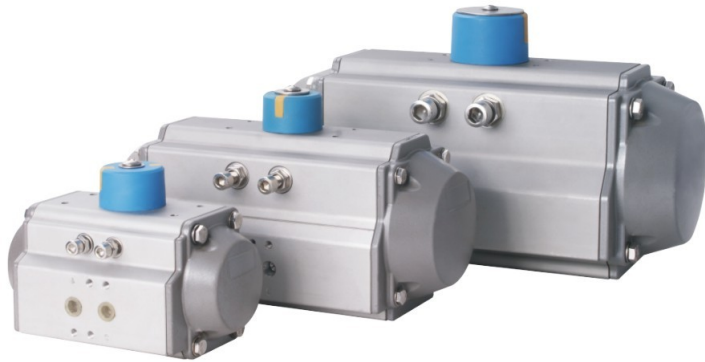


# STC

## AIR & ELECTRIC ACTUATED VALVES



Precision Engineered

Fine Quality



STC



Excellent Prices

Advanced Design



connects fluid power to industrial automation™

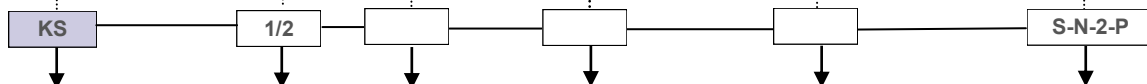
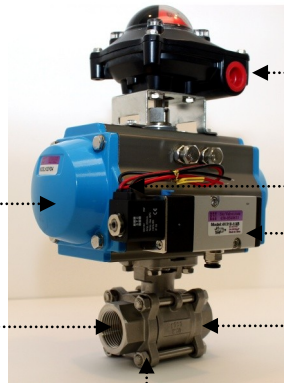
Website: [StcValve.com](http://StcValve.com)

# STC AIR & ELECTRIC ACTUATED VALVES

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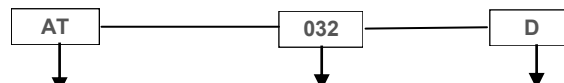
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# STC AIR ACTUATED VALVE NUMBERING SYSTEM



Model	Valve Port Size (in)	Connection Style	Valve Type	Valve Material	Options
KS = Single Acting (Spring Return) KD = Double Acting (Air Return)	1/2	Blank = NPT C = Tri-Clamp F = Flange R = BSPT W = Butt Weld	Blank = 2 Way, Normally Closed O = 2 Way, Normally Open L = 3 Way (L Port) T = 3 Way (T Port)	Blank = 316 Stainless Steel	S = Namur solenoid valve  Coil Electrical: D = DIN E = Explosion Proof Coil (1/2" Conduit) G = 2 Lead Wires N = 1/2 NPT for Conduit U = UL Coil (DIN)  Coil Voltage: 1 = 12VDC 2 = 24VDC 2A = 24VAC 3 = 110 VAC 50/60HZ 4 = 220 VAC 50/60HZ  P = Proximity Switch (2 SPDT) X = Proximity Switch (2 SPDT) Exp. Proof
	3/4				
	1				
	1 1/4				
	1 1/2				
	2				
	2 1/2				
	3				
4					

## Part No. for Air Actuators only

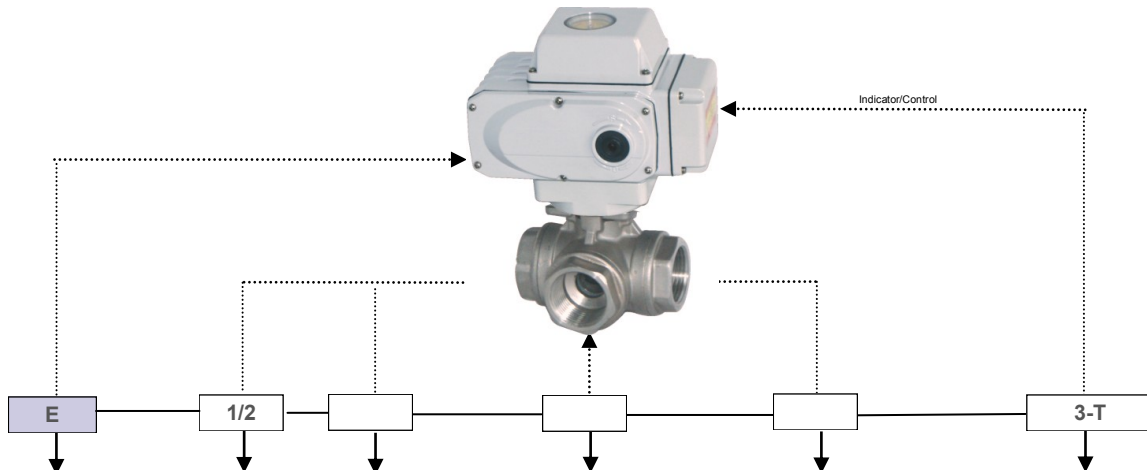


Air Actuator Model	Bore Size (mm)	Acting Mode
AT= Air Actuator	032	D = Double Acting S = Single Acting
	050	
	063	
	075	
	088	
	100	
	125	
	145	
160		

PROXIMITY SWITCH (POSITION INDICATOR & RELAY)			
Model	APL-210N	APL-310N	APL-410N
Picture			
Description	Proximity Switch (2 SPDT)	Proximity Switch (2 SPDT)	<b>Explosion Proof</b> Proximity Switch (2 SPDT)



# STC ELECTRIC ACTUATED VALVES NUMBERING SYSTEM

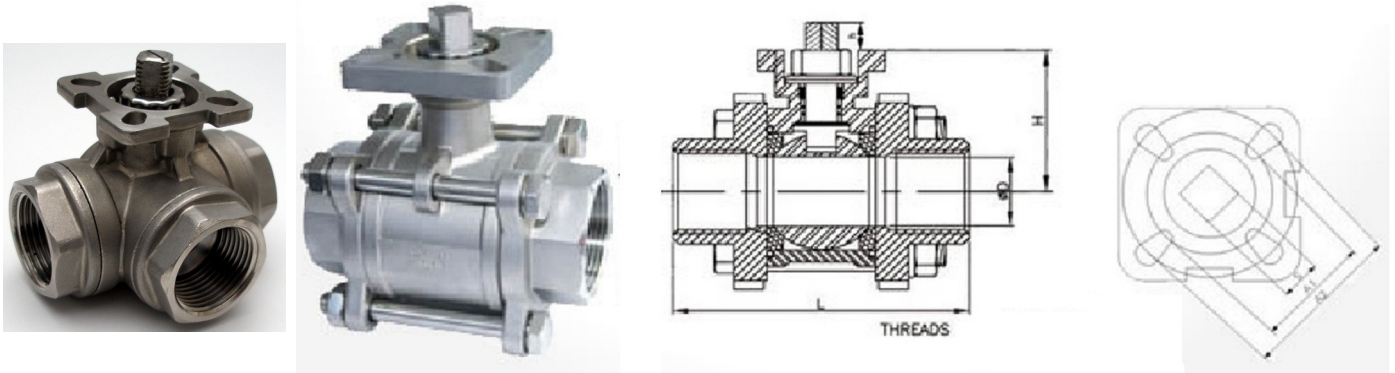


Model	Port Size (in)	Connection	Valve Type	Valve Material	Options
<b>Electric Actuated</b>	1/4	Blank = NPT C = Tri-Clamp F = Flange (150LB) R = BSPT W = Butt Weld	Blank = 2 Way, Normally Closed O = 2 Way, Normally Open L = 3 Way (L Port) T = 3 Way (T Port)	Blank = 316 Stainless Steel B = Brass	<b>Voltage Option:</b> 1 = 12VDC 2 = 24VDC 2A = 24VAC 3 = 110 VAC 50/60HZ 4 = 220 VAC 50/60HZ  <b>Control /Signal:</b> Blank = <b>Light Indicator</b> S = Contact signal R = 1K, 5K potentiometer T = 4-20 mA (for Proportional Control)
	3/8				
	1/2				
	3/4				
	1				
	1 1/4				
	1 1/2				
	2				
	2 1/2				
	3				
4					

## Electric Actuators Part No.

Actuator Type	Size	Proximity Indicator
<b>Electric Actuator</b>	05	<b>Voltage Option:</b> 1 = 12VDC 2 = 24VDC 2A = 24VAC 3 = 110 VAC 50/60HZ 4 = 220 VAC 50/60HZ  <b>Control /Signal:</b> Blank = <b>Light Indicator</b> S = Contact signal R = 1K, 5K potentiometer T = 4-20 mA (for Proportional Control)
	10	
	20	
	40	
	60	
	100	
	200	

## 2 & 3 WAY BALL VALVE BODY DIMENSIONS & SPECIFICATIONS

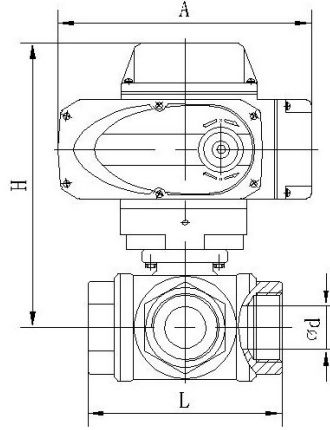


2 & 3 WAY VALVE BODY Dimensions (mm)									
Part No.	Part No.	SIZE						ISO05211	
2 WAY	3 WAY (L port)	NPT	D	L	H	h	S	A1	A2
V3-1/2A	V3-1/2LA	1/2"	15	75	38	9	9	F03	F04
V3-3/4A	V3-3/4LA	3/4"	20	80	47	9	9	F03	F04
V3-1A	V3-1LA	1"	25	90	57.2	11	11	F04	F05
V3-1 1/4A	V3-1 1/4LA	1 1/4"	32	110	62.5	11	11	F04	F05
V3-1 1/2A	V3-1 1/2LA	1 1/2"	38	120	77.5	14	14	F05	F07
V3-2A	V3-2LA	2"	50	140	86.5	14	14	F05	F07
V3-2 1/2A	V3-2 1/2LA	2 1/2"	65	162	108	17	17	F07	F10
V3- 3A	V3- 3LA	3"	80	184	115	17	17	F07	F10
V3-4A	V3-4LA	4"	100	228	141	22	22	F07	F10

