

# CLORIUS CONTROLS 3-WAY CONTROL VALVES

## TYPE Soft Seated

NODULAR CAST IRON, DN 80 – 300 mm

### Instructions



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## General safety instructions

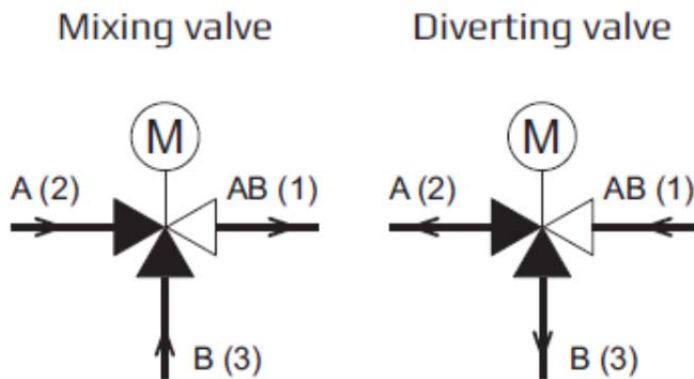
The valves must be installed and serviced by fully trained and qualified personnel only, observing the accepted industry codes and practices. Make sure employees or third persons are not exposed to any danger.

## DESIGN

The valve components (seats and cone) are made of gun metal, the spindle of stainless steel. The valve body is made of nodular cast iron and the valve flanges are drilled according to EN 1092-2 (JIS B 2210 option). The valve has two balanced single seats and the port AB-B is designed 100 % tight.

## PORT NUMBERING

The ports of valves type Soft Seated are marked with the letters AB, A and B. The letters in parentheses refer to the corresponding internationally adapted designations.



Port AB (1) common port always open  
Port A (2) closes at load on spindle  
Port B (3) opens at load on spindle

## FUNCTION

The valve cone is firmly connected with the motor spindle. When the valve cone is in the one extreme position by draw on the spindle, connection A-AB is kept fully open and connection B-AB is fully closed. In the other extreme position connection A-AB is fully closed and connection B-AB is fully open. In the intermediate positions the opening degrees change proportionally.

## TECHNICAL DATA

Materials:	- Valve body	Nodular cast iron EN-GJS-400-15
	- Trim	Gun metal RG 5 CuSn5Zn5Pb5-C
	- Valve spindle	Stainless steel (W.no. 1.4436)
Nominal pressure		
	DN 80-200	PN 16 (max.150°C)
	DN 300/250-300	PN 10 (max.150°C)
	DN 80-300	JIS 10K (option)
Seats		2 balanced single seats
Valve characteristic		Almost linear
Leakage	Port AB-B	0.0%
Temperature range		Max. 150°C
Mounting		See below
Flanges		According to EN 1092-2, PN 16 & PN 10
- option:		According to JIS B 2210 10K
<b>Note !</b> Valve DN 200/175 has outer measures and flanges drilled as valve DN 200. Valve DN 300/250 has outer measures and flanges drilled as valve DN 300.		

Counter flanges (suggested for EN 1092-2)

DN 80-200:	DIN 2633 – PN 16
DN 300/250-300:	DIN 2632 – PN 10

## Maintenance

The soft seals for DN200-300 (Fig 1: o-rings pos. 3+8+9, and u-ring pos. 5) and DN80-150 (Fig. 2: o-rings pos. 8+11+12, and u-ring pos. 7) have a durability of approximately 8 years. However, it is recommended that the soft seals are inspected and changed every 4 years if possible. For DN 80-DN150 it is also recommended that spindle and cone are changed every 4 years if possible.

