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SANITARY DIRECT MOUNT BALL VALVES

3-PC SANITARY SERIES



**THE ULTIMATE IN
AUTOMATION TECHNOLOGY!!!**



EA - 33NF - SN

FEATURES / SPECIFICATIONS:

- For use in food, pharmaceutical and highly sanitary applications
- Direct Mounting to actuator for simplified automation
- Live-loaded stem, self adjusting packing
- Designed for high cycle automated applications
- Highly polished internals and end caps
8-12 Ra
- All materials comply with FDA, USDA, & 3A requirements
- Manufacturer is ISO 9000 certified
- High quality investment cast body and end caps
- ASTM 316 Stainless construction
- Standard with Tri-Clamp ends, other end configurations available
- 100% tested and inspected prior to shipping
- Full traceability of all component parts
- SST x PTFE Seats available for high temperature applications

**The next generation ball valve, live loaded
with self adjusting packing**

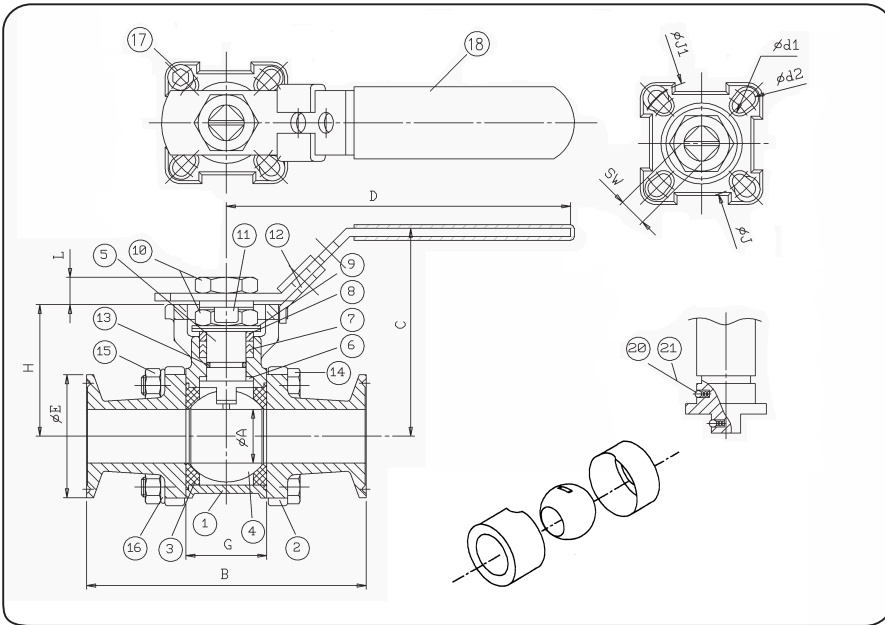
No more routine maintenance worries

Specifically designed for high cycle applications

**Lowers actuation costs by eliminating costly
brackets and couplers for actuation**

SANITARY DIRECT MOUNT BALL VALVES

3-PC SANITARY SERIES



Item	Part name	Material	Qty
1	body	CF8M/316	1
2	end caps	CF8M/316	2
3	seats	PTFE	2
4	ball	SUS 316	1
5	stem	SUS 316	1
6	gasket	PTFE	1
7	seal	PTFE	1
8	gland ring	SUS 304	2
9	belleville spring washer	SUS 301	2
10	lever nut	SUS 304	1
11	locking tab	SUS 304	1
12	handle	SUS 304	1
13	o-ring	VITON	1
14	bolts	SUS 304	4
15	bolts nut	SUS 304	4
16	spring washer	SUS 304	4
17	stop screw	SUS 304	1
18	plastic coating	PVC	1
19	static device	SUS 316	2
20	spring	SUS 316	2

Size	A	B	C	D	E	G	H	L	J	J1	d1	d2	SW	ISO5211
1/2"	9.5	88.9	70.9	110	25.4	25.2	42.3	8	36	42	6	6	9	F03/F04
3/4"	15.9	101.6	73.4	110	25.4	27.7	44.8	8	36	42	6	6	9	F03/F04
1"	22.1	114.3	84.1	135	50.4	33	54	10	42	50	6	7	11	F04/F05
1 1/2"	34.8	139.7	109.5	165	50.4	49.3	73.5	14.8	50	70	7	9	14	F05/F07
2"	47.5	158.8	118.9	165	63.9	63.6	82.9	14.8	50	70	7	9	14	F05/F07

Size	A	B	C	D	E	G	H	L	J	J1	d1	d2	SW	ISO5211
2 1/2"	60.1	177.8	133.4	230	77.5	70	107	17.1	70	102	9	11	17	F07/F10
3"	73.1	228.6	160	300	90.9	102	117.3	17.1	70	102	9	11	17	F07/F10
4"	97.4	241.3	175.2	300	118.9	102	132.3	17.1	70	102	9	11	17	F07/F10
6"	146.8	393.7	216.2	500	166.8	188.5	216	26.8	102	125	12	14	27	F10/F12

OPTION : CAVITY FILLER

standard	Ra	RMS	CLASS
Grit	µin	µ	µin
240g	14-18	34-46	15-20
320g	8-10	21-25	9-11

ITEM	PART NAME	MATERIAL	QTY
24	WASHER	SUS 304	1
23	SCREW	SUS 304	1
22	SPRING	SUS 316	2
21	STATIC DEVICE	SUS 316	2
20	LOCKING TAB	SUS 304	1
19	O RING	VITON	2
18	CENTER RING	SUS 304	2
17	BOLTS NUT	SUS 304	12
16	SPRING WASHER	SUS 304	12
15	BOLTS	SUS 304	6
14	PLASTIC COATING	PVC	1
13	STOP SCREW	SUS 304	1
12	LEVER NUT	SUS 304	1
11	HANDLE	SUS 304	1
10	BELLEVILLE SPRING WASHER	SUS 301	2
9	GLAND RING	SUS 304	2
8	SEAL	PTFE	1
7	GASKET	PTFE+15%GF	1
6	BODY SEAL	PTFE	2
5	STEM	SUS316	1
4	BALL	CF8M/316	1
3	SEATS	PTFE	2
2	END CAPS	CF8M	2
1	BODY	CF8M	1
		EA-33NF-SN	

SANITARY DIRECT MOUNT BALL VALVES

3-PC SANITARY BALL VALVES



FEATURES/SPECIFICATIONS:

- ASTM 316 stainless steel
- 3-pc body design facilitates inspection and easy inline repair
- Full port flow to tube I.D./O.D. for sanitary applications
- Highly polished I.D. 8-12 Ra finish for use in food and pharmaceutical applications
- Live loaded, self-adjusting stem packing and Belleville washers provide better sealing, additional defense against leaking, lower operating torque and reduces routine maintenance costs
- Meets FDA & USDA requirements when used with body cavity fillers
- 3-Pc, V-ring stem packing for better sealing and lower torque
- Extend Tube butt-weld ends allow easy inline welding without disassembly of valve and are suitable for orbital welding
- Blow out proof, bottom entry stem design and anti-static device
- For high cycle applications-working pressure to 1000 psi W.O.G.
- Regular and Cavity Filled designs available
- SST x PTFE Seats available for high temperature applications
- Sizes 1/2" - 2" in 316L Extend Tube Design
2.5" - 4" Available in Short Butt-Weld Design

Item	Part Name	Material	Qty
1	body	CF8M/316	1
2	end caps	CF8M/316	2
3	seats	PTFE	2
4	ball	SUS 316	1
5	stem	SUS 316	1
6	body seal	PTFE	2
7	gasket	PTFE	1
8	seal	PTFE	1
9	Gland ring	SUS 304	2
10	belleville spring washer	SUS 301	2
11	lever nut	SUS 304	1
12	locking tab	SUS 304	1
13	handle	SUS 304	1
14	O ring	VITON®	1
15	bolts	SUS 304	4
16	bolts nut	SUS 304	4
17	spring washer	SUS 304	4
18	stop screw	SUS 304	1
19	plastic coating	PVC	1
20	static device	SUS 316	2
21	spring	SUS 316	2

EA - 33NF - EXT

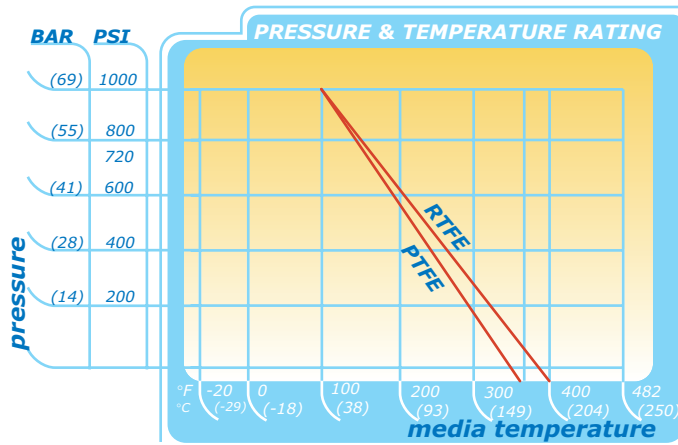
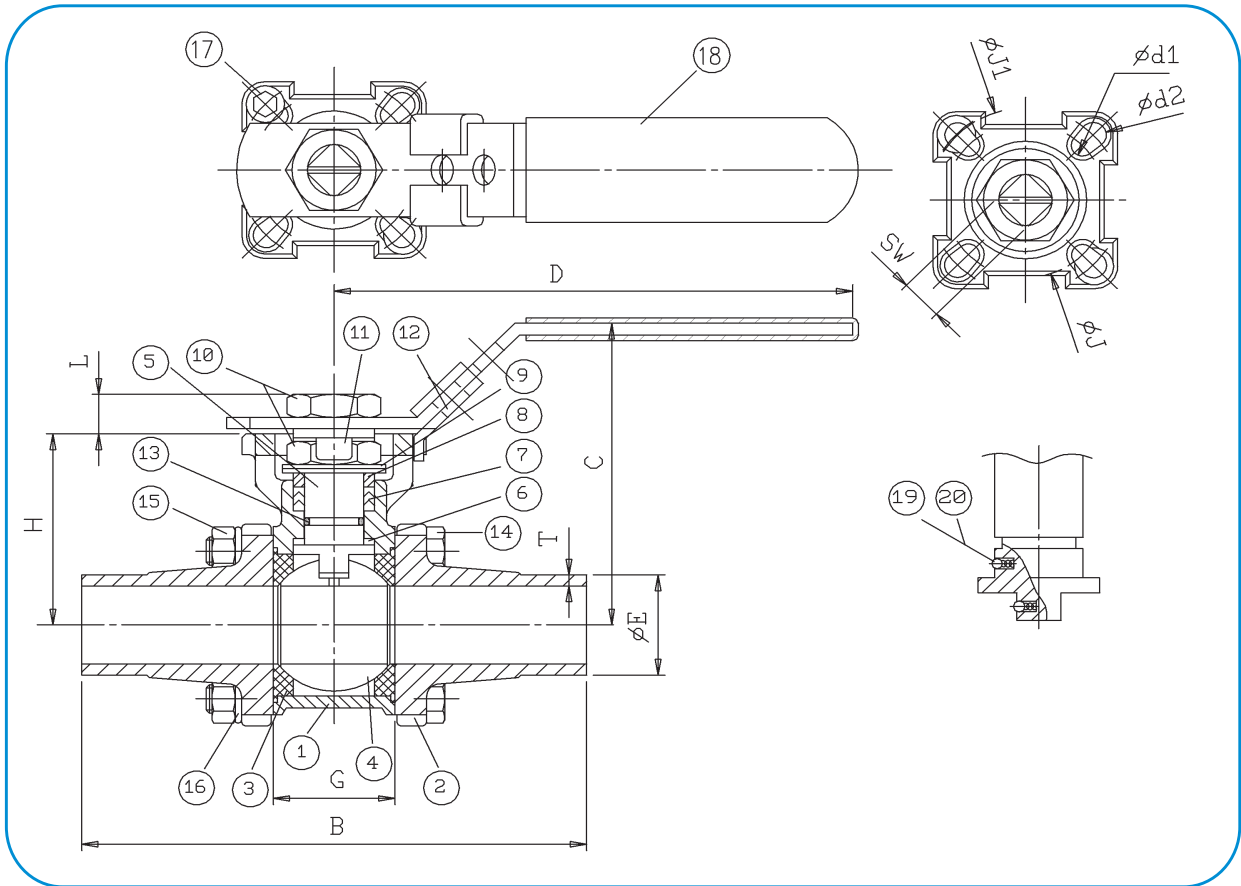
SANITARY BALL VALVES

3-PC SANITARY BALL VALVES



Size	A	B	C	D	E	G	H	L	J	J ₁	d ₁	d ₂	SW	T	ISO5211
1/2"	9.5	114.3	70.9	110	12.8	25.2	42.3	8	36	42	6	6	9	.065	F03/F04
3/4"	15.9	139.7	73.4	110	19.2	27.7	44.8	8	36	42	6	6	9	.065	F03/F04
1"	22.1	158.8	84.1	135	25.4	33	54	10	42	50	6	7	11	.065	F04/F05
1-1/2"	34.8	228.6	109.5	165	38.1	49.3	73.5	14.8	50	70	7	9	14	.065	F05/F07
2"	47.5	241.3	118.9	165	50.8	63.6	82.9	14.8	50	70	7	9	14	.065	F05/F07
2-1/2"	60.1	165.6	133.4	230	63.5	70	107	17.1	70	102	9	11	17	.065	F07/F10
3	73.1	228	150	300	76.2	102	117.3	17.1	70	102	9	11	17	.065	F07/F10
4	97.4	225.2	175.2	300	101.6	102	132.3	17.1	70	102	9	11	17	.083	F07/F10

*Note: Sizes 2-1/2" - 4" are short butt-weld



3-Way Ball Valves: Diverter vs. Multi-Port

There are two types of 3-Way Ball Valves: the Diverter Port and the Multi-Port. What's the difference? Well, it may not be as complicated as you think. Let's start with the Diverter Port. The Tru-Flo 3-Way Diverter Port Ball Valve is designed to have the center port act as the common port. This means that the center port must be open at all times. You can use the L-Port Diverter Port to go from center to left (Fig. 1-1 & Fig.1-2) or to go from center to right (Fig. 1-3). The T-Port Diverter Port can do the same configurations as the L-Port but can also have all three ports opened at once.

Figure 1-1

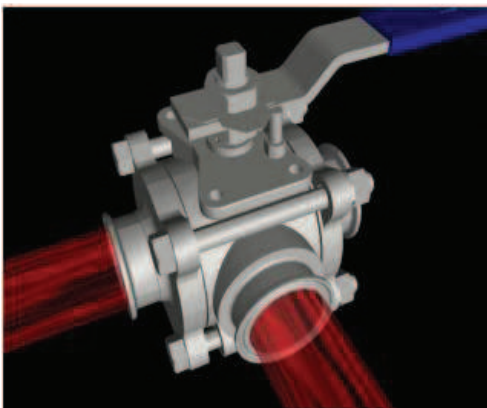


Figure 1-2

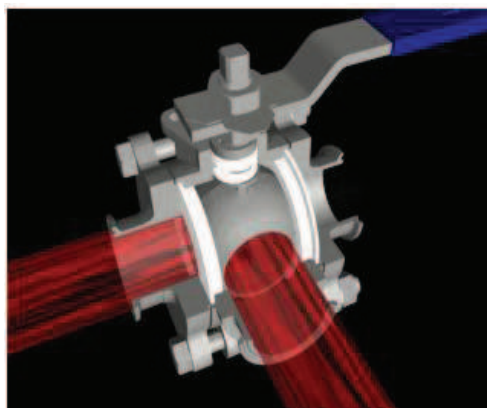
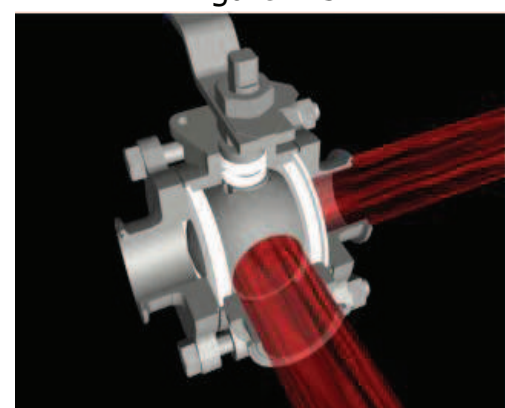


Figure 1-3



The second type of 3-Way Ball Valve is the Multi-Port. It is primarily used when an application requires a 3-Way Ball Valve to close the center port and have the flow go straight through the valve (Fig. 2-1). The Multi-Port is designed to have a positive seal on all ports, therefore you do not need a common port. With the L-Port Multi-Port you can go from center to left (Fig. 2-3) or center to right. The T-Port Multi-Port can do the same configurations as the L-Port but can go straight through / left to right (Fig. 2-2) and can also have all three ports opened at once.

