



Head-Up Display (HUD) Dis/assembly Instructions

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Written by Tino de Rijk

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1. Introduction

1.1 Reason for this manual

The AP Diving Inspiration and Evolution line of rebreathers are fitted as standard with a twin Head-Up Display, further referred to in this manual as HUD.

The HUD is a “static” device, in the sense that it does not contain moving or electrical or mechanical serviceable parts. It is designed to operate wet.

So although generally speaking the HUD does not need regular servicing or maintenance, there are a few reasons why you might want to disassemble and assemble the HUD:

- To swap it from the left-side position to the right-side position on the mouthpiece in order to create a better view for the diver when e.g. the position on the left side is blocking the view of other diving instruments; The HUD can easily be moved to the right side of the mouthpiece but then the red lights will appear on the bottom and the green on the top and the controller 1 lights will be on the right instead of the left. By following the procedures in this manual you can change the fibre optics to set the “lights” back to their original positions: Controller 1 on the left, Controller 2 on the right, green lights on the bottom and red lights on the top.
- When the HUD lights are too dim and adjusting them in the software does not solve this problem. In that case disassembling and inspecting and cleaning the HUD connection to the lid could help in diagnosing the problem.

1.2 Servicing

Before servicing the AP Diving HUD you must receive instruction and certification in servicing it by AP Diving.

Without the correct training it is possible to render the HUD inoperable or even damage the rebreather lid.

The Inspiration, Evolution and Evolution+ closed circuit rebreathers' CE certification to EN14143 is unaffected by servicing the HUD or swapping it from left to right, provided that the alternate position does not affect the operation of the rebreather.

The AP Diving HUD meets the requirements of the Personal Protective Equipment Directive 89/686/EEC – CE certification when fitted to an AP Diving rebreather.



WARNING: when servicing the HUD it is VERY important that all parts that may suffer wear and tear get replaced. It is also very important that the correct tools are used to avoid damaging any part of the fibre optics in the disassembly and assembly process.

Please don't try to save money by re-using parts that really should be replaced during a proper servicing action.

1.3 Copyright and Applicable Law

These instructions are copyrighted, all rights reserved. It may not, in whole or in part, be copied, photocopied, reproduced, translated, or reduced to any electronic medium (including the Internet) or machine-readable form without prior consent in writing from AP Diving.

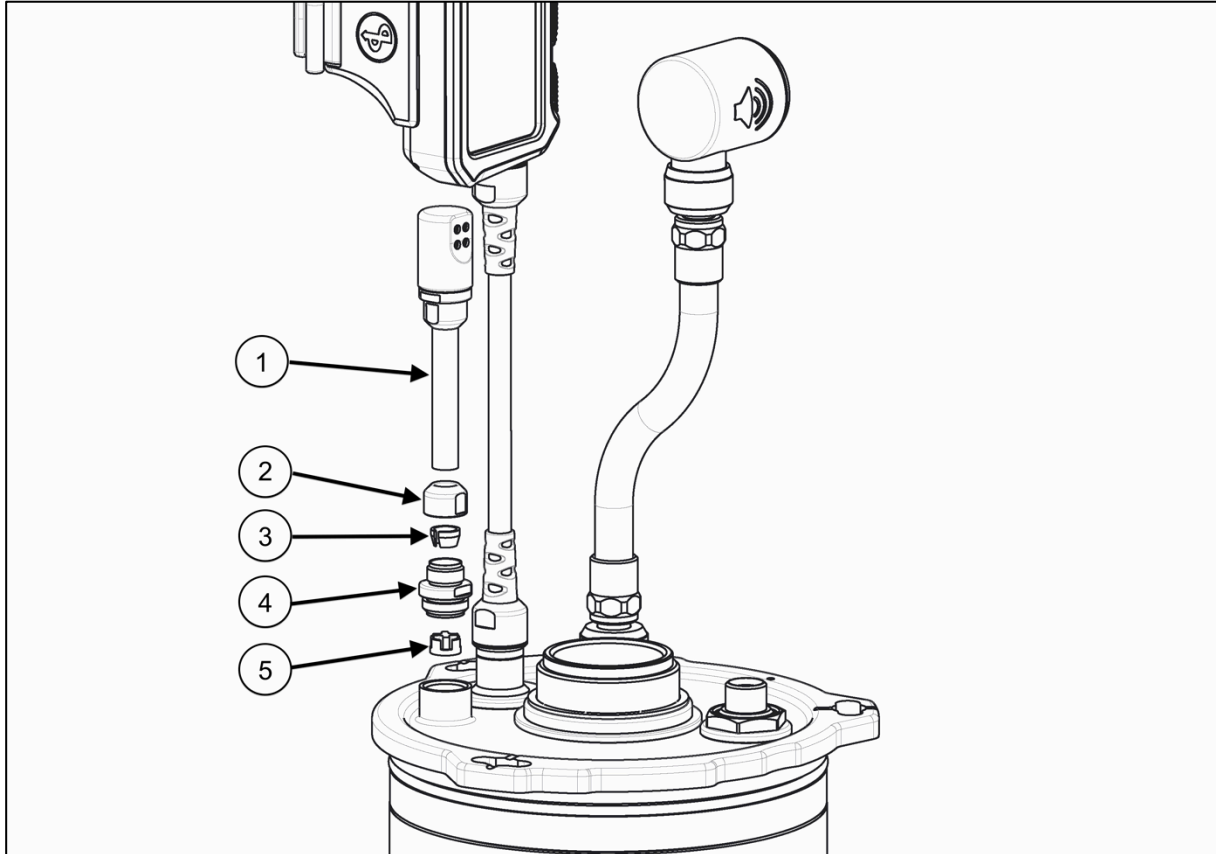
All products are sold on the strict understanding that only English Law applies in cases of warranty claims and product liability, regardless of where the equipment is purchased or used. Should a claim be made then the venue for this would be in Truro, England.

