

SY Series

Scotch Yoke Multi-purpose Actuators

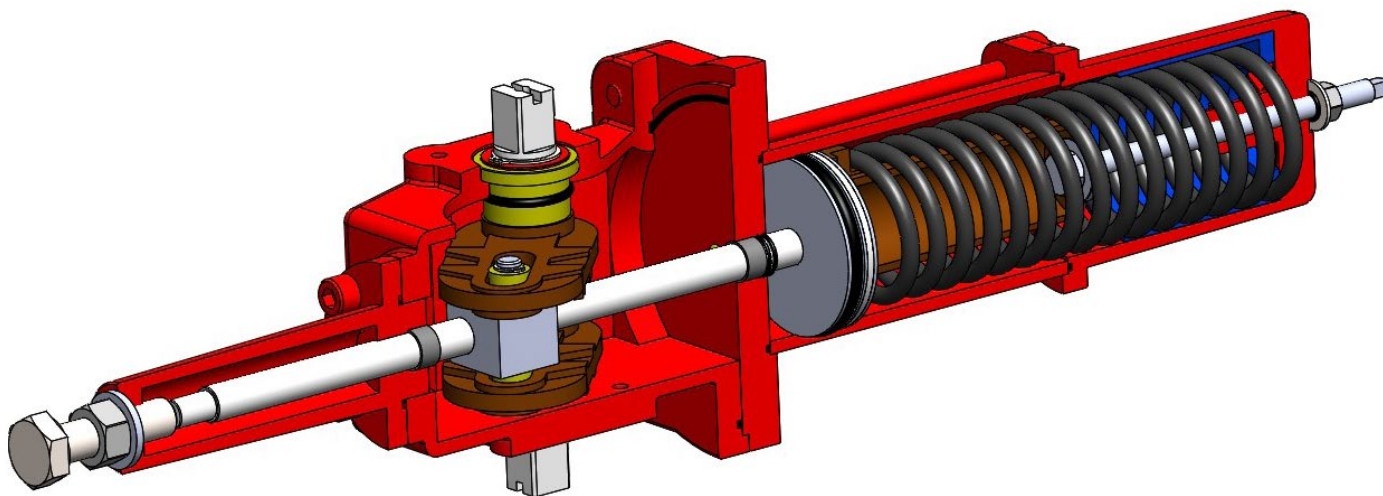
**Pneumatic Actuators
for Quarter-Turn Valves
and Dampers**

**Torques to 12,370 In-lbs
Double Acting
Spring Return**

SY Series Small Scotch Yoke Actuators

Advanced Quarter Turn Actuator Technology

part of the THD family of scotch yoke actuators



Triac® SY Series scotch yoke actuators by A-T Controls offer “workhorse” cycle operation. These rugged actuators are the compliment to the already trusted THD Series. The compact design offers options to address your quarter-turn torque requirements.

The SY Series is a reliable way to automate quarter turn valves and provides options for accessory mounting and manual override operation. The design is modular and allows for easy rotation choices. Simply flip the actuator to achieve clockwise (CW) or counterclockwise (CCW) operation.

This design features a supported scotch yoke which is stabilized by significant body bearings for minimal wear. Various spring and pressure options allow you to achieve the torque balance you need. Increased efficiencies in this design give you the most actuator for the money.

Rely on our Engineering team and solutions personnel to assist you with your applications.

