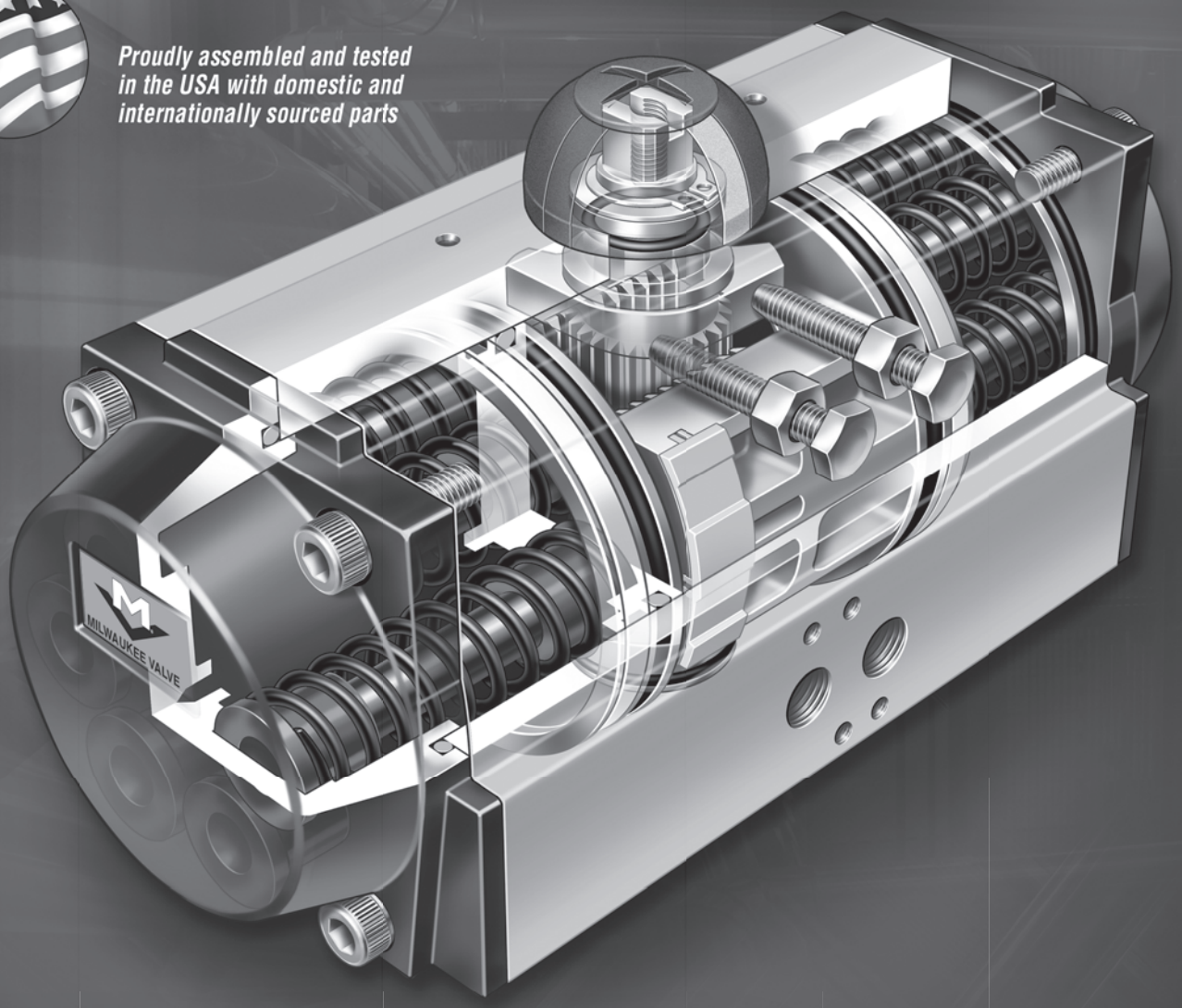
Proudly assembled and tested in the USA with domestic and internationally sourced parts

