Microne Industries

MICRONE VALVES DIVISION

No 117, Pattaravakkam Railway Station Road,
SIDCO Industrial Estate, Ambattur, Chennai - 600 098, Tamil Nadu, India.
P : +91 44 6527 0487 | F : +91 44 4504 8163
E : info@microneind.com | sales@microneind.com

MICRONE VALVES DMCC

P.O. Box : 392339
Jumeriah Bay Tower - X2 , Office # 810,
Jumeriah Lake Towers, Dubai, UAE.
Tel : +971502828158
Email : aseen@microneind.com , Web : www.microneind.com

TRILINK SPECIALTY CHEMICALS & ENERGY SERVICES SDN BHD

OFFICE ADDRESS : 216 Block B, Kelana Square, No 17, SS7/26 Kelana Jaya,47301 Petaling Jaya.
Tel. no : +60 3 78866477, +60 3 78864677, Fax : +60 3 8876477, Email : info@trilinkenergy.com.my
Web : www.trilinkenergy.com.my
FACTORY & SERVICE CENTER: No.10, Jalan Plma 34/18A, Taman Perindustrian Pak Chun,
Seksyen 34 Jalan Bukit Kemuning BT 6., 40470 Shah Alam, Selangor, Malaysia

MICRONE

Embracing Excellence

Performance Beyond Compare!

We are what we repeatedly do.
Excellence, then,
is not an act ,
but a habit.- Aristotle

SPECIALIZED MANUFACTURER FOR CRITICAL APPLICATIONS...

www.microneind.com

QUALITY IN NEVER AN ACCIDENT :
IT IS ALWAYS THE RESULT OF INTELLIGENT EFFORT!

Microne Industries is a leading manufacturer and exporter of high quality specialized Valves. Microne reigns supreme in offering products that are supreme in quality and robust in performance. The Company has a team of design engineers who excel at designing products that are not only quality driven and cost effective, but suit the wider market needs and specifications. Microne is a quality focused company and produces products using the highest quality components that are verified and tested in its own in-house lab before being used.

Microne is an **ISO 9001: 2008** , **ISO 14001: 2004, ISO 18001: 2007** certified & **API -6D** certified company and produces products on par with the international quality standards. Microne's Signature product range comprises of **Ball Valves,Plug Valves, Globe Valves, Check Valves, Gate Valves and Butterfly Valves.**

The Company is founded and ably managed by **Mr. N. Ravichandran and Mr. C.Raju** . Both are serving as Managing directors of the company . They lend strategic direction and drive the company towards achieving manufacturing excellence by setting up and efficient process mechanism. They remain to be the great source of inspiration to all the people across the organization handling various responsibilities.

Microne has state of the art manufacturing facility with large storage space which ensures there is no Mix up or other chaos. The Company adopts a robust process mechanism where even the bulk orders are processed efficiently without any time delay or other hassles. Microne offers customized packing options to clients to ensure Zero damage and total satisfaction to every customer.

VISION

To achieve pre-eminent position in the design and manufacture of Valves, across the globe.

To remain customer – centric organization and strive to work towards total customer satisfaction in all our endeavours.

MISSION

To make consistent initiatives to widen our capabilities and infrastructure.

To make total quality management as the driving force of the organization.

To commit ourselves to total customer satisfaction by producing world class products and delightful services at all times.

To achieve our business objectives through ethical ways, fair trade practices and transparent dealings.

To Maintain a work atmosphere that allows creativity, encourages collaborative learning and open communication.

OUR QUALITY POLICY

Microne industries is committed to manufacture and supply of quality products on time, every time, to utmost satisfaction of the customer on continual improvement basis.

AFTER SALES SERVICE

Microne offers all services to create customer more valve. Timely, excellent and professional after – sales service is what MICRONE has promised and provided. You can receive complete sets of services for the projects in time, Such as technical documents , drawings product manuals, production schedules, production/inspection control plan, etc. you can also get professional services from technically professional personnel including quality follow up of sold products, Site unpacking & inspection, installation guide , debugging and technical training.

SPECIALIZATION

Microne is specialized in manufacturing metal to metal contact valves in exotic alloys like Nickel Aluminium Bronze, Aluminium Bronze, Duplex, Super Duplex, Inconel N06625, N07718, N08825, N08926, CW6MW 17-4PH in addition to stainless steel, carbon steel and alloy steel.

Microne's also carrying out with the following process for specific customer requirement as below. Stellite Overlay, Stellite Coating , Tungsten Carbide Coating & Chromium Carbide Coating and ENP , Internal glass flake epoxy coatings.

INNOVATION
SUCCESS
EVALUATION
DEVELOPMENT
GROWTH
SOLUTION
PROGRESS
MARKETING

STANDARDS

ASTM, GOST, DIN, JIS, BS etc,.

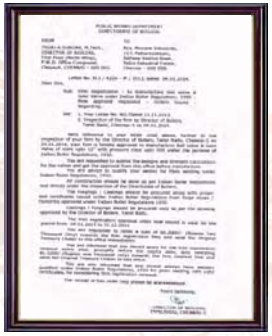
CERTIFICATION

ISO 9001:2008

ISO 14001:2004

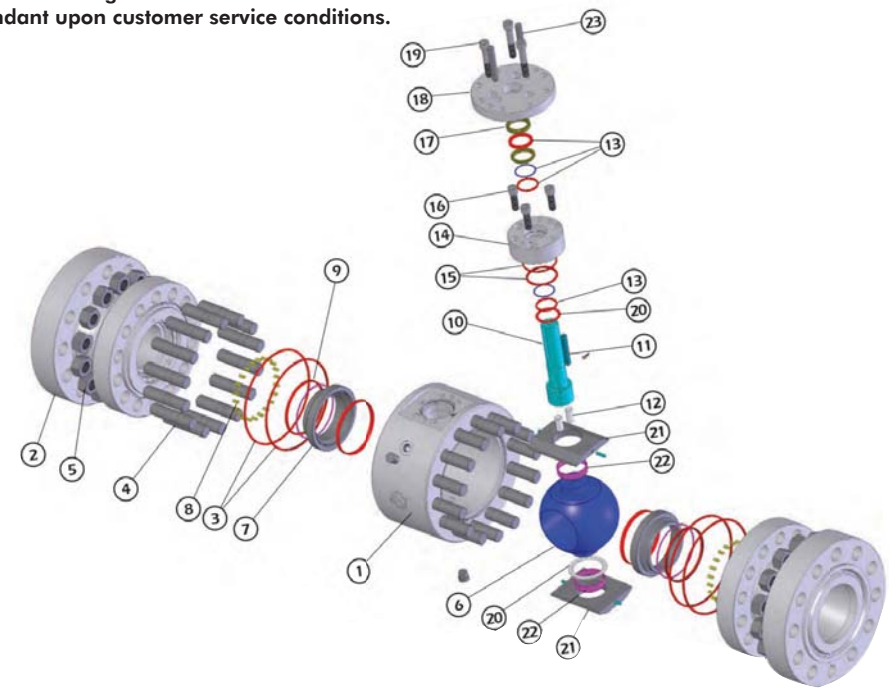
ISO 18001:2007

API 6D



IBR

The valve is designed for use with various material combinations dependant upon customer service conditions.



NO	PARTS	MATERIAL
1	Body	HASTELLOY, 6A, 5A, 4A, NAB, AL-BRZ, CF8M, CF3M, 17-4PH, CA6NM, C12A, LCC, LCB, WCC, WCB, INCONEL
2	Closure	N06625, N07718, N08825, N08926, F51, F53, F60, F316, F316L, F6A, 416, 4140, Lf2, A105
3	Gasket	Graphite
4	Body Stud	B7, B7M, L7, L7M, B8, B8M
5	Body Nut	2H, 2HM, H, 8, 8M
6	Ball	HASTELLOY, 6A, 5A, 4A, NAB, AL-BRZ, CF8M, CF3M, CA6NM, C12A, LCC, LCB, WCC, WCB, INCONEL
7	Seat Ring	N07718, N08825, N08926, F51, F53, F60, F316, F316L, F6A, 416, 4140, Lf2, A105
8	Seat Spring	X-750, SS302
9	Gasket	Graphite
10	Stem	316, 304, F51, N06625, N07718, N08825, N08926, XM-19, 17-4PH
11	Key	4140
12	Drive Pin	410, 4140, 316, F51
13	Gasket	Graphite
14	Body Cover	316, 304, F51, N06625, N07718, N08825, N08926, XM-19, 17-4PH
15	Gasket	Graphite
16	Capscrew	8.8, 10.9
17	Bushing	SS 316 + PTFE
18	Adapter Flange	316, 304, F51, N06625, N07718, N08825, N08926
19	Cap screw	8.8, 10.9
20	Thrust Washer	SS 316 + PTFE
21	Bearing Retainer	SS 316 + PTFE
22	Bearing	SS 316 + PTFE
23	Dowel Pin	Spring Dowel

TRUNNION MOUNTED BALL VALVE

Microne's Standard Trunnion-mounted Ball Valves offer increased value, by incorporating advanced design features!

TRUNNION MOUNTED BALL

The ball is fixed and the seat rings are floating, free to move along the valve axis.

Side load generated by the pressure acting on the ball is absorbed by bearings.

At low pressure the seat sealing action is achieved by the thrust of the springs acting on the seat rings.

