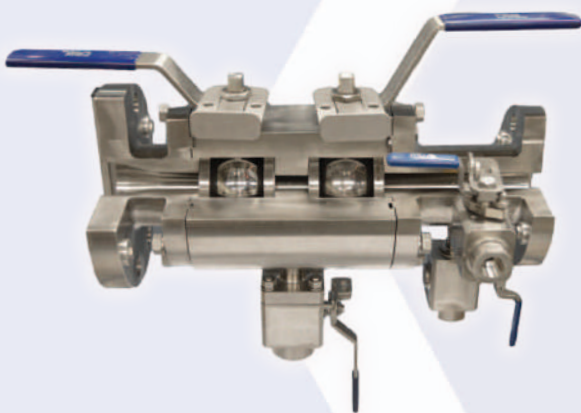




PBM VALVE SOLUTIONS

ENERGY INDUSTRY VALVES

- DOUBLE BLOCK AND BLEED
- FLUSH AND BLEED RINGS
- INSTRUMENT AND TRANSMITTER ISOLATION VALVES
- LOW-EMISSION PACKING DESIGN
- PROCESS FLOW
- SAMPLING



2-Way Instrument Valves

Instrument Isolation and Process Flow

PBM's Instrument Valves are used for process flow or isolation of pressure gauge, orifice plates, flush rings and various measurement instruments. Valves are designed to ASME B16.34. They offer a higher performance solution to needle valves.

PBM Double Block and Bleed Valves are custom engineered from standard components in a variety of alloys and pressure classifications to meet customer specifications. All PBM double block and bleed valves are made in the USA and have full supporting material and testing documentation available. PBM valves are trusted by major oil refineries where safety and reliability are critical. Valves are also designed to ASME B16.34.

SIZES

- 1/2" and 3/4" sizes with 0.41 bore

PRESSURE CLASS

- 1/4" - 3/4" Up to ANSI Class 2500 (Class 1500 standard)

END CONNECTIONS

- Extended Male or Female NPT
- Male or Female NPT
- Flanged
- Butt weld (tube or pipe)
- Ext. Socket Weld
- Compression
- Instrument Adapter Flange
- Others Available

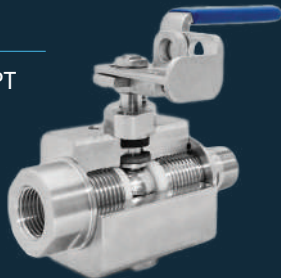
FEATURES

- Quarter Turn Operation
- Optional Extended Handle with lock out
- Bleed or Gauge Ports Available
- Soft and Metal Seated Designs
- Welded Body
- Rodable in 1/4" - 3/4"
- API-622 Low-E Stem Packing Standard
- SIL-3 Capable per IEC 61508

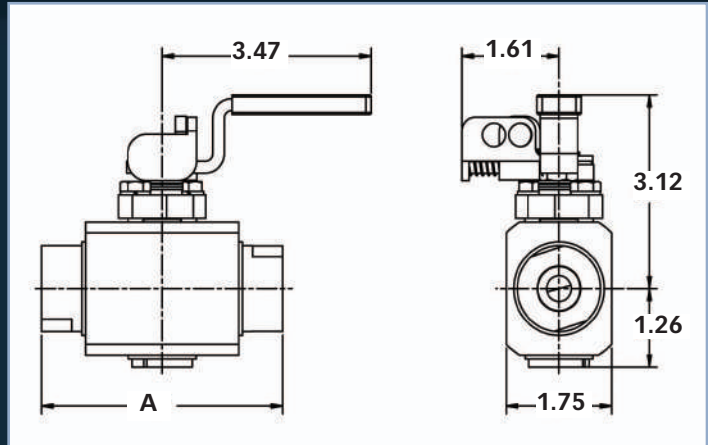
Notes:
PBM can comply with API-6D if specified.

MATERIALS

- Stainless Steel
- Duplex Stainless Steel
- Carbon Steels
- Monel®
- Hastelloys®
- Others Available



**Certified
SIL-3
Capable
per
IEC 61508**



2-WAY VALVE with .41 dia. port End Fitting	A inches	A mm
Ext. Male NPT	6.50	165
Male NPT	4.75	121
Female NPT	4.00	102
Ext. Female Socket Weld	6.50	165
Butt weld for Sch. 40 Pipe	6.50	165
Butt weld for Tube	6.50	165

Notes:
Dimensions shown for 1/2" valves only.
Design is rodable with rod out tool.



SEATING

- TFM™ Seats: 350°F (176°C)
- S-TEF® Seats: 400°F (204°C)
- PEEK® Seats: 500°F (260°C)
- Stellite® Ball & Seats: - 800°F (427°C)
- Tungsten or Chrome Carbide Coated S/S Ball & Seats: 800°F (427°C)

PACKING

- Die Molded Graphite (High Temperature)
- TFM™ or S-TEF®
- API-622 Low-E Stem Packing Standard in 1/2" and 3/4" sizes with .41 bore. It is optional in larger sizes.

TESTING AND DOCUMENTATION

- MTR (Material Test Reports)
- PMI (Positive Material Identification)
- LP (Liquid penetrant)
- Radiographic examination
- Pressure testing per API 598
- Magnetic particle examination
- Ultrasonic examination



Double Block & Bleed Instrument Isolation & Process Flow

The PBM difference - True Double Positive Isolation

PBM double block and bleed valves provide true double positive isolation:

- Two independent sealing members (two ball and seat combinations)
- Two separate actuating mechanisms (two stems and handles or actuators)

This configuration provides the best technology for the most severe isolation services where double block and bleed is required.

Double Positive Isolation when safety is critical.