Fig .1 DN200-300

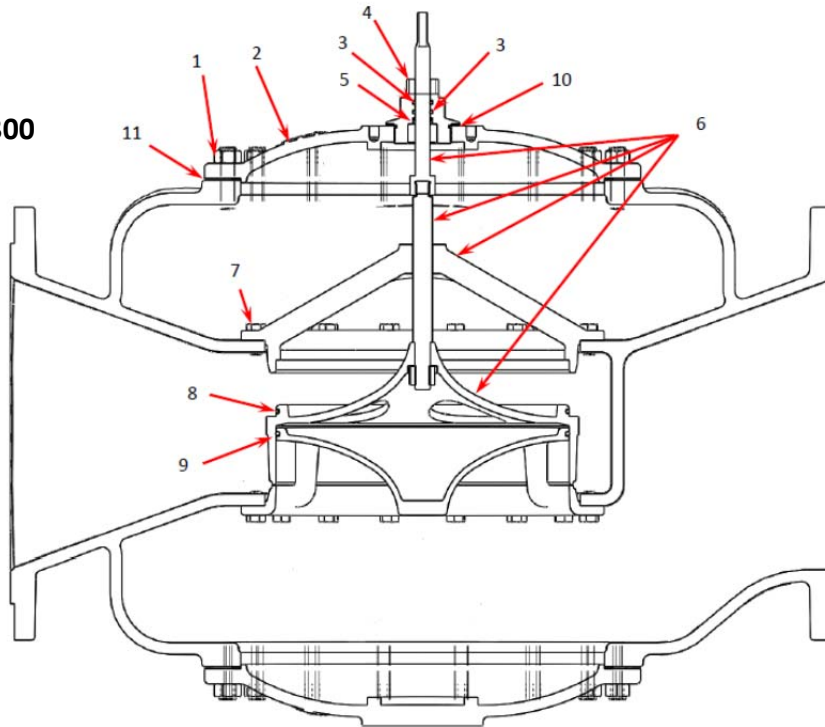
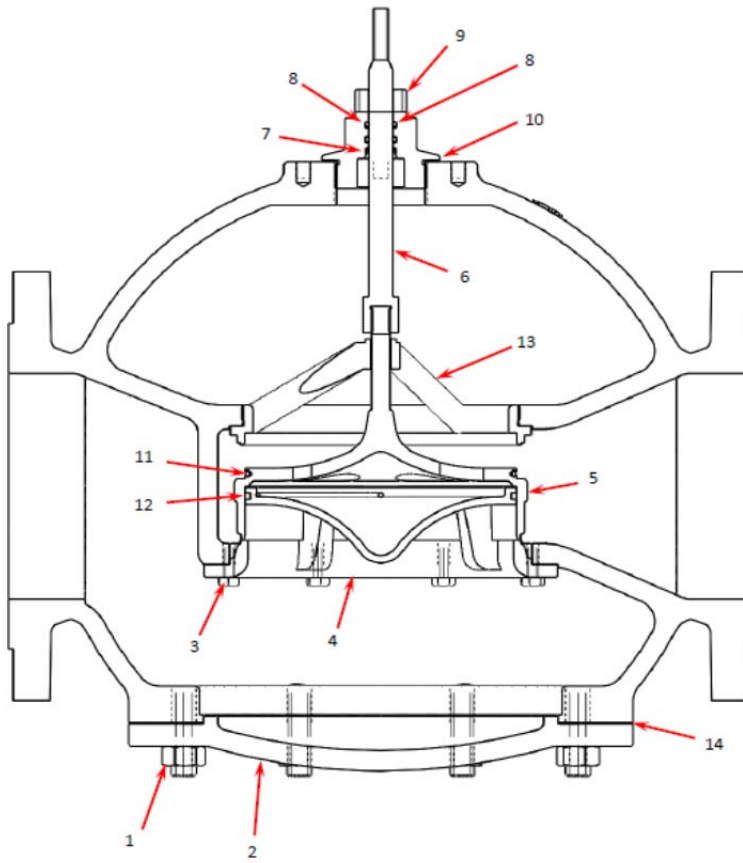


