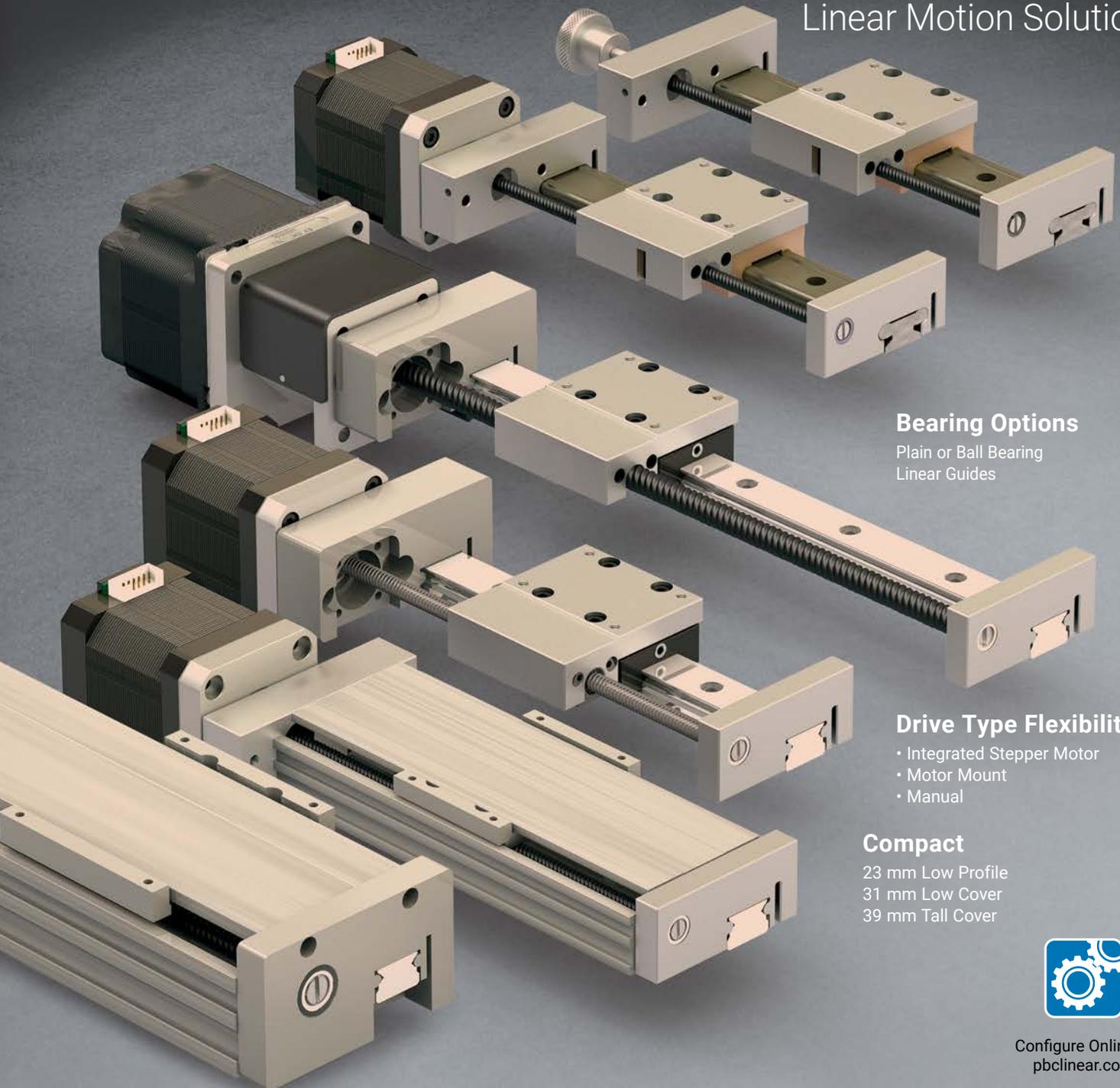




Compact Series Actuators

Linear Motion Solutions



Bearing Options

Plain or Ball Bearing
Linear Guides

Drive Type Flexibility

- Integrated Stepper Motor
- Motor Mount
- Manual

Compact

23 mm Low Profile
31 mm Low Cover
39 mm Tall Cover



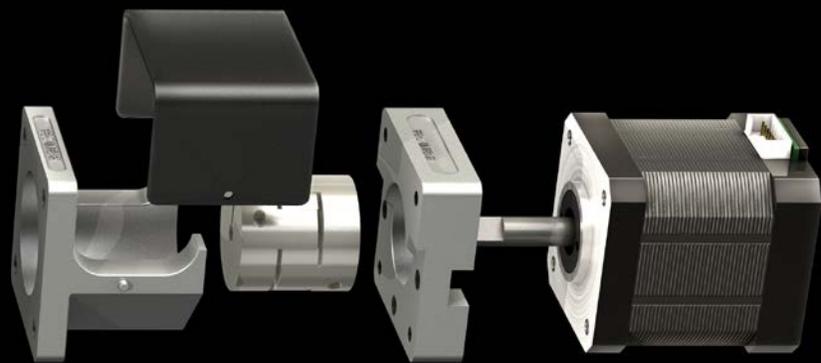
Configure Online at
pbclinear.com

1-800-962-8979

Compact Configurations

Bearing • Transmission Rail Length Available	Available Leads mm/rev	Rail Cover	# Carriages
<p>Self-Lubricating</p> <p>Plain Bearing* Rail</p> <p>6 mm Lead Screw</p> <p>Rail Length between end blocks 80 mm–510 mm</p>	<p>1 mm</p> <p>2 mm</p> <p>4 mm</p> <p>5 mm</p> <p>6 mm</p> <p>8 mm</p> <p>10 mm</p> <p>12 mm</p>	<p>NONE</p> <p>or</p> <p>LOW Cover</p>	<p>1</p> <p>2</p> <p>3</p>
<p>Ball Bearing</p> <p>Profile Rail</p> <p>6 mm Lead Screw</p> <p>Anti-Backlash Nut</p> <p>Rail Length between end blocks 80 mm–510 mm</p>	<p>2 mm</p> <p>5 mm</p> <p>8 mm</p>	<p>or</p> <p>TALL Cover</p>	<p>1</p> <p>2</p>
<p>Ball Bearing</p> <p>Profile Rail</p> <p>8 mm Ball Screw</p> <p>Rail Length between end blocks 130 mm–1,000 mm</p>	<p>1 mm • 2 mm</p> <p>4 mm • 5 mm,</p> <p>6 mm • 8 mm</p> <p>10 mm • 12 mm</p> <p>16 mm • 25 mm</p>	<p>or</p> <p>TALL Cover</p>	<p>3</p>
<p>Ball Bearing</p> <p>Profile Rail</p> <p>10 mm Lead Screw</p> <p>Anti-Backlash Nut</p> <p>Rail Length between end blocks 130 mm–1,000 mm</p>			

*Note: Plain bearings should comply with the 2:1 ratio rule. Cover option NOT available for plain bearing rail.



Contents

Drive End

Motor

None - Stub Shaft



Hand Knob



Integrated Motor



Motor Mount with Motor



Motor Mount



NEMA 17
Single Stack
Only integrated
motor option for
6 mm systems



NEMA 17
Single Stack
Double Stack
Triple Stack*

NEMA 23
Single Stack
Double Stack
Power Plus



Blank Plate
40 mm
42 mm (NEMA 17)
56 mm–58 mm (NEMA 23)
60 mm

*Triple Stack Only Available with Motor Mount

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Compact Features 2
Applications 3
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Speed Charts 8
Velocity Load Charts 9–12

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Dimensions 5

Actuator Covers

Specifications 13

Motor Mounts

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Mounting Brackets and Sensors

Specifications 19–21

User Manual. 22–25

If you are utilizing our digital Compact Series catalog, you can click these icons throughout the publication to get more information. *Hyperlinks go to English language website.*



Configure



**Application
Engineer**



Web Link

Compact Features

Linear Stepper Motors

The Compact Series drive systems feature NEMA 17 and NEMA 23 open loop stepper motors and integrated lead screws. Together, they provide better torsional rigidity and save additional space by eliminating couplings and additional journal bearings.

(Motor is not field replaceable)

Motor Mounting

Engineers have the option to attach any stepper, servo, or smart motor using the Compact Series motor mount option. Its universal design accommodates R+W EKL2 couplers for 6 mm lead screws, or R+W EKL5 couplers for 8 mm ball screws and 10 mm lead screws.

(Motor is field replaceable)

Ball Screws

Better suited for the combination of high-thrust loads and high-duty cycle applications. Not suitable for short strokes or dirty environments.

Lead Screws

Better suited for short-stroke applications and dirty environments. They are quieter with less backlash than a ball screw.

Constant Force™ Anti-Backlash Nut

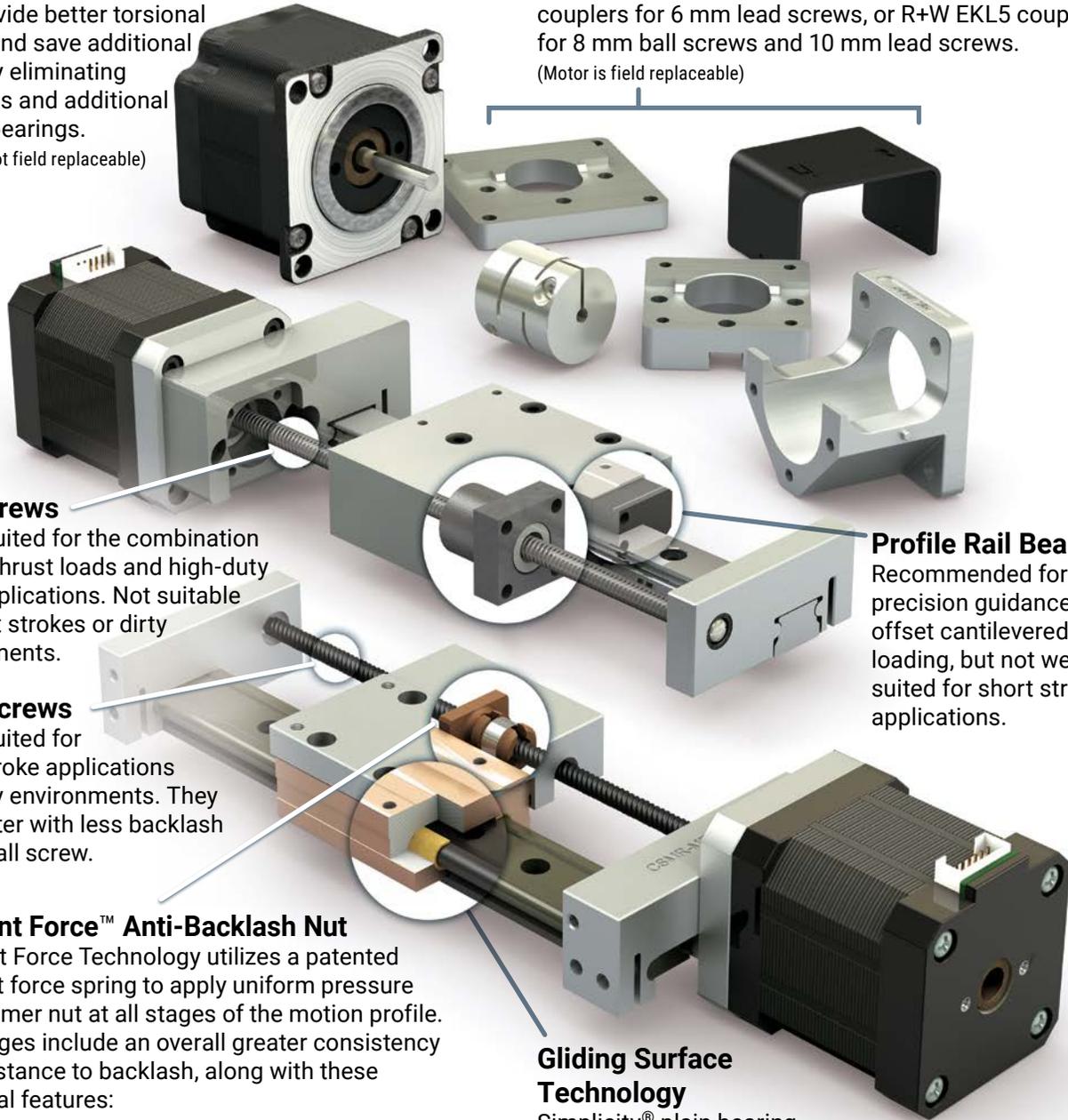
Constant Force Technology utilizes a patented constant force spring to apply uniform pressure to a polymer nut at all stages of the motion profile. Advantages include an overall greater consistency and resistance to backlash, along with these additional features:

- Self-adjusting and self-lubricating, maintenance-free design.
- Configurable for various torque requirements.
- Quieter with less backlash than standard ball screw nuts.

Gliding Surface Technology

Simplicity® plain bearing systems fulfill many of the demands of high precision applications where smooth operations are required. The patented FrelonGOLD® liners create maintenance-free, self-lubricating surfaces that are quieter than their profile rail recirculating ball bearing counterparts. In addition, they are best suited for short-stroke applications and dirty contaminated environments except for those with sticky liquids.

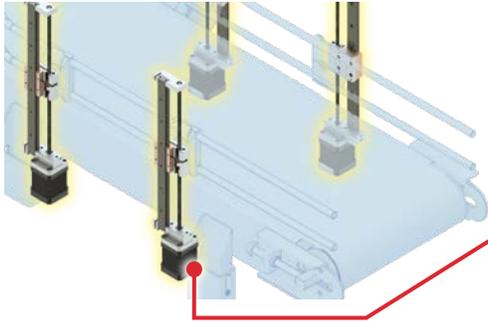
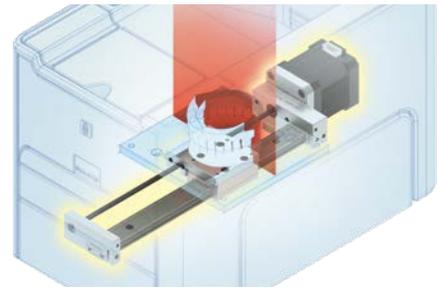
Note: Plain bearings should comply with the 2:1 ratio rule.



