



MV1
TOP-ENTRY
BALL VALVE



SIDE-ENTRY BALL VALVE



MV5
FULLY-WELDED
BALL VALVE

API 6D BALL VALVES

### **COMPANY PROFILE**



### ONE BRAND, INFINITE TRUST

**MIR VALVE** is a top-tier manufacturer offering the complete range of **ball and gate valves** serving the international oil & gas, petrochemical, refining and power industries. In less than 7 years, we have manufactured **over 9,000 MIR valves which are today in service** in onshore, offshore and subsea installations worldwide. Our technology and quality are proven in service.

With over 150 employees and **a plant** located in **Kuala Lumpur**, (Shah Alam Malaysia), and two **sales offices** in **Jakarta**, Indonesia and **Seoul**, Korea, we are **culturally in-tune** with all markets.

Our Quality Management System and products are certified to all standards including **ISO 9001, ISO 14001, OHSAS18001, API 6D, API 6DSS, API Spec Q1, APIQR, CE-PED, CE-ATEX, EN 14141, IEC 61508**. We are an approved manufacturer with over 100 major oil and gas companies.

We comply and meet the most stringent customers' requirements for the qualification of our products through extensive testing, such as firesafe, low temperature down to -125°C, fugitive emission, endurance, high pressure gas, TAT and others, QC inspection at our supply sources and 100% incoming inspection for all components and materials arriving to our plant.

We have extensive coverage and representation in the global markets through our **sales agent network in over 35 locations worldwide and growing**.

MIR VALVE aspires to **deliver on-time world-class quality products** managed by a highly experienced management team, continued investment, customer focus and continuous alignment to the dynamics driving the global markets.

### WE LISTEN AND LEARN FROM OUR CUSTOMERS, EMPLOYEES AND EXPERIENCE

Malaysia Operations, Shah Alam, Kuala Lumpur, 140,000 sq.ft.



## **INDUSTRIES AND APPLICATIONS**



### **OUR VALVES ARE SUITABLE FOR ONSHORE, OFFSHORE AND SUBSEA APPLICATIONS**

#### **INDUSTRIES**

- Oil & Gas
- Exploration & Production
- Pipelines & Processing Plants
- Refining & Petrochemical
- LNG
- Power

- Metering and Gate StationsFPSO & ShipbuildingOnshore Receiving Terminals

#### **APPLICATIONS**

- Blow-down
- ESD
- Riser
- Isolation
- Control
- HIPPS

- Subsea
- High Temp. ≥+200°C
- Low Temp. down to -125°C (DT)
  Sequencing service
  Abrasive fluids

• Upstream/Midstream/Downstream

### **ONSHORE**



### **OFFSHORE**



### **SUBSEA**



## **PRODUCT RANGE MV1 - MV3 - MV5**



#### **MV1** TOP-ENTRY BALL VALVE ASME CL. 900 ASME CL. 1500 ASME CL. 2500 ASME CL. 150-600 **SERVICE** 2"-16" Standard 2"-60" 2"-48" 2"-36" 2"-16" Low temp. down to -125°C (DT) 2"-60" 2"-48" 2"-36" Subsea 2"-60" 2"-48" 2"-36" 2"-16" Underground 2"-60" 2"-48" 2"-36" 2"-16" 2"-12" High temp. +220°C to +400°C (DT) 2"-36" 2"-36" 2"-24"

Other sizes and pressure classes available upon request

MV3 SIDE-ENTRY B	ALL VALVE			
SERVICE	ASME CL. 150-600	ASME CL. 900	ASME CL. 1500	ASME CL. 2500
Standard	2"-60"	2"-48"	2″-36″	2″-16″
Low temp. down to -125°C (DT)	2″-60″	2"-48"	2″-36″	2″-16″
Subsea	2″-60″	2"-48"	2″-36″	2″-16″
Underground	2″-60″	2"-48"	2″-36″	2″-16″
High temp. +220°C to +400°C (DT)	2"-36"	2″-36″	2"-24"	2"-12"

Other sizes and pressure classes available upon request

## **MV5** FULLY-WELDED BALL VALVE

SERVICE	ASME CL. 150-600	ASME CL. 900	ASME CL. 1500	ASME CL. 2500
Standard	2"-60"	2"-48"	2″-36″	2″-16″
Low temp. down to -125°C (DT)	2″-60″	2"-48"	2″-36″	2"-16"
Subsea	2″-60″	2"-48"	2″-36″	2″-16″
Underground	2″-60″	2"-48"	2″-36″	2″-16″
High temp. +220°C to +400°C (DT)	2"-36"	2″-36″	2"-24"	2″-12″

