ML/MF

CMO VALVES

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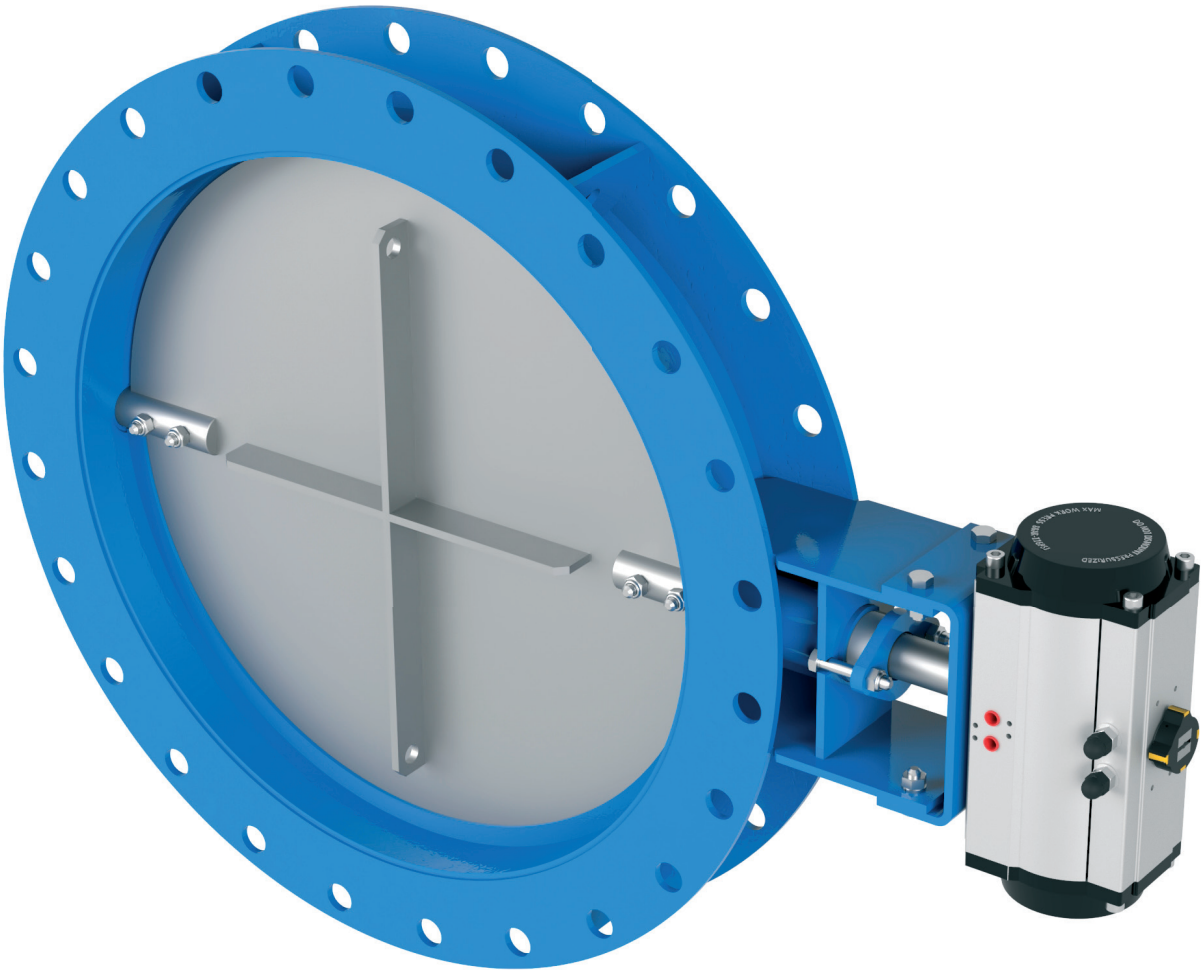
INSTRUCTIONS AND MAINTENANCE MANUAL



INSTRUCTIONS AND MAINTENANCE MANUAL

PURPOSE AND SCOPE

This document describes the installation, operation and maintenance instructions for **CMO Valves ML/MF** damper butterfly valves. **ML/MF** series damper butterfly valves are designed to work with a wide range of air and gases, controlling their passage, regulation, isolation and flow in ducts, as is their intended purpose. Any other uses must be consulted and approved in writing by **CMO Valves. CMO Valves** shall not be liable for any damage arising from applications deviating from the intended use and/or as a result of improper installation, commissioning or operation of the damper valve.

The manual describes general and generic instructions for **ML/MF** series damper butterfly valves; this documentation is supplemented by the technical information for the valve sales order (approval drawings, technical descriptions, specifications, etc.).

As part of its ongoing product and service improvement process, **CMO Valves** reserves the right to alter the data and content of this document at its discretion at any time without notice.

SAFETY ASPECTS

This manual provides essential information on installing, commissioning and maintaining **ML/MF** series butterfly valve. It is essential to follow all the indicated recommendations, codes of good practice, standards, applicable legislation, and directives related to work safety, risk prevention and technical aspects.

Individuals operating this equipment must possess technical training and be well acquainted with all warnings and cautions outlined in these instructions. Failure to observe the warnings and cautions may result in personal injury and damage to property. Be sure to read and fully understand this manual before installing, operating or maintaining the gate.

Altering or modifying this product without written consent from **CMO Valves** may lead to incorrect operation, critical failures or damage, thereby voiding the warranty.

APPLICATION OF EUROPEAN DIRECTIVES

See the applicable Directives document for **CMO Valves.**

La información relativa a las directivas aplicables a las mariposa dámper serie **ML/MF** se encuentra disponible en la web **www.cmovalves.com**, en el área de producto de las mariposa dámper serie **ML/MF.**

Upon request, **ML/MF** series can comply with the directive on equipment and protective systems for use in potentially explosive atmospheres (ATEX). In these cases, the butterfly valve will be identified and marked with a nameplate for use in such zones according to the ATEX directive. This label indicates the exact classification of the zone and the parameters under which the gate can be used. The user shall be responsible for any other use in other conditions or areas.

Supplementary information is provided for such applications (ATEX) concerning the risks associated with environments that have potentially explosive atmospheres (ignition hazards).

TRANSPORT AND HANDLING

When handling the equipment, pay special attention to the following points:

- **SAFETY WARNING:** Before handling the gate or its parts, ensure the lifting and handling equipment (e.g. cranes) are appropriately sized to manage the weight.
- Pay attention and care when lifting or handling the gate, so as to avoid damaging its seals. Damage to the seals can cause leakage problems during operation.
- To prevent damage, especially to the anticorrosive protection, it is recommended to use soft straps to lift **CMO Valves** cofferdam gates. These straps must be secured around the side profiles in the top part of the body, or in the lifting lugs in the top of the leaf.
- If the equipment is packed in wooden boxes, these must be provided with clearly marked holding areas where the slings will be placed when securing them. If two or more gates are packed together, separation and securing elements must be provided between them to prevent any movements, knocks and friction during transport. When storing two or more gates in the same box, ensure they are correctly supported in order to prevent any deformations. For sea transport, we recommend using vacuum bags inside the wooden boxes to protect the equipment from contact with sea water.
- Special attention should be paid to maintaining the correct levelling of the gates during loading and unloading, as well as during transport and storage, to prevent any mechanical deformations in the equipment. We therefore recommend using mounts or trestles.

STORAGE

Before storing, ensure the gates and related components have not been damaged or deformed during transport or handling. Any incident must be corrected prior to assembly. If in doubt, please contact **CMO Valves.**

To ensure the valve is in optimum conditions of use after long periods of storage, it should be stored in a well-ventilated place at temperatures below 30ºC.

It is not advisable but, if stored outside, the valve must be covered to protect it from heat and direct sunlight, with good ventilation to prevent humidity. The following aspects must be considered for storage purposes:

- The storage place must be dry and undercover.
- It is not recommended to store the equipment outdoors with direct exposure to adverse weather conditions, such as rain, wind, etc. This is particularly true if the equipment is not protected with packaging.
- This recommendation is even more important in areas with high humidity and saline environments. Wind can carry dust and particles, which can come into contact with the valve's mobile parts and lead to operating difficulties. The actuator system can also be damaged due to particles entering the different elements.
- The equipment must be stored on a flat surface to avoid loss of shape.
- If the equipment is stored without suitable packaging, it is important to keep the valve's mobile parts lubricated; for this reason, it is recommended to carry out regular checks and lubrication.
- Likewise, if there are any machined surfaces without surface protection, it is important for some form of protection to be applied to prevent the appearance of corrosion.

INSTALLATION

Adhere to the following instructions in order to prevent personal and/or material damage (to the facilities, the gate, etc.):

- Before installation, inspect the gate to ensure no damage has occurred during transport or storage.
- All personnel in charge of installing or operating the equipment must be qualified and trained.
- Use suitable personal protective equipment (PPE) (gloves, safety boots, goggles, etc.).
- Shut off all lines that affect the valve and put up a warning sign about the work.
- Completely isolate the valve from the whole process.
- Drain all the line fluid through the valve.

'Ex' approved hand tools must be used when installing and maintaining the **ML/MF** series damper butterfly valve in potentially explosive atmospheres (ATEX), as set out in current regulations.

Make sure that the inside of the valve body and, in particular, the seal area are clean. Inspect the pipes and the flanges to make sure they are clean and free of impurities, foreign bodies, etc.

ASSEMBLY

ASPECTS TO BE CONSIDERED DURING ASSEMBLY

ML/MF damper butterflies are bidirectional and work in the same way in both directions, meaning the line direction the valve is mounted in is irrelevant.

Special care must be taken to respect the correct distance between the flanges and ensure they are correctly aligned and parallel (fig. 1). Incorrect positioning or installation of the flanges can cause deformation in the body of the damper butterfly valve, leading to operational issues.

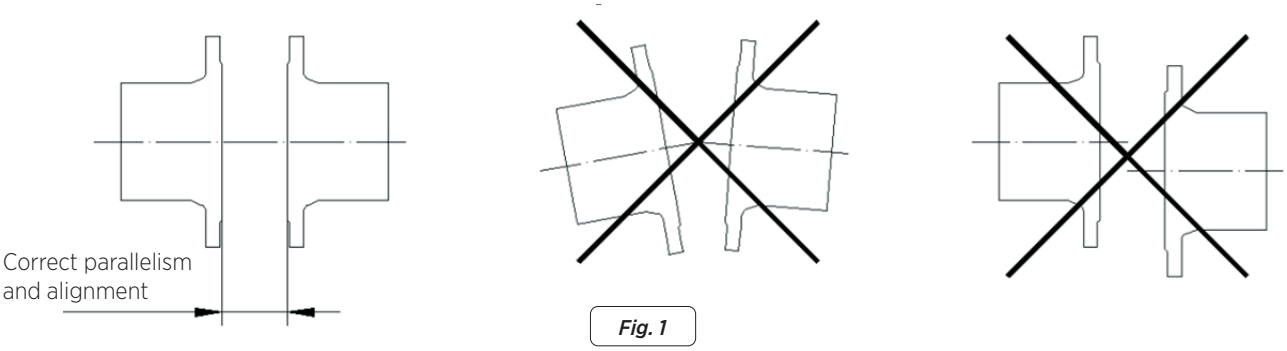


Fig. 1

It is very important to ensure that the damper butterfly valve is correctly aligned and parallel to the flanges in order to prevent external leaks caused by mechanical deformations, problems with the flange gaskets, etc. In the case of blind flanges, the bolts in the threaded boreholes will have a maximum depth and will never reach the bottom of the threaded hole.

- The equipment must be firmly installed in the duct where it is mounted. The joint to the duct can be bolted or welded.
- Whenever the joint is bolted to the duct, a watertight seal must be positioned between the duct and the damper butterfly valve in order to prevent any leakages. The seal to be installed will be selected in line with the work conditions inside the duct (temperature, pressure, fluid, etc.). The nuts and bolts to be fitted must also be suitable for the operating conditions, and their size must be in accordance with the approved drawings. The nuts and bolts should be assembled according to good practice codes, applying the tightening torque progressively and crosswise.
- When the joint is welded to the duct, great care must be taken when welding, as this may produce losses of shape in the damper butterfly valve due to the tensions created by the welding, possibly leading to valve operation problems. For this reason, it is vitally important to choose qualified personnel and the most suitable welding procedure in each case. Once the unit is positioned and levelled at the location for welding, we recommend first welding by sections in order to control the tensions created due to the welding process. To finish, carry out the continuous welding of the joint between the duct and the damper butterfly valve.
- As for scaffolding, ladders and other auxiliary elements to be used during assembly, follow the safety recommendations provided by their manufacturers, as well as the safety instructions in this manual.
- Once the equipment has been assembled, make sure that there are no objects inside or outside that may interfere with the movement of the swing check.
- Make the corresponding actuator connections (electrical, pneumatic, etc.) following the instructions set out in the manufacturers' manuals and in the wiring/operation diagrams supplied with the actuators.
- Assembly of the equipment must be coordinated with site control and safety personnel. No modifications to the damper butterfly valve's external elements, such as limit switches, positioners, signalling boxes, etc., are allowed.
- Operate the equipment according to the safety recommendations in this dossier and in the actuator manufacturers' installation and maintenance manuals.

ASSEMBLY POSITIONS (horizontal pipe)

CMO Valves´s **ML** and **MF** damper butterflies are designed for the rotation shaft to remain in horizontal position, although other assembly positions are also possible.

Positions numbers 4 and 5: CMO Valves´s damper butterflies are designed to work in these positions.

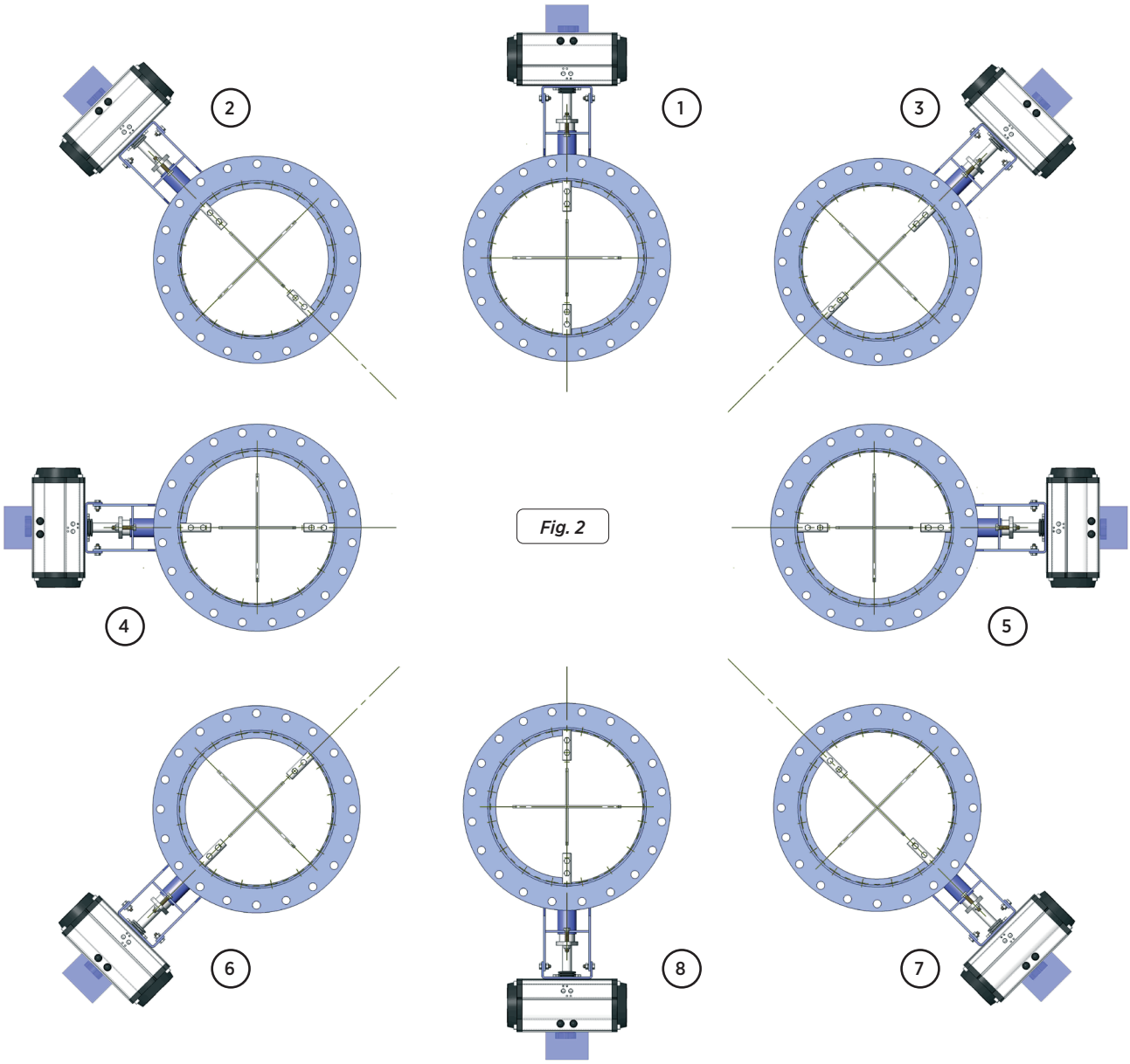


Fig. 2

Positions numbers 1, 2, 3, 6, 7 and 8:
The damper butterflies can be installed in these positions, although we suggest checking with **CMO Valves** as necessary.

For these positions it is necessary to design the valve to work correctly. Given the weight of the actuator, in some cases it may be necessary to prepare suitable support to prevent loss of shape and operation problems in the damper butterflies.

ASSEMBLY POSITIONS (vertical/slanting pipe)

CMO Valves's damper butterflies are designed for problem-free assembly in vertical or slanting pipes, although certain aspects must be taken into account:

Positions numbers 1, 2, and 3: One of the most important characteristics, which must be strictly adhered to, is that the rotation shaft should be in horizontal position.

Moreover, given the weight of the actuator, in some cases it may be necessary to prepare suitable support to prevent loss of shape and operation problems in the valve.
For this reason, we recommend checking with **CMO Valves** as necessary in order to assemble the damper butterfly in any of these positions.

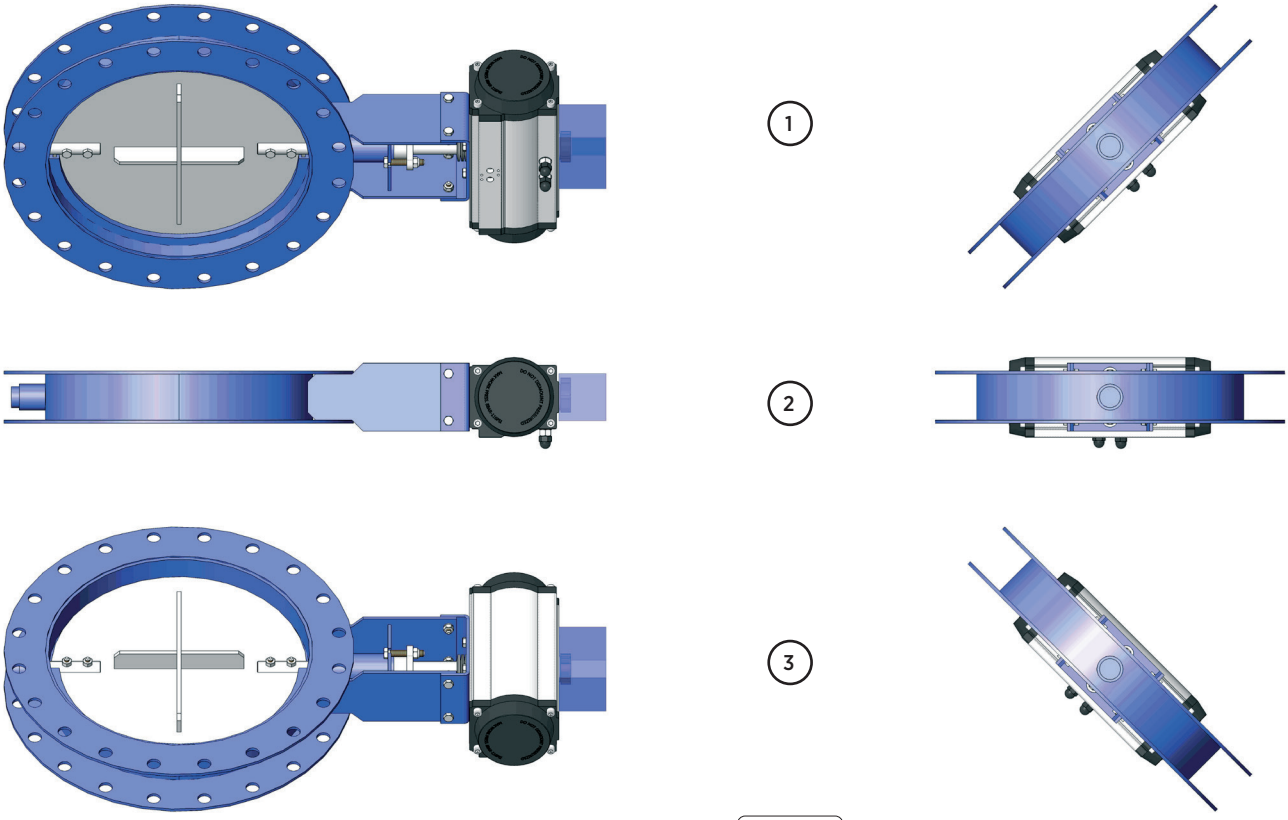


Fig. 3

Once the damper butterfly has been installed, check that all the bolts and nuts have been correctly tightened and that the whole valve drive system has been correctly adjusted (electrical connections, pneumatic connections, instruments, etc.). All **CMO Valves** . valves are tested at its facilities, however, during handling and transport the packing gland nuts can come loose and must be re-tightened.

Once the damper butterfly is installed in the pipeline and it has been pressurised, it is very important to check for any leakages from the packing gland to the atmosphere. In the event of a leakage, tighten the nuts of the packing gland flanges crosswise until the leakage stops, ensuring that there is no contact between the packing gland and the shafts.

Once the damper butterfly is in place, check that the flanges and electrical or pneumatic connections are secure. If the valve has electrical accessories or you are in an ATEX zone, earth connections must be made before operating it.

If you are in an ATEX zone, check the continuity between the damper butterfly and the pipe (EN 12266-2, annex B, points B.2.2.2 and B.2.3.1.). Check the pipe's earth connection and the conductivity between the outlet and inlet pipes.

DRIVE

HANDWHEEL WITH REDUCER (fig. 4).

Turn the wheel clockwise in order to operate (close) the damper butterfly valve. Turn the wheel anti-clockwise to open.

The geared motors have a mechanical open-close position indicator disc showing the position of the valve. Moreover, the geared motors have two mechanical stoppers to limit the final travel positions; these positions are preset at the factory. Refer to the geared motor user manual for more information.

CHAINWHEEL

To operate the damper butterfly, pull one of the chain's vertical drops, taking into account that sealing is carried out when the wheel turns clockwise.

LEVER (fig. 5).

First loosen the position locking clamp located on the yoke. Once unlocked, the lever can be operated to open or close it. Valve open position: Lever in line with the pipe. Valve closed position, lever perpendicular to it. Finally, lock the lever again.

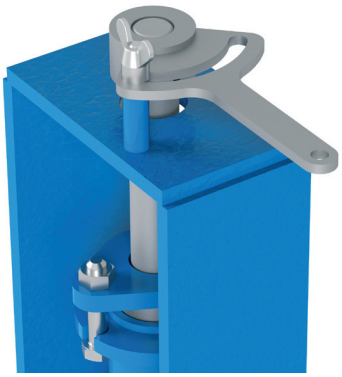


Fig. 5

PNEUMATIC (double and single acting)

CMO Valves pneumatic actuators are designed to connect to a 6-bar pneumatic network, although these units can withstand up to 10 bars. The pressurised air used for the pneumatic actuator must be correctly filtered and lubricated. Correctly identify the equipment's pneumatic connection ports/inlets, and use fittings and connections suitable for their type and size.

This type of actuator does not require any adjustment, due to the fact that the pneumatic cylinder is designed for the exact stroke of the valve (0-90º). Two types of pneumatic actuator can be distinguished:

- ¼ turn pneumatic actuator. These are the most common in this type of damper butterfly valve (fig. 6), and are mounted directly on the actuator shaft.
- Linear pneumatic cylinders (fig. 9). This type of actuator is mounted on a rod on the actuator shaft in order to convert the linear movement generated by the cylinder into rotational movement and operate the swing check.

On request, pneumatic actuators can have additional signalling and control elements, such as limit switch boxes, sensors, position transmitters, positioners, etc.
For further information, refer to the manufacturer's installation and maintenance manual or data sheet for the pneumatic actuator or any optional control and signalling elements.

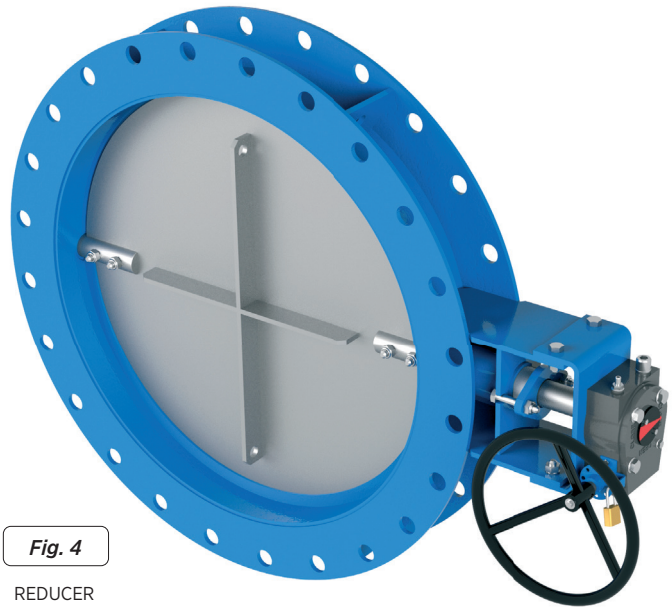


Fig. 4

REDUCER

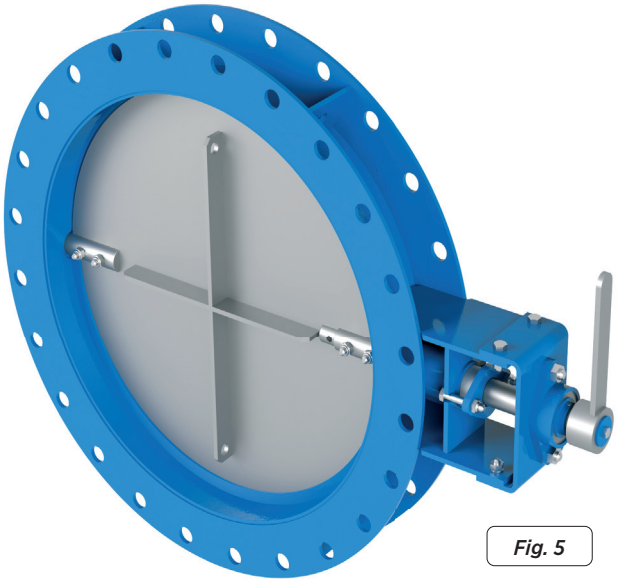


Fig. 5

LEVER

HYDRAULIC

The hydraulic actuators are designed to work at a standard pressure of 135 bars. Use hydraulic oil according to the manufacturer's recommendations. Correctly identify the equipment's pneumatic connection ports/inlets, and use fittings and connections suitable for their type and size.

On request, hydraulic actuators can have additional signalling elements such as limit switches, sensors, position transmitters, etc.

This type of actuator does not require any adjustment, due to the fact that the hydraulic cylinder is designed for the exact stroke of the damper butterfly valve.

For further information, refer to the manufacturer's installation and maintenance manual or data sheet for the hydraulic actuator or any optional signalling elements.

MOTORIZADO

If the damper butterfly valve is fitted with a motorised actuator, it will be accompanied by the electrical actuator supplier's instructions and technical documentation. Check the connections and operation diagram. Follow the manufacturer's instructions when starting up the equipment.

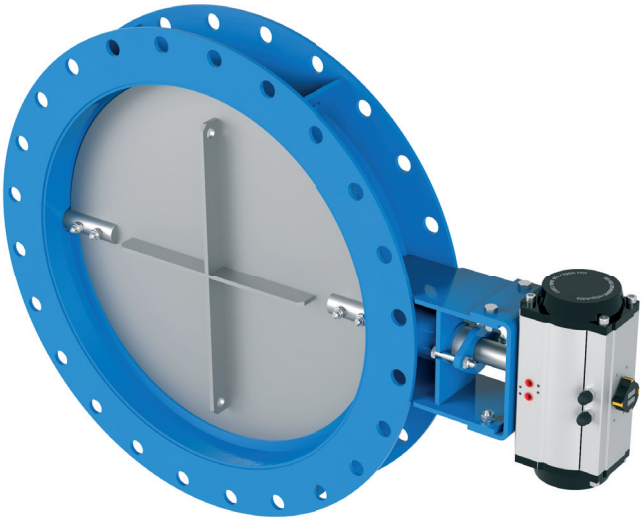


Fig. 6

PNEUMATIC ACTUATOR

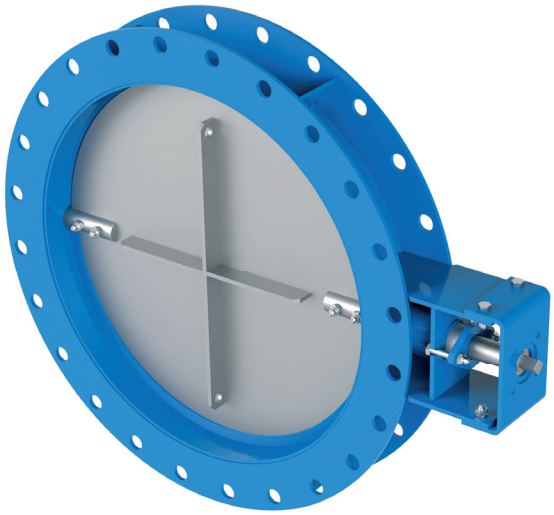


Fig. 7

SQUARE-HEAD

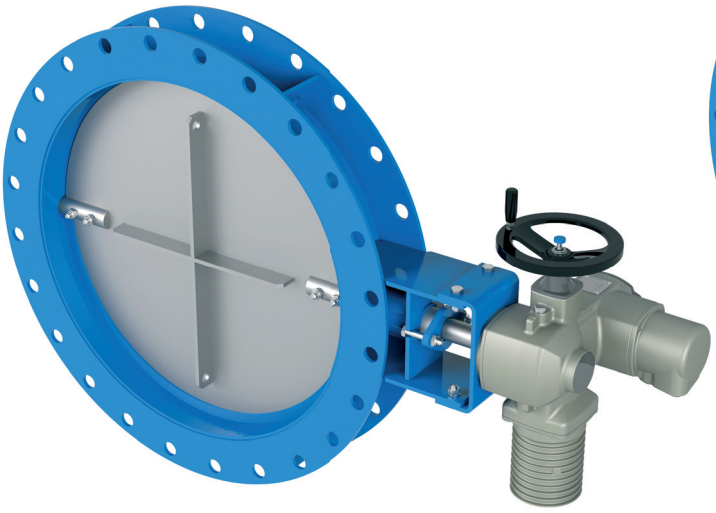


Fig. 8

ELECTRIC-MOTOR ACTUSTOR

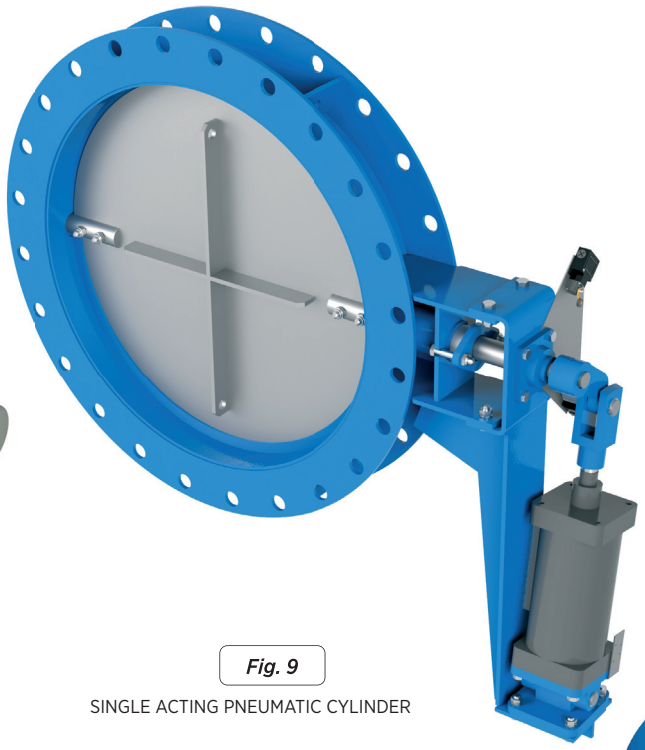


Fig. 9

SINGLE ACTING PNEUMATIC CYLINDER

MAINTENANCE

CMO Valves shall not be liable if the damper butterfly valve suffers damage due to incorrect or unauthorised handling or improper assembly and commissioning, thus voiding the warranty. Manipulating or modifying the damper butterfly valve is forbidden unless expressly authorised by **CMO Valves**. To prevent any personal or material damage during maintenance tasks, follow the safety instructions provided in this manual, as well as the following instructions:

- All personnel responsible for equipment maintenance or operation must be qualified, trained and familiar with the equipment and processes.
- It is mandatory to use appropriate personal protective equipment (PPE) (gloves, safety footwear, goggles, etc.).
- Shut off all lines that affect the damper butterfly valve and put up a warning sign to inform about the work being performed.
- Completely isolate the damper butterfly valve from the whole process. Depressurise the line
- Drain all the fluid through the damper butterfly valve.
- For maintenance and commissioning, use tools suitable for the application and work area according to current regulations
- In order to work under ideal safety conditions, maintenance staff must be up to date with the safety regulations and work can only start under orders from the site's safety staff.
- The safety areas must be clearly marked, avoiding the use of auxiliary equipment (ladders, scaffolding, etc.) in moving parts or levers.

The only maintenance required for this type of valve is to replace the gasket due to wear and tear. This operation is described in a later chapter.

In an ATEX zone, electrostatic charges may be present inside the valve, causing a risk of explosion. The user shall be responsible for implementing measures and actions to minimise risks.

- Maintenance personnel must be trained and informed about the risks of explosion and work in such areas, in accordance with current directives and regulations.
- If the fluid transported constitutes an internal explosive atmosphere, the user must regularly check the installation's sealtight integrity.
- Regular cleaning of the damper butterfly valve to prevent accumulation of dust.
- Assemblies are not permitted at the end of the line.
- Avoid re-painting the products supplied.

LUBRICATION

We recommend greasing any bearing brackets and following the manufacturer's instructions for greasing actuators.

After maintenance in an ATEX zone, it is mandatory to check electrical continuity between the pipe and the rest of the valve's components, e.g. the body, gate, stem, etc., in accordance with Standard EN 12266-2, Annex B, Points B.2.2.2. and B.2.3.1.

IMPORTANT SAFETY ASPECTS

- There is a risk of unexpected mechanical movement in damper butterfly valves, either inside or outside the duct, especially in equipment supplied with non-powered actuation systems (air tank, springs, etc.), even when disconnected from the mains or pressurised air line.

- To work under ideal safety conditions, the actuators must be in idle position and disconnected from their power source (electric, pneumatic or hydraulic) with the air tanks depressurised. Actuators with fail-safe position (spring return) must be in these safety positions or locked. Moreover, the electrical control cabinets must also be out of service and locked out. Maintenance staff must be up to date with the safety of all safety rules and regulations, and work can only start under orders from the site's safety personnel, who shall be in charge of coordination.

- In single-acting spring-return actuators, do not manipulate the actuator, as it contains high preload springs. Contact **CMO Valves.**

- The safety areas must be clearly marked, avoiding placing auxiliary equipment (ladders, scaffolding, etc.) on levers or moving parts which may lead to the movement of the swing check.

- In units fitted with spring return actuators, the swing check must be mechanically locked and only unlocked when the actuator is pressurised.

- In equipment with an electrical actuator, it is recommended to disconnect it from the mains in order to access the moving parts without any risk.

- Its great importance means you should check that the damper butterfly valve's shaft has no load before disassembling the actuator system.

Taking into account the recommendations indicated, the maintenance operations carried out in this type of equipment are shown below:

REPLACING THE GASKET

1.- Make sure there is absolutely no pressure or fluid in the facility.

2.- These **ML** or **MF** damper butterflies are usually fitted with two packing systems (fig. 10): one in the driving shaft and the other in the driven shaft. Start, for example, by replacing the driving shaft gasket.

3.- Release and remove the nuts (14) from the packing gland flange (8) in order to move it along the shaft, separating it from the packing bushing (7) (fig. 11).

4.- Extract the packing bushing (7) from its location, moving it along the shaft for access to the gasket strips (6) (fig. 12).

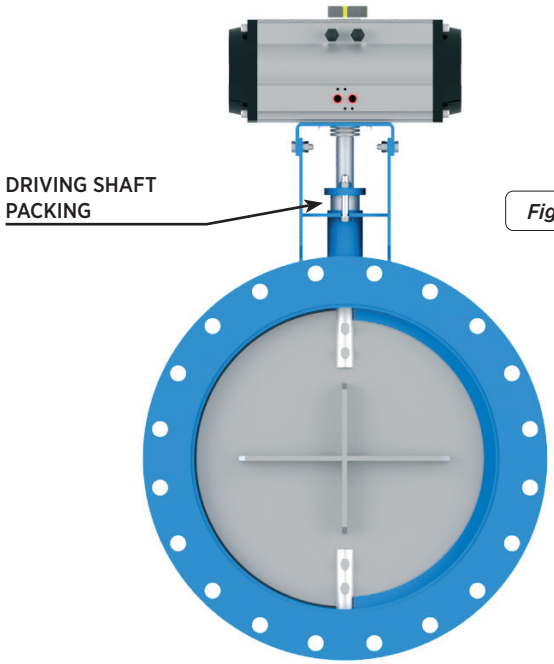


Fig. 10

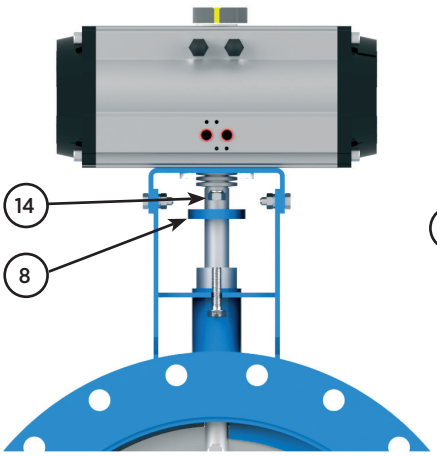


Fig. 11

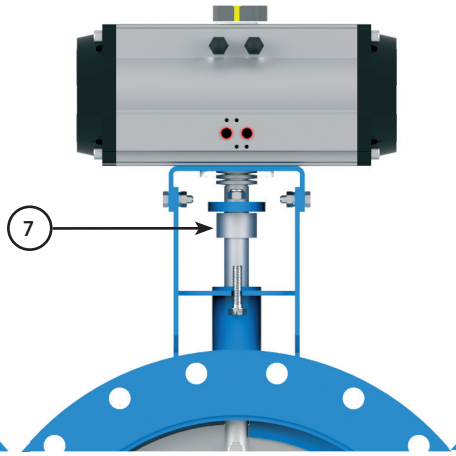


Fig. 12

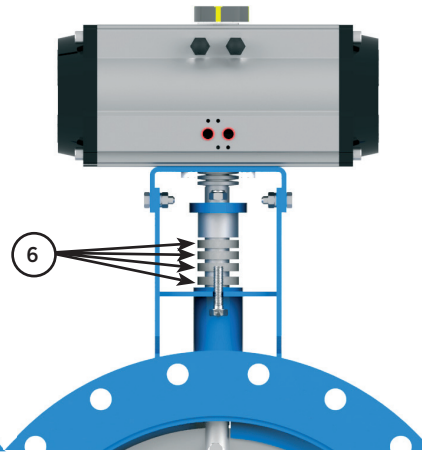


Fig. 13

5.- Remove the old gasket (6) using a pointed tool, taking care not to damage the surface of the shaft (fig. 13).

6.- Carefully clean the gasket housing and make sure to remove any excess or waste, thus ensuring that the gasket strips (6) fit correctly.

7.- Insert the new gasket (6). During this operation it is very important that both ends of each strip are perfectly joined, forming a ring.

8- After correctly introducing all the gasket strips (6), insert the packing bushing (7) in its original position.

9.- Continue to move the packing flange (8) along the shaft, until it is supported on the press bushing (7).

10.- Mount the nuts (14) of the press flange (8) and tighten them carefully crosswise, taking care to ensure the packing bushing (7) cannot come into contact with the shaft.

11.- It is very important to ensure that the surface of the packing flange (8) is always perpendicular to the shaft, thus ensuring that the press is exerting the same pressure throughout the gasket (6).

12.- Once the gaskets of both shafts have been replaced, carry out several operations without load in order to check the correct operation of the damper butterfly and ensure that the packing bushing (7) is correctly aligned.

13.- Subject the damper butterfly to pressure in the line and, if necessary, retighten the nuts (14) of the packing flanges (8) crosswise in order to prevent leakages.

Ø STEM	GASKET
Ø20	4 líneas de 6 x 6 x 82
Ø25	4 líneas de 6 x 6 x 98
Ø35	5 líneas de 8 x 8 x 135
Ø50	5 líneas de 10 x 10 x 189
Ø60	5 líneas de 12 x12 x 226
Ø70	5 líneas de 14 x 14 x 264

Note: Dimensions are expressed in millimeters.

Table. 1

REPLACING THE SEALING JOINT (except metal/metal)

1.- Make sure there is absolutely no pressure or fluid in the facility.

2.- If there is not sufficient space, remove the damper butterfly from the pipe.

3.- Place the swing check (2) in open position (fig. 14) in order to access the seal joints (10). These fit in the half-moon rims in the body (1).

4.- Extract the two sealing strips (10) using a pointed instrument (fig. 15). One of these seals is in front of the rim and the other behind the other rim.

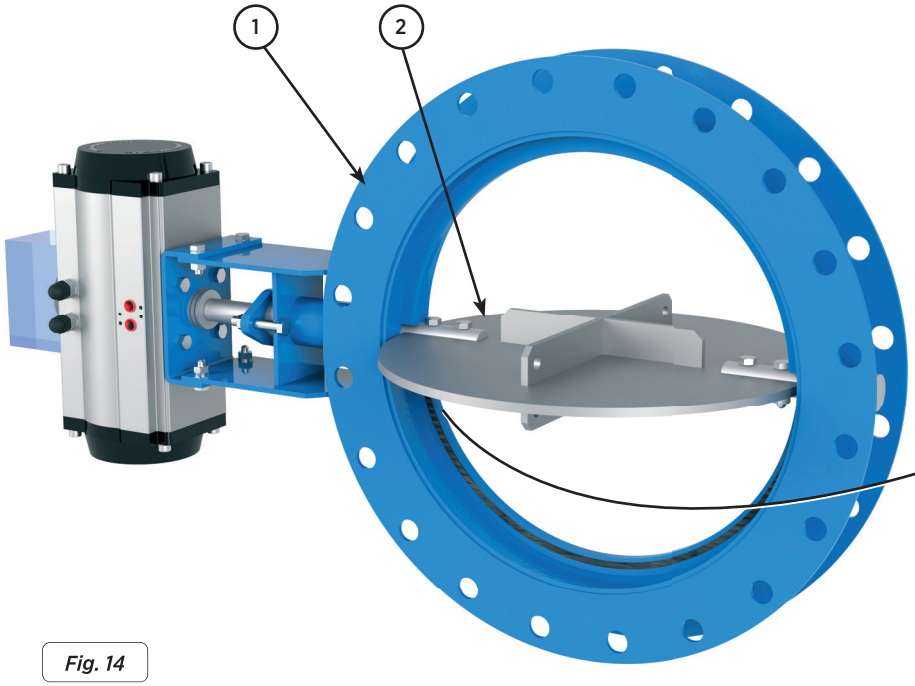


Fig. 14

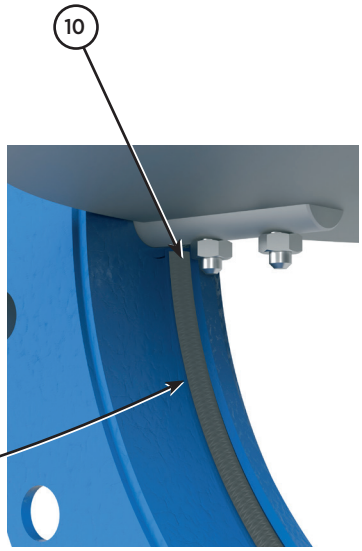


Fig. 15

5.- Carefully clean the channel for the seals. Ensure that it is clean of any excess or waste in order to fit the new seal strips (10) correctly.

6.- Position the new seal strips (10) in their location. The new seal must also comply with the dimensions and characteristics necessary for the damper butterfly.

7.- Cut both seal strips (10) to ensure they are flush with the half-moon rims (fig. 16).

8.- Once the sealing joint has been replaced, carry out several operations without load to check that the swing check is seated correctly on the seal.

9.- Reassemble the damper butterfly in the pipe.

10.- Carry out operations without load in order to check that there are no objects which prevent the swing check from moving freely.

11.- The valve is now ready to operate normally.

MAINTENANCE OF THE PNEUMATIC ACTUATOR

The pneumatic cylinders in our valves are manufactured and assembled at our premises. The maintenance of these cylinders is simple, if your need to replace any elements and you have any questions please consult **CMO Valves.** In single-acting spring-return actuators, do not manipulate the actuator as it contains high preload springs. Contact **CMO Valves.** Below is an exploded diagram of the pneumatic actuator (fig. 16) and a list of the cylinder's components (table 2). The top cover and the support cover are usually made of aluminium, but from pneumatic cylinders greater than Ø200 mm, they are made of cast ductile iron.

The maintenance kit normally includes: The socket and its joints and the scraper, and if the customer wishes the piston is also supplied. Below we show the steps to follow to replace these parts.

1. Position the valve in closed position and shut off the pneumatic circuit pressure.
2. Loosen the cylinder air input connections.
3. Release and remove the cylinder cap (5), the cylinder tube (4) and the tie rods (16).
4. Loosen the nut (14) which connects the piston (3) and the rod (1), remove the parts. Disassemble the cir-clip (10) and remove socket (7) with its joints (8 & 9).
5. Release and remove the cylinder head (2), in order to remove the scraper (6).
6. Replace the damaged parts with new ones and assemble the actuator in the opposite order to that described for the disassembly.

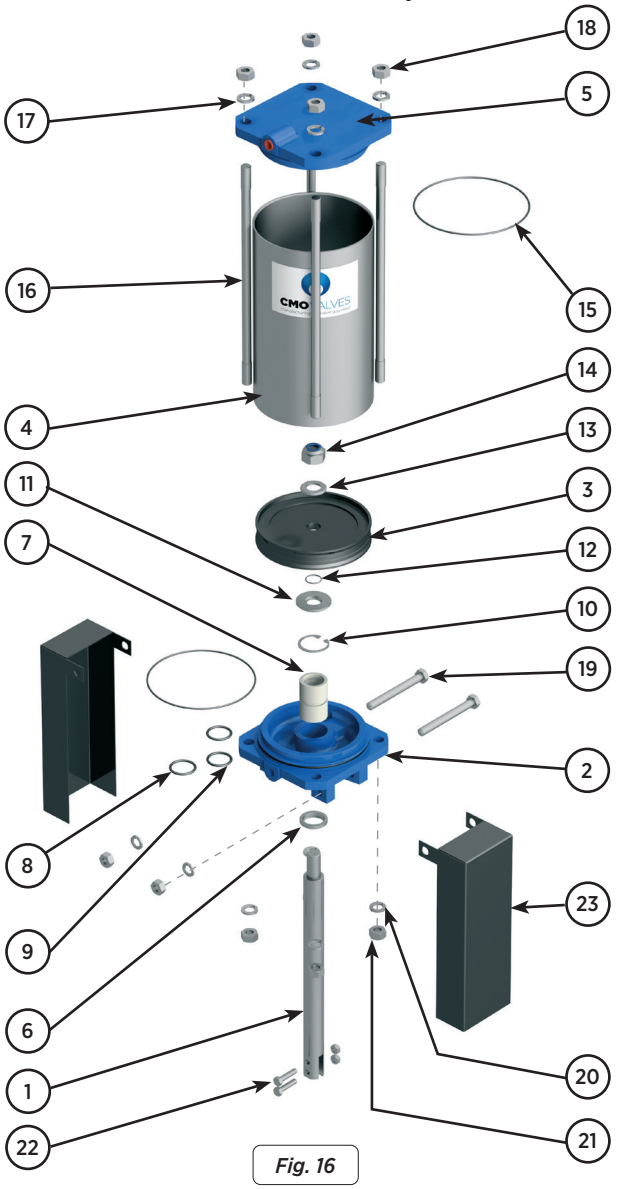


Fig. 16

PNEUMATIC ACTUATOR		
POS.	DESCRIPTION	MATERIAL
1	STEM	AISI-304
2	COVER SUPPORT	ALUMINIUM
3	PISTON	S275JR + EPDM
4	CASING	ALUMINIUM
5	UPPER COVER	ALUMINIUM
6	SCRAPER	NITRILE
7	SOCKET	PA6
8	EXTERIOR O-RING	NITRILE
9	INTERIOR O-RING	NITRILE
10	CIR-CLIP	STEEL
11	WASHER	ST ZINC
12	O-RING	NITRILE
13	WASHER	ST ZINC
14	SELF-LOCKING NUT	5.6 ZINC
15	O-RING	NITRILE
16	TIES	F-114 ZINC
17	WASHER	ST ZINC
18	NUT	5.6 ZINC
19	SCREW	5.6 ZINC
20	WASHER	ST ZINC
21	NUT	5.6 ZINC
22	SCREW	A-2
23	PROTECTION	S275JR

Table. 2

manufacturing the valve you need

MAINTENANCE OF OTHER ACTUATORS

For the maintenance of other types of actuators mounted on the damper butterfly valve (e.g. manual geared motors, electric actuators, ¼ turn pneumatic actuators and hydraulic actuators), follow the manufacturer's recommendations as set out in the user manual and technical sheets. This documentation is provided with the damper butterfly valve.

COMPONENTS LIST

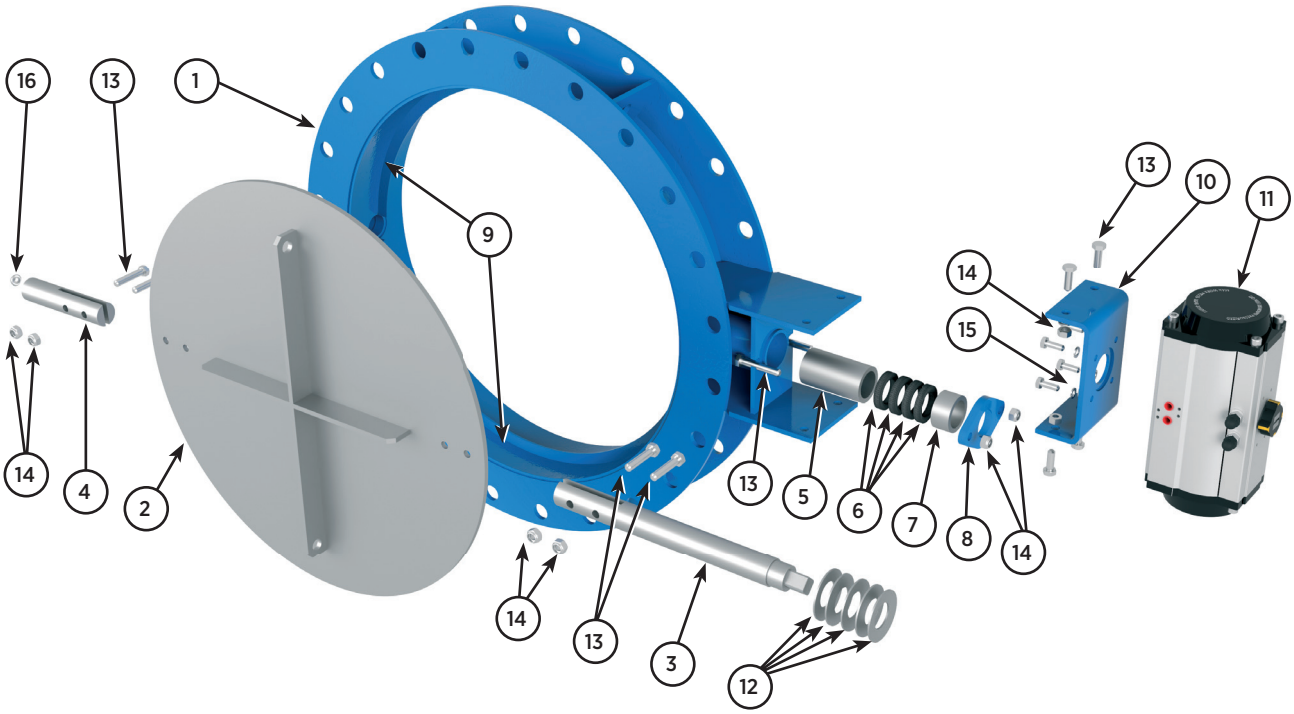


Fig. 17

STANDARD COMPONENTS LIST

POS	COMPONENT	POS	COMPONENT	POS	COMPONENT
1	BODY	7	PRESS BUSHING	13	BOLT
2	SWING CHECK	8	PRESS FLANGE	14	NUT
3	DRIVING SHAFT	9	SEAL (OPTIONAL)	15	WASHER
4	DRIVEN SHAFT	10	SUPPORT WITH BEARING	16	BALL
5	SPACER	11	ACTUATOR		
6	GASKET	12	PIN		

Table. 3

SPARE PARTS

All components and materials used to manufacture **CMO Valves** butterfly valve have been designed and selected according to the requirements and specifications of each project. Use only original spare parts.

For any request or inquiry, contact **CMO Valves** stating the material or component required and the order or project number. Our website at **www.cmovalves.com** includes catalogues and technical information that can be used to identify the self-tilting cleaner parts and components.

ENVIRONMENTAL ASPECTS: DISPOSAL AND RECYCLABILITY

To minimise environmental impact during the life cycle of the **ML/MF** series damper butterfly valve, users are given the following environmental guidelines and should consult the relevant standards and directives before disposal;

- During transport, storage, assembly and commissioning: Materials used in packaging must be processed through the appropriate recycling channels.
- At the end of the product's (or component's) life cycle: The materials used to manufacture the **ML/MF** damper butterfly valve can be recycled by specialist waste management companies, such as:
    - **Metal:** steel, aluminium, cast iron, copper, bronze, etc.
    - **Plastic:** Sliders, rubbers and seals
    - Due to their nature, **oils and greases** require special treatment before disposal; be sure to use approved waste management companies for this task.
    - For optional items such as limit switches, sensors, etc., refer to the relevant manufacturer's instructions.

As part of its ongoing product and service improvement process, **CMO Valves** reserves the right to alter the data and content of this document at its discretion at any time without notice. The publication of the latest revision renders all previous documents invalid.

Latest version of the Installation and Maintenance Manual available at **www.cmovalves.es.**

www.cmovalves.com

CMO VALVES

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