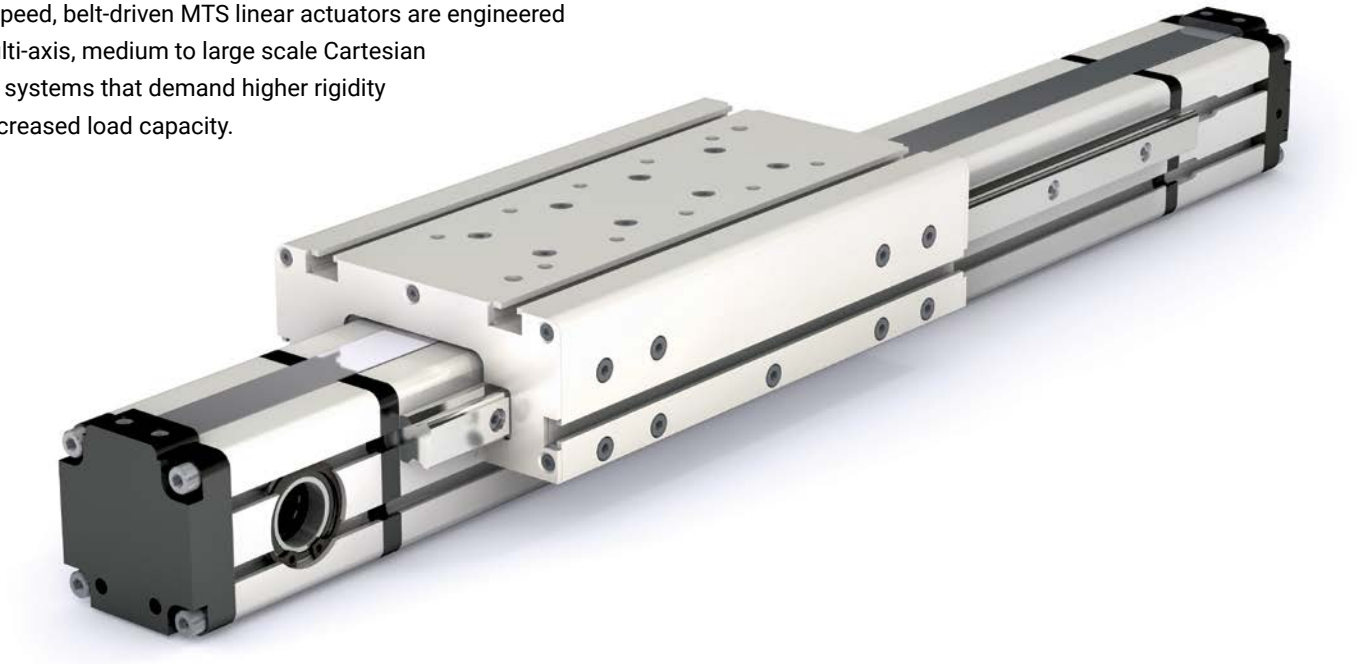
MTS SERIES

Belt Driven Linear Actuators

MTS 080, 055

Motor Mount Kits Available
Details on page 6–7 • Call for a Quote

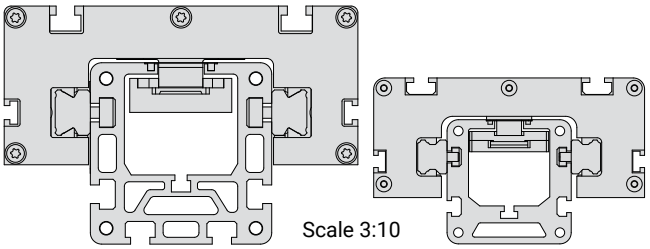
High-speed, belt-driven MTS linear actuators are engineered for multi-axis, medium to large scale Cartesian gantry systems that demand higher rigidity and increased load capacity.



The MTS Series utilizes an external, dual profile rail guidance system delivering precise, stable motion with low friction, reduced noise, and minimal vibration. The actuator body is constructed from an anodized aluminum housing with a stainless-steel sealing strip guided by magnetic tracks, protecting internal components from dust and debris in contaminant-prone environments. Precision-machined aluminum extrusions ensure flat, perpendicular mounting surfaces for accurate, repeatable installations.