Valve Specifications		
	2 Way Valve	3 Way Valve
Operating Pressure	3/8" to 2": 1000 PSI @ 100°F WOG	
	2 1/2" to 4" : 800 PSI @ 100°F WOG	
Operating Temperature	-60 to 450°F*	
Port	Full Port	Reduced Port
Port Connection	End Connections: FNPT; Options: Tri-clamp, Flange, Butt Weld	
Mounting standard	DIN 3203-M3, ISO 5211 MOUNTING PAD, ISO5211 PLATFORM	

Main Parts and Materials			
No	Part Name	Material	Qty
1	SEAT	PTFE	2
2	BALL	SS316	1
3	JOINT GASKET	PTFE	1
4	CAP	SS316	1
5	BODY, BODY CONNECTOR	SS316/CF8M	1, 2
6	STEM	SS316	1
7	THRUST WASHER	PTFE	1
8	STEM PACKING	PTFE	1
9	GLAND NUT	SS304	1
10	STEM WASHER	SS304	1
11	STEM NUT	SS304	1
14	BODY CONNECTOR BOLT	SS304	4
15	BODY CONNECTOR NUT & WASHER	SS304	4

# ELECTRIC ACTUATED 3 WAY BALL VALVE SPECIFICATIONS






Port (NPT)	d, Orifice (mm)	L (mm)	A (mm)	H (mm)	ACTUATOR
1/2"	10	68	55	103	E-02
3/4"	15	78	55	112	E-02
1/2"	10	68	160	144	E-05
3/4"	15	78	160	154	E-05
1"	18	86	160	164	E-05
1 1/4"	25	111	160	178	E-05
1 1/2"	32	126	160	188	E-05
2"	40	143	198	230	E-10
2 1/2"	50	200	255	290	E-20

Specifications			Main Parts and Materials			
	2 Way Valve	3 Way Valve	No	Part Name	Material	Qty
Operating Pressure	3/8" to 2": 1000 PSI @ 100°F WOG		1	SEAT	PTFE	2
	2 1/2" to 4" : 800 PSI @ 100°F WOG		2	BALL	SS316	1
Media Temperature	14 to 356°F* (-10 to 180°C)		3	JOINT GASKET	PTFE	1
Ambient Temperature	14 to 140°F* (-10 to 60°C)		4	CAP	SS316	1
Port	Full Port	Reduced Port	5	BODY, BODY CONNECTOR	SS316/CF8M	1, 2
			6	STEM	SS316	1
Port Connection	End Connections: FNPT; Options: Tri-clamp, Flange, Butt Weld		7	THRUST WASHER	PTFE	1
	Mounting standard		8	STEM PACKING	PTFE	1
Mounting standard	DIN 3203-M3, ISO 5211 MOUNTING PAD, ISO5211 PLATFORM		9	GLAND NUT	SS304	1
			10	STEM WASHER	SS304	1
			11	STEM NUT	SS304	1
			14	BODY CONNECTOR BOLT	SS304	4
			15	BODY CONNECTOR NUT & WASHER	SS304	4

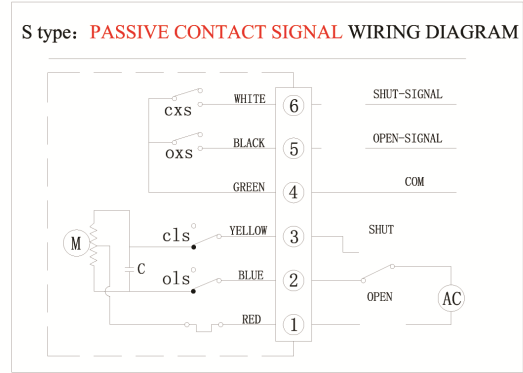
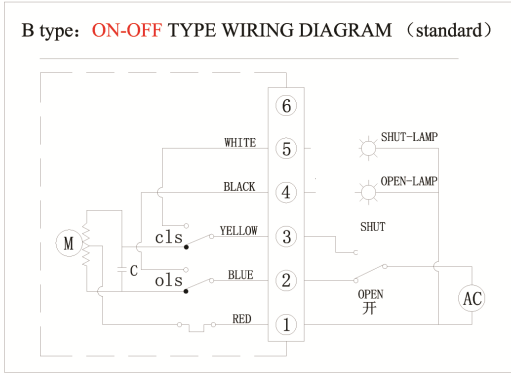
# ELECTRIC ACTUATOR SPECIFICATIONS

Electric Actuator Specifications		
Model	E-02	E-05 to 200
Operating Temperature & RH	60-130 °F, 10-90%RH	-22 to 140 °F (-30 to 60 °C) , 10-90%RH
Electrical Protection	IP 65	IP 68
Installation Position	Any Orientation	Any Orientation
Voltage Options	24VDC, 110 & 220 VDC (50/60HZ)	24VDC, 110 & 220 VDC (50/60HZ)
Enclosure	Die-Cast Aluminum (Powder Coated)	Die-Cast Aluminum Alloy (Powder Coated)

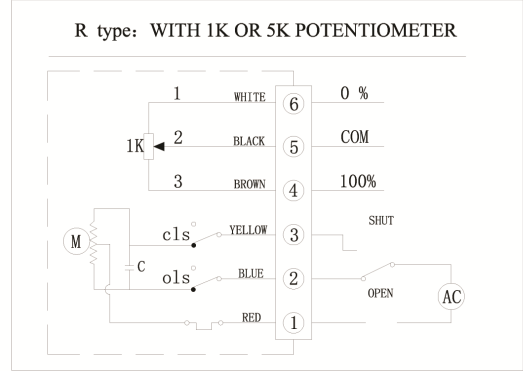
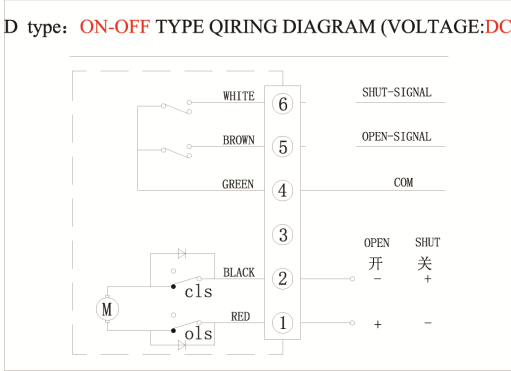
	Model	Torque	Cycle Time DC/AC	Drive Motor 24DC	Drive Motor 24-380AC	Weight	Special function	Signal	Ball Valve Diameter (DN)	Butterfly Valve Diameter (DN)	Rotation
	E-02	6N * M	7S		4.6W	0.5Kg	On-off light	Light Indicator	15-20		90°
	E-05	50N * M	7S/20S	10W	15W	2.6Kg	On-off light	Light Indicator	15-40	32-65	90°
	E-10	100N * M	10S/30S	20W	25W	3.7Kg	On-off light	Light Indicator	50-65	50-125	90°
	E-20	200N * M	12S/30S	40W	40W	6.7Kg	On-off light	Light Indicator	65-80	150-200	90°
	E-40	400N * M	15S/30S	70W	90W	7.2Kg	On-off light	Light Indicator	80-100	200-250	90°
	E-60	600N * M	20S/45S		90W	7.3Kg	On-off light	Light Indicator	100-125	250-300	90°
	E-100	1000N * M	NA/30S		100W	7.3Kg	On-off light	Light Indicator	125-150	300-400	90°
	E-200	2000N * M	NA/100S		100W	11.2Kg	On-off light	Light Indicator	150-300	450-700	90°
	E-02S	6N * M	7S		4.6W	0.5Kg	On-off light	Light Indicator	15-20		90°
	E-05S	50N * M	20S	10W	15W	2.6Kg	Passive contact	contact signal	15-40	32-65	90°
	E-10S	100N * M	30/60S	20W	25W	3.7Kg	Passive contact	contact signal	50-65	50-125	90°
	E-20S	200N * M	30/60S	40W	40W	6.7Kg	Passive contact	contact signal	65-80	150-200	90°
	E-40S	400N * M	30/60S	70W	90W	7.2Kg	Passive contact	contact signal	80-100	200-250	90°
	E-60S	600N * M	45S		90W	7.3Kg	Passive contact	contact signal	100-125	250-300	90°
	E-100S	1000N * M	50S		100W	7.3Kg	Passive contact	contact signal	125-150	300-400	90°
	E-200S	2000N * M	100S		100W	11.2Kg	Passive contact	contact signal	150-300	450-700	90°
	E-02R	6N * M	7S		4.6W	0.5Kg	On-off light	Light Indicator	15-20		90°
	E-05R	50N * M	20S	10W	15W	2.6Kg	1K, 5K potentiometer	Opening signal	15-40	32-65	90°
	E-10R	100N * M	30/60S	20W	25W	3.7Kg	1K, 5K potentiometer	Opening signal	50-65	50-125	90°
	E-20R	200N * M	30/60S	40W	40W	6.7Kg	1K, 5K potentiometer	Opening signal	65-80	150-200	90°
	E-40R	400N * M	30/60S	70W	90W	7.2Kg	1K, 5K potentiometer	Opening signal	80-100	200-250	90°
	E-60R	600N * M	45S		90W	7.3Kg	1K, 5K potentiometer	Opening signal	100-125	250-300	90°
	E-100R	1000N * M	50S		100W	7.3Kg	1K, 5K potentiometer	Opening signal	125-150	300-400	90°
	E-200R	2000N * M	100S		100W	11.2Kg	1K, 5K potentiometer	Opening signal	150-300	450-700	90°
	E-02T	6N * M	7S		4.6W	0.5Kg	On-off light	Light Indicator	15-20		90°
	E-05T	50N * M	20S	10W	15W	2.6Kg	Proportional Control	4-20mA	15-40	32-65	90°
	E-10T	100N * M	30/60S	20W	25W	3.7Kg	Proportional Control	4-20mA	50-65	50-125	90°
	E-20T	200N * M	30/60S	40W	40W	6.7Kg	Proportional Control	4-20mA	65-80	150-200	90°
	E-40T	400N * M	30/60S	70W	90W	7.2Kg	Proportional Control	4-20mA	80-100	200-250	90°
	E-60T	600N * M	45S		90W	7.3Kg	Proportional Control	4-20mA	100-125	250-300	90°
	E-100T	1000N * M	50S		100W	7.3Kg	Proportional Control	4-20mA	125-150	300-400	90°
	E-200T	2000N * M	100S		100W	11.2Kg	Proportional Control	4-20mA	150-300	450-700	90°

