

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

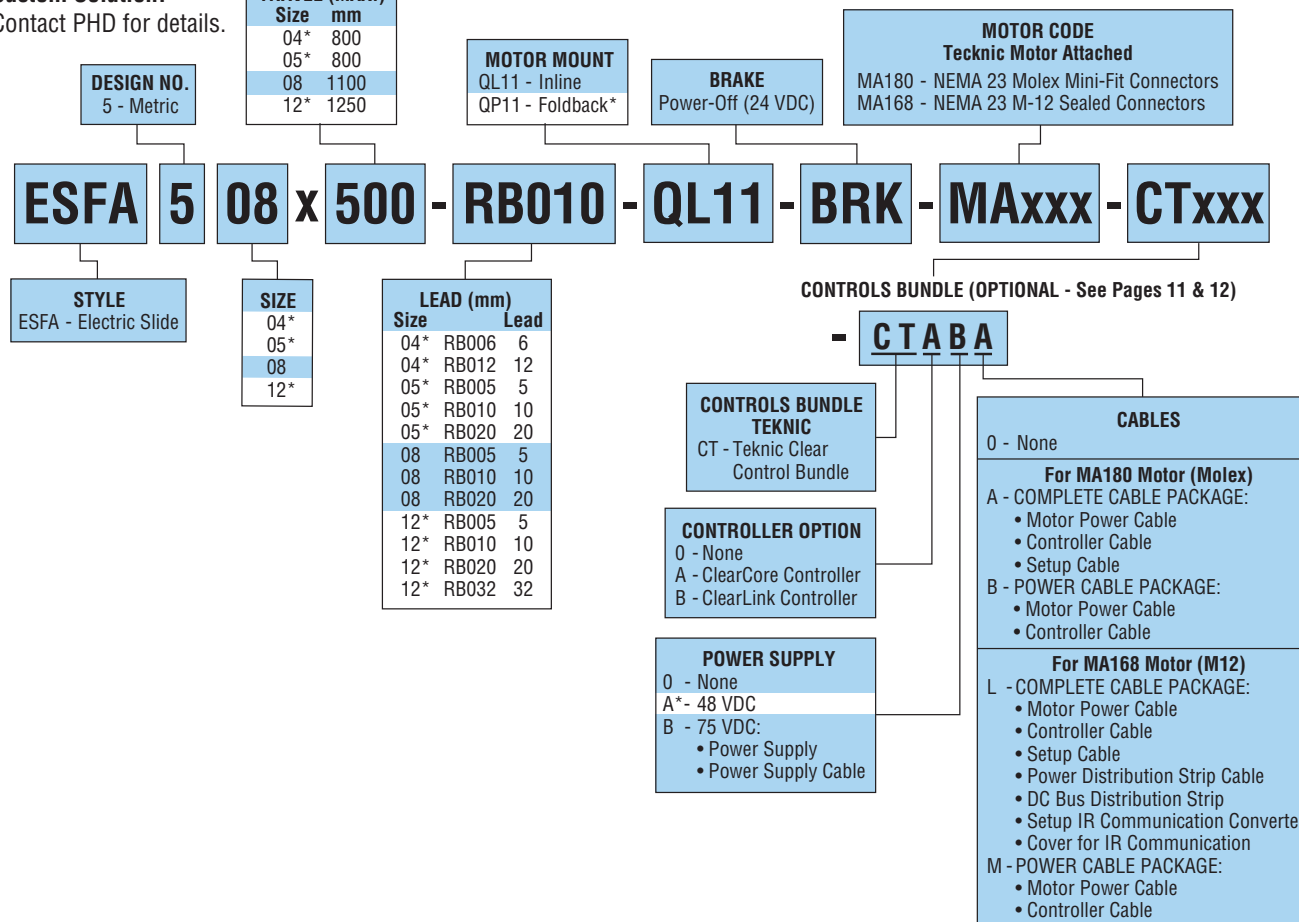
Major Benefits

- 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

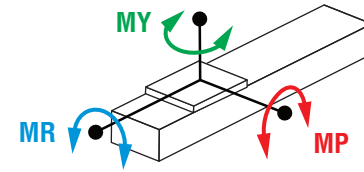
* Currently available as a Custom Solution. Contact PHD for details.



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.

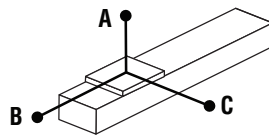


STATIC LOADING MOMENT (Nm)

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

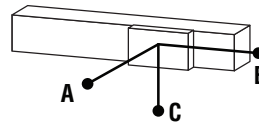
ESFA508-10

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

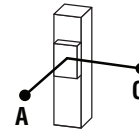


LOAD (kg)	A	B	C
15	146	131	356
25	86	73	278
40	76	54	517

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:

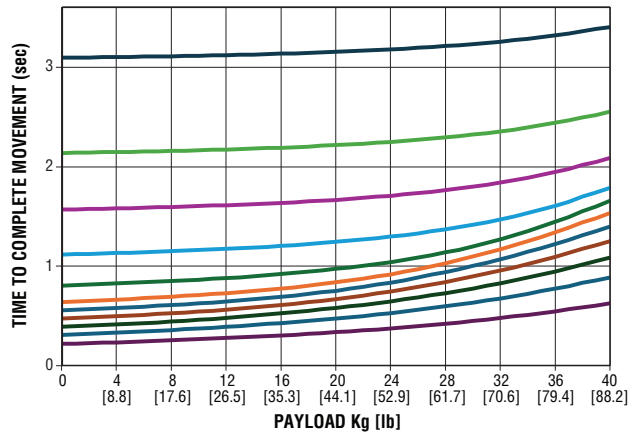
- 1) Customer responsibility not to exceed catalog limitations.
- 2) Bearing life based on 10,000 km.

