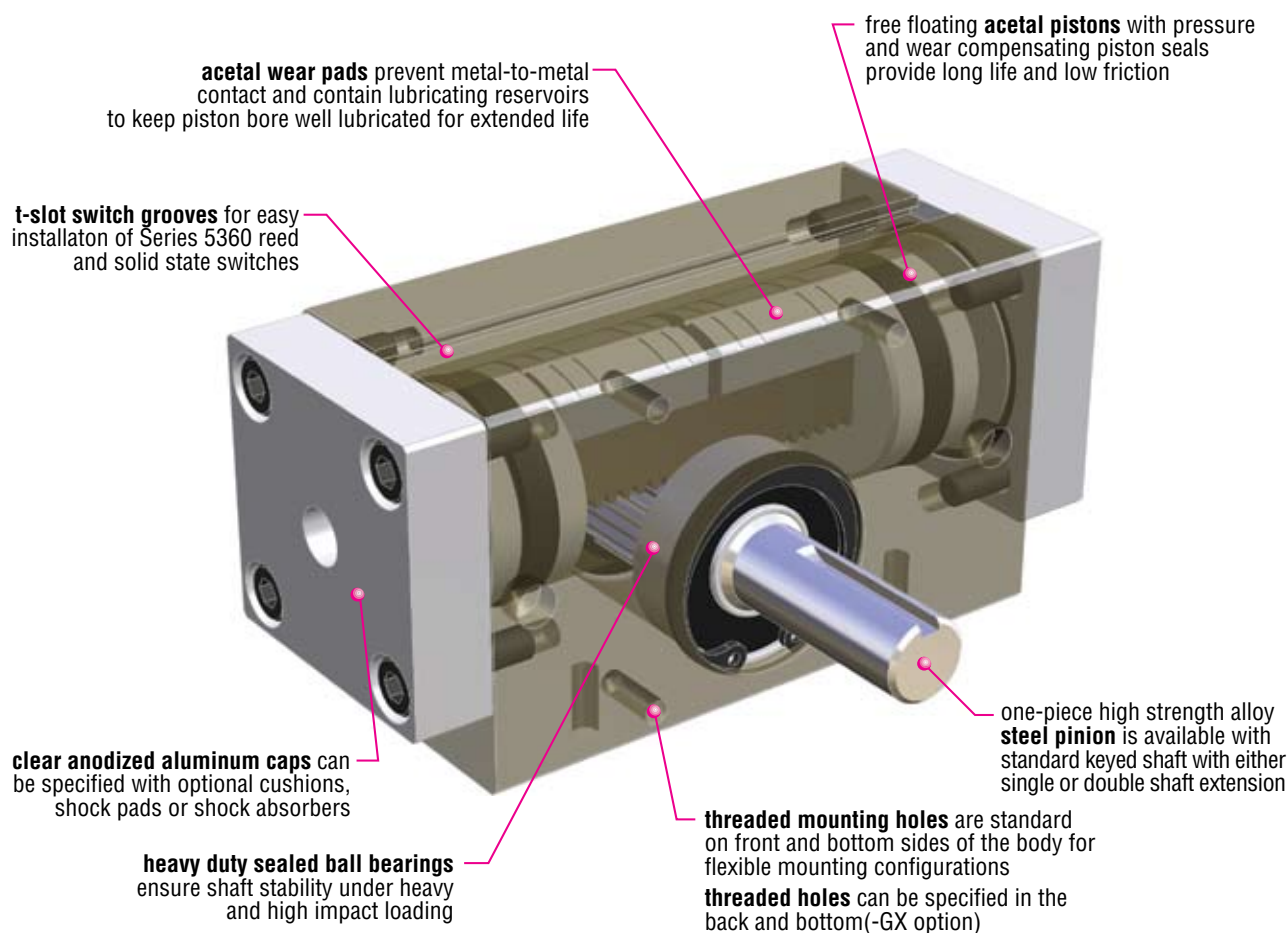


**LOW COST, HIGH TORQUE,
COMPACT SIZE**



RL

Major Benefits

- Low cost
- OEM style rotaries
- High axial & radial bearing load
- High torque/package size

Industry Uses

- Automotive
- Machine builders
- General industrial use
- Labeling/packaging

TO ORDER SPECIFY:

Product, Series, Type, Design No.,
Bore Size, Angle of Rotation,
and Options.

PRODUCT

R - Rotary Actuator

TYPE

S - 150 psi [10 bar] Air Max.

BORE SIZE

12 mm
16 mm
20 mm
25 mm
32 mm
40 mm
50 mm
63 mm

SHOCK ABSORBER

NB - Shock both directions
NC - Shock counterclockwise
NW - Shock clockwise
GS - Shock ready both directions
GT - Shock ready counterclockwise
GU - Shock ready clockwise
Shock absorber options not available on 12 mm, 16 mm, and 20 mm units.

SWITCH READY

E - Magnets for Series 5360 Solid State Hall Effect Switches
I - Magnets for Series 5360 Magnetoresistive Switches
M - Magnets for Series 5360 Reed Switches
Switches must be ordered separately. See notes 2, 3, 4, and option page.

MISCELLANEOUS

GX - Mounting holes in Positions 3 & 4 (Positions 2 & 3 standard)
Q13 - Double shaft extension
U4 - Port Position 2
U6 - Port Position 3
U8 - Port Position 4
-U options apply only to caps with angle adjustment or shock absorber options. Port Positions on all other caps are in Position 5.

R

L

S

1

40 x 180

NC

BW

AW

E

Q13

SERIES

L - Medium Duty

DESIGN NO.

1 - Imperial
5 - Metric

ANGLE OF ROTATION

45°, 90°, 135°, 180°,
225°, 270°

CUSHION CONTROL

DB - Cushion both directions
DC - Cushion counterclockwise
DW - Cushion clockwise
BB - Shock Pad both directions
BC - Shock Pad counterclockwise
BW - Shock Pad clockwise
Cushions and shock pads not available on same end of actuator. Shock pad options not available on 12 mm units.

