

Electric Saddle & Rod Style Linear Actuators

- Complete electric ball screw linear actuator solutions, including actuator, motor, power supply, and cabling
- Integrated linear guides minimize mechanical vibration while enhancing support for exceptional payload and moment capabilities
- Superior total value compared to similarly priced stepper robot positioners.



ESFA

Saddle Style

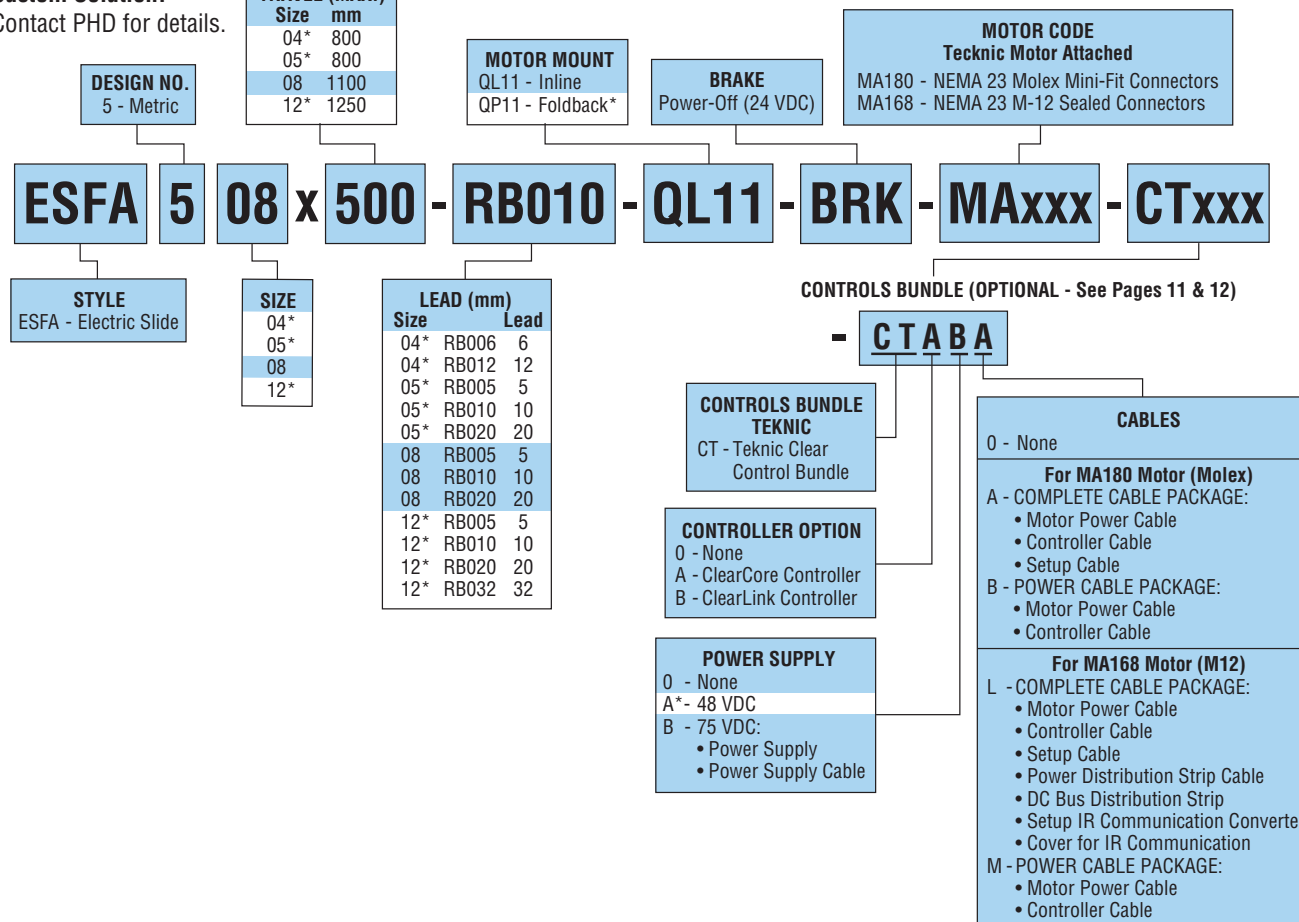
Major Benefits

- The Series ESFA provides a complete electric solution, including a single axis actuator, motor, power supply, and necessary cabling – all assembled and backed by PHD's industry leading service and support.
- An optional Power-Off Brake safeguards against power loss and serves as an emergency stop.
- The integrated linear guide minimizes mechanical vibration support for payload and moment capability beyond that of typical electric actuators in this form factor.
- Precise actuator and payload location are provided by dowel holes on all mounting surfaces.
- Installation is straightforward with easily accessible top and bottom mounting geometry.
- Superior performance and value compared to similar robot positioners.



ORDERING DATA

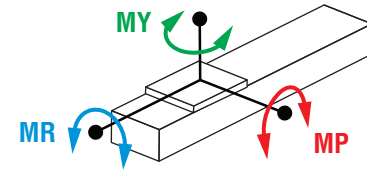
* Currently available as a **Custom Solution**.
Contact PHD for details.



SPECIFICATIONS		SERIES ESFA		
REPEATABILITY ¹		+/-0.01 mm		
DRIVE MECHANISM		Ball screw Ø 16 (C7 class)		
TRAVEL		50 mm to 1100 mm (50 mm pitch)		
MAXIMUM SPEED (OR EQUIVALENT) ²		1200 mm/sec	600 mm/sec	300 mm/sec
BALL SCREW LEAD		20 mm	10 mm	5 mm
MAXIMUM PAYLOAD (OR EQUIVALENT)	HORIZONTAL	40 kg	80 kg	100 kg
