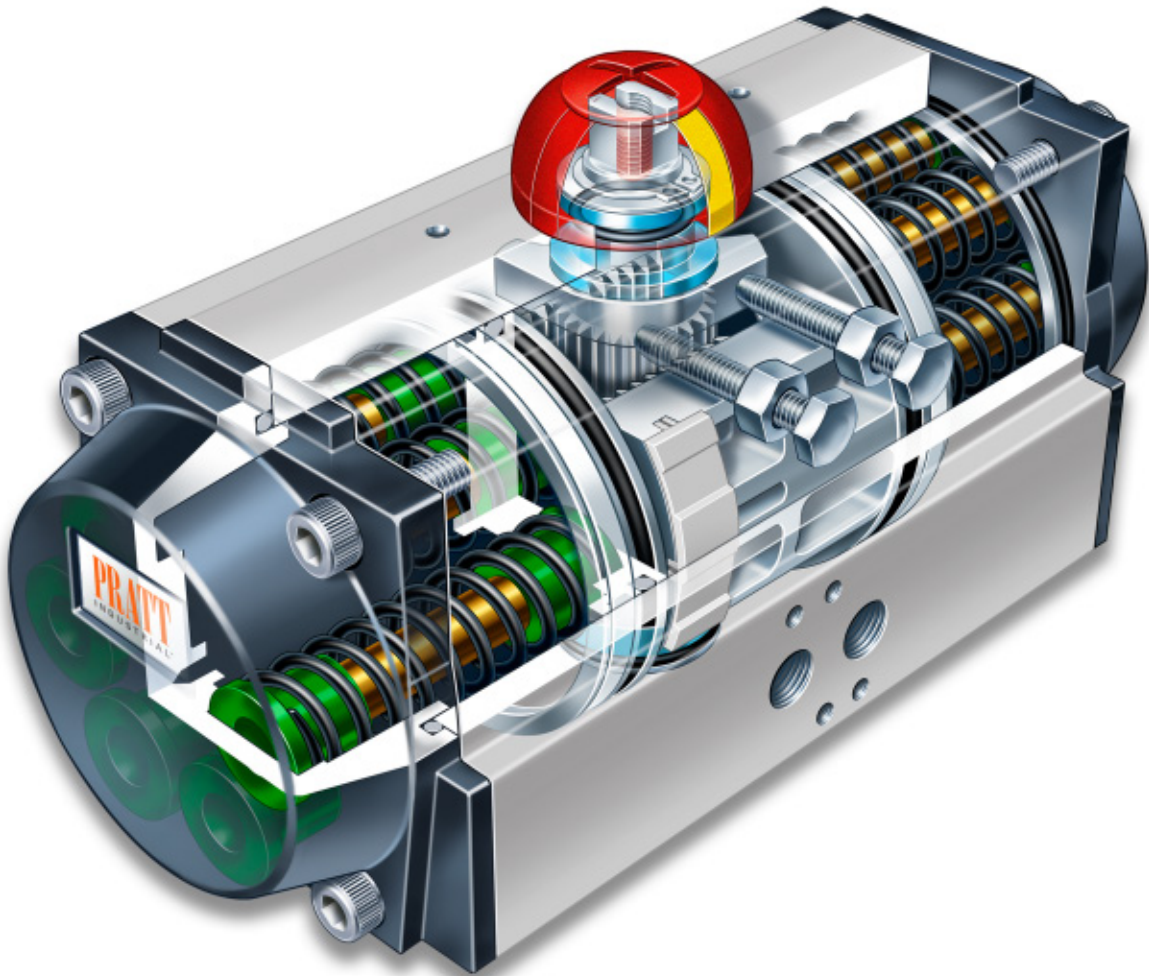


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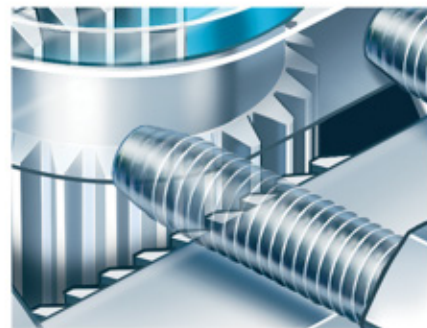
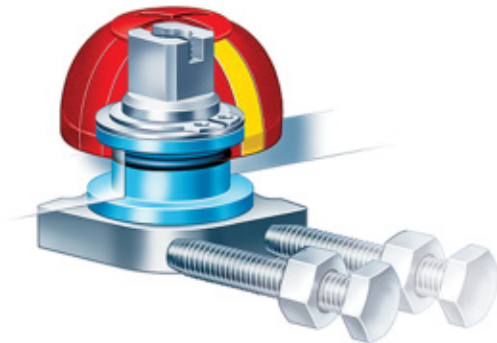
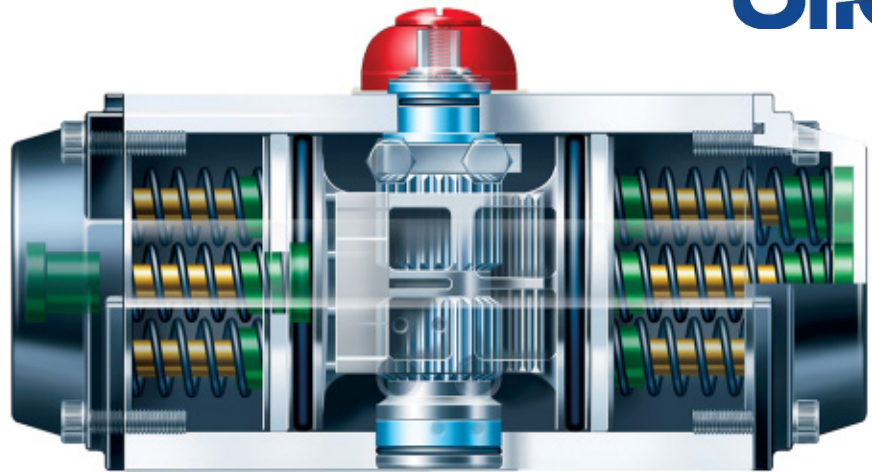
# Pneumatic Actuator PIK Series



Engineering Creative Solutions  
for Fluid Systems Since 1901

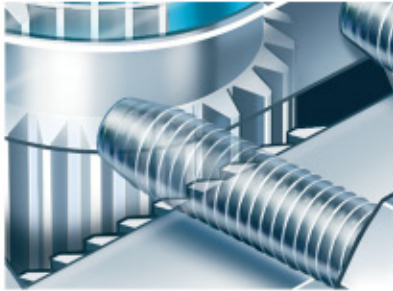
## INTRODUCTION

- Pratt Industrial designs and provides high quality actuators and services related to valve automation.
- Our many years of experience in the automation field enables us to launch our PIK Series Pneumatic Actuator which sets new standards in design, performance and reliability to integrate fully into sophisticated control systems.



