

INFORMATION NOTICE
REBREATHER ELECTRONICS

NGC



M3S - SAS

Tourves, January 25, 2025

V1.0

Modification history

Revisions	Dates	Descriptions
1.0	25/01/2025	Creation of the document

Thank you for buying a rebreather with the NGC

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VERSION 1.41/055 DOES NOT DEAL WITH DECOMPRESSION. DO NOT TAKE INTO ACCOUNT THE DTR AND NDL DATAS.

UNDER NO CIRCUMSTANCES THIS INFORMATION NOTICE REPLACES A TRAINING COURSE CARRIED OUT BY A TRAINING ORGANISATION RECOGNISED BY M3S.

WHEN TRAINING, EACH TRAINING STANDARD POINTS MUST BE COVERED AND MASTERED AT THE END OF THE TRAINING COURSE.

THE REBREATHER TOGETHER WITH THE NGC MUST NOT BE USED WITHOUT AN PROPER TRAINING.

THE REBREATHER TOGETHER WITH THE NGC MUST ONLY BE USED WITHIN THE PREROGATIVES OF THE USER'S (DIVER'S) TRAININGS.

A NON-STANDARD USE AND / OR USE OF A NGC THAT IS NOT REGULARLY MAINTAINED IN ACCORDANCE WITH M3S GUIDELINES MAY RESULT IN PERSONAL INJURIES OR DEATH.

EACH USER MUST CARRY OUT THE MAINTENANCE OF ITS NGC IN ACCORDANCE WITH THE GUIDELINES GIVEN BY M3S.

IN ACCORDANCE WITH THE CHECKLIST, PRE-DIVE TESTS ARE ESSENTIAL BEFORE EACH DIVING IN ORDER TO ENSURE THAT THE UNIT WORKS PROPERLY.

ONLY LUBRICANTS COMPATIBLE WITH OXYGEN MUST BE USED TO MAINTAIN THE NGC.

EACH CELL MUST NOT BE USED BEYOND 12 MONTHS FROM ITS MANUFACTURING DATE.

DO NOT DIVE WITHOUT THE BATTERY 2 BEING LESS THAN 80%.

THE NGC BATTERIES MUST ONLY BE CHARGE WITH THE PROVIDED CHARGERS.

IN THE EVENT OF THE UNIT DROWNING TOGETHER WITH THE NGC, RETURN THE UNIT TO THE MANUFACTUER AFTER FLUSHING, DRYING, FOR A FULL CHECKUP.

WE ADVISE YOU TO TEST ALL ALL NEW EQUIPEMENT OR EQUIPMENT RETURNED FROM OVERHAL, IN CASE IT SUFFERED DAMAGES DURING TRANSPORTATION.

DO NOT USE WATER JET OR HIGH-PRESSURE AIR ON THE NGC.

GENERAL INFORMATION

The TRITON® is a mix gas rebreather. It enables you to breathe underwater. The UE regulation 2016/425 classifies the TRITON® as a category III personal protective equipment preventing (PPE) from the risk of mixed gas dangerous to health.

The scuba diving rebreather of mixed gas is a protective device against liquids (such as fresh water, seawater or pool water) designed for use in aquatic environment.

The TRITON® complies with the harmonized norm EN 14143 2013. The notified body RINA n°0474 undertook the exam UE type. M3S therefore wrote a conformity declaration which you will find on the USB key supplied with your machine and which you can also find on our website (<https://en.ccrtriton.com/telechargement-ccr-triton>).

NGC is the electronics working with the TRITON®. It is an integral part of the CE approval. Any modification on the electronics, even partial, will result in the loss of the CE approval in Europe as well as a loss of warranty for the unit as a whole.

TECHNICAL SPECIFICATIONS

2.1. General description

The NGC is an electronic device allowing the display of the O₂ partial pression (PpO₂), that has been measured by the 3 cells inside the rebreather's cell holder. It enables the display of the PpO₂ of the 3 cells as well as their average during the dive.

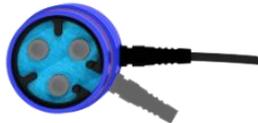
It has been tested for a depth of 130 m to comply with the EN 13 319: 2000-06 regulation.

NGC has 4 components :

- The system unit,
- The intermediate module – power supply,
- The PpO₂ display, peripheral
- The HUD, peripheral.



FIGURE 2.1 – NGC overview



The NGC includes a guide to the rebreather assembly and routine maintenance.

Upon the parameters set and collected during the dive, the NGC sends the information to the PpO₂ display and to the HUD through visual and vibratory alarms.

It is powered by 2 Li-Ion 18650 type batteries. The status of these batteries is indicated by an icon for each of them.

The serial number of the NGC is given, when switching on, by the first display screen.

FIGURE 2.2 – View of the display showing the NGC serial number



2.2 Operation

Warning: recommendation

The NGC will not switch itself on if the battery voltage is too low or whether there is no battery
1. The following message « replace battery » will be displayed.

2.2.1 The system unit

The system unit is the cell housing. It incorporates the main board of the NGC' electronics on which there is the emergency pressure sensor, the whole being sealed in resin. It contains the intelligence and the electronics' black box.

The system unit is made of the following components:

1. The **inner clip** of the system unit allows to maintain in place all components of the system unit in an easy way. It can be dismantled without any tools. A pinch of 2 fingers can remove it from its groove.
2. The **humidty pad**, captures the surrounding humidity close to the cells. It is maintained by the system unit's inner clip.
3. The **cell holder plate** holds in place the cells inside the system unit.
4. The **cells** are connected by a Molex plug. The set up of the cells is more robust if done without cables to prevent these from premature aging. The cells react to the oxygen present in the surrounding gas, and allow this Oxygen to be measured.
5. The **Main Sup PCB** enables to easily connect the 3 cells. This plate has the first pression sensor. This device is interchangeable by the user.
6. The **Main board**, the Main. This main board communicates in CANBUS. It has a protected analog reading for a computer connection.
7. The **secondary pressure sensor**, connected to the Main Board and sealed in resin.
8. The **central unit box**, contains all these elements and protect them during transportation or when the are integrated in the rebreather.

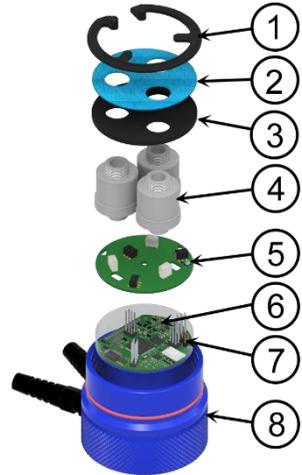


FIGURE 2.3 – View of a cell holder composition

2.2.2 The intermediate module

The NGC is powered by 2 Li-Ion 18650 type batteries (B1 and B2). They provide a 35 hours autonomy per battery.

Warning:

The other type of batteries may provide partial or degraded operation of the NGC. (ex : no vibrator).

Recommendation:

M3S reminds that only the supplied NL1836 NITECORE batteries ensure a good operation of the NGC.



FIGURE 2.4 – View of the opening of the intermediate module with its batteries.

The way the batteries are managed allows the use of one battery and then the other. Indeed, if the battery B1 is too weak, the switch to battery B2 is immediate. The B2 battery acts as redundancy. When switching to the B2 battery, the B1 battery must be replaced.

Warning: recommendation

Do not dive with a battery 1 less than 25%. Do not dive with a battery 2 less than 80%.

These recommendations are for standard dives.

Warning:

In case both batteries disconnect at the same time, the system will see its internal clock stop. A setting of the clock when introducing a new battery will be necessary.

Each battery has its own watertight compartment that can be sealed by screwing waterproof plugs (2 in total). Each compartment is independent from the other thus allowing the replacement of the 2 batteries in an independent way. The plugs can be screwed and unscrewed with either a coin or a washer. Batteries can be charged or replaced by non-rechargeable batteries. The battery is inserted in its compartment, negative contact first.

Warning:

Follow the orientation of the battery as indicated on the box (+/-).

After switching on, after the introduction of a battery, the NGC will require to select the type of the introduced battery in order to apply the corresponding SOC discharge curve corresponding to the introduced battery.

Warning:

The discharge curves for the Nimh 1.2V, Alkaline 1.5V, Photolithium 1.5V are generic curves, whereas the Li-ion 3.7V-18650 discharge curve is the NITECORE NL1836 battery' manufacturer's curve.

2.2.3 The display

The display is the control and configuration unit of the entire NGC. This unit is the human-machine interface (HMI). It enables the start up, navigation and setting of all the parameters of the entire NGC. It has a color screen, a vibrator and 2 buttons integrated in the unit. The display is linked to the intermediate module with a cable.

The NGC is switched on by simultaneously pressing the 2 buttons of the display.

The menu is called by simultaneously pressing the 2 buttons of the display.

The navigation in the menu is done by pressing one of the buttons of the display:

- top one to go up,
- bottom one to go down,



FIGURE 2.4 – View of the PpO₂ display

One press corresponds to the move of one line in the drop-down list or a digit in the numerical list.

To validate, press the 2 buttons of the display simultaneously.

The display can be worn on either the left arm or right arm. The parameters settings enable the configuration of the display and the top and bottom buttons in the right direction. (see §5.7.4)

Recommendation:

In order not to deteriorate the display cable, always route the cable from the wrist to the top of the arm.

2.2.4 The HUD

The HUD is attached to the breathing loop using the HUD holder either on the right or on the left side of the DSV.

The HUD shows the display alarms via 6 LED in 3 different colors:

- The red LED: means a low or very low PpO₂
- The yellow LED: means a high or very high PpO₂
- The white LED: means a non PpO₂ alarm (lime time, battery, faulty sensor...)

These LED are placed back to back so that they can be seen by both the diver and his buddy. The message is multidirectional.

When the PpO₂ remains in the programmed range, the 2 colors red and yellow flash at the same time every 4, 8, 12 or 16 seconds.

Outside the programmed range, the red LED lights up if the PpO₂ is low (below the programmed range), and they flash if the PpO₂ is very low (less than 0,4 bar). The yellow LED lights up if the PpO₂ is high (above the range programmed), and flashes if the PpO₂ is very high (above 1,6 bar).

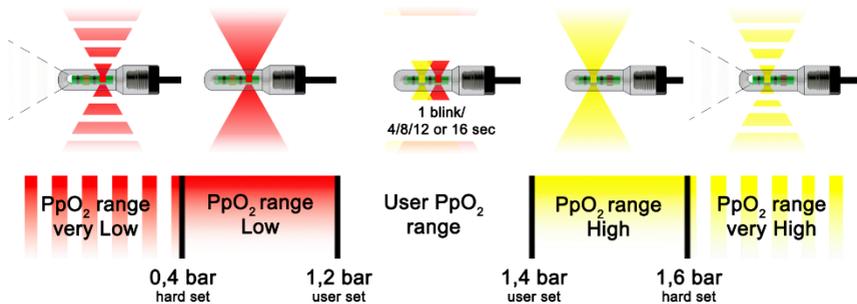


FIGURE 2.4 –HUD operation

In case of failure of the display, the HUD will still operate in accordance with its setting and til the full discharge of the batteries.

QUICK USE OF THE NGC

3.1 Battery set up



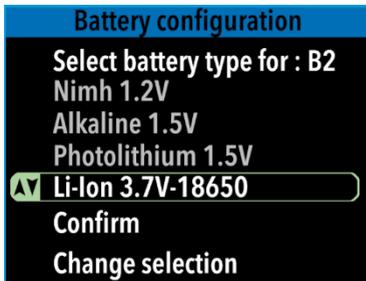
NGC requires to select the type of battery 1 (« B1 ») between:

- Nimh 1.2V
- Alkaline 1.5V
- Photolithium 1.5V
- Li-ion 3.7V-18650

Use the up and down buttons to enter the required information and double click to confirm your choice.

If you selected the wrong type of battery, choose « Change selection ».

Otherwise select « Confirm » by double clicking.



The same information is requested for the battery 2 (« B2 »).

Enter the information and confirm by selecting « Confirm » by double clicking.

3.2 Start up set up

When receiving the NGC, enter the system parameters (§ 5.7.8) including:

- Date and time,
- The units,
- Language,
- OTU type,
- Water type

Set the HUD alarms values for diving and deco, the vibrator parameters, the HUD flashing frequency (§5.7).

According to your preferences, set the screen display parameters for:

- Brightness
- The arm
- The topic

Enter the diluent gas used according to their values. Select your active gas.

Also enter the lime time values and the lime time alarm depending on the size of your canister and the water temperature of your future dive.

