

TBV™ Series 2100 Cryogenic Ball Valve



TBV™

SERIES 2100 CRYOGENIC BALL VALVE



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 that features raised face endplates for positive component alignment and totally encapsulated body seals to prevent cold flow of PTFE.

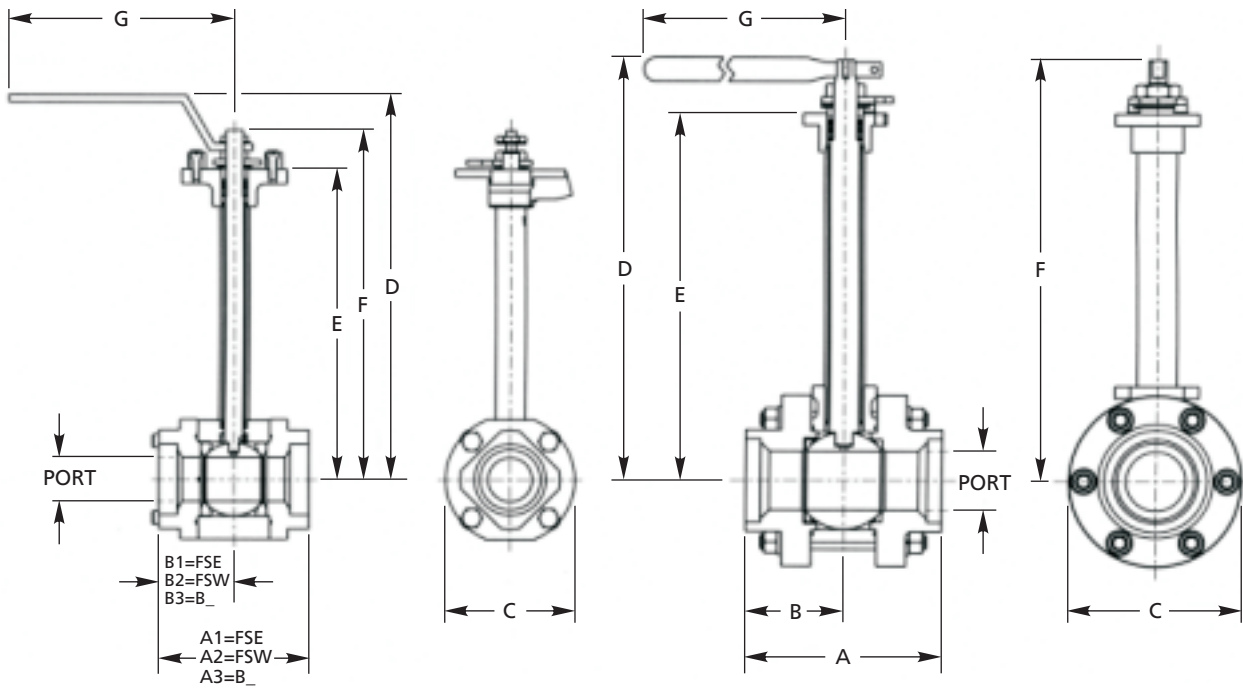
Positive cavity venting into the upstream piping is accomplished by a slotted endplate or a relief hole in the ball.

The **TBV 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 leak-proof 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.

- 1/2 inch THROUGH 6 inch SIZES
- LOW OPERATING TORQUE TO -452°F
- VARIOUS END CONNECTIONS AVAILABLE
- EXCLUSIVE CRYOFIL SEATS
- ACTUATOR MOUNTING CAPABILITY STANDARD
- PADLOCKING DEVICE STANDARD
- OXYGEN CLEANING STANDARD

