AQUALUNG®

SERVICE MANUAL

MISTRAL MOUTHPIECE

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INTRODUCTION

This manual gives the instructions and the recommendations for the disassembly, the cleaning, the checking, the reassembly and the adjustment of an Aqualung regulator.
This manual is not an instruction manual for unqualified personnel. The procedures described in this manual are intended only for qualified personnel who have been trained in the servicing of Aqualung equipment during a specialised course.
If you do not understand certain procedures in this manual you should contact an Aqualung service consultant before undertaking any operation.

WARNINGS, ATTENTION, NOTES

Certain icons have been used to facilitate the reading and understanding of this manual. They have the following meanings:

WARNING: Indicates situations that could result in serious or fatal accidents if the advice given is not followed correctly.

.

ATTENTION: Indicates a situation or action that could cause serious damage to the product, making it dangerous if the advice given is not followed correctly.

NOTE: Notes are used to emphasize important points as well as information that needs to be remembered.

MAINTENANCE

Attention: Whatever the number of dives carried out during a year, the regulator should receive a complete service each year. If the regulator is used in a chlorinated or aggressive environment the service period should be reduced to six months.

In order to conform with the Aqualung Regulator Lifetime Guarantee, all servicing (inspection, servicing and repairs) should be recorded in the Service Record incorporated in the regulator User Manual.

GENERAL INSTRUCTIONS

1. In order to carry out the procedures described in this manual correctly it is important that you follow the steps in the exact order indicated. Read the manual through completely so that you become familiar with all the procedures, the special tools and the replacement parts, before starting to disassemble the product. Keep this manual open near to you so that you can refer to it step by step. Do not rely on your memory.

2. All servicing and repair procedures should be carried out in a workshop that is clean, well lit, easy to access and specially fitted for the purpose.

3. The regulator body should never be directly held in the jaws of a vice. To hold the body, screw the tool 116230 into the HP port and then grip the tool with the vice.

4. Once the regulator has been disassembled, the re-usable components should be separated from the components that need to be replaced. Fragile items with seats or crowns with critical sealing surfaces should be separated and protected during servicing in order to prevent any damage.

5. Use only spare parts from Aqualung service kits. Never replace an Aqualung part with one from another manufacturer, even if it appears similar.

6. Never re-use regulator parts which should be replaced on the pretext that the regulator has seen little use since its manufacture or since its last service.

7. When reassembling, check that the torque used conforms with that shown in **Table 4, Torque**. Some parts can be irretrievably damaged if the acceptable torque is exceeded.

GENERAL CONVENTIONS

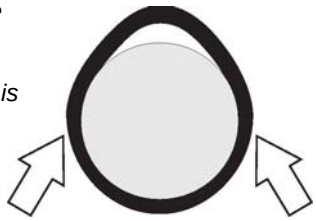
The conventions described below define the actions to be carried out when an instruction is given.

1. **Unscrew**: to unscrew a threaded part, turn it anti-clockwise.

2. **Screw**: to screw a threaded part, turn it clockwise.

3. **Remove the O-ring**: To remove an O-ring follow the method below, using the special tool provided for this purpose. Any tool that could damage the O-ring should be avoided. In every case, replace the O-ring removed with a new one.

   Press simultaneously on the two sides of the O-ring in order to form an 'eye'. . Insert the special tool into this eye to remove the O-ring.



4. The acronyms used:
   LP: Low Pressure
   MP: Medium Pressure
   HP: High Pressure

5. Numbers in brackets indicate the part number of the component shown on the exploded view attached.

DISASSEMBLY PROCEDURE

***Note**: Before commencing disassembly, consult the exploded view to check the reference numbers of all parts requiring replacement. These parts should all be replaced by new parts and should not be re-used on the pretext that the regulator has seen little use since its manufacture or since its last service.*

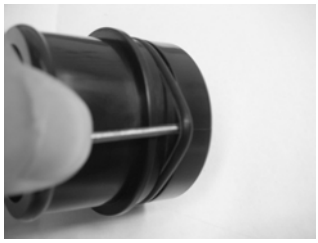
***Attention**: Use only the special tool when removing O-rings in order to avoid damaging the seal recess. The slightest scratch on a sealing surface could cause a leak. If a surface should be damaged then this part should be replaced with a new one. Do not use any pointed instrument or metal tool to remove O-rings.*