ANGLE ADJUSTMENT

AB - 45° Angle Adjustment both directions
AC - 45° Angle Adjustment counterclockwise
AW - 45° Angle Adjustment clockwise

NOTES:

- 1) Shock pad and/or angle adjustment options not available in the same direction with cushion or shock absorber options.
- 2) -E option not available on 12 mm and 16 mm units.
- 3) -M option not available on 12 mm units and a minimum of 90° of rotation required for one switch and 135° of rotation for two switches on 16 mm units
- 4) -I option a minimum of 90° of rotation required on 12 mm and 16 mm bores.
- 5) For keyless hub adaptor kits, see accessories page.

SHOCK ABSORBER CHART	
BORE	PHD SHOCK ABSORBER NO.
25 mm	60335-04
32 mm	60335-05
40 mm	60335-06
50 mm	60335-06
63 mm	60335-07



UNIQUE ROTARY ACTUATORS
ARE AVAILABLE. SEE UNIQUE PRODUCTS
AT THE END OF THIS SECTION.

ENGINEERING DATA: SERIES RL ROTARY ACTUATORS

SPECIFICATIONS	SERIES RL
OPERATING PRESSURE	20 to 150 psi [1.4 to 10 bar]
OPERATING TEMPERATURE	-20° to 180°F [-29° to 82°C]
RATED LIFE	5 million cycles
ROTATIONAL TOLERANCE	Nominal rotation +15° to -0°
BACKLASH AT END OF ROTATION	1° 30' (12/16mm), 1° 0' (20/25mm) 0° 45' (32/40mm), 0° 30' (50/63mm)
LUBRICATION	Factory lubricated for rated life
MAINTENANCE	Field repairable

SIZE	ROTATION	BASE WEIGHT		BORE DIAMETER		DISPLACEMENT VOLUME/DEG		THEORETICAL TORQUE OUTPUT		ROTATIONAL VELOCITY MAX	MAX AXIAL BEARING LOAD		MAX RADIAL BEARING LOAD		DISTANCE BETWEEN BEARINGS	
		lb	kg	in	mm	in³/°	mm³/°	in-lb/psi	Nm/bar	deg/sec	lb	N	lb	N	in	mm
12	45°/90°	.3	.13													
	135°/180°	.4	.18	.472	12	.0005	8.19	.029	.05	180°/.03	26	115	165	734	.65	16.6
	225°/270°	.4	.18													
16	45°/90°	.4	.18													
	135°/180°	.5	.22	.630	16	.001	16.39	.062	.10	180°/.03	39	173	230	1023	.73	18.6
	225°/270°	.6	.27													
20	45°/90°	.7	.32													
	135°/180°	.8	.36	.787	20	.002	32.77	.122	.20	180°/.05	39	173	230	1023	.89	22.6
	225°/270°	.9	.41													
25	45°/90°	1.1	.50													
	135°/180°	1.2	.54	.984	25	.004	65.55	.228	.37	180°/.05	110	489	320	1423	1.11	28.1
	225°/270°	1.4	.64													
32	45°/90°	1.7	.77													
	135°/180°	2.0	.91	1.260	32	.008	131.10	.468	.77	180°/.05	160	711	390	1734	1.28	32.6
	225°/270°	2.3	1.04													
40	45°/90°	2.6	1.17													
	135°/180°	3.3	1.49	1.575	40	.017	278.58	.974	1.60	180°/.06	184	818	420	1868	1.60	40.6
	225°/270°	4.3	1.95													
50	45°/90°	5.2	2.36													
	135°/180°	6.0	2.72	1.969	50	.032	524.39	1.826	2.99	180°/.075	285	1267	660	2935	1.93	49.1
	225°/270°	6.9	3.13													
63	45°/90°	9.2	4.17													
	135°/180°	10.5	4.76	2.480	63	.063	1032.38	3.624	5.94	180°/.075	450	2001	925	4114	2.52	64.1
	225°/270°	12.3	5.57													

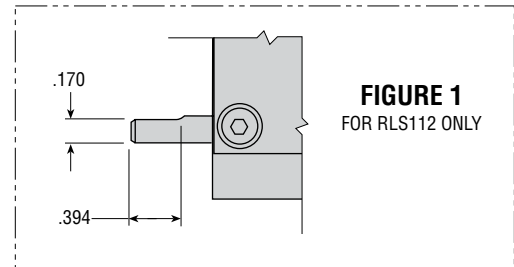
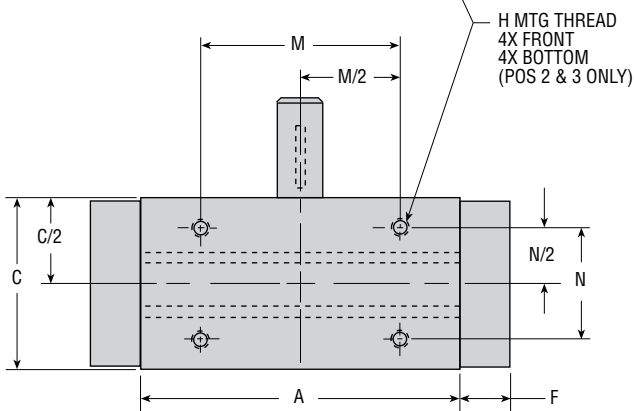
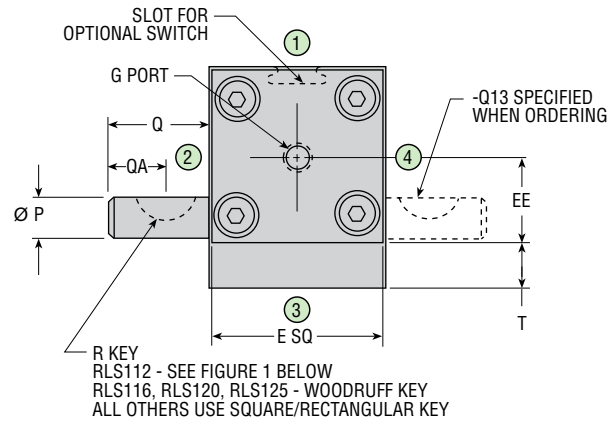
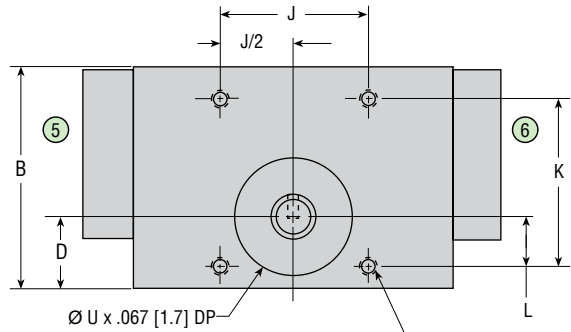
RL

