

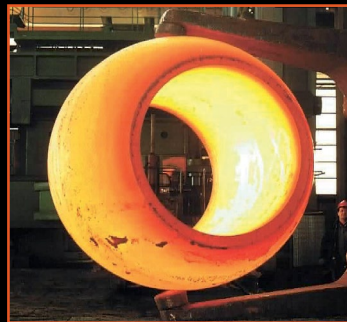
FS9000 SERIES TRUNNION MOUNTED BALL VALVE

OVERVIEW
BROCHURE



AUSTRALIAN
PIPELINE VALVE®

Local Strategic FZV Partner



API 6D - 1473
API Q1 - 2345
API QR - 2470 (9001)
API 6A - 0842



www.australianpipelinevalve.com.au

FS9000 SERIES SIDE ENTRY TRUNNION BALL VALVE

DESIGN FEATURES

- Manufactured and tested to API 6D/ISO 14313
- Double block & bleed capability
- Antistatic to API 6D
- 2 piece Side Entry type
- Only one potential body leakage point compared to 4 leakage points on conventional 3 piece trunnion mounted ball valves.
- Full Bore - Full through conduit - piggable
- Manual operation
- Trunnion mounted
- Stem separate from the ball, anti-blow-out design
- No side load on the stem. Bearing blocks absorb the pressure load on the ball
- Large diameter, heavy duty trunnion & bearings
- Triple barrier stem seals.
- Anti blow-out stem configuration
- Metal seat retainer (secondary fire seal) complete with soft insert
- O-ring for static (body joints) and dynamic (seat rings and stem) seals
- Self-relieving (automatic cavity relief) seats
- Spring energised constrained seat design
- Body bolting design complies with ASME B16.34 & ASME VIII
- Emergency seat & stem sealant injection
- Fire safe certified DNV witness in accordance with ISO 10497 & API 607 5th/6th/7th Edition
- Fugitive emission certified ISO - EN 15848-1
- Equipped with cavity pressure bleed fitting
- Manufactured under quality system ISO 9001 and API 6D
- Body and seat hydrostatic and seat air test
- Material certification to EN 10204/ISO type 3.1.B
- 10 Year warranty