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Head-Up Display (HUD) Service Manual

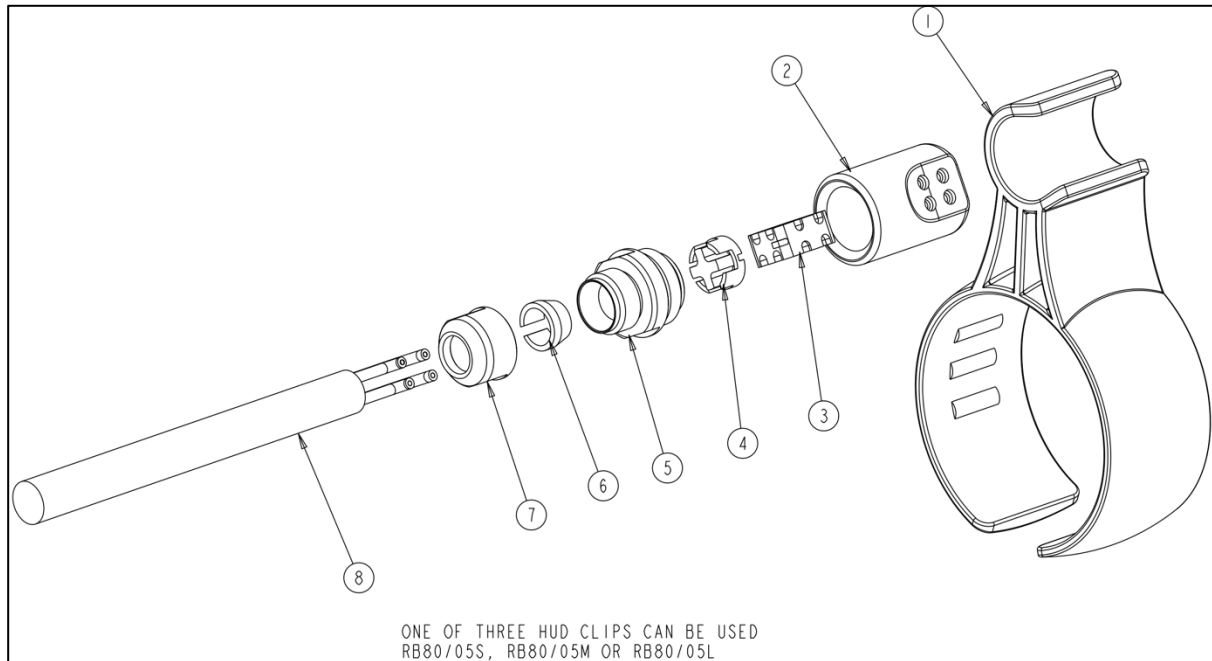
2. Exploded Diagrams and Parts Lists

2.1 HUD assembly at the Lid



NUMBER	DESCRIPTION	PART NUMBER	QUANTITY
1	Fibre optic cable	RB_80_A	1
2	HUD cable ring	RB_80_08	1
3	HUD cable collet	RB_80_09	1
4	HUD locking clamp	RB_80_07	1
5	HUD fibre guide	RB_80_03	1

