

Building connections that last™



Sharpe® Valves

Automation & Controls

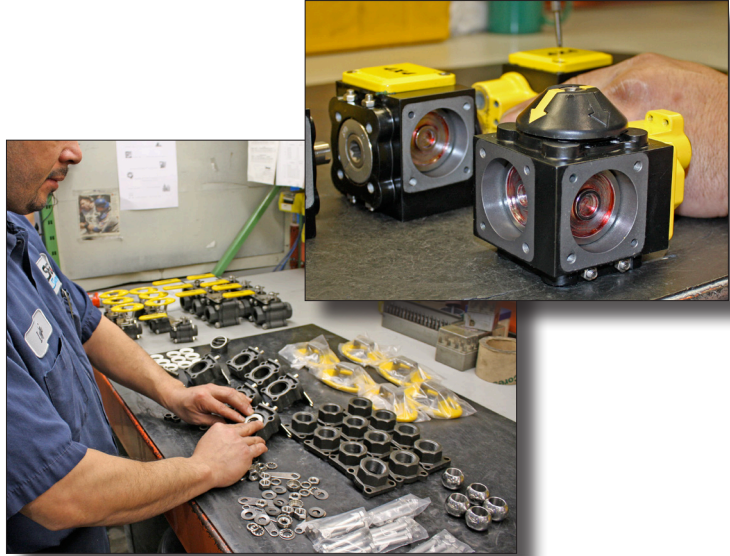




Valves, Automation & Controls



Our staff of In-house engineers are experts in designing valves for even the most stringent applications.



Our ISO 9001:2008 valve manufacturer and designer certification guarantees strict quality control.



Ultrasonic cleaning assures complete de-greasing of clean and cryogenic valve components before being assembled in our on-site clean room.



Every assembled valve is tested and certified to all customer requirements before shipping.



Valves, Automation & Controls

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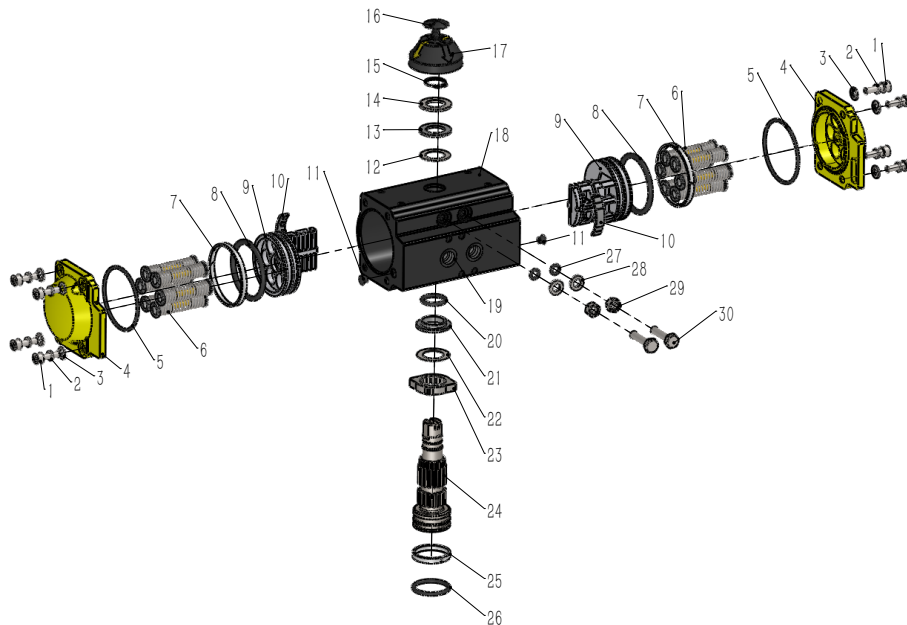
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SPN II Pneumatic Actuator



- Rack & pinion design
- The standard actuator configuration has an epoxy coated, hard anodized aluminum body and epoxy coated end caps
- Inside surface finish (Ra 0.4-0.6µm) to minimize friction and to maximize the life of the actuator.
- Standard applications for temperature ranges from -4°F to 180°F.
- Special options for extreme temperatures (upon request).
- Piston bearing made of material with a low friction coefficient to avoid metal-on-metal contact, easily replaceable for maintenance.
- Base drilling, for valve mounting and centering, according to ISO 5211/DIN 3337 standards.
- The indicator is designed to remain on the actuator for continuous indication when limit switch is not being used. (Not available on SPN II 032)
- Independent bidirectional travel stop adjustment $\pm 5^\circ$ ensuring precise positioning in all flow control services. (Not available on SPN II 032)
- Direct mounted solenoid connections according to NAMUR standards.
- Same body and end caps for double acting and spring return.
- Air supply can be dry or lubricated filter compressed air. Pressure: 40 PSI to 120 PSI
- The lubrication carried out by the manufacturer qualifies for a minimum 1,000,000 operations.
- Epoxy coating is a deposit of powder on clean sandblasted pieces. The chemical process is easily kept under control and after coating, the pieces must be subjected to heat treatment. Epoxy painting of actuators is advised where environment is strongly aggressive. With the exception of certain solvents, epoxy coatings resist acids and alkali, and also has a good resistance to UV rays. In order to retain its properties, the coating must not be scratched.
- Multi-function position indicator with NAMUR slot to allow confirmation of position.
- The SPN II features inserts to allow easy conversion to many square and diamond valve stems. There are also double D along with round bores with keyway inserts for the same actuators for butterfly applications. The pinion is drilled deeper than standard actuators. The SPN II series has mounting plates for the transition of the bolt circles of the actuator to be used with other industry standards for butterfly valves.
- For conditions or applications that demand the most from equipment, Sharpe® offers our SPNII with chemical nickel plating. These actuators are designed to be a cost effective option in comparison to stainless steel actuators. The Nickel plating is done through chemical impregnation to provide uniform coverage and protection. The bath is a mixture of nickel and phosphorous to provide excellent qualities in: hardness, wear resistance, appearance and its inherent ability to withstand many wash-down applications that actuators with standard finishes cannot.

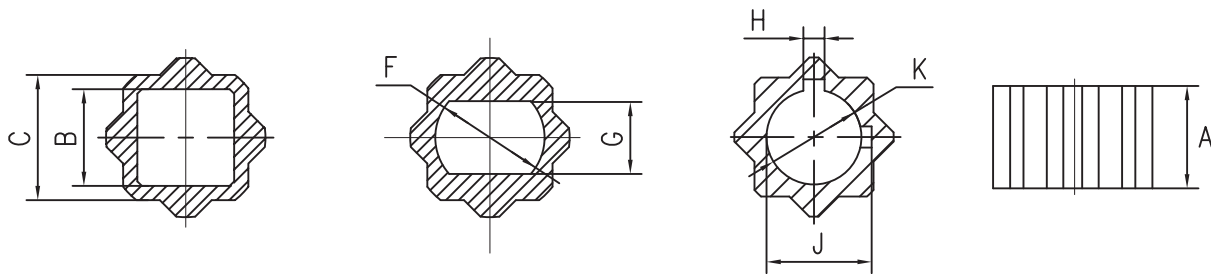
SPN II Material List



Part No.	Qty	Part Description	Materials	Surface Treated	Optional Material
1	8	Socket head screw	Stainless steel 304		
2	8	Washer	Stainless steel 304		
3	8	Washer	Stainless steel 304		
4	2	End cap	A380 (SPN II 032 - SPN II 200) WCB (SPN II 240 - SPN II 300)	Epoxy Coated	CF8/CF8M
5*	2	"O" ring (end cap)	NBR rubber		EPDM
6	2 - 12	Spring	Spring steel	Polyester Resin Coating	
7*	2	Piston ring	POM		
8*	2	"O" ring (piston)	NBR rubber		EPDM
9	2	Piston	A380 (SPN II 032 - SPN II 265) WCB (SPN II 300)	Anode hardening	
10*	2	Guide ring	PA66		
11*	2	Stopper	NBR rubber		EPDM
12	1	Disc bearing	Stainless steel 304		
13*	1	Thrust bearing	POM		
14	1	Washer	Stainless steel 304		
15	1	Snap ring	Stainless steel		
16	1	Indicator	ABS		
17	1	Indicator bolt	C15		
18	1	Body	6063-T6	Anode Hardening & Epoxy Coated	
19	2	Plug	Pvc		
20*	1	"O" ring (pinion top)	NBR rubber		EPDM
21*	1	Bearing (pinion top)	POM		
22	1	Disc bearing	Stainless steel 304		
23	1	Stroke adjustment Stop	C45	Nickel Plated	CF8/CF8M
24	1	Pinion shaft	C45	Nickel Plated	
25*	1	Bearing (pinion bottom)	POM		
26*	1	"O" ring (pinion bottom)	NBR rubber		EPDM
27*	2	"O" ring (adjusting bolt)	NBR rubber		EPDM
28	2	Metal washer	Stainless steel 304		
29	2	Nut	Stainless steel 304		
30	2	Adjusting bolt	Stainless steel 304		

* Parts Typically Supplied in Service Kits

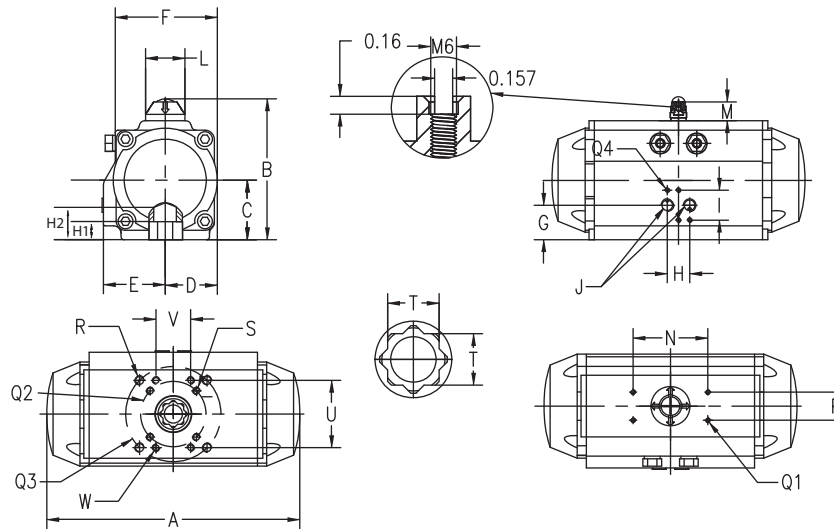
SPN II Inserts Dimensions



Model	Insert Code	Insert Shape	Unit	Insert Size	A	B	C	F	G	H	J	K
050	A	Square	in mm	0.354 9	0.472 12	0.354 9	0.669 17					
	B*	Square	in mm	0.433 11	0.472 12	0.433 11	0.669 17					
	C	Square	in mm	0.551 14	0.472 12	0.551 14	0.669 17					
	G	Flat	in mm	0.378 10	0.472 12	-	0.669 17	0.567 14	0.378 10			
063	A	Square	in mm	0.354 9	0.630 16	0.354 9	0.669 17					
	B*	Square	in mm	0.433 11	0.630 16	0.433 11	0.669 17					
	C	Square	in mm	0.551 14	0.630 16	0.551 14	0.669 17					
	G	Flat	in mm	0.378 10	0.630 16	-	0.669 17	0.567 14	0.378 10			
075 & 085	A	Square	in mm	0.354 9	0.709 18	0.354 9	0.866 22					
	B	Square	in mm	0.433 11	0.709 18	0.433 11	0.866 22					
	C*	Square	in mm	0.551 14	0.709 18	0.551 14	0.866 22					
	D	Square	in mm	0.669 17	0.709 18	0.669 17	0.866 22					
	G	Flat	in mm	0.378 10	0.709 18	-	0.866 22	0.567 14	0.378 10			
	H	Flat	in mm	0.441 11	0.709 18	-	0.866 22	0.63 16	0.441 11			
	I	Flat	in mm	0.503 13	0.709 18	-	0.866 22	0.756 19	0.503 13			
100 & 115	B	Square	in mm	0.433 11	0.906 23	0.433 11	0.866 22					
	C	Square	in mm	0.551 14	0.906 23	0.551 14	0.866 22					
	D*	Square	in mm	0.669 17	0.906 23	0.669 17	0.866 22					
	G	Flat	in mm	0.378 10	0.906 23	-	0.866 22	0.567 14	0.378 10			
	H	Flat	in mm	0.441 11	0.906 23	-	0.866 22	0.63 16	0.441 11			
	I	Flat	in mm	0.503 13	0.906 23	-	0.866 22	0.756 19	0.503 13			
125, 145 & 160	C	Square	in mm	0.551 14	1.142 29	0.551 14	1.417 36					
	D	Square	in mm	0.669 17	1.142 29	0.669 17	1.417 36					
	E	Square	in mm	0.866 22	1.142 29	0.866 22	1.417 36					
	F	Square	in mm	1.063 27	1.142 29	1.063 27	1.417 36					
	G	Flat	in mm	0.378 10	1.142 29	-	1.417 36	0.563 14	0.378 10			
	H	Flat	in mm	0.441 11	1.142 29	-	1.417 36	0.63 16	0.441 11			
	I	Flat	in mm	0.503 13	1.142 29	-	1.417 36	0.756 19	0.503 13			
	J	Flat	in mm	0.628 16	1.142 29	-	1.417 36	0.882 22	0.628 16			
	K	Round	in mm	1.130 29	1.142 29	-	1.417 36			0.252 6	1.252 32	1.13 29
180 & 200	E	Square	in mm	0.866 22	1.654 42	0.866 22	1.417 36					
	F*	Square	in mm	1.063 27	1.654 42	1.063 27	1.417 36					
	J	Flat	in mm	0.628 16	1.654 42	-	1.417 36	0.882 22	0.628 16			
	K	Round	in mm	1.130 29	1.654 42	-	1.417 36			0.252 6	1.252 32	1.13 29

* STANDARD INSERT

SPN II Dimensions



Model	Unit	A	B	C	D	E	F	G	H	H1	H2	I	J	L
032	in	3.23	2.83	1.22	.81	1.18	1.99	102	0.94	.43	-	1.26	1/8"	-
	mm	82	72	31	21	30	51	26	24	11	-	32		-
050	in	5.8	3.62	1.35	1.12	1.61	2.28	1.02	0.94	0.47	1.26	1.26	1/4"	1.65
	mm	147	92	34	28	41	58	26	24	12	32	32		42
063	in	6.26	4.25	1.67	1.42	1.93	2.83	1.18	0.94	0.63	1.34	1.26	1/4"	1.65
	mm	159	108	42	36	49	72	30	24	16	34	32		42
075	in	8.39	4.92	2.01	1.71	2.07	3.39	1.03	0.94	0.75	1.34	1.26	1/4"	1.65
	mm	213	125	51	43	53	86	26	24	19	34	32		42
085	in	9.8	5.43	2.27	1.91	2.22	3.8	1.26	0.94	0.75	1.34	1.26	1/4"	1.65
	mm	249	138	58	49	56	97	32	24	19	34	32		42
100	in	10.67	5.94	2.5	2.2	2.6	4.17	1.46	0.94	0.91	1.89	1.26	1/4"	1.65
	mm	271	151	64	56	66	106	37	24	23	48	32		42
115	in	12.40	7.28	2.85	2.52	3.03	5.00	1.67	0.94	0.91	1.89	1.26	1/4"	2.6
	mm	315	185	72	64	77	127	42	24	23	48	32		66
125	in	13.62	7.48	3.09	2.72	3.23	5.12	1.8	0.94	1.14	2.56	1.26	1/4"	2.6
	mm	346	190	78	69	82	130	46	24	29	65	32		66
145	in	16.22	8.25	3.46	3.15	3.54	5.85	2.17	0.94	1.14	2.56	1.26	1/4"	2.6
	mm	412	210	88	80	90	149	55	24	29	65	32		66
160	in	17.44	9.06	3.87	3.46	3.87	6.28	2.04	0.94	1.14	2.56	1.26	1/4"	2.6
	mm	443	230	98	88	98	160	52	24	29	65	32		66
180	in	19.37	9.96	4.33	3.88	4.15	7.07	2.37	0.94	1.65	3.62	1.26	1/4"	3.15
	mm	492	253	110	99	105	180	60	24	42	92	32		80
200	in	21.54	10.91	4.8	4.29	4.41	7.64	2.6	0.94	1.65	3.62	1.26	1/4"	3.15
	mm	547	277	122	109	112	194	66	24	42	92	32		80
240	in	24.17	13.7	5.75	5.14	5.16	9.09	2.76	1.57	1.97	3.62	1.77	3/8"	3.15
	mm	614	348	146	131	131	231	70	40	50	92	45		80
265	in	28.7	15.31	6.57	5.79	5.78	9.99	3.54	1.57	1.97	3.62	1.77	1/2"	3.15
	mm	729	389	167	147	146	254	90	40	50	92	45		80
300	in	33.03	16.14	6.99	6.38	6.81	11.42	3.35	1.57	1.97	3.62	1.77	1/2"	3.15
	mm	839	410	178	162	173	290	85	40	50	92	45		80

