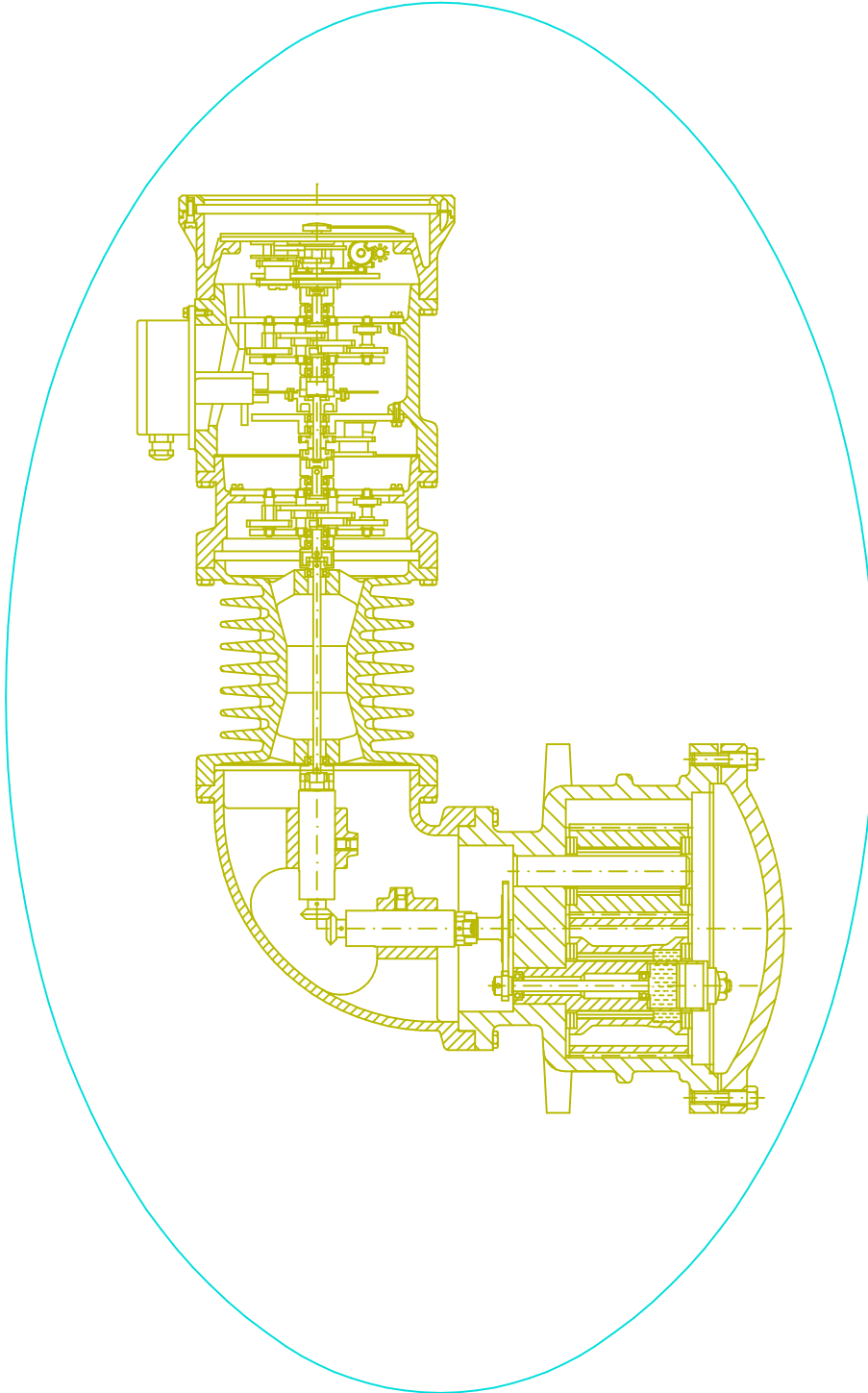




METROVAL

FLUIDS CONTROL

OVAL GEAR METER TYPE OSC AND OSCE



MANUAL

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1– INSTALLATION

1.1– HANDLING

The meter should be handled with care during transportation, storage and installation.

1.2– OPERATIONAL DATA

Observe the operational data specified on the Identification Plate on the meter. Attend to the order specifications and to the data sheet.