MAXIMUM ALLOWABLE SPEED

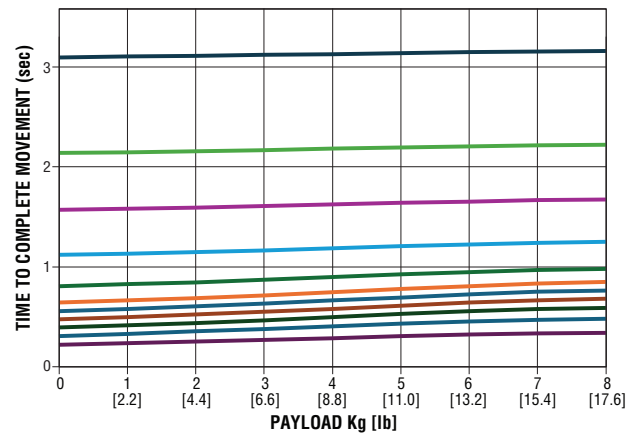
TOTAL ACTUATOR TRAVEL		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	
MAXIMUM SPEED (mm/sec)	Lead 20	1200														1020	900	780	660	600	540	480	420	360
	Lead 10	600														510	450	390	330	300	270	240	210	180
	Lead 5	300														255	225	195	165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

ESFA508 - PAYLOAD / TIME

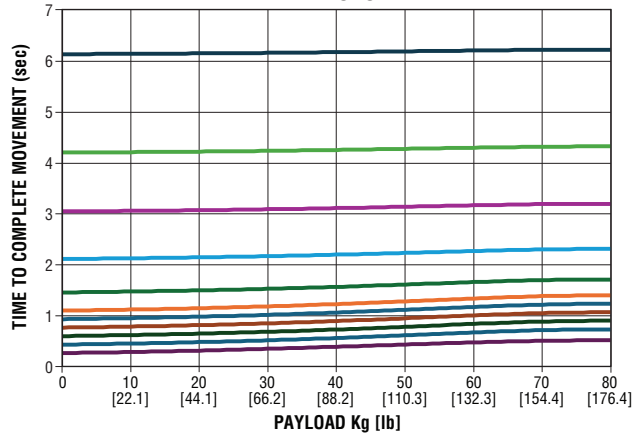
HORIZONTAL ORIENTATION -RB020



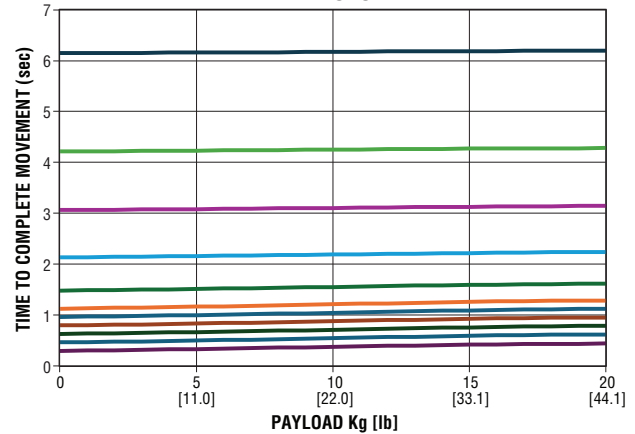
VERTICAL ORIENTATION -RB020



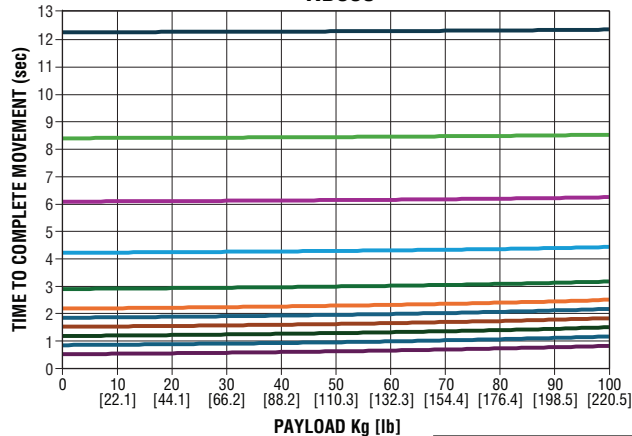
-RB010



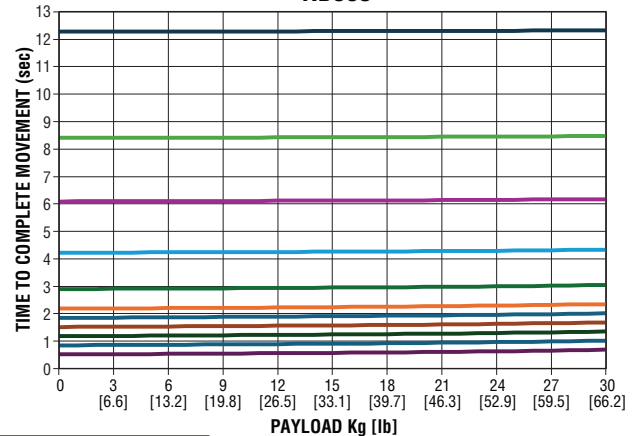
-RB010



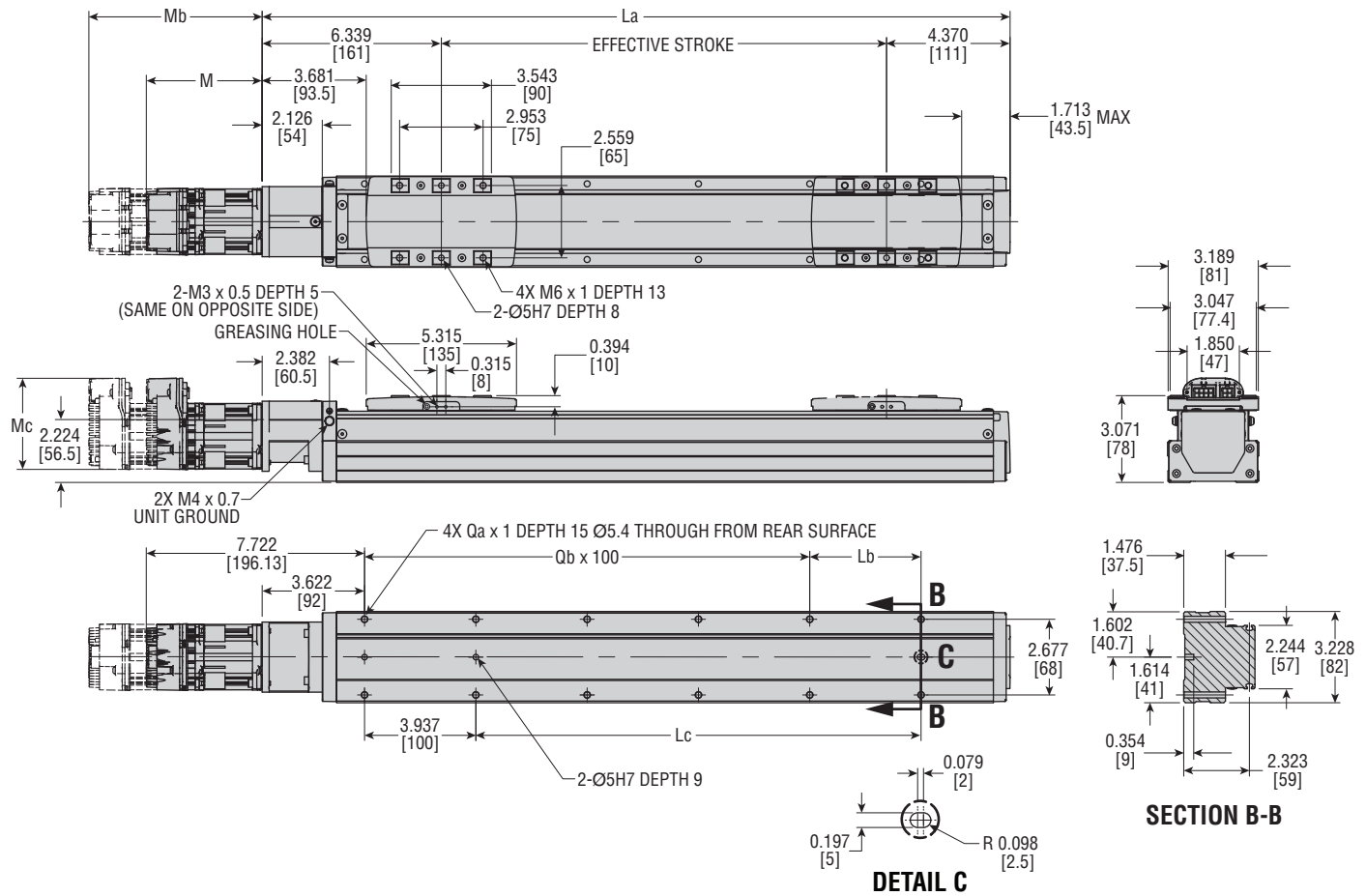
-RB005



-RB005



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.