Applications

Scanning Equipment

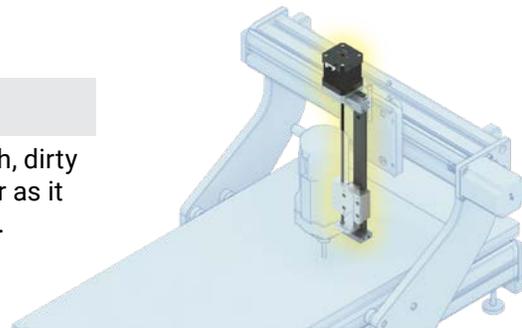
High precision and smooth operation are required when designing linear motion for laboratory scanning equipment. The plain bearing system utilizes FrelonGOLD®, a self-lubricating, maintenance-free surface that does not require oil.



Automated Conveyor

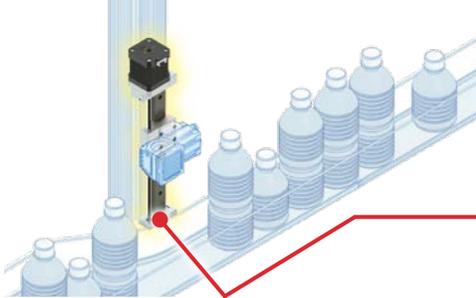
Material handling conveyor systems utilize the Compact Series linear guide system for maintenance-free, repeatable linear motion.

Integrated stepper motor reduces the number of components and improves rigidity in the system.



CNC Router

The plain bearing version of the Compact Series is ideal for harsh, dirty environments such as a CNC router. The carriage acts as a wiper as it clears away contamination such as dust and debris from the rail.



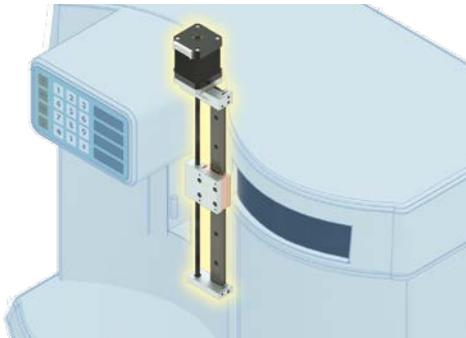
Bottling

The Compact Series is ideal in bottling and food service applications that require repeatable motion and involve various load capacities.

Plain bearings utilize the bonded FrelonGOLD self-lubricating maintenance-free surface.

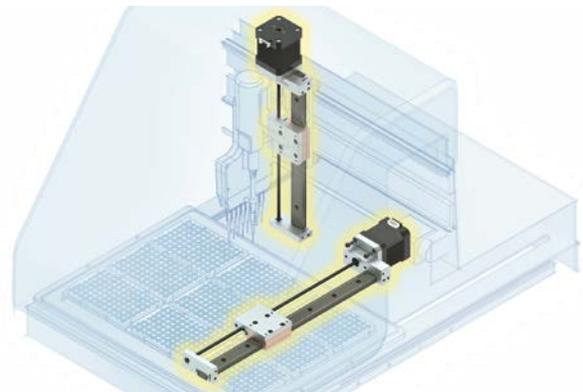
Medical & Laboratory Equipment

The self-lubricating FrelonGOLD lined plain bearing is ideal for environments where no grease or lubrication can be present.



Well Plate Handling

Compact Series installed in an intricate well plate handler, providing accurate and reliable linear motion.



Compact System Overview

Designed for Tight Spaces

The Compact Series boasts a low profile standard system height of 23 mm, making it an ideal solution for applications such as medical and lab automation, automated delivery systems, robotic dispensing systems, and electronics manufacturing. These compact systems provide smooth, accurate, and repeatable linear motion that ensure dependable performance for your application.

Compact Series can be configured with standard options to fit the demands of your application. There are two bearing options to choose from: profile rail (ball bearing) and gliding surface technology (plain bearing).

- Profile Rail systems (available in all sizes) provide higher rigidity and precision, as well as support cantilevered loads. Recirculating ball bearings operate at < 0.010 dynamic coefficient of friction (Approx. $0.020/0.025$ static coefficient of friction).
- Gliding Surface Technology systems (available in 6 mm diameter Lead Screws) utilize plain bearing rails and carriages that boast our FrelonGOLD® liners. This patented technology provides smooth, quiet operation with maintenance-free performance. Additional benefits include vibration damping, wide temperature range, and resistance to catastrophic failure. Keep in mind that plain bearings must comply with the 2:1 ratio rule and operate at < 0.125 dynamic coefficient of friction (Approx. $0.150/0.200$ static coefficient of friction).

All carriage dimensions conform to industry standards, providing flexibility in design. Carriages can be driven by either lead screws or ball screws. Lead screw sizes are available in 6, 8, and 10 mm, while ball screws are limited to 8 mm with various leads.

Lead screws are CNC precision rolled, conforming to a lead accuracy of $0.003''/ft$ ($76 \mu\text{m}/300 \text{ mm}$). They are constructed with 300 series stainless steel with an additional PTFE coating applied.

Our Constant Force™ anti-backlash nut applies uniform radial pressure along the full length of the lead screw and has consistent preload over the life of the nut. This combination of screw and nut provides a self-lubricated and maintenance-free system. The system can be driven with a NEMA 17 or NEMA 23 motor that's either integrated or contains a motor mount. Manual hand knobs or stub shafts are available for applications not requiring a motor.



Profile Rail - Ball Bearing



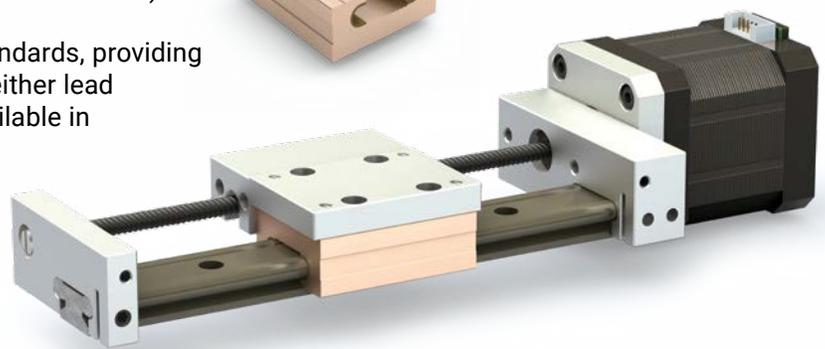
WARNING: Profile rail requires a flat mounting surface. It is recommended to have a mounting surface with a flatness error of $0.060/200 \text{ mm}$. Questions, contact an Applications Engineer at +1.800.962.8979.



Email an Application Engineer



Gliding Surface Technology Plain Bearing



WARNING: Plain bearings should comply with the 2:1 ratio rule.



**White Paper
Demystifying the 2:1 Ratio**

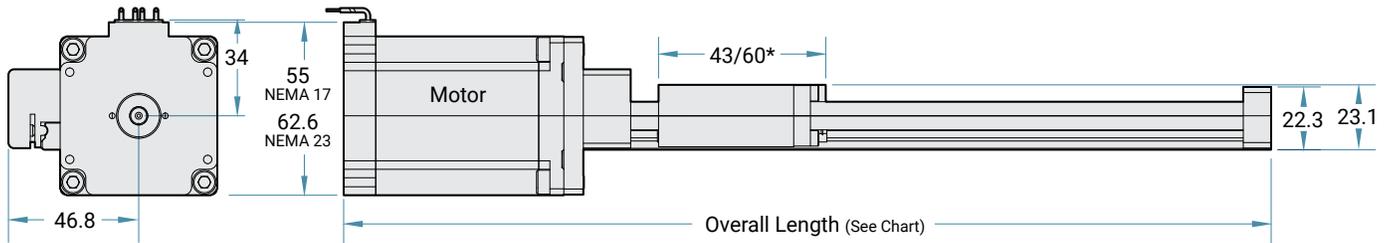
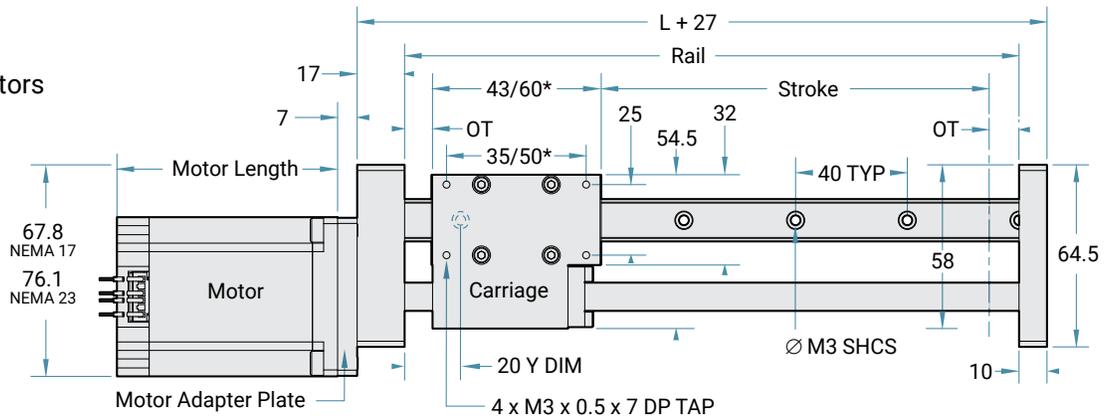
Noncovered Compact Dimensions

Profile Rail Actuator Dimensions

6 mm Lead Screw
8 mm Ball Screw
10 mm Lead Screw
Non-Covered Actuators



Configure
Online



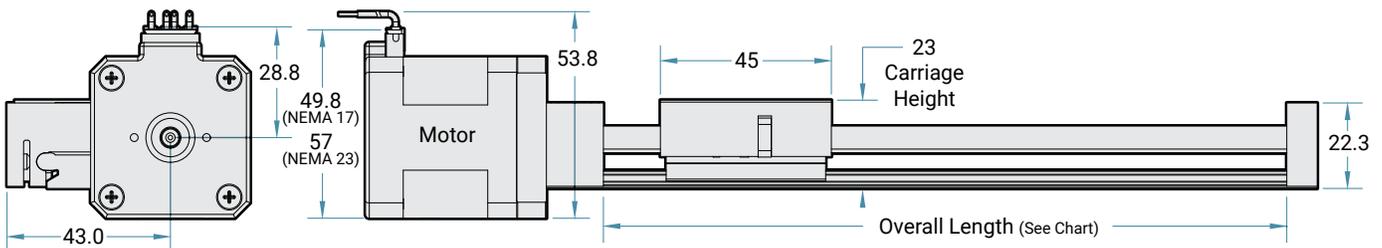
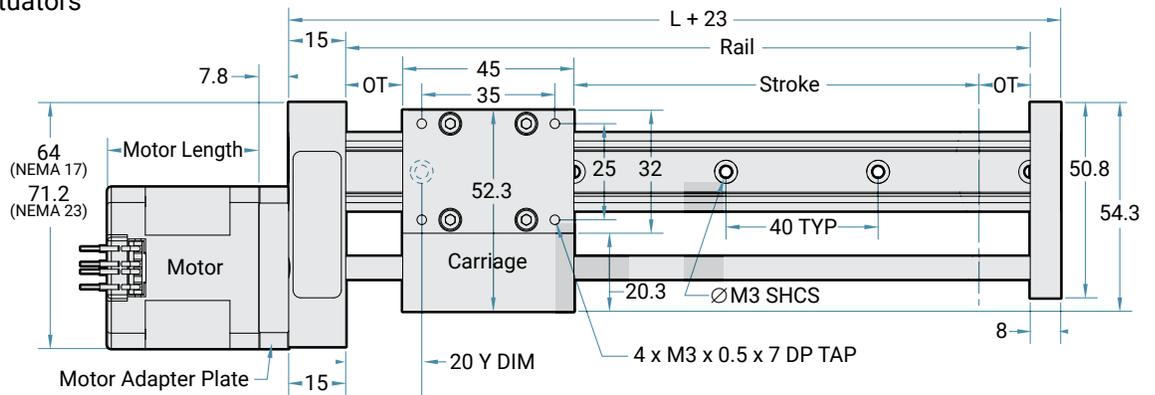
* First number pertains to 6 mm Compact version and second number pertains to 8 mm and 10 mm Compact version.

Plain Bearing Actuator Dimensions

6 mm Lead Screw Actuators



Configure
Online



Units of Measurement mm

Profile Rail System Ordering Information

Compact Series	Type	Diameter	Lead	Thread Dir.	Drive End Option	Motor Option	Nut	Carriage Length	Cover	Rail Length	QTY of Carriages
CS	LS	M10	AGX	R	1	00	1	L	L	XXXX	0



Configure Online

Screw Type	
LS	Lead Screw
BS	Ball Screw

Screw Diameter	
M06	6 mm Lead screw
M10	10 mm Lead screw
M08	8 mm Ball screw

Screw Lead	
AHX	1 mm (M06 & M10)
AGX	2 mm
ARX	4 mm (M06 & M10)
AXX	5 mm
BGX	6 mm (M06 & M10)
BHX	8 mm
AJX	10 mm (M06 & M10)
BDX	12 mm (M06 & M10)
AFX	16 mm (M10 only)
AWX	25 mm (M10 only)

Rail Length
Lengths of 130 mm to 1,000mm (Consult maximum speed data)

Nut
1 - Standard (Ball screw only)
2 - Anti-Backlash (Lead screw only)

Carriage
S - Short - 45 mm long (6 mm only)
L - Long - 60 mm long (10 mm and 8 mm only)

Cover
N - No
L - Low*
T - Tall*

Quantity of Carriages	
0	1 driven carriage
1	2 carriages, 1st from drive end driven
2	2 carriages, 2nd from drive end driven
3	3 carriages, 1st from drive end driven
4	3 carriages, 2nd from drive end driven
5	3 carriages, 3rd from drive end driven

Drive End Option	Motor Option
1 - Shaft (Includes referenced mount with no motor or coupling)	00 Stub Shaft
	0Z Motor Mount Adapter Plate
	ZE 40 mm Motor Mount
	ZF NEMA17 Motor Mount
	ZG NEMA23 Motor Mount
	ZH 60 mm Motor Mount
	Z0 Blank Plate (Customer Machined)
2 - Knob	00 Stub Shaft
3 - PBC Linear Integrated Motor Screw	A1 NEMA17 Single Stack
	A2 NEMA17 Double Stack

Drive End Option	Motor Option
3 - PBC Linear Integrated Motor Screw (cont.)	B4 NEMA23 Single Stack
	B5 NEMA23 Double Stack
	B6 NEMA23 Power Plus
4 - Complete System (Motor, Mount, Coupling, Shipped as 1 Unit)	A1 NEMA17 Single Stack
	A2 NEMA17 Double Stack
	A3 NEMA17 Triple Stack
	B4 NEMA23 Single Stack
	B5 NEMA23 Double Stack
	B6 NEMA23 Power Plus

Ordering example:

CSBSM08AXXR10Z-1SN-0300-5

*Covers for Compact Actuators (Low and Tall) have a MAX length of 500 mm.