Finally, calibrate the cells.

IGNITION SCREENS

4.1 Start up screen

Once the NGC has been switched on, the serial number of the NGC appears on the start-up screen.

If the batteries have been replaced, or if the caps of the intermediate module are opened, the NGC will ask you to select the battery type in order to determine the autonomy calculations.

A few seconds after this screen display, the NGC switched to the surface battery screen to check the autonomy level.

This screen is the first page of the surface screens: Battery, Surface, OTU.

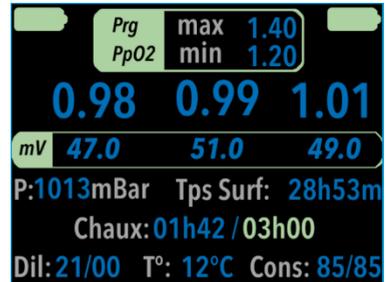
Navigation between these 3 screens is done by pressing a button, up and down in a cyclic manner.



4.2 Surface screen

The surface screen provides the basic information on the rebreather and the NGC:

- The status of the batteries with the icons in the 2 corners on top of the page.
- A color code of the battery status (green, blue, red) and a battery pictogram allow you to quickly know the battery level,
- The PpO₂ range programmed on the HUD with the low (min) and high (max) limits,
- The PpO₂ of the 3 cells if the calibration is less than 24h. Otherwise a necessary calibration message replaces the PpO₂,
- The mV of the 3 cells below PpO₂,
- The atmospheric pressure in mbar,
- Time since last immersion,
- Lime usage time over available time,
- Active diluent,
- Temperature,
- Conservatism settings.



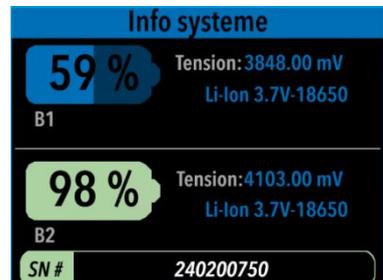
Pressing the bottom button displays the batteries screen, pressing the top button displays the surface physiology screen. The surface menu is only available from this screen.

4.3 Battery status screen

The battery status screen provides the following information in a clear and quick way:

- Battery B1 or B2 % charge,
- Its voltage,
- The type of battery.

Finally, at the bottom of the page, a reminder of the NGC serial number.



Pressing the bottom button displays the OTU screen, pressing the top button displays the surface screen.

4.4 Surface physiology screen



The surface physiology screen provides information on:

- Oxygen toxicity,
- Surface time,
- Maximum authorised latitude,
- Parameters linked to decompression.

The 2 batteries icons and the 3 cells PpO₂ remains on the screen.

To this come the date and time of the NGC.

Pressing the bottom button displays the surface screen, pressing the top button displays the batteries screen.

We apply DAN recommendations in relation to time without fly. It should be the result of the given table:

- A dive without decompression : 12 hours
- Successive dives (the previous surface time was < 24 hours) without decompression: 18 hours
- Dive with decompression : 24 hours
- A dive with a gauge or with decompression or missed decompression: 48 hours

SURFACE MENU

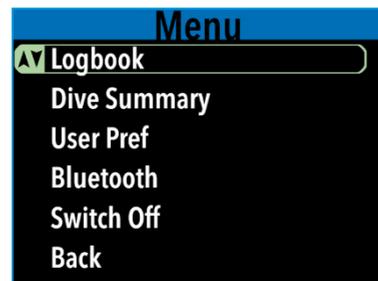
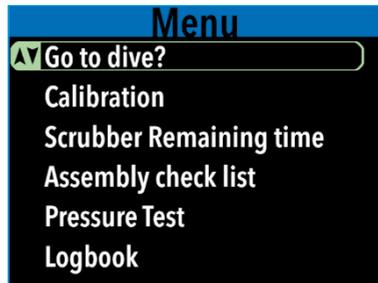
At any time, you can access the menus by simultaneously pressing the 2 buttons (as for the starting up). Whether in the dive or surface mode, the access menu is identical.

The menu page will be different on the surface (allow access to more elements), while the menu dive page will keep a reminder of the important dive parameters.

The NGC does not have a timer in surface mode, giving you time to progress through the menu.

You scroll from one line to another using the up and down buttons, and you enter or validate a line by simultaneously pressing the 2 buttons.

- « **Go to dive?** » gives access to the dive mode after a series of checks. Refer to chapters 6 and 7 of the notice.
- « **Calibration** » allows you to enter into the calibration mode in order to calibrate the cells. This action prevents from a drift of the cells over time.
- « **Scrubber Remaining time** » provides the duration time of the lime since the last filling. It also reset the counter to zero at the time of the filling,
- « **Assembly check list** » allows you to enter into the rebreather's control assembly mode. More than just a checklist, this mode allows you not to forget the chronological important rebreather assembly steps and to check the correct parameters while assembling.
- « **Pressure test** » allows you to enter into the rebreather waterproof test, with a positive and negative pressure test,
- « **Logbook** » provides you a list of last dives and gives you a more detailed overview of each dive,
- « **Dive summary** » allows you to have the total number of dives, the total dive time, the longest dive, and the deepest dive,
- « **User Pref** » allows you to set the preferences for display, alarms, sensors and system parameters,
- « **Bluetooth** » allows you to enable or not the Bluetooth,
- « **Switch off** » allows you to switch off the NGC,
- « **Back** » allows you to return to the home screen.



5.1 Calibration

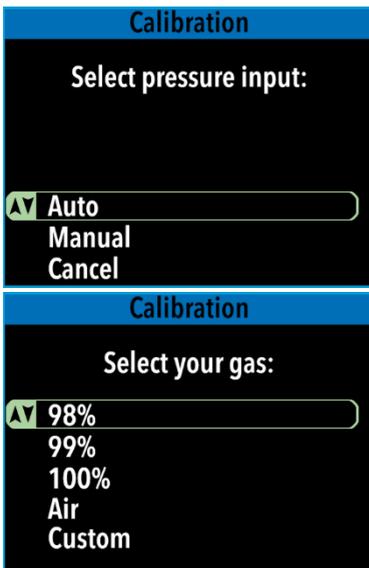
Cells calibration has to be done on a regular basis. A new calibration will be required after 24h. This request will be done by the display of the mention « CAL » instead of the PpO₂ values on the various screens.

Warning:

The NGC detects any cell disconnection from the PCB. When reconnecting cells, you will be requested to carry out a calibration. « CAL » will be displayed instead of the cell PpO₂ until the calibration is done.

It is not possible to give diving with this message on.

The calibration steps are:



Calibration

Select pressure input:

▲▼ Auto
Manual
Cancel

Calibration

Select your gas:

▲▼ 98%
99%
100%
Air
Custom

Select « Calibration » from the surface menu.

Select the Calibration gas.

A pre-recorded choice is available:

- 98%,
- 99%
- 100%
- Air,
- Other.

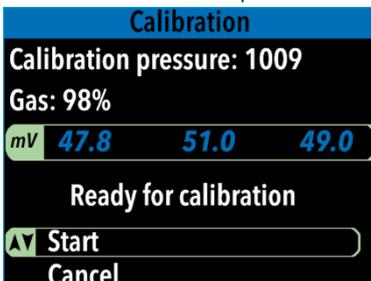
Or select « Custom » to define your own gas.

Select the Calibration mode:

- Auto with the pressure sensor,
- Manual without the pressure sensor.

5.1.1 Calibration with the pressure sensor

The **Auto Mode** uses the pressure to determine the referenced pressure to calibrate the cells.



Calibration

Calibration pressure: 1009

Gas: 98%

mV 47.8 51.0 49.0

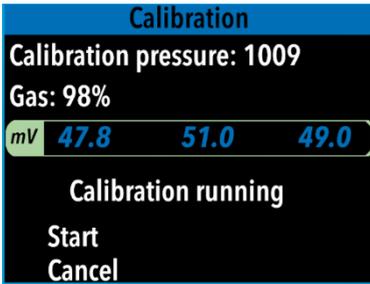
Ready for calibration

▲▼ Start
Cancel

The calibration screen provides the following information:

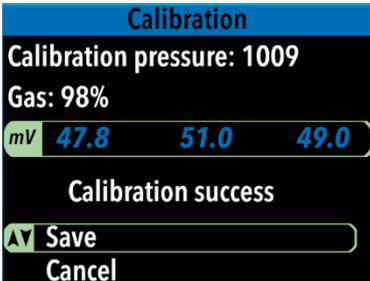
- The current pressure,
- The selected gas for the calibration,
- The cells' mV.

Select « Start » to initialize the calibration.



During the calibration, basic screen information remains displayed and the message « Calibration running » appears.

No action is required and nothing can be selected.



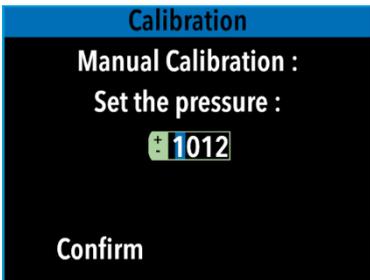
If the cells' voltage is steady and within the tolerance, the calibration is successful.

Select «Save » to save the calibration.

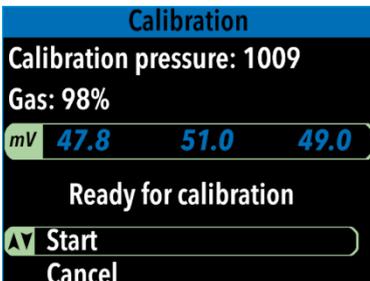
If the calibration failed, a message indicates why and suggest to try again or to cancel.

5.1.2 Calibration without the pressure sensor

In the **Manual mode** you have to set the referenced pressure to calibrate the cells. This mode is also useful when the pressure sensor is faulty or not active.



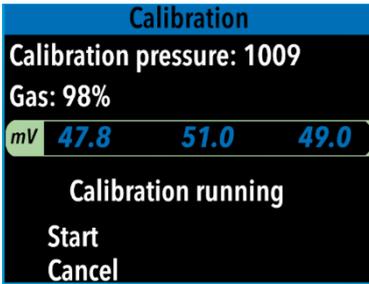
Enter the current pressure value and select « Confirm ».



The calibration screen displays the following information:

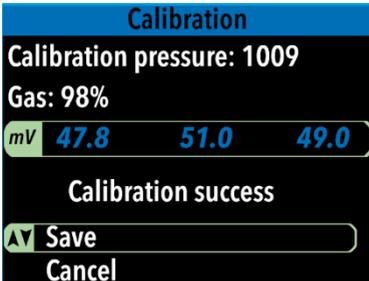
- The current pressure,
- The selected gas for the calibration,
- The cells' mV.

Select « Start » to initialize the calibration.



During the calibration, basic screen information remains displayed and the message « Calibration running » appears.

No action is required and nothing can be selected.



If the cells' voltage is steady and within the tolerance, the calibration is successful.

Select « Save » to save the calibration.

If the calibration failed, a message indicates why and suggest to try again or to cancel.

5.2 Remaining scrubber life time and reset

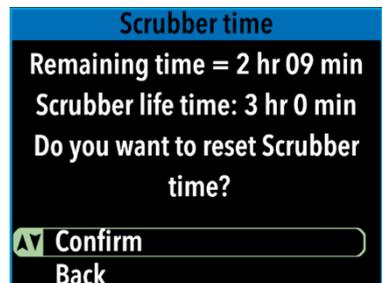
Remaining Scrubber life time or reset allows you to check the remaining time on your scrubber.

The first line shows the remaining time (maximum autonomy – the total of last dive(s)), and the other line reminds you of the maximum time you have set.

Scrubber time reset:

Select « Confirm » to reset the counter.

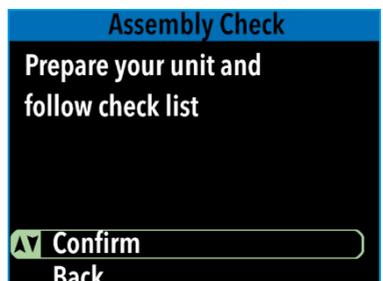
If you do not want to reset the scrubber time, select « Back » to go back to the main screen.



