From February 1st, 2017 SAMES Technologies SAS becomes SAMES KREMLIN SAS

*A partir du 1/02/17, SAMES Technologies SAS devient SAMES KREMLIN SAS*

SAMES KREMLIN


# User manual

## ”Easy Rinsing”
## Metering Gear Pumps
## 1.2 - 2.4 - 6 and 10 cc

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**Throughout the year, our company offers training courses in the operation and maintenance of your equipment.**
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**SAS Sames Technologies** operating manuals are written in French and translated into English, German, Spanish, Italian and Portuguese.
The French version is deemed the official text and Sames will not be liable for the translations into other languages.

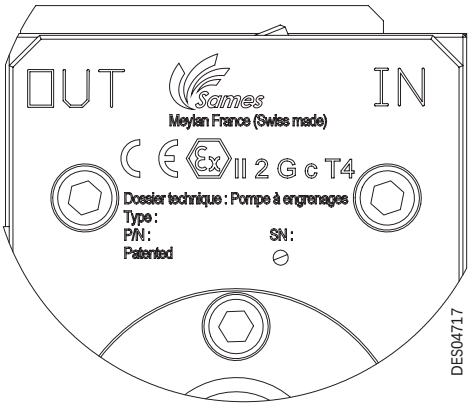
”Easy Rinsing”
Metering Gear Pumps
1.2 - 2.4 - 6 and 10 cc

**WARNING : This document also related to the following user manuals:**

- see RT Nr 6021 user manual for the microvalve.

# 1. Health and Safety Instructions

## 1.1. Marking




Type of the pump: 1.2 ER ADLC, 2.4 ER ADLC, 6 ER ADLC, 10 ER ADLC.
**Example**:

- Pump 6 cc: 6 ER ADLC P/N: 270000030

## 1.2. Simplied analysis of the potential sources of ignition according to Standard EN 13463-1

| Risk of ignition | | Action applied to prevent anu ignition source to become effective |
|---|---|---|
| Potential source of ignition | Description / Main cause (What are the conditions engendering the ignition risk?) | Description of the applied action |
| Hot surface | Warm-up of the exterior surface of the pump due to a temperature of the metered fluid or to mechanical fric-tions or to an excessive speed. | Test to define the maximum temperature of surface |
| Spark of a mechanical origin | Friction of the gears and axes | Rotation speed is lower than 1m/s, (see § 3.1 page 7). |
| Electrostatic discharge | Incorrect grounding | Electrostaic discharge is impossible because all the parts of the pump are metallic and are connected betwen them, (see § 1.5 page 6) |
| Electrostatic discharge | Insulated pump | For an electrostatic installation, respect the rules: see § 1.5 page 6. |

### 1.3. Precautions for Use

This document contains information that all operators should be aware of and understand before using this material. This information highlights situations that could result in serious damage and indicates the precautions that should be taken to avoid them. The equipment must only be used by personnel trained by SAMES Technologies.

### 1.4. Warnings

**WARNING : Safety may be jeopardized if this equipment is not operated, disassembled and reassembled in compliance with the instructions given in this manual and in any European Standard or national safety regulations in force.**

**WARNING : Equipment performance is only guaranteed if original spare parts distributed by SAMES Technologies are used.**

Pump assemblies must be kept clean so that it is possible to detect any leaks and their severity. Maintenance or repairs must always be performed when the pump is off.

Electrostatic spraying equipment must be serviced regularly in accordance with the information and instructions given by SAMES Technologies. The pump specifications must be observed carefully.

Cleaning operations must be carried out either in authorised areas equipped with a mechanical ventilation system, or using cleaning liquids with a flash point at least 5 °C higher than room temperature.

The operator must use the protections adapted for the eyes and the skin when the proportioned product presents dangers.
After having carried out repairs, adjustments or cleaning with polluting products, a particular care will be taken to the ecological elimination of waste.

It is strictly forbidden to any operator to interfere on equipment under operation.

**WARNING : Please rinse thoroughly with the proper rinsing solution before each time the pump is taken apart and make sure that no pressure positive or negative remains.**

Any modification of the pump being able to decrease the operating safety is prohibited.

The pump must be used in a surrounding area clear and clean.

Only metal containers can be used for cleaning liquids and they must have a reliable ground connection.

The storage of the pumps or its components must be done in a dry room and safe from dust.
Before the installation of the pump, it is important to store it, as a preliminary, at the temperature to which the pump will be used in order to avoid any risk of seizing.

### 1.5. Insulation or Grounding

Use of these pumps with conductive products must comply with the rules concerning electrical insulation and enclosure-access reserved for this material. The possibility of the access to the enclosure must be checked to the switch-off of the high voltage in order to avoid any risk of electric shocks to the people. n all cases, the connection equipment must comply with the characteristics relative to the transport of pressurised liquid products up to 50 bar.

Pumping of conductive products and presence of **HV**:

- The configuration of the installation will be established by SAMES specialists.
- Any modification without consultation will result in the invalidity of the certificate of conformity.

Pumping of insulating products with or without the presence of **HV**:

- It is necessary to connect the pump to the ground with the connection screw located on the pump.

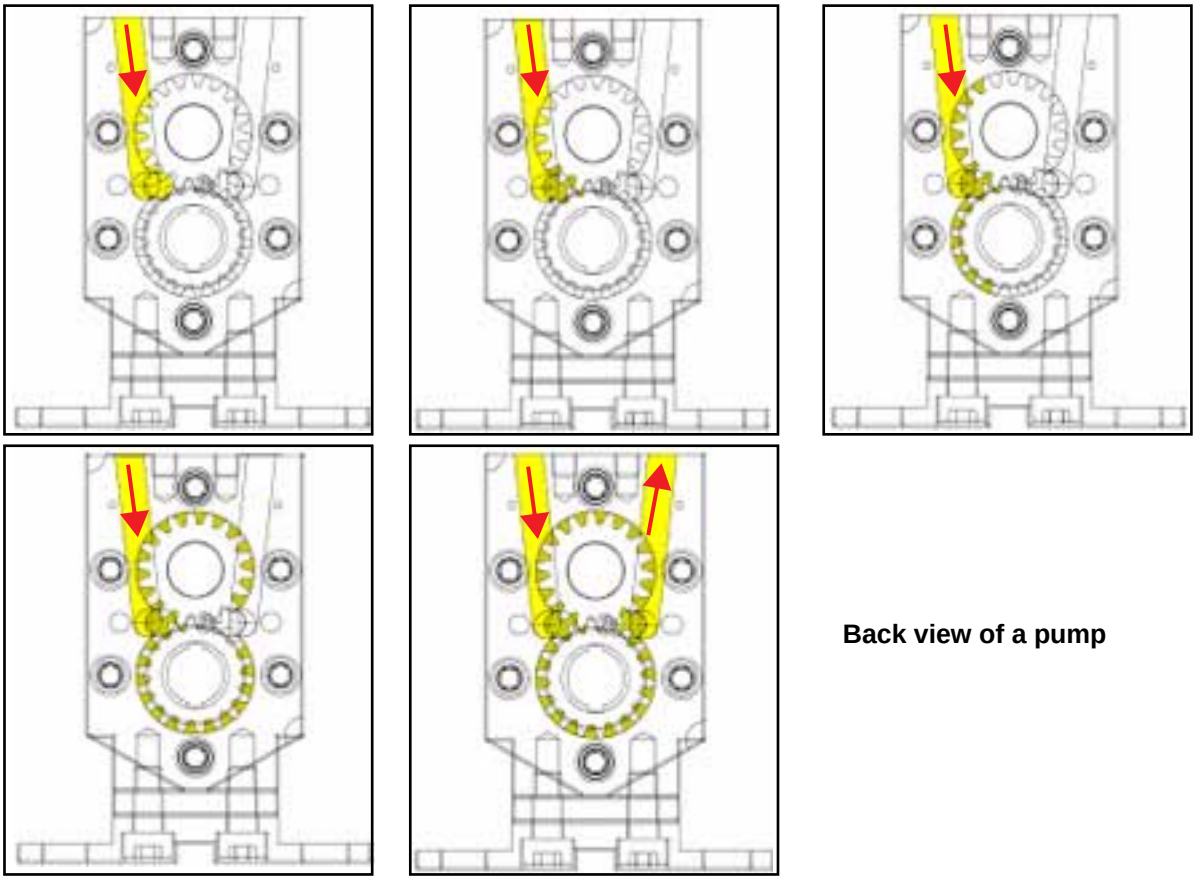
## 2. Description of the pump

The ”Easy Rinsing” pump is designed particularly for dosing bi-components varnishes, water varnishes and UV varnishes.
This pump strong point is its rinsing capability. It saves time and solvent.

This pumps are designed to guarantee a paint flow rate that is proportional to its rotation speed with a minimum of internal leaks.

All parts in contact with the paint are coated with ADLC.

Product input and output are located on the pump body. The product to be metered is guiding from the opening to the gears. The set of theeth fills up and drives the product to the exit. The set of theeth empties when the gear turns and pushes the product through the output opening by decompression.



**Back view of a pump**

## 3. Characteristics

### 3.1. General Characteristics

- Air Pressure: (valve pilot)
  - 3 bar min. (43.5 psi).
  - 6 bar maxi (87 psi).

