



Electric Automation Solutions

# Electric Linear Solutions

**High Performance  
Electric Solutions with  
PHD Proven Technology**



**ESG Slides**



**ESK/ESL Slides**



**ECVA Cylinders**



**NEW  
ECVR Cylinders**



**Easy 3 Step  
Actuator &  
Motor Selection!**



PHDPLUS02

# Easy 3 Step Actuator & Motor Sizing

[phdplus.phdinc.com](http://phdplus.phdinc.com)



Using PHD's 3 step process, you can specify the actuator configured for your particular motor brand.

**1 ONLINE SIZING:**  
Go to [sizing.phdinc.com](http://sizing.phdinc.com) and input your application requirements



Suitable actuator and motor performance requirements are provided.

**2 SELECT A MOTOR:**  
You choose the brand of motor and controls



**3 ONLINE CONFIGURATOR:**  
Go to [config.phdinc.com](http://config.phdinc.com) after motor verification, a W-code is assigned for ordering.



E C VA 5 32 x 500 - RB010 - T44 - QF21 - Wxxxx

Since 1957, PHD continues to be a leader in the industrial automation industry. Known for durable, high quality, pneumatic and hydraulic actuators, customers trust PHD to deliver the best possible product when they need it.

With this in mind, PHD introduces the PHD Plus electric actuator line. PHD Plus products are built on the foundation of proven pneumatic designs and components but now electrically driven. Also new, PHD introduces Your Motor, Your Way, a simple 3-step process allowing users to employ PHD's proven technology operated by the motor and controls of their choice. This saves time and money by eliminating the need to learn or place into service a new motor and controls platform. With Your Motor, Your Way integration into an existing controls system is quick and easy. If you prefer a complete package, your local PHD distributor can provide motors and controls to fit your application needs.

This all provides the best offering of electrically driven linear products with the flexibility to configure Your Motor, Your Way!



PHD can also supply you with accurate CAD models from our online CAD configurator. It is that easy!

See page 12 for more details.



## SERIES ECV CYLINDER

The Series ECV Cylinder is an electromechanical rod style actuator with an ISO/VDMA mounting interface. The Series ECV is available in three sizes with a choice of two high precision ball screws per size optimized for high speed or high thrust. Travels are available up to 1000 mm. A large choice of cylinder mounting accessories is available to simplify machine design.



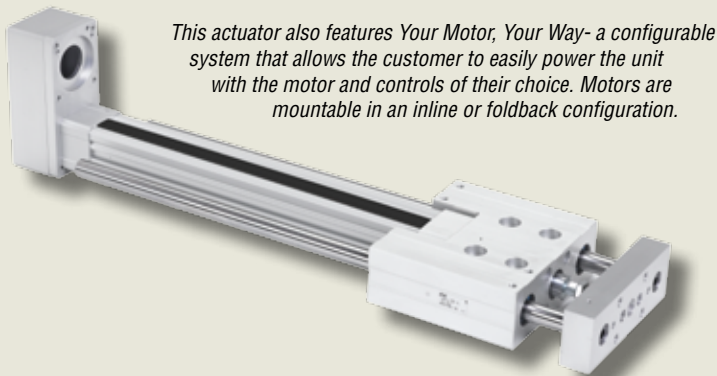
**NEW**

The Series ECVA provides a non-rotating rod design, whereas the new lower cost Series ECVR has a rotating rod for applications where rod rotation is prevented by the attached load or tooling. This actuator also features Your Motor, Your Way- a configurable system that allows the customer to easily power the unit with the motor and controls of their choice. Motors are mountable in an inline or foldback configuration.

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## SERIES ESK/ESL SLIDE

The Series ESK/ESL Slide is an electromechanical cantilever style actuator featuring precision ground guide shafts and ball bushings for smooth, accurate linear motion. The Series ESK/ESL is available in three sizes with a choice of two high precision ball screws per size optimized for high speed or high thrust. Travels are available up to 700 mm.



This actuator also features Your Motor, Your Way- a configurable system that allows the customer to easily power the unit with the motor and controls of their choice. Motors are mountable in an inline or foldback configuration.

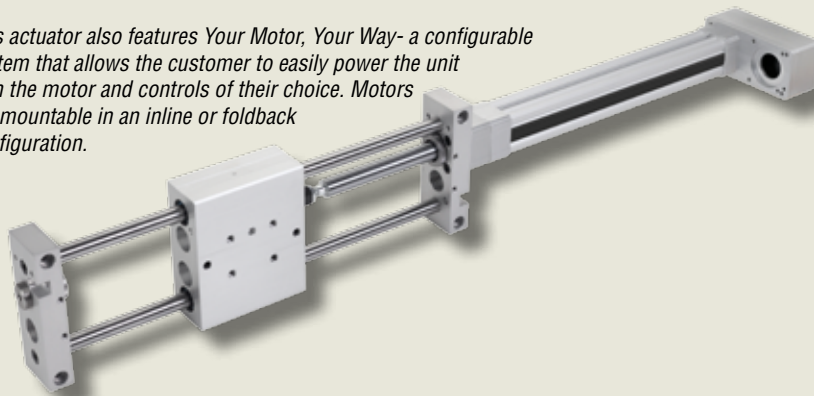


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## SERIES ESG SLIDE

The Series ESG Slide is an electromechanical gantry style actuator with precision ground guide shafts and ball bushings for smooth, accurate linear motion. The Series ESG is available in three sizes with a choice of two high precision ball screws per size optimized for high speed or high thrust. Travels are available up to 900mm.

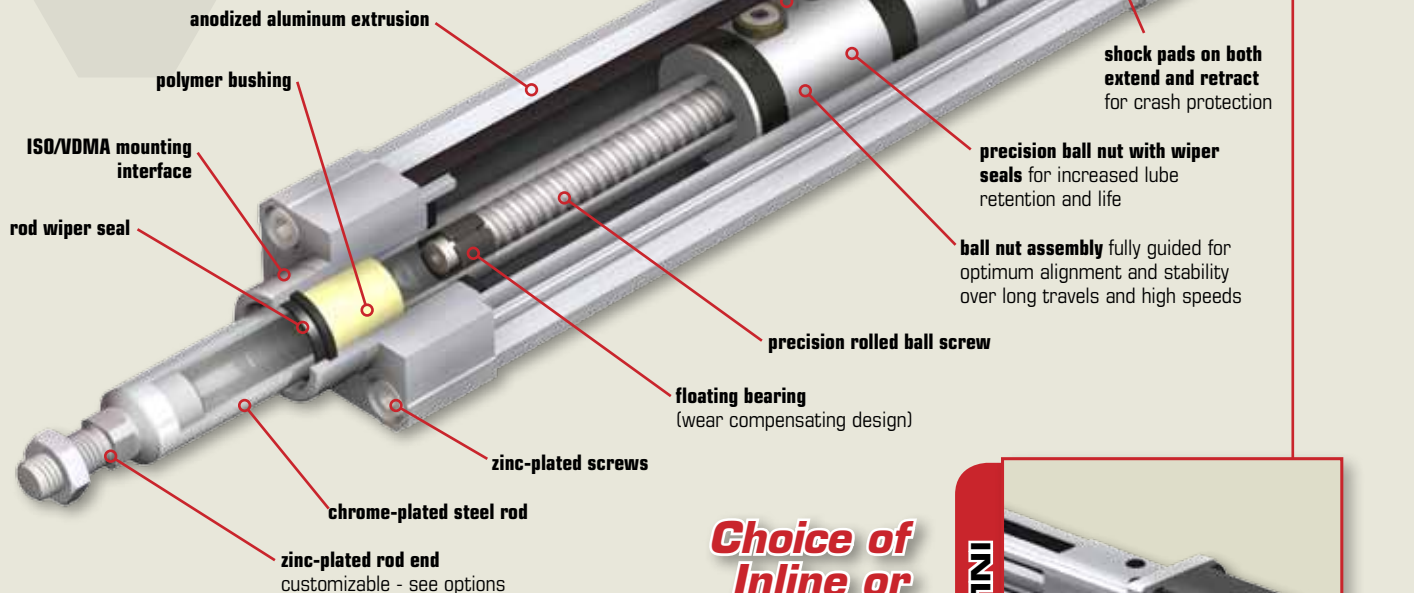
This actuator also features Your Motor, Your Way- a configurable system that allows the customer to easily power the unit with the motor and controls of their choice. Motors are mountable in an inline or foldback configuration.



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*Optimal design provides superior speeds, thrust, and travel lengths.*

*Fit and functional replacement for pneumatic VDMA/ISO cylinder.*



## Major Benefits

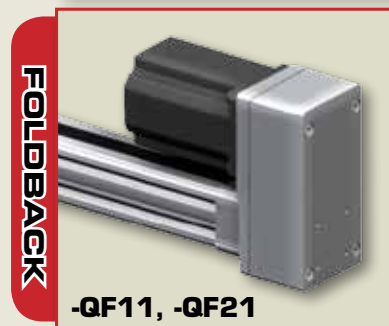
- High thrust and speed capability
- 1000 mm travel lengths available
- Available in cantilever (ESK/ESL) and gantry (ESG) slide configurations
- Rigid construction with extremely low backlash
- Very high degree of repeatability
- High precision ball screw assemblies with long service life
- IP50 ingress protection
- ISO/VDMA mounting interface for easy interchange
- Non-rotating rod or rotating rod versions
- Inline and foldback motor mounting flexibility
- *Your Motor, Your Way* for online configuration of motor mounting plates, with a database of electric motors from major manufacturers
- Large choice of options/accessories similar to pneumatic Series CV Cylinder
- Switch ready standard

## Applications

- Assembly
- Die cut
- Dispensing/filling
- Diverting
- Drilling
- Inspection/measurement
- Joining/fastening
- Labeling/marketing
- Part loading, sorting, clamping, positioning
- Tool change
- Valve control

## Choice of Inline or Foldback Motor Mounting

*Foldback available in 1:1 or 2:1 drive for tailored performance.*



## Industry/Process Uses

- Automotive
- Conveying
- Electronics
- Food/beverage
- Machine tool
- Medical
- Packaging
- Pharmaceutical
- Plastics
- Robotic tooling
- Semiconductor
- Special machines

# ORDERING DATA: SERIES ECV CYLINDER

TO ORDER SPECIFY:

**E C VA 5 32 x 500 - RB010 - T44 - QF21 - Wxxxx**

**SIZE**  
32  
40  
50

**DESIGN NO.**  
5 - Metric

**SERIES**  
VA - VDMA 24562  
Drop-in replacement,  
non-rotating rod  
VR - VDMA 24562  
Drop-in replacement,  
rotating rod

**PRODUCT**  
Cylinder

**TRAVEL**  
50 mm minimum travel  
in 50 mm increments

**CLASSIFICATION**  
Electromechanical

SIZE	MAX [mm]
32	1000
40	1000
50	1000

SCREW CONFIGURATION		LEAD*
SIZE		mm
32	RB005	5
	RB010	10
40	RB010	10
	RB016	16
50	RB010	10
	RB020	20

\*See engineering data page for drive screw selection.

**MOTOR CONFIGURATION**  
QF11 - Foldback with 1:1 ratio  
QF21 - Foldback with 2:1 ratio  
QL11 - Inline with 1:1 ratio

**MOTOR CODE**  
Wxxxx - Open architecture P/N code  
W0000 - Blank motor mount

No Code - No motor mount

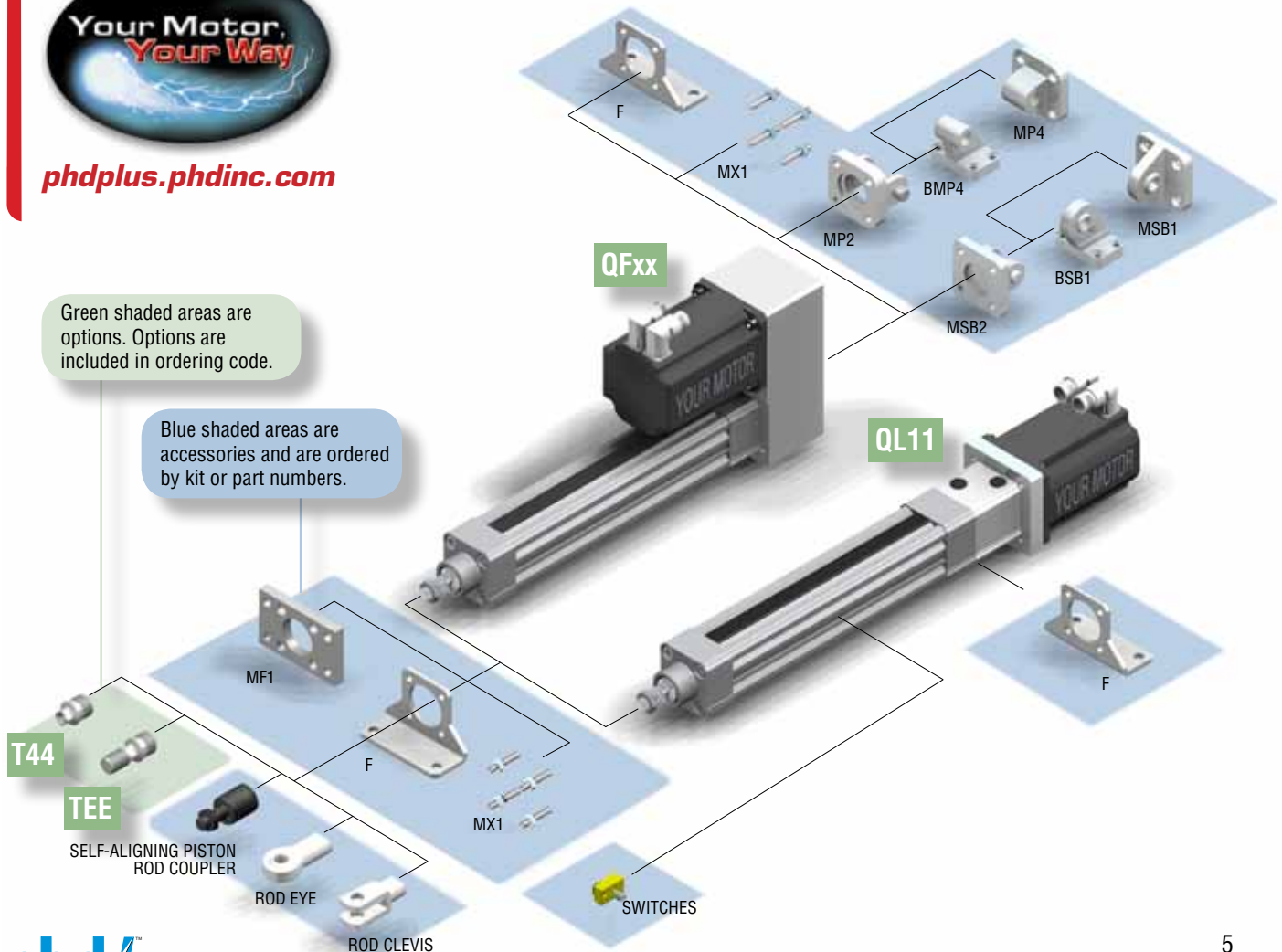
**OPTIONS**  
K\_\_\_ - Extra rod extension in 1 mm increments  
Length code is K100 = 100 mm, K50 = 50 mm  
T44 - Female rod end  
TEE - Male rod end with oversize rod



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Green shaded areas are options. Options are included in ordering code.

Blue shaded areas are accessories and are ordered by kit or part numbers.



# ENGINEERING DATA: SERIES ECV CYLINDER

SERIES SPECIFICATIONS	ECVA	ECVR <sup>10</sup>
PISTON ROD	Non-Rotating	Rotating
REPEATABILITY <sup>1</sup>	±0.0004 in [±0.01 mm]	
MAXIMUM BACKLASH <sup>2</sup>	0.001 in [0.025 mm]	
RATED LIFE	Refer to Life vs. Thrust Chart (next page)	
FULL TRAVEL TOLERANCE <sup>3</sup>	+0.138/-0.000 in [+3.5/-0.0 mm]	
DUTY CYCLE	100%	
OPERATING TEMPERATURE	40 - 150°F [4 - 65°C]	
LUBRICATION INTERVAL <sup>3</sup>	Horizontal: 100 million in [2500 km], Vertical: 60 million in [1500 km]	
ENCAPSULATION CLASS	IP50	

SPECIFICATIONS		SERIES ECV SIZE						
		32 mm		40 mm		50 mm		
MECHANICS	MAXIMUM TRAVEL in [mm]	39.37 [1000]						
	DRIVE MECHANISM	Ball Screw						
	SCREW DIAMETER mm	12		16		20		
	SCREW CONFIGURATION	-RB005	-RB010	-RB010	-RB016	-RB010	-RB020	
	SCREW LEAD mm	5	10	10	16	10	20	
SPEED <sup>4</sup>	MAXIMUM SPEED in/sec [mm/sec]	19.6 [500]	39.3 [1000]	39.3 [1000]	63.0 [1600]	39.3 [1000]	78.7 [2000]	
	MAXIMUM RPM rev/min	6000						
THRUST <sup>5</sup>	MAXIMUM THRUST lbf [N]	306 [1360]	153 [680]	546 [2430]	342 [1520]	991 [4410]	564 [2510]	
	NOMINAL THRUST <sup>6</sup> lbf [N]	90 [400]	74 [330]	285 [1270]	219 [975]	413 [1835]	341 [1515]	
TORQUE	PERMISSIBLE DRIVE TORQUE <sup>7</sup> in-lb [Nm]	10.62 [1.20]		38.06 [4.30]		69.03 [7.80]		
	NO-LOAD TORQUE in-lb [Nm]	0.89 [0.10]		2.21 [0.25]		3.54 [0.40]		
WEIGHT	TOTAL @ ZERO STROKE (W <sub>OT</sub> ) lb [kg]	2.55 [1.16]		3.29 [1.49]		5.20 [2.36]		
	TOTAL LENGTH ADDER (W <sub>LT</sub> ) lb/in [kg/mm]	0.19 [0.0034]		0.26 [0.0046]		0.40 [0.0071]		
	MOVING @ ZERO STROKE (W <sub>OM</sub> ) lb [kg]	0.66 [0.30]		1.14 [0.52]		2.15 [0.98]		
	MOVING LENGTH ADDER (W <sub>LM</sub> ) lb/in [kg/mm]	0.038 [0.0007]		0.058 [0.0010]		0.111 [0.0020]		
INERTIA	ACTUATOR @ ZERO STROKE (J <sub>o</sub> ) lb-in <sup>2</sup> [kg-m <sup>2</sup> ]	0.010 [3.00 x 10 <sup>-6</sup> ]		0.051 [1.50 x 10 <sup>-5</sup> ]		0.165 [4.84 x 10 <sup>-5</sup> ]		
	LENGTH ADDER (J <sub>L</sub> ) lb-in <sup>2</sup> /in [kg-m <sup>2</sup> /mm]	0.0009 [9.85 x 10 <sup>-9</sup> ]		0.0025 [2.90 x 10 <sup>-8</sup> ]		0.0069 [7.95 x 10 <sup>-8</sup> ]		
	MOVING WEIGHT ADDER (J <sub>M</sub> ) lb-in <sup>2</sup> /lb [kg-m <sup>2</sup> /kg]	9.63 x 10 <sup>-4</sup>	3.85 x 10 <sup>-3</sup>	3.85 x 10 <sup>-3</sup>	9.86 x 10 <sup>-3</sup>	3.85 x 10 <sup>-3</sup>	1.54 x 10 <sup>-2</sup>	
		[6.21 x 10 <sup>-7</sup> ]	[2.48 x 10 <sup>-6</sup> ]	[2.48 x 10 <sup>-6</sup> ]	[6.36 x 10 <sup>-6</sup> ]	[2.48 x 10 <sup>-6</sup> ]	[9.93 x 10 <sup>-6</sup> ]	
	MOTOR CONFIGURATION (J <sub>o</sub> )	-QF11	0.048 [1.40 x 10 <sup>-5</sup> ]		0.161 [4.71 x 10 <sup>-5</sup> ]		0.159 [4.65 x 10 <sup>-5</sup> ]	
		-QF21	0.094 [2.75 x 10 <sup>-5</sup> ]		0.283 [8.28 x 10 <sup>-5</sup> ]		0.654 [1.91 x 10 <sup>-4</sup> ]	
	-QL11	0.011 [3.14 x 10 <sup>-6</sup> ]		0.021 [6.11 x 10 <sup>-6</sup> ]		0.138 [4.04 x 10 <sup>-5</sup> ]		

**NOTES:**

- 1) UNIDIRECTIONAL AT MODERATE SPEEDS AND LOADS
- 2) AXIAL FREE PLAY WHEN DRIVE SHAFT LOCKED
- 3) REFER TO OPERATING INSTRUCTIONS FOR RE-LUBRICATION DETAILS
- 4) REFER TO SPEED VS. TRAVEL CHART ON NEXT PAGE
- 5) REFER TO LIFE VS. THRUST CHART ON NEXT PAGE
- 6) 100 MILLION INCHES [2500 km] LIFE
- 7) CORRESPONDS TO MAXIMUM THRUST
- 8) FOR HOMING AND INCREASED APPLICATION FLEXIBILITY, INCLUDE EXTRA TRAVEL WHEN NECESSARY.
- 9) ALL DIMENSIONS ARE FOR REFERENCE ONLY UNLESS SPECIFICALLY TOLERANCED. REFER TO ONLINE SIZING SOFTWARE FOR ACTUAL VALUES.
- 10) SERIES ECVR REPEATABILITY AND BACKLASH A FUNCTION OF COUPLING RIGIDITY TO EXTERNAL NON-ROTATING LOAD.

**WEIGHT AND INERTIAL CALCULATIONS:**

TOTAL WEIGHT = W<sub>OT</sub> + (W<sub>LT</sub> X TRAVEL) + MOTOR MOUNT WEIGHT [reference pages 10 and 11]  
 TOTAL MOVING WEIGHT = W<sub>OM</sub> + (W<sub>LM</sub> X TRAVEL) + EXTERNAL PAYLOAD

FOR -Qx11: INERTIA<sub>Reflected</sub> = J<sub>o</sub> + (J<sub>L</sub> X TRAVEL) + (J<sub>M</sub> X TOTAL MOVING WEIGHT) + J<sub>o</sub>

FOR -QF21: INERTIA<sub>Reflected</sub> = [J<sub>o</sub> + (J<sub>L</sub> X TRAVEL) + (J<sub>M</sub> X TOTAL MOVING WEIGHT)] / 4 + J<sub>o</sub>

## Series ECVR (rotating rod)

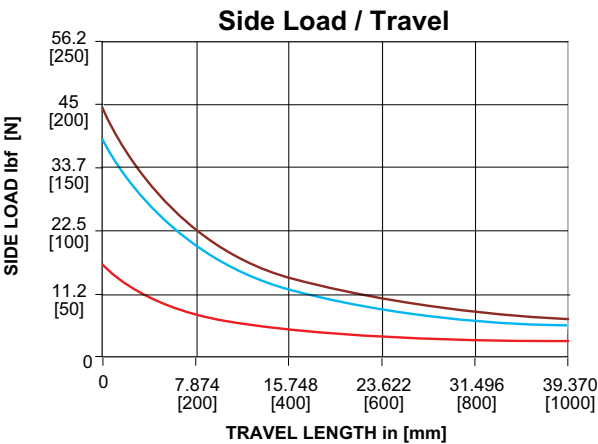
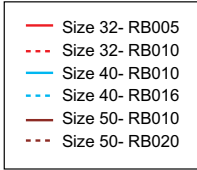
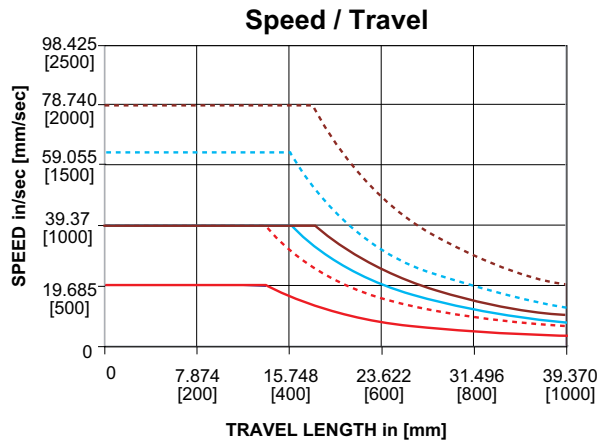
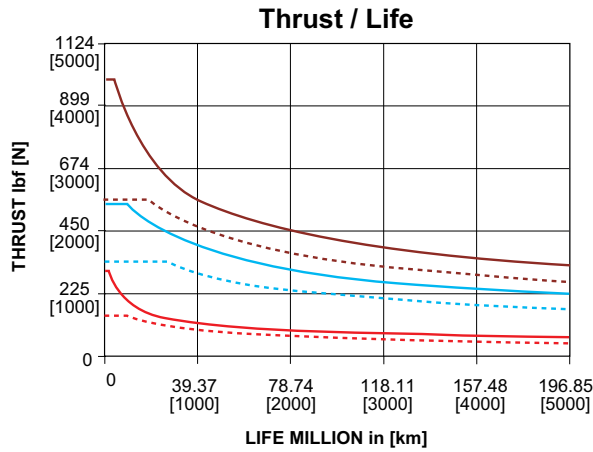
The ECVR requires the external payload to provide non-rotation to the system. This payload must be rigidly coupled to the rod to ensure axial motion. Any rotation will directly affect the performance of the system and result in lost motion.



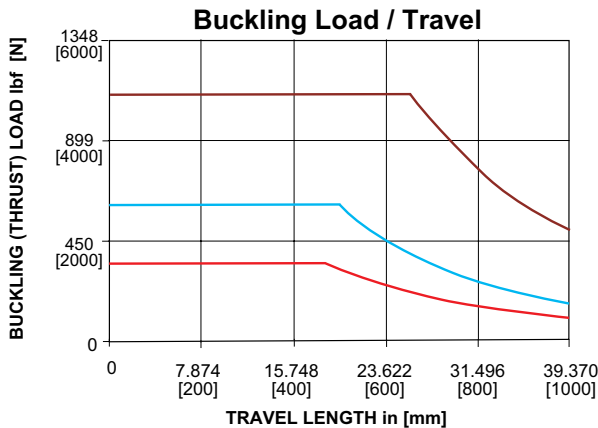


# PERFORMANCE CHARTS: SERIES ECV CYLINDER

This section contains information on the capabilities of the Series ECV. It is not intended to be a comprehensive selection guide. To make the selection process simple and quick, refer to PHD's sizing software. You may request application assistance from your distributor or PHD's Customer Service Department. Use the Application Data Fax Sheet at the back of this catalog for application sizing.

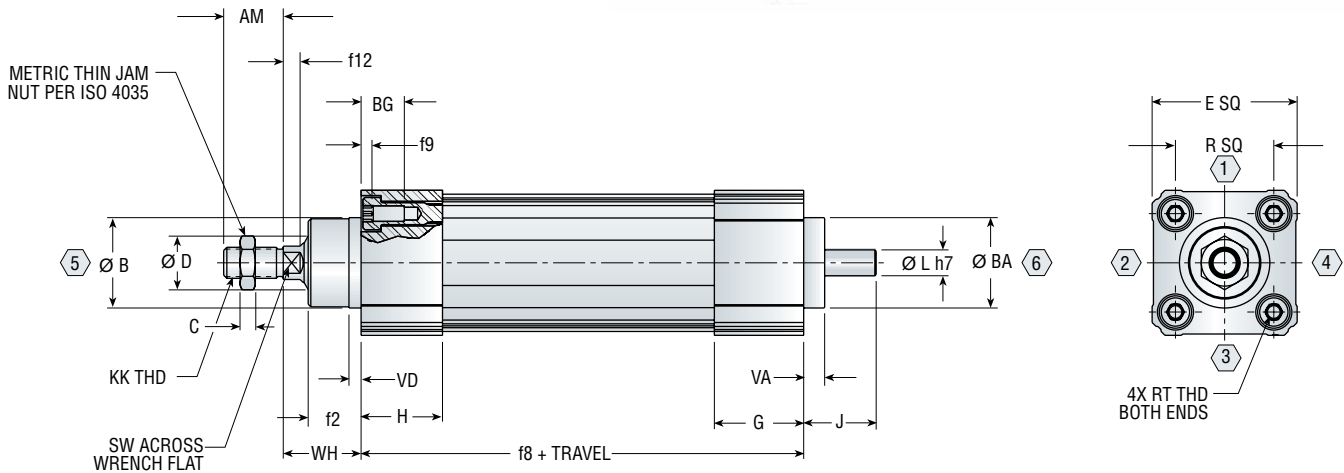
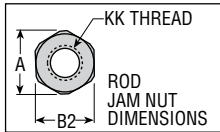


**NOTE:** THE MAXIMUM SPEED NOT TO EXCEED 7.87 in/sec [200 mm/sec]



# DIMENSIONS: SERIES ECV CYLINDER

The Series ECV is available as a driver only or with inline or foldback *Your Motor, Your Way* configurations. These dimensions apply to the driver portion for all standard units.