Other sizes and pressure classes available upon request

# **DESIGN FEATURES**



DESIGN FEATURES	MV1 TOP-ENTRY BALL VALVE	MV3 SIDE-ENTRY BALL VALVE	MV5 FULLY-WELDED BALL VALVE
› API 6D Design and Construction	STANDARD	STANDARD	STANDARD
Face-To-Face Dimensions to API 6D and ANSI B16.10	STANDARD	STANDARD	STANDARD
> Trunnion Mounted	STANDARD	STANDARD	STANDARD
› Independent Stem and Ball	STANDARD	STANDARD	STANDARD
> Floating Seats	STANDARD	STANDARD	STANDARD
> Soft Seat Insert	STANDARD	STANDARD	STANDARD
> Primary Metal – Secondary Soft Seat	OPTIONAL	OPTIONAL	OPTIONAL
› Metal-To-Metal Seats	OPTIONAL	OPTIONAL	OPTIONAL
O-Ring Type Seals	STANDARD	STANDARD	STANDARD
> Polymeric Lip-Seals	OPTIONAL	OPTIONAL	OPTIONAL
> Self-Relieving Seats (SR)	STANDARD	STANDARD	STANDARD
> Double Isolation and Bleed (DIB-1) (Double Piston Effect) (DPE Seats)	OPTIONAL	OPTIONAL	OPTIONAL
Double Isolation and Bleed (DIB-2)(Dual Seat)(SR+DPE)	OPTIONAL	OPTIONAL	OPTIONAL
Double Block & Bleed (DBB)	OPTIONAL	OPTIONAL	OPTIONAL
> Full or Reduced Bore	AS REQUESTED	AS REQUESTED	AS REQUESTED
> Flanged Ends / Welded Ends / Hub Ends	AS REQUESTED	AS REQUESTED	AS REQUESTED
> Transition Pups For Welded Ends Valves	OPTIONAL	OPTIONAL	OPTIONAL
Antistatic Device	STANDARD	STANDARD	STANDARD
> Anti Blowout Stem	STANDARD	STANDARD	STANDARD
> Double Body Barrier	STANDARD	STANDARD	STANDARD
> Triple Stem Barrier	STANDARD	STANDARD	STANDARD
> Vent Plug	STANDARD	STANDARD	STANDARD
> Bleed Valve	OPTIONAL	OPTIONAL	OPTIONAL
> Drain Plug	STANDARD	STANDARD	STANDARD
> Stem Injection Fitting	STANDARD	STANDARD	STANDARD
> Seat Injection Fitting	OPTIONAL	OPTIONAL	OPTIONAL
> Seat Pocket Overlay	OPTIONAL	OPTIONAL	OPTIONAL
Seal Areas Overlay	OPTIONAL	OPTIONAL	OPTIONAL
> Wetted Parts Overlay	OPTIONAL	OPTIONAL	OPTIONAL
> Body Internal Lining	OPTIONAL	OPTIONAL	N/A
> Extended Stem for Underground Installation	OPTIONAL	OPTIONAL	OPTIONAL
> Extended Bonnet for Low or High Temperature	OPTIONAL	OPTIONAL	OPTIONAL
> Locking Device	OPTIONAL	OPTIONAL	OPTIONAL
> Lifting Lugs/Valve Support	STANDARD	STANDARD	STANDARD
> Manual or Actuated Operation	AS REQUESTED	AS REQUESTED	AS REQUESTED
› Firesafe Design	STANDARD	STANDARD	STANDARD
› In-Line Maintenance	YES	NO	NO
> On-Site Maintenance	YES	YES	YES (FOR STEM SEALS ONLY)