In case of changing of the operational data, contact Metroval informing the meter's serial number and model.

1.3– INSTALLATION IN THE PIPELINE

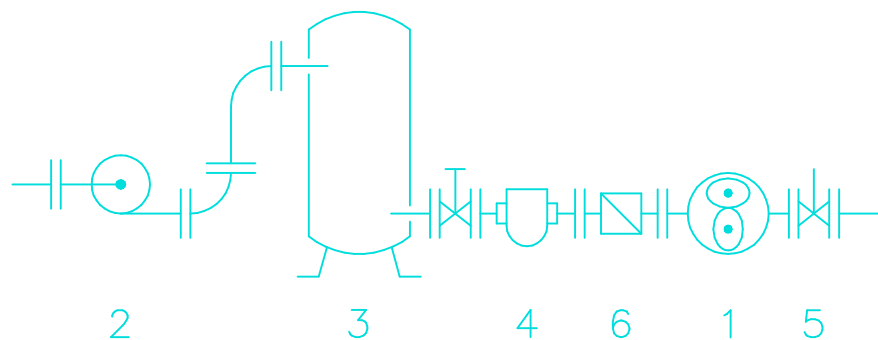
Install the Oval Gear Meter (1) in the pipeline after the pump (2).

1.4– METER'S MEASURING CHAMBER

Install the Oval Gear Meter (1) in the system in a way that the Measuring Chamber is always filled with liquid during stops and when the pump is turned off. If necessary, install a drain valve (6).

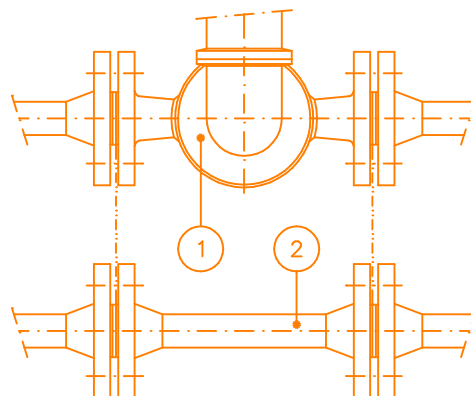
1.5– STRAINER

To protect the Meter against damage caused by solids install a Strainer (4) (mesh=0.25mm), before the meter.



1.6– PIPE CLEANING

Clean the piping in order to remove all solid particles. Wash the piping installing a flanged piece of pipe (2) instead of the Meter (1), to avoid damaging it.

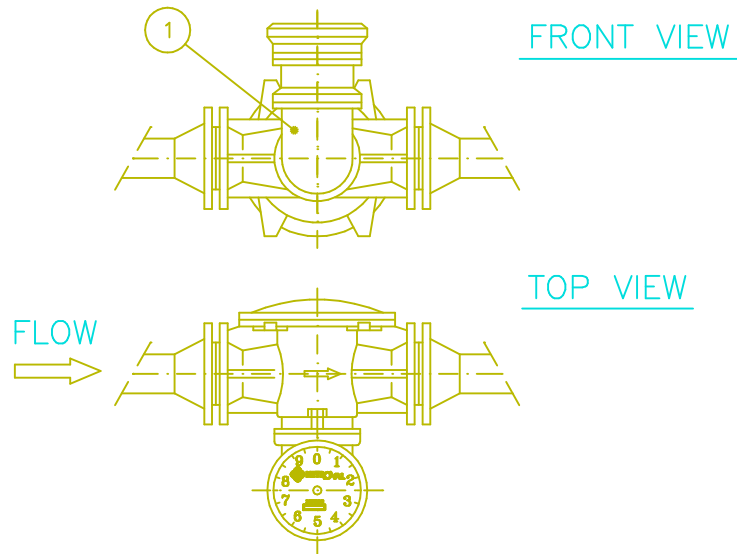


1.7– REMOVING THE PROTECTION COVERS

Remove the protection covers from the Meter's flanges just before the installation. Ensure that no solid particles penetrate the Oval Meter during installation.

1.8– FLOW DIRECTION

Install the Meter in a way that the arrow in the Meter Housing (1) points towards the same direction of the line's flow direction.

