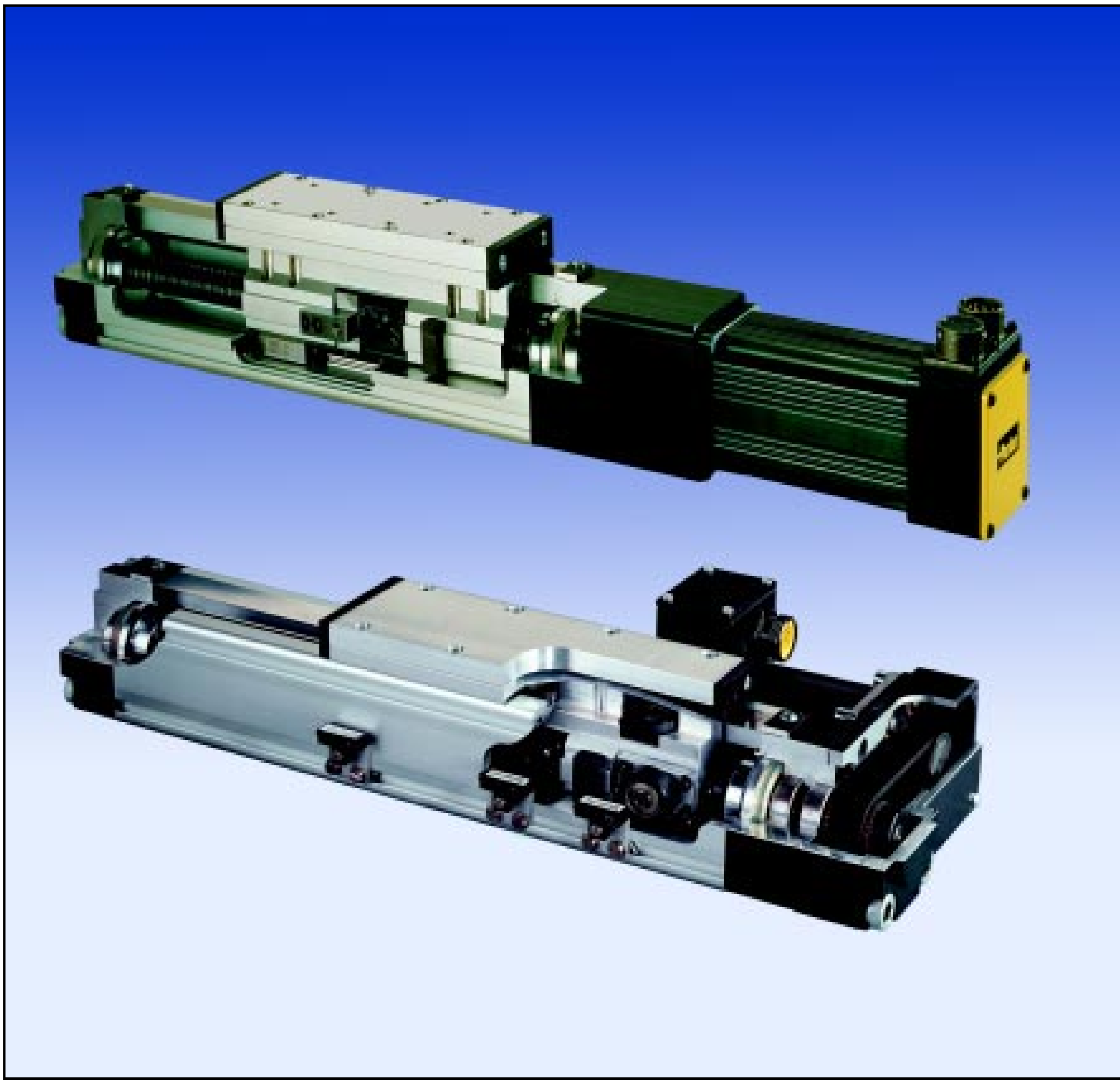
ER Series linear actuator

Catalogue 1604.012.01
July,1999



ER Series
Stepper and Servo Driven Rodless Linear Actuators

Automated linear motion can have a variety of requirements. Often programmability, repeatablity and simplicity of design are among them. The ER Series from Parker Hannifin's Electromechanical Division was designed to provide a solution to a variety of linear motion applications by offering a low cost, modular electric rodless linear actuator.

The ER Series is available in two profile sizes as a belt-driven or ballscrew-driven unit. The load-bearing carriage is supported either by precision roller bearing wheels or by an internally mounted square rail bearing. Combined with a Parker Hannifin stepper or servo motor system, the ER Series offers full programmability, high resolution and repeatablity. Backed by worldwide application support, the ER Series is the ideal solution to many linear motion applications.

The rodless design means . . .

- Compact design envelope
- Multiple drive transmissions
- High speed capabilities
- Multi-axis connectivity
- No need for external load guides

The ER's multiple design options can be matched to your application demands . . .

- Two profile sizes (32mm & 50mm)
- Belt-driven or ballscrew-driven
- Six ISO actuator mounting styles
- Roller bearing carriage assembly
- Square rail bearing option for greater load carrying capability
- Ready to mount to stepper motors, brushless servo motors and reduction systems

	Roller Bearing Carriage							*Square Rail Carriage*				
	Belt Drive		*Screw Drive*					*Screw Drive*				
	ER32	*ER50*	*ER32*		*ER50*			*ER32*		*ER50*		
Speed and Travel			**M05**	**M10**	**M05**	**M10**	**M16**	**M05**	**M10**	**M05**	**M10**	**M16**
Max. Speed (m/s)	3.50	5.00	0.83	1.66	0.62	1.25	2.00	0.83	1.66	0.62	1.25	2.00
Max. Acceleration (m/s²)	10	10	3	6	3	6	9	3	6	3	6	9
Max. Travel (mm)[2]	2800	3300	750		1000			750		1000		
Load Data												
Thrust Load F_X[1] (N)	135	265	600		3350			600		3350		
Side Load F_Y[1] (N)	71	133	71		133			1112		2225		
Normal Load F_Z[1] (N)	222	445	222		445			1112		2225		
Roll Moment M_X[1] (Nm)	5	14	5		14			14		28		
Pitch Moment M_Y[1] (Nm)	20	39	20		39			90		161		
Yaw Moment M_Z[1] (Nm)	9	20	9		20			48		84		
System Characteristics												
Unidirectional Repeatability (mm)	±0.10	±0.10	±0.013[3]		±0.013[3]			±0.013[3]		±0.013[3]		
System Backlash (mm)	0.1	0.1	0.02		0.02			0.02		0.02		
Drive Mechanism Efficiency	90%	90%	90%		90%			90%		90%		

[1] For orientation refer to diagram on page 4.
[2] A safety stroke of 20mm for screw drive and 50mm for belt drive should be added at either end of travel.
[3] These values are under ideal conditions at low speed and low load. At maximum speed and load this can increase to ±0.07.

