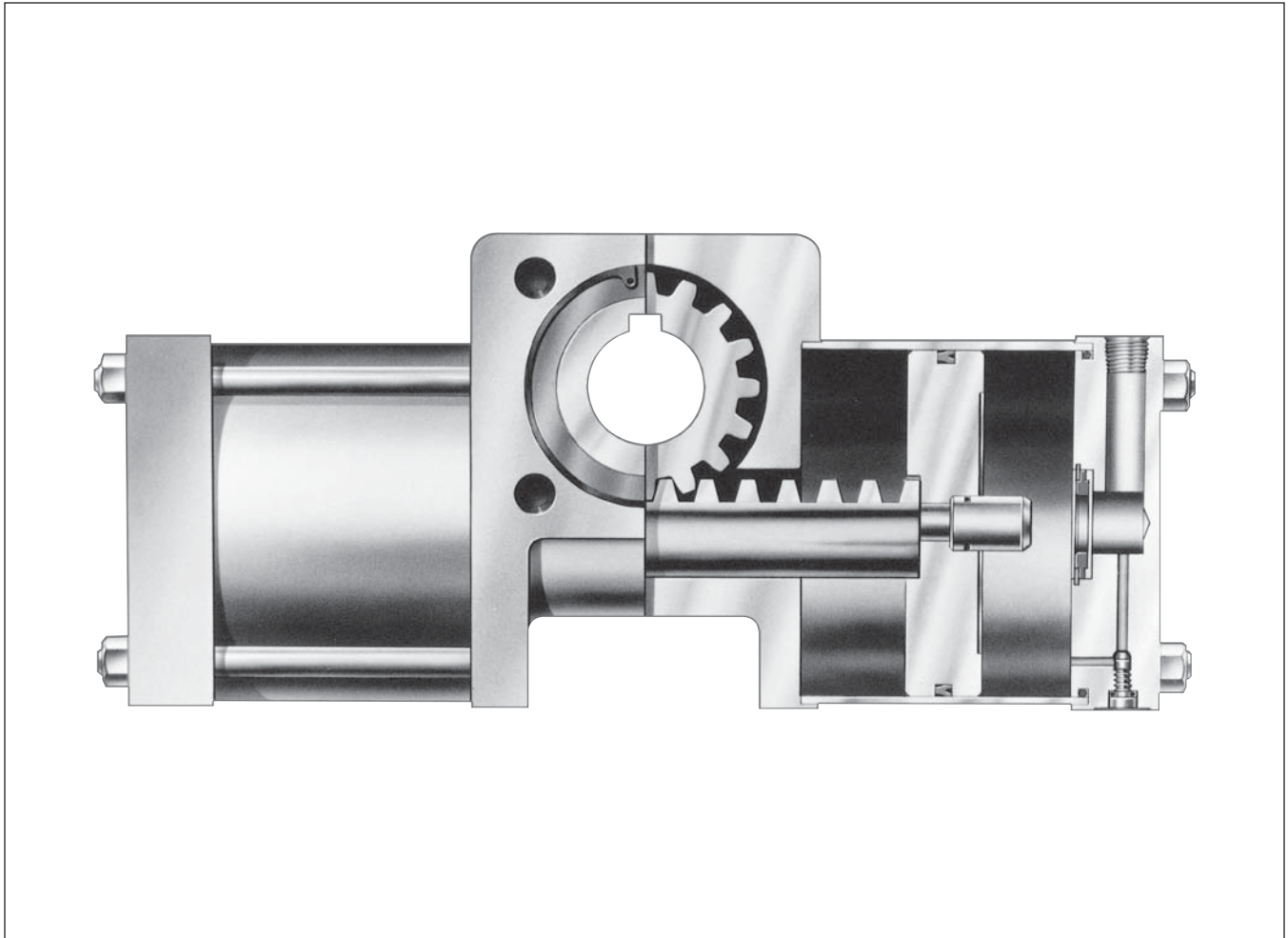




HP Series

Large Pneumatic
Rack & Pinion Rotary Actuator