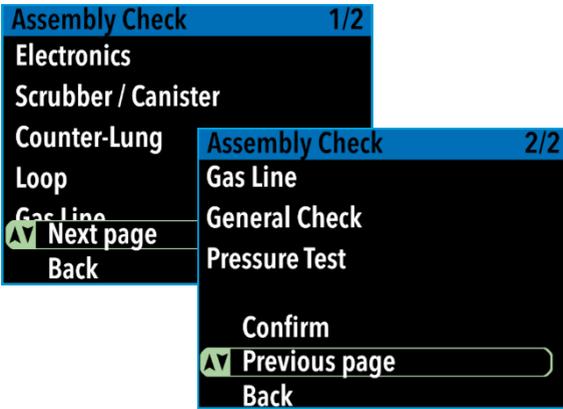
5.3 Assistance and assembly check

To access the assembly check, select « Assembly check list » from the surface menu.

The « Assembly check list » module is made to help you assemble the rebreather in order not to forget anything, to do in an optimum order thus making sure it is checked.



You will thus be able to prepare your rebreather by following each step in order. These steps take into account the internal parameters, previous assembly and dives.



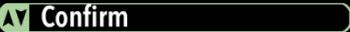
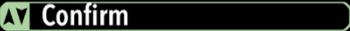
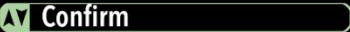
It reminds you of the date of the last calibration, and suggests a new calibration if necessary.

Finally, after it is assembled, it suggests positive and negative pressure tests using the pressure sensor.

To start the assembly assistance, select « Confirm » ...

Screens	Chronological order for rebreather assembly
<p>Electronics 1/1</p> <p>Batterie O2 cells date < 12 months O2 Tank Analyse Calibration</p> <p>Confirm Back</p>	<p><u>Overview of the electronics assembly summary:</u></p> <p>This page lists the checkpoints for the electronics assembly.</p> <p>To start assembly, and its checks, select « Confirm ».</p>
<p>Electronics 1/5</p> <p>Battery ckeck passed ?</p> <p>Confirm Back</p>	<p><u>NGC Main battery capacity check:</u></p> <p>Recommendation:</p> <p>If the battery is less than 25%, repalce or recharge the battery.</p> <p>If not « Confirm » by simultaneoulsy pressing the 2 display buttons.</p>

Screens	Chronological order for rebreather assembly
<p>Electronics 2/5</p> <p>O2 cells date < 12 months ?</p> <p>Confirm Back</p>	<p><u>Cell validity check:</u></p> <p>If the date of the manufacture of the cells is less than 12 months, « Confirm » by simultaneously pressing the 2 display buttons.</p> <p>If not, replace the batteries.</p>
<p>Electronics 3/5</p> <p>O2 Tank analyse done ?</p> <p>Confirm Back</p>	<p><u>Oxygen tank analysis:</u></p> <p>If you have analyzed your O₂ tank to check its contents, confirm.</p>
<p>Electronics 4/5</p> <p>Last calibration on: DD-MM-YY HH:mm</p> <p>Calibrate now Just calibrated</p>	<p><u>Last calibration check:</u></p> <p>If the date of the last calibration is more than 24h, the NGC will then require a new calibration. Confirm « Calibrate now ». Refer to § 5.1 on calibration.</p> <p>Further to this calibration, you are redirected to this checklist. The date of the last calibration has been updated.</p> <p>If you are satisfied with this calibration, press « Just calibrated», if not press « Calibrate now » to do a new calibration.</p>
<p>Electronics 5/5</p> <p>Happy with your Calibration ?</p> <p>Yes No</p>	<p>You are then asked to confirm that the calibration is satisfactory, press « Yes », if not press « No » to carry out a new calibration.</p> <p>If the date of the last calibration is less than, 24h,</p> <p>...</p>

Screens	Chronological order for rebreather assembly
<p>Scrubber / Canister 1/1</p> <p>Scrubber filling Internal O-rings check Close & label Scrubber time</p> <p> Confirm Back</p>	<p><u>Overview of the canister assembly summary:</u></p> <p>This page lists the canister assembly checkpoints.</p> <p>To initialise the assembly and its checks, select « Confirm ».</p>
<p>Scrubber / Canister 1/4</p> <p>Scrubber filling done ?</p> <p> Confirm Back</p>	<p><u>Canister filling:</u></p> <p>If the scrubber is full or if the lime of the cartridge has been changed, « Confirm », if not, the scrubber must be refilled, then press « Confirm ».</p>
<p>Scrubber / Canister 2/4</p> <p>Internal O-rings checked ?</p> <p> Confirm Back</p>	<p><u>Internal canister' O-rings check:</u></p> <p>If the 2 internal O-rings are present then press « Confirm », if not, insert 2 O-rings (§3.1.2.2 of the rebreather' notice), then « Confirm ».</p>
<p>Scrubber / Canister 3/4</p> <p>Close and label done ?</p> <p> Confirm Back</p>	<p><u>Canister' locking and marking:</u></p> <p>Insert the locked and filled cartridge in the canister. Lock the canister. Mark the canister as per §3.1.2.3 of the rebreather notice, then « Confirm ».</p>

Screens	Chronological order for rebreather assembly
<p>Scrubber / Canister 4/4</p> <p style="text-align: center;">Reset scrubber time needed ?</p> <p>Reset now Just reset</p>	<p><u>Lime time use:</u></p> <p>If the scrubber has been filled in or changed, confirm « Reset now ». You are then asked to confirm the reset « Confirm », and to validate by selecting « Confirm » twice, then « Just reset ».</p> <p>If not, select « Just reset » and « Confirm ».</p>
<p>Counter Lung 1/2</p> <p>Exhale counter-lung fitting Inhale counter-lung fitting Canister plug O-ring inspection Canister to counter-lung connect</p> <p>Next page Back</p>	<p><u>Overview of the counterlung assembly summary:</u></p> <p>These 2 pages list the counterlungs assembly checkpoints.</p> <p>To go from the first page to the second one, select « Next page ».</p> <p>To initialize the assembly and its controls, select « Confirm » (on the second page).</p>
<p>Counter Lung 2/2</p> <p>Canister secured Cells housing O-ring inspection Cells holder/inhale C-L connect</p> <p>Confirm Previous page Back</p>	
<p>Counter Lung 1/7</p> <p style="text-align: center;">Exhale counter-lung fitted ?</p> <p>Confirm Back</p>	<p><u>Exhale counter-lung set up:</u></p> <p>Insert the exhale counter-lung in the kevlar® protective cover according to §3.1.3.2 of the rebreather notice, then select « Confirm ».</p> <div style="border: 2px solid red; padding: 5px; margin-top: 10px;"> <p>Warning: Pay attention to the placement of the exhaust valve.</p> </div>

Screens	Chronological order for rebreather assembly
<p>Counter Lung 2/7</p> <p>Inhale counter-lung fitted ?</p> <p>AV Confirm Back</p>	<p><u>Inhale counter-lung set up:</u></p> <p>Insert the inhale counter-lung in the kevlar® protective cover according to §3.1.3.2 of the rebreather notice.</p> <p>Select « Confirm ».</p>
<p>Counter Lung 3/7</p> <p>Canister plug O-ring inspection done ?</p> <p>AV Confirm Back</p>	<p><u>O-ring canister check:</u></p> <p>Check the canister' O-rings.</p> <p>Select « Confirm ».</p>
<p>Counter Lung 4/7</p> <p>Canister to counterlung connected ?</p> <p>AV Confirm Back</p>	<p><u>Connection of the canister to the counterlungs:</u></p> <p>Connect the counterlungs to the canister, then lock using clips.</p> <p>Select « Confirm ».</p>
<p>Counter Lung 5/7</p> <p>Canister secured ?</p> <p>AV Confirm Back</p>	<p><u>Securing the canister:</u></p> <p>Secure the canister to the canister holder using the blue scratch.</p> <p>Select « Confirm ».</p>

Screens	Chronological order for rebreather assembly
<p>Counter Lung 6/7</p> <p>Cells housing O-ring inspection done ?</p> <p> <input type="button" value="Confirm"/> <input type="button" value="Back"/> </p>	<p><u>Cell holder O-ring check:</u></p> <p>Check the integrity of the cell holder O-ring, lubricate it if necessary.</p> <p>Select « Confirm ».</p>
<p>Counter Lung 7/7</p> <p>Cells holder to inhale counter-lung connected ?</p> <p> <input type="button" value="Confirm"/> <input type="button" value="Back"/> </p>	<p><u>Assembly of the cell holder on the inhale counterlung:</u></p> <p>Connect the cell holder to the inhale counterlung according to §3.1.3.3 of the rebreather notice.</p> <p>Select « Confirm ».</p>
<p>Loop 1/2</p> <p>Mouthpiece visual check</p> <p>Internal hose & mushroom</p> <p>Valves visual check</p> <p>Mushroom seal check</p> <p> <input type="button" value="Next page"/> <input type="button" value="Back"/> </p>	<p><u>Overview of the loop assembly:</u></p> <p>These 2 pages list the loop checkpoints.</p> <p>To go from the first page to the second page, select « Next Page ».</p> <p>To initialize the assembly and its control, select « Confirm » (on the second page).</p>
<p>Loop 2/2</p> <p>Loop plug O-ring inspection</p> <p>Loop to Counter-Lung connection</p> <p> <input type="button" value="Confirm"/> <input type="button" value="Previous page"/> <input type="button" value="Back"/> </p>	

Screens	Chronological order for rebreather assembly
<p>Loop 1/6</p> <p style="text-align: center;">Mouthpiece visual check done ?</p> <p>Confirm Back</p>	<p><u>Visual check of the mouthpiece:</u></p> <p>Check the state of the mouthpiece, of its hose clamp. Select « Confirm ».</p>
<p>Loop 2/6</p> <p style="text-align: center;">Internal hose inspection done ?</p> <p>Confirm Back</p>	<p><u>Loop' breathing hoses check:</u></p> <p>Check that there are no foreign bodies inside the hoses which can prevent the mushroom from operating. Select « Confirm ».</p>
<p>Loop 3/6</p> <p style="text-align: center;">Valves visual check done ?</p> <p>Confirm Back</p>	<p><u>Valves visual check:</u></p> <p>Visually check the state of the valves (mushrooms). Select « Confirm ».</p>
<p>Loop 4/6</p> <p style="text-align: center;">Mushroom seal check done ?</p> <p>Confirm Back</p>	<p><u>Mushrooms tightness check:</u></p> <p>Check the tightness of the mushrooms as described in §3.1.4.1 of the rebreather notice. Select « Confirm ».</p>

Screens	Chronological order for rebreather assembly
<p>Loop 5/6</p> <p>Loop plug O-ring inspection done ?</p> <p>Confirm Back</p>	<p><u>O-rings loop check:</u></p> <p>Check the integrity of all O-rings on the loop connection, lubricating them if necessary.</p> <p>Select « Confirm ».</p>
<p>Loop 6/6</p> <p>Loop to counter-lung connection done ?</p> <p>Confirm Back</p>	<p><u>Assembly of the loop to the counterlungs:</u></p> <p>Connect the loop to the counterlungs according to § 3.1.4.2 of the rebreather notice.</p> <p>Select « Confirm ».</p>
<p>Gas Line 1/2</p> <p>ADV plug O-ring inspection ADV/exhale C-L connection First stage properly screwed O2 cylinder fitting</p> <p>Next page Back</p>	<p><u>Overview of gas line assembly summary:</u></p> <p>These 2 pages list the assembly checkpoints of the gas line.</p> <p>To go from the first to the second one, select « Next page »</p> <p>To initialize the assembly and its checkpoints, select « Confirm » (on the second page).</p>
<p>Gas Line 2/2</p> <p>Check CMF flow (10bar or 150psi drop in in 7s)</p> <p>Confirm Previous page Back</p>	

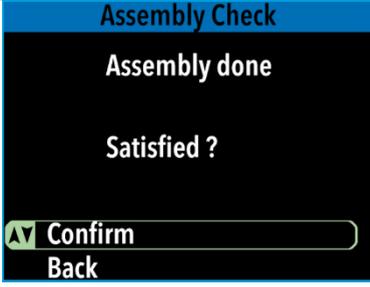
Screens	Chronological order for rebreather assembly
<p>Gas Line 1/5</p> <p>ADV plug O-ring inspection done ?</p> <p><input checked="" type="checkbox"/> Confirm Back</p>	<p><u>ADV O-ring check:</u></p> <p>Check the presence and the state of the ADV O-ring. Select « Confirm ».</p>
<p>Gas Line 2/5</p> <p>ADV to exhale counter-lung connection done ?</p> <p><input checked="" type="checkbox"/> Confirm Back</p>	<p><u>Assembly of the ADV on the exhale counterlung:</u></p> <p>Connect the ADV to the exhale counterlung according to § 3.1.5.1 of the rebreather notice. Select « Confirm ».</p>
<p>Gas Line 3/5</p> <p>First stage properly screwed to the O2 tank ?</p> <p><input checked="" type="checkbox"/> Confirm Back</p>	<p><u>O₂ first stage assembly:</u></p> <p>Screw the O₂ first stage to the O₂ tank. Select « Confirm ».</p>
<p>Gas Line 4/5</p> <p>Fitting and locking O2 cylinder done ?</p> <p><input checked="" type="checkbox"/> Confirm Back</p>	<p><u>Fitting the O₂ cylinder on the tank holder</u></p> <p>Install the O₂ cylinder, strap it to its tank holder underneath the kevlar® protective cover according to §3.1.5.2 of the rebreather notice. Select « Confirm ».</p>