ECFA Rod Style

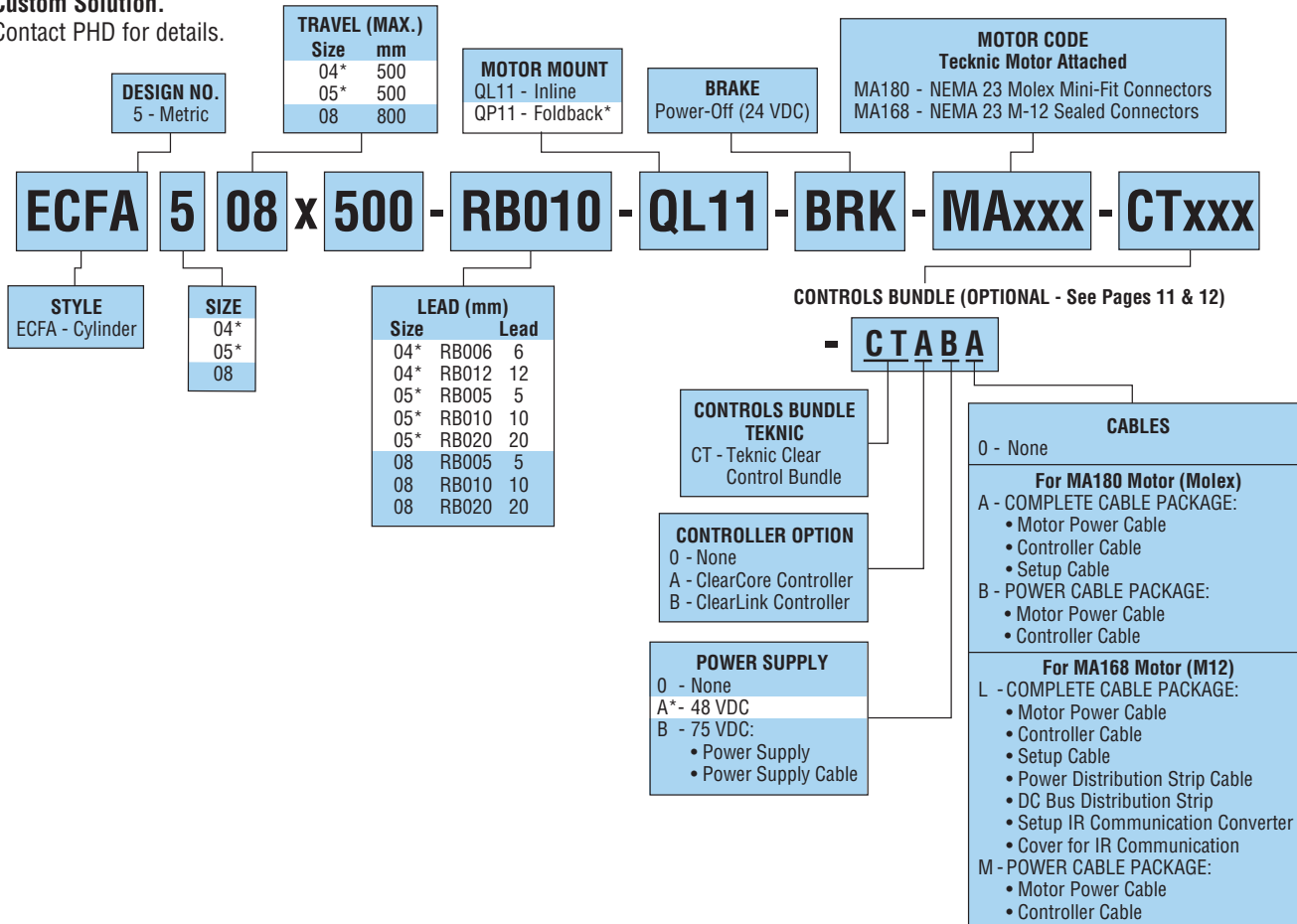
Major Benefits

- The Series ECFA offers a complete electric cylinder 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 and enhances rod support for superior side load capability beyond that of typical electric cylinders.
- 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.



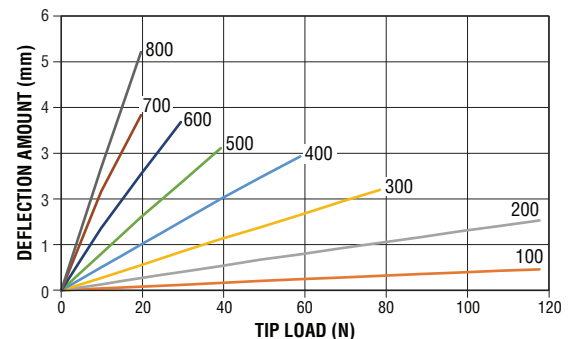
SPECIFICATIONS		SERIES ECFA		
REPEATABILITY ¹		+/-0.01 mm		
DRIVE MECHANISM		Ball screw Ø 16 (C7 class)		
TRAVEL		50 mm to 800 mm (50 mm pitch)		
MAXIMUM SPEED ²		1200 mm/sec	600 mm/sec	300 mm/sec
BALL SCREW LEAD		20 mm	10 mm	5 mm
MAXIMUM PAYLOAD	HORIZONTAL	30 kg	60 kg	80 kg
	VERTICAL	8 kg	20 kg	30 kg
MAXIMUM PRESSING FORCE		201 N	402 N	804 N
ROTATING BACKLASH		+/-0°		
MAXIMUM DIMENSIONS OF CROSS SECTION OF MAIN UNIT		W 82 mm x H 73.5 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 400 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.

ROD DEFLECTION AMOUNT (REFERENCE VALUE)

For the deflection amount per stroke, see the graph below.



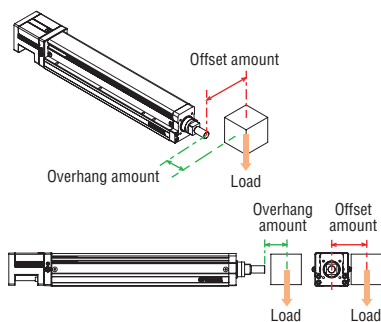
ALLOWABLE PAYLOAD

For the allowable payload per offset amount, see the graph below.