SIZE	A MAX	AM	ØB	ØBA	B2	BG MIN	C	ØD	E	f2	f8	f9	f12	G	H	J	KK	ØL	R	RT	SW	VA	VD	WH
32	.727 [18.5]	.827 [21.0]	1.178 [29.9]	1.178 [29.9]	.630 [16.0]	.709 [18.0]	.197 [5.0]	.750 [19.1]	1.949 [49.5]	.729 [18.5]	5.906 [150.0]	.168 [4.3]	.236 [6.0]	1.221 [31.0]	1.101 [28.0]	.984 [25.0]	M10 x 1.25	.236 [6.0]	1.280 [32.5]	M6 x 1	.394 [10.0]	.319 [8.1]	.179 [4.5]	1.024 [26.0]
40	.818 [20.8]	.906 [23.0]	1.374 [34.9]	1.374 [34.9]	.709 [18.0]	.709 [18.0]	.236 [6.0]	.875 [22.2]	2.205 56.0	.804 [20.4]	6.730 [170.9]	.166 [4.2]	.256 [6.5]	1.358 [34.5]	1.238 [31.4]	1.102 [28.0]	M12 x 1.25	.393 [10.0]	1.496 [38.0]	M6 x 1	.512 [13.0]	.319 [8.1]	.184 [4.7]	1.181 [30.0]
50	1.091 [27.7]	1.220 [31.0]	1.571 [39.9]	1.912 [48.6]	.945 [24.0]	.787 [20.0]	.315 [8]	1.125 [28.6]	2.697 [68.5]	1.085 [27.6]	7.598 [193.0]	.226 [5.7]	.315 [8.0]	1.358 [34.5]	1.358 [34.5]	1.364 [34.6]	M16 x 1.5	.472 [12.0]	1.831 [46.5]	M8 x 1.25	.630 [16.0]	.359 [9.1]	.183 [4.6]	1.457 [37.0]

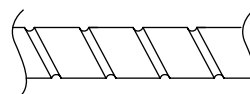
**NOTES:**

- 1) NUMBERS SHOWN IN ○ INDICATE CYLINDER POSITIONS.
- 2) DIMENSIONS: inch [mm]

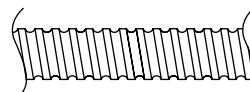
## RBxxx SCREW CONFIGURATION

The ball screw drive system of the Series ECV is available in two lead choices. This provides flexibility when matching velocity and load requirements to the application. Refer to product specifications and sizing software for performance parameters.

**E C VA 5 32 x 500 - RB010 - T44 - QF21 - Wxxxx**



High lead for speed



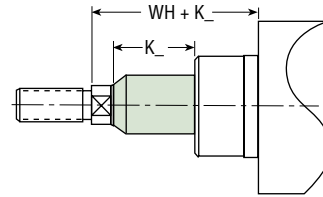
Low lead for thrust



# OPTIONS: SERIES ECV CYLINDER

## **K** EXTRA ROD EXTENSION

Extra rod extension can be achieved by specifying the option -K followed by the length code. Rod extension is available in 1 mm increments (250 mm max). Rod extension can impact load capacity, therefore rod extension and travel should not exceed 1000 mm.



**E C VA 5 32 x 500 - RB010 - K50 - QF21 - Wxxxx**

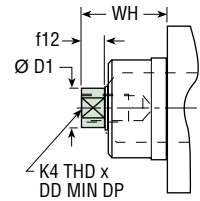
Length Code	
<b>Metric</b>	
K5	= 5 mm extra rod extension
K15	= 15 mm extra rod extension

BORE [mm]	WH	
	in	mm
32	1.024	26.0
40	1.181	30.0
50	1.457	37.0

## **T44** FEMALE ROD END

This option provides a female rod end in place of the standard male rod end. See catalog dimensional page for standard rod end. This rod end deviates from ISO 6431/VDMA 24562.

### T44 FEMALE ROD END

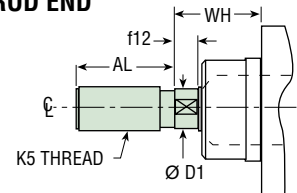


**E C VA 5 32 x 500 - RB010 - T44 - QF21 - Wxxxx**

## **TEE** MALE OVERSIZE ROD END

This option provides a male oversize thread rod end in place of the standard male rod end. See catalog dimensional pages for standard rod end. This rod end deviates from ISO 6431/VDMA 24562.

### TEE MALE OVERSIZE ROD END



**E C VA 5 32 x 500 - RB010 - TEE - QF21 - Wxxxx**

LETTER DIM	BORE SIZE					
	32 mm		40 mm		50 mm	
AL	.827	[21.0]	.906	[23.0]	1.220	[31.0]
D1	.447	[11.35]	.599	[15.22]	.757	[19.23]
f12	.236	[6.0]	.256	[6.5]	.315	[8.0]
K4	[M8 x 1.25]		[M10 x 1.5]		[M12 x 1.75]	
K5	[M12 x 1.25]		[M16 x 1.5]		[M20 x 1.5]	
DD min	.551	[14.0]	.669	[17.0]	.748	[19.0]
WH	1.024	[26.0]	1.181	[30.0]	1.457	[37.0]

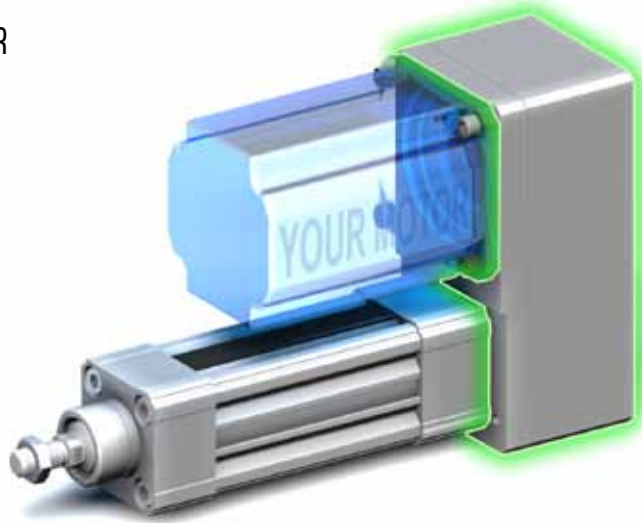
NOTE: DIMENSIONS: inch [mm]

# OPTIONS: SERIES ECV CYLINDER

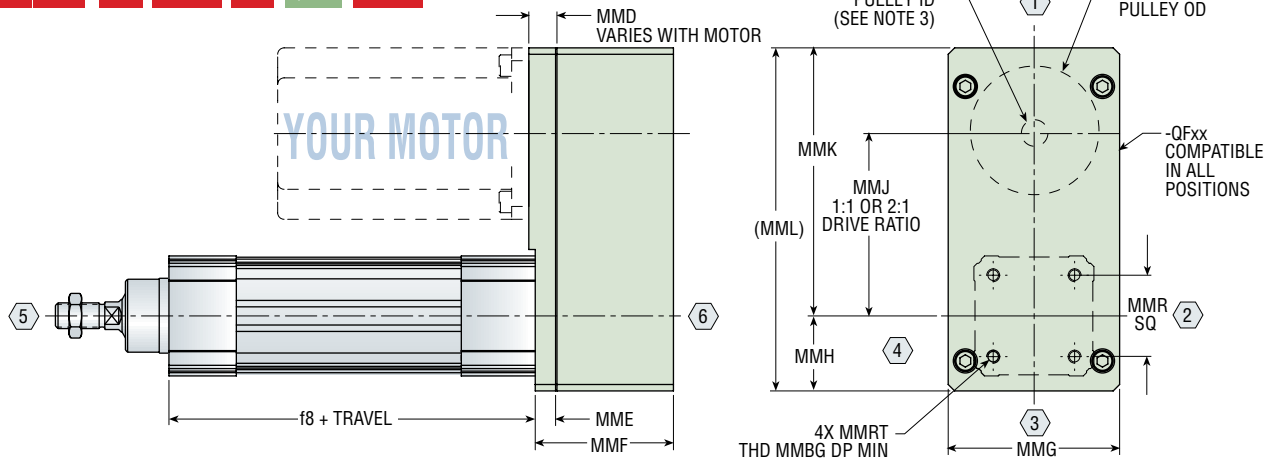
## QF11 FOLDBACK MOTOR MOUNTING WITH 1:1 DRIVE RATIO

## QF21 FOLDBACK MOTOR MOUNTING WITH 2:1 DRIVE RATIO

Foldback motor mounting with the QF11 option provides a 1:1 drive ratio allowing similar performance to the inline motor mounting in a shorter overall length. The QF21 option provides a 2:1 drive ratio reduction for applications that require higher thrust. Foldback motor mounting also provides a VDMA 24562 compliant mounting pattern that allows the use of many standard cylinder mounting accessories. If a blank motor mount is desired for special motor requirements, use -W0000 motor code to order a motor mount intended for customer modification. See page 12.



**E C VA 5 32 x 500 - RB010 - T44 - QF 21 - Wxxxx**



### -W0000 BLANK MOTOR MOUNTING

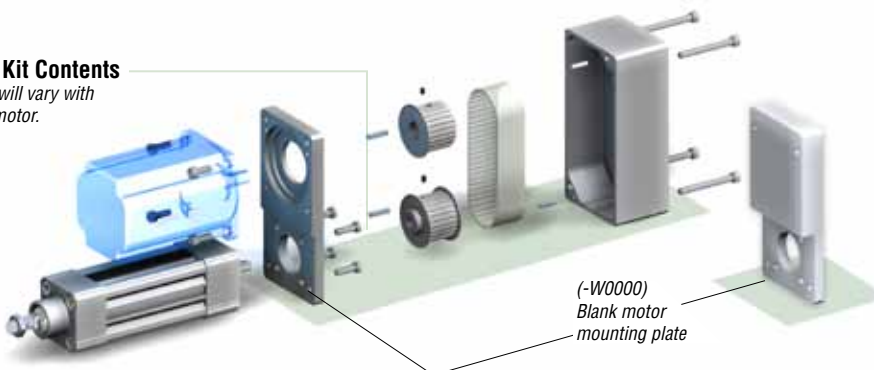
SIZE	f8	MMD MIN	MMD MAX	MME	MMF	MMG	MMH	MMJ 1:1	MMJ 2:1	MMK	(MML)	MMR	MMRT	MMBG	WEIGHT lb [kg]	MMD BLANK	MMU 1:1	MMU 2:1	MMV 1:1	MMV 2:1
32	5.905 [150.0]	.374 [9.5]	1.241 [31.5]	.374 [9.5]	2.185 [55.5]	2.480 [63.0]	1.220 [31.0]	2.854 [72.5]	2.776 [70.5]	4.094 [104.0]	5.315 [135.0]	1.280 [32.5]	M6 X 1	.453 [11.5]	2.25 [1.02]	.533 [13.5]	.236 [6.0]	.236 [6.0]	1.330 [33.8]	.892 [22.7]
40	6.730 [170.9]	.374 [9.5]	.886 [22.5]	.374 [9.5]	2.539 [64.5]	3.150 [80.0]	1.378 [35.0]	3.350 [85.1]	3.303 [83.9]	4.925 [125.1]	6.303 [160.1]	1.496 [38.0]	M6 X 1	.453 [11.5]	3.74 [1.70]	.591 [15.0]	.315 [8.0]	.236 [6.0]	1.644 [41.8]	1.080 [27.4]
50	7.598 [193.0]	.374 [9.5]	.886 [22.5]	.374 [9.5]	2.677 [68.0]	3.386 [86.0]	1.732 [44.0]	4.035 [102.5]	4.386 [111.4]	6.079 [154.4]	7.811 [198.4]	1.831 [46.5]	M8 X 1.25	.571 [14.5]	5.22 [2.37]	.591 [15.0]	.315 [8.0]	.236 [6.0]	1.644 [41.8]	1.330 [33.8]

#### NOTES:

- YOUR MOTOR, YOUR WAY MOTOR MOUNT -QFxx IS PROVIDED IN KIT FORM TO ALLOW ASSEMBLY OF MOTOR TO CYLINDER.
- KITS INCLUDE DIRECTIONS AND ALL PARTS REQUIRED TO ASSEMBLE TO DRIVER BASED ON -Wxxxx CODE SUPPLIED BY CUSTOMER.
- WHEN (-W0000) IS SPECIFIED, PULLEY ID IS SUPPLIED WITH UNFINISHED ID Ø MMU AND MOTOR MOUNTING PLATE IS SUPPLIED WITHOUT MOTOR MOUNTING FEATURES.
- DIMENSIONS: inch [mm]

#### Typical Kit Contents

Contents will vary with selected motor.

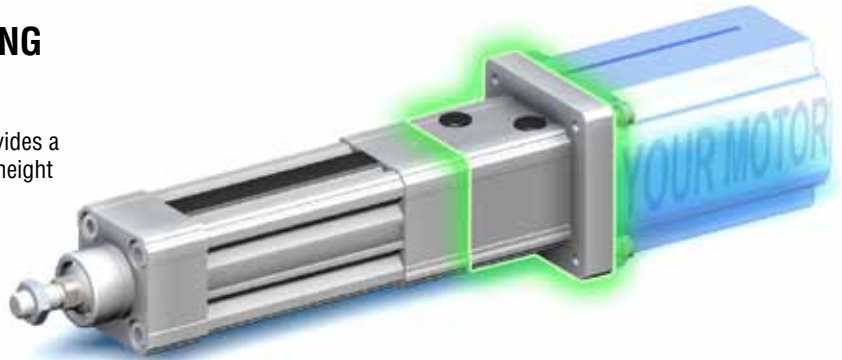


[phdplus.phdinc.com](http://phdplus.phdinc.com)

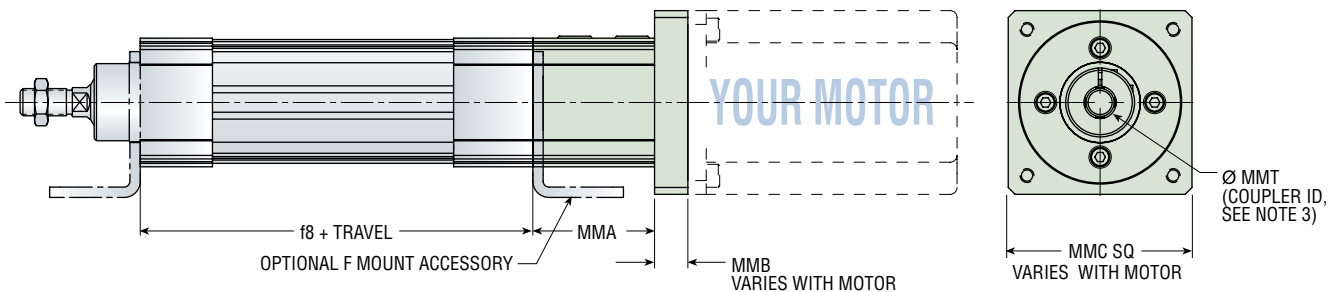
# OPTIONS: SERIES ECV CYLINDER

## QL11 INLINE MOTOR MOUNTING WITH 1:1 DRIVE RATIO

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. If a blank motor mount is desired for special motor requirements, use -W0000 motor code to order a motor mount intended for customer modification. See page 12.



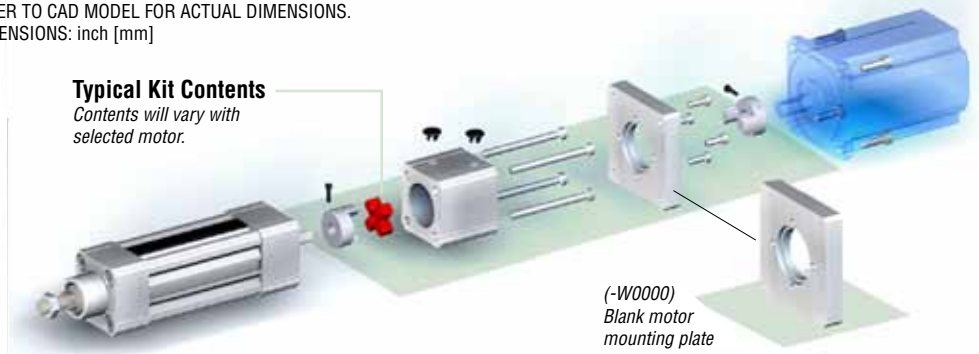
**E C VA 5 32 x 500 - RB 010 - T44 - QL11 - Wxxxx**



SIZE	f8	MMA	MMA WITH F MOUNT	MMB MAX	MMB MIN	MMC		WEIGHT lb [kg]	-W0000 BLANK MOTOR MOUNTING		
						STANDARD	OVERSIZE		MMB BLANK	MMT MIN	MMT MAX SHAFT Ø ALLOWED
32	5.905 [150.0]	1.949 [49.5]	2.126 [54.0]	1.000 [25.4]	.335 [8.5]	2.362 [60.0]	2.756 [70.0]	1.00 [0.45]	.842 [21.4]	.157 [4.0]	.472 [12.0]
40	6.730 [170.9]	2.087 [53.0]	2.264 [57.5]	1.400 [35.6]	.335 [8.5]	2.756 [70.0]	3.465 [88.0]	1.44 [0.65]	.890 [22.6]	.197 [5.0]	.630 [16.0]
50	7.598 [193.0]	3.234 [82.1]	3.451 [87.7]	1.400 [35.6]	.335 [8.5]	3.465 [88.0]	4.331 [110.0]	3.00 [1.36]	1.181 [30.0]	.236 [6.0]	.945 [24.0]

**NOTES:**

- 1) YOUR MOTOR, YOUR WAY MOTOR MOUNT -QL11 IS PROVIDED IN KIT FORM TO ALLOW ASSEMBLY OF MOTOR TO CYLINDER.
- 2) KITS INCLUDE DIRECTIONS AND ALL PARTS REQUIRED TO ASSEMBLE TO DRIVER BASED ON -Wxxxx CODE SUPPLIED BY CUSTOMER.
- 3) WHEN (-W0000) IS SPECIFIED, COUPLER ID IS SUPPLIED WITH UNFINISHED ID Ø MMT AND MOTOR MOUNTING PLATE IS SUPPLIED AT MMC "OVERSIZE" AND WITHOUT MOTOR MOUNTING FEATURES.
- 4) REFER TO CAD MODEL FOR ACTUAL DIMENSIONS.
- 5) DIMENSIONS: inch [mm]



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# OPTIONS: SERIES ECV CYLINDER



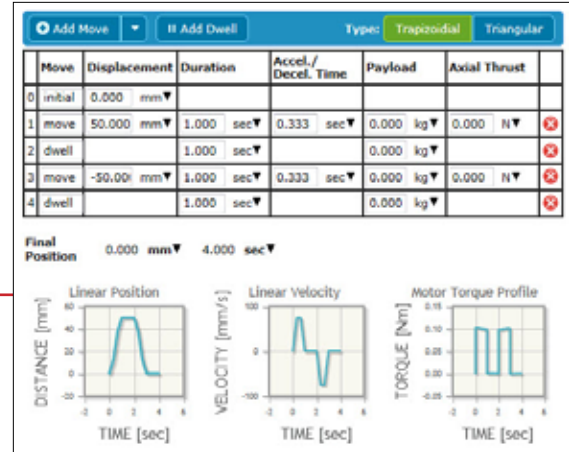
## Wxxxx MOTOR CODE

Your Motor, Your Way customizable motor mounting is generated by PHD's extensive motor database at [www.config.phdinc.com](http://www.config.phdinc.com). Users may select their compatible motor of choice from the pre-populated motor database. In the event the chosen motor is not in the database, they may enter necessary motor features to generate the PHD motor code.

The tailored motor mounting components are included with the specified driver and shipped in kit form.

**E C VA 5 32 x 500 - RB010 - T44 - QF21 - Wxxxx**

[phdplus.phdinc.com](http://phdplus.phdinc.com)



### Step 1 - Online Actuator Sizing [sizing.phdinc.com](http://sizing.phdinc.com)

- Input your application data.
- The sizing software will tell you which actuator and motor performance parameters are needed for your application.

### Step 2 - Motor Selection

- Based on the performance requirements determined by online sizing, select an appropriate motor from your preferred motor manufacturer.
- Return to the online sizing software with identified motor parameters to verify motor to application compatibility.

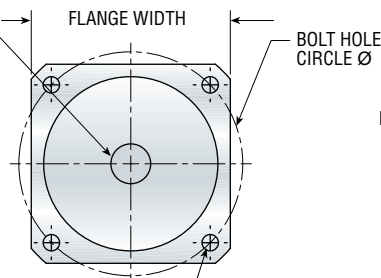
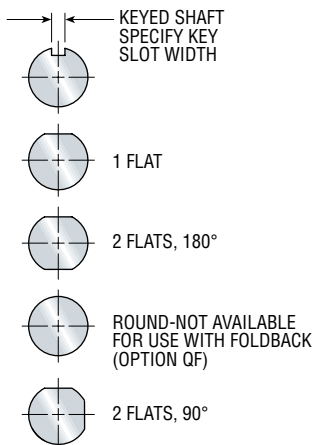
### Step 3 - Your Motor, Your Way Configurator [config.phdinc.com](http://config.phdinc.com)

- Select your motor from the drop down menus or enter the necessary motor geometry.
- The generated motor code for the compatible motor will complete the ordering data necessary to order the actuator tailored to your specific application.
- 3D CAD models are also available.
- If a blank motor mount is desired for special motor requirements, use -W0000 to order a motor mount intended for customer modification.

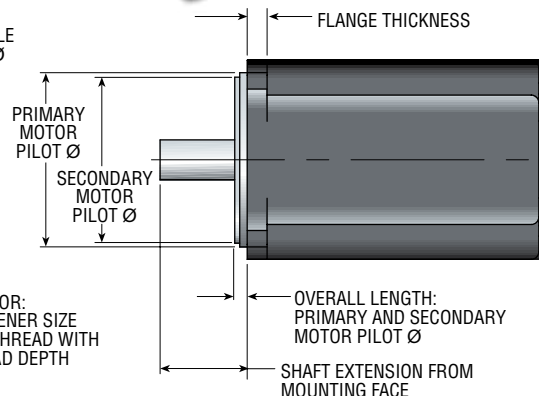


## MOTOR GEOMETRY

SPECIFY FROM MOTOR:  
 • MAXIMUM MOTOR SHAFT Ø  
 • SHAFT TYPE:



SPECIFY FROM MOTOR:  
 • MOUNTING FASTENER SIZE  
 • THRU HOLE OR THREAD WITH  
 MINIMUM THREAD DEPTH





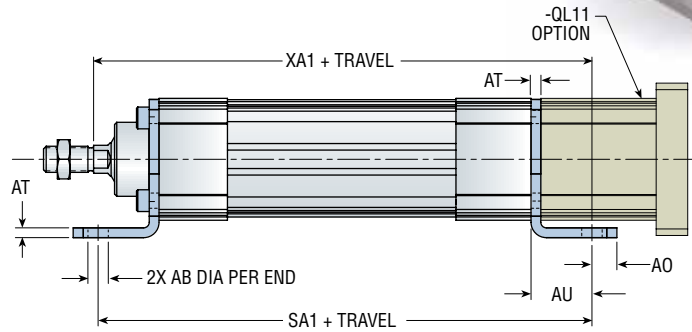
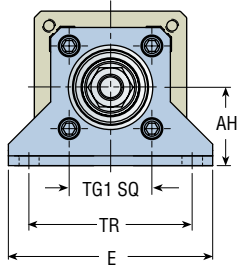
# ACCESSORIES: SERIES ECV CYLINDER

## BASE MOUNTING KIT

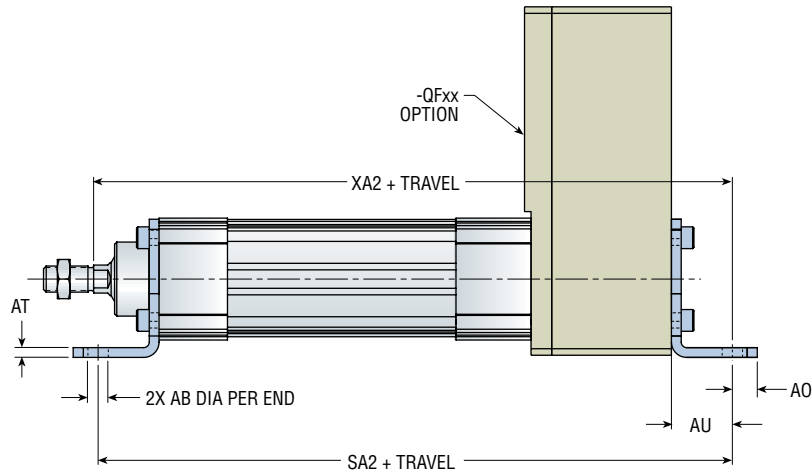
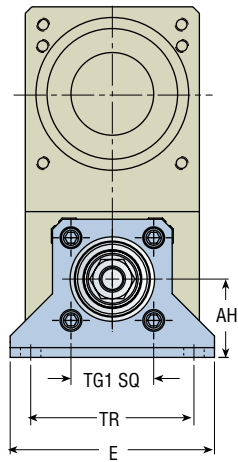
**F** NOTE: BASE MOUNTING KIT BRACKET ADDS TO OVERALL LENGTH.



### INLINE



### FOLDBACK



LETTER DIM	BORE SIZE					
	32 mm		40 mm		50 mm	
AB	.270	[6.87]	.369	[9.37]	.369	[9.37]
TG1	1.280	[32.5]	1.496	[38.0]	1.831	[46.5]
E MAX	3.165	[80.4]	3.726	[94.6]	4.291	[109.0]
TR	2.579	[65.5]	2.953	[75.0]	3.445	[87.5]
AO MAX	.332	[8.4]	.451	[11.5]	.450	[11.4]
AU	.945	[24.0]	1.102	[28.0]	1.26	[32.0]
AH	1.26	[32.0]	1.417	[36.0]	1.772	[45.0]
AT	0.177	[4.5]	0.177	[4.5]	0.217	[5.5]
SA1	7.795	[198.0]	8.934	[226.9]	10.118	[257.0]
SA2	9.98	[253.5]	11.473	[291.4]	12.795	[325.0]
XA1	7.874	[200.0]	9.013	[228.9]	10.315	[262.0]
XA2	10.059	[255.5]	11.552	[293.4]	12.992	[330.0]
KIT NO.*	83217-01-01		83217-02-01		83217-03-01	

**NOTES:**

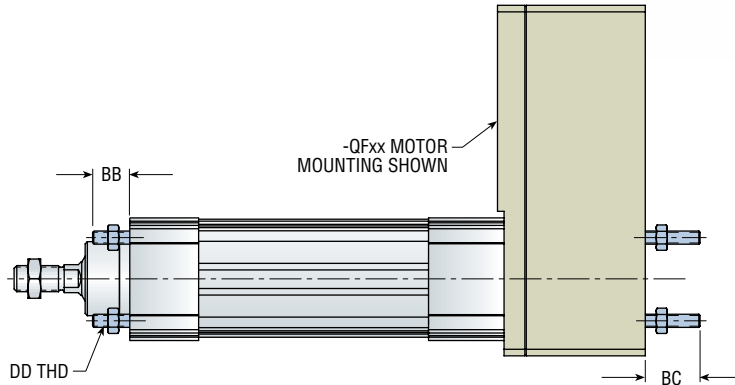
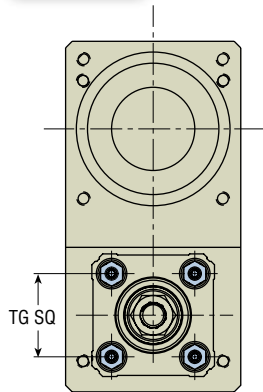
- \*KIT INCLUDES BRACKET AND CYLINDER MOUNTING HARDWARE FOR ONE END ONLY.
- DIMENSIONS: inch [mm]

# ACCESSORIES: SERIES ECV CYLINDER

## FASTENER MOUNTING KIT (PER ISO 6431)

**MX1**

Fastener mounting kit can be used on the rod end of all units. This kit can also be used on the motor end of -QFxx units.