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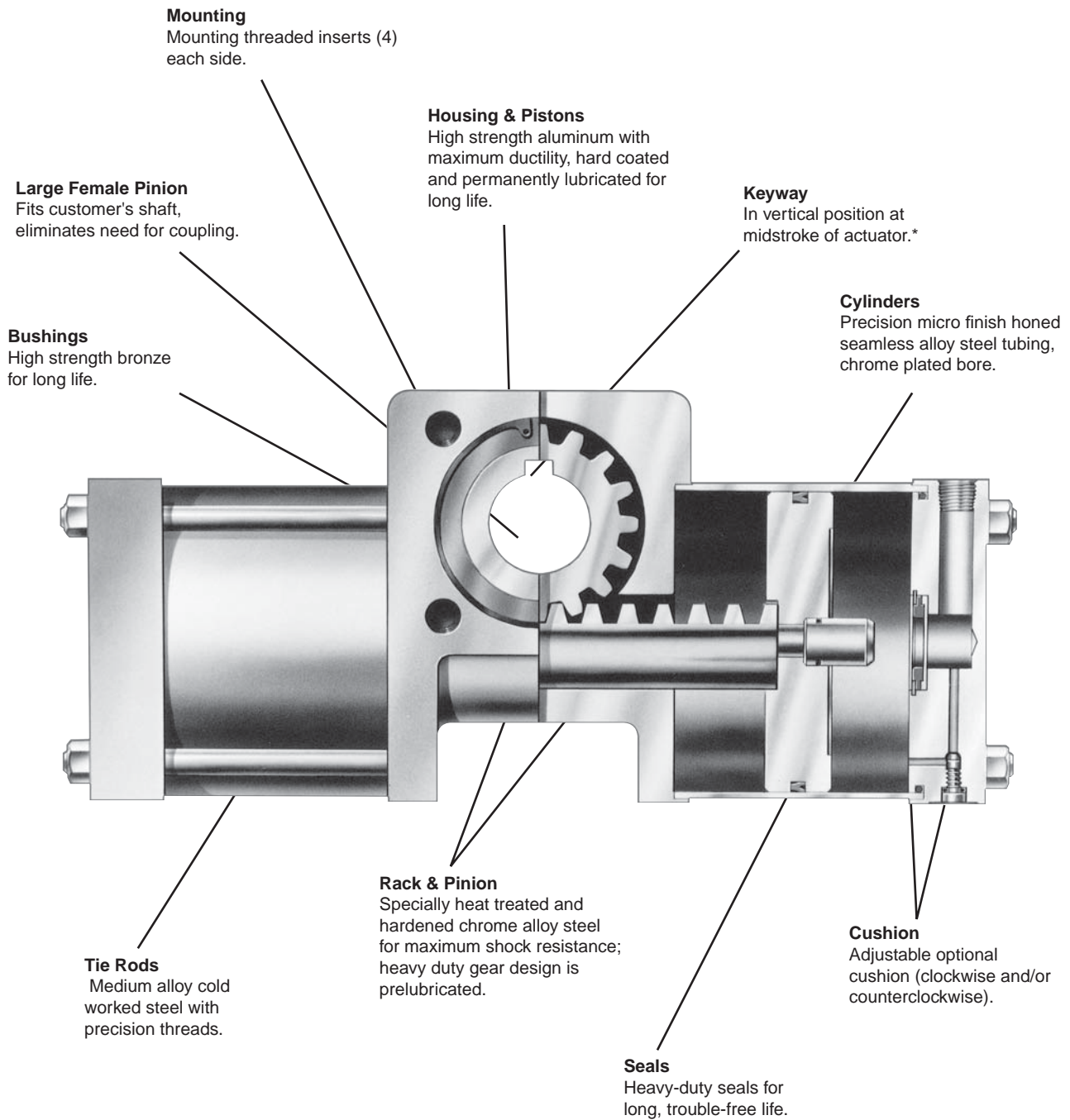


