

## General Specifications

### Torque Range

- Double-Acting: 119 to 38510 lbf.in (13.4 to 4338 Nm) at 80 psig (5.5 barg)
- Spring-Return: 41 to 15867 lbf.in (5 to 1793 Nm) spring end torque at maximum spring set.

### Pressure Range

- Double-Acting:
  - 2.9 to 120 psig (0.2 to 8.3 barg)
- Spring-Return:
  - 87 to 120 psig (6 to 8.3 barg), with maximum spring set
  - 43.5 to 120 psig (3 to 8.3 barg), reduced spring quantity

### Pressure Media

- Air, dry or lubricated and inert gases
- Dew point at least 10K below ambient temperature
- For sub-zero applications, take appropriate measures
- Mentioned pressure levels are "gauge pressures". Gauge pressure is equal to absolute pressure minus atmospheric pressure.

### Cycle life

- Normal working life is 500,000 cycles according EN15714-3, where 1 cycle is 1 open stroke and 1 close stroke.

### Finish

- Body: Chromated and polyurethane powder coated
- End caps: Sizes 25 to 600: Anodized and polyurethane powder coated  
Size 12 and 950 to 4000: Chromate and polyurethane powder coated
- Pistons: Chromated
- Pinion: Hard Anodized
- Fasteners: Stainless Steel or Deltatone® coated

### Lubrication

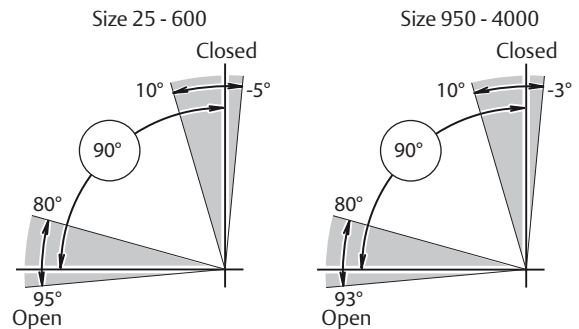
- Castrol High Temperature grease (or equivalent)

### Temperature Range

- Standard: -4 °F to 176 °F (-20 °C to +80 °C)
- Option:
  - Low temperature: -40 °F to 176 °F (-40 °C to +80 °C)
  - High temperature: +14 °F to 250 °F (-10 °C to +120 °C)

### Angle of Rotation

- Factory set at 90°
- Adjustable range:
  - Size 25 to 600: -5° to +10° and +80° to 95°
  - Size 950 to 4000: -3° to +10° and +80° to 93°



### Compliance to International Standards

- Valve flange: ISO 5211/DIN3337
- Solenoid flange: VDE/VDI 3845 (NAMUR)
- Accessory flange: VDE/VDI 3845 (NAMUR)
- European Directives: ATEX, PED and Machinery Directive
- For RoHS2 compliance contact your nearest Emerson representative.
- SIL 3 rated according to IEC 61508-1-7:2010
- EAC Customs union: Compliance to Russian TR010 and TR012

**Actuator Weight**

Actuator Model	Double-Acting		Spring-Return Springset N=6	
	lbs	Kg	lbs	Kg
F 12	1.3	0.6	1.5	0.7
F 25	3.1	1.4	3.5	1.6
F 40	4.6	2.1	5.1	2.3
F 65	6.2	2.8	7.3	3.3
F 100	7.7	3.5	9.5	4.3
F 150	10.8	4.9	14.6	6.6
F 200	13.2	6.0	18.3	8.3
F 350	22	10.2	32	14.5
F 600	44	20	57	26
F 950	58	26	89	41
F 1600	91	41	137	62
F 2500	141	64	221	100
F 4000	226	103	325	147

**Cycle time in seconds**

Actuator Model	Spring-Return		Double-Acting	
	Opening Stroke	Closing Stroke	Opening Stroke	Closing Stroke
F 12	0.4	0.4	0.4	0.4
F 25	0.5	0.4	0.5	0.4
F 40	0.6	0.5	0.6	0.5
F 65	0.7	0.5	0.6	0.6
F 100	0.8	0.6	0.8	0.7
F 150	1.0	0.8	0.9	0.8
F 200	1.3	0.9	1.0	1.0
F 350	1.9	1.3	1.4	1.5
F 600	3.2	1.9	2.2	2.2
F 950	6.6	2.2	2.4	2.0
F 1600	10.6	3.5	3.6	3.3
F 2500	16.9	5.7	5.8	5.2
F 4000	29.1	9.2	9.2	9.0