PBM DBB/DPI IM (Instrument valve)

with locking lever
handles and ends
and API 622 Low E
Packing

Temp: <800°F
Pressure: CL 2500
Sizes: 1/2" - 1 inch
Ends: Any



PBM Standard/ DPI IM (Instrument valve)

with locking lever
handles

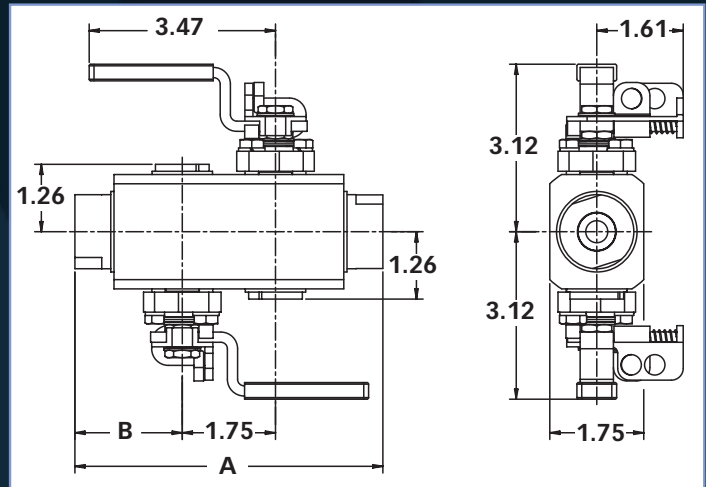
Temp: <800°F
Pressure: 2000 WOG
Sizes: 1/4" - 1 inch
Ends: Any



True DPI in 5 configurable body styles:

- Smaller than traditional 2 valve designs
- Lower potential emissions due to less flange connections
- 1/2 Inch through 12 inch
- Full or standard (reduced) port
- Fire rated to API 607 Rev. 4
- API-622 low emissions packing available
- Various bleed or purge options available
- Extended handles available
- 1/4 turn ball valve enables easy open/close and visual indication of valve position.

**Certified
SIL-3
Capable
per
IEC 61508**



DBB VALVE .41 dia. port End Fitting	A in.	A mm	B in.	B mm
Extended Male NPT	8.25	210	4.13	105
Male NPT	6.50	165	3.25	83
Female NPT	5.75	146	2.88	73
Ext. Female Socket Weld	8.25	210	4.13	105
Buttweld for Sch. 40 Pipe	8.25	210	4.13	105
Buttweld for Tube	8.25	210	4.13	105

Notes:
Dimensions shown for 1/2" valves only.
Design is rodable with rod out tool.

PBM DBB/DPI Configurations) 3-piece High Temp, High Pressure DBB/DPI

Temp: <800°F
Pressure: CL 1500
Sizes: 3, 4 CL600 only
Ends: Any





PBM Bolted Instrument Valves

PBM's bolted Instrument Valve design allows end connection design and fabrication flexibility. It is available in a wide range of materials for a variety of temperature and pressure classes to meet your most stringent process applications.

FEATURES

- Full and Reduced Port Designs
- Customizable End Connections
- Quarter Turn Operation
- Bleed or Gauge Ports Available
- Bolted Body
- API-607 Fire Rated
- Braided Graphite Packing
- API-622 Low-E Stem Packing Standard
- Gear Operator recommended for 1-1/2" and above.

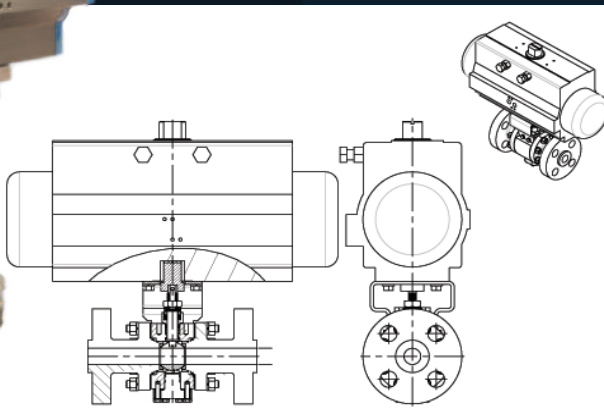
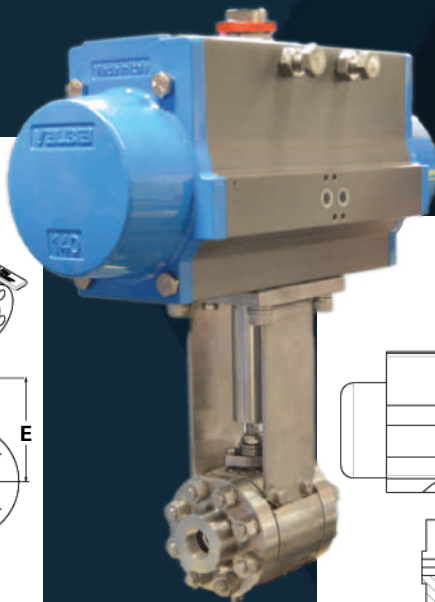
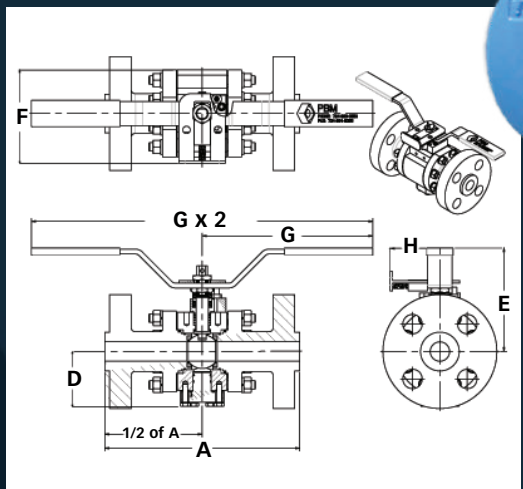
SIZES

