



## INSTALLATION, SERVICE AND MAINTENANCE INSTRUCTIONS

# INNOVA DOUBLE SEAT VALVE – S TYPE



10.251.32.0001

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Original Manual

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(0) 2017/06



## EC Declaration of Conformity

The designated Company

**INOXPA, S.A.**

c/ Telers, 54

17820 Banyoles (Girona), Spain

herewith declares under our sole responsibility that the machine

### Valve

Model

**INNOVA**

Type

**S**

from serial number I250000 to I400000 <sup>(1)</sup> / 000040000IIN to 000070000IIN <sup>(1)</sup>

<sup>(1)</sup> the serial number can be preceded by a slash and by one or two alphanumeric characters

is in conformity to the all relevant provisions of the following directives:

Machinery Directive 2006/42/EC

Pressure equipment Directive 2014/68/EU

The Technical Construction file is maintained and compiled by DAVID REYERO, c/ Telers nº 54, 17820 Banyoles.

Signed for and on behalf of:

**INOXPA, S.A.**

Place and date issue

Banyoles, March 30, 2017

Name, function

David Reyero Brunet, Technical Office Manager

Signature or equivalent authorized by the issuer

# 1. Safety

## 1.1. INSTRUCTION MANUAL

This instruction manual contains basic guidelines which must be followed during installation, start-up, and maintenance.

The information published in this instruction manual is based on updated data.

INOXPA reserves the right to modify this instruction manual without prior notice.

## 1.2. INSTRUCTIONS FOR START-UP

This instruction manual contains essential and useful information for the correct handling and maintenance of your valve.

The safety instructions detailed in this section as well as all the special measures and recommendations included in the other sections of this manual must be observed and fulfilled. These instructions must be kept in a safe location near the installation area.

## 1.3. SAFETY.

### 1.3.1. Warning symbols.



General hazard to people.



Injury hazard due to moving equipment parts.



Electrical hazard.



Caustic or corrosive substance hazard.



Suspended load hazard.



Hazard to the correct operation of the equipment.



Mandatory to ensure safety at the workplace.



Mandatory use of safety goggles.

## 1.4. GENERAL SAFETY INSTRUCTIONS



Read the instruction manual carefully before installing and using the valve. If in doubt, please contact INOXPA.

### 1.4.1. During the installation



The [Technical specifications](#) in chapter 8 should always be observed.

The installation and use of the valve must always be carried out in accordance with applicable safety and health regulations.

Before putting the valve into service, check that it is assembled correctly and that the shaft is perfectly aligned. Misalignment and/or excessive forces when securing the valve can cause serious mechanical problems with the valve.

### 1.4.2. During operation



Always take the *Technical specifications* in chapter 8 into consideration. The specified limit values shall NEVER be exceeded under any circumstance.

NEVER touch the valve and/or piping that is in contact with the fluid during operation. If the process involves hot products, a burn hazard exists.



The valve contains parts that move in a linear fashion. Do not place hands or fingers in the valve closing area. This can cause serious injury.

### 1.4.3. During maintenance



The *Technical specifications* in chapter 8 should always be observed.

NEVER disassemble or remove the valve until the pipes have been emptied. Bear in mind that the fluid in the pipe may be hazardous or extremely hot. Consult the regulations in effect in each country for these cases.

Inside the actuator there is a spring with an applied load, and the steps specified in this manual must be followed when performing maintenance operations to avoid injury.

Do not leave loose parts on the floor.



All electrical work must be carried out by authorised personnel.

### 1.4.4. Compliance with the instructions

Any failure to comply with the instructions may result in a risk to the operators, the environment and the machine, and may ultimately result in the loss of any right to claim damages.

Failure to comply may entail the following risks:

- Failure of important machine/plant functions.
- Failure of specific maintenance and repair procedures.
- Risk of electrical, mechanical and chemical hazards.
- Placing the environment at risk due to the substances released.

### 1.4.5. Warranty

Any warranty will be void immediately and lawfully and INOXPA shall be compensated for any civil liability claims submitted by third parties in the following cases:

- The installation and maintenance work has not been carried out following the instructions in this manual.
- The repairs have not been made by our personnel or have been made without our written authorisation.
- The parts used are not INOXPA genuine parts.
- Modifications have been carried out on our material or equipment without prior written authorisation.
- The material or equipment has been improperly used, has been used carelessly, or has not been used according to the instructions and their intended purpose, as specified in this manual.

The general terms of delivery already in your possession are also applicable.



The machine may not undergo any modification without prior approval from the manufacturer. For your safety, only use original spare parts and accessories.

The use of other parts will relieve the manufacturer of any liability.

Please do not hesitate to contact us in case of doubt or if further explanations are required regarding specific data (adjustments, assembly, disassembly, etc.).

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## 3. General Information

### 3.1. DESCRIPTION

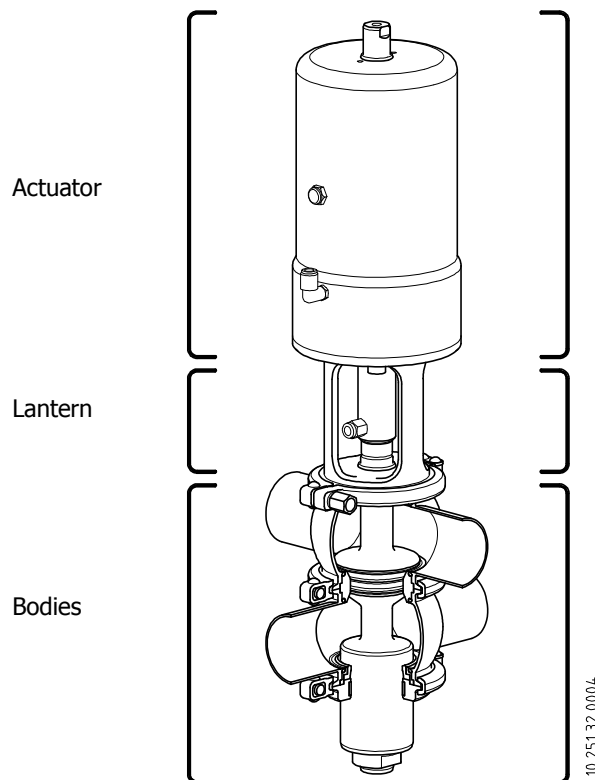
The INNOVA S-Type valve is a double seat shut-off valve. It essentially consists of a pneumatic actuator, which may incorporate a control unit, a lantern, the plug shafts and the bodies.