# Electric Actuator Wiring Diagram

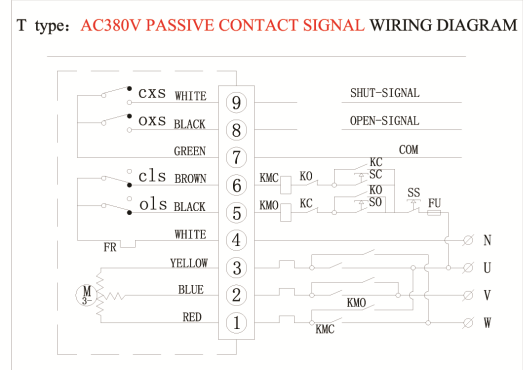
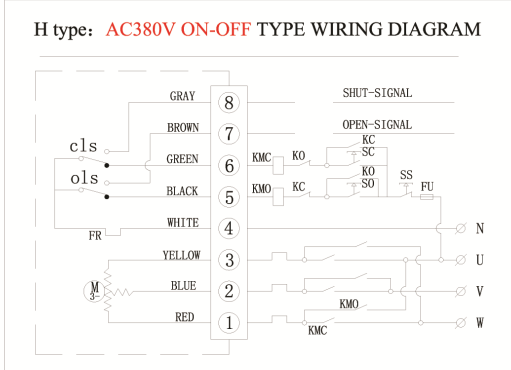
## Actuator with ON/OFF Indicator



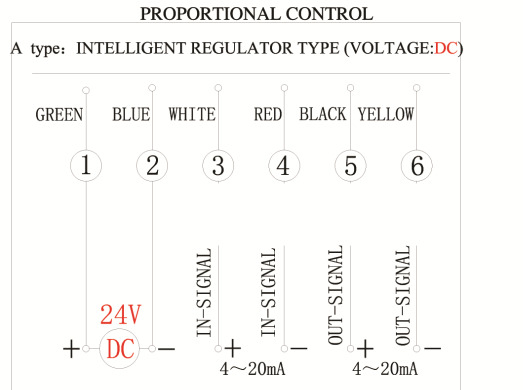
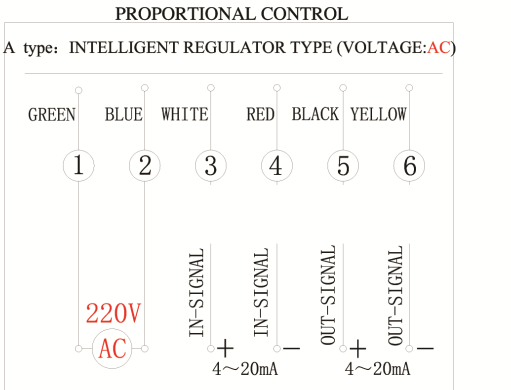
## Actuator with 1 to 5 K Potentiometer



## Actuator with Passive Contact




## Actuator with 4-20mA Proportional Control



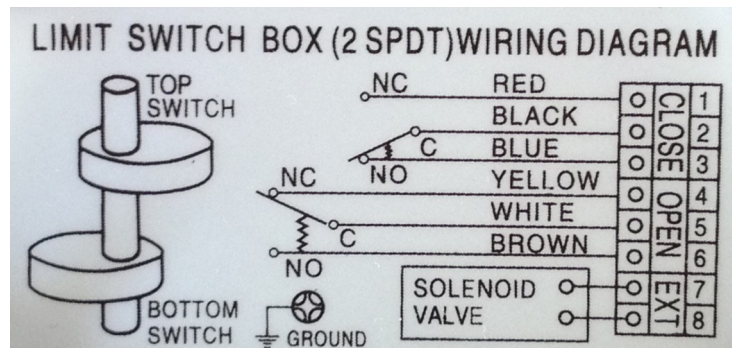


## POSITION INDICATOR/PROXIMITY SWITCHES FOR AIR ACTUATED VALVES

APL Series position indicator are designed to integrate valve and NAMUR rotary pneumatic actuator with a variety of mounting options, configurations, and internal switches or sensors.

			
<b>Model</b>	<b>APL-210N</b>	<b>APL-310N</b>	<b>APL-410N</b>
<b>Electrical</b>	IP 67 ENCLOSURE		Explosion Proof, Exd II BT6, IP 67 ENCLOSURE
<b>Proximity Switch</b>	2 SPDT Mechanical Limit Switches		
<b>Max. Voltage</b>	250VAC or DC		
<b>Current: DC</b>	5A @ 8 to 14VDC 4A @ 30VDC 0.4A @ 125VDC 0.2A @ 250VDC	0.6A 125VDC, 0.3A 250V DC	0.6A 125VDC, 0.3A 250VDC
<b>Current: AC</b>	5A @ 125VAC, 3A @ 250VAC	16A 125 to 250VAC	15A 125 to 250 VAC,
<b>Temperature</b>	-20°C to 85°C	-20°C to 85°C	-20°C to 85°C
<b>Indicator</b>	Visual OPEN/CLOSED Indicator		
<b>Cable Entry</b>	1/2 NPT (2X)	1/2 NPT (2X)	3/4 NPT (2X)
<b>Mounting Bracket</b>	Namur VDE/VDI 3845		

### Wiring Diagram



## AIR ACTUATOR KEY FEATURES:

1. Full conformance to the specifications of: ISO5211, DIN3337, VDI/VDE3845, NAMUR.
2. The extruded high strength aluminum bodies are precision honed and hard anodized yielding an internal bore surface that can provide low coefficient of friction, smooth performance and a long service life.
3. All acting surfaces are fitted with high quality bearings, resulting in low friction, quiet and high cycle life.
4. The two independent external travel stop adjustment bolts can easily and precisely adjust up to  $\pm 5^\circ$  at both open and closed directions.
5. Multifunction position indicator with NAMUR standard is convenient for mounting accessories.
6. Pre-compressed load springs are convenient for safe mounting and disassemble operations.
7. Die-casted aluminum pistons and end caps are high strength and light weight.
8. Optional Viton and Silicone seals are available for low and high temperature applications.

## PNEUMATIC ACTUATOR SPECIFICATIONS

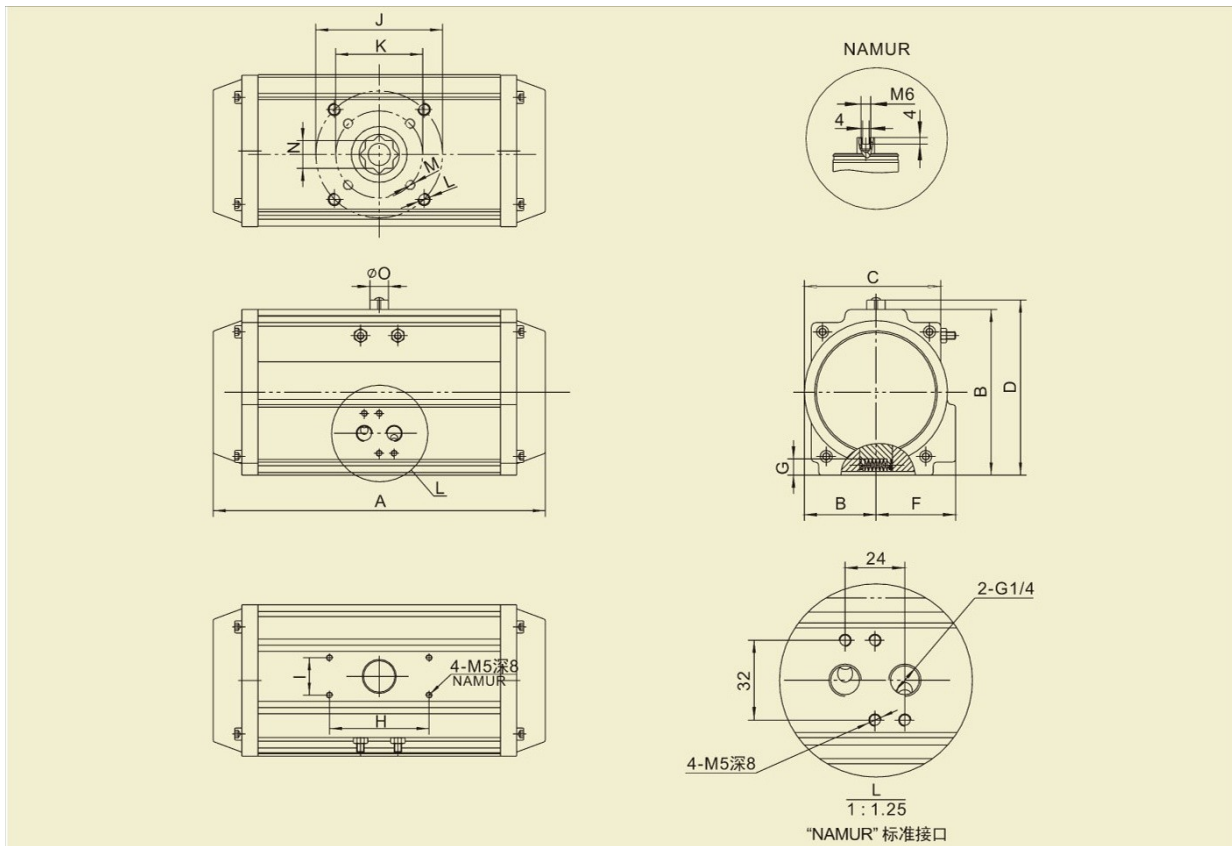
Actuator Standard	ISO5211, DIN3337, VDI/VDE3845, NAMUR
Actuator Controlling Pressure Range	45 to 120 PSI
Temperature Range	Standard: $-4$ to $176^\circ\text{F}$ ( $-20$ to $80^\circ\text{C}$ ) High Temperature Option: $5$ to $302^\circ\text{F}$ ( $-15$ to $150^\circ\text{C}$ ) Low Temperature Option: $-40$ to $176^\circ\text{F}$ ( $-40$ to $80^\circ\text{C}$ )
Materials	Housing & End Cap: Aluminum O-Rings: standard: Buna N, Options: fluorocarbon FKM, or silicone Mounting Bracket 316 stainless steel