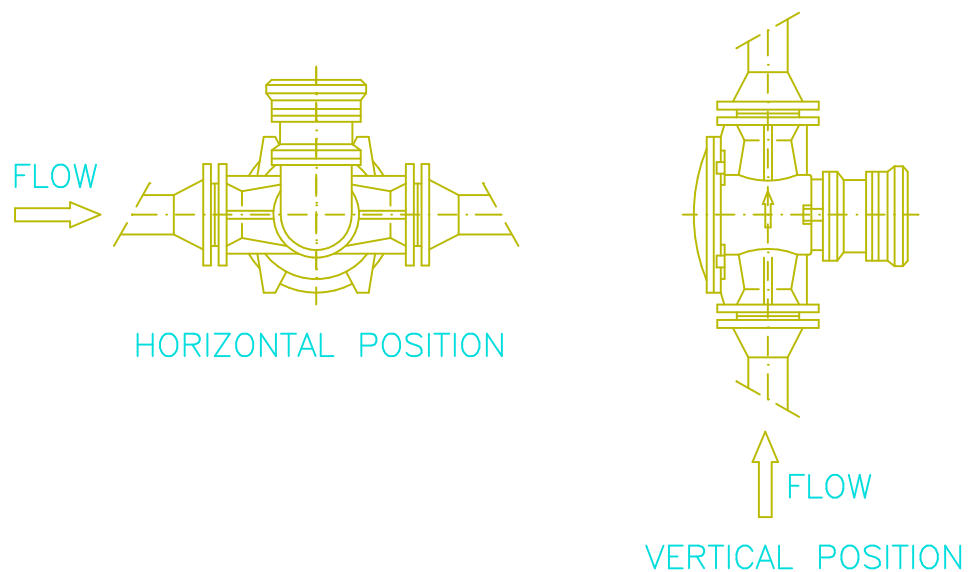


2– METER ASSEMBLY IN THE PIPELINE

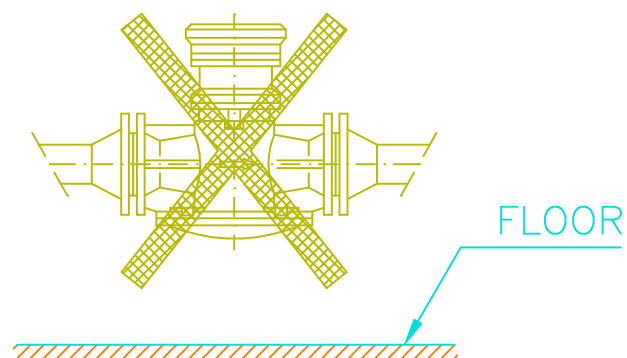
2.1– CORRECT ASSEMBLY POSITIONS

The Oval Gear Meter can be installed vertically or horizontally.

IMPORTANT: The Shafts and the Oval Gears must be on the horizontal position, otherwise, the equipment will be damaged.



WARNING: Never install the Oval Gear Meter as shown in the figure below.



2.2– PIPELINE MECHANICAL TENSIONS

Install the Oval Gear Meter free of pipeline mechanical tensions.

2.3– JOINTS

Use joints that are compatible to the liquid being measured. The joints shouldn't be wider than the pipe section.

3– FILLING THE SYSTEM WITH LIQUID

3.1– SLOW STARTUP

Fill the system slowly, with the valve after the Meter closed, then slowly open the valve after the Meter.

4– STARTUP

4.1– BEGINNING TO OPERATE

The Oval Gear Meter is now ready to work. When operating for the first time, open the valve slowly.

4.2– HIGH VISCOSITY LIQUIDS THAT NEED PREVIOUS HEATING

Previously heat the Meter, the strainer and the piping before starting to work with high viscosity liquids that need previous heating.

