Valves 101

Identifying Valve Standards and Engineered Valve Solutions

Gobind Khiani

AIMs Manager

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Definition of a Valve:

“Any device that stops, starts or changes the direction or magnitude of any fluid flow or its pressure”

How? By adjusting the closure element of the valve.

“Valves can be grouped by how they close onto the seat”

Manually Operated Valves

1. Closing-down valves: globe, y-pattern globe (Linear)
2. Slide Valves: wedge, slab, parallel slide gate (Linear)
3. Rotary Valves: ball, plug, butterfly (Quarter-turn)
4. Flex-body: pinch, diaphragm

Automatically Operated Valves
(Flow or pressure makes the valve operate)

1. Check Valves: swing, tilting disc, lift, duo, ball check, non-slam check
2. Pressure Relief Valves

Valve Types

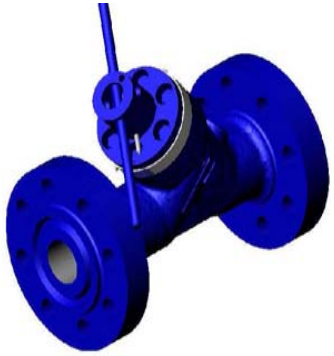
Gate Valve

Check Valve

Globe Valve

Pig Ball

Ball Valve



Choke Valve

Main Valve Component Parts

1. Body
2. Bonnet/Top Plate/End Caps
3. Trim (internal parts)
4. Packing and Seals
5. Means of Actuation

WE WANT TO CONTAIN THE MEDIUM WITHIN THE PRESSURE CONTAINING PARTS OF THE VALVE TO PREVENT:

A. Leakage to Atmosphere.

B. Leakage Downstream when in the closed position.

Valve Body

This is the pressure-containing component

Valve body materials range from cast iron to forged alloy – selection of the valve body depends on the function and application

The valve body is the main component in which the the media flows. Hence this area is very critical in nature of the selecting the right metal for the required process conditions.

The pressure, temperature, fluid flow and application criteria's are very important in selecting a correct metallurgy for a valve body.

Valve Body Materials

Temperature Comparisons

METAL	FORGING	CASTING	TEMP-	TEMP+
Cast Iron		A126	-20 °F	410 °F
Ductile Ir.		A395	-20 °F	650 °F
Carbon St.	A105	A216 WCB	-20 °F	850 °F
Low Temp. CS	A350 LF2	A352 LCC	-50 °F	650 °F
1 ¼ Moly	A182 F11	A217 WC6	-20 °F	1000 °F
2 ¼ Moly	A182 F22	A217 WC9	-20 °F	1050 °F
304ss	A182 F304	A351 CF8	-425 °F	1500 °F
316ss	A182 F316	A351 CF8M	-425 °F	1500 °F
347ss	A182 F347	A351 CF8C	-425 °F	1500 °F
Monel		A296 – M35	-325 °F	900 °F
Alloy 20		A296 CN7M	-50 °F	300 °F

Compatibility Chart

Pipe, Fittings, Flanges & Valves

PIPE	WELD FITTINGS	SCRD & SW FITTINGS	FLANGES	VALVES (FORGED)	VALVES (CAST)
SA-53	SA-234 WPB	SA-105	SA-105	SA-105	SA-216 WCB
SA-106B	SA-234 WPB	SA-105 (N)	SA-105 (N)	SA-105 (N)	SA-216 WCB
SA-333 GR 6	SA-420 WPL6	SA-350 LF2	SA-350 LF2	SA-350 LF2	SA-352 LCB SA-352 LCC
SA-312 T316	SA-403 WP316	SA-182 F-136	SA-182 F-316	SA-182 F-316	CF8M

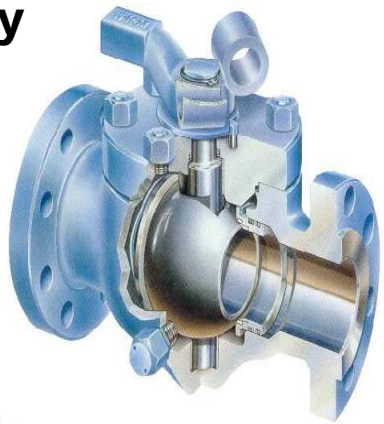
*This chart shows the most common piping components that require material match-up.

Studs and Nuts

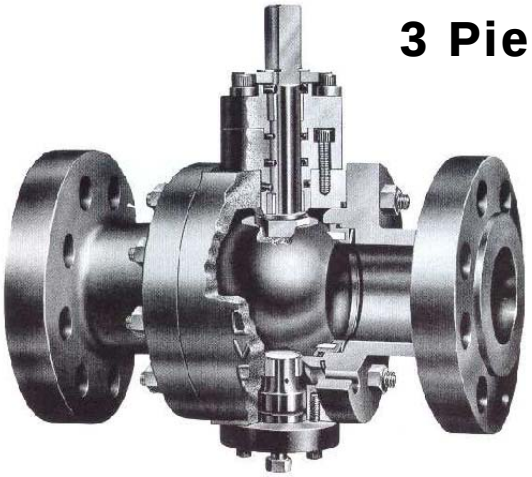
SERVICE	STUD	NUT
SWEET	B7	2H
SOUR	B7M	2HM
SWEET LOW TEMP	L7	GR 4
SOUR LOW TEMP	L7M	7M

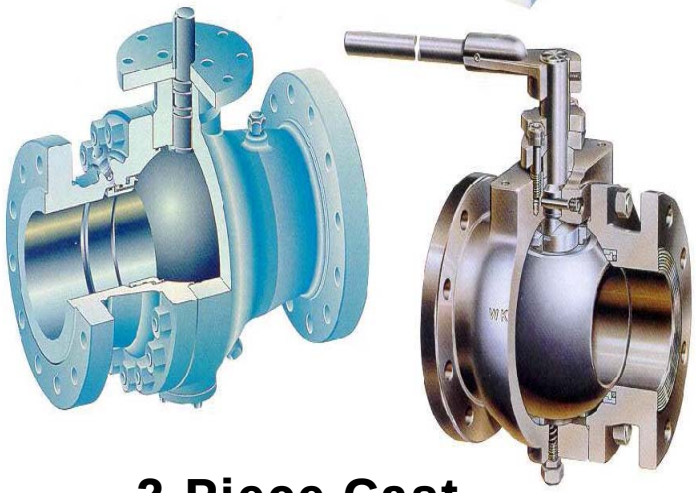
Body Style Variations

Top Entry

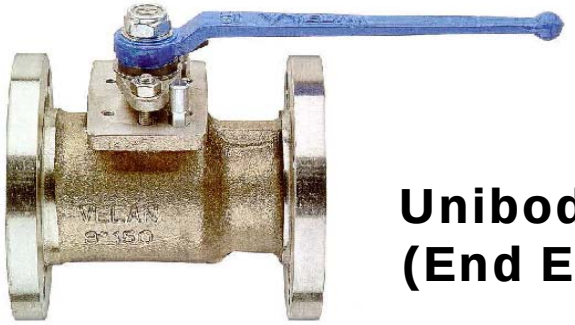


3 Piece





2 Piece Cast



Unibody
(End Entry)

Trim Selection

What is the media, what is the temperature, what is the operating pressure, what are the maximum design conditions? Is the media corrosive, abrasive, clean, dirty? Will there be high pressure drops? What type of trim do I need to stand up to these conditions?

