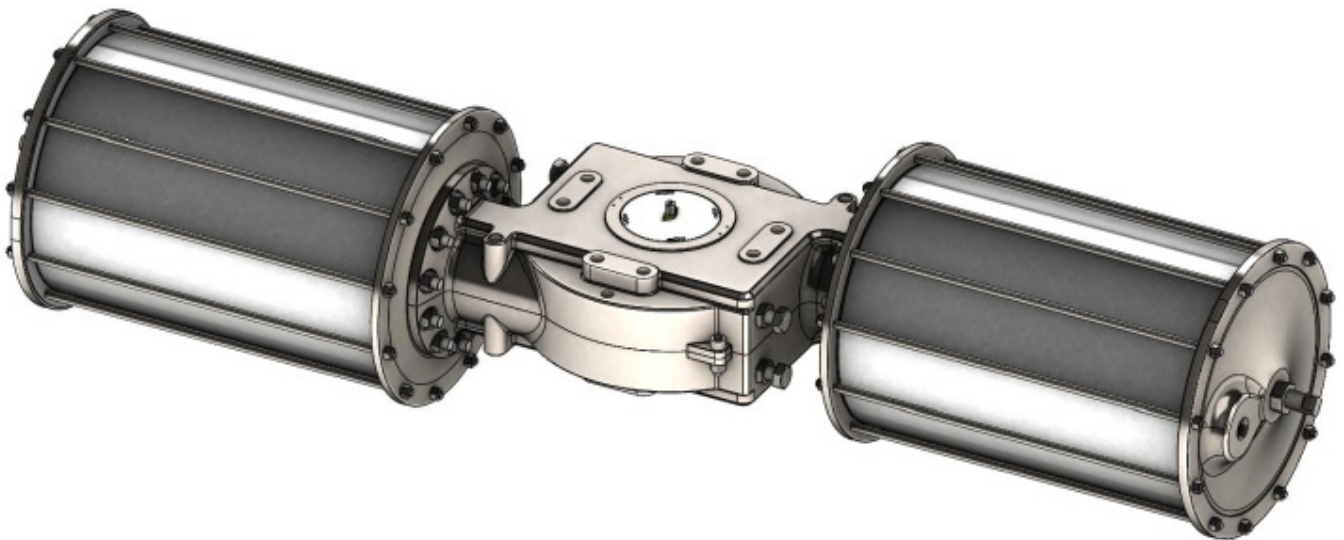


# Bettis GBY Series

## Spring-Return (SR) and Double-Acting (DA) Actuators

- Output Torques to 500,000 in-lb (56,492 N-m)
- Ductile Iron or Stainless-Steel Construction
- Temperatures from -60°F to 450°F (-51°C to 232°C)
- Double-Acting and Spring-Return Models
- High Cycle Life, High Speed, High Reliability



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## Operation and Piping

BGY Series actuators may be operated with instrument air, hydraulic fluid, water, or other power gases and fluids. Always ensure that the materials of construction are compatible with the application.

### Modes of Operation:

**Fail-Close (Left-Hand):** pressure on the end cap ports pushes the pistons inward and causes counterclockwise rotation. Springs push outward on the pistons and cause clockwise rotation.

**Fail-Open (Right-Hand):** pressure on the end cap ports pushes the pistons inward and causes clockwise rotation. Springs push outward on the pistons and cause counterclockwise rotation.

**Double-Acting (Left-Hand):** pressure on the end cap ports pushes the pistons inward and causes counterclockwise rotation. Pressure on the base plate ports push outward on the pistons and cause clockwise rotation.

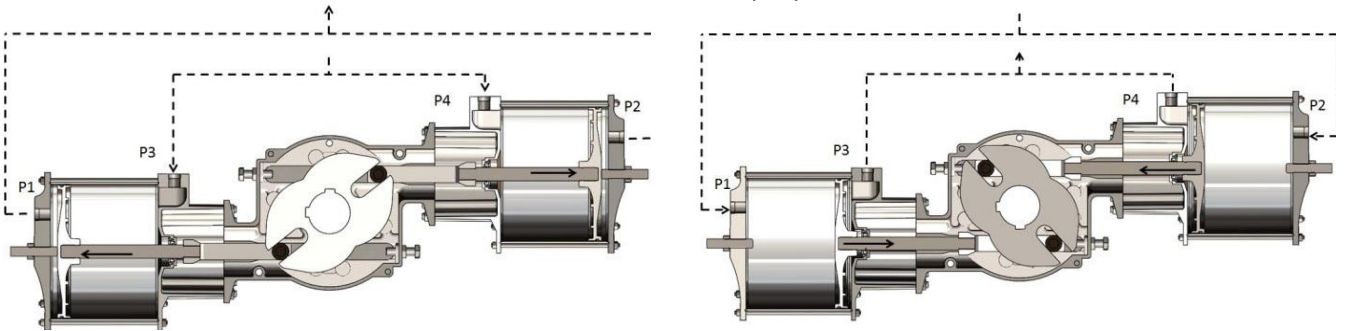
**Double-Acting (Right-Hand):** pressure on the end cap ports pushes the pistons inward and causes clockwise rotation. Pressure on the base plate ports pushes outward on the pistons and cause counterclockwise rotation.

All Bettis actuators are shipped in the Fail-Close or Left-Hand orientation unless ordered as Fail-Open or Right-Hand. The mode of operation may be reversed in the field by moving the accessories to the opposite side and turning the actuator top-side down.

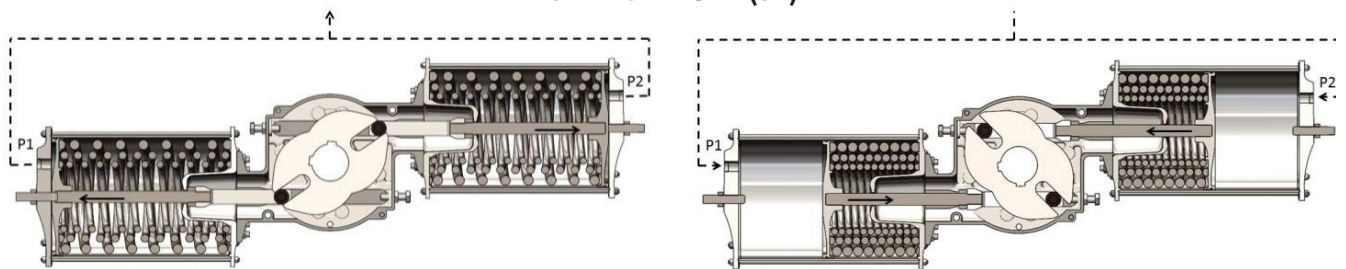
## Piping Guidelines

- For all models both, endcap pressure ports (P1 and P2) must be utilized for proper operation.
- P1 and P2 are typically connected together and powered by a single pathway.
- For all Double-Acting (DA) models, both base plate pressure ports (P3 and P4) must be utilized for proper operation. These ports are not present on SR models.
- P3 and P4 are typically connected together and powered by a single pathway.
- P5 and P6 are breather ports which should be fitted with a strainer on SR models and may be plugged on DA models.

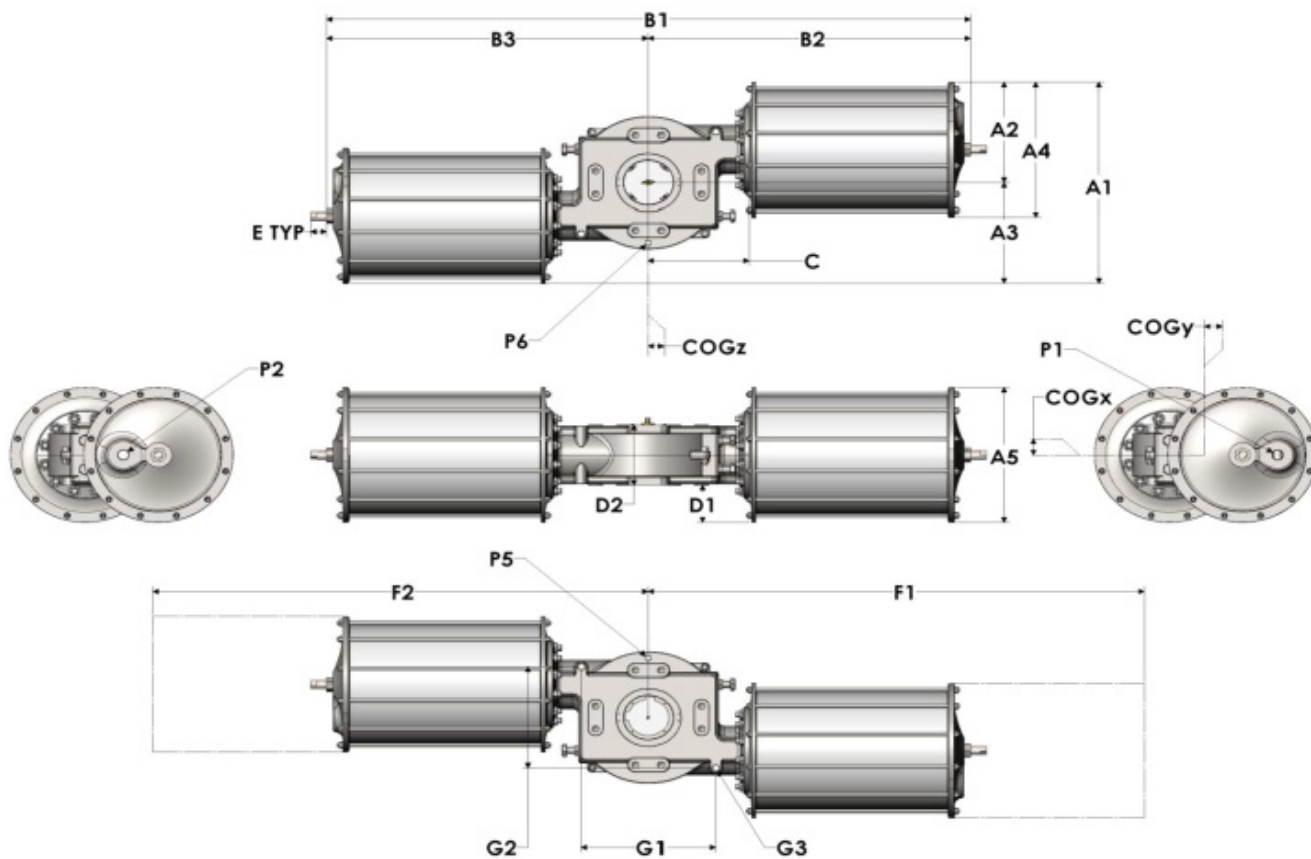
### DOUBLE-ACTING (DA)