Model	Unit	M	N	P	Q1	Q2	Q3	Q4	R	S	T	U	V	W
032	in	0.79	1.00	1.00	M5	F03	-	M5	-	M5	0.35	-	-	-
	mm	20	25	25							9	-	-	-
050	in	0.79	3.15	1.18	M5	F04	-	M5	-	M5	0.67	-	-	-
	mm	20	80	30							17	-	-	-
063	in	0.79	3.15	1.18	M5	F05	-	M5	-	M6	0.67	-	-	-
	mm	20	80	30							17	-	-	-
075	in	0.79	3.15	1.18	M5	F05	F07	M5	M8	M6	0.87	-	-	-
	mm	20	80	30							22	-	-	-
085	in	0.79	3.15	1.18	M5	F05	F07	M5	M8	M6	0.87	-	-	-
	mm	20	80	30							22	-	-	-
100	in	0.79	3.15	1.18	M5	F07	F10	M5	M10	M8	0.87	2.83	1.46	M8
	mm	20	80	30							22	72	37	
115	in	1.18	3.15	1.18	M5	F07	F10	M5	M10	M8	0.87	2.83	1.46	M8
	mm	30	80	30							22	72	37	
125	in	1.18	3.15	1.18	M5	F10	-	M5	-	M10	1.42	2.83	1.46	M8
	mm	30	80	30							36	72	37	
145	in	1.18	3.15	1.18	M5	F10	F12	M5	M12	M10	1.42	2.83	1.46	M8
	mm	30	80	30							36	72	37	
160	in	1.18	3.15	1.18	M5	F10	F12	M5	M12	M10	1.42	2.83	1.46	M8
	mm	30	80	30							36	72	37	
180	in	1.18	5.12	1.18	M5	F10	F14	M5	M16	M10	1.42	3.9	2.09	M10
	mm	30	130	30							36	99	53	
200	in	1.18	5.12	1.18	M5	F10	F14	M5	M16	M10	1.42	3.9	2.09	M10
	mm	30	130	30							36	99	53	
240	in	1.97	5.12	1.18	M5	F12	F16	M6	M20	M12	1.81	-	-	-
	mm	50	130	30							46	-	-	-
265	in	1.97	5.12	1.18	M5	-	F16	M6	M20	-	1.81	-	-	-
	mm	50	130	30							46	-	-	-
300	in	1.97	5.12	1.18	M5	-	F16	M6	M20	-	1.81	-	-	-
	mm	50	130	30							46	-	-	-

SPN II Spring Return Torques

Model	Spring Quantity	Air Supply														Spring Return	
		40 PSI		60 PSI		70 PSI		80 PSI		90 PSI		100 PSI		120 PSI			
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
50	5	53	39	82	67	109	95	129	114	146	131	174	160	215	200	42	27
	6	46	31	75	58	103	86	122	105	139	122	167	151	208	190	50	34
	7	41	23	69	49	97	78	115	96	133	113	161	142	201	181	59	40
	8	0	0	61	38	90	68	108	86	125	103	154	133	194	171	69	47
	9	0	0	55	30	84	61	102	78	119	94	148	125	188	163	77	53
	10	0	0	0	0	78	53	96	70	113	86	142	117	181	155	85	59
	11	0	0	0	0	71	44	89	60	105	76	135	107	174	145	95	66
	12	0	0	0	0	64	34	82	51	98	66	128	98	167	135	104	73
63	5	84	60	145	118	197	172	225	199	259	233	290	265	369	342	76	50
	6	75	46	135	102	187	156	215	183	249	216	281	249	359	326	92	60
	7	66	31	125	85	178	141	205	167	239	200	271	234	349	309	108	70
	8	0	0	114	70	167	127	194	153	228	185	261	220	338	295	122	81
	9	0	0	103	54	157	112	184	137	217	168	250	204	327	278	138	91
	10	0	0	92	38	147	97	173	121	206	152	240	188	316	262	154	102
	11	0	0	0	0	138	81	163	105	196	135	230	173	306	245	170	112
	12	0	0	0	0	128	67	154	90	186	120	221	158	296	230	185	121
75	5	183	130	325	266	402	346	457	399	526	467	602	545	728	668	159	102
	6	167	102	307	233	385	316	439	368	508	435	584	514	710	636	190	119
	7	149	73	287	201	366	286	420	337	488	403	565	484	689	604	221	139
	8	0	0	266	169	346	256	399	306	467	371	545	453	668	572	252	159
	9	0	0	246	137	328	226	381	275	448	339	527	423	649	540	283	178
	10	0	0	226	105	309	197	361	244	428	307	507	392	629	508	314	197
	11	0	0	0	0	291	167	342	213	407	275	488	362	609	476	345	217
	12	0	0	0	0	272	137	322	182	387	243	469	331	589	444	376	236
85	5	278	187	469	366	591	496	703	604	798	696	917	820	1155	1053	266	166
	6	248	140	435	313	560	446	670	552	764	643	885	769	1122	1000	317	199
	7	218	93	401	260	528	396	637	501	731	590	853	718	1088	947	368	232
	8	0	0	368	207	497	347	605	449	698	536	821	668	1055	894	419	264
	9	0	0	335	154	467	297	574	398	665	483	790	617	1022	840	471	296
	10	0	0	301	101	435	248	541	346	631	430	758	567	988	787	522	328
	11	0	0	0	0	403	198	508	295	597	377	725	516	954	734	573	361
	12	0	0	0	0	372	149	475	243	563	324	693	466	920	681	625	394
100	5	418	305	722	595	871	752	1038	914	1189	1062	1385	1264	1729	1602	345	222
	6	377	241	676	523	827	684	993	844	1143	990	1341	1195	1683	1530	415	267
	7	335	177	629	450	784	617	947	774	1096	917	1297	1127	1636	1458	485	312
	8	0	0	582	378	740	549	902	704	1049	845	1252	1058	1589	1385	555	358
	9	0	0	536	306	696	482	857	634	1002	773	1208	989	1543	1313	625	403
	10	0	0	490	234	654	415	812	565	957	701	1164	921	1497	1241	694	447
	11	0	0	0	0	610	348	767	494	910	629	1120	852	1450	1169	764	492
	12	0	0	0	0	566	280	721	424	862	557	1074	783	1403	1097	834	538
115	5	716	513	1199	970	1487	1273	1731	1509	1987	1758	2267	2049	2774	2554	584	363
	6	651	407	1126	851	1418	1162	1660	1403	1913	1648	2197	1936	2701	2435	699	434
	7	586	301	1053	732	1350	1051	1589	1287	1831	1520	2127	1822	2628	2307	814	504
	8	0	0	970	613	1273	940	1518	1172	1758	1401	2049	1709	2554	2188	929	584
	9	0	0	897	494	1205	829	1447	1048	1685	1282	1979	1596	2472	2069	1044	655
	10	0	0	824	375	1136	718	1367	932	1611	1163	1910	1482	2399	1950	1159	726
	11	0	0	0	0	1068	607	1296	817	1538	1044	1840	1369	2325	1831	1274	797
	12	0	0	0	0	1000	496	1225	701	1456	925	1761	1256	2243	1712	1389	867
125	5	911	667	1456	1181	1854	1598	2211	1944	2536	2261	2912	2651	3580	3305	717	451
	6	826	529	1360	1025	1765	1453	2117	1793	2440	2106	2821	2502	3484	3149	867	544
	7	741	399	1263	879	1675	1316	2024	1651	2344	1959	2729	2363	3387	3003	1009	637
	8	0	0	1163	723	1581	1171	1926	1500	2243	1804	2633	2215	3287	2847	1159	735
	9	0	0	1067	568	1491	1025	1833	1349	2147	1648	2542	2066	3191	2692	1310	827
	10	0	0	965	411	1401	880	1740	1198	2051	1492	2450	1918	3094	2536	1460	920
	11	0	0	0	0	1312	743	1647	1056	1955	1346	2359	1779	2998	2390	1602	1013
	12	0	0	0	0	1218	598	1549	906	1854	1190	2263	1630	2898	2234	1752	1111

SPN II Spring Return Torques Cont.

Model	Spring Quantity	Air Supply														Spring Return	
		40 PSI		60 PSI		70 PSI		80 PSI		90 PSI		100 PSI		120 PSI			
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
145	5	1213	838	2142	1721	2897	2504	3382	2974	4120	3699	4438	4037	5576	5154	1124	717
	6	1074	627	1987	1483	2751	2281	3231	2743	3964	3461	4290	3810	5420	4916	1354	867
	7	936	415	1831	1245	2606	2059	3081	2512	3809	3233	4142	3584	5264	4678	1584	1018
	8	0	0	1685	1007	2469	1837	2939	2282	3662	2985	4002	3357	5118	4440	1814	1159
	9	0	0	1529	778	2324	1624	2788	2060	3506	2756	3854	3139	4962	4211	2036	1310
	10	0	0	1373	540	2179	1401	2637	1829	3351	2518	3706	2912	4806	3973	2266	1460
	11	0	0	0	0	2042	1179	2495	1598	3204	2280	3566	2686	4660	3735	2496	1602
	12	0	0	0	0	1905	957	2353	1367	3058	2042	3427	2459	4514	3497	2726	1743
160	5	1953	1506	3113	2609	3845	3375	4572	4084	5173	4669	5912	5432	7324	6821	1460	974
	6	1766	1237	2902	2307	3649	3093	4368	3791	4962	4367	5711	5144	7114	6518	1752	1177
	7	1579	960	2692	1996	3452	2803	4164	3489	4752	4056	5511	4848	6903	6207	2053	1381
	8	0	0	2481	1694	3256	2521	3959	3196	4541	3754	5310	4560	6692	5905	2345	1584
	9	0	0	2280	1382	3068	2230	3764	2894	4340	3442	5118	4264	6491	5594	2646	1779
	10	0	0	2069	1080	2871	1948	3560	2601	4129	3140	4918	3976	6280	5292	2938	1982
	11	0	0	0	0	2675	1658	3356	2299	3918	2829	4717	3680	6070	4980	3239	2186
	12	0	0	0	0	2487	1376	3160	2006	3717	2527	4525	3392	5868	4678	3531	2381
180	5	2352	1676	4129	3369	5161	4452	6143	5407	6903	6143	7917	7193	9897	9137	2115	1381
	6	2091	1294	3836	2939	4888	4050	5859	4989	6610	5713	7638	6784	9604	8707	2531	1664
	7	1831	911	3543	2509	4614	3649	5575	4572	6317	5283	7359	6374	9311	8276	2947	1947
	8	0	0	3250	2069	4341	3238	5291	4146	6024	4843	7080	5955	9018	7837	3372	2230
	9	0	0	2966	1639	4076	2837	5016	3729	5740	4413	6810	5545	8734	7407	3788	2505
	10	0	0	2673	1208	3802	2435	4732	3311	5447	3983	6531	5136	8441	6976	4204	2788
	11	0	0	0	0	3538	2034	4457	2894	5164	3552	6260	4726	8157	6546	4620	3062
	12	0	0	0	0	3264	1632	4173	2477	4871	3122	5981	4316	7864	6116	5036	3345
200	5	3328	2498	5713	4779	7195	6323	8425	7519	9558	8624	10864	9975	13412	12479	2814	1912
	6	2987	1986	5328	4202	6836	5785	8052	6960	9173	8047	10498	9425	13028	11902	3372	2283
	7	2645	1473	4944	3625	6477	5247	7679	6401	8789	7471	10132	8876	12643	11325	3929	2655
	8	0	0	4559	3058	6118	4717	7306	5850	8404	6903	9766	8336	12259	10757	4478	3027
	9	0	0	4166	2490	5751	4187	6925	5300	8011	6335	9391	7795	11865	10190	5027	3407
	10	0	0	3772	1913	5383	3649	6543	4741	7617	5759	9016	7246	11471	9613	5584	3788
	11	0	0	0	0	5024	3119	6170	4190	7233	5191	8649	6705	11087	9045	6133	4160
	12	0	0	0	0	4657	2581	5788	3631	6839	4614	8275	6156	10693	8469	6691	4540
240	5	5737	4419	9796	8313	12134	10749	14249	12811	16342	14859	18685	17273	22888	21405	4664	3230
	6	5135	3564	9119	7352	11501	9852	13592	11878	15665	13898	18040	16357	22210	20444	5593	3885
	7	4541	2694	8450	6372	10878	8938	12944	10929	14996	12936	17395	15450	21524	19482	6540	4531
	8	0	0	7736	5402	10245	8032	12287	9987	14319	11975	16758	14535	20846	18521	7478	5186
	9	0	0	7123	4449	9639	7143	11656	9064	13669	11014	16113	13628	20160	17560	8399	5814
	10	0	0	6445	3506	9006	6263	11000	8150	12991	10052	15459	12713	19491	16589	9310	6469
	11	0	0	0	0	8374	5358	10343	7209	12314	9100	14823	11788	18814	15637	10248	7124
	12	0	0	0	0	7742	4426	9686	6241	11636	8148	14169	10882	18127	14667	11213	7779
265	5	9790	7690	16278	13916	20149	17944	23597	21307	27081	24719	30849	28599	37793	35431	7080	4797
	6	8887	6429	15298	12479	19217	16577	22629	19886	26083	23254	29898	27204	36795	33966	8452	5779
	7	8016	5119	14319	11041	18286	15210	21742	18466	22613	21789	28948	25809	35797	32501	9877	6726
	8	0	0	13339	9567	17355	13843	20685	17045	24087	20324	27997	24414	34799	31036	11284	7655
	9	0	0	12359	8111	16423	12475	19726	15625	23089	18860	27047	23019	33709	29571	12744	8673
	10	0	0	11297	6628	15492	11108	18759	14204	22091	17395	26097	21624	32803	28106	14125	9611
	11	0	0	0	0	14560	9741	17791	12784	21094	15930	25146	20229	31805	26642	15523	10558
	12	0	0	0	0	13672	8459	16823	11364	20096	14465	24196	18833	30807	25177	16904	11505
300	5	11857	8854	20041	16662	25147	21994	29181	25905	33444	30066	38225	35008	46838	43460	9797	6531
	6	10661	7064	18695	14648	23891	20115	27876	23952	32098	28051	36943	33089	45492	41445	11744	7832
	7	9464	5265	17349	12625	22635	18226	26571	21990	30752	26028	35662	31162	44146	39422	13700	9133
	8	0	0	16003	10602	21379	16338	25266	20028	29406	24005	34380	29236	42800	37399	15656	10434
	9	0	0	14648	8578	20115	14449	23952	18066	28051	21982	33089	27309	41445	35376	17612	11744
	10	0	0	13302	6555	18858	12561	22647	16104	26706	19958	31808	25382	40100	33352	19567	13045
	11	0	0	0	0	17602	10672	21342	14145	25359	17935	30526	23455	38754	31329	21523	14346
	12	0	0	0	0	0	0	20035	12184	24011	15914	29242	21530	37399	29306	23479	15656

SPN II Double Acting Torques and Technical Information

SPN II Double Acting Torque Ratings							
Model	40 PSI	60 PSI	70 PSI	80 PSI	90 PSI	100 PSI	120 PSI
32	26	41	51	59	67	76	92
50	77	110	135	155	174	201	243
63	130	197	245	275	311	340	421
75	277	430	500	559	632	702	833
85	431	641	752	870	970	1,081	1,328
100	623	952	1,085	1,261	1,419	1,604	1,959
115	1,050	1,556	1,837	2,095	2,362	2,625	3,149
125	1,327	1,923	2,289	2,664	3,003	3,357	4,047
145	1,872	2,884	3,588	4,102	4,862	5,145	6,317
160	2,849	4,120	4,784	5,549	6,180	6,871	8,331
180	3,622	5,557	6,492	7,529	8,331	9,278	11,325
200	5,087	7,690	9,037	10,344	11,536	12,748	15,390
240	8,709	13,138	15,248	17,492	19,684	21,869	26,230
265	14,203	21,240	24,772	28,413	32,044	35,577	42,755
300	17,865	26,798	31,443	35,738	40,201	44,663	53,595

SPN II Air Consumption and Weights																
	Unit	032	050	063	075	085	100	115	125	145	160	180	200	240	265	300
Body Diameter	in	1.26	1.97	2.48	2.95	3.46	3.94	4.53	4.92	5.71	6.3	7.09	7.87	9.45	10.43	11.81
	mm	32	50	63	75	88	100	115	125	145	160	180	200	240	265	300
Air Consumption Per Stroke Actual in ³	CCW	0.9	4.9	9.2	18.3	30.5	45.8	72.6	94.6	146.5	195.3	262.4	358.2	610.2	884.8	1287.6
	CW	2.1	7.9	15.3	29.3	44.6	65.9	109.8	133.0	216.6	288.0	415.0	581.6	927.6	1305.9	1861.2
Opening Time DA	Sec.	0.13	0.2	0.2	0.2	0.3	0.4	0.7	0.8	1.3	1.6	2.0	2.7	3.5	4.0	8.8
Closing Time DA	Sec.	0.14	0.2	0.2	0.3	0.4	0.5	0.9	1.1	1.4	2.0	2.4	3.5	4.1	4.5	12.7
Approximate Weight - DA	Lb	0.71	2.40	3.40	6.10	8.30	11.70	18.50	21.90	31.10	40.50	55.10	77.20	119.05	178.57	299.39
	kg	0.32	1.09	1.54	2.77	3.76	5.31	8.39	9.93	14.10	18.37	24.99	35.01	53.99	80.98	135.80

SPN II Ordering Information

SPN II Sample Specification

Actuator shall be Sharpe® Automation SPN II series with rack and pinion design. The body to be hard anodized, extruded aluminum. Powder coated body and epoxy coated end caps for corrosion protection. Internal parts to be dual aluminum pistons, with alloy steel blow out proof pinion. Bearings, bushings and o-rings designed to maximize service life and prevent premature failure. Actuators will have dual travel stops, with adjustments for travel on both ends. All markings screened on body to easily identify threading on ports, ISO and NAMUR interfaces. Accessory bolt patterns and mounting areas to NAMUR VDI / VDE industry standards. Fasteners are to be stainless steel. Bottom drilling patterns are to ISO 5211 to provide strong mounting to valves, and mounting kits when necessary.