SY Spring Return Torque Chart

MODEL		TORQUE OUTPUT IN-LBS					MOP *	MAWP **	Volume (Cubic Inches per 90°)		WEIGHT (LBS)
		SPRING	40 PSI	60 PSI	80 PSI	100 PSI			CW	CCW	
S04SR7540	START	416	537	879	1256		80	125	34	27	42
	MIN	159	244	449	619						
	END	212	350	668	1055						
S04SR7560	START	708		778	1160	1526	100	125	34	27	42
	MIN	266		339	514	706					
	END	310		366	767	1134					
S04SR7580	START	885			1073	1439	100	125	34	27	42
	MIN	319			462	654					
	END	398			593	959					
S04SR75100	START	1151				1343	100	125	34	27	44
	MIN	425				549					
	END	496				698					
S05SR10540	START	1239	1310	2133	3035		80	125	80	65	80
	MIN	434	537	1016	1421						
	END	487	619	1355	2293						
S05SR10560	START	1761		1950	2860	3732	100	125	80	65	80
	MIN	611		833	1247	1709					
	END	664		815	1779	2651					
S05SR10580	START	2381			2642	3514	100	125	80	65	82
	MIN	814			1046	1508					
	END	885			1168	2040					
S05SR105100	START	2921				3296	100	125	80	65	82
	MIN	1000				1325					
	END	1106				1509					
S05SR13040	START	1947	1921	3168	4552		80	100	121	101	86
	MIN	699	781	1520	2145						
	END	841	903	2024	3462						
S05SR13060	START	2478		2912	4308		80	110	121	101	86
	MIN	929		1282	1918						
	END	1089		1474	2939						
S05SR13080	START	3629			3942	5284	100	125	121	101	89
	MIN	1239			1613	2320					
	END	1460			1805	3148					
S05SR130100	START	4195				4857	100	125	121	101	89
	MIN	1522				2041					
	END	1894				2590					
S06SR13040	START	2390	2328	3809	5441		80	125	151	118	117
	MIN	841	903	1776	2529						
	END	929	985	2298	4003						
S06SR13060	START	3673		3351	5005	6592	100	125	151	118	117
	MIN	1239		1364	2136	2965					
	END	1372		971	2738	4325					
S06SR13080	START	4248			4700	6287	100	125	151	118	122
	MIN	1505			1875	2703					
	END	1682			2171	3758					
S06SR130100	START	5399				5764	100	125	151	118	122
	MIN	1903				2311					
	END	2213				2625					
S06SR18040	START	4107	4485	7334	10464		80	110	282	230	144
	MIN	1469	1864	3534	4971						
	END	1752	2320	4899	8145						
S06SR18060	START	6771		6263	9444	12496	100	125	282	230	144
	MIN	2390		2582	4064	5659					
	END	2788		2143	5520	8572					
S06SR18080	START	8630			8616	11668	100	125	282	230	148
	MIN	3098			3366	4962					
	END	3629			3689	6741					
S06SR180100	START	10311				10900	100	125	282	230	148
	MIN	3717				4351					
	END	4408				5084					

SY Double Acting Torque Chart

MODEL	TORQUE OUTPUT IN-LBS								MOP *	MAWP**	Volume (Cubic Inches per 90°)		WEIGHT (LBS)
	40 PSI		60 PSI		80 PSI		100 PSI				CW	CCW	
	START	MIN	START	MIN	START	MIN	START	MIN					
S04DA75	732	391	1046	584	1465	776	1831	968	100	125	34	27	38
S05DA105	1758	936	2511	1395	3514	1849	4386	2311	100	125	80	65	67
S05DA130	2694	1424	3846	2136	5380	2834			80	90	121	101	71
S06DA130	3182	1677	4543	2520	6357	3357	7944	4186	100	125	151	118	95
S06DA180	6096	3215	8711	4814	12191	6418			90	100	282	230	12

* Maximum operating pressure (MOP) is the pressure required to produce the maximum rated torque of the actuator

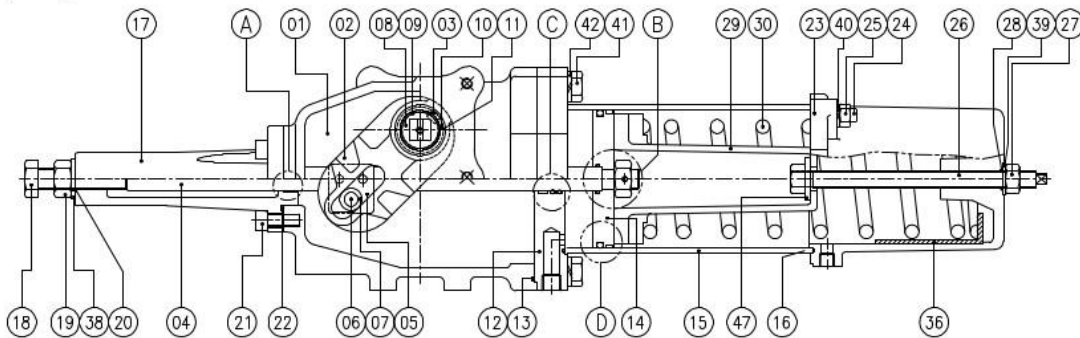
** Maximum Allowable Working Pressure (MAWP) is the maximum static pressure that may be applied to a fully stroked actuator against the travels stops.

