



A-T Controls, Inc.

High Purity Ball Valves

Series HP Forged Ball Valves

Series H78 Cast Ball Valves



BPE Compliant Ball Valves
(ASME BPE 2016)

AT High Purity Ball Valves

HP | Forged High Purity

- Available sizes 1/2"-4"
- TFM™-1600 Seats standard
- *B-Line* Flow Design
- Body Material - ASTM A182 F316L
- Controlled Sulfur Content
- Low Ferrite Content



H78 | Cast High Purity

- Available sizes 1/2"-4"
- TFM™-1600 Seats standard
- *B-Line* Flow Design
- Body Material - ASTM A351 CF3M
- Controlled Sulfur Content

High Purity Valve Product Features

- 1) All TFM™-1600 soft goods that are FDA, USP23 Class VI, and 3A compliant
- 2) Lubricant free
- 3) No Elastomers
- 4) Encapsulated bolts
- 5) Low ferrite
- 6) Three piece swing-out design for easy cleaning.
- 7) ASTM A193 Grade B8 bolts and ASTM A194 Grade 8 nuts.
- 8) MTRs supplied as standard on all wetted metallic parts.
- 9) Bubble Tight Bi-directional
- 10) Unique traceable serial number

Standard Materials and Options

MATERIALS:

- **316L**
316L is a commonly used material in the BPE industry because of its weldability, corrosion resistance properties, compatibility with a wide range of services, and the chromium layer that forms during the passivation process that keeps the base metal from leaching into the process and shields it from the media. All wetted metallic components of the HP Series and H78 Series go through a passivation process after being machined. The HP series complies with ASTM A182 F316L and DIN 1.4404 requirements and is certified to have a ferrite reading of less than 1%. The H78 series complies with ASTM A351 CF3M and is certified to have a ferrite reading of less than 2%.
- **Sulfur Content**
For all tube ends for both the H78 and HP series, the material is certified to have between .005 to .017%. A controlled sulfur content is important for automatic orbital welding which is commonly used in the biopharmaceutical industry. An orbital welder cannot control the weld as well as a manually operated welder could. If there is a difference in sulfur content of the two materials being joined together, it can cause the weld to not fully penetrate the material which could cause the weld to be rejected.
- **TFM™-1600**
The HP and H78 soft goods are exclusively made from TFM™-1600 and contain NO elastomers. TFM™-1600 is a common material for the biopharmaceutical industry, however, other polymers can be provided upon request. TFM™-1600 is a polymer that is compatible with a wide variety of media and processes. TFM™-1600 is FDA, USP23 Class VI and 3A compliant.
- **Ferrite**
A-T Controls, Inc. certifies that the HP Series has a Delta Ferrite measurement of less than 1% for all wetted parts. A-T Controls, Inc. also certifies that the H78 Series has a Delta Ferrite measurement of less than 2% for all wetted parts. Having a low ferrite content is important as it makes the material more corrosion resistant because it contains less iron. Ferrite can form as steel solidifies.

END CONNECTIONS:

- **Hygienic Clamps**
The Hygienic Clamp Ferrules Ends, also known as Sanitary Clamp, Tri-Clover® or Tri-Clamp® fitting, are machined to the ASME BPE standard per Table DT-7-1. Hygienic Clamps are used to quickly disconnect and reconnect tubing and are used for clean in place (CIP) areas.
- **Tube Ends**
All Tube Ends are made to table DT-4-1 in the ASME BPE standard with square cut ends and free from burrs. This is essential as tube ends shall have a consistent flow through the tube to keep from having a location for residual product to buildup. Additionally, the HP Series and H78 Series have a sulfur content that complies to the BPE requirement of .005%-0.17%. Lastly, the valves are not required to be disassembled before welding if using proper welding procedures.

FEATURES:

- **B-Line Flow Design**
The dimensions of the port opening are an exact match to the connected end. This design is customary to BPE compliant valves as it provides consistent flow through the ball, seat and ends. The uniform flow design allows for thorough cleaning and draining.
- **Vacuum**
The HP series and H78 series are rated for full vacuum and can be helium leakage tested as an option to ISO 15848-2 upon request.
- **Surface Finish**
Smooth surfaces are essential to avoid having an area for bacteria to develop. As a standard, the internal polish of the HP and H78 surface finish exceed the surface finish requirements of the SF1 surface finish. An SF4 electropolished surface finish is achievable upon request. Other surface finishes available.

	BPE Designation	R _a Max µin
Mechanically Polished	SF0	No Finish Requirement
	SF1	20
	SF2	25
	SF3	30
Electropolished after Mechanically Polished	SF4	15
	SF5	20
	SF6	25



A-T Controls, Inc.

Series HP

Forged High Purity Ball Valve

Sizes 1/2"-4"

**1500 PSIG, 1/2"-1"
1000 PSIG, 1-1/2"-2"
600 PSIG, 2-1/2"-3"
450 PSIG, 4"**

**Available in A182-F316L
SF1, Mechanically Polished Standard
SF4, Electropolish Option**

3-Piece Body Design

**BPE, Hygienic Clamp Ends or
Tube OD Ends**

"B-Line" Flow Design

TFM™-1600 Seats

SFP4 or better, polymeric surfaces

**Superior Live Loaded Packing
System**

Pyramidal Stem Seal Design

Blowout Proof Stem

Optional Lockable Manual Handle

Unique Serial Numbers

Documentation & Traceability

STANDARDS

Design	ASME BPE-2016, ASME B16.34-2017
End Connections	ASME BPE-2016
Pressure Testing	ASME BPE-2016 & EN 12266-1
Marking System for Valves	ASME BPE-2016
Material Certification	ASME BPE-2016, EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015
Canada Registration	CRN OC20761.5

Optional: API 598 Pressure Test



A-T Controls' *Series HP* high purity ball valves feature a high quality A182-F316L forging. They are available with BPE compliant hygienic clamp or tube ends. Superior leak protection is accomplished by using a live-loaded packing system featuring Belleville washers and chevron (v-ring) packing.

Excellent for a variety of applications

- Clean Steam
- High Purity Water
- High Purity Gas
- Clean Dry Air (CDA)
- Water for Injection (WFI)
- Ultrafiltration
- Gas Delivery
- Sterilization
- Silicon Wafer Manufacturing

VALVE SIZE	VALVE Cv
1/2"	10
3/4"	30
1"	65
1-1/2"	200
2"	410
2-1/2"	600
3"	1,050
4"	1,900

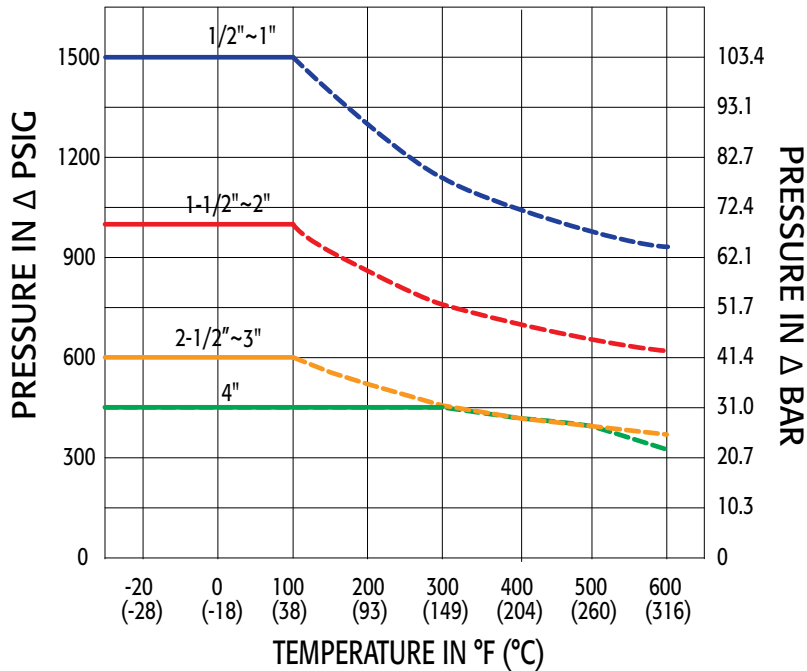
... in various Industries

- Bio-Pharm
- Pharmaceutical
- Food and Beverage
- Cosmetics/Personal Care
- Brewing/Distilling
- Semiconductors
- Gas Delivery Systems
- Sterilization Systems