### 3.2. APPLICATION

The INNOVA P-type valve is a double seat pneumatic shut-off valve for hygienic applications which, by means of a leakage detection chamber between the two seats, at atmospheric pressure, allows safe separation of two products, one of which is usually CIP (cleaning product).

The leakage detection chamber is cleaned by means of an external CIP connection located on the lantern.

**Double Seat Valve (S)**



# 4. Installation

## 4.1. RECEPTION OF THE VALVE





INOXPA will not be liable for any damage to the material during shipping or unpacking. Visually check that the packaging has not been damaged.

The first thing to do upon receipt of the valve is to check it and make sure that it matches the packing list.

INOXPA inspects all its equipment before packaging; however, it cannot guarantee that the shipped goods reach the user intact. Therefore, when receiving valves or any other items, they must be checked; if it is found that they are not in good condition or all the parts are not present, the carrier will fill out a report as soon as possible.

Each valve bears a manufacturing number. Please quote the manufacturing number on all documents and correspondence.





INOXPA S.A.  
C. TELERS, 54 - 17820 BANYOLES  
GIRONA (SPAIN) - www.inoxpa.com

Item	WANL0-00652050120	Size	DN 050
Type	INNOVA NL DIN S EPDM ACT.T2 S/E NC		
Air pressure	Min. 6 bar / 87 psi Max. 8 bar / 116 psi		
Working pressure	10 bar / 145 psi		
Work order	I254782	Year	2017

Manufacturing number

→

10.240.032.0003

## 4.2. TRANSPORT AND STORAGE



INOXPA shall in no case be liable for improper unpacking of the valve and its components.

### 4.2.1. Delivery:

Check that all the parts listed on the delivery slip are present.

- Complete valve.
- Its components (if any are supplied).
- Delivery slip.
- Instruction manual.

### 4.2.2. Unpacking:

- Remove any possible traces of packaging from the valve or its parts.
- Inspect the valve or the parts that comprise it for possible damage suffered during shipping.
- Take all possible precautions against damage to the valve and its components.



The buyer or user shall be responsible for the assembly, installation, start-up and operation of the valve.

### 4.3. IDENTIFICATION

WA	S	C	0	-	0	06	52	050	12	0
										<b>Options</b>
										0 ---
										1 ID Ra<0.5
										<b>Actuator</b>
										11 T1 S/E NC
										12 T2 S/E NC
										13 T3 S/E NC
										<b>Size</b>
										040 DN 40, OD 1 1/2"
										050 DN 50, OD 2"
										063 OD 2 1/2"
										065 DN 65
										076 OD 3"
										080 DN 80
										100 DN 100, OD 4"
										<b>Seals</b>
										43 HNBR
										52 EPDM
										78 FPM
										<b>Material</b>
										06 AISI 316L
										<b>Connection</b>
										0 Welded
										<b>Standard Pipe</b>
										0 DIN
										1 OD
										<b>Body configuration</b>
										A, B, C, D 2 bodies
										J, P, R, S, V, W, X, Z 3 bodies
										<b>Types</b>
										P Mixproof (Seat Lift)
										S Mixproof (Cavity Spray)
										<b>Product family</b>
WA	INNOVA Valve									



#### 4.4. POSITIONING

Position the valve in a way that facilitates inspections and servicing. Allow sufficient space around the valve for proper servicing, dismantling and maintenance ( [see table in section 4.7.1](#) ).

#### 4.5. GENERAL INSTALLATION

Once the location of the valve has been determined, the pipe can be joined by welding the valve body or using accessories (fittings). In this case, do not forget the seals, and tighten the unions properly.



For S-type valves, it is recommended that the union for one of the bodies be made using a fitting to facilitate disassembly of all the valve components.

Before starting to weld the valve bodies to the pipe, disassemble the valve to prevent damage to the joints, following the instructions in section [7.4 Assembly and disassembly](#).

Avoid using excessive force when assembling the valves, and pay special attention to:

- Vibrations that may be caused in the facility.
- Thermal expansion of the piping caused by the flow of hot fluids.
- The load bearing capacity of the piping.
- Excessive welding current.

#### 4.6. CHECKING AND VERIFICATION

Perform the following checks before using:

- Check that the clamps and nuts are securely fastened.
- Open and close the valve (applying compressed air to the actuator) several times to make sure it operates correctly and to check that the shaft seals seat well against the intermediate part of the valve.