Critical speeds of screw driven actuators

Model	Critical Speed (mm/sec) vs Stroke (mm) 50-300	450	600	750	1000
ER32-M05	833	448	276	187	-
ER32-M10	1667	895	552	347	-
ER50-M05	625	568	354	241	145
ER50-M10	1250	1125	702	480	289
ER50-M16	2000	1796	1122	766	461

Pulley data

	Roller Bearing Carriage Belt Drive ER32	ER50
Lead (mm)	70	100
Number of Teeth	14	20
Diameter (mm)	22.28	31.83
Max. Driving Torque (Nm)	5	12

Thrust factors and zero load torque

Cylinder	Thrust factor (N/Nm)	Zero load torque (Nm)	Cylinder	Thrust factor	Zero load torque (N)
ER32 M05-LA	1130	0.20	ER50 M10-LA	565	0.30
ER32 M05-PA	1015	0.20	ER50 M10-PA	510	0.30
ER32 M05-PZ	675	0.30	ER50 M10-PB	765	0.20
ER32 M10-LA	565	0.20	ER50 M10-PD	1015	0.15
ER32 M10-PA	510	0.20	ER50 M16-LA	353	0.30
ER32 M10-PZ	335	0.30	ER50 M16-PA	317	0.30
ER32 BLT-LA	80	0.18	ER50 M16-PB	476	0.30
ER32 BLT-PA	72	0.18	ER50 M16-PD	635	0.15
ER32 BLT-PZ	48	0.27	ER50 BLT-LA	56	0.18
ER50 M05-LA	113	0.30	ER50 BLT-PA	50	0.18
ER50 M05-PA	1015	0.30	ER50 BLT-PB	75	0.12
ER50 M05-PB	1525	0.20	ER50 BLT-PD	100	0.09
ER50 M05-PD	2035	0.15			

Inertia Tables (Reflected Rotational Inertia)

Inertia ($kg\text{-}m^2 \times 10^{-4}$)

	Inline Unit	Parallel Unit	Per Metre of Stroke
ER32 Screw	0.025	0.042	0.160
ER50 Screw	0.129	0.554	0.510
ER32 Belt	0.839	0.856	0.014
ER50 Belt	4.356	4.773	0.021

Belt Torque Ratings for Parallel Mounted Motors

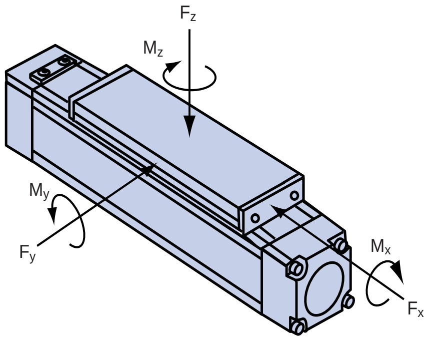
		Motor Type							Max. allowable motor torque (Nm) vs speed								
		Stepper		Servo													
		ST		ML	ML MD	HDY			Motor Speed (rpm)								
Cyl	Ratio	57	83	23	34	55	70	92	10	500	1000	1500	2000	2500	3000	3500	5000
ER32	1:1	x		x		x			1.68	1.35	1.09	0.92	0.84	0.75	0.68	0.65	0.65
ER32	1:1.5	x		x		x			1.22	0.99	0.82	0.72	0.63	0.57	0.53	0.50	0.50
ER50	1:1	x		x					2.80	2.19	1.73	1.42	1.27	1.12	1.01	0.99	0.99
ER50	1.5:1	x		x			x		1.93	1.55	1.25	1.04	0.94	0.84	0.76	0.73	0.73
ER50	2:1	x							1.43	1.16	0.94	0.80	0.73	0.66	0.60	0.57	0.57
ER50	1:1		x		x		x	x	3.64	2.93	2.39	2.10	1.85	1.67	1.53	1.38	1.24
ER50	1.5:1		x						2.40	1.96	1.62	1.44	1.28	1.17	1.08	0.99	0.93

Effective Load

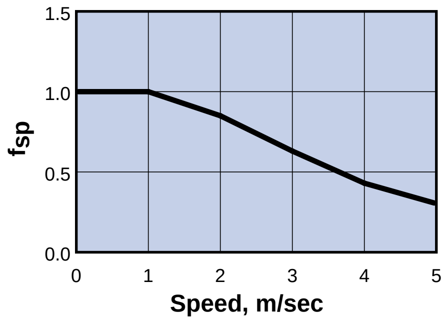
With roller bearing carriages, the load capaciy is reduced as ambient temperature and speed increases. Therefore when sizing cylinders with roller bearing carriages, the effective load must be calculated.

$$L_{eff} = L_{act} / (f_{sp} * f_{temp})$$

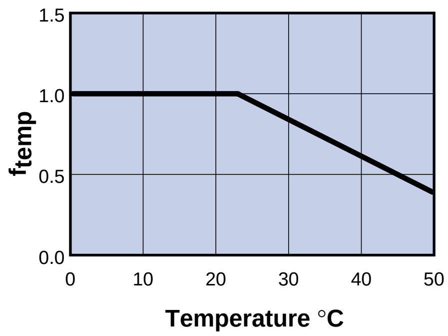
Where
- L_{eff} = effective load
- L_{act} = actual load
- f_{sp} = Speed factor taken from graph below
- f_{temp} = Temperature factor taken from graph below



Speed Factor vs Speed



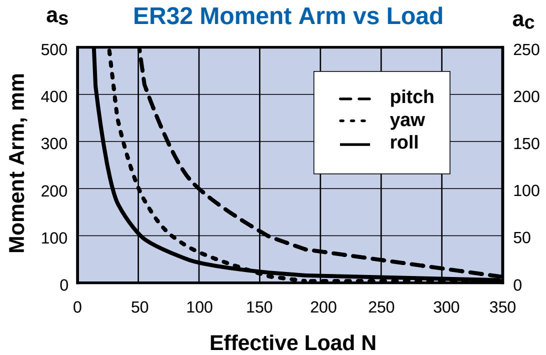
Temperature Factor vs Temperature



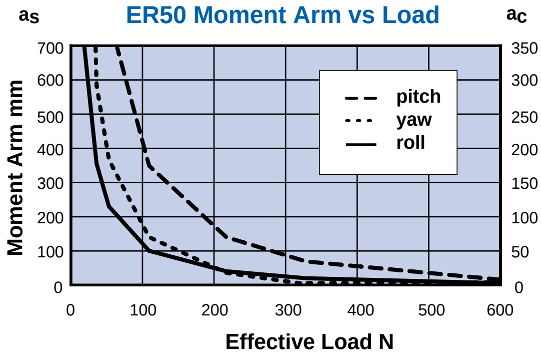
Moment Loading

Use the effective load calculated above to determine the moment loading on the carriage. For roller bearing carriages use the graphs below to check moment loading does not exceed the capacity of the carriage. Yaw-pitch and yaw-roll combinations can be considered as single acting moment loads, however a pitch-roll combination must be considered as a compound moment load, (a_S = single loading, a_C = compound loading). For square rail carriages consult the load capacity table on page 2.

ER32 Moment Arm vs Load

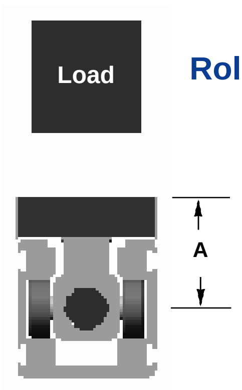


ER50 Moment Arm vs Load



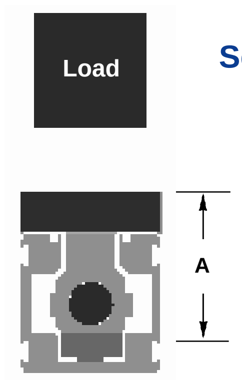
When calculating the moment arm of a load ensure to add the distance from the top of the load plate to the bearing centre as shown below.

Roller Bearing Carriage



Profile	*A mm*
ER32	38.8
ER50	50.3

Square Rail Carriage



Profile	*A mm*
ER32	48.3
ER50	63.5

Parker Automation
Parker Hannifin
Electromechanical Division
Offenburg, Germany & Poole, UK

Profile Data

	ER32	ER50
Profile cross section, mm^2	704.26	1487.09
Moment of Inertia (Mx), mm^4	1.852×10^5	7.168×10^5
Moment of Inertia (My), mm^4	1.998×10^5	7.684×10^5
Modulus of Elasticity, GN/m^2	73.015	73.015

Calculating Deflections

Determine the unsupported span length (L) and insert the value into the deflection formulae provided or consult the deflection curves. Note the deflection caused by both side and normal loads. The deflection should not exceed the value of 1/1000 of the unsupported span. Refer to formulae.