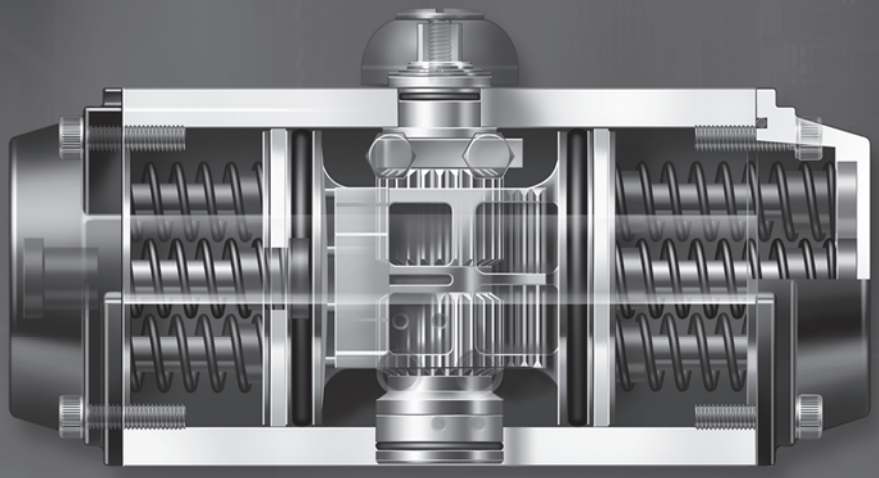


MC-SERIES PNEUMATIC ACTUATOR

MC-SERIES

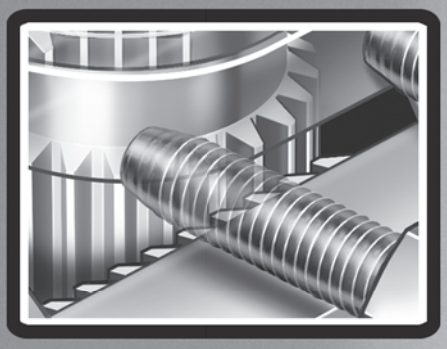
Features & Benefits

Our new M-Series product line represents a new class of actuators with design features that answer the growing needs and demands in the automation business. From the inside out, these changes help set a new standard in excellence, reliability and performance — qualities that continue to be synonymous with the Milwaukee Valve product line.



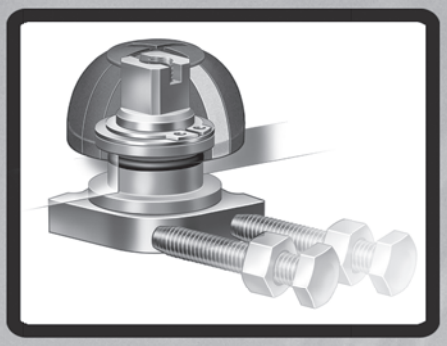
Proudly assembled and tested in the USA with domestic and internationally sourced parts.

Improved Travel Stop Design



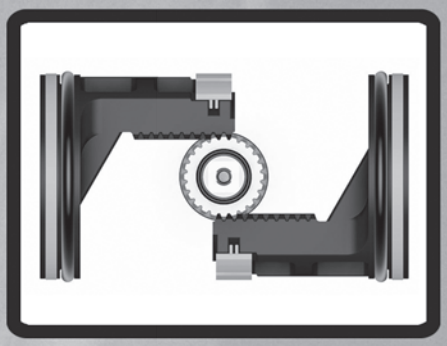
— Allows the actuator to stop off the pinion rather than the pistons. The standard actuator will have 100 degrees of travel with +5 or -5 degrees of adjustment on the open and close stop. The forged steel travel stop can be machined to any length of travel.

Upgraded Top Hat Thrust Bearing Design



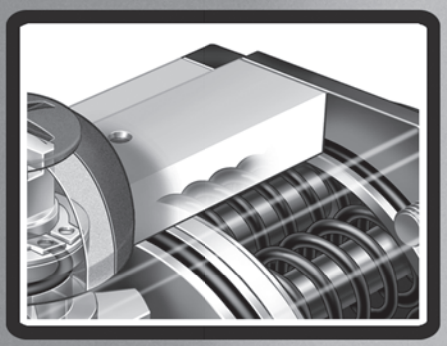
— Provides the largest pinion bearing surface in the industry. This upgraded Thrust Bearing limits friction between the actuator body and pinion, increases durability by absorbing side-load forces, and extends the cycle life of pinion o-rings.