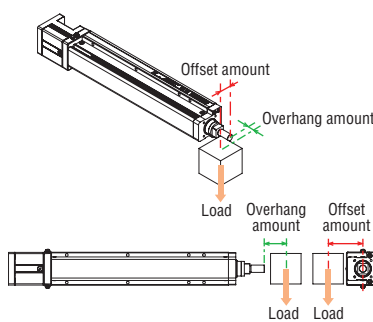
NOTES:

- When transferring an object with a weight exceeding the following, use an external support guide. Install the support guide flexibly so that no unnecessary load is applied to the rod.
- The values are when the service life of the guide is 5000 km.

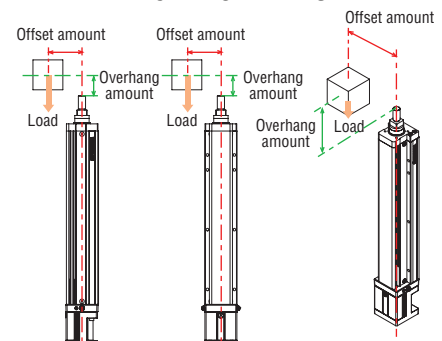
HORIZONTAL INSTALLATION



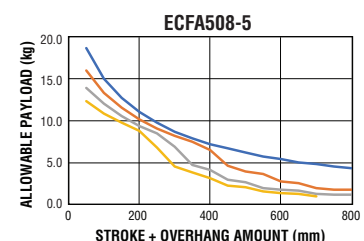
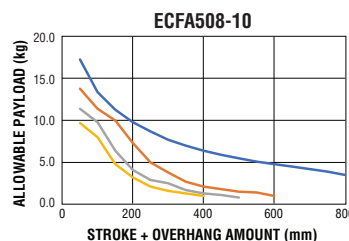
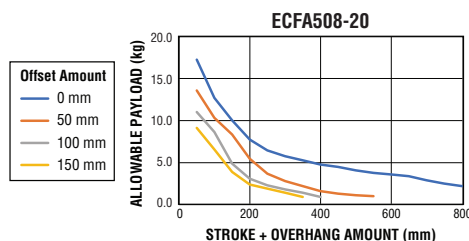
WALL INSTALLATION



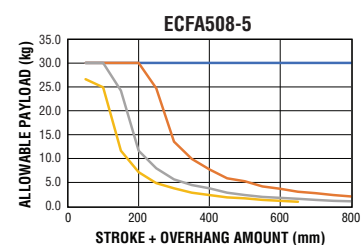
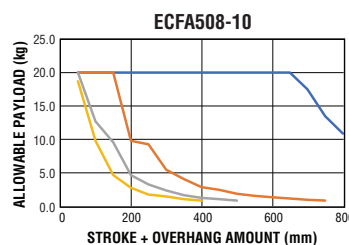
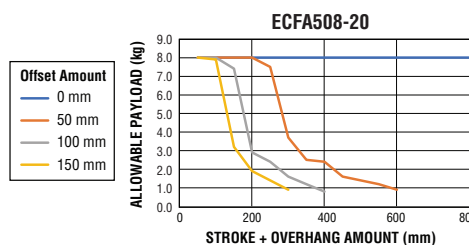
VERTICAL INSTALLATION



HORIZONTAL/WALL HANGING



VERTICAL



SIZING: Series ECFA Electric Cylinder

INSTRUCTION FOR SIZING SERIES ECFA:

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.

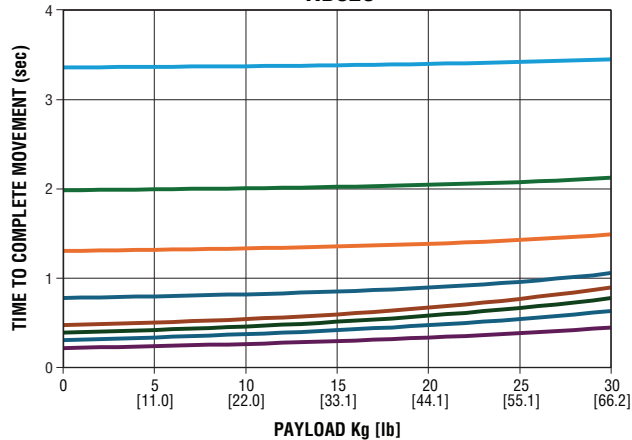
MAXIMUM ALLOWABLE SPEED

TOTAL ACTUATOR TRAVEL		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
MAXIMUM SPEED (mm/sec)	Lead 20	1200								900	720	600	480	420	360	300	240
	Lead 10	600								450	360	300	240	210	180	150	120
	Lead 5	300								225	180	150	120	105	90	75	60

