

Installation and Setting-Up Instructions



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- 1 TECHNICAL DATA**
- 2 CONSTRUCTION AND OPERATION**
- 3 INSTALLATION**
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- 5 MAINTENANCE**

DOCUMENTS

Technical Specifications : G345

Installation and Setting-Up Instructions : G345AV

The sensor-specific spare part list will be delivered with the order.

We reserve the right for technical modifications without prior notice.

PASVE® pH is the registered trademark of Satron Instruments Inc.



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1. TECHNICAL DATA

PASVE® pH is a mounting/service valve for pH sensors. It can be used with practically all pH sensors in this size category.

PASVE® pH allows the cleaning and calibration of pH sensors without stopping the process. When required, this can be done automatically. To protect the sensor in abrasive processes, it can be turned to the measuring position only for the duration of the actual measurement.

PASVE® pH is available in a manually operated type or equipped with a pneumatic or electric actuator.

TECHNICAL SPECIFICATIONS

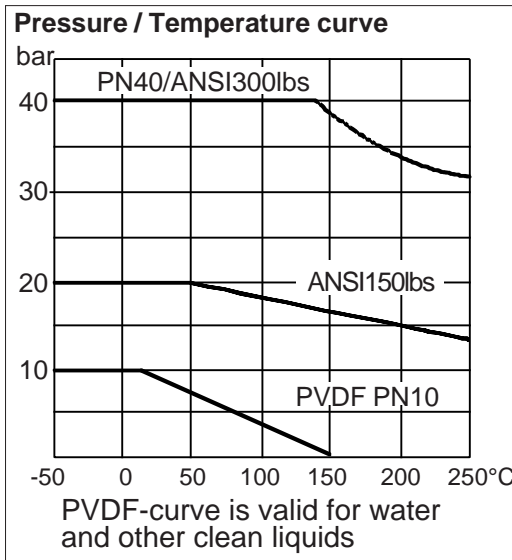
Applicable pH sensors

See the technical specification SATRON PASVE pH Mounting and Service Valve G345

Max. operating pressure/temperature

40 bar, 250 °C, (see the appended table).
Min. operating temp. -50°C.

Sensor-specific limitations should also be taken into account in applications.



Surface temperature

Ambient temperature °C	Temperature class
70	T6
85	T5
120	T4

Materials

Wetted parts: AISI316L, Titanium, Hastelloy® C276, Duplex and also PVDF for type F.
Seals: PTFE, or PTFE with carbon and graphite filling or PTFE 50%+AISI316 50% alloy.

Weight

PASVE pHC 4.7 kg, PASVE pHP 4.8 kg,
PASVE pHF 8.9 kg,
Actuator 5.5 kg

European Directive Information

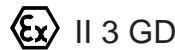
ATEX directive (94/9/EC)

Satron Instruments Inc. complies with the ATEX directive.

European Pressure Equipment Directive (PED) (97/23/EC)

- Sound Engineering Practice

European Certification :



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DECLARATION OF CONFORMITY

Module A
ATEX Directive, 94/9/EC
EN13463-1:2001 + AC:2002

Manufacturer: Satron Instruments Inc.
Address: Patamäenkatu 5
P.O.Box 22
FIN-33901 Tampere, Finland

Products: Mounting and service valves:
PASVE®
PASVE® pH

Above mentioned is hereby guaranteed

Tampere, 30.05.2006

Satron Instruments Inc.

Timo Blom
Managing Director

Pasve is the registered trademark of Satron Instruments Inc.

