AQUAMETRO
OIL & MARINE

What to do

when the oil meter is stuck?

What to do

When a meter is not rotating anymore!

Problem:
Flow meter is not running anymore, flow values are not changing on display or roller counter and signals are not transmitted through the pulser.

The Reason:
Long time experience and service data show, that **90%** of all problems, which where faced using a mechanical oil flowmeter, is due to bad quality of diesel and oil and missing or bad pre filtration before the oilmeter.
Despite mentioning in the technical manual, bad filtration has been installed which is not able to clean the fuel to a certain quality, where the flow meter will run smooth and without a problem.

What to do when the meter is stuck?
There are 2 options what can be done:

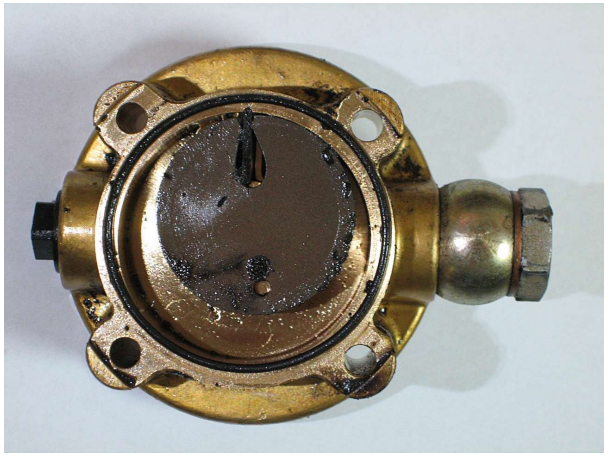
- Either you send back the meters to us as supplier, we clean the meter, assemble it again and re calibrate afterwards. This would be the best and most accurate way to do but also the highest in cost!

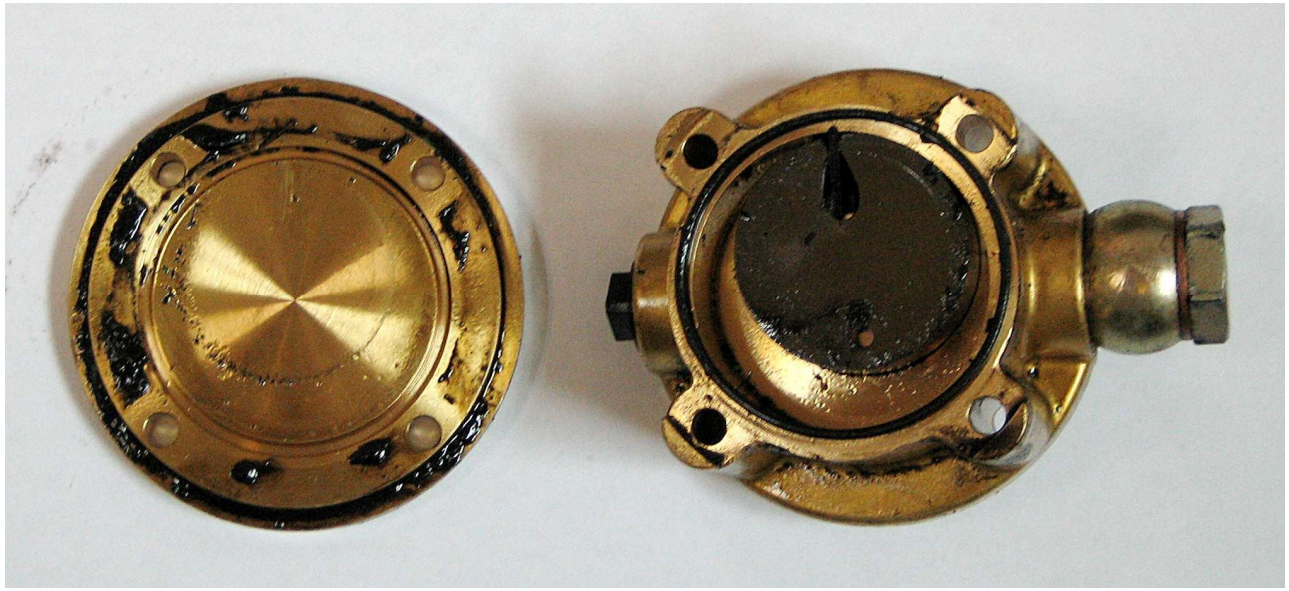
- 2nd option is that the customer itself is cleaning his meters, as these meters are mechanical meters and are designed to be able to be cleaned and assembled by the customer. The main difference compared to option 1 is the much lower cost and the loss of the original calibration. Anyhow, when assembled in the right way, described afterwards, the meter should operate within his designated accuracies!

