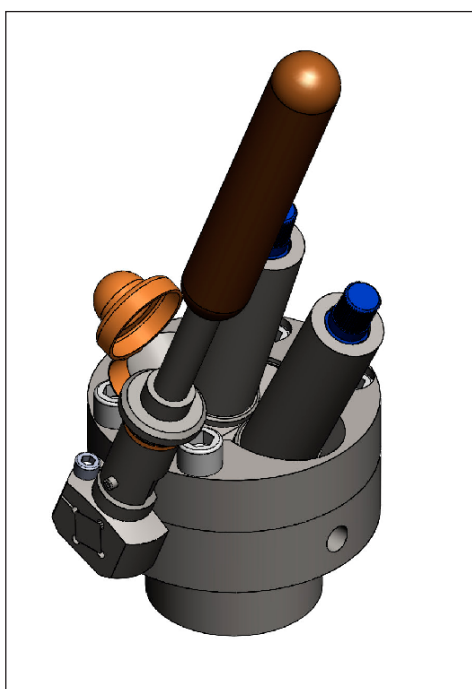


# Installation and Setting-Up Instructions

## Spare Parts List



### ***Contents :***

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

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### ***DOCUMENTS***

Technical Specifications : G365

Installation and Setting-Up Instructions : G365AV

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® DUAL** is mounting and service valve for two pH sensors of diameter 12 mm. It can be used with practically all pH sensors in this size category.

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

## TECHNICAL SPECIFICATIONS

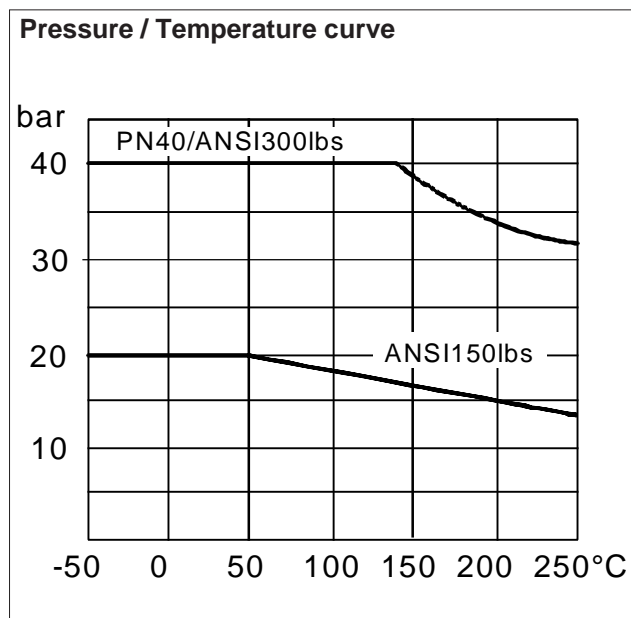
### Applicable pH sensors

See the technical specification SATRON PASVE DUAL Mounting and Service Valve G365

### 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

## 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 :

II 3 GD

## EC DECLARATION OF CONFORMITY

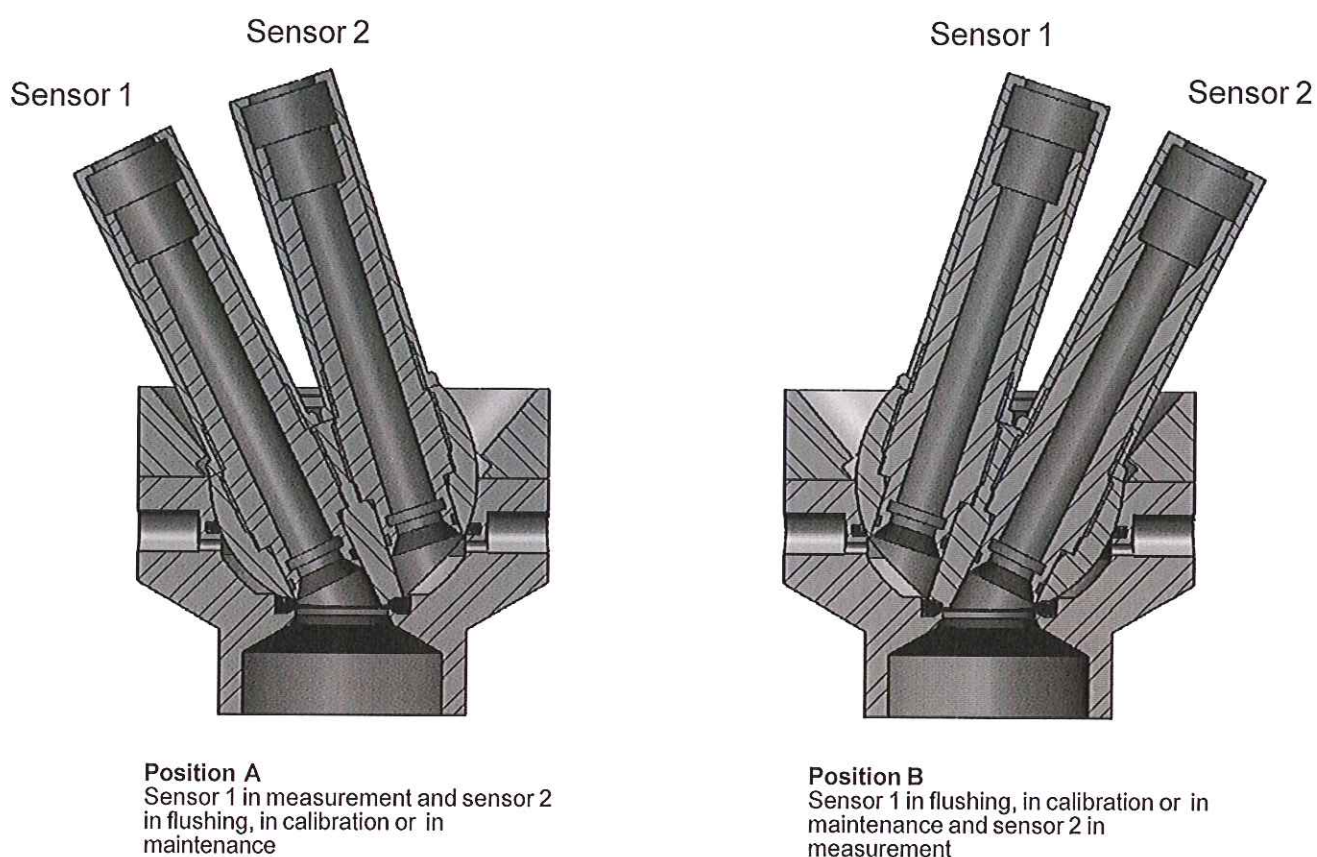


Type of Equipment <b>Mechanical Actuators and Valves</b>
Serial Number <b>P1004, Parve</b>
Type Designation <b>Pistor 75/150, Pistor 75/300, Pistor 75/300 Special, Parve, ParvepH</b>
Manufacturer <b>Satron Instruments Inc., Luopunkatu 1, 33900 Tampere, Finland Tel. +358 207 464 800. Fax. +358 207 464 881</b>
<p>We hereby declare that the equipment specified above is in conformity with the provisions of:</p> <p><b>Machinery Directive (98/37/EC) incl. latest amendments:</b> Conformity assessment procedure followed: <b>Module A</b></p> <p>Conformity is verified by the manufacturer. Conformity is substantiated by the use of good engineering practice. Production control follows the ISO9001:2008 regulations and includes required electrical safety routine tests.</p> <p><b>Pressure Equipment Directive (97/23/EC)</b> Conformity Assessment procedure followed: <b>Category 1 : Module A</b></p> <p>Conformity is verified by the manufacturer</p> <p><b>Atmosphere Explosive Directive (94/9/EC) incl. latest amendments with the application of the harmonized standards:</b> <b>EN 13463-1:2006+ AC:2007</b> Conformity assessment procedure followed: <b>Category 3 : Module A</b></p> <p>Conformity is verified by the manufacturer.</p>

