



A-T Controls, Inc.

High Purity Ball Valves

Series HP Forged Ball Valves

Series H78 Cast Ball Valves



BPE Compliant Ball Valves
(ASME BPE 2024)

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) TFM™-1600 is FDA 21 CFR 177.1550 (FoodGrade), USP <88> Biological Reactivity Test in Vivo, USP23 Class VI, and 3A compliant. USP <87> Biological Reactivity Test in Vitro
- 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. 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%-0.017%. 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

**Superior Live Loaded Packing
System**

Pyramidal Stem Seal Design

Blowout Proof Stem

Optional Lockable Manual Handle

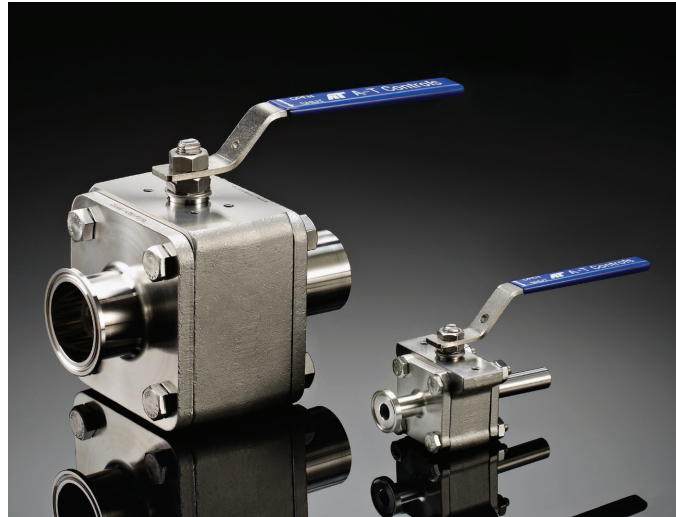
Unique Serial Numbers

Documentation & Traceability

STANDARDS

Design	ASME BPE-2024, ASME B16.34-2017
End Connections	ASME BPE-2024
Pressure Testing	ASME BPE-2024 & EN 12266-1
CE Approval	2014/68/EU Module H
Material Certification	ASME BPE-2024, 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

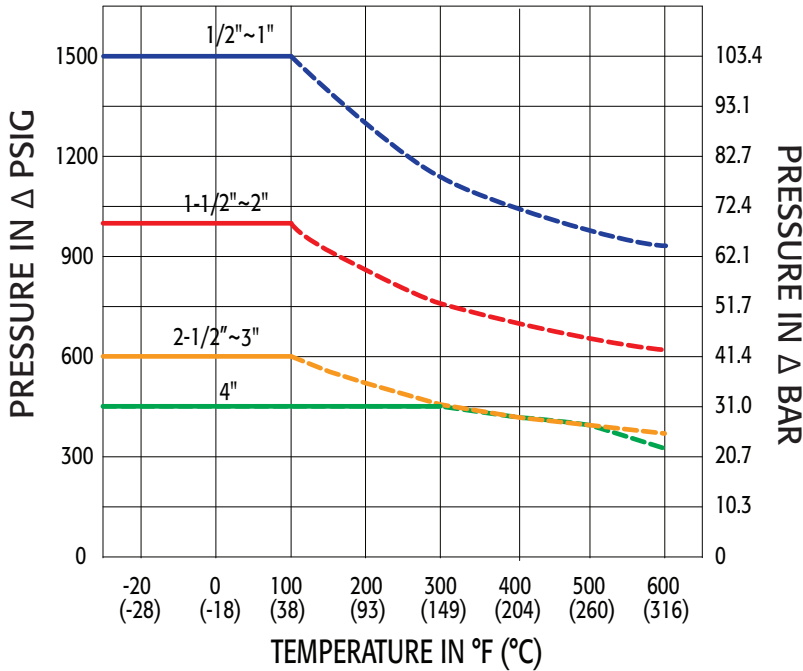
... in various Industries

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

HP Series

Forged High Purity Ball Valve

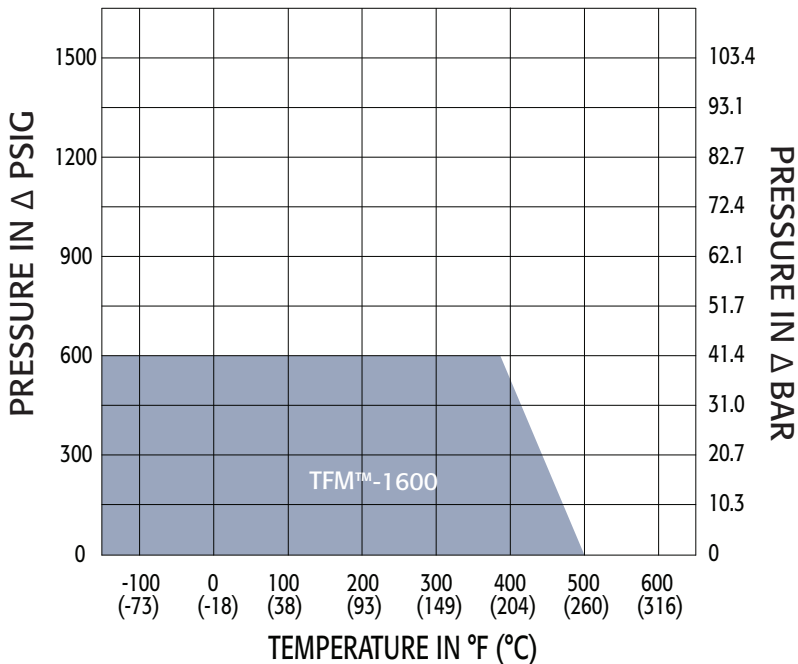
Body Ratings Pressure vs. Temperature



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

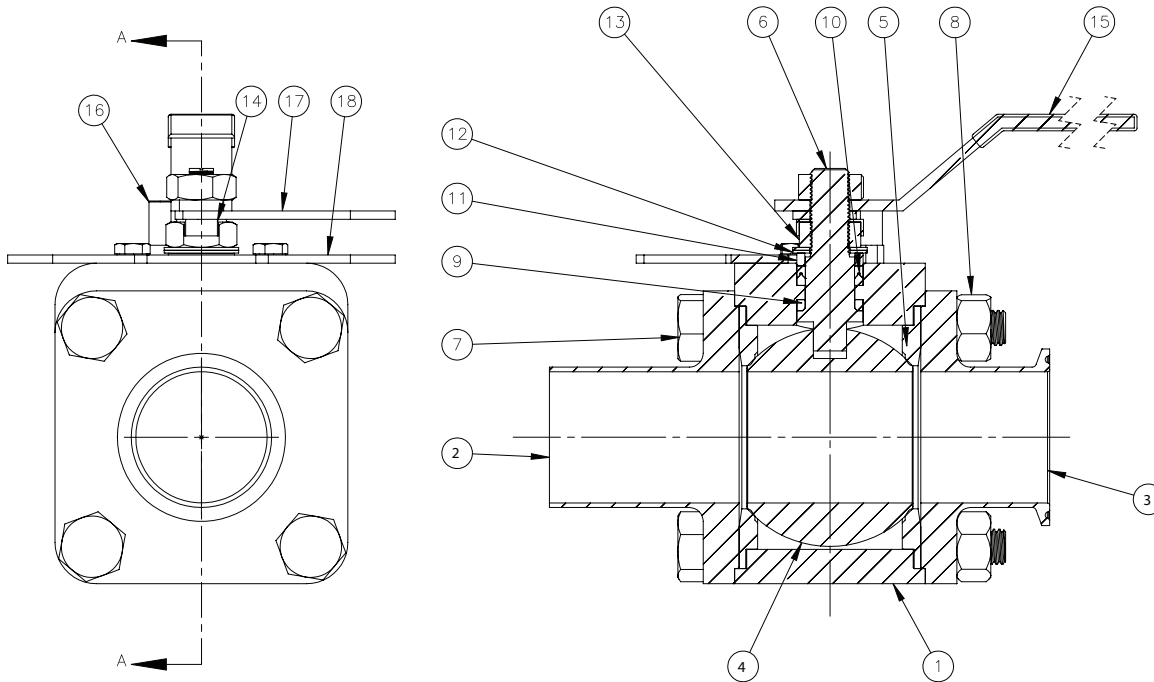
Published torques are based on full differential pressure with clean water. Consult The Application Sizing Guide for assistance with sizing actuators

