

SERVICE INSTRUCTION

# PERC

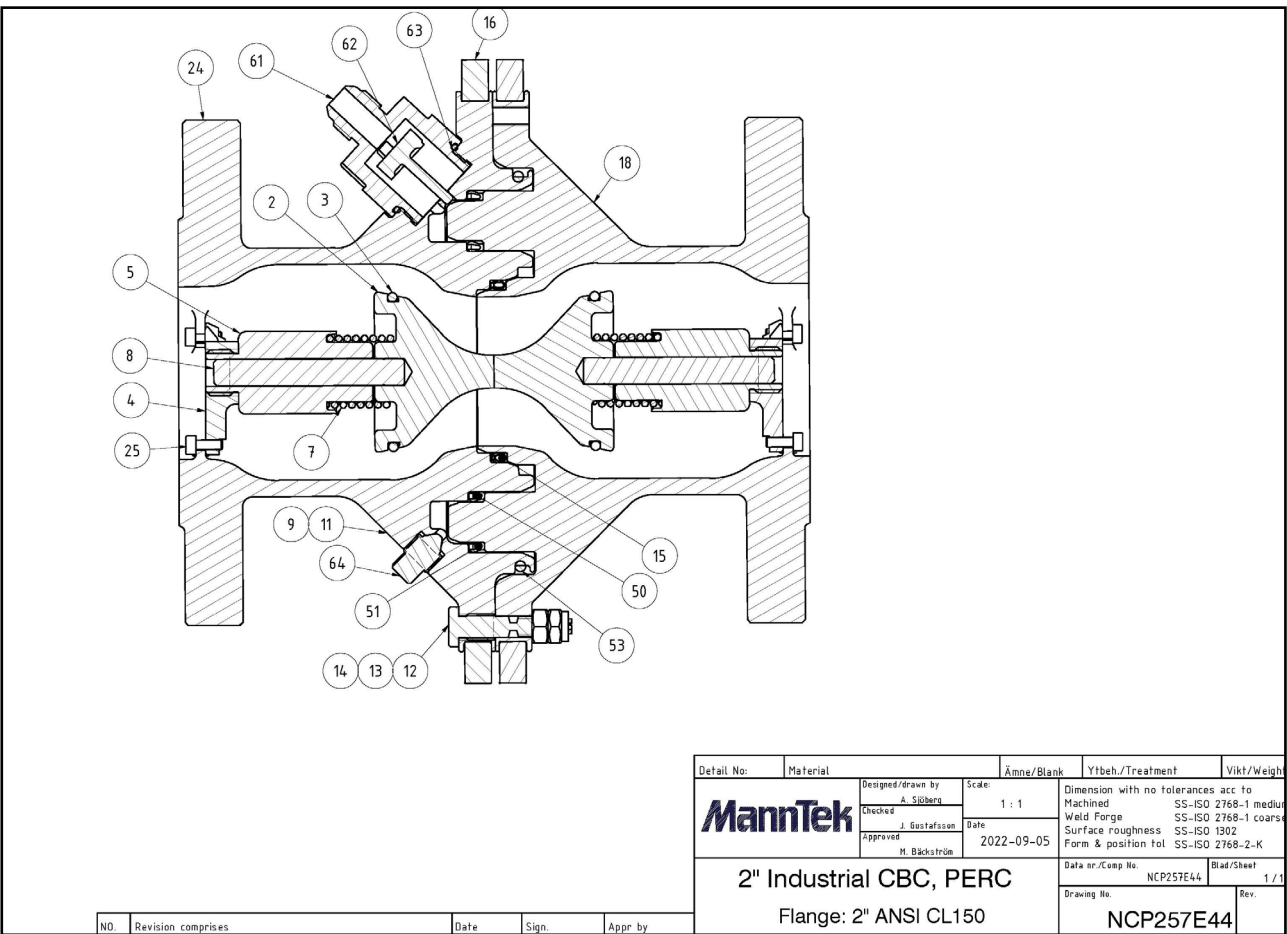
2" - E-Version



VERSION: 250108

# MannTek

# PERC – E-VERSION – 2"



MATERIAL: Stainless Steel

TYPE OF CONNECTION: Threaded and Flanged couplings have the same service instruction.

PERFORM A SERVICE: If leaking  
According to application service plan,  
(see regular service p.4)  
If change of media

## PLEASE NOTE

Make sure that you are using no grease for cryogenic applications



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## ITEMS NEEDED FOR SERVICE

PARTS NEEDED FOR SERVICE: Spare part kit and Sealing kit (for order numbers see the info box at the bottom of this page)

TOOLS NEEDED: Tool 001 (O-Ring Tools)  
Tool 020  
Screwdriver  
Wrench  
Allen Key

SPARE PART KIT INCLUDES: 4 pcs. O-rings  
3 pcs. Lip Seal  
3 pcs. Breaking Bolts  
3 pcs. Nuts  
3 pcs. Locking Nuts

OTHERS: Loctite® Thread locker.

