



F Series

Dual Rack and Pinion Pneumatic Actuators



The Assured Automation F Series pneumatic actuators offer a simple and cost effective solution for your valve automation needs. For use on quarter turn (90°) ball valves, plug valves, dampers, and resilient seated butterfly valves.

FEATURES

- Compact rack and pinion design
- Up to 1 million cycles
- Double acting and spring return models
- Direct mounting to ball and butterfly valves
- Multiple ISO drillings on each actuator: NAMUR DVI/DVE 3845, DIN 3337, ISO 5211
- NAMUR solenoid and limit switch mounting
- Removable drive insert for diamond or square configuration
- Dual travel stop adjustment bolts
- Visual position indicator

SIZES & TORQUE OUTPUT

Spring Return

Springs: 1 to 6

Torque: up to 14,125 in/lbs. (w/ 80 psi air)

ISO 5211: F03 to F25

Direct Acting

Torque: up to 39,498 in/lbs. (w/ 80 psi air)

ISO 5211: F03 to F25

MATERIALS OF CONSTRUCTION

Housing

Powder coated chromated aluminum

Mounting and Shaft

High grade aluminum ASTM 7075 T6

SPECIFICATIONS

Temperature

-4 to 175°F

Supply Air Pressure

Max. 120 psi

TYPICAL APPLICATIONS

- Ball, butterfly, and plug valves
- Chemical processing
- Refineries
- Pulp & paper
- Pharmaceutical
- Food & beverage

ACCESSORIES *(see page 10 for details)*

- NAMUR solenoid valves
- Limit switches
- Positioners
- Automatic thermal shut-off devices

CERTIFICATIONS

- ROHS3, REACH, ATEX, PED, SIL 3, IP66/67



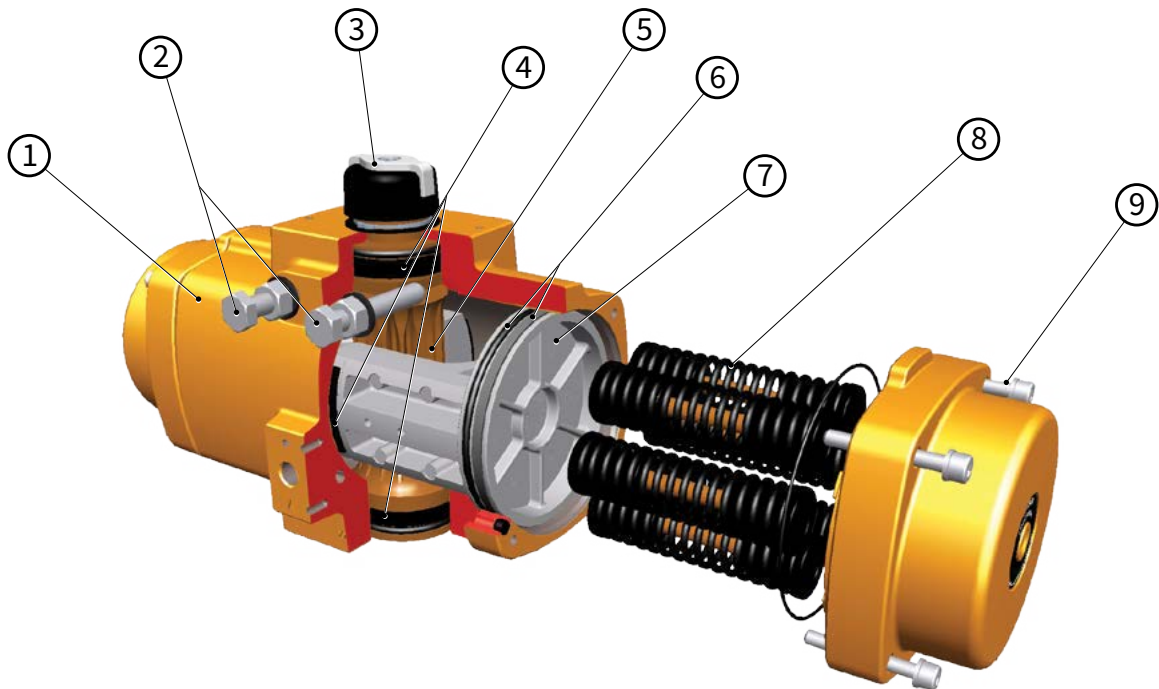


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CONSTRUCTION: Spring Return Actuators



Item	Name	Description & Benefits
1	Body and End Caps	Cast aluminum with two part coating with powder coating provides superior corrosion protection.
2	Dual Stroke Stop Adjustments (Open and Closed)	The dual stroke adjustment provide precise intuitive end of stroke adjustment for the open and closed valve positions
3	Valve Position Indicator	Provides local visual indication of the valve's current position
4	Permanently Lubricated Pinion Bearings	Ensures long life even in the most severe and demanding environments and applications
5	Pinion Shaft	The hard anodized high grade aluminum (7075 T6) pinion, provides the best combination of corrosion resistance, high strength and a lightweight construction as well as providing protection against galvanic corrosion
6	Piston Seals	BUNA o-ring and Carbon filled PTFE sleeve bearing provide for a long service life
7	Piston with Spring Locating Pockets	Ensures proper positioning of springs, whether using 1 spring, or 2 to 6 springs.
8	Spring Set	Electrophoretic coated and modular design allows from 1 to 6 spring sets
9	Fasteners	Stainless steel external fasteners for corrosion resistance