Fig. 2. DN80-150



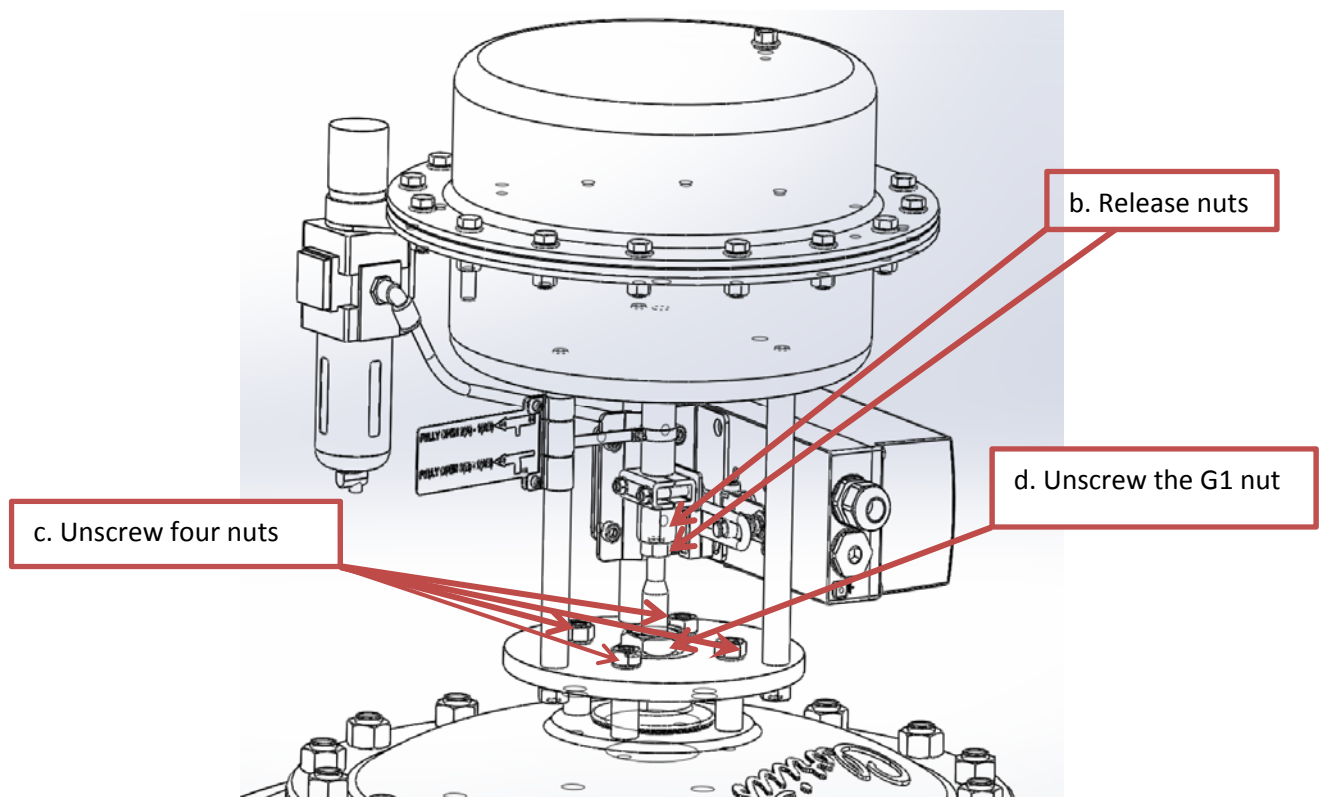
## 1.1 Disassembly Pneumatic Actuator from the valve:

### Step 1:

Disconnect the following items in sequence (fig. 3):

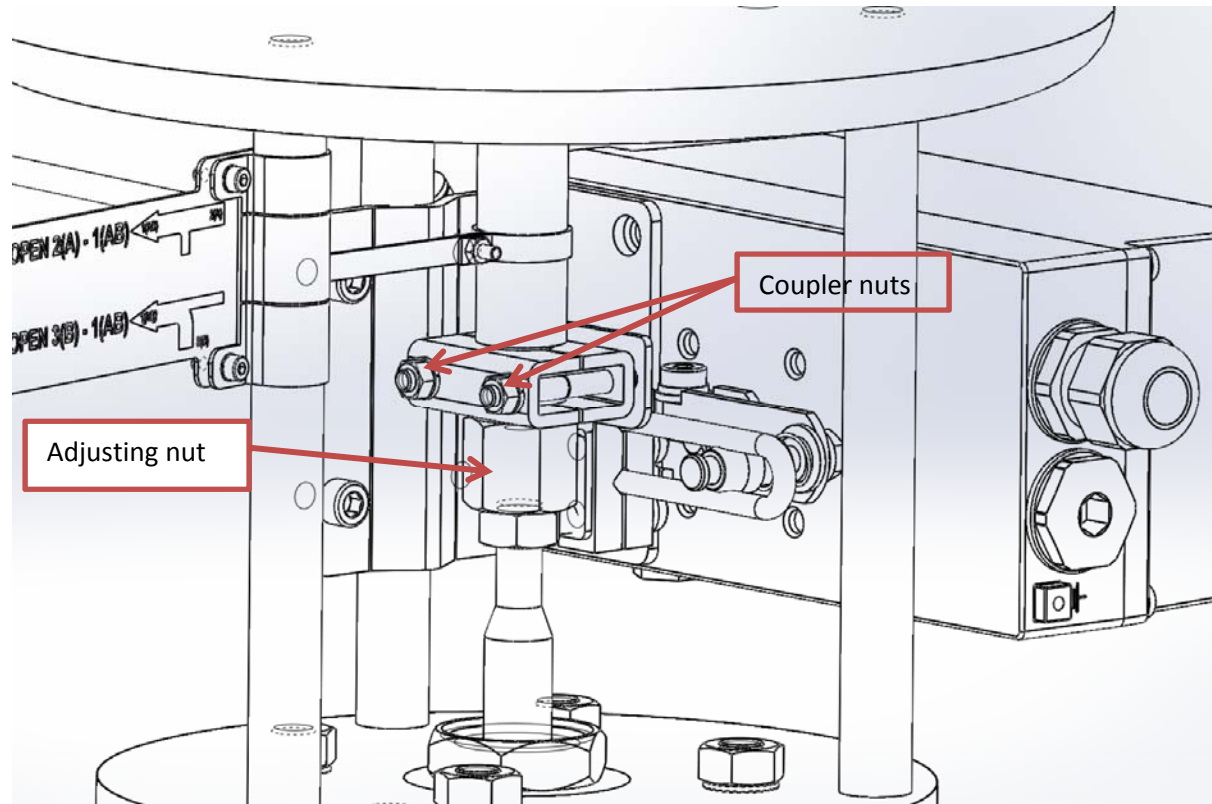
- a. Pipes from SIPART PS2 positioner
- b. Release connection of two nuts
- c. Unscrew four nuts
- d. Unscrew the G1 nut

