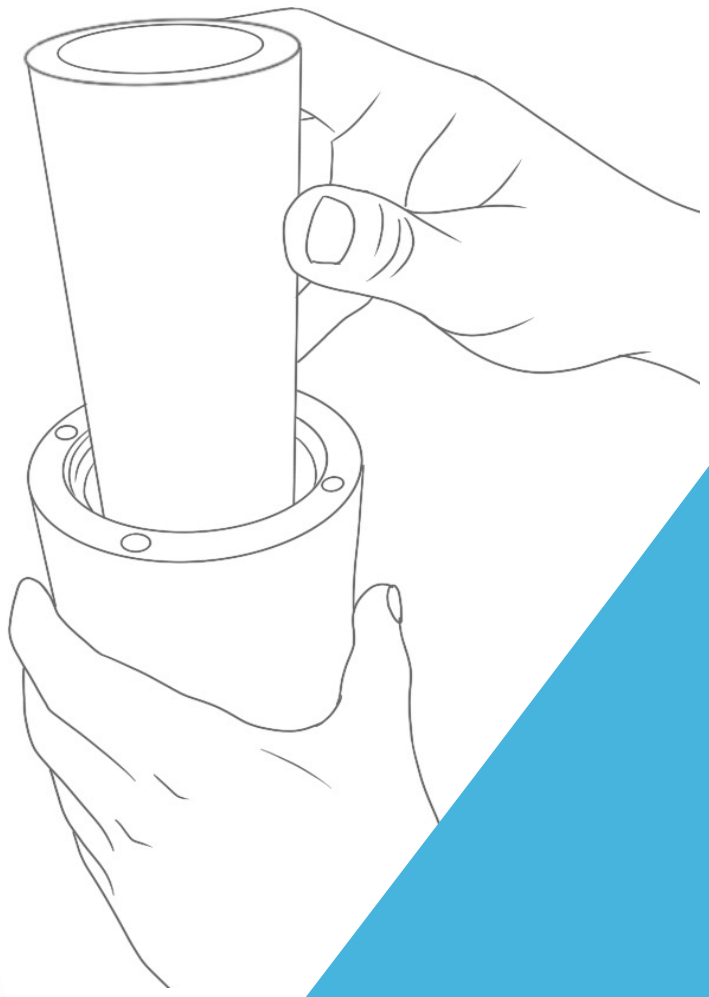
BOC



Pneumatic pinch valve

Operation Manual

For Series BMPS & CSF

Dongguan Bao Chen Valve Manufacturer Co.,Ltd.

www.boc-pinchvalve.com

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1.Installation and commmissioning safety instruction.

1.1 Warning of pinching !

This operation manual is used to guide the correct operation and commissioning of the pneumatic pinch valve. please read and follow the operating specifications of this manual before any installation and commissioning.

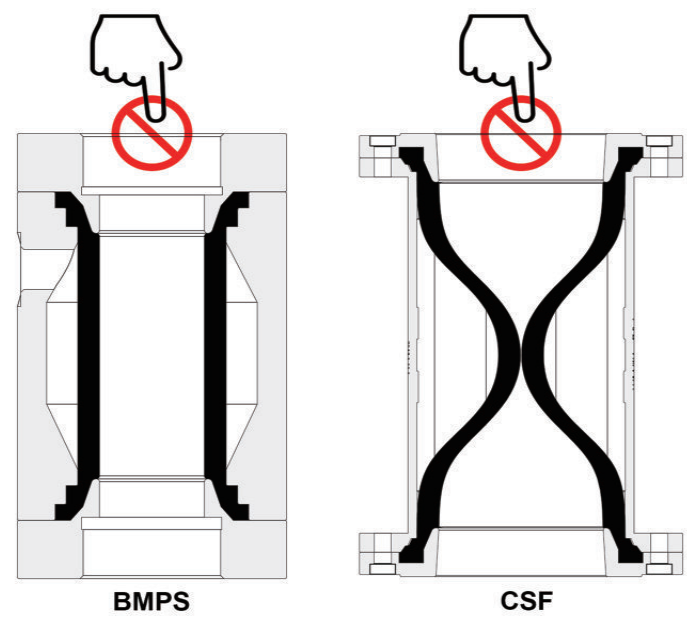
Any installation, commissioning, and maintenance operations must be performed by experienced engineers. The operator must read the safety instruction before operation.

Please do not put your finger inside the valve body while air supply is connected.

Serious injury may occur when the pinch valve is closed:

*If your fingers are pinched while valve closing, please quickly disconnect the air supply to let the valve open,then start correct emdical treatment ASAP if needed.

*Install appropriate warning if possible.



1.2 Preparation before installation

1.Please use dry, oil-free, filtered compressed air as the control medium to operate the pinch valve to avoid damage to the valve and rubber hose .

2.Before installation and commissioning, please try to test the performance of the pinch valve. If there is any leakage or failure to rebound, please contact the manufacturer.

3.Do not operate the valve with a pressure that exceeds the maximum pressure that the pinch valve can withstand. It may cause the hose to burst or slip off the valve body and cause injuiry.

4.During the pipeline installation and commissioning process, please keep all connections well sealed and leak-free.

5.Please do not put sharp blades and flat-end screwdrivers into the valve body during the commissioning process, so as not to scratch the rubber hose and damage the valve.

Warning of danger of injury!

When the medium is corrosive, toxic, or flammable, it may cause serious injury:

* During the commissioning process, if the connection is not tightly sealed, it may cause injury while media leakage.
* Please prepare safety equipment such as protective covers to deal with accidents during the commissioning process.
* If there is a leakage, and serious accidents such as burns, poisoning, fire, etc., please stop debugging immediately, and quickly start correct medical treatment ASAP.
* Install appropriate warning if possible.

6.Please equipped with the pressure regulating valve, filter, solenoid valve, quick exhaust valve, one-way valve, water hammer eliminator and other accessories according to actual needs.

7.There is no direction for pneumatic pinch valve, can be installed in any direction.

2.Technical description

2.1 Technical data

Before installation , please confirm the technical data of the pinch valve meets your requirement , any imporoer use will cause to the pinch valve. Special material not list on the table can confirm with BOC.

Vacuum system or negative pressure on each side which controlls by air is also suitable.