#### 4.7. WELDING.



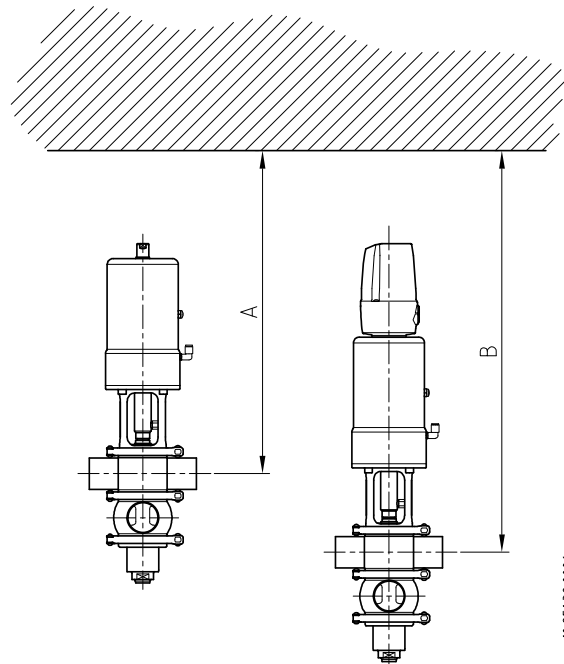
Welding work should only be performed by suitably qualified and trained personnel with the necessary equipment to perform this kind of work.

Before undertaking welding work, disassemble the valve.

##### 4.7.1. Double-seat valve, weld / weld

- Disassemble the valve as indicated in section [7.4 Assembly and disassembly](#).
- Weld the valve body to the pipes.
- When welding the valve body, it is very important to keep the minimum distance (height A) to allow the valve to be disassembled for subsequent servicing and to change valve parts (seals, bushings, etc.). It is important to differentiate when the valve has a control head (see height B)
- For S-type valves, it is recommended that the union for the bottom body be made using a fitting to facilitate disassembly of all the valve components.

Valve size	A [mm]	E [mm]
DN 40 / OD 1 ½"	590	720
DN 50 / OD 2"	650	780
DN 65 / OD 2 ½"	790	920
DN 80 / OD 3"	810	940
DN 100 / OD 4"	950	1080



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#### 4.8. VALVE CONFIGURATION WITH ACTUATOR

The standard configuration of the valves is NC (Normally Closed)

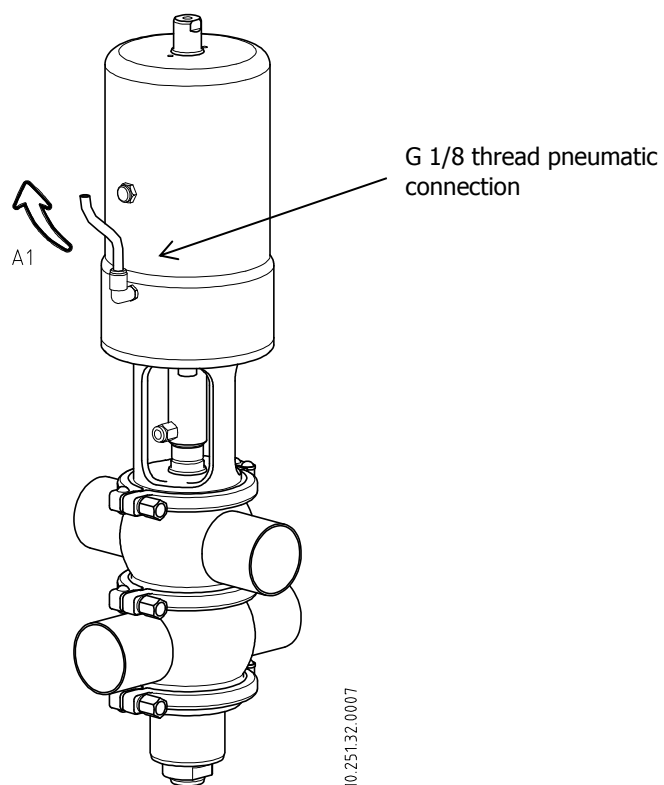


Never disassemble the valve clamps straight away without reading the instructions carefully, since the actuator contains a spring inside it with an applied load.

Valve and/or actuator assembly and disassembly should only be performed by qualified personnel.

#### 4.9. ACTUATOR AIR CONNECTION.

- Connect and check the compressed air connections
- INOXPA valves are supplied with connections for Ø6 piping.
- Consider the quality of the compressed air, according to the specifications described in [Technical specifications](#).



# 5. Start-up

Valve start-up can be performed only if the instructions set out in [chapter 4](#) have been followed first. [Installation](#)

## 5.1. START-UP



Prior to start-up, the persons in charge must be duly informed about the operation of the valve and the safety instructions to be followed. This instruction manual will be available to personnel at all times.

Before putting the valve/actuator into service, the following must be taken into consideration:

- Check that the piping and valve are completely free of possible traces of welding slag or other foreign particles. Clean the system if necessary.
- Check for smooth movement of the valve. If necessary, lubricate it with special grease or soapy water.
- Check for possible leaks, and make sure the pipes and their connections are sealed and do not have any leaks.
- If the valve has been supplied with an actuator, make sure that the alignment of the valve shaft and the actuator shaft enables smooth movement.
- Check that the compressed air pressure at the actuator inlet matches what is indicated in the [Technical specifications](#).
- Consider the quality of the compressed air, according to the specifications set out in chapter 8 [Technical specifications](#).
- Actuate the valve.

## 5.2. OPERATION.



Do not modify the operating parameters for which the valve has been designed without prior written authorisation from INOXPA.

Do not touch the moving parts of the coupling between the actuator and the valve when the actuator is connected to the compressed air supply.



Burn hazard! Do not touch the valve or the pipes when hot fluids are circulating or when cleaning and/or sterilisation is under way.