Use always in addition the MBA (Maintenance Manual) of each meter

What to do

Dirt example





What to do

Meter size 4..8..12mm






What to do

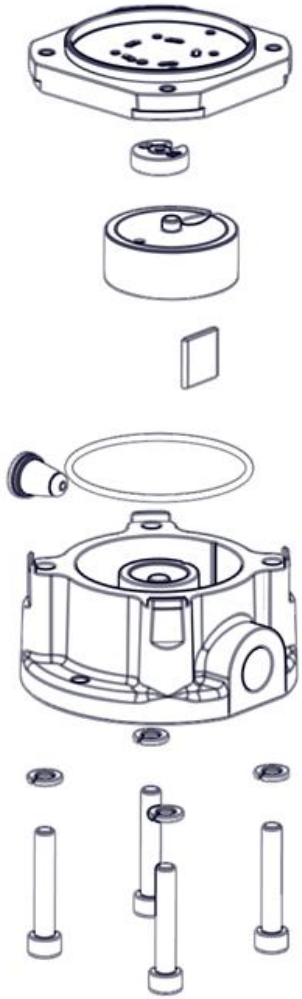
Single chamber flowmeter VZO 4/8 OEM

Cleaning / dismantling CONTOIL® VZO 4/8 OEM

1. Remove the four screws from the bottom of the measuring chamber.
2. Disassemble with care the different parts .
3. Take out the rotary piston and the separating plate.
4. Check if parts are worn or damaged. Replace such parts and clean all others with a non-fuzzy cloth. Use wash petrol when necessary!
5. Reassemble the meter by following the steps in reverse order. No adjustments are required.
6. Check the easy movement of the rotary piston by blowing briefly and gently into the inlet opening («**->**»on the measuring chamber).

Never use compressed air!