2. CONSTRUCTION AND OPERATION

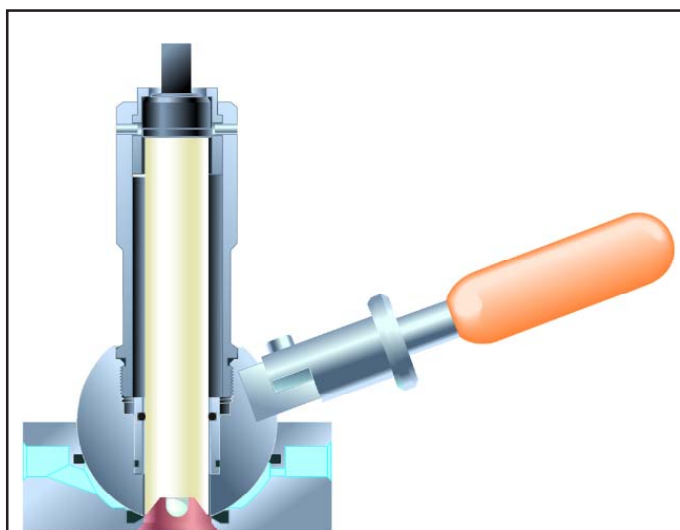


Figure 2-1 Measurement position

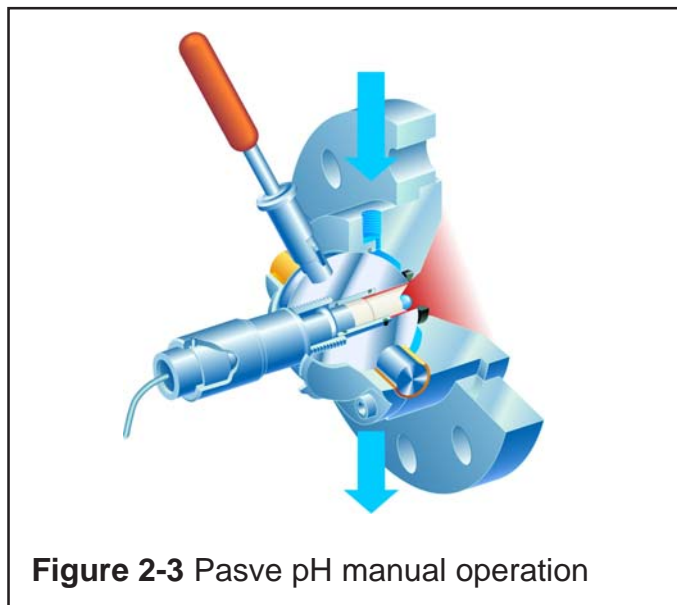


Figure 2-3 Pasve pH manual operation

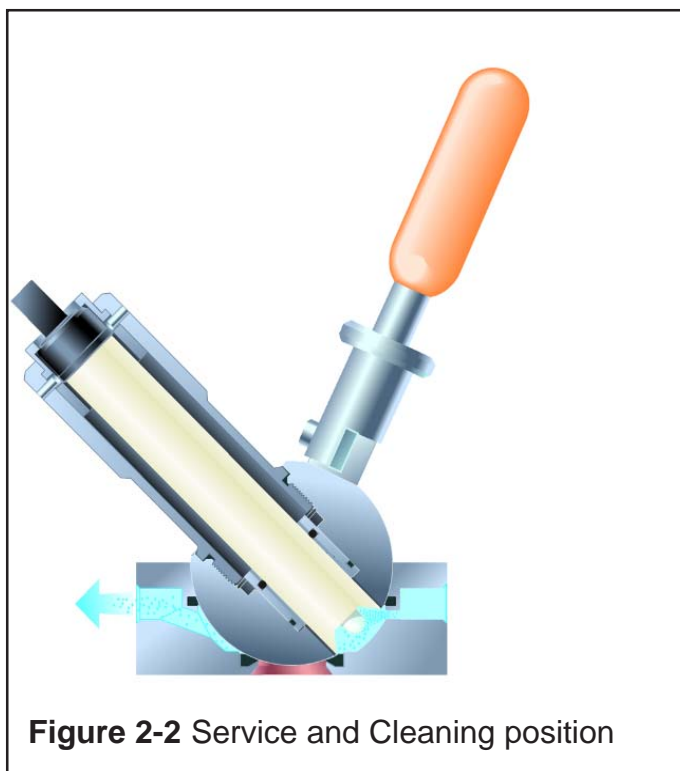


Figure 2-2 Service and Cleaning position

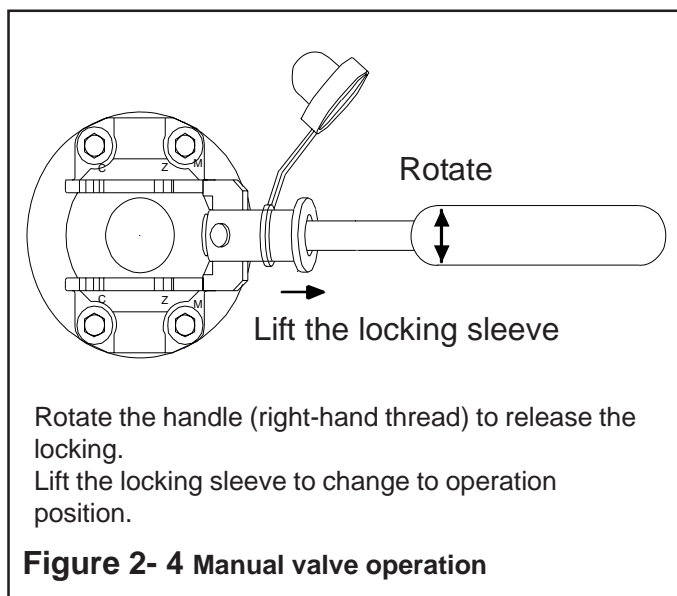


Figure 2- 4 Manual valve operation

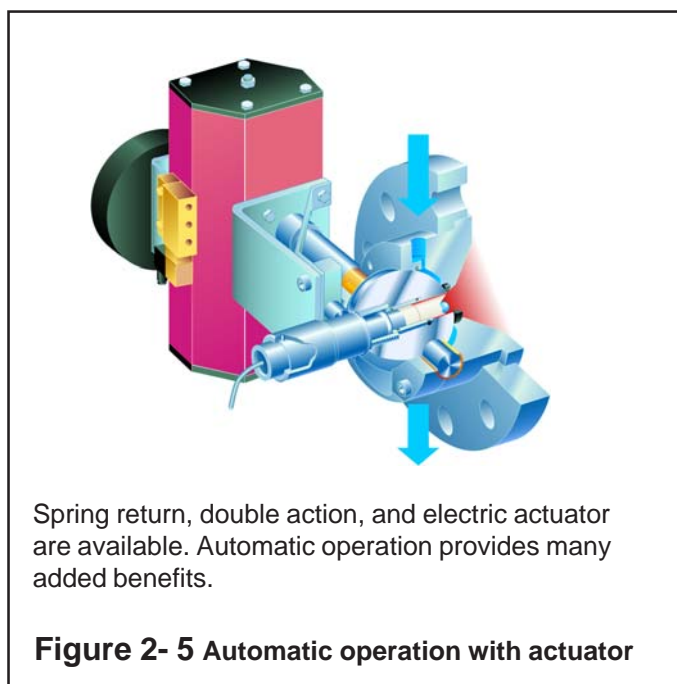


Figure 2- 5 Automatic operation with actuator

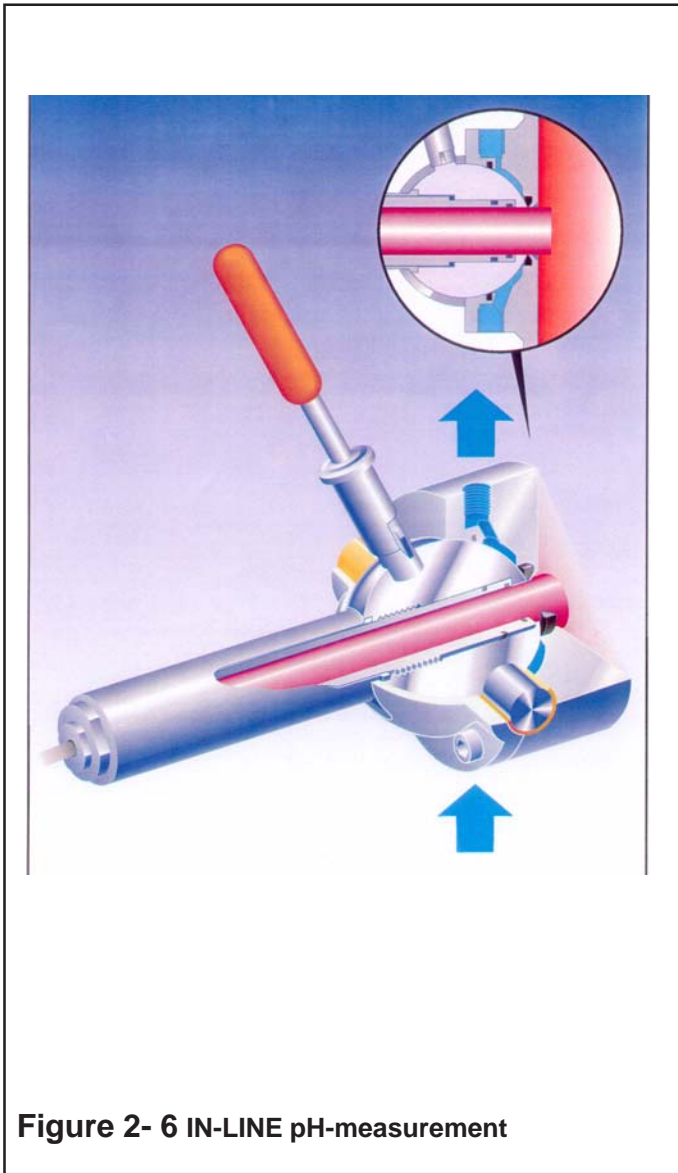


Figure 2- 6 IN-LINE pH-measurement

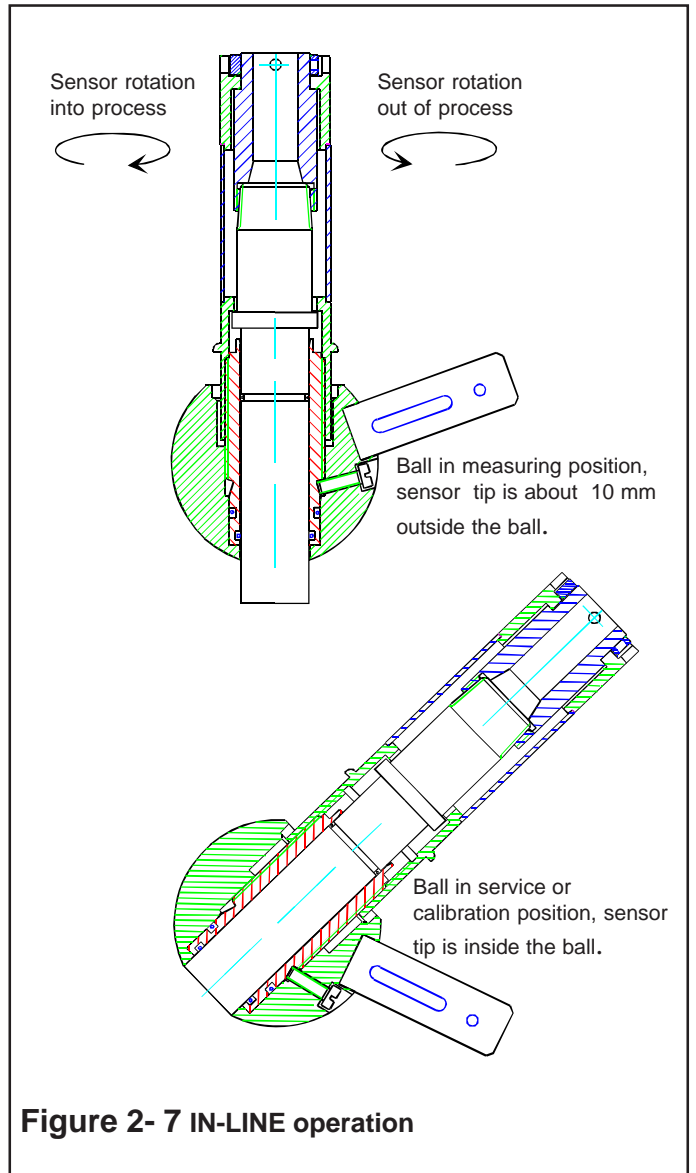


Figure 2- 7 IN-LINE operation

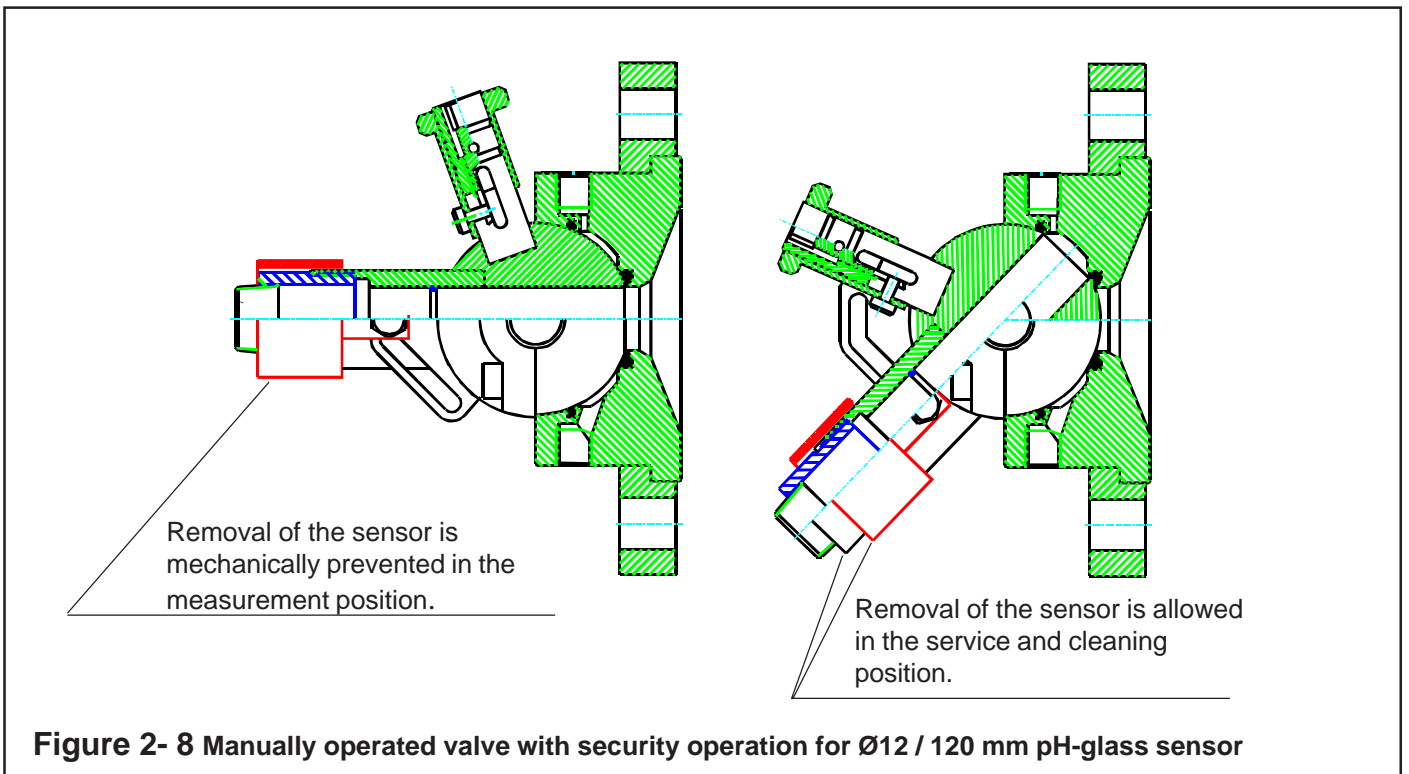


Figure 2- 8 Manually operated valve with security operation for Ø12 / 120 mm pH-glass sensor

Removal of the sensor is mechanically prevented in the measurement position, but it is allowed in the service and cleaning position.

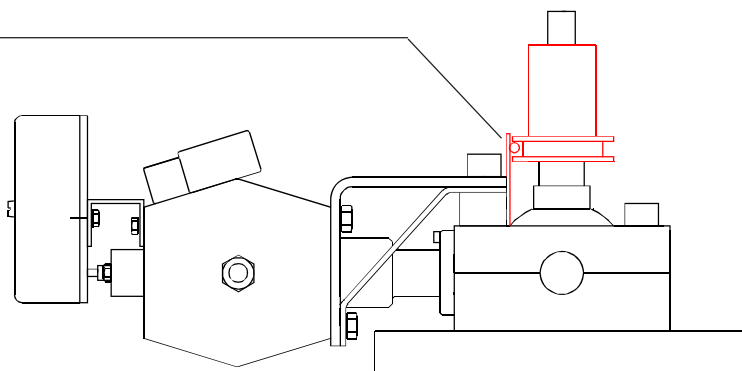


Figure 2- 9 Automatic operated valve with safety operation for Ø12 / 120 mm pH-glass sensor

Removal of the sensor is mechanically prevented in the measurement position, but it is allowed in the service and cleaning position.

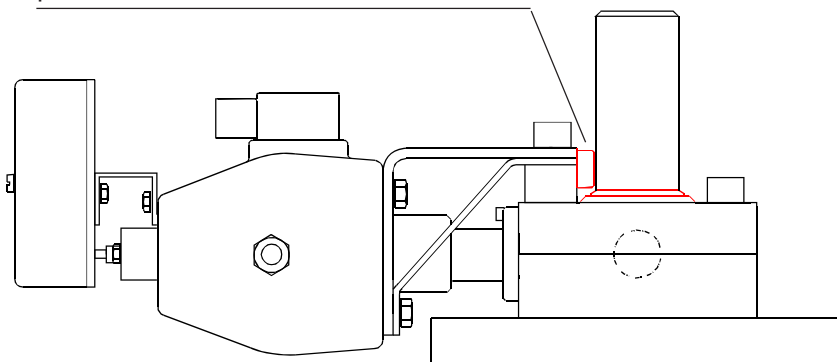
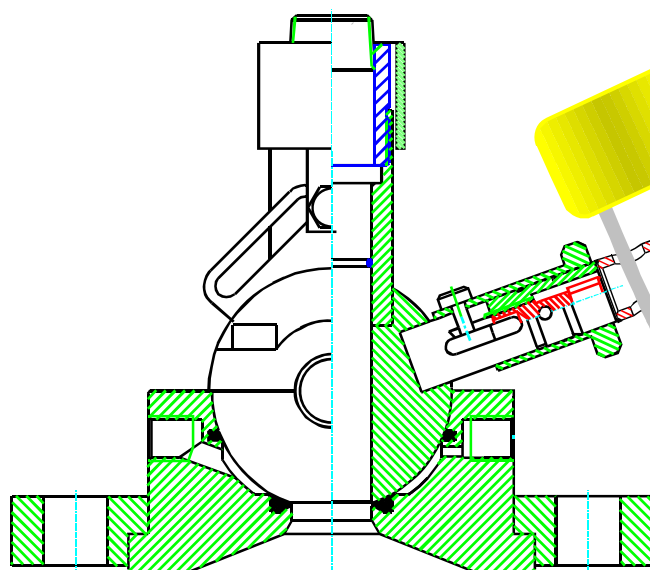
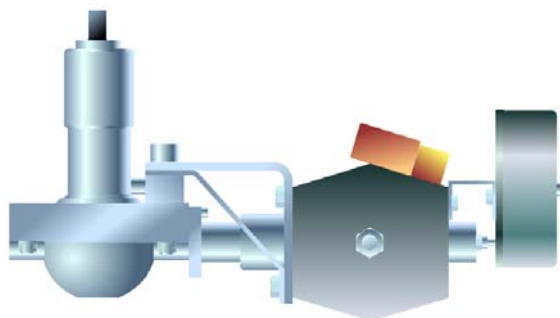


Figure 2- 10 Automatic operated valve with safety operation for pH-sensor

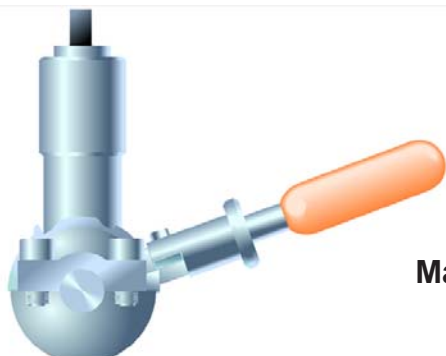


Using padlock can the unauthorized operation be prevented with the locking mechanism.