SERIES 2100 CRYOGENIC BALL VALVE

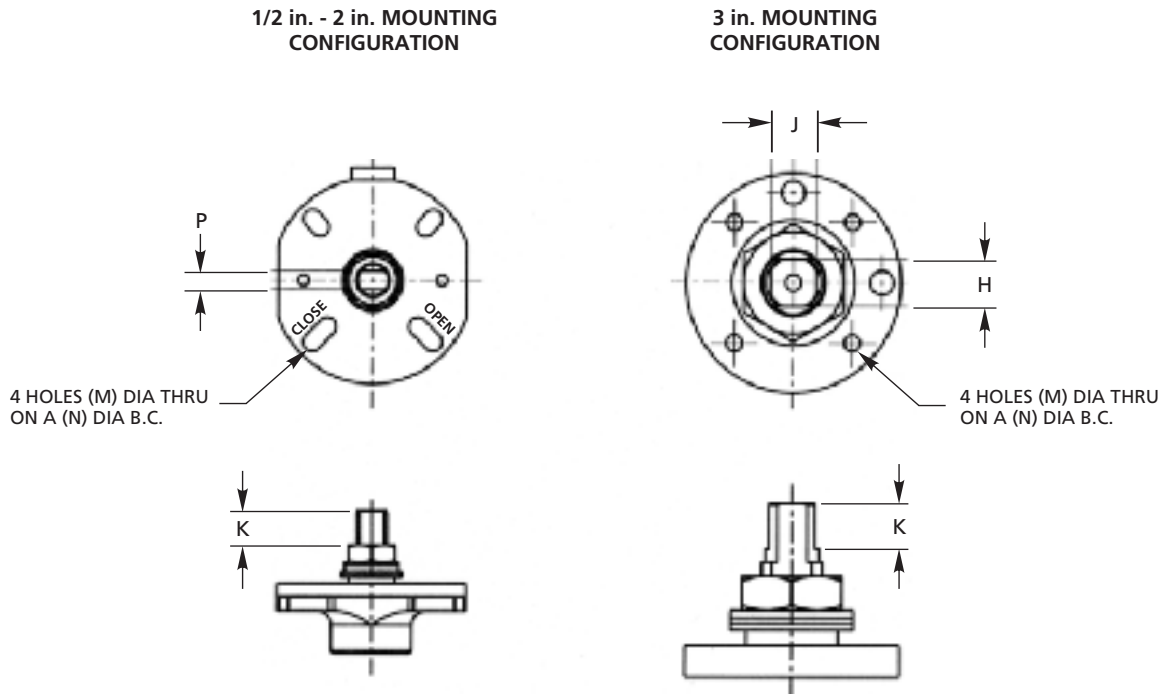


MAJOR DIMENSIONS

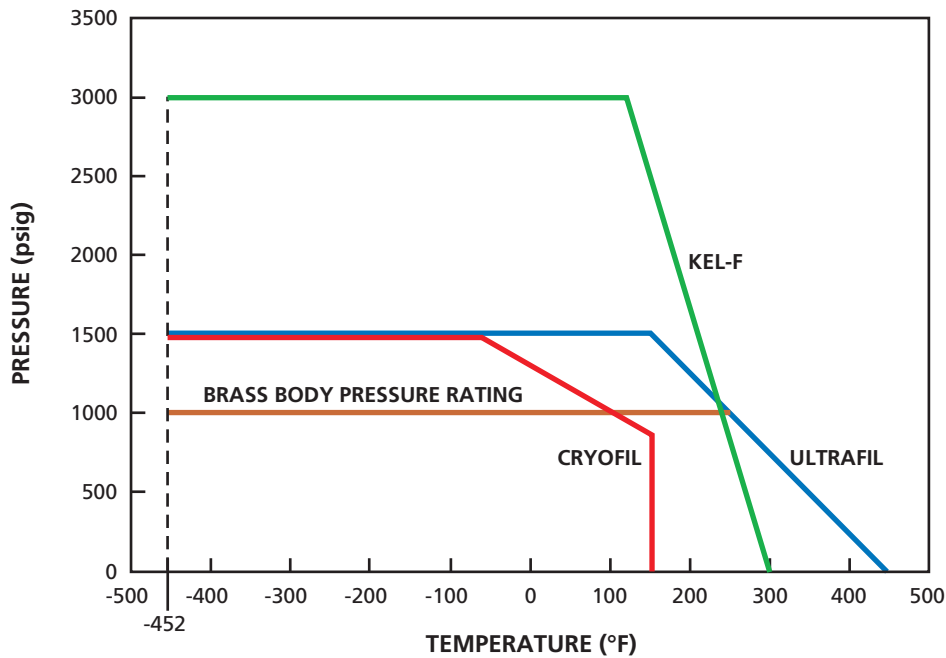
VALVE SIZE in.	PORT	A1	A2	A3	B1	B2	B3	C	D
1/2	0.50	3.14	3.06	3.06	1.57	1.53	1.53	2.50	9.98
3/4	0.50	3.14	3.06	3.06	1.57	1.53	1.53	2.50	9.98
1	0.81	3.75	3.69	3.67	1.87	1.84	1.83	3.25	10.33
1 1/2	1.25	4.76	4.70	4.70	2.38	2.35	2.35	4.12	12.72
2	1.50	5.06	5.00	5.00	2.53	2.50	2.50	4.36	12.91
3	2.50	8.25	8.25	8.25	4.13	4.13	4.13	7.25	17.84