Tightening torque of the nuts: **4mm: 2.5 Nm**
8mm: 4 Nm



What to do

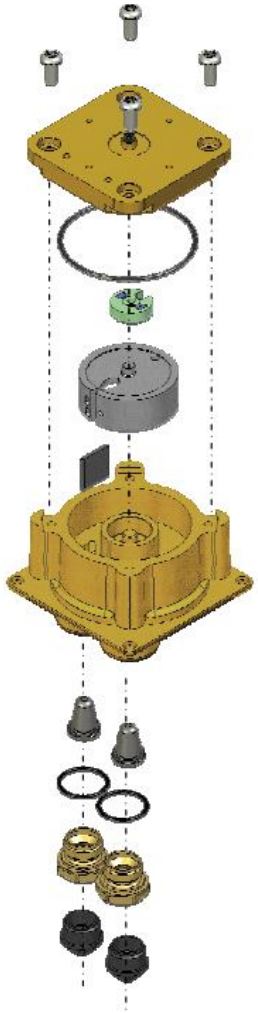
Single chamber flowmeter VZO 4/8

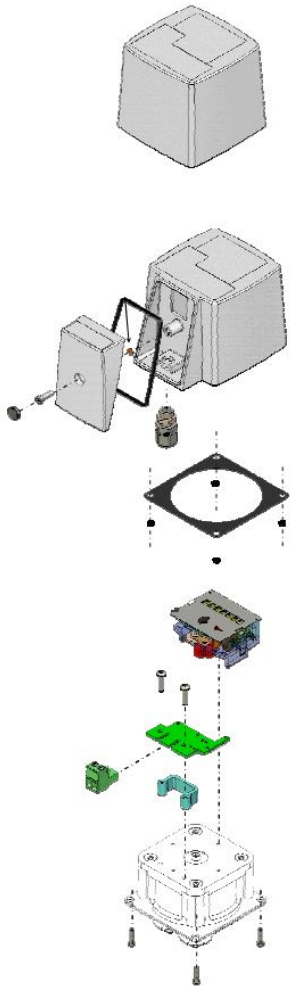
Cleaning / dismantling CONTOIL® VZO 4/8

1. Remove the four screws from the bottom of the measuring chamber.
2. Disassemble with care the different parts .
3. Take out the rotary piston and the separating plate.
4. Check if parts are worn or damaged. Replace such parts and clean all others with a non-fuzzy cloth. Use wash petrol when necessary!
5. Reassemble the meter by following the steps in reverse order. No adjustments are required.
6. Check the easy movement of the rotary piston by blowing briefly and gently into the inlet opening («**->**»on the measuring chamber).

Never use compressed air!

Tightening torque of the nuts: **4mm: 2.5 Nm**
8mm: 4 Nm





What to do

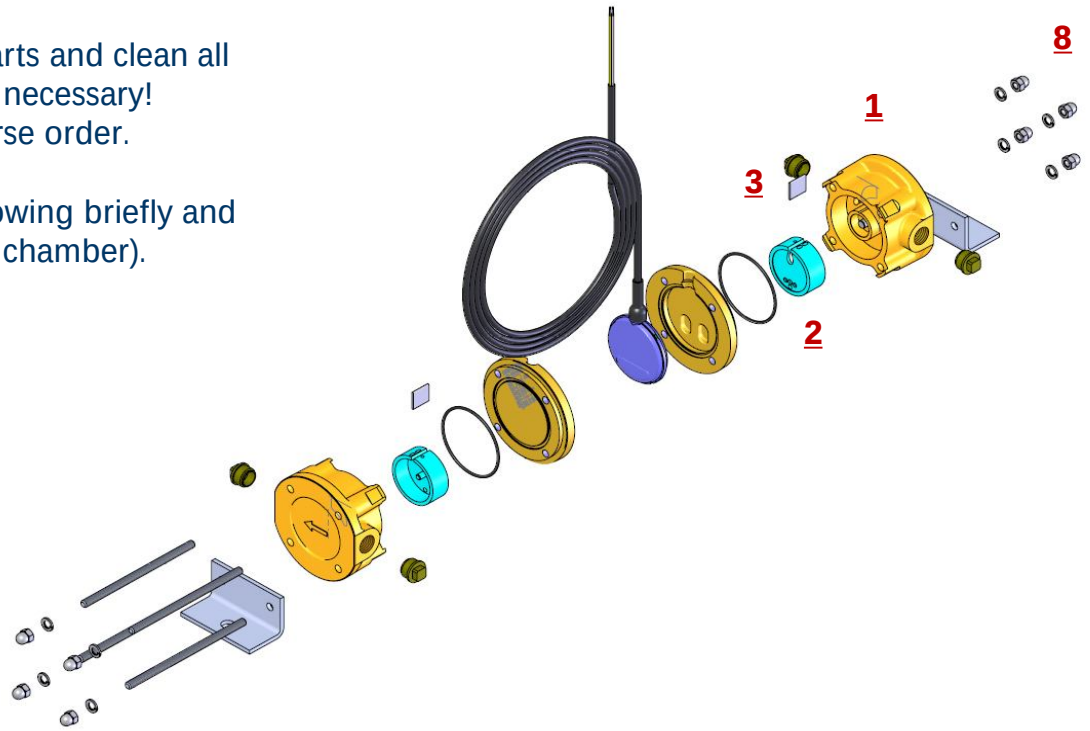
Double chamber flowmeter DFM 8 D and EDM