- 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

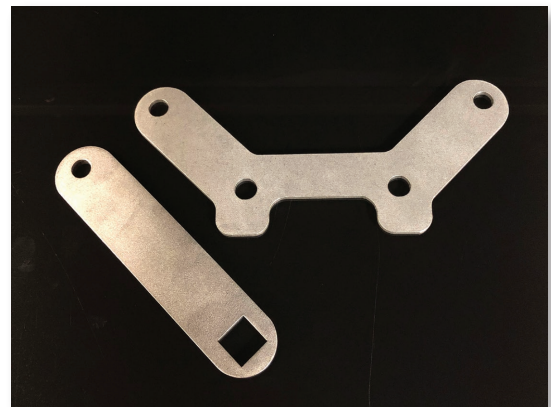
Bill of Materials



MATERIALS LIST

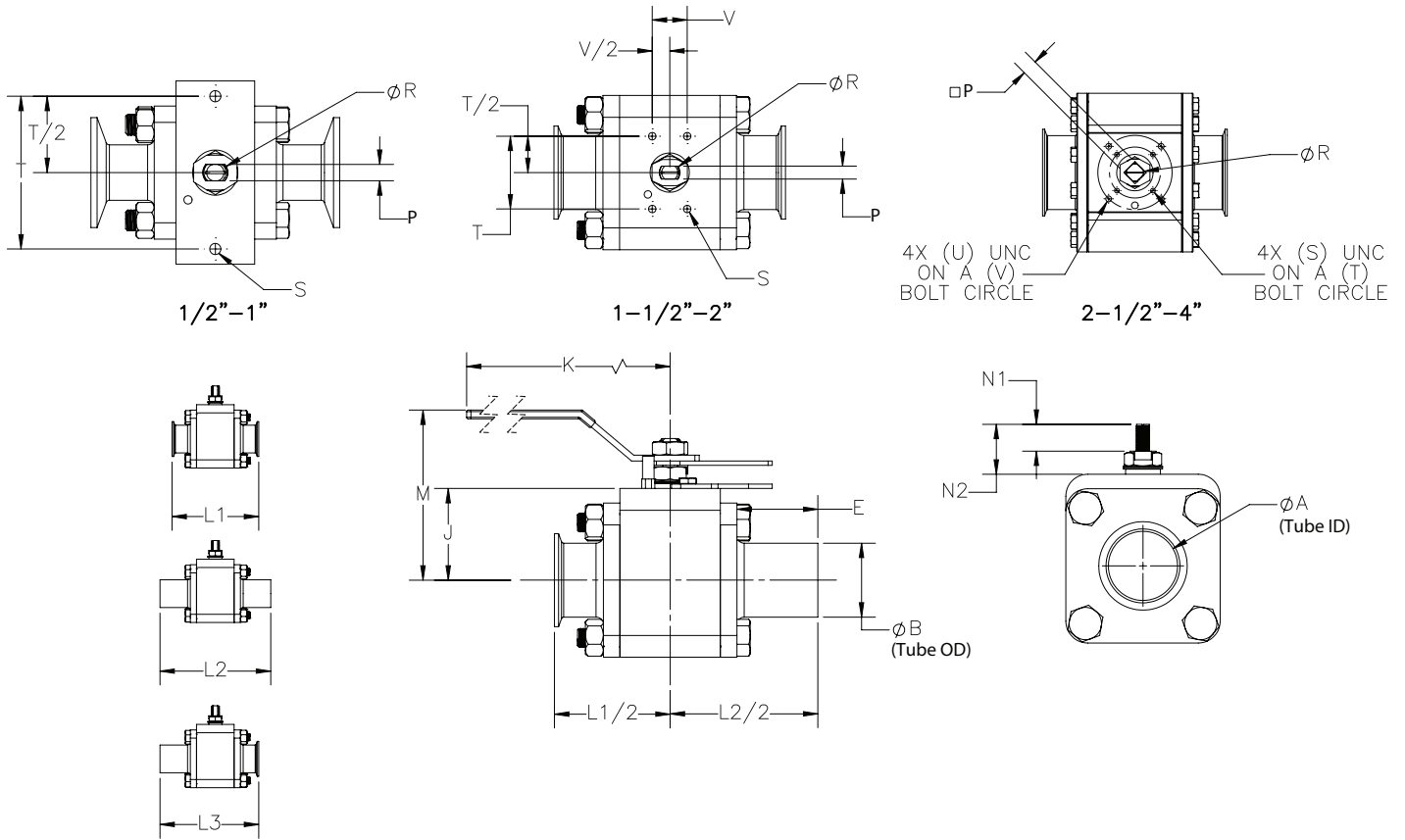
NO.	PART NAME	QTY	MATERIAL
1	BODY	1	ASTM A182-F316L
2	END CONNECTION	2	ASTM A182-F316L
3	END CONNECTION	2	ASTM A182-F316L
4	BALL	1	ASTM A479-316L
5	SEAT/BODY GASKET	2	TFM™-1600 FDA
6	STEM	1	ASTM A182-F316L
7	BODY BOLT	#	ASTM A193 GR B8
8	BODY NUT	&	ASTM A194 GR 8
9	THRUST BEARING	1	TFM™-1600 FDA
10	PACKING 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