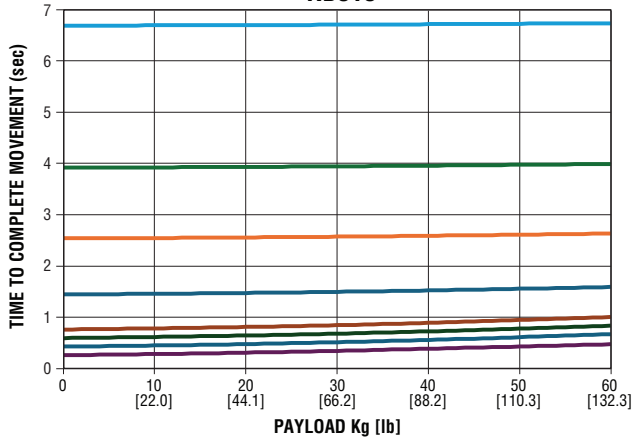
ECFA508 - PAYLOAD / MOVE

HORIZONTAL ORIENTATION

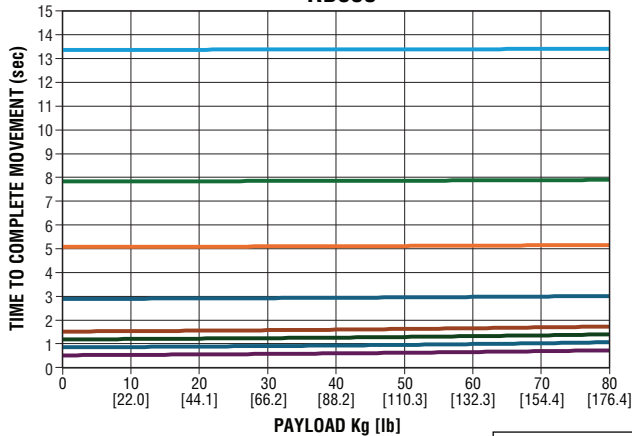
-RB020



-RB010

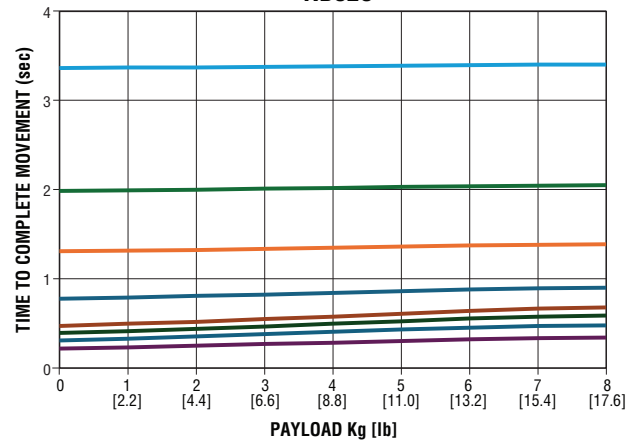


-RB005

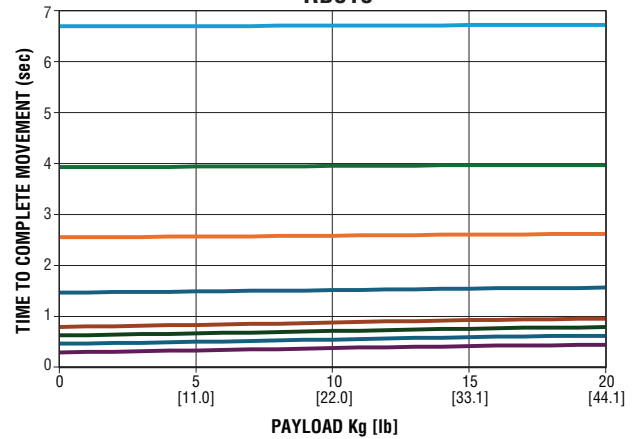


VERTICAL ORIENTATION

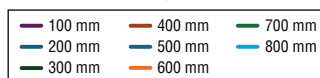
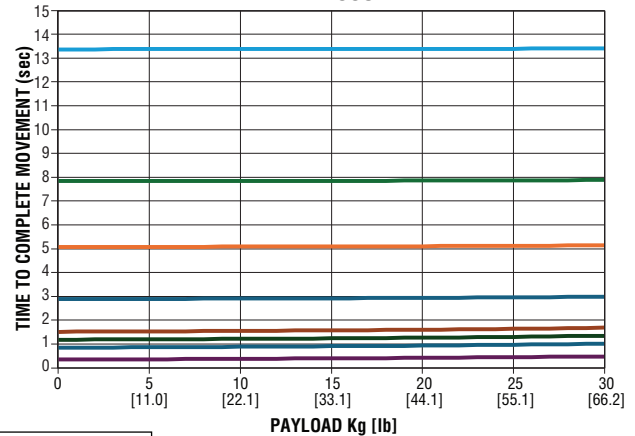
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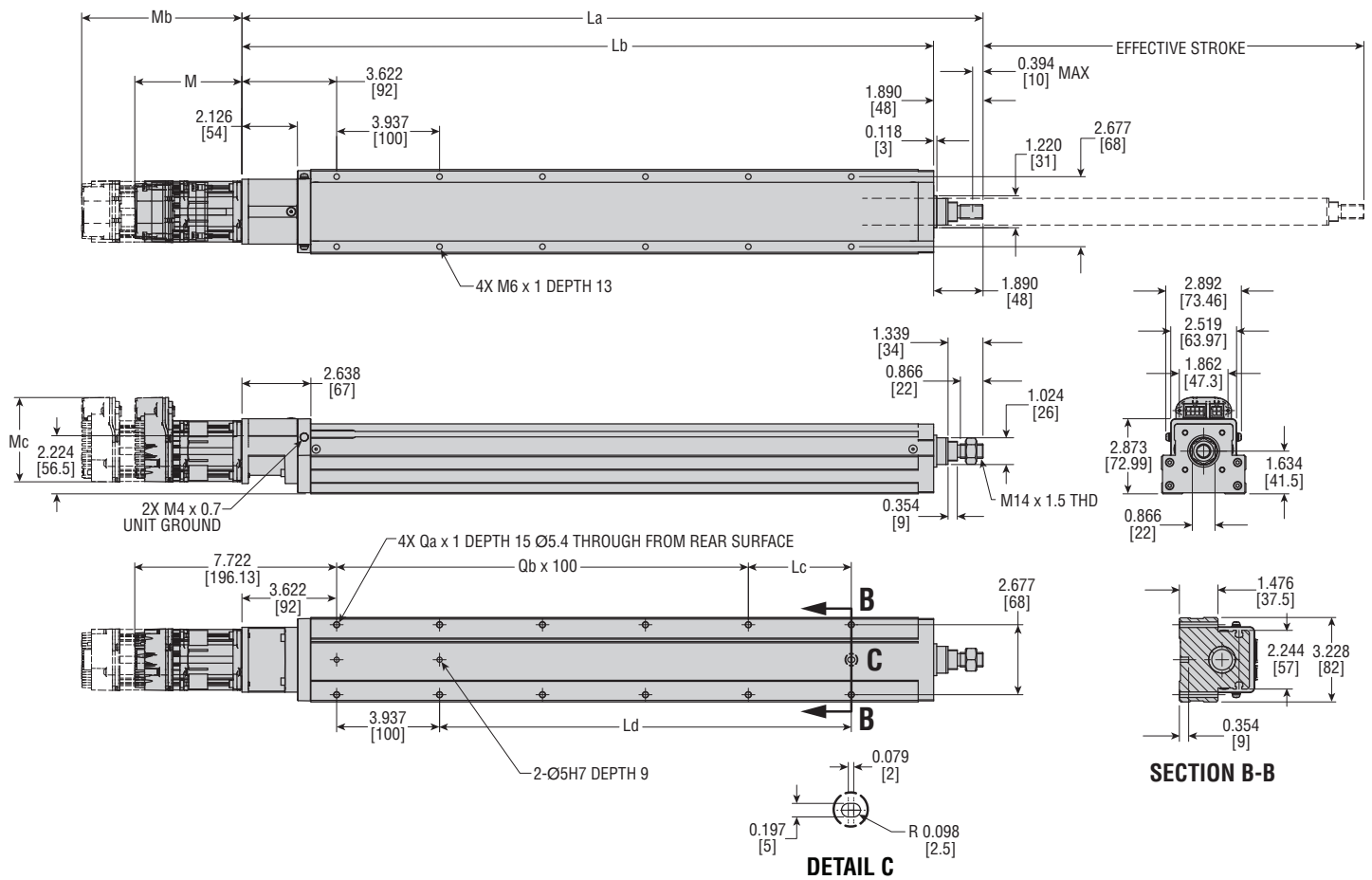
-RB010



-RB005



DIMENSIONS: Series ECFA Electric Cylinder



DIMENSION	EFFECTIVE STROKE (mm)															
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L_a	370	420	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1120
L_b	322	372	422	472	522	572	622	672	722	772	822	872	922	972	1022	1072
L_c	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100
L_d	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Q_a	6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20
Q_b	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8
Weight (kg)	3.9	4.3	4.7	5	5.3	5.7	6	6.3	6.6	7	7.4	7.7	8.1	8.4	8.6	8.9

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.

QL11 INLINE MOTOR MOUNTING