*** Swept Volume is the maximum volume including the cavity required for calculating consumption per 90° stroke.

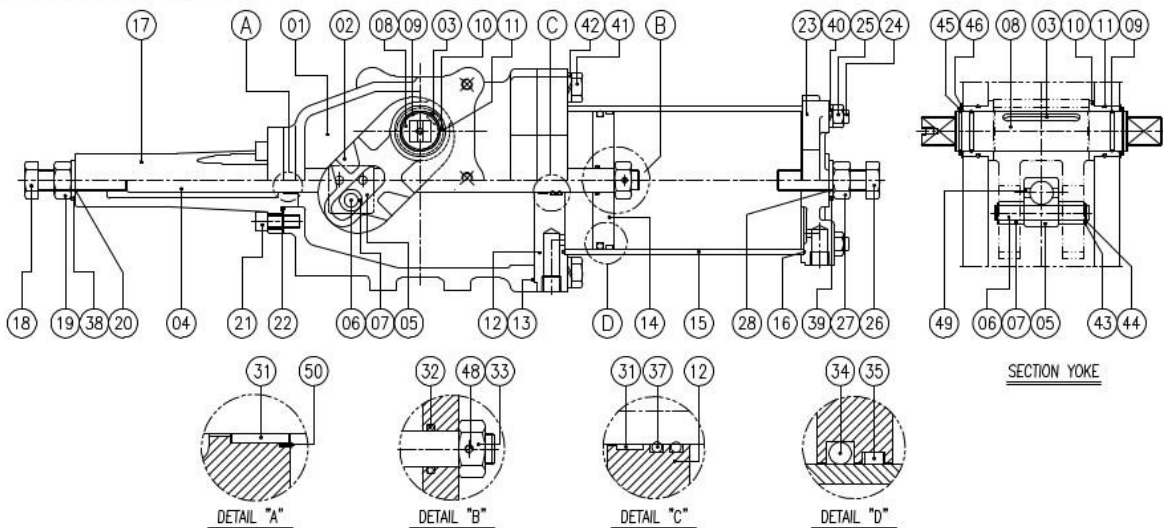
Bill of Materials

No.	QTY	Seal Kit	Description	Material	No.	QTY	Seal Kit	Description	Material
1	1		BODY	A536 Gr. 65-45-12	26	1		STOP BOLT	A193 Gr. B7
2	1		YOKE	A536 Gr. 65-45-12	27	1		STOP BOLT NUT	A194 Gr. 2H
3	1		YOKE KEY	ANSI 1045	28	1	*	STOP BOLT O-RING	BUNA-N
4	1		PISTON ROD	ANSI 4140 (Chrome Plated)	29	1		SPRING RETAINER*	A536 Gr. 65-45-12
5	1		BEARING BLOCK	ANSI 1045	30	1		SPRING*	SAE 9254
6	1		YOKE PIN	17-4PH	31	2		ROD BEARING	PTFE
7	2		YOKE BEARING	B505 Gr. C836	32	1	*	ROD O-RING	BUNA-N
8	1		YOKE SHAFT	17-4PH	33	1		LOCK NUT	A194 Gr. 8
9	2	*	SHAFT O-RING	BUNA-N	34	1	*	PISTON O-RING	BUNA-N
10	2		SHAFT BUSHING	B505 Gr. C836	35	1		BACK UP RING	PTFE
11	2	*	SHAFT BUSHING O-RING	BUNA-N	36	1		SPRING GUIDE BUSHING*	NYLON 6
12	1		FRONT FLANGE	A536 Gr. 65-45-12	37	2	*	ADDITIONAL FRONT FLANGE SEAL	BUNA-N
13	1	*	FRONT FLANGE O-RING	BUNA-N	38	1		STOP WASHER	A193 Gr. B7
14	1		PISTON	ASTM A36	39	1		STOP WASHER	A193 Gr. B7
15	1		CYLINDER	A106 Gr. A (Chrome Plated)	40	4		LOCK WASHER	A193 Gr. B7
16	2	*	CYLINDER O-RING	BUNA-N	41	4		FRONT FLANGE BOLT	A193 Gr. B7
17	1		ROD COVER	A536 Gr. 65-45-12	42	4		LOCK WASHER	A193 Gr. B7
18	1		STOP BOLT	A193 Gr. B7	43	2		PIN WASHER	A193 Gr. B7
19	1		STOP BOLT NUT	A194 Gr. 2H	44	2		PIN RETAINING RING	STEEL
20	1	*	STOP BOLT O-RING	BUNA-N	45	2		SHAFT RETAINING RING	STEEL
21	4		ROD COVER BOLT	A193 Gr. B7	46	2		SHAFT WASHER	A193 Gr. B7
22	1	*	ROD COVER O-RING	BUNA-N	47	1		STOP BOLT WASHER*	A193 Gr. B7
23	1		CYLINDER COVER	A536 Gr. 65-45-12	48	1		LOCK NUT SETSCREW	A193 Gr. B7
24	4		TIE ROD	ANSI 1045	49	2		DRIVE BLOCK PIN	STEEL
25	4		TIE ROD NUT	A194 Gr. 2H	50	1		ROD BEARING RETAINING SCREW	A193 Gr. B7

