

# TBV Inc.

a PCC Flow Technologies company

Exploded Drawing



Dimensional Drawing

Valve

Mounting Configurations

Seat and Torque Ratings

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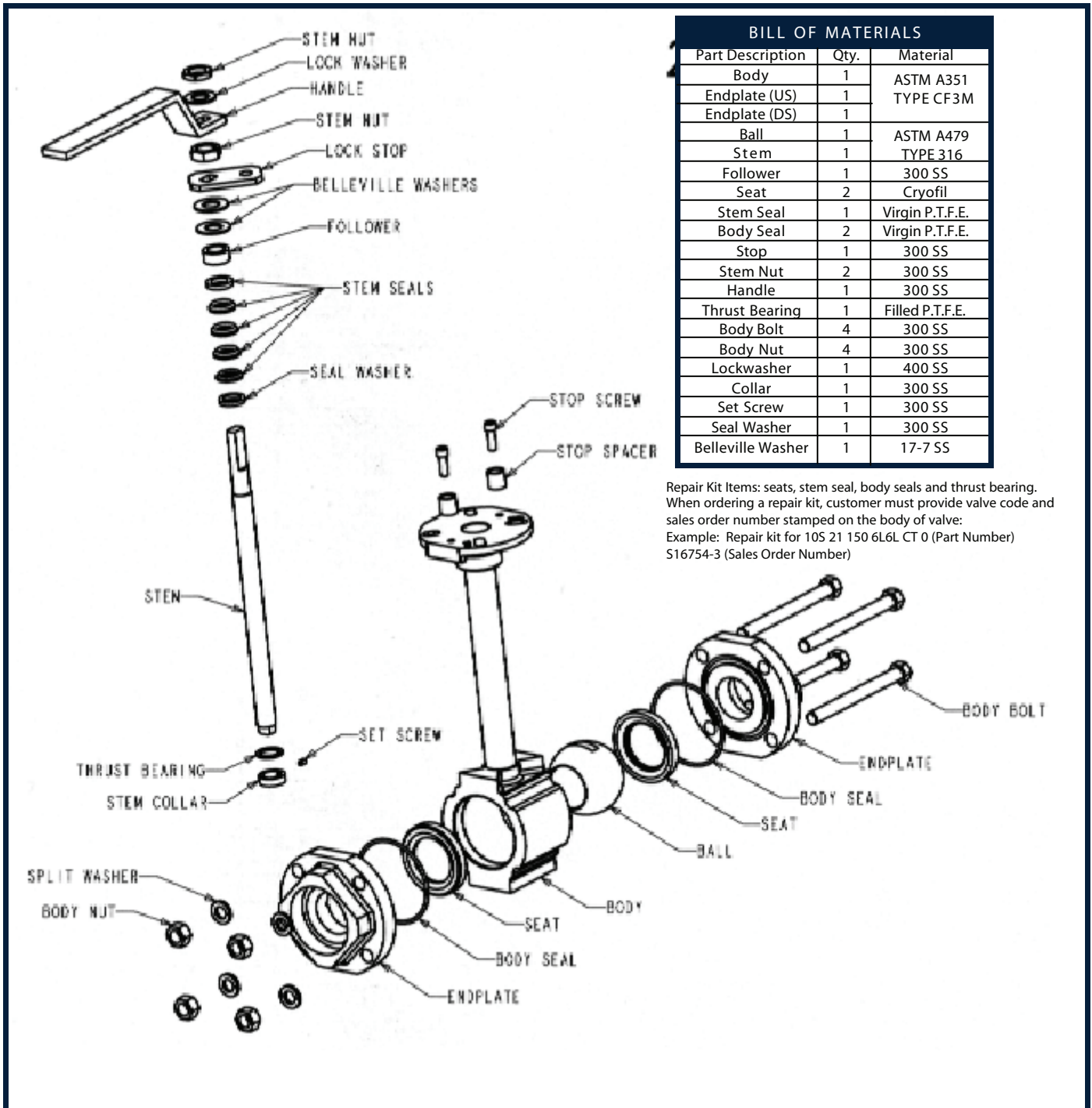
- ❖ 1/2" THROUGH 8" SIZES
- ❖ LOW OPERATING TORQUE TO -452°F
- ❖ VARIOUS END CONNECTIONS AVAILABLE
- ❖ EXCLUSIVE CRYOFIL SEATS
- ❖ ACTUATOR MOUNTING CAPABILITY STANDARD
- ❖ PADLOCKING DEVICE STANDARD
- ❖ OXYGEN CLEANING STANDARD