<table>
<tr><th>Sleeve material</th><th colspan="3">Natural rubber (01)</th><th colspan="4">EPDM (02) & Silicon rubber(03)</th></tr>
<tr><th>Size</th><th>Working temperature (℃)</th><th>Max working pressure (Mpa)</th><th>Max control pressure (Mpa)</th><th>EPDM working Temperature (℃)</th><th>Silicon rubber working Temperature (℃)</th><th>Max working pressure* (Mpa)</th><th>Max control pressure** (Mpa)</th></tr>
<tr><td>DN6
DN10</td><td rowspan="2">-10 ~ 70</td><td><0.5</td><td><0.8</td><td rowspan="5">-10 ~ 100</td><td rowspan="4">-40 ~ 150</td><td rowspan="5"><0.3</td><td rowspan="5"><0.6</td></tr>
<tr><td>DN15
DN20
DN25
DN32
DN40
DN50
DN65
DN80</td><td><0.6</td><td><0.8</td></tr>
<tr><td>DN100
DN125
DN150</td><td rowspan="2">-10 ~ 70</td><td rowspan="2"><0.4</td><td rowspan="2"><0.6</td><td rowspan="2">/</td></tr>
<tr><td>DN200</td></tr>
</table>

* EPDM, Silicon rubber and other material except natural rubber max working pressure is all less than 0.3 Mpa

** EPDM, Silicon rubber and other material except natural rubber max control pressure is all less than 0.6 Mpa

2.2 Improper use

Following improper use will casue damage quickly or failure to work properly.

* Operating the pinch valve which is not meet the technical data
* No-compliance with the safety instruction
* Choosing wrong size or material
* Installing non-original spare parts
* Switching too fast which damage the valve quickly
* Wet powder for small size on gravity convey system

BOC does not offer any product guarantee once the application is exceed the pinch valve technical data or operating too fast (Operating times exceed the expected operating times in laboratory)

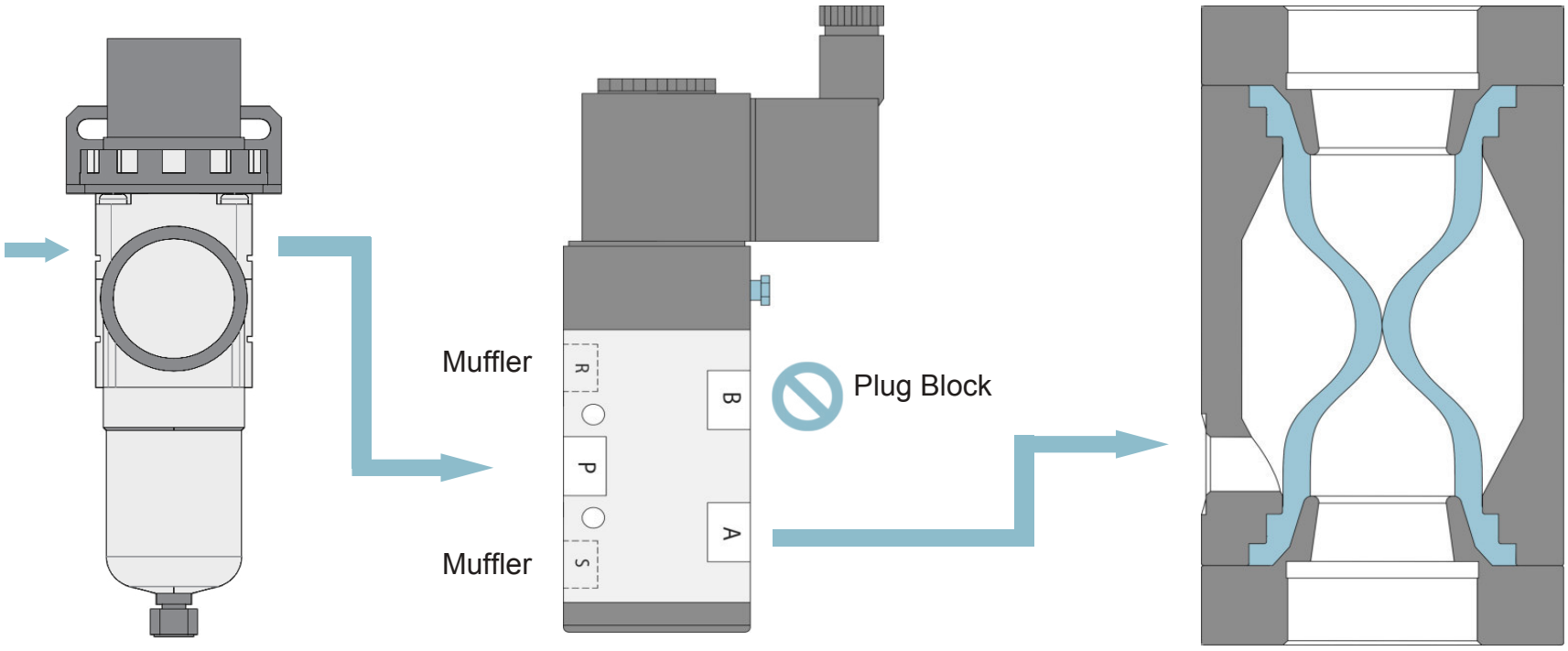
BOC does not take any liability for damage resulting from not obseving the technical data and safety instructions.

3.Control guidence

Accessories:

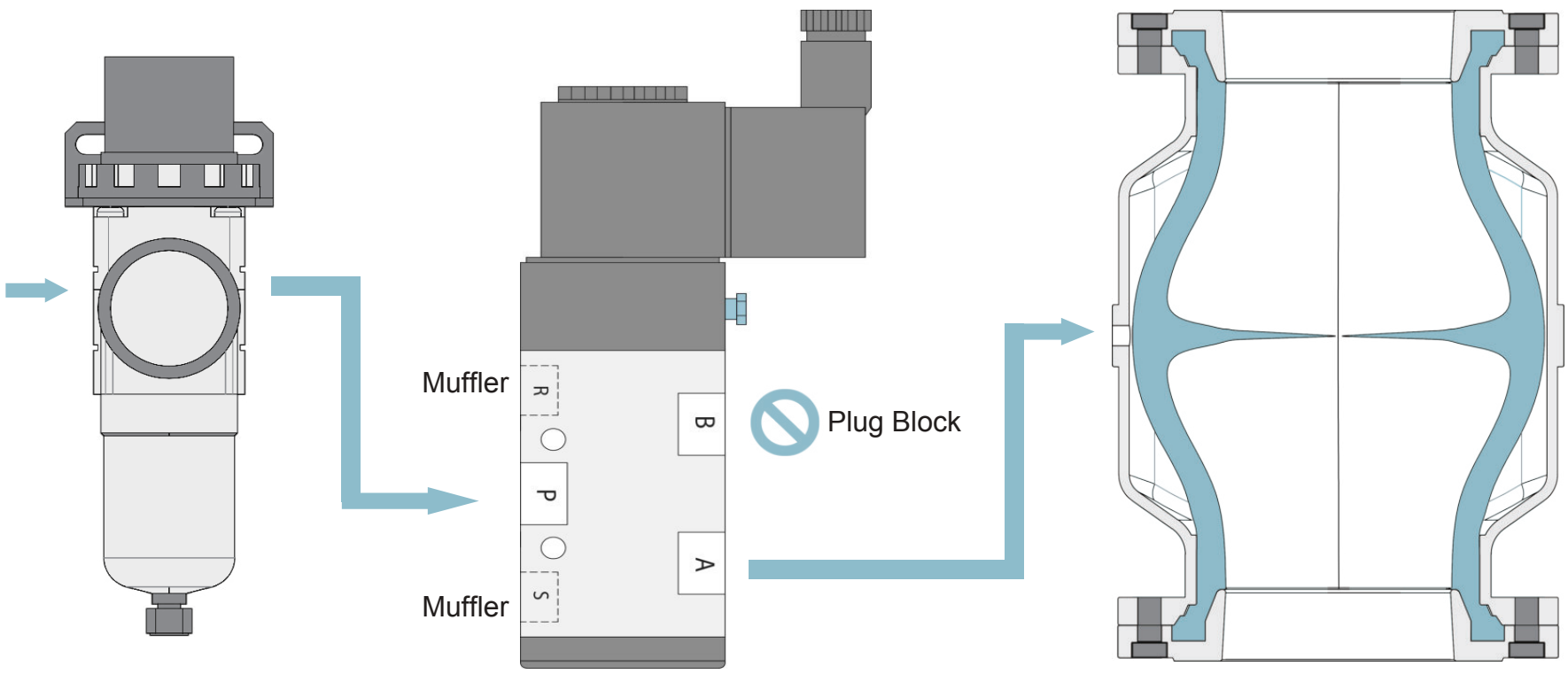
- Pressure regulator
- 2/5 way solenoid valve
- Muffler
- Quick Tracheal Joint
- Plug

3.1 BMPS11 series normally closed control



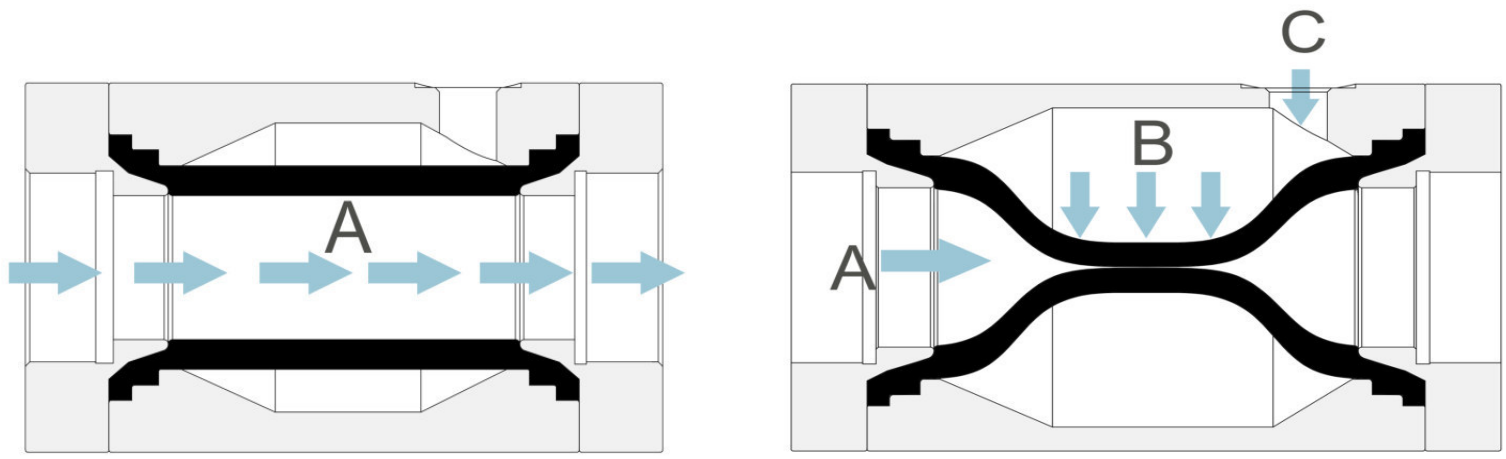
Pressure regulator Solenoid valve BMPS11 Pinch valve

3.2 CSF series normally closed control



Pressure regulator Solenoid valve CSF Pinch valve

3.3 Control pressure setting



A.Operating pressure B.Pressure difference* (Pressure make rubber form a lip seal)
C.Control pressure

Optimum control pressure C = A +B+0.5bar

*Each valve pressure difference is different, you can refer the name plate or test by yourself

How to get the pressure difference?

Connect the air, start regulating the pressure regulator from 0 bar to increase the pressure, when the valve close, at this time , the pointer value is the pressure difference of this valve.

4.Assembly and Commissioning

4.1 Mechnical connections

* Female thread connection according to DIN EN ISO 228 (G) or ANSI/ASME B1.20.1 NPT

1.Use a suitalbe selant for the threaded connection seal.

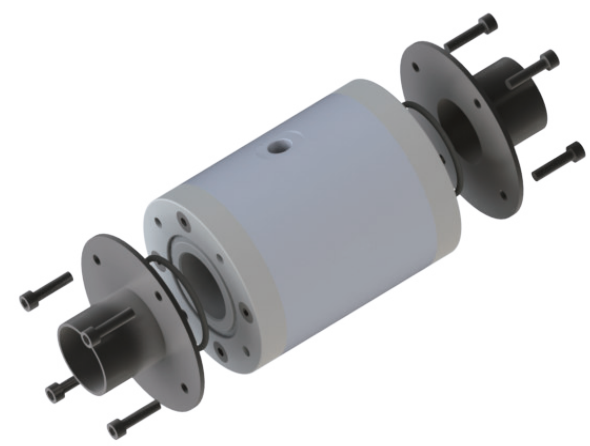
2.Use a pipe wrench or strap spanner to fix the valve.

3.Do not over tighten the POM plastic interal thread , it may cuase the socket to burst.

* Flange connection with O ring for BMPSS series

1.Put NBR o ring on the sealing groove of each face.

2.Tighten the bolt into the body.