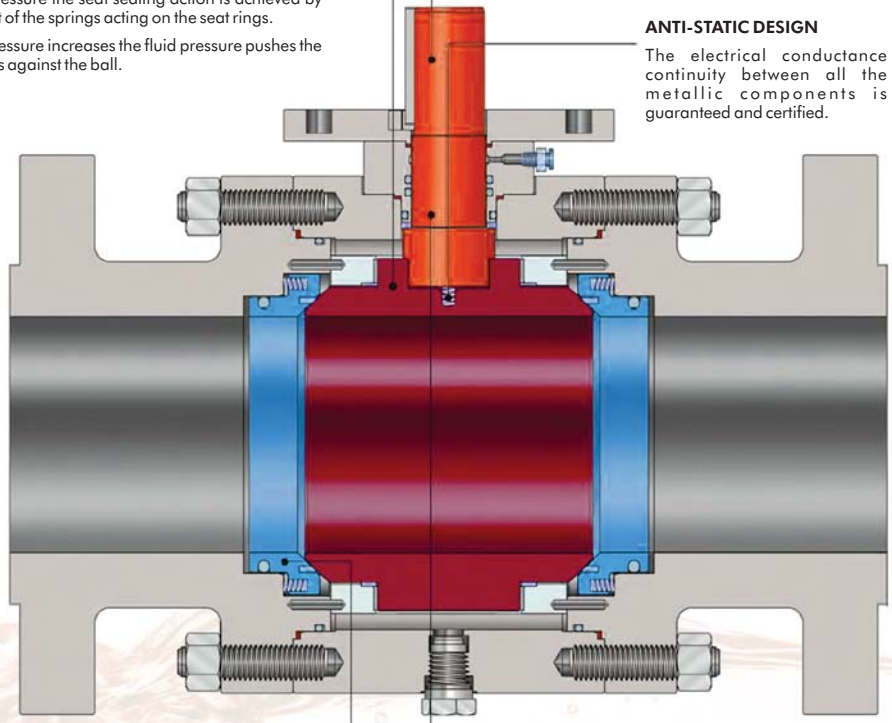
As the pressure increases the fluid pressure pushes the seat rings against the ball.

INDEPENDENT BALL AND STEM

The ball and stem are independent to minimize the effect of the side thrust generated by the pressure acting on the ball.

ANTI-STATIC DESIGN

The electrical conductance continuity between all the metallic components is guaranteed and certified.



FLOATING SELF-RELIEVING SEAT RINGS

Two independent floating seat rings assure the bidirectional tightness of the valve. The seats are carefully designed to minimize the torque required to operate the valves without losing sealing power, which is assured from zero differential pressure to the valves

LOW EMISSION VALVES

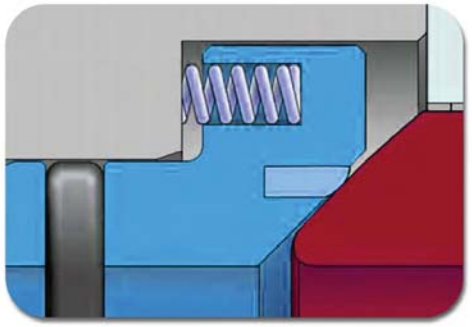
Accurate machining of stem and bonnet sealing surfaces ensures compliance with the most severe pollution control regulations. Special "live" seals are available on request.

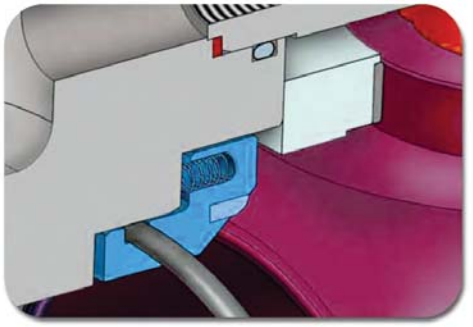
DOUBLE BLOCK & BLEED

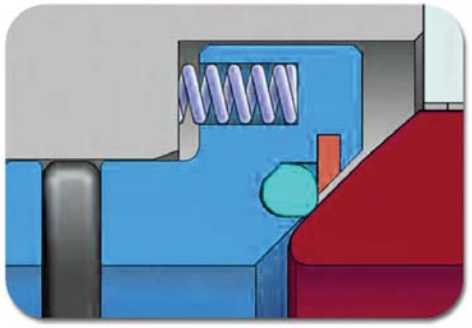
The double block and bleed feature, both with the ball in the fully closed or fully open position, is a standard feature.

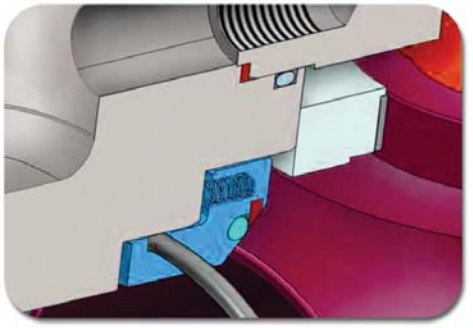
SOFT SEATED VALVES

Soft seated valves are designed for standard service, a resilient material is inserted into the metal seat holder to provide a soft seating action in addition to the metal to metal seating between the ball and the seat rings.



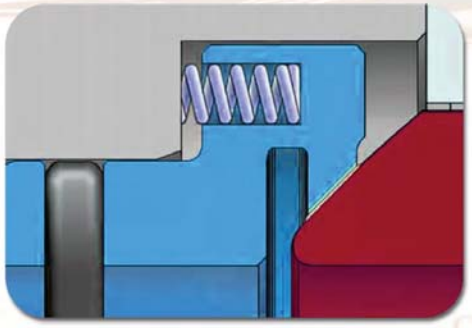


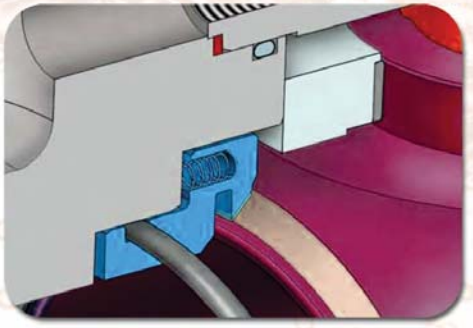




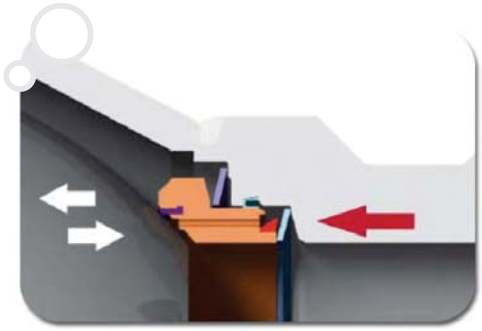
METAL SEATED VALVES

Metal seated valves designed for abrasive service or for operations in temperatures that prohibit the use of a resilient material have seating action provided by the metal to metal contact between the ball and the seat rings. Seating faces are hard faced.





Microne's fully welded Ball Valves has proven to be most efficient and conservative in terms of features and cost.

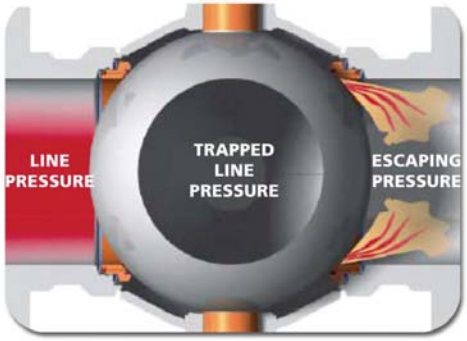


STANDARD SEAT DESIGN: In service since the early 1995s, the standard seat arrangement has proven itself to be sound design. This arrangement is available in all MICRONE fully welded ball valves and includes the features and benefits indicated on the preceding pages.

FEATURES AND BENEFITS

UPSTREAM SEALING

At low pressure, seat to ball contact is maintained by Belleville springs. At higher pressures, seat contact is reinforced by line pressure.

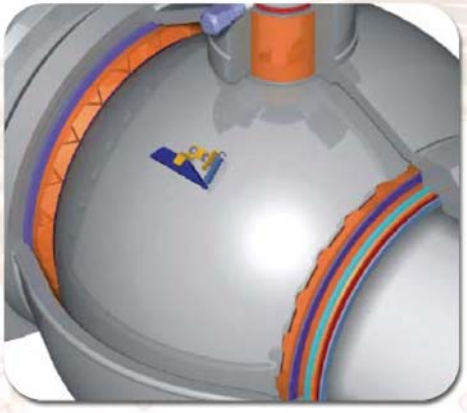


AUTOMATIC INTERNAL RELIEF OF BODY PRESSURE

Relief of excess body cavity pressure is automatic, avoiding dangerous pressure buildup. Any pressure exceeding downstream line pressure by approximately 200 psi pushes the downstream seat away from the ball, allowing the pressure to relieve into the pipeline.

ROTATING SEAT RINGS

A standard in the MICRONE fully welded ball valve sizes 14" (350 mm) and larger, the MICRONE fully welded ball valve incorporates the exclusive rotating seat feature. Both seats rotate 15 degrees each time the valve is closed, exposing a new pinch point, evenly distributing seat wear.



DISTRIBUTED SEAT WEAR

The pinch point is the area of the seat insert that experiences an increased velocity when the valve is seated closed and unseated open. This is where the seat seal experiences the most wear, and in most valves where a leak path begins. By rotating the seat ring, the pinch point wear is disturbed throughout the seat seal providing a substantial increase in seat life.

PREVENTS BUILD UP

In home services a valve can experience harmful sediment build up around the seat ring. This can cause the seat to stick and not seal properly. The MICRONE fully welded ball valves, with exclusive rotating seat, can handle these harsher services. As the seat rotates it will prevent any build up, or breaks up existing build up.

