Operation and maintenance instructions for Eurostop safety butterfly valve

Storage instructions

Handling
The handling of the valve has to be made with care, in order to avoid any shock, even accidental, which could damage it. In particular any lift of the valve should be carried out paying attention that the chain, cable or rope used for that specific operation is not clamped or does not touch the operating system. For this task the ends of the valve body or the flanges should be used.

Storage
Generally the valves are supplied in pallets banded with plastic film; if the valves are without packing and have to stay for long time in the stock before being installed, they must be stocked covering the passage of the valve, safeguarding in this way the interior parts and particularly the seat from the contact with powder or dirt.

The valves must be stored in a location offering a good protection against the direct sun, the rain and all other atmospheric elements. In absence of a right place the valves have to be wrapped with a cellophane or plastic sheet, if possible of dark color.

Do not leave the valve completely closed and do not protrude the disc out of the body of the valve.

Oleodynamic actuator storage
The oleo-dynamic actuator is supplied mounted on the valve with separate counterweight and arm in only one package.

It's advised to control that the seats of threaded connections for the electrical and/or hydraulic/pneumatic connections, always are protect till when they are not connected. This in order to prevent the contact between the interior components (gears, arms, cylinders, etc) with powder, earth or something that can damage them.

When the connection does not come immediately realized after the valves assembly on the system, the installer must supply the actuators protections against the atmospheric agents and condensate formation. It is

Saint-Gobain PAM Canalisation
21, avenue Camille Cavallier - BP 129 | 54705 PONT-A-MOUSSON CEDEX | FRANCE
Tel : (33) 03 83 80 67 89 | E-mail : Pamline@saint-gobain.com | pamline.fr

necessary to control monthly the conservation state of interior components opening the covers of control group and terminal board, protecting the same ones with silicone or Vaseline oil during the successive closing.

Preliminary inspection

Preliminary inspection
Before mounting the valve in the pipeline, it should be controlled that no dirt or dust or external particles are contained in the valve body and in particular that the valve seat is clean. Every clamping screw (mounted inside or outside the valve) should be checked and any loosened screw should be tightened.

One complete cycle of opening/closing of the valve has to be made in order to check that all components ensuring these specific operations are working correctly.

Mounting
The safety butterfly valve EUROSTOP can be supplied in three different configurations:

- valve with paddle, oleo-dynamic actuator and manual resetting pump;
- valve with paddle, oleo-dynamic actuator and electric resetting unit;
- valve with oleo-dynamic actuator and electric resetting unit.

The mounting of every valve has to be effectuated without pressure in the pipe. A sufficient space should be provided around the valve to permit its usual operation, as well as any eventual setting or future maintenance work.

It is usually foreseen to include in the mounting procedure of a valve a dismantling joint. The device is normally mounted in the downstream side of the valve. Thanks to its adjustable length range it's not needed a very precise mounting between the pipe flanges. When used at the downstream side of a butterfly valve, it allows, when removed off the pipe, to check the internal wear level and/or to change the seat ring of the valve, without taking it out of the pipe.

The valve is mounted with the disc rotation axis horizontally. The oleo-dynamic actuator is normally mounted on the hydraulic right with closing towards mount. In case of different configuration it will be respected the sense of asked assembly.

The safety butterfly valves EUROSTOP with paddle, the assembly sense previews the positioning of the paddle to mount of the valve.

The pipeline should be as free as possible from welding, scraps, mounting accessories, dirt, etc. The cleanest the pipe is kept during the installation, the less trouble will be produced. Afterwards if the transported fluid in the system contains a lot of external solid particles, it's recommended to install in the upstream side of the valve a strainer.

Both pipe flanges, which are connected to the valve, should be located perfectly in the centerline of the pipe and absolutely parallel. If no dismantling joint is used in the mounting procedure of the valve, the distance between the two pipe flanges should match the overall length given by the valve manufacturer including twice the thickness of the flange gaskets. Any longer distance between the two pipe flanges (even of some mm) can produce during the tightening of the flange bolts/nuts very high yield stress on the valve.

Saint-Gobain PAM Canalisation
21, avenue Camille Cavallier - BP 129 | 54705 PONT-A-MOUSSON CEDEX | FRANCE
Tel : (33) 03 83 80 67 89 | E-mail : Pamline@saint-gobain.com | pamline.fr

The centring can be made visually with the surface of the flange. The bolts have to be clamped gradually in alternate way.