Increased Tooth Engagement



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

Several New High Performance Options Available



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*

Mounting Options:

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

Coating Options:

Anodized type II

Hard Anodized type III

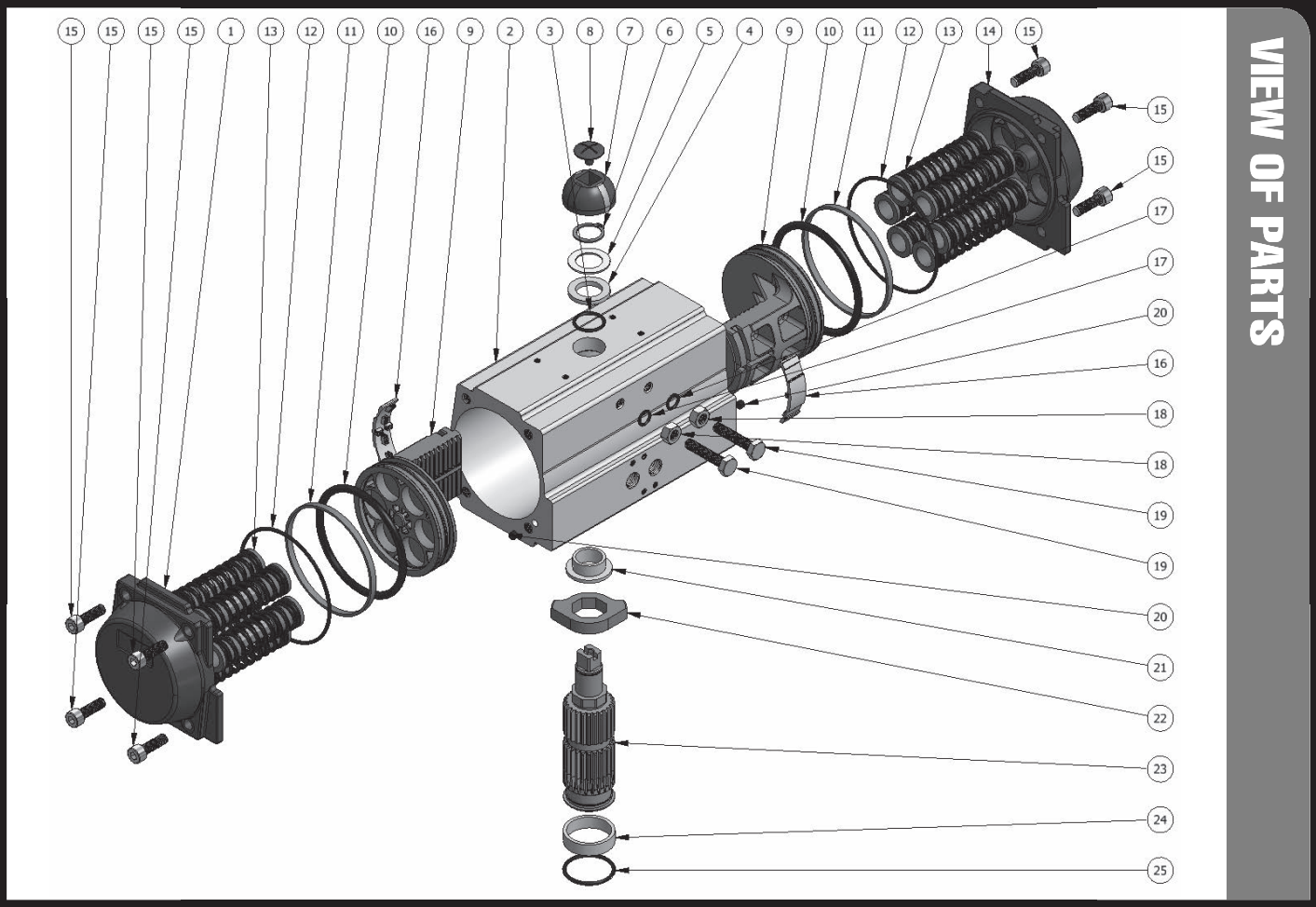
Anodized type II / epoxy polyester powder coat

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.