- Fluid pressure at input: (boosting)
  - 0.5 bar min. - (7,25 psi)
  - 2 bar maxi. - (29 psi)

- Acceptable output pressure:
  - Maximum outside pressure of 15 bar (217.5 psi).

**WARNING : Never work with an input pressure bigger than the output pressure (the pump is not a pressure limiter. It can affect the metering (irregular spraying).**

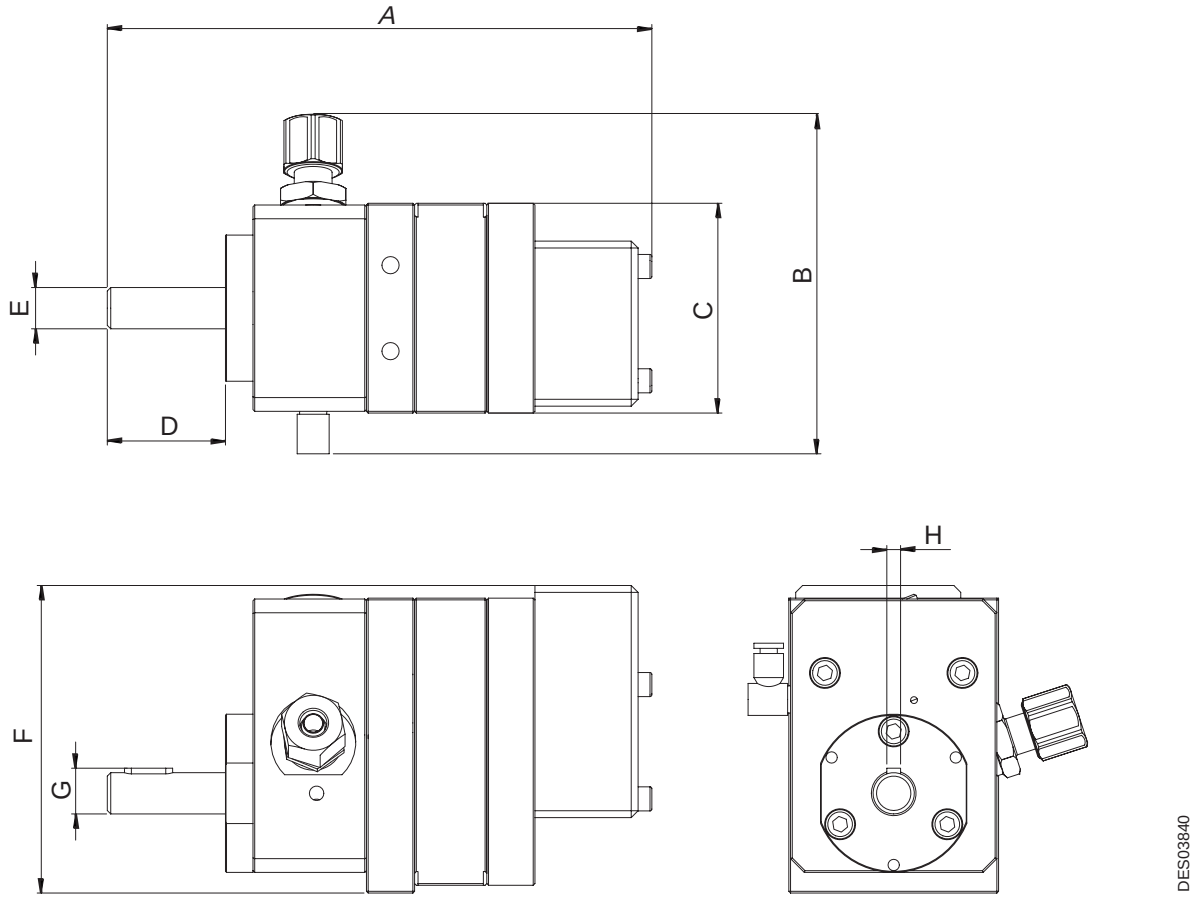
- Rotation speed. : from 10 rpm to 150 rpm depending on the product (best results obtained between 30 and 80 rpm).
  - Rinsing: Maximum 40 rpm, by pass open.

- Temperature of the metered fluid : 100°C max. for an ambient temperature between -20°C and 40°C.

- Dosage accuracy. The accuracy of the dosage of a new pump is between ± 2% within the following operation conditions:
  - Rotation speed between 30 and 80 rpm.
  - Rinsing oil viscosity of 25s DIN 4
  - Delta P ± 2 bar between input and output.

**WARNING : To avoid risks of seizure, this pump must never be operated without the appropriate paint or solvent.**

### 3.2. Dimensions




Dimensions are in mm.

| | A | B | C | D | E | F | G | H | Weight |
|---|---|---|---|---|---|---|---|---|---|
| **1.2 cc** | 141.57 | 92,5 | 61 | 34.37 | ∅: 12 | 89.43 | 13.30 | 4 | 2.057 Kg |
| **2.4 cc** | 145.7 | 92,5 | 61 | 34.37 | ∅: 12 | 89.43 | 13.30 | 4 | 2.21 Kg |
| **6 cc** | 158.37 | 92,5 | 61 | 34.37 | ∅: 12 | 89.43 | 13.30 | 4 | 2.665 Kg |
| **10 cc** | 172.37 | 92,5 | 61 | 34.37 | ∅: 12 | 89.43 | 13.30 | 4 | 3.173 Kg |

# 4. Installation

## 4.1. General Information

It is advised to clean the pump before its assembly. The inlets / outlets must be free from any impurities which could block the openings. Observe the direction of the rotation as well as the inlets/ outlets indicated on the pump. Turn manually the axis of the pump of some turns in order to check the rotation.

**WARNING : Turning the axle of the pump in the bad direction can cause damage and destroy the pump. In any case, the pump should not turn without paint or appropriate solvent with the risk to seize up this one.**

## 4.2. Installation

Elements linked to pump operation:

- A pump must always be boosted at between 0.5 and 2 bar in order to facilitate its priming and bleeding; this boost pressure must be as regular as possible, which is why a pressure regulator is used.
- For connection in series with the flowmeter, it must always be located after the pump.
- Check the hoses before and after the pump. In case of impurities at the entrance of the pump or if the product to be metered is not perfectly clean, a filter must be installed.

# 5. Start-up

In order to avoid burst hoses and pump blocking, it is advisable to equip the pump with a shunt valve. It will also serve to rinse the inside of the pump by injection of solvent from the changing block.

When starting the pump, the good sealing of the friction plates will be automatically verified. If the product leaks between the plates, the tension of the screws must be checked. If the leak persist, take the pump apart. After a good cleaning of the different parts and a careful check of the surfaces of the friction plates and of the mechanical seal, reassemble the pump. A perfect seal is possible only if the surfaces are dry and perfectly clean.

The pump is shipped with a liquid barrier. On each side of this seal is an opening which is plugged. Before starting the pump, fill this seal with the proper liquid (most often Mesamol oil) and replug the opening.

## 6. Maintenance

**WARNING : The metering pump is designed to run in a continuous manner, but can also be used intermittently. During relatively shorts off periods, no particular maintenance or repair is necessary. The bearings are lubricated by the product metered and therefore it advised NOT to run the pump dry.**

### 6.1. Tools

To set in the lip seal, and to control the rotation, the following tool kit is needed.


| Item | Part Number | Description | Qty | Sale Unit |
|---|---|---|---|---|
| **-** | **270000036** | **Tool kit for assembly / disassembly** | **-** | **1** |
| 1 | **-** | Seal guiding cone | - | - |
| 2 | **-** | Coupling to control the rotation | - | - |
| 3 | **-** | Pliers for safety washers | - | - |
| 4 | **-** | Cylinder to assemble the mechanical seal | - | - |
| 5 | **-** | Pressure cylinder | - | - |
| 6 | **-** | Guiding socket | - | - |

### 6.2. Preliminary Procedures

Before dismantling the pump, the following operations must be carried out:

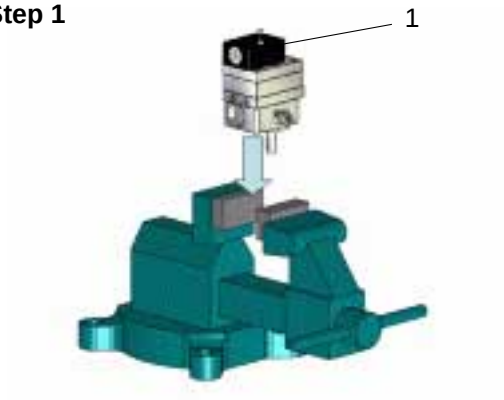
1 Rinse the inside of the pump and complete the cycle by prolonged blowing (4 to 5 seconds),

2 Lock the air and fluid valves, then disconnect the product pipes from the pump after having marked their respective positions,

### 6.3. Pump Disassembly Procedure

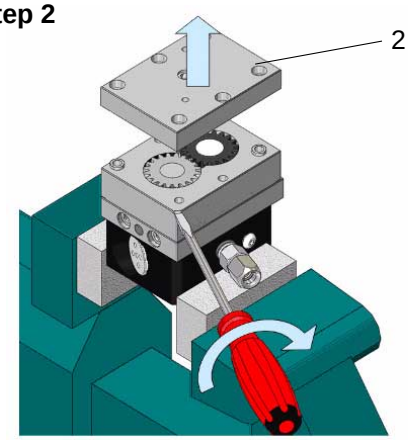
**WARNING : All the elements of the pump must be handled with an extreme delicacy, any shock between the different components could harm the future correct operation of the pump.**

**Step 1**



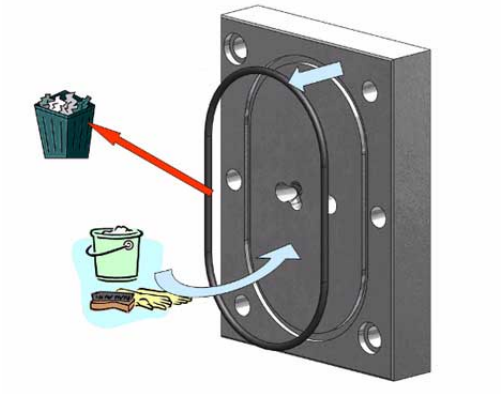

Place the pump in a vice. Remove the shunt valve (**1**) by unscrewing the two screws M 4 x 10 using the 3 mm allen key. The two PTFE o-rings must be replaced at each reassembly.