Fig. 3



## Step 2:

Release nuts from the coupler then unscrew the adjusting nut and remove Pneumatic Actuator from the valve. (Fig. 4)



**Fig. 4**

### **2.1 Maintenance of valves DN200, DN 200/175, DN300 and DN300/250 – Fig 1.**

- A. Remove positioner and actuator by following instruction 1.1. (page 4).
- B. Dismantle screw-joint for cover (pos. 4) - Note: Loctite has been added to protect against vibrations.
- C. Remove bolts (pos.1) –Note: Loctite has been added to protect against vibrations.
- D. Remove cover (pos. 2). Replace gasket (pos 11). -See Appendix of spare part list for correct item number
- E. Remove all seat bolts (pos. 7) -Note: Loctite has been added to protect against vibrations.
- F. Remove spindle, cone and all connected parts as one unit (pos. 6) by lifting them up.
- G. Change O-ring (pos. 3+8+9) -See Appendix of spare part list for correct item number.
- H. Change U-ring (pos. 5) -See Appendix of spare part list for correct item number.

- I. Follow instructions 2.1 in reverse order to assemble the valve. Remember to add Loctite again at step E,C and B.
- J. Follow instructions 3.1 (page 9) how to assemble the pneumatic actuator with the valve.

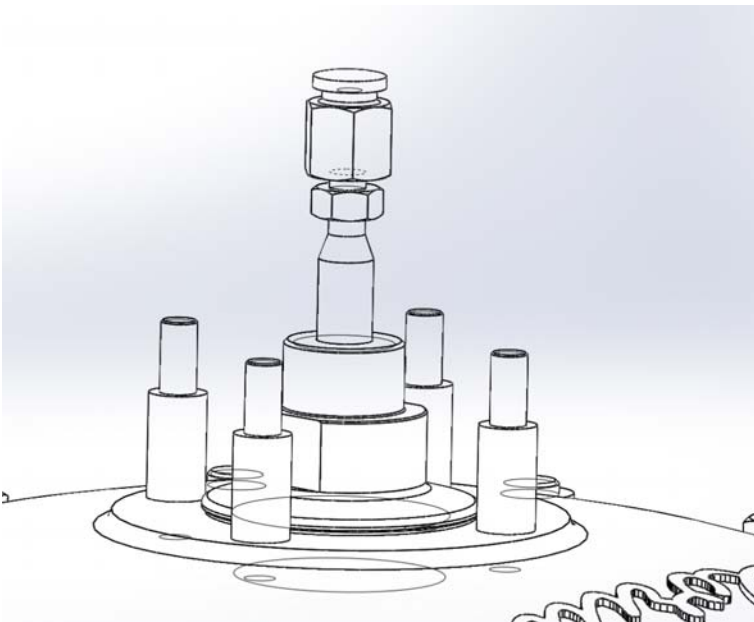
## **2.2. Maintenance of valves DN80-150 – Fig. 2**

- A. Remove positioner and actuator following instructions 1.1.
- B. Remove all nuts (pos. 1) - Note: Loctite has been added to protect against vibrations.
- C. Remove cover (pos. 2) Replace gasket (pos 14). -See Appendix of spare part list for correct item number
- D. Remove bolts (pos. 3) – Note: Loctite has been added to bolts for protection against vibrations. For DN80-DN100 which have no bolts the seat is screwed tight and Loctite has been added to the threading.
- E. Remove lower seat (pos. 4). Replace o-ring (pos. 12) -See Appendix of spare part list for correct item number
- F. Remove screw joint (pos. 9) Note: Loctite has been added to protect against vibrations.
- G. Replace gasket (pos. 10), replace o-ring (pos. 8), replace u-ring (pos. 7) -See Appendix of spare part list for correct item number
- H. Unscrew spindle (pos. 6) Note: Loctite has been added to protect against vibrations.
- I. Remove cone (pos. 5) through the bottom opening.
- J. Replace cone (pos. 5) with new cone and new o-ring (pos. 11) -See Appendix of spare part list for correct item number.
- K. Replace spindle (pos. 6) with new spindle. Connect the cone (pos. 5) and spindle. Add Loctite.
- L. Mount lower seat (pos. 4) and fasten bolts (pos. 3). Add Loctite.
- M. Mount gasket (pos. 14), cover (pos. 2). Add Loctite to nuts (pos. 1) and fasten them.
- N. Mount screw-joint (pos. 9). Add Loctite.
- O. Follow instructions 3.1 (page 9) how to assemble the pneumatic actuator with the valve.