VIEW OF PARTS



Part List for Milwaukee Valve MC-Series Actuators

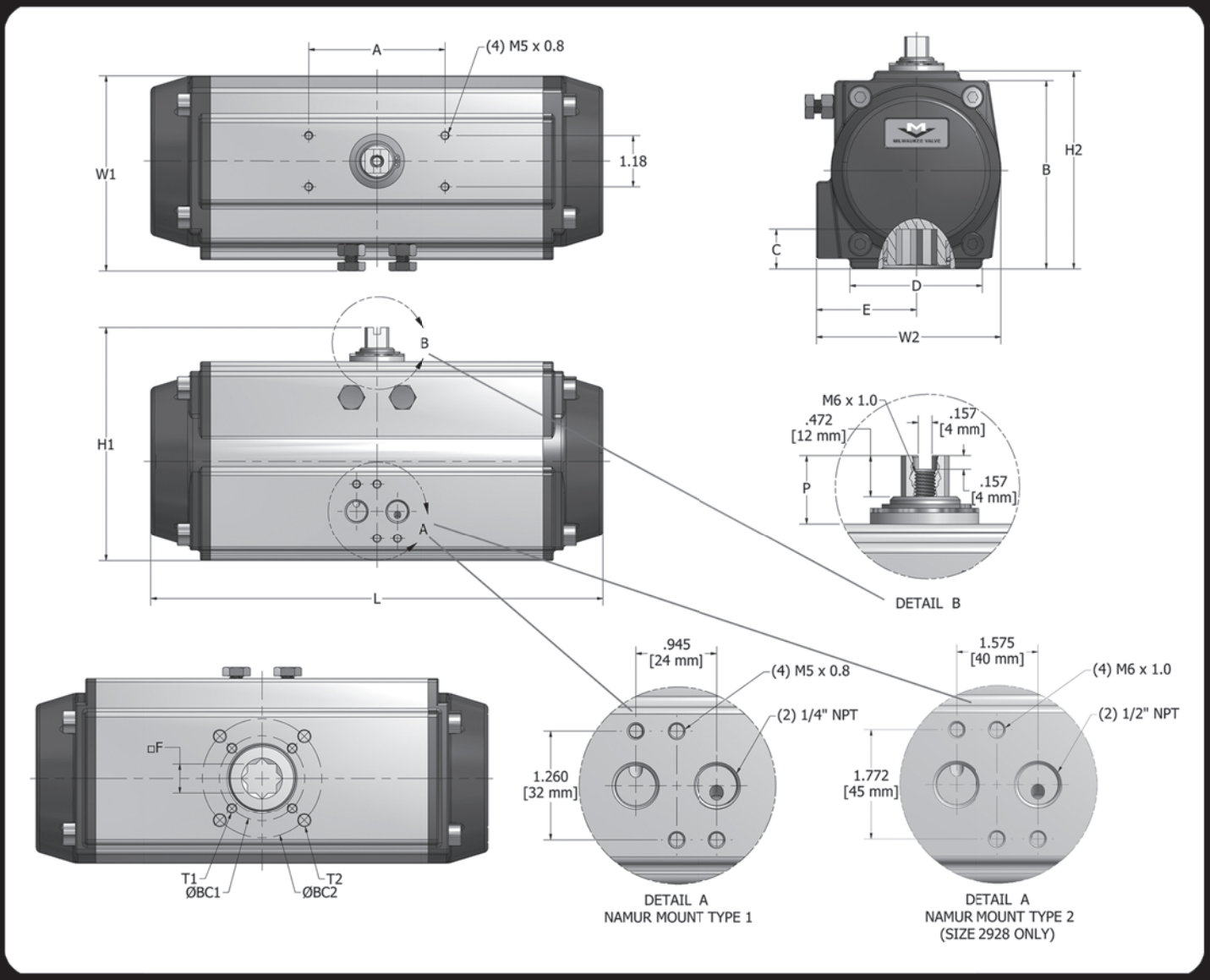
Item #	Qty.	Part Name	Material
1	1	Left End Cap	ASTM 384 Cast Aluminum
2	1	Body	6005T5 Extruded Aluminum
3	1	Upper Pinion O-Ring	NBR/Viton*/Low Temp NBR**
4	1	Flange Bearing	Delrin/Polysulphone (PSU)*
5	1	Pinion Washer	Stainless Steel
6	1	Pinion Circlip	Stainless Steel
7	1	Indicator	ABS
8	1	Indicator 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**

