mapol ... more than only valves

BUTTERFLY VALVE MAPOL TYPE M90

Installation & Maintanance Manual

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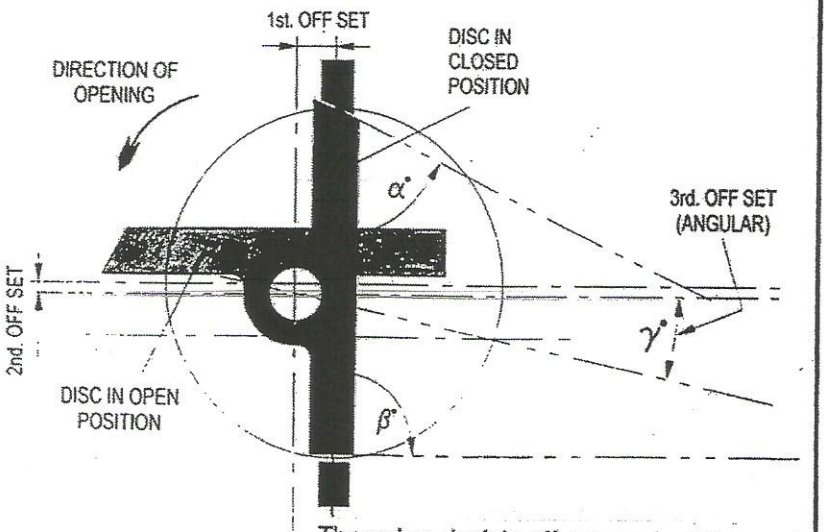
1. General

M90 series is adjustable metal seated butterfly valve. The seal system is build up with metal lamellar which are mechanically cutting with high accurancy and then inserted in the disc, match with the valve seat. This structure prevent against rise problems relating to press stress, welding stress, deformation by annealing and the problems of biting of breaking of the seal ring, either under high temerature or low temperature, which overcomes many dissdvantages of conventional elastic sealing structure butterfly valve. The sealing systemensures the valve up to zero leakage when the valve under different temperature and pressure.

Triple eccentric structure ensures that the seat ring stays clear of the seat except at the final shut-off position, resulting in long seat life and operating cycles in excess of 200.000. Triple eccentric structure makes the disc immeditelly apart from the sealing surface when the valve opened and disc touches the sealing surface just make the valve up to seal when the valve closed. Which decrease the open torque and close torque, make the valve immediate opening and closing with least friction, therefore prolong the life-time.

The adjustable means extend service life and increase benefits: When the conventional butterfly valve leaks because of wear of the seat, it must be abandoned, which is wasteful. However, for M90 valve, when the valve work for a long period time and the sealing wears, and the tightness is not satisfied, we can adjust the washer which in the back of the seat forward to the disc, which peolongs the seal life and promote the social economic benefits.

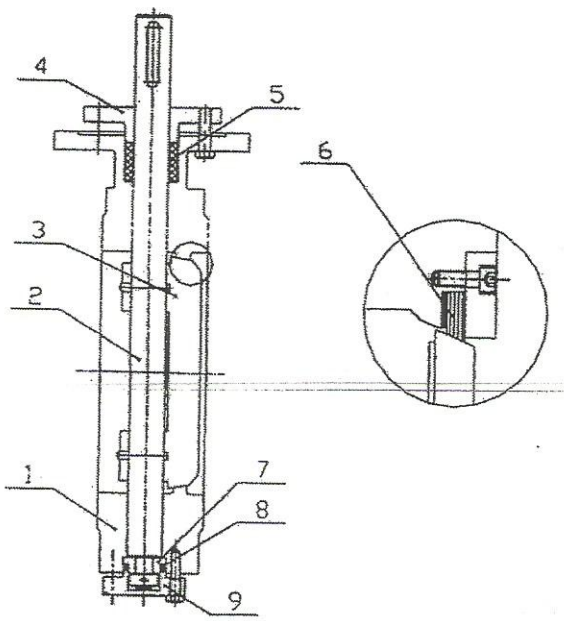


The valve shaft is off-set against the seal, (1st off-set), and against the centre line of the valve (2nd off-set). The seating edges are machined with a continuously changing slope from an angle ∝ on top of the oval seat ring to an angle β at the opposite side (3rd off-set angular).