### 3.1 Assembly Pneumatic Actuator with the valve:

#### Step 1:

Screw Adjusting Nut on the valve spindle all the way to the end position.(Fig. 5)



**Fig.5**

#### Step 2:

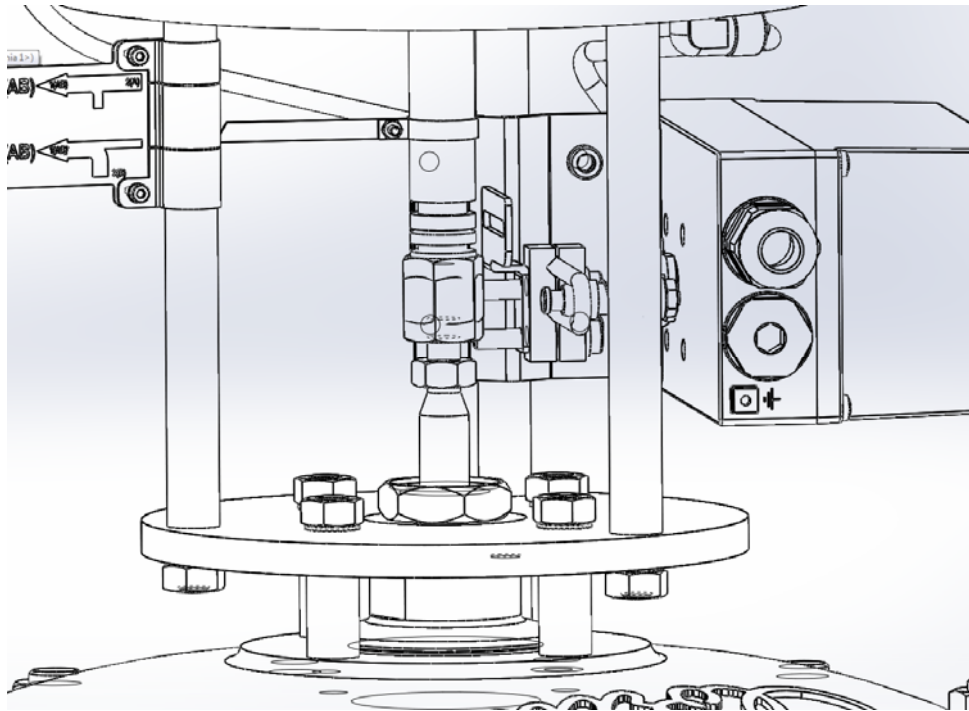
Place the Pneumatic Actuator on the stud bolts and fasten the plate actuator by screwing the nuts on the stud bolts (use special washer under nuts).

Fasten G1 nut on the plate.

Adjust “adjusting nut” by unscrewing until it touches the spindle surface from actuator side.

Tighten nuts.(Fig. 4)





**Fig.6**

**Step 3:** Connect lever positioner by using couplers between adjusting nut and pneumatic spindle.

Tighten nuts.

Feed in pneumatic supply power into positioner and repeat commissioning process.(Fig.6)