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TORQUE VALUES: Spring Return Actuators (in/lbs)

Actuator Size	Spring set nr.	Spring Stroke Torque (lbf.in)		Air Stroke Torque (lbf.in)															
				SUPPLY PRESSURE															
		Start	End	40 psig		50 psig		60 psig		70 psig		80 psig		90 psig		100 psig		120 psig	
FSA12	2	64	41	15	-	31	5	47	21	63	37	79	53	95	69	111	84	142	116
	1	31	20	93	80	123	109	152	139	181	168	211	198	240	227	270	257	329	316
FSA25	2	63	39	70	44	100	73	129	103	159	132	188	162	218	191	247	221	306	280
	3	94	59	48	8	77	37	107	67	136	96	166	126	195	155	225	185	283	244
	4	125	79	-	-	-	-	84	31	113	60	143	90	172	119	202	149	261	208
	5	156	99	-	-	-	-	-	-	91	24	120	54	150	83	179	113	238	172
	6	188	118	-	-	-	-	-	-	-	-	98	18	127	47	157	77	216	136
	1	58	37	175	150	230	206	285	261	341	316	396	371	451	427	506	482	617	592
FSA40	2	116	73	133	84	188	139	243	195	299	250	354	305	409	360	464	415	575	526
	3	174	110	91	18	146	73	201	128	257	183	312	239	367	294	422	349	533	459
	4	231	146	-	-	-	-	159	62	214	117	270	172	325	227	380	283	491	393
	5	289	183	-	-	-	-	-	-	172	50	228	106	283	161	338	216	449	327
	6	347	220	-	-	-	-	-	-	-	-	186	39	241	94	296	150	407	260
	1	90	57	265	227	349	311	434	395	518	479	602	564	686	648	770	732	939	900
FSA65	2	181	114	200	123	284	207	368	291	452	376	537	460	621	544	705	628	873	796
	3	271	171	134	19	219	103	303	188	387	272	471	356	555	440	639	524	808	693
	4	361	228	-	-	-	-	237	84	322	168	406	252	490	336	574	420	742	589
	5	452	285	-	-	-	-	-	-	256	64	340	148	424	232	509	317	677	485
	6	542	341	-	-	-	-	-	-	-	-	275	44	359	129	443	213	612	381
	1	131	83	394	339	518	463	643	588	767	712	892	836	1016	961	1141	1085	1390	1334
FSA100	2	262	166	299	188	423	313	548	437	672	562	797	686	921	811	1046	935	1295	1184
	3	392	248	203	38	328	162	452	287	577	411	701	536	826	660	950	785	1199	1034
	4	523	331	-	-	-	-	357	136	482	261	606	385	731	510	855	634	1104	883
	5	654	414	-	-	-	-	-	-	387	110	511	235	636	359	760	484	1009	733
	6	785	497	-	-	-	-	-	-	-	-	416	85	540	209	665	334	914	583
	1	208	131	633	544	832	743	1031	942	1231	1142	1430	1341	1629	1540	1829	1740	2227	2138
FSA150	2	416	262	482	304	681	504	881	703	1080	902	1279	1102	1479	1301	1678	1500	2077	1899
	3	625	393	332	65	531	264	730	464	930	663	1129	862	1328	1062	1528	1261	1926	1660
	4	833	524	-	-	-	-	580	224	779	424	979	623	1178	823	1377	1022	1776	1421
	5	1041	654	-	-	-	-	-	-	629	185	828	384	1027	583	1227	783	1626	1181
	6	1249	785	-	-	-	-	-	-	-	-	678	145	877	344	1076	543	1475	942
	1	289	182	862	739	1135	1012	1408	1285	1681	1558	1954	1831	2226	2104	2499	2376	3045	2922
FSA200	2	578	364	653	407	926	680	1198	953	1471	1226	1744	1499	2017	1771	2290	2044	2836	2590
	3	867	547	443	75	716	348	989	621	1262	894	1535	1166	1808	1439	2080	1712	2626	2258
	4	1156	729	-	-	-	-	780	289	1052	561	1325	834	1598	1107	1871	1380	2417	1926
	5	1445	911	-	-	-	-	-	-	843	229	1116	502	1389	775	1662	1048	2207	1593
	6	1734	1093	-	-	-	-	-	-	-	-	906	170	1179	443	1452	716	1998	1261
	1	495	312	1503	1293	1978	1767	2452	2241	2926	2716	3400	3190	3874	3664	4348	4138	5296	5086
FSA350	2	990	624	1145	724	1619	1199	2093	1673	2567	2147	3041	2621	3515	3095	3990	3569	4938	4517
	3	1485	936	786	156	1261	630	1735	1104	2209	1578	2683	2052	3157	2526	3631	3000	4579	3948
	4	1979	1248	-	-	-	-	1376	535	1850	1009	2324	1483	2798	1957	3272	2431	4221	3380
	5	2474	1560	-	-	-	-	-	-	1492	440	1966	914	2440	1388	2914	1863	3862	2811
	6	2969	1872	-	-	-	-	-	-	-	-	1607	346	2081	820	2555	1294	3504	2242
	1	848	534	2551	2190	3356	2996	4162	3801	4968	4607	5773	5413	6579	6218	7385	7024	8996	8635
FSA600	2	1695	1068	1937	1216	2743	2021	3548	2827	4354	3633	5160	4438	5965	5244	6771	6050	8382	7661
	3	2543	1601	1324	241	2129	1047	2935	1853	3741	2658	4546	3464	5352	4270	6158	5075	7769	6687
	4	3391	2135	-	-	-	-	2321	878	3127	1684	3933	2490	4738	3295	5544	4101	7155	5712
	5	4238	2669	-	-	-	-	-	-	2513	710	3319	1515	4125	2321	4930	3127	6542	4738
	6	5086	3203	-	-	-	-	-	-	-	-	2706	541	3511	1346	4317	2152	5928	3763