Over the years, valve trim has evolved into a limited number of materials which have the necessary balance of physical and chemical properties to give good performance in a wide variety of applications.

Factors Determining Trim Selection

1. Physical Properties
2. Erosion Considerations
3. Corrosion Considerations
4. Ease of Casting/Forming/Machining
5. Relative Cost

Common Trim Types for All Metal (Gate) Valves:

- Bronze – mild service (commercial water)
- 316 ss – general service/moderate corrosive
- 410 ss – general service/moderate erosive
- 17-4 ss – general service/corrosive & erosive
- Stellite 6 – erosive/high temp
- Inconel X – high temp strength for springs
- Monel – very corrosive/salts/reducing env.
- Hastelloy – very corrosive/acids/oxidizing env.
- Titanium – very corrosive/chlorides/brines

Common Trim Types for Soft Seat (Ball) Valves:

- 316 ss Ball & Stem– general service/moderate corrosive
- c/w PTFE Seat, Viton, or Nitrile O-ring; PTFE or Graphite Packing
- A105 ENC Ball & Stem – general service
- c/w PTFE Seat, Viton, or Nitrile O-ring; PTFE or Graphite Packing

There are a variety of seat and o-ring materials available for soft seated valves, selection depending upon service conditions.

*Check with your manufacturer

API Trims (Common trims for gate valves)

- API Trim 1 – F6 (13 Chrome) Seat/disc/stem
- API Trim 5 – HF (Hard Face) Seat & disc (full Stellite)
- API Trim 8 – F6 Disc/stem & HF Seat
- API Trim 9 – Monel Seat/Disc/Stem
- API Trim 10 – 316 SS Seat, disc & stem
- API Trim 12 – 316 SS Disc/stem & HF Seat
- API Trim 13 – Alloy 20 Seat/disc/stem

API Trims do not designate Body Materials.

Material Wear

Classifications of Wear

1. Adhesive Wear – material loss due to sliding motion between metal surfaces
2. Abrasive Wear – material loss due to cutting action of hard particles
3. Erosive Wear – form of abrasive wear due to particles suspended in a fluid
4. Corrosive Wear – material loss due to chemical attack
5. Surface Fatigue Wear – material loss from repeated sliding or rolling motion
6. Cavitation Wear – bubbles form in liquids due to sudden pressure change and then collapse producing mechanical shock on the metal surface

Purpose of Valve Seals

- Seal between seat and closure element (downstream leakage)
- Seal around stem (atmospheric leakage)
- Seal between pressure retaining valve components (atmospheric leakage)

Things To Consider When Selecting Valve Types

- SERVICE TEMPERATURE
- SERVICE CONDITIONS
- MEDIA
- ABRASIVES
- CORROSIVES
- FLOW RATES
- SIZE/ENVELOPE DIMENSIONS
- WEIGHT AND SUPPORT REQUIREMENTS
- ACTUATION
- REPAIRABILITY/LONG SERVICE LIFE
- FIELD SERVICEABILITY
- SPECIAL CONSIDERATIONS
  - DOUBLE BLOCK AND BLEED
  - FIRESAFE
  - PIGGING REQUIREMENTS
- STANDARDS – ANSI, API, ASTM, CRN, CSA
- FUGITIVE EMISSION CONSIDERATIONS
- SUPPLY AVAILABILITY
- PRICE

Valve Packing (Stem Seal)

Selection Criteria (Soft Packing ie: TFE or Graphoils)

- Service Medium
- Operating Pressure
- Temperature Range
- Size of Packing
- Valve Stem/Stuffing Box Material
- Availability for Maintenance

Some Specific Valve Types

Ball Valves

Gate Valves

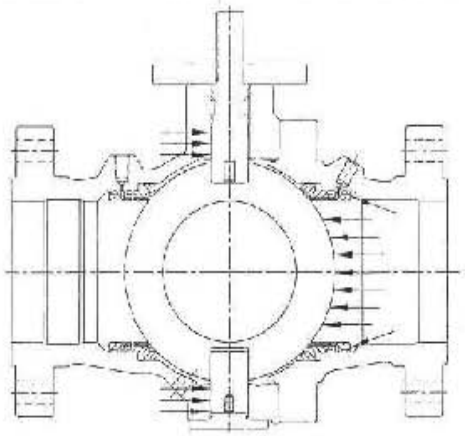
Check Valves

Double Block and Bleed Valves

Ball Valves

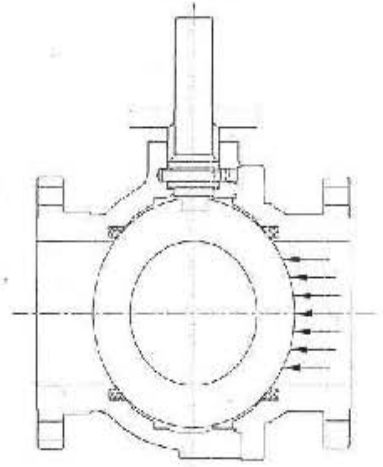
TRUNNION/FLOATING COMPARISON

- **Trunnion** - Designed for high pressure and/or large diameter applications in production and transmission.
  - No size limit
  - Seat moves to ball
  - Lower torque
  - lower actuation cost
  - Ease of operation
  - Double Block and Bleed Capability