Maximum deflection $\delta = \dfrac{\text{Unsupported span}}{1000}$

Deflection Formulas:

Key: δ = deflection (mm)

F = Force (N)

L = Unsupported span (mm)

ER32

$$\delta_x = \frac{L^4 + 83.64(F_x+6.37)L^3}{5.43 \times 10^{13}}$$

$$\delta_y = \frac{L^4 + 83.64(F_y+6.37)L^3}{5.86 \times 10^{13}}$$

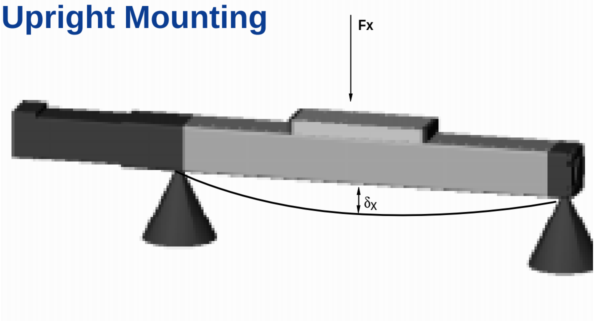
ER50

$$\delta_x = \frac{L^4 + 36.66(F_x+14.71)L^3}{9.21 \times 10^{13}}$$

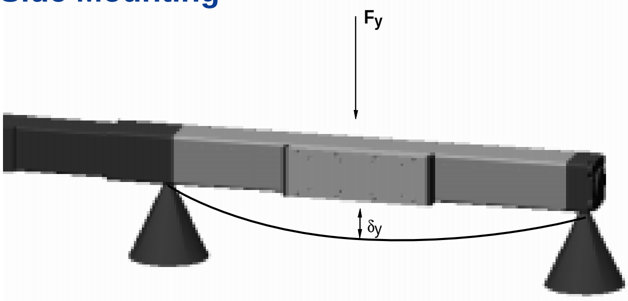
$$\delta_y = \frac{L^4 + 36.66(F_y+14.71)L^3}{9.87 \times 10^{13}}$$

Note: *These formulae take into consideration the self-deflection caused by the weight of the aluminium body and the carriage in addition to the load acting on the carriage.*

Upright Mounting



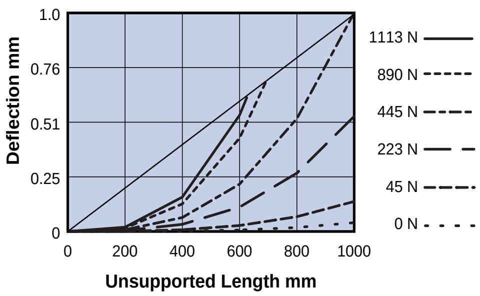
Side Mounting



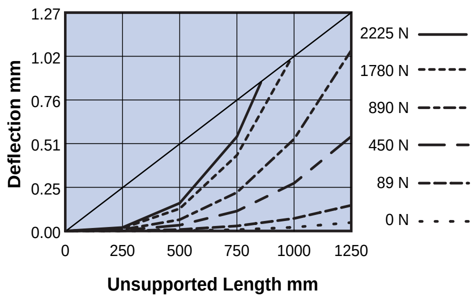
Deflection Curves (for upright mounting only)

Note: *Diagonal line represents maximum deflection.*

Size 32 Deflection



Size 50 Deflection



Weight Data (weights without motor, flange and mounting options)

	Roller Bearing Carriage				Square Rail Carriage	
	Belt Drive		Screw Drive		Screw Drive	
	ER32	ER50	ER32	ER50	ER32	ER50
Unit weight, zero travel, kg	2.21	4.38	2.07	4.42	2.24	3.89
Carriage weight, kg	0.65	1.50	0.58	1.65	0.64	0.98
Additional weight, kg/m	1.95	4.45	2.29	5.16	2.27	5.20

Life Graphs

Graphs ‘A’ show the travel distance achieved or exceeded by 90% of a large number of identical or similar screws and their bearings before they fail due to material fatigue. Carriages, gaskets, the front screw support and the timing belt for parallel drive are not included. The mean load for different forces at varying speeds can be calculated using the formula opposite.

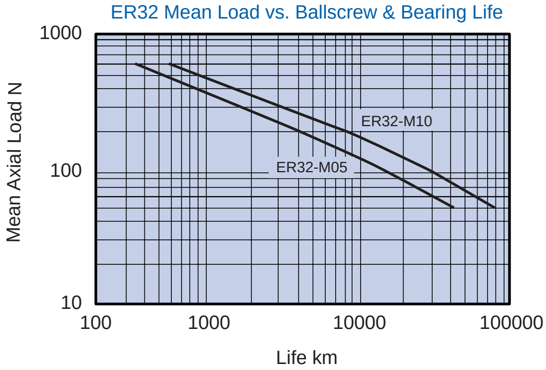
The life expectancy of drive belts cannot be accurately predicted.

Graphs ‘B’ to ‘H’ represent the life expectancy of the square rail carriages under normal and moment loading.

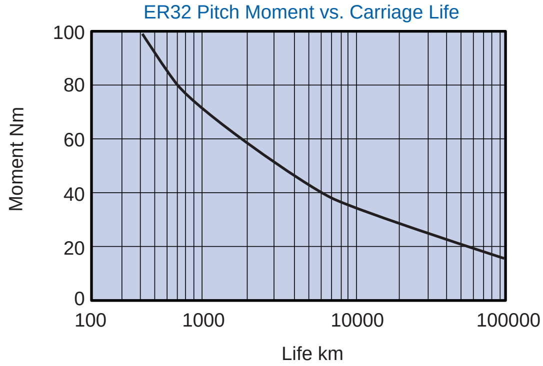
Compare the life expectancy produced by the screw and that of the carriages. The smaller of the two best represents expected life.

If the life expectancy is required in terms of operating cycles, simply divide the life expectancy in km by twice the travel.

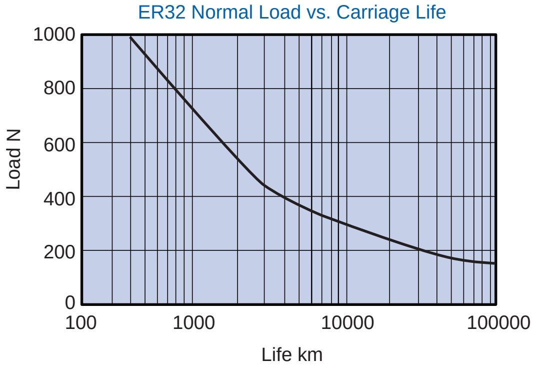
Graph A
ER32 Mean Load vs. Ballscrew & Bearing Life



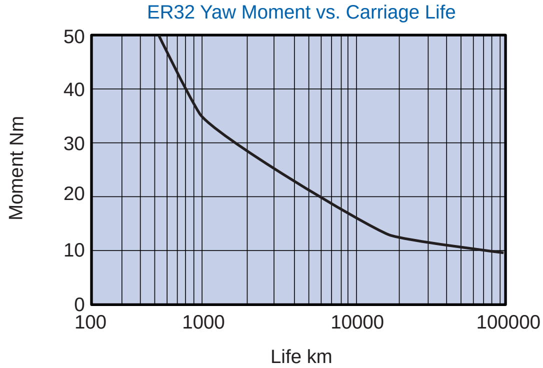
Graph B
ER32 Pitch Moment vs. Carriage Life