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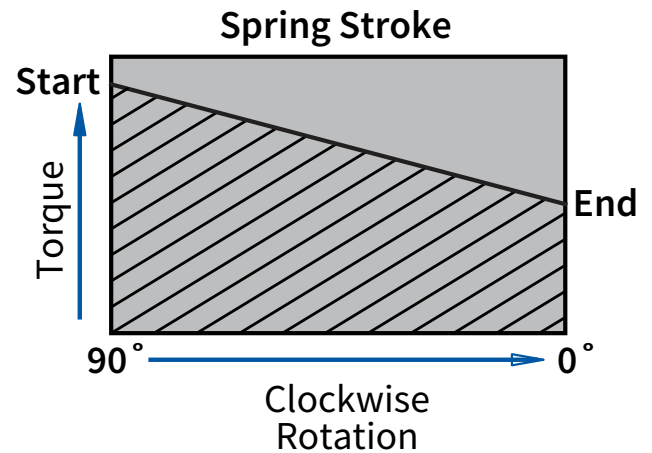
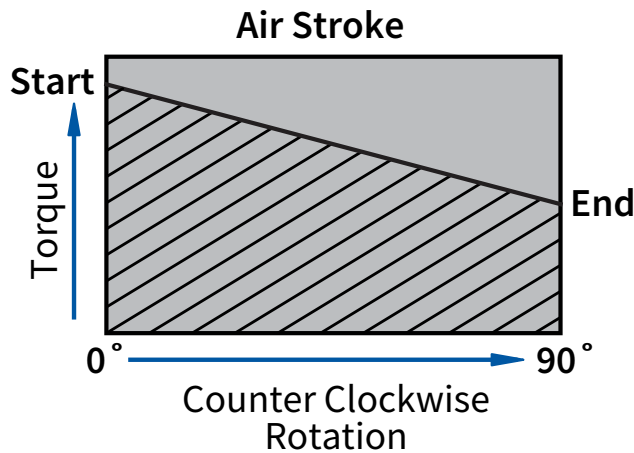