**Step 2**



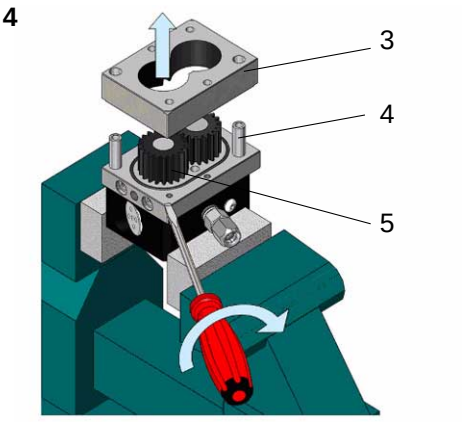

Unscrew the six securing screws of the rinsing cover (**2**) and separate it by carrying out a small rotation using a screwdriver.

**Step 3**



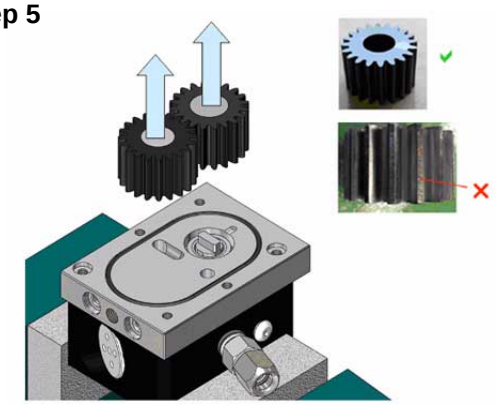
Remove the o-ring. Clean the rinsing cover using an appropriate solvent, pay a particular attention to the o-ring groove. The o-ring must be replaced at each reassembly.

**Step 4**



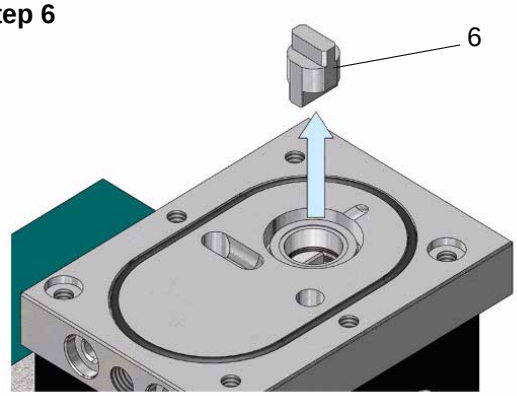

Remove the upper part (**3**) of the pump body. Remove the two centering round key (**4**) and the two gears **(5**).

**Step 5**



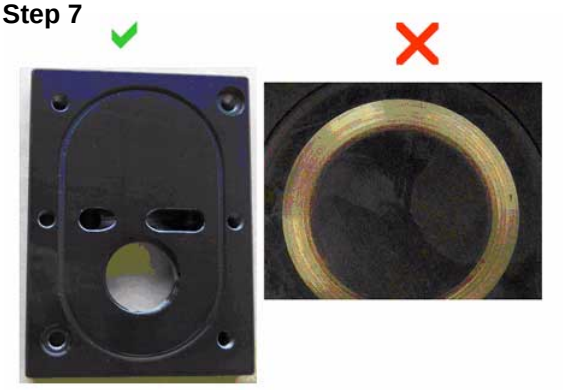
Check the gears for damage or wear (**5**), replace them if necessary.

**Step 6**



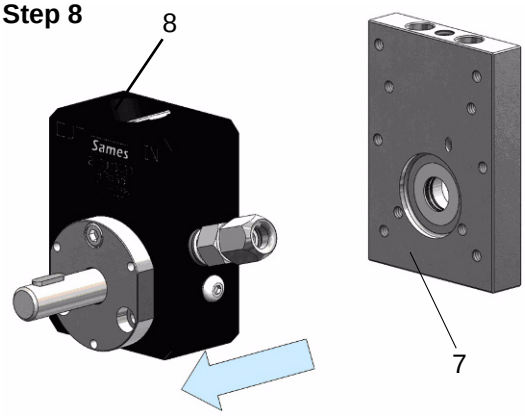

Remove the Oldham coupling (**6**) then remove the o-ring (proceed in the same way at the step 3 for cleaning).

**Step 7**



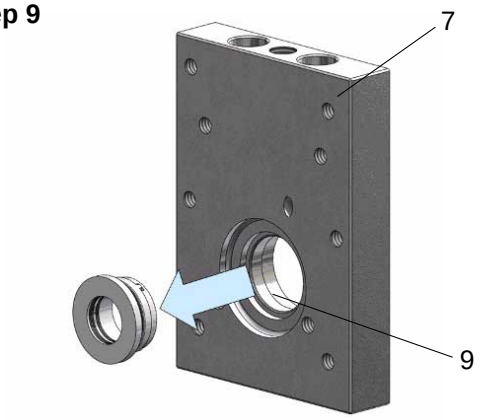
Check the conditions, replace if necessary.

**Step 8**



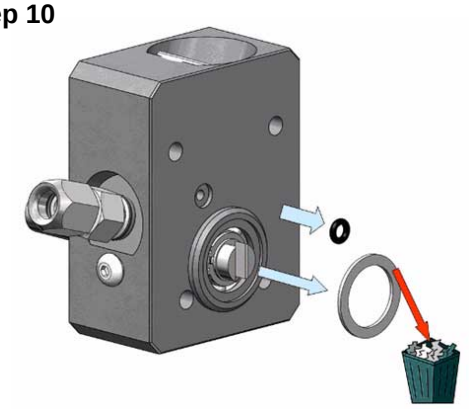

Separate the inner part (**7**) of the pump body from the sealing system body (**8**) by unscrewing the four screws (2 M5 x 35 and 2 M5 x40).

**Step 9**



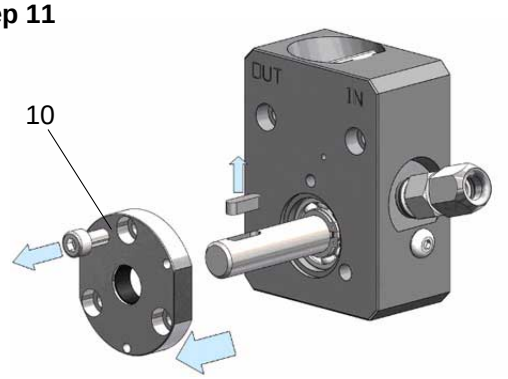

Push out the set ring (**9**) and the PTFE ring from the inner part (**7**). The PTFE ring must be automatically replaced at each reassembly.

**Step 10**



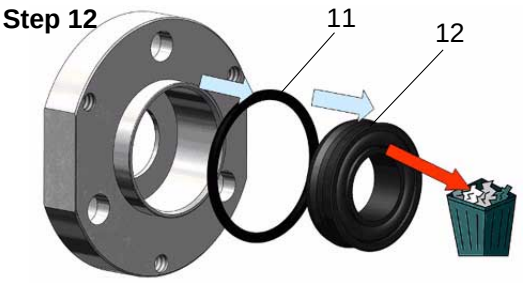
Remove the two o-rings, replace systematically.

**Step 11**



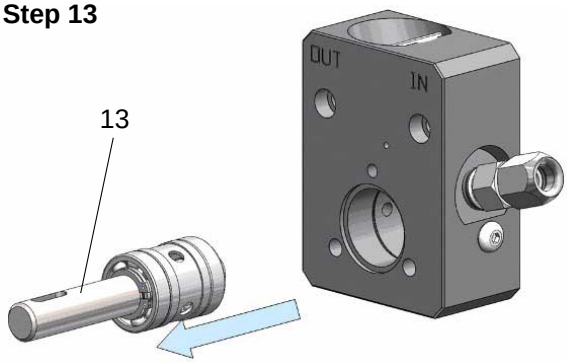

Unscrew the securing screw (M5 x 10) in order to remove the seal cover (**10**) and extract the key.