The **TBV 2100 Series** Cryogenic Valve is designed and engineered by a staff that is experienced in cryogenic applications. It utilizes a 3 piece body design which features raised face endplates for positive component alignment, and totally encapsulated body seals to prevent cold flow of PTFE. The upstream endplate is slotted to allow for positive ball cavity venting into the upstream piping, eliminating the need to drill the ball.

The **2100** has a pressure rating of 1500 psi and offers low torque operation down to -452°F, a result of our exclusively designed Cryofil seats. The leakproof integrity of the valve is further enhanced by a welded bonnet design and Chevron V-Ring packing, which can be adjusted by a simple turn of the stem nut.

**TBV INC. SERIES 2100**

# EXPLODED DRAWING



## BILL OF MATERIALS

Part Description	Qty.	Material
Body	1	ASTM A351
Endplate (US)	1	TYPE CF3M
Endplate (DS)	1	
Ball	1	ASTM A479
Stem	1	TYPE 316
Follower	1	300 SS
Seat	2	Cryofil
Stem Seal	1	Virgin P.T.F.E.
Body Seal	2	Virgin P.T.F.E.
Stop	1	300 SS
Stem Nut	2	300 SS
Handle	1	300 SS
Thrust Bearing	1	Filled P.T.F.E.
Body Bolt	4	300 SS
Body Nut	4	300 SS
Lockwasher	1	400 SS
Collar	1	300 SS
Set Screw	1	300 SS
Seal Washer	1	300 SS
Belleville Washer	1	17-7 SS

Repair Kit Items: seats, stem seal, body seals and thrust bearing.  
 When ordering a repair kit, customer must provide valve code and sales order number stamped on the body of valve:  
 Example: Repair kit for 10S 21 150 6L6L CT 0 (Part Number) S16754-3 (Sales Order Number)

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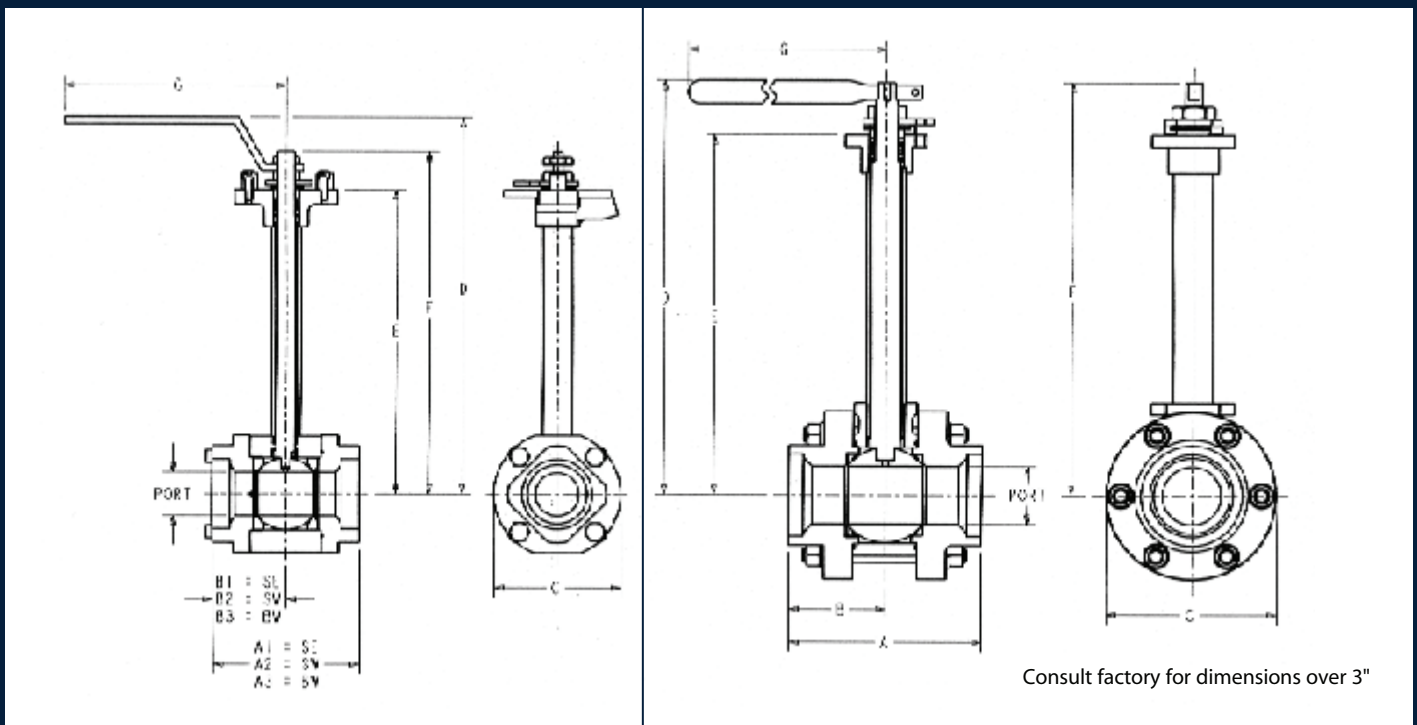
# DIMENSIONAL INFORMATION