## PNEUMATIC ACTUATOR AND VALVE MODEL SELECTION

316SS 3 PIECE BALL VALVE SIZE	Double Acting Actuator Size (MM)	Single Acting Actuator Size (MM)	MOUNTING STD. ISO5211	Double Acting Torque (in-Lbs)	AIR PRESSURE*	MODEL NO.					
						Female NPT		Flange type		Butt weld type	
						SINGLE ACTING	DOUBLE ACTING	SINGLE ACTING	DOUBLE ACTING	SINGLE ACTING	DOUBLE ACTING
1/4"	32	50	F03-F04	87	100 PSI	KS-1/4	KD-1/4	KS-1/4F	KD-1/4F	KS-1/4W	KD-1/4W
3/8"	32	50	F03-F04	87	100 PSI	KS-3/8	KD-3/8	KS-3/8F	KD-3/8F	KS-3/8W	KD-3/8W
1/2"	32	63	F03-F04	87	100 PSI	KS-1/2	KD-1/2	KS-1/2F	KD-1/2F	KS-1/2W	KD-1/2W
3/4"	50	63	F03-F04	87	100 PSI	KS-3/4	KD-3/4	KS-3/4F	KD-3/4F	KS-3/4W	KD-3/4W
1"	50	63	F04-F05	226	100 PSI	KS-1	KD-1	KS-1F	KD-1F	KS-1W	KD-1W
1-1/4"	63	75	F04-F05	226	100 PSI	KS-1 1/4	KD-1 1/4	KS-1 1/4F	KD-1 1/4F	KS-1 1/4W	KD-1 1/4W
1-1/2"	63	75	F05-F07	405	100 PSI	KS-1 1/2	KD-1 1/2	KS-1 1/2F	KD-1 1/2F	KS-1 1/2W	KD-1 1/2W
2"	75	75-88	F05-F07	737	100 PSI	KS-2	KD-2	KS-2F	KD-2F	KS-2W	KD-2W
2-1/2"	88	100	F07-F10	1072	100 PSI	KS-2 1/2	KD-2 1/2	KS-2 1/2F	KD-2 1/2F	KS-2 1/2W	KD-2 1/2W
3"	100	125	F07-F10	1376	100 PSI	KS-3	KD-3	KS-3F	KD-3F	KS-3W	KD-3W
4"	125	125-145	F07-F10	2230	100 PSI	KS-4	KD-4	KS-4F	KD-4F	KS-4W	KD-4W

\* Actuator Controlling Pressure Range 45 to 120 PSI

# PNEUMATIC ACTUATOR MOUNTING CONNECTION AND DIMENSIONS



Model Double Acting	Model Single Acting	Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	A120	A180	AIR CONNECTION
AT032D	AT032S	32	110	45	45	65	22.5	23	12	50	25		F03/36		M5X5	9				G1/8
AT050D	AT050S	50-52	143	72	55	92	30	41	14	80	30	F05/50	F03/36	M6X8	M5X8	11	40	158	200	G1/4
AT063D	AT063S	63	190	88	69	108	35	45	18	90	30	F07/70	F05/50	M8X13	M6X10	14	40	184	233	G1/4
AT075D	AT075S	75	207	99.5	100.5	119.5	38.5	52.5	20.5	80	30	F07/70	F05/50	M8X10	M6X8	14	40	203	243	G1/4
AT088D	AT088S	85-88	213	109	88	129	46	52.5	21	80	30	F07/70	F05/50	M8X13	M6X10	17	40	221	280	G1/4
AT092D	AT092S	92	258	117	98.5	137	50	61	21	80	30	F07/70	F05/50	M8X12	M6X10	17	40	280	374	G1/4
AT0100D	AT0100S	100-105	267	133	109	153	57	64	26	80	30	F10/102	F07/70	M10X13	M8X10	22	40	304	388	G1/4
AT125D	AT125S	125	340	155	120.5	175	67.5	70	27.5	80	30	F10/102	F07/70	M10X16	M8X13	22	65	365	470	G1/4
AT145D	AT145S	140-145	414	171.5	132	191.5	75	76	32	80	30	F12/125	F10/102	M12X20	M10X15	27	65	442	568	G1/4

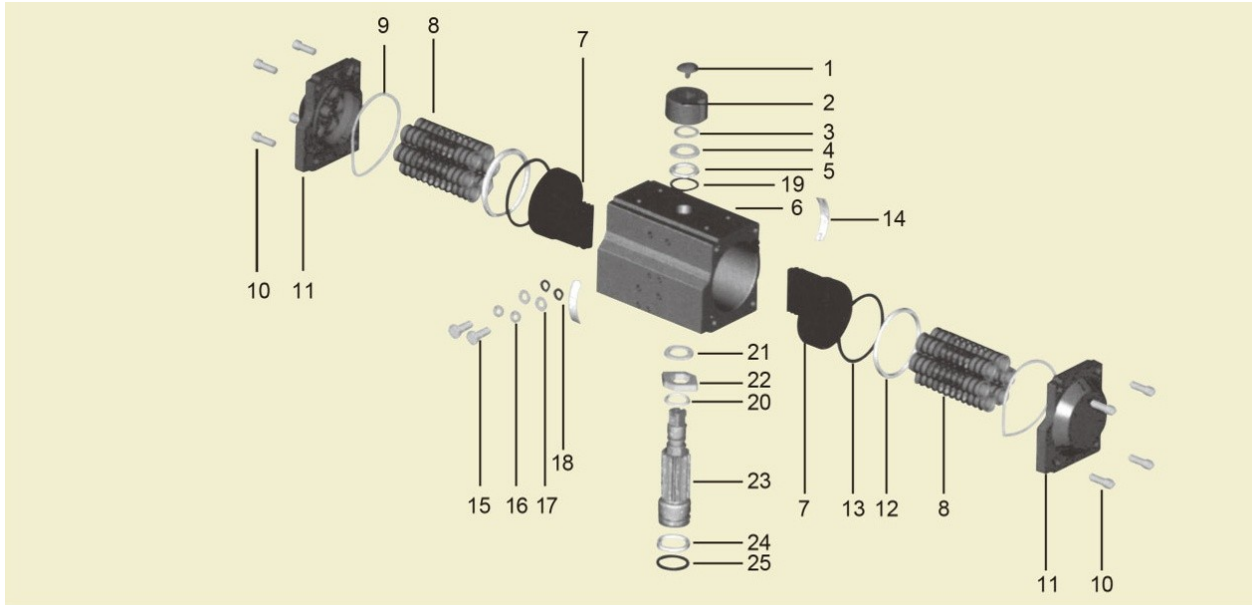
NOTE: A120 and A180 represent the acting length of the 120° rotation travel and 180° rotation travel, respectively.

DOUBLE ACTING PNEUMATIC ACTUATOR TORQUE OUTPUT (in-Lbs)								
DA ACTUATOR SIZE	AIR PRESSURE (PSI)							
	40	50	60	70	80	90	100	115
32	34	43	55	64	71	82	87	101
50-52	85	110	133	156	179	203	226	261
63	154	196	238	280	321	363	405	458
75	284	360	435	511	586	661	737	850
85-88	408	518	629	740	851	962	1072	1238
92	527	668	810	951	1093	1234	1376	1588
100-105	858	1087	1315	1544	1773	2000	2230	2573
125	1409	1783	2157	2532	2906	3280	3654	4216
140-145	2209	2511	3013	3515	4018	4513	5015	5772

