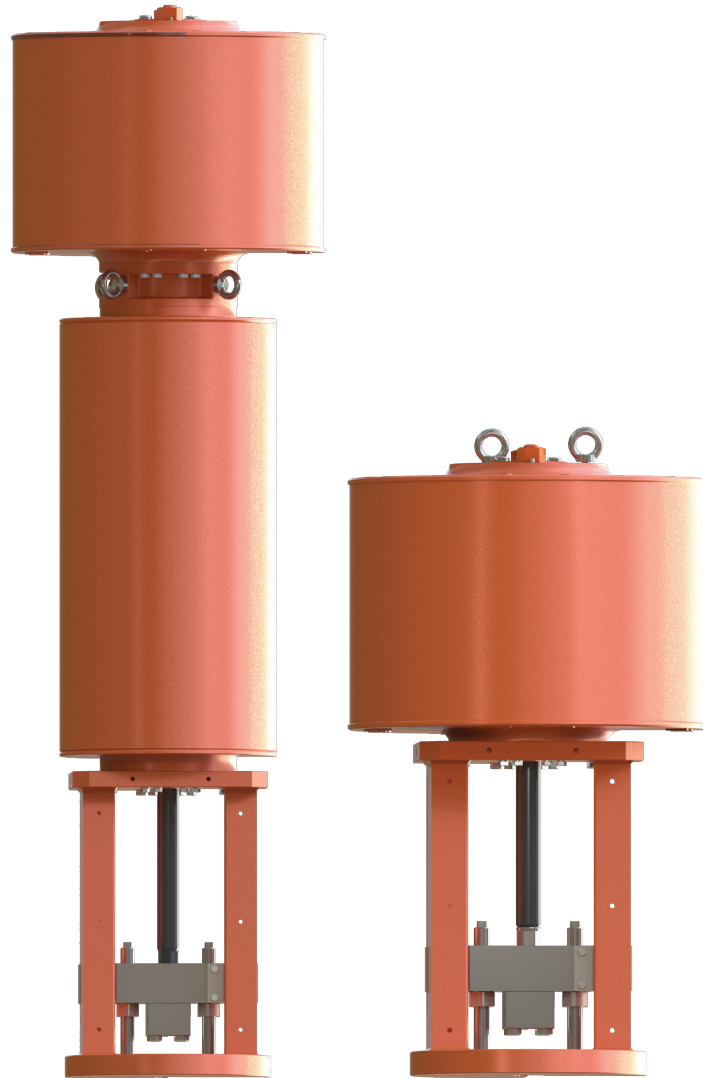


Bettis GVO-G Series

Pneumatic Linear Actuator



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Introduction

GVO-G pneumatic linear actuator utilizes G-Series' pneumatic power module and spring module to provide the linear motion. GVO-G series actuator has the same reliability as G-Series actuator. It is suitable for automating most types of rising stem valves in safety shutdown and control applications. The GVO-G actuators are manufactured in accordance with strict-quality standards and assure reliability and safety in your specific service. Like the G-Series, the GVO-G actuators are backed by a five-year material and workmanship warranty, the best in the industry.

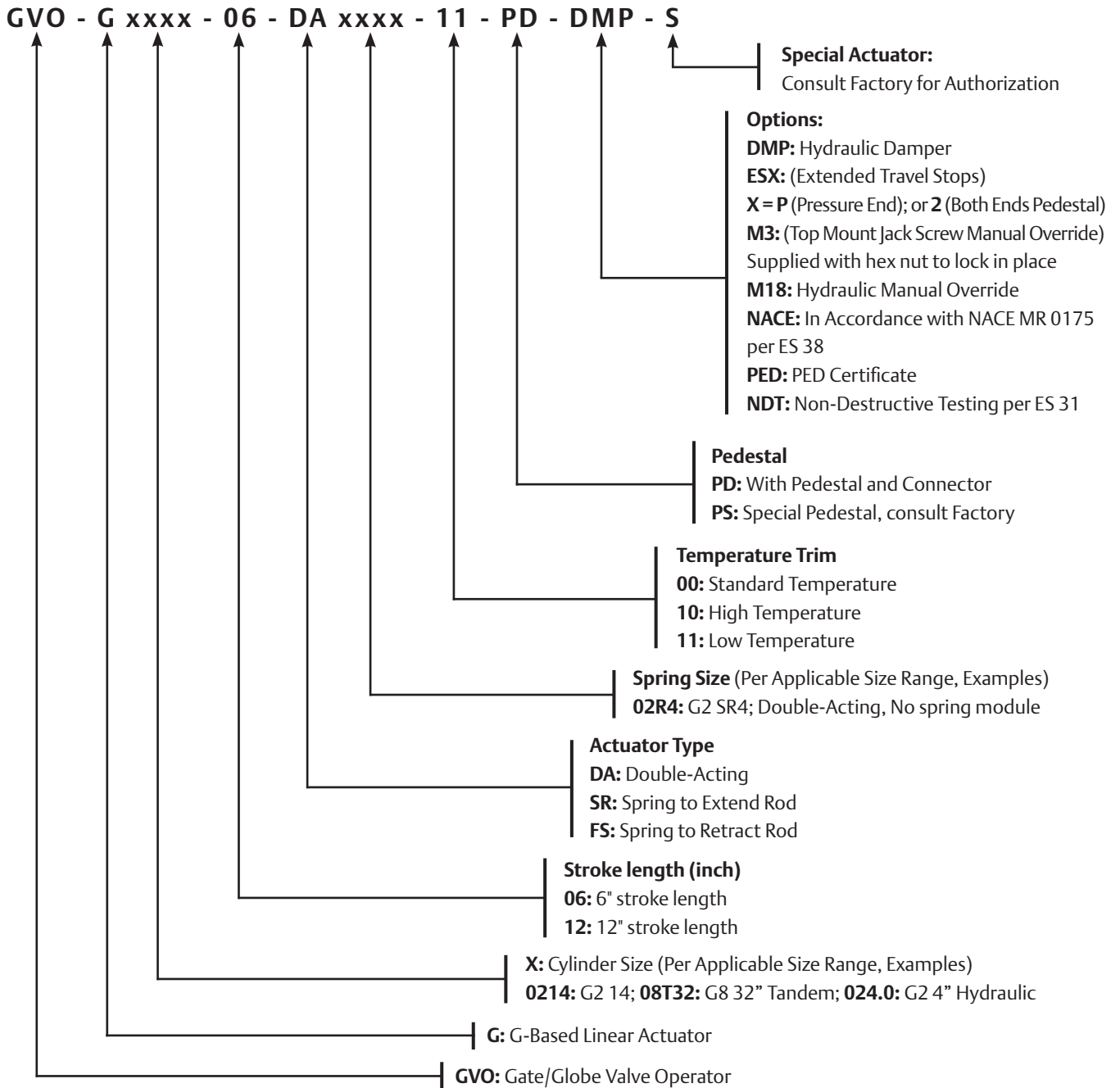
Types of Applications

ON-OFF, Emergency Shutdown Device (ESD), and Modulating Service for: Oil and gas, LNG terminal, power generation, water distribution, water and wastewater treatment, petrochemical, mining and minerals, industrial process.

Automated Packages

Emerson offers complete valve operating systems for final valve control. At our World Area Configuration Centers (WACC), we combine the GVO-G linear actuator and controls into a single system. We can integrate a complete control offerings including PlantWeb® digital plant architecture. We also supply pre-engineered and documented controls packages available at our WACC; reducing lead times, simplifying purchasing and easing installation.