HP Series

Forged High Purity Ball Valve

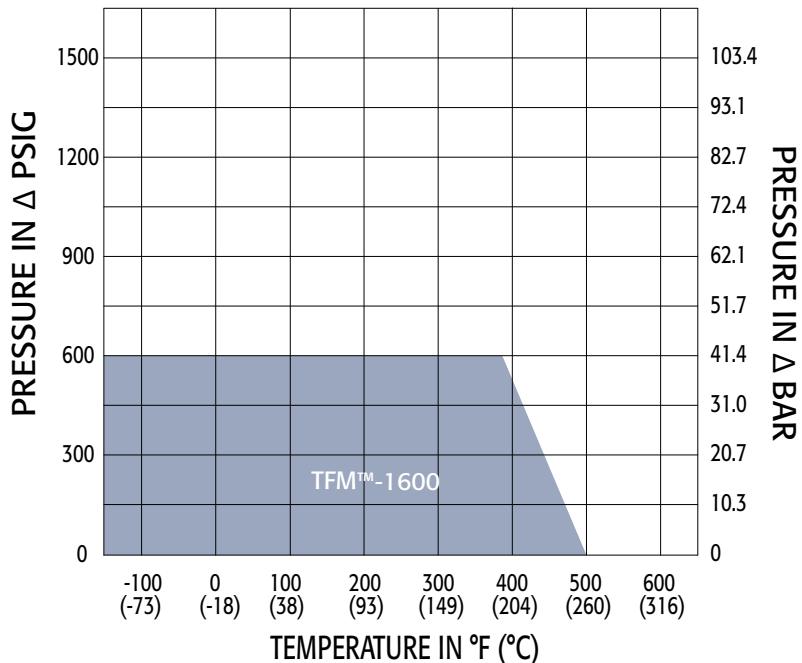
Body Ratings Pressure vs. Temperature



Shell Pressure							
1/2"-1"		1-1/2"-2"		2-1/2"-3"		4"	
°F	PSI	°F	PSI	°F	PSI	°F	PSI
-20°	1500	-20°	1000	-20°	600	-20°	450
100°	1500	100°	1000	100°	600	100°	450
150°	1389	150°	925	150°	555	150°	450
200°	1278	200°	850	200°	510	200°	450
300°	1140	300°	758	300°	455	300°	450
400°	1050	400°	700	400°	420	400°	420
500°	983	500°	655	500°	395	500°	395
600°	930	600°	620	600°	370	600°	325

Note: When using hygienic ferrule ends, the pressure rating may be limited to the pressure rating of the gaskets and clamps.

Seat Ratings Pressure vs. Temperature for TFM™-1600 Seats



Seat ΔP Pressure	
TFM™-1600	
°F	PSI
-100°	600
0°	600
100°	600
200°	600
300°	600
387°	600
500°	0

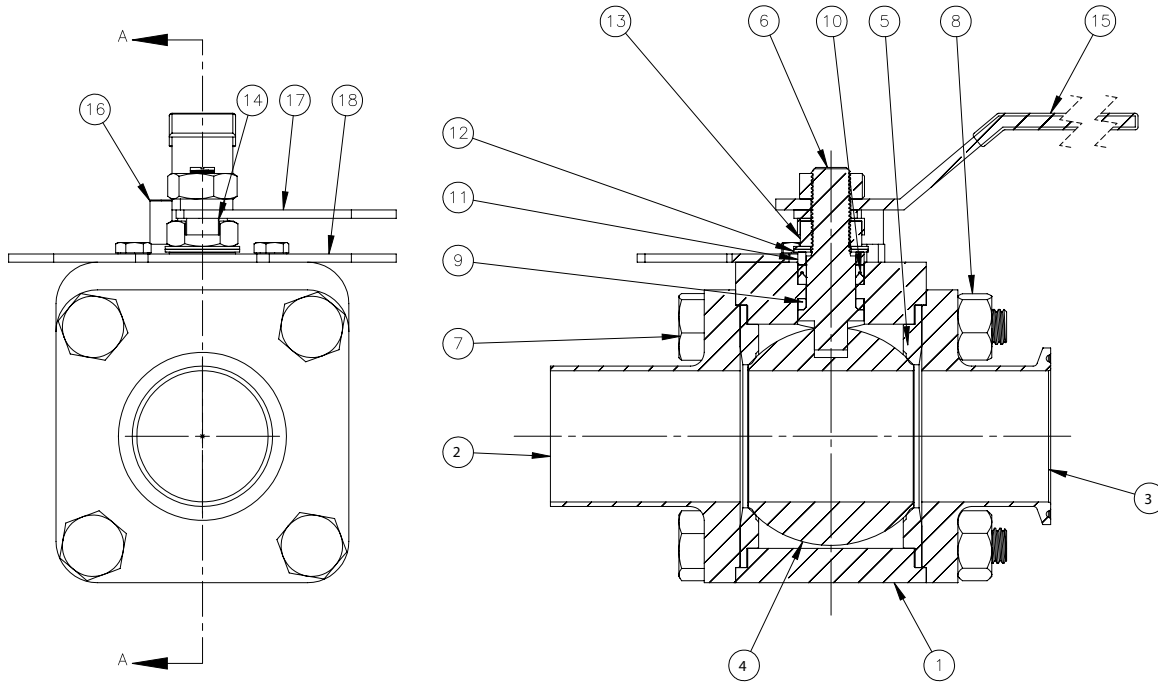
Breakaway Torques for TFM™-1600	
Size	in-lbs
1/2"	40
3/4"	40
1"	125
1-1/2"	225
2"	300
2-1/2"	450
3"	950
4"	1,500

- At temperature, the maximum pressure for the valve is limited by either the valve body, seat, or seals; whichever is lower.

HP Series

Forged High Purity Ball Valve

Bill of Materials



MATERIALS LIST

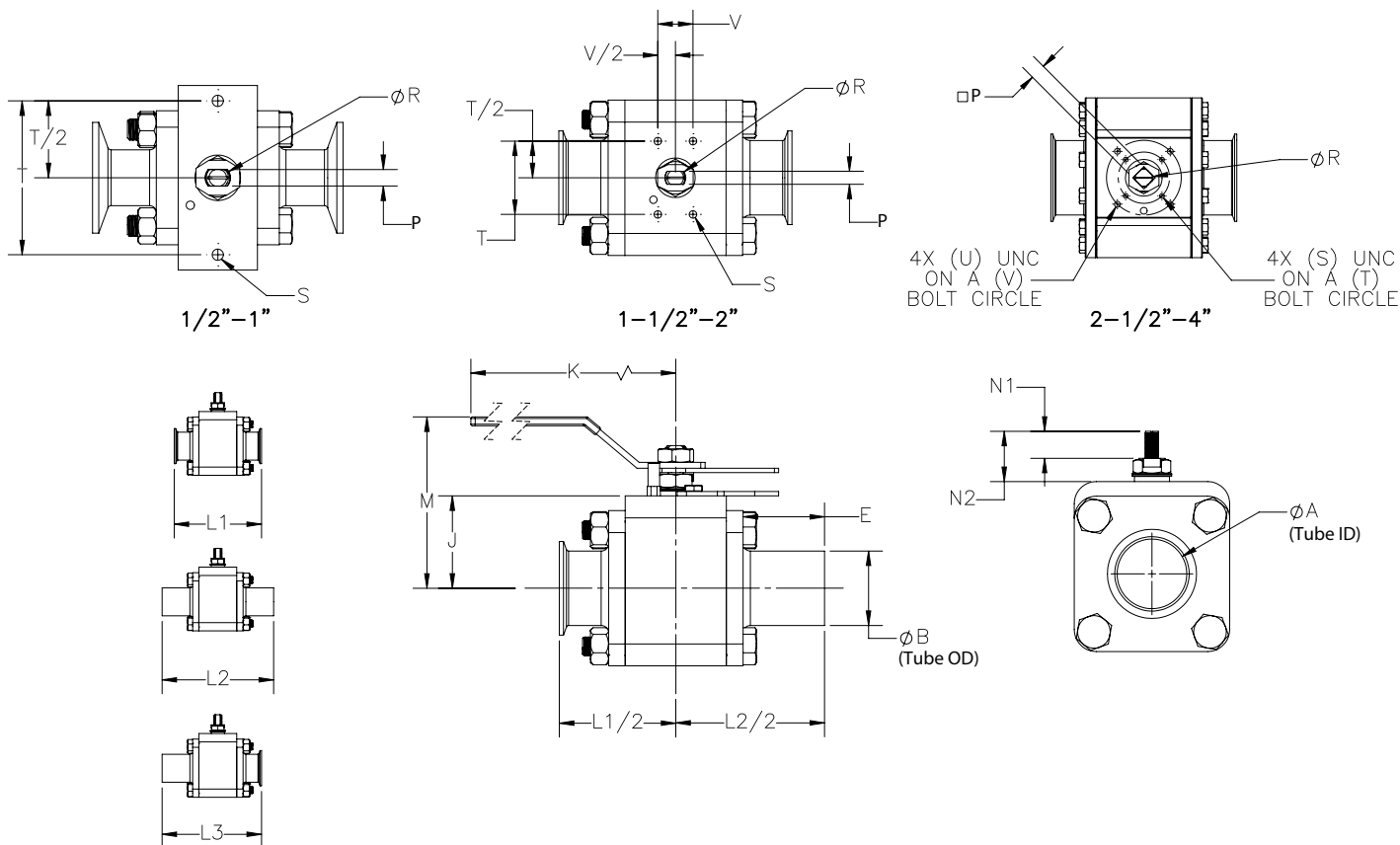
NO.	PART NAME	QTY	MATERIAL
1	BODY	1	ASTM A182-F316L
2	END CONNECTION	2	ASTM A182-F316L
3	END CONNECTION	2	ASTM A182-F316L
4	BALL	1	ASTM A479-316L
5	SEAT/BODY GASKET	2	TFM™-1600 FDA
6	STEM	1	ASTM A182-F316L
7	BODY BOLT	#	ASTM A193 GR B8
8	BODY NUT	&	ASTM A194 GR 8
9	THRUST BEARING	1	TFM™-1600 FDA
10	PACKING SET	1	TFM™-1600 FDA
11	PACKING GLAND	1	ASTM A276-316
12	CONICAL SPRING WASHER	2	ASTM A167-302
13	PACKING/HANDLE NUT	2	ASTM A276-316
14	LOCKING SADDLE	1	ASTM A167-302
15	HANDLE	1	ASTM A240-304
16	HANDLE STOP	1	ASTM A276-316
17	LOCKING ARM (option)	1	AISI 304SS
18	LOCKING PLATE (option)	1	AISI 304SS