**Step 12**



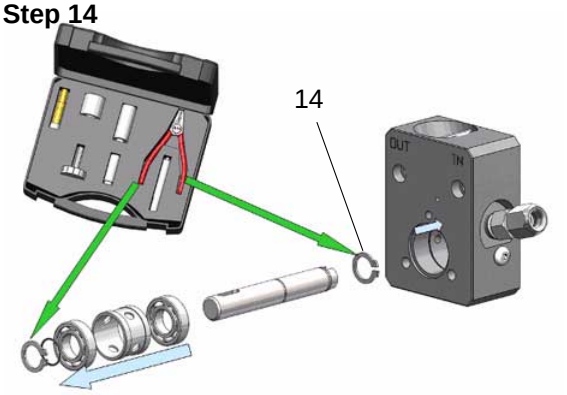

Remove the o-ring (**11**) and the lip seal (**12**).

**Step 13**



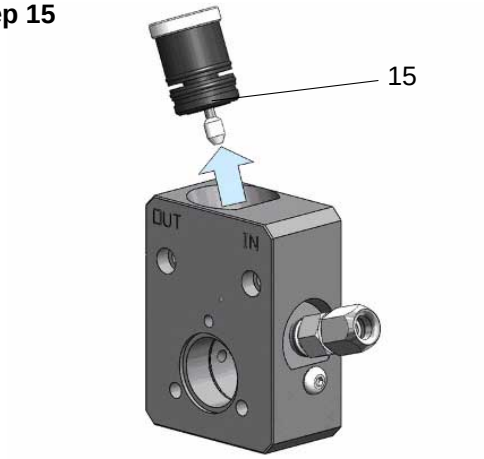

Extract the equipped drive shaft (**13**).

**Step 14**




Using the pliers, remove the two stop washers (**14**) and leave the two ball bearings.

**Step 15**

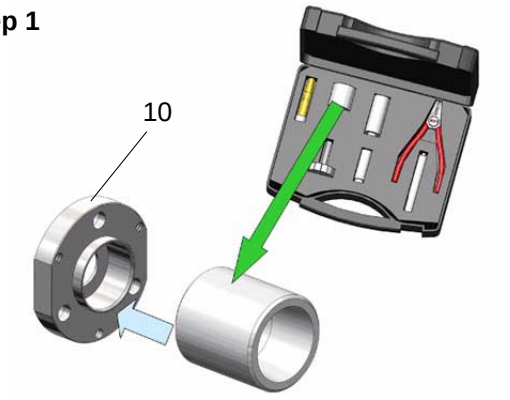



If necessary, remove the microvalve (**15**) (see RT Nr 6021).

**WARNING : Disassembling may be assisted by tapping with a wooden mallet or by the introduction of blades made from synthetic material (nylon).**
**Use of materials that are harder than the pump material may result in permanent damage to the components.**

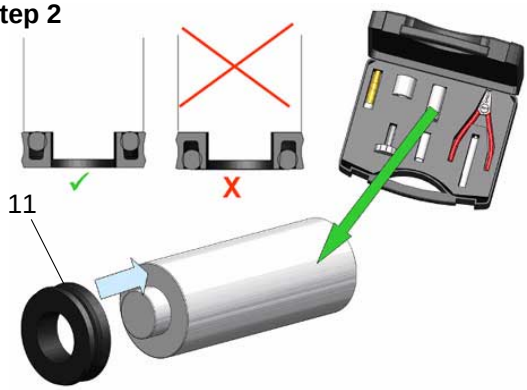
## 6.4. Pump Reassembly Procedure

**Step 1**



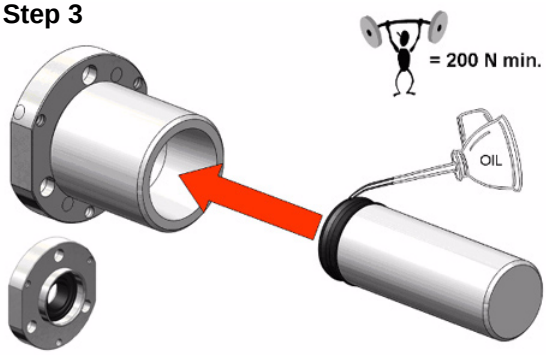

Place the tool on the seal cover (**10**). Put in place the lip seal (**11**) on the seal cover (**10**) using the two tools as illustrated.

**Step 2**



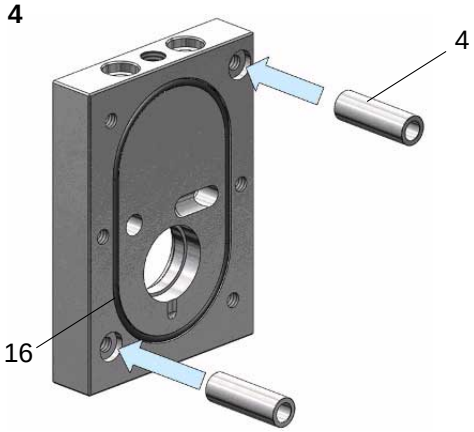

Put in place the lip seal (**11**) on the tool as illustrated.

**Step 3**



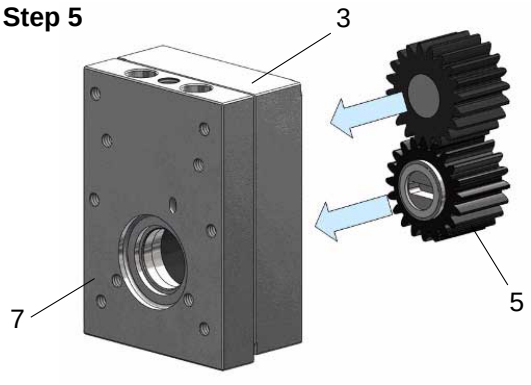

Place the lip seal (11) in the seal cover.

**Step 4**



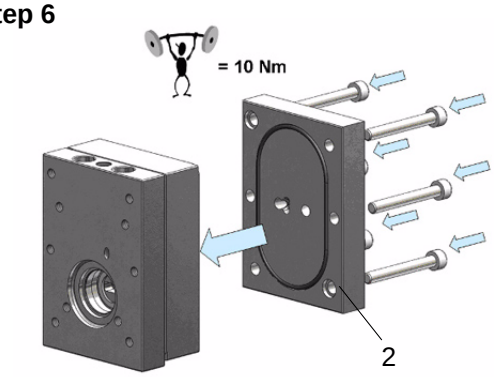

After a meticulous cleaning of the o-ring groove (see § 6.3 page 12 step 3), install a new o-ring (**16**) then put back in place the two centering round keys (**4**).

**Step 5**



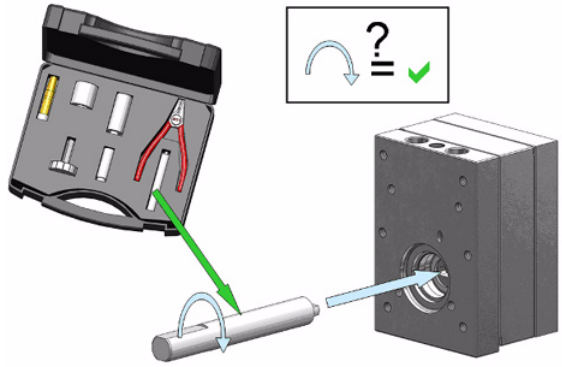

Assemble the inner (**7**) and upper (**3**) parts of the pump body then insert the two gears (**5**) as illustrated.

**Step 6**



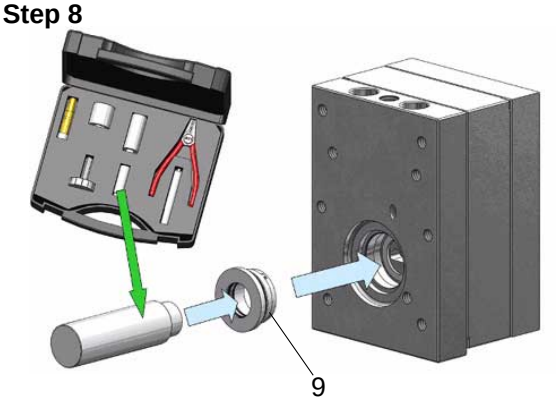

Install a new o-ring after having carried out a meticulous cleaning of the o-ring groove (see § 6.3 page 12 step 3), position the rinsing cover (**2**) on the pump body and tighten the six securing screws M5x 40 (tightening torque: 10 Nm).

**Step 7**



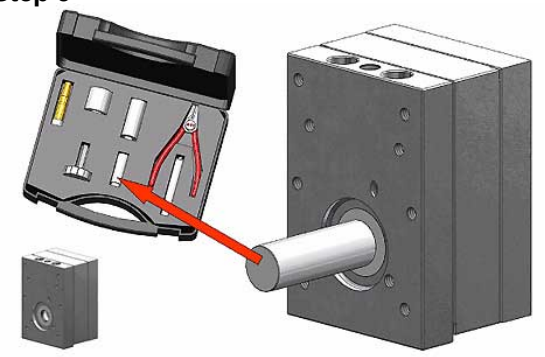
Place the tool in order to check the correct rotation. If the tool does not turn or turns not correctly, disassemble.