SINGLE ACTING PNEUMATIC ACTUATOR OUTPUT TORQUE (UNIT Nm)													
AIR PRESSURE (BAR)		3	4	5	6	7	Spring Stroke						
ACTUATOR SIZE	# OF SPRING	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
50-52	5	8.48	6.28	12.64	10.44							4	6.2
	6	7.68	4.98	11.84	9.14							4.8	7.5
	7	6.98	3.78	11.14	7.94							5.5	8.7
	8			10.34	6.74	14.5	10.9					6.3	9.9
	9			9.54	5.44	13.7	9.6					7.1	11.2
	10			8.74	4.24	12.9	8.4	17.06	12.56			7.9	12.4
	11					12.1	7.1	16.26	11.26	20.42	15.42	8.7	13.7
63	5	15	11.2	22.3	18.5	29.6	25.8					7	10.8
	6	13.5	9	20.8	16.3	28.1	23.7					8.5	12.9
	7	12	6.9	19.4	14.2	26.7	21.5					9.9	15.1
	8			18	12	25.3	19.3	32.6	26.6			11.3	17.3
	9			16.5	9.9	23.9	17.2	31.2	24.5			12.7	19.4
	10			15.3	7.7	22.6	15	29.9	22.3	37.2	29.6	14	21.6
	11			13.8	5.6	21.1	12.9	28.4	20.2	35.7	27.5	15.5	23.7
75	5	23.4	17.8	35.1	29.5							11.9	17.5
	6	21.1	14.3	32.8	26							14.2	21
	7	18.7	10.8	30.4	22.5							16.6	24.5
	8			28	19	39.8	30.8					19	28
	9			25.7	15.5	37.5	27.3					21.3	31.5
	10			23.3	12	35.1	23.8	46.8	35.5	58.6	47.3	23.7	35
	11					32.7	20.3	44.4	32	56.2	43.8	26.1	38.5
83-88	5	30.9	23.8	46.1	38.9							14.5	21.7
	6	28.1	19.5	43.3	34.6							17.4	26
	7	25.2	15.1	40.3	30.2							20.3	30.4
	8			37.4	25.9	52.6	41.1					23.2	34.7
	9			34.5	21.5	49.7	36.7					26.1	39.1
	10			31.6	17.2	46.8	32.4	62	47.6	77.1	62.7	29	43.4
	11					43.9	28.1	59.1	43.3	74.2	58.4	31.9	47.7
92	5	50.3	37.8	75.6	63							25.5	38
	6	45.2	30.2	70.4	55.4							30.6	45.6
	7	40.1	22.6	65.3	47.8							35.7	53.2
	8			60.2	40.2	85.5	65.5					40.8	60.8
	9			55.1	32.7	80.4	57.9					45.9	68.4
	10			50	25	75.3	50.3	100.6	75.6	125.8	100.8	51	76
	11					70.2	42.7	95.5	68	120.7	93.2	56.1	83.6
100-105	5	68.6	52	103.6	87							33.2	49.8
	6	61.9	42	96.9	77							39.9	59.8
	7	55.3	32.1	90.3	67.1							46.5	69.7
	8			83.7	57.1	116.6	90					53.1	79.7
	9			77	47.4	109.9	80.3					59.8	89.4
	10			70.4	37.2	103.3	70.1	137.3	104	171.2	138	66.4	99.6
	11					96.7	60.1	130.6	94	164.6	128	73	109.6
125	5	115.5	88	173.8	146.3							59.4	86.9
	6	103.6	70.6	161.9	128.9							71.3	104.3
	7	91.8	53.5	150.1	111.6							83.1	121.6
	8			138.2	94.2	196.5	152.5					65	139
	9			126.3	76.8	184.6	135.1					106.9	156.4
	10			114.4	59.4	172.7	117.7	231	176			118.8	173.8
	11					160.9	100.4	219.2	158.7	277.5	217	130.6	191.1
12					149	83	207.3	141.3	265.6	199.6	142.5	208.5	

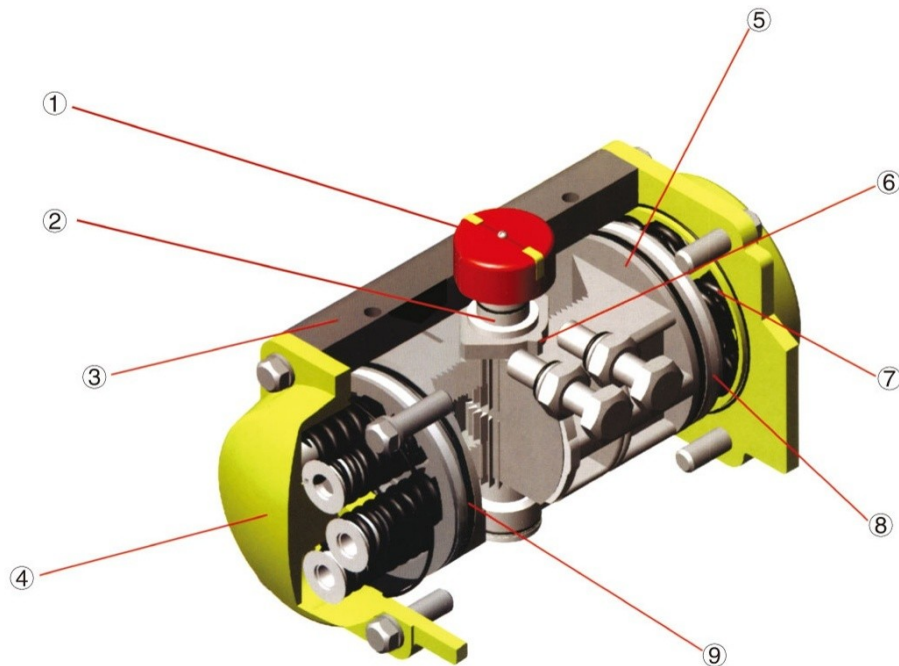


## PNEUMATIC ACTUATOR MATERIALS OF CONSTRUCTION



NO.	NAME	QTY	MATERIAL	FINISH	OPTION
1	INDICATOR SCREW	1	PLASTIC		
2	INDICATOR	1	PLASTIC		
3	SPRING CLIP	1	STAINLESS STEEL		
4	WASHER	1	STAINLESS STEEL		
5	OUTSIDE WASHER	1	PFTE		
6	BODY	1	EXTRUDED ALUMINUM	HARD ANODIZED	
7	PISTON	2	EXTRUDED ALUMINUM	ANODIZED/ZINC GALVANIZED	STAINLESS STEEL
8	SPRING-INTEGRATED	*	SPRING STEEL	DIP COATING	
9	O-RING (END CAP)	2	NBR		VITON/SILICONE
10	CAP SCREW	8	STAINLESS STEEL		
11	END CAP	2	ALUMINUM ALLOY	POLYESTER POWDER PAINTED	
12	PISTON BEARING	2	ENGINEERING PLASTIC		
13	PISTON O-RING	2	NBR		VITON/SILICONE
14	PISTON GUIDE	2	ENGINEERING PLASTIC		
15	ADJUSTMENT SCREW	2	STAINLESS STEEL		
16	ADJUST SCREW NUT	2	STAINLESS STEEL		
17	AJUSTMENT SCREW WASHER	2	STAINLESS STEEL		
18	AJUSTMENT SCREW O-RING	2	NBR		VITON/SILICONE
19	PINION TOP O-RING	1	NBR		VITON/SILICONE
20	PINION TOP BEARING	1	ENGINEERING PLASATIC		
21	INSIDE WASHER	1	PTFE		
22	CAM	1	ALLOY STEEL		
23	PINION	1	ALLOY STEEL	NICKEL PLATED	STAINLESS STEEL
24	PINION BOTTOM O-RING	1	ENGINEERING PLASTIC		
25	PINION BOTTOM BEARING	1	NBR		VITON/SILICONE

## PNEUMATIC ACTUATOR INTERNAL STRUCTURE

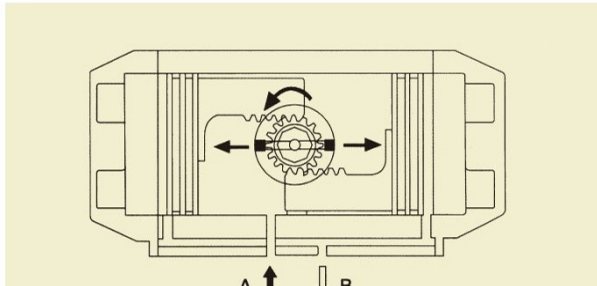


1. Indicator: Position indicator with NAMUR standard is convenient for mounting accessories such as Limit Switch box positioned etc.
2. Pinion: The pinion is high precision and integrative, made from nickel plated alloy steel, full conform to the latest standards of ISO5211, DIN3337, VDI/VDE3845, NAMUR. The dimensions and the stainless steel option can be customized for specific applications.
3. Actuator Body: The extruded aluminum alloy ASTM 6005 body can be treated with hard anodized, polyester power coated, PTFE or Nickel Plated.
4. End Caps: Die-casting aluminum polyester powder coated, PTFE or Nickel-plated.
5. Pistons: The twin rack pistons are made from die-casted aluminum treated with hard anodized or made from casted steel with galvanization. Symmetric mounting position, long cycle life and fast operation, reversing rotation by simply inverting the pistons.
6. Travel Adjustment: The two independent external travel stop adjustment bolts can adjust  $\pm 5^\circ$  at both open and close direction easily and precisely.
7. High performance spring: Preloaded coated springs are made from high quality material for resistant to corrosion and long service life, which can be dismantled safely and conveniently to meet different torque requirements by changing the number of springs.
8. Bearing and Guides: Made from low friction, long-life compound material, to avoid the direct contact between metals. The maintenance and replacement are easy and convenient.
9. O-rings: Standard: NBR, High and low temperature; Viton or Silicone are available as options.

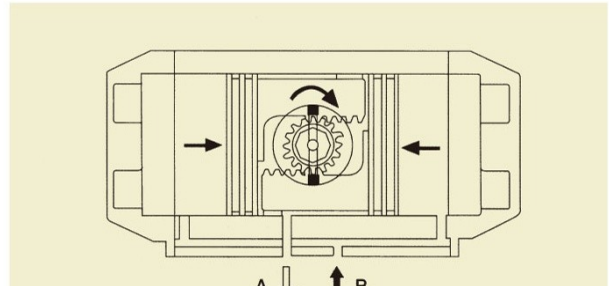


# PNEUMATIC ACTUATOR PRINCIPLE OF OPERATION

## 1. Double Acting

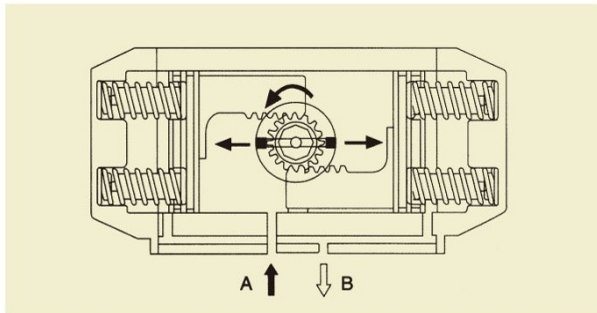


Air into Port A forces the pistons outwards, causing the pinion to turn counterclockwise while the air being exhausted from Port B.

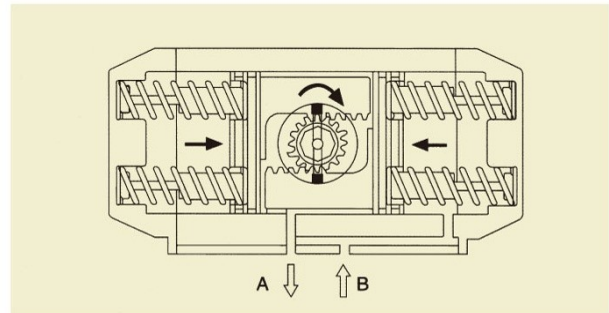


Air into Port B forces the pistons inwards, causing the pinion to turn clockwise while the air is being exhausted from Port A.