- 1/2" - 2" CL600, CL900 and CL1500

SEATING

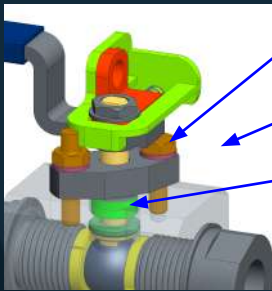
- TFM™ Seats: 350°F (176°C)
- S-TEF® Seats: 400°F (204°C)
- PEEK® Seats: 500°F (260°C)
- Stellite® Ball & Seats: 800°F (427°C)
- Tungsten or Chrome Carbide Coated S/S Ball & Seats: 800°F (427°C)

Size	Ends	Units	A		D		E		F		G		H			
			Overall Length		℄ to Bottom of Valve (2-Way)		Distance to Top of Valve		Body Width without Ends		Handle Radius		℄ to Locking Mechanism			
			CL600	CL1500	CL600	CL1500	CL600	CL1500	CL600	CL1500	CL600	CL1500	CL600	CL1500		
1/2" DN 15	Flanged	in (mm)	6.5 (165)	8.5 (216)	1.72 (44)		5.2 (132)		2.4 (61)		3.47 (88)		1.61 (41)			
	Female NPT	in (mm)	4.75 (121)													
	Others	in (mm)	8.5 (216)													
3/4" DN 20	Flanged	in (mm)	7.5 (191)	9 (229)	2.33 (59)		3.96 (101)		3.75 (95)		5 (127)		2.08 (53)			
	Female NPT	in (mm)	5.5 (140)													
	Others	in (mm)	9 (229)													
1" DN 25	Flanged	in (mm)	8.5 (216)	10 (254)	2.92 (74)		5.2 (132)		4.5 (114)		8.81 (224)		2.57 (65)			
	Female NPT	in (mm)	6 (152)													
	Others	in (mm)	10 (254)													
1-1/2" DN 40	Flanged	in (mm)	9.5 (241)	12 (305)	2.82 (72)	4.17 (106)	5.76 (146)	7.18 (182)	5.38 (137)	7.5 (191)	11.8 (300)	12 (305)	N/A			
	Female NPT	in (mm)	6.5 (165)	7.5 (191)												
	Others	in (mm)	12 (305)													
2" DN 50	Flanged	in (mm)	11.5 (292)	14.5 (368)	3.42 (87)	4.82 (122)	6.13 (156)	7.43 (189)	6.25 (159)	8 (203)	11.8 (300)	12 (305)				
	Female NPT	in (mm)	8 (203)	10 (254)												
	Others	in (mm)	14.5 (368)													





Bolted Double Block & Bleed Valves



Gland Bolt

Gland Plate

Stem

Packing

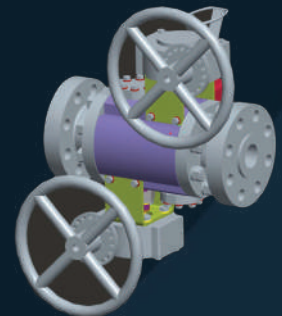
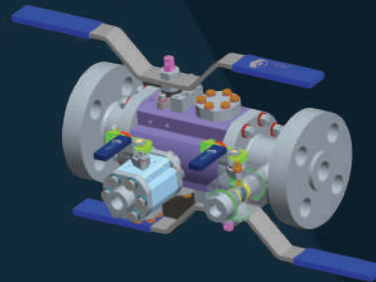
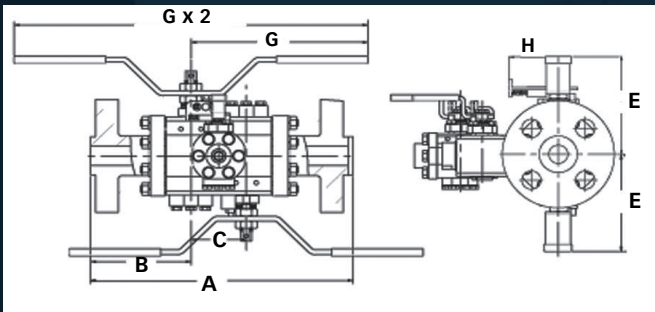
PBM valves with Low-E packing offer solutions to emission reduction.

Design features:

- Average stem packing leakage ≤ 10 ppmv for the duration of the test (100 ppm allowable)
- API 607 fire tested