VALVE SIZE in.	E	F	G	H	J	K	L	M	N	P
1/2	7.98	8.92	5.50	-	-	0.38	3/8-24	0.34	3.18	0.230
3/4	7.98	8.92	5.50	-	-	0.38	3/8-24	0.34	3.18	0.230
1	8.19	9.35	5.50	-	-	0.50	7/16-20	0.34	3.18	0.296
1 1/2	10.28	11.60	7.55	-	-	0.63	9/16-18	0.34	3.18	0.340
2	10.47	11.79	7.55	-	-	0.63	9/16-18	0.34	3.18	0.340
3	15.50	17.76	18.50	0.745	0.745	0.75	-	3/8-19	4.02	-

SERIES 2100 CRYOGENIC BALL VALVE



SEAT RATING CHART

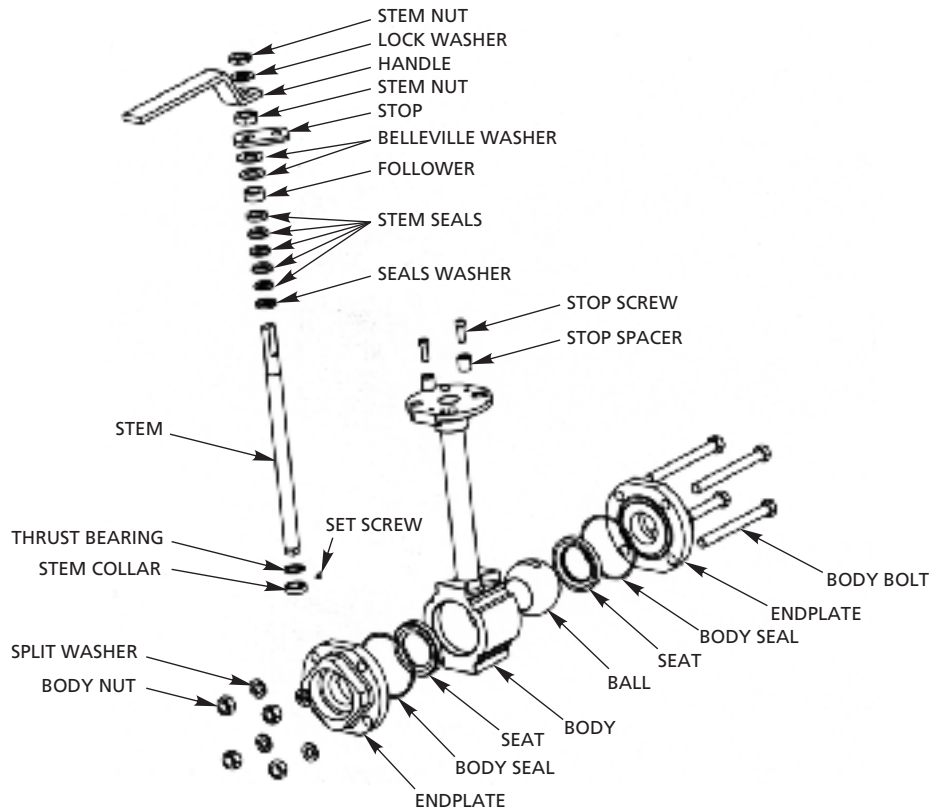


Extended pressures and temperatures may be achieved by altering design for specific applications. Consult factory with service conditions.

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.

SERIES 2100 CRYOGENIC BALL VALVE



BILL OF MATERIALS

PART	QTY.	MATERIAL
Body	1	ASTM A351 Type CF3M
Endplate (US)	2	ASTM A351 Type CF3M
Ball	1	ASTM A479 Type 316
Stem	1	ASTM A479 Type 316
Follower	1	300 Stainless Steel
* Seat	2	Cryofil
* Stem Seal	1	Virgin PTFE
* Body Seal	2	Virgin PTFE
Stop	1	300 Stainless Steel
Stem Nut	2	300 Stainless Steel
Handle	1	300 Stainless Steel
* Thrust Bearing	1	Filled PTFE
Body Bolt	4	300 Stainless Steel
Body Nut	4	300 Stainless Steel
Lock Washer	1	400 Stainless Steel
Collar	1	300 Stainless Steel
Set Screw	1	300 Stainless Steel
Seal Washer	1	300 Stainless Steel
Belleville Washer	1	17-7 Stainless Steel

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.



SEAT MATERIAL IDENTIFICATION CODE

C	Cryofil	White
K	CTFE	Translucent
U	Ultrafil	Black

* **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** on the body of valve:

Example: Repair kit for 105 21 150 6L 36 CT 0 (Part Number) 516754-3 (Sales Order Number).