## 2. Single Acting:

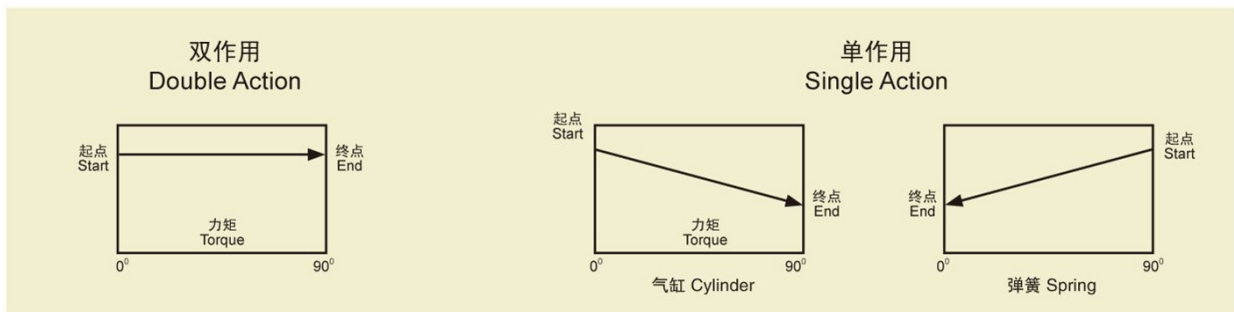


Air into Port A forces the pistons outwards, causing the springs to compress, the pinion turns counterclockwise while air is being exhausted from Port B.

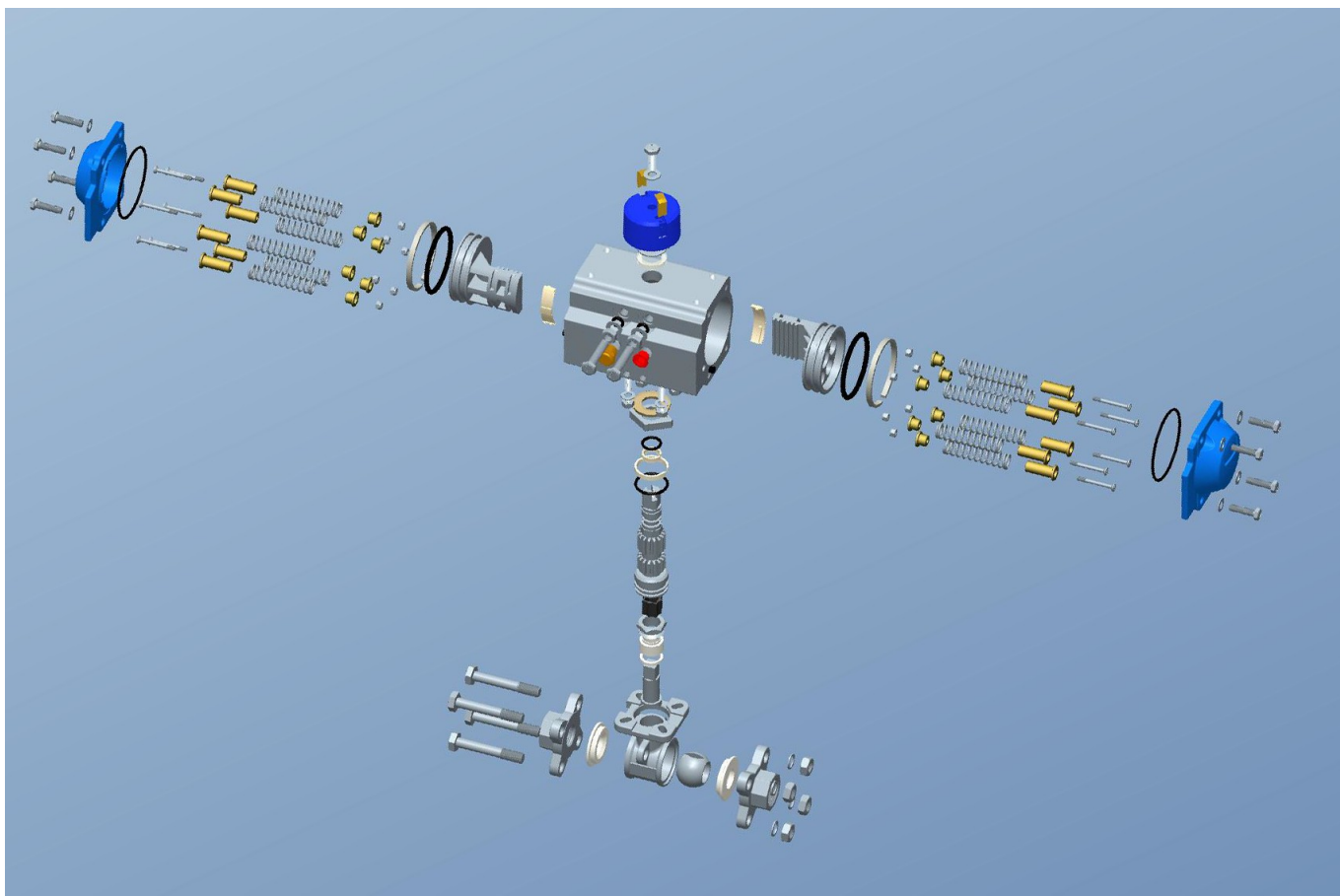


In the event of loss air pressure or power, the stored energy in the springs forces the pistons inwards, causing the pinion turns clockwise while air is being exhausted from Port A, and air to Port B can accelerate closing the valve.

# PNEUMATIC ACTUATOR TORQUE DIAGRAM



## EXPANDED VIEW OF PNEUMATIC ACTUATED VALVE INTERNAL COMPONENTS





## Installation of Namur Solenoid Valve onto KS/KD Series Air Actuated Ball Valve

1. Lay out the KS/KD series air actuated ball valve with the control ports on the air actuator facing upward as in FIG. 1 below.
2. Make sure the O-ring(s) is properly seated on port in the Namur solenoid valve as in FIG. 2 below.
3. Put the Namur solenoid valve on top of the KS/KD actuator with the solenoid coil on the left side as shown in FIG. 3.
4. Fasten the Namur solenoid valve onto the KS/KD actuator with the two socket head screws as shown in FIG. 4 and tighten to 1.5 to 2 lb-ft. torque.
5. Connect the supply air to port P as shown in FIG. 4, connect a muffler to the exhaust port is recommended.
6. Follow the electrical connection procedure to connect the coil on the Namur solenoid valve.