Cleaning / dismantling CONTOIL® DFM 8 D and EDM

1. Remove the four screws from the bottom of the measuring chamber.
2. Disassemble with care the different parts .
3. Take out the rotary piston and the separating plate.
4. Check if parts are worn or damaged. Replace such parts and clean all others with a non-fuzzy cloth. Use wash petrol when necessary!
5. Reassemble the meter by following the steps in reverse order. No adjustments are required.
6. Check the easy movement of the rotary piston by blowing briefly and gently into the inlet opening («**->**»on the measuring chamber).

Never use compressed air!

Tightening torque of the nuts: 5 Nm



What to do

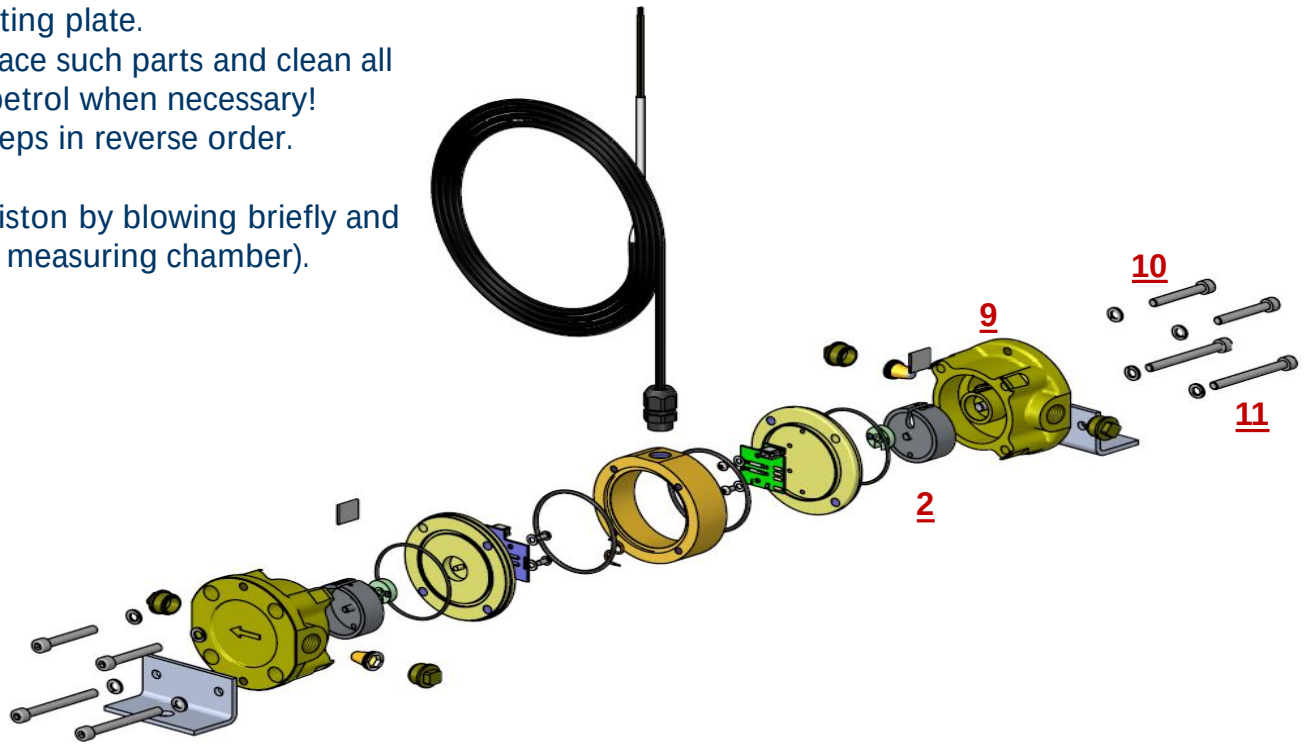
Double chamber flowmeter DFM 8/12 ECO

Cleaning / dismantling CONTOIL® DFM 8/12 ECO

1. Remove the four screws from the bottom of the measuring chamber.
2. Disassemble with care the different parts .
3. Take out the rotary piston and the separating plate.
4. Check if parts are worn or damaged. Replace such parts and clean all others with a non-fuzzy cloth. Use wash petrol when necessary!