Insert system for the pinion allows for flexible mounting combinations, with strong fits to actuator as well as valve stem or coupler. Pinion to have double bore to provide fitting to the valve stem or coupler as well as having extra depth to insert taller stems seen in butterfly valves.

Actuator to use cartridge style springs for easy identification of sizing. The same end caps and fasteners to be used whether for double acting or spring return applications. Inside surface finish minimizing friction and maximizing service life. Lubrication of actuator suitable for 1,000,000 operations. The visual indicator designed to be used with other top mounted devices for added benefits.

Fig: SPNII050-SR10-A-P1

Description: SPNII 050 - Spring Return - 10 Springs - Size A Insert - High Temp EPDM Seals

SPN II Part Number Chart						
Actuator Model	Action		No. of Springs	Insert	Options	
SPNII032	DA	Double Acting	5	A	P1	High/Low Temp EPDM Seals -40°F to 300°F
SPNII050	SR	Spring Return	6	B	P3	Electroless Nickel Treatment
SPNII063			7	C	P6	Reverse Rotation
SPNII075			8	D		
SPNII085			9	E		
SPNII100			10	F		
SPNII115			11	G		
SPNII125			12	H		
SPNII145				I		
SPNII160				J		
SPNII180				K		
SPNII200						
SPNII240						
SPNII265						
SPNII300						

4x4[®] Pneumatic Actuator

WHY SMALLER IS BETTER

The Sharpe[®] Pneumatic Actuator Series 4x4[®] packs more than double the torque of conventional rack and pinion actuators. Due to its four pistons that generate torque around a centrally located pinion. With more pistons in the actuator, it allows their diameter to be smaller while generating higher torque. At the same time, it means the size of the actuator can be more compact.

WHY SMALLER IS FASTER

With four small cylinders each located on one of four sides of the unit and at a given air pressure, the 4x4[®] produces the same torque output as double piston models using smaller diameter pistons and a narrower pinion. Thanks to the narrower pinion, the pistons travel shorter distances so that they can move faster from one position to the next.

WHY SMALLER REDUCES AIR CONSUMPTION

The cube shape coupled with pistons traveling shorter distances minimizes size requirements while maximizing torque output. At the same time, shorter piston travel and compact size greatly reduces pressure requirements compared to other designs and results in reduced energy expenditures.



WHY SMALLER MEANS LESS STRESS

It's a matter of balance. Unlike other designs that produce an off-axis thrust, the 4x4[®] design positions each piston around the cube so they develop thrust along their own axis. As a result, stressful piston side loading is minimized putting less stress on seals resulting in less wear.

WHY SMALLER IS A BETTER SOLUTION

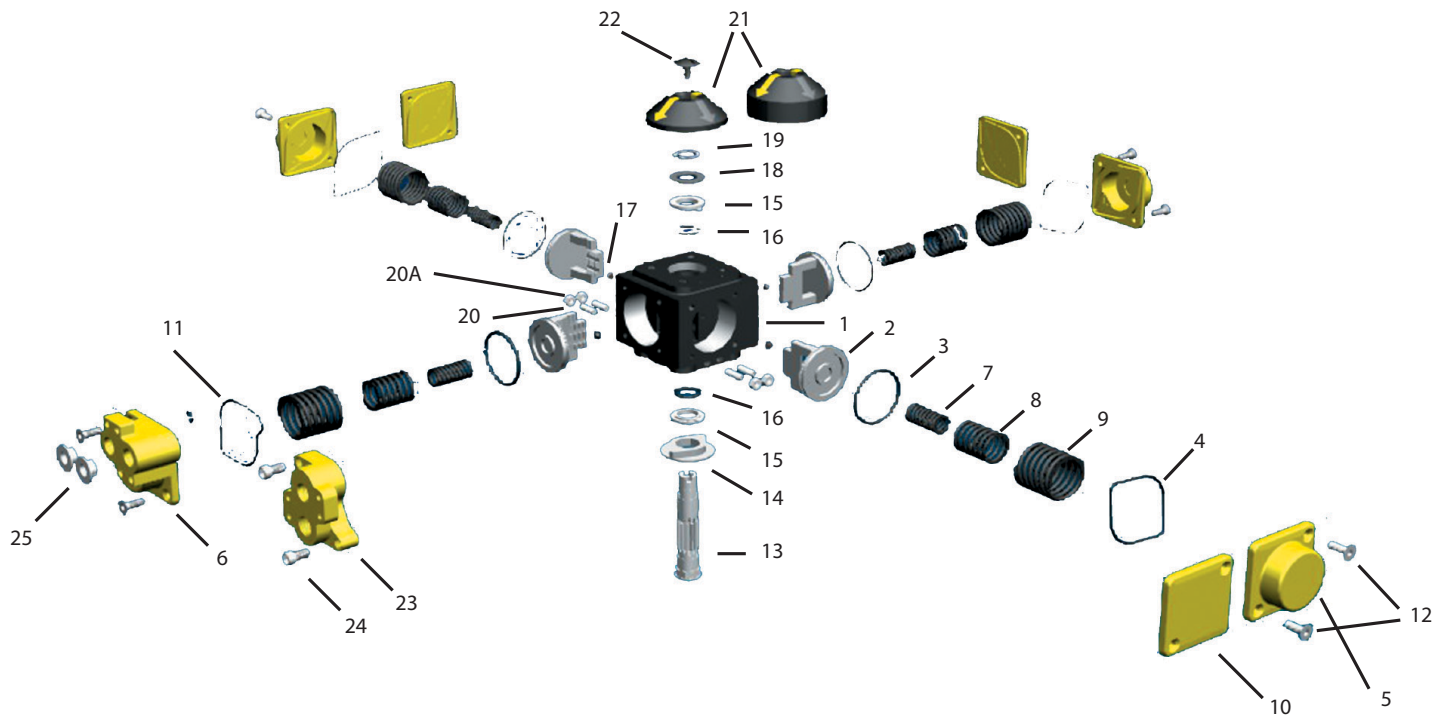
Because of the four-cylinder design, the 4x4[®] has many more spring combination possibilities than double piston actuators. This means better solutions under any air pressure requirement. Each chamber can use up to three different spring sizes which nest between the covers and pistons and align by centering rings. Also, springs are wound in opposite directions to avoid tangles during operation.

WHY SMALLER IS STRONGER

For superior corrosion resistance, the body and covers are anodized internally and externally. Plus, they have an external epoxy base layer and a second polyurethane paint to further reduce corrosion in demanding applications. Extended spray wash downs do not create corrosion problems for the actuator.



4x4[®] Material Listing



Part No.	Qty	Part Description	Standard Materials
1	1	Body	Aluminum AL 356-T6
2	4	Piston	Carbon Steel S45C Nickel Plated
3*	4	Piston "O" Ring	BUNA / Viton
4*	4	Cover "O" Ring	BUNA / Viton
5	3	Spring Return Cover	Aluminum AL 380
6	1	NAMUR Cover	Aluminum AL 380
7	Max 4	Inner Spring	Painted Spring Steel
8	Max 4	Middle Spring	Painted Spring Steel
9	Max 4	Outer Spring	Painted Spring Steel
10	3	Double Acting Cover	Aluminum AL 380
11	1	Air Supply "O" Ring	BUNA / Viton
12	8,16 or 18	Cover Screw	Stainless Steel 304
13	1	Pinion	Steel
14	1	Stroke Adjustment Stop	Stainless Steel 304
15*	2	Thrust Washer	POM
16*	2	Pinion "O" Ring	BUNA / Viton
17*	4	Pad	POM
18*	1	Disc Bearing	Stainless Steel 304
19	1	Snap Ring	Stainless Steel 304
20	4	Stroke Adjustment Stud	Stainless Steel 304
20A	4	Nut	Stainless Steel 304
21	1	Indicator	ABS
22	1	Indicator Screw	C15
23	1	NAMUR Insert (X115)	AL 380
24	2	Bolt (X115)	Stainless Steel 304
25	2	Plug	Plastic

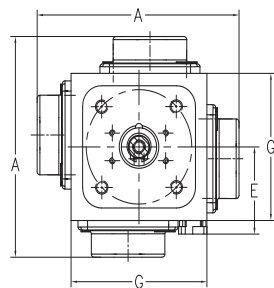
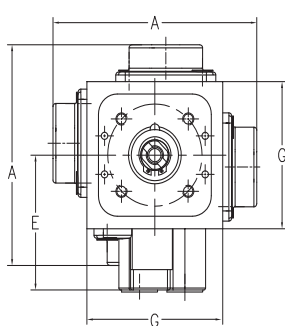
* Parts Typically supplied in service kits

4x4® Dimensions

SPRING RETURN

X40 - X90

X115



G-1/4" ISO
(FOR METRIC)
1/4" NPT
(FOR IMPERIAL)

M5 (FOR METRIC)
10/24 UNC
(FOR IMPERIAL)

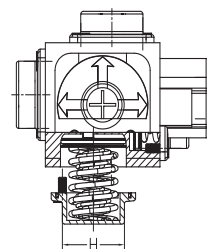
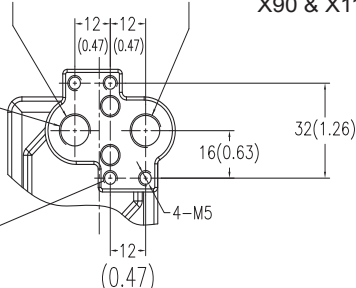
PORT B

PORT A

PORT A connected to
the center chambers

PORT B connected to
the outside chambers

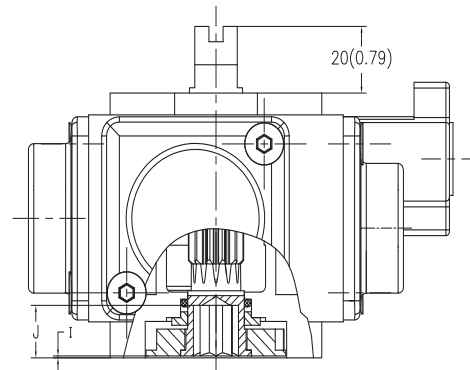
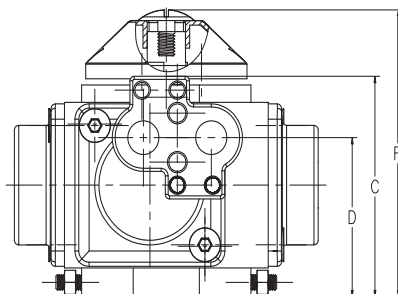
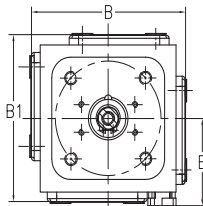
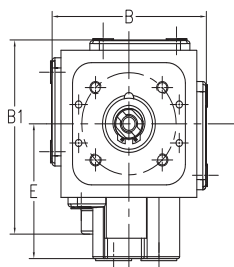
X90 & X115 are opposite



