



FLOW+

Rack & Pinion Pneumatic Actuator

Valves | Strainers
Actuators | Accessories

ISO
9001

3 YEAR VIEW TERMS
& CONDITIONS
WARRANTY



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Design and Construction



Introducing the new series of Flow+ rack and pinion pneumatic actuators, featuring many design enhancements over the previous model. It is the Flow+ brand of products' mission to offer innovative products by combining the long field experience with the latest production and materials technology available in the market today. Utilizing new machining tools and procedures, the Flow+ series of pneumatic actuators offer the following improved characteristics: Long-term reliability, high performance, full compliance with all the latest international standards, extensive product range, innovations and patented solutions for a universal drive shaft, enhanced multifunction position indicator, compact and light.

Range of Options

- Stainless steel (304 or 316) drive shafts are available upon request for all sizes, no matter the type of corrosion protection selected.
- For extremely high or low temperature applications, all models may be equipped with FPM or Silicon O-rings along with a field-tested lubricant.
- Other than the standard double square bottom drive shaft connection, we can supply a keyed drive connection. Consult us for these possible options.

Quality Management

- ISO9001.
- 3 year warranty.
- Each individual actuator has been factory inspected and tested and given a serial number for full traceability.
- Each individual actuator is individually packed in a special cardboard carton for protection, with a product description label for easy identification.

Accessories Available

- Air filter regulator
- Mounting brackets
- Couplings
- Solenoid valves
- Switch boxes
- Proximity switches
- Gear boxes
- Positioners

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

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

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

4 Two independent external travel stop adjustments permit easy and precise adjustment of +/- 5° in both directions. This adjustment may be made in either the open or closed position and provides for accurate valve alignment.

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

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

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

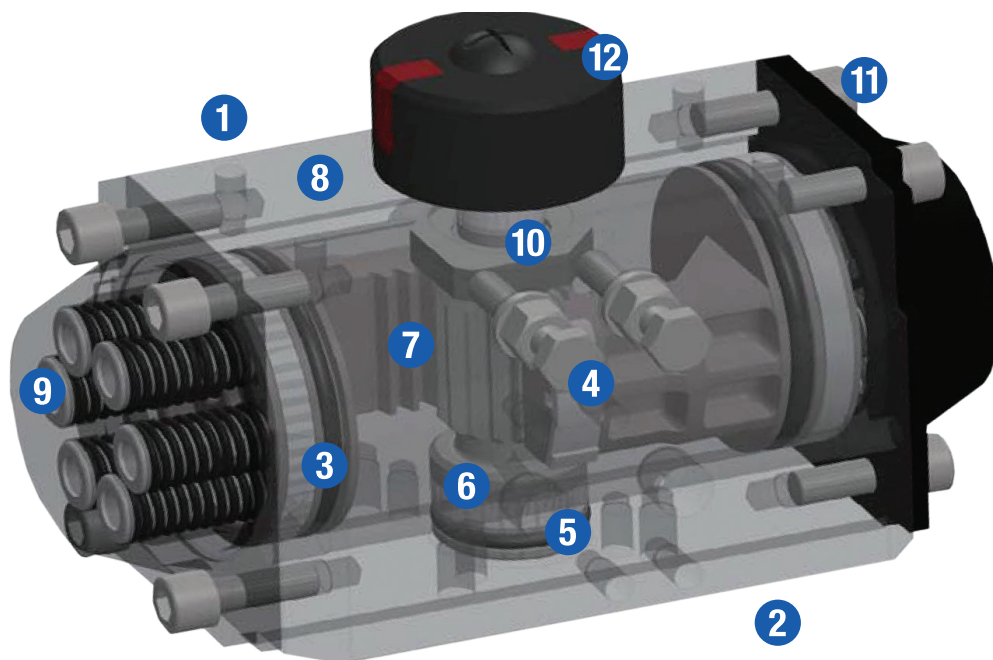
8 Extruded aluminum body with both internal and external corrosion protections. A honed cylinder surface for longer life and a lower coefficient of friction.

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

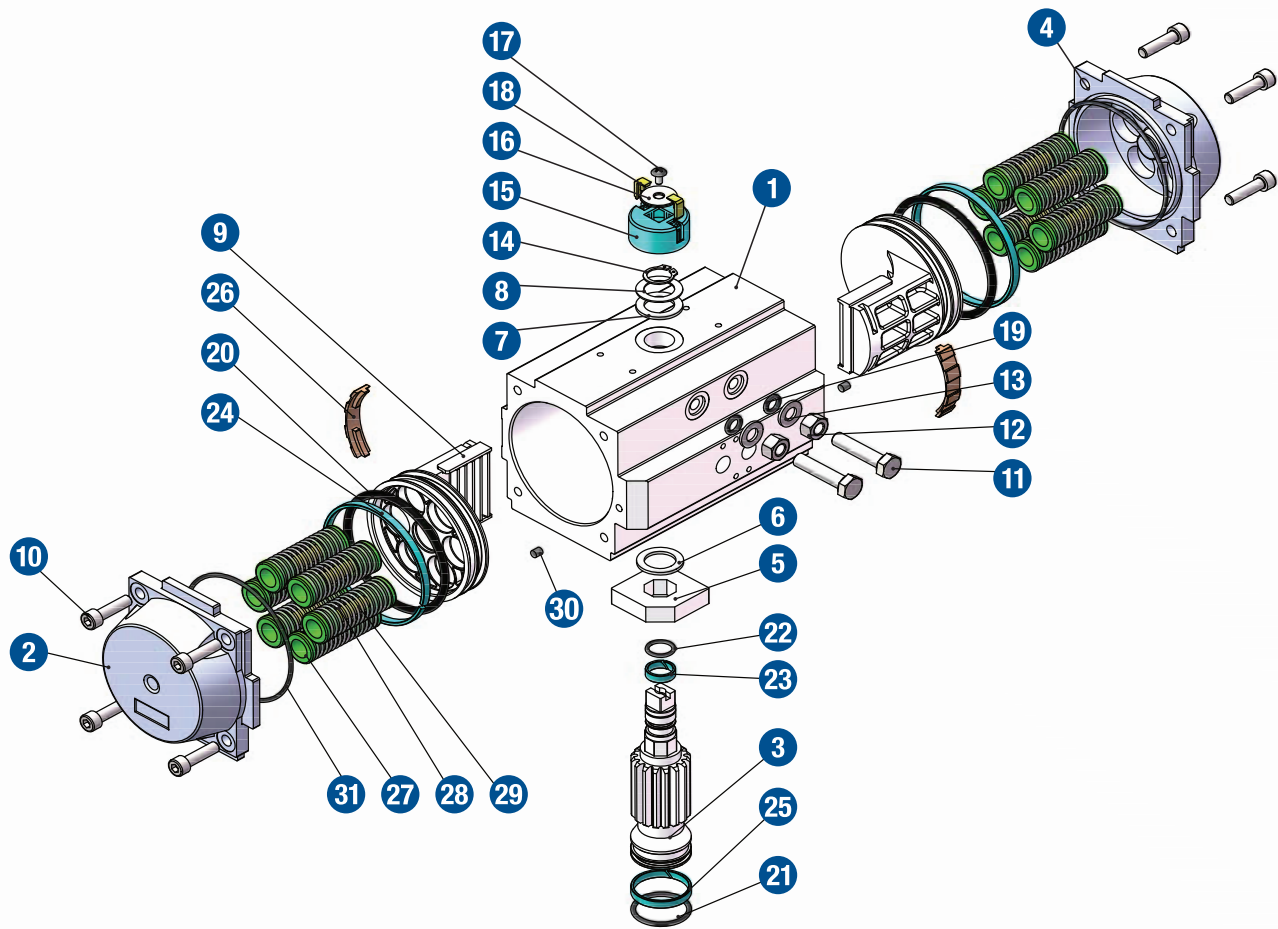
10 Selected high quality bearings and seals that provide a wide operating temperature range, low friction, and high cycle life.