* Flange connection accroding to DIN 1092 PN10/16 or BS EN1092-1 or GB/T 9112—2000

1.Use suitable, standard flange seals to seal the flange connections.

2.Use standard flange bolts, nuts and gaskets.

3.Cross-tighten the screws.

4.2 Commissioning

Before commissioning, please confirm the following measures had been taken

1.Pinch valve and all accessories had been connected well, there is no leakage for all parts.

2.Pressure regulating must be installed to regulate the control pressure.

3.Any safety devices required must be in place and fully functional.

4.The operator must make sure the pumping medium is compatible with the pinch valve materials.

5.Any explosive conditions, please make sure no static spartk.

The pinch valve is normally open while there is no control pressure on the valve.Try to apply the optimum control pressure on pinch valve and check all parts and connections, make sure every part working properly.

Please release the control pressure if the pinch valve damaged during commissioning

5.Maintenance and Repair

5.1 Maintenance requirement

Make sure the control pressure had been relived before carrying out the maintenance and inspection.

inspection.Operations must cease in the pumping area for the duration of the work. The control pressure supply line must be disconnected from the pinch valve.

Ensure safety while doing the maintenace work.

5.2 Inspection

*The service life of the sleeve is depend on the control pressure, quality of the sleeve, operating temperatures, pumping medium, nominal size, load change duration, frequency, control and its components.

*Check the proper function of the pinch valve once per month. Depending on the operation conditions, a funcitonal check in shorter intervals may be required.

*Determine the inspection intervals depending on the operating conditions and frequency of the operation.

*Check the sleeve at regular intervals for wear and damage.

*Check that the pressure switch is set correctly and connection and joints on the pinch valve are fitted Correctly and sealed.

5.3 Maintenance interval

The operator is reponsible for the creation of a mainteance plan that include the mainteance intervals. This plan based on inspection experience and technical support from the supplier.

5.4 Repair work

Damaged sleeves, connections and joints as well as protection and sfaety settings must be repaired immediately or replaced with original spare parts.

6.Repair instruction

6.1.Sleeve replacement guidence for BMPS11 series

1.Remove all screws with a hex wrench

2. Use a flat screwdriver to pry the valve sokcet out

3. Lubricate the outline where the rubber hose contacts the inner wall of the valve body with wrench

4. Use a vise to clamp the hose out

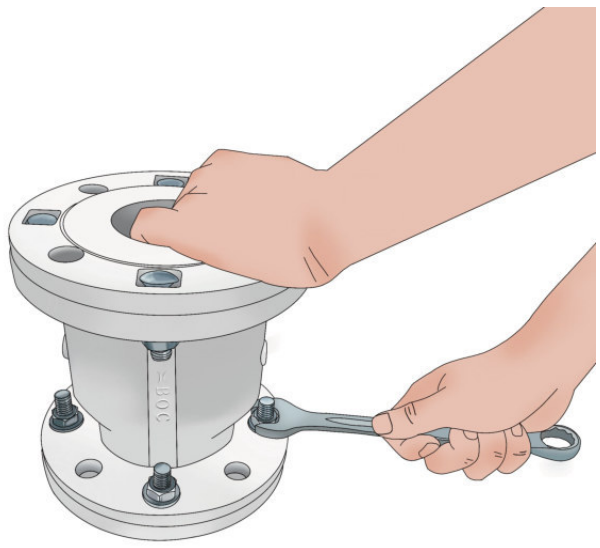
5. Replace the rubber hose with a new one

6. Lubricate the inner arc of the valve cover and the inner ring of the rubber hose

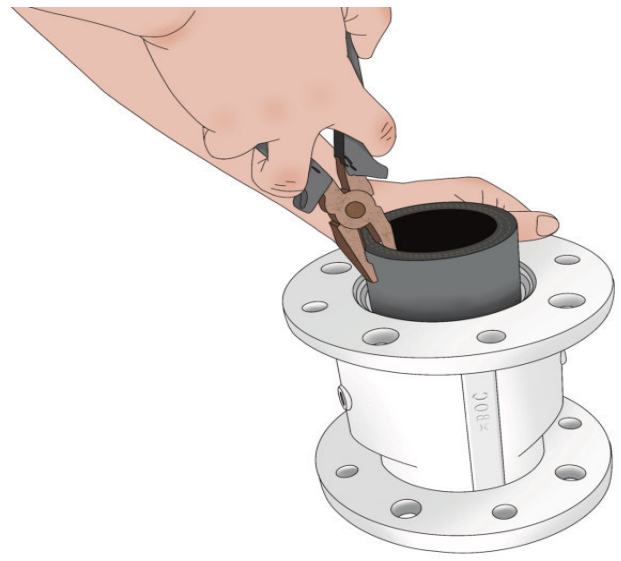
7. Screw the valve socket along the inner wall of the rubber hose, and then press the valve socket with one hand

8. Fix the valve socket with screws, and tighten the screws cross-stitch.

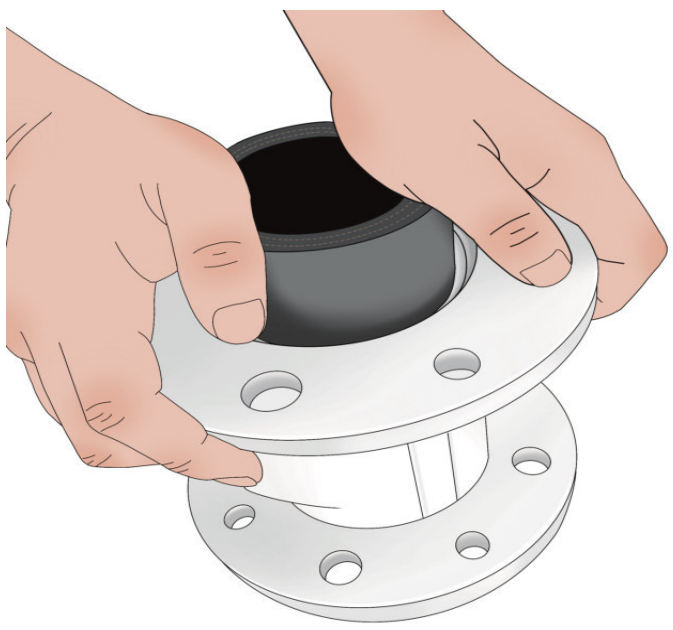
6.2.Sleeve replacement guidence for CSF-DN40 to CSF-DN80



