

AVCO

Alloy Valves and Control

BALL VALVES 7100 SERIES

INSTRUMENTS • CONTROLS • VALVES

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ARCO

Engineering, Inc.

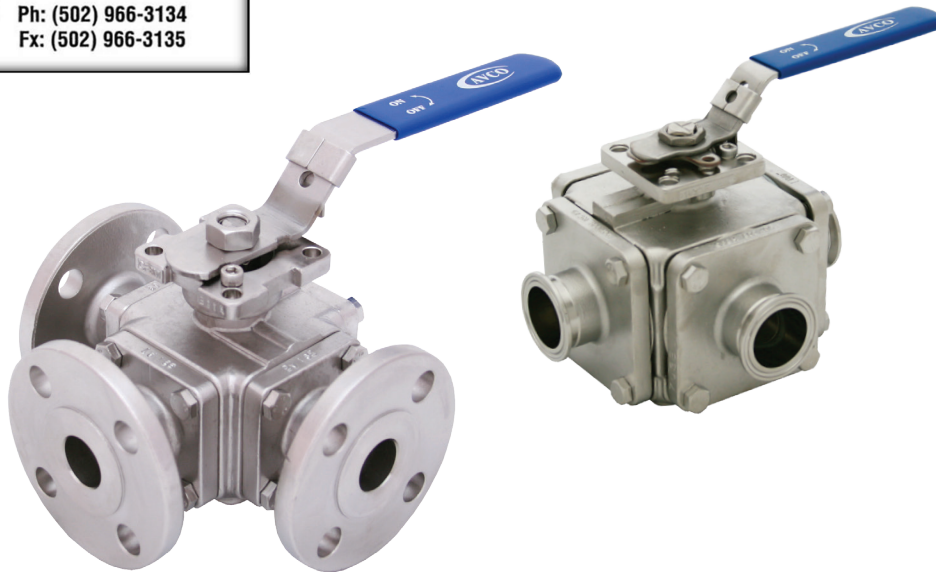
SINCE 1954

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Louisville, KY 40213

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Fx: (502) 966-3135



Size

1/2" - 4" (Full Port)
1000 WOG
Class 150

End Connections

Tube OD
Extended Tube OD
Clamp
Flanged (150#)

Valve Materials

316 Stainless Steel
Carbon Steel

Ball and Stem Materials

316 Stainless Steel

Seat Materials

Teflon (PTFE)
15% Glass Filled Teflon
TFM
TFM Cavity Filled

Applicable Standards

ASME B16.34
ASME B16.5
API 598

Service Applications

Biotech
Chemical
Clean Steam
Detergents
Dry/Liquid Chlorine
Food Processing
Gas and Air Delivery
High Purity Gases
High Purity Waters/Oils
Oxygen
Pharmaceutical
Steam
Thermal Fluids
Vacuum
Water/Oil/Gas
Waxes

Alloy Valves and Control**About the 7100 Series Ball Valve**

The AVCO 7100 series ball valve is a 3-way or 4-way side entry diverter ball valve for the sanitary or industrial markets. It is available with 150# flanged, clamp or extended butt weld tube OD ends. The ball can be oriented in the valve to provide for mixing or diverting media in a variety of configurations with 'I', 'L', 'T' and 'X' port options. The valves are delivered with balls configured to meet your required flow patterns. Cavity filled seats are available as an option to prevent media build up within the valve. Sizes 1/2" through 4" are available in 316 stainless steel with an ISO 5211 direct mounting pad that will accommodate most actuators without the need for a mounting kit. The extended butt weld tube ends are designed for easy automated orbital welding. Valves are designed to meet ASME B16.34 where appropriate and the flanged ends meet ASME B16.5. The valves are tested per API 598 for greater peace of mind. This valve offers great flexibility for mixing or diverting flow and has the potential to reduce the need for multiple valves.

Design

- The valve body has cast sections (body and end caps).
- The cast sections are bolted together and fully conform to ASME B16.34.
- Body bolts are encapsulated to minimize corrosion in hazardous or harsh locations.
- Valves are available as class 150 per ASME B16.34 for flanged valves or 1000 WOG for clamp and tube style valves.
- Flange ends conform to ASME B16.5.
- The ball is full port.
- The valve is designed for minimal pressure drop across the valve.
- The valve body has a direct mounting pad conforming to ISO 5211.
- Optional cavity filled seats available.
- 'I', 'L', 'T' and 'X' ports to meet most flow patterns.
- The stem has blow-out prevention and anti-static design.
- The stem assembly enables online adjustment of the packing.
- The valves are tested to API 598 and ASME B16.34.
- Valve sizes available are 1/2" thru 4".