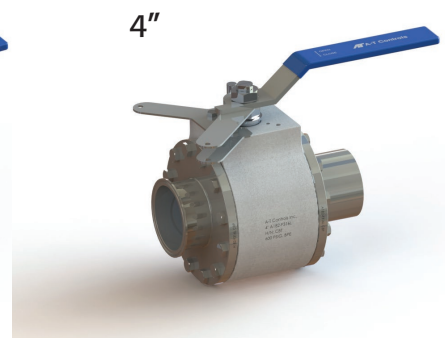
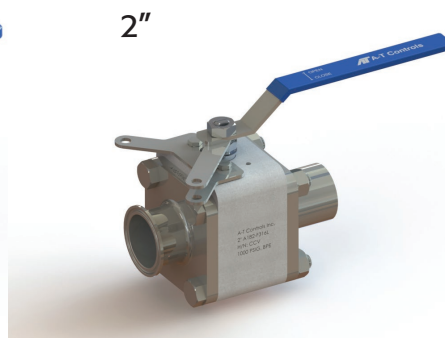
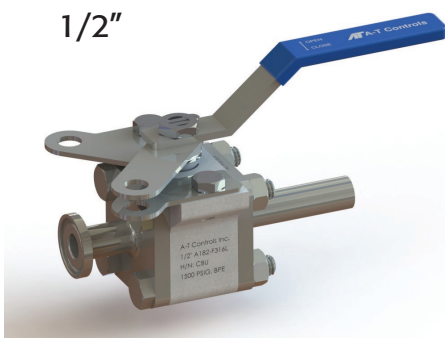
& FOR 1/2"-2" - 4 PCS
 FOR 2-1/2"-4" - 0 PCS



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	1.95	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	2.19	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	2.15	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	2.25	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	2.19	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	3.49	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	2.76	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	3.35	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.



HP Series

Forged High Purity Ball Valve

Forged High Purity Automated Sizing

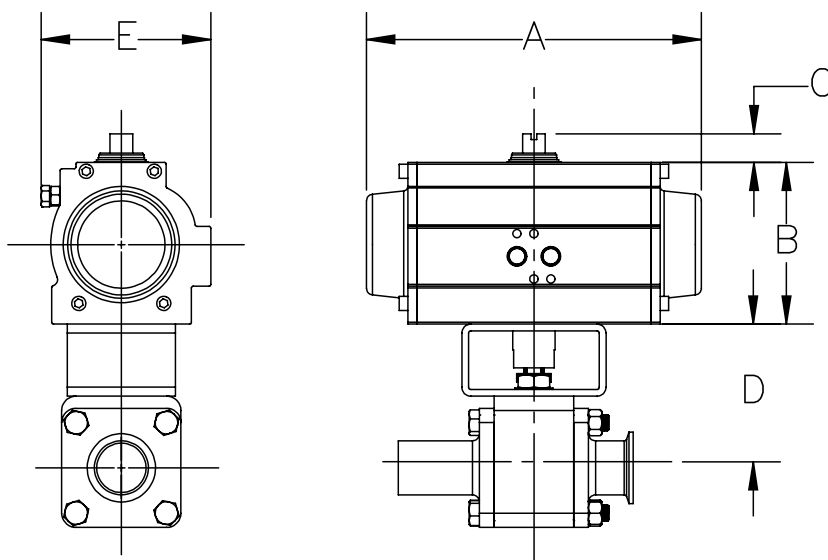
HP Series Double Acting	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	40	3R20DA	6.496	2.835	0.787	3.02	2.657	3R20DA	6.496	2.835	0.787	3.02	2.657
	3/4"	40	3R20DA	6.496	2.835	0.787	3.02	2.657	3R20DA	6.496	2.835	0.787	3.02	2.657
	1"	125	3R20DA	6.496	2.835	0.787	3.4	2.657	3R40DA	7.598	3.465	0.787	3.4	3.346
	1-1/2"	225	3R40DA	7.598	3.465	0.787	3.99	3.346	3R40DA	7.598	3.465	0.787	3.99	3.346
	2"	300	3R40DA	7.598	3.465	0.787	4.48	3.346	3R80DA	9.29	4.30	0.787	4.48	4.18
	2-1/2"	450	3R80DA	9.29	4.30	0.787	6.54	4.18	3R80DA	9.29	4.30	0.787	6.54	4.18
	3"	950	3R130DA	11.02	4.61	0.787	7.04	4.27	3R200DA	11.50	5.28	0.787	7.04	4.78
	4"	1500	3R300DA	13.39	6.14	0.787	8.12	5.59	3R300DA	13.39	6.14	0.787	8.12	5.59

Actuators are sized based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

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	3R20SR	6.496	2.835	0.787	3.02	2.66	3R20SR4	6.496	2.835	0.787	3.02	2.66
	3/4"	40	3R20SR	6.496	2.835	0.787	3.02	2.66	3R20SR4	6.496	2.835	0.787	3.02	2.66
	1"	125	3R80SR	9.291	4.299	0.787	3.4	4.177	3R80SR4	9.291	4.299	0.787	3.4	4.177
	1-1/2"	225	3R80SR	9.291	4.299	0.787	3.99	4.177	3R130SR4	11.024	4.606	0.787	3.99	4.272
	2"	300	3R130SR	11.024	4.606	0.787	4.48	4.272	3R200SR4	11.50	5.28	0.787	4.48	4.78
	2-1/2"	450	3R200SR	11.50	5.28	0.787	6.54	4.78	3R300SR4	13.39	6.14	0.787	6.54	5.59
	3"	950	3R500SR	15.35	6.81	1.181	7.04	5.98	3R500SR4	15.35	6.81	1.181	7.04	5.98
	4"	1500	3R700SR	16.89	7.36	1.181	8.12	6.38	3R850SR4	19.37	7.81	1.181	8.12	6.85

Actuators are sized based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

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.



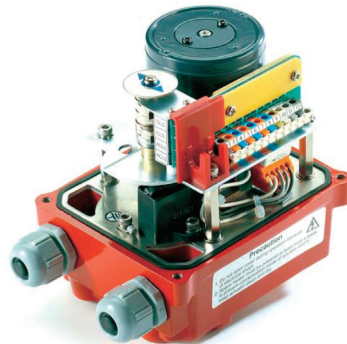


TMC3 Electronic Modulating Card (120/220VAC)

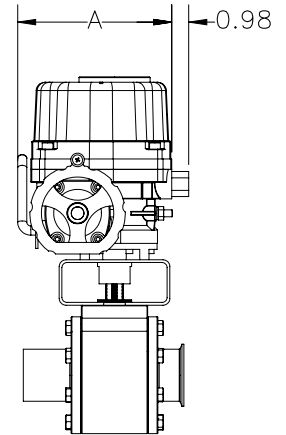
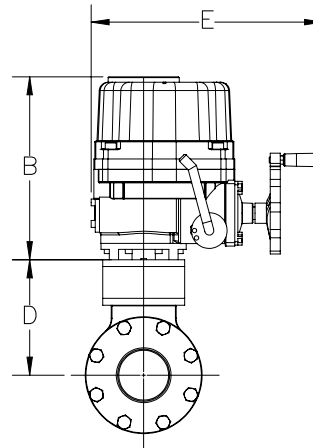
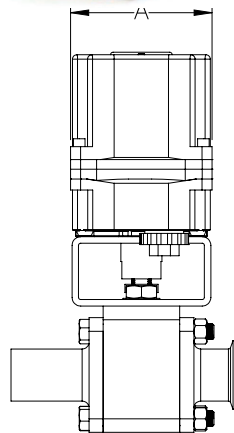
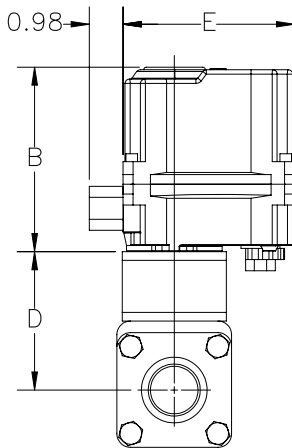
- 10 Bit Microprocessor controller for precise positioning and control
- 4-20mA, 1-5mA, 0-10 VDC, 1-5 VDC, 0-135 Ohm or Command Signal Potentiometer
- TMC3 Can be programmed to Fail in Place, Fail CW, or Fail CCW on loss of command signal
- Characterized Control-Linear, quick opening (Square root), or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



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



WE-500
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

Actuators are sized based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

Explosion proof actuators available.