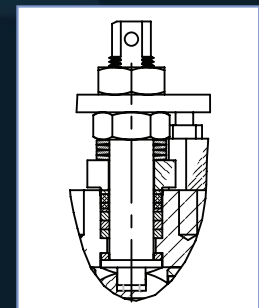


PBM's BOLTED DOUBLE BLOCK & BLEED VALVES



Size	Ends	Units	A		B		C		E		F		G		H	
			Overall Length		CL to End		Ball Separation		Distance to Top of Valve		Body Width without Ends		Handle Radius		CL to Locking Mechanism	
			CL600	CL1500	CL600	CL1500	CL600	CL1500	CL600	CL1500	CL600	CL1500	CL600	CL1500	CL600	CL1500
1/2" DN 15	Flanged	in (mm)	8.25 (210)	10.25 (260)	3.25 (83)	4.25 (108)	1.75 (44)		5.2 (132)		2.4 (61)		3.47 (88)		1.61 (41)	
	Female NPT	in (mm)	6.5 (165)		2.375 (60)											
	Others	in (mm)	10.25 (260)		4.25 (108)											
3/4" DN 20	Flanged	in (mm)	9.75 (248)	11.25 (286)	3.75 (95)	4.5 (114)	2.25 (57)		3.96 (101)		3.75 (95)		5 (127)		2.08 (53)	
	Female NPT	in (mm)	7.75 (197)		2.75 (70)											
	Others	in (mm)	11.25 (286)		4.5 (114)											
1" DN 25	Flanged	in (mm)	11.25 (286)	12.75 (324)	4.25 (108)	5 (127)	2.75 (70)		5.2 (132)		4.5 (114)		8.81 (224)		2.57 (65)	
	Female NPT	in (mm)	8.75 (222)		3 (76)											
	Others	in (mm)	12.75 (324)		5 (127)											
1-1/2" DN 40	Flanged	in (mm)	13.25 (337)	15.75 (400)	4.75 (121)	6 (152)	3.75 (95)		5.76 (146)	7.18 (182)	6 (152)	7.5 (191)	12 (305)		N/A	
	Female NPT	in (mm)	10.25 (260)	11.25 (286)	3.25 (83)	3.75 (95)										
	Others	in (mm)	15.75 (400)		6 (152)											
2" DN 50	Flanged	in (mm)	15.25 (387)	18.5 (470)	5.75 (146)	7.25 (184)	3.75 (95)	4 (102)	6.13 (156)	7.43 (189)	6.75 (171)	8 (203)	12 (305)			
	Female NPT	in (mm)	11.75 (298)	14 (356)	4 (102)	5 (127)										
	Others	in (mm)	18.5 (470)		7.25 (184)											

The high temperature valve version consists of carbide coating on the ball and seats.



Technical Information

How to Order IM or IB Valves

POS 1 & 2	POS 3 & 4	POS 5	POS 6	POS 7	POS 8	POS 9
	MATERIAL	VALVE TYPE	SERIES	1ST END CONNECTION TYPE (HP / UPSTREAM)	2ND END CONNECTION TYPE (LP / DOWNSTREAM)	SEAT / STEM PACKINGS / O-RINGS (GRAPHITE STEM PACKING FOR ALL)
IM	H = 316 S/S Body & End Conn. (800° F Max.)	C = 2-Way CL600	5	B = Ext. Butt Weld Sch. 40	B = Ext. Butt Weld Sch. 40	G = TFM / Graphite / Viton or TFM / TFM / Viton "A"
IB	HH = 316H S/S Body & End Conn. (800° F Max.)	E = 2-Way CL1500	6	D = Ext. Butt Weld Sch. 10	D = Ext. Butt Weld Sch. 10	H = S-TEF® / Graphite / Viton or S-TEF® / S-TEF® / Viton "A"
	EL = A-350 LF2 Carbon Steel	K = Double Block CL150		F = Ext. Butt Weld for Tube	F = Ext. Butt Weld for Tube	N = PEEK / Graphite / Kalrez or PEEK / PEEK / Kalrez
	C = Hastelloy C-276 Body & End Connections	L = Double Block CL300		G = Eye Flange	G = Eye Flange	O = Carbon Graphite - 750° F.
	C1 = Hastelloy B-2 Body & End Connections	M = Double Block CL600		L = RF Flange	L = RF Flange	S = Stellite Seats / Graphite Seals - 800° F. Max.
	Y = Hastelloy C-22 Body & End Connections	O = Double Block CL1500		N = Extended Male NPT	N = Extended Male NPT	T = Tungsten Carb. Cld S/S Ball & Seats/Graphite Seals - 800° F. Max.
	M = Monel Body & End Connections			P = Male NPT	P = Male NPT	U = Chrome Carb Cld S/S Ball & Seats/Graphite Seals - 800° F. Max.
	P = AL6XN Body & End Connections			Q = Female NPT	Q = Female NPT	Valves seal HP to LP. Consult PBM for other configurations.
	22 = Duplex 2205 Body & End Connections			R = Extended Female NPT	R = Extended Female NPT	
	25 = 254 SMO 6 Moly Body & End Connections			S = Female Comp. Thread *	S = Female Comp. Thread *	
	F9 = A182 Gr. F9 Carbon Steel Body & End Conn.			J = Ext. Female Socket Weld	J = Ext. Female Socket Weld	
	5 = Inconel 625			V = Ext. Male Socket Weld	V = Ext. Male Socket Weld	
				W = RTJ Flange	W = RTJ Flange	

Note: Other materials of construction available.

IM Valve = Instrument Valve - Welded W/ .41 Dia Port

IB Valve = Instrument Valve - Bolted W/ 1/2" Port and Larger.

* Ferrules Not Included

Note: other end connection types available.