In case of safety butterfly valves EUROSTOP with paddle and manual resetting pump, the two flexible pipes, that leave from the oil tank of the oleo-dynamic circuit, will have to be connected to the speed detector. The dimension standard of pipes is 3/8, the lengths vary according to the DN.

The supply of model safety butterfly valves EUROSTOP with electric resetting unit (with or without paddle) excludes oil and pipes (not more flexible but rigid), because the electric resetting unit can be more or less distant from the valve. If requested the supply can comprise the pipes, through a detailed planimetry study.

For every configuration of safety butterfly valves EUROSTOP, are present the predispositions for n. 2 end stroke signalling open/close for eventual control from remote; if request it is possible to install also end stroke.

In case of the connection valve with electric unit refer to the manual of electric unit.

Start up
After the mounting of the valves on the pipeline it must be verified that the coating has not been damaged. So it's advised to repair the coating to avoid the formation of rust.

Installation instructions

Manoeuvre
The valve closing is realized by the counterweight, put in motion from an oleo-dynamic cylinder. The closing happens when pressure to the oleo-dynamic circuit is removed, determining the discharged of the oleo-dynamic cylinder with consequent counterweight rotation.

In case of safety valve with paddle and manual resetting pump, is previewed a control valve (8), opportunely calibrated for the control of closing speed, by the regulation of the oil flow unloaded from the oleo-dynamic cylinder (2) and accumulator (9).

Manoeuvre with paddle, oleo-dynamc actuator and manual resetting pump
Refer to the working drawing in Figure 1.

The closing and opening manoeuvre of the safety butterfly valves are realized by manual resetting pump. They are present in proximity of the manual pump (6):

- n.1 gauge of the circuit pressure (5),
- n.1 check valve (7),
- n.1 ball valve to hold closed, in order to avoid the return of the oil to the mount of pump,
- n.1 valve of maximum pressure (11) for the oil discharge in the tank (10), in case of pressures exceeding maximum rating in the circuit.

Valve opening (filling phase)
The reloading of the oleo-dynamic circuit and opening of the safety butterfly valves are carried out by following steps.

Saint-Gobain PAM Canalisation
21, avenue Camille Cavallier - BP 129 | 54705 PONT-A-MOUSSON CEDEX | FRANCE
Tel : (33) 03 83 80 67 89 | E-mail : Pamline@saint-gobain.com | pamline.fr

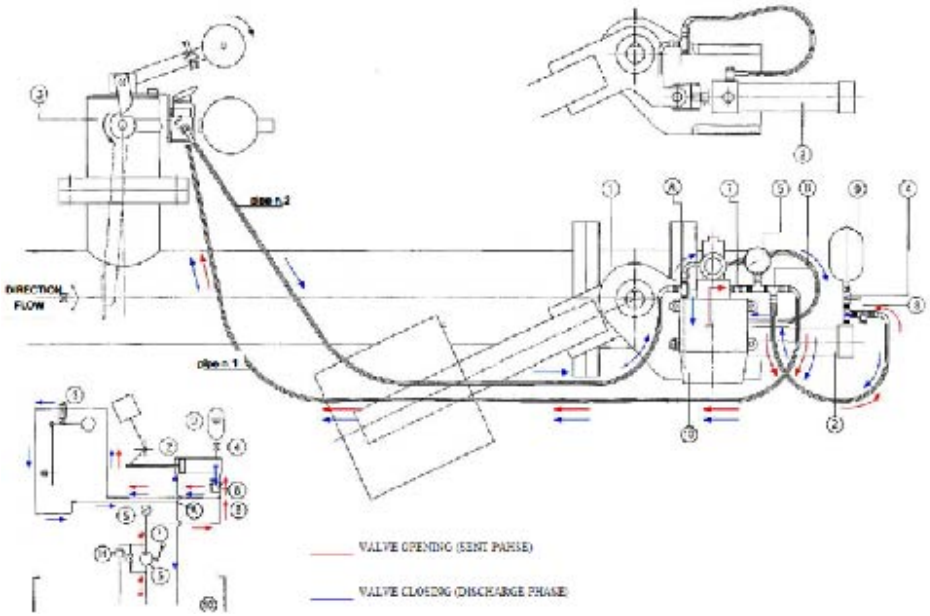
Initially the counterweight of the speed detector must be hooked on the cam (3), so as to close the oleo-dynamic circuit. This operation is carried out manually.

The oil comes from the tank (10) to the oleo-dynamic circuit by the manual pump; the tank volume changes according the DN.

The oil, passing by the node B, fills up the pipe n.1 till the oleo-dynamic valve connected to the speed detector (3); the oil cannot return to the pump by the check valve (7). In this conditions the oil passage by the pipe n. 2 are not possible, because the circuit is closed.

The oil by the node B goes to fill up also the oleo-dynamic cylinder (2) and accumulator (9). The passage from filling of oleo-dynamic cylinder to filling of accumulator is carried out by a remarkable increase of pressure (visible on the gauge) and consequently it is necessary to apply greater force to the pump lever. The accumulator is used in order to maintain constant pressure in the oleo-dynamic circuit in case of leakage, so as to avoid the possibility of the lowering graduates of the counterweight, with consequent opening of the butterfly valve. Since all the check valves have seal seat, the accumulator (9) is ulteriorly guarantee for the pressure maintenance in the oleo-dynamic circuit.

The ball valve (4) of the accumulator is open normally, is closed when it is necessary to isolate it.



Valve closing (discharge phase)
When the speed in conduct exceeds the set point, the water force on the paddle is proportional to the square of speed; this force takes effect on the actuator by the cam rotation and the mechanical release of the counterweight connected to the speed detector.

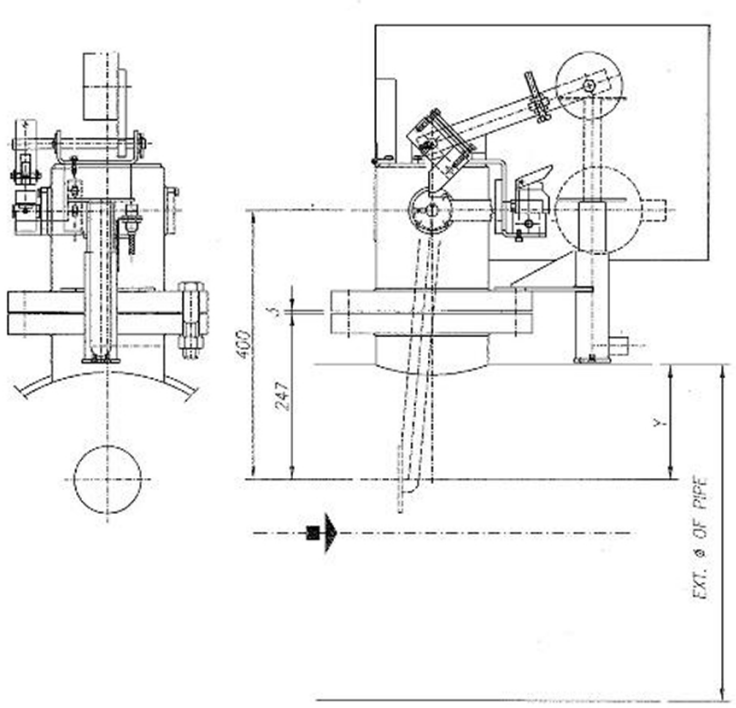
Saint-Gobain PAM Canalisation
21, avenue Camille Cavallier - BP 129 | 54705 PONT-A-MOUSSON CEDEX | FRANCE
Tel : (33) 03 83 80 67 89 | E-mail : Pamline@saint-gobain.com | pamline.fr

The paddle rotation determines the “hammer” movement of the counterweight that goes to press on the oleo-dynamic valve determining the circuit opening and the oil discharge from the oleo-dynamic cylinder.

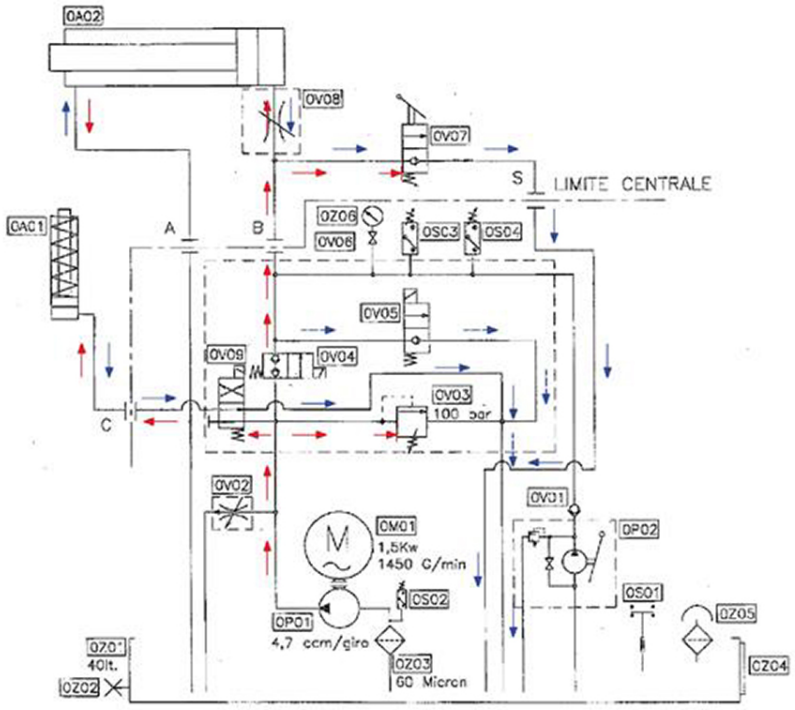
The oil flows down in pipe n. 2, gradually emptying the piston, accumulator and pipe n. 1 (the check valve (7) prevents the return of oil in the pump, the check valve of speed detector prevents the return of oil in the pipe n. 1) The oil majority will come discharged, by the node A, from the tube n. 2 to the tank (10); while a small part will go to fill up part of the oleo-dynamic cylinder, so as to avoid the contact with air and consequently the oxidation problems. The discharge of the oil in the tank determines the counterweight lowering by the movement of the oleo-dynamic cylinder and therefore the closing of the butterfly valve. The discharge speed of the oil is controlled by the control valve (8) opportunely calibrated; working in parallel a check valve can be previewed for simpler passage of the oil from the tank to the accumulator during the sent phase; this check valve will not allow the oil passage from the accumulator to the tank if not by the control valve (8).

Item	Description
1	Butterfly valve
2	Oleodynamic cylinder
3	Speed detector
4	Ball valve
5	Gauge
6	Manual pomp
7	Check valve
8	Control valve
9	Accumulator
10	Oil tank
11	Valve of maximum pressure

Saint-Gobain PAM Canalisation
21, avenue Camille Cavallier - BP 129 | 54705 PONT-A-MOUSSON CEDEX | FRANCE
Tel : (33) 03 83 80 67 89 | E-mail : Pamline@saint-gobain.com | pamline.fr



Saint-Gobain PAM Canalisation
21, avenue Camille Cavallier - BP 129 | 54705 PONT-A-MOUSSON CEDEX | FRANCE
Tel : (33) 03 83 80 67 89 | E-mail : Pamline@saint-gobain.com | pamline.fr



Manoeuvre with paddle, oleodynamic actuator and electric resetting unit
Refer to the working drawing in fig. 3.

Regarding the previous configuration, the safety butterfly valve Eurostop with paddle, oleo-dynamic actuator and electric resetting pump is characterized by the automatic resetting trough an electric unit.

Valve opening (filling phase)
The engine M operate a pump 0P01 which allows to maintain a constant value of the pressure of the oil in the circuit. The kind of engine and pump changes according to the diameter of the pipeline.

The compensated valve 0V02 maintains the pressure in the loading arm, discharging the exceeded portion of oil in the tank. The tank is sized according to the diameter of the pipeline too.

At the beginning the electro-valve 0V04 is closed, while the electro-valve 0V09 allows to feed the cylinder 0A01 (equipped by a spring) which allows the resetting of the speed control unit (paddle) trough the rising of the related balance weight.

When the resetting is finished with the closure of the cam valve 0V07, the valve 0V04 opens and feeds the oleo-dynamic cylinder 0A02, allowing the rising of the related balance weight.

Saint-Gobain PAM Canalisation
21, avenue Camille Cavallier - BP 129 | 54705 PONT-A-MOUSSON CEDEX | FRANCE
Tel : (33) 03 83 80 67 89 | E-mail : Pamline@saint-gobain.com | pamline.fr

During the normal working both the electro-valve 0V03 and the electro-valve 0V05 remain closed:

- 0V05 is a releasing electro-valve controlled from far trough a solenoid which allows the closing from far of the butterfly valve; its opening in fact (without considering the paddle and the cam valve) determines the discharge of the oil to the tank with the consequent lowering of the balance weight of the oleo dynamic cylinder and the closure of the valve;
- 0V03 is an electro-valve of maximum pressure which is normally installed in order to work when the maximum pressure switch doesn't work; in this case, with pressure values higher than the maximum value allowed, 0V03 opens and allows the discharge of the oil in the tank;
- 0S03 and 0S04 allow to control the minimum and maximum values of pressure (if the pressure goes below the minimum value the pump react to reset the right values)

When the maximum pressure is reached, detached by the maximum pressure switch, the engine which feed the pump stops, the electro-valve 0V04 closes and the oil still present in the cylinder 0A01 is discharged in the tank so that the cylinder come back in the beginning position.

In this condition the safety butterfly valve is open.

Valve closing (discharge phase)
Also in this case, the closing of the valve happens when in the pipeline the speed of the water reaches the maximum value and determines the acting of the paddle with consequent release of the balance weight from the cam valve 0V07. The opening of the valve 0V07 determines the discharge of the oil in the tank.

The closing, without the mechanical participation of the paddle which stresses the electro-valve 0V07, can be also obtained from far trough the activation of the electro-valve 0V05, as described above.

In both cases the speed of closing, and so the speed of lowering of the balance weight too is regulated with a flow regulating valve 0V08.

Consider that a manual pump 0P02 for the resetting is always installed to be used if the electric unit doesn't work.

For further information see the electric unit manual.

The working described above can change according to the configuration requested by the customer.

Ref.	Description
0A02	Oleodynamic cylinder
0A01	Oleodynamic cylinder
0S04	Pressure switch
0S03	Pressure switch
0S02	Obstruction Indicator
0S01	Electric level

Saint-Gobain PAM Canalisation
21, avenue Camille Cavallier - BP 129 | 54705 PONT-A-MOUSSON CEDEX | FRANCE
Tel : (33) 03 83 80 67 89 | E-mail : Pamline@saint-gobain.com | pamline.fr

Ref.	Description
0V09	Electro-valve
0V08	Flow regulating valve
0V07	Cam valve
0V06	Exclusion switch
0V05	Electro-valve
0V04	Electro-valve
0V03	Electro-valve VS
0V02	Valve
0V01	Check valve (one way)
0Z06	Manometer
0Z05	Charging cap
0Z04	Visual level
0Z03	Filter
0Z02	Discharging cap
0Z01	Tank
0P02	Manual pump
0P01	Motorized pump
0M01	Electric engine

Manoeuvre with oleodynamic actuator and electric resetting unit

The valve with oleo-dynamic actuator and electric resetting pump, without paddle, has the same working drawing as the one described in the paragraph 3.1.3. The only difference is that the opening and the closure of the valve are not controlled trough the paddle but trough an electro-valve controlled from far by a solenoid (the one that in the previous paragraph was called 0V05). For further information see the electric unit manual.

The working described above can change according to the configuration requested by the customer.

Exercise condition

The standard UNI EN 1074-1-2 fixes the maximum speed of water in the valve:

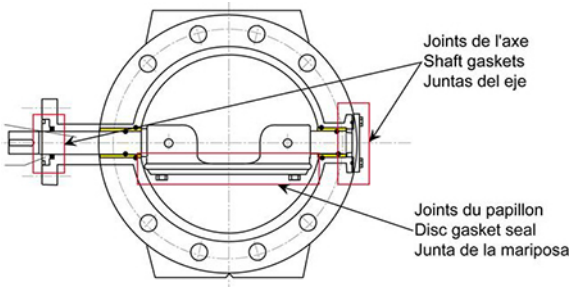
PFA (bar)	10	16	25
Max speed of water (m/s)	3	4	5

The same standards fix also the admissible temperature of water: from 0°C (excluded freezing) to 40°C.

The butterfly valve is an isolating device, so it’s designed to work completely closed or open.

Saint-Gobain PAM Canalisation
21, avenue Camille Cavallier - BP 129 | 54705 PONT-A-MOUSSON CEDEX | FRANCE
Tel : (33) 03 83 80 67 89 | E-mail : Pamline@saint-gobain.com | pamline.fr

Maintenance instructions



Ordinary maintenance

The butterfly valves EUROSTOP are designed, manufactured and tested to guarantee the maximum liability and endurance. In the standard version the choosing of materials is made paying attention to usual type of fluid and the common exercise condition: all the parts subjected to wear are perfectly self-lubricated and does not necessitate of particularly maintenance.

The efficiency of hydraulic equipments during their life is generally connected to the exercise conditions and to the type of fluid. It's advised to plan periodical inspection according to the type of valve and to the main function of the same valve.

For the butterfly valves, to maintain the performances in the time, it's needed to do at less one complete cycle of opening/closing manoeuvre every year to reduce incrustations and sediments that can accumulate during the exercise.

If the butterfly it's used also to regulate the flow, it's necessary to verify periodically the conditions of body and seat.

Operation	Year 1	Year 2	Year 3	Year 4	Year 5	After 5 years
Release simulation (op. - cl.)	yes	yes	yes	yes	yes	One cycle every year
Verify the clamping of bolts of flanges and gearbox	yes	yes	yes	yes	yes	Control at every inspection
Verify seat and body (if the valve is used for regulation)	yes	yes	yes	yes	yes	Control at every inspection

Release simulation

The correct working of the valve can be verified also without its complete closing, but by a partial closing, obtained by the counterweight rotation also of little degrees.

The controlled rotation can be carried out in various ways:

- in case of EUROSTOP safety butterfly valves with paddle, oleo-dynamic actuator and manual resetting pump/electric resetting unit:
  - to press on the push-button of the oleo-dynamic valve (the one on which the counterweight set in action from the paddle in closing phase), so as to have a controlled oil discharge in the tank

Saint-Gobain PAM Canalisation
21, avenue Camille Cavallier - BP 129 | 54705 PONT-A-MOUSSON CEDEX | FRANCE
Tel : (33) 03 83 80 67 89 | E-mail : Pamline@saint-gobain.com | pamline.fr

  - to use blocking chains on the counterweight of the oleo-dynamic actuator (so as to limit the spin of the counterweight to little degrees), to manually release the counterweight of speed detector by the cam rotation.
- in case of EUROSTOP safety butterfly valves with or without paddle, with oleo-dynamic actuator and electric resetting unit: to activate the electro-valve 0V05 from far, concurring the partial closing of the butterfly valve.

In any case, completed the simulation, it will be necessary to pump oil in the circuit to reset the initial conditions (valve completely opened).

Extraordinary maintenance
In presence of particular exercise conditions (not filtered or particularly aggressive water, incrustations) or damage due to external cause, it's possible that operations of extraordinary maintenance is needed.

These operations of extraordinary maintenance that can be made directly on site are the replacement of disc gasket seal and the replacement of shaft gaskets. Other operations (replacement of the disc, shaft, ...) are very exceptional and are not explained in this manual (in any case they are possible contacting our technical department).

All these operations have to be effectuated after the complete emptying of the pipe (total absence of pressure) to avoid any risk to the people during this operations.
Remember to remove gradually the bolts only after the clamping of the valve lifting device.

Disc gasket seal replacement
The particular construction of EUROSTOP butterfly valve permits the replacement of the gasket seal without removing the valve from the pipe (if the dismantling joint is present) with an easy seal centring (automatic gasket).

Please refer to the technical data sheet of spare parts for details.

Shaft gaskets replacement
Please refer to the technical data sheet of spare parts for details.

Oleo-dynamic components actuator replacement
Please refer to the technical data sheet of spare parts for details.

Saint-Gobain PAM Canalisation
21, avenue Camille Cavallier - BP 129 | 54705 PONT-A-MOUSSON CEDEX | FRANCE
Tel : (33) 03 83 80 67 89 | E-mail : Pamline@saint-gobain.com | pamline.fr