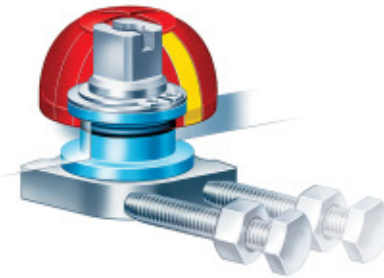
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## FEATURES



### Improved Travel Stop Design

- Allows the actuator to stop off the pinion rather than the pistons.
- The standard actuator will have 100 degrees of travel with +5 or -5 degrees of adjustment on the open and close stop.
- The forged steel travel stop can be machined to any length of travel.



### Upgraded Top Hat Thrust Bearing Design

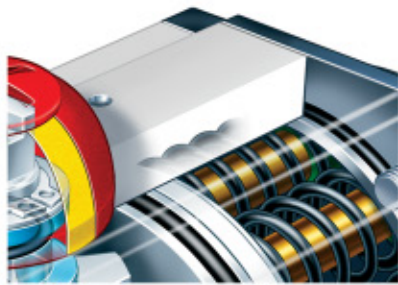
- Provides the largest pinion bearing surface in the industry.
- This upgraded Thrust Bearing limits friction between the actuator body and pinion, increases durability by absorbing side-load forces, and extends the cycle life of pinion o-rings.