**** Material used for high temperature applications. ** Material used for low temperature applications.***

MC-SERIES TORQUE CHART

	Double Acting					Spring Return											
PSI	40	60	80	100	120		ALL		40		60		80		100		120	
Model						S#	Spring		AIR		AIR		AIR		AIR		AIR	
							Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
MC1	57	85	113	141	170													
MC20	96	143	191	239	287	S2	42	29	67	53	115	101	162	149	210	197	258	245
						S3	63	43	53	32	100	80	148	128	196	176	244	224
						S4	84	57	38	11	86	59	134	107	182	155	229	203
						S5	105	71			72	38	120	86	167	134	215	181
						S6	126	86			58	17	105	65	153	113	201	160
MC34	170	255	340	425	510	S2	71	46	122	97	206	181	290	265	375	349	459	434
						S3	107	69	99	61	183	145	267	230	352	314	436	398
						S4	143	92	76	26	160	110	244	194	328	278	413	362
						S5	178	115			137	74	221	158	305	242	390	327
						S6	214	138			114	39	198	123	282	207	367	291
MC48	241	361	482	602	723	S2	99	71	167	140	287	259	406	378	525	498	644	617
						S3	148	107	132	91	251	210	370	329	490	448	609	568
						S4	197	142	96	41	216	161	335	280	454	399	573	518
						S5	246	178			180	111	299	231	419	350	538	469
						S6	296	213			145	62	264	181	383	301	502	420
MC75	369	553	738	922	1107	S2	157	106	259	208	441	391	624	573	806	756	989	939
						S3	235	160	206	130	388	312	571	495	753	678	936	860
						S4	314	213	152	52	335	234	517	417	700	599	883	782
						S5	392	266			282	156	464	338	647	521	829	703
						S6	470	319			229	77	411	260	594	442	776	625
MC105	544	816	1088	1360	1632	S2	234	157	381	304	650	573	919	843	1189	1112	1458	1381
						S3	351	236	303	187	572	456	841	726	1110	995	1379	1264
						S4	468	314	224	70	493	339	762	609	1031	878	1301	1147
						S5	585	393			415	222	684	492	953	761	1222	1030
						S6	702	471			336	105	605	374	874	644	1143	913
MC157	787	1181	1574	1968	2361	S2	335	213	566	444	956	833	1345	1223	1735	1612	2124	2002
						S3	503	320	459	276	849	666	1239	1055	1628	1445	2018	1834
						S4	671	426	353	109	742	498	1132	888	1522	1277	1911	1667
						S5	838	533			636	330	1025	720	1415	1110	1805	1499
						S6	1006	639			529	163	919	552	1309	942	1698	1331
MC237	1190	1784	2379	2974	3569	S2	535	353	836	654	1431	1249	2026	1844	2620	2438	3215	3033
						S3	803	530	659	386	1254	981	1849	1576	2444	2171	3038	2765
						S4	1071	707	483	119	1078	713	1672	1308	2267	1903	2862	2498
						S5	1339	883			901	446	1496	1040	2090	1635	2685	2230
						S6	1606	1060			724	178	1319	773	1914	1367	2508	1962
MC331	1658	2487	3316	4145	4974	S2	752	438	1221	906	2050	1735	2879	2564	3708	3393	4537	4223
						S3	1128	656	1002	531	1831	1360	2660	2189	3489	3018	4318	3847
						S4	1503	875	783	155	1612	984	2441	1813	3270	2642	4099	3471
						S5	1879	1094			1393	608	2222	1437	3051	2266	3880	3095
						S6	2255	1313			1174	232	2004	1061	2833	1890	3662	2719
MC406	2035	3052	4069	5087	6104	S2	877	579	1456	1158	2473	2175	3491	3193	4508	4210	5525	5227
						S3	1315	868	1166	720	2184	1737	3201	2754	4219	3772	5236	4789
						S4	1754	1158	877	281	1894	1298	2912	2316	3929	3333	4946	4351
						S5	2192	1447			1605	860	2622	1877	3640	2895	4657	3912
						S6	2630	1737			1316	422	2333	1439	3350	2456	4368	3474
MC633	3166	4749	6332	7914	9497	S2	1423	939	2210	1726	3785	3301	5360	4876	6935	6450	8509	8025
						S3	2135	1408	1741	1014	3316	2589	4890	4164	6465	5739	8040	7313
						S4	2847	1878	1272	303	2846	1877	4421	3452	5996	5027	7570	6602
						S5	3558	2347			2377	1166	3951	2741	5526	4315	7101	5890
						S6	4270	2817			1907	454	3482	2029	5057	3604	6631	5178
MC1009	5049	7574	10099	12624	15148	S2	2103	1346	3703	2947	6228	5471	8753	7996	11277	10521	13802	13045
						S3	3154	2019	3030	1895	5555	4420	8080	6945	10604	9469	13129	11994
						S4	4206	2692	2357	844	4882	3368	7406	5893	9931	8418	12456	10943
						S5	5257	3366			4209	2317	6733	4842	9258	7366	11783	9891
						S6	6308	4039			3535	1266	6060	3790	8585	6315	11110	8840
MC1260	6297	9445	12594	15742	18891	S2	2590	1851	4446	3707	7594	6856	10743	10004	13891	13152	17040	16301
						S3	3885	2777	3520	2412	6669	5561	9817	8709	12966	11858	16114	15006
						S4	5180	3702	2595	1117	5743	4266	8892	7414	12040	10563	15188	13711
						S5	6475	4628			4818	2971	7966	6119	11114	9268	14263	12416
						S6	7769	5553			3892	1676	7040	4824	10189	7973	13337	11121
MC1831	9158	13737	18316	22895	27475	S2	3851	2763	6348	5260	10903	9815	15459	14371	20014	18926	24570	23482
						S3	5777	4145	4966	3334	9522	7890	14077	12445	18633	17000	23188	21556
						S4	7703	5526	3585	1408	8140	5964	12696	10519	17251	15075	21807	19630
						S5	9628	6908			6759	4038	11314	8594	15870	13149	20425	17705
						S6	11554	8289			5377	2113	9932	6668	14488	11224	19043	15779
MC2928	14641	21962	29282	36603	43923	S2	5352	3769	10069	8486	16987	15404	23906	22323	30825	29242	37743	36160
						S3	8027	5653	8184	5810	15103	12729	22022	19647	28940	26566	35859	33485
						S4	10703	7537	6300	3134	13219	10053	20137	16971	27056	23890	33974	30809
						S5	13379	9422			11334	7377	18253	14296	25171	21214	32090	28133
						S6	16055	11306			9450	4701	16368	11620	23287	18539	30206	25457