DOUBLE ACTING

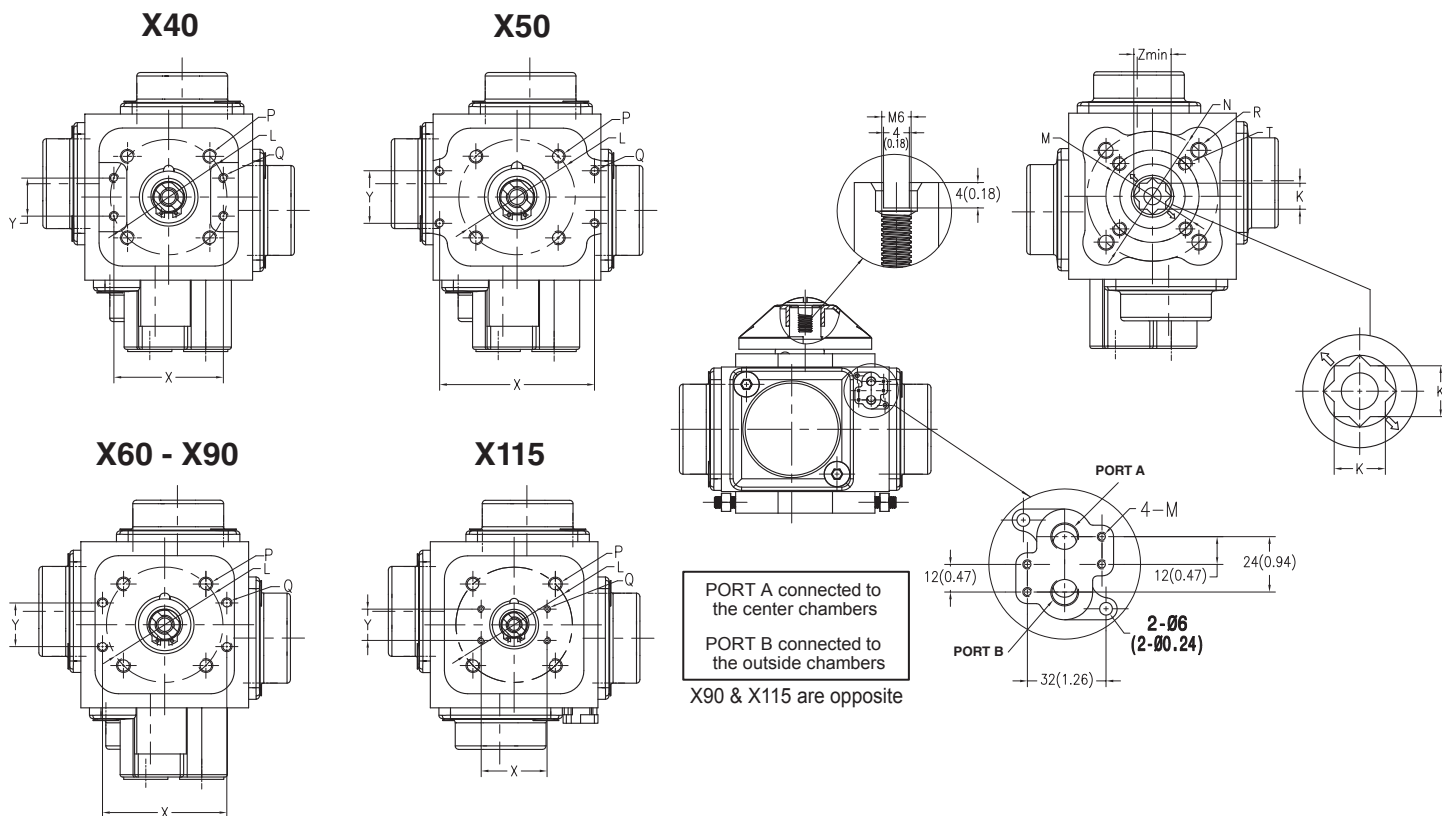
X40 - X90

X115



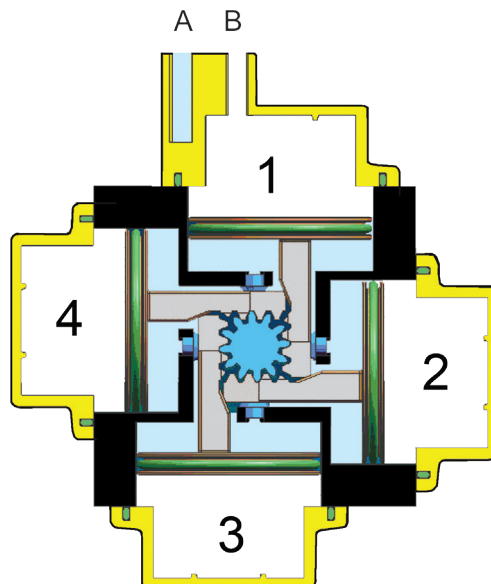
Size	Unit	A (S/R)	B (D/A)	B1 (D/A)	C	D	E	F	G	H	I	J
X40	in	4.26	3.31	3.78	2.73	2.04	2.60	3.65	2.84	1.61	0.02	0.55
	mm	108	84	96	69	52	66	92	72	40	0.5	14
X50	in	5.26	4.04	4.63	3.15	2.50	3.05	4.08	3.47	2.00	0.02	0.61
	mm	133	102	117	80	63	77	103	88	51	0.5	15
X60	in	6.38	5.20	5.79	3.86	3.02	3.53	4.73	4.26	2.50	0.02	0.77
	mm	162	132	147	98	77	89	120	108	63	0.5	20
X75	in	7.41	5.99	6.70	4.65	3.67	3.75	5.46	4.97	2.99	0.02	0.89
	mm	188	152	170	118	93	95	138	126	76	0.5	22
X90	in	8.75	7.17	7.96	5.36	4.04	4.49	6.17	5.91	3.59	0.02	1.04
	mm	222	182	202	136	102	114	156	150	91	0.5	26
X115	in	10.71	8.75	8.75	6.50	4.70	4.41	7.45	7.25	4.50	0.02	1.28
	mm	272	222	222	165	119	112	189	184	114	0.5	32

4x4® Dimensions



Size	Unit	K	L	M	N	P	Q	R	T	X	Y	Z (min)
X40	in mm	0.35 9	F05	-	F04	- M6	- M4	- M5	- -	1.85 47	0.67 17	0.48 12
X50	in mm	0.43 11	F05	F05	F07	- M6	- M5	- M8	- M6	3.15 80	1.18 30	0.56 14
X60	in mm	0.55 14	F07	F07	F10	- M8	- M5	- M10	- M8	3.15 80	1.18 30	0.72 18
X75	in mm	0.67 17	F07	F07	F10	- M8	- M5	- M10	- M8	3.15 80	1.18 30	0.87 22
X90	in mm	0.87 22	F10	-	F10	- M10	- M5	- M10	- -	3.15 80	1.18 30	1.11 28
X115	in mm	1.06 27	F12	-	F12	- M12	- M5	- M12	- -	3.15 80	1.18 30	1.43 36

4x4® Spring Arrangement



Spring Arrangement	Spring Position	Chamber			
		1	2	3	4
01	Inner	X	X	X	X
	Middle	-	-	-	-
	Outer	-	-	-	-
02	Inner	X	X	X	X
	Middle	-	-	-	-
	Outer	-	-	-	-
03	Inner	X	-	X	-
	Middle	X	X	X	X
	Outer	-	-	-	-
04	Inner	X	X	X	X
	Middle	X	X	X	X
	Outer	-	-	-	-
05	Inner	X	X	X	X
	Middle	-	X	-	X
	Outer	X	-	X	-
06	Inner	X	X	X	X
	Middle	-	-	-	-
	Outer	X	X	X	X
07	Inner	X	X	X	X
	Middle	X	X	X	X
	Outer	X	-	X	-
08	Inner	-	-	-	-
	Middle	X	X	X	X
	Outer	X	X	X	X
09	Inner	X	-	X	-
	Middle	X	X	X	X
	Outer	X	X	X	X
10	Inner	X	X	X	X
	Middle	X	X	X	X
	Outer	X	X	X	X

4x4® Torques

4x4® Spring Return Torques																		
Model	Spring Arrangement	Air Supply														Spring Return		
		40 PSI		60 PSI		70 PSI		80 PSI		90 PSI		100 PSI		120 PSI				
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	
X40	01	52	29	90	64	116	92	136	112	155	130	170	146	215	188	52	30	
	02			73	39	100	68	120	87	138	104	154	121	196	159	78	46	
	03					84	44	103	62	120	78	137	97	178	131	104	64	
	04									104	52	122	72	159	105	130	82	
X50	03	82	40	156	108	206	160	244	194	275	224	316	267	389	335	110	67	
	04			140	86	193	139	230	173	260	200	303	246	376	313	132	81	
	05			122	60	176	114	215	148	242	174	286	220	358	288	158	98	
	06					160	89	195	122	226	150	269	196	340	262	185	116	
	07					146	79	182	113	211	139	255	186	325	250	196	131	
	08							170	89	199	114	243	163	313	226	219	144	
	09									188	101	231	149	300	213	234	156	
	10									173	80	205	125	270	186	255	170	
	X60	03	204	119	347	249	439	343	519	417	590	485	672	570	818	723	205	118
		04			325	210	419	308	496	379	568	447	651	534	796	684	245	141
05				305	177	400	275	476	346	547	413	632	502	777	650	279	161	
06						373	237	450	306	520	372	606	462	749	609	320	188	
07						350	193	425	260	495	325	583	418	724	561	368	214	
08								400	219	470	284	559	379	699	519	409	238	
09										452	231	542	229	683	466	461	256	
10										430	192	521	291	660	426	501	277	
X75		03	235	212	563	432	729	600	859	722	976	834	1126	986	1382	1255	305	189
		04	290	153	520	367	688	538	817	658	933	769	1085	924	1339	1189	370	232
	05			475	270	646	448	772	563	888	673	1042	832	1294	1091	466	277	
	06			436	164	603	372	728	486	843	595	999	758	1249	1012	546	323	
	07					569	313	693	424	807	531	966	697	1214	948	610	358	
	08					552	216	657	348	772	454	931	624	1178	869	686	393	
	09							725	368	888	542	1132	781	1478	1206	774	440	
	10							681	297	845	474	1089	710	1478	1206	845	483	
	X90	03	656	405	1071	780	1346	1061	1559	1260	1748	1439	1995	1692	2428	2146	544	283
		04			1014	678	1291	965	1502	1159	1690	1337	1940	1594	2371	2042	648	340
05				915	562	1198	855	1405	1045	1592	1221	1845	1484	2273	1925	963	439	
06						1122	703	1326	888	1511	1061	1769	1332	2192	1762	924	519	
07						1061	575	1263	754	1447	926	1708	1203	2129	1625	1065	582	
08								1193	613	1376	782	1640	1065	2059	1478	1206	653	
09										1298	579	1567	968	1980	1375	1309	730	
10										1232	570	1504	864	1915	1264	1419	796	
X115		03	1196	645	2019	1437	2542	1975	2968	2370	3347	2732	3820	3218	4652	4087	1167	643
		04			1890	1206	2419	1756	2841	2143	3218	2500	3697	2997	4524	3852	1400	772
	05			1791	1027	2325	1586	2743	1967	3118	2322	3602	2827	4428	3670	1582	870	
	06					2174	1318	2585	1687	2959	2038	3450	2558	4264	3382	1866	1030	
	07					2051	1097	2458	1458	2828	1805	3325	2336	4136	3147	2100	1160	
	08							2330	1230	2699	1574	3203	2115	4007	2910	2335	1289	
	09									2573	1341	3083	1894	3881	2675	2568	1414	
	10									2444	1110	2960	1673	3754	2440	2800	1543	

4x4® Double Acting Torque Ratings							
Model	40 PSI	60 PSI	70 PSI	80 PSI	90 PSI	100 PSI	120 PSI
X40	79	119	137	178	192	218	238
X50	138	230	265	302	339	375	458
X60	315	470	550	657	725	799	959
X75	537	824	948	1074	1208	1340	1648
X90	920	1400	1666	2060	2130	2354	2893
X115	1953	2838	3322	3817	4302	4620	5401

4x4® Weights and Technical Information

4x4® Weights							
	Unit	X40	X50	X60	X75	X90	X115
Weight of Double Acting	Lb	2.38	3.86	6.81	10.69	16.42	28.66
	Kg	1.08	1.75	3.09	4.85	7.45	13.00
Weight of Double Acting with SR Cover (DS)	Lb	2.42	3.96	6.97	11.16	17.17	29.78
	Kg	1.10	1.80	3.16	5.06	7.79	13.51
Spring Set Code	Weight of Spring Return Actuator						
01	Lb	2.51	-	-	-	-	-
	Kg	1.14	-	-	-	-	-
02	Lb	2.60	-	-	-	-	-
	Kg	1.18	-	-	-	-	-
03	Lb	2.67	4.17	7.50	12.19	18.92	33.27
	Kg	1.21	1.89	3.40	5.52	8.58	15.09
04	Lb	2.73	4.21	7.58	12.35	19.22	33.91
	Kg	1.24	1.91	3.44	5.60	8.72	15.38
05	Lb	-	4.30	7.76	12.63	19.69	34.55
	Kg	-	1.95	3.52	5.73	8.93	15.67
06	Lb	-	4.39	7.94	12.92	20.15	35.19
	Kg	-	1.99	3.60	5.86	9.14	15.96
07	Lb	-	4.43	7.98	13.07	20.39	35.98
	Kg	-	2.01	3.62	5.93	9.25	16.32
08	Lb	-	4.52	8.20	13.47	20.92	36.77
	Kg	-	2.05	3.72	6.11	9.49	16.68
09	Lb	-	4.56	8.29	13.62	21.25	37.41
	Kg	-	2.07	3.76	6.18	9.64	16.97
10	Lb	-	4.63	8.38	13.78	21.56	38.03
	Kg	-	2.10	3.80	6.25	9.78	17.25

4x4® Air Consumption & Opening and Closing Times							
	Unit	X40	X50	X60	X75	X90	X115
Air Consumption Per Stroke * Actual Volume - Liter	CCW	0.08	0.15	0.29	0.47	0.80	1.3
	CW	0.11	0.19	0.38	0.64	0.95	1.3
	Total	0.19	0.34	0.67	1.11	1.75	2.6
Air Consumption Per Stroke * Actual Volume - in ³	CCW	4.9	9.2	16.2	28.7	46.3	79.3
	CW	6.7	11.6	21.3	35.1	52.3	82.6
	Total	11.6	20.7	37.5	63.8	98.6	161.9
Opening Time DA**	Sec.	0.15	0.21	0.39	0.53	1.10	1.60
Closing Time DA**	Sec.	0.16	0.24	0.41	0.54	1.30	1.80

* If you plan to use the actuator with the spring return cover as double acting actuator; please consult your representative for the air consumption figures

** The above indicated moving time of the actuator, are obtained in the following testcons: (1) Room Temperature. (2) Actuator Stroke 90° (3) Solenoid Valve with orifice of 4mm and flow capacity Qn 400/L/min. (4) Inside pipe diameter 8mm, (5) Medium clean air, (6) Air supply pressure 5.5 bar (79, 75psi), (7) Actuator without external resistance load. Cautions: on the field applications when one or more of the above parameters are different, the moving time will be different.

4x4® Sample Specification

Actuator shall be Sharpe® Automation X series (4x4®) with four piston design and function. Actuator will have epoxy coated end caps, with hard anodized internally and externally extruded aluminum body. Internal parts to feature four carbon steel pistons for strength and have electroless nickel plating to inhibit corrosion. Actuator will have a higher torque output than other designs with comparable cylinder bores allowing for fitting of the smallest size possible.

With its smaller design air consumption will be reduced due to less open space in the actuator. Actuator will have four pistons supporting the pinion for less wear. With this design, torque output is maximized. With its design travel is reduced leading to quicker response and less wear to moving parts.

Springs are nested and wound in opposite direction to prevent binding. Since there are four chambers many spring combinations are available to fit air supply issues in the application. Independent travel stops allow adjustment +/- 5° in both opening and closing rotations.

All bottom bolting to ISO 5211 for ease of usage with valves / mounting kits of industry standards. Actuators to have NAMUR mount solenoid connections as well as other top mounted devices such as limit switches and positioners.

Lubrication to qualify for a minimum of 1,000,000 operations. Bearings, bushings and o-rings designed to maximize service life and prevent premature failure.

Fig: X90-SR-07-M

Description: X90 - Spring Return - 07 Spring Arrangement - Metric Units

4x4® Part Number Chart							
Actuator Model	Action		Spring Arrangement	Insert		Options	
X40	DA	Double Acting	01, 02	M	Metric	P1	High/Low Temp EPDM Seals -40°F to 300°F Reverse Rotation
X50	SR	Spring Return	03, 04			P4	
X60	DS	Double Acting with Spring Return Cover	05, 06				
X75			07, 08				
X90			09, 10				
X115							

Limit Switches



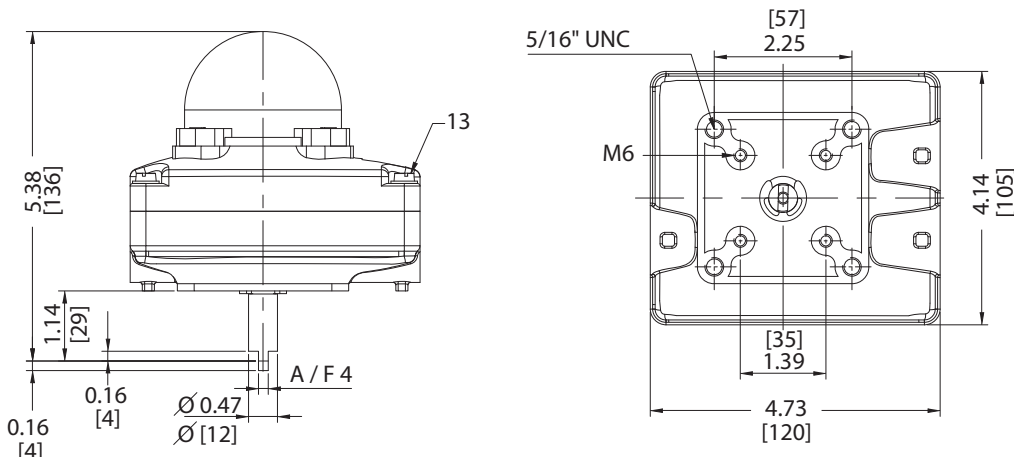
Housing Material: Die cast aluminum with powder coating

Indicator Cover: Shatterproof polycarbonate

Temperature: -4°F to 146°F

- Special printed circuit board eliminates all wiring from the switch element to the terminal while providing protection against short circuits
- Complies to NAMUR mounting standards
- NAMUR pattern mounting kits available
- UL Listed, for both NEMA 4/4X and NEMA 7/9
- NEMA 7/9 Class I Groups C&D, Class II Groups E, F & G Divisions 1 and 2
- Solenoid termination inside switch box
- Proximity Switches designed for Intrinsically Safe Applications

NEMA 4/4X Dimensions



NEMA 4/4X/7/9 Dimensions

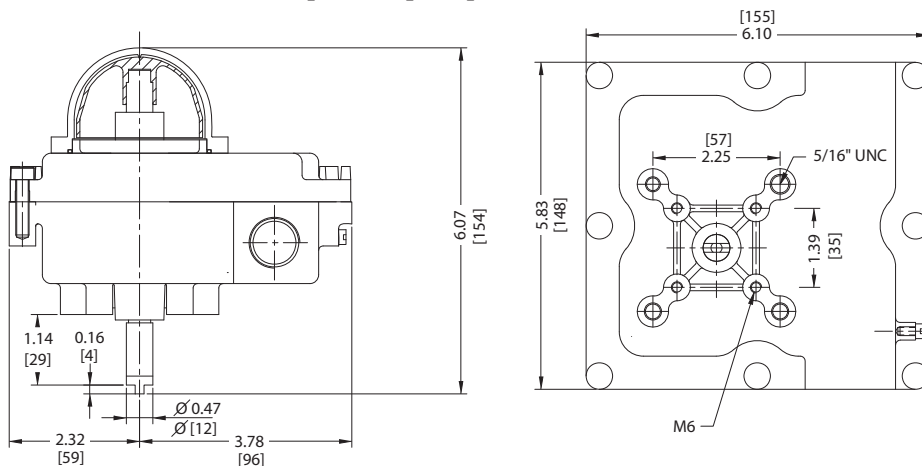


Fig: SLXS4MH10-M2

Description: SL - NEMA 4 Mechanical - M2 Bracket Size

Limit Switch Part Number Chart			
Model	Rating		Bracket
SL	XS4MH10	NEMA 4/4X MECHANICAL	M1
	S9MH10	NEMA 4/4X/7/9 MECHANICAL	M2
	XS4PPF8	NEMA 4/4X PROXIMITY	M3
	S9PPF2	NEMA 4/4X/7/9 PROXIMITY	M4

Note: Bracket as determined by actuator model and size.