Model Identification



Basic Features

Design

- Designed to operate on most types of valves: wedge-gate, slab-gate, knife-gate, globe, tank, and rising-stem ball and plug
- PED 2014/68/EU compliant to meet the stringent requirements of pressure mounting vessels
- Meet both IP66 and IP67M specifications for submergence and high-pressure water deluge test, this offers superior water ingress and corrosion protection
- SIL3 Suitable
- Other applications include dampers and louvers

Construction

- **Dual Internal Tie Bars**
 - GVO-G pneumatic cylinder features internal high-strength alloy steel tie bars. The internal tie bars are protected from corrosion and physical damage while also centering the piston in the cylinder bore, thus preventing metal to metal contact.
- **Corrosion Resistance**
 - GVO-G linear actuator incorporates protective internal and external coatings, assuring the actuator's reliable operation in the harshest of environments. The actuator exhibits excellent corrosion resistance, confirmed by Salt Spray Testing per ASTM B117 criteria.
- Xylan-coated cylinder
- Two-way travel stop adjustment for actuators with Pedestal
- No travel stop adjustment for standard bare actuator without pedestal

Cylinder Size

- 5 to 52 in.

Thrust Output

- Spring-Return: 493 lb to 163,420 lb / 2193 N to 726,000 N
- Double-Acting: 659 lb to 235,832 lb / 2,931 N to 1,049,033 N

Operating Pressure

- 40 to 200 psig / 3 to 13.8 bar

Trim

- Standard Temperature Trim: -20 °F to +200 °F / -29 °C to +93 °C (Non-PED and PED)
- High Temperature Trim: 0 °F to +350 °F / -18 °C to +177 °C (Non-PED and PED)
- Low Temperature Trim: -40 °F to +150 °F / -40 °C to +66 °C (Non-PED)
- Please consult factory for PED

Control Accessories

- Power supply filter and/or pressure regulator and relief valve
- Solenoid switching valve, AC or DC coil, with CSA, UL or ATEX electrical certification
- 3, 4, or 5-way local auto/manual selector valve
- High or low-static pressure pilot, single or dual setpoint
- Pneumatic positioner or controller; analog or digital
- Pneumatic switching relay, volume booster and/or flow control valve
- Mechanical or proximity type electric position switch for discrete (SPDT, DPDT) position indication

Standards and Certification

- Conformité Européenne (CE)
- ISO 9001 Certification by Lloyd's Register Quality
- Pressure Equipment Directive PED 2014/68/EU

Warranty

- 5 Years

Size Range

Table 1. Standard Linear Size Range

G MODEL	CYLINDER SIZE (in.)	SPRING TYPE					AVAILABLE STROKE LENGTH (in.)								MAXIMUM OPERATING PRESSURE (psi)	MAXIMUM DOUBLE-ACTING STROKE	MAXIMUM SPRING-RETURN STROKE	
		SR0	SR1	SR2	SR3	SR4	6	8	10	12	16	18	24	32				
G01 (DA)	8						•									200	7"	N/A
	9						•								200			
	10						•								185			
	12						•								130			
	14						•								105			
G02	9	01	01/02	01/02	01/02	01/02	•								200	7"	5" with G01 Spring, 6" with G02 Spring	
	10	01	01/02	01/02	01/02	01/02	•							185				
	12	01	01/02	01/02	01/02	01/02	•							130				
	14	01	01/02	01/02	01/02	01/02	•							105				
	16	01	01/02	01/02	01/02	01/02	•							80				
G03	10		03	03	03	03		•							200	9"	8"	
	12		03	03	03	03		•						170				
	14		03	03	03	03		•						135				
	16		03	03	03	03		•						105				
	20		03	03	03	03		•						65				
G04	12			04	04	04			•						200	10.5"	10"	
	14			04	04	04			•					200				
	16			04	04	04			•					175				
	20			04	04	04			•					102				
	24			04	04	04			•					74				
	28			04	04	04			•					50				
G05	16				05	05	05				•				200	13.5"	12"	
	20				05	05	05	05			•				175			
	24				05	05	05	05			•				135			
	28				05	05	05	05			•				95			
	32				05	05	05	05			•				70			
	36				05	05	05				•				55			

Note:

1. Consult factory for special strokes.

G MODEL	CYLINDER SIZE (in.)	SPRING TYPE					AVAILABLE STROKE LENGTH (in.)								MAXIMUM OPERATING PRESSURE (psi)	MAXIMUM DOUBLE-ACTING STROKE		
		SR0	SR1	SR2	SR3	SR4	6	8	10	12	16	18	24	30				
G07	20				07	07						•				200	17"	Consult Factory
	24		07	07	07	07						•				180		
	28		07	07	07	07						•				135		
	32		07	07	07	07						•				100		
	36		07	07	07	07						•				80		
	T28		07	07	07	07						•				65		
G08	24		08	08	08								•			200	19.5"	Consult Factory
	28		08	08	08								•			175		
	32		08	08	08								•			140		
	36		08	08	08								•			110		
	40		08	08	08								•			85		
	T32		08	08	08								•			70		
G10	T36		08	08	08								•			55	25"	Consult Factory
	28			10	10	10								•		200		
	32		10	10	10	10								•		200		
	36		10	10	10	10								•		180		
	40		10	10	10	10								•		128		
	T32		10	10	10	10								•		115		
	T36		10	10	10	10								•		90		
G13	T40		10	10	10	10								•		70	32"	Consult Factory
	40		13	13	13	13								•		200		
	44		13	13	13	13								•		180		
	48		13	13	13	13								•		150		
	52		13	13	13	13								•		130		
	T40		13	13	13	13								•		110		
	T44		13	13	13	13								•		90		
	T48		13	13	13	13								•		75		
T52		13	13	13	13								•		65			