## 2100 MAJOR DIMENSIONS

SIZE	PORT	A <sup>1</sup>	A <sup>2</sup>	A <sup>3</sup>	B <sup>1</sup>	B <sup>2</sup>	B <sup>3</sup>	C	D	E	F	G
1/2"	.50	3.14	3.06	3.06	1.57	1.53	1.53	2.50	9.98	7.98	8.92	5.50
3/4"	.50	3.14	3.06	3.06	1.57	1.53	1.53	2.50	9.98	7.98	8.92	5.50
1"	.81	3.75	3.69	3.67	1.87	1.84	1.83	3.25	10.33	8.19	9.35	5.50
1.5"	1.25	4.76	4.70	4.70	2.38	2.35	2.35	4.12	12.72	10.28	11.60	7.55
2"	1.50	5.06	5.00	5.00	2.53	2.50	2.50	4.36	12.91	10.47	11.79	7.55
3"	2.50	8.25	8.25	8.25	4.13	4.13	4.13	7.25	17.84	15.50	17.76	18.50

1/2" - 2" DRAWING

3" DRAWING



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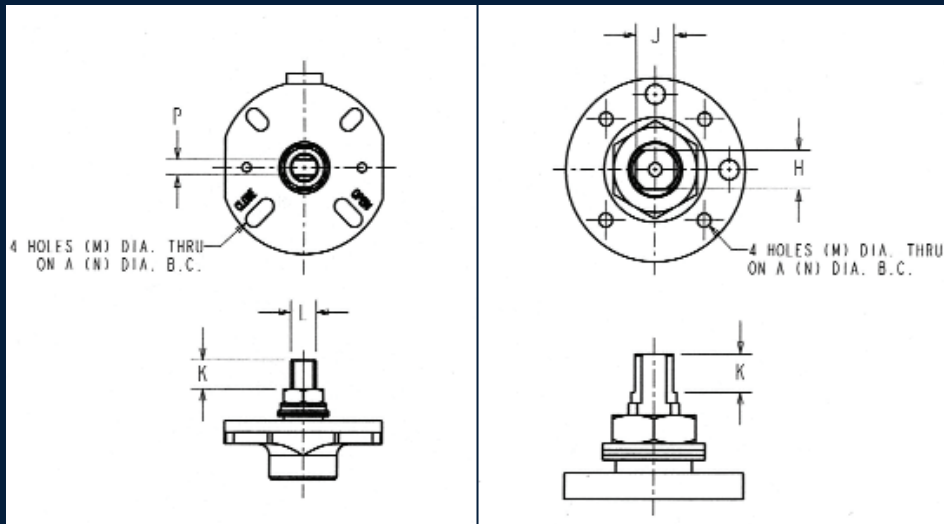
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# MOUNTING CONFIGURATIONS