FULLY WELDED BALL VALVES

STELLITE OVERLAY BEFORE MACHINING

STELLITE OVERLAY AFTER MACHINING

STELLITE OVERLAY THROUGH HVOF PROCESS

FEATURES AND BENEFITS (CONTD.)

STEM SEALS

Delta seals and lip seals made of PTFE are incorporated in the upper stem area. PTFE is a low friction, non-deteriorating material that is not subjected to rapid decompression explosion. Most valves have a provision for the injection of sealant to establish a secondary seal.

TRUNNION SUPPORTED BALL ALLOWS LOW TORQUE OPERATION

Regardless of size or pressure rating, every MICRONE Ball valve is trunnion mounted. High strength forged stems are located in PTFE impregnated stainless steels bearings for smooth accurate operations. Trunnion mounted stems absorb the thrust from line pressure, preventing excess friction between the ball and seats, so even at full rated working pressure, operating torque stays low.

DOUBLE BLOCK AND BLEED

Whether in fully open or closed position, pressure on each side of the ball is blocked from the body cavity by the seat ring.

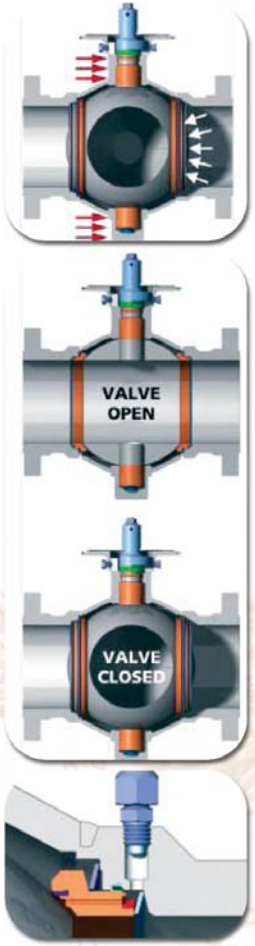
The body cavity can then be bled down or drained through the body port. When you block and bleed a MICRONE ball valve the following can be accomplished.

TEST VALVE INTEGRITY

When the valve body is vented this verifies the seat seals integrity. This test can be performed with the valve open or closed. By verifiying valve seat seal integrity valve performance can be validated.

SECONDARY SEAT SEAL

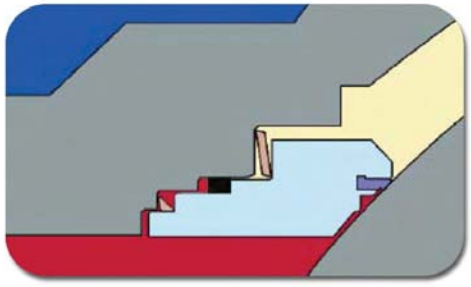
The sealant injection system provided a fast, simple way of restoring tight shut off if any foreign object should damage the sealing surfaces. The injection system can also be used for routing flushing of the seat ring area in services where this may be required.



MICRONE'S GENERAL VALVE SIZES

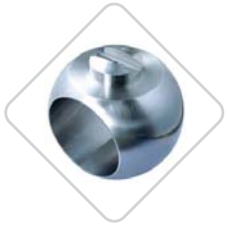
SIZE	CLASS RATING	MATERIAL OF CONSTRUCTION
1/2"- 48"	150	
1/2"- 48"	300	
1/2"- 48"	600	HASTELLOY, 6A, 5A, 4A, NAB, AL-BRZ, CF8M, CF3M, 17-4PH, CA6NM, C12A, LCC, LCB, WCC, WCB +ST
1/2"- 36"	900	INCONEL No6625, No7718, No8926, F51, F53, F60, F316, F316L, F6A, 416, 4140, Lf2, A105
1/2"- 30"	1500	
1/2"- 30"	2500	

The MICRONE fully welded ball valve is available with double acting and metal to metal seats to accommodate a variety of applications and customer preferences.

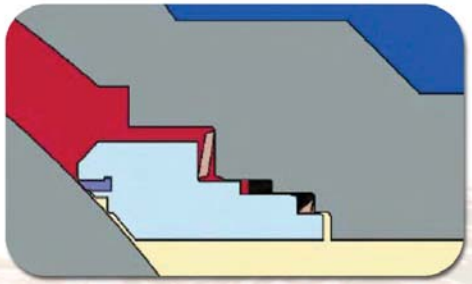


STELLITE OVERLAY BEFORE MACHINING

STELLITE OVERLAY AFTER MACHINING



DOUBLE ACTING

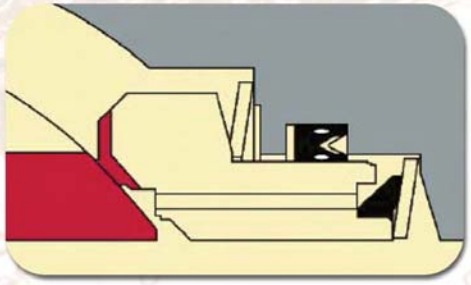


CONVENTIONAL UPSTREAM SEALING

With the upstream pressure, the bidirectional body to seat seal is pushed towards the front sealing face to its retaining pocket. This creates an unbalanced pressure annulus between the body seal and the inside diameter of the seat insert, forcing the seat insert against the ball.

DOWNSTREAM SEALING

With the downstream pressure, the bidirectional body to seat seal is pushed towards the back sealing face of its retaining pocket. This creates an unbalanced pressure annulus between the outside diameter of the seat insert and the body seal diameter, also forcing the seat insert against the ball.



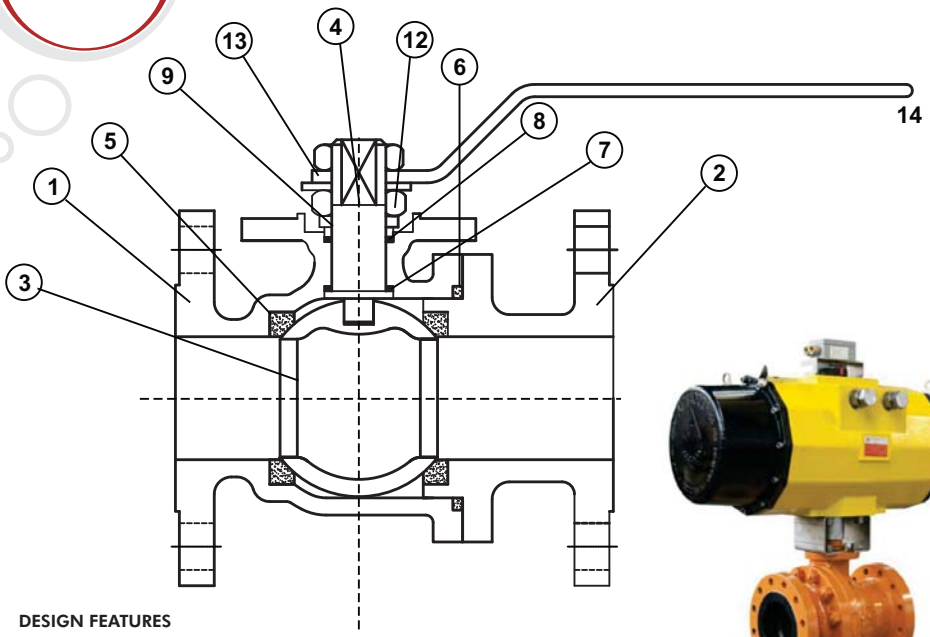
METAL TO METAL

FOR SEVERE SERVICE APPLICATIONS

Where a soft seat insert would be unstable, a metal to metal design can be provided. In the design both the seat and the ball are coated with Tungsten Carbide which is resistance to corrosion and wear making it suitable for abrasive services. This type of seat is upstream sealing and incorporates internal relief of body pressure.

FEATURE	SIDE ENTRY	WELDED BODY	TOP ENTRY
Trunnion mounted	Standard	Standard	Standard
Independent Stem Ball	Standard	Standard	Standard
Independent Floating Seats	Standard	Standard	Standard
Primary soft-secondary metal	Standard	Standard	Standard
Primary Metal-secondary soft	On Request	On Request	On Request
Metal to Metal Seat	On Request	N/A	On Request
Self Relieving Seats	Standard	Standard	Standard
Single Piston Effect	Standard	Standard	Standard
Double Piston Effect	On Request	On Request	On Request
Combination seats	On Request	On Request	On Request
API 6D Design & Construction	As Required	As Required	As Required
Face to Face to API 6D	Standard	Standard	Standard
Fire Safe to API 6FA- API 607	Standard	Standard	Standard
Full, Reduced or Venturi Port	As Required	As Required	As Required
Flanged, Welded or Hub Ends	As Required	As Required	As Required
Transition Pups for Welded ends	On Request	On Request	On Request
Antistatic	Standard	Standard	Standard
Anti-Blowout Stem	Standard	Standard	Standard
Double Block and Bleed	As Required	As Required	As Required
Possibility to check seat Integrity in line with Ball in Open/ Closed	Standard	Standard	Standard
Double Body Seals	Standard	As Required	Standard
Triple Stem Seals	Standard	Standard	Standard
Drain Plug	Standard	Standard	Standard
Drain Valve	On Request	On Request	On Request
Vent Valve	Standard	Standard	Standard
Emergency Sealant Injection on Stem	Standard	Standard	Standard
Emergency Sealant Injection on Seats	On Request	On Request	On Request
Seat pocket Overlay	On Request	On Request	On Request
Seals Area Overlay	On Request	On Request	On Request
Wetted Parts Overlay	On Request	On Request	On Request
Body Internal Lining	On Request	On Request	On Request
Extended Stem for Underground Installation	As Required	As Required	As Required
Extended Bonnet for Low/ High Temperature	As Required	N/A	As Required
Locking Device	On Request	On Request	On Request
Lifting Lugs	Standard	Standard	Standard
Supporting Feet	Standard	Standard	Standard
Manual or Motorized Operation	As Required	As Required	As Required
In-Line Maintenance	N/A	N/A	Yes
On Site Maintenance	yes	N/A	Yes