Figure 2-1



Figure 2-2

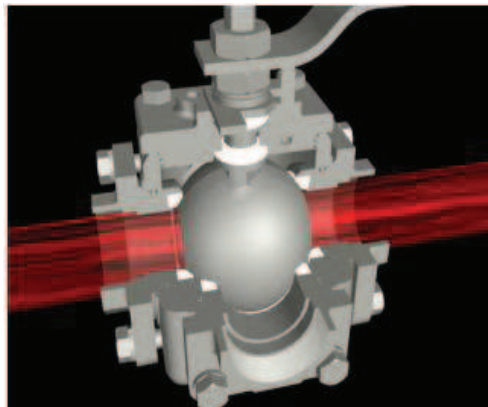
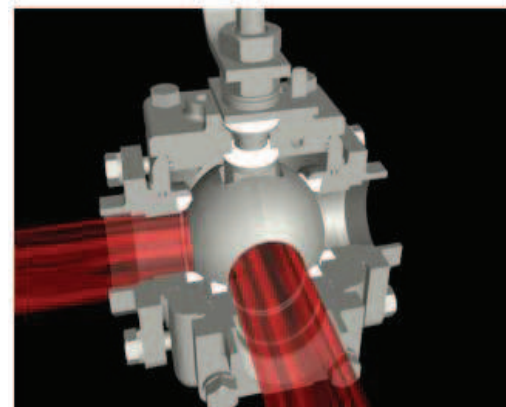


Figure 2-3



SANITARY 3-WAY BALL VALVES

SANITARY DIVERTER SERIES



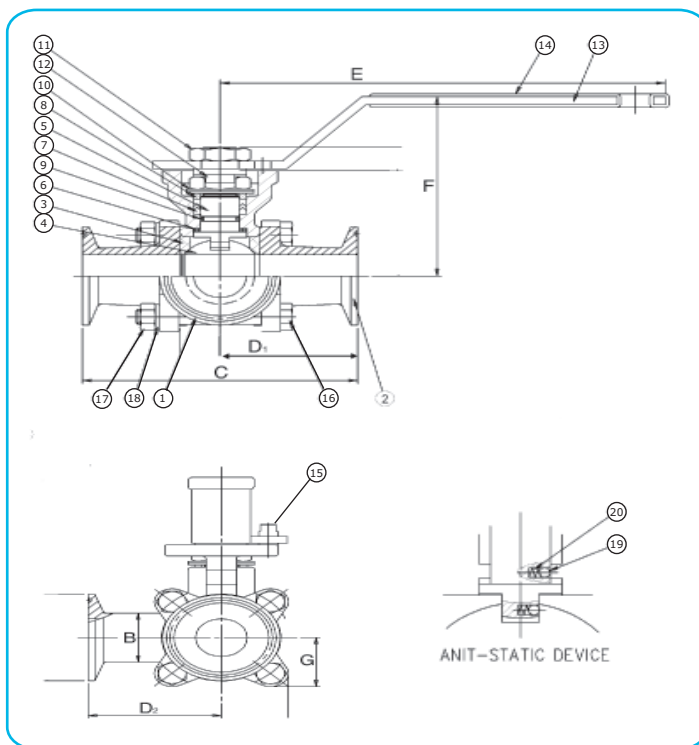
EA - 3308 - SN - L/T



FEATURES/SPECIFICATIONS:

- ASTM 316 Stainless construction
- Meets FDA & USDA requirements
- Live loaded self adjusting packing and blowout proof stem design
- Direct ISO mounting of actuation eliminates need for brackets and couplers
- Highly polished I.D. (8-12Ra)
- Full port (no internal taper)
- High Quality investment cast body and caps
- Standard with Tri-clamp ends, other ends available
- Diverts to "L" port or "T" port flow patterns
- Sizes: 1" - 4"

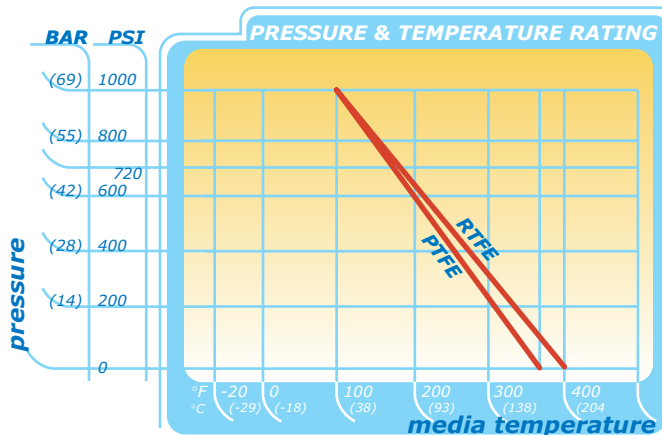
Item	Part Name	Material	Qty
1	body	CF3M/316L	1
2	end caps	CF3M/316L	2
3	seats	PTFE	2
4	ball	SUS 316	1
5	stem	SUS 316	1
6	gasket	PTFE	1
7	seal	PTFE	1
8	gland ring	SUS 304	2
9	O-ring	VITON®	1
10	bellevalle spring washer	SUS 301	2
11	lever nut	SUS 304	2
12	locking tab	SUS 304	1
13	handle	SUS 304	1
14	plastic coating	PVC	1
15	stop screw	SUS 304	1
16	bolts	SUS 304	4
17	bolts nut	SUS 304	4
18	spring washer	SUS 304	4
19	static device	SUS 316	2
20	spring	SUS 316	2



*See flow chart on page 9

Size _{mm}	B	C	D ₁	D ₂	E	F	G	ISO5211	Stem	weight lbs.
1	28.6	114.3	57.15	56.6	185	92	28.5	F04/F05	11	3.5
1.5	34.8	139.7	69.85	62.0	220	112	38.98	F05/F07	14	6
2	47.5	158.8	79.5	79.5	220	121	46.3	F05/F07	14	9.5
3	73.1	228.6	114.3	114.3	350	168.5	73.8	F07/F10	17	29
4	97.4	241.3	120.7	120.7	350	183.5	88	F07/F10	17	44

EA - 3308 - SN - L/T



MULTI-PORT SANITARY VALVES

3-WAY SANITARY VALVES



**THE ULTIMATE IN
AUTOMATION TECHNOLOGY!!!**



EA-407-SN

FEATURES / SPECIFICATIONS:

- Tru-Flo Multi-Port Tri-Clamp Sanitary Ball Valves are supplied in Standard and Encapsulated (Cavity Filled) designs.
- Multi-Port Valves provide a positive seal at every port.
- Direct Mounting ISO5211 Pad facilitates easy automation and installation in space restrictive applications.
- Spring loaded washers create a live loaded, self-adjusting stem assembly reducing in-line maintenance costs
- Ideally suited for high cycle applications in either manual or automated conditions
- Multi-Port Valves reduce costs and simplify flow control enabling shutoff and directional control with a single valve
- 316 Stainless Steel
- Full-Port design in 8-12 Ra finish
- When equipped with Encapsulated (Cavity Filled) Seats, Tru-Flo Multi-Port Sanitary Ball Valves meet or exceed USDA and FDA standards in federally inspected facilities
- Options: Tri-Clamp or Butt-Weld
 - Standard and Encapsulated (Cavity Filled) Styles
 - L-Port or T-Port configuration
 - Sizes 1"-4"

Item	Part name	Material	Qty
1	body	CF8M	1
2	end caps	CF8M	3
3	seat	PTFE	4
4	ball	SUS 316	1
5	stem	SUS 316	1
6	joint gasket	PTFE	4
7	gasket	PTFE	1
8	seal	PTFE	1
9	gland ring	SUS 304	2
10	o ring	VITON	1
11	belleville spring washer	SUS 301	2
12	lever nut	SUS 304	2
13	locking tab	SUS 304	1
14	handle	SUS 304	1
15	plastic coating	PVC	1
16	stop screw	SUS 304	1
17	bolts	SUS 304	16
18	static device	SUS 316	2
19	spring	SUS 316	2

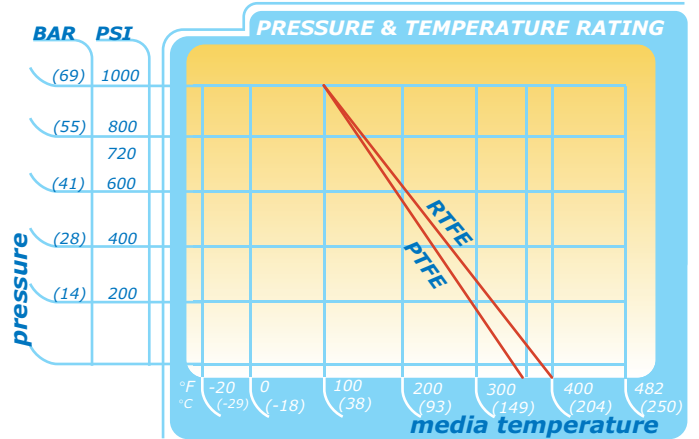
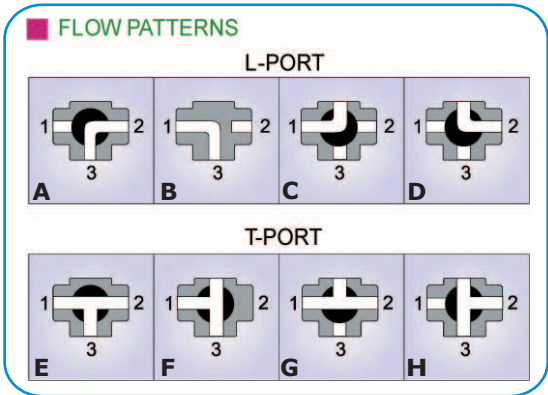
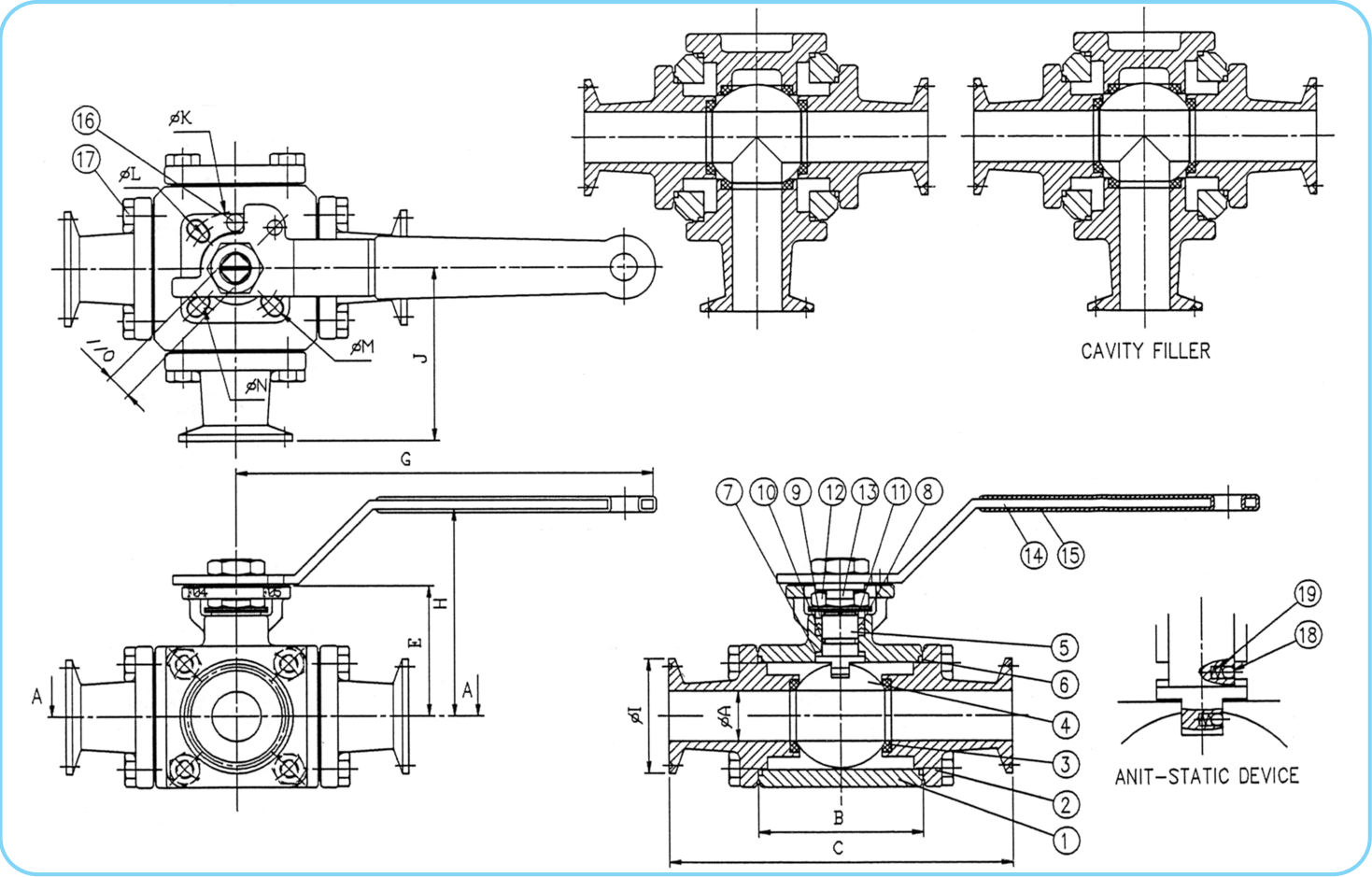
EA-407-SN

MULTI-PORT SANITARY VALVES

3-WAY SANITARY VALVES



DIMENSIONS (mm)																
size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	ISO5211
1"	22.1	73.2	152.4	46	57.6	11	185	91.6	50.4	76.2	50	42	7	6	11	F04/F05
1-1/2"	34.8	97.5	190.5	66	76.6	14.8	220	110.2	50.4	95.25	70	50	9	7	14	F05/F07
2"	47.5	120.3	215.9	86	86.7	14.8	220	120.3	63.9	107.95	70	50	9	7	14	F05/F07
3"	73.1	171.9	304.8	132	123.4	17.1	350	168.4	90.9	152.4	102	70	11	9	17	F07/F10
4"	97.4	210.4	330.2	165	139.9	17.1	350	184.9	118.9	165.1	102	70	11	9	17	F07/F10



SANITARY BUTTERFLY

316L BUTTERFLY SERIES

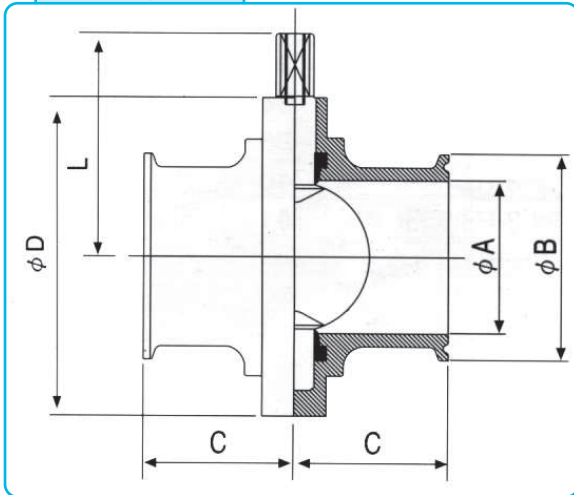


BFY-316L

FEATURES/SPECIFICATIONS:

- ASTM 316L grade stainless steel material
- Surface finish meets all 3-A, FDA & USDA standards and requirements
- 316L mirror finish disc helps provides an even flow preventing obstructions and restrictions
- The Tru-Flo butterfly valve features a special "opposing" body bolt design that prevents the loosening between body sections due to vibration and usage. This positive sealing prevents the usual leaking and maintenance worries that are common in other sanitary butterfly valves.
- Body bolting is flush with the body's surface preventing obstruction or modifications needing to be made to the valve during actuation or when space is limited for installation
- FDA approved Silicone, EPDM, Viton, and White Viton Seals are available
- Special 304ss 13-position, spring loaded, lever lock handle
- Standard Connections are Tri-Clamp and Butt-Weld. Other end connections are available upon request
- Suitable for actuation with pneumatic, electric and canister actuators
- Pressure - 110 PSI @ 200 degrees F. (Approx. 95C)

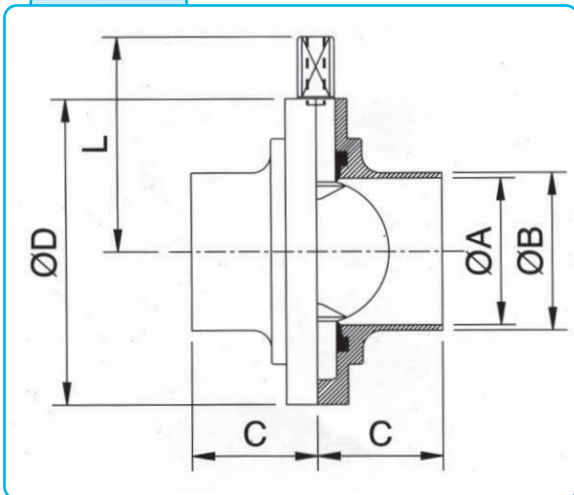
Tri-clamp Ends



TRI-CLAMP (STANDARD)

size	A	B	C	D	L
1.0"	22.1	50.5	44.5	79	61
1.5"	34.8	50.5	44.5	85	64.3
2.0"	47.5	64.0	47.6	105	74.3
2.5"	60.2	77.5	48.4	112	77.6
3.0"	72.2	91.0	51.5	125	84.3
4.0"	97.6	119.0	60.8	157	101.6
6.0"	148.3	166.9	76.2	208.3	76.2

Weld Ends



Description

Material

Qty

Description	Material	Qty
Body Half	316L	1
Disc	316L	1
Seal	Silicone/EPDM/Viton	1
Body Bolts	304	1
Notch Plate	304	1
Body Cap	Buna	1
Handle Cap	Buna	1
Handle Screw	304	1
13 Position Handle	304	1

SHORT BUTT - WELD (STANDARD)

size	A	B	C	D	L
1.0"	22.1	25.4	25.4	87.0	61
1.5"	34.8	38.1	25.4	97.0	64.3
2.0"	47.5	50.8	25.4	110.0	74.3
2.5"	60.2	63.5	25.4	110.0	77.6
3.0"	72.2	76.2	31.8	127.1	84.3
4.0"	97.6	101.6	31.8	160.0	101.6

LONG BUTT - WELD (SPECIAL)

size	A	B	C	D	L
1.0"	22.1	25.4	34	79	61
1.5"	34.8	38.1	38	85	64.3
2.0"	47.5	50.8	40	105	74.3
2.5"	60.2	63.5	40	112	77.6
3.0"	72.2	76.2	41	125	84.3
4.0"	97.6	101.6	44	157	101.6

Note: 6" Weld End also available



FEATURES / SPECIFICATIONS:

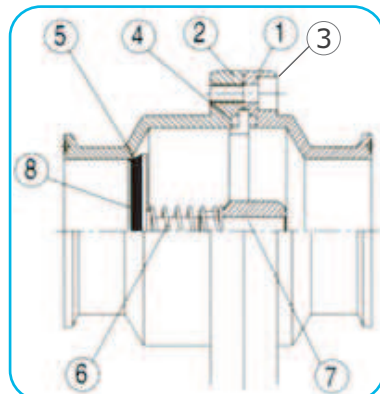
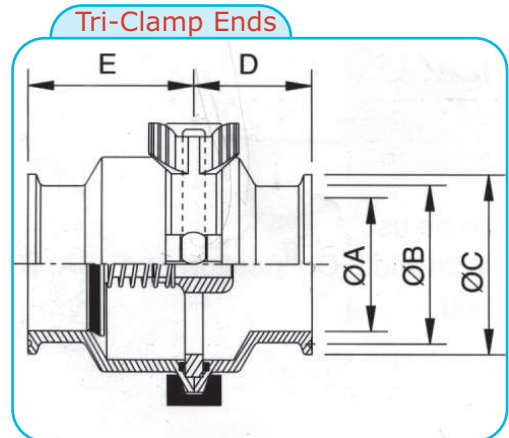
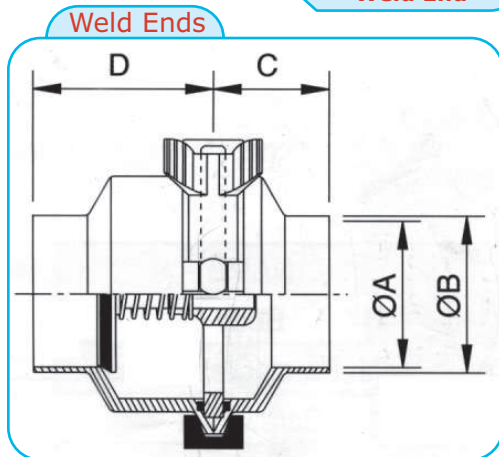
- ASTM 316L Stainless construction
- Polished body and internals - 25 Ra
- Body stem & disk : stainless, 316L, precision machined.
- Angle design for precision open and close.
- Can be used on viscous liquids.
- Stainless steel spring in both tri-clamp and weld end designs
- Seal Ring: Viton® standard (EPDM available)
- Internal Body O-Ring: Buna
- Suitable for Food, Pharmaceutical, Dairy, and other Sanitary Industries
- Maximum operating temperature/pressure - 250F/150PSI
- Size: 1/2"- 6"

Size	A	B	C	D
1.0"	22.2	25.65	38	59
1.5"	34.9	38.35	38	59
2.0"	47.6	51.05	38	59
2.5"	60.3	63.75	38	59
3.0"	73.0	76.45	38	59
4.0"	97.0	105.0	44	50

Weld End

Size	A	B	C	D	E
1/2"	9.5	17.5	25.4	28	39
3/4"	15.9	17.5	25.4	28	39
1.0"	22.2	43.5	50.5	42	59
1.5"	34.9	43.5	50.5	42	59
2.0"	47.6	56.5	64	42	59
2.5"	60.3	70.5	77.5	42	59
3.0"	73.0	83.5	91	42	59
4.0"	97.0	112.5	119	59	66

Clamp end

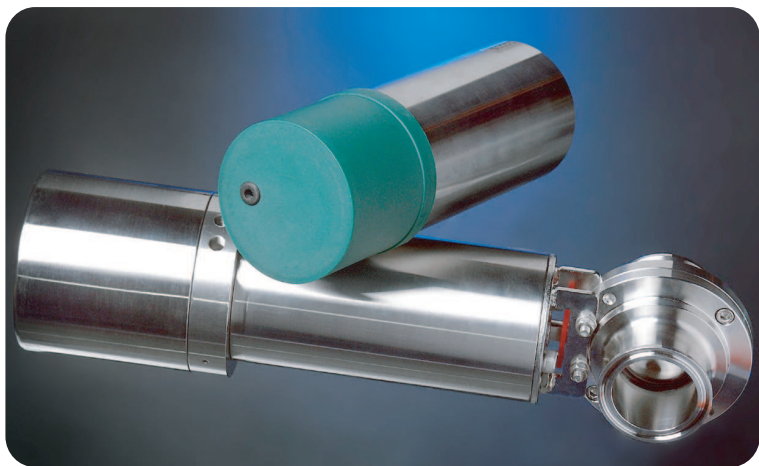


Item	Part Name
1	short body
2	long body
3	S/S screw (4" only)
4	O-ring
5	seal-ring
6	ST.ST spring
7	flow support plate
8	disc

CSE-316L

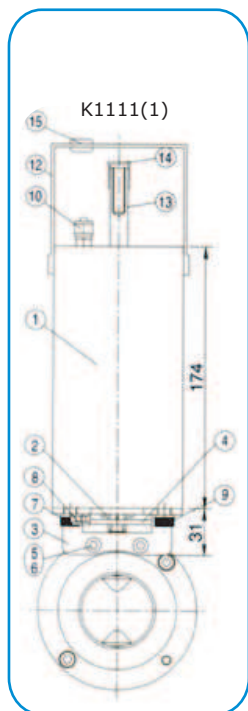
Stainless Steel Canister Actuator

K1111 SERIES

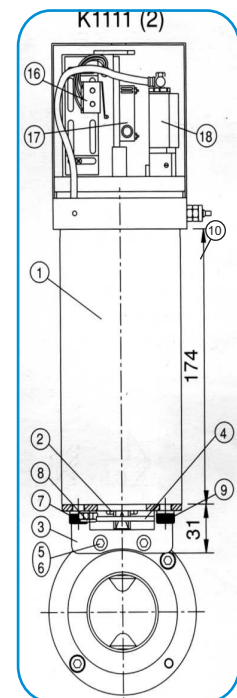


FEATURES / SPECIFICATIONS:

- Construction - 304 stainless
- Available as air/spring or air/air operated
- Available with solenoid/proximity switches
- K1111-1 (non-solenoid) has friction fit plastic top
- K1111-2 has secured (NEMA 4) stainless cover with solenoid and micro switch
- Specifically designed to actuate up to 3" butterfly valves
- Very high cycle life in excess of 1,000,000 cycles
- K1111-2 has protected switch package located under Nema 4 dome. Ideal for locations that require washdown, with no worries about damaging sensitive electronics
- Suitable for pharmaceutical/food processing applications



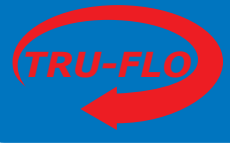
Item	Part Name	Qty
1	body	1
2	coupling axle piece	1
3	mounting bracket	1
4	plastic positioning ring	1
5	M6 x 30 stainless steel screw	2
6	M6 stainless steel nylon nut	2
7	M8 x 12 stainless steel screw	2
8	air outlet filter	1
9	piston O-ring	1
10	air connection	1
11	connection	1
12	cover	1
13	Inox piston stem	1
14	plug to protect stem	1
15	guide for air flow tube	1
16	Micro Switch	1
17	Proximity Detector	1
18	Solenoid	1



Canister Actuator

SANITARY CLAMPS

SINGLE PIN, DOUBLE PIN, 3 SEGMENT, & HIGH PRESSURE

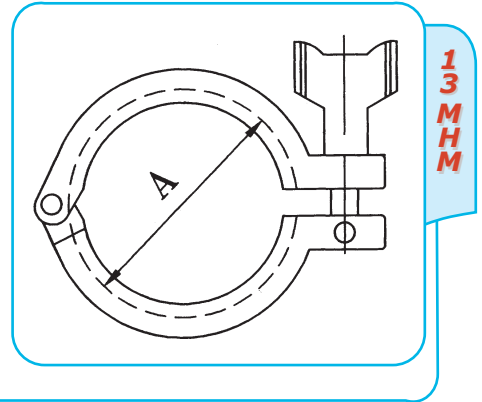


FEATURES/SPECIFICATIONS:

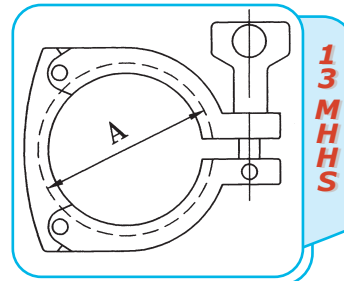
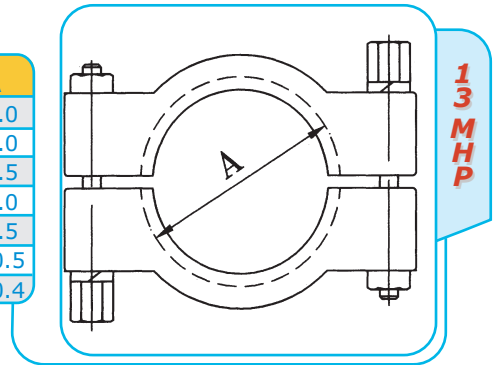
- 304 Stainless construction
- 100% Factory inspected to ensure the highest quality of finished product
- Various styles of wing nuts available



size	A
1/2"	28.6
3/4"	28.6
1.0"	53.9
1.5"	53.9
2.0"	67.4
2.5"	80.9
3.0"	94.4
4.0"	122.4
6.0"	170.4
8.0"	221.1
10.0"	272.0

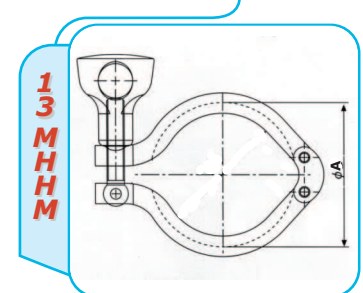


size	A
1.0"	52.0
1.5"	52.0
2.0"	65.5
2.5"	79.0
3.0"	92.5
4.0"	120.5
6.0"	170.4



size	A
1/2-3/4"	28.6
1.5"	53.9
2.0"	67.4
2.5"	80.9
3.0"	94.4
4.0"	122.4
6.0"	170.4
8.0"	221.1

size	A
1.0"	53.9
1.5"	53.9
2.0"	67.4
2.5"	80.9
3.0"	94.4
4.0"	122.4



Sanitary Clamps

INDUSTRIAL BALL VALVES

1-PC SERIES



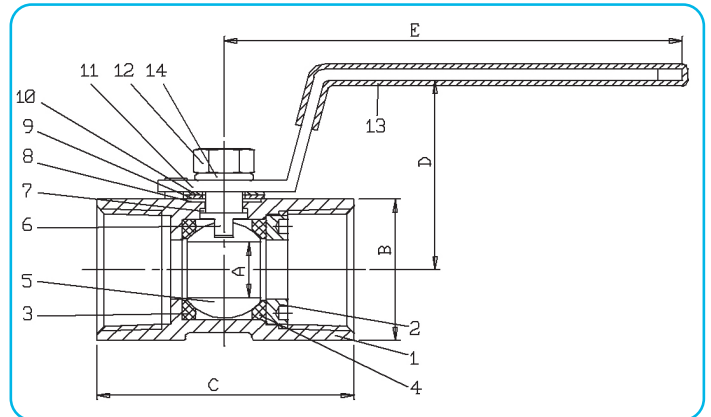
EA - 102A - SE



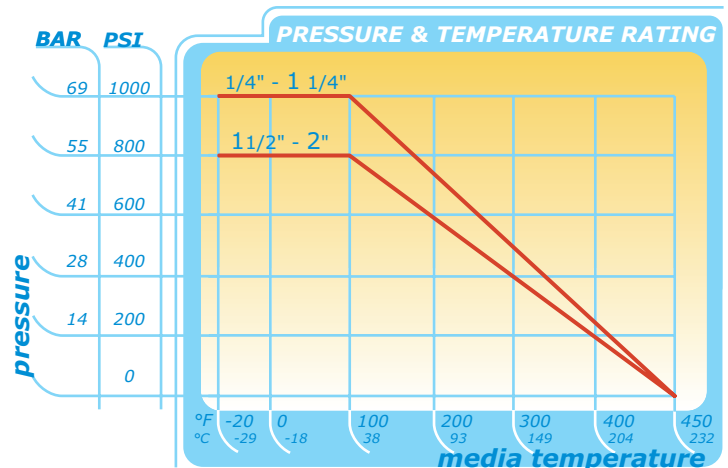
FEATURES / SPECIFICATIONS:

- General Purpose Industrial Application
- 1 Piece 316 Stainless Steel investment cast unibody
- Locking handle
- 800-1000 WOG working pressure
- Reduced port design
- For use up to 450 °F
- ANSI B16.34, ASTM-A351
- Sizes: 1/4"-2"

Size		A		B		C		D		E	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
8	1/4	5	0.196	17.1	0.673	38.7	1.524	27.2	1.071	58	2.283
10	3/8	7	0.276	20.7	0.815	44.2	1.74	29	1.142	70	2.756
15	1/2	9	0.354	24.8	0.976	55.6	2.189	36.5	1.437	85	3.346
20	3/4	12.5	0.492	31.4	1.236	62.1	1.445	39.8	1.567	85	3.346
25	1	15	0.59	38.2	1.504	68.9	2.713	49.1	1.933	100	3.937
32	1 1/4	20	0.787	47	1.85	78.2	3.079	53.5	2.106	100	3.937
40	1 1/2	24.5	0.965	53	2.087	86	3.386	61.5	2.421	125	4.921
50	2	32	1.26	65.2	2.567	102.7	4.043	67.6	2.661	125	4.921



Item	Parts Name	Material	Qty
1	BODY	ASTM A351.CF8M/SS316	1
2	SEAT RETAINER	SS316	1
3	SEATS	PTFE + 15% G.F.	1
4	SPECIAL SEAT	PTFE + 15% G.F.	1
5	BALL	ASTM A351. CF8M/SS316	1
6	STEM	SS316	1
7	GASKET	PTFE + 15% G.F.	1
8	THIN GASKET	PTFE + 15% G.F.	1
9/10	FLAT WASHER	420J1	1
11	SPRING WASHER	420J1	1
12	HANDLE	SS304	1
13	PREVENT LOOSE NUT	SS304	1
14	HANDLE COVER	VINYL	1
	LEVEL SPRING WASHER	SS304	1



EA - 102A - SE

INDUSTRIAL BALL VALVES

2-PC SERIES



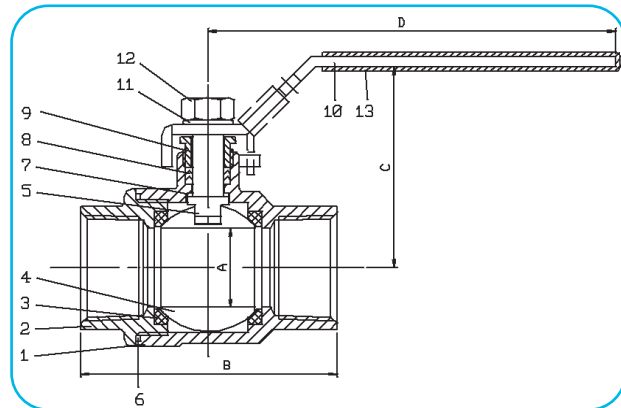
EA-207A-SE



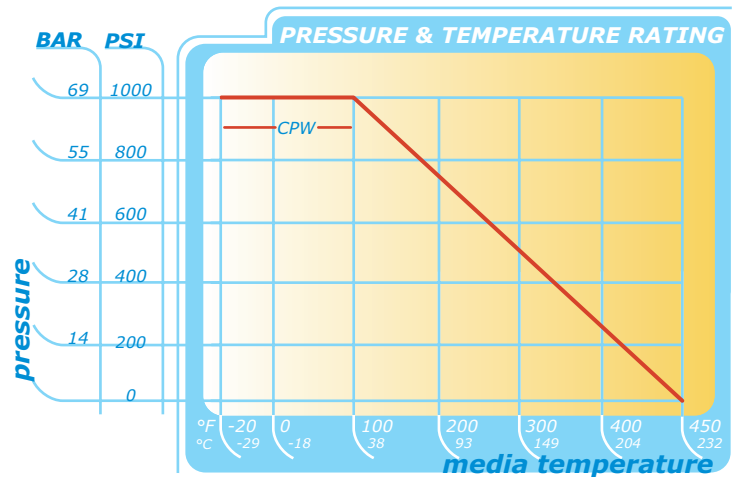
FEATURES/SPECIFICATIONS:

- 316 Stainless Steel
- Economical 2 piece design
- 1000psi WOG rating
- High Quality, investment cast body
- Blowout proof stem design
- Industrial/Chemical applications
- Full-ported, NPT
- Reinforced PTFE seat/seals
- ANSI B16.34, ASTM-A351
- Size: 1/4"-2"

ITEM	PARTS NAME	MATERIAL	QTY
1	BODY	ASTM A351.GR.CF8M	1
2	END CAPS	ASTM A351.GR.CF8M	1
3	SEATS	PTFE + 15% G.F.	2
4	BALL	ASTM A351.GR.CF8M	1
5	STEM	SS316	1
6	JOINT GASKET	PTFE	1
7	GASKET	PTFE	1
8	SEAL	PTFE	1
910	PACKING GLAND	SS304	1
11	HANDLE	SS304	1
12	LEVER SPRING WASHER	SS304	1
13	LEVER NUT	SS304	1
	HANDLE COVER	VINYL	1



SIZE		A		B		C		D	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
8	1/4	10	0.394	49.2	1.937	41.4	1.63	80	3.15
10	3/8	12.5	0.492	49.2	1.937	41.4	1.63	80	3.15
15	1/2	15	0.59	59	2.323	45	1.772	80	3.15
20	3/4	20	0.787	68.6	2.701	54.7	2.154	100	3.937
25	1	24.5	0.965	78.6	3.094	65.3	2.571	125	4.921
32	1 1/4	32	1.26	93.2	3.669	70.9	2.791	125	4.921
40	1 1/2	38	1.496	103.1	4.059	84	3.307	160	6.299
50	2	50	1.969	123.3	4.854	93.3	3.673	160	6.299



EA-207A-SE

INDUSTRIAL BALL VALVES

2-PC HEAVY DUTY SERIES



EA-201A-SE

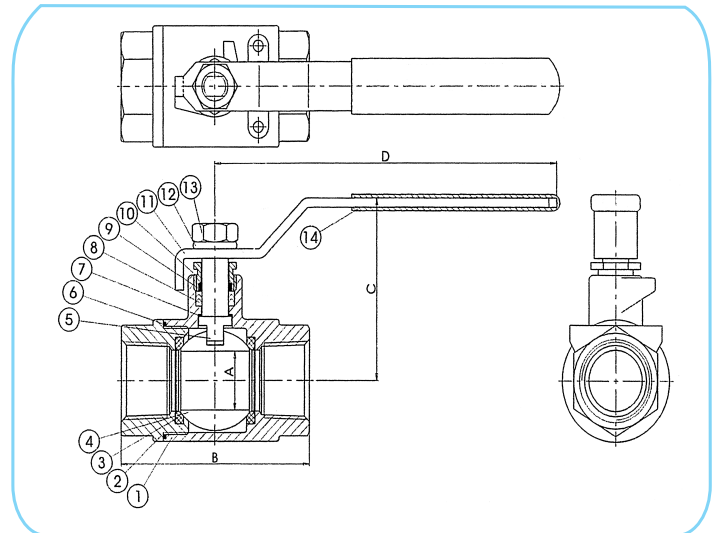


FEATURES / SPECIFICATIONS:

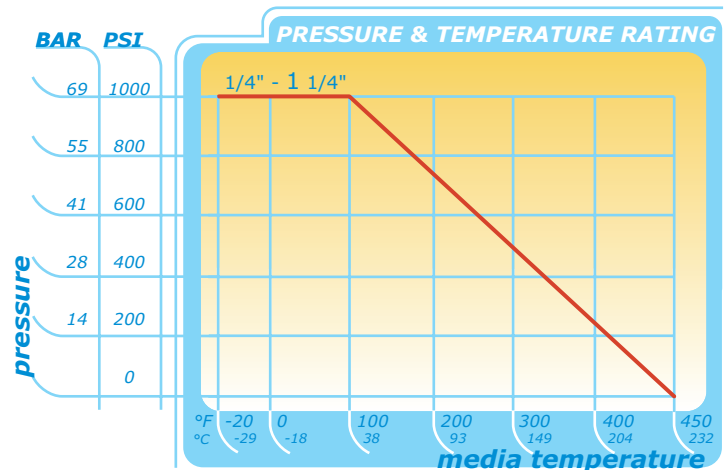
- Investment Cast 316 stainless steel
- Full-port, 2-pc design
- Heavy duty body design for intense chemical and industrial applications
- 3-pc, V-ring stem packing for better sealing and lower torque
- No lubrication required for life of valve
- Blow out proof, bottom entry stem design
- Working pressure to 1000 psi W.O.G.
- Threaded (NPT) ends to ANSI B2.1
- Sizes: 1/4" - 4"

*3" & 4" sizes are direct mounting

Size		A		B		C		D	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
8	1/4	11	0.433	56	2.205	49.2	1.937	103	4.055
10	3/8	12.5	0.492	56	2.205	49.2	1.937	103	4.055
15	1/2	15	0.591	62.4	2.457	53.9	2.122	103	4.055
20	3/4	20	0.787	76.6	3.016	63.3	2.492	109	4.291
25	1	25	0.984	91.6	3.606	78.2	3.079	145	5.709
32	1 1/4	32	1.260	98.3	3.870	82.3	3.240	145	5.709
40	1 1/2	38	1.496	117.7	4.634	93.0	3.661	180	7.087
50	2	50	1.969	135.2	5.323	98.7	3.886	180	7.087
65	2 1/2	65	2.559	166.2	6.543	131	5.157	230	9.055
80	3	80	3.150	198.8	7.827	143.9	5.665	300	11.81
100	4	100	3.937	235.8	9.283	163.9	6.453	400	15.75



Item	Part name	Material	Qty
1	body	ASTM A216 Gr.WCB	1
2	end cap	ASTM A216 Gr.WCB	1
3	seat	PTFE + 15% G.F.	2
4	ball	ASTM A351. GR.CF8	1
5	stem	SS304	1
6	joint gasket	PTFE	1
7	thrust washer	PTFE	1
8	packing	PTFE	2
9	gland bush	PTFE	1
10	packing gland	SS304	1
11	handle	SS304	1
12	spring washer	SS304	1
13	nut	SS304	1
14	handle cover	VINYL	1



EA-201A-SE

INDUSTRIAL BALL VALVES

2-PC HIGH PRESSURE SERIES

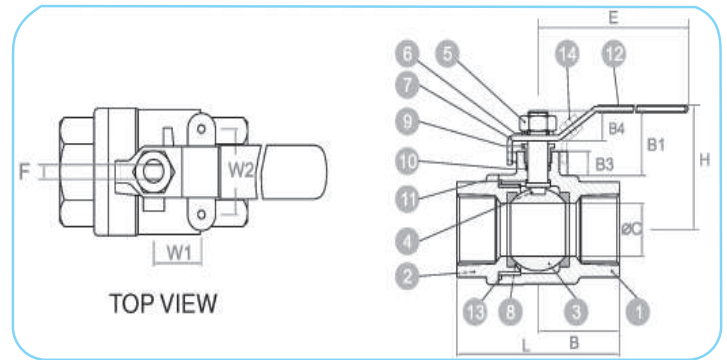


Series 20 / 40



FEATURES / SPECIFICATIONS:

- 2 Piece, 316 stainless construction
- High quality investment cast body
- Blowout proof stem design
- Full port design (no internal taper)
- Industrial/Chemical applications
- Standard locking handles
- ANSI B2.1, B16.34
- Size 1/4" to 1" rated at 2000psi WOG
- 1 1/4" to 2" rated at 1500psi WOG



DIMENSIONS (mm)

size	B	B1	B8	B4	OC	E	F	H	L	W1	W2
1/4"	27.5	23	8	10	11.6	100	5.0	50	55	12.7	28.5
3/8"	27.5	23	8	10	12.7	100	5.0	50	55	12.7	28.5
1/2"	32.5	26	10	12	15.0	130	6.5	65	65	12.7	28.5
3/4"	37.0	26	11	12	20.0	130	6.5	74	74	22.4	35.0
1"	44.0	30	12	15	25.0	165	8.0	88	88	22.4	35.0
1 1/4"	51.0	37	12	15	32.0	165	8.0	102	102	25.4	38.1
1 1/2"	55.0	35	12	16	38.0	190	9.7	110	110	25.4	38.1
2"	62.5	31	10	16	50.0	190	9.7	125	125	25.4	38.1

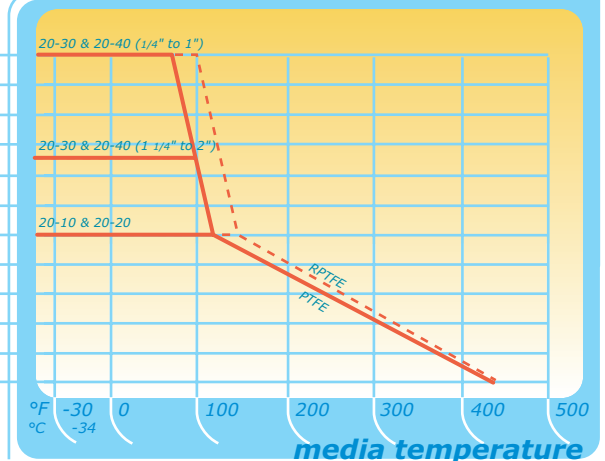
Item	Part name	Material	Qty
1	body	ASTM A351 Gr.CF8M	1
2	cap	ASTM A351 Gr.CF8M	1
3	ball	SUS 316	1
4	stem	SUS 316	1
5	stem nut	SUS 304	1
6	stem washer	SUS 304	1
7	handle	SUS 304	1
8	seat	PTFE	2
9	gland	SUS 304	1
10	stem packing	PTFE	1
11	thrust washer	PTFE	1
12	handle sleeve	Vinyl	1
13	joint gasket	PTFE	1
14	locking device	SUS 304	1

pressure

BAR PSI

152 2200
138 2000
124 1800
110 1600
96 1400
83 1200
69 1000
55 800
41 600
28 400
14 200
0 0

PRESSURE & TEMPERATURE RATING



Series 20 / 40

INDUSTRIAL BALL VALVES

3-PC DIRECT MOUNT SERIES



EA-33NF-SE/SW/BW

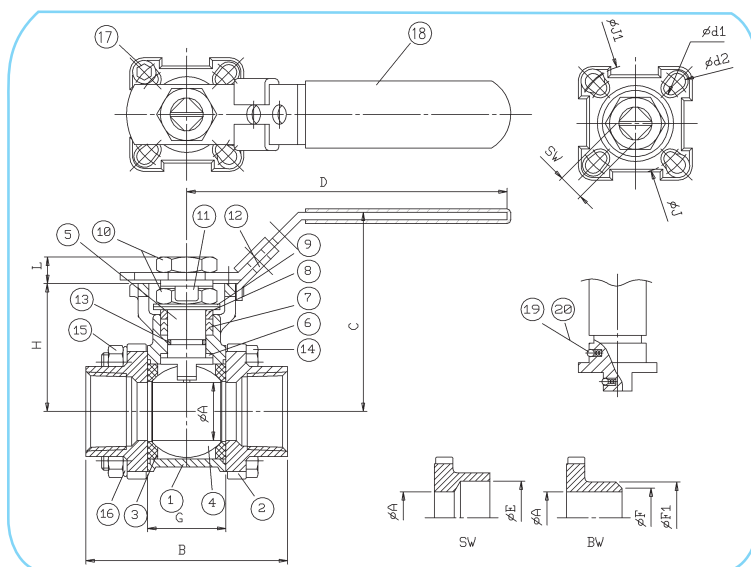


FEATURES / SPECIFICATIONS:

- 316 Stainless Steel investment casting body and components
- 3-pc full-port, split body design
- Maintenance free live loaded, self adjusting stem packing
- Reduces routine maintenance costs
- Optimum sealing for high cycle applications
- Direct Mounting ISO 5211 mounting pad and anti-static device
- 3-pc, V-ring chevron packing and belleville washers provide reduced torque and is a secondary defense against leaking
- Bottom entry blow-out proof stem for maximum safety
- 100% tested and inspected
- Various seating materials and styles available
- Optional fire safe design to API 607.1 available
- Working pressure 1000 psi W.O.G.
- End Connections: SE -- Threaded (NPT) ANSI B2.1
BW -- Butt-Weld ANSI B16.25
SW -- Socket-Weld ANSI B16.11

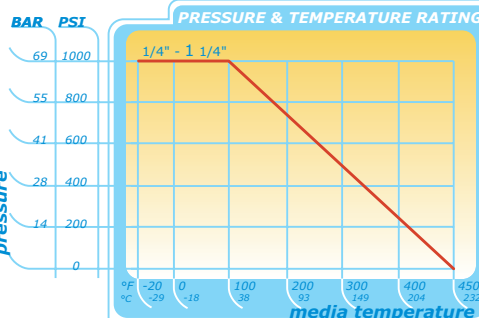
-Sizes: 1/4" - 4"

Item	Part name	Material	Qty
1	body	CF8M/316	1
2	end caps	CF8M/316	2
3	seatstem	PTFE	2
4	ball	SUS 316	1
5	stem	SUS 316	1
6	gasket	PTFE	1
7	seal	PTFE	1
8	gland ring	SUS 304	2
9	belleville washer	SUS 301	2
10	lever nut	SUS 304	1
11	locking tab	SUS 304	1
12	handle	SUS 304	1
13	o ring	VITON	1
14	bolts	SUS 304	4
15	bolts nut	SUS 304	4
16	spring washer	SUS 304	4
17	stop screw	SUS 304	1
18	plastic coating	PVC	1
19	static device	SUS 316	2
20	spring	SUS 316	2



DIMENSIONS (mm)

size	A	B	C	D	E	F	F1	G	J	J1	SW	d1	d2	H	L	ISO5211
1/2"	16	75	70.9	110	21.9	17	22.4	25.2	36	42	9	6	6	42.3	8	F03/F04
3/4"	20	80	73.4	110	27.2	22	28.2	27.7	36	42	9	6	6	44.8	8	F03/F04
1"	24.5	90	84.1	135	34	28	33.7	33	42	50	11	6	7	54	10	F04/F05
1-1/4"	32	110	89.3	135	42.7	37	44	41.2	42	50	11	6	7	59.2	10	F04/F05
1-1/2"	38	120	109.5	165	48.8	43	50.8	49.3	50	70	14	7	9	73.5	14.8	F05/F07
2"	50	140	118.9	165	61.3	54	62.6	63.6	50	70	14	7	9	82.9	14.8	F05/F07
2-1/2"		190	155	300	77	76.1		82.1	70	102	17	9	11	107	17.1	F07/F10
3"		220	165	335	90	88.9		95.8	70	102	17	9	11	117.3	17.1	F07/F10
4"		270	180	335	115.5	114.3		117.8	70	102	17	9	11	132.3	17.1	F07/F10



EA-33NF-SE/SW/BW

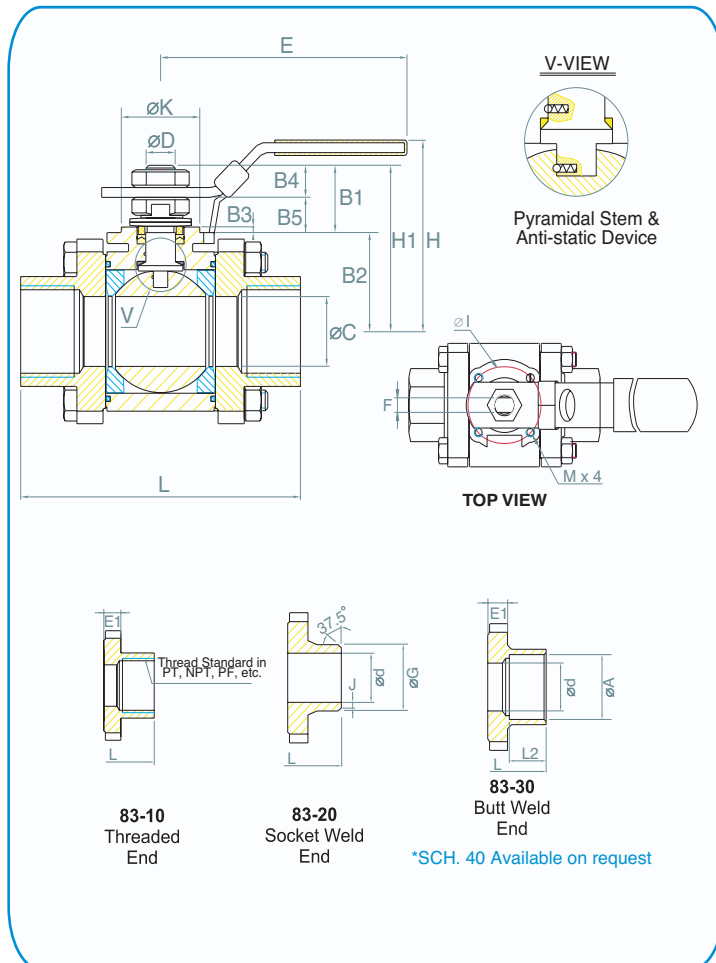
INDUSTRIAL BALL VALVES

3-PC HIGH PRESSURE SERIES



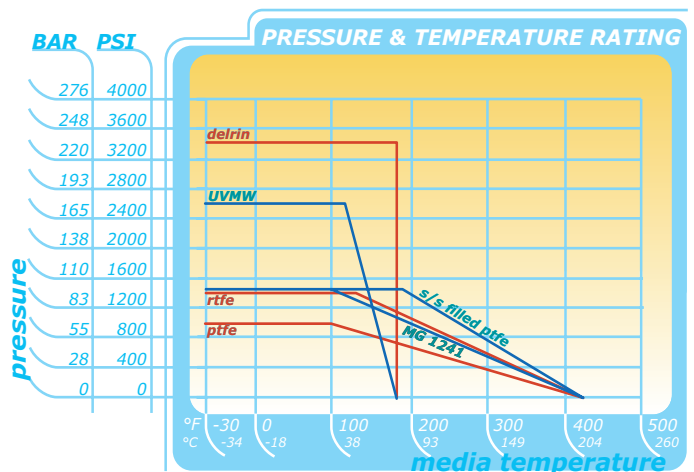
FEATURES/SPECIFICATIONS:

- ASTM 316 stainless construction
- Live loaded, blowout proof stem design
- High cycle life
- Reinforced teflon seats and 3pc "chevron" style packing
- High quality investment cast body and caps
- Full port design
- Anti-static device
- Locking handle is standard
- Suitable for automation
- Fire-safe tested per API 607 4th edition available
- Size: Full Bore 1/4" to 2" (DN8 to DN 50)
- Ends: Screwed, Socket Weld, Butt Weld
- Body: CF8M, WCB
- Ball & Stem: 316 S.S.
- Rating: 1/4" - 1" 2000 PSI
1-1/4" - 2" 1500 PSI



DIMENSIONS (mm)

SIZE	øA	B1	B2	B3	B4	B5	øC	øD	ød	E	E1	F	øG	H	H1	øI	J	øK	L	L2	M	M1	SO211	Wt. (kg)
1/4"	14.1	7.2	29.8	0.5	5.7	1.5	10	9.5	10	134	9.9	6.5	14.0	63.8	37	36	1.6	25	64.8	10	M5	29.5	F03	0.80
3/8"	17.6	7.2	29.8	0.5	5.7	1.5	10	9.5	10	134	9.9	6.5	17.5	63.8	37	36	1.6	25	64.8	10	M5	29.5	F03	0.80
1/2"	21.7	16.6	29	2	6.2	10.4	15	9.5	15	134	9.1	6.5	21.7	72	45.6	36	1.6	25	72.5	10	M5	30	F03	0.81
3/4"	27.3	18.4	33	2	7.5	10.9	20	9.5	20	134	11.4	6.5	27.5	76.4	51.4	36	1.6	25	85.4	13	M5	36	F03	1.27
1"	34.1	25.2	36	2	10.2	15	25	11.1	25	170	11.5	8.0	34.0	83	61.2	42	1.6	30	105.3	13	M5	44.5	F04	1.94
1 1/4"	42.8	24.2	40	2	8.2	16	32	11.1	32	170	12.2	8.0	42.7	88	64.2	42	1.6	30	111	13	M5	54	F04	2.65
1 1/2"	48.7	31.7	47.3	2.2	12.8	18.9	38	14.3	38	207	13	9.7	48.6	104.2	79	50	1.6	35	127.3	13	M6	60	F05	3.75
2"	61	25.5	69.5	1.5	11.3	14.2	50	14.3	50	207	11.3	9.7	60.5	121.7	95	50	1.6	35	142.8 R145	16	M6	73.2	F05	5.43



ERROR: rangecheck
OFFENDING COMMAND: .buildshading2

STACK:

-dictionary-
-dictionary-
-savelevel-

INDUSTRIAL BALL VALVES

MULTI-PORT SERIES

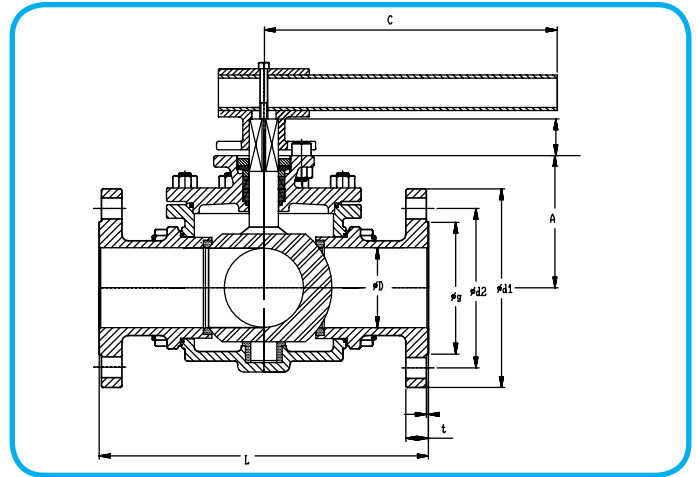
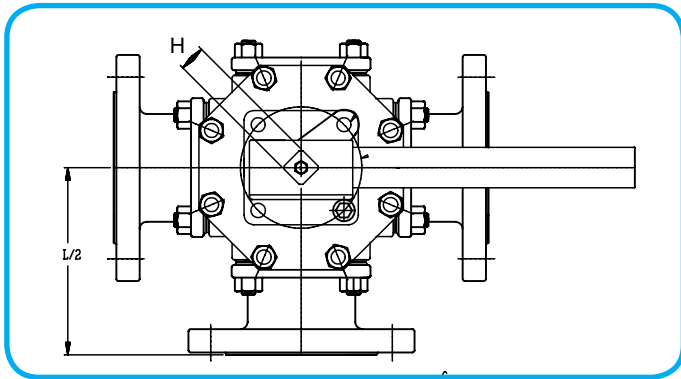


Series 36

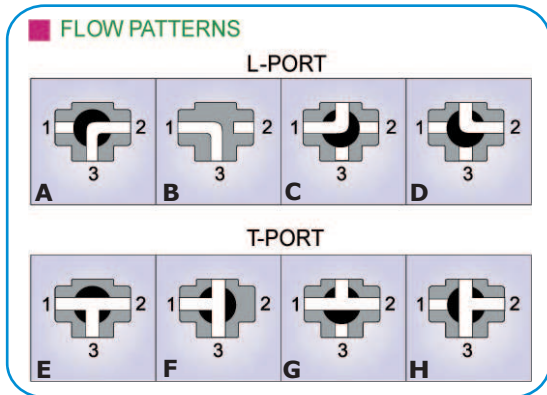


FEATURES/SPECIFICATIONS:

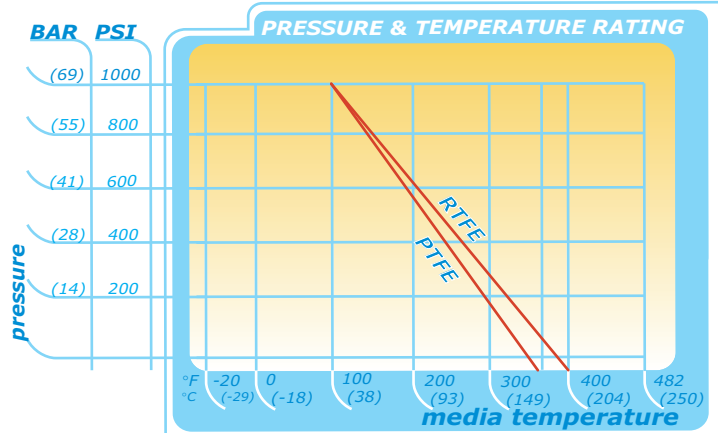
- Available in 316 stainless steel
- Full port design
- ISO 5211 mounting pad (sizes 1/2"-4" are direct mounting)
- Investment cast and sand cast body construction
- Meets International Standards
- 150# ANSI Flanged ends
- L or T Port
- Size: 1/2"-12"
- See page 22 for parts listing



Size	A	C	D	L	d1	d2	g	t	Stem Height	H	ISO5211
1/2"	41	130	15	152	89	60.5	35	11.2	11	9	F03/F04
3/4"	49	165	20	167	98	70	43	11.2	14	11	F04/F05
1"	55	165	25	190	108	79.5	51	11.2	14	11	F04/F05
1-1/4"	63	205	32	208	117	89	64	12.7	18	14	F05/F07
1-1/2"	74	205	38	220	127	98.5	73	14.3	18	14	F05/F07
2"	93	325	50	253	152	120.5	92	15.8	23	17	F07/F10
2-1/2"	118.5	400	62	300	178	139.5	105	17.8	25	22	F10
3"	136.5	500	76	305	190	152.5	127	19.1	25	22	F10
4"	156.5	650	96	368.5	229	190.5	157	24	25	22	F10
6"	159.5	1200	150	427	279.3	241.5	216	25.4	36	36	F12



Series 36



INDUSTRIAL BALL VALVES

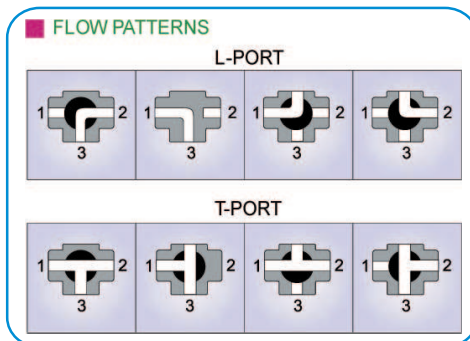
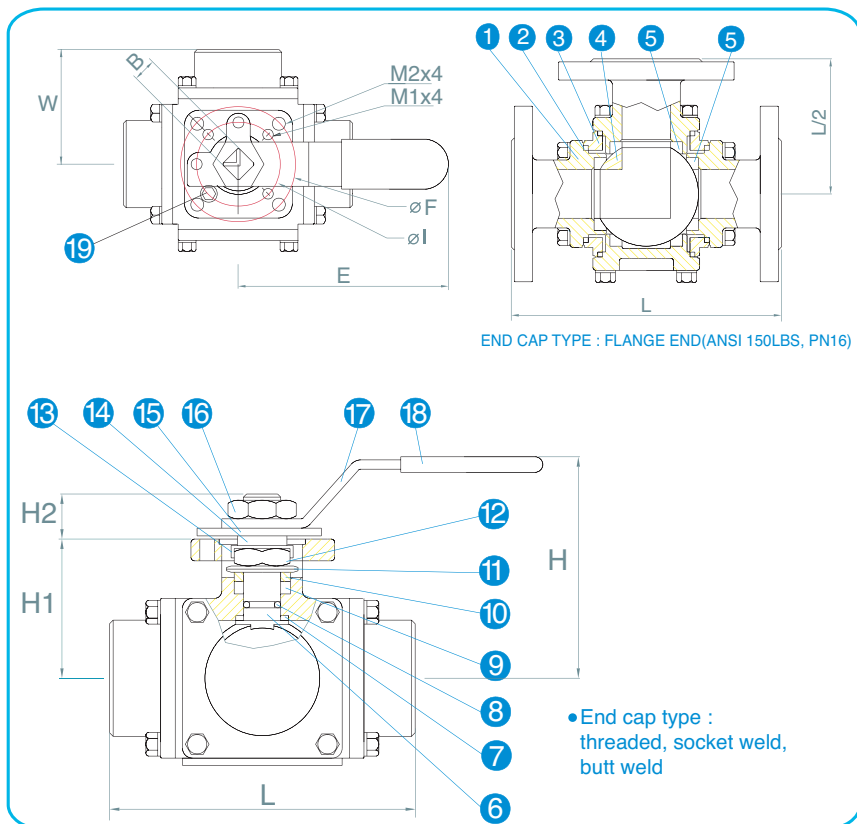
DIRECT MOUNT MULTI-PORT SERIES