## MOUNTING CONFIGURATIONS

1/2" - 2"

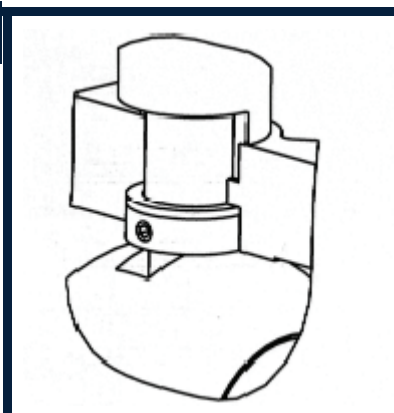
3"



SIZE	H	J	K	L	M	N	P
1/2"	-	-	0.38	3/8-24	0.34	3.18	0.23
3/4"	-	-	0.38	3/8-24	0.34	3.18	0.23
1"	-	-	0.5	7/16-20	0.34	3.18	0.296
1.5"	-	-	0.63	9/16-18	0.34	3.18	0.34
2"	-	-	0.63	9/16-18	0.34	3.18	0.34
3"	0.745	0.745	0.75	-	3/8-19	4.02	-

### ONE-PIECE STEM

TBV utilizes a one-piece stem which engages the ball and is secured in the valve cavity with a large threaded stem collar that is set screwed for safety.



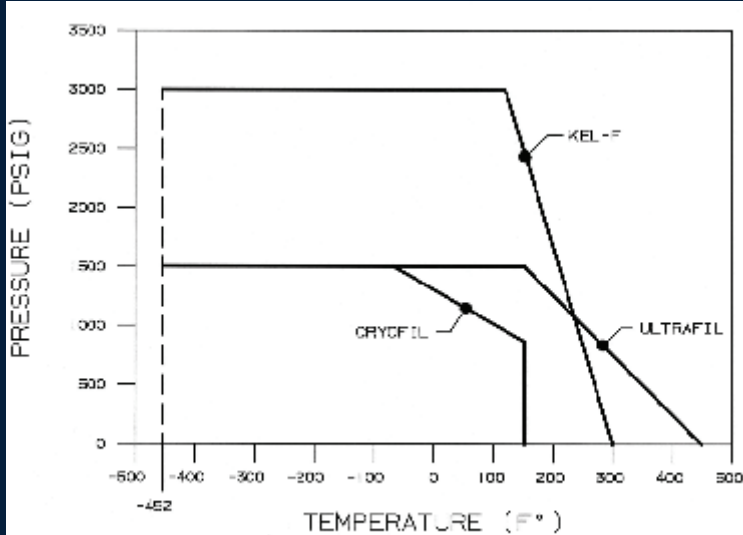
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# SEAT RATINGS & TORQUES

## SEAT RATING CHART



Extended pressures and temperatures may be achieved by altering design for specific applications. Consult factory with service conditions. The valve rating is the lesser of the body rating and the seat rating. TBV manufactures an extensive line of high pressure valves capable of the full seat ratings shown. Consult factory for details.

## SEAT MATERIAL IDENTIFICATION CODE

C - Cryofil      white  
 K - CTFE        translucent  
 U - Ultrafil     black

## CV VALUES AND MAXIMUM TORQUES

SIZE	CV	SEAT C	SEAT K	SEAT U
1/2"	8	100	120	50
3/4"	12	125	150	70
1"	33	250	300	120
1 1/2"	85	375	450	350
2"	133	610	732	600
3"	370	1350	1620	1900

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## NOTES FOR TORQUE INFORMATION

- ❖ Stem torque values are listed in inch pounds.
- ❖ All torque values are based on maximum rated pressure, clean service, and frequent operation (more than once per month).
- ❖ The recommended safety margin for sizing purposes is a minimum of 25%.
- ❖ For valves with torques above 1440 inch lbs., gear operator or actuation should be considered.
- ❖ Lower working pressures will reduce stem operating torque. Consult factory for further assistance.
- ❖ Cv values are based on the flow of water at 60°F and 14.7 psig through the valve in U.S. gallons per minute at a pressure drop of 1 psi.