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

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



Parts and Materials



#	Part	Material	Qty
1	Body	Aluminium alloy	1
2	Left End cap	Aluminium alloy	1
3	Drive shaft	Alloy Steel	1
4	Right end cap	Aluminium alloy	1 lot
5	OCTI-CAM	Alloy Steel	1 lot
6	Thrust bearing (pinion top)	POM+PTFE	2
7	Thrust bearing	POM+PTFE	2
8	Thrust washer	Stainless steel	1
9	Piston	Aluminium alloy	2
10	Cap screw (end cap)	Stainless steel	2
11	Stop top screw	Stainless steel	1
12	Nut (stop screw)	Stainless steel	2
13	Washer (stop screw)	Stainless steel	2
14	Spring clip	Spring steel	1
15	Position indicator	Nylon	1
16	Indicator thrust bearing	Stainless steel	1

#	Part	Material	Qty
17	Cap screw	Stainless steel	1
18	Color code	Nylon	2
19	"o" ring(stop screw)	NBR	2
20	"o" ring(piston)	NBR	2
21	"o" ring (pinion bottom)	NBR	1
22	"o" ring (pinion top)	NBR	1
23	Bearing (pinion top)	POM+PTFE	1
24	Bearing (pinion head)	POM+PTFE	2
25	Bearing (pinion bottom)	POM+PTFE	1
26	Wear band	Nylon	2
27	Spring seat	Nylon	24
28	Spring	High-carbon steel	12
29	Straining beam	Copper pipe	12
30	Plug	NBR	2
31	"o" ring (end cap)	NBR	2

Model Type A	FRP032		FRP050		FRP065		FRP075		FRP085		FRP095		FRP110		FRP125		FRP140	
	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S
Diameter (mm)	32	32	50	50	65	65	75	75	85	85	95	95	110	110	125	125	140	140
Air Volume Opening (L)	0.03	0.03	0.09	0.09	0.19	0.19	0.30	0.30	0.44	0.44	0.88	0.88	0.83	0.83	1.41	1.41	1.76	1.76
Air Volume Closing (L)	0.04	0.04	0.15	0.15	0.32	0.32	0.50	0.50	0.66	0.66	1.17	1.17	1.27	1.27	2.13	2.13	2.72	2.72
Opening Time (sec)	0.3	0.3	0.3	0.9	0.4	0.9	0.4	0.9	0.9	1.0	0.9	1.4	0.9	1.4	1.3	2.4	1.3	2.8
Closing Time (sec)	0.4	0.4	0.4	0.7	0.4	0.8	0.4	0.9	0.9	1.2	1.0	1.4	1.0	1.6	1.4	2.4	1.4	3.0
Weight (Kg)	0.47	0.59	1.13	1.25	1.97	2.21	2.93	3.29	3.78	4.26	5.14	5.86	6.09	7.17	10.86	12.54	13.77	15.93

Model Type A	FRP160		FRP190		FRP210		FRP240		FRP270		FRP300		FRP350		FRP400	
	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S
Diameter (mm)	160	160	190	190	210	210	240	240	270	270	300	300	350	350	400	400
Air Volume Opening (L)	2.85	2.85	4.75	4.75	6.60	6.60	11.40	11.40	15.80	15.80	19.09	19.09	27.65	27.65	42.81	42.81
Air Volume Closing (L)	4.08	4.08	7.20	7.20	10.29	10.29	15.10	15.10	18.80	18.80	28.23	28.23	44.10	44.10	62.05	62.05
Opening Time (sec)	2.0	4.8	2.2	2.4	2.9	3.4	3.2	3.8	4.4	5.0	5.0	6.0	6.2	7.4	7.5	9.6
Closing Time (sec)	2.4	4.9	2.6	3.0	3.8	4.1	3.7	4.0	4.9	5.5	6.0	6.8	7.2	8.4	8.5	10.6
Weight (Kg)	20.15	23.75	28.41	33.81	40.03	48.43	52.6	77.76	73.64	90.6	108	135.6	146.7	188.1	220.5	283.5

- For models 32-160: (1) Room temperature, (2) Actuator stroke 90°, (3) Solenoid valve with orifice of 4 mm and a flow capacity Qn400L/min, (4) Inside pipe diameter 6 mm, (5) Medium clean air, (6) Air supply pressure 5.5 bar, (7) Actuator without external resistance load.
- For models 190-400: (1) Room temperature (2) Actuator stroke 90°, (3) Solenoid valve with orifice of 12 mm and a flow capacity Qn5100L/min, (4) Inside pipe diameter 8 mm, (5) Medium clean air, (6) Air supply pressure 5.5 bar, (7) Actuator without external resistance load.

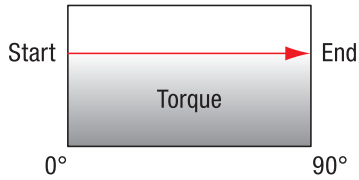
Cautions: Field applications when one or more of the above parameter are different will affect the closing time.

Air consumption dependent on air supply, air volume, and cycle times. Expressions:

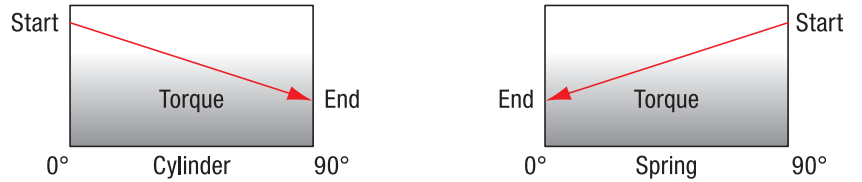
$$L/min = \text{Air volume (opening air volume + closing air volume)} \times \left[\frac{\text{Air Supply(Kpa)} + 101.3}{101.3} \right] \times \text{Action times(/min)}$$

Torque Ratings

**Torque Diagram
Double Acting Actuators**



**Torque Diagram
Single Acting Actuators**



Double Acting Torque Ratings (IBF-IN)

Model	Supply Pressure (Unit: psig)									
	35	40	50	55	60	70	80	90	100	110
FRP032	26	30	35	41	47	52	58	63	73	84
FRP050	76	92	109	126	142	158	175	191	225	258
FRP065	154	188	221	254	288	321	355	389	455	522
FRP075	239	291	343	396	447	499	551	604	707	812
FRP085	351	428	504	581	657	733	809	886	1038	1191
FRP095	493	601	708	815	922	1030	1137	1244	1459	1674
FRP110	637	790	929	1067	1206	1345	1483	1622	1899	2176
FRP125	1139	1412	1660	1907	2154	2402	2650	2898	3393	3888
FRP140	1735	2098	2461	2823	3186	3549	3912	4275	5001	5727
FRP160	2332	2891	3398	3905	4412	4919	5427	5934	6948	7963
FRP190	3793	4585	5375	6166	6956	7747	8538	9328	10909	12490
FRP210	5295	6401	7505	8608	9712	10816	11919	13022	15230	17437
FRP240	8216	9931	11639	13347	15064	16773	18490	20198	23623	27049
FRP270	11551	13958	16365	18773	21180	23588	25995	28403	33218	38033
FRP300	14857	17962	21059	24156	27253	30350	33447	36544	42737	48931
FRP350	22061	26657	31254	35850	40446	45042	49638	54235	63426	72619
FRP400	33617	40621	47625	54628	61632	68637	75639	82643	96650	110657

Single Acting (Spring Return) Torque Ratings (IBF-IN)