1. Cut the two tightening collars at the mouthpiece level and remove the corrugated hoses from the connectors.


2. Unscrew the screw connectors by hand.


3. Remove the two connectors from the mouthpiece body.


4. Remove the O-rings from the connectors.



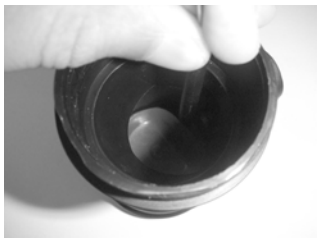

5. Remove the lip guard.


6. Remove the mouthpiece clip (8) by lifting the cam with your thumb, then remove the mouthpiece.

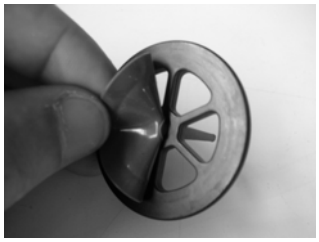

7. Using the tool (ref: 116236), extract the exhalation valve holder (side with the arrow pointing outwards) by pushing with the tool from the inhalation valve holder side, then extract the O-ring.



8. Using the tool (ref: 116236), extract the inhalation valve holder taking care not to press on the valve, then remove the valve holder O-ring.




9. Remove the inhalation and exhalation valves (5) and check their surface is clean and free from any scratches. They should be flexible and have a clean edge.
If they are in good condition it is not necessary to discard them and they can be reused. If they show any signs of deterioration they should be replaced.



END OF DISASSEMBLY

Before starting to re-assemble the regulator, make sure that all replacement parts have been cleaned and lubricated in accordance with *Procedure A: Cleaning and Lubricating* on page 14.

RE-ASSEMBLY PROCEDURE

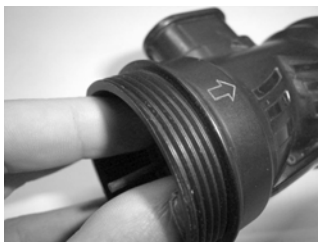
1. If the valves have been extracted, pass the tail through the hole in the valve holder and pull gently on it until the shoulder passes through to the inside of the valve holder. If the valve is new then cut the excess length leaving a tail of about 15mm.

2. Fit the O-ring (6) onto the valve holder.


3. Insert the valve holder into the body on the side with the outward-facing arrow (start by fitting the valve holder into the orifice then position it correctly by pushing it with your finger.

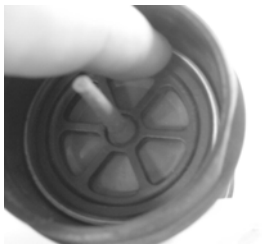

***Attention**: The valve holders should be fitted so that the gas can circulate in the direction indicated by the arrows engraved on the mouthpiece body.*

4. Insert the valve holder into the body on the side with the inward-facing arrow.



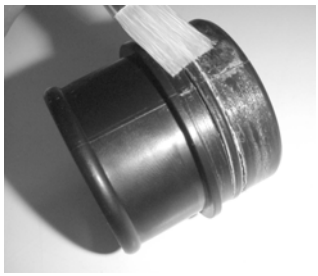

***Attention**: The valve holders should be fitted so that the gas can circulate in the direction indicated by the arrows engraved on the mouthpiece body.*

5. Insert the O-ring (6) into the mouthpiece body to the left of the sticker.

6. Fit the O-rings (6) to the two connectors (3).

7. Lubricate the two O-rings and the surface in contact with the mouthpiece body using a brush.



8. Fit the connectors into the mouthpiece body


***Note**: Check that the connectors are correctly fitted.*

9. Screw the two screws completely home by hand.


10. Fit the moulded mouthpiece (9) then the mouthpiece clip (8).


11. Fit the lip guard


12. Check the condition of the two corrugated hoses, they should not show any cuts or any other signs of deterioration.

If they are in good condition, it is not necessary to replace them and they can be reused. If they show any signs of deterioration they should be replaced and refitted following the procedure described in the Mistral Second Stage Service Manual.