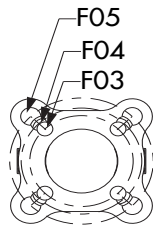
Mounting Brackets



Material: CF8M - 316 Stainless Steel

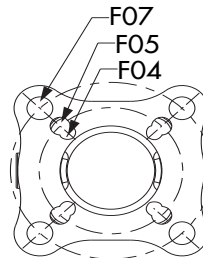
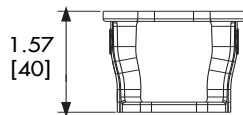
ISO Sizes: F03 to F12

- Two opposing holes for locking during maintenance and installation (special coupler required)
- Open design allows for viewing of stem position
- Access to stem nut without removing of actuator
- Casting Markings: Sharpe® logo, ISO Size, and material grade



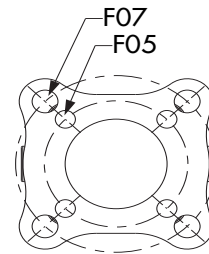
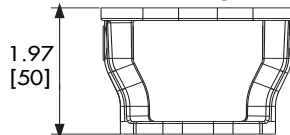
F03 - F030405

0.25 LB
0.1 kg



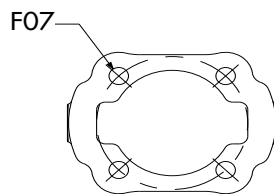
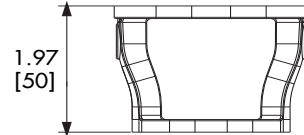
F04- F040507

0.6 LB
0.3 kg



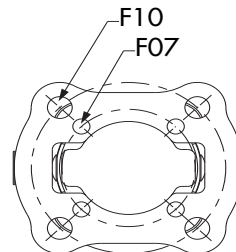
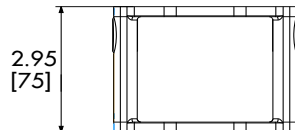
F05- F0507

0.6 LB
0.3 kg



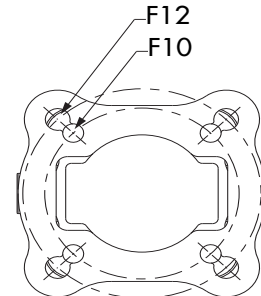
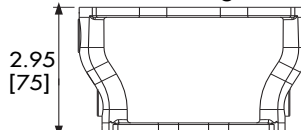
F07 - F07

1.7 LB
0.8 kg



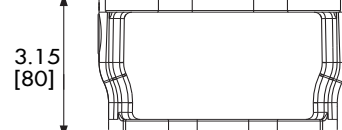
F07 - F0710

2.0 LB
0.9 kg



F10-F1012

2.87 LB
1.3 kg



V200 Positioner



Housing Material: Cast aluminium with polyester coating
Indicator Options: Flat pointed indicator or raised indicator (red/green or yellow/black)

- One housing for pneumatic or electropneumatic
- Optional gauges
- Optional range spring
- Variety of cams available
- Variety of spindles available
- External zero + span adjustment without removing the cover
- Five pilot options
- Explosion-proof, gas approved, fail-freeze, 0-5 VDC and 0-10 VDC options available
- Variety of feedback options

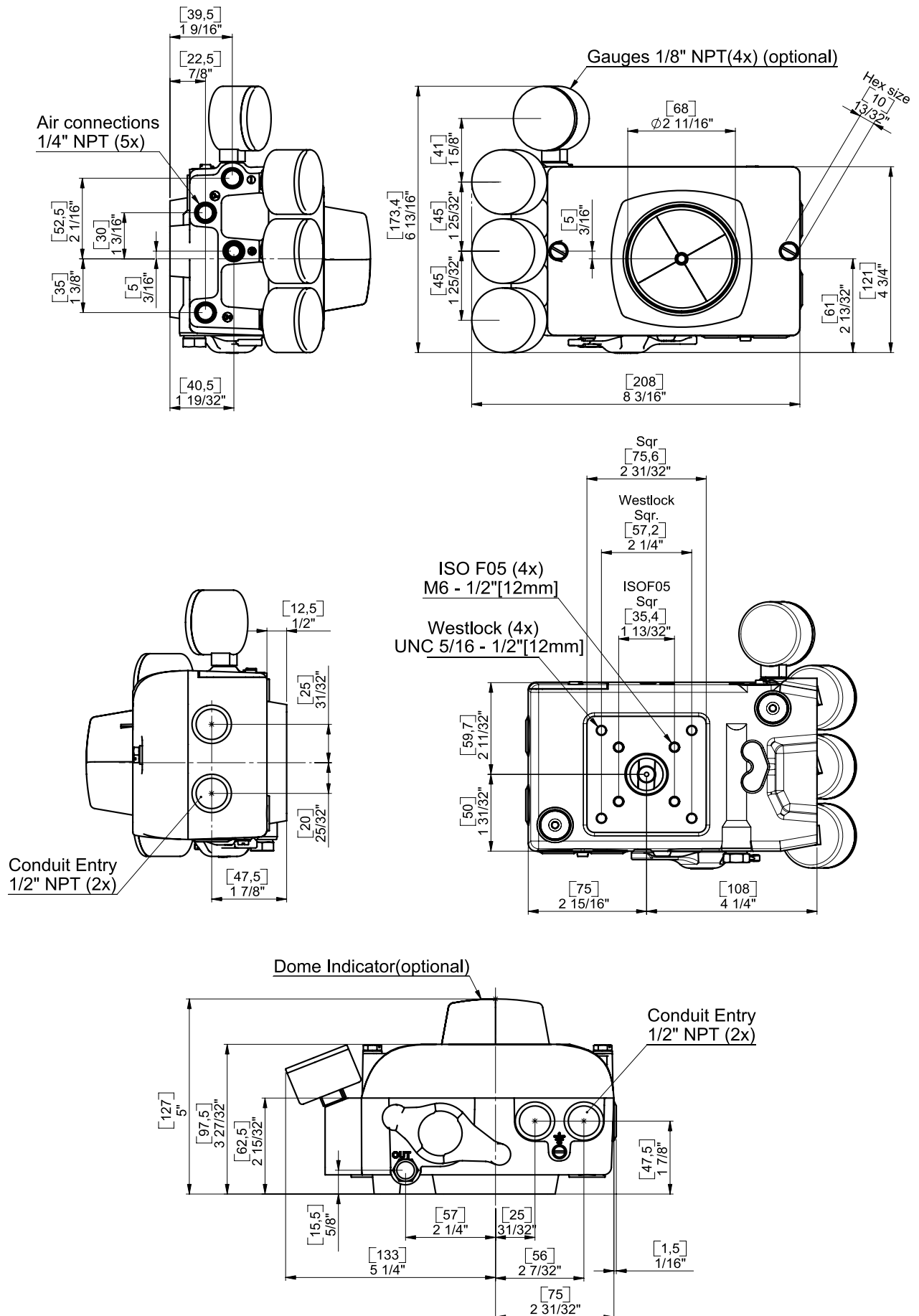
V200 P Pneumatic Positioner

Input Range:	3-15 PSI
Supply Pressure	20-145 PSI
Linearity Error:	<0.7 f.s.
Hysteresis:	<0.4 f.s.
Repeatability:	<0.3 f.s.
Pressure Gain @87 PSI: (acc. to ISA S75.13)	240:1
Air Delivery @87 PSI:	28.3 SCFM
Air Consumption @87 PSI:	0.20 SCFM
Temperature Range:	-40°F to 185°F
Air Connections:	1/4" NPT / G Threads
Gauge Port:	1/8" NPT / G Threads
Ingress & Corrosion Protection	Nema 4X and IP 66

V200 E Electropneumatic Positioner

Input Range:	4-20 mA (Ri<170 ohms)
Supply Pressure	20-145 PSI
Linearity Error:	<1% f.s.
Hysteresis:	<0.6% f.s.
Repeatability:	<0.5% f.s.
Pressure Gain @87 PSI: (acc. to ISA S75.13)	240:1
Air Delivery @87 PSI:	28.3 SCFM
Air Consumption @87 PSI:	0.20 SCFM
Temperature Range:	-40°F to 185°F
Air Connections:	1/4" NPT / G Threads
Gauge Port:	1/8" NPT / G Threads
Cable Entry:	1/2" NPT, M20x1.5 or PG 13.5
Ingress & Corrosion Protection:	Nema 4X and IP 66

V200 Positioner Dimensions



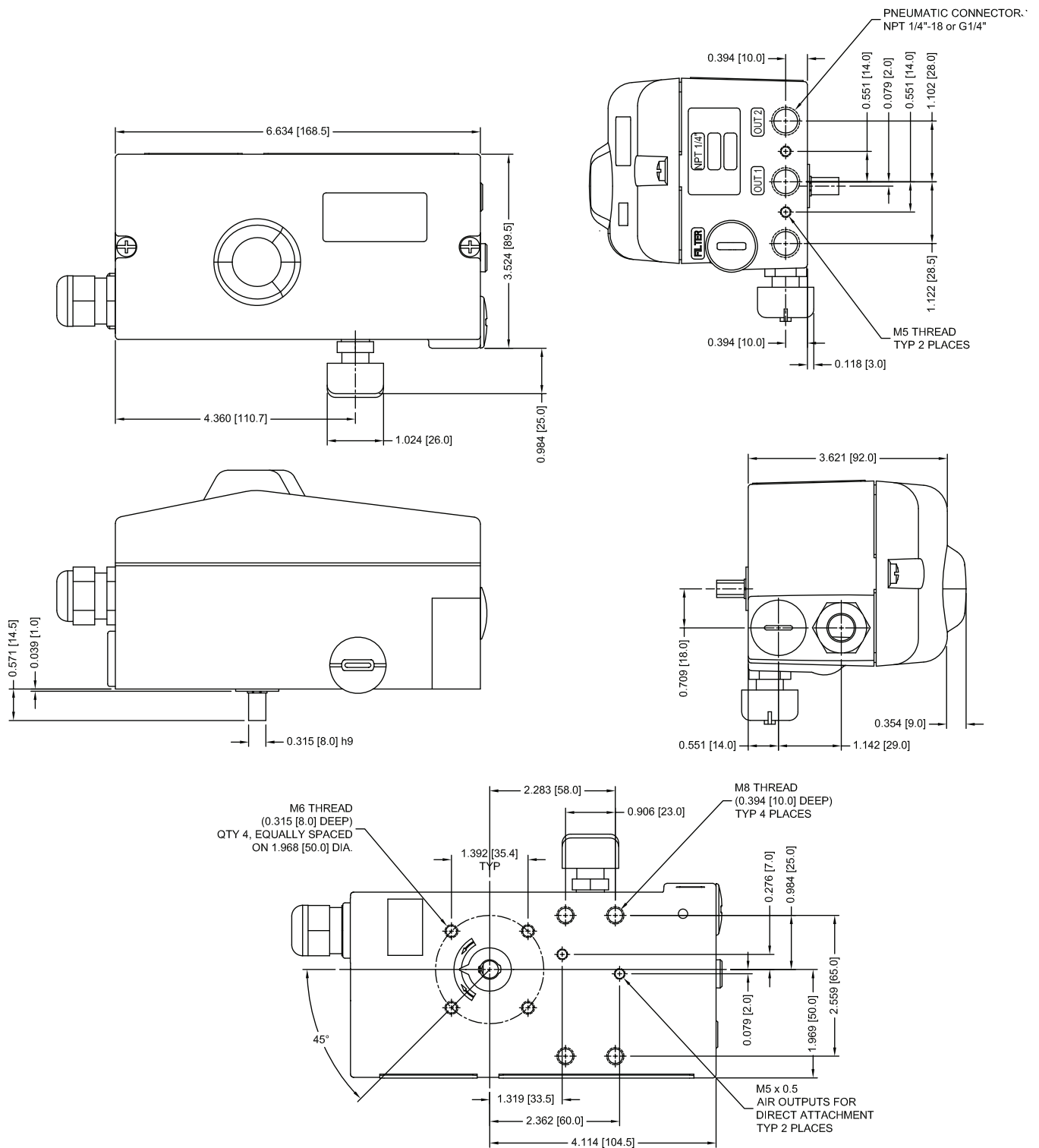
D400 Digital Positioner



- Microprocessor based valve positioner
- Menu driven programming with LCD display - multilingual
- Local push button configuration
- Low air consumption
- Explosion-proof & intrinsically safe modes available
- Modular design - available with position feedback, micro switches and fail freeze options, rotary or linear mounting
- NEMA 4X IP 65 enclosure, aluminum housing, electrostatically dipped varnish with stove-hardened epoxy resin
- Adaptive control feature offers the ability to update automation package without resetting the process
- Linear mounting possible
- ATEX - FM • CSA • IEC • Ex approvals available
- Available with Foundation Fieldbus, Profi-Bus and Hart Protocols

D400 Digital Positioner	
Rotation:	25 - 120 Degrees
Max Air Supply:	90 PSI
Air Delivery:	6.0 SCFM @ 90 PSI
Air Consumption:	≤ 0.015 SCFM
Stroke:	0.4 to 4"
Connections:	1/4" NPT air, 1/2" NPT Cable
Ambient Temperature:	-40° F to 185° F
Charateristic Curves:	Linear, equal %, 1:25, 1:50, 25:1, 50:1, or user configurable
Characteristic deviation:	≤ 0.5%
Deadband:	0.1%, adjustable to 10%
Resolution (A/D) Conversion):	16,000 steps
Sample Rate:	20 msec
Seismic Vibration:	Meets requirements to DIN IEC 68-3-3 Class III for strong and strongest earthquakes
Mechanical Vibration:	≤ 1% up to 10g and 10...80 Hz
Mounting orientation:	≤ 0.5% at 90° Change
EMI:	Complies with EMC directive 89/336/EEC as of May 1989 (Increased EMI Shielding to EN 50082-2 PR as of 11/93)