HP Series

Forged High Purity Ball Valve

Forged High Purity Stainless Steel Automated Sizing

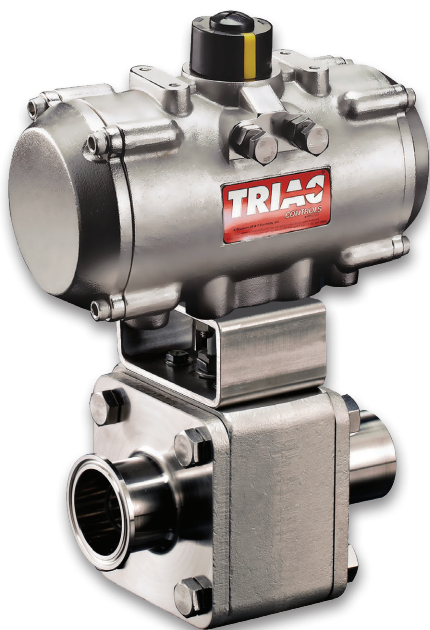
HP Series Stainless Steel Double Acting	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	40	S2-052DA	5.75	2.83	0.79	3.02	3.07	S2-052DA	5.75	2.83	0.79	3.02	3.07
	3/4"	40	S2-052DA	5.75	2.83	0.79	3.02	3.07	S2-052DA	5.75	2.83	0.79	3.02	3.07
	1"	125	S2-052DA	5.75	2.83	0.79	3.40	3.07	S2-052DA	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	

Actuators are sized based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

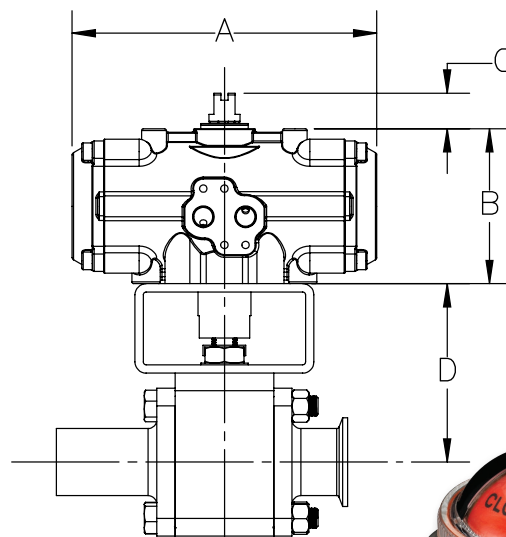
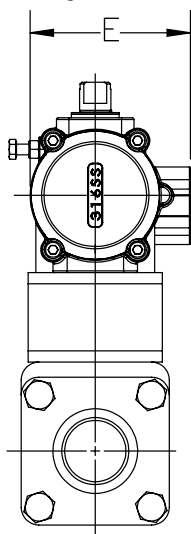
HP Series Stainless Steel Spring Return	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	40	S2-052SR	5.75	2.83	0.79	3.02	3.07	S2-052SR4	5.75	2.83	0.79	3.02	3.07
	3/4"	40	S2-052SR	5.75	2.83	0.79	3.02	3.07	S2-052SR4	5.75	2.83	0.79	3.02	3.07
	1"	125	S2-083SR	8.03	4.25	0.79	3.40	4.42	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	

Actuators are sized based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

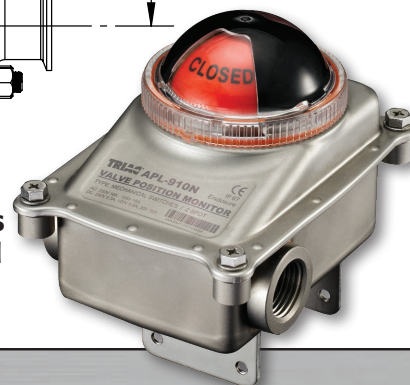
60 psi Spring Return assemblies will have 4 springs (indicated by 4 at the end of the size/model number. 80 psi will have the standard 5 springs per side, no designation required.



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

**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-2024, ASME B16.34-2017
End Connections	ASME BPE-2024
Pressure Testing	ASME BPE-2024 & EN 12266-1
CE Approval	2014/68/EU Module H
Material Certification	ASME BPE-2024, EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015
Canada Registration	CRN OC21013.5