# DESIGN SPECS AND FEATURES & BENEFITS

FEATURES	BENEFITS
Raised face end plates	Positive alignment, elimination of radial pipe stresses.
Totally encapsulated body seals	Elimination of cold flow. High performance over wide temperature and pressure range.
Variety of seating materials	Wide range of process media and service conditions.
Flexible lip seat design	Low operating torque.
Integral actuator mounting pad	Ease of automation (optional).
Live loaded stem	Pressure and temperature recovery, stem seal integrity with a low operating torque.
Blow out proof stem	Operator safety.
Heavy duty handle and stop	Ease of operation, long life.
Fully traceable materials	Certification of all pressure retaining parts available for stringent specification requirements.
3 ring chevron standard stem seals	Stem seal integrity.
Investment cast Cryofil Seats	High quality casting. Specially designed to provide leakproof operation to -452°F.
Welded bonnet construction	No leak paths or exposed gaskets.
Stainless steel externals	Atmospheric corrosion resistance.
No lubrication used	No possible contamination.

## DESIGN SPECIFICATIONS AVAILABLE

ANSI B1.20.1	NPT pipe threads
ANSI B16.11	Socket weld ends (diameter & depth)
ANSI B16.25	Butt weld ends
ANSI B16.34	Steel valves (performance & design)
ANSI B31.3	Process piping (application)
MSS SP25	Valve marking
MSS SP61	Pressure testing
API 607 Rev. 4	Fire test for soft seated valves

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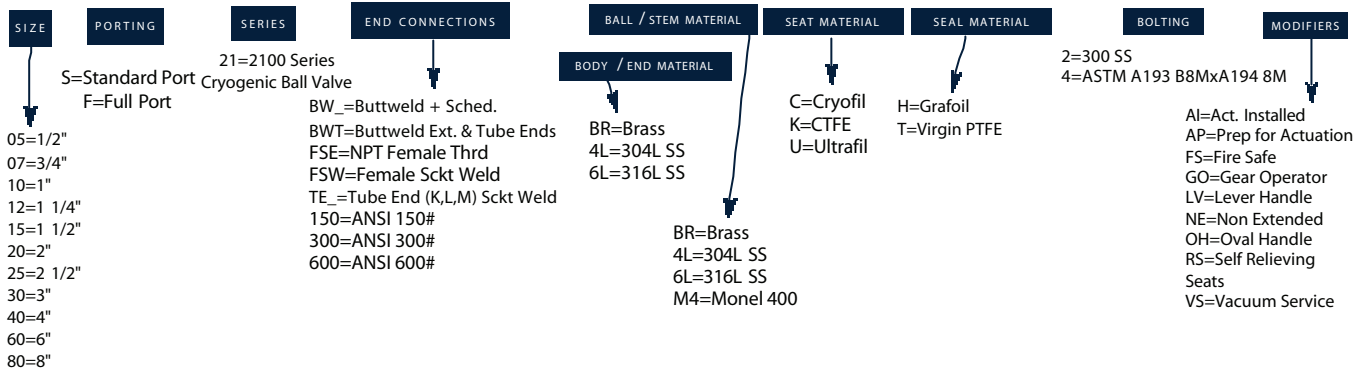
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# HOW TO ORDER

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If ball and stem are different materials, expand code to show ball first, stem second.  
For additional ordering information, see the TBV General Brochure, Corrosion Resistant and Cryogenic Valves.

EXAMPLE: 05S 21 FSW 6L36 CT 2

1/2" Cryogenic socket weld 300 series, 316L body and end plates, 316 ball and stem, with Cryofil seats and PTFE body seals with stainless steel bolting.

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CERTIFICATIONS





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