Figure 2- 11 Manually operated valve with security operation



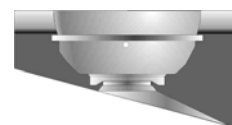
Automatic operated valve with actuator



Manually operated valve



C-body



B-body



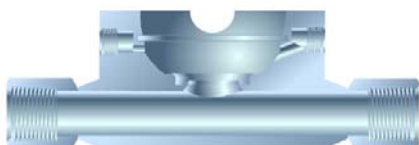
P-body



F-body

Flange standards :

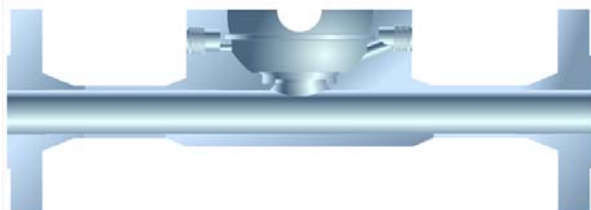
- DIN
- ANSI
- JIS



T-body

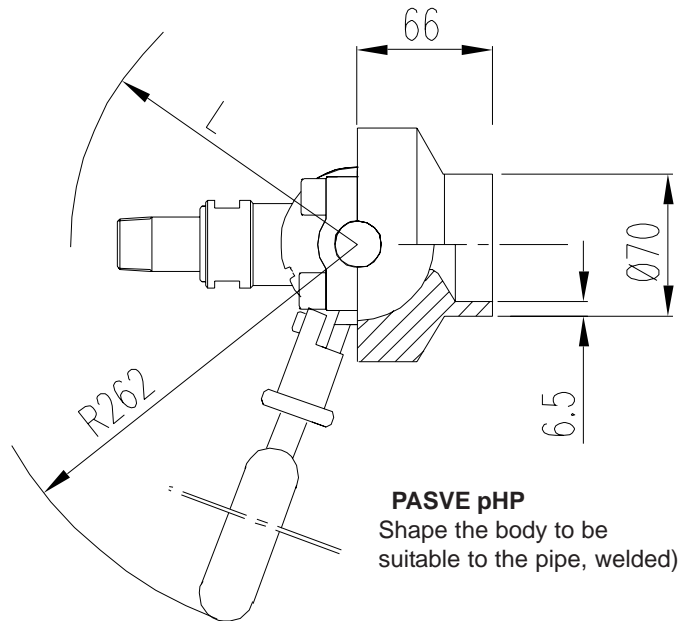
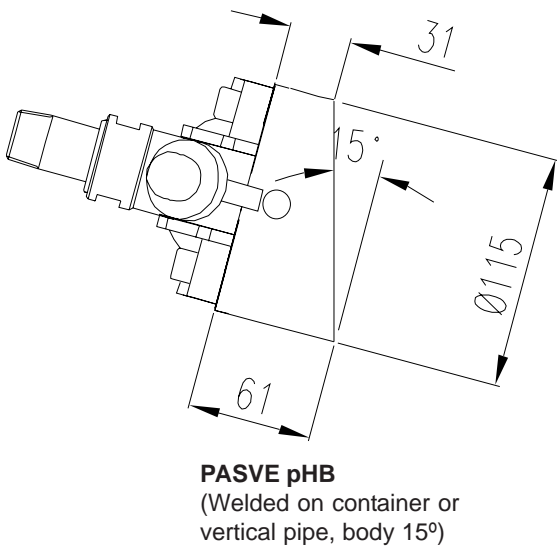
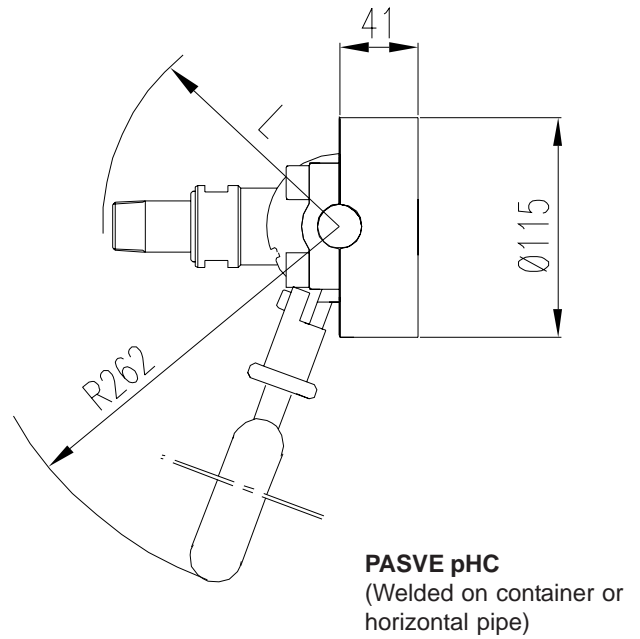
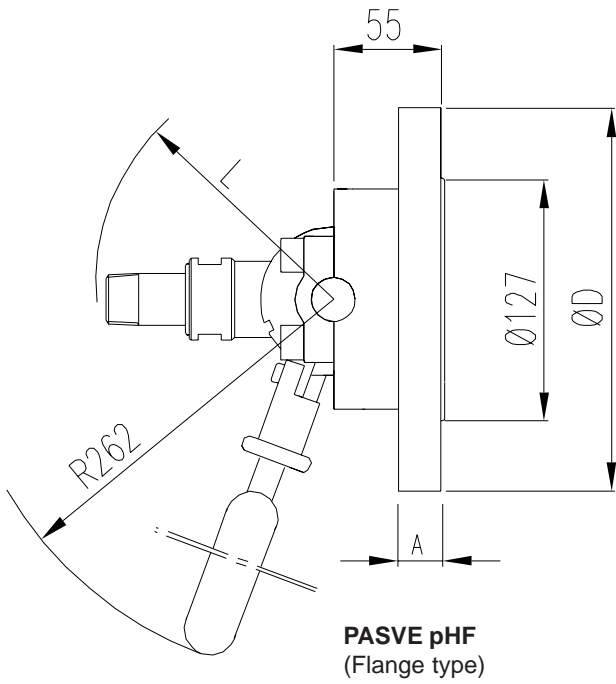
T-body threads :

- 1" - NPT
- 1½" - NPT
- 2" -



D-body

Figure 2- 12 Process connection types for Pasve pH

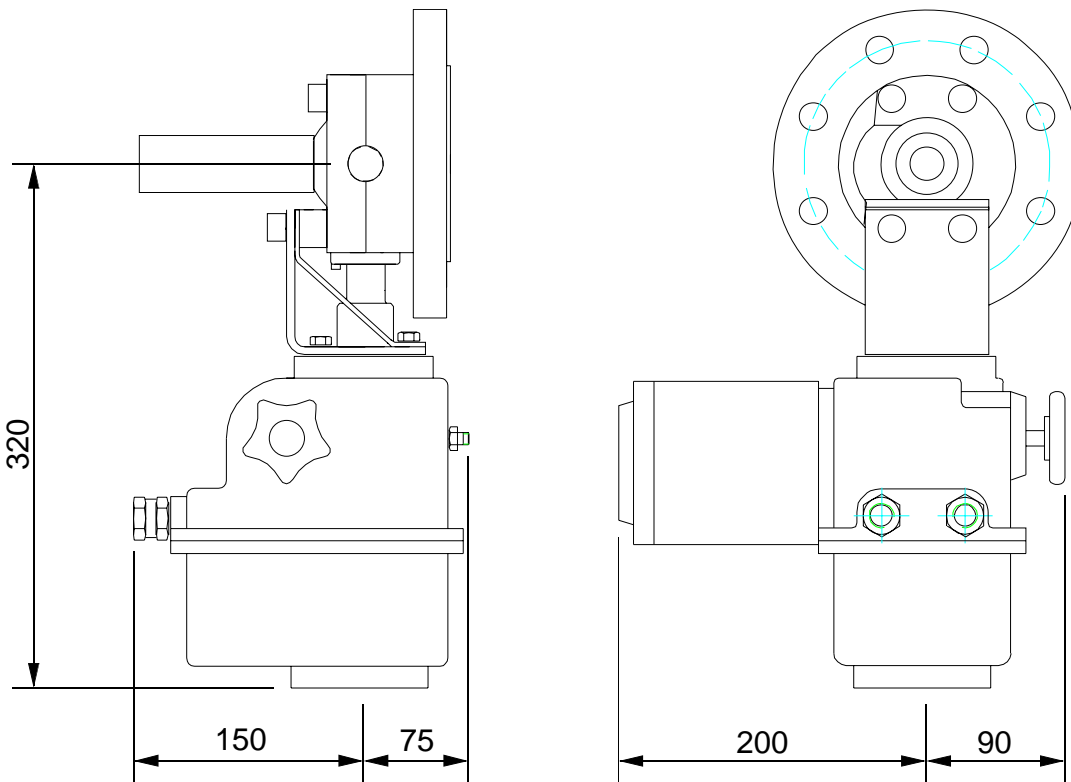
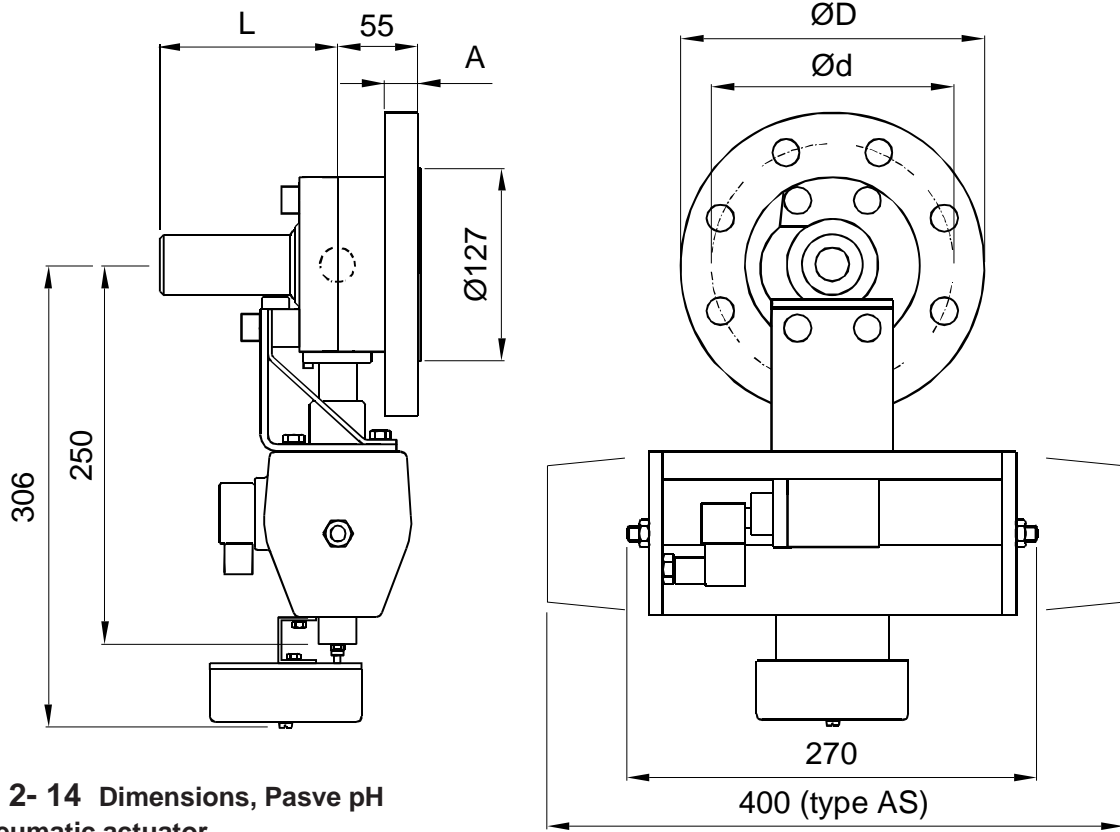