Dual Rack and Pinion Pneumatic Actuators

TORQUE VALUES: Spring Return Actuators (in/lbs) *continued*

Actuator Size	Spring set nr.	Spring Stroke Torque (lb.in)		Air Stroke Torque (lb.in)															
				SUPPLY PRESSURE															
		40 psig	50 psig	60 psig	70 psig	80 psig	90 psig	100 psig	120 psig	Start		End		Start		End			
FSA950	1	1070	685	3842	3360	5038	4556	6234	5752	7430	6948	8627	8144	9823	9340	11019	10536	13411	12929
	2	2141	1369	2986	2022	4182	3218	5379	4414	6575	5610	7771	6806	8967	8002	10163	9198	12555	11591
	3	3211	2054	2130	683	3327	1880	4523	3076	5719	4272	6915	5468	8111	6664	9307	7860	11699	10252
	4	4282	2738	-	-	2471	541	3667	1738	4863	2934	6059	4130	7255	5326	8451	6522	10844	8914
	5	5352	3423	-	-	-	-	2811	399	4007	1596	5203	2792	6400	3988	7596	5184	9988	7576
	6	6423	4108	-	-	-	-	-	-	3152	257	4348	1454	5544	2650	6740	3846	9132	6238
FSA1600	1	1835	1141	6447	5579	8452	7583	10456	9588	12461	11592	14466	13597	16470	15602	18475	17606	22484	21615
	2	3671	2281	5022	3284	7026	5289	9031	7294	11035	9298	13040	11303	15044	13307	17049	15312	21058	19321
	3	5506	3422	3596	990	5600	2995	7605	4999	9610	7004	11614	9008	13619	11013	15623	13018	19632	17027
	4	7342	4562	-	-	4175	700	6179	2705	8184	4709	10188	6714	12193	8719	14198	10723	18207	14732
	5	9177	5703	-	-	-	-	4753	411	6758	2415	8763	4420	10767	6424	12772	8429	16781	12438
	6	11013	6844	-	-	-	-	-	-	-	-	7337	2125	9342	4130	11346	6135	15355	10144
FSA2500	1	2607	1597	10204	8941	13310	12047	16416	15153	19523	18259	22629	21366	25735	24472	28841	27578	35054	33791
	2	5215	3194	8208	5681	11314	8788	14420	11894	17526	15000	20633	18106	23739	21213	26845	24319	33058	30532
	3	7822	4791	6211	2422	9318	5528	12424	8635	15530	11741	18636	14847	21743	17953	24849	21060	31062	27272
	4	10430	6388	-	-	7321	2269	10428	5375	13534	8482	16640	11588	19747	14694	22853	17800	29065	24013
	5	13037	7985	-	-	-	-	8432	2116	11538	5222	14644	8329	17750	11435	20857	14541	27069	20754
	6	15645	9582	-	-	-	-	-	-	9542	1963	12648	5069	15754	8176	18860	11282	25073	17494
FSA4000	1	4183	2645	16495	14572	21537	19613	26578	24655	31620	29696	36661	34738	41703	39780	46744	44821	56828	54904
	2	8366	5289	13189	9343	18231	14384	23273	19426	28314	24467	33356	29509	38397	34550	43439	39592	53522	49675
	3	12550	7934	9884	4114	14925	9155	19967	14197	25008	19238	30050	24280	35092	29321	40133	34363	50216	44446
	4	16733	10578	-	-	11620	3926	16661	8968	21703	14009	26744	19051	31786	24092	36827	29134	46911	39217
	5	20916	13223	-	-	-	-	13355	3739	18397	8780	23439	13822	28480	18863	33522	23905	43605	33988
	6	25099	15867	-	-	-	-	-	-	15091	3551	20133	8593	25174	13634	30216	18676	40299	28759

TORQUE CURVE: Spring Return Actuators





F Series

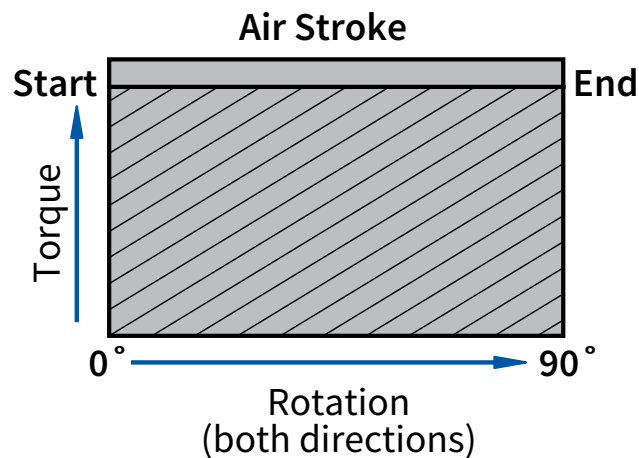


Dual Rack and Pinion Pneumatic Actuators

TORQUE VALUES: Double Acting Actuators (in/lbs)

Actuator Size	Torque in lbf.in Supply pressure (psig)												
	30	35	40	45	50	55	60	70	75	80	90	100	120
FDA12	44	51	59	66	74	81	89	104	112	119	134	149	179
FDA25	81	95	109	123	137	151	165	193	207	220	248	276	332
FDA40	153	179	205	231	257	283	309	361	387	413	466	518	622
FDA65	233	272	312	352	392	431	471	550	590	630	709	789	948
FDA100	344	403	461	520	579	638	696	814	873	931	1049	1166	1401
FDA150	551	645	739	833	927	1021	1115	1304	1398	1492	1680	1868	2244
FDA200	754	883	1011	1140	1269	1398	1527	1784	1913	2042	2299	2557	3072
FDA350	1310	1534	1758	1981	2205	2429	2653	3100	3324	3547	3995	4442	5337
FDA600	2226	2606	2987	3367	3747	4127	4508	5268	5648	6028	6789	7549	9070
FDA950	3374	3950	4527	5103	5679	6255	6832	7984	8560	9137	10289	11442	13747
FDA1600	5654	6620	7586	8552	9517	10483	11449	13380	14346	15312	17243	19175	23038
FDA2500	8762	10259	11755	13252	14748	16245	17741	20734	22231	23727	26720	29713	35699
FDA4000	14221	16650	19079	21508	23937	26365	28794	33652	36081	38510	43368	48225	57941