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

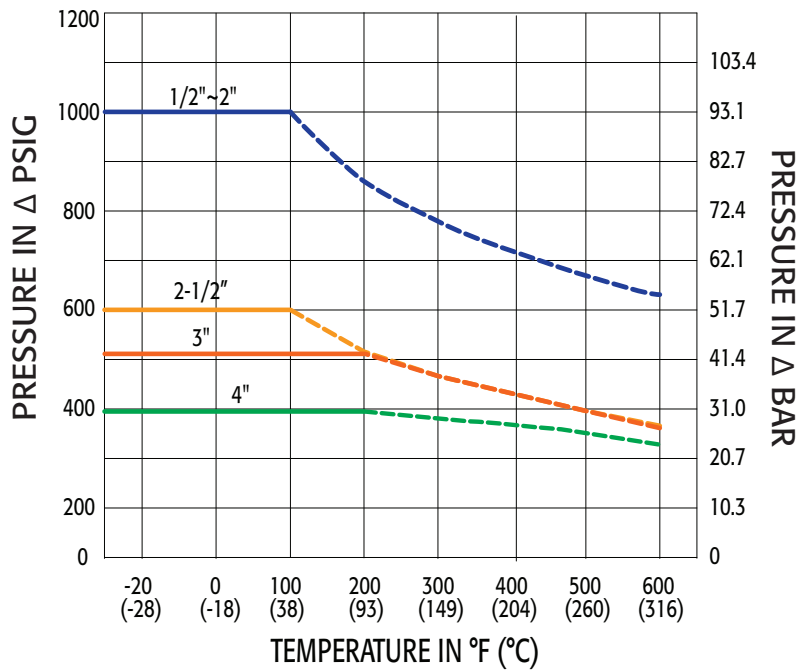
H78 Series

Cast High Purity Ball Valve

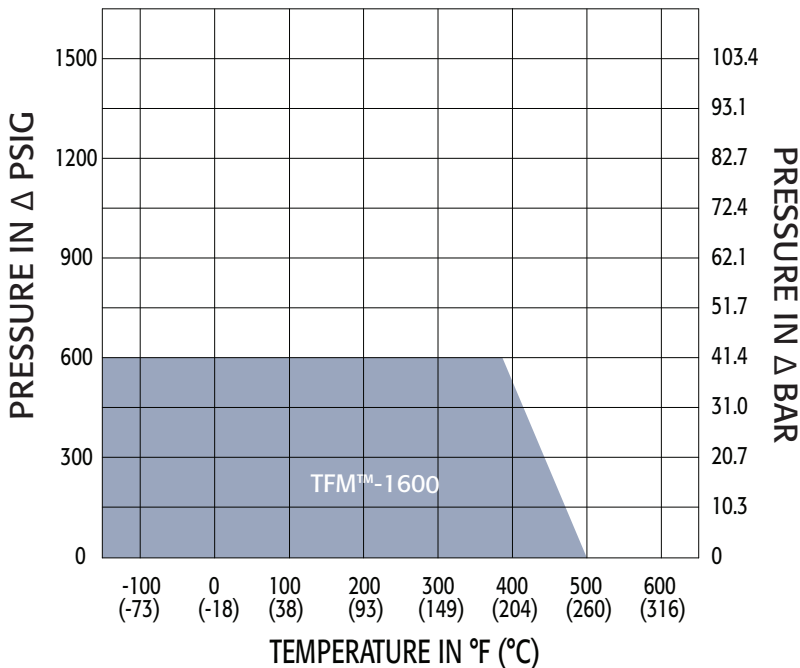
Shell Pressure							
1/2"-2"		2-1/2"		3"		4"	
°F	PSI	°F	PSI	°F	PSI	°F	PSI
-20°	1000	-20°	600	-20°	507	-20°	393
100°	1000	100°	600	100°	507	100°	393
150°	931	150°	558	150°	507	150°	393
200°	861	200°	516	200°	507	200°	393
300°	778	300°	467	300°	467	300°	382
400°	713	400°	429	400°	429	400°	378
500°	665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

Body Ratings Pressure vs. Temperature



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



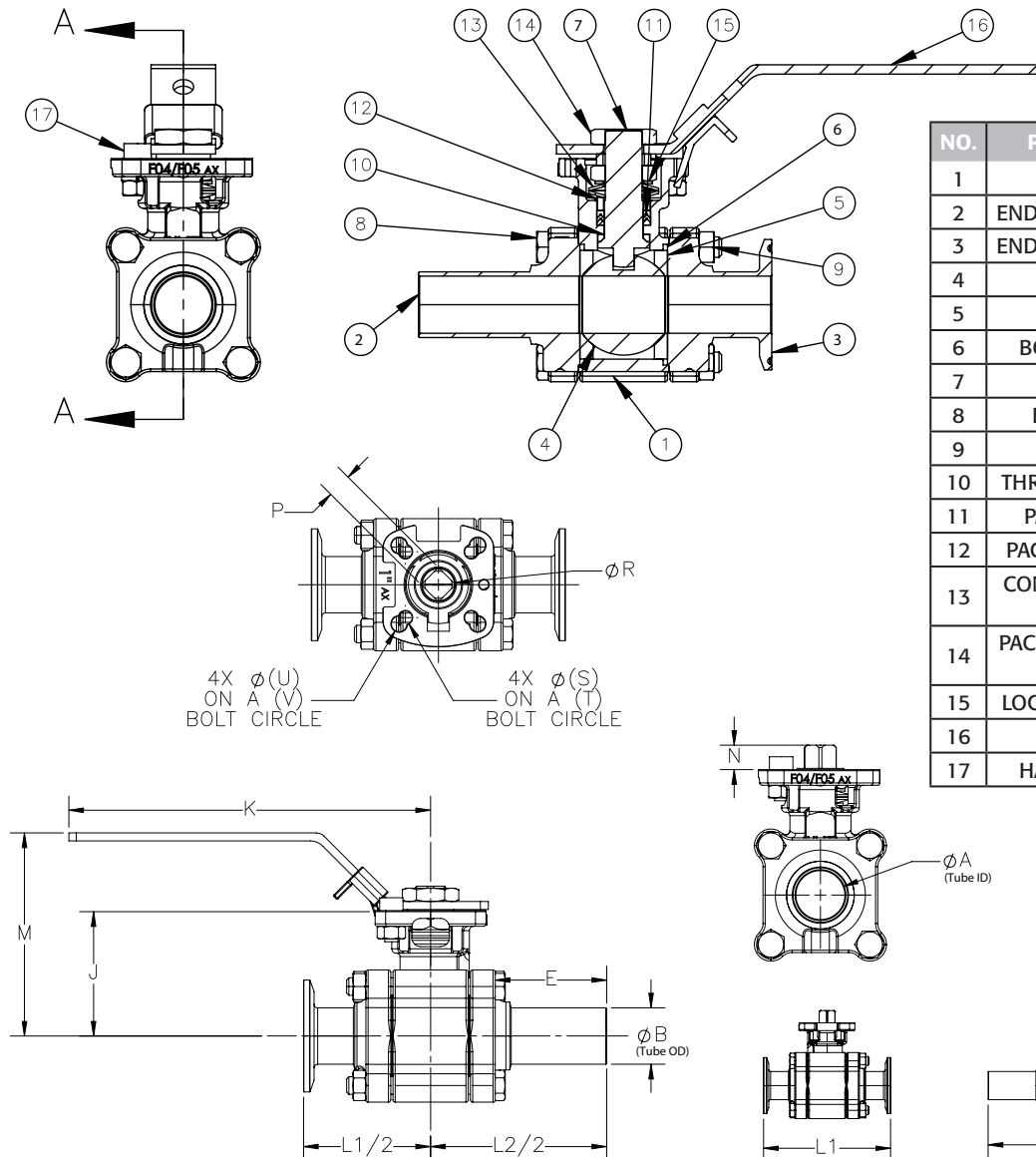
Seat ΔP Pressure	
TFM™-1600	
°F	PSI
-100°	600
0°	600
100°	600
200°	600
300°	600
387°	600
500°	0

Breakaway Torques for TFM™-1600	
Size	in-lbs
1/2"	37
3/4"	54
1"	90
1-1/2"	177
2"	296
2-1/2"	612
3"	679
4"	1218

Published torques are based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

- 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	0.669	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