# 6. Troubleshooting

Valve does not open/close																								
↓	The inner shaft does not clean																							
↓	Internal leak of product (valve closed)																							
↓	Jerky valve operation																							
↓	<table border="1"> <thead> <tr> <th>PROBABLE CAUSES</th> <th>SOLUTIONS</th> </tr> </thead> <tbody> <tr> <td rowspan="3"> <ul style="list-style-type: none"> <li>The seal or guide bushing is worn, damaged or jammed</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Replace the seals.</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Replace the seals with others of a different material or grade that is more suitable for the product.</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Lubricate with soapy water or a lubricant that is compatible with the seal material and the product</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Normal seal wear</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Replace the seals</li> </ul> </td> </tr> <tr> <td rowspan="2"> <ul style="list-style-type: none"> <li>Premature wear of the seal / affected by the product</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Replace the seals with ones made of a different material or grade that is more appropriate for the product.</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Reduce the pressure in the line.</li> <li>Lower the operating temperature.</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Product residue has deposited on the valve seat and/or plug</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Clean frequently</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Product pressure exceeds the actuator specifications</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Reduce the product pressure</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Excessive product pressure in upper body</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Reduce the product pressure</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Loss of seal (vibrations)</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Tighten loose parts</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Insufficient cleaning time</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Adjust cleaning time in control system</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Insufficient air pressure</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Increase the compressed air pressure</li> </ul> </td> </tr> </tbody> </table>	PROBABLE CAUSES	SOLUTIONS	<ul style="list-style-type: none"> <li>The seal or guide bushing is worn, damaged or jammed</li> </ul>	<ul style="list-style-type: none"> <li>Replace the seals.</li> </ul>	<ul style="list-style-type: none"> <li>Replace the seals with others of a different material or grade that is more suitable for the product.</li> </ul>	<ul style="list-style-type: none"> <li>Lubricate with soapy water or a lubricant that is compatible with the seal material and the product</li> </ul>	<ul style="list-style-type: none"> <li>Normal seal wear</li> </ul>	<ul style="list-style-type: none"> <li>Replace the seals</li> </ul>	<ul style="list-style-type: none"> <li>Premature wear of the seal / affected by the product</li> </ul>	<ul style="list-style-type: none"> <li>Replace the seals with ones made of a different material or grade that is more appropriate for the product.</li> </ul>	<ul style="list-style-type: none"> <li>Reduce the pressure in the line.</li> <li>Lower the operating temperature.</li> </ul>	<ul style="list-style-type: none"> <li>Product residue has deposited on the valve seat and/or plug</li> </ul>	<ul style="list-style-type: none"> <li>Clean frequently</li> </ul>	<ul style="list-style-type: none"> <li>Product pressure exceeds the actuator specifications</li> </ul>	<ul style="list-style-type: none"> <li>Reduce the product pressure</li> </ul>	<ul style="list-style-type: none"> <li>Excessive product pressure in upper body</li> </ul>	<ul style="list-style-type: none"> <li>Reduce the product pressure</li> </ul>	<ul style="list-style-type: none"> <li>Loss of seal (vibrations)</li> </ul>	<ul style="list-style-type: none"> <li>Tighten loose parts</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient cleaning time</li> </ul>	<ul style="list-style-type: none"> <li>Adjust cleaning time in control system</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient air pressure</li> </ul>	<ul style="list-style-type: none"> <li>Increase the compressed air pressure</li> </ul>
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# 7. Maintenance

## 7.1. GENERAL CONSIDERATIONS

This valve, just like any other machine, requires maintenance. The instructions in this manual cover the identification and replacement of spare parts. The instructions are aimed at maintenance personnel and those responsible for the supply of spare parts.

Carefully read chapter 8 *Technical specifications*



All replaced material should be duly disposed of/recycled according to the directives in effect in each area.

Valve and/or actuator assembly and disassembly should only be performed by qualified personnel.

Before starting maintenance work, make sure that the pipes are not under pressure.

## 7.2. MAINTENANCE.

To perform maintenance properly, the following are recommended:

- Periodic inspection of the valve and its components.
- Keeping an operation log for each valve, noting any problems.
- Always having spare replacement seals in stock.

During maintenance, pay special attention to the hazard warnings indicated in this manual.



The valve and the pipes must never be under pressure during maintenance.

During maintenance the valve must never be hot. **Burn hazard!**

### 7.2.1. Seal maintenance.

SEAL REPLACEMENT	
Preventive maintenance	Replace every 12 months.
Maintenance after a leak	Replace at the end of the process.
Planned maintenance	Regularly check for the absence of leaks and smooth operation of the valve. Keep a log for the valve. Use statistics to schedule inspections.
Lubrication	During assembly, apply lubricants that are compatible with the seal material. See the table below.

SEAL COMPONENT	LUBRICANT	Class NLGI DIN 51818
HNBR/ FPM	Klübersynth UH 1 64-2403	3
EPDM/ HNBR/ FPM	PARALIQ GTE 703	3

The preventive maintenance service intervals will vary depending on the valve operating conditions: temperature, pressure, number of operations per day, type of cleaning solutions used, etc.

### 7.2.2. Storage

Valves should be stored in an enclosed location under the following conditions:

Temperature           between 15 °C and 30 °C

Ambient humidity       <60%

Equipment **MAY NOT** be stored outdoors.

### 7.2.3. Spare parts

To order spare parts, you must indicate the valve type and the position and description of the part, as found in chapter 8 [Technical specifications](#)

## 7.3. CLEANING



The use of aggressive cleaning products such as caustic soda and nitric acid may cause skin burns.

Wear rubber gloves during all cleaning procedures.



Always wear protective goggles.

### 7.3.1. CIP (Clean-in-Place) cleaning

If the valve is installed in a system with a CIP process, its disassembly will not be required. **EPDM** is the standard seal material to be used for CIP cleaning, both in alkaline and acidic media. The other two options (**HNBR**, **FPM**) are not recommended.

Cleaning solutions for CIP processes.

Only use clear water (chloride-free) to mix with the cleaning agents:

**a) Alkaline solution:** 1% by weight of caustic soda (NaOH) at 70°C (150°F)

1 kg NaOH + 100 litres of water = cleaning solution

or

2.2 litres of 33% NaOH + 100 litres of water = cleaning solution

**b) Acid solution:** 0.5% by weight of nitric acid (HNO<sub>3</sub>) at 70°C (150°F)

0.7 litres of 53% HNO<sub>3</sub> + 100 litres of water = cleaning solution



Check the concentration of the cleaning solutions; incorrect concentrations may cause damage to the valve seals.