**Step 8**



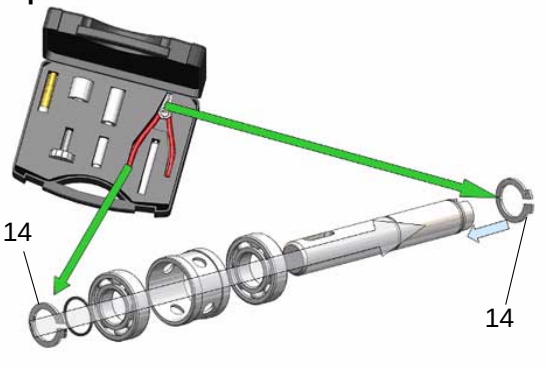

Using the tool, put in place a new PTFE ring and and the set ring (**9**).

**Step 9**



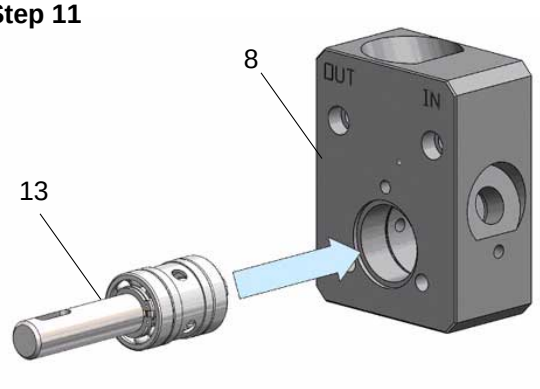
Remove the tool.

**Step 10**



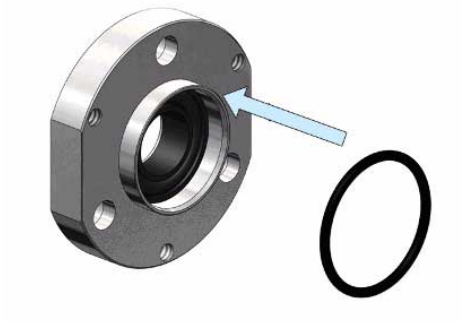

Using the pliers, place the first stop washer (**14**) on the drive shaft, position the two ball bearings, then put in place the second stop washer.

**Step 11**



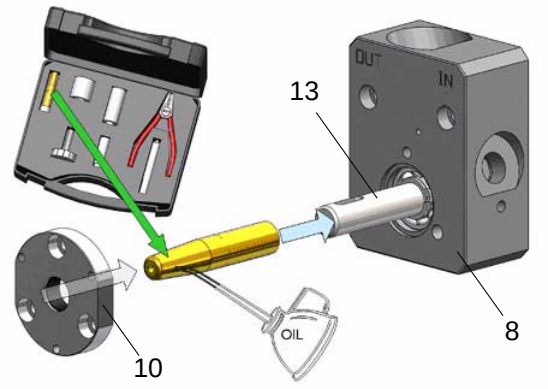

Install the drive shaft (**13**) thus equipped in the sealing system body (**8**).

**Step 12**



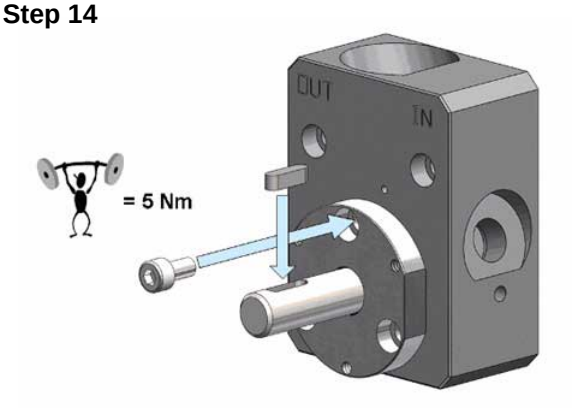
Place the o-ring on the seal cover.

**Step 13**



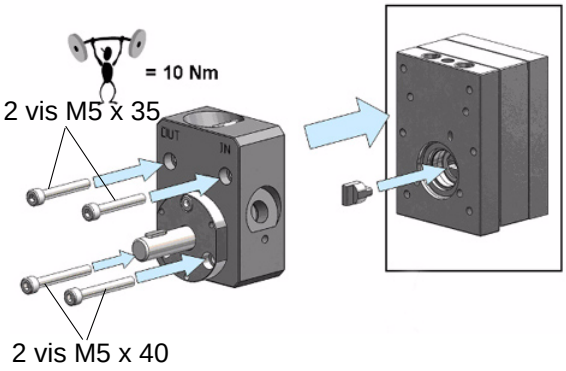

Place the tool on the drive shaft (**13**) then slide the sealing cover (**10**) on the tool and put it in place correctly (attention: adjustment pin), on the sealing system body (**8**).
Remove the tool.

**Step 14**



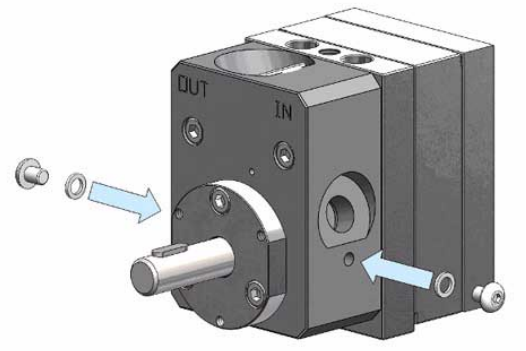

Tighten the screw (M 5x 10) with a tightening torque of 5 Nm and put back in place the key on the shaft.

**Step 15**



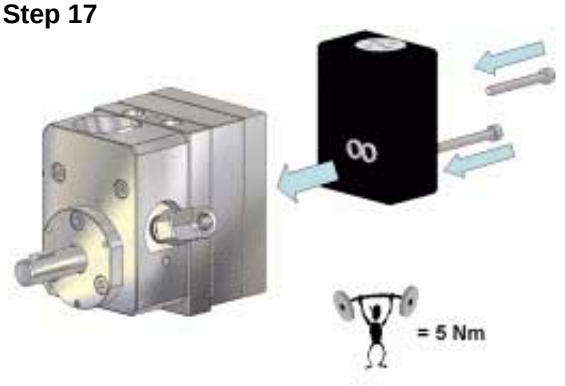

Replace the microvalve if it had been beforehand removed. Screw the sealing system body (**8**) on the pump body using the four screws (tightening torque: 10 Nm). Install the Oldham coupling.

**Step 16**




Screw the two screws, then the fitting.

**Step 17**




Install two new PTFE o-rings on the shunt valve. Screw the shunt valve on the pump assembly using the two screws M4 x 10 (tightening torque: 5 Nm).

### 6.5. Breaking in the new pump

It is advised to break it in with the product to be metered. Install the pump on its support and connect it.

**WARNING : Rinsing a pump is a destructive operation for the pump when the recommendations are not followed to the point.**
**Before starting the pump for the first time, a rinsing is necessary. It must be done with the rinsing product recommended by the paint manufacturer.**

**WARNING : The rinsing time must be short as possible (around 6 seconds), with a solvent pressure of 5 to 6 bars, a rotation speed of 30 rpm (maximum 40 rpm) and with the by-pass open.**

- Let the pump turn at a rotation speed of 20 to 30 rpm, with product in it, with an input pressure no to exceeding 3 bars and an outpressure of 0 bar, for one hour (if possible in close circuit).
- Following the same idea, increase the output pressure to 5 bars and so for 30 minutes.
- Then gradually, increase until the maximum pressure allowed is reached (15 bars), doing so 30 minutes at a time. During this time, it is possible to calibrate the pump in order to observe the output curb with the product running, and to compensate for any internal leakage of the pump by adapting its rotation speed.
- Then rinse the pump with appropriate solvent.

## 7. Cleaning

**WARNING : The elements will be dipped in the solvent appropriate for the product metered. Using a nylon brush or flexible scraper, remove the traces of paint and seals remaining on the components. Dry with compressed air.**

**The element must never hit anything or be hit anything during this procedure. The parts will be put in the container with care.**

**For the cleaning operation, do not use metallic tools as screwdrivers, knives or chisels.**

**In order not to mix the parts from different pumps, only one pump will be cleaned in one container at a time.**

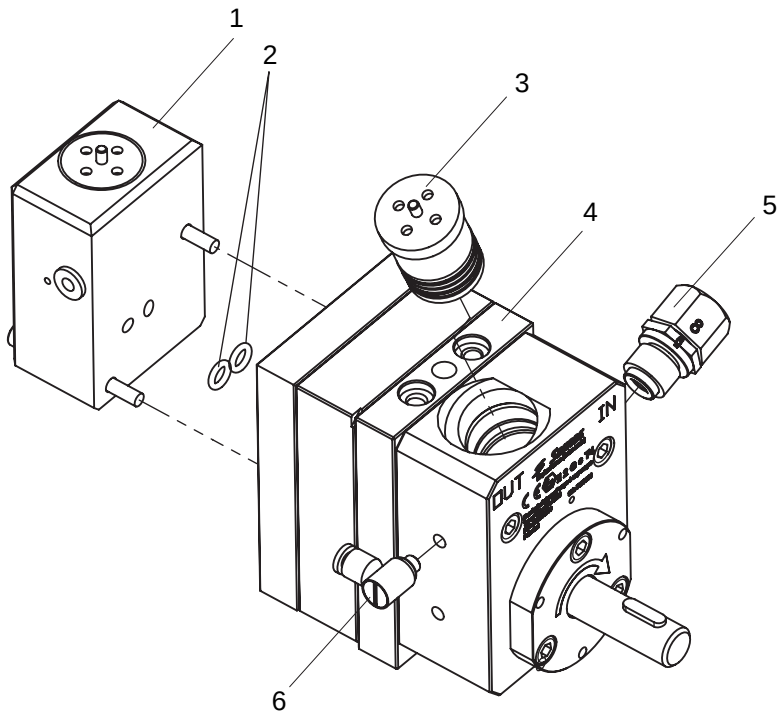
The cleaning of a pump is often tedious.
This procedure is however, of prime importance in order to correctly analyse signs of wear and tear and to ensure perfect assembly, which in turn, ensures successful functioning of the pump.