5. Reassemble the meter by following the steps in reverse order. No adjustments are required.
6. Check the easy movement of the rotary piston by blowing briefly and gently into the inlet opening («**->**»on the measuring chamber).

Never use compressed air!

Tightening torque of the nuts: 5 Nm



What to do

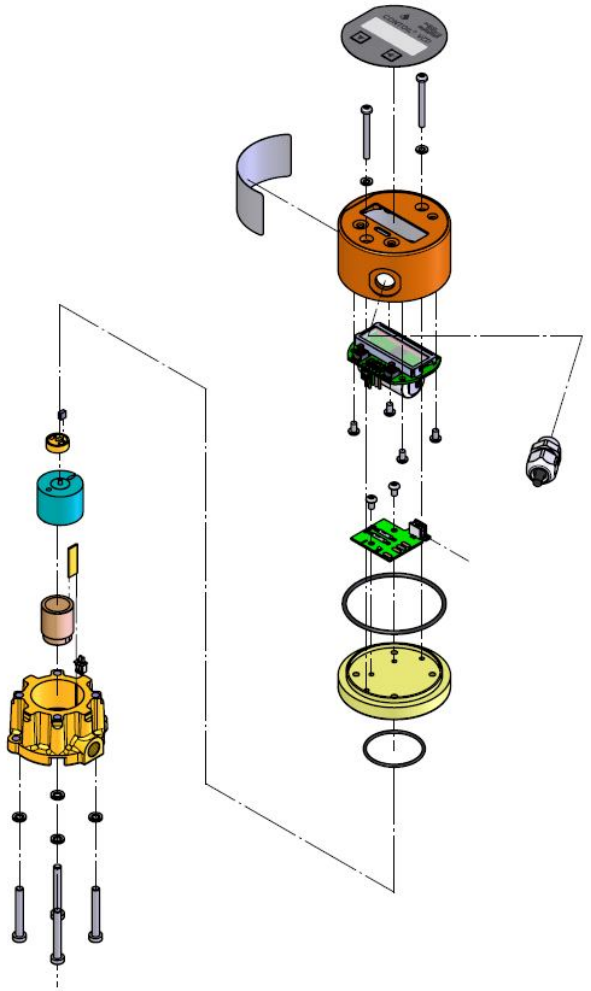
Single chamber flowmeter VZD 4/8

Cleaning / dismantling CONTOIL® VZD 4/8

1. Remove the four screws from the bottom of the measuring chamber.
2. Disassemble with care the different parts .
3. Take out the rotary piston and the separating plate.
4. Check if parts are worn or damaged. Replace such parts and clean all others with a non-fuzzy cloth. Use wash petrol when necessary!
5. Reassemble the meter by following the steps in reverse order. No adjustments are required.
6. Check the easy movement of the rotary piston by blowing briefly and gently into the inlet opening («**->**»on the measuring chamber).

Never use compressed air!