Optional Lock Plate & Arm



FOR 1/2"-2" - 4 PCS
 FOR 2-1/2" - 10 PCS
 FOR 3" - 8 PCS
 FOR 4" - 24 PCS

& FOR 1/2"-2" - 4 PCS
 FOR 2-1/2"-4" - 0 PCS



Dimensions (IN)

SIZE	Valve Dimensions									Operator Dimensions									(LBS)
	A	B	D	E	J	K	L1	L2	L3	M	N1	N2	P	R	S	T	U	V	
1/2"	0.37	0.50	0.53	1.75	1.02	4.29	3.54	5.50	4.52	2.55	0.34	0.69	0.217	0.38	1/4"-20	2.17	NA	NA	2
3/4"	0.62	0.75	0.78	1.98	1.02	4.29	4.02	5.98	5.00	2.55	0.36	0.71	0.217	0.38	1/4"-20	2.17	NA	NA	2
1"	0.87	1.00	0.63	1.91	1.40	4.37	4.49	6.49	5.49	3.10	0.49	0.98	0.295	0.44	1/4"-20	2.76	NA	NA	5
1-1/2"	1.37	1.50	0.66	1.97	1.99	8.90	5.50	7.52	6.51	4.11	0.66	1.28	0.346	0.56	1/4"-20	1.97	NA	0.94	10
2"	1.87	2.00	0.63	1.83	2.48	8.90	6.26	7.99	7.13	4.60	0.72	1.35	0.346	0.56	1/4"-20	1.97	NA	0.94	17
2-1/2"	2.37	2.50	1.50	3.25	3.54	12.07	7.99	11.50	9.74	6.52	0.98	1.74	0.591	0.75	5/16"-18	2.756	3/8"-16	4.016	31
3"	2.87	3.00	1.18	2.45	4.04	12.07	7.99	10.52	9.25	7.28	1.22	2.17	0.825	1.00	5/16"-18	2.756	3/8"-16	4.016	49
4"	3.83	4.00	1.54	3.04	5.12	12.07	9.99	12.99	11.49	8.41	1.36	2.34	0.825	1.00	5/16"-18	2.756	3/8"-16	4.016	90

A-T Controls reserves the right to change product designs and technical/dimensional specifications without notice.

1/2"



2"



4"



HP Series

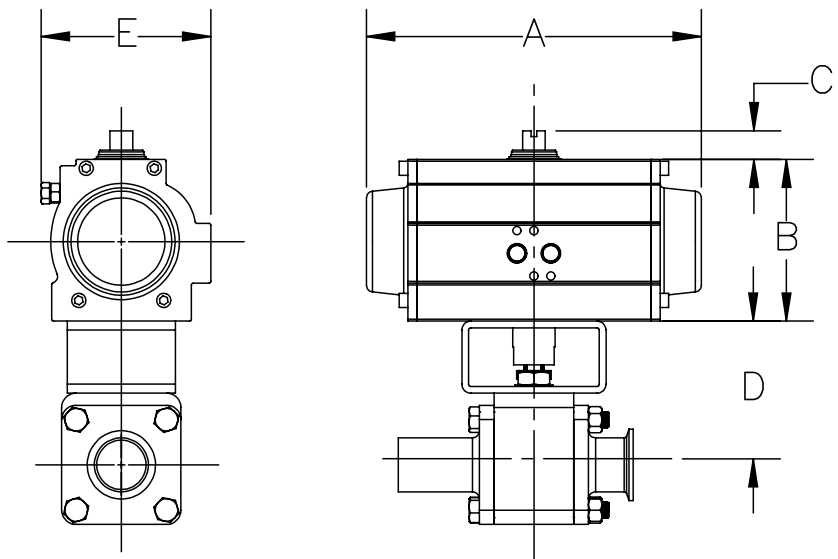
Forged High Purity Ball Valve

Forged High Purity Automated Sizing

HP Series Double Acting	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	40	TR10DA	4.57	1.91	0.79	3.02	1.93	TR10DA	4.57	1.91	0.79	3.02	1.93
	3/4"	40	TR10DA	4.57	1.91	0.79	3.02	1.93	TR10DA	4.57	1.91	0.79	3.02	1.93
	1"	125	TR20DA	5.98	2.76	0.79	3.40	2.58	2R40DA	7.95	3.43	0.79	3.40	2.58
	1-1/2"	225	2R40DA	7.95	3.43	0.79	3.99	3.29	2R40DA	7.95	3.43	0.79	3.99	3.29
	2"	300	2R40DA	7.95	3.43	0.79	4.48	3.29	2R80DA	9.29	4.49	0.79	4.48	4.41
	2-1/2"	450	2R80DA	9.29	4.49	0.79	6.54	4.41	2R80DA	9.29	4.49	0.79	6.54	4.41
	3"	950	2R130DA	10.87	4.88	0.79	7.04	4.69	2R200DA	11.46	5.28	0.79	7.04	5.06
	4"	1500	2R300DA	13.90	6.18	0.79	8.12	5.91	2R300DA	13.90	6.18	0.79	8.12	5.91

HP Series Spring Return	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	40	TR20SR	7.60	2.76	0.79	3.02	2.58	2R40SR4	7.95	3.43	0.79	3.02	3.29
	3/4"	40	TR20SR	7.60	2.76	0.79	3.02	2.58	2R40SR4	7.95	3.43	0.79	3.02	3.29
	1"	125	2R80SR	9.29	4.49	0.79	3.40	4.41	2R80SR4	9.29	4.49	0.79	3.40	4.41
	1-1/2"	225	2R80SR	9.29	4.49	0.79	3.99	4.41	2R130SR4	10.87	4.88	0.79	3.99	4.69
	2"	300	2R130SR	10.87	4.88	0.79	4.48	4.69	2R200SR4	11.46	5.28	0.79	4.48	5.06
	2-1/2"	450	2R300SR	13.90	6.18	0.79	6.54	5.91	2R300SR4	13.90	6.18	0.79	6.54	5.91
	3"	950	2R500SR	15.16	6.93	1.18	7.04	6.50	2R500SR4	15.16	6.93	1.18	7.04	6.50
	4"	1500	2R850SR	20.95	8.31	1.18	8.12	6.98	2R850SR4	20.95	8.31	1.18	8.12	6.98

60 psi Spring Return assemblies will have 4 springs (indicated by 4 at the end of the size/model number).
80 psi will have the standard 5 springs per side, no designation required.





TMC3 Electronic Modulating Card (120/220VAC)

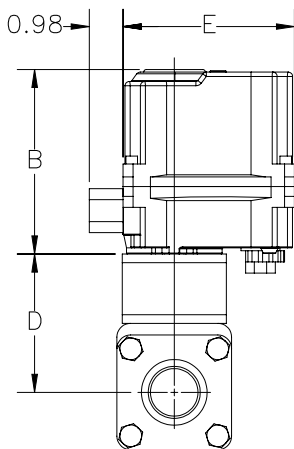
- 10 Bit Microprocessor controller for precise positioning and control
- 4-20mA, 1-5mA, 0-10 VDC, 1-5 VDC, 0-135 Ohm or Command Signal Potentiometer
- TMC3 Can be programmed to Fail in Place, Fail CW, or Fail CCW on loss of command signal
- Characterized Control-Linear, quick opening (Square root), or Equal Percentage (Square)
- OnBoard 4-20 mA transmitter (standard)



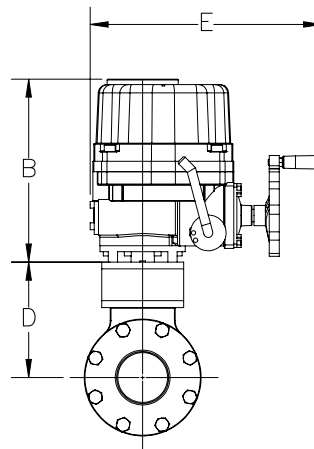
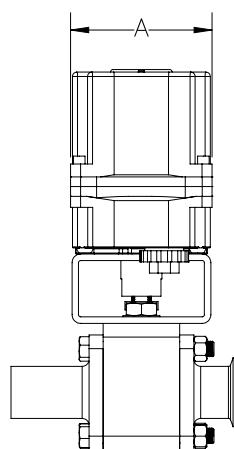
WE-500
CSA Approved,
Type 4 & 4X,
IP67