SIZING AND APPLICATION ASSISTANCE

See PHD Product Sizing Catalog for specific and complete sizing information.

Online sizing assistance is available at: www.phdinc.com/apps/sizing

DIMENSIONS: SERIES RL ROTARY ACTUATORS



NOTES:

- 1) CIRCLED NUMBERS INDICATE MOUNTING SURFACE POSITION
- 2) NUMBERS IN [] ARE FOR METRIC UNITS AND ARE IN mm
- 3) KEYWAY SHOWN AT MID-ROTATION POSITION

All dimensions are reference only unless specifically tolerated.

www.phdinc.com/rl • (800) 624-8511

DIMENSIONS: SERIES RL ROTARY ACTUATORS

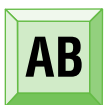
BORE SIZE	NOMINAL ROTATION	A	B	C	D	E	EE	F	G PORT	H
12 mm	45° OR 90°	2.047 [52.0]	1.201 [30.5]	1.024 [26.0]	.448 [11.5]	.964 [24.5]	.482 [12.25]	.374 [9.5]	10-32 THD [M5 x 0.8]	4-40 x .224 [M3 x 0.5 x 6.0]
	135° OR 180°	2.579 [65.5]								
	225° OR 270°	3.110 [79.0]								
16 mm	45° OR 90°	2.461 [62.5]	1.378 [35.0]	1.142 [29.0]	.530 [13.5]	1.082 [27.5]	.541 [13.75]	.374 [9.5]	10-32 THD [M5 x 0.8]	4-40 x .224 [M3 x 0.5 x 6.0]
	135° OR 180°	3.091 [78.5]								
	225° OR 270°	3.563 [90.5]								
20 mm	45° OR 90°	2.854 [72.5]	1.634 [41.5]	1.300 [33.0]	.532 [13.5]	1.260 [32.0]	.630 [16.0]	.374 [9.5]	10-32 THD [M5 x 0.8]	6-32 x .276 [M4 x 0.7 x 8.0]
	135° OR 180°	3.248 [82.5]								
	225° OR 270°	3.957 [100.5]								
25 mm	45° OR 90°	3.504 [89.0]	1.811 [46.0]	1.556 [39.5]	.623 [16.0]	1.516 [38.5]	.758 [19.25]	.473 [12.0]	1/8 NPT [1/8 BSP]	10-24 x .380 [M5 x 0.8 x 10.0]
	135° OR 180°	3.976 [101.0]								
	225° OR 270°	4.921 [125.0]								
32 mm	45° OR 90°	3.720 [94.5]	2.244 [57.0]	1.772 [45.0]	.788 [20.0]	1.732 [44.0]	.866 [22.0]	.473 [12.0]	1/8 NPT [1/8 BSP]	10-24 x .380 [M5 x 0.8 x 10.0]
	135° OR 180°	4.705 [119.5]								
	225° OR 270°	5.866 [149.0]								
40 mm	45° OR 90°	4.626 [117.5]	2.579 [65.5]	2.126 [54.0]	.866 [22.0]	2.086 [53.0]	1.043 [26.5]	.473 [12.0]	1/8 NPT [1/8 BSP]	1/4-20 x .500 [M6 x 1.0 x 12.0]
	135° OR 180°	5.925 [150.5]								
	225° OR 270°	7.500 [190.0]								
50 mm	45° OR 90°	5.295 [134.5]	3.248 [82.5]	2.540 [64.5]	1.004 [25.5]	2.480 [63.0]	1.240 [31.5]	.650 [16.5]	1/4 NPT [1/4 BSP]	5/16-18 x .625 [M8 x 1.25 x 16.0]
	135° OR 180°	6.850 [174.0]								
	225° OR 270°	8.661 [220.0]								
63 mm	45° OR 90°	6.535 [166.0]	3.858 [98.0]	3.168 [80.5]	1.279 [32.5]	2.972 [75.5]	1.486 [37.75]	.650 [16.5]	1/4 NPT [1/4 BSP]	5/16-18 x .625 [M8 x 1.25 x 16.0]
	135° OR 180°	8.504 [216.0]								
	225° OR 270°	10.846 [275.5]								