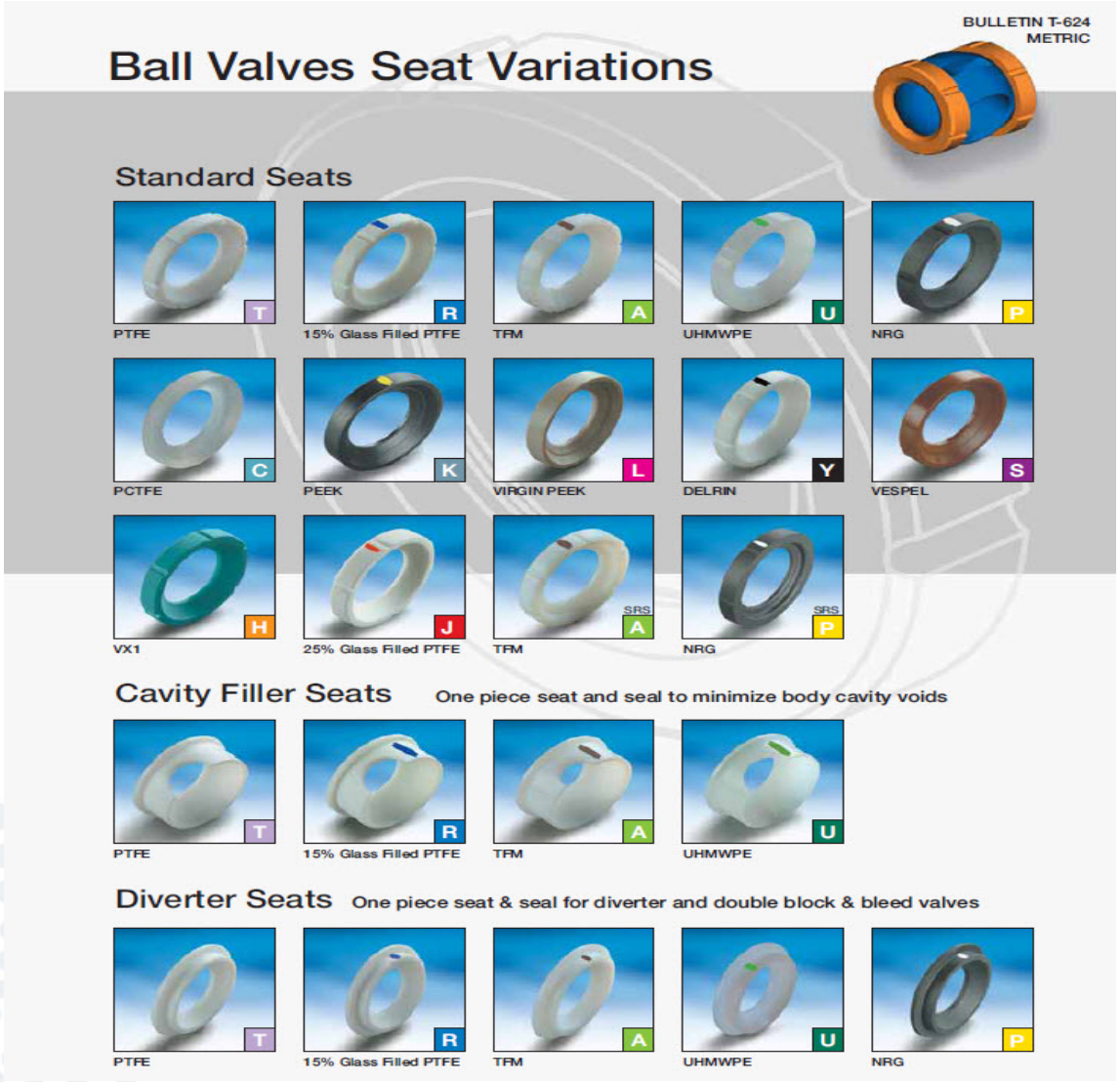
TRUNNION
BALL VALVE

- **Floating** - Designed for smaller size and application in production and process.
  - Limited to 12" bore size and smaller
  - Ball moves to downstream seat to seal
  - Economically priced
  - Trims available for multiple services



FLOATING
BALL VALVE

Ball Valves Seat Variations



Pressure / Temperature Rating

Materials:

T VIRGIN PTFE
Inert to most chemicals, low coefficient of friction, recommended for water, foodstuff and corrosive chemicals. FDA grade. **Colour:** White

J 25% GLASS FILLED PTFE
Similar to 15% glass filled PTFE seats but better resistance to wear and deformation under load. **Colour:** Gray-White with red stripe

R 15% GLASS FILLED PTFE
Withstands higher pressures than virgin PTFE. Good resistance to wear and deformation under load. **Colour:** Off-White with blue stripe

H GLASS & METAL OXIDE FILLED PTFE - VX1
Withstands higher temperatures and pressures than filled PTFE, good resistance under load, not recommended for foodstuff. **Colour:** Blue

P CARBON FILLED PTFE - NRG
Specially for steam and thermal oil, low coefficient of friction, inert to most media. **Colour:** Pale Black with white stripe

U ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE (UHMWPE)
Good for nuclear, Tobacco, H_2SO_4 and chemical resistance applications, low coefficient of friction. Temperature limit of 80°C. **Colour:** Pale White with green stripe

C PCTFE
Cryogenic applications such as oxygen, hydrogen, nitrogen and more, suitable for temperatures up to -260°C. **Colour:** See-through White

A TFM™ (Modified PTFE)
TFM™ is a chemically modified PTFE that offers enhanced properties while retaining all the proven advantages of conventional PTFE. FDA grade. **Color:** white with brown stripe.

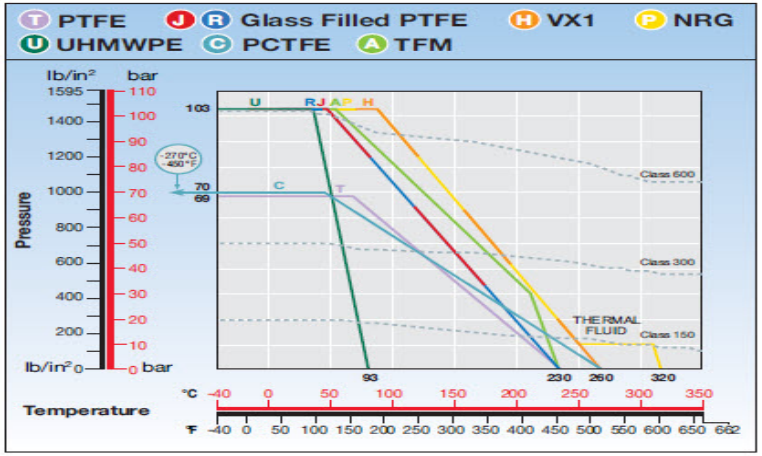
Y ACETAL RESIN (DELRIN®)
Suitable for high pressures, good resistance to wear and deformation under load, temeprature limit 80°C.
Must not be used in presence of oxygen.
Colour: Creamy White with black stripe

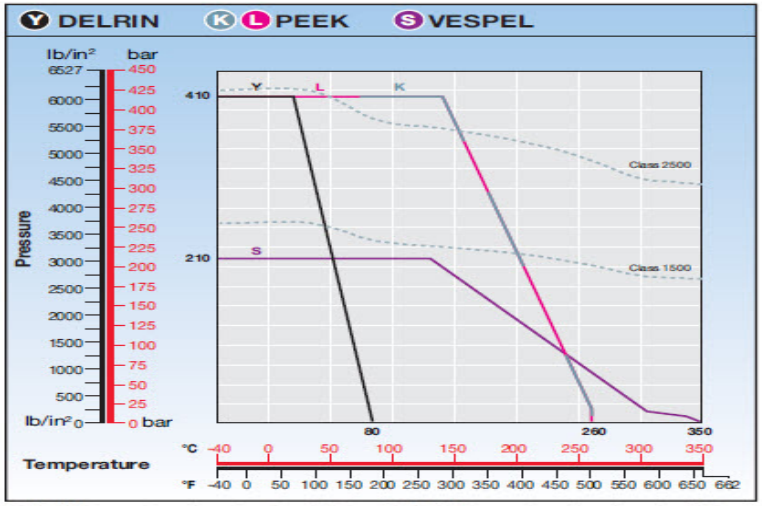
K CARBON FILLED PEEK®
Suitable for elevated temeperatures, good resistance under high pressure loads, low coefficient of friction, suitable for many corrosive applications. **Colour:** Charcoal Black with yellow stripe

L VIRGIN PEEK®
Similar to filled PEEK® but higher coefficient of friction, suitable for nuclear, Tobacco, clean applications. FDA grade. **Colour:** Beige

S VESPEL®
Vespel® is a polyimide material that has high temperature capabilities under load and is mainly used for heat transfer applications, hot gases and oils. Vespel® must not be used with STEAM or media containing WATER or WATER VAPOR. **Color:** brown.