POS 10	POS 11	POS 12	POS 13 & 14	POS 15
1ST END CONNECTION SIZE (HP / UPSTREAM)	2ND END CONNECTION SIZE (LP / DOWNSTREAM)	BLEED / GAUGE PORT OPTIONS	OPERATOR OPTIONS	BLEED / GAUGE VALVE OPTIONS
A = 1/4 inch, .41" Dia. Port	A = 1/4 inch, .41" Dia. Port	- = No Bleed or Gauge Ports (2-Way Only - STD)	04 = manual locking lever handle - Right Hand Operation (CW) - STD	- = No Bleed or Gauge Valve (2-Way Only - STD)
B = 3/8 inch, .41" Dia. Port	B = 3/8 inch, .41" Dia. Port	A = (1) 1/4" FNPT Bleed Port 90° from Stem (Double Block Only - STD)	05 = manual locking lever handle - Left Hand Operation (CCW)	A = 1/4" FNPT Ball Valve
C = 1/2 inch, .41" Dia. Port	C = 1/2 inch, .41" Dia. Port	B = (2) 1/4" FNPT Bleed Ports 90° from Stem (Double Block Only)	00 = manual lever handle - Right Hand Operation (CW)	B = 3/8" FNPT Ball Valve
D = 3/4 inch, .50" Dia. Port	C = 1/2 inch, .50" Dia. Port	C = (1) 3/8" FNPT Bleed Port 90° from Stem (Double Block Only)	01 = manual lever handle - Left Hand Operation (CCW)	C = 1/2" FNPT Ball Valve
D = 3/4 inch, .41" Dia. Port	D = 3/4 inch, .41" Dia. Port	D = (2) 3/8" FNPT Bleed Ports 90° from Stem (Double Block Only)	02 = manual oval handwheel	D = 3/4" FNPT Ball Valve
E = 3/4 inch, .75" Dia. Port	E = 3/4 inch, .75" Dia. Port	E = (1) 1/2" FNPT Bleed Port 90° from Stem (Double Block Only)	03 = manual locking oval handwheel	E = 1" FNPT Ball Valve
F = 1 inch, .41" Dia. Port	F = 1 inch, .41" Dia. Port	F = (2) 1/2" FNPT Bleed Ports 90° from Stem (Double Block Only)	08 = manual gear operator (recommended for valve > 1.5 inch)	F = 1 1/4" FNPT Needle Valve
G = 1 inch, .75" Dia. Port	G = 1 inch, .75" Dia. Port	J = (1) 1/4" Socket Weld Bleed Port 90° from Stem (Double Block Only)	20 = 80 PSIG Double Acting Actuator	G = 3/8" FNPT Needle Valve
H = 1 inch, 1" Dia. Port	H = 1 inch, 1" Dia. Port	K = (2) 1/4" Socket Weld Bleed Port 90° from Stem (Double Block Only)	27 = 60 PSIG Double Acting Actuator	H = 1/2" FNPT Needle Valve
G = 1-1/2 inch, Full Port	G = 1-1/2 inch, Full Port	L = (1) 3/8" Socket Weld Bleed Port 90° from Stem (Double Block Only)	34 = 80 PSIG Spring Return Actuator	I = 3/4" FNPT Needle Valve
H = 2 inch, Full Port	H = 2 inch, Full Port	M = (2) 3/8" Socket Weld Bleed Port 90° from Stem (Double Block Only)	41 = 60 PSIG Spring Return Actuator	E = 1" FNPT Needle Valve
J = 2-1/2 inch, Full Port	J = 2-1/2 inch, Full Port	N = (1) 1/2" Socket Weld Bleed Port 90° from Stem (Double Block Only)	Note: Additional operator options available	
K = 3 inch, Full Port	K = 3 inch, Full Port	P = (2) 1/2" Socket Weld Bleed Port 90° from Stem (Double Block Only)		
L = 4 inch, Full Port	L = 4 inch, Full Port	Note: additional bleed / gauge port options available.		
M = 6 inch, Full Port	M = 6 inch, Full Port			

Note: Larger sizes available through 10" PP - 12" RP

Position 10 - H through M available in Class 150 and 300 only

Flush Rings/Bleed Rings with Integral Valve

Flush rings and Bleed rings to customer material and pressure class specifications designed to fit between standard flanges using conventional flange gaskets.

Integral ball valve allows venting, purging, sampling and instrument isolation.

SIZES

- Face-to-face is 2" standard. Consult factory for other widths.

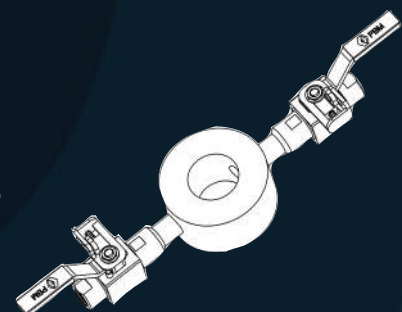
MATERIALS

- Stainless Steel
- Duplex
- Hastelloy®
- Others Available



FEATURES

- Integral code-welded valve for flushing, purging and instrument isolation





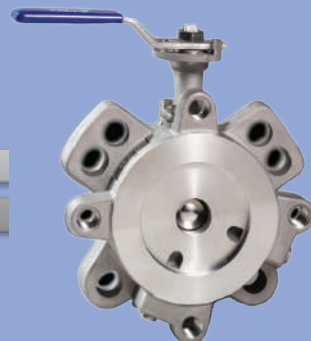
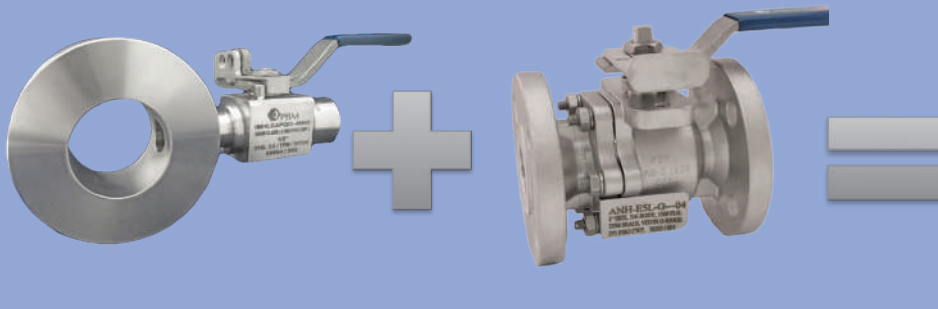
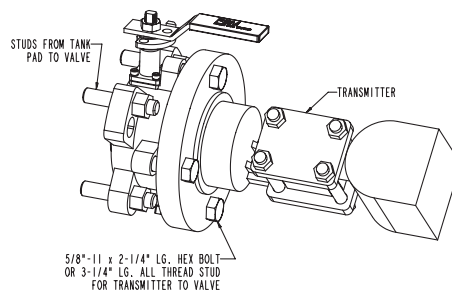
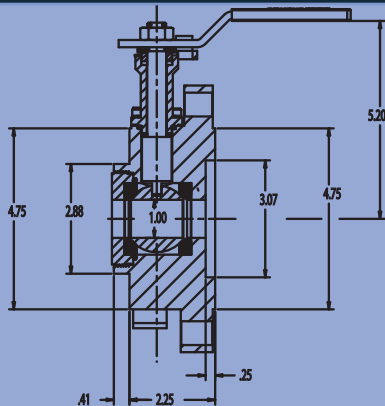
Transmitter Isolation Valves