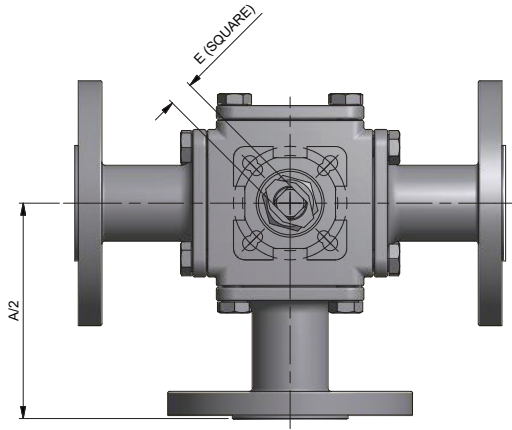
Operation

The following operators can be utilized on the valve:

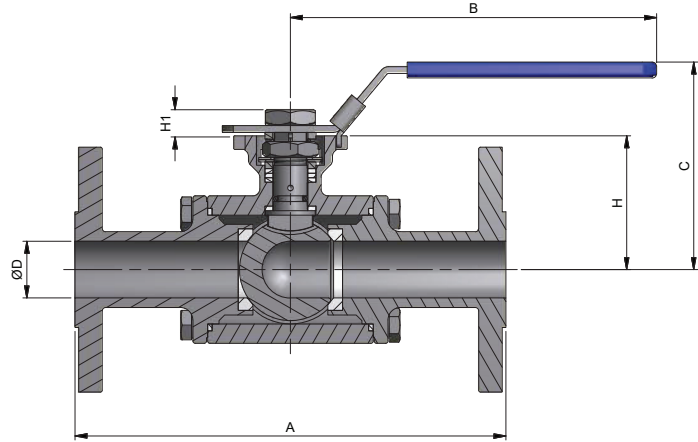
- Manual lever handles
- Chain wheel operator.
- Worm Gear operator.
- Pneumatic actuator.
- Hydraulic actuator.
- Electric motor actuator.

Alloy Valves and Control

1/2" THRU 2" 150# FLANGED

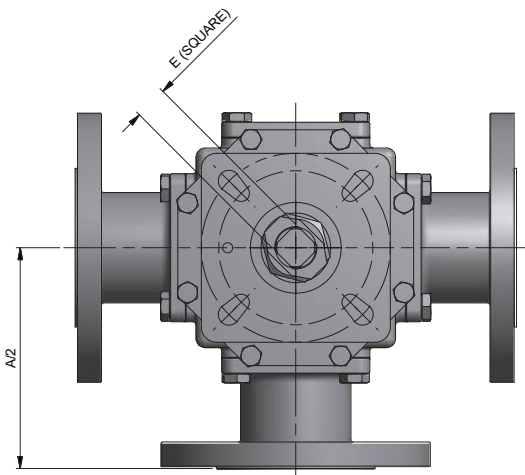


Plan View with Handle Removed

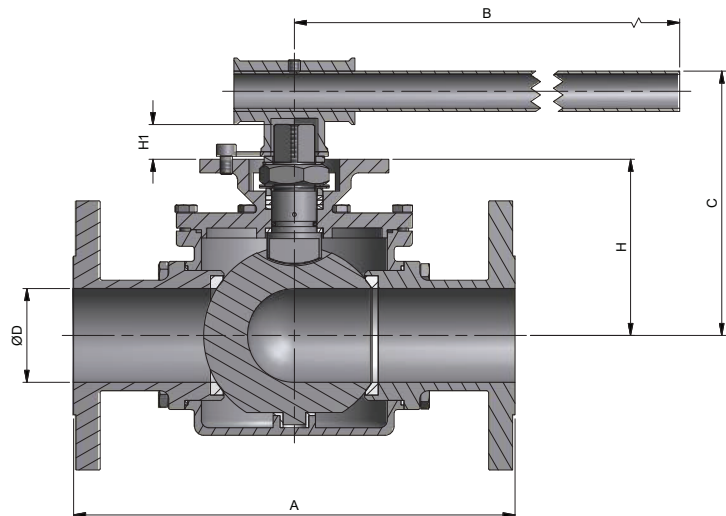


SIZE	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	H (in.)	H1 (in.)	ISO 5211	Torque (in.lbs)	Weight (lbs)
1/2"	5.98	4.72	2.76	0.59	0.354	1.87	0.354	F03/F04	80	6.5
3/4"	6.57	6.30	3.23	0.79	0.433	2.09	0.433	F04/F05	125	8.8
1"	7.48	6.30	3.39	0.98	0.433	2.38	0.433	F04/F05	142	11.8
1 1/2"	8.66	7.28	4.33	1.50	0.551	3.05	0.551	F05/F07	285	23.7
2"	10.00	9.84	5.24	1.89	0.669	3.58	0.669	F07/F10	530	38.6