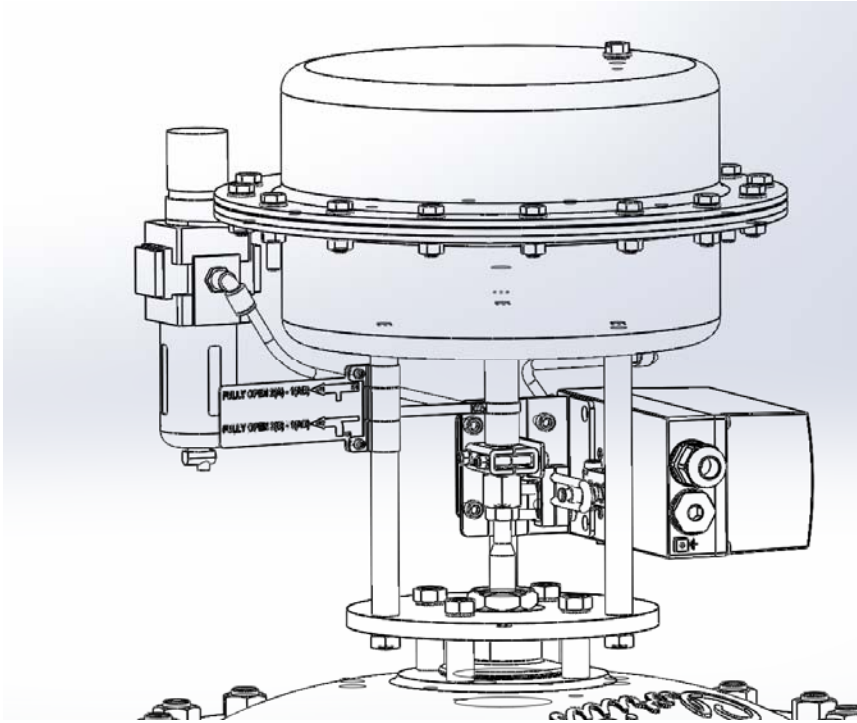


Fig.7

**Important! Use Loctite for all screw connections that were disassembled.**

## Strainer

It is recommended to use a strainer in front of the control valve if the liquid contains suspended particles.

## Transport and storage

The valve must be transported and stored dry and clean. In humid rooms, a drying material or heating must be used to avoid condensation.

During transport and intermediate storage the valve should not be exposed to temperatures lower than  $-10^{\circ}\text{C}$ .

The valves are painted (top coated) on the outside. This coating must remain without damage, otherwise the faulty spots must be repaired immediately.

The standard packaging protects valves and equipment against rain and snow during trucking.

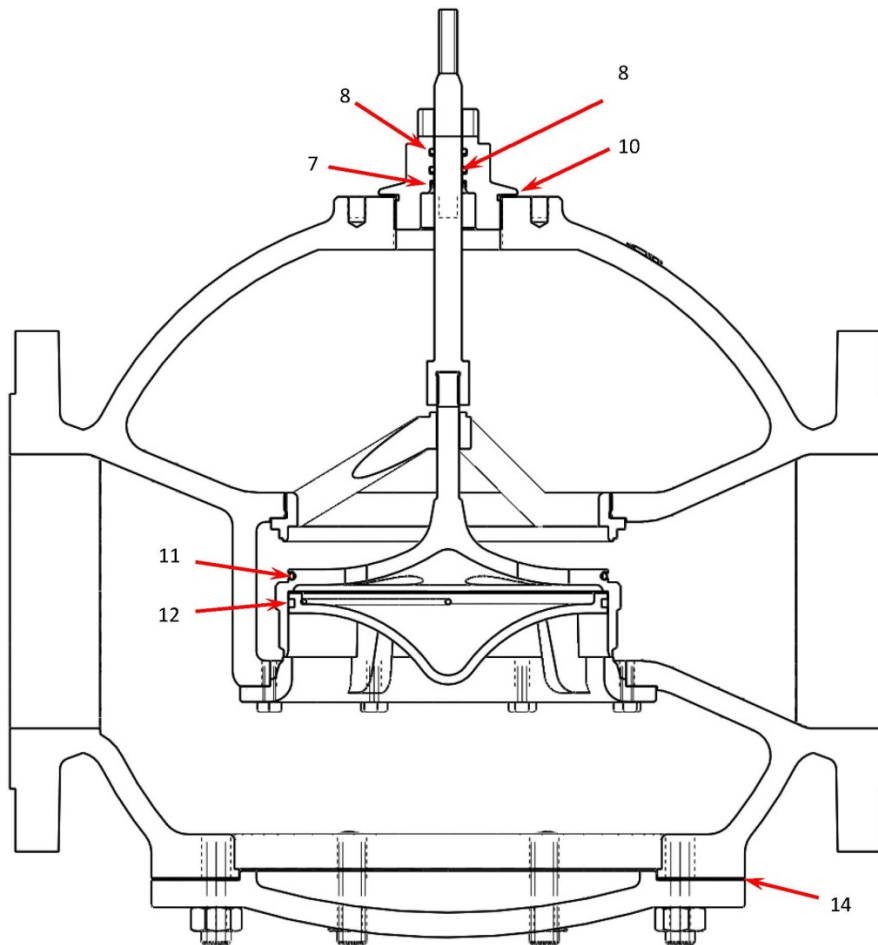
For critical transports such as sea freight equipment will be protected by VCI (Volatile Corrosion Inhibitor) material.