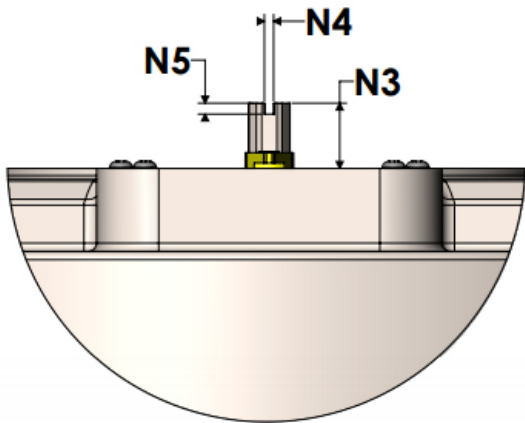
### SPRING-RETURN (SR)



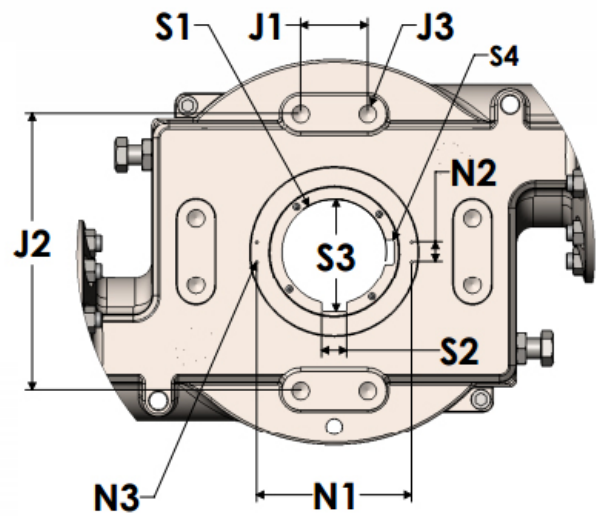
## Dimensions and Technical Data



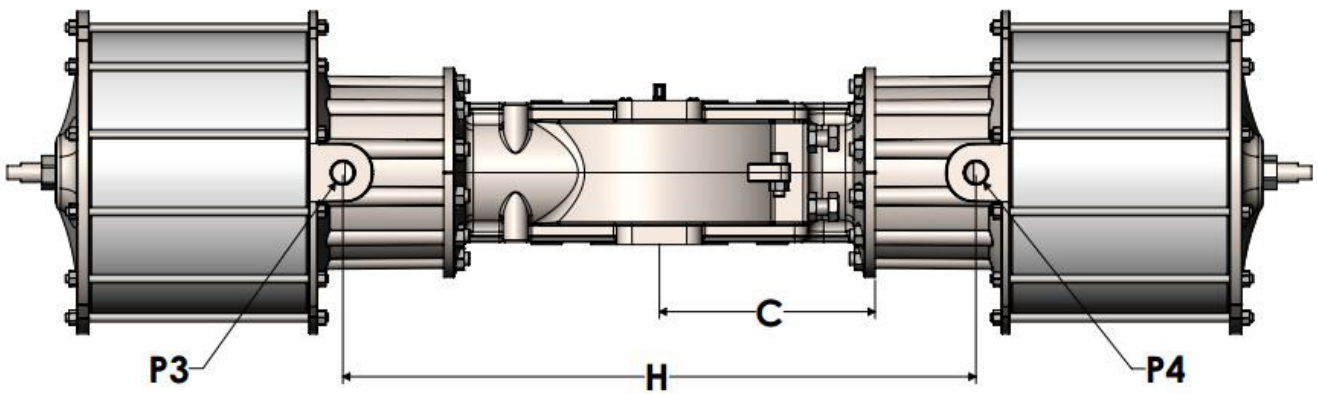
NAMUR TOP HAT  
DIMENSIONS



MOUNTING  
DIMENSIONS



DIMENSIONS BELOW FOR  
DOUBLE-ACTING MODELS ONLY



## Dimension and Technical Data (Imperial, Inches)

ENVELOPE DIMENSIONS											
		GBY200			GBY250				GBY251	GBY300	
		DA06	SR06	SR08	DA06	DA08	SR08	SR10	SR08	DA08	SR12
Width Total	A1	10.50	10.50	12.75	10.50	13.19	13.19	17.50	13.75	14.80	20.80
Width Side 1	A2	5.25	5.25	6.38	5.25	6.59	6.59	8.75	6.88	7.40	10.40
Width Side 2	A3	5.25	5.25	6.38	5.25	6.59	6.59	8.75	6.88	7.40	10.40
Width Cylinder	A4	6.50	6.50	8.75	6.50	8.75	8.75	12.50	8.75	8.75	14.80
Height Cylinder	A5	6.50	6.50	8.75	6.50	8.75	8.75	12.50	8.75	8.75	14.80
Length Total	B1	31.40	37.20	36.80	40.20	41.40	36.80	45.00	38.40	47.00	58.00
Length Side 1	B2	15.70	18.60	18.40	20.10	20.70	18.40	22.50	19.20	23.50	29.00
Length Side 2	B3	15.70	18.60	18.40	20.10	20.70	18.40	22.50	19.20	23.50	29.00
Flange Distance	C	6.38	6.38	6.38	7.41	7.41	7.41	7.41	7.41	10.19	10.19
Flange Depth*	D1	1.22	1.22	2.22	0.05	1.57	1.44	3.44	1.44	1.20	4.21
Body Depth	D2	4.10	4.10	4.10	5.60	5.60	5.60	5.60	5.60	6.40	6.40
Stop Extension	E TYP	0.66	0.72	0.43	0.66	0.43	0.43	0.86	0.64	0.80	1.15
Maint Clearance	F1	23	30	29	28	29	31	35	29	34	45
Maint Clearance	F2	23	30		28	29	31	35	29	34	45
Lifting Eye Dim X	G1	-	-	-	-	-	-	-	-	-	-
Lifting Eye Dim Y	G2	-	-	-	-	-	-	-	-	-	-
Lifting Eye Diameter	G3	-	-	-	-	-	-	-	-	-	-
P3 - P4 Distance	H	14.1	-	-	20.0	19.5	-	-	-	22.8	-
MOUNTING PATTERN											
Pattern X	J1	1.75	1.75	1.75	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Pattern Y	J2	6.50	6.50	6.50	8.00	8.00	8.00	8.00	8.00	9.00	9.00
Thread Type	J3	M12-1.75	M12-1.75	M12-1.75	M16-2	M16-2	M16-2	M16-2	M16-2	M16-2	M16-2
Thread Depth		0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
NAMUR PATTERN											
Length	N1	5.118	5.118	5.118	5.118	5.118	5.118	5.118	5.118	5.118	5.118
Width	N2	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181
Height	N3	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181
Slot Width	N4	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157
Slot Depth	N5	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197
Thread	N6	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8
Thread Depth		0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38

*The NAMUR slotted drive can be moved to the opposite side for field reversibility.*

DRIVE DIMENSIONS											
		GBY200			GBY250				GBY251	GBY300	
		DA06	SR06	SR08	DA06	DA08	SR08	SR10	SR08	DA08	SR12
Shaft Bore	S1	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.500	2.500
Key Width	S2	0.312	0.312	0.312	0.375	0.375	0.375	0.375	0.375	0.500	0.500
Female Key Distance	S3	2.147	2.147	2.147	2.147	2.147	2.147	2.147	2.147	2.729	2.729
Key Corner Radius	S4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Engagement		3.63	3.63	5.13	5.13	5.13	5.13	5.13	5.13	5.88	5.87
<i>Shafts have two keyways 90 degrees apart. Only one keyway is required to transmit torque. Max engagement shown with top hat. Removal of top hat allows shaft to extend through the actuator bore.</i>											
CENTER OF GRAVITY											
Center of Gravity	COGx	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COGy	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.03
	COGz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Air Volume (cu in)	Body Side	279	-	505	333	614	-	-	-	725	-
	End Cap Side	379	379	464	327	577	577	908	577	692	1,576
Port Size, NPT (P1, P2, P3, P4)	Normal	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/2"	1/4"	1/4"	1"
	Max	1"	1"	1"	1"	1"	1"	1 1/2"	1"	1"	2 1/2"
Port Size, NPT (P5, P6)	Std	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
Stroke Time	Min	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
<i>Stroke time varies with supply pressure, temperature, spring rate, travel adjustment, working medium, and valve torque. Values shown with no valve resistance. Contact factory about faster stroke speed.</i>											
Max Rated Torque (lb-in)		10,000	10,000	10,000	20,000	20,000	20,000	20,000	20,000	40,000	40,000
	Max Pressure (PSIG)	150	150	150	150	150	150	150	150	120	120