Features and Benefits

- Dual ball guide system - two external rails
- Long travel lengths
- High acceleration, speeds, and rigidity
- Fully enclosed aluminum housing
- Strong yet lightweight and corrosion-resistant
- Low friction, noise and vibration
- Anodized aluminum housing and carriage
- Steel reinforced belt with adjsutable tension
- Ideal for the y-axis of gantry systems
- Multiple drive configurations

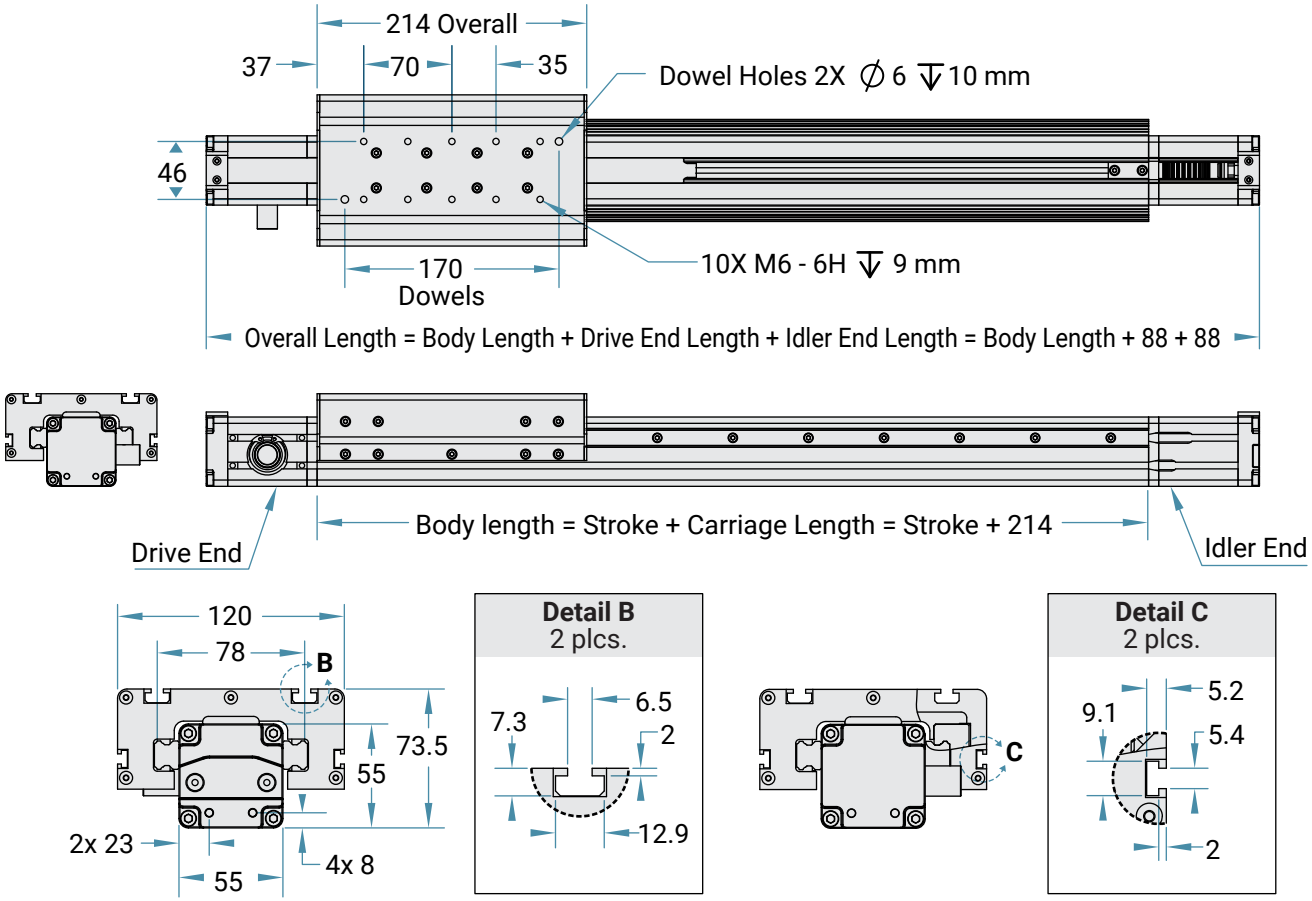


Scale 3:10

NOTE:

1. Moment arms for calculating moments should be measured from the centerline of the extrusion.
2. Limit switches must be used in order to prevent the carriage from contacting the actuator end blocks, resulting in damage.
3. 25 mm of over-travel has been added to the body length in each direction to allow for carriage over-travel. 25 mm is the recommended over-travel; although a minimum of 10 mm may be specified for special applications.