2.2 HUD assembly at the Mouthpiece



NUMBER	DESCRIPTION	PART NUMBER	QUANTITY
1	HUD clip (set of three sizes)	RB_80_05S RB_80_05M RB_80_05L	3 1 1
2	HUD outer	RB_80_01	1
3	HUD inner	RB_80_02	1
4	HUD fibre guide	RB_80_03	1
5	HUD locking clamp	RB_80_07	1
6	HUD cable collet	RB_80_09	1
7	HUD cable ring	RB_80_08	1
8	Fibre optic cable	RB_80_0A	1

3. Tools

3.1 Special Tools needed

When servicing the AP Diving HUD no special tools are needed.

3.2 Standard Tools needed

The following standard tools are needed:

- 16 and 14 mm spanners
- (Access to) an ultrasonic bath for cleaning the parts.



WARNING: Do NOT use aggressive chemicals. They might damage the metal plating of the hose ends. Use an ultrasonic cleaning bath with a suitable cleaning fluid. A very good cleaning fluid is Biox "O2" immersion fluid. See WWW.BIOXINT.COM for further information and distributors.

The use of rubber gloves while re-assembling the hoses is recommended to avoid rendering them unclean due to human touch.

4. HUD disassembly



- Hold the HUD Locking clamp (RB80_07) with a 16mm spanner.
- Unscrew the HUD cable ring (RB80_08) with a 14mm spanner (anti-clockwise).



- Push the HUD cable ring nut up along the cable.



- Gently wiggle the fibre optic cable sideways, backwards and forwards until the cable collet (RB80_09) comes out far enough to pull it out with your fingers:



- Slide the cable collet up the cable:



- Once the cable collet is clear of the locking clamp, as shown, use a 16 mm spanner to loosen the HUD Locking clamp (RB80_07) by unscrewing it anti-clockwise.
- Unscrew the HUD locking clamp all the way and slide it up cable.
- The fibre optic cable and cable clamp can now be pulled together from the lid recess.

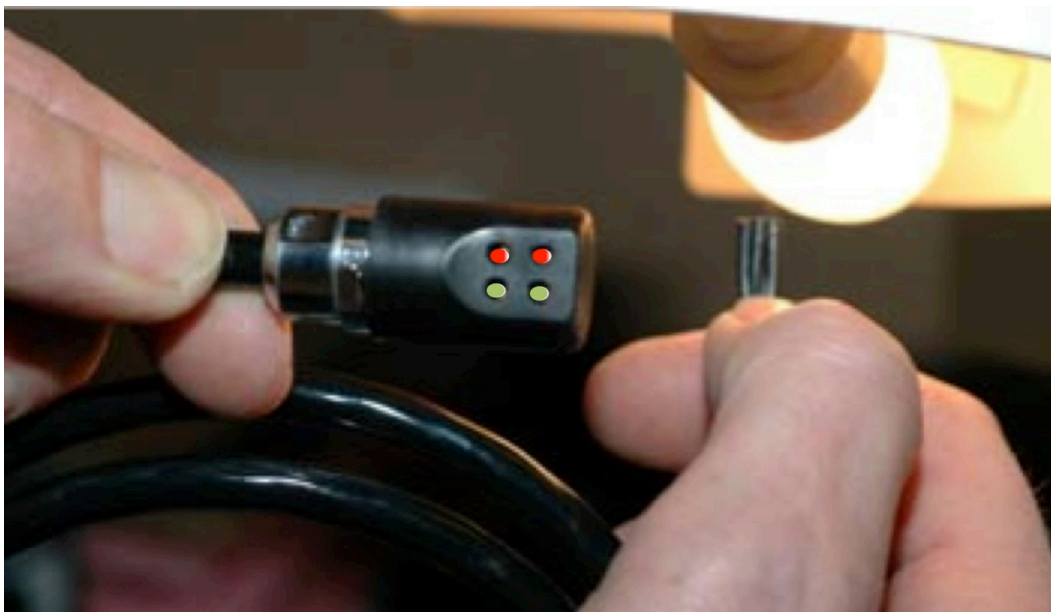


5. HUD assembly

- Switch the Vision handset on by pressing and holding the left button for 1 second.
- Controller 1's LEDs (one red and one green) should light up, followed by Controller 2's LEDs.
- Clean the round glass window with a wet piece of paper or a cotton swab. Do NOT use any chemicals!
- If any of the 4 LEDs do not light up, the lid should be returned to the factory.