Pressure / Temperature Rating*





DELRIN® is a registered trademarks of DuPont, VESPEL® is a registered trademark of DuPont, TFM™ is a trademark of Dyneon, PEEK® is a trademark of VICTREX

*The graph lines represent the maximum pressure / temperature rating of the seat material. When selecting a seat material, the lower rating between the valve body and seat should be considered. For more information please contact Habonim.

Typical Trunnion Details

Pressure Actuated Seat
Provides positive seal under all conditions

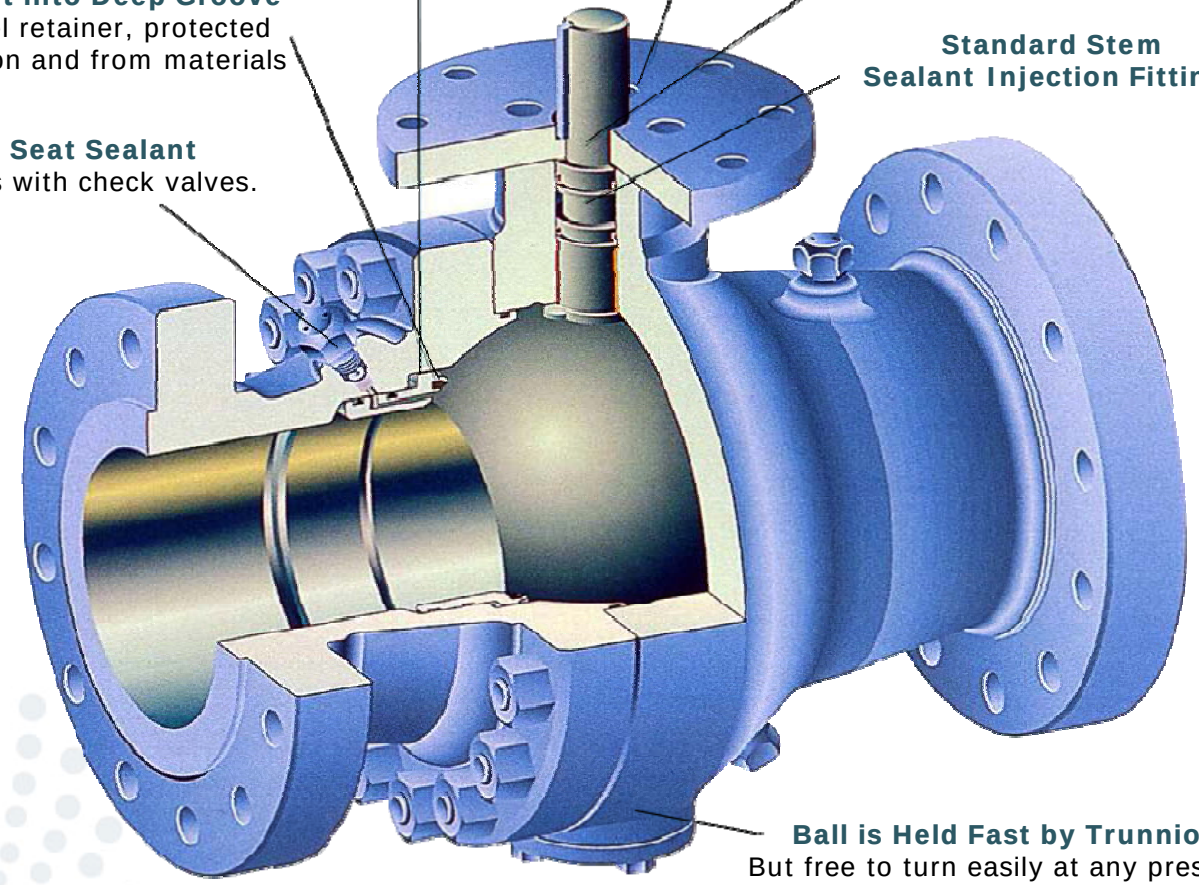
Standard Adapter Flange
For ease of automation

Stem is Positively Retained
Cannot be removed with valve in service

Seat is Set into Deep Groove
In its steel retainer, protected from erosion and from materials

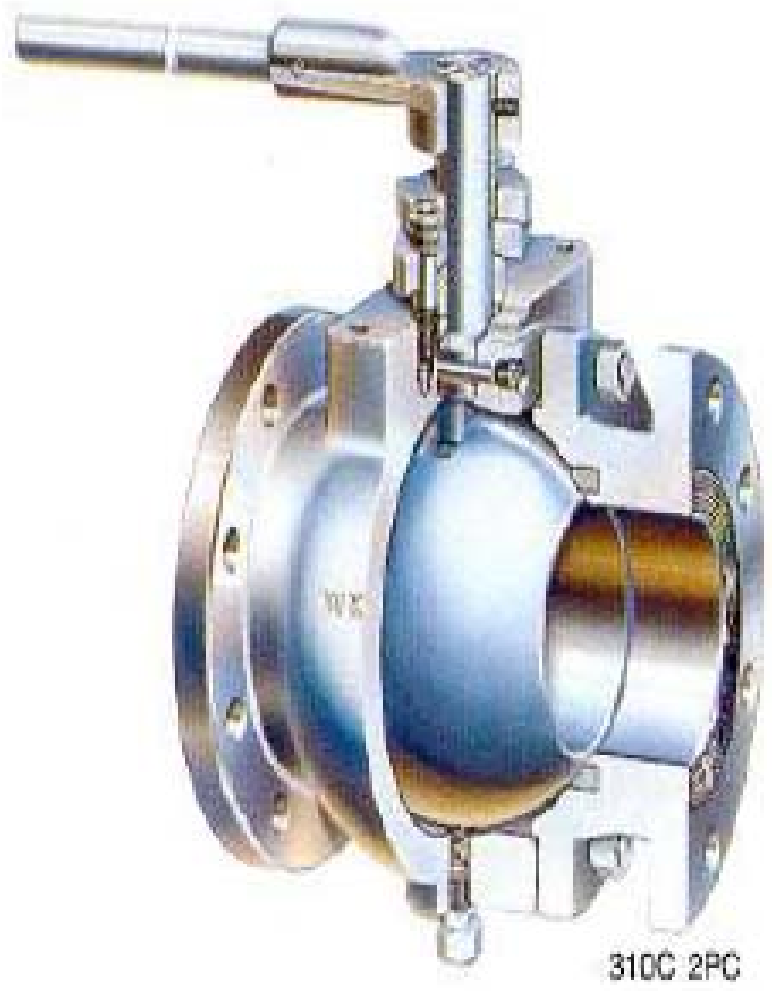
Standard Stem Sealant Injection Fittings

Secondary Seat Sealant
Injection fittings with check valves.