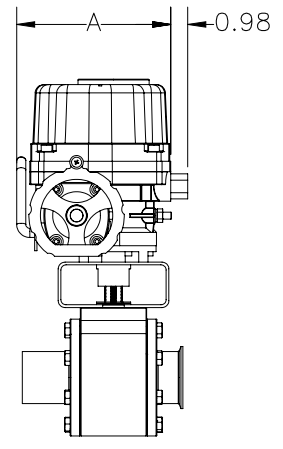
WE-690
CSA Approved,
Type 4 & 4X,
IP67



WE-500



WE-690 AND LARGER



HP Series Electric	Valve Size	Torque (in*lbs)	On-Off	A	B	D	E	Modulating	A	B	D	E
	1/2"	40	WE-500	4.09	5.33	3.02	4.95	WEM-500	4.09	5.33	3.02	8.49
	3/4"	40	WE-500	4.09	5.33	3.02	4.95	WEM-500	4.09	5.33	3.02	8.49
	1"	125	WE-500	4.09	5.33	3.40	4.95	WEM-500	4.09	5.33	3.40	8.49
	1-1/2"	225	WE-500	4.09	5.33	3.99	4.95	WEM-500	4.09	5.33	3.99	8.49
	2"	300	WE-500	4.09	5.33	4.48	4.95	WEM-500	4.09	5.33	4.48	8.49
	2-1/2"	450	WE-690	6.69	9.25	6.54	10.16	WEM-690	6.69	9.25	6.54	13.17
	3"	950	WE-1350	9.02	10.55	7.04	13.31	WEM-1350	9.02	10.55	7.04	13.31
	4"	1500	WE-1700	9.02	10.55	8.12	13.31	WEM-2640	10.20	11.42	8.12	14.49

Explosion proof actuators available.

HP Series

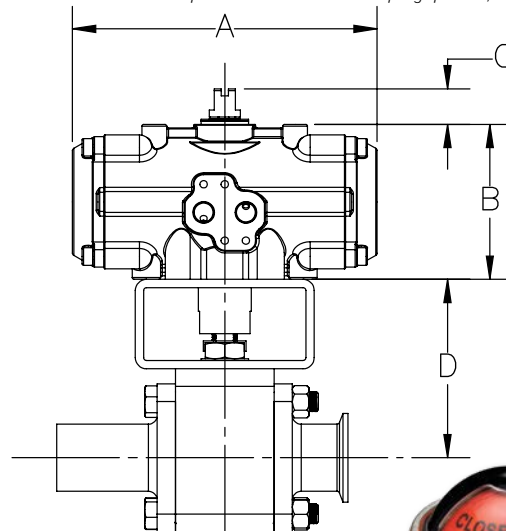
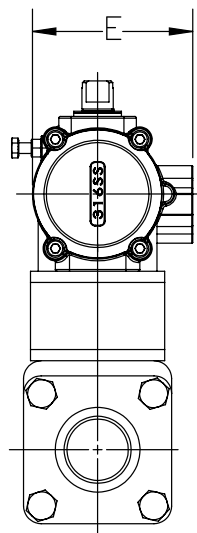
Forged High Purity Ball Valve

Forged High Purity Stainless Steel Automated Sizing

HP Series Stainless Steel Double Acting	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	40	S2-052DA	5.75	2.83	0.79	3.02	3.07	S2-052DA	5.75	2.83	0.79	3.02	3.07
	3/4"	40	S2-052DA	5.75	2.83	0.79	3.02	3.07	S2-052DA	5.75	2.83	0.79	3.02	3.07
	1"	125	S2-052DA	5.75	2.83	0.79	3.40	3.07	S2-052DA	5.75	2.83	0.79	3.40	3.07
	1-1/2"	225	S2-063DA	6.81	3.46	0.79	3.99	3.58	S2-063DA	6.81	3.46	0.79	3.99	3.58
	2"	300	S2-063DA	6.81	3.46	0.79	4.48	3.58	S2-083DA	8.03	4.25	0.79	4.48	4.42
	2-1/2"	450	S2-083DA	8.03	4.25	0.79	6.54	4.42	S2-083DA	8.03	4.25	0.79	6.54	4.42
	3"	950	S2-105DA	10.63	5.24	0.79	7.04	5.31	S2-105DA	10.63	5.24	0.79	7.04	5.31
	4"	1500	S2-125DA	11.89	6.10	1.18	8.12	6.12	S2-125DA	11.89	6.10	1.18	8.12	6.12

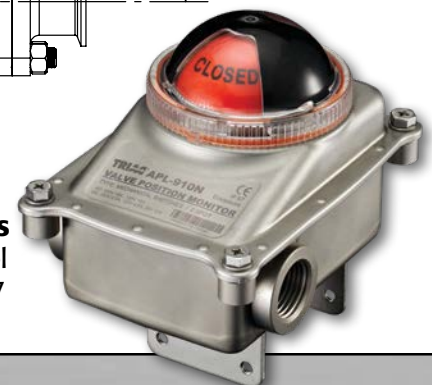
HP Series Stainless Steel Spring Return	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	40	S2-052SR	5.75	2.83	0.79	3.02	3.07	S2-052SR4	5.75	2.83	0.79	3.02	3.07
	3/4"	40	S2-052SR	5.75	2.83	0.79	3.02	3.07	S2-052SR4	5.75	2.83	0.79	3.02	3.07
	1"	125	S2-083SR	8.03	4.25	0.79	3.40	4.42	S2-083SR4	8.03	4.25	0.79	3.40	4.42
	1-1/2"	225	S2-083SR	8.03	4.25	0.79	3.99	4.42	S2-083SR4	8.03	4.25	0.79	3.99	4.42
	2"	300	S2-105SR	10.63	5.24	0.79	4.48	5.31	S2-105SR4	10.63	5.24	0.79	4.48	5.31
	2-1/2"	450	S2-105SR	10.63	5.24	0.79	6.54	5.31	S2-105SR4	10.63	5.24	0.79	6.54	5.31
	3"	950	S2-140SR	15.51	6.77	1.18	7.04	6.75	S2-140SR4	15.51	6.77	1.18	7.04	6.75
	4"	1500	S2-140SR	15.51	6.77	1.18	8.12	6.75	S2-160SR4	17.95	7.80	1.18	8.12	7.58

60 psi Spring Return assemblies will have 4 springs (indicated by 4 at the end of the size/model number).
80 psi will have the standard 5 springs per side, no designation required.



Featuring TRIAC® Series S2 Stainless Steel Pneumatic Actuators

Also available:
APL-9 Series
Stainless Steel
Type 4X, IP 67
Limit Switch





A-T Controls, Inc.

H78 Series Cast High Purity Ball Valve

Sizes 1/2"-4"

1000 PSIG, 1/2"-2"

600 PSIG, 2-1/2"

507 PSIG, 3"

393 PSIG, 4"

**Available in A351 CF3M
SF1, Mechanically Polished Standard
SF4, Electropolish Option**

3-Piece Body Design

**BPE, Hygienic Clamp Ends or
Tube OD Ends**

"B-Line" Flow Design

TFM™-1600 Seats

SFP6 or better, polymeric surfaces

**Superior Live Loaded Packing
System**

Pyramidal Stem Seal Design

Blowout Proof Stem

Lockable Manual Handle Standard

Unique Serial Numbers

Documentation & Traceability

STANDARDS

Design	ASME BPE-2016, ASME B16.34-2017
End Connections	ASME BPE-2016
Pressure Testing	ASME BPE-2016 & EN 12266-1
Marking System for Valves	ASME BPE-2016
Material Certification	ASME BPE-2016, EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015
Canada Registration	CRN 0C21013.5 (in progress)

Optional: API 598 Pressure Test



A-T Controls' Series H78 high purity ball valves feature a high quality A351 CF3M casting. They are available with BPE compliant hygienic clamp or tube ends. Superior leak protection is accomplished by using a live-loaded packing system featuring Belleville washers and chevron (v-ring) packing.

