB-08-FTB-Q		.500 x .500 **P**	<.002	±.0002										
2EB-12-FTB-D	.75	20mm x 5mm **NP**	<.002	<.002	1.88	2.0	7.5	1.25	2.937	1.500	2.75	.50	.25	1.56
2EB-12-FTB-G		.750 x .200 **NP**	<.002	<.002										
2EB-12-FTB-W		.750 x .200 **P**	<.002	±.0002										
2EB-12-FTB-L		.631 x 1.00 **P**	<.002	±.0002										
2EB-12-FTB-U		20mm x 20mm **NP**	<.002	<.002										
2EB-16-FTB-H		1.00 x .250 **P**	<.002	±.0002										
2EB-16-FTB-T	1.00	1.00 x 1.00 **P**	<.002	±.0002	2.63	2.2	9.0	1.50	3.437	1.750	3.37	.50	.25	2.00
2EB-24-FTB-I		1.50 x .250 **P**	<.002	±.0002										
2EB-24-FTB-J	1.50	1.50 x 1.00 **P**	<.002	±.0002	3.75	2.8	13.0	2.25	5.000	2.500	4.87	.75	.38	2.94
2EB-24-FTB-Z		1.50 x 1.875 **P**	<.002	±.0002										

< Indicates Less Than ± Indicates Plus or Minus
P- Indicates preloaded ball screw.
NP- Indicates non-preloaded ball screw.
For Motion Control Options refer to the Motion Control Section, page 381.
To determine system **Torque Requirements** or Ball Screw travel life refer to the Engineering Support Appendix, see page 310.

For Bellows Way Covers, see page 291.
For Radial Mount Ball Screw Shaft Extenders, see page 292.
For Spring Set electric brakes, see page 304.
For Handwheels, see page 308.

Thomson actuated systems utilize standard NEMA motor mounting configurations for each system size.

System	Motor Size
2EB-08	NEMA 23
2EB-12	NEMA 23
2EB-16	NEMA 34
2EB-24	NEMA 42

For motor coupling and motor mounting block specifications see the accessories section, page 288.

SuperSlide 2EB Standard Lengths (Lengths in inches)

System	18	24	30	32	36	40	42	48	54	56	60	64	66	72	X	MAX
2EB-08	■	■	■		■		■	■							6	72
2EB-12	■	■	■		■		■	■							6	96
2EB-16	■	■	■		■		■	■	■		■		■	■	6	144
2EB-24		■		■		■		■		■		■		■	8	176

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in three to four weeks. Custom length systems are available and require four to six weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2EB Benefits:

- Used in continuously supported appli cations when rigidity is required.
- Integrated ball screw assembly with standard NEMA motor mounting.
- Pre-aligned and preassembled for immediate installation and use.
- Designed for medium to heavy loads.

SuperSlide 2EB Components:

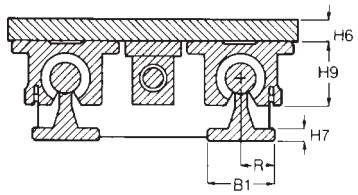
- 4 open type Super Smart Ball Bushing* pillow blocks
- 2 60 Case* LinearRace* Assemblies
- 2 integrated double end supports
- 1 mounting carriage top
- 1 integrated ball screw assembly

Specifying a Thomson System:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in inches, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.** Place your order with your local authorized Thomson distributor.

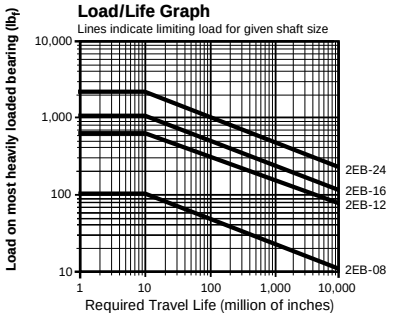
Part Numbering System

2EB-12-FTB-G L24

- System Designation
- Nominal Diameter
- Type of Bearing Block
- Type of Support
- Type of Carriage
- Ball Screw
- System Length



Determining the SuperSlide System for your application:
To determine the System which best meets your needs, calculate **travel life vs. load** based on your application criteria. Calculate the load on the most heavily loaded bearing and total travel life requirements from stroke length and duty cycle. Select the system with a rated load life above your plotted point.



SuperSlide 2EB with Carriage and Integral Ball Screw Assembly (Dimensions in inches)

Part Number	T	B	R	B1	B2	B4	N	N1	M	M1	X	Y	F	G		Max. Stroke Length
														Bolt	Hole	
2EB-08-FTB-B **2EB-08-FTB-F** **2EB-08-FTB-V** **2EB-08-FTB-Q**	5.5	4.75	.750	1.50	3.25	4.25	4.5	.50	3.25	1.13	4.0	2.0	1/4-20	#8	.19	L-(8.5)
2EB-12-FTB-D **2EB-12-FTB-G** **2EB-12-FTB-W** **2EB-12-FTB-L** **2EB-12-FTB-U**	7.5	6.25	.875	1.75	4.50	6.00	6.0	.75	4.50	1.50	6.0	3.0	5/16-18	#10	.22	L-(11.5)
2EB-16-FTB-H **2EB-16-FTB-T**	9.0	7.63	1.062	2.12	5.50	7.25	7.0	1.00	5.50	1.75	6.0	3.0	3/8-16	1/4	.28	L-(13.4)
2EB-24-FTB-I **2EB-24-FTB-J** **2EB-24-FTB-Z**	13.0	11.00	1.500	3.00	8.00	10.75	10.0	1.50	8.00	2.50	8.0	4.0	1/2-13	5/16	.34	L-(18.6)

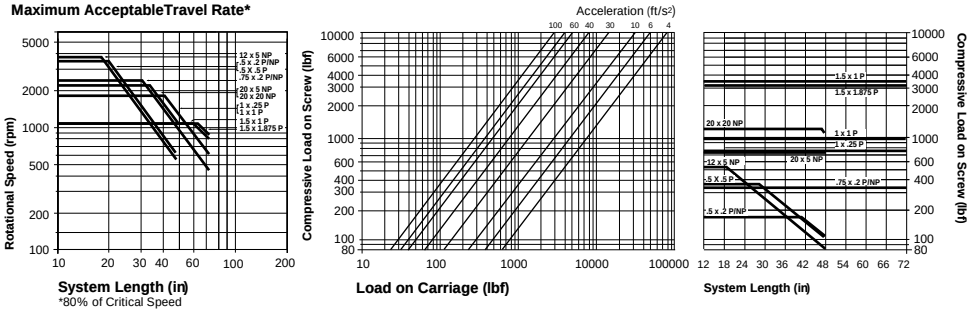
Maximum continuous length of support rails is 24". If longer continuous shaft support rails are required, contact the Thomson Systems application engineering department.

The SuperSlide has a pre-designed **Maximum Acceptable Travel Rate**. Calculate maximum rotational speed (rpm) by dividing your required maximum linear speed (in/min) by the corresponding system ball screw lead (in/rev.). Enter the chart with the required system length and your maximum rotational speed. Select the system with a maximum acceptable travel rate curve above the plotted line.

Compressive load on the ball screw is a key factor in selecting the proper System. Using maximum load and acceleration requirements, plot compressive load on the left side of the chart. Using System length and compressive load. plot the maximum allowable compressive force on the right chart. Select the System with a rated maximum compressive force above your plotted point.

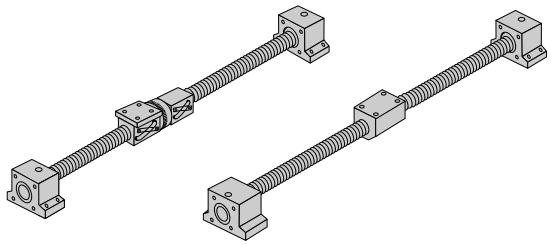
If you have questions concerning your system requirements, contact the Thomson **Systems** application engineering department.

Note: Ball screw should never exceed recommended critical speed.

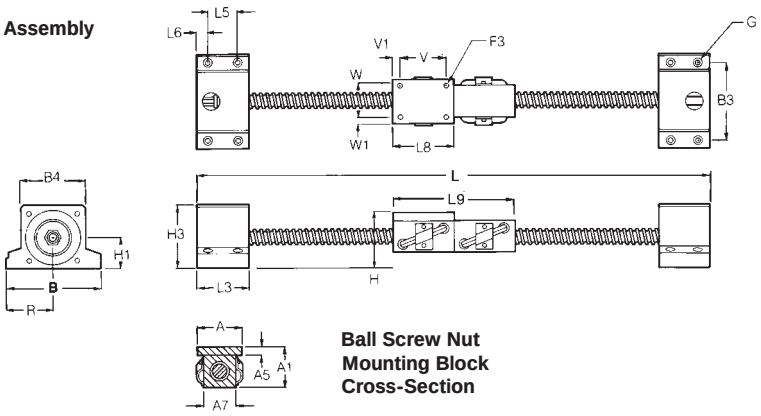


For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Ball Screw Assemblies



Ball Screw Assembly Preloaded



Ball Screw Nut Mounting Block Cross-Section

Preloaded Ball Screw Assemblies are predesigned to match the base to pillow block height of 1CA, 1CB and 1CC linear guides. To utilize Ball Screw Assemblies with other linear guides contact the Thomson Systems application engineering department.

Ball Screw Assemblies - (Preloaded) (Dimensions in inches)

Part Number	Ball Screw Dia. x Lead	L3	L5	L6	L8	H	H3	H1	B	B3	B4	R	G
BSA-08-Q	.500 x .500	1.50	0.75	0.38	2.25	1.812	2.35	1.200	3.80	3.20	2.50	1.900	0.19
BSA-12-L	.631 x 1.00	2.00	1.00	0.50		2.437	2.70	1.500	3.80	3.20	2.50	1.900	0.22
BSA-16-H	1.00 x .250	2.20	1.20	0.50	2.40	2.937	3.45	1.750	5.00	4.20	3.50	2.500	0.28
BSA-16-T	1.00 x 1.00												
BSA-24-I	1.50 x .250												
BSA-24-J	1.50 x 1.00	2.80	1.50	0.65	2.82	4.250	5.000	2.500	7.25	6.20	5.00	3.625	0.34
BSA-24-Z	1.50 x 1.875												

Ball Screw Assemblies - (Preloaded) (Dimensions in inches)

Part Number	Ball Screw Dia. x Lead	Y	V1	W	W1	F3	L9	A	A1	A5	A7	Motor Frame Size
BSA-08-Q	.500 x .500	1.00	0.25	0.95	0.14	#6-32		1.23	1.20	0.23	0.76	NEMA 23
BSA-12-L	.631 x 1.00	1.93	0.25	1.33	0.18	#8-32		1.69	1.80	-	-	NEMA 23
BSA-16-H	1.00 x .250	1.90	0.25	1.63	0.26	#10-32		2.15	2.03	0.44	2.12	NEMA 34
BSA-16-T	1.00 x 1.00											NEMA 34
BSA-24-I	1.50 x .250											NEMA 42
BSA-24-J	1.50 x 1.00	2.00	0.41	2.00	0.37	1/4-20		2.75	3.25	0.63	2.25	NEMA 42
BSA-24-Z	1.50 x 1.875											NEMA 42

Ball Screw Assembly Standard Lengths (Lengths in inches)

Part No.	18	24	30	32	36	40	42	48	54	60	64	66	72	80	84	88	96
BSA-08-Q	■	■	■		■		■	■									
BSA-12-L	■	■	■		■		■	■	■	■		■	■				
BSA-16-H	■	■	■		■		■	■	■	■		■	■		■		■
BSA-16-T	■	■	■		■		■	■	■	■		■	■		■		■
BSA-24-I		■		■		■		■			■		■	■		■	■
BSA-24-J		■		■		■		■			■		■	■		■	■
BSA-24-Z		■		■		■		■			■		■	■		■	■

Custom Lengths and Delivery Information

Systems ordered in standard lengths are typically shipped in three to four weeks. Custom length systems are available and require four to six weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For Motion Control Options, refer to the Motion Control Section, see page 381.
To determine system Torque Requirements of Ball Screw travel life refer to the Engineering Support Appendix, page 310.
For Motor Adaptor and Motor Coupling information, see page 288.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Ball Screw Assembly Benefits:

- Integrated ball screw, end support, motors and controllers provide complete drive capabilities.
- Designed to fit appropriately sized linear guides.
- Pre-engineered to meet your system needs.

Ball Screw Assembly Components:

- 1 Ball Screw Assembly with Ball Nut Mounting Surface (Preloaded or Non-Loaded)
- 2 Integrated End Supports with Angular Contact Bearings
- 1 Motor and Controller with integrated indexer (optional)

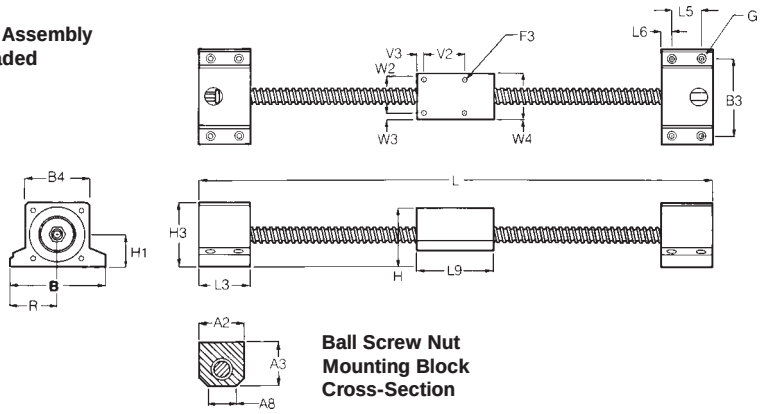
Specifying a Thomson Ball Screw Assembly:
1. Determine your drive requirements (torque, speed, acceleration, etc. **2.** Select the part number of the ball screw you have chosen. **3.** Place your order with your local authorized Thomson distributor.

Part Numbering System

BSA-12-B L24

- BSA: Type of Assembly
- 12: System Size
- B: Ball Screw
- L24: Length

Ball Screw Assembly Non-Preloaded



Ball Screw Nut Mounting Block Cross-Section

Non-Preloaded Ball Screw Assemblies are predesigned to match the base to pillow block height of 1CA, 1CB and 1CC linear guides.
To utilize Ball Screw Assemblies with other linear guides contact the Thomson Systems application engineering department.

Ball Screw Assemblies (Non-Preloaded) (Dimension in inches)

Part Number	Ball Screw Dia. x Lead	L3	L5	L6	L9	H	H3	H1	B	B3	B4	R	G
BSA-08-F	.500 x .200	1.50	0.75	0.38	2.25	1.812	2.35	1.200	3.80	3.20	2.50	1.90	0.19
BSA-12-G	.750 x .200	2.00	1.00	0.50		2.437	2.70	1.500	3.80	3.20	2.50	1.90	0.22
BSA-M12-B	12mm x 5mm	1.50	0.75	0.38	2.25	1.812	2.35	1.200	3.80	3.20	2.50	1.90	0.19
BSA-M20-D	20mm x 5mm	2.00	1.00	0.50	2.46	2.437	2.70	1.500	3.80	3.20	2.50	1.90	0.22

Ball Screw Assemblies (Non-Preloaded) (Dimension in inches)

Part Number	Ball Screw Dia. x Lead	A2	A3	A8	V2	V3	W2	W3	W4	F3
BSA-08-F	.500 x .200	1.19	1.23	0.48	1.00	0.25	0.95	0.12	1.19	#6-32
BSA-12-G	.750 x .200	1.69	1.80	0.72	1.93	0.25	1.33	0.18	1.69	#8-32
BSA-M12-B	12mm x 5mm	1.19	1.23	0.48	1.00	0.25	0.95	0.12	1.19	#6-32
BSA-M20-D	20mm x 5mm	1.69	1.80	0.72	1.93	0.25	1.33	0.18	1.69	#8-32

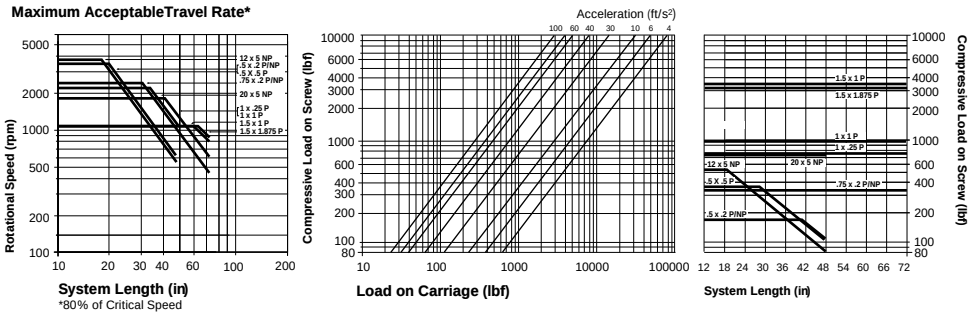
The SuperSlide has a pre-designed **Maximum Acceptable Travel Rate**. Calculate maximum rotational speed (rpm) by dividing your required maximum linear speed (in/min) by the corresponding system ball screw lead (in/rev.). Enter the chart with the required system length and your maximum rotational speed. Select the system with a maximum acceptable travel rate curve above the plotted line.

Compressive load on the ball screw is a key factor in selecting the proper System. Using maximum load and acceleration requirements, plot compressive load on the left side of the chart. Using System length and compressive load. plot the maximum allowable compressive force on the right chart. Select the System with a rated maximum compressive force above your plotted point.

If you have questions concerning your system requirements, contact the Thomson **Systems** application engineering department.

Note: Ball screw should never exceed recommended critical speed.

Maximum AcceptableTravel Rate*



For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Systems Applications

Application Analysis

Determining the system which best meets the demands of your application and provides optimum performance requires the evaluation of a number of variables. The accompanying form establishes basic criteria to initiate the analysis of your application. In addition, the Engineering Support Appendix has been designed with pertinent data and formulas used to specify the proper system for your application.

If you have questions or special needs a Thomson systems engineer can assist you in evaluating your application and recommending a system solution. Simply call 1-800-554-8466.

Application Description: ❑ Horizontal ❑ Vertical

System Part Number:

Quantity Required:

Weight of Load (lbs):

Space Requirements (LxHxW):

Stroke Length Requirements (in):

Support Requirements: ❑ End Supported ❑ Full Support

Maximum Velocity Requirements (in/s):

Maximum Acceleration Requirements (in/s^2):

Required Straightness of Travel Accuracy (in/ft):

Required Positioning Accuracy (in):

Required Repeatability (in):

Life Requirement (in):

Cycle (in/yr):

Environmental Considerations:

Other Design Criteria:

Production Time Frame:

Company:

Name:

Title:

Address:

City: State: Zip:

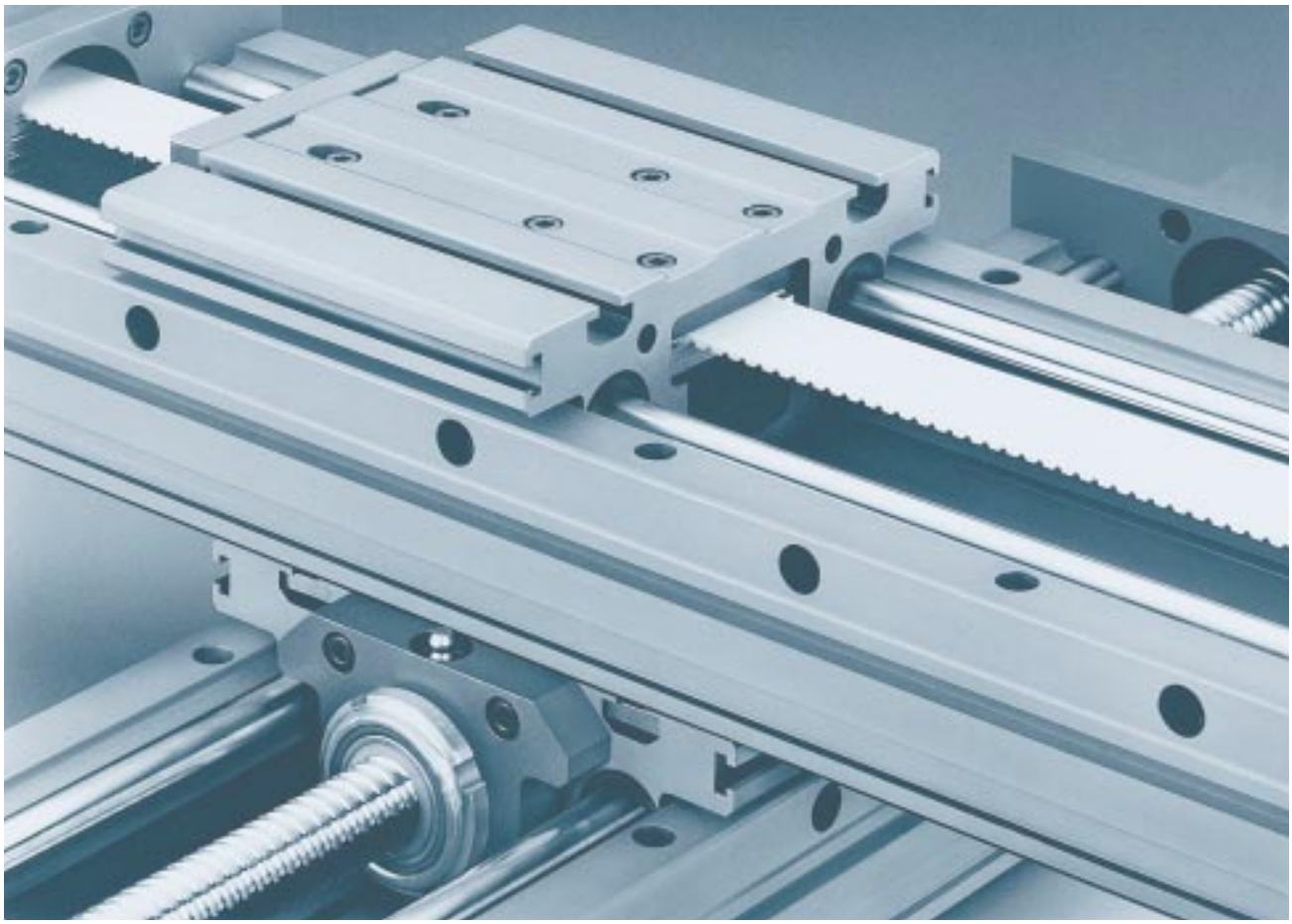
Telephone: Fax:

Please Fax your Application Analysis to 516-883-9039 Attention: Application Engineering.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Systems, Slides, and Stages

Metric Products



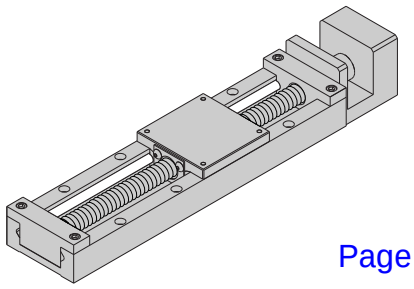
Engineering Selection Guide for Linear Motion System Solutions

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Metric Product Matrix

MicroStage*

Actuated Linear Motion System



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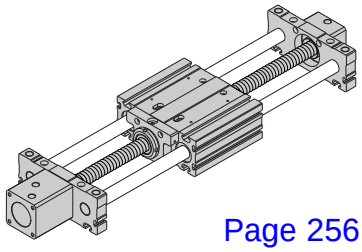
SuperSlide*

Ball Screw Actuated Systems

For End Supported Applications

2NB



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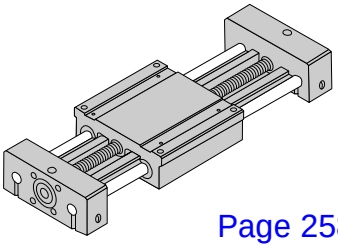
For Continuously Supported Applications

2DB



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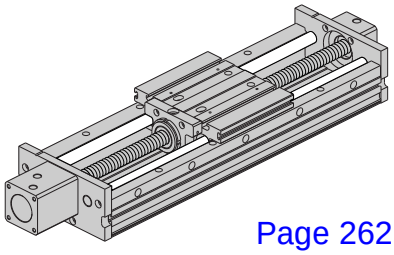
2RB



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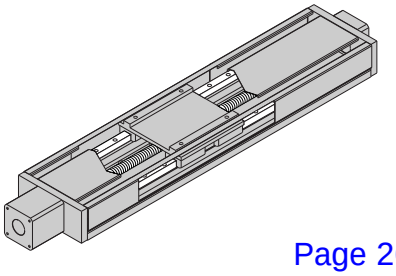
AccuSlide*

Ball Screw Actuated Systems

2HB



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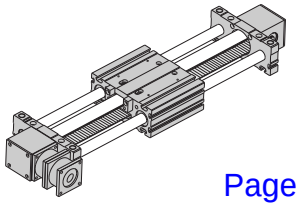
SuperSlide

Belt Actuated Systems

For End Supported Applications

2NE



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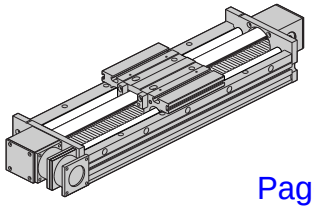
For Continuously Supported Applications

2RE



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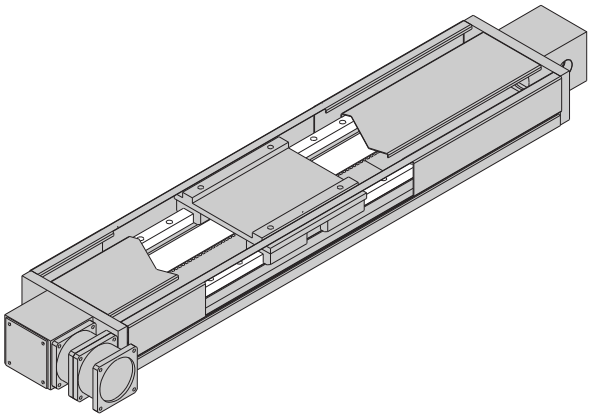
Metric Product Matrix

AccuSlide*
Belt Actuated Systems

2HE



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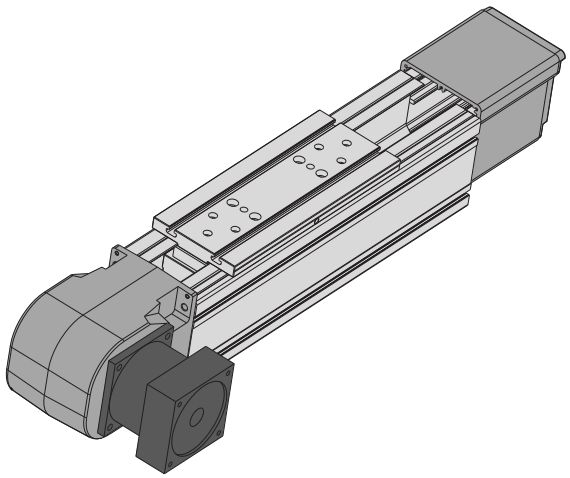
Turbo Module*
Belt Actuated Systems

2GE



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For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

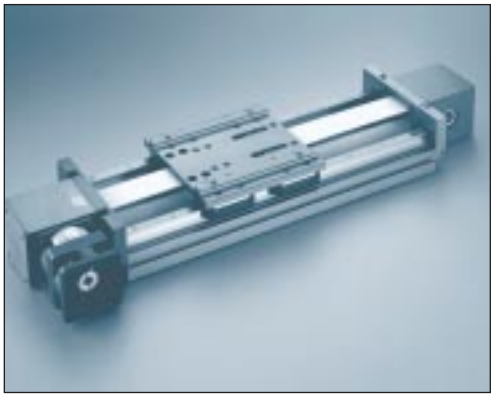
Product Selector

MicroStage* Actuated Linear Motion Systems for lightly loaded, smooth travel applications

The MicroStage system incorporates a unique bearing segment design that offers smooth anti-friction linear motion in a very compact envelope for applications where high precision in a tight space are absolute requirements. The lead screw actuated stage is available in two different nominal sizes of 25mm and 33mm overall carriage mounting surface height. The lead screw is offered in both inch and metric dimensions with leads ranging from .025 inches to 1.2 inches and 1mm to 3mm. The slide is standard with a motor coupling and motor adapter block. The motor mounting arrangements are to recognized industry standards or custom stepper or servo motors can be configured to meet your needs. A standardized bolt hole pattern in the base assembly and on the carriage top as well as T-slots on the size 33 system allow for easy interchange and simple X-Y mounting. A range of standard overall lengths for each size stage is offered, while custom lengths can be accommodated. (Refer to page 245).

AccuSlide* Ball Screw Actuated Systems for high load, tight precision continuously supported applications

AccuSlide Ball Screw Actuated Systems are continuously supported linear motion systems complete with pre-aligned ProfileRail* linear guides and an integral ball screw assembly. The load bearing members on the AccuSlide system are the AccuGlide* linear guides which provide high precision, tight tolerance positioning on a modular base assembly with T-slot mounting. A uniquely designed carriage provides a bolt hole mounting pattern on pedestal table mounts which allow for an optional shroud cover that protects the moving elements from contamination with no stroke reduction and provides easy workpiece mounting. Integral ball screw assemblies are available in a wide range of diameters and leads for the most stringent motion control requirements. The motor end block is designed for industry standard servo motors to adapt directly to the system with only the use of a shaft coupling. Once the AccuSlide system has been selected, simply specify a standard Thomson AXI-PAK* motion control package for a complete turnkey motion control solution. (Refer to page 260).

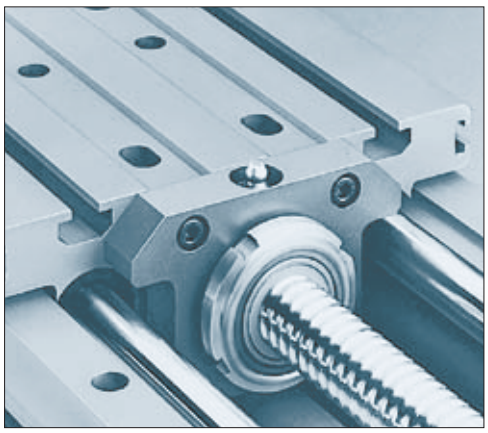


AccuSlide Belt Driven Systems for high load, high speed continuously supported applications

AccuSlide Belt Driven Systems are continuously supported linear motion systems complete with pre-aligned ProfileRail linear guides and an integral belt drive assembly. The load bearing members on the AccuSlide system are the AccuGlide linear guides which provide high precision, tight tolerance positioning on a modular base assembly with T-slot mounting. A uniquely designed carriage provides a bolt hole mounting pattern on pedestal table mounts which allow for an optional shroud cover that protects the moving elements from contamination with no stroke reduction and provides easy workpiece mounting. A Thomson Micron NemaTRUE* Planetary* gearhead provides speed reduction, torque multiplication and inertia matching and mounts directly to industry standard servo motors. Once the AccuSlide system has been selected, simply specify a standard Thomson AXI-PAK motion control package for a complete turnkey motion control solution. (Refer to page 274).

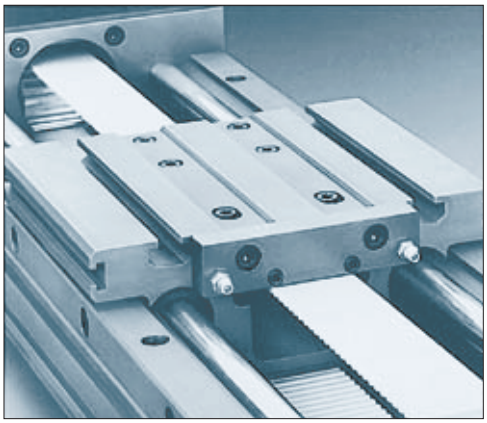
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Product Selector



SuperSlide* Ball Screw Actuated Systems for End and Continuously Supported Applications

SuperSlide Ball Screw Actuated Systems are available in an end and continuously supported version complete with prealigned LinearRace* ways and an integral ball screw assembly. Uniquely designed carriages and LinearRace assemblies offer modularity with integrated T-slots for easy assembly and work piece mounting. All SuperSlide Ball Screw Actuated Systems can be mounted in any direction and are standard with Super Smart Ball Bushing* bearings which provide up to 216 times the travel life of conventional linear bearing based systems. A uniquely designed lubrication system is available for all SuperSlide systems which disperses the proper amount of lubrication to the system. Integral ball screw assemblies are available in a wide range of diameters and leads and are designed to meet the most stringent motion control requirements. Once the SuperSlide system has been selected simply specify a standard Axi-Pak* Motion Control package and your motion control needs are complete. (Refer to page 262).

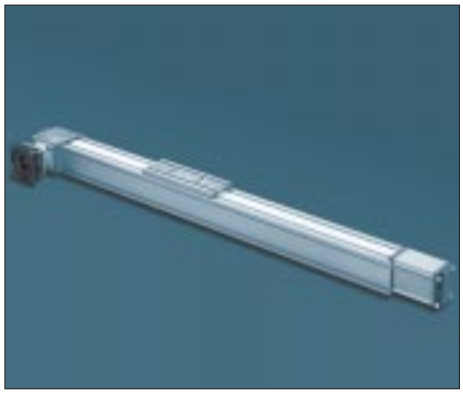


SuperSlide Belt Actuated Systems for End and Continuously Supported Applications

This belt drive system is available with uniquely designed carriages and LinearRace assemblies which offer modularity with integral T-slots for easy assembly and work piece mounting. The steel cable reinforced tooth belt provides high speed and acceleration combined with good positioning accuracy and repeatability. All SuperSlide Belt Actuated Systems offer the Super Smart Ball Bushing bearings which provide up to six times the load capacity of conventional linear bearing based systems. An anodized coating, double acting integral wipers combined with a uniquely designed lubrication system maximizes system reliability. A standard precision gearhead provides needed inertia matching and torque multiplication. The gearheads True Planetary* design provides thrust capacity up to 1400 Nm at speeds as high as 4000 RPM. To specify all that is required is the system diameter and length. Once the SuperSlide Belt Actuated system has been selected, simply specify the standard Axi-Pak Motion Control package that meets your application needs. (Refer to page 276).

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Product Selector



Turbo Module Belt Drive System*

The Thomson Turbo Module combines the high load capacity of ProfileRail* Linear bearing systems with high speed belt actuation. The Turbo Module is designed to meet the most stringent motion control requirements. The steel cable reinforced toothed belt in the Turbo Module provides rapid motion control with quick responsiveness and high acceleration. All Turbo Modules are designed with T-slots on the carriage top for easy mounting of the workpiece. T-slots down three sides of the Turbo Module allow for easy system mounting as well as multi-axis capability. Each Turbo Module is designed using the new advanced Thomson ProfileRail* Linear bearing technology. Compared to other belt driven systems, the Turbo Module provides a dramatic increase in dynamic load capacity, moment loading and travel life. For maximum system performance, the Turbo Module comes standard with a precision gearhead. This True Planetary designed gearhead provides strong torque multiplication and inertia matching capabilities that are commonly required in belt drive applications. Available in sizes 15, 25 and 35 with load capacities up to 60 kN. Available from over 1800 authorized distributor locations worldwide. (Refer to page 279).

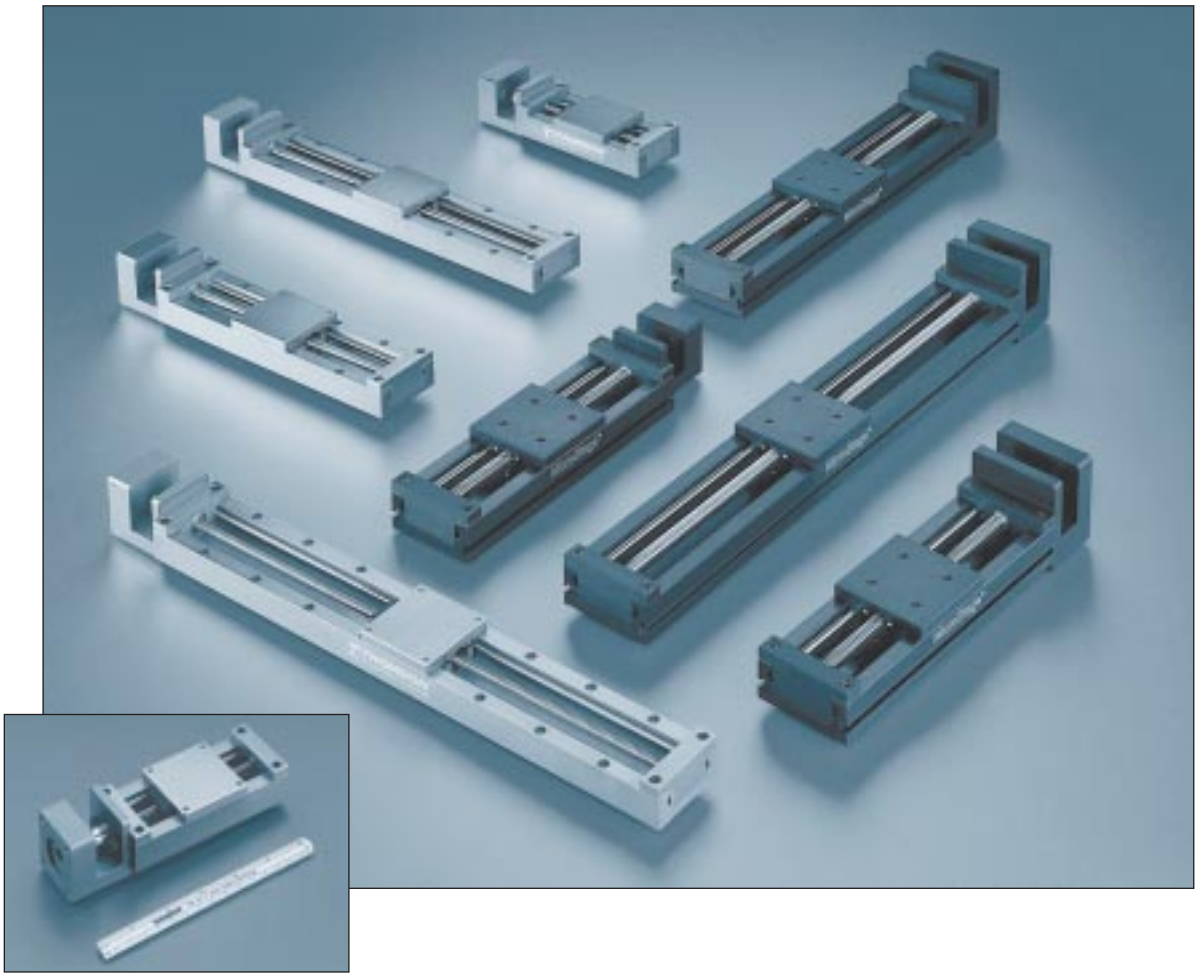
Accessories
Radial Mount, Protective Bellows and Brake Options

The uniquely designed Radial Mount Ball screw shaft extender consists of an oversized shaft, a heavy duty radial bearing, a housing with a standard NEMA mounting face and an easy to mount coupling. The Radial Mount provides a dramatic increase in side or cantilever load capacity. All Protective Bellows are manufactured from a durable polyurethane coated polyester material which will protect your Linear Motion System from most contaminants or corrosive environments. The flexible convoluted folding construction reinforced with bonded integral stiffeners minimizes the reduction in system stroke length. Compact design eliminates work surface interference and assures uninterrupted movement of the carriage during operation. Brake Options are available in three versions. QuickSlide* 2DA Manual Brake System allows the system carriage to have infinite fixed positioning capability. The Electric Brake is used with all SuperSlide Systems and Ball Screw Assemblies. The Electric Brake is designed to engage when power is lost. The Electric Brake can be equipped with a controller option that interfaces directly with a PLC, switch, relay, computer, or controller output. Available from over 1800 authorized distributor locations worldwide. (Refer to page 287).

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Thomson MicroStage*

Actuated Linear Motion Systems



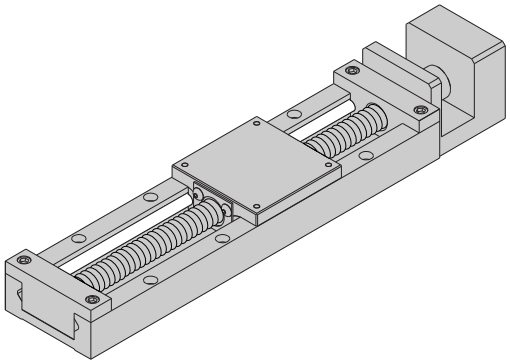
Features:

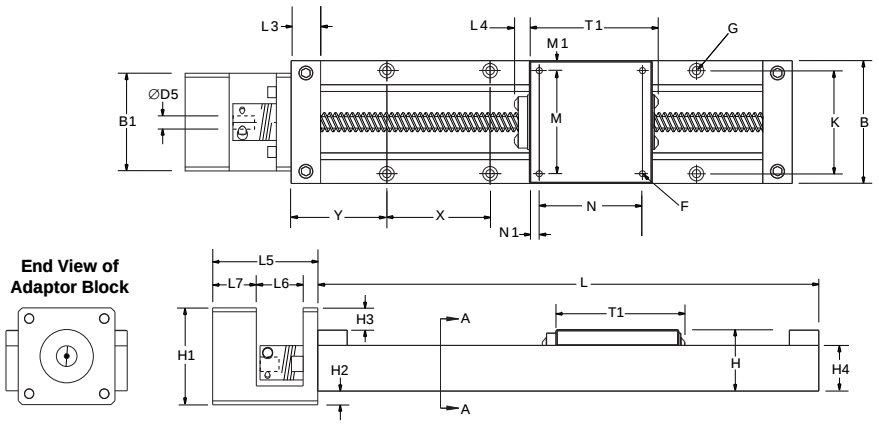
- **Smooth Precision Linear Motion**
  Incorporates a unique bearing segment design and offers a backlash-free slide assembly without sacrificing load capacity or smoothness.
- **Rugged, But Lightweight Construction**
  It is manufactured from aluminum alloys to provide the optimum in strength and rigidity, and to dramatically decrease the mass of the system. This unique design provides for lower inertia and higher performance versus either built-in, or external actuators.
- **Flexible Mounting Configuration**
  MicroStage linear guides offer hole patterns and T-slots for easy interchange and simple X-Y mounting.
- **Drive Options**
  A wide range of leads are available for the lead screw driven MicroStage Linear Motion System. MicroStage Systems are readily adaptable to most industry standard air cylinders and micrometer movement devices. A variety of motor control options are also available from Thomson.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Thomson MicroStage* MS25

Actuated Linear Motion System





Maximum Stroke Length is determined by subtracting the carriage length **(T1),** 2x the end block length **(L3)** and the nut extension **(L4)** from the total System length **(L)**.

MicroStage MS25 Lead Screw Actuated Linear Motion System													(Dimensions in mm)
Part Number	B	B1	D5	F	G	H	H1	H2	H3	H4	H5	K	L3
MS25-LXA-LXXX	50	32,0	3,0	M3 x 0,5	M3 Screw	25	22,0	3,25	0,45	18,6	6	42	12
MS25-LXB-LXXX	50	39,9	6,35	M3 x 0,5	M3 Screw	25	39,9	5,7†	9,4	18,6	6	42	12

MicroStage MS25 Lead Screw Actuated Linear Motion System												(Dimensions in mm)
Part Number	L4	L5	L6	L7	N	N1	M	M1	T1	Base Mounting Hole		Load Capacity
										X	Y	
MS25-LXA-LXXX	12	27,75	18,75	3,0	42	4	42	4	52,5	42	39	100N
MS25-LXB-LXXX	12	43,25	19,25	18,0	42	4	42	4	52,5	42	39	100N

† Adaptor Block extends below the mounting surface of the System Rail Assembly.

MicroStage MS25 System			
Part Number	Length (L) (mm)	Stroke (mm)	Weight (kg)
MS25-LXA-L120	120	31,5	0,42
MS25-LXA-L204	204	115,5	0,56
MS25-LXA-L288	288	199,5	0,71
MS25-LXA-L372	372	283,5	0,86
MS25-LXB-L120	120	31,5	0,45
MS25-LXB-L204	204	115,5	0,60
MS25-LXB-L288	288	199,5	0,75
MS25-LXB-L372	372	283,5	0,89

MicroStage MS25 System		
Part Number	Screw Lead	Screw Diameter
MS25-LAX-LXXX	0,025"	0,250"
MS25-LBX-LXXX	0,050"	0,250"
MS25-LCX-LXXX	0,062"	0,250"
MS25-LDX-LXXX	0,200"	0,250"
MS25-LEX-LXXX	0,250"	0,250"
MS25-LFX-LXXX	0,500"	0,250"
MS25-LGX-LXXX	1,000"	0,250"
MS25-LHX-LXXX	1,5mm	0,250"
MS25-LIX-LXXX	2mm	0,250"
MS25-LJX-LXXX	3mm	0,250"

Specifying a Thomson Linear Motion System:

1. Determine the proper system for your load and life requirements.
2. Select the part number.
3. Place your order with your local authorized Thomson distributor.

Part Numbering System

MS25-LEA-L204

- System Designation
- Actuator Type
- Screw Lead
- Overall Length
- Coupling and Motor Adaptor Combination

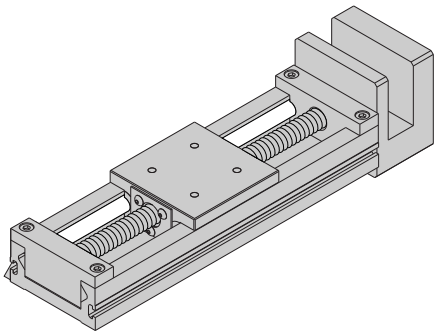
Custom Lengths and Delivery Information

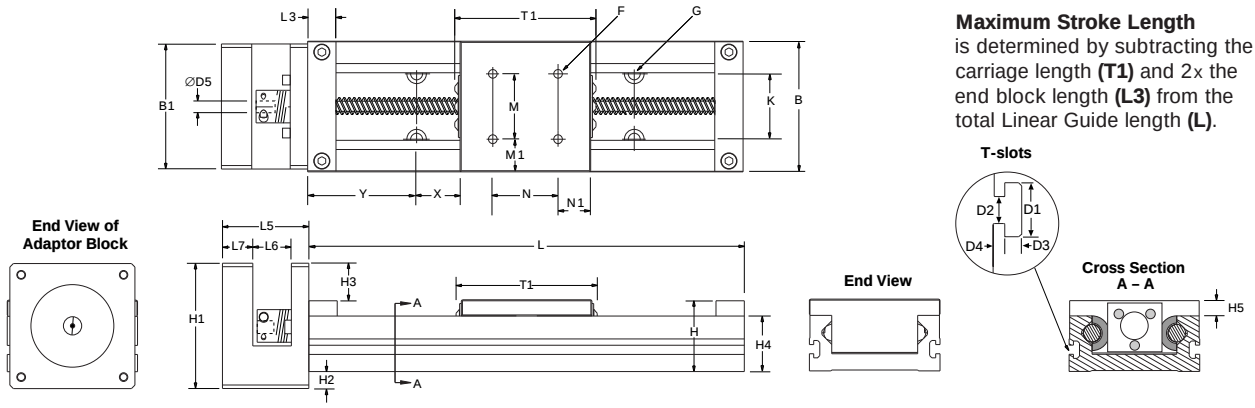
Systems ordered in standard lengths are typically shipped in one week. For special requirements, please contact the Thomson **Systems** Application Engineering Department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Thomson MicroStage* MS33

Actuated Linear Motion System





Maximum Stroke Length is determined by subtracting the carriage length **(T1)** and 2x the end block length **(L3)** from the total Linear Guide length **(L)**.

MicroStage MS33 Lead Screw Actuated Linear Motion System (Dimensions in mm)

Part Number	B	B1	D1	D2	D3	D4	D5	F	G	H	H1	H2	H3	H4	H5
MS33-LXA-LXXX	60	39,9	8,0	4,2	2,75	2	6,35	M5 x 0,8	M5 Screw	33	39,9	1,05	8,45	25,5	7
MS33-LXB-LXXX	60	57,66	8,0	4,2	2,75	2	6,35	M5 x 0,8	M5 Screw	33	57,66	7,83†	17,33	25,5	7

MicroStage MS33 Lead Screw Actuated Linear Motion System (Dimensions in mm)

Part Number	K	L3	L5	L6	L7	N	N1	M	M1	T1	Base Mounting Hole		Load Capacity
											X	Y	
MS33-LXA-LXXX	30	13	43,25	19,25	18,0	30	15	30	15	65	100	50	150N
MS33-LXB-LXXX	30	13	39,75	17,75	14,0	30	15	30	15	65	100	50	150N

† Adaptor Block extends below the mounting surface of the System Rail Assembly.

MicroStage MS33 System

Part Number	Length (L) (mm)	Stroke (mm)	Weight (kg)
MS33-LXA-L200	200	100	0,95
MS33-LXA-L300	300	200	1,25
MS33-LXA-L400	400	300	1,56
MS33-LXB-L200	200	100	1,07
MS33-LXB-L300	300	200	1,37
MS33-LXB-L400	400	300	1,68

MicroStage MS33 System

Part Number	Screw Lead	Screw Diameter
MS33-LAX-LXXX	0,0625"	0,375"
MS33-LBX-LXXX	0,100"	0,375"
MS33-LCX-LXXX	0,125"	0,375"
MS33-LDX-LXXX	0,200"	0,375"
MS33-LEX-LXXX	0,250"	0,375"
MS33-LFX-LXXX	0,375"	0,375"
MS33-LGX-LXXX	0,500"	0,375"
MS33-LHX-LXXX	1,000"	0,375"
MS33-LIX-LXXX	1,200"	0,375"
MS33-LJX-LXXX	2mm	0,375"

Specifying a Thomson Linear Motion System:

1. Determine the proper system for your load and life requirements.
2. Select the part number.
3. Place your order with your local authorized Thomson distributor.

Part Numbering System

MS33-LFB-L400

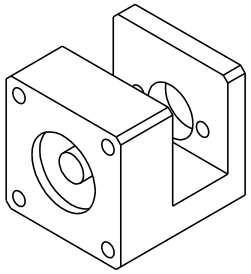
- MS33 — System Designation
- L — Actuator Type
- F — Screw Lead
- B — Coupling and Motor Adaptor Combination
- L400 — Overall Length

Custom Lengths and Delivery Information

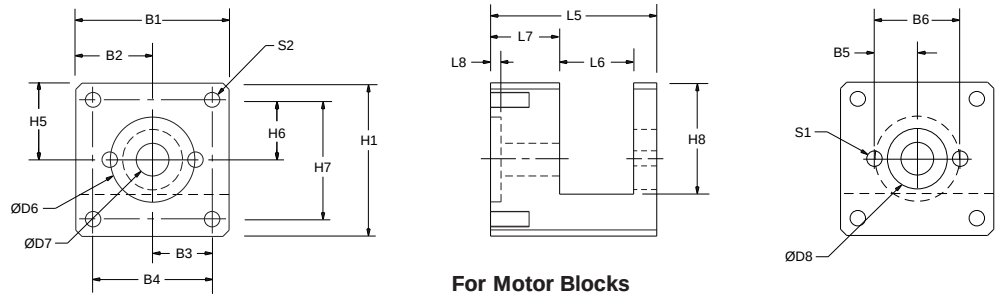
Systems ordered in standard lengths are typically shipped in one week. For special requirements, please contact the Thomson **Systems** Application Engineering Department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

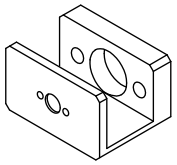
MicroStage* Actuated Linear Motion System Accessories



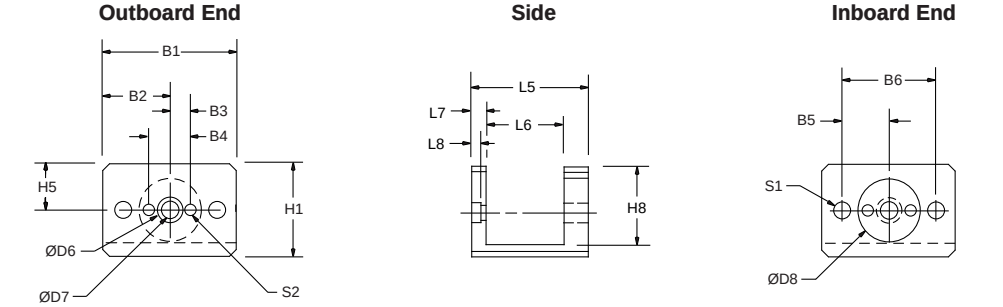
Motor Mount Block with Four Bolt Hole Pattern



For Motor Blocks Part Number MMBMS25-17, MMBMS33-17, MMBMS33-23



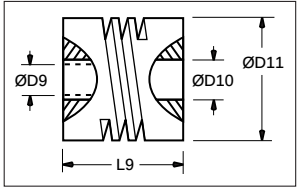
Motor Mount Block with Two Bolt Hole Pattern



For Motor Blocks Part Number MMBMS25-22 Only

Motor Mount Blocks	(Dimensions in mm)																				
Part Number	B1	B2	B3	B4	B5	B6	ØD6	ØD7	ØD8	H1	H5	H6	H7	H8	L5	L6	L7	L8	S1	S2	Used w/System	Used w/Coupling
MMBMS25-22	32	16	5	10	11,38	22,75	6,02	4,0	14,5	22	11	–	–	18,75	27,75	18,75	3,0	1,7	4,60	2,40	**MS25-LXA-LXXX**	**MCMS25-22**
MMBMS25-17	39,9	19,95	15,5	31	11,38	22,75	22,03	8,5	16,4	39,9	19,95	15,5	31	29	43,25	19,25	18,0	2,75	4,60	M4	**MS25-LXB-LXXX**	**MCMS25-17**
MMBMS33-17	39,9	19,95	15,5	31	11,15	22,3	22,03	8,5	16,4	39,9	19,95	15,5	31	29	43,25	19,25	18,0	2,75	M4	M4	**MS33-LXA-LXXX**	**MCMS33-17**
MMBMS33-23	57,7	28,83	23,57	47,14	11,15	22,3	38,18	8,5	16,4	57,7	28,83	23,57	47,14	38	39,75	17,75	14,0	4,0	M4	M4	**MS33-LXB-LXXX**	**MCMS33-23**

Motor Couplings

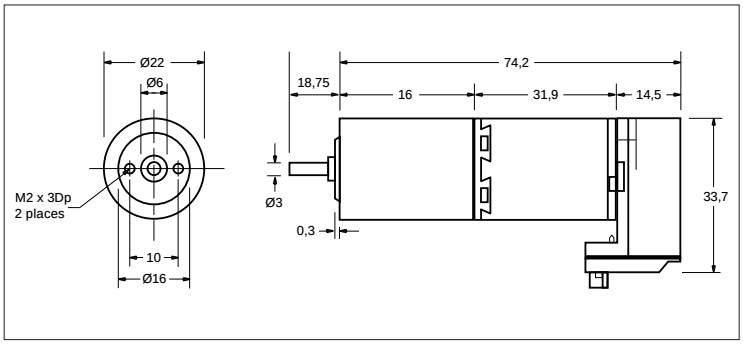


Motor Couplings	(Dimensions in mm)					
Part Number	ØD9	ØD10	ØD11	L9	Used w/System	Used w/Motor Adaptor Block
MCMS25-22	M5	3,0	12	19	**MS25-LXA-LXXX**	**MMBMS25-22**
MCMS25-17	M5	6,35	15	22	**MS25-LXB-LXXX**	**MMBMS25-17**
MCMS33-17	M5	6,35	15	22	**MS33-LXA-LXXX**	**MMBMS33-17**
MCMS33-23	M5	6,35	15	22	**MS33-LXB-LXXX**	**MMBMS33-23**

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Motors

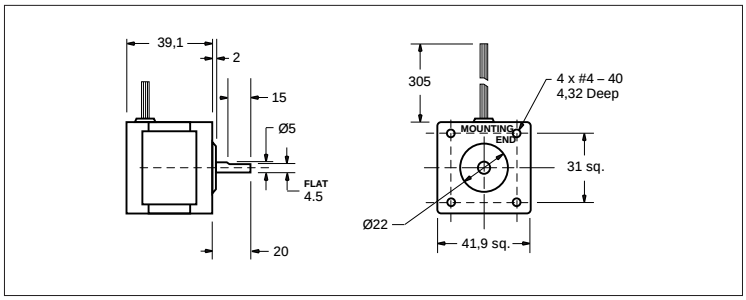
22mm DC Gearmotor



Parameter	Units	BRD22M715D10100
Rated Power†	Watts	3
Cont. Stall Torque†	mNm	29.2
No Load Speed†	rpm	1500
Resistance	ohm	13.6
Feedback	–	2 channel 100 line encoder
Gear Ratio	n:1	4.4

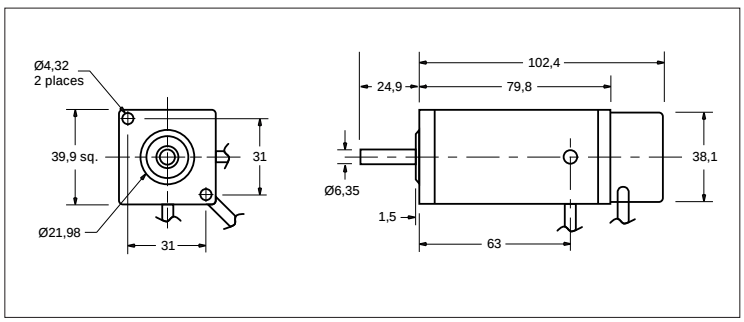
† At gear box output

Size 17 Step Motor



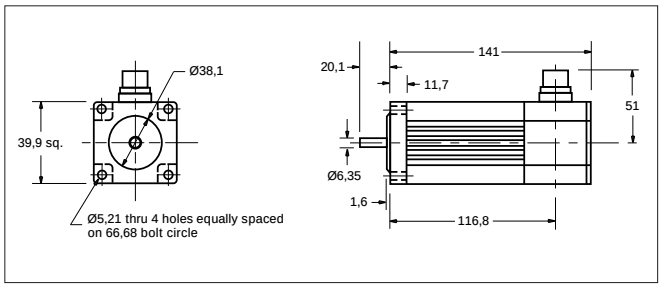
Parameter	Units	AMPHT17-071
Holding Torque	oz-in	36.1
Leads	–	8
Current	amp	1.2
Resistance	ohm	3.3

Size 17 Brushless Servo Motor



Parameter	Units	BLD1715D10100
Rated Power	Watts	40
Cont. Stall Torque	Nm	0.20
Peak Torque	NM	0.55
Inertia	Kg-cm²	0.0275
Torque Const.	Nm/A	0.06
Voltage Const.	Vrms/krpm	6.47
Feedback	–	1000 line encoder & Halls

NEMA 23 Brushless Servo Motor



Parameter	Units	BLX232A2E000	BLX234A2E000
Rated Power	Watts	160	360
Cont. Stall Torque	Nm	0.56	1.12
Peak Torque	NM	1.7	3.36
Inertia	Kg-cm²	0.109	.179
Torque Const.	Nm/A	0.204	0.204
Voltage Const.	Vrms/krpm	18.2	17.8
Feedback	–	2000 line commutating encoder	

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Systems Applications

Application Analysis

Determining the system which best meets the demands of your application and provides optimum performance requires the evaluation of a number of variables. The accompanying form establishes basic criteria to initiate the analysis of your application. In addition, the Engineering Support Appendix has been designed with pertinent data and formulas used to specify the proper system for your application.

If you have questions or special needs a Thomson systems engineer can assist you in evaluating your application and recommending a system solution. Simply call 1-800-554-8466.

Application Description: ❑ Horizontal ❑ Vertical

System Part Number:

Quantity Required:

Weight of Load (lbs):

Space Requirements (LxHxW):

Stroke Length Requirements (in):

Support Requirements: ❑ End Supported ❑ Full Support

Maximum Velocity Requirements (in/s):

Maximum Acceleration Requirements (in/s^2):

Required Straightness of Travel Accuracy (in/ft):

Required Positioning Accuracy (in):

Required Repeatability (in):

Life Requirement (in):

Cycle (in/yr):

Environmental Considerations:

Other Design Criteria:

Production Time Frame:

Company:

Name:

Title:

Address:

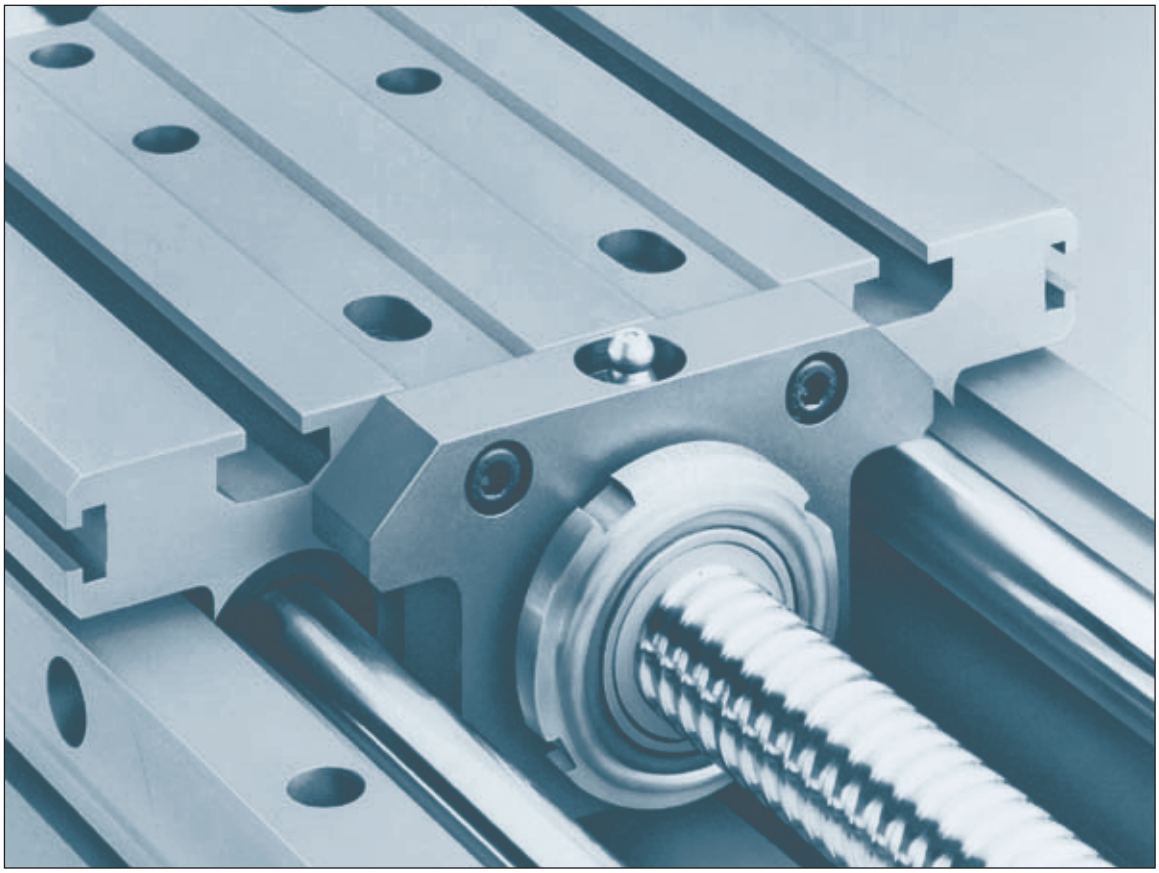
City: State: Zip:

Telephone: Fax:

Please Fax your Application Analysis to 516-883-9039 Attention: Application Engineering

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide
Ball Screw Actuated Systems

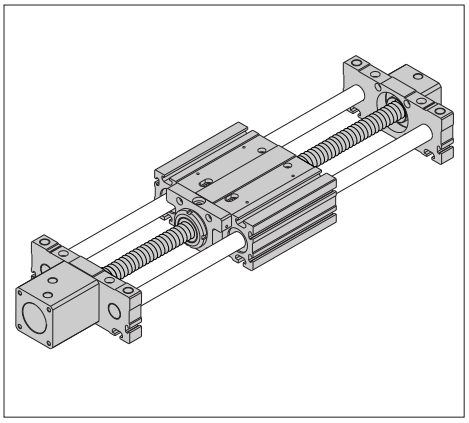


SuperSlide* Ball Screw Actuated Systems offer:

- An end supported and continuously supported version complete with prealigned LinearRace* ways and an integral ball screw assembly. End Supported Systems are used when spanning or bridging a gap. Continuously Supported Systems are used when rigidity is required.
- Available with uniquely designed carriages and LinearRace assemblies with integrated T-slots for easy assembly and mounting.
- Positioning accuracy better than 0,01 mm with repeatability as low as 0,025 mm/ 300mm. Improvement in system performance is realized immediately.
- Available with integrated Super Smart Ball Bushing* bearings which provide up to six times the load capacity or 216 times the travel life of conventional linear bearing based systems.
- Anodized coating, double acting integral wipers and bellows for protection in corrosive environments. A uniquely designed lubrication system option is available for all systems.
- A variety of highly efficient ball screw assemblies with diameters and leads designed to meet the most stringent motion control requirements.
- A single part number system. All that is required to order is to specify the system nominal size and length.
- Easy integration to the Thomson AXI-PAK* motion control system. Once the Superslide system has been selected simply specify a standard **T**homson **M**otion **C**ontrol package that meets your complete motion control needs.
(See the Motion Control Section on page 381)

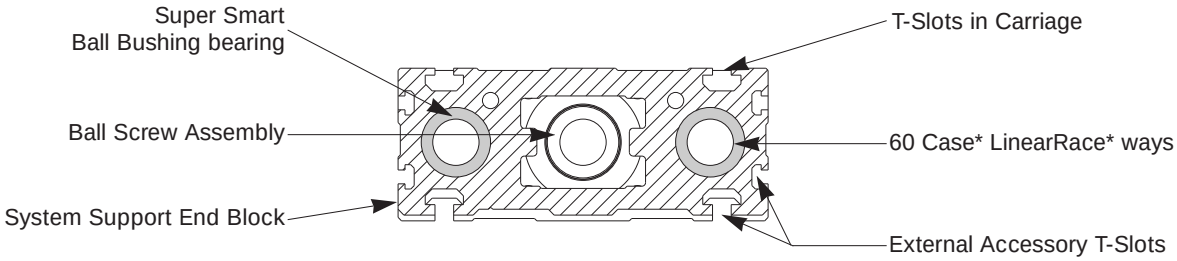
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* Ball Screw Actuated Systems

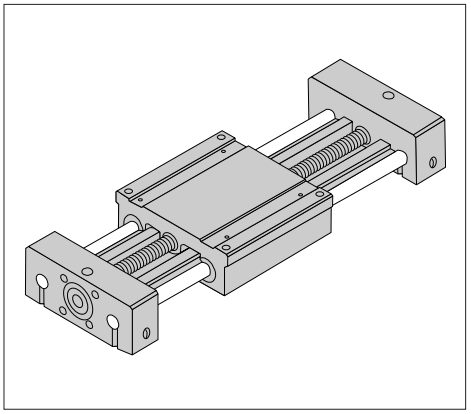


SuperSlide 2NB Ball Screw Actuated System Features:

- End Supported System
- Integral Ball Screw Assembly
- T-Slots in Carriage
- T-Slots in Base Mounting System
- Positioning Accuracy is 0,025/300 mm
- Repeatability as Low as 0,01 mm
- Super Smart Ball Bushing* bearing
- Long Travel Life
- Double Acting Wipers
- Optional Lubrication System
- Speeds up to 1 m/s
- Single Part Number System
- Standard Motor Mounting
- Protective Bellows Option

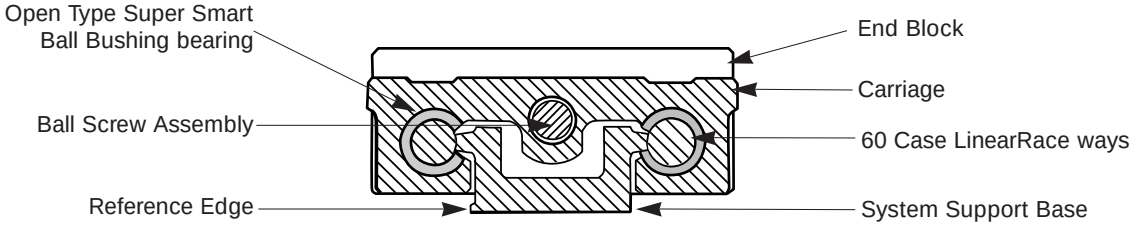


System 2NB
Cross Section



SuperSlide 2DB Ball Screw Actuated System Features:

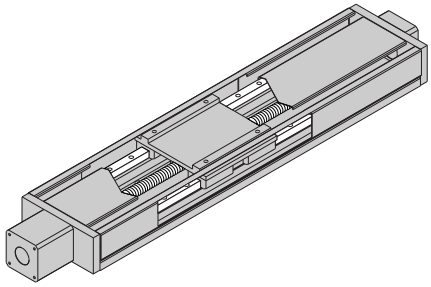
- Continuously Supported System
- Integral Ball Screw Assembly
- Drilled and Tapped Holes in Carriage
- Double Hole Spacing in Base
- Positioning Accuracy is 0,025/300 mm
- Repeatability as Low as 0,01 mm
- Super Smart Ball Bushing bearing
- Load Capacities up to 33 kN
- Double Acting Wipers
- Optional Lubrication System
- Speeds up to 1 m/s
- Single Part Number System
- Standard Motor Mounting
- Protective Bellows Option



System 2DB
Cross Section

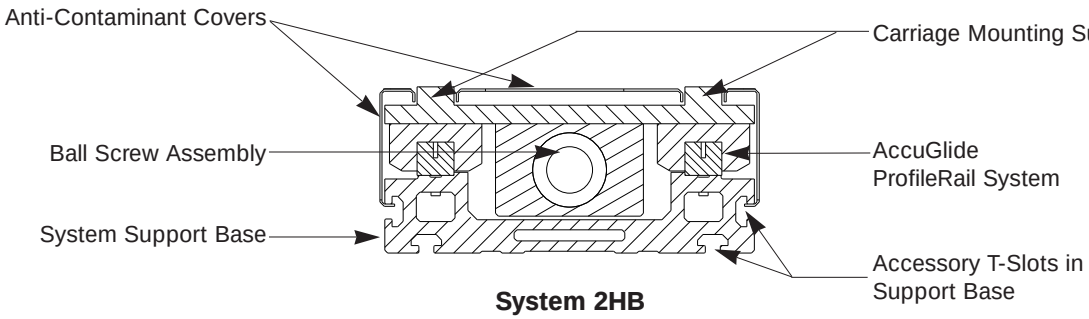
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* Ball Screw Actuated Systems

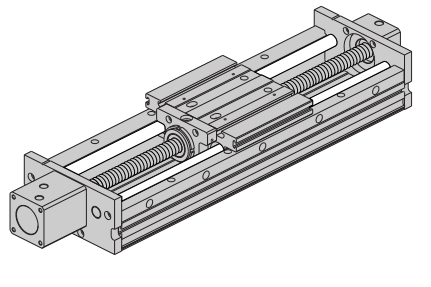


AccuSlide* 2HB Ball Screw Driven System Features:

- Continuously Supported System
- Integral Ball Screw Assembly
- T-Slots in Carriage
- AccuGlide* ProfileRail* system
- Positioning Accuracy is 0,025/300 mm
- Repeatability as Low as 0,01 mm
- Low Profile and Compact
- Long travel life Capability
- Double Acting Seals
- Optional Lubrication System
- Speeds up to 1 m/s
- Single Part Number System
- Standard Motor Mounting
- Protective Bellows Option

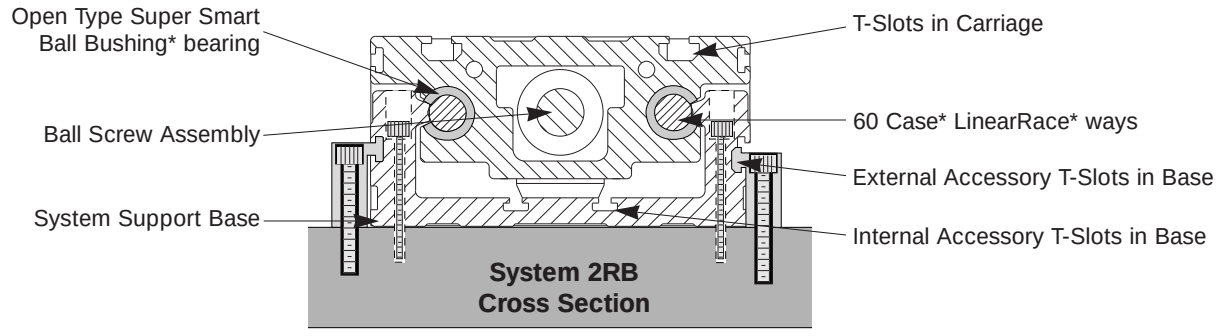


System 2HB
Cross Section



SuperSlide 2RB Ball Screw Actuated System Features:

- Continuously Supported System
- Integral Ball Screw Assembly
- T-Slots in Carriage
- T-Slots in Base Mounting System
- Positioning Accuracy is 0,025/300 mm
- Repeatability as Low as 0,01 mm
- Super Smart Ball Bushing* bearing
- Long Travel Life Capability
- Double Acting Wipers
- Optional Lubrication System
- Speeds up to 1 m/s
- Single Part Number System
- Standard Motor Mounting
- Protective Bellows Option



System 2RB
Cross Section

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

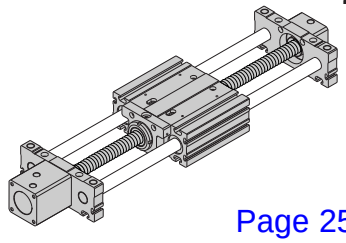
SuperSlide Ball Screw Actuated Systems Solution Matrix

SuperSlide*

Ball Screw Actuated Systems

For End Supported Applications

2NB



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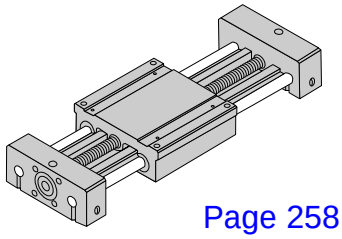
For Continuously Supported Applications

2DB



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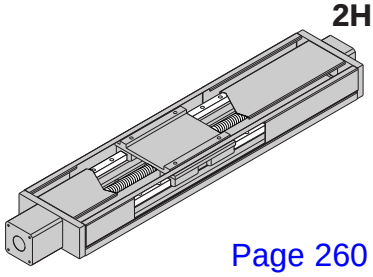
2HB



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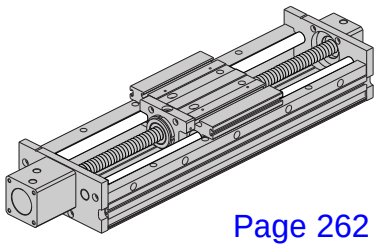
2RB



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For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* Ball Screw Actuated Systems
Selection Criteria

Many variables influence the selection of a Linear Motion System. The best solution demands a thorough evaluation of the application; only then can design criteria be established. Issues such as envelope limitations, system load capacity, actuator load capacity, speed and acceleration, drive requirements, accuracy and repeatability, and operating environment are looked at from a broad perspective to determine the type of system, type of actuator, and whether the system need be built of special materials.

Typically, a ball screw actuated linear motion system is ideal for tight precision, highly repeatable, high load, moderate speed applications. Long lead ball screws are available for most style systems, but it is important to be mindful of the critical speed (first harmonic of the resonant ball screw whirling vibration) in longer stroke systems when attempting to reach higher linear velocities. If an application requires rigidity, then a fully supported system should be specified in lieu of an end supported type system. When zero backlash is required for the best repeatability, then a preloaded version ball screw assembly need to be specified. For extremely heavy-duty applications, the AccuSlide* (2HB series) system, with its use of ProfileRail* type linear guides is adept at handling normal axis, overhung, or cantilever loads of increased magnitude. In environments that are corrosive or high temperature special materials may be required and are available. Contact Application Engineering for details on special materials.

In order to determine the Ball Screw Actuated SuperSlide System that meets the needs of your application, it is first necessary to evaluate the following detail design criteria:

- System support requirements
- System stroke length
- Maximum allowable shaft deflection
- Required travel life
- Force on the most heavily loaded bearing
- Load correction factor
- Load/Life requirements-linear bearings
- Load/Life requirements-ball screws
- Motion (move) profile (velocity, acceleration)
- Maximum acceptable travel rate
- Torque considerations
- Size motor using torque/speed curves

A detailed explanation of the procedure for selecting a Ball Screw Actuated Linear Motion System is given on page 327 in the Engineering Support Section.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

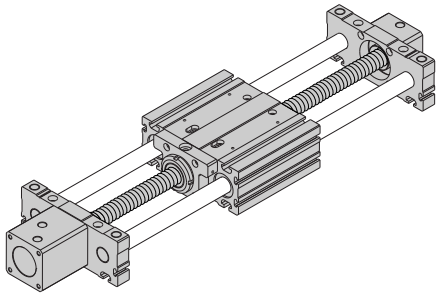
SuperSlide* 2NB
End Supported System

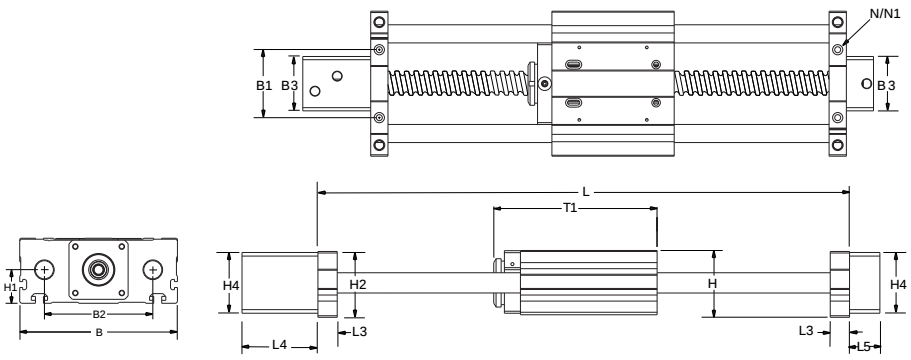
with Integral Ball Screw Assembly and T-Slot Carriage

New... Super Smart

Ball Bushing* Bearing...

Now Available For All Sizes





Maximum Stroke Length is determined by subtracting the carriage length **(T1)** and 2 times the end block length **(L3)** from the total system length **(L)**.

SuperSlide 2NB System with Integral Ball Screw Assembly and T-Slot Carriage (Dimensions in mm)

Part Number	Nominal Dia.	Ball Screw (Dia. x Lead)	Accuracy mm/300 mm	Repeatability	B	B1	B2	B3	B9	Max. Stroke Length
2NB-M16-OGL-G	16	16 x 5 P	0,025	± 0,005						L-(000)
2NB-M16-OGL-H	16	16 x 10 P	0,025	± 0,005						
2NB-M20-OGL-I	20	20 x 5 P	0,025	± 0,005	160	75	110	60	120	L-200
2NB-M20-OGL-J	20	20 x 10 P	0,025	± 0,005						
2NB-M20-OGL-K	20	20 x 20 P	0,025	± 0,005						

SuperSlide 2NB System with Integral Ball Screw Assembly and T-Slot Carriage (Dimensions in mm)

Part Number	H	H1	H2	H4	L3	L4	L5	N Bolt	N1 Hole	T1	NEMA SIZE
2NB-M16-OGL											
2NB-M20-OGL	66	34	65	60	20	75	31,5	M6	11,25	160	23

System 2NB Standard Lengths (Lengths in mm)

System	300	375	400	450	500	525	600	675	700	750	800	825	900	975	1000	1050	1100	1125	1200	1275	1300	1350	1400	1425	1500	X	MAX
2NB-M16	■	■		■		■	■	■		■		■	■	■		■		■	■	■		■		■	■	75	1500
2NB-M20	■		■		■		■		■		■		■		■		■		■		■		■		■	100	2000

For Motion Control Options refer to the Motion Control Section on page 381.
For Motor Coupling specifications, see page 290.
For Bellows Way Covers, see page 291.
For Radial Mount Ball Screw Shaft Extenders, see page 292.
For Spring Set electric brakes, see page 304.
For TNUT mounting hardware, see page 308.

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in two to three weeks. Custom length systems are available and require three to four weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2NB Benefits:

- Used in end supported applications when spanning or bridging a gap is required.
- Single part number is all that is required
- T-Slot in carriage provides quick and easy mounting and removal of the workpiece.

SuperSlide 2NB Components:

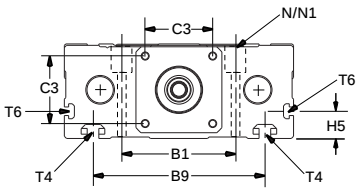
- 2 LinearRace* End Support blocks with T-Slots for mounting ease.
- 1 T-Slot integrated carriage with 4 Super Smart open type Ball Bushing* bearings.
- 1 Integral Ball Screw Assembly

Specifying a Thomson System:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.**Place your order with your local authorized Thomson distributor.

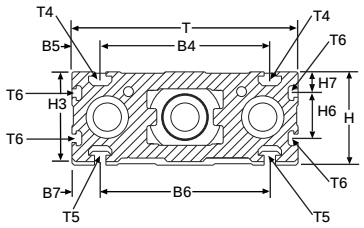
Part Numbering System

2NB-M16-OGL-I L600

- System Designation / Nominal Diameter
- Type of Support
- Type of Carriage
- Type of Ball Screw
- System Length

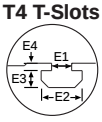


End Block

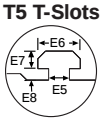


Carriage X-Section

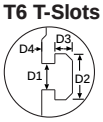
T4 T-Slots



T5 T-Slots

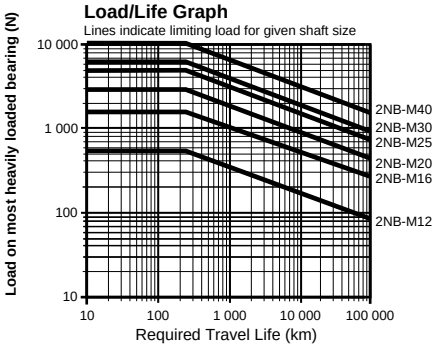


T6 T-Slots



Load/Life Graph

Lines indicate limiting load for given shaft size



SuperSlide 2NB System with Integral Ball Screw Assembly and T-Slot Carriage (Dimensions in mm)

Part Number	Nominal Diameter	B1	B4	B5	B6	B7	B9	D1	D2	D3	D4
2NB-M16-OGL	16										
2NB-M20-OGL	20	75	120	20	120	20	120	6	10,5	4	3

SuperSlide 2NB System with Integral Ball Screw Assembly and T-Slot Carriage (Dimensions in mm)

Part Number	E1	E2	E3	E4	E5	E6	E7	E8	H	H3	H5	H6	H7	T
2NB-M16-OGL														
2NB-M20-OGL	8,1	16,5	6,8	3	8,1	16,5	6,8	4,5	66	63,5	19	32	15	160

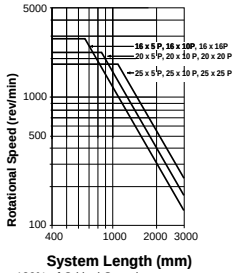
The SuperSlide has a pre-designed **Maximum Acceptable Travel Rate**. Calculate maximum rotational speed (rpm) by dividing your required maximum linear speed (m/s) by the corresponding system ball screw lead (m/rev). Enter the chart with the required system length and your maximum rotational speed. Select the system with a maximum acceptable travel rate curve above the plotted line.

Compressive load on the ball screw is a key factor in selecting the proper System. Using maximum load and acceleration requirements, plot compressive load on the left side of the chart. Using System length and compressive load. plot the maximum allowable compressive force on the right chart. Select the System with a rated maximum compressive force above your plotted point.

If you have questions concerning your system requirements, contact the Thomson **Systems** application engineering department.

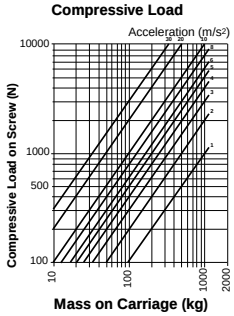
Note: Ball screw should never exceed recommended critical speed.

Maximum Acceptable Travel Rate†

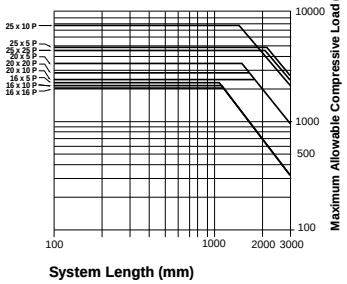


†80% of Critical Speed

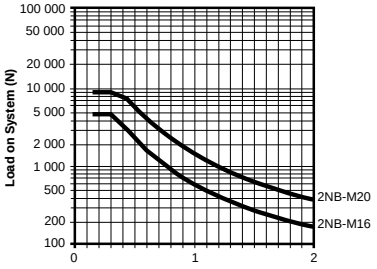
Compressive Load



Maximum Allowable Compressive Load



Maximum Recommended Load on System

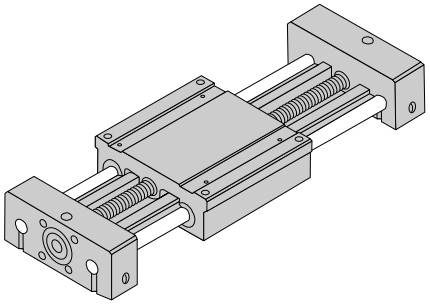


For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2DB

Continuously Supported System

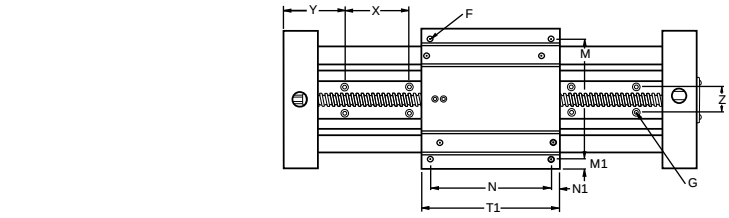
with Integral Ball Screw Assembly and Carriage

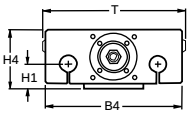


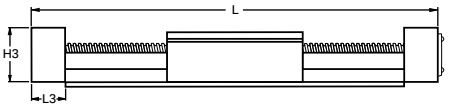
New... Super Smart

Ball Bushing* Bearing...

Now Available For All Sizes







Maximum Stroke Length (without Bellows) is determined by subtracting the carriage length **(T1)** and 2x the end support length **(L3)** from the total system length.

SuperSlide 2DB with Carriage and Integral Ball Screw Assembly													(Dimensions in mm)
Part Number	Ball Screw (Dia. x Lead)	Accuracy mm/300 mm	Repeatability	T1	L3	H	H1	H2	H3	H4	B	R	T
2DB-12-OUK-B	12 x 5 NP	<0,05	<0,05	150	38	54	28,6	49,0	60,3	66,4	66,8	17,5	155
2DB-16-OUK-D	20 x 5 NP	<0,05	<0,05	190	50	66	34,9	61,3	85,7	88,9	82,5	22,3	193

SuperSlide 2DB with Carriage and Integral Ball Screw Assembly												(Dimensions in mm)
Part Number	B2	B4	N	N1	M	M1	X	Y	Z	F	G	Max. Stroke Length Without Bellows
2DB-12-OUK-B	101,6	152	130	10	135	10	150	75	25	M6	M8	L-(226)
2DB-16-OUK-D	127	178	170	10	175	9	200	100	30	M8	M10	L-(292)

For Motion Control Options refer to the Motion Control Section on page 381.
For Motor Adaptor and Motor Coupling specifications, see page 288.
For Bellows Way Covers, see page 291.
For Radial Mount Ball Screw Shaft Extenders, see page 292.
For Spring Set electric brakes, see page 304.
For Handwheels, see page 308.

