

**PRATT**  
INDUSTRIAL®

# **PNEUMATIC ACTUATOR PV SERIES**



**Engineering Creative Solutions  
for Fluid Systems Since 1901**

# DESIGN AND CONSTRUCTION

## DESIGN

PV Series pneumatic actuators represent an improved rack and pinion design that offers enhanced quality and reliability. It is always Pratt's mission to offer innovative products by combining many years of experience in product application and the latest production and material technology available in the market today. Our new design features the PV Series pneumatic actuators provide the following advantageous characteristics:

- Reliability
- High performance
- Innovations and patented solutions for a universal drive shaft
- Fully compliance with all the latest international standards
- Multifunction position indicator
- Compact and light

1. A single compact design utilizing identical body and end caps for both double acting and spring return models. This feature reduces inventory and allows field conversion, by adding or removing modular spring cartridges.

2. Full conformance to following latest specifications: ISO 5211, DIN 3337 and VDI/VDE 3845 for product interchangeability and easy mounting of solenoids, limit switches and other accessories.

3. Pratt piston rack and pinion design for compact construction, symmetric mounting position, high-cycle life and fast operation. Reverse rotation can be accomplished in the field by simply inverting the pistons.

4. Two independent external travel stop adjustments permit easy and precise adjustment of  $\pm 5^\circ$  in both directions. This adjustment may be made in either the open or closed position and provides for accurate valve alignment.

5. Multiple bearings and guides on pistons and racks for precise operation, low friction, high cycle life and a blowout proof pinion shaft.

6. Electroless nickel-plated blowout resistant, bearing guided, one-piece pinion shaft for improved safety and maximum cycle life.

7. High precision teeth on piston racks and pinion shaft for accurate positioning, low backlash, and maximum engagement resulting in overall efficient operation.

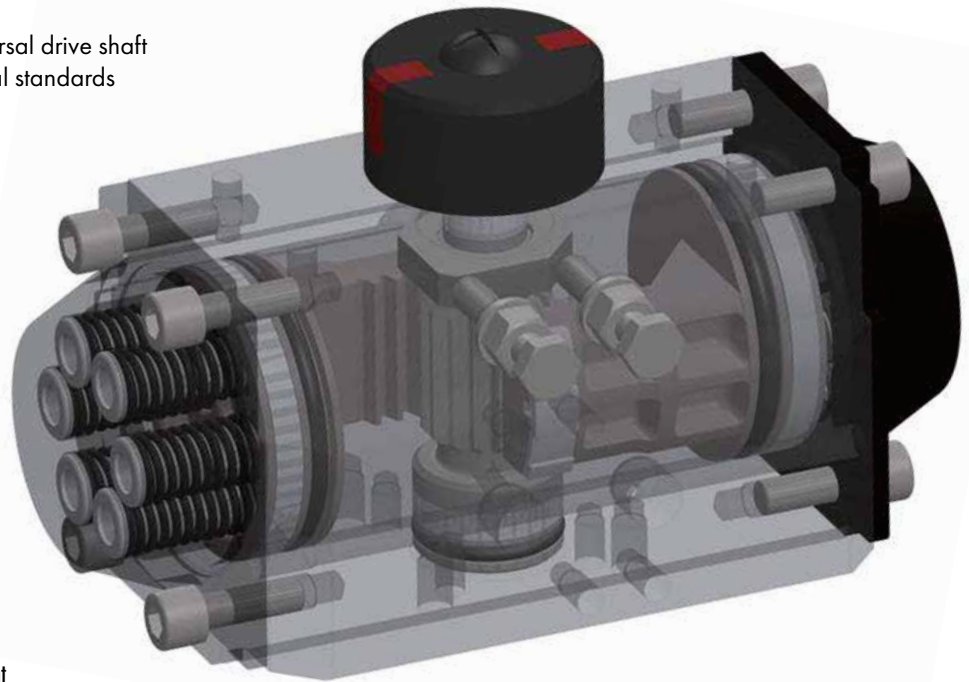
8. Extruded aluminum body with both internal and external corrosion protections having a honed cylinder surface for longer life and a lower coefficient of friction.

9. Modular preloaded spring cartridges designed with coated springs for simple range versatility, greater safety and corrosion resistance.

10. Selected high quality bearings and seals that provide a wide operating temperature range, low friction, and high cycle life.

11. Internal and external stainless steel fasteners for long term corrosion resistance.

12. Multifunctional position indicator for visual position indication, and a direct, easy, economical way to mount popular sensors.



## RANGE OF OPTIONS, QUALITY MANUFACTURING, AND ACCESSORIES

### RANGE OF OPTIONS

A. Stainless steel 304 or 316 drive shafts are available on request for all sizes no matter the type of corrosion protection selected.

B. For extremely high or low temperature applications, all models may be equipped with FPM or Silicon O rings along with an Pratt tested and certified suitable lubricant.

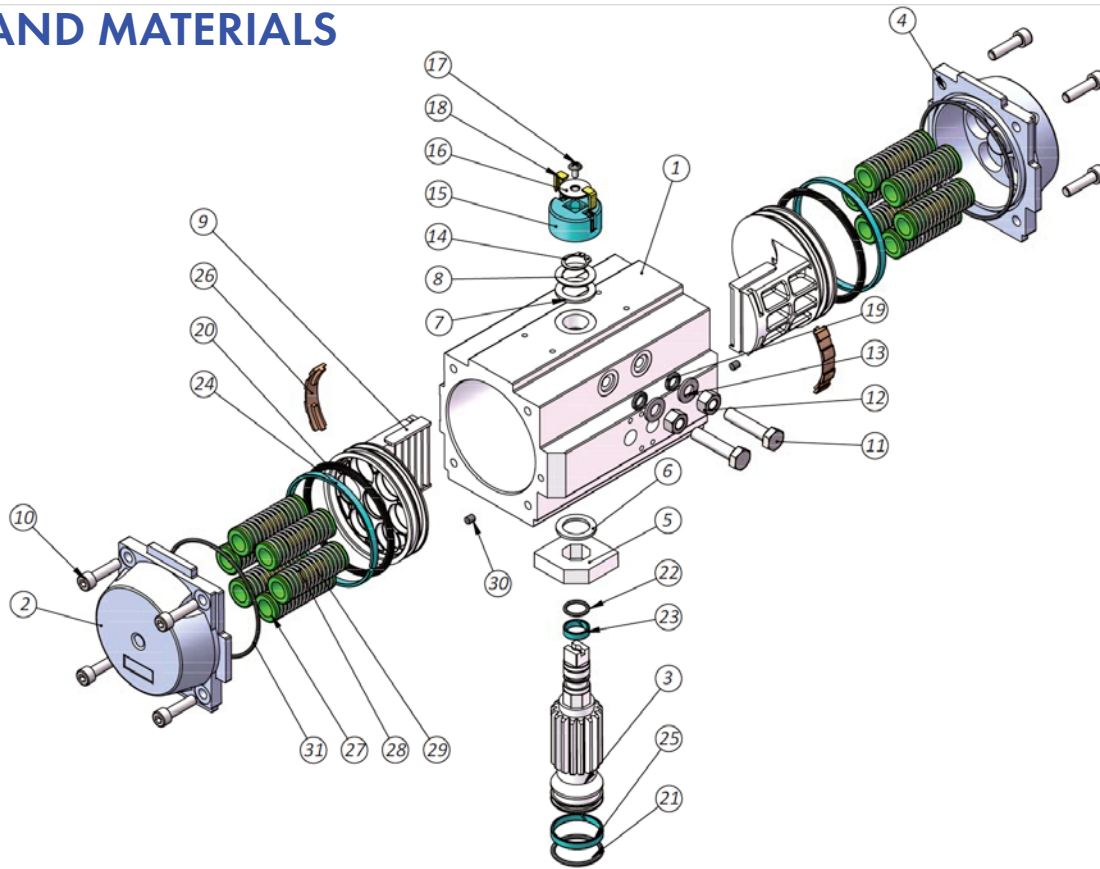
### QUALITY MANAGEMENT

- Production conforms to ISO 9001-2015
- Each individual actuator are factory tested
- Each actuator is individually packed in a special cardboard carton for protection, with a product description label for easy identification and includes installation, operation and maintenance instructions

### ACCESSORIES AVAILABLE

- Solenoid Valves
- Limit Switches
- Manual Overrides
- Bracket & Couplers

# PARTS AND MATERIALS



Item #	Part Description	Material Quality	QTY	Item #	Part Description	Material Quality	QTY	Item #	Part Description	Material Quality	QTY
1	Body	Aluminium alloy	1	12	Nut (stop screw)	Stainless steel	2	23	Bearing (pinion top)	POM+PTFE	1
2	Left end Cap	Aluminium alloy	1	13	Washer (top screw)	Stainless steel	2	24	Bearing (pinion head)	POM+PTFE	2
3	Drive shaft	Alloy Steel	1	14	Spring clip	Spring steel	1	25	Bearing (pinion bottom)	POM+PTFE	1
4	Right end cap	Aluminium alloy	1	15	Position Indicator	Nylon	1	26	Wear Band	Nylon	2
5	OCTI-CAM	Alloy Steel	1	16	Indicator thrust bearing	Stainless steel	1	27	Spring seat	Nylon	24
6	Thrust bearing (pinion top)	POM+PTFE	1	17	Cap screw	Stainless steel	1	28	Spring	High-carbon steel	12
7	Thrust bearing	POM+PTFE	1	18	Color code	Nylon	2	29	Straining beam	Copper pipe	12
8	Thrust washer	Stainless steel	1	19	"o" ring (stop screw)	NBR	2	30	Plug	NBR	2
9	Piston	Aluminium alloy	2	20	"o" ring (piston)	NBR	2	31	"o" ring (end cap)	NBR	3
10	Cap Screw (end cap)	Stainless steel	8	21	"o" ring (pinion bottom)	NBR	1				
11	Stop top screw	Stainless steel	2	22	"o" ring (pinion top)	NBR	1				

## TECHNICAL DATA (METRIC UNIT)

Model Type A	PV 032		PV 050		PV 065		PV 075		PV 085		PV 095		PV 110		PV 125		PV 140		PV 160		PV 190		PV 210		PV 240		PV 270		PV 300		PV 350		PV 400	
	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S
Diameter (mm)	32		50		65		75		85		95		110		125		140		160		190		210		240		270		300		350		400	
Air Volume Opening (L)	0.03		0.09		0.19		0.30		0.44		0.88		0.83		1.41		1.76		2.85		4.75		6.60		11.40		15.80		19.09		27.65		42.81	
Air Volume Closing (L)	0.04		0.15		0.32		0.50		0.66		1.17		1.27		2.13		2.72		4.08		7.20		10.29		15.10		18.80		28.23		44.10		62.05	
Opening Time (sec)	0.3	0.3	0.9	0.4	0.9	0.4	0.9	0.9	1.0	0.9	1.4	0.9	1.4	1.3	2.4	1.3	2.8	2.0	4.8	2.2	2.4	2.9	3.4	3.2	3.8	4.4	5.0	5.0	6.0	6.2	7.4	7.5	9.6	
Closing Time (sec)	0.4	0.4	0.7	0.4	0.8	0.4	0.9	0.9	1.2	1.0	1.4	1.0	1.6	1.4	2.4	1.4	3.0	2.4	4.9	2.6	3.0	3.8	4.1	3.7	4.0	4.9	5.5	6.0	6.8	7.2	8.4	8.5	10.6	
Weight (Kg/lb)	0.47	0.59	1.13	1.25	1.97	2.21	2.93	3.29	3.78	4.26	5.14	5.86	6.09	7.17	10.86	12.54	13.77	15.93	20.15	23.75	28.41	33.81	40.03	48.43	52.60	77.76	73.64	90.6	108.0	135.6	146.7	188.1	220.5	283.5

### 1. For model 32-160

(1) Room temperature (2) Actuator stroke 90° (3) Solenoid valve with orifice of 4 mm and a flow capacity Qn400L/min (4) Inside pipe diameter 6 mm (5) Medium clean air (6) Air supply pressure 5.5 bar (7) Actuator without external resistance load

### 2. For model 190-400

(1) Room temperature (2) Actuator stroke 90° (3) Solenoid valve with orifice of 12 mm and a flow capacity Qn5100L/min (6) Air supply pressure 5.5 bar (7) Actuator without external resistance load (4) Inside pipe diameter 8 mm

Field applications when one or more of the above parameter are different, the moving time will also be different.

Air consumption rest with the air supply, air volume and action cycle times. Formula: L/min = Air volume (opening air volume + closing air volume) X (Air Supply (Kpa) + 101.3) X Action times (/min) 101.3



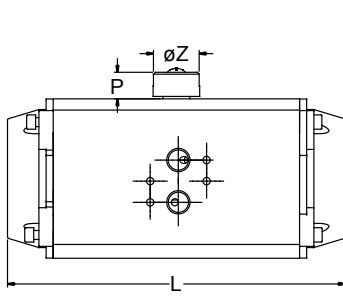
# IMPERIAL TORQUE RATINGS

## SINGLE ACTING TORQUE RATINGS (IN-LBS)

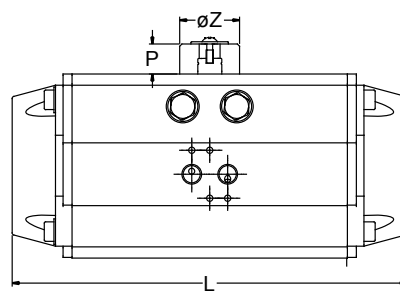
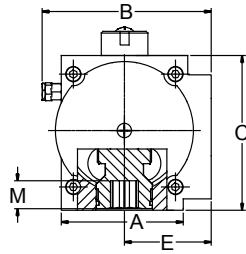
Model	Spring		Supply Pressure (Unit Psig)																			
	Stroke		35		40		50		55		60		70		80		90		100		110	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
PV 125 SR 05	713	451	688	427	960	698	1208	946	1455	1194	1703	1442	1951	1690	2199	1937	2446	2184	2941	2680	3437	3175
PV 125 SR 06	856	542	597	283	870	556	1118	804	1365	1051	1613	1299	1860	1546	2108	1794	2356	2042	2851	2538	3347	3032
PV 125 SR 07	998	632			780	413	1028	661	1275	909	1522	1157	1770	1404	2048	1652	2266	1899	2761	2395	3256	2890
PV 125 SR 08	1141	722					937	519	1184	766	1432	1013	1680	1261	1928	1509	2176	1757	2670	2252	3166	2747
PV 125 SR 09	1283	813							1094	642	1342	871	1590	1119	1837	1367	2085	1614	2580	2109	3076	2605
PV 125 SR 10	1426	903									1252	728	1499	976	1747	1224	1995	1472	2490	1967	2985	2462
PV 125 SR 11	1568	996											1409	834	1657	1082	1905	1329	2400	1824	2895	2320
PV 125 SR 12	1711	1083													1567	939	1814	1186	2309	1682	2805	3062
PV 140 SR 05	1083	728	1011	656	1373	1018	1736	1381	2098	1743	2460	2105	2822	2467								
PV 140 SR 06	1299	874	865	439	1228	802	1590	1164	1952	1526	2315	1888	2677	2251	3090	2613						
PV 140 SR 07	1516	1020			1082	585	1444	947	1806	1309	2168	1672	2531	2034	2893	2396	3255	2758				
PV 140 SR 08	1733	1165					1298	730	1660	1093	2023	1455	2385	1817	2747	2179	3109	2542	3834	3266		
PV 140 SR 09	1949	1311							1515	876	1877	1238	2239	1601	2602	1963	2964	2325	3688	3050	4413	3774
PV 140 SR 10	2166	1456									1732	1022	2094	1384	2456	1746	2818	2108	3543	2833	4267	3557
PV 140 SR 11	2383	1602											1948	1167	2311	1529	2673	1892	3397	2616	4122	3341
PV 140 SR 12	2599	1747													2165	1313	2527	1675	3252	2400	3976	3124
PV 160 SR 05	1437	974	1359	897	1917	1455	2424	1962	2931	2469	3429	2977	3946	3484	4453	3991	4960	4498	5974	5512	6990	6527
PV 160 SR 06	1723	1168	1164	609	1722	1167	2230	1675	2737	2182	3244	2689	3751	3196	4258	3703	4765	4210	5780	5225	6795	6240
PV 160 SR 07	2011	1363			1528	881	2035	1388	2542	1895	3049	2402	3556	2909	4063	3416	4571	3924	5426	4938	6600	5952
PV 160 SR 08	2298	1558					1840	1100	2347	1607	2854	2115	3362	2622	3869	3129	4376	3636	5390	4650	6566	
PV 160 SR 09	2585	1732							2153	1321	2660	1828	3167	2335	3674	2842	4181	3349	5196	4364	6211	5378
PV 160 SR 10	2872	1947									2465	1540	2972	2047	3479	2554	3986	3062	5001	4076	6016	5091
PV 160 SR 11	3160	2142											2777	1760	3285	2268	3792	2775	4806	3789	5821	4803
PV 160 SR 12	3447	2337													3090	1980	3597	2487	4611	3501	5627	4517
PV 190 SR 05	2312	1609	2184	1482	2977	2274	3767	3064	4557	3855	5348	4645	6138	5435								
PV 190 SR 06	2274	1930	1862	1019	2654	1811	3445	2601	4235	3393	5026	4183	5817	4973	6607	5764						
PV 190 SR 07	3236	2253			2094	1349	3124	2139	3914	2930	4704	3720	5495	4510	6285	5302	7075	6092				
PV 190 SR 08	3698	2574					2801	1757	3592	2467	4382	3258	5173	4048	5964	4839	6899	5629	8335	7221		
PV 190 SR 09	4161	2896							3270	2002	4061	2796	4851	3586	5642	4377	6595	5167	8013	6748	9594	8330
PV 190 SR 10	4623	3217									3739	2333	4530	3124	5320	3915	6292	4705	7692	6286	9272	7867
PV 190 SR 11	5085	3540											4208	2661	4998	3452	5989	4242	7369	5824	8951	7405
PV 190 SR 12	5566	3866													4677	2990	5685	3780	7048	5361	8629	6943
PV 210 SR 05	3178	2172	3123	2116	4229	3233	5333	4326	6436	5430	7540	6543	8644	7638	9747	8740	10850	9844	13058	12050	15265	14259
PV 210 SR 06	3814	2607	2688	1481	3794	2587	4898	3691	6002	4795	7106	5898	8209	7001	9313	8105	10417	9209	12623	11416	14831	13623
PV 210 SR 07	4449	3041			3360	1952	4464	3055	5567	4158	6671	5263	7775	6366	8878	7469	9982	8573	12190	10781	14396	12988
PV 210 SR 08	5086	3475					4030	2419	5133	3523	6236	4626	7340	5730	8444	6834	9548	7938	11755	10145	13962	12352
PV 210 SR 09	5721	3909							4699	2887	5803	3991	6906	5095	8328	6198	9113	7302	11320	9509	13528	11716
PV 210 SR 10	6357	4344									5368	3355	6472	4459	5755	5562	8678	6666	10886	8673	13093	11081
PV 210 SR 11	6992	4779											6037	3823	7141	4926	8245	6030	10451	8238	12659	10445
PV 210 SR 12	7628	5213													6706	4291	7810	5395	10018	7602	12224	9810
PV 240 SR 05	4903	3633	4583	3313	6295	5025	8007	6736	9718	8447	11430	10160	13142	11872								
PV 240 SR 06	5884	4360	3856	2332	5568	4044	7280	5756	8992	7468	10704	9179	12415	10891	14127	12603						
PV 240 SR 07	6865	5087			4841	3063	6553	4775	8265	6487	9977	8199	11689	9910	13400	11622	15112	13334				
PV 240 SR 08	7846	5813					5827	3794	7538	5506	9250	7218	10962	8930	12674	10642	14386	12353	17809	15777		
PV 240 SR 09	8826	6540							6812	4526	8524	6237	10235	7949	11947	9661	13659	11373	17082	14796	20506	18220
PV 240 SR 10	9807	7267									7797	5257	9509	6968	11220	8480	12932	10392	16356	13816	19779	17239
PV 240 SR 11	10779	7993											8782	5988	10494	7699	12206	9411	15629	12835	19053	16258
PV 240 SR 12	11768	8720													9767	6719	11479	8431	14902	11854	18326	15278
PV 270 SR 05	6957	4952	6602	4597	9009	7005	11417	9412	13823	11819	16231	14226	18638	16633								
PV 270 SR 06	8348	5943	5612	3206	8019	5613	10426	8021	12833	10427	15241	12437	17647	15241	19975	17649						
PV 270 SR 07	9740	6933			7029	4222	10321	6629	11743	9036	14250	11443	16657	13850	19064	16258	21472	18665				
PV 270 SR 08	11131	7923					8446	5238	10852	7645	13260	10052	15666	12459	18074	14866	20481	17274	25295	22088		
PV 270 SR 09	12522	8914							9862	6253	12269	8661	14676	11067	17083	13475	19491	15882	24305	20696	29119	25510
PV 270 SR 10	13914	9904									11279	7269	13685	9676	16093	12083	18500	14491	23314	19305	28128	24119
PV 270 SR 11	15305	10895											12695	8285	15102	10692	17510	13099	22324	17914	27138	22728
PV 270 SR 12	16697	11885													14112	9301	16520	11708	26148	16522	26418	21336
PV 300 SR 05	9133	6117	8740	5724	11845	8829	14942	11926	18039	15023	21136	18120	24233	21217	27330	24314	30427	27411	36620	33604	42814	39798
PV 300 SR 06	10960	7340	7517	3897	10622	7002	13719	10099	16816	13196	19913	16293	23009	19390	26106	22487	29203	25584	35397	31778	41591	37972
PV 300 SR 07	12787	8563			9399	5175	12495	8272	15592	11369	18689	14466	23379	17563	24885	20660	27980	23757	34174	29951	40368	36145
PV 300 SR 08	14613	9787							14369	9542	17466	12639	20563	15736	23660	18833	26757	21930	32951	28124	39144	34318
PV 300 SR 09	16440	11011							13146	7716	16242	10816	19339	13909	22410	17006	25533	20103	31727	26297	37921	32491
PV 300 SR 10	18267	12234									15019	8986	18116	12083	21213	15180	24310	18277	30503	24470	36697	30664
PV 300 SR 11	20094	13457											16892	10257	19989	13354	23086	16450	29280	22644	35474	28838
PV 300 SR 12	21920	14680																				



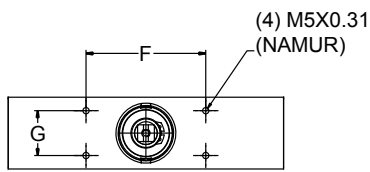
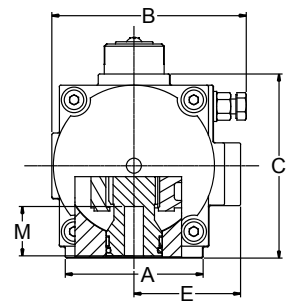
# DIMENSIONS



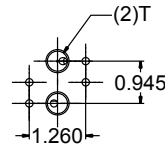
PV32



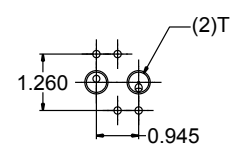
PV40 ~ PV160



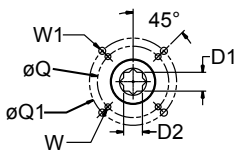
PV32 ~ PV160  
TOP MOUNT



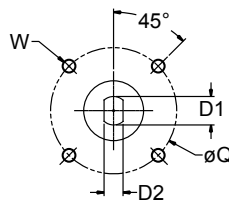
PV32  
SIDE MOUNT



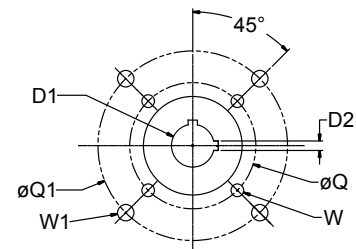
PV40 ~ PV160  
SIDE MOUNT



PV32 ~ PV50  
BOTTOM MOUNT



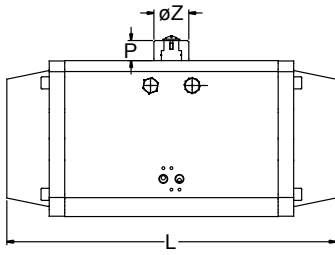
PV65 ~ PV95  
BOTTOM MOUNT



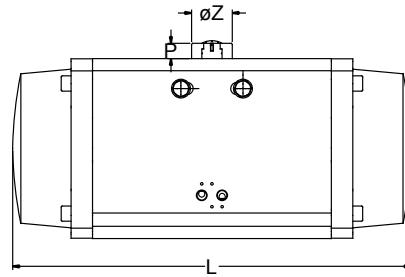
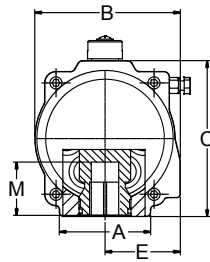
PV110 ~ PV160  
BOTTOM MOUNT

Model	A	B	C	E	F	G	P	ØZ	L	M	Flange	Q	Q1	W	W1	D1	D2	T
PV 032	1.46	1.85	1.97	1.06	1.97	1.18	0.79	1.57	4.33	0.39	F03	1.42		4-M5 X 9		0.354	0.354	1/8" NPT
PV 040	1.89	2.56	2.36	1.44	1.97	1.18	0.79	1.57	4.80	0.47	F03/05	1.42	1.97	4-M6 X 9	4-M5 X 8	0.433	0.433	1/4" NPT
PV 050	1.77	2.78	2.75	1.63	3.15	1.18	0.79	1.57	6.26	0.47	F03/05	1.42	1.97	4-M5 X 7.5	4-M6 X 9	0.433	0.433	1/4" NPT
PV 065	3.07	3.60	3.50	2.03	3.15	1.18	0.79	1.57	7.44	1.30		3.25		3/8"-16UNC x 0.59		0.562	0.375	1/4" NPT
PV 075	3.11	4.04	3.94	2.32	3.15	1.18	0.79	1.57	8.27	1.30		3.25		3/8"-16UNC x 0.59		0.75	0.50	1/4" NPT
PV 085	3.07	4.50	4.45	2.50	3.15	1.18	0.79	1.57	9.02	1.30		3.25		3/8"-16UNC x 0.59		0.75	0.50	1/4" NPT
PV 095	3.62	5.12	4.84	3.03	3.15	1.18	0.79	1.57	10.39	1.30		3.25		3/8"-16UNC x 0.59		0.75	0.50	1/4" NPT
PV 110	3.66	5.45	5.35	3.01	3.15	1.18	0.79	1.57	10.47	1.30		3.25		3/8"-16UNC x 0.59		1.125	1/4" Key	1/4" NPT
PV 125	4.57	6.50	6.34	3.35	3.15	1.18	1.18	2.20	13.27	2.10		3.25	5.00	3/8"-16UNC x 0.59	1/2"-13UNC x 0.71	1.125	1/4" Key	1/4" NPT
PV 140	4.57	7.24	7.01	3.82	3.15	1.18	1.18	2.21	14.84	2.10		3.25	5.00	3/8"-16UNC x 0.59	1/2"-13UNC x 0.71	1.125	1/4" Key	1/4" NPT
PV 160	4.57	7.72	7.87	4.17	5.12	1.18	1.18	2.21	16.22	2.10		3.25	5.00	3/8"-16UNC x 0.59	1/2"-13UNC x 0.71	1.125	1/4" Key	1/4" NPT

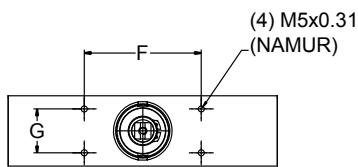
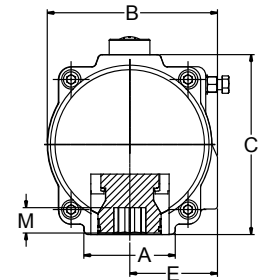
# DIMENSIONS



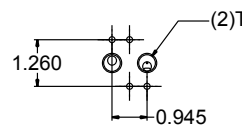
PV190 ~ PV270



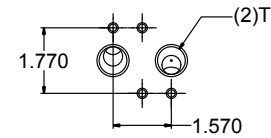
PV300 ~ PV400



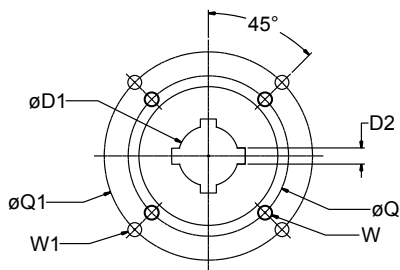
PV190 ~ PV400  
TOP MOUNT



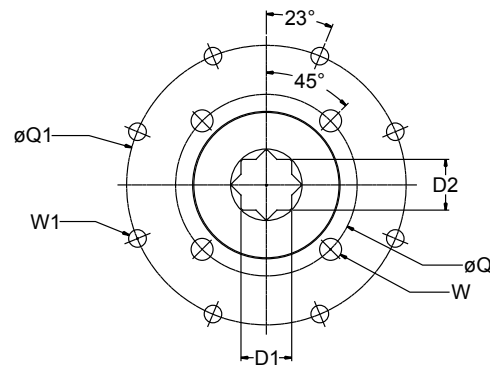
PV190 ~ PV210  
SIDE MOUNT



PV240 ~ PV400  
SIDE MOUNT



PV190 ~ PV270  
BOTTOM MOUNT



PV300 ~ PV400  
BOTTOM MOUNT

Model	A	B	C	E	F	G	P	ØZ	L	M	Flange	Q	Q1	W	W1	D1	D2	T
PV 190	5.35	8.52	9.13	4.41	5.12	1.18	1.18	2.21	19.21	3.11		5.00		1/2"-13UNC x 0.71		1.375	5/16" Key	1/4" NPT
PV 210	5.51	9.27	10.04	4.72	5.12	1.18	1.18	3.15	21.65	4.11		5.00	6.50	1/2"-13UNC x 0.71	3/4"-10UNC x 0.98	1.875	1/2" Key	1/4" NPT
PV 240	6.26	10.31	11.50	5.16	5.12	1.18	1.18	3.15	23.70	4.11		5.00	6.50	1/2"-13UNC x 0.71	3/4"-10UNC x 1.18	1.875	1/2" Key	1/2" NPT
PV 270	6.26	11.61	13.03	5.81	5.12	1.18	1.18	3.15	23.70	4.11		5.00	6.50	1/2"-13UNC x 0.71	3/4"-10UNC x 1.18	1.875	1/2" Key	1/2" NPT
PV 300	7.07	13.19	13.94	6.81	5.12	1.18	1.18	3.15	30.87	1.97	F16	6.50		4-M20 X 1.1		1.81	1.81	1/2" NPT
PV 350	10.63	15.16	16.14	7.68	5.12	1.18	1.18	3.15	33.27	1.97	F16/25	6.50	10.00	4-M20 X 1.1	8-M16 X 1.26	1.81	1.81	1/2" NPT
PV 400	11.42	20.47	18.35	10.24	5.12	1.18	1.18	3.15	37.64	2.36	F25	-	10.00	8-M16 X 1.26		2.16	2.16	1/2" NPT

# PNEUMATIC ACTUATOR PV SERIES ORDERING INFORMATION

Series	
<b>XX</b>	
<b>PV</b>	Pneumatic

Actuator Size	
<b>XXX</b>	
<b>032</b>	32
<b>040</b>	40
<b>050</b>	50
<b>065</b>	65
<b>075</b>	75
<b>085</b>	85
<b>095</b>	95
<b>110</b>	110
<b>125</b>	125
<b>140</b>	140
<b>160</b>	160
<b>190</b>	190
<b>210</b>	210
<b>240</b>	240
<b>270</b>	270
<b>300</b>	300
<b>350</b>	350
<b>400</b>	400

Action	
<b>XX</b>	
<b>DA</b>	Double Acting
<b>SR</b>	Spring Return

Spring	
<b>XX</b>	
<b>05</b>	Total Number of Spring
<b>06</b>	Total Number of Spring
<b>07</b>	Total Number of Spring
<b>08</b>	Total Number of Spring
<b>09</b>	Total Number of Spring
<b>10</b>	Total Number of Spring
<b>11</b>	Total Number of Spring
<b>12</b>	Total Number of Spring

## Pneumatic Actuator Ordering Examples

### Example P/N: PV-075-SR10

PV Series actuator, Model 75 with five springs per side

*Note: Standard Spring Configuration is "SR 10"*



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