Gliding Surface Rail System Ordering Information

Compact Series	Type	Rail Length	Drive Option	Lead	Nut	QTY of Carriages	
CS	MR15D	000	XXXX	100	AWX	R2	X



Configure Online

Rail Length
Lengths from 80 mm to 510 mm (Consult maximum speed data)

Drive Type	
100	None-Stub Shaft
200	Hand Knob
3A1	NEMA17 Single Stack
1ZE	40 mm Motor Mount
1ZF	NEMA17 Motor Mount
1ZG	NEMA23 Motor Mount
1ZH	60 mm Motor Mount
1Z0	Blank Plate

M06 (6 mm lead screw)	
AHX	1 mm
AGX	2 mm
ARX	4 mm
AXX	5 mm
BGX	6 mm
BHX	8 mm
AJX	10 mm
BDX	12 mm

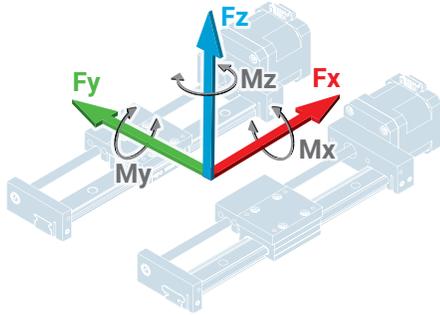
Nut
Anti-Backlash

Quantity of Carriages	
0	1 driven carriage
1	2 carriages, 1st from drive end driven
2	2 carriages, 2nd from drive end driven
3	3 carriages, 1st from drive end driven
4	3 carriages, 2nd from drive end driven
5	3 carriages, 3rd from drive end driven

Ordering example:

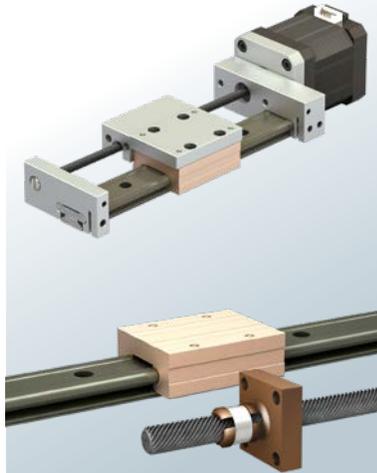
CSMR15D-000-0425-3A1-AXXR2-2

System Properties



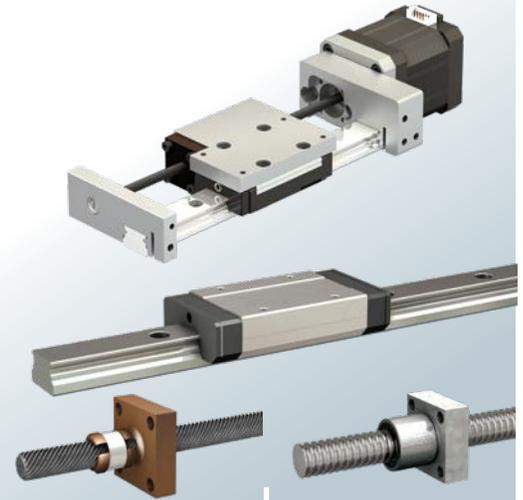
Email an Application Engineer

Gliding Surface Technology Plain Bearing



Lead Screw

Profile Rail technology Ball Bearing Linear Guides



Lead Screw

Ball Screw

Speed mm/s			4,200	4,200	5,500	
Acceleration m/sec ²			50	50	250	
Stroke mm			445 MAX Plus. 10 mm End Over Travel	920 MAX Plus. 10 mm End Over Travel	920 MAX Plus. 10 mm End Over Travel	
Repeatability (+/- mm)			< /= 0.02 Anti-Backlash	< /= 0.02 Anti-Backlash	< /= 0.03	
MAX Drive (Input) Speed rpm			2,000	3,000	3,000	
Screw Diameter mm			6 mm Lead Screw	6 mm LS 10 mm LS	8 mm Ball Screw	
Lead mm			1, 2, 4, 5, 6, 8, 10, or 12	1, 2, 4, 5, 6, 8, 10, or 12 1, 2, 4, 5, 6, 8, 10, 12, 16, or 25	2, 5 or 8	
MAX Bearing Loads	Fx	N	25	25	222	386
	Fy		200	950	1,425	
	Fz (Normal)		200	950	1,425	
	Fz (Inverted)		200	950	1,425	
MAX Carriage Bearing Moment Loads	Mx	Nm	9	20.2	30.4	
	My		9	13.1	29.8	
	Mz		15.1	13.1	29.8	

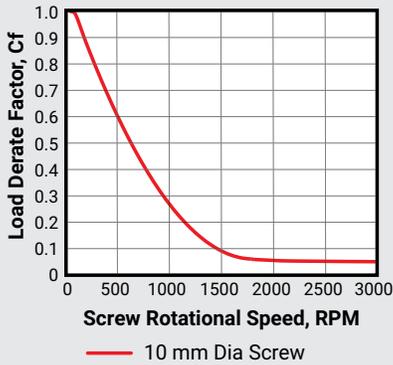


White Paper
Demystifying the 2:1 Ratio

WARNING: Profile rail requires a flat mounting surface. It is recommended to have a mounting surface within a flatness error of 0.060/200 mm. For questions, contact an Applications Engineer at +1.800.962.8979.

PV Derate, Buckling, & Critical Speed Curves

Load Derate Factor for Metric Lead Screw Nuts



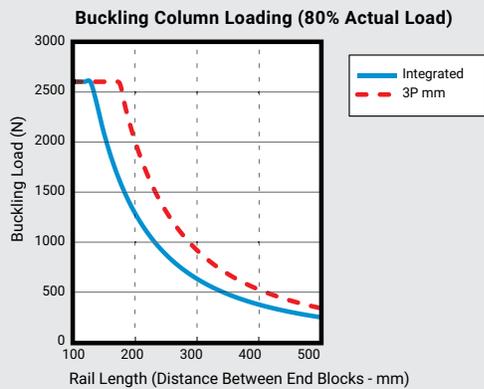
MAX Nut Load = Cf x Nut Dynamic Load Rating

Please note that the PV limit of the nut is dependent on the duty of the application and other factors so these curves are a guideline. If your application will operate near or beyond the shown curves, please contact PBC Linear for support.

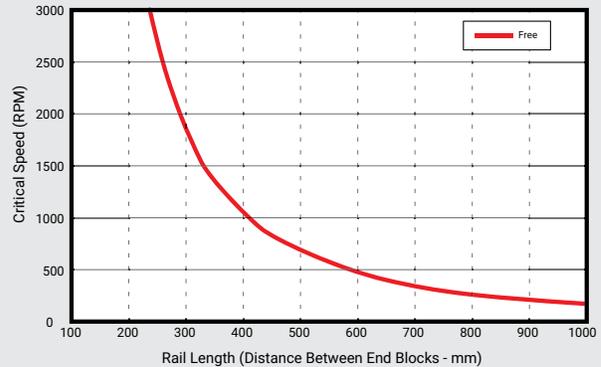
Screw Diameter	Drag Torque** (Nm)		Dynamic Load (N)	
	Standard	Constant Force	Standard	Constant Force
6 mm	Free Wheeling	0.0134-0.0164	334 N	302 N
10 mm	Free Wheeling	0.0197-0.0240	445 N	400 N

** Standard drag torque is factory set to the median number shown. For custom drag torque please contact a PBC Linear Applications Engineer.

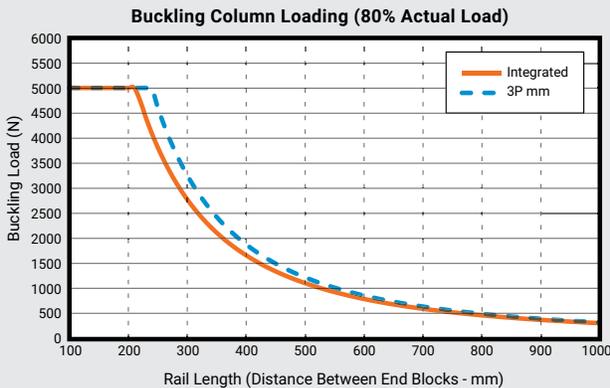
6 mm Lead Screw



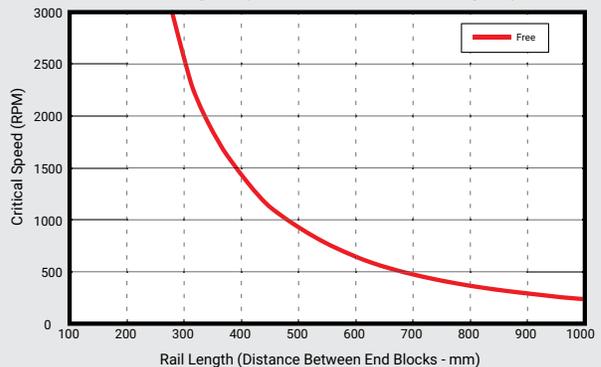
Critical Speed (80% of Calculated Critical Speed)



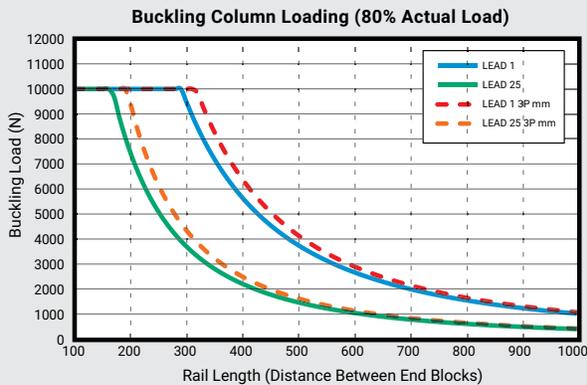
8 mm Ball Screw



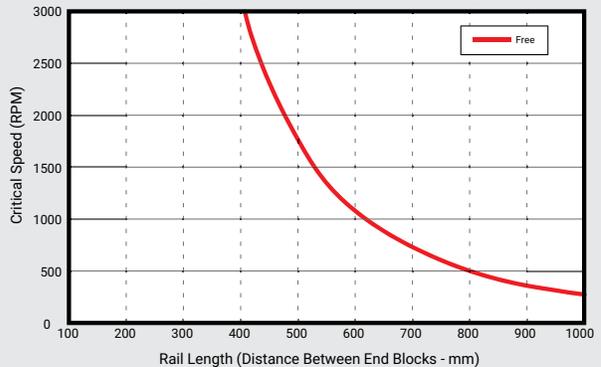
Critical Speed (80% of Calculated Critical Speed)



10 mm Lead Screw

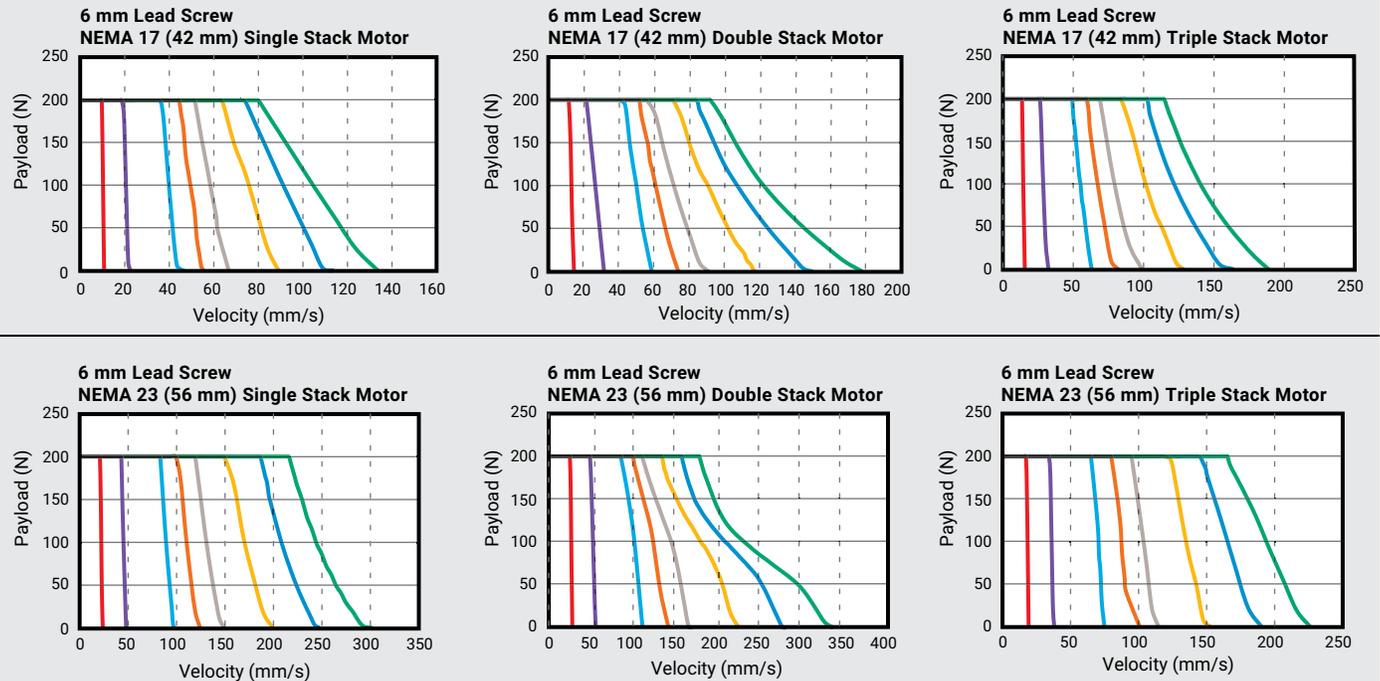


Critical Speed (80% of Calculated Critical Speed)