Ball is Held Fast by Trunnion
But free to turn easily at any pressure

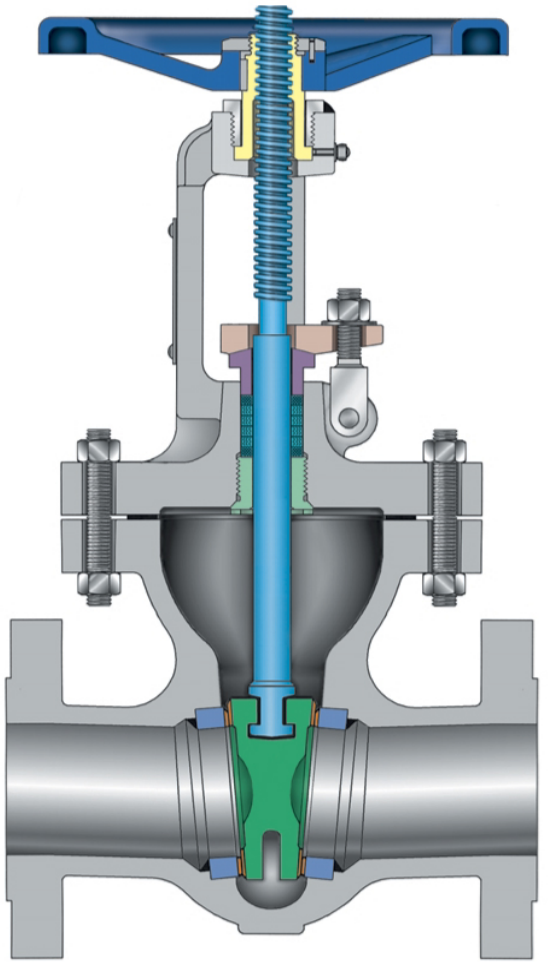
Floater



Gate Valves

Bolted Bonnet Gate Valves available in Cast carbon, stainless or alloy steel API 600 2–60” (50–1500 mm)

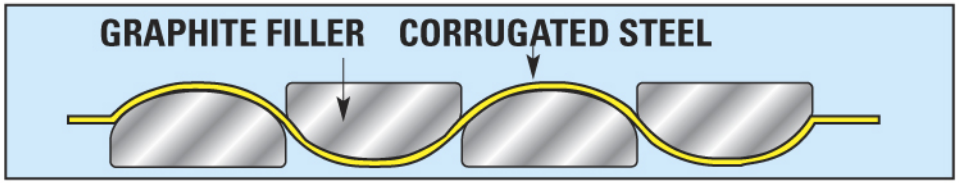
ASME Classes 150, 300, 600, 900 & 1500



Body-Bonnet Gasket Design

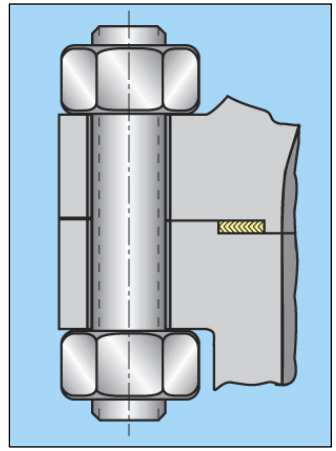
Gate valves with oval flanges

- Ensures leakage of no more than 20 ppm as demonstrated through extensive laboratory testing
- Requires no retorquing after long cycling
- Effective under wide fluctuations of temperature and pressure
- Insensitive to flange finish
- Steel walls of graphite channels provide additional protection from oxidation, corrosion and blow-out
- Seal offers the advantage of flexible graphite (0-14pH, -328°F to +2000°F)
- Lower bolt torques
- Modern torquing methods

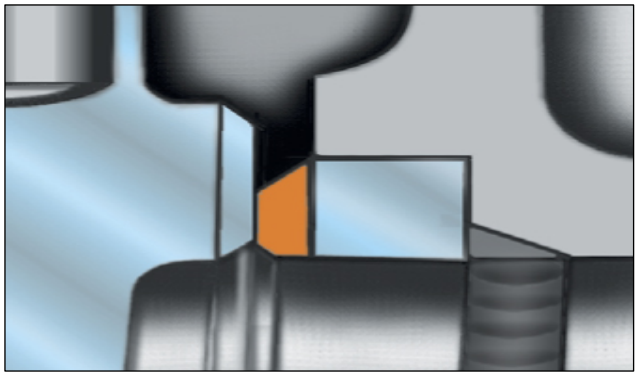


API 600 Cast Steel Valves With Round Body-Bonnet Flanges

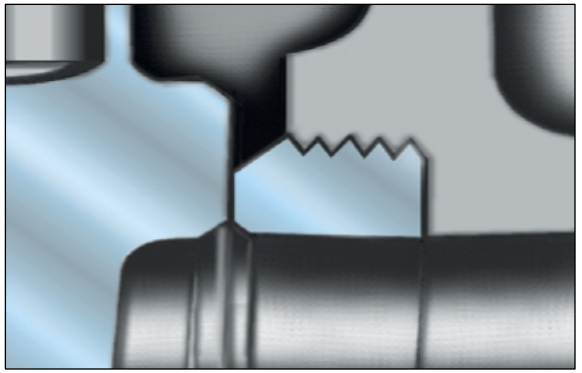
- Fully encased spiral wound 316 or 347 SS/graphite body-bonnet gasket.
- Full enclosure to allow gasket to retain positive radial support during loading.
- Ensures leakage of no more than 20 ppm as demonstrated through extensive laboratory testing.
- Accurate control of compression through close tolerance of gasket groove and allowance for radial expansion.
- No radial machine marks.
- Minimum of three inner wraps to prevent buckling.
- Minimum of three tack welds & filler wraps.
- Close tolerance ±0.005" (0.13 mm) for gasket thickness.
- Regular testing of gasket resiliency and inspection at receiving due to sensitivity to inconsistent quality.
- Modern torquing methods.