FLOATING BALL VALVE MATERIALS



DESIGN FEATURES

* Design as per API6D, ISO 17292 & BS5351
* Full Port & Reduced Port
* Two Piece & Three Piece Body Construction
* Class 150, 300 & 600 as per ASME B16.34
* Gear Operator (Optional)
* Valve could be supplied with ISO 5211 for operator installation.
* Valve Ends Flanged/Socket/Screwed/Welded Ends available.
* Fire safe as per API 607 / API 6FA

PART NO	PARTS	GUN METAL	AL BRONZE	NAB	Carbon Steel / Stainless Steel
1	Body	ASTM B 62	AB2	NAB to NES 747 Part II	WCB,A105,LCB,LF2,CF8M,F316,CF3M,F316L
2	Tail Piece	ASTM B 62	AB2	NAB to NES 747 Part II	WCB,A105,LCB,LF2,CF8M,F316,CF3M,F316L
3	Ball	ASTM B 62	AB2	NAB to NES 747 Part II	F316,CF8M,INCONEL,MONEL
4	Spindle	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104	F316,CF8M,INCONEL,MONEL
5	Seat	PTEFE | GFT	PTFE | GFT	PTFE | GFT	PTFE,RPTFE,NYLON,PEEK
6	Body Seal	PTFE | Graphite	PTFE | GRAPHITE	PTFE | GRAPHITE	PTFE | GRAPHITE
7	Thrust Pad	PTFE | GFT	PTFE | GFT	PTFE | GFT	PTFE | GFT
8	Gland Seal	PTFE | GFT	PTFE | GFT	PTFE | GFT	GRAPHITE
9	Stem Follower	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104	B7,B7M,L7,L7M,B8,B8M
10	Tail Piece Stud	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104	B7,B7M,L7,L7M,B8,B8M
11	Tail Piece Stud Nut	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104	B7,B7M,L7,L7M,B8,B8M
12	Spindle Nut	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104	B7,B7M,L7,L7M,B8,B8M
13	Washer	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104	CS,SS
14	Handle	Carbon Steel (Epoxy Coated)			

TWIN SEAL PLUG VALVE

SPECIFICATION & AVAILABILITY

MICRONE Standards Twin Slip Double Block and Bleed Valve
Rating : ANSI Class 150/300/600/900/1500
Size : 2"~ 24"
Temperature Range : -20°F(-29°C) TO + 350°F(+176.7°C)
Connections : Flanged, Screwed, Welded (Butt, Socket)
Wrench, enclosed gear operated or actuated

MICRONE Full Bore Twin Slip Double Block and Bleed Valves
Rating : ANSI Class 150/300/600/900/1500
Size : 2"~ 24"
Temperature Range : -20°F(-29°C) TO + 350°F(+176.7°C)
Connections : Flanged, Screwed, Welded (Butt, Socket)
Hand wheel, enclosed gear operated or actuated

MICRONE 4-Way Twin Slip Double Block and Bleed Valves
Rating : ANSI Class 150/300/600/900/1500
Size : 2"~ 24"
Temperature Range : -20°F(-29°C) TO + 350°F(+176.7°C)
Connections : Flanged, Screwed, Welded (Butt, Socket)
Hand wheel, enclosed gear operated or actuated

MATERIAL OF CONSTRUCTION

Body Top Cover Bottom Cover Wedge	HASTELLOY, 6A, 5A, 4A,NAB, AL-BRZ, CF8M, CF3M, 17-4PH, CA6NM, C12A, LCC, LCB, WCC, WCB, INCONEL, NO6625, NO7718, NO8825, NO8926, F51, F53, F60, F316, F316L, F6A, 416, 4140, LF2, A105
Slips	A536-65-45-12
Gland	410, 4140, 316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19
Packing	Graphite
O Ring & Slip	Viton
Stud & Nut	B7/2H, B7M/2HM

CONSTRUCTION

HANDLE & OPERATOR
This is designed for easy opening and closing, and minimizes the possibility of line shock.

INDICATOR
This indicates the direction of the plug open or closed position.

GLAND & PACKING
This is designed so that the depth of the stung box is sufficient to insert both a re safe graphite packing and Viton O-ring or other customer specied material.

COVER BOLT

TOP COVER

PLUG & TRUNNION
This is designed to insure the trunnions (Upper &Lower) maintain correct alignment of the plug during opening and closing of the plug.

SLIP & VITON SEAL
The viton seal within the slip executes a double block and bleed function, it eliminates abrasion, because the slips Containing the Viton seals pull away from the body before the plug starts to
rotate.

BODY

O-RING & GASKET

BOTTOM COVER
The bottom cover may be removed for maintenance purpose.
Replacement of the slips is possible, while the valve remains bolted in the pipeline (In Line Reparability).

PLUG VALVE

DESIGN FEATURES

ZERO LEAKAGE
Valves selection is very important in the petroleum industry. An incorrect valve may cause loss of income, pollution of product, and increase of product line maintenance costs. Multi-product system valves should be designed to withstand frequent cycling and provide a tight seal shut o. The double block and bleed valve was developed to cater for pump or metering station, tank farms, marine loading docks and blending plants.

NO ABRASION
The MICRONE Twin Slip Double Block and Bleed valve can completely isolate a line without leakage. The valve design is such that the seals do not come into contact with the valve body at any time while opening or closing of the valve. The seals come in contact with the body at the last moment force. This pressure force is perpendicular to the seating area and a shearing
force is thus eliminated. When the valve is in the opening position, the seals are separated from the body, and are maintained at this state during wedge rotation. This eliminates abrasion forces from the seals and extends seal life.

DOUBLE BLOCK & BLEED
With the MICRONE Twin Slip Double Block and Bleed valve,there is an up-stream and down-stream seal, as well as a bleed point in between. This one D.B.B. may be substituted for two valves with one spool (drain). The spool sends any leaking uid from the valve to the tank. The bleed system on the MICRONE double block and bleed is provided to prove zero leakage. The ensures that if any leakage was to occur, it would be eliminated via the bleed. This in turn, guarantees complete and total product segregation.

HIGH INTEGRITY SHUTOFF
When the valve is closed the elastomeric seal rings are pushed against the seats each side of the valve body, the force is directed at a perpendicular direction by the wedging action of the slips. The elastomer seals on the slips are secured within a machined grove by a bonding agent. As for being re-safe, the outside surface around the seals (on the slips) is a finished surface of metal, that is pushed against the metal body seat. This results in both an elastomeric and metal-to-metal bubble tight seal.

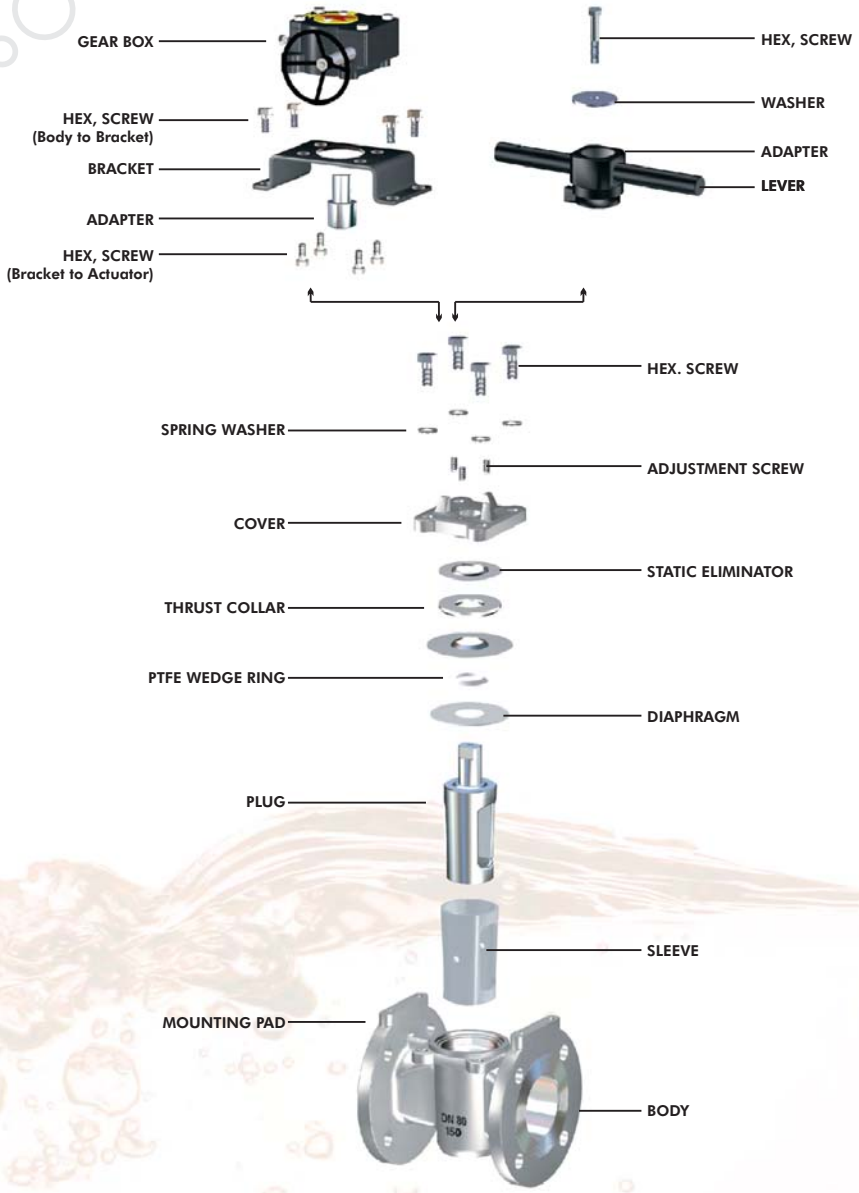
IN LINE REPAIRABILITY
It is possible to inspect and replace the sealing slips with the valve still in line. The valve has a top and bottom bolted ange that is removable while the valve remains bolted in place.

