



*MATÉRIEL CONCERNÉ – CONCERNED EQUIPMENT – BETROFFENES MATERIAL*

## **ALL BUTTERFLY VALVES**

# **ERECTION**

# **INSTRUCTIONS**

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## **ALL BUTTERFLY VALVES**

### **GENERALITIES**

The VPR and VPS 34000, 34102 or 34100 butterfly valves are designed to be fitted between flanges by means of tie rods and nuts.

### **PIPE CONNECTION**

The connecting flanges ensure a tight connection between valve and pipe. This implies the following:

- Conformity to valve connecting dimensions ;
- Outside tightness guaranty
- The rigid mechanical connection between valve and pipe to absorb the resulting temperature and pressure stresses.

### **FITTING BETWEEN FLANGES**

The fitting of the valves between flanges should ensure positive and rigid connection of the assembly upstream flange – valve body – downstream flange.

The valve body should never undergo the traction and flexion stresses occurring in the upstream pipes on each side of the valve.

### **FITTING REQUIREMENTS.**

- Flanges should be flat
- Flange port should be :
  - Flat (lathe machining quality)
  - Clean (absence of weld splashes and beads or any other impurities)
  - Free from any surface flaws (welding fins, choc traces)
- The flanges should be parallel and aligned to prevent additional stresses on valve body and tie-rods.

### **Valves with tapped holes on stuffing box body neck.**

When there are tapped holes on the stuffing box body neck, fastening is done by:

- One tie-rod with washer and nut per hole or,
- One screw with washer.
- The thread should be coated with graphite-grease before assembly to make the disassembling easier.

***We would advise to use the first assembly solution.***

### **Checking before fitting.**

1. The flanges must be flat (check that they have not been deformed during welding operations).
2. Check surface condition of flange gasket port.
3. Make sure that the flange gasket port is free of welding beads, welding fins, weld seams, which could alter the contact surfaces between pipe flange and valve body flange.
4. Ensure size conformity (diameter, drilling diameter, holes number and diameter) between pipe flange and valve body.

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## ALL BUTTERFLY VALVES

### Fitting operations.

1. **Valve positioning:** valve shaft has to be horizontal when assembled onto the pipe.

2. **Fitting between flanges:**

2.1. Spread apart the two pipe flanges to allow easy passage of valve body and gaskets and to prevent scratching or catching the outer faces of the inner lining when sliding the valve between de flanges for CFEM type valves.

*For CFEM type valves:*

*When sliding in the valve between the flanges, the valve must not be completely closed. The butterfly disc has to be in the maximal opened position which still permits the valve to be inserted between the flanges. To open lightly the butterfly disc, use the stop screw tag 2.34 of the actuator until the opening angle reaches the desired position. When the valve is fitted, unscrew the stop in the initial position (defined to obtain the suitable actuator spring tension).*

*Caution: do not weld with electric arc or acetylene blow-pipe near the valve (the lining could get burned or damaged by splashes or liquid metal beads.*

2.2. Center the valve by placing the tie-rods in the valve body on stuffing box body neck.

2.3. Make sure the gaskets are well centred.

2.4. Tighten progressively and regularly each flange by screwing the nuts cross ways.

### After assembly check.

Make the butterfly rotate completely to ensure a free complete rotation.

### ELECTRICAL CONNECTIONS

For VPR control valves:

Connect the 4-20mA control signal to the electro-pneumatic positioner.

Use armoured cable. Comply with polarity. Connect earth to the positioner.

For VPS valves:

Connect the electrical ON-OFF signal to the 3 way solenoid valve.

Connect the end of motion switches if necessary.

For VPR control valves with additional ON-OFF function

Connect the 4-20mA control signal to the electro-pneumatic positioner, the electrical ON-OFF signal to the 3 way solenoid valve and the end of motion switches if delivered.

For VPRE control or ON-OFF valves:

Connect the suitable power supply and follow electrical actuator instruction manual.

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## **ALL BUTTERFLY VALVES**

### **PNEUMATIC CONNECTION**

According to the valve fittings, connect the network air pressure to:

- Air pressure regulator
- Electro-pneumatic positioner
- Solenoid valve

#### **Air supply: use instrument air – maximal service pressure 5 bars**

We advise to fit a small manual plug valve on the air supply pipe. On the other hand, we strongly advise not to use a manual ball valve. Preferably use a needle type valve (dimension 1/4 ")

For all pneumatic connection tightening operations, a special joint paste (as LOCTITE tight tube) should be used, and PTFE bands especially are to be prohibited.

Air connections between air pressure reducer, positioner and actuator are done in factory by hosepipes.

### **Checking after electrical and pneumatic connections**

Make sure there is no air leakage at the pneumatic connections.

N.B. for control valves: the positioner always has an air leak within the cover. Without this leak it cannot operate. Never try to leakproof the cover.

### **IMPORTANT REMARKS**

#### **Inside pipe cleaning**

To ensure valve operation it is essential before valve fitting onto the pipe, to carefully and thoroughly clean the pipe inside to free it from any traces of impurities and especially from welding beads.

If the pipe is cleaned by means of air or water the valve should be removed and replaced by a sleeve.

The impurities could get stuck between the butterfly and the valve body at the very place of the butterfly shaft and jam the butterfly.

#### **Dimensions**

The control valves have generally a smaller nominal diameter than the pipe ND due to the valve allowable pressure lost. A reduction cone has to be welded onto the pipe upstream and downstream of the valve.

A pipe of the same ND as the one of the valve, and of the same length as the valve ND, should be welded between the cone and the flange on either side of the valve.

#### **Fluid flow direction**

An arrow on the valve body indicates the fluid flow direction.

#### **Air failure opening valves**

The air failure opening valves can be delivered with actuator rod disconnected from actuation lever shaft to facilitate transportation.

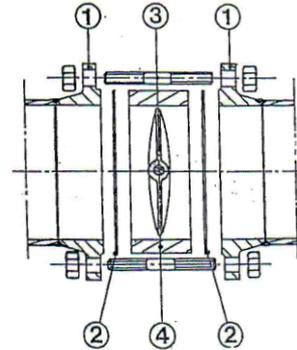
These parts should be connected before valve fitting on the pipe.

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## ALL BUTTERFLY VALVES

### Diagram – Between flanges fitting

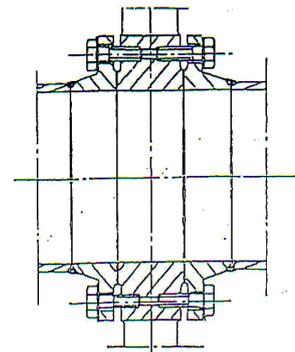
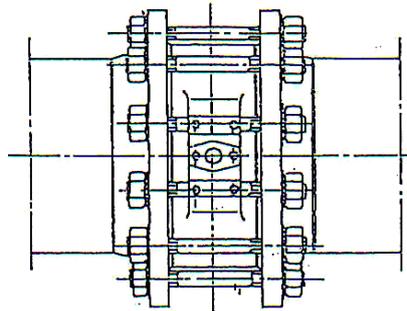
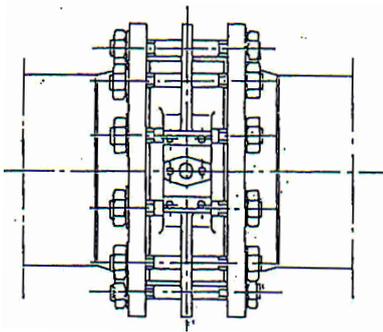
- 1- UPSTREAM AND DOWNSTREAM FLANGES
- 2- UPSTREAM AND DOWNSTREAM GASKETS
- 3- TIE AND ROD
- 4- BUTTERFLY VALVE BODY



Valve fitted with body ring

Valve fitted without body

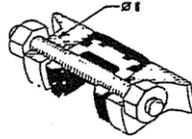
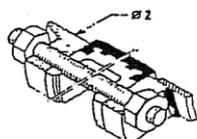
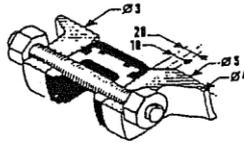
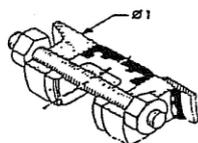
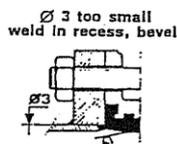
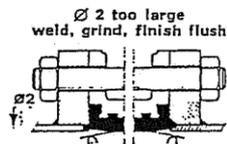
Valves with 4 tapped holes on stuffing box



### CFEM type valves

Optimum valve fitting is achieved by employing the optimum dimensions.  
The diagrams below show how to achieve them.

#### Flat flanges



VALVE DIAMETER		Ø OPTIMA	Ø MAXI	Ø MIN	Ø MINI act 10mm	Ø MINI act 20mm	Ø NINE
mm	pouce	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6
300	12	300	328	297	289	280	365
350	14	350	372	347	339	332	420
400	16	400	423	396	388	382	477
450	18	450	474	446	436	430	534
500	20	500	524	495	484	478	592

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### VALVE BODY HEAT SHIELDING

It is used for HF type valve, on hot and very hot lines.

#### 1. Expansion play between butterfly and body.

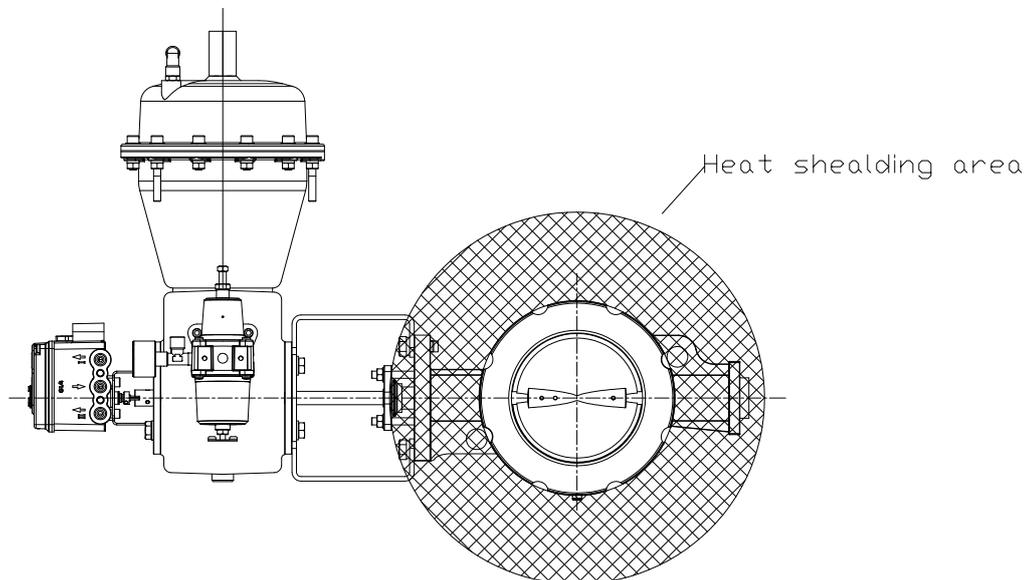
It is highly advisable to insulate the valve body to decrease the differential temperature between butterfly and valve body;

The butterfly expansion play is designed for a heat shielded valve body.

#### 2. Stuffing box body neck heat shielding.

The valve body insulation will be limited to the stuffing box body neck place (fork free of insulation) in order to:

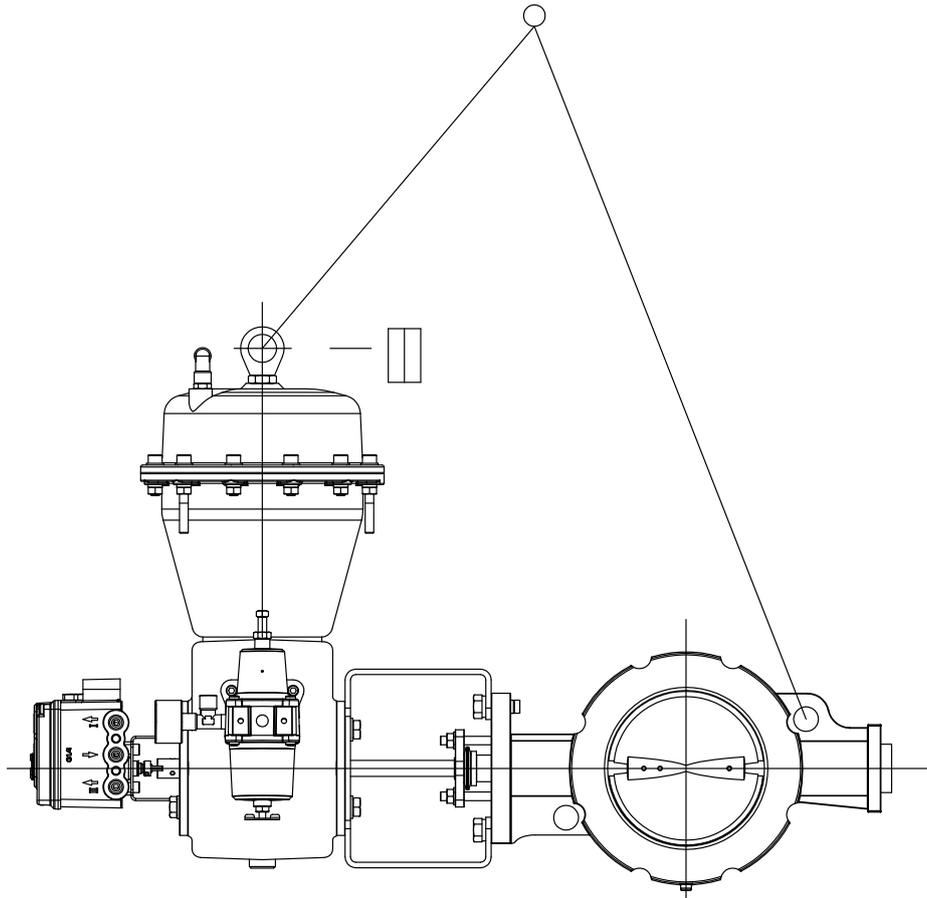
- Be able to screw the stuffing box tightening nuts after insulation.
- Allow cooling of the fork and rear guiding bushing.



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### VALVE SLINGING



#### Valve slinging:

If you remove the cap 2.35, do not forget to set it again after handling of the valve.