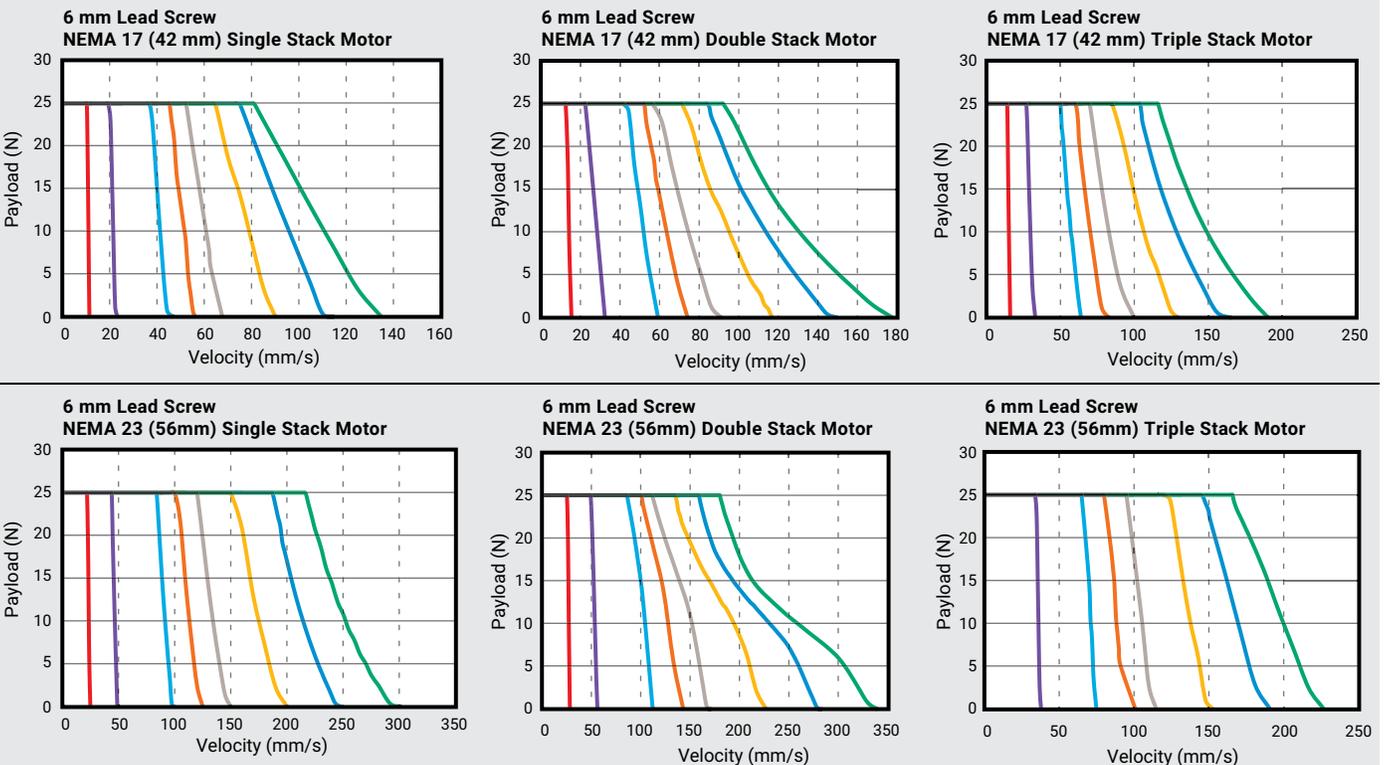


6 mm Lead Screw Gliding Surface Load Curves

Horizontal Loads



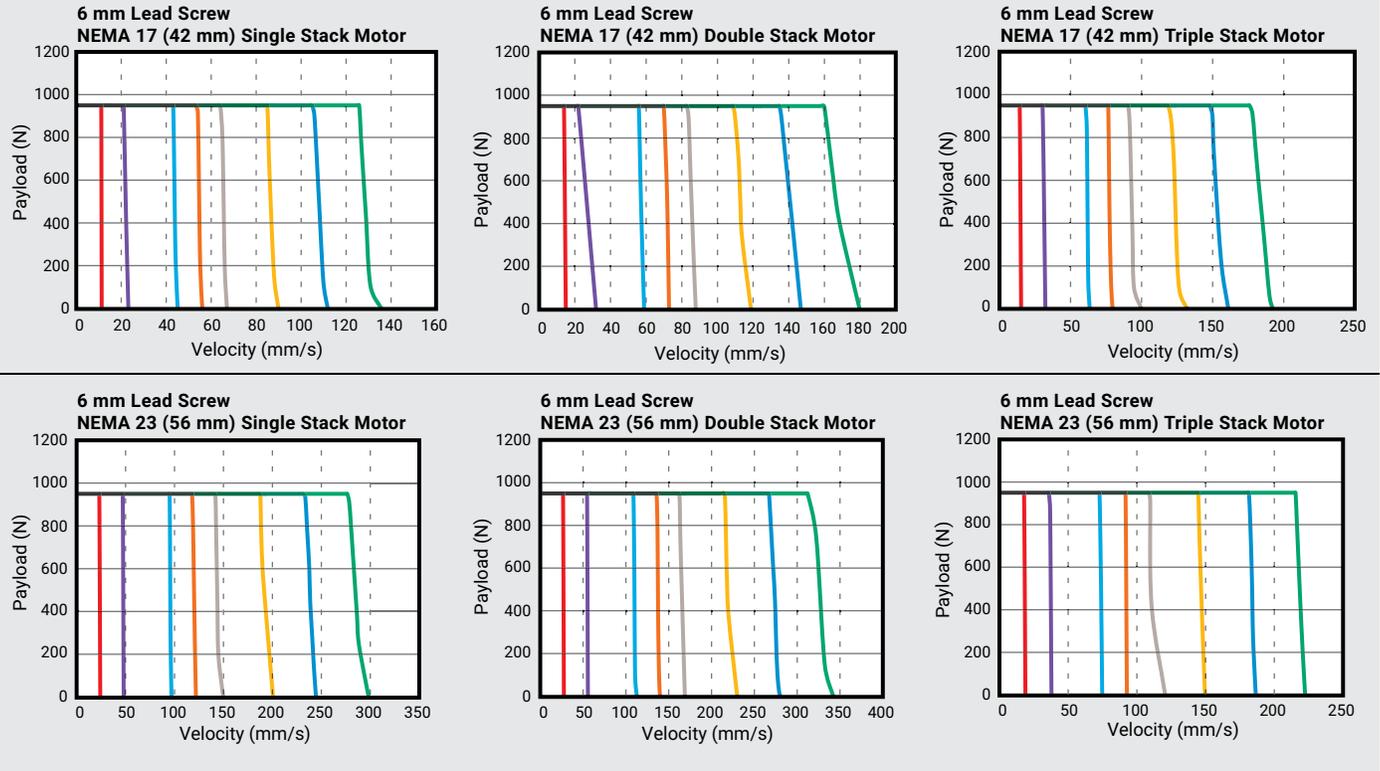
Vertical Loads



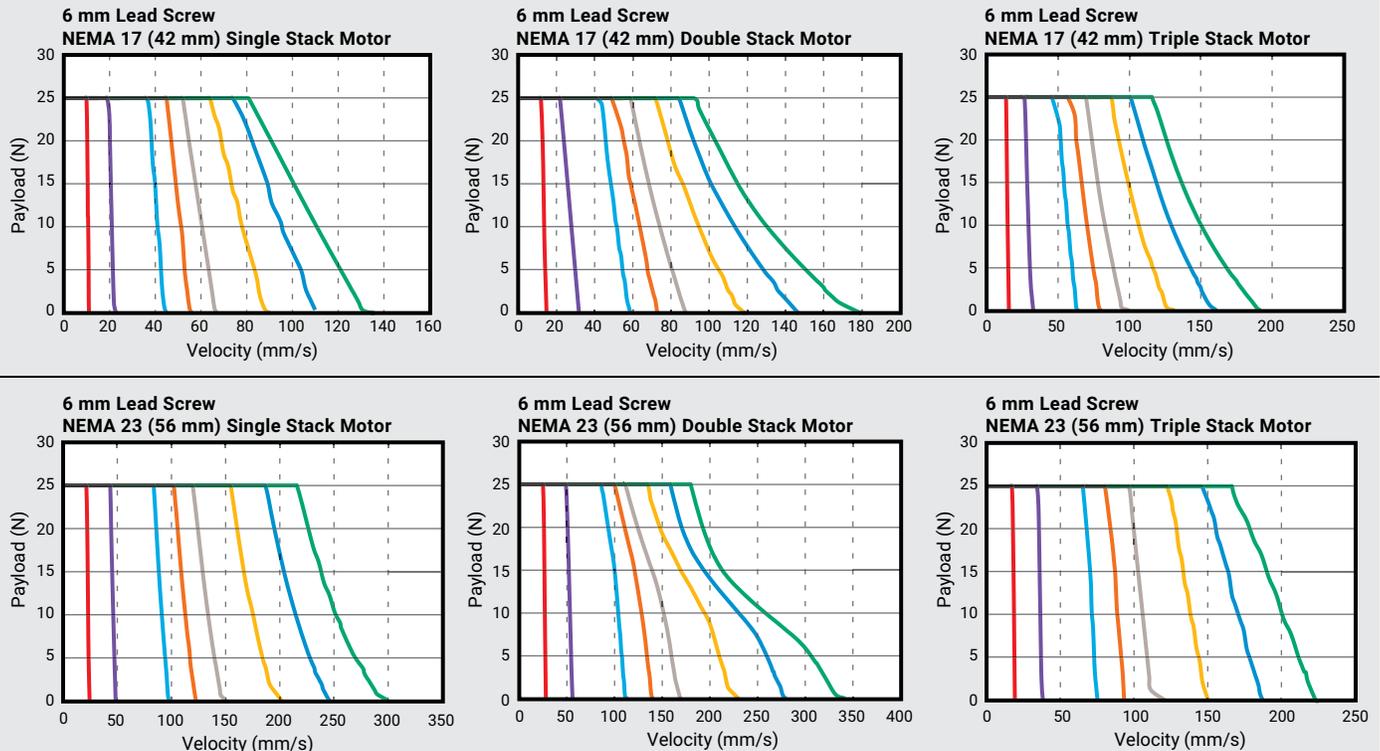
Note: Based on 500 mm stroke, GST version with 0.125 C.O.F. and 0.3G acceleration. Based on 24 volt, but higher voltage amplifiers may produce higher speeds.

6 mm Lead Screw Profile Rail Load Curves

Horizontal Loads



Vertical Loads

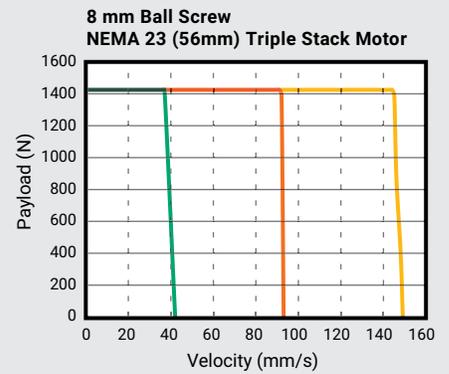
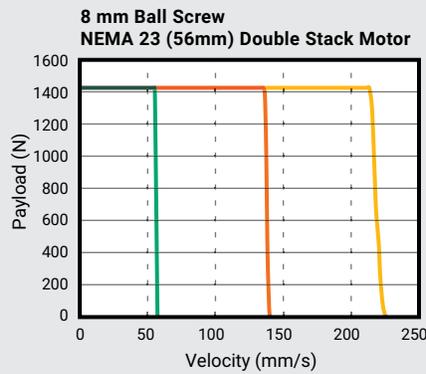
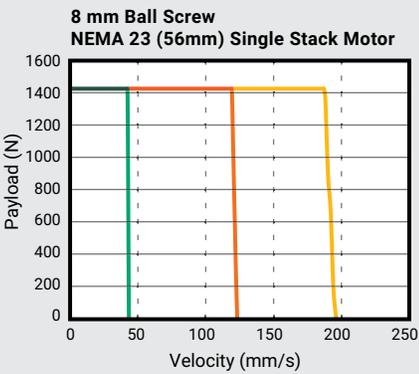
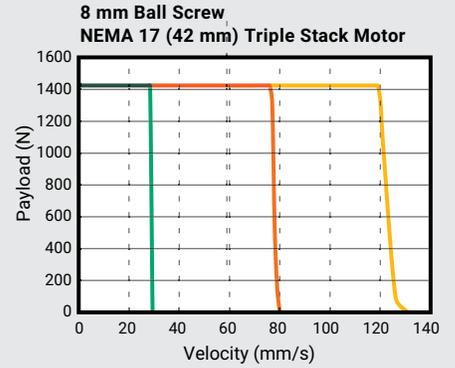
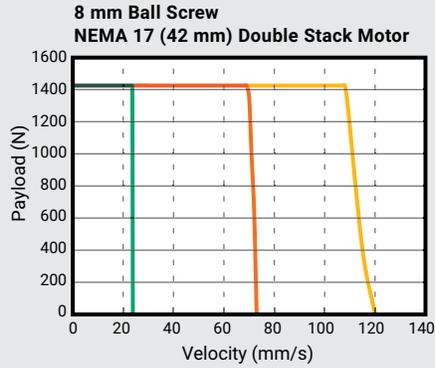
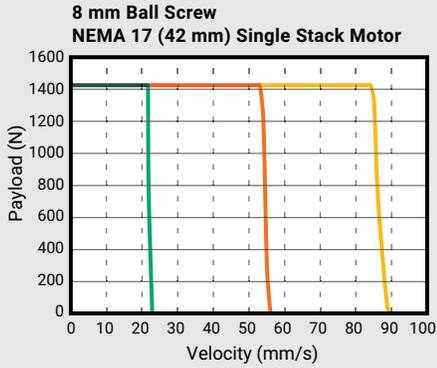


Note: Based on 500 mm stroke, GST version with 0.125 C.O.F. and 0.3G acceleration. Based on 24 volt, but higher voltage amplifiers may produce higher speeds.