SuperSlide System 2DB Standard Lengths												(Lengths in mm)	
System	450	600	750	800	900	1000	1050	1200	1400	1600	1800	X	MAX
2DB-12	■	■	■		■		■	■				150	1200
2DB-16		■		■		■		■	■	■	■	200	2000

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in three to four weeks. Custom length systems are available and require four to six weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2DB Benefits:

- Used in continuously supported applications when stiffness and rigidity is required.
- Pre-aligned and preassembled for immediate installation and use.
- Designed for medium to heavy loads.
- Compact and low profile

SuperSlide 2DB Components:

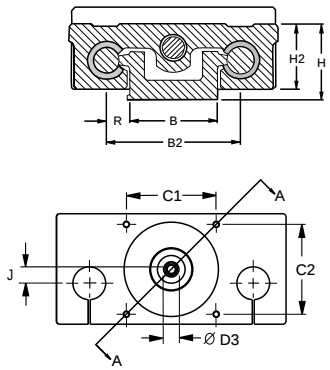
- 1 Dual LinearRace* Rail Assembly
- 1 modular carriage with 4 open type Super Smart Ball Bushing* Pillow blocks.
- 1 integrated ball screw assembly

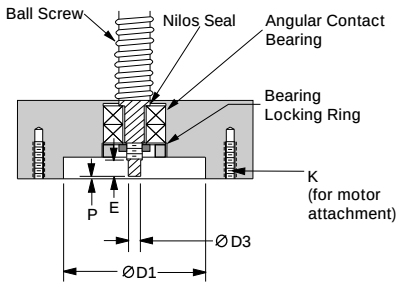
Specifying a Thomson System:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.** Place your order with your local authorized Thomson distributor.

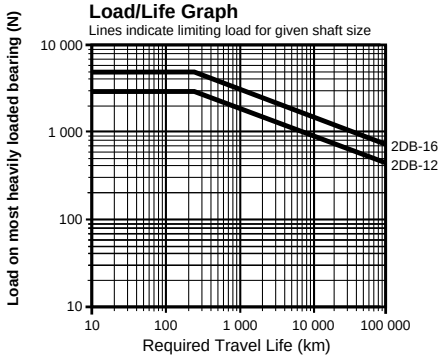
Part Numbering System

2DB-12-OUK-B L600

- System Designation
- Nominal Diameter
- Type of Bearing Block
- Type of Support
- Type of Carriage
- Ball Screw
- System Length







SuperSlide 2DB with Carriage and Integral Ball Screw Assembly (Dimensions in mm)

Part Number	C1	C2	D1	D3	E	J	K	P
2DB-12-OUK-B	47,1	47,1	54,61	6	8,5	7,62	M5 x 0,8	1,3
2DB-16-OUK-D	69,6	69,6	73,05	10	14,2	10,80	M5 x 0,8	1,3

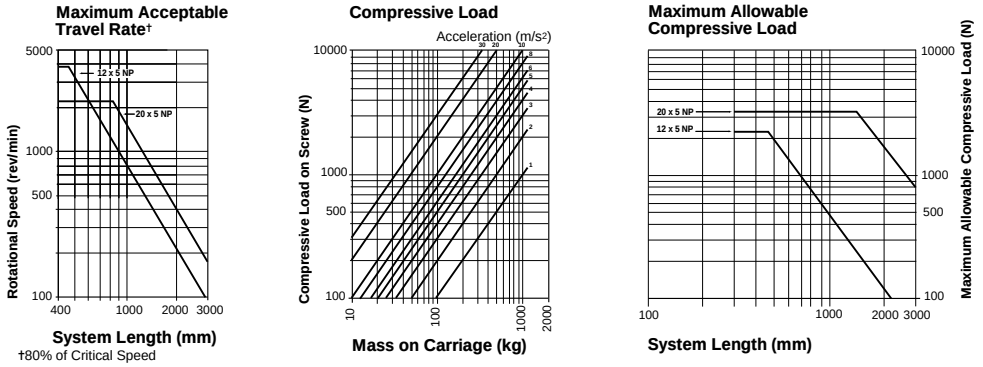
Maximum continuous length of 2DB LinearRace support rails is 600 mm. If longer continuous one-piece LinearRace support rails are required, contact the Thomson Systems Application Engineering Department.

The SuperSlide has a pre-designed **Maximum Acceptable Travel Rate**. Calculate maximum rotational speed (rpm) by dividing your required maximum linear speed (m/s) by the corresponding system ball screw lead (m/rev). Enter the chart with the required system length and your maximum rotational speed. Select the system with a maximum acceptable travel rate curve above the plotted line.

Compressive load on the ball screw is a key factor in selecting the proper System. Using maximum load and acceleration requirements, plot compressive load on the left side of the chart.Using System length and compressive load. plot the maximum allowable compressive force on the right chart. Select the System with a rated maximum compressive force above your plotted point.

If you have questions concerning your system requirements, contact the Thomson **Systems** application engineering department.

Note: Ball screw should never exceed recommended critical speed.

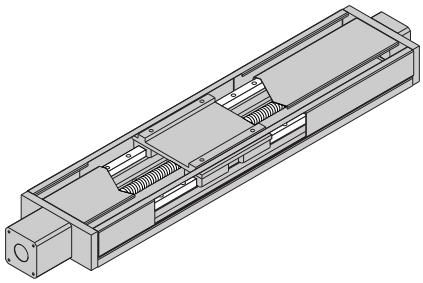


For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

AccuSlide* 2HB

Continuously Supported ProfileRail* System

with Integral Ball Screw Assembly and Carriage



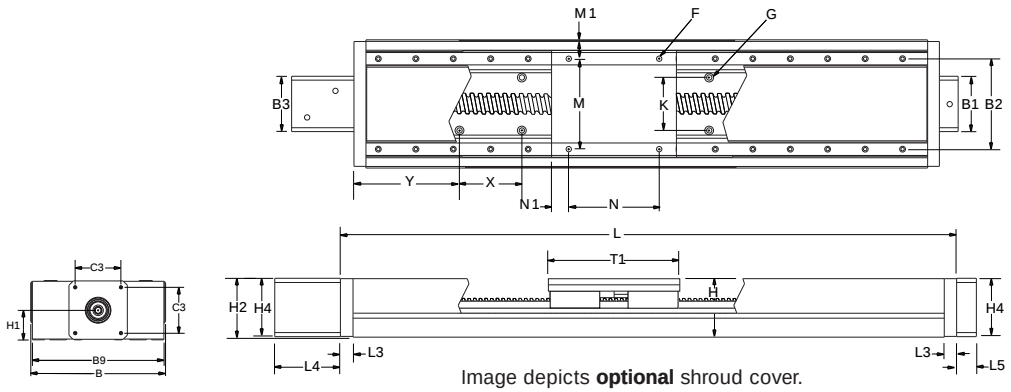


Image depicts **optional** shroud cover.

Maximum Stroke Length is determined by subtracting the carriage length **(T1)** and 2 times the end block length **(L3)** from the total system length **(L).**

Metric AccuSlide 2HB ProfileRail System with Integral Ball Screw Assembly and Carriage (Dimensions in mm)

Part Number	Ball Screw (Dia. x Lead)	Accuracy mm/300mm	Repeatability	B	B1	B2	B3	B9	C3	F	G	H	H1
2HBM10OYPG	16 x 5 P	0,025	± 0,005	100	60	70	60	105	47,15	M5	M5	60	31
2HBM10OYPH	16 x 10 P	0,025	± 0,005										
2HBM20OYPL	25 x 5 P	0,025	± 0,005	200	88	145	88	205	69,6	M10	M8	90	45
2HBM20OYPM	25 x 10 P	0,025	± 0,005										
2HBM20OYPN	25 x 25 P	0,025	± 0,005										

Metric AccuSlide 2HB ProfileRail System with Integral Ball Screw Assembly and Carriage (Dimensions in mm)

Part Number	H2	H4	K Central	M	M1	N	N1	L3	L4	L5	T1	X	Y	Max. Stroke Length Without Bellows
2HB-M10	61	60	35	70	15	70	15	12,5	70	26,5	100	75	37,5	L-125
2HB-M20	89	88	85	145	27,5	145	27,5	20	105	40	200	120	42,5	L-240

Metric System 2HB Standard Lengths (Lengths in mm)

System	300	325	375	450	445	525	565	600	675	685	750	825	805	900	925	975	1045	1165	1285	1405	X	MAX
2HB-M10	■		■	■		■		■	■		■	■			■		■				75	1000
2HB-M20		■			■		■			■			■		■		■	■	■	■	120	3000

For Motion Control Options refer to the Motion Control Section on page 381.
For Motor Coupling specifications, see page 290.
For Bellows Way Covers, see page 291.
For Shroud Covers, see pages 302 and 303.
For Limit Switch Packages, see pages 296 and 298.
For Radial Mount Ball Screw Shaft extenders, see page 292.
For Spring Set electric brakes, see page 304.
For TNUT mounting hardware, see page 308.

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in three to four weeks. Custom length systems are available and require four to six weeks for delivery. Lengths exceeding MAX length will require butt joints and will need 6 to 8 weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

AccuSlide* 2HB Benefits:

- Used in continuously supported applications that require high stiffness and rigidity.
- Single part number is all that is required
- Equipped with high load and moment capacity AccuGlide* ProfileRail* System.

AccuSlide 2HB Components:

- 1 double ProfileRail System Assembly.
- 1 carriage with 4 mounting holes
- 1 Integral Ball Screw Assembly

Specifying a Thomson System:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in illimeters, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.**Place your order with your local authorized Thomson distributor.

Part Numbering System

2HB-M20-OYP L L685

- System Designation / Nominal Diameter
- System Length
- Type of Ball Screw
- Type of Carriage
- Type of Support

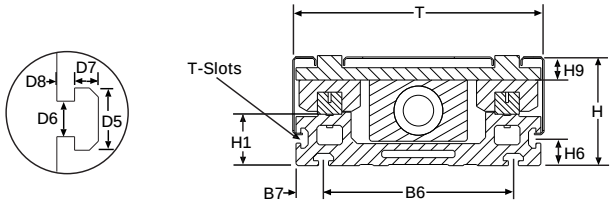
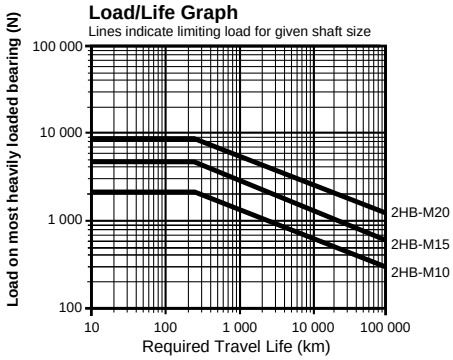


Image depicts **optional** shroud cover.



Metric AccuSlide 2HB ProfileRail System with Integral Ball Screw Assembly and Carriage (Dimensions in mm)

Part Number	Nominal Diameter	D5	D6	D7	D8	B6	B7	H	H1	H6	H9	T
2HB-M10	10	10,5	6	3	2,5	70	15	60	31	15	13	100
2HB-M20	20	16,5	8,1	6	4	155	22,5	90	45	22,5	20	200

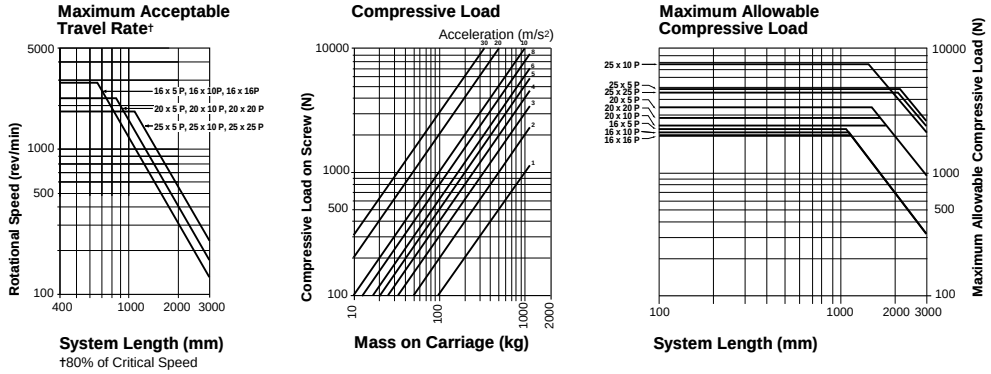
Appropriate mounting holes can be added for mounting the base of one system to the carriage of another for x–y configurations.

The AccuSlide has a pre-designed **Maximum Acceptable Travel Rate**. Calculate maximum rotational speed (rpm) by dividing your required maximum linear speed (m/s) by the corresponding system ball screw lead (m/rev). Enter the chart with the required system length and your maximum rotational speed. Select the system with a maximum acceptable travel rate curve above the plotted line.

Compressive load on the ball screw is a key factor in selecting the proper System. Using maximum load and acceleration requirements, plot compressive load on the left side of the chart.Using System length and compressive load. plot the maximum allowable compressive force on the right chart. Select the System with a rated maximum compressive force above your plotted point.

If you have questions concerning your system requirements, contact the Thomson **Systems** application engineering department.

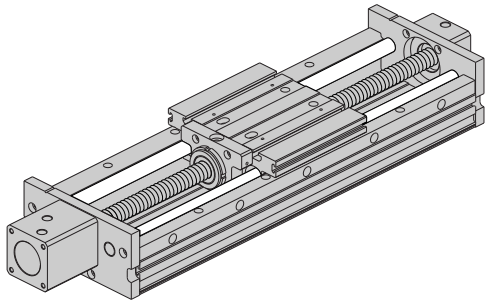
Note: Ball screw should never exceed recommended critical speed.



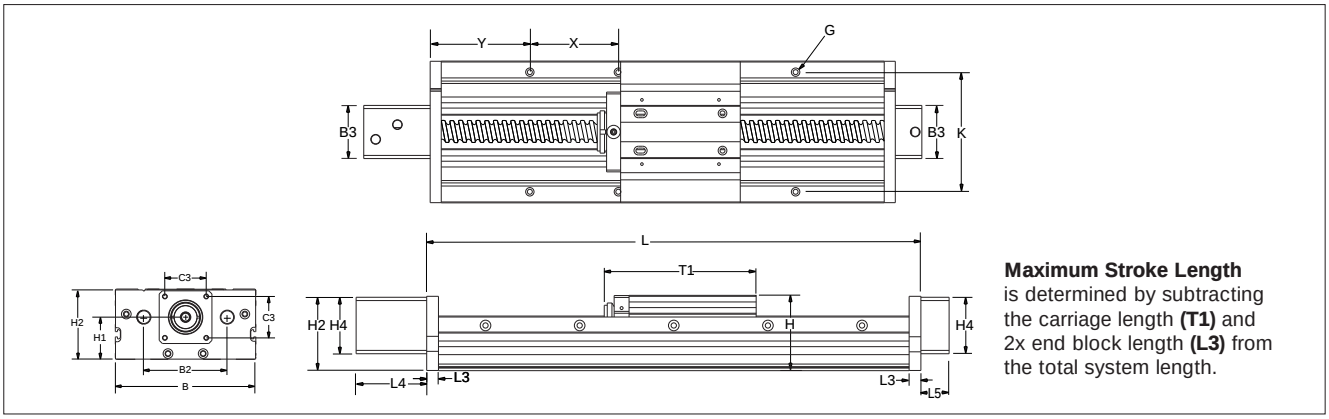
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2RB
Continuously Supported System

with Integral Ball Screw Assembly and T-Slot Carriage



New... Super Smart
Ball Bushing* Bearing...
Now Available For All Sizes



Maximum Stroke Length is determined by subtracting the carriage length **(T1)** and 2x end block length **(L3)** from the total system length.

SuperSlide 2RB System with Integral Ball Screw Assembly and T-Slot Carriage (Dimensions in mm)

Part Number	Nominal Dia.	Ball Screw (Dia. x Lead)	Accuracy mm/300 mm	Repeatability	B	B2	B3	C3	G	H1
2RB-M12-ODM-G	12	16x 5 P	0,025	± 0,005	130	75	60	47,15	M4	40
2RB-M12-ODM-H	12	16x 10 P	0,025	± 0,005						
2RB-M16-ODM-I	16	20 x 5 P	0,025	± 0,005	160	95	60	47,15	M5	48
2RB-M16-ODM-J	16	20 x 10 P	0,025	± 0,005						
2RB-M16-ODM-K	16	20 x 20 P	0,025	± 0,005						
2RB-M20-ODM	20									

SuperSlide 2RB System with Integral Ball Screw Assembly and T-Slot Carriage (Dimensions in mm)

Part Number	H2	H4	K	L3	L4	L5	T1	Base Mounting Holes		Max. Stroke Length
								X	Y	
2RB-M12-ODM	75	60	110	9,5	70	26,5	130	75	75	L-149
2RB-M16-ODM	79	60	135	12,5	75	31,5	160	100	100	L-185
2RB-M20-ODM										L-(000)

System 2RB Standard Lengths (Lengths in mm)

System	300	375	400	450	500	525	600	675	700	750	800	825	900	975	1000	1050	1100	1125	1200	1275	1300	1350	1400	1425	1500	X	MAX
2RB-M12	■	■		■		■	■	■		■		■	■	■		■		■	■	■		■		■	■	75	2100
2RB-M16	■		■		■		■		■		■		■		■		■		■		■		■		■	100	3000

For Motion Control Options refer to the Motion Control Section on page 381.
For Motor Coupling specifications, see page 290.
For Bellows Way Covers, see page 291.
For Limit Switch Packages, see pages 300-301.
For Radial Mount Ball Screw Shaft Extenders, see page 292.
For Spring Set electric brakes, see page 304.
For TNUT mounting hardware, see page 308.

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in two to three weeks. Custom length systems are available and require three to four weeks for delivery. Lengths exceeding MAX length will require butt joints and will need 4 to 6 weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2RB Benefits:

- Used in continuously supported applications when stiffness and rigidity is required.
- Single part number is all that is required
- T-Slot in carriage provides quick and easy mounting and removal of the workpiece.

SuperSlide 2RB Components:

- 1 double LinearRace* Rail Assembly with T-Slots for mounting ease.
- 1 T-Slot integrated carriage with 4 open type Super Smart Ball Bushing* bearings.
- 1 Integral Ball Screw Assembly

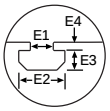
Specifying a Thomson System:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.**Place your order with your local authorized Thomson distributor.

Part Numbering System

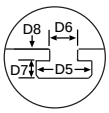
2RB-M16-ODM-I L600

- System Designation
- Nominal Diameter
- System Length
- Type of Ball Screw
- Type of Carriage
- Type of Support

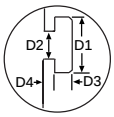
T4 T-Slots

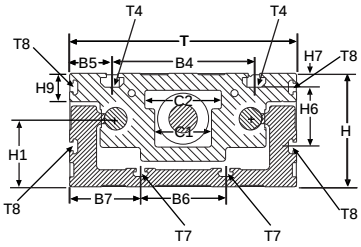


T7 T-Slots



T8 T-Slots

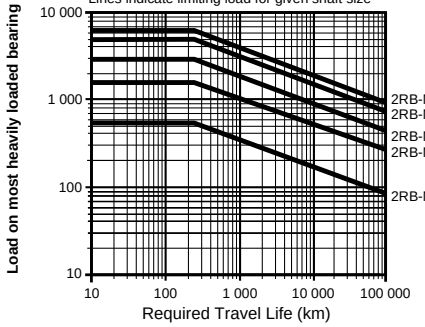




Carriage X-Section

Load/Life Graph

Lines indicate limiting load for given shaft size



SuperSlide 2RB System with Integral Ball Screw Assembly and T-Slot Carriage (Dimensions in mm)

Part Number	Nominal Diameter	B4	B5	B6	B7	D1	D2	D3	D4	D5	D6
2RB-M12-ODM	12	75	27,5	65	32,5	8,0	4,2	2,75	2	8,0	4,2
2RB-M16-ODM	16	100	30	80	40	10,5	6	3,5	2,5	10,5	6
2RB-M20-ODM	20										

SuperSlide 2RB System with Integral Ball Screw Assembly and T-Slot Carriage (Dimensions in mm)

Part Number	D7	D8	E1	E2	E3	E4	H	H1	H6	H7	H9	T
2RB-M12-ODM	2,75	2	7,5	13	4	3	65	40	35	7	14	130
2RB-M16-ODM	3,5	2,5	8,1	16,5	6,8	3	80	48	41,5	10	20	160
2RB-M20-ODM												

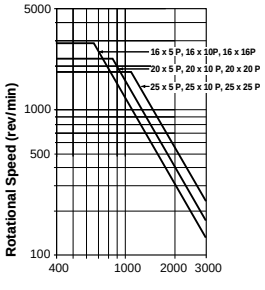
The SuperSlide has a pre-designed **Maximum Acceptable Travel Rate**. Calculate maximum rotational speed (rpm) by dividing your required maximum linear speed (m/s) by the corresponding system ball screw lead (m/rev). Enter the chart with the required system length and your maximum rotational speed. Select the system with a maximum acceptable travel rate curve above the plotted line.

Compressive load on the ball screw is a key factor in selecting the proper System. Using maximum load and acceleration requirements, plot compressive load on the left side of the chart.Using System length and compressive load. plot the maximum allowable compressive force on the right chart. Select the System with a rated maximum compressive force above your plotted point.

If you have questions concerning your system requirements, contact the Thomson **Systems** application engineering department.

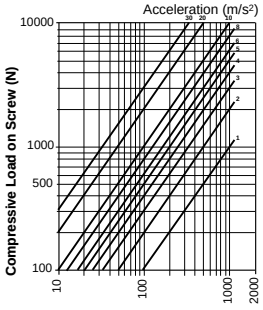
Note: Ball screw should never exceed recommended critical speed.

Maximum Acceptable Travel Rate†

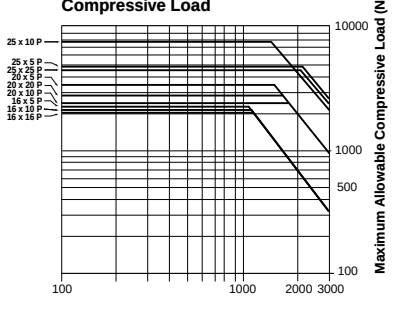


†80% of Critical Speed

Compressive Load



Maximum Allowable Compressive Load



For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Systems Applications

Application Analysis

Determining the system which best meets the demands of your application and provides optimum performance requires the evaluation of a number of variables. The accompanying form establishes basic criteria to initiate the analysis of your application. In addition, the Engineering Support Appendix has been designed with pertinent data and formulas used to specify the proper system for your application.

If you have questions or special needs a Thomson systems engineer can assist you in evaluating your application and recommending a system solution. Simply call 1-800-554-8466.

Application Description: ❑ Horizontal ❑ Vertical

System Part Number:

Quantity Required

Weight of Load (N):

Space Requirements (LxHxW):

Stroke Length Requirements (mm):

Support Requirements: ❑ End Supported ❑ Full Support

Maximum Velocity Requirements (m/s):

Maximum Acceleration Requirements (m/s^2):

Required Straightness of Travel Accuracy (µm/m):

Required Positioning Accuracy (µm):

Required Repeatability (µm):

Life Requirement (km):

Cycle (km/yr):

Environmental Considerations:

Other Design Criteria:

Production Time Frame:

Company:

Name:

Title:

Address:

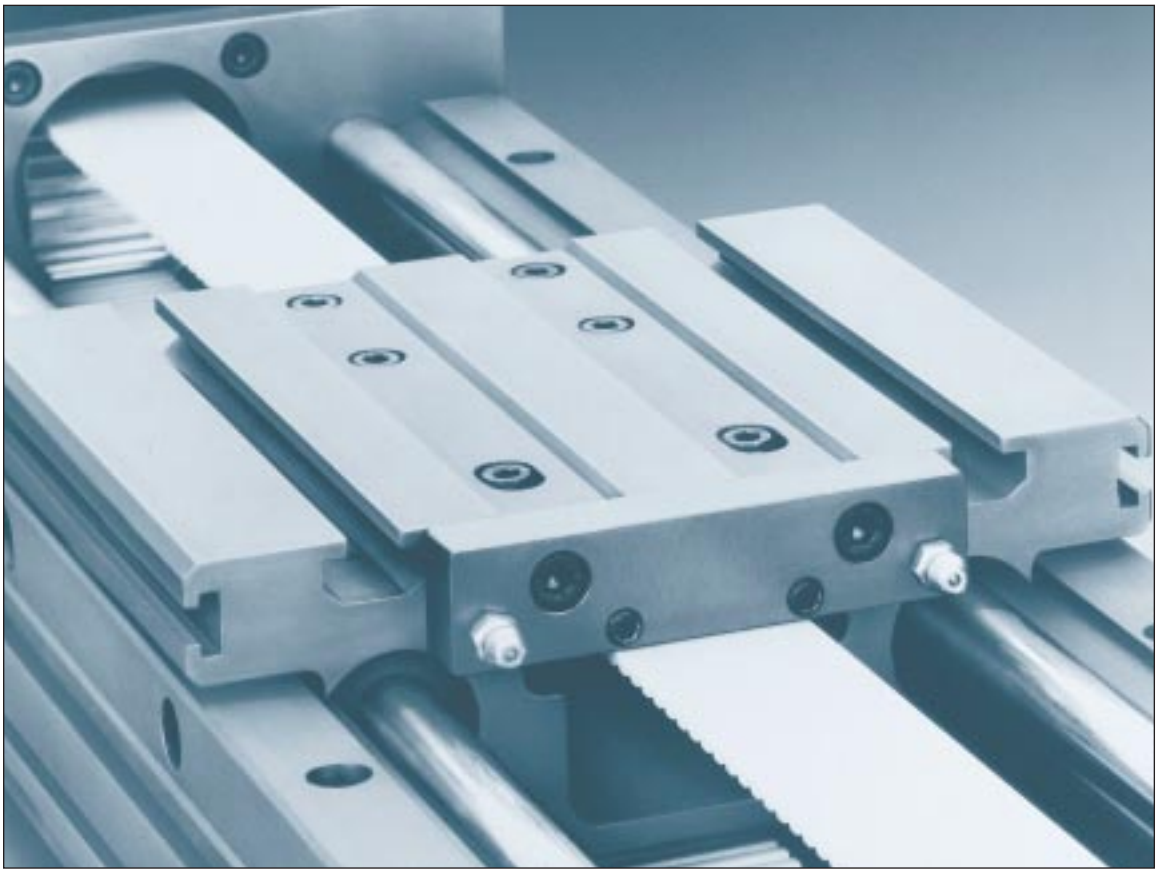
City: State: Zip:

Telephone: Fax:

Please Fax your Application Analysis to 516-883-9039 Attention: Application Engineering

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide
Belt Actuated Systems

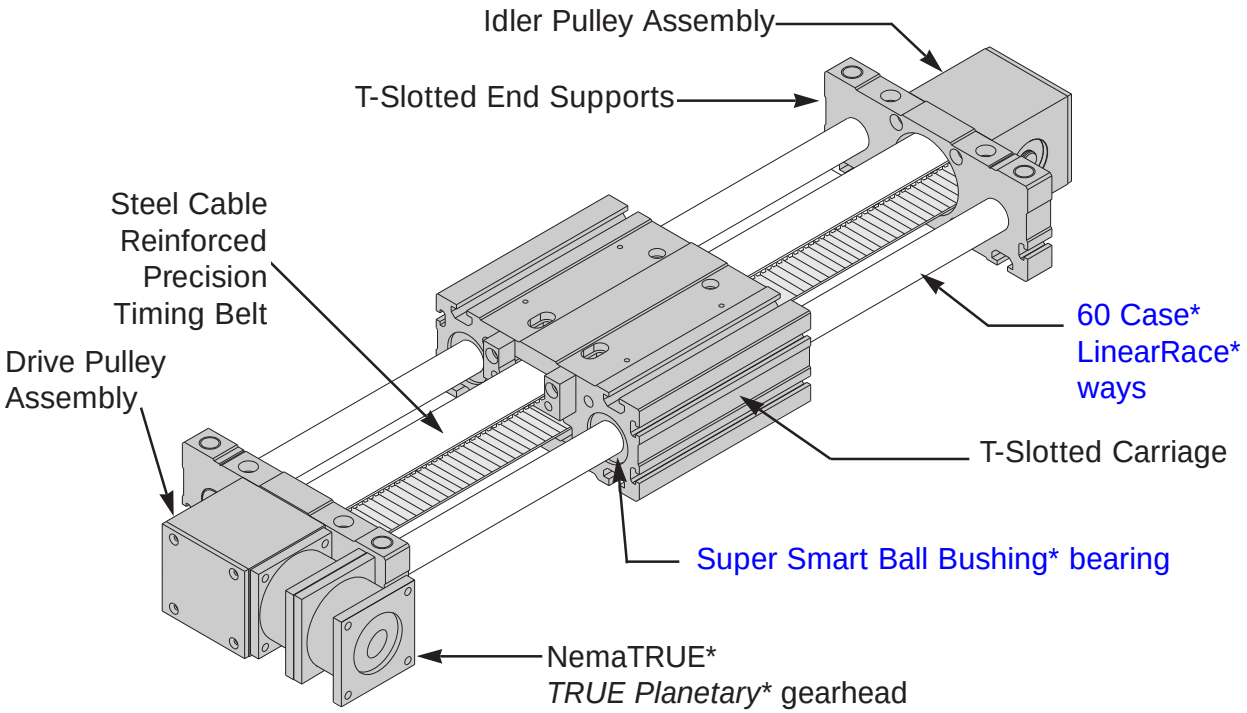


SuperSlide* Belt Actuated Systems offer:

- An end supported and continuously supported version complete with prealigned LinearRace* ways and an integral belt drive assembly. End Supported Systems are used when spanning or bridging a gap. While Continuously Supported Systems are used when rigidity is required.
- Available with uniquely designed carriages and LinearRace assemblies with integrated T-slots for easy assembly and mounting.
- High speed and acceleration with positioning accuracy better than 0,2 mm/ 300 mm and repeatability within 0,10 mm. Improvement in system performance is realized immediately.
- Available with integrated Super Smart Ball Bushing* bearings which provide up to six times the load capacity or 216 times the travel life of conventional linear bearing based systems.
- Anodized coating, double acting integral wipers and bellows for protection in corrosive environments. A uniquely designed lubrication system option is available for all systems.
- A precision gearhead for matching the inertia between the belt drive system payload and the servo motor. The True Planetary* gearhead design provides torque capacity up to 28 N-m at speeds as high as 4000 rpm.
- A single part number system. All that is required to order is to specify the system nominal size and length.
- Easy adaptation to the Thomson AXI-PAK* Motion Control system. Once the Superslide Belt Drive system has been selected simply specify a standard **T**homson **M**otion **C**ontrol package that meets your complete motion control needs.
(See the Motion Control section on page 381)

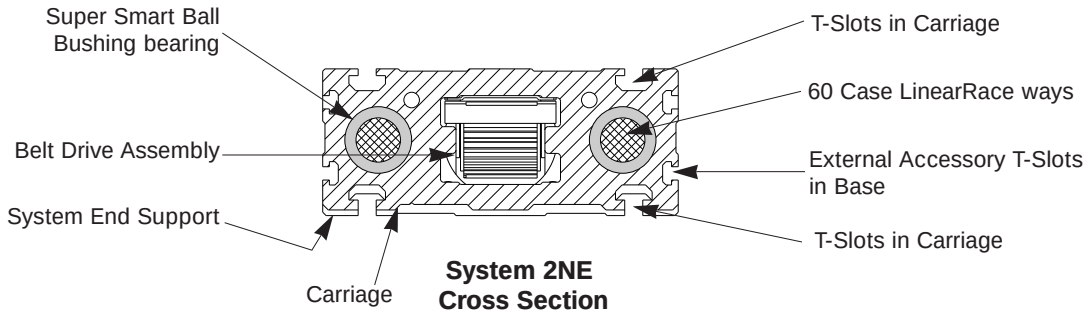
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2NE Belt Actuated System



SuperSlide 2NE End Supported Belt Actuated System Features:

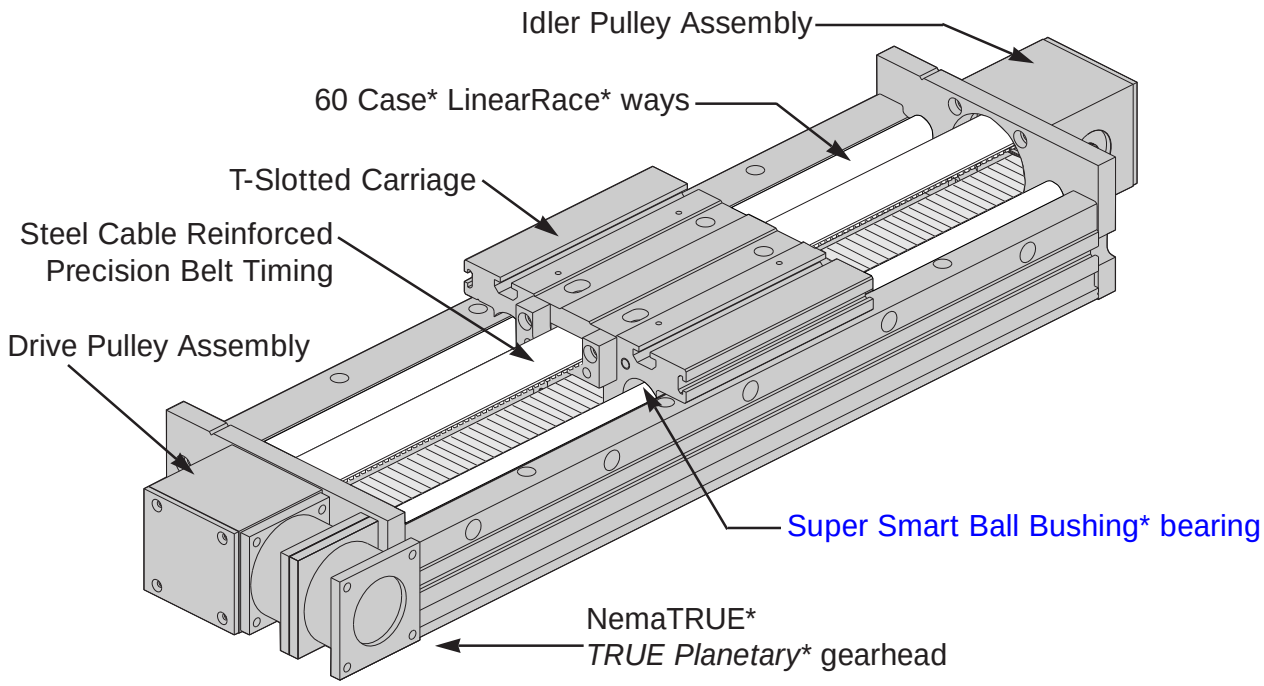
- End Supported System
- Precision Steel Reinforced Timing Belt
- T-Slots in Carriage
- T-Slots in Base Mounting System
- Positioning Accuracy less than 0,2 mm/300 mm
- Long Travel Life
- Super Smart Ball Bushing bearings
- Integral Precision Gearhead
- Double Acting Seals
- Optional Lubrication System
- Speeds in excess of 3 m/s
- Single Part Number System
- Standard NEMA Motor Mounting
- Protective Bellows Option



System 2NE Cross Section

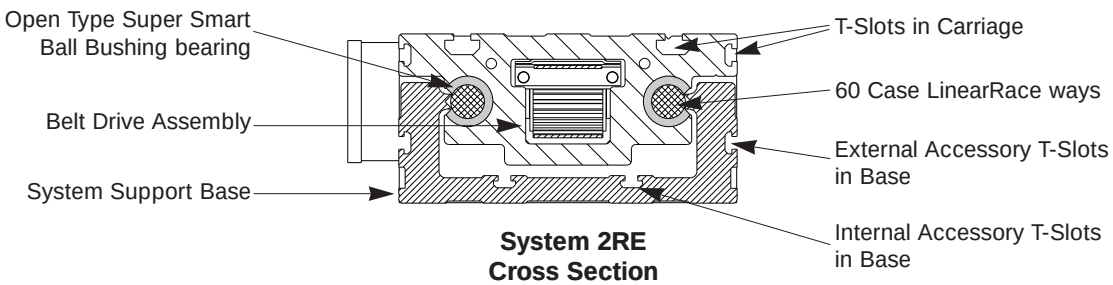
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2RE Belt Actuated System



SuperSlide 2RE Belt Actuated System Features:

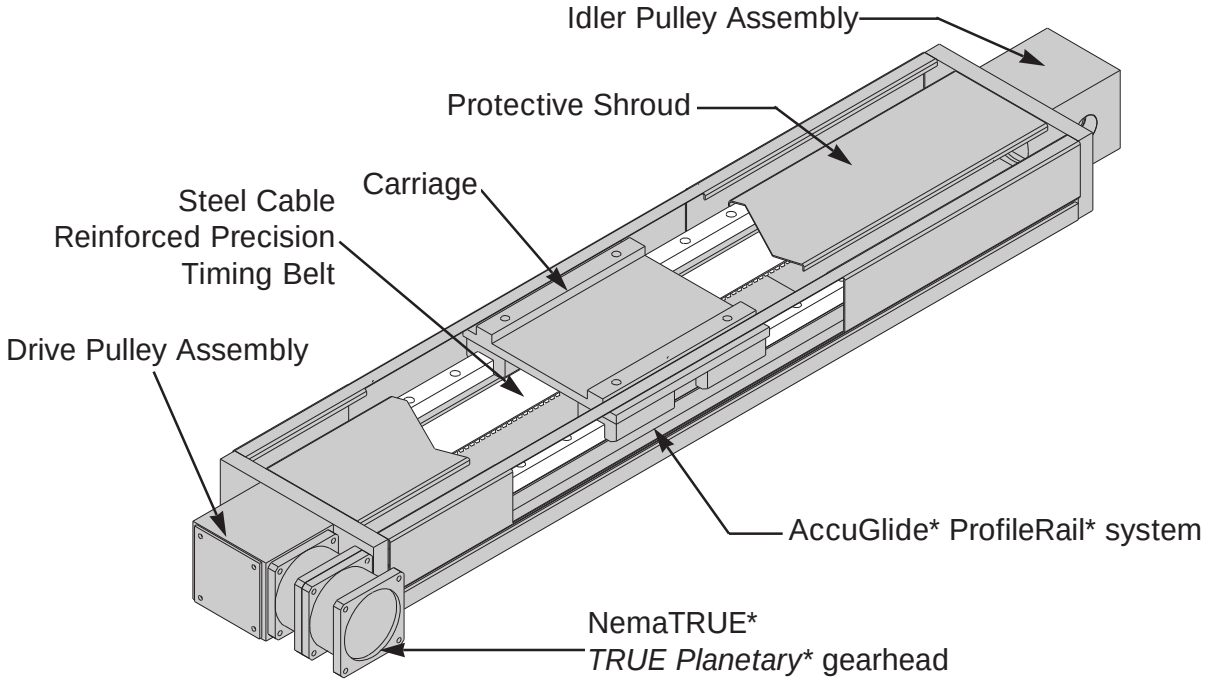
- Continuously Supported System
- Precision Steel Reinforced Timing Belt
- T-Slots in Carriage
- T-Slots in Base Mounting System
- Positioning Accuracy less than 0,2 mm/300 mm
- Long Travel Life
- Super Smart Ball Bushing bearing
- Load Capacities up to 5446 N at 250 Km of travel life.
- Double Acting Seals
- Optional Lubrication System
- Speeds in excess of 3 m/s
- Integral Precision Gearhead
- Standard NEMA Motor Mounting
- Protective Bellows Option



System 2RE
Cross Section

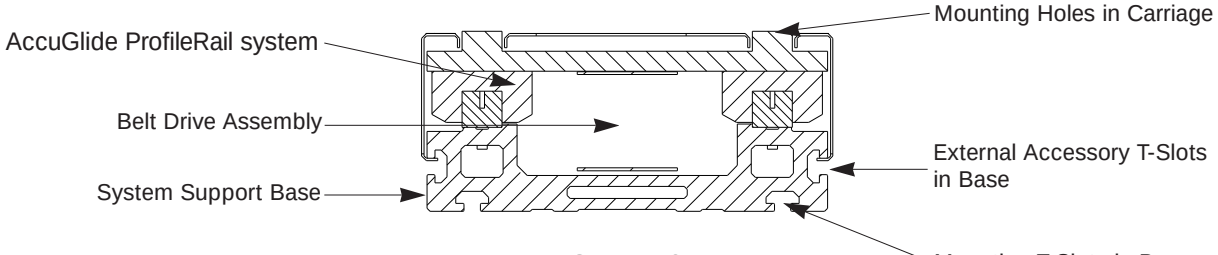
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

AccuSlide* 2HE Belt Actuated System



AccuSlide 2HE Belt Actuated System Features:

- Continuously Supported System
- Precision Steel Reinforced Timing Belt
- Mounting holes in Carriage
- T-Slots in Base Mounting System
- Positioning Accuracy less than 0,2 mm/300 mm
- Long Travel Life
- AccuGlide ProfileRail system
- High Dynamic Moment Capacity
- Integral Full Length Wipers
- Optional Lubrication System
- Speeds up to 3 m/s
- Integral Precision Gearhead
- Standard NEMA Motor Mounting
- Optional Integral Protective Shroud



System 2HE
Cross Section

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

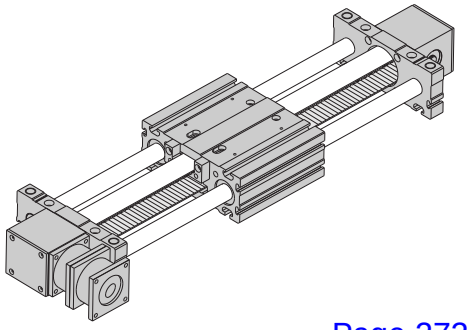
Metric SuperSlide Belt Actuated System Solution Matrix

Metric SuperSlide*

Belt Actuated Systems

For End Supported Applications

2NE



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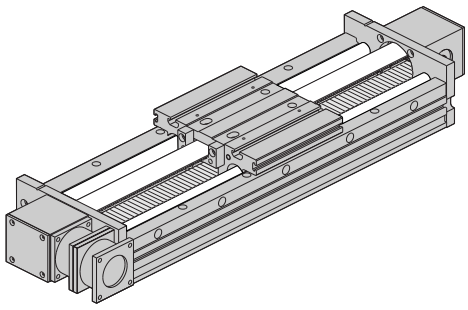
For Continuously Supported Applications

2RE



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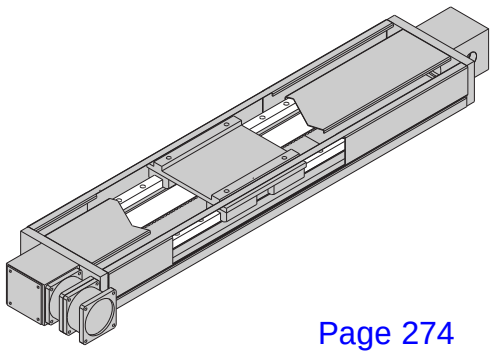
2HE



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For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide*
Belt Actuated System

Precision True Planetary* gearhead

NemaTRUE Planetary* Precision Gearheads

Torque Multiplication and Inertia Matching.

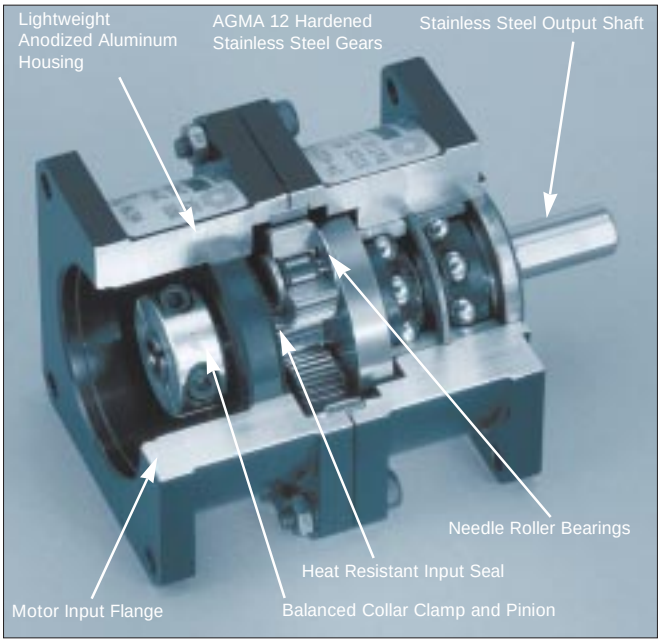
Precision True Planetary gearheads are available in ratios 1:1, 3.1, 5:1 and 10:1 providing maximum application flexibility. To specify the proper precision True Planetary gearhead all that is required is the torque, speed and inertia requirements for the belt actuated system and the AXI-PAK* motion control system selection. True Planetary gearheads reduce the inertia reflected from the system load and allow for higher accelerations. Motor torque capacity is multiplied while accuracy is increased due to improvements in torsional stiffness.

NemaTRUE
Precision True Planetary gearheads
Features:

- 13 Arc-minutes Maximum Backlash
- Long Service Life
- True Planetary gearing
- Compact Design
- Ratios Between 1:1 and 50:1
- 90% Efficient
- High Torque Capacity
- Low Inertia
- High Speed Capacity
- Single Part Number System
- Lifetime Lubrication
- Standard NEMA Motor Mounting

NemaTRUE
Precision True Planetary gearheads
Materials:

- AGMA Stainless Steel Gears
- Angular Contact Ball Bearings
- Stainless Steel Output Shaft
- Lightweight Aluminum Input Housing



For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* Belt Driven System
System Selection

Many variables influence the selection of a Linear Motion System. The best solution demands a thorough evaluation of the application, only then can design criteria be established. Issues such as envelope limitations, system load capacity, actuator load capacity, speed and acceleration, drive requirements, accuracy and repeatability, and operating environment are looked at from a broad perspective to determine the type of system, type of actuator, and whether the system need be built of special materials.

Typically, a belt actuated linear motion system is ideal for moderate precision, high load, and high-speed applications. When compared to a Ball Screw Actuated Linear Motion System, the Belt Actuated System can attain higher linear speeds in longer stroke applications. A degree of positioning accuracy, however, is sacrificed, as the belt is not capable of meeting the accuracy of that of the ball screw. Since the belt actuated is actuated through a True Planetary* gearhead, the torque, speed, and system inertia can be matched by varying the gear ratio. If an application requires rigidity, then a fully supported system should be specified in lieu of an end supported type system. For extremely heavy-duty applications, the AccuSlide* (2HE series) system, with its use of ProfileRail* type Linear Guides is adept at handling normal axis, overhung, or cantilever loads of increased magnitude. In environments that are corrosive or high temperature special materials may be required and are available. Contact Application Engineering for details on special materials.

In order to determine the Belt Actuated SuperSlide System that meets the needs of your application, it is first necessary to evaluate the following detail design criteria:

- System support requirements
- System stroke length
- Maximum allowable shaft deflection
- Required travel life
- Force on the most heavily loaded bearing
- Load correction factor
- Load/Life requirements-linear bearings
- Motion (move) profile (velocity, acceleration)
- Maximum belt tooth shear strength
- Gear motor rotational speed (gear reduction)
- Torque considerations
- Size motor using torque/speed curves

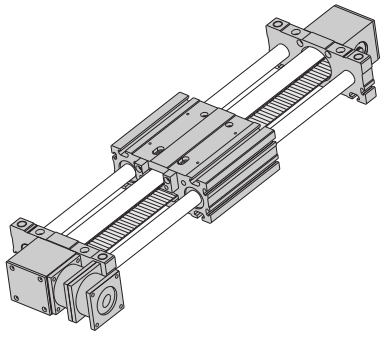
A detailed explanation of the procedure for selecting a Belt Actuated Linear Motion System is given on page 342 in the Engineering Support Section.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

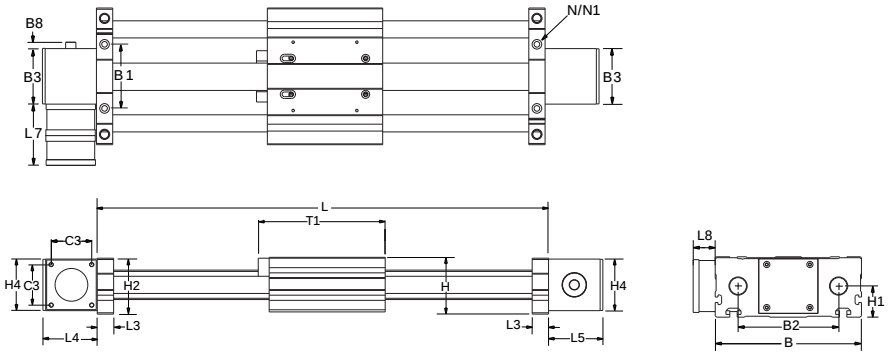
SuperSlide* 2NE
End Supported System

with Integral Belt Drive Assembly and T-Slot Carriage

New... Super Smart
Ball Bushing* Bearing...
Now Available For All Sizes



Maximum Stroke Length
is determined by subtracting the carriage length **(T1)** and end block length **(L3)** from the total system length (**L**).



SuperSlide 2NE System with Integral Belt Actuated Assembly and T-Slot Carriage												(Dimensions in mm)
Part Number	Nominal Dia.	B	B1	B2	B3	B8	C3	H	H1	H2	H4	Max. Stroke Length
2NE-M16-OLL-	16											
2NE-M20-OLL-	20	160	75	110	65	7,5	47,15	66	34	65	60	L-200

SuperSlide 2NE System with Integral Belt Actuated Assembly and T-Slot Carriage									(Dimensions in mm)
Part Number	L3	L4	L5	L7	L8	N Bolt	N1 Hole	T1	NEMA Size
2NE-M16-OLL-									
2NE-M20-OLL-	20	61,5	61,5	71,6	24,1	M6	11,25	160	23

System 2NE Standard Lengths																										(Lengths in mm)	
System	300	375	400	450	500	525	600	675	700	750	800	825	900	975	1000	1050	1100	1125	1200	1275	1300	1350	1400	1425	1500	X	MAX
2NE-M16	■	■		■			■	■	■		■			■	■	■		■		■	■	■			■	75	1500
2NE-M20	■		■		■			■		■		■		■			■		■		■		■			100	2000

Metric SuperSlide 2NE			
System Part Number	Gear Ratio	Motor Frame Size	Gearbox Part Number
2NE-M16-OLL-A	1:1	NEMA23	NT-23-1
2NE-M16-OLL-B	3:1	NEMA23	NT-23-3
2NE-M16-OLL-C	5:1	NEMA23	NT-23-5
2NE-M16-OLL-D	10:1	NEMA23	NT-23-10
2NE-M20-OLL-A	1:1	NEMA23	NT-23-1
2NE-M20-OLL-B	3:1	NEMA23	NT-23-3
2NE-M20-OLL-C	5:1	NEMA23	NT-23-5
2NE-M20-OLL-D	10:1	NEMA23	NT-23-10

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in two to three weeks. Custom length systems are available and require three to four weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For Motion Control Options refer to the Motion Control Section on page 381.
For Bellows Way Covers, see page 291.
For Spring Set electric brakes, see page 304.
For TNUT mounting hardware, see page 308.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

THOMSON First in Linear Motion and Control Technology

SuperSlide* 2NE Benefits:

- Used in end supported applications when spanning or bridging a gap is required.
- High speed and acceleration.
- T-Slots in carriage provides quick and easy mounting and removal of the workpiece.

SuperSlide 2NE Components:

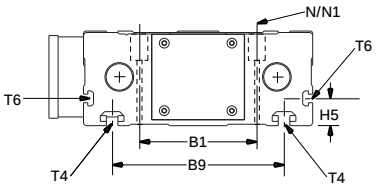
- 2 LinearRace* End Support blocks with T-Slots for mounting ease.
- 1 T-Slot integrated carriage with 4 Super Smart Ball Bushing* bearings.
- 1 Integral steel cable reinforced Belt Assembly.
- 1 Integral NemaTRUE* Precision Planetary Gearhead

Specifying a Thomson System:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.**Place your order with your local authorized Thomson distributor.

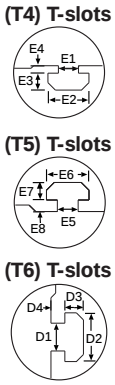
Part Numbering System

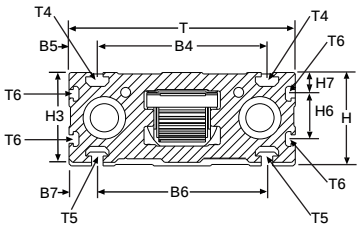
2NE-M20-OLL-A-L600

- System Designation / Nominal Diameter
- System Length
- Type of Gearbox
- Type of Carriage
- Type of Support



End Block





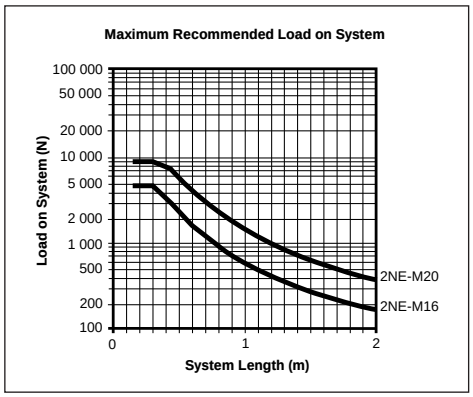
Carriage X-Section

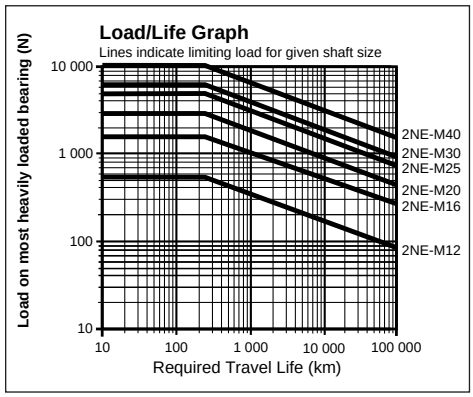
SuperSlide 2NE System with Integral Belt Actuated Assembly and T-Slot Carriage (Dimensions in mm)

Part Number	Nominal Diameter	B1	B4	B5	B6	B7	B9	D1	D2	D3	D4
2NE-M16-OLL-	16										
2NE-M20-OLL-	20	75	120	20	120	20	120	6	10,5	4	3

SuperSlide 2NE System with Integral Belt Actuated Assembly and T-Slot Carriage (Dimensions in mm)

Part Number	E1	E2	E3	E4	E5	E6	E7	E8	H	H3	H5	H6	H7	T
2NE-M16-OLL-														
2NE-M20-OLL-	8,1	16,5	6,8	3,0	8,1	16,5	6,8	4,5	66	63,5	19	32	15	160



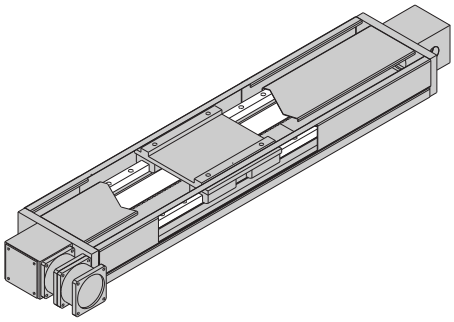


For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

AccuSlide* 2HE

Continuously Supported ProfileRail* System

with Integral Belt Drive Assembly and Carriage



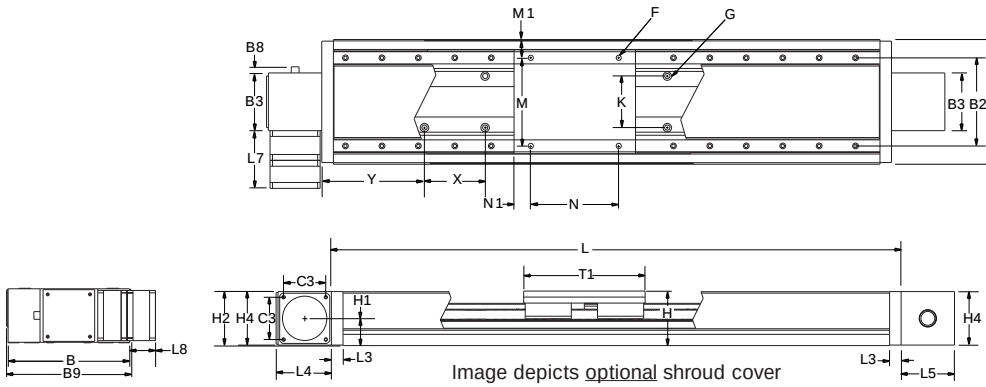


Image depicts optional shroud cover

Maximum Stroke Length is determined by subtracting the carriage length **(T1)** and 2X end block length **(L3)** from the total system length **(L).**

Metric AccuSlide 2HE ProfileRail System with Integral Belt Actuated Assembly and Carriage (Dimensions in mm)

Part Number	Nominal Size	B	B2	B3	B8	B9	C3	F	G	H	H1	H2	H4
2HE-M10-OZP	10	100	70	65	6,6	105	47,15	M5	M5	60	31	61	60
2HE-M20-OZP	20	200	145	95	10	205	69,6	M10	M8	90	45	89	88

Metric AccuSlide 2HE ProfileRail System with Integral Belt Actuated Assembly and Carriage (Dimensions in mm)

Part Number	Nominal Size	K Central	L3	L4	L5	L7	L8	M	M1	N	N1	T1	X	Y
2HE-M10-OZP	10	35	12,5	61,5	61,5	71,6	54,1	70	15	70	15	100	75	37,5
2HE-M20-OZP	20	85	20	101,5	101,5	95	42,5	145	27,5	145	27,5	200	120	42,5

Metric System 2HE Standard Lengths (Lengths in mm)

System	300	325	375	450	445	525	565	600	675	685	750	825	805	900	925	975	1045	1165	1285	1405	X	MAX
2HE-M10	■		■	■		■		■	■		■		■	■		■					75	1000
2HE-M20		■			■		■			■			■		■		■	■	■	■	120	3000

For Motion Control Options refer to the Motion Control Section on page 381.
For Bellows Way Covers, see page 291.
For Shroud Covers, see pages 302 and 303.
For Limit Switch Packages, see pages 297 and 299.
For Spring Set electric brakes, see page 304.
For TNUT mounting hardware, see page 308.

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in three to four weeks. Custom length systems are available and require four to six weeks for delivery. Lengths exceeding MAX length will require butt joints and will need 6 to 8 weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

AccuSlide* 2HE Benefits:

- Used in continuously supported applications that require high rigidity.
- Single part number is all that is required.
- Equipped with high load and moment capacity AccuGlide* ProfileRail* System.

AccuSlide 2HE Components:

- 1 double ProfileRail System Assembly.
- 1 carriage with 4 mounting holes.
- 1 Integral Belt Actuated Assembly.
- 1 integral NemaTRUE* Planetary* Precision gearhead.

Specifying a Thomson System:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.**Place your order with your local authorized Thomson distributor.

Part Numbering System

2HE-M20-OZP-E-L600

- System Designation / Nominal Diameter
- Type of Support
- Type of Carriage
- Type of Gearbox
- System Length

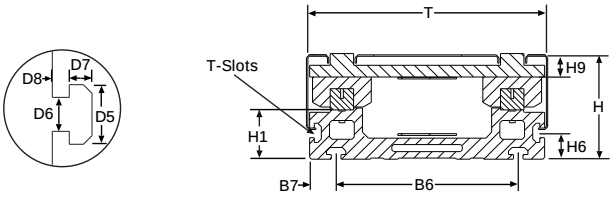


Image depicts optional shroud cover

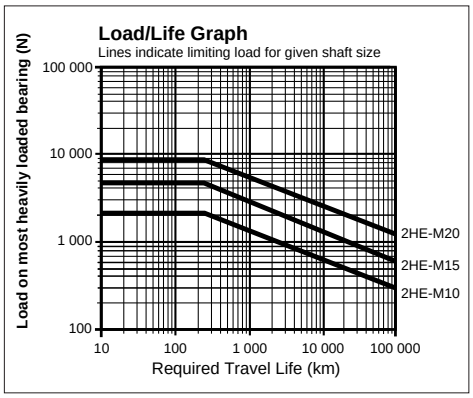
Metric AccuSlide 2HE ProfileRail System with Integral Belt Actuated Assembly and Carriage (Dimensions in mm)

Part Number	Nominal Diameter	B6	B7	D5	D6	D7	D8	H	H1	H6	H9	T
2HE-M10-OZP	10	70	15	10,5	6	3,0	2,5	60	31	15	13	100
2HE-M20-OZP	20	155	22,5	16,5	8,1	6	4	90	45	22,5	20	200

Appropriate mounting holes can be added for mounting the base of one system to the carriage of another for x–y configurations.

Metric AccuSlide 2HE Belt Actuated System

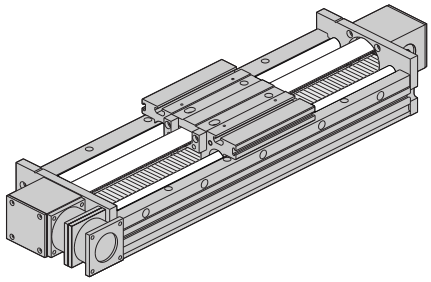
System Part Number	Gear Ratio	Motor Frame Size	Gearbox Part Number
2HE-M10-OZP-A	1:1	NEMA23	NT-23-1
2HE-M10-OZP-B	3:1	NEMA23	NT-23-3
2HE-M10-OZP-C	5:1	NEMA23	NT-23-5
2HE-M10-OZP-D	10:1	NEMA23	NT-23-10
2HE-M20-OZP-E	1:1	NEMA34	NT-34-1
2HE-M20-OZP-F	3:1	NEMA34	NT-34-3
2HE-M20-OZP-G	5:1	NEMA34	NT-34-5
2HE-M20-OZP-H	10:1	NEMA34	NT-34-10



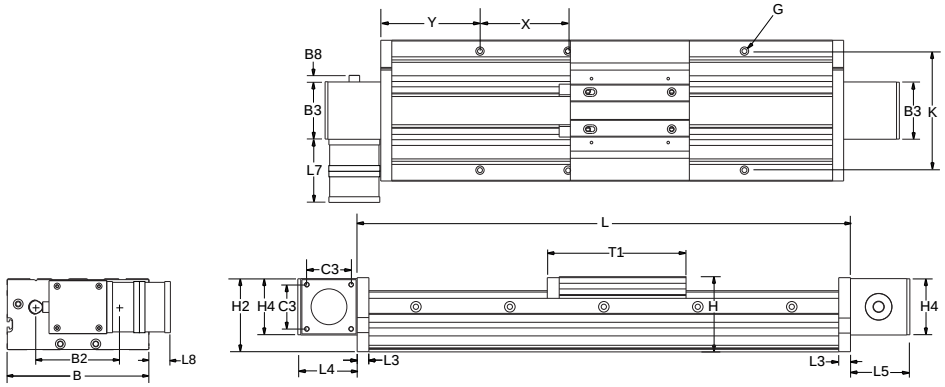
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Superslide* 2RE
Continuously Supported System

with Integral Belt Drive Assembly and T-Slot Carriage



New... Super Smart
Ball Bushing* Bearing...
Now Available For All Sizes



Maximum Stroke Length is determined by subtracting the carriage length **(T1)** and 2X end block length **(L3)** from the total system length.

SuperSlide 2RE System with Integral Belt Actuated Assembly and T-Slot Carriage										(Dimensions in mm)
Part Number	Nominal Dia.	B	B2	B3	C3	G	H	H2	H4	K
2RE-M12-OEM	12	130	75	65	47,15	M4	65	75	60	110
2RE-M16-OEM	16	160	95	65	47,15	M5	80	79	60	135
2RE-M20-OEM	20									

SuperSlide 2RE System with Integral Belt Actuated Assembly and T-Slot Carriage								(Dimensions in mm)
Part Number	L3	L4	L5	L7	T1	Base Mounting Hole		Max. Stroke Length
						X	Y	
2RE-M12-OEM	9,5	61,5	61,5	71,6	130	75	75	L-149
2RE-M16-OEM	12,5	61,5	61,5	71,6	160	100	100	L-185
2RE-M20-OEM								

System 2RE Standard Lengths																										(Lengths in mm)	
System	300	375	400	450	500	525	600	675	700	750	800	825	900	975	1000	1050	1100	1125	1200	1275	1300	1350	1400	1425	1500	X	MAX
2RE-M12	■	■		■		■	■	■		■		■	■	■		■		■	■	■		■		■	■	75	3000
2RE-M16	■		■		■		■		■		■		■		■		■		■		■		■		■	100	3000

For Motion Control Options refer to the Motion Control Section on page 381.
For Bellows Way Covers, see page 291.
For Limit Switch Packages, see pages 300 and 301.
For Spring Set electric brakes, see page 304.
For TNUT mounting hardware, see page 308.

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in two to three weeks. Custom length systems are available and require three to four weeks for delivery. Lengths exceeding MAX length will require butt joints and will need 4 to 6 weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

SuperSlide* 2RE Benefits:

- Used in continuously supported applications when rigidity is required.
- High speed and acceleration.
- T-Slot in carriage provides quick and easy mounting and removal of the workpiece.

SuperSlide 2RE Components:

- 1 double LinearRace* Rail Assembly with T-Slots for mounting ease.
- 1 T-Slot integrated carriage with 4 open type Super Smart Ball Bushing* bearings.
- 1 Integral Belt Actuated Assembly.
- 1 Integral NemaTRUE* Planetary Precision gearhead.

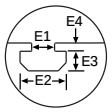
Specifying a Thomson System:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.**Place your order with your local authorized Thomson distributor.

Part Numbering System

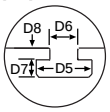
2RE-M16 OEM-A-L600

- 2RE — System Designation
- M16 — Nominal Diameter
- OEM — System
- A — Type of Gearbox
- L600 — Length
- Type of Carriage
- Type of Support

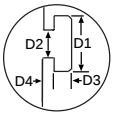
(T4) T-slots

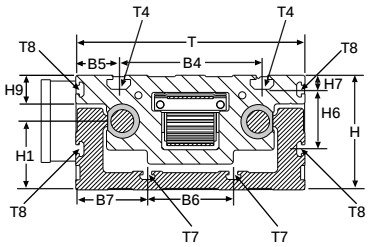


(T7) T-slots



(T8) T-slots





Carriage X-Section

SuperSlide 2RE System with Integral Belt Actuated Assembly and T-Slot Carriage (Dimensions in mm)

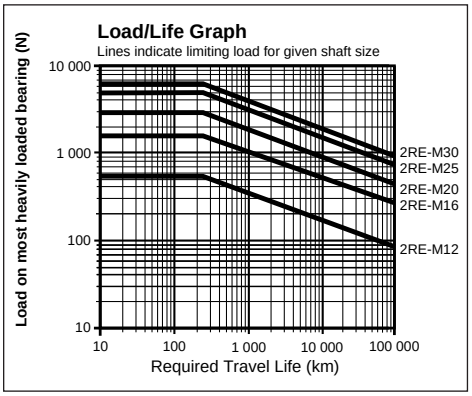
Part Number	Nominal Diameter	B4	B5	B6	B7	D1	D2	D3	D4	D5	D6
2RE-M12-OEM	12	75	27,5	65	32,5	8,0	4,2	2,75	2	8,0	4,2
2RE-M16-OEM	16	100	30	80	40	10,5	6	3,5	2,5	10,5	6
2RE-M20-OEM	20										

SuperSlide 2RE System with Integral Belt Actuated Assembly and T-Slot Carriage (Dimensions in mm)

Part Number	D7	D8	E1	E2	E3	E4	H	H1	H6	H7	H9	T
2RE-M12-OEM	2,75	2	7,5	13	4	3	65	40	35	7	14	130
2RE-M16-OEM	3,5	2,5	8,1	16,5	6,8	3	80	48	41,5	10	20	160
2RE-M20-OEM												

SuperSlide 2RE Belt Actuated System

System Part Number	Gear Ratio	Motor Frame Size	Gearbox Part Number
2RE-M12-OEM-A	1:1	NEMA23	NT-23-1
2RE-M12-OEM-B	3:1	NEMA23	NT-23-3
2RE-M12-OEM-C	5:1	NEMA23	NT-23-5
2RE-M12-OEM-D	10:1	NEMA23	NT-23-10
2RE-M16-OEM-A	1:1	NEMA23	NT-23-1
2RE-M16-OEM-B	3:1	NEMA23	NT-23-3
2RE-M16-OEM-C	5:1	NEMA23	NT-23-5
2RE-M16-OEM-D	10:1	NEMA23	NT-23-10



For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Systems Applications

Application Analysis

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If you have questions or special needs a Thomson systems engineer can assist you in evaluating your application and recommending a system solution. Simply call 1-800-554-8466.

Application Description: ❑ Horizontal ❑ Vertical

System Part Number:

Quantity Required

Weight of Load (N):

Space Requirements (LxHxW):

Stroke Length Requirements (mm):

Support Requirements: ❑ End Supported ❑ Full Support

Maximum Velocity Requirements (m/s):

Maximum Acceleration Requirements (m/s^2):

Required Straightness of Travel Accuracy (µm/m):

Required Positioning Accuracy (µm):

Required Repeatability (µm):

Life Requirement (km):

Cycle (km/yr):

Environmental Considerations:

Other Design Criteria:

Production Time Frame:

Company:

Name:

Title:

Address:

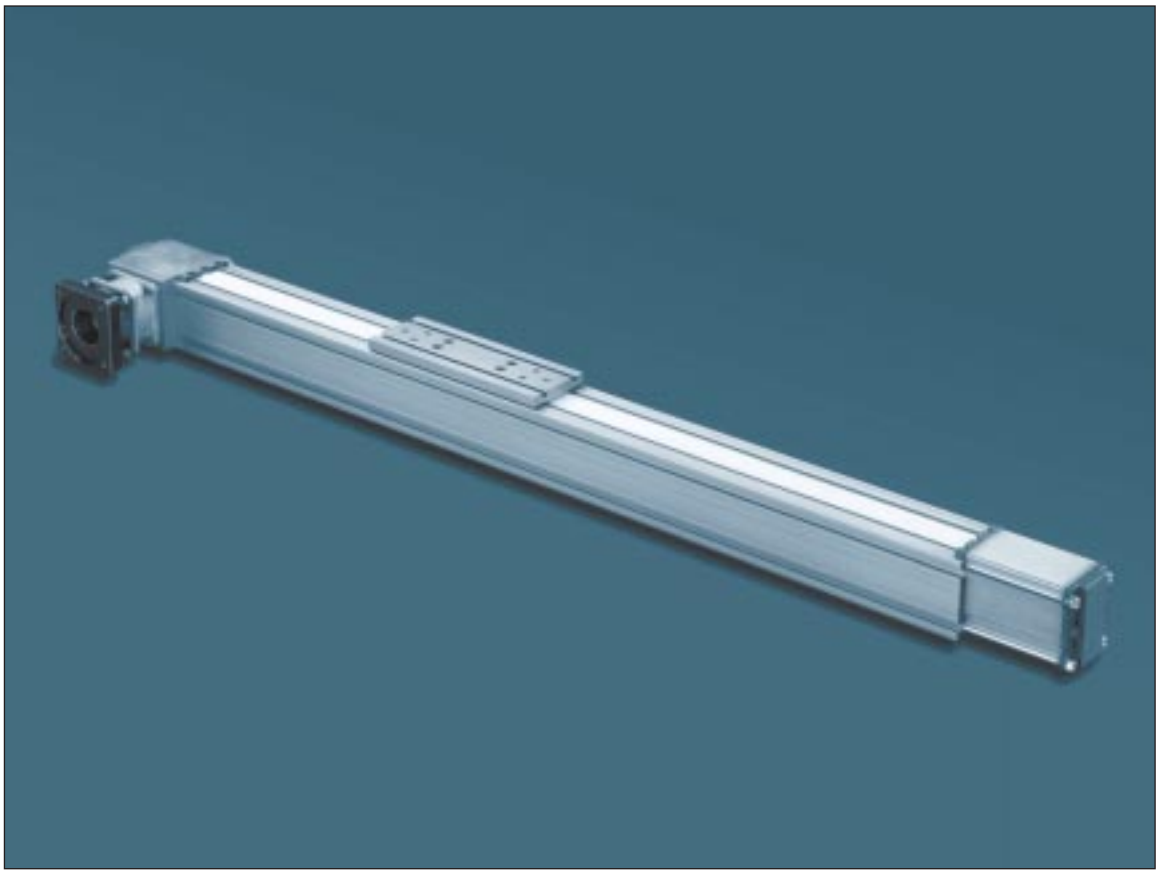
City: State: Zip:

Telephone: Fax:

Please Fax your Application Analysis to 516-883-9039 Attention: Application Engineering

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Turbo Module
Belt Actuated Systems

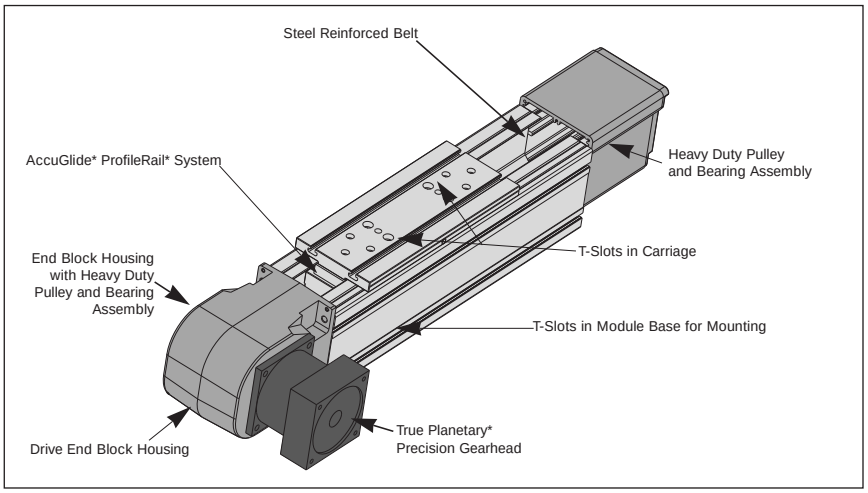


Turbo Module Belt Actuated Systems offer:*

- A structurally rigid design with mounting flexibility, the Turbo Module System can be used when spanning or bridging a gap or mounted continuously when maximum rigidity is required.
- Available with a uniquely designed carriage and mounting base with integrated T-slots for quick and easy multi-axis assembly and control.
- High speed and acceleration with positioning accuracy better than +/- 0,15 mm.
- Integrated AccuGlide* ProfileRail* Systems providing high rigidity combined with dynamic load capacities up to 56 kN and moment capacities up to 7900 Nm.
- A single point integrated lubrication system that maximizes reliability and reduces down time.
- Standard integrated True Planetary* gearhead for speed reduction and torque multiplication. Gearhead motor mounting flanges are stocked, awaiting your motor specifications.
- A single part number system. All that is required to order is to specify the system size and length.
- Easy adaptation to industry standard servo motor systems. Refer to the Motion Control Section on page 381.

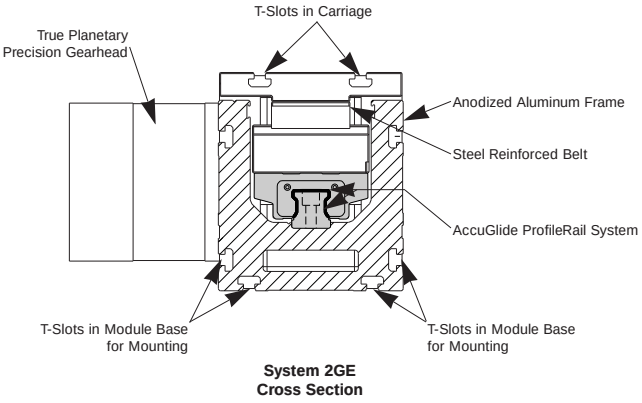
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Turbo Module* Belt Actuated Systems



Turbo Module 2GE Belt Actuated System Features:

- Compact and Rigid Aluminum Mounting Base
- Integral Steel Reinforced Belt
- T-Slots in Carriage
- T-Slots in Base Mounting System
- Standard Built-in Gearhead
- Repeatability better than +/- 0,15 mm
- AccuGlide* ProfileRail* System
- Load Capacities up to 56 kN
- Easy to install
- Integral Lubrication System
- Speeds up to 5 m/s
- Standard Motor Mounting
- Single Part Number System
- Simple or Continuous Support Capabilities



System 2GE
Cross Section

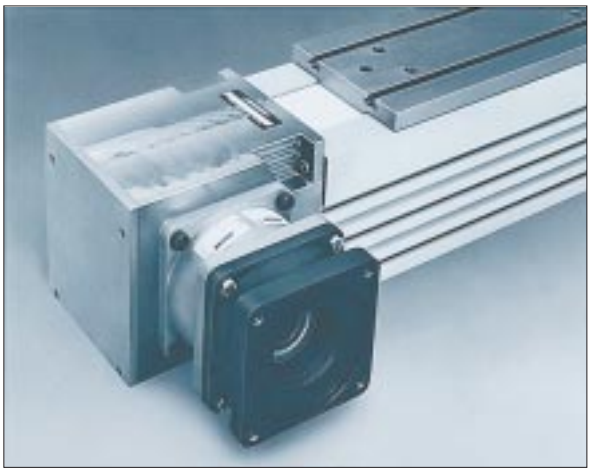
System Material Specifications:

- **Belt Material:**
  White Polyurethane Steel Cable Reinforced
- **Mounting Base Material**
  High Strength Aluminum Alloy
- **ProfileRail Systems**
  Hardened Bearing Quality Steel Rail
  Hardened Bearing Quality Steel Carriage Assembly
  Hardened and Precision Ground Bearing Ball Elements
- **AccuTRUE* True Planetary* Precision Gearheads**
  AGMA Stainless Steel Gears
  Tapered Roller Bearings
  Stainless Steel Output Shaft
  Stainless Steel Output Housing
  Light Weight Aluminum Housing
- **End Support Systems**
  High Quality Steel Toothed Pulley
  Heavy Duty Bearings

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Turbo Module* 2GE
Belt Actuated Systems

True Planetary* Gearheads



AccuTRUE*
True Planetary Gearheads
Speed reduction choices.

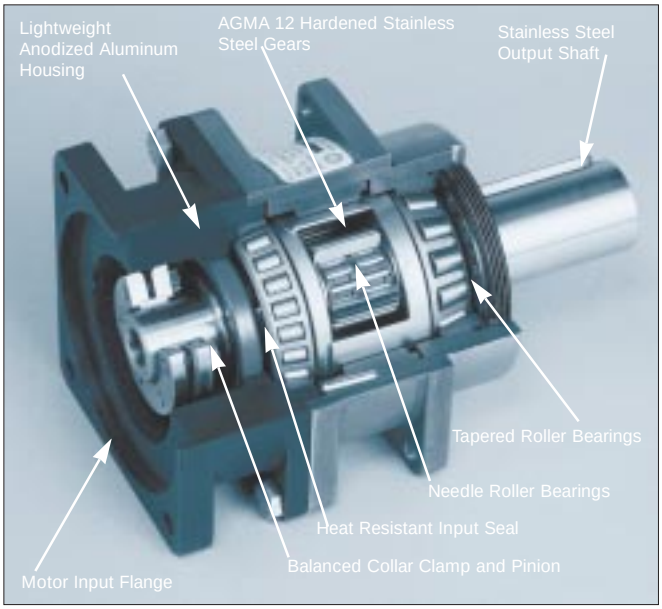
True Planetary gearheads are available in standard ratios between 1:1 and 10:1 providing maximum application flexibility. Motor torque capacity is multiplied while output speed is reduced. True Planetary gearheads reduce the inertia reflected from the system load and allow for higher accelerations. To specify the proper precision gearhead all that is required is the torque and speed requirements for the belt actuated system and your selection of a servo motor. Simply follow the step by step selection process on pages 359 through 370.

AccuTRUE
True Planetary Gear Reduction Features:

- 6 Arc-minutes Maximum Backlash
- Long Service Life
- True Planetary Gearing
- Compact Design
- Ratios Between 1:1 and 50:1
- Up to 90% Efficient
- High Torque Capacity
- Low Inertia
- High Speed Capacity
- Lifetime Lubrication
- Standard Motor Mounting

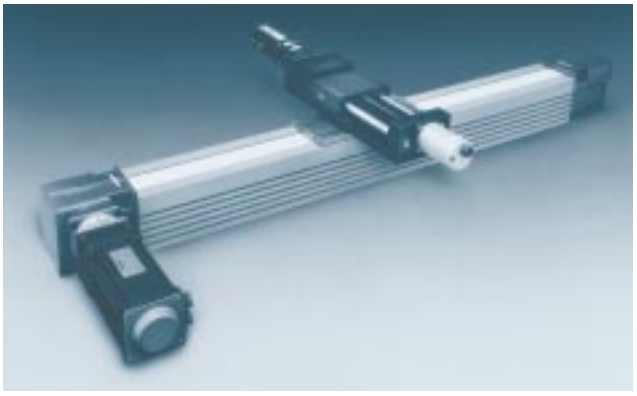
AccuTRUE
True Planetary Precision Gearhead Materials:

- AGMA Stainless Steel Gears
- Tapered Roller Bearings
- Stainless Steel Output Shaft and Housing
- Light Aluminum Input Housing



For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

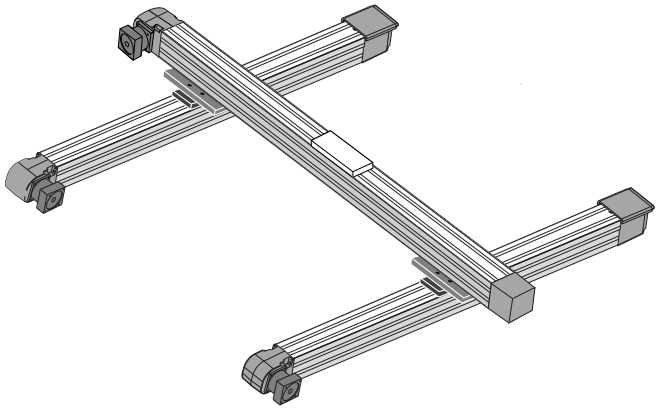
Turbo Module **2GE**
Belt Actuated System



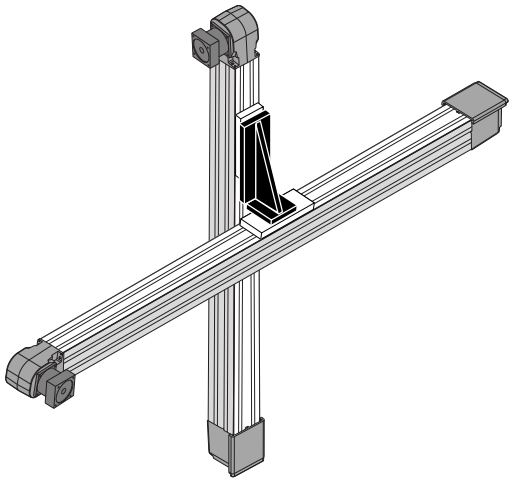
Turbo Module* Multi-Axis Options
High Speed Multi Axis Positioning

The Turbo Module 2GE system provides the basis for multi-axis motion control. The built-in flexibility of the T-slots in the base and the carriage allow for quick and easy x-y, x-z and x-y-z assembly and positioning capability. The illustrations below provide a sampling of the types of configurations that can be achieved. In many cases a SuperSlide ball screw actuated system can be used to provide an additional axis of motion. Adapter plates can be provided for the mounting of each system. For your next multi-axis application contact Thomson Systems application engineering.

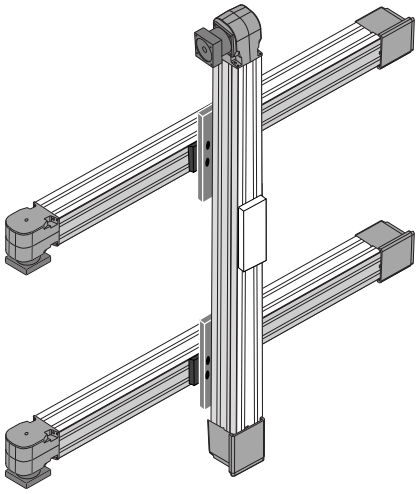
2GE-2X-Y



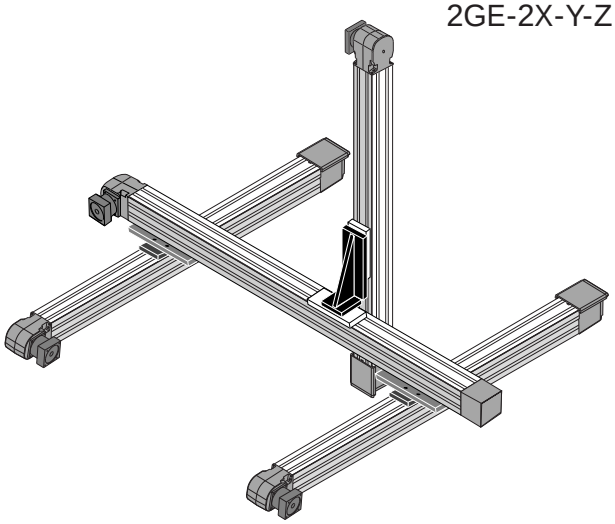
2GE-X-Z



2GE-2X-Z



2GE-2X-Y-Z



For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Turbo Module* Belt Actuated System Selection Criteria

Many variables influence the selection of a Linear Motion System. The best solution demands a thorough evaluation of the application, only then can design criteria be established. Issues such as envelope limitations, system load capacity, actuator load capacity, speed and acceleration, drive requirements, accuracy and repeatability, and operating environment are looked at from a broad perspective to determine the type of system, type of actuator, and whether the system need be built of special materials.

Typically, a belt driven linear motion system is ideal for moderate precision, high load, and high-speed applications. When compared to a Ball Screw Actuated Linear Motion System, the Belt Actuated System can attain higher linear speeds in longer stroke applications. A degree of positioning accuracy, however, is sacrificed, as the belt is not capable of meeting the accuracy of that of the ball screw. The Turbo Module is designed to act as its own support structure by virtue of its robust base support member and is thereby suited for applications that require gantry or overhung loads. Since the Turbo Module belt drive is actuated through a True Planetary* gearhead, the torque, speed, and system inertia can be matched by varying the gear ratio. In environments that are corrosive or high temperature special materials may be required and are available. Contact Application Engineering for details on special materials.

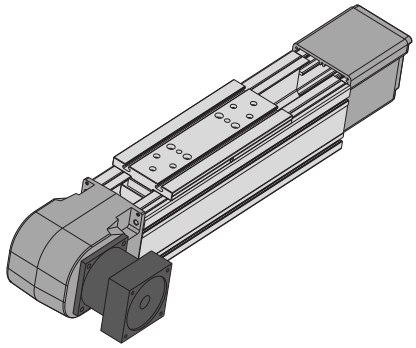
In order to determine the Turbo Module Belt Actuated SuperSlide* System that meets the needs of your application, it is first necessary to evaluate the following detail design criteria:

- System support requirements
- System stroke length
- Maximum allowable shaft deflection
- Required travel life
- Force on the most heavily loaded bearing
- Load correction factor
- Load/Life requirements-linear bearings
- Motion (move) profile (velocity, acceleration)
- Maximum belt tooth shear strength
- Gear motor rotational speed (gear reduction)
- Torque considerations
- Size motor using torque/speed curves

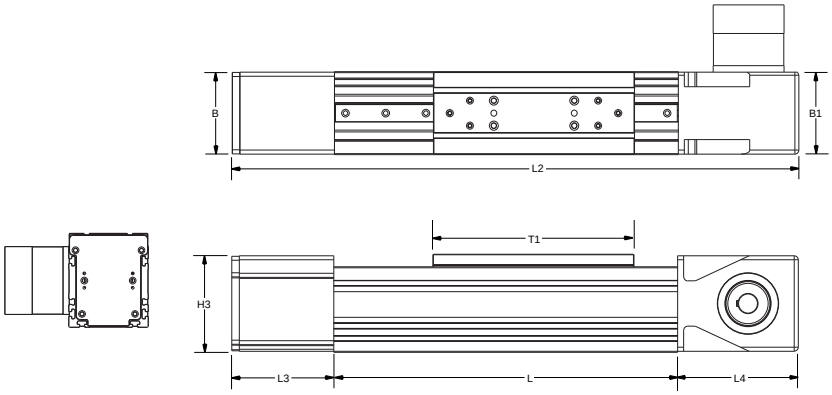
A detailed explanation of the procedure for selecting a Turbo Module Belt Actuated Linear Motion System is given on page 359 in the Engineering Support Section.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Turbo Module 2GE
Belt Actuated System
with T-Slot Integrated Carriage



New... AccuGlide*
ProfileRail* System...
Now Available in Select Sizes



Maximum Stroke Length
is determined by subtracting the carriage length **(T1)** from the system length **(L)**.

