

**maxon motor**

**driven by precision**



Revision 01

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## 1. Oil filling

### 1.1 Safety note

When using the listed lubricants, be sure to follow the safety instructions found on the MSDS (material safety data sheet). The most current safety data sheets are enclosed with this service book. Check the data sheet annually to ensure that the information has not changed. If the safety data sheets are not up to date, please request the latest version from the manufacturer. Follow proper storage time and storage requirements as instructed by manufacturer.

Safety goggles and protective gloves must to be weared during the whole oil change process.



### 1.2 Tools

Order code	Supplier	Comment
598575	maxon motor GmbH	Maintenance kit: 1x hand pump with silicone hose 1x back pressure valve 2x hose clamp

### 1.3 Consumables

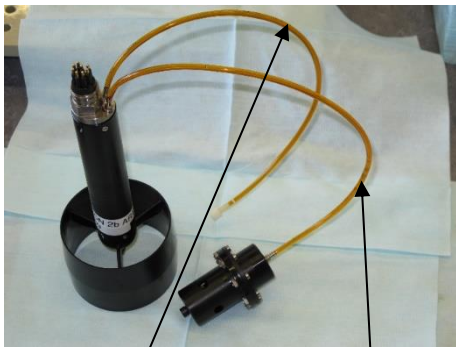
Manufacturer	Designation
Panolin	HLP SYNTH 15

## 1.4 Working steps

If the oil dipstick falls below the recommended minimum distance of 3 strokes, the total unit must be refilled with oil. The necessary steps are listed below.

### pictures

### working steps



hose 4

hose 5

#### Step 1



hose 4

hose 5

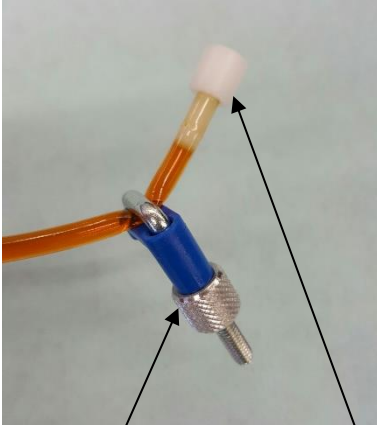
#### Step 2:

Clamp hose 4 just before the plug with a hose clamp.

Gap between clamp hose and plug should be 4 cm.

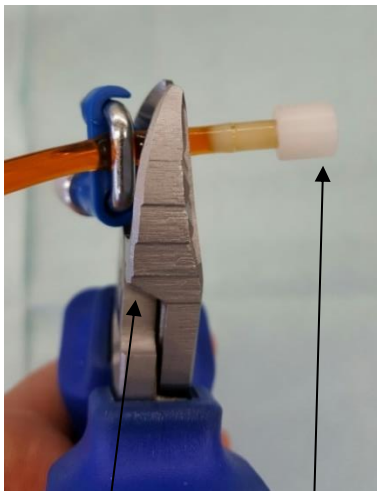
*Equipment:*

- hose clamp



hose clamp

plug



side cutter

plug

**Step 3:**

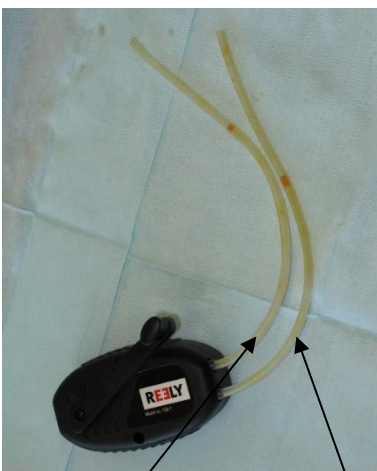
Cut hose 4 just between the plug and the hose clamp with the side cutter.

The hose length behind the clamp should be 2 cm.

Avoid air pockets inside the hose!

*Equipment:*

- side cutter



hose 2

hose 1

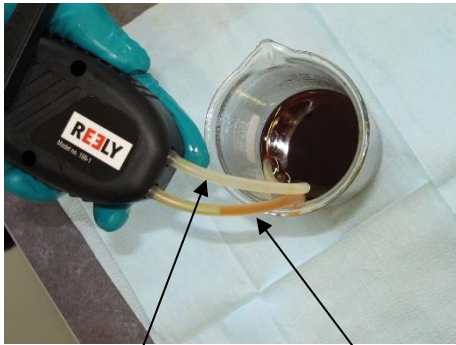
**Step 4:**

Cut the provided silicone in three equal size pieces. From here on they are named hose 1, hose 2 and hose 3

Connect hose 1 and hose 2 to the hand pump as shown in the picture.

