

# Specification of Triple Eccentric Metal Seated Butterfly Valves



Triple eccentric metal seated butterfly valves are widely used in plant and high pressure piping system.

The metal seat shall be consisted of laminated seat or solid seat.

The valve shall be capable of bi-directional flow bubble tight shut-off at full rated pressure.

## TYPE NUMBERING SYSTEM

- AV-TMW Triple Eccentric wafer type metal seated butterfly valves.
- AV-TML Triple Eccentric lug type metal seated butterfly valves.
- AV-TMF Triple Eccentric flange type metal seated butterfly valves.

## STANDARDS COMPLIANCE

- The face to face dimension shall be in accordance with API609, ISO5752, DIN 3203, MSS-SP-68, JIS F7480, JIS B2032, KSV7490.
- Fire safe design shall be in accordance with API607, 6FA and BS6755.

## PRODUCTION RANGE

- SIZE : 50mm (2inch) ~ 2000mm (80inch)
- End connection ANSI B16.5, 16.47 Class 150LB-2500LB
- Working temperature : -196°C ~ 815°C
- Working pressure : Maximum 6,000psi(400 kg / Cm<sup>3</sup>)

## APPLICABLE FLANGE

- ANSI B 16.5, 16.47, 150LB-300LB-600LB-900LB, 1500LB, 2500LB
- KS/JIS 5K, 10K, 16K, 20K, 30K, 40K, 63K
- BS 3293, DIN 2501, ISO 7005, PN6, PN10, PN16, PN20, PN25, PN40
- PN50, PN110, PN150, PN260, PN420

## APPLICATION IN MAJOR INDUSTRIES

- Petroleum refinery
- Nuclear power plants
- Fossil power plants
- Cryogenic services
- Petrochemical plants
- Exhaust gas line & Steam line
- Fire safe line

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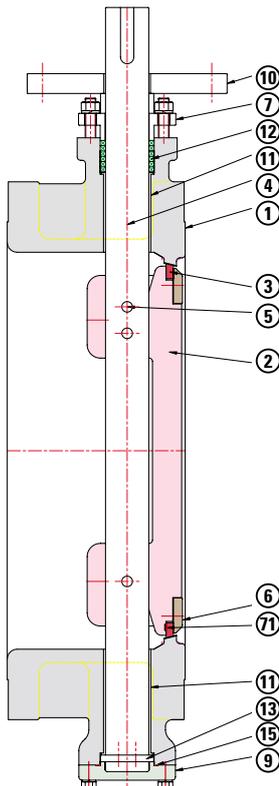
## Classification by Connection

- WAFER** : The valve to be installed with long bolts between the flanges at adjacent pipe without flange on the valve.
- LUG** : A pair of thread bolt holes to be provided upper and lower side in order to hold the valve.
- FLANGE** : Both end with complete flange suitable to connect with general pipe flange.

## Operations

The following operation of the valve is available. The choice of operation depends on the valve location and the type of work and service for which the valve is provided.

- Manual lever operation
- Manual worm gear operation
- Single or double acting pneumatic actuator operation
- Hydraulic actuator operation
- Electric motor actuator operation



## Part List

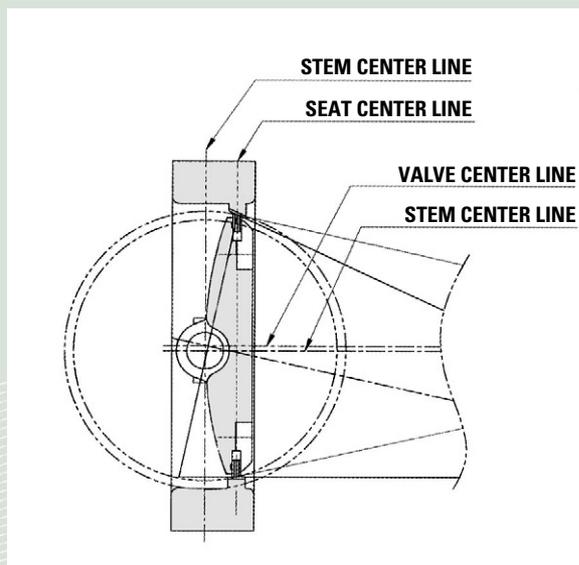
No	PART NAME	METERIAL
1	BODY	Cast steel / Stainless steel Ni-Al-Bronze
2	DISC	Cast steel / Stainless steel Ni-Al-Bronze
3	SEAT	Stainless steel + Graphite Laminated Stainless steel / Monel
4	STEM	Stainless steel / Monel
5	DISC PIN	Stainless steel / Monel
6	RETAINER	Cast steel / Stainless steel Ni-Al-Bronze
7	PACKING GLAND	Cast steel / Stainless steel Ni-Al-Bronze
9	BOTTOM COVER	Cast steel / Stainless steel Ni-Al-Bronze
10	ACTUATOR STAND	Carbon steel
11	STEM BEARING	Stainless steel + Teflon Stainless steel / Bronze
12	PACKING	Graphite
13	THRUST PLATE	Stainless steel + Teflon Stainless steel / Bronze
15	BOTTOM GASKET	Graphite
71	SEAT GASKET	Graphite

# Triple Eccentric Metal Seated Butterfly valves

## Triple eccentric design principle

Metal seated high pressure butterfly valves provide bi-directional bubble tight shut off which achieved by introducing state of the triple eccentric disc geometry.

The valve shaft is off set against the seat and the centre line of the valve body respectively. The seating edges are machined with a continuously changing slope from an angle on top of the oval seat ring to an angle at the opposite side. This geometry ensures that the seat ring stays clear of the seat except at the final shut off position which results long life seat.



## Metal to metal seat

Various disc seals are available for each temperature and pressure service applications. Solid metal seals are often used for temperatures above 510°C and up to 815°C or low temperature service. The laminated metal seal consisted of stainless steel with intermediate material of graphite or ceramic fiber layers is used widely. The laminated seal is secured to the disc with a bolt-on stainless steel retainer and easily accessible for replacement. The graphite laminated seal Ring is suitable for temperatures between -40°C and 650°C in general.

The seal leakage meets API 598 or API 6D.

The solid metal seating valve can be operated in a temperature range of -253°C to +815°C.

Valve for cryogenic application shall be provided with extended stem.