FEATURES/SPECIFICATIONS:

- ISO 5211 Direct mount pad. Allows direct mounting of pneumatic and electric actuators, no brackets and couplings needed, easy and low cost for automated service.
- Full Port, Multi port design :L&T port flow design available
- Live loaded stem packing
- Blow out proof stem, floating ball design
- Cost efficient. One valve can replace two or more valves, reduces the number of valves in piping system.
- Anti-static device
- Investment cast body construction
- 1000 PSI W.O.G.
- Sizes 1/2" - 4"

Item	Part Name	Material	Qty
1	end caps	A351 Gr. CG8M/A216 Gr. WCB	3
2	gasket	PTFE	4
3	body	A351 Gr. CG8M/A216 Gr. WCB	1
4	ball	SS 316	1
5	seat	15% Carbon+PTFE	4
6	stem	SS 316	1
7	stem seal	RPTFE	1
8	o-ring	VITON	1
9	stem packing	PTFE	1
10	gland	SS 304	1
11	belleville washer	SS 301	2
12	stem nut	SS 304	1
13	nut stop	SS 304	1
14	space washer	SS 304	1
15	lock saddle	SS 304	1
16	handle nut	SS 304	1
17	handle	SS 304	1
18	handle sleeve	Vinyl	1
19	stop pin	SS 304	1



SIZE	B	øC	ød	E	H	H1	H2	øI	øF	L	M1	M2	W	ISO5211
1/4"	9			130	62	38.5	10	36	42	88	6.0	6.0	44	F03/F04
3/8"	9			130	62	38.5	10	36	42	88	6.0	6.0	44	F03/F04
1/2"	9			130	64	41	10	36	42	15	6.0	6.0	52.5	F03/F04
3/4"	11			165	82	49	13	42	50	112	6.0	7.1	55.5	F04/F05
1"	11			165	89	55	13	42	50	128	6.0	7.1	70	F04/F05
1 1/4"	14			205	98	63	17	50	70	140	7.1	9.2	64	F05/F07
1 1/2"	14			205	108	74	17	50	70	160	7.1	9.2	80	F05/F07
2"	17			325	140	93	22	70	102	192	9.2	11.4	96	F07/F10
2 1/2"	22	62	65	400	144					294				F10
3"	22	76	80	500	162					317				F10
4"	22	96	100	650	182					369				F10

INDUSTRIAL BALL VALVES

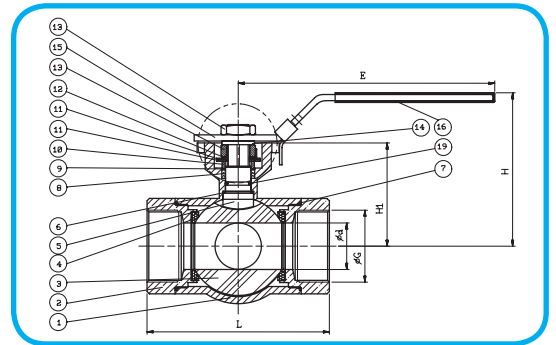
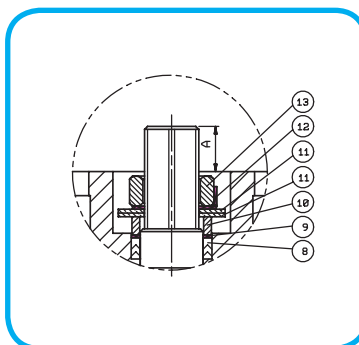
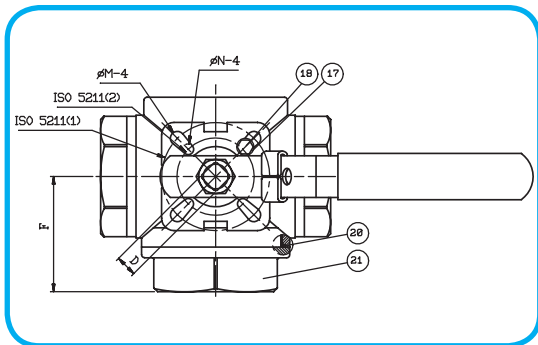
3-WAY MULTI-PORT SERIES



SERIES 38

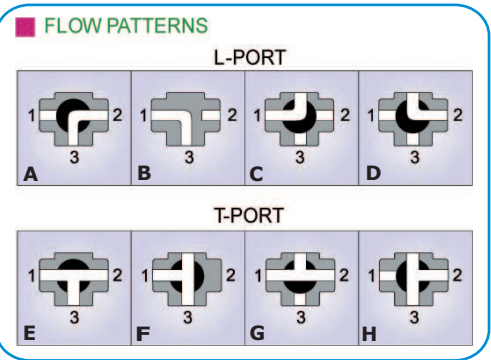
FEATURES / SPECIFICATIONS:

- ASTM 316 Stainless construction
- Blowout proof stem design
- Standard (reduced) port design
- Available in "L" port or "T" port to fit your specific needs - please specify
- Locking handle is standard
- Suitable for automation - ISO 5211 mtg. pad
- 1000 WOG/NPT ends
- Multi-Port design-positive sealing at all ports
- Reduces quantity of valves needed in pipeline
- Size: 1/4"-2"

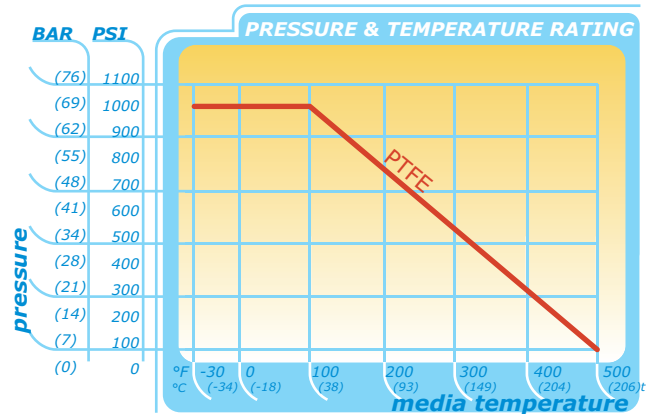


Size	d	L	H	D	F	A	N	M	E	H _i	ISO5211
1/4"	11	75.7	66.9	9	38.3	82	6	6	132	36.8	F04/F03
3/8"	11	75.7	66.9	9	38.3	82	6	6	132	36.8	F04/F03
1/2"	12.5	75.7	66.9	9	38.3	82	6	6	132	36.8	F04/F03
3/4"	16	86.6	74.6	9	44.7	99	6	6	177	44.1	F04/F03
1"	20	183	94.3	11	50.8	11.5	6	7	177	55.1	F05/F04
1 1/4"	25	118.2	100	11	57.7	11.5	6	7	205	60.7	F05/F04
1 1/2"	32	125.8	115.7	14	62.7	15.1	7	9	225	75.2	F07/F05
2"	38	149	124.9	14	74.6	15.1	7	9	225	84.4	F07/F05

Item	Part name	Material	Qty
1	body	ASTM 351 Gr.CF8M	1
2	cap	ASTM 351 Gr.CF8M	3
3	ball	ASTM 351 Gr.CF8M	1
4	ball seats	PTFE	4/1 set
5	stem	SS316	1
6	thrust washer	PTFE	1
7	end seals	PTFE	2/1 set
8	stem packing	PTFE	1 set
9	thrust washer	PTFE25XG/F	1
10	gland bush	SS304	1
11	bevelille washer	SUS304-CSP	2
12	stop	SS304	1
13	handle nut	SS304	1
14	washer	SS304	1
15	handle	SS304	1
16	handle sleeve	VINYL GRIP	1
17	stopper	SS304	1
18	screw	SS304	1
19	o-ring	VITON	1
20	end seals	PTFE	1
21	cap	ASTM 351 Gr.CF8M	1



SERIES 38



INDUSTRIAL BALL VALVES

GROOVED-END STYLE 3-PC SERIES

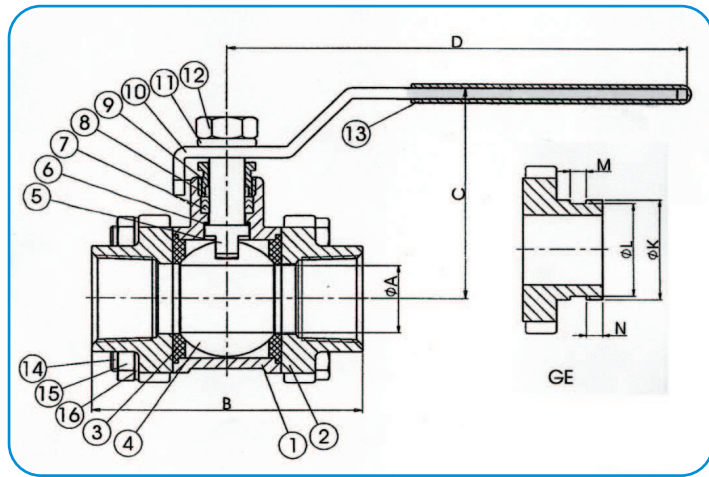


EA - 301 - GE

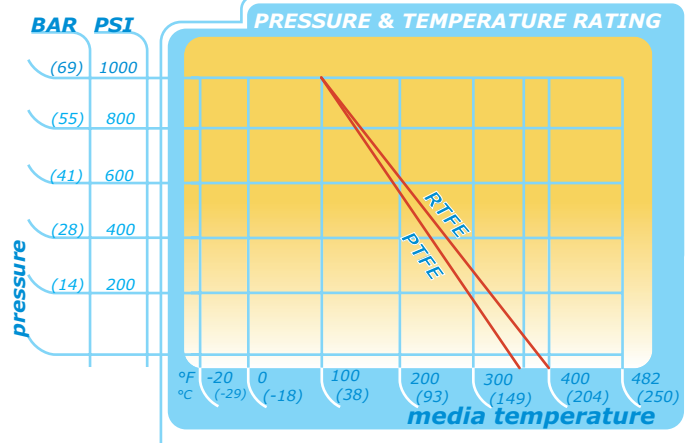
FEATURES / SPECIFICATIONS:

- ASTM 316 stainless construction
- Reinforced teflon, 3-piece "chevron" style packing - expands outward as it is compressed to seal
- Victaulic® style grooved connections
- High quality investment cast body and end caps
- Designed for quick disconnect service
- 100% air tested underwater at the factory
- Blowout proof stem design
- Locking handle is standard
- Available in 2" & 3" sizes
- Options: 3" in 8" or 10" length

SIZE	A mm	B (GE) mm	C mm	D mm	K (GE) mm	L (GE) mm	M (GE) mm	N (GE) mm
2"	50	171.45	98.7	180	60.3	57.15	7.93	15.88
3"	80	203.20	142.1	300	88.9	84.94	7.93	15.88
3" sp	8.0	254.0	142.1	300	88.9	84.94	7.93	15.88



Item	Part name	Material	Qty
1	body	ASTMA351.CF8M/SS316	1
2	end cap	ASTMA351.CF8M/SS316	2
3	seats	PTFE + 15% G.F.	2
4	ball	ASTMA351.CF8M/SS316	1
5	stem	SS316	1
6	gasket	PTFE	1
7	seal	PTFE	1
8	gland bush	PTFE	1
9	packing gland	SS304	1
10	handle	SS304	1
11	lever spring washer	SS304	1
12	lever nut	SS304	1
13	handle cover	VINYL	1
14	bolts	SS304	4
15	bolt nuts	SS304	4/8
16	spring washers	SS304	4/8



EA - 301 - GE

INDUSTRIAL BALL VALVE

HIGH PRESSURE DOUBLE UNION SERIES

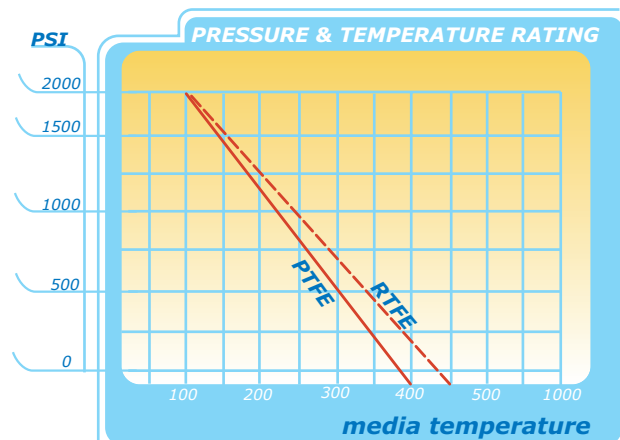
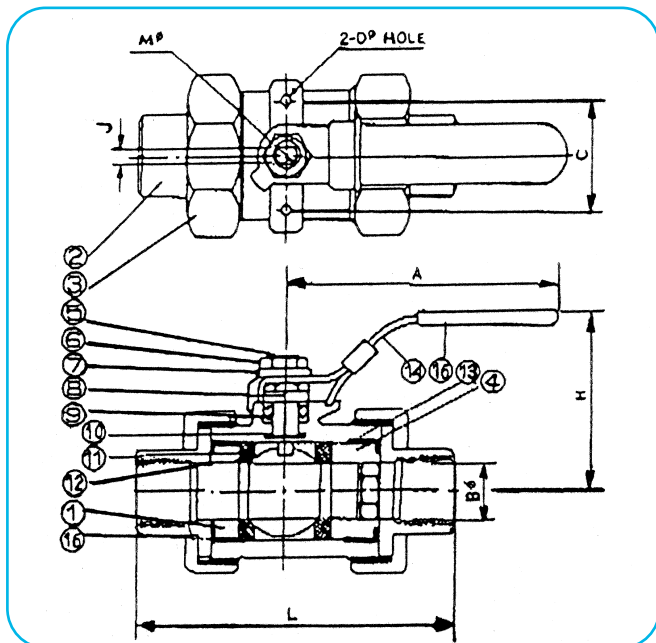


FEATURES / SPECIFICATIONS:

- Investment Cast 316 stainless steel construction
- 3-pc lug style body design facilitates inspection and easy inline repair
- Full port flow with self contained center section
- Blow out proof, bottom entry stem design
- Mounting Pad
- Suitable for water borne paint applications
- Working pressure to 2000 psi W.O.G.
- Sizes 1/4" - 2" in NPT & Socket Weld Ends

MM	Inch	A	B	C	D	H	L	J	M
8	1/4"	100	9	28.6	M4	53	90	5	8
10	3/8"	100	12.5	28.6	M4	53	90	5	8
15	1/2"	120	15.8	36	M5	59	100	6	9.5
20	3/4"	120	20	36	M5	62	104	6	9.5
25	1"	145	25.4	42	M5	73	122	8	12.7
32	1-1/4"	145	31.8	42	M5	78	128	8	12.7
40	1-1/2"	175	38.1	50	M6	90	142	10	15.9
50	2"	175	50.8	50	M6	98	165	10	15.9