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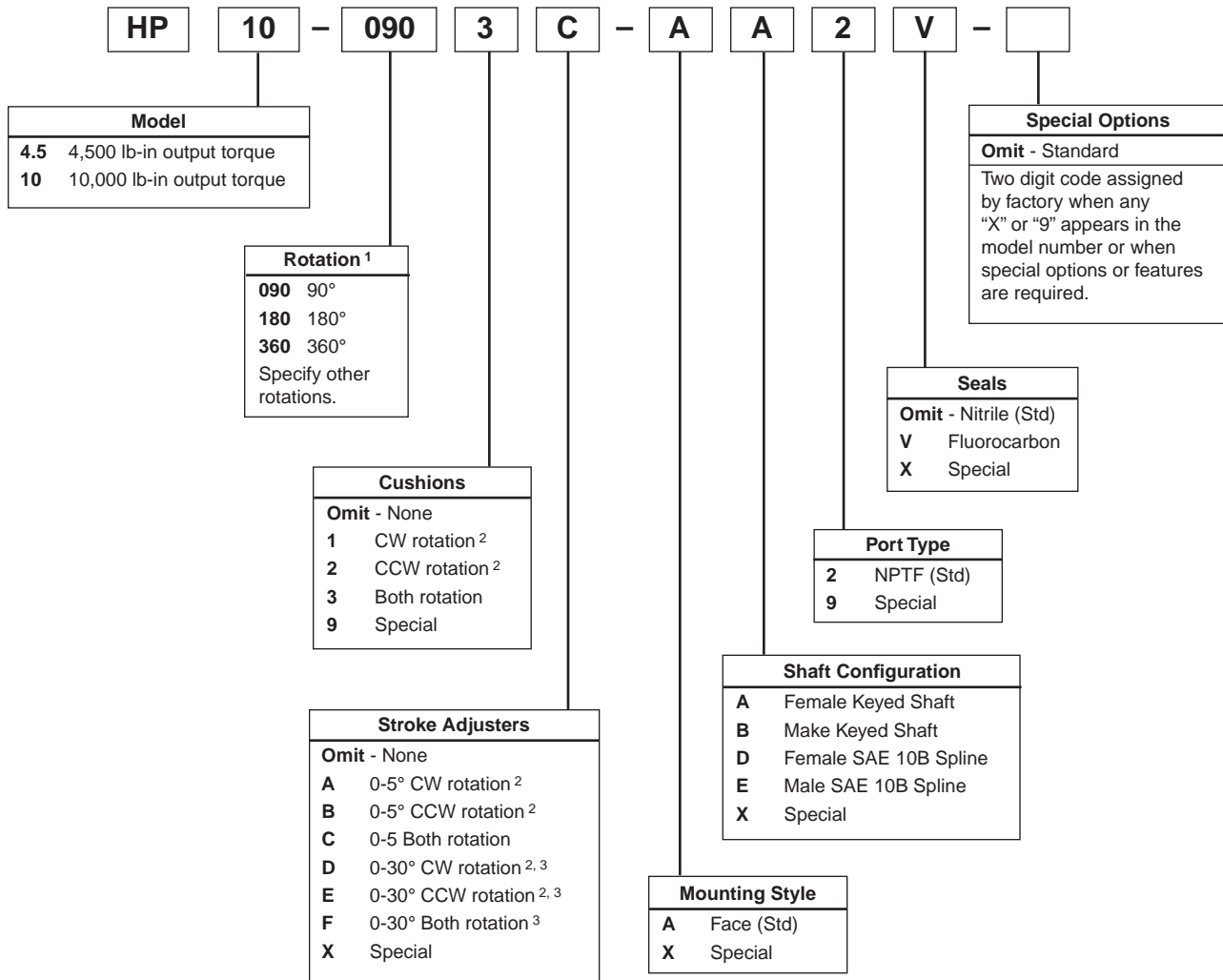
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Pneumatic Division
Wadsworth, Ohio
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Model Code and Ordering Information

Example: HP10-0903C-AA2V-



Notes:

- 1 To obtain equal rotation both sides of midstroke (theoretical 12:00), order 5° longer rotation than standard with stroke adjusters.
- 2 Viewed from shaft end.
- 3 Cannot combine with cushions.