MICRONE'S GENERAL VALVE SIZES

SIZE	CLASS RATING	MATERIAL OF CONSTRUCTION
1/2"- 48"	150	HASTELLOY, 6A, 5A, 4A,NAB, AL-BRZ, CF8M, CF3M, 17-4PH, CA6NM, C12A, LCC, LCB, WCC, WCB, INCONEL, NO6625, NO7718, NO8825, NO8926, F51, F53, F60, F316, F316L, F6A, 416, 4140, LF2, A105
1/2"- 48"	300	
1/2"- 48"	600	
1/2"- 36"	900	
1/2"- 30"	1500	
1/2"- 30"	2500	

GEAR OPERATION

LEVER OPERATION



ZERO LEAKAGE

With primary sealing by sleeve (lining in case of lined plug valve), secondary sealing by diaphragm and tertiary sealing by wedge ring, the plug valve assures zero leakage of the fluid flowing through the system.

SECURE SEALING

The sleeve is positively locked in the body with the locking ribs located in the body to assure secure sealing.

CAVITY FREE

There are no cavities in the body, the plug is surrounded completely by sleeve, so there Is no possibility of fluid accumulation and contaminate feature processing. This cavity free design also prevents sticking.

NON LUBRICATION

The PTFE sleeves have a low coefficient of friction and acts on a lubricant. Hence ease of operation is assured even though valve unopened for a period.

LOW MAINTENANCE

The sealing pressure can be regenerated by the adjustment bolts provided on the cover without disassembly for repair. On line repair is easy as the plug is top entry type which will reduce the shutdown time for the plant.

SUPERIOR IN LINE SEALING

The plug is completely surrounded by the sleeve, providing a large circumferential sealing surface from port to port.

SELF CLEANING PLUG

As the plug rotates, the port lips located throughout 360° provide a self cleaning action to remove stealing and adhering media, facilitates no seizing and no sticking.

ADJUSTABLE SEALING

When seal presence adjustment is required due to sleeve wear, slight rotation of adjustment bolts pushes the plug downwards thereby providing extra sealing pressure.

ANTISTATIC ELECTRICITY

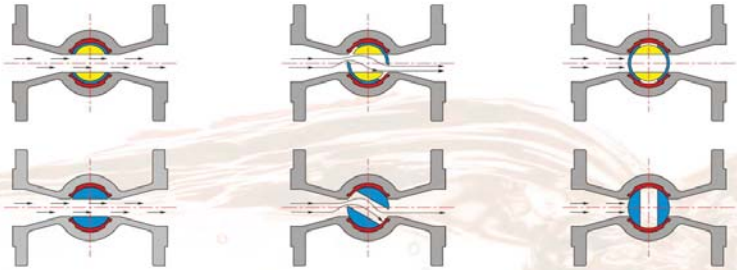
Static eliminator (only in case of sleeved plug valves) is always in contact with the plug and releases the static electricity generated from the free floating fluid to the pipeline.

COMPACT DESIGN

Taper plug with trapezoidal shaped port, one piece body and less number of parts required to construct the valve make a compact and cost effective plug valve.

CAGED PLUG VALVES

SLEEVED PLUG VALVES



ADVANTAGES OF CAGED PLUG VALVES

* Bubble tight shut off across the seat due to metal to soft seat sealing.
* Metal to Metal contact during throttling.
* During on-off position, soft seat is completely protected by plug.
* During throttling position, soft seat is protected by cage.
* Cage opening is matched to plug opening to give equal percentage flow characteristic for control applications.
* Hardened cages are available for increased life.

STELLITE OVERLAY BEFORE MACHINING

STELLITE OVERLAY AFTER MACHINING

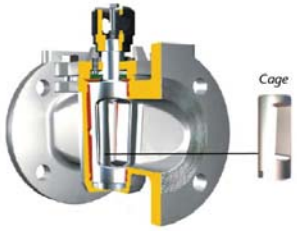
CONSTRUCTION DETAILS

MICRONE range of sleeved plug valves are designed for high standard of performance. These tight shut-off, bi-directional valves with cavity- free passage can be used on both pressure and vaccum services and ensure long-term reliable operation with simplified in-line maintenance.

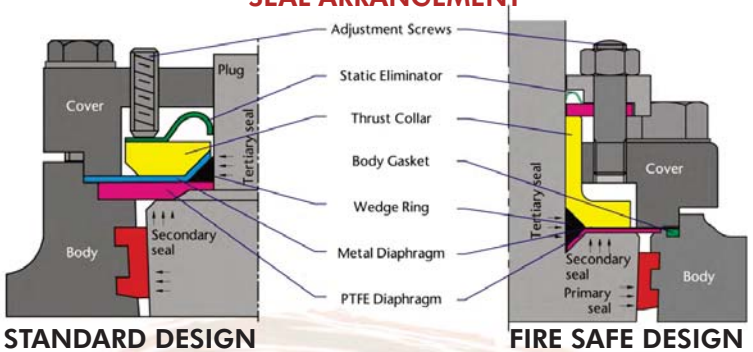
Sleeve is positively locked with the locking ribs in the body, ensures leak tight shut-off. Protects the sleeve from direct flow impingement in throttling position.

STANDARD DESIGN

STANDARD CAGED DESIGN

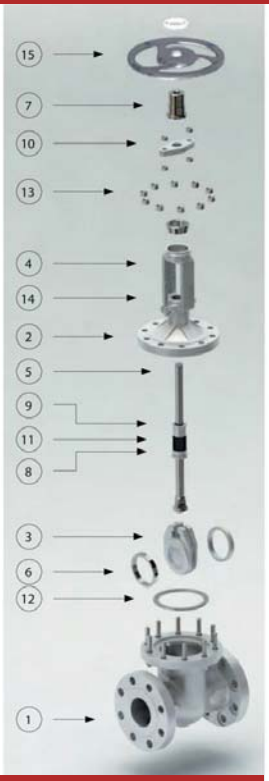


SEAL ARRANGEMENT



STANDARD DESIGN FIRE SAFE DESIGN

MATERIAL OF CONSTRUCTION	
Body 7 Cover	HASTELLOY, 6A, 5A, 4A,NAB, AL-BRZ, CF8M, CF3M, 17-4PH, CA6NM, C12A, LCC, LCB, WCC, WCB, INCONEL, NO6625, NO7718, NO8825, NO8926, F51, F53, F60, F316, F316L, F6A, 416, 4140, LF2, A105
Plug	
Sleeve / Diaphragm	PTFE / CFT / GFT
Wedge Ring	PTFE / CFT / GFT
Metal Diaphragm / Static Eliminator	410, 4140, 316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19
Thrust Collar	WCB, WCC, LCB, LCC, CF3, CF8, CF3M,CF8M, 4A, 5A, CK3MCUN, MONEL
Adjusting Screws	B7/2H, B7M/2HM
Fasteners	B7/2H, B7M/2HM
Adapter / Lever	Steel
Gear Unit	Cast Iron/ SG Iron
Bearing	PTFE / CFT / GFT
Body Gasket	PTFE / CFT / GFT



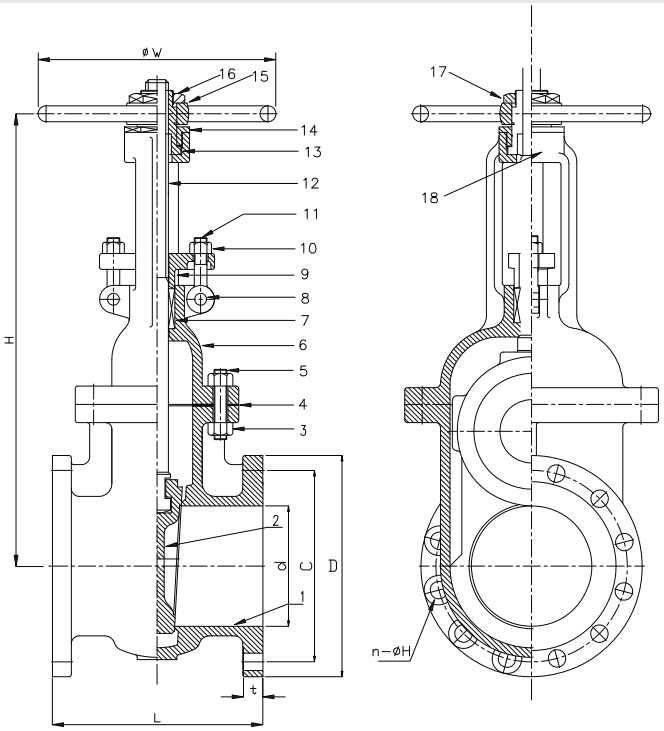
½" - 36" Class 150 - Class 2500

Gate valves serve as efficient on-of valves with flow in either direction. In such a design, a wedge slides cross a general passageway in order to control fluid flow (like a sliding gate - hence, the name). One of the most significant characteristics of this type of valves is its straight-through, unobstructed passageway when set in the "full open" position. This is made possible by the wedge lifting entirely out of the passageway. As a result, gate valves are characterized by a minimum of turbulence and pressure drop in operation.