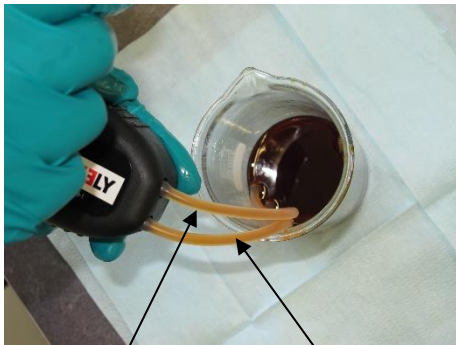
*Equipment:*

- hand pump



hose 2

hose 1



hose 2

hose 1



Hose 2

hose 1

**Step 5:**

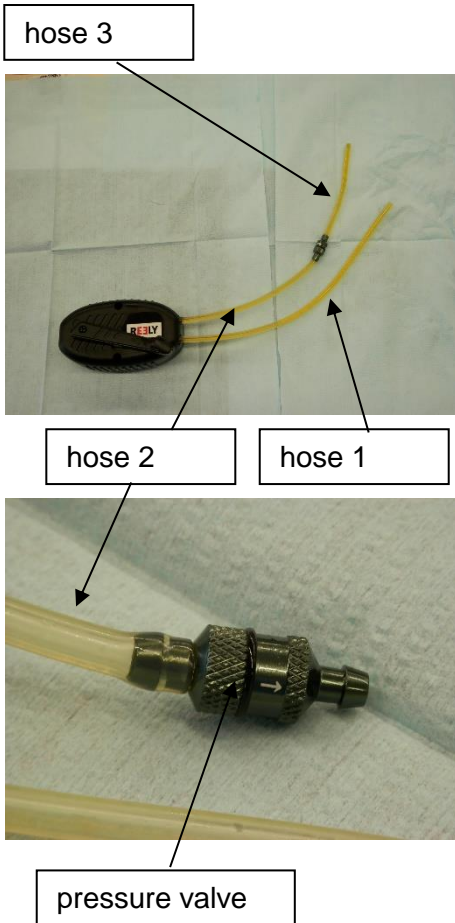
Immerse the open ends of hose 1 and hose 2 in oil and actuate the crank of the hand pump clockwise. Actuate the hand pump until both hoses are completely filled with oil.

Avoid air pockets inside the hose!

*Equipment:*

- hand pump



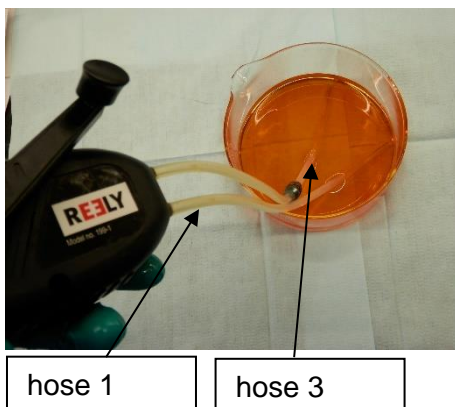
**Step 6:**

Connect the open end of hose 2 with the back pressure valve. Connect the other end of the back pressure valve with hose 3.

Be sure to note the correct direction of flow of the back pressure valve!

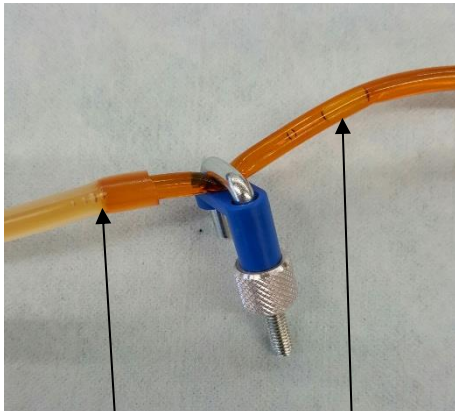
*Equipment:*

- back pressure valve

**Step 7**

Immerse the open ends of hose 1 and hose 3 in oil and actuate the crank of the hand pump clockwise. Actuate the hand pump until all three hoses are completely filled with oil.

Avoid air pockets inside the hose!



hose 3

hose 4

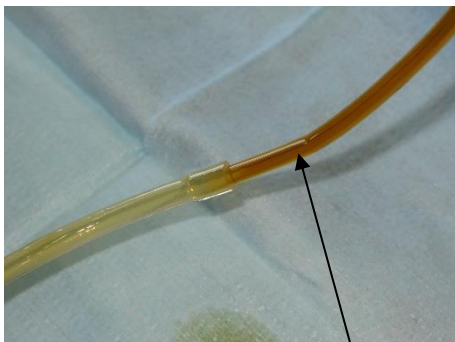
**Step 8:**

Connect hose 3 with the clamped end of hose 4.