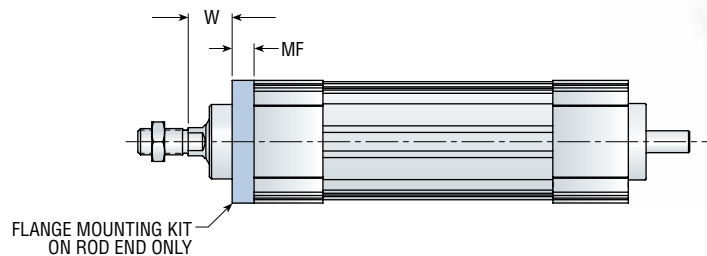
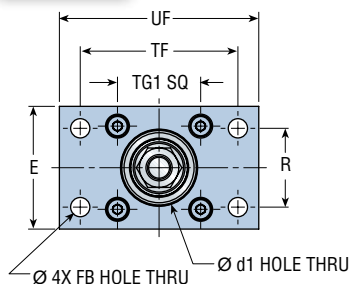
SIZE	BB MIN	BC	DD	TG	KIT NO. *
32	.669 [17.0]	.985 [25.0]	M6 x 1.0	1.280 [32.5]	83213-01-01
40	.669 [17.0]	.985 [25.0]	M6 x 1.0	1.496 [38.0]	83213-01-01
50	.906 [23.0]	1.236 [31.4]	M8 x 1.25	1.831 [46.5]	83213-02-01

**NOTES:**

- 1) \*KIT INCLUDES STUD AND NUTS FOR ONE END ONLY.
- 2) ROD END MOUNTING (BB) COMPLIES WITH ISO 6431, REAR MOUNTING (BC) DOES NOT.
- 3) REQUIRES -QFxx FOR REAR MOUNTING.
- 4) DIMENSIONS: inch [mm]

## FLANGE MOUNTING KIT (PER VDMA 24562)

**MF1**



SIZE	LETTER DIMENSION/TOLERANCE									KIT NO. *
	d1/H11	FB/H13	TG1	E MAX	R/JS14	MF	TG/JS14	UF MAX	W	
32	1.181 [30.0]	.276 [7.0]	1.280 [32.5]	1.969 [50.0]	1.260 [32.0]	.394 [10.0]	2.520 [64.0]	3.386 [86.0]	.630 [16.0]	83219-01-01
40	1.378 [35.0]	.354 [9.0]	1.496 [38.0]	2.283 [58.0]	1.417 [36.0]	.394 [10.0]	2.835 [72.0]	3.780 [96.0]	.787 [20.0]	83219-02-01
50	1.575 [40.0]	.354 [9.0]	1.831 [46.5]	2.756 [70.0]	1.772 [45.0]	.472 [12.0]	3.543 [90.0]	4.528 [115.0]	.984 [25.0]	83219-03-01

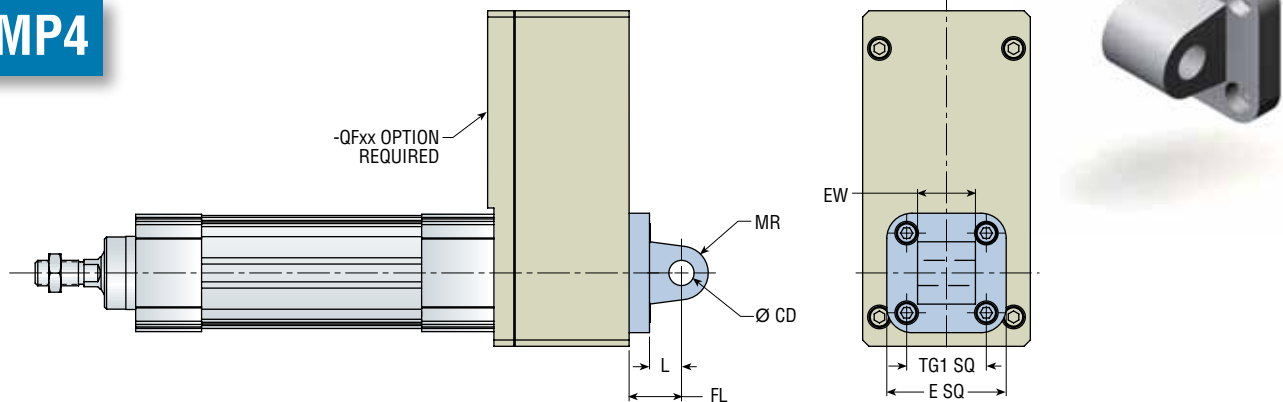
**NOTES:**

- 1) \*KIT INCLUDES CYLINDER MOUNTING HARDWARE FOR ROD END ONLY.
- 2) DIMENSIONS: inch [mm]

# ACCESSORIES: SERIES ECV CYLINDER

## REAR MALE HINGE MOUNTING KIT (PER VDMA 24562)

**MP4**



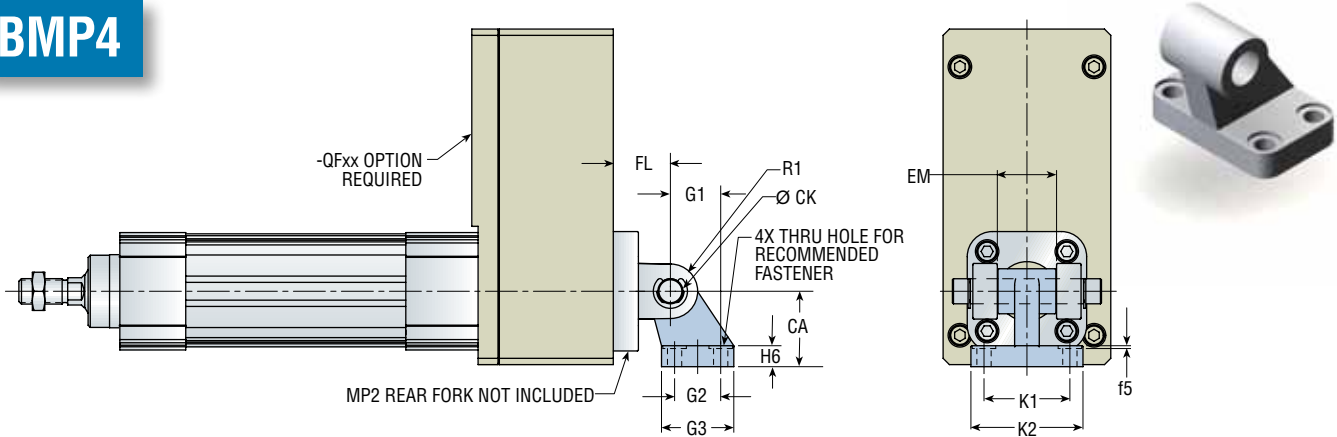
SIZE	LETTER DIMENSION/TOLERANCE							KIT NO. *
	E MAX	EW MAX	TG1	FL (±0.2 mm)	L MIN	CD/H9	MR MAX	
32	1.969 [50.0]	1.024 [26.0]	1.280 [32.5]	.866 [22.0]	.472 [12.0]	.394 [10.0]	.433 [11.0]	83218-01-01
40	2.283 [58.0]	1.102 [28.0]	1.496 [38.0]	.984 [25.0]	.591 [15.0]	.472 [12.0]	.512 [13.0]	83218-02-01
50	2.756 [70.0]	1.260 [32.0]	1.831 [46.5]	1.063 [27.0]	.591 [15.0]	.472 [12.0]	.512 [13.0]	83218-03-01

**NOTES:**

- \*KIT INCLUDES CYLINDER MOUNTING HARDWARE.
- REAR MALE HINGE IS COMPATIBLE WITH MP2 MOUNTING AND MP2 PIVOT PIN.
- REQUIRES -QFxx OPTION
- DIMENSIONS: inch [mm]

## PILLOW BLOCK MOUNTING KIT (PER CETOP 107 P)

**BMP4**



SIZE	LETTER DIMENSION/TOLERANCE													FASTENER	KIT NO. *
	CK/H9	K1/JS14	K2 MAX	G1/JS14	f5 MAX	G2	EM MAX	G3 MAX	CA/JS15	H6	R1 MAX	FL			
32	.394 [10.0]	1.496 [38.0]	2.008 [51.0]	.827 [21.0]	.063 [1.6]	.709 [18.0]	1.016 [25.8]	1.220 [31.0]	1.260 [32.0]	.315 [8.0]	.394 [10.0]	.866 [22.0]	M6	62818-001-00	
40	.472 [12.0]	1.614 [41.0]	2.126 [54.0]	.945 [24.0]	.063 [1.6]	.866 [22.0]	1.094 [27.8]	1.378 [35.0]	1.417 [36.0]	.394 [10.0]	.433 [11.0]	.984 [25.0]	M6	62818-002-00	
50	.472 [12.0]	1.969 [50.0]	2.559 [65.0]	1.299 [33.0]	.063 [1.6]	1.181 [30.0]	1.252 [31.8]	1.772 [45.0]	1.772 [45.0]	.472 [12.0]	.512 [13.0]	1.063 [27.0]	M8	62818-003-00	

**NOTES:**

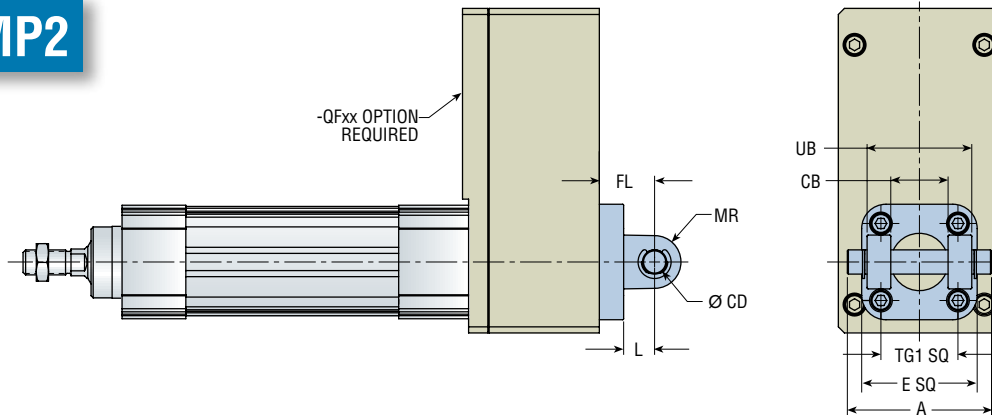
- \*KIT DOES NOT INCLUDE MOUNTING FASTENERS OR PIVOT PIN
- BMP4 PILLOW BLOCK IS COMPATIBLE WITH MP2 REAR FORK
- REQUIRES -QFxx OPTION
- DIMENSIONS: inch [mm]
- MOUNTING IS FUNCTIONAL IN INDICATED ORIENTATION ONLY



# ACCESSORIES: SERIES ECV CYLINDER

## REAR FORK MOUNTING KIT (PER VDMA 24562)

**MP2**



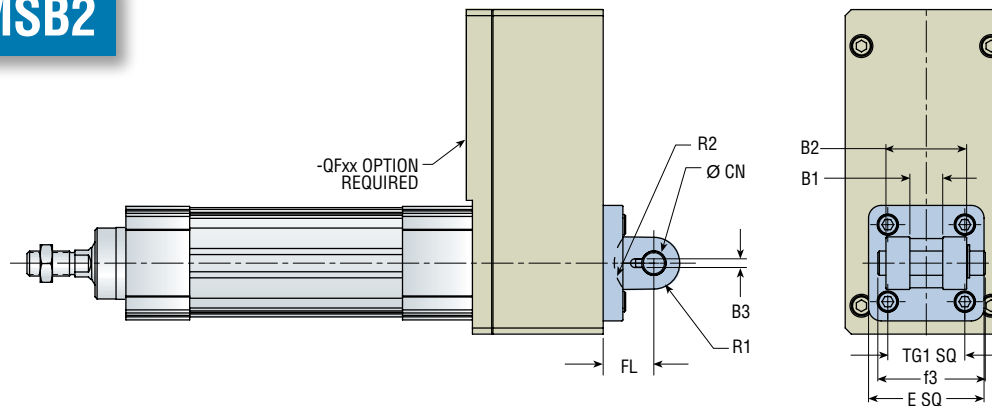
SIZE	LETTER DIMENSION/TOLERANCE									
	A MAX	E MAX	UB/h14	CB/H14	TG1	FL [±0.2 mm]	L MIN	CD/H9	MR MAX	KIT NO. *
32	2.559 [65.0]	1.969 [50.0]	1.772 [45.0]	1.024 [26.0]	1.280 [32.5]	.866 [22.0]	.472 [12.0]	.394 [10.0]	.433 [11.0]	83214-01-01
40	2.835 [72.0]	2.283 [58.0]	2.047 [52.0]	1.102 [28.0]	1.496 [38.0]	.984 [25.0]	.591 [15.0]	.472 [12.0]	.512 [13.0]	83214-02-01
50	3.150 [80.0]	2.756 [70.0]	2.362 [60.0]	1.260 [32.0]	1.831 [46.5]	1.063 [27.0]	.591 [15.0]	.472 [12.0]	.512 [13.0]	83214-03-01

**NOTES:**

- \*KIT INCLUDES CYLINDER MOUNTING HARDWARE, PIVOT PIN AND PIVOT PIN RETAINER CLIPS.
- MP2 REAR FORK MOUNTING IS COMPATIBLE WITH MP4 MALE HINGE AND BMP4 PILLOW BLOCK.
- REQUIRES -QFxx OPTION
- DIMENSIONS: inch [mm]

## REAR FORK MOUNTING FOR SPHERICAL BEARING KIT (PER VDMA 24562)

**MSB2**



SIZE	LETTER DIMENSION/TOLERANCE										
	E MAX	B2/d12	B1/H14	TG1	B3 [±0.2 mm]	R2 MIN	f3	FL [±0.2 mm]	CN/F7	R1 MAX	KIT NO. *
32	1.969 [50.0]	1.339 [34.0]	.551 [14.0]	1.280 [32.5]	.130 [3.3]	.669 [17.0]	1.811 [46.0]	.866 [22.0]	.394 [10.0]	.433 [11.0]	83215-01-01
40	2.283 [58.0]	1.575 [40.0]	.630 [16.0]	1.496 [38.0]	.169 [4.3]	.787 [20.0]	2.087 [53.0]	.984 [25.0]	.472 [12.0]	.512 [13.0]	83215-02-01
50	2.756 [70.0]	1.772 [45.0]	.827 [21.0]	1.831 [46.5]	.169 [4.3]	.866 [22.0]	2.283 [58.0]	1.063 [27.0]	.630 [16.0]	.709 [18.0]	83215-03-01

**NOTES:**

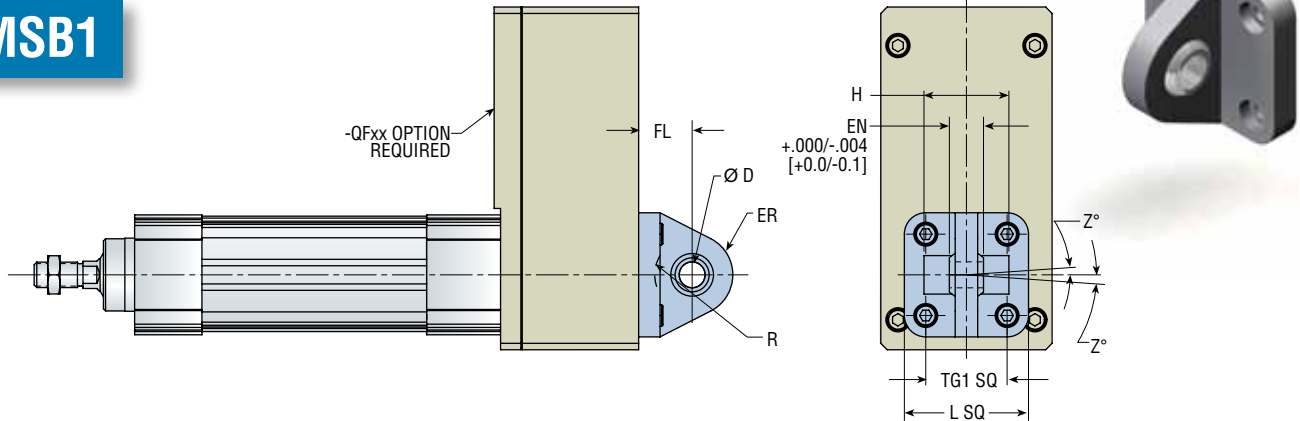
- \*KIT INCLUDES CYLINDER MOUNTING HARDWARE AND PIVOT PIN.
- MSB2 REAR FORK IS COMPATIBLE WITH BSB1 PILLOW BLOCK, MSB1 REAR MALE HINGE WITH SPHERICAL BEARING AND ROD EYE.
- REQUIRES -QFxx OPTION
- DIMENSIONS: inch [mm]



# ACCESSORIES: SERIES ECV CYLINDER

## REAR MALE HINGE MOUNTING FOR SPHERICAL BEARING KIT

**MSB1**



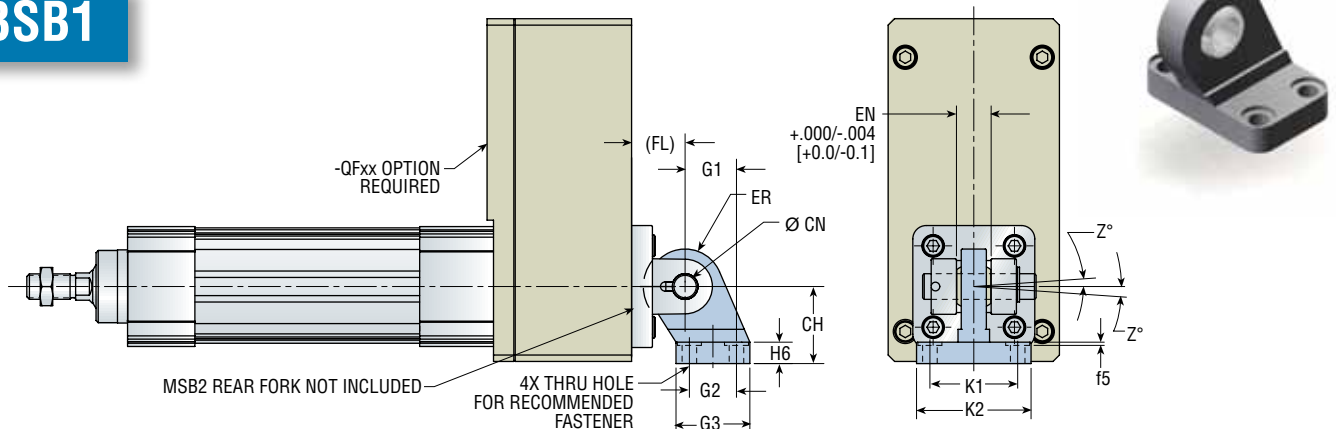
SIZE	LETTER DIMENSION/TOLERANCE									
	TG1	FL $[\pm 0.2 \text{ mm}]$	D/H7	EN	ER MAX	L MAX	Z	H	R	KIT NO. *
32	1.280 [32.5]	.866 [22.0]	.394 [10.0]	.551 [14.0]	.630 [16.0]	1.969 [50.0]	4°	-	-	83216-01-01
40	1.496 [38.0]	.984 [25.0]	.472 [12.0]	.630 [16.0]	.748 [19.0]	2.283 [58.0]	4°	-	-	83216-02-01
50	1.831 [46.5]	1.063 [27.0]	.630 [16.0]	.827 [21.0]	.827 [21.0]	2.756 [70.0]	4°	2.008 [51.0]	.748 [19.0]	83216-03-01

**NOTES:**

- \*KIT INCLUDES CYLINDER MOUNTING HARDWARE.
- MSB1 REAR MALE IS COMPATIBLE WITH MSB2 REAR FORK FOR SPHERICAL BEARING.
- REQUIRES -QFxx OPTION
- DIMENSIONS: inch [mm]

## PILLOW BLOCK MOUNTING SPHERICAL BEARING KIT (PER VDMA 24562)

**BSB1**



SIZE	LETTER DIMENSION/TOLERANCE														
	CN/H7	K1/JS14	K2 MAX	G1/JS14	f5 MAX	G2/JS14	EN	G3 MAX	CH/JS15	H6	ER MAX	FL	Z	FASTENER	KIT NO. *
32	.394 [10.0]	1.496 [38.0]	2.008 [51.0]	.827 [21.0]	.063 [1.6]	.709 [18.0]	.551 [14.0]	1.220 [31.0]	1.260 [32.0]	.394 [10.0]	.630 [16.0]	.866 [22.0]	4°	M6	62822-001-00
40	.472 [12.0]	1.614 [41.0]	2.126 [54.0]	.945 [24.0]	.063 [1.6]	.866 [22.0]	.630 [16.0]	1.378 [35.0]	1.417 [36.0]	.394 [10.0]	.709 [18.0]	.984 [25.0]	4°	M6	62822-002-00
50	.630 [16.0]	1.969 [50.0]	2.559 [65.0]	1.299 [33.0]	.063 [1.6]	1.181 [30.0]	.827 [21.0]	1.772 [45.0]	1.772 [45.0]	.472 [12.0]	.827 [21.0]	1.063 [27.0]	4°	M8	62822-003-00

**NOTES:**

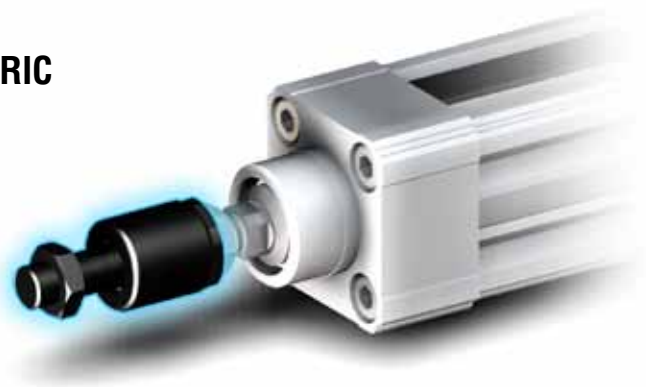
- \*KIT INCLUDES PILLOW BLOCK ONLY.
- BSB1 PILLOW BLOCK IS COMPATIBLE WITH MSB2 REAR FORK FOR SPHERICAL BEARING.
- REQUIRES -QFxx OPTION
- DIMENSIONS: inch [mm]
- MOUNTING IS FUNCTIONAL IN INDICATED ORIENTATION ONLY.

# ACCESSORIES: SERIES ECV CYLINDER

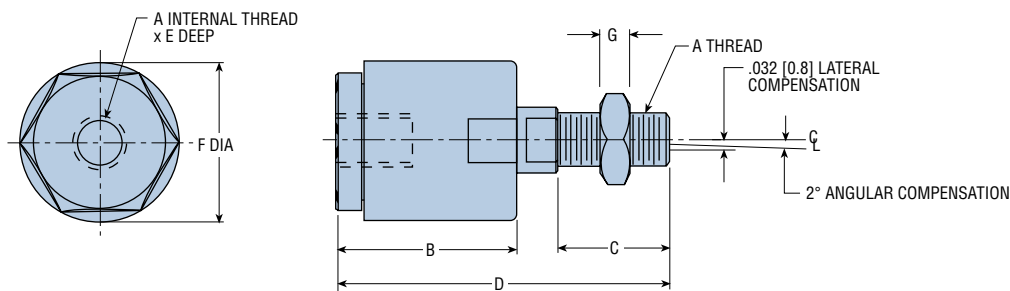
## SELF-ALIGNING PISTON ROD COUPLERS - METRIC (NOT FOR USE WITH SERIES ECVR)

### BENEFITS

- Rod Couplers eliminate expensive precision machining for mounting fixed or rigid cylinder on guide or slide applications.
- Cylinder efficiency is increased by eliminating friction caused by misalignment. Couplers compensate for 2° angular error and 1/32" [0.8 mm] lateral misalignment on push and pull travel.
- Couplers provide greater reliability and reduce cylinder and component wear, simplifying alignment problems in the field.
- Rod Couplers are manufactured from high tensile and hardened steel components.



**Metric rod couplers are an ideal accessory for use with Series ECVA Cylinders.**

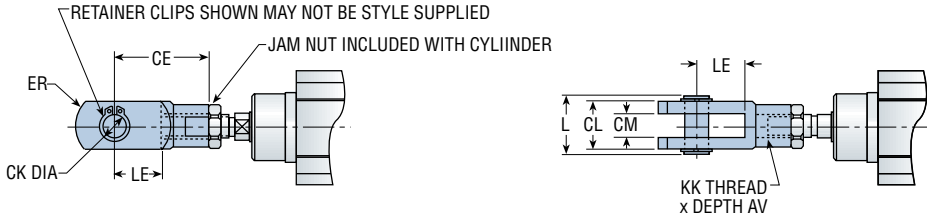


SIZE	LETTER DIMENSION/TOLERANCE							PART NO.	CORROSION RESISTANT
	A	B MIN	C MIN	D MIN	E	F	G		
32	M10 x 1.25	1.00 [25.4]	.625 [15.9]	1.875 [47.6]	.50 [12.7]	.875 [22.2]	.197 [5.0]	83275-03	51842-03
40	M12 x 1.25	1.13 [28.6]	.650 [16.5]	2.187 [55.5]	.50 [12.7]	1.0 [25.4]	.236 [6.0]	83275-04	51842-04
50	M16 x 1.5	1.75 [44.5]	1.125 [28.5]	3.312 [84.1]	.812 [20.6]	1.562 [39.7]	.314 [8.0]	83275-05	51842-05

NOTE: DIMENSIONS: inch [mm]

# ACCESSORIES: SERIES ECV CYLINDER

## ROD CLEVIS MOUNTING KIT FOR METRIC ROD ENDS (PER DIN 8140)

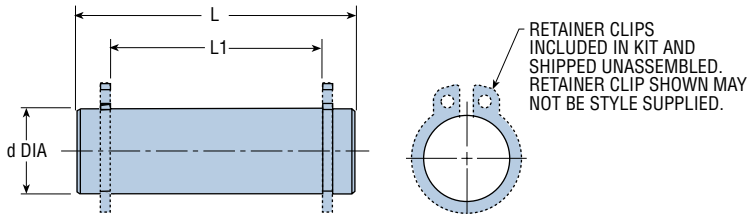
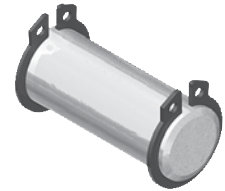


SIZE	LETTER DIMENSION/TOLERANCE									
	AV MIN	CE	CK/H9	CL MAX	CM MIN	ER MAX	KK	L	LE MIN	KIT NO. *
32	.787 [20.0]	1.575 [40.0]	.394 [10.0]	.787 [20.0]	.394 [10.0]	.630 [16.0]	M10 x 1.25	.984 [25.0]	.787 [20.0]	83221-01-01
40	.866 [22.0]	1.890 [48.0]	.472 [12.0]	.945 [24.0]	.472 [12.0]	.748 [19.0]	M12 x 1.25	1.181 [30.0]	.945 [24.0]	83221-02-01
50	1.102 [28.0]	2.520 [64.0]	.630 [16.0]	1.260 [32.0]	.630 [16.0]	.984 [25.0]	M16 x 1.5	1.535 [39.0]	1.260 [32.0]	83221-03-01

**NOTES:**

- 1) \*KIT INCLUDES CLEVIS, PIVOT PIN, AND RETAINER RINGS.
- 2) DIMENSIONS: inch [mm]

## ROD CLEVIS PIVOT PIN KIT

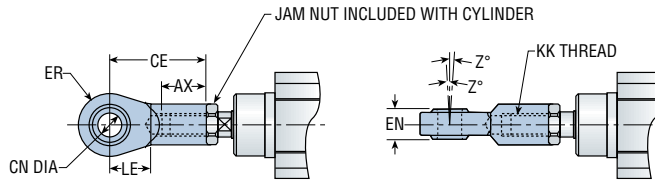


SIZE	d	L	L1	KIT NO.
32	.394 [10.0]	.984 [25.0]	.791 [20.1]	63463-01-2
40	.472 [12.0]	1.181 [30.0]	.949 [24.1]	63463-02-2
50	.630 [16.0]	1.535 [39.0]	1.264 [32.1]	63463-03-2

**NOTE:** DIMENSIONS: inch [mm]

# ACCESSORIES: SERIES ECV CYLINDER

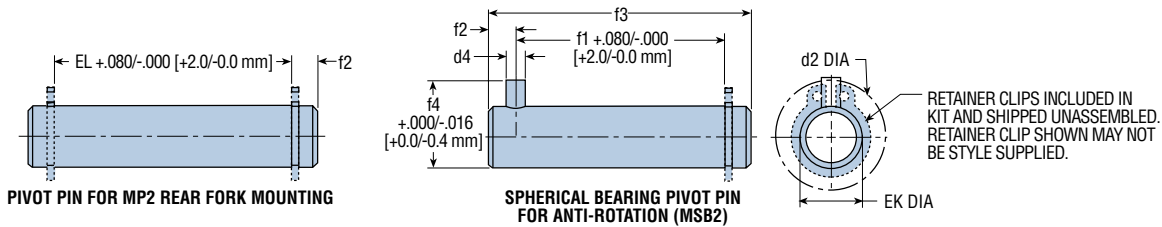
## ROD EYE MOUNTING WITH SPHERICAL BEARING KIT



SIZE	LETTER DIMENSION/TOLERANCE								KIT NO.
	AX MIN	CE	CN/H9	EN/h12	ER MAX	KK	LE MIN	Z	
32	.787 [20.0]	1.693 [43.0]	.394 [10.0]	.551 [14.0]	.551 [14.0]	M10 x 1.25	.591 [15.0]	4°	83220-01-01
40	.866 [22.0]	1.969 [50.0]	.472 [12.0]	.630 [16.0]	.630 [16.0]	M12 x 1.25	.669 [17.0]	4°	83220-02-01
50	1.102 [28.0]	2.520 [64.0]	.630 [16.0]	.827 [21.0]	.827 [21.0]	M16 x 1.5	.906 [23.0]	4°	83220-03-01

- NOTES:  
 1) KIT COMPATIBLE WITH MSB2 REAR FORK FOR SPHERICAL BEARING.  
 2) DIMENSIONS: inch [mm]

## PIVOT PIN KIT



PIVOT PIN FOR MP2 REAR FORK MOUNTING

SPHERICAL BEARING PIVOT PIN FOR ANTI-ROTATION (MSB2)

### MP2 PIVOT PIN

SIZE	LETTER DIMENSION/TOLERANCE				KIT NO.
	d2 MAX	EK/e8	EL	f2 MAX	
32	.906 [23.0]	.394 [10.0]	1.811 [46.0]	.335 [8.5]	52490-01-2
40	.984 [25.0]	.472 [12.0]	2.087 [53.0]	.335 [8.5]	52490-02-2
50	.984 [25.0]	.472 [12.0]	2.402 [61.0]	.335 [8.5]	52490-03-2

### MSB2 PIVOT PIN

SIZE	LETTER DIMENSION/TOLERANCE							KIT NO.
	d2 MAX	d4/H12	EK/h9	f1	f2 MAX	f3 MAX	f4	
32	.906 [23.0]	.118 [3.0]	.394 [10.0]	1.280 [32.5]	.177 [4.5]	1.811 [46.0]	.551 [14.0]	52491-01-2
40	.984 [25.0]	.157 [4.0]	.472 [12.0]	1.496 [38.0]	.236 [6.0]	2.087 [53.0]	.630 [16.0]	52491-02-2
50	.984 [25.0]	.157 [4.0]	.630 [16.0]	1.693 [43.0]	.236 [6.0]	2.283 [58.0]	.787 [20.0]	52491-03-2

NOTE: DIMENSIONS: inch [mm]



# ACCESSORIES: SERIES ECV CYLINDER

## 6250 SOLID STATE SWITCHES

Series ECV comes standard with a magnet band for use with PHD miniature Reed and Solid State Switches listed below. These switches mount easily to the cylinder using any of the three "T" slots provided in the body.