Seal Welded Seats vs Screwed In Seats



- Industry standard ground & lapped seal welded seat rings faced with stellite 6
  - State-of-the-art technology
  - Welded-in leakproof
  - Weld quality 100% tested
  - Stellite 6 seating faces for long service life
  - Ground and lapped to 2 RMS finish after weld-in



Competing screwed in seats in 13 CR

Replacement is difficult if not impossible

Seat can become loose due to temperature fluctuations or vibration, and can leak

Not suitable for steam service

Steam and other fluids will wire draw body threads of loose seats beyond repair

13 CR seat suitable only for certain fluids

API 600 Gate Valves
Flexible Wedge vs Solid Wedge

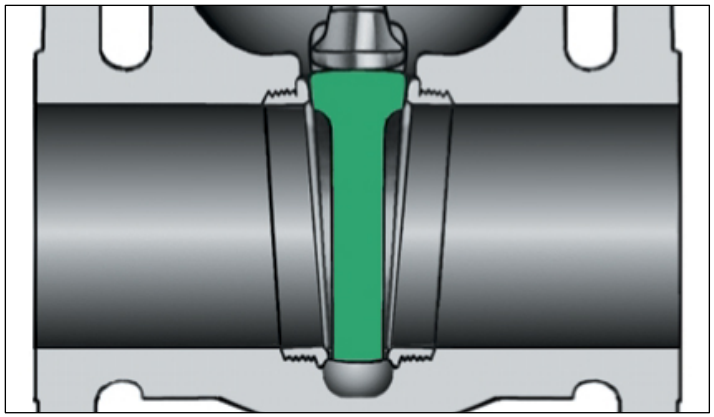
Flexible round wedge:

- Universal use for temperatures up to 1000°F (538°C)
- Flexibility compensates for seat face distortion
- Compensates for deformation of body due to pipe stresses
- Long cycle life
- Ideal for processes with large temperature fluctuations
- Assures valve tightness on both seats over wide range of pressures
- Stem to wedge connection is inside the seating
- faces supporting the wedge ears during opening
- More robust with less mass

API 600 Gate Valves
Flexible Wedge vs Solid Wedge

Classical solid wedge on competitive designs

- Wedge may cause jamming at temperatures over 200°F (93°C)
- Suitable for small valves ($^1/_2$ –2", 15–50 mm)
- Wedge will stick when valve is closed hot and allowed to cool
- No compensation for deformation of body due to pressure-temperature or pipe stresses
- Difficult to make valve tight on both seats due to seat face distortion



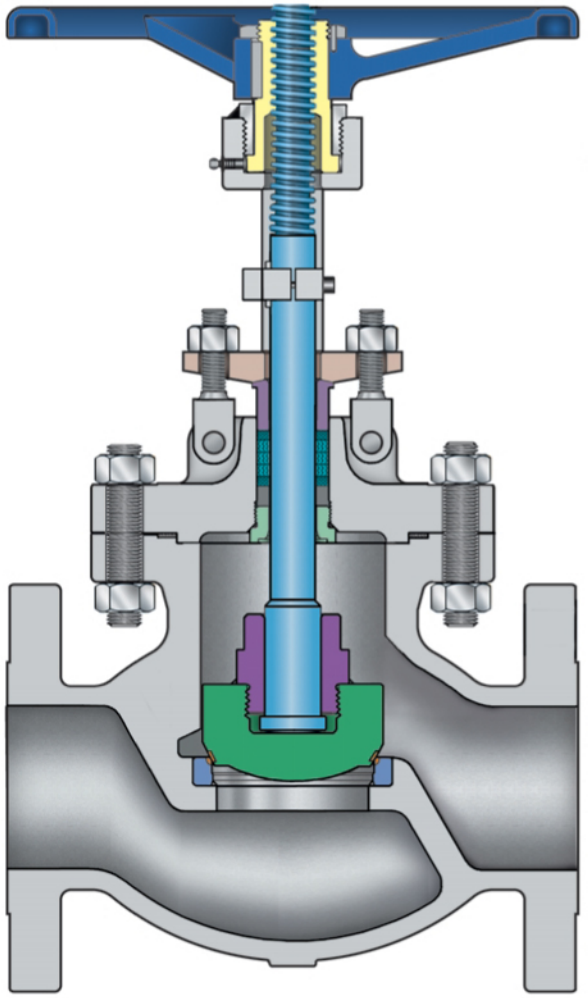
Bolted Bonnet Globe & Stop Check Valves

The only API 600 globe valve with a non-rotating stem

Cast carbon, stainless or alloy steel API 600

2–16" (50–400 mm)

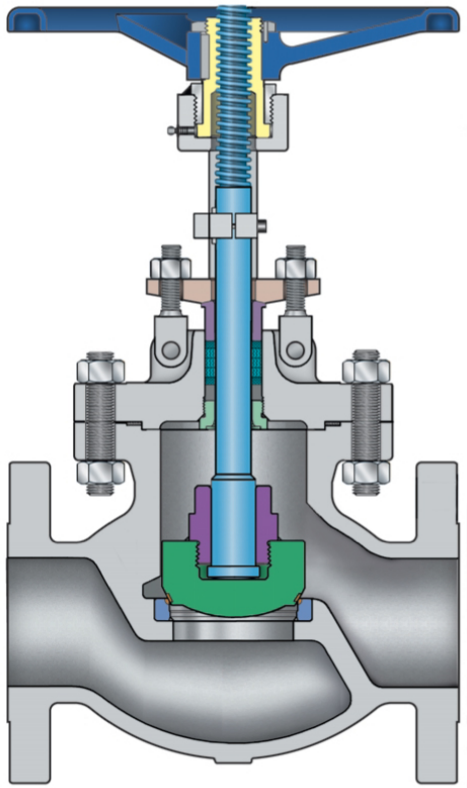
ASME Classes
150, 300 & 600



Bolted Bonnet Globe & Stop Check Valves

Cast carbon, stainless or alloy steel API 600

- Conical Seat face Stellited, ground and lapped to a mirror finish.
- Tapered disc. Hardfaced with 13 CR, Stellite 6, SS 316 or Monel, ground and lapped with seat.
- Gland has two-piece construction for easy alignment.
- Non-rotating Stem with precision ACME threads and burnished finish. Valve suitable for horizontal installation.
- Rotating Stem nut austenitc ductile iron Gr. D-2C renewable in-line.
- Torque arm to reduce wear of packing rings, to enable better sealing and to reduce torque.



Swing Check Valves

Cast carbon, stainless or alloy steel API 600

2–36" (50–900 mm)

ASME Classes 150, 300, 600, 900 & 1500

- Cage unit design with no penetration of body prevents:
  - Possibility of leakage with gasketed or packed hinge pin
  - Possibility of pin ejection.
- All parts are accessible from the top for easy servicing.
- Welded-in seat is Stellite 6 faced.
- Disc is free to rotate to prevent localized wear.
- Ground and lapped seating surfaces.

Definition of Double Block and Bleed

API 6D –21st Edition

"A valve with two seating surfaces which, in the closed position, provides blockage of flow from both valve ends when the cavity between the seating surface is vented or drained. A means shall be provided for draining or venting the cavity between the seating surfaces."

The body cavity can be vented or drained in the open or closed position.

The valve can be tested for integrity and safeguard for downstream work.