Avoid air pockets inside the hose!

**Step 9:**

In case of air inside hose 1, immerse the end of hose in oil; then compress the hose by hand so that it becomes saturated with oil.



hose 4

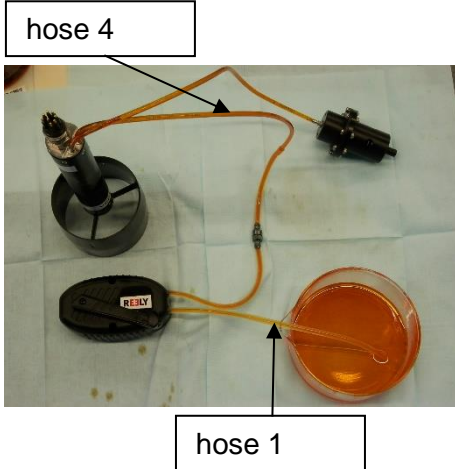
**Step 10:**

Immersed the open end of hose 1 in oil and the connection between hose 4 and remove the hose clamp from hose 4

*Equipment:*

- hose clamp

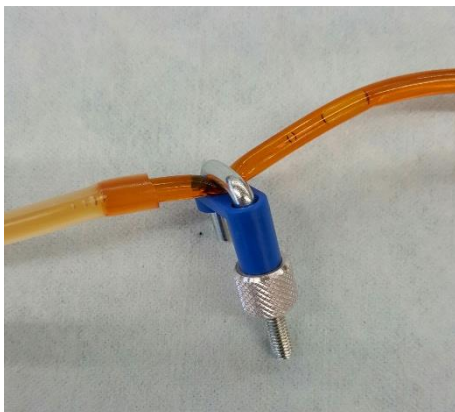


**Step 11:**

Actuate the hand pump clockwise until the oil dipstick has reached the fill level of 4 strokes.

*Equipment:*

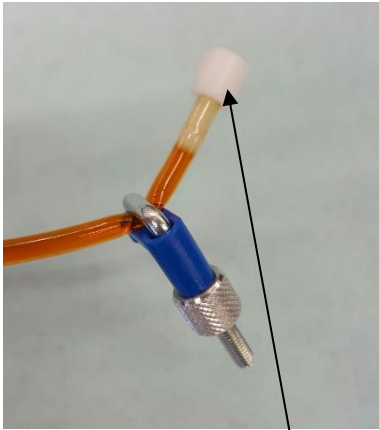
- hand pump

**Step 12:**

If the fill level of 4 strokes on the oil dipstick is reached, clamp hose 4 again with the hose clamp.

*Equipment:*

- hose clamp



hose 1

**Step 13:**

Disconnect hose 3 from hose 4 and plug the previously removed plug to the open end of hose 4. Remove hose clamp from hose 4.

*Equipment:*

- hose clamp



Now the requested fill level of 4 strokes is reached.

## 2. Propeller and Nozzle change

### 2.1 Safety note

When using the listed lubricants, be sure to follow the safety instructions found on the MSDS (material safety data sheet). The most current safety data sheets are enclosed with this service book. Check the data sheet annually to ensure that the information has not changed. If the safety data sheets are not up to date, please request the latest version from the manufacturer. Follow proper storage time and storage requirements as instructed by manufacturer.

### 2.2 Tools

Tool	Comment
torque wrench and socket for female screws with external hexagon	wrench width 8 for the socket torque = 2,0 Nm
torque wrench and blade for screws with hexalobular socket	blade size 10 hexalobular torque = 0,5 Nm

### 2.3 Consumables

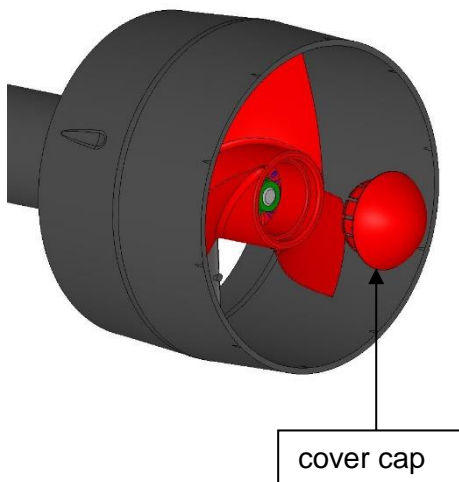
Manufacturer	Designation
Loctite	243

## 2.4 Propeller change

The following chapter describes the working steps for changing the nozzle and the propeller.