### SERIES 6250 SOLID STATE SWITCHES

PART NO.	DESCRIPTION	COLOR
62505-1-02	NPN (Sink) DC Solid State, 2 m cable	Brown
62506-1-02	PNP (Source) DC Solid State, 2 m cable	Tan
62515-1	NPN (Sink) DC Solid State, Quick Connect	Brown
62516-1	PNP (Source) DC Solid State, Quick Connect	Tan

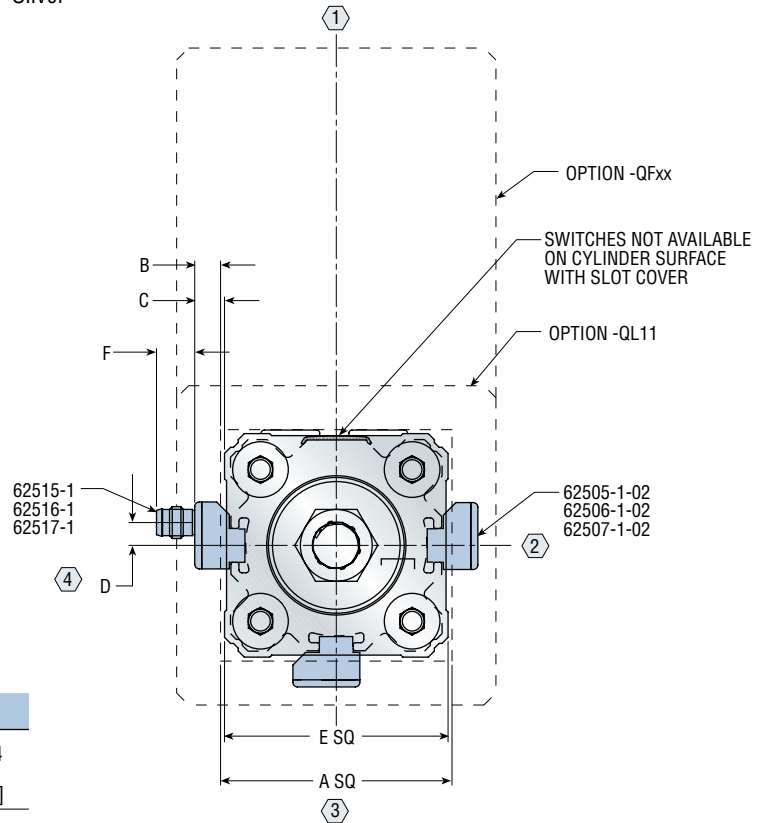
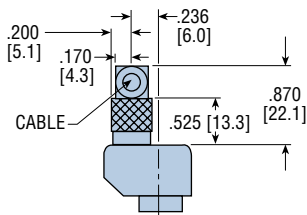
### SERIES 6250 REED SWITCHES

PART NO.	DESCRIPTION	COLOR
62507-1-02	AC/DC Reed, 2 m cable	Silver
62517-1	AC/DC Reed, Quick Connect	Silver

### CORDSETS WITH QUICK CONNECT

PART NO.	DESCRIPTION
61397-02	2 meter/3 wire
61397-05	5 meter/3 wire

### 62515-1, 62516-1 & 62517-1 Connector Detail

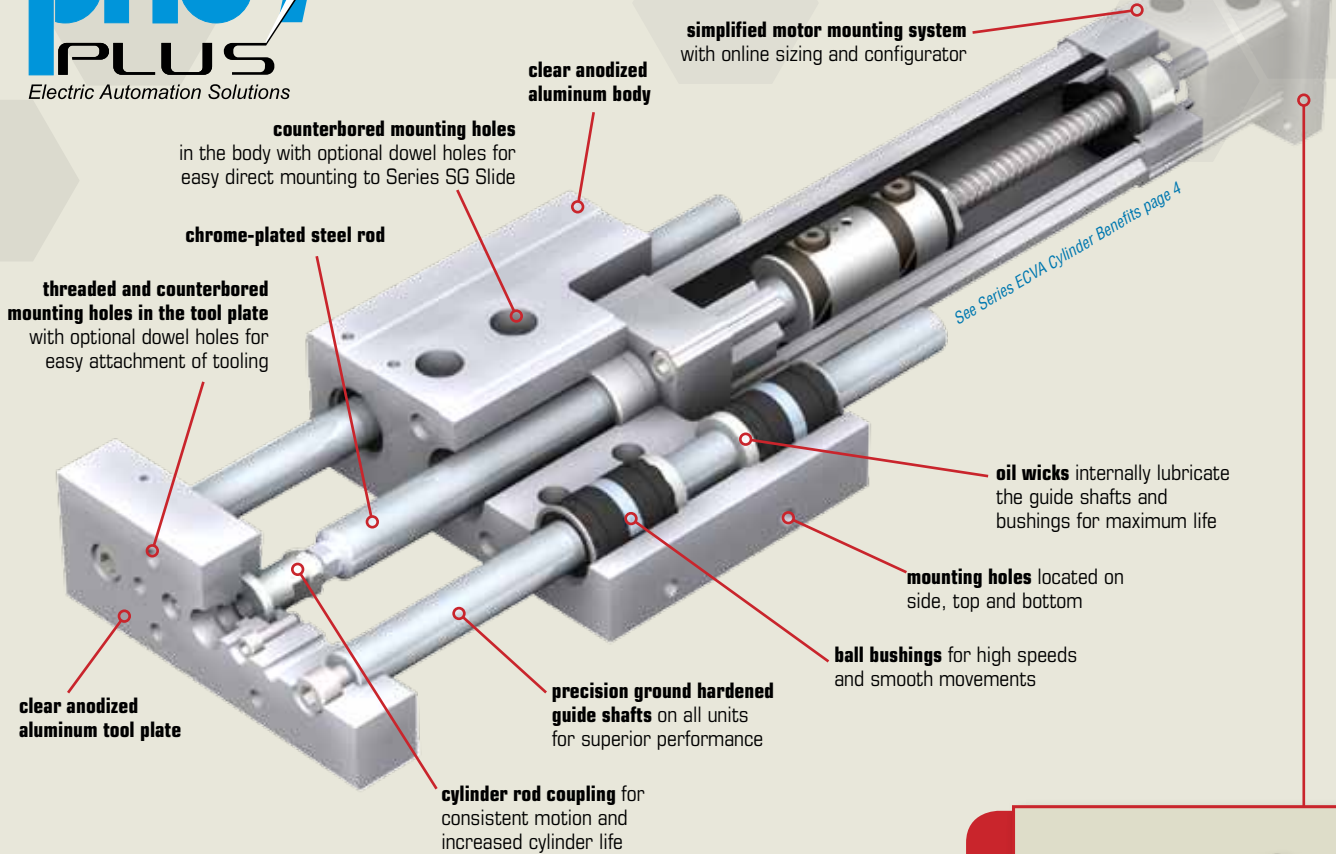


SIZE	A*	B	C	D	E	F
32	1.969	.276	.295	.236	1.949	.374
	[50.0]	[7.0]	[7.5]	[6.0]	[49.5]	[9.5]
40	2.283	.197	.256	.236	2.205	.374
	[58.0]	[5.0]	[6.5]	[6.0]	[56.0]	[9.5]
50	2.756	.236	.276	.236	2.697	.374
	[70.0]	[6.0]	[7.0]	[6.0]	[68.5]	[9.5]

#### NOTES:

- 1) \*ISO/VDMA MAX SQUARE SIZE.
- 2) DIMENSIONS F & D APPLY TO SWITCHES 62515-1, 62517-1 & 62516-1 ONLY.
- 3) DIMENSIONS: inch [mm]

# SERIES ESK/ESL SLIDE



## Major Benefits

- Electrically driven cantilever slide based on the proven PHD Series SK and SL Slide
- Offered in long or short bodies for application flexibility
- Standard dowel pin holes with optional transitional and precision diameters
- High thrust and speed capability
- Travel lengths up to 700 mm
- Rigid construction with low backlash
- Very high degree of repeatability
- High precision ball screw assemblies with long service life
- IP50 ingress protection
- Inline and foldback motor mounting flexibility
- *Your Motor, Your Way* for online configuration of motor mounting plates, with a database of electric motors from all major manufacturers
- Choice of options/accessories similar to pneumatic Series SK/SL Slides
- Switch ready standard

## Applications

- Assembly
- Die cut
- Dispensing/filling
- Diverting
- Drilling
- Inspection/measurement
- Joining/fastening
- Labeling/marketing
- Part loading, sorting, clamping, positioning
- Tool change
- Valve control

## Choice of Inline or Foldback Motor Mounting



*Foldback available in 1:1 or 2:1 drive for tailored performance.*



## Industry/Process Uses

- Automotive
- Conveying
- Electronics
- Food/beverage
- Machine tool
- Medical
- Packaging
- Pharmaceutical
- Plastics
- Robotic tooling
- Semiconductor
- Special machines

ESK/ESL SLIDE

# ORDERING DATA: SERIES ESK/ESL SLIDE

TO ORDER SPECIFY:

**E S K B 5 4 x 400 - RB010 - G30 - Q1 - QF21 - Wxxxx**

SIZE	ECVA
4	32
5	40
6	50

**DESIGN NO.**  
5 - Metric

**TYPE**  
B - Ball Bushing

**SERIES**  
K - Short body  
L - Long body

**PRODUCT**  
S - Slide

**CLASSIFICATION**  
Electromechanical

SCREW CONFIGURATION		LEAD*
SIZE		mm
4	RB005	5
	RB010	10
5	RB010	10
	RB016	16
6	RB010	10
	RB020	20

\*See engineering data page for drive screw selection.

**MOTOR CONFIGURATION**

- QF11 - Foldback with 1:1 ratio
- QF21 - Foldback with 2:1 ratio
- QL11 - Inline with 1:1 ratio

**MOTOR CODE**

- Wxxxx - Open architecture P/N code
- W0000 - Blank motor mount

No Code - No motor mount

**TRAVEL**  
50 mm minimum travel in 50 mm increments

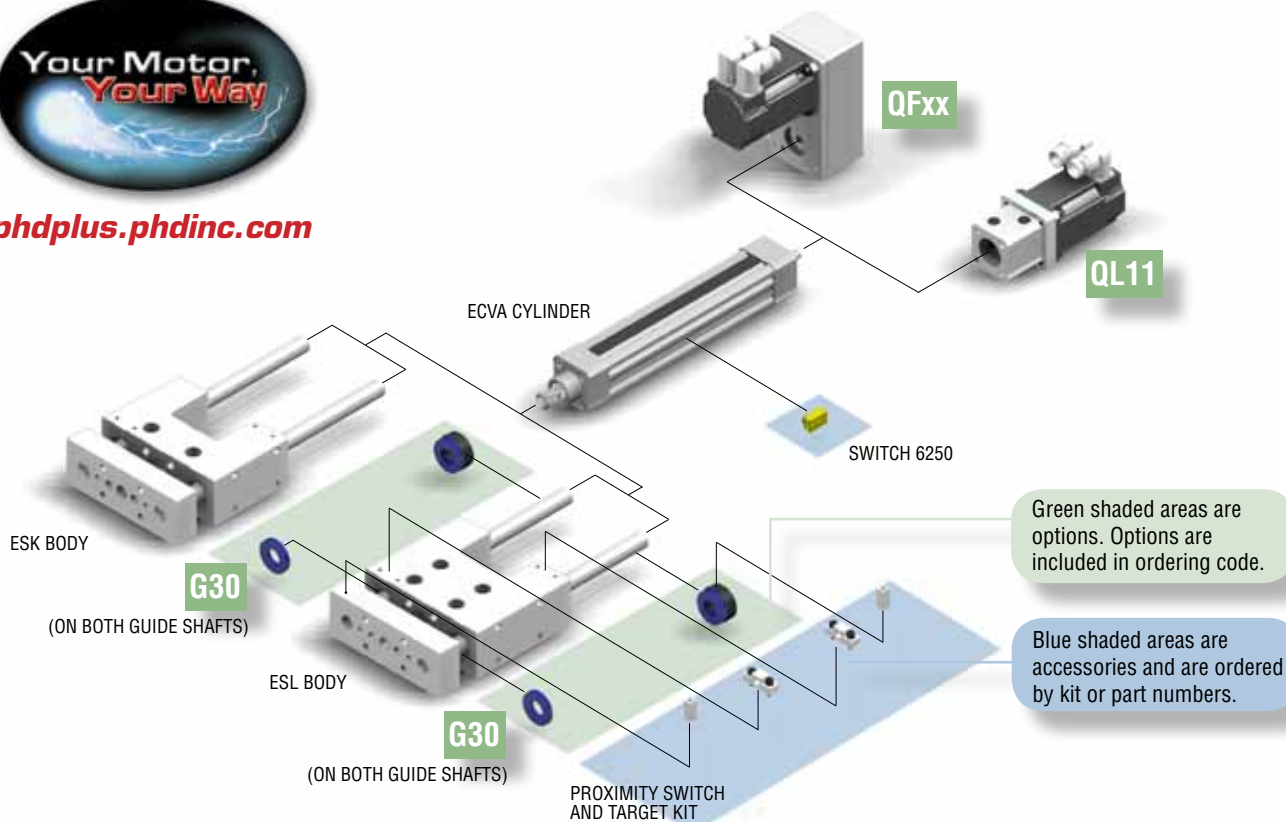
MAX [mm]		
SIZE	SERIES SK	SERIES SL
4	450	600
5	450	600
6	550	700

**OPTIONS**

- H4 - Cylinder replacement only
- H11 - Without cylinder option
- G30 - Proximity switch ready with shock pads on extension and retraction
- J3 - Transitional fit dowel holes (in both tool plate and housing)
- J8 - Precision fit dowel holes (in both tool plate and housing)
- Q1 - Corrosion resistant guide shafts (both ends unplated)



phdplus.phdinc.com



Green shaded areas are options. Options are included in ordering code.

Blue shaded areas are accessories and are ordered by kit or part numbers.

ESK/ESL SLIDE

# ENGINEERING DATA: SERIES ESK/ESL SLIDE

SPECIFICATIONS	SERIES ESK/ESL
REPEATABILITY <sup>1</sup>	±0.0004 in [±0.010 mm]
MAXIMUM BACKLASH <sup>2</sup>	0.007 in [0.18 mm]
RATED LIFE	Refer to Life vs. Thrust Chart (next page)
FULL TRAVEL TOLERANCE <sup>3</sup>	+0.138/-0.000 in [+3.5/-0.0 mm]
DUTY CYCLE	100%
OPERATING TEMPERATURE	40 - 150°F [4 - 65°C]
LUBRICATION INTERVAL <sup>3</sup>	Horizontal: 100 million in [2500 km], Vertical: 60 million in [1500 km]

SPECIFICATIONS			SERIES ESK/ESL SIZE							
			4		5		6			
MECHANICS	MAXIMUM TRAVEL	ESK	in [mm]	17.72 [450]		17.72 [450]		21.65 [550]		
		ESL		23.62 [600]		23.62 [600]		27.65 [700]		
	DRIVE MECHANISM			Ball Screw						
	SCREW DIAMETER			12		16		20		
	SCREW CONFIGURATION			-RB005	-RB010	-RB010	-RB016	-RB010	-RB020	
	SCREW LEAD			5	10	10	16	10	20	
SPEED <sup>4</sup>	GUIDE SHAFT DIAMETER			16		20		25		
	GUIDE SHAFT BEARING TYPE			Ball Bushing						
	MAXIMUM SPEED			19.6 [500]	39.3 [1000]	39.3 [1000]	63.0 [1600]	39.3 [1000]	78.7 [2000]	
	MAXIMUM RPM			6000						
	THRUST <sup>5</sup>	MAXIMUM THRUST			306 [1360]	153 [680]	546 [2430]	342 [1520]	991 [4410]	564 [2510]
		NOMINAL THRUST <sup>6</sup>			90 [400]	74 [330]	285 [1270]	219 [975]	413 [1835]	341 [1515]
TORQUE	PERMISSIBLE DRIVE TORQUE <sup>7</sup>			10.62 [1.20]		38.06 [4.30]		69.03 [7.80]		
	NO-LOAD TORQUE			1.33 [0.15]		3.54 [0.40]		5.31 [0.60]		
WEIGHT	TOTAL @ ZERO STROKE (W <sub>OT</sub> )	ESK	lb [kg]	7.83 [3.55]		11.77 [5.34]		20.93 [9.50]		
		ESL		9.26 [4.20]		14.07 [6.38]		25.76 [11.68]		
	TOTAL LENGTH ADDER (W <sub>LT</sub> )			0.41 [0.0073]		0.59 [0.0105]		0.81 [0.0145]		
	MOVING @ ZERO STROKE (W <sub>OM</sub> )	ESK	lb [kg]	2.83 [1.28]		4.97 [2.25]		9.16 [4.15]		
ESL		3.17 [1.44]		5.61 [2.54]		10.45 [4.74]				
INERTIA	MOVING LENGTH ADDER (W <sub>LM</sub> )			0.216 [0.0039]		0.333 [0.0059]		0.544 [0.0097]		
	ACTUATOR @ ZERO STROKE (J <sub>o</sub> )			0.010 [3.00 x 10 <sup>-6</sup> ]		0.051 [1.50 x 10 <sup>-5</sup> ]		0.165 [4.84 x 10 <sup>-5</sup> ]		
	LENGTH ADDER (J <sub>L</sub> )			0.0009 [9.85 x 10 <sup>-9</sup> ]		0.0025 [2.90 x 10 <sup>-8</sup> ]		0.0069 [7.95 x 10 <sup>-8</sup> ]		
	MOVING WEIGHT ADDER (J <sub>M</sub> )			9.63 x 10 <sup>-4</sup>	3.85 x 10 <sup>-3</sup>	3.85 x 10 <sup>-3</sup>	9.86 x 10 <sup>-3</sup>	3.85 x 10 <sup>-3</sup>	1.54 x 10 <sup>-2</sup>	
MOTOR CONFIGURATION (J <sub>o</sub> )	-QF11	lb-in <sup>2</sup> /lb [kg-m <sup>2</sup> /kg]	0.048 [1.40 x 10 <sup>-5</sup> ]		0.161 [4.71 x 10 <sup>-5</sup> ]		0.159 [4.65 x 10 <sup>-5</sup> ]			
	-QF21		0.094 [2.75 x 10 <sup>-5</sup> ]		0.283 [8.28 x 10 <sup>-5</sup> ]		0.654 [1.91 x 10 <sup>-4</sup> ]			
	-QL11		0.011 [3.14 x 10 <sup>-6</sup> ]		0.021 [6.11 x 10 <sup>-6</sup> ]		0.138 [4.04 x 10 <sup>-5</sup> ]			

## NOTES:

- UNIDIRECTIONAL AT MODERATE SPEEDS AND LOADS
  - AXIAL FREE PLAY WHEN DRIVE SHAFT LOCKED
  - REFER TO OPERATING INSTRUCTIONS FOR RE-LUBRICATION DETAILS
  - REFER TO SPEED VS. TRAVEL CHART ON NEXT PAGE
  - REFER TO LIFE VS. THRUST CHART ON NEXT PAGE
  - 100 MILLION INCHES [2500 km] LIFE
  - CORRESPONDS TO MAXIMUM THRUST
  - FOR HOMING AND INCREASED APPLICATION FLEXIBILITY, INCLUDE EXTRA TRAVEL WHEN NECESSARY.
  - ALL DIMENSIONS ARE FOR REFERENCE ONLY UNLESS SPECIFICALLY TOLERANCED.
- REFER TO ONLINE SIZING SOFTWARE FOR ACTUAL VALUES.

## WEIGHT AND INERTIAL CALCULATIONS:

$$\text{TOTAL WEIGHT} = W_{OT} + (W_{LT} \times \text{TRAVEL}) + \text{MOTOR MOUNT WEIGHT [reference pages 30 and 31]}$$

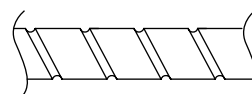
$$\text{TOTAL MOVING WEIGHT} = W_{OM} + (W_{LM} \times \text{TRAVEL}) + \text{EXTERNAL PAYLOAD}$$

$$\text{FOR -Qx11: INERTIA}_{\text{Reflected}} = J_o + (J_L \times \text{TRAVEL}) + (J_M \times \text{TOTAL MOVING WEIGHT}) + J_o$$

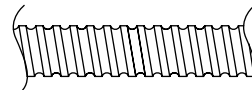
$$\text{FOR -QF21: INERTIA}_{\text{Reflected}} = [J_o + (J_L \times \text{TRAVEL}) + (J_M \times \text{TOTAL MOVING WEIGHT})] / 4 + J_o$$

## RBxxx SCREW CONFIGURATION

The ball screw drive system of the Series ESK/ESL is available in two lead choices. This provides flexibility when matching velocity and load requirements to the application. Refer to product specifications and sizing software for performance parameters.



High lead for speed



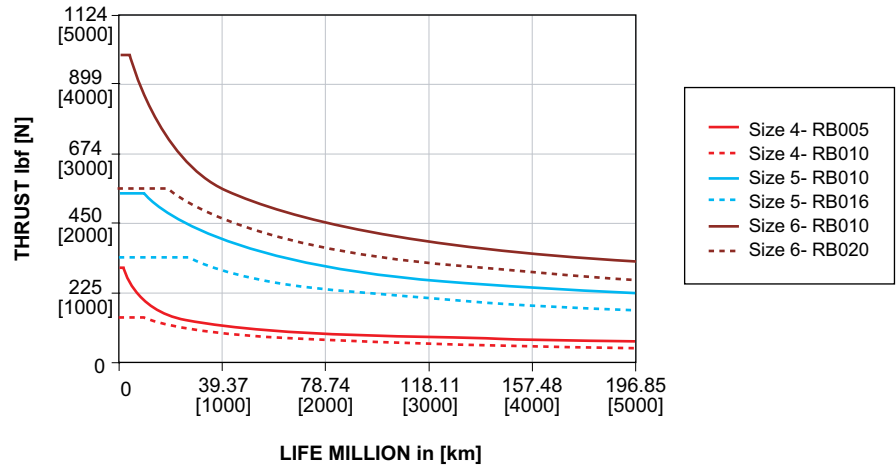
Low lead for thrust

**ESKB54x400-RB010-J3-QL11-Wxxxx**

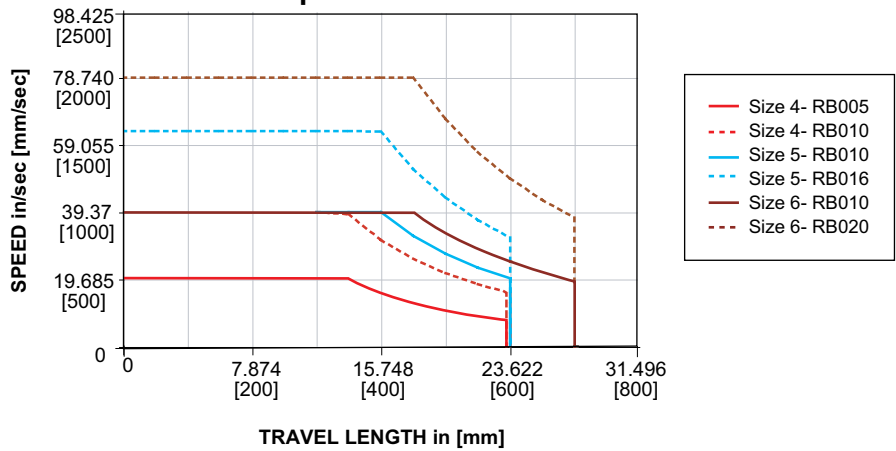
# PERFORMANCE CHARTS: SERIES ESK/ESL SLIDE

This section contains information on the capabilities of the Series ESK/ESL. It is not intended to be a comprehensive selection guide. To make the selection process simple and quick, refer to PHD's sizing software. You may request application assistance from your distributor or PHD's Customer Service Department. Use the Application Data Fax Sheet at the back of this catalog for application sizing.

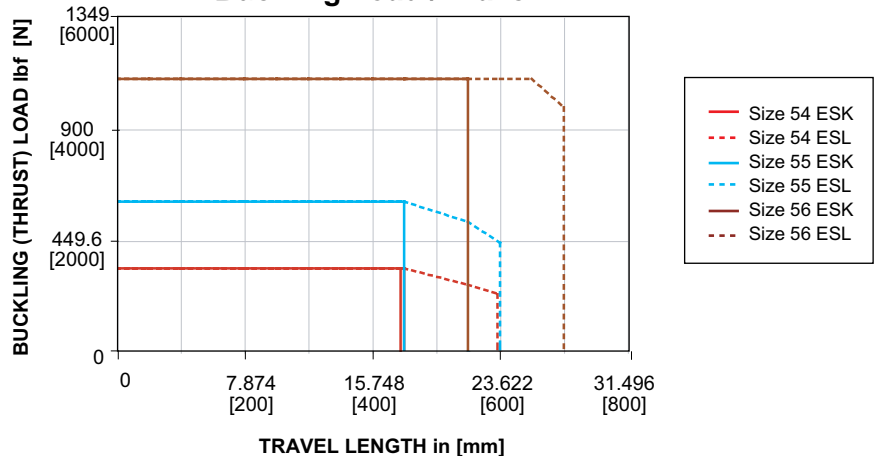
### Thrust / Life



### Speed / Travel



### Buckling Load / Travel

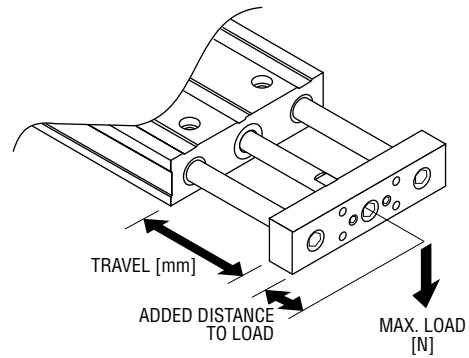


ESK/ESL SLIDE

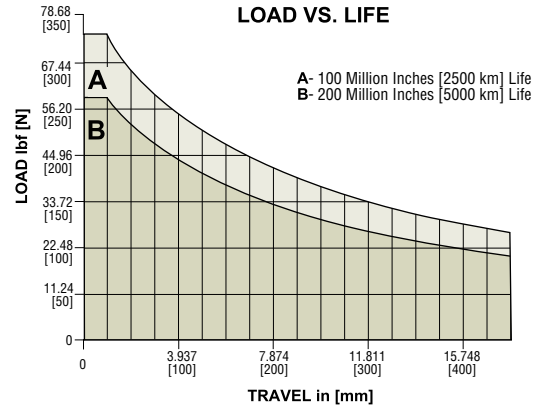
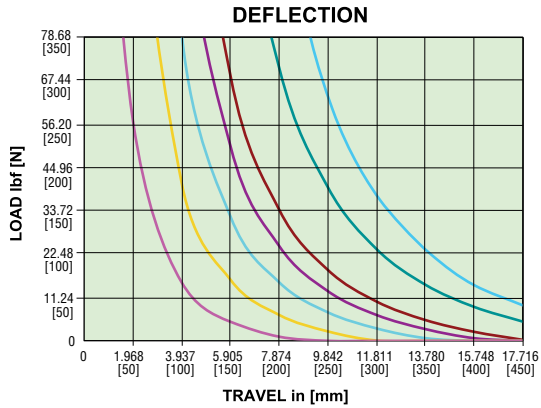


# PERFORMANCE CHARTS: SERIES ESK SLIDE

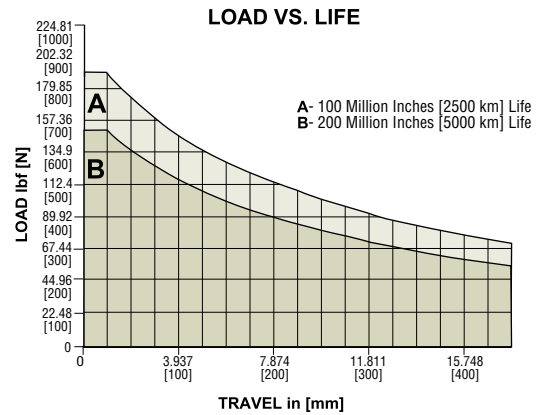
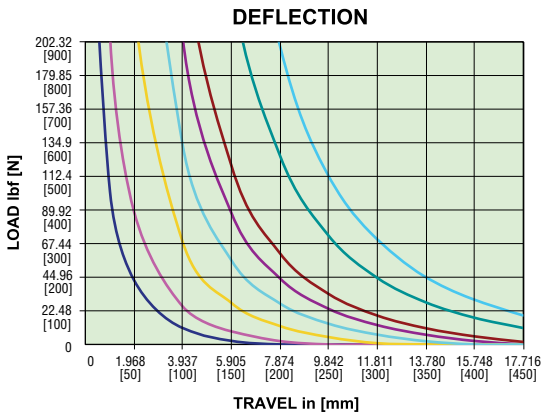
The deflection figures given in these charts are based on the effect of external loads. Shaft straightness, and bearing alignment will affect the accuracy of the tool plate location. When the load is attached to the face of the tool plate, add the distance between load center of gravity and tool plate to the travel length and use the total as the travel length in the following charts.