MTS055 Dimensional information



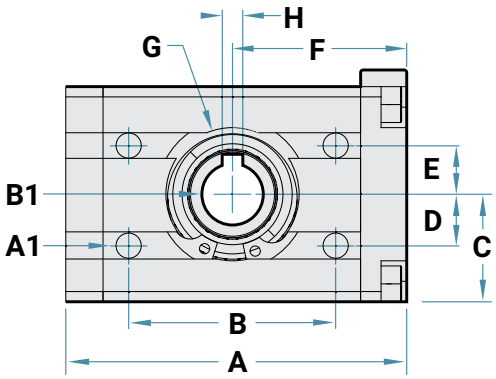
Ordering Information

Example: MTS-055D-1000-12F12

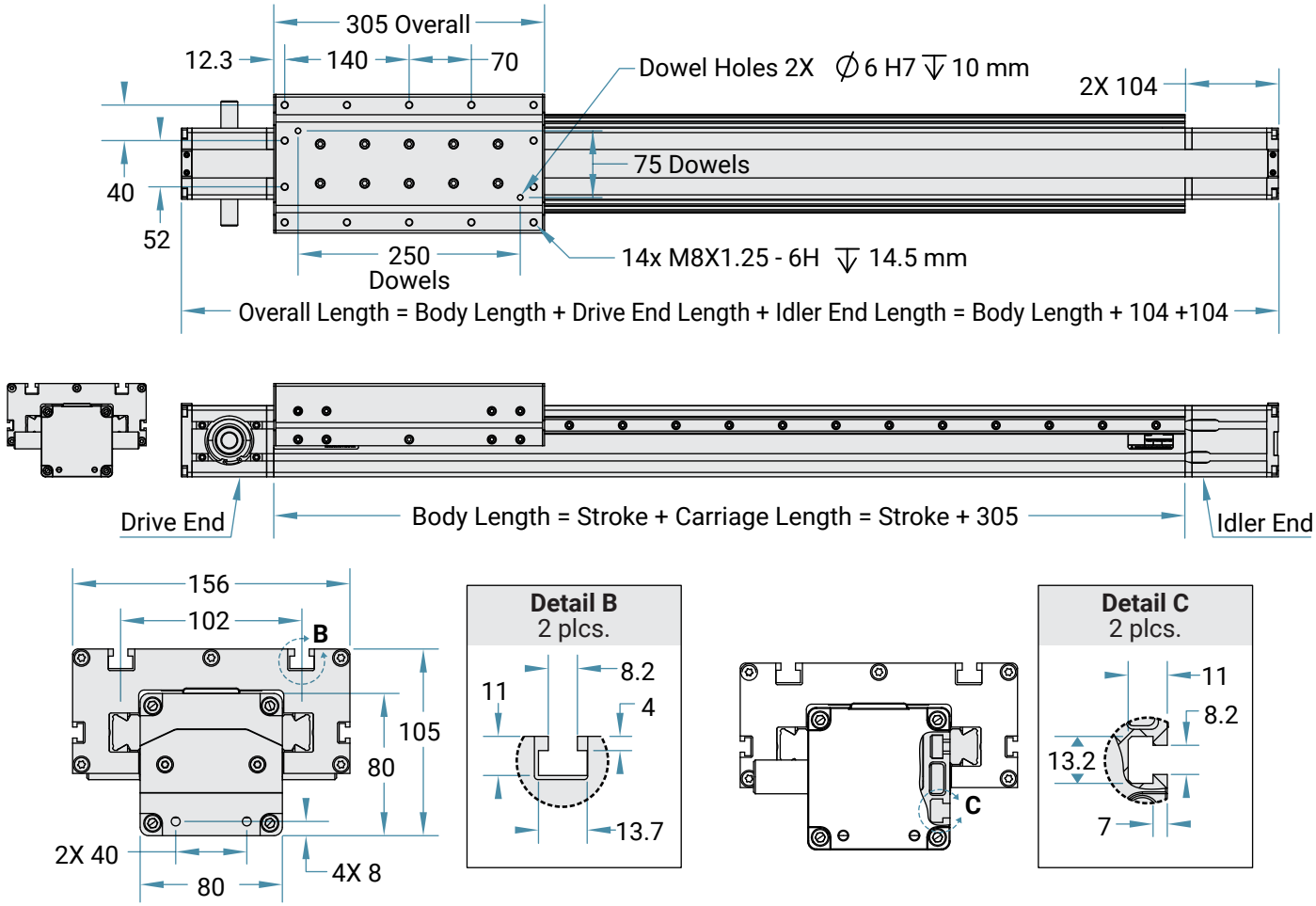
MTS	055	X	-	XXXX	-	XX	XX	X	X
Series	**Size mm** (Base and Height)	**System Type***		**Body Length****		**Shaft Diameter**	**Shaft Type**	**Carriage****	**Guidance Type**
MTS Belt Driven Unit	55 x 55	D = Driven N = Undriven		6,000 mm (max.) Must include 50 mm over-travel For lengths greater than 1,500 mm consult factory		00 = No shaft (undriven system) 12 = 12 mm 14 = 14 mm 16 = 16 mm	F = Female hollow (12, 14) L = Left Male (16) R = Right Male (16) B = Both Male (16) 0 = No shaft (undriven system) LW = Left Male w/o Keyway RW = Right Male w/o Keyway BW = Both Male w/o Keyway	1 Standard 2 3 4	2 = Profile rail w/2 runner blocks per carriage