Model	Supply Pressure (Unit: psig)																				Spring Stroke	
	35		40		50		55		60		70		80		90		100		110			
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
FRP050-SR05	45	30	61	47	78	64	95	80	111	96	127	113	144	129	160	146	194	179	227	212	46	31
FRP050-SR06	39	21	55	38	72	54	89	71	104	88	121	104	138	120	154	137	188	170	220	203	55	37
FRP050-SR07	–	–	49	28	65	45	82	62	98	78	115	95	132	112	148	127	181	161	214	194	63	43
FRP050-SR08	–	–	–	–	59	36	76	52	92	69	109	86	126	102	142	119	175	151	208	185	73	50
FRP050-SR09	–	–	–	–	–	–	70	43	86	60	103	76	119	93	135	110	169	143	202	175	82	56
FRP050-SR10	–	–	–	–	–	–	–	–	80	50	96	67	113	84	129	100	163	134	196	166	91	62
FRP050-SR11	–	–	–	–	–	–	–	–	–	–	90	58	107	74	123	91	157	124	189	158	100	68
FRP050-SR12	–	–	–	–	–	–	–	–	–	–	–	–	101	65	117	82	150	115	183	148	110	74
FRP065-SR05	77	38	111	72	144	105	177	138	211	172	244	205	278	239	312	273	378	339	445	406	116	77
FRP065-SR06	62	15	95	49	128	81	162	115	196	149	229	182	263	263	296	250	363	316	430	383	139	92
FRP065-SR07	–	–	80	25	113	58	147	92	181	126	213	159	247	247	281	226	348	293	414	360	162	108
FRP065-SR08	–	–	–	–	97	35	131	69	165	103	198	136	232	232	266	203	332	270	399	337	186	123
FRP065-SR09	–	–	–	–	–	–	116	46	150	80	183	112	216	216	250	180	317	247	384	313	209	139
FRP065-SR10	–	–	–	–	–	–	–	–	134	56	167	89	201	201	235	157	301	223	368	290	232	154
FRP065-SR11	–	–	–	–	–	–	–	–	–	–	152	66	186	186	219	134	286	200	353	267	255	169
FRP065-SR12	–	–	–	–	–	–	–	–	–	–	–	–	170	170	204	110	271	177	337	244	278	185
FRP075-SR05	144	90	196	142	249	194	301	246	352	298	404	350	457	402	509	454	612	558	717	662	150	95
FRP075-SR06	126	60	178	112	229	165	281	216	334	268	386	320	437	373	489	424	594	528	697	632	179	113
FRP075-SR07	–	–	158	82	211	135	263	187	315	238	366	290	419	343	471	395	574	498	679	603	289	133
FRP075-SR08	–	–	–	–	192	104	243	157	296	209	348	260	400	312	451	365	556	469	659	573	239	151
FRP075-SR09	–	–	–	–	–	–	225	127	243	179	328	231	381	283	433	335	537	439	641	543	268	171
FRP075-SR10	–	–	–	–	–	–	–	–	225	149	310	201	362	253	414	305	518	409	622	513	298	189
FRP075-SR11	–	–	–	–	–	–	–	–	–	–	291	171	343	223	395	275	499	379	603	483	328	208
FRP075-SR12	–	–	–	–	–	–	–	–	–	–	–	–	324	193	376	245	480	350	584	453	358	227
FRP085-SR05	205	121	281	197	358	273	434	350	510	426	587	503	663	571	739	655	892	808	1044	960	231	147
FRP085-SR06	175	74	251	150	328	227	404	304	481	380	557	456	634	533	710	609	862	761	1015	914	277	176
FRP085-SR07	–	–	222	104	299	299	375	258	451	334	528	410	605	487	681	563	833	715	986	868	323	205
FRP085-SR08	–	–	–	–	269	269	346	212	422	288	498	364	574	440	651	517	804	669	957	822	369	235
FRP085-SR09	–	–	–	–	–	–	317	166	393	242	469	318	545	394	622	471	774	623	928	776	415	264
FRP085-SR10	–	–	–	–	–	–	–	–	364	196	440	272	516	348	593	425	745	577	898	730	461	293
FRP085-SR11	–	–	–	–	–	–	–	–	–	–	411	226	487	302	563	378	716	531	868	683	507	322
FRP085-SR12	–	–	–	–	–	–	–	–	–	–	–	–	458	256	534	332	687	485	839	630	553	351
FRP095-SR05	297	185	405	292	512	399	620	507	727	614	835	721	942	828	1049	936	1236	1151	1478	1365	309	196
FRP095-SR06	258	123	366	231	474	338	581	445	688	552	796	659	903	767	1010	874	1224	1089	1439	1304	370	235
FRP095-SR07	–	–	327	169	435	276	542	383	649	490	756	598	863	705	971	813	1185	1028	1399	1242	432	273
FRP095-SR08	–	–	–	–	395	214	503	322	610	429	717	536	824	643	931	751	1146	966	1360	1180	494	313
FRP095-SR09	–	–	–	–	–	–	463	260	571	367	678	474	785	582	892	689	1107	904	1321	1119	555	352
FRP095-SR10	–	–	–	–	–	–	–	–	531	305	639	413	746	520	853	628	1067	842	1283	1057	617	391
FRP095-SR11	–	–	–	–	–	–	–	–	–	–	599	351	707	458	814	566	1028	781	1244	995	679	420
FRP095-SR12	–	–	–	–	–	–	–	–	–	–	–	–	667	397	775	505	990	790	1204	933	740	469
FRP110-SR05	384	232	537	384	676	523	814	662	953	800	1092	939	1230	1078	1369	1216	1646	1494	1923	1771	406	253
FRP110-SR06	334	150	487	304	625	443	764	580	903	720	1041	858	1180	997	1319	1136	1596	1413	1873	1690	487	304
FRP110-SR07	–	–	436	222	574	361	713	499	851	638	990	777	1129	915	1267	1054	1545	1331	1822	1609	568	354
FRP110-SR08	–	–	–	–	524	280	663	419	801	557	940	696	1079	835	1217	973	1495	1251	1772	1528	650	405
FRP110-SR09	–	–	–	–	–	–	612	337	751	476	890	614	1028	753	1167	892	1444	1169	1722	1446	730	456
FRP110-SR10	–	–	–	–	–	–	–	–	700	395	839	534	977	672	1116	811	1393	1088	1670	1365	812	506
FRP110-SR11	–	–	–	–	–	–	–	–	–	–	788	452	927	590	1066	729	1343	1006	1620	1284	893	557
FRP110-SR12	–	–	–	–	–	–	–	–	–	–	–	–	876	510	1014	648	1292	926	1569	1203	974	607

Torque Ratings

Single Acting (Spring Return) Torque Ratings (IBF-IN) Continued

Model	Supply Pressure (Unit: psig)																				Spring Stroke	
	35		40		50		55		60		70		80		90		100		110			
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
FRP125-SR05	688	427	960	698	1208	946	1455	1194	1703	1442	1951	1690	2199	1937	2446	2184	2941	2680	3437	3175	713	451
FRP125-SR06	597	283	870	556	1118	804	1365	1051	1613	1299	1860	1546	2108	1794	2356	2042	2851	2538	3327	3032	856	542
FRP125-SR07	-	-	780	413	1028	661	1275	909	1522	1157	1770	1404	2018	1652	2266	1899	2761	2395	3256	2890	998	632
FRP125-SR08	-	-	-	-	937	519	1184	766	1432	1013	1680	1261	1928	1509	2176	1757	2670	2252	3166	2747	1141	722
FRP125-SR09	-	-	-	-	-	-	1094	642	1342	871	1590	1119	1837	1367	2085	1614	2580	2109	3076	2605	1283	813
FRP125-SR10	-	-	-	-	-	-	-	-	1252	728	1499	976	1747	1224	1995	1472	2490	1967	2985	2462	1426	903
FRP125-SR11	-	-	-	-	-	-	-	-	-	-	1409	834	1657	1082	1905	1329	2400	1824	2895	2320	1568	993
FRP125-SR12	-	-	-	-	-	-	-	-	-	-	-	-	1567	939	1814	1186	2309	1682	2805	3062	1711	1083
FRP140-SR05	1011	656	1373	1018	1743	1381	2098	1743	2460	2105	2822	2467	-	-	-	-	-	-	-	-	1083	728
FRP140-SR06	865	439	1228	802	1590	1164	1952	1526	2315	1888	2677	2251	3090	2613	-	-	-	-	-	-	1299	874
FRP140-SR07	-	-	1082	585	1444	947	1806	1309	2168	1672	2531	2034	2893	2396	3255	2758	-	-	-	-	1516	1020
FRP140-SR08	-	-	-	-	1298	730	1660	1093	2023	1455	2385	1817	2747	2179	3109	2542	3834	3266	-	-	1733	1165
FRP140-SR09	-	-	-	-	-	-	1515	876	1877	1238	2239	1601	2602	1963	2964	2325	3688	3050	4413	3774	1949	1311
FRP140-SR10	-	-	-	-	-	-	-	-	1732	1022	2094	1384	2456	1746	2818	2108	3543	2833	4267	3557	2166	1456
FRP140-SR11	-	-	-	-	-	-	-	-	-	-	1948	1167	2311	1529	2673	1892	3397	2616	4122	3341	2383	1602
FRP140-SR12	-	-	-	-	-	-	-	-	-	-	-	-	2165	1313	2527	1675	3252	2400	3976	3124	2599	1747
FRP160-SR05	1359	897	1917	1455	2424	1962	2931	2469	3439	2977	3946	3484	4453	3991	4960	4498	5974	5512	6990	6527	1437	975
FRP160-SR06	1164	609	1722	1167	2230	1675	2737	2182	3244	2689	3751	3196	4258	3703	4765	4210	5780	5225	6795	6240	1723	1168
FRP160-SR07	-	-	1528	881	2035	1388	2542	1895	3049	2402	3556	2909	4063	3416	4571	3924	5426	4938	6600	5952	2011	1363
FRP160-SR08	-	-	-	-	1840	1100	2347	1607	2854	2116	3363	2622	3869	3129	4376	3636	5390	4650	6405	5666	2298	1558
FRP160-SR09	-	-	-	-	-	-	2153	1321	2660	1828	3167	2335	3674	2842	4181	3349	5196	4364	6211	5378	2585	1752
FRP160-SR10	-	-	-	-	-	-	-	-	2465	1540	2972	2047	3479	2554	3986	3062	5001	4076	6016	5091	2872	1947
FRP160-SR11	-	-	-	-	-	-	-	-	-	-	2777	1760	3285	2268	3792	2775	4806	3789	5821	4903	3160	2142
FRP160-SR12	-	-	-	-	-	-	-	-	-	-	-	-	3090	1980	3597	2487	4611	3501	5627	4517	3447	2337
FRP190-SR05	-	-	-	-	-	-	-	-	28155	12754	35156	19755	42157	17906	49167	33767	63170	47769	77181	61780	48755	33474
FRP190-SR06	2184	1482	2977	2274	3767	3064	4557	3855	5348	4645	6138	5435	-	-	-	-	-	-	-	-	2312	1609
FRP190-SR07	1862	1019	2654	1811	3445	2601	4235	3393	5026	4183	5817	4973	6607	5764	-	-	-	-	-	-	2774	1930
FRP190-SR08	-	-	2094	1349	3124	2139	3914	2930	4704	3720	5495	4510	6285	5302	7075	6092	-	-	-	-	3236	2253
FRP190-SR09	-	-	-	-	2801	1757	3592	2467	4382	3258	5173	4048	5964	4839	6899	5629	8335	7221	-	-	3698	2574
FRP190-SR10	-	-	-	-	-	-	3270	2002	4061	2796	4851	3586	5642	4377	6595	5167	8013	6748	9594	8330	4161	2896
FRP190-SR11	-	-	-	-	-	-	-	-	3739	2333	4530	3124	5320	3915	6292	4767	7692	6286	9272	7867	4623	3217
FRP190-SR12	-	-	-	-	-	-	-	-	-	-	4208	2661	4998	3452	5989	4242	7369	5824	8951	7405	5085	3540
FRP210-SR05	-	-	-	-	-	-	-	-	-	-	-	-	4677	2990	5685	3780	7048	5361	8629	6943	5566	3866
FRP210-SR06	3123	2116	4229	3223	5333	4326	6436	5430	7540	6543	8644	7638	9747	8740	10850	9844	13058	12050	15265	14259	3178	2172
FRP210-SR07	2688	1481	3794	2587	4898	3691	6003	4795	7106	5898	8209	7001	9313	8105	10417	9209	12623	11416	14831	13623	3814	2607
FRP210-SR08	-	-	3360	1952	4464	3055	5567	4158	6671	5263	7775	6366	8878	7469	9982	8573	12190	10781	14396	14396	4449	3041
FRP210-SR09	-	-	-	-	4030	2419	5133	3523	6236	4626	7340	5730	8444	6834	9548	7938	11755	10145	13962	13962	5086	3475
FRP210-SR10	-	-	-	-	-	-	4699	2887	5803	3991	6906	5095	8328	6198	9113	7302	11320	9509	13528	13528	5721	3909
FRP210-SR11	-	-	-	-	-	-	-	-	5368	3355	6472	4459	7575	5562	8578	6666	10886	8873	13093	13093	6357	4344
FRP210-SR12	-	-	-	-	-	-	-	-	-	-	6037	3823	7141	4926	8245	6030	10451	8238	12659	12659	6992	4779
FRP240-SR05	-	-	-	-	-	-	-	-	-	-	-	-	6706	4291	7810	5395	10018	7602	12224	12224	7628	5213