Excellent for a variety of applications

- Clean Steam
- High Purity Water
- High Purity Gas
- Clean Dry Air (CDA)
- Water for Injection (WFI)
- Ultrafiltration
- Gas Delivery
- Sterilization
- Silicon Wafer Manufacturing

VALVE SIZE	VALVE Cv
1/2"	10
3/4"	30
1"	65
1-1/2"	200
2"	410
2-1/2"	600
3"	1,050
4"	1,900

... in various Industries

- Bio-Pharm
- Pharmaceutical
- Food and Beverage
- Cosmetics/Personal Care
- Brewing/Distilling
- Semiconductors
- Gas Delivery Systems
- Sterilization Systems

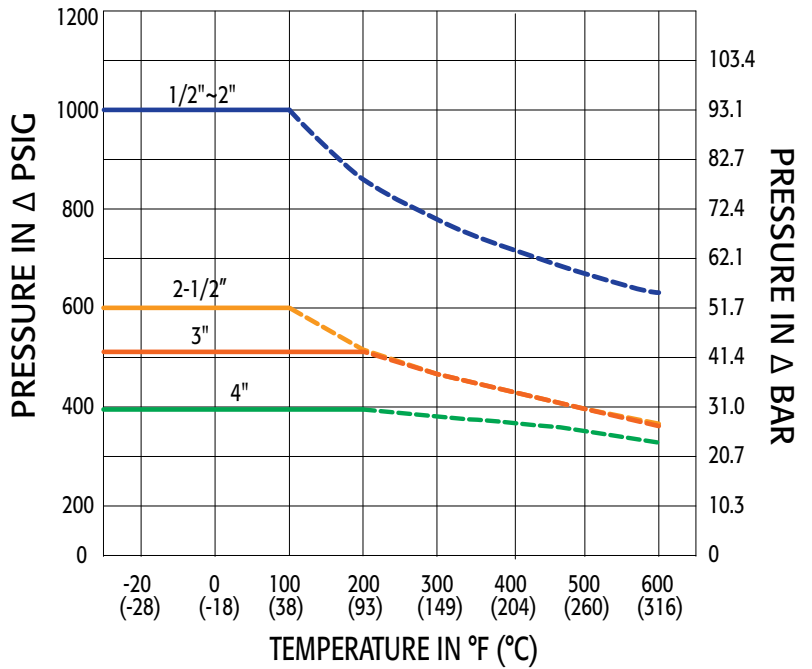
H78 Series

Cast High Purity Ball Valve

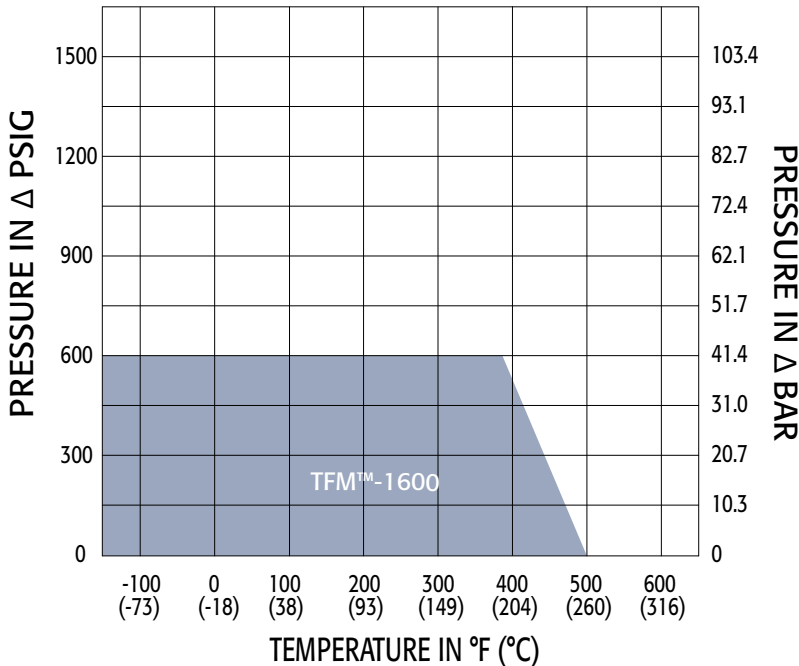
Body Ratings Pressure vs. Temperature

Shell Pressure							
1/2"-2"		2-1/2"		3"		4"	
°F	PSI	°F	PSI	°F	PSI	°F	PSI
-20°	1000	-20°	600	-20°	507	-20°	393
100°	1000	100°	600	100°	507	100°	393
150°	931	150°	558	150°	507	150°	393
200°	861	200°	516	200°	507	200°	393
300°	778	300°	467	300°	467	300°	382
400°	713	400°	429	400°	429	400°	378
500°	665	500°	396	500°	396	500°	352
600°	625	600°	366	600°	366	600°	334

Note: When using hygienic ferrule ends, the pressure rating may be limited to the pressure rating of the gaskets and clamps.



Seat Ratings Pressure vs. Temperature for TFM™-1600 Seats

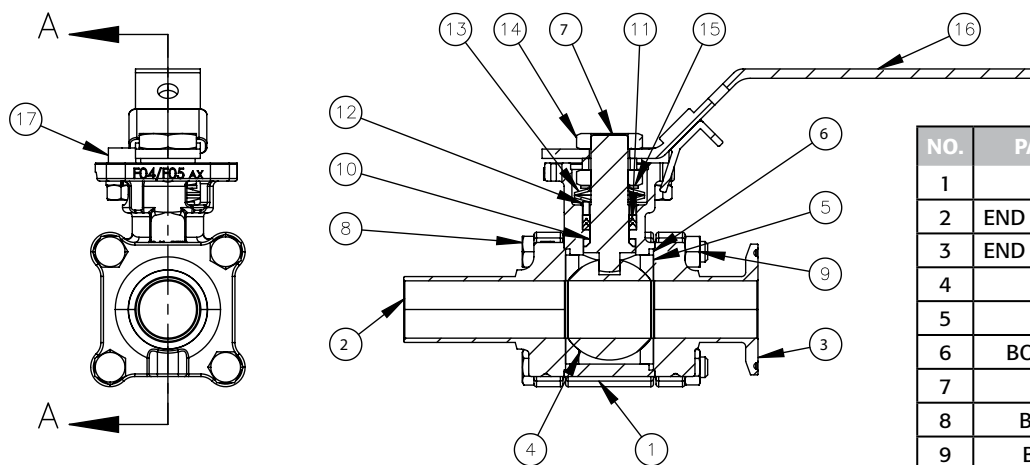


Seat ΔP Pressure	
TFM™-1600	
°F	PSI
-100°	600
0°	600
100°	600
200°	600
300°	600
387°	600
500°	0

Breakaway Torques for TFM™-1600	
Size	in-lbs
1/2"	80
3/4"	90
1"	142
1-1/2"	319
2"	390
2-1/2"	806
3"	921
4"	1,317

- At temperature, the maximum pressure for the valve is limited by either the valve body, seat, or seals; whichever is lower.

Bill of Materials

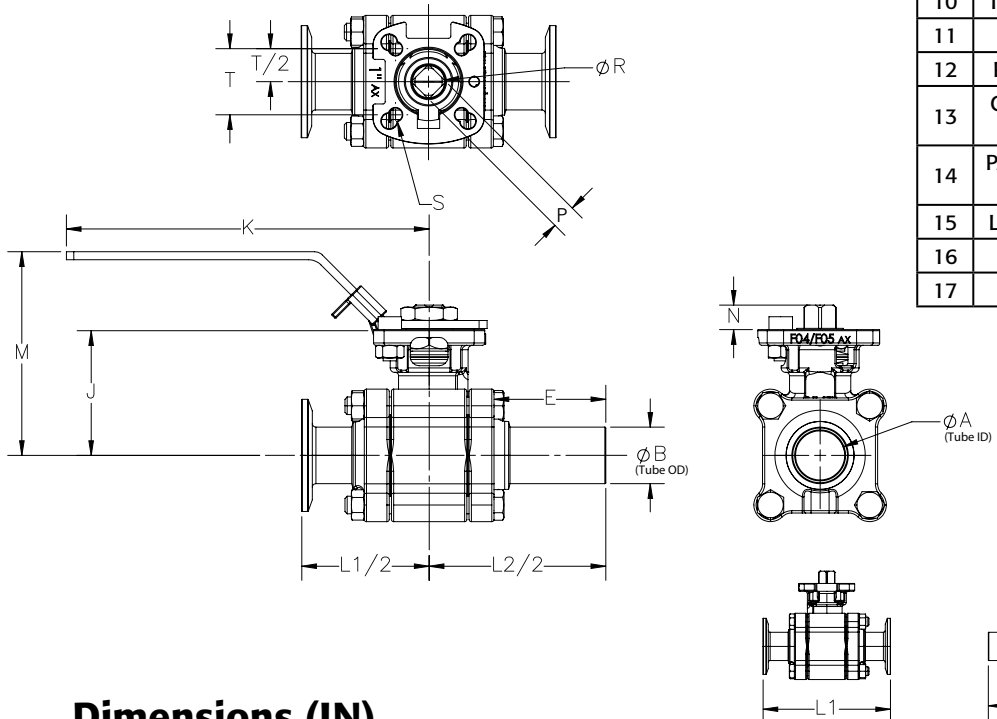


MATERIALS LIST

NO.	PART NAME	QTY	MATERIAL
1	BODY	1	ASTM A351-CF3M
2	END CONNECTION	2	ASTM A351-CF3M
3	END CONNECTION	2	ASTM A351-CF3M
4	BALL	1	ASTM A351-CF3M
5	SEAT	2	TFM™-1600 FDA
6	BODY GASKET	1	TFM™-1600 FDA
7	STEM	#	ASTM A276-316
8	BODY BOLT	&	ASTM A193 GR B8
9	BODY NUT	1	ASTM A194 GR 8
10	THRUST BEARING	1	TFM™-1600 FDA
11	PACKING SET	1	TFM™-1600 FDA
12	PACKING GLAND	2	AISI 304SS
13	CONICAL SPRING WASHER	2	AISI 304SS
14	PACKING/HANDLE NUT	1	AISI 304SS
15	LOCKING SADDLE	1	AISI 304SS
16	HANDLE	1	AISI 304SS
17	HANDLE STOP	1	AISI 304SS