Detail A - Drive End

MTS Size	A mm	B MAX	C mm	D mm	E mm	F mm	G
MTS 55	88	55	25	8.5	13.5	48.5	2 x Ø32 H7↧1.5 mm
MTS 80	104	71	41	19	17	54	2 x Ø55 H7↧2 mm



MTS080 Dimensional information



Ordering Information

Example: MTS-080D-1000-19F12

MTS	080	D	-	XXXX	-	XX	XX	X	X
Series	**Size mm** (Base and Height)	**System Type***		**Body Length****		**Shaft Diameter**	**Shaft Type**	**Carriage****	**Guidance Type**
MTS Belt Driven Unit	80 x 80	D = Driven		6,000 mm (max.) Must include 50 mm over-travel For lengths greater than 1,500 mm consult factory		16 = 16 mm 19 = 19 mm	F = Female hollow (16,19) L = Left Male (19) R = Right Male (19) B = Both Male (19) LW = Left Male w/o Keyway RW = Right Male w/o Keyway BW = Both Male w/o Keyway	1 Standard 2 3 4	2 = Profile rail w/2 runner blocks per carriage

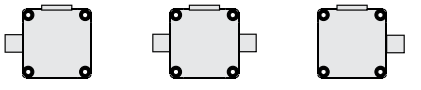
* No belt or motor mount, contact manufacturer for "N" version.

** Contact manufacturer for other options and availability. Profile rail will be segmented for lengths over 1 m.

Drive End - Cont.

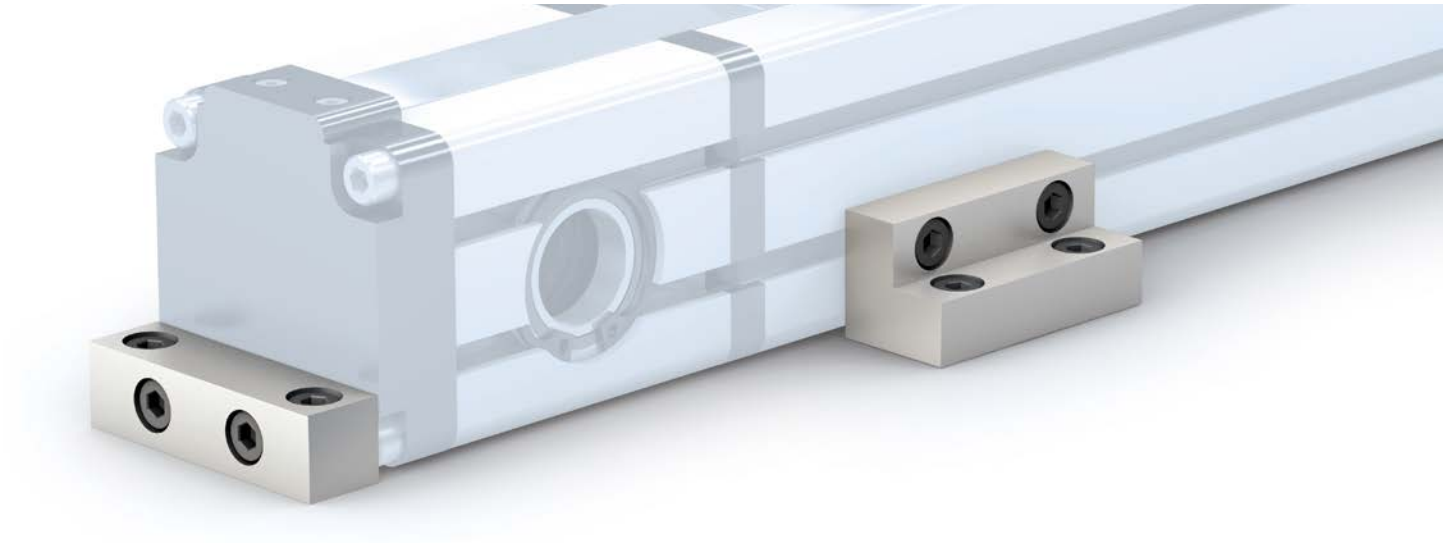
MTS Size	Male Input Shaft Size	A1 Square Nut Included	B1 Female mm	B1 Male mm	H Female Bore Dia.	H Keyway Width
MTS 55	16H7 +0.018/-0 Dia. X 18.5 mm length	M5 NIN557	Ø 12 Ø 14	Ø 16	12H7 -0/+0.018 14H7 -0/+0.018	4N9 -0.030/+0 5N9 -0.030/+0
MTS 80	19H7 +0.021/-0 Dia. X 30 mm length	M8 DIN557	Ø 16 Ø 19	Ø 19	16H7 -0/+0.018 19H7 -0/+0.018	5N9 -0.030/+0 6N9 -0.030/+0