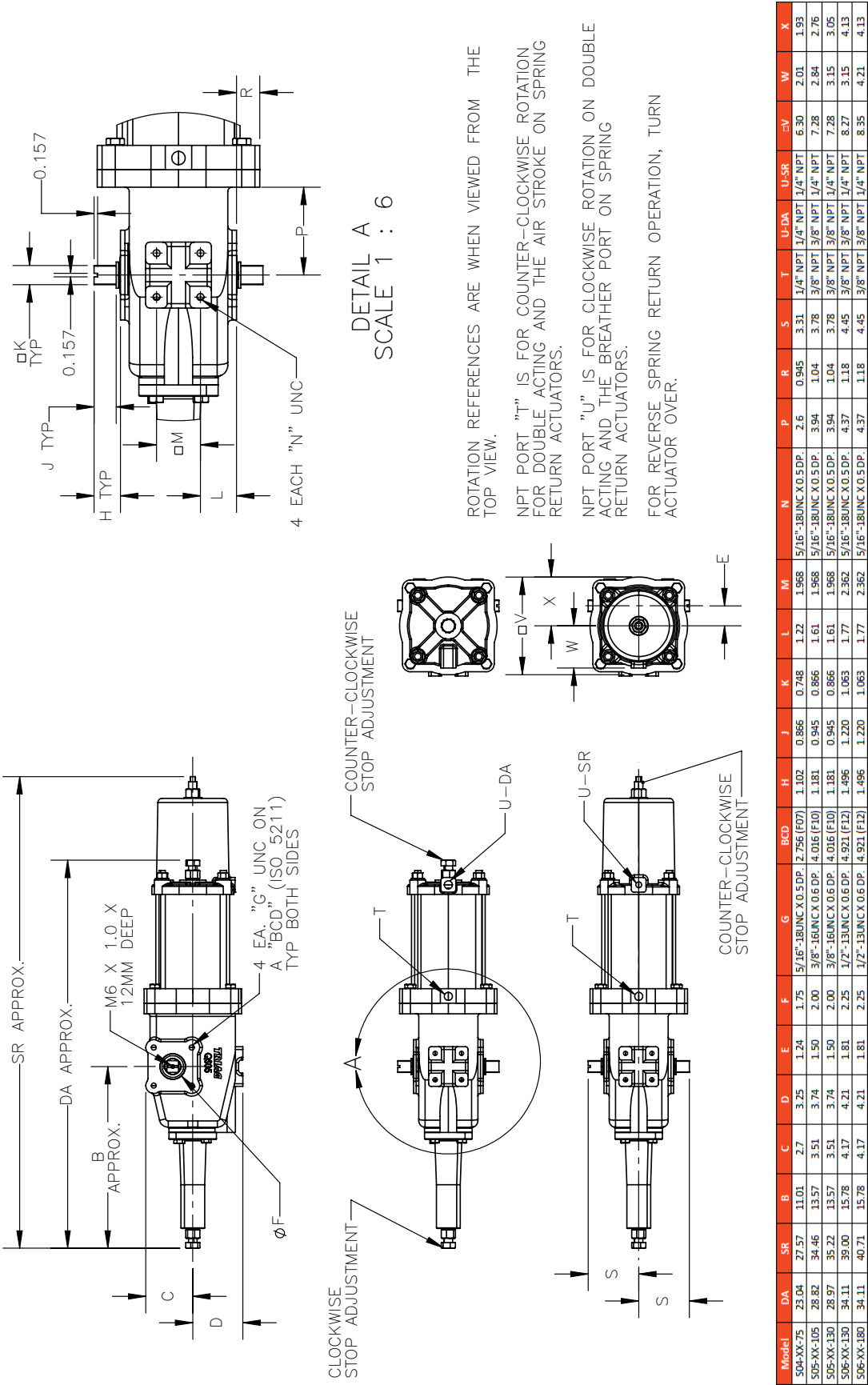
Spring Return Actuator



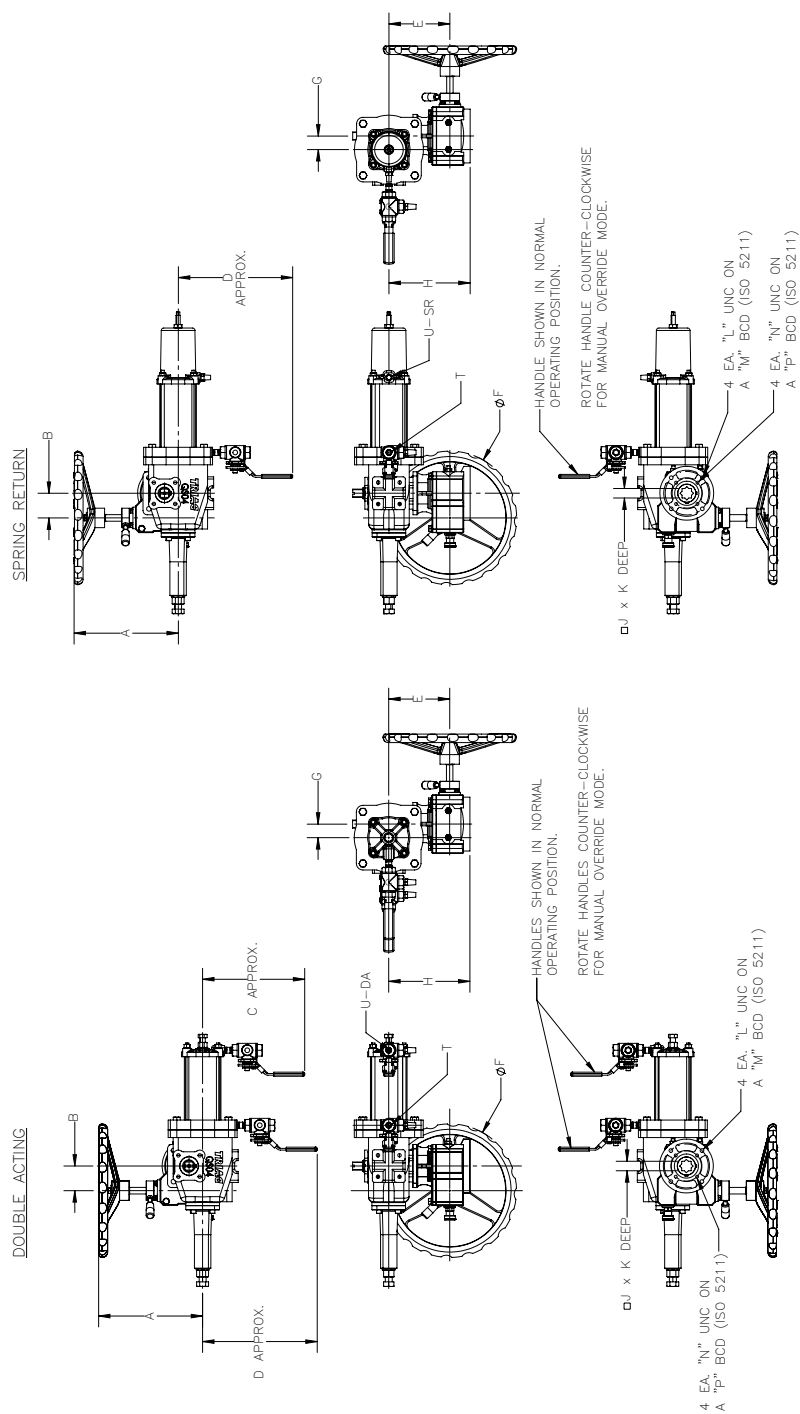
Double Acting Actuator



SY Series Dimensions



SY Series with Manual Override Dimensions



ACTUATOR	DECLUTCHABLE GEAR	GEAR RATIO	A	B	C	D	E	ØF	G	H	□J	K	L	ØM	N	ØP	T	U-DA	U-SR
S04DA075	S04-DGO-22	36:1	9.51	2.25	9.33	10.47	5.57	12.20	1.24	7.42	0.866	1.06	5/16-18 UNC	2.756 (F07)	3/8-16 UNC	4.016 (F10)	1/4" NPT	1/4" NPT	1/4" NPT
S04SR075XX																			
S05DA105	S05-DGO-27	48:1	11.77	3.07	11.64	12.45	6.71	15.75	1.50	8.78	1.063	1.06	3/8-16 UNC	4.016 (F10)	1/2-13 UNC	4.921 (F12)	3/8" NPT	3/8" NPT	1/4" NPT
S05SR105XX																			
S05DA130	S05-DGO-27	48:1	11.77	3.07	11.95	12.45	6.71	15.75	1.50	8.78	1.063	1.06	3/8-16 UNC	4.016 (F10)	1/2-13 UNC	4.921 (F12)	3/8" NPT	3/8" NPT	1/4" NPT
S05SR130XX																			
S06DA130	S06-DGO-36	64:1	13.82	4.33	12.25	13.25	7.79	19.69	1.81	10.59	1.417	1.65	N/A	N/A	5/8-11 UNC	5.5123 (F14)	3/8" NPT	3/8" NPT	1/4" NPT
S06SR130XX																			