To remove any traces of cleaning products, **ALWAYS** perform a final rinse with clean water at the end of the cleaning process.



Before starting disassembly and assembly tasks, clean the entire interior and exterior of the valve.

### 7.3.2. Automatic SIP (Sterilisation-in-Place)

Sterilisation with steam is applied to all equipment including the pigging.



Do NOT start the equipment during sterilisation with steam.  
The parts/materials will not be damaged if the indications specified in this manual are observed.

No cold fluid can enter the equipment until the temperature of the equipment is below 60°C (140°F).

Maximum conditions during the SIP process with steam or superheated water

- a) **Max. temperature:** 140°C / 284°F
- b) **Max. time:** 30 min
- c) **Cooling:** Sterile air or inert gas
- d) **Materials:** EPDM (HNBR and FPM materials are not recommended)

### 7.4. ASSEMBLY AND DISASSEMBLY



Proceed with caution. Personal injury can occur.

Always disconnect the compressed air before starting to disassemble the valve.



Never disassemble the valve clamps straight away without reading the instructions carefully, since the actuator contains a spring inside it with an applied load.

Valve and/or actuator assembly and disassembly should only be performed by qualified personnel.



The following tools are needed to assemble/disassemble the valve:

- Appropriate tool (non-piercing) to fit the seat seals
- Use the tools specified in the table below:

Tool	Area	DN 40	DN 50	DN 65/80	DN 100
Spanner	Body clamp	13mm			
	Valve shafts	17mm			
		27mm	30mm	49mm	
Allen key	Lantern	6mm			



Proceed with caution. Personal injury can occur.  
Never disassemble the clamps from the valve straight away without reading the instructions carefully.



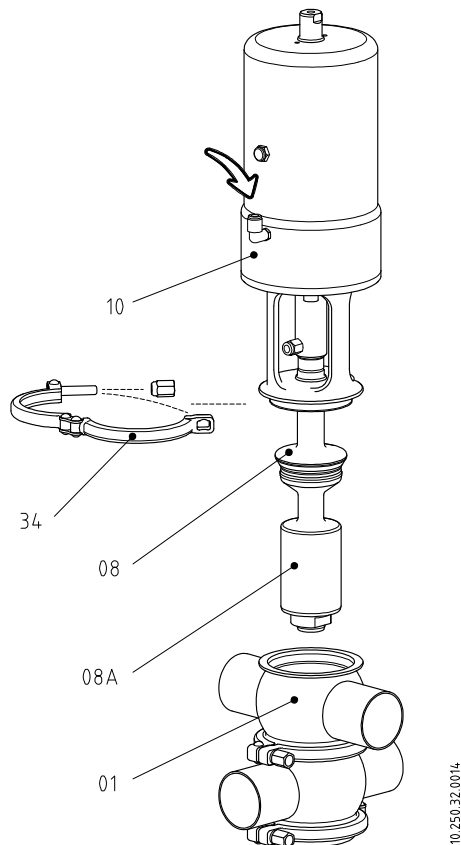
Valve / actuator assembly and disassembly should only be performed by qualified personnel.



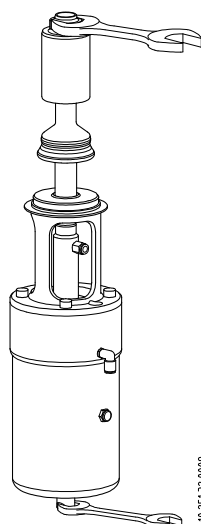
## 7.5. DISASSEMBLY/ASSEMBLY OF THE INNOVA DOUBLE-SEAT VALVE (S TYPE)

### 7.5.1. Disassembly

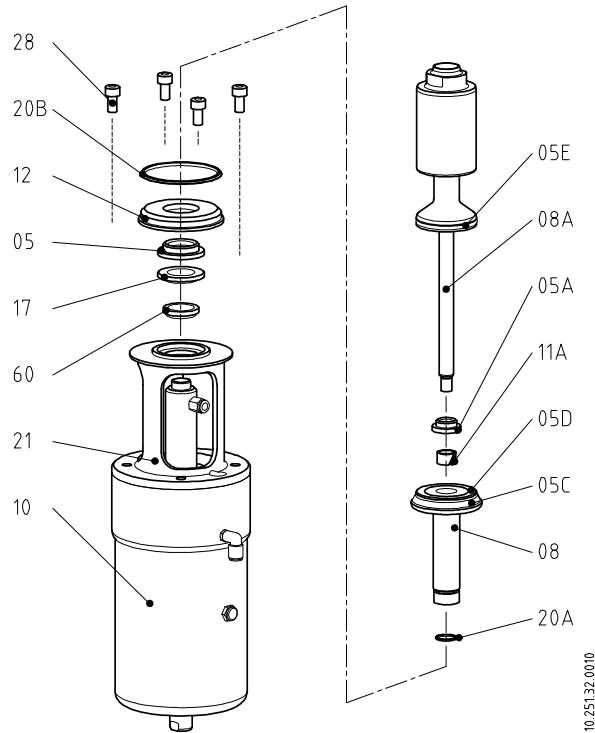
1. Apply compressed air to the actuator (10) so that the shafts (08/08A) move to the open position.
2. Loosen and remove the top clamp (34) between the top body (01) and the lantern (21).
3. Remove the actuator (10) and the shafts (08/08A) from the valve bodies (01).
4. Release the compressed air in the actuator (10).