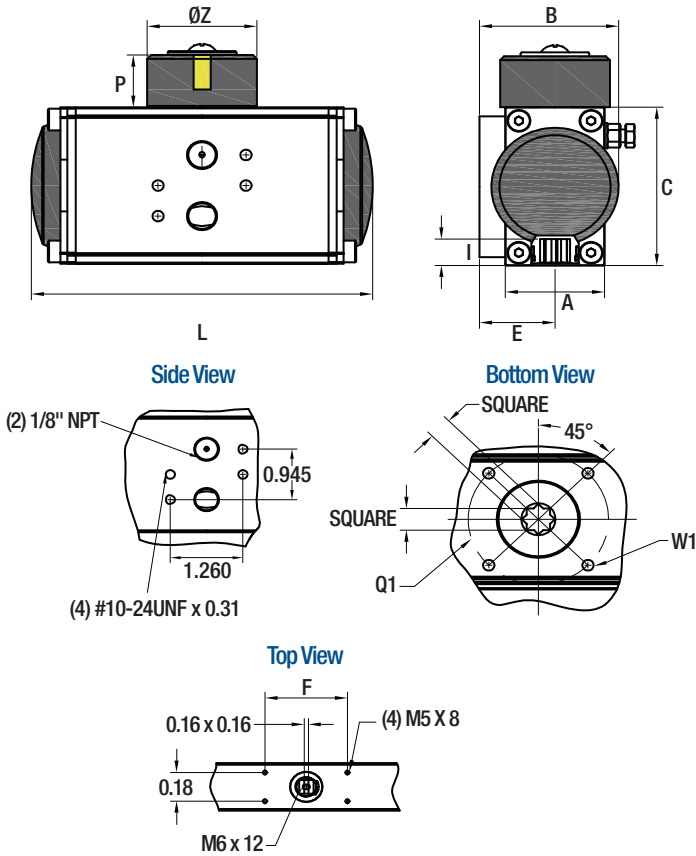
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Single Acting (Spring Return) Torque Ratings (IBF-IN) Continued