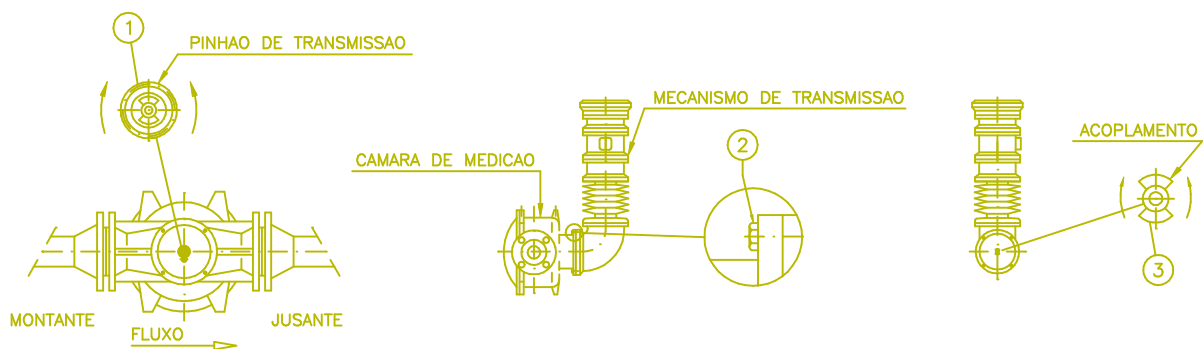
5– MANTEINANCE

5.1– CHECKING THE TRANSMISSION

To check the couplings (3) remove the bolts (2) and manually check if the couplings (3) are turning freely. If this not occurs in the transmission proceed according to 5.2.

The coupling gear (1) from the measuring chamber has to be checked in the same way. If this not occurs proceed according 5.3.

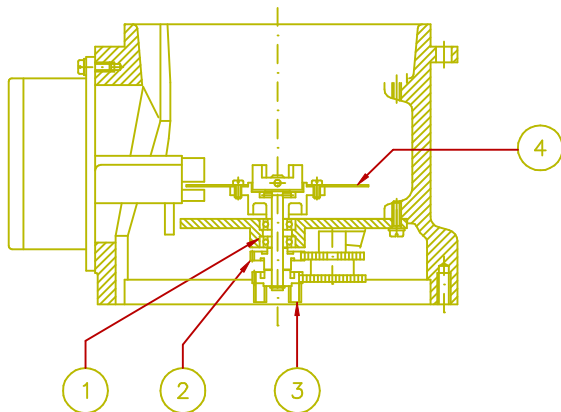
In case the checkings above are ok, the Meter has to be removed to have the measuring chamber checked according 5.4.



5.2- REPLACING PARTS

If the transmission mechanism is jammed, it must be disassembled and checked manually, to assure that each section coupling turns freely. When the malfunction is located at one of the sections, the following parts can be replaced:

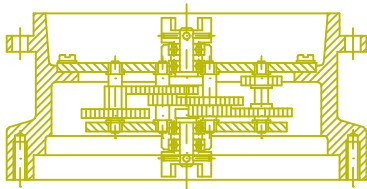
PULSE GENERATOR AG19



PARTS

- 1- BALL BEARING
- 2- CORRECTION GEAR
- 3- COUPLING
- 4- VANE DISC

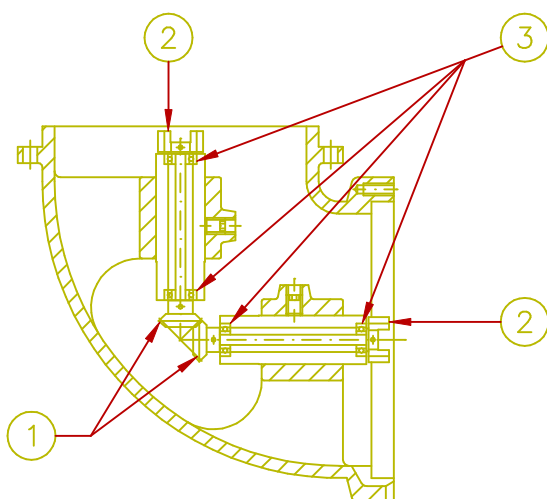
GEAR BOX



PARTS

This unit has the internal parts to be replaced completely.

