

## MAINTENANCE PROCEDURE FOR MK 2 EVO 1<sup>ST</sup> STAGE





## MAINTENANCE PROCEDURE FOR MK 2 EVO 1st STAGE

WARNING: This maintenance procedure is only for appointed Scubapro technicians that followed a complete course on equipment repair and in no case can replace a technical repair course delivered by a SCUBAPRO/ UWATEC appointed staff.

### Tools needed:

1. Seat extractor P/N 43.300.210
2. Socket P/N 43.191.107
3. Socket extension P/N 43.040.009
4. Field handle tool P/N 43.300.127
5. O ring extractor P/N 43.300.107
6. Filter retainer tool P/N 43.026.101
7. Torque wrench P/N 43.300.130P
8. Interstage pressure gauge P/N 28.158.000
9. Cap tool P/N 43.300.999
10. 14 mm spanner
11. 4 mm Allen key
12. Wooden chopstick
13. Flat blade screwdriver
14. Cristolube MCG 111 lubricant

### DISASSEMBLY

1. Unscrew all hoses from 1<sup>st</sup> stage with the spanner being careful not to damage the chrome plating. Remove all the plugs from the 1<sup>st</sup> stage with the 4 mm Allen key.  
Remove the o rings from the plugs with the o ring extractor and discard.
2. Remove the inlet protector and the cap protector.
3. Take the field handle tool and use preferably for strength the bigger thread 7/16" and  
screw it in the HP port. Hold it in the vice.
4. Unscrew the cap with the cap tool.
5. Carefully remove the piston assembly from the cap, remove the blue spring.
6. Remove the silicone sleeve from the piston shaft. Remove the sleeve from the piston head.
7. Using the o ring extractor remove the two o rings from the piston and the nylon washer/s and discard the o rings.
8. Use the seat extractor to remove the HP seat.
9. Remove the insulating bushing (capsule).
10. For the INT version: Remove the yoke screw, screw the field handle tool on the body of the 1<sup>st</sup> stage. Firmly hold the field handle tool in a vice and use the socket and



socket extension to carefully remove the yoke retainer. Remove the filter retaining clip

with the screwdriver, the filter and the o ring with the o ring remover. Discard both o

ring and filter.

10b. For the DIN version: Remove with the o ring extractor the "tank" o ring, then with the

4 mm Allen key unscrew the filter retainer. Remove the spring and the filter.

Firmly hold the field handle tool in a vice and use the 6 mm socket extension to

unscrew with care the DIN knob retainer. Discard the o ring and filter.

11. Remove the spacer from the body.

12. Remove the o ring from the yoke retainer or DIN retainer and discard.

13. With the wooden chopstick, carefully push the replaceable orifice off the body.

14. Remove the o ring from the orifice with the extractor and discard.

### **PARTS CLEANING**

**WARNING: Refer to parts cleaning procedure.**

### **ASSEMBLY**

After careful inspection of the cleaned parts prepare all the parts that need to be changed at every service.

- a. 01.028.109 the filter
- b. 01.073.101 the filter retaining clip ( only for INT version )
- c. 10.102.103 the HP seat
- d. 01.050.126 the piston stem o ring
- e. 01.050.158 o ring
- f. 01.050.132 the hose and plug o rings
- g. 01.050.181 the piston head o ring or the repair kit P/N 10.063.045

1. Place the o ring P/N 01.050.422 on the HP orifice, slightly lubricate.

3. Carefully push the orifice back in position inside the body.

4. Place the spacer on the body before the assembly of the yoke or DIN retainer.

3a. For the INT version, place the filter in the yoke retainer, then the retaining clip on top and

push with the filter retainer mounting tool. Assemble the o ring P/N 01.050.158 on the yoke

retainer. Slightly lubricate the threads and the o ring before assembling the parts on the 1<sup>st</sup>

stage body. Firmly hold the field handle tool in a vice and use the bigger thread (7/16")

screwed in the HP port of the 1<sup>st</sup> stage for optimal strength. Fit the socket on the yoke

retainer, and the socket extension on the torque wrench and screw. **Adjust the torque wrench to 30 Newton / meter and tighten. Never use a torque exceeding 30 Newton / meter.**

**WARNING:** The use of a torque wrench is compulsory. An excess torque can lead to a permanent deformation or rupture of parts.