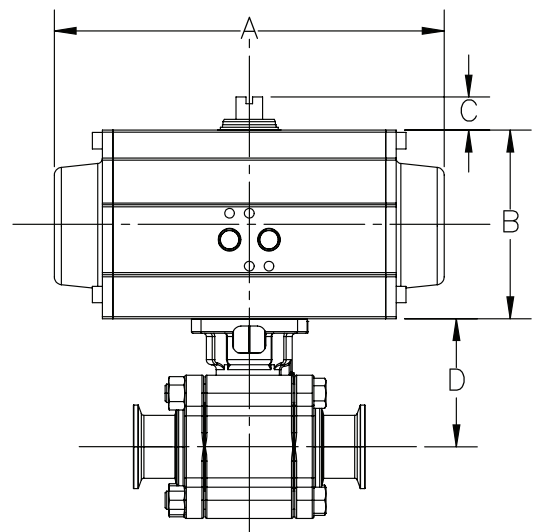
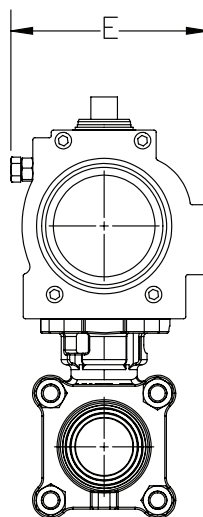
H78 Series Double Acting	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	37	3R20	6.50	2.84	0.787	1.58	2.66	3R20	6.50	2.84	0.787	1.58	2.66
	3/4"	54	3R20	6.50	2.84	0.787	1.89	2.66	3R20	6.50	2.84	0.787	1.89	2.66
	1"	90	3R20	6.50	2.84	0.787	2.23	2.66	3R20	6.50	2.84	0.787	2.23	2.66
	1-1/2"	177	3R40	7.60	3.47	0.787	3.05	3.35	3R40	7.60	3.47	0.787	3.05	3.35
	2"	296	3R40	7.60	3.47	0.787	3.35	3.35	3R80	9.29	4.30	0.787	3.35	4.18
	2-1/2"	612	3R80	9.29	4.30	0.787	4.28	4.18	3R130	11.02	4.61	0.787	4.28	4.27
	3"	679	3R80	9.29	4.30	0.787	4.63	4.18	3R130	11.02	4.61	0.787	4.63	4.27
	4"	1218	3R200	11.50	5.28	0.787	5.22	4.78	3R300	13.39	6.14	0.787	5.22	5.59

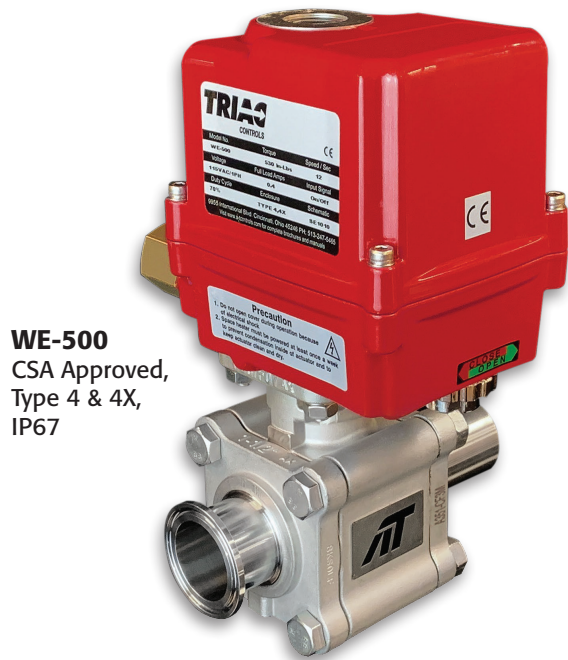
Actuators are sized based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

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"	37	3R20	6.50	2.84	0.787	1.58	2.66	3R20	6.50	2.84	0.787	1.58	2.66
	3/4"	54	3R20	6.50	2.84	0.787	1.89	2.66	3R20	6.50	2.84	0.787	1.89	2.66
	1"	90	3R40	7.60	3.47	0.787	2.23	3.35	3R40	7.60	3.47	0.787	2.23	3.35
	1-1/2"	177	3R80	9.29	4.30	0.787	3.05	4.18	3R80	9.29	4.30	0.787	3.05	4.18
	2"	296	3R130	11.02	4.61	0.787	3.35	4.27	3R130	11.02	4.61	0.787	3.35	4.27
	2-1/2"	612	3R300	13.39	6.14	0.787	4.28	5.59	3R300	13.39	6.14	0.787	4.28	5.59
	3"	679	3R300	13.39	6.14	0.787	4.63	5.59	3R300	13.39	6.14	0.787	4.63	5.59
	4"	1218	3R500	15.35	6.81	1.181	5.22	5.98	3R700	16.89	7.36	1.181	5.22	6.38

Actuators are sized based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

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.