Screens	Chronological order for rebreather assembly
<p>Gas Line 5/5</p> <p style="text-align: center;">Check CMF flow done ? (10 bar or 150 psi drop in 7 sec)</p> <p>Confirm Back</p>	<p><u>CMF flow check:</u></p> <p>Before starting, check the operation of the CMF.</p> <p>Use a stopwatch. Also remember the O₂ cylinder pressure.</p> <p>Open the O₂ cylinder, start the stopwatch and close the cylinder.</p> <p>Check the SPG. A loss of 10 bars (or 150 psi) in 7 seconds indicate the normal operation of the CMF.</p> <p>Select « Confirm ». In case of abnormal operation, a service of the gas line is necessary.</p>
<p>General Check 1/2</p> <p>4 snap installed HUD properly installed NGC wire properly rough-in Battery box secured to the bag</p> <p>Next page Back</p>	<p><u>Overview of the assembly summary of the main points:</u></p> <p>These 2 pages list the assembly control points of the main points.</p> <p>To move from the first page to the second page, select « Next page ».</p> <p>To initialize the assembly and its controls, select « confirm » (second page).</p>
<p>General Check 2/2</p> <p>None Cable hinder Counter-Lung Bag zipper closed and secured</p> <p>Confirm Previous page Back</p>	
<p>General Check 1/6</p> <p style="text-align: center;">4 snap check and fitting done ?</p> <p>Confirm Back</p>	<p><u>Check that there are 4 snaps:</u></p> <p>The rebreather must have:</p> <ul style="list-style-type: none"> • 2 double-pump snaps on the top, • 2 snaps with their bungee on the O₂ tank holder. <p>Check that all 4 snaps are present and working properly.</p> <p>Check also the integrity of the bungee.</p> <p>Select « Confirm ».</p>

Screens	Chronological order for rebreather assembly
<p>General Check 2/6</p> <p>HUD properly installed ?</p> <p>Confirm Back</p>	<p><u>HUD assembly:</u></p> <p>Set the HUD on its loop holder.</p> <p>Select « Confirm ».</p>
<p>General Check 3/6</p> <p>NGC wires properly roughed-in ?</p> <p>Confirm Back</p>	<p><u>Check that wires are properly roughed-in:</u></p> <p>Check the wires routing from the cell holder to the display, the HUD, the intermediate module and the computer.</p> <p>Select « Confirm ».</p>
<p>General Check 4/6</p> <p>Battery box secured to the bag ?</p> <p>Confirm Back</p>	<p><u>Check that the intermediate module is well positioned:</u></p> <p>Secure the intermediate module (battery box) in the Kevlar® protective cover.</p> <div style="border: 2px solid red; padding: 5px; margin: 10px 0;"> <p>Warning:</p> <p>Pay attention to the position of intermediate module. Put it properly in the protective cover, alongside the canister and near the diver's stomach.</p> </div> <p>Select « Confirm ».</p>
<p>General Check 5/6</p> <p>None cable hinder counter-lung checked ?</p> <p>Confirm Back</p>	<p><u>Check that the cables are correctly assembled within the protective cover:</u></p> <div style="border: 2px solid red; padding: 5px; margin: 10px 0;"> <p>Warning:</p> <p>Be careful not to wrap the cables around the counterlungs.</p> </div> <p>Select « Confirm ».</p>

Screens	Chronological order for rebreather assembly
<p>General Check 6/6</p> <p>Bag zipper closed and secured ?</p> <p>Confirm Back</p>	<p><u>Closing the cover:</u></p> <p>Close and secure the ZIPs of the Kevlar® protective cover.</p> <p>Select « Confirm ».</p>
<p>Pressure Test</p> <p>Positive Negative</p> <p>Confirm Back</p>	<p><u>Overview of the pressure tests summary:</u></p> <p>This page lists the control points with positive and negative tests.</p> <p>To initialize these controls, select « Confirm ».</p>
<p>Pressure Test 1/4</p> <p>Last positive pressure test on: DD-MM-YY HH:mm</p> <p>Do pressure test now Back</p>	<p><u>Reminder:</u></p> <p>Reminder of date and time of the last positive test. Select « Do pressure test now » to start the test, or « Back » to exit the control and assembly assistant.</p>
<p>Refer to paragraph §5.4.1 for explanations on the positive test</p>	
<p>Pressure Test 1/4</p> <p>Last positive pressure test on: DD-MM-YY HH:mm</p> <p>Do pressure test now Just tested</p>	<p><u>Reminder of the positive test performed:</u></p> <p>The information of the positive test modifies the previous information.</p> <p>Confirm this information by selecting « Just tested ».</p>

Screens	Chronological order for rebreather assembly
<p>Pressure Test 2/4</p> <p>Happy with your Positive test ?</p> <p> <input type="radio"/> Yes <input type="radio"/> No </p>	<p><u>Request from positive test satisfaction:</u></p> <p>Answer the question on the positive test satisfaction by:</p> <ul style="list-style-type: none"> • « Yes » if the test is satisfactory, • « No » if you want to perform another positive test.
<p>Pressure Test 3/4</p> <p>Last negative pressure test on: DD-MM-YY HH:mm</p> <p> <input type="radio"/> Do pressure test now <input type="radio"/> Back </p>	<p><u>Reminder:</u></p> <p>Reminder of date and time of the last negative test. Select « Do pressure test now » to start the test, or « Back » to exit the control and assembly assistant.</p>
<p>Refer to paragraph §5.4.1 for explanations on the negative test.</p>	
<p>Pressure Test 4/4</p> <p>Happy with your Negative test ?</p> <p> <input type="radio"/> Yes <input type="radio"/> No </p>	<p><u>Request from negative test satisfaction:</u></p> <p>Answer the question on the negative test satisfaction by:</p> <ul style="list-style-type: none"> • « Yes » if the test is satisfactory, • « No » if you want to perform another negative test.
<p>Pressure Test 3/4</p> <p>Last negative pressure test on: DD-MM-YY HH:mm</p> <p> <input type="radio"/> Do pressure test now <input type="radio"/> Just tested </p>	<p><u>Reminder of negative test performed:</u></p> <p>The information of the performed negative test modify the previous information.</p> <p>Confirm the information by selecting « just tested ».</p>

Screens	Chronological order for rebreather assembly
 <p>Assembly Check</p> <p>Assembly done</p> <p>Satisfied ?</p> <p>Confirm Back</p>	<p><u>Confirmation of complete assembly:</u></p> <p>Confirm the complete rebreather assembly.</p> <p>Select « Confirm ».</p>
 <p>Step</p> <p>Warning assembly abort</p> <p>Confirm Back</p>	<p><u>Assistant and control assembly stop:</u></p> <p>In case of a return during the various rebreather assembly steps, a warning message will inform you that the assembly is going to be aborted.</p> <p>Warning message « Assembly abort ».</p> <p>If you want to stop the assistant and control assembly, select « Confirm », or select « Back » and the assistant and control assembly.</p>

5.4 Pressure test

From the surface menu, or during the assembly and control assistant, you can perform pressure test on your rebreather.

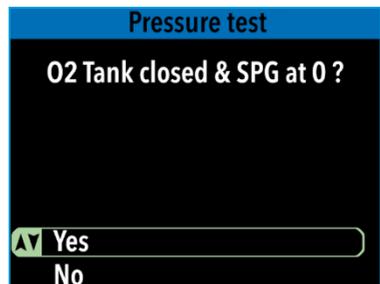
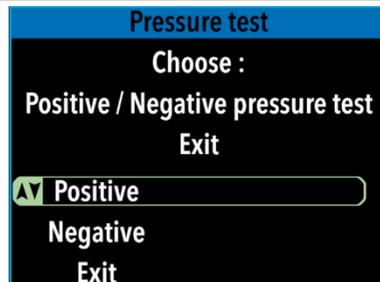
Select:

- « Positive » to perform a positive pressure test,
- « negative » to perform a negative pressure test.

5.4.1 Positive pressure test

When performing the positive test, confirm that the O₂ cylinder is closed and that SPG is at zero (no pressure in the gas line)

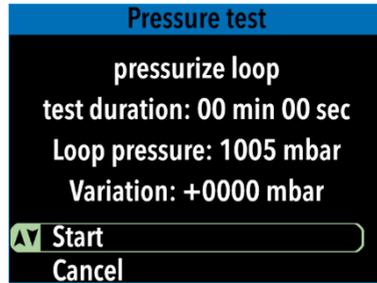
Select « Yes ».



The preparation page summarises the information available during the test:

- test duration,
- the loop pressure,
- the variation.

You are invited to start, or cancel, the test. Select « Start » or « Cancel ».

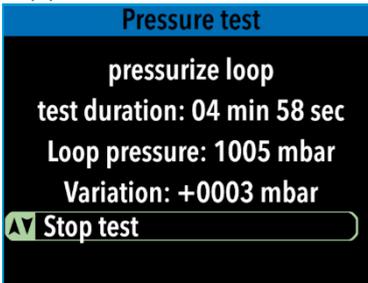


Pressure test

pressurize loop
test duration: 00 min 00 sec
Loop pressure: 1005 mbar
Variation: +0000 mbar

Start
Cancel

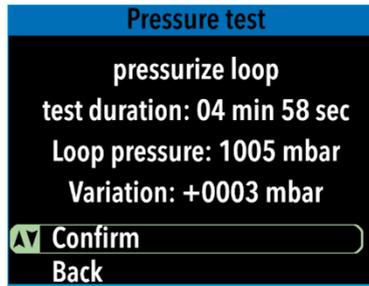
During the test, these indications are incremented along with the test duration, the instantaneous loop pressure and the variation from the start of the test.



Pressure test

pressurize loop
test duration: 04 min 58 sec
Loop pressure: 1005 mbar
Variation: +0003 mbar

Stop test



Pressure test

pressurize loop
test duration: 04 min 58 sec
Loop pressure: 1005 mbar
Variation: +0003 mbar

Confirm
Back

You can stop the test at any time by selecting « Stop test », you will then have the summary of the test to confirm by selecting « Confirm ».

5.4.2 Negative pressure test

Pressure test

pressurize loop
test duration: 00 min 00 sec
Loop pressure: 0965 mbar
Variation: -0000 mbar

Start
Cancel

When performing the negative test, confirm that the O₂ tank is closed, the SPG is at 0 and that the ADV set on the flow stop is also closed.

Select « Yes ».

Pressure test

O₂ tank closed & SPG at 0 ?
ADV Flow stop closed ?

Yes
No

The preparation page summarises the information available during the test:

- test duration,
- the loop pressure,
- the variation.

You are invited to start, or cancel, the test. Select « Start » or « Cancel ».

During the test, these indications are incremented along with the test duration, the instantaneous loop pressure and the variation from the start of the test.

You can stop the test at any time by selecting « Stop test », you will then have the summary of the test to confirm by selecting « Confirm ».

Pressure test

pressurize loop
test duration: 04 min 48 sec
Loop pressure: 0965 mbar
Variation: -0004 mbar

Stop test

Pressure test

pressurize loop
test duration: 04 min 58 sec
Loop pressure: 1005 mbar
Variation: +0003 mbar

Confirm
Back

5.5 Logbook

The logbook lists your dives, in order of dates and time. At the end of the list, you can exit the page.

Logbook

DD-MM-YY HH:mm
 DD-MM-YY HH:mm
 DD-MM-YY HH:mm
 DD-MM-YY HH:mm
 ▲ DD-MM-YY HH:mm
 DD-MM-YY HH:mm

Logbook

DD-MM-YY HH:mm
 DD-MM-YY HH:mm
 DD-MM-YY HH:mm
 DD-MM-YY HH:mm
 ▲ DD-MM-YY HH:mm
 Back

If you select a dive, you will see the profile of this dive, and you can view its details or return to the list.