GVO-G Double-Acting Performance Data

Table 2. Performance Data - Standard Double-Acting Sizes

Actuator Model	Volume (cu in.) ▲		Maximum Operating Pressure (MOP)* (PSIG)	Approximate Weight of Actuator (lb)	Approximate Height of Actuator (in.)	Port Size	
	Extend	Retract				Standard	Max
GVO-G0108	365	343	200	60	14	1 x 3/4"	Not Applicable
GVO-G0109	465	435	200	65	14	1 x 3/4"	Not Applicable
GVO-G0110	621	580	185	75	14	1 x 3/4"	Not Applicable
GVO-G0112	898	835	130	86	14	1 x 3/4"	Not Applicable
GVO-G0114	1096	1015	105	96	14	1 x 3/4"	Not Applicable
GVO-G0209	435	465	200	70	14	1 x 3/4"	Not Applicable
GVO-G0210	580	621	185	74	14	1 x 3/4"	Not Applicable
GVO-G0212	835	898	130	87	14	1 x 3/4"	Not Applicable
GVO-G0214	1015	1096	105	97	14	1 x 3/4"	Not Applicable
GVO-G0216	1336	1443	80	135	14	1 x 3/4"	1 x 1-1/4"
GVO-G0310	751	767	200	88	16	1 x 3/4"	Not Applicable
GVO-G0312	1093	1140	170	104	16	1 x 3/4"	1 x 1"
GVO-G0314	1337	1344	135	114	16	1 x 3/4"	1 x 1"
GVO-G0316	1736	1697	105	145	16	1 x 3/4"	1 x 1-1/4"
GVO-G0320	2940	2675	65	209	16	1 x 3/4"	1 x 2"
GVO-G0412	1307	1297	200	129	20	1 x 3/4"	Not Applicable
GVO-G0414	1515	1627	200	141	20	1 x 3/4"	1 x 1"
GVO-G0416	2067	2172	175	168	20	1 x 3/4"	1 x 1-1/2"
GVO-G0420	3277	2885	120	260	20	1 x 3/4"	1 x 2"
GVO-G0424	4741	5146	80	340	20	1 x 3/4"	1 x 2"
GVO-G0428	7055	6746	55	505	20	1 x 1"	1 x 2"
GVO-G0516	2477	2880	200	295	24	1 x 3/4"	Not Applicable
GVO-G0520	4157	4383	175	302	24	1 x 3/4"	1 x 2"
GVO-G0524	6127	6231	135	412	24	1 x 1"	1 x 2"
GVO-G0528	8659	8669	95	586	24	1 x 1"	1 x 2"
GVO-G0532	10470	11719	70	977	24	1 x 1-1/2"	2 x 2"
GVO-G0536	13108	14588	55	1243	24	1 x 1-1/2"	2 x 2"
GVO-G0720	4876	5434	200	591	30	1 x 3/4"	1 x 1"
GVO-G0724	7144	7645	180	600	30	1 x 1"	1 x 2"
GVO-G0728	10800	10822	135	810	30	1 x 1-1/2"	1 x 2"
GVO-G0732	13441	14126	100	1100	30	1 x 1-1/2"	3 x 2"
GVO-G0736	14851	17102	80	1400	30	1 x 1-1/2"	3 x 2"
GVO-G07T28	21622	21724	65	1582	58	1 x 2"	Consult Factory
GVO-G0824	8103	8154	200	805	35	1 x 1"	1 x 2"
GVO-G0828	11921	13138	175	941	35	1 x 1-1/2"	1 x 2"
GVO-G0832	15791	17191	140	1146	35	1 x 1-1/2"	2 x 2"
GVO-G0836	20100	21785	110	1712	35	1 x 1-1/2"	3 x 2"
GVO-G0840	24993	26919	85	1975	35	1 x 2"	3 x 2"
GVO-G08T32	31582	32982	70	2292	67	1 x 1-1/2"	Consult Factory
GVO-G08T36	40200	41885	55	3424	67	1 x 1-1/2"	Consult Factory
GVO-G1028	16975	16228	200	1120	42	1 x 1-1/2"	1 x 2"
GVO-G1032	19550	21272	200	1422	42	1 x 1-1/2"	2 x 2"
GVO-G1036	25491	26978	180	1938	42	1 x 2"	2 x 2"
GVO-G1040	31679	33355	145	2210	42	1 x 2"	2 x 2"
GVO-G10T32	39100	39100	115	2670	80	1 x 1-1/2"	2 x 2"
GVO-G10T36	50983	50983	90	3522	80	1 x 2"	2 x 2"
GVO-G10T40	61729	61729	70	4010	80	1 x 2"	2 x 2"
GVO-G1340	44244	43566	200	2900	53	1 x 2"	2 x 2"
GVO-G1344	53958	53406	180	3120	53	1 x 2"	2 x 2"
GVO-G1348	64597	63638	150	3990	53	1 x 2"	2 x 2"
GVO-G1352	76161	74686	130	4130	53	1 x 2"	2 x 2-1/2"
GVO-G13T40	90843	90843	110	5200	105	1 x 2"	2 x 2"
GVO-G13T44	92847	92847	90	5655	105	1 x 2"	2 x 2"
GVO-G13T48	132814	132814	75	6875	105	1 x 2"	2 x 2"
GVO-G13T52	151600	151600	65	7290	105	1 x 2"	2 x 2"

GVO-G Spring-Return Performance Data

Table 3. Performance Data - Standard Spring-Return Sizes

Actuator Model		Volume (cu in.) ▲		Maximum Operating Pressure (PSIG)	Approximate Weight of Actuator (lb)	Approximate Height of Actuator (in.)	Port Size				
		Air Extend	Air Retract				Standard	Max			
GVO-G0209-	01R0	465	435	200	274	45.98	1 x 3/4"	Not Applicable			
	01R1	465	435		270						
	01R2	465	435		268						
	01R3	465	435		263						
	01R4	465	435		254						
GVO-G0210-	01R0	621	580	185	278		45.98	1 x 3/4"	Not Applicable		
	01R1	621	580		274						
	01R2	621	580		272						
	01R3	621	580		267						
	01R4	621	580		258						
GVO-G0212-	01R0	898	835	130	291			45.98	1 x 3/4"	Not Applicable	
	01R1	898	835		287						
	01R2	898	835		285						
	01R3	898	835		280						
	01R4	898	835		271						
GVO-G0214-	01R0	1096	1015	105	301	45.98			1 x 3/4"	Not Applicable	
	01R1	1096	1015		297						
	01R2	1096	1015		295						
	01R3	1096	1015		290						
	01R4	1096	1015		281						
GVO-G0216-	01R0	1443	1336	80	339		45.98		1 x 3/4"	Not Applicable	
	01R1	1443	1336		335						
	01R2	1443	1336		333						
	01R3	1443	1336		328						
GVO-G0209-	02R1	465	435	200	360				49.04	1 x 3/4"	Not Applicable
	02R2	465	435		352						
	02R3	465	435		345						
	02R4	465	435		330						
GVO-G0210-	02R1	621	580	185	364			49.04		1 x 3/4"	Not Applicable
	02R2	621	580		356						
	02R3	621	580		349						
	02R4	621	580		334						
GVO-G0212-	02R1	898	835	130	377	49.04				1 x 3/4"	Not Applicable
	02R2	898	835		369						
	02R3	898	835		362						
	02R4	898	835		347						
GVO-G0214-	02R1	1096	1015	105	387		49.04			1 x 3/4"	Not Applicable
	02R2	1096	1015		379						
	02R3	1096	1015		372						
	02R4	1096	1015		357						
GVO-G0216-	02R1	1443	1336	80	425				49.04	1 x 3/4"	1 x 1-1/4"
	02R2	1443	1336		417						
	02R3	1443	1336		410						
	02R4	1443	1336		395						

Actuator Model		Volume (cu in.) ▲		Maximum Operating Pressure (PSIG)	Approximate Weight of Actuator (lb)	Approximate Height of Actuator (in.)	Port Size	
		Air Extend	Air Retract				Standard	Max
GVO-G0310-	03R1	767	751	200	494	53.62	1 x 3/4"	Not Applicable
	03R2	767	751		490			
	03R3	767	751		474			
	03R4	767	751		460			
GVO-G0312-	03R1	1140	1093	170	510		1 x 3/4"	1 x 1"
	03R2	1140	1093		506			
	03R3	1140	1093		490			
	03R4	1140	1093		476			
GVO-G0314-	03R1	1344	1337	135	520		1 x 3/4"	1 x 1"
	03R2	1344	1337		516			
	03R3	1344	1337		500			
	03R4	1344	1337		486			
GVO-G0316-	03R1	1736	1697	105	551		1 x 3/4"	1 x 1-1/4"
	03R2	1736	1697		547			
	03R3	1736	1697		531			
	03R4	1736	1697		517			
GVO-G0320-	03R1	2940	2675	65	615	1 x 3/4"	1 x 2"	
	03R2	2940	2675		611			
	03R3	2940	2675		595			
	03R4	2940	2675		581			
GVO-G0412-	04R2	1307	1297	200	760	61.99	1 x 3/4"	Not Applicable
	04R3	1307	1297		744			
	04R4	1307	1297		685			
GVO-G0414-	04R1	1627	1515	200	781		1 x 3/4"	1 x 1"
	04R2	1627	1515		772			
	04R3	1627	1515		756			
	04R4	1627	1515		697			
GVO-G0416-	04R1	2172	2067	175	808		1 x 3/4"	1 x 1-1/2"
	04R2	2172	2067		799			
	04R3	2172	2067		783			
	04R4	2172	2067		724			
GVO-G0420-	04R1	3277	2885	120	901		1 x 3/4"	1 x 2"
	04R2	3277	2885		891			
	04R3	3277	2885		875			
	04R4	3277	2885		816			
GVO-G0424-	04R1	5146	4741	80	981		1 x 3/4"	1 x 2"
	04R2	5146	4741		972			
	04R3	5146	4741		956			
	04R4	5146	4741		896			
GVO-G0428-	04R1	7055	6746	55	1146	1 x 1"	1 x 2"	
	04R2	7055	6746		1136			
	04R3	7055	6746		1120			