### Increased Tooth Engagement

- A minimum of two teeth are engaged at all times during the stroke for consistent torque output and accuracy.

## OPTIONS AVAILABLE



### Mounting Options

- 3.25" and 5" bolt circles along with "Double D" and keyway pinions available for direct valve automation.

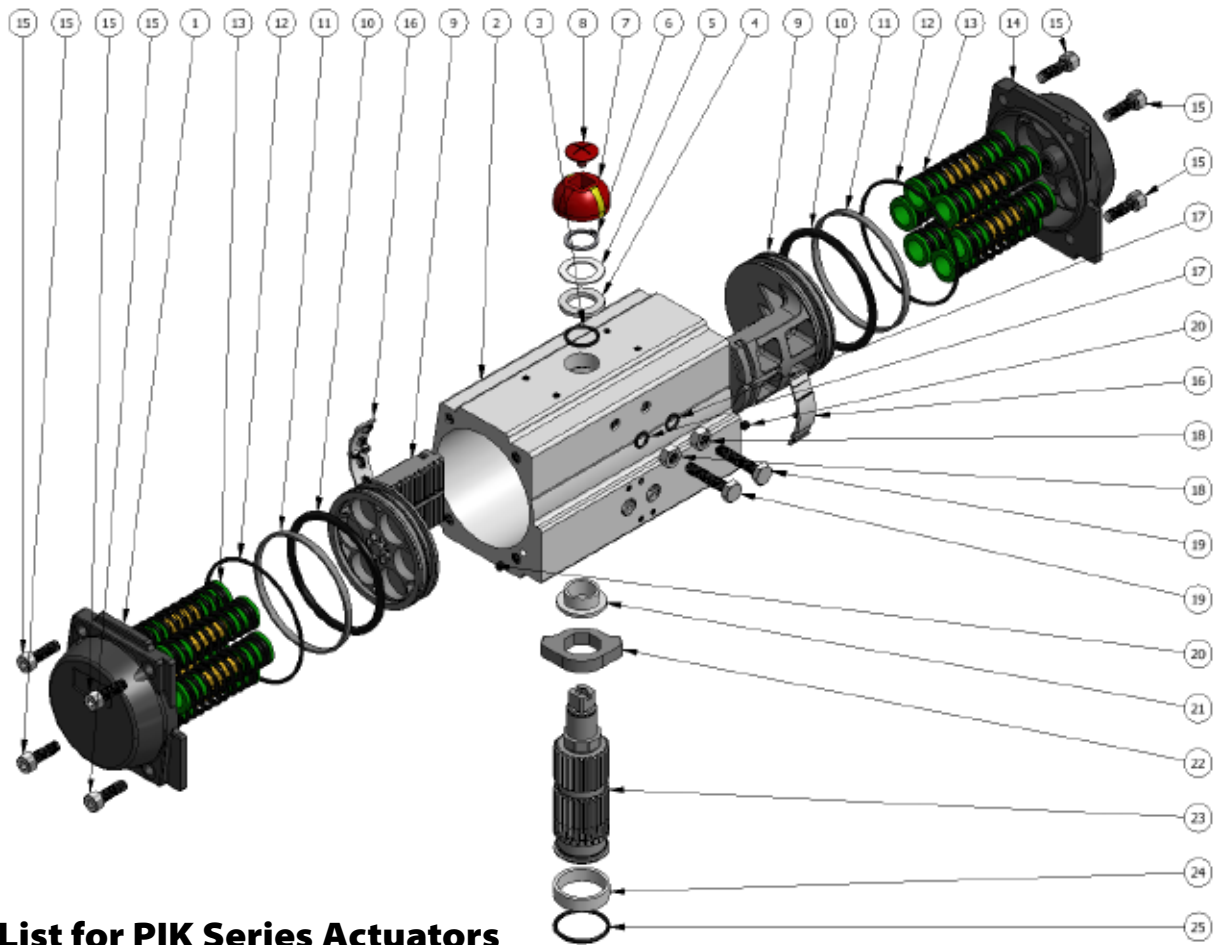
### Actuator Options

- 120°, 135°, 180° rotation in double acting and spring return
- Low and high temperature
- Fast acting/quick exhaust
- 100% travel stop adjustment
- 3 position actuators