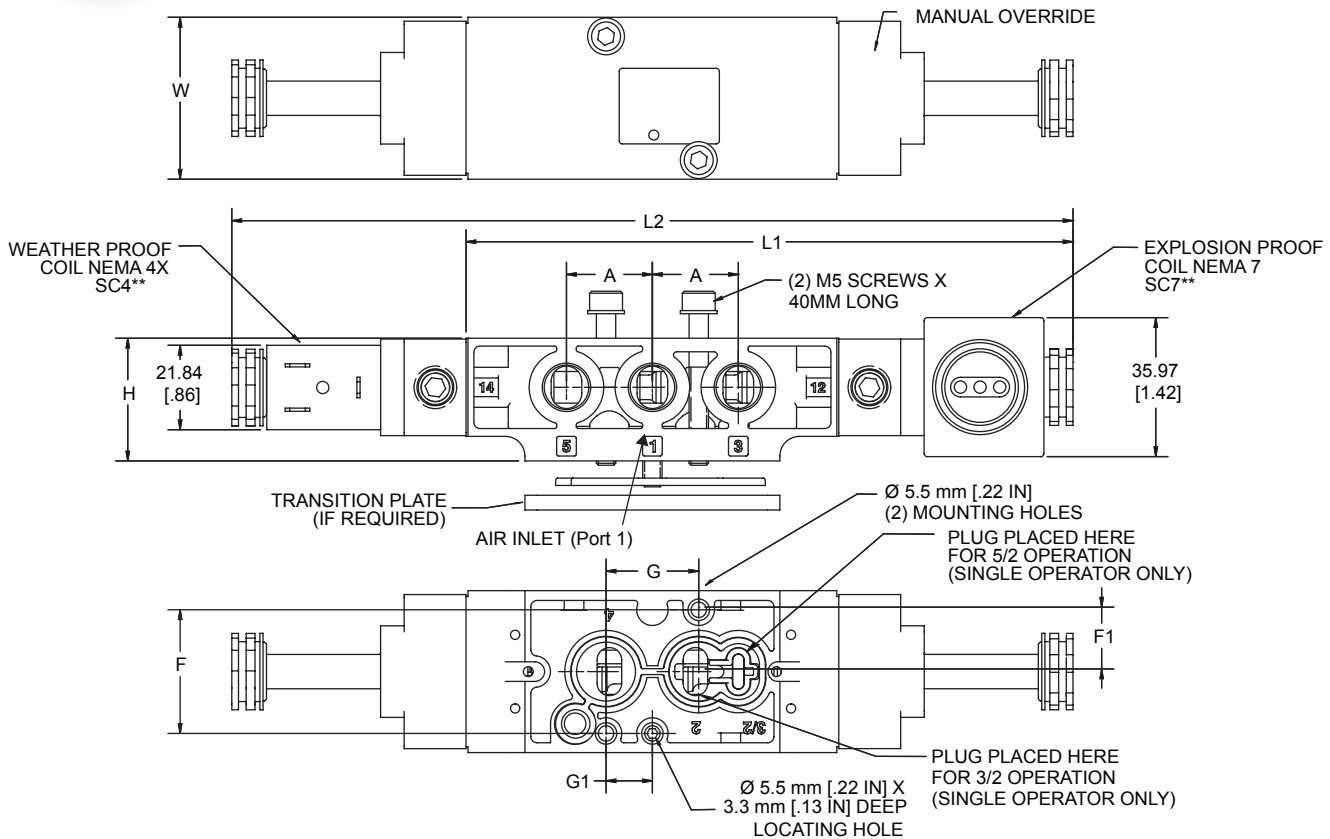
D400 Digital Positioner Dimensions



Solenoids



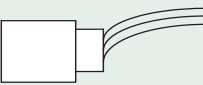
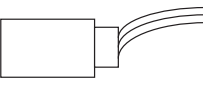
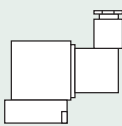
- Aluminum body
- NBR seals
- Manual override
- High flow: 1.8 CV
- 1/2" conduit connection to coil
- 1/4" port size
- Body can be converted between 5/2 (double acting) and 3/2 (spring return)
- Coils and flange tubes are rated to CSA/UL
- Same body accepts NEMA 4, NEMA 7, and ATEX coils
- Voltage options available upon request



Setup	Unit	A	C	F	F1	G	G1	H	L1	L2	W
Single	in	0.88	0.75	1.25	0.63	0.94	0.47	1.25	6.15	-	1.65
	mm	22.2	19.1	32.0	16.0	23.9	11.9	31.7	157	-	41.9
Double	in	0.88	0.75	1.26	0.63	0.94	0.47	1.25	-	8.55	1.65
	mm	22.2	19.1	32.0	16.0	23.9	11.9	31.7	-	217	41.9

Connectors (Not polarity dependent)						
DIN 43650 Industrial Form B Type Part Number						
	Maximum Cable Diameter: 9mm (0.35")					
	Strain Relief without Cord	Strain Relief with Light		1/2" Conduit without Cord	Strain Relief with Light & 6' Cord	
		100-240 AC 48-120 DC	6-48 AC/DC		100-240 AC 48-120 DC	6-48 AC/DC
	SR7020-001	SRL7020-AA	SRL7020-DB	DIN PLUG	SRLC-7094-006	SRLC-7094-007

Solenoids Electrical Information

Coil Part Numbers					
Coil Part Number **=Voltage	Description		Operator Type	Instructions	Lb
SC4**	Weather-Proof DIN 43650 Industrial Form B Connection NEMA 4X		W	Order coil separately (specify voltage code from below)	0.12
SC4**C SC4**CT (high temp 82°C max)	Weather-Proof 1/2" Conduit with 30" Leads NEMA 4X		W	Order coil separately (specify voltage code from below)	0.12
SC7**	Explosion-Proof 1/2" Conduit with 24" Leads CSA & FM Approved CL. I; Zone 1 Ex m II T4; AEx m II CL. I; Div. I; GR. A, B, C, D CL. II; GR. E, F, G CL. III T4 Ta=20°C to +60°C NEMA 4, 4X, 7C, 7D, 9		W	Order coil separately (specify voltage code from below)	0.44
SCI2D	Intrinsically-Safe Strain Relief Ex ia CL. I; GR. A, B, C, D CL. II; GR. E, F, G CL. III; Div. I; T5		V	Coil and Connector included with valve (24VDC only)	0.46
SCI2D Must be Used with an Intrinsically-Safe Barrier					

Voltage Codes																		Lower Wattage available, upon request							
** Code	Operator Type	Current (Amps)								Resistance (OHMS @ 25°C)						Power (AC=VA, DC=Watts)									
		Inrush				Holding																			
		W		V	Z	W		V	Z	W		V	Z	W		V	Z								
		NEMA		ATEX		NEMA		ATEX		NEMA		ATEX		NEMA		ATEX									
		4, 4x	7, 9	Ex ia	Ex m	4, 4x	7, 9	Ex ia	Ex m	4, 4x	7, 9	Ex ia	Ex m	4, 4x	7, 9	Ex ia	Ex m								
2A	22/50 24/60	.36	-	-	-	.24	-	-	-	32	-	-	-	6.9	-	-	-								
12	120/50 120/60	.08	.10	-	.04	.05	.05	-	.03	840	530	-	1164	6.9	6.5	-	3.4								
22	230/50 230/60	.04	.05	-	.02	.03	.03	-	.01	3310	2345	-	6730	6.4	6.8	-	3.3								
1D	12 VDC	.38	.38	-	.27	.38	.38	-	.27	32	32	-	45	4.8	4.5	-	3.5								
2D	24 VDC	.20	.19	.05	.14	.20	.19	.05	.14	121	128	275	177	4.8	4.5	1.6	3.5								

Fig: X2003AAWR-I-2D

Description: Coil Right - Intrinsically Safe - 24 VCD

Solenoids Part Number Chart						
Body		NEMA CLASS			Voltage	
S2003ACWR	COIL LEFT FOR SPNII AND OTHER ACTUATORS THAT REQUIRE AIR TO COME IN ON THE LEFT IN SPRING RETURN MODE	4	4 = NEMA 4X		12	12 = 120 VAC
		7	7 = NEMA 7/9		22	22 = 240 VAC
		I	I = INTRINSICALLY SAFE - 24VDC ONLY		2A	2A = 24 VAC
X2003AAWR	COIL RIGHT FOR X AND OTHER ACTUATORS THAT REQUIRE AIR TO COME IN ON THE RIGHT IN SPRING RETURN MODE				1D	1D = 12 VDC
					2D	2D = 24 VDC

SEA Electric Actuator



Enclosure:

- IP 67: Waterproof and dust-proof enclosure
- NEMA 4X: Waterproof and dust-proof enclosure
- Material: Dry powder coating aluminum alloy

Motor:

- Standard extended duty cycle induction motor F insulation class for all models
- Built-in thermal protection (275°F) prevents motor burning out
- Standard Unit is 120 VAC
- Standard motors are 30% duty rated

Position Indicator:

- All models except SEA-1 have continuous mechanical position indicator on the top of the actuator cover

Manual Override:

- Non-clutch design, the manual operation can be operated without any lever, clutch or brake upon power outage
- When electric motor is operating, manual hand-wheel will not rotate for safety purposes

Gear Train:

- High alloy steel gear trains provide self-locking function to avoid valve back drive
- Gear trains have been already lubricated sufficiently with anti-high temperature lubricant at the factory

Working Conditions:

- Ambient temperature: -22°F to 149°F
- Humidity: 30% to 95%

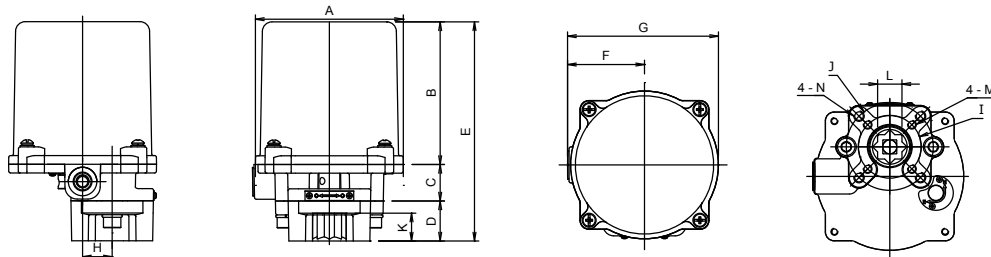
Various Options:

- Space heater
- Additional limit switches (2 units)
- Potentiometer unit (1K Ohm or 5K Ohm)
- Local control unit (local/remote, on/off)
- Conduit entrance (1/2" PS, 3/4" PF, 1/2" NPT)
- Torque switches (2 units)
- Current position transmitter (output 4-20mA)
- Modulating controller (4-20mA, 1-5 VDC, 2-10 VDC)
- Various voltages
- Nylon enclosure material
- Thermostat
- 75% duty rating

Certifications:

- CE
- CSA (Conforming to the test standard for outdoor use)

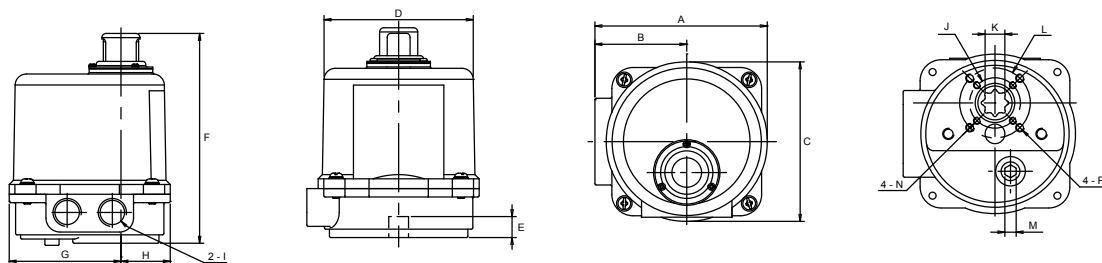
SEA Electric Actuator Dimensions



SEA 1

Unit	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Flange Type
in	3.35	3.23	0.83	0.90	4.96	1.73	3.42	0.67	1.42	1.97	0.63	0.55	M5x0.8	M6x1.0	F03 or F05
mm	85	82	21	23	126	44	87	17	36	50	16	14	M5x0.8	M6x1.0	

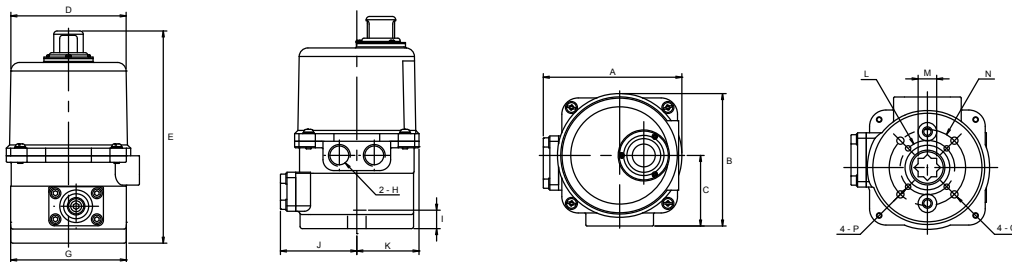
* The dimensions are based on 110/220v AC actuator, for 24v AC type: B=113mm(4.45 in); E=157mm (6.18 in)



SEA 3

Unit	A	B	C	D	E	F	G	H	I	J	K Max	L	M	N	P	Flange Type
in	4.80	2.56	4.49	4.17	0.59	5.9	3.11	1.38	1/2 PS	1.42	0.551	1.97	0.2	M5x0.8	M6x1.0	F03 or F05
mm	122	65	114	106	15	150	79	35	1/2 PS	36	14	50	8	M5x0.8	M6x1.0	

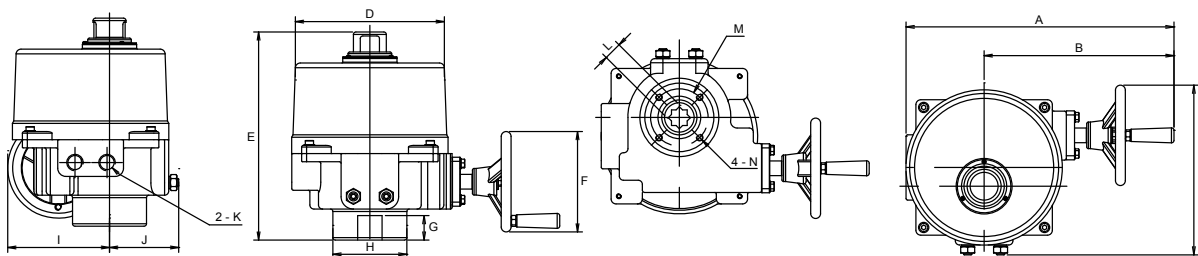
* Option: 1) K=11mm[0.43 in] 2) K=9mm[0.35 in] • With modulation card F=183mm[7.2 in] • No mechanical stops



SEA 4

Unit	A	B	C	D	E	G	H	I	J	K	L	M	N	P	Q	Flange Type
in	5.0	4.8	2.56	4.02	7.71	4.17	1/2 PS	0.79	2.76	2.24	1.97	0.669	2.76	M6x1.0	M8x1.25	F05 or F07
mm	127	122	65	102	196	106	1/2 PS	20	70	57	50	17	70	M6x1.0	M8x1.25	

* With modulation card E=229mm[9.0 in] • No mechanical stops

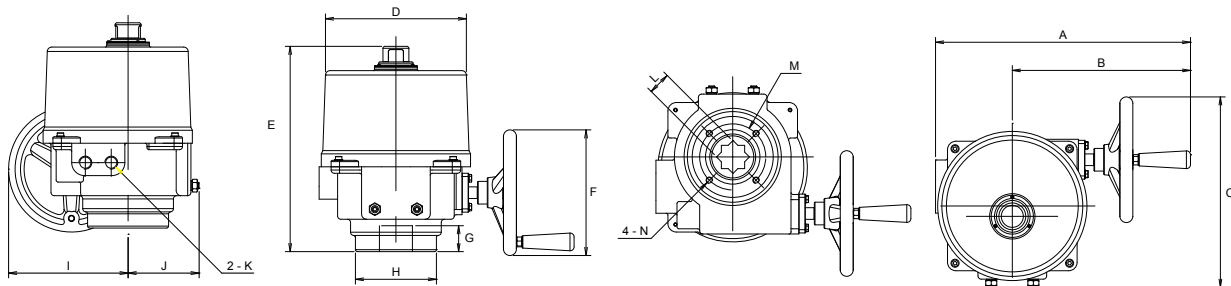


SEA 8 AND SEA 13

Unit	A	B	C	D	E	F	G	H	I	J	K	L Max	M	N	Flange Type
in	12.83	9.09	8.15	7.13	10.04	4.76	1.18	3.54	4.88	3.31	1/2 PS	0.867	2.76	M8x1.25	F07
mm	326	231	207	181	255	121	30	90	124	84	1/2 PS	22	70	M8x1.25	

* With DC motor E=289mm[11.38 in] (applv.to DC model or 75% duty cycle) • With torque switch A=361mm[14.21 in]

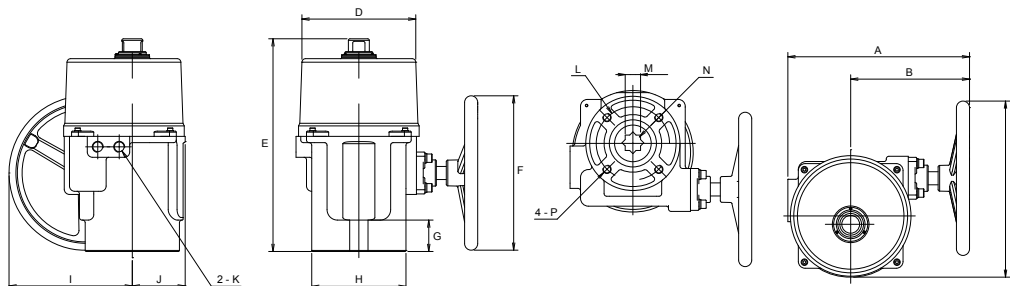
SEA Electric Actuator Dimensions Cont.