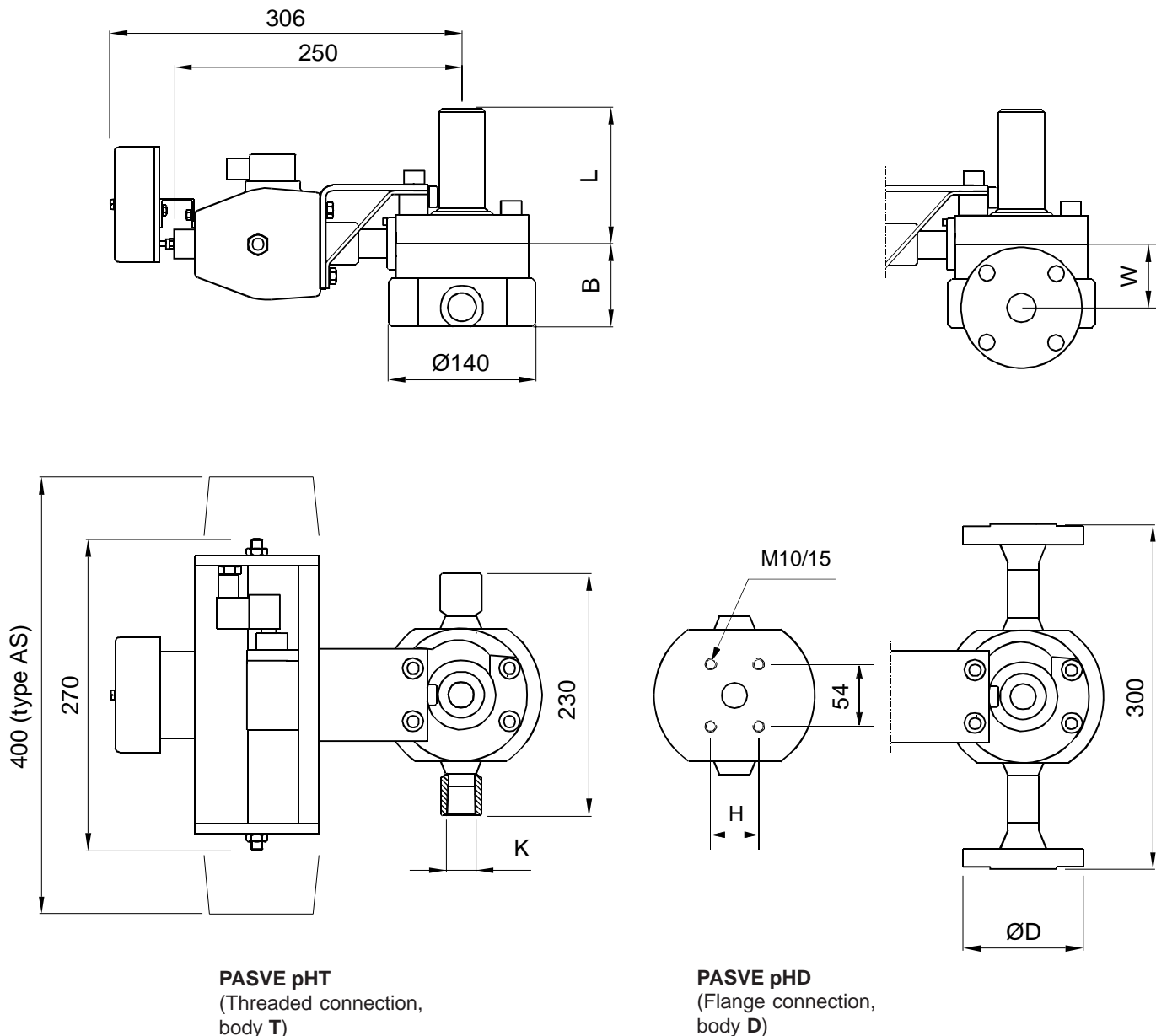
PASVE pHF

Flange Code	Type	ØD	Ød	A
A	ANSI 3" 150 lb	191	152.4	22
B	ANSI 3" 300 lb	210	168.3	27
C	DN100 PN40	220	180	26
D	DN80 PN40	200	160	22
E	JIS 10K 80	185	150	20
F	JIS 40K 80	210	170	30

L depends on the sensor type.

Figure 2- 13 Dimensions (in mm)





PASVE pH T

Thread Code	Thread (dimension K)	B	H
2	1" - NPT	77	48
4	1,5" - NPT	92	64
5	2" - NPT	104	76

PASVE pH D

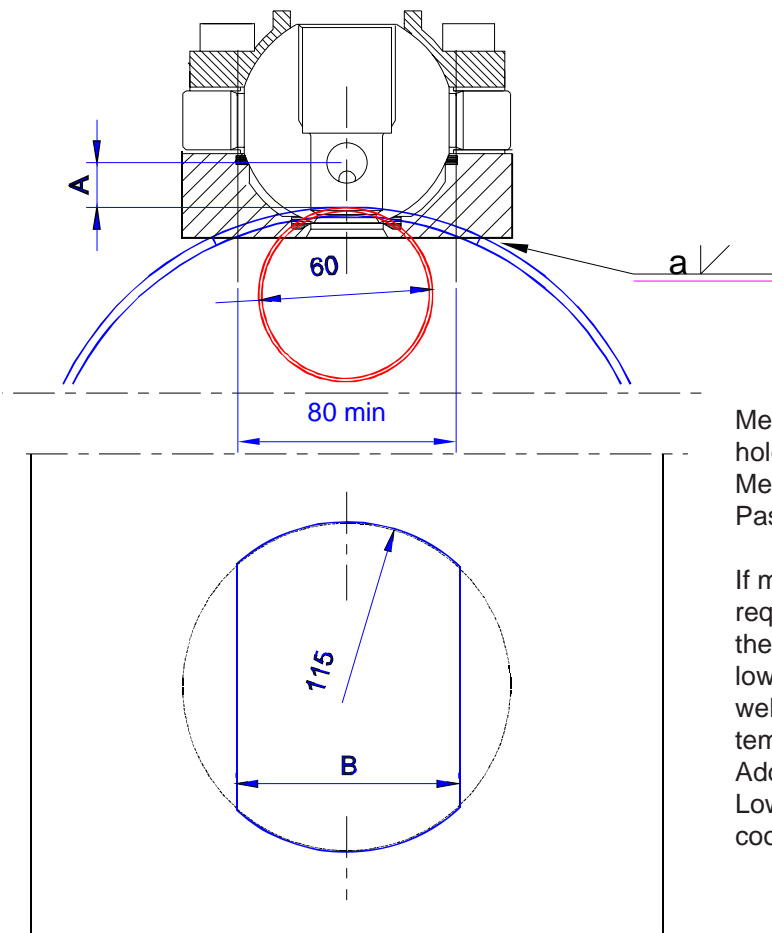
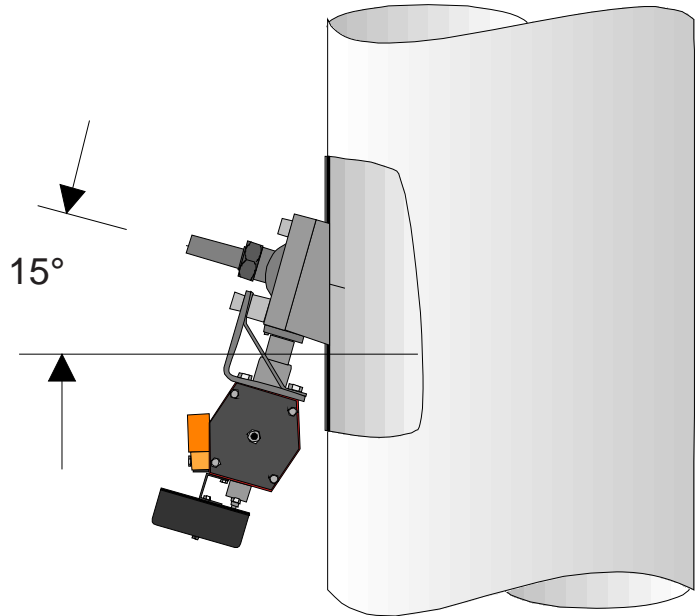
Flange Code	Type	W	$\text{Ø}D$	H
H	ANSI 1" 150 lbs	55	108	48
J	ANSI 1" 300 lbs	55	124	48
U	ANSI 2" 150 lbs	68	153	76
V	ANSI 2" 300 lbs	68	165	76
G	DN25 PN40	55	115	48
T	DN50 PN40	68	165	76

Figure 2- 16 Dimensions, mounting types T and D (flow-through)

3. Installation

3.1 Mechanical installation

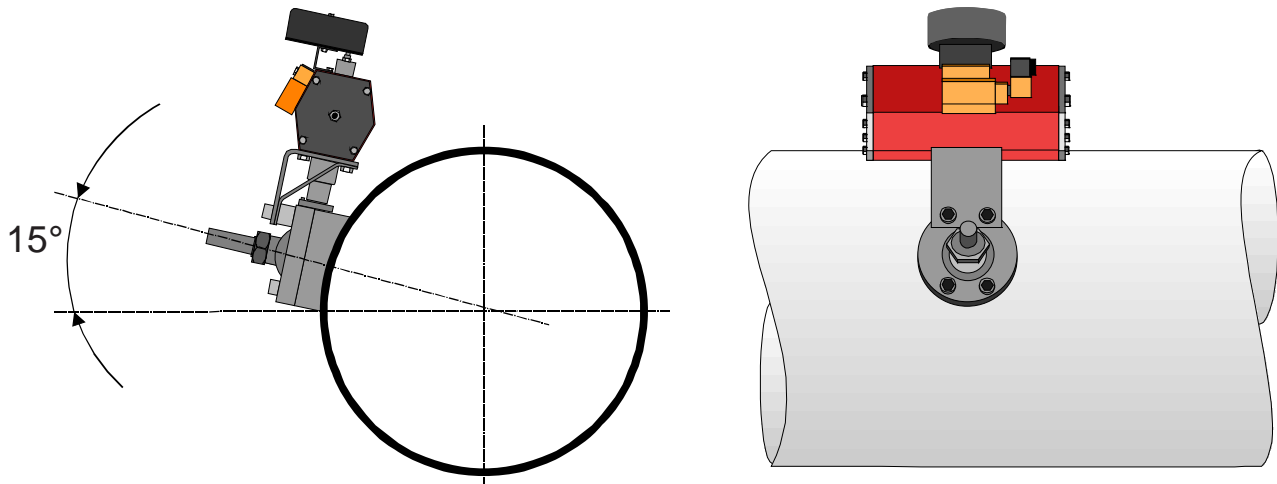
Note! In vertical mounting the air bubble in pH-sensor does not stay into the tip of sensor. It is recommended to use PASVE mounting type B; the mounting angle is 15°.