Actuator Model		Volume (cu in.) ▲		Maximum Operating Pressure (PSIG)	Approximate Weight of Actuator (lb)	Approximate Height of Actuator (in.)	Port Size	
		Air Extend	Air Retract				Standard	Max
GVO-G0516-	05R2	2880	2477	200	1415	70.17	1 x 3/4"	Not Applicable
	05R3	2880	2477		1359			
	05R4	2880	2477		1295			
GVO-G0520-	05R1	4383	4157	200	1416		1 x 3/4"	1 x 2"
	05R2	4383	4157		1422			
	05R3	4383	4157		1366			
GVO-G0524-	05R4	4383	4157	140	1302		1 x 1"	1 x 2"
	05R1	6231	6127		1526			
	05R2	6231	6127		1532			
	05R3	6231	6127		1476			
GVO-G0528-	05R4	6231	6127	100	1412	1 x 1"	1 x 2"	
	05R1	8669	8659		1700			
	05R2	8669	8659		1706			
	05R3	8669	8659		1650			
GVO-G0532-	05R4	8669	8659	76	1586	1 x 1-1/2"	2 x 2"	
	05R1	11719	10470		2091			
	05R2	11719	10470		2097			
	05R3	11719	10470		2041			
GVO-G0536-	05R4	11719	10470	60	1977	1 x 1-1/2"	2 x 2"	
	05R1	14588	13108		2357			
	05R2	14588	13108		2363			
GVO-G0720-	05R3	14588	13108	200	2307	1 x 3/4"	1 x 1"	
	07R3	5434	4876		2256			
	07R4	5434	4876		2341			
GVO-G0724-	07R1	7645	7144	180	2530	1 x 1"	1 x 2"	
	07R2	7645	7144		2615			
	07R3	7645	7144		2265			
	07R4	7645	7144		2350			
GVO-G0728-	07R1	10822	10800	135	2740	1 x 1-1/2"	1 x 2"	
	07R2	10822	10800		2825			
	07R3	10822	10800		2475			
	07R4	10822	10800		2560			
GVO-G0732-	07R1	14126	13441	100	3030	1 x 1-1/2"	3 x 2"	
	07R2	14126	13441		3115			
	07R3	14126	13441		2765			
	07R4	14126	13441		2850			
GVO-G0736-	07R1	17102	14851	80	3330	1 x 1-1/2"	3 x 2"	
	07R2	17102	14851		3415			
	07R3	17102	14851		3065			
	07R4	17102	14851		3150			
GVO-G07T28-	07R1	21724	21622	65	3512	1 x 2"	Consult Factory	
	07R2	21724	21622		3597			
	07R3	21724	21622		3247			
	07R4	21724	21622		3332			

Actuator Model		Volume (cu in.) ▲		Maximum Operating Pressure (PSIG)	Approximate Weight of Actuator (lb)	Approximate Height of Actuator (in.)	Port Size				
		Air Extend	Air Retract				Standard	Max			
GVO-G0824-	08R1	8154	8103	200	4425	113.01	1 x 1"	1 x 2"			
	08R2	8154	8103		4136						
	08R3	8154	8103		3975						
GVO-G0828-	08R1	13138	11921	172	4561		145.34	1 x 1-1/2"	1 x 2"		
	08R2	13138	11921		4271						
	08R3	13138	11921		4111						
GVO-G0832-	08R1	17191	15791	131	4766			133.38	1 x 1-1/2"	2 x 2"	
	08R2	17191	15791		4477						
	08R3	17191	15791		4316						
GVO-G0836-	08R1	21785	20100	103	5332				133.38	1 x 1-1/2"	3 x 2"
	08R2	21785	20100		5043						
	08R3	21785	20100		4882						
GVO-G0840-	08R1	26919	24993	84	5595					133.38	1 x 2"
	08R2	26919	24993		5306						
	08R3	26919	24993		5145						
GVO-G08T32-	08R1	32982	31582	105	5912	145.34					1 x 1-1/2"
	08R2	32982	31582		5623						
	08R3	32982	31582		5462						
GVO-G08T36-	08R1	41885	40200	83	7044		145.34				1 x 1-1/2"
	08R2	41885	40200		6755						
	08R3	41885	40200		6594						
GVO-G1028-	10R2	16975	16228	200	5830			133.38			1 x 1-1/2"
	10R3	16975	16228		5440						
	10R4	16975	16228		5080						
GVO-G1032-	10R1	21272	19550	200	6592				133.38		1 x 1-1/2"
	10R2	21272	19550		6132						
	10R3	21272	19550		5742						
	10R4	21272	19550		5382						
GVO-G1036-	10R1	26978	25491	158	7108	133.38				1 x 2"	2 x 2"
	10R2	26978	25491		6648						
	10R3	26978	25491		6258						
	10R4	26978	25491		5898						
GVO-G1040-	10R1	33355	31679	128	7380		133.38			1 x 2"	2 x 2"
	10R2	33355	31679		6920						
	10R3	33355	31679		6530						
	10R4	33355	31679		6170						
GVO-G10T32-	10R1	39100	39100	160	7840			172.14		1 x 1-1/2"	2 x 2"
	10R2	39100	39100		7380						
	10R3	39100	39100		6990						
	10R4	39100	39100		6630						
GVO-G10T36-	10R1	50983	50983	127	8692				172.14	1 x 2"	2 x 2"
	10R2	50983	50983		8232						
	10R3	50983	50983		7842						
	10R4	50983	50983		7482						
GVO-G10T40-	10R1	61729	61729	102	9180	172.14				1 x 2"	2 x 2"
	10R2	61729	61729		8720						
	10R3	61729	61729		8330						
	10R4	61729	61729		7970						

Actuator Model	Volume (cu in.) ▲		Maximum Operating Pressure (PSIG)	Approximate Weight of Actuator (lb)	Approximate Height of Actuator (in.)	Port Size		
	Air Extend	Air Retract				Standard	Max	
GVO-G1340-	13R1	44244	43566	200	13160	183.18	1 x 2"	2 x 2"
	13R2	44244	43566		12425			
	13R3	44244	43566		11210			
	13R4	44244	43566		10475			
GVO-G1344-	13R1	53958	53406	165	13380	183.18	1 x 2"	2 x 2"
	13R2	53958	53406		12645			
	13R3	53958	53406		11430			
	13R4	53958	53406		10695			
GVO-G1348-	13R1	64597	63638	140	14250	183.18	1 x 2"	2 x 2"
	13R2	64597	63638		13515			
	13R3	64597	63638		12300			
	13R4	64597	63638		11565			
GVO-G1352-	13R1	76161	74686	120	14390	183.18	1 x 2"	2 x 2-1/2"
	13R2	76161	74686		13655			
	13R3	76161	74686		12440			
	13R4	76161	74686		11705			
GVO-G13T40-	13R1	90843	90843	160	15460	234.55	1 x 2"	2 x 2"
	13R2	90843	90843		14725			
	13R3	90843	90843		13510			
	13R4	90843	90843		12775			
GVO-G13T44-	13R1	92846.61	92847	132	15915	234.55	1 x 2"	2 x 2"
	13R2	92846.61	92847		15180			
	13R3	92846.61	92847		13965			
	13R4	92846.61	92847		13230			
GVO-G13T48-	13R1	132814	132814	112	17135	234.55	1 x 2"	2 x 2"
	13R2	132814	132814		16400			
	13R3	132814	132814		15185			
	13R4	132814	132814		14450			
GVO-G13T52-	13R1	151600	151600	96	17550	234.55	1 x 2"	2 x 2"
	13R2	151600	151600		16815			
	13R3	151600	151600		15600			
	13R4	151600	151600		14865			