CHEVRON
APPROVED



BP APPROVED



SHELL TAT TAMAP
APPROVED



PETRONAS
APPROVED



PDO APPROVED



API 607 5th, 6th & 7th Ed.
ISO 10497 Firesafe Certified



ISO 15848-1 & API 641
Fugitive Emission Certified



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SIL 3



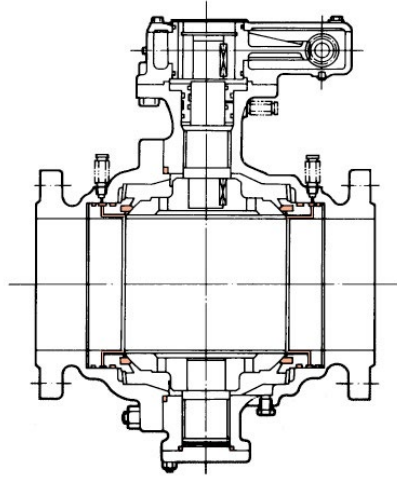
LLOYDS
FZV - CE/PED
2014/68/EU

FS9000 SERIES - TECHNICAL OVERVIEW



 AUSTRALIAN PIPELINE VALVE®		TECHNICAL OVERVIEW SHEET	
		PROJECT	Stock Order
		PURCHASER	Australian Pipeline Valve
		END USER	Australia
LINE		SPECIFICATIONS	
1	VALVE DESCRIPTION	2-Piece Ball Side Entry Trunnion Bolted Bonnet	
2	VALVE MODEL NO.	Series Ball Valve Side Entry	
3			
4			
5			
6	PRESSURE CLASS	Refer to drawing	
7	BORE (FULL/REDUCED)	Refer to drawing	
8	END CONNECTIONS	Refer to drawing	
9	OPERATION (MANUAL/ACTUATED)	Refer to drawing	
10	GEARBOX (WHERE APPLICABLE)	Diamond Gear	
11	SEAT CONFIGURATION	Self-Relieving	
12	ANTI BLOWOUT STEM DESIGN (YES/NO)	Yes	
13	ANTI STATIC DEVICE (YES/NO)	Yes	
14	VENT/DRAIN FITTING	NPT Plug and Bleed Valve - as per API 6D	
15	FIRE SAFE DESIGN & TESTING (YES/NO - SPEC)	Yes - ISO 10497 / API 607	
16			
17	VALVE MATERIALS OF CONSTRUCTION		
18	BODY	Refer to drawing	
19	CLOSURE	Refer to drawing	
20	STEM	Refer to drawing	
21	BALL	Refer to drawing	
22	SEATS	Refer to drawing	
23	SEAT INSERT	Refer to drawing	
24	SEAT SPRINGS	INCONEL X750	
25	OTHER SEALS	Graphite/Viton AED	
26	BOLTING	Refer to drawing	
27	STEM GREASE FITTING	Yes	
28	SEAT SEALANT INJECTION FITTING	Yes	
29			
30			
31	VALVE DESIGN LIMITS		
32	TEMPERATURE	Refer to drawing	
33	PRESSURE	Refer to drawing	
34	DIFFERENTIAL PRESSURE (MAX.)	Refer to drawing	
35			
36	TESTING		
37	REFERENCED SPECIFICATION	API 6D (ISO 5208 Rate A)	
38	OTHER TEST/INSPECTION CONDUCTED	APV Representative Witness	
39	SPECIAL TESTS	PMI/CT/MPI where specified	
40	CERTIFICATION		
41	PRESSURE RETAINING PARTS		
42	- BODY, BONNET, CLOSURE	EN 10204 3.1	
43	- STEM	EN 10204 3.1	
44	- BOLTING†	EN 10204 3.1	
45	PRESSURE CONTROLLING PARTS		
46	- SEATS	EN 10204 3.1	
47	- BALL	EN 10204 3.1	
48			
49	†ALL B7, B7M, L7, L7M BOLTING IS GALVANISED.		
50	CLARIFICATIONS/QUALIFICATIONS:		
51			
52	1) All valves are provided with locking devices on their individual operators.		
53	2) Valves are designed with capability for double block and bleed operation/function.		
54	3) Vent and drain connections include bleed valve.		
55	4) Valve body cavity pressure can be released during open and close position.		
56	5) Gear box's cover screw shall be accessible from the top.		
57	6) All external fixtures, i.e. seal injection, drain & bleed plug are full 316SS.		
58			
59			
60			
PREPARED BY		CHECKED BY	REV. NO.
BT		AS	02

FS9000 SERIES BALL VALVE DESIGN FEATURES OVERVIEW



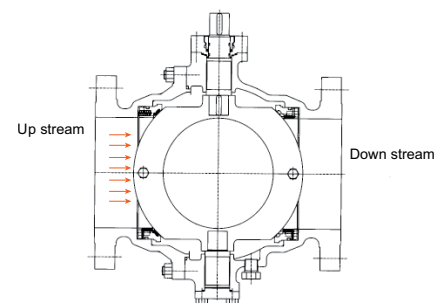
MANUFACTURING SPECIFICATIONS

Specification	Standards
General design standard	API 6D
Pressure-temperature rating	ASME B16.34
Face to face dimensions	ASME B16.10
Flange type and dimensions	ASTM B16.5
Butt-weld ends	ASME B16.25

APV TRUNNION MOUNTED BALL VALVE CONSTRUCTION FEATURES FUNCTION

UP-STREAM SEALING TWO-WAY VALVE

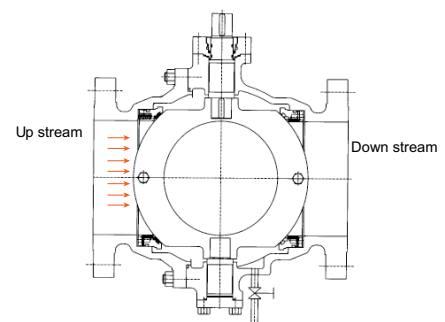
The up-stream seal of the valve is effected by the advanced spring pre-tightening seats which automatically adjust. The two-way valve has two seats that can be sealed in both directions, so there's no limitations of flow direction during installation. As line pressure increases the seat reacts to the force of the pressure to form an effective seal. In the absence of line pressure, coil springs around the seat unit provide a tight seal by keeping the seat in contact with the ball.



DOUBLE BLOCK & BLEED VALVE

Being "up-stream side sealing", the valve can bleed out the trapped fluid in the body cavity when the valve's in fully open or fully closed position. The fluid is intercepted by seats on up-stream and down-stream side. Bleeding the dirty fluid periodically can reduce damage of the sealing surface and prolong the service life of the valve.

Once the integrity of the cavity is ensured, the upper stem seal may be replaced under working pressure. However, this depends on the size and class as designs vary. Also prime the stem sealant nipple with emergency sealant before attempting to replace the upper seal.



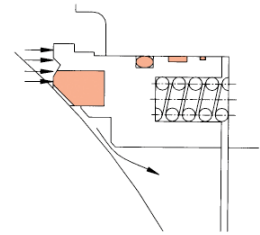
FS9000 SERIES BALL VALVE DESIGN FEATURES OVERVIEW (Continued)

AUTOMATIC RELIEF OF THE CAVITY

Independent floating spring loaded seats are always in contact with the ball to provide an effective tight seal even at low differential pressures. Independent upstream and downstream seat permit draining of fluid from the body cavity, allowing double block and bleed operation.