Measure A so that connectors for flushing holes can be connected
Measure B so that minimum 80mm of the Pasve body is inside inner surface of the pipe

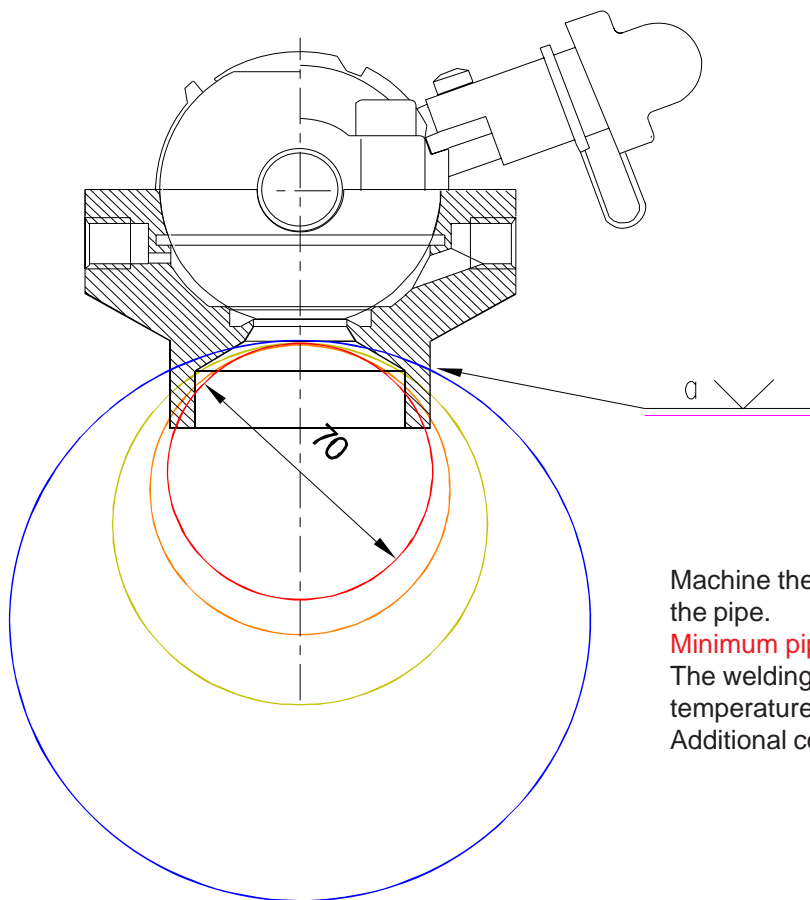
If measure B cannot fulfill 80mm minimum requirement (incase of below 200mm pipes), then PASVE must be disassembled and lowest gasket removed before welding. The welding must be carried so that the body temperature remains as small as possible. Additional cooling is recommended. Lowest pipe size with disassembly and cooling is 60mm.

Figure 3-1 Installation in container or vertical pipe



Note! In horizontal mounting the air bubble in pH-sensor does not stay into the tip of sensor. It is recommended to use the mounting angle 15°.

Figure 3-2 Installation in horizontal pipe



Machine the body of Pasve to the same diameter as the pipe.
Minimum pipe size is 70 mm.
 The welding must be carried so that the body temperature remains as small as possible.
 Additional cooling is recommended.