Specifications

- Maximum operating pressure: 100 psi
- Standard rotations: 90°, 180°, 360° *
- Standard output torque at 100 psi: 4,500 and 10,000 lb-in
- Operating temperature range:
 - Nitrile seals 0° to 180°F
 - Fluorocarbon seals 0° to 250°F
- Filtration requirement: 40 micron filtration

Quick Reference Data

Model	Rotation* (degrees)	Displacement (cubic inches)	Weight (lb)	Bore Size	Actual Torque Output at 100 PSI (lb-in)	Maximum Rotational Tolerance (degrees)	Maximum Angular Backlash (minutes)
4.5	90	79.93	63	6"	4,500	-0, +2	15
	180	159.86	75				
	360	319.72	95				
10	90	177.64	125	8"	10,000	-0, +2	15
	180	355.28	147				
	360	710.56	190				

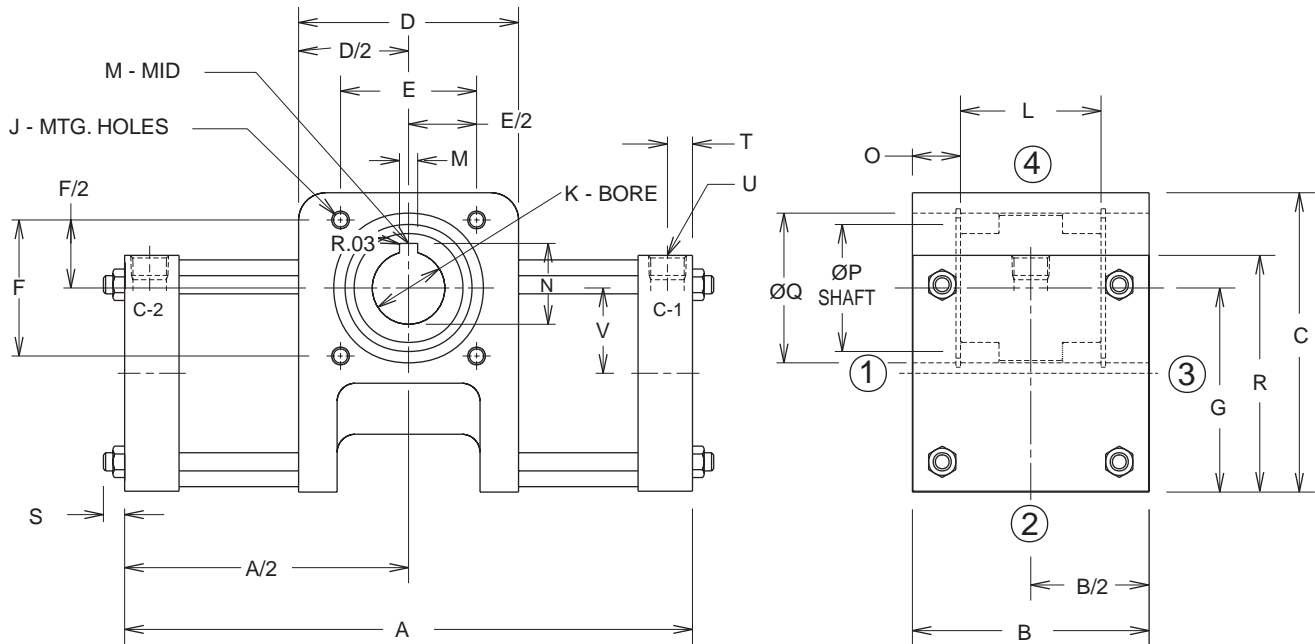
* To obtain equal rotation both sides of midstroke (theoretical 12:00), order 5° longer rotation than standard with stroke adjusters.

Bearing Load Capacities and Kinetic Energy Ratings

Model	Radial Load (lb) per Bearing		Thrust Load (lb)		Distance between Bearings (in.)	Maximum Kinetic Energy Rating for Models Based on Configuration (in-lb)		
	Dynamic	Static	Dynamic	Static		Standard	Stroke Adjusters	Cushion
4.5	2,000	3,000	300	450	2.77	45	45	650
10	2,000	3,000	500	750	3.63	100	100	1450



**Standard Face Mount (A) and
 Female Keyed Shaft (A) Shown**



Note: Numbers above represent possible mounting and port positions.