Dimensions - Actuators

Figure 1. Spring-Return Actuators

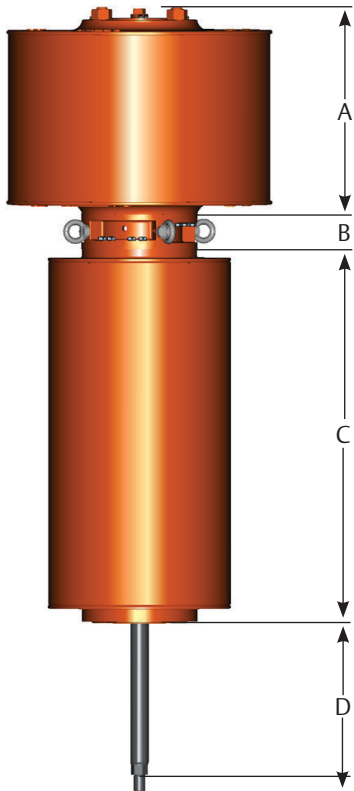


Figure 2. Double-Acting Actuators

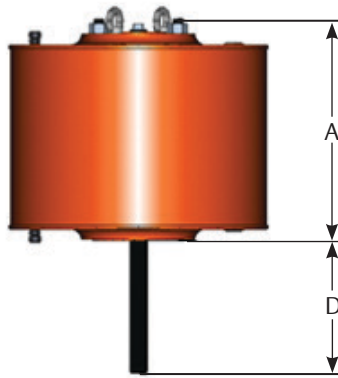


Figure 3. Actuator Diameters

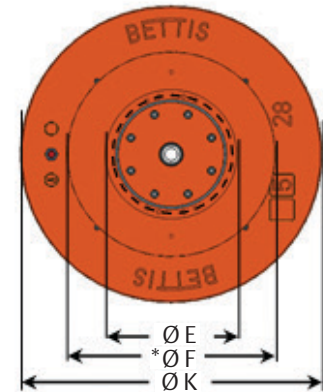


Table 4. Dimension Chart

G Sizes	CYLINDER SIZE	ROD DIAMETER	A	B	C*	D Fail extended	D Fail retracted	D Double-acting	E	F*	K
G01	8	1	13.96	N/A	N/A	N/A	N/A	8.86	6.875	N/A	8.75
G01/G02	9	1	13.96	3.03	29.34/29.93	10.04/11.23	3.88	10.33	6.875/8.375	8.63/10.76	9.88
G01/G02	10	1	13.96	3.03	29.34/29.93	10.04/11.23	3.88	10.33	6.875/8.375	8.63/10.76	11
G03		1.25	16.39	3.64	31.83	13.84	4.74	12.31	8.375	12.75	11
G01/G02	12	1	13.96	3.03	29.34/29.93	10.04/11.23	3.88	10.33	6.875/8.375	8.63/10.76	13
G03		1.25	16.39	3.64	31.83	13.84	4.74	12.31	8.375	12.75	13
G04		1.5	19.85	3.64	38.68	16.25	5.55	14.8	9.375	15.9	13
G01/G02	14	1	13.96	3.03	29.34/29.93	10.04/11.23	3.88	10.33	6.875/8.375	8.63/10.76	14.25
G03		1.25	16.39	3.64	31.83	13.84	4.74	12.31	8.375	12.75	14.25
G04		1.5	19.85	3.64	38.68	16.25	5.55	14.8	9.375	15.9	14.25
G01/G02	16	1	13.96	3.03	29.34/29.93	10.04/11.23	3.88	10.33	8.375	10.76	16.25
G03		1.25	16.39	3.64	31.83	13.84	4.74	12.31	8.375	12.75	16.25
G04		1.5	19.85	3.64	38.68	16.25	5.55	14.8	9.375	15.9	16.25
G05		2	23.85	4.03	42.98	19.64	5.89	18.37	12.625	20	16.25
G03	20	1.25	16.39	3.64	31.83	13.84	4.74	12.31	8.375	12.75	20.25
G04		1.5	19.85	3.64	38.68	16.25	5.55	14.8	9.375	15.9	20.25
G05		2	23.85	4.03	42.98	19.64	5.89	18.37	12.625	20	20.25
G07		2.25	29.87	Consult Factory	47.68	Consult Factory	20	15.5	26.75	20.25	

G Sizes	CYLINDER SIZE	ROD DIAMETER	A	B	C*	D Fail extended	D Fail retracted	D Double-acting	E	F*	K
G04	24	1.5	19.85	3.64	38.68	16.25	5.55	14.8	9.375	15.9	24.25
G05		2	23.85	4.03	42.98	19.64	5.89	18.37	12.625	20	24.25
G07		2.25	29.87	Consult Factory	47.68	Consult Factory		20	15.5	26.75	24.25
G08		2.75	34.51		73.5			25.5	17.75	26.75	24.25
G04	28	1.5	19.85	3.64	38.68	16.25	5.55	14.8	9.375	15.9	29
G05		2	23.85	4.03	42.98	19.64	5.89	18.37	12.625	20	29
G07		2.25	29.87	Consult Factory	47.68	Consult Factory		20	15.5	26.75	29
G08		2.75	34.51		73.5			25.5	17.75	26.75	29
G10		3.25	41.5		85.88			32	21.375	26.75	29
G05		2	23.85		4.03			42.98	19.64	5.89	18.37
G07	32	2.25	29.87	Consult Factory	47.68	Consult Factory		20	15.5	26.75	33
G08		2.75	34.51		73.5			25.5	17.75	26.75	33
G10		3.25	41.5		85.88			32	21.375	26.75	33
G05	36	2	23.85	4.03	42.98	19.64	5.89	18.37	12.625	20	37.25
G07		2.25	29.87	Consult Factory	47.68	Consult Factory		20	15.5	26.75	37.25
G08		2.75	34.51		73.5			25.5	17.75	26.75	37.25
G10		3.25	41.5		85.88			32	21.375	26.75	37.25
G08	40	2.75	34.51		73.5			25.5	17.75	26.75	41.25
G10		3.25	41.5	85.88	32	21.375	26.75	41.25			
G13		4	53.15	124.05	40	26	29	41.25			
G13	44	4	53.15	124.05	40	26	29	45.25			
G13	48	4	53.15	124.05	40	26	29	49.25			
G13	52	4	53.15	124.05	40	26	29	53.25			

Notes:

1. Dimension "D" is the value of actuator as assembled, the working stroke is guaranteed by travels stop screws and pedestal.
2. Dimension with "*" marking are for Spring-Return actuators only.
3. Consult factory for dimensions of tandem actuators.
4. Refer to actuator mounting pattern section for interface dimensions.

Dimensions - Pedestals

Pedestal dimension listed here is for reference only, pedestal will be provided per actuator size by choosing pedestal model string PD or PS as listed in Model Identification (see page 5), pedestal will not be provided with blank model string of Pedestal.