Figure 3-3 Install body P in the pipe

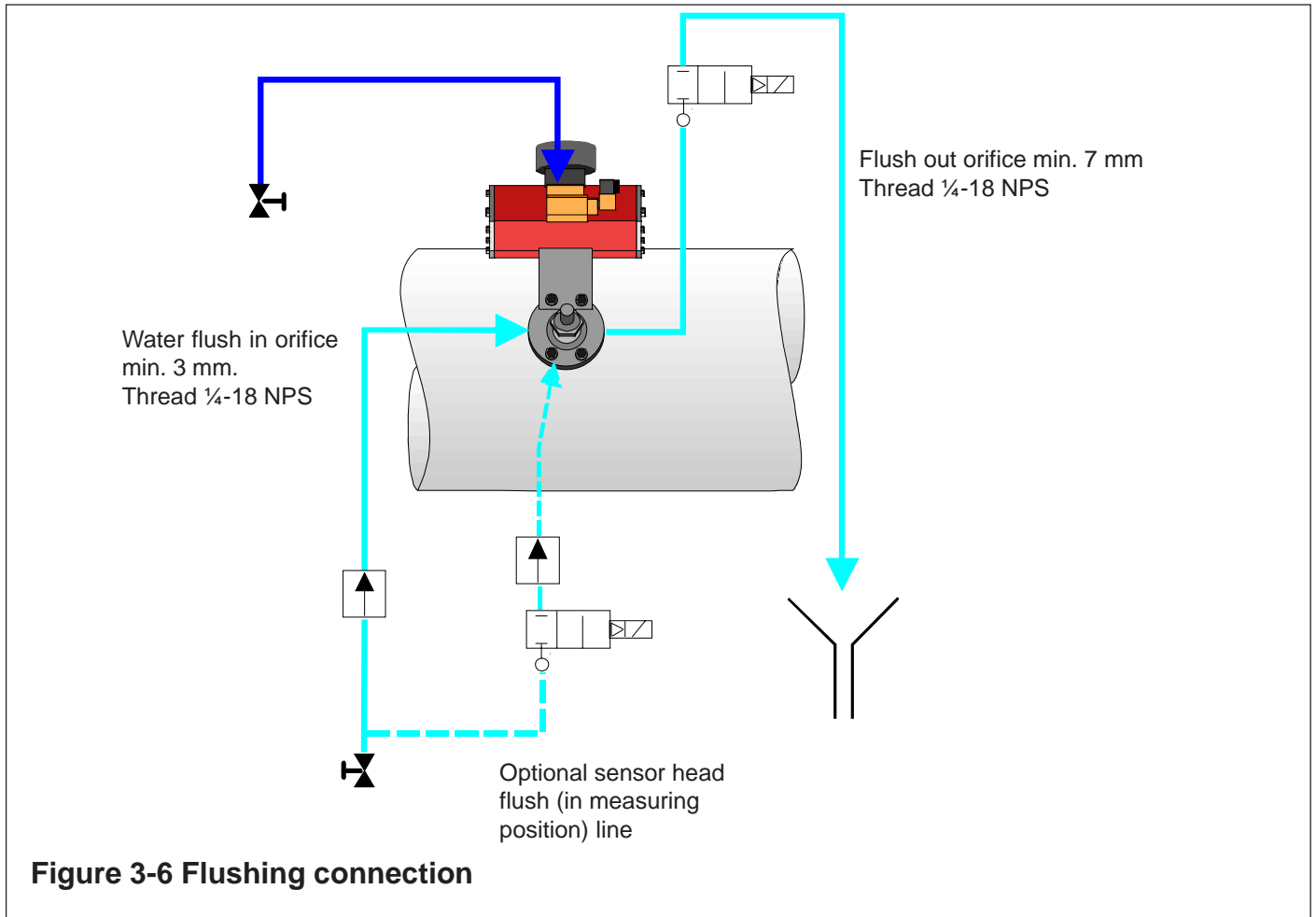


Figure 3-4 Installation of Pasve pH body C in horizontal pipe

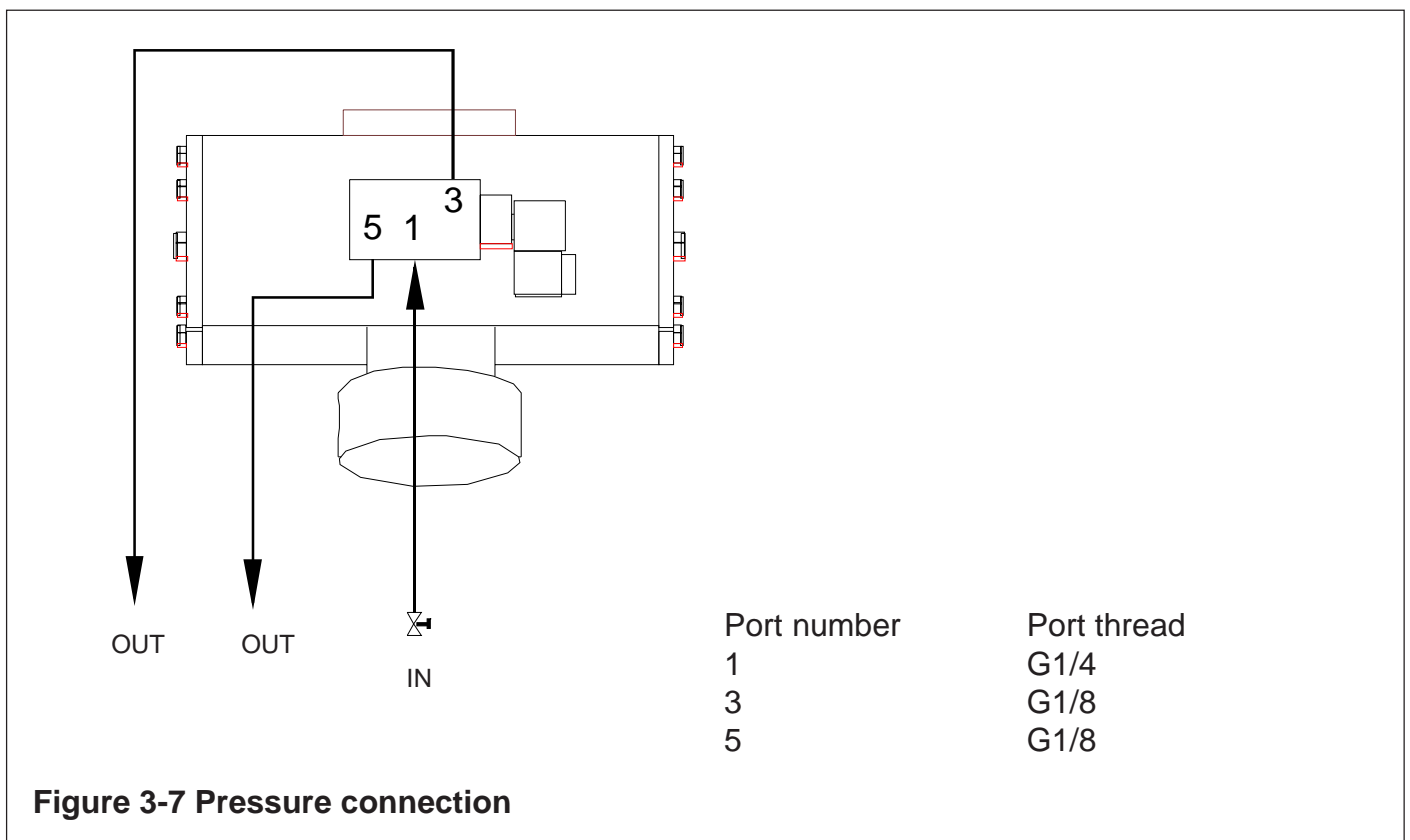


Figure 3-5 Welding of Pasve pH body C in horizontal pipe

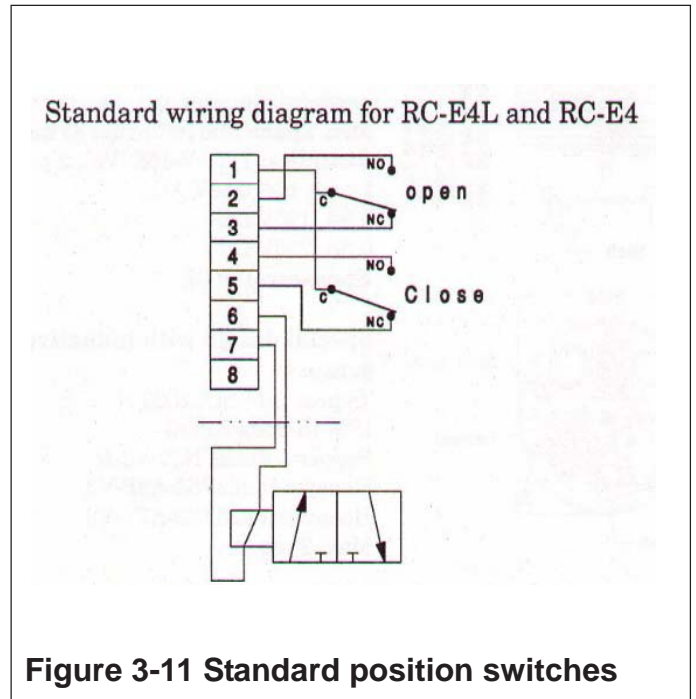
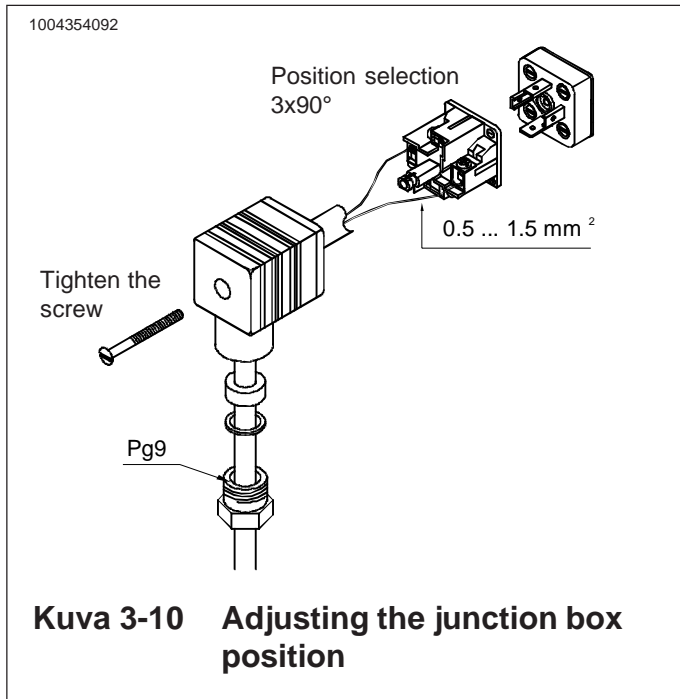
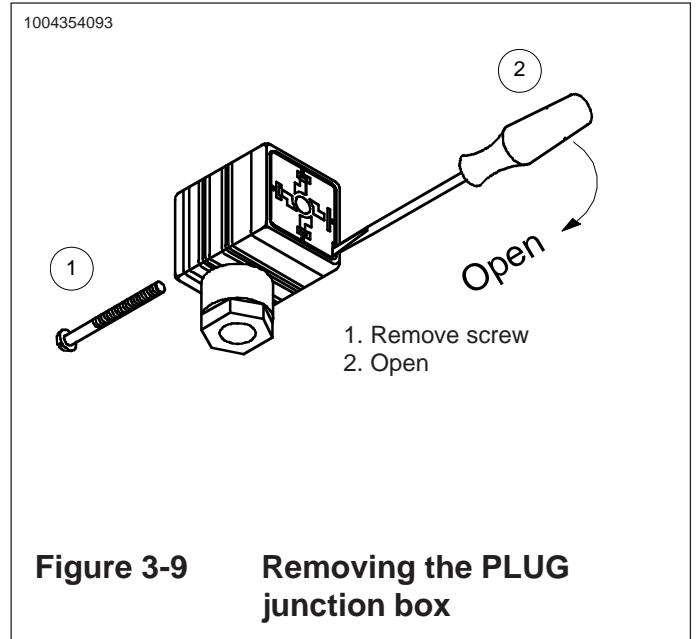
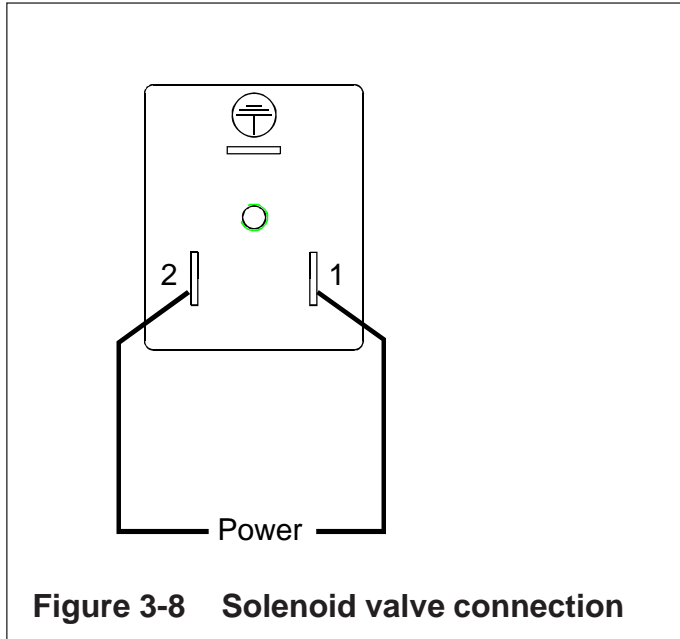
3.2 FLUSHING INSTALLATION



3.3 COMPRESSED AIR INSTALLATION



3.4 ELETRICAL CONNECTION



B BERNARD

www.bernard-actuators.com

Type	Torque Nm	Closing time secs/ 90°	Motor single phase	P kW	In A	I _s A
OAB	80	8	230 V 50 Hz	0,03	0,8	0,9
OAB	80	6	230 V 50 Hz	0,10	1,2	1,7
OAP6	80	30 or 60	230 V 50 Hz	0,03	0,8	0,9
DA15	150	15 or 25	230 V 50 Hz	0,03	0,8	0,9

WIRING S2242-A

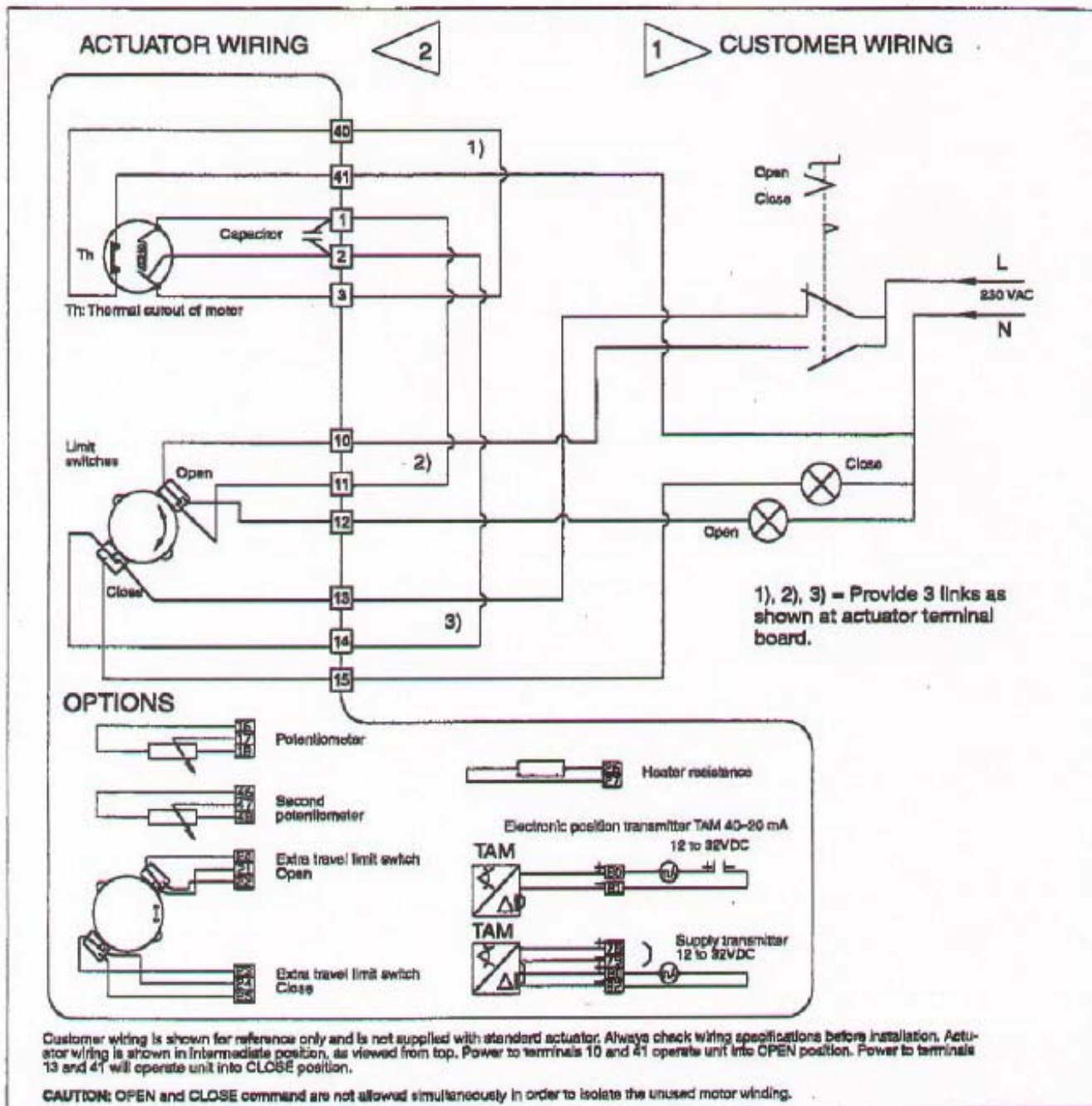
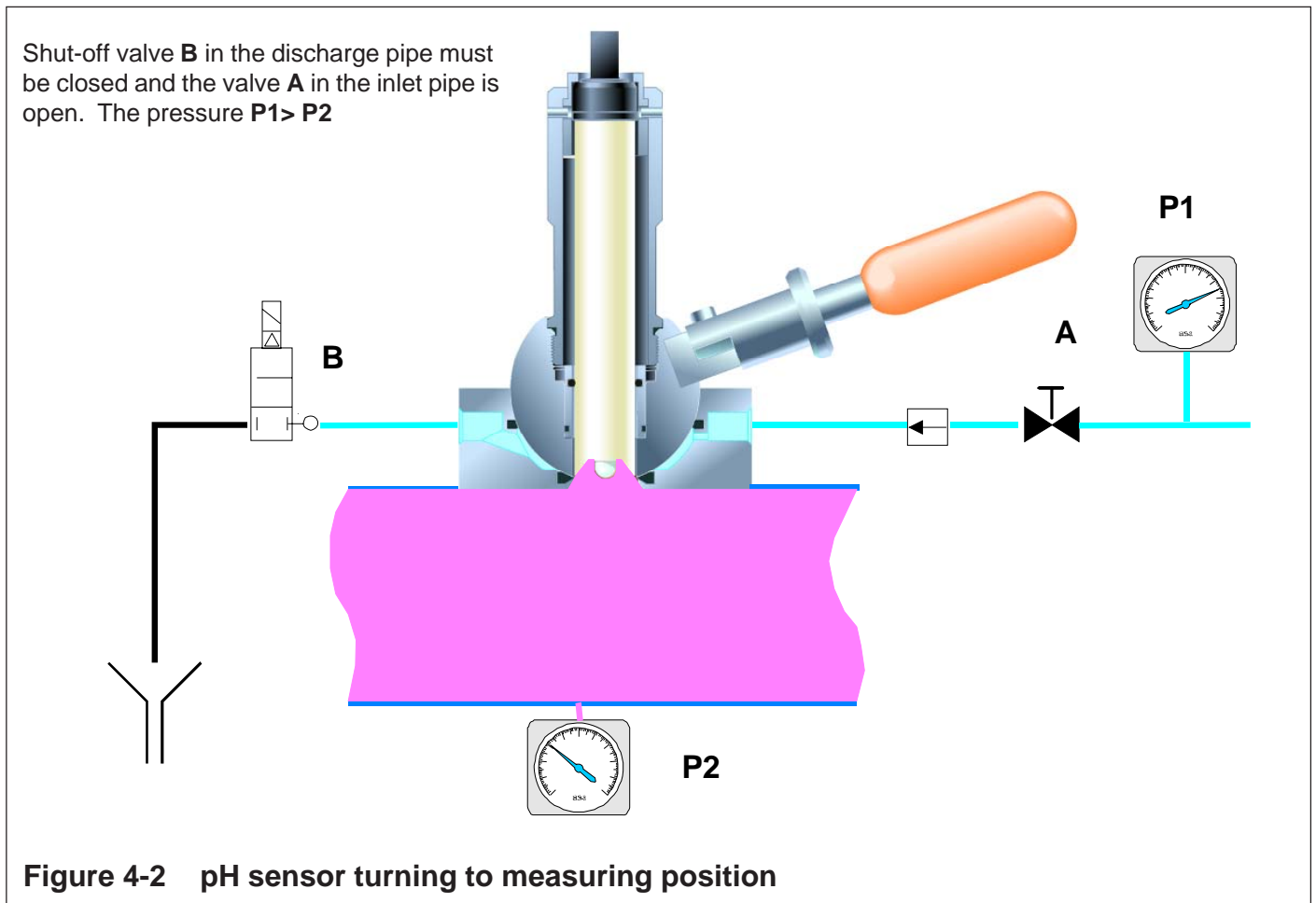
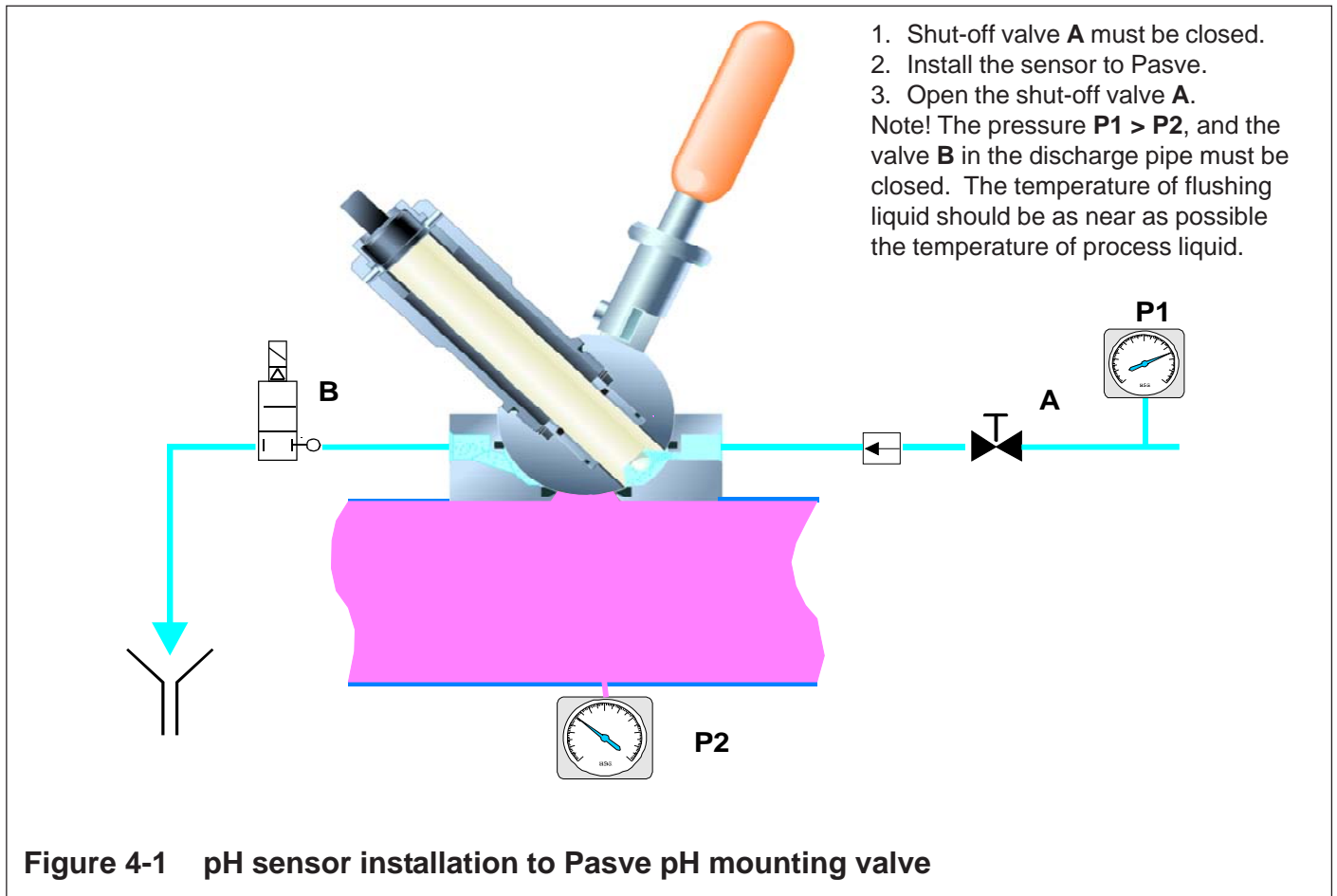