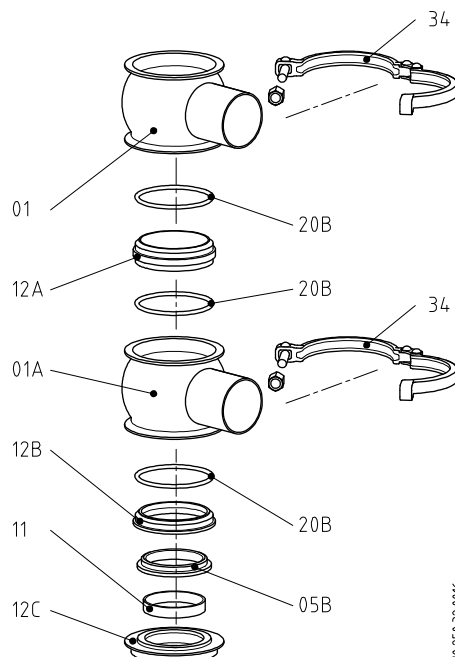
5. Place the valve-actuator assembly in a vertical position with the actuator at the bottom and the shaft at the top. If required, disassemble C-TOP and leave enough space on the bottom part so that the protruding part of the actuator shaft is not in contact with the support surface.
6. Unscrew the bottom shaft (08A) while holding the top shaft (08) of the actuator (10).



7. Remove the top shaft (08).
8. Extract the lip seal (05A), the inner bushing (11A) and the O-ring (20A) from inside the shaft.
9. Remove the top cover (12).
10. Remove the lip seal (05) and the O-ring (20B) fitted on the cover, as well as the bearing (17) and the scraper (60) housed in the lantern (21).
11. Lastly, to remove the three seat seals from the top and bottom shafts (05C, 05D, 05E) follow the steps specified in section 7.6. *Replacing the seat seals.*



12. Remove the clamp (34) located on one end of the bodies.
13. Take off the two covers (12C & 12B) as well as the inner bushing (11), the O-ring (20B) and the lip seal (05B).
14. Remove the intermediate clamp (34) and take the bodies apart. Take off the intermediate cover (12A) and the two O-ring seals (20B).



### 7.5.2. Assembly

1. Place the actuator-valve assembly in a vertical position with the actuator at the bottom.
2. Perform the installation of the three seat seals (05C, 05D, 05E) as described in section 7.6. *Replacing the shaft seals.*
3. Install the scraper (60) and the bushing (17) inside the lantern (21).
4. Fit the O-ring (20B) and the lip seal (05) on the top cover (12).
5. Place the top cover (12) on the lantern (21).
6. Place the O-ring (20A), the inner bushing (11A) and the seal (05A) inside the top shaft (08).
7. Place the top shaft (08) over the sleeve protruding from the actuator, inserting the shaft through the inside of the top cover (12).
8. Screw the bottom shaft (08A) inside the top shaft (08) holding the top shaft to stop it from turning.
9. Fit the two O-rings (20B) on the intermediate cover (12A).
10. Place the intermediate cover (12A) over one of the valve bodies (01) and then place the other body on top.
11. Install the intermediate clamp (34) joining these two bodies together.
12. Fit the O-ring (20B) and the lip seal (05B) inside the bottom cover (12B).
13. Position the bottom cover (12B) over the valve body lower opening.
14. Slide the seal bushing (11) inside the bottom cover (12C) and rest the cover over the top opening of the valve body where the bottom cover is already in place (12B).
15. Install the lower clamp (34) joining the valve body and lower cover (12C).
16. Supply compressed air to the actuator (10).
17. Insert the actuator-valve assembly into the valve bodies, with the actuator and the valve body lower opening on opposite sides.
18. Position the top clamp (34) that joins the lantern (21) to the two valve bodies.
19. Release the compressed air in the actuator.



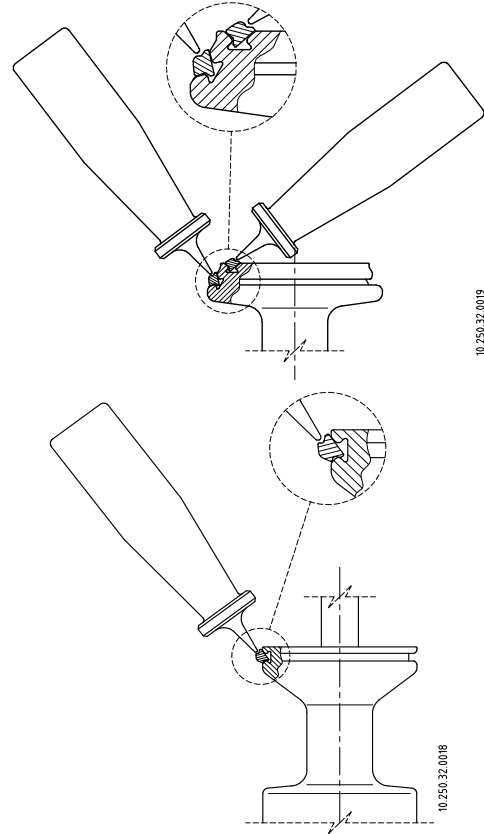
See section 8.2. for reference to the parts described. *Exploded drawing and parts list, Innova valve, S type*

### 7.6. REPLACING THE SEAT SEAL

Note, to perform this operation it is advisable to hold the shafts securely, for example with a bench clamp with padded claws to avoid damaging the shaft surfaces.