## Dimension and Technical Data Continuation (Imperial, Inches)

ENVELOPE DIMENSIONS													
		GBY375			GBY488				GBY575				
		DA10	DA12	SR16	DA12	DA16	SR16	SR20	DA12	DA16	DA20	SR20	SR24
Width Total	A1	20.25	22.30	26.50	24.20	28.50	28.50	33.20	26.75	30.22	34.96	35.00	39.00
Width Side 1	A2	10.13	11.15	13.25	12.10	14.25	14.25	16.60	13.375	15.11	17.48	17.50	19.50
Width Side 2	A3	10.13	11.15	13.25	12.10	14.25	14.25	16.60	13.375	15.11	17.48	17.50	19.50
Width Cylinder	A4	12.70	14.80	19.00	14.80	19.00	18.70	23.40	15.25	18.7	23.4	23.40	27.40
Height Cylinder	A5	12.70	14.80	19.00	14.80	19.00	18.75	23.40	15.25	18.75	23.4	23.40	27.40
Length Total	B1	58.000	58.60	69.00	69.00	70.80	90.20	92.60	86	86	90.2	99.00	101.00
Length Side 1	B2	29.00	29.30	34.50	34.50	35.40	45.10	46.30	43	43	45.1	49.50	50.50
Length Side 2	B3	29.00	29.30	34.50	34.50	35.40	45.10	46.30	43	43	45.1	49.50	50.50
Flange Distance	C	11.06	11.06	11.06	13.13	13.13	13.13	13.13	15.75	15.75	15.75	15.75	15.75
Flange Depth*	D1	2.90	3.90	6.10	3.00	5.10	5.10	7.50	2.52	4.066	6.5	6.50	8.50
Body Depth	D2	6.90	6.90	6.90	8.50	8.50	8.50	8.50	10.5	10.5	10.5	10.50	10.50
Stop Extension	E TYP	0.63	1.35	1.50	1.30	1.50	1.50	2.50	1.24	2.3	2.5	3.50	4.75
Maint Clearance	F1	40	40	55	48	49	74	75	59	58	61	80	81
Maint Clearance	F2	40	40	55	48	49	74	75	59	58	61	80	81
Lifting Eye Dim X	G1	12.25	12.25	12.25	18.00	18.00	18.00	18.00	17.65	17.65	17.65	17.65	17.65
Lifting Eye Dim Y	G2	12.75	12.75	12.75	14.68	14.68	14.68	14.68	21	21	21	21.00	21.00
Lifting Eye Diameter	G3	1.13	1.13	1.13	0.94	0.94	0.94	0.94	1.06	1.06	1.06	1.06	1.06
P3 - P4 Distance	H	30.2	29.7	-	34.5	35.2	-	-	44.1	47.0	46.2	-	-
MOUNTING PATTERN													
Pattern X	J1	2.50	2.50	2.50	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00
Pattern Y	J2	11.00	11.00	11.00	14.00	14.00	14.00	14.00	16.50	16.50	16.50	16.50	16.50
Thread Type	J3	M20-2.5	M20-2.5	M20-2.5	M24-3	M24-3	M24-3	M24-3	M30-3.5	M30-3.5	M30-3.5	M30-3.5	M30-3.5
Thread Depth		1.00	1.00	1.00	1.50	1.50	1.50	1.50	1.5	1.5	1.5	1.5	1.5
NAMUR PATTERN													
Length	N1	5.906	5.906	5.906	7.480	7.480	7.480	7.480	9.252	9.252	9.252	9.252	9.252
Width	N2	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181
Height	N3	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181
Slot Width	N4	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157
Slot Depth	N5	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197
Thread	N6	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8
Thread Depth		0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38

*The NAMUR slotted drive can be moved to the opposite side for field reversibility.*

DRIVE DIMENSIONS													
		GBY375			GBY488				GBY575				
		DA10	DA12	SR16	DA12	DA16	SR16	SR20	DA12	DA16	DA20	SR20	SR24
Shaft Bore	S1	3.500	3.500	3.500	4.750	4.750	4.750	4.750	6.250	6.250	6.250	6.250	6.250
Key Width	S2	0.500	0.500	0.500	1.250	1.250	1.250	1.250	1.500	1.500	1.500	1.500	1.500
Female Key Distance	S3	3.729	3.729	3.729	5.120	5.120	5.120	5.120	6.690	6.690	6.690	6.690	6.690
Key Corner Radius	S4	0.00	0.00	0.00	0.06	0.06	0.06	0.06	0.13	0.13	0.13	0.13	0.13
Max Engagement		6.38	6.38	8.00	8.00	8.00	8.00	10.00	10.00	10.00	10.00	10.00	10.00
<i>Shafts have two keyways 90 degrees apart. Only one keyway is required to transmit torque. Max engagement shown with top hat. Removal of top hat allows shaft to extend through the actuator bore.</i>													
CENTER OF GRAVITY													
Center of Gravity	COGx	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COGy	0.03	0.08	0.02	0.10	0.10	0.00	0.00	0.00	0.00	0.10	0.00	0.00
	COGz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
Air Volume (cu in)	Body Side	1,351	1,908	-	2,468	4,350	-	-	2,900	5,117	8,099	-	-
	End Cap Side	1,354	1,961	3,479	2,539	4,510	4,510	7,011	2,987	5,302	8,318	8,318	11,981
Port Size, NPT (P1, P2, P3, P4)	Normal	1/2"	1"	1 1/2"	1"	1 1/2"	1 1/2"	1 1/2"	1"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
	Max	1 1/2"	2 1/2"	3"	2 1/2"	3"	3"	3"	2 1/2"	3"	3"	3"	4"
Port Size, NPT (P5, P6)	Std	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"	3/4"	3/4"	3/4"	3/4"	3/4"
Stroke Time	Min	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
<i>Stroke time varies with supply pressure, temperature, spring rate, travel adjustment, working medium, and valve torque. Values shown with no valve resistance. Contact factory about faster stroke speed.</i>													
Max Rated Torque (lb-in)	80,000	80,000	80,000	200,000	200,000	200,000	200,000	200,000	500,000	500,000	500,000	500,000	500,000
	Max Pressure (PSIG)	120	120	120	120	120	120	120	120	120	120	120	100

## Dimension and Technical Data (Metric, Millimeters)

ENVELOPE DIMENSIONS											
		GBY200			GBY250				GBY251	GBY300	
		DA06	SR06	SR08	DA06	DA08	SR08	SR10	SR08	DA08	SR12
Width Total	A1	266.7	266.7	323.9	266.7	334.9	334.9	444.5	349.3	375.9	528.3
Width Side 1	A2	133.4	133.4	161.9	133.4	167.4	167.4	222.3	174.6	188.0	264.2
Width Side 2	A3	133.4	133.4	161.9	133.4	167.4	167.4	222.3	174.6	188.0	264.2
Width Cylinder	A4	165.1	165.1	222.3	165.1	222.3	222.3	317.5	222.3	222.3	375.9
Height Cylinder	A5	165.1	165.1	222.3	165.1	222.3	222.3	317.5	222.3	222.3	375.9
Length Total	B1	797.6	944.9	934.7	1021.1	1051.6	934.7	1143.0	975.4	1193.8	1473.2
Length Side 1	B2	398.8	472.4	467.4	510.5	525.8	467.4	571.5	487.7	596.9	736.6
Length Side 2	B3	398.8	472.4	467.4	510.5	525.8	467.4	571.5	487.7	596.9	736.6
Flange Distance	C	161.9	161.9	161.9	188.1	188.1	188.1	188.1	188.2	258.8	258.8
Flange Depth*	D1	31.0	31.0	56.4	1.1	39.9	36.6	87.4	36.6	30.5	106.9
Body Depth	D2	104.1	104.1	104.1	142.2	142.2	142.2	142.2	142.2	162.6	162.6
Stop Extension	E TYP	16.6	18.3	10.9	16.6	10.9	10.9	21.8	16.2	20.3	29.2
Maint Clearance	F1	576.6	750.8	744.2	720.6	748.0	786.1	893.6	742.7	851.9	1148.1
Maint Clearance	F2	576.6	750.8	744.2	720.6	748.0	786.1	893.6	742.7	851.9	1148.1
Lifting Eye Dim X	G1	-	-	-	-	-	-	-	-	-	-
Lifting Eye Dim Y	G2	-	-	-	-	-	-	-	-	-	-
Lifting Eye Diameter	G3	-	-	-	-	-	-	-	-	-	-
P3 - P4 Distance	H	358.1	-	-	508.0	495.3	-	-	-	579.1	-
MOUNTING PATTERN											
Pattern X	J1	44.45	44.45	44.45	50.80	50.80	50.80	50.80	50.80	50.80	50.80
Pattern Y	J2	165.10	165.10	165.10	203.20	203.20	203.20	203.20	203.20	228.60	228.60
Thread Type	J3	M12-1.75	M12-1.75	M12-1.75	M16-2	M16-2	M16-2	M16-2	M16-2	M16-2	M16-2
Thread Depth		19.05	19.05	19.05	19.05	19.05	19.05	19.05	19.05	19.05	19.05
NAMUR PATTERN											
Length	N1	130	130	130	130	130	130	130	130	130	130
Width	N2	30	30	30	30	30	30	30	30	30	30
Height	N3	30	30	30	30	30	30	30	30	30	30
Slot Width	N4	4	4	4	4	4	4	4	4	4	4
Slot Depth	N5	5	5	5	5	5	5	5	5	5	5
Thread	N6	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8
Thread Depth		9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5

*The NAMUR slotted drive can be moved to the opposite side for field reversibility.*

DRIVE DIMENSIONS											
		GBY200			GBY250				GBY251	GBY300	
		DA06	SR06	SR08	DA06	DA08	SR08	SR10	SR08	DA08	SR12
Shaft Bore	S1	50.80	50.80	50.80	50.80	50.80	50.80	50.80	50.80	63.50	63.50
Key Width	S2	7.92	7.92	7.92	9.53	9.53	9.53	9.53	9.53	12.70	12.70
Female Key Distance	S3	54.53	54.53	54.53	55.22	55.22	55.22	55.22	55.22	69.32	69.32
Key Corner Radius	S4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Engagement		92	92	92	130	130	130	130	130	149	149
<i>Shafts have two keyways 90 degrees apart. Only one keyway is required to transmit torque. Max engagement shown with top hat. Removal of top hat allows shaft to extend through the actuator bore.</i>											
CENTER OF GRAVITY											
Center of Gravity	COGx	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COGy	0.00	0.00	0.00	0.00	0.00	0.00	0.76	0.00	0.00	0.76
	COGz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Air Volume (cu in)	Body Side	5	-	8	5	10	-	-	-	12	-
	End Cap Side	6	6	8	5	9	9	15	9	11	26
Port Size, NPT (P1, P2, P3, P4)	Normal	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/2"	1/4"	1/4"	1"
	Max	1"	1"	1"	1"	1"	1"	1 1/2"	1"	1"	2 1/2"
Port Size, NPT (P5, P6)	Std	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
Stroke Time	Min	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
<i>Stroke time varies with supply pressure, temperature, spring rate, travel adjustment, working medium, and valve torque. Values shown with no valve resistance. Contact factory about faster stroke speed.</i>											
Max Rated Torque (lb-in)		1,130	1,130	1,130	2,260	2,260	2,260	2,260	2,260	4,519	4,519
Max Pressure (PSIG)		10.34	10.34	10.34	10.34	10.34	10.34	10.34	10.34	8.27	8.27