CLEANING AGENTS: Strong clean® (Petroleum based degreasing agent)

### PLEASE NOTE

**Use only original MannTek spare parts for maintenance**

Spare part kit (S-NCP2E-XX)

Sealing kit (O-NCP2E-06)



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## MAINTENANCE AND SERVICE



Always depressurise the system and rinse all parts thoroughly before beginning any maintenance work. Ensure you wear protective goggles.



Use tweezers and neoprene or PVC gloves during handling. Avoid touching adjacent parts with bare hands. Rinse the parts again before proceeding with the “daily inspection”.

## DAILY INSPECTION

1. Visually inspect the coupling for cleanliness, wear, loose parts, damage and signs of corrosion.
2. Visually inspect the coupling for leaks.

## REGULAR SERVICE

The regular service interval depends heavily on local regulations and application conditions. If no specific interval is specified or agreed upon, and it is a new application with unknown parameters, we recommend performing the first service after one year. Based on the inspection results, you can then determine the appropriate intervals for future servicing.

The service procedure should be carried out as follows:

1. Replace seals at least once a year.
2. Replace worn or damaged components.

## AFTER RELEASE

When the coupling is put into service, there is a risk that fluid may spurt out. Special protective measures, such as using appropriate personal protective equipment, must therefore be adopted. Additionally, ensure the system is thoroughly cleaned. After cleaning, remove any residue left by the cleaning agent.

- a) Wear suitable personal protective equipment (PPE).
- b) Ensure the coupling is depressurised and emptied.
- c) Clean the coupling before disassembly using a cleaning agent that is suitable for the fluid being pumped.



## DISASSEMBLE

Unscrew the damaged remnants of the breaking bolts.

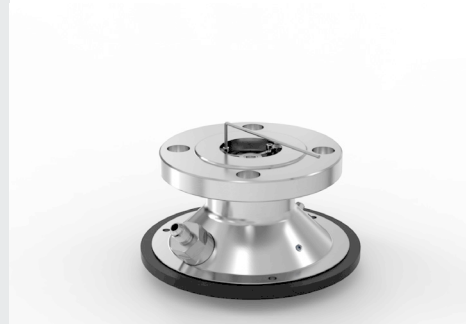
Inspect for dirt, seal damage, and any visible physical damage, such as impacts or deformations.



Unscrew the three screws securing the spindle steering.

A distance pin in the piston protrudes from the housing.

To disassemble, use a support plate with a hole in the middle to accommodate the distance pin, preventing any damage to the internal components.



Press down the spindle steering and rotate it until it is free. Release it carefully.

**Warning:** The piston guide is spring-loaded—risk of injury.

Using the recommended special tool will simplify the process and enhance safety.

Repeat the procedure for the second half.



## DETAIL PARTS AFTER DISASSEMBLING

Remove all the components from the body. Inspect each part for damage or wear before proceeding.

Pos.2 – Piston

Pos.7 – Spring

Pos.4&5 – Spindle steering & Spring cap

Pos.18 – Body



## PISTON O-RING

Replace the O-ring (pos.3) on the piston with a new one.

When removing the old O-ring, take care not to scratch the sealing surface.

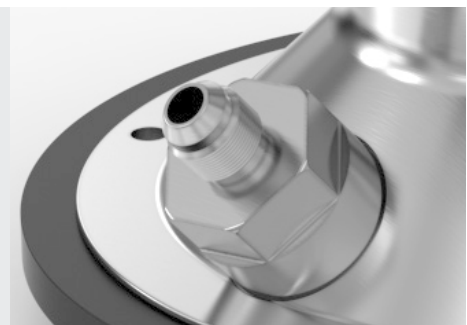
Ensure the new O-ring is mounted without damage or twisting. Avoid scratching the seal during installation.

Only use original MannTek spare parts for replacement.



## PERC

Remove the PERC valve from the coupling housing carefully.



Replace the O-ring with a new one and ensure the PERC valve rotates smoothly without any issues.

Reinstall the PERC valve into the coupling housing securely.



## MOUNTING PISTON

The piston has a larger diameter than the three brackets for the piston guide.

Insert the piston as illustrated and place it in a relaxed position within the valve seat. Be cautious, as the piston will protrude from the other side.

Using a support plate with a hole in the middle can aid in the assembly process.



## REASSEMBLE COUPLING HALVES

Install the spring along with the spring cap and the spindle steering with the guidance bushing.

Press down the spindle steering and rotate it to secure it in its proper position.



Insert the screws into the designated holes in the brackets and secure the spindle steering by tightening the three locking screws. Use Loctite® to lock the screws in place.

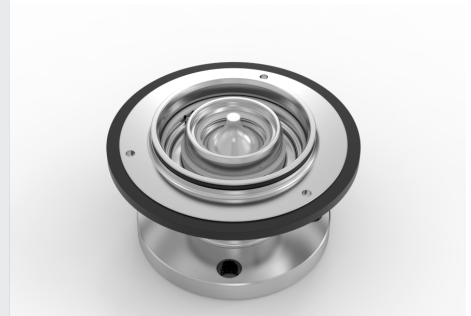
Repeat the same procedure for the second half.