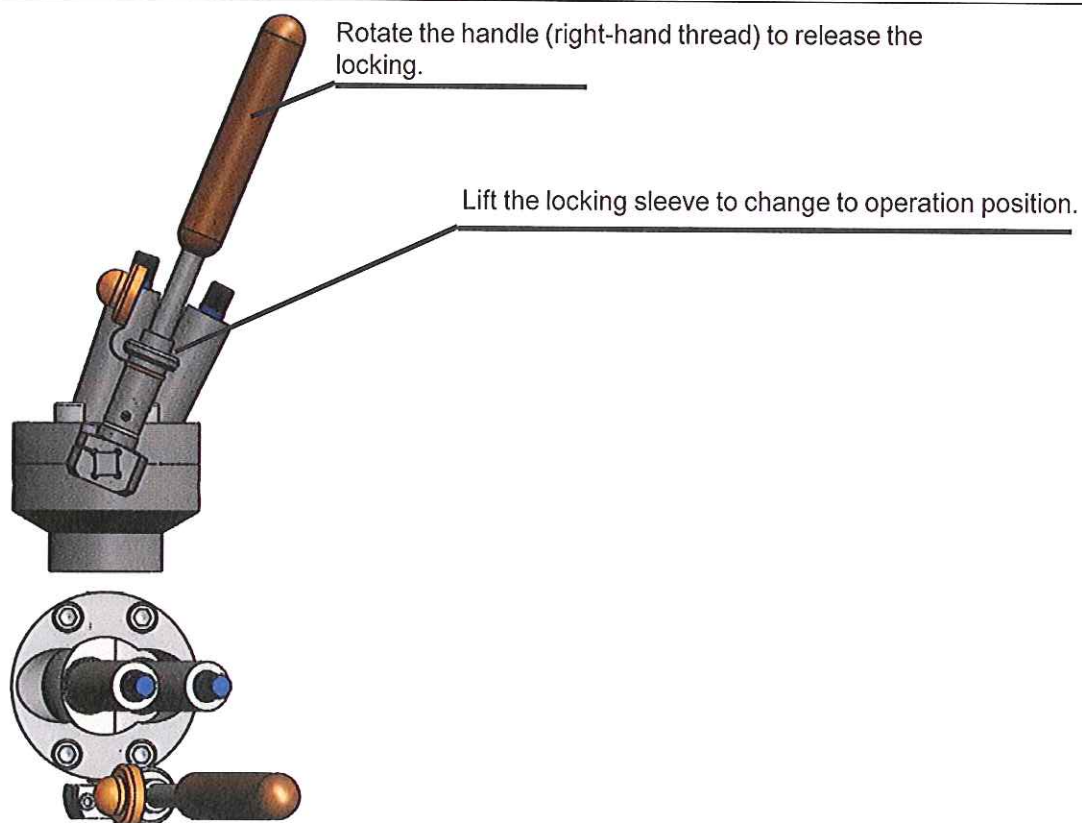
Tampere 2009-05-28

*Tim Blom*  
Tim Blom, Managing Director

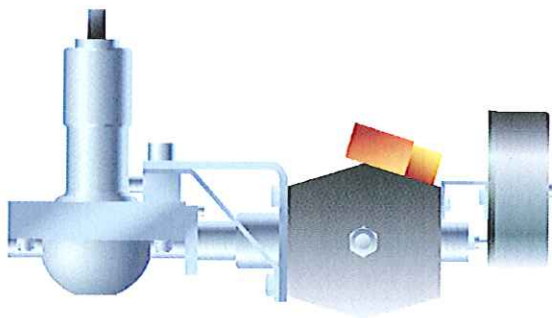
### 2. CONSTRUCTION AND OPERATION



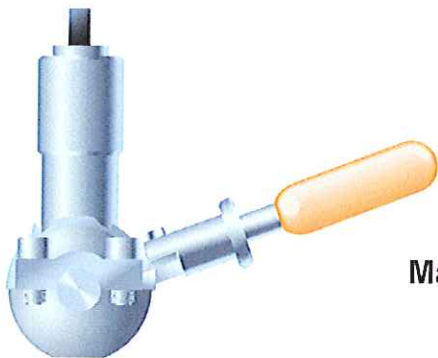
**Figure 2- 1** Operating positions



**Figure 2- 2** Manual valve operation



Automatic operated valve  
with actuator



Manually operated valve



C-body



B-body

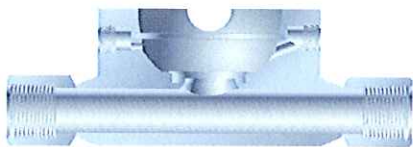


P-body



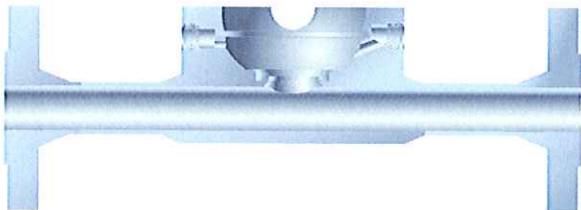
F-body

Flange standards :  
- DIN  
- ANSI  
- JIS



T-body

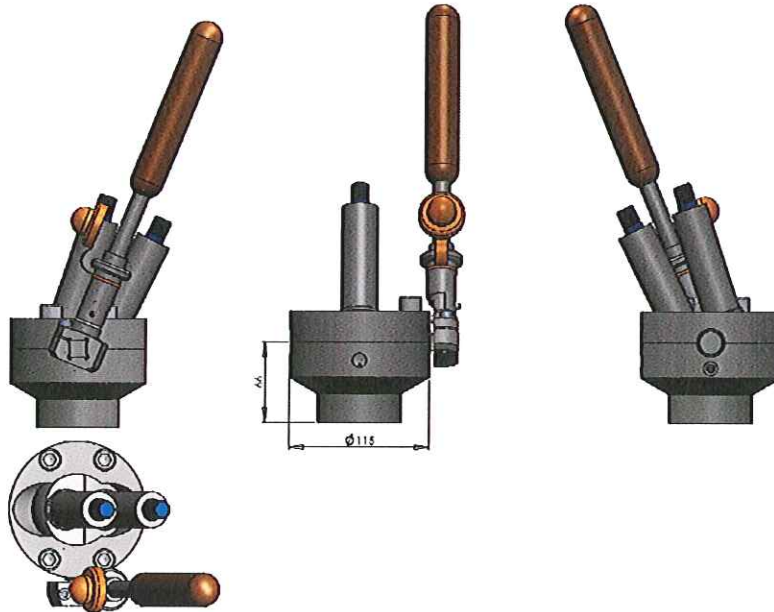
T-body threads :  
- 1" - NPT  
- 1½" - NPT  
- 2" -



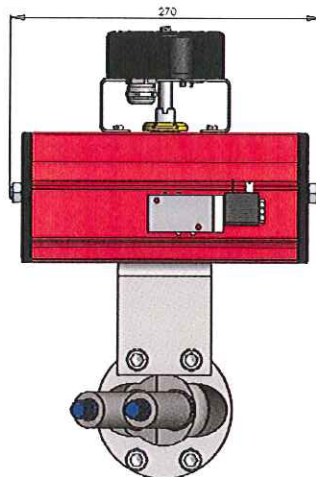
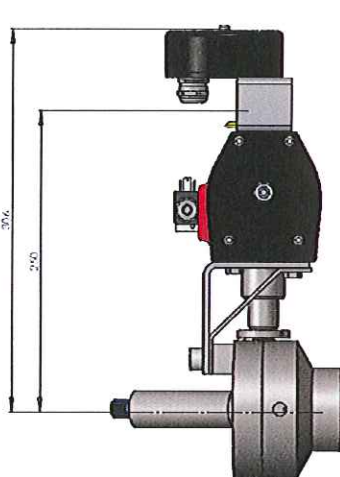
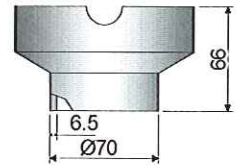
D-body

Figure 2- 3 Process connection types for Pasve pH

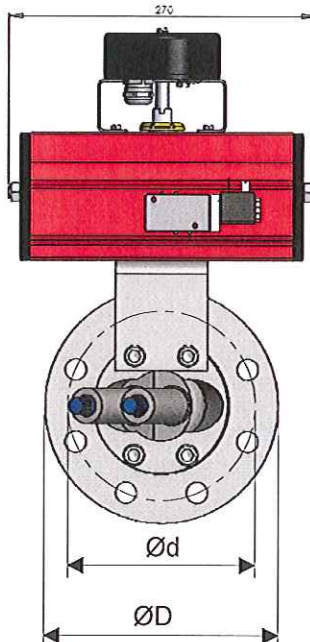
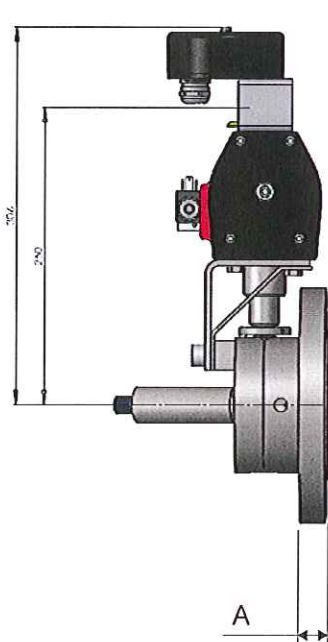
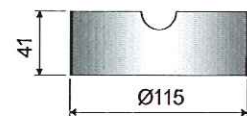