8 mm Ball Screw Profile Rail Load Curves

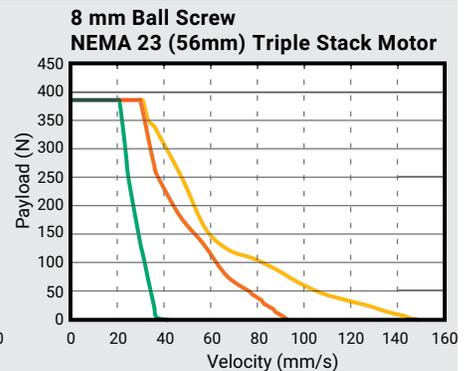
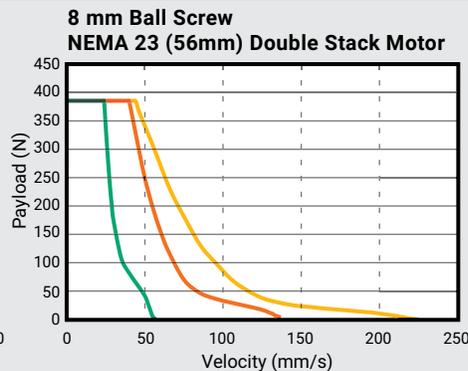
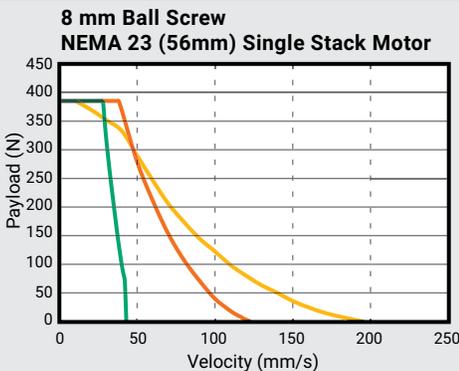
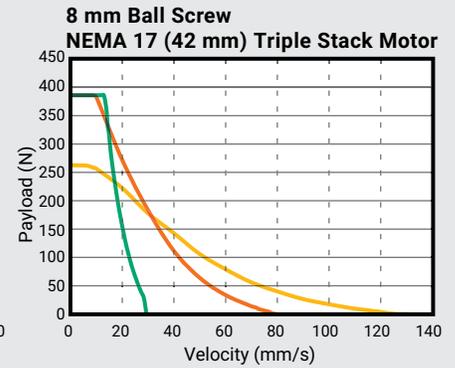
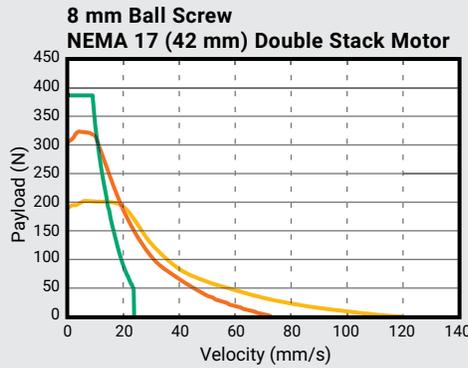
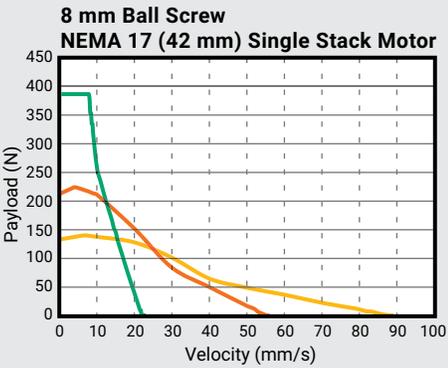
Horizontal Loads

— Lead 2 — Lead 5 — Lead 8



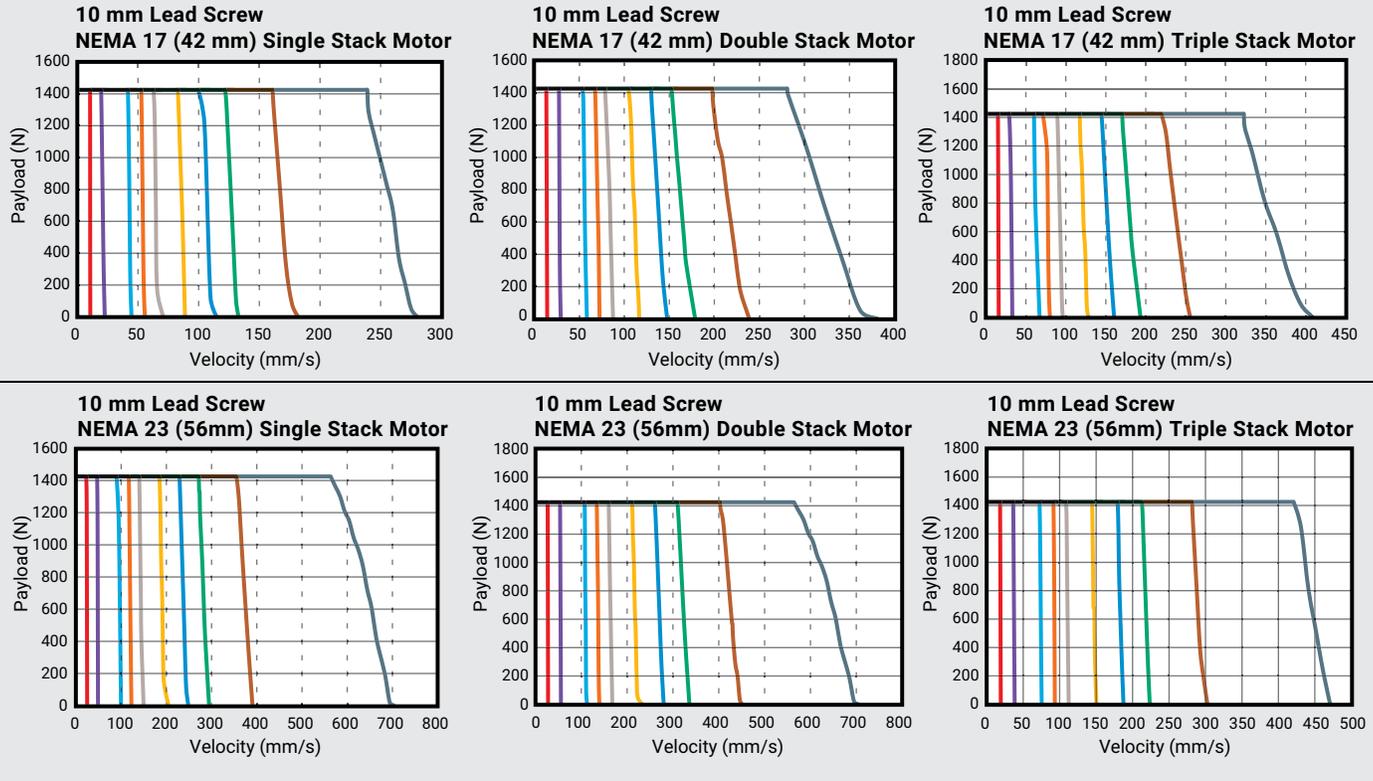
Vertical Loads

— Lead 2 — Lead 5 — Lead 8

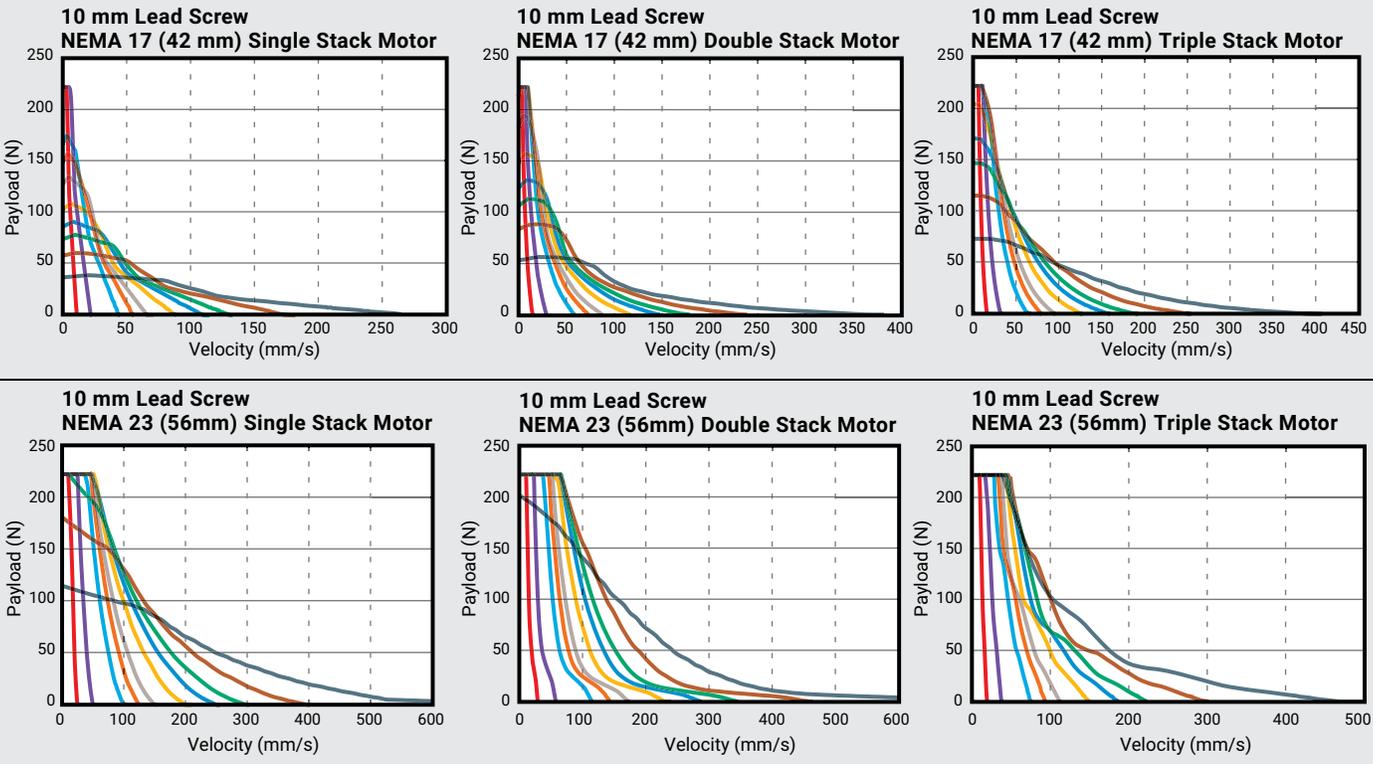


10 mm Lead Screw Profile Rail Load Curves

Horizontal Loads



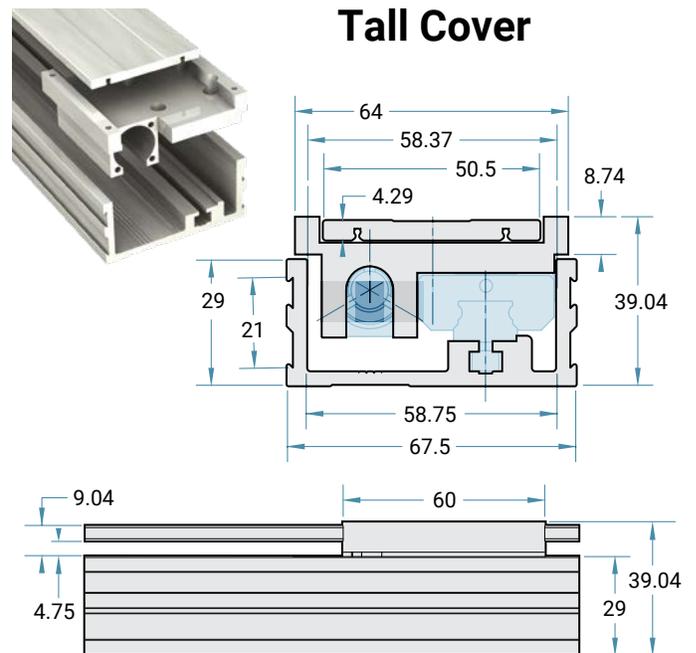
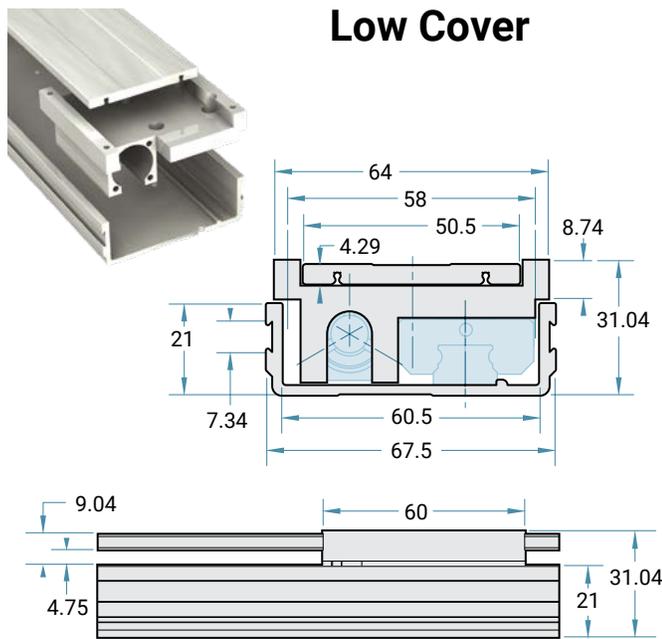
Vertical Loads



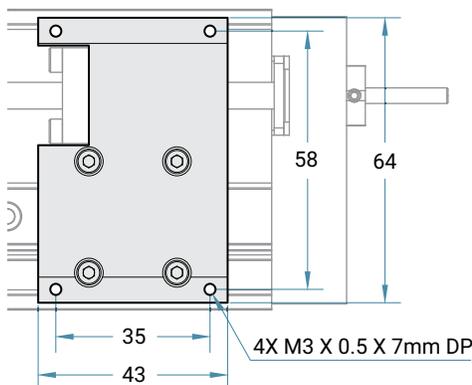
Cover Component Dimensions

Covered Compact Actuators

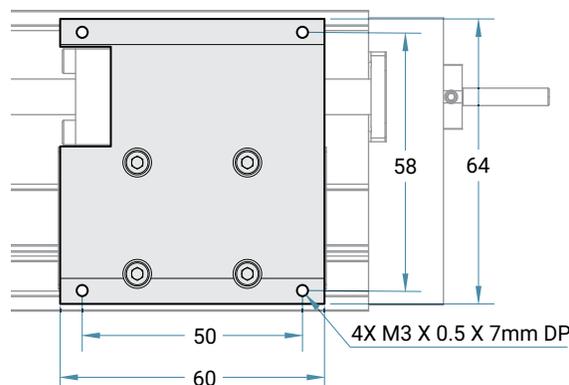
- Material: Aluminum (MAX length 500 mm)
- Low profile cover with thru rail mount or tall profile cover that provides a more modular mounting with toe clamps
- 6 mm diameter lead screw, 10 mm diameter lead screws, or 8 mm diameter ball screw drives
- 15 PRT profile rail (standard recirculating ball brg block)
- 45 mm long carriage for 6 mm dia. lead screw
60 mm long carriage for 8 mm dia. ball screw & 10 mm dia. lead screw



6 mm System Carriage



8 & 10 mm System Carriage



Units of Measurement mm

Drive End Options/ Motor Mount Benefits

Manual Hand Knob

Hand adjustment knob is used for manually adjusting screw driven systems



Stub Shaft

6 mm screw = 3.5 mm dia. stub
8 & 10 mm screw = 4 mm dia. stub



Integrated Stepper Motor

Lead screw aligned and fixed directly with motor

- Fewer components means greater accuracy, increased rigidity, and less cost
- 6 mm & 10 mm dia. lead screw driven or 8 mm dia. ball screw driven
- Attach NEMA 17 and NEMA 23 motors
- Single and double stack
- Standard wire connection is onboard plug, included connector plug with 12" leads