Figure 3-13 Electric actuator connection

4 SETTING-UP



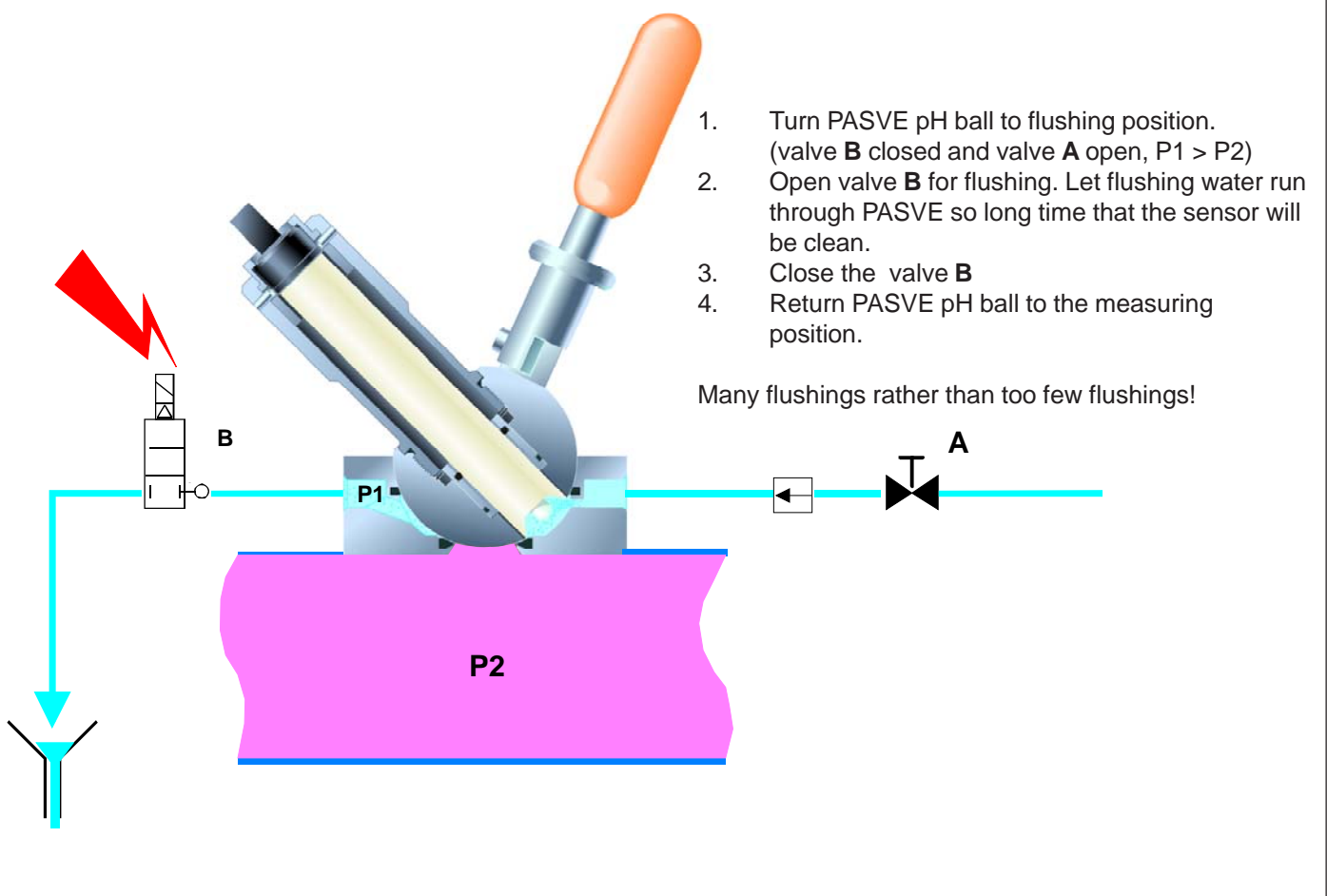
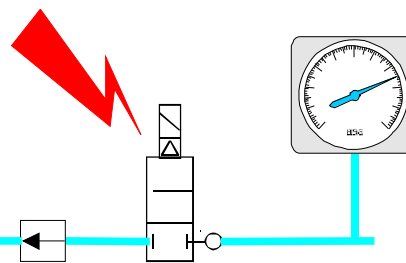
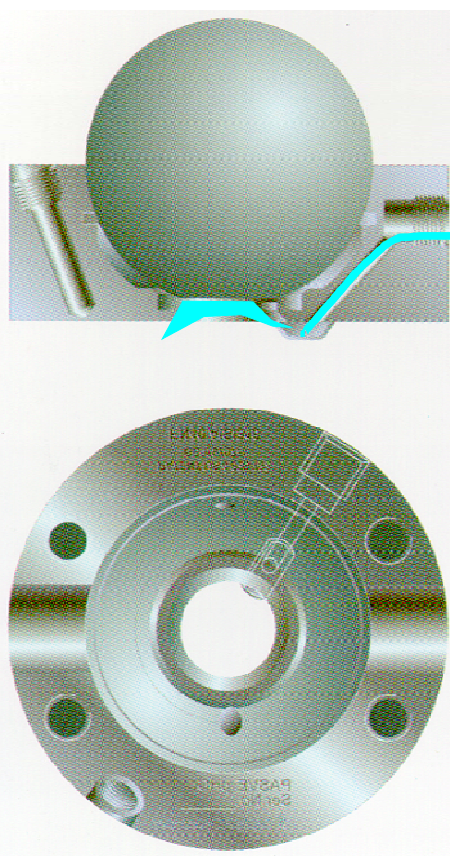


Figure 4-3 pH sensor flushing



1. When the sensor cleaning and flushing is needed in the measurement position without turning the sensor off.
2. When the hollow in the body is needed to be cleaned off the possibly sedimented stuff
3. When the foxhole in the body is needed to be cleaned from the process liquid before turning the ball.

Note! The pressure of the flushing liquid must be bigger than the pressure of the process liquid. The temperature of flushing liquid should be as near as possible to the temperature of process liquid. Flushing should be made often for avoiding the blocking of flushing channel.

Figure 4-4 When the process side flushing is needed?

5 MAINTENANCE

Replacing the seals

Required tools

- M12 Allen key
- piece of wood to press seal in groove
- sharp, thin screwdriver to remove old seal
- cleaning paper or cloth to clean the grooves

Procedure

1. If PASVE is connected to process, make sure that the container/pipe is empty and unpressurized and, when necessary, flushed.
2. Remove the sensor and valve ball (four M12 Allen screws). Make sure that the bearing parts do not drop off the shaft. When Pasve is equipped with an actuator then it is very important that the other screws will not be opened, because the actuator settings can otherwise be changed, see figure 5-1 part 18 or 24.
3. Remove old sealing with screwdriver. Be careful not to scratch the metal surfaces. Once removed, the old seals will be damaged and useless.
4. Clean the surface and sealing grooves carefully.
5. Place the bottom (smallest) seal in its groove. Correct alignment: the seal's shorter chamfer against the ball, see figure 5-2.
6. Press the seal with a finger as deep as possible in the groove. Then press the seal carefully home with a piece of wood. Since the final pressing requires the use of force, be sure to exert a uniform pressure on the piece of wood to avoid damaging the seal.
7. Check the seals visually: they should be evenly in their grooves without any visible damage.
8. Press new bearing strips and sleeves to the bottom of the shafts. Re-install the valve ball. Note mounting alignment, see the picture Mounting on the back. Grease the Allen screws and tighten them by turns (60 Nm).
9. Check the ball's movement and tightness. At first the ball will move quite stiffly, and moving the ball will require an additional lever arm and solid mounting (the valve must be firmly mounted either in the process or e.g. on a vice bench).

Other considerations:

The type equipped with actuator has two groove seals, one of which is installed on the bearing ring to balance the bearing. Cut from the seal away a piece which is as big as the hole in the bearing ring, see figure 5-1 part 26.