FOR 1/2" to 1-1/2" - 4 PCS
 FOR 2" to 2-1/2" - 8 PCS
 FOR 3" - 12 PCS
 FOR 4" - 16 PCS

& FOR 1/2" to 1-1/2" - 4 PCS
 FOR 2" to 4" - 0 PCS



Dimensions (IN)

SIZE	Valve Dimensions								Operator Dimensions								(LBS)
	ØA	ØB	E	J	K	L1	L2	L3	M	N	P	ØR	S	T	U	V	
1/2"	0.37	0.5	1.89	1.58	5.91	3.51	5.5	4.51	3.31	0.32	0.354	0.43	0.26	1.417	0.28	1.654	2
3/4"	0.62	0.75	1.92	1.89	5.91	4	5.75	4.87	3.31	0.32	0.354	0.43	0.26	1.417	0.28	1.654	2
1"	0.87	1	1.98	2.23	6.50	4.51	6.25	5.38	3.78	0.43	0.433	0.563	0.26	1.654	0.28	1.969	4
1-1/2"	1.37	1.5	2.21	3.05	8.46	5.52	7.5	6.51	5.00	0.55	0.551	0.744	0.30	1.969	0.35	2.756	9
2"	1.87	2	2.44	3.35	8.46	6.26	8.5	7.38	5.28	0.55	0.551	0.744	0.30	1.969	0.35	2.756	12
2-1/2"	2.37	2.5	2.51	4.28	11.81	6.85	9.75	8.3	6.57	0.66	0.669	0.885	0.39	2.756	0.47	4.016	24
3"	2.87	3	2.65	4.63	14.57	7.61	10.5	9.06	6.93	0.70	0.669	0.885	0.39	2.756	0.47	4.016	31
4"	3.83	4	3.1	5.22	14.57	8.9	12.5	10.7	7.56	0.66	0.748	0.94	0.39	2.756	0.47	4.016	49

A-T Controls reserves the right to change product designs and technical/dimensional specifications without notice.

H78 Series

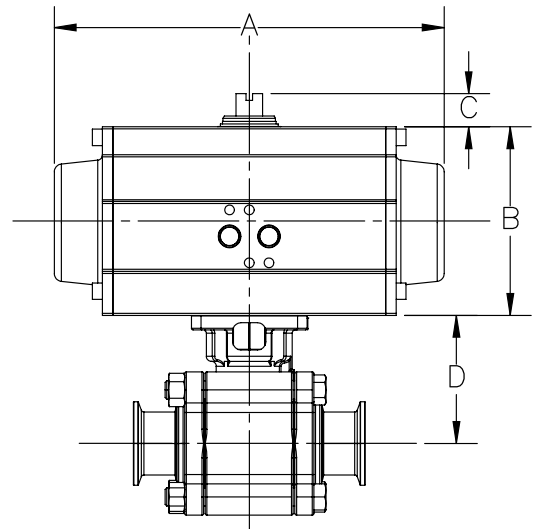
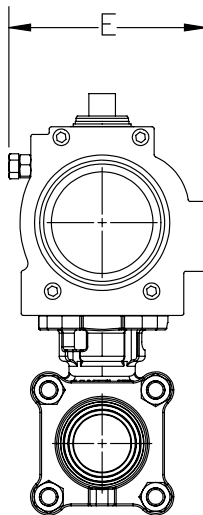
Cast High Purity Ball Valve

Cast High Purity Automated Sizing

H78 Series Double Acting	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	80	TR20DA	5.98	2.76	0.79	1.58	2.58	TR20DA	5.98	2.76	0.79	1.58	2.58
	3/4"	90	2R40DA	7.95	3.43	0.79	1.89	3.29	2R40DA	7.95	3.43	0.79	1.89	3.29
	1"	142	2R40DA	7.95	3.43	0.79	2.23	3.29	2R40DA	7.95	3.43	0.79	2.23	3.29
	1-1/2"	319	2R80DA	9.29	4.49	0.79	3.05	4.41	2R80DA	9.29	4.49	0.79	3.05	4.41
	2"	390	2R80DA	9.29	4.49	0.79	3.35	4.41	2R80DA	9.29	4.49	0.79	3.35	4.41
	2-1/2"	806	2R130DA	10.87	4.88	0.79	4.28	4.69	2R130DA	10.87	4.88	0.79	4.28	4.69
	3"	921	2R130DA	10.87	4.88	0.79	4.63	4.69	2R200DA	11.46	5.28	0.79	4.63	5.06
	4"	1317	2R300DA	13.90	6.18	0.79	5.22	5.91	2R300DA	13.90	6.18	0.79	5.22	5.91

H78 Series Spring Return	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	80	2R40SR	7.95	3.43	0.79	1.58	3.29	2R80SR4	9.29	4.49	0.79	1.58	4.41
	3/4"	90	2R80SR	9.29	4.49	0.79	1.89	4.41	2R80SR4	9.29	4.49	0.79	1.89	4.41
	1"	142	2R80SR	9.29	4.49	0.79	2.23	4.41	2R80SR4	9.29	4.49	0.79	2.23	4.41
	1-1/2"	319	2R200SR	11.46	5.28	0.79	3.05	5.06	2R200SR4	11.46	5.28	0.79	3.05	5.06
	2"	390	2R200SR	11.46	5.28	0.79	3.35	5.06	2R300SR4	13.90	6.18	0.79	3.35	5.91
	2-1/2"	806	2R300SR	13.90	6.18	0.79	4.28	5.91	2R500SR4	15.16	6.93	1.18	4.28	6.50
	3"	921	2R500SR	15.16	6.93	1.18	4.63	6.50	2R500SR4	15.16	6.93	1.18	4.63	6.50
	4"	1317	2R500SR	15.16	6.93	1.18	5.22	6.50	2R850SR4	20.95	8.31	1.18	5.22	6.98

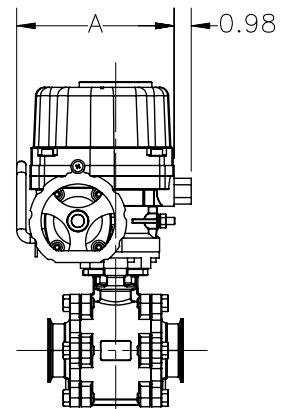
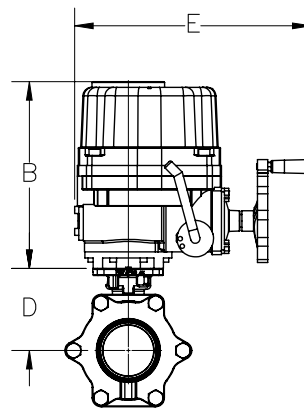
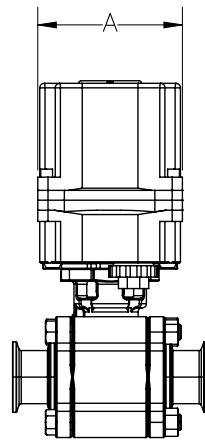
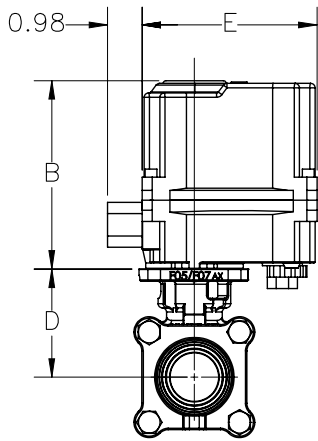
60 psi Spring Return assemblies will have 4 springs (indicated by 4 at the end of the size/model number.
80 psi will have the standard 5 springs per side, no designation required.