Design and Procurement

Valve designs must comply with known, published standards such as

- API
- ASTM
- AWWA
- CSA
- ASME
- MSS-SP

Valve Standards, Testing and Certification

Valves are tested by independent testing organizations and certified to comply with published standards

These include:

- API
- ISO
- MSS-SP
- ASME
- ASTM
- CSA etc

Testing of Valves

Standard pressure tests

- API 6D, ASME B16.34
- Shell
  - Body / Bonnet / bolting
  - Stem packing
    - Teflon w / injectable packing
    - Graphite
- Seat
  - Leakage determined visually
  - Soft seats
    - 0 leakage
  - Metal-seated
    - API 598
- Optional testing
  - Cryogenic (cold box)
    - Using gas and liquid nitrogen
  - High pressure gas
  - Fugitive emission
- On-going testing to specific customer requirements
  - High pressure gas
    - Helium
    - Ambient Temperature
- Compliance with 1990 US Clean Air Act
  - EPA Method 21
    - 500 PPM – Effective 1995
    - 100 PPM – Effective 1997
  - Testing with Methane
    - Teflon Packing Systems – Ambient
    - Graphite Packing System– 600 F / 315 C

Valve Certification

Certification versus Traceability

- EN10204 3.1b = 3.1
  - Testing done by someone other than mfg.
- EN10204 3.1a & c = 3.2
  - Witnessed testing or certification by a third party.
- Bodies, bonnets
  - Fully traceable using heat numbers
- Cores, Seats, Stems, etc
  - Made from traceable material but not maintained throughout mfg process (meets 3.1).

(EN10204 Metallic products Types of inspections documents)

Procurement Specifications

Three key points should be considered when specifying a valve:

1. How to Identify and Order Valves:	Example:
1. Size of Connection	1. 6”
2. Pressure Class	2. 600#
3. Type of Connection	3. RF
4. Port (if necessary)	4. Full Port
5. Body Type	5. Top Entry
6. Valve Type	6. Ball Valve
7. Body Material	7. A352 LCC
8. Trim Material	8. A105/ENC Trim
9. Seat/Seal/Packing	9. Nylon Seat
10. Special Service	10. Double Block and Bleed
11. Actuation	11. Manual Gear Op
12. Service Conditions	12. 22% H2S -45 deg. C

Procurement Specifications Cont'd

2. Identify its corresponding API Standard, ie: Forged Steel Valve to API 602.

   API specifications for valves sets the minimum standards the valve has to comply to.

3. Canadian Registration Number (CRN)

The above three key areas will set minimum standards of quality and conformance. This is extremely important should you ever have to deal with indemnity issues resulting from any catastrophic failure.

CRN Numbers (Canadian Registration Number)

- CSA B51-M1991
- Fitting & Valve Registration is Mandatory by Code
- Provincial Jurisdiction
- Changes in Design etc. Require Re-Registration
- Renewal Required Every 10 Years
- Operator's Responsibility

Registration in the Province of Alberta is "ABSA" (Alberta Boilers Safety Association)

ANSI Pressure Classes

- 150# = 285 PSI Maximum Operating Pressure
- 300# = 740 PSI Maximum Operating Pressure
- 600# = 1480 PSI Maximum Operating Pressure
- 900# = 2220 PSI Maximum Operating Pressure
- 1500 = 3705 PSI Maximum Operating Pressure
- 2500# = 6170 PSI Maximum Operating Pressure
- 800# = 1975 PSI (*Interpolated)

*800# is an interpolated pressure class equivalent to 1975 psi, and is commonly used with API 602 forged steel gate, globe, and check valves, and to reflect 2,000 psi.

Maximum Pressures are at Ambient Temperature. As Temperature Rises, The Pressure Envelope Decreases!

Nomenclature

NOMINAL PRESSURE CLASS NOMENCLATURE

ASME CLASS	ANSI CLASS	NOMINAL PRESSURE CLASS
	150	PN 20
	300	PN 50
800	600	PN 100
1500	900	PN150
	1500	PN 250
	2500	PN 420

NOTE: PN means "pressure nominal'. The numerical part of the designation approximates the maximum cold working pressure rating in bars (100 kPa)

TYPICAL PRESSURE COMBINATIONS FOR VALVES AND FITTINGS

PRESSURE CLASS ANSI/ASME	MAXIMUM OPERATING PRESSURE	FITTING RATING -psi (forged steel)	FLANGE RATING ANSI/ASME	VALVES WOG RATING-MFR THRD/SW -psi	VALVES ANSI B16.34 THRD/SW	FLANGED VALVE RATING
CL 150	285	2000	CL 150	2000	CL 800	CL 150
CL 300	740	2000	CL 300	2000	CL 800	CL 300
CL 600	1480	2000	CL 600	2000	CL 800	CL 600
CL 900	2220	3000	CL 900	2500-3000	CL 900-1500	CL 900
CL 1500	3705	6000 psi	CL 1500	4000-6000	CL 1500	CL 1500
CL 2500	6170	6000 **	CL 2500	6000 **	CL 2500	CL 2500

***Based on A105/A216WCB pressure ratings. Maximum allowable pressure varies with each specific material.**
****Does not fully meet ANSI Class 2500#**

NOTE: The temperature rating of valves are limited by the specific seat and seal material used.

The following charts show how temperature affects the maximum allowable pressure rating.

PRESSURE/TEMPERATURE RATINGS - ANSI B16.34 - A216 WCB

TEMP ° F	150 #	300 #	600 #	900 #	1500 #	2500 #
-20 to 100	285	740	1480	2220	3705	6170
200	260	675	1350	2025	3375	5625
300	230	655	1315	1970	3280	5470
400	200	635	1270	1900	3170	5280
500	170	600	1200	1795	2995	4990
600	140	550	1095	1640	2735	4560
700	110	535	1065	1600	2665	4440
800	80	410	825	1235	2060	3430
900	50	170	345	515	860	1430
1000	20	50	105	155	260	430

Pressure / Temperature Ratings Cont'd

PRESSURE / TEMPERATURE RATINGS - ANSI B16.34 – A352 LCC

TEMP ° F	150 #	300 #	600 #	900 #	1500 #	2500 #
-20 to 100	290	750	1500	2250	3750	6250
200	260	750	1500	2250	3750	6250
300	230	730	1455	2185	3640	6070
400	200	705	1410	2185	3530	5880
500	170	665	1330	1995	3325	5540
600	140	605	1210	1815	3025	5040
700	110	570	1135	1705	2840	4730
800	80	410	825	1235	2060	3430
900	50	170	345	515	860	1430
1000	20	50	105	155	260	430