SERIES 2100 CRYOGENIC BALL VALVE ENGINEERING DATA

FEATURES

BENEFITS

Raised face endplates	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.
Blowout 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	High quality casting.
Cryofil Seats	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.

NOTES FOR TORQUE INFORMATION

- 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.
- C_v 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.

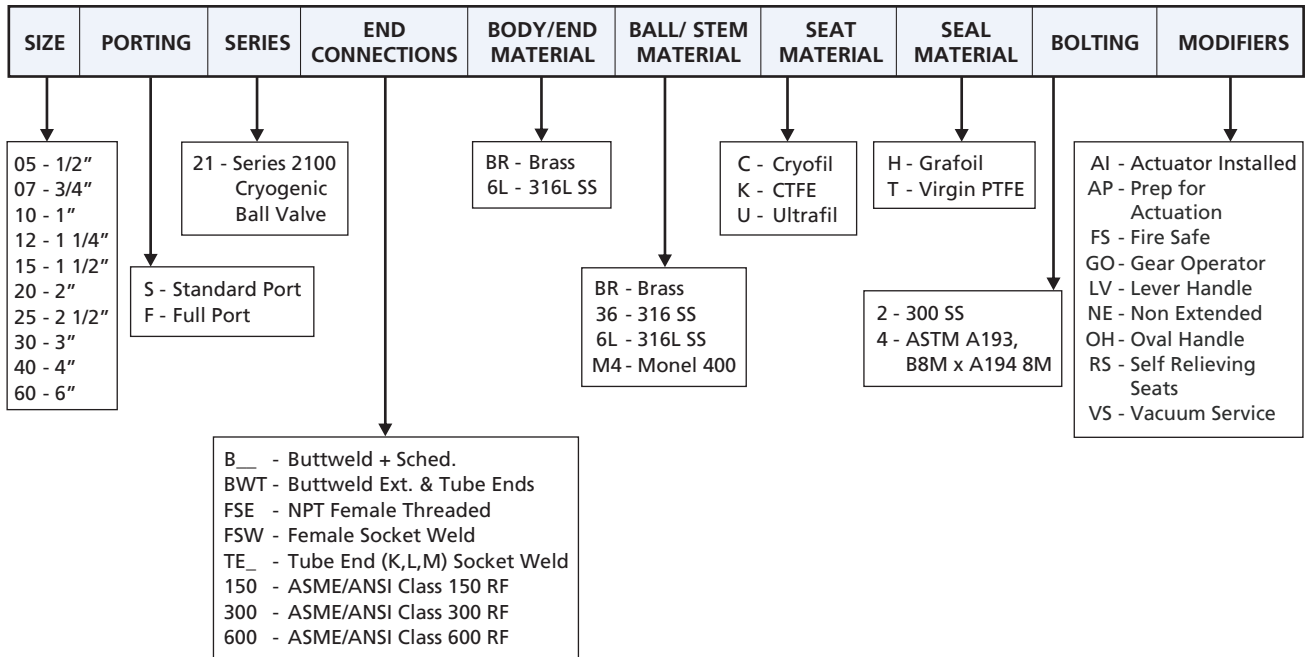
C_v VALUES AND MAXIMUM TORQUE (in. - lbs.)

SIZE	C_v	SEAT C	SEAT K	SEAT U
1/2"	12	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

DESIGN SPECIFICATIONS AVAILABLE

ASME B1.20.1	NPT Pipe Threads
ASME B16.11	Socket Weld Ends (diameter & depth)
ASME B16.25	Butt Weld Ends
ASME B16.34	Steel Valves (performance & design)
ASME B31.3	Process Piping (application)
MSS SP25	Valve Marking
MSS SP61	Pressure Testing
API 607 4th Edition	Fire Test for Soft Seated Valves

HOW TO ORDER



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" Standard Port Cryogenic socket weld, 316L body and endplates, 316 ball and stem, with Cryofil seats and PTFE body seals with stainless steel bolting.



Other TBV Cryogenic Valves
(from left to right):

- Series 2120**
Cryogenic Flanged Ball Valve
- Series 2151A**
Multiport High Flow Cryogenic Diverter
- Series 2100**
Cryogenic Ball Valve
- Series 21/51**
Three Piece Cryogenic Diverter Valve

CERTIFICATIONS



**VALVES & MEASUREMENT**

3250 Briarpark Drive, Suite 300
Houston, Texas 77042
USA Toll Free 800 323 9160

For the most current contact and location information go to: www.c-a-m.com/valvesandmeasurement