(Belt Not Shown for Clarity)

Turbo Module* 2GE Belt Actuated System with T-Slot Integrated Carriage (Dimensions in mm)

Part Number	Nominal Size	B	B1	H3	L3	L4	T1	L2 Total System Length	Max. Stroke Length
2GE-M25-OQN	25	102	131	112	138	153	305	L+(316)	L-(305)
2GE-M35-OQN	35	160	162	190	206	250	400	L+(456)	L-(400)

Turbo Module 2GE Belt Actuated System with T-Slot Integrated Carriage Technical Data (Dimensions in mm)

Part Number	Dyn Load Cap. (N)	Dynamic Moment			Carriage Mass (kg)	Max Length (mm)	Moment of Inertia		Weight Formula (N)
		Myaw (Nm)	Mroll (Nm)	Mpitch (Nm)			Ix (cm4)	Iy (cm4)	
2GE-M25-OQN	32000	3500	450	3500	4.3	3960	600	829	155,9+0,186 x L
2GE-M35-OQN	56000	7950	1270	7950	12.5	3960	2840	3730	503,0+0,353 x L

For Motion Control Options refer to the Motion Control Section on page 381.
For TNUT mounting hardware, see page 308.

System 2GE Standard Lengths (L) (Lengths in mm)

System	410	530	610	650	770	890	930	1010	1090	1130	1250	X	Max.
2GE-M25	■	■		■	■	■		■		■	■	120	4010
2GE-M35			■		■		■		■		■	160	3970

Custom Lengths and Delivery Information

Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in two to three weeks. Custom length systems are available and require three to four weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Turbo Module* 2GE Benefits:

- Used in high speed and high load applications.
- Compact and rigid design minimizes machine size.
- T-Slot in carriage provides quick and easy mounting and removal of the workpiece.

Turbo Module 2GE Components:

- 1 Structural Frame Assembly with standard T-Slots for mounting ease.
- 1 AccuGlide* ProfileRail* System Carriage assembly.
- 1 steel cable reinforced belt system including heavy duty pulleys and bearings.
- 1 Integral AccuTRUE* True Planetary* Precision gearhead.

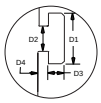
Specifying a Thomson System:
1. Determine the proper system for your load and life requirements. **2.** Select the part number. **3.** Add the letter "L" followed by the overall length in millimeters, as a suffix to the part number (choosing a standard length will reduce costs and speed delivery). **4.**Place your order with your local authorized Thomson distributor.

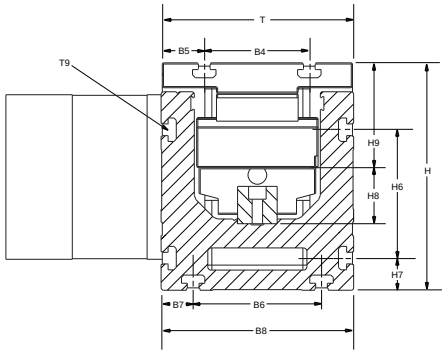
Part Numbering System

2GE-M35-OQN-N L610

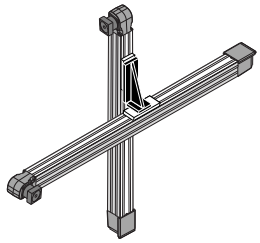
- System Designation
- Nominal Size
- Type of Support
- Type of Carriage
- Type of Gearbox
- System Length

(T9) T-slots





Carriage X-Section

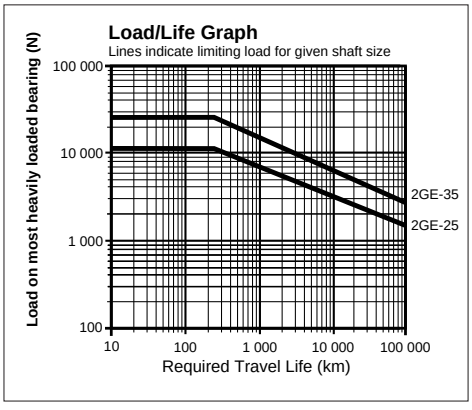


Turbo Module 2GE Belt Actuated System with T-Slot Integrated Carriage (Dimensions in mm)

Part Number	Nominal Size	B4	B5	B6	B7	B8	D1	D2	D3	D4	H	H6	H7	H8	H9	T
2GE-M25-OQN	25	65	17,5	75	13,5	110	16,5	8,1	6,8	2,2	129	75	17,5	36	59,5	108
2GE-M35-OQN	35	90	37	110	27,5	165	20,1	10	7	6	195	110	27,5	48	90	163

Turbo Module 2GE Gearbox Data

System Part Number	Gear Ratio	Gearbox Part Number	Gearbox inertia (Kg • m^2)
2GE-M25-OQN-K	1:1	AT-10-1	$7{,}0 \times 10^{-2}$
2GE-M25-OQN-L	3:1	AT-10-3	$2{,}34 \times 10^{-3}$
2GE-M25-OQN-M	6:1	AT-10-6	$1{,}00 \times 10^{-3}$
2GE-M35-OQN-N	1:1	AT-14-1	$1{,}99 \times 10^{-1}$
2GE-M35-OQN-P	6:1	AT-14-6	$3{,}43 \times 10^{-3}$
2GE-M35-OQN-Q	10:1	AT-14-10	$2{,}55 \times 10^{-3}$



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Systems Applications

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Application Description: ❑ Horizontal ❑ Vertical

System Part Number:

Quantity Required

Weight of Load (N):

Space Requirements (LxHxW):

Stroke Length Requirements (mm):

Support Requirements: ❑ End Supported ❑ Full Support

Maximum Velocity Requirements (m/s):

Maximum Acceleration Requirements (m/s^2):

Required Straightness of Travel Accuracy (µm/m):

Required Positioning Accuracy (µm):

Required Repeatability (µm):

Life Requirement (km):

Cycle (km/yr):

Environmental Considerations:

Other Design Criteria:

Production Time Frame:

Company:

Name:

Title:

Address:

City: State: Zip:

Telephone: Fax:

Please Fax your Application Analysis to 516-883-9039 Attention: Application Engineering

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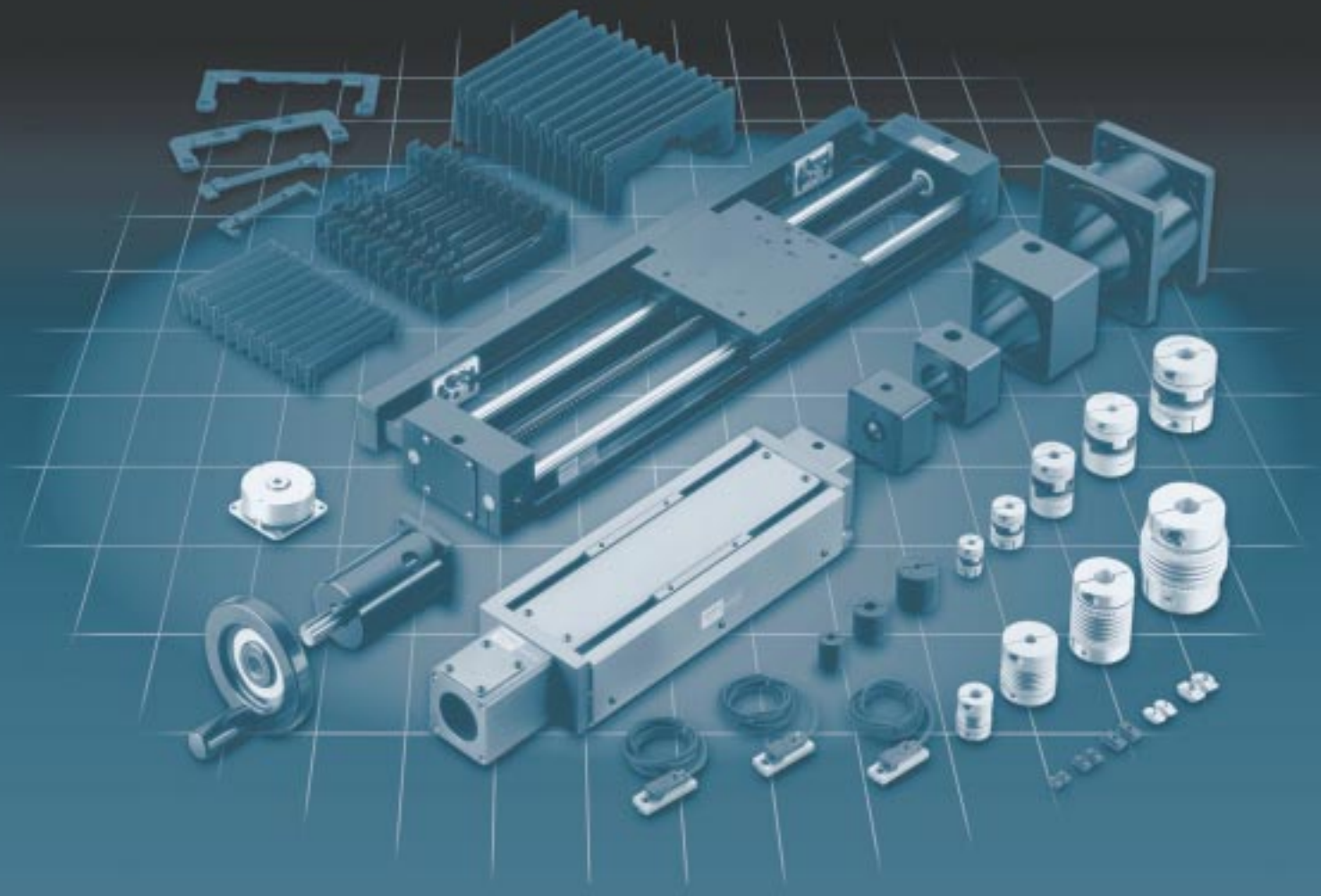
THOMSON INDUSTRIES, INC.

ACCESSORIES

Accessories for Systems, Slides & Stages, and Motion Control Products



HARDWARE FOR YOUR APPLICATION

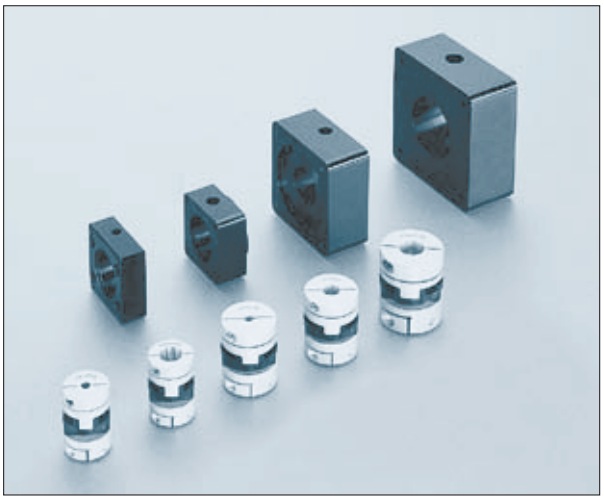
- Motor Adaptor and Couplings
- Bellows and Shroud Way Covers
- Limit Switch and Sensor Packages
- Electric Brakes
- T-Nuts for Multi-Axis adaptation

THOMSON*
First in Linear Motion and Control Technology

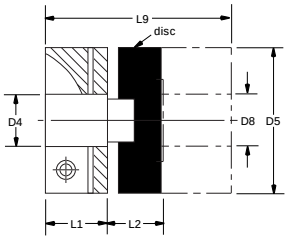
www.thomsonindustries.com

For Application Engineering assistance contact the Thomson Technical HelpLine at 1-800-554-8466.

Couplings and Motor Adaptor Blocks

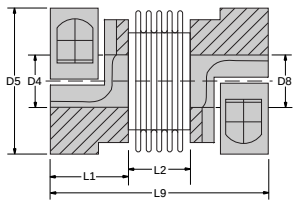


Motor Couplings for Mounting NEMA frame size motors to Inch Size Systems



Aluminum Oldham Type with Clamp Attachment (Acetal Disc)

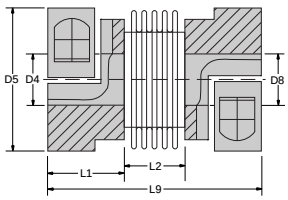
Part Number	Motor Size	Dimensions (in.)						Maximum Torque (lbf-in)
		D5	D4	D8	L1	L2	L9	
MC-OLD-12-23	NEMA 23	1.00	.250	.250	.46	.36	1.28	30.1
MC-OLD-16-23	NEMA 23	1.00	.250	.375	.46	.36	1.28	30.1
MC-OLD-16-34	NEMA 34	1.31	.375	.375	.59	.71	1.89	79.6
MC-OLD-16-34 AE	NEMA 34	1.31	.375	.500	.59	.71	1.89	79.6
MC-OLD-24-42	NEMA 42	1.63	.625	.625	.70	.60	2.00	159.3



Stainless Steel Bellows Type with Clamp Attachment

Part Number	Motor Size	Dimensions (in.)						Maximum Torque (lbf-in)
		D5	D4	D8	L1	L2	L9	
MC-BEL-12-23	NEMA 23	.98	.250	.250	.51	.24	1.26	17.7
MC-BEL-16-23	NEMA 23	.98	.250	.375	.51	.24	1.26	17.7
MC-BEL-16-34	NEMA 34	1.57	.375	.375	.67	.51	1.85	88.5
MC-BEL-16-34 AE	NEMA 34	1.57	.375	.500	.67	.51	1.85	88.5
MC-BEL-24-42	NEMA 42	1.77	.625	.625	.47	1.54	2.48	159.3

Motor Couplings for Mounting BLX Series Servo Motors to Inch Size Systems



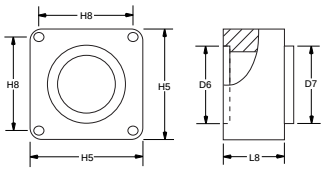
Stainless Steel Bellows Type with Clamp Attachment

Coupling Part No.	Motor Part No.	Dimensions (in.)						Maximum Torque (lbf-in)
		D5	D4	D8	L1	L2	L9	
MC324104760635	BLX232, BLX234	1.26	0.188	0.250	0.55	0.51	1.614	39.8
MC324106350635	BLX232, BLX234	1.26	0.250	0.250	0.55	0.51	1.614	39.8
MC324109530635	BLX232, BLX234	1.26	0.375	0.250	0.55	0.51	1.614	39.8
MC324112700635	BLX232, BLX234	1.26	0.500	0.250	0.55	0.51	1.614	39.8
MC456309531270	BLX341, BLX342, BLX343	1.77	0.375	0.500	0.47	0.95	2.48	159.3
MC456312701270	BLX341, BLX342, BLX343	1.77	0.500	0.500	0.47	0.95	2.48	159.3
MC667815881900	BLX421	2.60	0.625	0.748	0.77	0.79	3.07	354.0
MC667815882400	BLX422, BLX423	2.60	0.625	0.945	0.77	0.79	3.07	354.0

For Dimensional information and specifications of BLX series servo motors, see page 431.

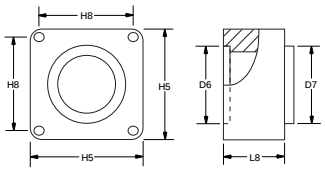
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Motor Adaptor Blocks for mounting NEMA frame size Motors to Inch Size Systems



Motor Adaptor Block – Black Anodized Aluminum						
Part Number	Motor Size	Dimension (in.)				
		L8	H5	H8	D6	D7
MAB 12-23	NEMA 23	1.425	2.24	1.86	1.503	2.149
MAB 16-23	NEMA 23	1.245	3.26	2.74	1.503	2.875
MAB 16-34	NEMA 34	1.994	3.26	2.74	2.878	2.875
MAB 24-42	NEMA 42	2.285	4.38	3.50	2.189	4.100

Motor Adaptor Blocks for mounting BLX Series Servo Motors frame size Motors to Inch Size Systems



Motor Adaptor Block - Black Anodized Aluminum						
Motor Adaptor Part No.	Motor Part No.	Dimensions (in.)				
		L8	H5	H8	D6	D7
MAB2DB08-BLX23	BLX232, BLX234	1.685	2.24	1.856	1.503	1.498
MAB08/12-BLX23	BLX232, BLX234	1.59	2.24	1.856	1.503	2.148
MAB12-BLX23	BLX232, BLX234	1.41	2.24	1.856	1.503	2.148
MAB16-BLX23	BLX232, BLX234	1.40	3.26	2.740	1.503	2.875
MAB16-BLX34	BLX341, BLX342, BLX343	2.40	3.26	2.740	2.878	2.875
MAB24-BLX42	BLX421, BLX422, BLX423	3.40	4.50	3.619	4.332	4.099

Motor Coupling, Motor Adaptor, Motor, and Inch Size SuperSlide Interchange Matrix

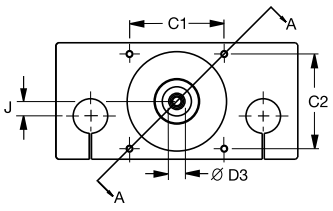
NEMA frame size motors			BLX series motors			Used with SuperSlide System Part No.
Coupling Part No.	Motor Adaptor Part No.	Motor Frame Size	Coupling Part No.	Motor Adaptor Part No.	Motor Part No.	
MC324104760635	MAB2DB08-BLX23	NEMA23	MC324104760635	MAB2DB08-BLX23	BLX232, BLX234	2DB08
MCBEL 12-23	MAB12-23	NEMA23	MC324106350635	MAB08/12-BLX23	BLX232, BLX234	2AB08, 2CB08, 2CB12, 2DB12, 2EB08, BSA08, BSAM12
MCBEL12-23	MAB12-23	NEMA23	MC324106350635	MAB12-BLX23	BLX232, BLX234	2AB12, 2EB12, BSA12, BSAM20
MCBEL16-23	MAB16-23	NEMA23	MC324109530635	MAB16-BLX23	BLX232, BLX234	2CB16†, 2DB16†
MCBEL16-34	MAB16-34	NEMA34	MC456309531270	MAB16-BLX34	BLX341, BLX342, BLX343	2CB16†, 2DB16†
MCBEL16-34AE	MAB16-34	NEMA34	MC456312701270	MAB16-BLX34	BLX341, BLX342, BLX343	2AB16, 2EB16, BSA16
MCBEL24-42	MAB24-42	NEMA42	MC667815881900	MAB24-BLX42	BLX421	2AB24, 2EB24, BSA24
			MC667815882400	MAB24-BLX42	BLX422, BLX423	2AB24, 2EB24, BSA24

† Accessories for 2CB-16 and 2DB-16 Systems available for both NEMA 23 and NEMA 34 or BLX 23X and BLX 34X frame size motors.

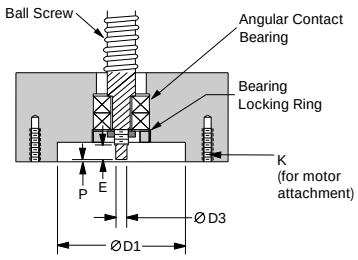
Motor Mounting Dimensions

Dimensional Information for mounting motors to Inch size Ball Screw Actuated SuperSlide* Systems.

SuperSlide End Block End View



Section A-A



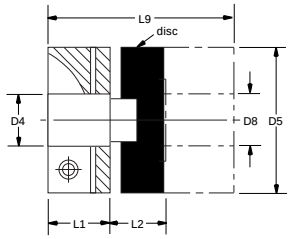
Ball Screw Actuated SuperSlide									
Part Number Prefix	Motor Size Size	Dimensions (in.)							
		C1	C2	D1	D3	E	J	K	P
2DB08†	NEMA 23	1.75	1.25	1.50	.188	.30	.275	10-32	.05
2AB08, 2CB08, 2CB12, 2DB12, 2EB08	NEMA 23	1.86	1.86	2.15	.250	.34	.300	10-32	.05
2AB12, 2EB12	NEMA 23	1.86	1.86	2.15	.375	.56	0	10-32	.05
2CB16, 2DB16	NEMA 34	2.74	2.74	2.88	.375	.56	.425	10-32	.05
2AB16, 2EB16	NEMA 34	2.74	2.74	2.88	.500	.42	0	10-32	.05
2AB24, 2EB24	NEMA 42	3.50	3.50	4.10	.625	.59	0	¼-20	.05

† Dimensions for the 2DB08 SuperSlide system are for lead screw actuation only.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

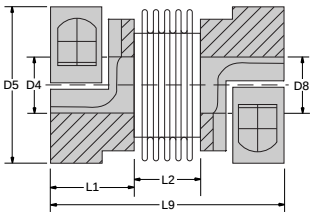
Metric Motor Couplings

Motor Couplings for Mounting NEMA frame size motors to Metric Size Systems



Aluminum Oldham Type with Clamp Attachment (Acetal Disc)

Part Number	Motor Size	Dimension (mm)						Maximum Torque (N • m)
		D5	D4	D8	L1	L2	L9	
MCM-OLD-08-23	NEMA 23	25,4	6,35	8	11,6	9,2	32,4	3,4
MCM-OLD-10-23	NEMA 23	25,4	6,35	10	11,6	9,2	32,4	3,4
MCM-OLD-14-34	NEMA 34	41,3	9,53	14	15,0	18,0	48,0	9,0



Stainless Steel Bellows Type with Clamp Attachment

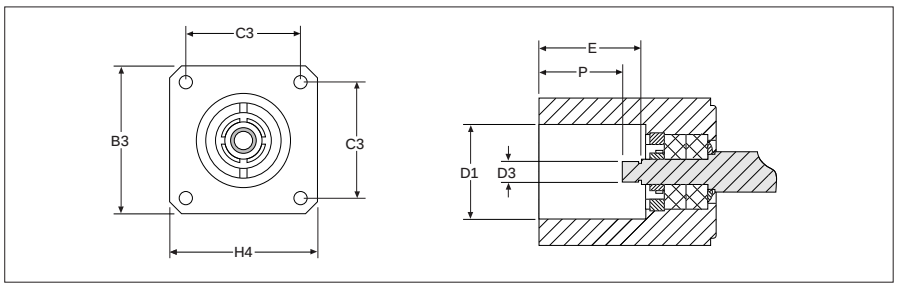
Part Number	Motor Size	Dimension (mm)						Maximum Torque (N • m)
		D5	D4	D8	L1	L2	L9	
MCM-BEL-08-23	NEMA 23	25	6,35	8	13	6	32	2,0
MCM-BEL-10-23	NEMA 23	25	6,35	10	13	6	32	2,0
MCM-BEL-14-34	NEMA 34	40	9,53	14	17	13	47	10,0

Motor Couplings for Mounting BLX Series Servo Motors to Metric Size Systems

System Model	Thomson Motor Model	Motor Adaptor Block	Shaft Coupling
2RBM12	BLX23	None Required	MCM-BEL-08-23
2RBM16	BLX23	None Required	MCM-BEL-10-23
	BLX34	MABM34	MCM-BEL-10-34-GB
2NBM20	BLX23	None Required	MCM-BEL-10-23
	BLX34	MABM34	MCM-BEL-10-34-GB
2HBM10	BLX23	None Required	MCM-BEL-08-23
2HBM20	BLX34	None Required	MCM-BEL-14-34-GB
	BLX421	MABM42	MCM-BEL-14-421
	BLX422, BLX423	MABM42	MCM-BEL-14-422

Motor Mounting Dimensions

Dimensional Information for mounting of NEMA frame size motors to Metric size Ball Screw Actuated SuperSlide* Systems



Ball Screw Actuated SuperSlide

Part Number	Motor Size	Dimension (mm)						
		B3	C3	H4	D1	D3	E	P
2RB M12	NEMA 23	60,0	47,15	60,0	38,2	8,0	42,0	34,0
2RB M16	NEMA 23	60,0	47,15	60,0	38,2	10,0	42,5	32,5
2NB M20	NEMA 23	60,0	47,15	60,0	38,2	10,0	42,5	32,5
2HB M10	NEMA 23	60,0	47,15	60,0	38,2	8,0	42,0	34,0
2HB M20	NEMA 34	88,9	69,6	88,9	73,10†	14,0	66,0	52,0

† ∅ DI is for the first 5mm only; remainder is ∅ 50.8mm

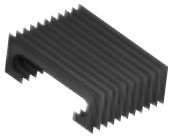
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

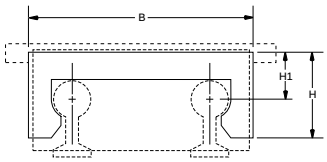
Protective Bellows

Way Covers

BEL-2AE

For QuickSlide* Systems 2AA, 2EA and SuperSlide* Systems 2AB, 2EB





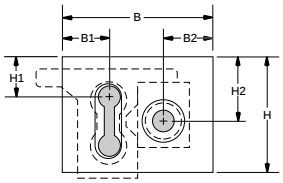
BEL-2AE Moveable Protective Bellows

Part Number	Nom. Shaft Dia.	Dimension (in.)		
		H	H1	B
BEL-2AE-08	1/2	1.4	1.24	5.25
BEL-2AE-12	3/4	2.1	1.35	6.85
BEL-2AE-16	1	2.8	1.68	8.10
BEL-2AE-24	1 1/2	4.2	2.44	11.18

Each moveable bellows comes with 1 section of bellows and 2 pairs of Velcro® fasteners.

BEL-2CB

For Twin Shaft Web SuperSlide System 2CB



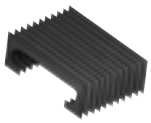
BEL-2CB Moveable Protective Bellows

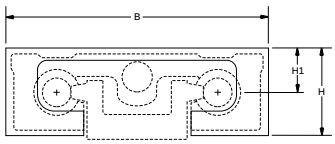
Part Number	Nom. Shaft Dia.	Dimension (in.)					
		H	H1	H2	B	B1	B2
BEL-2CB-08	1/2	2.750	1.062	1.500	3.750	1.125	1.250
BEL-2CB-12	3/4	3.438	1.125	1.750	4.125	1.250	1.375
BEL-2CB-16	1	4.250	1.313	2.250	4.750	1.313	1.313

Each moveable bellows comes with 1 section of bellows and 2 pairs of Velcro® Fasteners.

BEL-2D

For Dual Shaft Rail QuickSlide System 2DA† and SuperSlide System 2DB





BEL-2D Dual Shaft Rail Bellows

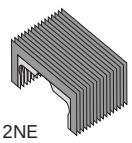
Part Number	Nom. Shaft Dia.	Dimension (in.)		
		H	H1	B
BEL-2DA-08	1/2	1.50	0.85	4.60
BEL-2DB-08	1/2	1.89	1.34	5.13
BEL-2D-12	3/4	2.406	1.437	6.000
BEL-2D-16	1	2.875	1.687	7.500

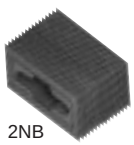
Each moveable bellows comes with 1 section of bellows and 2 mounting brackets and mounting screws.

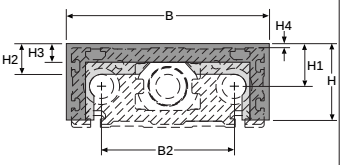
†Appropriate arrangements for afixing the Bellows at each end of the QuickSlide 2DA System are required.

BEL-2NB and BEL-2NE

For QuickSlide Systems 2NA and SuperSlide Systems 2NB and 2NE







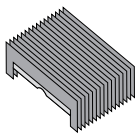
BEL-2NB and BEL-2NE Moveable Protective Bellows

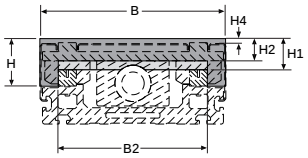
Part Number	Nom. Shaft Dia.	Dimension (mm)						
		B	B2	H	H1	H2	H3	H4
BEL-2NB-20	20	176	110	81	52	41	20	30
BEL-2NE-20	20	166	110	70	38	28	15	6

Each moveable bellows comes with 1 section of bellows and 2 mounting brackets and mounting screws.

BEL-2H

For SuperSlide Systems 2HB, 2HE





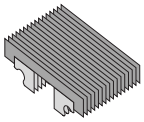
BEL-2H Moveable Protective Bellows

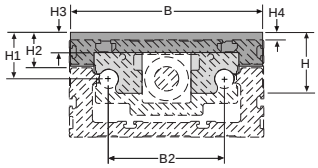
Part Number	Nom. Sys. size	Dimension (mm)					
		B	B2	H	H1	H2	H4
BEL-2H-10	10	103	81	26	11	10	0
BEL-2H-20	20	199	167	48	30	15	5

Each moveable bellows comes with 1 section of bellows and 2 mounting brackets and mounting screws.

BEL-2R

For QuickSlide Systems 2RA and SuperSlide Systems 2RB, 2RE





BEL-2R Moveable Protective Bellows

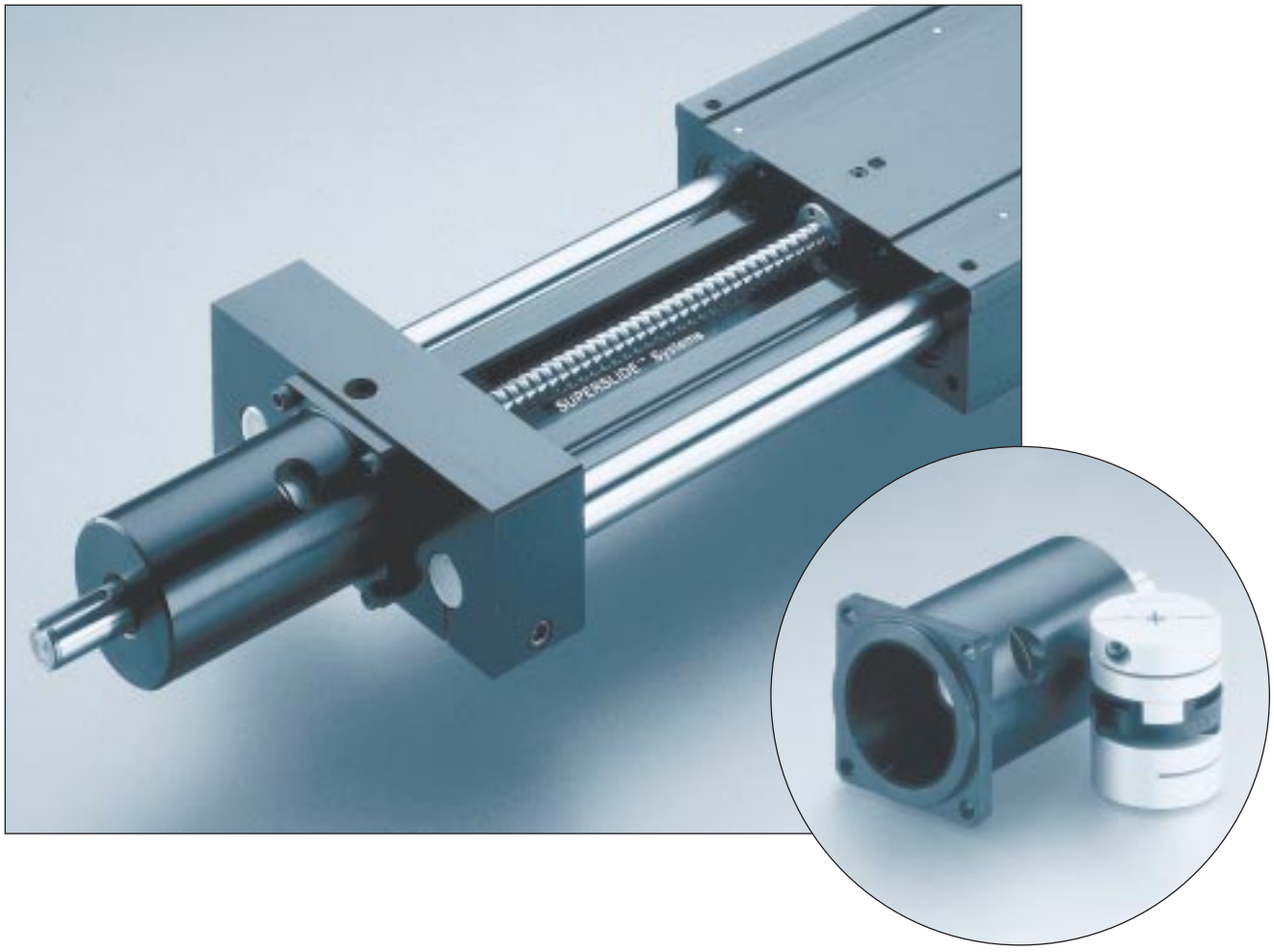
Part Number	Nom. Shaft Dia.	Dimension (mm)						
		B	B2	H	H1	H2	H3	H4
BEL-2R-12	12	128	75	48	37	29	15	12
BEL-2R-16	16	158	95	52	426	30	150	10

Each moveable bellows comes with 1 section of bellows and 2 mounting brackets and mounting screws.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Radial Mount Ball

Ball Screw Shaft Extenders for SuperSlide* Systems

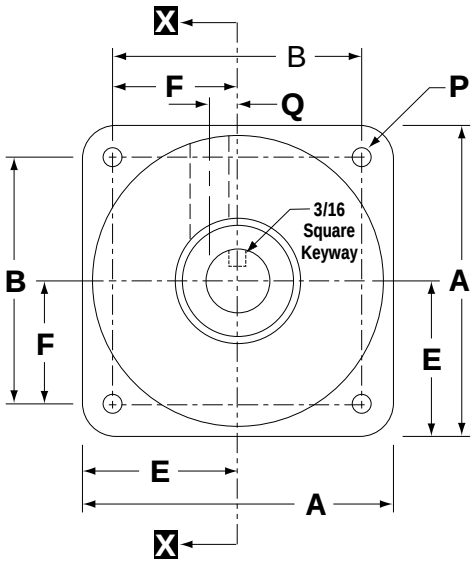


- Allows for the mounting of actuating devices that will impart a cantilever load to the ball screw shaft extension.
- May be used with:
  – Pulley and Belt Drives
  – Hand Cranks
  – Pinion Gears
- Radial Mount* couplings provide attachment of ball screw and extender shafts without the need for painstaking alignment procedures.
- The heavy duty cantilever torque capacity of the Radial Mount shaft extender resists ball screw stub shaft fatigue and failure.

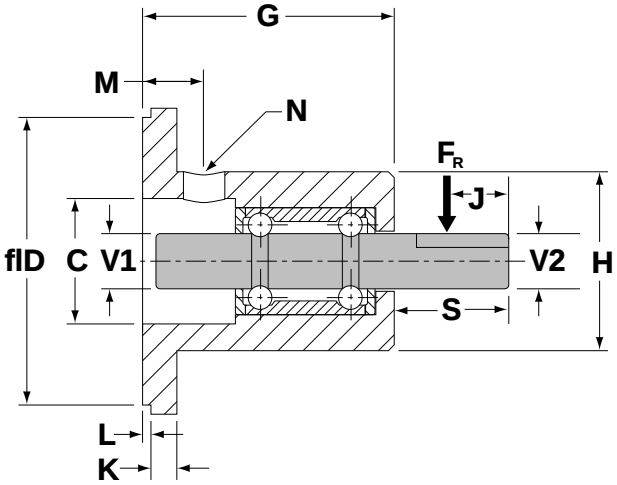
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Radial Mount

Ball Screw Shaft Extenders for SuperSlide* Systems



Output shaft is a non-hardened steel.



Section X-X

Radial Mount* Shaft Extender Technical Information

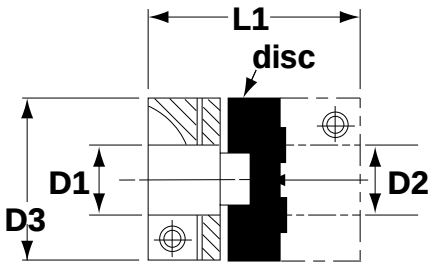
Part Number	F_R† Max. (lbf.)	J (in.)	Frame Size	Dimensions (in.)															
				A	B	C	D	E	F	G	H	K	L	M	N	P	S	V1	V2	Q
RADMO-23A†††	120	.5	NEMA-23	2.24	1.86	1.75	2.15	1.12	.93	3.625	2.15	.25	.16	1.15	.62	.22	1.26	.626	.626	.43
RADMO-23B	120	.5	NEMA-23	2.24	1.86	1.75	2.15	1.12	.93	3.625	2.15	.25	.16	1.15	.62	.22	1.26	.626	.626	.43
RADMO-23C	120	.5	NEMA-23	2.24	1.86	1.75	2.15	1.12	.93	3.625	2.15	.25	.16	1.15	.62	.22	1.26	.626	.626	.43
RADMO-34A	120	.5	NEMA-34	3.26	2.74	1.75	2.88	1.63	1.37	3.625	3.0	.25	.16	1.2	.50	.22	1.26	.626	.626	.48
RADMO-34B	120	.5	NEMA-34	3.26	2.74	1.75	2.88	1.63	1.37	3.625	3.0	.25	.16	1.2	.50	.22	1.26	.626	.626	.48
RADMO-42A	210	1.0	NEMA-42	4.19	3.50	2.37	4.10	2.09	1.75	4.225	3.5	.38	.16	1.43	.50	.27	2.19	.747	.747	.68

† Based on a bearing life of 2 x 10^8 revolutions.

††Radial Mount shaft extenders are supplied with their corresponding Radial Mount Coupling.

Radial Mount Couplings

Couples the SuperSlide Ball Screw shaft to the Smart Mount Shaft Extender



Radial Mount Coupling Technical Information

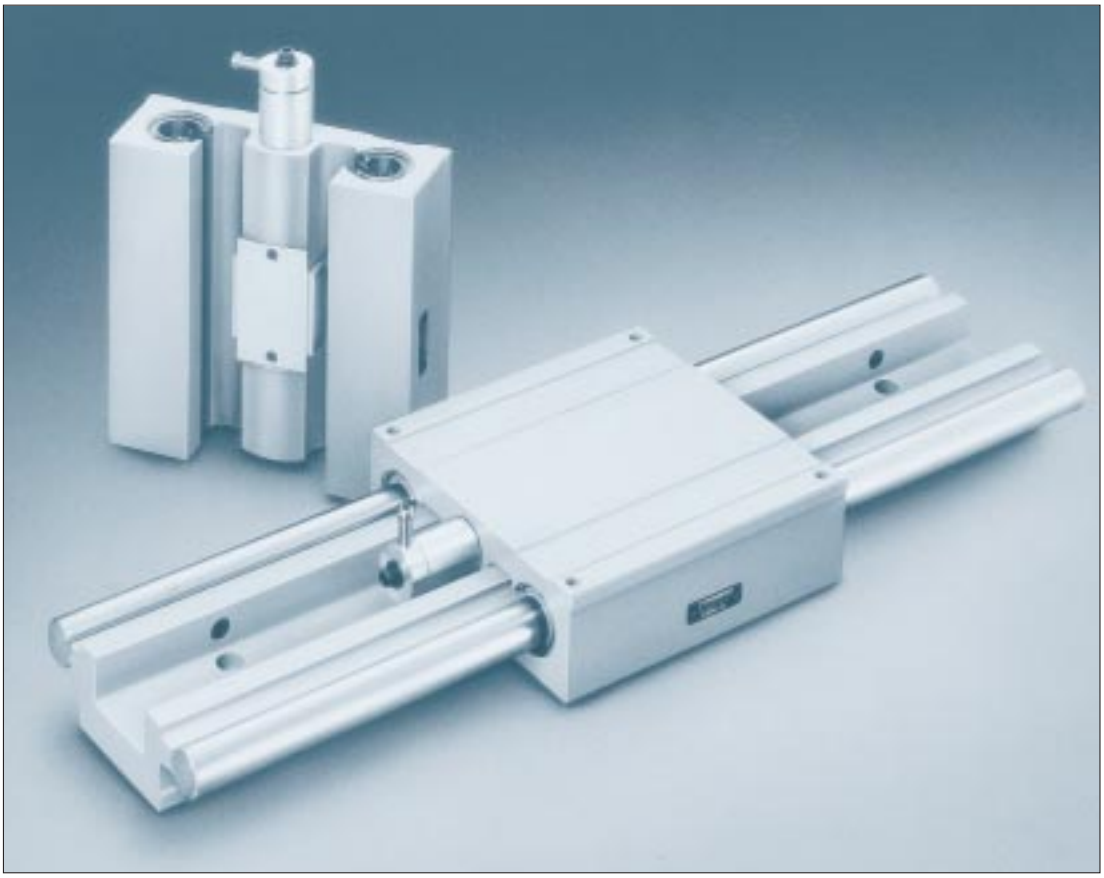
Part Number	Max. Torque in-lbf.	Dimensions (in.)				Used with System	Supplied with Smart Mount Extender
		L1	D1	D2	D3		
RMC-23A†††	80	1.89	.188	.626	1.31	2DB08	RADMO-23A
RMC-23B	80	1.89	.250	.626	1.31	2AB08, 2CB08, 2CB12, 2DB12, 2EB08, BSA08, BSAM12	RADMO-23B
RMC-23C	80	1.89	.375	.626	1.31	2AB12, 2EB12, BSA12, BSAM20	RADMO-23C
RMC-34A	80	1.89	.375	.626	1.31	2CB16, 2DB16	RADMO-34A
RMC-34B	160	2.00	.500	.626	1.63	2AB16, 2EB16, BSA16	RADMO-34B
RMC-42A	230	2.35	.625	.748	1.97	2AB24, 2EB24, BSA24	RADMO-42A

††† The RADMO-23A shaft extender is supplied with an adaptor block part number MB08-23.

For more information, or to place an order, please contact Thomson Industries, at 1-800-55-4-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

2DA QuickSlide System with Brake

A manual locking mechanism for the Dual Shaft Rail System



2DA QuickSlide* System with Brake offers:

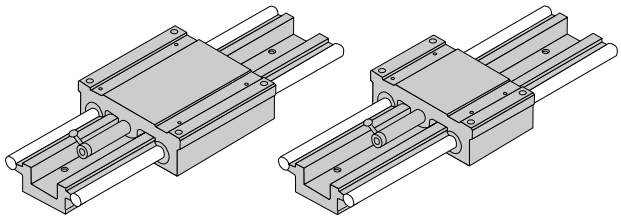
- A manual locking mechanism with infinite positioning capability.
- No carriage mounting surface deflection when the locking mechanism is activated.
- Immediate off-the-shelf availability in 1/2, 3/4 and 1 inch sizes.
- A locking mechanism that, when activated, will not apply an increase in load on the system's Ball Bushing* bearing.
- Zero axial movement during the activation of the locking mechanism.
- A fully supported Dual Shaft assembly for maximum rigidity and unlimited travel.
- High load capacity in any direction.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

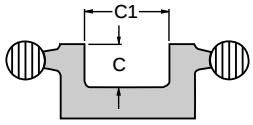
2DA QuickSlide* System with Brake

Dual Shaft Rail Fully Supported System

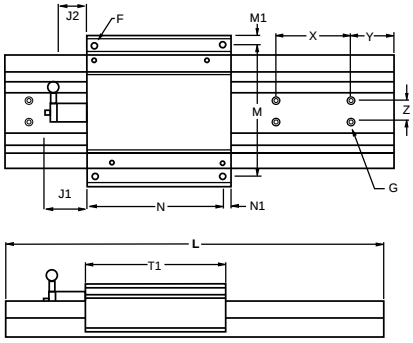
with Integrated Carriage and Locking Mechanism

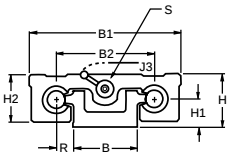


Dual Shaft Rail Fully Supported System with Integrated Carriage



Dual Shaft Rail Supported Cross-Section





Maximum Stroke Length is determined by subtracting the carriage length **(T1 or T2)** plus the brake handle length **(J1)** from the total system length.

Dual Shaft Rail Fully Supported System with Integrated Carriage (Long Style) (Dimensions in inches)

Part Number	Nom. Shaft Dia.	Max.Load on System(1) (lbf)	Max.Load on One Bearing(1) (lbf)	T1	H	H1	H2	B	R	B1	B2	C	C1
2DA-08-OOL	½	600	150	4.50	1.625	0.875	1.43	2.00	0.500	4.60	3.00	0.64	1.25
2DA-12-OOL	¾	1880	470	6.00	2.125	1.125	1.93	2.63	0.688	6.10	4.00	0.75	1.62
2DA-16-OOL	1	3120	780	7.50	2.625	1.375	2.44	3.25	0.875	7.60	5.00	0.99	2.00

(1) For rated travel life of 2 million inches.

Note: Manual Brake can be adjusted in order to position handle to any radial location.
Dual Shaft Rail Support Material: Aluminum Alloy Black Anodized. Standard length of one-piece Aluminum Dual Shaft Rails is 72".

Dual Shaft Rail Fully Supported System with Integrated Carriage (Long Style) (Dimensions in inches)

Part Number	N	N1	M	M1	X	Y	Z	J1	J2	J3	F	G		Max. Stroke Length	Carriage Part No.
												Bolt	Hole		
2DA-08-OOL	4.00	0.25	4.00	0.30	4.00	2.00	0.75	1.63	1.19	0.88	#10-23	¼	0.28	L-(6.13)	DSRC-08-SL
2DA-12-OOL	5.25	0.37	5.25	0.42	6.00	3.00	1.00	1.63	1.19	1.00	¼-20	5/16	0.34	L-(7.63)	DSRC-12-SL
2DA-16-OOL	6.75	0.37	6.75	0.42	6.00	3.00	1.25	1.63	1.19	1.00	5/16-18	⅜	0.41	L-(9.13)	DSRC-16-SL

Dual Shaft Rail Fully Supported System with Integrated Carriage (Short Style)

Part Number	Nom. Shaft Dia.	T2	N2	Max. Stroke Length	Carriage Part No.
2DA-08-OOM	½	3.50	3.00	L-(5.13)	DSRC-08-SM
2DA-12-OOM	¾	4.50	3.75	L-(6.13)	DSRC-12-SM
2DA-16-OOM	1	6.00	5.25	L-(7.63)	DSRC-16-SM

QuickSlide Brake Holding Force

System	Axial Holding Force (lbf.)
2DA-08	125
2DA-12	130
2DA-16	140

System 2DA Standard Lengths (Lengths in inches)

System	8"	12"	16"	18"	20"	24"	28"	30"	32"	36"	40"	42"	44"	48"
2DA-08	■	■	■		■	■	■	■		■	■	■		■
2DA-12		■		■		■		■		■			■	

Custom Lengths and Delivery Information

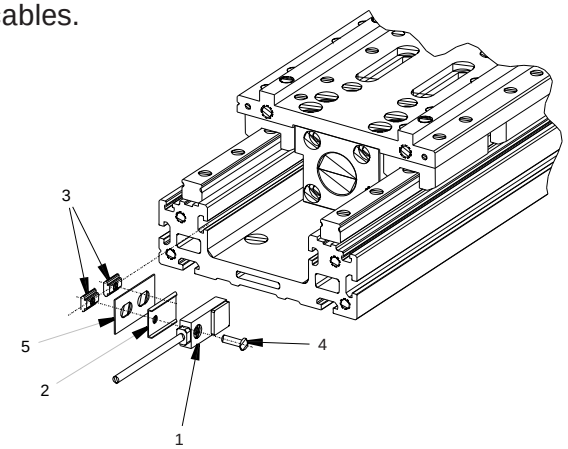
Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in two to three weeks. Custom length systems are available and require three to four weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Limit Switch/Sensor Package for AccuSlide* 2HBM10 System

An inductive proximity sensor for end of travel limit and home position sensing. Standard part numbers are packages for either home positioning, end of travel limits or both home and end of travel limit sensing together. Options include NPN or PNP output types, normally closed or normally open output operations, and standard or varied frequencies. All sensors include 12-24 VDC supply voltages and 5 meter length cables.

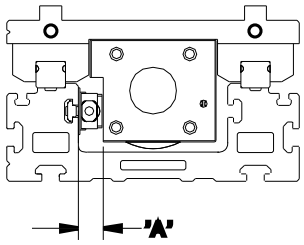
Part Number	Output Type	Output Operation	Frequency
Home Sensor			
LSP2HBM10-N-1 LSP2HBM10-P-1	(1) NPN (1) PNP	(1) Normally Open (1) Normally Open	(1) Varied (1) Varied
End of Travel Sensors			
LSP2HBM10-N-2 LSP2HBM10-P-2	(2) NPN (2) PNP	(1) Normally Closed (1) Normally Closed	(1) Standard (1) Standard
Home Sensor & End of Travel Sensors			
LSP2HBM10-N-3 LSP2HBM10-P-3	(3) NPN (3) PNP	(1) N.O., (2) N.C. (1) N.O., (2) N.C.	(1) Var. (2) Std (1) Var. (2) Std



End Plates not shown for clarity

Item	Quantity	Description
1	1	Proximity Sensor
2	1	Sensor Bracket
3	2	Tee Nut (TNUT01-M3)
4	1	Button Head Cap Screw
5	1	Shim Kit

Dimension “A” (mm)	Dimension “A” (in.)	Shim Part No.	Shim Thickness
up to 8.15	up to .320	none	0
8.16-8.65	.321-.340	22723A-02	.51mm (0.20”)
8.66-9.15	.341-.360	22723A-04	1.02mm (0.40”)
9.16-9.65	.361-.380	22723A-02+ 22723A-04	1.52mm (0.60”)



End Plates not shown for clarity

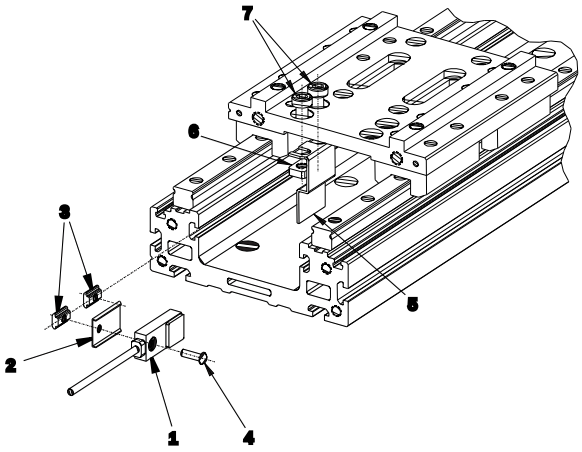
Each 2HBM10 AccuSlide system is provided with access holes on each side of each end plate for passage of the sensor cable. Normal orientation of the sensor package will detract approximately 30mm from the effective stroke of the system at each end. Orientation of the sensor can be reversed so as to retain full system stroke. When Limit and Home Sensor Packages are ordered together with their respective Linear Motion System, the package is assembled to the system with their appropriate shim packs at no extra charge. When the End of Travel Limit Sensors are ordered in conjunction with the Home Position Sensor (the -3 option) the Home Sensor will be located between the Limit Sensors on the Linear Motion System.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Limit Switch/Sensor Package for AccuSlide* 2HEM10 System

An inductive proximity sensor for end of travel limit and home position sensing. Standard part numbers are packages for either home positioning, end of travel limits or both home and end of travel limit sensing together. Options include NPN or PNP output types, normally closed or normally open output operations, and standard or varied frequencies. All sensors include 12-24 VDC supply voltages and 5 meter length cables.

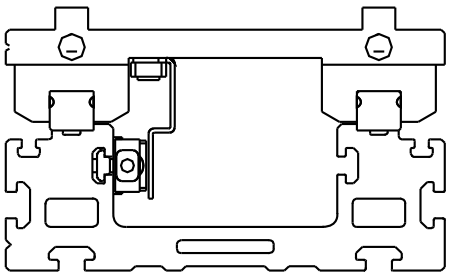
Part Number	Output Type	Output Operation	Frequency
Home Sensor			
LSP2HEM10-N-1 LSP2HEM10-P-1	(1) NPN (1) PNP	(1) Normally Open (1) Normally Open	(1) Varied (1) Varied
End of Travel Sensors			
LSP2HEM10-N-2 LSP2HEM10-P-2	(2) NPN (2) PNP	(1) Normally Closed (1) Normally Closed	(1) Standard (1) Standard
Home Sensor & End of Travel Sensors			
LSP2HEM10-N-3 LSP2HEM10-P-3	(3) NPN (3) PNP	(1) N.O., (2) N.C. (1) N.O., (2) N.C.	(1) Var. (2) Std (1) Var. (2) Std



End Plates not shown for clarity

Item	Quantity	Description
1	1	Proximity Sensor
2	1	Sensor Bracket
3	2	Tee Nut (TNUT01-M3)
4	1	Button Head Cap Screw (M3)
5	1	Sensor Flag
6	1	Sensor Flag Nutplate
7	2	Low Head Cap Screw (M5)

Each 2HEM10 AccuSlide system is provided with access holes on each side of each end plate for passage of the sensor cable. Normal orientation of the sensor package will detract approximately 30mm from the effective stroke of the system at each end. Orientation of the sensor can be reversed so as to retain full system stroke. When Limit and Home Sensor Packages are ordered together with their respective Linear Motion System, the package is assembled to the system at no extra charge. When the End of Travel Limit Sensors are ordered in conjunction with the Home Position Sensor (the -3 option) the Home Sensor will be located between the Limit Sensors on the Linear Motion System.



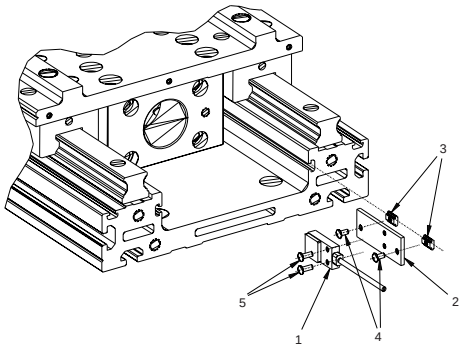
End Plates not shown for clarity

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Limit Switch/Sensor Package for AccuSlide* 2HBM20 System

An inductive proximity sensor for end of travel limit and home position sensing. Standard part numbers are packages for either home positioning, end of travel limits or both home and end of travel limit sensing together. Options include NPN or PNP output types, normally closed or normally open output operations, and standard or varied frequencies. All sensors include 12-24 VDC supply voltages and 5 meter length cables.

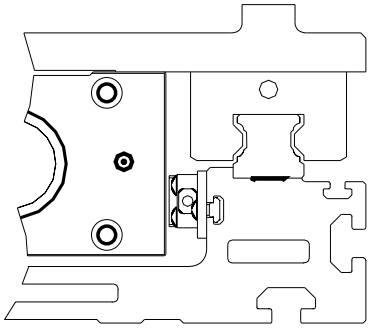
Part Number	Output Type	Output Operation	Frequency
Home Sensor			
LSP2HBM20-N-1 LSP2HBM20-P-1	(1) NPN (1) PNP	(1) Normally Open (1) Normally Open	(1) Varied (1) Varied
End of Travel Sensors			
LSP2HBM20-N-2 LSP2HBM20-P-2	(2) NPN (2) PNP	(1) Normally Closed (1) Normally Closed	(1) Standard (1) Standard
Home Sensor & End of Travel Sensors			
LSP2HBM20-N-3 LSP2HBM20-P-3	(3) NPN (3) PNP	(1) N.O., (2) N.C. (1) N.O., (2) N.C.	(1) Var. (2) Std (1) Var. (2) Std



Item	Quantity	Description
1	1	Proximity Sensor
2	1	Sensor Mounting Plate
3	2	Tee Nut (TNUT01-M3)
4	2	Button Head Cap Screw (M3)
5	2	Button Head Cap Screw (M3)

End Plates not shown for clarity

Each 2HBM20 AccuSlide system is provided with access holes on each side of each end plate for passage of the sensor cable. Normal orientation of the sensor package will detract approximately 30mm from the effective stroke of the system at each end. Orientation of the sensor can be reversed so as to retain full system stroke. When Limit and Home Sensor Packages are ordered together with their respective Linear Motion System, the package is assembled to the system with their appropriate shim packs at no extra charge. When the End of Travel Limit Sensors are ordered in conjunction with the Home Position Sensor (the -3 option) the Home Sensor will be located between the Limit Sensors on the Linear Motion System.



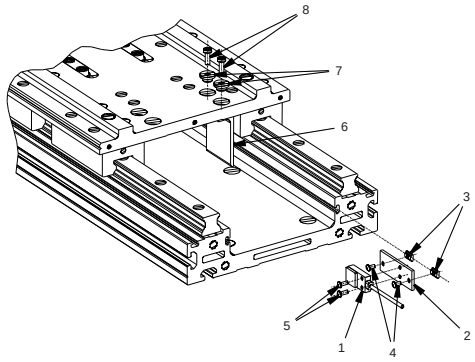
End Plates not shown for clarity

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Limit Switch/Sensor Package for AccuSlide* 2HEM20 System

An inductive proximity sensor for end of travel limit and home position sensing. Standard part numbers are packages for either home positioning, end of travel limits or both home and end of travel limit sensing together. Options include NPN or PNP output types, normally closed or normally open output operations, and standard or varied frequencies. All sensors include 12-24 VDC supply voltages and 5 meter length cables.

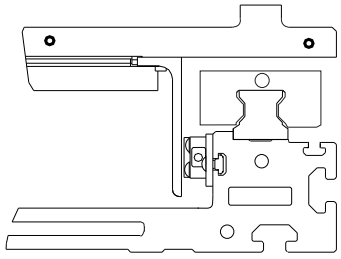
Part Number	Output Type	Output Operation	Frequency
Home Sensor			
LSP2HEM20-N-1 LSP2HEM20-P-1	(1) NPN (1) PNP	(1) Normally Open (1) Normally Open	(1) Varied (1) Varied
End of Travel Sensors			
LSP2HEM20-N-2 LSP2HEM20-P-2	(2) NPN (2) PNP	(1) Normally Closed (1) Normally Closed	(1) Standard (1) Standard
Home Sensor & End of Travel Sensors			
LSP2HEM20-N-3 LSP2HEM20-P-3	(3) NPN (3) PNP	(1) N.O., (2) N.C. (1) N.O., (2) N.C.	(1) Var. (2) Std (1) Var. (2) Std



Item	Quantity	Description
1	1	Proximity Sensor
2	1	Sensor Mounting Plate
3	2	Tee Nut (TNUT01-M3)
4	2	Button Head Cap Screw (M3)
5	2	Button Head Cap Screw (M3)
6	1	Sensor Flag
7	2	Hat Washer
8	2	Low Head Cap Screw (M4)

End Plates not shown for clarity

Each 2HEM20 AccuSlide system is provided with access holes on each side of each end plate for passageof the sensor cable. Normal orientation of the sensor package will detract approximately 30mm from the effective stroke of the system at each end. Orientation of the sensor can be reversed so as to retain full system stroke. When Limit and Home Sensor Packages are ordered together with their respective Linear Motion System, the package is assembled to the system at no extra charge. When the End of Travel Limit Sensors are ordered in conjunction with the Home Position Sensor (the -3 option) the Home Sensor will be located between the Limit Sensors on the Linear Motion System.



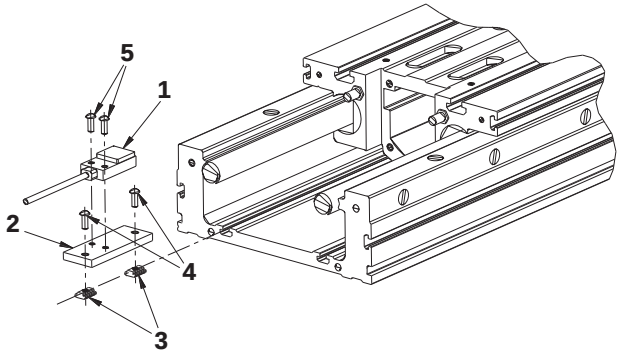
End Plates not shown for clarity

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Limit Switch/Sensor Package for SuperSlide* 2RBM12 and 2REM12 Systems

An inductive proximity sensor for end of travel limit and home position sensing. Standard part numbers are packages for either home positioning, end of travel limits or both home and end of travel limit sensing together. Options include NPN or PNP output types, normally closed or normally open output operations, and standard or varied frequencies. All sensors include 12-24 VDC supply voltages and 5 meter length cables.

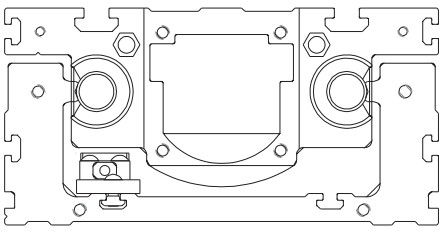
Part Number	Output Type	Output Operation	Frequency
Home Sensor			
LSP2RM12-N-1 LSP2RM12-P-1	(1) NPN (1) PNP	(1) Normally Open (1) Normally Open	(1) Varied (1) Varied
End of Travel Sensors			
LSP2RM12-N-2 LSP2RM12-P-2	(2) NPN (2) PNP	(1) Normally Closed (1) Normally Closed	(1) Standard (1) Standard
Home Sensor & End of Travel Sensors			
LSP2RM12-N-3 LSP2RM12-P-3	(3) NPN (3) PNP	(1) N.O., (2) N.C. (1) N.O., (2) N.C.	(1) Var. (2) Std (1) Var. (2) Std



End Plates not shown for clarity

Item	Quantity	Description
1	1	Proximity Sensor
2	1	Sensor Mounting Plate
3	2	Tee Nut (TNUT01-M3)
4	2	Button Head Cap Screw (M3)
5	2	Button Head Cap Screw (M3)

Each 2RBM12 and 2REM12 SuperSlide system is provided with access holes on each side of each end plate for passage of the sensor cable. Normal orientation of the sensor package will detract approximately 35mm from the effective stroke of the system at each end. Orientation of the sensor can be reversed so as to retain full system stroke. When Limit and Home Sensor Packages are ordered together with their respective Linear Motion System, the package is assembled to the system at no extra charge. When the End of Travel Limit Sensors are ordered in conjunction with the Home Position Sensor (the -3 option) the Home Sensor will be located between the Limit Sensors on the Linear Motion System.



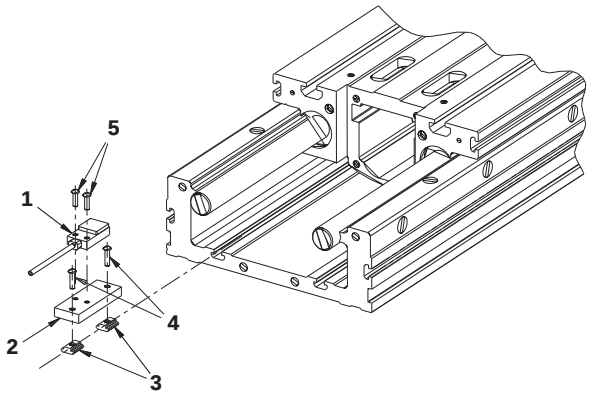
End Plates not shown for clarity

For more information, or to place an order, please contact Thomson Industries, at 1-800-55-4-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Limit Switch/Sensor Package for SuperSlide* 2RBM16 and 2REM16 System

An inductive proximity sensor for end of travel limit and home position sensing. Standard part numbers are packages for either home positioning, end of travel limits or both home and end of travel limit sensing together. Options include NPN or PNP output types, normally closed or normally open output operations, and standard or varied frequencies. All sensors include 12-24 VDC supply voltages and 5 meter length cables.

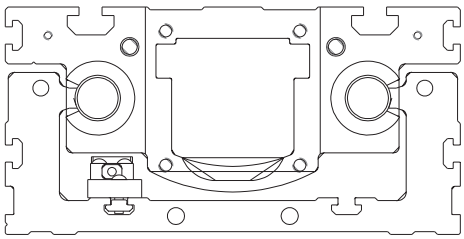
Part Number	Output Type	Output Operation	Frequency
Home Sensor			
LSP2RM16-N-1 LSP2RM16-P-1	(1) NPN (1) PNP	(1) Normally Open (1) Normally Open	(1) Varied (1) Varied
End of Travel Sensors			
LSP2RM16-N-2 LSP2RM16-P-2	(2) NPN (2) PNP	(1) Normally Closed (1) Normally Closed	(1) Standard (1) Standard
Home Sensor & End of Travel Sensors			
LSP2RM16-N-3 LSP2RM16-P-3	(3) NPN (3) PNP	(1) N.O., (2) N.C. (1) N.O., (2) N.C.	(1) Var. (2) Std (1) Var. (2) Std



End Plates not shown for clarity

Item	Quantity	Description
1	1	Proximity Sensor
2	1	Sensor Mounting Plate
3	2	Tee Nut (TNUT01-M3)
4	2	Button Head Cap Screw (M3)
5	2	Button Head Cap Screw (M3)

Each 2RBM16 and 2REM16 SuperSlide system is provided with access holes on each side of each end plate for passage of the sensor cable. Normal orientation of the sensor package will detract approximately 35mm from the effective stroke of the system at each end. Orientation of the sensor can be reversed so as to retain full system stroke. When Limit and Home Sensor Packages are ordered together with their respective Linear Motion System, the package is assembled to the system at no extra charge. When the End of Travel Limit Sensors are ordered in conjunction with the Home Position Sensor (the -3 option) the Home Sensor will be located between the Limit Sensors on the Linear Motion System.

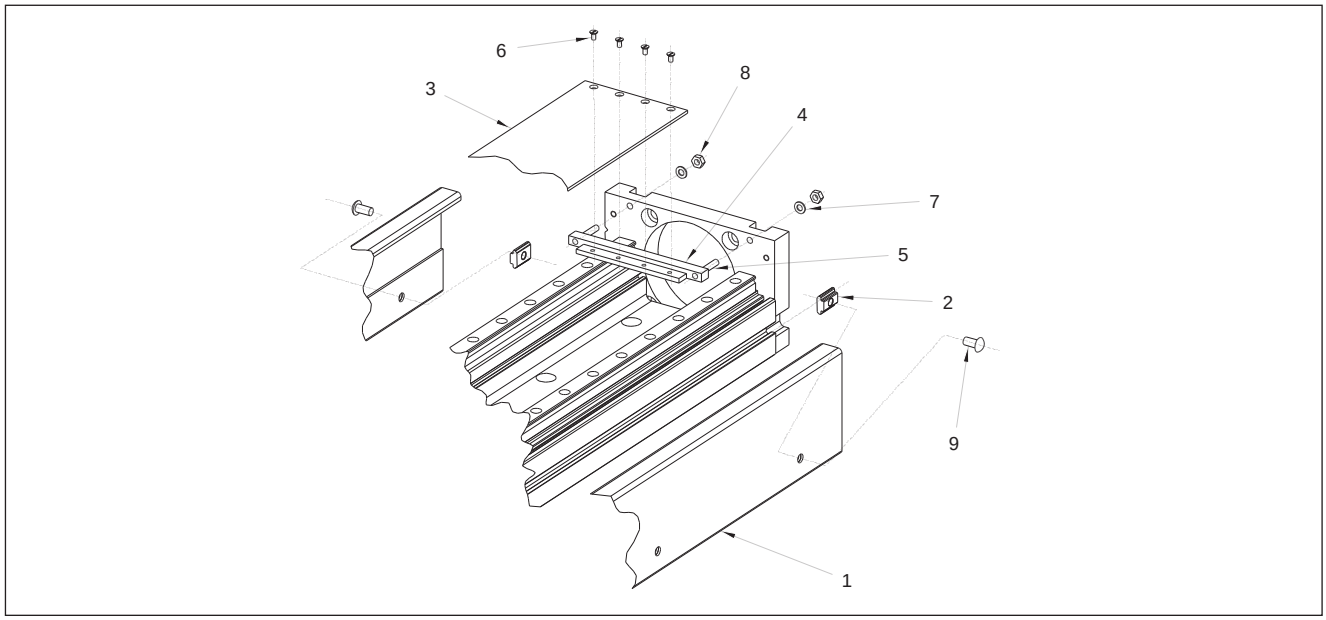


End Plates not shown for clarity

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Shroud Cover for AccuSlide* 2HBM10 and 2HEM10 Systems

The AccuSlide Shroud Cover is designed to protect the AccuSlide system from contaminants and particulate matter with a minimal reduction in system stroke length. The shroud cover is a three-piece design, consisting of two side shrouds and one top shroud, each made of grey anodized aluminum. The AccuSlide system carriage top is designed with pedestal mounts so as to allow the passage of the carriage assembly without interference with the cover. This arrangement leaves two uncovered slots that run the length of the stroke. Bellows way covers are also available for full coverage of the AccuSlide system (see page 291).



Part No. ASC2HM10 x (length in mm) includes the following components:

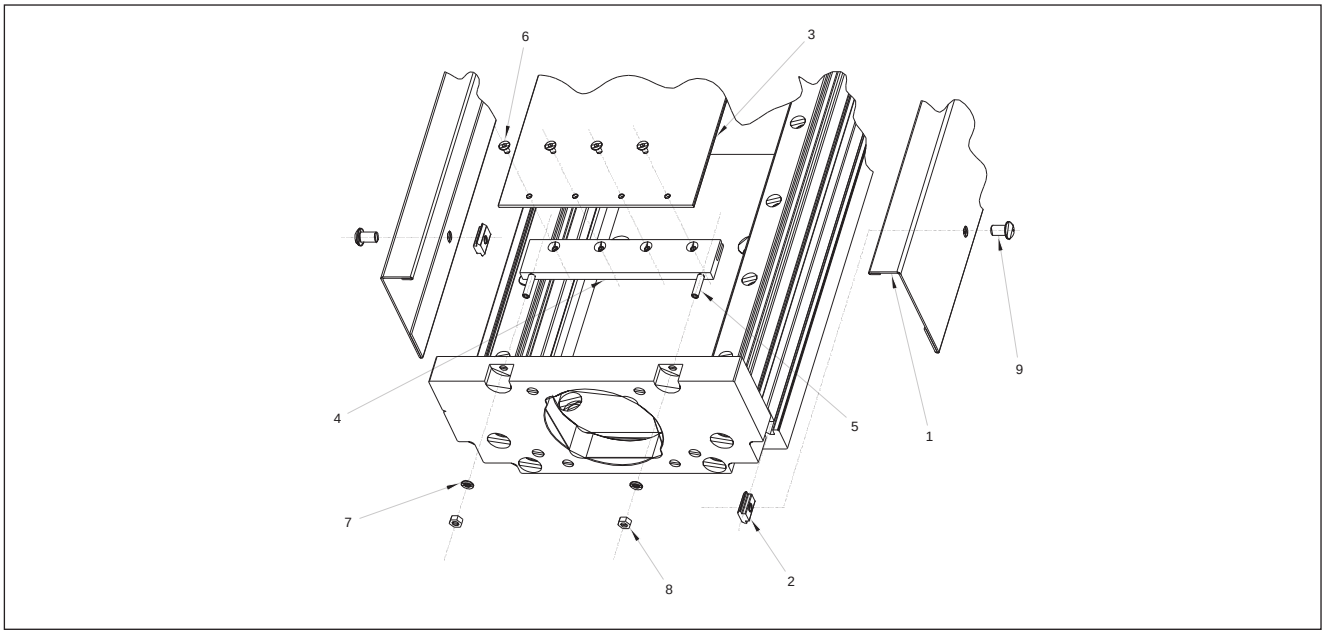
Item	Quantity	Description
1	2	Side Shroud
2	as req'd	TNUT02-M4
3	1	Top Shroud
4	2	Top Shroud Bracket
5	4	Set Screw M3
6	8	Flat Head Screw M2
7	4	Washer
8	4	Hexagonal Nut M3
9	as req'd	Button Head Cap Screw M4

Each shroud cover for the 2HBM10 and 2HEM10 AccuSlide systems is provided with all of the necessary hardware to mount the covers. On the top shroud this includes an end mounting bracket at each end of the system with set-screws and associated nuts and washers. These set screws pull the brackets outboard in the axial direction, thus tensioning the top shroud and removing most of the sag in the cover on long axis systems. The side shrouds are attached to the system via tee nuts and button head cap screws. The screw/nut assemblies on the side shrouds are spaced every 75 mm.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Shroud Cover for AccuSlide* 2HBM20 and 2HEM20 Systems

The AccuSlide Shroud Cover is designed to protect the AccuSlide system from contaminants and particulate matter with a minimal reduction in system stroke length. The shroud cover is a three-piece design, consisting of two side shrouds and one top shroud, each made of grey anodized aluminum. The AccuSlide system carriage top is designed with pedestal mounts so as to allow the passage of the carriage assembly without interference with the cover. This arrangement leaves two uncovered slots that run the length of the stroke. Bellows way covers are also available for full coverage of the AccuSlide system (see page 291).



Part No. ASC2HM20 x (length in mm) includes the following components:

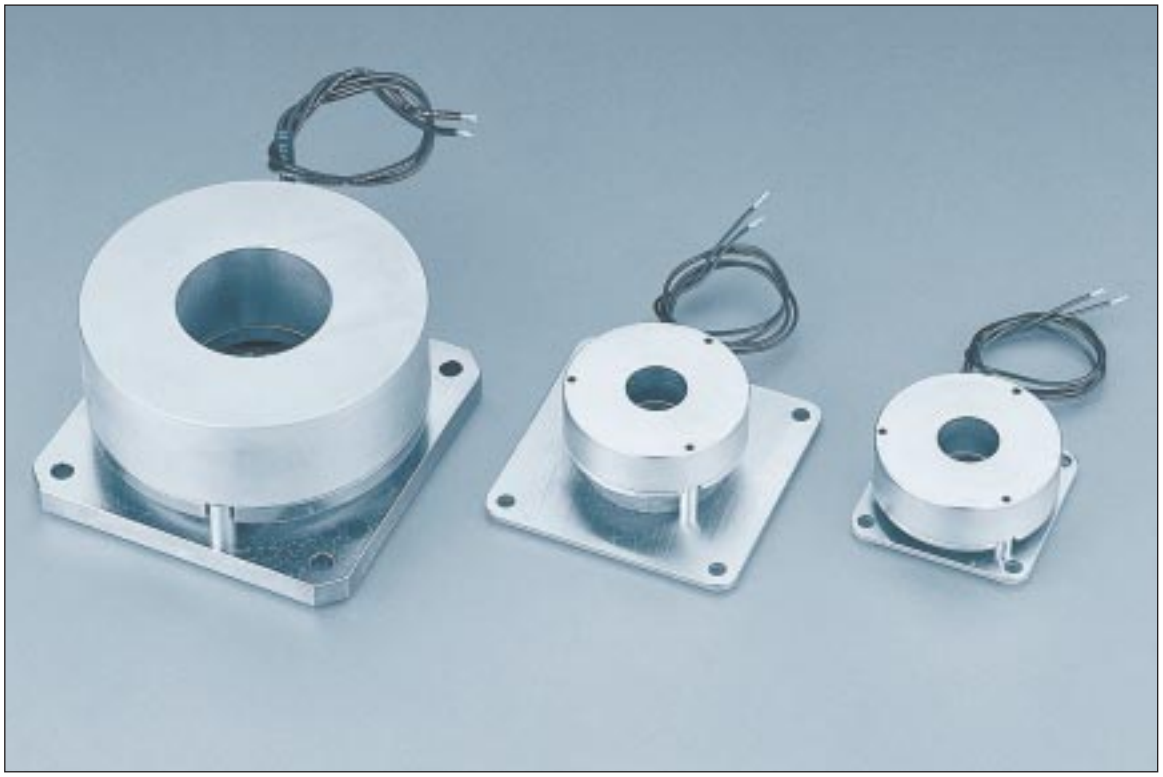
Item	Quantity	Description
1	2	Side Shroud
2	as req'd	TNUT04-M6
3	1	Top Shroud
4	2	Top Shroud Bracket
5	4	Set Screw M4
6	8	Flat Head Screw M3
7	4	Washer
8	4	Hexagonal Nut M4
9	as req'd	Button Head Cap Screw M6

Each shroud cover for the 2HBM20 and 2HEM20 AccuSlide systems is provided with all of the necessary hardware to mount the covers. On the top shroud this includes an end mounting bracket at each end of the system with set-screws and associated nuts and washers. These set screws pull the brackets outboard in the axial direction, thus tensioning the top shroud and removing most of the sag in the cover on long axis systems. The side shrouds are attached to the system via tee nuts and button head cap screws. The screw/nut assemblies on the side shrouds are spaced every 120 mm.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

TEB Spring Set Electric Brakes

For use on Ball Screw Assembly, SuperSlide and PowerSlide Linear Motion Systems



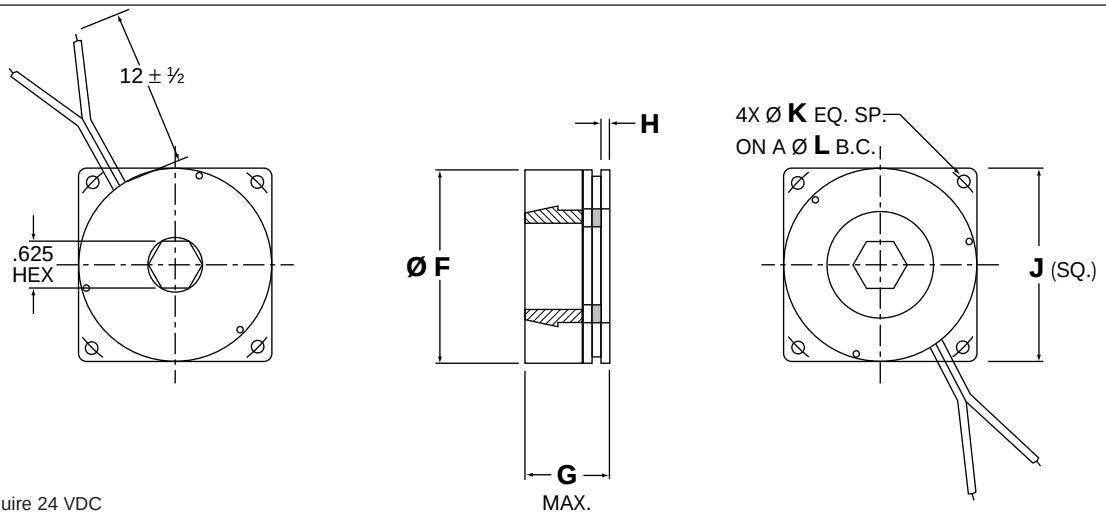
Electric Brake:

- Mounts to support end of all SuperSlide*, PowerSlide* and Ball Screw assembly systems
- Engages upon loss of a 24-VDC Power Supply (see TBC-7 data on page 306)
- Provides resistance to back drive rotation of ball screws due to gravitational force when power is interrupted to the brake unit
- Pre-burnished for maximum torque capacity
- Standard NEMA 23, 34 and 42 mounting patterns for easy field retrofit
- Compact size minimizes change to overall system envelope
- Easily integrates with TBC-7 Brake Controller to offer a complete braking solution, see page 306

For immediate Application
Engineering Assistance contact
the Thomson Toll Free Helpline*:
☎ 800-554-THOMSON (800-554-8466)

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Thomson Spring Set Electric Brakes

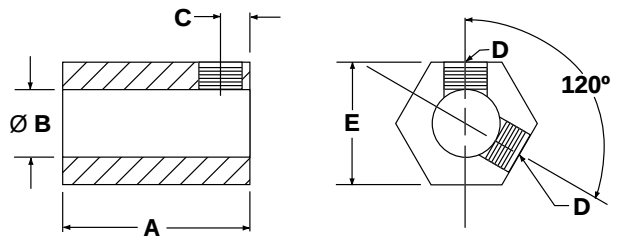


*All brakes require 24 VDC

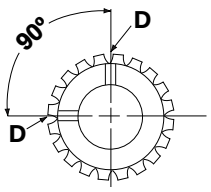
Spring Set Brake Data

Electric Brake Part No.	Frame Size	Static Torque (lbf-in.)	Dimensions (in.)							Brake Hub Part No	Brake Adaptor Part No	Used with System Part Number
			F	G	H	J	K	L	HEX			
TEB23A	NEMA 23	NEMA 23	2.25	1.10	0.11	2.25	0.22	2.625	5/8	HEXHUB23A	MB08-23	2DB08
TEB23B	NEMA 23	NEMA 23	2.25	1.10	0.11	2.25	0.22	2.625	5/8	HEXHUB23B	None Required	2AB08, 2CB08, 2CB12, 2DB12, 2EB08, BSA08, BSDAM12
TEB23C	NEMA 23	NEMA 23	2.25	1.10	0.11	2.25	0.22	2.625	5/8	HEXHUB23C	None Required	2AB12, 2EB12, BSA12, BSAM20
TEB23D	NEMA 23	NEMA 23	2.25	1.10	0.11	2.25	0.22	2.625	5/8	HEXHUB23D	None Required	2HBM10, 2RBM12
TEB23E	NEMA 23	NEMA 23	2.25	1.10	0.11	2.25	0.22	2.625	5/8	HEXHUB23E	None Required	2NBM20, 2RBM16
TEB23F	NEMA 23	NEMA 23	2.25	1.10	0.11	2.25	0.22	2.625	7/8	HEXHUB23F	EBA23F	2HEM10, 2NEM20, 2REM12, 2REM16
TEB34A	NEMA 34	NEMA 34	2.25	1.10	0.11	3.25	0.22	3.875	5/8	HEXHUB34A	None Required	2DB16, 2CB16
TEB34B	NEMA 34	NEMA 34	2.25	1.31	0.11	3.25	0.22	3.875	7/8	HEXHUB34B	None Required	2AB16, 2EB16, BSA16
TEB34C	NEMA 34	NEMA 34	2.25	1.31	0.11	3.25	0.22	3.875	7/8	HEXHUB34C	None Required	2HBM20
TEB34D	NEMA 34	NEMA 34	2.25	1.31	0.11	3.25	0.22	3.875	7/8	HEXHUB34D	EBA34D	2HEM20
TEB42A	NEMA 42	NEMA 42	4.19	2.38	0.36	4.25	0.27	4.950	Splined	SPLHUB42A	None Required	2AB24, 2EB24, BSA24

Hex-Hubs for all NEMA 23 and 34 Size Brakes



Splined Hub Part No. SPLHUB42A For Brake Part No. TEB-42A



Brake Hub Data

Brake Hub Part No.	Dimensions					Used with System Part Number	Used with Spring Set Brake
	A	B	C	D(1)	E		
HEXHUB23A	1.53 in.	3/16 in.	0.15 in.	#10-32	5/8 in.	2DB08	TEB23A
HEXHUB23B	1.31 in.	1/4 in.	0.26 in.	#10-32	5/8 in.	2AB08, 2CB08, 2CB12, 2DB12, 2EB08, BSA08, BSDAM12	TEB23B
HEXHUB23C	1.67 in.	3/8 in.	0.44 in.	#10-32.	5/8 in.	2AB12, 2EB12, BSA12, BSAM20	TEB23C
HEXHUB23D	20 mm	8 mm	5 mm	M4	5/8 in.	2HBM10, 2RBM12	TEB23D
HEXHUB23E	20 mm	10 mm	5 mm	M4	5/8 in.	2NBM20, 2RBM16	TEB23E
HEXHUB23F	15.6 mm	12 mm	10.8 mm	M4	7/8 in.	2HEM10, 2NEM20, 2REM12, 2REM16	TEB23F
HEXHUB34A	1.67 in.	3/8 in.	0.44 in.	#10-32	5/8 in.	2DB16, 2CB16	TEB34A
HEXHUB34B	0.82 in.	1/2 in.	0.21 in.	#10-32	7/8 in.	2AB16, 2EB16, BSA16	TEB34B
HEXHUB34C	32 mm	14 mm	6 mm	M5	7/8 in.	2HBM20	TEB34C
HEXHUB34D	22 mm	15 mm	6 mm	M5	7/8 in.	2HEM20	TEB34D
SPLHUB42A	1.66 in.	5/8 in.	0.50 in.	1/4 20	-	2AB24, 2EB24, BSA24	TEB42A

NOTE 1: Suggested torque for hub set screws are 36 in-lb for #10-32, M4, M5, and 87 in-lb for 1/4-20. Additionally, it is suggested a serviceable thread locking compound be used.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

TBC-7 ELECTRIC BRAKE CONTROLLER

Features:

- Operates Thomson's TEB series electric brakes or any 24 VDC spring set brake, 1 amp max
- Optical isolated control input
- Direct connection to any PLC, switch, relay, or computer, or CNC output.
- Black textured ABS enclosure with mounting feet, U.L. 94VO rated
- Overexcite spiking dramatically reduces brake response time
- Underexcite feature for cooler operating brake
- 115/220 VAC 50/60 Hz input, switch selectable
- Fused for protection
- Solid state design for highest reliability

The TBC-7 Brake Control/Power Supply is designed to operate most 24 VDC rated brakes. Flexible control inputs allow the brake to be switched on and off in a variety of ways:

- a 3 to 28 volt DC signal
- any dry contact switch or relay
- function as a simple power supply, switching the brake on and off with input power.

This flexibility allows the TBC-7 to interface directly to almost any PLC, switch, relay, computer, CNC, or motion controller output.

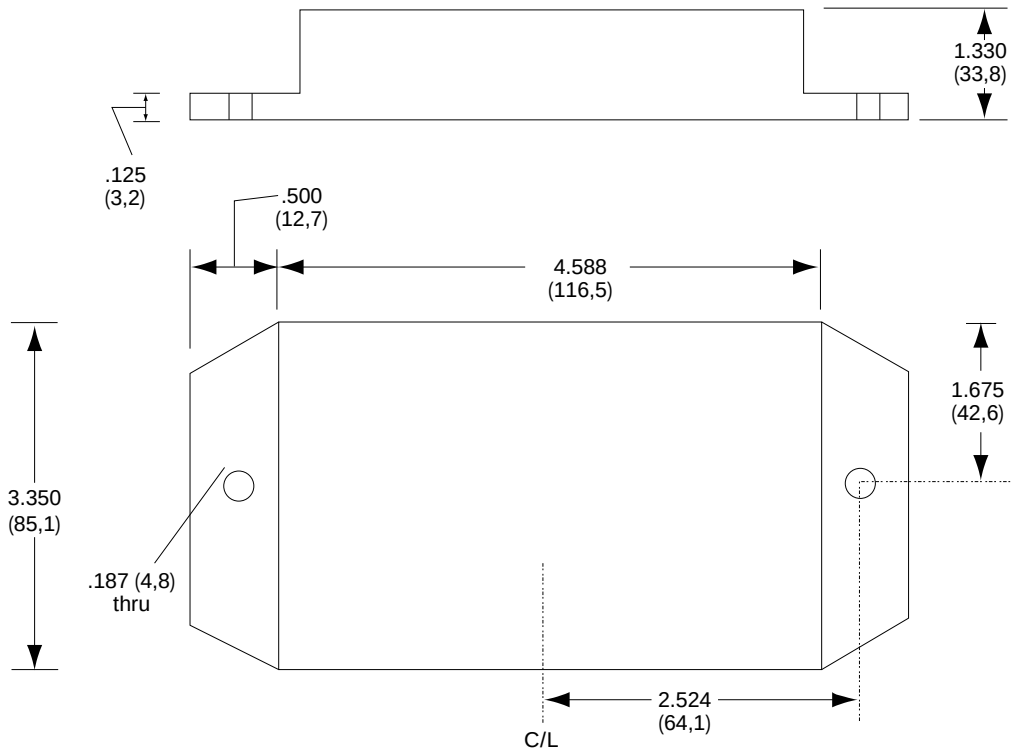
Incorporating the latest in MOSFET switching technology, the TBC-7 features overexcite/underexcite operation. Overexcite operation applies a high voltage spike to decrease the brake's response time, while underexcite operation reduces the brake's average operating current making for a much cooler running brake. The TBC-7 may be powered by 115 VAC or 220 VAC, and is switch selectable. In addition, it has an optically isolated control input which completely eliminates noise feedback into the control system.