If protected by VCI do not remove the packaging until the equipment is going to be installed.

## APPENDIX

### Packing set for Soft Seat Valves DN80-150

DN80	-	2992201
DN100	-	2992203
DN125	-	2992205
DN150	-	2992207



7	-	U-ring sealing
8	-	O-ring
10	-	Gasket
11	-	O-ring for cone
12	-	O-ring for seat
14	-	Gasket

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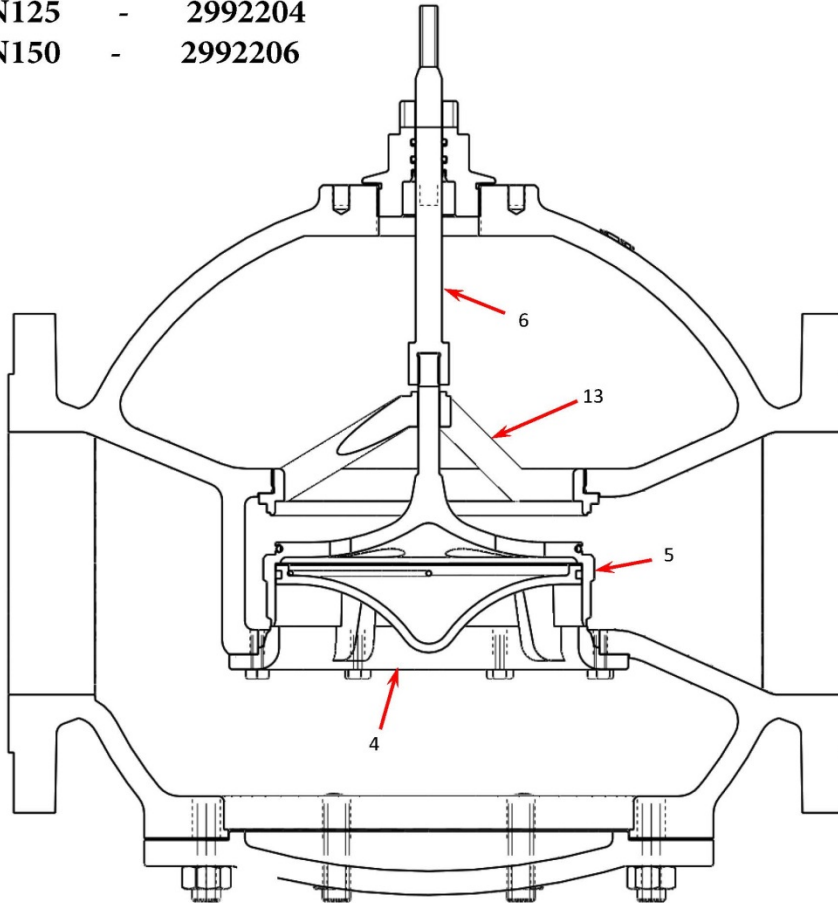
## Sparepart kit for Soft Seat Valves DN80-150