## Dimension and Technical Data Continuation (Metric, Millimeters)

ENVELOPE DIMENSIONS													
		GBY375			GBY488				GBY575				
		DA10	DA12	SR16	DA12	DA16	SR16	SR20	DA12	DA16	DA20	SR20	SR24
Width Total	A1	514.4	566.4	673.1	614.7	723.9	723.9	843.3	679.5	767.6	888.0	889.0	990.6
Width Side 1	A2	257.2	283.2	336.6	307.3	362.0	362.0	421.6	339.7	383.8	444.0	444.5	495.3
Width Side 2	A3	257.2	283.2	336.6	307.3	362.0	362.0	421.6	339.7	383.8	444.0	444.5	495.3
Width Cylinder	A4	322.6	375.9	482.6	375.9	482.6	475.0	594.4	387.4	475.0	594.4	594.4	696.0
Height Cylinder	A5	322.6	375.9	482.6	375.9	482.6	476.3	594.4	387.4	476.3	594.4	594.4	696.0
Length Total	B1	1473.2	1488.4	1752.6	1752.6	1798.3	2291.1	2352.0	2184.4	2184.4	2291.1	2514.6	2565.4
Length Side 1	B2	736.6	744.2	876.3	876.3	899.2	1145.5	1176.0	1092.2	1092.2	1145.5	1257.3	1282.7
Length Side 2	B3	736.6	744.2	876.3	876.3	899.2	1145.5	1176.0	1092.2	1092.2	1145.5	1257.3	1282.7
Flange Distance	C	280.9	280.9	280.9	333.4	333.4	333.4	333.4	400.1	400.1	400.1	400.1	400.1
Flange Depth*	D1	73.7	99.1	154.9	76.2	129.5	129.5	190.5	64.0	103.3	165.1	165.1	215.9
Body Depth	D2	175.3	175.3	175.3	215.9	215.9	215.9	215.9	266.7	266.7	266.7	266.7	266.7
Stop Extension	E TYP	16.0	34.3	38.1	33.0	38.1	38.1	63.5	31.5	58.4	63.5	88.9	120.7
Maint Clearance	F1	1007.1	1015.7	1390.7	1213.4	1236.2	1875.8	1910.3	1488.4	1483.4	1546.1	2029.7	2061.7
Maint Clearance	F2	1007.1	1015.7	1390.7	1213.4	1236.2	1875.8	1910.3	1488.4	1483.4	1546.1	2029.7	2061.7
Lifting Eye Dim X	G1	311.4	311.4	312.2	228.6	228.6	228.6	228.6	251.7	251.7	251.7	251.7	251.7
Lifting Eye Dim Y	G2	162.1	162.1	162.1	185.4	185.4	185.4	185.4	224.3	224.3	224.3	224.3	224.3
Lifting Eye Diameter	G3	28.6	28.6	28.6	23.7	23.7	23.7	23.7	26.9	26.9	26.9	26.9	26.9
P3 - P4 Distance	H	767.1	754.4	-	876.3	894.1	-	-	1120.9	1193.5	1174.2	-	-
MOUNTING PATTERN													
Pattern X	J1	63.50	63.50	63.50	76.20	76.20	76.20	76.20	101.60	101.60	101.60	101.60	101.60
Pattern Y	J2	279.40	279.40	279.40	355.60	355.60	355.60	355.60	419.10	419.10	419.10	419.10	419.10
Thread Type	J3	M20-2.5	M20-2.5	M20-2.5	M24-3	M24-3	M24-3	M24-3	M30-3.5	M30-3.5	M30-3.5	M30-3.5	M30-3.5
Thread Depth		25.40	25.40	25.40	38.10	38.10	38.10	38.10	38.1	38.1	38.1	38.1	38.1
NAMUR PATTERN													
Length	N1	150	150	150	190	190	190	190	235	235	235	235	235
Width	N2	30	30	30	30	30	30	30	30	30	30	30	30
Height	N3	30	30	30	30	30	30	30	30	30	30	30	30
Slot Width	N4	4	4	4	4	4	4	4	4	4	4	4	4
Slot Depth	N5	5	5	5	5	5	5	5	5	5	5	5	5
Thread	N6	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8
Thread Depth		9.53	9.53	9.53	9.53	9.53	9.53	9.53	9.53	9.53	9.53	9.53	9.53

*The NAMUR slotted drive can be moved to the opposite side for field reversibility.*

DRIVE DIMENSIONS													
		GBY375			GBY488				GBY575				
		DA10	DA12	SR16	DA12	DA16	SR16	SR20	DA12	DA16	DA20	SR20	SR24
Shaft Bore	S1	88.90	88.90	88.90	120.65	120.65	120.65	120.65	158.75	158.75	158.75	158.75	158.75
Key Width	S2	12.70	12.70	12.70	31.75	31.75	31.75	31.75	38.10	38.10	38.10	38.10	38.10
Female Key Distance	S3	94.72	94.72	94.72	130.05	130.05	130.05	130.05	169.93	169.93	169.93	169.93	169.93
Key Corner Radius	S4	0.00	0.00	0.00	1.52	1.52	1.52	1.52	3.18	3.18	3.18	3.18	3.18
Max Engagement		162	162	203	203	203	203	254	254	254	254	254	254
<i>Shafts have two keyways 90 degrees apart. Only one keyway is required to transmit torque. Max engagement shown with top hat. Removal of top hat allows shaft to extend through the actuator bore.</i>													
CENTER OF GRAVITY													
Center of Gravity	COGx	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COGy	0.76	2.03	0.51	2.54	2.54	0.00	0.00	0.00	0.00	2.54	0.00	0.00
	COGz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54	0.00	0.00
Air Volume (cu in)	Body Side	22	31	-	40	71	-	-	48	84	133	-	-
	End Cap Side	22	32	57	42	74	74	115	49	87	136	136	196
Port Size, NPT (P1, P2, P3, P4)	Normal	1/2"	1"	1 1/2"	1"	1 1/2"	1 1/2"	1 1/2"	1"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
	Max	1 1/2"	2 1/2"	3"	2 1/2"	3"	3"	3"	2 1/2"	3"	3"	3"	4"
Port Size, NPT (P5, P6)	Std	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"	3/4"	3/4"	3/4"	3/4"	3/4"
Stroke Time	Min	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
<i>Stroke time varies with supply pressure, temperature, spring rate, travel adjustment, working medium, and valve torque. Values shown with no valve resistance. Contact factory about faster stroke speed.</i>													
Max Rated Torque (lb-in)		9,039	9,039	9,039	22,597	22,597	22,597	22,597	56,492	56,492	56,492	56,492	56,492
	Max Pressure (PSIG)	8.27	8.27	8.27	8.27	8.27	8.27	8.27	8.27	8.27	8.27	8.27	6.89

## Output Torque Data

The following tables show output torque for common pressures. At high pressures, actuators may generate more torque than the maximum rating (refer to Pages 15 through 20 for torque ratings). Actuators should not be sized above their maximum torque rating unless there is no possibility that the valve will resist with a value above that rating.

### Double-Acting (Imperial, lb-in)

RH (FAIL OPEN)	20 PSIG			40 PSIG			60 PSIG			WEIGHT (LB)	
	BTC	RTC	ETC	BTC	RTC	ETC	BTC	RTC	ETC	FS	FD
LH (FAIL CLOSE)	BTO	RTO	ETO	BTO	RTO	ETO	BTO	RTO	ETO	FS	FD
GBY200DA06	4,927	2,036	3,469	9,854	4,072	6,938	14,781	6,107	10,407	90	78
GBY250DA06	6,159	2,564	4,336	12,318	5,129	8,673	18,477	7,693	13,009	136	118
GBY250DA08	10,949	4,524	7,709	21,898	9,048	15,418	32,847	13,572	23,127	176	153
GBY300DA08	13,139	5,429	9,251	26,278	10,858	18,502	39,417	16,286	27,753	230	200
GBY375DA10	25,662	10,603	18,068	51,324	21,206	36,136	76,985	31,808	54,204	439	382
GBY375DA12	36,953	15,268	26,018	73,906	30,536	52,037	110,859	45,804	78,055	512	445
GBY488DA12	48,039	19,849	33,824	96,078	39,698	67,648	144,117	59,546	101,471	702	617
GBY488DA16	85,403	35,286	60,131	170,806	70,573	120,262	256,208	105,859	180,393	916	789
GBY575 DA12	56,661	23,411	39,895	113,323	46,822	79,790	169,984	70,233	119,684	1,143	1,015
GBY5 75DA16	100,731	41,620	70,924	201,463	83,240	141,848	302,194	124,859	212,772	1,329	1,161
GBY575DA20	157,393	65,031	110,819	314,786	130,062	221,638	472,179	195,093	332,456	1,759	1,521

RH (FAIL OPEN)	80 PSIG			100 PSIG			120 PSIG			WEIGHT (LB)	
	BTC	RTC	ETC	BTC	RTC	ETC	BTC	RTC	ETC	FS	FD
LH (FAIL CLOSE)	BTO	RTO	ETO	BTO	RTO	ETO	BTO	RTO	ETO	FS	FD
GBY200DA06	19,708	8,143	13,876	24,635	10,179	17,345	29,562	12,215	20,814	90	78
GBY250DA06	24,636	10,257	17,345	30,795	12,821	21,681	36,954	15,386	26,018	136	118
GBY250DA08	43,796	18,096	30,836	54,745	22,620	38,545	65,694	27,144	46,254	176	153
GBY300DA08	52,556	21,715	37,004	65,695	27,144	46,255	78,834	32,573	55,506	230	200
GBY375DA10	102,647	42,411	72,272	128,309	53,014	90,340	153,971	63,617	108,408	439	382
GBY375DA12	147,812	61,072	104,073	184,765	76,340	130,091	221,718	91,608	156,110	512	445
GBY488DA12	192,156	79,395	135,295	240,195	99,244	169,119	288,234	119,093	202,943	702	617
GBY488DA16	341,611	141,145	240,524	427,014	176,431	300,655	512,417	211,718	360,786	916	789
GBY575 DA12	226,645	93,644	159,579	283,306	117,055	199,474	339,968	140,466	239,369	1,143	1,015
GBY5 75DA16	402,925	166,479	283,696	503,656	208,099	354,620	604,388	249,719	425,544	1,329	1,161
GBY575DA20	629,572	260,124	443,275	786,965	325,155	554,094	944,358	390,186	664,913	1,759	1,521

The torque values above indicate the actual actuator output torque. Some values may exceed the maximum rating of the actuator.