Male Shaft Type Options:
As viewed from drive end with carriage on top



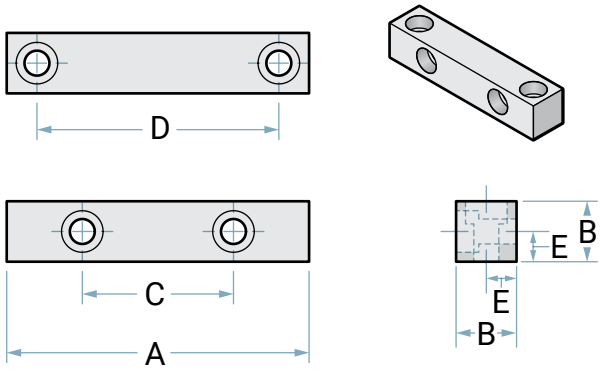
Left Mount Dual Mount Right Mount

MTE Accessories (Available upon request)



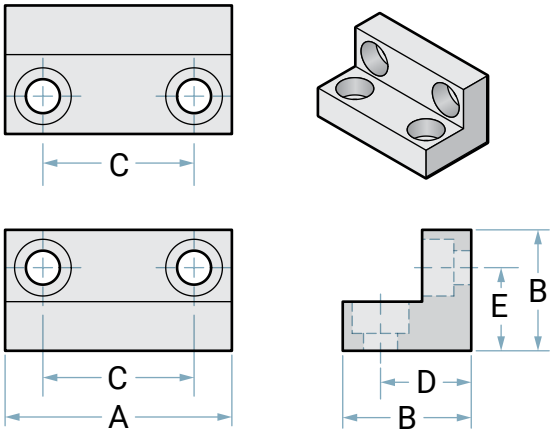
End Cap Mounting Bracket

The end mount clamps fix the MT actuator to the base plate via the end blocks.



Mid Section Mounting Bracket

The mid mount clamps fix the MT actuator to the base plate via the side t-slots with T-nuts.



End Mount Style Clamp

MTB Size	Part Number	A mm	B mm	C mm	D mm	E mm
MTB 42	MTB042A-A0AA001-KIT	42	14	16	30	7
MTB 55	MTB055A-A1AA001-KIT	55	15	23	41	7.5
MTB 80	MTB080A-A2AA001-KIT	80	16	40	64	8
MTB 105	MTB105A-A3AA001-KIT	105	21	60	88	10

Mid Mount Style Clamp

MTB Size	Part Number	A mm	B mm	C mm	D mm	E mm
MTB 42	MTB042A-A0AA002-KIT	40	17	25	10.5	11
MTB 55	MTB055A-A1AA002-KIT	50	23	30	16.5	16.5
MTB 80	MTB080A-A2AA002-KIT	60	32	40	24	22
MTB 105	MTB105A-A3AA002-KIT	80	30	55	32	30

End Mount Fasteners (each kit comes with 4)

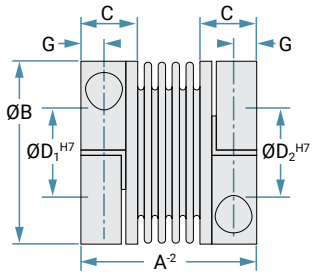
Part Number	Screw	Torque	Tool Hex Wrench
MTB042A-A0AA001-KIT	M4 SHCS	2.8 N-m(25 in-ob)	3 mm
MTB055A-A1AA001-KIT	M5 SHCS	5.7 N-m (50 in-lb)	4 mm
MTB080A-A2AA001-KIT	M6 SHCS	6.8 N-m (60 in-lb)	5 mm
MTB105A-A3AA001-KIT	M8 SHCS	15.0 N-m (133 in-lb)	6 mm

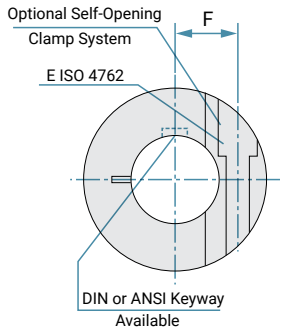
Mid Mount Style Fasteners (each kit comes with 4 and 4 t-nuts)