## 8. Troubleshooting

| Symptoms | Probable Causes | Remedies |
|---|---|---|
| Product leaking in the drive<br>Shaft seal | Sealing unit worn out<br><br>Incompatible products or pressures | Take apart and check.<br>Change parts if necessary.<br><br>Contact Sames Technologies |
| | | |
| Leakage in the plates area | Impurities between the plates<br>Allowed pressures exceeded<br>Very thin liquid (leak by capillarity) | Take apart and clean the pump. Check the screw and tighten if necessary.<br>Lower the pressures.<br>Contact Sames Technologies |
| | | |
| No precision in the metering. | Pump elements are worn out. Impurities in the Input/Output hoses. Feeding pressure too weak. Play not adapted to the product. Error during assembly | Take apart and check the pump elements as well as the I/O hoses. Check the I/O pressures.<br>Check the viscosity of the product. |
| | | |
| No output (the pump does not run)<br><br>No output (the pump runs) | The motor does not run. The coupling is broken or missing.<br><br>The I/O are poorly connected or plugged. The pin driving the gears is broken. No product enters the pump | Check the motor and its electrical connection. Check the coupling and the keys.<br><br>Check the I/O connections. Check the feeding of the pump. Take apart the pump and check the pin and the gears. |

# 9. Spare parts

## 9.1. ”Easy rinsing” 1.2 cc metering Gear pump - ADLC

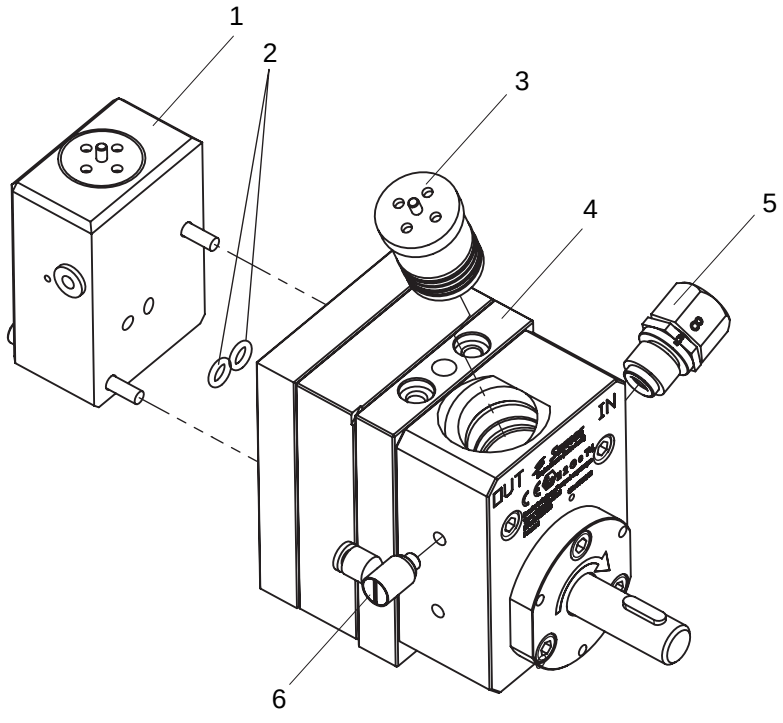



| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare parts (*) |
|---|---|---|---|---|---|
| | **910008565** | **”Easy Rinsing” 1.2 cc Gear Pump** | **1** | **1** | **3** |
| **1** | **910007369** | **Block, shunt microvalve** (see § 9.7 page 31) | **1** | **1** | **3** |
| 2 | J3TTCN009 | O-ring - PTFE | 2 | 5 | 1 |
| **3** | **1507375** | **Microvalve 2 ways, orange indicator, chemically inert o-rings** (see RT Nr 6021) | **1** | **1** | **2** |
| 4 | 270000066 | Pump 1.2 cc ”Easy Rinsing” | 1 | 1 | 3 |
| 5 | 910007348 | Fitting 6/8 -G1/4” | 1 | 1 | 2 |
| 6 | F6RLCS270 | Male elbow fitting | 1 | 1 | 2 |

**(*)**
**Level 1: Standard preventive maintenance**
**Level 2: Corrective maintenance**
**Level 3: Exceptional maintenance**

**For the different connecting flanges see § 9.6 page 29.**

## 9.2. ”Easy rinsing” 2.4 cc metering Gear pump - ADLC

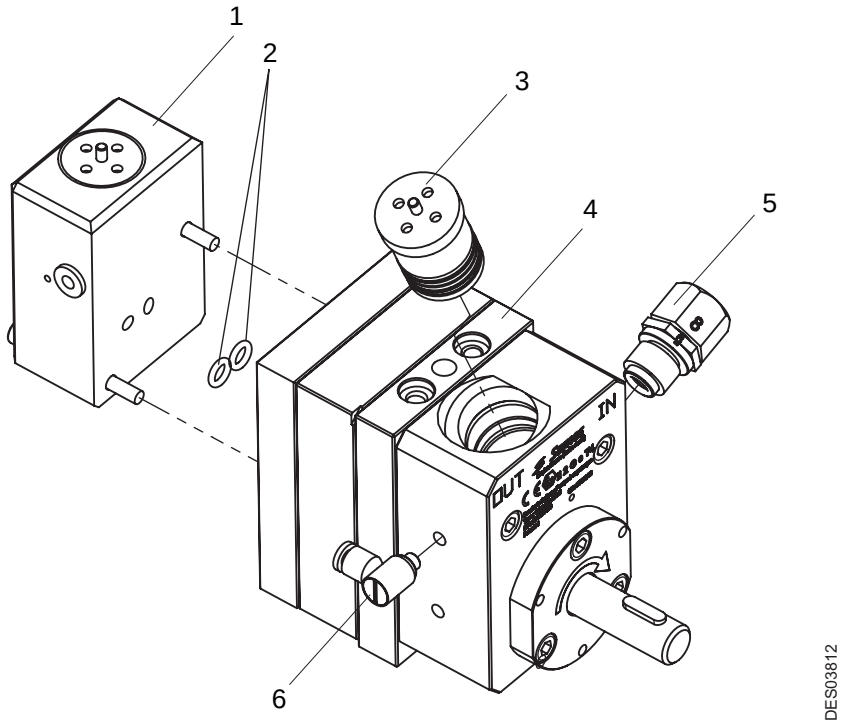



| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare parts (*) |
|---|---|---|---|---|---|
| | **910008566** | **”Easy Rinsing” 2.4 cc Gear Pump** | **1** | **1** | **3** |
| **1** | **910007369** | **Block, shunt microvalve** (see § 9.7 page 31) | **1** | **1** | **3** |
| 2 | J3TTCN009 | O-ring - PTFE | 2 | 5 | 1 |
| **3** | **1507375** | **Microvalve 2 ways, orange indicator, chemically inert o-rings** (see RT Nr 6021) | **1** | **1** | **2** |
| 4 | 270000065 | Pump 2.4 cc ”Easy Rinsing” | 1 | 1 | 3 |
| 5 | 910007348 | Fitting 6/8 -G1/4” | 1 | 1 | 2 |
| 6 | F6RLCS270 | Male elbow fitting | 1 | 1 | 2 |

**(*)**
**Level 1: Standard preventive maintenance**
**Level 2: Corrective maintenance**
**Level 3: Exceptional maintenance**

