



RACK & PINION FEATURES

TRIAC pneumatic actuators are designed and manufactured to provide the highest cycle-life on the market. We can accessorize them to accomplish virtually any control requirement. They are available with various mounting dimension configurations and span eleven models for appropriate torque compatibility. Our extensive inventory and engineering capabilities allow us to respond to your needs with flexibility. We pride ourselves on exceeding customer expectations. Contact us for application assistance.

- ▶ Double acting and spring return
- Dual travel stops
- ▶ Torques to 36,000 in.lbs.
- ▶ DA and SR common end caps
- ▶ ISO 5211 mounting dimensions
- Wide base for direct mount to many butterfly valves
- Substantial pinion bearings mean high cycle life
- Corrosion resistant hard anodized finish
- Each unit serialized and bar coded
- Namur accessory mounting configuration
- Custom accessory mounting











See accessory page for details

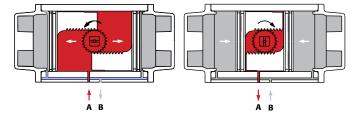
GENERAL TECHNICAL DATA



- Standard working temperature -5°F to 175°F
- Low temperature and high temperature option
- Maximum working pressure 150 psig
- Operating media clean, dry air, non-corrosive gas or light hydraulic oil

- Air supply 40 psi 150 psi
- Rotation 100°
- Dual travel stops standard
- Mounting dimensions
 - Accessories to Namur VDI/VDE
 - Valve mounting to ISO 5211 (TR20 - 2R1750)
 - Custom configurations available in quantity
- Permanently lubricated units

Operation



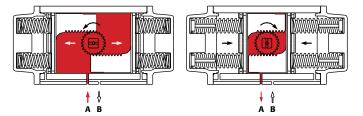
Double Acting Operation

CCW

Air is supplied to Port A forcing the pistons away from each other (toward ends), rotating drive pinion counterclockwise and exhausting air out of Port B.

CW

Air is supplied to Port B forcing the pistons toward each other (toward center), rotating drive pinion clockwise and exhausting air out of Port A.



Spring Return Operation

CCW

Air is supplied to Port A forcing the pistons away from each other (toward ends), rotating drive pinion counterclockwise, compressing springs and exhausting air out of Port B.

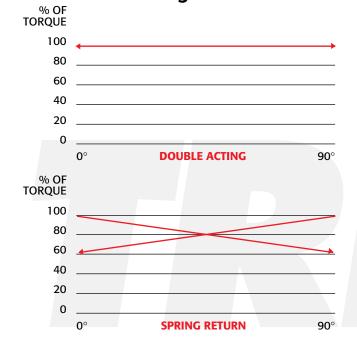
FAIL CW

Air failure (loss of pressure) allows compressed springs to force pistons toward each other (toward center), rotating drive pinion clockwise and exhausting air out of Port A.

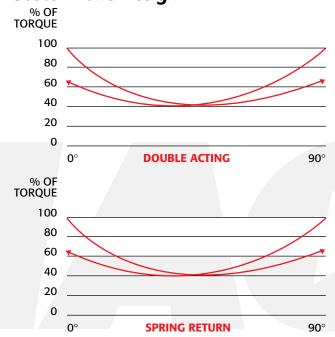
*(Unit is capable of failure in counterclockwise direction by reversing pistons inside of housing.)

Torque Curves

TR10-2R1750 Rack & Pinion Design



2R2500-2R3500 Scotch Yoke Design



TORQUE OUTPUT & OPERATION INFORMATION TRIAS



SPRING RETURN TORQUE (in. lbs.)