90° ELBOW



PARTS

- 1- GEAR
- 2- COUPLING
- 3- BALL BEARING

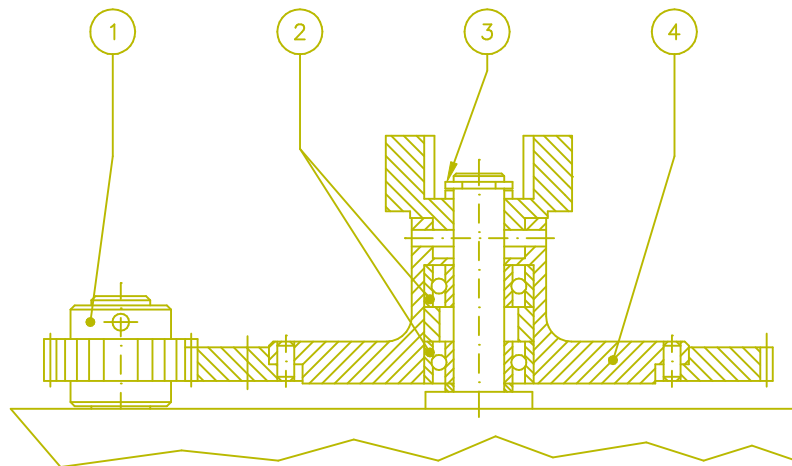
5.3– METER HOUSING MAINTENANCE

5.3.1– METER TYPE OSC / OSCE 5, 10, 50 AND 115

Remove ring (3) from the transmission gear (4) and pull it out, check the ball bearings (2) and the gear teeth. In case the ball bearings (2) are damaged, they must be changed. Special care must be taken in order to use ball bearings suitable with the meter process temperature.

If the gear teeth are damaged the transmission gear (4) has to be changed.

In case the gear (1), in meters type OSC5, 10 and 115 proceed according 5.3.3.1, and for meter type OSC50, proceed according 5.3.3.2.

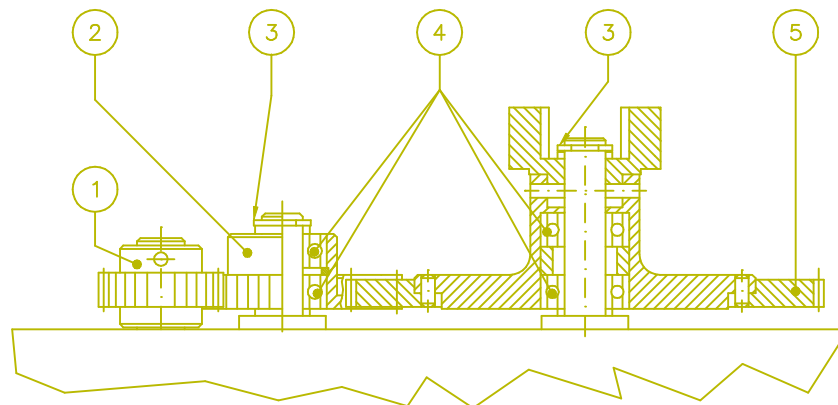


5.3.2– METER TYPE OSC / OSCE 200 AND 400

Remove ring (3) from the transmission gear (5) and from the gear (2) and pull the gears out. Check the ball bearings (4) and the gears teeth. In case the ball bearings (2) are damaged, special care must be taken in order to use ball bearings suitable with the meter process temperature.

If the gear teeth are damaged the transmission gears have to be changed.

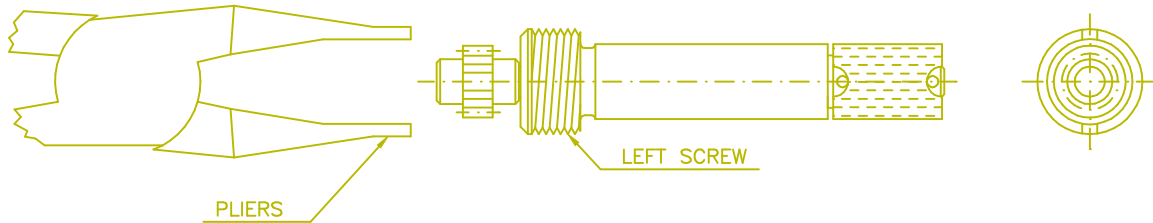
If the gear (1) has to be changed, proceed according 5.3.3.2.



5.3.3– DRIVEN MAGNET

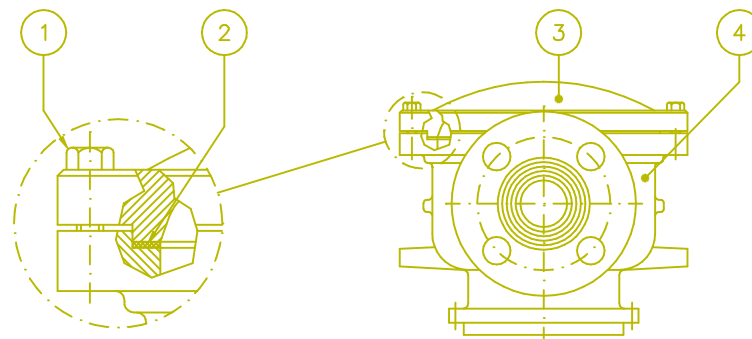
5.3.3.1– FOR METER TYPES: OSC / OSCE 5 AND 10

Pull out the driven magnet from shaft, using a pair of pliers (left screw).
If necessary replace it by a new one.