TORQUE CURVE: Double Acting Actuators



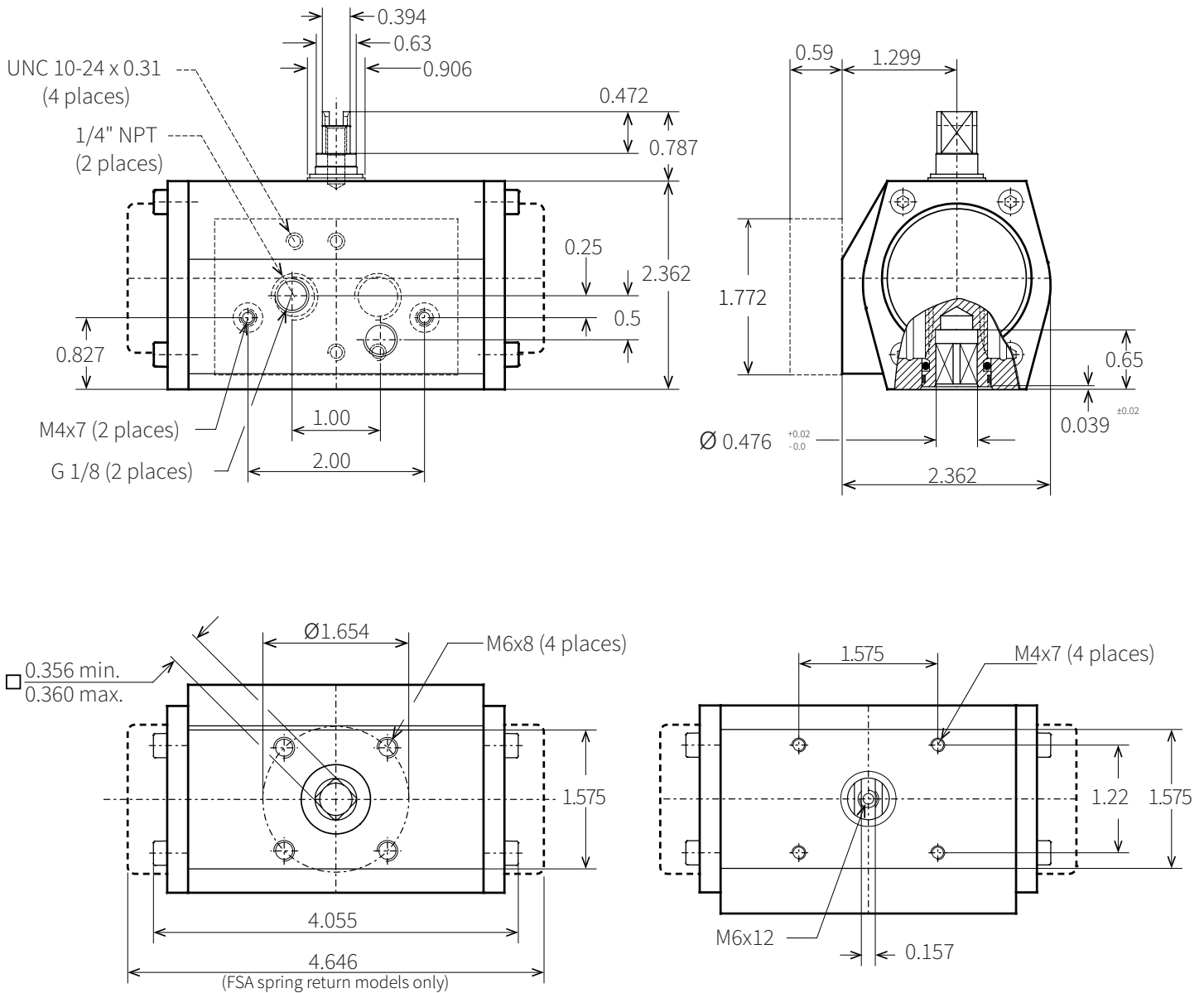


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Dual Rack and Pinion Pneumatic Actuators

DIMENSIONS: Size 12 (inches and lbs)