**PASVE DUAL P**  
Shape the body to be  
suitable to the pipe, welded)



**PASVE DUAL C**  
(Welded on container or  
horizontal pipe)



**PASVE DUAL F**  
(Flange type)

**PASVE pHF**

Code	Flange 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

**Figure 2- 4 Dimensions (in mm)**

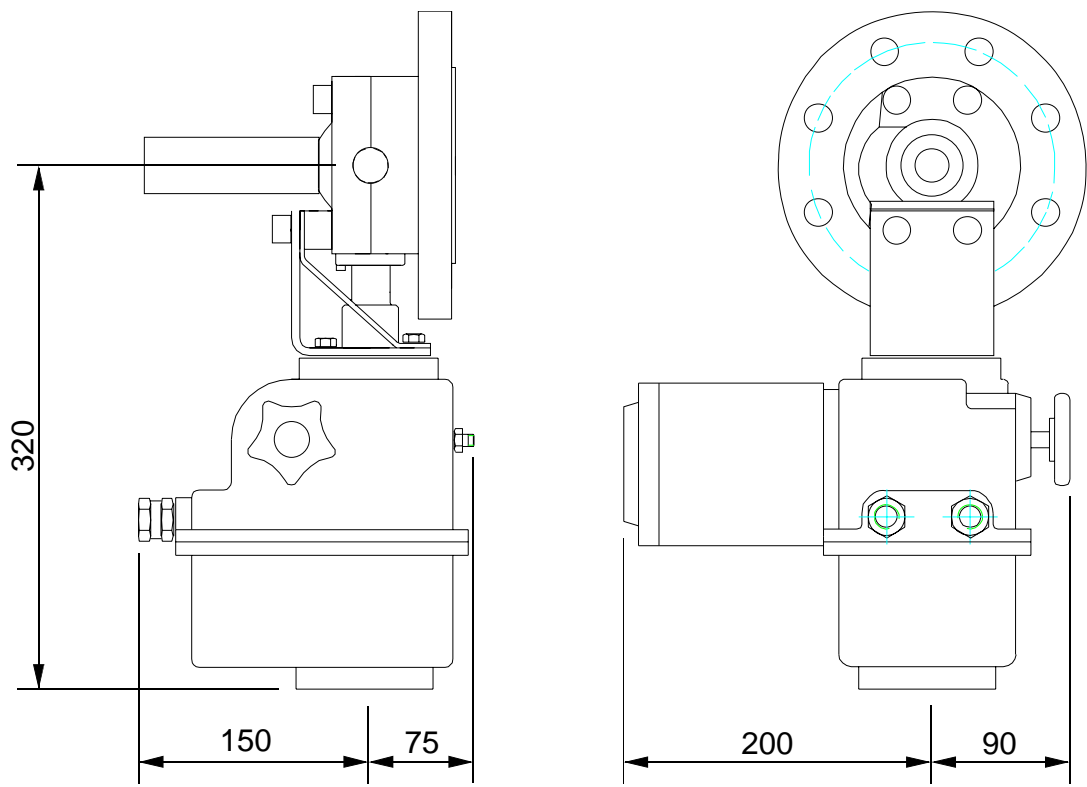
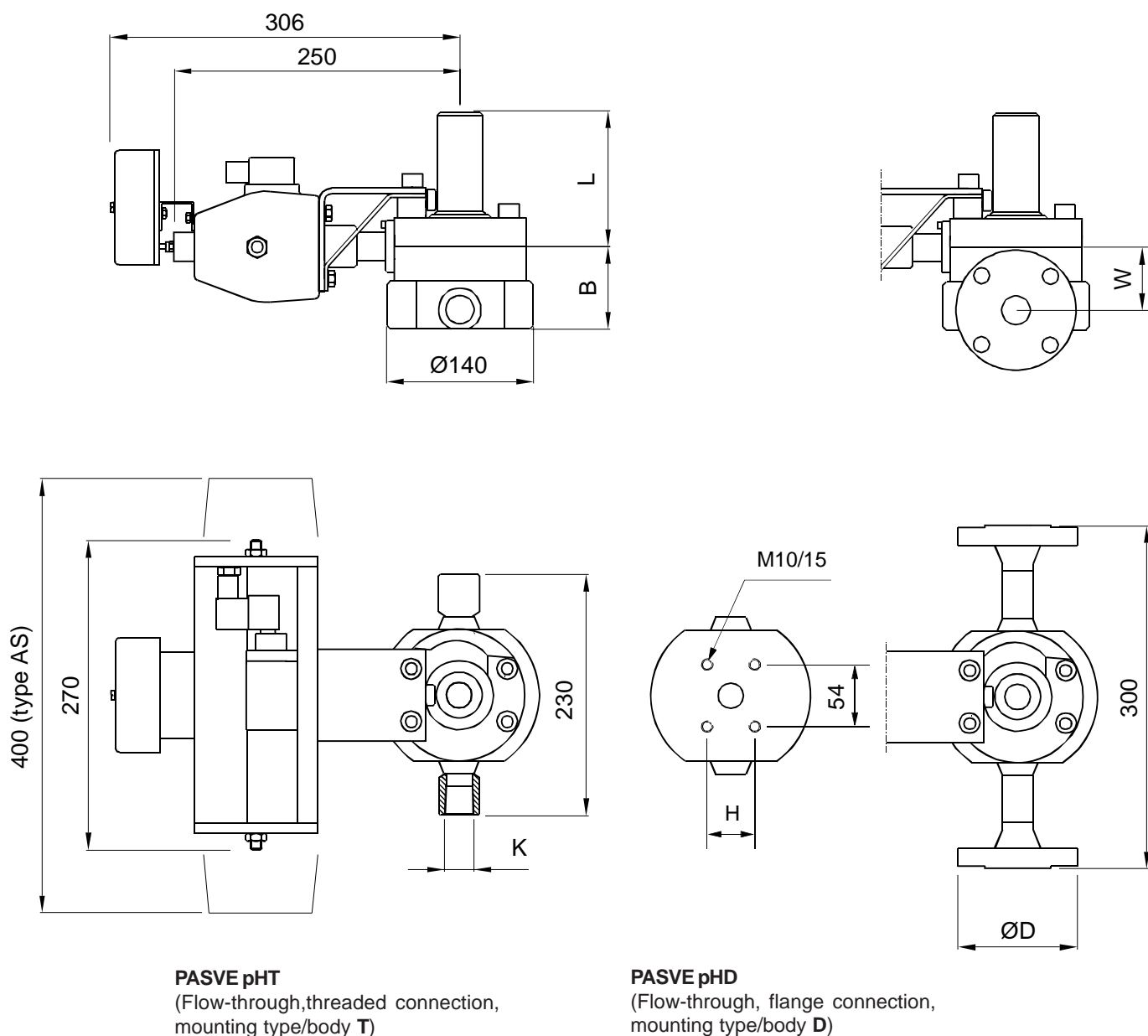


Figure 2- 5 Dimensions, Pasve pH with electric actuator



### PASVE pH<sub>T</sub>

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<sub>D</sub>

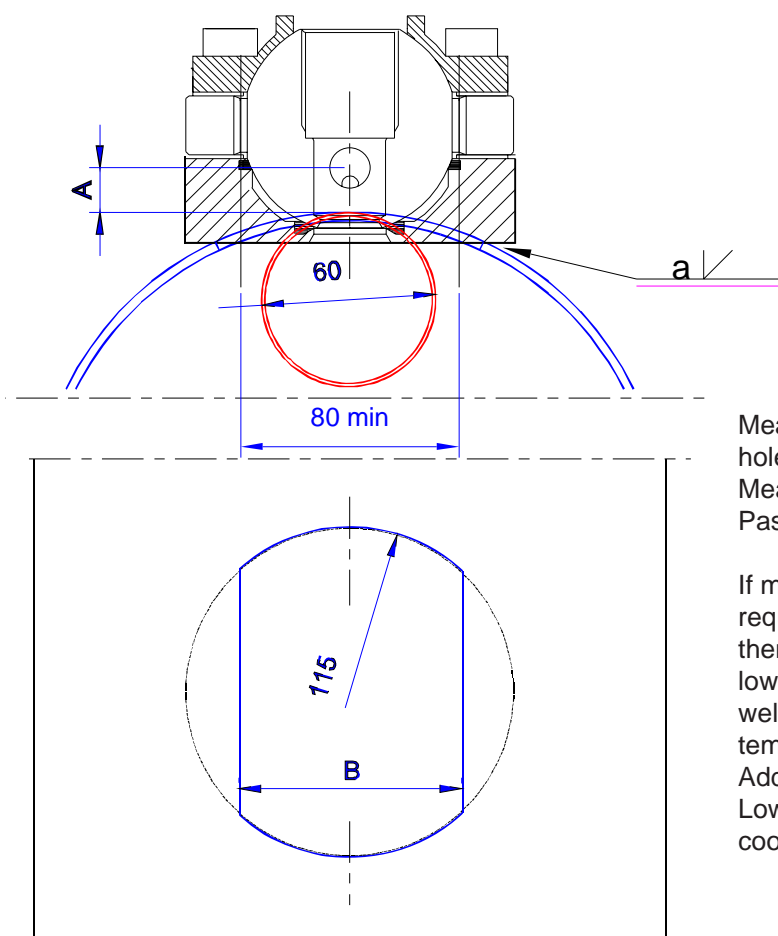
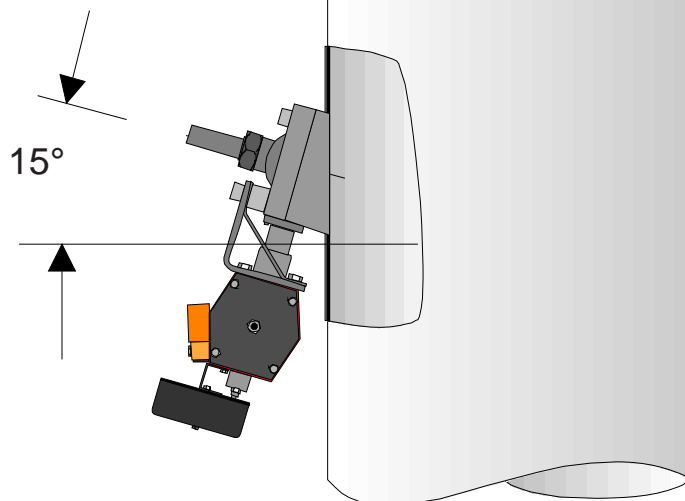
Flange Code	Type	W	ØD	H
H	ANSI 1" 150 lbs	55	108	48
J	ANSI 1" 300 lbs	55	124	48
U	ANSI 2" 150 lbs	68	153	76
V	ANSI 2" 300 lbs	68	165	76
G	DN25 PN40	55	115	48
T	DN50 PN40	68	165	76

**Figure 2- 6 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°.



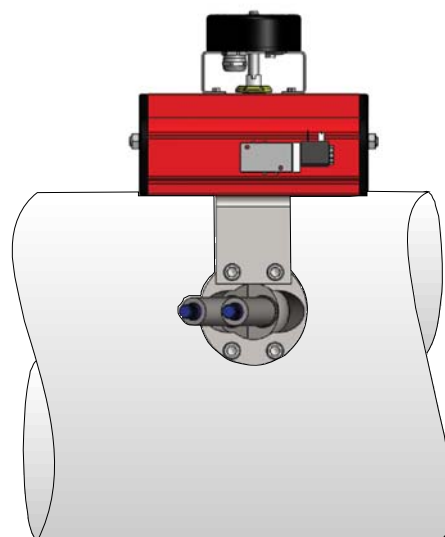
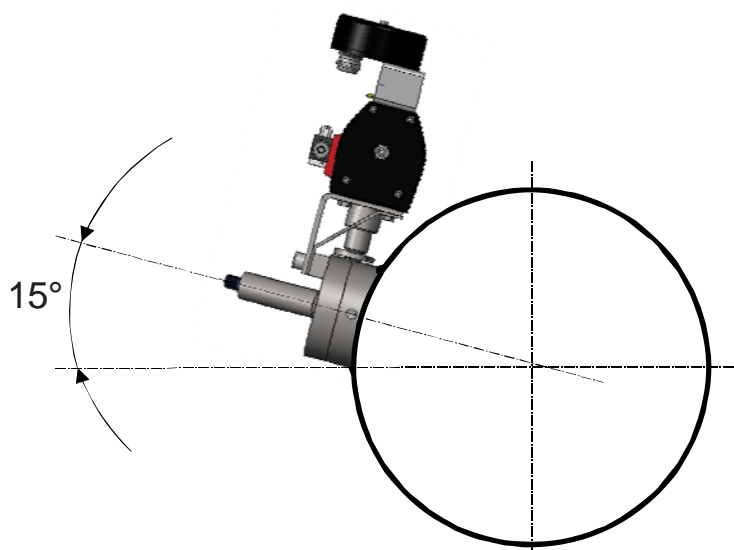
Measure A so that connectors for flushing holes can be connected

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.