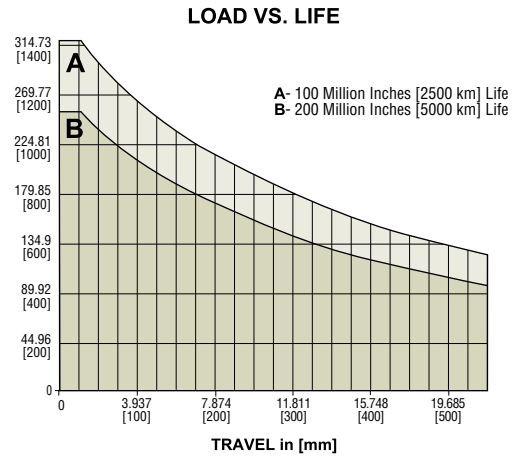
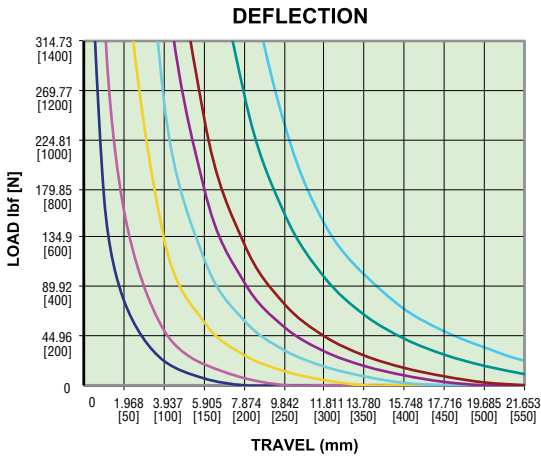
## ESKB54



## ESKB55



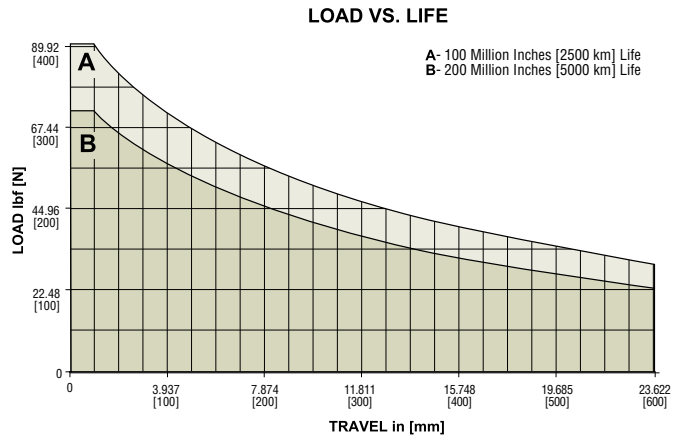
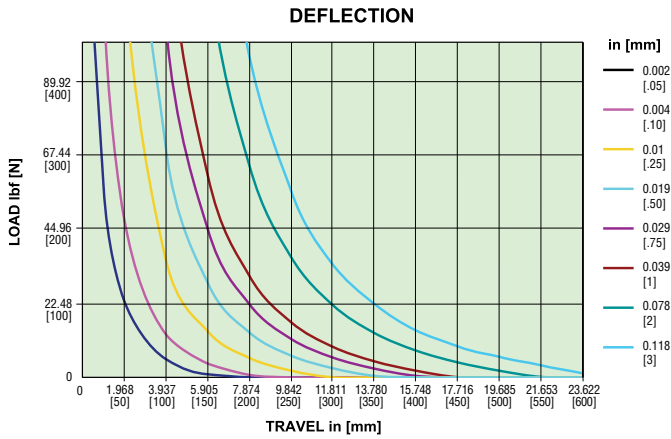
## ESKB56



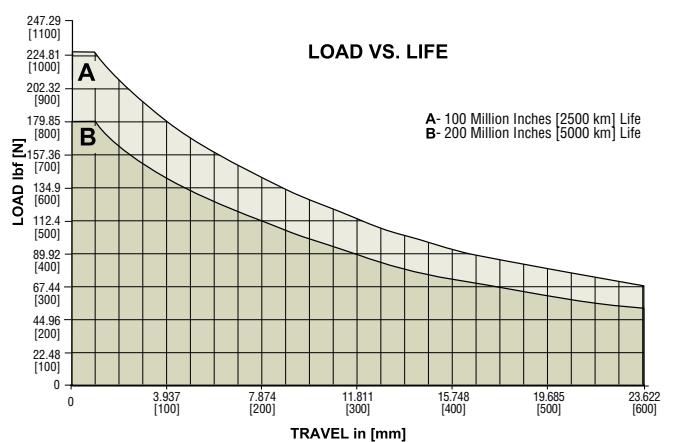
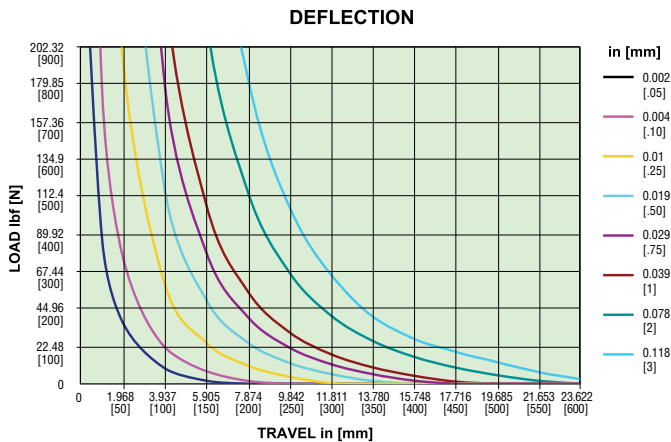
ESK/ESL SLIDE

# PERFORMANCE CHARTS: SERIES ESL SLIDE

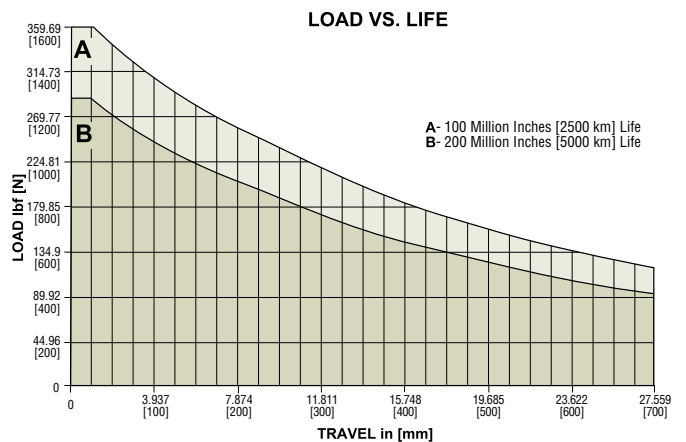
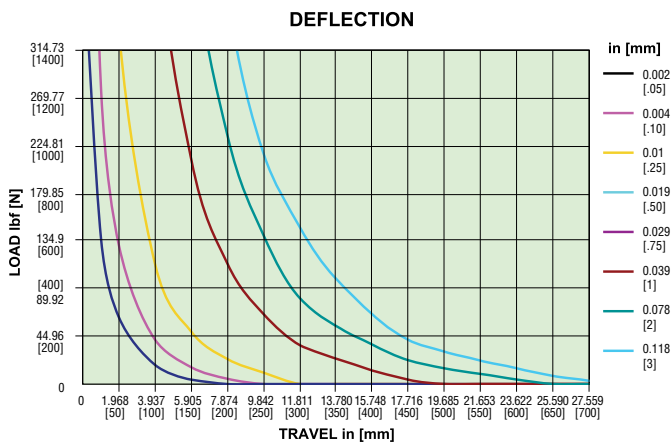
## ESLB54



## ESLB55

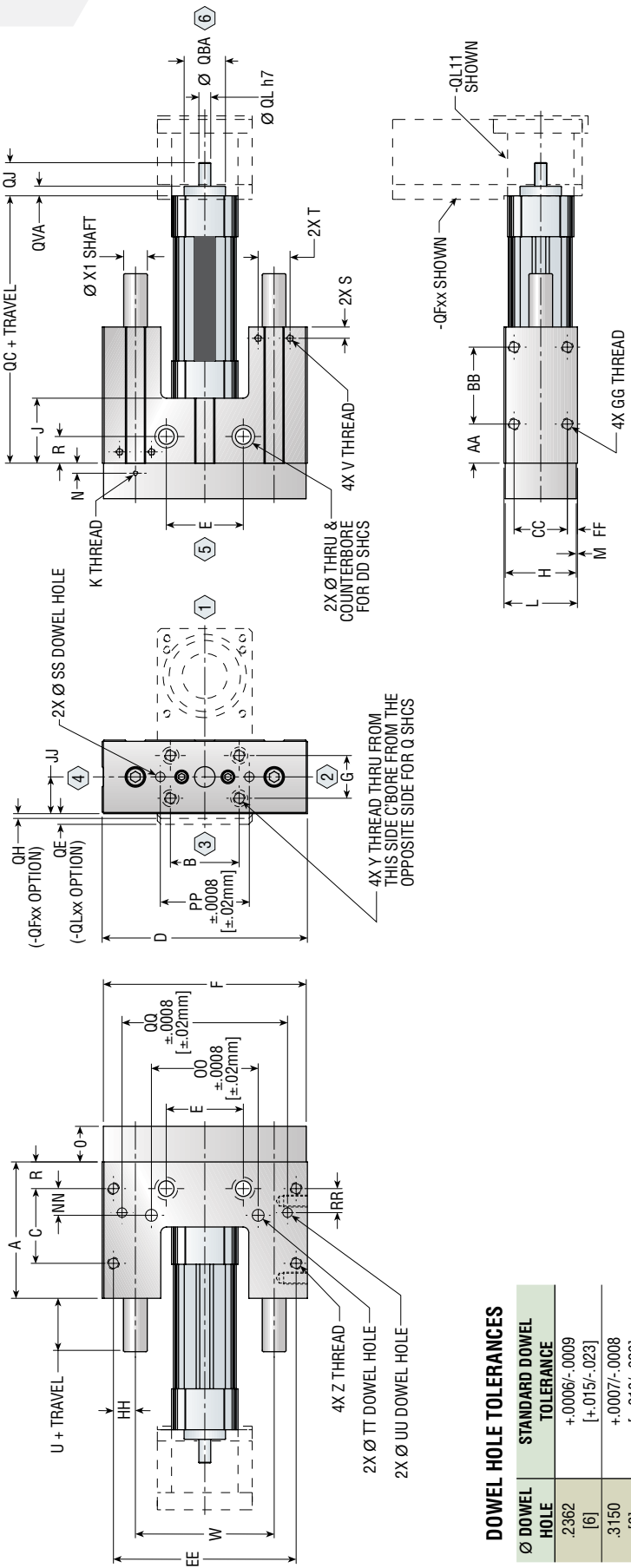


## ESLB56



ESL/ESL SLIDE

# DIMENSIONS: SERIES ESK SLIDE



### DOWEL HOLE TOLERANCES

Ø DOWEL HOLE	STANDARD TOLERANCE
.2362 [6]	+0.0006/-0.0009 [+0.015/-0.023]
.3150 [8]	+0.0007/-0.0008 [+0.018/-0.020]
.3937 [10]	+0.0007/-0.0008 [+0.018/-0.020]

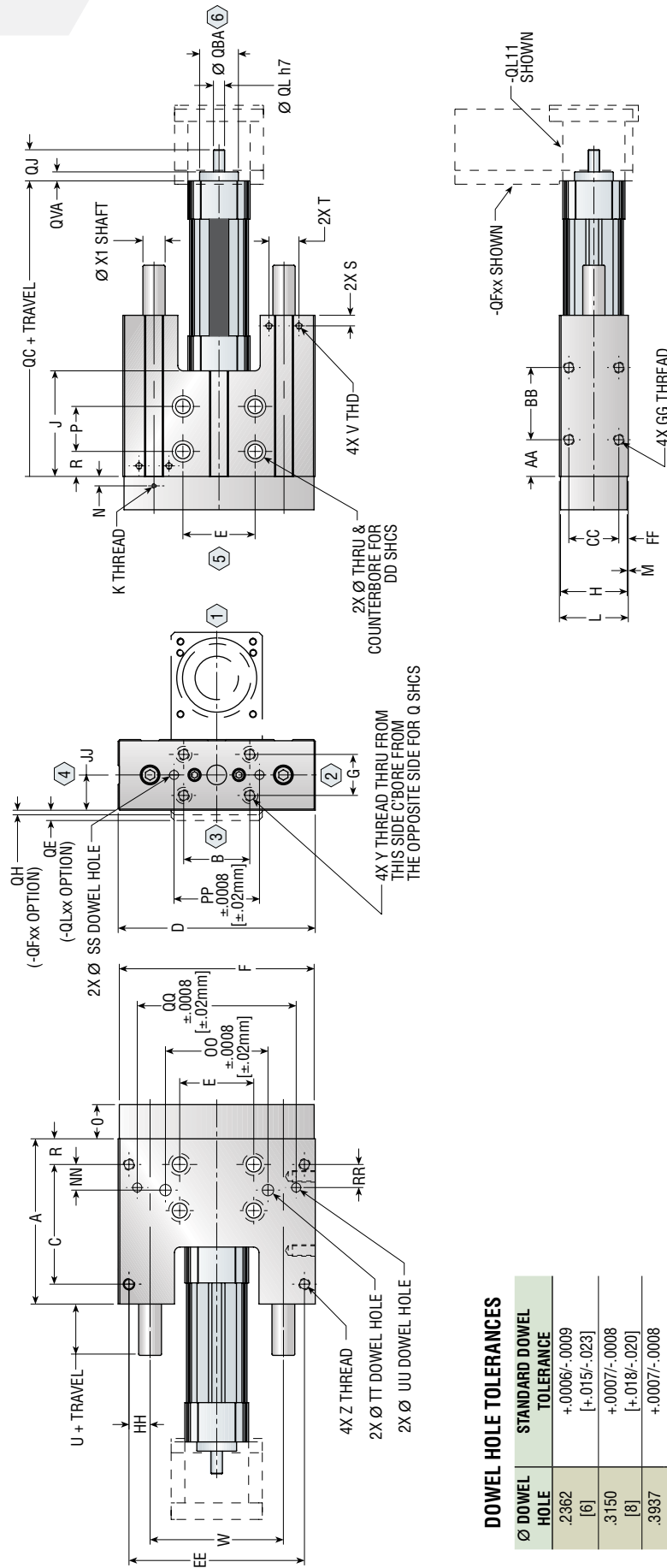
SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	O	Q	R	S	T	U	V	W	X1	Y	Z
4	3.937	1.870	2.756	5.630	2.283	5.551	1.260	1.890	1.890	M4 x 0.7 x 11 mm DP	1.988	.039	.399	.984	M6	.866	.320	1.062	1.772	M6 x 1.0 x 15 mm DP	3.819	.630	M8 x 1.25	M8 x 1.25 x 16 mm DP
	[100]	[47.5]	[70]	[143]	[58]	[141]	[32]	[48]	[48]		[50.5]	[1]	[10.1]	[25]		[22]	[8.1]	[27.0]	[45]		[97]	[16]		
	4.528	2.283	2.480	6.811	2.559	6.732	1.417	2.362	2.165	M4 x 0.7 x 11 mm DP	2.441	.039	.335	1.181	M8	.886	.374	1.062	1.772	M6 x 1.0 x 15 mm DP	4.606	.787	M10 x 1.5	M10 x 1.5 x 19 mm DP
5	[115]	[58]	[63]	[173]	[65]	[171]	[36]	[60]	[55]		[62]	[1]	[8.5]	[30]		[22.5]	[9.5]	[27.0]	[45]		[117]	[20]		
	5.906	2.559	3.937	8.465	3.150	8.386	1.772	2.756	2.598	M4 x 0.7 x 11 mm DP	2.874	.059	.292	1.378	M10	1.004	.490	1.375	2.008	M8 x 1.25 x 16 mm DP	5.630	.984	M12 x 1.75	M12 x 1.75 x 20 mm DP
	[150]	[65]	[100]	[215]	[80]	[213]	[45]	[70]	[66]		[73]	[1.5]	[7.4]	[35]		[25.5]	[12.4]	[34.9]	[51]		[143]	[25]		

SIZE	AA	BB	CC	DD	EE	FF	GG	HH	NN	OO	PP	QQ	RR	SS	TT	UU	JJ	QC	QVA	QL	QJ	QBA	QE	QH
4	1.240	2.283	1.417	M10	5.039	.276	M8 x 1.25 x 16 mm DP	.610	0.709	2.953	2.520	4.488	0.709	Ø.2362 x .315 DP	Ø.3150 x .315 DP	Ø.3150 x .315 DP	.984	7.795	.319	.984	2.362	1.178	.197	.236
	[31.5]	[58]	[36]		[128]	[7]		[15.5]	[18.0]	[75.0]	[64.0]	[114.0]	[18.0]	Ø 6 x 8 mm DP	Ø.3150 x .315 DP	Ø 8 x 8 mm DP	[25]	[198]	[8.1]	[25.0]	[6.0]	[29.9]	[5.0]	[6.0]
	1.299	2.559	1.772	M12	6.063	.335	M10 x 1.5 x 20 mm DP	.728	0.797	3.543	2.953	5.492	0.866	Ø.3150 x .315 DP	Ø.3937 x .394 DP	Ø 8 x 8 mm DP	1.220	8.895	.319	1.102	.3937	1.374	.158	.158
5	[33]	[65]	[45]		[154]	[8.5]		[18.5]	[20.25]	[90.0]	[75.0]	[139.5]	[22.5]	Ø 8 x 8 mm DP	Ø.3150 x .315 DP	Ø 10 x 10 mm DP	[31]	[226]	[8.1]	[28.0]	[10.0]	[34.9]	[4.0]	[4.0]
	1.752	2.559	1.969	M12	7.756	.453	M12 x 1.75 x 20 mm DP	1.063	1.496	—	3.543	7.756	—	Ø.3937 x .394 DP	Ø.3937 x .394 DP	Ø 8 x 8 mm DP	1.437	10.196	.359	1.364	.4724	1.912	.295	.295
	[44.5]	[65]	[50]		[197]	[11.5]		[27]	[38.0]	—	[90.0]	[197.0]	—	Ø 10 x 10 mm DP	Ø 10 x 10 mm DP	Ø 10 x 10 mm DP	[36.5]	[259]	[9.1]	[34.6]	[12.0]	[48.6]	[7.5]	[7.5]

**NOTES:**  
 1) NUMBERS SHOWN IN ◯ INDICATE SLIDE POSITIONS.  
 2) DIMENSIONS: -inch [mm]



# DIMENSIONS: SERIES ESL SLIDE



## DOWEL HOLE TOLERANCES

Ø DOWEL HOLE	STANDARD DOWEL TOLERANCE
.2362 [6]	+ .0006 / - .0009 [+ .015 / - .023]
.3150 [8]	+ .0007 / - .0008 [+ .018 / - .020]
.3937 [10]	+ .0007 / - .0008 [+ .018 / - .020]

SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X1	Y	Z
4	5.118 [130]	1.870 [47.5]	3.780 [96]	5.630 [143]	2.283 [58]	1.260 [32]	5.551 [141]	1.890 [48]	3.346 [85]	M4 x 0.7 x 11 mm DP	1.988 [50.5]	.039 [1]	.399 [10.1]	.984 [25]	1.417 [36]	M6	.866 [22]	.320 [8.1]	1.062 [27.0]	1.772 [45]	M6 x 1.0 x 15 mm DP	3.819 [97]	.630 [16]	M8 x 1.25	M8 x 1.25 x 16 mm DP
5	5.709 [145]	2.283 [58]	4.134 [105]	6.811 [173]	2.559 [65]	1.417 [36]	6.732 [171]	2.362 [60]	3.740 [95]	M4 x 0.7 x 11 mm DP	2.441 [62]	.039 [1]	.335 [8.5]	1.181 [30]	1.594 [40.5]	M8	.886 [22.5]	.374 [9.5]	1.062 [27.0]	1.772 [45]	M6 x 1.0 x 15 mm DP	4.606 [117]	.787 [20]	M10 x 1.5	M10 x 1.5 x 19 mm DP
6	7.874 [200]	2.559 [65]	5.906 [150]	8.465 [215]	3.150 [80]	1.772 [45]	8.386 [213]	2.756 [70]	4.567 [116]	M4 x 0.7 x 11 mm DP	2.874 [73]	.059 [1.5]	.292 [7.4]	1.378 [35]	2.165 [55]	M10	1.004 [25.5]	.490 [12.4]	1.375 [34.9]	2.008 [51]	M6 x 1.25 x 16 mm DP	5.630 [143]	.984 [25]	M12 x 1.75	M12 x 1.75 x 20 mm DP

SIZE	AA	BB	CC	DD	EE	FF	GG	HH	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	QJ	QA	QC	QE	QH
4	1.240 [31.5]	2.283 [58]	1.417 [36]	M10	5.039 [128]	.276 [7]	M8 x 1.25 x 16 mm DP	.610 [15.5]	0.709 [18.0]	2.953 [75.0]	2.520 [64.0]	4.488 [114.0]	0.709 [18.0]	Ø .2362 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP
5	1.299 [33]	2.559 [65]	1.772 [45]	M12	6.063 [154]	.335 [8.5]	M10 x 1.5 x 20 mm DP	.728 [18.5]	0.797 [20.25]	3.543 [90.0]	2.983 [75.0]	5.492 [139.5]	0.886 [22.5]	Ø .3150 x .315 DP	Ø .3937 x .394 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP
6	1.752 [44.5]	2.559 [65]	1.969 [50]	M12	7.756 [197]	.453 [11.5]	M12 x 1.75 x 20 mm DP	1.063 [27]	1.496 [38.0]	3.543 [90.0]	7.756 [197.0]	-	-	Ø .3937 x .394 DP	Ø .3937 x .394 DP	Ø .3937 x .394 DP	Ø .3937 x .394 DP	Ø .3937 x .394 DP	Ø .3937 x .394 DP	Ø .3937 x .394 DP	Ø .3937 x .394 DP	Ø .3937 x .394 DP	Ø .3937 x .394 DP	Ø .3937 x .394 DP	Ø .3937 x .394 DP	Ø .3937 x .394 DP

NOTES:  
 1) NUMBERS SHOWN IN ◊ INDICATE SLIDE POSITIONS.  
 2) DIMENSIONS: inch [mm]

# OPTIONS: SERIES ESK/ESL SLIDE

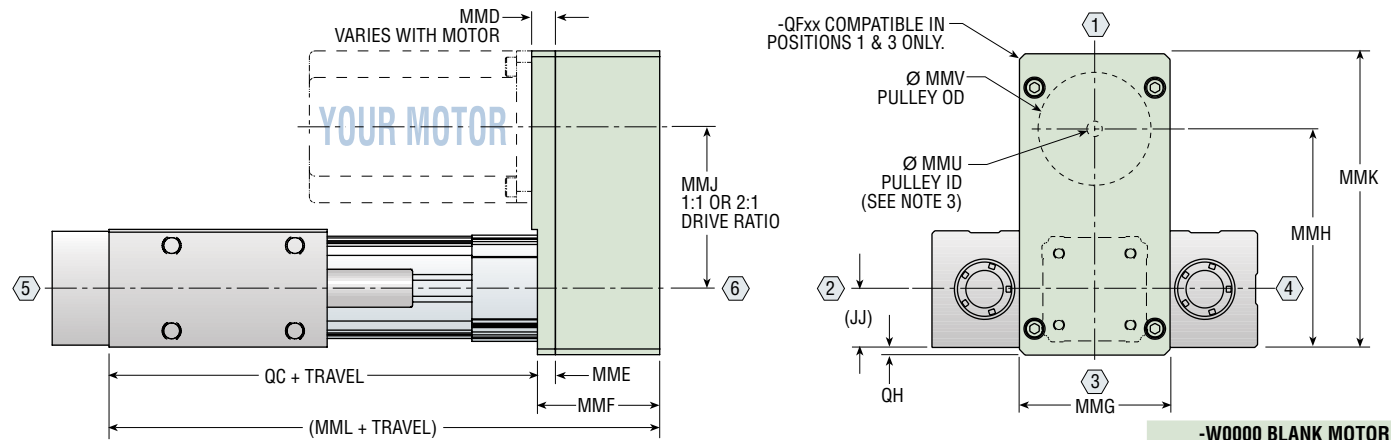
## QF11 FOLDBACK MOTOR MOUNTING WITH 1:1 DRIVE RATIO

## QF21 FOLDBACK MOTOR MOUNTING WITH 2:1 DRIVE RATIO

Foldback motor mounting with the QF11 option provides a 1:1 drive ratio allowing similar performance to the inline motor mounting in a shorter overall length. The QF21 option provides a 2:1 drive ratio reduction for applications that require higher thrust. If a blank motor mount is desired for special motor requirements, use -W0000 motor code to order a motor mount intended for customer modification. See page 12.



**E S K B 5 4 x 400 - RB010 - QF21 - Wxxxx**



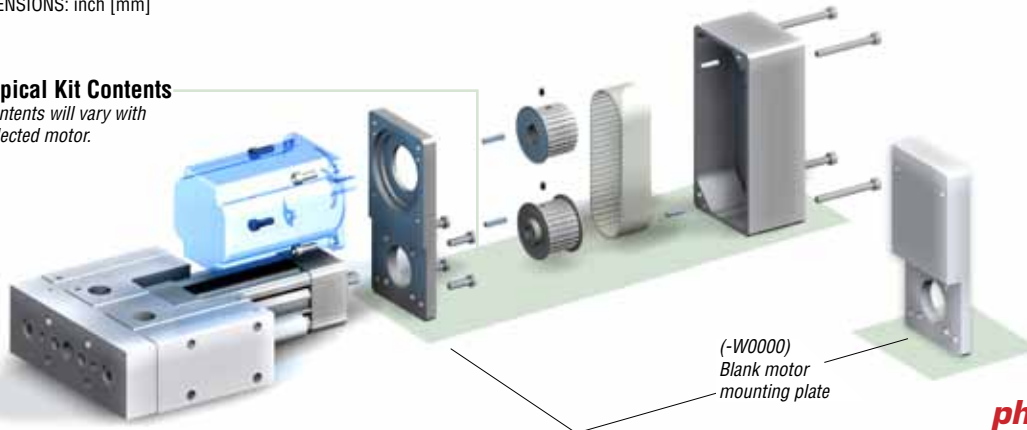
SIZE															-W0000 BLANK MOTOR MOUNTING							
	QC (ESKBxx)	QC (ESLBxx)	(JJ)	QH	MMD MIN	MMD MAX	MME	MMF	MMG	MMH 1:1	MMH 2:1	MMJ 1:1	MMJ 2:1	MMK	MML (ESKBxx)	MML (ESLBxx)	WEIGHT lb [kg]	MMD BLANK	MMU 1:1	MMU 2:1	MMV 1:1	MMV 2:1
4	7.795 [198]	9.251 [235]	.984 [25]	.236 [6.0]	.374 [9.5]	1.241 [31.5]	.374 [9.5]	2.185 [55.5]	2.480 [63.0]	3.838 [97.5]	3.760 [95.5]	2.854 [72.5]	2.776 [70.5]	5.078 [129.0]	9.980 [253.5]	11.436 [290.5]	2.25 [1.02]	.533 [13.5]	.236 [6.0]	.236 [6.0]	1.330 [33.8]	.892 [22.7]
5	8.895 [226]	10.470 [266]	1.220 [31]	.158 [4.0]	.374 [9.5]	.886 [22.5]	.374 [9.5]	2.539 [64.5]	3.150 [80.0]	4.570 [116.1]	4.250 [108]	3.350 [85.1]	3.303 [83.9]	6.145 [156.1]	11.434 [290.4]	13.009 [330.4]	3.74 [1.70]	.591 [15.0]	.315 [8.0]	.236 [6.0]	1.644 [41.8]	1.080 [27.4]
6	10.196 [259]	12.168 [309]	1.437 [36.5]	.295 [7.5]	.374 [9.5]	.886 [22.5]	.374 [9.5]	2.677 [68]	3.386 [86.0]	5.472 [139.0]	5.823 [148]	4.035 [102.5]	4.386 [111.4]	7.516 [190.9]	12.873 [327]	14.845 [377]	5.22 [2.37]	.591 [15.0]	.315 [8.0]	.236 [6.0]	1.644 [41.8]	1.330 [33.8]

**NOTES:**

- 1) YOUR MOTOR, YOUR WAY MOTOR MOUNT -QFxx IS PROVIDED IN KIT FORM TO ALLOW ASSEMBLY OF MOTOR TO SLIDE.
- 2) KITS INCLUDE DIRECTIONS AND ALL PARTS REQUIRED TO ASSEMBLE SLIDE BASED ON -Wxxxx CODE SUPPLIED BY CUSTOMER.
- 3) WHEN (-W0000) IS SPECIFIED, PULLEY ID IS SUPPLIED WITH UNFINISHED ID Ø MMU AND MOTOR MOUNTING PLATE IS SUPPLIED WITHOUT MOTOR MOUNTING FEATURES.
- 4) DIMENSIONS: inch [mm]

**Typical Kit Contents**

Contents will vary with selected motor.