Tightening torque of the nuts: **4mm: 2.5 Nm**
8mm: 4 Nm



What to do

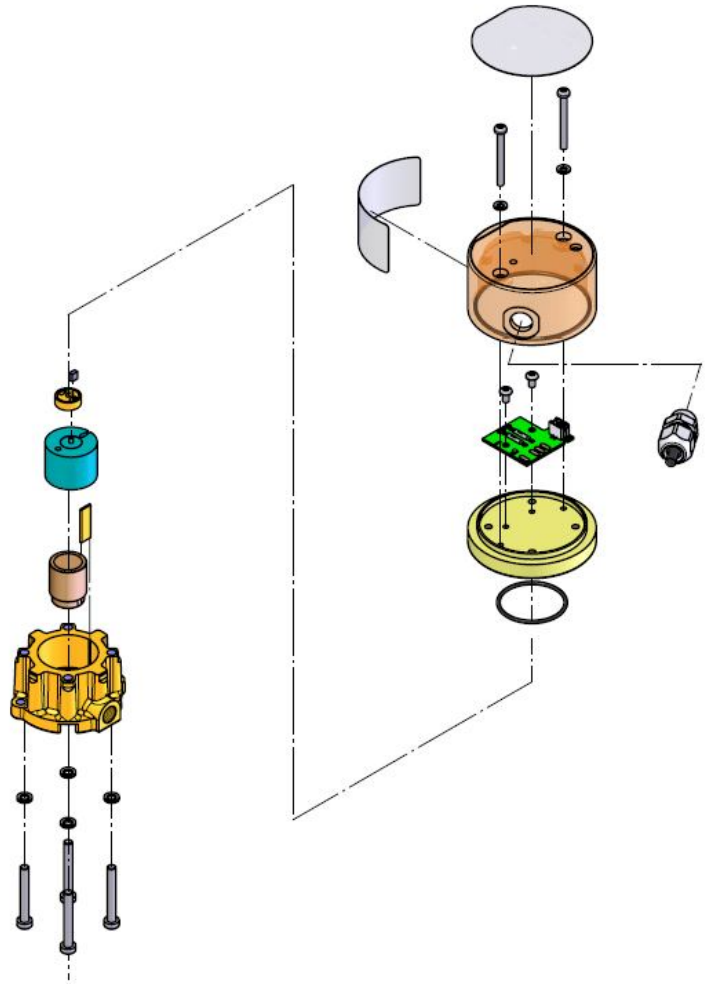
Single chamber flowmeter VZP 4/8

Cleaning / dismantling CONTOIL® VZP 4/8

1. Remove the four screws from the bottom of the measuring chamber.
2. Disassemble with care the different parts .
3. Take out the rotary piston and the separating plate.
4. Check if parts are worn or damaged. Replace such parts and clean all others with a non-fuzzy cloth. Use wash petrol when necessary!
5. Reassemble the meter by following the steps in reverse order. No adjustments are required.
6. Check the easy movement of the rotary piston by blowing briefly and gently into the inlet opening («**->**»on the measuring chamber).

Never use compressed air!

Tightening torque of the nuts: **4mm: 2.5 Nm**
8mm: 4 Nm



What to do

Meters size 15 … 50mm

What to do

Single chamber flowmeter DFM 20/25 S

Detaching of measuring chamber

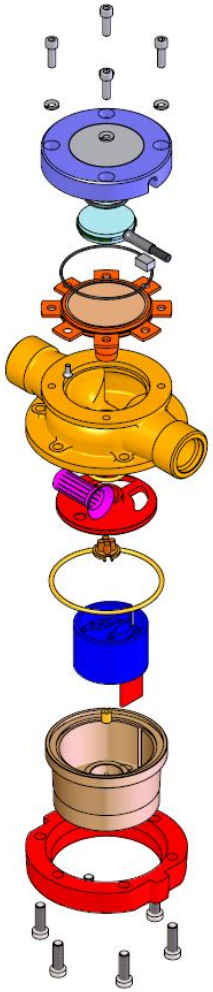
Mark or memorize markings (dot, dash and embossment) at measuring chamber and housing. Remove screws of measuring chamber. Remove measuring chamber and cover from housing. Remove deposits from housing surface and seating using fine emery cloth and clean housing connections.
For cleaning the use of non-fraying cloths and kerosene or solvents is recommended.