							AIR SU				
		SPRING	TORQUE	40	psi	60	psi	80	psi	100) psi
	SPRINGS/										
MODEL	SIDE (5 STD.)	END	BREAK	END	BREAK	END	BREAK	END	BREAK	END	BREAK
	2	19	31	36	48	77	89				
	3	29	49	20	40	60	80	94	115	139	160
TR20SR	4	39	67			42	70	78	106	113	145
	5	49	84			25	60	61	96	105	135
	6	59	101					43	85	88	121
	2	33	59	63	89	125	151				
	3	49	87	27	54	98	135	159	196		
2R40SR	4	65	114			70	119	131	180	194	243
	5	82	142			43	103	103	164	165	226
	6	98	170					75	147	137	209
	2	86	160	185	259	358	432				
	3	128	245	101	218	273	390	447	564		
2R80SR	4	170	330			188	348	362	522	536	696
	5	215	410			109	304	282	477	455	651
	6	260	490					202	432	375	605
	2	120	226	233	339	473	579				
	3	185	343	117	275	356	514	586	744		
2R130SR	4	250	460			239	449	469	679	720	930
	5	315	573			127	385	357	614	607	864
	6	380	685					244	549	494	799
	2	168	310	339	481	669	811				
	3	252	460	190	398	519	727	849	1057		
2R200SR	4	336	610			369	643	699	973	1030	1304
	5	420	760			220	560	549	889	879	1219
	6	504	910					399	805	729	1135
	2	350	644	745	1039	1445	1739				
	3	525	962	428	865	1127	1564	1827	2264		
2R300SR	4	700	1280			809	1389	1509	2089	2200	2780
	5	880	1605			485	1210	1184	1909	1874	2599
	6	1060	1930					859	1729	1549	2419
	2	530	920	1109	1499	2129	2519	2672	7004		
•••••	3	795	1380	650	1235	1669	2254	2679	3264	7271	4010
2R500SR	4	1060	1840			1209	1989	2219	2999	3231	4010
	5	1325	2300			750	1725	1759	2734	2769	3744
<u> </u>	6	1590	2760	1400	1000	2020	7410	1299	2469	2309	3479
	2	740	1230	1499	1989	2929	3419	7644	4379		
2R850SR	3	1100 1460	1835 2440	1095	1830	2324 1719	3059 2699	3644 3039	4019	4320	4300
ZROSUSK	4 5	1460 1815	3050			1719	2699	3039 2429	3664	4320 3709	4944
	5 6	2170	3660			1110	2343	2429 1819	3309	3709 3099	4589
	2	1050	1820	2029	2799	4189	4959	1019	3303	5033	7303
	3	1575	2730	1120	2799	3279	4959	5169	6324		
2R1200SR	4	2100	3640	1120	2213	2369	3909	4259	5799	6140	7680
2111200311	5	2625	4550			1460	3385	3349	5274	5169	7094
	6	3150	5460			1700	3303	2439	4749	4259	6569
	2	1390	2430	3049	4089	6124	7164	2733	1743	1233	0303
	3	2085	3645	1835	3395	4909	6469	7664	9224		
2R1750SR	4	2780	4860	1033	3393	3694	5774	6449	8529	9100	11,180
ZN1/303R	5	3475	6075			2480	5080	5234	7834	7884	10,484
		4170	7290			Z700	3000	4019	7139	6669	9789
	6	41/0	7290					4019	7139	0009	9/09

TORQUE OUTPUT & OPERATION INFORMATION TRIAS

TR10DA - 2R1750DA **DOUBLE ACTING TORQUE (In-Lbs)**

	AIR SUPPLY (psi)							
MODEL	40	60	80	100	120			
TR10DA	30	45	60	75	90			
TR20DA	79	118	158	197	237			
2R40DA	164	245	327	409	491			
2R80DA	352	528	703	879	1055			
2R130DA	527	791	1054	1318	1581			
2R200DA	716	1,073	1,431	1789	2147			
2R300DA	1,217	1,825	2,434	3042	3651			
2R500DA	1,749	2,624	3,498	4373	5247			
2R850DA	3282	4923	6565	8206	9847			
2R1200DA	4510	6765	9020	11275	13530			
2R1750DA	5729	8586	11448	14311	17173			

NOTE:

Spring Return (In-Lbs)

NOTE: Torque shown are for 2R Series (ISO), 2CI Series (Centerline Direct Mount, and 2K Series (Keystone Direct Mount)

Torques are actual. Please be sure to include appropriate safety factors for all service condition variables when sizing.

3-way (master slave) assemblies should use a 35% safety factor. Call factory for assistance.