## Double-Acting (Metric, N·m)

RH (FAIL OPEN)	1.5 BAR			3 BAR			4 BAR			WEIGHT (KG)	
	BTC	RTC	ETC	BTC	RTC	ETC	BTC	RTC	ETC	FS	FD
LH (FAIL CLOSE)	BTO	RTO	ETO	BTO	RTO	ETO	BTO	RTO	ETO	FS	FD
GBY200DA06	606	250	426	1,211	500	853	1,615	667	1,137	41	36
GBY250DA06	757	315	533	1,514	630	1,066	2,019	840	1,421	62	54
GBY250DA08	1,346	556	947	2,691	1,112	1,895	3,588	1,483	2,527	80	69
GBY300DA08	1,615	667	1,137	3,230	1,334	2,274	4,306	1,779	3,032	104	91
GBY375DA10	3,154	1,303	2,221	6,308	2,606	4,441	8,410	3,475	5,922	199	173
GBY375DA12	4,542	1,876	3,198	9,083	3,753	6,395	12,111	5,004	8,527	232	202
GBY488DA12	5,904	2,439	4,157	11,808	4,879	8,314	15,744	6,505	11,085	318	280
GBY488DA16	10,496	4,337	7,390	20,993	8,674	14,781	27,990	11,565	19,707	415	358
GBY575 DA12	6,964	2,877	4,903	13,928	5,755	9,806	18,570	7,673	13,075	518	460
GBY5 75DA16	12,380	5,115	8,717	24,760	10,230	17,434	33,014	13,641	23,245	603	527
GBY575DA20	19,344	7,993	13,620	38,688	15,985	27,240	51,584	21,313	36,320	798	690

RH (FAIL OPEN)	5.5 BAR			7 BAR			8 BAR			WEIGHT (KG)	
	BTC	RTC	ETC	BTC	RTC	ETC	BTC	RTC	ETC	FS	FD
LH (FAIL CLOSE)	BTO	RTO	ETO	BTO	RTO	ETO	BTO	RTO	ETO	FS	FD
GBY200DA06	2,220	917	1,563	2,826	1,168	1,990	3,230	1,334	2,274	41	36
GBY250DA06	2,776	1,156	1,954	3,532	1,471	2,487	4,037	1,681	2,842	62	54
GBY250DA08	4,934	2,039	3,474	6,280	2,595	4,421	7,177	2,965	5,053	80	69
GBY300DA08	5,921	2,446	4,169	7,536	3,114	5,306	8,612	3,558	6,064	104	91
GBY375DA10	11,564	4,778	8,142	14,718	6,081	10,363	16,821	6,950	11,843	199	173
GBY375DA12	16,653	6,880	11,725	21,194	8,757	14,923	24,222	10,008	17,055	232	202
GBY488DA12	21,648	8,945	15,242	27,553	11,384	19,400	31,489	13,011	22,171	318	280
GBY488DA16	38,486	15,902	27,098	48,983	20,238	34,488	55,980	23,130	39,415	415	358
GBY575 DA12	25,534	10,550	17,978	32,498	13,427	22,882	37,140	15,346	26,150	518	460
GBY5 75DA16	45,394	18,756	31,961	57,774	23,871	40,678	66,028	27,281	46,489	603	527
GBY575DA20	70,928	29,306	49,940	90,272	37,298	63,560	103,168	42,627	72,640	798	690

The torque values above indicate the actual actuator output torque. Some values may exceed the maximum rating of the actuator.



### Spring-Return (Imperial, lb-in)

RH (FAIL OPEN)	SPRINGS			20 PSIG			40 PSIG			60 PSIG			WEIGHT (LB)	
	BTO	RTO	ETO	BTC	RTC	ETC	BTC	RTC	ETC	BTC	RTC	ETC		
LH (FAIL CLOSE)	BTC	RTC	ETC	BTO	RTO	ETO	BTO	RTO	ETO	BTO	RTO	ETO	FS	FD
GBY200SR06-S1	7,971	3,940	7,248							7,533	2,040	2,436	120	112
GBY200SR06-S2	5,899	2,844	4,987	3,772	762	268	12,532	4,368	6,435	21,291	7,974	12,602	117	109
GBY200SR06-S3	2,071	1,095	2,261	2,666	939	1,398	7,594	2,974	4,867	12,521	5,008	8,336	116	108
GBY200SR08-S1	14,414	7,052	12,728							13,550	3,536	4,088	181	169
GBY200SR08-S2	8,515	4,208	7,740				9,778	2,981	3,820	18,537	6,576	9,987	178	166
GBY200SR08-S3	5,899	2,844	4,987	3,772	762	268	12,532	4,368	6,435	21,291	7,974	12,602	177	165
GBY250SR08-S1	16,000	8,138	15,761							17,086	5,281	7,127	222	208
GBY250SR08-S2	11,085	5,630	10,875				11,023	3,371	4,333	21,972	7,871	12,042	218	204
GBY250SR08-S3	4,915	2,509	4,886	6,063	2,009	2,794	17,012	6,527	10,503	27,961	11,045	18,212	216	202
GBY250SR10-S1	23,363	11,896	23,080				11,136	2,108	728	28,244	9,110	12,773	331	265
GBY250SR10-S2	16,000	8,138	15,761				18,455	5,941	8,091	35,563	12,980	20,136	301	235
GBY250SR10-S3	11,085	5,630	10,875	6,233	1,424	961	23,341	8,478	13,006	40,449	15,532	25,052	287	257
GBY300SR12-S1	46,325	22,991	42,625							46,062	12,974	16,119	560	476
GBY300SR12-S2	37,246	18,486	34,272				24,853	5,685	4,383	54,416	17,770	25,198	529	445
GBY300SR12-S3	29,503	14,643	27,147				31,978	9,620	12,126	61,540	21,752	32,941	496	412
GBY300SR12-S4	25,900	12,855	23,832				35,293	11,452	15,729	64,856	23,605	36,544	493	409
GBY375SR16-S1	81,397	42,648	86,742				44,647	11,364	11,112	110,341	38,370	57,367	1,009	918
GBY375SR16-S2	63,151	33,088	67,298				64,091	21,079	29,358	129,785	48,162	75,613	967	876
GBY375SR16-S3	52,628	27,575	56,084				75,305	26,630	39,881	140,999	53,733	86,136	893	802
GBY375SR16-S4	47,014	24,633	50,102				81,287	29,580	45,495	146,982	56,687	91,750	913	822
GBY375SR16-S5	34,383	18,015	36,640	29,054	9,102	11,872	94,749	36,218	58,126	160,443	63,335	104,381	797	706
GBY488SR16-S1	176,794	90,225	175,731							80,477	14,642	3,599	1,623	1,426
GBY488SR16-S2	101,571	52,321	103,514				67,292	18,106	18,691	152,695	53,320	78,822	1,383	1,186
GBY488SR16-S3	75,223	37,904	72,218				98,588	32,523	45,039	183,991	67,736	105,170	1,227	1,030
GBY488SR20-S1	176,794	90,225	175,731				91,153	19,687	11,116	224,594	74,644	105,071	2,104	1,809
GBY488SR20-S2	101,571	52,321	103,514				163,370	57,803	86,339	296,812	112,866	180,294	1,864	1,569
GBY488SR20-S3	75,223	37,904	72,218	61,224	17,158	18,732	194,666	72,220	112,686	328,107	127,282	206,641	1,708	1,413
GBY575SR20-S1	356,035	177,338	331,124										3,049	2,837
GBY575SR20-S2	270,815	135,621	255,628							216,551	57,873	61,640	2,829	2,617
GBY575SR20-S3	246,715	122,249	226,172							246,007	71,330	85,740	2,671	2,459
GBY575SR20-S4	194,540	96,805	180,449				134,337	32,598	27,097	291,730	97,300	137,916	2,515	2,303
GBY575SR24-S1	523,709	263,649	501,502										4,243	3,809
GBY575SR24-S2	438,489	221,908	426,005							253,932	56,435	40,247	4,017	3,583
GBY575SR24-S3	414,389	208,564	396,550							283,388	69,929	64,347	3,845	3,411
GBY575SR24-S4	356,035	177,338	331,124							348,813	101,525	122,701	3,553	3,119
GBY575SR24-S5	270,815	135,621	255,628				197,664	50,835	48,342	424,309	144,063	207,921	3,347	2,913
GBY575SR24-S6	246,715	122,249	226,172				227,120	64,222	72,442	453,765	157,457	232,021	3,175	2,741

The torque values above indicate the actual actuator output torque. Some values may exceed the maximum rating of the actuator.