Logbook 1/2

03-07-24 10:02
 Duration: 00:57
 Diluent: 21/00
 Avg PpO2: 1.26
 ▲ Max depth: 27.2
 Avg depth: 8.7

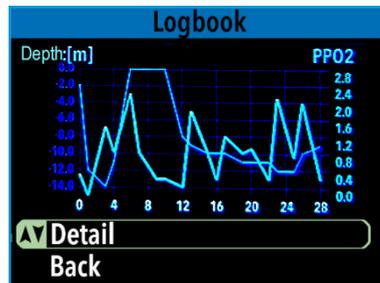
The details of the dive are on 2 pages, and show:

- Date and time at the start of dive,
- Dive time,
- Diluent used,
- PpO₂ average,
- Maximum depth during dive,
- Average depth over dive,
- Average temperature,
- Surface pressure at the start.

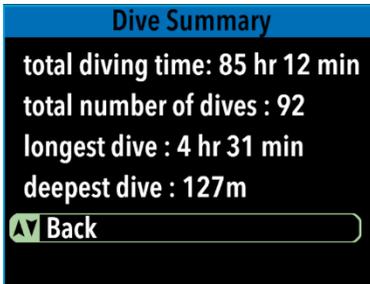
Back to graphs, or back to dives list.

Logbook 2/2

Max depth: 27.2
 Avg depth: 8.7
 Avg temp: 18.00
 Surf press: 1276
 ▲ Graph
 Back



5.6 Dive summary



Dive Summary

total diving time: 85 hr 12 min
 total number of dives : 92
 longest dive : 4 hr 31 min
 deepest dive : 127m

⏪ Back

The dive summary indicates:

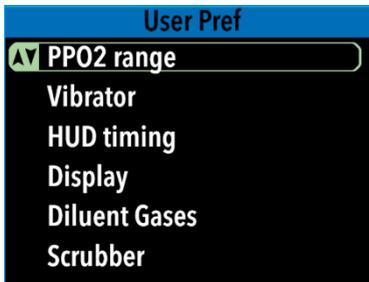
- Total duration of the dives,
- Total number of dives,
- Duration of the longest dive,
- Maximum depth reached.

Select « Back » to return to the main menu.

5.7 User's preferences

In the « User preferences » menu, select the required submenu to customize them:

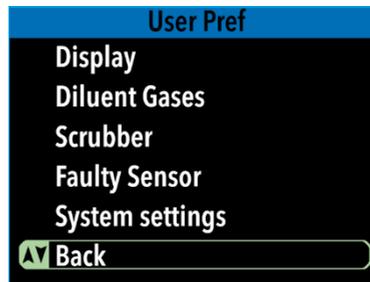
- PpO₂ range,
- The vibrator,
- HUD frequency,
- Screen parameters,
- Information on diluent gas,
- Canister autonomy,
- Pressure sensor activation,
- System settings.



User Pref

⏪ PPO2 range

Vibrator
 HUD timing
 Display
 Diluent Gases
 Scrubber



User Pref

Display
 Diluent Gases
 Scrubber
 Faulty Sensor
 System settings

⏪ Back

5.7.1 PpO₂ range

Select the active alarm range from:

- Dive,
- Deco.

Select the line « Modify ranges » to customize the minimum and maximum PpO₂ range for the 2 modes. Beyond these limits, LEDs will be enabled.

When modifications are done, select « Back ».



Select active range

	min	max
⏪ Dive	1.35	1.45
Deco	1.40	1.60

Modify ranges
 Back

5.7.2 Vibrator

Using the browsing buttons, select the required vibrator alarm mode:

- Auto,
- Manual.

Select « Buzz PpO₂ min » to set the minimum limits or « Buzz PpO₂ max » to set the maximum PpO₂ to enable the vibrator outside these limits. By using the up and down buttons, the values can be changed by range of 0.05. Confirm your choice by simultaneously double-clicking on these buttons.

The vibrator can be disabled. Select:

- « OFF » to disable the vibrator,
- « ON » to enable the vibrator.

5.7.3 HUD Timing

The flashing frequency indicates that the PpO₂ is within the targeted range, and the 2 LED (red and yellow) flash at the same time, every 4, 8, 12 or 16 seconds.

Select « HUD Frequency », then select "time:" to enter the choice of the frequency:

- 4,
- 8,
- 12,
- 16

Select « Back » to return to the menu.

5.7.4 Display

Customize the display parameters in these submenus:

Brightness

The setting of the screen brightness is done between 10% to 100% by increments of 10%.

Select « Brightness » to enter the brightness of the display using the up and down buttons. Double-click to confirm your choice.

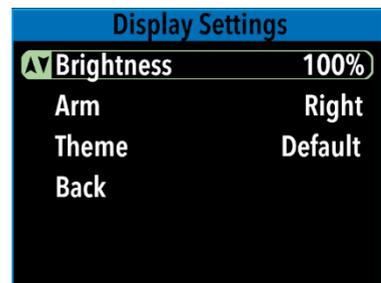
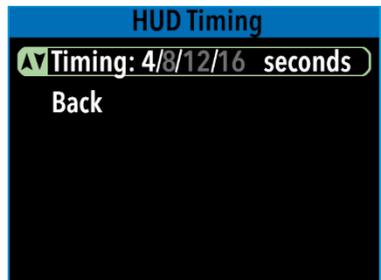
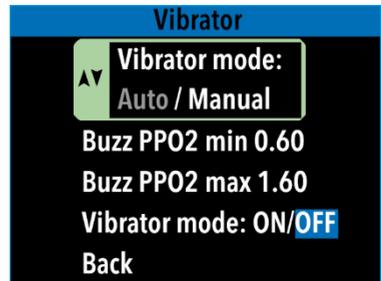
Arm

The NGC can be worn on either the right or left arm. Selecting the other arm rotates the screen by 180°. When rotating, the buttons follow the orientation.

Select « Arm » to enter the arm on which the NGC is worn. Using the up and down buttons select:

- « Right » to wear the NGC on the right arm,
- « Left » to wear the NGC on the left arm.

Double click to confirm your choice and to return to the diluent list.



Theme

The theme will be the subject of the next version of this notice.

Select "Back" to return to the top menu.

5.7.5 Gas diluent

NGC allows you to configure 5 bottles of diluent (O₂ / Helium).

The first percentage shows the O₂ part of the mix. The 2nd percentage (after the « / ») shows the Helium part of the mix.

Select the diluent line (1, 2, 3, 4 or 5). Validate (double click) to enable the value modification.

First set the tens, double click then set the unit for your diluent cylinder percentage. Continue to set the Helium percentage. Double click to confirm your choice and return to the diluent list.

Select « Current dil: » to enter the active diluent (1, 2, 3, 4 ou 5) from the list. Double click to confirm your choice and to return to the diluent list.

If you want to have the diluent PpO₂ value at the current depth, enable the line « PpO₂ dil. cal. ». Double click to confirm your choice and return to the diluent list.

Select « Back » to return to the top menu.

Diluent List	
DIL 1	21/00
DIL 2	21/00
DIL 3	21/00
DIL 4	21/00
DIL 5	21/00
<input checked="" type="checkbox"/> Current Dil:	1
PPO2 dil. cal.	Yes
Back	

5.7.6 Lime

Scrubber

Scrubber life time :
4 hr 30min

scrubber alarm :
remaining time = 30 min

Back

Set the maximum lime counter time.

You can set the value from 2 h to 6 h in 30 min steps.

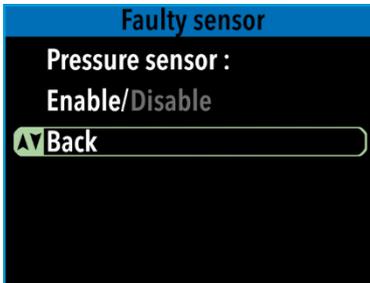
Adjust the remaining time alarm from 0 to 69 min.

Select « Back » to return to the top menu.

Recommendation:

M3S can provide 2 canister sizes. Refer to the manufacturer maximum recommendations.

5.7.7 Faulty sensor



If a pressure sensor is faulty, it can be disabled.

Select « Pressure sensor », and using up and down buttons, go to « Enable » to « Disable » or vice versa.

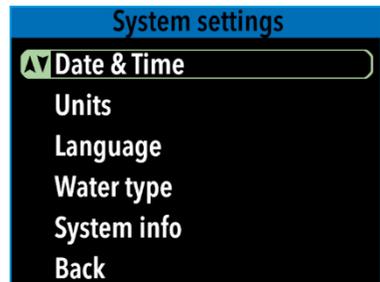
Double click to confirm your choice.

Select « Back » to return to the top menu.

5.7.8 System settings

Select « System settings » to enter the menu:

- « **Date & Time** » allows the modification of the parameters linked to the date and time,
- « **Units** » allows the modification of the parameters linked to the calculation type of the unit measurement,
- « **Language** » allows the modification of the language parameters,
- « **Water type** » allows the modification of the water type parameters,
- « **Oxygen toxicity** » allows the choice of the calculation method of the pulmonary toxicity,
- « **System info** » summarises the system information.



5.7.8.1 Date and time

In this menu, you can modify the time and date independently from each other, as well as the time format.

Select the line showing the hours, minutes and seconds information to set the time, the minutes and seconds according to where you are in the world.

Use the up and down buttons to enter the required tens of hours. Double click to confirm and go to the hour's unit and so on. Double click to confirm your choice and return to the list.

Select the line showing the day, month and year information to set up the day, month and year. As for hours, use the up and down buttons to enter the required information and double click to confirm your choice and return to the menu.

You can change the time format between:

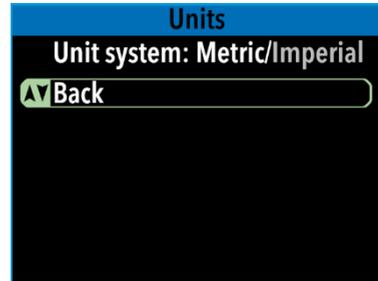
- 12h,
- 24h.

Recommendation:

We recommend you to charge one battery and then the other. If the 2 batteries are disconnected, when you next switch on, it will be necessary to set the timestamp.

Select the line « 12h / 24h » and use the up and down buttons to modify the required time format. Double click to confirm your choice and return to the list.

Select « Back » to return to the top menu.

5.7.8.2 Units

NGC offers the possibility to change the required unit system between:

- Metric,
- Imperial.

Select « Unit system » by double clicking on the line. Use the up and down buttons to enter the type of system units required. Double click to confirm your choice and to return to the list.

Select « Back » to return to the top menu.

5.7.8.3 Language

NGC can be used in different languages:

- English,
- French.

Select « Language » by double clicking on the line. Use the up and down buttons to enter one or the other required display language. Double click to confirm your choice and to return to the list.

Select « Back » to return to the top menu.



5.7.8.4 Water type

The NGC offers the possibility to change the water type for the measure of the depth according to pressure:

- Fresh water,
- Salt water,
- Water comply with the EN 13 319 regulation.

Select « Water type » by double clicking on the line. Use the up and down buttons to change the required water type. Double click to confirm your choice and return to the list.

Select « Back » to return to the top menu.



5.7.8.5 Oxygen toxicity

The NGC allows the user to chose the pulmonary oxygen water calculation method, OTU or the new ESOT method resulting from the Arieli works.

5.7.8.6 System information

NGC summarizes the information system in this menu with the following information:

- « Serial » gives the serial number of the NGC,
- « HW » gives the components Hardware version,
- « FW » gives the components Firmware version,
- « Battery » gives the name of the battery between « B1 » and « B2 »,
- « Type » gives the information about the type of battery,
- « Voltage » gives the instantaneous voltage of each of the 2 batteries.

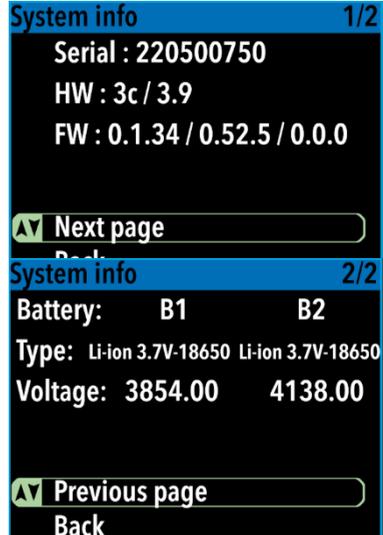
Select « Back » to return to the top menu.

5.7.8.7 Back

Select « Back » to return to the top menu.

5.7.9 Back

Select « Back » to return to the top menu.