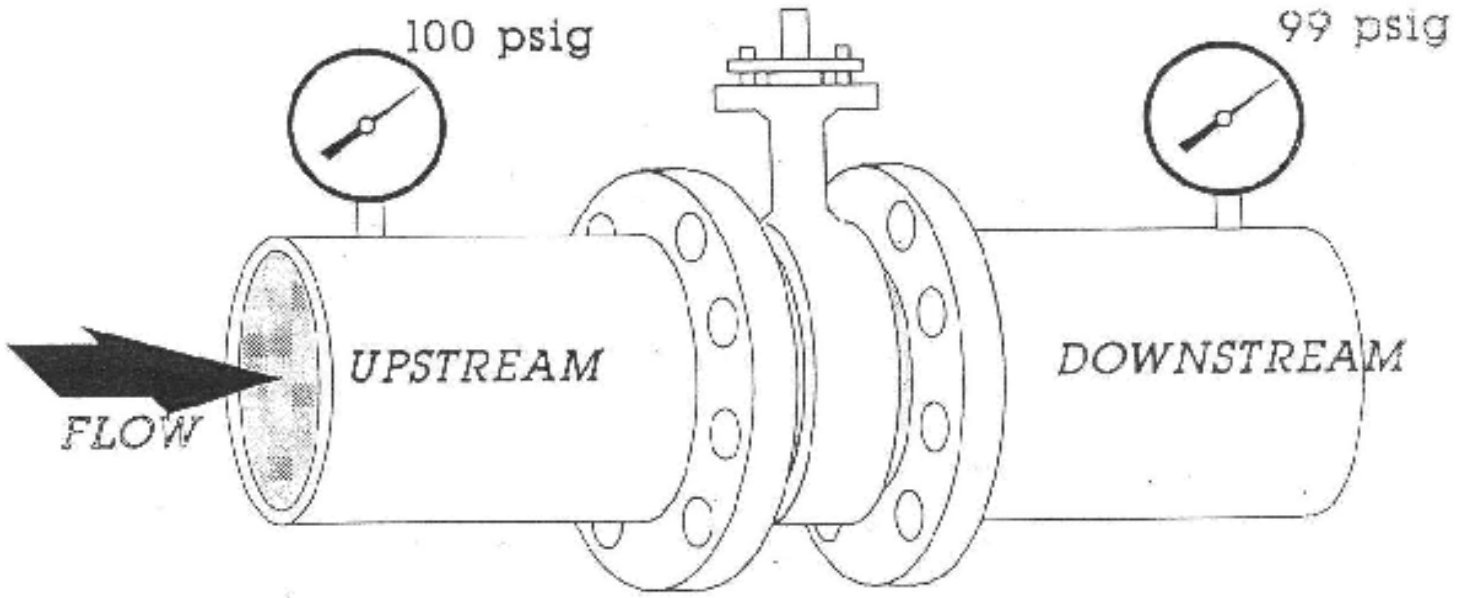
PRESSURE / TEMPERATURE RATINGS - ANSI B16.34 – A351 CF8M

TEMP ° F	150 #	300 #	600 #	900 #	1500 #	2500 #
-20 to 100	275	720	1440	2160	3600	6000
200	240	620	1240	1860	3095	5160
300	215	560	1120	1680	2795	4660
400	195	515	1030	1540	2570	4280
500	170	480	955	1435	2390	3980
600	140	450	905	1355	2255	3760
700	110	430	865	1295	2160	3600
800	80	415	830	1245	2075	3460
900	50	395	790	1180	1970	3280
1000	20	365	725	1090	1820	3030

CV Factors

Coefficient of Volume (CV) is the amount of Gallons Per Minute of water flowing past the valve, required to create enough friction to lose one psi of pressure.

(i.e.: “pressure drop”)



Governing Codes and Standards

- ASME – American Society of Mechanical Engineers
- API – American Petroleum Institute
- ANSI – American National Standards Institute
- MSS – Manufacturer's Standards Society
- NACE – National Association of Corrosion Engineers
- CSA – Canadian Standards Association
- ISO – International Standards Organization

These standards govern body & trim materials, testing procedures and dimensional specifications.

Fire Safe Standards

Fire Safe Standards tests valves under simulated fire conditions and defines how a valve is supposed to react under these conditions, and hopefully will dot the same under an “actual fire”. It looks at rapid heating and cooling, method of measuring temperature, test pressures, cycling, open and closed positions and allowable leak rates under these conditions.

API-607 (for plants and facilities) is a new standard so that everyone could test to the same spec for soft seated valves. There have been several revisions, the latest being the 4th edition. The 4th edition is more strict in its requirements than the previous 3rd edition. Not all manufacturers have met this new standards.

Fire Safe Standards Cont'd

API 6FA - This standard is more commonly used for fire safe Trunnion ball valves, & it's recognized (also used internationally), for pipelines, gathering systems, terminals, etc. The standard used to be identical to API 607 until the arrival of the 4th edition.

EXES 3-14-1-2A - Exxon has their own fire burn test. They have additional requirements to API or BS such as rapid cooling and more stringent allowable leakage rates.

BS-6755 British Standard Institute - has been re-worded so its now similar to API 607 3rd edition.

ISO-10497 - European specification. Like British standards, the specification was very much like API 607 till the latest revision.

NACE MR0175 / ISO15156

- Oil production and drilling equipment began to fail in Canada and the Western United States as reserves were developed that contained hydrogen sulfide (H2S).
- The mode of failure was sulfide stress cracking (SSC) that occurred below the conventional mechanical design stresses for equipment.
- Fatalities from an accident in West Texas prompted the Texas Railroad Commission to ask the industry to write a document to help prevent such incidents in the future.
- NACE members came together to write MR0175, the first materials recommendation from NACE issued in 1975.
- "It is the responsibility of the user to determine the operating conditions and to specify when this standard applies. The manufacturer is responsible for meeting metallurgical requirements. It is the user's responsibility to ensure that a material will be satisfactory in the intended environment." Cenovus Energy Inc is a user.

NACE MR0175 / ISO15156

These are NOT users.

- An equipment manufacturer is NOT a user.
- A mill is NOT a user.
- A distributor is NOT a user.
- A consultant or contractor are NOT users.

If we specify a material, we are the only ones responsible for safe and reliable performance in the field.

There is another NACE standard that may be an acceptable substitute to MR0175 for most customers. That standard is NACE MR103 The material specifications in NACE MR0103 closely parallel earlier versions of MR0175 and is therefore the best choice for Cameron to quote unless expressly prohibited by customer's specifications.

Tools in Grow your knowledge in Valve Industry are

In order to grow your valve knowledge we have following:

- Valve User Group, Alberta
- Valve Magazine, USA
- Valve World, Netherlands
- Valve Seminars/Conferences and trainings
- Valve Handbooks such as CRANE Flow of FLUIDS, TC Piping Book, FISHER Handbook, POWELL Valve Guide, Flowserve Valve Book, Cameron Valve Info etc.

More Valve Presentations

- Double Block and Bleed Valves
- Non Slam Check Valves
- Control Valves 101
- PSV 101(Safety Valves)
- How to write Valve Specifications and understand Industry Standards
- Asset Integrity Management on Facilities and Valve Operations and Maintenance
- How to select the right valve for application
- Valve Sizing and Selection using Flow of Fluids Software

Thank you all and Team Members of APEGGA to make this event successful

Have a wonderful Wednesday

Questions?

Comments!

Suggestions Welcome

Contact:
gobind.khiani@cenovus.com,

Tel 403-766-2028