FIG. 1

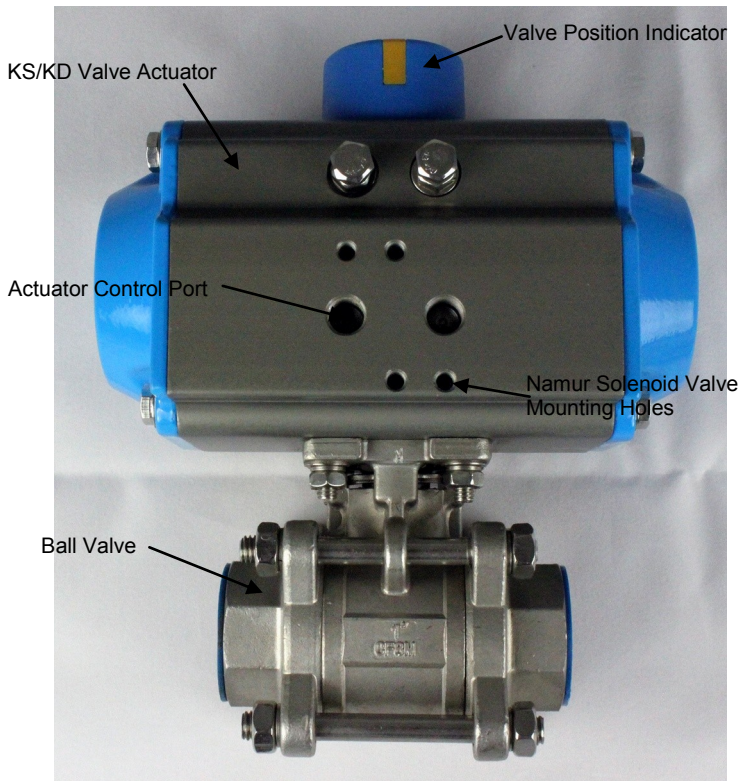


FIG. 2

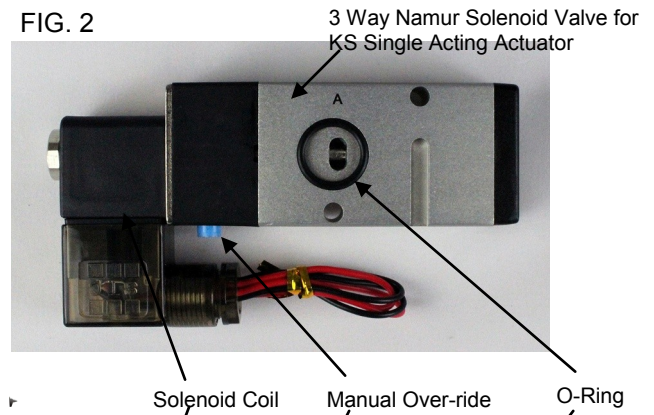


FIG. 2A

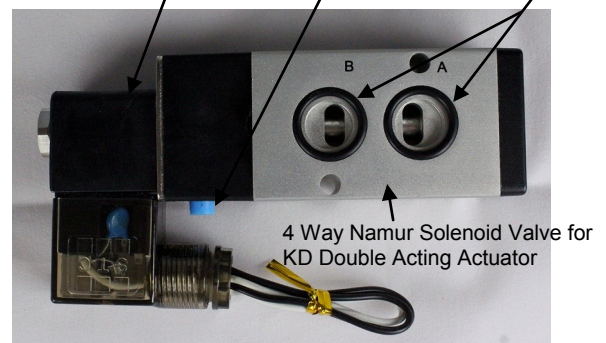


FIG. 3

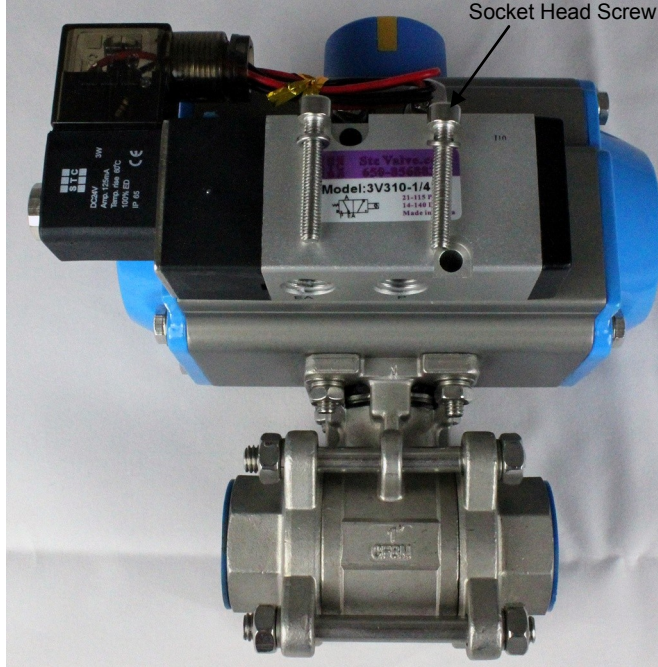


FIG. 4



## ELECTRICAL CONNECTION PROCEDURE

### A: DIN Connector:

[1] Remove the Philip screw from the plastic housing.

[2] Unplug the plastic housing from the DIN coil.

[3] From the screw opening, use the screw to push the terminal block out of the plastic housing.

[4] Note the 1, 2, and ground markings on underside of DIN enclosure.

[5] For DC DIN coil, connect 1 to positive, 2 to negative.

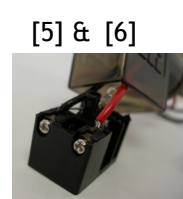
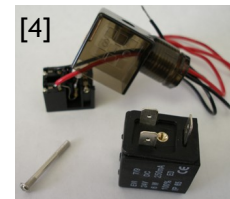
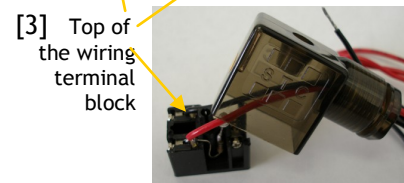
[6] For AC DIN coil, connect 1 to HOT wire, 2 to neutral wire, and if required connect ground to ground wire.

### B: Grommet/Lead Wire Connector:

DC: Red=Positive, Black=Negative

AC: Black=Hot, White=Neutral/Common

To download detail procedure: please visit [www.StcValve.com](http://www.StcValve.com)





# Air Actuated Ball Valve

## Model KS, KD

### Installation Guide

**Note:** This valve is designed to be controlled by air flow only. Any kind of COMPATIBLE fluid may flow

**Warning:** When tightening any connections to the valve, do not use the actuator as leverage. Doing so may damage the joint between the actuator and the valve.

#### Adjusting the valve's default position:

1. Remove the four bolts underneath the actuator.
2. Separate the actuator from the valve.
3. Rotate the valve to the desired default position.
4. Place the actuator back on the valve and screw everything back into place.

#### Connection to fluid supply:

1. Connect the main fluid ball valve to the primary source and primary outlet.
2. Connect the control supply to the actuator. If the actuator is double acting, air supplied to the right port will open the valve, and the air supplied to the left port will close the valve.

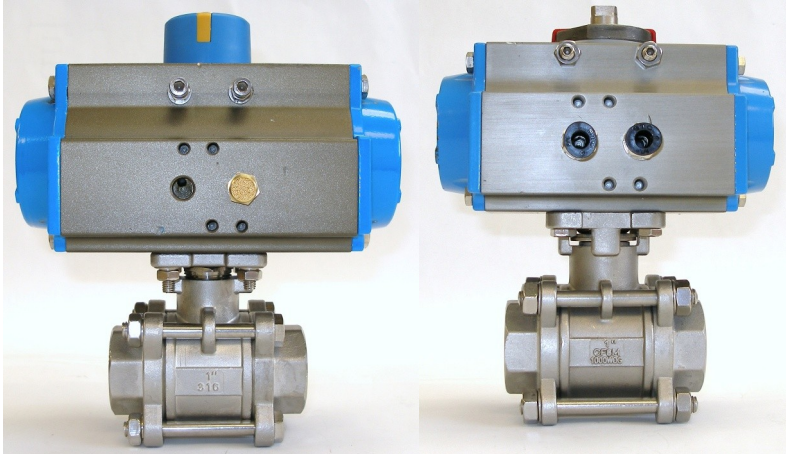
#### Connection to Position Indicator:

1. Remove the bolt and cap covering the slot at the top of the actuator.
2. Set the indicator to the default/current position and place it so that the key fits in the slot.
3. Screw the bracket holding the indicator in place.

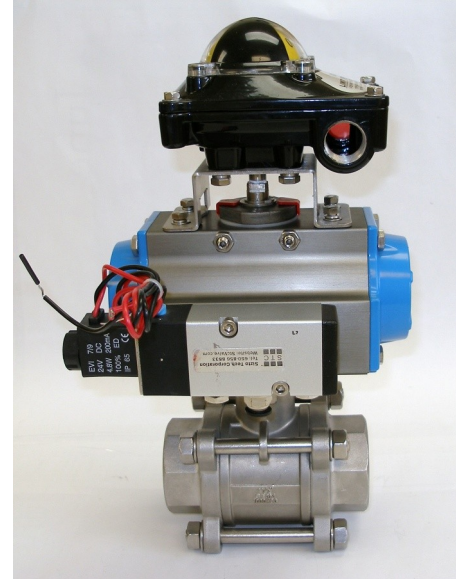
#### Adjustment:

The angle of the actuator can be adjusted if the actuator becomes misaligned during operation. To realign the actuator, adjust the two screws near the top of the actuator, above the air supply ports. Ensure that the screws are tightened down after adjustment.

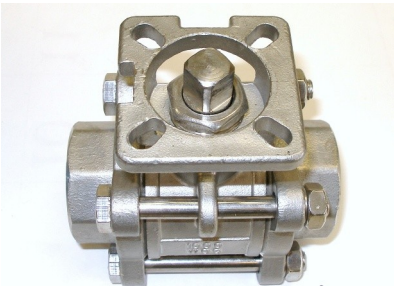
#### Reference Figures:



**Figure 1:** [Left] Model KS-1 and [Right] Mode KD-1. Main valve body is under the actuator.



**Figure 2:** KD-1 1/2 with solenoid controller and indicator attached.



**Figure 3:** Valve without actuator. The key may be rotated to either normally open or closed position.

# Air Actuated Ball Valve

## Model KS, KD

### Maintenance Guide

**Note:** This valve is designed to last for an extended time period. However, common maintenance is necessary. If a leak begins to develop on the valve body, please consult these common maintenance procedures for a solution.

**Warning:** When tightening any connections to the valve, do not use the actuator as leverage. Doing so may damage the joint between the actuator and the valve.

#### Tightening the seal between the valve and the actuator:

*This valve does not have a dynamic seal (i.e. no spring), therefore as the valve ages, the seal between the valve and the actuator body must be periodically tightened manually.*

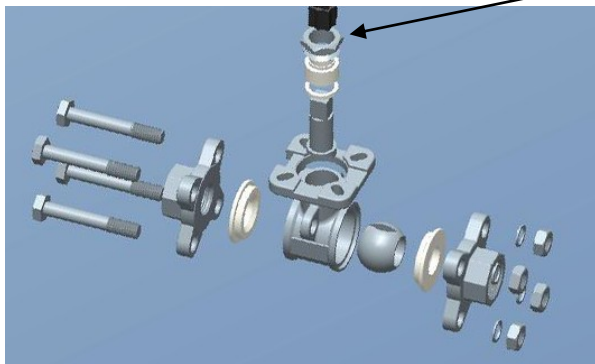
1. Remove the four bolts underneath the actuator.
2. Separate the actuator from the valve.
3. Tighten the nut on the top of the valve body. See figure one for location.
4. Place the actuator back on the valve and screw everything back into place.

#### Tightening the seals between the valve and the inlet/outlet ports:

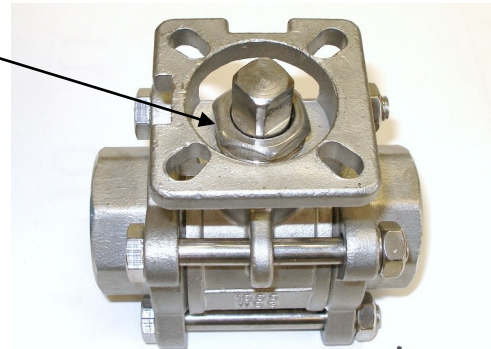
*Leaks developing in the inlet/outlet ports are often caused by inconsistent tightening of the torque bolts on the valve body. If this occurs, make sure to use a consistent method of tightening these bolts to ensure consistent torque.*

1. Remove the torque bolts and check for any debris or damage to the gaskets.
2. Use a torque wrench or other consistent method of tightening the torque bolts to reconnect the inlet and outlet ports.