System info 1/2

Serial : 220500750
HW : 3c / 3.9
FW : 0.1.34 / 0.52.5 / 0.0.0

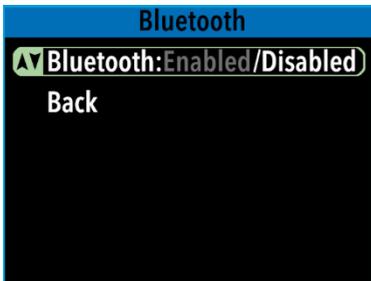
Next page

System info 2/2

Battery: B1 B2
Type: Li-ion 3.7V-18650 Li-ion 3.7V-18650
Voltage: 3854.00 4138.00

Previous page
Back

5.8 Bluetooth and data transfer



Bluetooth

Bluetooth: Enabled/Disabled

Back

The diving information cannot yet be downloaded. They will be using an application. Bluetooth will enable you to connect yourself to this application.

Select « Bluetooth », and then using the up and down buttons, navigate from « Enabled » to « Disabled » or vice versa.

Double click to confirm your choice.

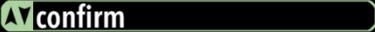
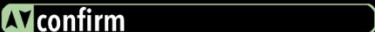
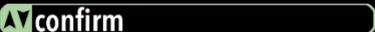
Select « Back » to return to the top screen.

5.9 Switch off

To switch off the NGC, withing the main menu, select « Swith off ».

PRE-DIVE CHECKS

6.1 Automatic check

Screens	Checks order
<p>time since last positive pressure test: YY.MM.DD hh:mm:ss 00.00.25 00:00:00</p> <p> confirm</p> <p>Do pressure test now back</p>	<p><u>Date of the last positive pressure check:</u></p> <p>« Confirm »: confirm that this value suits you.</p> <p>« Do pressure test now »: allows you to perform a test immediately</p> <p>« Back »: to return to the top menu</p>
<p>time since last negative pressure test: YY.MM.DD hh:mm:ss 00.00.25 00:00:00</p> <p> confirm</p> <p>Do pressure test now back</p>	<p><u>Date of the last negative pressure check:</u></p> <p>« Confirm »: confirm that this value suits you.</p> <p>« Do pressure test now »: allows you to perform a test immediately</p> <p>« Back »: to return to the top menu</p>
<p>Scrubber time is: hh:mm:ss 03:00:00 enough for the dive?</p> <p> confirm</p> <p>No Back</p>	<p><u>Remaining scrubber time check:</u></p> <p>« Confirm »: you have enough time for the scheduled dive</p> <p>« No »: ask you whether you installed a new lime, otherwise back to the top menu</p> <p>« Back »: to return to the top menu</p>

Screens	Checks order
<p style="text-align: center;"> OTU are: 0000/0850 CNS clock is: 0000% ok for the dive? </p> <p>  Confirm Back </p>	<p><u>CNS / OTU / ESOT values check:</u></p> <p>« Confirm »: your values are correct to go diving</p> <p>« Back »: to return to the top menu</p>

Before diving, the NGC carries out an automatic check and creates a summary page of this status.

The NGC requires you to confirm the checks, and depending on the actions taken or datas, adds a green or red spot.

You can then directly to the the dive mode, or carry out the diving checks with your buddy for example.

The checks will guid you in the pre-dive checklist. Once done, go to the dive mode.

Auto Check 1/2

- **Bat: B1: 065% B2: 095%**
- **Pressure sensor: 1013mbar**
- **PP02: 0.89 0.91 0.91**
- **Calibration**

 **Next page**
Back

Auto Check 2/2

- **Assembly:**
- **Pressure test**
- **Scrubber time: 02:19**

Previous page
 **Start dive check**
Back

6.2 Pre-dive check

Screens	Pre-dive check order
<p>Pre Dive Check</p> <p>Oxygen % OK & pressure >100bar ?</p> <p>Confirm</p> <p>Back</p>	<p><u>Pre-dive check – oxygen cylinder:</u></p> <p>Check the O₂ percentage and a pressure superior to 100 bar in the O₂ cylinder.</p> <p>Select « Confirm ».</p>
<p>Pre Dive Check</p> <p>O2 Valve, constant flow & manual addition</p> <p>Confirm</p> <p>Back</p>	<p><u>Pre-dive check – O2 valve:</u></p> <p>Check that the O₂ valve is working properly.</p> <p>Select « Confirm ».</p>
<p>Pre Dive Check</p> <p>Diluent % OK & pressure >100bar ?</p> <p>Confirm</p> <p>Back</p>	<p><u>Pre-dive check – cylinder diluent:</u></p> <p>Check the diluent and a pressure superior to 100 bar in the diluent cylinder.</p> <p>Select « Confirm ».</p>
<p>Pre Dive Check</p> <p>ADV & BCD connected ?</p> <p>Confirm</p> <p>Back</p>	<p><u>Pre-dive check – diluent connection:</u></p> <p>Check the ADV and BCD connection.</p> <p>Select « Confirm ».</p>

Screens	Pre-dive check order
<p>Pre Dive Check</p> <p>Check ADV function, no free flow, manual addition</p> <p>Confirm Back</p>	<p><u>Pre-dive check – Operation of the ADV:</u></p> <p>Check that the ADV and its pushing button are working properly and that there is no free flow.</p> <p>Select « Confirm ».</p>
<p>Pre Dive Check</p> <p>Close ADV flow stop</p> <p>Confirm Back</p>	<p><u>Pre-dive check – ADV flow stop:</u></p> <p>Close the ADV flow stop.</p> <p>Select « Confirm ».</p>
<p>Pre Dive Check</p> <p>Check BCD function, no free flow, manual addition, OPV</p> <p>Confirm Back</p>	<p><u>Pre-dive check – operation of the BCD system:</u></p> <p>Check the operation of the BCD, injection, exhaust valve and that there is no free flow.</p> <p>Select « Confirm ».</p>
<p>Pre Dive Check</p> <p>Computer properly set ?</p> <p>Confirm Back</p>	<p><u>Pre-dive check – computer:</u></p> <p>Check the parameters of the diving computer.</p> <p>Select « Confirm ».</p>

Screens	Pre-dive check order
<p>Pre Dive Check</p> <p>BO enough for the dive ?</p> <p>Confirm Back</p>	<p><u>Pre-dive check – bail out:</u></p> <p>Check the quantity and the mixtures of the Bail Out upon the programmed dive.</p> <p>Select « Confirm ».</p>
<p>Pre Dive Check</p> <p>Safety equipment appropriate for the dive ?</p> <p>Confirm Back</p>	<p><u>Pre-dive check – safety equipment:</u></p> <p>Check your safety equipment upon your programmed dive.</p> <p>Select « Confirm ».</p>
<p>Pre Dive Check</p> <p>Pre-breath PpO₂ is moving</p> <p>0.89 0.88 0.88</p> <p>0:19</p> <p>Confirm Back</p>	<p><u>Pre-dive check – pre-breath:</u></p> <p>Check the reactivity of the O₂ cells.</p> <p>Select « Confirm ».</p>
<p>Pre Dive Check</p> <p>O₂ flush</p> <p>0.89 0.88 0.88</p> <p>Confirm Back</p>	<p><u>Pre-dive check –oxygen flushing:</u></p> <p>Carry out a O₂ rebreather flushing.</p> <p>Select « Confirm ».</p>

DIVE SCREENS

While diving, you can read the different screens by scrolling in a cyclical manner by pressing the top button for example, and return to the previous screen using the bottom button, or vice versa.

In dive mode, several screens are available. The type of information varies from one screen to another, but no matter the screen, the following information is always available:

- The instantaneous depth,
- The ascent speed,
- The total dive time,
- The PpO₂ for each of the 3 cells.

A color code displays whether these datas are within the normal range (as defined by the user) or outside (refer to paragraph [§9.1.2](#)).

7.2 Main diving screen

In addition to the above information, the first screen provides the following information:

- The limit time without decompression,
- The total ascent time,
- The active diluent PpO₂ at the current depth,
- The average PpO₂ over the dive,
- A reminder of the HUD maximum and minimum alarm PpO₂ settings,
- A reminder of the HUD usage mode (dive or deco).



7.3 Lime Screen

In addition to the above information, the second screen provides the following information:

- The time limit with no decompression,
- The total ascent time,
- A reminder of the vibrator's maximum and minimum PpO₂ alarm settings,
- A reminder of the vibrator's status (ON or OFF),
- Lime usage time,
- A reminder of the maximum time set in the system,
- A reminder of HUD's maximum and minimum PpO₂ alarm settings,
- A reminder of the HUD usage mode (dive or deco).



7.4 Toxicity Screen

In addition to the above information, the third screen provides the following information:

- The Delta v C,
- The total ascent time,
- The OTU or ESOT (according to the settings)
- The CNS,
- The maximum reached depth during this dive,
- The average depth over the dive.



7.5 Battery Screen

In addition to the above information, the forth screen provides the following information:

- The simultaneous voltage in mV of each cells,
- The date,
- The temperature,
- The time,
- The 2 batteries' percentage,
- The surface pressure.



DIVING MENU

At any time during the dive, you can access the menus by pressing simultaneously the 2 buttons (as when starting). As in dive or surface mode, the access to the menu is identical.

Identically to the surface menu, you navigate with the up and down buttons, and validate the line or enter the submenu by simultaneously pressing the 2 buttons.

During the dive, the menu has less setting possibilities, and some are shaded depending on diving settings (for example: end of dive is only accessible on surface).

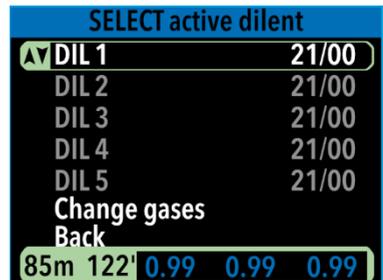
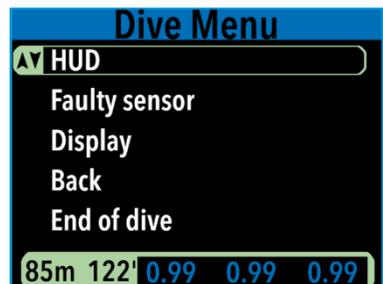
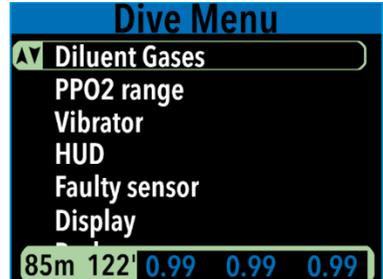
- « **Diluent Gases** » allows the modification of the active diluent and the modification of the value defining the diluent during the dive,
- « **PpO₂ range** » allows the modification of the PpO₂ active page during the dive or during the decompression period and the modification of these ranges during the dive,
- « **Vibrator** » allows the modification of the vibrator mode, the minimum and maximum release ranges and the enabling or disabling of the vibrator during the dive,
- « **HUD** » allows the modification of the HUD flashing frequency during the dive,
- « **Faulty sensor** » allows to modify or not the activation of the faulty sensors during the dive,
- « **Display** » allows the setting of the brightness and the orientation of the NGC during the dive,
- « **Back** » allows to return to the dive mode screens,
- « **End of dive** » allows to end the dive and to return to the surface mode. This function is only accessible at the surface (depth is 0m).

At the bottom of the screen and during the navigation through the menus, you always have the current depth, the immersion time and the PpO₂ of the 3 cells.

8.1 Gaz diluent

NGC offers the possibility to set 5 diluent cylinders (O₂/Hélium).

The first percentage shows the O₂ share of the mix. The 2nd percentage (after the « / ») show the Helium share of the mix.



8.1.1 Active diluent change

In this menu, you can change the active diluent. Using the up and down buttons, select the active diluent line. Double click to confirm your choice.

When the modifications are done, select « Back ».

8.1.2 Diluent modifications

To modify the values of a diluent during the dive, select the line « gas change ».

Select the diluent line (« DIL 1 », « DIL 2 », ..., « DIL 5 ») to be modified. Using the up and down buttons, first set the tens, double click then set the unit for the percentage of your diluent cylinder. Continue to set the Helium percentage. Double click to confirm your choice and return to the diluent list.

Select « Back » to return to the top menu.

8.2 PpO₂ range

8.2.1 Active range selection

Select the active alarm range by double clicking on the buttons between:

- Dive,
- Deco.

When modifications are made, select « Back ».

The « Modify range » selection will enable the modification of the minimum and maximum PpO₂ range of the 2 modes.

Select active range			
	min	max	
 Dive	1.35	1.45	
Deco	1.40	1.60	
Modify ranges			
Back			
85m 122'	0.99	0.99	0.99

8.2.2 Ranges modification

Select « Modify ranges » within « PpO₂ range » to modify the minimum and maximum values of the dive periods.