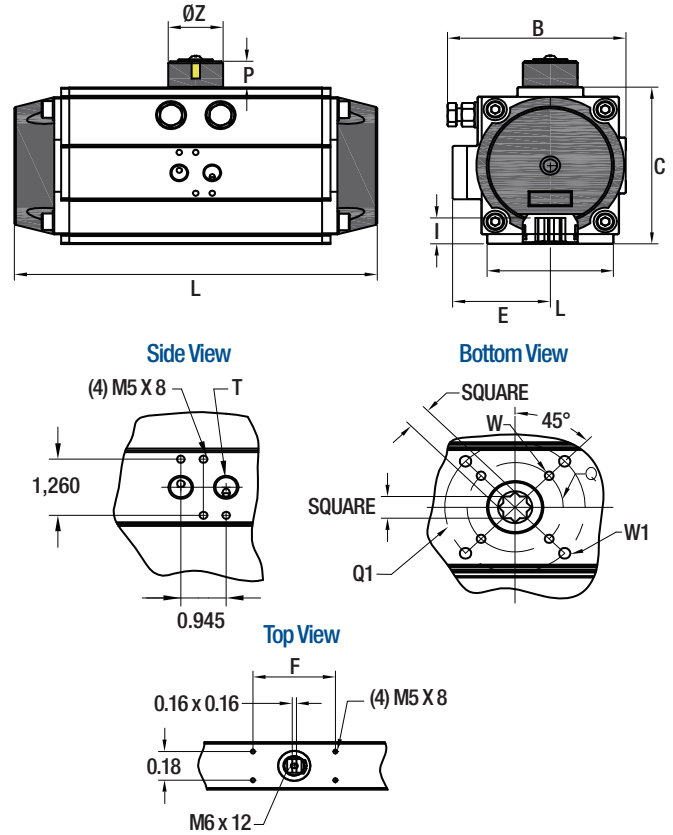
Model	Supply Pressure (Unit: psig)																				Spring Stroke	
	35		40		50		55		60		70		80		90		100		110			
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
FRP240-SR06	4583	3313	6295	5025	8007	6736	9718	8447	11430	10160	13142	11872	-	-	-	-	-	-	-	-	4903	3633
FRP240-SR07	3856	2332	5568	4044	7280	5756	8992	7468	10704	9179	12415	10891	14127	12603	-	-	-	-	-	-	5884	4360
FRP240-SR08	-	-	4841	3063	6553	4775	8265	6487	9977	8199	11689	9910	13400	11622	15112	13334	-	-	-	-	6865	5087
FRP240-SR09	-	-	-	-	5827	3794	7538	5506	9250	7218	10962	8930	12674	10642	14386	12353	17809	15777	-	-	7846	5813
FRP240-SR10	-	-	-	-	-	-	6812	4526	8524	6237	10235	7949	11947	9661	13659	11373	17082	14796	20506	18220	8826	6540
FRP240-SR11	-	-	-	-	-	-	-	-	7797	5257	9509	6968	11220	8680	12932	10392	16356	13816	19779	17239	9807	7267
FRP240-SR12	-	-	-	-	-	-	-	-	-	-	8782	5988	10494	7699	12206	9411	15629	12835	19053	16258	10779	7993
FRP270-SR05	-	-	-	-	-	-	-	-	-	-	-	-	9767	6719	11479	8431	14902	11854	18326	15278	11768	8720
FRP270-SR06	6602	4597	9009	7005	11417	9412	13823	11819	16231	14226	18638	16633	-	-	-	-	-	-	-	-	6957	4952
FRP270-SR07	5612	3206	8019	5613	10426	8021	12833	10427	15241	12437	17647	15241	19975	17649	-	-	-	-	-	-	8348	5943
FRP270-SR08	-	-	7029	4222	10321	6629	11743	9036	14250	11443	16657	13850	19064	16258	21472	18665	-	-	-	-	9740	6933
FRP270-SR09	-	-	-	-	8446	5238	10852	7645	13260	10052	15666	12459	18074	14866	20481	17274	25295	22088	-	-	11131	7923
FRP270-SR10	-	-	-	-	-	-	9862	6253	12269	8661	14676	11067	17083	13475	19491	15882	24305	20696	29119	25510	12522	8914
FRP270-SR11	-	-	-	-	-	-	-	-	11279	7269	13685	9676	16093	12083	18500	14491	23314	19305	28128	24119	13914	9904
FRP270-SR12	-	-	-	-	-	-	-	-	-	-	12695	8285	15102	10692	17510	13099	22324	17914	27138	22728	15305	10895
FRP300-SR05	-	-	-	-	-	-	-	-	-	-	-	-	14112	9301	16520	11708	26148	16522	26418	21336	16697	11885
FRP300-SR06	8740	5724	11845	8829	14942	11926	18039	15023	21136	18120	24233	21217	27330	24314	30427	27411	36620	33604	42814	39798	9133	6117
FRP300-SR07	7517	3897	10622	7002	13719	10099	16816	13196	19913	16293	23009	19390	26106	22487	29203	25584	35397	31778	41591	37972	10960	7340
FRP300-SR08	-	-	9399	5175	12495	8272	15592	11369	18689	14466	23379	17563	24885	20660	27980	23757	34174	29951	40368	36145	12787	8563
FRP300-SR09	-	-	-	-	-	-	14369	9542	17466	12639	20563	15736	2366-	18833	26757	21930	32951	28124	39144	34318	14613	9787
FRP300-SR10	-	-	-	-	-	-	13146	7716	16242	10813	19339	13909	22410	17006	25533	20103	31727	26297	37921	32491	16440	11011
FRP300-SR11	-	-	-	-	-	-	-	-	15019	8986	18116	12083	21213	15180	24310	18277	30503	24470	36697	30664	18267	12234
FRP300-SR12	-	-	-	-	-	-	-	-	-	-	16892	10257	19989	13354	23086	16450	29280	22644	35474	28838	20094	13457
FRP350-SR05	-	-	-	-	-	-	-	-	-	-	-	-	18766	11527	21863	14624	28057	20818	32658	27011	21920	14680
FRP350-SR06	13261	9002	17857	13599	22453	18194	27050	22790	31645	27210	36241	31983	40838	36579	45434	41175	54626	52757	63818	59559	13060	8801
FRP350-SR07	-	-	16096	10987	20693	15582	25289	20179	29885	24775	34482	29371	39077	33967	43673	38563	52866	47756	62058	56947	15671	10561
FRP350-SR08	-	-	14337	8375	18933	12971	23529	17567	28125	22163	32721	26759	37318	31356	41914	35951	51106	45144	60298	54336	18283	12321
FRP350-SR09	-	-	-	-	17173	10359	21769	14955	26365	19551	30961	24147	35557	28744	40153	33340	49345	42532	58538	51724	20895	14081
FRP350-SR10	-	-	-	-	15412	7747	20009	12344	24605	16939	29201	21535	33798	26132	38393	30728	47586	39920	56777	49112	23506	15841
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FRP400-SR05	-	-	-	-	-	-	-	-	19324	9104	23921	13700	28517	18296	33113	22892	42305	32084	51498	41277	31342	21121
FRP400-SR06	19667	13250	26668	20251	33678	27261	40679	33784	47680	41263	54690	48273	-	-	-	-	-	-	-	-	20366	13949
FRP400-SR07	-	-	23880	16180	30890	23190	37891	30191	44892	37192	51893	44193	58903	51203	-	-	-	-	-	-	24438	16737
FRP400-SR08	-	-	21092	12108	28093	19428	35103	26191	42104	33120	49105	40122	56106	47123	63116	54133	-	-	-	-	28509	19525
FRP400-SR09	-	-	-	-	25305	15038	32306	22039	39316	29049	46317	36050	53318	43051	60346	50061	74331	64064	-	-	32589	22322
FRP400-SR10	-	-	-	-	22517	10966	29518	17968	36519	24969	43529	31979	50530	38980	57532	45981	71543	59992	85545	73994	36661	25110
FRP400-SR11	-	-	-	-	-	-	26730	13896	33731	20897	40741	27907	47742	34908	54743	41909	68755	55921	82757	69923	40732	27898
FRP400-SR12	-	-	-	-	-	-	23942	9825	30943	16826	37944	23827	44954	30837	51955	37838	65958	51840	79969	65851	44804	30686

Installation

FRP032

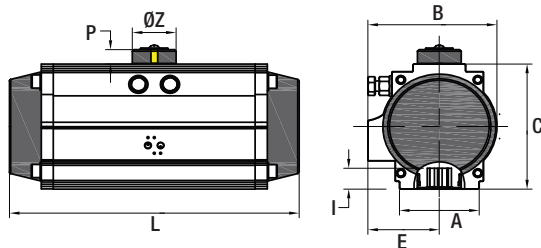


FRP050–FRP160

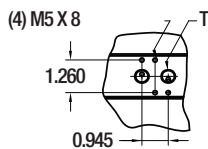


Model	A		B		C		E		F		P		$\varnothing Z$		L		I	Flange ISO 5211	Q		Q1		W UNC	W1 UNC	Square		T in	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm			in	mm	in	mm			in	mm		
FRP032	1.46	37	1.85	47	1.97	50	1.06	27	1.97	50	0.79	20	1.57	40	4.33	110	0.39	10	F03	–	–	1.42	36	–	M5	0.354	9	1/8" NPT
FRP050	1.77	45	2.78	71	2.76	70	1.63	41	3.15	80	0.79	20	1.57	40	6.06	154	0.47	12	F03/05	1.42	36	1.97	50	M5	M6	0.433	11	1/4" NPT
FRP065	2.44	62	3.52	89	3.5	89	2.03	52	3.15	80	0.79	20	1.57	40	7.44	189	0.63	16	F05/07	1.97	50	2.76	70	M6	M8	0.433	11	1/4" NPT
FRP075	2.68	68	4.04	103	3.94	100	2.32	59	3.15	80	0.79	20	1.57	40	8.27	210	0.63	16	F05/07	1.97	50	2.76	70	M6	M8	0.551	14	1/4" NPT
FRP085	2.68	68	4.43	113	4.45	113	2.5	64	3.15	80	0.79	20	1.57	40	9.02	229	0.75	19	F05/07	1.97	50	2.76	70	M6	M8	0.551	14	1/4" NPT
FRP095	3.62	92	4.96	126	4.84	123	2.8	71	3.15	80	0.79	20	1.57	40	10.39	264	0.75	19	F10	1.97	50	2.76	70	–	M10	0.669	17	1/4" NPT
FRP110	3.66	93	5.45	138	5.35	136	3.01	76	3.15	80	0.79	20	1.57	40	10.47	266	0.75	19	F10	2.76	70	4.02	102	M8	M10	0.669	17	1/4" NPT
FRP125	3.78	96	6.18	157	6.34	161	3.35	85	3.15	80	1.18	30	2.2	56	13.27	337	0.98	25	F10/12	2.76	70	4.02	102	M10	M12	0.866	22	1/4" NPT
FRP140	4.33	110	7.01	178	7.01	178	3.82	97	3.15	80	1.18	30	2.2	56	14.84	377	1.22	31	F10/12	4.02	102	4.92	125	M10	M12	1.063	22	1/4" NPT
FRP160	4.41	112	7.72	196	7.87	200	4.17	106	5.12	130	1.18	30	2.2	56	16.22	412	1.22	31	F10/12	4.02	102	4.92	125	M10	M12	1.063	27	1/4" NPT

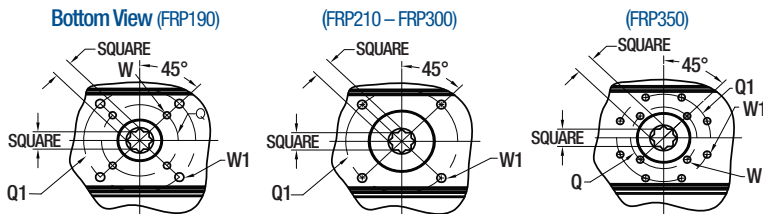
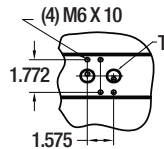
FRP190–FRP350