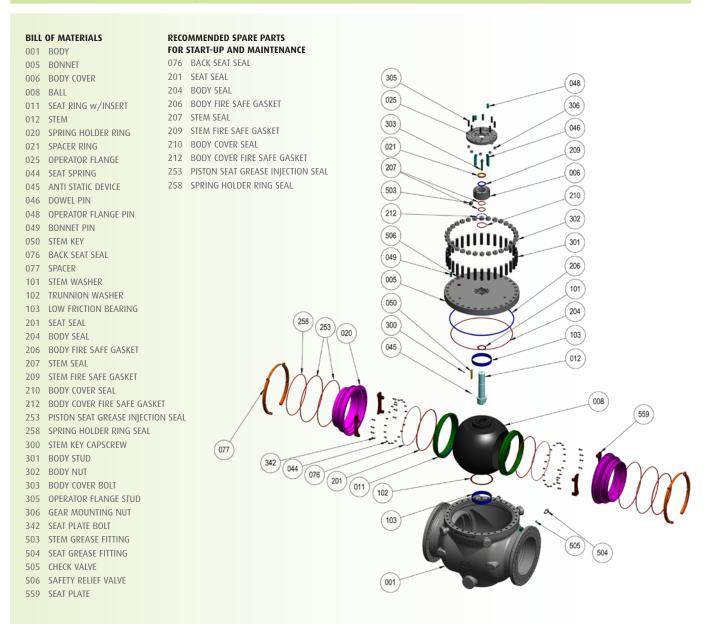
16" to 36" CL. 150 to 900, CS+ENP+500 pups, Peek Insert, c/w Pneumatic / GOO Actuator Onshore Malaysia

### **MV1 TOP-ENTRY BALL VALVE**



### **BENEFITS OF THE TOP-ENTRY DESIGN**

- > **Full in-line maintenance** in vertical or horizontal position. The bolted construction allows disassembly on site for inspections and possible repairs. Clearing the bonnet off the valve allows free access to the ball and the seats, which can simultaneously be taken out with special maintenance tools.
- > Reduced number of potential leak paths.
- > After maintenance, the valve can be fully retested without pipeline pressure (for DIB-1 Valves) (DPE Valves).
- > Sized to **withstand external loads from the pipeline** even when the bonnet, the ball and the seats are removed for maintenance.
- > Can be welded directly onto the pipeline assembly.
- > Available for all industries and applications.



## **MV1 TOP-ENTRY BALL VALVE**

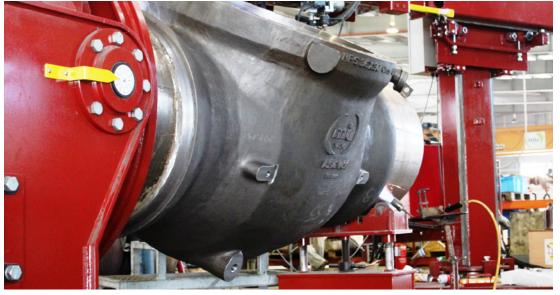




6" to 18" CL. 600 c/w Hydraulic Actuator, fugitive emission testing, high-pressure gas testing to MESC Spec. Onshore Oman



2" to 12" CL. 900 forged body gear+ROV, MESC Spec. hyperbaric testing Subsea Malaysia



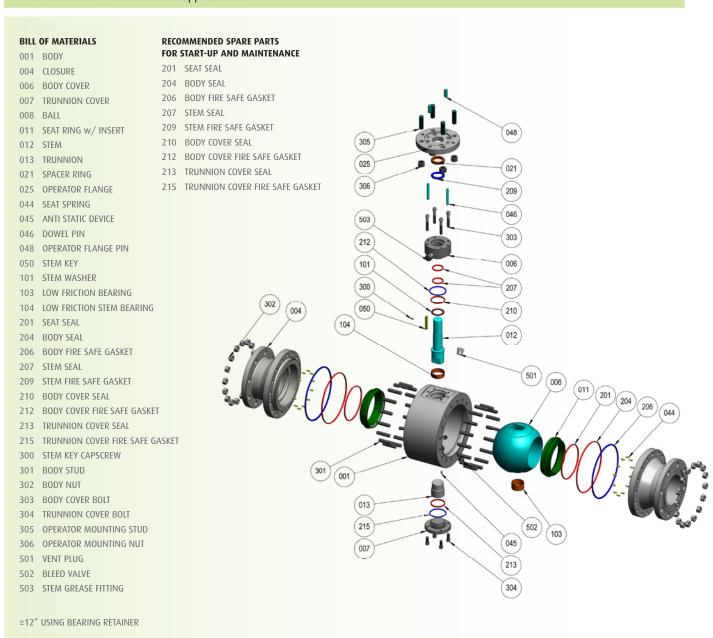
Welding of pup pieces on top-entry ball valve

## **MV3 SIDE-ENTRY BALL VALVE**



### **BENEFITS OF THE SIDE-ENTRY DESIGN**

- Most common and popular design as it can be easily removed from the pipeline for maintenance due to bolted design.
- > Most competitive design of all the ball valves in terms of cost and delivery.
- The split body construction allows the use of forged materials in various grades of CS, SS and high alloys, thus suitable for the most severe service conditions.
- > Large inventory of parts kept available in-house.
- > Available for **short delivery** 16 weeks or less.
- > Available for all industries and applications.