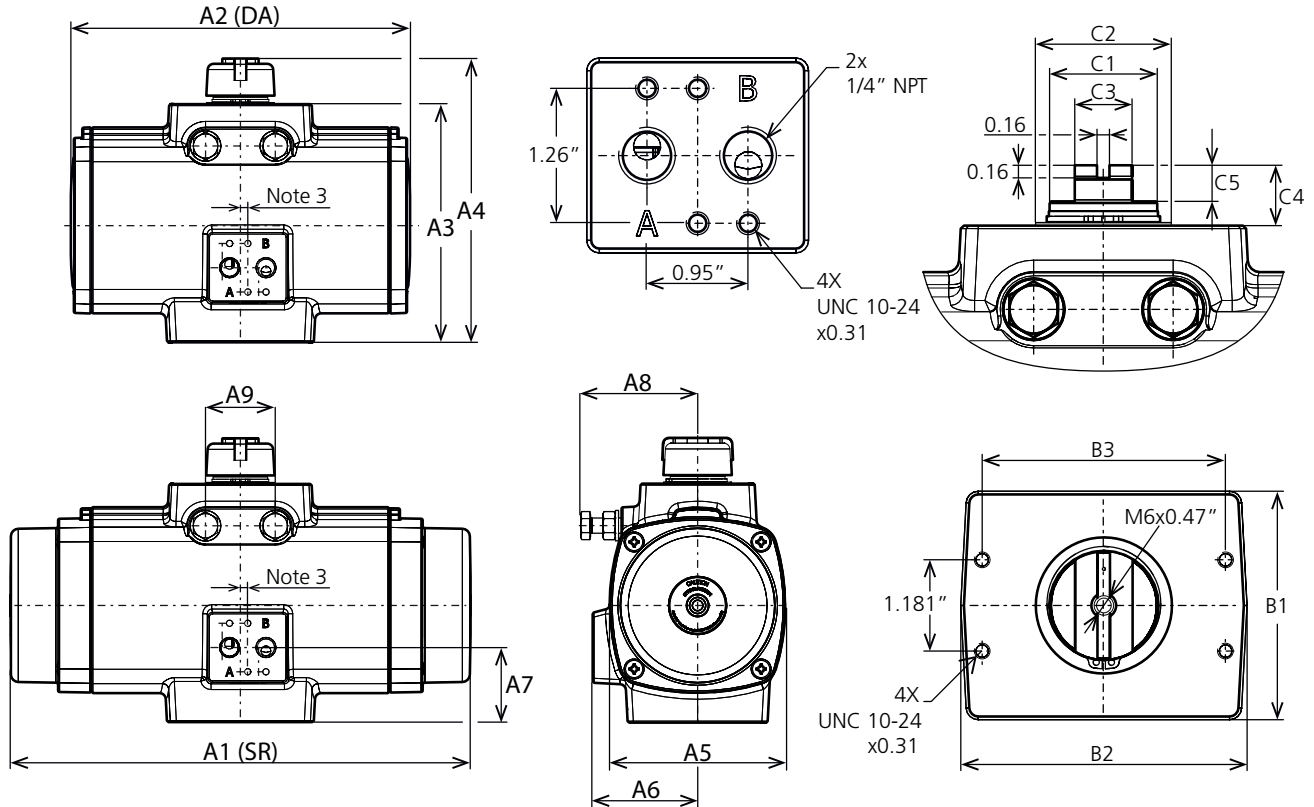


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Dual Rack and Pinion Pneumatic Actuators

DIMENSIONS: Sizes 25 to 4000 (inches and lbs)



Note:

1. DA = Double-Acting, SR = Spring-Return
2. Solenoid interface and top mounting interface according to VDI/VDE3845 (NAMUR)
3. The solenoid drilling pattern is shifted 0.16" for size 0025 and 0.08" for size 0040 vs. the centerline of the actuator.

Tolerance limits unless otherwise specified

XX.X = ± 0.02"
XX.XX = ± 0.01"

Dim in Inches	Actuator size											
	0025	0040	0065	0100	0150	0200	0350	0600	0950	1600	2500	4000
A1	6.54	7.55	8.53	9.72	11.97	14.23	15.15	18.73	xx.xx	xx.xx	xx.xx	xx.xx
A2	6.54	7.55	8.53	9.72	8.80	10.07	10.58	13.21	xx.xx	xx.xx	xx.xx	xx.xx
A3	3.59	4.39	4.86	5.14	6.19	6.42	7.92	9.77	xx.xx	xx.xx	xx.xx	xx.xx
A4	4.69	5.47	5.94	6.22	7.28	7.52	9.06	11.50	xx.xx	xx.xx	xx.xx	xx.xx
A5	3.23	3.74	4.09	4.53	5.00	5.28	6.50	7.83	xx.xx	xx.xx	xx.xx	xx.xx
A6	1.91	2.15	2.28	2.50	2.72	2.83	3.35	4.02	xx.xx	xx.xx	xx.xx	xx.xx
A7	1.16	1.34	1.48	1.50	1.93	1.92	1.65	2.64	xx.xx	xx.xx	xx.xx	xx.xx
A8	1.89	2.28	2.72	2.72	2.95	3.43	4.29	5.20	xx.xx	xx.xx	xx.xx	xx.xx
A9	0.71	0.98	1.06	1.10	1.81	1.81	1.81	2.36	xx.xx	xx.xx	xx.xx	xx.xx
B1	1.69	1.77	1.97	2.36	2.95	2.95	3.35	3.86	xx.xx	xx.xx	xx.xx	xx.xx
B2	3.70	3.70	3.70	3.82	3.70	3.70	3.94	5.83	xx.xx	xx.xx	xx.xx	xx.xx
B3	3.15	3.15	3.15	3.15	3.15	3.15	3.15	5.12	5.12	5.12	5.12	5.12
C1	0.63	0.87	0.87	0.87	1.34	1.42	1.42	2.17	2.17	2.52	2.17	2.52
C2	0.91	1.18	1.18	1.18	1.77	1.77	1.77	2.56	2.56	2.95	2.56	3.15
C3	0.39	0.55	0.55	0.55	0.75	0.75	0.75	1.42	1.42	1.42	1.42	1.42
C4	0.79	0.79	0.79	0.79	0.79	0.79	0.79	1.18	1.18	1.18	1.18	1.18
C5	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.39	0.39	0.39	0.39	0.39