#### Reference Figures:

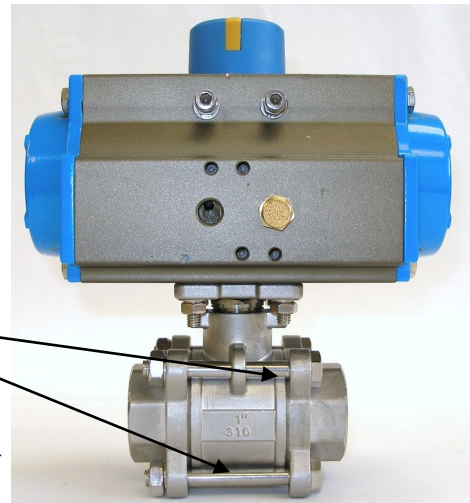


**Figure 1:** Exploded view of valve body with tightening nut indicated.



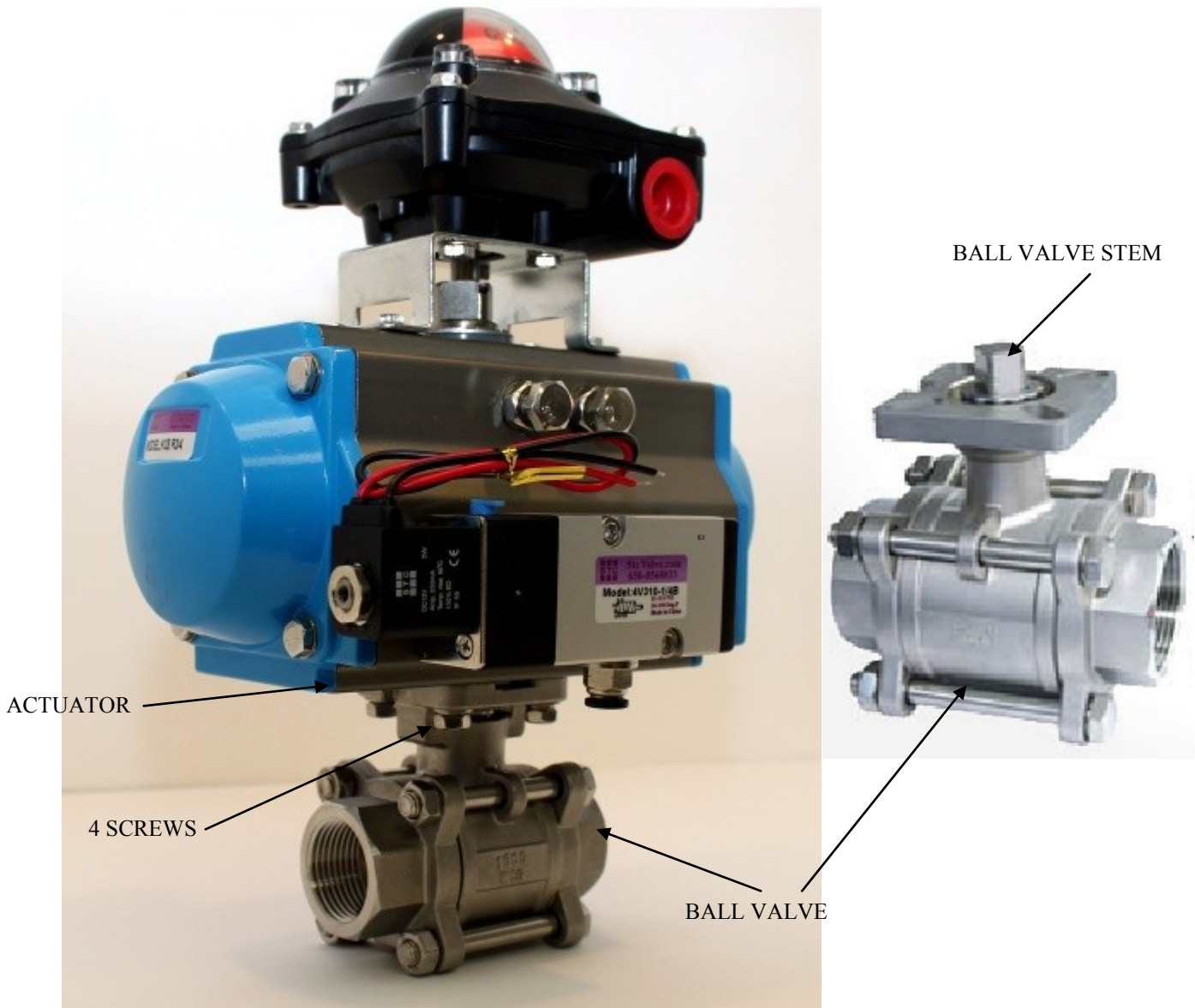
**Figure 2:** Valve Body without actuator with tightening nut indicated.

Torque Bolts (4x)



**Figure 3:** Model KS-1 with torque bolts indicated.

## To re-configure a normally closed air actuated valve to a normally open valve

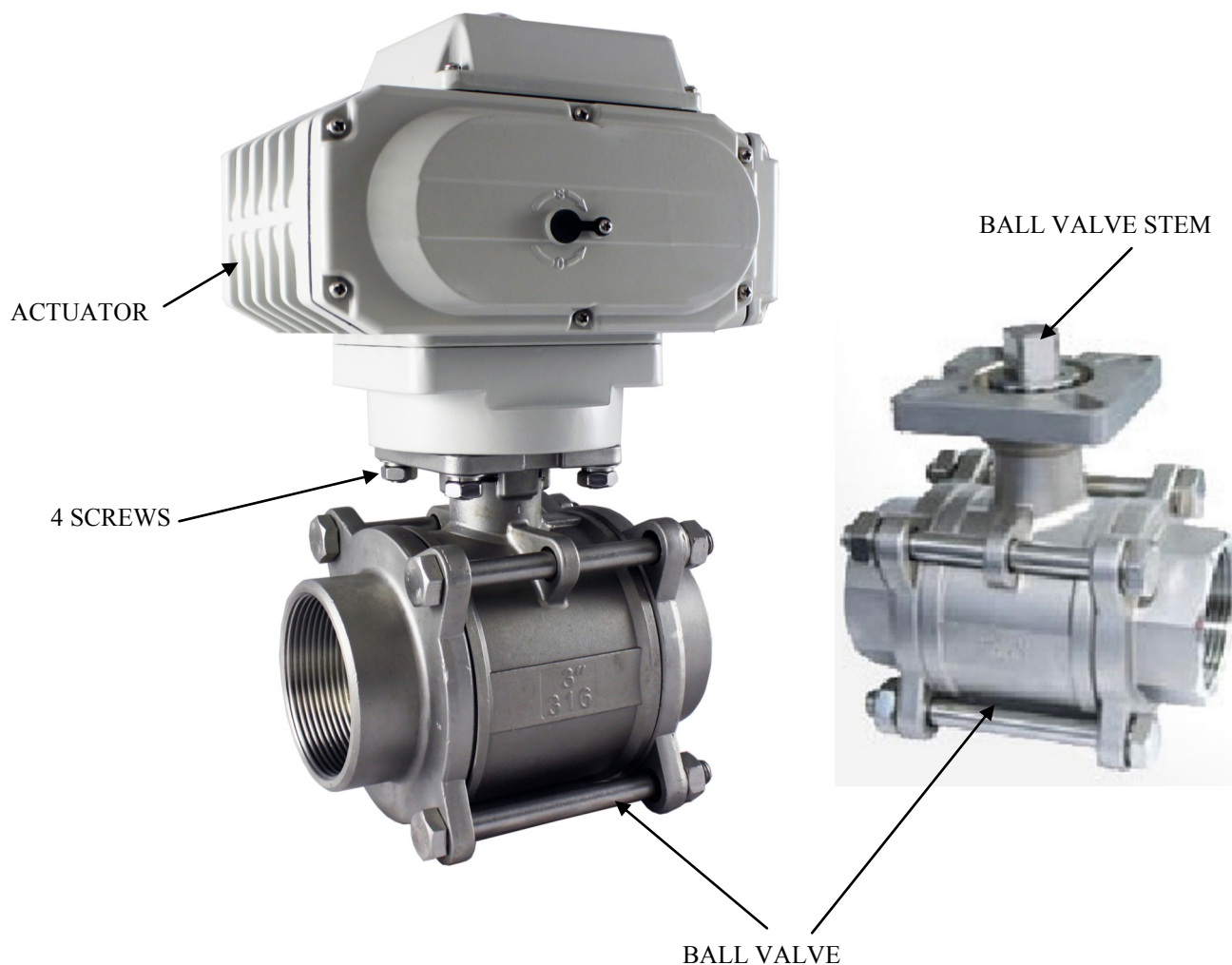


### To re-configure a normally closed valve to a normally open valve:

1. Turn off the air supply to the air actuator
2. Remove the 4 SCREWS on the bottom of the ACTUATOR
3. Remove the BALL VALVE from the ACTUATOR
4. Turn the BALL VALVE STEM on the ball valve 90 degree such at the valve is fully open (visually inspect the ball to make sure it is open)
5. Put the BALL VALVE back into the ACTUATOR and re-install the 4 SCREWS.



## To re-configure a normally closed air actuated valve to a normally open valve



### To re-configure a normally closed valve to a normally open valve:

1. Disconnect the power supply to the electric ACTUATOR.
2. Remove the 4 SCREWS on the bottom of the ACTUATOR
3. Remove the BALL VALVE from the ACTUATOR
4. Turn the BALL VALVE STEM on the ball valve 90 degree such at the valve is fully open (visually inspect the ball to make sure it is open)
5. Put the BALL VALVE back into the ACTUATOR and re-install the 4 SCREWS.

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No merchandise is accepted for return 30 days after delivery date. No credit allowed on merchandise shipped as ordered and returned without obtaining an authorization number IN ADVANCE. A 20% restocking charge applies to all returns, and transportation charges must be fully prepaid. We will pay **ground** transportation charges on re-sent or returned merchandise due to STC's error.

**Shortages & Mis-Shipments:** Any shortages or mis-shipment must be reported within 15 days.

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Sizto Tech Corporation

892 Commercial Street, Palo Alto, CA 94303, USA

Credit Card Payments: Visa, MasterCard, Discover, or American Express Accepted

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**Credit Application:** To establish a net 30 day account, please mail or fax three trade references with complete mailing addresses and account numbers.

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