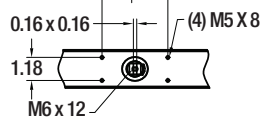
Side View (FRP190 – FRP210)



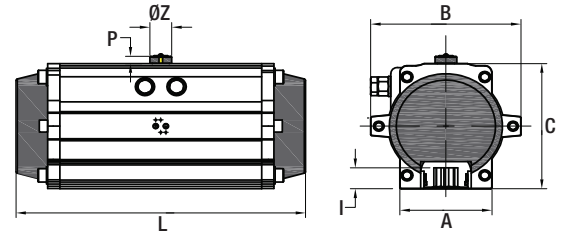
(FRP240 – FRP350)



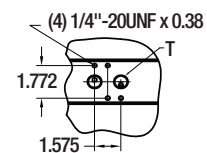
Top View



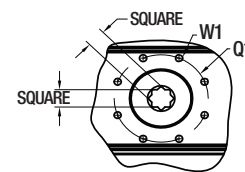
FRP400



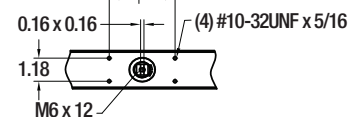
Side View



Bottom View



Top View



Model	A		B		C		E		F		P		ØZ		L		I	Flange	Q		Q1		W		W1		Square		T
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	UNC	UNC	in	mm	in		
FRP190	5.35	136	8.52	216	9.13	232	4.41	112	5.12	130	1.18	30	2.2	56	19.21	488	1.61	41	F10/F14	4.02	102	5.51	140	M10	M16	1.260	32	1/4" NPT	
FRP210	5.51	140	9.27	235	10.04	255	4.72	120	5.12	130	1.18	30	3.15	80	21.65	550	1.57	40	F14	-	-	5.51	140	M10	M16	1.417	36	1/4" NPT	
FRP240	6.26	159	10.31	262	11.5	292	5.16	131	5.12	130	1.18	30	3.15	80	23.7	602	1.97	50	F14	-	-	6.5	165	-	M16	1.417	36	1/2" NPT	
FRP270	6.26	159	11.61	295	13.03	331	5.81	148	5.12	130	1.18	30	3.15	80	26.46	672	1.97	50	F16	-	-	6.5	165	-	M20	1.654	42	1/2" NPT	
FRP300	7.09	180	13.19	335	13.94	354	6.81	173	5.12	130	1.18	30	3.15	80	30.87	784	1.97	50	F16	-	-	6.5	165	-	M20	1.417	36	1/2" NPT	
FRP350	10.63	270	15.16	385	16.14	410	7.68	195	5.12	130	1.18	30	3.15	80	33.27	845	1.97	50	F16/25	6.5	165	10	254	M20	M16	1.811	46	1/2" NPT	
FRP400	11.42	290	20.47	520	18.35	466	10.24	260	5.12	130	1.18	30	3.15	80	37.64	956	2.36	60	F25	-	-	10	254	M20	M16	1.654	42	1/2" NPT	

Part Numbering System

Model	Type	Spring Qty (Spring Return Only)	Body	Seals	Rotation
FRP032-	DA = DOUBLE ACTING SR = SPRING RETURN	4 5 6 7 8 9 10 11 (Standard) 12	0 = Sandblasted + Hard Anodized Aluminum, Black Colour 1 - Stainless Steel (non-stock option)	0 = STANDARD VITON -15°C to +80°C 1 = HT FLUORORUBBER (FOR HIGH TEMPERATURE) -15°C to +150°C 2 = LT SILASTIC (FOR LOW TEMPERATURE) -40°C to +80°C	0 = Fail Clockwise (Standard) 1 = Fail Counter-Clockwise
FRP050-					
FRP065-					
FRP075-					
FRP085-					
FRP095-					
FRP110-					
FRP125-					
FRP140-					
FRP160-					
FRP190-					
FRP210-					
FRP240-					
FRP270-					
FRP300-					
FRP350-					
FRP400					

Example: FRP085-SR11000

Flow+ Rack & Pinion Actuator, model 085, Spring Return, Spring Set 11, Sandblasted & Hard Anodized Aluminum body, black colour, Viton 15C to 80C seals, fail clockwise

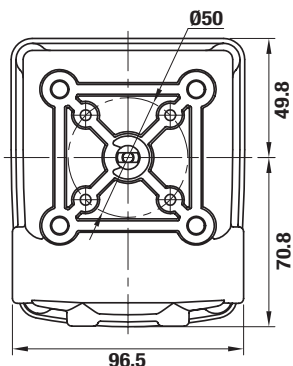
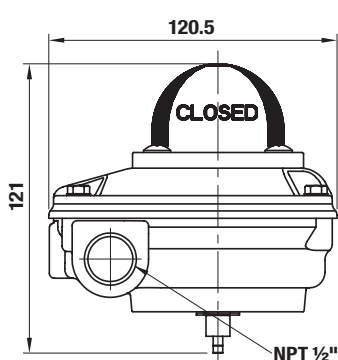
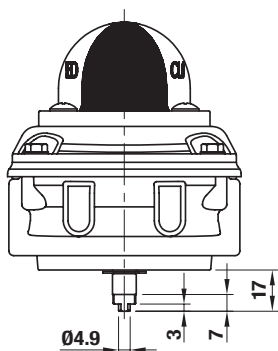
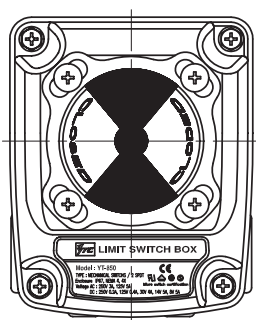
1. The standard rotation of double acting and spring return is clockwise to close.
2. Standard stocking spring quantity is 11.
3. Customization for special requirements is available. Please contact sales to request additional information.

FL31000 Features

- Solid and Compact Design.
- Weatherproof and Corrosion Resistant NEMA 4, 4X, IP67 Enclosure.
- Captive Stainless Steel Cover Bolts.
- Green/Red Position Indicator.
- Easy adjustment of CAM position.
- 8 contacts of terminal ports.
- Dual ½" conduit entries.
- Quick-Set, Spring Loaded, Splined Cams require no tools for adjustments.
- Qty. 2 OMRON SPDT Mechanical Switches rated at 5 amps at 120 VAC / 4 amps at 30 VDC (other switches available on request).
- Approvals: UL, CSA, SEMKO, and SEV EN61058.

FL31000 Materials

Housing Cover and Body	Powder Coated Painted Aluminum
Shaft	Stainless Steel
Indicator Cover	Polycarbonate
Indicator	ABS/Polycarbonate
Cam	Polycarbonate
Spring	Stainless Steel
Housing Cover Bolt	Captive Stainless Steel
O-Ring	NBR
Bushing	Bronze
E-ring (shaft)	Stainless Steel
Ground lug	Stainless Steel
Bracket	Stainless Steel



FL31000 Specifications

Model	Flow+#FL31000
Enclosure	IP67.NEMA 4, 4X
Type	Mechanical Switch/2SPDT
Voltage AC	250V 3A, 125V 5A
DC	250V 0.2A, 125V 0.4A 30V 4A, 14V 5A, 8V 5A

About Flow+ Limit Switch Boxes

Flow+ manufactures limit switches which are durable, versatile, cost-effective, perform well after many cycles and are perfect for extensive commercial and industrial use.

Flow+ limit switches are suitable for a full range of water, gas, steam, petrochemical and general use/utility services and applications

Flow+ limit switches feature a compact design and provide low cost solution to visual and electrical indication of rotary valve and actuator position.

FL41000 Materials

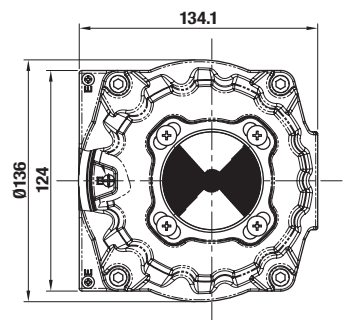
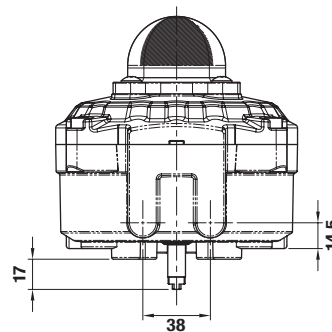
1	Indicator	ABS
2	Cover Indicator	Poly-Carbonate
3	Housing Cover	Powder Coated Painted Aluminum
4	Housing Body	Powder Coated Painted Aluminum
5	Shaft Main	STS303
6	Plate Name	2M CH PET

FL41000 Features

- Solid and Compact Design.
- Weatherproof and Corrosion Resistant NEMA 4, 4X, IP67 Enclosure.
- Captive Stainless Steel Cover Bolts.
- Yellow/Red Position Indicator.
- Easy adjustment of CAM position.
- 8 contacts of terminal ports.
- Dual ½" conduit entries.
- Quick-Set, Spring Loaded, Splined Cams require no tools for adjustments.
- Qty. 2 OMRON SPDT Mechanical Switches rated at 5 amps at 120 VAC / 4 amps at 30 VDC (other switches available on request).
- Approvals: UL, CSA, SEMKO, and SEV EN61058.