## OUTER BODY SEALING RING

Replace the sealing rings (pos. 15, pos. 50, pos. 51, pos. 53) on the body with new ones.

Be cautious when removing the lip-seal to avoid scratching the sealing surface. When installing the new seals, ensure that the sealing surface remains undamaged. The open profile of the lip-seal should be facing downward, as shown in the picture.



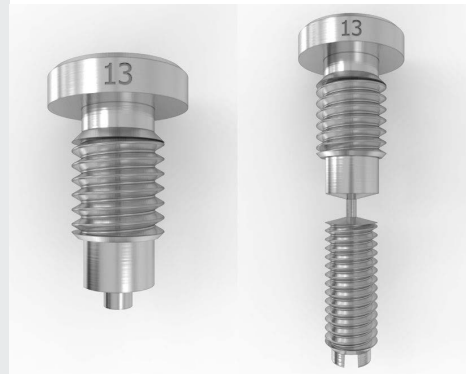
## BREAKING BOLTS

Replace the bolts with original spare parts from MannTek, ensuring that the replacement bolts have the same breaking force.

The total breaking force for each bolt can be found engraved on the head of the bolt (e.g., 13 kN, as shown in the pictures).

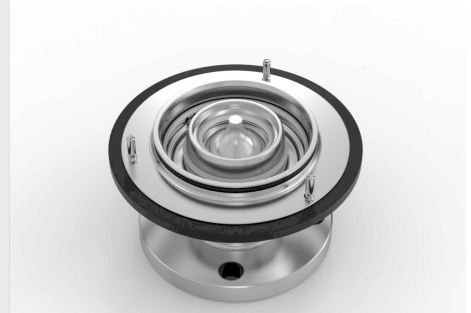
Left: Destroyed bolt after release

Right: New breaking bolt



## REASSEMBLE COUPLING

Screw the new breaking bolts into the designated holes on the coupling body. Ensure that they are tightened securely, but avoid over-tightening to prevent damage to the bolts or the coupling.





Place both halves on top of each other and gently press them together. Ensure that the breaking bolts align with the bore holes in the second half.

It's crucial that the bodies are perfectly aligned when you're pressing the halves together. Take your time and exercise caution to avoid damaging the lip seal.

Employing a press along with a fixture will significantly simplify the task.



Carefully thread the nuts onto the bolts by hand. Stop once they are snug against the halves when pressed together.

Avoid Over Tightening! Emphasize not using excessive force when securing the nuts. This will prevent any potential damage to the bolts.



Use a standard 10mm wrench to fasten the nut, but only turn it a maximum of 45 degrees.

Ensure that all three bolts are mounted in the same manner. Failing to do so may result in one bolt being damaged before the others.

*Standard wrench 10mm*



Begin by threading the second nut onto the bolt. To prevent undue pressure on the breaking bolt, use a wrench to hold the first nut steady while tightening the second one.



## TEST THE COUPLING

Perform a visual inspection ensuring that everything is in its place. Finally, do a tightness test according to the test procedure described on the next page.

If the coupling functions correctly you are ready to mount the PERC back in your application again.



## TEST PROCEDURE

After each major service a leak test of each coupling is required.

The following test parameters are in accordance with EN12266, EN14432 and ISO5208:

TEST PROCEDURE	TEST PRESSURE	STOP TIME
Tightness test (air/N <sub>2</sub> )	6 bar +/- 1 bar*	60 s

TABLE 1 – TEST PRESSURE

Instead of dry air/N<sub>2</sub> we recommend making the tightness test with liquid nitrogen or with LNG.

If a pressure test should be achieved for the coupling mounted in an assembly follow the respective text instructions for the equipment but do not exceed our recommended maximum test pressure of the coupling which you will find in table 2. If testing with higher pressure is necessary, please ask our sales department for a special test bolt kit.

It is not recommended to use liquids for the tests which will freeze under operation with LNG. If so it must be guaranteed that the coupling is completely free of liquid before it will be used in operation.

### TEST PROCEDURE:

- Pressurise the PERC chamber with a pilot pressure of 2.5-3.5 bar through the valve house (pos.61)
- Cool down the coupling by letting the test medium flow through until the coupling bodies are cooled down (the couplings should be completely covered by ice powder from condensed water from the air). Internal pressure should be 5-7 bar.
- Verify that there is no visible leakage between the coupling halves.
- Close the inlet for the pilot pressure and hold for 10 minutes. Note if the pressure goes up or down by 0,5 bar during that time.
- If the pressure rises this could indicate a leakage between media chamber and PERC chamber. This is caused by damaged seals pos.15 and pos.50. If the pressure drops, it indicates that the seal pos.55 is damaged. Make sure to change any damaged seals and perform a new test before installing the coupling in any assembly.

## STORAGE

Store coupling in a dry, dust free, dark place, in ambient temperature.