The procedure for the three different types of seat seals fitted on the valve is virtually the same. It is divided into the following steps:

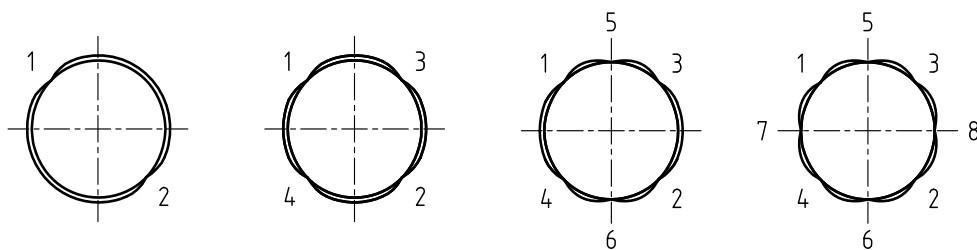
1. Put the plug shaft in a vertical position—for example, with a bench clamp—so that the shaft is kept stable and no damage is caused to the mating surface of the conical seal. Do not press the shaft too much if using a bench clamp.
2. Remove the used seal using a screw driver or a sharp hook-shaped tool. Make sure not to damage the mating surface of the seal.
3. Lubricate the new seat seal with soapy water if necessary to facilitate installation.
4. Insert the seal in the plug shaft seat housing so that its edges are inside the housing. Preferably the seal should fit within the part of the section that has the greatest diameter, as shown in the figures.
5. Then, with the help of an appropriate tool (not piercing), press the edge of the seal that has not yet fit into the housing, as shown in the figure.
6. This operation should be performed around the entire diameter, applying the tool in the sequence **1-2-3-4-5-6-7-8** as shown in the bottom figure. Always press on opposite sides. Once you get to the last step of this sequence, repeat the process until the seal is completely inside the housing.



10.250.32.0019

10.250.32.0018

7. Press the seal with your fingers to make sure it is well seated. Make sure there are no parts protruding due to poor positioning of the seal.



10.240.32.0017

## 7.7. ACTUATOR ASSEMBLY / DISASSEMBLY.

Do not apply compressed air until the disassembly/assembly process is complete. The figure is a schematic representation of some of the steps in the actuator disassembly process.

### 7.7.1. Disassembly

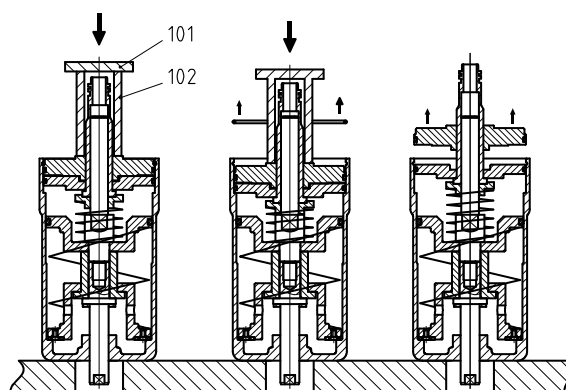
1. Extract the air fitting (18 & 18C).
2. Extract the silencer (18B) and cap (18D).
3. Locate the actuator at the base of the clamp or in the lathe collet. A thick tube (102) and a shim (101) must be used on the free end of the actuator.
4. Apply force to the shim. Once the cover (12) has dropped 15-20mm, remove the snap ring (45); this should have sufficient free space to be able to remove it.
5. Reduce the force on the shim slowly until the top cover is free (you will note that the spring no longer exerts pressure).
6. Extract the cover (12) and the sleeve (35A).
7. Extract the seals (20C & 20F), the scraper (60C) and the bushing (11D) from the cover (12).
8. Extract the bushing (11C) and the seals (20E & 20G) from the shaft sleeve (35A).
9. Extract the spring base (43B) and spring (06A).
10. Extract the spring assembly (06) without disassembling it.



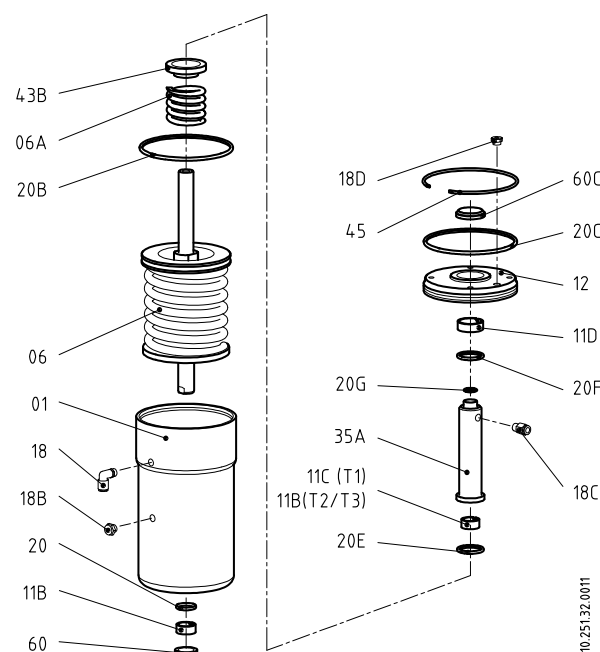
Do not take the spring assembly (06) apart, as it contains a spring with an applied charge.

Valve and/or actuator assembly and disassembly should only be performed by qualified personnel.

11. Remove the seal (20B) from the spring assembly (06).
12. Remove the scraper (60), seal (20) and bushing (11B) from the actuator body (01).



10.250.32.0021



10.251.132.0011

### 7.7.2. Assembly

1. Fit the scraper (60), seal (20) and bushing (11B) on the actuator body (01).
2. Fit the seal (20B) on the spring assembly (06).
3. Fit the seals (20E & 20G) and bushing (11C) on the shaft sleeve (35).
4. Fit the seals (20C & 20F), scraper (60C) and bushing (11D) on the cover (12).
5. Insert the spring assembly (06) into the actuator body (01).
6. Insert spring (06A), spring base (43B), shaft sleeve (35) and piston (30A) into the cylinder (01).
7. Mount the top cover (12) on the cylinder.
8. Apply force to the shim so it lowers 15-20mm. Insert the snap ring (45).
9. Reduce the force applied slowly until the tool no longer touches the cover.
10. Install the air fitting (18 & 18C), silencer (18B) and cap (18D).
11. Apply compressed air to check the proper operation of the actuator.