Item	Part Name	Material
1	body	CF8M/316 ASTM A351
2	Union End	CF8M/316 ASTM A351
3	Union Nut	CF8M/316 ASTM A351
4	Threaded Spacer	CF8M/316 ASTM A351
5	Stem	316 SST
6	Handle Nut	304 SST
7	Washer	304 SST
8	Follower	304 SST
9	Stem Packing	Reinforced PTFE
10	Thrust Washer	Reinforced PTFE
11	Ball Seat	Reinforced PTFE
12	Solid Ball	CF8M/316 ASTM A351
13	Spacer Seal	Reinforced PTFE
14	Handle	304 SST
15	Cover	Plastic
16	End Seal	Reinforced PTFE



HSBV-501

STAINLESS NEEDLE VALVES

HIGH PRESSURE SERIES

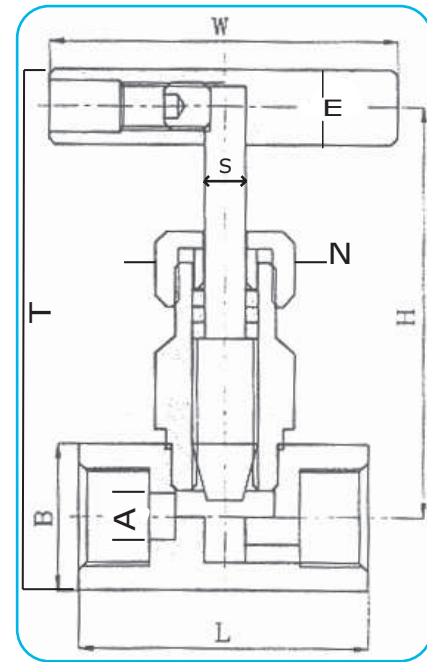


EN-501A



FEATURES / SPECIFICATIONS:

- High quality, investment cast body - 316 stainless
- Threaded NPT ends
- High pressure 6000psi WOG
- Manufactured dry and silicone free for use in instrumentation and waterborne paint applications
- Sizes 1/4" to 1" available

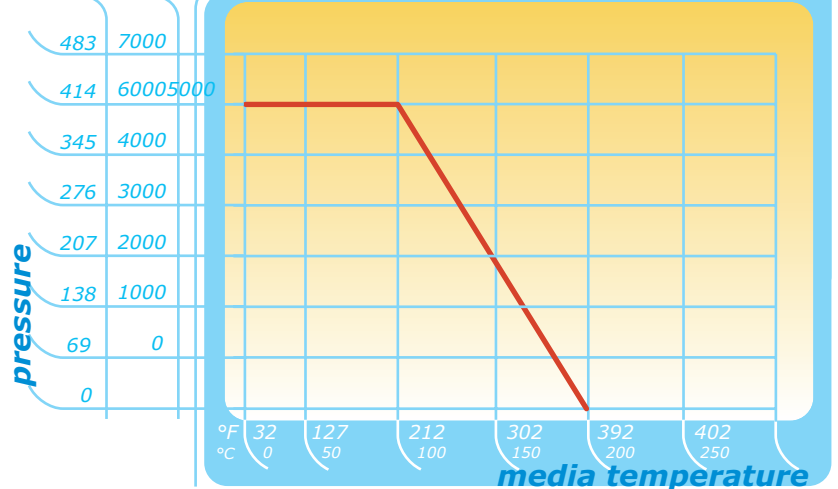


SIZE		L	A	B	T	H	E	S	N	W	NT (KGS)
mm	inch										
8	1/4	45	3	22	80	70	13	7	21	60	0.36
10	3/8	50	3	25	85	73	13	7	21	60	0.43
15	1/2	60	4	30	110	95	16	8	24	65	0.55
20	3/4	65	5	35	115	100	16	8	24	65	0.65
25	1	83	7	46	129	105	19	10	30	80	1.35

Description	Material
body	SS316
bonnet	SS316
packing nut	SS316
packing	PTFE
gland	SS316
stem	SS316
handle	SS316
set screw	Alloy Steel

BAR PSI

PRESSURE & TEMPERATURE RATING



EN-501A



FEATURES

1. Butterfly valve Wafer or Lug type
2. Ductile Iron (GGG40) body, suitable for installation between DIN PN10, PN16 and ANSI # 150 pipe flanges
3. Interchangeable EPDM body seat
4. Butterfly made in Stainless Steel AISI 316 or Nickel plated Ductile Iron (GGG40)
5. Actuator mounting plate according ISO 5211 - DIN 3337
6. Face to face according UNI EN 558-1 Series 20 (DIN 3202 PART 3, Basic series K1)
7. Epoxy Painted body
8. Max. Working Temperature 100 °C.

OPTIONAL

- NAMUR Solenoid Valves
- Limit Switch Boxes
- Positioners
- Declutchable Gear Boxes



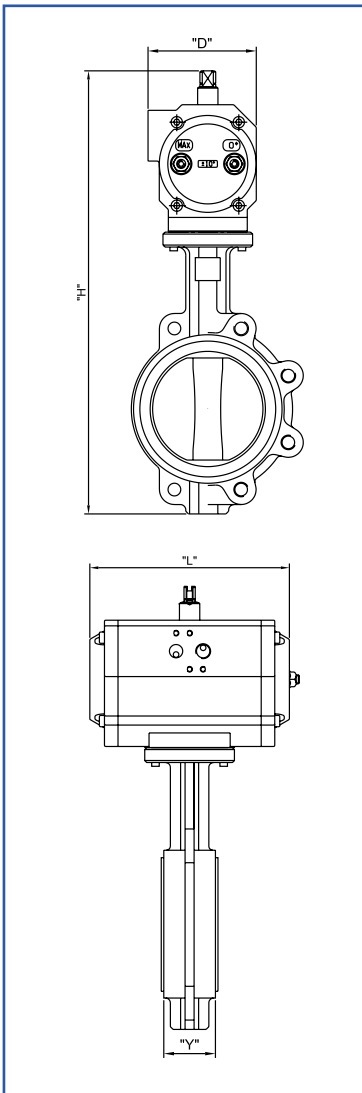
To order "LUG" valves, change BFWD in the code system into BFLD

To order "WAFER or LUG" valves with ductile iron disc, change BFWDS in the code system in to BFWDG or BFLDG

STAINLESS STEEL DISC

Dimensions with Double Acting Aluminium Actuator

SIZE	DN	Part No.	PN	D	H	L	Y	ISO 5211
1 1/4"	32	UT16DA-BFWDS13	16	85	298	165	33	F04
1 1/2"	40	UT16DA-BFWDS15	16	85	332	165	33	F07
2"	50	UT16DA-BFWDS20	16	85	360	165	43	F07
2 1/2"	65	UT16DA-BFWDS25	16	85	374	165	46	F07
3"	80	UT17DA-BFWDS30	16	85	389	197	46	F07
4"	100	UT21DA-BFWDS40	16	96	448	177	52	F07
5"	125	UT26DA-BFWDS50	16	96	486	239	56	F07
6"	150	UT26DA-BFWDS60	16	96	511	239	56	F07-F10
8"	200	UT36DA-BFWDS80	16	138	626	246	60	F07-F10
10"	250	UT41DA-BFWDS100	16	138	707	290	68	F10-F12
12"	300	UT46DA-BFWDS120	16	151	779	351	78	F12
14"	350	UT61DA-BFWDS140	10	235	805	444	78	F12
16"	400	UT61DA-BFWDS160	10	235	875	444	102	F14
18"	450	UT66DA-BFWDS180	10	235	930	502	114	F14
20"	500	UT71DA-BFWDS200	10	332	1065	587	121	F14



Dimensions with Spring Return Aluminium Actuator

SIZE	DN	Part No.	PN	D	H	L	Y	ISO 5211
1 1/4"	32	UT17SR5-BFWDS13	16	85	298	197	33	F04
1 1/2"	40	UT17SR5-BFWDS15	16	85	332	197	33	F07
2"	50	UT17SR5-BFWDS20	16	85	360	197	43	F07
2 1/2"	65	UT26SR5-BFWDS25	16	96	396	239	46	F07
3"	80	UT31SR4-BFWDS30	16	113	430	230	46	F07
4"	100	UT31SR5-BFWDS40	16	113	467	230	52	F07
5"	125	UT36SR4-BFWDS50	16	138	539	246	56	F07
6"	150	UT36SR5-BFWDS60	16	138	564	246	56	F07-F10
8"	200	UT56SR4-BFWDS80	16	185	638	418	60	F07-F10
10"	250	UT56SR5-BFWDS100	16	185	759	418	68	F10-F12
12"	300	UT61SR4-BFWDS120	16	235	819	444	78	F12
14"	350	UT71SR5-BFWDS140	10	332	862	587	78	F12
16"	400	UT71SR6-BFWDS160	10	332	932	587	102	F14



QSM, Inc.
127 Village Lane
Easley, SC 29642

Actuators are sized for normal conditions based on supply air pressure of at least 5.62 Bar (80 PSI).

QSM, Inc. reserves the right to change or modify products without prior notice and without incurring any obligation to make such changes on products previously or subsequently sold.



We maintain an extensive array of custom brackets, couplers, solenoids, indicators and other necessary items to complete your automation requirements



Limit Switches, Proximity, Solenoids, Gear Operators



MATERIALS

Item	Material
Visual Indicator	Polycarbonate
Housing	Die Cast Aluminum
	Epoxy Powder Coated
Shaft	AISI 304 Stainless Steel
Fasteners	AISI 304 Stainless Steel
Seals	Nitrilic Rubber NBR
Cams	Polycarbonate
Spring	AISI 304 Stainless Steel



FEATURES

“Quick Set” cams

The operating position of the switches can be easily changed by adjusting the high resolution spline cams manually and independently without the need for additional tools (cam closed - up, cam open - down)

Compact Design

Very compact limit switch box, minimizing valve package envelope size

Easy Wiring

Equipped as standard with 2 conduit entries M20x1.5 and 1 terminal strip with 8 point

High Visibility Indicator

Our indicator offers clear location of the current valve position

Captive Cover Bolts

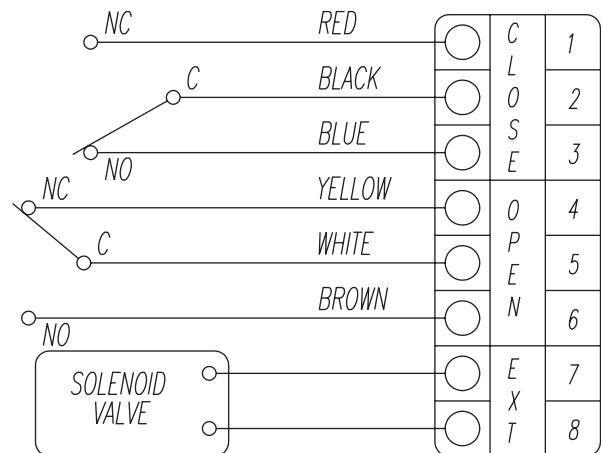
Designed to be capted into the cover

Mounting Bracket

Adjusting NAMUR steel bracket supplied as standard with the necessary hardware for ease in mounting onto the actuator

WIRING DIAGRAM

Mechanical Switches (2 SPDT)

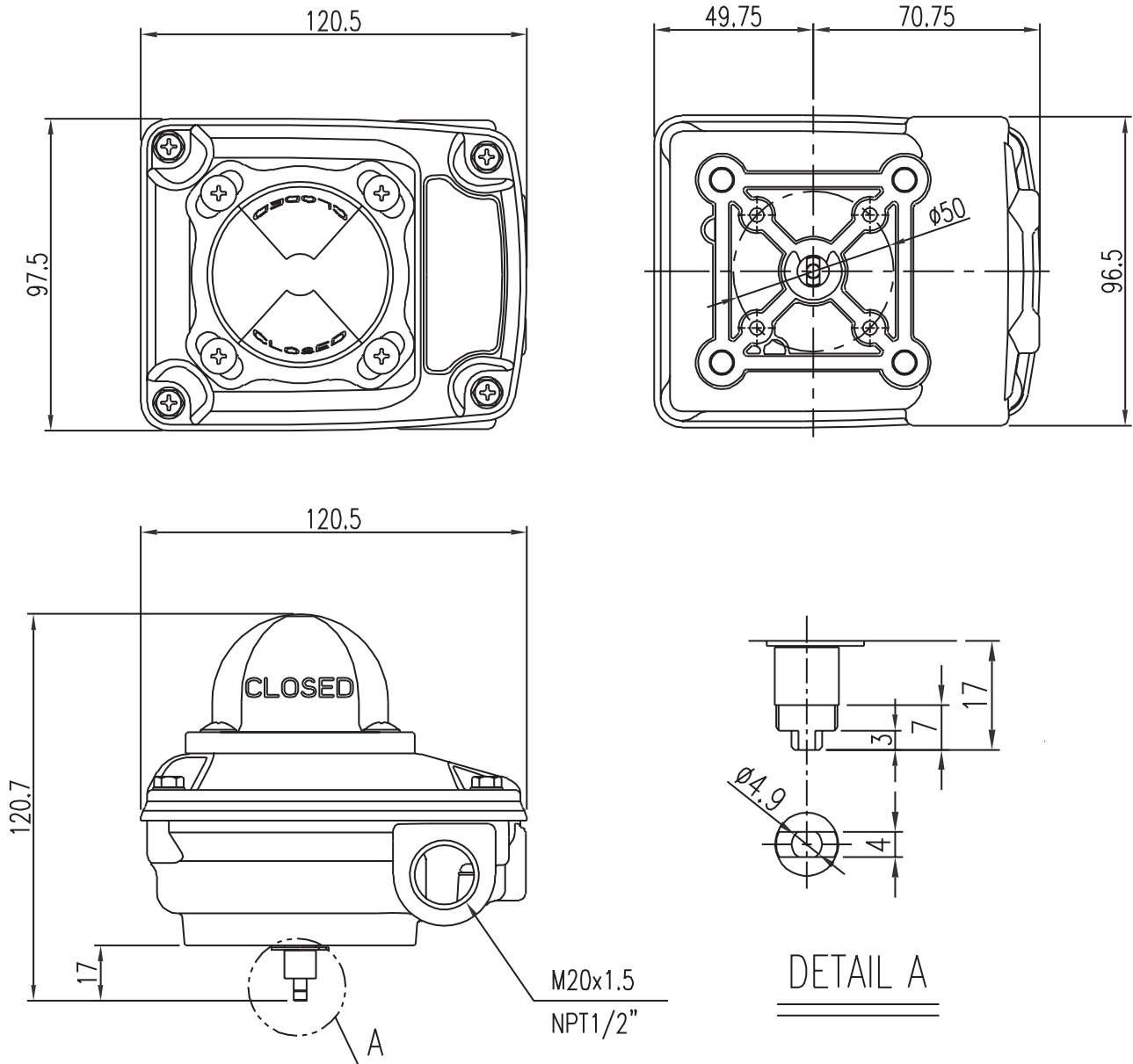


ALUMINIUM LIMIT SWITCH BOX Ip67

QMS41-2AL (Limit) QPS41-2AL (Prox.)