Replacing of filter

When removing the filter, small chips may form, which must not be allowed to enter the measuring chamber. Therefore it is recommended to remove the housing from the measuring unit first (see above).
Pull filter out using a screwdriver or similar and replace it. Put new filter in place. Press the metal ring into position using an appropriate tool (cylindric bar). Take care, not to press on the bottom of the filter! Rinse housing or remove possible chips with a cloth.

Cleaning or repairing measuring unit

Pull off cover from measuring chamber. Remove driver, rotary piston, separating plate, and guide roller from measuring chamber. Clean and check if the parts have worn or are damaged. Replace such parts and clean all others.



What to do

Single chamber flowmeter DFM 20/25 S

Assembly of measuring chamber

Place guide roller onto pin at bottom of measuring chamber. Insert separating plate into measuring chamber.
Insert the rotary piston with eccentric driver pin (Ø3 mm) pointing upwards into the measuring chamber. Position it so that the driver pin and separating plate lie on one axis.

Note: The centric guide pin of the rotary piston is now seated in the bottom of the measuring chamber. Place the driver onto the pin of the cover of the measuring chamber and align the driver's long, deep groove to the axis of the separating plate .

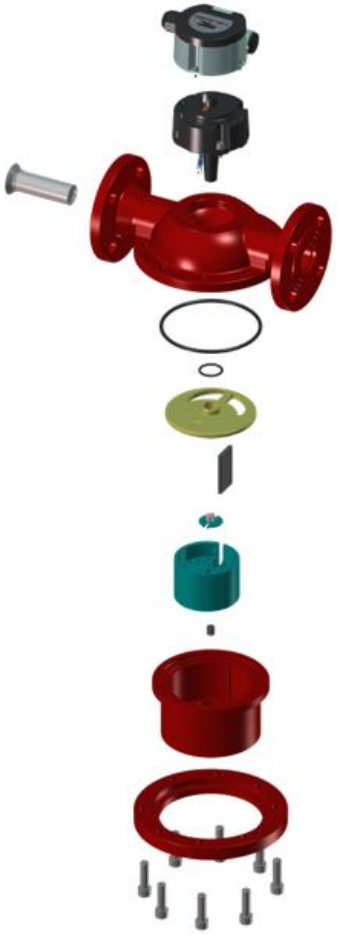
Place cover of measuring chamber with aligned driver onto the measuring chamber, so that the separating plate and driver pin of the rotary piston engage into the corresponding groove and driver.
The cover should be flush and the rotary piston should move freely.

Mounting of measuring chamber

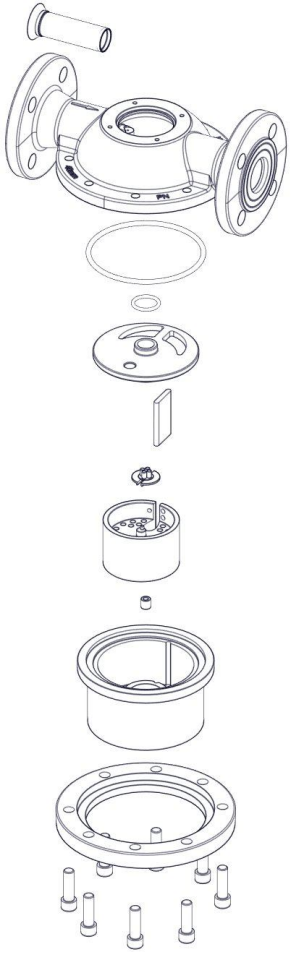
Fit the new gaskets lightly greased with silicon. Align inlet/outlet openings of the housing to the openings in the cover of the measuring chamber. The openings must correspond to each other. Join housing and measuring chamber and check the markings.
Align marking (dot, dash and embossment) on the measuring chamber base at right angles to the meter axis.
Insert measuring chamber screws and tighten them with correct torque.