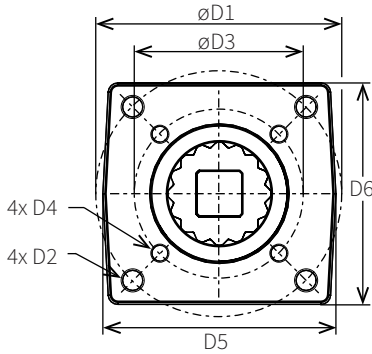
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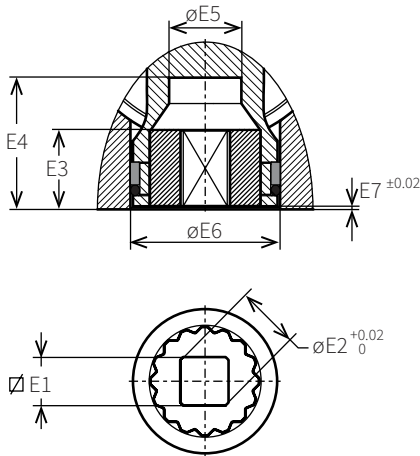
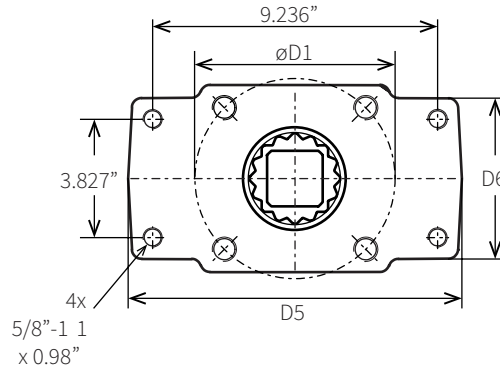
Dual Rack and Pinion Pneumatic Actuators

DIMENSIONS: Valve Mounting Pad and Stem Drive Details (inches and lbs)

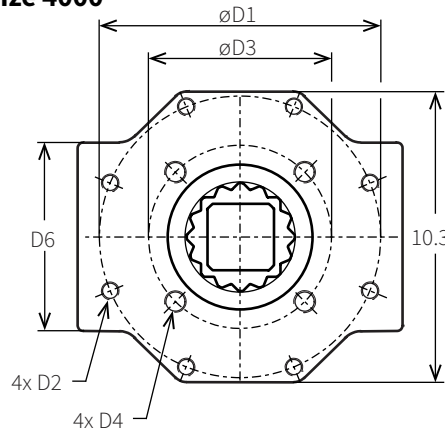
Size 25 to 950



Size 1600 & 2500



Size 4000



Note:

1. Flange and square drive according to DIN 3337
2. Drilling pattern DIN 1 is default. Drilling pattern DIN 2 is optional.

Tolerance limits unless otherwise specified

- X.X = ± 0.02"
X.XX = ± 0.01"

Dim in Inches	Actuator size											
	0025	0040	0065	0100	0150	0200	0350	0600	0950	1600	2500	4000
ISO 1	F05	F07	F07	F07	F10	F10	F10	F12	F14	F16	F16	F25
D1	1.969	2.756	2.756	2.756	4.016	4.016	4.016	4.921	5.512	6.496	6.496	10.000
D2	1/4"-20 x0.35"	5/16"-18 x0.47"	5/16"-18 x0.47"	5/16"-18 x0.47"	3/8"-16 x0.59"	3/8"-16 x0.59"	3/8"-16 x0.59"	1/2"-13 x0.71"	5/8"-11 x0.94"	3/4"-10 x1.18"	3/4"-10 x1.18"	5/8"-11 x0.94"
ISO 2	F03	F05	F05	F05	F07	F07	F07	F10	F10	F25*	F25*	F16
D3	1.417	1.969	1.969	1.969	2.756	2.756	2.756	4.016	4.016	-/-	-/-	6.496
D4	#10-24 x0.31"	1/4"-20 x0.35"	1/4"-20 x0.35"	1/4"-20 x0.35"	5/16"-18 x0.47"	5/16"-18 x0.47"	5/16"-18 x0.47"	3/8"-16 x0.59"	3/8"-16 x0.59"	5/8"-11 x0.94"	5/8"-11 x0.94"	3/4"-10 x1.18"
D5	1.97	2.68	2.68	2.62	3.82	3.7	3.7	4.65	5.31	11.02	11.02	10.75
D6	1.89	2.56	2.56	2.48	3.62	3.54	3.7	4.45	5.12	5.2	5.2	10.59
E1 Max	0.436	0.554	0.554	0.751	0.751	0.87	1.067	1.067	1.424	1.817	1.817	2.175
E1 Min	0.433	0.551	0.551	0.748	0.748	0.866	1.063	1.063	1.417	1.811	1.811	2.165
E2	0.555	0.713	0.713	0.992	1.004	1.11	1.425	1.426	2.291	2.37	2.37	2.843
E3	0.591	0.591	0.591	0.709	1.083	1.083	1.083	1.083	1.909	2.343	2.343	2.421
E4	1.34	1.34	1.34	1.34	1.97	1.97	1.97	1.97	2.58	3.21	3.21	3.02
E5	0.56	0.71	0.83	0.93	1.12	1.26	1.26	1.44	1.89	2.36	2.36	2.87
E6	0.96	1.36	1.36	1.5	2.22	2.22	2.22	2.66	3.39	4.09	4.92	5.24
E7	0.02	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04