Inline motor mounting with the QL11 option provides a 1:1 drive ratio with the lowest overall unit weight and height for high speed applications. The simple, low inertia design of the inline motor mounting allows for a cost effective solution with minimal assembly time.

BRK POWER-OFF BRAKE (Requires 24 VDC)

This spring applied power-off brake is designed to stop and hold a load stationary at times when the connected motor is not able to produce torque, as during machine power loss, emergency stops, and drive-initiated safety shutdowns.

SPECIFICATIONS	POWER-OFF BRAKE
VOLTAGE REQUIREMENT	24 VDC nominal (20 VDC min)
CURRENT DRAW	0.31 Amps
OUTPUT	0.5 Nm holding torque
ENGAGE TIME (Time required for brake to engage after 24 VDC is removed.)	10 ms (max)
DISENGAGE TIME	20 ms (max)



[Spring Applied Power-Off Brake User Manual](#)

https://tekninc.com/files/downloads/brake_manual.pdf

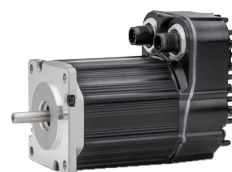
Mxxxx MOTOR CODE (Teknic Motor Attached)

ClearPath, MCPV series motors with integrated servo and motion controller for positioning applications. Choose your desired position, enter velocity, acceleration, and control motion using simple I/O from a PLC, switches, or buttons.