RH (FAIL OPEN)	80 PSIG			100 PSIG			120 PSIG			WEIGHT (LB)	
	BTC	RTC	ETC	BTC	RTC	ETC	BTC	RTC	ETC	FS	FD
LH (FAIL CLOSE)	BTO	RTO	ETO	BTO	RTO	ETO	BTO	RTO	ETO		
GBY200SR06-S1	12,460	4,033	5,905	17,387	6,027	9,374	7,971	3,940	7,248	120	112
GBY200SR06-S2	30,050	11,580	18,769	38,810	15,186	24,936	5,899	2,844	4,987	117	109
GBY200SR06-S3	17,448	7,042	11,805	22,376	9,077	15,274	2,071	1,095	2,261	116	108
GBY200SR08-S1	22,309	7,065	10,255	31,069	10,595	16,423	14,414	7,052	12,728	181	169
GBY200SR08-S2	27,296	10,171	16,154	36,055	13,765	22,322	8,515	4,208	7,740	178	166
GBY200SR08-S3	30,050	11,580	18,769	38,810	15,186	24,936	5,899	2,844	4,987	177	165
GBY250SR08-S1	28,035	9,754	14,836	38,984	14,227	22,545	16,000	8,138	15,761	222	208
GBY250SR08-S2	32,921	12,371	19,751	43,870	16,872	27,460	11,085	5,630	10,875	218	204
GBY250SR08-S3	38,910	15,563	25,921	49,859	20,081	33,630	4,915	2,509	4,886	216	202
GBY250SR10-S1	45,352	16,112	24,818	62,460	23,114	36,864	23,363	11,896	23,080	331	265
GBY250SR10-S2	52,671	20,019	32,181	69,779	27,059	44,227	16,000	8,138	15,761	301	235
GBY250SR10-S3	57,557	22,586	37,098	74,665	29,640	49,143	11,085	5,630	10,875	287	257
GBY300SR12-S1	75,624	24,962	36,934	105,187	36,951	57,748	46,325	22,991	42,625	560	476
GBY300SR12-S2	83,979	29,855	46,013	113,541	41,941	66,827	37,246	18,486	34,272	529	445
GBY300SR12-S3	91,102	33,884	53,756	120,665	46,015	74,570	29,503	14,643	27,147	496	412
GBY300SR12-S4	94,419	35,758	57,359	123,981	47,912	78,173	25,900	12,855	23,832	493	409
GBY375SR16-S1	176,035	65,376	103,622	241,730	92,382	149,876	81,397	42,648	86,742	1,009	918
GBY375SR16-S2	195,479	75,245	121,868	261,174	102,329	168,122	63,151	33,088	67,298	967	876
GBY375SR16-S3	206,693	80,836	132,391	272,388	107,938	178,645	52,628	27,575	56,084	893	802
GBY375SR16-S4	212,677	83,794	138,005	278,371	110,900	184,259	47,014	24,633	50,102	913	822
GBY375SR16-S5	226,137	90,452	150,636	291,832	117,568	196,890	34,383	18,015	36,640	797	706
GBY488SR16-S1	165,880	49,598	63,730	251,282	84,554	123,862	176,794	90,225	175,731	1,623	1,426
GBY488SR16-S2	238,098	88,533	138,953	323,500	123,747	199,085	101,571	52,321	103,514	1,383	1,186
GBY488SR16-S3	269,394	102,949	165,301	354,796	138,163	225,433	75,223	37,904	72,218	1,227	1,030
GBY488SR20-S1	358,036	129,600	199,026	491,478	184,556	292,980	176,794	90,225	175,731	2,104	1,809
GBY488SR20-S2	430,254	167,928	274,249	563,696	222,990	368,203	101,571	52,321	103,514	1,864	1,569
GBY488SR20-S3	461,549	182,344	300,596	594,991	237,406	394,550	75,223	37,904	72,218	1,708	1,413
GBY575SR20-S1	298,448	78,588	87,239	455,840	142,570	198,057	-	-	-	3,049	2,837
GBY575SR20-S2	373,944	122,371	172,459	531,336	186,869	283,277	-	-	-	2,829	2,617
GBY575SR20-S3	403,400	135,857	196,559	560,792	200,383	307,377	-	-	-	2,671	2,459
GBY575SR20-S4	449,123	162,001	248,735	606,517	226,703	359,553	-	-	-	2,515	2,303
GBY575SR24-S1	405,081	105,204	114,606	631,727	197,418	274,184	-	-	-	4,243	3,809
GBY575SR24-S2	480,578	149,216	199,826	707,224	241,996	359,404	-	-	-	4,017	3,583
GBY575SR24-S3	510,034	162,760	223,926	736,680	255,590	383,504	-	-	-	3,845	3,411
GBY575SR24-S4	575,459	194,480	282,280	802,105	287,434	441,858	-	-	-	3,553	3,119
GBY575SR24-S5	650,955	237,291	367,500	877,601	330,519	527,078	-	-	-	3,347	2,913
GBY575SR24-S6	680,411	250,692	391,600	907,057	343,928	551,178	-	-	-	3,175	2,741

The torque values above indicate the actual actuator output torque. Some values may exceed the maximum rating of the actuator.

### Spring-Return (Metric, N·m)

RH (FAIL OPEN)	SPRINGS			1.5 BAR			3 BAR			4 BAR			WEIGHT (KG)	
	BTO	RTO	ETO	BTC	RTC	ETC	BTC	RTC	ETC	BTC	RTC	ETC		
LH (FAIL CLOSE)	BTC	RTC	ETC	BTO	RTO	ETO	BTO	RTO	ETO	BTO	RTO	ETO	FS	FD
GBY200SR06-S1	901	445	819							851	230	275	54	51
GBY200SR06-S2	666	321	563	426	86	30	1,416	494	727	2,406	901	1,424	53	49
GBY200SR06-S3	234	124	255	301	106	158	858	336	550	1,415	566	942	53	49
GBY200SR08-S1	1,629	797	1,438							1,531	400	462	82	77
GBY200SR08-S2	962	475	875				1,105	337	432	2,094	743	1,128	81	75
GBY200SR08-S3	666	321	563	426	86	30	1,416	494	727	2,406	901	1,424	80	75
GBY250SR08-S1	1,808	919	1,781							1,930	597	805	101	94
GBY250SR08-S2	1,252	636	1,229				1,245	381	490	2,483	889	1,361	99	93
GBY250SR08-S3	555	283	552	685	227	316	1,922	737	1,187	3,159	1,248	2,058	98	92
GBY250SR10-S1	2,640	1,344	2,608				1,258	238	82	3,191	1,029	1,443	150	120
GBY250SR10-S2	1,808	919	1,781				2,085	671	914	4,018	1,467	2,275	137	107
GBY250SR10-S3	1,252	636	1,229	704	161	109	2,637	958	1,470	4,570	1,755	2,830	130	117
GBY300SR12-S1	5,234	2,598	4,816							5,204	1,466	1,821	254	216
GBY300SR12-S2	4,208	2,089	3,872				2,808	642	495	6,148	2,008	2,847	240	202
GBY300SR12-S3	3,333	1,654	3,067				3,613	1,087	1,370	6,953	2,458	3,722	225	187
GBY300SR12-S4	2,926	1,452	2,693				3,988	1,294	1,777	7,328	2,667	4,129	224	186
GBY375SR16-S1	9,197	4,819	9,801				5,044	1,284	1,256	12,467	4,335	6,482	458	416
GBY375SR16-S2	7,135	3,738	7,604				7,241	2,382	3,317	14,664	5,442	8,543	439	397
GBY375SR16-S3	5,946	3,116	6,337				8,508	3,009	4,506	15,931	6,071	9,732	405	364
GBY375SR16-S4	5,312	2,783	5,661				9,184	3,342	5,140	16,607	6,405	10,366	414	373
GBY375SR16-S5	3,885	2,035	4,140	3,283	1,028	1,341	10,705	4,092	6,567	18,128	7,156	11,793	362	320
GBY488SR16-S1	19,975	10,194	19,855							9,093	1,654	407	736	647
GBY488SR16-S2	11,476	5,911	11,696				7,603	2,046	2,112	17,252	6,024	8,906	627	538
GBY488SR16-S3	8,499	4,283	8,160				11,139	3,675	5,089	20,788	7,653	11,883	557	467
GBY488SR20-S1	19,975	10,194	19,855				10,299	2,224	1,256	25,376	8,434	11,871	954	821
GBY488SR20-S2	11,476	5,911	11,696				18,458	6,531	9,755	33,535	12,752	20,370	845	712
GBY488SR20-S3	8,499	4,283	8,160	6,917	1,939	2,116	21,994	8,160	12,732	37,071	14,381	23,347	775	641
GBY575SR20-S1	40,227	20,037	37,412										1,383	1,287
GBY575SR20-S2	30,598	15,323	28,882							24,467	6,539	6,964	1,283	1,187
GBY575SR20-S3	27,875	13,812	25,554							27,795	8,059	9,687	1,212	1,115
GBY575SR20-S4	21,980	10,937	20,388				15,178	3,683	3,062	32,961	10,993	15,582	1,141	1,045
GBY575SR24-S1	59,171	29,788	56,662										1,925	1,728
GBY575SR24-S2	49,543	25,072	48,132							28,691	6,376	4,547	1,822	1,625
GBY575SR24-S3	46,820	23,565	44,804							32,019	7,901	7,270	1,744	1,547
GBY575SR24-S4	40,227	20,037	37,412							39,411	11,471	13,863	1,612	1,415
GBY575SR24-S5	30,598	15,323	28,882				22,333	5,744	5,462	47,941	16,277	23,492	1,518	1,321
GBY575SR24-S6	27,875	13,812	25,554				25,661	7,256	8,185	51,269	17,790	26,215	1,440	1,243

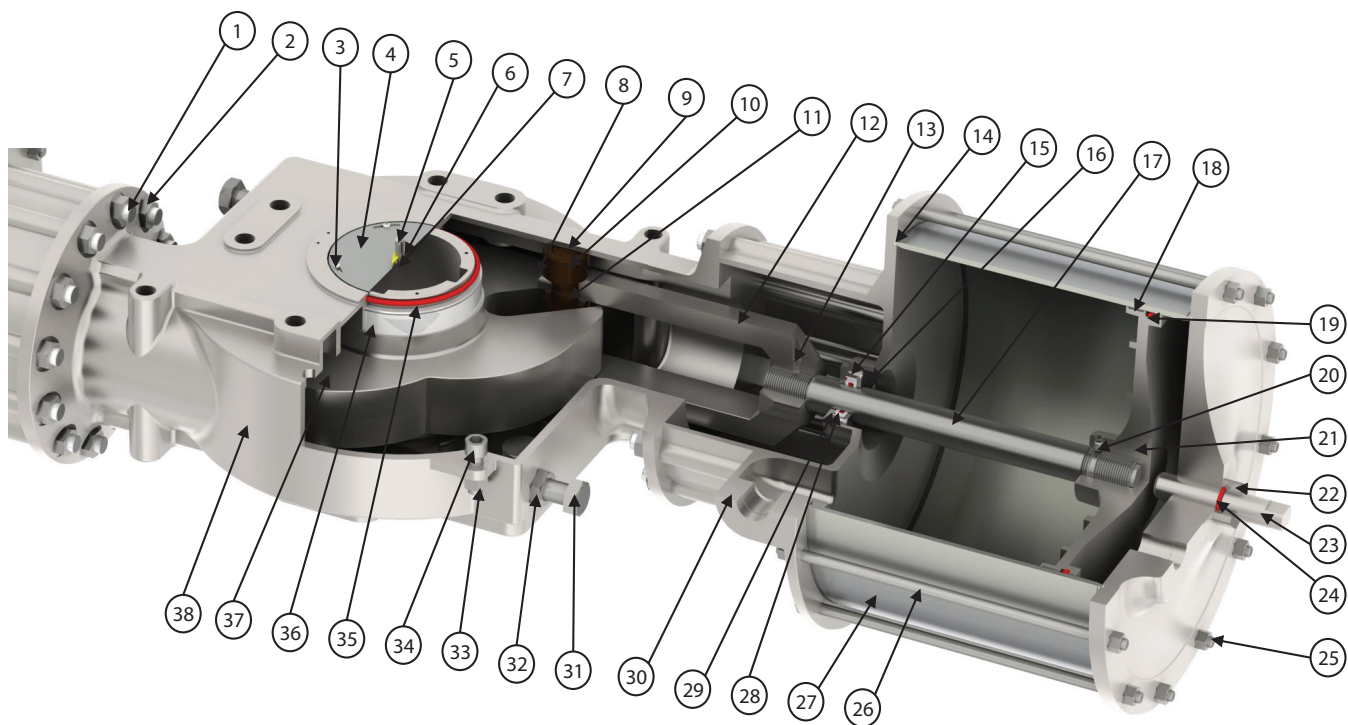
The torque values above indicate the actual actuator output torque. Some values may exceed the maximum rating of the actuator.