Figure 4. Pedestal Dimension

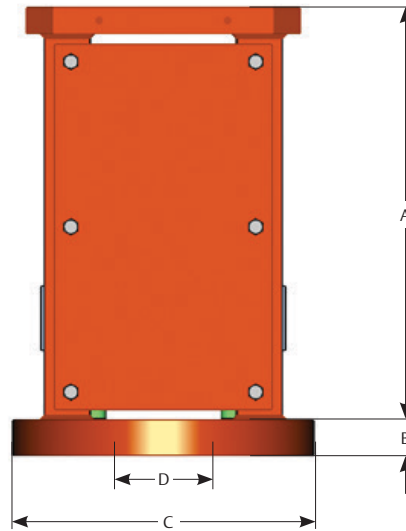


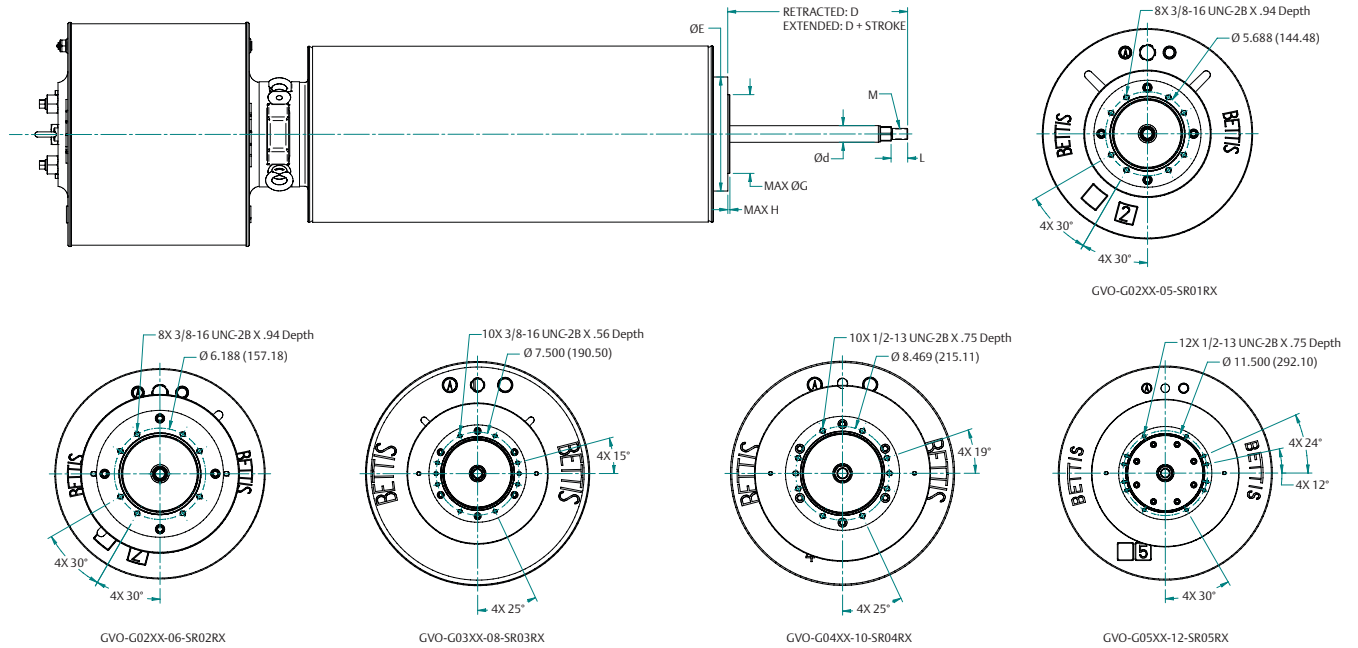
Table 5. Dimension Chart in inches

PEDESTAL	STROKE	A	B	C	D
GVO-G01 and 02	6	12	1	10	2.5
GVO-G03	8	18	1	15	2.5
GVO-G04	10	21	1	15	2.5
GVO-G05	12	25	1.5	18	2.5
GVO-G07-13	Consult factory				

Note:

1. Dimension A is an estimated reference only, it will be changed according to customer valve top works.

Figure 5. Pedestal Mounting Pattern Drawing - Spring Fail Extended

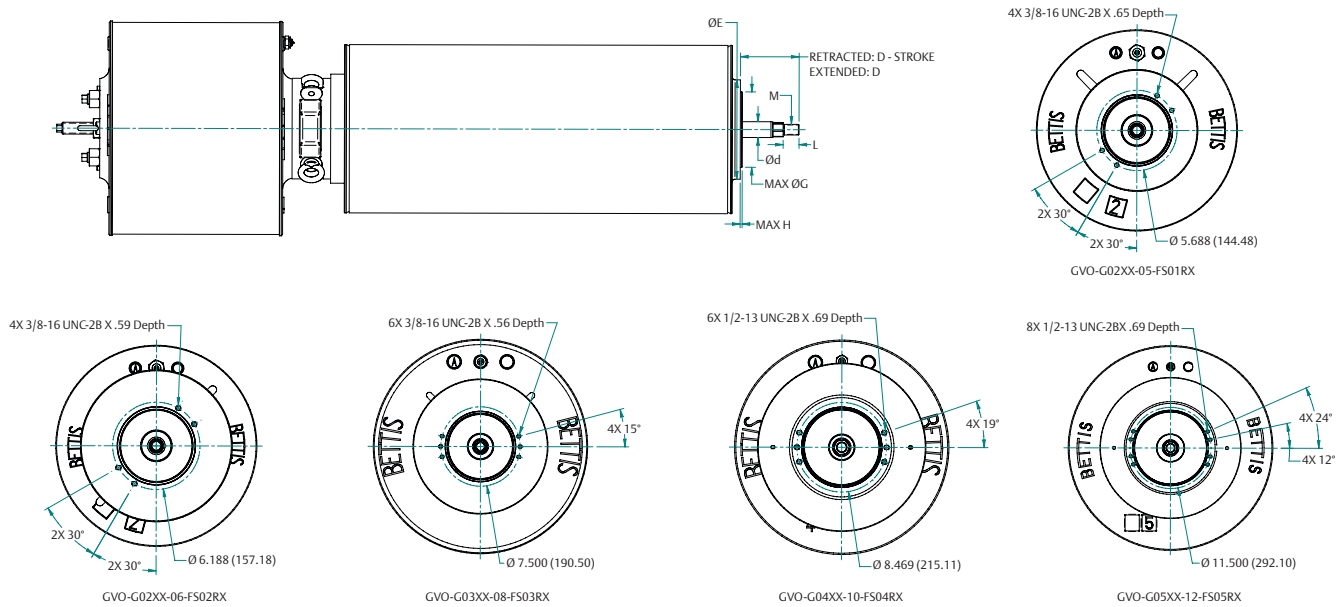


Note:
RX RANGE IS R0 - R4 FOR ACTUATOR MODEL GVO-G02XX-05-SR01RX.

Table 6. Pedestal Mounting Pattern Dimension Chart - Spring Fail Extended

ACTUATOR MODEL	d (INCH/MM)	D (INCH/MM)	E (INCH/MM)	G (INCH/MM)	H (INCH/MM)	L (INCH/MM)	M
GVO-G02XX-05-SR01RX	1.00 (25.4)	4.13 (104.8)	7.25 (184.2)	4.619 (117.32)	0.13 (3.30)	1.13 (28.7)	3/4-16 UNF-2A
GVO-G02XX-06-SR02RX	1.00 (25.4)	4.13 (104.8)	8.60 (218.4)	5.119 (130.02)	0.13 (3.30)	1.13 (28.7)	3/4-16 UNF-2A
GVO-G03XX-08-SR03RX	1.25 (31.75)	5.22 (132.7)	8.80 (223.5)	6.119 (155.42)	0.13 (3.30)	1.31 (33.3)	7/8-14 UNF-2A
GVO-G04XX-10-SR04RX	1.50 (38.1)	5.86 (148.9)	10.30 (261.6)	7.124 (180.95)	0.192 (4.88)	1.50 (38.1)	1-12 UNF-2A
GVO-G05XX-12-SR05RX	2.00 (50.8)	6.22 (158.1)	12.62 (320.7)	10.244 (260.20)	0.192 (4.88)	1.87 (47.5)	1 1/4-12 UNF-2A

Figure 6. Pedestal Mounting Pattern Drawing - Spring Fail Retracted



Note:
RX RANGE IS R0 - R4 FOR ACTUATOR MODEL GVO-G02XX-05-FS01RX.