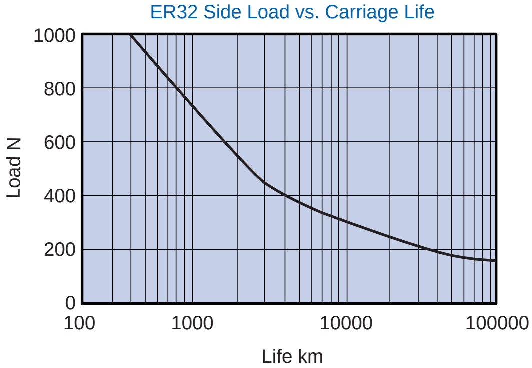
Graph C
ER32 Normal Load vs. Carriage Life



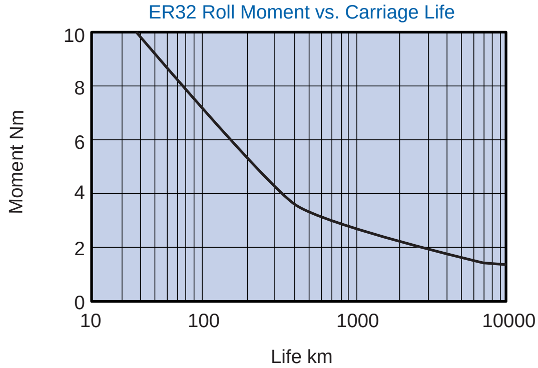
Graph D
ER32 Yaw Moment vs. Carriage Life



Graph E
ER32 Side Load vs. Carriage Life



Graph F
ER32 Roll Moment vs. Carriage Life



Establishing the Mean Load

The mean load for different forces at varying speeds can be calculated using the following formula

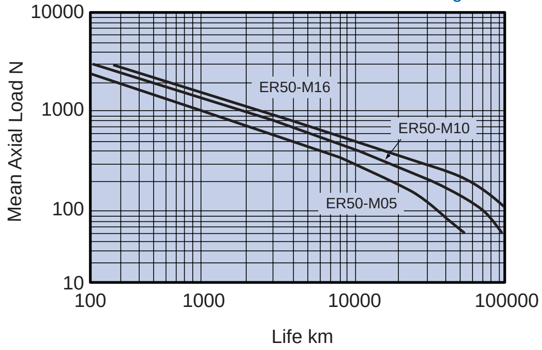
$$F_m = \sqrt[3]{F_1^3 \cdot \frac{n_1}{n_m} \cdot \frac{q_1}{100} + F_2^3 \cdot \frac{n_2}{n_m} \cdot \frac{q_2}{100} + F_3^3 \cdot \frac{n_3}{n_m} \cdot \frac{q_3}{100} + F_4^3 + \ldots}$$

where:

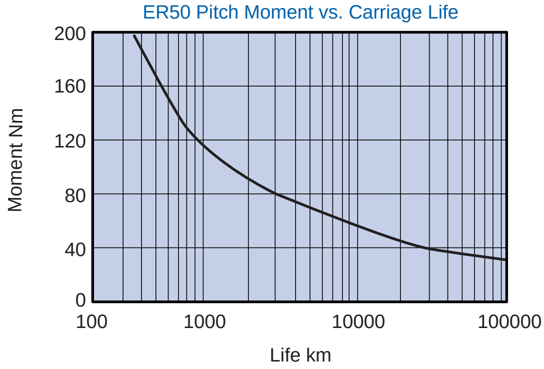
$$n_m = n_1 \cdot \frac{q_1}{100} + n_2 \cdot \frac{q_2}{100} + n_3 \cdot \frac{q_3}{100} + n_4 \cdot \ldots$$

F_m	=	mean load [N]
n_m	=	mean speed [rpm]
$F_{1.2.3}$	=	individual forces [N]
$n_{1.2.3}$	=	speeds at which an individual force F_1, F_2 or F_3 is applied [rpm]
$q_{1.2.3}$	=	time proportion of the overall cycle when an individual force F_1, F_2 or F_3 is applied [%]

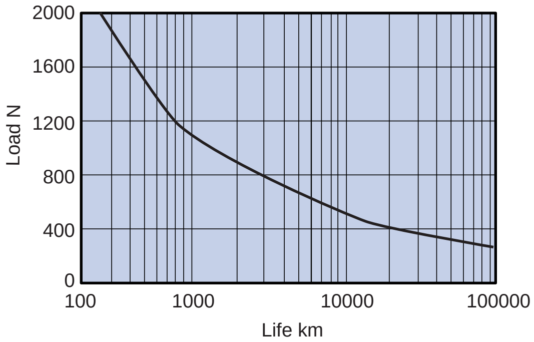
Graph A
ER50 Mean Load vs. Ballscrew & Bearing Life



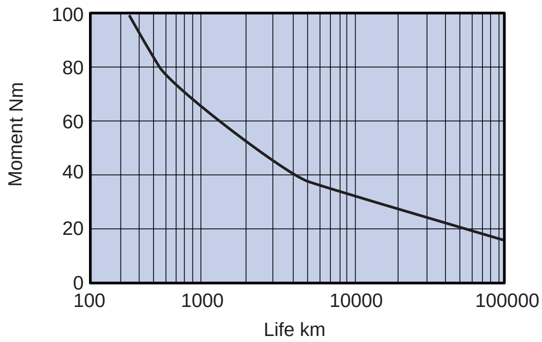
Graph B
ER50 Pitch Moment vs. Carriage Life



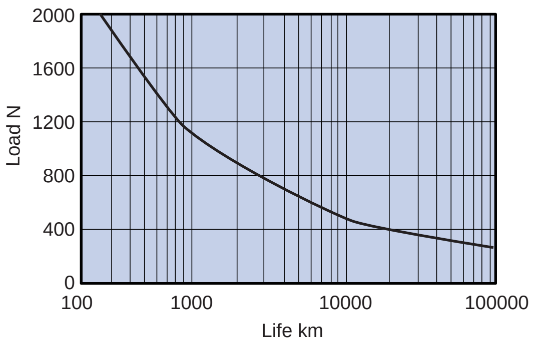
Graph C
ER50 Normal Load vs. Carriage Life