2 1/2" THRU 4" 150# FLANGED



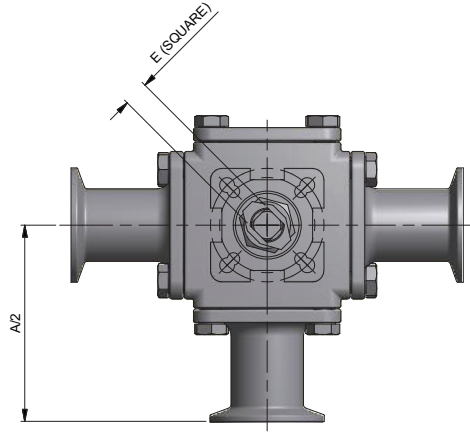
Plan View with Handle Removed



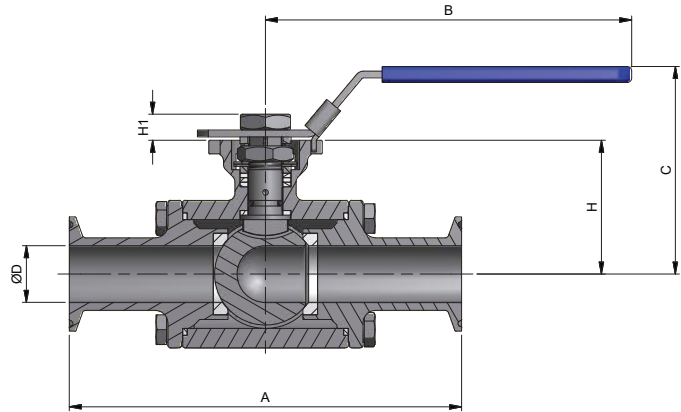
SIZE	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	H (in.)	H1 (in.)	ISO 5211	Torque (in.lbs)	Weight (lbs)
2 1/2"	11.50	19.69	7.87	2.44	0.866	5.31	0.906	F10/F12	815	69.1
3"	12.00	19.69	8.50	2.99	0.866	5.79	0.906	F10/F12	1075	90.6
4"	14.53	25.60	9.06	3.86	0.866	6.50	0.906	F10/F12	1595	143.7

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1/2" THRU 2" CLAMP ENDS

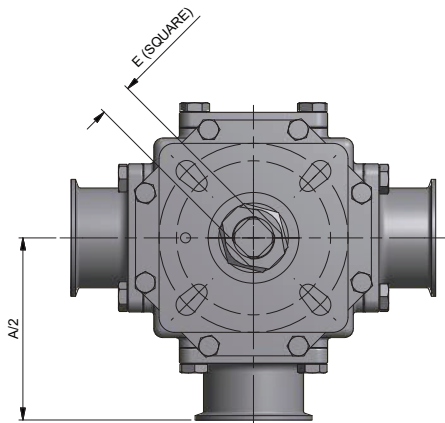


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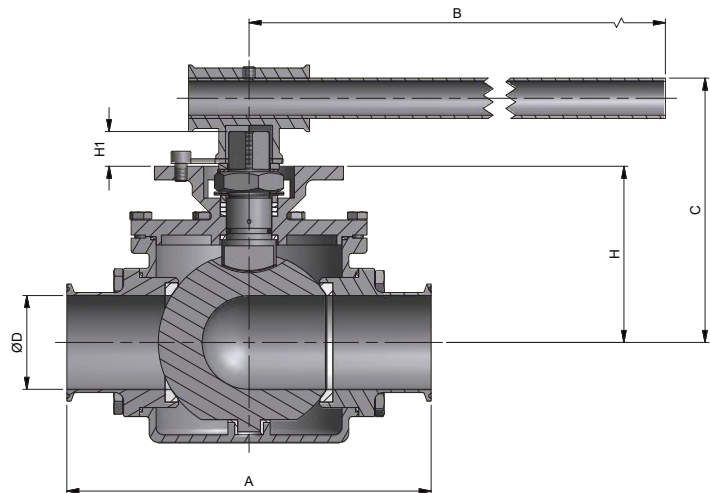


SIZE	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	H (in.)	H1 (in.)	ISO 5211	Torque (in.lbs)	Weight (lbs)
1/2"	5.20	5.12	2.95	0.38	0.354	1.87	0.354	F03/F04	80	4.7
3/4"	5.60	5.12	3.07	0.62	0.433	2.09	0.433	F04/F05	125	6.4
1"	6.30	6.30	3.27	0.87	0.433	2.64	0.433	F04/F05	142	8.1
1 1/2"	7.20	8.27	3.86	1.37	0.551	3.05	0.551	F05/F07	285	13.8
2"	8.50	9.84	4.72	1.88	0.669	3.58	0.669	F07/F10	530	25.2

2 1/2" THRU 4" CLAMP ENDS



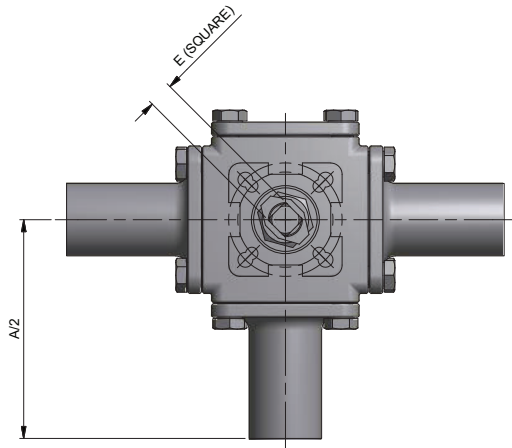
Plan View with Handle Removed



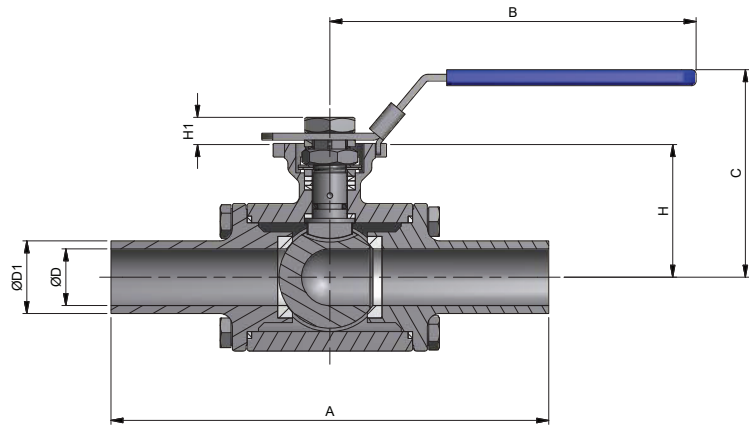
SIZE	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	H (in.)	H1 (in.)	ISO 5211	Torque (in.lbs)	Weight (lbs)
2 1/2"	9.49	13.78	5.71	2.37	0.866	5.31	0.906	F10/12	815	51.0
3"	10.98	17.72	6.38	2.87	0.866	5.79	0.906	F10/12	1075	70.9
4"	12.99	23.62	7.17	3.83	0.866	6.50	0.906	F10/12	1595	82.1