**For the different connecting flanges see § 9.6 page 29.**

### 9.3. ”Easy rinsing” 6 cc metering Gear pump - ADLC

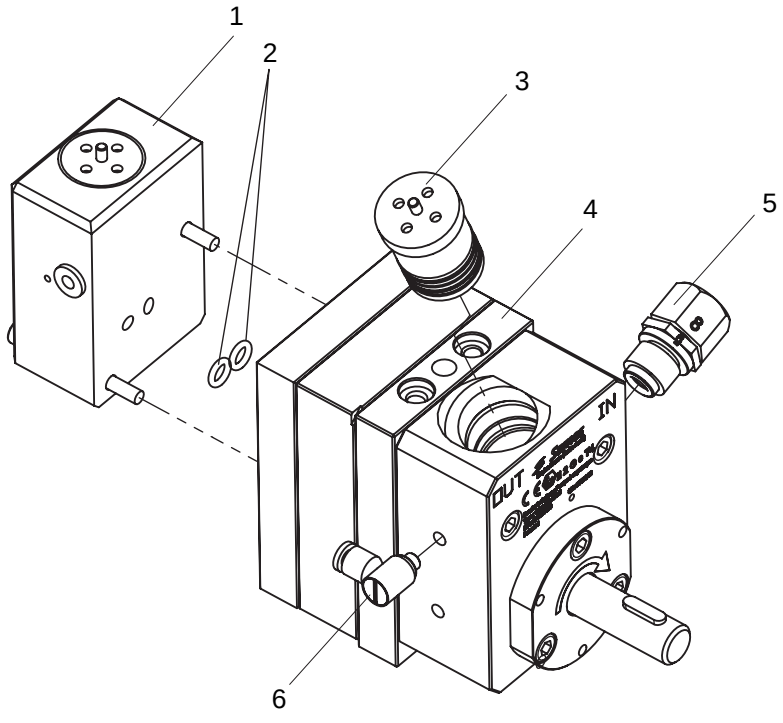



| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare parts (*) |
|---|---|---|---|---|---|
| | **910004540** | **”Easy Rinsing” 6 cc Gear Pump** | **1** | **1** | **3** |
| **1** | **910007369** | **Block, shunt microvalve** (see § 9.7 page 31) | **1** | **1** | **3** |
| 2 | J3TTCN009 | O-ring - PTFE | 2 | 5 | 1 |
| **3** | **1507375** | **Microvalve 2 ways, orange indicator, chemically inert o-rings** (see RT Nr 6021) | **1** | **1** | **2** |
| 4 | 270000030 | Pump 6 cc ”Easy Rinsing” | 1 | 1 | 3 |
| 5 | 910007348 | Fitting 6/8 -G1/4” | 1 | 1 | 2 |
| 6 | F6RLCS270 | Male elbow fitting | 1 | 1 | 2 |

**(*)**
**Level 1: Standard preventive maintenance**
**Level 2: Corrective maintenance**
**Level 3: Exceptional maintenance**

**For the different connecting flanges see § 9.6 page 29.**

### 9.4. ”Easy rinsing” 10 cc metering Gear pump - ADLC



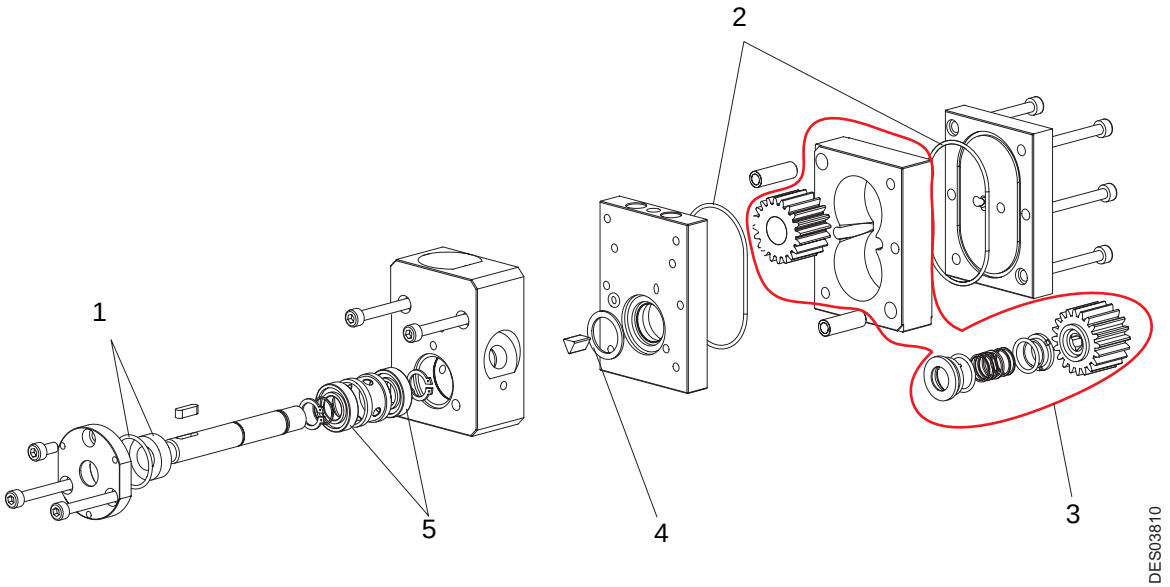

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare parts (*) |
|---|---|---|---|---|---|
| | **910008567** | **”Easy Rinsing” 10 cc Gear Pump** | **1** | **1** | **3** |
| **1** | **910007369** | **Block, shunt microvalve** (see § 9.7 page 31) | **1** | **1** | **3** |
| 2 | J3TTCN009 | O-ring - PTFE | 2 | 5 | 1 |
| **3** | **1507375** | **Microvalve 2 ways, orange indicator, chemically inert o-rings** (see RT Nr 6021) | **1** | **1** | **2** |
| 4 | 270000064 | Pump 10 cc ”Easy Rinsing” | 1 | 1 | 3 |
| 5 | 910007348 | Fitting 6/8 -G1/4” | 1 | 1 | 2 |
| 6 | F6RLCS270 | Male elbow fitting | 1 | 1 | 2 |

**(*)**
**Level 1: Standard preventive maintenance**
**Level 2: Corrective maintenance**
**Level 3: Exceptional maintenance**

**For the different connecting flanges see § 9.6 page 29.**

## 9.5. Repair Sets of ”Easy Rinsing” pumps

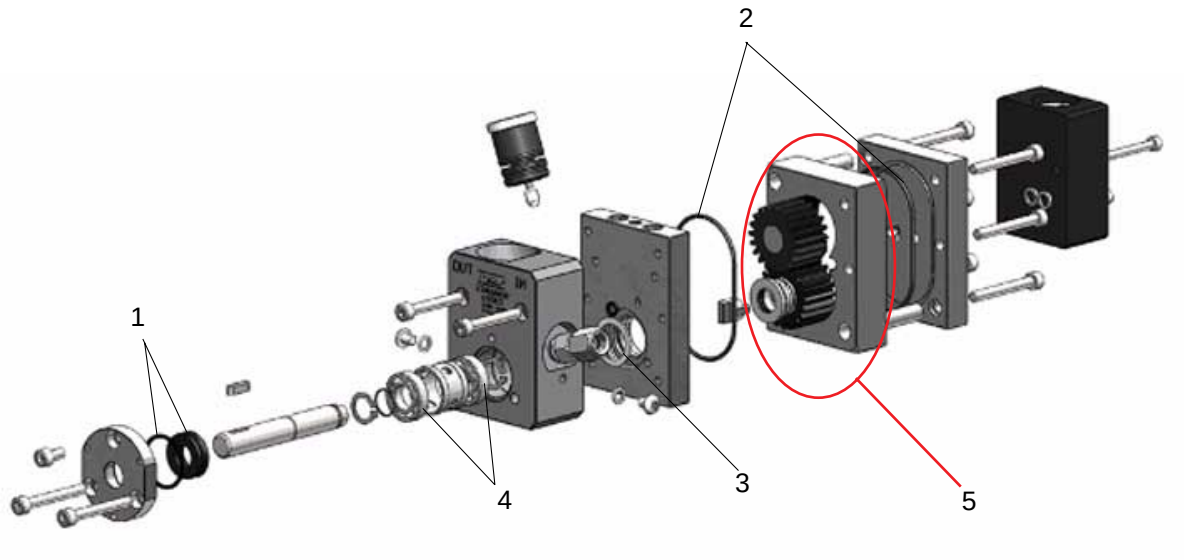
9.5.1. Repair Sets of ”Easy Rinsing” pumps until the serial number 72354




| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare parts (*) |
|---|---|---|---|---|---|
| **1** | **270000033** | **Seal assembly included:** | **1** | **1** | **2** |
| | | Lip seal PTFE | 1 | - | - |
| | | O-ring 23,52 x 1,78 | 1 | - | - |
| 2 | 270000032 | O-ring 56,87 x 1,78 | 2 | 10 | 1 |
| **3** | **270000031** | **Sealing set** | **1** | **1** | **2** |
| | | Center plate ADLC | 1 | - | - |
| | | Slave gear ADLC | 1 | - | - |
| | | Drive gear ADLC with mechanical seal | 1 | - | - |
| | | O-ring 14 x 1,78 | 1 | - | - |
| | | Ring set | 1 | - | - |
| | | O-ring 15,6 x 1,78 | 1 | - | - |
| | | Blocking sleeve | 1 | - | - |
| 4 | 270000035 | PTFE ring | 1 | 10 | 2 |
| 5 | 270000034 | Ball bearing | 2 | 10 | 2 |

**(*)**
**Level 1: Standard preventive maintenance**
**Level 2: Corrective maintenance**
**Level 3: Exceptional maintenance**