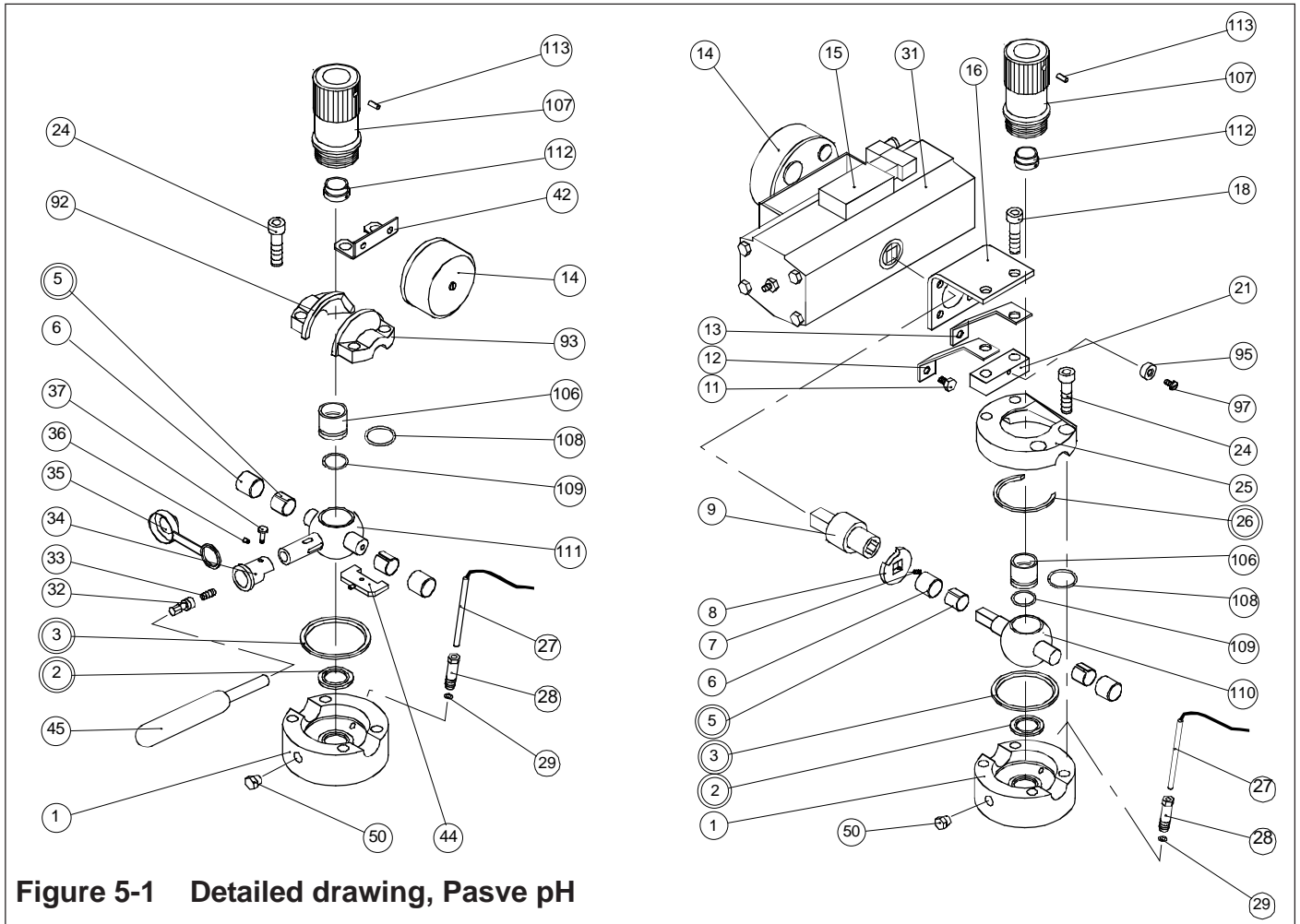
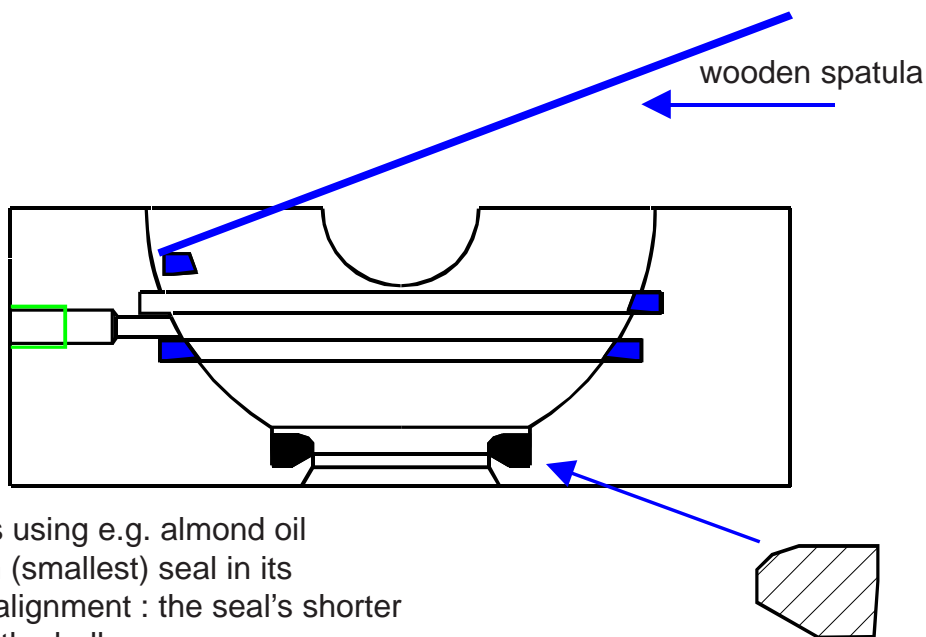
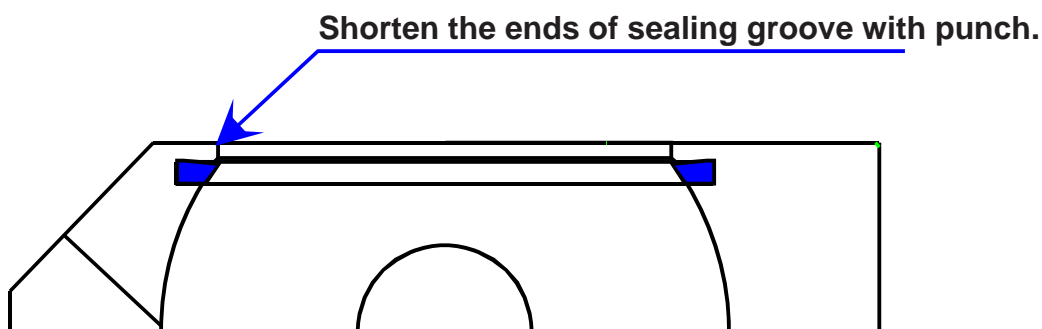


Figure 5-1 Detailed drawing, Pasve pH



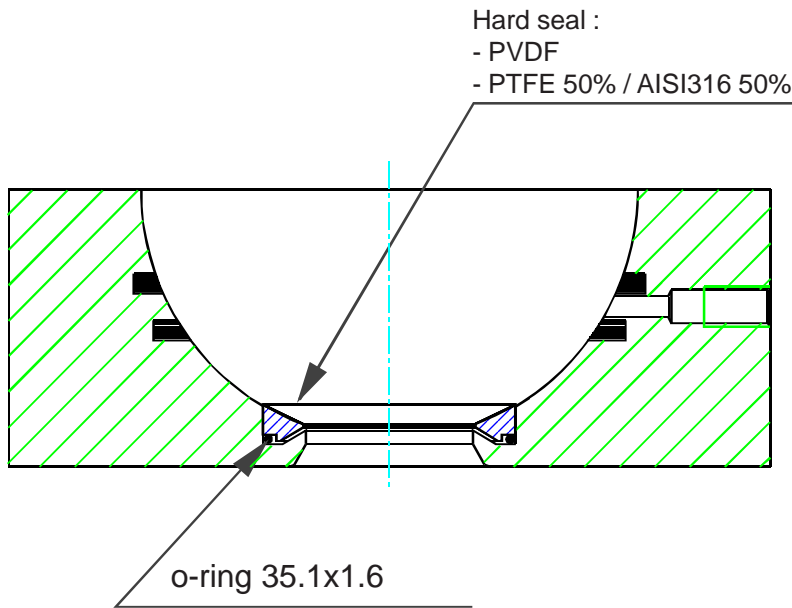
1. Grease the seals using e.g. almond oil
2. Place the bottom (smallest) seal in its groove. Correct alignment : the seal's shorter chamfer against the ball.
3. Press the seal with a finger as deep as possible in to the groove. Then press the seal carefully home with a piece of wood. Since the final pressing requires the use of force, be sure to exert a uniform pressure on the piece of wood to avoid damaging the seals.

Figure 5-2 Seals installation



1. Cut from the seal away a piece which is as big as the hole in the bearing ring and set the seal.
2. Shorten the ends of sealing groove with the punch so the seal do not slide from the groove.

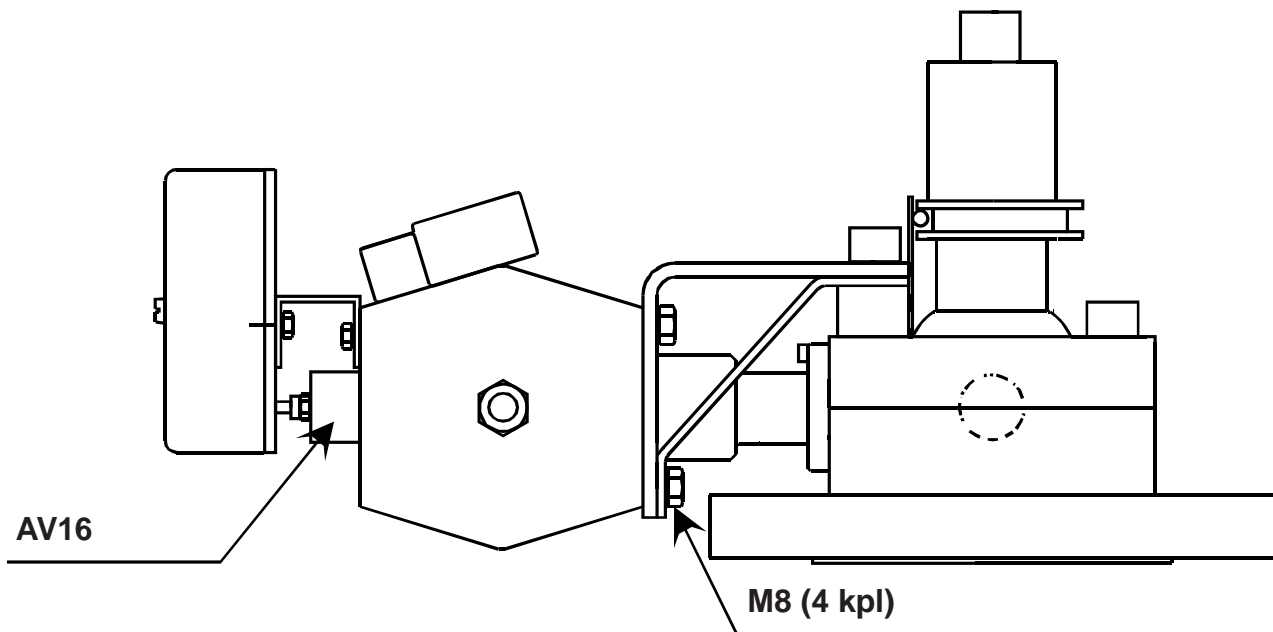
Figure 5-3 Back-up seal installation



1. Set o-ring Ø35.1x1.6 to the groove in the body bottom.
2. Set hard seal on the O-ring in the body bottom. Be sure that O-ring is placed properly into the space of the seal collar and body groove.
3. Install the ball.

Hard seal will be used e.g. with the cutting ball or together with diamond-/ ceramic-coated ball.
Order code for PVDF-seal set : **KIT553262**
Order code for PTFE 50% / AISI316 50% -seal set : **KIT551350**

Figure 5-4 Hard seal installation



1. Remove old actuator by opening screws M8 (4 pcs)
2. Fasten new actuator by screws M8.
3. Turn the valve to the measuring position.
4. Loosen screws M8 (4 pcs)
5. Turn the valve to the flushing position.
6. Tighten the screws M8 (4 pcs), torque 60Nm.

Figure 5-5 Changing the actuator



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