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1/2" THRU 2" EXTENDED TUBE OD ENDS



Plan View with Handle Removed



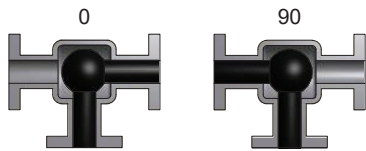
SIZE	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	H (in.)	H1 (in.)	ISO 5211	Torque (in.lbs)	Weight (lbs)
1/2"	5.12	5.12	2.95	0.38	0.354	1.87	0.354	F03/F04	80	4.7
3/4"	5.51	5.12	3.07	0.62	0.433	2.09	0.433	F04/F05	125	6.4
1"	6.30	6.30	3.27	0.87	0.433	2.64	0.433	F04/F05	142	8.1
1 1/2"	7.09	8.27	3.86	1.37	0.551	3.05	0.551	F05/F07	285	13.8
2"	8.27	9.84	4.72	1.88	0.669	3.58	0.669	F07/F10	530	25.2

Alloy Valves and Control

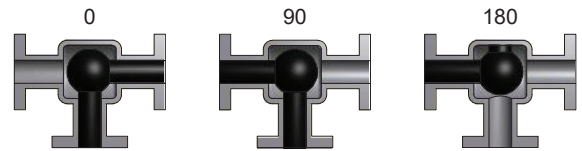
Flow Plans

A variety of Flow Plans are available as shown below. Each Flow Plan is shown as viewed from the top of the valve with clockwise rotation based upon manual operation. '0' denotes the starting position of the sequence for clockwise rotation.

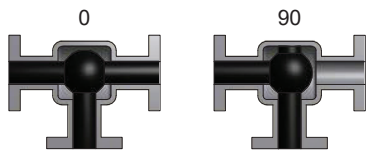
*****IMPORTANT***** The Flow Plan sequences will be reversed with '90' being the starting position for most pneumatic and electric actuators. Contact AVCO if actuated clockwise rotation as shown below is required.