Graph D
ER50 Yaw Moment vs. Carriage Life

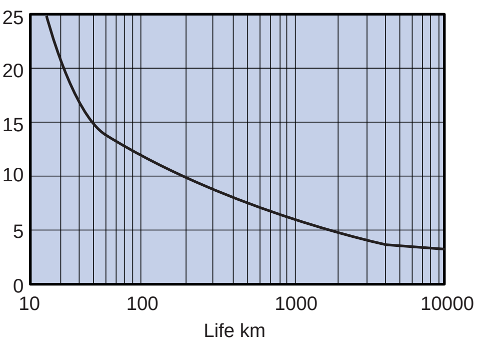


Graph E
ER50 Side Load vs. Carriage Life

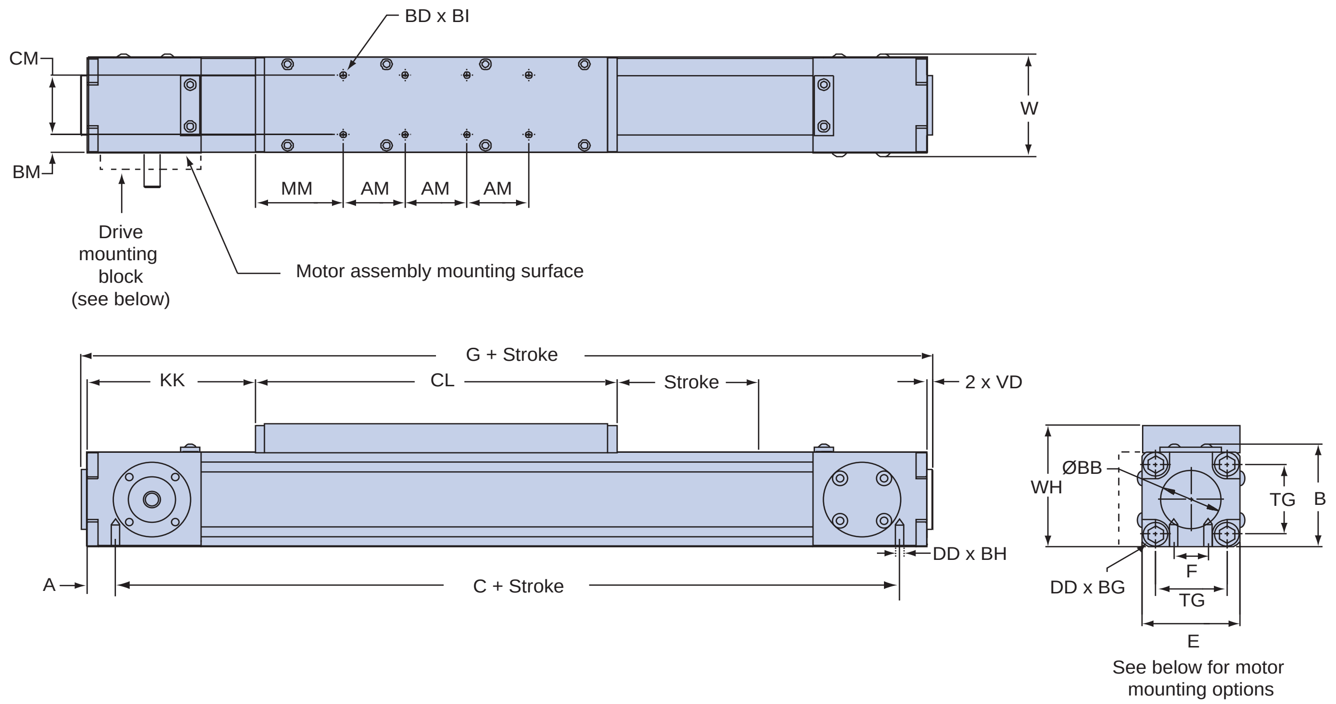


10 100 1000 10000 100000

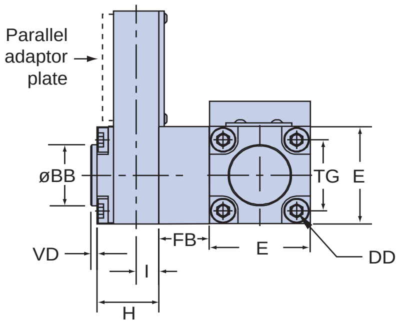
Graph F
ER50 Roll Moment vs. Carriage Life



Belt Drive Actuator

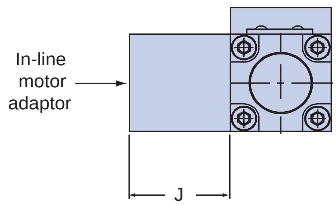


Parallel Motor Mounting



End view of actuator

Inline Motor Mounting



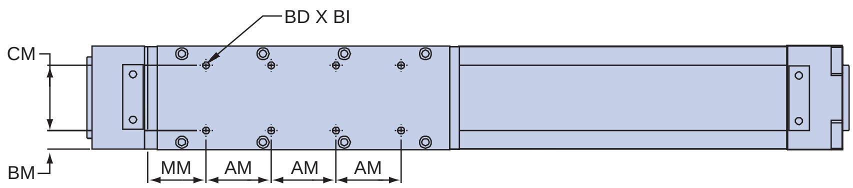
End view of actuator

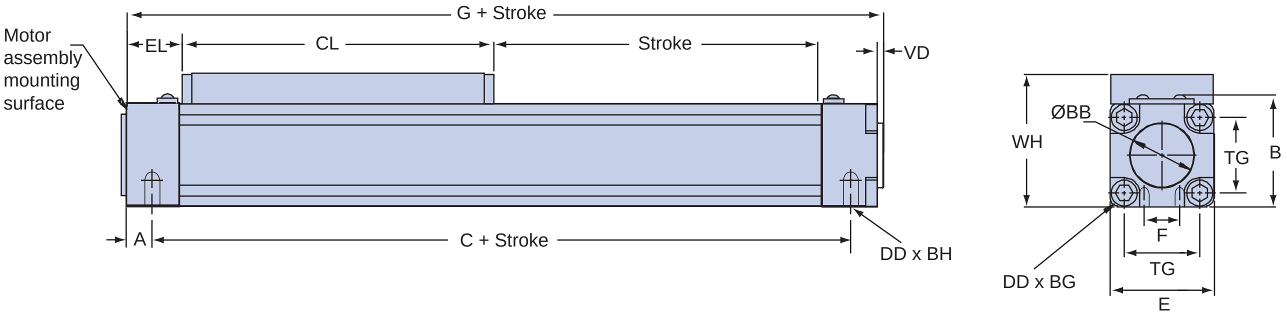
Dimensions (mm)

	A	AM	B	øBB	BDxBI	BM	C	CL	CM	DDxBG	DDxBH	E
ER32	14	28	52	30	M4x 8	9.2	364	222	28	M6x 14.5	M6x 9	46.5
ER50	18	40	70	40	M5x 10	11.8	414	234	40	M8 x 16	M8x 12.7	63.5

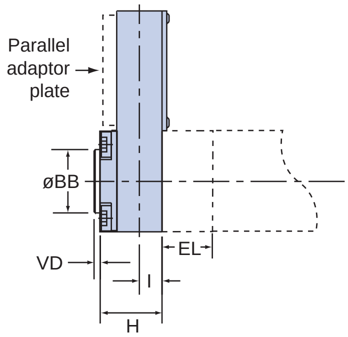
	F	FB	G	H	I	J	KK	MM	TG	VD	W	WH
ER32	16	16	400.5	36.8	14.4	37.5	85	69	32.5	4	50	62
ER50	24	20	458	39.8	14.8	53.5	108	57	46.5	4	69	82

Screw Drive Actuator



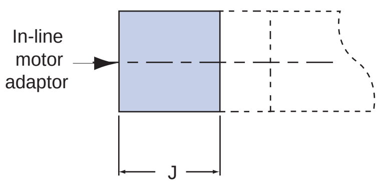


Parallel Motor Mounting



Side view of actuator

Inline Motor Mounting



Side view of actuator

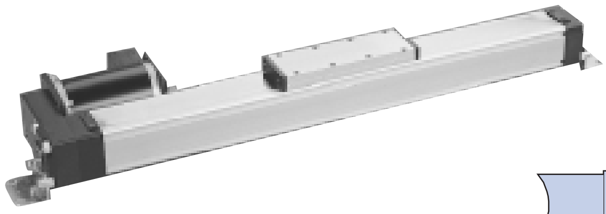
Dimensions (mm)