While gate valves are good for applications requiring these two factors, they are not recommended for

installations in which throttling would be a function. They are designed for on/off service.

ITEM	DESCRIPTION	MATERIAL
1	Body	HASTELLOY, 6A, 5A, 4A,NAB, AL-BRZ, CF8M, CF3M, 17-4PH, CA6NM, C12A, LCC, LCB, WCC, WCB, INCONEL, NO6625, NO7718, NO8825, NO8926, F51, F53, F60, F316, F316L, F6A, 416, 4140, LF2, A105
2	Bonnet	
3	Wedge	
4	Yoke	
5	Stem	316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19, 17-4PH
6	Seat Ring	316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19, 17-4PH
7	Stem Nut	316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19, 17-4PH
8	Backseat	410, 4140, 316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19
9	Gland	410, 4140, 316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19
10	Gland Flange	410, 4140, 316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19
11	Stem Packing	Graphite
12	Gasket (Class 150)	Graphite
12	Gasket (Class 300)	SPW / Graphite
12	Gasket (Class 600)	SPW / Graphite
12	Gasket (Class 900)	304, 316
12	Gasket (Class 1500)	304, 316
12	Gasket (Class 2500)	304, 316
13	Bonnet Bolt & Nut	B7/2H, B7M/2HM
14	Eye Bolt & Nut	B7/2H, B7M/2HM
15	Handwheel	CS



GATE VALVE MATERIALS OF CONSTRUCTION

PART NO	PARTS	GUN METAL VALVE	AL BRONZE VALVE	NAB VALVE
1	Body	ASTM B 62	AB2	NAB to NES 747 Part II
2	Disc	ASTM B 62	AB2	NAB to NES 747 Part II
3	Bonnet Stud Nut	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
4	Gasket	Non Asbestos	Non Asbestos	Non Asbestos
5	Bonnet Stud	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
6	Bonnet	ASTM B 62	AB2	NAB to NES 747 Part II
7	Packing	PTFE	PTFE	PTFE
8	Gland Eye Bolt Pin	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
9	Gland Flange	ASTM B 62	AB to BS 2874 CA 104	AB to BS 2874 CA 104
10	Gland Eye Bolt Nut	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
11	Gland Eye Bolt	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
12	Stem	ASTM B 124	AB to BS 2874 CA 104	AB to BS 2874 CA 104
13	Yoke Bush	ASTM B 62	AB2	NAB to NES 747 Part II
14	Yoke Cap Nut	ASTM B 62	AB2	NAB to NES 747 Part II
15	Handle Wheel	ASTM A 197	ASTMA 197	ASTM A 197
16	Handle Wheel Nut	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
17	Set Screw	SS	SS	SS
18	Grease Nipple	Standard	Standard	Standard

GATE VALVE

BODY AND BONNET

Bodies and bonnets are high quality cast and afterwards precisely machined, directing the attention to prevent stress concentration. The bodies of gate valves consist of a straight through port that guarantees minimal turbulence and resistance to flow. In both designs, bolted bonnet and pressure seal, the bodies consist of guide slots to accommodate the wedge during opening or closing of the valve. Bonnets are made either of one piece only –the yoke then being an integral part of it– or have two pieces, depending on the size of the valve. This ensures the perfect alignment with the body what leads to an accurate opening and closing.

BACKSEAT

All MICRONE gate and globe valves have backseat threaded in the bonnet, or for the pressure seal valves, welded to the bonnet. Into pressure seal the hard facing is stellite 6 or equivalent.

STEM

The stems of MICRONE gate valves are forged from one piece and ACME threaded, then mechanized and finally provided with a smooth finishing in order to minimize friction. In gate valves, the union of stem and wedge shall be in T form, designed to prevent the stem disengaging itself from the wedge while being in service. This design includes a conical raised surface that presses the seat against the bonnet backseat in the fully open position.

BODY AND BONNET GASKETS

The design of the body-bonnet/gaskets varies depending on the class of the valve. Class 150 gate valves consist of a square joint in 2" and an oval one for all other sizes. Depending on the valve service it can be supplied flat-face gasket with graphite or PTFE. Class 300 and 600 valves consist of a circular spiral wound gasket. Class 900 and above gate valves consist of a ring type joint. In pressure seal designs the sealing is achieved through a gasket that takes advantage of the internal pressure of the line. The material most commonly used is high-purity graphite being located between the body and the body retainer ring.

FLEXIBLE WEDGE

All gate valves 3" and above valves feature a flexible wedge unless otherwise specified by the customer. The flexible wedge shifts along the body of the valve during opening and closing, being held in position by a guide slot that minimizes the friction between body seat and wedge. This design is especially suited to compensate slight thermal deformations produced by the pipe or the valve itself safeguarding a better sealing between body and wedge seats.

DESIGN STANDARDS	
Bolted Bonnet Gate Valve	API 600/ISO 10434 & ASME B16.34
Pressure Seal Gate Valve	ASME B16.34
API 603 Gate Valve	API 603
Through Conduit Gate Valve	API 6D
Cryogenic Gate	API 600 / BS 1873 & BS 6364
Face to Face / End to End Dimensions	ASME B16.10 / ISO 5752
End Flanged dimensions	ASME B16.5 / ISO 7005-1, ASME B16.47-A&B,MSS SP- 44 & API 605
Butt-weld End dimensions	ASME B16.25
Valve inspection & testing	API 600 / ISO 10434 & ISO 5208, EN 17266
Pressure - Temperature Rating	ASME B16.34

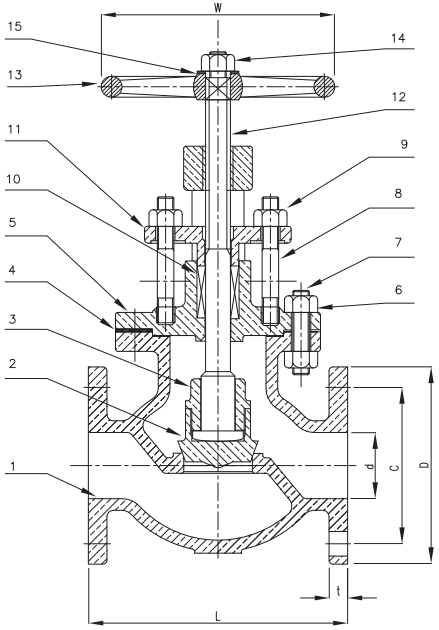
TEST / INSPECTION	METHOD	ACCEPTANCE CRITERIA
Visual Inspection		MSS SP-55
Marking		MSS SP-25 & ISO5208
Dimensional Inspection		Applicable valve
Chemical Analysis	ASTM E350	Applicable Standard
Mechanical Properties	ASTM A370	Applicable Standard
Liquid Penetrant Inspection	ASTM A165	ASME B16.34
Magnetic Particle Inspection	ASTM E709	ASME B16.34
Radiographic Inspection	ASME B16.34	ASME B16.34
Ultrasonic Inspection	ASTM A388	ASME B16.34
Pressure Testing	API 598 / ISO 5208	API 598 / ISO 5208

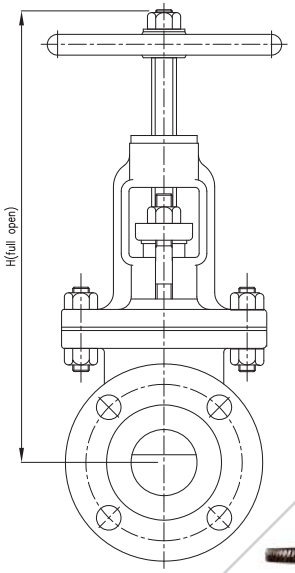
½" - 36" | Class 150 - Class 2500

All globe valves utilize the "port closure" concept of valves. By this it meant that fluid passes through a specific opening (rather than a general passageway, as in the case of gate valves), and the fluid is controlled by means of a stem-mounted disc or inserted plug in that area. Despite of lacking the straight through, unobstructed passageway of the gate valve, these globe types are superior in two key aspects - throttling and service ability under frequent use. They are better at the throttling function because they permit fluid to exit uniformly around the circumference of a seat, rather than "slicing" down to limit passage through a narrowly restricted area.