With the standard 'single sealing' feature, when the valve is closed there is an automatic body cavity release of over pressure to the line through the downstream (or upstream) seat. The pre-tightened seat springs are preset to automatically relieve excess cavity pressure caused by thermal expansion back downstream (or upstream). Once pressure exceeds the API6D (6.8) maximum (1.33 times the valve maximum pressure rating at 38°C at the time of publishing).

'Double sealing' feature (available on request), maintains the sealing capacity of the valve even in the case of failure of the upstream seat. Body cavity over pressure in this case can be released through a relief valve to atmosphere or flare, or can be recycled back upstream. A combination of double sealing features on the downstream side and single sealing on the upstream seat is available on request. This configuration maintains the sealing capacity of the valve in case of failure of the upstream seat and release of the body cavity over pressure through the upstream seat.

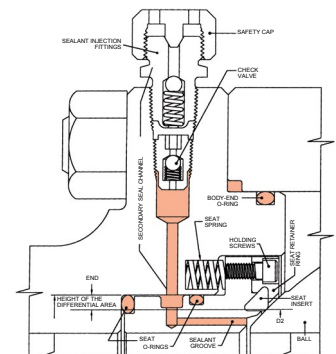


FULL BORE OR REDUCED BORE

Full bore and reduced bore are available in all sizes. Full bore is full through conduit bore size to API 6D to facilitate pigging.

SEALANT INJECTION SYSTEM

When the seat and/or stem sealing system is damaged, the grease injection valve can inject sealant into the valve for temporary sealing. Under normal circumstances Australian Pipeline Valve valves require no lubrication.

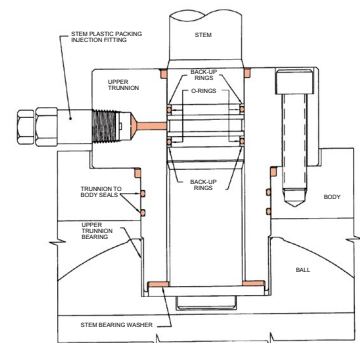


STEM SEALING SYSTEM

Two O-rings are utilised in the stem area for reliable performance, as well as graphite fireseal.

FLEXIBLE OPERATION

The seat and stem bearing has a Teflon coating which is low friction and self-lubricates to reduce the valve operation torque.



OPERATORS

The valve may be operated by hand, pneumatic operator, motor, hydro-pneumatic operator and hydraulic operator, etc.

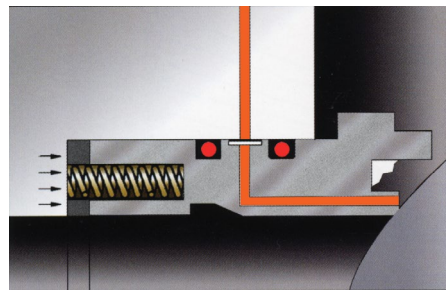
NACE

The full range of APV valves can meet NACE standard MR-01-75, latest edition if necessary.

FS9000 SERIES BALL VALVE DESIGN FEATURES SEAT DESIGN AND STEM SEALING

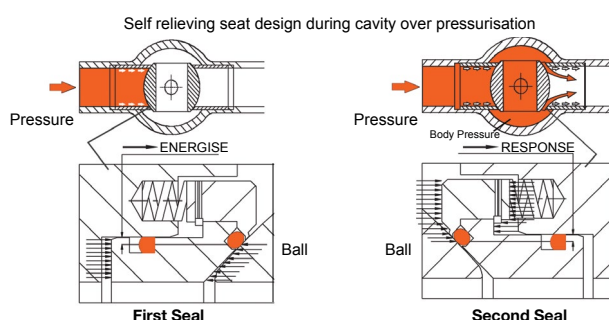
PISTON-ACTION SEATS

As line pressure increases the seat reacts to the force of the pressure to form an effective seal. In the absence of line pressure, coil springs behind the seat provide a tight seal by keeping the seat in contact with the ball surface. Independent floating spring loaded seats are always in contact with the ball to provide an effective tight seal even at low differential pressure. Independent upstream and downstream seats permit draining of fluid from the body cavity, so allowing double block and bleed operation (closed position only). With the optional single sealing feature, there is automatic body cavity release of over pressure to the line through the downstream seat.