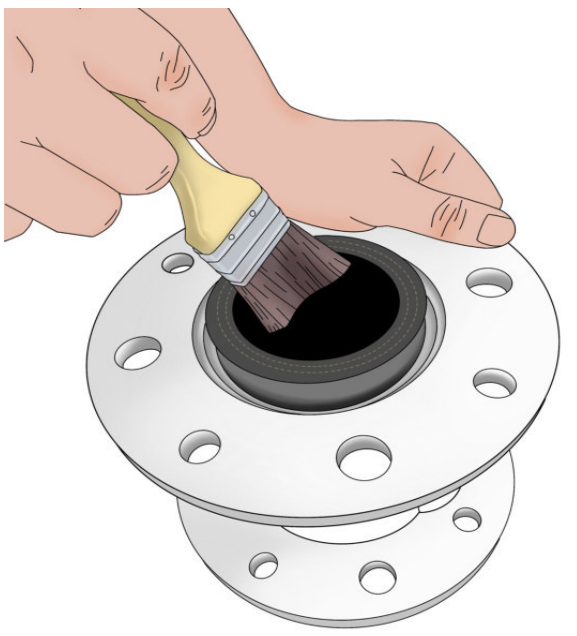
1.Remove all bolts and nuts with a spanner.



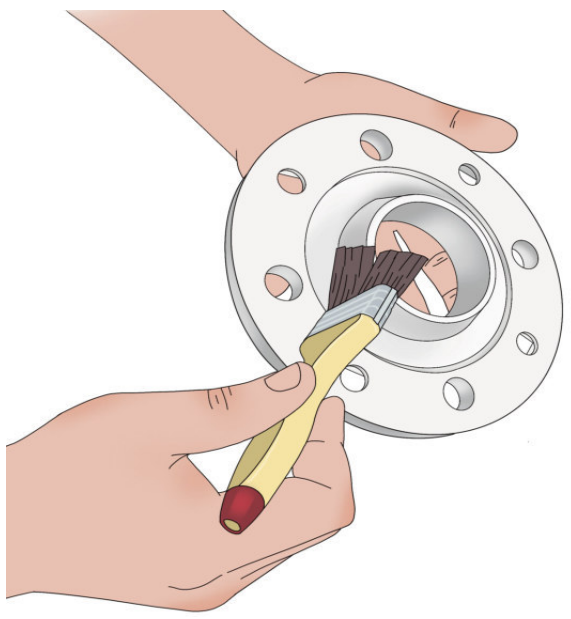
2. Use a vise to clamp the hose out.



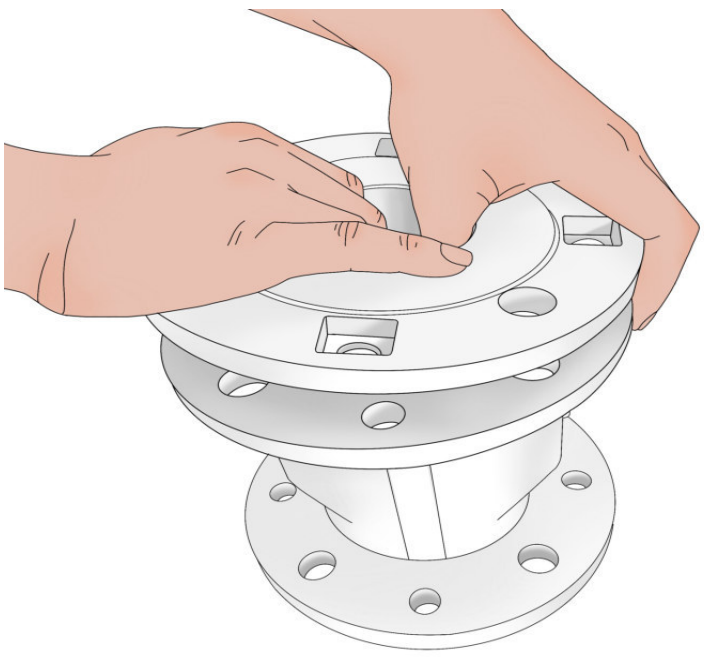
3. Push the new rubber hose into the body.



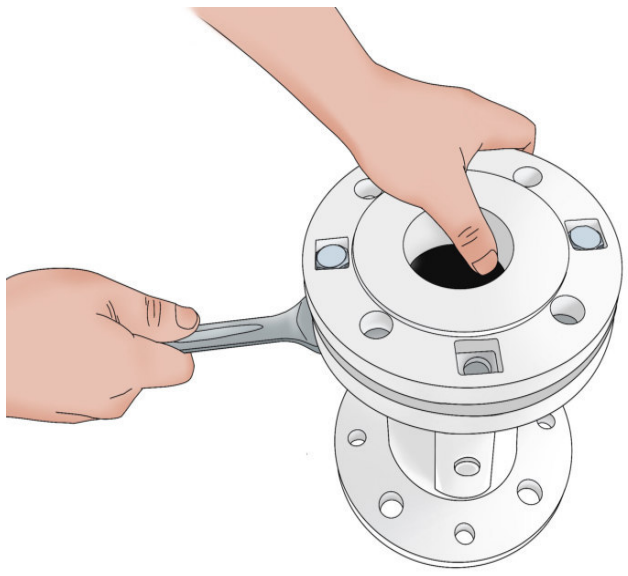
4. Lubricate the rubber hose inner edge.



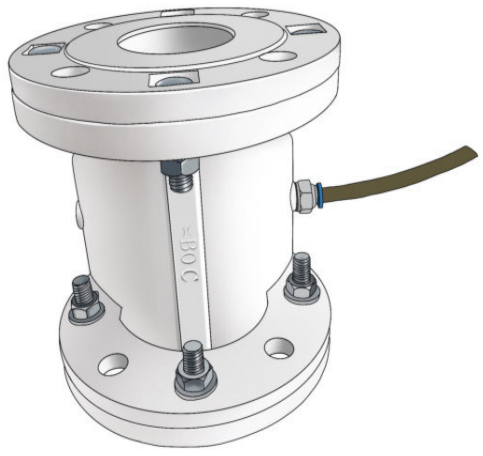
5. Lubricate the socket outer edge.