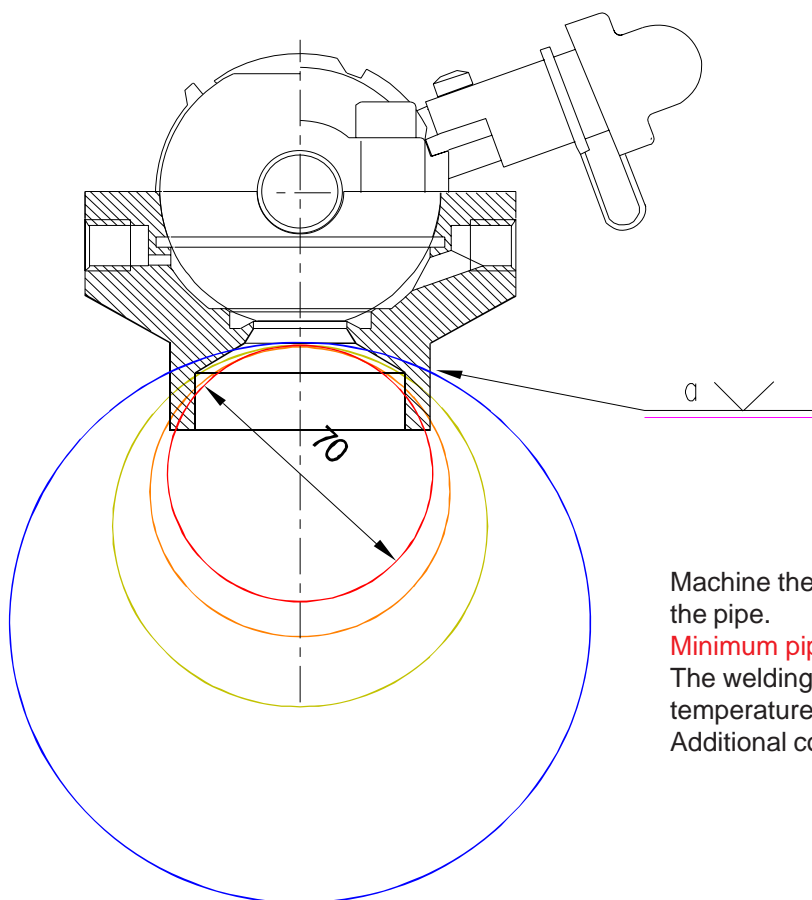
Figure 3-1 Installation in container or vertical pipe





