Rev. 01 / 6-06-2023

TELESCOPIC VALVE FOR LEVEL CONTROL

DESCRIPTION

- Telescopic valve to capture surface water.
- Circular body and obturator, highly functional and low-maintenance.
- Multiple construction materials available.
- Multiple sealing materials available.
- Designed for installation in upright position on the water run-off pipe flange.

GENERAL APPLICATIONS:

TE telescopic valves are designed for installation in chambers or ponds in which the fluid level needs to be regulated.

It is suitable to work with clean liquids or loaded with solids. Used mainly in:

- Water treatment plants
- Ponds
- Hydroelectric power stations

SIZES:

DN50 to DN1500

** Larger sizes on request.*

Check with **CMO Valves** for the general dimensions of a **TE** telescopic valve.

WORKING (ΔP)

Maximum working pressure depends on the valve stroke and is equal to the difference between the maximum and minimum level required for the pond.
These units adapt to the customer's requirements in each project, and are designed to meet the working conditions in the final location.

STANDARD FLANGES

PN10 & ANSI B16.5 (class 150)

OTHER COMMON FLANGES

PN 6 BS "D" & "E"	PN 16 ANSI 150	PN25 Others to order

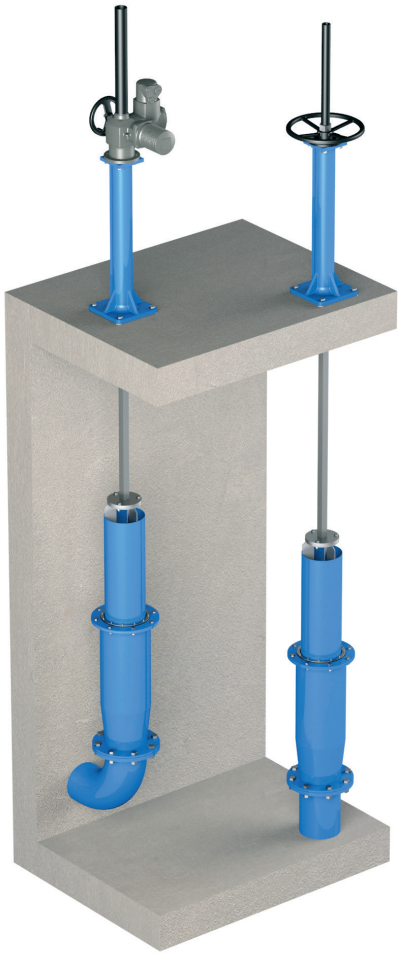


Fig. 1

WATERTIGHT INTEGRITY:

The watertight integrity of **TE** telescopic valves complies with that set out in regulation DIN 19569, class 5 of leaks.

APPLICATION OF EUROPEAN DIRECTIVES

See document of European Directives applicable to **CMO Valves.**

** For category and zone information, contact technical-commercial department at **CMO Valves.***

QUALITY DOSSIER

The watertight integrity of the seat area is measured with gauges.
Material and testing certificates can be supplied on request.

ADVANTAGES

TE telescopic valves are designed to work with liquids and are always installed in upright position. The main elements are the body, the obturator and the gasket mounted between them.

The most characteristic aspect of these valves is the circular design of the body and the obturator, with both parts made basically from pieces of mechanically welded pipe.

The body is usually static, mounted on the run-off pipe flange in the pond, generally with greater diameter. The obturator is the moving part of the valve. Its movement is linear and, since it has less diameter than the body (equal to the run-off pipe), it is introduced inside the body of the valve. The gasket is mounted between the body and the obturator, which is fixed to the body and closes on the exterior surface of the obturator.

The obturator has an opening in the top to discharge the fluid above the required level. Whenever the obturator is raised (valve closed), the level in the pond comes up; on the other hand, if the obturator descends (valve open), the fluid above the obturator opening level will overflow, reducing the level in the pond.

In the top of the obturator, above the opening, there is a flange which the stem is bolted to; this element transmits the force necessary to operate, as generated by the actuator, to the obturator.

The valve stroke is defined by the difference between the maximum and minimum water level required. The length of both the obturator and the body depends on the required stroke.

Whenever the valve is fitted with a manual actuator, the stem protection cap is independent from the handwheel attachment nut, meaning the cap can be dismounted without having to release the entire handwheel. This advantage allows regular maintenance operations to be performed, such as lubricating the stem, etc.

The stem of **CMO Valves** valves is made from stainless steel AISI 304 and the handwheel is nodular cast iron. This material is highly resistant to bangs, making it more long-lasting than commonly used cast iron wheels.

The yoke has a compact design with the bronze actuator nut protected in a sealed and lubricated box. This makes it possible to move the valve with a key, even without the handwheel (in other manufacturers' products this is not possible).

In the case of pneumatic actuators, the top and bottom covers are made from nodular cast iron or aluminium. This characteristic is essential in pneumatic actuators. The pneumatic cylinder seals are commercial products and can be purchased worldwide, meaning it is not necessary to contact **CMO Valves** every time spare parts are required.

LIST OF COMPONENTS

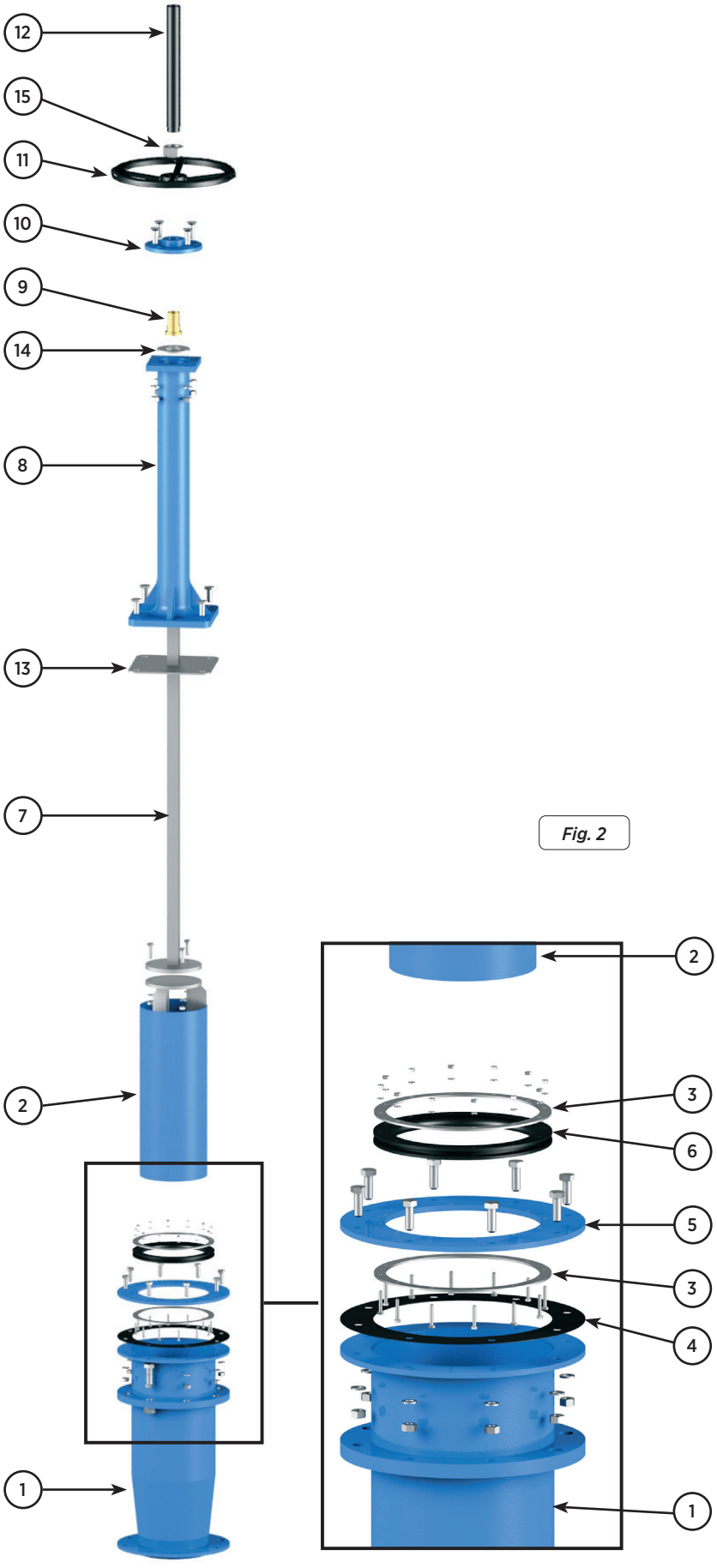


Fig. 2

LIST OF COMPONENTS

POS.	DESCRIPTION
1	BODY
2	OBTURATOR
3	SEAL ATTACHMENT FLANGE
4	FLANGE SEAL
5	SEAL SUPPORT FLANGE
6	GASKET
7	STEM
8	FLOOR STAND
9	ACTUATOR NUT
10	YOKE
11	HANDWHEEL
12	CAP
13	STEM NON-TURN PLATE
14	NUT SUPPORT
15	CAP NUT

Table. 1

DESIGN CHARACTERISTICS

BODY

In this type of valve, the design of the body is mechanically welded and is made up of a fragment of pipe with a flange on each end. Assembly position is always vertical and the bottom flange of the body is used to secure the valve in the installation, to which end it is manufactured in accordance with the flange bore standard of the run-off pipe in the pond.

The diameter of the body is generally little larger than the run-off pipe. This is due to the fact that the obturator is designed with the same diameter and, since this is to be introduced in the body, the body must be designed with a larger diameter.

In the top of the body there is another flange, which is used to bolt the seal support flange. This is where the gasket is positioned, for sealing between the body and the obturator.

The materials commonly used are stainless steel AISI304 or AISI316 and carbon steel S275JR. In any case, the elastomer seals are always seated on a stainless steel surface; in consequence, when choosing the option of S275JR carbon steel body, the obturator is always manufactured in stainless steel to ensure the seals fit correctly and thus guarantee watertight integrity at all times.

In accordance with the conditions the valve will be subject to, there are other special materials available to order, such as AISI316Ti, Duplex, 254SMO, Uranus B6, Aluminium, etc. As a rule, the carbon steel components of the valves are painted with an anti-corrosive protection of 80 microns of EPOXY (colour RAL 5015), although other types of anti-corrosive protections are also available.

Fig. 3

OBTURATOR

As with the body, the obturator also has a circular design and is mechanically welded. It basically comprises a fragment of smooth pipe with a flange on the top end.

The fragment of pipe is stainless steel, and, since the seal closes against the outside surface, this face is usually polished in order to guarantee appropriate watertight integrity.

The opening is in the top of the pipe, through which the fluid above the required level overflows.

The obturator is finished with a top flange, which is used to bolt the stem. In order to join the obturator and the flange, there are several welded radial ribs which are set out to minimise obstruction to the fluid being discharged.

The obturator material is usually the same as that used for the body, although it can also be supplied to order with other materials or combinations.

The materials commonly used are stainless steel AISI304 or AISI316. As mentioned above, since the elastomer seals close against the outside face of the obturator, this surface is also made from stainless steel in order to ensure the seals are correctly seated.

Fig. 4

SEAT (Fig. 5)

This type of valve is sealed with a special elastomer profile (fig. 5). This seal is mounted on the seal support flange and is bolted using two fastening bolts. This unit is bolted to the top flange of the body, and a flat seal is used to guarantee the watertight integrity of the joint. As the seal is secured to the body, it is static and closes against the obturator, which is moving (fig. 6).

The obturator is always made of stainless steel with a polished outside face. These characteristics ensure that the seals are correctly seated and achieve appropriate watertight integrity.

The fastening bolts and flanges used to hold the seal are also made of stainless steel, meaning they can be reused several times.

Fig. 5

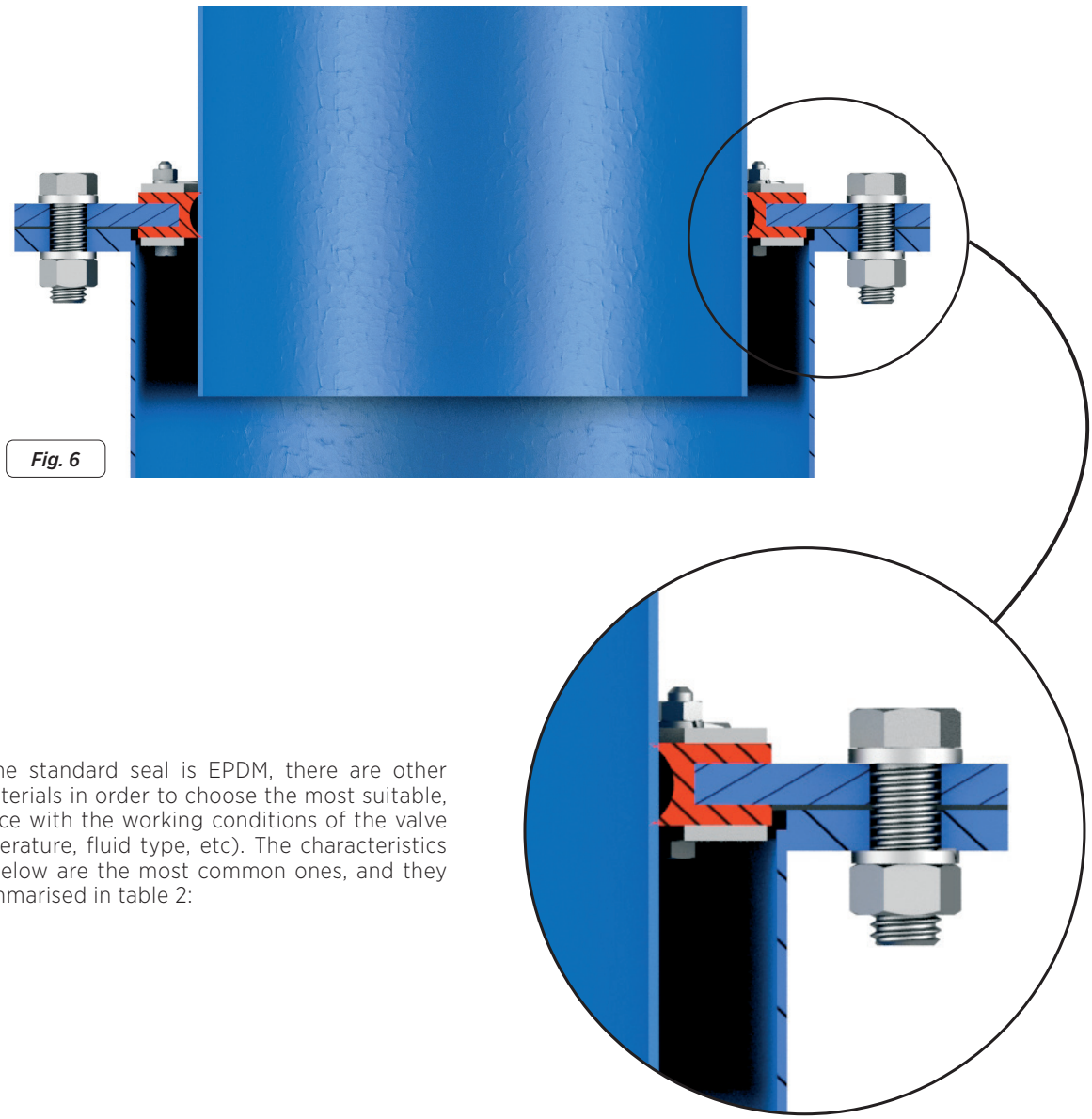


Fig. 6

Although the standard seal is EPDM, there are other types of materials in order to choose the most suitable, in accordance with the working conditions of the valve (work temperature, fluid type, etc). The characteristics described below are the most common ones, and they are also summarised in table 2:

RESILIENT SEAT MATERIALS

EPDM:
Recommended for temperatures below 90ºC*, providing the valve with 100% watertight integrity.
Application: Water and acids.

SEAT/SEALS		
MATERIAL	**Tª MAX (ºC)**	**APPLICATIONS**
EPDM (E)	90 * °C	Non-mineral oils, water and acids.
Nitrile (N)	90 * °C	Hydrocarbons, oils and greases
Natural Rubberl	90 °C	Abrasive products
FKM (V)	200 °C	Hydrocarbons and solvents
Silicone (S)	200 °C	Food products
PTFE (T)	250 °C	Resistant to corrosion
* **EPDM & Nitrilo:** possible up to max temp: 120ºC to order.		
Note: More details and other materials available on order		

Table. 2

***Note**: In some applications other types of rubber are used, such as: hypalon, butyl, etc. Please contact **CMO Valves** for any such requirements.

NITRILE:
Se utiliza en fluidos que contienen grasas o aceites temperaturas no mayores de 90°C*. Proporciona a la compuerta una estanqueidad del 100%.

NATURAL RUBBER:
This can be used in multiple applications at temperatures below 90ºC with abrasive products, and it provides the valve with 100% watertight integrity.
Application: fluids in general.

FKM:
Suitable for corrosive applications and high temperatures of up to 190ºC continuously and peaks of 210ºC. It provides the valve with 100% watertight integrity.

SILICONE:
Mainly used in the food industry and for pharmaceutical products with temperatures no higher than 200°C. It provides the valve with 100% watertight integrity.

PTFE:
Suitable for corrosive applications and pH between 2 and 12. Does not provide the valve with 100% watertight integrity. Estimated leakage: 0.5% of the tube flow.

STEM

The stem of **CMO Valves** valves is made from stainless steel AISI 304. This characteristic makes it highly resistant and provides excellent properties against corrosion.

The stem is the element which protrudes from the actuator and is fastened directly on the obturator, for which reason the **TE** valve is generally designed with rising stem. This ensures that neither the threaded part of the stem nor the bronze nut are in contact with the fluid, thus reducing maintenance to a minimum. A cap is also supplied to protect the stem from contact with dust and dirt, whilst also keeping it lubricated.

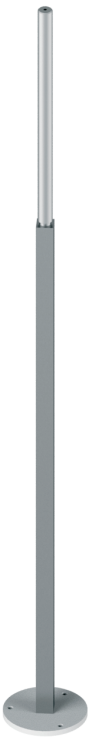


Fig. 7

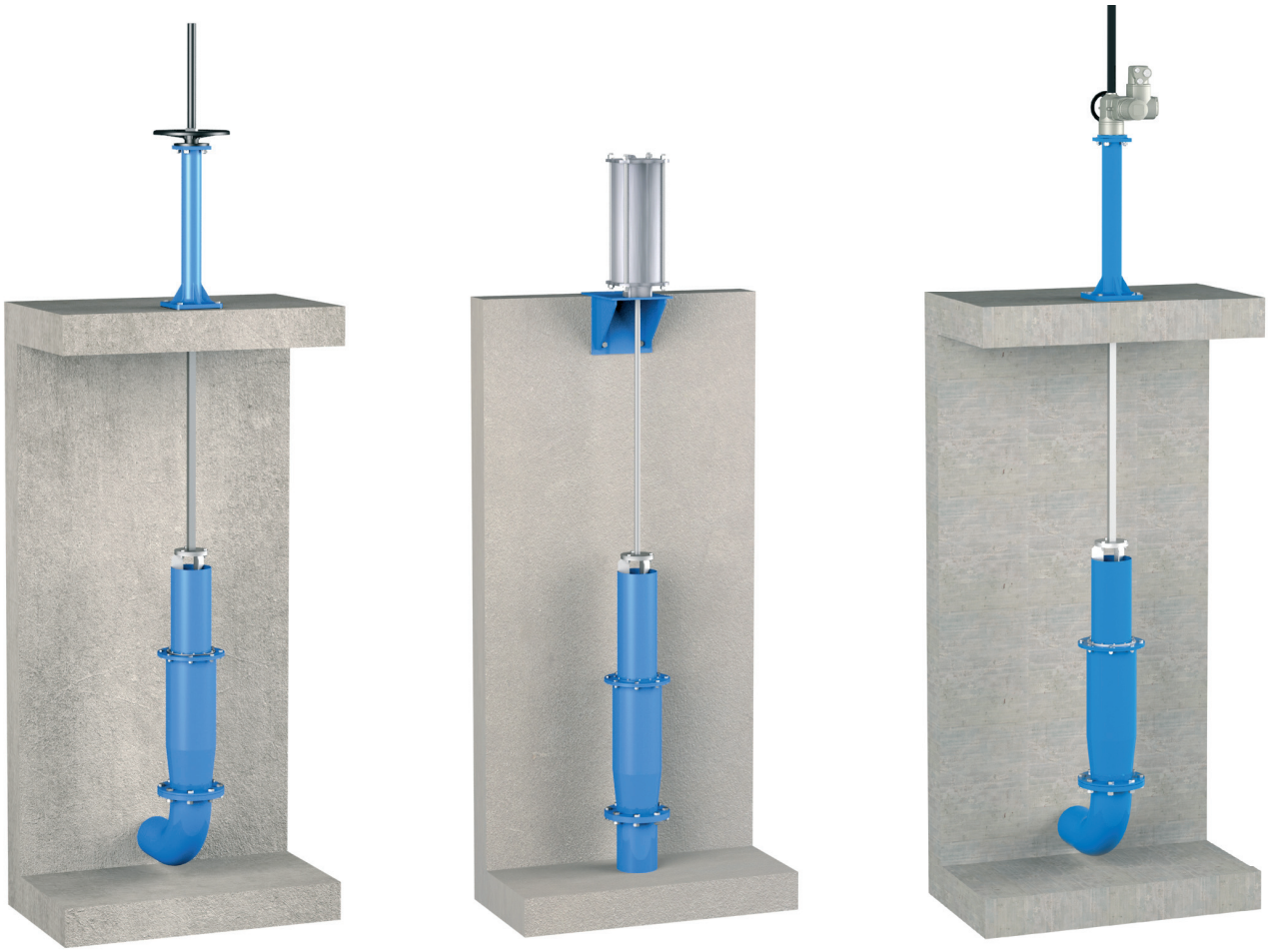
ACTUATORS

These telescopic valves can be made with different types of actuator systems. A characteristic of the design of **CMO Valves** valves is that all the actuators are interchangeable. This allows the customer to change the actuators and no extra assembly accessories are required.

Some possible examples of actuators are detailed below; if another type of actuator is required, please contact **CMO Valves´**s Technical and Sales Department.

Manual Drives
Handwheel
Gears
Others (square stem)

Automatic Drives
Electric actuator
D/E & S/E pneumatic cylinder
Hydraulic cylinder



MANUAL ACTUATOR
ON FLOOR STAND

PNEUMATIC CYLINDER
ACTUATOR ON SQUARE BRACKET

MOTORISED ACTUATOR
ON FLOOR STAND

Fig. 8

Stem extensions have also been developed, allowing the drive to be located far away from the valve, to suit all needs. Please ask our engineers beforehand.

Availability of Accessories
Mechanical stoppers
Locking devices
Emergency manual drives
Electrovalves
Positioners
Limit switches
Proximity detectors
Straight floor stand (fig. 9)
Leaning floor stand (fig. 10)

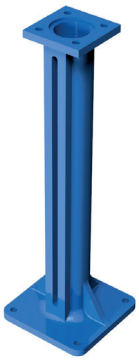


Fig. 9

STRAIGHT FLOOR STANDS.

Fig. 10

LEANING FLOOR STAND

ACCESSORIES AND OPTIONS

Different types of accessories are available to adapt the valve to specific working conditions such as:

MECHANICAL LIMIT SWITCHES, INDUCTIVE SWITCHES AND POSITIONERS:

Limit switches or inductive switches are installed to indicate precise valve position, as well as positioners to indicate continuous position.

ELECTROVALVES:

For air distribution to pneumatic actuators.

CONNECTION BOXES, CABLING AND PNEUMATIC PIPING:

Units supplied fully assembled with all the necessary accessories.

STROKE LIMITERS (MECHANICAL STOPS):

These allow the stroke to be mechanically adjusted, limiting the valve run.

MECHANICAL LOCKING SYSTEM:

This allows the valve to be mechanically locked in a set position for long periods.

EMERGENCY MANUAL ACTUATOR (HANDWHEEL/GEARS):

This allows manual operation of the valve in the event of power failure.

INTERCHANGEABLE ACTUATORS

The actuators are easily interchangeable.

EPOXY COATING:

All the carbon steel bodies and components of **CMO Valves** valves are coated with a layer of EPOXY, which makes them resistant to corrosion and gives an excellent surface finish. **CMO Valves**'s standard colour is blue RAL-5015.

TYPES OF EXTENSION

When the valve needs to be operated from a distance, the following different types of actuators can be fitted:

1.- FLOOR STAND

This extension is done by coupling an extension to the stem or spindle. The desired extension is achieved by defining the length of the elongation. A floor stand is normally installed to support the actuator.

The definition variables are as follows:

H1 = Distance from the base of the channel to the floor

CHARACTERISTICS:

- Can be coupled to different types of actuator.
- The standard floor stand is 800 mm high (fig. 11). Other floor stand measurements available on request.
- Leaning floor stand to order (fig. 12).
- Option of fitting an indicator rule in order to display the degree of opening of the valve.

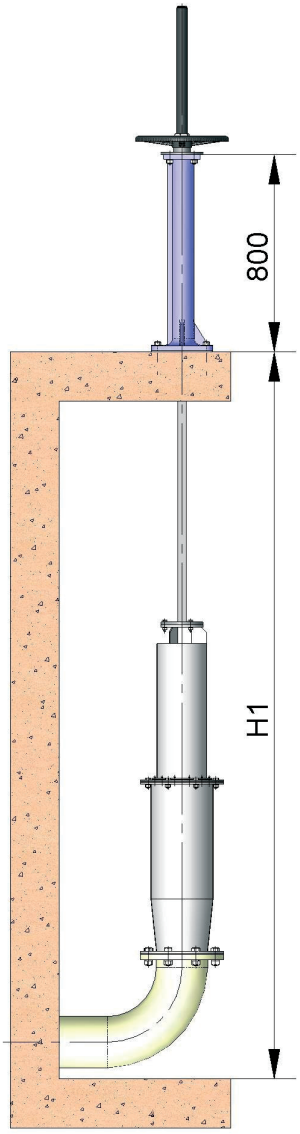


Fig. 11

STANDARD OPERATION STAND.

LEANING STAND.

Fig. 12

GENERAL DIMENSIONS

In order to define a **TE** telescopic valve, it is necessary to know the diameter of the run-off pipe, the flange bore standard and the required stroke. The stroke is defined as the difference between the upper and lower levels required.

Level DN (Nominal Diameter) will be used to refer to the diameter of the valve, whilst R will refer to the stroke.
The length of the valve body will depend on the required fluid level and the height of the run-off flange (level M), meaning these aspects must also be taken into account.

The actuator system must also be considered. It is necessary to define how this system is installed. Whenever the pond is undercover, the actuator will be positioned in the top. The roof over the pond must have an orifice of Ø100 mm in order to pass the stem through and secure it to the obturator.

If the pond is not covered, use a square bracket fastened to a sidewall, which the actuator system will be mounted on.

Whether covered or uncovered, it is essential to know the height the actuator will be positioned at. Hs level will be used to define this dimension.

For easier understanding, these variables are shown in the attached image (fig. 13).

These levels are the most common and important. A short description of each of them is defined below:

- **DN Level:** This is used to define the nominal diameter of the valve.
- **Hamax Level:** This is used to define the maximum height level of the fluid.
- **Hamin Level:** This is used to define the minimum height level of the fluid.
- **R Level:** This is used to define the stroke of the valve. It complies with the following formula: **R = Hamax. - Hamin.**
- **M Level:** This is used to define the height of the water run-off pipe flange.
- **Hs Level:** This is used to define the height of the location of the actuator.

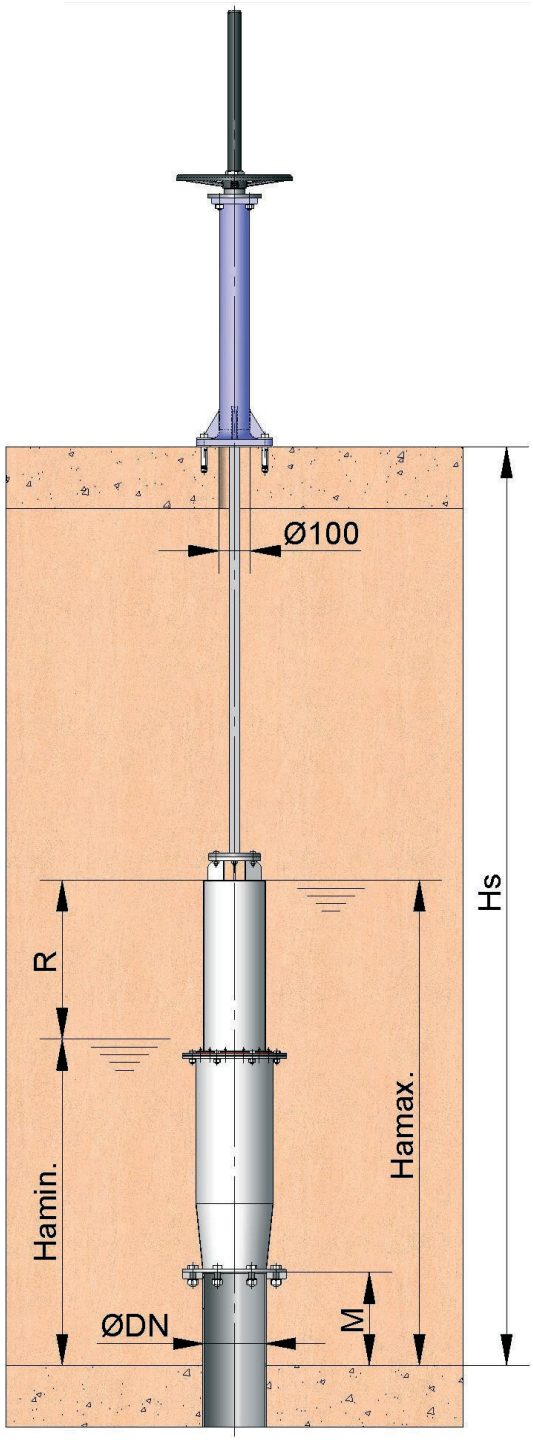


Fig. 13

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