[phdplus.phdinc.com](http://phdplus.phdinc.com)

ESK/ESL SLIDE



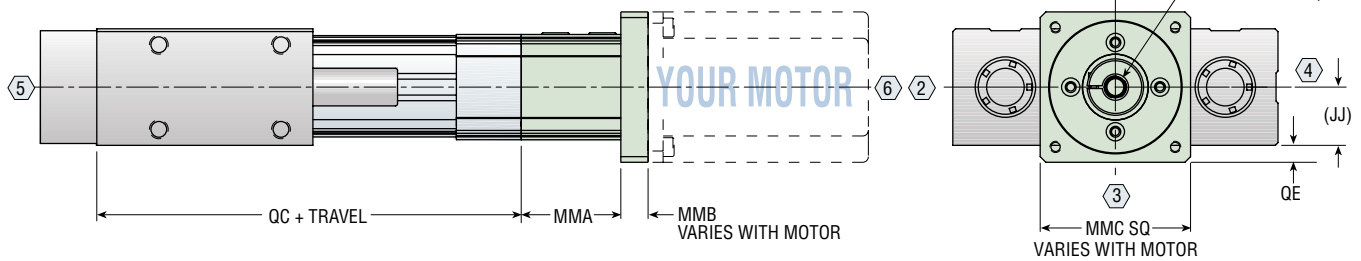
# OPTIONS: SERIES ESK/ESL SLIDE

## QL11 INLINE MOTOR MOUNTING WITH 1:1 DRIVE RATIO

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. If a blank motor mount is desired for special motor requirements, use -W0000 motor code to order a motor mount intended for customer modification. See page 12.



**E S K B 5 4 x 400 - R B 0 1 0 - Q L 1 1 - W x x x x**

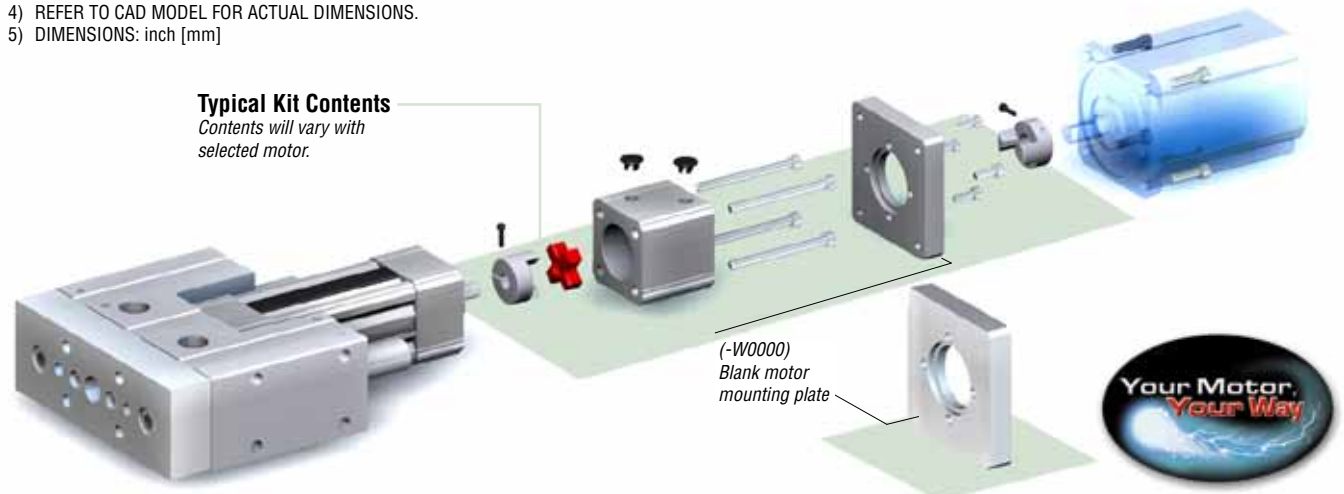


### -W0000 BLANK MOTOR MOUNTING

SIZE	QC (ESKBxx)	QC (ESLBxx)	(JJ)	QE	MMA	MMB MAX	MMB MIN	MMC		WEIGHT lb [kg]	MMB BLANK	MMT MIN	MMT MAX SHAFT ALLOWED
								STANDARD	OVERSIZE				
4	7.795 [198]	9.251 [235]	.984 [25]	.197 [5.0]	1.949 [49.5]	1.000 [25.4]	.335 [8.5]	2.362 [60.0]	2.756 [70.0]	1.00 [0.45]	.842 [21.4]	.157 [4.0]	.472 [12.0]
5	8.895 [226]	10.470 [266]	1.220 [31]	.158 [4.0]	2.087 [53.0]	1.400 [35.6]	.335 [8.5]	2.756 [70.0]	3.465 [88.0]	1.44 [0.65]	.890 [22.6]	.197 [5.0]	.630 [16.0]
6	10.196 [259]	12.168 [309]	1.437 [36.5]	.295 [7.5]	3.234 [82.1]	1.400 [35.6]	.335 [8.5]	3.465 [88.0]	4.331 [110.0]	3.00 [1.36]	1.181 [30.0]	.236 [6.0]	.945 [24.0]

#### NOTES:

- YOUR MOTOR, YOUR WAY MOTOR MOUNT -QL11 IS PROVIDED IN KIT FORM TO ALLOW ASSEMBLY OF MOTOR TO SLIDE.
- KITS INCLUDE DIRECTIONS AND ALL PARTS REQUIRED TO ASSEMBLE A SLIDE BASED ON -Wxxxx CODE SUPPLIED BY CUSTOMER.
- WHEN (-W0000) IS SPECIFIED, COUPLER ID IS SUPPLIED WITH UNFINISHED ID Ø MMT AND MOTOR MOUNTING PLATE IS SUPPLIED AT MMC "OVERSIZE" AND WITHOUT MOTOR MOUNTING FEATURES.
- REFER TO CAD MODEL FOR ACTUAL DIMENSIONS.
- DIMENSIONS: inch [mm]



[phdplus.phdinc.com](http://phdplus.phdinc.com)



All dimensions are reference only unless specifically tolerated.

PHDPLUS02

(800) 624-8511  
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# OPTIONS: SERIES ESK/ESL SLIDE

## Wxxxx MOTOR CODE

Your Motor, Your Way customizable motor mounting is generated by PHD's extensive motor database at [www.config.phdinc.com](http://www.config.phdinc.com). The user may select their compatible motor of choice from the pre-populated motor database. In the event the chosen motor is not in the database, they may enter necessary motor features to generate the PHD motor code.

The tailored motor mounting components are included with the specified driver and shipped in kit form. See page 12.

**E S K B 5 4 x 400 - RB010 - QL11 - Wxxxx**

## Q1 CORROSION RESISTANT GUIDE SHAFTS

Extremely hard corrosion-resistant coating on the guide shafts for use in applications where moisture may corrode untreated hardened and ground shafts. End faces of the shafts remain uncoated. Consult PHD for fully coated shafts.

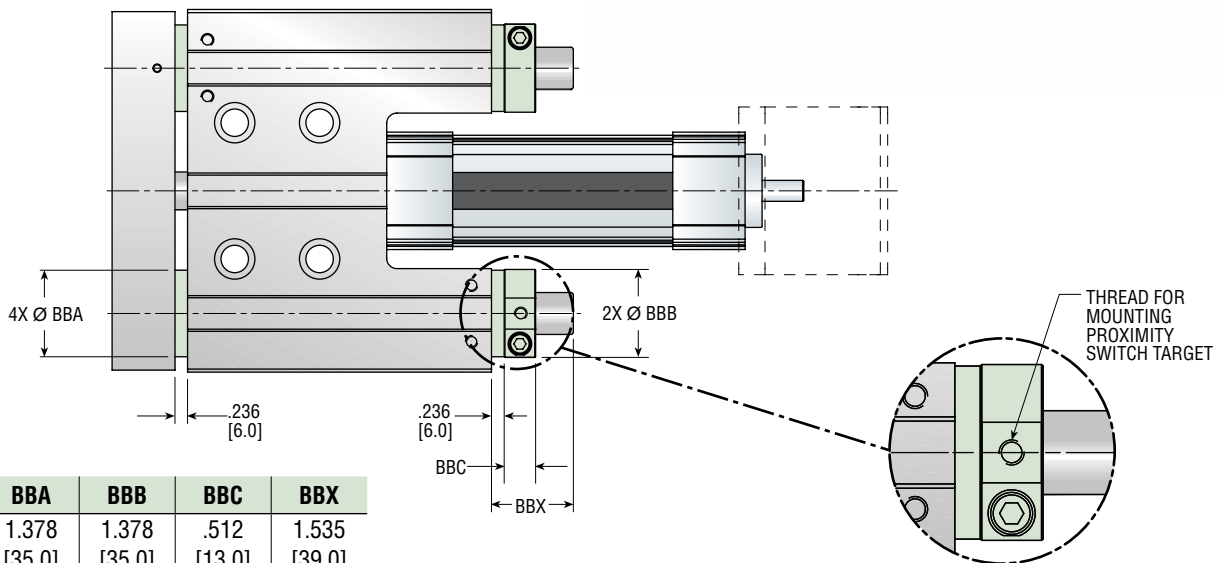
**E S K B 5 4 x 400 - RB010 - Q1 - QL11 - Wxxxx**

## G30 SHOCK PADS ON EXTENSION AND RETRACTION

This option provides urethane shock pads on retraction and extension for crash protection, eliminating metal-to-metal contact as the tool plate or stop collars reach the slide body. This option is not intended for travel adjustment.

The G30 option also includes one collar that allows the addition of a proximity switch target. This option is required when proximity switches are desired on extend.

**E S K B 5 4 x 400 - RB010 - G30 - QL11 - Wxxxx**



SIZE	BBA	BBB	BBC	BBX
4	1.378 [35.0]	1.378 [35.0]	.512 [13.0]	1.535 [39.0]
5	1.614 [41.0]	1.654 [42.0]	.591 [15.0]	1.535 [39.0]
6	1.870 [47.5]	1.890 [48.0]	.591 [15.0]	1.772 [45.0]

NOTE: DIMENSIONS: inch [mm]

# OPTIONS: SERIES ESK/ESL SLIDE

## J3 TRANSITION FIT DOWEL HOLES

This option provides a compromise fit between clearance and interference. Transitional fits are used where accuracy of location is important, but a small amount of clearance or interference is permissible.

**E S K B 5 4 x 400 - RB010 - J3 - QL11 - Wxxxx**

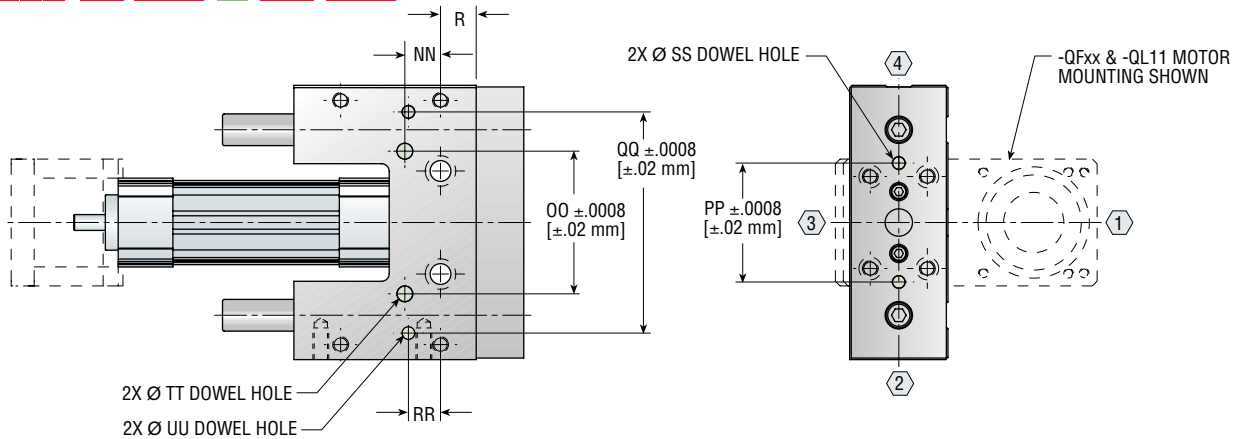


POSITION 3 SHOWN

## J8 PRECISION FIT DOWEL HOLES

This option provides an H7 tolerance precision fit with dowel pins. Precision fits are used where accuracy of location is of prime importance, and for parts requiring rigidity and alignment.

**E S K B 5 4 x 400 - RB010 - J8 - QL11 - Wxxxx**



SIZE	R	NN	OO	PP	QQ	RR	SS	TT	UU
4	.866	0.709	2.953	2.520	4.488	0.709	Ø .2362 x .315 DP	Ø .3150 x .315 DP	Ø .3150 x .315 DP
	[22]	[18.0]	[75.0]	[64.0]	[114.0]	[18.0]	[Ø 6 x 8 mm DP]	[Ø 8 x 8 mm DP]	[Ø 8 x 8 mm DP]
5	.886	0.797	3.543	2.953	5.492	0.886	Ø .3150 x .315 DP	Ø .3937 x .394 DP	Ø .3150 x .315 DP
	[22.5]	[20.25]	[90.0]	[75.0]	[139.5]	[22.5]	[Ø 8 x 8 mm DP]	[Ø 10 x 10 mm DP]	[Ø 8 x 8 mm DP]
6	1.004	1.496	-	3.543	7.756	-	Ø .3937 x .394 DP	-	Ø .3937 x .394 DP
	[25.5]	[38.0]	-	[90.0]	[197.0]	-	[Ø 10 x 10 mm DP]	-	[Ø 10 x 10 mm DP]

NOTE: DIMENSIONS: inch [mm]

Ø DOWEL HOLE	J3 OPTION TOLERANCE	J8 OPTION TOLERANCE
.2362	+0.015/-0.004	+0.005/-0.000
[6]	[+.038/-.011]	[+.012/-.000]
.3150	+0.016/-0.006	+0.006/-0.000
[8]	[+.041/-.016]	[+.015/-.000]
.3937	+0.016/-0.006	+0.006/-0.000
[10]	[+.041/-.016]	[+.015/-.000]

NOTE: DIMENSIONS: inch [mm]

## H4 CYLINDER REPLACEMENT ONLY (WITHOUT SLIDE)

This option provides complete ECVA Cylinder replacement and motor mounting is included/excluded based on ordering specifications. If motor mounting is desired, a full unit description is required.

**E S K B 5 4 x 400 - RB010 - H4 - QL11 - Wxxxx**

## H11 SLIDE REPLACEMENT ONLY (WITHOUT CYLINDER)

This option provides the slide mechanism only without cylinder or motor mounting. Included with option -H11 is all the hardware required for mounting standard PHD Series ECVA Cylinders or pneumatic standard VDMA/ISO cylinders to the slide. A self-aligning rod coupling is also provided, making it easy to attach the appropriate VDMA/ISO cylinder. (No extra rod extension required.)

**E S K B 5 4 x 400 - RB010 - H11 - QL11 - Wxxxx**

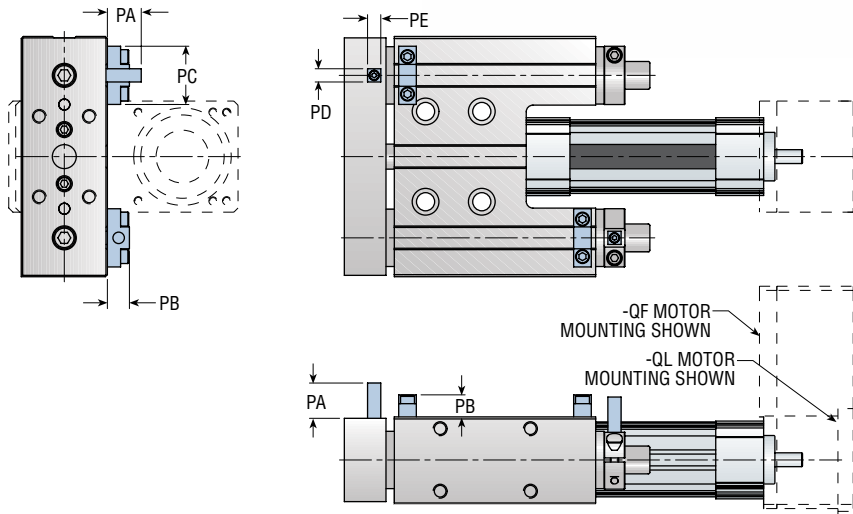
# ACCESSORIES: SERIES ESK/ESL SLIDE

## PROXIMITY SWITCH BRACKET & TARGET KITS

Each kit contains a bracket, target, and hardware for mounting one 8 mm or 12 mm threaded proximity switch on an ESK or ESL Slide. Switches must be ordered separately.



SIZE	STANDARD PLATING		CORROSION RESISTANT	
	8 mm	12 mm	8 mm	12 mm
4	56848-02	65561-03-1	58243-02	65561-03-2
5	56848-03	65561-03-1	58243-03	65561-03-2
6	56848-04	65561-04-1	58243-04	65561-04-2



8 mm PROXIMITY SWITCH MOUNTING

SIZE	PA	PB	PC	PD	PE
4	1.004 [25.5]	.630 [16.0]	1.654 [42.0]	.374 [9.5]	.374 [9.5]
5	1.004 [25.5]	.630 [16.0]	1.654 [42.0]	.374 [9.5]	.374 [9.5]
6	1.083 [27.5]	.650 [16.5]	2.008 [51.0]	.374 [9.5]	.374 [9.5]

NOTE: DIMENSIONS: inch [mm]

12 mm PROXIMITY SWITCH MOUNTING

SIZE	PA	PB	PC	PD	PE
4	1.000 [25.4]	.886 [22.5]	1.496 [38.0]	.500 [12.7]	.374 [9.5]
5	1.000 [25.4]	.886 [22.5]	1.496 [38.0]	.500 [12.7]	.374 [9.5]
6	1.126 [28.6]	.886 [22.5]	2.008 [51.0]	.500 [12.7]	.374 [9.5]

NOTE: DIMENSIONS: inch [mm]

## INDUCTIVE PROXIMITY SWITCHES

Two models of inductive proximity switches are available for use with PHD Series ESK and ESL Slides (-G30 option required on extend).

PART NO.	DESCRIPTION
51422-005-02	8 mm Inductive Proximity Switch, NPN with 2 meter Cable
51422-006-02	8 mm Inductive Proximity Switch, PNP with 2 meter Cable
15561-001	12 mm Inductive Proximity Switch, NPN with 3 meter Cable
15561-002	12 mm Inductive Proximity Switch, PNP with 3 meter Cable
15561-003	12 mm Inductive Proximity Switch, AC 35-250 with 3 meter Cable



ESK/ESL SLIDE

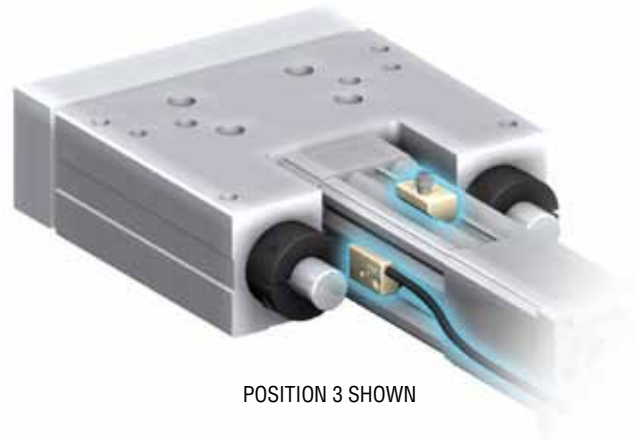
# ACCESSORIES: SERIES ESK/ESL SLIDE

## 6250 SOLID STATE SWITCHES

Cylinder comes standard with a magnet band for use with PHD miniature Reed and Solid State Switches listed below. These switches mount easily to the cylinder using any of the three "T" slots provided in the body.

### SERIES 6250 SOLID STATE SWITCHES

PART NO.	DESCRIPTION	COLOR
62505-1-02	NPN (Sink) DC Solid State, 2 m cable	Brown
62506-1-02	PNP (Source) DC Solid State, 2 m cable	Tan
62515-1	NPN (Sink) DC Solid State, Quick Connect	Brown
62516-1	PNP (Source) DC Solid State, Quick Connect	Tan



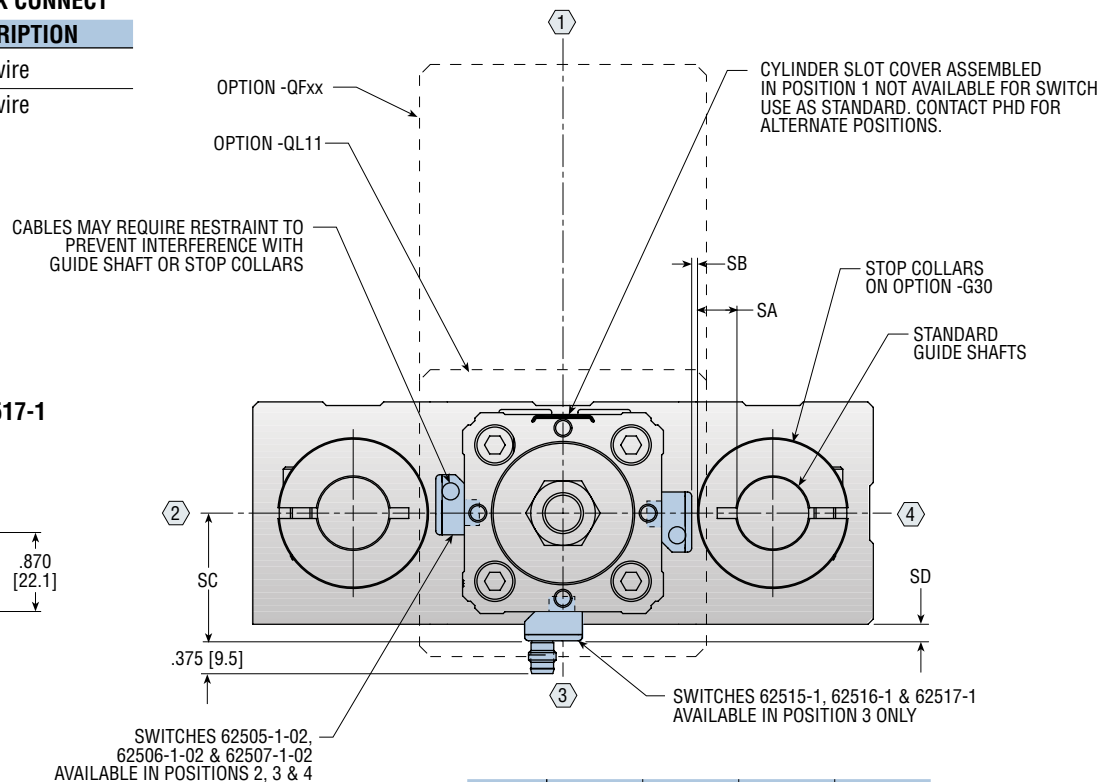
POSITION 3 SHOWN

### SERIES 6250 REED SWITCHES

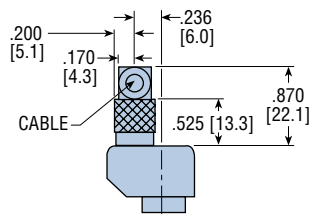
PART NO.	DESCRIPTION	COLOR
62507-1-02	AC/DC Reed, 2 m cable	Silver
62517-1	AC/DC Reed, Quick Connect	Silver

### CORDSETS WITH QUICK CONNECT

PART NO.	DESCRIPTION
61397-02	2 meter/3 wire
61397-05	5 meter/3 wire



### 62515-1, 62516-1 & 62517-1 Connector Detail



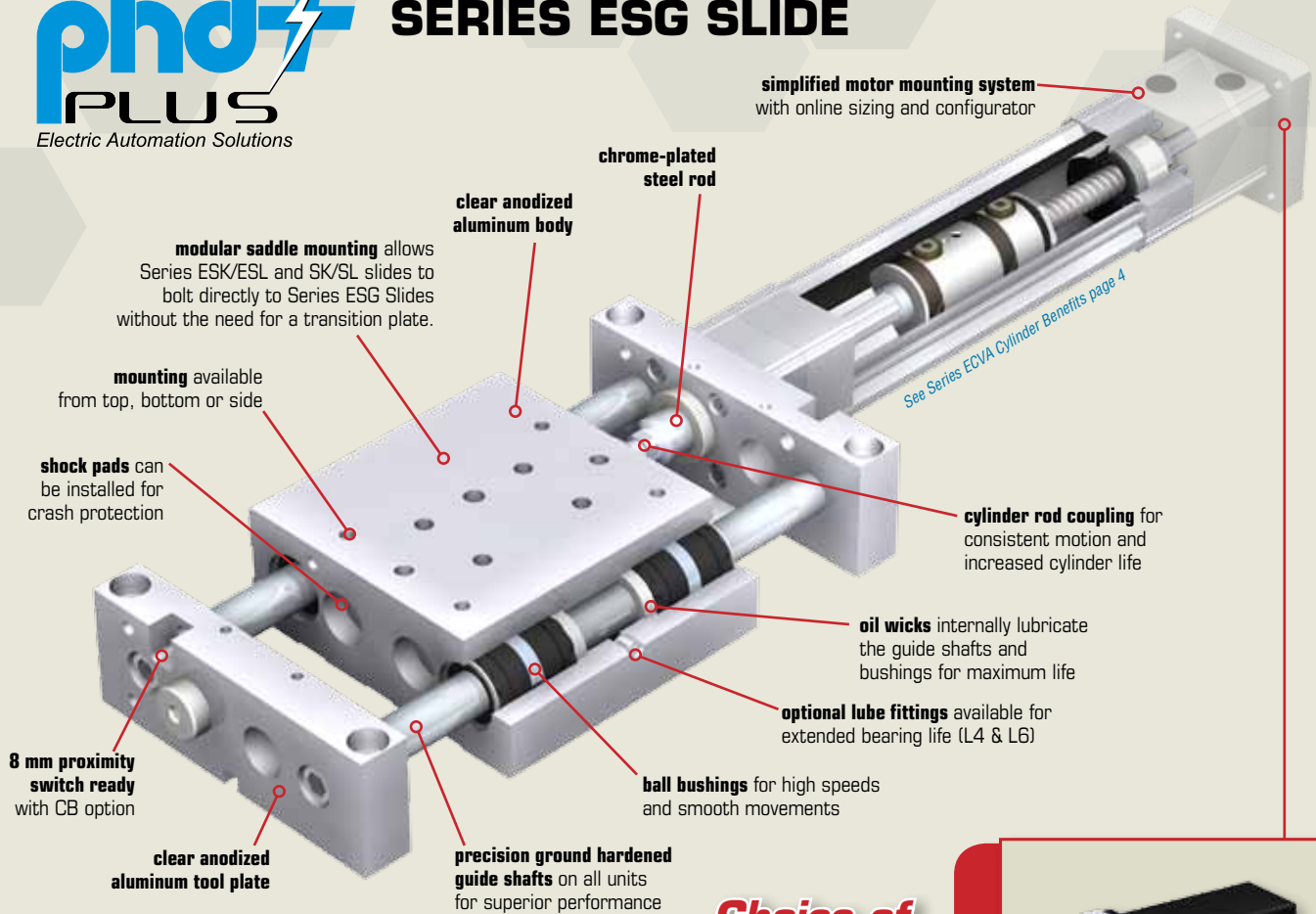
SIZE	SA	SB	SC	SD
4	.36 [9.1]	—	1.24 [31.5]	.25 [6.4]
5	.51 [13.0]	.05 [1.3]	1.40 [35.6]	.18 [4.6]
6	.73 [18.5]	.25 [6.4]	1.59 [40.4]	.16 [4.1]

NOTE: DIMENSIONS: inch [mm]

ESK/ESL SLIDE



# SERIES ESG SLIDE



## Major Benefits

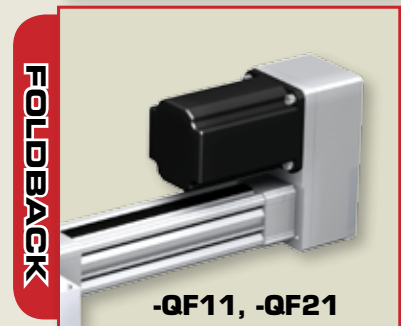
- Electrically driven gantry slide based on the proven PHD Series SG Slide
- Long travel, high load
- Standard travel up to 900 mm
- High thrust and speed capability
- Rigid construction
- Very high degree of repeatability
- High precision ball screw assemblies with long service life
- IP50 ingress protection
- Inline and foldback motor mounting flexibility
- *Your Motor, Your Way* for online configuration of motor mounting plates, with a database of electric motors from all major manufacturers
- Choice of options/accessories similar to pneumatic Series SG Slides
- Switch ready standard

## Applications

- Assembly
- Die cut
- Dispensing/filling
- Diverting
- Drilling
- Inspection/measurement
- Joining/fastening
- Labeling/marketing
- Part loading, sorting, clamping, positioning
- Tool change
- Valve control