Dimensions

Model	Rotation	A	B	C	D	E	F	G	J		K
4.5	90°	15-5/8	6.525	8-1/4	6.063	3.750	3.750	5.615	7/16-14 x 21/32 DP		2.000 2.003
	180°	22-1/4									
	360°	33									
10	90°	18	8.525	10-1/2	7.813	5.000	5.000	7.265	5/8-11 x 15/16 DP		2.250 2.253
	180°	26-3/4									
	360°	39-5/8									
Model	L	M	N	O	P	Q	R	S	T	U	V
4.5	3-7/8	0.500 0.502	2.223 2.233	1-5/16	3-1/2	4-1/8	6-1/2	5/8	0.69	3/4 NPTF	2.35
10	5	0.625 0.628	2.525 2.535	1-3/4	4-1/2	5-1/4	8-1/2	3/4	0.69	3/4 NPTF	3.00

Note:
 Pressure on C-1 port gives clockwise rotation.
 Pressure on C-2 port gives counterclockwise rotation.



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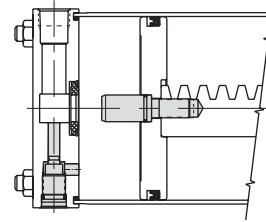
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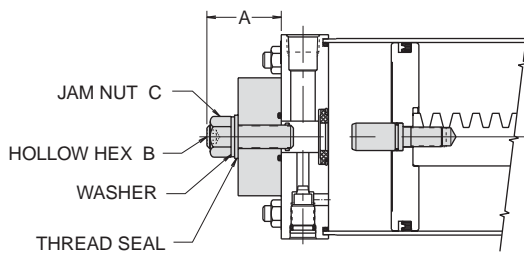
Cushions (1, 2, 3)

The standard cushions operate over the last 20° of rotation in either direction. A floating bushing ensures no binding of cushion spear. All cushions are fully adjustable and are located on the side opposite the port. For other cushion locations specify "9" and describe.

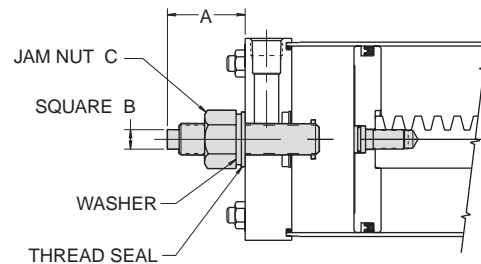


Stroke Adjusters (A - F)

5° Stroke Adjust Option with Cushion Option

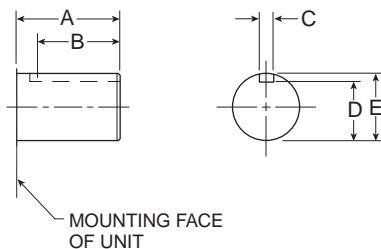


5° or 30° Stroke Adjust Option without Cushion Option



Model	Cushioned End Cap				Non-Cushioned End Cap				
	(1) Turn Adjust	A	B	C	(1) Turn Adjust	A		B	C
						5°	30°		
4.5	2.5°	2.50	5/8	1.00-14	2.0°	2.00	2.81	3/8	3/4-16
10	2.0°	2.50	15/16	1.50-12	1.5°	2.56	3.50	15/16	1-1/2-12

Male Shaft (B)



Model	A	B	C	D	E
4.5	2.61	2.38	0.561	1.928	2.249
			0.562	1.933	2.250
10	4.38	3.38	0.625	1.888	2.249
			0.627	1.893	2.250

Additional Shaft Options (D, E)

Hollowed key shaft is standard. Additional shaft options available are available as a special. Consult factory for information.

- Male splined (E)
- Female splined (D)

Options

Fluorocarbon Seals (V)

Standard abrasion resistant nitrile seals should be used for general purpose applications with temperatures of 0 to 180°F. Fluorocarbon seals are recommended for high temperature applications up to 250°F.