Select the the dive period between:

- « Dive »,
- « Deco ».

Use the up and down buttons to customize the minimum and maximum PpO₂ range of the selected period. Beyond these limits, the LED will flash.

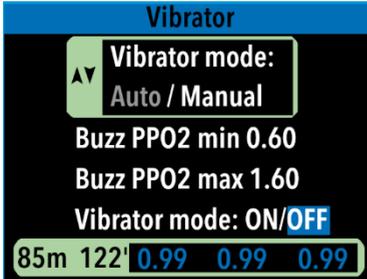
When the modifications are done, select « Back ».

PPO2 range			
	min	max	
 Dive	1.35	1.45	
Deco	1.40	1.60	
Back			
85m 122'	0.99	0.99	0.99

8.3 Vibrator

Using the navigation buttons, select the desired vibrator alarm:

- Auto,
- Manual.



Select « Buzz PpO₂ min » to set the minimum limits or « Buzz PpO₂ max » to set the PpO₂ maximum limits to enable the vibrator outside these limits. Using the up and down buttons, the values can be modified by increment of 0.05. Confirm your choice by simultaneously double clicking on the buttons.

The vibrator can be disabled. Select:

- « OFF » to disable the vibrator,
- « ON » to enable the vibrator.

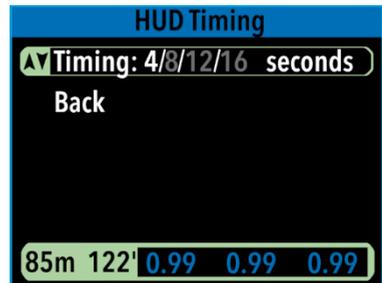
8.4 HUD

The flashing frequency shows that the PpO₂ is within the aimed range, and the 2 LED (red and yellow) flash at the same time, every 4, 8, 12 ou 16 seconds.

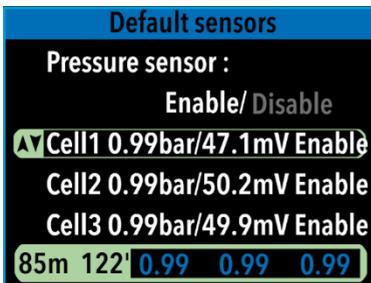
Select «HUD frequency » then “time” to enter the chosen frequency by selecting:

- « 4 »,
- « 8 »,
- « 12 »,
- « 16 ».

Select « Back » to return to the top menu



8.5 Faulty sensor



In case of a faulty sensor, it can be disabled, refer to the paragraph about the warning messages.

Select the desired sensor from:

- « Pressure sensor »,
- « Cell 1 »,
- « Cell 2 »,
- « Cell 3 ».

Use the up and down buttons to change between « Enable » and « Disable ». Double click to confirm your choice.

The PpO₂ and the mV of each cell appear on the line corresponding to the cell. When a cell is disabled, the PpO₂ and mV information are grayed out to distinguish it from the remaining active cells. A cell that is disabled during the dive is automatically re-enabled at the end of the dive.

The return to the menu is tacit.

8.6 Display

8.6.1 Brightness

The screen brightness can be adjusted from 10% to 100% in 10% increments.

Select « Brightness » to enter the brightness of the display using the up and down buttons. Double click to confirm.

8.6.2 Arm

The NGC can be worn on either the right or left arm. Selecting the other arm rotates the display by 180°. When rotating, the buttons follow the orientation.

Select « Arm » to enter the arm on which the NGC is worn. Using the up and down buttons select:

- « Right » to wear the NGC on the right arm,
- « Left » to wear the NGC on the left arm.

Double click to confirm your choice and to return to the diluent list.

Select « Back » to return to the top menu.

8.6.3 Theme

The theme will be the subject of the next version of this notice.

Select « Back » to return to the top menu.

8.7 Back

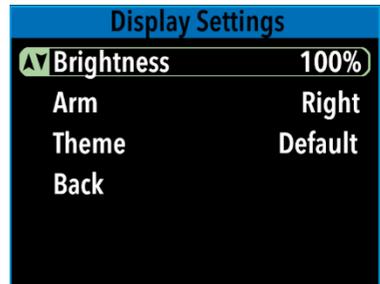
From the main menu, select « Back » to return to diving screens

8.8 End of dive

If allowed by safety conditions (white line), select « end of dive » to stop the current dive and to return to surface screens.

The line is grayed out and cannot be selected if the PpO_2 is superior to 1.10 and the pressure is more than 50 mbar from the initial surface pressure.

If these 2 conditions are held more than 10 mns, the NGC return to the surface mode.



PpO₂ ALARMS SETTINGS

The NGC alarms are visual or vibratory. Depending on the settings in the user's preferences, there are 2 ranges that can be configured, as well as a manufacturer' range for the PpO₂ alarms.

The other alarms or notifications are set by M3S or they depend on variable paramaters such as lime autonomy for example. Please go to §10 for details on other alarms.

The PpO₂ alarms will be seen on the display and on the HUD, and they will be sensitive by the integrated vibrator set in the display.

9.1 Visual alarm

Mainly for the PpO₂, the visual alarms are set by color codes.

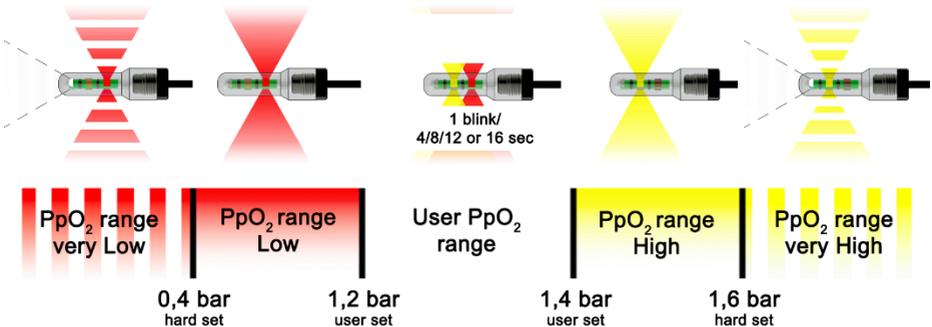
The alarms which are not related to the PpO₂ are: vertical speed, and the default notifications (autonomy, cells, pressure sensor, battery level)

9.1.1 HUD

The PpO₂ alarm settings can be modified in the users' preferences. There are 2 ranges that can be configured: Dive mode (dive) and Deco mode. This allows you to easily switch between 2 pre-settings during the various diving phase.

You have to enter in each of these modes the minimum and maximum value of the targeted PpO₂. Thus, these values are between 0,7 and 1,6 bar.

As indicated in paragraph § 2.2.4, the red LED will be steady below the minimum value and will be steady yellow above the maximum value. As a reminder, the red LED will be flashing when below a factory value of 0,4 bar of PpO₂, and yellow flashing above 1,6 bars of PpO₂.



9.1.2 Display

Depending on the PpO₂ of the HUD alarm settings, the display also shows a visual alarm on the cells display. Thus, on a low value of PpO₂, the cell PpO₂ value will be displayed on a steady red background and on a high range PpO₂, the cell PpO₂ value will be displayed on a steady yellow background. Beyond these limits, in either very high or very low ranges, the background will be flashing.



PpO₂ in the programmed range



Low PpO₂, the red background is steady



High PpO₂, the background is steady yellow



Very high PpO₂, the background will be flashing yellow/black with black/yellow letters



Very low PpO₂, the background will be flashing red/black with black/red letters



9.2 Sensitive alarm – vibrator

The NGC has a vibrator. It can be disabled if necessary and it can send an alert on receipt of a notification.

The PpO₂ vibrator settings are:

- Either similar to those of the HUD (auto)
- Either upon independent values between 0.4 and 1.6 (manual). This allows to have a third range of alarms if necessary.

It comes with some given warnings and notifications



WARNING MESSAGES

10.1 General information

Before listing the possible notifications given by the NGC, let start by defining the possible types of messages:

- **Reminders:** message or information aimed at drawing the attention of the user to an event or a good practice to be carried out.
- **Warnings:** warning message asking the user to make a choice by a confirmation and / or choice. Warnings are not recurring messages once validated.
- **Alarms:** Warning messages asking the user to make a choice by a confirmation and / or choice. Alarms can be recurring messages.

The warning messages can be seen on the HUD and / or the display. The display has 2 types of alarm, one visual by a message and sensitive. The sensitive alarm will not work if the vibrator is disabled.

Most of the warnings will enable a choice and / or confirmation from the user.

Example of alerts requiring a choice – low PpO₂:

Triggering event: the NGC detects a PpO₂ below 0,4 for 5 consecutive seconds.

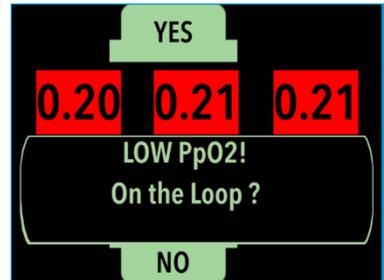
HUD alarm: Flashes every 2 seconds

Display alarm:

- Message: « low PpO₂! On the loop? ».
- Vibrator: small vibration every 2 seconds.

Choice requested from the user:

- Yes,
- No.



Example of alerts requiring confirmation – cell error:

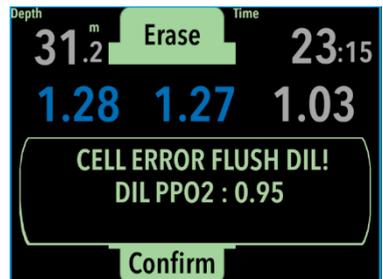
Triggering event: the NGC detects a cell outside the volting logic for more than 15 seconds.

HUD Alarm: Flashes every 2 seconds

Display alarm:

- Message: « Cell error – Diluent flushing – Diluent PpO₂ at ... ».
- Vibrator: small vibration every 2 seconds.

Confirmation requested from the user: confirmation request to delete the message.



10.2 Surface mode

10.2.1 Batteries

Notifications	Type of message	Reasons	Consequences		Choices / user actions
			White LED HUD	Display	
Battery 1 low	Warning	Battery 1 has reached 25% of its total capacity	Flashes every 2 seconds	<p>Message: « Battery 1 at 25% ».</p> <p>Vibrator: small vibration every 2 seconds.</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.
Battery 2 low	Warning	Battery 2 has reached 25% of its total capacity	Flashes every 2 seconds	<p>Message: « Battery 2 at 25% ».</p> <p>Vibrator: small vibration every 2 seconds.</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.
Battery 1 replacement	Warning	Battery 1 has reached 10% of its total capacity	Flashes every 2 seconds	<p>Message: « Battery 1 at 10% ».</p> <p>Vibrator: small vibration every 2 seconds.</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.

10.2.2 PpO₂

Notifications	Type of message	Reasons	Consequences		Choice / user actions
			White LED HUD	Display	
Low PpO₂	Warning and/or Alarm	PpO ₂ below 0,4 for 5 consecutive seconds	Flashes every 2 seconds	<p>Message: « Low PpO₂! On the loop? ».</p> <p>Vibrator: small vibration every 2 seconds</p>	<p>Yes: delete the message on the display and stop the alarm LED flashing and of the vibrator. The message will come back as an alarm.</p> <p>No: delete the message on the display and stop the alarm LED flashing and of the vibrator. Disable this warning until the mode change. The message will not come back.</p>
Very low PpO₂	Warning	PpO ₂ below 0,15 during 1 consecutive second	Flashes every 2 seconds	<p>Message: « very low PpO₂! ».</p> <p>Vibrator: continuous vibration.</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and of the vibrations.
Significant cell error	Alarm	Volting logic: significant cell error during more than 5 consecutive seconds.	Flashing of 3 flashes per second when a significant cell error happens	<p>Message: « Cell error ».</p> <p>Vibrator: 4 vibrations</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and of the vibrations, and disable this alarm until the mode change.