DIMENSIONS



RACK & PINION ALUMINUM ACTUATORS

DOUBLE ACTING & SPRING RETURN



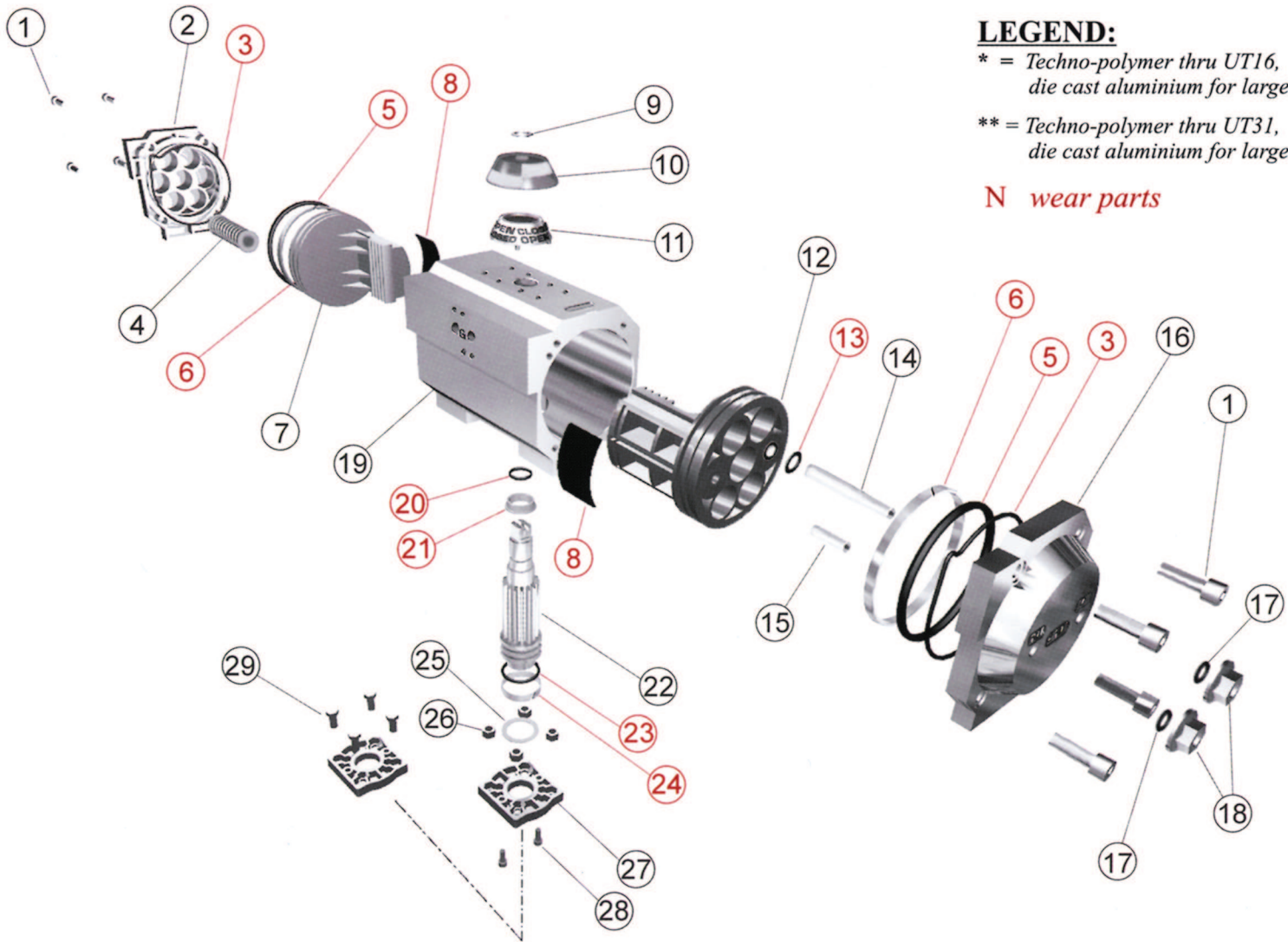
FEATURES / SPECIFICATIONS:

- Extruded aluminum body is internally machined and lapped to exact specifications. All internal and external surfaces are anodized for corrosion resistance
- Die-cast aluminum end caps and pistons are epoxy powder coated for maximum corrosion resistance.
- The pinion teeth are engaged the full length and stroke of the piston. The pinion height allows for manual operation without disturbing the position indicator.
- All pinions are supplied with anti-blowout retention in both directions.
- Epoxy coated special steel springs are preloaded with nonmetallic materials. The stainless steel end cap fasteners are extra long to allow for spring relaxation.
- Pistons incorporate double wear pads that serve as both guide and wear bearings. Shaft bearings isolate the pinion gear from the housing and support the shaft during high cycle applications.
- Travel stop adjustment with plus or minus 10° in both open and close directions have machined grooves for retention of the internal o-ring seal.*



-
- Buna-N seals standard, Viton and Silicon are available for high or low temperatures.
 - Techno-polymer bearing pads have large contact areas permitting smoother movement and longer service.
 - Spring cartridges are preloaded carbon steel and coated for corrosion resistance.
 - Double travel stops provide +/- 10% adjustment in both the open and close directions.
 - High visibility Black and Yellow Indicator.
 - Corrosion resistant end caps on all models.
 - Bodies are of extruded aluminum and are machined lapped. All surfaces are hard anodized for superior corrosion resistance.
 - Anti-Blowout proof design mounting flange.
 - Pinions are 303SS on sizes 16 and 21. All other sizes are ENP carbon steel.

RACK & PINION ALUMINUM ACTUATORS



LEGEND:

* = Techno-polymer thru UT16,
die cast aluminium for larger sizes.

** = Techno-polymer thru UT31,
die cast aluminium for larger sizes.

N wear parts

Item	Description	Material
1	end cap screw	AISI 304 stainless steel
2	left end cap	*
3	endcap o-ring	buna-n
4	spring cartridge	spring steel epoxy coated
5	piston o-ring	buna-n
6	guide ring	techno-polymer
7	left piston	*
8	piston thrust block	techno-polymer
9	indicator snap ring	AISI 304 stainless steel
10	indicator rotating part	techno-polymer
11	indicator (fix part)	techno-polymer
12	right piston	*
13	stop bolt o-ring	buna-n
14	internal regulation screw	AISI 304 stainless steel
15	stop bolt	AISI 304 stainless steel

Item	Description	Material
16	right end cap	die cast aluminum
17	washer	AISI 304 stainless steel
18	stop bolt nut	AISI 304 stainless steel
19	actuator body	extruded aluminum ASTM B210 (6063)
20	upper pinion o-ring	buna-n
21	upper pinion bearing	techno-polymer
22	pinion	ASTM A314 (303) stainless steel or SAE ILL14 nickel plated acc. ASTM B733
23	lower pinion o-ring	buna-n
24	lower pinion bearing	techno-polymer
25	washer	quenched and tempered steel
26	nuts	AISI 304 stainless steel
27	flange	**
28	flange screws	AISI 304 stainless steel
29	bolts (optionals)	AISI 304 stainless steel

In continuing research to improve and expand the range of its products. QSM, Inc. reserves the right to modify dimensional details and/or dynamic features.

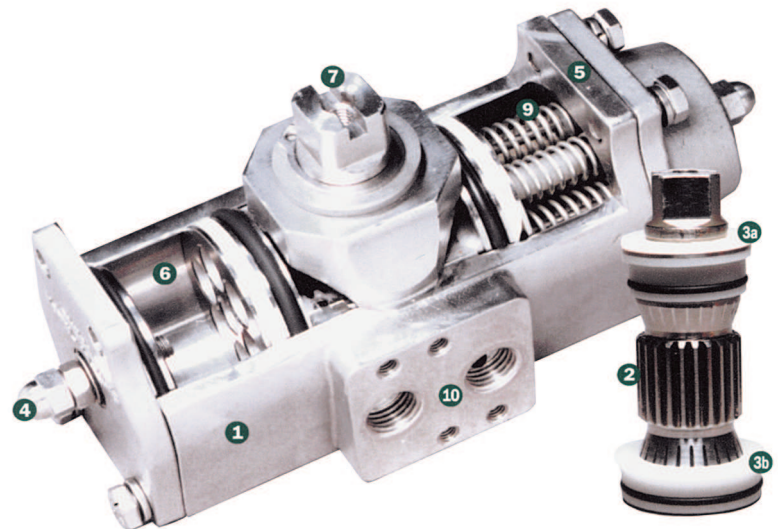


FEATURES/SPECIFICATIONS:

- Quality: Each part of the ALPHA SERIES actuator must pass a stringent quality test before it can be incorporated into an assembly. All materials used in construction must be certified and tested to prove their proper composition. Every cast part must pass an X-ray test before proceeding to the machining process. After machining every part is dimensionally calibrated in order to assure it meets an acceptable tolerance.
- Affordable Pricing: In the designing stage to the ALPHA series actuator, it was the commitment of the engineering staff to produce a superior, high quality actuator that the customer could afford. The rack and pinion concept was chosen for its compact size relative to torque output and because it requires fewer parts to cast, machine and assemble. With this in mind substantial financial investments were made in molds for investment castings. CNC machinery was employed to achieve high quality and high production. Specifically designed equipment was manufactured to assure efficient assembly and proper testing procedures.
- ALPHA series actuators are designed for ease of maintenance. Should you wish simply to change a spring rating or completely rebuild a unit, total disassembly and reassembly is easily performed in just minutes with standard shop tools.
- ISO/NAMUR Mounting: By using ISO/Namur standards, ALPHA series actuators lend themselves to a host of various manufacturers' direct mount accessories. Solenoid valves, limit switches, positioners, etc. bolt directly to the actuator and in turn reduces the cost of assembly and installation of automated packages. Flexibility for future system modifications is greatly enhanced.

DESIGN/CONSTRUCTION:

1. Investment Cast Body. Assures manufacturing of other special alloys, such as Monel.
2. Unique Drive pinion. One piece stainless steel alloy shaft, precision machined gear and teeth for precise control.
3. Bearings. Replaceable top and bottom TFE Pinion Bearings to ensure low friction, stability above 400°F, and chemical resistance
4. Travel Stops. Provides +/4° travel adjustment
5. Accessory Mounting. Manufactured to NAMUR to provide international standardized mounting.
6. Stainless Steel Pistons. Precision cast pistons are guided through full face engagement with the pinion and piston guide.
7. NAMUR Slotted Shaft. Standard to provide a self-centering positive drive for positioners, a variety of switches.
8. Actuator Mounting. Manufactured in accordance with ISO 5211 to ensure mounting the actuator directly on valves.
9. Pre-loaded Cartridges. Converts a standard double acting actuator to a spring return unit by simply removing the end caps and adding the spring cartridges.
10. NAMUR Solenoid Mounting. International standard for direct mounting of solenoid valves.



ETI Series



ON-OFF with Modulating Controls



With Modulating Controls

FEATURES/SPECIFICATIONS:

- Corrosion resistant NEMA 4,4x construction
 - Die cast aluminum housing and cover
 - Powder polyurethane coated
 - Stainless steel fasteners
- CSA and CE Approved
 - CSA certification No. 211860
 - CE regulation No. AN985455101
- Self-locking EPI-CYCLICAL gear train
 - No brake required
 - ETI-300/ETI-400 features self-locking motor with spur ears.
- Standard manual override with handwheel
 - Not available on ETI300/ETI-400
 - Manual override can be operated without any lever, clutch or brake upon power outage.
 - When actuator is operating, handwheel is stationary assuring safety to personnel.
- Visual position indicator
- Standard two auxiliary limit switches (10amp at 120VAC)
- Torque switches (2) standard on models ETI-8600 and larger
 - Optional on models ETI-700 through ETI-4300
- Optional servo card for modulating service
 - 4-20mA, 1-5mA, 1-5vdc, 0-10vdc, command signal potentiometer inputs
 - Optional 4-20mA transmitter
 - Characterized output - linear, quick opening, equal percent
- ISO5211 mounting patterns
 - Eliminates mounting kits to direct mount valves
 - Mounting kits available for ISO and other valve mounting patterns
 - Built-in thermal protection to prevent overheating motor windings = 248°F thermal setting
 - Heater and thermostat to prevent condensation buildup
- 14° -160° F working temperature

QSM's line of electric actuators offers a broad range of torques from 300 to 30,000 in. lbs. and numerous features including manual overrides, auxiliary switches, 4-20ma modulating control, several voltage options including 1-phase 24/120V/220V - 12 and 24VDC. 3-phase 220v, 380v, and 440v. The units feature EPI-CYCLICAL gear trains and a unique manual override with handwheel.

All actuators are NEMA 4x and are designed for maximum cycle life due to our rugged motors and gear trains. The actuators are ideal for use on butterfly and louver dampers with the increased benefit of self-locking EPI-CYCLICAL gears, eliminating the need for unreliable solenoid brakes.

PNEUMATIC POSITIONER

LINEAR & ROTARY TYPE



PPR 1200

FEATURES/SPECIFICATIONS:

- Easy maintenance
- Precise calibration with simple SPAN and ZERO adjustments
- Simple conversion to Direct Acting or Reverse Acting
- Split range control available by simple adjustments without changing parts
- Simple structure for feedback connection
- Corrosion-resistant aluminum diecast body
- Sensitive response for high performance
- Vibration resistant design
- Stainless steel gauges standard
- A restricted pilot valve orifice kit for small actuators included
- NAMUR mounting dimensions

Type Item	PPL		PPR	
	Linear Type (lever feedback)	Rotary Type (cam feedback)	Single	Double
Input Signal	3-15 psi (0.2-1.0 kgf/cm ²) (NOTE 1)			
Supply Air Pressure	100 psi Max. (7.0 kgf/cm ²)			
Standard Stroke	10-80mm (NOTE 2)	60-100° (NOTE 3)		
Air Piping Connection	1/4" NPT			
Ambient Temperature	-4 - 158°F (-20-70°C)			
Pressure Gauge	Stainless Steel			
Output Characteristics	Linear			
Linearity	Within ±1.0% F.S.	Within ±1.5% F.S.		
Sensitivity	Within 0.1% F.S.	Within 0.5% F.S.		
Hysteresis	Within 0.5% F.S.	Within 1.0% F.S.		
Repeatability	Within ±0.5% F.S.			
Air Consumption	0.18 CFM @ 20 psi			
Flow Capacity	2.83 CFM @ 20 psi			
Material	Aluminum Diecast Body			
Weight	4.63 lbs.			

NOTE: 1) Split range is available
 NOTE: 2) Feedback lever for stroke 80-150mm is available (PPL)
 NOTE: 3) Stroke can be adjusted to 0°-60° or 0°-100° (PPR)

ELECTRO-PNEUMATIC POSITIONER

LINEAR & ROTARY TYPE



EPR 1000

FEATURES/SPECIFICATIONS:

- Easy maintenance
- Precise calibration with simple SPAN and ZERO adjustments
- Simple conversion to Direct Acting or Reverse Acting
- Split range control available by simple adjustments without changing parts
- Simple structure for feedback connection
- Corrosion-resistant aluminum diecast body
- Sensitive response for high performance
- Vibration resistant design
- Stainless steel gauges standard
- A restricted pilot valve orifice kit for small actuators included
- Optional built-in limit switches or 4-20 mA position transmitter for feedback
- Optional directly-mountable positioner

Type Item	EPL		EPR	
	Linear Type (lever feedback)	Rotary Type (cam feedback)	Single	Double
Input Signal	4...20 mA DC (NOTE 1)			
Input Resistance	235±15Ω			
Supply Air Pressure	Max. 100 psi (7.0 kgf/cm ²)			
Standard Stroke	10-80mm (NOTE 2)	60-100° (NOTE 3)		
Air Piping Connection	1/4" NPT			
Conduit Connection	1/2" NPT			
Explosion-Proof Classification	Exmd II BT6, Exmd II C(H ²)T6, IP66, Exia II Bt6			
Ambient Temperature	-4 - 158°F			
Pressure Gauge	Stainless Steel			
Output Characteristics	Linear			
Linearity	Within ±1.0% F.S.	Within ±1.5% F.S.		
Sensitivity	Within 0.1% F.S.	Within 0.5% F.S.		
Hysteresis	Within 0.5% F.S.	Within 1.0% F.S.		
Repeatability	Within ±0.5% F.S.			
Air Consumption	.18 CFM @ 20 psi			
Flow Capacity	2.83 CFM @ 20 psi			
Material	Aluminum Diecast Body			
Weight	6.5 lbs. with a terminal box			

NOTE: 1) 1/2 split range can be adjusted
 NOTE: 2) Feedback lever for stroke 80-150mm is available (EPL)
 NOTE: 3) Stroke can be adjusted to 0°-60° or 0°-100° (EPR)