PBM Transmitter Isolation Valves are valves used to isolate media in a tank from a pressure/level transmitter. The valve when in the open position creates a communication between the media in the tank and the transmitter. The valve is only closed when the transmitter needs to be isolated for service.

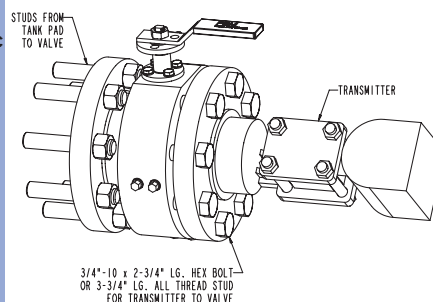
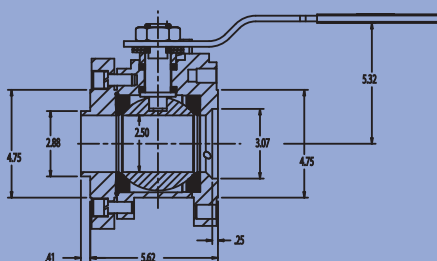
TIV valves feature minimal dead space and positive shut-off. They are available in CL150, CL300, and CL600 RF Flange. Calibration port, CIP port, and locking handle are standard. Cast body, universal design, in stock.



1" PORT X 3" FLANGED

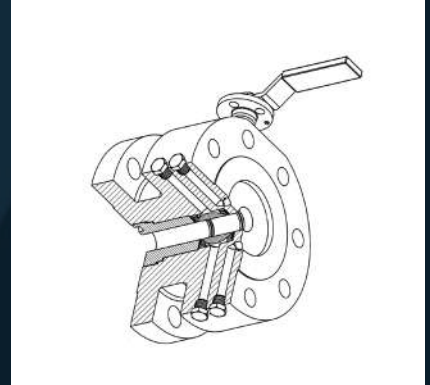
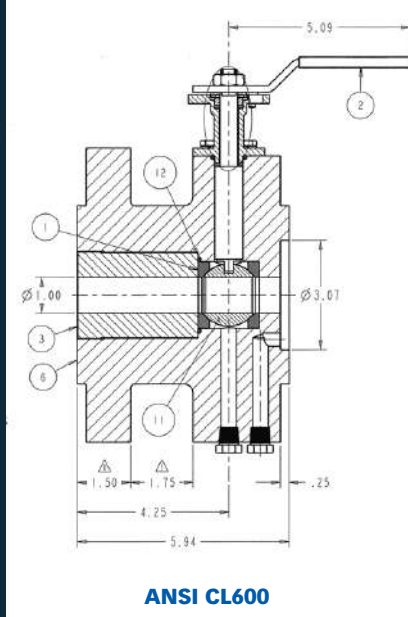
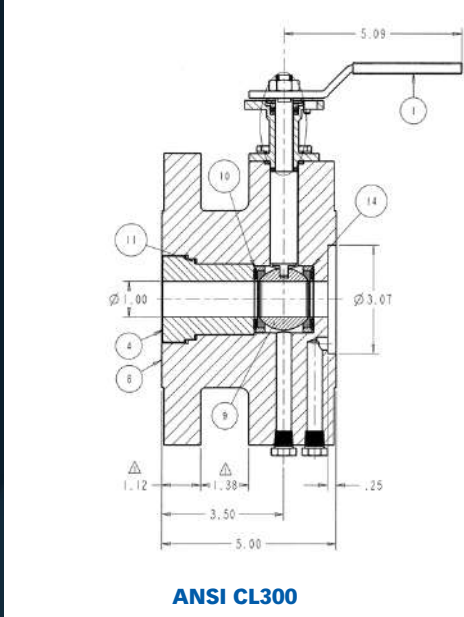


2-1/2" PORT X 3" FLANGED



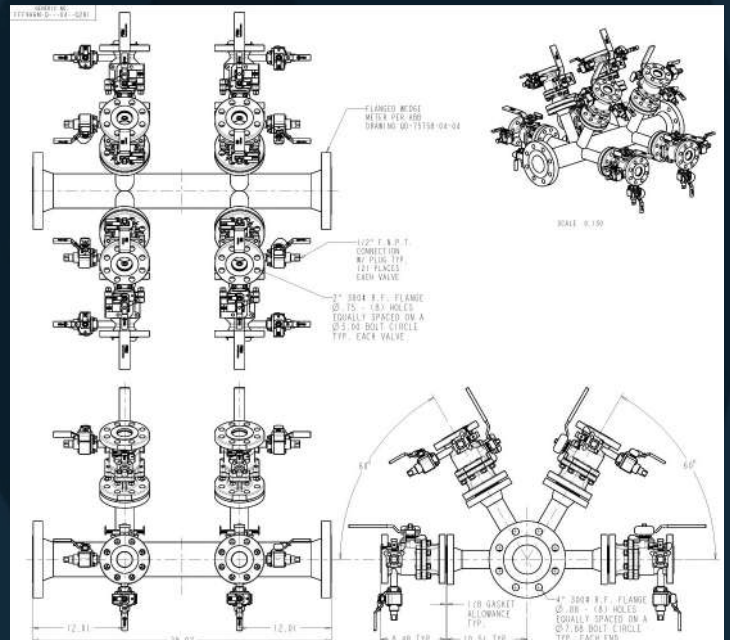
Full or True Bore® Port ANSI Style Transmitter Isolation Valves provide value to the customer.