Proximity Sensors

(Namco Cylinders or Balluff Cylinder Indicator Sensor)

The inductive type proximity sensor provides end of rotation indication. The non-contact probe senses the presence of the ferrous cushion spear and has no springs, plungers, cams or dynamic seals that can wear out or go out of adjustment. The sensor is solid state and meets NEMA 1, 12 & 13 specifications. For ease of wiring the connector housing is rotatable through 360°. To rotate, lift the cover latch, position and release.

The sensor make/break activation point may occur at 0.125" to ±0.125" from the end of stroke. Depending on the actuator size, this distance may cause activation at 2° to 15° from end of stroke.

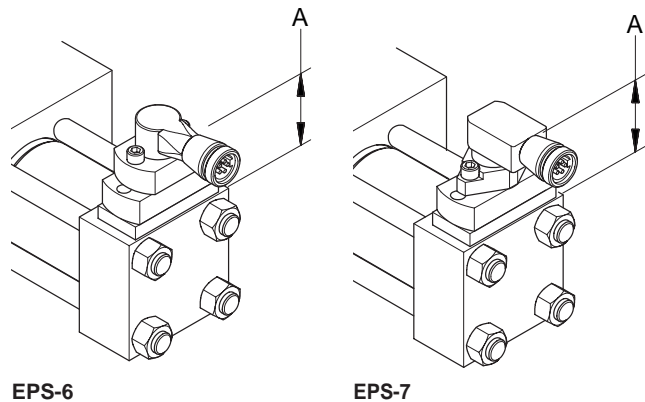
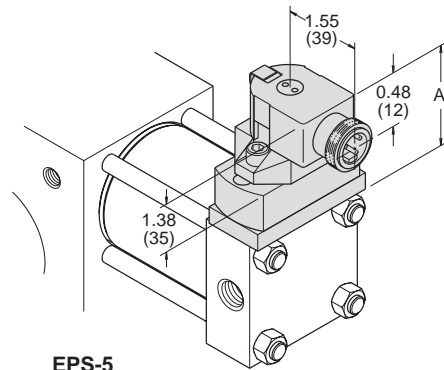
The standard proximity sensor controls 50-230 VAC/DC loads from 5 to 500 mA. The low 1.7 mA off-state leakage current can allow use for direct PLC input. The standard short circuit protection (SCP) protects the sensor from a short in the load or line upon sensing such a condition (5 amp or greater current) by assuming a non-conductive mode. The fault condition must be corrected and the power removed to reset the sensor preventing automatic restarts.

The low voltage DC sensor is also available for use with 10-30 VDC. The sensor is in a non-rotatable housing, but does incorporate the short circuit protection.

Both sensors are equipped with two LEDs, "Ready" and "Target". The "Ready" LED is lit when power is applied and the cushion spear is not present. The "Target" LED will light and the "Ready" LED will go out when the sensor is closed, indicating the presence of the cushion spear. Both LEDs flashing indicates a short circuit condition.

NOTES:

1. Available with or without cushions.
2. Not available with stroke adjusters.
3. Pressure rating: 3000 psi
4. Operating temperature: -4°F to 158°F
5. Specify sensor type, orientation and voltage when ordering.
6. The low voltage DC sensor is available in non-rotatable style only; consult factory for further information.

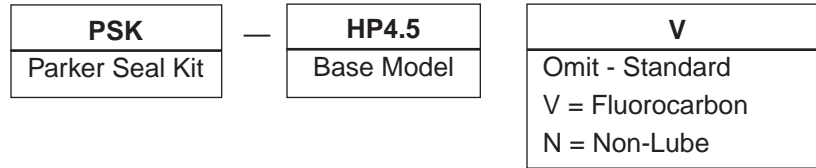


Model	A (max)	
	EPS-5	EPS-6 & 7
4.5	1.48	1.59
10	2.17	2.28

Order proximity sensors separately. See Electronic Sensors section for specifications and ordering information.

Seal Kit Ordering Information

- Standard units are equipped with Nitrile seals.
- Optional seal compounds are available.
- See parts list for items contained in seal kit.
- Seal kit part numbers as shown:



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