Spring Re	eturn (In-Lb	s)				
Spring Cl	ockwise Di	rection				
'						
2R2500S	R					
	Air			Spring		Spring
	Break	Run	Air End	Break	Run	End
60 psi	9,854	4,000	5,612	6,000	2,500	3,480
80 psi	12,258	4,750	6,403	9,080	3,950	5,520
			_			
2R3500S	R					
	Air			Spring		Spring
	Break	Run	Air End	Break	Run	End
60 psi	19,700	8,000	11,200	12,000	5,000	6,900
80 psi	24,500	9,500	12,800	18,100	7,900	11,000

Double Acting Torque (In-Lbs)							
2R2500D	Α						
	0 deg	Min	90 deg				
60 psi	13,334	6,667	11,610				
80 psi	17,778	8,890	15,483				
100 psi	22,223	11,110	19,350				
2R3500DA							
	0 deg	Min	90 deg				
60 psi	26,650	13,330	23,200				
80 psi	35,550	17,750	30,960				
100 psi	44,440	22,200	38,700				

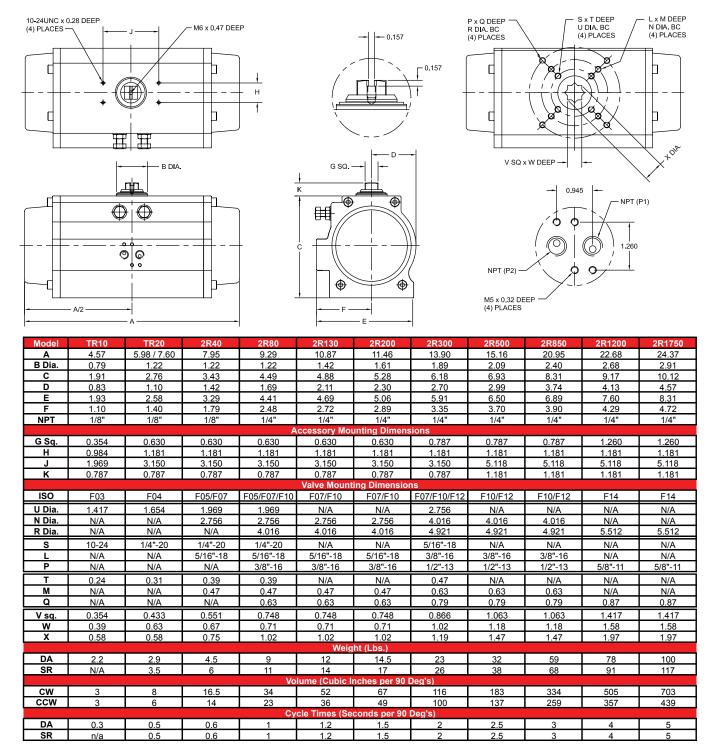
Spring Co	Spring Counter Clockwise Direction								
2R2500SR									
	Air Break	Run	Air End	Spring Break	Run	Spring End			
60 psi	7,522	4,160	6,000	6,240	2,330	2,760			
80 psi	9,500	5,110	6,432	7,800	3,600	4,200			
2R3500S	2R3500SR								
	Air			Spring		Spring			
	Break	Run	Air End	Break	Run	End			
60 psi	15,000	8,200	12,000	12,400	4,600	5,410			
80 psi	19,000	10,200	12,800	15,600	7,200	8,400			

NOTE: 2R2500 and 2R3500 are scotch yoke design.

Consult factory for 2R2500DAR and 2R3500DAR (reverse acting) torque chart

DIMENSIONS TR20-2R1750

TRIAG



TR10 & TR20 have travel stops located in the End Caps for travel adjustment in one direction.

2R40 & 2R80 have travel stops on the opposite side as shown.

Direct Acting:

Pressure at port P1 will result in a clockwise rotation

Pressure at port P2 will result in a counter clockwise rotation

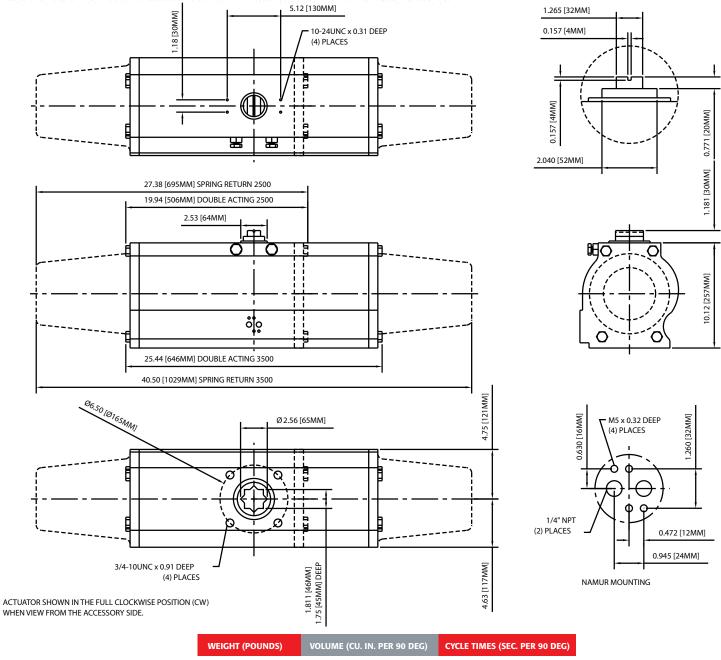
Reverse Acting:

Pressure at port P1 will result in a counter clockwise rotation

Pressure at port P2 will result in a clockwise rotation

DIMENSIONS 2R2500 – 2R3500





	WEIGHT (POUNDS)		VOLUME (CU. IN	N. PER 90 DEG)	CYCLE TIMES (SEC. PER 90 DEG)		
MODEL	DA	SR	CW	ccw	CW	ccw	
2R2500	98	137	525	310	5	5	
2R3500	125	195	650	585	9	9	

Air Consumption (scf per 90 Deg)= $\frac{\text{Volume}}{1,728} \times \frac{\text{Supply Pressure} + 14.7}{14.7}$

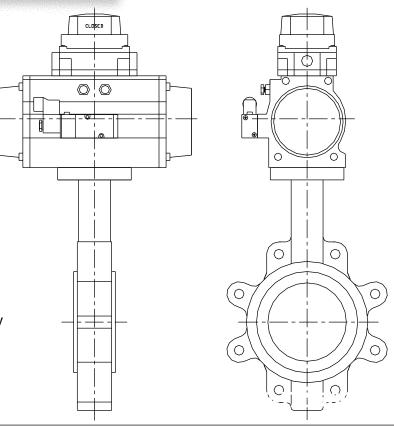
NOTES: Accessory mounting holes are not intended for Manual Gear Overrides or Stop Blocks. Cycle times are under no load conditions. Air line size, air capacity, and valve torque characteristics affect these cycle times. Faster or slower cycle times can be accomplished using special control components.

DIRECT MOUNT FOR BUTTERFLY VALVES

TRIAC

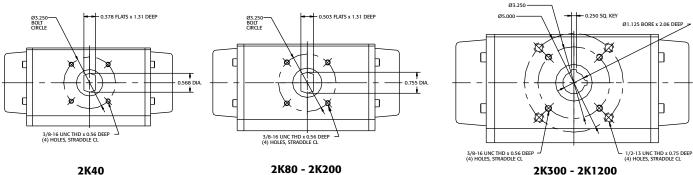
- Available for many of the most popular resilient seated butterfly valves
- Call for details and availability
- Usually requires no additional hardware
- Lower profile packages
- Wide base accommodates pattern without transition plate

TRIAC actuators feature a wide base to enable direct mounting to many butterfly valves without transition plates. Contact factory for compatibility with your particular butterfly.



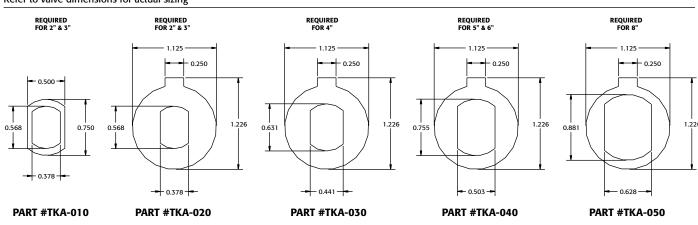
Note: 2K850 and 2K1200 have only 5" bolt circle