WE-500
CSA Approved,
Type 4 & 4X,
IP67



XE-690
ATEX/IECEX
Ex d IIB T4 Gb,
IP67



WE-500

WE-690 AND LARGER

H78 Series Electric	Valve Size	Torque (in*lbs)	On-Off	A	B	D	E	Modulating	A	B	D	E
	1/2"	80	WE-500	4.09	5.33	1.58	4.95	WEM-500	4.09	5.33	1.58	8.49
	3/4"	90	WE-500	4.09	5.33	1.89	4.95	WEM-500	4.09	5.33	1.89	8.49
	1"	142	WE-500	4.09	5.33	2.23	4.95	WEM-500	4.09	5.33	2.23	8.49
	1-1/2"	319	WE-500	4.09	5.33	3.05	4.95	WEM-500	4.09	5.33	3.05	8.49
	2"	390	WE-690	6.69	9.25	3.35	10.16	WEM-690	6.69	9.25	3.35	13.17
	2-1/2"	806	WE-1350	9.02	10.55	4.28	13.31	WEM-1350	9.02	10.55	4.28	13.31
	3"	921	WE-1350	9.02	10.55	4.63	13.31	WEM-1350	9.02	10.55	4.63	13.31
	4"	1317	WE-1700	9.02	10.55	5.22	13.31	WEM-1700	9.02	10.55	5.22	13.31

Explosion proof actuators available.

H78 Series

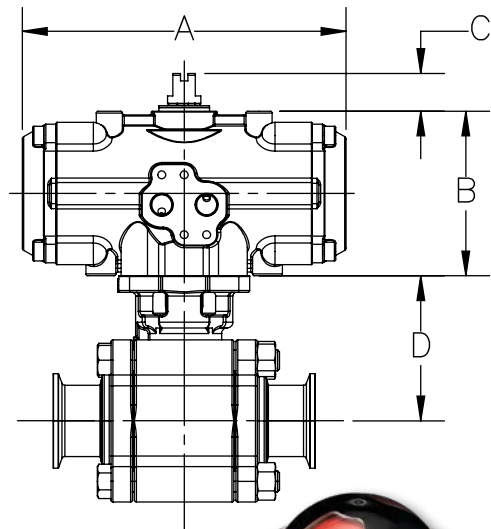
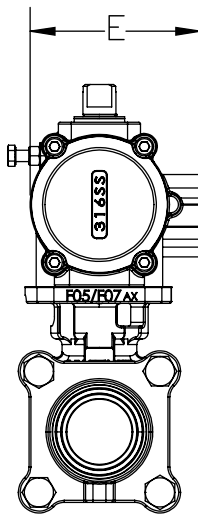
Cast High Purity Ball Valve

Cast High Purity Stainless Steel Automated Sizing

H78 Series Stainless Steel Double Acting	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	80	S2-052DA	5.75	2.83	0.79	1.58	3.07	S2-052DA	5.75	2.83	0.79	1.58	3.07
	3/4"	90	S2-052DA	5.75	2.83	0.79	1.89	3.07	S2-052DA	5.75	2.83	0.79	1.89	3.07
	1"	142	S2-052DA	5.75	2.83	0.79	2.23	3.07	S2-063DA	6.81	3.46	0.79	2.23	3.58
	1-1/2"	319	S2-063DA	6.81	3.46	0.79	3.05	3.58	S2-083DA	8.03	4.25	0.79	3.05	4.42
	2"	390	S2-083DA	8.03	4.25	0.79	3.35	4.42	S2-083DA	8.03	4.25	0.79	3.35	4.42
	2-1/2"	806	S2-105DA	10.63	5.24	0.79	4.28	5.31	S2-105DA	10.63	5.24	0.79	4.28	5.31
	3"	921	S2-105DA	10.63	5.24	0.79	4.63	5.31	S2-105DA	10.63	5.24	0.79	4.63	5.31
	4"	1317	S2-105DA	10.63	5.24	0.79	5.22	5.31	S2-125DA	11.89	6.10	1.18	5.22	6.12

H78 Series Stainless Steel Spring Return	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	80	S2-063SR	6.81	3.46	0.79	1.58	3.58	S2-063SR4	6.81	3.46	0.79	1.58	3.58
	3/4"	90	S2-063SR	6.81	3.46	0.79	1.89	3.58	S2-063SR4	6.81	3.46	0.79	1.89	3.58
	1"	142	S2-083SR	8.03	4.25	0.79	2.23	4.42	S2-083SR4	8.03	4.25	0.79	2.23	4.42
	1-1/2"	319	S2-105SR	10.63	5.24	0.79	3.05	5.31	S2-105SR4	10.63	5.24	0.79	3.05	5.31
	2"	390	S2-105SR	10.63	5.24	0.79	3.35	5.31	S2-105SR4	10.63	5.24	0.79	3.35	5.31
	2-1/2"	806	S2-125SR	11.89	6.10	1.18	4.28	6.12	S2-140SR4	15.51	6.77	1.18	4.28	6.75
	3"	921	S2-140SR	15.51	6.77	1.18	4.63	6.75	S2-140SR4	15.51	6.77	1.18	4.63	6.75
	4"	1317	S2-140SR	15.51	6.77	1.18	5.22	6.75	S2-160SR4	17.95	7.80	1.18	5.22	7.58

60 psi Spring Return assemblies will have 4 springs (indicated by 4 at the end of the size/model number).
80 psi will have the standard 5 springs per side, no designation required.



Featuring TRIAC® Series S2 Stainless Steel Pneumatic Actuators

Also available:
APL-9 Series
Stainless Steel
Type 4X, IP 67
Limit Switch



Pneumatic Rack & Pinion Actuators



2R Series Rack & Pinion



S2 Series Stainless Steel Actuators



TRIAC® Automated Valve Assemblies

- ▶ Pneumatic or Electric
- ▶ Pre-engineered assemblies
- ▶ Pre-sized and pre-priced
- ▶ Double Acting or Spring Return
- ▶ Options
- ▶ Butterfly Valve packages

Electric Actuators



APL Limit Switches

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



APL-210N
CSA Approved, Type 4X

APL-310N
CSA Approved,
Type 4X

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

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

See individual brochures for details & options

A-T High Purity Ball Valves

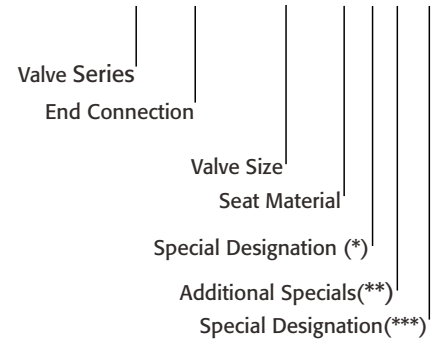
Manual HIGH PURITY Ball Valve Part Number Matrix

How to Order Options A-T High Purity Manual Ball Valves				
Valve Series	HP	Forged High Purity		
	H78	Cast High Purity H78 Encapsulated Bolts		
Body Material	blank	F316L (Low S Low F) SF1 Standard		
	2	F316L (Low S Low F) SF4 Electropolished Forged		
	3	CF3M (Low S Low F) SF4 Electropolished Cast		
Ends	SA	Sanitary		
	DA	Tube		
	DS	Sanitary x Tube		
Size	0050	1/2"	0200	2"
	0075	3/4"	0250	2-1/2"
	0100	1"	0300	1"
	0150	1-1/2"	0400	4"
Seat	T	TFM™-1600 (other options available)		
*	X	Standard Handle		
	L	Lockable Handle (HP valves only)		
	G	Gear Operator		
**	X	Standard, No specials		
	O	Oxygen Cleaned		
	V	Vented Ball		
***	X	Standard		
	S	Anti-Static Design (option)		

HOW TO ORDER MANUAL VALVES

SAMPLE PART #

HP-SA-0050-TXX-X



See How to Order Options table for available options

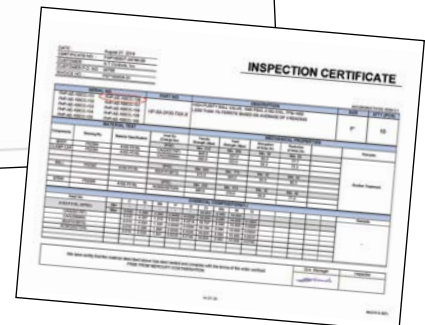
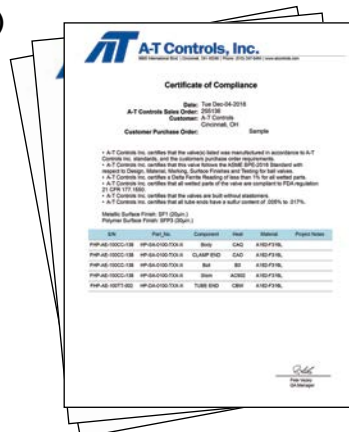
TFM™ is a trademark of Dyneon™, a 3M Company.

Tri-Clover® and Tri-Clamp® are registered trademarks of Alfa Laval Corporate AB.

Documentation / Traceability

A Document package is included with each High Purity Ball Valve purchase.