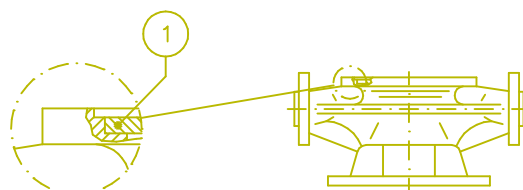
5.4– MEASURING CHAMBER CHECK

To open the measuring chamber (4) it is necessary to take the flow Meter from the pipeline and be sure it was drained and decontaminated.
Remove the bolts (1), the cover (3) and the gasket (2). To continue the disassembling check the instructions according the Meter types below.



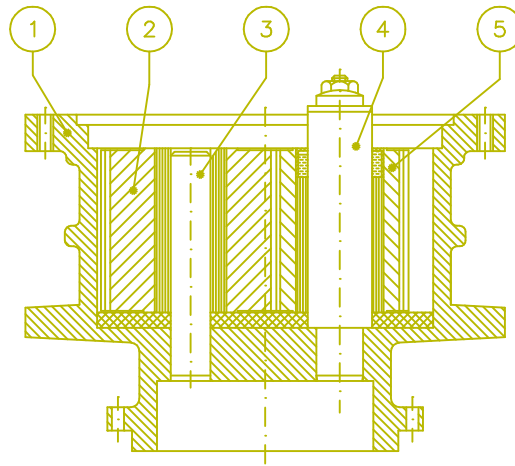
5.4.1– METERS TYPE OSC / OSCE 5 AND 10

For all Meter types remove manually the measuring chamber cover (1).



5.5– VISUAL INSPECTION MEASURING CHAMBER

Since the measuring chamber (1) is opened, a visual inspection is possible. To proceed remove the oval gears (2 and 5) and place them on a smooth surface. Look for scratches or worn out areas at the bottom or at the walls of the measuring chamber. A uniform surface indicates an instrument in good conditions. In case there are excessive wear in the gears teeth or bearings, they must be replaced.



5.6– MAINTENANCE AND REPLACEMENT OF OVAL GEARS

All the repairs on the oval gears must be done at Metroval.

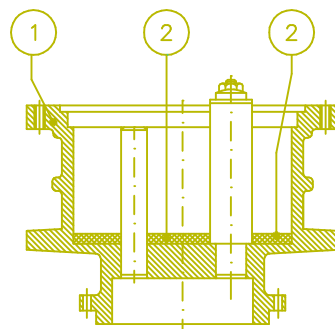
5.7– INSPECTION AND REPLACEMENT OF THE LOWER GRAPHITE PLATES

After removing the oval gears, check for deep scratches at the lower graphite plates (2). If these scratches are found, the lower graphite plates(2) must be replaced as described below.

To remove the lower graphite plates (2) located at the bottom of the measuring chamber (1), hold tight one of the plates while injecting air in the openings between them.

If the method described above doesn't work, the lower graphite plates (2) must be destroyed.

ATTENTION!! Be careful not to damage the bottom of the measuring chamber (1) when breaking the lower graphite plates (2).



5.8– INSPECTION AND REPLACEMENT OF THE UPPER GRAPHITE PLATE

The upper graphite plate must be examined in the same way as the lower graphite plate, looking for damage, excessively worn out areas or deep scratches. If any of those are found it's necessary to replace the plate.

After replacing the necessary parts, the Meter can be assembled and used again.

6– PUTTING THE METER OFF SERVICE

If the Oval Gear Meter is taken off service for a long period of time it should be fully cleaned and conserved with acid – free oil.

Both flanges must be sealed for protection.

The Oval Gear Meter must be stored in a dry place.

6.1– SPARE PARTS

When asking for the spare parts list please mention your meter's serial number.