## Choice of Inline or Foldback Motor Mounting

*Foldback available in 1:1 or 2:1 drive for tailored performance.*



# ORDERING DATA: SERIES ESG SLIDE

TO ORDER SPECIFY:

**E S G B 5 4 x 500 - RB010 - BB - L6 - QF21 - Wxxxx**

**SIZE ECVA**

4	32
5	40
6	40

**SCREW CONFIGURATION**

SIZE	LEAD* mm
4	RB005 - 5 RB010 - 10
5	RB010 - 10 RB016 - 16
6	RB010 - 10 RB016 - 16

**MOTOR CONFIGURATION**

- QF11 - Foldback with 1:1 ratio
- QF21 - Foldback with 2:1 ratio
- QL11 - Inline with 1:1 ratio

**MOTOR CODE**

- Wxxxx - Open architecture P/N code
- W0000 - Blank motor mount

**DESIGN NO.**  
5 - Metric

**TYPE**  
B - Ball Bushing

**SERIES**  
G - Gantry

**PRODUCT**  
S - Slide

**CLASSIFICATION**  
E - Electromechanical

**TRAVEL**  
50 mm minimum stroke in 50 mm increments

SIZE	MAX [mm]
4	500
5	600
6	900

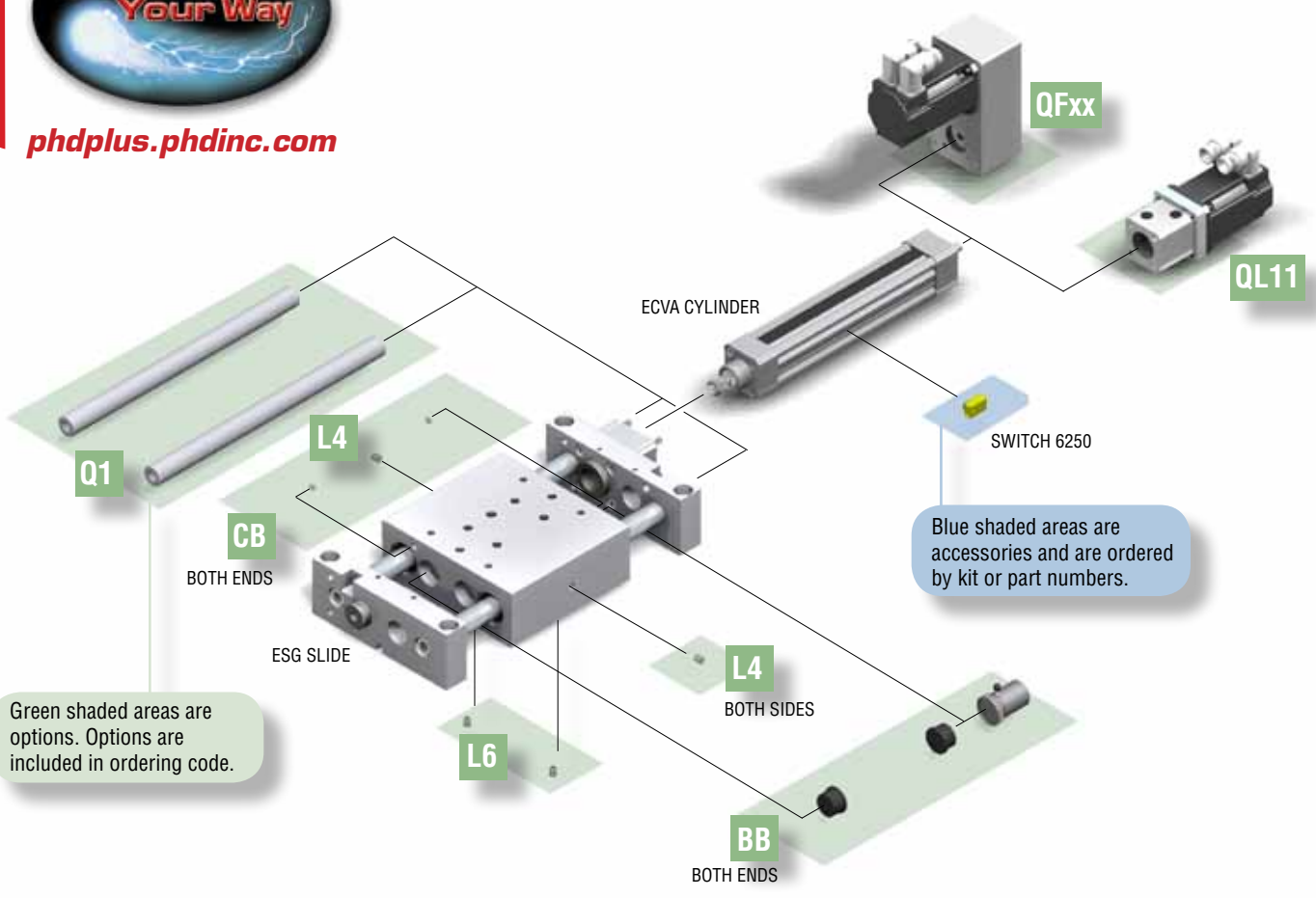
- OPTIONS**
- H4 - Cylinder replacement only
  - H11 - Without cylinder option
  - CB - Proximity switch ready on both ends
  - BB - Shock pads on extension and retraction
  - L4 - Lube fitting in saddle port position 2 and 4
  - L6 - Lube fitting in saddle port position 3
  - Q1 - Corrosion resistant guide shafts (both ends unplated)

\*See engineering data page for drive screw selection.

**No Code - No motor mount**



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Green shaded areas are options. Options are included in ordering code.

Blue shaded areas are accessories and are ordered by kit or part numbers.

**ESG SLIDE**

# ENGINEERING DATA: SERIES ESG SLIDE

SPECIFICATIONS	SERIES ESG
REPEATABILITY <sup>1</sup>	±0.0004 in [±0.010 mm]
MAXIMUM BACKLASH <sup>2</sup>	0.007 in [0.18 mm]
RATED LIFE	Refer to Life vs. Thrust Chart
FULL TRAVEL TOLERANCE <sup>3</sup>	+0.138/-0.000 in [+3.5/-0.0 mm]
DUTY CYCLE	100%
OPERATING TEMPERATURE	40 - 150°F [4 - 65°C]
LUBRICATION INTERVAL <sup>3</sup>	Horizontal: 100 million in [2500 km], Vertical: 60 million in [1500 km]

SPECIFICATIONS		SERIES ESG SIZE						
		4		5		6		
MECHANICS	MAXIMUM TRAVEL in [mm]	19.69 [500]		23.62 [600]		35.43 [900]		
	DRIVE MECHANISM	Ball Screw						
	SCREW DIAMETER mm	12		16		16		
	SCREW CONFIGURATION	-RB005	-RB010	-RB010	-RB016	-RB010	-RB016	
	SCREW LEAD mm/rev	5	10	10	16	10	16	
	GUIDE SHAFT DIAMETER mm	16		20		25		
	GUIDE SHAFT BEARING TYPE	Ball Bushing						
SPEED <sup>4</sup>	MAXIMUM SPEED in/sec [mm/sec]	19.6 [500]	39.3 [1000]	39.3 [1000]	63.0 [1600]	39.3 [1000]	63.0 [1600]	
	MAXIMUM RPM rev/min	6000						
THRUST <sup>5</sup>	MAXIMUM THRUST lbf [N]	306 [1360]	153 [680]	546 [2430]	342 [1520]	546 [2430]	342 [1520]	
	NOMINAL THRUST <sup>6</sup> lbf [N]	90 [400]	74 [330]	285 [1270]	219 [975]	285 [1270]	219 [975]	
TORQUE	PERMISSIBLE DRIVE TORQUE <sup>7</sup> in-lb [Nm]	10.62 [1.20]		38.06 [4.30]		38.06 [4.30]		
	NO-LOAD TORQUE in-lb [Nm]	1.33 [0.15]		3.54 [0.40]		5.31 [0.60]		
WEIGHT	TOTAL @ ZERO STROKE (W <sub>OT</sub> ) lb [kg]	13.7 [6.21]		18.87 [8.56]		24.67 [11.19]		
	TOTAL LENGTH ADDER (W <sub>LT</sub> ) lb/in [kg/mm]	0.57 [0.010]		0.74 [0.132]		0.92 [0.0169]		
	MOVING @ ZERO STROKE (W <sub>OM</sub> ) lb [kg]	5.41 [2.45]		8.47 [3.84]		10.67 [4.89]		
	MOVING LENGTH ADDER (W <sub>LM</sub> ) lb/in [kg/mm]	0.038 [0.0006]		0.058 [0.0010]		0.058 [0.0010]		
INERTIA	ACTUATOR @ ZERO STROKE (J <sub>o</sub> ) lb-in <sup>2</sup> [kg-m <sup>2</sup> ]	0.010 [3.00 x 10 <sup>-6</sup> ]		0.051 [1.50 x 10 <sup>-5</sup> ]		0.051 [1.50 x 10 <sup>-5</sup> ]		
	LENGTH ADDER (J <sub>L</sub> ) lb-in <sup>2</sup> /in [kg-m <sup>2</sup> /mm]	0.0009 [9.85 x 10 <sup>-9</sup> ]		0.0025 [2.90 x 10 <sup>-8</sup> ]		0.0025 [2.90 x 10 <sup>-8</sup> ]		
	MOVING WEIGHT ADDER (J <sub>M</sub> ) lb-in <sup>2</sup> /lb [kg-m <sup>2</sup> /kg]	9.63 x 10 <sup>-4</sup> [6.21 x 10 <sup>-7</sup> ]	3.85 x 10 <sup>-3</sup> [2.48 x 10 <sup>-6</sup> ]	3.85 x 10 <sup>-3</sup> [2.48 x 10 <sup>-6</sup> ]	9.86 x 10 <sup>-3</sup> [6.36 x 10 <sup>-6</sup> ]	3.85 x 10 <sup>-3</sup> [2.48 x 10 <sup>-6</sup> ]	9.86 x 10 <sup>-3</sup> [6.36 x 10 <sup>-6</sup> ]	
	MOTOR CONFIGURATION (J <sub>o</sub> )	-QF11	0.048 [1.40 x 10 <sup>-5</sup> ]		0.161 [4.71 x 10 <sup>-5</sup> ]		0.161 [4.71 x 10 <sup>-5</sup> ]	
		-QF21	0.094 [2.75 x 10 <sup>-5</sup> ]		0.283 [8.28 x 10 <sup>-5</sup> ]		0.283 [8.28 x 10 <sup>-5</sup> ]	
-QL11		0.011 [3.14 x 10 <sup>-6</sup> ]		0.021 [6.11 x 10 <sup>-6</sup> ]		0.021 [6.11 x 10 <sup>-6</sup> ]		

## NOTES:

- UNIDIRECTIONAL AT MODERATE SPEEDS AND LOADS
- AXIAL FREE PLAY WHEN DRIVE SHAFT LOCKED
- REFER TO OPERATING INSTRUCTIONS FOR RE-LUBRICATION DETAILS
- REFER TO SPEED VS. TRAVEL CHART ON NEXT PAGE
- REFER TO LIFE VS. THRUST CHART ON NEXT PAGE
- 100 MILLION INCHES [2500 km] LIFE
- CORRESPONDS TO MAXIMUM THRUST
- FOR HOMING AND INCREASED APPLICATION FLEXIBILITY, INCLUDE EXTRA TRAVEL WHEN NECESSARY.
- ALL DIMENSIONS ARE FOR REFERENCE ONLY UNLESS SPECIFICALLY TOLERANCED.
- REFER TO ONLINE SIZING SOFTWARE FOR ACTUAL VALUES.

## WEIGHT AND INERTIAL CALCULATIONS:

TOTAL WEIGHT = W<sub>OT</sub> + (W<sub>LT</sub> x TRAVEL) + MOTOR MOUNT WEIGHT [reference pages 42 and 43]

TOTAL MOVING WEIGHT = W<sub>OM</sub> + (W<sub>LM</sub> x TRAVEL) + EXTERNAL PAYLOAD

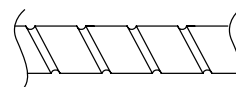
FOR -Qx11: INERTIA<sub>Reflected</sub> = J<sub>o</sub> + (J<sub>L</sub> x TRAVEL) + (J<sub>M</sub> x TOTAL MOVING WEIGHT) + J<sub>o</sub>

FOR -QF21: INERTIA<sub>Reflected</sub> = [J<sub>o</sub> + (J<sub>L</sub> x TRAVEL) + (J<sub>M</sub> x TOTAL MOVING WEIGHT)] / 4 + J<sub>o</sub>

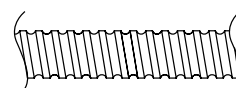
## RBxxx SCREW CONFIGURATION

The ball screw drive system of the Series ESG is available in two lead choices. This provides flexibility when matching velocity and load requirements to the application. Refer to product specifications and sizing software for performance parameters.

**E S G B 5 4 x 500 - RB010 - BB - L6 - QL11 - Wxxxx**



High lead for speed

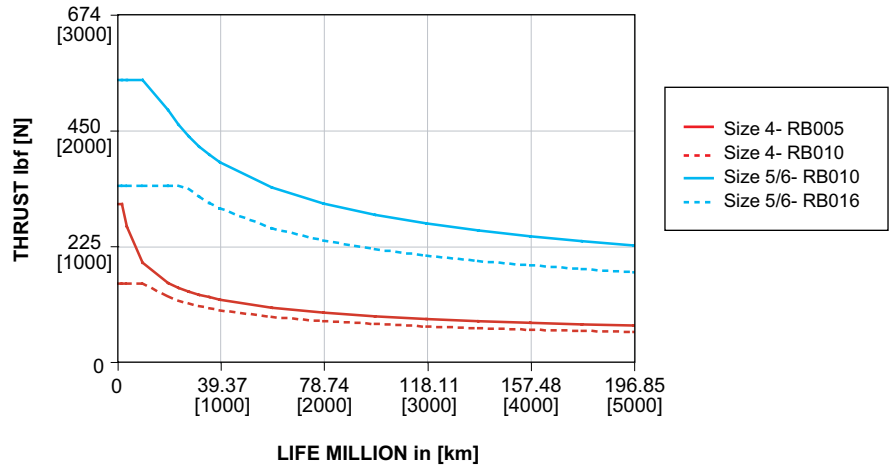


Low lead for thrust

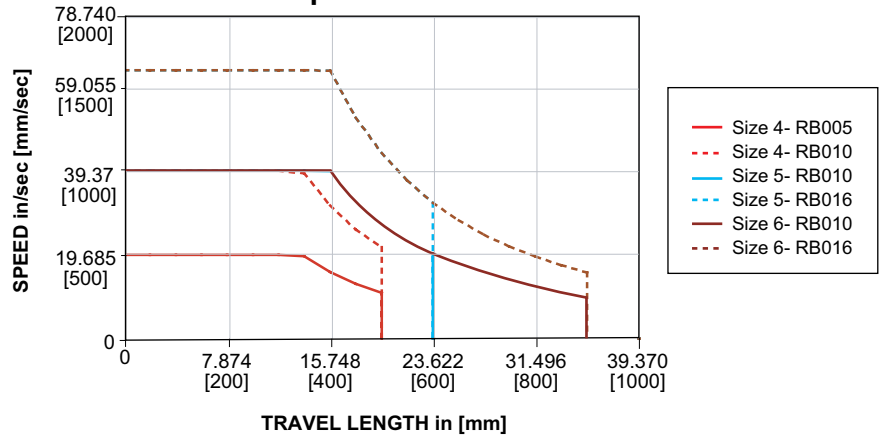
# PERFORMANCE CHARTS: SERIES ESG SLIDE

This section contains information on the capabilities of the Series ESG. It is not intended to be a comprehensive selection guide. To make the selection process simple and quick, refer to PHD's sizing software. You may request application assistance from your distributor or PHD's Customer Service Department. Use the Application Data Fax Sheet at the back of this catalog for application sizing.

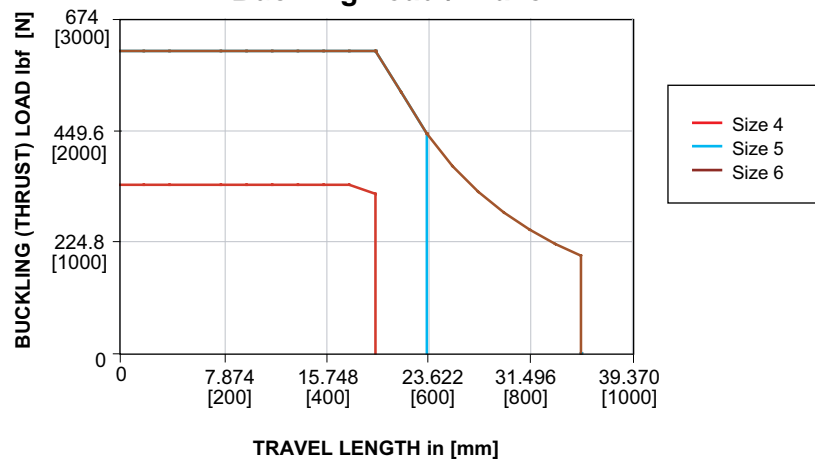
### Thrust / Life



### Speed / Travel

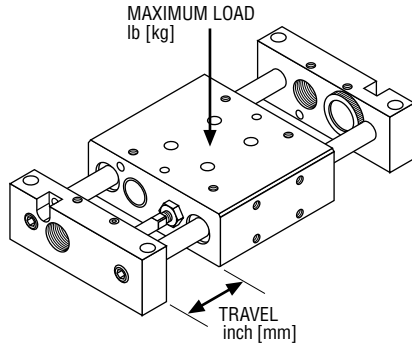


### Buckling Load / Travel



# PERFORMANCE CHARTS: SERIES ESG SLIDE

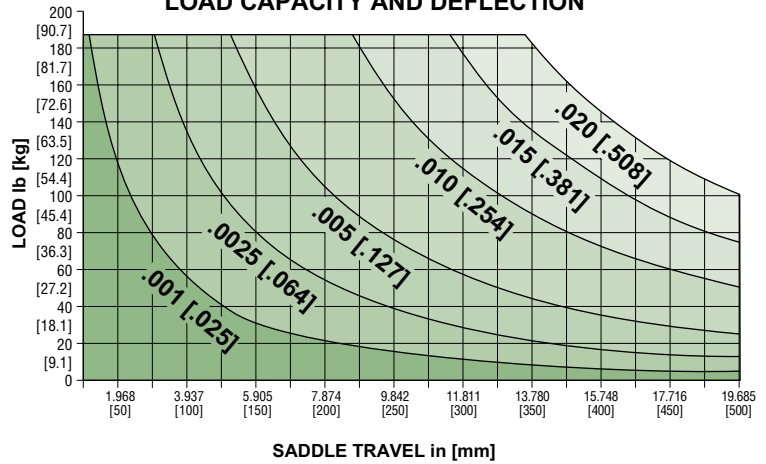
The deflection figures given in these charts are based on the effect of external loads. Shaft straightness, shaft weight, and bearing alignment will affect the accuracy of the saddle location. For torsional deflection calculations, see the SG Slide in the Product Sizing. Deflections shown are theoretical and reflect the performance of the unit at mid-travel. Deflections at ends of travel will be greatly reduced.



Horizontal load values are based on the load centered on the saddle as shown.

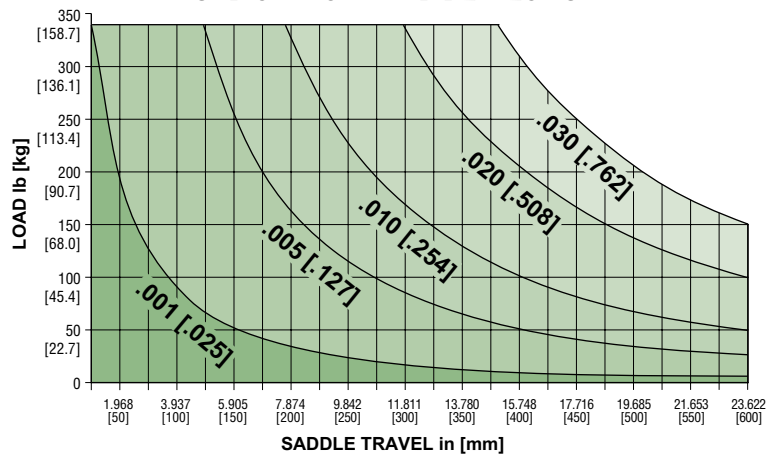
## ESGB54

### LOAD CAPACITY AND DEFLECTION



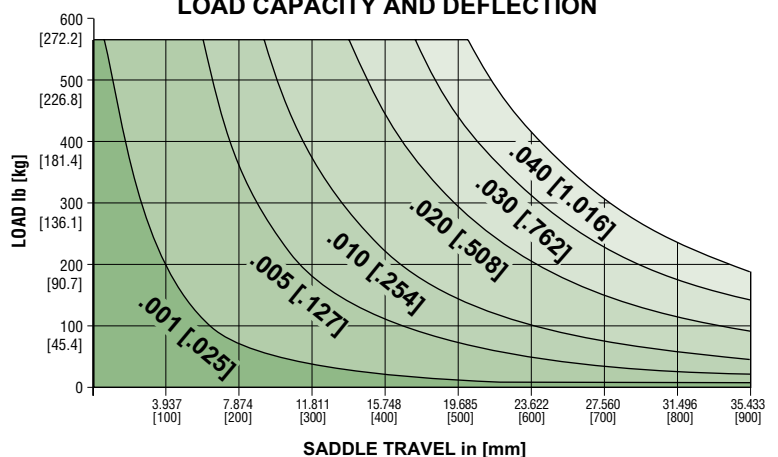
## ESGB55

### LOAD CAPACITY AND DEFLECTION



## ESGB56

### LOAD CAPACITY AND DEFLECTION

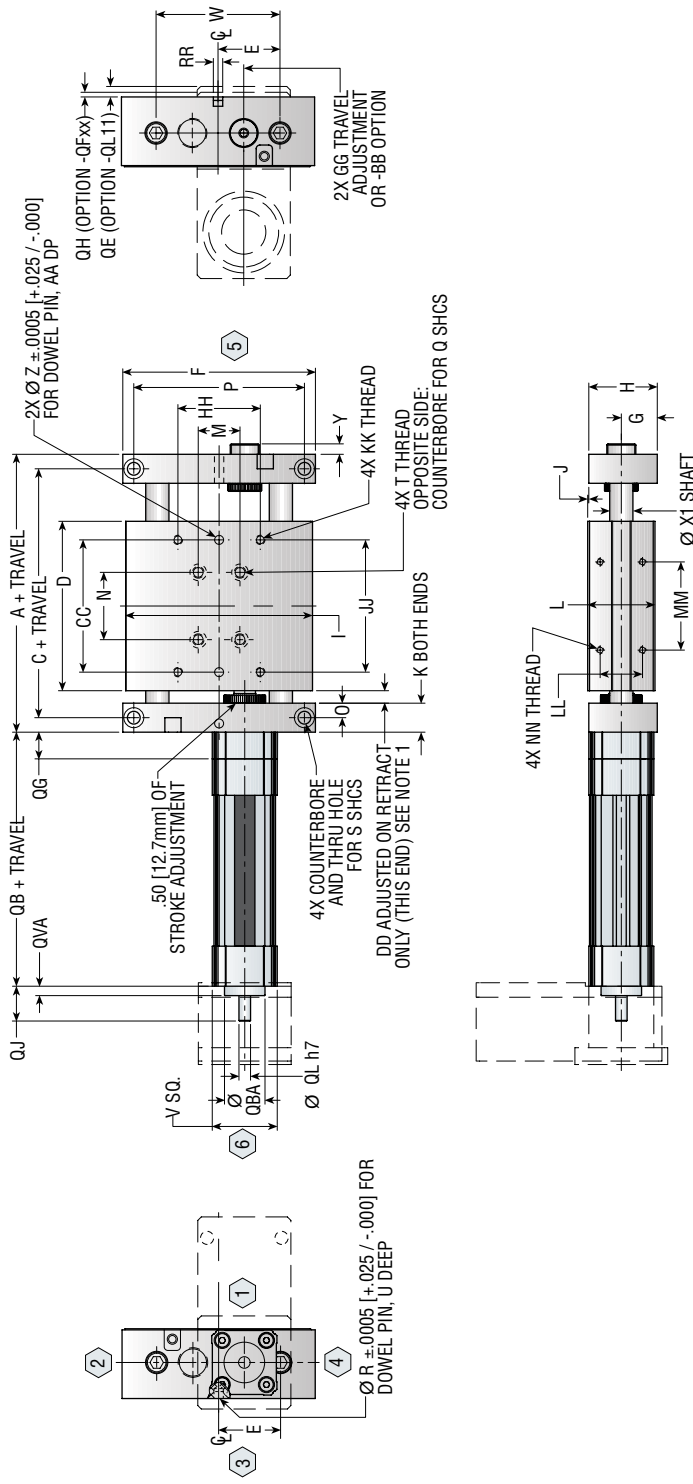


**NOTE:**  
LOAD VALUES ARE BASED ON SERVICE  
LIFE OF 1000 MILLION in [25000 km]

**ESG SLIDE**



# DIMENSIONS: SERIES ESG SLIDE



SIZE	A	QB	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
4	7.441 [189]	6.891 [175]	6.457 [164]	4.744 [120.5]	1.909 [48.5]	5.787 [147]	1.063 [27]	2.046 [52]	5.630 [14.3]	0.039 [1]	0.984 [25]	2.008 [51]	1.535 [39]	1.870 [47.5]	0.492 [12.5]	4.960 [126]	M8	0.3155 [8]	M8 x 25	0.236 [6]	0.236 [6]	1.949 [49.5]
5	8.445 [214.5]	7.635 [194]	7.461 [189.5]	5.748 [146]	2.096 [53.25]	6.536 [166]	1.220 [31]	2.323 [59]	6.338 [161]	0.039 [1]	0.984 [25]	2.283 [58]	1.417 [36]	2.284 [58]	0.492 [12.5]	5.790 [147]	M8	0.3155 [8]	M10 x 25	0.236 [6]	0.236 [6]	2.205 [56]
6	9.449 [240]	7.635 [194]	8.465 [215]	6.752 [171.5]	2.303 [58.5]	7.046 [179]	1.299 [33]	2.480 [63]	6.811 [173]	0.039 [1]	0.984 [25]	2.441 [62]	1.594 [40.5]	2.559 [65]	0.492 [12.5]	6.300 [160]	M10	0.3155 [8]	M12 x 25	0.236 [6]	0.236 [6]	2.205 [56]

SIZE	W	X1	Y	Z	AA	CC	DD	GG	HH	JJ	KK	LL	MM	NN	QVA	OBA	QE	QG	QH	QJ	QL	RR
4	3.819 [97]	0.630 [16]	.354 [9]	0.3155 [8]	0.49 [12.5]	3.956 [100.5]	0.335 [8.5]	1.142 [29.0]	2.658 [67.5]	3.956 [100.5]	M6 x 1.0 x 12	1.339 [34.0]	1.988 [50.5]	M6 x 1.0 x 9	0.319 [8.1]	1.178 [29.9]	0.118 [3.0]	0.158 [4.0]	0.985 [25.0]	0.984 [25.0]	0.236 [6.0]	.317 [8.05]
5	4.192 [106.5]	0.787 [20]	.354 [9]	0.3155 [8]	0.49 [12.5]	4.488 [114]	0.335 [8.5]	1.226 [31.1]	2.795 [71.0]	4.488 [114.0]	M8 x 1.25 x 12	1.437 [36.5]	2.992 [76.0]	M6 x 1.0 x 9	0.319 [8.1]	1.374 [34.9]	.158 [4.0]	0.158 [4.0]	0.905 [23.0]	1.102 [28.0]	0.394 [10.0]	.317 [8.05]
6	4.606 [117]	0.984 [25]	.354 [9]	0.3155 [8]	0.49 [12.5]	5.492 [139.5]	0.335 [8.5]	1.371 [34.8]	2.834 [72.0]	5.492 [139.5]	M10 x 1.5 x 15	1.437 [36.5]	3.996 [101.5]	M6 x 1.0 x 9	0.319 [8.1]	1.374 [34.9]	.079 [2.0]	0.079 [2.0]	0.905 [23.0]	1.102 [28.0]	0.394 [10.0]	.317 [8.05]

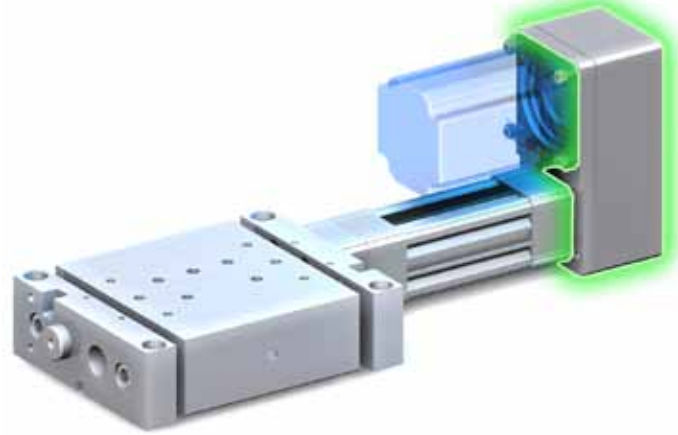
- NOTES:  
 1) DIMENSIONS SHOWN IN  $\varnothing$  INDICATE SLIDE POSITIONS.  
 2) DIMENSIONS: inch [mm]  
 3) DUE TO TRAVEL TOLERANCE ALLOWANCES, DIMENSION DD WILL NOT BE THE SAME ON BOTH ENDS OF THE UNIT.