S06SR180	S06-DGO-36	64:1	13.82	4.33	13.25	13.33	7.79	19.69	1.81	10.59	1.417	1.65	N/A	N/A	5/8-11 UNC	5.5123 (F14)	3/8" NPT	3/8" NPT	1/4" NPT
S06SR180XX																			

OPTIONS

TRIAC

Declutchable Gear Overrides



The Declutchable Gear Override "sandwich mounts" between a pneumatic quarter-turn actuator and a ball, butterfly, plug or damper valve. This rugged device allows for manual operation during installation, system testing and in the event of an air supply failure.

Positioners



PPR, EPR &
SS "Smart" Series

TRIAC® PPR (3-15 PSI control) and EPR (4-20 mA control) are rotary type pneumatic positioners with advanced control devices which provide unparalleled stability in difficult environments.

SS "Smart" Series offers smart performance with innovative and ever-long drive even under harsh weather environments.

- ▶ SS2 Rotary Smart Digital Valve Positioner
- ▶ SS3 Flame Proof Digital Valve Positioner
- ▶ SS5 Fail-Freeze Digital Valve Positioner

Other position options available - Consult factory for more information.

APL Limit Switches

- ▶ Aluminum or Stainless Steel housing
- ▶ Weatherproof/Explosion proof construction
- ▶ Dome indicator
- ▶ Easy-Set cams
- ▶ Captive bolts
- ▶ Many switch options
- ▶ AS-I systems
- ▶ Can be mounted on manual valves

See brochure for details & options.

APL-310N
CSA Approved,
Type 4X



APL-510N
CSA Approved
Class I, Div 1 & 2, Groups B, C, D

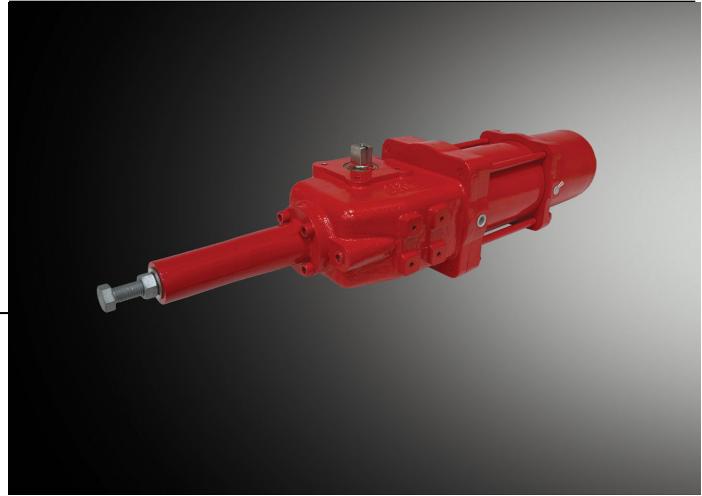


APL-210N
CSA Approved, Type 4X



APL-910N
Stainless Steel
Type 4X, IP 67

TRIAC® SY Model Number Matrix



S - Symmetrical Scotch Yoke

Actuator Center Body

04
05
06

DA - Double Acting
SR - Spring Return

Power Group

075
105
130
180

Blank - Double Acting
Spring Options

40
60
80
100

Blank - No Override
D - Declutchable Gear

Blank - Standard Seals (-29°C to 93°C) (-20°F to 200°F)

V - High Temperature Seals

(-18°C to 177°C) (0°F to 350°F)

L - Low Temperature Seals

(-40°C to 82°C) (-40°F to 180°F)

Example:

S **05** **SR** **130** **80** **D - L**

(Triac SY Spring Return Actuator, fails clockwise with declutchable gear override, low temperature seals)



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