MA180 NEMA 23 MOLEX MINI-FIT CONNECTORS



MA168 NEMA 23 M12 SEALED CONNECTORS



SPECIFICATIONS	MA180	MA168
MOTOR FRAME SIZE	NEMA 23 - 2.33 in (59.18 mm) sq	
INPUT (BUS) VOLTAGE RANGE	24-75 VDC (90 VDC max)	
PEAK TORQUE (@75 VDC)	369 oz-in (2.6 Nm)	
CONTINUOUS (RMS) TORQUE (@75 VDC)	61 oz-in (0.4 Nm)	
MAX SPEED (@75 VDC)	6000 RPM	
ACHIEVABLE RESOLUTION	0.450 degrees	
CONTROLLER SIGNAL I/O VOLTAGE RANGE	4.0 to 28 VDC	

For more information, go to:

[ClearPath-MC Series Overview](#)

https://youtu.be/_VG8wYc8n64

[Software: ClearPath Motor Setup Program](#)

https://tekninc.com/files/downloads/motor_setup.zip

[Motor: ClearPath User Manual](#)

https://tekninc.com/files/downloads/clearpath_user_manual.pdf

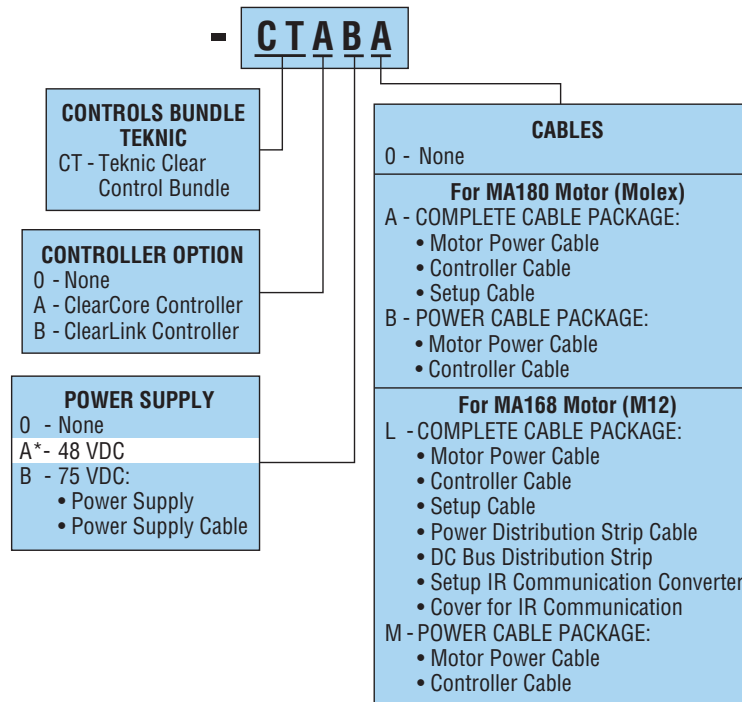
[Motor: ClearPath User Manual \(IP67\)](#)

https://tekninc.com/files/downloads/clearpath_user_manual_ip67.pdf



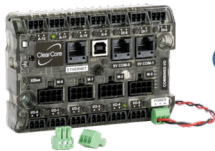
CTxxx

CONTROLS BUNDLE (OPTIONAL)



See next page for cabling schematics.

CONTROLLER OPTION



ClearCore

CTAxx - ClearCore Controller

Each ClearCore Industrial I/O and Motion Controller handles up to four axes of high-speed step & direction motion, and provides 13 software-configurable I/O points (fully protected and 24 VDC compatible). An extensive C++ Motion and I/O Library makes coding easier and more productive.

Controller: ClearCore User Manual

https://teknic.com/files/downloads/clearcore_user_manual.pdf



ClearLink
EtherNet/IP

CTBxx - ClearLink Controller

ClearLink EtherNet/IP Industrial I/O and Motion Controller. Four axes of step & direction output; 13 configurable I/O points (24 VDC compatible); one serial port and one I/O expansion port.

Controller: ClearLink User Manual

https://teknic.com/files/downloads/clearlink_user_manual.pdf

POWER SUPPLY



CTxBx - Teknic IPC-5 Power Supply and Power Supply Cable

Low Voltage (75 VDC) "Intelligent Power Center" power supply optimized for motor drive bus power. AC Power (120 VAC) Cable for IPC-5 motor drive power supply.

CABLES & PACKAGES: Series ESFA/ECFA Electric Linear Actuators

ITEM DESCRIPTION	CONTROLLER		PWR SPLY	MA180 - MOLEX		MA168 - M12	
	CTAxx	CTBxx	CTxBx	CTxxA	CTxxB	CTxxL	CTxxM
Controller	92067	92715-001					
Power Supply			92064				
Power Supply Cable 2 m (6.5 ft)			92065				
Motor Power Cable 3 m (10 ft)				92066	92066	93208	93208
Controller Cable 3 m (10 ft)				92068	92068	93209	93209
Setup Cable 3 m (10 ft)				92069		93210	
Power Distribution Strip Cable 1.8 m (6 ft)						92071	
DC Bus Distribution Strip						92715-016	
Setup IR Communication Converter						93211	
Cover for IR Communication						92715-017	

Controllers require 24 VDC (not included in bundles).