ITEM	DESCRIPTION	MATERIAL
1	Body	HASTELLOY, 6A, 5A, 4A,NAB, AL-BRZ, CF8M, CF3M, 17-4PH, CA6NM, C12A,
2	Bonnet	LCC, LCB, WCC, WCB, INCONEL, NO6625, NO7718, NO8825, NO8926,
3	Disc	F51, F53, F60, F316, F316L, F6A, 416, 4140, LF2, A105
4	Seat Ring	316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19, 17-4PH
5	Backseat	316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19, 17-4PH
6	Stem	316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19, 17-4PH
7	Gland	410, 4140, 316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19
8	Gland Flange	410, 4140, 316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19
9	Stem Nut	410, 4140, 316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19
10	Disc Nut	410, 4140, 316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19
11	Handwheel	CS
12	Handwheel Nut	B7
13	Bonnet Bolt & Nut	B7/2H, B7M/2HM
14	Eye Bolt & Nut	B7/2H, B7M/2HM
15	Gasket (Class 150)	Graphite
16	Gasket (Class 300)	SPW / Graphite
17	Gasket (Class 600)	SPW / Graphite
18	Gasket (Class 900)	304, 316
19	Gasket (Class 1500)	304, 316
20	Gasket (Class 2500)	304, 316
21	Stem Packing	Graphite
22	Thrust Washer	304, 316
23	Washer	Steel
24	Grub Screw	B7
25	Lock Nut	Steel

GLOBE VALVE





GLOBE VALVE MATERIALS OF CONSTRUCTION

PART NO	PARTS	GUN METAL VALVE	AL BRONZE VALVE	NAB VALVE
1	Body	ASTM B 62	AB2	NAB to NES 747 Part II
2	Disc	ASTM B 62	AB2	NAB to NES 747 Part II
3	Disc Nut	ASTM B 124	AB2	NAB to NES 747 Part II
4	Gasket	Non Asbestos	Non Asbestos	Non Asbestos
5	Bonnet	ASTM B 62	AB2	NAB to NES 747 Part II
6	Bonnet Stud	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
7	Bonnet Stud Nut	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
8	Gland Stud	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
9	Gland Stud Nut	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
10	Packing	PTFE	PTFE	PTFE
11	Gland Flange	ASTM B 62	AB to BS 2874 CA 104	AB to BS 2874 CA 104
12	Stem	ASTM B 124	AB to BS 2874 CA 104	AB to BS 2874 CA 104
13	Hand Wheel	ASTM A 197	ASTM A 197	ASTM A 197
14	Hand Wheel Nut	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
15	Washer	Brass	AB to BS 2874 CA 104	AB to BS 2874 CA 104

GLOBE VALVE

STEM

The stems of MICRONE globe valves are forged from one piece and ACME threaded, then mechanized and finally provided with a smooth finishing in order to minimize friction.

BODY AND BONNET GASKET

The design of the body bonnet gasket varies depending on the class of the valve. Class 150 to 600 globe valves consist of a circular male-female connection with a graphite or spiral wound gasket. Class 900 and above globe valves consist of a ring type joint. In pressure seal designs the sealing is achieved through a gasket that takes advantage of the internal pressure of the line. The material most commonly used is high-purity graphite being located between the body and the body retainer ring.

BODY AND BONNET

Bodies and bonnets are high quality cast and afterwards precisely machined, directing the attention to prevent stress concentration. Bonnets are made either of one piece only –the yoke then being an integral part of it – or have two pieces, depending on the size of the valve. This ensures the perfect alignment with the body what leads to an accurate

opening and closing. Bodies of globe valves are designed considering the same characteristics as gate valves, which in this case means that the disc is guided in bigger valve sizes or high pressure service in order to avoid vibrations and better seat.

BACKSEAT

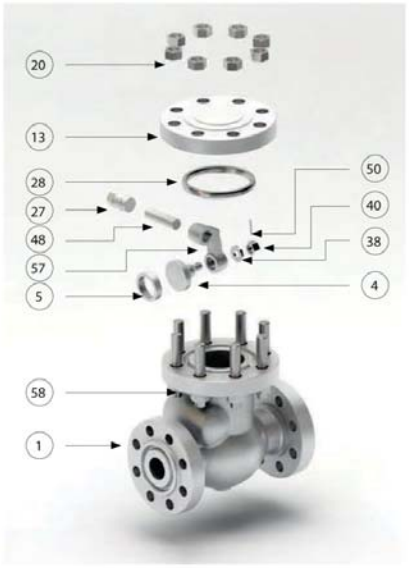
All MICRONE gate and globe valves have backseat threaded in the bonnet, or for the pressure seal valves, welded to the bonnet. The hard facing is Stellite 6 or equivalent.

DESIGN STANDARDS	
Bolted Bonnet Globe Valve	ASME B16.34 , API 602
Bolted Bonnet Globe Valve	BS 1873 & ASME B16.34
Pressure Seal Globe Valve (Long & Short pattern)	ASME B16.34
Face to Face / End to End Dimensions	ASME B16.10 / ISO 5752
End Flanged dimensions	ASME B16.5 / ISO 7005-1, ASME B16.47-A&B MSS SP- 44 & API 605
Butt-weld End dimensions	ASME B16.25
Valve inspection & testing	BS1873, ISO 5208, BS 6755, EN 17266
Pressure - Temperature rating	ASME B16.34




TEST / INSPECTION	METHOD	ACCEPTANCE CRITERIA
Visual Inspection		MSS SP-55
Marking		MSS SP-25 & ISO5208
Dimensional Inspection		Applicable valve
Chemical Analysis	ASTM E350	Applicable Standard
Mechanical Properties	ASTM A370	Applicable Standard
Liquid Penetrant Inspection	ASTM A165	ASME B16.34
Magnetic Particle Inspection	ASTM E709	ASME B16.34
Radiographic Inspection	ASME B16.34	ASME B16.34
Ultrasonic Inspection	ASTM A388	ASME B16.34
Pressure Testing	API 598 / ISO 5208	API 598 / ISO 5208

CHECK VALVE




½" - 36" | Class 150 - Class 2500

While not a valve in the traditional sense, check valves serve an important application—namely to prevent flow in one direction while allowing it in the other. A check valve is self-actuated and designed to prevent fluid from flowing back into the system (prevent reverse flow). Real-life applications include preventing backflow into an injection line or into a pump. The fluid flow opens the valve by forcing a disk or ball in one direction. When the flow stops, the disk or ball is seated and closes the valve. They can be installed in horizontal or vertical upward flow piping.

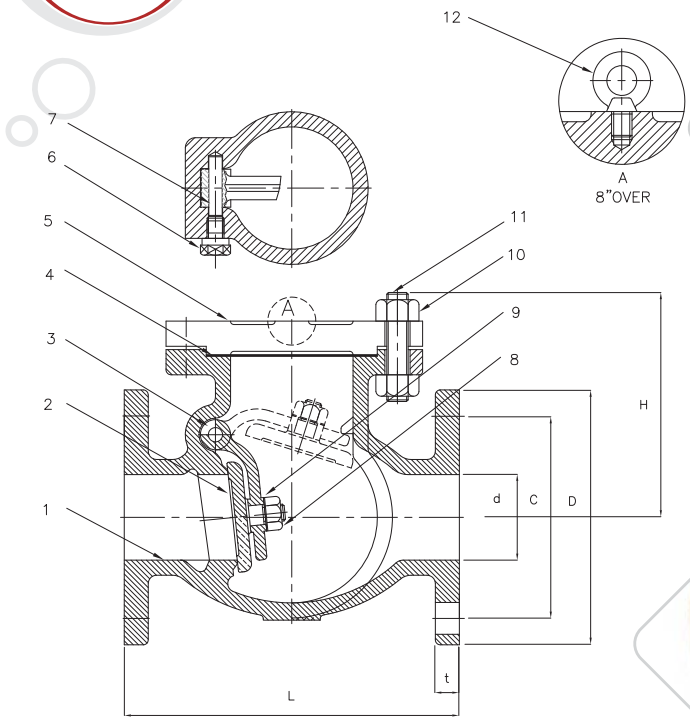
BODY AND COVER

Bodies and covers are high quality cast and afterwards precisely machined directing the attention to prevent stress concentration.
The design characteristic of check valves is the unobstructed passageway, with a full-opening when required.

BODY AND COVER GASKET

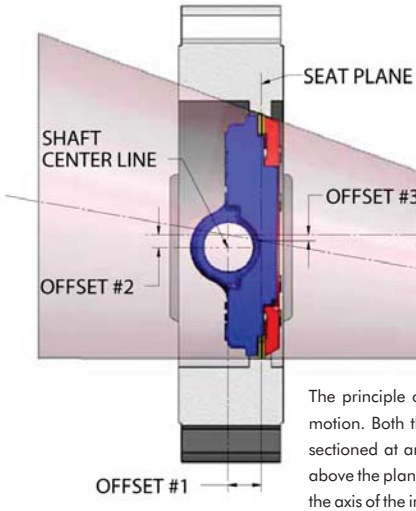
The design of the body | cover gasket varies depending on the class of the valve.
Class 150 to 600 check valves consist of a male-female connection with a graphite or spiral wound or spiral wound gasket.
Class 900 and above check valves consist of a ring type joint.
In pressure seal designs is achievedthrough a gasket that takes advantage of the internal pressure of the line. The material most commonly used is high purity graphite being located between the body and the body retainer ring.

ITEM	DESCRIPTION	MATERIAL
1	Body	HASTELLOY, 6A, 5A, 4A,NAB, AL-BRZ, CF8M, CF3M, 17-4PH, CA6NM, C12A, LCC, LCB, WCC, WCB, INCONEL, NO6625, NO7718, NO8825, NO8926, F51, F53, F60, F316, F316L, F6A, 416, 4140, LF2, A105
4	Disc	
5	Seat Ring	316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19, 17-4PH
13	Cover	WCB, WCC, LCB, LCC, CF3, CF8, CF3M,CF8M, 4A, 5A, CK3MCUN, MONEL
20	Cover Bolt & Nut	B7/2H, B7M/2HM
27	Bracket Stud & Nut	B7/2H, B7M/2HM
28	Gasket	SPW SS 304 / Graphite
38	Washer	316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19, 17-4PH
40	Disc Nut	316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19, 17-4PH
48	Hinge Pin	410, 4140, 316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19
50	Split Pin	410, 4140, 316, 304, F51, F53, N06615, N06625, N07718, N08825, N08926, XM-19
57	Hinge	WCB, WCC, LCB, LCC, CF3, CF8, CF3M,CF8M, 4A, 5A, CK3MCUN, MONEL
58	Hinge Bracket	WCB, WCC, LCB, LCC, CF3, CF8, CF3M,CF8M, 4A, 5A, CK3MCUN, MONEL