### Coating Options

- Anodized type II
- Hard Anodized type III
- Anodized type II / epoxy polyester powder coat
- ANI - high phosphorus nickel impregnated
- Anodized type II or III / PTFE sealed

*Several new options are available to provide the level of corrosion protection needed for the required application. Whether your application's pharmaceutical, food and beverage, oil and gas, refining, marine, or chemical processing, our standard and optional coatings will ensure reliable performance.*



## Part List for PIK Series Actuators

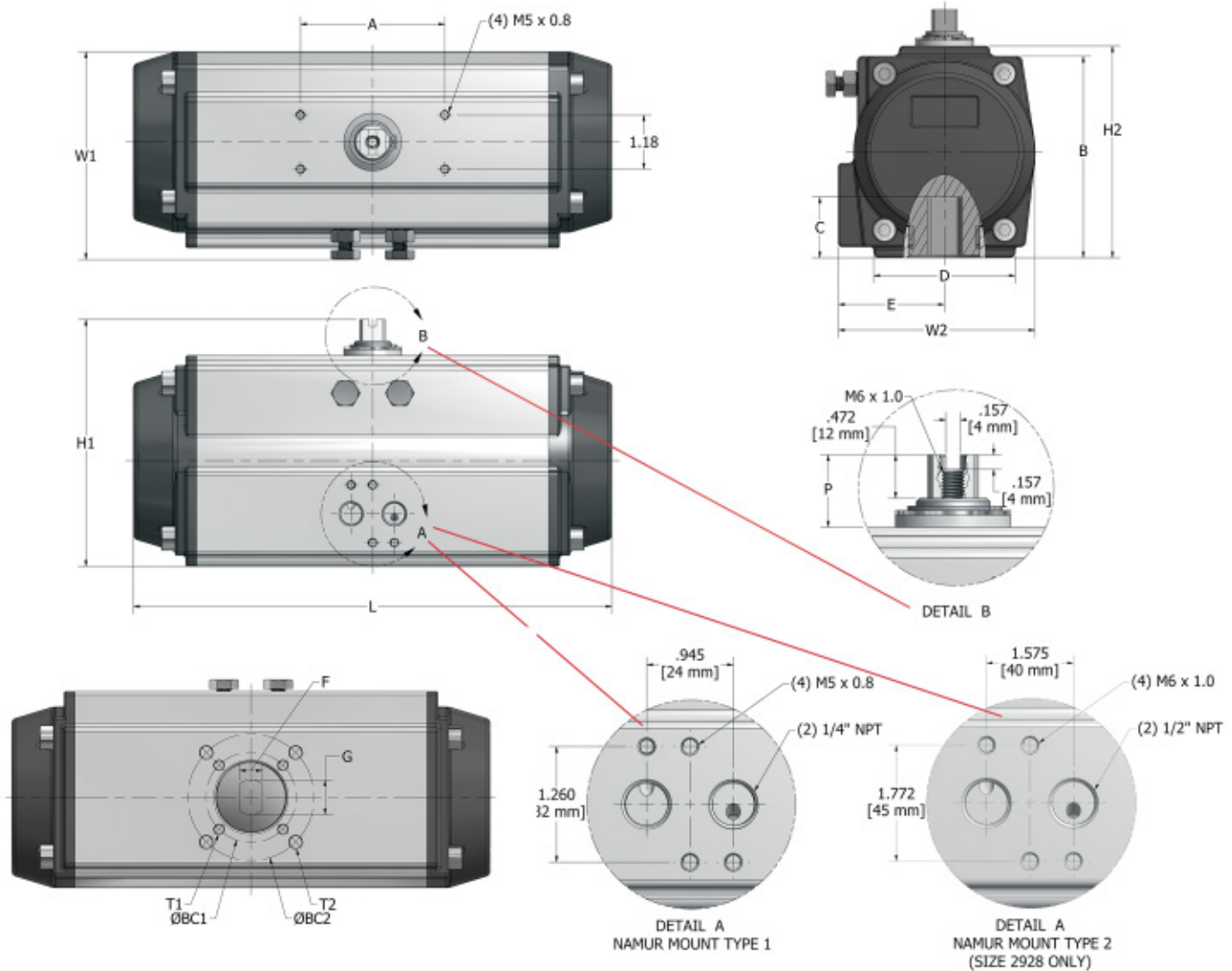
Item #	Qty.	Part Name	Material
1	1	Left End Cap	ASTM 384 Cast Aluminum
2	1	Body	6005T5 Extruded Aluminum
3	1	Upper Pinion O-Ring	NBR/Viton*/Low Temp NBR**
4	1	Flange Bearing	Delrin/Polysulphone (PSU)*
5	1	Pinion Washer	Stainless Steel
6	1	Pinion Circlip	Stainless Steel
7	1	Indicator	ABS
8	1	Indicator Screw	ABS
9	2	Piston	ASTM A23320 Anodized
10	2	Piston O-Ring	NBR/Viton*/Low Temp NBR**
11	2	Piston Guide	Bronze Impregnated PTFE
12	2	End Cap O-Ring	NBR/Viton*/Low Temp NBR**
13	0-12	Spring Cartridge	Epoxy Coated Spring Steel
14	1	Right End Cap	ASTM 384 Cast Aluminum
15	8	End Cap Socket Head Cap Screw	Stainless Steel
16	2	Piston Skate	Delrin/Polysulphone (PSU)*
17	2	Stop O-Ring	NBR/Viton*/Low Temp NBR**
18	2	Stop Nut	Stainless Steel
19	2	Stop Bolt	Stainless Steel
20	2	Air Channel Plug	NBR/Viton*/Low Temp NBR**
21	1	Thrust Bearing	Delrin/Polysulphone (PSU)*
22	1	Pinion Cam	Electroless Nickel/Forged 1045 Carbon Steel
23	1	Pinion	Electroless Nickel/Alloy Steel
24	1	Lower Pinion Bearing	Delrin/Polysulphone (PSU)*
25	1	Lower Pinion O-Ring	NBR/Viton*/Low Temp NBR**