# 8. Technical specifications

## 8.1. TECHNICAL SPECIFICATIONS

### Valve

Maximum working pressure	10 bar (145 PSI)
Minimum working pressure	Vacuum
Operating temperature	-10°C to +121°C (14°F to 250°F) Standard EPDM seals. (For higher temperatures, different grade seals must be used)

### Actuator

Compressed air pressure	6-8 bar
Compressed air quality	Per DIN/ISO 8573.1 <ul style="list-style-type: none"> <li>- <u>Solid particulate content</u>: Quality class 3 / Max. particle dimension 5 microns / Max. particle density 5 mg/m<sup>3</sup></li> <li>- <u>Water content</u>: Quality class 4 / Max dew point +2°C. If the valve is used at high altitude or under low ambient temperature conditions, the dew point must be adjusted accordingly.</li> <li>- <u>Oil content</u>: Quality class 5, preferably oil free / Max. 25mg oil per 1m<sup>3</sup> are</li> </ul>

Compressed air fitting G 1/8

Compressed air consumption (Litres N./cycle) at atmospheric pressure:

DN	Actuator movement
40	0.5
50	0.5
65	1.5
80	1.5
100	2.5

### Materials

Parts in contact with the product	AISI 316L (1.4404)
Other steel parts	AISI 304L (1.4301)
seals in contact with the product	EPDM (standard) – FPM – HNBR

### Surface finish

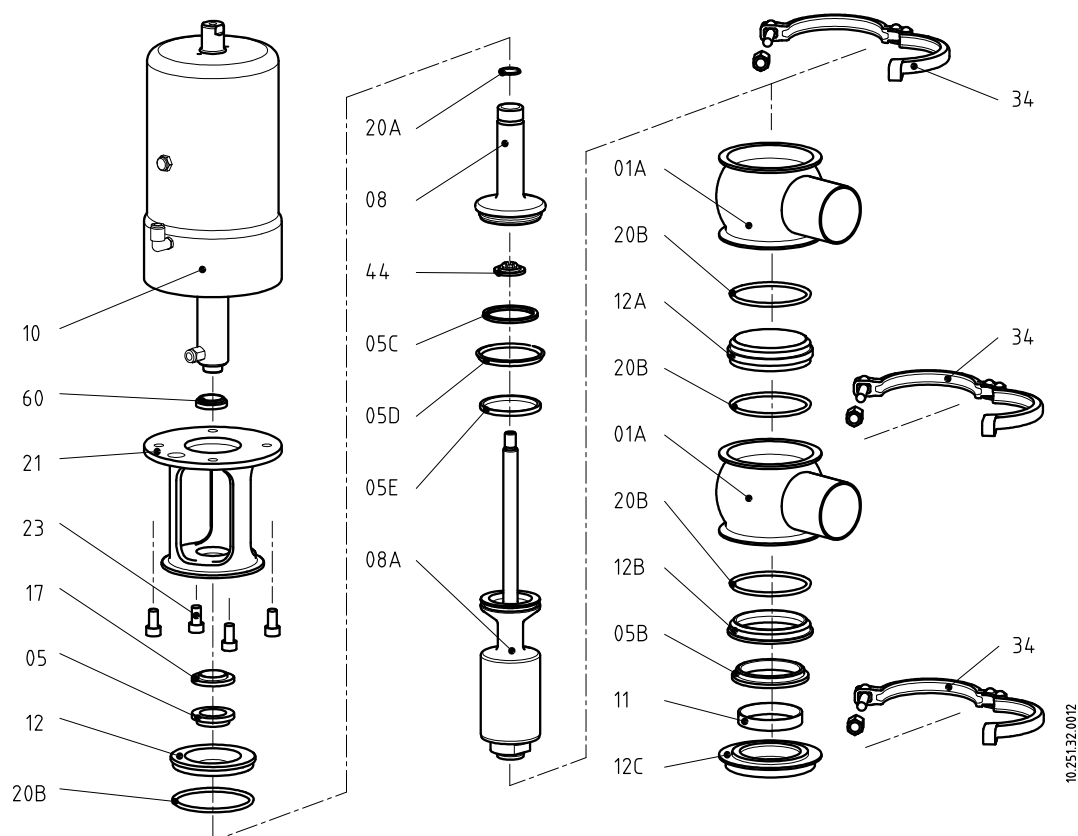
Inner	Polished Ra ≤ 0.8 µm
Outer	Matt

### Sizes available

DIN 11850	DN 40 – DN 100
ASME BPE	OD 1 1/2" – OD 4"
Connections	Welded

## 8.2. EXPLODED DRAWING AND PARTS LIST INNOVA VALVE S TYPE

### 8.2.1. Exploded drawing



### 8.2.2. Parts list

Item	Description	Quantity	Material
01	Intermediate body	2	AISI 316L
05 / 05B	Shaft seal	1	EPDM / FPM / HNBR
05C / 05D / 05E	Tapered / flat / radius seat seal	1	EPDM / FPM / HNBR
08	Top shaft	1	AISI 316L
08A	Bottom shaft	1	AISI 316L
10	Actuator	1	AISI 304
11	Shaft bushing	1	PTFE
12	Body cap (top bushing)	1	AISI 316L
12A	Upper bushing	1	AISI 316L
12B	Bottom seal bushing	1	AISI 316L
12C	Body cap (bottom bushing)	1	AISI 316L
17	Guide bushing	1	PTFE
20A / 20B	O-ring	1	EPDM / FPM / HNBR
21	Lantern	1	AISI 304
23	Allen Screw	4	A2
34	Clamp	3	AISI 304
44	Doser	1	PTFE
60D	Scraper	1	NBR



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