Part Number	Screw	Torque	Tool Hex Wrench
MTB042A-A0AA002-KIT	M4 SHCS	2.8 N-m(25 in-ob)	3 mm
MTB055A-A1AA002-KIT	M5 SHCS	5.7 N-m (50 in-lb)	4 mm
MTB080A-A2AA002-KIT	M8 SHCS	8.5 N-m (75 in-lb)	6 mm
MTB105A-A3AA002-KIT	M8 SHCS	15.0 N-m (133 in-lb)	6 mm

Couplers

Bellows Model BKL Coupler

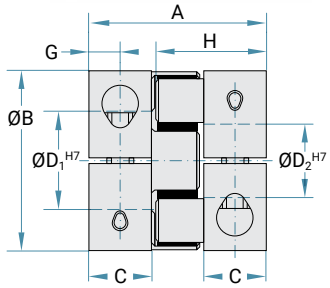


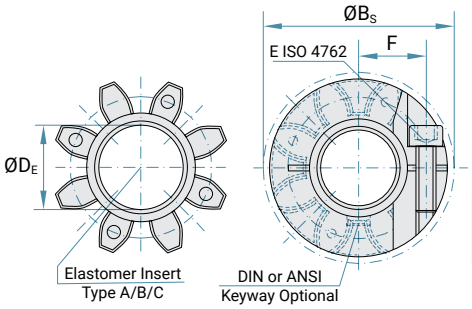


Features	Material	Design	Temperature	Clearance
Lightweight Low moment of inertia	High grade stainless steel	2 clamping hubs concentrically mounted to flexible bellows	-30°C to 100°C	0.01–0.05 mm

R+W Coupler Size			3	4.5	10	15	30	60
Rated Torque	Nm	T_{KN}	3	4.5	10	15	30	60
Overall Length	mm	A^{-2}	32	40	44	58	68	79
Outside Diameter	mm	B	25	32	40	49	56	66
Fit Length	mm	C	10	13	13	21.5	26	28
Inside Diameter Possible from Ø to Ø H7	mm	$D_{1/2}$	3–12.7	6–16	6–24	8–28	10–32	14–35
Fastening Screw ISO 4762		E	M3	M4	M4	M5	M6	M8
Tightening Torque of the Fastening Screw	Nm		2.3	4	4.5	8	15	40
Distance Between Centerlines	mm	F	8	11	14	17	20	23
Distance	mm	G	3.8	5	5	6.5	7.5	9.5
Moment of Inertia	10^{-3} kgm²	J_{ges}	20	0.007	0.016	0.065	0.12	0.3
Approximate Weight	kg		0.023	0.05	0.06	0.16	0.25	0.4
Torsional Stiffness	10^3 Nm/rad	C_T	0.994	7	9	23	31	72
Axial ±	mm	MAX values	1	1	1	1	1	1.5
Lateral ±	mm		0.2	0.2	0.2	0.2	0.2	0.2
Angular ±	degree		2	1	1	1	1	1
Axal Spring Stiffness	N/mm	C_a		35	30	30	50	67
Lateral Spring Stiffness	N/mm	C_f		350	320	315	366	679
Rotational Speed	rpm		10,000					

Elastomer Model EKL Coupler





Features	Material	Design	Temperature	Clearance
Easy Mounting Vibration Dampening	Hubs: Aluminum Elastomer: Wear resistant TPU	2 concentrically machined hubs, curved jaws, & clamping screws	See chart at bottom of next page	0.01–0.05 mm