Dimensions - 2K Series

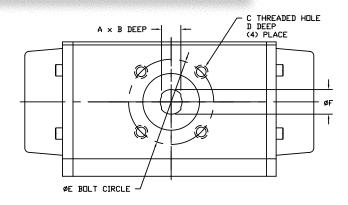


Adapter Dimensions for 2K Series

Refer to valve dimensions for actual sizing



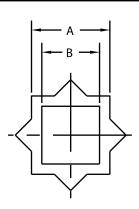
DIRECT MOUNT ACTUATORS FOR CENTERLINE BUTTERFLY VALVES



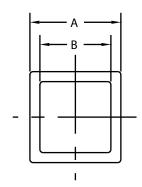
MODEL	Α	В	С	D	E	F
2CI40**/2-3	0.394	1.31	5/16-18	0.47	2.756	0.50
2CI80**/2-3	0.394	1.31	5/16-18	0.47	2.756	0.50
2CI80**/4	0.472	1.31	5/16-18	0.47	2.756	0.63
2CI80**/5-6	0.551	1.31	5/16-18	0.47	2.756	0.75
2CI130**/2-3	0.394	1.31	5/16-18	0.47	2.756	0.50
2CI130**/4	0.472	1.31	5/16-18	0.47	2.756	0.63
2CI130**/5-6	0.551	1.31	5/16-18	0.47	2.756	0.75
2CI200**/4	0.472	1.31	5/16-18	0.47	2.756	0.63
2CI200**/5-6	0.551	1.31	5/16-18	0.47	2.756	0.75
2CI300**/5-6	0.551	1.31	5/16-18	0.47	2.756	0.75
2CI300**/8	0.669	1.81	3/8-16	0.63	4.016	0.88
2CI300**/10	0.866	1.81	3/8-16	0.63	4.016	1.13
2CI500**/8	0.669	1.81	3/8-16	0.63	4.016	0.88
2CI500**/10	0.866	1.81	3/8-16	0.63	4.016	1.13
2CI500**/12-14	0.945	1.81	3/8-16	0.63	4.016	1.25
2CI850**/10	0.866	1.81	3/8-16	0.63	4.016	1.13
2CI850**/12-14	0.945	1.81	3/8-16	0.63	4.016	1.25
2CI1200**/10	0.866	1.81	3/8-16	0.63	4.016	1.13
2CI1200**/12-14	0.945	1.81	3/8-16	0.63	4.016	1.25

Inserts for use with 2R Series Actuators

As shown on page 6



STAR INSERTS	Α	В
ATD11T09	0.433	0.354
ATD14T09	0.551	0.354
ATD14T11	0.551	0.433
ATD19T09	0.748	0.354
ATD19T11	0.748	0.433
ATD19T14	0.748	0.551
ATD19T17	0.748	0.669
ATD22T14	0.866	0.551
C11251 (22mm-17mm)	0.866	0.669
ATD27T17	1.063	0.669
C15186 (27mm-19mm)	1.063	0.748
ATD27T22	1.063	0.866
C13116 (36mm-27mm)	1.417	1.063



SQUARE INSERTS	Α	В
C14352 (17mm-14mm)	0.669	0.551
C11251 (22mm-17mm)	0.866	0.669
ATE22T19	0.866	0.748
ATE26T17	1.023	0.669
ATE35T22	1.378	0.866
C13116 (36mm-27mm)	1.417	1.063

Solenoid Valves

- Direct mount TVC series
- ▶ Nipple mount available
- Weatherproof/explosion proof construction
- Intrinsically safe coil available
- Various voltages AC or DC
- Quick exhaust modification
- ▶ 2 or 3 position control
- ► Exhaust speed controls



TVCS-X411-4N Direct Mount Solenoids All Accessory Options Available

APL & EX Series Limit Switches

- ▶ Aluminum 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-310

TRIAS

Stainless Steel Pneumatic Actuators



See stainless steel actuator brochure for details and information.