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

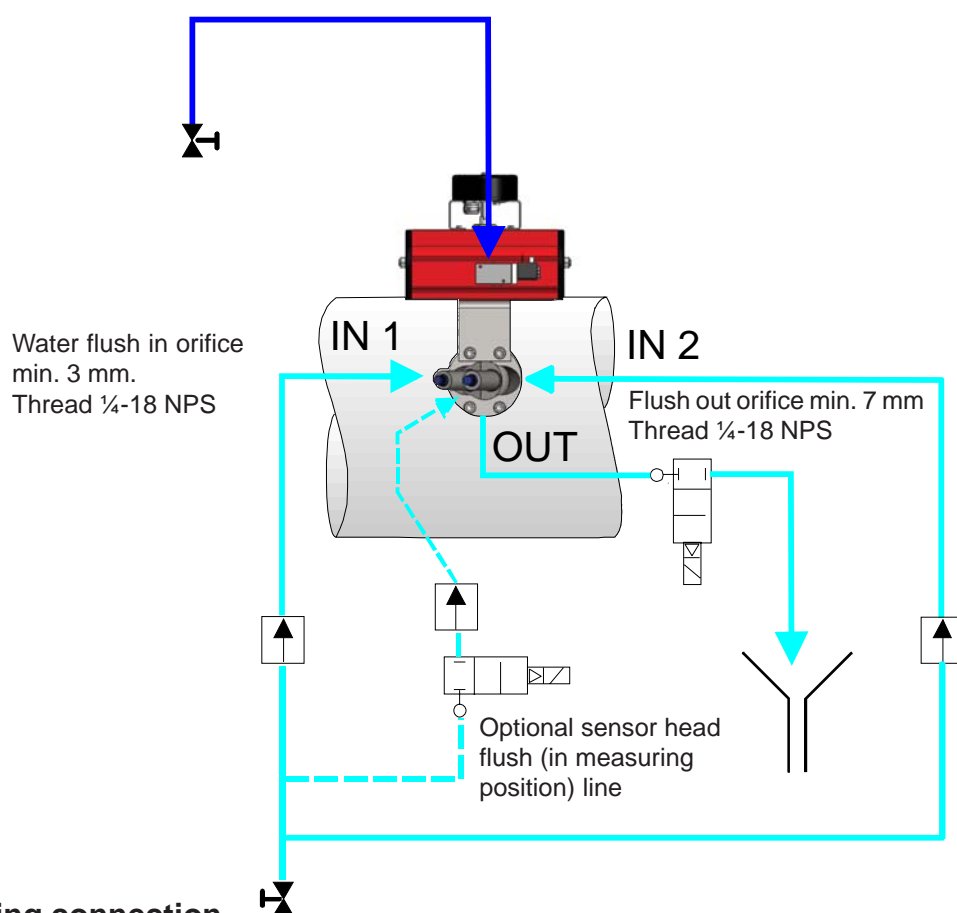


Figure 3-6 Flushing connection

## 3.3 COMPRESSED AIR INSTALLATION

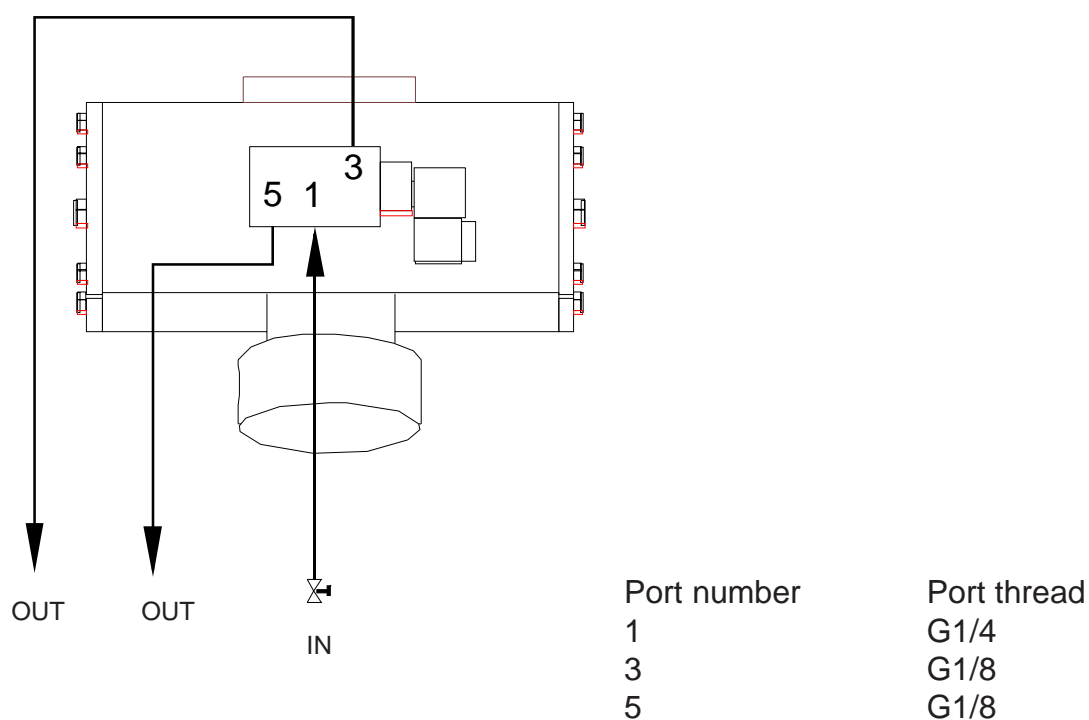
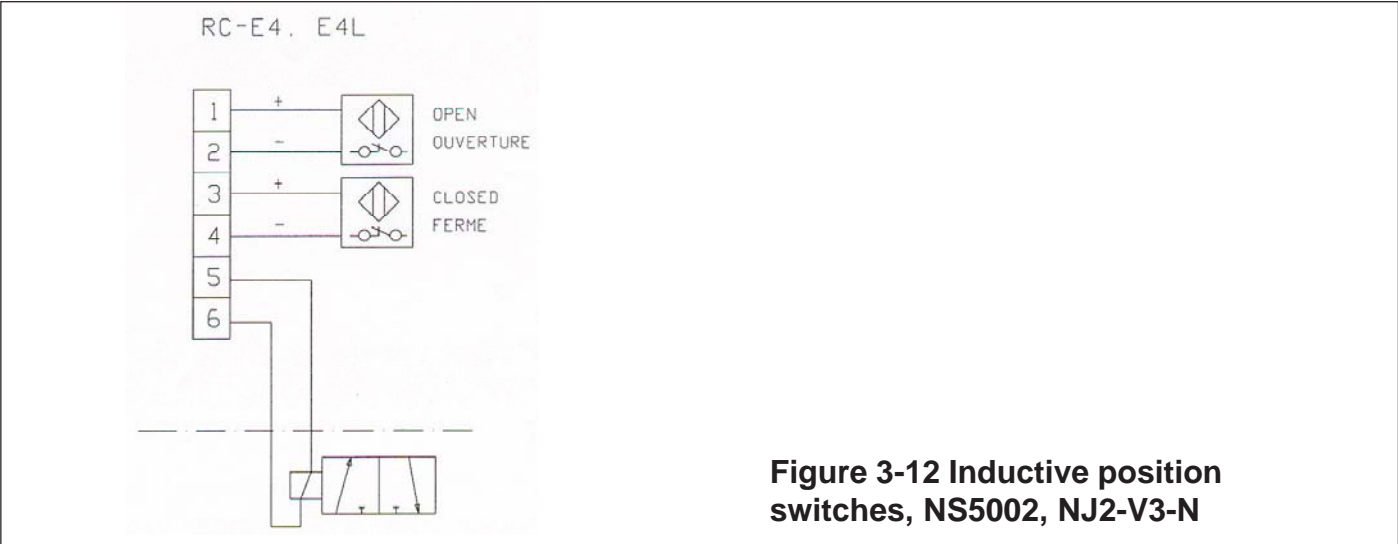
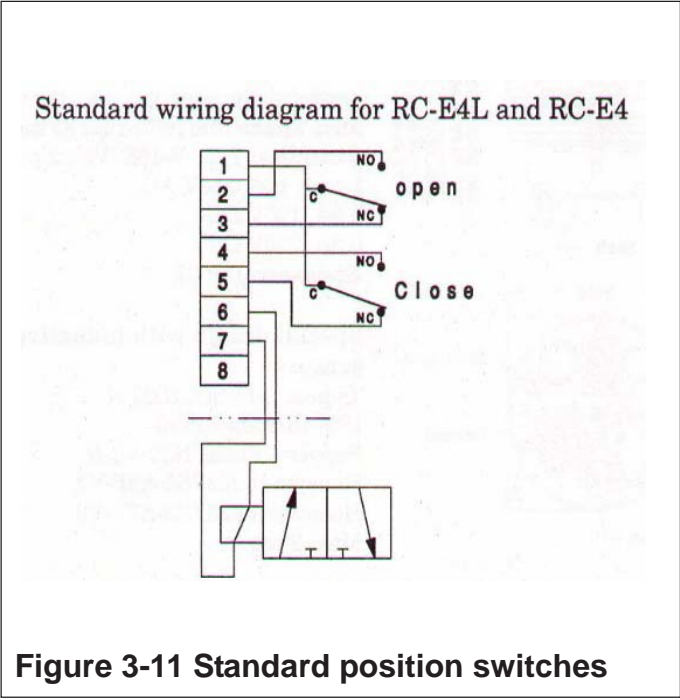
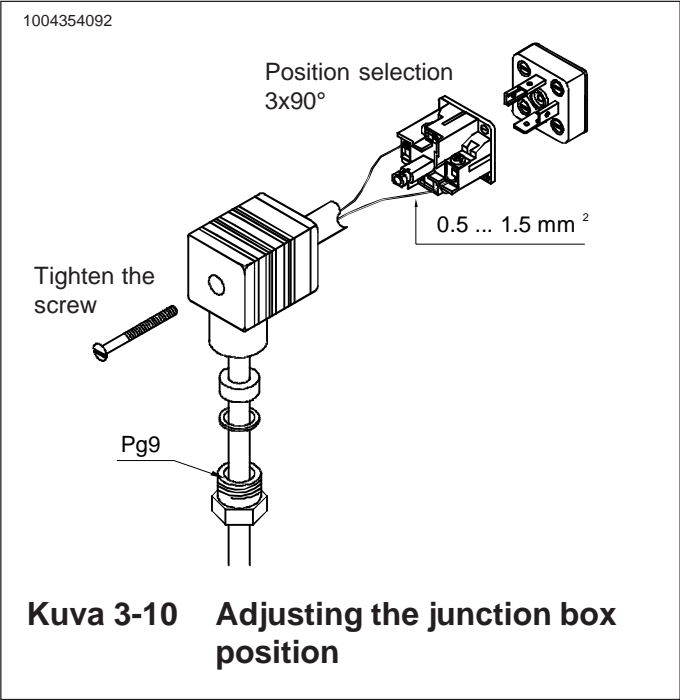
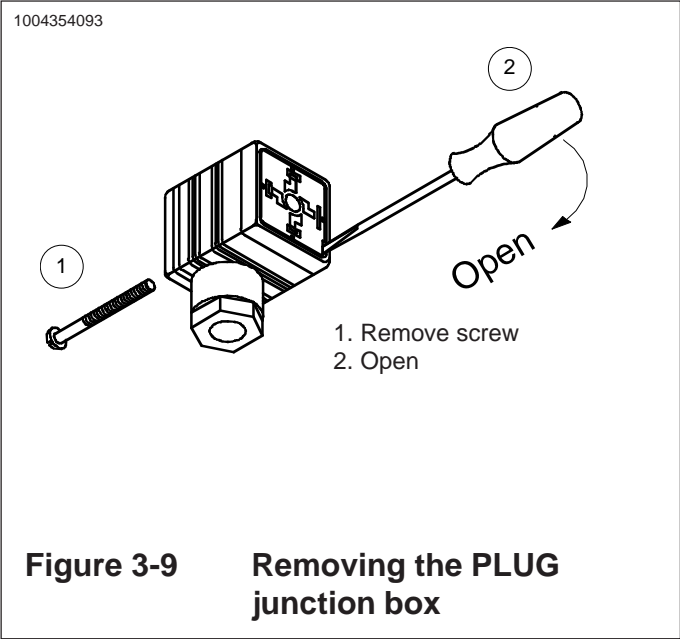
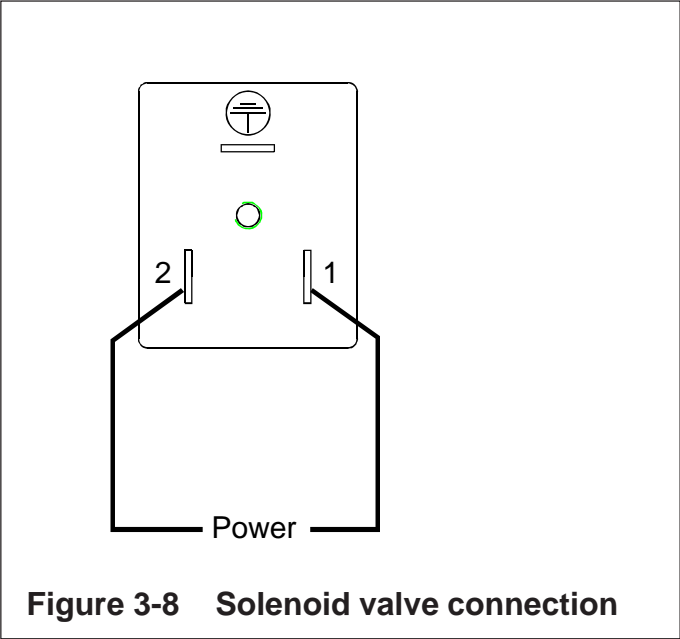


Figure 3-7 Pressure connection

3.4 ELETRICAL CONNECTION



# B BERNARD

www.bernard-actuators.com

Type	Torque Nm	Closing time secs/ 90°	Motor single phase	P kW	In A	Is 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