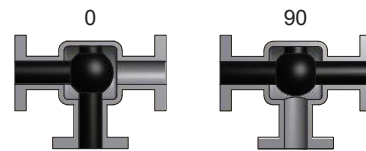
FLOW PLAN 1
3 Way L-Port - 90°



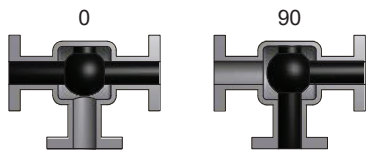
FLOW PLAN 2
3 Way L-Port - 180°



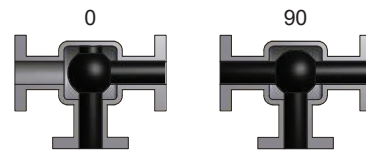
FLOW PLAN 3
3 Way T-Port - 90°



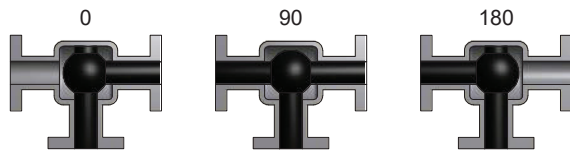
FLOW PLAN 4
3 Way T-Port - 90°



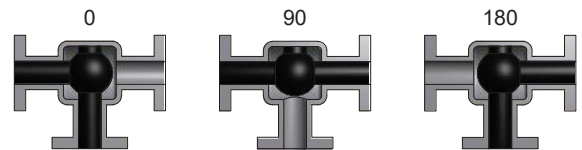
FLOW PLAN 5
3 Way T-Port - 90°



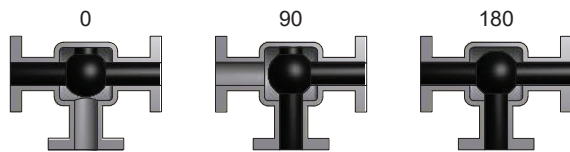
FLOW PLAN 6
3 Way T-Port - 90°



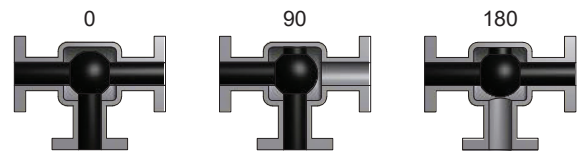
FLOW PLAN 7
3 Way T-Port - 180°



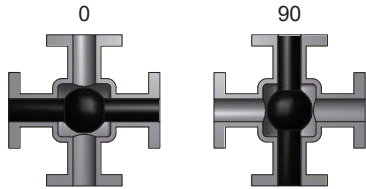
FLOW PLAN 8
3 Way T-Port - 180°



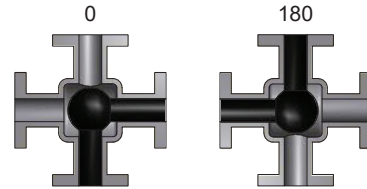
FLOW PLAN 9
3 Way T-Port - 180°