# OPTIONS: SERIES ESG SLIDE

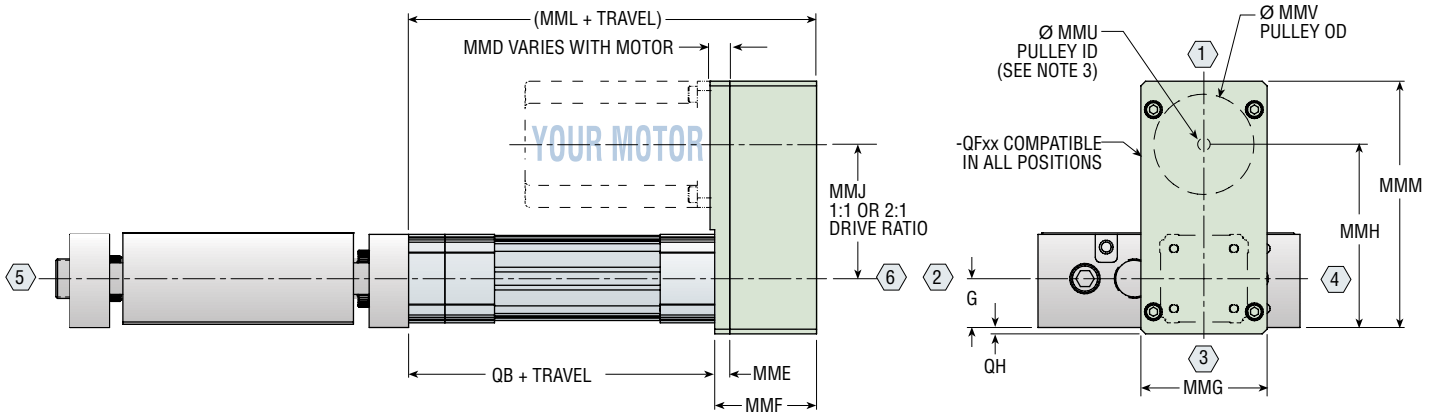
## QF11 FOLDBACK MOTOR MOUNTING WITH 1:1 DRIVE RATIO

## QF21 FOLDBACK MOTOR MOUNTING WITH 2:1 DRIVE RATIO

Foldback motor mounting with the QF11 option provides a 1:1 drive ratio allowing similar performance to the inline motor mounting in a shorter overall length. The QF21 option provides a 2:1 drive ratio reduction for applications that require higher thrust. If a blank motor mount is desired for special motor requirements, use -W0000 motor code to order a motor mount intended for customer modification. See page 12.



**E S G B 5 4 x 500 - RB010 - BB - L6 - QF21 - Wxxxx**



**-W0000 BLANK MOTOR MOUNTING**

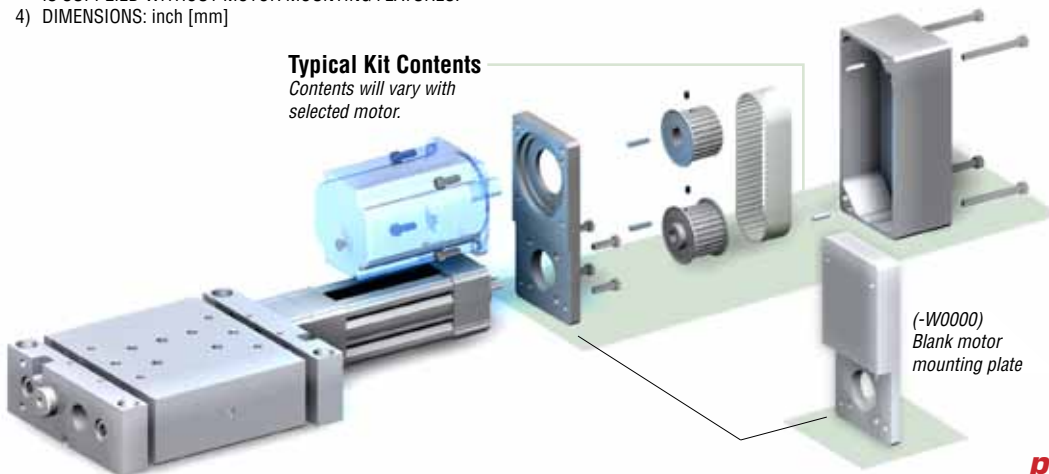
SIZE	QB	(G)	QH	MMD MIN	MMD MAX	MME	MMF	MMG	MMH 1:1	MMH 2:1	MMJ 1:1	MMJ 2:1	MMM	MML	WEIGHT lb [kg]	MMD BLANK	MMU 1:1	MMU 2:1	MMV 1:1	MMV 2:1
4	6.891 [175]	1.063 [27]	.157 [4.0]	.374 [9.5]	1.241 [31.5]	.374 [9.5]	2.185 [55.5]	2.480 [63.0]	3.917 [99.5]	3.839 [97.5]	2.854 [72.5]	2.776 [70.5]	5.157 [131.0]	9.08 [231]	2.25 [1.02]	.533 [13.5]	.236 [6.0]	.236 [6.0]	1.330 [33.8]	.892 [22.7]
5	7.635 [194]	1.221 [31]	.157 [4.0]	.374 [9.5]	.886 [22.5]	.374 [9.5]	2.539 [64.5]	3.150 [80.0]	4.571 [116.1]	4.524 [114.9]	3.350 [85.1]	3.303 [83.9]	6.146 [156.1]	10.17 [258.4]	3.74 [1.70]	.591 [15.0]	.315 [8.0]	.236 [6.0]	1.644 [41.8]	1.080 [27.4]
6	7.635 [194]	1.299 [33]	.079 [2.0]	.374 [9.5]	.886 [22.5]	.374 [9.5]	2.539 [64.5]	3.150 [80.0]	4.649 [118.1]	4.602 [116.9]	3.350 [85.1]	3.303 [83.9]	6.224 [158.1]	10.17 [258.4]	5.22 [2.37]	.591 [15.0]	.315 [8.0]	.236 [6.0]	1.644 [41.8]	1.080 [27.4]

**NOTES:**

- 1) YOUR MOTOR, YOUR WAY MOTOR MOUNT -QFxx IS PROVIDED IN KIT FORM TO ALLOW ASSEMBLY OF MOTOR TO SLIDE.
- 2) KITS INCLUDE DIRECTIONS AND ALL PARTS REQUIRED TO ASSEMBLE SLIDE BASED ON -Wxxxx CODE SUPPLIED BY CUSTOMER.
- 3) WHEN (-W0000) IS SPECIFIED, PULLEY ID IS SUPPLIED WITH UNFINISHED ID Ø MMU AND MOTOR MOUNTING PLATE IS SUPPLIED WITHOUT MOTOR MOUNTING FEATURES.
- 4) DIMENSIONS: inch [mm]

**Typical Kit Contents**

Contents will vary with selected motor.



(-W0000) Blank motor mounting plate



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**ESG SLIDE**

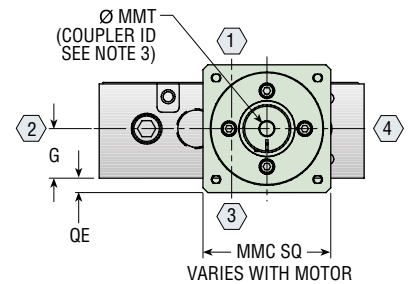
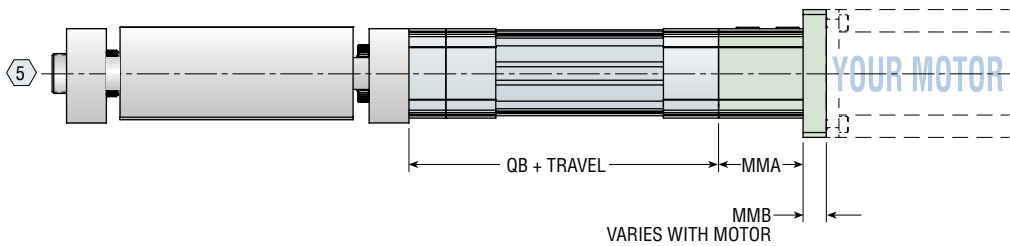
# OPTIONS: SERIES ESG SLIDE

## QL11 INLINE MOTOR MOUNTING WITH 1:1 DRIVE RATIO

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. If a blank motor mount is desired for special motor requirements, use -W0000 motor code to order a motor mount intended for customer modification. See page 12.



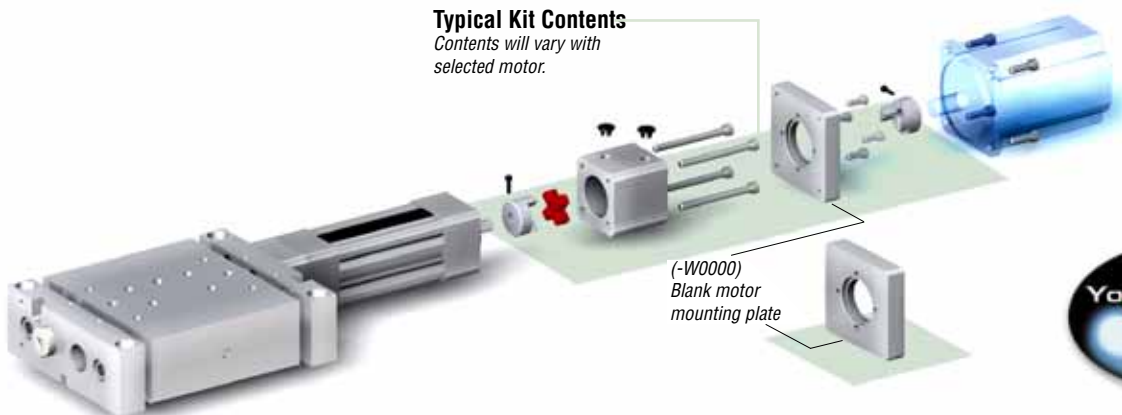
**E S G B 5 4 x 500 - RB010 - BB - L6 - QL11 - Wxxxx**



SIZE	QB	(G)	QE	MMA	MMB MAX	MMB MIN	MMC		WEIGHT lb [kg]	-W0000 BLANK MOTOR MOUNTING		
							STANDARD	OVERSIZE		MMB BLANK	MMT MIN	MMT MAX SHAFT ALLOWED
32	6.891 [175]	1.063 [27]	.118 [3.0]	1.949 [49.5]	1.000 [25.4]	.335 [8.5]	2.362 [60.0]	2.756 [70.0]	1.00 [0.45]	.842 [21.4]	.157 [4.0]	.472 [12.0]
40	7.635 [194]	1.221 [31]	.158 [4.0]	2.087 [53.0]	1.400 [35.6]	.335 [8.5]	2.756 [70.0]	3.465 [88.0]	1.44 [0.65]	.890 [22.6]	.197 [5.0]	.630 [16.0]
50	7.635 [194]	1.299 [33]	.079 [2.0]	2.087 [53.0]	1.400 [35.6]	.335 [8.5]	3.465 [88.0]	4.331 [110.0]	3.00 [1.36]	.890 [22.6]	.197 [5.0]	.630 [16.0]

### NOTES:

- YOUR MOTOR, YOUR WAY MOTOR MOUNT -QL11 IS PROVIDED IN KIT FORM TO ALLOW ASSEMBLY OF MOTOR TO SLIDE.
- KITS INCLUDE DIRECTIONS AND ALL PARTS REQUIRED TO ASSEMBLE A SLIDE BASED ON -Wxxxx CODE SUPPLIED BY CUSTOMER.
- WHEN (-W0000) IS SPECIFIED, COUPLER ID IS SUPPLIED WITH UNFINISHED ID Ø MMT AND MOTOR MOUNTING PLATE IS SUPPLIED AT MMC "OVERSIZE" AND WITHOUT MOTOR MOUNTING FEATURES.
- REFER TO CAD MODEL FOR ACTUAL DIMENSIONS.
- DIMENSIONS: inch [mm]



[phdplus.phdinc.com](http://phdplus.phdinc.com)



All dimensions are reference only unless specifically tolerated.

PHDPLUS02

(800) 624-8511  
phdplus.phdinc.com

# OPTIONS: SERIES ESG SLIDE

## Wxxxx MOTOR CODE

Your Motor, Your Way customizable motor mounting is generated by PHD's extensive motor database at [www.config.phdinc.com](http://www.config.phdinc.com). The user may select their compatible motor of choice from the pre-populated motor database. In the event the chosen motor is not in the database, they may enter necessary motor features to generate the PHD motor code.

The tailored motor mounting components are included with the specified driver and shipped in kit form. See page 12.

**E S G B 5 4 x 500 - RB010 - BB - L6 - QF21 - Wxxxx**

## Q1 CORROSION RESISTANT GUIDE SHAFTS

Extremely hard corrosion-resistant coating on the guide shafts for use in applications where moisture may corrode untreated hardened and ground shafts. End faces of the shafts remain uncoated. Consult PHD for fully coated shafts.

**E S G B 5 4 x 500 - RB010 - BB - Q1 - QL11 - Wxxxx**

## L4 LUBE FITTING IN SADDLE PORT POSITION 2 AND 4

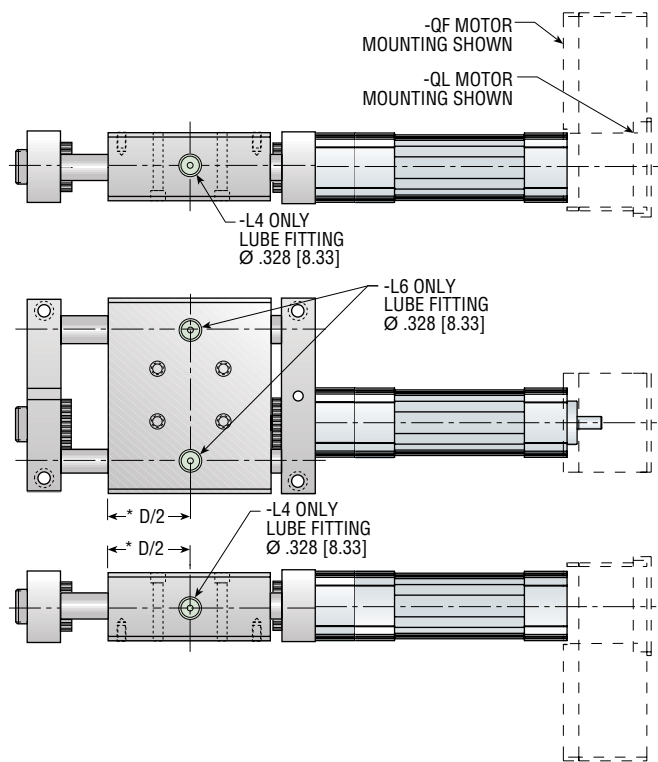
## L6 LUBE FITTING IN SADDLE PORT POSITION 3

Lube fittings provide an easy efficient method for lubricating the bearings and shafts for extended life beyond the normal catalog specifications. Periodic lubrication (every 25 million inches of travel [635 km]) is recommended for applications where heat, dust, or other conditions will dry out the bearings and shafts. PHD suggests a lightweight oil.

**NOTE: \*SEE CATALOG DIMENSIONS**

**E S G B 5 4 x 500 - RB010 - BB - L4 - QL11 - Wxxxx**

**E S G B 5 4 x 500 - RB010 - BB - L6 - QL11 - Wxxxx**



## H4 CYLINDER REPLACEMENT ONLY (WITHOUT SLIDE)

This option provides complete ECVA Cylinder replacement and motor mounting is included/excluded based on ordering specifications. If motor mounting is desired, a full unit description is required.

**E S G B 5 4 x 500 - RB010 - BB - H4 - QL11 - Wxxxx**

## H11 SLIDE REPLACEMENT ONLY (WITHOUT CYLINDER)

This option provides the slide mechanism only without cylinder or motor mounting. Included with option -H11 is all the hardware required for mounting standard PHD Series ECVA Cylinders or pneumatic standard VDMA/ISO cylinders to the slide. A self-aligning rod coupling is also provided, making it easy to attach the appropriate VDMA/ISO cylinder. (No extra rod extension required.)

**E S G B 5 4 x 500 - RB010 - BB - H11 - QL11 - Wxxxx**

# OPTIONS: SERIES ESG SLIDE

## BB SHOCK PADS BOTH DIRECTIONS

This option provides urethane shock pads on retraction and extension for crash protection, eliminating metal-to-metal contact as the saddle reaches physical end of travel. This -BB option does not affect the overall slide length.

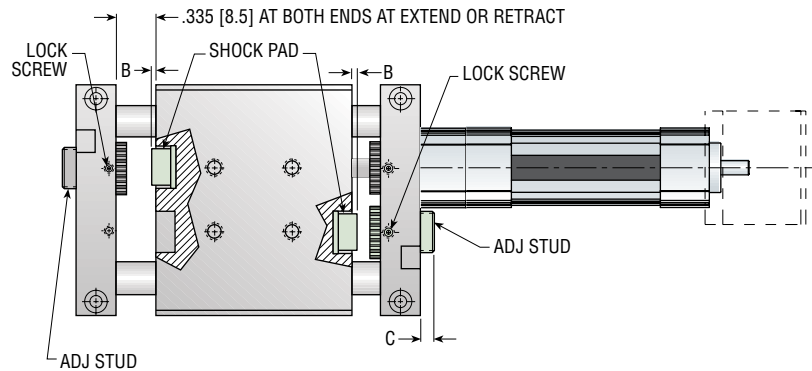


**E S G B 5 4 x 500 - RB010 - BB - L6 - QL11 - Wxxxx**

SIZE	B	C
4	.118 [3]	.354 [9]
5	.118 [3]	.354 [9]
6	.118 [3]	.354 [9]

**NOTES:**

- 1) DIMENSIONS: inch [mm]
- 2) LOCK SCREW TORQUE IS 30 in-lb [3.39 Nm].



## CB PROXIMITY SWITCH READY BOTH ENDS

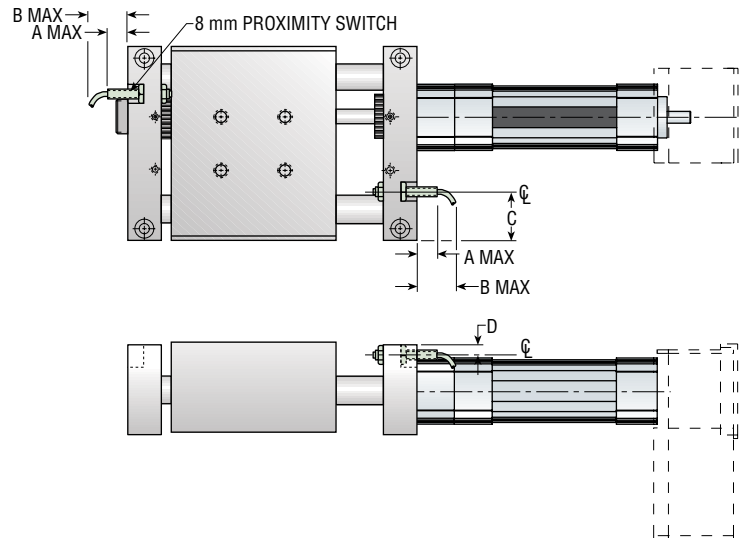
This option provides targets in the slide saddle for use with 8 mm inductive proximity switches. The end plates of the slide are standard with provisions for mounting the 8 mm proximity switches on both ends. Proximity switches must be ordered separately. See next page for switch information.



**E S G B 5 4 x 500 - RB010 - CB - L6 - QL11 - Wxxxx**

SIZE	A	B	C	D
4	.57 [14.5]	1.10 [28]	1.476 [37.5]	.354 [9]
5	.57 [14.5]	1.10 [28]	1.693 [43]	.315 [8]
6	.57 [14.5]	1.10 [28]	2.008 [51]	.315 [8]

**NOTE:** DIMENSIONS: inch [mm]





# ACCESSORIES: SERIES ESG SLIDE

## INDUCTIVE PROXIMITY SWITCHES

Inductive proximity switches are available for use with PHD Series ESG Slides (requires option -CB). See Switches and Sensors section of PHD's main catalog for complete switch specifications.



PART NO.	DESCRIPTION
51422-005-02	8 mm Inductive Proximity Switch, NPN with 2 meter Cable
51422-006-02	8 mm Inductive Proximity Switch, PNP with 2 meter Cable

## 6250 SOLID STATE SWITCHES

Cylinder comes standard with a magnet band for use with PHD miniature Reed and Solid State Switches listed below. These switches mount easily to the cylinder using any of the three "T" slots provided in the body.

### SERIES 6250 SOLID STATE SWITCHES

PART NO.	DESCRIPTION	COLOR
62505-1-02	NPN (Sink) DC Solid State, 2 m cable	Brown
62506-1-02	PNP (Source) DC Solid State, 2 m cable	Tan
62515-1	NPN (Sink) DC Solid State, Quick Connect	Brown
62516-1	PNP (Source) DC Solid State, Quick Connect	Tan



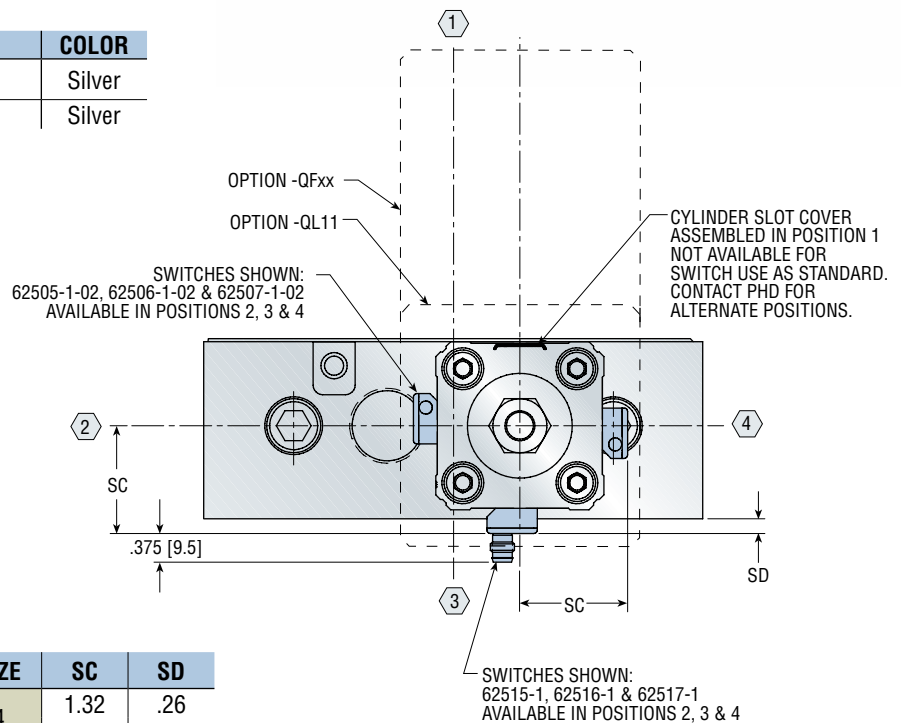
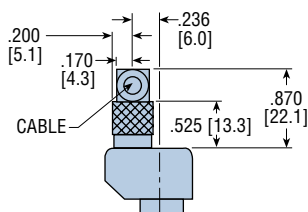
### SERIES 6250 REED SWITCHES

PART NO.	DESCRIPTION	COLOR
62507-1-02	AC/DC Reed, 2 m cable	Silver
62517-1	AC/DC Reed, Quick Connect	Silver

### CORDESETS WITH QUICK CONNECT

PART NO.	DESCRIPTION
61397-02	2 meter/3 wire
61397-05	5 meter/3 wire

### 62515-1, 62516-1 & 62517-1 Connector Detail



SIZE	SC	SD
4	1.32 [33.5]	.26 [6.6]
5	1.41 [35.9]	.19 [4.9]
6	1.41 [35.9]	.11 [2.8]

NOTE: DIMENSIONS: inch [mm]

# APPLICATION SIZING QUESTIONNAIRE:

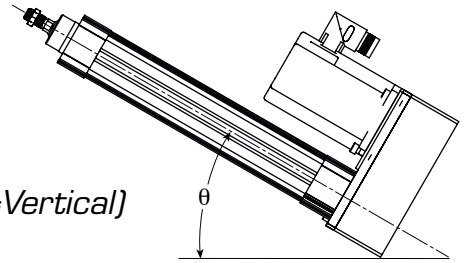
**Your Name:** \_\_\_\_\_ **Organization:** \_\_\_\_\_

**Project Name:** \_\_\_\_\_ **Contact Info:** \_\_\_\_\_

**Email:** \_\_\_\_\_ **Zip Code:** \_\_\_\_\_

For sizing application assistance, please fill out the following questionnaire and email (phdinfo@phdinc.com) or fax (260-479-2315) it to us. You can also size your application by using our online sizing software at [sizing.phdinc.com](http://sizing.phdinc.com).

- Actuator Type**
- ECVA Cylinder
  - ECVR Cylinder
  - ESK/ESL SLIDE
  - ESG SLIDE

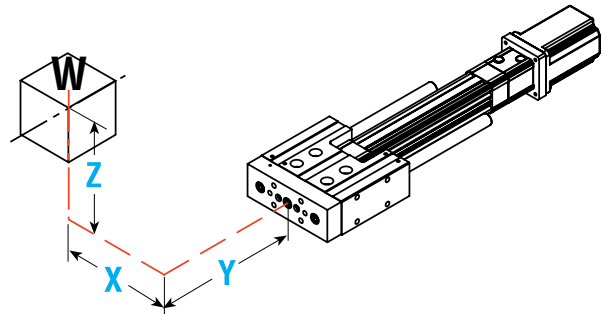


**Mounting Inclination** \_\_\_\_\_ [ $0^\circ$ =Horizontal/ $90^\circ$ =Vertical]

**Travel Length** \_\_\_\_\_ [in/mm]

**Payload (W)** \_\_\_\_\_ [lbf/kg]

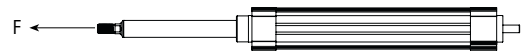
- Is the payload guided?**  YES  
 NO  
 (Unguided load may require selection of slide)



**Payload's C.G.**

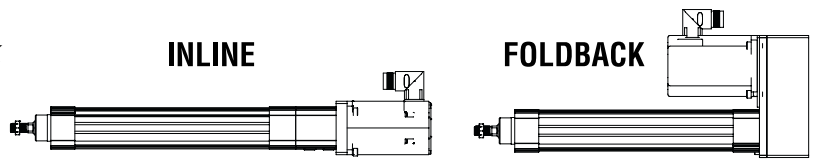
- offset (y)** \_\_\_\_\_  in  mm  
**offset (x)** \_\_\_\_\_  in  mm (only allowed on slides)  
**offset (z)** \_\_\_\_\_  in  mm (only allowed on slides)

**Axial Thrust Force (F)** \_\_\_\_\_ [lbf/N]



- Motor Mounting Style**  Inline  
 Foldback

- Foldback Gear Ratio**  1:1  
 2:1



**MOTION PROFILE:** Please include all the moves that make up one complete cycle.

	DISPLACEMENT	TOTAL TRAVEL TIME	ACCEL./DECCEL. TIME	PAYLOAD (W)	AXIAL THRUST (F)	DWELL/IDLE TIME
	in [mm]	seconds	seconds	lb [kg]	lbf [N]	seconds
HOME						
Move 1						
Move 2						
Move 3						
Move 4						

# MORE PHD ELECTRIC SOLUTIONS:

**Series EGRK Gripper**  
Standard



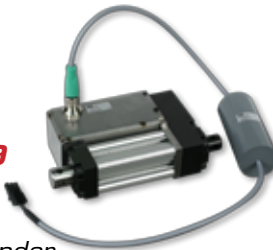
**Series EGRM Clamp**  
Standard



**ML311373**  
Ball Screw Driven Gripper



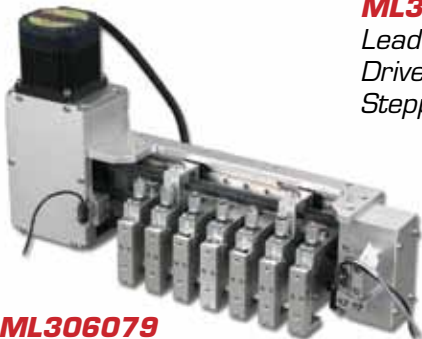
**ML311179**  
Lead Screw  
Driven  
Stepper Cylinder



**ML220914**  
IP67 Slide



**ML306079**  
Stepper Drive  
with Variable Pitch Pickhead



**ML310393**  
IP67 Belt Slide for  
Food Industry



**ML310629**  
Precision Guide  
Servo Gripper



**ML306440**  
SFP Slide with Lead  
Screw Drive



**ML301149**  
Belt Drive DC Gripper



**ML302711**  
3-Jaw DC Gripper



**PHD, Inc.**  
9009 Clubridge Drive  
P.O. Box 9070, Fort Wayne, Indiana 46899 U.S.A.  
Phone (260) 747-6151 • Fax (260) 747-6754  
www.phdinc.com • phdinfo@phdinc.com

**PHDinEurope GmbH**  
Arnold-Sommerfeld-Ring 2  
52499 Baesweiler, Germany  
Tel. +49 (0)2401 805 230 • Fax +49 (0)2401 805 232  
www.phdinc.com • info@PHDinEurope.de

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