Tightening torque of the nuts for **DFM 20 S: 6 Nm ;**
DFM 25 S: 16 Nm

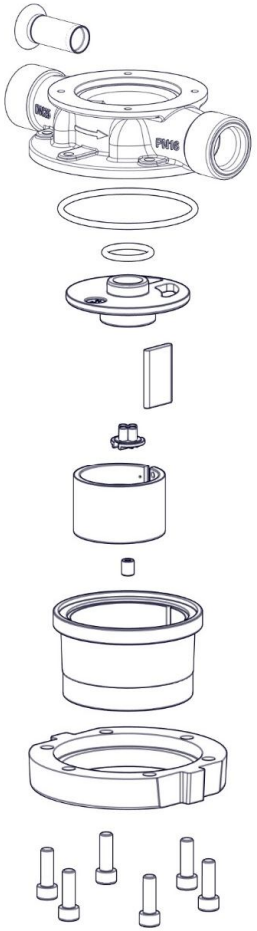
What to do



VZF II



VZO flange



VZF threaded end

What to do

Repair instructions for measuring sensors

Detaching of measuring chamber
- Mark or memorize markings (dot, dash, embossment) at measuring chamber and housing.
- Remove screws of measuring chamber.
- Remove measuring chamber and cover from housing.
- Remove deposits from housing surface and seating using fine emery cloth (Fig. 1).
- Clean housing connections with a cloth.
- For cleaning the use of non-fraying cloths and kerosene or solvents is recommended.

Replacing of filter
- When removing the filter, small chips may form, which must not be allowed to enter the measuring chamber. Therefore, its recommended to remove the housing from the measuring unit first (as above).
- Pull filter out using a screwdriver or similar and replace it.
- Put new filter in place. Press the metal ring into position using an appropriate tool (cylindric bar).
- Take care, not to press on the bottom of the filter!
- Rinse housing or remove possible chips with a cloth.

Cleaning or repairing measuring unit
- Pull off cover from measuring chamber.
- Remove driver, rotary piston, separating plate, and guide roller from measuring chamber. Clean and check if worn or damaged. Replace such parts and clean all others.

What to do

Assembly of measuring chamber

- Place guide roller onto pin at bottom of measuring chamber.
- Insert separating plate into measuring chamber.
- Insert the rotary piston with eccentric driver pin (3 mm) pointing upwards into the measuring chamber. Position it so that the driver pin and separating plate lie on one axis.
- Note: The centric guide pin of the rotary piston is now seated in the bottom of the measuring chamber
- Place the driver onto the pin of the cover of the measuring chamber and align the driver's long, deep groove to the axis of the separating plate (Fig. 3).
- Place cover of measuring chamber with aligned driver onto the measuring chamber, so that the separating plate and driver pin of the rotary piston engage into the corresponding groove and driver (Fig. 4).
- The cover should be flush and the rotary piston should move freely.

Mounting of measuring chamber

- Fit the new gaskets lightly greased with silicon (Fig. 5).
- Align inlet/outlet openings of the housing to the openings in the cover of the measuring chamber (Fig. 6).
- The openings must correspond to each other.
- Join housing and measuring chamber and check the markings
- Align marking (dot, dash, embossment) on the measuring chamber base at right angles to the meter axis.
- Insert measuring chamber screws and tighten them with correct torque (see page 4).

Flow sensor	Screw Torque
VZO 4/ VZO 4 OEM	**2.5 Nm**
VZP/VZD 4	
VZO 8/ VZO 8 OEM	**4 Nm**
DFM 8/12 D/S/EDM/ECO	**5 Nm**
VZP/VZD 8	
DFM 20 S	**6 Nm**
DFM 25 S	**16 Nm**
VZO/VZF 15	**6 Nm**
VZO/VZF 20	**6 Nm**
VZO/VZF 25	**16 Nm**
VZO/VZF 40	**47 Nm**
VZO/VZF 50	**100 Nm**