Positioners

Declutchable Gear Overrides



PPR and EPR Series



DG0 Series

Other Accessories and Controls



- ▶ Lock-up valves
- ▶ Filter regulators
- ► Special tubing/fittings
- ▶ Lockout/tagout hardware
- ▶ Flow controls
- ▶ Speed controls

- ▶ Custom assemblies
- ▶ Dribble control
- Specials
- Complete mounting and assembly service

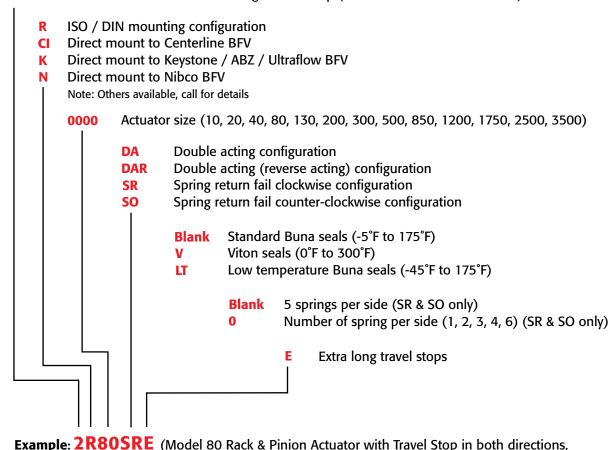
SPECIFICATION AND ORDERING INFORMATION TRIAC

Sample Specification

Actuator shall be TRIAC TR/2R series rack and pinion design. Body to be hard anodized, extruded aluminum for corrosion protection and shall have a base wide enough for stable mounting to valve mounting pads. Internals to feature dual aluminum piston racks and a one-piece electroless nickel plated blow-out proof pinion. Pinion shall also have significant body housing bearings with O ring seals to prevent premature cycle-life failure. Unit to have dual adjustable travel stops and overtravel in both directions. Fasteners and hardware to be stainless steel. Standard bottom mounting dimensions to conform to ISO5211 and accessory mounting to NAMUR-VDI/VDE guildlines.

TRIAC Model Number Matrix

- 2 Triac Rack & Pinion Actuator with double travel stops
- Triac Rack & Pinion Actuator with single travel stop (discontinued from 40 ~ 3500)

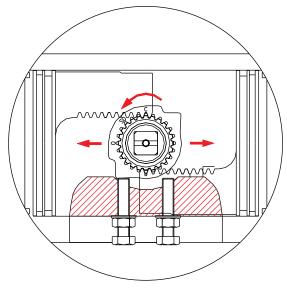


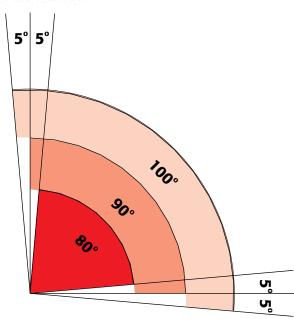
Spring Return fail clockwise, with Extra long travel stops)

OPERATIONAL DETAILS AND FEATURES

TRIAS

Dual Travel Stop Adjustment

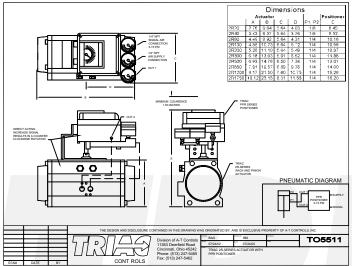


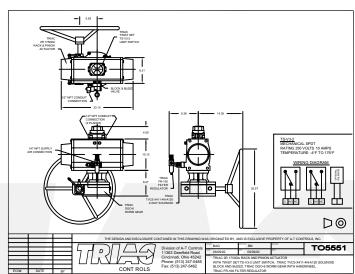


Triac 2R Series features a splined stop collar that provides travel stop adjustments in both the clockwise and counter-clockwise directions. The splined collar ensures minimal hysteresis and repeatable stop positions.

Support

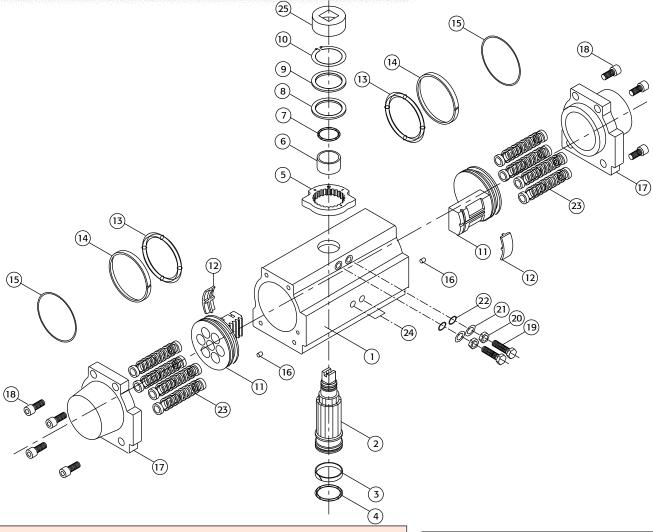
Engineering assistance and AUTOCAD® drawings available