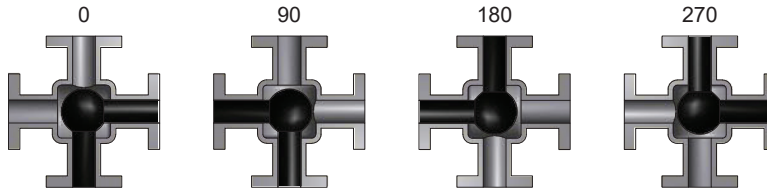
FLOW PLAN 10
3 Way T-Port - 180°



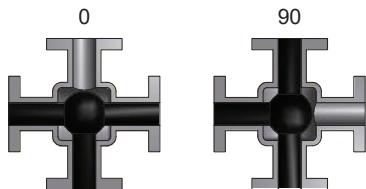
FLOW PLAN 11
4 Way I-Port - 90°



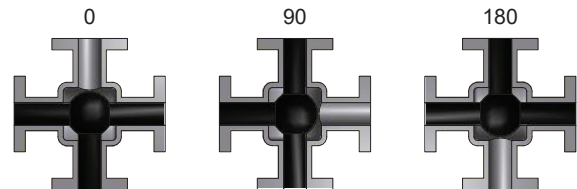
FLOW PLAN 12
4 Way L-Port - 180°



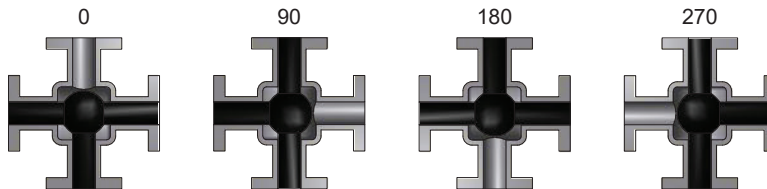
FLOW PLAN 13
4 Way L-Port - 360°



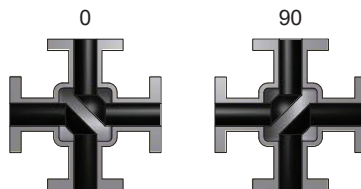
FLOW PLAN 14
4 Way T-Port - 90°



FLOW PLAN 15
4 Way T-Port - 180°

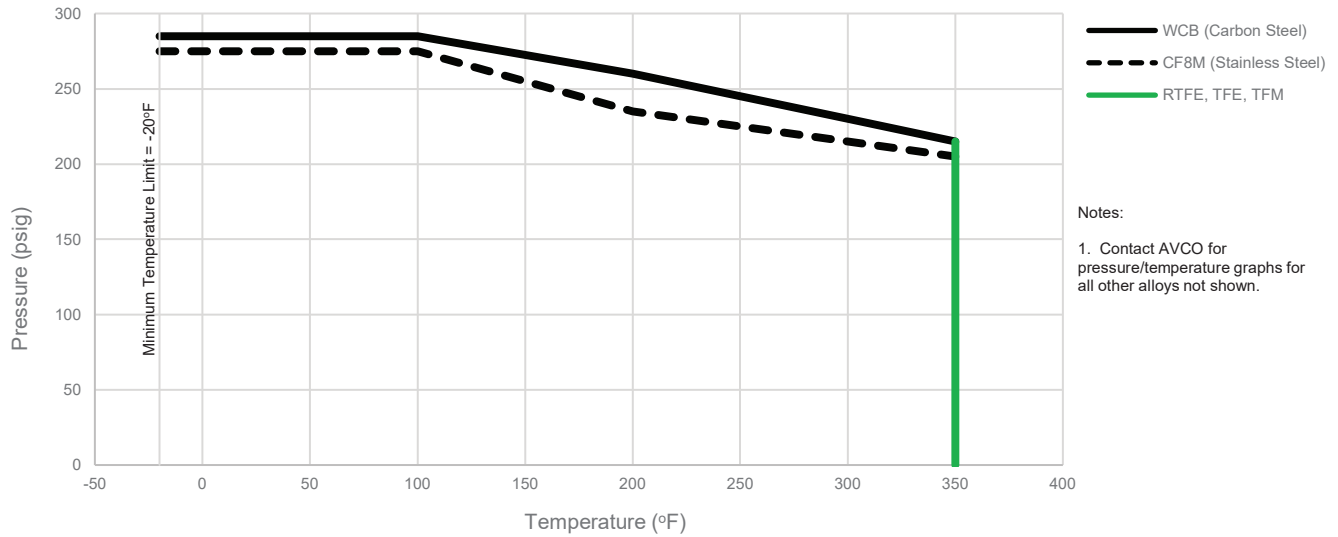


FLOW PLAN 16
4 Way T-Port - 360°

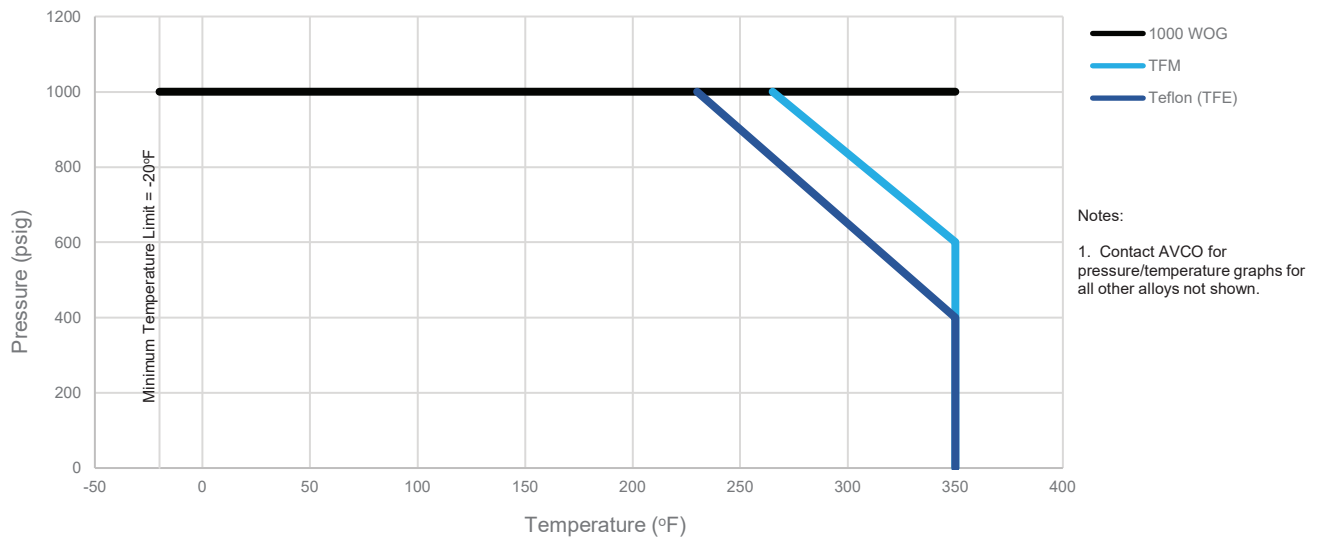


FLOW PLAN 17
4 Way X-Port - 90°

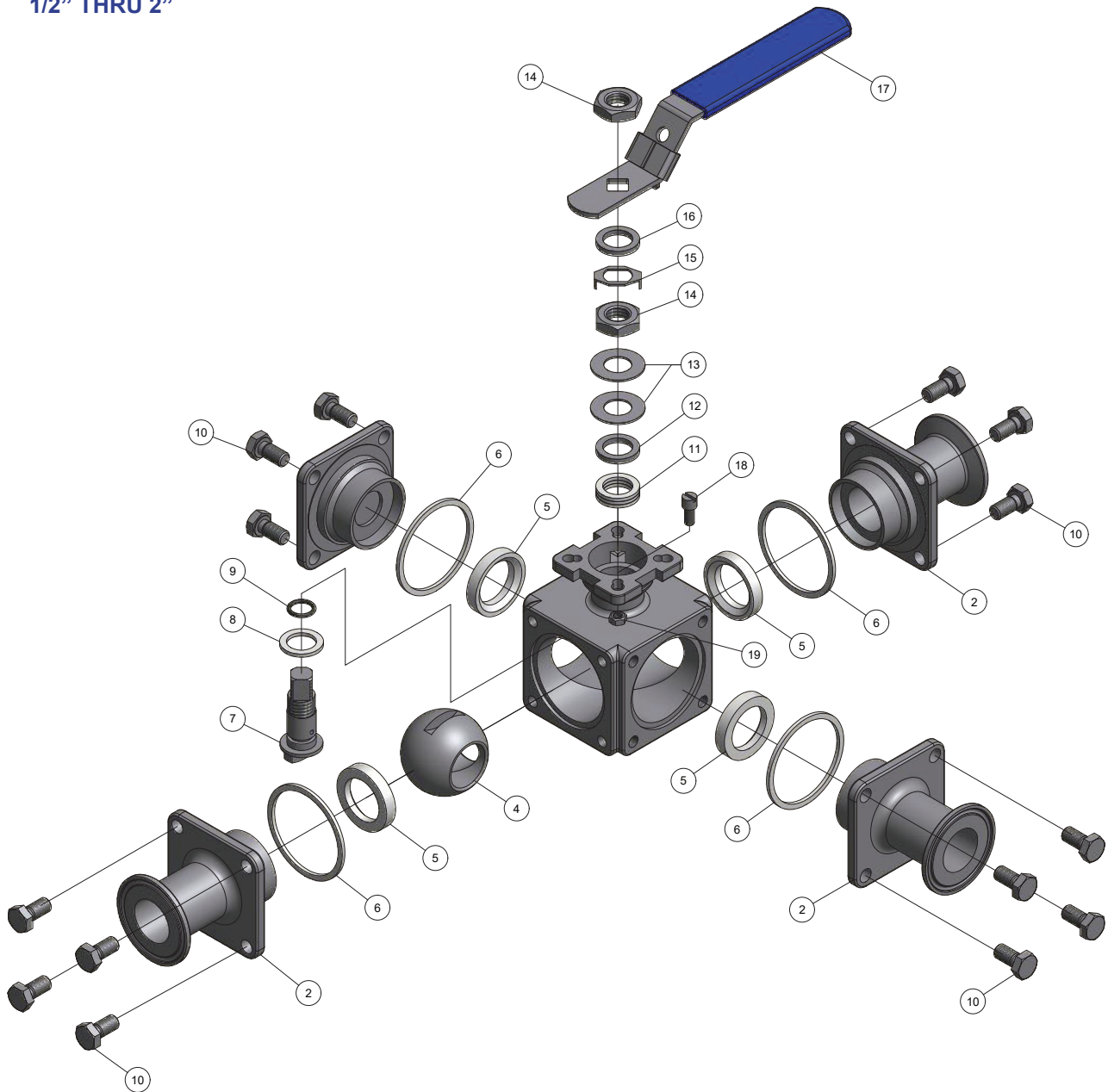
Pressure/Temperature Rating Graph for 150# Flanged Valves