# **MV3 SIDE-ENTRY BALL VALVE**





16" CL. 300, Australia

16" CL. 1500 full duplex, metal-seated +150μ TCC, PMI High-pressure gas testing as per API 598 Offshore Malaysia



24" CL. 900, Total specification Extensive high-pressure hydro and gas testing Onshore Myanmar



## **MV5 FULLY-WELDED BALL VALVE**



### BENEFITS OF THE FULLY-WELDED DESIGN

- > 3-piece design welded body reduces the number of potential leak paths.
- > Allows for **reduction in weight**, especially if the welded end version is selected.
- > The split body construction allows the use of forge materials in the various grades of CS, SS and high alloys, thus **suitable for the most severe service conditions.**
- > **Compact design** available with weld end/weld end connections.
- > Alternative option to the side-entry bolted body.
- > Typically used on gas transmission pipeline.
- > Available for all industries and applications.

#### RECOMMENDED SPARE PARTS **BILL OF MATERIALS** FOR START-UP AND MAINTENANCE 001 BODY 207 STEM SEAL 004 CLOSURE 209 STEM FIRE SAFE GASKET 006 BODY COVER 210 BODY COVER SEAL 008 BALL 212 BODY FIRE SAFE GASKET 011 SEAT RING W/INSERT 012 STEM 048 015 BEARING RETAINER 021 SPACER RING 305 306 025 OPERATOR FLANGE 025 044 SEAT SPRING 046 045 ANTI STATIC DEVICE 021 046 DOWEL PIN 303 047 BEARING RETAINER PIN 209 006 048 OPERATOR FLANGE PIN 503 050 STEM KEY 051 LIFTING LUG 207 050 047 052 VALVE SUPPORT 210 101 STEM WASHER 045 102 TRUNNION WASHER 103 LOW FRICTION BEARING 501 201 SEAT SEAL 207 STEM SEAL 103 209 STEM FIRE SAFE GASKET 210 BODY COVER SEAL (011) 212 BODY FIRE SAFE GASKET 303 BODY COVER BOLT 305 OPERATOR MOUNTING STUD 306 GEAR MOUNTING NUT 501 VENT PLUG 502 DRAIN PLUG 503 STEM GREASE FITTING

## **MV5 FULLY-WELDED BALL VALVE**





8"-16", 20", 28" CL. 300-900 CS/SS Onshore UAE

12", 16", 20", 30" CL. 600 FB/RB CS+ENP+500 mm. pups c/w Gas Over Oil Actuator Onshore Malaysia



### **SPECIAL SERVICES AND APPLICATIONS**



### **SUBSEA BALL VALVES**

- Additional environmental sealing at body to closure and body to stem
- > CRA overlay on sealing or process wetted areas
- > ROV interface to API 17H/ISO 13628-8 (optional)
- > More stringent requirements for material selection
- Advanced inspection and testing requirements (i.e. hyperbaric testing, cycling)



MV1-SS Top-Entry Subsea Ball Valves to MESC Spec., Trunnion-mounted ball, 12", 4"x3", 3"x2", 2"x1.5" CL. 900, Welded ends + pup pieces Metal seated + TCC, Soft seated + ENP on ball and seats, Self-relieving seats Body & bonnet: Forged, Low Temp. CS, Inc. 625; Trim: F51 Duplex, Inc. 625 + TCC, A694 F60 + ENP 0.025 mm, Cladding: Inc. 625 on all wetted areas, NACE 0175 Subsea gear + ROV CL.2 Interface; High pressure hydro and gas shell and seat test, Hyperbaric test at 120m water depth; Subsea Malaysia 100m water depth