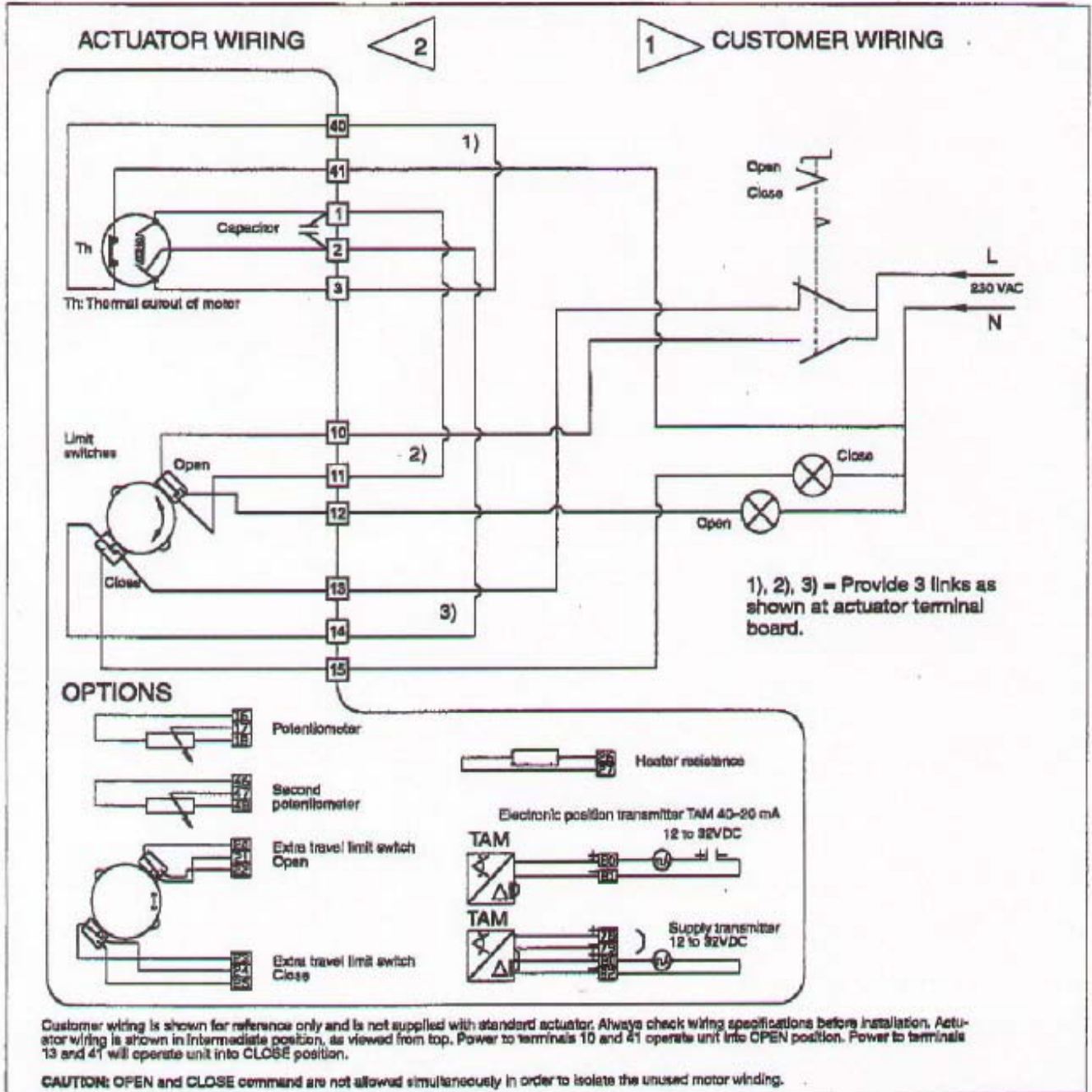
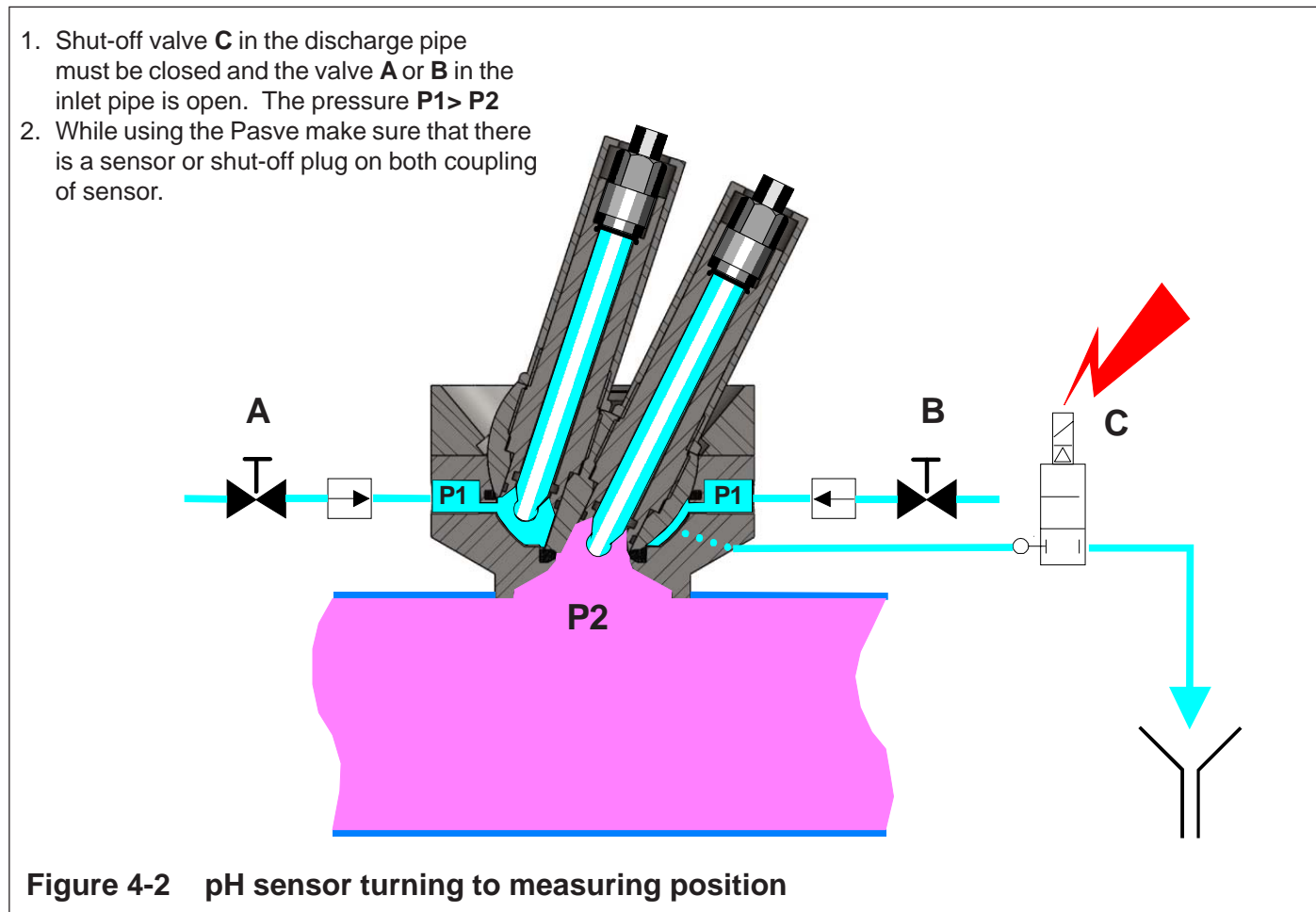
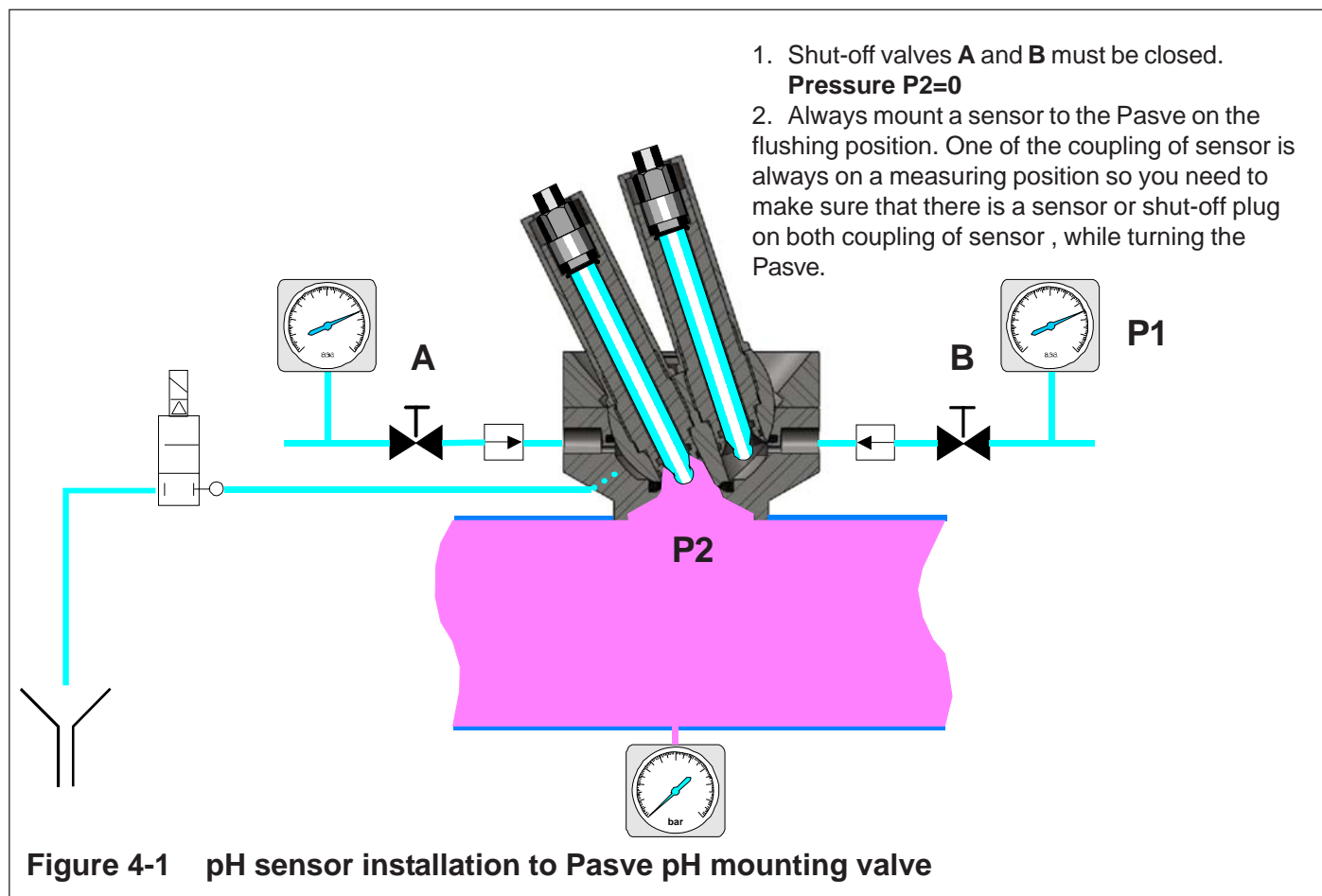


Figure 3-13 Electric actuator connection

## 4 SETTING-UP





1. Turn PASVE pH ball to flushing position.  
Depending on the flush sensors valve **A** or **B** open,  $P1 > P2$ )
2. Open valve **C** for flushing. Let flushing water run through PASVE so long time that the sensor will be clean.
3. Close the valve **C**
4. Return PASVE pH ball to the measuring position.

Many flushings rather than too few flushings!