Electrical Specifications:

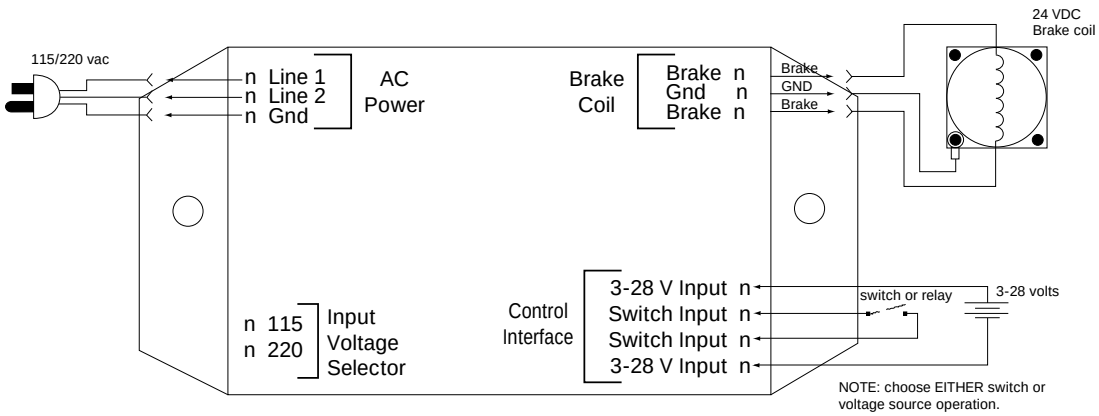
Input Power:	115/220VAC switch selectable 50/60 Hz single phase 1 amp maximum
Output Power:	Underexcite/overexcite sequence suitable for any 24VDC brake rated up to 1.0 amp
Overexcite:	36VDC nominal for 200ms
Underexcite:	18VDC after overexcite complete
Control Interface:	H11AA1 type optoisolator for voltage source switching or internal pullup to own supply for dry contact switching

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

TBC-7 Dimensions

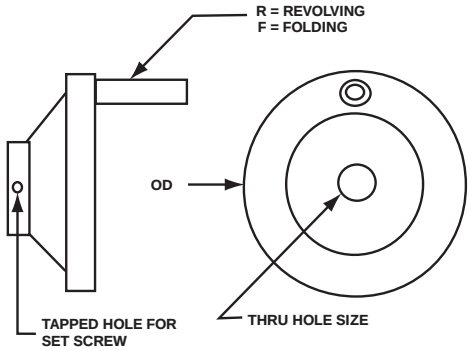


TBC-7 Wiring Diagram



For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Handwheels for Manual Actuation of SuperSlide* Systems



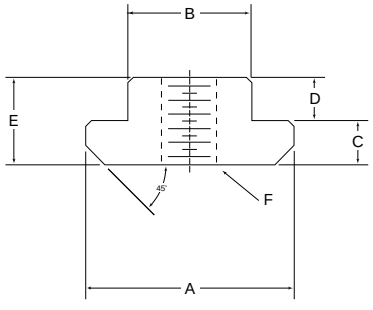
Part No.	O.D.	Thru Hole	Handle
HW4R-188	4.0 inch	0.188 in	Revolving
HW4R-250	4.0 inch	0.250 in	Revolving
HW4R-375	4.0 inch	0.375 in	Revolving
HW4R-500	4.0 inch	0.500 in	Revolving
HW4R-625	4.0 inch	0.625 in	Revolving
HW4R-M8	4.0 inch	8 mm	Revolving
HW4R-M10	4.0 inch	10 mm	Revolving
HW4R-M14	4.0 inch	14 mm	Revolving
HW4R-747	4.0 inch	0.747 in	Revolving

Part No.	O.D.	Thru Hole	Handle
HW5R-188	5.0 inch	0.188 in	Revolving
HW5R-250	5.0 inch	0.250 in	Revolving
HW5R-375	5.0 inch	0.375 in	Revolving
HW5R-500	5.0 inch	0.500 in	Revolving
HW5R-625	5.0 inch	0.625 in	Revolving
HW5R-M8	5.0 inch	8 mm	Revolving
HW5R-M10	5.0 inch	10 mm	Revolving
HW5R-M14	5.0 inch	14 mm	Revolving
HW5R-747	5.0 inch	0.747 in	Revolving

Part No.	O.D.	Thru Hole	Handle
HW4F-188	4.0 inch	0.188 in	Folding
HW4F-250	4.0 inch	0.250 in	Folding
HW4F-375	4.0 inch	0.375 in	Folding
HW4F-500	4.0 inch	0.500 in	Folding
HW4F-625	4.0 inch	0.625 in	Folding
HW4F-M8	4.0 inch	8 mm	Folding
HW4F-M10	4.0 inch	10 mm	Folding
HW4F-M14	4.0 inch	14 mm	Folding
HW4F-747	4.0 inch	0.747 in	Folding

Part No.	O.D.	Thru Hole	Handle
HW5F-188	5.0 inch	0.188 in	Folding
HW5F-250	5.0 inch	0.250 in	Folding
HW5F-375	5.0 inch	0.375 in	Folding
HW5F-500	5.0 inch	0.500 in	Folding
HW5F-625	5.0 inch	0.625 in	Folding
HW5F-M8	5.0 inch	8 mm	Folding
HW5F-M10	5.0 inch	10 mm	Folding
HW5F-M14	5.0 inch	14 mm	Folding
HW5F-747	5.0 inch	0.747 in	Folding

T-Nuts for Mounting



Standard T-Nut Dimensions (Dimensions in mm)							
Part Number	Dimensions						Used in conjunction with Systems
	A	B	C	D	E	F	
TNUT-01-M3	7	4	1,75	1,25	3	M3	2RxM12, 2HxM10, 2HxM20
TNUT-02-M4	9,5	5,5	2,25	1,75	4	M4	2NxM20, 2RxM16, 2HxM10
TNUT-03-M4	12	7	2,5	2,5	5	M4	2RxM12
TNUT-03-M5	12	7	2,5	2,5	5	M5	2RxM12
TNUT-04-M4	16,5	7,9	4,8	1,2	6	M4	2NxM20, 2RxM16, 2HxM20,
TNUT-04-M5						M5	2GEM25
TNUT-04-M6						M6	
TNUT-05-M4	19,5	9,8	5,8	2,8	8,6	M4	
TNUT-05-M5						M5	2GEM35
TNUT-05-M6						M6	
TNUT-05-M8						M8	

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

$$T_{RMS} = \sqrt{\frac{t_a (T_A)^2 + t_{cv} (T_{cv})^2 + t_d (T_D)^2 + t_h (T_H)^2}{t_a + t_{cv} + t_d + t_h}} \quad (N \bullet m)$$

THOMSON INDUSTRIES, INC.

ENGINEERING SUPPORT

Engineering Guide for Systems, Slides & Stages, and Motion Control

$$J_M \bullet i + J_g \bullet i \Big] + T_L \quad (N \bullet m)$$

$$x\ 10^{-6} = K_g \bullet m^2$$

$$T_J = \left[\frac{1000 \bullet 2 \bullet a}{d_0}\right] \bullet \left[\frac{J_p}{i^2 \bullet X}\right.$$

$$T_A = T_J + T_F + T_g + T_e \ (N \bullet m)$$
$$T_{cv} = T_F + T_g + T_e \ (N \bullet m)$$
$$T_D = T_J - T_F - T_g - T_e \ (N \bullet m)$$
$$T_H = -T_F + T_g + T_e \ (N \bullet m)$$

Systems Engineering Support

SYSTEM SIZING CALCULATIONS FOR:

- Inch size SuperSlide* ball screw actuated systems
- Metric size SuperSlide ball screw actuated systems
- Metric size SuperSlide belt actuated systems
- Turbo Module* belt actuated systems

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First in Linear Motion and Control Technology

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$$T_L = \frac{P_a \bullet d_0}{1000 \bullet 2 \bullet i \bullet X_g \bullet X_b}$$

For Application Engineering assistance contact the Thomson Technical HelpLine at 1-800-554-8466.

INCH
SuperSlide* Ball Screw Actuated System
System Selection

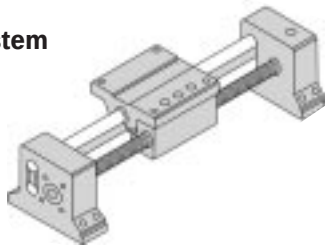
To determine the system that fits your **SuperSlide Ball Screw Actuated System** application requirements the following design criteria needs to be evaluated:

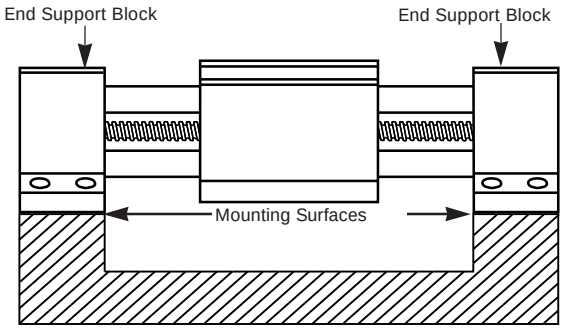
- **System Support Requirements**
- **System Stroke Length**
- **Maximum Allowable Shaft Deflection**
- **Required Travel Life**
- **Force on the Most Heavily Loaded Bearing**
- **Load Correction Factor**
- **Load/Life Requirements – Linear Bearings**
- **Load/Life Requirements – Ball Screws**
- **Motion (Move) Profile (Velocity, Acceleration)**
- **Maximum Acceptable Travel Rate**
- **Maximum Compressive (Column) Load**
- **Torque Calculations**
- **Size Motor Using Torque/Speed Curves**

After each criteria is determined, system selection will become quick and easy. The following procedure will guide you through the proper system selection.

Step 1. Based on your application needs determine the mounting support requirements.

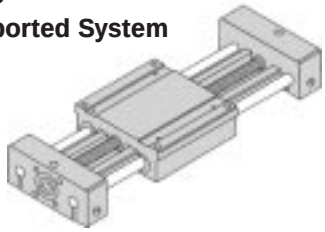
SuperSlide 2CB
End Supported System

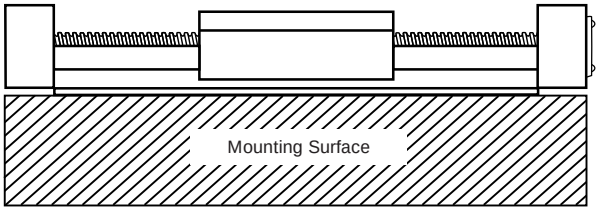




SuperSlide Ball Screw Actuated System 2AB, 2BB and 2CB are designed to quickly mount over a gap as shown in the above illustration. For other mounting ideas contact Thomson Systems application engineering.

SuperSlide 2DB
Continuously Supported System





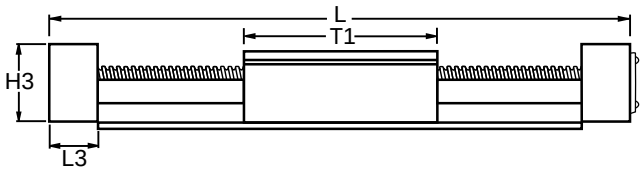
SuperSlide Ball Screw Actuated System 2DB and 2EB are designed to be mounted continuously over a surface for reduced deflection as shown in the above illustration. For other mounting ideas contact Thomson Systems application engineering.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

INCH
SuperSlide* Ball Screw Actuated System
System Stroke Length

Step 2. Determine the **Stroke Length (L_S)** required. The maximum **Stroke Length (L_S)** is determined by subtracting the carriage length **(T1)** and twice end block lengths **(L3)** from the total system length **(L).** The application or required stroke length should not exceed this number.

$$L_S = L - (T1 + 2\ L3)$$



Should your application require the use of bellows way covers, it is important to recognize that the bellows will detract from the available stroke of the system. The bellows will retract to approximately 14% of the available stroke at each end of the system. The **stroke length with bellows ($L_{S/B}$)** is calculated by subtracting 2 times the **stroke (L_S)** times .14 from the **stroke (L_S)**.

$$L_{S/B} = L_S - (2 \times L_S \times .14)$$

Standard Length and Delivery. For each SuperSlide Ball Screw Actuated System there is a standard length chart and delivery information that also includes the standard length increment and the maximum system length. Selecting a standard system length will minimize shipment time. Once you have selected a length that best fits your application requirements, simply determine the maximum stroke length. The required stroke length should not exceed this number. Refer to the product specification section for the standard length charts not shown.

SuperSlide System 2DB Standard Lengths (Lengths in inches)

System	12	16	18	20	24	28	30	32	36	40	42	44	48	54	60	72	X	MAX
2DB-08	■	■		■		■	■		■	■		■		■	■		4	48
2DB-12			■		■		■			■		■		■			6	72
2DB-16			■		■		■			■		■		■		■	■	■

Custom Lengths and Delivery Information

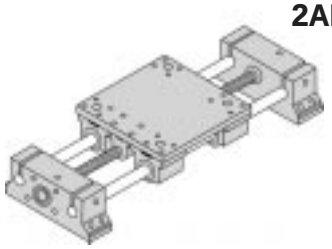
Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in two to three weeks. Custom length systems are available and require three to four weeks for delivery. Lengths exceeding MAX length will require butt joints and will need 4 to 6 weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

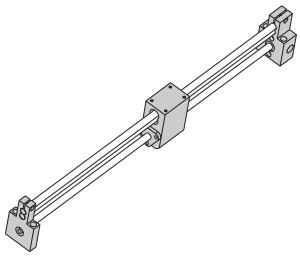
INCH
SuperSlide* Ball Screw Actuated System
End Supported System
Maximum Allowable Deflection

Step 3. Determine if the system selected meets the **Maximum Allowable Deflection** criteria.

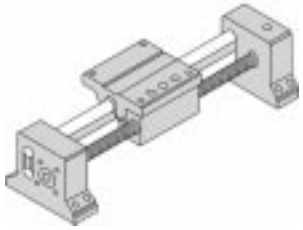
2AB

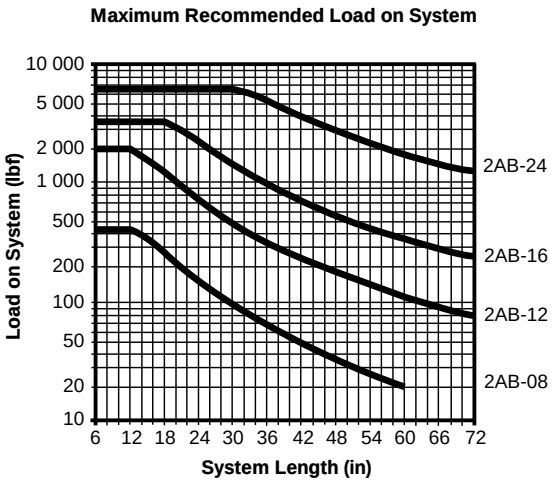


2BB



2CB





Graph (SBSU 5.1)

In end supported applications the bearing system can withstand an enormous amount of system deflection and still run smoothly due to the universal self-aligning feature of the Super Smart Ball Bushing* bearing. In a ball screw actuated end supported application, deflection is limited by the small amount of radial load that a ball screw assembly can withstand. Step 3 will determine if the system size and length can handle the applied load. For SuperSlide Ball Screw Actuated System 2AB there is a graph (SBSU 5.1) that gives the maximum recommended load on the system based on shaft and ball screw deflection. To determine the system that best meets your application requirements, simply enter the graph with the total load on the system and the overall system length. Select a system characteristic curve that is above or to the right of the plotted point. To determine the actual deflection see the **Engineering Support Appendix,** page 378.

Travel Life

Step 4. Determine the **Required Application Travel Life (in).**

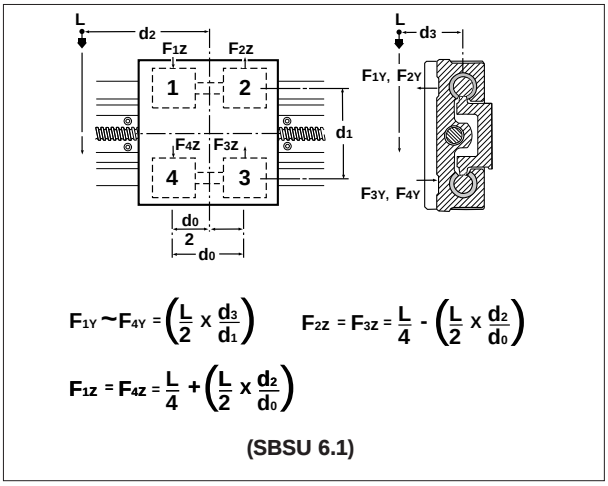
$$L_t = 2 \bullet s \bullet f \bullet L_h \bullet 60$$

L_t = required travel life (in)
s = stroke (in)
f = frequency (cycles/minute)
L_h = service life (hrs)

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

INCH
SuperSlide* Ball Screw Actuated System
System Loading

Step 5. Determine the **Force on the Most Heavily Loaded Bearing.** When selecting a SuperSlide Ball Screw Actuated System, it is necessary to evaluate the bearing forces that are generated based on the position of the load and its movement during application. The free body diagram (SBSU 6.1) is an example of the type of calculations that are required when determining resultant bearing forces. For other free body diagram examples see **Load Considerations** in the **Engineering Support Appendix,** page 377**.** The determination of the force on the most heavily loaded bearing allows you to enter the load life graph and select the system that best fits your application needs.



$$F_{1Y} \sim F_{4Y} = \left(\frac{L}{2} \times \frac{d_3}{d_1}\right) \qquad F_{2Z} = F_{3Z} = \frac{L}{4} - \left(\frac{L}{2} \times \frac{d_2}{d_0}\right)$$

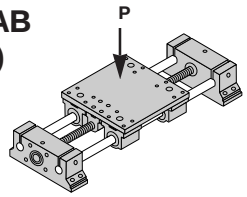
$$F_{1Z} = F_{4Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right)$$

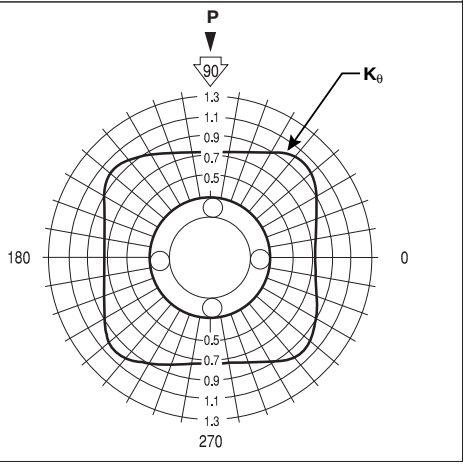
(SBSU 6.1)

Step 6. Determine the **Load Correction Factor (K_θ).** The dynamic load capacity of SuperSlide Ball Screw Actuated system is determined by the orientation of the system and the direction of the resultant bearing load. To determine the load correction factor, simply enter the polar graph with the applied or resultant load direction until it intersects the polar curve. If the load correction factor is 1,0 the resultant force **($P_{resultant}$)** is equal to the **Force on the Most Heavily Loaded Bearing (P_{max}).** If the direction of the resultant bearing load cannot be determined, then use the minimum K_θ value (0,7 for closed bearings and 0,5 for open bearings).

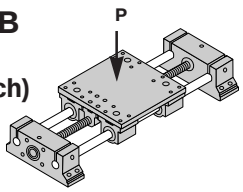
Load Correction Factor Polar Charts

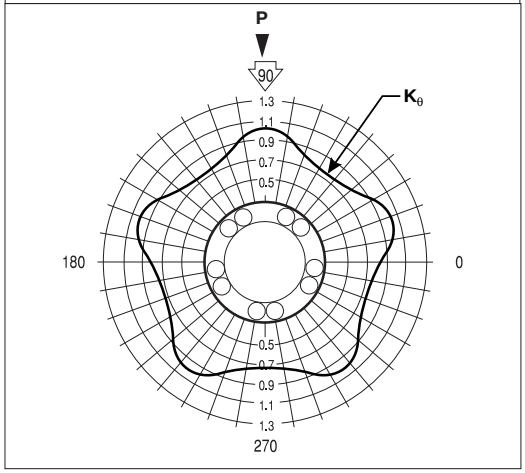
SuperSlide 2AB
Size: 08 (1/2 inch)





SuperSlide 2AB
Sizes: 12, 16, 24
(3/4, 1, and 1 1/2 inch)



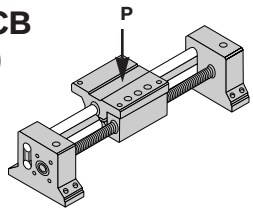


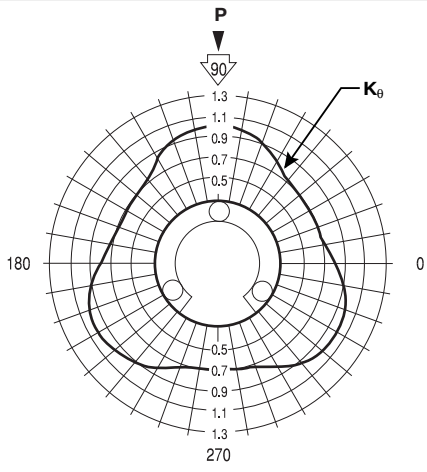
These Load Correction Factor Polar charts show values of K_θ for load orientations on a single Ball Bushing* bearing. Appropriate load orientation should be considered for the most heavily loaded Ball Bushing bearing.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

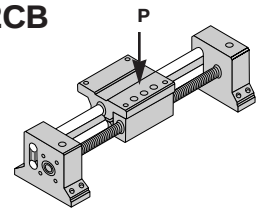
INCH
SuperSlide* Ball Screw Actuated System
Load Correction Factor Polar Charts

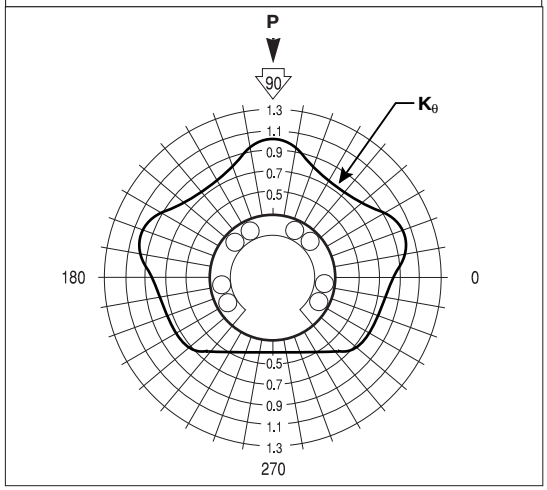
SuperSlide 2CB
Size: 08 (1/2 inch)



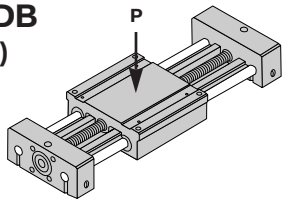


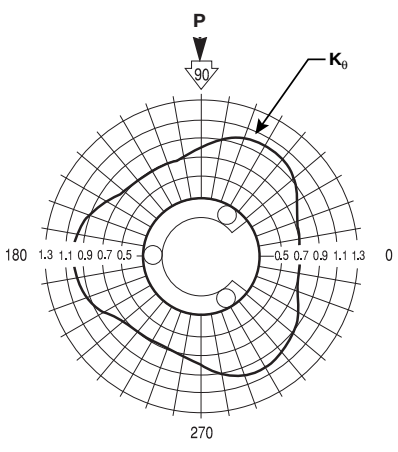
SuperSlide 2CB
Sizes: 12, 16 (3/4 and 1 inch)



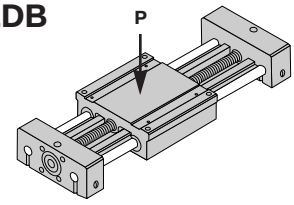


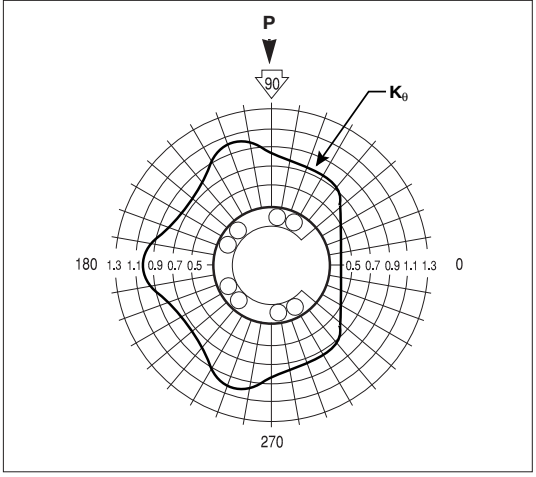
SuperSlide 2DB
Size: 08 (1/2 inch)





SuperSlide 2DB
Sizes: 12, 16 (3/4 and 1 inch)



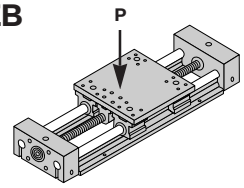


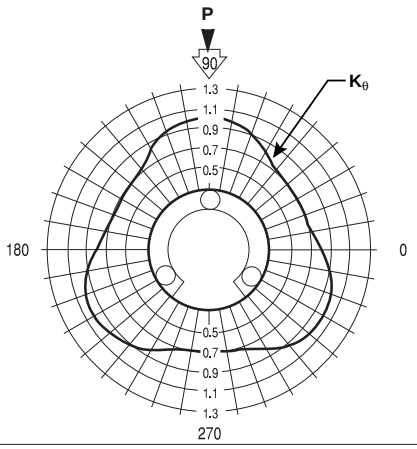
These Load Correction Factor Polar charts show values of K_θ for load orientations on a single Ball Bushing* bearing. Appropriate load orientation should be considered for the most heavily loaded Ball Bushing bearing.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

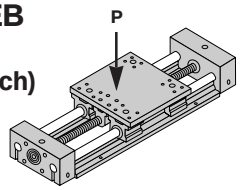
INCH
SuperSlide* Ball Screw Actuated System
Load Correction Factor Polar Charts

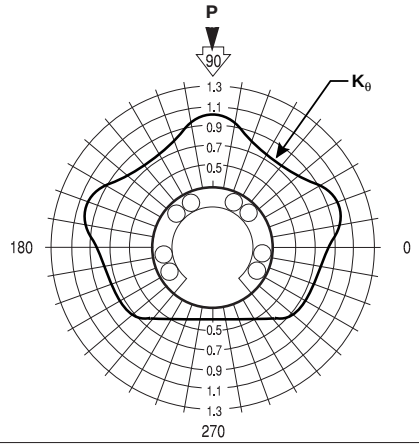
SuperSlide 2EB
Size: 08 (1/2 inch)





SuperSlide 2EB
Sizes: 12, 16, 24
(3/4, 1, and 1 1/2 inch)





These Load Correction Factor Polar charts show values of K_θ for load orientations on a single Ball Bushing* bearing. Appropriate load orientation should be considered for the most heavily loaded Ball Bushing bearing.

If the **Load Correction Factor** is less than 1.0 the following formula should be used to determine the **Corrected Force on the Most Heavily Loaded Bearing.**

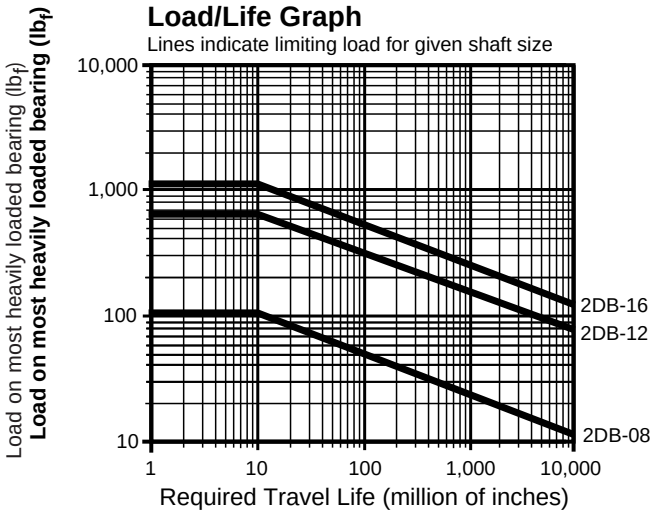
$$P_{max} = \frac{P_{resultant}}{K_\theta}$$

P_{max} = Force on the Most Heavily Loaded Bearing (N)
$P_{resultant}$ = Resultant of Externally Applied loads (N)
K_θ = Load Correction Factor

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

System Loading (continued)

Step 7. Select the system that meets the application **load and life requirements.**



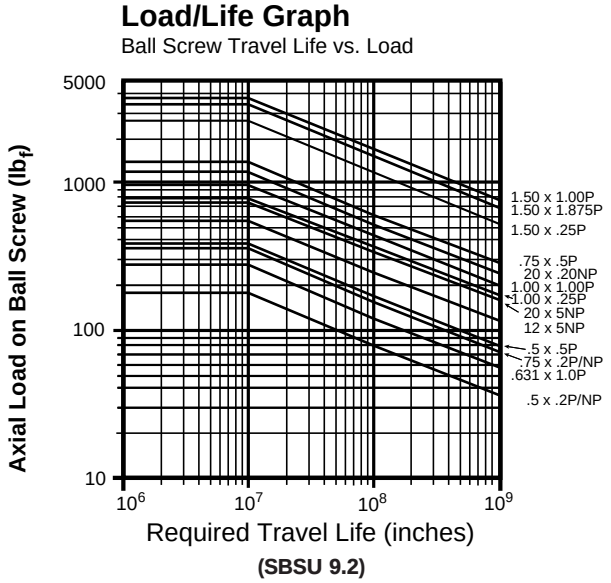
(SBSU 9.1)

For each SuperSlide Belt Actuated System there is a graph (e.g. graph SBSU 9.1) that allows for system selection based on the **Required Travel Life** and the **Force on the Most Heavily Loaded Bearing**. To determine the system which best meets your application requirements, simply enter the graph with your **Required Travel Life** from step 4 and the **Corrected Force on the Most Heavily Loaded Bearing** from step 6. Select a system characteristic curve that is above or to the right of the plotted point.

Note: Use **Corrected Force on the Most Heavily Loaded Bearing** if load correction factor is less than 1.0.

Ball Screw Load/Life

Step 8. Confirm that the **Ball Screw** in the SuperSlide selected will achieve **Load and Life requirements**. Once the SuperSlide Ball Screw Actuated System is selected refer to the Ball Screw Compatibility charts on the next two pages and select a ball screw that meets your application needs. With the ball screw axial load and the required travel life enter the graph (SBSU 9.2) below.



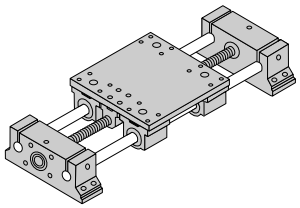
(SBSU 9.2)

To use the **Ball Screw Load/Life** graph (e.g. graph SBSU 9.2), simply enter the graph with the axial load on the ball screw and the required travel life. Select a SuperSlide System characteristic curve to the right or above of where the two lines intersect.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

INCH
SuperSlide* Ball Screw Actuated System
Ball Screw and System Compatibility

SuperSlide 2AB
End Supported System

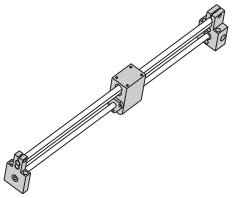


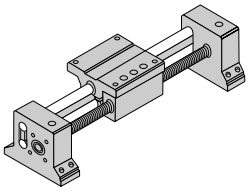
P-Preloaded
NP- Non-Preloaded

SuperSlide 2AB Ball Screw Compatibility Chart

Part Number	Ball Screw Diameter and Lead											Metric		
	.50 x .20	.50 x .20	.50 x .50	.631 x 1.0	.75 x .20	.75 x .20	1.0 X .25	1.0 X 1.0	1.5 X .25	1.5 X 1.0	15 X 1875	12 X 5	20 X 5	20 X 20
	NP	P	P	P	NP	P	P	P	P	P	P	NP	NP	NP
2AB-08	■	■	■									■		
2AB-12				■	■	■							■	■
2AB-16							■	■						
2AB-24									■	■	■			

SuperSlide 2BB / 2CB
End Supported System



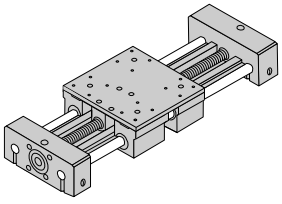


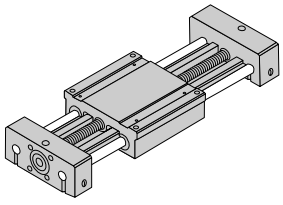
P-Preloaded
NP- Non-Preloaded

SuperSlide 2BB/2CB Lead Screw or Ball Screw Actuator Compatibility Chart

Part Number	Lead Screw or Ball Screw Diameter and Lead									Metric		
	.375 x .10	.375 x .25	.375 x .50	.375 x .75	.375 x 1.0	.50 x .20	50 x .20	.75 x .20	.75 x .20	12 X 5	16 X 5	20 X 5
	P	P	P	P	P	NP	P	NP	P	NP	NP	NP
2BB-06	■	■	■	■		■						
2CB-08						■	■			■		
2CB-12											■	
2CB-16								■	■			■

SuperSlide 2DB
Continuously Supported System





P-Preloaded
NP- Non-Preloaded

SuperSlide 2DB Ball Screw and Screw Actuator Compatibility Chart

Part Number	Lead Screw or Ball Screw Diameter and Lead												Metric	
	.375 x .1	.375 x .25	.375 x .50	.375 x .75	.375 x 1.0	.50 x .20	.50 x .20	.50 x .50	.631 x 1.0	.75 x .20	.75 x .20	.75 x.50	12 x 5	20 x 5
	P	P	P	P	P	P	NP	P	P	P	NP	P	NP	NP
2DB-08	■	■	■	■		■								
2DB-12						■	■	■					■	
2DB-16									■	■	■	■		■

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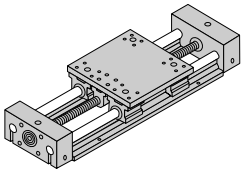
INCH
SuperSlide* Ball Screw Actuated System
Ball Screw and System Compatibility (continued)

SuperSlide 2EB
Continuously Supported System



P-Preloaded
NP- Non-Preloaded

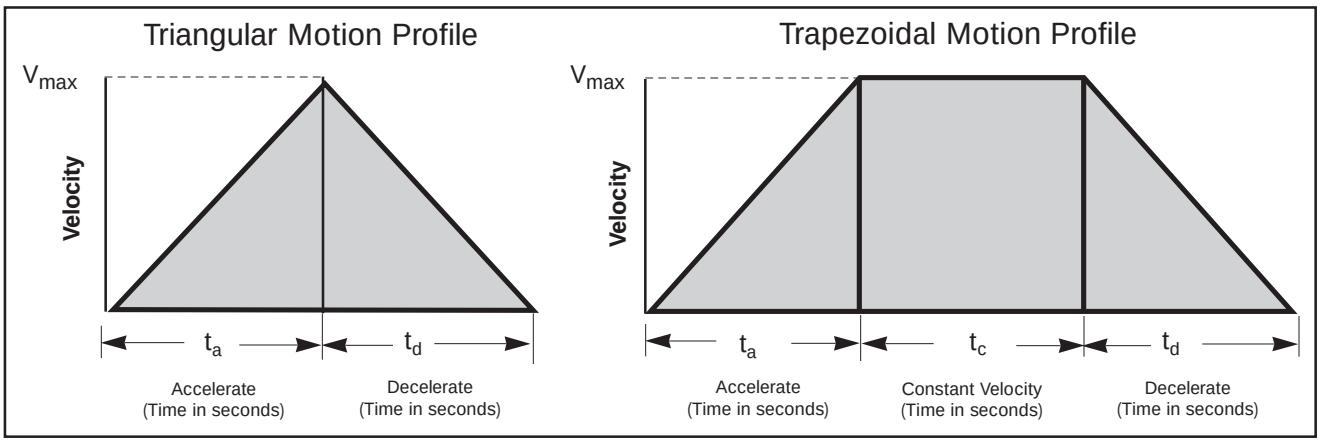
SuperSlide 2EB Ball Screw Compatibility Chart

Part Number	Ball Screw Diameter and Lead											Metric		
	.50 x .20	.50 x .20	.50 x .50	.631 x 1.0	.75 x .20	.75 x .20	1.0 X .25	1.0 X 1.0	1.5 X .25	1.5 X 1.0	1.5 X 1.875	12 X 5	20 X 5	20 X 20
	NP	**P**	**P**	**P**	**NP**	**P**	**P**	**P**	**P**	**P**	**P**	**NP**	**NP**	**NP**
2EB-08	■	■	■									■		
2EB-12				■	■	■							■	■
2EB-16							■	■						
2EB-24									■	■	■			

Motion Profile

A typical linear ball screw actuated application normally consists of a series of motion profiles. The drive torque required to move the system should be evaluated for each motion profile. There are two basic motion profile types. The first and most simple move is a triangular motion profile which consists of two legs. The first leg is for acceleration and the second is for deceleration. The second motion profile type is trapezoidal which consists of an acceleration leg; a leg of constant velocity and a deceleration leg.

Step 9. Determine the **Motion Profile** that fits your application requirements. Calculate V_{max} and a.



Triangular Motion Profile:

Assume: $t_a = t_d = t/2$ and $x_a = x_d = x/2$

Then: $V_{avg} = x/t$

$V_{max} = 2 \cdot V_{avg} = 2x/t$

$a = V_{max} / t_a = 4\,x/t^2$

Where:
- a = acceleration (in/s²)
- d = Deceleration (in/s²)
- x = Total Distance (in)
- x_a = Distance to Accelerate (in)
- x_c = Distance at Constant Velocity (in)
- x_d = Distance to Decelerate (in)

Trapezoidal Motion Profile:

Assume: $t_a = t_c = t_d = t/3$ and $x_a = x_d = x/4$, $x_c = x/2$

Then: $V_{avg} = x/t$

$V_{max} = 1.5 \cdot V_{avg}$

$a = -d = V_{max} / t_a = 4.5x/t^2$

- t = Total Move Time (s)
- t_a = Acceleration Time (s)
- t_c = Time at Constant Velocity (s)
- t_d = Deceleration Time (s)
- V_{avg} = Average Velocity (in/s)
- V_{max} = Maximum Velocity (in/s)

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Step 10. Determine the **Ball Screw and Motor Rotational Speed** required to move at V_{max} for the selected SuperSlide Ball Screw Actuated system.

SuperSlide Ball Screw Actuated Systems are equipped with a ball screw assembly already mounted. In Some SuperSlide sizes there are multiple ball screw leads available. To determine the availability of ball screw leads for each superslide system see the Ball Screw Compatibility charts on page 317-318. To calculate the rotational speed (rpm) required to achieve V_{max}, simply divide the linear speed (in/s) by the corresponding ball screw lead (in/rev).

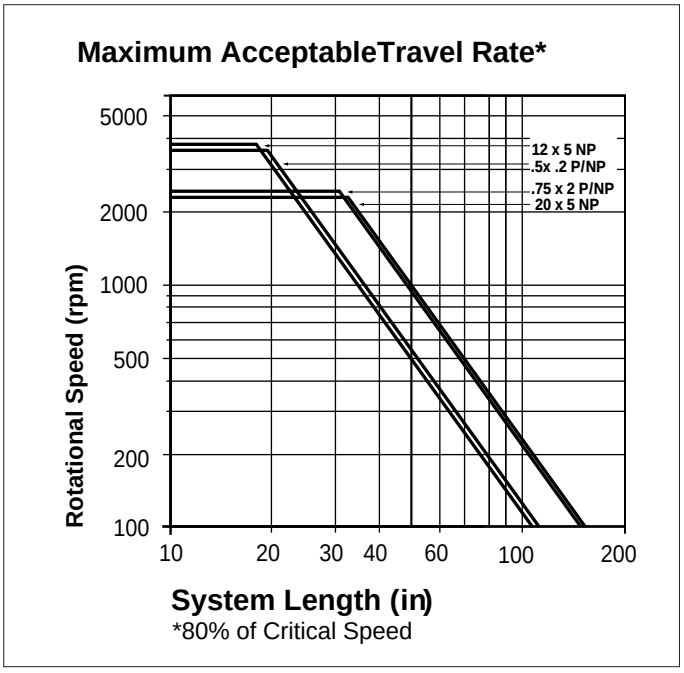
$$RPM = \left(\frac{V_{max}}{P}\right) \times 60 \text{ sec/min}$$

P = Ball Screw Lead (in/rev)
V_{max} = Maximum Linear Speed (in/s)

Maximum Acceptable Travel Rate

Step 11. Confirm the system application **Ball Screw Rotational Speed** is below the **Maximum Acceptable Travel Rate.**

Each SuperSlide Ball Screw Actuated System has a **Maximum Acceptable Travel Rate** based on the natural frequency of the whirling vibration of the ball screw. To determine the SuperSlide system that is capable of achieving the applications speeds, simply enter the graph with the Maximum Ball Screw Rotational Speed from step 10 and the required system length. Select the SuperSlide system characteristic curve to the right or above the plotted point.



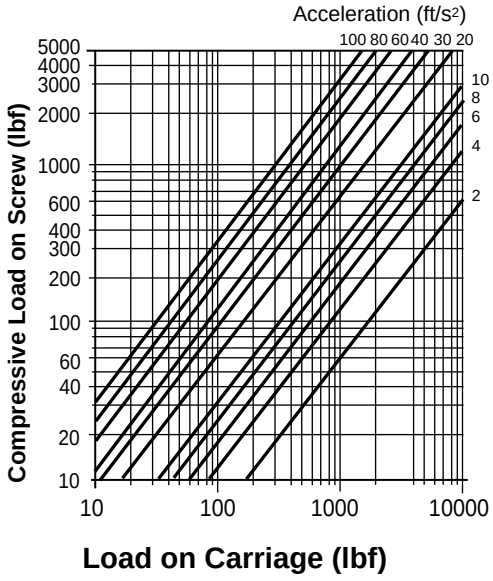
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

INCH
SuperSlide* Ball Screw Actuated System
Maximum Compressive Load

Step 12. Determine if the application loads on the SuperSlide exceed the maximum compressive load limits of the ball screw. Determine the **Actual Compressive Load** and the **Maximum Allowable Compressive Load.**

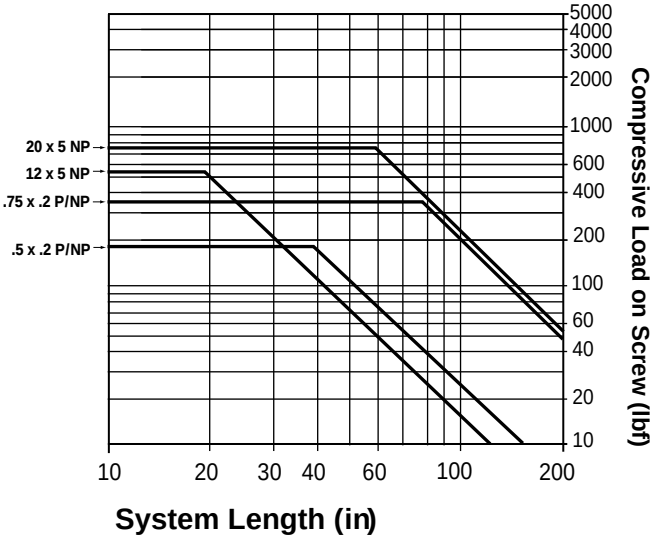
Graph SBSU 13.1 is used to determine the **Actual Compressive Load** on the system ball screw caused by the load on the carriage and the system acceleration. To determine the **Actual Compressive Load**, enter the graph with the load on the carriage and intersect this line with the system acceleration and locate the compressive load on the ball screw.

Actual Compressive Load



Graph SBSU 13.1

Maximum Allowable Compressive Load



Graph SBSU 13.2

Graph 13.2 is used to determine the **Maximum Allowable Compressive Load** for each SuperSlide Ball Screw Actuated system. To determine the **Maximum Allowable Compressive Load** enter the graph with the **Actual Compressive Load** from (Graph 13.1) and intersect this line with the system length. Select a system with a rated maximum Compressive Load characteristic curve above or to the right of your plotted point.

Note: If the **Actual Compressive Load** is higher than the **Maximum Allowable Compressive Load** than the system size, length, load or acceleration should be reconsidered.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

INCH
SuperSlide* Ball Screw Actuated System
Torque Calculations

Step 13. In order to size a motor for your SuperSlide system it is important to calculate the torque required to meet your application requirements with all of the parameters in mind. If you are actuating your system with a stepping motor, then a **maximum** or **peak torque (T_{peak})** calculation is required. **Peak torque** is usually seen at the time of maximum acceleration, however, other factors such as torque due to external forces can affect when peak torque occurs. It is important to calculate for all torque conditions (**Torque due to acceleration (T_A), Torque at constant velocity (T_{cv}), Torque due to deceleration (T_D), and Torque required to hold at rest (T_H)),** and take that torque with the largest magnitude as the **Peak Torque (T_{peak}).**

$$T_A = T_J + T_F + T_g + T_e \quad (oz \cdot in)$$
$$T_{cv} = T_F + T_g + T_e \quad (oz \cdot in)$$
$$T_D = T_J - T_F - T_g - T_e \quad (oz \cdot in)$$
$$T_H = -T_F + T_g + T_e \quad (oz \cdot in)$$

where:
T_J = Torque due to system inertia (oz • in)
T_F = Torque due to friction (oz • in)
T_g = Torque due to gravity (oz • in)
T_e = Torque due to external forces (oz • in)

Should you be actuating your SuperSlide system with a servo motor system then it is also necessary to calculate a **Root-Mean-Square Torque (T_{RMS}) or Continuous Torque.**

$$T_{RMS} = \sqrt{\frac{t_a (T_A)^2 + t_{cv} (T_{cv})^2 + t_d (T_D)^2 + t_h (T_H)^2}{t_a + t_{cv} + t_d + t_h}} \quad (oz \cdot in)$$

where:
t_a = time to accelerate (s)
t_{cv} = time at constant velocity (s)
t_d = time to decelerate (s)
t_h = time at rest (s)

Step 13a. Calculate **Torque due to system inertia (T_J)**:

$$T_J = \frac{\omega}{g \cdot t_a} \left[\frac{J_L}{\xi_{screw}} + J_B + J_M \right] \quad (oz \cdot in)$$

where:
w = angular velocity (rad/s)
J_L = Load inertia (oz • in²)
J_B = Ball or Lead Screw inertia (oz • in²)
J_M = Motor inertia (oz • in²)(1) (1 oz • in² = 386 oz • in • s²)
t_a = Time for acceleration (s) (from step 9)
g = Acceleration due to gravity = 386 in/s²
ξ_{screw} = Efficiency of screw (from table on page 323)

(1) For motor inertia data see the Motion Control Section, page 431

Calculate **Load inertia (J_L):**

$$J_L = \frac{(W_c + W_p) P^2}{(2\pi)^2} \quad (oz \cdot in^2)$$

where:
W_c = Weight of the Carriage (oz) (from table on next page)
W_p = Weight of Payload (oz) (from Application Data)
P = Lead of Ball or Lead Screw (in/rev) (from table on page 323)
π = 3.1416

INCH
Superslide* Ball Screw Actuated System

Calculate **Ball or Lead Screw inertia (J_b)**:

$$J_B = \frac{\pi \; L \; \rho \; d^4}{32} \qquad (oz \bullet in^2)$$

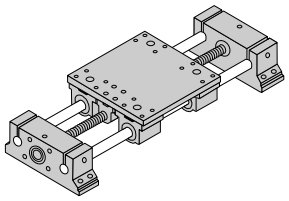
L = Length of Ball or Lead Screw (in)
ρ = Density of Ball or Lead Screw = 4.48 $^{oz}/_{in^3}$
d = Diameter of Ball or Lead Screw (in) (from table on next page)

Calulate **angular velocity (ω)**:

$$\omega = \frac{2\pi \; V_{max}}{P} \qquad (^{rad}/_{s})$$

where: V_{max} = Maximum Linear Speed ($^{in}/_{s}$) (from step 9)
P = Lead of Ball or Lead Screw ($^{in}/_{rev}$) (from table on next page)

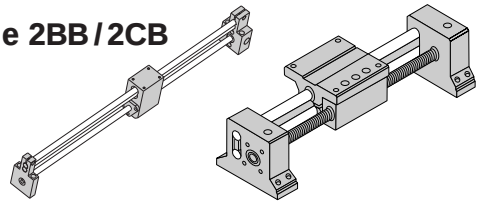
SuperSlide 2AB



SuperSlide 2AB Ball Screw Actuated System Data

Part Number	Nominal Dia.	Carriage Weight (oz)	Coefficient Friction Carriage	Number of Seals	Seal Drag (oz)
2AB-08	.50	30.4	.002	8	1.6
2AB-12	.75	76.8	.002	8	2.4
2AB-16	1.0	128.0	.002	8	4.8
2AB-24	1.5	403.2	.002	8	6.4

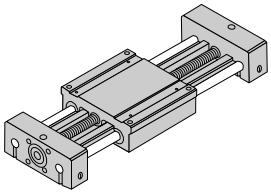
SuperSlide 2BB / 2CB



SuperSlide 2BB/2CB Lead Screw/Ball Screw Act. System Data

Part Number	Nominal Dia.	Carriage Weight (oz)	Coefficient Friction Carriage	Number of Seals	Seal Drag (oz)
2BB-06	.375	8.5	.002	0	—
2CB-08	.50	20.3	.002	4	1.6
2CB-12	.75	48.0	.002	4	2.4
2CB-16	1.0	100.0	.002	4	4.8

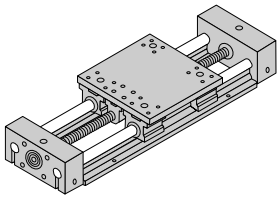
SuperSlide 2DB



SuperSlide 2DB Ball Screw Actuated System Data

Part Number	Nominal Dia.	Carriage Weight (oz)	Coefficient Friction Carriage	Number of Seals	Seal Drag (oz)
2DB-08-OUB	.50	24.5	.002	4	1.6
2DB-12-OUB	.75	63.5	.002	4	2.4
2DB-12-JUB	.75	64.0	.002	8	2.4
2DB-16-OUB	1.0	120.5	.002	4	4.8
2DB-16-JUB	1.0	108.0	.002	8	4.8

SuperSlide 2EB



SuperSlide 2EB Ball Screw Actuated System Data

Part Number	Nominal Dia.	Carriage Weight (oz)	Coefficient Friction Carriage	Number of Seals	Seal Drag (oz)
2EB-08	.50	30.4	.002	8	1.6
2EB-12	.75	76.8	.002	8	2.4
2EB-16	1.0	128.0	.002	8	4.8
2EB-24	1.5	403.2	.002	8	6.4

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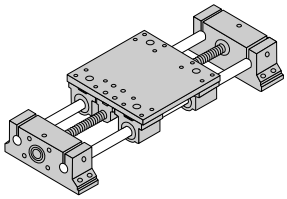
SuperSlide* Ball Screw Actuated System

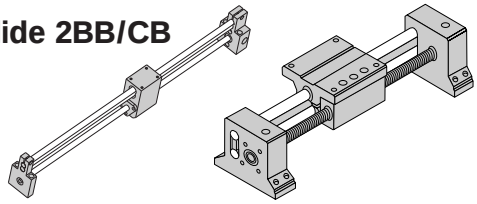
SuperSlide 2AB



SuperSlide 2AB Ball Screw Actuated System Data

Part Number	System Nom. Dia.	Ball Screw Dia. x lead	Preload Condition	Frictional Torque oz-in T_r †	Screw Efficiency ξ_{screw}
2AB-08-ARB-B	.50	12 mm x 5 mm	**NP**	6.4	0.90
2AB-08-ARB-F	.50	.50 x .20	**NP**	6.4	0.90
2AB-08-ARB-Q	.50	.50 x .50	**P**	7.2	0.90
2AB-12-ARB-D	.75	20 mm x 5 mm	**NP**	9.6	0.90
2AB-12-ARB-G	.75	.75 x .20	**NP**	9.6	0.90
2AB-12-ARB-L	.75	.631 x 1.0	**P**	7.2	0.90
2AB-12-ARB-U	.75	20 mm x 20 mm	**NP**	10.0	0.90
2AB-16-ARB-T	1.0	1.0 x 1.0	**P**	12.8	0.90
2AB-16-ARB-H	1.0	1.0 x .25	**P**	16.0	0.90
2AB-24-ARB-J	1.5	1.5 x 1.0	**P**	19.2	0.90
2AB-24-ARB-I	1.5	1.5 x .25	**P**	24.0	0.90
2AB-24-ARB-Z	1.5	1.5 x 1.875	**P**	16.0	0.90

SuperSlide 2BB/CB

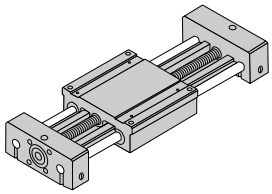


SuperSlide 2BB/CB Lead Screw or Ball Screw Act. System Data

Part Number	System Nom. Dia.	Ball Screw Dia. x lead	Preload Condition	Frictional Torque oz-in T_r †	Screw Efficiency ξ_{screw}
2BB-06-OTH-AA	.375	.375 x .1	**P**	3 to 6	0.53
2BB-06-OTH-AB	.375	.375 x .25	**P**	3 to 6	0.60
2BB-06-OTH-AC	.375	.375 x .50	**P**	3 to 6	0.81
2BB-06-OTH-AD	.375	.375 x .75	**P**	3 to 6	0.84
2BB-06-OTH-AE	.375	.375 x 1.0	**P**	3 to 6	0.84
2CB-08-OVA-B	.75	12 mm x 5 mm	**NP**	6.4	0.90
2CB-08-OVA-F	.75	.50 x .20	**NP**	6.4	0.90
2CB-12-OVA-C	1.0	16 mm x 5 mm	**P**	8.5	0.90
2CB-16-OVA-G	1.0	.75 x .20	**NP**	9.6	0.90
2CB-16-OVA-D	1.5	20 mm x 5 mm	**NP**	9.6	0.90

† Values of T_r are provided for calculation purposes. Measured values of T_r will vary with radial bearing and ball nut preload.

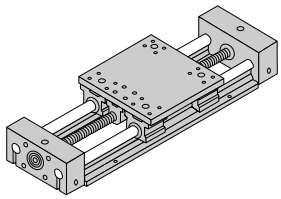
SuperSlide 2DB



SuperSlide 2DB Lead Screw or Ball Screw Act. System Data

Part Number	System Nom. Dia.	Ball Screw Dia. x lead	Preload Condition	Frictional Torque oz-in T_r †	Screw Efficiency ξ_{screw}
2DB-08-OUB-AA	.50	.375 x .1	**P**	3 to 6	0.53
2DB-08-OUB-AB	.50	.375 x .25	**P**	3 to 6	0.60
2DB-08-OUB-AC	.50	.375 x .50	**P**	3 to 6	0.81
2DB-08-OUB-AD	.50	.375 x .75	**P**	3 to 6	0.84
2DB-08-OUB-AE	.50	.375 x 1.0	**P**	3 to 6	0.84
2DB-12-OUB-B	.75	12 mm x 5 mm	**NP**	6.4	0.90
2DB-12-OUB-F	.75	.50 x .20	**NP**	6.4	0.90
2DB-12-OUB-V	.75	.50 x .20	**P**	9.6	0.90
2DB-12-JUB-Q	.75	.50 x .50	**P**	7.2	0.90
2DB-16-OUB-D	1.0	20 mm x 5 mm	**NP**	9.6	0.90
2DB-16-OUB-G	1.0	.75 x .20	**NP**	9.6	0.90
2DB-16-OUB-W	1.0	.75 x .20	**P**	12.4	0.90
2DB-16-OUB-L	1.0	.631 X 1.0	**P**	7.2	0.90
2DB-16-OUB-R	1.0	.75 X .50	**P**	8.4	0.90

SuperSlide 2EB



SuperSlide 2EB Ball Screw Actuated System Data

Part Number	System Nom. Dia.	Ball Screw Dia. x lead	Preload Condition	Frictional Torque oz-in T_r †	Screw Efficiency ξ_{screw}
2EB-08-FTB-B	.50	12 mm x 5 mm	**NP**	6.4	0.90
2EB-08-FTB-F	.50	.50 x .20	**NP**	6.4	0.90
2EB-08-FTB-Q	.50	.50 x .50	**P**	7.2	0.90
2EB-12-FTB-D	.75	20 mm x 5 mm	**NP**	9.6	0.90
2EB-12-FTB-G	.75	.75 x .20	**NP**	9.6	0.90
2EB-12-FTB-L	.75	.631 x 1.0	**P**	7.2	0.90
2EB-12-FTB-U	.75	20 mm x 20 mm	**NP**	10.0	0.90
2EB-16-FTB-T	1.0	1.0 x 1.0	**P**	12.8	0.90
2EB-16-FTB-H	1.0	1.0 x .25	**P**	16.0	0.90
2EB-24-FTB-J	1.5	1.5 x 1.0	**P**	19.2	0.90
2EB-24-FTB-I	1.5	1.5 x .25	**P**	24.0	0.90
2EB-24-FTB-Z	1.5	1.5 x 1.875	**P**	16.0	0.90

† Values of T_r are provided for calculation purposes. Measured values of T_r will vary with radial bearing and ball nut preload.

With the calculated values of **Load inertia (J_L), Ball or Lead Screw inertia (J_B)**, and **Angular Velocity (ω)** you can now calculate **Torque due to system inertia (T_J):**

$$T_J = \frac{\omega}{g \bullet t_a}\left[\frac{J_L}{\xi_{screw}} + J_B + J_M\right] \quad \text{(oz • in)}$$

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Step 13b. Calculate **Torque due to friction (TF)**

$$T_F = \frac{P \bullet P_f}{2\pi \xi_{screw}} + T_r \quad \text{(oz • in)}$$

where:
P = **Lead of Ball or Lead Screw (in/rev) (from table on previous page)**
π = **3.1416**
ξ_{screw} = **Efficiency of Ball or Lead Screw (from table on previous page)**

Calculate **Friction Force (P_f):**

$$P_f = (W_c + W_p) \bullet m_{sys} + n \bullet D_s \quad \text{(oz)}$$

where:
W_c = **Weight of Carriage (oz) (from table on page 322)**
W_p = **Weight of Payload (oz) (from Application Data)**
μ_{sys} = **Coefficient of friction of carriage (from table on page 322)**
n = **number of seals (from table on page 322)**
D_s = **Seal Drag (oz) (from table on page 322)**

With the calculated value of **Frictional Force (P_F),** locate **Frictional Torque (T_r) (oz • in)** in the appropriate table on previous page and calculate **Torque due to friction (T_F)** using the formula, above.

Step 13c. Calculate **Torque due to gravity (T_g)**:

$$T_g = \frac{P \bullet P_g}{2\pi \xi_{screw}} \quad \text{(oz • in)}$$

where:
P = **Lead of Ball or Lead Screw ($^{in}/_{rev}$) (from table on previous page)**
π = **3.1416**
ξ_{screw} = **Efficiency of Ball or Lead Screw (from table on previous page)**

Calculate **Gravity Force (P_g):**

$$P_g = (W_c + W_p) \text{ SIN } \theta \quad \text{(oz)}$$

where:
W_c = **Weight of Carriage (oz) (from table on page 322)**
W_p = **Weight of Payload (oz) (from Application Data)**
θ = **Angle from horizontal (for horizontal θ = 0°; vertical θ = 90° for upstroke, θ = 270° for downstroke)**

With the calculated value of **Gravity Force (P_g), the torque due to gravity (T_g)** can be calculated using the formula, above.

Step 13d. Calculate **Torque due to external forces (T_e):**

$$T_e = \frac{P \bullet P_e}{2\pi \xi_{screw}} \quad \text{(oz • in)}$$

where:
P = **Lead of Ball or Lead Screw (in/rev) (from table on previous page)**
π = **3.1416**
ξ_{screw} = **Efficiency of Ball or Lead Screw (from table on previous page)**

The value of external force(s) **(P_e)** (oz) must be calculated or estimated from the application specifications. Any outside forces that have a component that acts along the axis of the Superslide system should be included as an **external force (P_e)** (oz).

With the calculated or estimated value of **external force (P_e)** the **Torque due to external forces (T_e)** can be calculated using the formula, above.

Step 13e. Calculate **Peak Torque (T_{peak})**, the largest of the following:

Torque due to acceleration (T_A):

$$T_A = T_J + T_F + T_g + T_e \quad (oz \bullet in)$$

where:
T_J = Torque due to system inertia (oz • in) (from step 13a)
T_F = Torque due to friction (oz • in) (from step 13b)
T_g = Torque due to gravity (oz • in) (from step 13c)
T_e = Torque due to external forces (oz • in) (from step 13d)

Torque at constant velocity (T_{cv}):

$$T_{cv} = T_F + T_g + T_e \quad (oz \bullet in)$$

Torque due to deceleration (T_D):

$$T_D = T_J - T_F - T_g - T_e \quad (oz \bullet in)$$

Torque required to hold at rest (T_H):

$$T_H = -T_F + T_g + T_e \quad (oz \bullet in)$$

Step 13f. Calculate **Root-Mean-Square Torque (T_{RMS})** or **Continuous Torque:**

$$T_{RMS} = \sqrt{\frac{t_a (T_A)^2 + t_{cv} (T_{cv})^2 + t_d (T_D)^2 + t_h (T_H)^2}{t_a + t_{cv} + t_d + t_h}} \quad (oz \bullet in)$$

where: T_A, T_{cv}, T_D, and T_H are from step 13e.

t_a = time to accelerate (s)
t_{cv} = time at constant velocity (s)
t_d = time to decelerate (s)
t_h = time at rest (s)

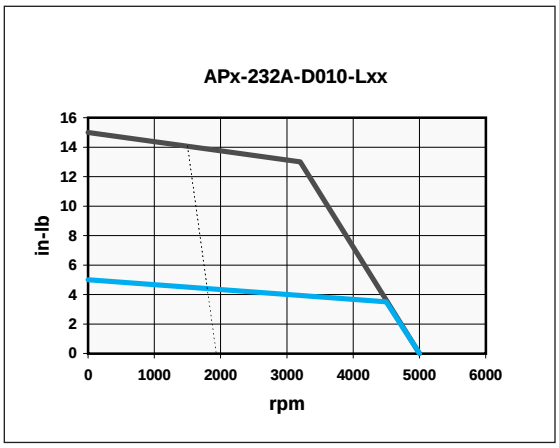
Speed vs Torque

Step 14. Determine the proper TMC-1000 motor selection. Plot **Peak Torque (T_{peak})** against the **Required Motor Speed** from step 10 and enter the Motor Speed vs. Torque graph (Graph SBSU 19.1). If the plotted point is below the curve for intermittent duty, then you have made a proper selection. Now plot **Continuous Torque (T_{RMS})** against the **Required Motor Speed** from step 10 and enter the graph again. If the plotted point is below the curve for continuous duty, then you have made a proper selection. If either of the plotted points fall above their respective curve then either a larger frame motor or a speed reducing gearhead must be employed. Check mounting flange availability when increasing the motor frame size. See the example at the bottom of the next page if you choose to employ a speed reducing gearhead.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Motor Speed vs. Torque Curve

Graph SBSU 19.1 is an example of a speed vs. torque curve for a NEMA 23 motor from the Motion Control section. BLX Series motors are available in standard NEMA frame sizes 23, 34 and 42 and can be combined with either a one, two, three or four axis controller. To determine the motor speed vs. torque curve that best suits the application and for a continuation of features and specifications refer to the Motion Control section, page 371.



Graph SBSU 19.1

Speed vs. Torque Curve with Gearhead

There is an increased torque capability when using a gearhead. The use of a gearhead also requires the motor to run at a higher speed. Gearheads are available in standard NEMA frame sizes 23, 34 and 42 and in ratios 1:1, 3:1; 5:1 and 10:1 (other ratios are available). To determine the motor speed vs. torque curve that best suits the application and for a continuation of features and specifications refer to the Motion Control section, page 371.

To determine motor speed, use the following formula:

$$RPM = \frac{V_{max} \bullet 60 \bullet i}{P}$$

where: V_{max} = maximum linear speed ($^{in}/_{s}$) (from step 9)
P = lead of Ball or Lead screw ($^{in}/_{rev}$) (from table on page 323)
i = gearhead ratio

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Ball Screw Actuated System
System Selection

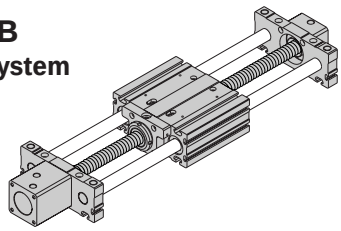
To determine the **SuperSlide Ball Screw Actuated System** that best fits your application requirements, the following design criteria will be evaluated:

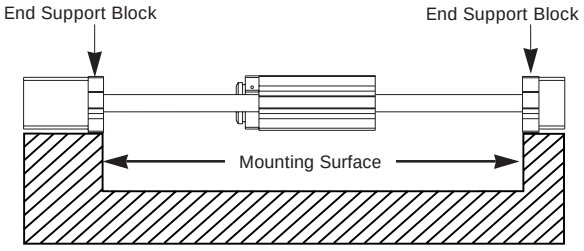
- **System Support Requirements**
- **System Stroke Length**
- **Maximum Allowable Shaft Deflection**
- **Required Travel Life**
- **Force on the Most Heavily Loaded Bearing**
- **Load Correction Factor**
- **Load/Life Requirements–Linear Bearings**
- **Load/Life Requirements–Ball Screws**
- **Motion (Move) Profile (Velocity, Acceleration)**
- **Maximum Acceptable Travel Rate**
- **Maximum Compressive (Column) Load**
- **Torque Calculations**
- **Size Motor Using Torque/Speed Curves**

After each criteria is determined system selection will become quick and easy. The following procedure will guide you through the proper system selection.

Step 1. Based on your application needs determine the **mounting support requirements.**

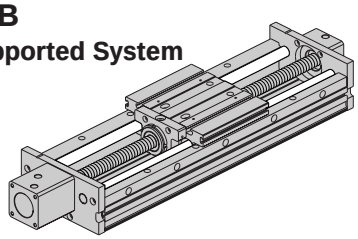
SuperSlide 2NB
End Supported System

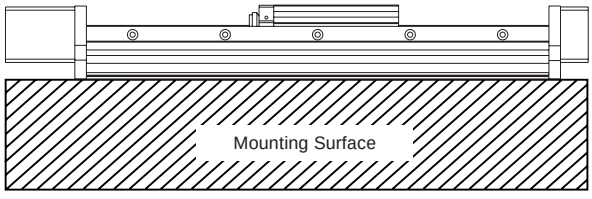




SuperSlide Ball Screw Actuated System 2NB is designed to quickly mount over a gap as shown in the above illustration. For other mounting ideas contact Thomson Systems application engineering.

SuperSlide 2RB
Continuously Supported System





SuperSlide Ball Screw Actuated System 2DB, 2HB, and 2RB are designed to be mounted continuously over a surface for reduced deflection as shown in the above illustration. For other mounting ideas contact Thomson Systems application engineering.

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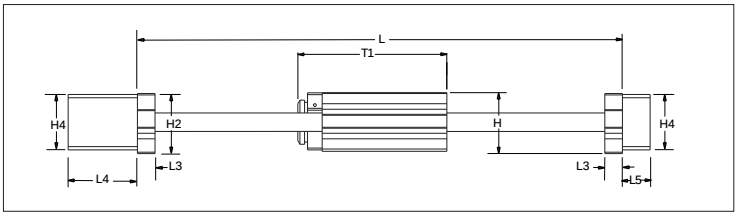
METRIC
SuperSlide* Ball Screw Actuated System
System Travel Lengths

Step 2. Determine the **Stroke Length (L_S).** For each SuperSlide Ball Screw Actuated System the maximum **Stroke Length (L_S)**can easily be determined. The following example describes how Maximum Stroke Length is calculated. By subtracting the carriage length **(T1)** and two times the end block length **(L3)** from the total system length **(L)** the Maximum Stroke Length is determined. The application or required stroke length should not exceed this number.

$$L_S = L - (T1 + 2\ L3)$$



Should your application require the use of bellows way covers, it is important to recognize that the bellows will detract from the available stroke of the system. The bellows will retract to approximately 14% of the available stroke at each end of the system. The **stroke length with bellows ($L_{S/B}$)** is calculated by subracting 2 times the **stroke (L_S)** times .14 from the **stroke (L_S)**.

$$L_{S/B} = L_S - (2 \times L_S \times .14)$$

Standard Length and Delivery. For each SuperSlide Ball Screw Actuated System there is a standard length chart and delivery information that also includes the standard length increment and the maximum system length. Selecting a standard system length will minimize shipment time. Once you have selected a length that best fits your application requirements, simply determine the maximum stroke length. The required stroke length should not exceed this number. Refer to the product specification section for the standard length charts not shown.

System 2RB Standard Lengths (Lengths in mm)

System	300	375	400	450	500	525	600	675	700	750	800	825	900	975	1000	1050	1100	1125	1200	1275	1300	1350	1400	1425	1500	X	MAX
2RB-M12	■	■		■			■	■	■		■			■	■	■		■		■	■	■■		■		75	2100
2RB-M16	■		■		■			■		■		■		■			■		■		■		■		■	100	3000

Custom Lengths and Delivery Information

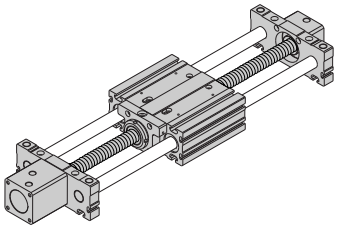
Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in two to three weeks. Custom length systems are available and require three to four weeks for delivery. Lengths exceeding MAX length will require butt joints and will need 4 to 6 weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

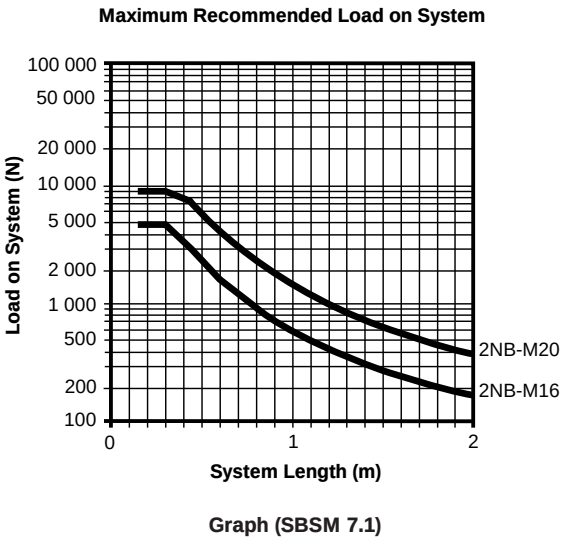
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Ball Screw Actuated System
Maximum Allowable Deflection
End Supported Systems

Step 3. For end supported systems, determine if the system selected meets the **Maximum Allowable Deflection** criteria.

SuperSlide 2NB
End Supported System





Graph (SBSM 7.1)

In end supported applications the bearing system can withstand an enormous amount of system deflection and still run smoothly due to the universal self-aligning feature of the Super Smart Ball Bushing* bearing. In a Ball Screw actuated end supported application, deflection is limited by the amount of radial load that a ball screw assembly can withstand. Step 3 will determine if the system size and length can handle the applied load. For SuperSlide Ball Screw Actuated System 2NB there is a graph (SBSM 7.1) that gives the maximum recommended load on the system based on shaft and ball screw deflection. To determine the system that best meets your application requirements, simply enter the graph with the total load on the system and the overall system length. Select a system characteristic curve that is above or to the right of the plotted point. To determine the actual deflection see the **Engineering Support Section,** page 378.

Travel Life

Step 4. Determine the **Required Travel Life** (km).

$$L_t = \frac{2 \cdot s \cdot f \cdot L_h \cdot 60}{10^6}$$

L_t = required travel life (km)
s = stroke (mm)
f = frequency (cycles/minute)
L_h = service life (hrs)

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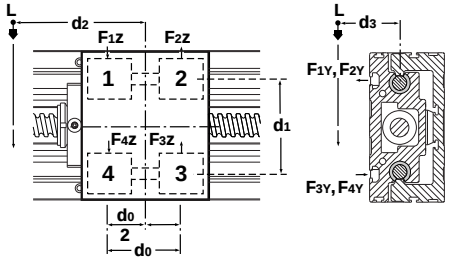
METRIC
SuperSlide* Ball Screw Actuated System

System Loading

Step 5. Determine the **Force on the Most Heavily Loaded Bearing.** When selecting a SuperSlide Ball Screw Actuated System, it is necessary to evaluate the bearing forces that are generated based on the position of the load and its movement during application. The free body diagram (SBSM 8.1) is an example of the type of calculations that are required when determining resultant bearing forces. For other free body diagram examples see **Load Considerations** in the **Engineering Support Section,** page 377**.** The determination of the force on the most heavily loaded bearing allows you to enter the load life graph and select the system that best fits your application needs.

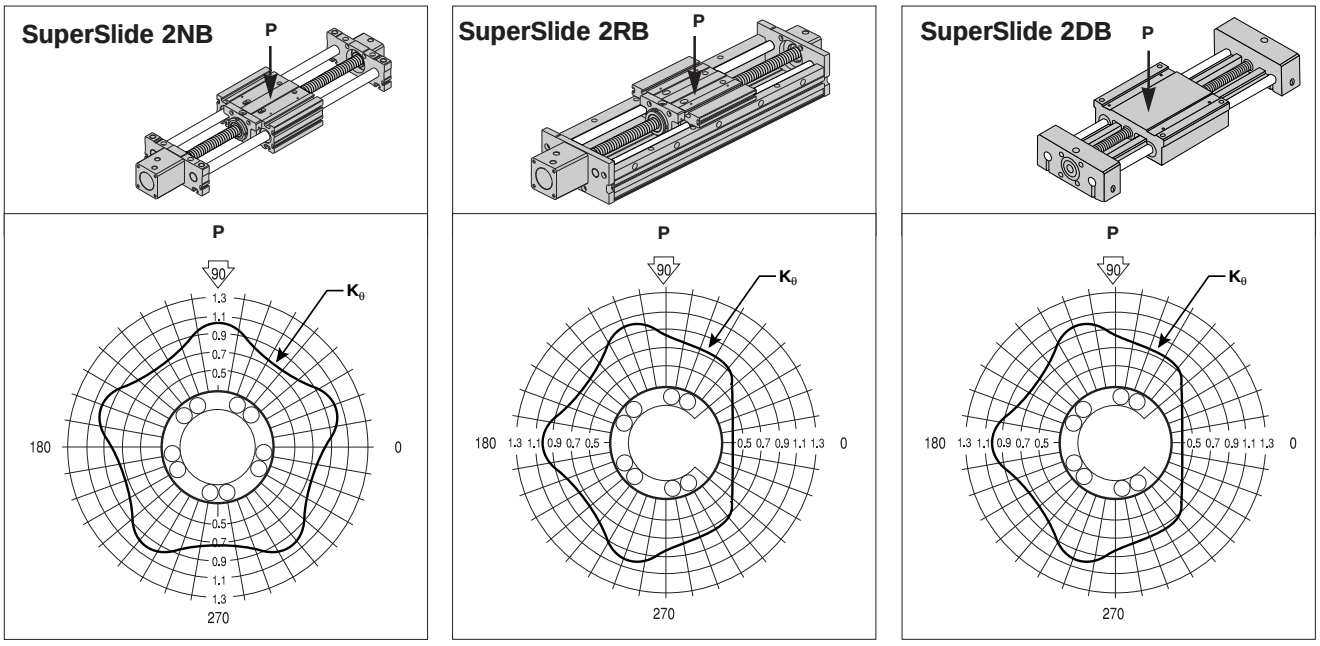


$$F_{1Y} \sim F_{4Y} = \left(\frac{L}{2} \times \frac{d_3}{d_1}\right) \qquad F_{2Z} = F_{3Z} = \frac{L}{4} - \left(\frac{L}{2} \times \frac{d_2}{d_0}\right)$$

$$F_{1Z} = F_{4Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right)$$

(SBSM 8.1)

Step 6. Determine the **Load Correction Factor (K_θ).** The dynamic load capacity of the SuperSlide Ball Screw Actuated system is determined by the orientation of the system and the direction of the resultant bearing load. To determine the load correction factor, simply enter the polar graph with the applied or resultant load direction until it intersects the polar curve. If the load correction factor is 1,0 the resultant force **($P_{resultant}$)** is equal to the **Force on the Most Heavily Loaded Bearing (P_{max}).** If the direction of the resultant bearing load cannot be determined, then use the minimum K_θ value (0,7 for closed bearings and 0,5 for open bearings).



These Load Correction Factor Polar charts show values of K_θ for load orientations on a single Ball Bushing* bearing. Appropriate load orientation should be considered for the most heavily loaded Ball Bushing bearing.

If the Load Correction Factor is less than 1,0 the following formula should be used to determine the **Corrected Force on the Most Heavily Loaded Bearing.**

$$P_{max} = \frac{P_{resultant}}{K_\theta}$$

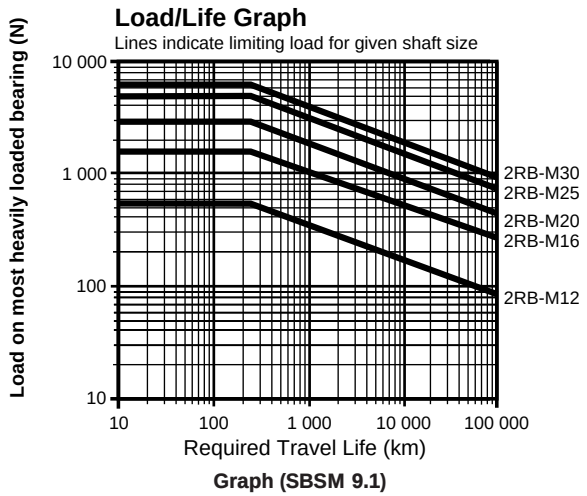
P_{max} = Force on the Most Heavily Loaded Bearing (N)
$P_{resultant}$ = Resultant of Externally Applied loads (N)
K_θ = Load Correction Factor

Note: AccuSlide* 2HB has a load correction factor in all directions of 1,0.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Ball Screw Actuated System
Load and Life Requirements

Step 7. Select the system that meets the application **Load and Life Requirements**.



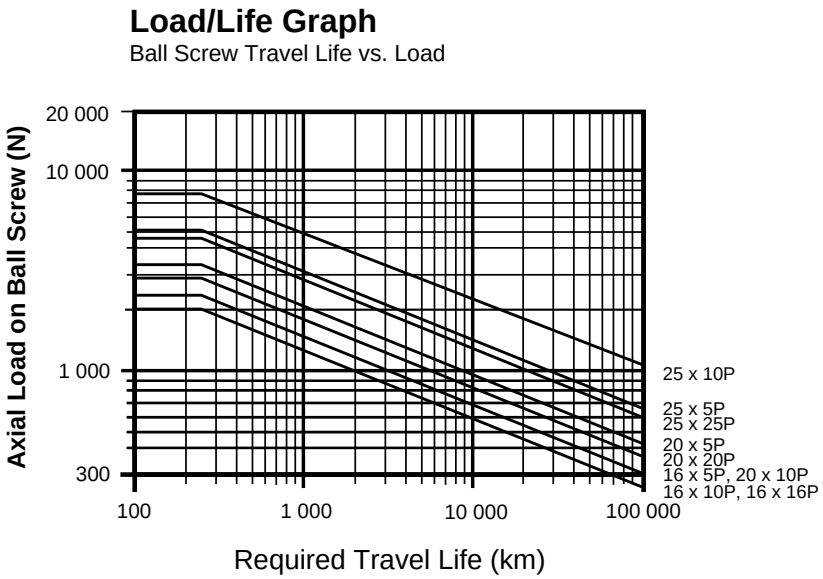
Graph (SBSM 9.1)

For each SuperSlide Ball Screw Actuated System there is a graph (SBSM 9.1) that allows for system selection based on the **Required Travel Life** and the **Force on the Most Heavily Loaded Bearing**. To determine the system which best meets your application Load and Life requirements, simply enter the graph with your **Required Travel Life** from step 4 and the **Corrected Force on the Most Heavily Loaded Bearing** from step 6. Select a system characteristic curve that is above or to the right of the plotted point.

Note: Use **Corrected Force on the Most Heavily Loaded Bearing** if load correction factor is less than 1,0.

Step 8. Confirm that the Ball Screw in the SuperSlide selected will achieve **Load and life Requirements**. Once the SuperSlide Ball Screw Actuated System is selected refer to the **Ball Screw Compatability Charts** on the next page and select a ball screw that meets your application needs. With the Ball Screw axial load and the required travel life enter the graph below.

To use the Ball Screw Load/Life graph (SBSM 9.2), simply enter the graph with the axial load on the ball screw and the required travel life. Select a SuperSlide Ball Screw characteristic curve to the right or above of where the two lines intersect.



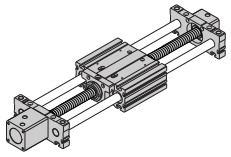
Graph (SBSM 9.2)

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Ball Screw Actuated System
Ball Screw Compatibility

To determine the availability of ball screw diameters and leads for each SuperSlide system see the Ball Screw Compatibility charts below.

SuperSlide 2NB
End Supported System

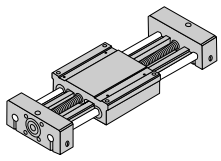


P-Preload
NP- Non-Preload

SuperSlide 2NB Ball Screw Compatibility Chart

Part Number	Ball Screw Diameter and Lead									
	12 x 5	12 x 10	16 x 5	16 x 10	20 x 5	20 x 10	20 x 20	25 x 5	25 x 10	25 x 25
Preload	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**
2NB-M16			■	■						
2NB-M20					■	■	■			

SuperSlide 2DB
Continuously Supported System

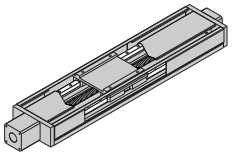


P-Preload
NP- Non-Preload

SuperSlide 2DB Ball Screw Compatibility Chart

Part Number	Ball Screw Diameter and Lead									
	12 x 5	12 x 10	16 x 5	16 x 10	20 x 5	20 x 10	20 x 20	25 x 5	25 x 10	25 x 25
Preload	**NP**	**P**	**P**	**P**	**NP**	**P**	**P**	**P**	**P**	**P**
2DB-12	■									
2DB-16					■					

AccuSlide* 2HB
Continuously Supported System

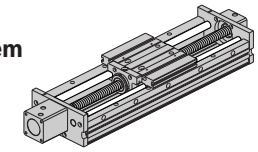


P-Preload
NP- Non-Preload

AccuSlide 2HB Ball Screw Compatibility Chart

Part Number	Ball Screw Diameter and Lead									
	12 x 5	12 x 10	16 x 5	16 x 10	20 x 5	20 x 10	20 x 20	25 x 5	25 x 10	25 x 25
Preload	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**
2HB-M10			■	■						
2HB-M20								■	■	■

SuperSlide 2RB
Continuously Supported System



P-Preload
NP- Non-Preload

SuperSlide 2RB Ball Screw Compatibility Chart

Part Number	Ball Screw Diameter and Lead									
	12 x 5	12 x 10	16 x 5	16 x 10	20 x 5	20 x 10	20 x 20	25 x 5	25 x 10	25 x 25
Preload	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**
2RB-M12			■	■						
2RB-M16					■	■	■			

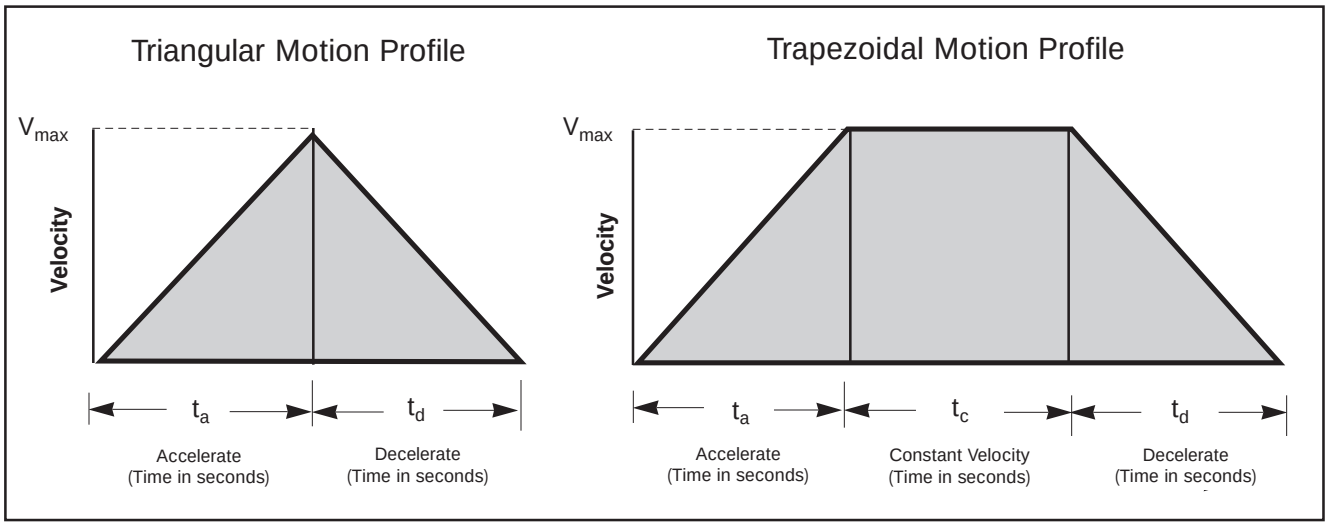
Engineering Support - Metric

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Ball Screw Actuated System
Motion Profile

A typical linear ball screw actuated application normally consists of a series of motion profiles. The drive torque required to move the system should be evaluated for each motion profile. There are two basic motion profile types. The first and most simple move is a triangular motion profile which consists of two legs. The first leg is for acceleration and the second is for deceleration. The second motion profile type is trapezoidal which consists of an acceleration leg; a leg of constant velocity and a deceleration leg.

Step 9. Determine the **Motion Profile** that fits your application requirements. Calculate $\mathbf{V_{max}}$ and **a**.



Triangular Motion Profile:

Assume: $t_a = t_d = t/2$ and $x_a = x_d = x/2$

Then: $V_{avg} = x/t$

$V_{max} = 2 \bullet V_{avg} = 2x/t$

$a = V_{max} / t_a = 4\,x/t^2$

Where:
- a = acceleration (m/s^2)
- d = deceleration (m/s^2)
- x = total Distance (m)
- x_a = distance to Accelerate (m)
- x_c = distance at Constant Velocity (m)
- x_d = distance to Decelerate (m)

Trapezoidal Motion Profile:

Assume: $t_a = t_c = t_d = t/3$ and $x_a = x_d = x/4$, $x_c = x/2$

Then: $V_{avg} = x/t$

$V_{max} = 1.5 \bullet V_{avg}$

$a = -d = V_{max} / t_a = 4.5x/t^2$

- t = total Move Time (s)
- t_a = acceleration Time (s)
- t_c = time at Constant Velocity (s)
- t_d = deceleration Time (s)
- V_{avg} = average Velocity (m/s)
- V_{max} = maximum Velocity (m/s)

Step 10. Determine the **Ball Screw and Motor Rotational Speed** required to move at $\mathbf{V_{max}}$ for the selected SuperSlide Ball Screw Actuated system.

SuperSlide Ball Screw Actuated Systems are equipped with a ball screw assembly already mounted. In some Superslide sizes there are multiple ball screw leads available. To determine the availability of ball screw leads for each SuperSlide system see the **Ball Screw Compatibility** charts on page 332. To calculate the rotational speed (rpm) required to achieve V_{max} simply divide the linear speed (m/s) by the corresponding ball screw lead (mm/rev).