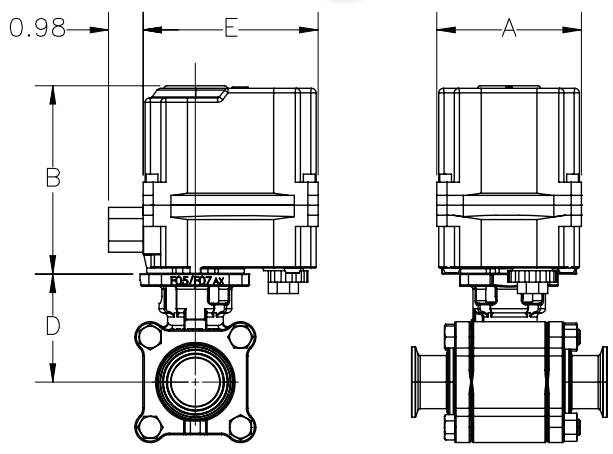




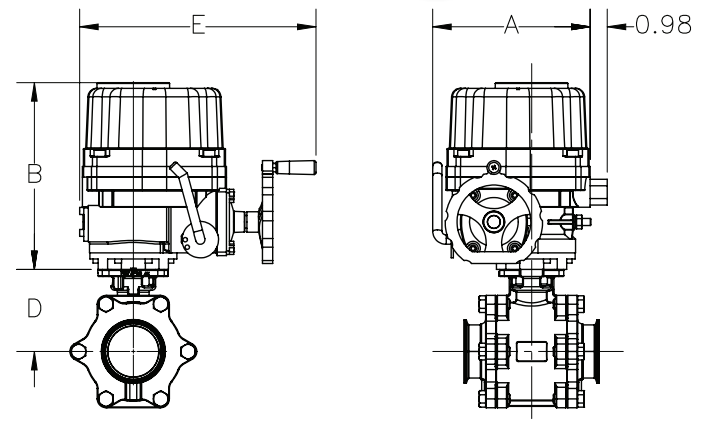
WE-500
CSA Approved,
Type 4 & 4X,
IP67



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"	37	WE-500	4.09	5.33	1.58	4.95	WEM-500	4.09	5.33	1.58	8.49
	3/4"	54	WE-500	4.09	5.33	1.89	4.95	WEM-500	4.09	5.33	1.89	8.49
	1"	90	WE-500	4.09	5.33	2.23	4.95	WEM-500	4.09	5.33	2.23	8.49
	1-1/2"	177	WE-500	4.09	5.33	3.05	4.95	WEM-500	4.09	5.33	3.05	8.49
	2"	296	WE-690	6.69	9.25	3.35	10.16	WEM-690	6.69	9.25	3.35	13.17
	2-1/2"	612	WE-1350	9.02	10.55	4.28	13.31	WEM-1350	9.02	10.55	4.28	13.31
	3"	679	WE-1350	9.02	10.55	4.63	13.31	WEM-1350	9.02	10.55	4.63	13.31
	4"	1218	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"	37	S2-052DA	5.75	2.83	0.787	1.58	3.07	S2-052DA	5.75	2.83	0.787	1.58	3.07
	3/4"	54	S2-052DA	5.75	2.83	0.787	1.89	3.07	S2-052DA	5.75	2.83	0.787	1.89	3.07
	1"	90	S2-052DA	5.75	2.83	0.787	2.23	3.07	S2-052DA	5.75	2.83	0.787	2.23	3.07
	1-1/2"	177	S2-063DA	6.81	3.46	0.787	3.05	3.58	S2-063DA	6.81	3.46	0.787	3.05	3.58
	2"	296	S2-063DA	6.81	3.46	0.787	3.35	3.58	S2-083DA	8.03	4.25	0.787	3.35	4.42
	2-1/2"	612	S2-083DA	8.03	4.25	0.787	4.28	3.58	S2-105DA	10.63	5.24	0.787	4.28	5.31
	3"	679	S2-105DA	10.63	5.24	0.787	4.63	5.31	S2-105DA	10.63	5.24	0.787	4.63	5.31
	4"	1218	S2-105DA	10.63	5.24	0.787	5.22	5.31	S2-125DA	11.89	6.10	1.180	5.22	6.12

Actuators are sized based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

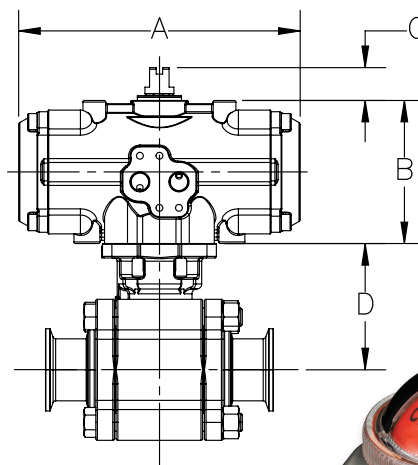
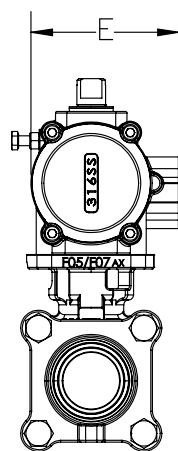
H78 Series Stainless Steel Spring Return	Valve Size	Torque (in*lbs)	80 PSIG	A	B	C	D	E	60 PSIG	A	B	C	D	E
	1/2"	37	S2-052SR	5.75	2.83	0.787	1.58	3.07	S2-052SR4	5.75	2.83	0.787	1.58	3.07
	3/4"	54	S2-052SR	5.75	2.83	0.787	1.89	3.07	S2-052SR4	5.75	2.83	0.787	1.89	3.07
	1"	90	S2-063SR	6.81	3.46	0.787	2.23	3.58	S2-063SR4	6.81	3.46	0.787	2.23	3.58
	1-1/2"	177	S2-083SR	8.03	4.25	0.787	3.05	3.58	S2-083SR4	8.03	4.25	0.787	3.05	3.58
	2"	296	S2-105SR	10.63	5.24	0.787	3.35	5.31	S2-105SR4	10.63	5.24	0.787	3.35	5.31
	2-1/2"	612	S2-125SR	11.89	6.10	1.180	4.28	6.12	S2-125SR4	11.89	6.10	1.180	4.28	6.12
	3"	679	S2-125SR	11.89	6.10	1.180	4.63	6.12	S2-125SR4	11.89	6.10	1.180	4.63	6.12
	4"	1218	S2-140SR	15.51	6.77	1.180	5.22	6.75	S2-140SR4	15.51	6.77	1.180	5.22	6.75

Actuators are sized based on full differential pressure with clean water. Consult the Application Sizing Guide for assistance with sizing actuators.

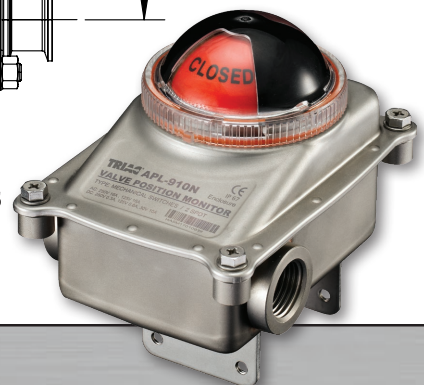
60 psi Spring Return assemblies will have 4 springs (indicated by 4 at the end of the size/model number). 80 psi will have the standard 5 springs per side, no designation required.



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



3R 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

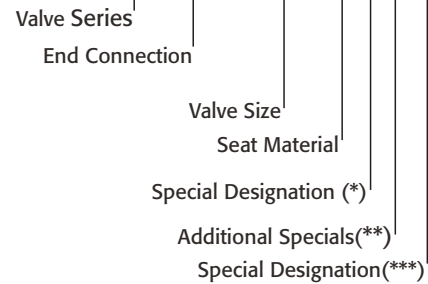
A-T High Purity Ball Valves

Manual HIGH PURITY Ball Valve Part Number Matrix

How to Order Options A-T High Purity Manual Ball Valves			
Valve Series	HP H78	3pc. Forged High Purity 3pc. Cast High Purity Encapsulated Bolts	
Body Material	Blank 2 3	F316L (Low S Low F) SF1 Standard F316L (Low S Low F) SF4 Electropolished Forged CF3M (Low S Low F) SF4 Electropolished Cast	
Ends	SA DA DS	Sanitary Clamp Ends Tube O.D. Ends Sanitary Clamp x Tube O.D. Ends	
Size	0050 0075 0100 0150	1/2" 3/4" 1" 1-1/2"	0200 0250 0300 0400
			2" 2-1/2" 3" 4"
Seat	T A	TFM™-1600 Seats (other options available) 50% SS Powder/ 50% TFM™-1600 Seats (STFM)	
*	X L G H 4	Standard Handle Lockable Handle (HP valves only) Gear Operator Gear Operator with Lockout Plate 4" Lockable Stem Extension	
**	X O V	No Specials, Series Standard Oxygen Cleaned Vented Ball	
***	X S	No Specials, Series Standard Anti-Static Option	

HOW TO ORDER MANUAL VALVES

SAMPLE PART #
HP-SA-0050-TXX-X



See How to Order Options table for available options

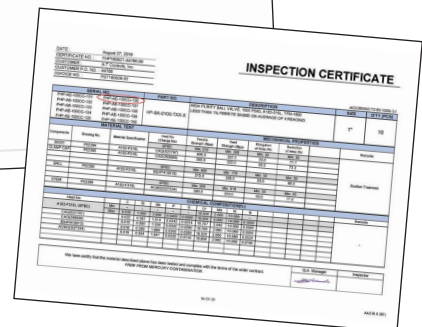
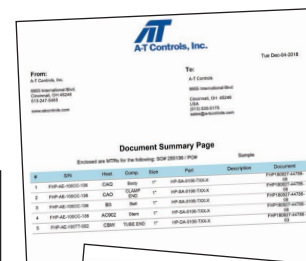
TFM™ is a trademark of Dyneon™, a 3M Company.