SWING CHECK VALVES MATERIALS OF CONSTRUCTION

PART NO	PARTS	GUN METAL VALVE	AL BRONZE VALVE	NAB VALVE
1	Body	ASTM B 62	AB2	NAB to NES 747 Part II
2	Disc	ASTM B 62	AB2	NAB to NES 747 Part II
3	Hinge Arm	ASTM B 62	AB2	NAB to NES 747 Part II
4	Gasket	Non Asbestos	Non Asbestos	Non Asbestos
5	Cover	ASTM B 62	AB2	NAB to NES 747 Part II
6	Side Plug	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
7	Hinge Pin	ASTM B 36	AB to BS 2874 CA 104	AB to BS 2874 CA 104
8	Disc Nut	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
9	Washer	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
10	Stud Nut	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
11	Cover Stud	ASTM B 16	AB to BS 2874 CA 104	AB to BS 2874 CA 104
12	Eye Hook	Steel *	Steel *	Steel *
13	* Optional			



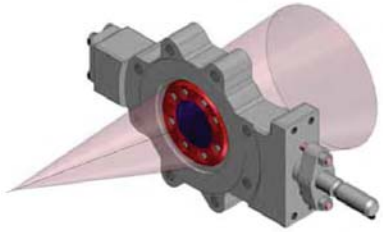
PRINCIPLE OF OPERATION

2"- 36" | Class 150 - Class 2500

The principle of operation incorporated in the MICRONE triple offset valve is geometry in motion. Both the seat in the body and the seal on the disc are surfaces of a cone which is sectioned at an angle. The valve shaft is located slightly to one side of the seat center and above the plane of the seat. Its center of rotation is also somewhat is also somewhat offset from the axis of the imaginary cone which extends from the surface of the seat.

When the valve is closed, the surface of the seal and the seat are in full contact at all points. Any efforts to try to further close the disc (rotating it into the seat) increases the sealing force and tightens the valve. This allows the valve to achieve a bi-directional seal.

Opening the valve, or rotating the disc away from its seat, results in the seal moving away from the seat at all points, eliminating rubbing or sliding of the seating surfaces, thus avoiding wear. MICRONE valves feature true non-rubbing seating surfaces for long life and tight shutoff.



FEATURES AND BENEFITS

* Triple offset metal seat design
* Long life seats
* Bearing protectors
* Bi-directional tight sealing
* Zero leakage
* Excellent throttling characteristics
* Frictionless seating eliminates galling and/or seat and seal wear
* Shaft does not penetrate through seat/seal = less susceptible to seat leakage
* Shutoff is assisted by pressure = seating improves as pressure increases
* Seal is not subject to 'set' like soft seated designs = long term seating performance
* Torque seated, not position seated = No need to find sweet spot" for seal
* Self compensating seal = will not stick due to temperature fluctuations
* Larger shaft diameter with more bearing wear surface = longer life
* Robust shaft design to support full range of actuator torques

TRIPLE OFFSET SEALING SYSTEM

Offset # 1 The shaft is offset from the seat plane providing an uninterrupted seating surface.

Offset # 2 Centerline of disc is offset from the centerline of the shaft allowing the seal to freely lift off any away from the seat on opening.

Offset # 3 The cone axis is offset from the centerline of the seal to provide a conical sealing surface that allows the seal to rotate in and out of the seat without interface sliding or jamming.

BUTTERFLY VALVE

ACCESSORIES

MICRONE valves are easily automated. A variety of automation options are available.

BODY TYPE / END CONNECTIONS

* Flanged
* Lugged
* Wafer
* Butt Weld end (end to end dimensions for BW valves can vary based on customer requirements)
* Special End to End requirements

ADDITIONAL OPTIONS

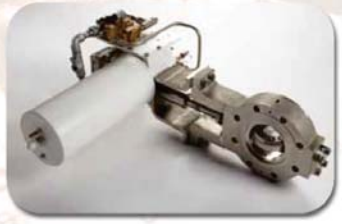
* Oxygen clean wrap
* Steam traced shaft
* Weld-on steam jacket
* Bolt-on steam jacket
* NACE MR 0175 & 103 compliant
* Heat extension bonnet
* Cryogenic extension bonnet
* Remote position indication
* Stem instrumentation
* Baseline diagnostic testing
* Live loaded packing
* Purge port and lantern ring
* Stellite seat overlay

ACTUATOR ACCESSORIES

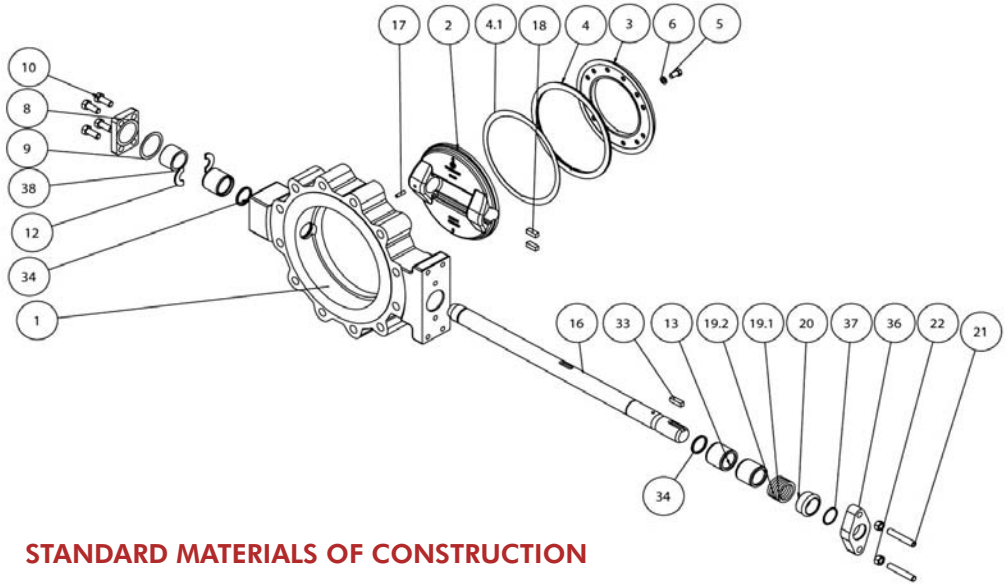
* Actuator standoff designs
* Handwheel override
* Limit switches
* Solenoid valves Positioners

ACTUATORS

* Pneumatic
* Electric motor
* Hydraulic
* Manual gear



PRODUCT ATTRIBUTE	DESIGN STANDARD
Valve Design	BS 5155, DIN 3202, IS 13095, API 609
Flange Design	ASME B16.5, B16.47
Butt Weld Design	ASME B16.25
Face to Face	ASME B16.10, API 609
Testing	ASME B16.34, API 598, API 607



STANDARD MATERIALS OF CONSTRUCTION

S. NO	ITEM	MATERIALS
1	Body	HASTELLOY, 6A, 5A, 4A,NAB, AL-BRZ, CF8M, CF3M, 17-4PH, CA6NM, C12A,
2	Disc	LCC, LCB, WCC, WCB, INCONEL, NO6625, NO7718, NO8825, NO8926,
3	Clamp Ring	F51, F53, F60, F316, F316L, F6A, 416, 4140, LF2, A105
4	Seal Stack	Graphite & 316
4.1	Seal Gasket	Graphite
5	Cap Screw	B8/ B8m
6	Lock Washer	316
8	Cover Plate	WCB, WCC, LCB, LCC, CF3, CF8, CF3M,CF8M, 4A, 5A, CK3MCUN, MONEL
9	Cover Plate Gasket	Graphite
10	Cap Screw	B8/ B8m
12	Annular Key	S21800
13	Bearing	Carbon Graphite
16	Shaft	A564 630 H1150M, F316, F51, F53,N06615, N06625, N07718, N08825, N08926, 17-4PH
17	Spring Pin	SST
18	Parallel Key	316
19.1	Wiper Ring	Graphite
19.2	Packing Ring	Graphite
20	Gland Follower	SS 416
21	Stud	B8
22	Hex Nut	B8M
33	Actuator Key	S21800
34	BRG Protector	Graphite
36	Gland Plate	WCB, WCC, LCB, LCC, CF3, CF8, CF3M,CF8M, 4A, 5A, CK3MCUN, MONEL
37	Retainer Ring	SS 302
38	Spacer Ring	SS 316

"We will start with you on the project and stay with you throughout the project's operational life."
MICRONE Management

Our After-Market Services include on-stock availability of full range of spare-parts, prompt valve repair and maintenance services by our experienced and competent technical staff, immediate on-site field services, on-time commissioning of projects and related technical training to your full satisfaction.

Besides the design, manufacture and testing of API 6D Ball ,Plug,Globe, Gate,Check Valves and Actuators, our ISO 9001:2008 certificate also accredits MICRONE VALVE for after-sales valve repair, field services, remanufacture and refurbishment of API 6D valves and actuators of any brand. MICRONE VALVE After-Sales Services is provided worldwide by our professional technical staff from our headquarters in Chennai, India.

Our Global Sales Network in over 5 countries in Asia, Middle East, Europe and Russia also offers customer support locally by coordinating with our HQ in India for the provision of after-market services in your country. For any queries please contact our headquarters or our local agent in your country.

PROJECT MANAGEMENT

AFTER MARKET PROGRAMS

SPARES INVENTORY

VALVE REPAIRS

FIELD SERVICES

COMMISSIONING

TRAINING

OVERLAY WELDED BALLS

METAL TO METAL BALL & SEAT RINGS

RAW MATERIAL

SEMI-FINISHED

FINISHED BALLS

CLIENTS

PETRONAS GAS · KSS · GE · tyco · L&T · CAMERON · FLOWSERVE · BHEL · EMERSON · mokveld · ExxonMobil