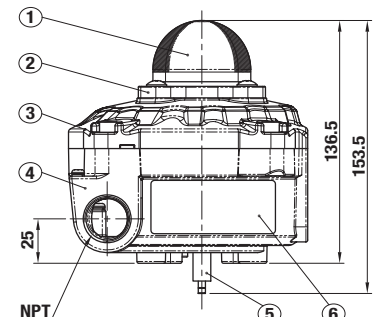
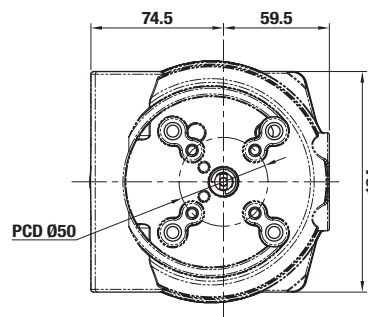
FL41000 Specifications

Model	Flow+#FL41000
Explosion Proof	Ex db IIC T6 / Ex tb IIIC T85°C
Enclosure	IP67
Ambient Temp.	-20°C to +60°C
Switch Type	Mechanical Switch / 2SPDT
Frequency	50~60Hz
Rating AC	250VAC 3A, 125VAC 5A
Rating DC	250V--- 0.2A, 125V--- 0.4A, 30V--- 4A, 14V--- 5A, 8V---5



With a powder coated die-cast aluminum housing and captive cover bolts, Flow+ limit switches offer superior corrosion resistance.

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.



1 Select a Valve (as per below chart)

2 Find an Actuator



Ball Valve Actuator Selection Chart

(B Series and ZF1 Stainless Steel Series only)

(For ball valves that come with ISO direct mounting pad only)

- Actuator sized for liquid service up to 500 psig differential line pressure using 80 psig instrument air.
- Actuator sizing torques up to 500 psig Diff. Line Press, Water-1.0, Oil-0.8, Gas wet(or steam) - 1.0, Gas Dry-1.3.
- Add 20% on torque valves for 3-way B-07 series valve.
- For high or low temperature applications consult supplier for special seal kits.
- For non-direct mount valves, contact supplier (ISO only).

Size	Double Acting	Spring Return	Torque
0.5	FRP050-DA	FRP065-SR11	85
0.75	FRP065-DA	FRP065-SR11	110
1	FRP065-DA	FRP075-SR11	180
1.5	FRP075-DA	FRP085-SR11	315
2	FRP075-DA	FRP095-SR11	450
2.5	FRP095-DA	FRP095-SR11	565
3	FRP110-DA	FRP110-SR11	680
4	FRP125-DA	FRP125-SR11	1190
6	FRP140-DA	FRP190-SR11	2850

Butterfly Valve Actuator Selection Chart

For Rubber Seat Ductile Iron Body Valves Only

- Recommended Sonic Torque SPN II pneumatic actuators have been sized based on 80 PSI air supply.
- All torque values on chart are in lbs based on 150 PSI differential pressure and are for “clean, wet” (water & other lubricating media) on-off service. For “dry” service (non-lubricating, dry gas media) and Teflon Seat Valves, multiply values by 1.5.
- For high or low temperature applications consult supplier for special seal kits.

Butterfly Valves with TFE seats (B/C2845393)			
Size	Double Acting	Spring Return	Torque
2	FRP065-DA	FRP075-SR11	200
3	FRP075-DA	FRP085-SR11	325
4	FRP085-DA	FRP110-SR11	490
6	FRP110-DA	FRP125-SR11	1080
8	FRP125-DA	FRP160-SR11	2100
10	FRP160-DA	FRP190-SR11	2850
12	FRP160-DA	FRP240-SR11	5130

Butterfly Valves with BUNA, EPDM or VITON seats			
Size	Double Acting	Spring Return	Torque
2	FRP065-DA	FRP065-SR11	133
2.5	FRP065-DA	FRP075-SR11	211
3	FRP065-DA	FRP085-SR11	278
4	FRP085-DA	FRP085-SR11	419
5	FRP085-DA	FRP095-SR11	648
6	FRP095-DA	FRP125-SR11	940
8	FRP125-DA	FRP140-SR11	1510
10	FRP125-DA	FRP190-SR11	2489
12	FRP160-DA	FRP210-SR11	3628
14	FRP160-DA	FRP210-SR11	4200
16	FRP190-DA	FRP240-SR11	6600
18	FRP210-DA	FRP270-SR11	9840
20	FRP240-DA	FRP300-SR11	12000
24	FRP270-DA	FRP400-SR11	21840

Actuator Assembly Guide



ASCO Solenoids (Optional)

Single Coil, Nipple Mounted (for SR Actuators)	Category	Part Number
EF8320G202-120VAC, Explosion Proof	ASC	000EF8320G202120VAC
EF8320G202-24VDC, Explosion Proof	ASC	000EF8320G20224VDC

Single Coil, Namur Mount (for SR/DA Actuators)	Category	Part Number
SC8551A1MMS-120VAC, Standard	ASC	000SC8551A1MMS120
SC8551A1MMS-24VDC, Standard	ASC	000SC8551A1MMS24
WT8551A1MMS-120VAC Standard	ASC	000WT8551A1MMS120
WT8551A1MMS-24VDC Standard	ASC	000WT8551A1MMS24
EF8551A1MMS-120VAC, Explosion Proof	ASC	000EF8551A1MMS120
EF8551A1MMS-24VDC, Explosion Proof	ASC	000EF8551A1MMS24

Limit Switches

Qty SPDT Mechanical switches, 5.0 AMPS, Nema 4, 4x Enclosure, Qty 2-1/2" NPT Connections Polyester Paint, Captive Stainless Fasteners, Quick Set Cams, Red Closed, Green Open, Dome Position Indicator.

Category	Part Number
F08	FL31000

Explosion Proof Limit Switch & Beacon Assembly NEMA 4/4X/7 IP67, CSA Cl I Zone I AEx db IIC T6 / Ex tb II Enclosure 2 X 1/2" Conduit Connection 2 X SPDT MECH. Switches, 5A/125VAC, 4A/30VDC Polyester Powder Coat, Beacon Indicator, -20C to 60C

Category	Part Number
F08	FL41000



- 1) CANCELLATIONS and RESTOCKING POLICY:** Purchase orders once placed by Buyer and accepted by Seller can be cancelled only with Seller's written consent and upon terms which will save Seller from loss. No orders may be cancelled subsequent to delivery and/or shipment, whichever occurs first. As estimated actual damages, Buyer agrees to pay Seller the greater of Seller's actual costs incurred prior to cancellation plus a reasonable profit, or the following minimum cancellation charges: a) 20% of Order value if cancelled thirty (30) or more days prior to the original delivery/shipment date; b) 50% of the Order value if cancelled thereafter; or, c) 100% of the Order value of any non-standard items, which are items not built for stock or built to Buyer's specifications.
- 2) RETURNED PRODUCT:** All sales are final; all custom products (non-stocking) are not subject to return, credit or refund. The return of obsolete and used Products shall not be permitted. The Purchaser shall not return Products without first obtaining Seller's written permission and shall be subject to a restocking charge. Products must be returned within 10 days after the date that written permission has been given. All transportation charges for any returned Products shall be paid by the Purchaser. Request to return Products must be accompanied by relevant customer order and Seller's invoice number(s). Final acceptance of returned Products is subject to examination and/or testing. Products will not be accepted for return or credit later than six (6) months after invoicing.
- 3) PRICES:** Possession of price lists will not be accepted by the Seller as an obligation, or offer, to sell any goods listed therein. All prices contained in published price lists are subject to change without notice and supersede those of all previous lists. Prices quoted are based on current exchange rates; Seller reserves the right to adjust pricing to reflect the exchange rate in effect at the product receipt date to Seller's facility.
- 4) LIQUIDATED DAMAGES:** Liquidated damages will not be accepted in the event of order placement.
- 5) SALES TAXES, ETC.:** The Purchaser shall pay and be responsible for all provincial, local or federal sales, use or other taxes (including general sales or value added taxes) and customs duties now or hereinafter enacted which may be applicable to the sale of the Products or the importation of the Products to the destination specified by the Purchaser and which duties and taxes shall be the responsibility of the Purchaser.
- 6) CREDIT APPROVAL:** Orders are accepted subject to satisfactory credit approval. Pending credit approval, delivery may be delayed without liability to Seller.
- 7) TERMS OF PAYMENT:** The terms of payment for Products purchased pursuant to this Agreement are (I) upon acceptance of the purchase order a deposit in such amount as may be set out in the Seller's written acceptance notice and (II) the balance within 30 days from the date of invoice. Any invoice amount which is not paid when due shall bear interest at the rate of one and one-half (1 ½%) percent per month until paid in full.