13. Place the corrugated hoses onto the connectors and proceed as follows:

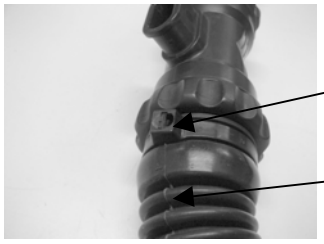
    a. Fit the corrugated hoses to the connectors.

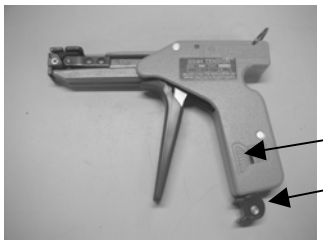
***Attention**: The corrugated hoses should be fitted to the connectors so that the gas can circulate in the direction indicated by the arrows engraved on the mouthpiece body.*

b. Check that the corrugated hose mould line is identical with that shown below when the regulator is laid flat with the mouthpiece pointing upwards.

14. Fit the tightening collars (11) and tighten them with PANDUIT GS4H pliers following the adjustment information supplied:

***Attention**: The lug of the tightening collars should be aligned with the mould line of the hoses (white line on the photos of 13.b.) when the collar is tightened.*





PANDUIT GS4H :

- Tension = 8
- Locker = HVY

WARNING: Only pliers and tightening collars following the references given by Aqualung should be used.

END OF REASSEMBLY

TEST IN WATER

Check that all the MP and HP plugs are in place and that a correctly adjusted second stage is connected to the first stage. Slowly open the cylinder valve to put the regulator under pressure.
Immerse the first and second stages and the hoses completely in water to check that there are no leaks.

***Note**: Do not mistake any bubbles that are trapped in the regulator with a leak. If there is a leak there will be a constant stream of bubbles.*

When you are sure that there is no leak, close the cylinder valve and purge the regulator. Remove the first stage from the cylinder and refit the dust cap.
If a leak has been detected then note its source and refer to **Table 1. Troubleshooting Guide.**

Table 1. Troubleshooting Guide

SYMPTOM	POSSIBLE CAUSE	TREATMENT
External leak	1.The connector or valve support O-rings are extruded, worn or damaged.	1. Replace the O-ring(s)
	2. The mouthpiece body is cracked	2. Replace the mouthpiece body
	3. The corrugated hoses are worn or damaged	3. Replace the corrugated hoses
	4. The corrugated hose tightening collars are damaged or badly tightened	4. Replace the collar(s)
Reduced air flow or a significant general increase in breathing resistance in the complete regulator	1. The cylinder valve is not completely open	1. Open the valve and check the cylinder pressure
	2. The valve needs servicing	2. Try another cylinder
	3. The first stage filter (10) is blocked	3. See the Mistral First Stage Trouble Shooting Guide
	4. The cylinder is empty	4. Charge the cylinder
Impossible to inhale or exhale from the complete regulator	1. The valve holders have been fitted the wrong way round in the mouthpiece	1. Disassemble and refit following the correct procedure
	2. The mouthpiece has been fitted backwards to the corrugated hoses	2. Disassemble and refit following the correct procedure
	3. The cylinder valve is not open	3. Open the valve
	4. The cylinder is empty	4. Charge the cylinder
Water enters the mouthpiece during inhalation	1. Mouthpiece pierced or broken (1)	1. Replace the mouthpiece
	2. Diaphragm damaged	2. See the Mistral Second Stage Trouble Shooting Guide
	3. The connector or valve support O-rings are extruded, worn or damaged.	3. Replace the O-ring(s)
	4. The corrugated hose tightening collars are damaged or badly tightened	4. Replace the collar(s)
	5. The corrugated hoses are worn or damaged	5. Replace the corrugated hoses

Table 2. List of tools and service kits

REF	DESCRIPTION	APPLICATION	US PART NO.
116236		Valve support disassembly	109436
N/C	O-ring tool	Fit and remove O-rings	944022
N/C	Tightening collar tool PANDUIT GS4H 	Tightening collars PLT4H	N/a
N/C	Collar cutting pliers	Removing tightening collars	N/a

125905	**Service Kit MISTRAL**	**All versions except Nitrox**	**N/a**
125936	**Service Kit MISTRAL Nitrox/O2**	**Nitrox Version**	**N/a**