RH (FAIL OPEN)	5.5 BAR			7 BAR			8 BAR			WEIGHT (KG)	
	BTC	RTC	ETC	BTC	RTC	ETC	BTC	RTC	ETC	FS	FD
LH (FAIL CLOSE)	BTO	RTO	ETO	BTO	RTO	ETO	BTO	RTO	ETO		
GBY200SR06-S1	1,408	456	667	1,964	681	1,059	901	445	819	54	51
GBY200SR06-S2	3,395	1,308	2,121	4,385	1,716	2,817	666	321	563	53	49
GBY200SR06-S3	1,971	796	1,334	2,528	1,026	1,726	234	124	255	53	49
GBY200SR08-S1	2,521	798	1,159	3,510	1,197	1,856	1,629	797	1,438	82	77
GBY200SR08-S2	3,084	1,149	1,825	4,074	1,555	2,522	962	475	875	81	75
GBY200SR08-S3	3,395	1,308	2,121	4,385	1,716	2,817	666	321	563	80	75
GBY250SR08-S1	3,168	1,102	1,676	4,405	1,607	2,547	1,808	919	1,781	101	94
GBY250SR08-S2	3,720	1,398	2,232	4,957	1,906	3,103	1,252	636	1,229	99	93
GBY250SR08-S3	4,396	1,758	2,929	5,633	2,269	3,800	555	283	552	98	92
GBY250SR10-S1	5,124	1,820	2,804	7,057	2,612	4,165	2,640	1,344	2,608	150	120
GBY250SR10-S2	5,951	2,262	3,636	7,884	3,057	4,997	1,808	919	1,781	137	107
GBY250SR10-S3	6,503	2,552	4,191	8,436	3,349	5,552	1,252	636	1,229	130	117
GBY300SR12-S1	8,544	2,820	4,173	11,884	4,175	6,525	5,234	2,598	4,816	254	216
GBY300SR12-S2	9,488	3,373	5,199	12,828	4,739	7,550	4,208	2,089	3,872	240	202
GBY300SR12-S3	10,293	3,828	6,074	13,633	5,199	8,425	3,333	1,654	3,067	225	187
GBY300SR12-S4	10,668	4,040	6,481	14,008	5,413	8,832	2,926	1,452	2,693	224	186
GBY375SR16-S1	19,889	7,386	11,708	27,312	10,438	16,934	9,197	4,819	9,801	458	416
GBY375SR16-S2	22,086	8,502	13,769	29,509	11,562	18,995	7,135	3,738	7,604	439	397
GBY375SR16-S3	23,353	9,133	14,958	30,776	12,195	20,184	5,946	3,116	6,337	405	364
GBY375SR16-S4	24,029	9,467	15,592	31,452	12,530	20,819	5,312	2,783	5,661	414	373
GBY375SR16-S5	25,550	10,220	17,020	32,973	13,283	22,246	3,885	2,035	4,140	362	320
GBY488SR16-S1	18,742	5,604	7,201	28,391	9,553	13,994	19,975	10,194	19,855	736	647
GBY488SR16-S2	26,901	10,003	15,700	36,551	13,982	22,494	11,476	5,911	11,696	627	538
GBY488SR16-S3	30,437	11,632	18,677	40,087	15,610	25,470	8,499	4,283	8,160	557	467
GBY488SR20-S1	40,453	14,643	22,487	55,530	20,852	33,102	19,975	10,194	19,855	954	821
GBY488SR20-S2	48,612	18,973	30,986	63,689	25,194	41,601	11,476	5,911	11,696	845	712
GBY488SR20-S3	52,148	20,602	33,963	67,225	26,823	44,578	8,499	4,283	8,160	775	641
GBY575SR20-S1	33,720	8,879	9,857	51,503	16,108	22,377	*	*	*	1,383	1,287
GBY575SR20-S2	42,250	13,826	19,485	60,033	21,113	32,006	*	*	*	1,283	1,187
GBY575SR20-S3	45,578	15,350	22,208	63,361	22,640	34,729	*	*	*	1,212	1,115
GBY575SR20-S4	50,744	18,304	28,103	68,527	25,614	40,624	*	*	*	1,141	1,045
GBY575SR24-S1	45,768	11,886	12,949	71,376	22,305	30,979	*	*	*	1,925	1,728
GBY575SR24-S2	54,298	16,859	22,577	79,906	27,342	40,607	*	*	*	1,822	1,625
GBY575SR24-S3	57,626	18,389	25,300	83,234	28,878	43,330	*	*	*	1,744	1,547
GBY575SR24-S4	65,018	21,973	31,893	90,626	32,476	49,923	*	*	*	1,612	1,415
GBY575SR24-S5	73,548	26,810	41,522	99,156	37,344	59,552	*	*	*	1,518	1,321
GBY575SR24-S6	76,876	28,324	44,245	102,484	38,859	62,275	*	*	*	1,440	1,243

The torque values above indicate the actual actuator output torque. Some values may exceed the maximum rating of the actuator.

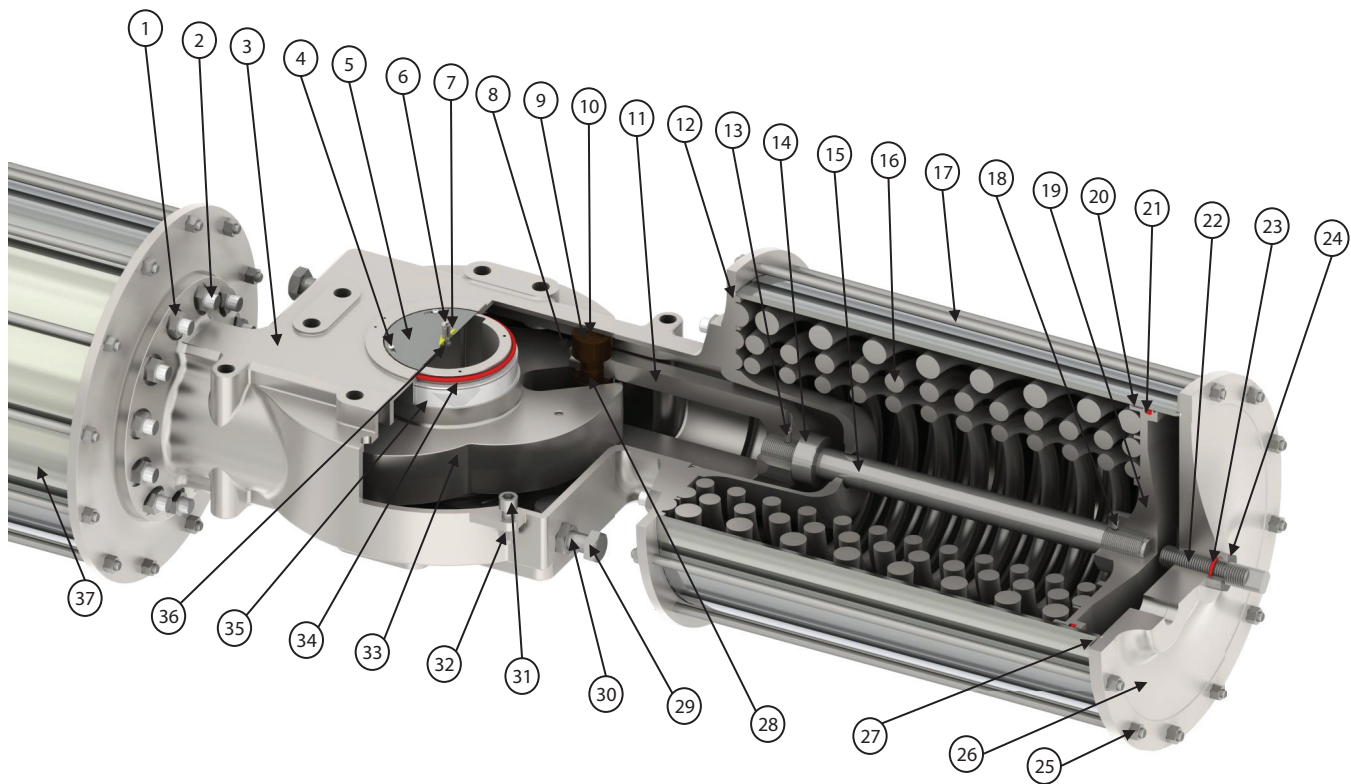
## Parts Diagram and Materials of Construction