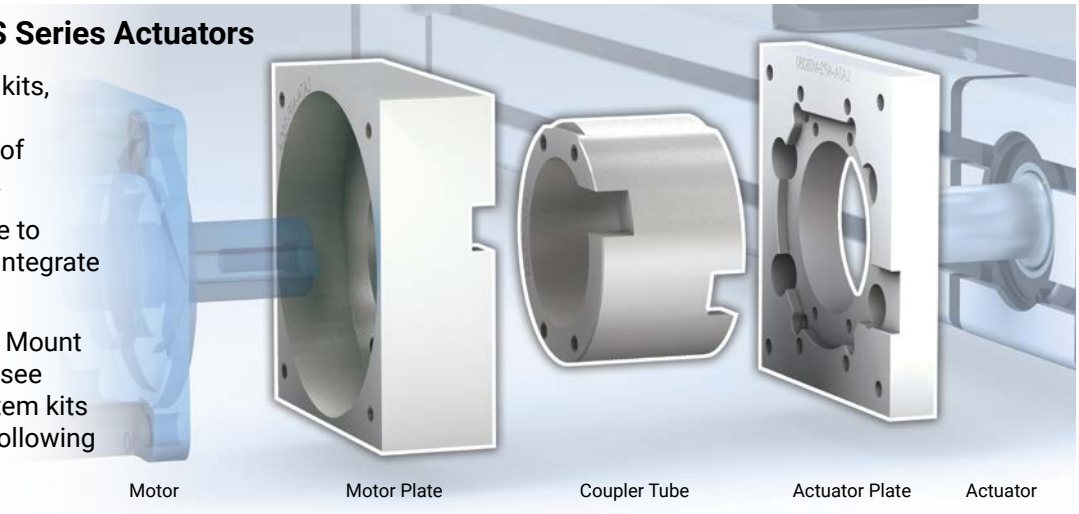
Elastomer Coupler Size			10			20			60			150		
Type (Elastomer Insert)			A	B	C	A	B	C	A	B	C	A	B	C
Rated Torque	Nm	T_{KN}	12.5	16	4	17	21	6	60	75	20	160	200	42
MAX Torque	Nm	T_{Kmax}	25	32	6	34	42	12	120	150	35	320	400	85
Overall Length	mm	A^{-2}	32			50			58			62		
Outside Diameter	mm	B	32			42			56			66.5		
Outside Dia. w/Screw Head	mm	B_S	32			44.5			57			68		
Inside Diameter Range H7	mm	$D_{1/2}$	4–16			8–25			12–32			19–36		
Mounting Length	mm	C	10.3			17			20			21		
Inside Diameter of Elastomer	mm	D_E	14.2			19.2			26.2			29.2		
Clamping Screw (ISO 4762)		E	M4			M5			M6			M8		
Torque for Clamping Screw	Nm		4			8			15			35		
Distance Between Centers	mm	F	10.5			15.5			21			24		
Distance	mm	G	5			8.5			10			11		
Hub Length	mm	H	20.7			31			36			39		
Moment of Inertia per Hub	10^3 Nm/rad	J_1/J	0.003			0.010			0.040			0.080		
Approx.Weight	kg		0.05			0.12			0.30			0.50		
Speed Standard	min^{-1}		13,000			12,500			11,000			10,000		
Speed Balanced	$10^3 min^{-1}$		53	63	40	45	60	35	31	31	25	22	26	18
Rotational Speed	rpm		10,000											

Motor Mount Kits for MTS Series Actuators

Motor mount kits, coupler tube kits, and couplers are available and designed to accommodate ten of the most common motor sizes.

Blank motor plates are available to give end users the flexibility to integrate virtually any motor.

To select the PBC Linear Motor Mount complete set for your actuator, see chart below. To order specific item kits for mounting a motor, see the following chart on next page.



Online Configurator

Application Engineers
Available to assist with the design and selection process.

Complete Motor Mount Kit Ordering Chart

LATA	-	Kit	-	MM	-	MT	XXX	-	XXX	X	-	X	XXXX	X
				Kit Type		Actuator Family	Actuator Size		Motor Plate*	Motor Plate Type		Coupler Model	Coupler Size	Coupler Type
				MM = Motor Mount			**055** = MTS **080** = MTS		**042** = NEMA 17 **056** = NEMA 23 **086** = NEMA 34 **110** = NEMA 42 **040** = 40 mm **060** = 60 mm **080** = 80 mm **100** = 100 mm **130** = 130 mm **180** = 180 mm	**B** = Blank **S** = Standard		**E** = R+W Elastomer **B** = R+W Bellows	*for EKL* **0100** = Size 10 **0200** = Size 20 **0600** = Size 60 **1500** = Size 150 *for BLK* **0030** = Size 3 **0045** = Size 4.5 **0100** = Size 10 **0150** = Size 15 **0300** = Size 30 **0600** = Size 60	*for EKL* **A** = Use chart tp select **B** = Type based on MAX **C** = Torque *for BLK* **N** = Not Applicable

Motor Mount Kits include all required fasterners. Kits will ship unassembled from the actuator. Customers can have kits shipped assembled for an added cost. Contact sales for a quote.

* Reference chart to know which plate size is availabel for which actuator size.