SEA 35, SEA 44 AND SEA 57

Unit	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Flange Type
in	15.51	10.82	11.50	8.54	12.48	7.52	1.57	4.97	7.24	4.33	1/2 PS	1.42	4.01	M10*1.5	F10
mm	394	275	292	217	317	191	40	125	184	110	1/2 PS	36	102	M10*1.5	

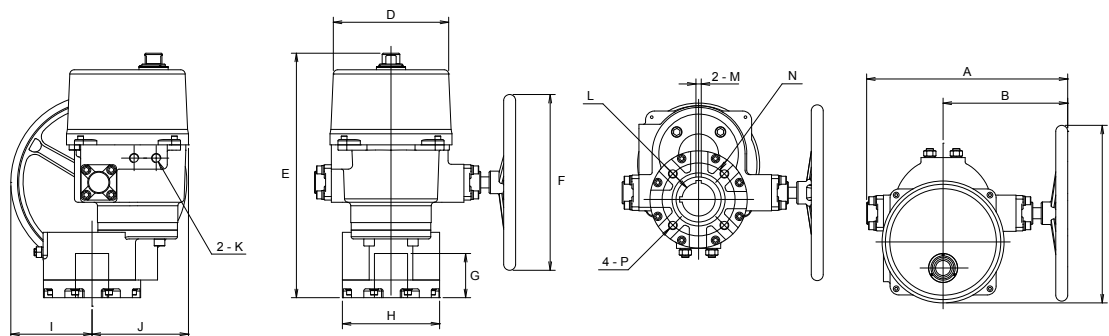
* With torque switch A=460mm[18.11 in]



SEA 88 AND SEA 132

Unit	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Flange Type
in	13.66	8.94	13.23	8.54	15.98	11.61	2.36	7.09	9.25	3.98	1/2 PS	4.92	1.38	1.38	M12*1.75	F12 or F14
mm	347	227	336	217	406	295	60	180	235	101	1/2 PS	125	35	35	M12*1.75	

* With torque switch A=435mm[17.13 in] • With Flange type F14: L=140mm[5.51 in] & P=M16*2.0



SEA 177, SEA 221, SEA 265 AND SEA 310

Unit	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Flange Type
in	17.91	11.10	15.83	10.27	21.81	15.67	3.94	8.66	7.24	8.58	1/2 PS	2.95	0.47	6.50	M20*2.5	F16
mm	455	282	402	261	554	398	100	220	184	218	1/2 PS	75	12	165	M20*2.5	

SEA Technical Information

Model	Power (watts)	Max Torque (In/lb)	Speed (Sec/90°)	Weight (lb)	Manual Override	Mounting Flange
SEA 1	5W	132	19	3.3	Lever	F03 / F05
SEA 3	10W	310	12	4.4	Lever	F03 / F05
SEA 4	10W	443	20	6.6	Lever	F05 / F07
SEA 8	40W	797	15	24.2	Hand-wheel	F07
SEA 13	40W	1328	22	24.2	Hand-wheel	F07
SEA 35	80W	3540	16	44	Hand-wheel	F10
SEA 44	80W	4425	22	44	Hand-wheel	F10
SEA 57	80W	5750	28	44	Hand-wheel	F10
SEA 88	120W	8850	46	71	Hand-wheel	F12 / F14
SEA 132	120W	13275	46	71	Hand-wheel	F12 / F14
SEA 177	180W	17700	58	157	Hand-wheel	F16
SEA 221	180W	22125	58	157	Hand-wheel	F16
SEA 265	180W	26550	58	159	Hand-wheel	F16
SEA 310	220W	31000	58	159	Hand-wheel	F16

Fig: SEA3 - 2

Description: SEA3 - 24V

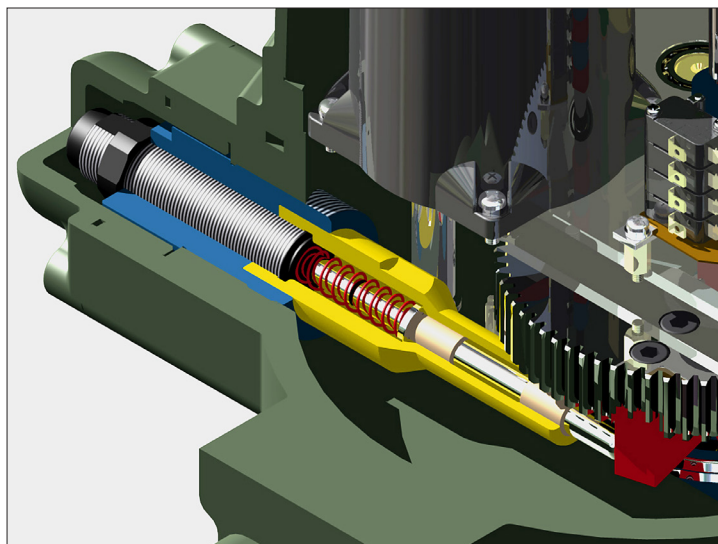
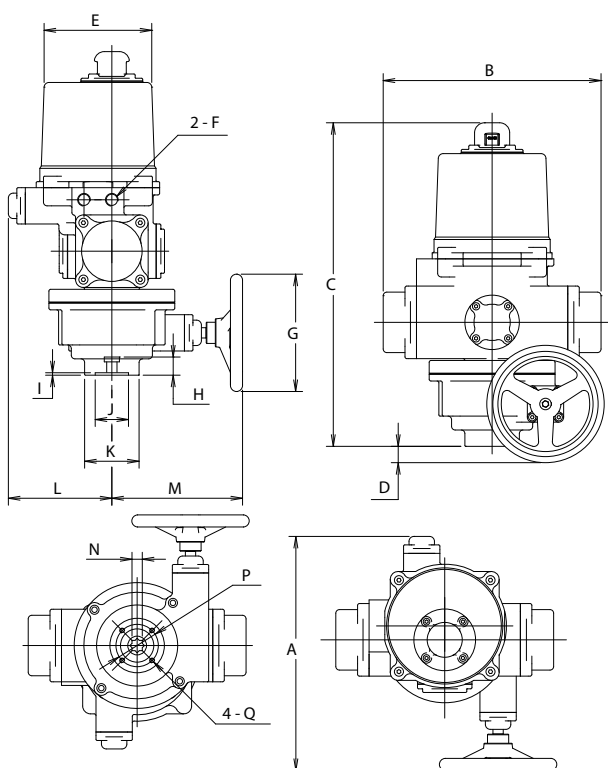
How To Order		
SEA Series	Options	
SEA1	1	220V*
SEA3	2	24 VAC*
SEA4	3	12 VDC*
SEA8	4	24 VDC*
SEA13	AS	Auxiliary Switches
SEA 35	FP	Feedback Potentiometer*
SEA 44	CR	Control Relays*
SEA 57	HT	Heater & Thermostat
SEA 88	PP	Proportional Positioner*
SEA 132	FT	Feedback Transmitter*
SEA 177*	TR	Timers*
SEA 221*	TS	Torque Sensor*
SEA 265*	*POA	
SEA 310*		

SEA Spring Return Electric Actuator



- Spring return models are designed to provide a fail-safe position in the event of a power loss of supply voltage a mechanical spring set is utilized to position the valve or damper to either the fully open or fully closed position without any external power source.
- A mechanical buffer system is employed at the end of the spring stroke to reduce the dynamic effect of the springs returning to the fail safe position.
- Standard unit fails clockwise, counter-clockwise rotation failure is available.
- A clutch-less, lever-less manual over-ride provides full-time manual capabilities.
- Patented in Taiwan, USA, Japan and China
- 50% duty rated
- Temperature range: -22° F TO +149° F with use of heater and thermostat
- Powder coated aluminum alloy enclosure
- Nema 4X, IP67
- Gear train comes lubricated for life from factory
- Visual indicator
- Voltage options include: 24VAC, 24VDC, 110/220V 1 phase, 220/380/440V 3 phase

SEA Spring Return Electric Actuator Dimensions



SPRING BUFFER SYSTEM

Model	Unit	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	Flange Type
SEA-4-SR-MO	in mm	15.09 387	14.04 360	20.87 535	1.38 35	6.94 178	1/2" NPT	7.57 194	1.17 30	0.16 4	2.15 55	3.51 90	6.67 171	8.42 216	0.66 17	2.73 70	M8 x 1.25	F07
SEA-11-SR-MO	in mm	18.84 483	18.02 462	25.12 638	2.70 68	10.43 265	1/2" NPT	11.61 295	1.61 41	0.20 5	2.73 70	4.88 125	9.63 247	9.33 237	0.86 22	3.98 102	M10 x 1.5	F10
SEA-17-SR-MO	in mm	22.97 589	23.40 600	28.50 732	4.30 109	12.00 305	1/2" NPT	15.70 398	1.76 45	0.20 5	3.32 85	5.85 150	11.90 305	11.08 284	1.05 27	4.88 125	M12 x 1.75	F12
SEA-23-SR-MO	in mm	22.97 589	23.40 600	28.50 732	4.30 109	12.00 305	1/2" NPT	15.70 398	1.76 45	0.20 5	3.32 85	5.85 150	11.90 305	11.08 284	1.05 27	4.88 125	M12 x 1.75	F12

* With DC power supply C=572mm[22.52 in]

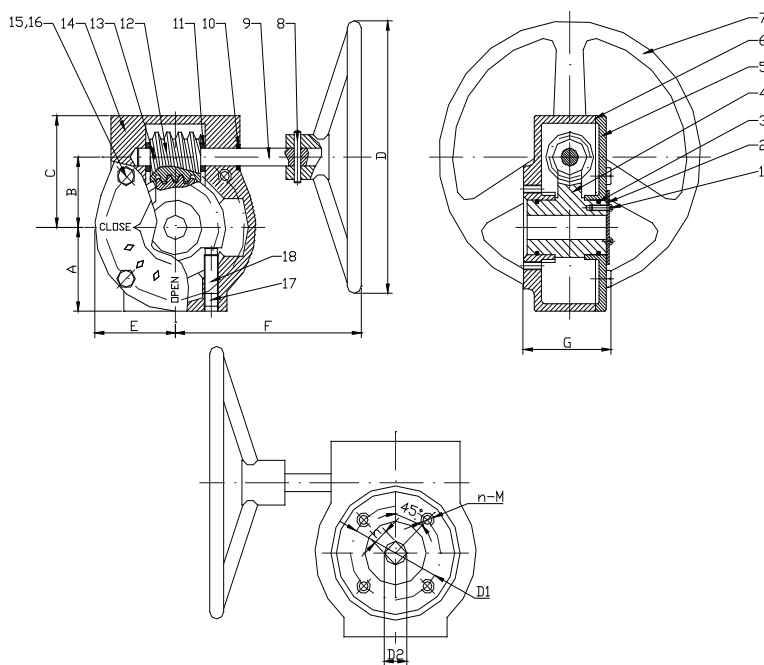
Model	Power (watts)	Max Torque (In/lb)	Motor Speed (Sec/90°)	Speed Spring	Mounting Flange
SEA-4-SR-MO*	1.5A RUN / 2.8A LOCK	440	7-9 SECONDS	3 SECONDS	F07
SEA-11-SR-MO*	3.8A RUN / 11A LOCK	1150	7-9 SECONDS	8 SECONDS	F10
SEA-17-SR-MO*	3.8A RUN / 11.5A LOCK	1770	11-13 SECONDS	12 SECONDS	F12
SEA-23-SR-MO*	3.8A RUN / 11.5A LOCK	2300	14-17 SECONDS	12 SECONDS	F12

*POA

Series SG Gear Operator



Item	Quantity	Part Description	Material Code
1	2	Bolts	Steel
2	1	Indicator	Aluminum
3	2	"O" Ring	ASTM D2000 NBR
4	1	Worm Gear	ASTM A536 65-45-12
5	1	Cover	ASTM A126 Class B
6	1	Spacer Sheet	
7	1	Hand Wheel	ASTM A126 Class B
8	1	Taper Pin	AISI 1045
9	1	Shaft	AISI 1045
10	1	Ring	ASTM D2000 NBR
11	2	Baffle Ring	ASTM536 65-45-12
12	1	Worm	AISI 1045
13	1	Taper Pin	STEEL
14	1	Housing	ASTM A126 Class B
15	4	Bolts	Steel
16	4	Spring Spacer	AISI 1566
17	1	Locking Screw	Steel
18	1	Adjusting Screw	Steel

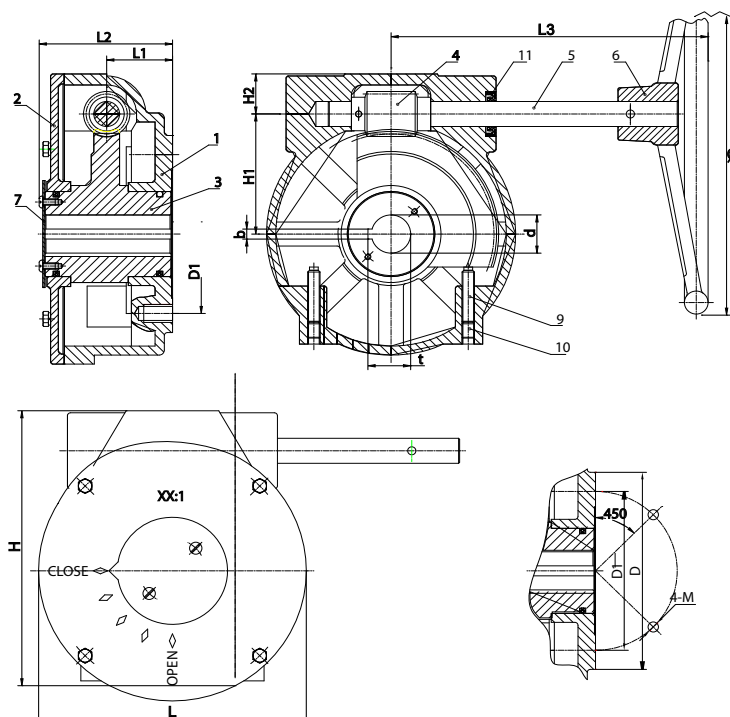


Model	Gear Ratio	Unit	A	B	C	D	D1	D2	E	F	G	h	M	n	Output Torque IN/LBS	Weight LBS/KG
SG-11	24:1	in mm	2.13 54	1.77 45	2.87 73	5.9 150	F05	0.496 13	2.07 53	6.1 155	2.68 68	0.354 9	M6	4	1504	10.1 5
SG-12	24:1	in mm	2.13 54	1.77 45	2.87 73	5.9 150	F07	0.712 18	2.07 53	6.1 155	2.68 68	0.551 14	M8	4	1504	10.1 5
SG-13	30:1	in mm	3.01 76	2.6 66	3.94 100	11.81 300	F10	1.12 28	3.00 76	8.74 222	3.00 76	0.867 22	M10	4	6195	18.7 8
SG-14	50:1	in mm	3.19 81	3.05 77	4.59 117	11.81 300	F10	1.12 28	3.19 81	8.39 213	3.18 81	0.867 22	M10	4	10621	24.64 11

Series SG Gear Operator (Continued)



Item	Quantity	Part Description	Material Code
1	1	Housing	ASTM A126 Class B
2	1	Top Cover	ASTM A126 Class B
3	1	Gear Quadrant	Ductile Iron
4	1	Worm Gear	Steel
5	1	Input Shaft	Steel
6	1	Hand Wheel	ASTM A126 Class B
7	1	Indicator	Aluminum
9	2	Adjustment Screw	Steel
10	2	Set Screw	Steel
11	1	Shaft Seal	Buna-N