Table 7. Pedestal Mounting Pattern Dimension Chart - Spring Fail Retracted

ACTUATOR MODEL	d (INCH/MM)	D (INCH/MM)	E (INCH/MM)	G (INCH/MM)	H (INCH/MM)	L (INCH/MM)	M
GVO-G02XX-05-FS01RX	1.00 (25.4)	9.79 (248.7)	-	4.619 (117.32)	0.13 (3.3)	1.13 (28.7)	3/4-16 UNF-2A
GVO-G02XX-06-FS02RX	1.00 (25.4)	10.98 (278.9)	-	5.119 (130.02)	0.13 (3.3)	1.13 (28.7)	3/4-16 UNF-2A
GVO-G03XX-08-FS03RX	1.25 (31.75)	13.35 (339.1)	-	6.119 (155.42)	0.13 (3.3)	1.31 (33.3)	7/8-14 UNF-2A
GVO-G04XX-10-FS04RX	1.50 (38.1)	15.94 (404.8)	9.38 (238.3)	7.124 (180.95)	0.192 (4.88)	1.50 (38.1)	1-12 UNF-2A
GVO-G05XX-12-FS05RX	2.00 (50.8)	19.33 (490.9)	12.62 (320.7)	10.244 (260.20)	0.192 (4.88)	1.87 (47.5)	1 1/4-12 UNF-2A

Figure 7. Pedestal Mounting Pattern Drawing - Double-Acting

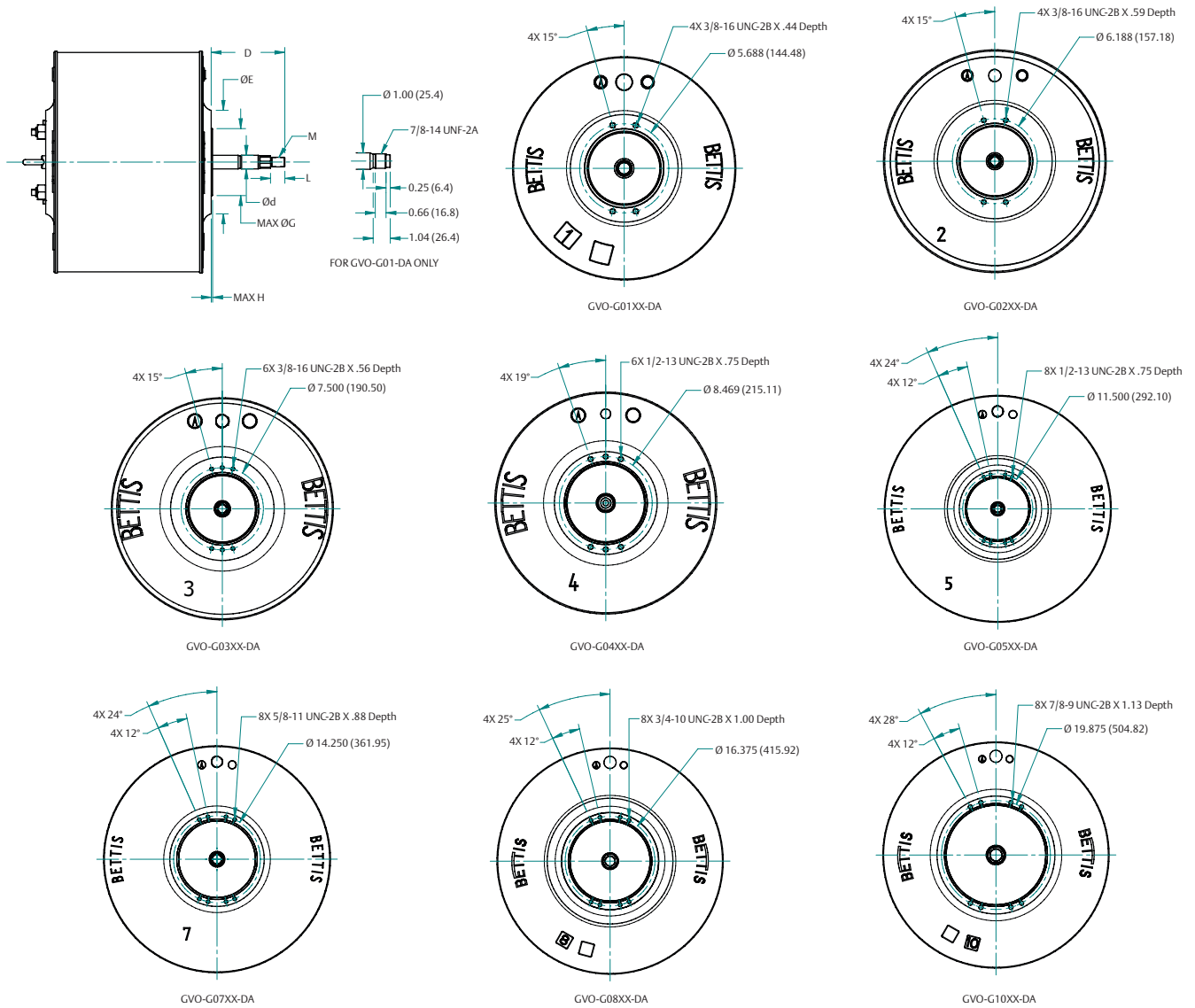


Table 8. Pedestal Mounting Pattern Dimension Chart - Double-Acting

ACTUATOR MODEL	d (INCH/MM)	D (INCH/MM)		E (INCH/MM)	G (INCH/MM)	H (INCH/MM)	L (INCH/MM)	M
		RETRACTED	EXTENDED					
GVO-G01XX-DA	1.00 (25.4)	2.50 (63.5)	8.50 (215.9)	6.875 (174.6)	4.619 (117.32)	0.13 (3.30)	-	7/8-14 UNF-2A
GVO-G02XX-DA	1.00 (25.4)	4.13 (104.8)	10.13 (257.3)	6.875 (174.6)	5.119 (130.02)	0.13 (3.30)	1.13 (28.7)	3/4-16 UNF-2A
GVO-G03XX-DA	1.25 (31.75)	5.22 (132.7)	13.22 (335.8)	8.80 (223.5)	6.119 (155.42)	0.13 (3.30)	1.31 (33.3)	7/8-14 UNF-2A
GVO-G04XX-DA	1.50 (38.1)	5.86 (148.9)	15.86 (402.8)	10.30 (261.6)	7.124 (180.95)	0.192 (4.88)	1.50 (38.1)	1-12 UNF-2A
GVO-G05XX-DA	2.00 (50.8)	6.22 (158.1)	18.22 (462.8)	12.62 (320.7)	10.244 (260.20)	0.192 (4.88)	1.87 (47.5)	1 1/4-12 UNF-2A
GVO-G07XX-DA	2.25 (57.15)	7.57 (192.4)	23.57 (598.7)	15.50 (393.7)	12.617 (320.47)	0.192 (4.88)	2.43 (61.7)	1 5/8-12 UN-2A
GVO-G08XX-DA	2.75 (69.85)	7.57 (192.4)	25.57 (649.5)	17.75 (450.85)	14.619 (371.32)	0.192 (4.88)	2.81 (71.4)	1 7/8-12 UN-2A
GVO-G10XX-DA	3.25 (82.55)	8.50 (215.9)	33.50 (850.9)	21.50 (546.1)	18.190 (462.03)	0.192 (4.88)	3.37 (85.6)	2 1/4-12 UN-2A