Test conditions:

1. Solenoid with flow capacity: 0.6 m<sup>3</sup>/hr
2. Pipe diameter: 6 mm
3. Medium: clean air
4. Supply pressure: 5.5 bar/80 psi
5. Load: with average load
6. Stroke: 90°
7. Temperature: Room temperature

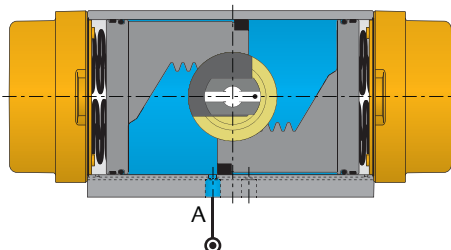
Actuator air volumes and consumption

Actuator model	Actuator volumes			Consumption per stroke (in liters, pressure in barg)					
	Maximum volume (in liters)			Outward Stroke			Inward Stroke		
	Central1 chamber	End cap2 chamber	Displace3 volume	Double-Acting and Spring-Return			Double-Acting only		
				2.0 barg	4.0 barg	8.0 barg	2.0 barg	4.0 barg	8.0 barg
F 12	0.05	0.06	0.04	0.14	0.24	0.44	0.16	0.28	0.52
F 25	0.14	0.20	0.08	0.36	0.64	1.2	0.48	0.88	1.7
F 40	0.26	0.37	0.15	0.67	1.2	2.2	0.89	1.6	3.1
F 65	0.40	0.56	0.22	1.02	1.8	3.4	1.3	2.4	4.7
F 100	0.6	0.9	0.3	1.5	2.7	5.0	2.0	3.8	7.2
F 150	1.0	0.8	0.5	2.4	4.3	8.1	2.1	3.6	6.7
F 200	1.3	1.0	0.7	3.2	5.7	11	2.8	4.9	9.1
F 350	2.1	1.9	1.2	5.5	9.8	18	5.0	8.8	16
F 600	3.6	3.3	2.1	9.4	17	31	8.7	15	28
F 950	4.9	4.6	3.2	13	23	43	12	22	40
F 1600	7.9	7.3	5.4	21	37	69	20	35	64
F 2500	12.6	11.9	8.3	34	59	109	32	56	104
F 4000	21.7	19.0	13.5	57	100	187	52	89	165

Actuator model	Actuator volumes			Consumption per stroke (in Cu.in., pressure in psig)					
	Maximum volume (Cu.in.)			Outward Stroke			Inward Stroke		
	Central1 chamber	End cap2 chamber	Displace3 volume	Double-Acting and Spring-Return			Double-Acting only		
				40 psig	80 psig	120 psig	40 psig	80 psig	120 psig
F 12	3.1	3.7	2.5	11	19	28	13	23	33
F 25	8.5	12.2	4.7	28	52	75	38	72	106
F 40	15.9	23	8.9	53	96	140	71	133	196
F 65	24	34	13.5	81	148	215	107	200	294
F 100	36	53	19.9	118	216	314	165	310	455
F 150	58	47	32	192	352	512	163	293	424
F 200	76	64	44	255	466	676	220	397	573
F 350	131	115	76	436	796	1157	392	709	1025
F 600	222	201	129	742	1354	1967	683	1237	1790
F 950	301	279	196	1025	1854	2682	966	1735	2505
F 1600	484	447	328	1662	2997	4331	1560	2792	4024
F 2500	769	728	508	2630	4751	6873	2515	4523	6530
F 4000	1324	1159	825	4477	8130	11782	4022	7219	10416

- Notes:
1. For Double-Acting and Spring-Return. Pistons at 90° outward position
  2. Only for Double-Acting. Pistons at 0° inward position
  3. Stroke is 90°

Central air chamber volume  
Double-Acting and Spring-Return



End cap air chamber volume  
Double-Acting only