BORE SIZE	J	K	L	M	N	P [h8]	Q	QA	R	T	U
12 mm	1.062 [27.0]	.866 [22.0]	.335 [8.5]	1.378 [35.0]	.630 [16.0]	.1875 [6.0]	.630 [16.0]	—	SEE FIGURE 1 [2.0 SQ x 10.0]	.233 [5.9]	.7485 [19.0]
16 mm	1.142 [29.0]	1.004 [25.5]	.373 [9.5]	1.536 [39.0]	.650 [16.5]	.2495 [8.0]	.748 [19.0]	.312 [7.92]	203 WOODRUFF [3.0 SQ x 14.0]	.289 [7.3]	.8666 [22.0]
20 mm	1.102 [28.0]	1.220 [31.0]	.354 [9.0]	1.516 [38.5]	.906 [23.0]	.3125 [8.0]	.748 [19.0]	.437 [11.1]	204 WOODRUFF [3.0 SQ x 14.0]	.349 [8.9]	.8666 [22.0]
25 mm	1.378 [35.0]	1.397 [35.5]	.443 [11.25]	1.968 [50.0]	1.182 [30.0]	.3745 [10.0]	1.004 [25.5]	.437 [11.1]	204 WOODRUFF [3.0 SQ x 16.0]	.292 [7.4]	1.0241 [26.0]
32 mm	1.614 [41.0]	1.850 [47.0]	.631 [16.0]	2.204 [56.0]	1.260 [32.0]	.4995 [14.0]	1.260 [32.0]	—	1/8 SQ x 3/4 [5.0 SQ x 20.0]	.488 [12.4]	1.2603 [32.0]
40 mm	2.028 [51.5]	2.146 [54.5]	.650 [16.5]	2.874 [73.0]	1.534 [39.0]	.6245 [16.0]	1.496 [38.0]	—	3/16 SQ x 1.00 [5.0 SQ x 25.0]	.476 [12.1]	1.3785 [35.0]
50 mm	2.480 [63.0]	2.677 [68.0]	.670 [17.0]	3.308 [84.0]	1.850 [47.0]	.7495 [20.0]	1.752 [44.5]	—	3/16 SQ x 1-1/4 [6.0 SQ x 30.0]	.725 [18.4]	1.6540 [42.0]
63 mm	2.716 [69.0]	3.248 [82.5]	.945 [24.0]	3.544 [90.0]	2.204 [56.0]	.9995 [30.0]	2.007 [51.0]	—	1/4 SQ x 1-3/8 [8.0 x 7.0 x 36.0 RECT]	.849 [21.6]	2.1659 [55.0]

Numbers in [] are for metric units and are in mm.

All dimensions are reference only unless specifically toleranced.

OPTIONS: SERIES RL ROTARY ACTUATORS



**45° ANGLE ADJUSTMENT
BOTH DIRECTIONS**



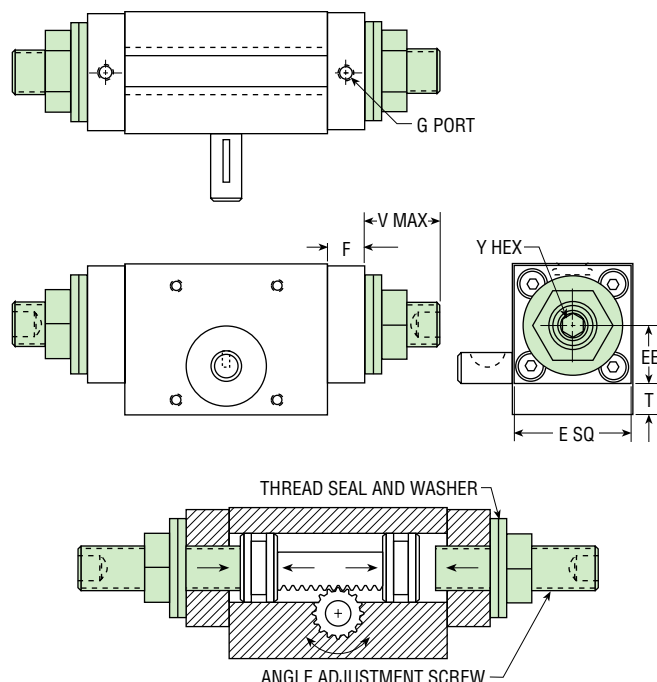
**45° ANGLE ADJUSTMENT
COUNTERCLOCKWISE DIRECTION**



**45° ANGLE ADJUSTMENT
CLOCKWISE DIRECTION**

Angle adjustment screws allow the nominal angle of rotation to be reduced by up to 45° from each end of rotation (-AC or -AW options). With adjustments at both ends of the unit, a total reduction of 90° (-AB option) can be achieved. Angle adjustment is available in either or both directions.

NOTE: Angle adjustment options are not available with cushion or shock absorber options in the same direction.



BORE SIZE	NOMINAL ROTATION	E	EE	F	G	T	V	Y
12 mm	45°, 90°, 180°, 270°	.964 [24.5]	.482 [12.25]	.552 [14.0]	10-32 THD [M5 x 0.8]	.233 [5.9]	.511 [13.0]	4 mm
16 mm	45°, 90°, 180°, 270°	1.082 [27.5]	.541 [13.75]	.552 [14.0]	10-32 THD [M5 x 0.8]	.289 [7.3]	.649 [16.5]	4 mm
20 mm	45°, 90°, 180°, 270°	1.260 [32.0]	.630 [16.0]	.552 [14.0]	10-32 THD [M5 x 0.8]	.349 [8.9]	.747 [19.0]	6 mm
25 mm	45°, 90°, 180°, 270°	1.516 [38.5]	.758 [19.25]	.827 [21.0]	1/8 NPT [1/8 BSP]	.292 [7.4]	.767 [19.5]	6 mm
32 mm	45°, 90°, 180°, 270°	1.732 [44.0]	.866 [22.0]	.827 [21.0]	1/8 NPT [1/8 BSP]	.488 [12.4]	.984 [25.0]	8 mm
40 mm	45°, 90°, 180°, 270°	2.086 [53.0]	1.043 [26.5]	.984 [25.0]	1/8 NPT [1/8 BSP]	.476 [12.1]	1.421 [36.1]	10 mm
50 mm	45°, 90°, 180°, 270°	2.480 [63.0]	1.240 [31.5]	1.024 [26.0]	1/4 NPT [1/4 BSP]	.725 [18.4]	1.378 [35.0]	10 mm
63 mm	45°, 90°, 180°, 270°	2.972 [75.5]	1.486 [37.75]	1.024 [26.0]	1/4 NPT [1/4 BSP]	.849 [21.6]	1.378 [35.0]	10 mm

Numbers in [] are for metric units and are in mm.



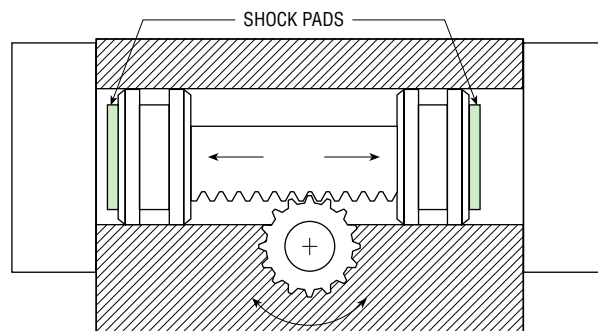
**SHOCK PAD INSTALLED
BOTH DIRECTIONS**



**SHOCK PAD INSTALLED
COUNTERCLOCKWISE DIRECTION**



**SHOCK PAD INSTALLED
CLOCKWISE DIRECTION**



Polyurethane shock pads for noise reduction and absorption of shock at ends of rotation are available on each end of Series RL Rotary Actuators. Reduction of shock permits higher piston velocities for shorter cycle times. Noise reduction is beneficial for the working environment. See PHD Product Sizing Catalog for information on unit stopping capacity.

NOTE: Shock pad options are not available on 12 mm units, or with shock absorber or cushion options in the same direction.

OPTIONS: SERIES RL ROTARY ACTUATORS



CUSHION BOTH DIRECTIONS



CUSHION COUNTERCLOCKWISE DIRECTION

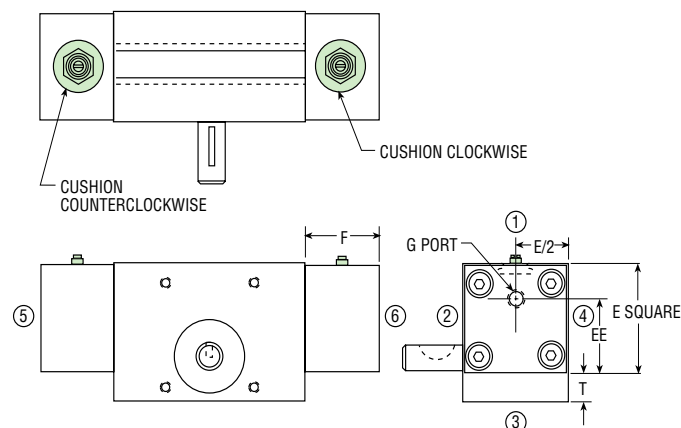


CUSHION CLOCKWISE DIRECTION

PHD Cushions allow smooth deceleration at the end of rotation. When a cushion is activated, the remaining volume of air in the exhaust side of the actuator is expelled through an adjustable needle valve, controlling the rate of deceleration of the pinion shaft. The effective cushion length is approximately 40° at the end of full nominal rotation. See PHD Product Sizing Catalog for information on unit stopping capacity.

Cushion performance will not be realized on units of 45° or less due to 40° of effective cushion length.

NOTE: Cushion options are not available with angle adjustment, shock absorber, or shock pad options in the same direction.



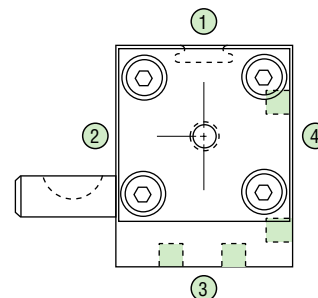
BORE SIZE	NOMINAL ROTATION	E	EE	F	G	T
12 mm	45°, 90°, 135°, 180°, 225°, 270°	.964 [24.5]	.226 [5.75]	.728 [18.5]	10-32 THD [M5 x 0.8]	.233 [5.9]
16 mm	45°, 90°, 135°, 180°, 225°, 270°	1.082 [27.5]	.728 [18.5]	.827 [21.0]	10-32 THD [M5 x 0.8]	.289 [7.3]
20 mm	45°, 90°, 135°, 180°, 225°, 270°	1.260 [32.0]	.856 [21.75]	.866 [22.0]	10-32 THD [M5 x 0.8]	.349 [8.9]
25 mm	45°, 90°, 135°, 180°, 225°, 270°	1.516 [38.5]	1.043 [26.5]	1.004 [25.5]	1/8 NPT [1/8 BSP]	.292 [7.4]
32 mm	45°, 90°, 135°, 180°, 225°, 270°	1.732 [44.0]	1.161 [29.5]	1.063 [27.0]	1/8 NPT [1/8 BSP]	.488 [12.4]
40 mm	45°, 90°, 135°, 180°, 225°, 270°	2.086 [53.0]	1.457 [37.0]	1.142 [29.0]	1/8 NPT [1/8 BSP]	.476 [12.1]
50 mm	45°, 90°, 135°, 180°, 225°, 270°	2.480 [63.0]	1.752 [44.5]	1.260 [32.0]	1/4 NPT [1/4 BSP]	.725 [18.4]
63 mm	45°, 90°, 135°, 180°, 225°, 270°	2.972 [75.5]	1.998 [50.75]	1.260 [32.0]	1/4 NPT [1/4 BSP]	.849 [21.6]

Numbers in [] are for metric units and are in mm.



MOUNTING HOLES IN POSITIONS 3 & 4

This option provides mounting holes on the back side (position 4) and the bottom side (position 3). Standard units are supplied with mounting holes on the front side (position 2) and the bottom side (position 3). The mounting pattern for this option is identical to the pattern shown in the dimensions.



OPTIONS: SERIES RL ROTARY ACTUATORS

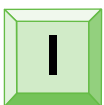
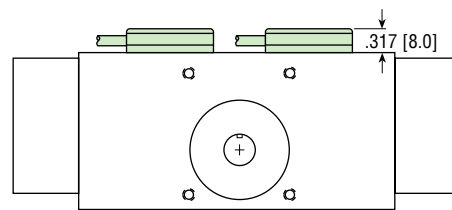
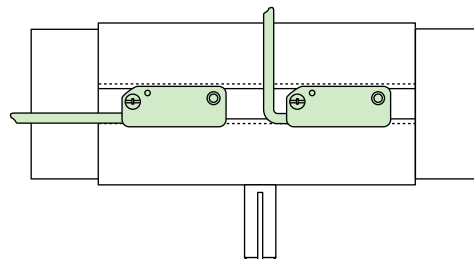
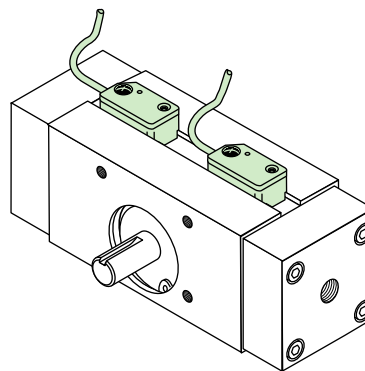
PHD Series 5360 Hall Effect, Reed, and Magnetostrictive Switches are designed specifically to provide an input signal to various types of programmable controllers of logic systems. See Switches and Sensors section for information on the Series 5360 Switches.



MAGNETS FOR PHD SOLID STATE HALL EFFECT SWITCHES

This option equips the rotary actuator with magnets on the rack for use with PHD Series 5360 Hall Effect Switches. These switches mount easily to the actuator using the “T” slot in the top of the body. Not available on 12 mm and 16 mm units.

PART NO.	COLOR	DESCRIPTION
53603-1-02	Yellow	NPN (Sink) 4.5-24 VDC, 2 meter cable
53604-1-02	Red	PNP (Source) 4.5-24 VDC, 2 meter cable
53623-1	Yellow	NPN (Sink) 4.5-24 VDC, Quick Connect
53624-1	Red	PNP (Source) 4.5-24 VDC, Quick Connect



MAGNETS FOR PHD SOLID STATE MAGNETORESISTIVE SWITCHES

This option equips the rotary actuator with magnets on the rack for use with PHD Magnetostrictive Switches. These switches mount easily to the actuator using the “T” slot in the top of the body. Minimum sensing rotation of 90° for 12 mm and 16 mm units.

PART NO.	COLOR	DESCRIPTION
53605-1-02	Black	NPN 6-24 VDC, 2 m cable
53606-1-02	Orange	PNP 6-24 VDC, 2 m cable
53625-1	Black	NPN 6-24 VDC, Quick Connect
53626-1	Orange	PNP 6-24 VDC, Quick Connect



MAGNETS FOR PHD REED SWITCHES

This option equips the rotary actuator with magnets on the rack for use with PHD Series 5360 Reed Switches. These switches mount easily to the actuator using the “T” slot in the top of the body. Not available on 12 mm units. For 16 mm bore units, minimum sensing rotation of 90° for one switch, and 135° for two switches is required.

PART NO.	COLOR	DESCRIPTION
53602-2-02	White	Sink or Source Type 4.5-24 VDC, 2 meter cable
53609-2-02	Green	AC Type 110-120 VAC with Current Limit, 2 meter cable
53622-2	White	Sink or Source Type VDC, Quick Connect
53629-2	Green	AC Type 110-120 VAC, Quick Connect with Current Limit

OPTIONS: SERIES RL ROTARY ACTUATORS

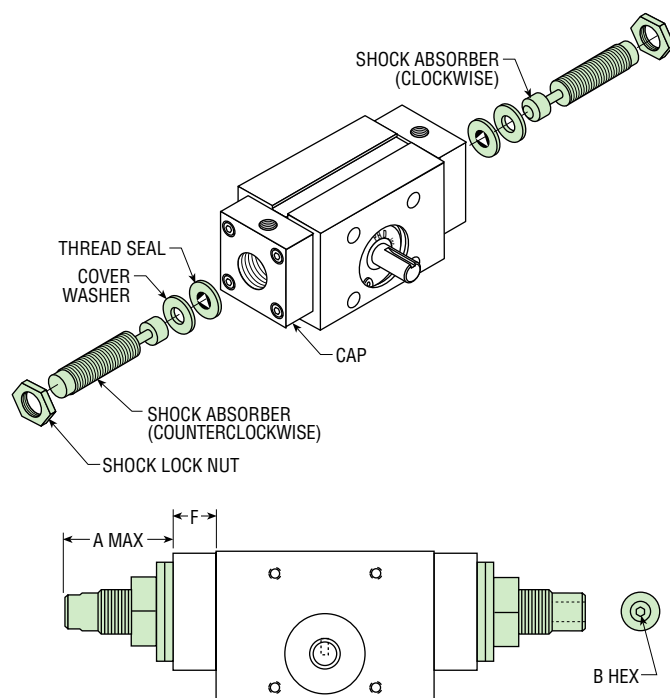
NB SHOCK ABSORBER INSTALLED BOTH DIRECTIONS

NC SHOCK ABSORBER INSTALLED COUNTERCLOCKWISE DIRECTION

NW SHOCK ABSORBER INSTALLED CLOCKWISE DIRECTION

Hydraulic shock absorbers provide optimum control of deceleration and maximum load stopping capacity. The -NB, -NC, and -NW options equip the rotary actuator with a hydraulic shock absorber installed in the cap(s). See PHD Product Sizing Catalog for details of stopping capacity with built-in shock absorbers. Shock absorbers are nominally effective for 45° of rotation each direction.

NOTE: The shock absorber also provides the rotation adjustment. Shock absorber options are not available on 12 mm, 16 mm, or 20 mm units or with angle adjustment, cushion, or shock pad options in the same direction.



GS SHOCK ABSORBER READY BOTH DIRECTIONS

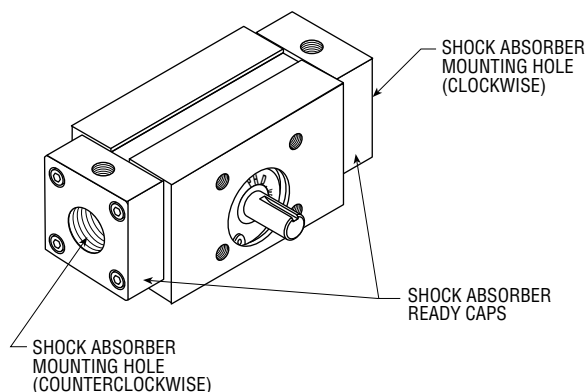
GT SHOCK ABSORBER READY COUNTERCLOCKWISE DIRECTION

GU SHOCK ABSORBER READY CLOCKWISE DIRECTION

The -GS, -GT, and -GU options should only be ordered if the shock absorber(s) is to be supplied separately from the rotary actuator. These options make provisions for the installation of hydraulic shock absorbers but do not include the shock absorber units. They include the shock sealing kit for each direction ordered. See PHD Product Sizing Catalog for details of stopping capacity with built-in shock absorbers.

NOTE: The shock absorber also provides rotation adjustment. Shock absorbers **must** be installed in the rotary actuator body prior to operating the unit. Operation without shock absorbers can

damage the actuator and void the warranty. Only shock absorbers specified by PHD should be used in Series RL Rotary Actuators. The use of any other shock absorbers will adversely affect actuator performance and service life.



SHOCK ABSORBER SPECIFICATIONS

BORE SIZE	PHD SHOCK ABSORBER NUMBER	THREAD TYPE	STROKE		SHOCK ABSORBER WEIGHT		KINETIC ENERGY LOAD		A MAX.		B HEX		F	
			in	mm	lb	kg	in-lb	Nm	in	mm	in	mm	in	mm
25 mm	60335-04	9/16-18	.19	4.83	.12	.05	2.00	.23	2.35	59.7	.25	6.4	.827	21.0
32 mm	60335-05	3/4-16	.25	6.35	.34	.15	4.00	.45	2.75	69.6	.31	7.9	.827	21.0
40 mm	60335-06	1-12	.29	7.37	.57	.26	10.00	1.13	3.81	96.8	.38	9.5	.984	25.0
50 mm	60335-06	1-12	.29	7.37	.57	.26	16.00	1.81	3.77	95.8	.38	9.5	1.024	26.0
63 mm	60335-07	1-12	.37	9.40	.57	.26	28.00	3.16	3.76	95.4	.38	9.5	1.024	26.0

All dimensions are reference only unless specifically toleranced.

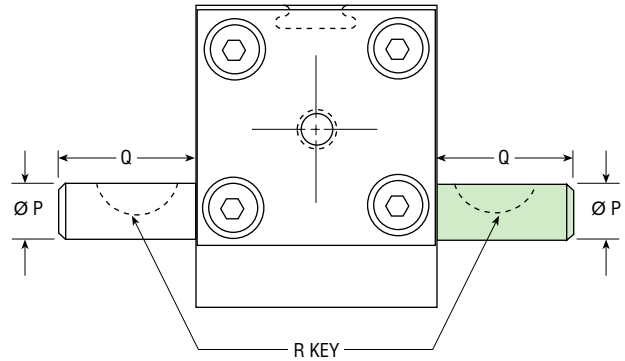
www.phdinc.com/rl • (800) 624-8511

Q13 DOUBLE SHAFT EXTENSION

This option provides a shaft extension out the front side (position 2) and the back side (position 4) of the actuator. This double shaft extension can be used for mounting tooling, fixturing, or for tripping external proximity switches. The one-piece pinion construction provides the same bearing load capacities for both front and rear shaft extensions.

BORE SIZE	P [h8]	Q	R
12 mm	.1875 [6.0]	.630 [16.0]	SEE FIGURE 1, PAGE 5-22 [2.0 SQ x 10.0]
16 mm	.2495 [8.0]	.748 [19.0]	203 WOODRUFF [3.0 SQ x 14.0]
20 mm	.3125 [8.0]	.748 [19.0]	204 WOODRUFF [3.0 SQ x 14.0]
25 mm	.3745 [10.0]	1.004 [25.5]	204 WOODRUFF [3.0 SQ x 16.0]
32 mm	.4995 [14.0]	1.260 [32.0]	1/8 SQ x 3/4 [5.0 SQ x 20.0]
40 mm	.6245 [16.0]	1.496 [38.0]	3/16 SQ x 1.00 [5.0 SQ x 25.0]
50 mm	.7495 [20.0]	1.752 [44.5]	3/16 SQ x 1-1/4 [6.0 SQ x 30.0]
63 mm	.9995 [30.0]	2.007 [51.0]	1/4 SQ x 1-3/8 [8.0 x 7.0 x 36.0 RECT]

Numbers in [] are for metric units and are in mm.

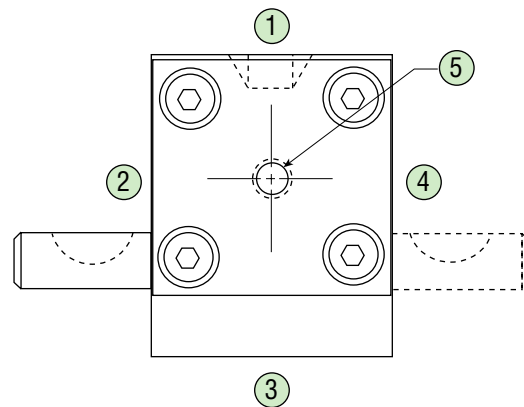


U4 PORT POSITION 2

U6 PORT POSITION 3

U8 PORT POSITION 4

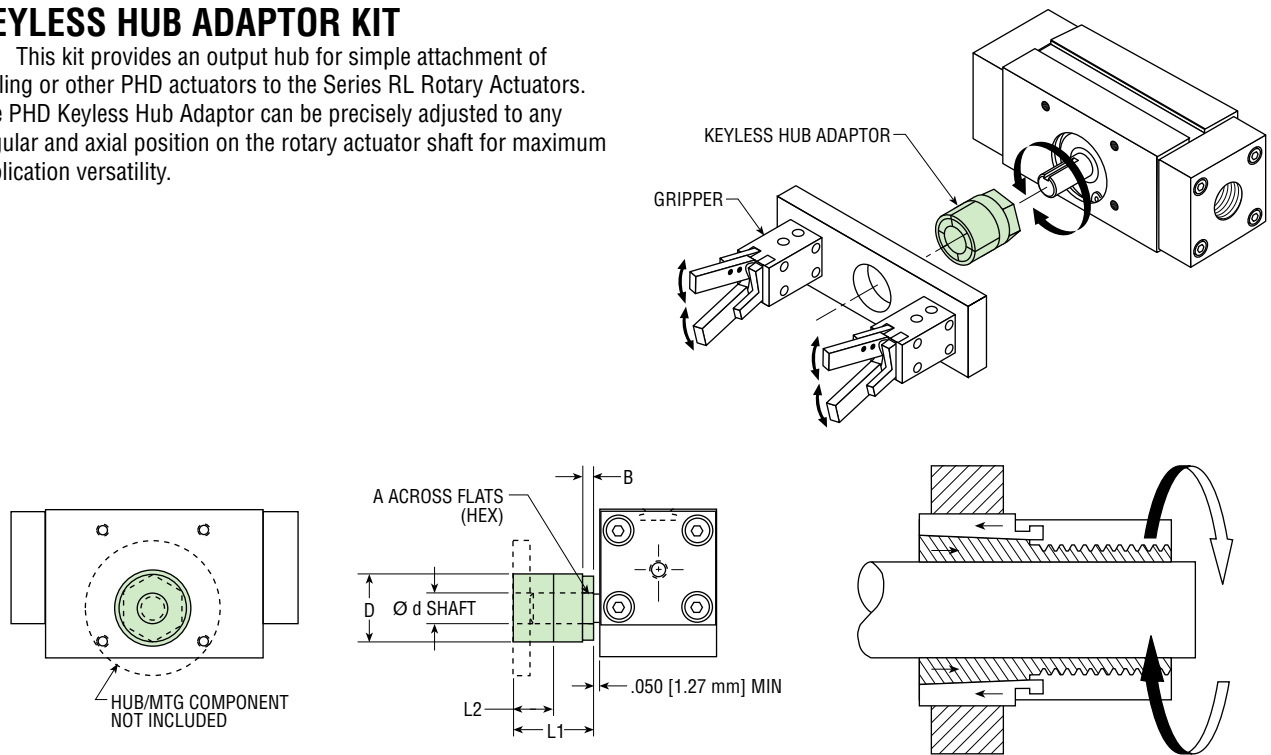
Port positions on units with angle adjustment or shock absorber options are provided with a standard port in position 1. The port position may be rotated by specifying the desired option.



ACCESSORIES: SERIES RL ROTARY ACTUATORS

KEYLESS HUB ADAPTOR KIT

This kit provides an output hub for simple attachment of tooling or other PHD actuators to the Series RL Rotary Actuators. The PHD Keyless Hub Adaptor can be precisely adjusted to any angular and axial position on the rotary actuator shaft for maximum application versatility.



IMPERIAL UNIT	TRANSTORQUE PART NUMBER	PHD PART NUMBER	d in	D in	D TOL.	L1 in	L2 in	B in	A in	MAX. TRANSMISSIBLE		WEIGHT oz	INSTALLATION TORQUE ON NUT in-lb
										TORQUE in-lb	THRUST lb		
RLS112	6202103	60264-01	.188	.625	± .0015	.750	.375	.125	.500	100	700	.50	125
RLS116	6202105	60264-02	.250	.625	± .0015	.750	.375	.125	.500	150	790	.50	125
RLS120	6202107	60264-03	.313	.750	± .0015	.875	.438	.125	.625	200	890	1.0	150
RLS125	6202109	60264-04	.375	.750	± .0015	.875	.438	.125	.625	250	925	1.0	150
RLS132	6202112	60264-06	.500	.875	± .0015	1.00	.500	.188	.750	350	980	1.5	175
RLS140	6202120	60264-09	.625	1.50	± .0015	1.50	.750	.313	1.25	1750	3300	8.0	1200
RLS150	6202160	60264-11	.750	1.50	± .003	1.50	.750	.313	1.25	2500	4400	8.0	1200
RLS163	6202240	60264-15	1.00	1.75	± .003	1.875	.875	.438	1.50	3500	6600	11.0	1500

METRIC UNIT	TRANSTORQUE PART NUMBER	PHD PART NUMBER	d mm	D mm	D TOL.	L1 mm	L2 mm	B mm	A mm	MAX. TRANSMISSIBLE		WEIGHT kg	INSTALLATION TORQUE ON NUT Nm
										TORQUE Nm	THRUST kN		
RLS512	6202660	60265-02	6	16.0	± .0015	19.0	9.5	3	13	16	3.4	0.014	19.1
RLS516	6202680	60265-04	8	19.0	± .0015	22.0	11.0	3	16	23	4.0	0.028	17.0
RLS520	6202680	60265-04	8	19.0	± .0015	22.0	11.0	5	16	23	4.0	0.028	17.0
RLS525	6202700	60265-06	10	22.5	± .0015	25.5	12.5	5	19	30	4.2	0.042	19.8
RLS532	6202740	60265-09	14	25.5	± .0015	28.5	16.0	5	22	44	4.4	0.560	22.6
RLS540	6202760	60265-11	16	25.5	± .0015	28.5	16.0	5	22	50	4.5	0.560	22.6
RLS550	6202811	60265-17	20	45.0	± .003	47.5	21.5	11	38	290	21.0	0.310	170
RLS563	6202835	60265-22	30	51.0	± .003	57.0	21.5	13	46	580	35.4	0.450	225

NOTE: The torque required to install Trantorque adaptors exceeds the maximum value that can be safely applied to the rack and pinion assembly of Series RL Rotary Actuators. The tooling or component attached to the Trantorque adaptor must be constrained, to avoid excessive loading on the pinion gear, while the nut is being tightened to the torque specified above. Failure to follow this procedure will result in damage to the actuator.

All dimensions are reference only unless specifically toleranced.