- Certificate of Compliance
- MTR (Inspection and Material Report)
- Each valve is identified by a unique serial number for traceability



Automated HIGH PURITY Ball Valve Part Number Matrix

Valve

2 Valve Series	
HP	Forged High Purity
H78	Cast High Purity, Encapsulated Bolts

3 Body Material	
Blank	F316L (SF1) Standard
2	F316L (SF4) Electropolished Forged
3	CF3M (SF4) Electropolished Cast

4 End Connection	
C	Sanitary Clamp Ends
D	Tube O.D. Ends
H	Tube x Sanitary

5 Seat, Lining & Trim Materials	
1	Valve Series Standard (TFM™-1600)

other options available

6 Valve Size			
025	1/4"	200	2"
038	3/8"	250	2-1/2"
050	1/2"	300	3"
075	3/4"	400	4"
100	1"		
125	1-1/4"		
150	1-1/2"		

Actuators

7 Actuator - Pneumatic (DA)			
TRYD	TR10DA	2R7D	2R500DA
TR1D	TR20DA	2R8D	2R850DA
2R2D	2R40DA	2R9D	2R1200DA
2R3D	2R80DA	2R0D	2R1750DA
2R4D	2R130DA	2RAD	2R2500DA
2R5D	2R200DA	2RBD	2R3500DA
2R6D	2R300DA		

7 Actuator - Electric (On-Off)			
WEX1	WE-350	WEG1	WE-5200
WEA1	WE-500	WEH1	WE-6900
WEB1	WE-690	WEJ1	WE-10500
WEC1	WE-1350	WEK1	WE-17500
WED1	WE-1700	WEL1	WE-25900
WEE1	WE-2640	WEM1	WE-53000
WEF1	WE-4400	WEN1	WE-80000

7 Actuator - Pneumatic Stainless (DA)			
S21D	S2-052DA	S25D	S2-125DA
S22D	S2-063DA	S26D	S2-140DA
S23D	S2-083DA	S27D	S2-160DA
S24D	S2-105DA	S28D	S2-210DA

7 Actuator - Pneumatic (SR)			
80 PSIG		60 PSIG	
TR1S	TR20SR	TR1S4	TR20SR4
2R2S	2R40SR	2R2S4	2R40SR4
2R3S	2R80SR	2R3S4	2R80SR4
2R4S	2R130SR	2R4S4	2R130SR4
2R5S	2R200SR	2R5S4	2R200SR4
2R6S	2R300SR	2R6S4	2R300SR4
2R7S	2R500SR	2R7S4	2R500SR4
2R8S	2R850SR	2R8S4	2R850SR4
2R9S	2R1200SR	2R9S4	2R1200SR4
2R0S	2R1750SR	2R0S4	2R1750SR4
2RAS	2R2500SR	2RAS4	2R2500SR4
2RBS	2R3500SR	2RBS4	2R3500SR4

7 Actuator - Electric (Modulating)			
WEA2	WEM-500	WEH2	WEM-6900
WEB2	WEM-690	WEJ2	WEM-10500
WEC2	WEM-1350	WEK2	WEM-17500
WED2	WEM-1700	WEL2	WEM-25900
WEE2	WEM-2640	WEM2	WEM-53000
WEF2	WEM-4400	WEN2	WEM-80000
WEG2	WEM-5200		

7 Actuators - Pneumatic Stainless (SR)			
80 PSIG		60 PSIG	
S21S	S2-052SR	S21S4	S2-052SR4
S22S	S2-063SR	S22S4	S2-063SR4
S23S	S2-083SR	S23S4	S2-083SR4
S24S	S2-105SR	S24S4	S2-105SR4
S25S	S2-125SR	S25S4	S2-125SR4
S26S	S2-140SR	S26S4	S2-140SR4
S27S	S2-160SR	S27S4	S2-160SR4
S28S	S2-210SR	S28S4	S2-210SR4

All 80 psi Spring Return assemblies will have the standard 5 springs, and all 60 psi Spring Return assemblies will have 4 springs (indicated by 4 at the end of the size and model number).

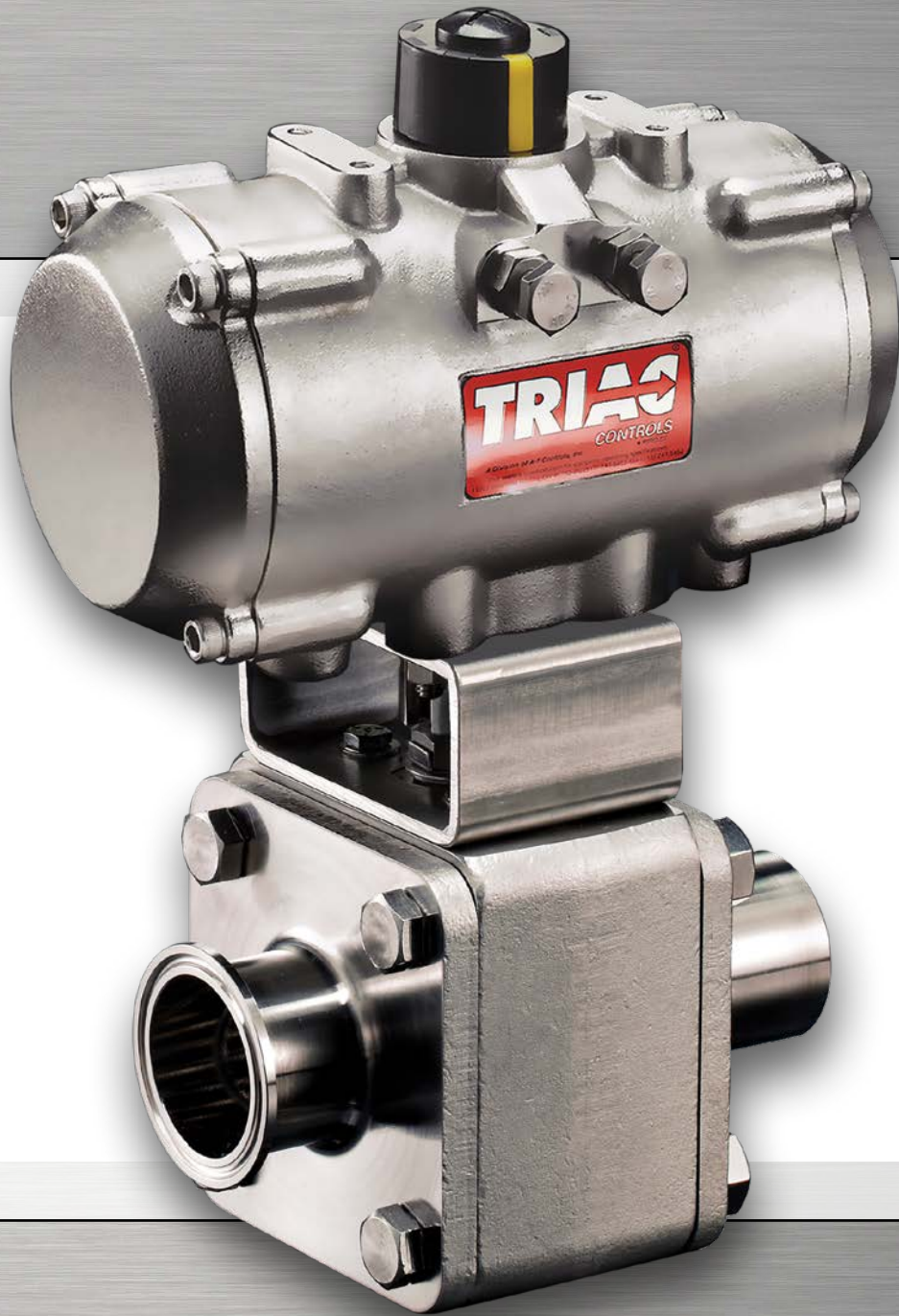
Additional Options

8 Accessories/Options	
X	No Specials
A	TYPE 4 Solenoid 120VAC
B	TYPE 7 Solenoid 120VAC
C	Intrinsically Safe Solenoid
D	TYPE 4 Solenoid 24VDC
F	TYPE 7 Solenoid 24VDC
Q	TYPE 4 SST Solenoid 120VAC
M	TYPE 7 SST Solenoid 120 VAC
L	TYPE 4 SST Solenoid 24VDC
N	TYPE 7 SST Solenoid 24VDC
P	Pneumatic Positioner
E	Electro-Pneumatic Positioner
R	24VDC Electric Actuator
S	220VAC Electric Actuator
T	Other Voltage Electric Actuator
W	12VDC Electric Actuator
Y	24VAC Electric Actuator
2	2 Position, 180° control for Wine Industry
3	3 Position, 180° control for Wine Industry
Blank	*No voltage specified on electric assemblies denotes 120VAC

9 Accessories	
X	No Specials
A	TYPE 4 Limit Switch
B	TYPE 7 Limit Switch
C	Intrinsically Safe Limit Switch
Q	TYPE 4 SST Limit Switch
M	TYPE 7 SST Limit Switch
Z	180° Operation
1	HS1 High Speed Electric
2	HS2 High Speed Electric

10 Special Valve Designation	
Blank	No Designation, SST Stem
S	Anti-Static Design

HOW TO ORDER AUTOMATED VALVES														
1	2	3	-	4	5	-	6	/	7	-	8	9	-	10
↓	↓	↓		↓	↓		↓		↓		↓	↓		↓
H78				- C1		- 300/2R4D				- X		X		



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