	VERTICAL	8 kg	20 kg	30 kg
RATED THRUST (OR EQUIVALENT)		174 N	341 N	683 N
MAXIMUM DIMENSIONS OF CROSS SECTION OF MAIN UNIT		W 82 mm x H 78 mm		
OPERATING TEMPERATURE & HUMIDITY		0 to 40°C, 35 to 80 %RH (non-condensing)		
ENCAPSULATION CLASS		IP50		

NOTES:

- Positioning repeatability in one direction.
- When a moving distance is short and depending on an operation condition, it may not reach the maximum speed. If the effective stroke exceeds 650 mm, the ball screw may resonate. (Critical speed)
At this time, make the adjustment to decrease the speed while referring to the maximum speed shown in the table.

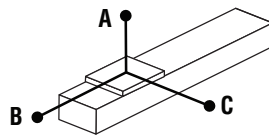


STATIC LOADING MOMENT (Nm)

MY	MP	MR
221	309	343

ALLOWABLE OVERHANG (mm)

HORIZONTAL INSTALLATION



ESFA508-20

LOAD (kg)	A	B	C
15	356	131	146
25	278	73	86
40	517	54	76

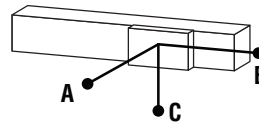
ESFA508-10

LOAD (kg)	A	B	C
30	465	83	120
50	341	44	65
80	228	22	34

ESFA508-5

LOAD (kg)	A	B	C
30	1604	95	153
50	1035	52	83
80	719	27	44
100	608	19	31

WALL INSTALLATION

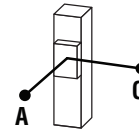


LOAD (kg)	A	B	C
15	146	131	356
25	86	73	278
40	76	54	517

LOAD (kg)	A	B	C
30	120	83	465
50	65	44	341
80	34	22	228

LOAD (kg)	A	B	C
30	153	95	1604
50	83	52	1035
80	44	27	719
100	31	19	608

VERTICAL INSTALLATION



LOAD (kg)	A	C
3	634	634
6	321	321
8	240	240

LOAD (kg)	A	C
5	551	551
10	270	270
20	129	129

LOAD (kg)	A	C
10	312	312
20	149	149
30	95	95

NOTES:

- Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.
- Service life is calculated for 600 mm stroke models.