6. Inset the socket into the rubber hose, make sure the rubber hose’s inner edge cover the socket’s outer edge.

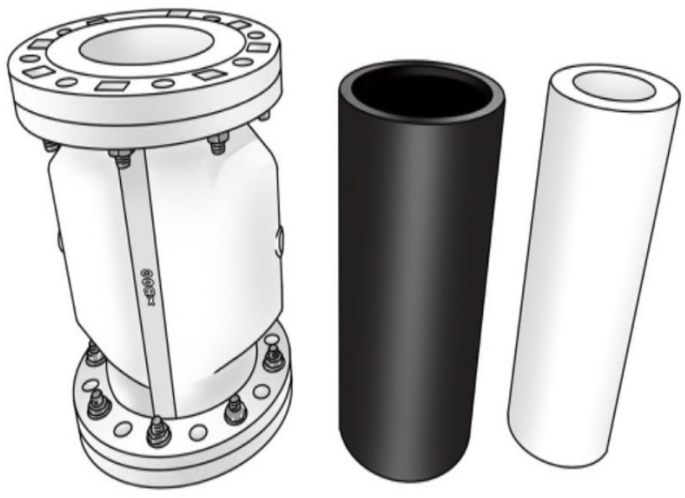


7. Push the socket with one hand, and cross tighten bolts, nuts, gaskets.



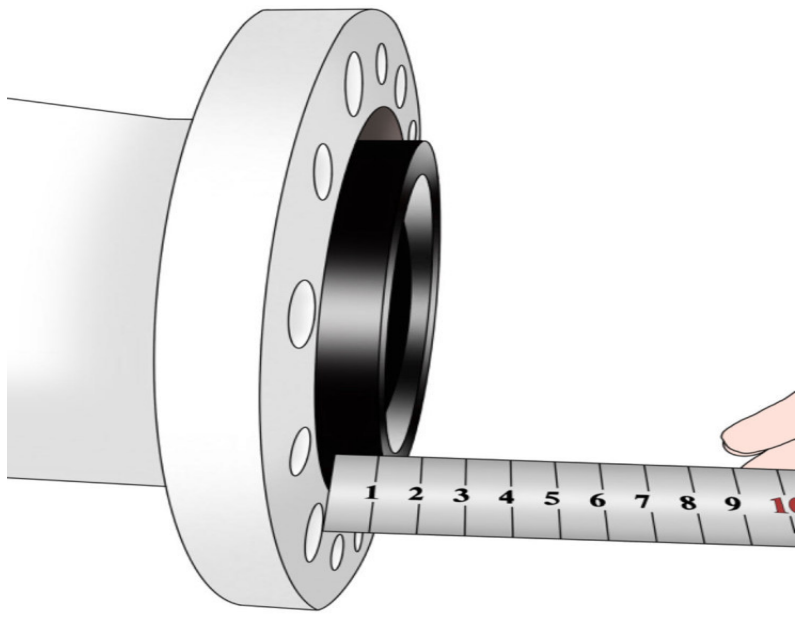
8. Finish assembly the flange , try to operate the valve at 3 bar several times then at 7 bar several times to watch the rubber form a lip seal and rebound normally.

6.3.Sleeve replacement guidence for CSF-DN100 to CSF-DN200

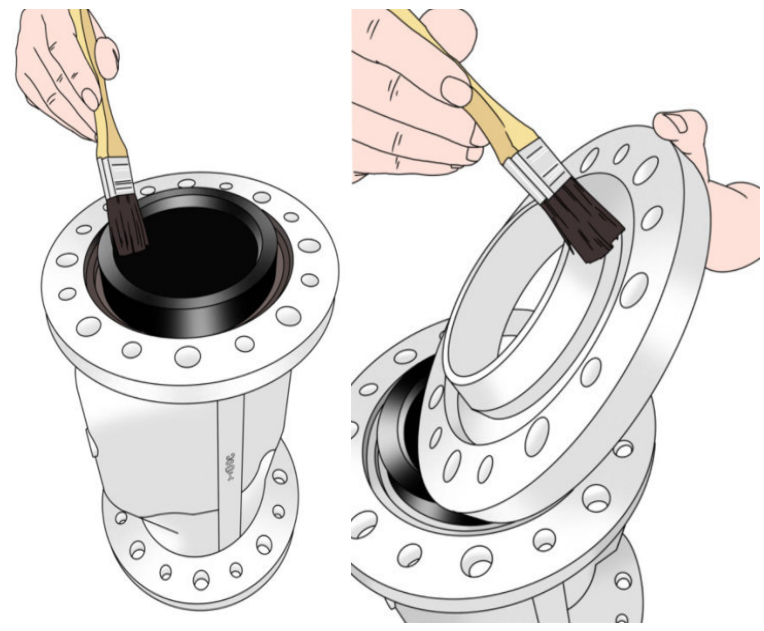


1.Prepare a new rubber sleeve and a plastic pipe, pipe outer dimension is 15-20mm smaller than the nominal diamater, length is similar with the valve length.

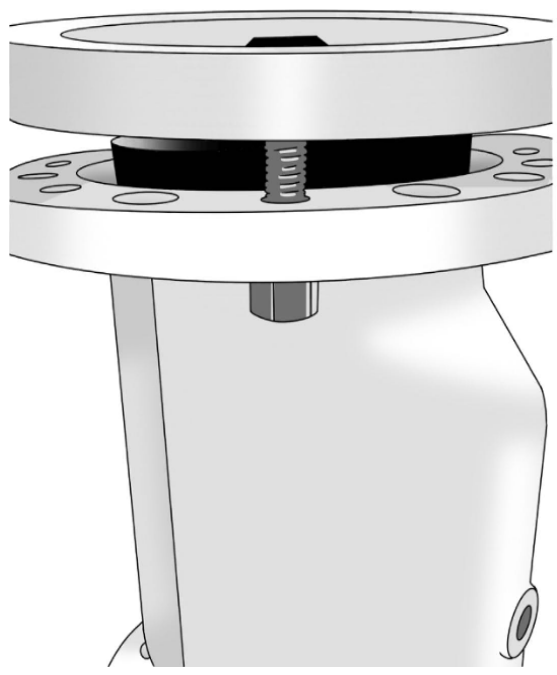
2. Loose the flange bolts,take off the damaged rubber sleeve, insert a new rubber sleeve into the body



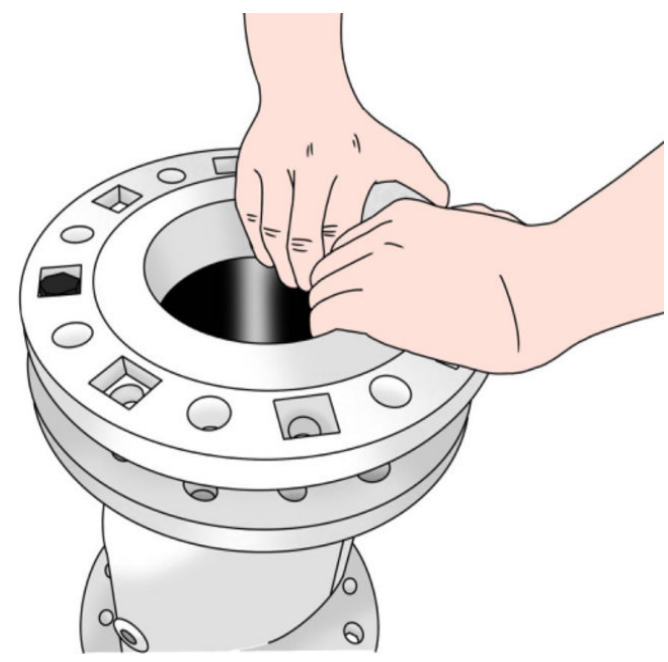
3.Make sure the rubber sleeve is in the middle of the body, the protuding lengths of rubber sleeve compare to flange must be almost the same, measure with a ruler or by visual.