DN80 - 2992200

DN100 - 2992202

DN125 - 2992204

DN150 - 2992206



4 - Lower seat

5 - Cone

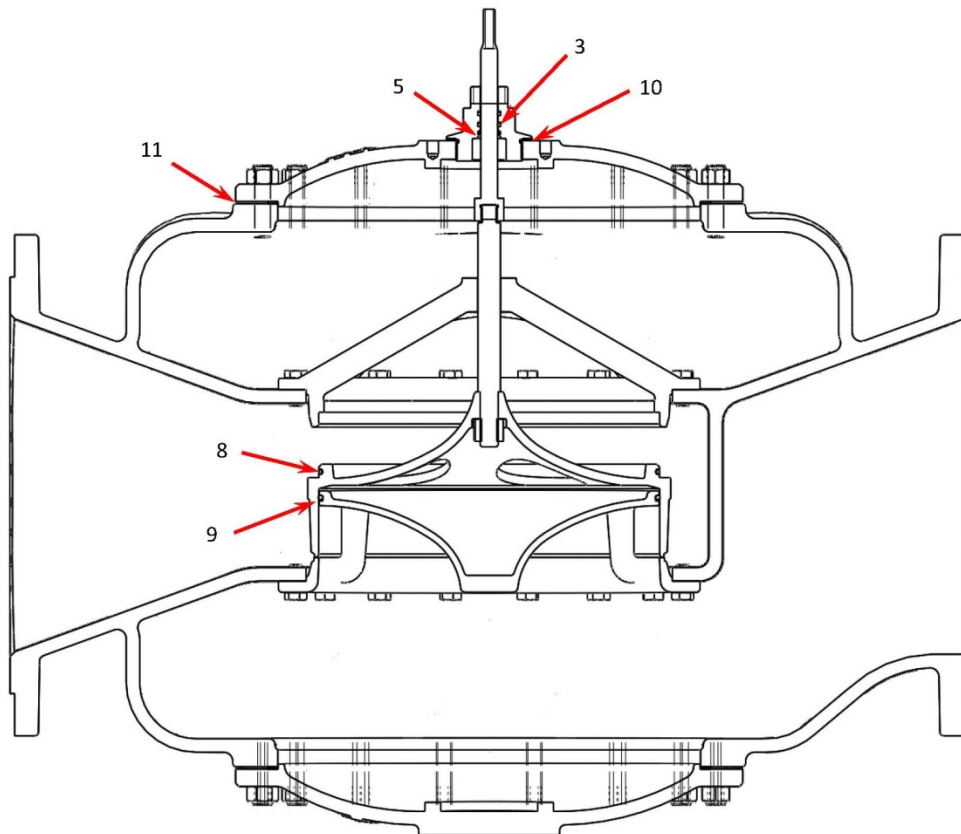
6 - Spindle

13 - Upper seat

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## Packing set for Soft Seat Valves DN200/175-300

DN200/ 175 - 2992209  
DN200 - 2992211  
DN300/250 - 2992213  
DN300 - 2992215

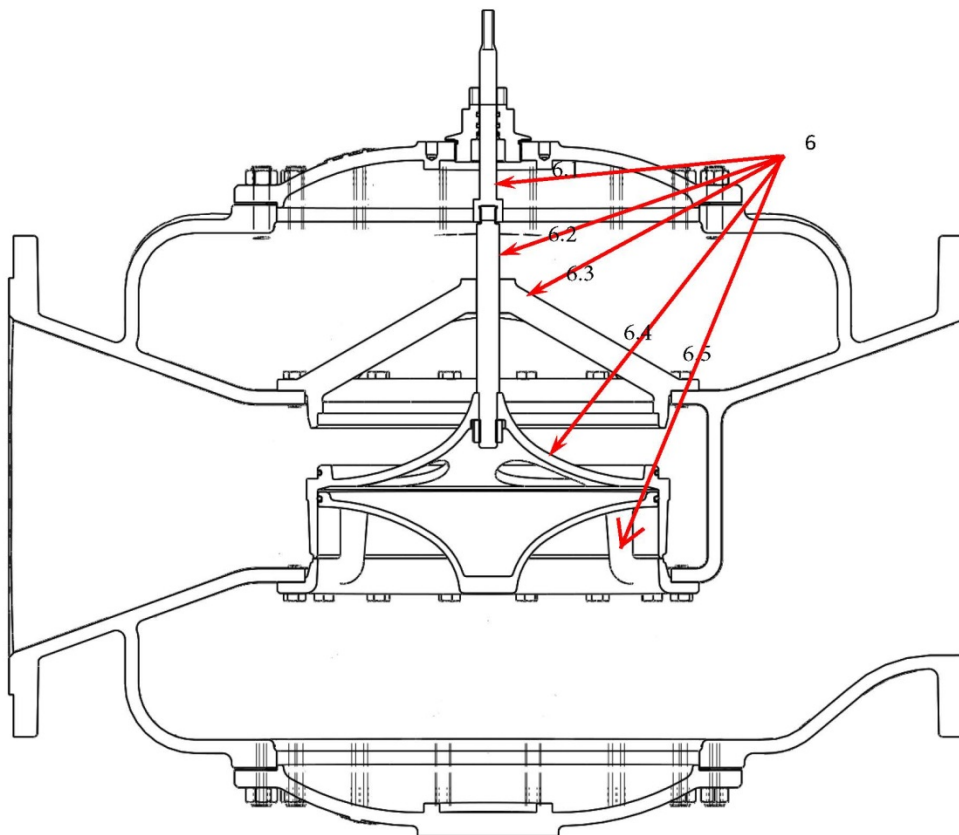


- 3 - O-ring
- 5 - U-ring sealing
- 8 - O-ring for cone
- 9 - O-ring for seat
- 10 - Gasket
- 11 - Gasket

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## Sparepart kit for Soft Seat Valves DN200/175-300

DN200/ 175	-	2992208
DN200	-	2992210
DN300/250	-	2992212
DN300	-	2992214



- 6.1 - spindle joint
- 6.2 - spindle
- 6.3 - upper seat
- 6.4 - cone
- 6.5 - lower seat

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