Model	Gear Ratio	Unit	D	D1	H	H1	H2	L	L1	L2	L3	M	b	d	t	Φ	Output Torque IN/LBS	Weight LBS/KG
SG-15	50:1	in mm	5.51 140	4.02 102	7.78 198	3.05 77	1.54 39	6.38 162	1.71 43	3.18 81	8.39 213	0.39 10	0.315 8	1.25 32	1.38 35	11.81 300	10621	24.6 11
SG-16	80:1	in mm	7.76 197	5.51 140	11.32 288	4.72 120	1.57 40	10.04 255	2.32 59	4.92 125	9.88 251	0.63 16	0.393 10	1.31 33	1.42 36	11.81 300	22127	73.7 33
SG-17	80:1	in mm	7.76 197	5.51 140	11.32 288	4.72 120	1.57 40	10.04 255	2.32 59	4.92 125	9.88 251	0.63 16	0.393 10	1.5 38	1.61 41	15.75 400	22127	73.7 33
SG-18	560:1	in mm	7.76 197	5.51 140	12.32 313	4.72 120	3.39 86	8.43 214	2.36 60	6.06 154	13.3 338	0.63 16	0.393 10	1.63 41	1.74 44	9.84 250	22127	105.8 48
SG-19	640:1	in mm	6.50 165	5.18 132	12.32 313	4.72 120	2.17 55	10.87 276	2.36 60	6.06 154	13.3 338	0.79 20	0.630 16	2.0 51	2.22 56	11.81 300	35403	105.8 48

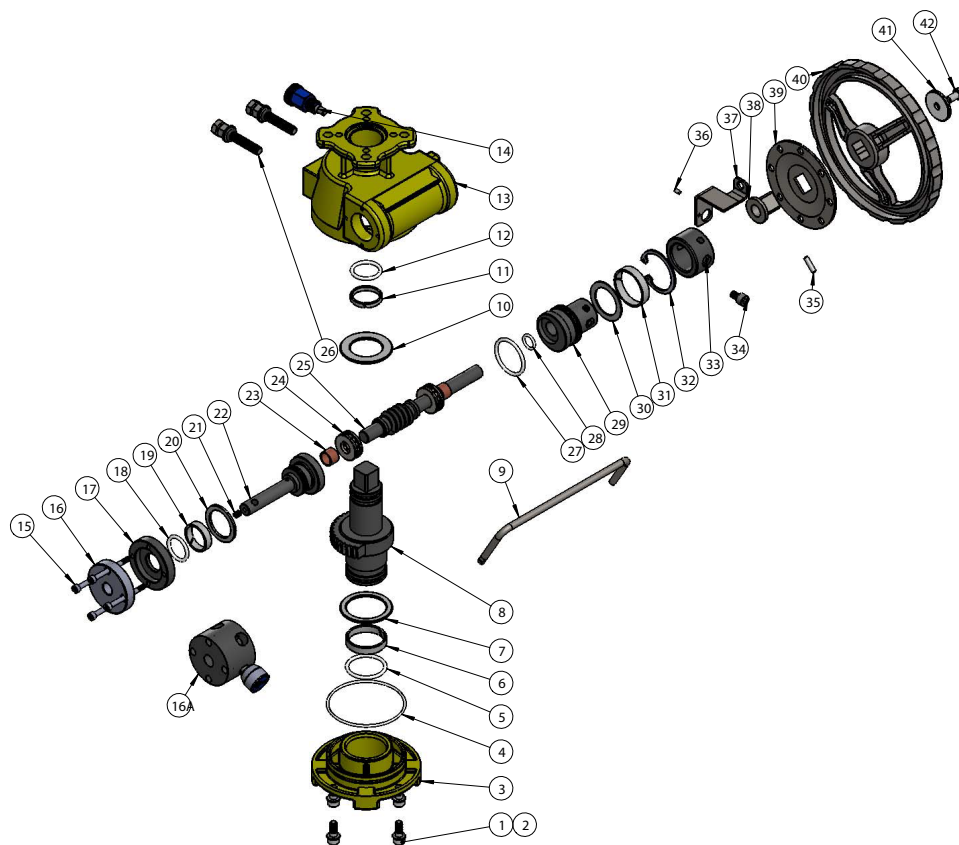
SDC Declutchable Manual Override



- One piece body, IP67 solid weatherproof sealing
- ISO5211 mounting standard
- Self lubricated bearing for worm & gear
- WCB body surface treated by phosphating, epoxy & polyester coating
- Optional relief air shut off (RV)
- Optional lock out (LO)

SDC Material Listing

SDC-17

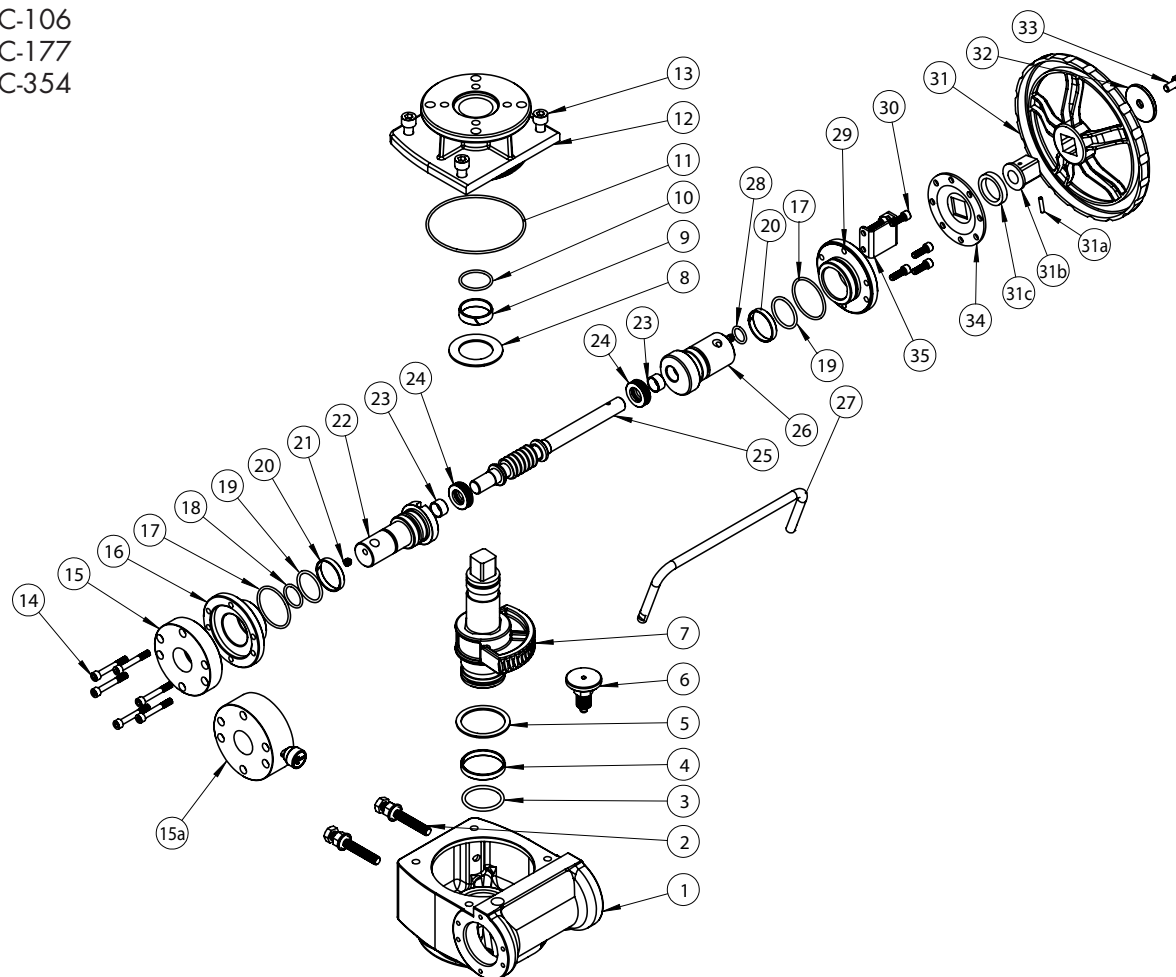


No.	Part Name	Qty	Material
1	Screw	4	304
2	The elastic washer	4	304
3	Cap	1	WCB
4	O Ring (cap)	1	NBR
5	O Ring (shaft)	1	NBR
6	Bearing (shaft)	1	POM
7	Bearing (shaft)	1	POM
8	Shaft	1	C45
9	Shift Handle	1	Steel+Cr
10	Bearing (upper shaft)	1	POM
11	Bearing (upper shaft)	1	POM
12	O Ring (upper shaft)	1	NBR
13	Body	1	WCB
14	Positioning unit	1	AL
15	Screw (left cap)	4	SS304
16	Cover plate (left cap)	1	C45
16A	Air shift valve	1	AL
17	left Cap	1	C45
18	O Ring	1	NBR
19	Bearing	1	POM
20	Bearing	1	POM
21	Bolt	2	SS304

No.	Part Name	Qty	Material
22	left Eccentric half axle	1	C45
23	Bearing	2	Steel+PTFE
24	Thrust ball bearing	2	Steel
25	Worm shaft	1	C45
26	Adjust Bolt	2	SS304+NBR
27	O Ring (right axle)	1	NBR
28	O Ring	1	NBR
29	Right Eccentric half axle	1	C45
30	Bearing (right axle)	1	POM
31	Bearing (right axle)	1	POM
32	Circlip for shaft	1	SS304
33	Right Cap	1	C45
34	Screw (right cap)	1	SS304
35	Cylindrical pin	1	C20
36	Cylindrical pin	1	C45
37	Lock bracket	1	C15
38	The adapter sleeve	1	C45
39	Lock disc	1	C15
40	Hand wheel	1	DI/20
41	Flat washer	1	C15
42	Screw	1	SS304

SDC Material Listing

SDC-53
SDC-106
SDC-177
SDC-354

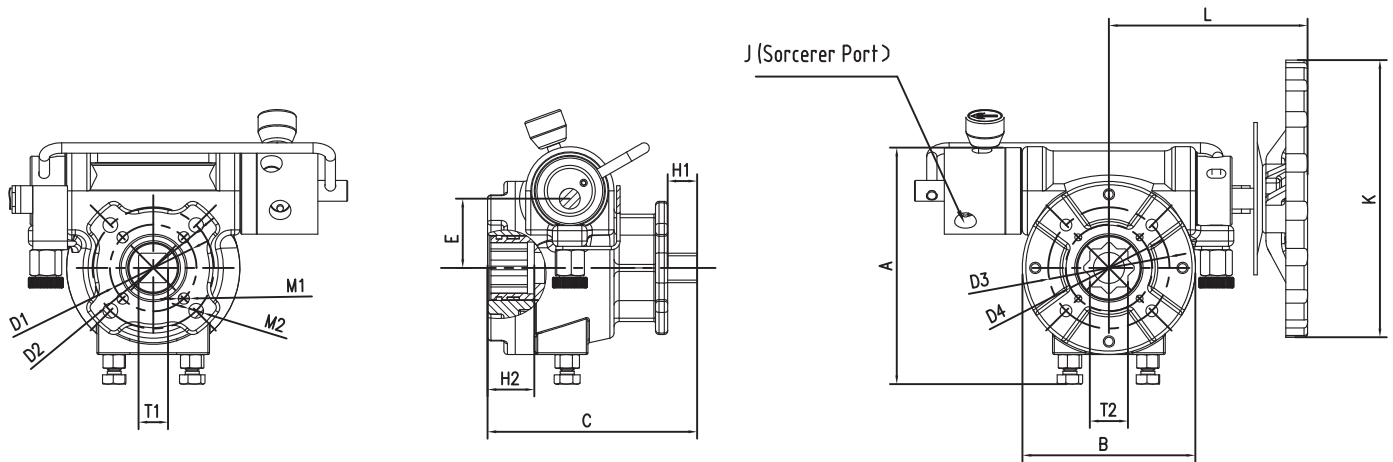


No.	Part Name	Qty	Material
1	Body	1	WCB
2	Adjust Bolt	2	SS304&NBR
3	O Ring (shaft)	1	NBR
4	Bearing (shaft)	1	POM
5	Bearing (shaft)	1	POM
6	Positioning unit	1	AL
7	Shaft	1	C45
8	Bearing (upper shaft)	1	POM
9	Bearing (upper shaft)	1	POM
10	O Ring (upper shaft)	1	NBR
11	O Ring (cap)	1	NBR
12	Cover Cap	1	WCB
13	Screw (cover cap)	4	SS304
14	Screw (left cap)	6	SS304
15	Left Cap	1	C45
15A	Air shift valve	1	AL
16	Left Cap	1	C45
17	O Ring	2	NBR
18	O Ring (left axle)	1	NBR
19	O Ring (left axle)	2	NBR

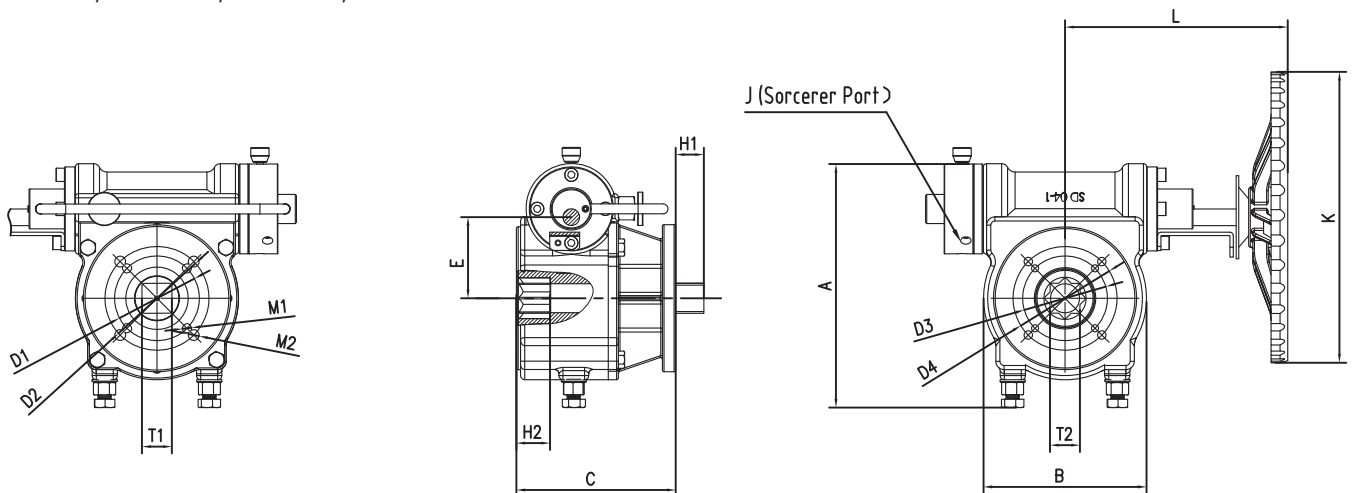
No.	Part Name	Qty	Material
20	Eccentric axle bearing	2	POM
21	Bolt	1	SS304
22	Left Eccentric half axle	1	C45
23	Bearing	2	Steel+PTFE
24	Thrust ball bearing	2	Steel
25	Worm shaft	1	C45
26	Right Eccentric half axle	1	C45
27	Shift Handle	1	Steel+Cr
28	O Ring (right axle)	1	NBR
29	Right Cap	1	C45
30	Screw (right cap)	6	SS304
31	Hand wheel	1	D1/20
31A	Cylindrical pin	1	C20
31B	The adapter sleeve	1	C45
31C	hand wheel washer	1	Steel+Zn
32	Flat washer	1	C15
33	Bolt	1	SS304
34	Lock disc	1	C15
35	Lock bracket	1	C15

SDC Dimensions

SDC-17



SDC-53, SDC-106, SDC-177, SDC-354



Model	A	B	C	D1	D2	D3	D4	E	L	M1	M2
SDC-17	120	100	104	F05	F07	F05	F07	44.5	120	4-φ7	4-φ9
SDC-53	192	148	145	F07	F10	F07	F10	71	175	4-φ9	4-φ11
SDC-106	192	148	145	F07	F10	F07	F10	71	181	4-φ9	4-φ11
SDC-177	260	196	192	F10	F12	F10	F12	107.5	272	4-φ11	4-φ13
SDC-354	334	255	181	F16	-	F12	F16	123	275	4-φ22	-

Model	T1	T2	H1	H2	K	J	Actuators	Output Torque
SDC-17	□ 17	□ 17	14	25	φ200	1/4"NPT	SPN II 075~100	1770 in/lb
SDC-53	□ 22	□ 27	19	30	φ200	1/4"NPT	SPN II 100~145	5310 in/lb
SDC-106	□ 27	□ 27	19	30	φ300	1/4"NPT	SPN II 145~180	10620 in/lb
SDC-177	□ 36	□ 36	34	40	φ400	1/4"NPT	SPN II 200~240	17700 in/lb
SDC-354	□ 46	□ 46	45	50	φ700	1/4"NPT	SPN II 265~300	35400 in/lb

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