- 3b. For the DIN version, assemble the o' ring P/N 01.050.158 on the DIN retaining screw. Slightly lubricate the threads and the o' ring before assembling the parts through the DIN knob and screw on the 1<sup>st</sup> stage body. Fix the socket extension on the torque wrench. **Adjust the torque wrench to 30 Newton / meter and tighten. Never use a torque exceeding 30 Newton / meter.**

**WARNING:** The use of a torque wrench is compulsory. An excess torque can lead to a permanent deformation or rupture of parts.

Now place the conical filter upside down (the tip of the filter facing the tank valve), then the spring, and screw the filter retainer with a 4 mm Allen key to 4 Newton/meter. Slightly lubricate the threads before inserting the "tank" o' ring (P/N 01.050.428)

4. Insert the new HP seat on the piston by placing the seat on a clean flat surface and push the piston on it.

5. Place the 2 o' rings on the piston head and stem and slightly lubricate. Place the insulating sleeve on the piston then slide the silicone sleeve on the piston cap.

6. Place the assembled piston inside the cap.

7. Slightly grease the threads of the cap.

8. Place the spring on the piston.

9. Slightly lubricate the bottom of the bushing to prevent water stagnation and insert it

- inside the body. Put back all the washers found during disassembly inside the bushing head and stem (capsule)

10. Assemble the cap and body and lightly hand tighten. Remove the field vice tool and

- place back the all the plugs after light lubrication of the o ring and threads.

11. Remove the field handle tool from the body. Place back all the hoses and plugs after

- careful inspection of the o' rings and light lubrication of the threads and o' rings. Change them if necessary. Be careful to tighten with a torque not exceeding 4 to

- 5 Newton / meter.

### **THE 1<sup>ST</sup> STAGE IS NOW READY FOR ADJUSTMENT**

**IT IS VERY IMPORTANT TO USE A TANK FILLED TO THE NORMAL WORKING PRESSURE OF THE REGULATOR (200, 230 or 300 bars) TO CARRY OUT THE ADJUSTMENT OF THE INTERSTAGE PRESSURE.**

### ADJUSTMENT

1. Mount the 1<sup>st</sup> stage on a properly filled tank as mentioned above.
2. Fix the interstage pressure gauge either on the 1<sup>st</sup> stage or at the end of one of the hoses. **WARNING:** For a repair workshop, it is recommended to use a bigger and more precise gauge.
3. Open the tank valve slowly.
4. Carefully observe the needle of the gauge as the pressure rises. The needle should move regularly and stop dead without any creeping of the interstage pressure. The regulator should now be cycled about 10 to 15 times by pushing the purge of the 2<sup>nd</sup> stage so that all the parts take their permanent position. Take note of the interstage pressure. Three cases can occur: a) The interstage pressure is in between 9 and 10 bars. b) The interstage pressure is less than 9 bars. c) The interstage pressure is more than 10 bars.
5. If the pressure gauge indicates a pressure between 9 and 10 bars with a good stability of the needle of the pressure gauge, a good adjustment has been reached.
6. If the interstage pressure is less than 9 bars, close the tank valve and purge the 2<sup>nd</sup> stage. The 1<sup>st</sup> stage can be left attached to the tank valve. Unscrew the cap with the cap tool and take a nylon washer (P/N 01.060.219) and place it between the spring and the bushing on the body side of the 1<sup>st</sup> stage. Assemble everything back and proceed as per paragraph 3, 4 and 5. It is possible to pile up a maximum of 3 washers inside the bushing (capsule) to obtain a good adjustment of the interstage pressure. **No washers should be placed between the piston and spring.**
7. If the interstage pressure is more than 10 bars, proceed as per paragraph 6 and **remove** the necessary washers to obtain the correct adjustment of the interstage pressure.
8. Place the protection cap and the inlet protector.