### LOW TEMPERATURE VALVES DOWN TO -125°C (DESIGN TEMP)

- > Extended bonnet with vapor space to maintain the stem packing within the suitable temperature range.
- > Low friction coating on seating for smoother operation
- > Fugitive emission (FE) compliance
- > More stringent requirements for material selection
- Supplementary inspection and testing (i.e. FE, Low temperature testing)

### HIGH TEMPERATURE VALVES +220°C TO +400°C (DESIGN TEMP)

- > Extended bonnet
- → Metal and graphite seals
- > Inherently firesafe design
- Adjustable stem packing with live load for easy maintenance which guarantees performance throughout the operational life
- Advanced selection of hard facing technologies suitable for various services

#### **METAL-SEATED BALL VALVES**

- Suitable for severe service (dirty, abrasive), high temperature (+220°C to +400°C), low maintenance (subsea, underground), high demand (frequent cycling)
- > Hard facing on ball and seats (ENP, TCC, CCC)
- Higher torque, more robust topwork design, more powerful actuator
- Longer life cycle, low maintenance, low spare parts consumption
- > Leakage rates to API 598 or ISO 5208:1993, Rates A, B

### **CLADDED BALL VALVES**

- Suitable for sour service, harsh and hostile environment, low maintenance
- > Corrosion resistant, long life, high reliability
- Overlay in Inconel 625 or Stainless Steel, mostly applied on Carbon Steel base material
- Cladding options: dynamic seal areas, all sealing areas, all wetted areas (fully cladded)
- > Final overlay thickness of 3 mm min.

## **DESIGN SPECIFICATIONS**



DESIGN STANDARDS							
DESIGN	BODY THICKNESS	BOLTING	FACE-TO-FACE DIMENSIONS	DRIVE TRAIN SIZING (MAST)	FIRESAFE		
API 6D/ISO 14313 API 6DSS/ISO 14723 Customer Specifications (Shell, Total, Exxonmobil and other customer specs)	ASME VIII-1, VIII-2 ASME B16.34	ASME VIII-1, VIII-2 ASME B16.34	API 6D/ISO 14313 API 6DSS/ISO 14723 ANSI B16.10	ASME VIII-1, VIII-2	ISO 10497/API 607 API 6FA		
OTHERS		NDT: ASME V Weld ends: B16.25	Welding: ASME IX Gas pipeline: ISO 14141	Sour service: NACE MR-01	75/ISO 15156		

MATERIAL SPECIFICATIONS						
BODY	BALL/SEATS	STEM	SEATING/SEALS	BOLTING		
CARBON STEEL  > A105  > WCB  > LCC  > LF2  > LF3  STAINLESS STEEL  > 316  > 321  > 347  DUPLEX SS  SUPERDUPLEX SS NICKEL ALLOYS  > Inconel  > Monel  TITANIUM OTHERS	CARBON STEEL  > A105 > LF2 > LF3 > F60/F65  STAINLESS STEEL  > 316 > 321 > 347 > 13 Cr > 13 Cr4Ni > 17-4PH > Nitronic  DUPLEX SS SUPERDUPLEX SS NICKEL ALLOYS > Inconel > Incoloy > Monel > Stellite TITANIUM OTHERS	CARBON STEEL  > 4140  > LF3  STAINLESS STEEL  > 316  > 13 Cr  > 13 Cr4Ni  > 17-4PH  > Nitronic  DUPLEX SS  SUPERDUPLEX SS  NICKEL ALLOYS  > Inconel  > Monel  TITANIUM  OTHERS	SOFT SEATING  RPTFE  NYLON  PEEK  FKM  HNBR  FFKM  PCTFE  METAL SEATING  TCC  ENP  CCC  Ni-SiC  Graphite	CARBON STEEL  > B7/2H  > L7/7  > B7M/2HM  > L7M/7M  > L43  STAINLESS STEEL  > B8/8  > B8M/8M  > 660  DUPLEX SS  SUPERDUPLEX SS  NICKEL ALLOYS  > Inconel  TITANIUM  OTHERS		

### **COATING**

ENP Electroless Nickel Plating (25μ, 75μ)

Tungsten Carbide Coating (150μ, 200μ, 400μ)
CCC Chrome Carbide Coating (150μ, 200μ)

Weld Overlay AISI 316 / 316L, ALLOY 625

Stellite Gr. 6, Gr. 12

**Ni-SiC** Nickel-Silicon Carbide Plating (25μ, 50μ)

SEALING						
O-Rings	Lip-Seals					
-46°C /+200°C	-196°C /+220°C					
Metal/Graphoil Gasket & Stem Extension	Lip-Seals & Stem Extension					
Over +220°C	Below -101°C					

Estimate temperatures as per the recommendation of the seal manufacturer. Seal selection is based on a combination of criteria and is not limited to temperature only.