F Series



Dual Rack and Pinion Pneumatic Actuators

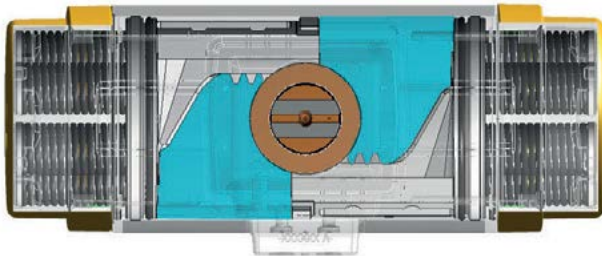
WEIGHTS & SPEEDS:

Size	Weight (lbs.)		Speed (Sec.)			
	FDA... Double Acting	FSA... Spring Return*	FDA... Double Acting		FSA... Spring Return	
			A Port Pressurized	B Port Pressurized	A Port Pressurized	Spring Stroke
F 25	3.1	3.5	0.5	0.4	0.5	0.4
F 40	4.6	5.1	0.6	0.5	0.6	0.5
F 65	6.2	7.3	0.6	0.6	0.7	0.5
F 100	7.7	9.5	0.8	0.7	0.8	0.6
F 150	10.8	14.6	0.9	0.8	1.0	0.8
F 200	13.2	18.3	1.0	1.0	1.3	0.9
F 350	22	32	1.4	1.5	1.9	1.3
F 600	44	62	2.2	2.2	3.2	1.9
F 950	60	86	3.9	3.6	4.6	3.2
F 1600	95	146	5.9	4.8	6.9	4.8
F 2500	126	194	7.8	7.9	9.0	6.3
F 4000	192	291	13.3	13.0	15.4	10.8

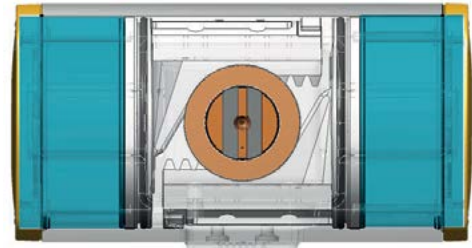
*Weights given for Spring Return models is with the 6 spring set

AIR CONSUMPTION:

Central Chamber (for spring return and double acting models)



End Cap Chambers (for double acting models only)



Size	Maximum Air Volume (cubic inches)			Air Consumption (cubic inches)					
	Central Chamber (with pistons outward)	End Cap Chamber (Double Acting Only)	Displaced Volume	Outward Stroke			Inward Stroke		
				29 psi	58 psi	116 psi	29 psi	58 psi	116 psi
F 25	6.4	11.8	4.7	23	40	58	37	70	102
F 40	10.0	22	8.9	36	64	92	70	131	192
F 65	22	34	13.5	74	134	194	107	200	293
F 100	22	50	19.9	80	140	200	158	295	433
F 150	48	43	32	163	295	427	151	270	389
F 200	50	59	44	182	320	458	207	369	532
F 350	118	103	76	402	729	1055	359	642	925
F 600	189	174	129	650	1171	1692	610	1091	1571
F 950	310	260	193	1049	1905	2760	910	1628	2346
F 1600	477	430	319	1635	2951	4267	1505	2691	3877
F 2500	638	676	501	2259	4018	5776	2367	4232	6097
F 4000	1122	1151	853	3946	7040	10134	4027	7202	10377



F Series



Dual Rack and Pinion Pneumatic Actuators

ORDERING INFORMATION



Series: _____

F = F Series Dual Rack-n-Pinion

Type: _____

DA = Direct Acting (Double Acting)

SA = Spring Return (Single Acting)

Size: (see [torque](#) and [dimension](#) tables to select the proper size) _____

12	350
25	600
40	950
65	1500
100	2500
150	4000
200	

Spring Set: _____

(omit) = No springs for Direct Acting models

1 = 1 spring **4** = 4 springs

2 = 2 springs **5** = 5 springs

3 = 3 springs **6** = 6 springs

ACCESSORIES

NAMUR Solenoid Valves



Either 3-way for Spring return or 4-way for double acting. Each is available with various coils and connectors that are either NEMA 4/4X Weatherproof or NEMA 7 Explosion proof.

For complete details visit:

<https://assuredautomation.com/NAMUR-solenoid-valves>

Limit Switches



We offer a wide range of limit switches that includes proximity sensors and mechanical switches. Our offering includes NEMA 4/4X Weatherproof and NEMA 7 Explosion proof.

For complete details visit:

<https://assuredautomation.com/limit-switches>

Positioners



Pneumatic and Electro-pneumatic positioners are available. Electro-pneumatic models are available as standard, intrinsically safe, and explosion proof. All units are available with or without feedback units.

For complete details visit:

<https://assuredautomation.com/valve-positioners>

FireChek Thermal Shutoff Valve



This revolutionary product turns any spring return pneumatic actuator into a thermally activated shutoff valve. Not only does it vent the actuator allowing for the springs to return the valve to fail-safe, it also shuts off the supply air which would feed oxygen to the fire. Sizes are available for ANY size actuator.

For complete details visit:

<https://assuredautomation.com/firechek>