# TECHNICAL INFORMATION



PSI	Double Acting					Spring Return														
	40	60	80	100	120	K#	ALL Spring		40 AIR		60 AIR		80 AIR		100 AIR		120 AIR			
							Start	End	Start	End	Start	End	Start	End	Start	End	Start	End		
PIK10	57	85	113	141	170															
	96	143	191	239	287	K22	42	29	67	53	115	101	162	149	210	197	258	245		
						K33	63	43	53	32	100	80	148	128	196	176	244	224		
						K44	84	57	38	11	86	59	134	107	182	155	229	203		
						K55	105	71			72	38	120	86	167	134	215	181		
PIK20						K66	126	86			58	17	105	65	153	113	201	160		
	170	255	340	425	510	K22	71	46	122	97	206	181	290	265	375	349	459	434		
						K33	107	69	99	61	183	145	267	230	352	314	436	398		
						K44	143	92	76	26	160	110	244	194	328	278	413	362		
						K55	178	115			137	74	221	158	305	242	390	327		
PIK34						K66	214	138			114	39	198	123	282	207	367	291		
	241	361	482	602	723	K22	99	71	167	140	287	259	406	378	525	498	644	617		
						K33	148	107	132	91	251	210	370	329	490	448	609	568		
						K44	197	142	96	41	216	161	335	280	454	399	573	518		
						K55	246	178			180	111	299	231	419	350	538	469		
PIK48						K66	296	213			145	62	264	181	383	301	502	420		
	369	553	738	922	1107	K22	157	106	259	208	441	391	624	573	806	756	989	939		
						K33	235	160	206	130	388	312	571	495	753	678	936	860		
						K44	314	213	152	52	335	234	517	417	700	599	883	782		
						K55	392	266			282	156	464	338	647	521	829	703		
PIK75						K66	470	319			229	77	411	260	594	442	776	625		
	544	816	1088	1360	1632	K22	234	157	381	304	650	573	919	843	1189	1112	1458	1381		
						K33	351	236	303	187	572	456	841	726	1110	995	1379	1264		
						K44	468	314	224	70	493	339	762	609	1031	878	1301	1147		
						K55	585	393			415	222	684	492	953	761	1222	1030		
PIK105						K66	702	471			336	105	605	374	874	644	1143	913		
	787	1181	1574	1968	2361	K22	335	213	566	444	956	833	1345	1223	1735	1612	2124	2002		
						K33	503	320	459	276	849	666	1239	1055	1628	1445	2018	1834		
						K44	671	426	353	109	742	498	1132	888	1522	1277	1911	1667		
						K55	838	533			636	330	1025	720	1415	1110	1805	1499		
PIK157						K66	1006	639			529	163	919	552	1309	942	1698	1331		
	1190	1784	2379	2974	3569	K22	535	353	836	654	1431	1249	2026	1844	2620	2438	3215	3033		
						K33	803	530	659	386	1254	981	1849	1576	2444	2171	3038	2765		
						K44	1071	707	483	119	1078	713	1672	1308	2267	1903	2862	2498		
						K55	1339	883			901	446	1496	1040	2090	1635	2685	2230		
PIK237						K66	1606	1060			724	178	1319	773	1914	1367	2508	1962		
	1658	2487	3316	4145	4974	K22	752	438	1221	906	2050	1735	2879	2564	3708	3393	4537	4223		
						K33	1128	656	1002	531	1831	1360	2660	2189	3489	3018	4318	3847		
						K44	1503	875	783	155	1612	984	2441	1813	3270	2642	4099	3471		
						K55	1879	1094			1393	608	2222	1437	3051	2266	3880	3095		
PIK331						K66	2255	1313			1174	232	2004	1061	2833	1890	3662	2719		
	2035	3052	4069	5087	6104	K22	877	579	1456	1158	2473	2175	3491	3193	4508	4210	5525	5227		
						K33	1315	868	1166	720	2184	1737	3201	2754	4219	3772	5236	4789		
						K44	1754	1158	877	281	1894	1298	2912	2316	3929	3333	4946	4351		
						K55	2192	1447			1605	860	2622	1877	3640	2895	4657	3912		
PIK406						K66	2630	1737			1316	422	2333	1439	3350	2456	4368	3474		
	3166	4749	6332	7914	9497	K22	1423	939	2210	1726	3785	3301	5360	4876	6935	6450	8509	8025		
						K33	2135	1408	1741	1014	3316	2589	4890	4164	6465	5739	8040	7313		
						K44	2847	1878	1272	303	2846	1877	4421	3452	5996	5027	7570	6602		
						K55	3558	2347			2377	1166	3951	2741	5526	4315	7101	5890		
PIK633						K66	4270	2817			1907	454	3482	2029	5057	3604	6631	5178		
	5049	7574	10099	12624	15148	K22	2103	1346	3703	2947	6228	5471	8753	7996	11277	10521	13802	13045		
						K33	3154	2019	3030	1895	5555	4420	8080	6945	10604	9469	13129	11994		
						K44	4206	2692	2357	844	4882	3368	7406	5893	9931	8418	12456	10943		
						K55	5257	3366			4209	2317	6733	4842	9258	7366	11783	9891		
PIK1009						K66	6308	4039			3535	1266	6060	3790	8585	6315	11110	8840		
	6297	9445	12594	15742	18891	K22	2590	1851	4446	3707	7594	6856	10743	10004	13891	13152	17040	16301		
						K33	3885	2777	3520	2412	6669	5561	9817	8709	12966	11858	16114	15006		
						K44	5180	3702	2595	1117	5743	4266	8892	7414	12040	10563	15188	13711		
						K55	6475	4628			4818	2971	7966	6119	11114	9268	14263	12416		
PIK1260						K66	7769	5553			3892	1676	7040	4824	10189	7973	13337	11121		
	9158	13737	18316	22895	27475	K22	3851	2763	6348	5260	10903	9815	15459	14371	20014	18926	24570	23482		
						K33	5777	4145	4966	3334	9522	7890	14077	12445	18633	17000	23188	21556		
						K44	7703	5526	3585	1408	8140	5964	12696	10519	17251	15075	21807	19630		
						K55	9628	6908			6759	4038	11314	8594	15870	13149	20425	17705		
PIK1831						K66	11554	8289			5377	2113	9932	6668	14488	11224	19043	15779		
	14641	21962	29282	36603	43923	K22	5352	3769	10069	8486	16987	15404	23906	22323	30825	29242	37743	36160		
						K33	8027	5653	8184	5810	15103	12729	22022	19647	28940	26566	35859	33485		
						K44	10703	7537	6300	3134	13219	10053	20137	16971	27056	23890	33974	30809		
						K55	13379	9422			11334	7377	18253	14296	25171	21214	32090	28133		
PIK2928						K66	16055	11306			9450	4701	16368	11620	23287	18539				