SIZING: Series ESFA Electric Linear Actuator

INSTRUCTION FOR SIZING SERIES ESFA:

Step 1: Check the maximum permissible speed for total actuator travel to avoid screw whip.
Step 2: Assess payload versus time for each individual move to confirm bearing life.

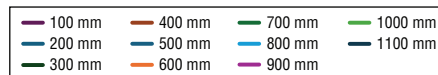
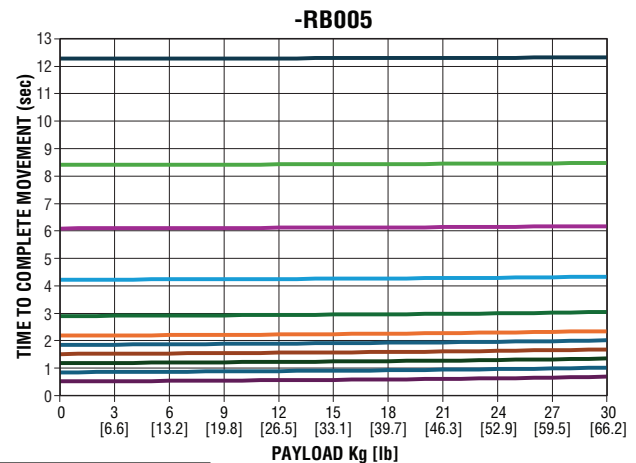
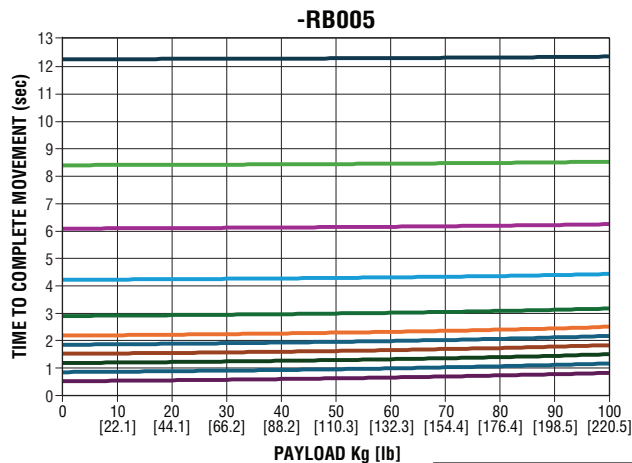
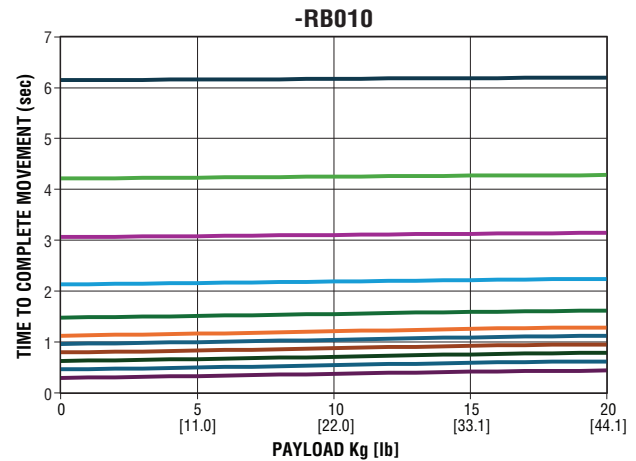
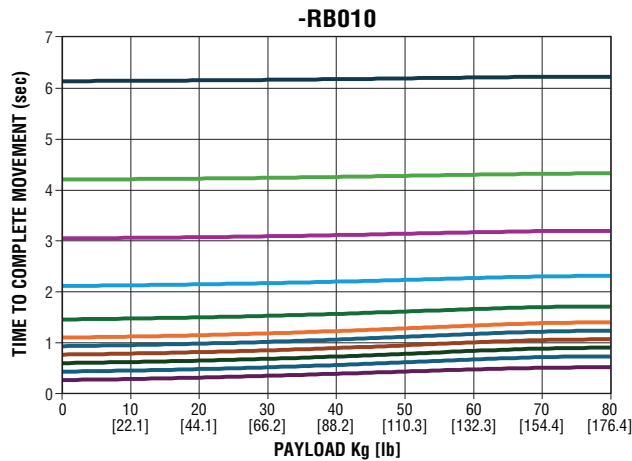
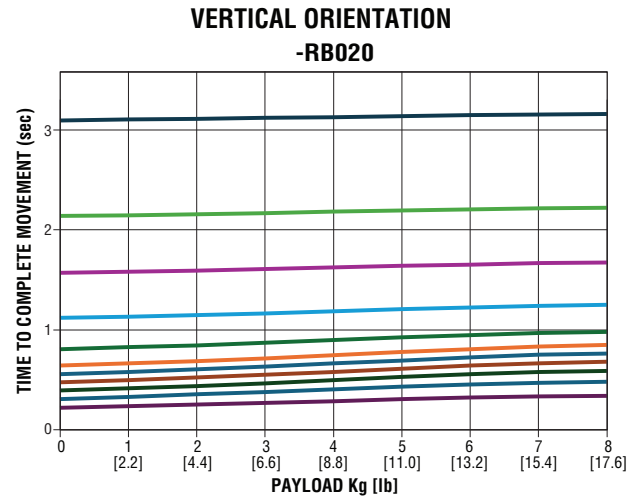
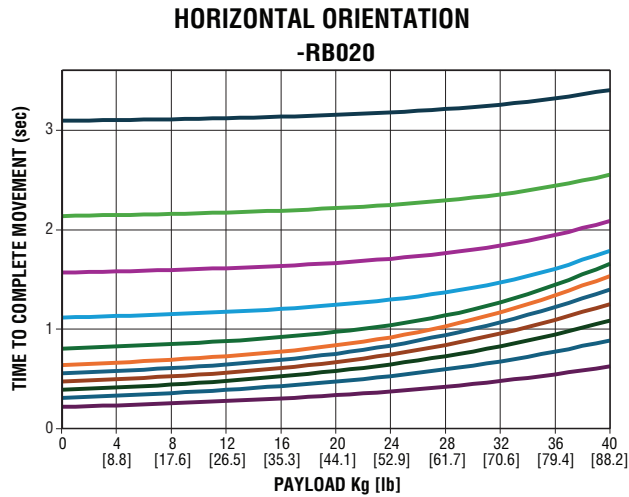
NOTES:

- 1) Customer responsibility not to exceed catalog limitations.
- 2) Bearing life based on 10,000 km.

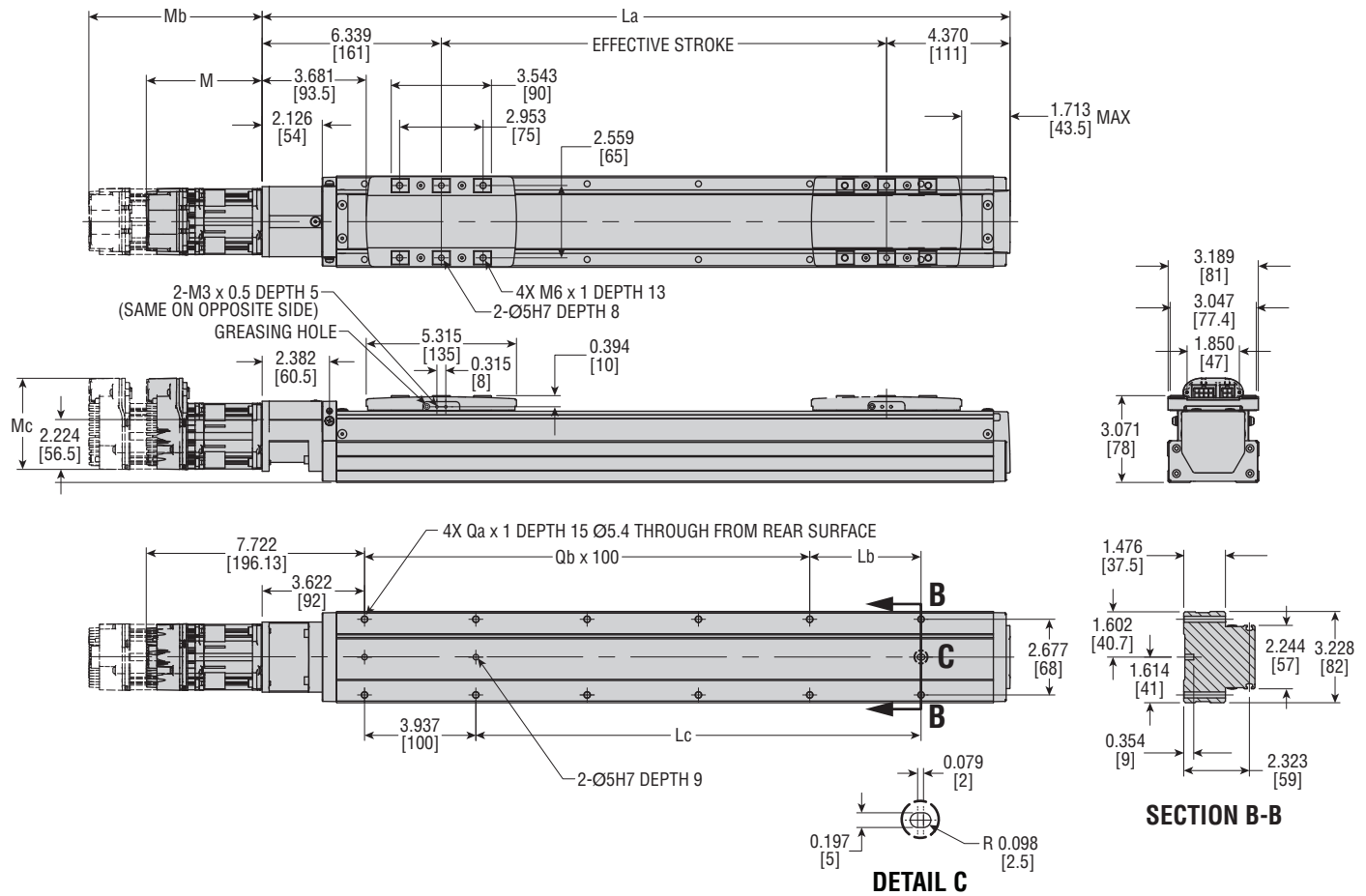
MAXIMUM ALLOWABLE SPEED

TOTAL ACTUATOR TRAVEL		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
MAXIMUM SPEED (mm/sec)	Lead 20	1200													1020	900	780	660	600	540	480	420	360
	Lead 10	600													510	450	390	330	300	270	240	210	180
	Lead 5	300													255	225	195	165	150	135	120	105	90

ESFA508 - PAYLOAD / TIME



DIMENSIONS: Series ESFA Electric Linear Actuator



DIMENSION	EFFECTIVE STROKE (mm)																					
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
L_a	322	372	422	472	522	572	622	672	722	772	822	872	922	972	1022	1072	1122	1172	1222	1272	1322	1372
L_b	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100
L_c	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
Q_a	6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26
Q_b	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
Weight (kg)	3.7	4.1	4.5	4.8	5.2	5.5	5.8	6.2	6.5	6.8	7.2	7.5	7.9	8.2	8.5	8.8	9.2	9.4	9.8	10.1	10.5	10.9

MOTOR DIMENSION	MA180		MA168	
	in	mm	in	mm
M	4.098	104.09	4.339	110.21
M_b	6.130	155.7	6.374	161.91
M_c	3.223	81.87	3.306	83.98

All dimensions are reference only unless specifically tolerated.