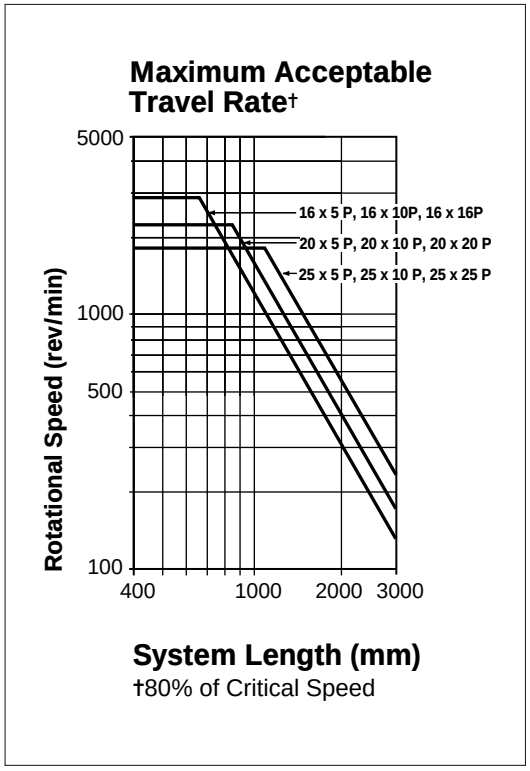
$$\text{RPM} = \left(\frac{V_{max}}{P}\right) \times 1000 \text{ mm/m} \times 60 \text{ sec/min} \qquad P = \text{Ball Screw Lead (mm/rev)}$$

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Ball Screw Actuated System
Maximum Acceptable Travel Rate

Step 11. Confirm the system application **Maximum Ball Screw Rotational Speed** is below the **Maximum Acceptable Travel Rate.**

Each SuperSlide Ball Screw Actuated System has a **Maximum Acceptable Travel Rate** based on the natural frequency of the whirling vibration of the ball screw. To determine the SuperSlide system that is capable of achieving the applications speeds, simply enter the graph with the **Maximum Ball Screw Rotational Speed** from step 10 and the required system length. Select the Superslide system characteristic curve to the right or above the plotted point.

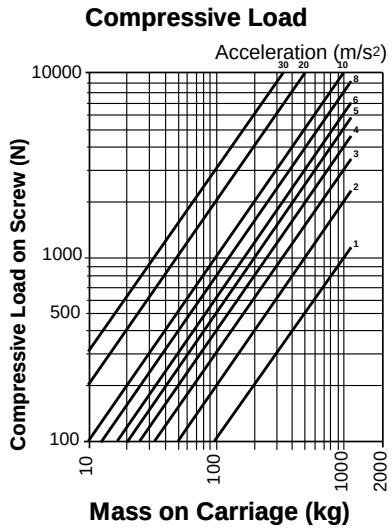


For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

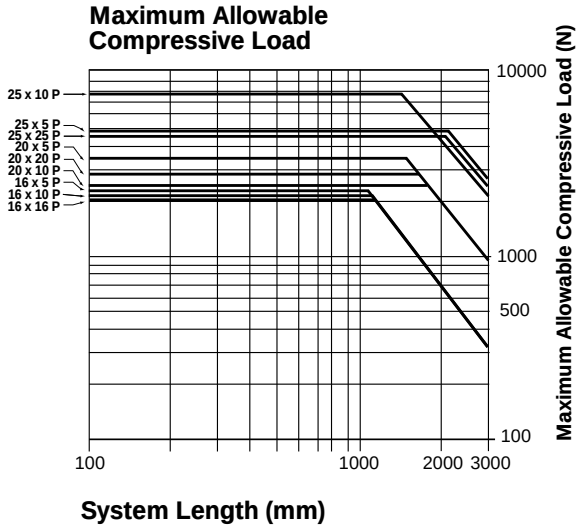
Maximum Compressive Load

Step 12. Determine if the application loads on the SuperSlide exceed the maximum compressive load limits of the ball screw. Determine the **Actual Compressive Load** and the **Maximum Allowable Compressive Load.**

Graph SBSM13.1 is used to determine the **Actual Compressive Load** on the system ball screw caused by the load on the carriage and the system acceleration. To determine the **Actual Compressive Load**, enter the graph with the mass on the carriage and intersect this line with the system acceleration and locate the compressive load on the ball screw.



Graph (SBSM 13.1)



Graph (SBSM 13.2)

Graph SBSM13.2 is used to determine the **Maximum Allowable Compressive Load** for each Superslide Ball Screw Actuated system. To determine the **Maximum Allowable Compressive Load**, enter the graph with the **actual compressive load** from (Graph 13.1) and intersect this line with the system length. Select a system with a rated maximum compressive load characteristic curve above or to the right of your plotted point.

Note: If the **Actual Compressive Load** is higher that the **Maximum Allowable Compressive Load** than the system size, length, load or acceleration should be reconsidered.

METRIC
SuperSlide Ball Screw Actuated System
Torque Calculations

Step 13. In order to size a motor for your SuperSlide Ball Screw Actuated system it is important to calculate the torque required to meet your application requirements with all of the parameters in mind. If you are actuating your system with a stepping motor, then a **maximum** or **peak torque (T_{peak})** calculation is required. **Peak torque** is usually seen at the time of maximum acceleration, however, other factors such as torque due to external forces can affect when peak torque occurs. It is important to calculate for all torque conditions (**Torque due to acceleration (T_A), Torque at constant velocity (T_{CV}), Torque due to deceleration (T_D), and Torque required to hold at rest (T_H)),** and take that torque with the largest magnitude as the **Peak Torque (T_{peak}).**

$$T_A = T_J + T_F + T_g + T_e \quad (N \cdot m)$$
$$T_{cv} = T_F + T_g + T_e \quad (N \cdot m)$$
$$T_D = T_J - T_F - T_g - T_e \quad (N \cdot m)$$
$$T_H = -T_F + T_g + T_e \quad (N \cdot m)$$

where:
T_J = Torque due to system inertia (N • m)
T_F = Torque due to friction (N • m)
T_g = Torque due to gravity (N • m)
T_e = Torque due to external forces (N • m)

Should you be actuating your Superslide system with a servo motor system then it is also necessary to calculate a **Root-Mean-Square Torque (T_{RMS}) or Continuous Torque.**

$$T_{RMS} = \sqrt{\frac{t_a (T_A)^2 + t_{cv} (T_{cv})^2 + t_d (T_D)^2 + t_h (T_H)^2}{t_a + t_{cv} + t_d + t_h}} \quad (N \cdot m)$$

where:
t_a = time to accelerate (s)
t_{cv} = time at constant velocity (s)
t_d = time to decelerate (s)
t_h = time at rest (s)

Step 13a. Calculate **Torque due to system inertia (T_J)**:

$$T_J = \frac{\omega}{g \cdot t_a} \left[\frac{J_L + J_B + J_M}{\xi_{screw}} \right] \quad (N \cdot m)$$

where:
ω = angular velocity (rad/s)
J_L = Load inertia (N • m²)
J_B = Ball Screw inertia (N • m²)
J_M = Motor inertia (N • m²)(1) (1 g • cm² = 10^{-8} N • m²)
t_a = Time for acceleration (s) (from step 9)
g = Acceleration due to gravity = 9.81 m/s²
ξ_{screw} = Efficiency of Ball Screw = 90%

(1) **For motor inertia data see the Motion Control Section, page 431**

Calculate **Load inertia (J_L):**

$$J_L = \frac{(W_c + W_p)\,(P/1000)^2}{(2\pi)^2} \quad (N \cdot m^2)$$

where:
W_c = Weight of the Carriage (N) (from table on next page)
W_p = Weight of Payload (N) (from Application Data)
P = Lead of Ball or Lead Screw (mm) (from table on page 338)
π = 3.1416

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Ball Screw Actuated System

Calculate **Ball or Lead Screw inertia (J_B)**:

$$J_B = \frac{\pi \; L \; \rho \; (d/1000)^4}{32} \qquad (N \cdot m^2)$$

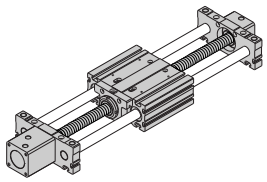
L = Length of Ball Screw (m)
ρ = Density of Ball Screw = 76,400 N/m^3
d = Diameter of Ball Screw (mm) (from table on next page)

Calulate **angular velocity (ω)**:

$$\omega = \frac{2\pi \; V_{max}}{(P/1000)} \qquad (rad/s)$$

where: V_{max} = Maximum Linear Speed (m/s) (from step 9)
P = Lead of Ball Screw (mm) (from table on next page)

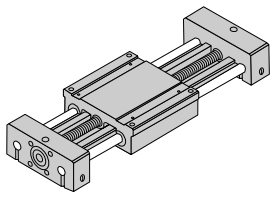
SuperSlide 2NB



SuperSlide 2NB Ball Screw Actuated System Data

Part Number	System Size	Carriage Weight (N)	Carriage Friction Coefficient	Number of Seals	Seal Drag (N)
2NB-M16	**16**		0,002	8	0,7
2NB-M20	**20**	22,6	0,002	8	1,2

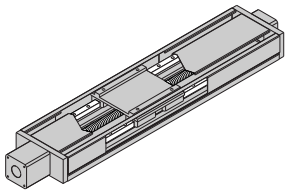
SuperSlide 2DB



SuperSlide 2RB Ball Screw Actuated System Data

Part Number	System Size	Carriage Weight (N)	Carriage Friction Coefficient	Number of Seals	Seal Drag (N)
2DB-12	**12**	16,7	0,002	4	0,7
2DB-16	**16**	34,3	0,002	4	1,2

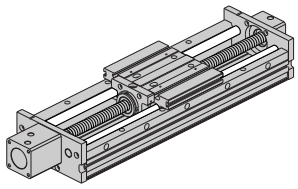
AccuSlide 2HB



AccuSlide 2NB Ball Screw Actuated System Data

Part Number	System Size	Carriage Weight (N)	Carriage Friction Coefficient	Number of Seals	Seal Drag (N)
2HB-M10	**10**	3,9	0,003	4	0,9
2HB-M20	**20**	26,5	0,003	4	7,0

SuperSlide 2RB



SuperSlide 2RB Ball Screw Actuated System Data

Part Number	System size	Carriage Weight (N)	Carriage Friction Coefficient	Number of Seals	Seal Drag (N)
2RB-M12	**12**	8,8	0,002	8	0,5
2RB-M16	**16**	16,7	0,002	8	0,7

With the calculated values of **Load inertia (J_L), Ball or Lead Screw inertia (J_B)**, and **Angular Velocity (ω)** you can now calculate **Torque due to system inertia (T_J):**

$$T_J = \frac{\omega}{g \cdot t_a}\left[\frac{J_L}{\xi_{screw}} + J_B + J_M\right] \qquad (N \cdot m)$$

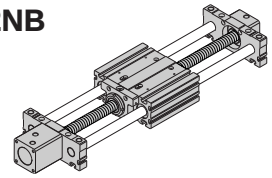
Step 13b. Calculate **Torque due to friction (T_F)**

$$T_F = \frac{(P/1000)}{2\pi \; \xi_{screw}} \cdot P_f + T_r \qquad (N \cdot m)$$

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Ball Screw Actuated System

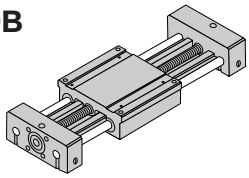
SuperSlide 2NB



SuperSlide 2NB Ball Screw Act. System Data

Part Number	Nominal Dia.	Ball Screw Dia.x lead (mm)	Frictional Torque N-m T_r †
2NB-M20-OGL-I	**20**	20 X 5	0,1
2NB-M20-OGL-J	**20**	20 X 10	0,1
2NB-M20-OGL-K	**20**	20 X 20	0,1

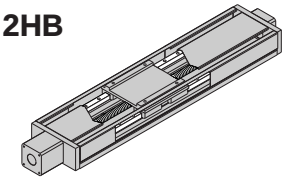
SuperSlide 2DB



SuperSlide 2DB Ball Screw Act. System Data

Part Number	System Dia.	Ball Screw Dia.x lead (mm)	Frictional Torque N-m T_r †
2DB-12-OUK-B	**12**	12 x 5	0,05
2DB-16-OUK-D	**16**	20 x 5	0,07

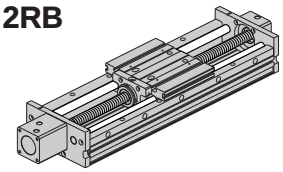
AccuSlide* 2HB



AccuSlide 2HB Ball Screw Act. System Data

Part Number	Nominal Size	Ball Screw Dia.x lead (mm)	Frictional Torque N-m T_r †
2HB-M10-OYP-G	**10**	16 x 5	0,09
2HB-M10-OYP-H	**10**	16 x 10	0,09
2HB-M20-OYP-L	**20**	25 x 5	0,1
2HB-M20-OYP-M	**20**	25 x 10	0,1
2HB-M10-OYP-N	**20**	25 x 25	0,1

SuperSlide 2RB



SuperSlide 2RB Ball Screw Act. System Data

Part Number	Nominal Dia.	Ball Screw Dia.x lead (mm)	Frictional Torque N-m T_r †
2RB-M12-ODM-G	**12**	16 x 5	0,09
2RB-M12-ODM-H	**12**	16 x 10	0,09
2RB-M16-ODM-I	**16**	20 x 5	0,1
2RB-M16-ODM-J	**16**	20 x 10	0,1
2RB-M16-ODM-K	**16**	20 x 20	0,1

† Values of T_r are provided for calculation purposes. Measured values of T_r will vary with radial bearing and ball nut preload.

where: P = **Lead of Ball Screw (mm) (from table above)**
π = **3.1416**
ξ_{screw} = **Efficiency of Ball Screw = 90%**

Calculate **Friction Force (P_f):**

$$P_f = (W_c + W_p) \bullet \mu_{sys} + n \bullet D_s \quad (N)$$

where: W_c = **Weight of Carriage (N) (from table on previous page)**
W_p = **Weight of Payload (N) (from Application Data)**
μ_{sys} = **Coefficient of friction of carriage (from table on previous page)**
n = **number of seals (from table on previous page)**
D_s = **Seal Drag (N) (from table on previous page)**

With the calculated value of **Frictional Force (P_F),** locate **Frictional Torque (T_r) (N • m)** in the appropriate table above and calculate **Torque due to friction (T_F)** from the formula on the previous page.

Step 13c. Calculate **Torque due to gravity (T_g)**:

$$T_g = \frac{(P/1000)}{2\pi\ \xi_{screw}} \bullet P_g \qquad (N \bullet m)$$

where: P = **Lead of Ball Screw (mm) (from table above)**
π = **3.1416**
ξ_{screw} = **Efficiency of Ball Screw = 90%**

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Calculate **Gravity Force (P_g):**

$$P_g = (W_c + W_p) \text{ SIN } \theta \quad \text{(N)}$$

where: W_c = **Weight of Carriage (N) (from table on page 337)**
W_p = **Weight of Payload (N) (from Application Data)**
θ = **Angle from horizontal (for horizontal θ = 0°; vertical θ = 90° for upstroke, θ = 270° for downstroke)**

With the calculated value of **Gravity Force (P_g)** (N)**, the torque due to gravity (T_g)** can be calculated from the formula on the previous page.

Step 13d. Calculate **Torque due to external forces (T_e):**

$$T_e = \frac{(P/1000)}{2\pi\ \xi_{screw}} \bullet P_e \quad \text{(N • m)}$$

where: P = **Lead of Ball Screw (mm/rev) (from table on previous page)**
π = **3.1416**
ξ_{screw} = **Efficiency of Ball Screw = 90%**

The value of external force(s) **(P_e)** (N) must be calculated or estimated from the application specifications. Any outside forces that have a component that acts along the axis of the Superslide system should be included as an **external force (P_e)** (N).

With the calculated or estimated value of **external force (P_e)** the **Torque due to external forces (T_e)** can be calculated using the formula, above.

Step 13e. Calculate **Peak Torque (T_{peak})**, the largest of the following:

Torque due to acceleration (T_A):

$$T_A = T_J + T_F + T_g + T_e \quad \text{(N • m)}$$

where: T_J = **Torque due to system inertia (N • m) (from step 13a)**
T_F = **Torque due to friction (N • m) (from step 13b)**
T_g = **Torque due to gravity (N • m) (from step 13c)**
T_e = **Torque due to external forces (N • m) (from step 13d)**

Torque at constant velocity (T_{cv}):

$$T_{cv} = T_F + T_g + T_e \quad \text{(N • m)}$$

Torque due to deceleration (T_D):

$$T_D = T_J - T_F - T_g - T_e \quad \text{(N • m)}$$

Torque required to hold at rest (T_H):

$$T_H = -T_F + T_g + T_e \quad \text{(N • m)}$$

Step 13f. Calculate **Root-Mean-Square Torque (T_{RMS})** or **Continuous Torque:**

$$T_{RMS} = \sqrt{\frac{t_a (T_A)^2 + t_{cv} (T_{cv})^2 + t_d (T_D)^2 + t_h (T_H)^2}{t_a + t_{cv} + t_d + t_h}} \quad \text{(N • m)}$$

where: **T_A, T_{cv}, T_D, and T_H are from step 13e.**

t_a = **time to accelerate (s)**
t_{cv} = **time at constant velocity (s)**
t_d = **time to decelerate (s)**
t_h = **time at rest (s)**

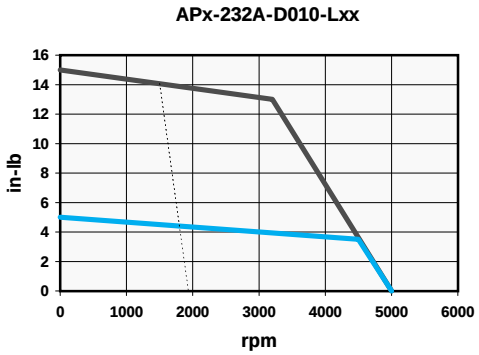
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Ball Screw Actuated System
Speed vs Torque

Step 14. Determine the proper motor selection. Plot **Peak Torque (T_{peak})** against the **Required Motor Speed** from step 10 and enter the Motor Speed vs. Torque graph (SBSM 18.1). If the plotted point is below the curve for intermittent duty, then you have made a proper selection. Now plot **Continuous Torque (T_{RMS})** against the **Required Motor Speed** from step 10 and enter the graph again. If the plotted point is below the curve for continuous duty, then you have made a proper selection. If either of the plotted points fall above their respective curve then either a larger frame motor or a speed reducing gearhead must be employed. Check mounting flange availability when increasing the motor frame size. See the example at the bottom of this page if you choose to employ a speed reducing gearhead.

Motor Speed vs. Torque Curve

Graph SBSM18.1 is an example of a speed vs. torque curve for a NEMA 23 motor from the Motion Control section. BLX Series motors are available in standard NEMA frame sizes 23, 34 and 42 and can be combined with either a one, two, three or four axis controller. To determine the motor speed vs. torque curve that best suits the application and for a continuation of features and specifications refer to the Motion Control section, page 381.



Graph SBSM18.1

Speed vs. Torque Curve with Gearhead

There is an increased torque capability when using a gearhead. The use of a gearhead also requires the motor to run at a higher speed. Gearheads are available in standard NEMA frame sizes 23, 34 and 42 and in ratios 1:1, 3:1, 5:1 and 10:1. (other ratios are available). To determine the motor speed vs. torque curve that best suits the application and for a continuation of features and specifications refer to the Motion Control section, page 381.

To determine motor speed, use the following formula:

$$RPM = \frac{V_{max} \bullet 60000 \bullet i}{P}$$

where: V_{max} = **maximum linear speed ($^{m}/_{s}$) (from step 9)**
P = **lead of Ball Screw ($^{mm}/_{rev}$)**
i = **gearhead ratio (from Application Data)**

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Ball Screw Actuated System
System Mounting

The SuperSlide 2NB and 2RB Ball Screw Actuated Systems can be mounted using the T-nuts and T-slots from above with clamping fixtures as shown below. In addition, SuperSlide Ball Screw Actuated Systems 2NB and 2RB can be mounted using the bolt down attachment holes found in each end block (System 2NB) or system support base (System 2RB). For other mounting fixity contact Thomson Systems Application Engineering.

SuperSlide 2NB

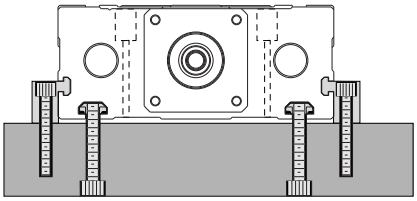


Figure 2: Mounting from below using T-slots or from above through mounting holes.

SuperSlide 2RB

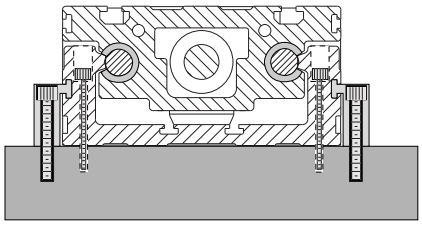
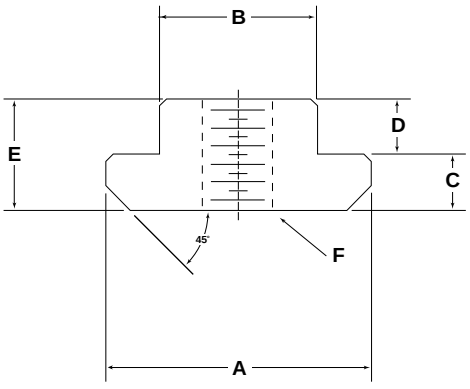


Figure 1: Mounting from above using T-slots or from above through mounting holes.

T-Nuts for Mounting

Standard T-Nut Dimensions



Standard T-Nut Dimensions						(Dimensions in mm)
Part Number	A	B	C	D	E	F
TNUT-01-M3	7	4	1,75	1,25	3	M3
TNUT-02-M4	9,5	5,5	2,25	1,75	4	M4
TNUT-03-M4	12	7	2,5	2,5	5	M4
TNUT-03-M5	12	7	2,5	2,5	5	M5
TNUT-04-M4	16,5	7,9	4,8	1,2	6	M4
TNUT-04-M5						M5
TNUT-04-M6						M6
TNUT-05-M4	19,5	9,8	5,8	2,8	8,6	M4
TNUT-05-M5						M5
TNUT-05-M6						M6
TNUT-05-M8						M8

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Belt Actuated System
System Selection

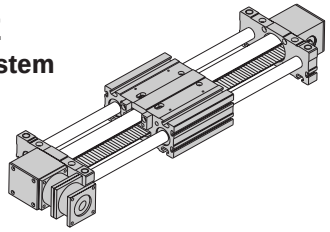
To determine the system that fits your **SuperSlide Belt Actuated System** application requirements the following design criteria needs to be evaluated:

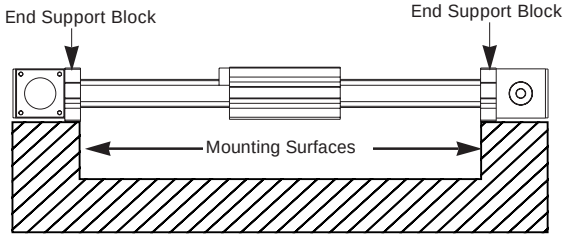
- **System Support Requirements**
- **System Stroke Length**
- **Maximum Allowable Shaft Deflection**
- **Required Travel Life**
- **Force on the Most Heavily Loaded Bearing**
- **Load Correction Factor**
- **Load/Life Requirements – Linear Bearings**
- **Motion (Move) Profile (Velocity, Acceleration)**
- **Maximum Belt Tooth Shear Strength**
- **Gear Motor Rotational Speed (Gear Reduction)**
- **Torque Calculations**
- **Size Motor using Torque/Speed Curves**

After the above are determined, the system selection will become quick and easy. The following procedure will guide you through the proper system selection.

Step 1. Based on your application needs determine the **Mounting Support Requirements**. Will the application require end or continuous support?

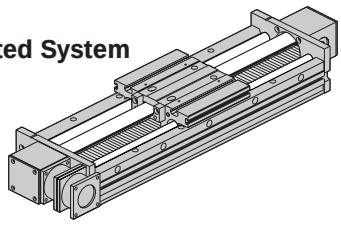
SuperSlide 2NE
End Supported System

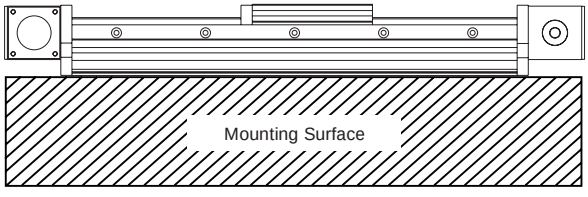




SuperSlide Belt Actuated System 2NE is designed to quickly mount over a gap as shown in the above illustration. For other mounting ideas contact Thomson Systems application engineering.

SuperSlide 2RE
Continuously Supported System





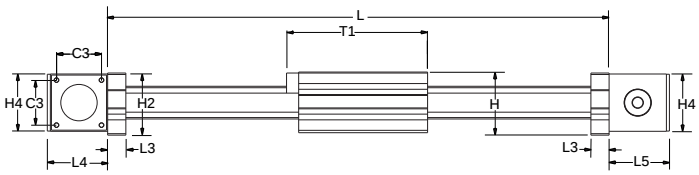
SuperSlide Belt Actuated System 2RE and 2HE are designed to be mounted continuously over a surface for reduced deflection as shown in the above illustration. For other mounting ideas contact Thomson Systems application engineering.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Belt Actuated System
System Travel Lengths

Step 2. Determine the **Stroke Length (L_S)**. For each SuperSlide Belt Actuated System, the maximum **Stroke Length (L_S)** can easily be determined. By subtracting the carriage length **(T1)** and two times end block length **(L3)** from the total system length **(L)** the maximum stroke length is determined. The application or required stroke length should not exceed this number.

$$L_S = L - (T1 + 2\ L3)$$



Should your application require the use of bellows way covers, it is important to recognize that the bellows will detract from the available stroke of the system. The bellows will retract to approximately 14% of the available stroke at each end of the system. The **stroke length with bellows ($L_{S/B}$)** is calculated by subtracting 2 times the **stroke (L_S)** times .14 from the **stroke (L_S)**.

$$L_{S/B} = L_S - (2 \times L_S \times .14)$$

Standard Length and Delivery. For each SuperSlide Belt Actuated System there is a standard length chart and delivery information that also includes the standard length increment and the maximum system length. Selecting a standard system length will minimize shipment time. Once you have selected a length that best fits your application requirements, simply determine the maximum stroke length. The required stroke length should not exceed this number.

System 2NE Standard Lengths (Lengths in mm)

System	300	375	400	450	500	525	600	675	700	750	800	825	900	975	1000	1050	1100	1125	1200	1275	1300	1350	1400	1425	1500	X	MAX
2NE-M16	■	■		■			■	■	■		■			■	■	■		■		■	■	■■		■		75	1500
2NE-M20	■		■		■			■		■		■		■			■		■		■		■		■	100	2000

Custom Lengths and Delivery Information

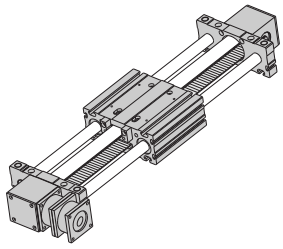
Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in two to three weeks. Custom length systems are available and require three to four weeks for delivery. Lengths exceeding MAX length will require butt joints and will need 4 to 6 weeks for delivery. For special requirements, please contact the Thomson Systems application engineering department.

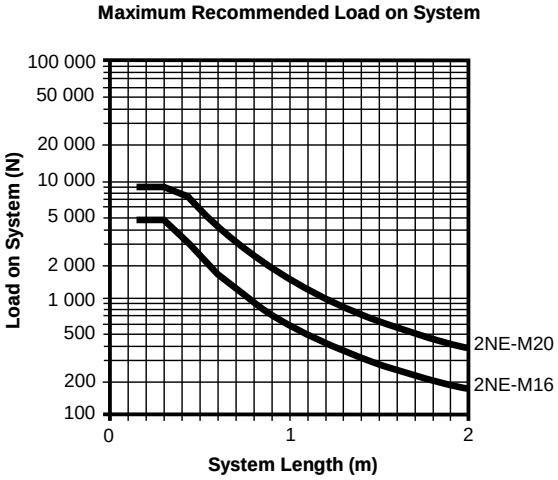
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

System Deflection

Step 3. For end supported systems, determine if the system selected meets the **Maximum Allowable Deflection** criteria.

SuperSlide 2NE
End Supported System – Horizontal Orientation





Graph (SBM 9)

In end supported applications the bearing system can withstand a substantial amount of system deflection and still run smoothly due to the universal self-aligning feature of the Super Smart Ball Bushing* bearing. In a Belt actuated end supported application, deflection is limited by the amount of LinearRace* shaft curvature a Ball Bushing bearing can withstand. Step 3 will determine if the system size and length can handle the applied load with respect to the deflection limit. For SuperSlide Belt Actuated System 2NE there is a graph (SBM 9) that gives the maximum recommended load on the system based on LinearRace deflection. To determine the system that best meets your application requirements, simply enter the graph with the total load (including any dynamic loads) on the system and the overall system length. Select a system characteristic curve that is above or to the right of the plotted point. To determine the actual deflection see the **Engineering Support Appendix,** page 378.

Travel Life

Step 4. Determine the **Required Travel Life (km).**

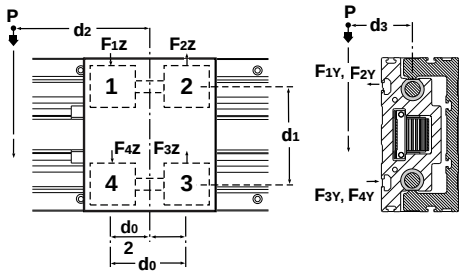
$$L_t = \frac{2 \bullet s \bullet f \bullet L_h \bullet 60}{10^6}$$

L_t = required travel life (km)
s = stroke (mm)
f = frequency (cycles/minute)
L_h = service life (hrs)

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Belt Actuated System
System Loading

Step 5. Determine the **Force on the Most Heavily Loaded Bearing.** When selecting a SuperSlide Belt Actuated System, it is necessary to evaluate the bearing forces that are generated based on the position of the load and its movement during application. The free body diagram (SBM 10.1) is an example of the type of calculations that are required when determining resultant bearing forces. For other free body diagram examples see **Load Considerations** in the **Engineering Support Appendix,** page 377. The determination of the force on the most heavily loaded bearing allows you to enter the load life graph and select the system that best fits your application needs.

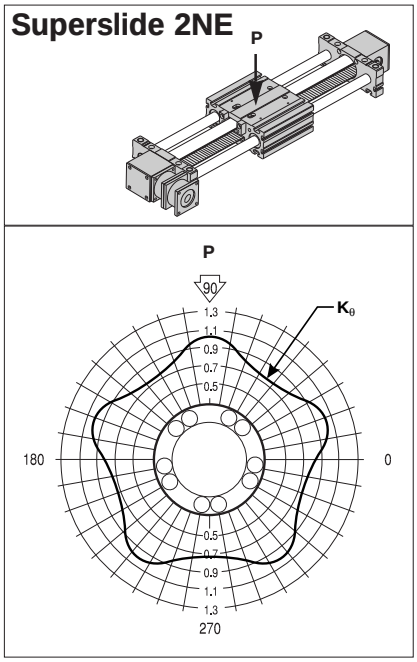


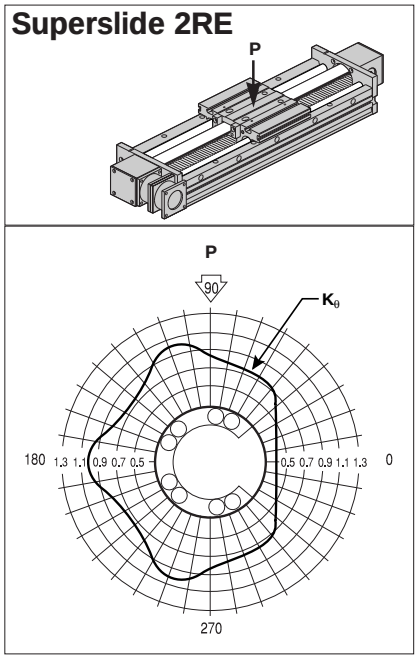
$$F_{1Y} \sim F_{4Y} = \left(\frac{P}{2} \times \frac{d_3}{d_1}\right) \qquad F_{2Z} = F_{3Z} = \frac{P}{4} - \left(\frac{P}{2} \times \frac{d_2}{d_0}\right)$$

$$F_{1Z} = F_{4Z} = \frac{P}{4} + \left(\frac{P}{2} \times \frac{d_2}{d_0}\right)$$

(SBM 10.1)

Step 6. Determine the **Load Correction Factor (K_θ).** The dynamic load capacity of SuperSlide Belt Actuated system is determined by the orientation of the system and the direction of the resultant bearing load.To determine the load correction factor, simply enter the polar graph with the applied or resultant load direction until it intersects the polar curve. If the load correction factor is 1,0 the resultant force **($P_{resultant}$)** is equal to the **Force on the Most Heavily Loaded Bearing (P_{max}).** If the direction of the resultant bearing load cannot be determined, then use the minimum K_θ value (0,7 for closed bearings and 0,5 for open bearings.)





These Load Correction Factor Polar charts show values of K_θ for load orientations on a single Ball Bushing* bearing. Appropriate load orientation should be considered for the most heavily loaded Ball Bushing bearing.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

If the **Load Correction Factor** is less than 1,0 the following formula should be used to determine the **Corrected Force on the Most Heavily Loaded Bearing.**

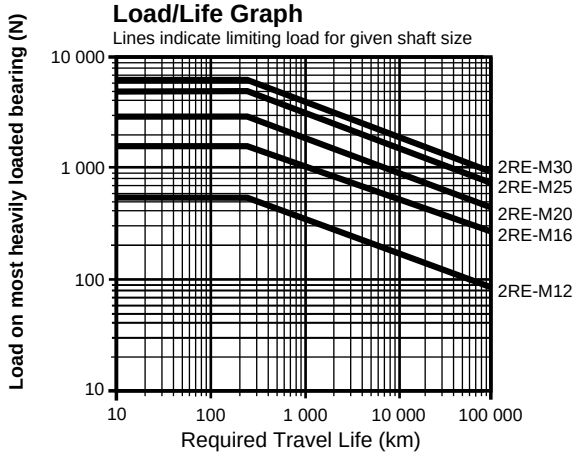
$$P_{max} = \frac{P_{resultant}}{K_\theta}$$

P_{max} = Force on the Most Heavily Loaded Bearing (N)
$P_{resultant}$ = Resultant of Externally Applied loads (N)
K_θ = Load Correction Factor

Note: AccuSlide* 2HE has a load correction factor in all directions of 1,0.

Load and Life Requirements

Step 7. Select the system that meets the application load and life requirements.



(SBM 11.1)

For each SuperSlide Belt Actuated System there is a graph (SBM 11.1) that allows for system selection based on the **Required Travel Life** and the **Force on the Most Heavily Loaded Bearing**. To determine the system which best meets your application requirements, simply enter the graph with your **Required Travel Life** from step 4 and the **Corrected Force on the Most Heavily Loaded Bearing** from step 6. Select a system characteristic curve that is above or to the right of the plotted point.

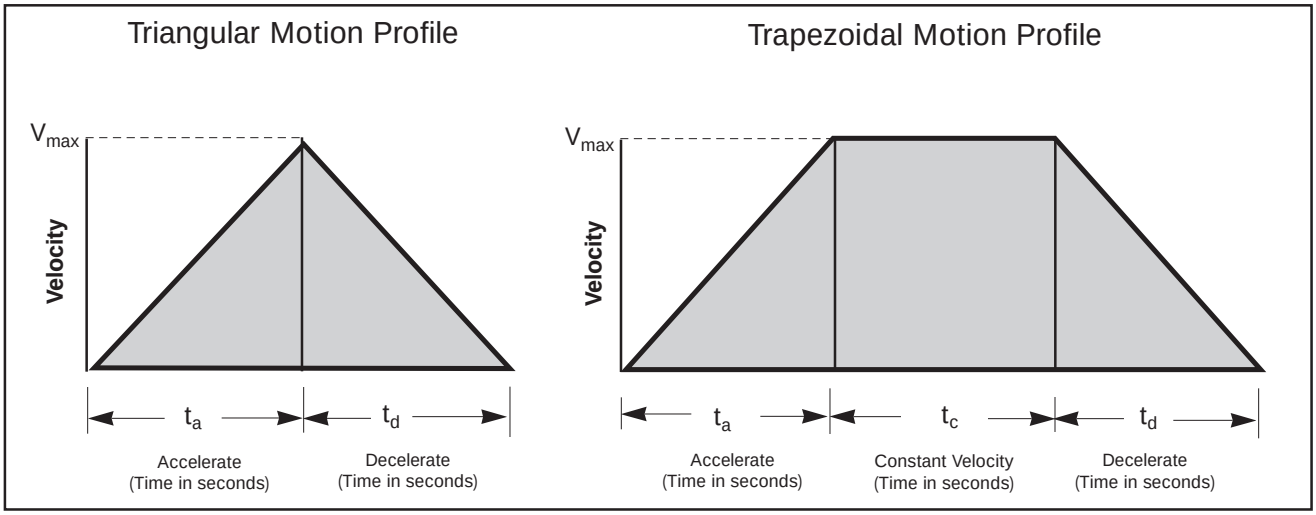
Note: Use **Corrected Force on the Most Heavily Loaded Bearing** if load correction factor is less than 1,0.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Motion Profile

A typical linear belt actuated application normally consists of a series of motion profiles. The actuated torque required to move the system should be evaluated for each motion profile. There are two basic motion profile types. The first and most simple move is a triangular motion profile which consists of two legs. The first leg is for acceleration and the second is for deceleration. The second motion profile type is trapezoidal which consists of an acceleration leg, a leg of constant velocity and a deceleration leg.

Step 8. Determine the **Motion Profile** that fits your application requirements. Calculate $\mathbf{V_{max}}$ and **a**.



Triangular Motion Profile:

Assume: $t_a = t_d = t/2$ **and** $x_a = x_d = x/2$

Then: $V_{avg} = x/t$

$V_{max} = 2 \bullet V_{avg} = 2x/t$

$a = V_{max} / t_a = 4\,x/t^2$

Where:

- a = acceleration (m/s^2)
- d = deceleration (m/s^2)
- x = total Distance (m)
- x_a = distance to Accelerate (m)
- x_c = distance at Constant Velocity (m)
- x_d = distance to Decelerate (m)

Trapezoidal Motion Profile:

Assume: $t_a = t_c = t_d = t/3$ **and** $x_a = x_d = x/4$, $x_c = x/2$

Then: $V_{avg} = x/t$

$V_{max} = 1.5 \bullet V_{avg}$

$a = -d = V_{max} / t_a = 4.5x/t^2$

- t = total Move Time (s)
- t_a = acceleration Time (s)
- t_c = time at Constant Velocity (s)
- t_d = deceleration Time (s)
- V_{avg} = average Velocity (m/s)
- V_{max} = maximum Velocity (m/s)

Maximum Belt Tooth Shear Strength

Step 9. Calculate the **Total Axial Forces** on the system belt and determine whether they are within the limits of the **Belt Pre-Tension Force** and **Maximum Allowable Tooth Shear** of the belt. The **Total Axial System Belt Force (P_s)** is the summation of **External Force (P_e)**, **Acceleration Force (P_a) and Frictional Force (P_f)**.

$$P_s = P_e + P_a + P_f$$

Step 9a. Determine the **External Axial Forces (P_e)**. External axial forces seen by the Superslide Belt Actuated system can be the result of application forces such as stretching fabric in a textile application or compressing boxing in a packaging application. In a vertical application, the external force is the addition of gravity acting on the payload. In those vertical applications the motor must be mounted above the load on the carriage.

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METRIC
SuperSlide* Belt Actuated System
Maximum Belt Tooth Shear Strength (continued)

Step 9b. Determine the **Acceleration force (P_a).** To overcome the inertia generated by the payload, the carriage assembly and the belt force due to acceleration must be evaluated.

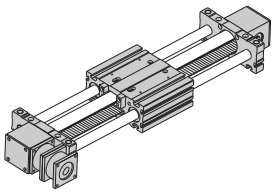
$$P_a = a \cdot \frac{(W_c + W_p + (W_b \cdot L \cdot 2))}{g}$$

$$a = V_{max} / t_a = \frac{4.5 \cdot x}{t^2} = \text{linear acceleration (m/s}^2\text{) (from step 8)}$$

W_c = carriage Weight (N) (from table below)
W_p = weight of Payload (N) (from Application Data)
W_b = weight of Belt (N/m) (from table below)
g = acceleration due to gravity = 9,81 m/s²

V_{max} = maximum velocity (m/s) (from Step 8)
t_a = acceleration time (s)
x_a = distance to accelerate (m)
L = overall length of system (m)
x = total distance (m)
t = total move time (s)

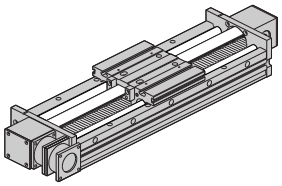
SuperSlide 2NE



SuperSlide 2NE Belt Actuated System Data

Part Number	Nominal Dia.	Carriage Weight (N)	Belt Weight (N/m)	Coefficient Friction Carriage	Number of Seals	Seal Drag (N)	Belt Pre-Tension Force (N)	Maximum Axial Force, Belt (N)
2NE-M16	**16**		0,4	0,002	8	0,7	**225**	**485**
2NE-M20	**20**	22,6	1,12	0,002	8	1,2	**780**	**817**

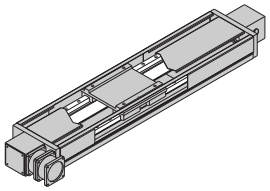
SuperSlide 2RE



SuperSlide 2RE Belt Actuated System Data

Part Number	Nominal Dia.	Carriage Weight (N)	Belt Weight (N/m)	Coefficient Friction Carriage	Number of Seals	Seal Drag (N)	Belt Pre-Tension Force (N)	Maximum Axial Force, Belt (N)
2RE-M12	**12**	8,8	0,4	0,002	8	0,5	**225**	**485**
2RE-M16	**16**	16,7	1,12	0,002	8	0,7	**780**	**817**

AccuSlide* 2HE



AccuSlide 2HE Belt Actuated System Data

Part Number	Nominal Size	Carriage Weight (N)	Belt Weight (N/m)	Coefficient Friction Carriage	Number of Seals	Seal Drag (N)	Belt Pre-Tension Force (N)	Maximum Axial Force, Belt (N)
2HE-M10	**10**	3,9	0,4	0,003	4	0,9	**225**	**485**
2HE-M20	**20**	26,5	1,75	0,003	4	7,0	**1260**	**1488**

Step 9c**.** Determine the **Frictional Force (P_f).** The total Frictional force is the sum of the payload and carriage weight times the system coefficient of friction plus the additional seal drag.

$$P_f = [\mu_{sys} \cdot (W_p + W_c) + n \cdot D_s]$$

W_p= payload weight (N)

W_c= carriage weight (N) (see table at left)

μ_{sys}= system coefficient of friction (see table at left)

D_S= seal Drag (N) (see table at left)

n= number of seals (see table at left)

In the case of vertical axis orientation, this **P_f** term may be omitted.

Step 9d**.** Calculate **Total Axial System Belt Force (P_s):**

$$P_s = P_e + P_a + P_f$$

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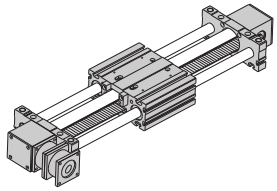
Step 9e. Compare the calculated **Total Axial System Belt Force (P_S)** with the **Belt Pre-Tension Force** in the tables on the previous page. If the calculated value exceeds the **Pre-Tension Force** in the table then the application parameters or the size of the system should be reconsidered, as the possibility exists that the belt could go into a slackened condition causing slippage on the pulley. In no case should the **Total Axial Belt Force (P_S)** ever exceed the **Maximum Axial Force** for the belt in the tables on the previous page.

Maximum Belt Tooth Shear Capacity

Step 10. It is also important to check that the application parameters are within the limits of the **Belt Tooth Shear Capacity.**

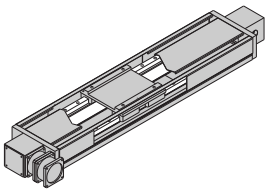
SuperSlide 2NE



SuperSlide 2NE Belt Actuated System Data

Part Number	Nominal Dia.	Pitch Circle Diameter (mm)	Lead (mm/rev.)	Number of Effective Teeth	Belt Width (mm)	Belt Pitch (mm)	Standard Gear Ratios	**Maximum Axial Force (N)**
2NE-M16	16	26,74	84	12	20	3	1:1, 3:1, 5:1, 10:1	**485**
2NE-M20	20	35,01	110	11	32	5	1:1, 3:1, 5:1, 10:1	**817**

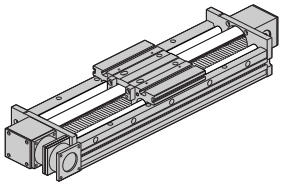
AccuSlide* 2HE



AccuSlide 2HE Belt Actuated System Data

Part Number	Nominal Size	Pitch Circle Diameter (mm)	Lead (mm/rev.)	Number of Effective Teeth	Belt Width (mm)	Belt Pitch (mm)	Standard Gear Ratios	**Maximum Axial Force (N)**
2HE-M10	10	26,74	84	12	20	3	1:1, 3:1, 5:1, 10:1	**485**
2HE-M20	20	47,75	150	12	50	5	1:1, 3:1, 5:1, 10:1	**1488**

SuperSlide 2RE



SuperSlide 2RE Belt Actuated System Data

Part Number	Nominal Dia.	Pitch Circle Diameter (mm)	Lead (mm/rev.)	Number of Effective Teeth	Belt Width (mm)	Belt Pitch (mm)	Standard Gear Ratios	**Maximum Axial Force (N)**
2RE-M12	12	26,74	84	12	20	3	1:1, 3:1, 5:1, 10:1	**485**
2RE-M16	16	35,01	110	11	32	5	1:1, 3:1, 5:1, 10:1	**817**

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METRIC
SuperSlide* Belt Actuated System
Maximum Belt Tooth Shear Capacity (continued)

The formula for calculating **Belt Tooth Shear Capacity (C_{ts})** is as follows:

$$C_{ts} = C_{sp} \cdot Z_e \cdot W$$

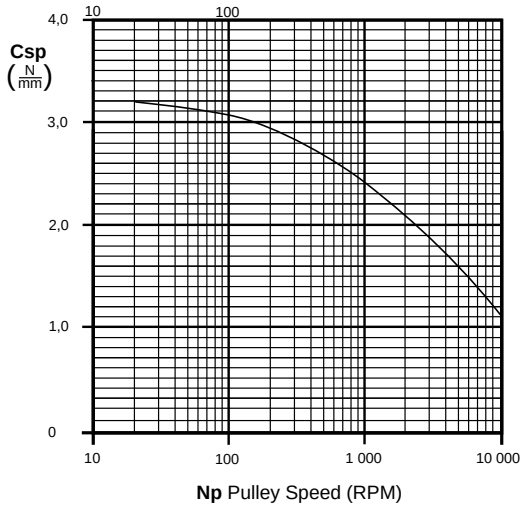
C_{sp} = Specific Axial Force Capacity (N/mm)
Z_e = Number of Effective Belt Teeth (from previous page)
W = Belt Width (mm) (from previous page)

Step 10a. The **C_{sp} value** is taken from the above graphs. Enter the graph for the appropriate **Belt Pitch** with the **Pulley Speed (N_p)** calculated as follows:

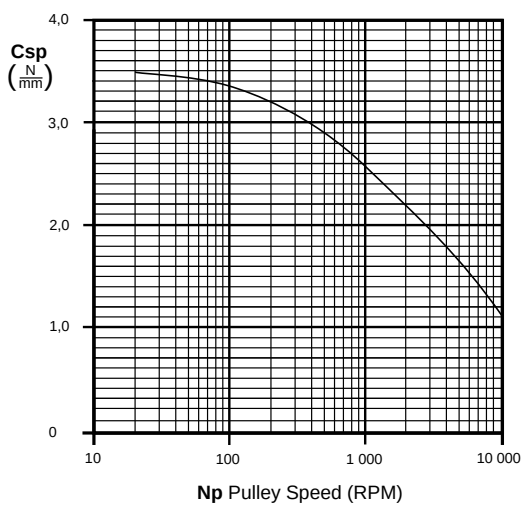
$$N_p = \frac{V_{max} \cdot 60000}{p_b} = \frac{V_{max} \cdot 60000}{\pi\, d_0}$$

N_p = Pulley Speed (RPM)
V_{max}= Maximum Linear Speed (m/s)(from Step 8)
P_b = πd_0 = Lead (mm/rev.) (from previous page)
d_0 = Pitch Circle Diameter (mm)(from previous page)
π = 3,1416

Specific Axial Force Capacity vs. Pulley Speed for 3mm pitch belt



Specific Axial Force Capacity vs. Pulley Speed for 5mm pitch belt



Step 10b. Once **Pulley Speed (N_p)** is calculated, and the **Specific Axial Force Capacity (C_{sp})** is determined from the above graph, locate the number of **Effective Belt Teeth (Z_e)** and the **Belt Width (W)** from the tables on the previous page and calculate the **Belt Tooth Shear Capacity (C_{ts})**:

$$C_{ts} = C_{sp} \cdot Z_e \cdot W$$

Step 10c. Compare the **Belt Tooth Shear Force Capacity (C_{ts})** with the calculated **Maximum Axial System Belt Force (P_s)** from step 9d. If the calculated value for **P_s** exceeds the maximum allowable capacity from step 10b, the application parameters or the size of the system must be reconsidered.

$$C_{ts} > P_s$$

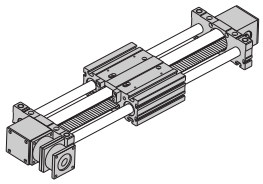
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Belt Actuated System
Speed Requirements
Rotational vs. Linear

Step 11. Determine the **Motor Rotational Speed** required to move at V_{max} for all system ratios.

The SuperSlide Belt Actuated System is equipped with a Thomson Micron True Planetary* Precision Gearhead already mounted. Each gearhead ratio (greater than 1:1) provides an increase in output torque and requires the motor to operate at a higher speed.

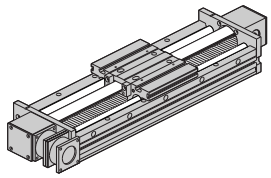
SuperSlide 2NE



SuperSlide 2NE Belt Actuated System Data

Part Number	Nominal Dia.	Pitch Circle Dia. (mm)	Lead (mm/rev)	Motor Frame Size	Standard Gear Ratios
2NE-M16	**16**	26,74	84	NEMA 23	1:1, 3:1, 5:1, 10:1
2NE-M20	**20**	35,01	110	NEMA 23	1:1, 3:1, 5:1, 10:1

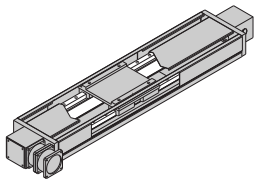
SuperSlide 2RE



SuperSlide 2RE Belt Actuated System Data

Part Number	Nominal Dia.	Pitch Circle Dia. (mm)	Lead (mm/rev)	Motor Frame Size	Standard Gear Ratios
2RE-M12	**12**	26,74	84	NEMA 23	1:1, 3:1, 5:1, 10:1
2RE-M16	**16**	35,01	110	NEMA 23	1:1, 3:1, 5:1, 10:1

AccuSlide* 2HE



AccuSlide 2HE Belt Actuated System Data

Part Number	Nominal Size	Pitch Circle Dia. (mm)	Lead (mm/rev)	Motor Frame Size	Standard Gear Ratios
2HE-M10	**10**	26,74	84	NEMA 23	1:1, 3:1, 5:1, 10:1
2HE-M20	**20**	47,75	150	NEMA 34	1:1, 3:1, 5:1, 10:1

Calculate the **Maximum Motor Speed (N_{max})** at the system **Maximum Linear Speed (V_{max})** from Step 8 using the following formula:

$$N_{max} = \frac{V_{max}\, i}{p_b}$$

V_{max}= Maximum Linear Speed (m/s)
i = Gear Ratio
d_0 = Pitch Circle Diameter (mm) (from tables above)
$p_b = \pi d_0$ = Lead (mm/rev.) (from tables above)
π= 3,1416

or with unit conversions and constants:

$$N_{max} = \frac{V_{max} \bullet i \bullet (1000mm/m) \bullet (60\ sec/min)}{\pi d_0} = \frac{V_{max} \bullet i \bullet (19\ 100)}{d_0}\ (RPM)$$

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METRIC
SuperSlide* Belt Actuated System
Torque Calculations

Step 12. In order to size a motor for your SuperSlide Belt Actuated system it is important to calculate the torque required to meet your application requirements with all of the parameters in mind. If you are actuating your system with a stepping motor, then a **maximum** or **peak torque (T_{peak})** calculation is required. **Peak torque** is usually seen at the time of maximum acceleration, however, other factors such as torque due to external forces can affect when peak torque occurs. It is important to calculate for all torque conditions (**Torque due to acceleration (T_A), Torque at constant velocity (T_{cv}), Torque due to deceleration (T_D), and Torque required to hold at rest (T_H)),** and take that torque with the largest magnitude as the **Peak Torque (T_{peak}).**

$$T_A = T_J + T_F + T_g + T_e \quad (N \cdot m)$$
$$T_{cv} = T_F + T_g + T_e \quad (N \cdot m)$$
$$T_D = T_J - T_F - T_g - T_e \quad (N \cdot m)$$
$$T_H = -T_F + T_g + T_e \quad (N \cdot m)$$

where:
- T_J = Torque due to system inertia (N • m)
- T_F = Torque due to friction (N • m)
- T_g = Torque due to gravity (N • m)
- T_e = Torque due to external forces (N • m)

Should you be actuating your SuperSlide system with a servo motor system then it is also necessary to calculate a **Root-Mean-Square Torque (T_{RMS}) or Continuous Torque.**

$$T_{RMS} = \sqrt{\frac{t_a (T_A)^2 + t_{cv} (T_{cv})^2 + t_d (T_D)^2 + t_h (T_H)^2}{t_a + t_{cv} + t_d + t_h}} \quad (N \cdot m)$$

where:
- t_a = time to accelerate (s)
- t_{cv} = time at constant velocity (s)
- t_d = time to decelerate (s)
- t_h = time at rest (s)

Step 12a. Calculate **Torque due to system inertia (T_J)**:

$$T_J = \left[\frac{1000 \cdot 2 \cdot a}{d_0}\right] \cdot \left[\frac{J_p}{i^2 \cdot \xi_g} + J_M \cdot i + J_g \cdot i\right] + T_L \quad (N \cdot m)$$

and

$$T_L = \frac{P_a \cdot d_0}{1000 \cdot 2 \cdot i \cdot \xi_g \cdot \xi_b} \quad (N \cdot m)$$

where:
- T_L = Torque due to payload (N • m)
- a = required linear acceleration (m/s^2) (from step 8)
- d_0 = pulley pitch circle diameter (mm) (from table on next page)
- J_p = drive pulley inertia ($Kg \cdot m^2$) (from table on next page)
- J_M = motor inertia ($Kg \cdot m^2$)(1) ($g \cdot cm^2 = Kg \cdot m^2 \times 10^{-7}$)
- J_g = gearbox inertia ($Kg \cdot m^2$) (from table on next page)
- i = gearbox ratio (from Application Data)
- ξ_g = gearbox efficiency = 90%
- ξ_b = belt efficiency = 90%
- P_a = acceleration force (N)

(1) For motor inertia data see the **Motion Control Section, page 431.**

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

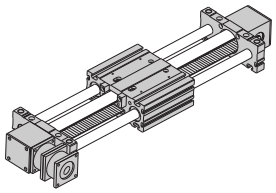
METRIC
SuperSlide* Belt Actuated System

Calculate **acceleration force (P_a)** (N)

$$P_a = \frac{a \bullet (W_c + W_p + W_B \bullet L \bullet 2)}{g} \qquad (N)$$

W_c = weight of carriage (N) (from table below)
W_p= weight of payload (N) (from application data)
W_B= weight of belt (N/m) (from table below)
L= overall system length (m)
a= required linear acceleration (m/s^2) (from step 8)
g= acceleration due to gravity = 9,81 m/s^2

SuperSlide 2NE



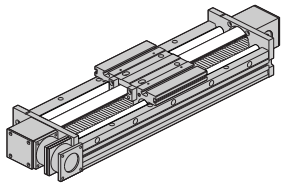
SuperSlide 2NE Belt Actuated System Data

Part Number	System Size	Pitch Circle Diameter (mm)	Pulley inertia (kg • m^2)	Carriage Weight (N)	Belt Weight (N/m)
2NE-M16	**16**	26,74	7,3 x 10^{-6}		0,4
2NE-M20	**20**	35,01	3,02 x 10^{-5}	22,6	1,12

SuperSlide 2NE

System Part Number	Gear Ratio	Motor Frame Size	Gearbox Part Number	Gearbox inertia (Kg • m^2)
2NE-M16-OLL-A	1:1	NEMA23	NT-23-1	8,14 x 10^{-4}
2NE-M16-OLL-B	3:1	NEMA23	NT-23-3	7,82 x 10^{-4}
2NE-M16-OLL-C	5:1	NEMA23	NT-23-5	2,58 x 10^{-4}
2NE-M16-OLL-D	10:1	NEMA23	NT-23-10	1,61 x 10^{-4}
2NE-M20-OLL-A	1:1	NEMA23	NT-23-1	8,14 x 10^{-4}
2NE-M20-OLL-B	3:1	NEMA23	NT-23-3	7,82 x 10^{-4}
2NE-M20-OLL-C	5:1	NEMA23	NT-23-5	2,58 x 10^{-4}
2NE-M20-OLL-D	10:1	NEMA23	NT-23-10	1,61 x 10^{-4}

SuperSlide 2RE



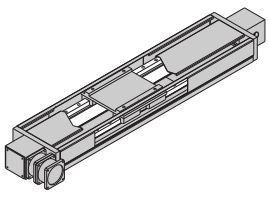
SuperSlide 2RE Belt Actuated System Data

Part Number	System Size	Pitch Circle Diameter (mm)	Pulley inertia (kg • m^2)	Carriage Weight (N)	Belt Weight (N/m)
2RE-M12	**12**	26,74	7,3 x 10^{-6}	8,8	0,4
2RE-M16	**16**	35,01	3,02 x 10^{-5}	16,7	1,12

SuperSlide 2RE

System Part Number	Gear Ratio	Motor Frame Size	Gearbox Part Number	Gearbox inertia (Kg • m^2)
2RE-M12-OEM-A	1:1	NEMA23	NT-23-1	8,14 x 10^{-4}
2RE-M12-OEM-B	3:1	NEMA23	NT-23-3	7,82 x 10^{-4}
2RE-M12-OEM-C	5:1	NEMA23	NT-23-5	2,58 x 10^{-4}
2RE-M12-OEM-D	10:1	NEMA23	NT-23-10	1,61 x 10^{-4}
2RE-M16-OEM-A	1:1	NEMA23	NT-23-1	8,14 x 10^{-4}
2RE-M16-OEM-B	3:1	NEMA23	NT-23-3	7,82 x 10^{-4}
2RE-M16-OEM-C	5:1	NEMA23	NT-23-5	2,58 x 10^{-4}
2RE-M16-OEM-D	10:1	NEMA23	NT-23-10	1,61 x 10^{-4}

AccuSlide* 2HE



AccuSlide 2HE Belt Actuated System Data

Part Number	System Size	Pitch Circle Diameter (mm)	Pulley inertia (kg • m^2)	Carriage Weight (N)	Belt Weight (N/m)
2HE-M10	**10**	26,74	7,3 x 10^{-6}	3,9	0,4
2HE-M20	**20**	47,75	1,54x 10^{-4}	26,5	1,75

AccuSlide 2HE

System Part Number	Gear Ratio	Motor Frame Size	Gearbox Part Number	Gearbox inertia (Kg • m^2)
2HE-M10-OZP-A	1:1	NEMA23	NT-23-1	8,14 x 10^{-4}
2HE-M10-OZP-B	3:1	NEMA23	NT-23-3	7,82 x 10^{-4}
2HE-M10-OZP-C	5:1	NEMA23	NT-23-5	2,58 x 10^{-4}
2HE-M10-OZP-D	10:1	NEMA23	NT-23-10	1,61 x 10^{-4}
2HE-M20-OZP-E	1:1	NEMA34	NT-34-1	4,9 x 10^{-3}
2HE-M20-OZP-F	3:1	NEMA34	NT-34-3	4,51 x 10^{-3}
2HE-M20-OZP-G	5:1	NEMA34	NT-34-5	1,39 x 10^{-3}
2HE-M20-OZP-H	10:1	NEMA34	NT-34-10	7,56 x 10^{-4}

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METRIC
SuperSlide* Belt Actuated System

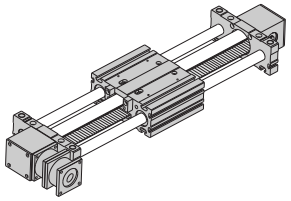
Calculate **Torque due to payload (T_L):**

$$T_L = \frac{P_a \bullet d_0}{1000 \bullet 2 \bullet i \bullet \xi_g \bullet \xi_b} \quad (N \bullet m)$$

Calculate **Torque due to system inertia (T_J) :**

$$T_J = \left[\frac{1000 \bullet 2 \bullet a}{d_0}\right] \bullet \left[\frac{J_p}{i^2 \bullet \xi_g} + J_M \bullet i + J_g \bullet i\right] + T_L \quad (N \bullet m)$$

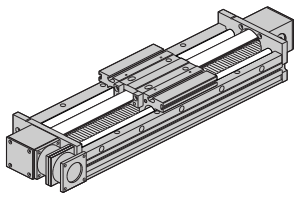
SuperSlide 2NE



SuperSlide 2NE Belt Actuated System Data

Part Number	Nominal Dia.	Carriage Weight (N)	Belt Weight (N/m)	Coefficient Friction Carriage	Number of Seals	Seal Drag (N)
2NE-M16	**16**		0,4	0,002	8	0,7
2NE-M20	**20**	22,6	1,12	0,002	8	1,2

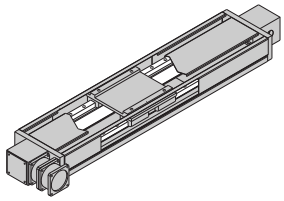
SuperSlide 2RE



SuperSlide 2RE Belt Actuated System Data

Part Number	Nominal Dia.	Carriage Weight (N)	Belt Weight (N/m)	Coefficient Friction Carriage	Number of Seals	Seal Drag (N)
2RE-M12	**12**	8,8	0,4	0,002	8	0,5
2RE-M16	**16**	16,7	1,12	0,002	8	0,7

AccuSlide* 2HE



AccuSlide 2HE Belt Actuated System Data

Part Number	Nominal Size	Carriage Weight (N)	Belt Weight (N/m)	Coefficient Friction Carriage	Number of Seals	Seal Drag (N)
2HE-M10	**10**	3,9	0,4	0,003	4	0,9
2HE-M20	**20**	26,5	1,75	0,003	4	7,0

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Step 12b. Calculate **Torque due to Friction (T_F) :**

$$T_F = \left[\frac{d_0}{1000 \cdot 2}\right] \cdot \left[\frac{P_f}{i \cdot \xi_g \cdot \xi_b}\right]$$

and

$$P_f = (W_p + W_c) \cdot \mu_{sys} + n \cdot D_s$$

where:

P_f = Force due to Friction (N)
W_p = Weight of Payload (N) (from Application Data)
W_c = Weight of Carriage (N) (from table on previous page)
μ_{sys} = Coefficient of friction of carriage (from table on previous page)
n = Number of seals (from table on previous page)
D_s = Seal Drag (N) (from table on previous page)
d_0 = Pulley pitch circle diameter (mm) (from table on page 353)
i = Gearbox ratio (from Application Data)
ξ_g = Gearbox efficiency = 90%
ξ_b = Belt efficiency = 90%

First calculate **Force due to friction (P_f)** and with this value calculate **Torque due to friction (T_f)** using the formula, above.

Step 12c. Calculate **Torque due to gravity (Tg):**

$$T_g = \left[\frac{d_0}{1000 \cdot 2}\right] \cdot \left[\frac{P_g}{i \cdot \xi_g \cdot \xi_b}\right] \quad (N \cdot m)$$

and

$$P_g = (W_p + W_c)\ SIN\theta \quad (N)$$

where:

P_g = Force due to Gravity (N)
W_p = Weight of Payload (N) (from Application Data)
W_c = Weight of Carriage (N) (from table on previous page)
θ = Angle from horizontal (for horizontal $\theta = 0^\circ$, vertical $\theta = 90^\circ$ for upstroke $\theta = 270°$ for downstroke)
d_0 = Pulley pitch circle diameter (mm) (from table on page 353)
i = Gearbox ratio (from Application Data)
ξ_g = Gearbox efficiency = 90%
ξ_b = Belt efficiency = 90%

First calculate **Force due to gravity (P_g)** and with this value calculate **Torque due to gravity (T_g)** using the formula, above.

Step 12d. Calculate **Torque due to external forces (T_e):**

$$T_e = \left[\frac{d_0}{1000 \cdot 2}\right] \cdot \left[\frac{P_e}{i \cdot \xi_g \cdot \xi_b}\right] \quad (N \cdot m)$$

where:

d_0 = Pulley pitch circle diameter (mm) (from table on page 353)
i = Gearbox ratio (from Application Data)
ξ_g = Gearbox efficiency = 90%
ξ_b = Belt efficiency = 90%

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The value of external force(s) **(P_e)** (N) must be calculated or estimated from the application specifications. Any outside forces that have a component that acts along the axis of the Superslide system should be included as an **external force (P_e)** (N).

With the calculated or estimated value of **external force (P_e)**, the **Torque due to external force (T_e)** can be calculated from the formula on the previous page.

Step 12e. Calculate **Peak Torque (T_{peak})**, the largest of the following:

Torque due to acceleration (T_A):

$$T_A = T_J + T_F + T_g + T_e \quad (N \cdot m)$$

where:
T_J = **Torque due to system inertia (N • m) (from step 12a)**
T_F = **Torque due to friction (N • m) (from step 12b)**
T_g = **Torque due to gravity (N • m) (from step 12c)**
T_e = **Torque due to external forces (N • m) (from step 12d)**

Torque at constant velocity (T_{cv}):

$$T_{cv} = T_F + T_g + T_e \quad (N \cdot m)$$

Torque due to deceleration (T_D):

$$T_D = T_J - T_F - T_g - T_e \quad (N \cdot m)$$

Torque required to hold at rest (T_H):

$$T_H = -T_F + T_g + T_e \quad (N \cdot m)$$

Step 12f. Calculate **Root-Mean-Square Torque (T_{RMS})** or **Continuous Torque:**

$$T_{RMS} = \sqrt{\frac{t_a (T_A)^2 + t_{cv} (T_{cv})^2 + t_d (T_D)^2 + t_h (T_H)^2}{t_a + t_{cv} + t_d + t_h}} \quad (N \cdot m)$$

where: T_A, T_{cv}, T_D, and T_H **are from step 12e.**

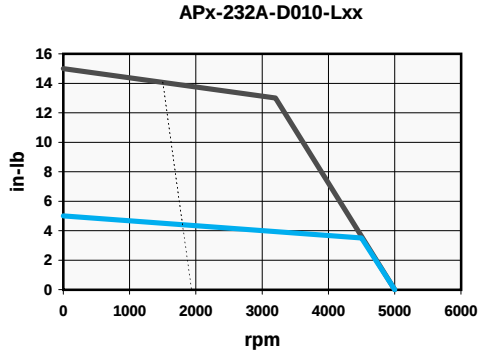
t_a = **time to accelerate (s)**
t_{cv} = **time at constant velocity (s)**
t_d = **time to decelerate (s)**
t_h = **time at rest (s)**

Speed vs Torque

Step 13. Determine the proper motor selection. Plot **Peak Torque (T_{peak})** against the **Required Motor Speed** from step 11 and enter the Motor Speed vs. Torque graph. (See the Motion Control Section, page 381). If the plotted point is below the curve for intermittent duty, then you have made a proper selection. Now plot **Continuous Torque (T_{RMS})** against the **Required Motor Speed** from step 11 and enter the graph again. If the plotted point is below the curve for continuous duty, then you have made a proper selection. If either of the plotted points fall above their respective curve then either a larger frame motor or a different gear ratio gearbox must be employed. Check mounting flange availability when increasing the motor frame size. Use of a system with a gearbox with a different gear ratio entails recalculating steps 11 and 12 with the new gear ratio in mind.

Motor Speed vs. Torque Curve

Graph SBSM22.1 is an example of a Speed vs. Torque curve for a NEMA 23 motor from the Motion Control section. BLX Series motors are available in standard NEMA frame sizes 23, 34 and 42 and can be combined with either a one, two, three or four axis controller. To determine the motor speed vs. torque curve that best suits the application and for a continuation of features and specifications refer to the Motion Control section, page 381.



Graph SBSM22.1

To determine motor speed, use the following formula:

$$\text{Motor RPM} = \frac{V_{max} \bullet 60 \bullet i}{(P_B/1000)}$$

where: V_{max} = maximum linear speed ($^m/_s$) (from step 8)
i = gearhead ratio (from Application Data)

P_B = belt lead (mm)(from table in step 10)

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
SuperSlide* Belt Actuated System
System Mounting

The SuperSlide Belt Actuated System can be mounted using the T-nuts and T-slots from above with clamping fixtures and below as shown below. In addition, SuperSlide Belt Actuated System can also be mounted using the bolt down attachment holes found in each end block (System 2NE) or system support base (System 2RE). For other mounting fixity contact Thomson Systems Application Engineering.

SuperSlide 2NE

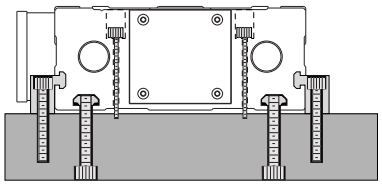


Figure 1: Mounting from below using T-slots or from above through mounting holes.

SuperSlide 2RE

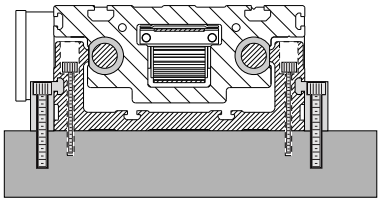
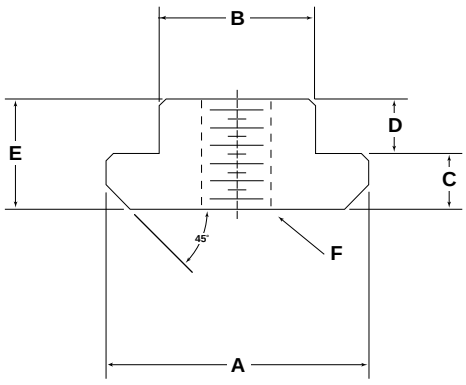


Figure 2: Mounting from above using T-slots or from above through mounting holes.

T-Nuts for Mounting

Standard T-Nut Dimensions



Standard T-Nut Dimensions						(Dimensions in mm)
Part Number	A	B	C	D	E	F
TNUT-01-M3	7	4	1,75	1,25	3	M3
TNUT-02-M4	9,5	5,5	2,25	1,75	4	M4
TNUT-03-M4	12	7	2,5	2,5	5	M4
TNUT-03-M5	12	7	2,5	2,5	5	M5
TNUT-04-M4	16,5	7,9	4,8	1,2	6	M4
TNUT-04-M5						M5
TNUT-04-M6						M6
TNUT-05-M4	19,5	9,8	5,8	2,8	8,6	M4
TNUT-05-M5						M5
TNUT-05-M6						M6
TNUT-05-M8						M8

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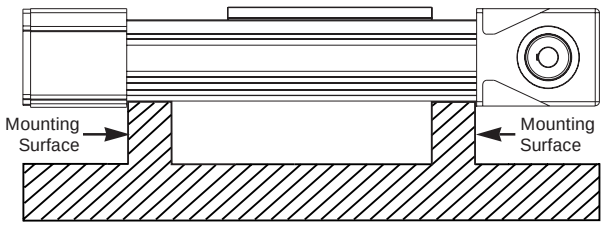
METRIC
Turbo Module* Belt Actuated System
System Selection

To determine the **Turbo Module Belt Actuated System** that best fits the application requirements the following design criteria should be evaluated:

- **System Support Requirements**
- **System Stroke Length**
- **Maximum Allowable System Deflection**
- **Required Travel Life**
- **Force on the Most Heavily Loaded Bearing**
- **Load/Life Requirements – Linear Bearings**
- **Motion (Move) Profile (Velocity, Acceleration)**
- **Maximum Belt Tooth Shear Strength**
- **Gear Motor Rotational Speed (Gear Reduction)**
- **Torque Calculations**
- **Size Motor using Torque/Speed Curves**

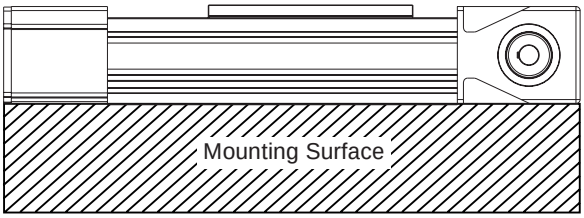
Step 1. Based on your application needs determine the **Mounting Support Requirements.** Will the application require end or continuous support?

End Supported System



Turbo Module Belt Actuated System 2GE can be mounted at each end as shown above in gantry or in cantilevered configurations. Stiffness of the mounting base and allowable deflection in the application should be considered. For other mounting ideas contact Thomson Systems application engineering.

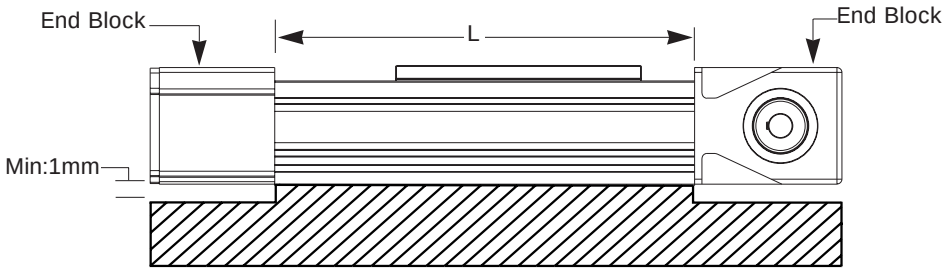
Continuously Supported System



Turbo Module Belt Actuated System 2GE is designed to be mounted continuously over a surface for reduced deflection as shown in the above illustration. For other mounting ideas contact Thomson Systems application engineering.

Note: For multi-axis application mounting and specifications contact the Thomson Systems Application Engineering Department

Note: Only the system length (**L**) should be supported. The Turbo Module end blocks are not designed to carry the system load and should be mounted with clearance.



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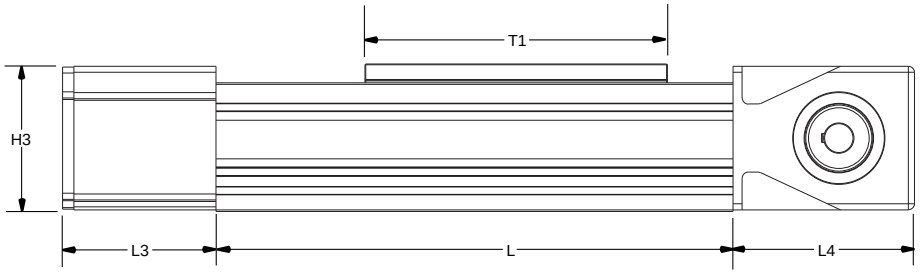
METRIC
Turbo Module* Belt Actuated System
System Travel Lengths

Step 2. Determine the **Maximum Stroke Length.** For each Turbo Module Belt Actuated System, the Maximum Stroke Length can easily be determined. By subtracting the carriage length **(T1)** from the total system length **(L)** the maximum stroke length is determined. The application or required stroke length should not exceed this number.



Standard Length and Delivery. For each Turbo Module Belt Actuated System there is a standard length chart and delivery information that also includes the standard length increment and the maximum system length. Selecting a standard system length will minimize shipment time. Once you have selected a length that best fits your application requirements, simply determine the Maximum stroke length. The required stroke length should not exceed this number.

System 2GE Standard Lengths (L)												(Lengths in mm)	
System	410	530	610	650	770	890	930	1010	1090	1130	1250	X	Max.
2GE-M25	■	■		■	■	■		■		■	■	120	4010
2GE-M35			■		■		■		■		■	160	3970

Custom Lengths and Delivery Information

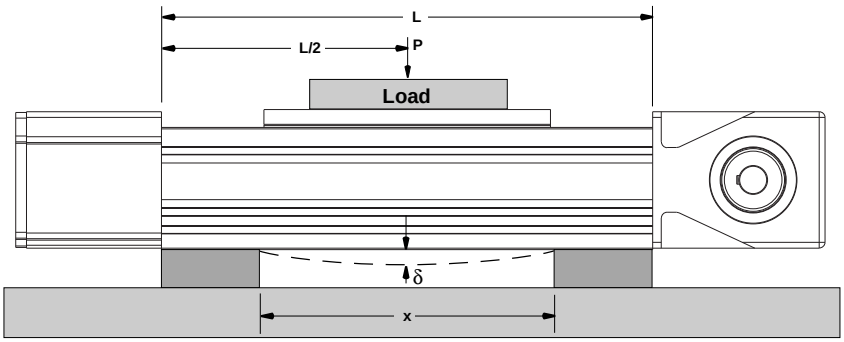
Systems ordered in standard lengths and longer lengths in increments of (X) are typically shipped in two to three weeks. Custom length systems are available and require three to four weeks for delivery. For special requirements, please contact the Thomson **Systems** application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

METRIC
Turbo Module* Belt Actuated System
System Deflection

Step 3. Determine the Turbo Module **System Deflection**. The Turbo Module 2GE is designed for the most stringent motion control requirements. Due to its unique structure, the Turbo Module can be mounted on simple or cantilevered supports. To maximize system reliability maximum system deflection should be considered in any simply supported application. Calculate deflection **(δ)** using one of the following formulae for the appropriate system support condition:

Step 3a. The end or simply supported case – deflection at center.



$$\delta = \frac{Px^3}{48EI} + \frac{5Wx^4}{384EI}$$

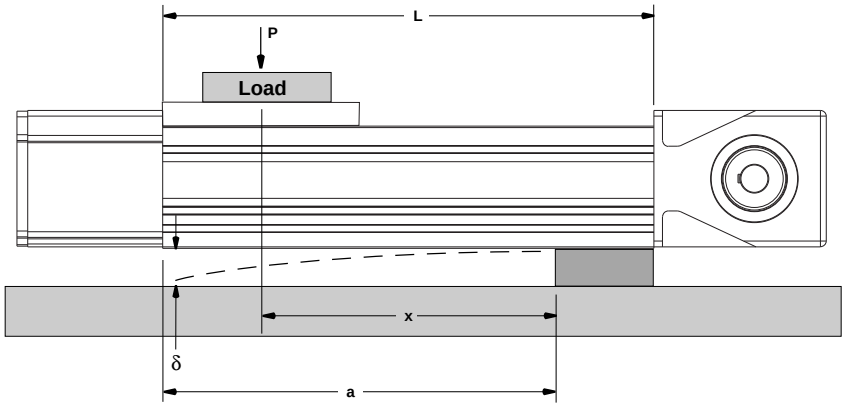
P = Load on System (N)

x = Distance between supports (mm)

EI = Stiffness (from table below) (N • mm²)

W = Weight per Unit Length (N/mm)

Step 3b. The cantilevered case – deflection at end.



$$\delta = \frac{Px^3}{3EI} + \frac{Wa^4}{8EI}$$

P = Load on System (N)

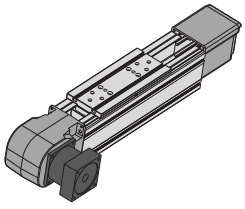
x = Distance between center of gravity of load to support (mm)

EI = Stiffness (from table below) (N • mm²)

W = Weight per Unit Length (N/mm)

a = Unsupported length of base (mm)

Turbo Module 2GE



Turbo Module 2GE Belt Actuated System Data

Part Number	Nominal Size	Moment of Inertia		Stiffness		Unit Weight	Weight of Motor End Block Assy. (N)	Weight of Support End Block Assy. (N)
		I_{xx} (mm_4)	I_{yy} (mm_4)	EI_{xx} ($N•mm_2$)	EI_{yy} ($N•mm_2$)	W (N/mm)		
2GE-M15	**15**							
2GE-M25	**25**	5.76×10^6	8.23×10^6	3.97×10^{11}	5.67×10^{11}	0,186	93,2	20,6
2GE-M35	**35**	2.84×10^7	3.73×10^7	1.96×10^{12}	2.57×10^{12}	0,353	270,6	109,8

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METRIC
Turbo Module* Belt Actuated System
Travel Life

Step 4. Determine the **Required Travel Life (km)**.

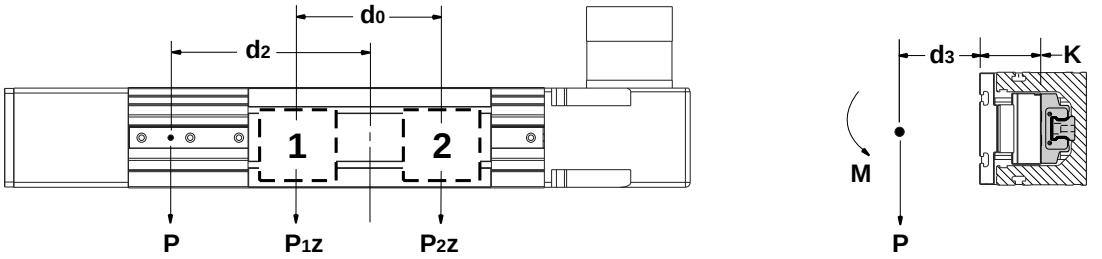
$$L_t = \frac{2 \cdot s \cdot f \cdot L_h \cdot 60}{10_6}$$

L_t = required travel life (km)
s = stroke (mm)
f = frequency (cycles/minute)
L_h = service life (hrs)

System Loading

Step 5. Determine the **Force on the Most Heavily Loaded Bearing**.

When selecting a Turbo Module Belt Actuated System, it is necessary to evaluate the bearing forces that are generated based on the position of the load and its movement during application. The free body diagram (figure TM9.1) is an example of the type of calculations that are required when determining resultant bearing forces. For other free body diagram examples see **Load Considerations** in the **Engineering Support Appendix,** page 377. The determination of the force on the most heavily loaded bearing allows you to enter the load life graph and select the system that best fits your application needs.

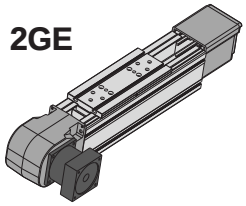


$P_{1z} = P/2 \cdot [1 + (d_2/d_0)]$
$P_{2z} = P/2 \cdot [1 - (d_2/d_0)]$
$M_{max} \leq P \cdot (d_3 + k)$
P = Applied Load at distance d_3 from carriage top and distance d_2 from carriage axial centerline. (N)

P_{1z}, P_{2z} = reaction loads at bearings (N)
d_0 = axial distance between bearings–from table below (mm)
K = moment arm of system–from table below (mm)

(Figure TM9.1)

Turbo Module 2GE



Turbo Module 2GE Belt Act. System Data (Dimensions in mm)

Part Number	Nominal Size	d_0 (mm)	K (mm)
2GE-M15	**15**		
2GE-M25	**25**	219	59,5
2GE-M35	**35**	284	90,0

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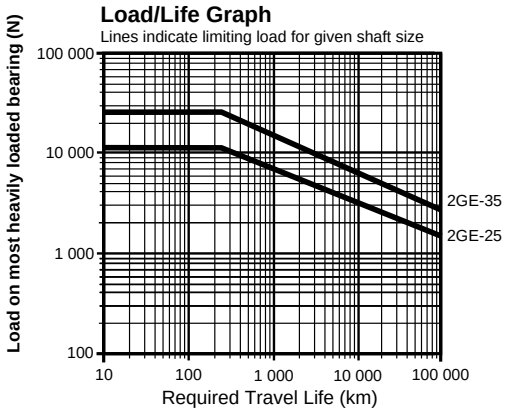
METRIC
Turbo Module* Belt Actuated System
Load and Life Requirements

Step 6. Selecting the system that meets load and life requirements.



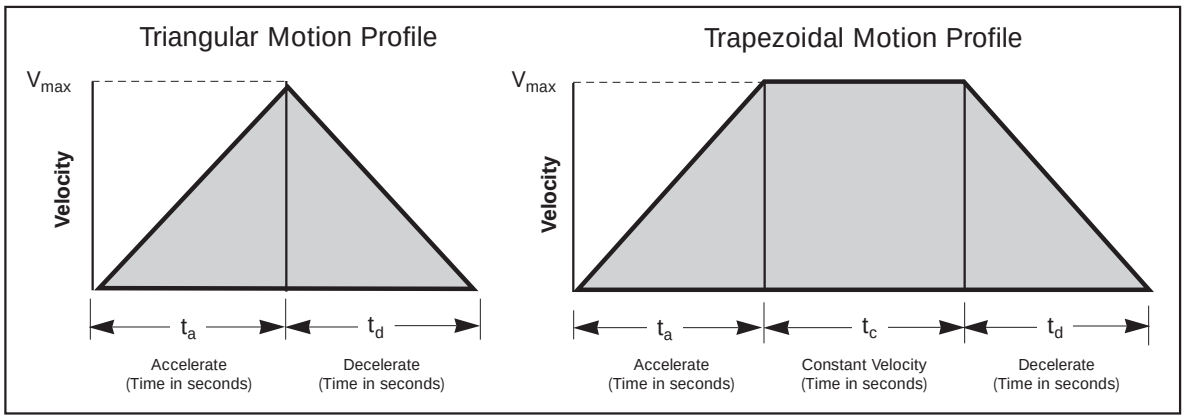
(Figure TM 10.2)

For each Turbo Module Belt Actuated System there is a graph (figure TM10.2) that allows for system selection based on the **Required Travel Life** and the **Force on the Most Heavily Loaded Bearing**. To determine the system which best meets your application requirements, simply enter the graph with your required travel life from step 4 and the load on the most heavily loaded bearing from step 5. Select a system with a characteristic curve that is above or to the right of the plotted point.

Motion Profile

A typical linear belt actuated application normally consists of a series of motion profiles. The drive torque required to move the system should be evaluated for each motion profile. There are two basic motion profile types. The first and most simple move is a triangular motion profile which consists of two legs. The first leg is for acceleration and the second is for deceleration. The second motion profile type is trapezoidal which consists of an acceleration leg, a leg of constant velocity and a deceleration leg.

Step 7. Determine the **Motion Profile** that fits your application requirements. Calculate **Vmax** and **a**.



Triangular Motion Profile:

Assume: $t_a = t_d = t/2$ and $x_a = x_d = x/2$

Then: $V_{avg} = x/t$

$V_{max} = 2 \bullet V_{avg} = 2x/t$

$a = V_{max} / t_a = 4\,x/t^2$

Where:
- a = acceleration (m/s^2)
- d = deceleration (m/s^2)
- x = total Distance (m)
- x_a = distance to Accelerate (m)
- x_c = distance at Constant Velocity (m)
- x_d = distance to Decelerate (m)

Trapezoidal Motion Profile:

Assume: $t_a = t_c = t_d = t/3$ and $x_a = x_d = x/4$, $x_c = x/2$

Then: $V_{avg} = x/t$

$V_{max} = 1.5 \bullet V_{avg}$

$a = -d = V_{max} / t_a = 4.5x/t^2$

- t = tTotal Move Time (s)
- t_a = acceleration Time (s)
- t_c = time at Constant Velocity (s)
- t_d = deceleration Time (s)
- V_{avg} = average Velocity (m/s)
- V_{max} = maximum Velocity (m/s)

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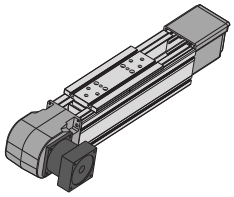
METRIC
Turbo Module* Belt Actuated System
Maximum Belt Tooth Shear Strength

Step 8. Calculate the **Total Axial Forces** on the system belt and determine whether they are within the limits of the **Belt Pre-Tension Force** and **Maximum Allowable Tooth Shear** of the belt. The **Total Axial System Belt Force (P_S)** is the summation of **External Force (P_e)**, **Acceleration Force (P_a)**, **and Frictional Force (P_f)**.

$$P_S = P_e + P_a + P_f$$

Step 8a. Determine the **External Axial Forces (P_e)**. External axial forces seen by the Turbo Module Belt Actuated system can be the result of application forces such as stretching fabric in a textile application or compressing boxing in a packaging application. In a vertical application, the external force is the addition of gravity acting on the payload. In those vertical applications the motor must be mounted above the load on the carriage.