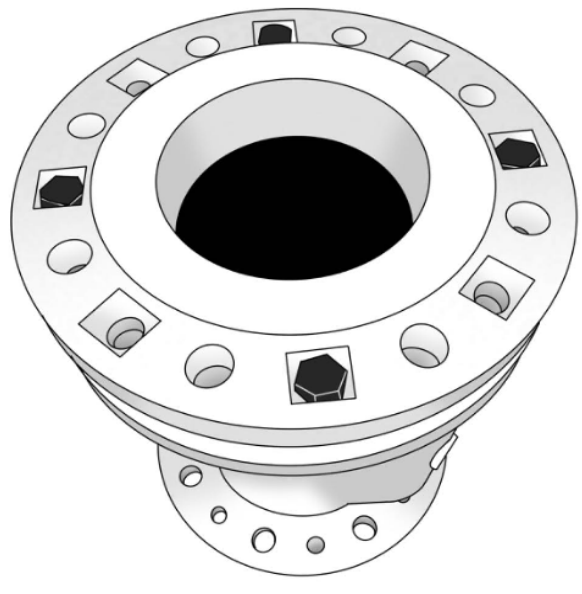
4. Lubricate the rubber sleeve's inner edge, and socket outer edge.



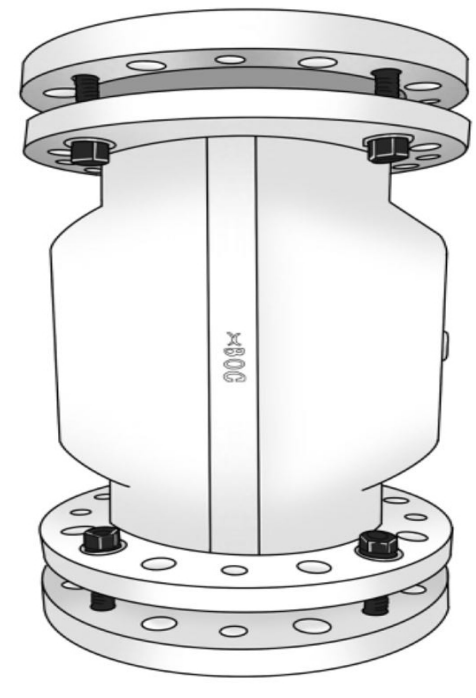
5. Put the socket on the rubber sleeve's chamfer, fix one bolt, fasten a little.



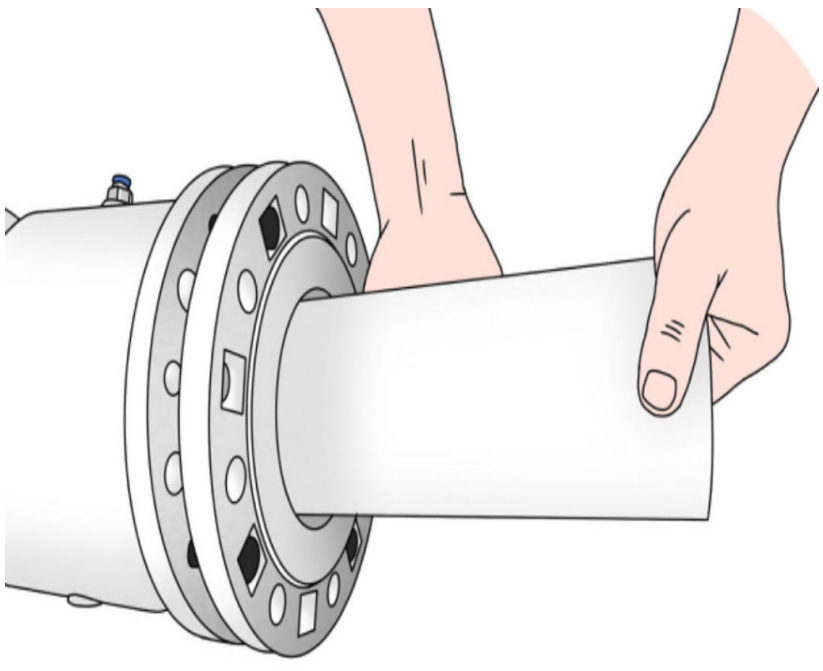
6. Push the socket into the rubber sleeve on the opossite side of the fixed bolt.



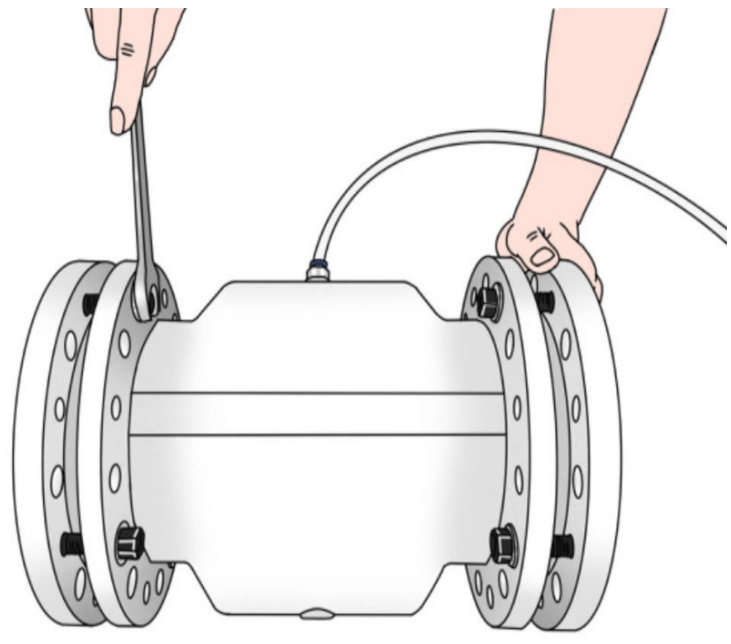
7. Hold the socket into the rubber sleeve, install remaining bolts, fasten a little.