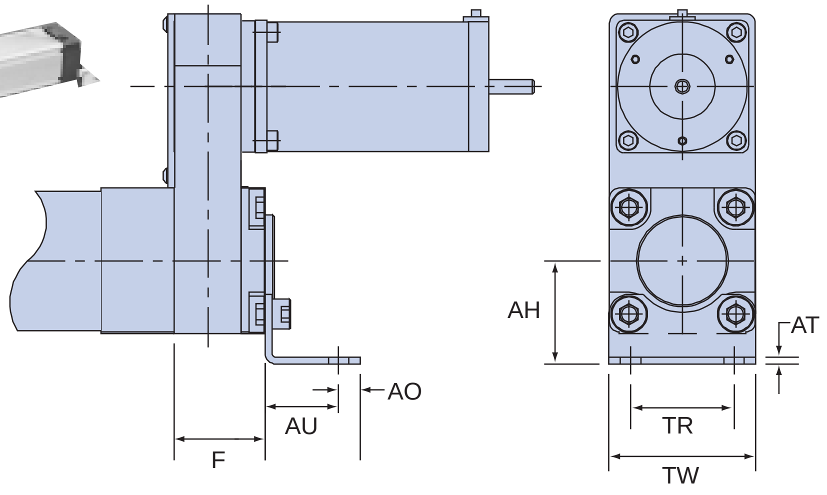
	A	AM	B	øBB	BDxBI	BM	C	CL	CM	DDxBG	DDxBH
ER32	14	28	52	30	M4x 8	9.2	212	180	28	M6x 14.5	M6X9
ER50	16	40	70	40	M5x 10	11.8	228	192	40	M8 x 16	M8 x 12.7

	E	EL	F	G	H	I	J	MM	TG	VD	WH
ER32	46.5	30	16	244	36.8	14.4	37.5	48	32.5	4	62
ER50	63.5	34	24	262	39.8	14.8	53.5	36	46.5	4	82

Foot Mounting (MS1)

Mounting Code B





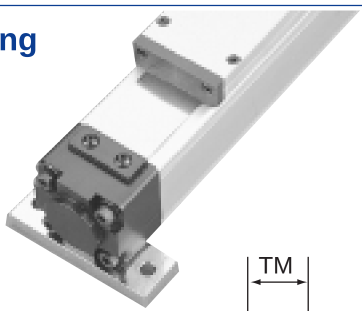
NOTE: Not available with inline motor mounting on screw drive actuator.

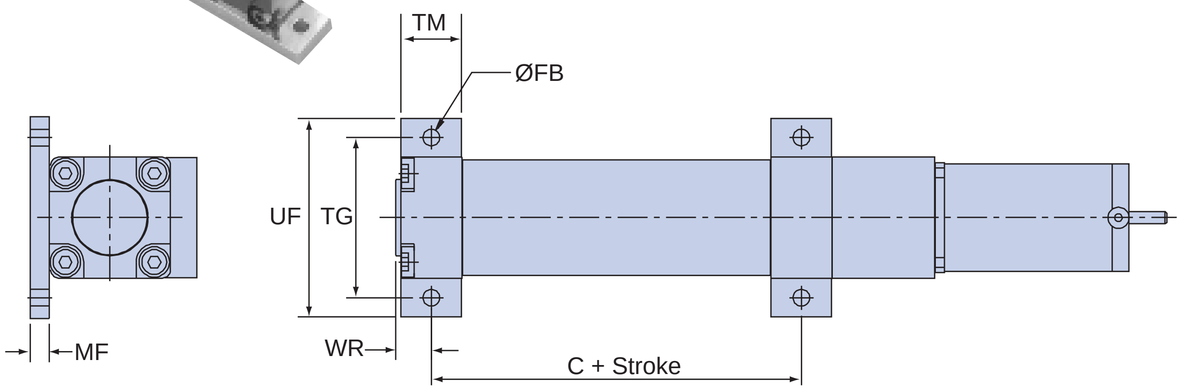
Dimensions (mm)

	AH	*AO*	*AT*	*AU*	*F*	*TR*	*TW*
ER32	32	7.2	3	24	36.8	32	46.5
ER50	45	9.5	3	32	39.8	45	64

Side Lug Mounting

Mounting Code G



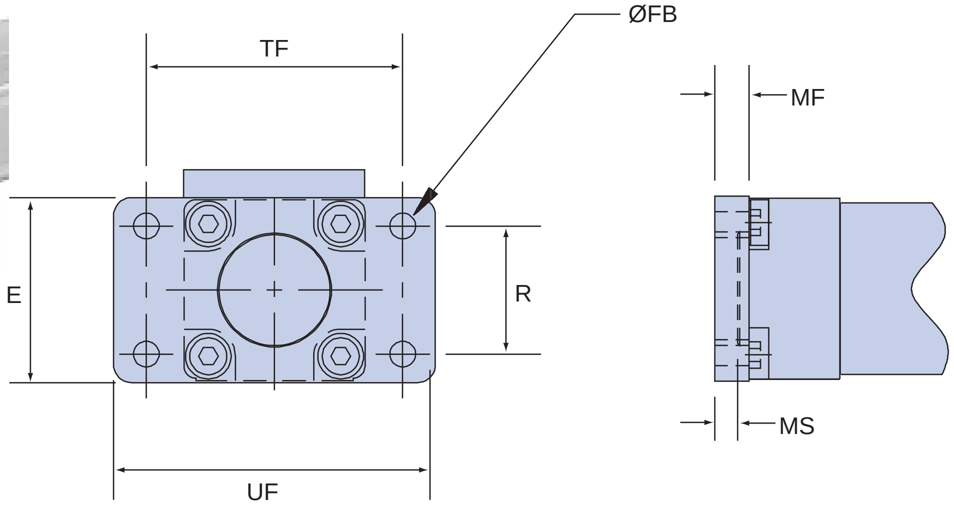


Dimensions (mm)

	øFB	*MF*	*TG*	*TM*	*UF*	*WR*	*Screw Drive C*	*Belt Drive C*
ER32	6.7	8	62	25.4	78	18	212	364
ER50	8.7	10	84	31.8	104	22	228	414

Flange Mounting (MF1 or MF2)

Mounting Codes J (Front), H (Rear), N (Front & Rear)



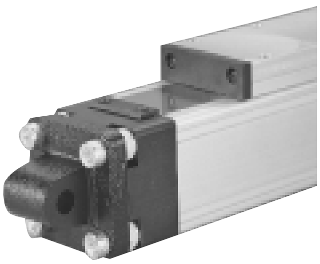
NOTE: When using this option, it is important that both ends of the actuator are supported.
Rear flange mounting is not available with inline motor mounting on screw drive actuator.

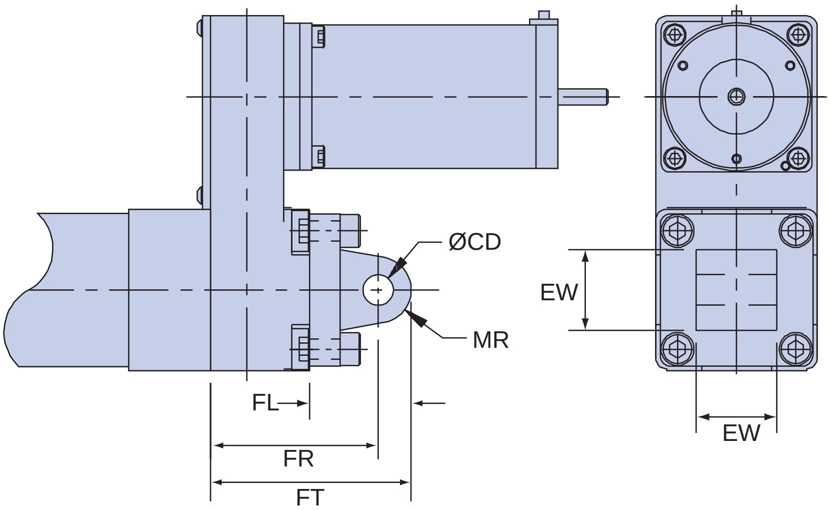
Dimensions (mm)

	E	ØFB	MF	MS	R	TF	UF
ER32	47	7	10	6	32	64	80
ER50	65	9	12	8	45	90	113

Rear Eye Mounting (MP4)

Mounting Code E





NOTE: Not available with inline motor mounting on screw drive actuator.