Elastomer Model EKL Coupler

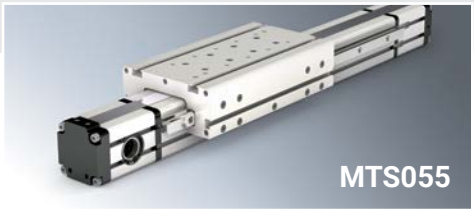
Elastomer Couplers Temp Chart

Temp Factor S_u	A	B	C
Temperature (u)	Sh 98 A	Sh 64 D	Sh 80 A
> -30°C to -10°C	1.5	1.3	1.4
> -10°C to +30°C	1.0	1.0	1.0
> +30°C to +40°C	1.2	1.1	1.3
> +40°C to +60°C	1.4	1.3	1.5
> +60°C to +80°C	1.7	1.5	1.8
> +80°C to +100°C	2.0	1.8	2.1
> +100°C to +120°C	–	2.4	–

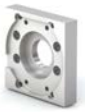
MTS Individual Motor Mount Kits

Individual Motor Mount Kits Ordering Chart

Actuator



Actuator Plate

LATA-Kit-APMTB055 

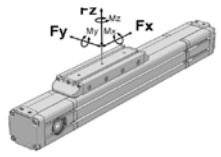
LATA-Kit-APMTB080 

Motor Motor Plate	**Coupler Size** Bellows **Coupler Tube Part #**	 Elastomer 	**Coupler Size** Bellows **Coupler Tube Part #**	 Elastomer
NEMA 23 LATA-MP-056A	Size 4.5 LATA-Kit-CT01	Size 10 LATA-Kit-CT01		
NEMA 34 LATA-MP-086A	Size 10 LATA-Kit-CT02	Size 20 LATA-Kit-CT03	Size 10 LATA-Kit-CT02 Size 15 LATA-Kit-CT04	Size 20 LATA-Kit-CT02
NEMA 42 LATA-MP-110A	Size 10 LATA-Kit-CT02	Size 20 LATA-Kit-CT03	Size 10 LATA-Kit-CT03 Size 15 LATA-Kit-CT04	Size 20 LATA-Kit-CT03
60 mm LATA-MP-060A	Size 4.5 LATA-Kit-CT01 Size 10 LATA-Kit-CT02	Size 10 LATA-Kit-CT01 Size 20 LATA-Kit-CT03		
80 mm LATA-MP-080A	Size 10 LATA-Kit-CT02	Size 20 LATA-Kit-CT03	Size 10 LATA-Kit-CT02 Size 15 LATA-Kit-CT04	Size 20 LATA-Kit-CT02
100 mm LATA-MP-100A	Size 10 LATA-Kit-CT02	Size 20 LATA-Kit-CT03	Size 10 LATA-Kit-CT03 Size 15 LATA-Kit-CT04	Size 20 LATA-Kit-CT03
130 mm LATA-MP-130A			Size 30 LATA-Kit-CT10 Size 60 LATA-Kit-CT10	Size 60 LATA-Kit-CT09

PBC Linear Custom Motor Plate(s) Option
Switching the last digit from **A** to **-BK** indicates a blank motor plate that can be finished by PBC Linear to your motor specifications (Example: LATA-MP-180-BK).

Technical Data

Size		mm/in		55 x 55 (2.17 x 2.17)		80 x 80 (3.15 x 3.15)	
Max. Speed		m/s	in/s	3	118.11	3	118.11
Max. Stroke Length		mm	in	6,700	263.78	6,700	263.78
Min. Stroke Length		mm	in	100	3.94	100	3.94
Pulley Drive Ratio		mm	in	120	4.72	160	6.30
Number of Pulley Teeth				24		32	
MAX RPM				1,500		1,000	
Base Weight		Kg	lb	4.80	10.58	8.80	19.40
Add for 100 mm or 3.94 in of Stroke		Kg	lb	0.63	1.39	1.10	2.43
Max. Load	Fx	N	lbf	820	184	1,650	370.93
	Fy	N	lbf	10,800	2,427.94	20,200	4,541.14
	Fz	N	lbf	10,800	2,427.94	20,200	4,541.14
Max. Moments	Mx	Nm	lbf-in	395	3,496.04	620	5,487.46
	My	Nm	lbf-in	480	4,248.36	730	6,461.04
	Mz	Nm	lbf-in	480	4,248.36	730	6,461.04
Moment of Inertia	Ix	cm^4	in^4	36	0.86	183	4.39
	Iy	cm^4	in^4	45	1.08	226	5.42
Repeatability		mm	in	± 0.05	± 0.002	± 0.05	± 0.002
Max. Radial Load on Input Shaft		N	lbf	300	67.4	300	67.4
No Load Torque		Nm	lbf-in	0.5	8.9	0.7	9.7



For combined loads, the combined loading cannot exceed the following formula.

$$\frac{Fy_A}{Fy}+\frac{Fz_A}{Fz}+\frac{Mx_A}{Mx}+\frac{My_A}{My}+\frac{Mz_A}{Mz}<=1$$

PBC Linear®

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Visit **pbclinear.com** for Product Information and 2D/3D CAD Downloads

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