2. Technical Performance & Application Standard

Nominal Pressure:		PN		ANSI	
		0.6-10 Mpa		150LB-600LB	
Nominal Size		65-3000 mm		2-1/2"-42" inch	
Intensity Testing Pressure		PN × 1.5 Mpa			
Sealing Testing Pressure		PN × 1.1 Mpa			
Air Pressure Sealing Pressure		0.6 Mpa			
Body material	Grey cast iron **Z**	Ductile iron **Q**	Carbon Steel **C**	Alloy Steel **I**	Stainless steel **P/R**
Working temp.	0-150℃	-15-300℃	-29-425℃	-29-530℃	-196-600℃
Medium	Water, sea water, steam, gas, oil and etc.		Water, steam, gas, oil and etc.	Acetum, nitric acid, corrosive gas/liquid, chemical and etc.	
Design and manufacture	GB 12238-89 ANSI B16.34 BS5155				
Connection dimensions	GB79 ISO7005 ANSI B16.5 MSS SP44				
Face to Face	GB12221-89 API609 ISO 5752 DIN3202				
Pressure Test	ZBJ16006-90 API598 ISO5208				
* Other standard according to the customer's request (Please indicated in purchase order).					

3. Structure and material



1. body
2. stem
3. disc
4. packing grand
5. flexible graphite
6. metal lamellar
7. washer
8. graphite washer
9. bottom bonnet

Body: grey cast iron, ductile irion, carbon steel, alloy steel, stainless steel, Cr/Ni/Mo/Ti
Stem: alloy steel, stainless steel, Cr/Ni/Mo/Ti
Seat seeling: alloy steel welded lath, stainless steel stacked lamellars

4. Working principal & structure illustration

4.1 Valve structure is composed of the following main spare parts: body, stem, seat, valve disc, sealing ring, packing, bearing.

4.2 The valce is triple eccentric structure, the disc and seat is connected with bolt, the valve sealing can be compensated by adjustable pads, which prolongs the working life. Valve stem and valve disc connected and locked tightly with pin. Valve stem and valve disc make revolving movementsdriven by the actuator at the direction range: 0 °C – 90 °C, which comes at the purpose of opening / closing valve and controlling the flow capacity

4.3 The valve stem revolves at clockwise direction is to close the valve, the valve stem revolves at counter-clockwise direction is to open the valve.

4.4 The valve sealed in one direction , the arrowhead direction on the valve body is the direction which is convinient for the medium sealing. When you install the valve, please note this.

5. Attention line of safe – keeping, installation, operation and maintanace

5.1 The valve should be kept in dry warehouse orderly, store in open air and stack is prohibitive, the two sides of the valve path should be closed tightly.

5.2 If the valve being kept for long time, it is need to inspect regularly. The processing surface exposed in outside should be painted with rustproof oil and clean out the oil dirt and rust on the surface of valve.

5.3 When installation, please note that the arrowhead direction on the valve body is the direction which is convenient for the medium sealing. Please don't install reverse.

6. Installation

6.1 Before installation, all rust preventative should be removed using a commercial solvent. The seat and the disc seal should be checked for dirt accummulations or damage in transit or storage. Any dirt accumulations should be cleaned and any damage repaired. The valve must be installed with disc in the closed position.

6.2 The valve should be installed with the shaft in a horizontal plane, this will reduce the axial load on the annular key and prevent debris build-up in the lower bearing area.

6.3 The M90 valve should be centered between flanges to prevent any damage to the disc or shaft which would be caused by the disc striking the pipe wall.

7. Maintanace

Routine maintance consists of tightening down the packing gland. More extensive maintanace is not necessary. Should a replacement of disc seat, bearing, and packing be required, it can be done as described below.

8. Valve removal

Valve must be fully closed before removing it from the pipeline
CAUTION: Valves equipped with fail-open (air-to-close) actuator must be disconnected from the actuators and then closed, or thre must be sufficient air pressure supplied to the actuator to close the valve while removing it from pipeline. After valve removal, slowly relieve the pressure in the axtuator Line pressure should be relieved before removal of actuator.