### Double-Acting



ITEM NUMBER	PART DESCRIPTION	MATERIAL (FS)	MATERIAL (FD)
1	Stud	316 SST	316 SST
2	Stud Hex Nut	316 SST	316 SST
3	Top Hat Base Bolt	316 SST	316 SST
4	Top Hat Base	316 SST	316 SST
5	Modular Top Hat	316 SST	316 SST
6	Top Hat Indicator	Nylon 6/6 GF30	Nylon 6/6 GF30
7	Top Hat Bolt	316 SST	316 SST
8	Pin Set Screw	316 SST	316 SST
9	Pin	316 SST NIT	316 SST NIT
10	Body Roller	316 SST NIT	316 SST NIT
11	Yoke Roller	316 SST NIT	316 SST NIT
12	Clevis	304 SST	Ductile Iron
13	Clevis Set Screw	316 SST	316 SST
14	Cylinder Seal	PTFE	PTFE
15	Seal Carrier	Option	Option
16	Seal Carrier Plate	316 SST	316 SST
17	Piston Bolt	316 SST	316 SST
18	Wiper Ring	PTFE	PTFE
19	Piston O-Ring	Option	Option
20	Piston Set Screw	316 SST	316 SST
21	Piston	304 SST	Ductile Iron
22	Travel Stop Nut	316 SST	316 SST
23	Travel Stop 1	316 SST	316 SST
24	Travel Stop O-Ring	Option	Option
25	Tie Rod Hex Nut 1	316 SST	316 SST
26	Tie Rod	316 SST	316 SST
27	Cylinder	316 SST	Black Amalgon
28	Internal Piston Bolt Seal	Option	Option
29	External Piston Bolt Seal	Option	Option
30	Base Plate	304 SST	Ductile Iron
31	Travel Stop 2	316 SST	316 SST
32	Travel Stop Nut 2	316 SST	316 SST
33	Body Fastening Nut	316 SST	316 SST
34	Body Fastening Bolt	316 SST	316 SST
35	Yoke Seal	Option	Option
36	Yoke Bushing	Option	Option
37	Yoke	304 SST	Ductile Iron
38	Body	304 SST	Ductile Iron

## Spring-Return



ITEM NUMBER	PART DESCRIPTION	MATERIAL (FS)	MATERIAL (FD)
1	Stud Hex Nut	316 SST	316 SST
2	Stud	316 SST	316 SST
3	Body	304 SST	Ductile Iron
4	Top Hat Base Bolt	316 SST	316 SST
5	Top Hat Base	316 SST	316 SST
6	Modular Top Hat	316 SST	316 SST
7	Top Hat Indicator	Nylon 6/6 GF30	Nylon 6/6 GF31
8	Pin Set Screw	316 SST	317 SST
9	Body Roller	316 SST NIT	316 SST NIT
10	Pin	316 SST NIT	316 SST NIT
11	Clevis	304 SST	Ductile Iron
12	Spring Retainer	304 SST	Ductile Iron
13	Clevis Set Screw	316 SST	316 SST
14	Safety Collar	316 SST	316 SST
15	Piston Bolt	316 SST	316 SST
16	Springs	Chrome Silicon	Chrome Silicon
17	Tie Rod	316 SST	316 SST
18	Piston Set Screw	316 SST	316 SST
19	Piston	304 SST	Ductile Iron
20	Wiper Ring	PTFE	PTFE
21	Piston O-Ring	Option	Option
22	Travel Stop 1	316 SST	316 SST
23	Travel Stop O-Ring	Option	Option
24	Travel Stop Nut 1	316 SST	316 SST
25	Tie Rod Hex Nut	316 SST	316 SST
26	End Cap	304 SST	Ductile Iron
27	Cylinder	316 SST	Black Amalgon
28	Travel Stop 2	316 SST	316 SST
29	Travel Stop Nut 2	316 SST	316 SST
30	Body Fastening Bolt	316 SST	316 SST
31	Body Fastening Nut	316 SST	316 SST
32	Yoke Roller	316 SST NIT	317 SST NIT
33	Yoke	304 SST	Ductile Iron
34	Yoke Seal	Option	Option
35	Yoke Bushing	Option	Option
36	Top Hat Bolt	316 SST	316 SST



## Sample Specifications

Model (1)	Action (4)	PST/SZ Angle (5)	Temp Limits (8)
<b>FS</b> Stainless Steel	Replace xx with piston size	<b>Axx</b>  <b>SP actuators</b> Angle of travel as measured from the piston fully inward position that valve will be allowed to travel during partial stroke test.	<b>T</b> custom range <b>G</b> -60F to 185F <b>M</b> -20F to 185F <b>H</b> -20F to 400F
	<b>DAxx*</b> Double Acting		
<b>FD</b> Ductile Iron	<b>SRxx*</b> Spring Return, Fail to 0 or 90 degrees	<b>SZ actuators</b> Angle (from fully CCW position) of fail position for SZ actuator. Example: for an SZ actuator that travels 30deg CW and 60 degrees CCW, this field would be A30	<b>Spring Material (9)</b> <b>10</b> Custom <b>11*</b> Chrome Silicon <b>12</b> 17-7 PH Stainless
	<b>SYxx</b> Spring Return, Fail to 45 degrees		
<b>Grade (2)</b> <b>C</b> Commercial	<b>SZxx</b> Spring Return, Fail to other angles	<b>Spring Set (6)</b> <b>Sxx</b>  Choose spring set based on required torque (N/A for DA and DP models).	<b>Cylinder Material (10)</b> <b>U</b> Custom <b>A*</b> Amalga <b>L</b> Aluminum <b>C</b> Carbon Steel <b>S*</b> Stainless Steel
	<b>SPaxx</b> Spring Return with partial stroke (Xrciser) addn. Replace 'a' with number of partial stroke positions (standard is 1)		
<b>N</b> Nuclear	<b>SEaxx</b> Spring Return with tandem air cylinders to assist spring compression. Replace 'a' with number of tandem pistons (Standard is 2, must be multiples of 2)	<b>Port Size (7)</b> <b>P00</b> Custom <b>P01*</b> ¼ NPT <b>P02</b> 3/8 NPT <b>P03</b> ½ NPT <b>P04</b> ¾ NPT <b>P05</b> 1 NPT <b>P06</b> 1 ¼ NPT <b>P07</b> 1 ½ NPT <b>P08</b> 2 NPT <b>P09</b> 2 1/2 NPT <b>P10</b> 3 NPT <b>P11</b> 4 NPT	<b>Bushings (11)</b> <b>20</b> Custom <b>21*</b> Acetal <b>22*</b> Bronze Filled PTFE <b>23</b> PEEK <b>24</b> Carbon Filled PTFE
	<b>SPaEbxx</b> Spring Return with partial stroke (Xrciser) addn and tandem cylinders to assist spring compression. Replace 'a' with number of partial stroke positions (standard is 1). Replace 'b' with number of tandem pistons (Standard is 2, must be multiples of 2)		
<b>Size (3)</b> <b>200</b> <b>250</b> <b>300</b> <b>375</b> <b>488</b> <b>575</b>	<b>DPaxx</b> Double Acting with partial stroke (Xrciser) addn. Replace 'a' with number of partial stroke positions (standard is 1)		<b>Wiper Rings (12)</b> <b>30</b> Custom <b>31*</b> PTFE <b>32</b> UHMWPE <b>33</b> PEEK

O-Rings (13)		Options (17)	
<b>40</b>	Custom	<b>Separate multiple options with a comma.</b>	
<b>41*</b>	Buna N	<b>JR</b>	Jackscrew. Hand wheelsize and material specified separately.
<b>42</b>	Viton	<b>HR</b>	Hydraulic override, cylinders only. Pump and reservoir specified separately.
<b>43</b>	Silicon	<b>ETSxx,yy</b>	XX: Travel Adjustment End Cap Side YY: Travel Adjustment Body Side
<b>44</b>	EPDM	Example: <b>15,80</b> (65 degrees total travel):	
Cylinder End Seals (14)		A spring return actuator would fail to a 15 degree position in both LH and RH (failopen or failclosed) models, and would stroke with air to an 80 degree position (65 degrees total travel).	
<b>50</b>	Custom	An LH double acting model would stroke clockwise to the 15 degree position, and counter clockwise to the 80 degree position.	
<b>51*</b>	PTFE		
<b>52</b>	Grafoil		
Grease (15)			
<b>60</b>	Custom		
<b>61*</b>	Standard		
<b>62</b>	Food Grade		
<b>63</b>	Nuclear Grade		
Orientation (16)			
<b>LH</b>	Left Hand. Pistons move outward to turn the valve clockwise. This is commonly called "Fail Closed" for spring return actuators.		
<b>RH</b>	Right Hand. Pistons move outward to turn the valve counterclockwise. This is commonly called "Fail Open" for spring return actuators.		
		Modifier (18)	
		<b>3-digit number used by QTRCO to identify further customization. Contact QTRCO for details.</b>	

For ordering actuators with standard options and trim, specify items 1-8 and 16 as applicable. Bettis will choose the appropriate trim.

SAMPLE SPECIFICATIONS	
STRING	DESCRIPTION
FSCxxxSRxx-S06-P01-M-11-S-21-31-41-51-61-LH	Standard stainless SR actuator with medium temp trim.
FDCxxxDAxx-P01-G-A-21-31-43-51-61-LH	Standard ductile iron DA actuator with low temp trim.
FDCxxxSRxx-S02-P01-H-11-L-22-31-42-51-61-LH	Standard ductile iron SR actuator with high temp trim.
FDCxxxSP1xx-A15-S10-P04-G-11-A-21-31-43-51-61-LH	Ductile iron, 1 position partial stroke at 15 degrees, 3/4" NPT ports, standard low
Temp trim	Modular Top Hat
FSCxxxSRxx-S04-P01-M-11-S-22-31-42-51-61-LH	Stainless, medium temp trim.
FDCxxxDAxx-P01-H-11-L-22-31-42-51-61-LH	Ductile iron, high temp trim
FSNxxxSRxx-S03-P01-M-12-S-23-33-44-52-63-RH-HR	Stainless, nuclear grade with medium temp nuclear trim and stainless springs. Right hand (fail open) orientation with hydraulic override.
FDCxxxSP1xx-A15-S40-P04-G-12-S-24-31-43-51-62-LH	Ductile iron, 1 position partial stroke at 15 degrees, 3/4" NPT ports, low temp trim

**Notes:**

\*Items are considered standard

Ensure material compatibility of all components with applications requirements.

**(7)** Port size limited by piston size.

PISTON SIZE (IN)	4	6	8	10	12	16	20	24
Pmax	P04	P05	P05	P07	P09	P10	P10	P11

**(8)** Environmental temperature requirements may limit the use of certain trim materials. Temperature ranges may be extended with proper insulation. Ductile iron units may be used in low temperature (less than -20°F), but stroke speed should be limited to prevent brittle fracture. Allowable temperature on SP units may be limited by selected sensors (specified separately).

**(9)** Standard springs are various grades of spring steel, most commonly chrome silicon, with powder coat.

**(15)** Bettis selects the appropriate grease based on application requirements.

**(17)** Multiple compatible options may be chosen. Separate options with a comma.

**(18)** This number is assigned by Bettis for modifications that cannot be defined by the engineering string. Contact Emerson for details about specific modifiers.

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