Transmitter Isolation Valves CL300, CL600



Pressure Classes: 150-600
Sizes: 1x2, 1x3, 2.5 x 3 Inch
(ball port size x flange size)
Any Materials, Temps <800°F
Purge/Cal Port Sizes: 1/4 or 1/2 inch
FNPT (2 or 4 ports available)
Make to Order. Custom configurations
available.

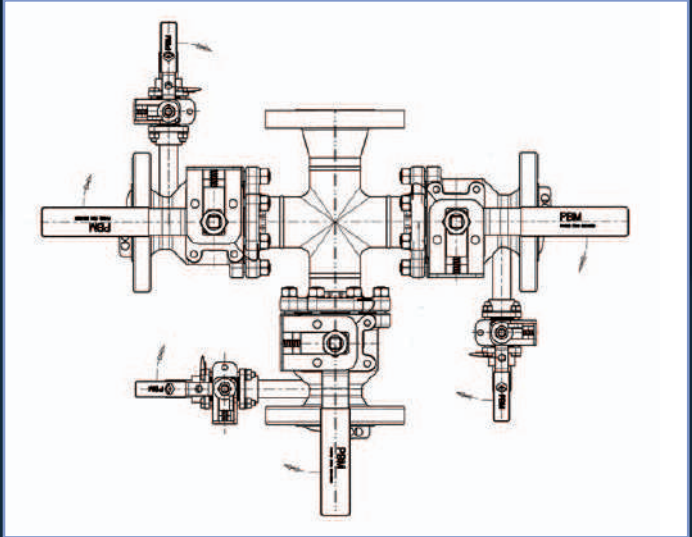
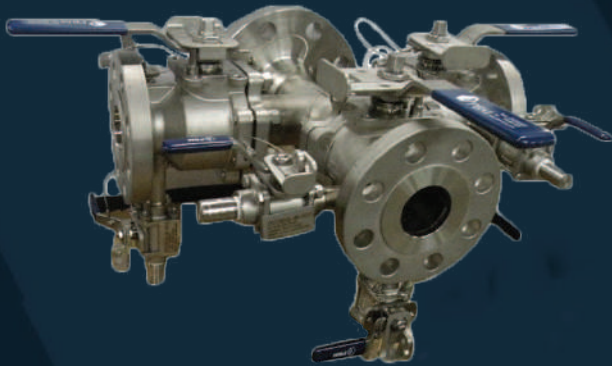
**2" PBM TIV on 4 inch ABB Wedge Meter
Heavy Crude Line in a Coker Unit**





Fabflex® Instrumentation Valve Manifolds

PBM's Valve Manifolds have temperatures that range from 300° to 600° F, 149 to 316°C with pressures from 150 to 400 psig, 10 to 28 barg. A refinery uses these manifolds for measuring as well as level indication.



Fabflex® fabricated manifold solution:

- Custom PBM Fabflex® manifold design for multiple instrumentation mounts.
- Custom manifold design to optimize space utilization.
- Factory fabricated in a controlled manufacturing environment to ensure high quality welding fabrication process.
- Individual valves fabricated "into" the manifold eliminating many emission leak paths to improve the overall EPA rating of the system.
- Field installation simplified into bolting up one flange and installing the transmitters, transducers or other instrumentation.





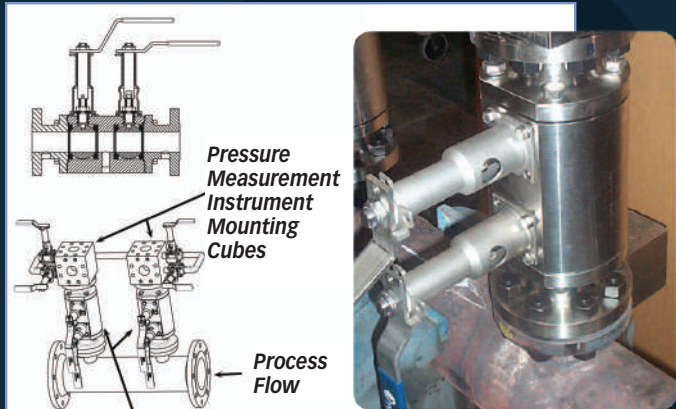
Unique Valve Applications



Double Block and Bleed
for hydrogen use



Fabflex Manifold® Assembly
Various configurations available.



DOUBLE BLOCK AND BLEED VALVES



Lockable Manual Handles
Standard and automation available.



ANSI Trunnion Valve



Sampling Valve
Available in single and double block configurations.