Turbo Module 2GE



Turbo Module 2GE Belt Actuated System Data

Part Number	Nominal Size	Carriage Weight (N)	Belt Weight (N/m)	Carriage Friction Coefficient	Seal Drag (N)	Number of Seals	**Belt Pre Tension Force (N)**	**Maximum Axial Force, Belt (N)**
2GE-M15	**15**			0,003	2,8	2		
2GE-M25	**25**	42,07	2,75	0,003	7,5	2	**2250**	**3307**
2GE-M35	**35**	122,58	7,80	0,003	18,0	2	**5400**	**9234**

Step 8b. Determine the **Acceleration force (P_a).** To overcome the inertia generated by the payload, the carriage assembly and the belt force due to acceleration must be evaluated.

$$P_a = a \cdot \frac{(W_c + W_p + (W_b \cdot L \cdot 2))}{g}$$

$$a = V_{max} / t_a = \frac{4.5 \cdot x}{t^2} = \text{linear acceleration (m/s}^2\text{) (from step 7)}$$

W_c = carriage Weight (N)
W_p = Weight of Payload (N)
W_b = Weight of Belt (N/m)
g = acceleration due to gravity = 9,81 m/s²

V_{max} = maximum velocity (m/s) (from Step 8)
t_a = acceleration time (s)
x_a = distance to accelerate (m)
L = overall length of system (m)
x = total distance (m)
t = total time (s)

Step 8c**.** Determine the **Frictional Force (P_f).** The total Frictional force is the sum of the payload and carriage mass times the system coefficient of friction plus the additional seal drag.

$$P_f = [\mu_{sys} \cdot (W_p + W_c) + n \cdot D_s]$$

W_p = payload weight (N) (from Application Data)
W_c = carriage weight (N) (see table above)
μ_{sys} = system coefficient of friction (see table above)

D_S = seal Drag (N) (see table above)
n = number of seals (see table above)

Step 8d**.** Calculate **Total Axial System Belt Force (P_S): $P_S = P_e + P_a + P_f$**

Step 8e. Compare the calculated **Total Axial System Belt Force (P_S)** with the **Belt Pre-Tension Force** in the tables above. If the calculated value exceeds the **Pre-Tension Force** in the table then the application parameters or the size of the system should be reconsidered, as the possibility exists that the belt could go into a slackened condition causing slippage on the pulley. In no case should the **Total Axial Belt Force (P_S)** ever exceed the **Maximum Axial Force** for the belt in the tables above.

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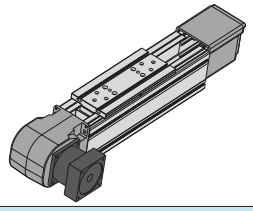
METRIC
Turbo Module* Belt Actuated System
Maximum Belt Tooth Shear Capacity

Step 9. It is also important to check that the application parameters are within the limits of the **Belt Tooth Shear Capacity**.

Turbo Module 2GE



Turbo Module 2GE Belt Actuated System Data

Part Number	Nominal Size	Pitch Circle Diameter (mm)	Lead (mm/rev.)	Number of Effective Teeth	Belt Width (mm)	Belt Pitch (mm)	Standard Gear Ratios	Maximum Axial Force (N)
2GE-M15	**15**							
2GE-M25	**25**	92,31	290	12	50	10	1:1, 3:1, 6:1	3307
2GE-M35	**35**	140,06	440	11	75	20	1:1,6:1,10:1	9234

The formula for calculating **Belt Tooth Shear Capacity (C_{ts})** is as follows:

$$C_{ts} = C_{sp} \bullet Z_e \bullet W$$

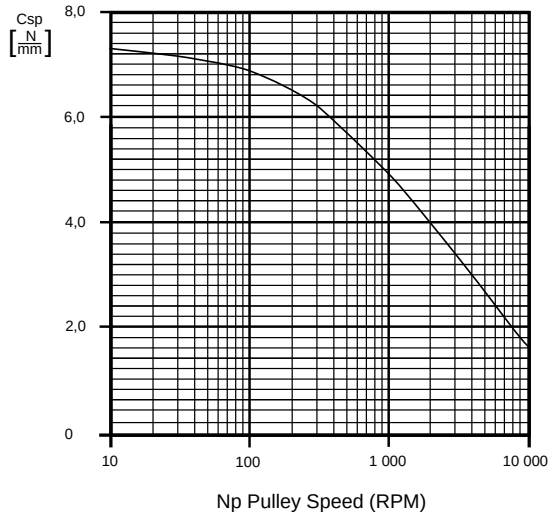
C_{sp} = specific Axial Force Capacity (N/mm)
Z_e = number of Effective Belt Teeth (from table above)
W = belt Width (mm) (from table above)

Step 9a. The **C_{sp} value** is taken from the graphs below. Enter the graph for the appropriate **Belt Pitch** with the **Pulley Speed (N_p)** calculated as follows:

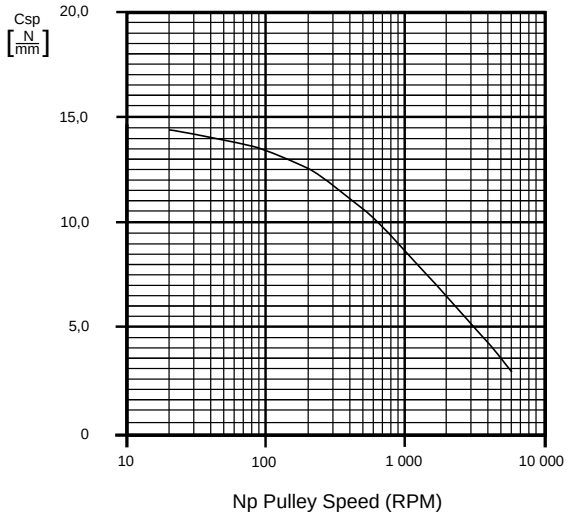
$$N_p = \frac{V_{max} \bullet 60000}{p_b} = \frac{V_{max} \bullet 60000}{\pi d_0} \quad \text{(RPM)}$$

N_p = pulley Speed (RPM)
V_{max} = maximum Linear Speed (m/s) (from step 7)
d_0 = pitch Circle Diameter (mm) (from tables above)
$p_b = \pi d_0$ = Lead (mm/rev.) (from tables above)
π = 3,1416

Specific Axial Force Capacity vs. Pulley Speed for 10mm width belt



Specific Axial Force Capacity vs. Pulley Speed for 20mm width belt



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Step 9b. Once **Pulley Speed (N_p)** is calculated, and the **Specific Axial Force Capacity (C_{sp})** is determined from the graph on the previous page, locate the number of **Effective Belt Teeth (Z_e)** and the **Belt Width (W)** from the tables on the previous page and calculate the **Belt Tooth Shear Capacity (C_{ts})**:

$$C_{ts} = C_{sp} \cdot Z_e \cdot W$$

Step 9c. Compare the **Belt Tooth Shear Force Capacity (C_{ts})** with the calculated **Total Axial System Belt Force (P_s)** from step 8e. If the calculated value exceeds the maximum allowable capacitiy from step 9c, the application parameters or the size of the system must be reconsidered.

$$C_{ts} > P_s$$

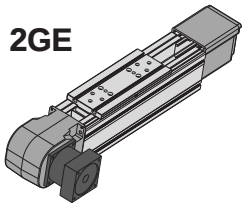
Speed Requirements

Rotational vs. Linear

Step 10. Determine the **Motor Rotational Speed** required to move at V_{max} for all system ratios.

The Turbo Module Belt Actuated System is equipped with an AccuTRUE* Planetary Precision Gearhead already mounted. Each gearhead ratio (greater than 1:1) provides an increase in output torque and requires the motor to operate at a higher speed.

Turbo Module 2GE



Turbo Module 2GE Belt Actuated System Data

Part Number	Nominal Size	Pitch Circle Dia. (mm)	Lead (mm/rev)	Standard Gear Ratios
2GE-M15	**15**			
2GE-M25	**25**	92,31	290	1:1, 3:1, 6:1
2GE-M35	**35**	140,06	440	1:1, 6:1,10:1

Calculate the **Maximum Motor Speed (N_{max})** at the system **Maximum Linear Speed (V_{max})** from Step 7. using the following formula:

$$N_{max} = \frac{V_{max}\, i}{p_b}$$

V_{max} = Maximum Linear Speed (m/s)
i = Gear Ratio(input/output)
d_0 = Pitch Circle Diameter (mm) (from table above)
$p_b = \pi d_0$ = Lead (mm/rev.) (from table above)
π = 3,1416

or with unit conversions and constants:

$$N_{max} = \frac{V_{max} \cdot i \cdot (1000 mm/m) \cdot (60\ sec/min)}{\pi d_0} = \frac{V_{max} \cdot i \cdot (19\ 100)}{d_0}\ (RPM)$$

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METRIC
Turbo Module* Belt Actuated System
Torque Calculations

Step 11. In order to size a motor for your Turbo Module Belt Actuated system it is important to calculate the torque required to meet your application requirements with all of the parameters in mind. A **maximum** or **peak torque (T_{peak})** calculation is required. **Peak torque** is usually seen at the time of maximum acceleration, however, other factors such as torque due to external forces can affect when peak torque occurs. It is important to calculate for all torque conditions (**Torque due to acceleration (T_A), Torque at constant velocity (T_{cv}), Torque due to deceleration (T_D), and Torque required to hold at rest (T_H)),** and take that torque with the largest magnitude as the **Peak Torque (T_{peak}).**

$$T_A = T_J + T_F + T_g + T_e \quad (N \cdot m)$$
$$T_{cv} = T_F + T_g + T_e \quad (N \cdot m)$$
$$T_D = T_J - T_F - T_g - T_e \quad (N \cdot m)$$
$$T_H = -T_F + T_g + T_e \quad (N \cdot m)$$

where:
- T_J = Torque due to system inertia (N • m)
- T_F = Torque due to friction (N • m)
- T_g = Torque due to gravity (N • m)
- T_e = Torque due to external forces (N • m)

It is also necessary to calculate a **Root-Mean-Square Torque (T_{RMS}) or Continuous Torque.**

$$T_{RMS} = \sqrt{\frac{t_a (T_A)^2 + t_{cv} (T_{cv})^2 + t_d (T_D)^2 + t_h (T_H)^2}{t_a + t_{cv} + t_d + t_h}} \quad (N \cdot m)$$

where:
- t_a = time to accelerate (s)
- t_{cv} = time at constant velocity (s)
- t_d = time to decelerate (s)
- t_h = time at rest (s)

Step 11a. Calculate **Torque due to system inertia (T_J)**:

$$T_J = \left[\frac{1000 \cdot 2 \cdot a}{d_0}\right] \cdot \left[\frac{J_p}{i^2 \cdot \xi_g} + J_M \cdot i + J_g \cdot i\right] + T_L \quad (N \cdot m)$$

and

$$T_L = \frac{P_a \cdot d_0}{1000 \cdot 2 \cdot i \cdot \xi_g \cdot \xi_b} \quad (N \cdot m)$$

where:
- T_L = torque due to payload (N • m)
- a = required linear acceleration (m/s^2) (from step 7)
- d_0 = pulley pitch circle diameter (mm) (from table on next page)
- J_p = drive pulley inertia ($Kg \cdot m^2$) (from table on next page)
- J_M = motor inertia ($Kg \cdot m^2$)(1) ($g \cdot cm^2 \times 10^{-6} = Kg \cdot m^2$)
- J_g = gearbox inertia ($Kg \cdot m^2$) (from table on next page)
- i = gearbox ratio (from Application Data)
- ξ_g = gearbox efficiency = 90%
- ξ_b = belt efficiency = 90%
- P_a = acceleration force (N)

(1) For motor inertia data refer to technical information for your Motion Control System, page 431.

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METRIC
Turbo Module* Belt Actuated System

Calculate **acceleration force (P_a)** (N)

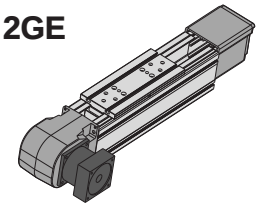
$$P_a = \frac{a \cdot (W_c + W_p + W_B \cdot L \cdot 2)}{g} \qquad (N)$$

W_c = weight of carriage (N) (from table on next page)
W_p = weight of payload (N) (from application data)
W_B = weight of belt (N/m) (from table on next page)
L = overall system length (m)
a = required linear acceleration (m/s²)
g = acceleration due to gravity = 9,81 m/s²

Calculate **Torque due to payload (T_L):**

$$T_L = \frac{P_a \cdot d_0}{1000 \cdot 2 \cdot i \cdot \xi_g \cdot \xi_b} \qquad (N \cdot m)$$

Turbo Module 2GE



Turbo Module 2GE Belt Actuated System Data

Part Number	System Size	Pitch Circle Dia. (mm)	Pulley Inertia (kg • m²)	Carriage Weight (N)	Belt Weight (N/m)
2GE-M15	**15**				
2GE-M25	**25**	92,31	2,18 x 10-3	42,07	2,75
2GE-M35	**35**	140,06	1,94 x 10-2	122,58	7,80

Turbo Module 2GE Gearbox Data

System Part Number	Gear Ratio	Gearbox Part Number	Gearbox inertia (Kg • m²)
2GE-M25-OQN-K	1:1	AT-10-1	7,0 x 10^{-2}
2GE-M25-OQN-L	3:1	AT-10-3	2,34 x 10^{-3}
2GE-M25-OQN-M	6:1	AT-10-6	1,00 x 10^{-3}
2GE-M35-OQN-N	1:1	AT-14-1	1,99 x 10^{-1}
2GE-M35-OQN-P	6:1	AT-14-6	3,43 x 10^{-3}
2GE-M35-OQN-Q	10:1	AT-14-10	2,55 x 10^{-3}

Calculate **Torque due to system inertia (T_J) :**

$$T_J = \left[\frac{1000 \cdot 2 \cdot a}{d_0}\right] \cdot \left[\frac{J_p}{i^2 \cdot \xi_g} + J_M \cdot i + J_g \cdot i\right] + T_L \qquad (N \cdot m)$$

Step 11b. Calculate **Torque due to Friction (T_F) :**

$$T_F = \left[\frac{d_0}{1000 \cdot 2}\right] \cdot \left[\frac{P_f}{i \cdot \xi_g \cdot \xi_b}\right]$$

and

$$P_f = (W_p + W_c) \cdot \mu_{sys} + n \cdot D_s$$

where:
P_f = force due to Friction (N)
W_p = weight of Payload (N) (from Application Data)
W_c = weight of Carriage (N) (from table on next page)
μ_{sys} = coefficient of friction of carriage (from table on next page)
n = number of seals (from table on next page)
D_s = seal Drag (N) (from table on next page)
d_0 = pulley pitch circle diameter (mm) (from table on next page)
i = gearbox ratio (from Application Data)
ξ_g = gearbox efficiency = 90%
ξ_b = belt efficiency = 90%

First calculate **Force due to friction (P_f)** and with this value calculate **Torque due to friction (T_f)** using the formula, above.

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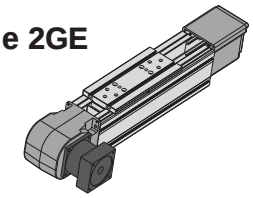
Turbo Module 2GE



Turbo Module 2GE Belt Actuated System Data

Part Number	Nominal Size	Carriage Weight (N)	Belt Weight (N/m)	Coefficient Friction Carriage	Number of Seals	Seal Drag (N)
2GE-M15	**15**					
2GE-M25	**25**	42,07	2,75	0,003	2	7,5
2GE-M35	**35**	122,58	7,80	0,003	2	18

Step 11c. Calculate **Torque due to gravity (Tg):**

$$T_g = \left[\frac{d_0}{1000 \cdot 2}\right] \cdot \left[\frac{P_g}{i \cdot \xi_g \cdot \xi_b}\right] \quad (N \cdot m)$$

and

$$P_g = (W_p + W_c)\ SIN\theta \quad (N)$$

where:
P_g = **Force due to Gravity (N)**
W_p = **Weight of Payload (N) (from Application Data)**
W_c = **Weight of Carriage (N) (from table above)**
θ = **Angle from horizontal (for horizontal $\theta = 0^\circ$, vertical $\theta = 90^\circ$ for upstroke $\theta = 270°$ for downstroke**
d_0 = **Pulley pitch circle diameter (mm) (from table on previous page)**
i = **Gearbox ratio (from Application Data)**
ξ_g = **Gearbox efficiency = 90%**
ξ_b = **Belt efficiency = 90%**

First calculate **Force due to gravity (P_g)** and with this value calculate **Torque due to gravity (T_g)** using the formula, above.

Step 11d. Calculate **Torque due to external forces (T_e):**

$$T_e = \left[\frac{d_0}{1000 \cdot 2}\right] \cdot \left[\frac{P_e}{i \cdot \xi_g \cdot \xi_b}\right] \quad (N \cdot m)$$

where:
d_0 = **Pulley pitch circle diameter (mm) (from table on previous page)**
i = **Gearbox ratio (from Application Data)**
ξ_g = **Gearbox efficiency = 90%**
ξ_b = **Belt efficiency = 90%**

The value of external force(s) **(P_e)** (N) must be calculated or estimated from the application specifications. Any outside forces that have a component that acts along the axis of the Turbo Module system should be included as an **external force (P_e)** (N).

With the calculated or estimated value of **external force (P_e)**, the **Torque due to external forces (T_e)** can be calculated from the formula above.

Step 11e. Calculate **Peak Torque (T_{peak})**, the largest of the following:

Torque due to acceleration (T_A):

$$T_A = T_J + T_F + T_g + T_e \quad (N \cdot m)$$

where:
T_J = **Torque due to system inertia (N • m) (from step 11a)**
T_F = **Torque due to friction (N • m) (from step 11b)**
T_g = **Torque due to gravity (N • m) (from step 11c)**
T_e = **Torque due to external forces (N • m) (from step 11d)**

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METRIC
Turbo Module* Belt Actuated System

Torque at constant velocity (T_{cv}): $T_{cv} = T_F + T_g + T_e$ (N • m)

Torque due to deceleration (T_D): $T_D = T_J - T_F - T_g - T_e$ (N • m)

Torque required to hold at rest (T_H): $T_H = -T_F + T_g + T_e$ (N • m)

Step 11f. Calculate **Root-Mean-Square Torque (T_{RMS})** or **Continuous Torque:**

$$T_{RMS} = \sqrt{\frac{t_a (T_A)^2 + t_{cv} (T_{cv})^2 + t_d (T_D)^2 + t_h (T_H)^2}{t_a + t_{cv} + t_d + t_h}} \quad (N \bullet m)$$

where: T_A, T_{cv}, T_D, and T_H **are from step 11e.**

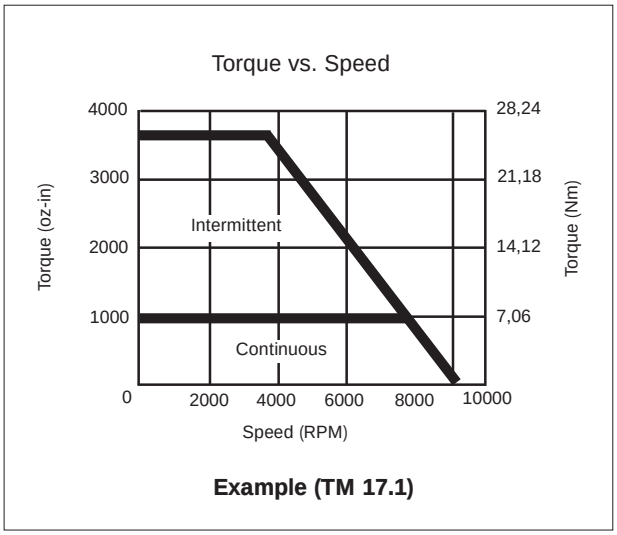
t_a = **time to accelerate (s)**
t_{cv} = **time at constant velocity (s)**
t_d = **time to decelerate (s)**
t_h = **time at rest (s)**

Speed vs Torque

Step 12. Determine the proper Servo motor selection. Plot **Peak Torque (T_{peak})** against the **Required Motor Speed** from step 10 and enter the Motor Speed vs. Torque graph (Graph TM 17.1). If the plotted point is below the curve for intermittent duty, then you have made a proper selection. Now plot **Continuous Torque (T_{RMS})** against the **Required Motor Speed** from step 10 and enter the graph again. If the plotted point is below the curve for continuous duty, then you have made a proper selection. If either of the plotted points fall above their respective curve then either a larger frame motor or a different gear ratio gearbox must be employed. Check mounting flange availability when increasing the motor frame size. Use of a system with a gearbox with a different gear ratio entails recalculating steps 10 and 11 with the new gear ratio in mind.

Motor Speed vs. Torque Curve

Graph TM 17.1 is an example of a Speed vs. Torque curve for a typical DC Servo motor. To determine the motor Speed vs. Torque curve that best suits your application a review of the application parameters with our Application Engineers and your selection of a motion control system will be required. See the Motion Control Section, page 381.



Example (TM 17.1)

$$\text{Motor RPM} = \frac{V_{max} \bullet 60 \bullet i}{(P_B/1000)}$$

where: V_{max} = **maximum linear speed (m/s) (from step 7)**
i = **gearhead ratio (from Application Data)**
P_B = **belt lead (mm) (from table in step 9a)**

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Engineering Support Appendix

Evaluating your needs and providing you with the information to make the system selection that's right for you.

Thomson Linear Motion Systems have been designed to fit a broad spectrum of linear motion applications. From light to heavy loads from short stroke to nearly infinite length from modular to completely integrated units, our Systems are built to meet your needs. Unactuated or actuated with ball screws or belts in both inch and metric sizes, we provide a complete solution to your Linear Motion requirements.

This support section includes the basic engineering data and formulae to determine deflection, load-life relationships, free body diagrams, and material specifications needed to select the proper system for your design needs.

Each section of the catalog is preceded with a concise selection section designed to be a road map to your Linear Motion Solution. Each section concludes with an Application Analysis required for a proper system selection. Simply fax your Application Analysis to Thomson Application Engineering at 1-516-883-9039 and receive quick, accurate answers to your selection questions.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Choosing A Thomson Linear Motion System

Many variables influence the selection of a Linear Motion System. The best solution demands a thorough evaluation of the design application. Only then can the design criteria be established.

The following basic design criteria should be considered when selecting a linear motion system:

- system support requirements
- system stroke length
- system deflection
- envelope limitations
- system load capacity
- actuator load capacity
- speed and acceleration
- drive requirements
- accuracy and repeatability
- environment

If your application has special requirements, they should be added to the list of criteria.

Calculating Bearing and Inner Race Size

The factors which influence bearing size are **maximum load on a single bearing** and **total travel life**. Calculating stroke length and duty cycle will provide an accurate travel life requirement.

Applied load and travel life are related through the following formula:

$$\text{Life} = (C/F)^3 \times 10^7 \text{ (in)} = (C/F)^3 \times 250 \text{ (km)}$$

where:

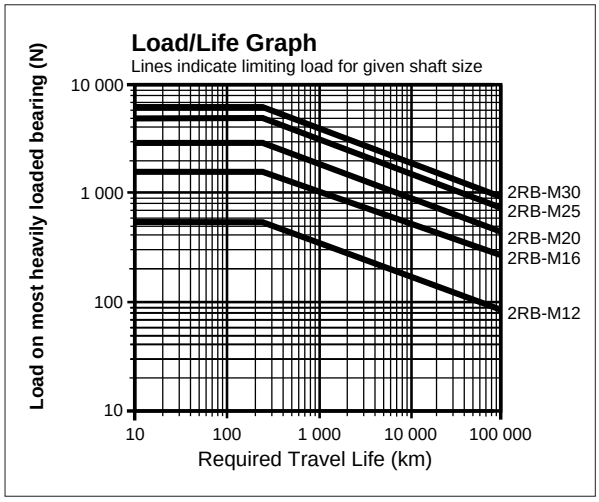
c = dynamic load rating of the Super Smart Ball bushing* bearing

F = applied load

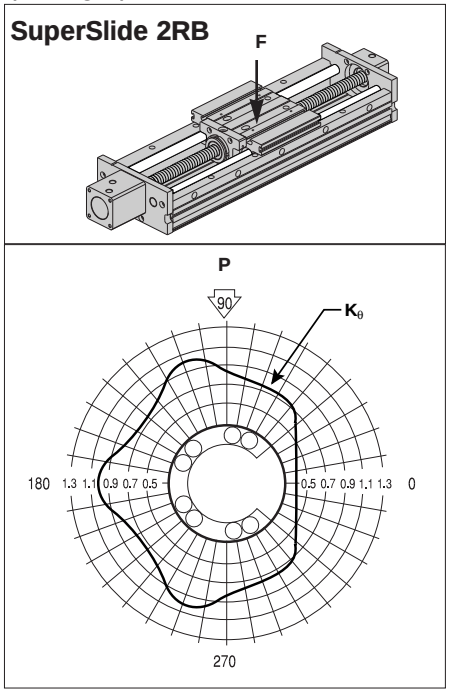
Thomson Super Smart Ball bushing bearings will provide 10 million inches or 250 km of travel life at their rated load capacities, and extended life under reduced load.

The load/life graph provides a quick evaluation of bearing performance based on maximum load on a single bearing and travel life requirements.

To determine your bearing/inner race size, plot your maximum load on the most heavily loaded bearing and required travel life. If the plotted point occurs **above** a bearing performance curve, specify the next largest size System.



It is also important to keep in mind that the orientation of load can effect the load carrying capacity of the Ball Bushing bearing. For this reason polar graphs are provided in each system selection section. The force on the must heavily loaded bearing used in the Load/Life graph should be the quotient of the resultant applied load and the K_θ value from the polar graph.



Determining Stroke, System Length, Envelope.

A primary consideration for your application will be the maximum stroke required. Each Thomson System dimension chart lists the formula for maximum stroke and a pre-calculated summation of components which limit the stroke.

Maximum Stroke Length is determined by subtracting the carriage length **(T1** or **T2)** and 2 times the end support block length **(L3)**, where necessary, from the total system length **(L)**. For systems requiring protective bellows, consult the appropriate selection section for stroke reduction formulae. Thomson systems are supplied in a variety of standard lengths which vary with System type and size. A standard length chart has been provided which accompanies each System's technical data. Standard lengths require shorter lead times and are more economical.

Custom lengths are available in most linear motion systems. Careful consideration and evaluation of design criteria should occur before specifying a custom length System. Contact the Thomson **Systems** application engineering department for assistance in addressing custom requirements.

Lubrication, Materials and Part Number Specifications

Thomson Linear Motion Systems are pre-lubricated with a rust preventative oil. This process is designed to inhibit the corrosion of the steel components within the system during transport.

Available upon special request, LinearLube* lubricant can be applied to the ball tracks of the Ball Bushing* bearings. This specially formulated lubricant provides optimum performance for most applications. LinearLube is a synthetic lubricant utilizing suspended Teflon® in a specially formulated base compound.

LinearLube provides excellent performance characteristics in a wide range of applications. It is FDA listed, non-polluting, non-corrosive. LinearLube will not stain and adheres tightly to parts, forming a water resistant barrier and airtight seal against contaminant's.

LinearLube reduces overall maintenance and extends service intervals, which helps decrease your maintenance costs.

- Maintains properties in operating temperatures from -65˚F to 450˚F
- U.S.D.A. Rated H1 (Non-Toxic)
- Inhibits wear, rust, and corrosion
- Will not oxidize in use
- 100% water resistant

*LinearLube is an NLGI Grade II class material which contains PTFE (Teflon®) particles suspended in a specially compounded base.

All Thomson Ball Bushing bearings require a small amount of grease or oil to operate. For most applications, lubricant is recommended to prevent wearing and rusting of the bearing surfaces. When linear speeds are high, a light oil should be used and the bearing should be prevented from running dry for a prolonged period of time.

A medium to heavy oil or light grease has greater adhesion properties that afford longer bearing protection and minimize sealing problems. The numerous built-in pockets in the Ball Bushing bearing retainer allow grease to be stored for an extended period of time. Though not generally recommended, in some lightly loaded, low speed and highly contaminated applications, Ball Bushing bearings have been used without lubrication. For these types of applications contact Thomson application engineering.

Specifying a Thomson linear motion system.
Thomson linear motion systems are specified quickly and easily with a single part number. When you have evaluated your linear motion requirements and selected a System which best meets your criteria, review the System part number, System length, and any special options to generate a single order number.

Custom lengths or special requirements should be reviewed with the Thomson systems application engineering department.

System Replacement Components
Replacement components form systems are available from Thomson. Assure the accuracy and repeatability of your system by specifying a -XS after the component part number.

Thomson Linear Motion systems are designed and manufactured through advanced processes with high grade materials chosen for their strength, durability, and hardness. The following is a comprehensive list of the materials utilized throughout Thomson systems.

Ball Bushing Bearing

Components	Material
Super Smart Ball Bushing bearings*	
• Sleeve and Retainers	Thomson Engineered Plastic††
• Bearing Plates	Hardened Bearing Steel
• Balls	Chrome Alloy Steel
• Seals	Synthetic Rubber
Pillow Block Housing	Aluminum Alloy†
Supports	
• Type ASB End Support	Aluminum Alloy†
• Type SB End Support	Iron
• Type SRA Rail Support	Aluminum Alloy†
• Twin Shaft End Support	Aluminum Alloy†
• Twin Shaft Web End Support	Aluminum Alloy†
• Integrated End Support	Aluminum Alloy†
• Dual Shaft Support Rail	Aluminum Alloy†
Inner Race (60 Case™ Shafting)	Case Hardened High Carbon Steel
Carriage	
• Universal Carriage	Aluminum Alloy†
• Twin Shaft Carriage	Aluminum Alloy†
• Twin Shaft Web Carriage	Aluminum Alloy†
• Modular Dual Shaft Carriage	Aluminum Alloy†
• Integrated Dual Shaft Carriage	Aluminum Alloy†

†Custom Black Anodized for inch size systems
Custom Grey Anodized for metric size systems

††Limited to a Max. Temperature of 185˚F (85˚C)

Custom system lengths may require black paint to protect machine cut-off ends on Dual shaft Rail Assemblies and Shaft support Rails. If a specific surface finish is required contact the Thomson Systems application engineering department.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Part Number Specifications

The following is an explanation of the part numbering system:

2RE-M16-OEM-A- L800

- System Basic Prefix
- "M" signifies Metric Size
- Shaft Diameter or System Size for inch: 1/16 inch increments i.e. size 12 = 3/4 inch dia. for metric: size is the dia. in mm
- Type of Bearing Block
- Type of Linear Race Support
- Type of Carriage
- Type of Ball Screw, Type of Lead Screw, or Type of Gearbox
- System Length for inch sizes in inches for metric sizes in mm

Coefficient of Friction and Seal Drag

Coefficient of Friction

The coefficient of friction of Thomson Ball Bushing* bearings ranges from 0.001 to 0.004. There are two components of the coefficient of friction, the rolling or operating friction and the static or breakaway friction.

Coefficient of Rolling Friction

The rolling coefficient of friction is measured by the force required to operate the Ball Bushing at a constant rate of travel. The formula for determining frictional resistance during operation is as follows:

$$P_f = P \times f_r$$

where: P_f = Frictional resistance (lbf)
P = Resultant of externally applied loads (lbf)
f_r = Coefficient of rolling friction

The following table describes the coefficient of rolling friction of Ball Bushing bearings operating on Thomson 60 Case* LinearRace*. These values are grouped according to the number of ball circuits in each bearing. Friction coefficients are constant among bearings having three and four ball circuits, but slightly less for bearings with five or six ball circuits. A dry Ball Bushing bearing has the lowest coefficient of friction due to the complete absence of lubricant surface tension effects. Values for grease lubrication ranges from 100% greater in the smaller sizes to 20% to 50% greater in the larger sizes. Oil lubrication (medium/heavy, viscosity 64 cs @ 100˚F) achieves frictional values slightly higher than those for grease lubrication.

Ball bushing Bearing coefficients of rolling friction (f_r)

Bearing I.D.	Number of Ball Circuits	Condition of Lubrication	Load in % of Rolling Load Rating (for 2,000,000 inches of travel)				
			125%	100%	75%	50%	25%
1/4", 3/8"	3 & 4	No Lube	.0011	.0011	.0012	.0016	.0025
1/2", 5/8"		Grease Lube	.0019	.0021	.0024	.0029	.0044
8 mm		Oil Lube	.0022	.0023	.0027	.0032	.0045
3/4", 1"	5	No Lube	.0011	.0011	.0012	.0024	.0033
12, 16 mm		Grease Lube	.0018	.0019	.0021	.0024	.0033
		Oil Lube	.0020	.0021	.0023	.0027	.0036
1 1/4"	6	No Lube	.0011	.0011	.0012	.0014	.0019
thru 4"		Grease Lube	.0016	.0016	.0017	.0018	.0022
20 thru 40 mm		Oil Lube	.0011	.0011	.0012	.0013	.0018
5/8" thru	10	No Lube	.0011	.0011	.0012	.0013	.0019
1 1/2"		Grease Lube	.0014	.0014	.0015	.0016	.0019
12 thru 40 mm		Oil Lube	.0016	.0016	.0017	.0019	.0025

Coefficient of Static Friction

The coefficient of static or breakaway friction is measured by the force required to initiate Ball Bushing bearing movement. The formula used to determine static frictional resistance is:

$$P_f = P \times f_o$$

where: f_o = Coefficient of static friction

Ball bushing Bearing coefficients of static friction (f_0)

Load in % of Rolling Load Rating				
125%	100%	75%	50%	25%
.0028	.0030	.0033	.0036	.0040

The values for the coefficient of static friction or breakaway friction are not measurably affected by the number of ball circuits in the bearing or by the lubrication condition.

Seal Drag

Another variable that affects the frictional resistance in a Ball Bushing bearing system is seal drag. When seals are used to retain lubricant or to prevent entry of foreign particles, frictional resistance must be taken into account for determining total frictional drag. In applications where contamination is minimal, the seals can be removed to reduce frictional drag. In highly contaminated applications, seals, wipers and or scrapers are used to minimize the ingress of contamination into the bearing. This protective measure adds to the frictional drag of the bearing system. There is a fine line between minimizing frictional drag and maximizing contaminant protection which is controlled by the addition or removal of seals, wipers or scrapers. In applications that require low frictional drag in highly contaminated environments, contact Thomson application engineering.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

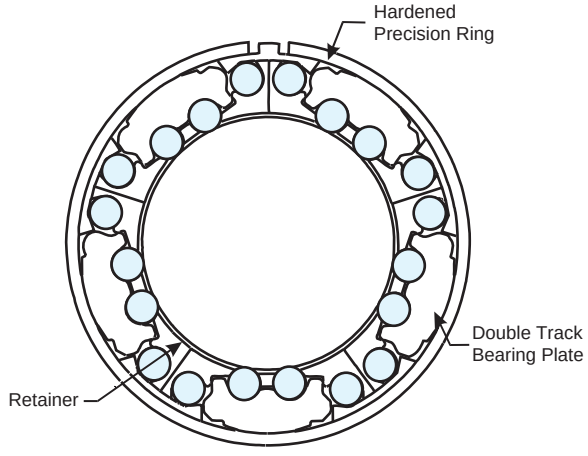
Super Smart Ball Bushing Bearing

The new Super Smart Ball Bushing* bearing represents a major advancement in linear bearing technology worldwide. The Super Smart Ball Bushing bearing offers twice the load capacity or eight times the travel life of the industry standard Thomson Super Ball Bushing bearing. An enormous technological breakthrough, considering the Super Ball Bushing Bearing already offers three times the load capacity or twenty-seven times the travel life of conventional linear bearings.

Technologically Advanced Design

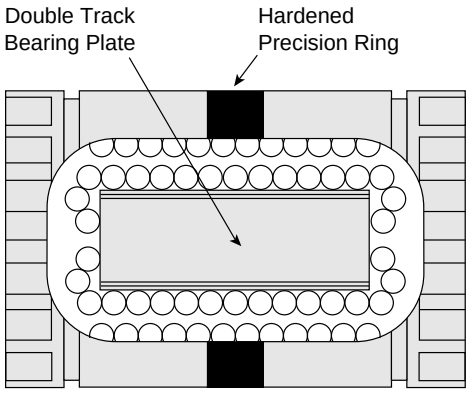
The load carrying component of the Super Smart Ball Bushing bearing is the combination four hardened and precision ground, bearing quality steel components (Figures 1 & 2).

The first component is the steel outer ring, which allows the bearing to maintain its diametrical fit-up even when installed in a housing that is slightly out-of-round. The unique ring design also allows for bearing adjustment and the removal of diametrical clearance. The second component is the precision ground double track bearing plate that provides twice the load capacity and features universal self-alignment.



Cross-section of Super Smart Ball Bushing Bearing

Figure 1



Cut-away view of the Super Smart Ball Bushing Bearing

Figure 2

The third component is the rolling element. Each Super Smart Ball Bushing utilizes precision ground balls manufactured to the highest quality standards for roundness and sphericity. The result is maximum load capacity, travel life and performance.

The last component is the 60 Case* LinearRace* that acts as the inner race to the Super Smart Ball Bushing Bearing. Each 60 Case LinearRace is manufactured to the highest quality standards for roundness, straightness, surface finish and hardness. Roundness is held under eighty millionths of an inch (2μm); straightness to .002 inches per foot (0,050mm per 0,3m); surface finish under twelve microinch and hardness between 60-65 HRC. The combination of inner and outer race or 60 Case LinearRace and Super Smart Ball Bushing bearing provides the basis for the RoundRail Advantage.

The RoundRail Advantage

The RoundRail Advantage is the inherent ability of Super Smart Ball Bushing bearing system to accommodate torsional misalignment (caused by inaccuracies in carriage or base machining or by machine deflection) with little increase in stress to bearing components. Installation time and cost are minimized and system performance is maximized.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Super Smart Ball Bushing Bearing

Universal Self-Alignment

The bearing plate of the Super Smart Ball Bushing* Bearing is designed with many unique and technologically advanced features. The Universal Self-Alignment feature assures that the Super Smart Ball Bushing Bearing will achieve maximum performance regarding load capacity, travel life, smooth operation and coefficient of friction. The three components that make up universal self-alignment are **Rock, Roll** and **Yaw.**

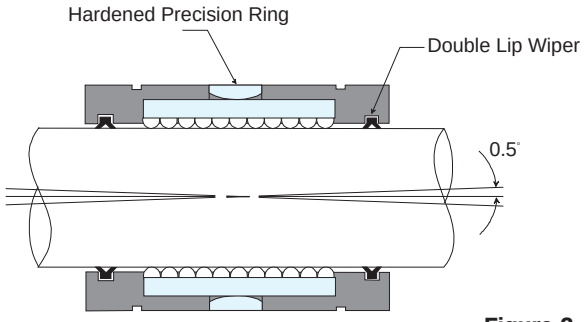
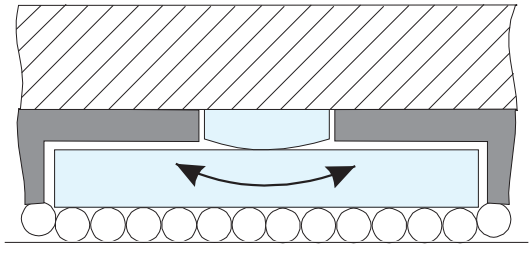


Figure 3

Rock

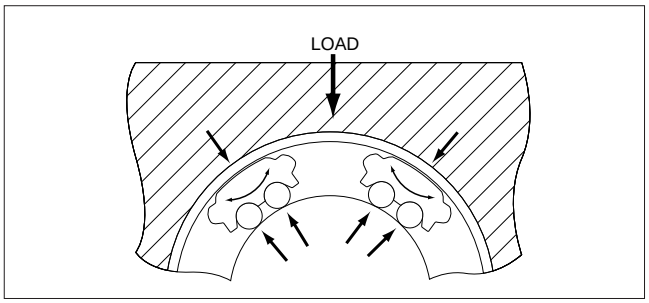
The bearing plate is designed to rock 0.5° about the hardened precision ground outer ring (Figures 3 & 4). This self-aligning feature allows the Super Smart Ball Bushing bearing to absorb misalignment caused by inaccuracies in housing bore alignment or 60 Case LinearRace deflection.

This rocking capability provides smooth entry and exit of the precision balls into and out of the load zone assuring a constant low coefficient of friction. By compensation for misalignment, each bearing ball in the load carrying area is uniformly loaded providing maximum load capacity.



Close-up of hardened precision ring, showing how the bearing plate self-aligns (rocks) about the curved surface of the ring.

Figure 4



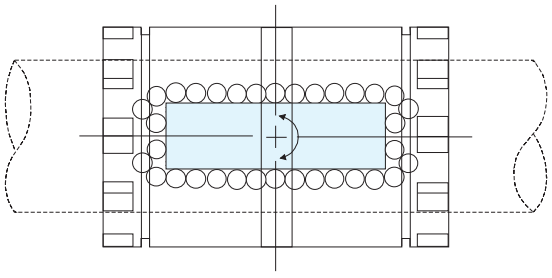
Close-up of double track bearing plates showing how they self-align (roll) to evenly distribute the load on each of their two ball tracks.

Figure 5

Roll

The second key design feature of the Super Smart Ball Bushing bearing plate is its ability to **Roll.** The bearing plate is designed with the radius of its outer surface smaller than the inside radius of the precision outer ring (Figure 5). This allows the bearing plate to compensate for torsional misalignment and evenly distribute the load on each of its two ball tracks. The roll component assures maximum load capacity and travel life.

Yaw



Bearing plates rotate about their center to prevent skewing relative to the 60 Case LinearRace.

Figure 6

The shape formed by the **Rock** and **Roll** features allows the Super Smart Ball Bushing bearing plate to rotate about its center (Figure 6). This allows the Super Smart Ball Bushing bearing to absorb skew caused by misalignment. The result is a constant low coefficient of friction and maximum bearing performance.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Load Considerations

When designing a linear motion system, it is necessary to consider the effect the variables of operation will have on performance.

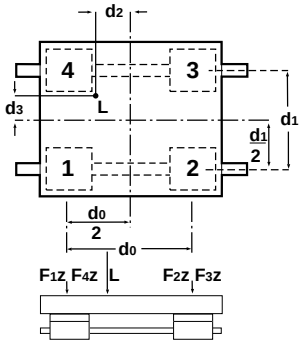
The following examples demonstrate how the position of the load and the center of gravity can influence the system selection. When evaluating your application, review each of the forces acting on your system and determine the System best for your needs.

$$F_{1Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) - \left(\frac{L}{2} \times \frac{d_3}{d_1}\right)$$

$$F_{2Z} = \frac{L}{4} - \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) - \left(\frac{L}{2} \times \frac{d_3}{d_1}\right)$$

$$F_{3Z} = \frac{L}{4} - \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) + \left(\frac{L}{2} \times \frac{d_3}{d_1}\right)$$

$$F_{4Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) + \left(\frac{L}{2} \times \frac{d_3}{d_1}\right)$$



Horizontal Application I
At the time of movement with uniform velocity or at the time of stop.

Terms

d_0 = distance between centerlines of pillow blocks (in) or (mm)

d_1 = distance between centerlines of shafts (in) or (mm)

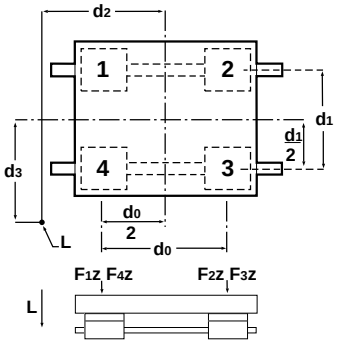
d_2 = distance from centerline of carriage to load action point (in) or (mm)

d_3 = distance from centerline of carriage to load action point (in) or (mm)

F_{NX}= Force in the **X-axis** direction (lb_f) or (N)

F_{NY}= Force in the **Y-axis** direction (lb_f) or (N)

F_{NZ}= Force in the **Z-axis** direction (lb_f) or (N)



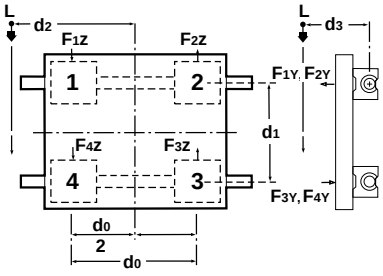
$$F_{1Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) - \left(\frac{L}{2} \times \frac{d_3}{d_1}\right)$$

$$F_{2Z} = \frac{L}{4} - \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) - \left(\frac{L}{2} \times \frac{d_3}{d_1}\right)$$

$$F_{3Z} = \frac{L}{4} - \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) + \left(\frac{L}{2} \times \frac{d_3}{d_1}\right)$$

$$F_{4Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) + \left(\frac{L}{2} \times \frac{d_3}{d_1}\right)$$

Horizontal Application II
At the time of movement with uniform velocity or at the time of stop.

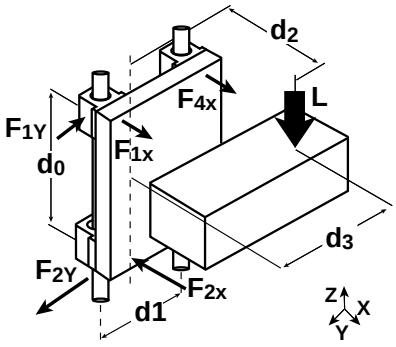


$$F_{1Y} \sim F_{4Y} = \left(\frac{L}{2} \times \frac{d_3}{d_1}\right)$$

$$F_{1Z} = F_{4Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right)$$

$$F_{2Z} = F_{3Z} = \frac{L}{4} - \left(\frac{L}{2} \times \frac{d_2}{d_0}\right)$$

Side Mounted Application
At the time of movement with uniform velocity or at the time of stop.



$$F_{1X} \sim F_{4X} = \frac{L}{2} \times \frac{d_2}{d_0}$$

$$F_{1Y} \sim F_{4Y} = \frac{L}{2} \times \frac{d_3}{d_0}$$

$$F_{1X} + F_{4X} \sim F_{2X} + F_{3X}$$

$$F_{1Y} + F_{4Y} \sim F_{2Y} + F_{3Y}$$

Vertical Application
At the time of movement with uniform velocity or at the time of stop.
At the time of start and stop, the load varies because of inertia.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

System LinearRace Deflection

When a Linear Motion System is used in an end supported configuration it is important to ensure that system deflections at the bearing locations are kept within performance limitations.

These equations give the deflection at the center of an end supported system. Systems with continuous 60 Case* LinearRace* support are not subject to the same types of deflection.

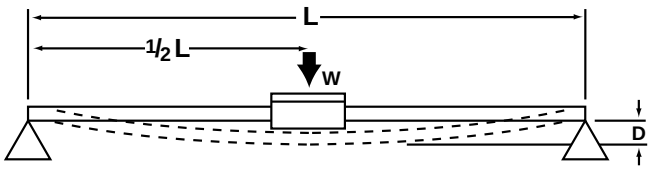
For more detailed information of the deflection characteristics of Thomson linear motion products contact application engineering.

60 Case LinearRace Stiffness and Weights

Inch Size			Metric Size		
Diameter (in)	EI ($lb_f \cdot in^2$)	Weight (lb_f / in)	Diameter (mm)	EI ($N \cdot mm^2$)	Weight (N/mm)
1/4	5.8×10^3	0.014	8	$3{,}83 \times 10^7$	0,0038
3/8	2.9×10^4	0.031	12	$1{,}94 \times 10^8$	0,0087
1/2	9.2×10^4	0.055	16	$6{,}12 \times 10^8$	0,0154
5/8	2.3×10^5	0.086	20	$1{,}50 \times 10^9$	0,0240
3/4	4.7×10^5	0.125	25	$3{,}65 \times 10^9$	0,0379
1	1.5×10^6	0.222	30	$7{,}57 \times 10^9$	0,0542
1 1/4	3.6×10^6	0.348	40	$2{,}39 \times 10^{10}$	0,0968
1 1/2	7.5×10^6	0.500			

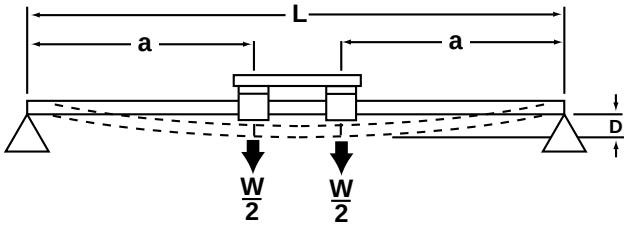
Simply Supported 60 Case LinearRace with One Block

DEFLECTION AT CENTER (D)



$$D = \frac{WL^3}{48EI} + \frac{5SL^4}{384EI}$$

Simply Supported 60 Case LinearRace with Two Blocks



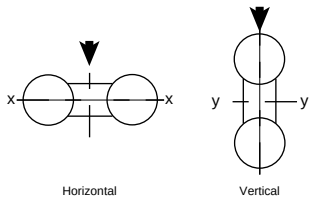
$$D = \frac{Wa(3L^2-4a^2)}{48EI} + \frac{5SL^4}{384EI}$$

Deflection for Twin Shaft Web System

Since the Twin Shaft Web rail has different stiffness depending on its orientation, an appropriate EI value must be used based upon the direction of loading. Select the orientation of your load from the figure below and then use the appropriate EI value in the deflection equation.

Values of EI

Shaft Dia. (in)	EI Horizontal ($lbf\ in^2$)	EI Vertical ($lbf\ in^2$)
1/2	1.9×10^5	3.7×10^6
3/4	9.4×10^5	1.5×10^7
1	3.0×10^6	4.7×10^7



LEGEND

D = Deflection (in) or (mm)
W = Load (lb_f) or (mm)
L = Length of unsupported 60 Case LinearRace (in) or (mm)
a = Distance to first bearing with carriage at center position (in) or (mm)
S = Unit weight of LinearRace (lb_f/in) or (N/mm)
E = Modulus of Elasticity (lb_f/in^2) or (N/mm^2)
I = Moment of inertia of area through diameter of LinearRace (in^4) or (mm^4)

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

60 Case LinearRace Specifications

Thomson 60 Case* LinearRace* provides the inner race for Thomson Ball bushing bearings. All 60 Case LinearRace is manufactured to extremely close tolerances for surface finish, roundness, hardness and straightness to provide long service life with reduced maintenance.

Specifications:

Hardness:	HRC 60-65
Surface Finish:	12R_a microinch (R_a 0,30 µm)
Roundness:	80 millionths of an inch (2µm)
Straightness:	Standard–.001 inch per foot (0,050mm per 0,3m) (.002 in or 0,050mm TIR) Special–.0005 inch per foot (0,025mm per 0,3m) cumulative (.001 in or 0,025mm TIR)
Length Tolerance	Standard +/-.030 (+/-0,75mm) for diameters up to 1 1/2 inch or 40mm. Special length tolerances available.
Chamfer:	Standard chamfer on diameters up to 1 inch or 25mm is .030 x 45° or 0.8mm x 45° and .060 x 45° or 1,6mm x 45° for diameters larger than 1 inch or 25mm.
Tensile Strength:	Case: 335,000 psi, Core: 100,000 psi 2,31 GPa 0,69 GPa
Yield Strength:	Case: 250,000 psi, Core: 75,000 psi 1,72 GPa 0,52 GPa

Short Stroke Applications

In applications when the stroke length is short, the life of the shaft is shorter than that of the Ball Bushing bearing. In short stroke applications, the required dynamic load capacity must be multiplied by the factor K_C found on Figure ESA 9.1.

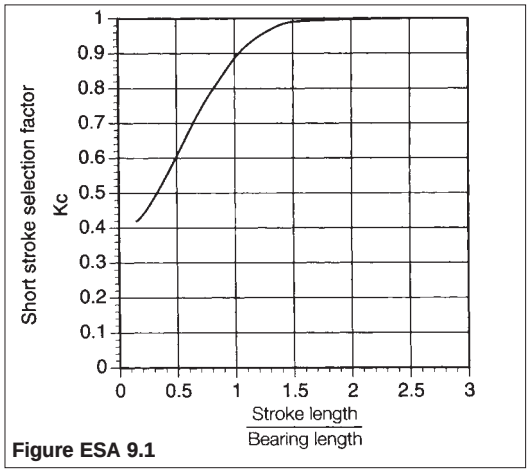


Figure ESA 9.1

Application Tips

Two Ball Bushing Bearings per 60 Case LinearRace
When using the Super Smart, Super or Precision Steel Ball Bushing bearing it is recommended that two Ball Bushings bearings be used on each 60 Case Linear Race. This will assure system stability as well optimum performance. If envelope constraints prohibit the use of two Ball Bushing bearings per 60 Case LinearRace contact application engineering.

Ball Bushing Bearing Spacing v. 60 Case LinearRace Spacing
In parallel 60 Case LinearRace applications, the ratio of 60 Case LinearRace spacing to Ball Bushing bearing spacing should always be less than three to one. This will assure a constant breakaway and operating friction.

60 Case LinearRace Parallelism
In most applications the maximum acceptable out of parallelism condition is .001 inch (0,025 mm) over the entire full system length. In applications where preload is present a closer 60 Case LinearRace parallelism is recommended.

Measuring 60 Case LinearRace Alignment
Methods for establishing or checking 60 Case LinearRace straightness and parallelism depends on the accuracy required. Lasers, collimator or alignment telescopes can be used for very precise applications, while accurate levels, straight edges, micrometers and indicators will suffice for the majority of applications which have less stringent accuracy requirements.

Access for Lubrication
Thomson Super Smart and Super Ball Bushing Pillow blocks in inch sizes are equipped with either an oil lubrication fitting or a 1/4-28 access hole for lubrication. To use the oil fitting simply insert a lubrication device into the oil nipple by depressing the spring loaded ball. The 1/4-28 tapped hole is a standard size for most grease and lubrication fittings. Simply install the lubrication fitting of your choice and it is ready for immediate use. super Ball Bushing Pillow blocks in sizes .250 through .500 inch diameter are equipped with oil lubrication fittings. Super Ball Bushing pillow blocks in sizes .625 inch and above and all Super smart Ball Bushing Pillow Blocks are equipped with a 1/4-28 access for lubrication.

Super smart Ball Bushing Bearing pillow blocks in metric sizes are provided with an M6 x 0,1 access for lubrication. Simply install the appropriate lubrication fitting and it is ready for immediate use.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

Systems Applications

Application Analysis

Determining the system which best meets the demands of your application and provides optimum performance requires the evaluation of a number of variables. The accompanying form establishes basic criteria to initiate the analysis of your application. In addition, the Engineering Support Appendix has been designed with pertinent data and formulas used to specify the proper system for your application.

If you have questions or special needs a Thomson systems engineer can assist you in evaluating your application and recommending a system solution. Simply call 1-800-554-8466.

Application Description: ❑ Horizontal ❑ Vertical

System Part Number:

Quantity Required:

Weight of Load (lbs) or (N):

Space Requirements (LxHxW):

Stroke Length Requirements (in) or (mm):

Support Requirements: ❑ End Supported ❑ Full Support

Maximum Velocity Requirements (in/s) or (m/s):

Maximum Acceleration Requirements (in/s^2) or (m/s^2):

Required Straightness of Travel Accuracy (in/ft) or (µm/300mm):

Required Positioning Accuracy (in) or (µm):

Required Repeatability (in) or (µm):

Life Requirement (in) or (km):

Cycle (in/yr) or (km/yr):

Environmental Considerations:

Other Design Criteria:

Production Time Frame:

Company:

Name:

Title:

Address:

City: State: Zip:

Telephone: Fax:

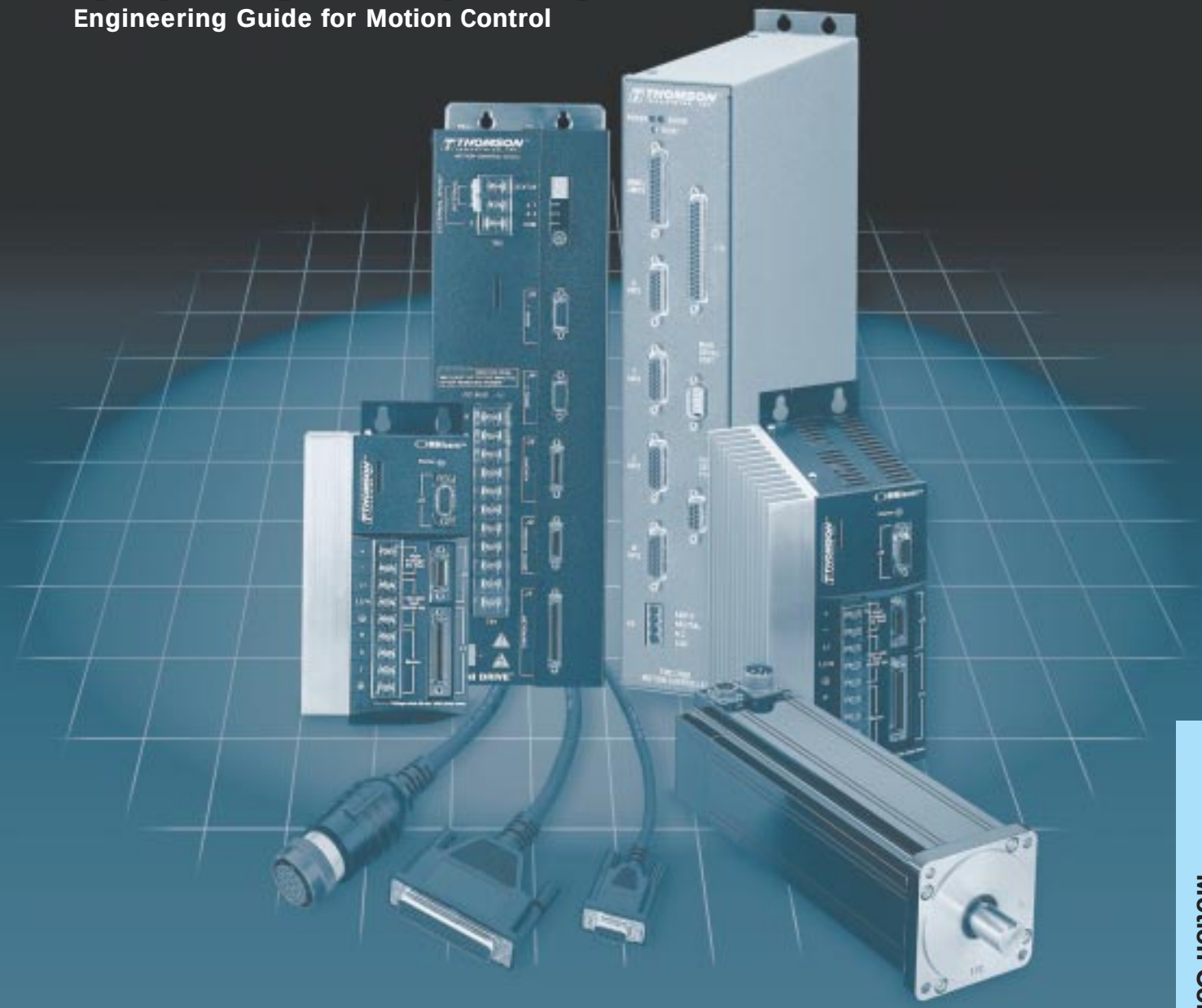
Please Fax your Application Analysis to 516-883-9039 Attention: Application Engineering

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at systems@thomsonmail.com.

THOMSON INDUSTRIES, INC.

MOTION CONTROL SOLUTIONS

Engineering Guide for Motion Control



MOTION CONTROL

- Easy to Specify; Complete Solutions
- Easy to Install; Plug & Play

THOMSON*
First in Linear Motion and Control Technology

www.thomsoncontrol.com

Motion Control

For Application Engineering assistance contact the Thomson Technical HelpLine at 1-800-554-8466.

TMC-2000 MOTION CONTROLLER

Page 385

- High performance, stand alone, multi axis servo and stepper motor controller
- Performs point to point motion, linear and circular interpolation, contouring, electronic gearing, electronic cam, and jogging
- Powerful yet simple instruction set supports multitasking, user variables and arrays, arithmetic and logic functions, position latch, event triggers, error handling and more.
- Servo Setup Kit* software for Windows® provides communications, program editing, tuning and diagnostics
- All optoisolated I/O

AXI-PAK* Complete Servo Axis Packages

Page 397

- A complete servo axis that operates either with a motion controller or as a smart stand alone drive
- Includes a matched BLX brushless motor, OMNIDRIVE* digital servo drive, professionally molded cables, OMNI LINK* setup software, and documentation for a fast and worry free installation
- The latest technology and most rugged design for a high performance industrial quality turn key motion control solution

OMNIDRIVE Digital Servo Drives

Page 413

- Fully digital “smart” brushless servo amplifier with integrated power supply
- Configurable for analog input, step and direction, serial link, encoder follower, electronic gearing.
- Indexing option for stand alone positioning capabilities
- Available in 0.5, 1, 2, 3, 7.5, and 15 kW continuous power ratings
- Included OMNI LINK setup and diagnostic software

BLX Brushless Servo Motors

Page 431

- Superior magnetic and thermal design gives exceptional performance and the highest torque per frame size
- Standard IP65 sealing, MS style fluid tight connectors, oversize bearings, and thermal switch ensure a long and worry free service life
- A variety of frame sizes and winding configurations are available to suit your precise application needs
- Internal bearing mounted commutating encoder provides precision and reliability
- Available with planetary gearheads and internal brakes

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

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RECOMMENDED PRODUCT APPLICATION GUIDE

	TMC-2000 motion controller and non-indexing AXI-PAK* servo axis packages	Indexing AXI-PAK servo axis packages	Non-indexing AXI-PAK servo axis packages
single axis, point to point positioning	✓	✓	
multi-axis, point to point positioning	✓	✓	
multi-axis, linear and circular interpolation	✓	✓	
contouring	✓	✓	
electronic gearing	✓	✓	✓
torque control	✓	✓	✓
analog position control	✓	✓	✓
control by PLC I/O	✓	✓	except for positioning
control by another stepper card (step/dir)			✓
control by another servo card (+/- 10V)			✓
control by a host PC	✓	✓	except for positioning
electronic cam	✓	✓	✓
encoder following	✓	✓	✓
electronic gearing	✓	✓	✓
torque control	✓	✓	✓
analog position control	✓	✓	✓
serial port control	✓	✓	✓
auto program execute	✓	✓	except for positioning

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The TMC-2000 is a packaged high performance multi-axis motion controller designed for stand alone operation. It is capable of controlling 1 - 4 axes of servo or stepper motors independently, coordinated (linear and circular interpolation) or synchronized to external events. Flexible inputs and outputs allow interfacing to a wide variety of industrial sensors, relays, or PLCs. A powerful yet easy to use instruction set allows solving any motion control problem quickly and easily.

Windows® based support software allows quick program editing, system setup and tuning. Programs may be permanently stored in memory and automatically executed upon power up.

Features

- Controls 1-4 axes of servo and/or stepper motors
- Stand alone operation with automatic program execution upon power up
- Various modes of motion include point to point, linear and circular interpolation, contouring, electronic gearing, electronic cam, and jogging
- 2 serial RS-232/RS-422 communication ports
- 32 bit microprocessor gives high performance servo control through: Full digital PID control with feed forward; S-curve profiling with accel, velocity, and position changes on the fly; and auxiliary encoder inputs for dual loop and backlash compensation
- Enhanced I/O including:
  8 optoisolated digital inputs
  8 optoisolated digital outputs
  Dedicated reset and abort inputs and error output
  7 analog inputs
  72 additional OPTO-22 compatible I/O option
- Dedicated limit and home inputs (optoisolated)
- Servo Setup Kit* for Windows® software provides: communications, program editing, various auto and manual tuning methods, motion and I/O diagnostics
- Multitasking allows up to 4 programs running simultaneously

- Compact industrial enclosure
- 110V/220V operation
- Powerful, yet simple two letter instruction set supports: 254 user variables and 8000 array elements; arithmetic and logic functions; high speed position latch; and, event triggers and sophisticated error handling

For Application Engineering assistance contact the Thomson Technical HelpLine at 1-800-554-8466.

DESCRIPTION

MODES OF MOTION

The **TMC-2000** supports various modes of motion to allow solving any motion problem.

Fully independent positioning allows each axis to follow its own prescribed profile regardless of any other axis motion. Linear interpolation is supported for any combination of axes and provides coordinated motion along any prescribed vector path.

Circular interpolation allows circular moves and arc segments between any pair of axes.

Coordinated motion allows the following of a two dimensional path consisting of a continuous vector feed of an infinite number of linear and arc segments, while maintaining a constant vector speed. A third axis can be commanded to remain tangent to the path.

Contouring mode allows the user to completely define any arbitrary position trajectory which is useful when specialized computer generated trajectories must be followed. Position increments over a time interval are specified. An automatic recording feature allows the controller to learn and play back this path.

Electronic gearing allows any number of axes to be electronically geared to one master axis or external encoder and gear ratio may be changed on the fly. Electronic cam mode allows synchronizing axes with a master axis according to a user defined table, point by point along the motion cycle, for repetitive periodic operations such as flying shears and rotating knives.

Jogging allows any axis to move at a constant speed for an indefinite time.

All motion may be **synchronized with outside** events through the controller's I/O, and motion profiles may be smoothed through the use of **S-Curve** velocity profiling.

I/O

The TMC-2000 comes standard with 8 uncommitted digital inputs, 8 uncommitted digital outputs, and dedicated home, forward and reverse travel limits for each axis. There are also dedicated reset and abort inputs and an error output. All of the I/O is optoisolated. Additionally, 7 analog inputs are standard. Up to 72 more I/O points (OPTO-22 compatible) are optionally available.

PROGRAMMING

The TMC-2000 has a powerful yet intuitive and simple programming language allowing complex and demanding applications to be solved quickly. Programming is BASIC-like and instructions consist of two letter commands such as BG for Begin and SP for Speed. The command set includes commands for defining motion profiles, configuring your system, handling I/O, checking status, and tuning the axes. Conditional instructions, subroutines, and jump statements allow the building of a complete

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machine control program. Use of the arithmetic and logic functions and the flexibility of 254 user defined symbolic variables allow writing complete self contained application programs. Multiple arrays may contain up to 8000 elements to capture real time data for teach modes or data collection. Programs can be controlled by event triggers, timers, and definable input interrupts And the controller's multitasking capabilities allow up to 4 independent or related programs to run simultaneously. Programs, arrays, and variables can be stored in nonvolatile memory and programs may be set for automatic execution upon power up.

Programming can be performed with the controller's own internal editor and can be quickly entered and edited with any dumb terminal or PC. However, you'll probably prefer using the supplied Servo Setup Kit* Windows® based software. Servo Setup Kit will allow you to edit, upload and download your programs. A terminal mode allows direct communication with the controller. Tuning the axes is simplified through an advanced assortment of autotuning and manual tuning methods. Built in scope and plotting capabilities allow graphical representation of position, velocity, position error, motor command, system response, and many other parameters. All system configuration parameters may be viewed and set.

COMMUNICATIONS

The TMC-2000 has two RS-232 serial communication ports which also can be configured as RS-422. Baud rates from 300 to 38.4k bps can be used with or without handshaking. Up to 8 controllers may be daisy chained together for control by a single host computer or by each other. Because all instructions are simple 2 letter ASCII commands, most any PLC, computer, or controller with a serial port can communicate with the TMC-2000.

SERVO PERFORMANCE

The controller supports up to 4 axes of servo and step motors. High performance operation is ensured through a fast servo update rate, 16 bit DAC motor command, and a fully digital PID filter with velocity and acceleration feedforward and integration limits. S-Curve velocity profiling with different acceleration and deceleration rates is supported along with the ability to change position, velocity, and acceleration on the fly. Each axis may utilize an auxiliary encoder for automatic dual loop damping and backlash compensation. And for those applications where a potentiometer or other sensor is used for feedback, the controller can close the loop around the analog inputs.

SAFETY FEATURES AND ERROR HANDLING

Prudent design of any piece of machinery dictates consideration of unexpected problems. The TMC-2000 has both software and hardware limits. The axes may be configured for automatic shut-off on excessive error. Dedicated optoisolated inputs are provided for Abort and Reset. And, sophisticated error handling may be employed through user definable error and limit routines.

APPLICATIONS

XYZ systems

General Automation

Specialty Machinery

Pick and Place

Dispensing

Laser & Water Jet Cutting

Welding Robots

Food Processing

Coil Winding

Metalworking

Packaging Machinery

Material Handling

Web Synchronization

Tension Control

Printing and Labeling

and more!

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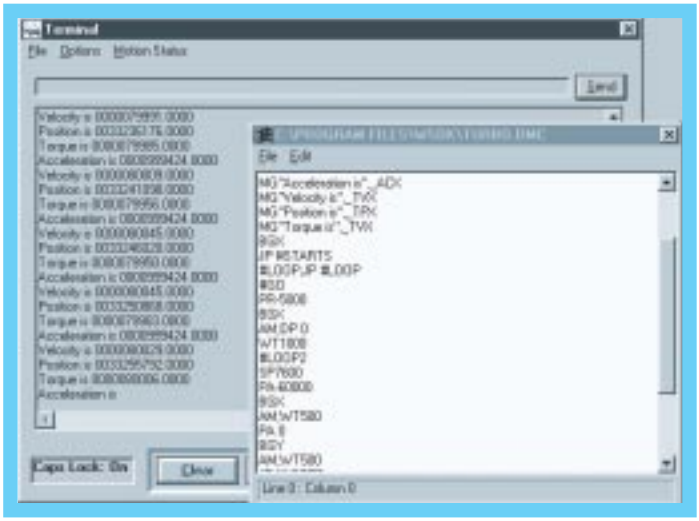
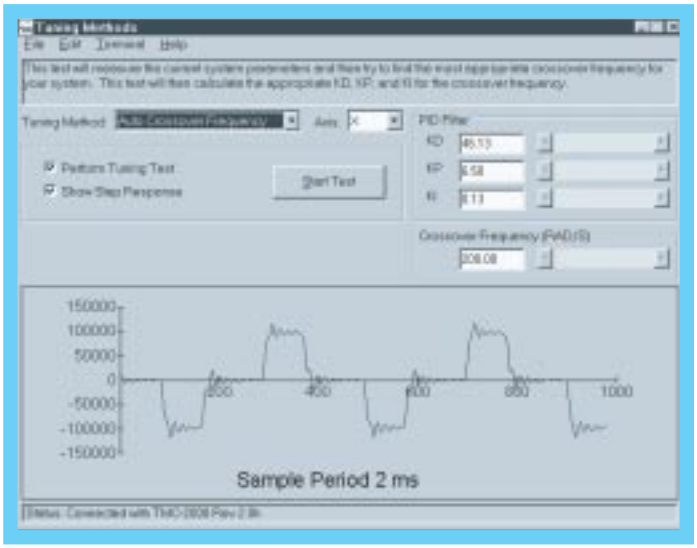
TERMINAL

For programming, development, troubleshooting, or operation, use the built in terminal for direct interaction with the controller. The program editor may be launched from here to edit, save, upload, download, and print your programs. You also may create a log file to capture all activity for later review.



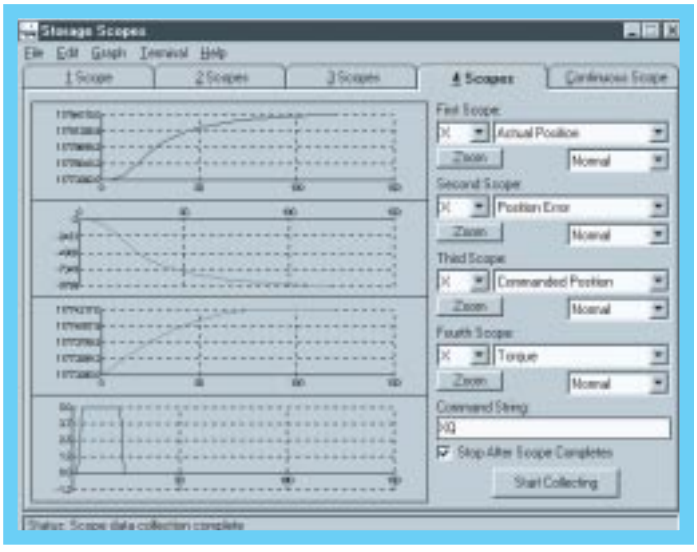
TUNING

Choose from one of five tuning routines that best suits your application. You can completely hands off auto-tune or, if you prefer, interact by specifying a crossover frequency, gain, or damping. Either way, the resulting system response is displayed.



STORAGE SCOPES

You can create up to four channels of storage to capture important parameters for any combination of axes. View critical signals such as commanded position, actual position, position error, motor command, auxiliary encoder, and I/O levels. Adjust the trigger method, sample time, trace colors, grid types, values, min/max levels, and more.



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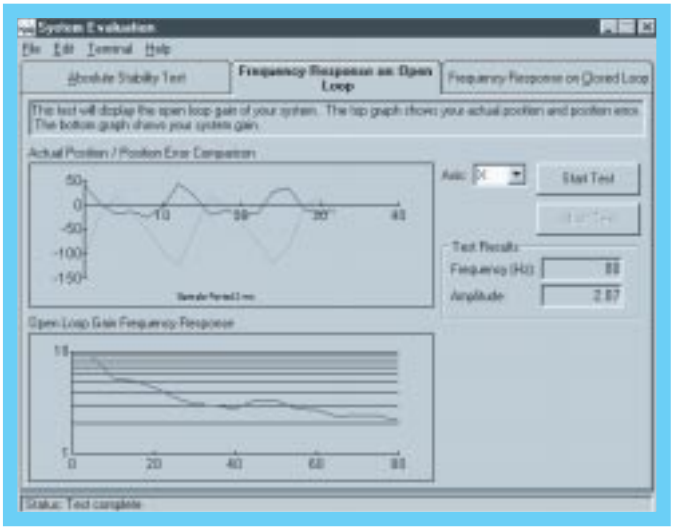
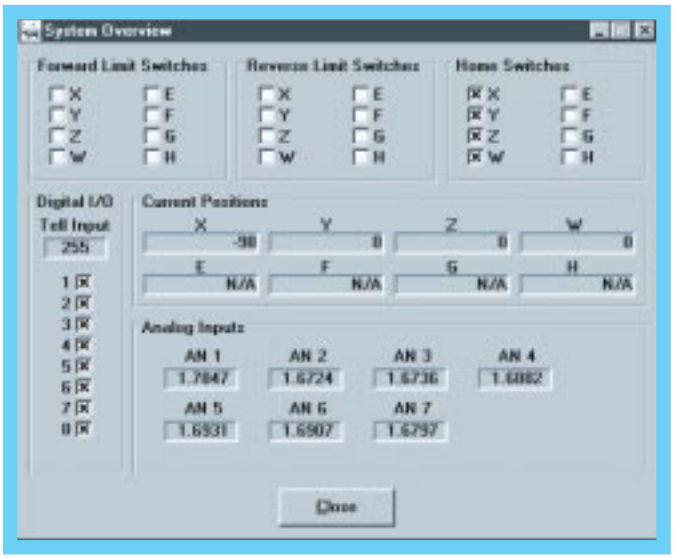


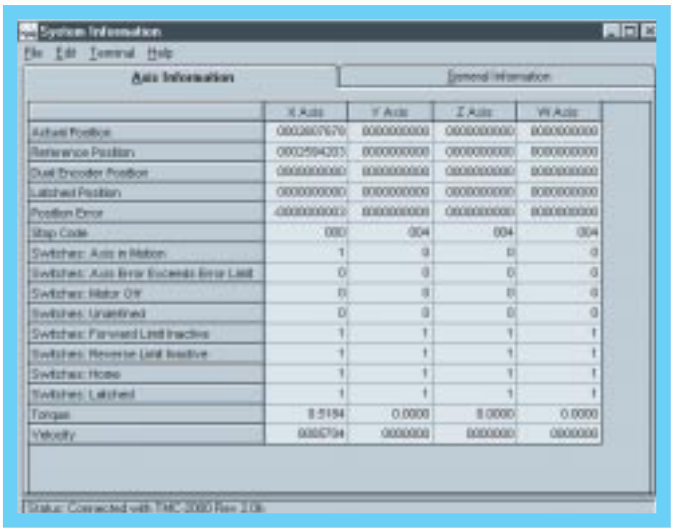
SYSTEM EVALUATION

Evaluate the servo performance though an absolute stability test, step response test, or frequency response on either the open-loop or closed loop response. Check for problems with gain or damping and get a graphical look at the responsiveness of your system.



SYSTEM OVERVIEW

A quick overview of the state of important system variables such as encoder positions, digital and analog I/O status, limit and home switch states.



SYSTEM INFORMATION

A detailed listing of all system parameters can be viewed for diagnostic or troubleshooting purposes. Check the status of error codes, motion related variables, all I/O, limit switches and more.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

COMMAND SUMMARY

MOTION

AB	Abort Motion
AC	Acceleration
BG	Begin Motion
CD	Contour Data
CM	Contour Mode
CR	Circle
CS	Clear Motion Sequence
DC	Deceleration
DT	Contour Time Interval
ES	Ellipse Scaling
FE	Find Edge
FI	Find Index
GA	Master Axis for Gearing
GR	Gear Ratio
HM	Home
IP	Increment Position
JG	Jog Mode
LE	Linear Interpolation End
LI	Linear Interpolation Distance
LM	Linear Interpolation mode
PA	Position Absolute
PR	Position Relative
SP	Speed
ST	Stop
TN	Tangent
VA	Vector Acceleration
VD	Vector Deceleration
VE	Vector Sequence End
VM	Coordinated Motion Mode
VR	Vector Speed Ratio
VP	Vector Position
VS	Vector Speed

PROGRAM FLOW

AD	After Distance
AI	After Input
MF	After Motion– Forward Direction
AM	After Motion– Complete
AP	After Absolute Position
AR	After Relative Distance
AS	At Speed
AT	After Time
AV	After Vector Distance
EA	Choose ECAM Master
EB	Enable CAM
EG	Engage ECAM
EM	CAM Cycle Command
EN	End Program
EP	CAM Interval and Starting Point
EQ	Disengage ECAM
ET	ECAM Table Entry
HX	Halt Execution
JP	Jump to Location
JS	Jump to Subroutine
MC	After In Position
MF	After Motion — Forward Direction
MG	Message
MR	After Motion — Reverse Direction
NO	No Operation
RE	Return from Error Subroutine
RI	Return from Interrupt
TW	Timeout for In Position
WC	Wait for Contour Data
WT	Wait
XQ	Execute Program
ZS	Zero Subroutine Stack

GENERAL CONFIGURATION

AF	Analog Feedback
AL	Arm Latch
BN	Burn
BP	Burn Program
BV	Burn Variables
CB	Clear Bit
CC	Configure Com Port
CE	Configure Encoder Type
CI	Communication Interrupt
CN	Configure Switches and Stepper
CO	Configure Outputs
DA	Deallocate Arrays
DE	Define Dual Encoder Position
DL	Download
DM	Dimension Arrays
DP	Define Position
ED	Edit Mode
EI	Enable Interrupts
EO	Echo Off
LS	List
MO	Motor Off
MT	Motor Type Define
OB	Output Bit
OP	Output Port
PF	Position Format
QU	Upload Array
QD	Download Array
RA	Record Array
RC	Record
RD	Record Data
RI	Interrupt Mask
RS	Reset
SB	Set Bit
UI	User Interrupt
UL	Upload
VF	Variable Format

CONTROL FILTER SETTINGS

DV	Damping for Dual Loop
FA	Acceleration Feedforward
FV	Velocity Feedforward
GN	Gain
IL	Integrator Limit
IT	Smoothing Time Constant – Independent
KD	Derivative Constant
KI	Integrator Constant
KP	Proportional Constant
KS	Stepper Smoothing Constant
OF	Offset
SH	Servo Here
TL	Torque Limit
TM	Sample Time
VT	Smoothing Time Constant – Vector
ZR	Zero

STATUS

RP	Report Command Position
RL	Report Latch
SC	Stop Code
TB	Tell Status
TC	Tell Error Code
TD	Tell Dual Encoder
TE	Tell Error
TI	Tell Input
TP	Tell Position
TR	Trace
TS	Tell Switches
TT	Tell Torque
TV	Tell Velocity

ERROR AND LIMITS

BL	Reverse Software Limit
ER	Error Limit
FL	Forward Software Limit
OE	Off on Error

EDITOR

ED	Edit Mode
<return>	Save Line
<cntrl> P	Previous Line
<cntrl> I	Insert Line
<cntrl> D	Delete Line
<cntrl> Q	Quit Editor

ARITHMETIC FUNCTIONS

@SIN	Sine
@COM	Complement
@COS	Cosine
@ABS	Absolute Value
@FRAC	Fraction Portion
@INT	Integer Portion
@RND	Round
@SQR	Square Root
@IN	Return Digital Input
@AN	Return Analog Input
+	Add
-	Subtract
*	Multiply
/	Divide
&	And
|	Or
( )	Parentheses

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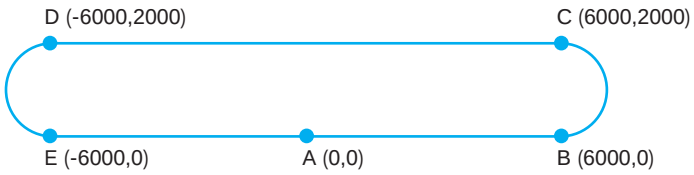
Example #1: Coordinated Motion

Applications such as dispensing, machining, welding, and water jet cutting often require coordinated motion amongst a set of XY axes. This code sample shows typical straight line and circular motion.

Motion Path for XY



Instruction	Interpretation
#M	Label
VM XY	Specify XY plane
VP6000,0	Move to point B
CR 1000,270,180	Move to point C
VP -6000,2000	Move to point D
CR 1000,90,180	Move to point E
VP 0,0	Return to point A
VE	End of path
VS 20000	Vector speed
VA 100000	Vector acceleration
VD 100000	Vector deceleration
BGS	Start motion
EN	End program

Example #2: Inputs and Outputs

On machines, inputs and outputs are often used to read sensors, turn on equipment, or handshake with other controllers. This code sample waits for an input, performs motion, and sets an output to notify a PLC. Additionally, the speed of the motion is set proportional to an analog input, which could be wired to a potentiometer or some type of sensor.

Instruction	Interpretation
#CYCLE	Label
PA 50000	Specify position
AI1	Wait for input 1
A=@AN[1]	Read analog input 1
V=A*2500	Scale voltage to desired speed
SP V	Update feedrate
BGX	Start motion
AMX	Wait for completion of move
SB1	Turn on output 1
PA 0	Specify return position
BGX	Start motion
AMX	Wait for completion of move
CB1	Turn off output 1
JP#CYCLE	Repeat the cycle

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

Example #3: Loops and Variables

Machines often need to repeat a cycle a certain number of times. This code sample shows how a variable, V1, can be used to create a counter. The motion cycles back and forth, each time incrementing the counter. When 10 cycles are complete, the program ends.

Instruction	Interpretation
#MAIN	Label
V1=1	Set counter variable to 1
#LOOP	Label for loop
PA 25000	Set move distance
BG X	Begin move
AM X	Wait for move completion
PA 0	Set move distance
BG X	Begin move
AM X	Wait for move completion
V1=V1+1	Increment cycle counter
JP #LOOP, V1<10	Loop until counter = 10
EN	Program end

Example #4: Electronic Gearing

Some applications require axes to follow another master encoder in a synchronized or geared configuration. In this example, three rotating dies repetitively stamp material traversing on a conveyor. It is important that the dies rotate at the same surface speed as the material. When the operator presses the start switch, the axes rotate and cycle the dies by following the conveyor motor. The gear ratio is set by an operator depending on the size of the die.

Instruction	Interpretation
#MAIN	Label
IN“Enter die size”, A	Prompt operator for die size
A=A*3.33	Scale gear ratio as required
GAW	Designate W as master (conveyor) axis
JG,4000	Start conveyor running
#CYCLE	Label
AI1	Wait for start switch
GR A,A,A	Start stamping by setting ratios for X, Y, and Z
AI2	Wait for stop switch
GR 0,0,0	Stop stamping by disabling gearing
JP #CYCLE	

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

SERVO

Number of axes		4 axes, any combination of servo and stepper
Feedback		Incremental encoder, single ended or differential. Can also use analog voltage from potentiometer or transducer
Servo Loop Update Time		500 µs
Position Accuracy		+/-1 quadrature count
Position Range		+/-2147483647 counts per move; automatic rollover and no limit in jog or vector modes
Velocity Accuracy:	Long Term	Phase-locked, better than .003%
	Short Term	System dependent
Velocity Range		Up to 8,000,000 counts/sec
Velocity Resolution		2 counts/sec
Accel/Decel Range		1024 to 67,107,840 counts/s^2
Motor Command Resolution		16-bit or 0.0003V
Block Execution Time		In contour mode, up to 1000 (moves)/sec with full trajectory generation
Synchronization		All axes in the same unit are perfectly synchronized and share the same servo cycle. Multiple controllers may share the same synchronization signal and be perfectly synchronized in the same servo cycle
Position Capture Accuracy		25µs with optoisolation, 0.1µs bypassed optoisolation
Gear Ratio		+/- 127.9999
Step Pulse Frequency		2,000,000 pulses/sec maximum

PROGRAMMING

Number of Variables	254
Variable Range	+/-2 billion
Variable Resolution	$1 \bullet 10^{-4}$
Array Size	8000 elements in up to 30 arrays
Program Size	1000 lines x 80 characters

INPUTS / OUTPUTS

General Purpose Inputs	8 uncommitted optoisolated, open collector 28V@ 25mA max
General Purpose Outputs	8 uncommitted optoisolated, open collector 28V@ 25mA max
General Purpose Analog Inputs	7 +/- 10V, 12 bit resolution
Limit Inputs	Dedicated forward and reverse limit inputs for each axis, optoisolated
Home Inputs	Dedicated home input for each axis, optoisolated
Other	Reset input, Abort input, and Error output

ELECTRICAL

Servo ACMD Amplifier Command	+/-10 Volts analog signal. Resolution 16-bit, .0003 Volts. 3 mA maximum
Encoder A+,A-,B+,B-,IDX+,IDX-	TTL compatible, but can accept up to +/-12 Volts. Quadrature phase on CHA,CHB. Can accept single-ended (A+,B+ only) or differential (A+,A-,B+,B-). Maximum A, B edge rate: 8 MHz. Minimum IDX pulse width: 120 nsec.
Stepper Pulse	TTL (0-5 Volts) level at 50% duty cycle. 2,000,000 pulses/sec maximum frequency
Stepper Direction	TTL (0-5 Volts)
Uncommitted Inputs, Limits, Home, Reset and Abort Inputs	2.2K ohm in series with optoisolator. Requires at least 1 mA for on. Can accept up to 28 Volts without additional series resistor. Above 28 Volts requires additional resistor.
AN[1] thru AN[7] Analog Inputs	Standard configuration is +/-10 Volt. 12-Bit Analog-to-Digital converter.
OUT[1] thru OUT[8] Outputs	Optoisolated, open collector
Available Power For External Devices	+ 5V 1.5 A +12V 750 mA -12V 200 mA

COMMUNICATIONS

Number of Communication Ports	2 serial RS-232 (can be configured for RS-422)
Speed	300, 1200, 4800, 9600, 19200, 38400 bps
Handshaking	Hardware or none

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

CONNECTION PINOUTS

RS-232 Main Serial Port

Connector Type: 9 pin male D sub

Pin	Function
1	CTS – output
2	Transmit Data – output
3	Receive Data – input
4	RTS – input
5	Ground
6	CTS – output
7	RTS – input
8	CTS – output
9	No connect/ or 5V or sample clock with jumpers

RS-232 – Auxiliary Serial Port Connector

Connector Type: 9 pin female D sub

Pin	Function
1	CTS – input
2	Transmit Data – input
3	Receive Data – output
4	RTS – output
5	Ground
6	CTS – input
7	RTS – output
8	CTS – input
9	5V / or no connect or sample clock with jumpers

*RS-232 ports can be configured for RS-422 by factory

X, Y, Z, W Axis Connectors

Connector Type: 26 pin high density female D sub, one per axis

Pin #	Function
1	enc A+
2	enc A-
3	enc B+
4	enc B-
5	enc I+
6	enc I-
7	enc gnd
8	enc 5V
9	enc shield
10	amp cmd
11	amp enable
12	amp PWM/step
13	amp sign/dir
14	amp enable Vx
15	stepper mode enable
17	amp gnd
18	amp shield
16, 23	gnd
24	+5V
26	+12V
25	-12V
19,20,21,22	N.C.