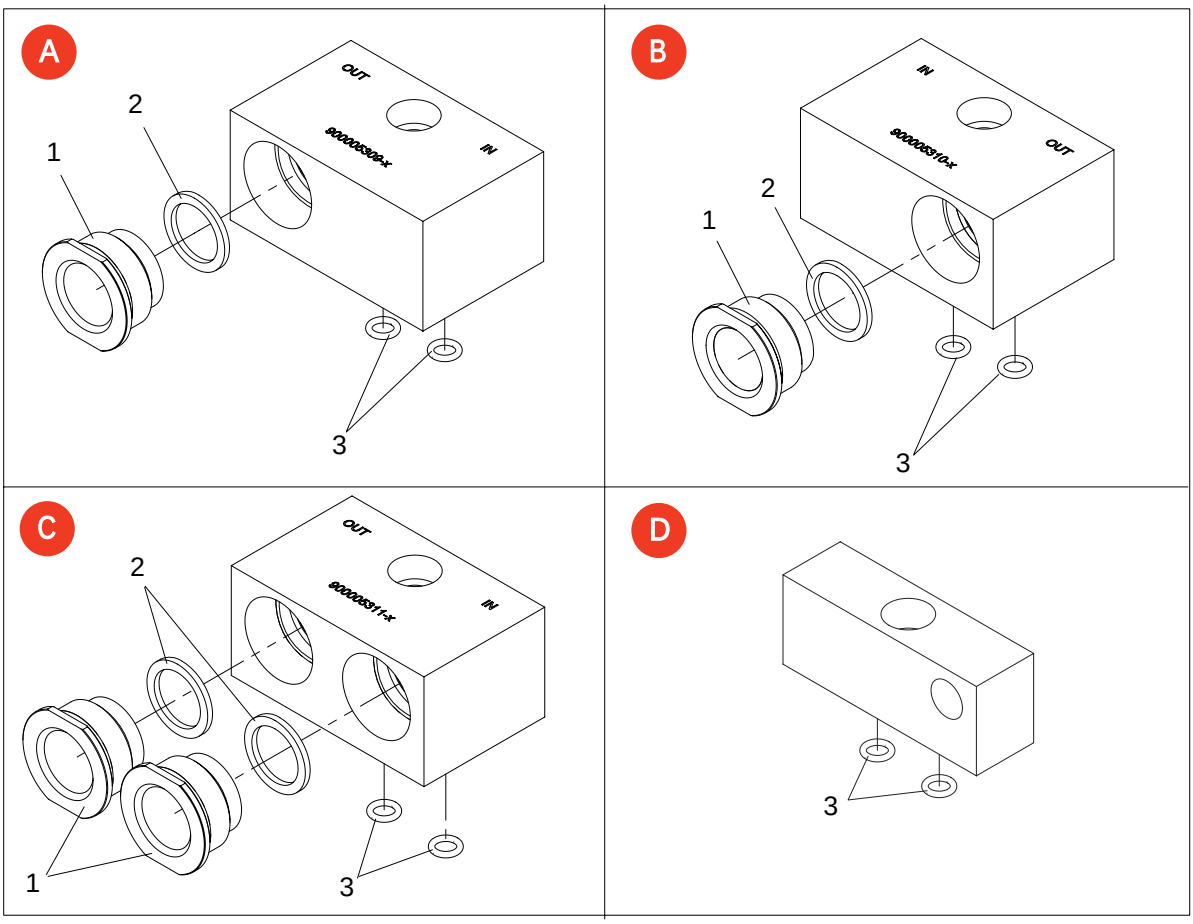
9.5.2. Repair Sets of ”Easy Rinsing” pumps from the serial number 72355




| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare parts (*) |
|---|---|---|---|---|---|
| **1** | **270000033** | **Seal assembly included:** | **1** | **1** | **2** |
| | | Lip seal PTFE | 1 | - | - |
| | | O-ring 23,52 x 1,78 | 1 | - | - |
| 2 | 270000032 | O-ring 56,87 x 1,78 | 2 | 10 | 1 |
| 3 | 270000035 | PTFE ring | 1 | 10 | 2 |
| 4 | 270000034 | Ball bearing | 2 | 10 | 2 |
| **5** | **270000085** | **Oldham sealing set for 1.2 cc pump** | **1** | **1** | **2** |
| | **270000086** | **Oldham sealing set for 2.4 cc pump** | **1** | **1** | **2** |
| | **270000087** | **Oldham sealing set for 6 cc pump** | **1** | **1** | **2** |
| | **270000088** | **Oldham sealing set for 10 cc pump** | **1** | **1** | **2** |
| This set includes: | | | | | |
| | | Center plate ADLC | 1 | - | - |
| | | Slave gear ADLC | 1 | - | - |
| | | Drive gear ADLC with mechanical seal | 1 | - | - |
| | | O-ring 14 x 1,78 | 1 | - | - |
| | | Ring set | 1 | - | - |
| | | O-ring 15,6 x 1,78 | 1 | - | - |
| | | Blocking sleeve | 1 | - | - |

**(*)**
**Level 1: Standard preventive maintenance**
**Level 2: Corrective maintenance**
**Level 3: Exceptional maintenance**

## 9.6. Connecting flanges




| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare parts (*) |
|---|---|---|---|---|---|
| **A** | **910007407** | **1 Pressure switch flange** | **Option** | **1** | **-** |
| 1 | 270000023 | Tightening adapter | 1 | 1 | - |
| 2 | 270000024 | O-ring - PTFE | 1 | 1 | 1 |
| 3 | J3TTCN118 | O-ring - white PTFE | 2 | 1 | 1 |
| **B** | **910007408** | **1 Pressure switch reverse flange** | **Option** | **1** | **-** |
| 1 | 270000023 | Tightening adapter | 1 | 1 | - |
| 2 | 270000024 | O-ring - PTFE | 1 | 1 | 1 |
| 3 | J3TTCN118 | O-ring - white PTFE | 2 | 1 | 1 |
| **C** | **910007409** | **2 Pressure switch flange** | **Option** | **1** | **-** |
| 1 | 270000023 | Tightening adapter | 2 | 1 | - |
| 2 | 270000024 | O-ring - PTFE | 2 | 1 | 1 |
| 3 | J3TTCN118 | O-ring - white PTFE | 2 | 1 | 1 |
| **D** | **910008031** | **Fitting fixing flange** | **Option** | **1** | **-** |
| 3 | J3TTCN118 | O-ring - white PTFE | 2 | 1 | 1 |

**Remark: Flanges are used to connect, according to the type, one or two pressure switches.**

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare parts (*) |
|---|---|---|---|---|---|
| | 22000068AT | Pressure switch (0 to 50 bar) (pump outlet) | - | 1 | 3 |
| | 22000069AT | Pressure switch (0 to 16 bar) (pump inlet) | - | 1 | 3 |
| | 900005312 | Pressure switch plug | - | 1 | 3 |

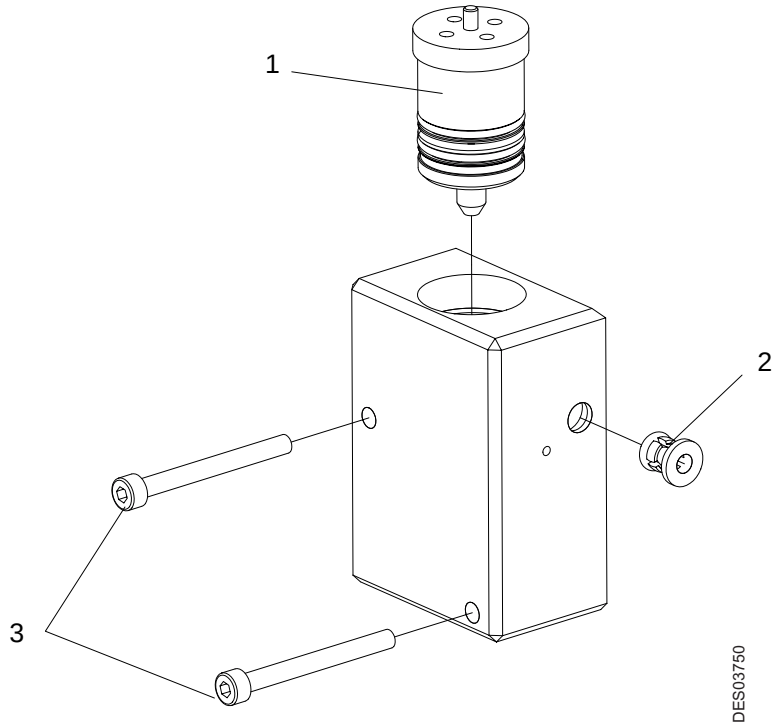
**(*)**
**Level 1: Standard preventive maintenance**
**Level 2: Corrective maintenance**
**Level 3: Exceptional maintenance**

**Remarks: connecting flanges are fitted to the pumps by a Chc M8x 40 screw (P/N X3AVSY287).**

**Remarks:**

1 When a pressure switch is used, it is imperative beforehand to install a tightening adapter (P/N: 270000023) on the connecting flange.
2 Put in place the o-ring (P/N: 270000024) then the plug (P/N: 900005312), when a pressure switch exit is not used.

### 9.7. Microvalve shunt block




| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare parts (*) |
|---|---|---|---|---|---|
| | **910007369** | **Block, shunt microvalve** | **1** | **1** | **3** |
| **1** | **1508516** | **Microvalve 2 ways, orange indicator,** (see RT Nr 6021) | **1** | **1** | **2** |
| 2 | F6RXZG081 | Stainless steel grip + seal | 1 | 1 | **3** |
| 3 | X4FVSY126 | Screw Chc M 4 x 35 stainless steel | 2 | 1 | 3 |

**(*)**
**Level 1: Standard preventive maintenance**
**Level 2: Corrective maintenance**
**Level 3: Exceptional maintenance**