Dimensions (mm)

	ØCD	EW	FL	FR	FT	MR
ER32	10.0	25.4	22.0	59	70	10
ER50	12.0	31.5	27.0	67	80	13

Model Code and Ordering Information

Example: ERB50-M10RA57-BSR600-A

ERB | 50 - M10 | R | A

Feature	Description	Frame Size		Symbol
		32	50	
Series	Stepper Series	✔	✔	ERS
	Brushless Servo Series	✔	✔	ERB
Model/Size	32			32
	50			50
Drive Type	Ballscrew 16mm Lead		✔	M16
	Ballscrew 10mm Lead	✔	✔	M10
	Ballscrew 5mm Lead	✔	✔	M05
	Belt Drive	✔	✔	BLT
Motor Mounting Style	Inline Direct Drive			L
	Parallel Motor Position 2			M
	Parallel Motor Position 3			N
	Parallel Motor Position 4			Q
	Reverse Parallel Motor Position 1			R
	Reverse Parallel Motor Position 2			S
	Reverse Parallel Motor Position 3			T
	Reverse Parallel Motor Position 4			V
	Direct Drive, Drive Left			L
	Direct Drive, Drive Right			R
	Parallel with Timing Belt, Over Right			M
	Parallel with Timing Belt, Under Right			N
	Parallel with Timing Belt, Over Left			S
	Parallel with Timing Belt, Under Left			T
	Reverse Parallel with Timing Belt, Over Right			V
	Reverse Parallel with Timing Belt, Under Right			W
	Reverse Parallel with Timing Belt, Over Left			Y
	Reverse Parallel with Timing Belt, Under Left			Z
	Reverse Parallel with Timing Belt, Rear Right			J
	Reverse Parallel with Timing Belt, Rear Left			K
Drive Ratio	Inline or Parallel, Ratio 1:1	✔	✔	A
	Parallel, Ratio 1.5:1		✔	B[1]
	Parallel, Ratio 2:1		✔	D[1]
	Parallel, Ratio 1:1.5	✔		Z

Screw Drive

Belt Drive

ER | 50 - IDL - S - B | S | R | 600 - A

Frame size	32	ER32
	50	ER50
Model	Idler Unit, Non-driven	IDL
Matching type of driven unit	Screw drive	S
	Belt drive	B
Actuator Mtg	Same as equivalent driven unit	n
Carriage style	Same as equivalent driven unit	n
Bearing style	Same as equivalent driven unit	n
Stroke	Same as equivalent driven unit	n

57 - B S R 600 - A

ERS

ERB

Symbol	Frame Size 32	Frame Size 50	Description	Feature
-			Assigned by Factory	Design Series
ER32[4]			50-750mm Screw Drive	Stroke Length
ER32[4]			50-2800mm Belt Drive	
ER50[4]			50-1000mm Screw Drive	
ER50[4]			50-3300mm Belt Drive	
R			Roller Bearing Carriage	Carriage Bearing Style
S[3]			Square Rail Carriage	
S			Standard	Carriage Style
X			Special	
B[2]			Foot Mount (MS1)	Actuator Mounting
E[2]			Rear Eye (MP4)	
F			Bottom Tap (MS4) - Standard	
G[3]			Foot Side Lug	
H[2,3]			Rear Flange (MF2)	
J			Front Flange (MF1)	
N[2,3]			Front & Rear Flange (MF1 & MF2)	
X			Special	
20	✔	✔	ST57, Prepared Only	Stepper Motor Style
27	✔	✔	STL57-102, Motor with 3m Cable	
28	✔	✔	STT57-102, Motor with Grommet	
30		✔	ST83, Prepared Only	
37		✔	STL83-135, Motor with 3m Cable	
38		✔	STT83-135, with Grommet	
20	✔	✔	ML2340B, Prepared Only	Brushless Servo Motor Style
21	✔	✔	ML2340B-10, Supplied	
24	✔		ML2340A-10, Supplied	
25	✔		ML2340A, Prepared Only	
30		✔	ML3450B/ML3475B, Prepared Only	
31		✔	ML3450B-10, Supplied	
35		✔	ML3475B-10, Supplied	
36		✔	MD3450/14/230V, Supplied	
37		✔	MD3450/ML3475/14, Prepared Only	
38		✔	MD3475/14/230V, Supplied	
46	✔		HDY55C4-32S, Supplied	
47	✔		HDY55, Prepared Only	
56		✔	HDY70C4-44S, Supplied	
57		✔	HDY70, Prepared Only	
66		✔	HDY92E4-44S, Supplied	
67		✔	HDY92, Prepared Only	
90	✔	✔	Special Customer Supplied Motor	
99	✔	✔	Non-Standard Motor	

① Not available with larger frame size motors on ER50
② Not available with inline (L) motor mounting
③ Screw drive only
④ Safety stroke of 20mm for screw drive and 50mm for belt drive should be added to either end of travel.

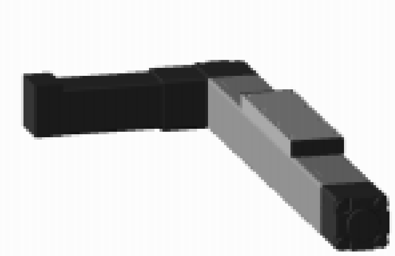
The ER Series may be ordered in a variety of orientations, depending on transmission type and space restrictions. The orientation options are illustrated below and can be specified in the model code.

Model Code Example

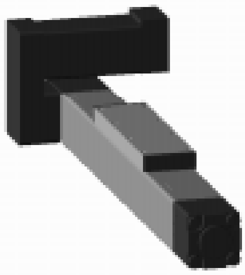
ERB50-BLTLA21-BSR200-A

In this case, a size 50 belt-driven actuator was selected with the motor mounted to the left of the pulley housing (**L**), a 1:1 required drive ratio (**A**), and a NEMA 23 servo motor with a stroke of 200 mm.

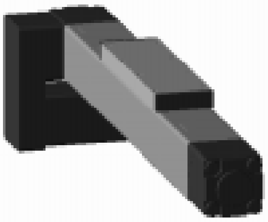
Belt Driven Orientations



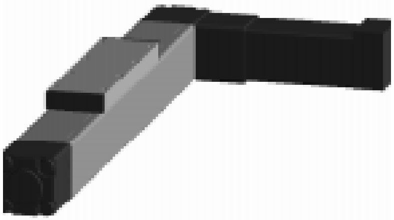
L: Direct Drive, Motor in Position 4 – Drive Left



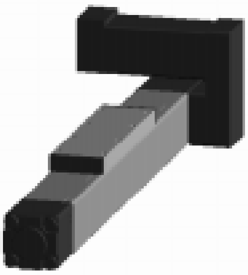
M: Parallel with Timing Belt, Over Right



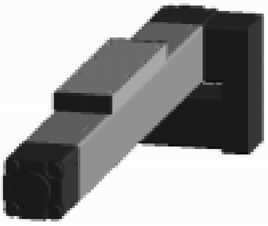
N: Parallel with Timing Belt, Under Right



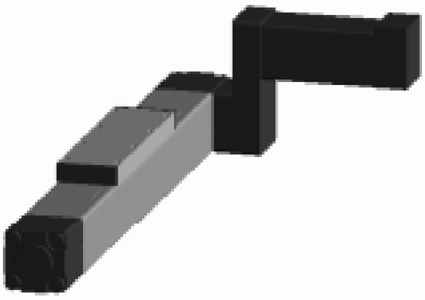
R: Direct Drive, Motor in Position 2 – Drive Right