Motor Mount

One-piece main frame holds shaft-to-shaft center line

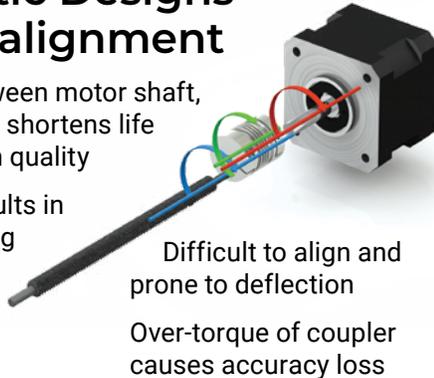
- Extends motor and coupler life
- Increases accuracy and repeatability
- Attach NEMA 17 or NEMA 23 stepper, servo, or smart motor
- 6 mm, 10 mm diameter lead screw or 8 mm diameter ball screw driven
- Motor easily attached with adapter plate and coupler (Motor mount kit excludes coupler)
- Assembled system available with motor, coupling, and motor mount. Consult factory
- Easy to assemble and motor field replaceable



Problematic Designs Cause Misalignment

Misalignment between motor shaft, coupler, and screw shortens life and affects motion quality

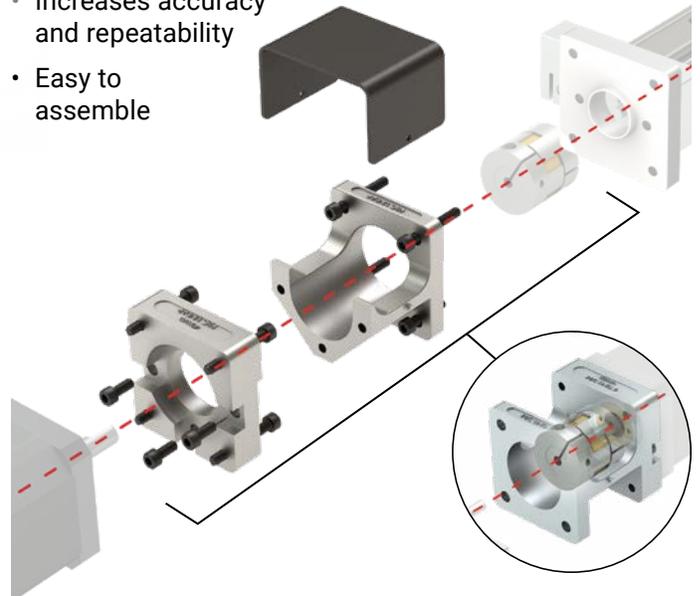
Mis-alignment results in camming or lobbing motion that translates to inconsistent linear movement



PBC Linear Design with Pre-Engineered Alignment

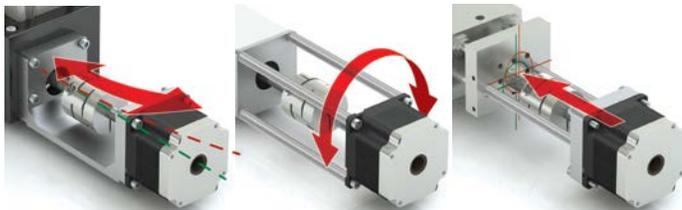
One-piece main frame holds shaft-to-shaft center line

- Extends motor and coupler life
- Increases accuracy and repeatability
- Easy to assemble

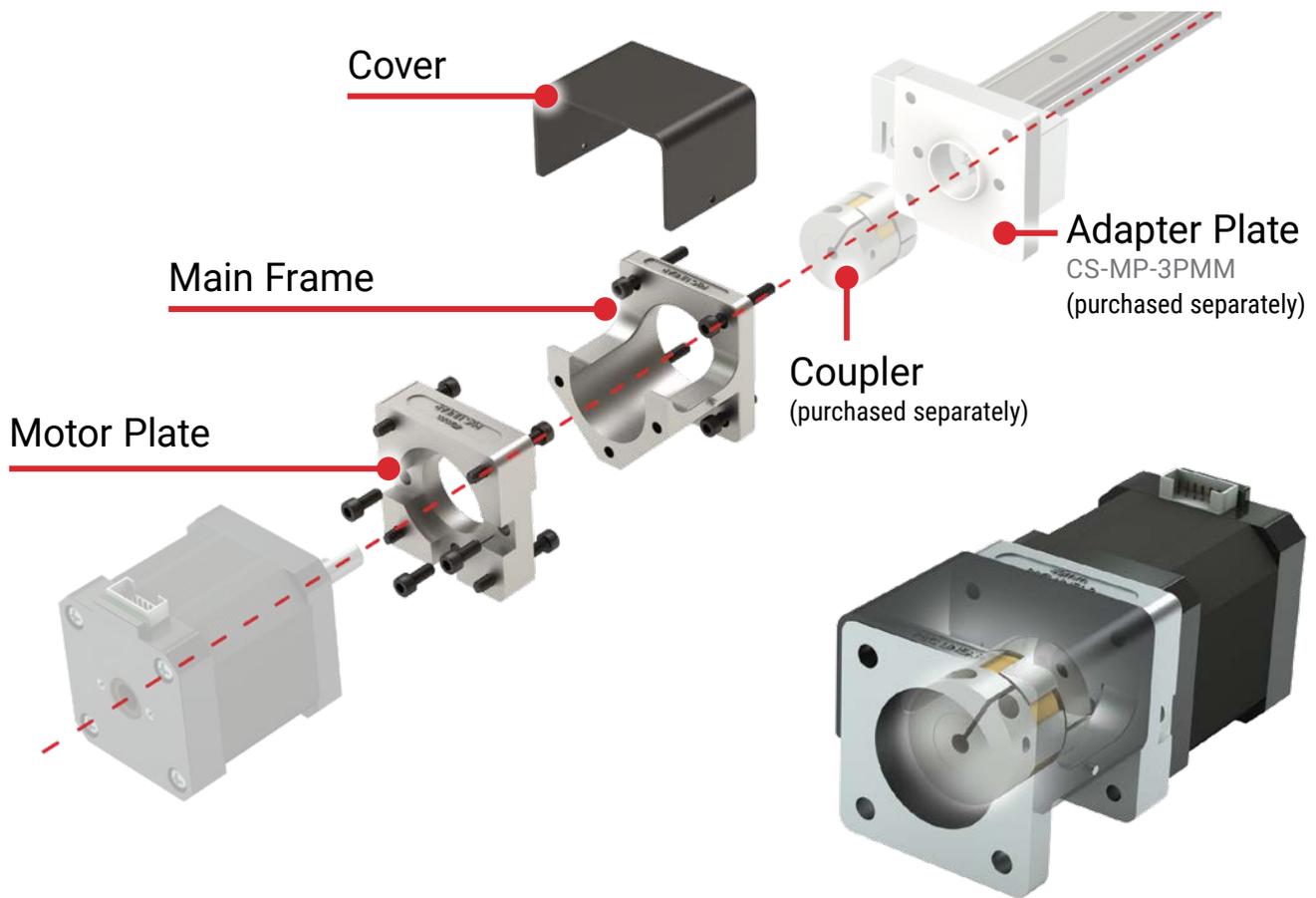


⚠ CAUTION Problems with Alternate Designs

- Problem 1** Deflection **Problem 2** Twist **Problem 3** Off Center line



Ordering Motor Mount Kit Separately



Motor Size	Part Number	Recommended Coupler Ordered Separately or Customer Supplied	Included with Motor Mount Purchase
40 mm	UGA040A-3PMM-HE	R + W EKL2 for 6 mm R + W EKL5 for 8 mm & 10 mm Maximum coupler dimensions: 25 mm O.D. x 26 mm length	(1) Main frame with 4 SBHCS (Socket Button Head Cap Screw)
NEMA 17 - 42 mm	UGA040A-3PMM-HF		(1) Motor plate with 3 SBHCS for attaching to frame*
NEMA 23 - 56 mm	UGA040A-3PMM-HG		(1) Cover (plastic)
60 mm	UGA040A-3PMM-HH		* Customer supplies motor screws
Blank Plate (customer machined)	UGA040A-3PMM-H0		



Email an Application Engineer

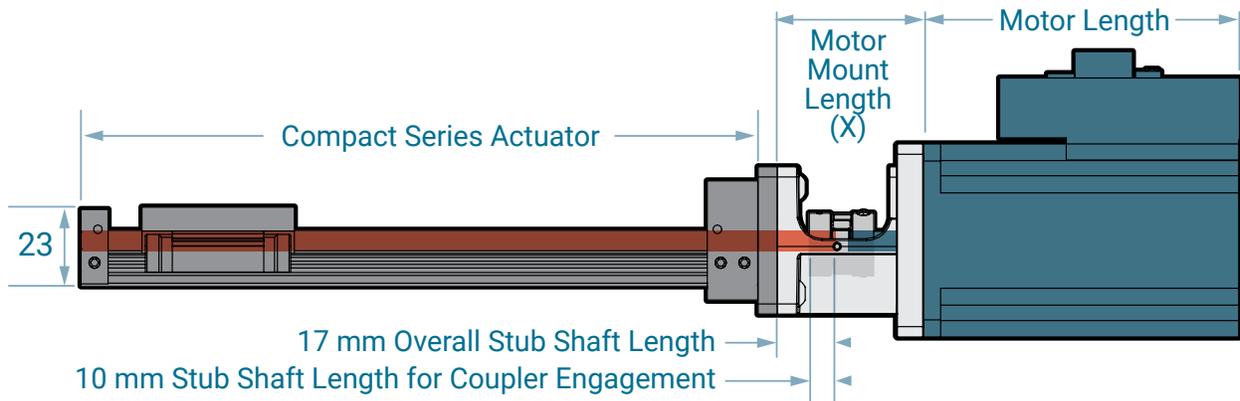
Motor Mount Main Frame

Stub Shaft Dimensions

Stub Shaft Diameter (6 mm dia. Lead Screw)	3.5 mm
Stub Shaft Diameter (8 mm dia. BS & 10 mm dia. LS)	4 mm
Overall Stub Shaft Length	20 mm
Stub Shaft Length for Coupler Engagement	6 mm

Motor Mount Length

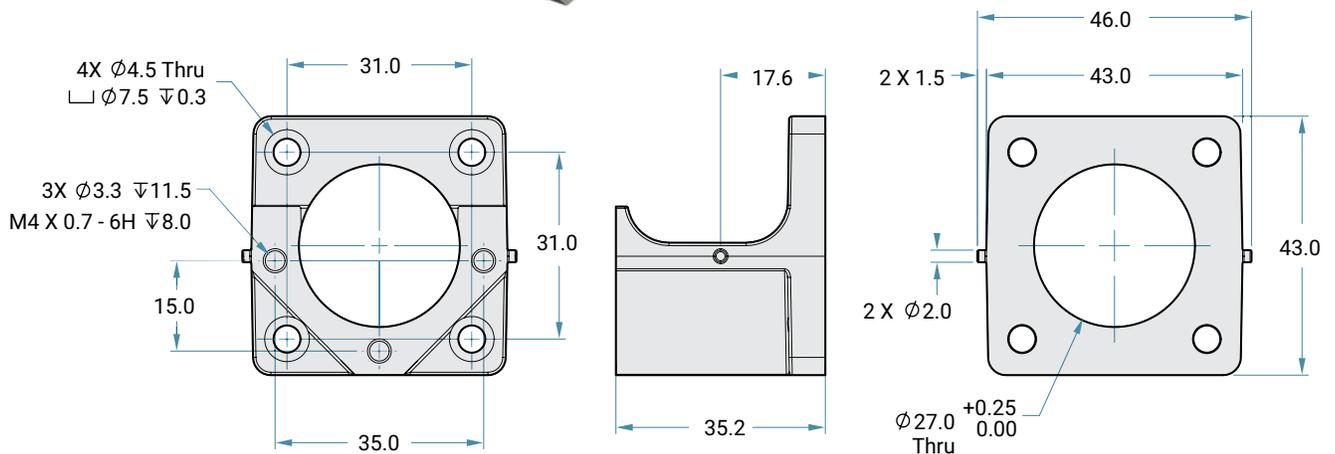
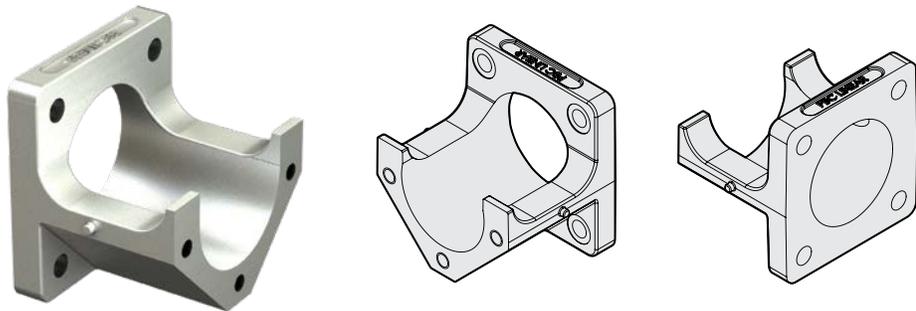
NEMA 17 - 42 mm	53.7 mm
NEMA 23 - 56 mm	54.3 mm



Main Frame

UGA040Z-3PMM-FRAME

Material: Die cast aluminum, clear chromate



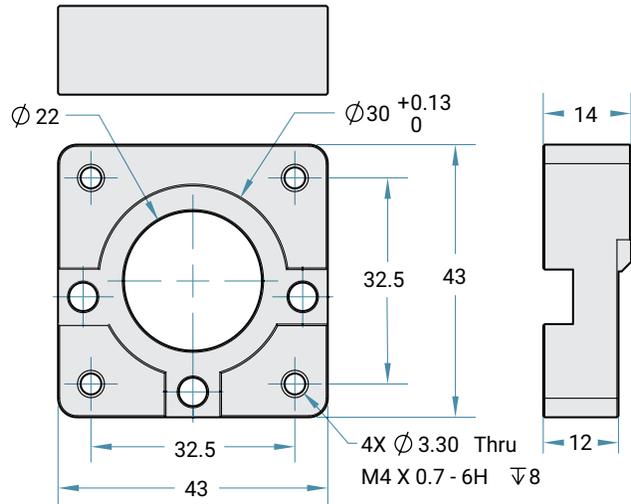
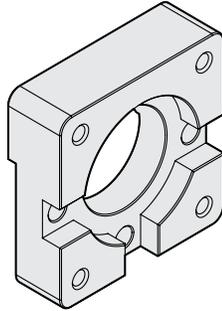
Units of Measurement mm