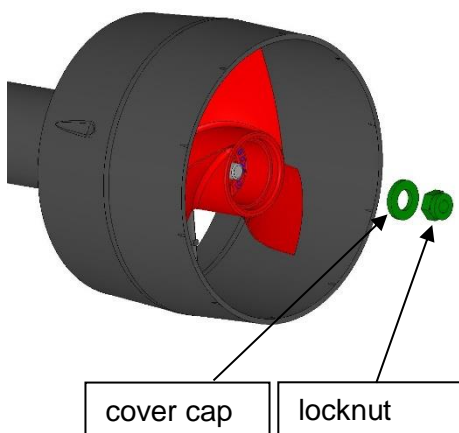
pictures

Changing propeller  
working steps



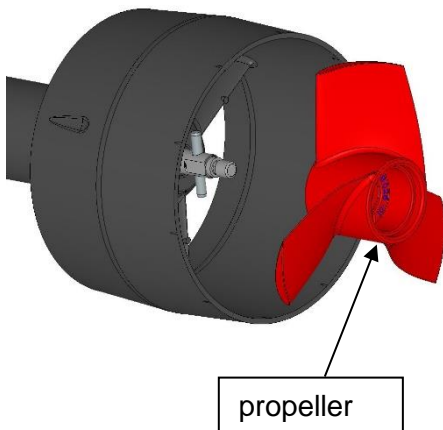
### Step 1:

Dismount the covering cap of the propeller.  
Avoid any damage of the snap hooks!

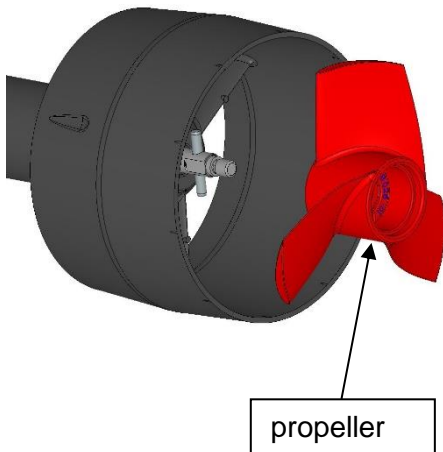


### Step 2:

Unscrew the locknut and dismount the washer  
from the output shaft.

**Step 3:**

Remove the propeller of the output shaft.

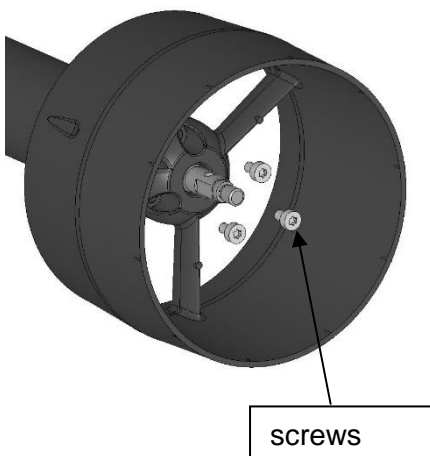
**Step 4:**

Perform working steps 1 to 3 in reverse order to mount a new propeller.

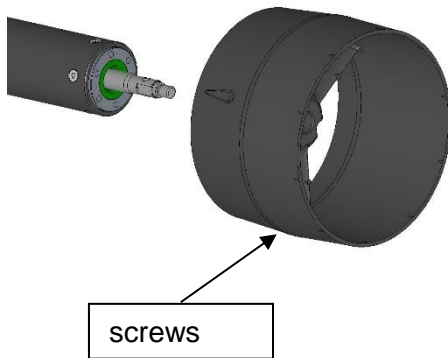
## 2.5 Change nozzle

pictures

Changing nozzle  
working steps

**Step 1:**

Remove the screws at the nozzle out of the flange.

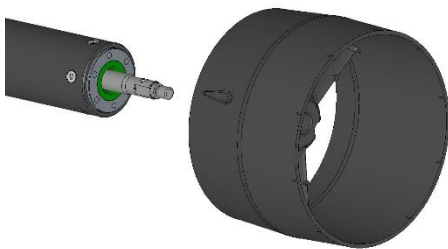
**Step 2:**

Remove the nozzle.

**Step 3:**

Perform steps 1 and 2 in reverse order to change the nozzle.

Note that the hexalobular screws have to be mounted with a torque of 0,5 Nm and the female screw with a torque of 2,0 Nm. All screw connections have to be locked with Loctite 243 according to manufacturer's instructions.

**Equipment:**

- Torque wrench with the socket for the female screw.
- Torque wrench for the hexalobular screws
- Loctite 243