# TECHNICAL DIMENSIONS



Size	L	W1	W2	H1	H2	P	BC1	T1	BC2	T2	A	B	C	D	E	F	G
PIK10	4.91	3.11	2.38	3.17	2.38	0.79 (20mm)	1.417 (F03)	#10-32 UNF	1.969 (F05)	1/4-20 UNC	3.15	-	0.55	1.89	1.44	0.433 (11mm)	-
PIK20	5.79	3.15	2.80	3.62	2.83	0.79 (20mm)	1.417 (F03)	#10-32 UNF*	1.969 (F05)	1/4-20 UNC*	3.15	-	0.59	2.09	1.61	0.433 (11mm)	-
PIK34	6.69	3.50	3.30	4.24	3.46	0.79 (20mm)	1.417 (F03)	1/4-20 UNC	2.756 (F07)	5/19-18 UNC	3.15	3.19	0.71	2.67	1.85	0.511 (14mm)	-
PIK48	7.32	3.90	3.74	4.71	3.93	0.79 (20mm)	3.25	3/8-16 UNC X 0.59 DP	-	-	3.15	3.70	1.30	3.07	2.09	0.57	0.38
PIK75	8.35	4.43	4.06	5.08	4.29	0.79 (20mm)	3.25	3/8-16 UNC X 0.59 DP	-	-	3.15	3.88	1.30	3.07	2.25	0.76	0.51
PIK105	10.43	4.72	4.27	5.38	4.59	0.79 (20mm)	3.25	3/8-16 UNC X 0.59 DP	-	-	3.15	4.37	1.32	3.07	2.30	0.76	0.51
PIK157	10.67	5.16	4.78	6.06	5.28	0.79 (20mm)	3.25	3/8-16 UNC X 0.59 DP	-	-	3.15	4.84	1.34	3.62	2.52	0.76	0.51
PIK237	12.28	5.87	5.61	7.32	6.14	1.18 (30mm)	3.25	3/8-16 UNC X 0.59 DP	-	-	3.15/5.12**	5.75	2.32	3.94	2.93	1.13	.25 key
PIK331	15.04	6.08	5.75	7.68	6.50	1.18 (30mm)	3.25	3/8-16 UNC X 0.59 DP	5.00	1/2-13 UNC X 0.71 DP	3.15/5.12**	6.10	2.36	4.33	2.95	1.13	.25 key
PIK406	15.51	6.24	5.98	7.99	6.81	1.18 (30mm)	3.25	3/8-16 UNC X 0.59 DP	5.00	1/2-13 UNC X 0.71 DP	3.15/5.12**	6.36	2.32	4.72	3.03	1.13	.25 key
PIK633	18.11	7.26	6.85	8.98	7.80	1.18 (30mm)	5.00	1/2-13 UNC X 0.71 DP	-	-	3.15/5.12**	7.26	2.36	4.72	3.43	1.13	.25 key
PIK1009	20.87	8.78	8.11	10.28	9.09	1.18 (30mm)	5.00	1/2-13 UNC X 0.71 DP	-	-	5.12	8.52	3.11	5.12	4.06	1.63	.38 key
PIK1260	21.50	9.70	8.90	11.26	10.08	1.18 (30mm)	5.00	1/2-13 UNC X 0.71 DP	-	-	5.12	9.29	3.11	5.12	4.45	1.63	.38 key
PIK1831	25.28	11.42	10.24	12.64	11.46	1.18 (30mm)	6.50	3/4-10 UNC X 1.18 DP	-	-	5.12	10.45	3.62	6.30	5.12	1.88	.50 key
PIK2928	29.13	12.48	11.57	14.17	12.99	1.18 (30mm)	6.50	3/4-10 UNC X 1.18 DP	-	-	5.12	11.85	3.62	6.30	5.79	1.88	.50 key

\* The size 20 is also available with an F04 (#10-32 UNF on a 1.654 BC) mounting pattern in place of the F03 / F05.