Technical Dimensions



SIZE	L	W1	W2	H1	H2	P	BC1	T1	BC2	T2	A	B	C	D	E	F
MC1	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)
MC20	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)
MC34	6.69	3.50	3.30	4.24	3.46	0.79 (20mm)	1.969 (F05)	1/4-20 UNC	2.756 (F07)	5/16-18 UNC	3.15	3.19	0.71	2.67	1.85	0.551 (14mm)
MC48	7.32	3.90	3.74	4.71	3.93	0.79 (20mm)	1.969 (F05)	1/4-20 UNC	2.756 (F07)	5/16-18 UNC	3.15	3.70	0.71	3.07	2.09	0.551 (14mm)
MC75	8.35	4.43	4.06	5.08	4.29	0.79 (20mm)	1.969 (F05)	1/4-20 UNC	2.756 (F07)	5/16-18 UNC	3.15	3.88	0.94	3.07	2.25	0.669 (17mm)
MC105	10.43	4.72	4.27	5.38	4.59	0.79 (20mm)	1.969 (F05)	1/4-20 UNC	2.756 (F07)	5/16-18 UNC	3.15	4.37	0.93	3.07	2.30	0.669 (17mm)
MC157	10.67	5.16	4.78	6.06	5.28	0.79 (20mm)	2.756 (F07)	5/16-18 UNC	4.016 (F10)	3/8-16 UNC	3.15	4.84	1.22	3.62	2.52	0.866 (22mm)
MC237	12.28	5.87	5.61	7.32	6.14	1.18 (30mm)	2.756 (F07)	5/16-18 UNC	4.016 (F10)	3/8-16 UNC	3.15/5.12**	5.75	1.10	3.94	2.93	0.866 (22mm)
MC331	15.04	6.08	5.75	7.68	6.50	1.18 (30mm)	4.016 (F10)	3/8-16 UNC	4.921 (F12)	1/2-13 UNC	3.15/5.12**	6.10	1.30	4.33	2.95	0.866 (22mm)
MC406	15.51	6.24	5.98	7.99	6.81	1.18 (30mm)	4.016 (F10)	3/8-16 UNC	4.921 (F12)	1/2-13 UNC	3.15/5.12**	6.36	1.42	4.72	3.03	1.063 (27mm)
MC633	18.11	7.26	6.85	8.98	7.80	1.18 (30mm)	4.016 (F10)	3/8-16 UNC	4.921 (F12)	1/2-13 UNC	3.15/5.12**	7.26	1.46	4.72	3.43	1.063 (27mm)
MC1009	20.87	8.78	8.11	10.28	9.09	1.18 (30mm)	5.512 (F14)	5/8-11 UNC	-	-	5.12	8.52	1.65	5.12	4.06	1.417 (36mm)
MC1260	21.50	9.70	8.90	11.26	10.08	1.18 (30mm)	5.512 (F14)	5/8-11 UNC	-	-	5.12	9.29	1.65	5.12	4.45	1.417 (36mm)
MC1831	25.28	11.42	10.24	12.64	11.46	1.18 (30mm)	6.496 (F16)	3/4-10 UNC	-	-	5.12	10.45	2.24	6.30	5.12	1.811 (46mm)
MC2928	29.13	12.48	11.57	14.17	12.99	1.18 (30mm)	6.496 (F16)	3/4-10 UNC	-	-	5.12	11.85	2.24	6.30	5.79	1.811 (46mm)