AC Power Connector

Connector Type: 4 position Phoenix screw terminal

Pin	Function
LINE	Hot wire of AC power cord – black
N.C.	Do not connect (used for key)
NEUTRAL	Return of AC power cord – white
EARTH	Chassis ground – green

I/O Connector

Connector Type: 37 pin female D sub

Pin	Function
28,17	Controller supplied 5V
10,11, 29,30, 36	Controller supplied Ground
16,35	User isolated inputs Vcc INCOM
1,20	User isolated outputs ground

Pin	Function
34	input 1 (latch X)
15	input 2 (latch Y)
33	input 3 (latch Z)
14	input 4 (latch W)
32	input 5
13	input 6
31	input 7
12	input 8

Pin	Function
2	output 1
21	output 2
3	output 3
22	output 4
4	output 5
23	output 6
5	output 7
24	output 8
6	analog 1

Pin	Function
25	analog 2
7	analog 3
26	analog 4
8	analog 5
27	analog 6
9	analog 7
19	abort input
37	error output
18	reset input

HOME/LIMITS Connector

Connector Type: 25 pin female D sub

Pin	Function
15,16,17	Controller supplied 5V
18,19,20,21 22,23,24,25	Controller supplied ground
1,14	User isolated inputs Vcc, LSCOM
2	X + limit
3	X - limit
4	X home

Pin	Function
5	Y + limit
6	Y - limit
7	Y home
8	Z + limit
9	Z - limit
10	Z home
11	W + limit
12	W - limit
13	W home

Auxiliary Encoder Connector J3

Connector Type: 20 pin male ribbon header. It is internally mounted and noted as J3. Remove side cover for access.

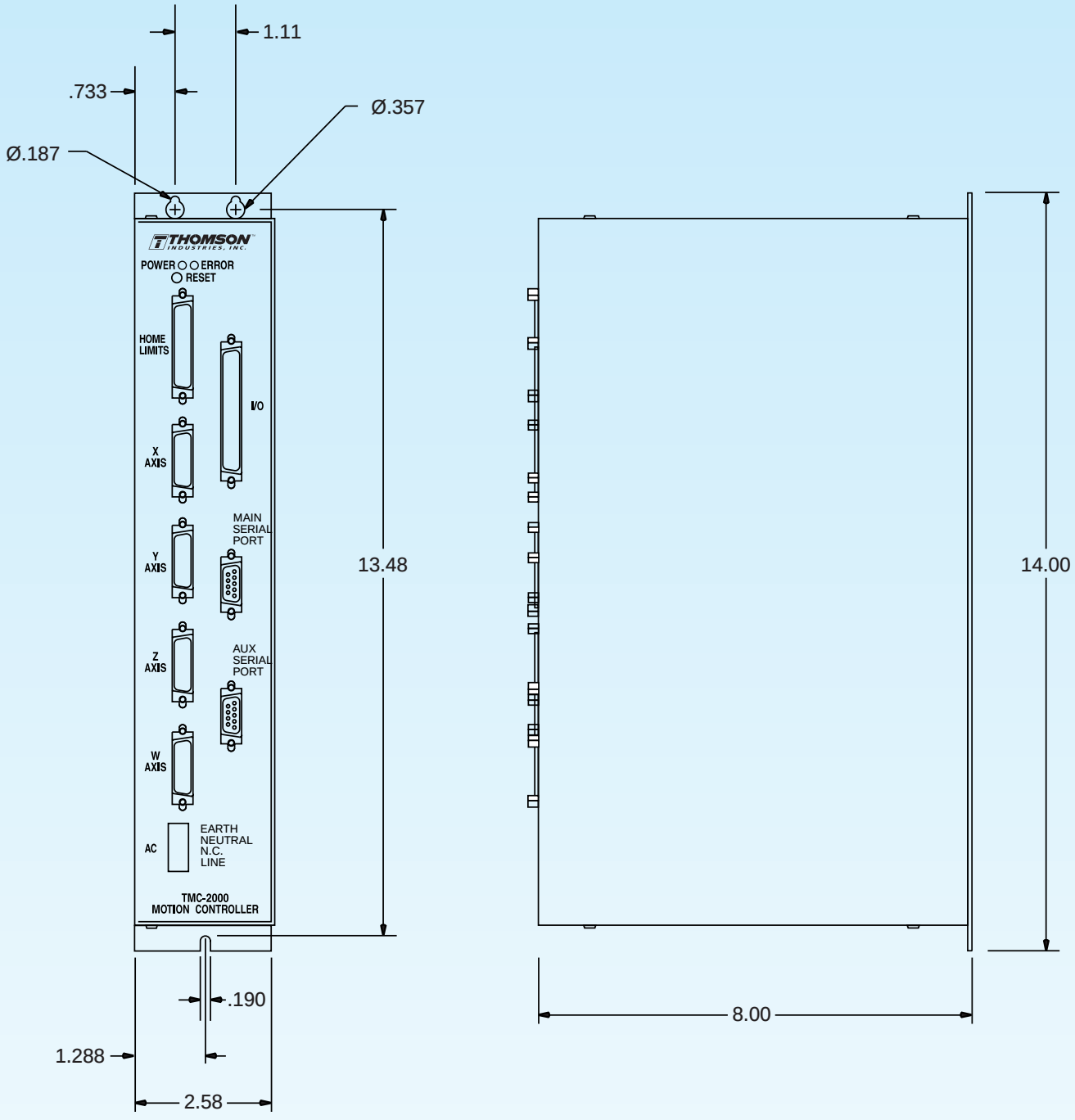
Pin	Function
1	Sample clock
2	Synch
3	B-Aux W
4	B+Aux W
5	A-Aux W
6	A+Aux W
7	B-Aux Z

Pin	Function
8	B+Aux Z
9	A-Aux Z
10	A+Aux Z
11	B-Aux Y
12	B+Aux Y
13	A-Aux Y
14	A+Aux Y

Pin	Function
15	B-Aux X
16	B+Aux X
17	A-Aux X
18	A+Aux X
19	5 Volt
20	Ground

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

MOTION CONTROLLER



NOTE:
DIMENSIONS ARE IN INCHES

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

Ordering Information

TMC 2004-CO	4 axis Motion Controller

Accessories

19260A	TMC-2000 manual. Note: one manual is included with each controller.
21365B	Cable for direct connection of the TMC-2000 motion controller to any OMNIDRIVE* digital servo drive or AXI-PAK* servo axis package. 36” length
21210B	Cable, same as above 21365B, with the addition of a separate pigtail to access all signals of the OMNIDRIVE that are unused by the TMC-2000 motion controller.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

A THOMSON AXI-PAK

servo axis package is the simplest way to a high performance and cost effective servo solution. An AXI-PAK is a tested and proven combination of a BLX brushless servo motor, an OMNIDRIVE* digital servo drive, and the required cables all under a single part number. Pre-engineered and pre-matched components ensure optimized performance and take the guesswork and worry out of compatibility and installation issues. We put it together so you can put it to work.

An AXI-PAK can operate as a smart stand alone drive, or if the application requires it, can easily connect to a motion controller (such as in coordinated multi-axis systems). As a smart digital drive, it can be configured to operate in torque, velocity, or position modes. It can accept the standard +/- 10V analog command signal from a motion control card, digital commands from a host computer via its serial link, or step and direction inputs and function as a high performance alternative to a stepper drive. Its programmable I/O and preset speeds allow it to be used as a variable speed drive. It can even follow a master encoder with electronic gearing.

AXI-PAK servo axis packages are also available in an indexing version capable of executing up to eight different position moves initiated by the digital I/O as well as a user defined homing routine. This indexing option eliminates the need for a separate motion control card in many applications.

FEATURES

- A turnkey motor and drive package
- Operates with a motion controller or as a smart stand alone drive
- Four motor frame sizes to fit your requirements
- Continuous torque ratings from 4.2 to 280 in-lb, peak torque ratings from 11.0 in-lb to 840 in-lb
- Includes all cabling
- Digital drives operate in torque, velocity, or position modes
- High torque maintenance free brushless servo motors feature IP65 sealing, MS style fluid tight connectors, oversize bearings, and a winding thermal switch and internal 2000 (8000 count) line commutating encoder
- Simple one cable connection to TMC-2000 controller for complex or multi axis applications
- All components carry UL, cUL, and CE approvals
- Off-the-shelf delivery

MODES OF OPERATION

CONTROL BY SERVO OR STEPPER CONTROLLER

Use an AXI-PAK servo axis package without indexing for direct control by any servo or stepper controller. Either a +/- 10V torque/velocity command or step and direction signals may be used as a command source. Ideal for use with the TMC-2000 multi-axis controller.

STAND ALONE BASIC POSITIONING

For basic point to point positioning applications, the AXI-PAK with servo axis package indexing option allows the drive to execute up to eight different position moves initiated by the drive's digital I/O. In many cases, a separate motion control card is not needed. Connect to your I/O card, PLC, or switch panel for a simple solution

SLAVE TO A MASTER ENCODER

Any AXI-PAK servo axis package can use an incremental encoder source as a command signal. This feature can be used to have an AXI-PAK follow a master encoder or even another AXI-PAK. Multiple axes can be a slave to a master without requiring a multi-axis controller or a gantry configuration can be easily implemented. The gear ratio of this electronic gearing feature is easily set in OMNILINK* setup software.

CONTROL BY HOST THROUGH SERIAL INTERFACE

An AXI-PAK servo axis package can be controlled through its host command language via its serial interface port. In this way, a PC, PLC, or any host computer may constantly change all parameters including acceleration, velocity, move distance, and I/O configuration. This gives the AXI-PAK maximum flexibility.

In general, an AXI-PAK without indexing is used when a separate servo or stepper controller (such as the TMC-2000) is utilized. The indexing option is required to give the AXI-PAK basic stand alone positioning capabilities.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

OMNIDRIVE – Power and Flexibility

The heart of every AXI-PAK servo axis package is an OMNIDRIVE* digital servo drive. Available in both full size and mini versions, this fully digital drive is suitable for a myriad of motion control applications. With the optional indexing functionality, it makes an ideal stand alone positioner for basic point to point motion. Without the indexing option, it is a high performance drive using a command source from a servo or stepper motion controller (such as the TMC-2000), PLC, master encoder, or host computer.

Communications are provided through an RS-232/RS-485 serial port (2 ports on full size drive). OMNI LINK* software running on your PC is used for quick point and click configuration.

Various **Modes of Operation** are possible including analog torque, velocity, and position, digital preset velocity or torque, master encoder follower with electronic gearing, step/dir input, and serial commands from a host computer. The indexing option adds eight preset positions as well as homing.

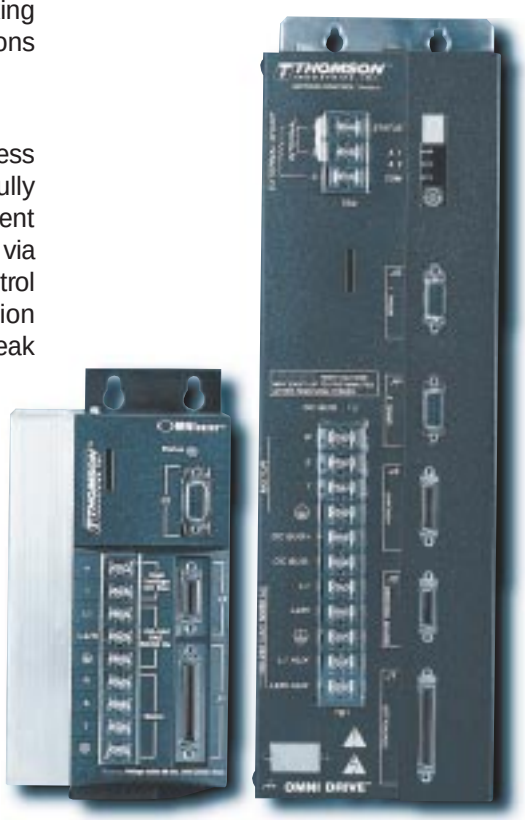
Precise Motor Control of brushless motors is provided through fully digital position, velocity, and current loops. Sine wave commutation via encoder feedback, special control algorithms, and latest generation IGBT power modules ensure peak performance and reliability.

Fully Digital Design provides the ultimate in performance, features, and functionality as well as providing a system that is stable over time and temperature

The **Indexing Option** extends the drives functionality by allowing up to eight different move profiles initiated by the digital I/O as well as a user defined homing routine.

Flexible I/O is user definable. Inputs can be set as: various enable and preset selects, start index, start home, fault reset, drive mode select, mode override, and more. Outputs can be set as: in position or speed window, in motion, sequence complete, various fault indicators, home status, and more. Analog outputs can reproduce important voltage, current, error, and feedback signals.

Power Ratings are 0.5, 1, and 2 kW for the mini version and 1, 2, 3, 7.5, and 15 kW for the full size version. Full size drives add a 24V user I/O supply and internal regeneration resistor.



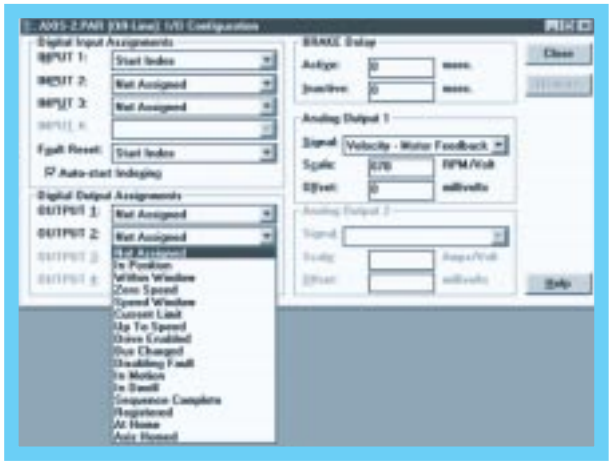
MINI SIZE FULL SIZE

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

OMNI LINK* Setup Software

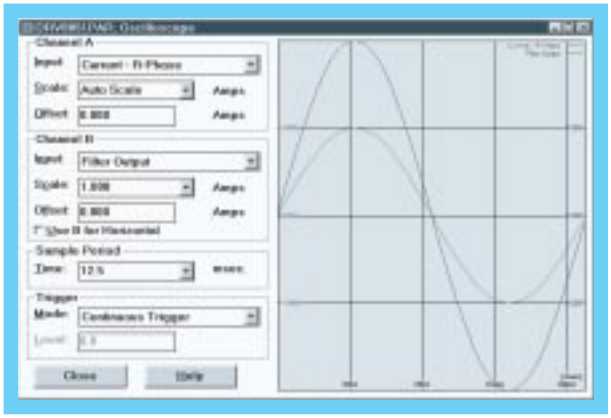
Every AXI-PAK servo axis package comes with OMNI LINK software, a Windows® based interface tool for setup, configuration, and diagnostics. OMNI LINK software provides a complete graphical interface to the drive with absolutely no programming language to learn. A drive is configured by simply clicking on the appropriate option box or entering values in existing fields. A variety of intuitive screens guide you through configuration, signal monitoring, and diagnostics.

With just a click, the drive can be configured for a wide variety of operational modes (torque, velocity, position, step/dir, follower, etc.) Communications parameters may be set for single or multi-drop operation.



Digital inputs can be configured for homing, reset, enable, indexing, and more. Digital outputs may be defined for various signals as well. Analog outputs may be set for a variety of position, velocity, current, voltage and error signals.

Although an AXI-PAK package comes pre-configured for its motor, there may be times where an application requires special settings. The Drive Parameters screen may be used to set current limits, error limits, scaling, offsets, and more.

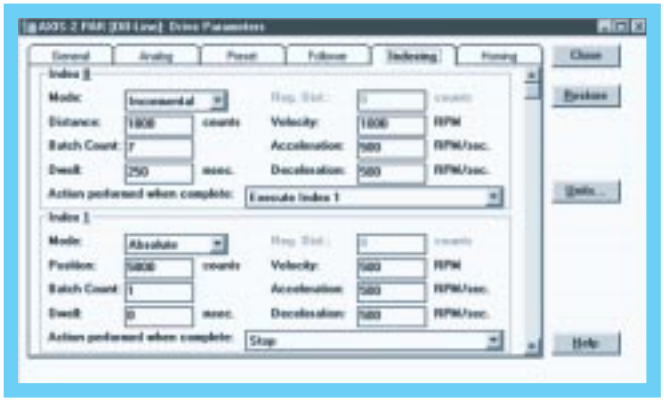


All important drive signals may be plotted realtime using the oscilloscope utility. Additional windows allow a numerical display of all signals as well as error codes, status codes, fault history, tuning parameters, and more.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

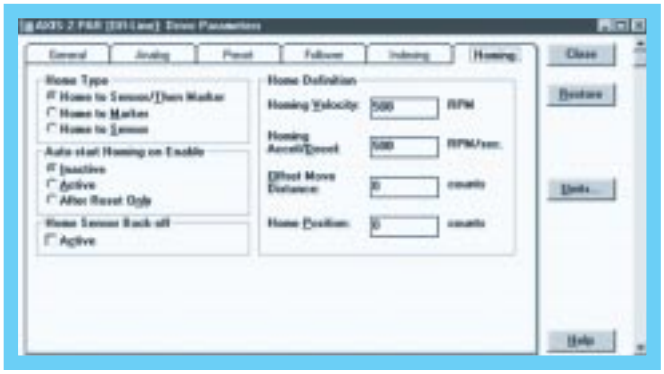
Indexing Option

When not using an AXI-PAK servo axis package in conjunction with a separate motion controller, you'll likely be interested in the indexing option. This indexing capability allows an AXI-PAK to act as a simple controller for basic point-to-point positioning applications. Using the OMNI LINK* setup software, the drive may be configured for up to eight different position moves (indexes) initiated by the drive's digital I/O. As the OMNI LINK software only requires you to enter parameters in existing fields, there is no programming language to learn. The moves may be incremental (a distance relative to the current position), absolute (a distance relative to home position), or registration (a distance relative to the registration sensor input). Velocity, acceleration, and move distance may be specified for each index, as well as a batch count that will automatically repeat any index a specified number of times. A dwell time between moves also may be set. Through an "action when complete" setting, each index may be linked to any other for automatic subsequent execution. And for those cases where a host computer is employed, an infinite number of moves may be executed by sending parameter information to the drive via the serial interface. The indexing option also includes a user defined homing routine.



No Programming Language to Learn!

Up to eight indexes are defined using OMNI LINK setup software with a simple point and click. Absolute, relative, and registration moves are supported. Moves are initiated by the drive's digital I/O.



User Defined Homing Routine

You can home to a sensor switch and/or encoder marker, as well as set homing speed and acceleration, and enter an offset distance. Homing may begin automatically upon drive enable or through an assignable input.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

DESCRIPTION

A Motor Built To Last

Each AXI-PAK servo axis package includes a Thomson BLX Series brushless servo motor. There are four frame sizes of motors available, each with a variety of winding configurations that are an engineered match to the OMNIDRIVE* servo drive. This high performance, industrial quality motor is built to last. Brushless construction, oversize lifetime lubricated bearings, MS style fluid tight connectors, IP65 sealing, and a winding thermal switch ensure a long and trouble free life in the harshest and most challenging applications. An internally mounted 2000 line encoder (8000 counts) with integral commutation sensors and its own bearing system provides the precision and resolution for your high performance application.

- Maintenance free brushless construction
- High energy rare earth magnets
- Standard IP65 for washdown environments
- MS style connectors for durability
- Internal winding thermal switch
- UL and cUL recognized

The Right Cables

"The devil is in the details" – a saying quite appropriate for such a seemingly simple item as cabling. Experienced engineers and technicians know very well that properly built cables make the difference in getting a machine up and running quickly – and keeping it running. That is why Thomson has tooled up to provide you with professionally molded, high quality cable assemblies that just drop in, saving you time and worry. Our cables incorporate features such as 360° shielding of both cable and connectors for EMC compliance, UL approved oil and chemical resistant cable, and fully molded connector housings with integral strain reliefs. Each AXI-PAK includes all cables for a quick, complete and trouble-free installation.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

Your choice: AXI-PAK with mini size drive or with full size drive

Choose the Mini Size when:

- power levels are from 0.5kW to 2kW
- space is a premium
- a more cost effective solution is needed
- any application requires a feature rich, high performance, digital servo drive

Choose the Full Size when:

- power levels are from 1kW to 15 kW
- internal shunt is needed for fast deceleration and high inertia applications
- the most flexibility is required by a second serial port and a few extra I/O
- any application requires a feature rich, high performance, digital servo drive

The majority of features and performance are common to both size drives. However, some important differences are noted below.

Mini and Full Size Drive Comparison

	Mini	Full
Size	roughly 1/4 of full size	see p.46-50
Power Output	0.5, 1.0, 2.0 kW	1.0, 2.0, 3.0, 7.5, 15 kW
Command sources and operational modes	Same	Same
Setup Software	Same	Same
Connectors/Cables	Same	Same
Indexing option available	yes	yes
I/O power supply	requires external 12-24V source	internal 24V supply
Regenerative shunt	external kit	internal
Digital Inputs/Outputs	3 inputs, 2 outputs	4 inputs, 4 outputs
Serial Ports	1	2
Front Panel Status Display	no	yes

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AXI-PAK with Mini Size Drive

Axis Package PN	Cont. Stall Torque		Cont. Rated Torque		Speed at Cont. Rated Torque	Peak Stall Torque		Peak Rated Torque		Speed at Peak Rated Torque	Motor Model Included	Drive Model Included
	in-lb	Nm	in-lb	Nm	rpm	in-lb	Nm	in-lb	Nm	rpm		
APx-232A-DM005-Lxx	4.5	0.51	3.5	0.40	4500	12.3	1.39	11.0	1.24	3500	BLX232A2E000	ODM-005
APx-232A-DM010-Lxx	5.0	0.56	3.5	0.40	4500	15.0	1.69	13.0	1.47	3200	BLX232A2E000	ODM-010
APx-234A-DM005-Lxx	4.2	0.47	3.4	0.38	5700	12.0	1.36	11.2	1.27	5000	BLX234A2E000	ODM-005
APx-234A-DM010-Lxx	8.3	0.94	8.0	0.90	5700	24.0	2.71	22.0	2.49	5050	BLX234A2E000	ODM-010
APx-234A-DM020-Lxx	10.0	1.13	8.0	0.90	5600	30.0	3.39	27.0	3.05	4800	BLX234A2E000	ODM-020
APx-341B-DM005-Lxx	16.0	1.81	14.5	1.64	2100	48.0	5.42	43.0	4.86	1500	BLX341B2E000	ODM-005
APx-342A-DM010-Lxx	17.9	2.02	17.0	1.92	4100	53.6	6.05	48.0	5.42	3000	BLX342A2E000	ODM-010
APx-342A-DM020-Lxx	30.0	3.39	25.5	2.88	4000	90.0	10.2	81.0	9.15	2950	BLX342A2E000	ODM-020
APx-343A-DM010-Lxx	26.9	3.04	25.0	2.82	3100	80.0	9.04	72.0	8.13	2550	BLX343A2E000	ODM-010
APx-343A-DM020-Lxx	39.0	4.41	34.4	3.89	3000	119.0	13.4	105	11.9	2200	BLX343A2E000	ODM-020
APx-421B-DM010-Lxx	51.0	5.76	47.0	5.31	1400	146.0	16.5	140	15.8	1000	BLX421B2M000	ODM-010
APx-421B-DM020-Lxx	54.0	6.10	50.0	5.65	1400	162.0	18.3	150	16.9	1000	BLX421B2M000	ODM-020
APx-422A-DM020-Lxx	50.0	5.65	44.0	4.97	3000	159.0	18.0	142	16.0	2300	BLX422A2M000	ODM-020
APx-423B-DM020-Lxx	103	11.6	93.0	10.5	1400	303.0	34.2	271	30.6	1000	BLX423B2M000	ODM-020

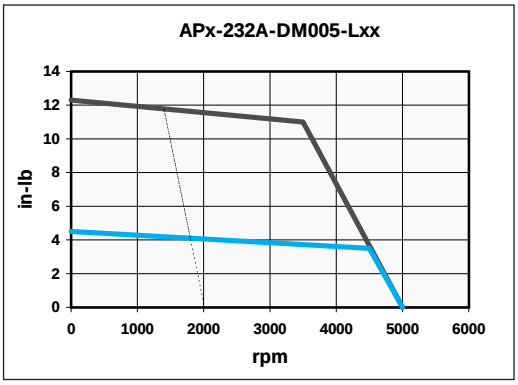
AXI-PAK with Full Size Drive

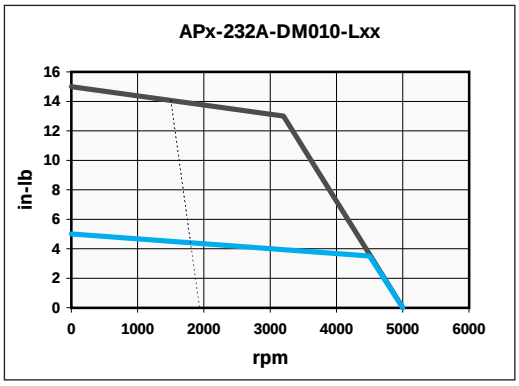
Axis Package PN	Cont. Stall Torque		Cont. Rated Torque		Speed at Cont. Rated Torque	Peak Stall Torque		Peak Rated Torque		Speed at Peak Rated Torque	Motor Model Included	Drive Model Included
	in-lb	Nm	in-lb	Nm	rpm	in-lb	Nm	in-lb	Nm	rpm		
APx-232A-D010-Lxx	5.0	0.56	3.5	0.40	4500	15.0	1.69	13.0	1.47	3200	BLX232A2E000	OD-010
APx-234A-D010-Lxx	8.3	0.94	8.0	0.90	5600	16.7	1.88	15.0	1.69	5200	BLX234A2E000	OD-010
APx-234A-D020-Lxx	10.0	1.13	8.0	0.90	5600	30.0	3.39	27.0	3.05	4800	BLX234A2E000	OD-020
APx-341B-D010-Lxx	16.0	1.81	14.5	1.64	2100	48.0	5.42	43.0	4.86	1500	BLX341B2E000	OD-010
APx-342A-D010-Lxx	17.9	2.02	17.0	1.92	4100	35.7	4.04	33.0	3.73	3550	BLX342A2E000	OD-010
APx-342A-D020-Lxx	30.0	3.39	25.5	2.88	4000	71.4	8.07	64.0	7.23	3200	BLX342A2E000	OD-020
APx-342A-D030-Lxx	30.0	3.39	25.5	2.88	4000	90.0	10.2	81.0	9.15	2950	BLX342A2E000	OD-030
APx-343A-D010-Lxx	26.9	3.04	25.0	2.82	3100	54.7	6.2	50.0	5.65	2800	BLX343A2E000	OD-010
APx-343A-D020-Lxx	39.0	4.41	34.4	3.89	3000	105	11.9	94.0	10.6	2300	BLX343A2E000	OD-020
APx-343A-D030-Lxx	39.0	4.41	34.4	3.89	3000	119	13.4	105	11.9	2200	BLX343A2E000	OD-030
APx-421B-D010-Lxx	51.0	5.76	47.0	5.31	1400	101	11.4	93.0	10.5	1200	BLX421B2M000	OD-010
APx-421B-D020-Lxx	54.0	6.10	50.0	5.65	1400	162	18.3	150	16.9	1000	BLX421B2M000	OD-020
APx-422A-D020-Lxx	50.0	5.65	44.0	4.97	3000	103	11.6	90.0	10.2	2700	BLX422A2M000	OD-020
APx-422A-D030-Lxx	80.0	9.04	69.1	7.81	3000	159	18.0	137	15.5	2700	BLX422A2M000	OD-030
APx-422A-D075-Lxx	83.0	9.38	69.1	7.81	3000	245	27.7	215	24.3	2400	BLX422A2M000	OD-075
APx-423A-D030-Lxx	81.0	9.15	72.0	8.13	3000	147	16.6	138	15.6	2700	BLX423A2M000	OD-030
APx-423A-D075-Lxx	116	13.1	96.8	10.9	3000	348	39.3	308	34.8	2300	BLX423A2M000	OD-075
APx-423B-D020-Lxx	103	11.6	93	10.5	1400	204	23.0	181	20.5	1200	BLX423B2M000	OD-020
APx-423B-D030-Lxx	116	13.1	104	11.8	1400	295	33.3	280	31.6	1050	BLX423B2M000	OD-030
APx-602B-D030-Lxx	170	19.2	152	17.2	1350	340	38.4	306	34.6	1100	BLX602B2M000	OD-030
APx-602B-D075-Lxx	210	23.7	190	21.5	1400	630	71.2	570	64.4	1000	BLX602B2M000	OD-075
APx-603A-D075-Lxx	235	26.6	220	24.9	2200	490	55.4	450	50.8	1800	BLX603A2M000	OD-075
APx-603A-D150-Lxx	280	31.6	238	26.9	2150	840	94.9	750	84.7	1200	BLX603A2M000	OD-150

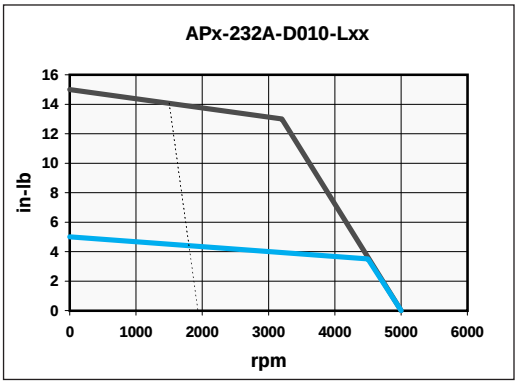
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

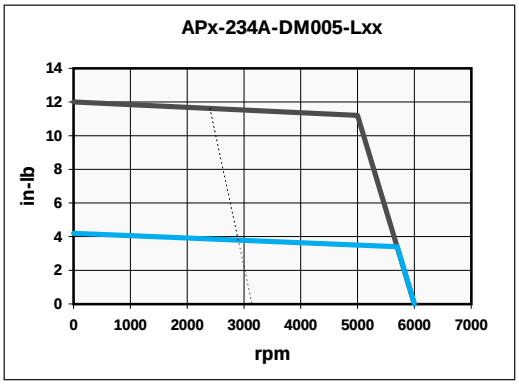
23 FRAME AXI-PAK

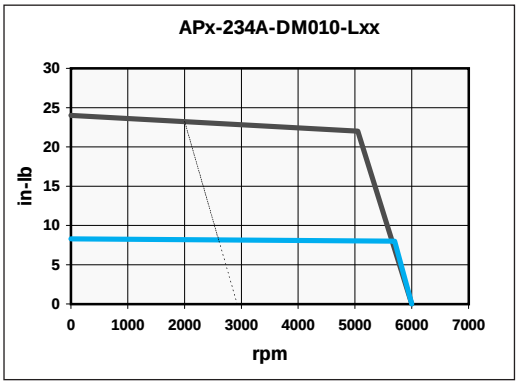
Peak, 230 VAC — Continuous, 230 VAC ---- 115 VAC

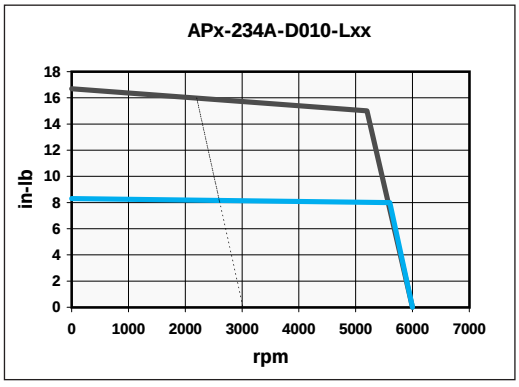


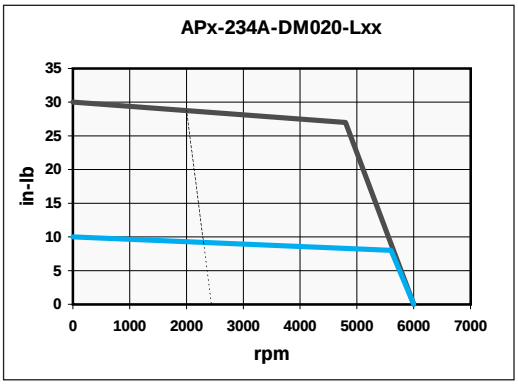


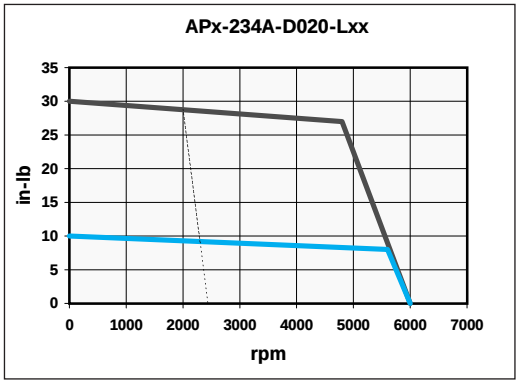










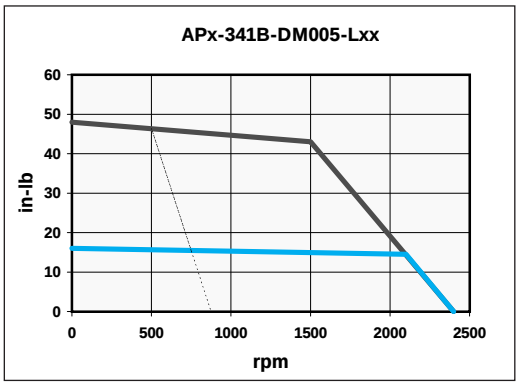


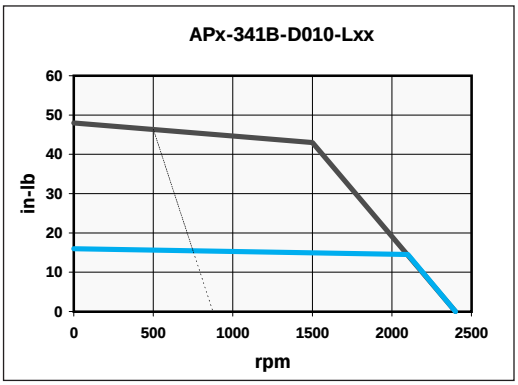
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

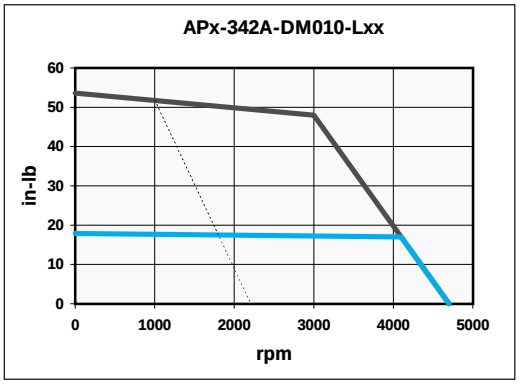
SPEED TORQUE CURVES

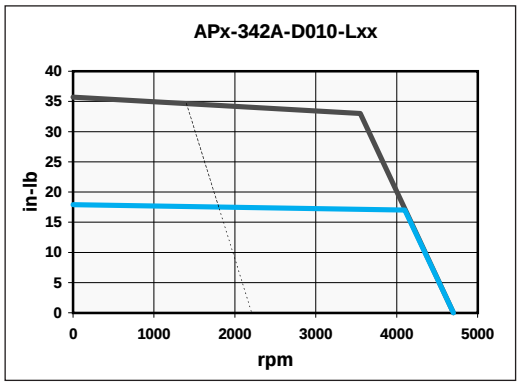
34 FRAME AXI-PAK

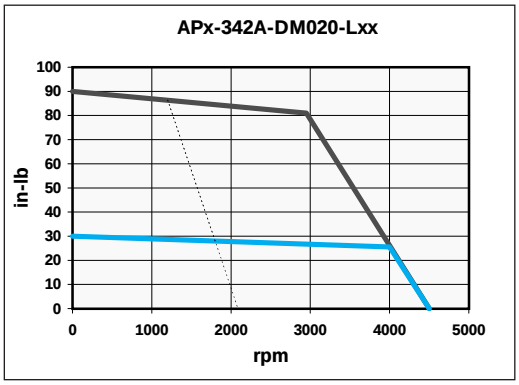
Peak, 230 VAC — Continuous, 230 VAC - - - 115 VAC

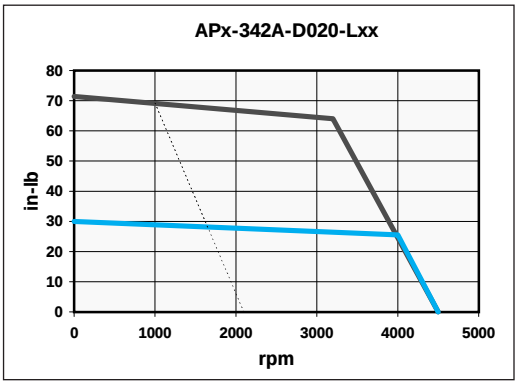


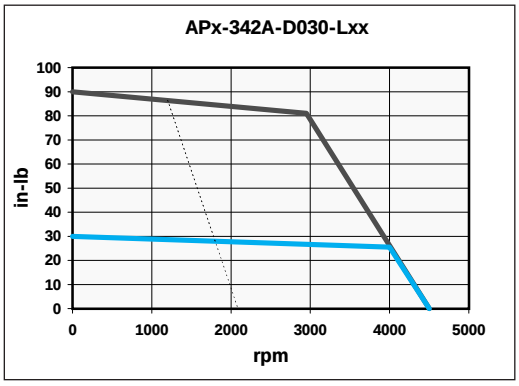


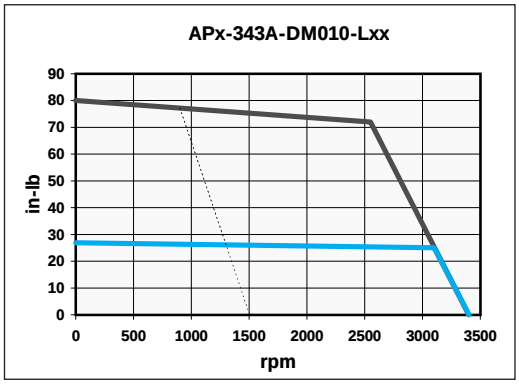












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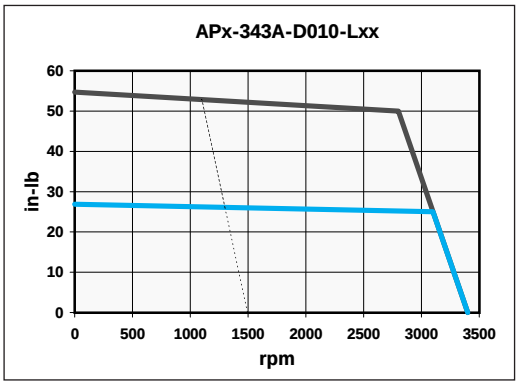
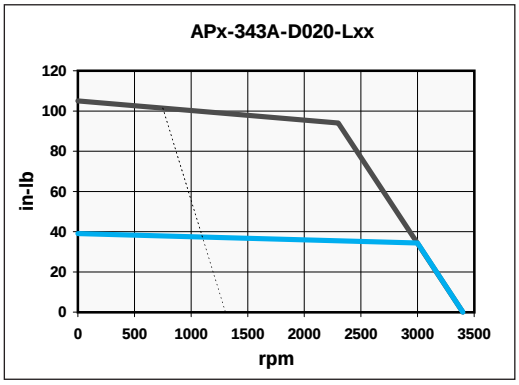
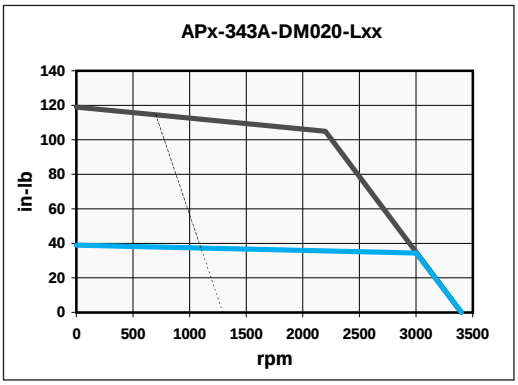
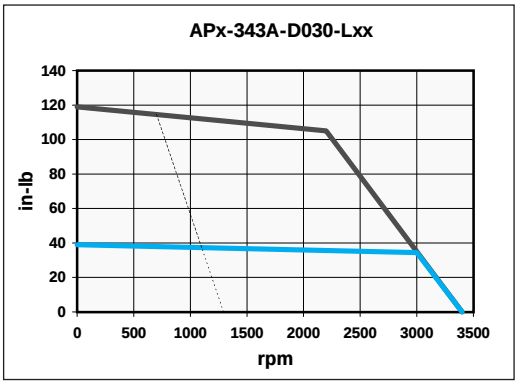
34 FRAME AXI-PAK

Peak, 230 VAC — Continuous, 230 VAC - - - - 115 VAC









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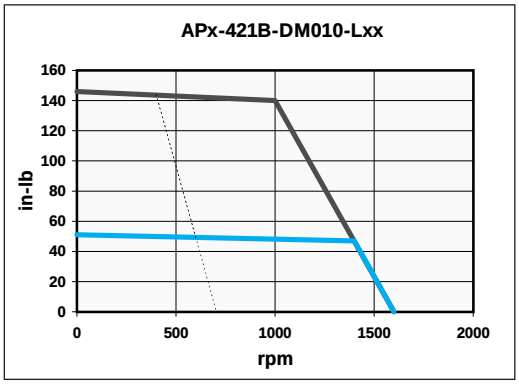
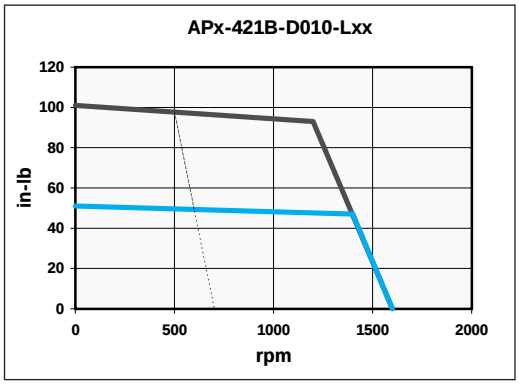
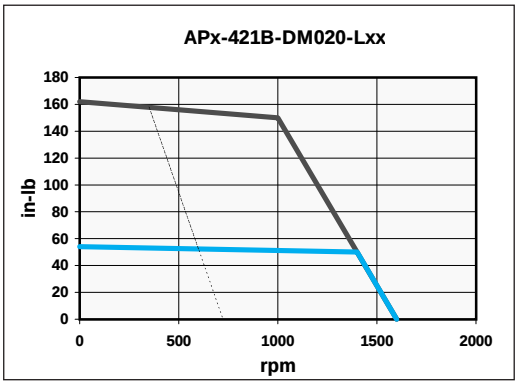
SPEED TORQUE CURVES

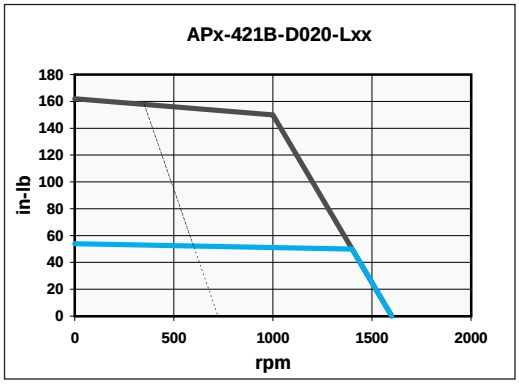
42 FRAME AXI-PAK

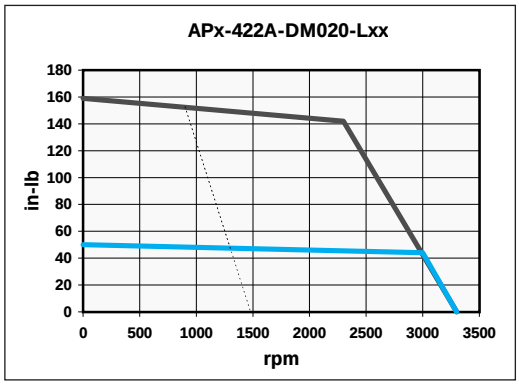
Peak, 230 VAC — Continuous, 230 VAC - - - - 115 VAC

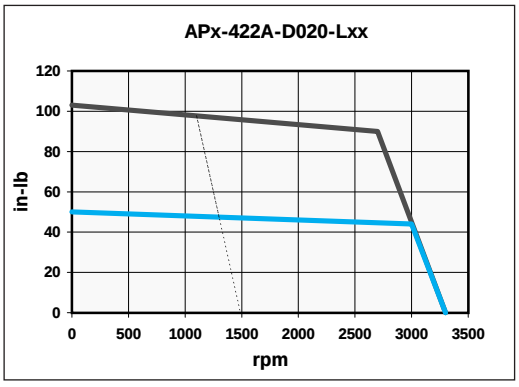


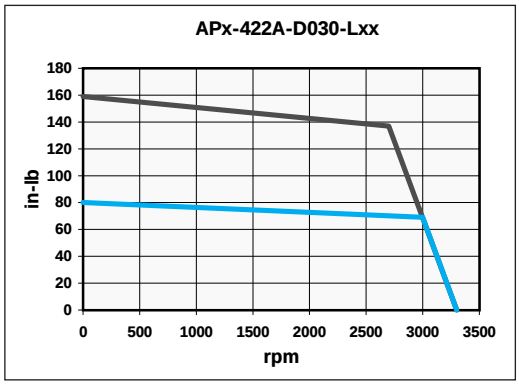


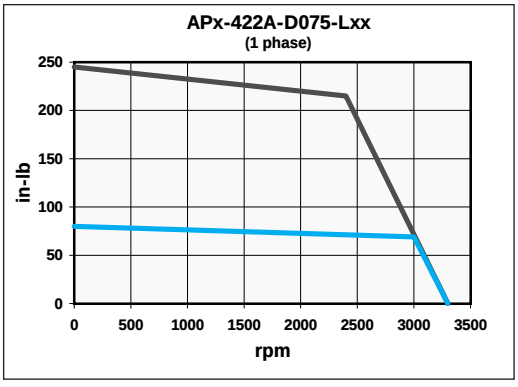








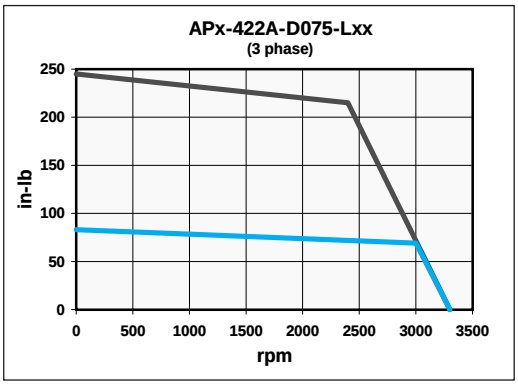


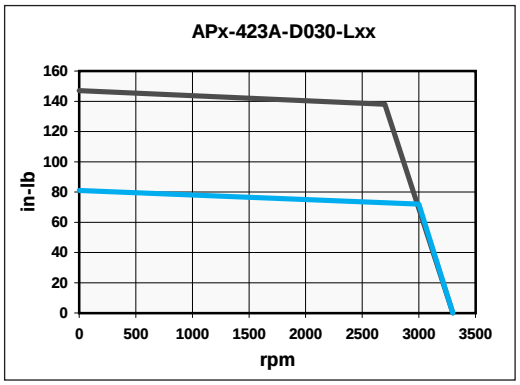


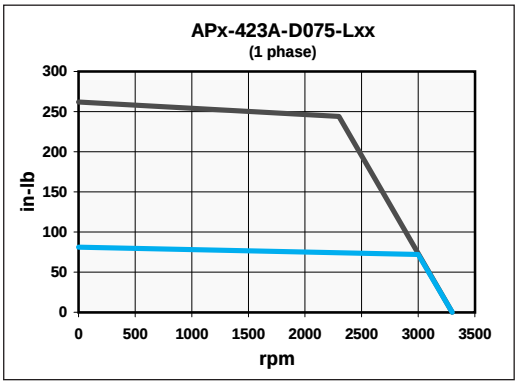
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

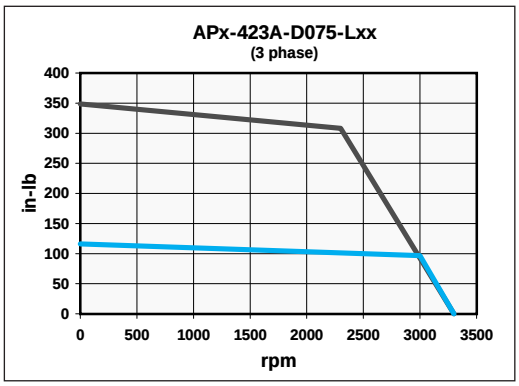
42 FRAME AXI-PAK

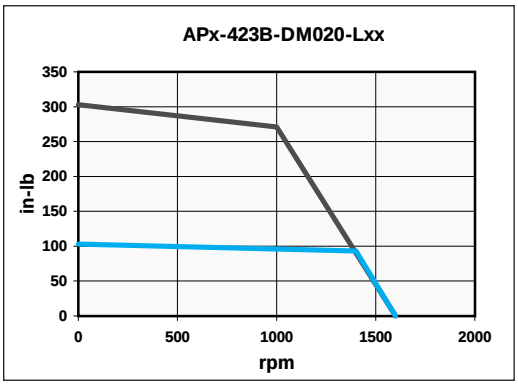
Peak, 230 VAC — Continuous, 230 VAC

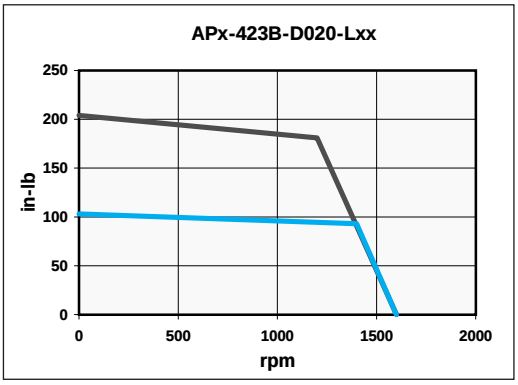


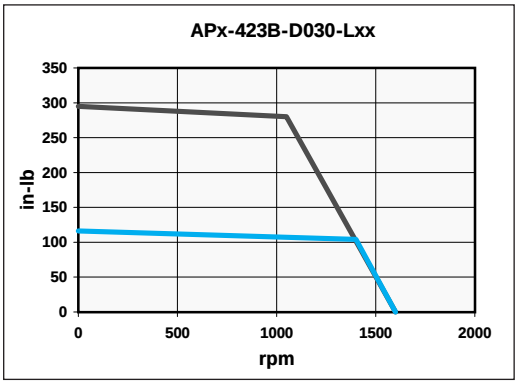


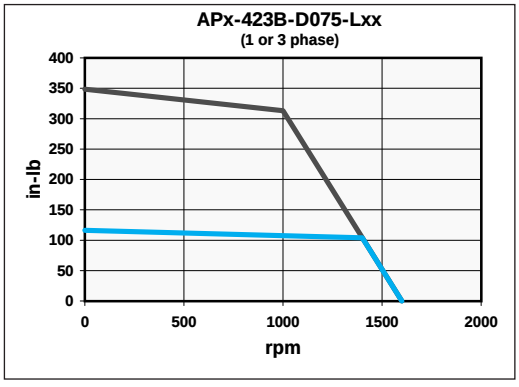










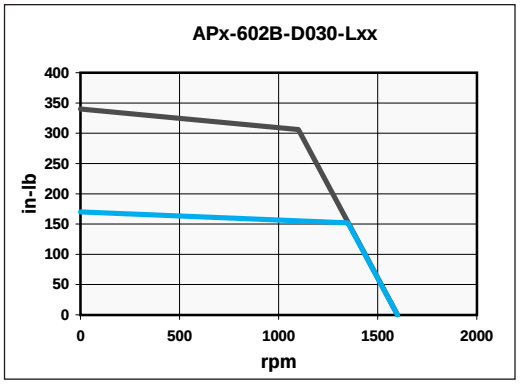


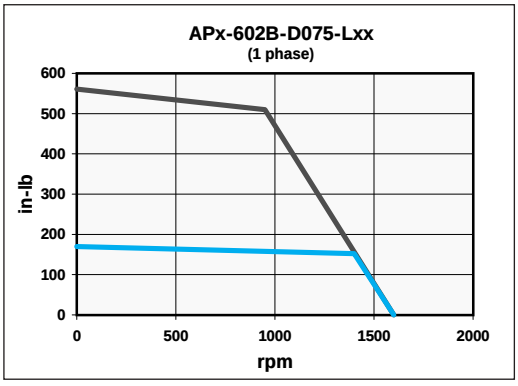
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

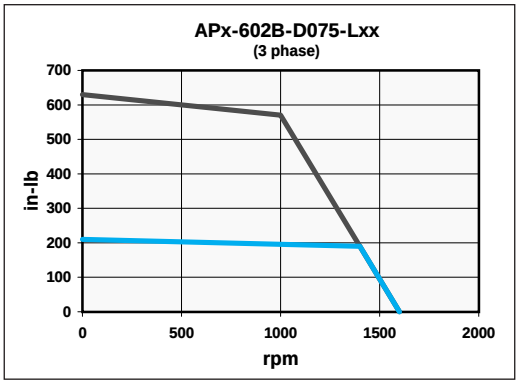
SPEED TORQUE CURVES

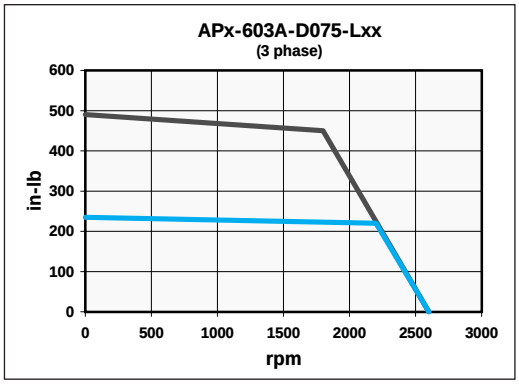
60 FRAME AXI-PAK

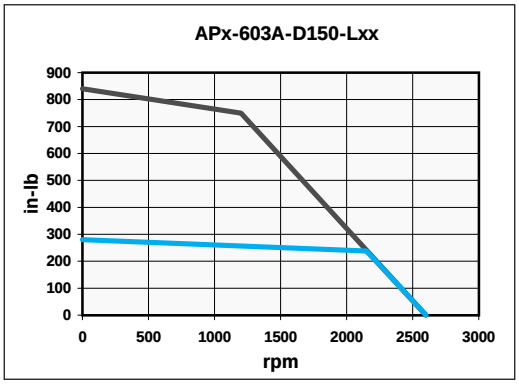
Peak, 230 VAC — Continuous, 230 VAC











For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

Dimensions and Specifications

For details on motors used in an AXI-PAK servo axis package, see the BLX Brushless Motor section starting on page 53.

For details on Servo Drives used in an AXI-PAK servo axis package, see the OMNIDRIVE* section starting on page 35.

Accessories

Touchpad TP-OOI

The optional Touchpad gives you the convenience of OMNI LINK* software in the palm of your hand. The Touchpad plugs into the RS-232/RS-485 port on the drive. One Touchpad communicates with all drive types. The Touchpads can be left attached to the drive for constant operator use, or in a toolbox to be used as needed. The Touchpad is the best solution for maintenance technicians and engineers troubleshooting and testing on the floor.

Touchpad commands are entered by pressing a single key or combination of keys. Two modes of operation are available. Display mode allows you to move through the touchpad command tree to each parameter. Modify mode allows you to monitor and change each parameter. Most parameters can be modified or viewed while the drive is running or disabled.

TOUCHPAD TP-OOI

Cables

Professionally molded, high quality cable assemblies just drop in, saving you time and worry. Our cables incorporate features such as 360° shielding of both cable and connectors for EMC compliance, UL approved oil and chemical resistant cable, and fully molded connector housings with integral strain reliefs.

21365B	Cable for direct connection of any AXI-PAK servo axis package to the TMC-2000 motion controller. 36” length
21210B	Cable, same as above 21365B with the addition of a separate pigtail to access all signals of the OMNIDRIVE digital servo drive that are unused by the TMC-2000 motion controller.
21380B10	Serial interface cable for connection to a PC or any RS-232/RS-485. 10ft. length. Note: one serial interface cable is included in each AXI-PAK servo axis package.
21468B-xx	J1 interface cable. Available in lengths of 10 ft (xx=10) and 25 ft (xx=25). Note: one 10 ft cable is included in each AXI-PAK with indexing.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

Ordering Information

APx-232A-DM-005-Lxx

AXI-PAK
AP - Std. axis package
APi - Axis package w/indexing
AB - Std. axis package w/brake motor
ABi - Axis package w/indexing and w/brake motor

Motor Models

232A	422A	341B
234A	423A	421B
342A	603A	423B
343A		602B

Drive Type
D - Full Size OmniDrive*
DM - Mini Size OmniDrive

Drive Power Ratings

005 - 0.5 kW	030 - 3.0 kW
010 - 1.0 kW	075 - 7.5 kW
020 - 2.0 kW	150 - 15 kW

Motor Cable Length
15 - 15 ft.
30 - 30 ft.
50- 50 ft.

Note: See page 404 for valid AXI-PAK part numbering

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

The Thomson OMNIDRIVE line of digital brushless servo drives delivers the high performance and reliability required for any motion control application. Available in continuous output power ratings from 0.5 kW to 15 kW, an OMNIDRIVE digital servo drive flexibility allows it to be configured for various command sources for operation with a separate motion controller, PLC, or as a stand alone drive or positioner. The setup, operation, and control of an OMNIDRIVE is just a point and click away with full featured Windows® based OMNI LINK* software or the available touchpad. There is no programming language to learn.

FEATURES

- High performance microcontroller technology provides fully digital velocity, position, and current loop control as well as motor commutation
- Software configurable for various modes including analog velocity and torque, encoder follower, step/direction, preset velocities, and serial commands
- Indexing versions are capable of storing multiple move profiles for basic stand alone positioning applications
- Includes OMNI LINK Windows® based setup software – no programming language to learn!
- Output power ratings from 0.5kW to 15kW
- User configurable optically isolated I/O
- Available in both space saving mini and full size versions

A Fully Digital Design Gives Unrivaled Functionality and Performance

OMNIDRIVE digital servo drives incorporate high performance micro-controllers giving the features, flexibility, performance, and ease of use only possible in a fully digital design. An OMNIDRIVE can be configured to control a brushless servo motor in conjunction with a separate motion controller, PLC, or as a stand alone drive or positioner. All aspects of configuration, adjustments, and diagnostics are done completely in software. Current, velocity, and position loops are controlled digitally, as well as motor commutation. Intelligent Power Module (IPM) technology based on the latest generation IGBTs provides the highest possible reliability. Brushless motors are controlled with a pulse width modulated (PWM) sine wave in a smooth and efficient method utilizing feedback from a motor mounted encoder. Onboard electrically erasable programmable read only memory (EEPROM) stores all motor and configuration parameters to ensure reliability and repeatability over time and temperature.

Multiple Command Sources

- +/- 10V analog input for torque, velocity, or position modes
- Step/Direction input or step up/step down with electronic gearing for a high performance replacement for step motors
- Auxiliary master encoder input with electronic gearing
- Eight preset torques or speeds selected via the digital inputs
- Basic positioning capability through eight preset move profiles and a homing routine (indexing version only)
- RS-232/RS-485 serial host command language control for unlimited torque, velocity, position, and configuration control
- Command source and mode of operation may be changed during operation by toggling of an input

An Easy to Use Package

All sizes of the OMNIDIVE digital servo drive share the same connectors for commonality. All connector locations are clearly marked on the front panel. Electronics and power supplies are fully enclosed in a single panel mounted package, eliminating the need for external transformers.

Host Command Language

A serial port provides the connection for the OMNIDRIVE to PCs, PLCs, or other smart systems that can communicate via a RS-232/RS-485 interface. The host command language is a rich serial command set which allows real time control of multiple drives up to 32 addresses. The command language gives remote access to all OMNIDRIVE parameters and functions.

Flexible I/O

Optically isolated digital inputs and outputs work with 12-24VDC and are user definable for various functions.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

Inputs may be configured as:	Outputs may be configured as:
drive mode select	in position
integrator inhibit	within window
follower enable	zero speed
forward enable	speed window
reverse enable	current limit
mode override	up to speed
preset/index select	drive enabled
start index	bus charged
define home	disabling fault
start homing	in motion
fault reset	in dwell
registration sensor	sequence complete
	registered
	at home

OMNIDRIVE Mini and OMNIDRIVE Full Size

To satisfy the widest range of application requirements, OMNIDRIVE digital servo drivers are available in a full size version as well as a reduced size mini version.

Choose the Mini Size when:

- power levels are 0.5kW to 2kW
- space is a premium
- a more cost effective solution is needed
- any application requires a feature rich, high performance, digital servo drive

Choose the Full Size when:

- power levels are 1kW to 15 kW
- internal shunt is needed for fast deceleration and high inertia applications
- the most flexibility is required by a second serial port and a few extra I/O
- any application requires a feature rich, high performance, digital servo drive

Multiple Protection Features

Multiple protection circuits monitor all critical parameters so in the unlikely event of trouble, your system shuts down safely and predictably. OMNI LINK* software provides a fault history which stores error messages allowing you to easily troubleshoot what went wrong. OMNIDRIVE digital servo drives self-protect from input over/under voltage, phase to phase and phase to ground short circuit, overcurrent, drive and motor overtemperature, motor overspeed, and various other errors. Additionally, watchdog timers provide additional protection.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

OMNIDRIVE Mini
Compact Frame, Digital Servo Drives (ODM)

- Continuous output power ratings of 0.5kW, 1kW, 2kW available
- Large scale integration with custom ASICs and IPMs for performance and reliability
- Superior performance in a package 1/4 the size of most drives
- On board electrically erasable programmable read only memory (EEPROM)
- 115 to 240 VAC single phase input power
- Phase to phase and phase to ground short circuit protection
- Sinusoidal current control
- DC bus available externally for power leveling
- Scalable motor encoder output
- 4 dedicated I/O with 5 selectable optically isolated digital I/O
- 1 analog input for external current limiting
- 1 analog output for variable monitoring or torque sharing
- Serial port for RS-232/RS-485 for host communications
- Internally shielded output filters for electromagnetic compatibility
- UL and cUL listed, and CE marked
- Flash memory for easy upgrades
- Wireless construction for reliability
- User selectable command source configuration

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

OMNIDRIVE Full Size

OMNIDRIVE Full Size
Full Featured Digital Servo Drives (OD)

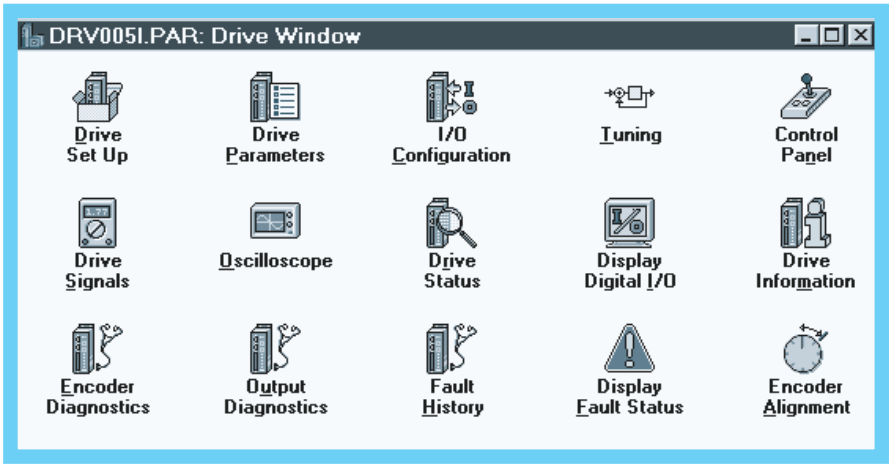
- Continuous output power ratings of 1kW, 2kW, 3kW, 7.5kW, 15kW available
- Advanced multi-processor design for all digital current, velocity and position loops
- On board electrically erasable programmable read only memory (EEPROM)
- 115 to 240 VAC input power single phase (for OD-075 and OD-150 max power with 3 phase)
- Phase to phase and phase to ground short circuit protection
- Internal power supplies including a 24 V I/O supply, only AC line required
- Sinusoidal current control
- Removable personality module to store setup parameters
- Large scale integration with custom ASICs and IPMs for performance and reliability
- Flash memory for easy upgrades
- DC bus available externally for power leveling
- Scalable motor encoder output
- 4 dedicated I/O with 8 selectable optically isolated digital I/O
- 2 analog input for external current limiting
- 2 analog output for variable monitoring or torque sharing
- 2 serial ports for RS-232/RS-485 host communications
- Internally shielded output filters for electromagnetic compatibility
- Wireless construction for reliability
- Internal or external resistive shunt
- UL and cUL listed, and CE marked

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

OMNI LINK SOFTWARE

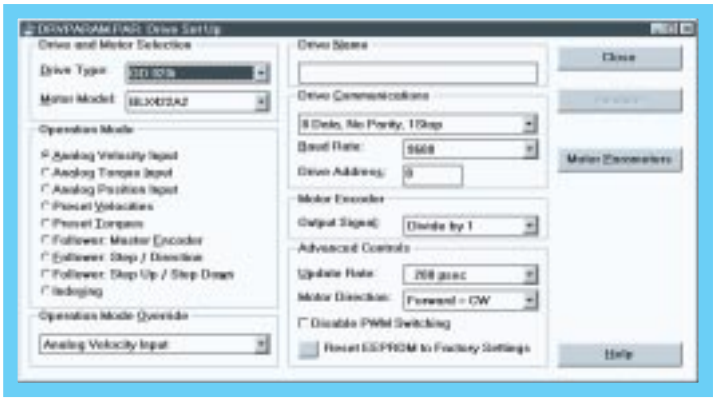
A powerful Windows® based setup and operation software package allows the user to fully exploit OMNIDRIVE digital servo drive features specific to each application. Program tasks are organized for easy setup, control and maintenance. A context sensitive, on-line help file provides immediate assistance every step of the way. Operation is simplified by a series of logically arranged setup screens. Files can be stored and printed for on-line or off-line modification or back-up. Diagnostic tools ease system integration. System tuning and debugging is added with on-screen dual channel digital oscilloscope and drive signals. OMNI LINK contains a complete Host Command Language reference library for setting up the drives to be controlled via host computer or PLC.

OMNI LINK Servo Setup Software



- The Drive Window is the main window for performing functions. It becomes active after communications are established or the software enters the off-line mode.

- The Drive Set Up window displays the basic parameter set required to connect with a servo system. This window, along with the Drive Parameters and I/O Configuration windows, defines the necessary drive parameters for an application.



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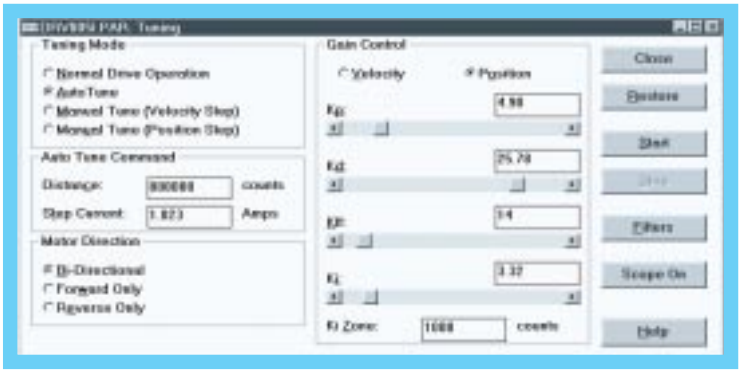

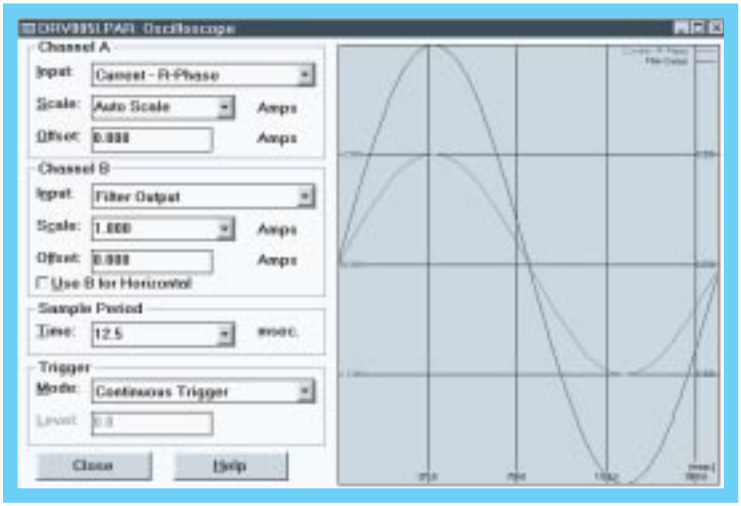

- The I/O Configuration window routes signals from digital inputs, assigns drive signals to digital or analog outputs, and sets both active and inactive BRAKE delays. This window, along with the Drive Set Up and the Drive Parameters windows, define the necessary drive parameters for an application.
- The Tuning window displays the connected drive's velocity and position servo loop gains. It provides various means for tuning the servo loops and monitoring drive performance.
- The Control Panel window is used as a set up and testing tool to verify that the drive is functioning.
- The Oscilloscope window, along with the Drive Signals window, display the values of selected drive signals in the connected drive.
- The Encoder Diagnostics window is used for diagnosing encoder problems. It is used to display the count from the motor encoder, the resolution and the position of the encoder index. If the drive's Operation Mode is set to Step/Direction or Step Up/Step Down, it also displays the count from the master input. If the drive's Operation Mode is set to Master Encoder, it also displays the count from the master encoder, the resolution and the position of the encoder index.
- The Output Diagnostics window provides controlled outputs for verification of analog and digital output signals. When this window is opened, the drive firmware enters a special mode where the outputs are controlled by this window, rather than by the state of the drive.
- The Fault History window displays the faults that are stored in the drive's non-volatile memory. The fault list is arranged from the most recent to the least recent.
- The Fault Status window displays the state of various potential fault sources. Faults which are active appear "lighted." Refer to the troubleshooting guide in the Hardware and Installation Manual for determining the cause and appropriate actions.

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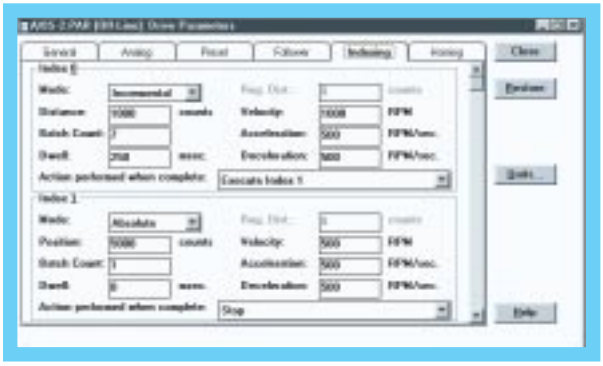
INDEXING OPTION

When not using an AXI-PAK* digital servo drive in conjunction with a separate motion controller, you'll likely be interested in the indexing option. This indexing capability allows an AXI-PAK to act as a simple controller for basic point to point positioning applications. Using the OMNI LINK* setup software, the drive may be configured for up to eight different position moves (indexes) initiated by the drive's digital I/O. As the OMNI LINK software only requires you to enter parameters in existing fields, there is no programming language to learn. The moves may be incremental (a distance relative to the current position), absolute (a distance relative to home position) or registration (a distance relative to the registration sensor input). Velocity, acceleration, and move distance may be specified for each index, as well as a batch count that will automatically repeat any index a specified number of times. A dwell time between moves may also be set. Through an "action when complete" setting, each index may be linked to any other for automatic subsequent execution. And for those cases where a host computer is employed, an infinite number of moves may be executed by sending parameter information to the drive via the serial interface. The indexing option also includes a user defined homing routine.



No Programming Language to Learn!

Up to eight indexes are defined using OMNI LINK setup software with a simple point and click. Absolute, relative, and registration moves are supported. Moves are initiated by the drive's digital I/O.

User Defined Homing Routine

You can home to a sensor switch and/or encoder marker, as well as set homing speed and acceleration, and enter a offset distance. Homing may begin automatically upon drive enable or through an assignable input.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

SERIAL COMMUNICATION PORT (ALL DRIVES)

RS-232, Four wire RS-485
1200-19200 Baud rate
Maximum 32 drives connected for multiple drive addressing

INTERNAL POWER SUPPLY SPECIFICATIONS

OD-010/020/030/075	Min	Max	Max Output Current
24 Vdc power supply	21.6	26.4	500 mA
5 Vdc power supply	4.75	5.25	250 mA

ENVIRONMENTAL

Operating Temperature	-5°C to 55°C
Humidity	5% to 90% non-condensing
Altitude	1500m/5000ft
Vibration	10 to 2000 Hz at 2g
Shock	15g 11msec half sine

OD-010/020/030/075/150 I/O (FULL SIZE)

4 Digital INPUTS
4 Digital OUTPUTS
Dedicated Digital ENABLE Input
Dedicated Digital FAULT RESET
Dedicated BRAKE and DRIVE READY Relay Outputs
2 External Current Limit Analog Input 0–10 volt
2 User Set Analog Output +/-10 v
Encoder Output Scalable by 1, 1/2, 1/4, 1/8

ODM-005/010/020 I/O (MINI SIZE)

3 Selectable Digital INPUTS
2 Selectable Digital OUTPUTS
Dedicated Digital ENABLE Input
Dedicated Digital FAULT RESET
Dedicated BRAKE and DRIVE READY Relay Outputs
1 External Current Limit Analog Input 0–10 volt
1 User Set Analog Output +/-10 v
Encoder Output Scalable by 1, 1/2, 1/4, 1/8

SELECTABLE I/O

Inputs and outputs are configurable in software as follows:

Selectable Outputs	Selectable Inputs
In Position	Drive Mode Select
Within Window	Integrator Inhibit
Zero Speed	Forward Enable
Speed Window	Follower Enable
Current Limit	Reverse Enable
Up to Speed	Operation Mode Override
Drive Enabled	Preset Select 0–7
Bus Charged	Start Index
Disabling Fault	Define Home
In Motion	Remove Command Offset
In Dwell	Registration Sensor
Sequence Complete	
Registered	
At Home	

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SPECIFICATIONS

MINI

	ODM-005	ODM-010	ODM-020
Peak Output Current (Amps)	7.5 Amps	15 Amps	30 Amps
Continuous Output Current (Amps)	2.5 Amps	5 Amps	10 Amps
Continuous Output Power (kW)	0.5 kW	1 kW	2 kW
Continuous Input Current (Amps)	5	9	18
Input Voltage and Frequency	100 to 240 VAC 47-63 Hz	100 to 240 VAC 47-63 Hz	100 to 240 VAC 47-63 Hz
Velocity Loop Bandwidth Maximum	300 Hz	300 Hz	300 Hz
Weight Lbs (kg)	3.7 (1.68)	4.5 (2.03)	4.4 (2.0)

FULL SIZE

	OD-010	OD-020	OD-030	OD-075 Single Phase Input	OD-075 Three Phase Input	OD-150 Three Phase Input
Peak Output Current (Amps)	10 Amps	20 Amps	30 Amps	50 Amps	75 Amps	150 Amps
Continuous Output Current (Amps)	5 Amps	10 Amps	15 Amps	15 Amps	35 Amps	65 Amps
Continuous Output Power (kW)	1 kW	2 kW	3 kW	3 kW	7.5 kW	15 kW
Continuous Input Current (Amps)	19	28	28	28	30	46
Input Voltage and Frequency	100-240 VAC 47-63 Hz	100-240 VAC 47-63 Hz	100-240 VAC 47-63 Hz	100-240 VAC 47-63 Hz	100-240 VAC 47-63 Hz	100-240 VAC 47-63 Hz
Velocity Loop Bandwidth Maximum	400 Hz	400 Hz	400 Hz	400 Hz	400 Hz	400 Hz
Weight Lbs (kg)	12.8 (5.80)	14 (6.36)	14.3 (6.48)	21.3 (9.67)	21.3 (9.67)	31 (14.06)

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OD-010, OD-020, OD-030, OD-075, and OD-150

J4 and J5 - Serial Port

Pin	Function	
1	RCV +	RS-485
2	RCV	RS-232
3	XMT	RS-232
4	XMT +	RS-485
5	COM	
6	Reserved	
7	RCV -	RS-485
8	XMT -	RS-485
9	Reserved	

J3 - Auxiliary Port

Pin	Function
Duplicates J1 pins 1–26	

J2 - Encoder

Pin	Function	Pin	Function
1	Encoder Pwr	11	Mtr Encdr Input Chnl I+
2	Encoder Com	12	Mtr Encdr Input Chnl I-
3	Encoder Pwr	13	Hall Effect A
4	Encoder Com	14	Hall Effect B
5	Encoder Pwr Sense +	15	Hall Effect C
6	Encoder Pwr Sense -	16	Absolute Position
7	Mtr Encdr Input Chnl A+	17	Reserved
8	Mtr Encdr Input Chnl A-	18	Reserved
9	Mtr Encdr Input Chnl B+	19	Thermal Switch +
10	Mtr Encdr Input Chnl B-	20	Thermal Switch -

J1 - Controller

Pin	Function	Pin	Function	Pin	Function	Pin	Function
1	Encoder +5V DC	14	Auxiliary Chnl A+	27	+I Limit	40	Reserved
2	Encoder Com	15	Auxiliary Chnl A-	28	Analog Com	41	Reserved
3	Encoder +5V DC	16	Auxiliary Chnl B+	29	-I Limit	42	Selectable Output 1
4	Encoder Com	17	Auxiliary Chnl B-	30	Analog Output 1	43	Selectable Output 2
5	External +24 VDC	18	Auxiliary Chnl I+	31	Analog Output 2	44	Selectable Output 3
6	External 24V COM	19	Auxiliary Chnl I-	32	Selectable Input 1	45	Selectable Output 4
7	Mtr Output Chnl A+	20	Drive Enable	33	Selectable Input 2	46	Reserved
8	Mtr Output Chnl A-	21	Fault Reset	34	Selectable Input 3	47	Reserved
9	Mtr Output Chnl B+	22	Analog Cmnd +	35	Selectable Input 4	48	Reserved
10	Mtr Output Chnl B-	23	Analog Cmnd -	36	Reserved	49	Brake Enable +
11	Mtr Output Chnl I+	24	Drive Ready +	37	Reserved	50	Brake Enable -
12	Mtr Output Chnl I-	25	Drive Ready -	38	Reserved		
13	Isolated 24V Com	26	Isolated +24 VDC	39	Reserved		

ODM-005, ODM010 and ODM-020

J5 - Serial Port

Pin	Function	
1	RCV +	RS-485
2	RCV	RS-232
3	XMT	RS-232
4	XMT +	RS-485
5	COM	
6	Reserved	
7	RCV -	RS-485
8	XMT -	RS-485
9	Reserved	

J2 - Encoder

Pin	Function	Pin	Function
1	Encoder +5V Pwr	11	Mtr Encdr Input Chnl I+
2	Encoder VCOM	12	Mtr Encdr Input Chnl I-
3	Encoder +5V Pwr	13	Hall A
4	Encoder VCOM	14	Hall B
5	Reserved	15	Hall C
6	Reserved	16	Absolute Position
7	Mtr Encdr Input Chnl A+	17	Reserved
8	Mtr Encdr Input Chnl A-	18	Reserved
9	Mtr Encdr Input Chnl B+	19	Thermal Switch +
10	Mtr Encdr Input Chnl B-	20	Thermal Switch -

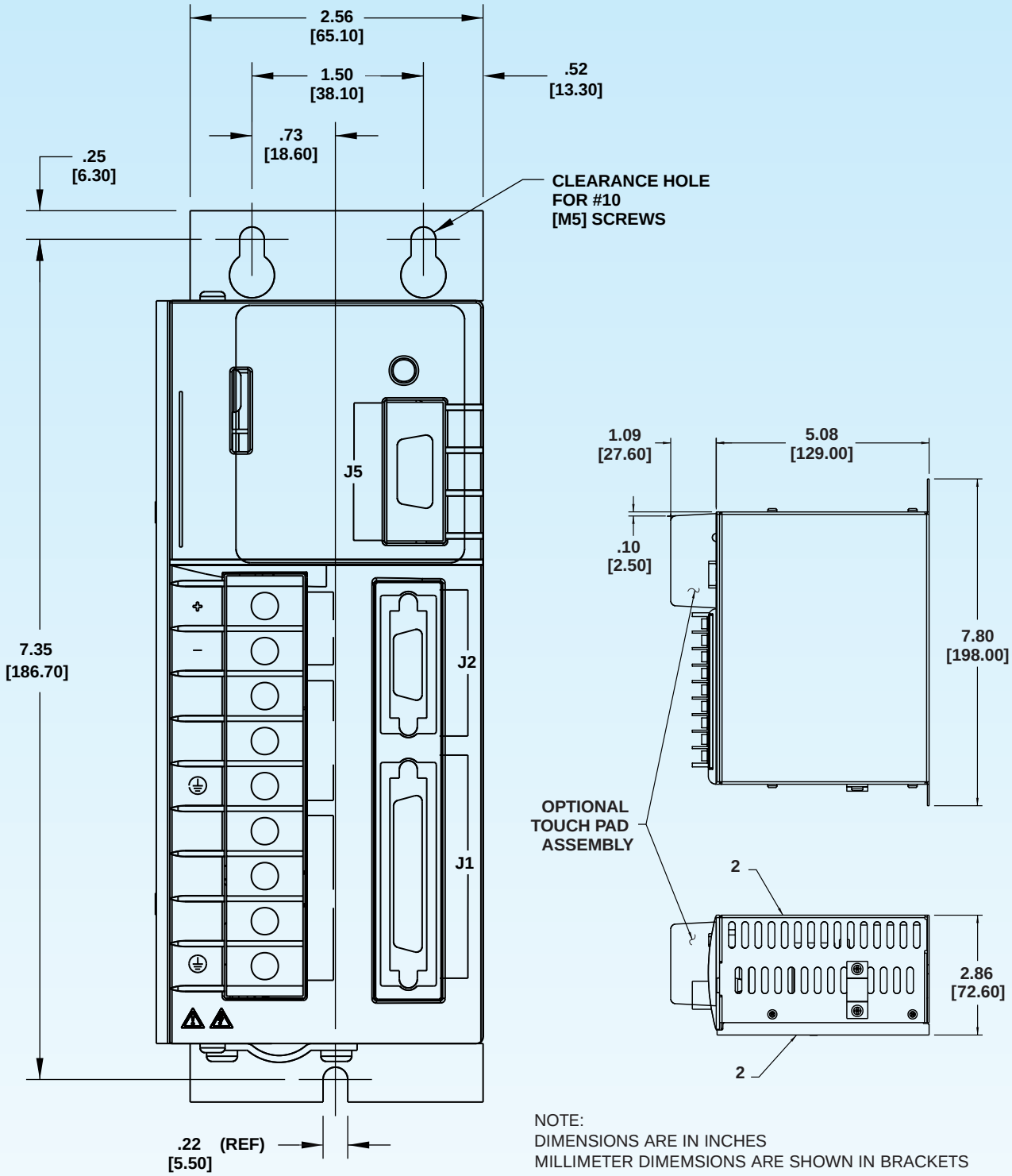
J1 - Controller

Pin	Function	Pin	Function	Pin	Function	Pin	Function
1	Encoder +5VDC	14	Auxiliary Chnl A+	27	+I Limit	40	Reserved
2	Encoder COM	15	Auxiliary Chnl A-	28	Analog Com	41	Reserved
3	Encoder +5VDC	16	Auxiliary Chnl B+	29	-I Limit	42	Selectable Output 1
4	Encoder COM	17	Auxiliary Chnl B-	30	Reserved	43	Selectable Output 2
5	External +24 VDC	18	Auxiliary Chnl I+	31	Analog Output 1	44	Reserved
6	External 24VCOM	19	Auxiliary Chnl I-	32	Selectable Input 1	45	Reserved
7	Mtr Encdr Output Chnl A+	20	Drive Enable	33	Selectable Input 2	46	Reserved
8	Mtr Encdr Output Chnl A-	21	Fault Reset	34	Selectable Input 3	47	Reserved
9	Mtr Encdr Output Chnl B+	22	Analog Cmnd +	35	Reserved	48	Reserved
10	Mtr Encdr Output Chnl B-	23	Analog Cmnd -	36	Reserved	49	Brake Enable +
11	Mtr Encdr Output Chnl I+	24	Drive Ready +	37	Reserved	50	Brake Enable -
12	Mtr Encdr Output Chnl I-	25	Drive Ready -	38	Reserved		
13	External 24V Com	26	External +24 VDC	39	Reserved		

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

DIMENSIONS

ODM-005



NOTE:
DIMENSIONS ARE IN INCHES
MILLIMETER DIMEMSIONS ARE SHOWN IN BRACKETS

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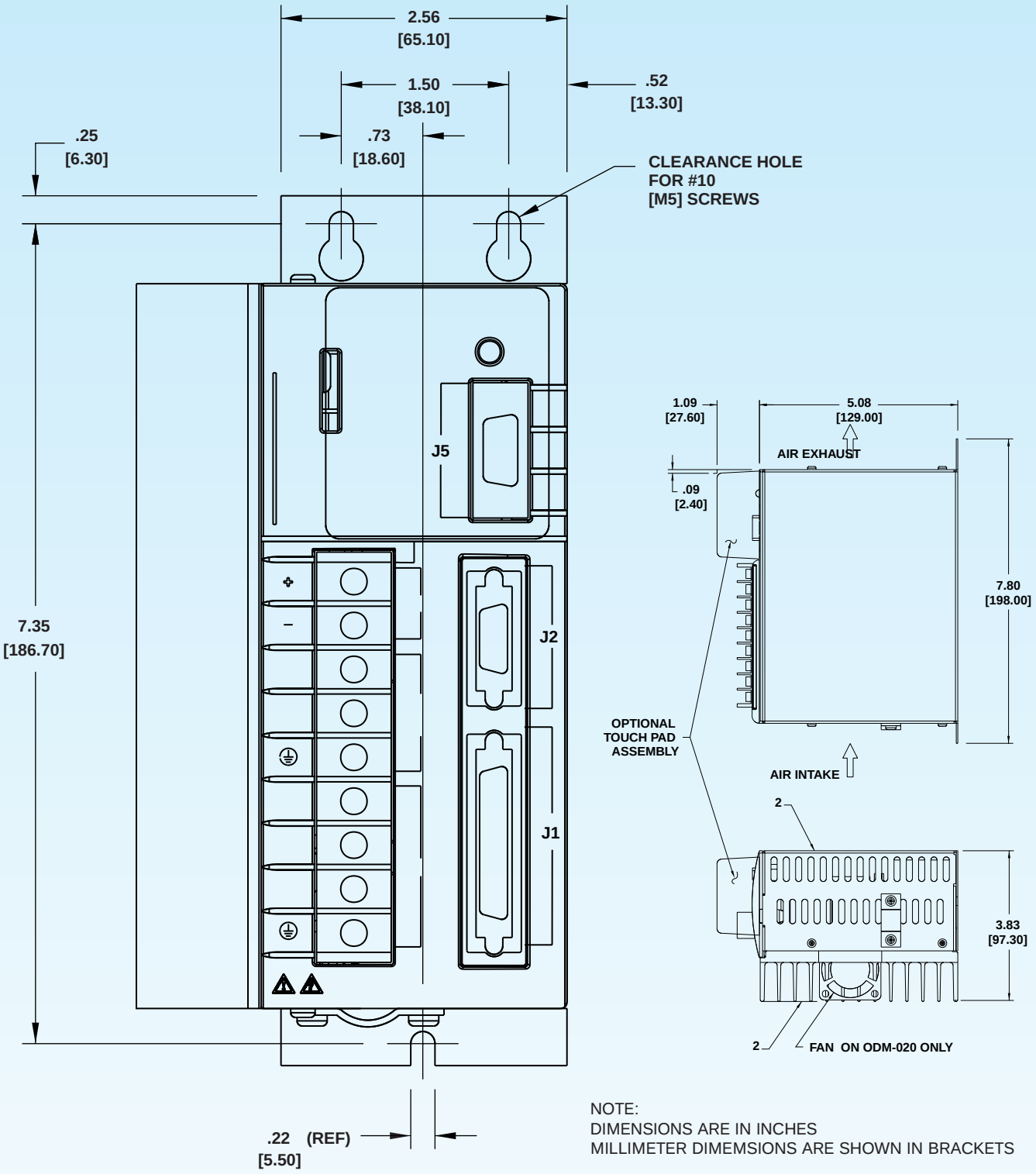
ODM-010 AND ODM-020