\*\* Sizes 237-633 have 3.15 x 1.18 and a 5.12 x 1.18 top mounting with (8) M5 x 0.8 threaded holes.

Actual air consumption is calculated using the internal volume and supply pressure in the following equation.

## TECHNICAL INFORMATION

Air Consumption (Standard Cubic feet) per Stroke =

$$\frac{V}{1728} \left( \frac{\text{Supply Pressure} + 14.7}{14.7} \right)$$

### Weights (lbs)

Size	DA	K55	Single Spring
PIK10	2.00	-	-
PIK20	3.00	3.30	0.03
PIK34	4.65	5.05	0.04
PIK48	5.75	6.25	0.05
PIK75	7.65	8.65	0.10
PIK105	10.45	11.95	0.15
PIK157	13.25	14.75	0.15
PIK237	21.00	23.50	0.25
PIK331	26.85	30.35	0.35
PIK406	30.05	34.55	0.45
PIK633	45.05	51.55	0.65
PIK1009	72.45	82.95	1.05
PIK1260	87.20	104.70	1.75
PIK1831	124.00	149.00	2.50
PIK2928	180.00	222.00	4.20

### Free Internal Air Volume (in<sup>3</sup>)

Size	Opening Stroke	Closing Stroke (DA only)
PIK10	4.27	5.49
PIK20	5.49	11.59
PIK34	8.54	15.87
PIK48	13.43	23.19
PIK75	20.75	32.34
PIK105	30.51	56.75
PIK157	46.99	72.62
PIK237	76.28	104.96
PIK331	111.06	163.54
PIK406	131.81	195.28
PIK633	206.87	294.74
PIK1009	341.12	484.53
PIK1260	405.20	642.58
PIK1831	590.71	994.08
PIK2928	911.08	1502.40

### Speed of Operation (sec)

Size	Double Acting			Spring Return		
	Opening Stroke	Closing Stroke	Per Cycle	Opening Stroke	Closing Stroke	Per Cycle
PIK10	0.2	0.2	0.4	-	-	-
PIK20	0.2	0.2	0.4	0.3	0.3	0.6
PIK34	0.3	0.3	0.6	0.3	0.4	0.7
PIK48	0.3	0.4	0.7	0.4	0.5	0.9
PIK75	0.4	0.5	0.9	0.5	0.6	1.1
PIK105	0.6	0.6	1.2	0.7	0.9	1.6
PIK157	0.8	0.8	1.6	0.9	1.1	2.0
PIK237	0.9	1.1	2.0	1.2	1.4	2.6
PIK331	1.2	1.3	2.5	1.4	1.5	2.9
PIK406	1.4	1.4	2.8	1.5	1.8	3.3
PIK633	1.7	1.8	3.5	1.8	2.1	3.9
PIK1009	2.4	2.5	4.9	2.5	2.8	5.3
PIK1260	2.7	3.2	5.9	3.5	4.0	7.5
PIK1831	3.5	4.0	7.5	4.1	4.6	8.7
PIK2928	4.0	4.5	8.5	4.5	5.0	9.5

### Temperature Specifications

Temp Designation	Temp Range (F°)	Temp Range (C°)	Bearing Material	O-ring Material	Grease
Standard Temp	-4° to 176°	-20° to 80°	Delrin/Bronze Impregnated PTFE	NBR	Standard
High Temp	5° to 320°	-15° to 160°	PPSU/Bronze Impregnated PTFE	Viton	High Temp
Low Temp	-58° to 176°	-50° to 70°	Delrin/Bronze Impregnated PTFE	Low Temp TBR	Standard