*The size 20 is also available with an F04 (#10-32 UNF on a 1.654 B.C.) 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.

WEIGHT

MC-Series Weights (lbs)

Size	DA	K55	Single Spring
MC1	2.00	-	-
MC20	3.00	3.30	0.03
MC34	4.65	5.05	0.04
MC48	5.75	6.25	0.05
MC75	7.65	8.65	0.10
MC105	10.45	11.95	0.15
MC157	13.25	14.75	0.15
MC237	21.00	23.50	0.25
MC331	26.85	30.35	0.35
MC406	30.05	34.55	0.45
MC633	45.05	51.55	0.65
MC1009	72.45	82.95	1.05
MC1260	87.20	104.70	1.75
MC1831	124.00	149.00	2.50
MC2928	180.00	222.00	4.20

AIR VOLUME

MC-Series Free Internal Air Volume Cubic Inches (in^3)

Size	Opening Stroke	Closing Stroke (DA only)
MC1	4.27	5.49
MC20	5.49	11.59
MC34	8.54	15.87
MC48	13.43	23.19
MC75	20.75	32.34
MC105	30.51	56.75
MC157	46.99	72.62
MC237	76.28	104.96
MC331	111.06	163.54
MC406	131.81	195.28
MC633	206.87	294.74
MC1009	341.12	484.53
MC1260	405.20	642.58
MC1831	590.71	994.08
MC2928	911.08	1502.40

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

Air Consumption (Standard Cubic feet) per Stroke =

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

SPEED

MC-Series Speed of Operation (sec)

Size	Double Acting			Spring Return		
	Opening Stroke	Closing stroke	Per cycle	Opening Stroke	Closing stroke	Per cycle
MC1	0.2	0.2	0.4	-	-	-
MC20	0.2	0.2	0.4	0.3	0.3	0.6
MC34	0.3	0.3	0.6	0.3	0.4	0.7
MC48	0.3	0.4	0.7	0.4	0.5	0.9
MC75	0.4	0.5	0.9	0.5	0.6	1.1
MC105	0.6	0.6	1.2	0.7	0.9	1.6
MC157	0.8	0.8	1.6	0.9	1.1	2.0
MC237	0.9	1.1	2.0	1.2	1.4	2.6
MC331	1.2	1.3	2.5	1.4	1.5	2.9
MC406	1.4	1.4	2.8	1.5	1.8	3.3
MC633	1.7	1.8	3.5	1.8	2.1	3.9
MC1009	2.4	2.5	4.9	2.5	2.8	5.3
MC1260	2.7	3.2	5.9	3.5	4.0	7.5
MC1831	3.5	4.0	7.5	4.1	4.6	8.7
MC2928	4.0	4.5	8.5	4.5	5.0	9.5

TEMP

MC-Series Temperature Specifications

Temperature Designation	Temperature Range (F°)	Temperature 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 NBR	Standard

Rev. 1