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	3pc. Forged High Purity
H78	3pc. Cast High Purity, Encapsulated Bolts

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

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

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

5 Seat, Lining & Trim Materials	
1	Valve Series Standard (TFM™-1600)
A	50% SS Powder/ 50% TFM™-1600 (STFM)

other options available

Actuators

7 (A) Pneumatic Actuator - 3R, 3N, 3P Series			
3RC	3R10	3RM	3R850
3RD	3R20	3RN	3R1000
3RE	3R40	3RP	3R1200
3RF	3R80	3RR	3R1750
3RG	3R130	3RS	3R2400
3RH	3R200	3RT	3R2500
3RJ	3R300	3RU	3R2700
3RK	3R500	3RV	3R3300
3RL	3R700	3RW	3R3500

3R=Standard, 3N=Electroless Nickel Plating,
3P=Teflon™ (PTFE) Coating

7 (A) Pneumatic Actuator - S2 Series			
S2C	S2-052	S2G	S2-125
S2D	S2-063	S2H	S2-140
S2E	S2-083	S2J	S2-160
S2F	S2-105	S2K	S2-210

7 (B) Pneumatic Action	
D	Double Acting (DA)
S	Spring CW (5 springs)*
O	Spring CCW (5 springs)*
4	Spring CW (4 springs)**
F	Spring CCW (4 springs)**
6	Spring CW (6 springs)
H	Spring CCW (6 springs)

*2500 & 3500 80 psig spring
**2500 & 3500 60 psig spring

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 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

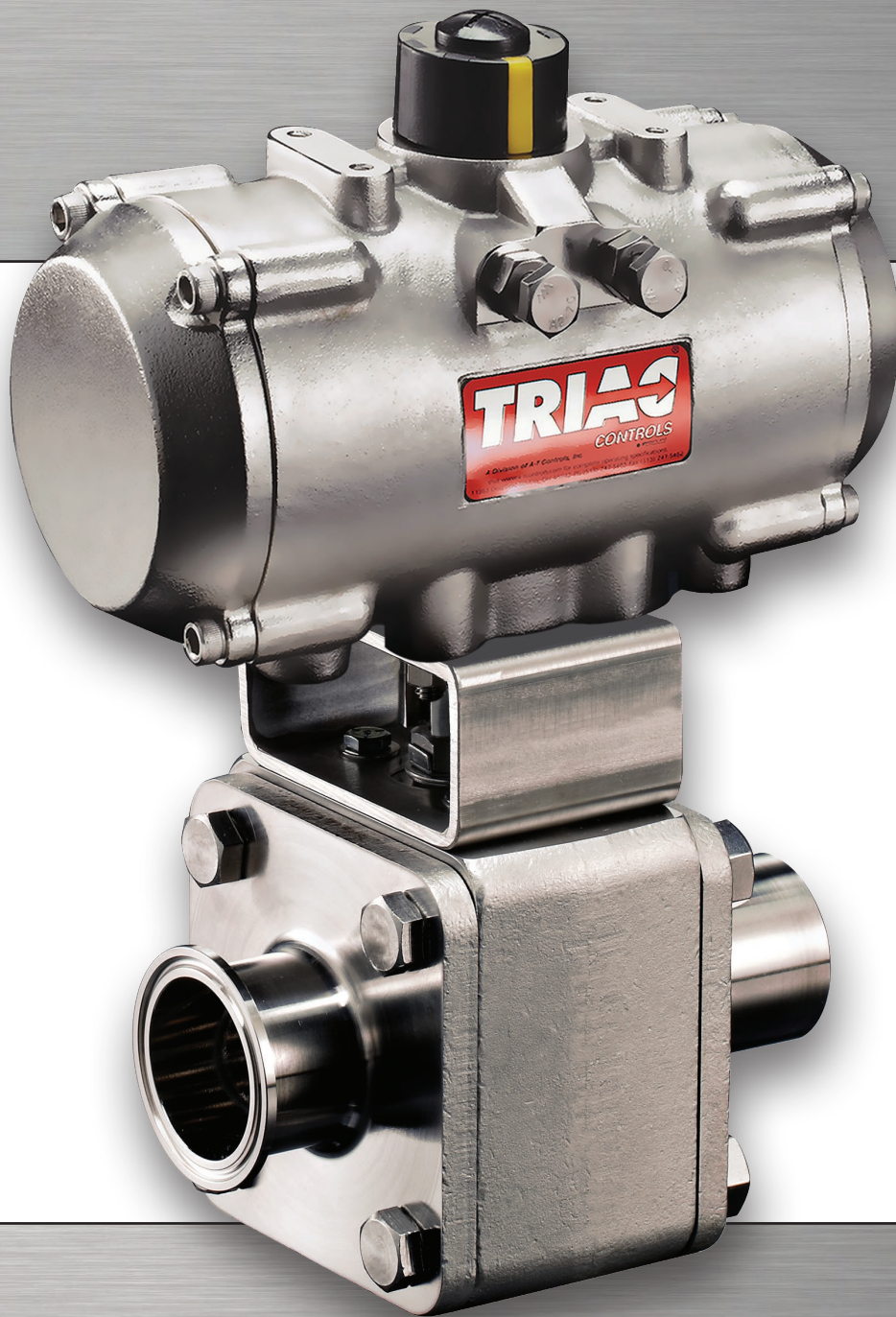
Additional Options

8 Accessories/Options	Model No.
X	No Specials
A	TYPE 4 Solenoid 120VAC TVCS-X411-4N-A120
B	TYPE 7 Solenoid 120VAC TVC6-X411-7N-A120
C	Intrinsically Safe Solenoid TVIS-X411-4N-D24
D	TYPE 4 Solenoid 24VDC TVCS-X411-4N-D24
F	TYPE 7 Solenoid 24VDC TVC6-X411-7N-D24
Q	TYPE 4 SST Solenoid 120VAC TVSS-X411-4N-A120
M	TYPE 7 SST Solenoid 120 VAC TVSS-X411-7N-A120
L	TYPE 4 SST Solenoid 24VDC TVSS-X411-4N-D24
N	TYPE 7 SST Solenoid 24VDC TVSS-X411-7N-D24
P	Pneumatic Positioner PPR-1200
E	Electro-Pneumatic Positioner EPR-1000
R	24VDC Electric Actuator
S	220VAC Electric Actuator
T	Other Voltage Electric Actuator
W	12VDC Electric Actuator
Y	24VAC Electric Actuator
Blank	*No voltage specified on electric assemblies denotes 120VAC

9 Accessories	Model No.
X	No Specials
A	TYPE 4 Limit Switch APL-210N
B	TYPE 7 Limit Switch APL-510N
C	Intrinsically Safe Limit Switch APL-218N
Q	TYPE 4 SST Limit Switch APL-910N
M	TYPE 7 SST Limit Switch APL-510S
H	NEMA 4 Std. Enc. APL-310N
Z	180° Operation
1	HS1 High Speed Electric
2	HS2 High Speed Electric

10 Special Valve Designation	
Blank	No Designation, SST Stem
F	Viton® Seal for Pneumatic Actuators (0°F to 300°F)
S	Anti-Static Design

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



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