Table 3. Recommended cleaners and lubricants

LUBRICANT / CLEANER	APPLICATION	SOURCE
Cristo-Lube MCG 111	All O-rings	Aqualung, ref. 480025
	***Attention**: Silicone parts do not require lubrication. Do not grease them. Greasing silicone parts can change their molecular construction and cause premature degradation of the material.*	
Oakite #31	Acid bath for cleaning brass and stainless steel parts.	Oakite Products, Inc.
NETALU	Acid bath for cleaning brass and stainless steel parts.	Aqualung, ref. 455001
Diluted white vinegar	Acid bath for cleaning brass and stainless steel parts.	Household stores
	***Attention**: Do not use hydrochloric acid for cleaning parts. Hydrochloric acid, even when well diluted, attacks the coating of metal parts and leaves a corrosive deposit that damages plastic parts and O-rings.*	
Washing-up liquid (diluted with hot water)	Degreases brass and stainless steel parts; general cleaning of plastic and rubber parts.	Household stores

Procedure A
Cleaning and Lubricating
(All Aqualung Regulators)

Cleaning brass and stainless steel parts.

1. Pre-clean by soaking in NETALU diluted to 25%.
2. Cleaning in an ultra-sonic bath filled with a mixture of washing-up liquid + hot water. If some resistant deposits remain then fill the ultrasonic bath with white vinegar and repeat. DO NOT put plastic, rubber, silicone or anodised aluminium parts in contact with vinegar.
3. Rinse in demineralised or fresh water to avoid calcium deposits. Soak for 10 minutes. Dry with filtered low pressure air and then check that their condition is now suitable for re-use.

Cleaning plastic, rubber and anodised aluminium parts.

For anodised aluminium parts: soak in a « NETALU diluted to 25% ». Rinse in fresh water and dry with low-pressure filtered air.
For plastic parts. (casings, plugs.): clean in an ultrasonic bath containing a mixture of washing-up liquid and hot water. Use only a toothbrush with nylon bristles to remove any deposits. Rinse in fresh water and dry with low-pressure filtered air

***Attention**: Do not place plastic and rubber parts in contact with acid solutions. This could alter their physical properties and cause degradation and premature breakdown.*

Cleaning parts for Nitrox/O2 use.

1. Metal parts: Pre-clean by soaking in NETALU diluted to 25%.
2. Ultrasonic cleaning in Promoclean TP108 diluted at 5%.
3. Rinse in demineralised water. Soak for 10 min.
4. Dry in the open air in a clean and dust-free atmosphere. Place the parts on a white cloth, allow to dry and check after drying that the cloth shows no grease deposits and that the condition of the parts is appropriate for re-use with Nitrox/O2.

Cleaning hoses.

If there is significant corrosion then it is permissible to soak only the ends in an ultrasonic bath, avoiding any possibility of the solution entering the hose. Rinse in fresh water and allow to dry with the connections hanging down. Dry the inside with filtered compressed air before reconnecting the hose to the regulator.

Wiping.

To wipe parts, use a white filter paper, a pure cotton cloth or any other material that **does not produce fluff.**

Inspection.

Visually check under a white light (day light or artificial light).
The parts are completely free of any traces of:

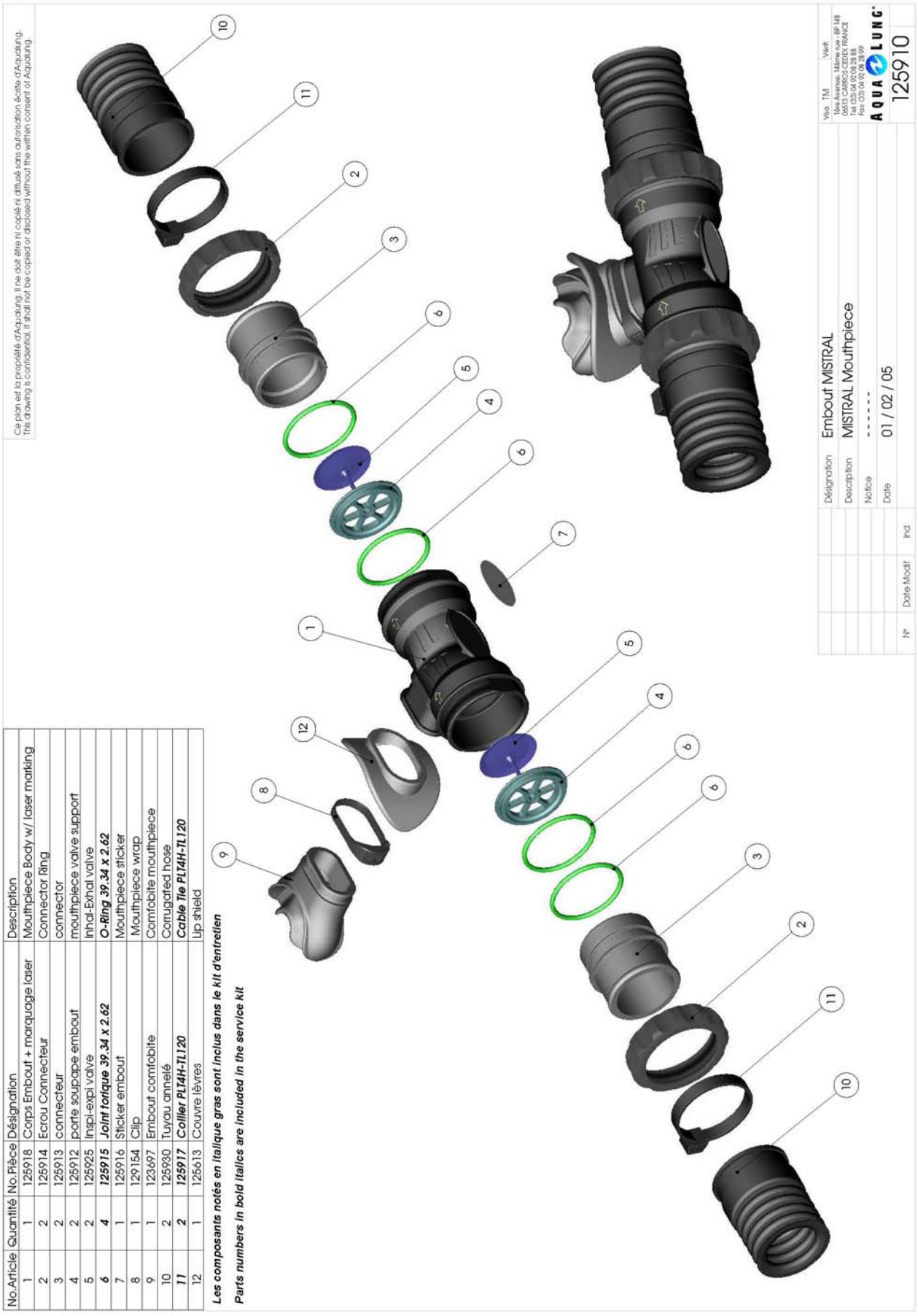
1. organic materials (oil, grease, paint, rust…)
2. cleaning agents
3. dust
4. humidity

Lubrication.

When handling O-rings wear unpowdered latex gloves. It is important not to allow contact between the internal components and the skin or any other source of contamination when the regulator is being prepared for Nitrox use. All seals should be lubricated with Cristolube MCG111. Cover the seals with a light film of grease and remove any excess by rolling the seal between finger and thumb. Do not use an excess of grease; this can have the effect of accumulating particles that could damage the O-rings.

Maintenance Notes.

Exploded view of Mistral mouthpiece - 125910.



No.Article	Quantité	No.Pièce	Désignation	Description
1	1	125918	Corps Embout + marquage laser	Mouthpiece Body w/ laser marking
2	2	125914	Ecrou Connecteur	Connector Ring
3	2	125913	connecteur	connector
4	2	125912	porte soupape embout	mouthpiece valve support
5	2	125925	Inspi-expi valve	Inhal-Exhal valve
6	**4**	**125915**	***Joint torique 39.34 x 2.62***	***O-Ring 39.34 x 2.62***
7	1	125916	Sticker embout	Mouthpiece sticker
8	1	129154	Clip	Mouthpiece wrap
9	1	123697	Embout comfobite	Comfobite mouthpiece
10	2	125930	Tuyau annelé	Corrugated hose
11	**2**	**125917**	***Collier PLI4H-TL120***	***Cable Tie PLI4H-TL120***
12	1	125613	Couvre lèvres	Lip shield

Les composants notés en italique gras sont inclus dans le kit d'entretien

Parts numbers in bold italics are included in the service kit

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