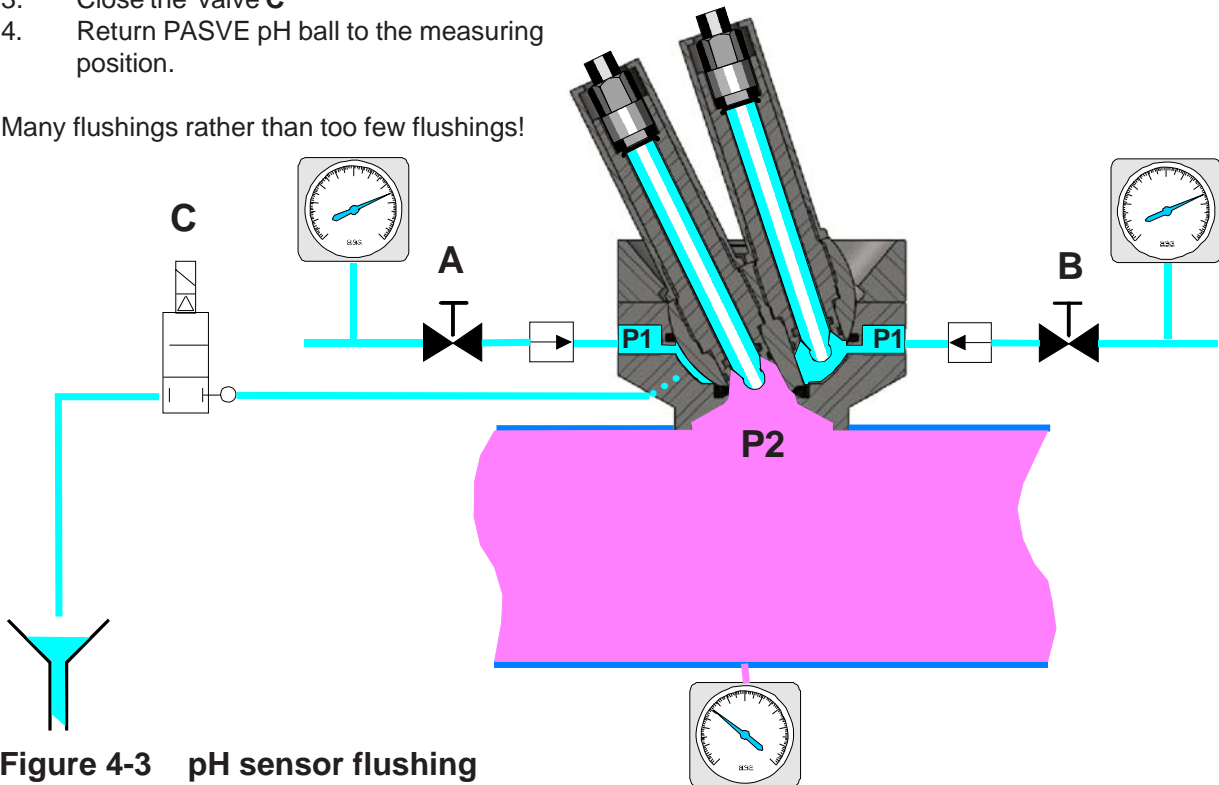
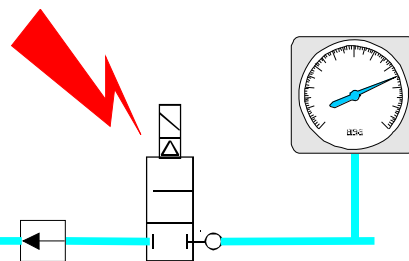
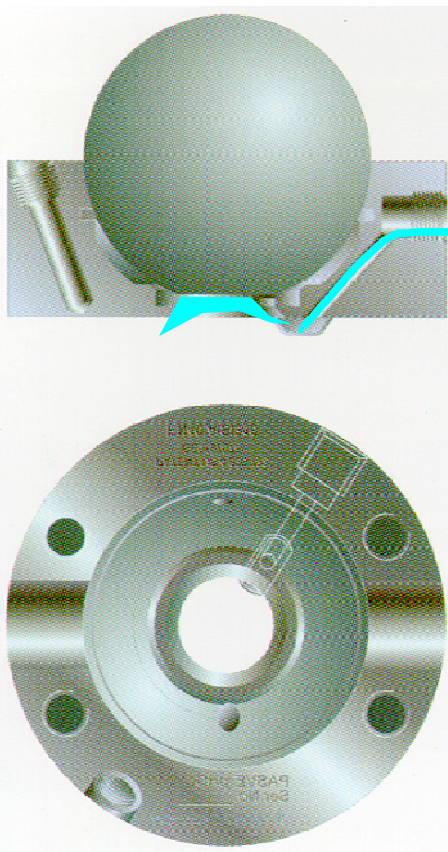


Figure 4-3 pH sensor flushing



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

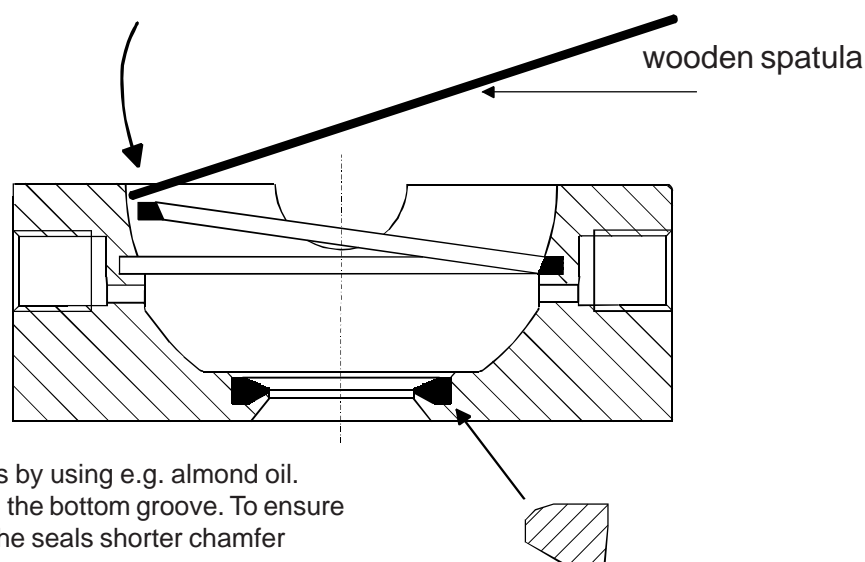
- M12 Allen key
- piece of wood to press seal in groove
- sharp, thin screwdriver to remove old seal
- cleaning paper or cloth to clean the grooves

#### 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 5-1.
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.



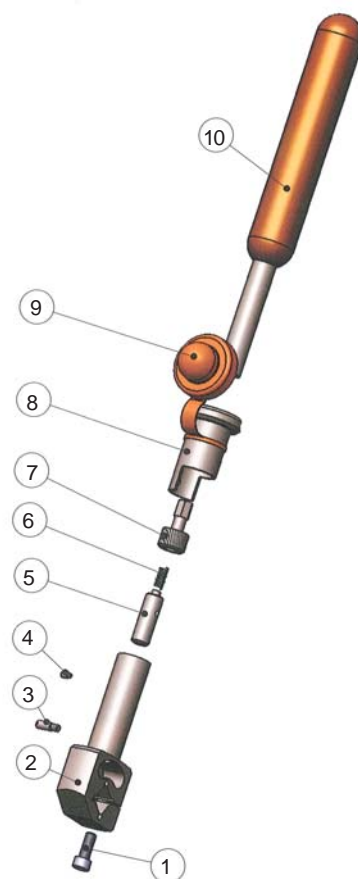
1. Properly grease the seals by using e.g. almond oil.
2. Place the smallest seal in the bottom groove. To ensure correct alignment place the seals shorter chamfer against the ball.
3. Press the seal as deep as possible into the groove with the use of a finger. Then press the seal carefully all around in place with a piece of wood. Since the final pressing requires the use of force, be sure to apply a uniform pressure on the piece of wood to avoid damaging the seals.

**Figure 5-1 Seals installation**

Part no.	Part name	Order code
1	Allen screw M4x6 SFS2219 A4	54426030
2	Lock body	T1015203
3	Pull-out screw	T550974
4	Retaining screw M4x6 DIN915 A4	53282403
5	Locking element	T552384
6	Pasve-spring	85547525
7	Lock screw	T547526
8	Pull-out sleeve	T550975
9	Protecting plug	44547518
10	Lever arm	44547539

Order code for locking piece assembly: (without lever arm, part no. 10)

Locking piece assembly, 65 deg	T552382
--------------------------------	---------

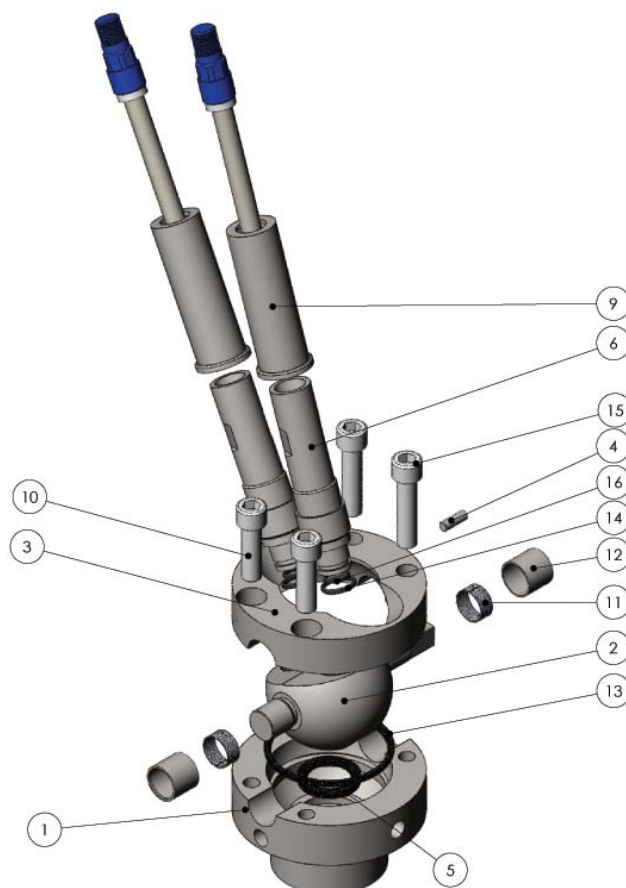


**Figure 5-2 Exploder view and part list, locking piece assembly**

Part no.	Part name	Order code
1	Body B, dual	T1015220
1	C, dual	T1015219
1	F, dual	T1015218
1	P, dual	T1015217
2	Ball DUAL, AISI 316L	T1015213
3	Bearing ring dual	T1015214
4	Lock pin	T552428
5	Sealing ring 3	80547534
6	Tube adapter	T1015215
7	Cylindrical pin 10x24 ISO6325 A4	57481326
9	Protective tube	T1015216
10	Allen screw M12x30 SFS2219 A4	54428138
11	Bearing strip	T547516
12	Bearing sleeve	T547529
13	Sealing ring 1	80547532
14	o-ring Ø17x2,5 FPM	80011725
15	Allen screw M12x30 SFS2219 A4	54428240
16	o-ring Ø11x2,5 FPM	80011125