SELF RELIEVING SEATS (STANDARD)

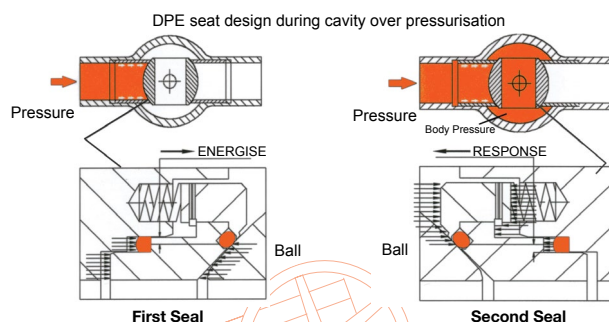
In self relieving condition, excessive internal cavity pressure is automatically relieved both upstream and downstream into the line by excessive pressure forcing the seats away from the ball.



DOUBLE PISTON EFFECT (DPE) SEATS

With the 'DPE' seat option, if a leakage occurs in the upstream seat, the pressure entering the body cavity pushes the downstream seat against the ball and the valve seals. Line pressure forces a seal against the floating seat.

An external body relief valve is installed to protect the body cavity from excess pressure which can be vented to atmosphere or recycled back to the downstream side of the valve or to flare.



TRIPLE BARRIER STEM SEAL DESIGN

Leakage from the stem area is prevented by double barrier sealing with O-rings as well as graphite fire seals. Leakage through the valve body joint is also protected by double sealing with an O-ring and a flexible graphite gasket. After a fire has deteriorated the O-rings, graphite packing and secondary seal ensure prevention of external fluid leakage.

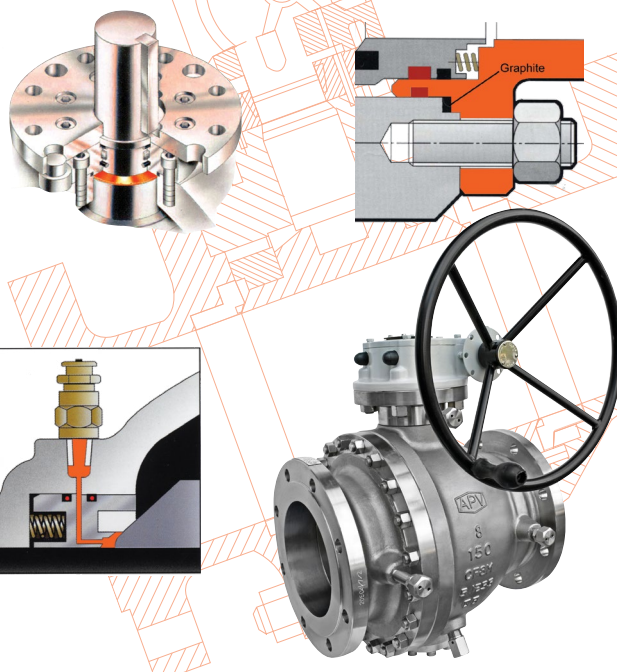
Only one potential body leakage point compared to 4 leakage points on conventional 3 piece trunnion mounted ball valves.

DOUBLE BLOCK AND BLEED

Whether in the open or closed position, pressure on each side of the ball is blocked from the body cavity by the seat ring. The cavity can be blown down or drained (only in the closed position) through the body port to indicate line isolation is effective.

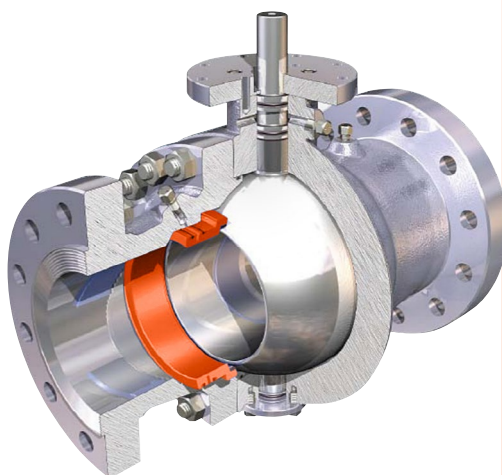
EMERGENCY SEALING FUNCTION

In case of fluid leaks from the seat or stem sealing area, a sealant can be supplied through the injection fitting to temporarily prevent leakage.





AUSTRALIAN PIPELINE VALVE®



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LOCAL DISTRIBUTOR



QUALITY ASSURANCE AND CERTIFICATION

We are continually improving all facets of quality assurance. Full metallurgical and test certificates are always supplied for all pressure retaining parts, we also provide it on all major trim components.

This brochure is a general overview only, individual drawings and data sheets can be furnished on request.

If you have any requirement in the field of valves, please contact us for a prompt response. Continuous development of Australian Pipeline Valve products may necessitate changes in the design or manufacturing processes. Australian Pipeline Valve reserves the right to effect any such changes without prior notice.