MV3 Side-Entry Ball Valve 16"x14" CL.2500 HUB ENDS, Full Superduplex, Gas Tested, Offshore Malaysia

### **TESTING CAPABILITY**



### AS PER DESIGN STANDARDS AND CUSTOMER REQUIREMENTS

### STANDARD TESTS ADDITIONAL 1

- > Hydrostatic Body Test
- > Hydrostatic Seat Test
- > Low Pressure Air Seat Test
- > Cavity Safety Relief Test
- > Functional Test
- > Anti-static Device Test

### **ADDITIONAL TESTS (UPON REQUEST)**

- > Torque Test
- > Endurance Test (cycling)
- > Drift Tool Test
- Double Isolation and Bleed Test (DIB-1, DIB-2)
- > DB&B Test
- > High Pressure Gas Test
- > Fugitive Emission Test acc. to ISO15848 or MESC SPE 77/312
- > Low Temperature Test acc. to MESC SPE 77/306
- > TAT Testing to MESC 77/300A
- > Firesafe Testing
- > Hyperbaric Test
- > Others as per customer requirements

### **QUALITY ASSURANCE CERTIFICATION**

- > API 6D for Ball Valves
- > API 6DSS for Subsea Ball Valves
- > CE-PED 97/23/EC
- > CE-ATEX 94/9/EC
- > Firesafe ISO 10497/API 607
- > ISO 9001/API Q1/API QR1
- > Achilles JQS Certificate of Qualification
- > IEC 61508 (up to SIL 3)
- → ISO/IEC 17025
- → Shell 2 STAR Certificate

High-pressure gas testing



Submerged water testing



Fugitive emission testing



Low temperature testing



## **MV4 TWIN BALL VALVE (DBB)**



### **BENEFITS OF THE DBB DESIGN**

- > Space and weight saving
- > Flanged or flangeless design
- > Cost saving (product and installation)
- > Reduced number of potential leak paths
- > Increased line structural integrity
- > More reliable system
- Manual and/or actuated configuration
- > Available for all industries and applications



## **MV4** TWIN BALL VALVE (DBB)

SERVICE	ASME CL. 150-600	ASME CL. 900	ASME CL. 1500	ASME CL. 2500
Standard	3/4"-24"	3/4"-24"	3/4"-20"	3/4"-12"
Subsea	3/4"-24"	3/4"-24"	3/4"-20"	3/4"-12"

Other sizes and pressure classes available upon request.

DESIGN FEATURES			
> Trunnion Mounted	STANDARD	> Anti Blowout Stem	STANDARD
› Independent Stem and Ball	STANDARD	› Double Body Barrier	STANDARD
> Floating Seats	STANDARD	> Triple Stem Barrier	STANDARD
> Soft Seat Insert	STANDARD	> Vent Plug	STANDARD
> Primary Metal – Secondary Soft Seat	OPTIONAL	> Bleed Valve	STANDARD
› Metal-To-Metal Seats	OPTIONAL	> Stem Injection Fitting	OPTIONAL
O-Ring Type Seals	STANDARD	> Seat Injection Fitting	OPTIONAL
> Polymeric Lip-seals	OPTIONAL	> Seat Pocket Overlay	OPTIONAL
> Self-Relieving Seats	STANDARD	> Seal Areas Overlay	OPTIONAL
> Double Block & Bleed (DBB)	STANDARD	> Wetted Parts Overlay	OPTIONAL
> Double Isolation and Bleed (DIB-2)	OPTIONAL	> Body Internal Lining	OPTIONAL
> Full or Reduced Bore	AS REQUESTED	› Locking Device	OPTIONAL
> Flanged Ends / Welded Ends / Hub Ends	AS REQUESTED	> Lifting Lugs/Valve Support	STANDARD
> Transition Pups For Welded Ends Valves	OPTIONAL	> Manual or Actuated Operation	AS REQUESTED
› Antistatic Device	STANDARD	› Firesafe Design	STANDARD

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Coming up in 2015