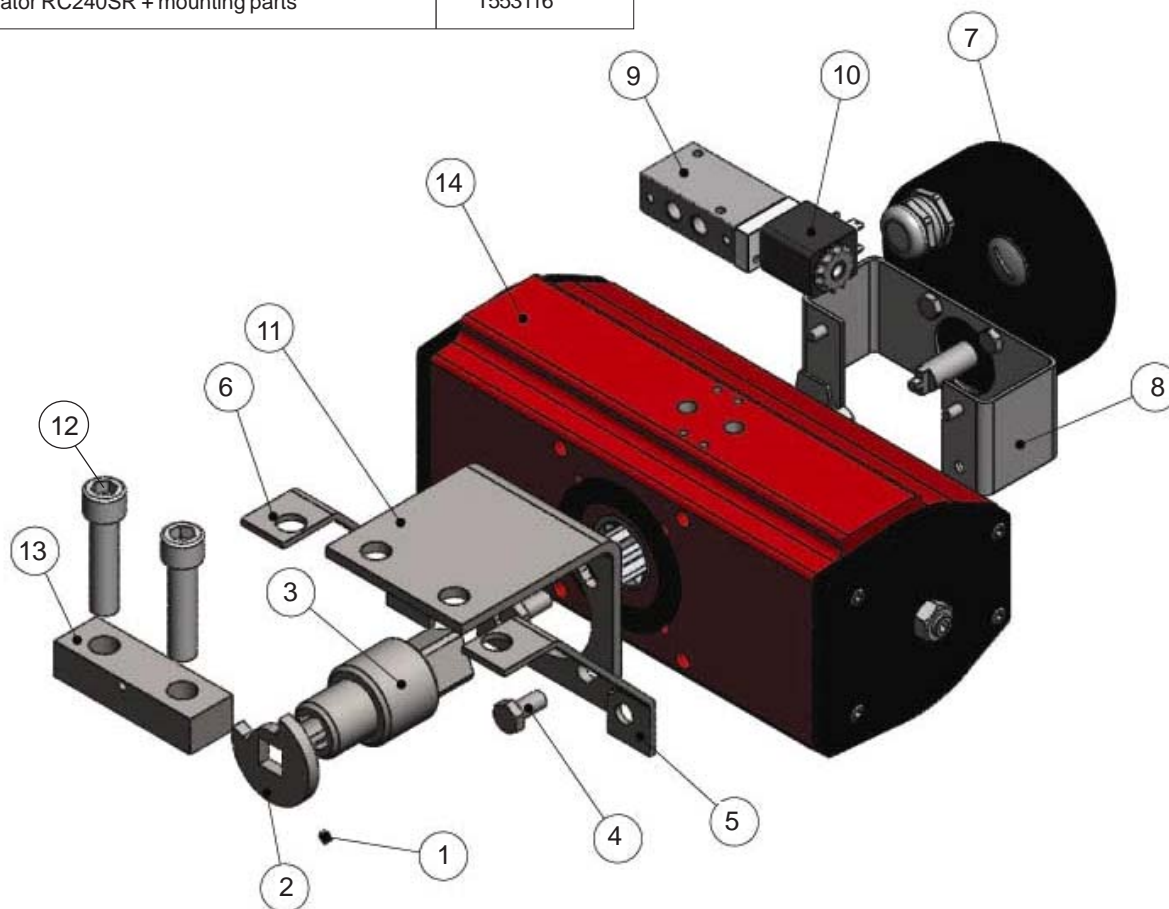
Pasve DUAL-valve assembly order codes:  
(without locking piece assembly and actuator assembly, material AISI316L)

Pasve DUAL- B200	MDUAL-B200
Pasve DUAL-C200	MDUAL-C200
Pasve DUAL-F0200	MDUAL-F0200
Pasve DUAL- P200	MDUAL-P200

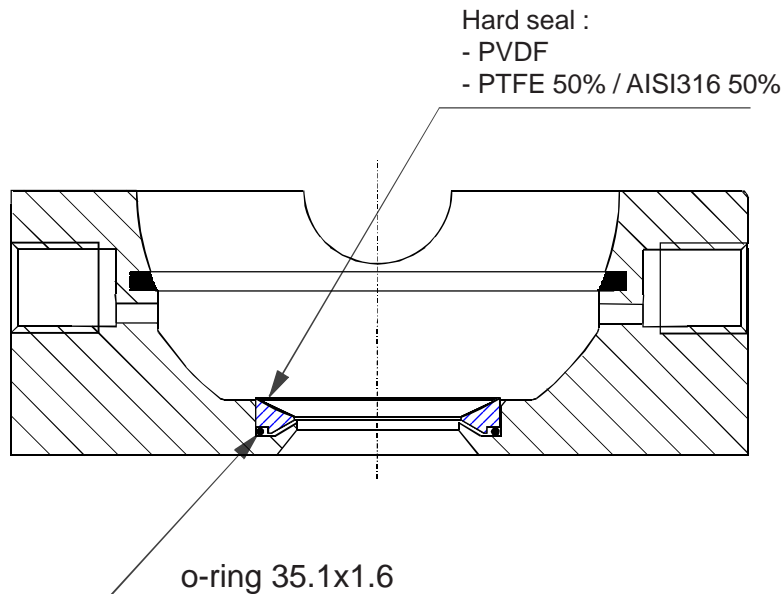


**Figure 5-3 Exploder view and part list, Pasve pH-U mounting valve**

Part no.	Part name	Order code
1	Retaining screw M4x6	53322400
2	Limit stop	T550994
3	Switch	T553106
4	Hex screw M8x20 A4	54220820
5	Brace	T552946
6	Brace	T552947
7	Position indicator stand. micro-switch	82920022
	Position indicator Namur-switch	82920028
8	Mounting parts for position indicator	82920019
9	Solenoid valve Lucifer 341N 01	82920031
10	- Coil 2110 220V 50Hz (2W) or	82920033
	- (Coil 488980 3D 230V50Hz (2W))	
	- Coil 488980 6J 110V60Hz (2W)	82920034
	- Coil 488980 C2 24VDC (2.5W)	82920035
	EEx me II T5-coil:	
	- Coil 488980 3D 230V50Hz (2W)	82920037
	- Coil 488980 6J 110V60Hz (2W)	82920038
	- Coil 488980 C2 24VDC (2.5W)	82920040
	Solenoid valve EEx ia IIC T6	82920042
	- Coil 28 V DC 0.4 W EEx ia IIC T6	82920043
11	Actuator bracket	T552945
12	Allen screw M12x70 A4	54428247
13	Spacer	T551008
14	Actuator RC240 DA (double-action)	82920020
	Actuator RC240 SR (spring return)	82920021
Order codes for actuator assembly: (without position indicator, parts no. 7 and 8 and without coil, part no. 10)		
Actuator RC240DA + mounting parts		T553113
Actuator RC240SR + mounting parts		T553116



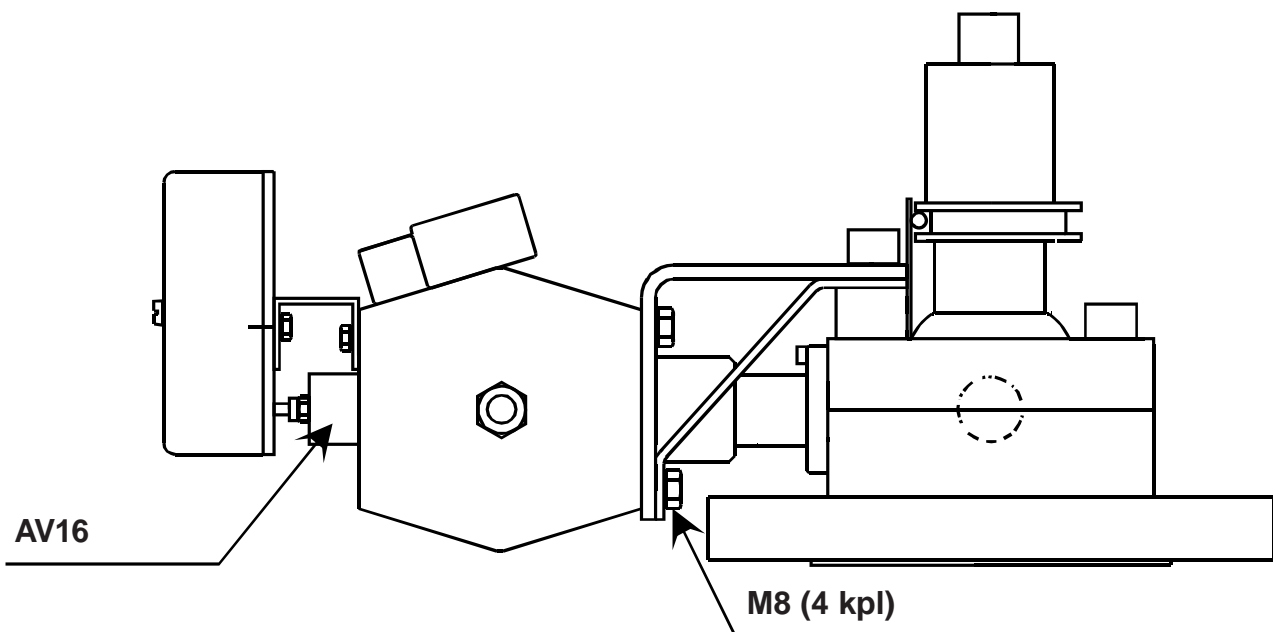
**Figure 5-4** Exploder view and part list, actuator assembly



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 5-5 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 5-6 Changing the actuator**



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