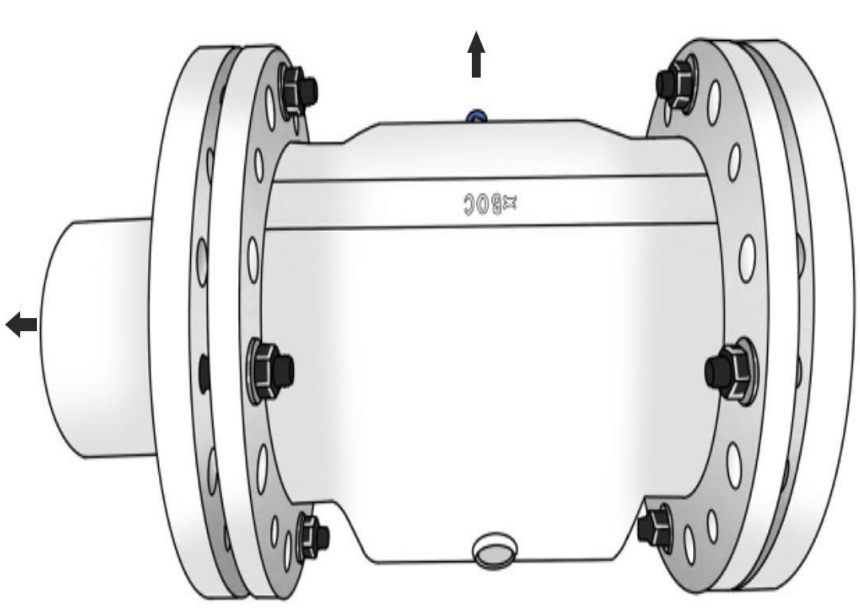
8. Install another socket in the same way. Both side flanges are fixed on the body.



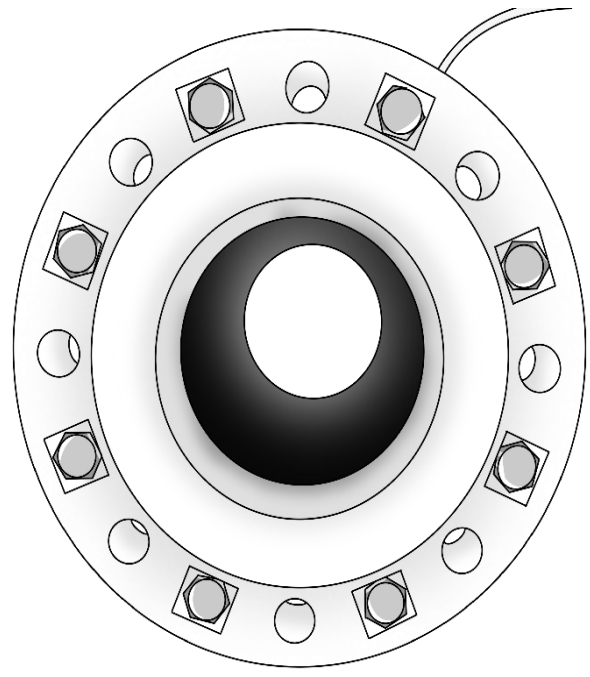
9.Push the plastic pipe into the valve body, make sure it is in the middle of the valve.



10.Supply 0.2 Mpa air pressure on the valve, you can hear the sound of air leakage, ignore it. Gradually tighten the screws from opposite sides



11.Take out the plastic pipe and release the air supply at the same Once you fell it is hard to fasten the screws, or the socket flange is close to the body flange, distance less than 10mm.



12.Finishing fasten all bolts, check the rubber hose is straight or not, try to operate the valve from 2 bar to 6 bar gradually, from low pressure to high pressure.

6.4.Sleeve replacement notes and safety instruction (Very Important)

1. Must use non-grease lubricating oil.

Very important !

Do not lubricate the body housing inner edge and the rubber sleeve's outer edge

2. If it is easy or a little bit hard to inert the rubber sleeve into the body housing, try to push hard slowly. Do not use lubricating oil.

3. If it is very hard to insert the rubber sleeve into the valve body, lubricate the rubber hose outer edge with non-grease lubricating oil a little to help, but not too much lubricating oil, then start assembly after several hours till the lurbriacting oil dry.

4.If too much oil on the body housing inner edge and rubber sleeve's outher edge, the rubber sleeve is easy to slip out from the body while testing at high control pressure. such as 5 bar or higher, it may cuase serious injuire to the operator.

5.After rubber sleeve's replacement , test pressure must gradually increase from 2 bar to 6 bar. From low pressure to high pressure to protect the operator from serious injuire.

7.Storage

Store the pinch valve in a dry and dust-free environment, escaped from UV rays and light. Ambient temperature is ok.

8.Malfauntion of pinch valve possibility

Malfunction	Possible cause	Solution
Pinch valve does not close or fully close	No control pressure	Check the air supply and regulating valve
	Control pressure too low	Increase the control pressure
	Sleeve damaged	Replace sleeve
Pinch valve does not open or fully open	Control pressure loss	Check the air supply
	Air exhaust is clogged	Replace a new solenoid valve or exhaust valve
	Vacuum in pumping area	Vacuum compensator
Sleeve wears out quickly	Excessive control pressure	Set the control pressure to optimum pressure
	Switching too fast	Increasing switching time
	Sleeve quality not suitable Such as temperature, medium.....	Change to a suitable material
Pinch valve opens/closes too slowly	Control pressure is too small	Increase the control pressure
	Control line is too long	Shorten the control line
	Air exhaust is clogged	Install a quick exhuast valve Exhuast valve damaged, replace it
Control medium enters pumping area	Sleeve damaged	Replace sleeve
Control medium exits the bleed outlet of the control valve	Sleeve damaged	Replace sleeve

9.Reducing the pipeline vibration and noisy

The small-diameter pneumatic pinch valve is a quick opening and closing valve, which will produce a water hammer while working, and the pressure at the front end of the valve will rise rapidly in a short period of time. At this moment, the pipeline will vibrate and cause big noise. Please fit a water hammer eliminator at the front of the valve to reduce the sudden increase in pressure and reduce vibration and noise. The resulting noise and vibration can impair the service life of pipes and valves at the same time.