Motor Mount Plates

Motor Size: 40 mm

UGA040Z-3PMM-40A

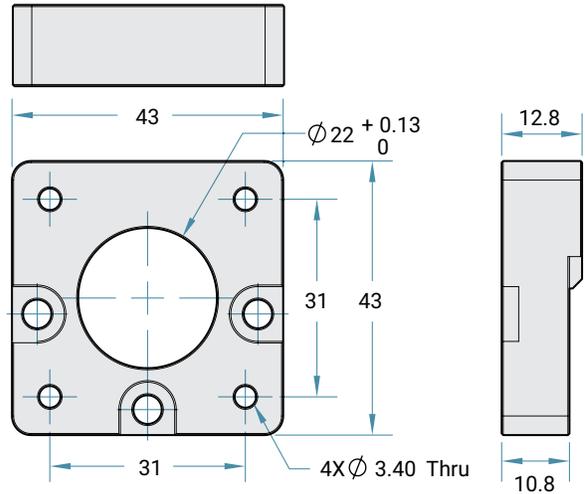
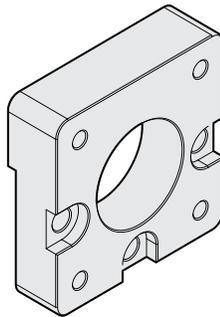
Material: Anodized aluminum



Motor Size: Nema 17 (42 mm)

UGA040Z-3PMM-42A

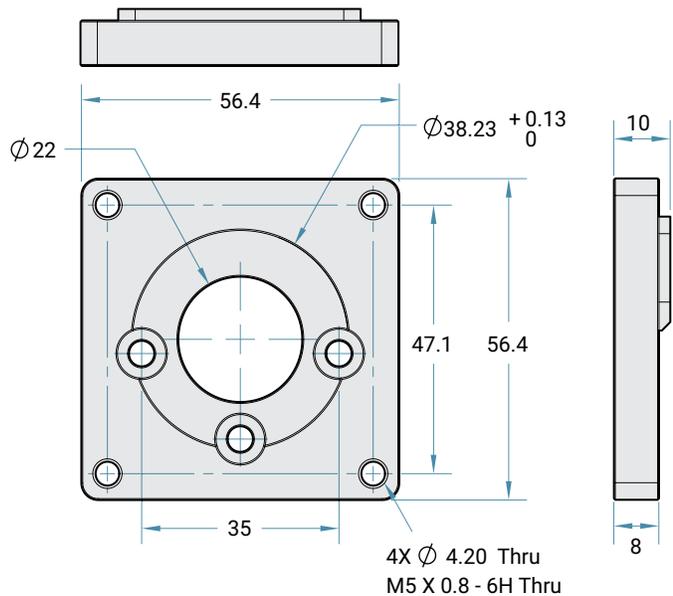
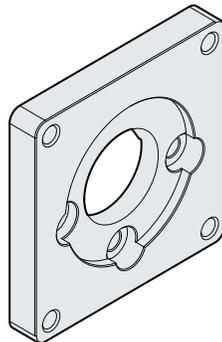
Material: Anodized aluminum



Motor Size: Nema 23 (56 mm)

UGA040Z-3PMM-56A

Material: Anodized aluminum



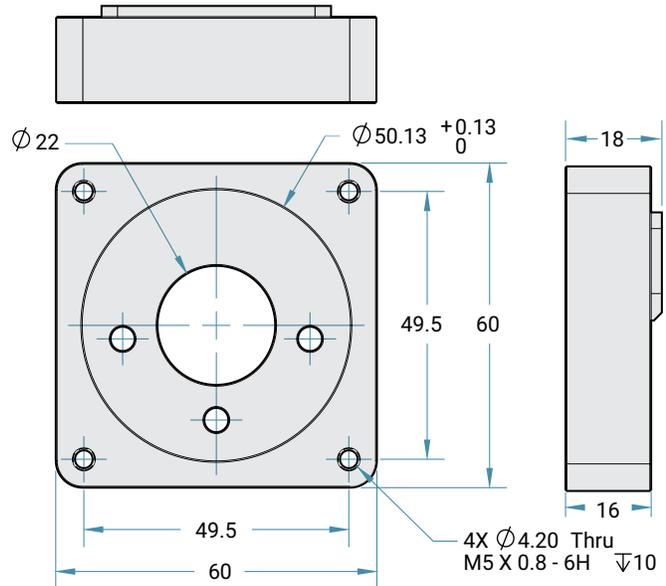
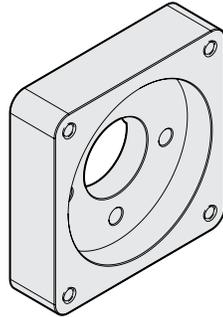
Units of Measurement mm

Motor Mount Plates

Motor Size: 60 mm

UGA040Z-3PMM-60A

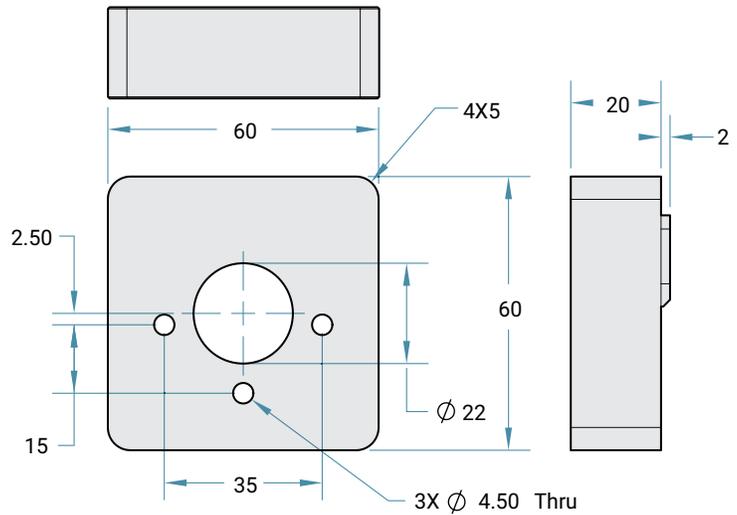
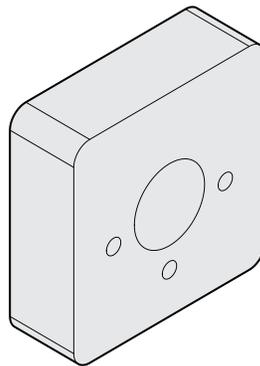
Material: Anodized aluminum



Blank Plate

UGA040Z-3PMM-BKA

- Intended use: To give customers the ability to machine the plate to match non-standard motor configurations
- Material: Anodized aluminum
- Tip: It is best to locate from the center hole when machining hole pattern for motor attachment.



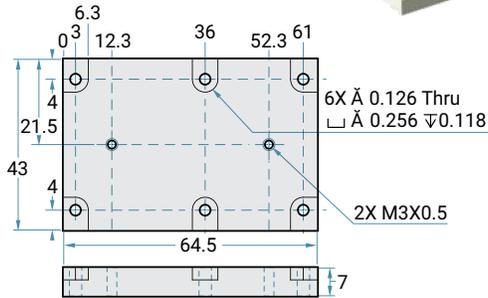
Email an
Application Engineer

Units of Measurement mm

Saddle Plates & Clamps

Saddle Plate Short

CS-SP-S



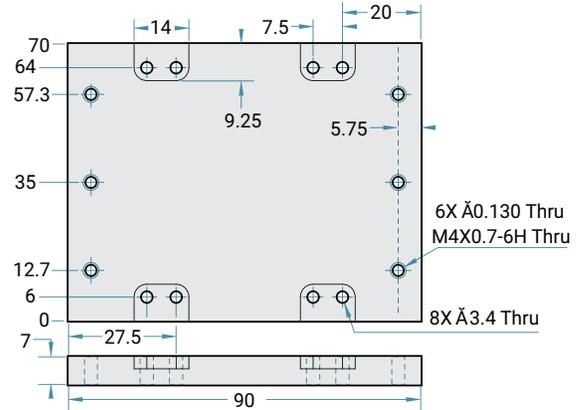
Use with:
Uncovered
Covered Low & Tall

Saddle Plate

CS-SP-CL



Use with:
Covered Low & Tall

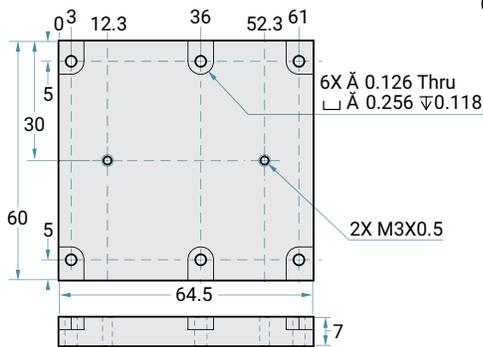


Saddle Plate Long

CS-SP-L

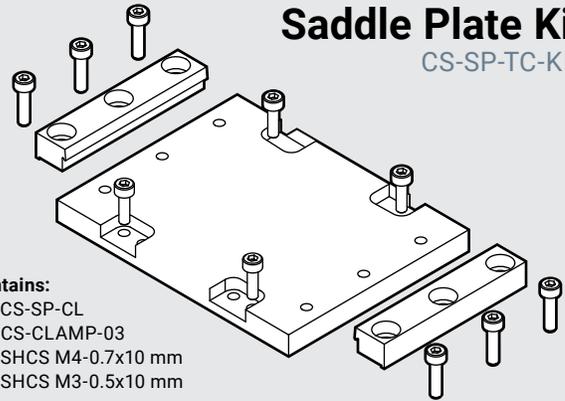


Use with:
Uncovered
Covered Low & Tall



Saddle Plate Kit

CS-SP-TC-KIT



Contains:

- #1 CS-SP-CL
- #2 CS-CLAMP-03
- #6 SHCS M4-0.7x10 mm
- #4 SHCS M3-0.5x10 mm

Clamps

CS-CLAMP-01



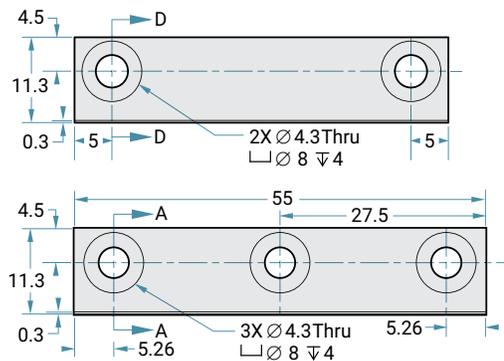
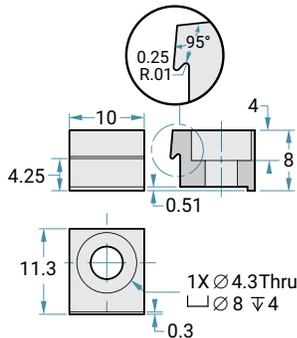
CS-CLAMP-02



CS-CLAMP-03



Use with:
Covered Tall



Units of Measurement mm

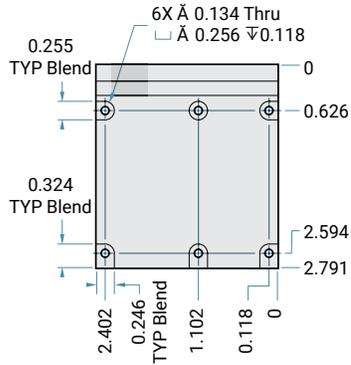
90° Angle Bracket & Saddle Plate

90 Degree Long

CS-90-LLC



Use with:
Uncovered
Covered Low & Tall

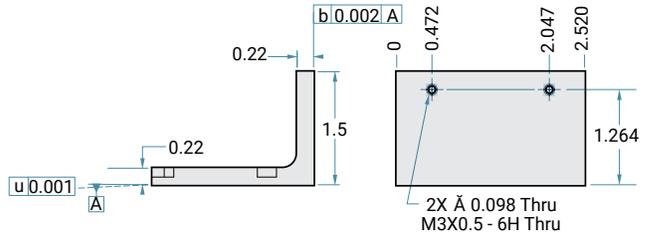
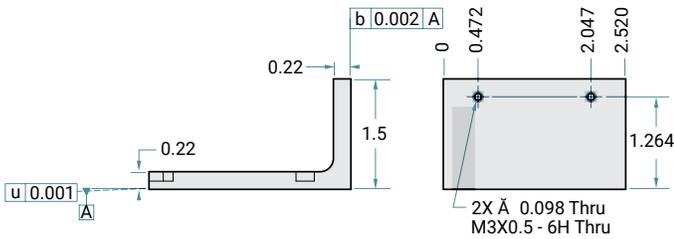
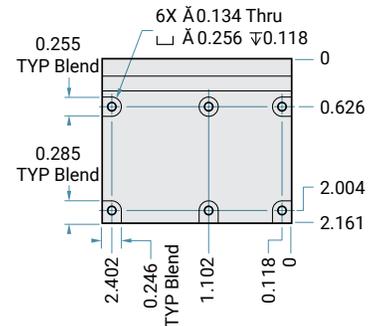


90 Degree Short

CS-90-SLC



Use with:
Uncovered
Covered Low & Tall

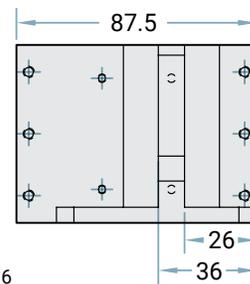
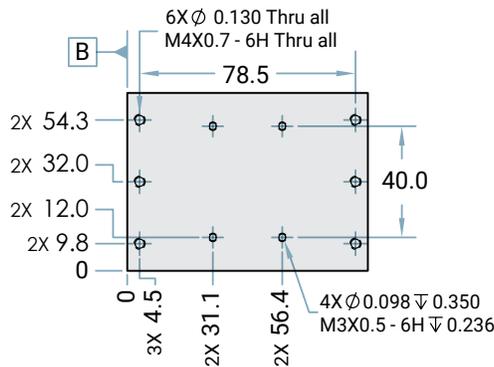
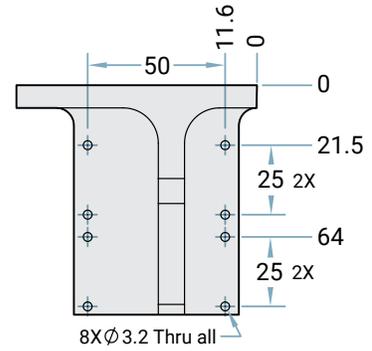
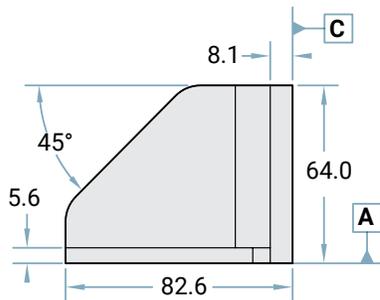