EXPLODED VIEW AND BILL OF MATERIAL

TRIAS



No.	Description		Qty.	Material	Remarks
1	Cylinder Body		1	Aluminum	Hard Anodized
2	Pinion		1	Steel	Electroless Nickel Plated
3	Bottom Pinion Bushing (@	1	Nylon	
4	Bottom Pinion O-ring ①)@	1	Nitrile Buna	
5	Travel Stop Cam		1	SCM21	Phosphate Coated
6		0	1	Nylon	
7)@③	1	Nitrile Buna	
8		00	1	RTFE	
9	Pinion SST Washer ①)②	1	304 Stainless Steel	
10	Snap Ring (1)②	1	Steel	Electroless Nickel Plated
11	Piston		2	Die Cast Aluminum	Dichromate Dipped
12	Guide Plate ①	0	2	Nylon	
13	Piston O-ring (1	003	2	Nitrile Buna	
14	Piston Guide Band ①)2	2	PTFE	
15		23	2	Nitrile Buna	
16	Hole Sealant		2	Nitrile Buna	
17	End Cap		2	Die Cast Aluminum	Epoxy Coated
18	End Cap Bolt		2	304 Stainless Steel	
19	Travel Stop Bolt		2	304 Stainless Steel	
20	Travel Stop Nut		2	304 Stainless Steel	
21	Travel Stop Washer		2	304 Stainless Steel	
22		23	2	Nitrile Buna	
23	Spring Cartridge		12	Spring Steel	Epoxy Coated
24	Dust Plug		2	Polyethylene	
25	Position Indicator		1	Polyethylene	

	Repair Kit	
Nitrile Buna	2RKB(Actuator Size)	-5°F ~ +175°F
Viton	2RKV(Actuator Size)	0°F ~ +300°F
Low Temp Buna	2RKLT(Actuator Size)	-45°F ~ +175°F

Example: 2RKB0130 = Nitrile Buna Repair Kit for 2R130

Seal Kit								
Nitrile Buna	2BOK(Actuator Size)	-5°F ~ +175°F						
Viton	2VOK(Actuator Size)	0°F ~ +300°F						
Low Temp Buna	2LTOK(Actuator Size)	-45°F ~ +175°F						
Example: 2VOV0000 - Viter Seel Vit for 2000								

① Recommended spare parts② Parts included in a repair kit3 Parts included in a seal kit



TRIAS Electric Actuators



- ▶ Torques to 80,000 in. lbs.
- ▶ Weatherproof enclosure
- ▶ ISO5211 mounting kits
- ▶ On-off or modulating
- CSA approved

Custom Mounting and Assembly Service



Heavy Duty Actuators



- Double acting
- ▶ Spring return
- ▶ Features stabilizer bar for longer cycle life
- ▶ Torques to 250,000 in. lbs.
- Easy accessory mounting

Manual Gear Operators & Overrides





- ▶ Quarter turn and multiturn
- ▶ Torques to 106,000 in. lbs.
- ▶ Declutchable gear overrides
- ▶ ISO 5211 and other mounting
- Custom mounting available

Automated Ball Valve Assemblies



- Pre-engineered assemblies
- Pre-sized and pre-priced
- ▶ Double acting or spring return
- ▶ 150 lb. and 300 lb. flanged
- ▶ 3 piece valves
- ▶ 3-way flanged and threaded
- ▶ Firesafe valves and more
- Sanitary ends
- ▶ Tank bottom valves











Complete Valve Automation



9955 International Blvd. Cincinnati, Ohio 45246 PH (513) 247-5465 FAX (513) 247-5462 sales@atcontrols.com www.atcontrols.com