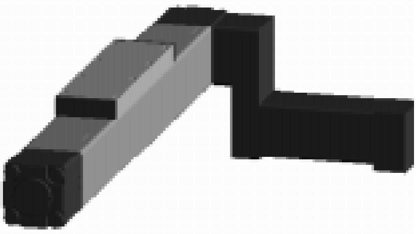
S: Parallel with Timing Belt, Over Left



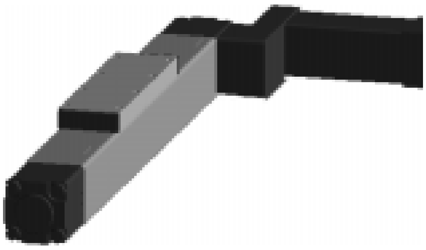
T: Parallel with Timing Belt, Under Left



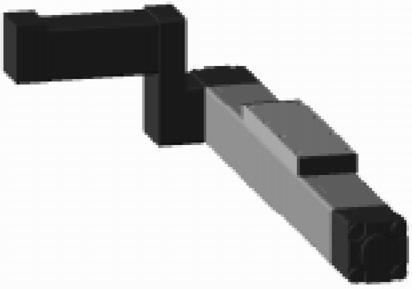
V: Reverse Parallel with Timing Belt, Over Right



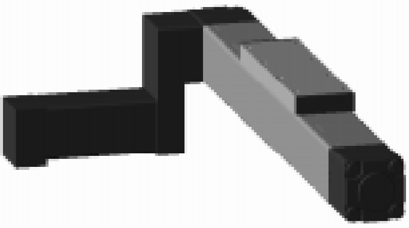
W: Reverse Parallel with Timing Belt, Under Right



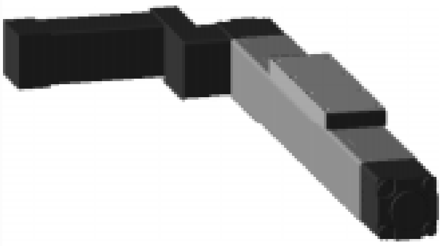
J: Reverse Parallel with Timing Belt, Rear Right



Y: Reverse Parallel with Timing Belt, Over Left

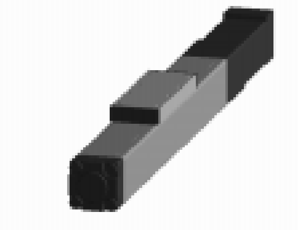


Z: Reverse Parallel with Timing Belt, Under Left

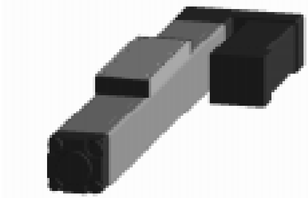


K: Reverse Parallel with Timing Belt, Rear Left

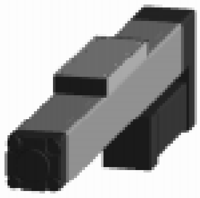
Screw Driven Orientations



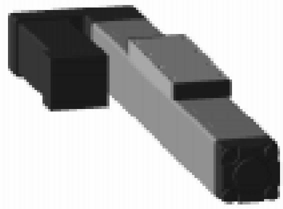
L: Inline Direct Drive



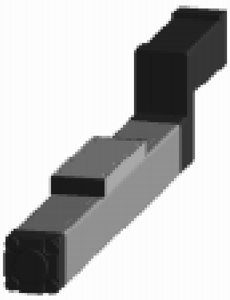
M: Parallel with Timing Belt, Motor in Position 2



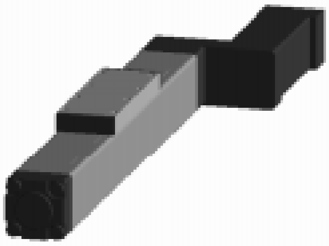
N: Parallel with Timing Belt, Motor in Position 3



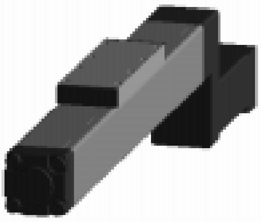
Q: Parallel with Timing Belt, Motor in Position 4



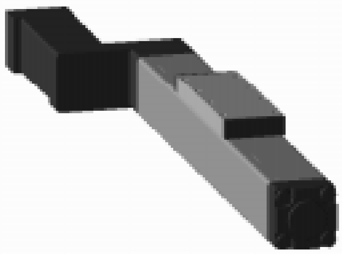
R: Reverse Parallel with Timing Belt, Motor in Position 1



S: Reverse Parallel with Timing Belt, Motor in Position 2

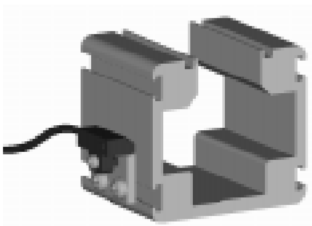


T: Reverse Parallel with Timing Belt, Motor in Position 3



V: Reverse Parallel with Timing Belt, Motor in Position 4

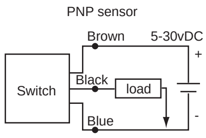
Home Limit Switches

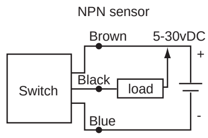


All standard linear actuators are equipped with a permanent magnet, which is integrated into the carriage. The limit and home sensors must be fitted using the suitable switch clamp, (part number SC32 for ER32 and SC50 for ER50), to one of the four T-grooves featured on the cylinder body as shown on the left

Hall effect sensor

- N.C or N.O
- electronic
- LED display
- moderate cost
- long life expectancy





Reed contact

- N.C
- mechanical
- LED display
- low cost
- moderate life expectancy

Hall effect sensors

Type	*Function*	*LED colour*	*Logic*	*Cable*	*Switch current*	*Power supply current*	*Supply voltage range*	*Operating frequency*
SMH-1P*	N.O.	Green	PNP	1.5m	max. 150mA	7mA at 12vDC	5-30vDC	max.500 Hz
SMH-1N*	N.O.	Red	NPN					
SMC-1P*	N.C.	Yellow	PNP			14mA at 24vDC		
SMC-1N*	N.C.	White/Red	NPN					

* Add 'C' to part number for 150mm cable with connector in place of 1.5m cable, e.g. SMH-1PC

Reed contact

Type	*Function*	*LED colour*	*Cable*	*Switch on current*		*Nominal Power rating*		*Supply voltage*	*Operating frequency*
				ohmic load	*ind. load*	*ohmic load*	*ind. load*		
SMR-1	N.O.	Green	1.5m	30-300 mA	30-100 mA	AC/DC 10W	AC/DC 5W	5-30vDC	300 Hz
SMR-1L	N.O	Red	1.5m	5-40 mA	5-25mA	AC/DC 10W	AC/DC 5W	5-30vDC	300 Hz
SMD-1L	N.C.	Yellow	1.5m	5-25 mA	5-25 mA	AC/DC 3W		5-30vDC	200 Hz

Only use SMC-1P with Compax. With PDX drives, use SMH-1N as the home switch and 2x SMC-1N as the limit switches.

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The performance requirements of today's automation tasks demand reliable, cost-effective solutions and the reassurance of competent technical backup. A comprehensive product range supported by highly-trained, experienced application engineers forms the basis of Parker's motion control capability.

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Parker - we engineer solutions in motion control

Machine Interfaces	Motion Controllers	Drives & Motors	Mechanical Positioners	Machine Structures
Remote panels	Open loop	Stepper	Linear tables	Structural framing
Joysticks	Closed loop	Microstepper	Rotary tables	Gantry systems
	PC compatible	Servo	Multi-axis stages	Support hardware
	Contouring	Analogue	Linear actuators	
	Following	Digital		

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