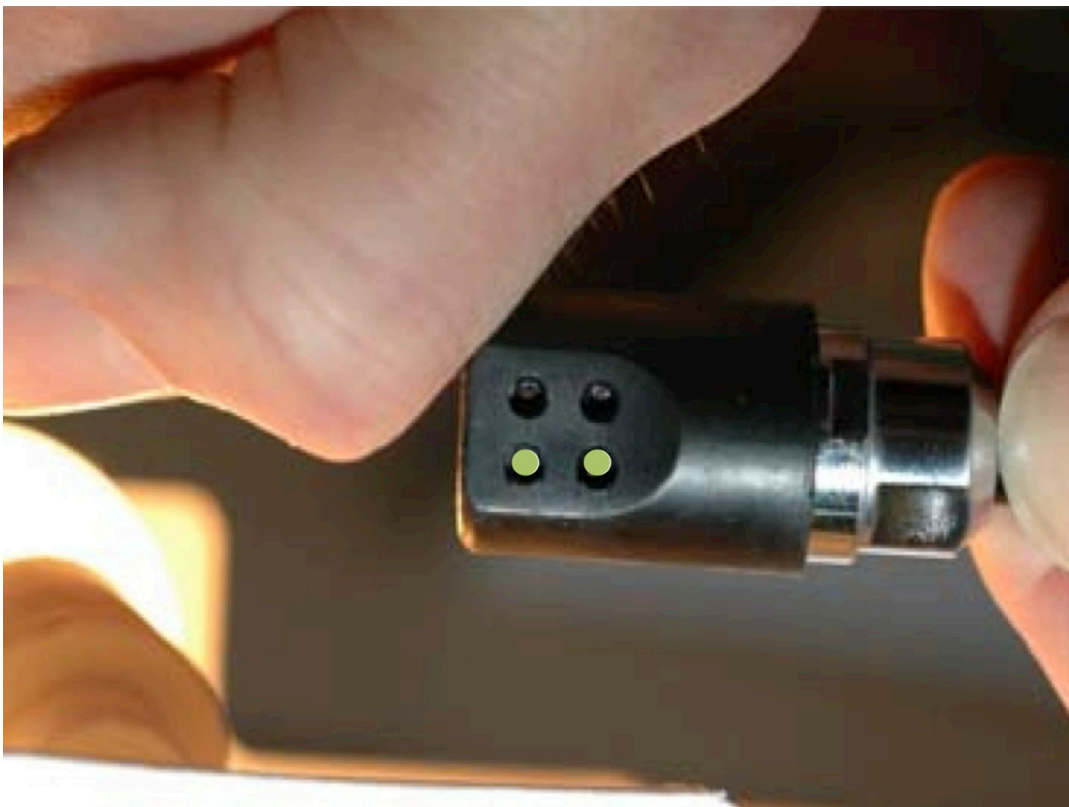
- If you want the HUD to come in from the left on top of the mouthpiece, hold the HUD so that the cable comes in from the left.
- Point the lid-end of the cable end at a bright light source, taking care not to touch it onto a hot surface.
- **⚠ WARNING:** the fibre optic rods are polyethylene and will melt when exposed to a heat source.
- All four lights should be seen in the HUD and light up evenly.