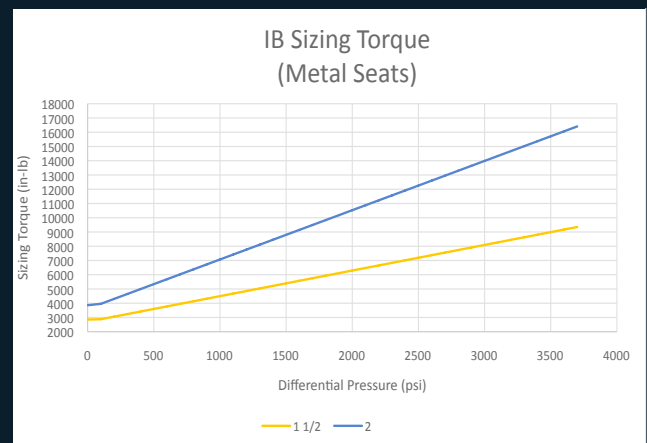
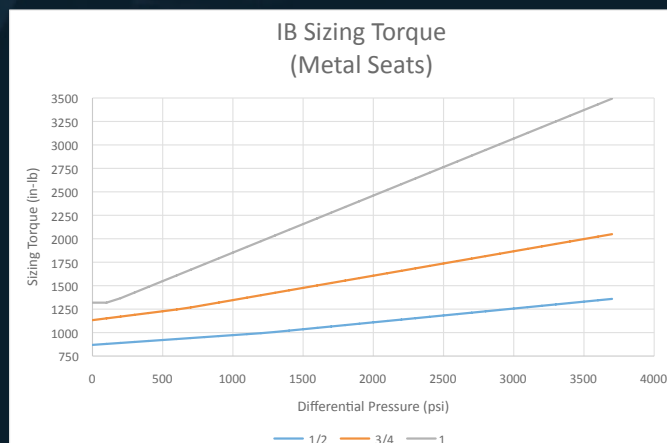
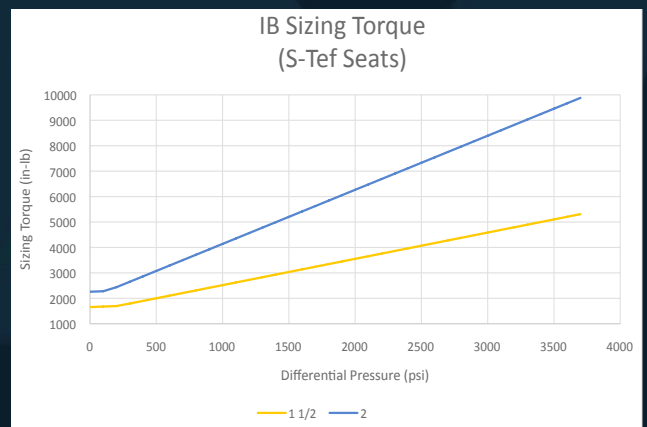
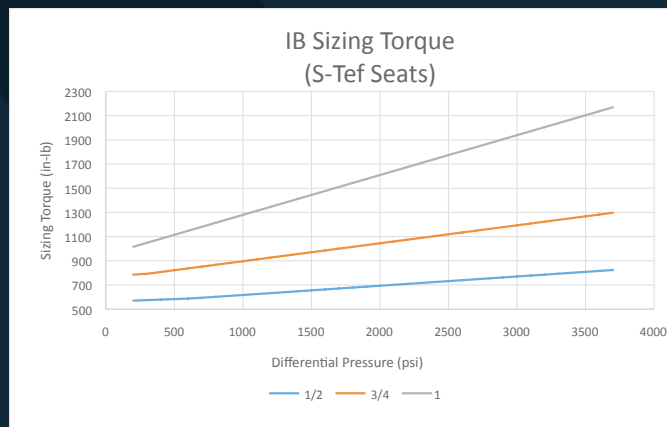
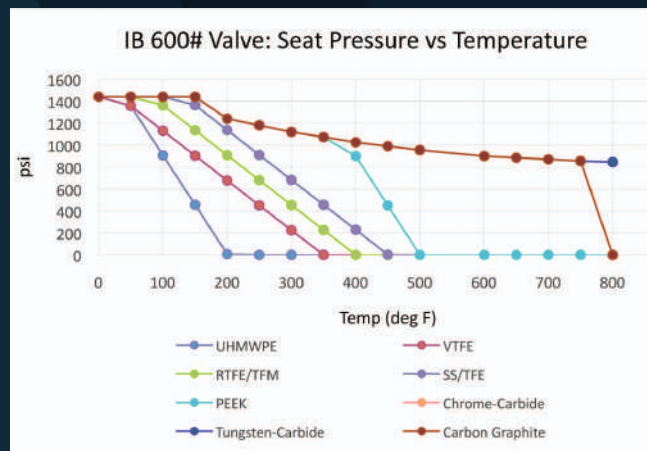
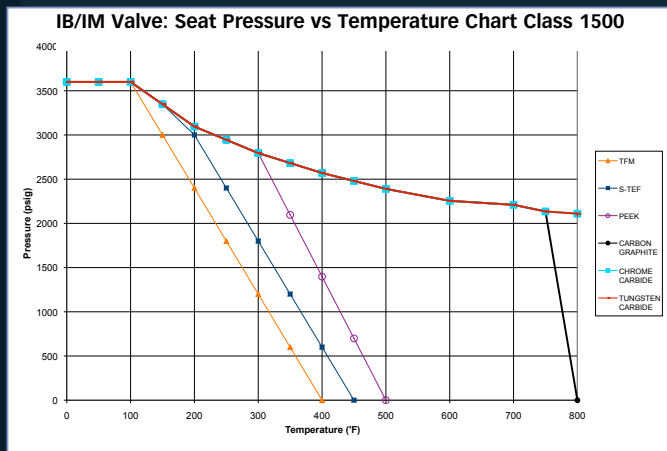
Rating Size	150	300	600	1500	2500
1/4"	•	•	•	•	•
1/2"	•	•	•	•	•
3/4"	•	•	•	•	•
1"	•	•	•	•	•
1-1/2"	•	•	•	•	•
2"	•	•	•	•	•
3"	•	•			
4"	•	•			
6"	•	•			
8"	•	•			
12"	•	•			

**PBM Valve
Pressure
Class**



Technical Information

BOLTED INSTRUMENT VALVES PRESSURE/TEMPERATURE AND TORQUE CHARTS





PBM VALVE SOLUTIONS

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