Standard Materials - Spring-Return

Figure 8. GVO-G Linear Spring-Return Actuator

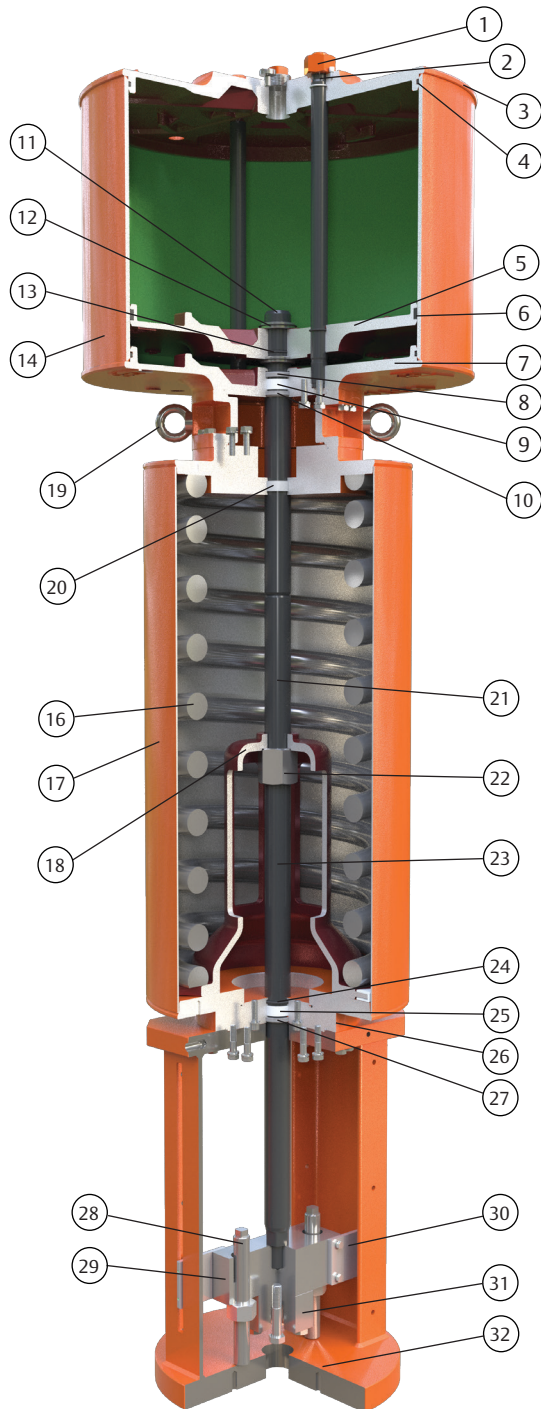


Table 9. Material List

Item	Description	Material
Pneumatic Power Cylinder Module		
1	Tie Bar Nut	Alloy Steel
2	Tie Bar	Alloy Steel
3	Outer Endcap	Cast Ductile Iron
4	O-ring Seal	Nitride
5	Piston	Cast Ductile Iron
6	Piston Seal	-
7	Inner Endcap	Cast Ductile Iron
8	Polypak Seal	Urethane Impregnated
9	Rod Bushing	Delrin
10	Rod Wiper	Urethane Impregnated
11	Piston Rod	Alloy Steel
12	Split Ring	Alloy Steel
13	O-ring Seal	Nitride
14	Cylinder	Steel
Spring Cartridge Module		
15	Rod Bushing	Delrin
16	Spring	Alloy Steel
17	Spring Cylinder	Steel
18	Spring Guide	Cast Ductile Iron
Linear Conversion Module		
19	Lifting Lug	Alloy steel
20	Linear Conversion Pallet	Cast Ductile Iron
21	Connection Rod	Alloy Steel
22	Lock Nut	Alloy Steel
23	Tension Rod	Alloy Steel
24	O-ring Seal	Nitride
25	Rod Bushing	Delrin
26	Interface Plate	Steel
27	Rod Wiper	Urethane Impregnated
26	Interface Plate	Steel
27	Rod Wiper	Urethane Impregnated
Pedestal		
28	Stroke Adjustment Screws	Alloy Steel
29	Connector Assy	Steel
30	Indicator Plate	Steel
31	Stem Connector	Steel
32	Pedestal Weldment	Steel

Standard Materials - Double-Acting

Figure 9. GVO-G Linear Double-Acting Actuator

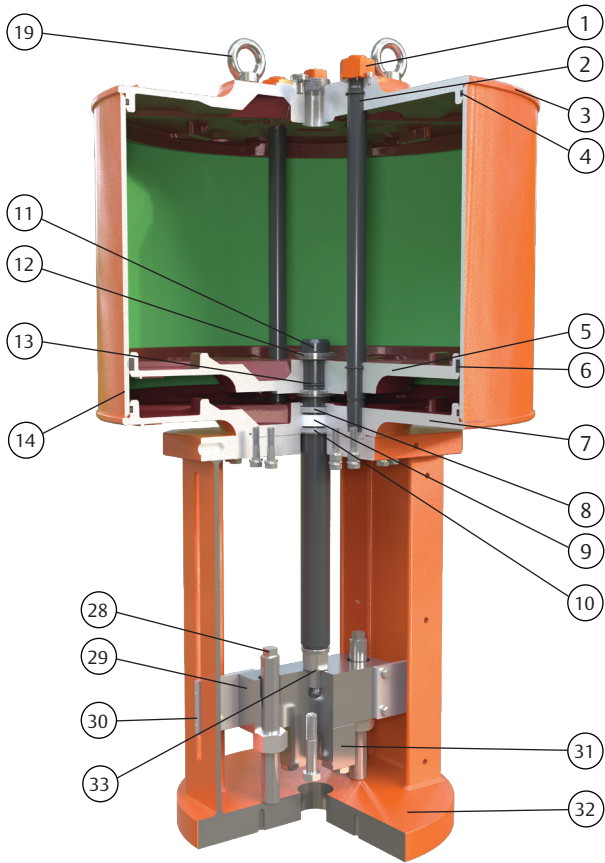
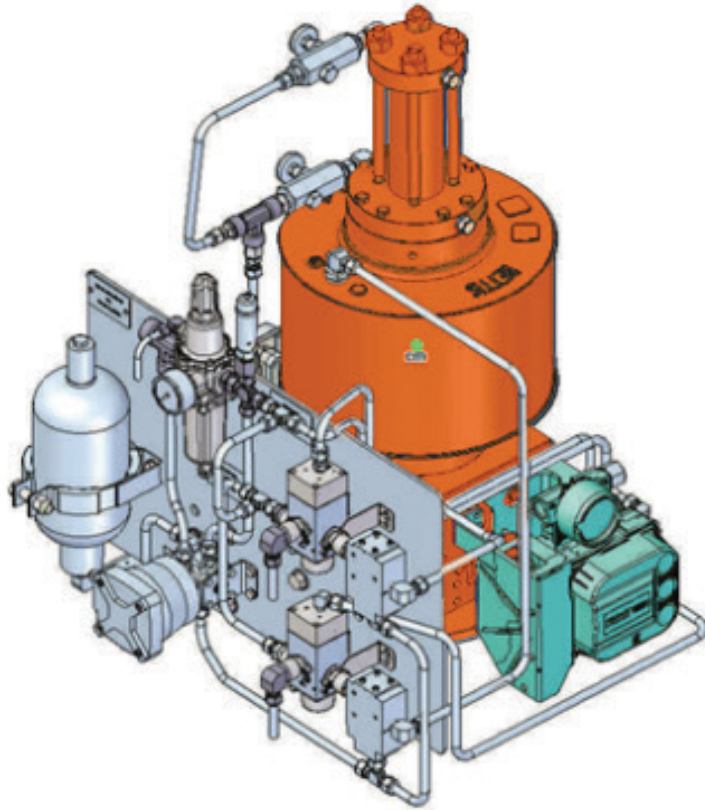


Table 10. Material List

Item	Description	Material
Pneumatic Power Cylinder Module		
1	Tie Bar Nut	Alloy Steel
2	Tie Bar	Alloy Steel
3	Outer Endcap	Cast Ductile Iron
4	O-ring Seal	Nitride
5	Piston	Cast Ductile Iron
6	Piston Seal	Nitride
7	Inner Endcap	Cast Ductile Iron
8	Polypak Seal	Urethane Impregnated
9	Rod Bushing	Delrin
10	Rod Wiper	Urethane Impregnated
11	Piston Rod	Alloy Steel
12	Split Ring	Alloy Steel
13	O-ring Seal	Nitride
14	Cylinder	Steel
19	Lifting Lug	Cast Steel
Pedestal		
28	Stroke Adjustment Screws	Alloy Steel
29	Connector Body	Steel
30	Stem Connector	Steel
31	Extension Rod Assembly	Alloy Steel
32	Pedestal Weldment	Steel
33	Rod Adapter	Steel

Figure 10. GVO-G Linear Double-Acting Actuator - Customized



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