Pressure/Temperature Rating Graph for 1000 WOG (Clamp, ETO, etc.) Valves



1/2" THRU 2"

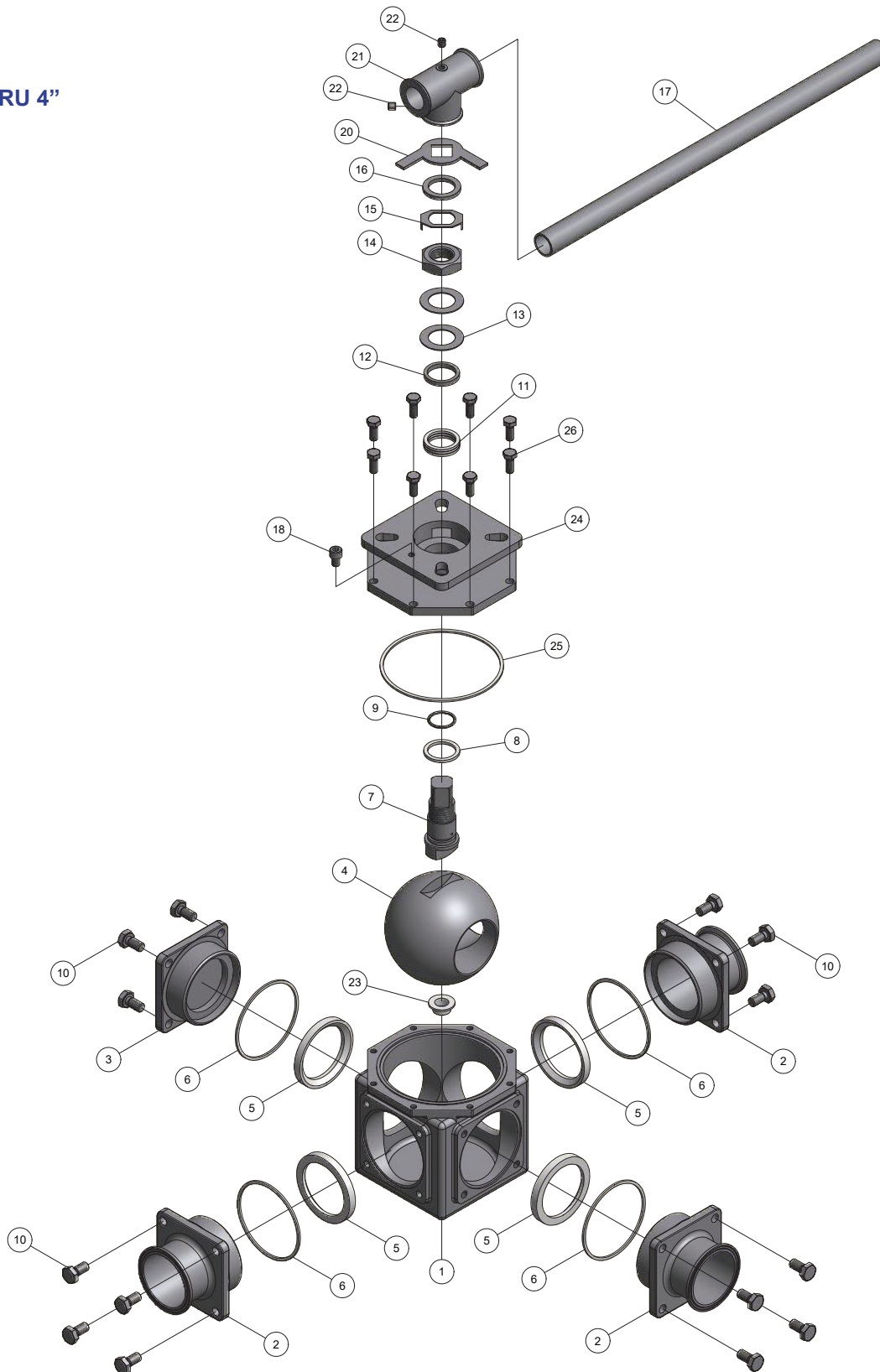


AVCO

Alloy Valves and Control

BALL VALVES 7100 SERIES

2 1/2" THRU 4"