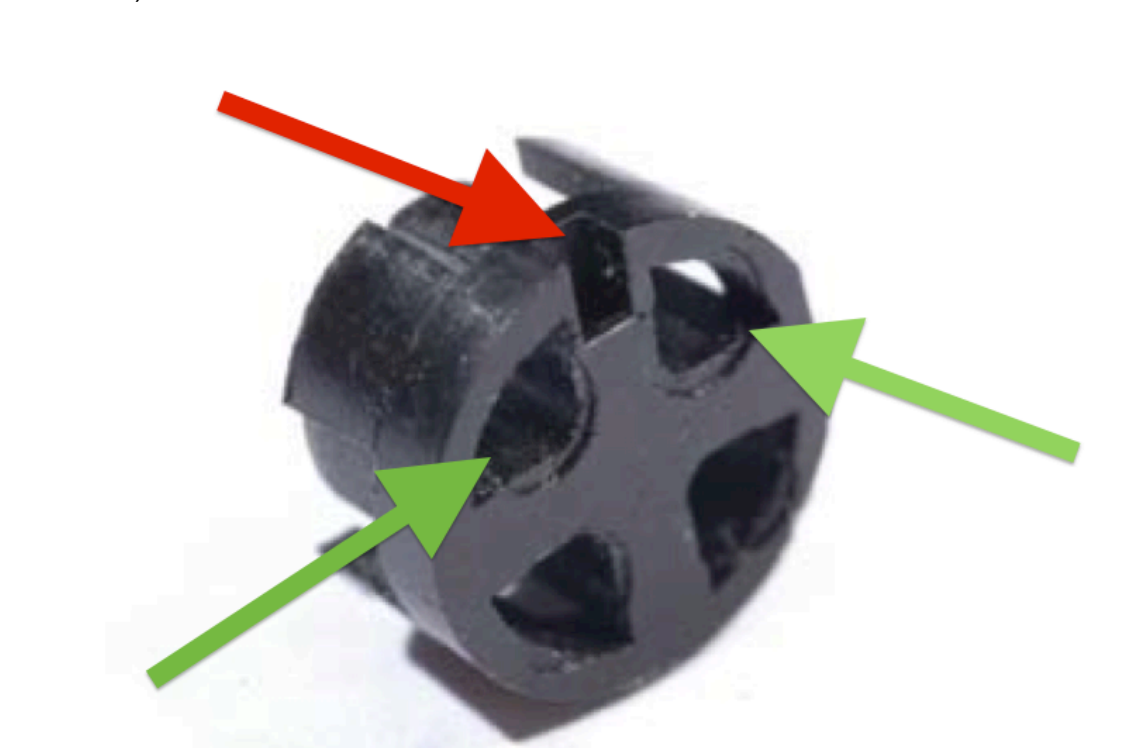
- The lower two lights will be green when assembled correctly.
- By covering the four ends of the fibres in turn with your thumb, identify which pair of fibres are the green ones.



- If you want the HUD to come in from the right, simply hold the HUD so the cable comes in from the right and then identify which two fibres are providing light to the lowest two (green) lights.



- All four cables need to be inserted into the cable clamp (RB80_03), from left to right as you look at this picture. There is a small notch on top of the cable clamp (see red arrow below) and the green fibres need to be on either side of the notch (see green arrows below).



- In the picture below the green fibres are the top two, on either side of the notch in the clamp.



- Slide the Cable Clamp (RB80_03), so there is an equal length of fibre on each side of the clamp.



- In the lid there is a small raised section, seen here in the 9 o'clock position (see red arrow below).
- As you insert the cable and cable clamp assembly, the notch of the cable clamp must line up with the raised section.



- To line it up, gently rotate the cable while aligning it, so you can feel for correct alignment when the cable clamp slips onto the raised section within the lid.



- Once the cable is correctly pushed in and located correctly, keep it secured in its place by keeping it pushed down.
- Now screw the locking clamp (RB80_07) back into place (clockwise).



- Slide the cable collet (RB80_09) back in place, ensuring the chamfered side is going into the chromed brass fitting.



- Tighten the locking clamp GENTLY with a 16mm spanner.
- Take care not to over-tighten!



- Screw the cable ring (RB80_08) back into place (clockwise).



- Hold the HUD Locking clamp (RB80_07) in place with a 16mm spanner.
- Tighten the HUD cable ring (RB80_08) with a 14mm spanner (clockwise).
- Take care not to over-tighten!



8. Testing Instructions

8.1 Test for proper operation

- Switch the Vision handset on by pressing and holding the left button for 1 second.
- Controller 1's LEDs (one red and one green) should light up, followed by Controller 2's LEDs.
- Check if all 4 LEDs are clearly visible on the mouthpiece-end of the HUD.
- Check if all 4 LEDs are evenly lit on the mouthpiece-end of the HUD.
- TIP: in order to get the red LED's to go on, simply keep the oxygen supply closed while opening up the lid of the rebreather. This will force a "LOW OXYGEN" error and will subsequently put the red LEDs on.
- Switch controller 1 and 2 off and on, to verify that their corresponding LEDs come on and are in the correct left-right position on the mouthpiece-end of the HUD.