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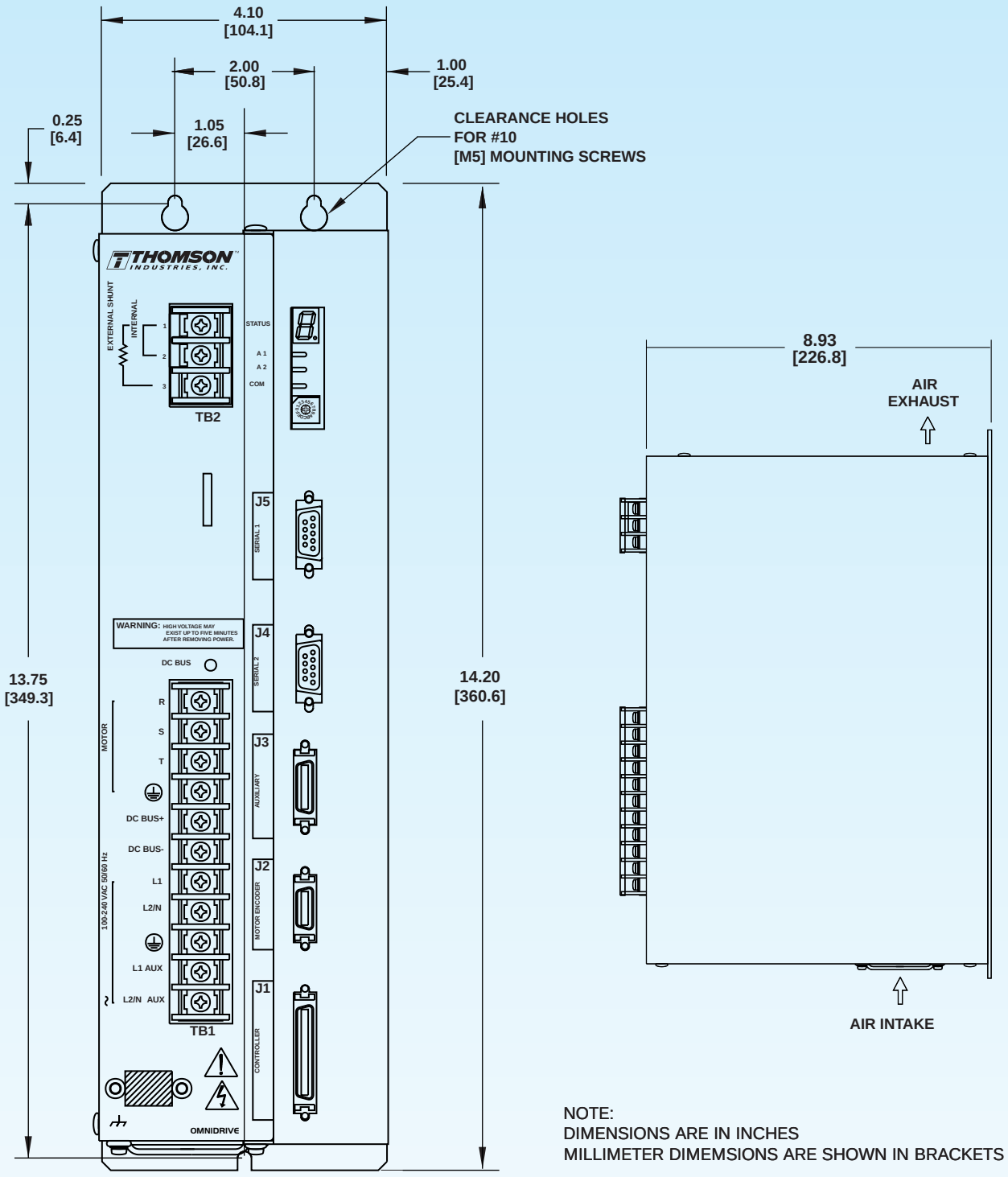
OD-010, OD-020 AND OD-030



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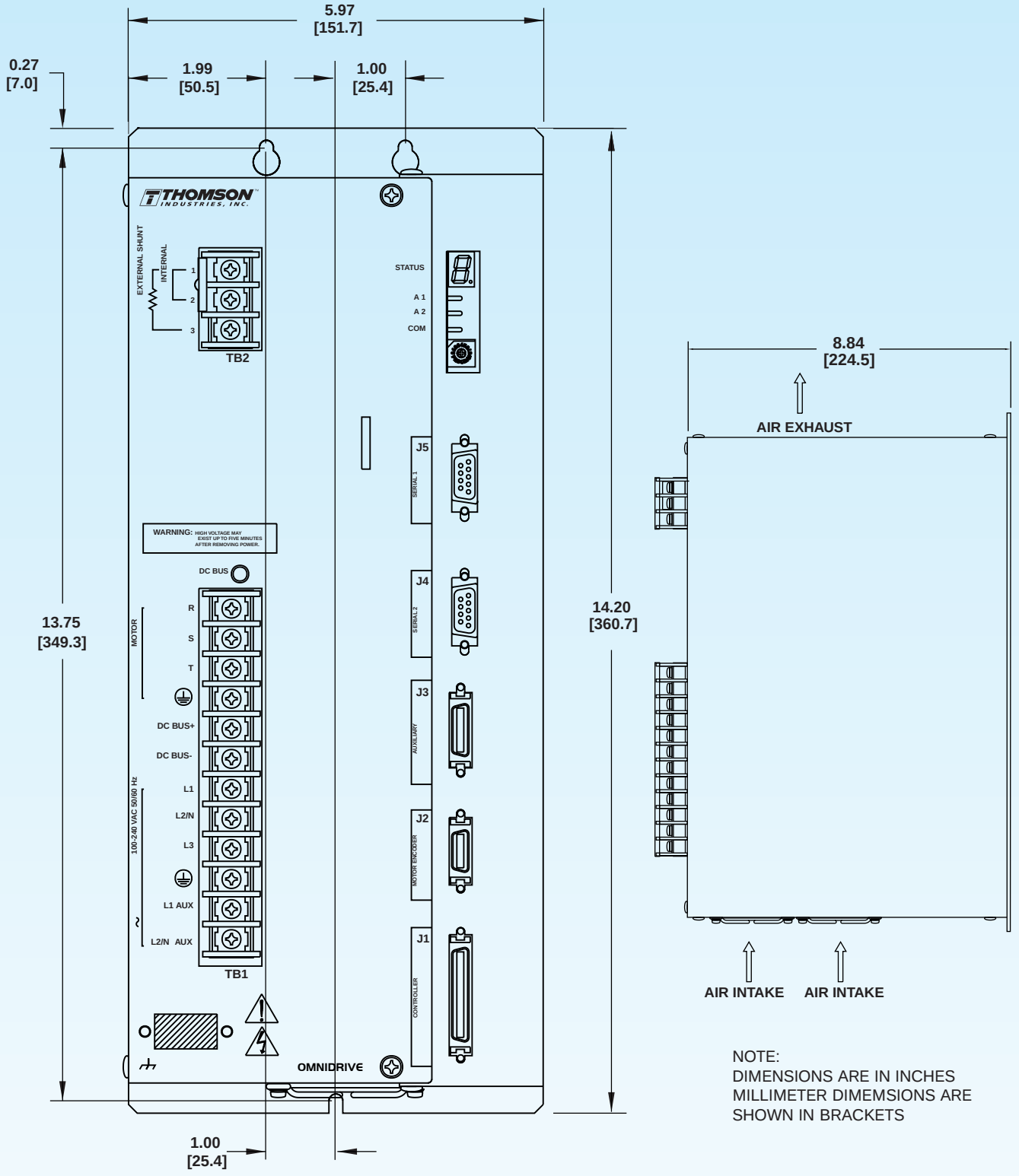
OD-075



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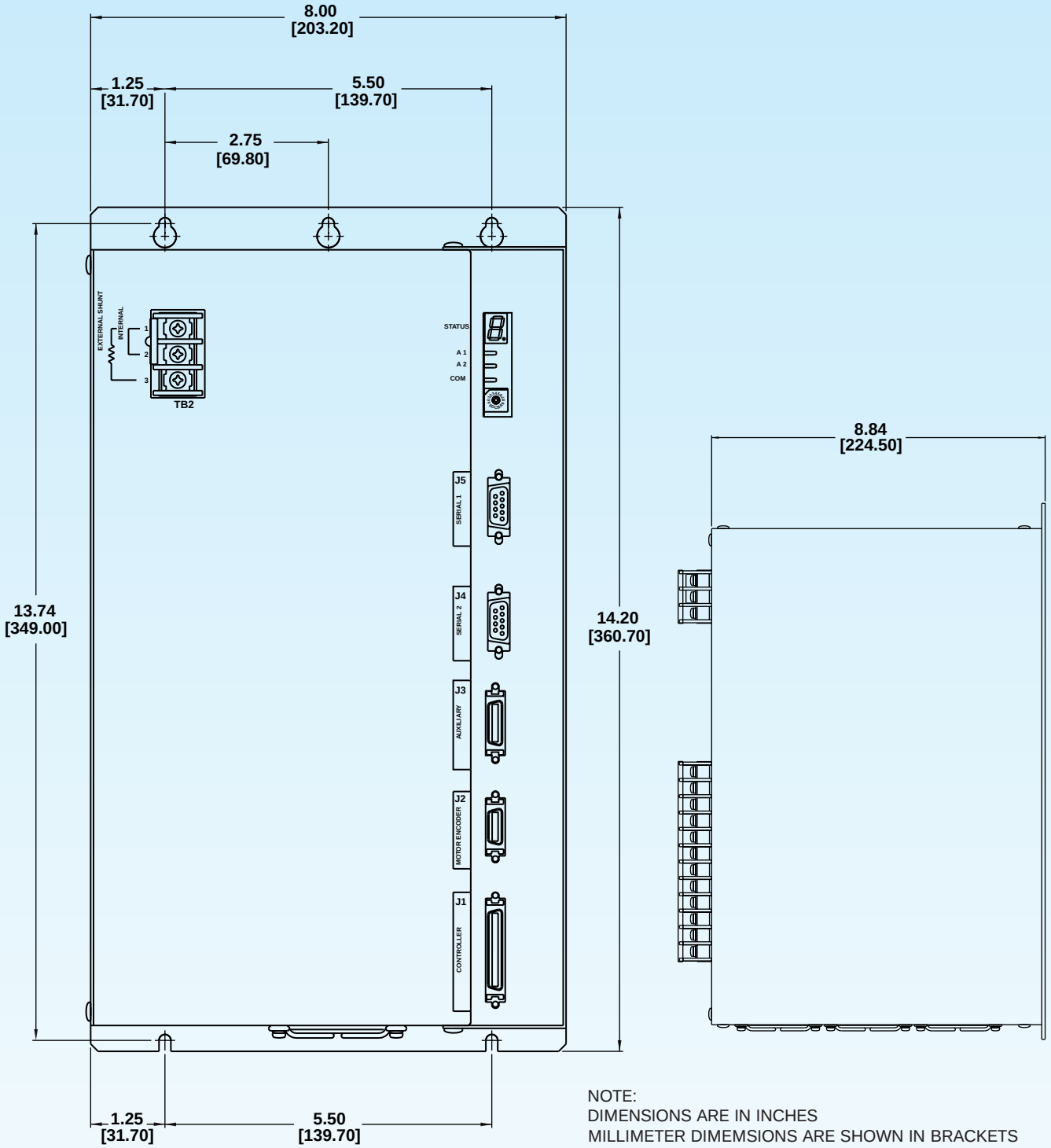
DIMENSIONS

OD-150



NOTE:
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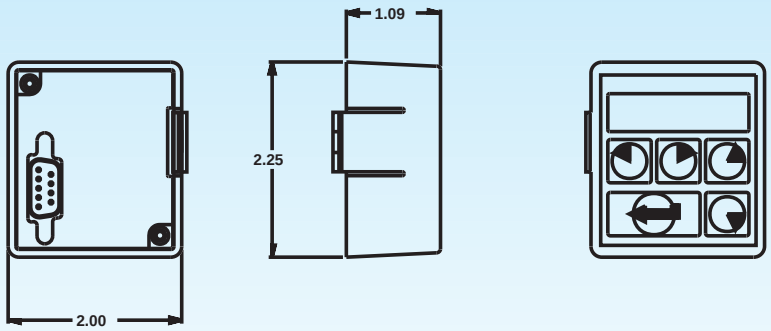
TOUCHPAD TP-OOI



Ordering Information: OmniDrive Digital Servo Drive

ODM-020 i

Blank = No indexing
i = Indexing Option

OD = OMNIDRIVE Full Size
ODM = OMNIDRIVE Mini Size

Continuous Power Rating

Mini Size		Full Size	
005	0.5 kW	010	1 kW
010	1.0 kW	020	2 kW
020	2.0 kW	030	3 kW
		075	7 1/2 kW
		150	15 kW

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TouchPad P/N TP-OOI

The optional Touchpad gives you the flexibility and power of OMNI LINK* software in the palm of your hand. The Touchpad plugs into the RS-232/RS-485 port on the drive. One Touchpad communicates with all drive types. The Touchpads can be left attached to the drive for constant operator use or in a toolbox to be used as needed. The Touchpad is a convenient solution for maintenance technicians and engineers troubleshooting and testing on the floor.

Touchpad commands are entered by pressing a single key or combination of keys. Two modes of operation are available. Display mode allows you to move through the touchpad command tree to each parameter. Modify mode allows you to monitor and change each parameter. Most parameters can be modified or viewed while the drive is running or disabled.

CABLES

Professionally molded, high quality cable assemblies just drop in, saving you time and worry. Our cables incorporate features such as 360° shielding of both cable and connectors for EMC compliance, UL approved oil and chemical resistant cable, and fully molded connector housings with integral strain reliefs.

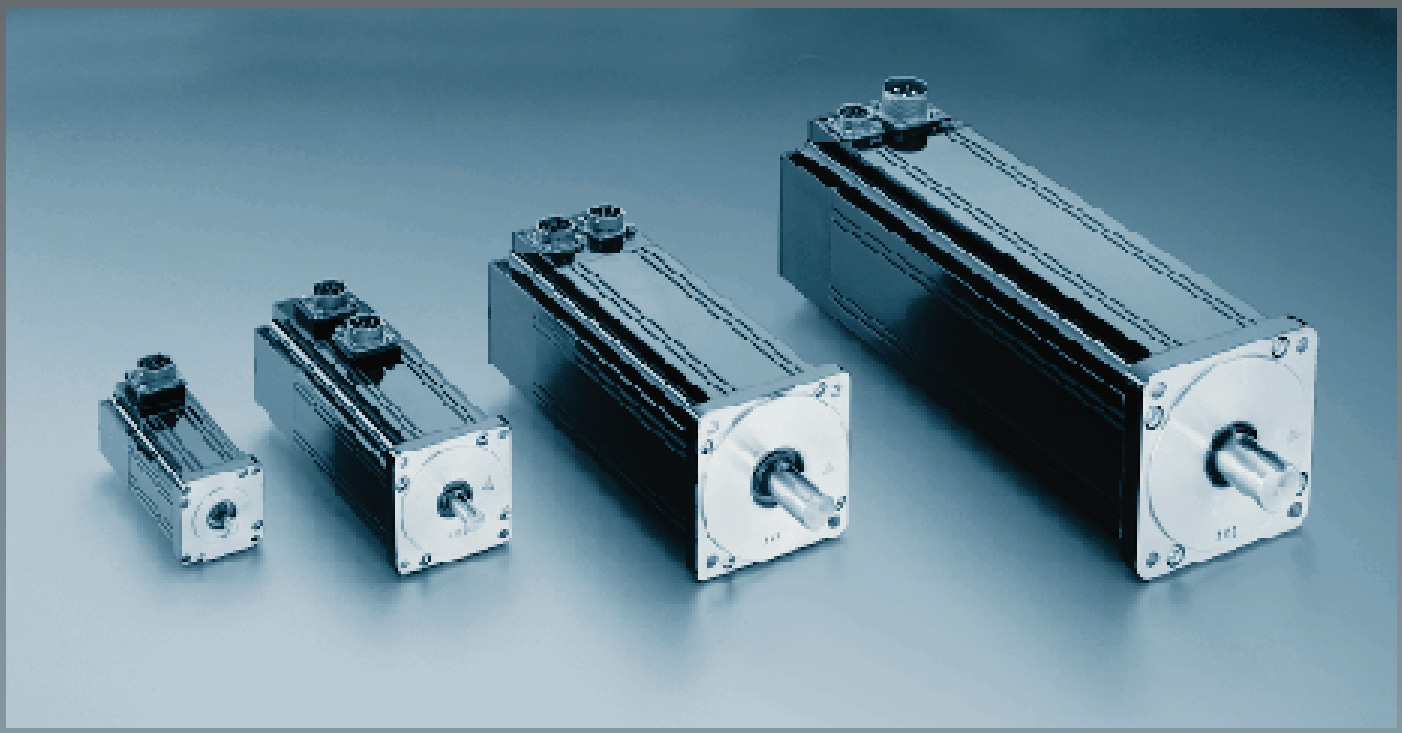
21209B-xx	Power/feedback cable for all BLX23 motors w/o brake
21305B-xx	Power/feedback cable for all BLX23 motors w/ brake
21207B-xx	Feedback cable for all BLX 34, 42, 60 motors
21290B-xx	Power cable for BLX 34x, 421, 422 motors w/o brake
21206B-xx	Power cable for BLX 34x, 421, 422 motors w/ brake
21208B-xx	Power cable for BLX 423, 60x motors w/o brake
21306B-xx	Power cable for BLX 423, 60x motors w/ brake
21210B	OMNIDRIVE to TMC-2000 interface w/breakout
21365B	OMNIDRIVE to TMC-2000 interface
21380B10	RS232 serial cable, 10 ft
21468B-xx	J1 interface pigtail, xx= 10 ft. or 25 ft. only

xx = standard cable length designator, 15=15ft, 30=30ft, 50=50ft except for 21468B-xx which is 10ft or 25ft only.

AXI-PAK* Servo Axis Packages

Thomson Industries engineered AXI-PAK servo axis packages are proven combinations of OMNIDRIVE digital dervo drives, BLX servo motors and cabling designed to deliver the best performing, lowest cost solutions for the widest variety of applications. See page 431 for details.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.



The BLX Series of brushless servo motors are industrial quality motors designed for high performance and durability. A superior magnetic and thermal design gives exceptional performance and the highest torque per frame size. A wide variety of frame sizes and winding configurations are available to suit your application needs.

BLX servo motors are built to last. Brushless construction and lifetime lubricated bearings eliminate all maintenance issues. Standard IP65 sealing, MS style fluid tight connectors, over-size bearings, and a winding thermal switch ensure a long and worry-free service life in the harshest and most challenging applications.

For a complete motor control solution, BLX motors are available with matched OMNIDRIVE* digital servo drives and pre-made cables for a quick, easy and trouble-free installation.

Features

- Four frame sizes to fit your requirements
- High energy magnets for extremely high torque
- Maintenance free brushless construction
- Standard IP65 sealing for wash down environments
- MS style connectors for durability
- Internal 2000 line (8000 count) commutating encoder
- Internal thermal switch
- UL and cUL recognized
- Optional internal 24VDC brake
- Optional Thomson Micron True Planetary* gearheads
- Available matching OMNIDRIVE digital servo drives and pre-made cables
- Off-the-shelf delivery

MOTOR DATA

PARAMETER	SYMBOL	UNITS	BLX232A	BLX234A
Rated Power (1)(2)	Pr	Hp	0.22	0.47
		Kw	0.16	0.36
Speed at Rated Power	N rated	rpm	4000	5000
Max Operating Speed (1)	N max	rpm	5000	6500
Continuous Stall Torque (2)	Tc	in-lb	5	10
		Nm	0.56	1.12
Peak Torque	Tp	in-lb	15	30
		Nm	1.7	3.36
Rotor Inertia (4)	Jm	lb-in-s^2	0.000097	0.000184
		Kg-m^2	0.0000109	0.0000207
Weight	W	lb	3	3.7
		Kg	1.3	1.68
Number of Poles	-	-	4	4
Torque Constant, sinewave (line-line) (3)	Kt	in-lb/A	1.81	1.81
		Nm/A	0.204	0.204
Voltage Constant (line-line)	Ke	V_{rms}/Krpm	18.2	17.8
		V_{rms}/rad/sec	0.174	0.17
Resistance (cold) (line-line)	Rc	ohm	8.4	3.1
Resistance (hot) (line-line)	Rh	ohm	12.6	4.65
Inductance (line-line)	L	mH	11.6	5.1
Peak Current (3)	Ip	A	8.28	18
Continuous Current (3)	Ic	A	2.76	6

NOTES:
1. With 230VAC drive line input voltage.
2. 25°C ambient, motor mounted on a 8”x8”x1/2” aluminum heat sink and the lower of 155°C winding or 100°C encoder temperature.
3. Peak value of a sinusoidal waveform.
4. Add brake inertia if applicable.

COMMENTS:
a) Thermostat in stator windings will open if winding temperature exceeds 155°C.
b) Above data represent typical values. Actual performance is dependent on amplifier, controller, and system installed.

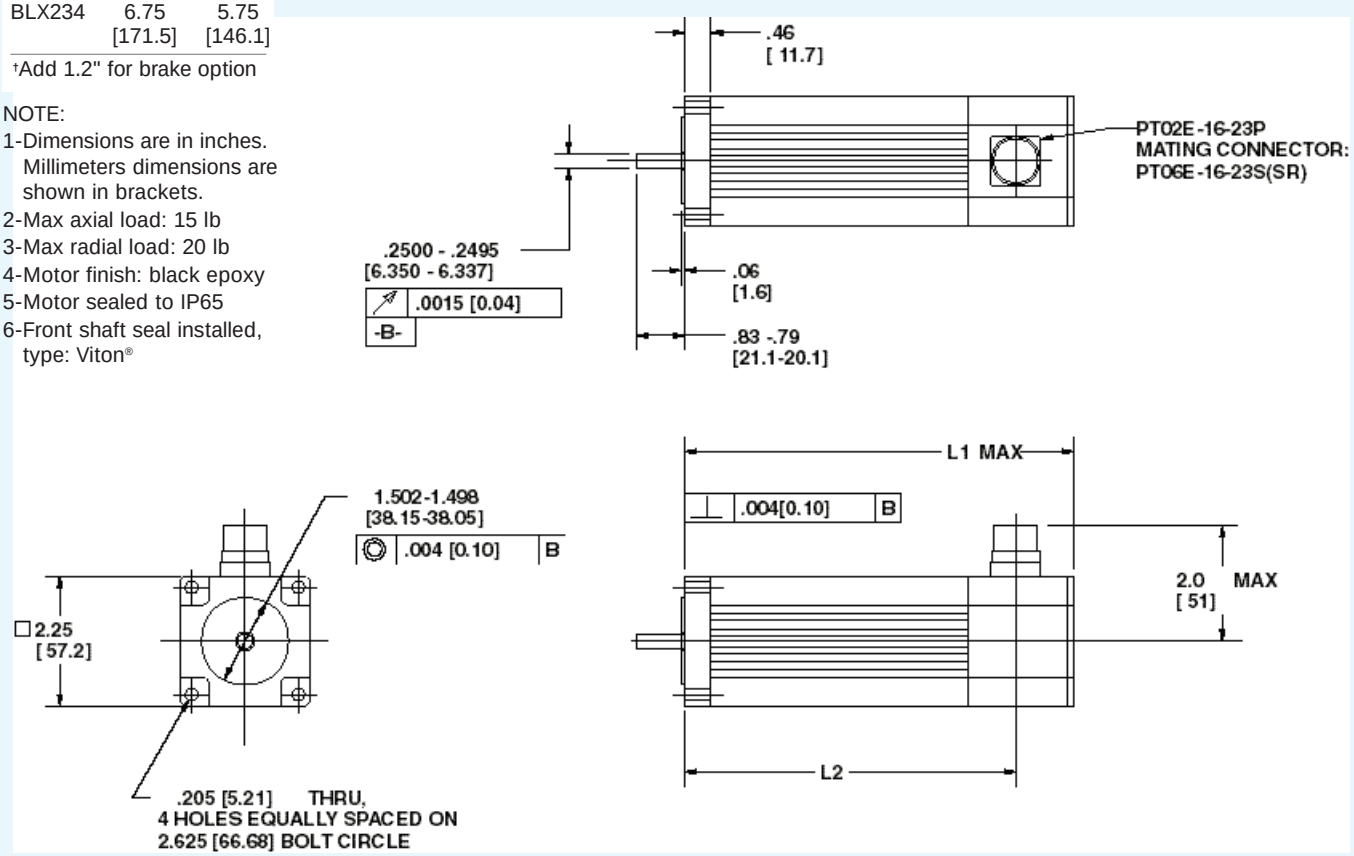
For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

NEMA 23

MODEL	L1†	L2†
BLX232	5.55 [140.9]	4.60 [116.8]
BLX234	6.75 [171.5]	5.75 [146.1]

†Add 1.2" for brake option

NOTE:
1-Dimensions are in inches. Millimeters dimensions are shown in brackets.
2-Max axial load: 15 lb
3-Max radial load: 20 lb
4-Motor finish: black epoxy
5-Motor sealed to IP65
6-Front shaft seal installed, type: Viton®



Motor/Encoder/Therm/Brake Connector PT02E-16-23P

Pin	Function
T	ENC GROUND
E	ENC +5VDC
F	ENC CH A
U	ENC CH A\
G	ENC CH B
V	ENC CH B\
H	ENC CH Z
W	ENC CH Z\
J	HALL CH U
K	HALL CH U\
X	HALL CH V

Pin	Function
L	HALL CH V\
Y	HALL CH W
M	HALL CH W\
N	GND/CABLE SHIELD
S	THERM
R	THERM
D	GND
A	MOTOR PHASE R
B	MOTOR PHASE S
C	MOTOR PHASE T
P	BRAKE (+)
Z	BRAKE (-)

DIODE IN4007

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

MOTOR DATA

PARAMETER	SYMBOL	UNITS	BLX341B	BLX342A	BLX343A
Rated Power (1)(2)	Pr	Hp	0.55	1.62	1.96
		Kw	0.41	1.20	1.46
Speed at Rated Power	N rated	rpm	2400	4000	3600
Max Operating Speed (1)	N max	rpm	3000	5000	4100
Continuous Stall Torque (2)	Tc	in-lb	16.0	30	39
		Nm	1.81	3.4	4.4
Peak Torque	Tp	in-lb	48.0	90	117
		Nm	5.43	10.2	13.2
Rotor Inertia (4)	Jm	lb-in-s^2	0.000615	0.000991	0.00137
		Kg-m^2	0.0000693	0.0001116	0.000154
Weight	W	lb	8.3	9.3	14.6
		Kg	3.8	4.2	6.6
Number of Poles	-	-	6	6	6
Torque Constant, sinewave (line-line) (3)	Kt	in-lb/A	7.65	3.91	5.58
		Nm/A	0.864	0.442	0.63
Voltage Constant (line-line)	Ke	V_{rms}/Krpm	75.2	36.6	55
		V_{rms}/rad/sec	0.72	0.35	0.53
Resistance (cold) (line-line)	Rc	ohm	15.4	1.5	1.9
Resistance (hot) (line-line)	Rh	ohm	23.1	2.25	2.85
Inductance (line-line)	L	mH	39.6	5.1	7.5
Peak Current (3)	Ip	A	6.57	25.2	21.75
Continuous Current (3)	Ic	A	2.19	8.4	7.25

NOTES:
1. With 230VAC drive line input voltage.
2. 25°C ambient, motor mounted on a 8"x 8"x 1/2" aluminum heat sink and the lower of 155°C winding or 100°C encoder temperature.
3. Peak value of a sinusoidal waveform.
4. Add brake inertia if applicable.

COMMENTS:
a) Thermostat in stator windings will open if winding temperature exceeds 155°C.
b) Above data represent typical values. Actual performance is dependent on amplifier, controller, and system installed.

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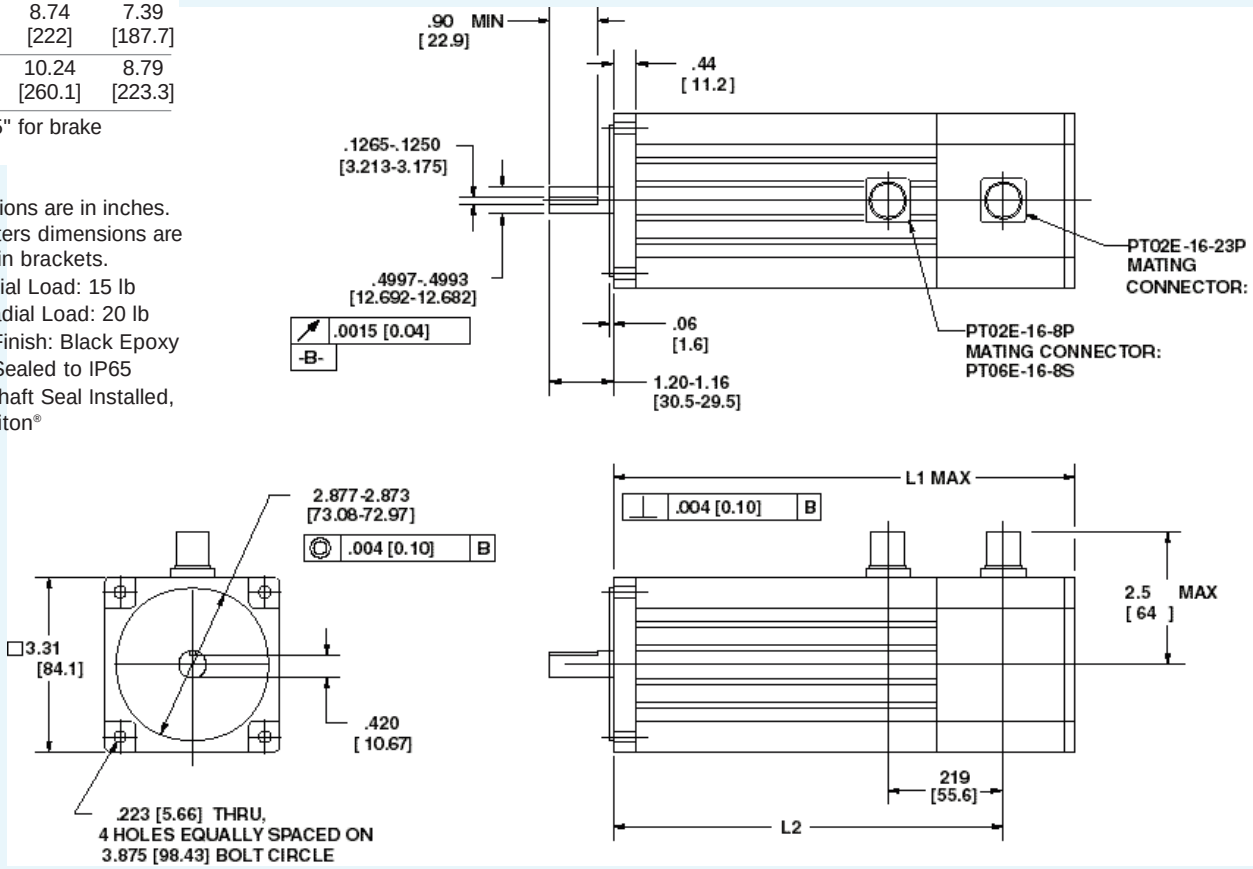
NEMA 34

MODEL	L1†	L2†
BLX341	7.24 [183.9]	5.89 [149.6]
BLX342	8.74 [222]	7.39 [187.7]
BLX343	10.24 [260.1]	8.79 [223.3]

†Add 1.5" for brake option

NOTE:
1-Dimensions are in inches. Millimeters dimensions are shown in brackets.
2-Max Axial Load: 15 lb
3-Max Radial Load: 20 lb
4-Motor Finish: Black Epoxy
5-Motor Sealed to IP65
6-Front Shaft Seal Installed, Type: Viton®



Encoder/Therm Connector PT02E-16-23P

Pin	Function
T	ENC GROUND
E	ENC +5VDC
F	ENC CH A
U	ENC CH A\
G	ENC CH B
V	ENC CH B\
H	ENC CH Z
W	ENC CH Z\
J	HALL CH U
K	HALL CH U\
X	HALL CH V

Pin	Function
L	HALL CH V\
Y	HALL CH W
M	HALL CH W\
N	GND/CABLE SHIELD
S	THERM
R	THERM
D	GND
A	NO CONNECTION
B	NO CONNECTION
C	NO CONNECTION
P	NO CONNECTION
Z	NO CONNECTION

Motor/Brake Connector PT02E-16-8P

Pin	Function
A	MOTOR PHASE R
B	MOTOR PHASE S
C	MOTOR PHASE T
D	PE GND
E	BRAKE SHLD
F	BRAKE (+)
G	BRAKE (-)
H	NO CONNECTION

DIODE IN4007

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

MOTOR DATA

PARAMETER	SYMBOL	UNITS	BLX421B	BLX422A	BLX423A	BLX423B
Rated Power (1)(2)	Pr	Hp	1.2	3.3	4.6	2.0
		Kw	0.88	2.5	3.4	1.8
Speed at Rated Power	N rated	rpm	1500	3000	3000	1500
Max Operating Speed (1)	N max	rpm	2100	4200	4200	2100
Continuous Stall Torque (2)	Tc	in-lb	54.0	83	116.2	116.2
		Nm	6.1	9.3	13.1	13.1
Peak Torque	Tp	in-lb	162.0	249	348.6	348.6
		Nm	18.3	27.9	39.3	39.3
Rotor Inertia (4)	Jm	lb-in-s^2	0.0035	0.0066	0.0095	0.0095
		Kg-m^2	0.00039	0.00074	0.00107	0.00107
Weight	W	lb	20	26.4	37	37
		Kg	9.1	12	16.8	16.8
Number of Poles	-	-	6	6	6	6
Torque Constant, sinewave (line-line) (3)	Kt	in-lb/A	11.16	5.66	5.58	11.16
		Nm/A	1.26	0.64	0.64	1.28
Voltage Constant (line-line)	Ke	V_{rms}/Krpm	110	55.0	55.0	110
		V_{rms}/rad/sec	1.05	0.525	0.525	1.05
Resistance (cold) (line-line)	Rc	ohm	3.3	0.4	0.27	1.1
Resistance (hot) (line-line)	Rh	ohm	4.95	0.6	0.4	2.25
Inductance (line-line)	L	mH	24.4	21.8	2	8.1
Peak Current (3)	Ip	A	15.18	46.2	64.5	32.4
Continuous Current (3)	Ic	A	5.06	15.4	21.5	10.8

NOTES:
1. With 230VAC drive line input voltage.
2. 25°C ambient, motor mounted on a 10"x 10"x 1/2" aluminum heat sink and the lower of 155°C winding or 100°C encoder temperature.
3. Peak value of a sinusoidal waveform.
4. Add brake inertia if applicable.

COMMENTS:
a) Thermostat in stator windings will open if winding temperature exceeds 155°C.
b) Above data represent typical values. Actual performance is dependent on amplifier, controller, and system installed.

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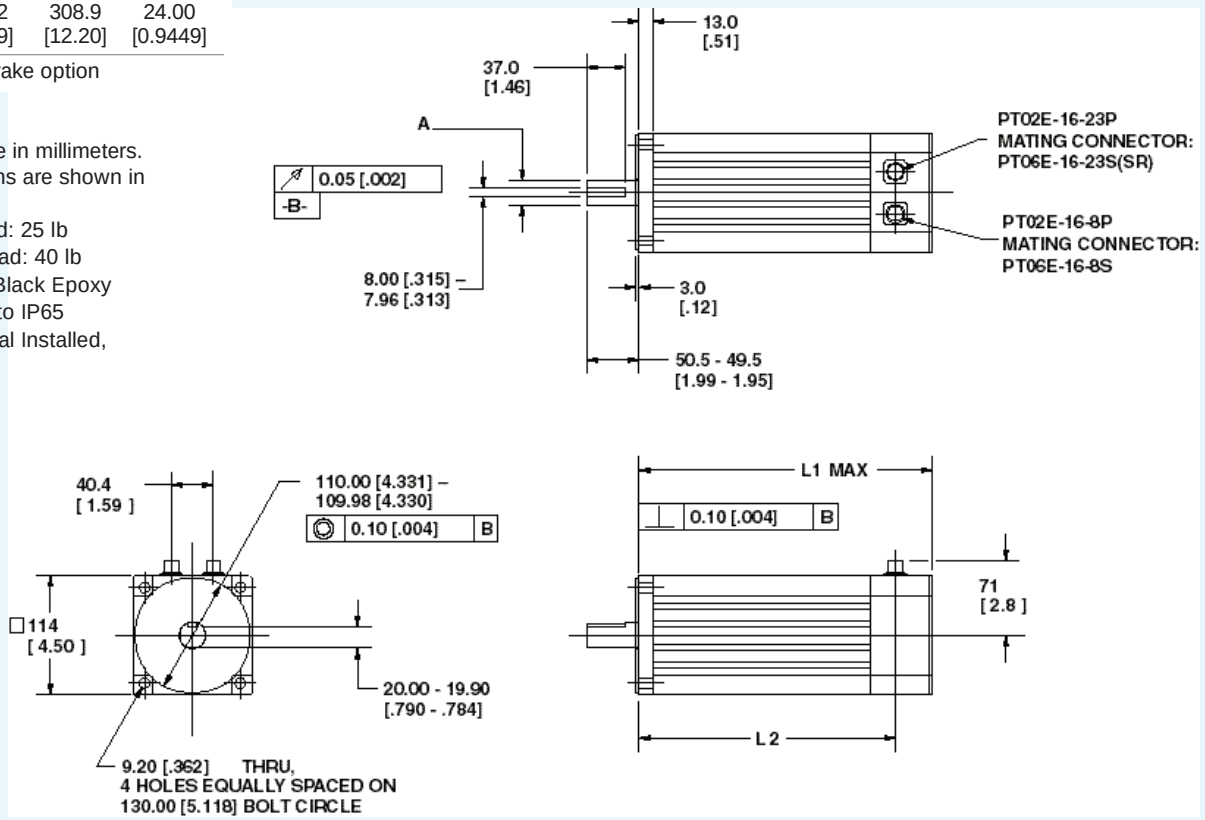
MODEL	L1†	L2†	A
BLX421	218.2 [8.59]	183.7 [7.209]	19.0 [0.748]
BLX422	281.7 [11.09]	246.4 [9.70]	24.00 [0.9449]
BLX423	345.2 [13.59]	308.9 [12.20]	24.00 [0.9449]

†Add 2.0" for brake option

NOTE:
1-Dimensions are in millimeters. Inch dimensions are shown in brackets.
2-Max Axial Load: 25 lb
3-Max Radial Load: 40 lb
4-Motor Finish: Black Epoxy
5-Motor Sealed to IP65
6-Front Shaft Seal Installed, Type: Viton®



Encoder/Therm Connector PT02E-16-23P

Pin	Function	Pin	Function
T	ENC GROUND	L	HALL CH V\
E	ENC +5VDC	Y	HALL CH W
F	ENC CH A	M	HALL CH W\
U	ENC CH A\	N	GND/CABLE SHIELD
G	ENC CH B	S	THERM
V	ENC CH B\	R	THERM
H	ENC CH Z	D	GND
W	ENC CH Z\	A	NO CONNECTION
J	HALL CH U	B	NO CONNECTION
K	HALL CH U\	C	NO CONNECTION
X	HALL CH V	P	NO CONNECTION
		Z	NO CONNECTION

Motor/Brake Connector PT02E-16-8P

Pin	Function
A	MOTOR PHASE R
B	MOTOR PHASE S
C	MOTOR PHASE T
D	PE GND
E	BRAKE SHLD
F	BRAKE (+)
G	BRAKE (-)
H	NO CONNECTION

DIODE IN4007

Motion Control

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

MOTOR DATA

PARAMETER	SYMBOL	UNITS	BLX602B	BLX603A
Rated Power (1)(2)	Pr	Hp	4.5	9.1
		Kw	3.4	6.8
Speed at Rated Power	N rated	rpm	1500	2400
Max Operating Speed (1)	N max	rpm	1750	2700
Continuous Stall Torque (2)	Tc	in-lb	210	280
		Nm	23.7	31.5
Peak Torque	Tp	in-lb	630	840
		Nm	70.8	94.4
Rotor Inertia (4)	Jm	lb-in-s^2	0.0016	0.0276
		Kg-m^2	0.00212	0.00307
Weight	W	lb	51	64
		Kg	23.1	29
Number of Poles	-	-	6	6
Torque Constant, sinewave (line-line) (3)	Kt	in-lb/A	12.0	7.11
		Nm/A	1.35	0.8
Voltage Constant (line-line)	Ke	V_{rms}/Krpm	1.1	0.669
		V_{rms}/rad/sec	0.72	0.13
Resistance (cold) (line-line)	Rc	ohm	1.08	0.2
Resistance (hot) (line-line)	Rh	ohm	12.6	4.65
Inductance (line-line)	L	mH	6.1	1.4
Peak Current (3)	Ip	A	54.5	122
Continuous Current (3)	Ic	A	18.2	40.7

NOTES:
1. With 230VAC drive line input voltage.
2. 25°C ambient, motor mounted on a 12" x 12" x 1/2" aluminum heat sink and the lower of 155°C winding or 100°C encoder temperature.
3. Peak value of a sinusoidal waveform.
4. Add brake inertia if applicable.

COMMENTS:
a) Thermostat in stator windings will open if winding temperature exceeds 155°C.
b) Above data represent typical values. Actual performance is dependent on amplifier, controller, and system installed.

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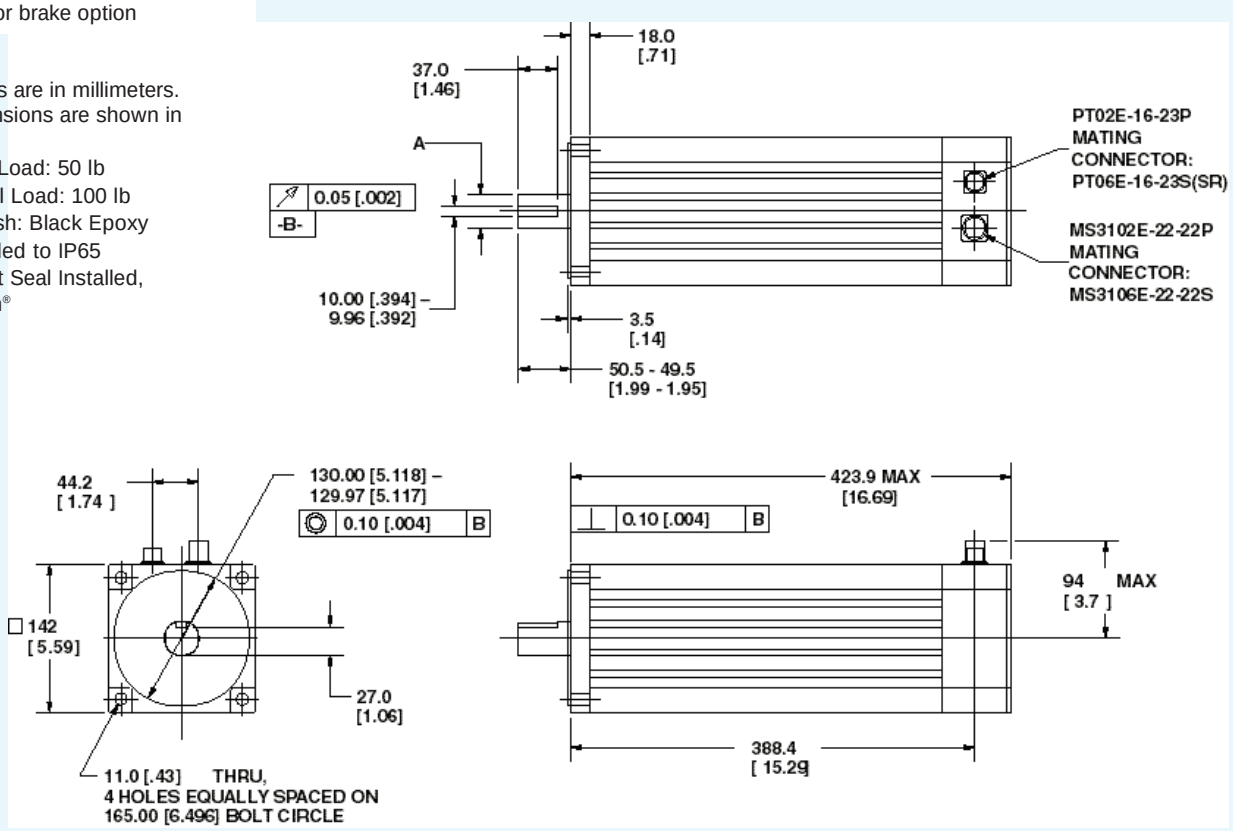
MODEL	L1†	L2†	A
BLX602	355.3 [13.99]	325.3 [12.806]	24.00 [0.9449]
BLX603	423.9 [16.69]	388.4 [15.29]	32.00 [1.2598]

†Add 1.2" for brake option

NOTE:
1-Dimensions are in millimeters. Inch dimensions are shown in brackets.
2-Max Axial Load: 50 lb
3-Max Radial Load: 100 lb
4-Motor Finish: Black Epoxy
5-Motor Sealed to IP65
6-Front Shaft Seal Installed, Type: Viton®



Encoder/Therm Connector PT02E-16-23P

Pin	Function
T	ENC GROUND
E	ENC +5VDC
F	ENC CH A
U	ENC CH A\
G	ENC CH B
V	ENC CH B\
H	ENC CH Z
W	ENC CH Z\
J	HALL CH U
K	HALL CH U\
X	HALL CH V

Pin	Function
L	HALL CH V\
Y	HALL CH W
M	HALL CH W\
N	GND/CABLE SHIELD
S	THERM
R	THERM
D	GND
A	NO CONNECTION
B	NO CONNECTION
C	NO CONNECTION
P	NO CONNECTION
Z	NO CONNECTION

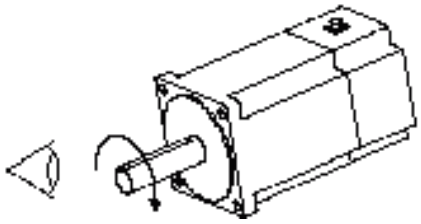
Motor/Brake Connector PT02E-16-8P

Pin	Function
A	MOTOR PHASE R
B	MOTOR PHASE S
C	MOTOR PHASE T
D	PE GND
E	BRAKE SHLD
F	BRAKE (+)
G	BRAKE (-)

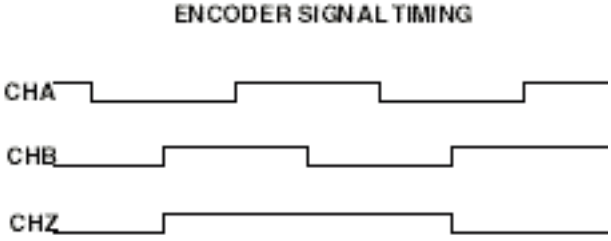
DIODE IN4007

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

COMMON SPECS

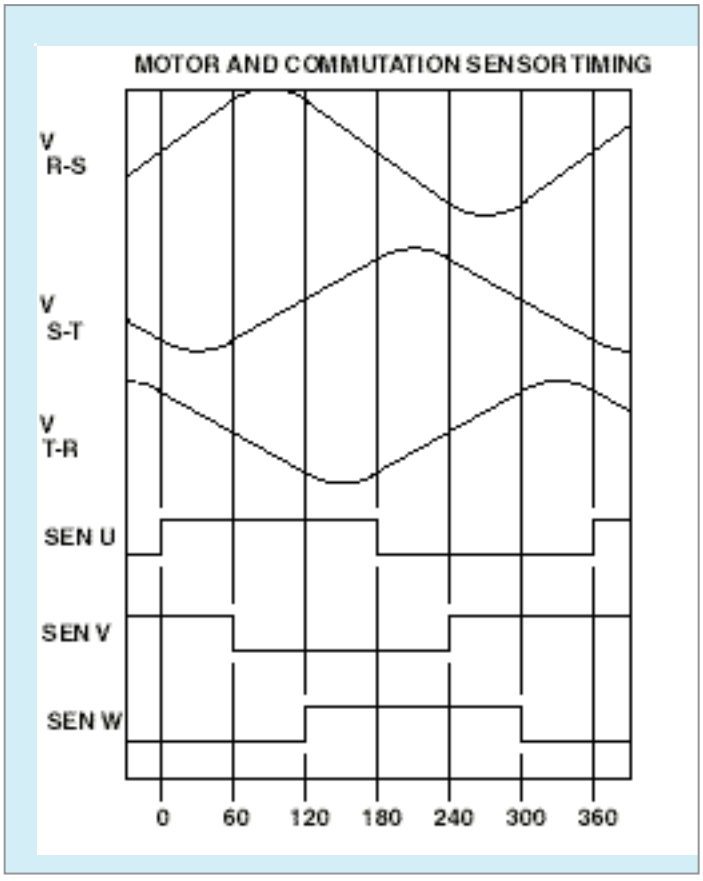


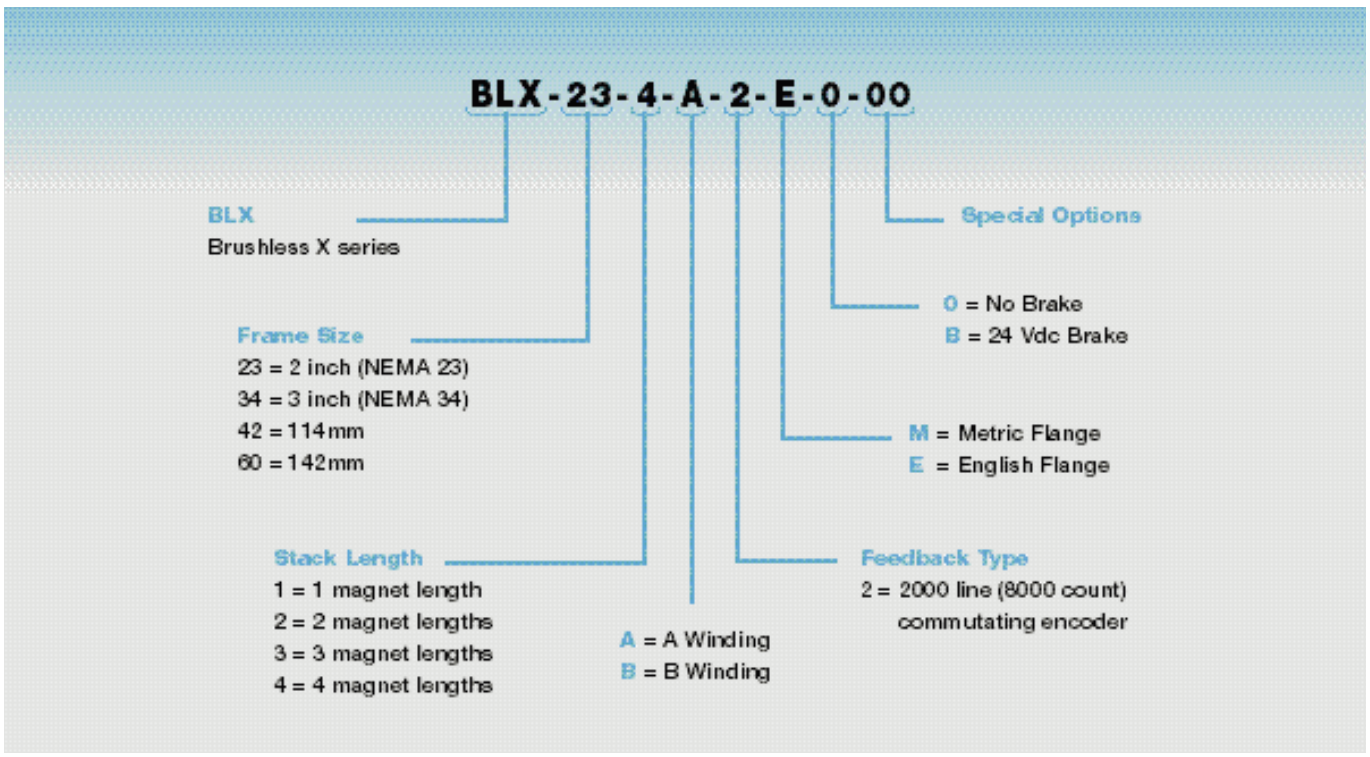
Note: All motor and sensor timing for CW rotation as viewed from shaft end



ENCODER NOTES

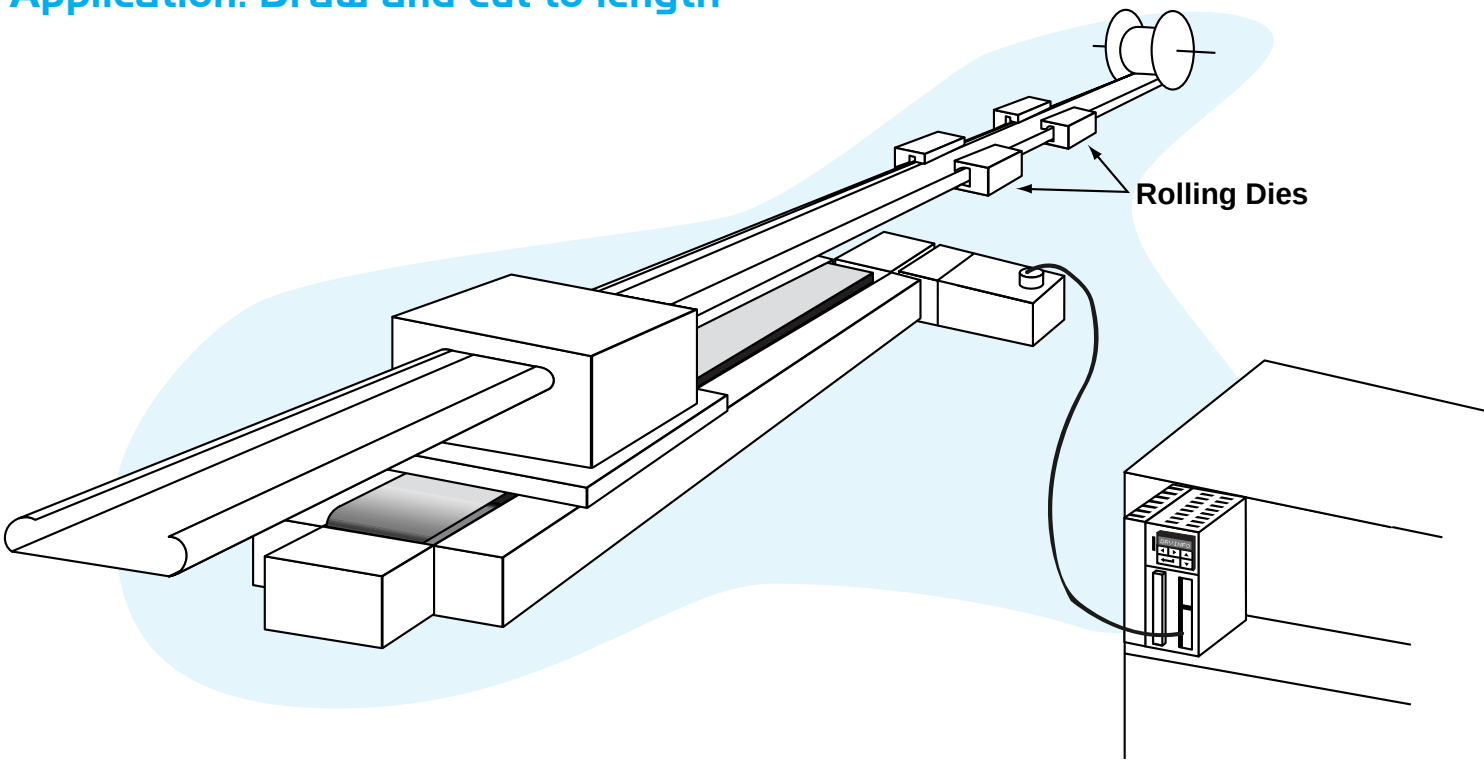
1. Resolution = 2000 lines/rev. (8000 counts)
2. Power Supply = 5VDC±5%, 200mA max.
3. Output circuit is 26LS31 differential line driver, 20mA max sink/source
4. Commutation sensors in encoder have differential outputs.





For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

Application: Draw and cut to length



Application Description

Flat stock clamped to a positioning stage is drawn through two rolling dies which form the material into a profile. At the end of a pre-determined stroke length, the clamp releases, the slide retracts, and the material is cut off. The material is once again clamped and the action repeats. The actual cutoff and clamping mechanisms are located on a Thomson belt driven linear motion slide which is energized by outputs from the drives. The length of the material must be altered as required for the job.

Requirements

- One axis stand alone capability
- Configurable I/O
- On the floor programmability

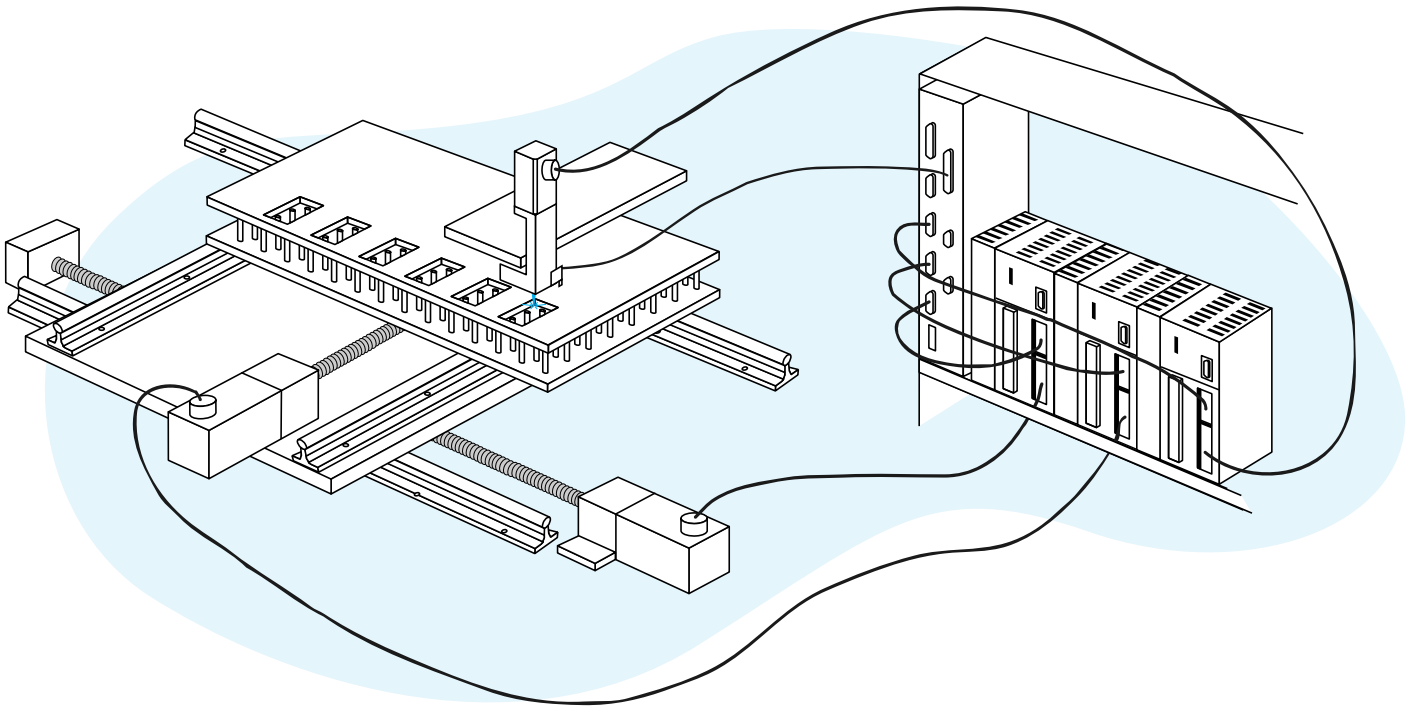
The Solution

(1) APi-421B-DM020-L15 AXI-PAK* digital servo drive package with indexing
(1) TP-001 Touchpad

A Thomson Industries AXI-PAK drive/motor combination with indexing capability and touch pad has been selected to satisfy this application. The drive's programmable outputs are configured to fire when moves are complete thus initiating the clamp and cut operations. The touch pad allows the move lengths, speeds, accelerations, etc. to be set on the factory floor without a separate computer. The drive is homed automatically upon power up.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

APPLICATION EXAMPLE



Application Description

Sheet stock, which has been clamped in place on an X-Y table, will be guided under the head of a focusing beam laser. As these pre-programmed patterns are being traced, any height deviations of the sheet metal with respect to the laser head will jeopardize the integrity and accuracy of the cut. This condition will be compensated for by a sensor attached to the laser head mounted on the Z axis.

Requirements

- Three axis control, smooth motion, high accuracy
- Stand alone operation
- Linear and circular Interpolation, and contouring
- Analog inputs
- Multi-tasking capabilities
- User defined I/O

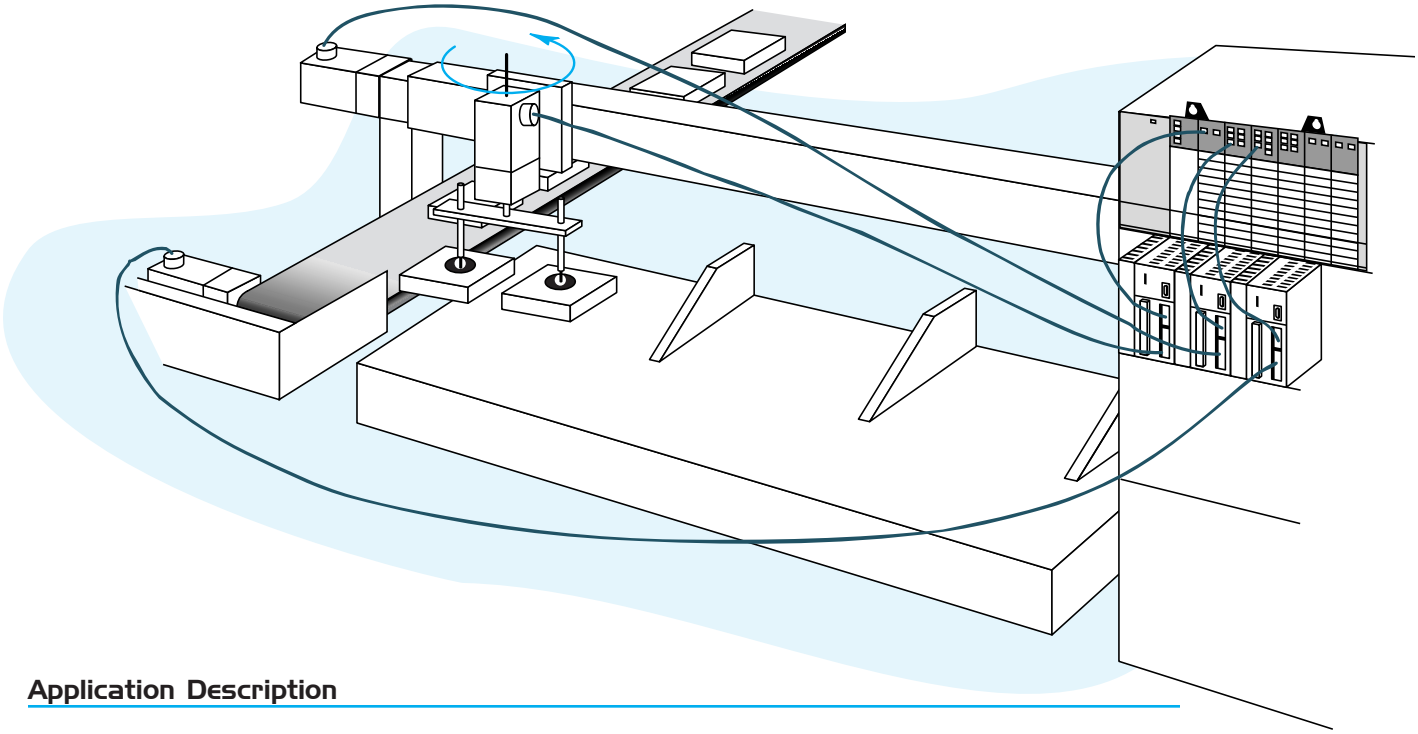
The Solution

(1) TMC-2004-CO multi-axis motion controller
(2) AP-342A-DM020-L15 AXI-PAK* servo axis packages for X and Y
(1) AP-232A-DM005-L15 AXI-PAK servo axis packages for Z

Thomson Industries TMC-2004-CO multi-tasking controller has been selected to control three AXI-PAK servo axis packages. The controller provides coordinated motion between the X and Y axes while, at the same time closing a position loop around the Z axis and the analog input to which the height sensor is connected. The cut progresses smoothly and accurately as the controller processes these two programs simultaneously, while having the additional capability to run two more programs, for a total capacity of four. These two additional programs can be used to monitor laser beam quality and/or safety devices located on the machine.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

Application: Offload transfer line



Application Description

Automate a material transfer process by integrating assembly workstations and the necessary linear and rotary motion stages into one machine. All motion is to be coordinated with an existing PLC. Finished assemblies will be sensed and picked on a first in first out basis and transferred to an offload conveyor which will index as necessary. Product is then forwarded to a packaging station.

Requirements

- Smooth, quick motion
- High reliability
- High-speed indexing for increased throughput
- Interface with a PLC
- Accurate position control
- Non-volatile memory for move profiles

The Solution

(3) APi-234A-DM010-L15 AXI-PAK* digital servo drive packages with indexing

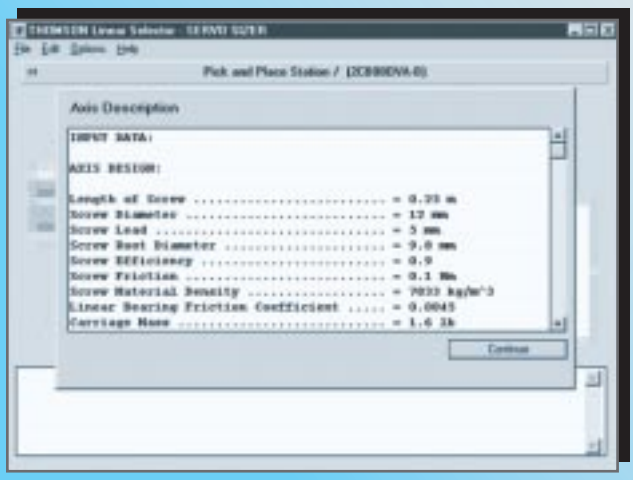
Three Thomson Industries AXI-PAK digital servo drive packages have been selected. Each will use its indexing capability to execute up to 8 preset move profiles while communicating with the PLC through user defined I/O. Finished assemblies are placed in “out” boxes by their respective assemblers and sensed by the PLC. A Thomson linear motion belt driven slide, controlled by an AXI-PAK, will be directed to the out box. The rotary stage indexes as required and pneumatics make the pick. Product is then transferred to the offload conveyor, which indexes ahead as necessary. The process repeats itself, with the PLC sequencing a total of 24 move profiles provided by the Thomson drives.

For more information, or to place an order, please contact Thomson Industries, at 1-800-554-THOMSON, Fax: 1-800-445-0329, or E-mail at motioncontrol@thomsonmail.com.

Servo Sizing Software

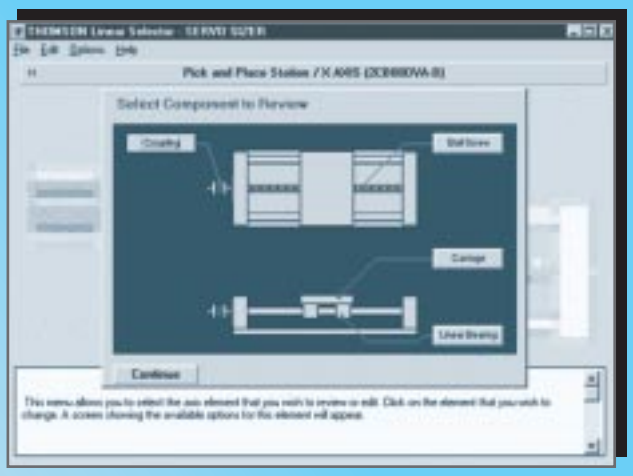
FREE

Selecting the right servo solution has never been easier or more accurate. Thomson servo sizing software gives you the exact part number(s) for the solution to your motion control application. Ballscrew (leadscrew), belt drive, and direct drive configurations are supported. If using a Thomson linear motion system, simply choose the part number from a list box and all system parameters are automatically entered. You can also design your own system with Thomson components or your own. Then, specify your move profile and the suitable AXI-PAK* engineered servo axis packages are listed.

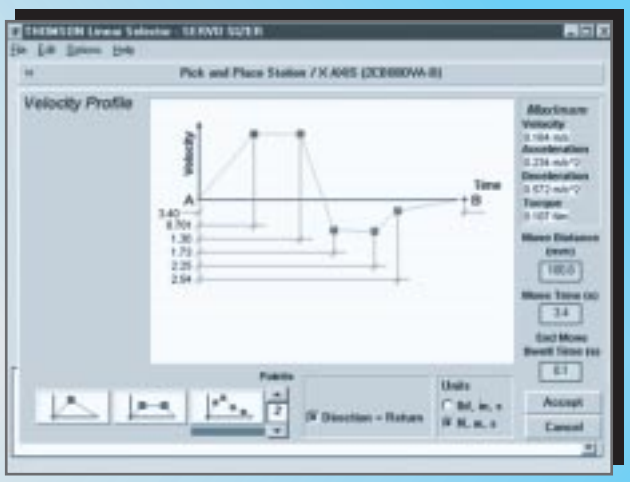


In addition to the program's rich graphical output both on screen and printed, tabulated values are available for all design parameters, move profile, torque requirements, and chosen motion control components.

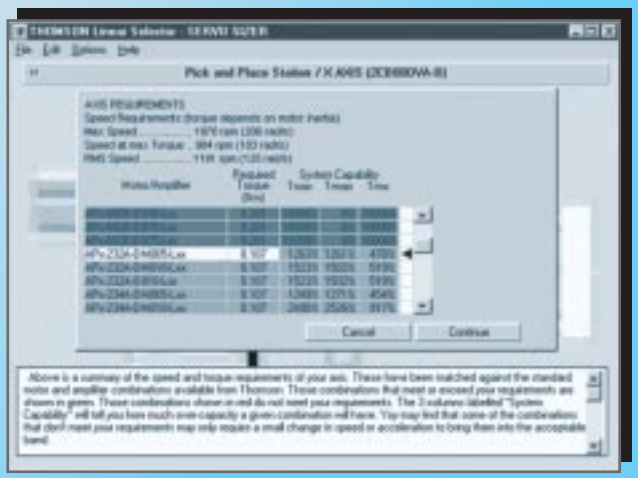
Call 1-800-55-4-THOMSON for your FREE copy of Thomson servo sizing software



If using a Thomson system, simply enter its part number to have all system parameters automatically entered. You may also design your own system using Thomson components or your own/generic components. Screw, belt, and direct driven systems are supported.



Your move profile is easily entered in a graphical way. Simply drag the profile as desired and all values are updated. Triangular, trapezoidal, or complex multi-speed/acceleration/deceleration moves are supported.



Actual AXI-PAK servo axis package part numbers are generated for a matched motor-drive-cable solution. All available solutions are listed with the suitable packages highlighted. Torque margins are displayed for convenience.

For Application Engineering assistance contact the Thomson Technical HelpLine at 1-800-554-8466.

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Linear Bearings & Components (Inch)

ADVANCED LINEAR MOTION TECHNOLOGY GUIDE

144-page guide includes specifications of all linear Ball Bushing* bearings, pillow blocks and support rails. Also featured are the new Super Smart Ball Bushing* bearings, Super Ball Bushing* bearings and RoundWay* linear roller bearings.

Literature No. 01-00-000-6001-03

Linear Bearings & Components (Metric)

ADVANCED LINEAR MOTION METRIC PRODUCTS

A 66-page comprehensive catalog provides information and specifications on advanced linear motion metric products. These include Super Smart Ball Bushing bearings, Smart MultiTrac Ball Bushing* bearings and Smart Rail* linear guides.

Literature No. 01-50-000-6001-02

Thomson 60 Case

THOMSON 60 CASE LINEARRACE SHAFTING CATALOG

60-page catalog describing the features, benefits and technical specifications of the complete line of 60 Case* LinearRace* shafting. Engineering templates are provided for ease of ordering.

Literature No. 02-00-000-6001

Thomson Saginaw

ADVANCED LINEAR ACTUATOR GUIDE

This 92-page technology guide is a complete source of information on high performance Thomson Saginaw* ball screws, including rolled thread assemblies, precision ground assemblies and ball splines. Also included are product descriptions, applications, specifications, design and selection criteria and mounting instructions.

Literature No. 06-00-000-6001-02

Thomson Saginaw

PERFORMANCE PAK ACTUATORS– ENGINEERING AND SELECTION GUIDE

This 28-page catalog describes the Thomson Saginaw* Performance Pak, PPA*, actuators and accessories for commercial, institutional and industrial linear actuation. PPA's combine the efficiency of a ball screw with an electric motor for a ready-to-install positioning system. Includes complete engineering and selection data and application examples.

Literature No. 09-00-000-6001-01

Thomson Saginaw

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Brochure describes ball screw repair services from Thomson Saginaw that can save a customer up to 90% of the cost of a new ball screw. Topics include repair capabilities, inspection procedures, and special programs such as emergency repairs, training seminars, and preventive maintenance. Brochure also includes information on how a ball screw operates and what causes damage and wear.

Literature No. 06-16-000-6400-01

Thomson Micron*

TRUE PLANETARY GEARHEAD SELECTION GUIDE AND ENGINEERING CATALOG

Complete engineering data and selection guide for True Planetary* gearheads and position feedback transducers.

Literature No. 10-00-000-6001

Thomson Micron

GEARHEAD EXPRESS

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Literature No. 10-08-000-6001

Thomson Airpax Mechatronics

PRODUCT SELECTION AND ENGINEERING GUIDE

Features the largest and most powerful capability per size in the industry and:

- Ideal for valve actuators, fluid displacement pumps, copiers, printers, fax machines, paper feed devices, character positioning devices, climate control, and fluid flow-rate management
- Customization to meet your precise design needs
- Fast, powerful, precise positioning
- Large selection of permanent magnet stepper motors – from 15mm to 60mm
- Pioneer in digital linear actuator (DLA) technology

Literature No. 12-00-000-6001

Linear Motion Solutions

LINEAR GUIDES, SYSTEMS, SLIDES & STAGES, AND MOTION CONTROL SOLUTION GUIDE

450-page guide permits quick selection of standard off-the-shelf linear motion systems and accessories. Easy to use, it presents inch and metric systems separately and has special sections on motion control, accessories and engineering support. Using the graphs, formulas and illustrations included throughout, complete systems can be designed, specified and ordered with a single part number.

Literature No. 99-40-000-6100

Molded Products

NYLINER BEARING DESIGNER'S GUIDE

20-page design guide for Nyliner engineered polymer bearings includes easy-to-use technical and selection data, specification and application guidelines. Special section included on Nyliner Plus* bearings. They are composed of advanced thermoplastics for increased PV ratings and operation at higher temperature and lower friction.

Literature No. 04-00-000-6001-03

Thomson Precision Ball

THOMSON PRECISION BALL CATALOG

A 22-page catalog covers standard and custom precision balls, guaranteed to meet ABMA standards. Available in chrome and stainless steel and many special materials-and in 0.005" to 1" diameters, in grades 3-1000. The catalog also features a full-line of balls in ferrous, non-ferrous and ceramic materials: from 0.0525 in.; and in Grades 10-1000.

Literature No. 07-00-000-6001-02

Systems

LINEAR MOTION SYSTEMS FOR SEMICONDUCTOR PROCESSING

This brochure presents an overview of Thomson linear motion systems, both pre-engineered, off-the-shelf designs and currently engineered custom designs for proprietary equipment. Typical applications in the semiconductor industry include wafer processing and inspection, wafer furnaces, robotic wafer arms, transport and flat panel display processing.

Literature No. 03-00-000-6402

Systems

THOMSON LINEAR MOTION SYSTEMS FOR PACKAGING MACHINERY

This brochure shows 1-to 4-axis modular servo systems complete with motors and controls. These systems reduce product development time and time-to-market for new packaging equipment with such applications as width adjustment, stretch wrapping and fluid dispensing. The components of these systems are stocked for quick assembly, matching of motors and controls, shipment and ease of in-plant operation.

Literature No. 03-00-000-6403

Corporate

WHY YOU SHOULD SPECIFY THOMSON LINEAR MOTION PRODUCTS

When buying linear motion products you want to get the very best. This brochure explains why you should specify Thomson products. Thomson products offer the highest loads, longest life, and the most advanced features and benefits available in the world. Thomson offers 10,000 standard off-the-shelf linear motion products.

Literature No. 99-00-000-6416-01

Corporate

INFORMATION BY FAX!

A simple one-page brochure that explains how to use the LinearFax* technical data system. Lists the product information available through this service.

Literature No. 99-00-000-6401

Corporate

THE WORLD'S MOST COMPLETE LINEAR MOTION & CONTROL LINE

An eight-page brochure featuring a listing of Thomson's linear motion products. Included are brief descriptions of each product line.

Literature No. 99-00-000-6430

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Advanced Linear Motion Systems Product Overview **CT** Literature No. 03-00-000-6005-03	
Thomson Linear Motion Systems for Semiconductor Processing **CT** Literature No. 03-00-000-6402	
Thomson Linear Motion Systems for Packaging Machinery **CT** Literature No. 03-00-000-6403	
MicroStage* Systems **TB** Literature No. 03-55-000-6001	
Motion Control Solutions Catalog **CT** Literature No. 03-14-000-6001	
Linear Motion System Catalog on CD ROM including 2D DFX CAD Files and Linear Selector* Software **CD** Literature No. 03-00-000-6005	

LINEAR BEARINGS	QTY
Advanced Linear Motion Technology Guide **CT** Literature No. 01-00-000-6001-03	
Advanced Linear Motion Metric Products **CT** Literature No. 01-50-000-6001-02	
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Smart MultiTrac Ball Bushing* block **TB** Literature No. 01-58-300-6501	
Super Smart Ball Bushing* bearing Rigid Pillow Block **TB** Literature No. 01-01-200-6501	
Miniature Instrument Ball Bushing bearings and Matched Sets **TB** Literature No. 01-03-104-6001	
Metric Miniature Ball Bushing* bearings **TB** Literature No. 01-03-104-6500-01	
Super Smart Ball Bushing* bearings (JIS) **TB** Literature No. 01-81-100-6001-03	
Super Smart Ball Bushing* bearings (6-Track) Inch & ISO **TB** Literature No. 01-01-400-6001	
Linear Motion Products Price Book **PL** Literature No. 01-00-000-6901	
Thomson Linear Motion Products Metric Interchange Guide **MS** Literature No. 01-50-000-6003	

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Genuine 60 Case* LinearRace* shafting **CT** Literature No. 02-00-000-6001	
Thomsalloy* 60 Case LinearRace shafting **TB** Literature No. 02-02-006-6002	
60 Case Flanged Shaft Support Blocks **TB** Literature No.02-03-103-6001-01	
60 Case LinearRace JIT shafting **TB** Literature No.02-02-005-6001-01	
Linear Motion Products Price Book **PL** Literature No.01-00-000-6901	
60 Case shafting Poster (Rolled in Tube) **MS** Literature No. 02-02-000-6402	
60 Case shafting Poster (Folded) **MS** Literature No. 02-02-000-6402	
60 Case shafting & Super Smart Ball Bushing* bearing Poster **MS** Literature No. 99-00-000-6424	

LINEAR GUIDES	QTY
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AccuGlide Protective Bellows **TB** Literature No. 05-02-100-6001	
AccuGlide Scraper Option **TB** Literature No. 14-50-100-6001	
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Linear Guides Interchange Guide (THK/STAR to Thomson) **MS** Literature No. 05-02-000-6014	
Choosing Linear Guides for Smooth Moves (MD Article 5/98) **MS** Literature No. 14-00-000-6200	
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AccuMax* Linear Guide Video **VO** Literature No. 05-03-000-6800	

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Expert Ball Screw Reconditioning for any Design or Make **CT** Literature No. 06-16-000-6400-01	
Performance Pak* Actuators/ Engineering and Selection Guide **CT** Literature No. 09-00-000-6001-01	
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High-Speed HPD In-Line Ball Screw Actuator **TB** Literature No. 09-11-100-6001	
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Actuators for All-Weather Antenna Positioning **MS** Literature No. 09-10-000-6400	

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Nyliner* Bearing Designer's Guide **CT** Literature No. 04-00-000-6001-03	
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Zero Clearance Bearings **TB** Literature No. 04-04-000-6001	
Nyliner, Nylined*, & Nyliner Plus Engineered Polymer Bearings - Complete Price Guide **PL** Literature No. 04-00-000-6902	
Nyliner Bushing Bearings/FluoroNyliner Bushing Bearings - Complete Price Guide **PL** Literature No. 04-00-000-6903	
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MICRON* TRUE PLANETARY* GEARHEADS	QTY
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Gearhead Express Brochure **CT** Literature No. 10-008-000-6001	
Programmable Limit Switches **TB** Literature No. 10-05-000-6001	

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CORPORATE CATALOGS & BROCHURES	QTY
Why You Should Specify Thomson Linear Motion Products **CT** Literature No. 199-00-000-6416-01	
LinearFax* Technical Data **TB** Literature No. 99-00-000-6401	
The World's Most Complete Linear Bearing Line **TB** Literature No. 99-00-000-6430	
Thomson 2000 **VO** Literature No. 99-00-000-6301	

IBL BALL SCREWS	QTY
CT LITERATURE NO. 08-00-000-6002	

Code: CT-Catalog/Brochure; TB-Technical Bulletin; PL-Price List; CD-CD ROM; MS-Miscellaneous; VO-Video

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ENGINEERING CONVERSION FACTORS

QUANTITY	CONVENTIONAL		SI UNIT	CONVERSION FACTORS
	Inch Unit	Metric Unit (MKS)		
LENGTH	Inch **in.**	Meter **m**	**Metre m**	1 in. = 25.4 mm 1 mm = 0.03937 in. 1 m = 3.2808 ft. 1 ft. = 0.3048 m
AREA	Square Inch **$in.^2$**	Square Meter **m^2**	Square Metre **m^2**	1 $in.^2$ = 6.4516 cm^2 1 cm^2 = 0.155 $in.^2$ 1 m^2 = 10.764 ft^2 1 $ft.^2$ = 0.092903 m^2
MASS	Pound **lb_m**	Kilogram **kg**	Kilogram **kg**	1 lb_m = 0.45359237 kg 1 kg = 2.2046 lb
FORCE	Pound Force **lb_f**	Kilogram Force **kg_f**	Newton **N**	1 lb_f = 0.45359237 kg_f 1 lb_f = 4.44822 N 1 kg_f = 2.2046lbf 1 kg_f = 9.80665 N 1 N = 0.1019716 kg_f 1 N = 0.224809 lb_f
STRESS or PRESSURE	Pounds per square inch **$lb_f/in.^2$**	Kilograms per square meter **kg_f/m^2**	Pascal **Pa**	1 MPa = 10^6 N/m^2 = N/mm^2 1 kPa = 10^3 N/m^2 1 $lb_f/inch^2$ = 0.070307 kg_f/cm^2 1 $lb_f/inch^2$ = 7.0307 x 10^{-4} kg_f/mm^2 1 $lb_f/inch^2$ = 6.8947 x 10^{-3} N/mm^2 (MPa) 1 kg_f/cm^2 = 14.2233 $lb_f/in.^2$ 1 kg_f/cm^2 = 9.80665 x 10-2 N/mm^2 (MPa)
TORQUE or WORK	Inch Pounds **lb_f-in.**	Kilogram Meters **kg_f-m**	Newton-Metres **Nm**	1 lbf-in. = 1.1521 kg_f-cm 1 kg_f-cm = 0.8679 lb_f-in. 1 lb_f-in. = 0.1129848 Nm 1 kg_f-m = 9.80665 Nm 1 kg_f-cm = 9.80665 x 10^{-2} Nm 1 Nm = 8.85 lb_f-in. 1 Nm = 10.19716 kg_f-cm
POWER	Foot pound per minute **lb_f-ft./min.**	Force per second **kg_f-m/s**	Newton Metre per second **Nm/s**	1 kW = 1000Nm/s 1 kW = 60,000 Nm/s 1 kW = 44,220 lb_f-ft./min. 1 kW = 1.341 hp 1 hp = 75 kg_f-m/s 1 hp = 44,741 Nm/min. 1 hp = 33,000 lb_f-ft.min. 1 hp = 0.7457 kW
VELOCITY	Feet per second **ft./s**	Meters per second **m/s**	Meters per second **m/s**	1 ft./sec. = 0.3048 m/s 1 in./sec. = 2.54 cm/s 1 ft./sec. = 0.00508 m/s 1 mile/hr. = 0.44704 m/s 1 km/hr. = 0.27777 m/s 1 mile/hr = 1.609344 km/hr.
ACCELERA-TION	Feet per second squared **$ft./s^2$**	Meters per second squared **m/s^2**	Metres per second squared **m/s^2**	1 $ft./s^2$ = 0.3048 m/s^2

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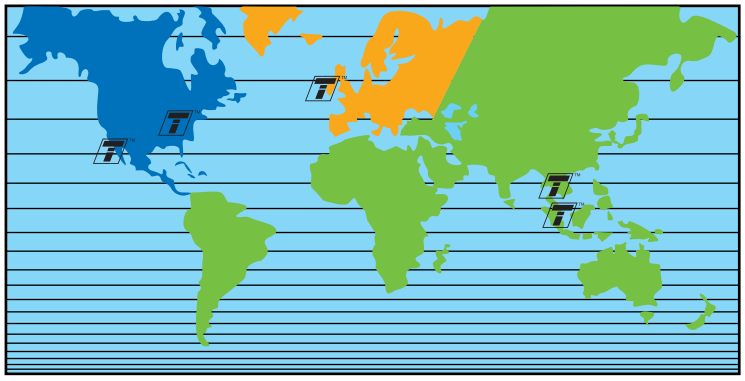

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