Item	Description	Included in Valve Assembly		Typical Materials	
		1/2" thru 2"	2 1/2" thru 4"	Stainless Steel	Carbon Steel
1	Body	Yes	Yes	ASTM A351 CF8M	ASTM A216 WCB
2	End Cap	Yes	Yes	ASTM A351 CF8M	ASTM A216 WCB
3	Blank End Cap*	Yes	Yes	ASTM A351 CF8M	ASTM A216 WCB
4	Ball	Yes	Yes	ASTM A182 F316	ASTM A182 F304
5	Seat	Yes	Yes	RTFE, TFE, TFM	RTFE, TFE, TFM
6	Body Seal	Yes	Yes	PTFE	PTFE
7	Stem	Yes	Yes	ASTM A276 316	ASTM A276 304
8	Thrust Washer	Yes	Yes	PTFE	PTFE
9	O-Ring	Yes	Yes	Viton	Viton
10	Body Bolt	Yes	Yes	ASTM A193-B8	ASTM A193-B7
11	Packing	Yes	Yes	PTFE	PTFE
12	Gland Ring	Yes	Yes	ASTM A276 304	ASTM A276 304
13	Belleville Washer	Yes	Yes	ASTM A276 304	ASTM A276 304
14	Stem Nut	Yes	Yes	Stainless Steel	Stainless Steel
15	Lock Washer	Yes	Yes	ASTM A276 304	ASTM A276 304
16	Spacer	Yes	Yes	ASTM A276 304	ASTM A276 304
17	Handle	Yes	Yes	Stainless Steel	Stainless Steel
18	Stop Pin	Yes	Yes	ASTM A276 304	ASTM A276 304
19	Stop Pin Nut	Yes	No	Stainless Steel	Stainless Steel
20	Stop Pad	No	Yes	ASTM A276 304	ASTM A276 304
21	Handle Adaptor	No	Yes	Stainless Steel	Stainless Steel
22	Grub Screw	No	Yes	Stainless Steel	Stainless Steel
23	Ball Bushing	No	Yes	PTFE	PTFE
24	Bonnet	No	Yes	ASTM A351 CF8M	ASTM A216 WCB
25	Bonnet Seal	No	Yes	PTFE	PTFE
26	Bonnet Bolt	No	Yes	ASTM A193-B8	ASTM A193-B7

* The blank end cap (item 3) is not included in 4 way valve assemblies.

Maintenance & Repair

The AVCO 7100 series ball valve is a very reliable and robust design, but as with all resilient seated valves, the 'soft' parts are subject to wear over time. Replacing a whole valve is an unnecessarily high cost and as such, the 7100 series is fully repairable. Repair and maintenance kits are usually available for same day shipping and are easy to install when following the IOM manual.

AVCO is committed to ensuring repair and maintenance kits are available for your valves for many years service.

Alloy Valves and Control

Electric Actuator

120 VAC
12/24 VDC
NEMA 4/7
Positioners 4-20 mA
Reversing
Telemetry
Battery Back-up
Spring Return

Pneumatic Actuator

Double Acting
Spring Return
Solenoid Valves
Limit Switches
Positioners 3-15 psi
Positioners 4-20 mA
Digital 'Intelligent' Positioner
Dec clutchable Manual Override

Manual Valves

Lever Handle
Oval Handle
Spring Return
Fusible Link
Locking Device
Gear Operators

HOW TO ORDER

71	3	3	R	T	150	100
Series	Body & End Material	Ball & Stem Material	Seat Material	Seal Material	End Style	Size
7100 Series 3 Way or 4 Way Direct Mount Ball Valve	1 - Carbon Steel 3 - 316 SS	3 - 316 SS	R - 15% Glass PTFE T - Teflon (PTFE) E - TFM	T - Teflon (PTFE)	150 - 150# Flange ETO - Extended Tube OD TR - Clamp	050 - 1/2" 075 - 3/4" 100 - 1" 150 - 1 1/2" 200 - 2" 250 - 2 1/2" 300 - 3" 400 - 4"
Variations of the above or special ends can be supplied upon request						

3L90	DM	LH
Ball Configuration	Direct Mount	Options
3L90 - 3 Way 90° L-Port (Flow Plan 1)	DM - Direct Mount	None - Bare Stem
3L180 - 3 Way 180° L-Port (Flow Plan 2)		CF - Cavity Filled
3T90 - 3 Way 90° T-Port (Flow Plans 3, 4, 5 & 6)		LH - Locking Lever Handle
3T180 - 3 Way 180° T-Port (Flow Plans 7, 8, 9 & 10)		
4I90 - 4 Way 90° I-Port (Flow Plan 11)		
4L180 - 4 Way 180° L-Port (Flow Plan 12)		
4L360 - 4 Way 360° L-Port (Flow Plan 13)		
4T90 - 4 Way 90° T-Port (Flow Plan 14)		
4T180 - 4 Way 180° T-Port (Flow Plan 15)		
4T360 - 4 Way 360° T-Port (Flow Plan 16)		
4X90 - 4 Way 90° X-Port (Flow Plan 17)		

Example ordering codes:

7133RT-150-100-3L90-DM-LH = 1" ball valve with stainless steel body/ball, RTFE seats, PTFE seals, 150# flanged ends, 3 way 90° L-port & locking lever handle
7133TT-TR-100-4T90-DM-CF = 1" ball valve with stainless steel body/ball, Cavity Filled PTFE seats, PTFE seals, clamp ends, 4 way 90° T-port and bare stem