



MATÉRIEL CONCERNÉ – CONCERNED EQUIPMENT – BETROFFENES MATERIAL

ALL BUTTERFLY VALVES

OPERATION INSTRUCTIONS

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ALL BUTTERFLY VALVES

GENERALITIES

The butterfly valves serial **34100**, **34102** and **34000** are throttling control valves, actuated by a pneumatic single action spring-return rolling diaphragm pneumatic actuators, with accessories such as:

For VPR control valves:

- electro-pneumatic positioner
- air pressure reducer

For shut-off valves:

- 3 way solenoid valve
- end of motion switches

Note: the 34000 type butterflies are 15° inclined when closed (only existing for CF and HF valves)

To ensure a proper operation, the valve must be installed with horizontal shaft to avoid friction between body and butterfly due to gravity.

1. VALVE BODY ASSEMBLY

The valve body is mainly composed of a body, a rotating butterfly, a shaft and one stuffing box.

The butterfly is actuated by the pneumatic actuator.

The wider is the butterfly rotation, round the shaft, the wider is the valve opening and vice-versa.

The fluid flow passing through the valve varies according to the aforesaid opening.

The valve has approximately an equal percent flow characteristic.

The flow value increases up to a rotation point (50%) where it is much lower than 50% of total flow capacity, and over this rotation point, it increases very quickly.

- On **CFEJ4** type valves, the tightness between body and butterfly is made by a joint mounted onto the butterfly. The tightness is class 4 according to the ANSI/FCI 70-2.
- On **CFEJ** type valves, the tightness between body and butterfly is made by a joint mounted onto the valve body. The tightness is class 6 according to the ANSI/FCI 70-2.
- On **34000**, **34102 CF**, **HF & HFI** type valves, the tightness is made by direct contact between the body and the butterfly. The tightness is class 3 according to the ANSI/FCI 70-2.
- The **34100 CF**, **HF & HFI** type valves are non tight valves
- On **CFEM** type valves, the tightness is made by a lining in the valve body, which is in contact with the butterfly when the valve is closed.

2. ACTUATOR (if electric)

See electrical actuator instruction manual.

3. ACTUATOR (if pneumatic)

The actuator is operated by a pneumatic proportional signal issued by the electro-pneumatic positioner.

The actuator stroke is obtained by full signal range. The actuator rod moves vertically.

It is transformed to a rotating motion in the connection casing by means of a lever acting as a link and crank to actuate the butterfly.

The return-spring positions the actuator rod on zero.

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The butterfly is opened or closed according to lever action direction on the butterfly shaft.

Stop adjustment – open position

The lower stop could be adjusted to obtain from 50 to 100% of the butterfly motion. Unscrew the counter-nut 2.37 into the carter and adjust the mechanical stop 2.36.

Adjust again the limit switches.

Note: on the 34000 type valve, the butterfly motion is 15° to 90°

Stop adjustment – closed position (for 34000/34102 or CFEJ type valves)

In closed position, the stop is done by the seating of the butterfly on the valve body. The adjustment between actuator and valve is done by the coupling screw tag 2.10.

3.1 Hand actuating (if present)

Temperature caution: take precautions when the valve is very hot to open it.

Manual operation of the valve

Unscrew the stop nut on the hand actuating shaft. Operate the hand actuating wheel to the required position according to the direction indicated on the wheel top.

3.2 Air pressure reducer filter

It reduces the pressure from the network down to the suitable air supply pressure.

3.3 Positioner (if present)

It is supplied with a 4-20mA control signal on one side and with compressed air pressure on the other side. The electro-pneumatic positioner functions are following:

- converting the proportional electrical 4-20mA control signal into a pneumatic proportional signal.
- coinciding the butterfly position with the control signal.

The operation of a control valve involves friction forces which are minimized by a careful and elaborate construction but which can not be totally avoided.

3.4 3 way solenoid valve (if present)

It is a 3 way micro-plug valve operated by a solenoid.

When the solenoid is energized, the air can flow from upstream to downstream into the actuator.

When the solenoid is not energized, upstream is closed, downstream is put in exhaust position, allowing air to flow out of the actuator, which, through the spring-return action, sets the valve in safety position.



MATÉRIEL CONCERNÉ – CONCERNED EQUIPMENT – BETROFFENES MATERIAL

ALL BUTTERFLY VALVES

Generally, a quick exhaust valve is installed between the solenoid valve and the actuator to obtain a quick closing time. The actuator exhaust air flows out through this exhaust valve and not through the solenoid valve.

On some version the solenoid valve can be manually operated by a little lever on the side. The manual drive allows obtaining the same position as when the solenoid valve is energized.

3.5 End of travel switch (if present)

It is generally a double inductive sensor activated by two metallic pins (one for each position, opened or closed) placed on a rotary device actuated by the actuator lever. On some models it can be a double mechanical switch.

It gives remote information about butterfly position.