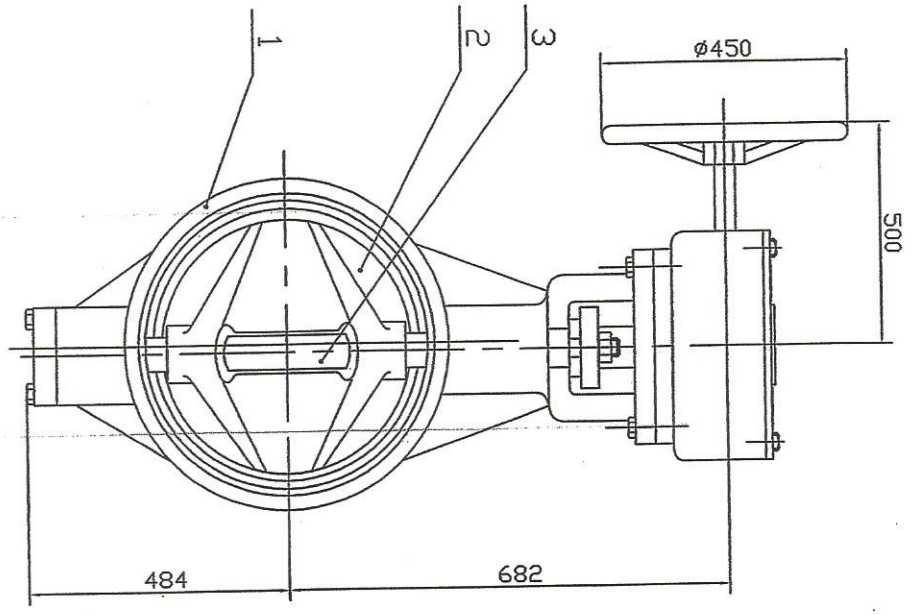
9. Valve disassembly

NOTE: If complete disassembly becomes necessary, replacement of all spare parts is recommended. The valve must be in the closed position during disassembly. See exploded view of the valve for recomended spare parts and quantities per valve.

a) Place the valve on a bench or other suitable working space; shaft side up.
b) Remove roll pin from disc lug and shaft.
c) Next remove the hex head cap screws, o-ring, and cover plate.
d) Use a soft drift and hammer to tap the drive end of shaft. While pushing the shaft through the body and disc, remove the annular key from the non-driven end of shaft and the parallel keys from the shaft and disc lug.
e) Following removal of the shaft, lift the disc from the body. For disassembly of the disc, clamp ring and laminated seal use the disc seal replacement procedure.
f) Remove the packing gland, packing and the hex nuts and studs.
g) With a punch or soft drift and hammer remove the bearings by tapping them outward from the inside of the body.

10. Valve assembly

a) Clean all valve components.
b) Inspect all components for damage before starting to assemble the valve. Look especially for damage to sealing areas on the disc seals, valve body seating area, shaft, and for wear in the bearing areas of the shatf and body.
c) Coat the shaft and disc bore lightly with a lubircant conpatible with the fluid to be handled by the valve.
d) Reverse the disassembly procedure for valve assembly.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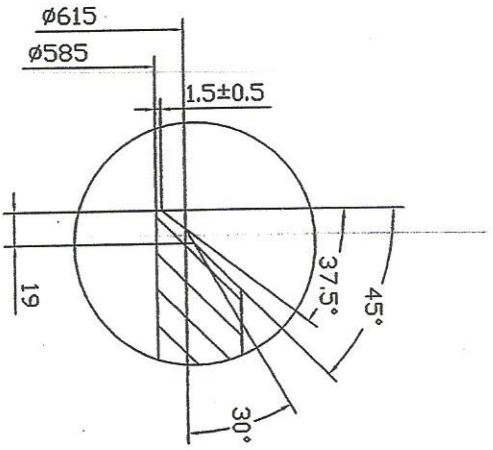
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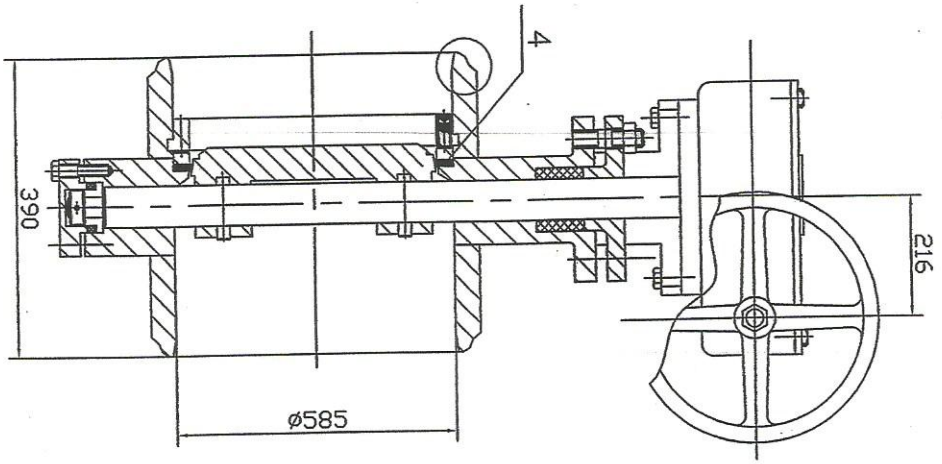
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