Saddle Plate

CS-XZ-L



Use with:
Uncovered
Covered Low & Tall



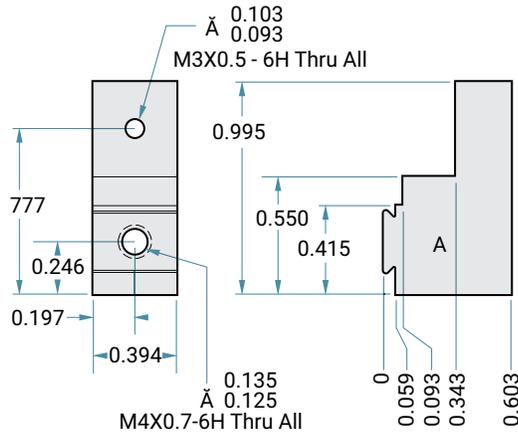
**Additional Mounting Options Available
for High Volume Engineered Orders
Contact an Applications Engineer.**

Units of Measurement mm

Sensor Bracket & Sensors

Sensor Bracket

CS-SB-01



Use with:
Covered Low & Tall

Units of Measurement mm

Inductive Proximity Sensor Switches

Home sensor or position sensor with rectangular shape and only 11 mm width. DC 3-wire (10-30V DC)



6200418

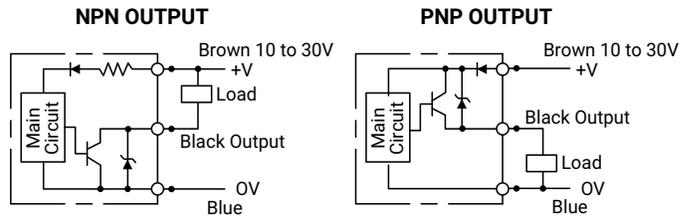


6200699

Specifications

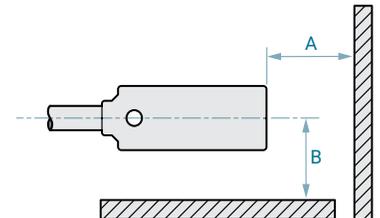
Sensor Model	6200418	6200699
Detecting Distance	4 mm	
Sensing Direction	Flat Pack	
Connection	Cable Type (DC 3 Cores Dia. 4 mm)	
Supply Voltage	10-30VDC	
Output Mode	NPN	PNP
Output Type	Normal Open	Normal Open
Output Current (MAX)	200mA	
Current Consumption	8mA	
Leakage Current	< 0.1mA	
Residual Voltage	< 1.5VDC	
Response Frequency	500 Hz	
Reverse Polarity Protection	Standard	
Short Circuit Protection	Not Available	
Hysteresis	10%	
Ambient Temp/Humidity	-25°C to 55°C / 25% to 90% RH	
IP Protection Category	IP67	
Size (L/W/H)	L/W/H 30/11/8 mm	

Output Circuit & Wiring



Attention

- Keep sufficient distance from nearby objects
- Do not confuse the wire connections as wrong connections may damage product
- Do not use in the presence of flammable or volatile gas
- Proximity switch may malfunction if used near cellular phones or other transceivers



Units of Measurement mm

Table of Contents

Safety	
Tips for Safe Installation and Operation	18
Motor Mount Option	
Coupler	19
Assembly.	20
Maintenance	
Lubrication	21

Tips for Safe Installation and Operation

- Only qualified personnel should transport, assemble, operate, and maintain this equipment.
- Always wear appropriate personal protection equipment, such as safety glasses and hearing protection.
- Read and observe the installation, operating, and safety instructions provided by the manufacturer. Incorrect handling and operation may result in damage to equipment and personal injury.
- Comply with all installation specifications and requirements to ensure proper setup.
- Provide a flat and stable mounting surface.
- Be sure sufficient space is provided to permit full carriage travel with no hard stops.
- Be sure power is OFF before performing actuator maintenance.
- The unit should be checked regularly for worn or damaged components. Follow recommended service intervals and replace defective parts immediately. Always replace parts with the same make and model as the original.
- Be aware that most actuator configurations are not self-braking. A load can move if the drive force is disconnected, or if drive train components are detached. This is particularly true for vertical applications. The load should be secured prior to service. Consider installing an electromechanical power-off brake in vertical configurations to prevent potential damage or personal injury.
- Actuators should be wiped down occasionally to keep them clean. Use fluids sparingly and be sure none seeps inside. Do not use strong or harsh cleaning agents.
- Always test run actuators after maintenance work is completed.
- Do not back-drive the lead screw by moving the carriage by hand.

Mounting tips

- Mount the Compact Series through the holes in the rail
- Counter bores accommodate M3 SHCS
- The number of counter bores varies with the length of rail



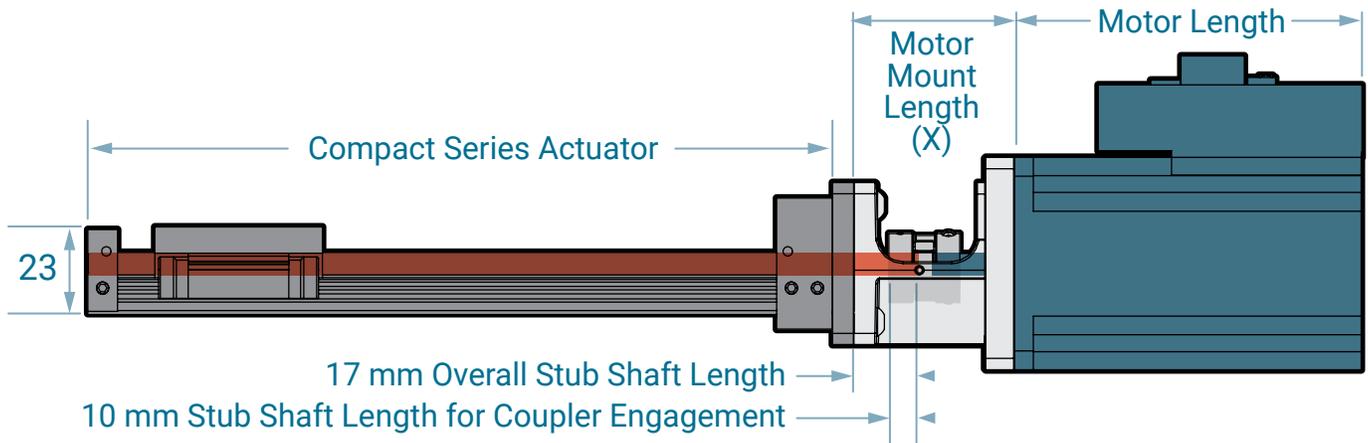
Motor Mount & Coupler Information

Coupler

- Compact Series motor mounts are designed to work optimally with the R+W EKL2 or R+W EKL5 coupler
- Other couplers can be used under the following conditions
 - Maximum O.D. = 25 mm
 - Maximum length = 26 mm
 - Coupler should be sized per the Compact Series actuator

CAUTION

Verify coupler bore diameters and depths will accept both actuator stub shaft and motor shaft.



Stub Shaft Dimensions

Stub Shaft Diameter (6 mm dia. Lead Screw)	3.5 mm
Stub Shaft Diameter (8 mm dia. BS & 10 mm dia. LS)	4 mm
Overall Stub Shaft Length	20 mm
Stub Shaft Length for Coupler Engagement	6 mm

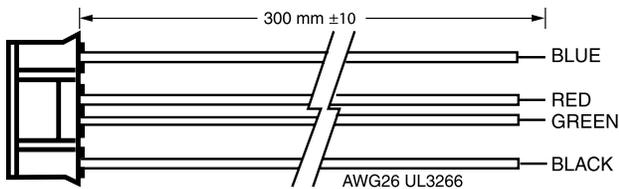
Motor Mount Length

NEMA 17 - 42 mm	53.7 mm
NEMA 23 - 56 mm	54.3 mm

ONBOARD connector PLUG

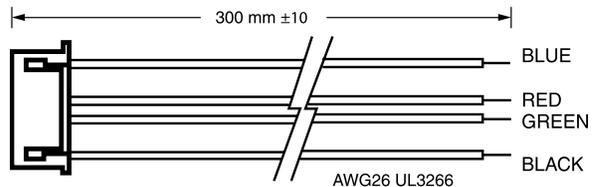
With 12" Leads Included with Purchase

NEMA 17 Connector
PBC Part Number: 6200490



Housing: JST PHR-6
Terminal: JST SPH-002T-P0.5

NEMA 23 Connector
PBC Part Number: 6200491



Housing: JST XHP-6
Terminal: JST SXH-001T-P0.6



Onboard connector plug with 12" leads included with purchase

User Manual Motor Mount Assembly

Motor Mount Assembly

Components:

- Base actuator unit
- Motor (customer supplied)
- Motor Mount Kit
 - Motor Plate
 - Main Frame
 - Cover
- Coupler (**customer supplied**) R + W EKL2 recommended

Fasteners:

- (9) M4 x 12 mm SBHCS (supplied by PBC Linear),
- (4) Motor fasteners (**customer supplied**) (See Table 2)

Tools Required:

Hex Key (See Table 1)

Suggested Thread Locker:

Blue Loctite® 242 or equivalent

Assembly Steps

1. Slide coupling onto shaft and leave loose.
2. Install main frame to actuator end block using (4) M4 x 12 mm SBHCS. Snug fasteners, but do not tighten.
3. Install motor plate to main frame using (3) M4 x 12 mm SBHCS. Apply blue Loctite® 242 or equivalent threadlocker and torque to 17-21 in/lb [2.0-2.4 Nm] (See Table 3).
4. Install motor to motor plate with customer supplied fasteners (See Table 2) and install shaft into coupling. Snug fasteners, but do not tighten.
5. Check for proper shaft engagement on both sides (per coupler manufacturer specs).
6. Once system is aligned, final torque all fasteners appropriately (See Table 3).
7. Install cover on pins in casting (snaps in place).

Table 1

Hex Key Size Needed:

M3 SHCS	= 2.5 mm Driver
M4 SBHCS	= 2.5 mm Driver
M5 SHCS	= 4 mm Driver

Table 2

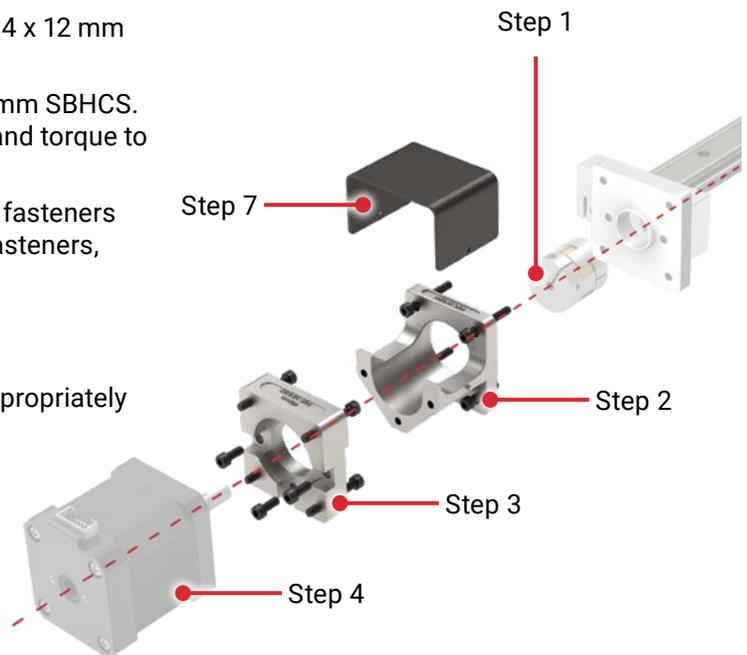
Customer Supplied Motor Fasteners:

NEMA 17 Motor	= M3 x 0.5 SHCS
NEMA 23 Motor	= M5 x 0.8 SHCS
60 mm Servo Motor	= M5 x 0.8 SHCS

Table 3

Fastener Torque Values:

M3 SHCS	= 8-10 in/lb [1.0-1.2 Nm]
M4 SBHCS	= 17-21 in/lb [2.0-2.4 Nm]
M5 SHCS	= 37-45 in/lb [4.2-5.1 Nm]



Initial Lubrication During Installation

Some PBC Linear systems are shipped with a preservative lubrication applied to the raceways. If so, additional lubrication should be applied during installation. Proper lubrication dissipates heat, increases service life, and reduces friction, wear, and corrosion. Recommended lubricants are listed where applicable, but there are some lubricants which SHOULD NOT be used on any configuration.

DO NOT USE: WD40; motor oil; oils with additives; moly or other filled greases; PTFE sprays, oils, or greases; or sprays containing fluorocarbons or silicone.

Recommended Lubricants

Plain Bearing (GST - Gliding Surface Technology)

Recommended Lubricants: way lube oils, lightweight oils, 3-IN-ONE® oils, and lightweight petroleum-based greases. The PTFE coated lead screw and polymer nut require no lubrication during normal operation, but should be routinely inspected for damage and wear. In certain applications, however, an external lubricant may be desirable. Contact a PBC Linear applications engineer for guidance regarding additional lubrication.

Profile Rail (PRT - Profile Rail Technology)

Recommended Grease: Synthetic oil based lithium-soap grease with an ISO VG32-100 viscosity.

Recommended Oil: Synthetic oil CLP or CGLP based on DIN 51517, or HLP based on DIN51524.

Viscosity range should be ISO VG32-100.

Relubrication

Linear guide raceways should be relubricated periodically with oil or grease. Recommended lubricants are listed where applicable, but there are some lubricants which SHOULD NOT be used on any Compact Series configuration.

DO NOT USE: WD40; motor oil; oils with additives; moly or other filled greases; PTFE sprays, oils, or greases; or sprays containing fluorocarbons or silicone.

The relubrication interval is dependent on many operating and environmental conditions, such as load, stroke, velocity, acceleration, lubrication type, mounting position/orientation, UV exposure, temperature, and humidity. The actual lubrication interval should be determined by tests conducted under actual application conditions.

While the actual relubrication intervals are application specific and determined only through testing, the following "first check" guidelines can typically be used as a starting reference point under "normal" conditions: *Relubrication every 1000 km; 50000 cycles; or six months (whichever occurs first)*

Extended Lubrication Interval

Relubrication every 2500 km; 100000 cycles; or one year (whichever comes first)



A Pacific Bearing Company

Engineering Your Linear Motion Solutions



Global Footprint



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MR15, 97 mm Rail



PTFE Coated Leadscrew
Anti-Backlash Nut, 12 mm

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