The Purchaser agrees that it will not have any rights of set off against or deduction from the purchase price for the Products payable by the Purchaser pursuant to this Agreement. The Purchaser grants to Seller a purchase money security interest in all Products delivered pursuant to this Agreement and all proceeds thereof (whether cash or non-cash and including, without limitation, accounts, instruments and chattel paper). Any failure by the Purchaser to pay the purchase price in full as provided in this Agreement shall constitute an event of default for purposes of said security interest. Upon the occurrence of any such default, Seller shall have all rights of a secured party after default under applicable law. Any repossession and removal of any Products shall be without prejudice to any of Seller's other remedies at law or in equity. The Purchaser agrees, without further consideration, at any time, to do or cause to be done, to execute and deliver, all such further acts and instruments (including, without limitation, finaFlow+ng statements approved for filing) as Seller may reasonably request in order to perfect Seller's security interest.
- 8) DELIVERY DATE:** Seller will utilize reasonable best efforts to meet the delivery schedules stipulated in this Agreement. In the event the provisions of Section 14 hereof shall apply, the delivery date shall be extended by a number of days that is equal to the duration of the event or condition that is responsible for such delay.
- 9) TITLE AND SHIPMENT:** All quotations and sales are FCA Loaded Truck ValvSource Warehouse (Inco Terms 2010) unless otherwise specified in writing and agreed by both parties. Seller's responsibility ceases upon delivery to carrier and title shall transfer and risk of loss shall be borne by Buyer at that point. Any expedited or other premium transportation charges requested by Buyer will be for the account of Buyer. Prices include domestic packing, blocked and strapped to open pallets and wrapped in Poly. No claims for price adjustments will be honored unless presented within six (6) months from date of invoice. All quotations are subject to change without notice and prior to sale of goods.
- 10) INSPECTION BY PURCHASER:** All Products must be inspected by the Purchaser upon receipt and the Purchaser and Seller, collectively, agree to file appropriate claims with the carrier when there is evidence of shipping damage, either concealed or external. Claims for shortage or error in shipment or for damage other than shipping damage must be made within 5 days after receipt of shipment, failing which the Purchaser shall be deemed to have accepted the shipment.
- 11) LIMITED WARRANTY:** Purchaser acknowledges that the Products are provided to the Purchaser subject only to the limited warranties provided by the manufacturer of the Products and are subject to all of the conditions, limitations and exclusions set out therein, all of which are hereby accepted by the Purchaser. The warranty exclusions include, without limitation, (I) any defects caused by faulty installation performed by Purchaser or third parties, (II) any damage caused by the contractors or tradesman of the Purchaser, (III) any damage caused by improper use or misuse, including exposure to excessive temperatures, moisture or cleaning agents and solvents and (IV) any damage caused during transportation or improper storage. Claims for warranty repairs and replacements must be made within the applicable time period described in the manufacturer's limited warranty. In no event shall Seller be liable for other than the repair or replacement of any defective Products. In no event shall Seller be liable for any damages, direct or indirect, special or consequential, including, without limitation, damages for lost profits, business interruption, or economic loss arising out of defects in the Products.
- 12) EXCLUSION OF WARRANTIES:** Except as expressly set forth herein seller disclaims all warranties with regard to the products including, without limitation, all implied warranties of merchantability and fitness for a particular purpose.
- 13) CATALOGUE AND OTHER PRINTED MATTER:** Seller's illustrations are representations of a certain size of each line of Product, but do not necessarily represent all sizes and materials in detail. Similarly, dimensions, weights and material information have been prepared with care, but their correctness is not guaranteed. Seller reserves the right to vary the designs and dimensions without notice.
- 14) FORCE MAJEURE:** Any delay or failure of performance by Seller shall be excused if and to the extent caused, directly or indirectly, events beyond Seller's control including, without limitation, fire, flood earthquake, lightning, hurricane, explosion, accident or breakdown, acts of God, embargo, strike, labour dispute, labour trouble, lockout, shortage or control of power supply, shortage of supplies or raw materials, or any causes whether of the same kind as the causes enumerated before or not. Subject to any express provisions of this Agreement, any such causes of delay shall extend the time of performance by the length of delay occasioned thereby.
- 15) NO WAIVER:** No waiver by Seller of any right hereunder or of any right granted in connection with a failure to perform or breach by the Purchaser shall be deemed as a waiver of any other right hereunder or of any right granted in connection with any other failure or breach by the Purchaser, whether of a similar nature or otherwise.
- 16) NOTICE:** Any notice made under or in relation to this Agreement shall be sent to the addresses first above written or such other address as the intended recipient shall have previously designated by written notice, by postage prepaid registered mail or by telegram including telex, followed by a confirmation letter by postage prepaid and return receipt requested registered mail. The notice shall be deemed to be made on the fifth day following the date of mailing.
- 17) ENTIRE AGREEMENT:** This Agreement contains the entire agreement and understanding of the parties hereto with respect to the subject matter of this Agreement, and supersedes all prior discussions, agreements, understandings of any and every nature, whether written or oral, between the parties with respect to the subject matter of this Agreement, and no condition, definition, warranty or representation other than those expressly provided for in this Agreement with respect to the subject matter of this Agreement shall be binding upon either party hereto.
- 18) AMENDMENTS IN WRITING:** Any amendment, modification, change or alteration of this Agreement shall be made in writing which expressly refers to this Agreement and which is signed by a duly authorized officer or representative of each of the parties hereto.
- 19) SEVERABILITY:** All provisions of this Agreement are severable and this Agreement shall be interpreted and enforced as if all completely invalid or unenforceable provisions were not contained herein. All partially valid and enforceable provisions shall be enforced to the extent they are valid and enforceable.
- 20) NO AGENCY OR PARTNERSHIP:** Nothing herein contained shall be deemed or construed to constitute either party the agent or partner of the other. Neither party shall have any right, title or authority to enter into any contract, agreement or commitment on behalf of the other or to bind the other in any manner whatsoever.
- 21) GOVERNING LAW:** This agreement shall be governed by and construed in accordance with the laws of the jurisdiction from which the products are shipped by the seller to the purchaser and the parties hereby attorn to the courts of such jurisdiction.
- 22) ENUREMENT:** This Agreement shall enure to the benefit of and be binding upon the parties hereto and on their successors and permitted assigns.
- 23) SELLER DEFINED:** For the purposes hereof, Seller means the Corporation listed as such on the front page of the Invoice or acceptance notice of which these terms and conditions of sale form a part.

Your Complete Source for Valves, Actuation, Strainers and Pressure/Temperature Gauges



- 1,2,3 Piece Ball Valves
- Flanged Floating Ball Valves
- Knife Gate Valves
- Butterfly Valves
- Actuation
- Position Switches



- Y, Basket & Temporary Strainers
- Check Valves
- Triple Duty Valves
- Foot Valves
- Expansion Joints



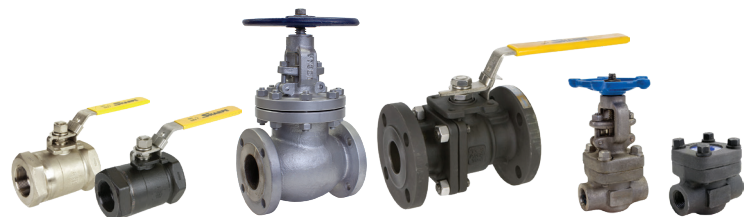
- Pressure Gauges & Accessories
- Temperature Indicators
- Needle Valves
- Thermowells & Thermocouples



- Brass Ball Valves
- Bronze Gate, Globe, & Check Valves
- Cast Iron Gate, Globe, & Check Valves
- Cast & Forged Steel Gate, Globe and Check Valves



- Cast Gate, Globe & Check Valves
- Forged Gate, Globe & Checks
- Threaded Ball Valves
- Flanged Ball Valves



For more information contact: