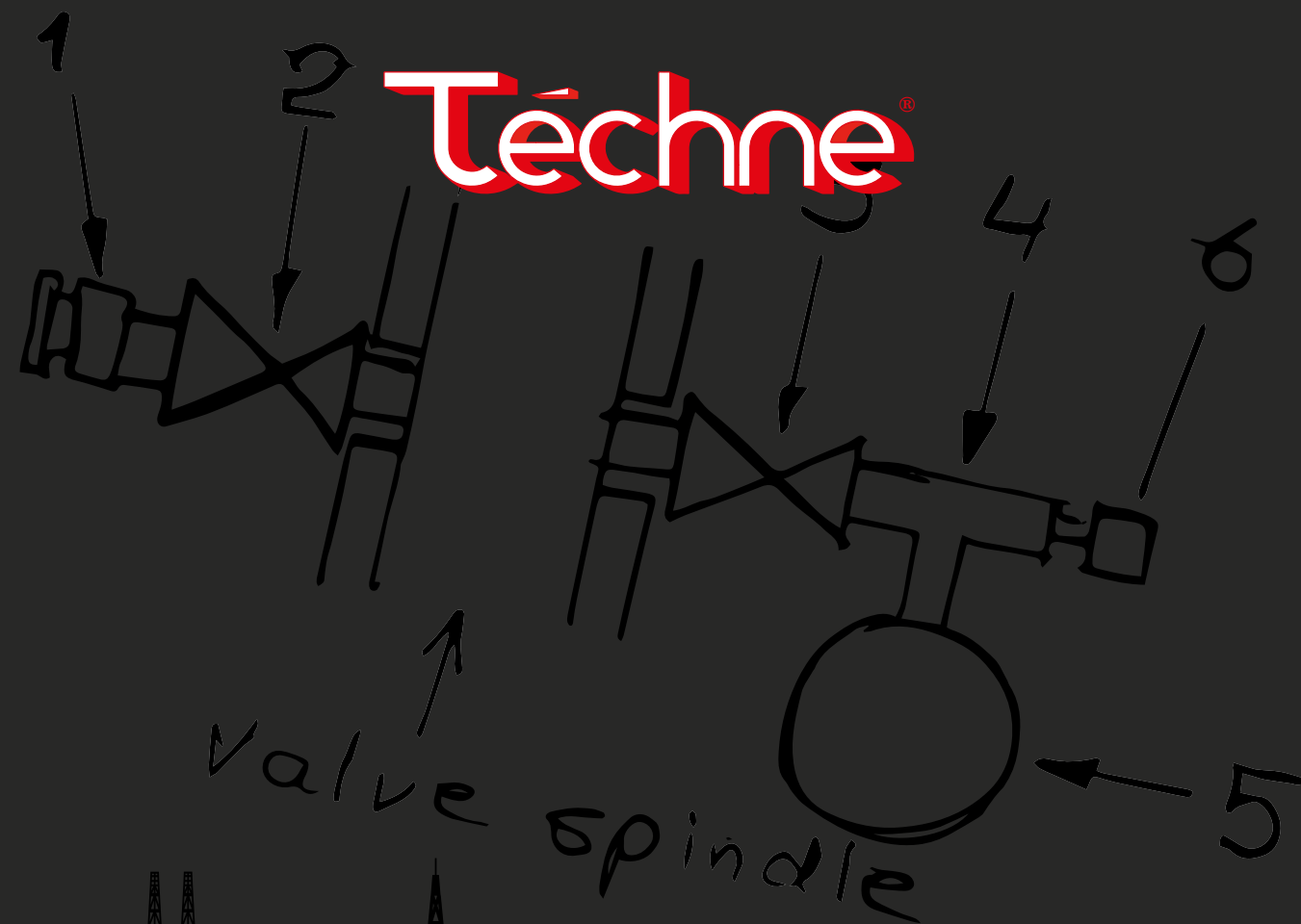


progetto www.ladesign.it

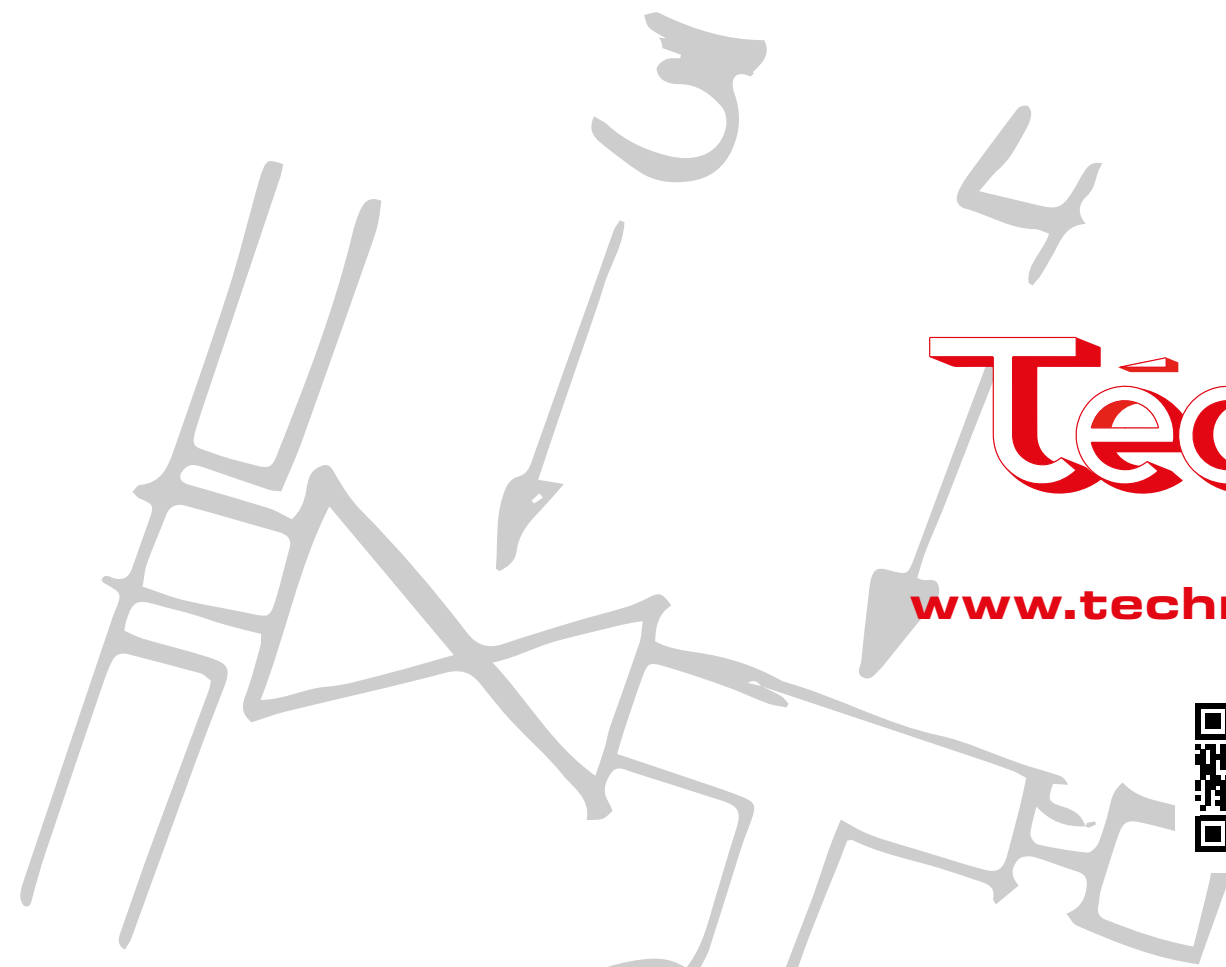
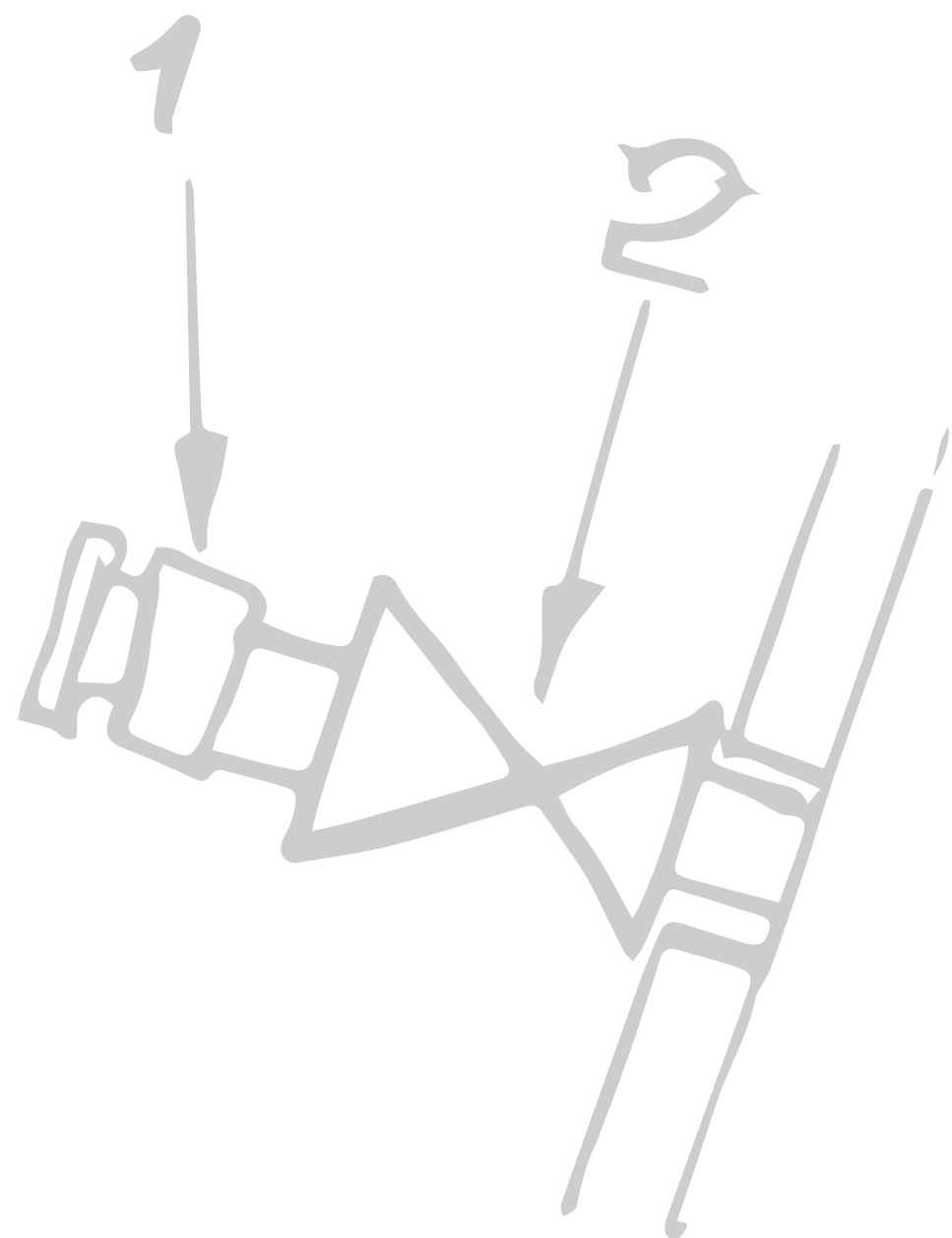


Téchné[®]
VALVE & WELLHEAD COMPONENTS

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AXV Auxiliary
VALVE

SOMETHING UNIQUE



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Valve
Gigant button

Spindle



5

ΤΕΧΝΗ

"...Téchne includes the modern concept of arts, techniques and skills, either it is manual or not, to do something in accordance with a rule. Therefore, it is not a mere execution of other people's projects, which the executor may neither share or understand, nor a creativity without any rule. Artists are technicians, too, and technicians are artists, too, because their made requires a know-how or a method: in other terms, it requires both a theoretical and practical knowledge, and an active participation to what one has been doing. And this is suitable both for intellectual and material work: to the Greek téchne take part the architect, the engineer, and people expert in their work..."

Platone and "The Techniques"

ART
TECHNIQUE
SKILL

AXYVALVE

SOMETHING UNIQUE



The Axy auxiliary valves produced by Téchne Srl are especially designed to be small, flexible, safe and easy to handle. All valves are tested in accordance with ASME B16.34-2013, ISO 5208 and TR 2000 standards.



Fig. 1

Major ball and gate valves are usually produced with one or two holes into their cavity. New valves of class 150 and 300 have holes which are normally NPT threaded and can be equipped with a blind or a bleed plug, as shown in Fig. 1. The plug can be welded on to prevent leakage.



Fig. 2

New larger valves of class 600 and above have the cavity hole which is almost always equipped with a blind flange, as illustrated in Fig. 2. However, in these cases, the connection is not useful for keeping the valve operating under pressure.

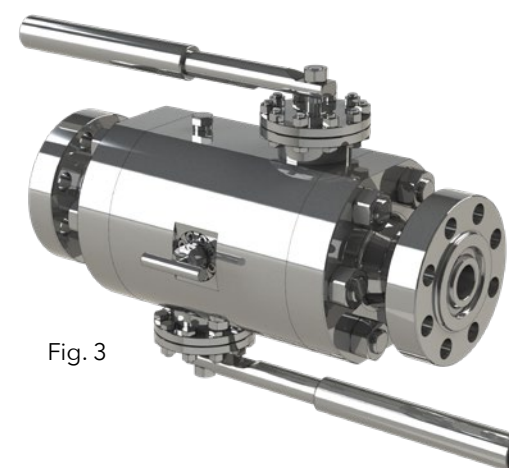


Fig. 3

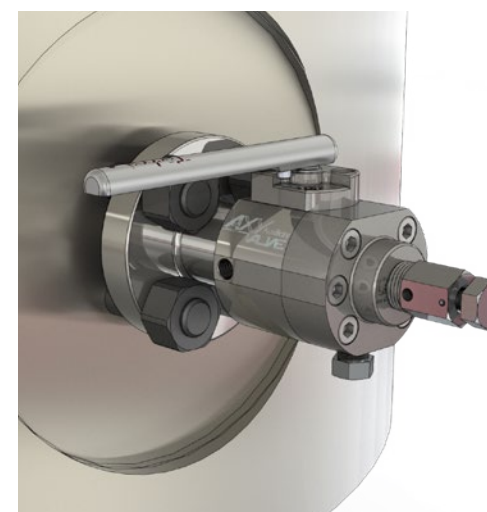


Fig. 4

The alternative to blinding holes is the installation of an auxiliary valve into the connection point. A variety of options are available when it comes to valves selection. One is the Modular valve, illustrated in Fig. 3, which consists of two valves (either wedge gate valves or ball valves) with a bleed in between (double block & bleed). This is a rather big and heavy alternative and not very suitable if installed into an NPT connection. Another option is a single or double valve permanently connected to a vent system. However, this type of installation is complex and expensive.

On a modular valve both ball or wedge gate valves are in the same valve body and if one of the valves are having problems the whole valve must be replaced as it is in one unit. When operating an auxiliary valve to maintain, test or equalize the main valve the outer valve in the modular valve will always be used as the throttle valve which will cause wear to the valve and at the end this valve may start to leak. To replace a leaking outlet valve in a modular valve, the whole modular valve must be disconnected.

The best alternative for cavity bleed connection is a single valve to be connected during barrier setting or maintenance on the main valve. There are a number of standard valves that can be selected, but there are also special valves which are built for the purpose of maintenance in a pressurized system. The AXY valve produced by Téchne Srl is a valve especially designed for auxiliary applications.

Use a single AXY valve with floating ball and floating seats, (which seal on both the upstream and the downstream seat at the same time) like the permanent valve having a replaceable service valve, to be connected to the AXY valve only when performing maintenance on the main valve. In this way the outer valve suffers all the wear due to throttling and opening with differential pressure. The second valve can be disconnected and, at any sign of leakage after several hundred operations, can be replaced with a new service valve.

The AXY valve used as a cavity and replaceable valve, it is the lightest and most flexible solution to be used on major ball or gate valves. The AXY valve is a ball valve with floating seats and a floating ball having two outlet ports, 1 1/2" NPT for connecting the service valve to the AXY valve, and 1 1/4" NPT for connecting the test gauge to the AXY valve. During normal operations, the AXY valve is in its closed position and its outlet ports are blocked with a 1/4" blind plug and a 1/2" bleed plug, as illustrated in Fig. 4.

The standard material used for the making of the AXY valve is 316 or Duplex alloy. Any further special alloy is available upon request.

The valve is manufactured in accordance with TR2000 standards.

Fig. 5 illustrates all the internal parts of the valve in its standard configuration.

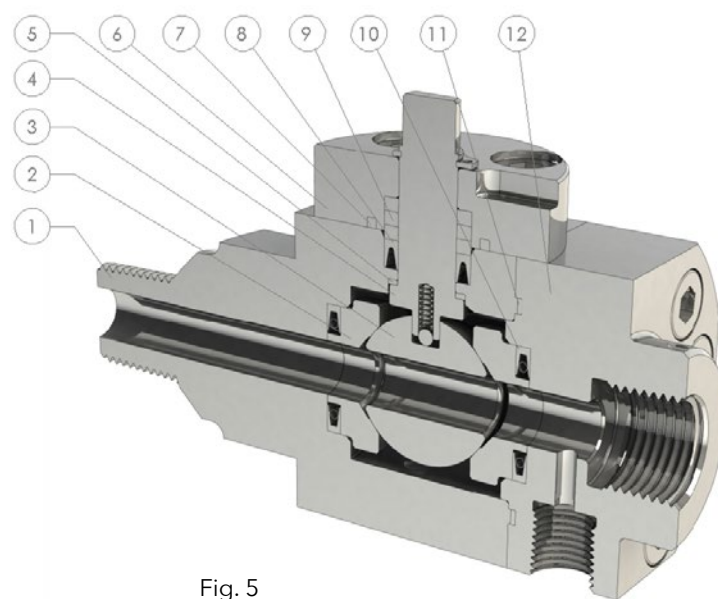


Fig. 5

STANDARD MATERIAL CONFIGURATION		
Part	Description	Material
1	Body	316 or duplex
2	Seats	Duplex + TCC
3	Ball	Duplex + TCC
4	Stem	316 or duplex
5	Washer	Kolsterized duplex
6	Bonnet	316 or duplex
7	Bonnet Seal	Graphite
8	Stem Seal (Lip Seal)	TFM PTFE
9	Stem Packings	Graphite
10	Body Seal	Graphite
11	Seat Seals (Lip Seal)	TFM PTFE
12	Closure (Body)	316 or duplex

Table 1

DEVELOPMENT IN ACCORDANCE WITH THE TR2000

The AXY valve has been developed in steps and in cooperation with Mr. Ingolf Fra Holmslet and Equinor to create the highest quality service ball valve.

This valve is a zero leakage metal-to-metal sealed, fire-safe floating ball valve.

The inlet connection can vary in type, dimension or pressure rating, but the body always has a 1/2" bore, making it very light, weighing only a few kilograms.

The valve is short (end to end 130 mm +/-, depending on pressure classes and inlet connection), making it also suitable in confined spaces.

The outlet can be straight or at an angle, which is especially important in proximity to the floor or other pipes. In order to safely bleed down the cavity of the main valve, it is necessary to install a service valve and a vent hose.

The AXY valve can also be produced in a two-elements design, with an installation part to be screwed into the body and the valve to be bolted into the installation part. This design must be used when there is no place to rotate the valve into the NPT threads in the main valve body. The two-element AXY valve can be delivered with a lever on the top or on the side of the valve.

The ball and the seats are Tungsten-Carbide coated (TCC), ensuring a long lifespan and hundreds of operations under full differential pressure. The ball and seats are all floating and the latter are equipped with a radial seal; this allows both seats

to close in the direction of the pressure. The inlet pressure will force the inlet seat towards the ball. The inlet pressure will also force the inlet seat and the ball towards the outlet seat. This design creates two metal seals.

The stem washer is in Kolsterized® Duplex, preventing galling between the stem and the body.

A special constructed connection between the stem and the ball increases the normal contact area between the ball groove and the stem drive of more than 50% compared to traditional designs.

The stem connection to the lever is hexagonal, enabling operation of the valve in narrow areas. If needed a stem extension can be connected to the lever.

To prevent incorrect operation of the valve or accidental damage to the stem, the standard or telescope lever is not fixed to the stem but is removed after each valve operation.

When the AXY valve is not operating, a 1/2" bleed plug and a 1/4" blind plug must be installed in the two outlet ports of the valve.

USE THE AXY VALVE

AXY valves are to be used as auxiliary valves (helper valves) on major trunnion mounted ball valves and parallel gate valves.

During operation, the AXY valve configuration consists of four major elements, as shown in the Fig. 6 below:

A) The inner valve (AXY valve) is installed in the main valve.

B) The Gauge is installed in 1/4" the body of the AXY valve with a 1/4" NPT male connection.

C) The service valve is installed in the outlet of the AXY valve, which is a 1/2" NPT male connection.

D) The vent hose is installed in the outlet of the service valve and vented to a safe location. The hose connection on the service valve is a 1/2" NPT female connection.

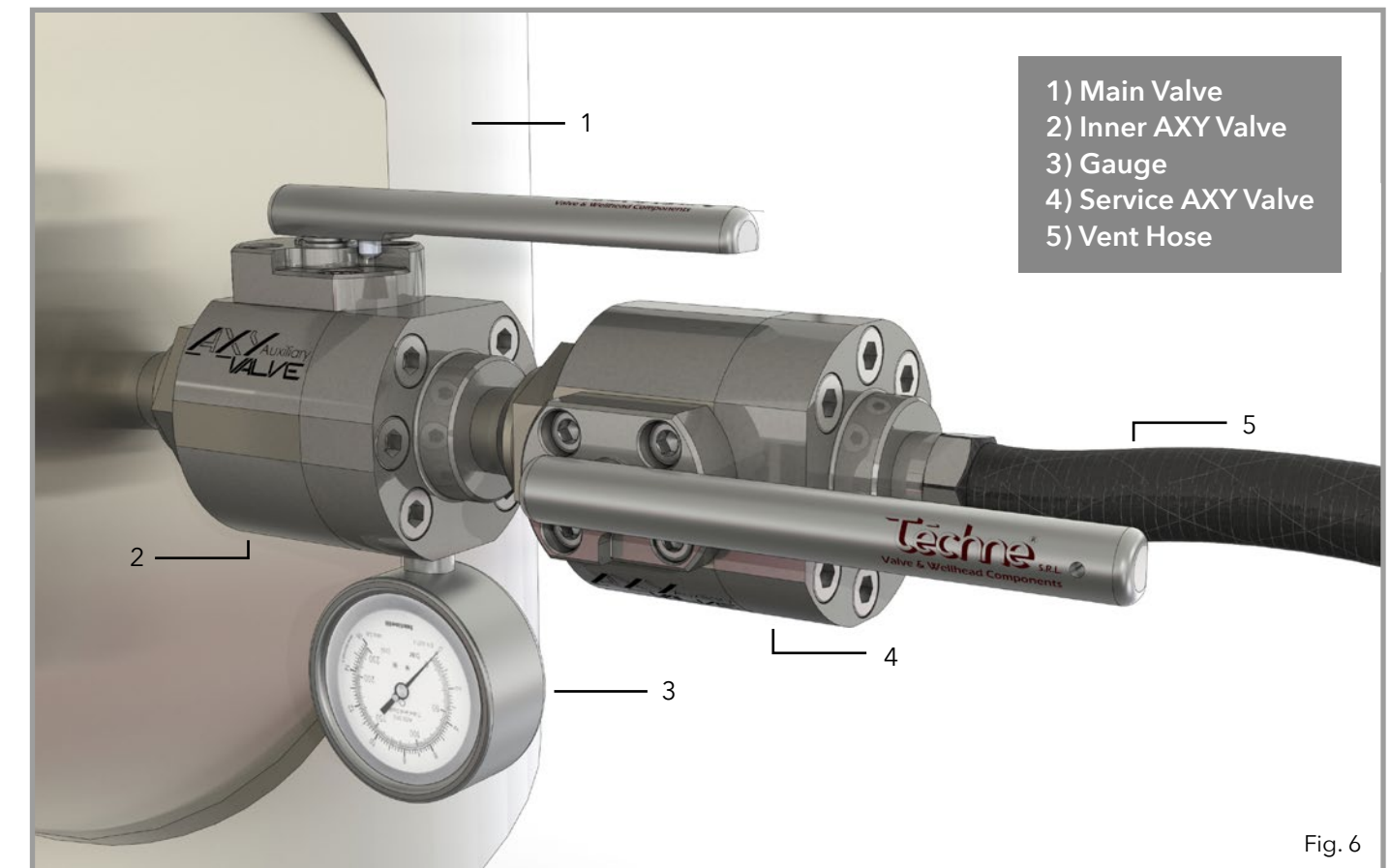


Fig. 6

The handle (lever) on the Axy / service valve is left loose to avoid accidental opening.

When the valve is not operating the handle is disconnected from the stem and stored for further use.

Tailor made design

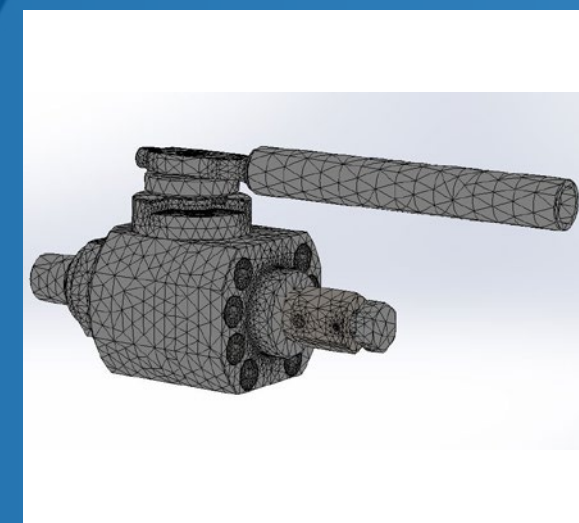
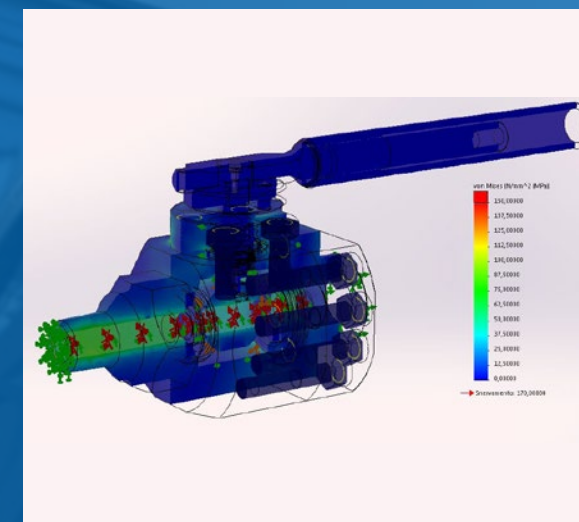
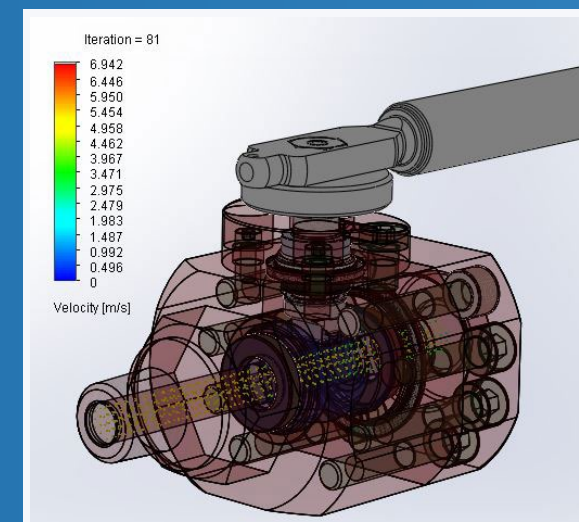
R&D

Fire-Safe

FEM analysis

Compact - Modular - Light

Fluid dynamics



PREPARATION OF THE VALVE TO BE USED AS A TEST / MAINTENANCE VALVE

1) The AXY valve is closed, with a bleed plug installed in the ½ " NPT outlet and a blind plug installed in the ¼ " NPT test port (Fig.7).

2) With the AXY valve closed; the bleed plug is opened to test the seal of the AXY valve. If there are no leaks out of the bleed plug, the sealing tests OK (Fig. 8). In this case, the AXY valve will have a double barrier between the cavity of the main valve and the outside. As previously illustrated, the AXY valve consists of two floating seats and a floating ball creating two pressure-activated seats.

3) The service valve is opened and installed into the ½ " NPT (Fig. 9) outlet of the AXY valve, using a 68 Nm torque. The ¼ " NPT plug is disconnected from the ¼ " test hole.

4) The gauge is installed in the ¼" test port of the AXY valve (Fig. 10) and a hose is installed in the ½" outlet of the service valve (Fig. 11). Both the AXY valve and the service valve have to remain closed. The valves are now ready to be used for testing and/or maintenance of a trunnion mounted ball valve or a parallel gate valve.



Fig. 7



Fig. 8



Fig. 9

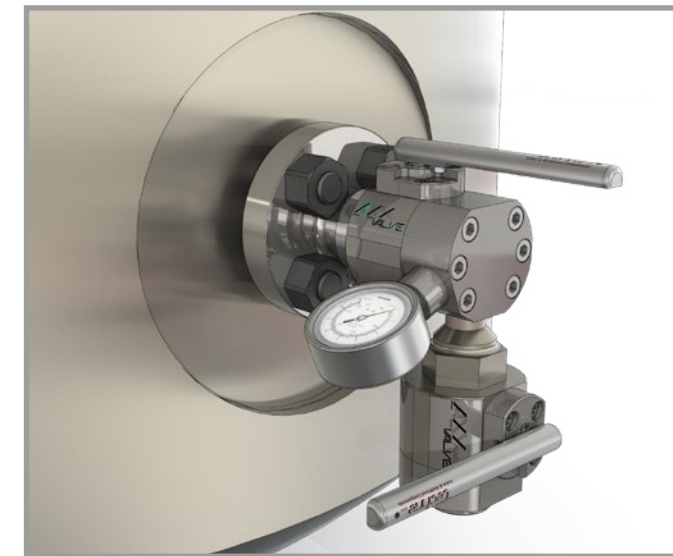


Fig. 10



Fig. 11

When the AXY valve is used as an auxiliary valve for maintenance or for securing a barrier, the service valve is installed in the ½ " NPT outlet of the AXY valve.

5) Operation of the AXY and the service valve. To reduce the wear and prolong the life of the inner AXY valve, do NOT use it as a throttle valve. When testing or performing maintenance, the service valve is left closed and the AXY valve is opened and must be left open during the entire test/ maintenance. The pressure in the cavity of the main valve is read by gauge and registered for later use.

6) With the inner AXY valve open, the service valve is opened and the cavity pressure in the main ball/ gate valve is reduced to zero. Close the service valve and monitor the increment of the cavity pressure in a specific timeframe (seconds or minutes), depending on the leak rate.

The leak rate is recorded as it is the baseline to control the effect of valve cleaning. If the two AXY valves are used during the test of a rotation ball or a parallel gate valve, the cavity pressure will be monitored on the gauge in the AXY valve.

7) When the valve maintenance or valve testing are carried out, the service valve is closed, followed by the inner AXY valve, and the service valve is reopened to test the inner AXY valve seal. When the AXY valve test is OK, the hose, the service valve and the gauge can be disconnected. Then the ½ " NPT bleed plug and the ¼ " NPT blind plug will be reinstalled.

OPERATING LEVER

The operating lever illustrated in Fig. 12 and 13 is a telescope handle with a hexagonal connection to the stem. This hexagonal connection allows operation of the valve in any direction, the stem-adapter ensures the correct ball operation and the indicator on the stem-adapter shows the position of the ball.

INLET

The AXY valve can be delivered in different designs. The trims are identical and the inlet connection can be threaded or flanged but always with a DN ½" valve.

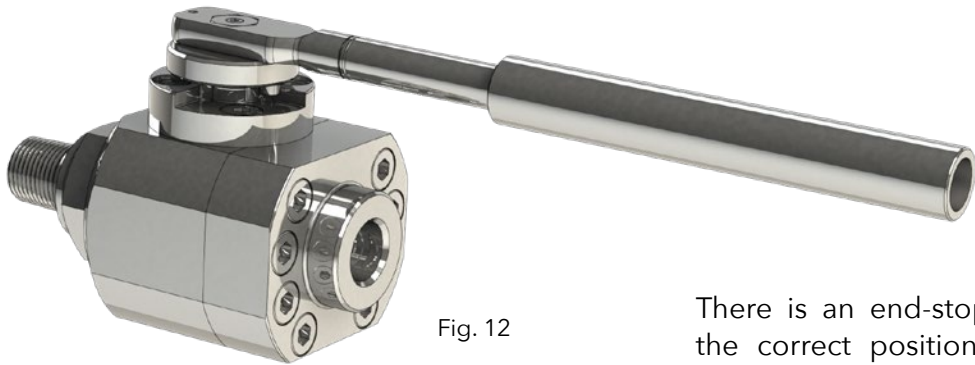


Fig. 12

There is an end-stop on the bonnet that ensures the correct position of the ball (open or close) (Fig. 12). As illustrated in Fig. 13, the bore direction of the ball is engraved into the adapter plate. Upon completion of operation, disconnect the lever from the valve, as the lever should not be permanently installed into the valve.

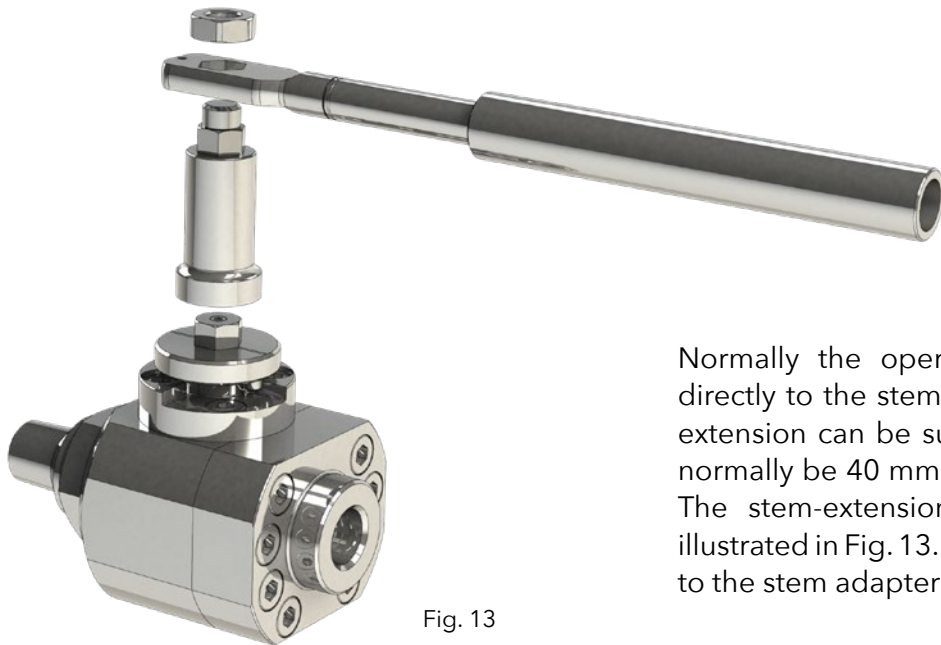


Fig. 13

Normally the operating lever will be connected directly to the stem-adapter. But if needed, a stem-extension can be supplied. The stem-extension will normally be 40 mm but any length can be supplied. The stem-extension is fastened to the lever as illustrated in Fig. 13. The stem-extension is connected to the stem adapter with a hexagonal connection.



Fig. 14

The inlet of the valve may be threaded with ASME B1.20.1 NPT connection:
Size: ½" - ¾" - 1"
Class: 600 to 2500

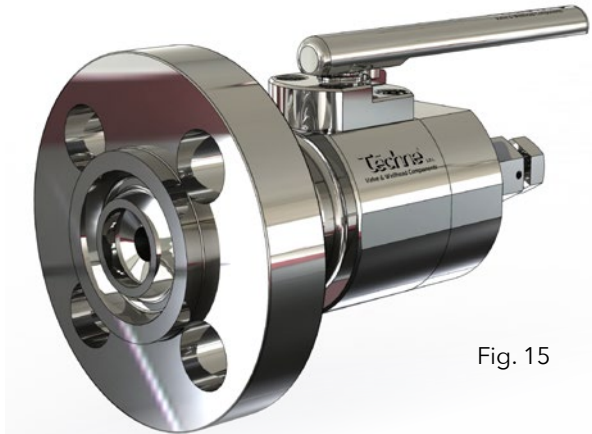


Fig. 15

ASME B16.5 Ring Joint (RTJ) Flanged connection:
Size: ½" to 2"
Class: 600 to 4500

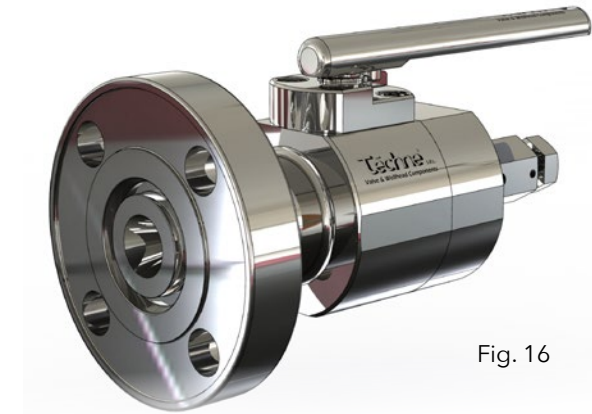


Fig. 16

Compact flange
Size: ½" to 2"
Class: 600 to 4500

A row of industrial valves, likely from the company 'Auxiliary', are shown in a close-up, perspective view. The valves are made of polished metal and have various ports and flanges. The text 'Environment' is overlaid in white on the left side of the image.

Environment

Quality

Safety

Experience & Skill

Service

Technology

AXY VALVE BODY

The valve body dimension can be designed in different customized solutions in addition to the standard one.

INSTALLATION WITH 90-DEGREE INLET

The 90-degree AXY valve is especially manufactured for installation in narrow spaces, when the rotation of the valve during installation is prevented.

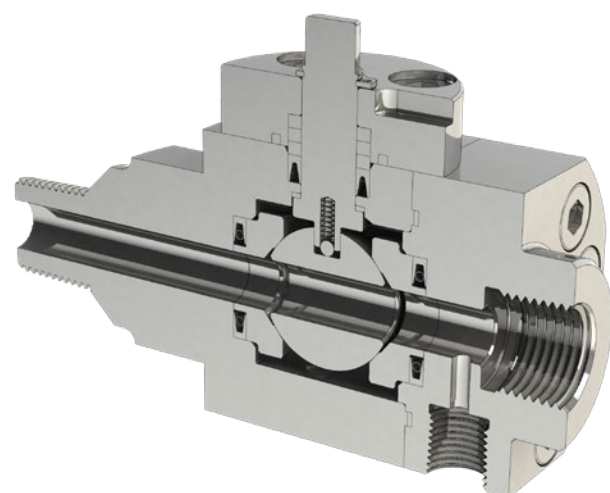


Fig. 17

In addition to standard design, which provides for 11 mm straight bore (Fig. 17), the AXY valve can be furnished with alternative dimensions and shapes, as follows (indicative examples).



Fig. 18

For installation in restricted space the body can be at 90 degrees, with the operating handle on the side (Fig. 18). This structure is normally used with a threaded inlet. The body comes in two separate parts for easy installation (Fig.20).

90 degrees AXY valve can be delivered with flange inlet connection. In this case it could be in one-piece (Fig. 23), or two-pieces body.



Fig. 19

Alternatively, the valve body can be at 90 degrees, with the operating handle on the top of the valve (Fig. 19). This structure is normally used with a threaded inlet. The body comes in two separate parts for easy installation (Fig.20)

90 degrees AXY valve can be delivered with flange inlet connection. In this case it could be in one-piece (Fig. 23), or two-pieces body.

As shown in the picture below, the 90-degree AXY valve consists of two parts, which must be disconnected before installation. There are four bolts connecting the inlet NPT part and the main AXY valve.

With the 90-degree AXY valve disconnected, the inlet NPT part (valve adapter) is installed into the main valve (Fig. 21).

1/2" NPT inlet = 68 Nm
3/4" NPT inlet = 135 Nm
1" NPT inlet = 270 Nm

The main body of the AXY valve can be installed in any of the four directions.

After positioning the body in the desired direction, the valve is lifted and the four bolts connecting the valve to the adapter are fastened using a 136 Nm torque (Fig. 22).

PTFE tape must not be used when installing the inlet part of the AXY valve, as the NPT threads are coated with Xylan.



Fig. 21



Fig. 22



Fig. 23

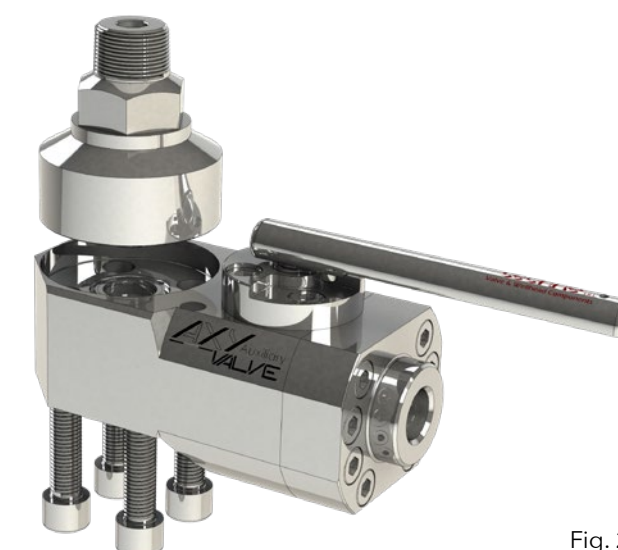
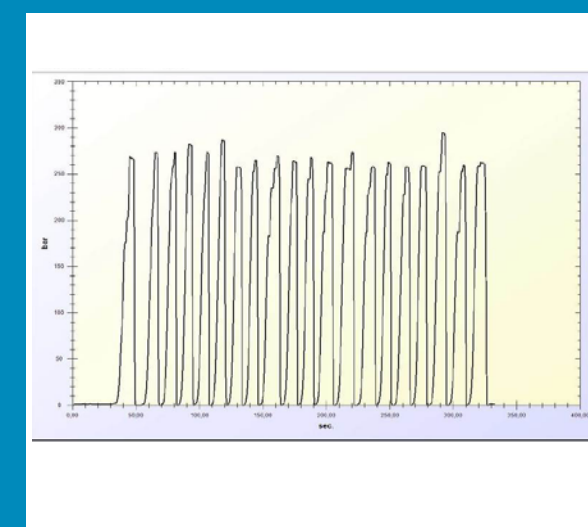
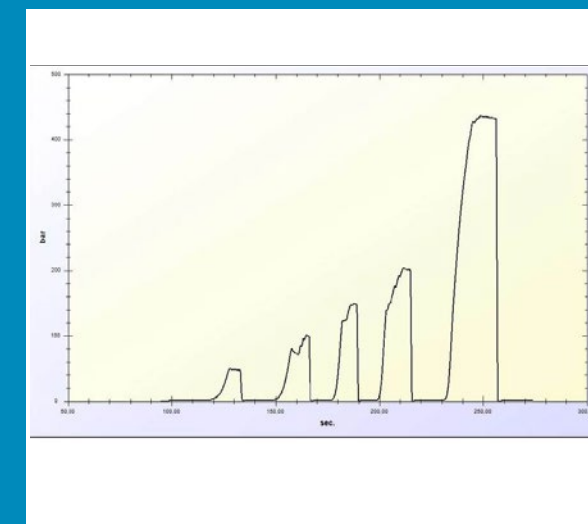
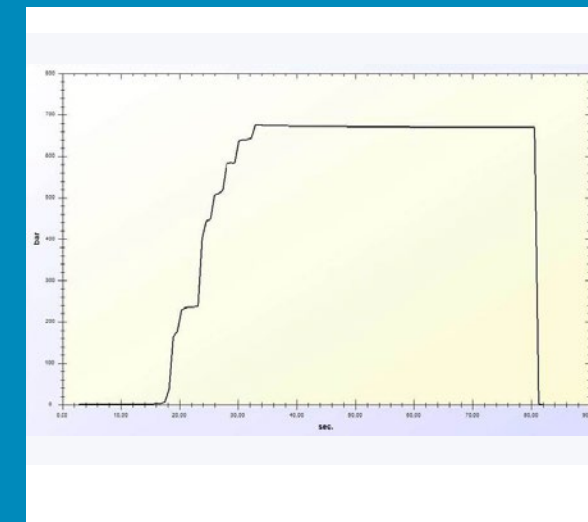


Fig. 20

Zero leakage
100% tested
Repeatability

More than 400
opening cycles
at maximum DP

Up to 690 bar
Low torque
Easy handle operation

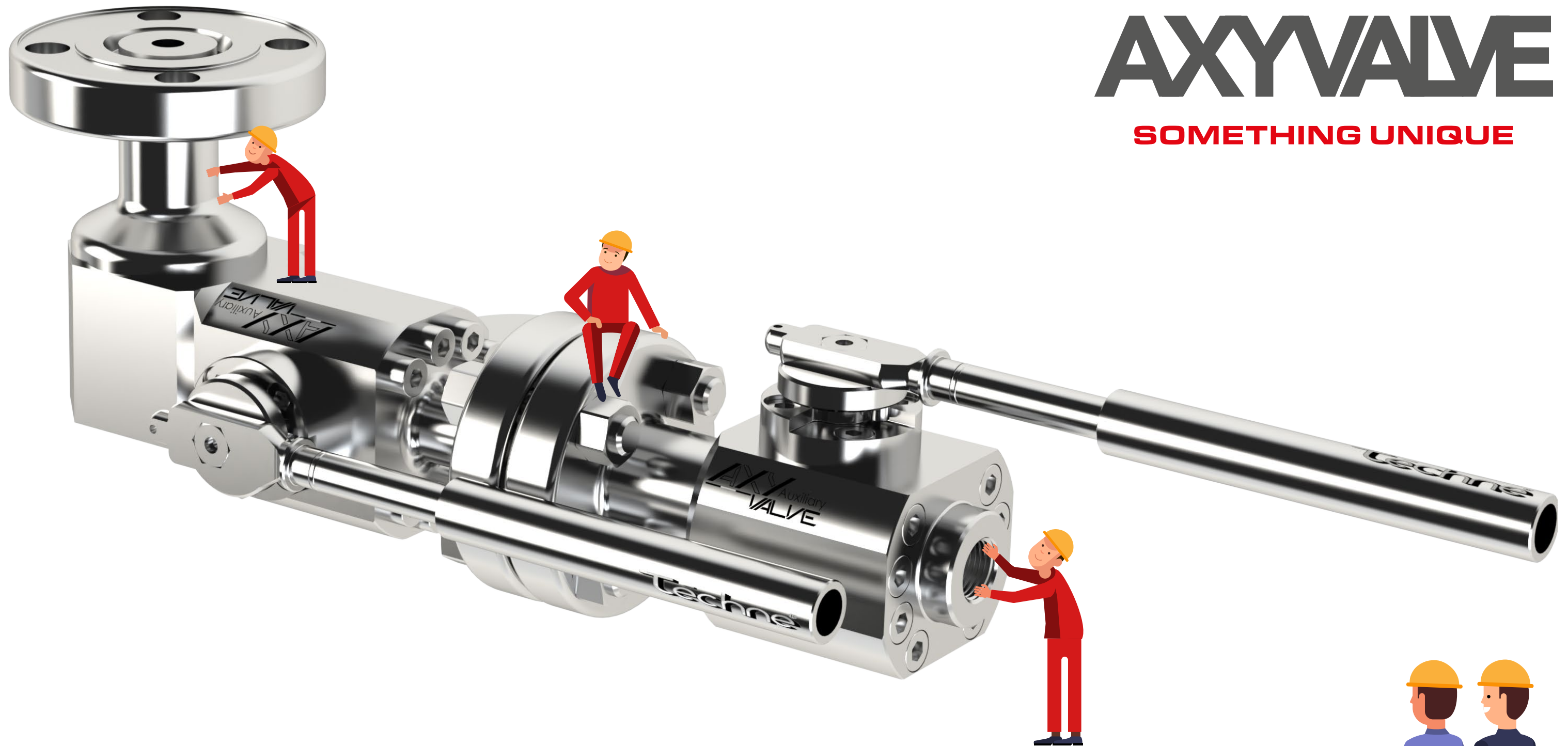


Standard Testing Procedure :

- Hydro Body Test
- Hydro Seat Test
- Low P Gas Seat Test

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