10.2.3 Lime time

Notifications	Type of message	Reasons	Consequences		Choice / user actions
			White LED HUD	Display	
Lime, low remaining lime time	Warning	Autonomy is less or equal to the safety set autonomy, the alarm goes off	Flashes every 2 seconds	<p>Message: « lime time at ... ».</p> <p>Vibrator: small vibration every 2 seconds.</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and of the vibrations.
Lime, very low remaining lime time	Warning	Autonomy left is at 1/8 of total autonomy of the set lime time.	Flashes every 2 seconds	<p>Message: « Lime time at ... ». (depending on the calculation)</p> <p>Vibrator: small vibration every 2 seconds.</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and of the vibrations
Lime, no remaining lime time	Warning	No lime time left.	Flashes every 2 seconds	<p>Message: « No lime time left! – Bail Out! ».</p> <p>Vibrator: small vibration every 2 seconds.</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and of the vibrations Bail out proposal

10.3 Diving mode

10.3.1 Batteries

Notifications	Type of message	Reasons	Consequences		Choice / user actions
			White LED HUD	Display	
Battery 1 low	Warning	Battery 1 has reached 25% of its total capacity	Flashes every 2 seconds	Message: « Battery 1 at 25% ». Vibrator: small vibration every 2 seconds.	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.
Battery 2 low	Warning	Battery 2 has reached 25% of its total capacity	Flashes every 2 seconds	Message: « Battery 2 at 25% ». Vibrator: small vibration every 2 seconds.	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.
Battery 1 replacement	Warning	Battery 1 has reached 10% of its total capacity	Flashes every 2 seconds	Message: « Battery 1 at 10% ». Vibrator: small vibration every 2 seconds.	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.
Battery 2 replacement	Warning	Battery 2 reached 10% of its total capacity	Flashes every 2 seconds	Message: « Battery 2 at 10% » Vibrator: small vibration every 2 seconds	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.
Battery switch	Warning	Automatic switch from battery 1 to battery 2.	Flashing once every 2 seconds	Message: « Switching to reserve battery! » Vibrator: small vibration every 2 seconds	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.

10.3.2 PpO₂

Notifications	Type of message	Reasons	Consequences		Choice / user actions
			White LED HUD	Display	
Low PpO₂	Alarm	PpO ₂ below 0,4 during 5 consecutive seconds	Flashes every 2 seconds	<p>Message: « Low PpO₂! ».</p> <p>Vibrator: small vibration every 2 seconds.</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.
Very low PpO₂	Alarm	PpO ₂ below 0,15 during 1 consecutive second	Flashes every 2 seconds	<p>Message: «Very low PpO₂! ».</p> <p>Vibrator: continuous vibration.</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.
High PpO₂	Warning	PpO ₂ above 1,6 during 10 consecutive seconds.	Flashes every 2 seconds	<p>Message: « High PpO₂ ».</p> <p>Vibrator: small vibration every 2 seconds.</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.
Cell error	Warning	1 cell outside the voting logic for more than 15 seconds.	Flashes every 2 seconds	<p>Message: « Cell error – Diluent flushing – Diluent PpO₂ at ... ».</p> <p>Vibrator: small vibration every 2 seconds.</p>	<p>Confirmation request to delete the message on the display and stop the vibrator. The flashing of the HUD is still on.</p> <p>Message: « Diluent PpO₂: ... - cell check? ». Perform a diluent flushing. Check the cells information.</p> <p>If the flushing has been efficient, confirmation to delete the message on the display and stop</p>

Notifications	Type of message	Reasons	Consequences		Choice / user actions
			White LED HUD	Display	
					<p>alarm LED flashing and of the vibrator.</p> <p>If the flushing was not efficient, select « go to disabling » to disable a cell. Cf. §8.5</p>
Significant cell error	Alarm	Volting logic: major cell error for more than 5 consecutive seconds.	Flashing of 3 flashes per second when a significant cell error happens	<p>Message: « Cell error – Diluent flushing – diluent PpO₂ at ... ».</p> <p>Vibrator: continuous vibrations</p>	<p>Confirmation request to delete the message on the display and stop the vibrator. The flashing of the HUD is still on.</p> <p>Message: « Diluent PpO₂: ... - cell check? ». Performing diluent flushing. Check of cell information.</p> <p>If the flushing has been efficient, confirmation to delete the message on the display and stop alarm LED flashing and of the vibrator.</p> <p>If the flushing was not efficient, select « go to disabling » to disable a cell. Cf. §8.5</p>
Repetition of a significant cell error	Alarm	3 rd repetition of a volting logic without the disabling of a cell	Flashing of 3 flashes per second when a significant cell error happens	<p>Message: « Cell error – Switch to bail-out ».</p>	<p>Confirmation request to delete the message on the display and stop</p>

Notifications	Type of message	Reasons	Consequences		Choice / user actions
			White LED HUD	Display	
				Vibrator: continuous vibrations.	<p>the vibrator. The flashing of the HUD is still on.</p> <p>Perform the switch to bail-out. Confirmation request to delete the message on the display and stop the vibrator</p>
1 disabled cell	Reminder	Disabling of a cell during dive	One flash every 30 seconds	-	No choice or action from the user

10.3.3 Lime time

Notifications	Type message	Causes	Conséquences		Choix / actions utilisateur
			HUD	Afficheur	
Lime, low remaining lime time	Warning	Autonomy is less or equal to the safety set autonomy, the alarm goes off	Flashes every 2 seconds	<p>Message: « Lime time at ... ».</p> <p>Vibrator: small vibrations every 2 seconds</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.
Lime, very low remaining lime time	Warning	Autonomy left is at 1/8 of total autonomy of the set lime time.	Flashes every 2 seconds	<p>Message: « Lime time at ... ». (depending on calculation)</p> <p>Vibrator: small vibrations every 2 seconds</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations.
Lime, no remaining lime time	Warning	No lime time left.	Flashes every 2 seconds	<p>Message: « No lime time left! – Bail Out! ».</p> <p>Vibrator: small vibrations every 2 seconds</p>	Confirmation request to delete the message on the display, stop the alarm LED flashing and the vibrations with the suggestion to switch to Bail Out.

10.3.4 Depth and speed

Notifications	Type of message	Reasons	Consequences		Choice / user actions
			HUD	Display	
Bubble Check	Reminder	When the depth is more than 4 m and reached for the first time	-	<p>Message: « Bubble check! ».</p> <p>Vibrator: small vibration every 0.5 seconds.</p>	Confirmation request to delete the message on the display, stop the vibrations
Excessive speed	Warning	Ascent speed more than 18 m/min	-	<p>Message: « Too fast ».</p> <p>Vibrator: small vibration every 2 seconds.</p>	No choice or action from the user .

NGC APPLICATION

M3S is currently developing a software application in order to complete the NGC experience. This application will allow you to:

- update the NGC,
- download the dives in the log dive book,
- do the set up of your NGC from the application.

This application will be available on iPhone and Android.

An update of the notice will be done to accompany you when using it.

11.1 NGC update

To come

11.2 Downloading of the dive in the log book

To come

11.3 Setting up of the NGC parameters

To come

MAINTENANCE INSTRUCTIONS

This chapter is about the daily and more in-depth maintenance of the NGC.

Recommendation:

Between 2 successive dives on the same day, M3S recommends the aeration of the rebreather by disconnecting the system unit from the inspiratory counterlung to prevent from residual humidity.

After diving, always leave the system unit in a clean and dry area, taking care not to leave them exposed to heat.

12.1 Cleaning

12.1.1 Flushing

Flushing is carried out on a fully assembled rebreather with clear water after each dive in order to avoid any accumulation of salt or dirt.

Warning:

Except in the case of post drowning, do not flush the inside of the system unit.

Warning:

Be careful not to disinfect them. Do not use high pressure water jet, which may damage the NGC

Warning: If the rebreather has been drowned

It might occur that, in case of improper use, non-respect of the assembly checklist or a non-respect of positive and negative tests to drown one's rebreather. The mix of soda lime and water produces a basic liquid (pH ≈ 9). It is therefore necessary to give special care to the electronics by doing a whole flushing of the system unit in order to avoid damages on the unit and to the diver during the next dive

The procedure to adopt in case of drowning is as follows:

1. Clean the entire unit with clear water and the system unit,
2. Air dry the unit and the electronics
3. Return the unit to the manufacturer for a full check.

12.1.2 Drying

We draw your attention on the importance of the drying quality. After each use, the electronics must be dismantled in a well-ventilated area to allow the drying.

Warning:

Do not use high pressure air to dry the NGC, it could damage it.

Warning:

Do not leave your electronics under full sun.

Recommendation for non-temperate climates:

Under tropical climates: in order to best protect the connections, it is recommended to dry in a air conditioned room.

Under cold climates: in order to best protect the whole electronics, it is recommended to dry in a well-ventilated room, heated frost free.

12.2 Maintenance

A Regular maintenance is essential for the unit to work properly. This includes a number of checkpoints:

Recommendation:

It is important to use the oxygen compatible grease, supplied with your rebreather, when you grease the O-ring surfaces of the cell holder or of the intermediate module.

Maintenance	Recommendation
O ₂ cells replacement	Every 12 months whether used or not
Replacement of the system unit	Every 12 months whether used or not
Humidity Pad replacement	Every 12 months
Batteries plug O-rings of the intermediate module replacement	Every 12 months whether used or not
Full check of the NGC	Every 36 months
Main Sup PCB replacement	In case of failure
Batteries replacement	Every 36 months whether used or not

Take care to protect them from knocks and scratches.

Warning:

The recommendations given are only for guidance. It is essential to store the unit in a dry place, away from lights and UV rays and well ventilated to avoid premature wear.

12.2.1 Maintenance of the system unit elements

12.2.1.1 Oxygen cell change

Reminder, the cells are wearing parts.

Recommendation:

A cell must not be used beyond 12 months after its manufacture date (on the left inside of cell bar code).



Warning:

A cell that is more than 12 months old may have acid leaks which may lead to the replacement of the Main Sup.

Moreover, even if the Main connectors are gold plated, acid leaks may lead the deterioration of the connectors and a loss of signal. In this case, a total repair of the NGC system unit will be necessary.

The replacement of the cells is as follows:



- Remove the system unit from the inhale counterlung.
- Remove the inner circlip from the system unit
- Remove the humidity pad and the cell holder
- Disconnect Cell 1 (if necessary) – pull the cell to the top
- Disconnect cell 2 (if necessary)
- Disconnect cell 3 (if necessary)
- Replace one or all cell(s)
- Remove the O-ring from the new cells before reconnecting them.
 - Correctly place the cell before putting it on the main sup PCB.
 - Put the cell holder and the humidity pad on the cells to fix them with the clip.
 - Perform a calibration of the new cells using the calibration tool for example.



12.2.1.2 Maintenance of the system unit O-ring

In order to easily allow the introduction and removal of the system unit from the inhale counterlung, the system unit O-ring has to be regularly greased using the MGC111 Christolub grease.

Recommendation:

The System unit O-ring must be replaced every 12 months, whether used or not.

12.2.1.3 Replacement of the humidity pad

In order to avoid the development of mold, the system unit has to be disconnected from the counterlung to enable the drying in a well-ventilated room.

The humidity pad must also be replaced every year. Its removal is easily done by the unlocking of the system unit circlip, releasing the humidity pad for its replacement.

Recommendation:

The humidity pad of the system unit must be changed every 12 months.

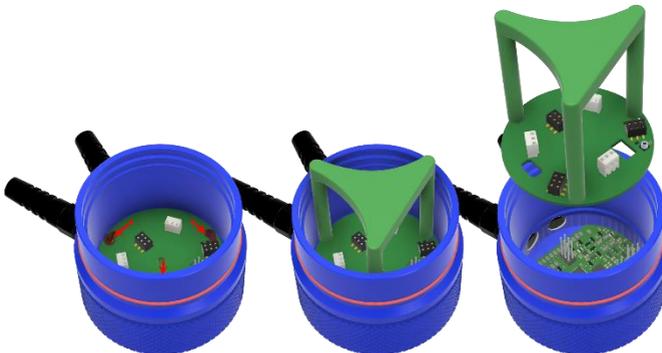
12.2.1.4 Main Sup PCB replacement

In case of a damaged Main Sup PCB (damaged pressure sensor or cell connection problem), it can be replaced by the user. Indeed, this Main Sup PCB is interchangeable using a tool.

Once cells are disconnected (refer to [§ 12.2.1.1 on cells replacement](#)), insert the tool in the 3 Main Sup PCB slots. Delicately vertically pull to the top the Main Sup PCB to free it from the system unit.

Replace the Main Sup PCB by the new one. Install the Main Sup PCB on to the tool. Position the Main Sup PCB in front of the system unit CPU connectors and gently push the Main Sup PCB all the way.

Remove the tool from the Main Sup PCB, and insert the cells.



12.2.2 Maintenance of the intermediate module

The maintenance of the intermediate module is only done within M3S offices every 36 months.

The intermediate module is made of 2 compartments each containing a battery and an electronic part. The maintenance of the intermediate module goes through the charging of the batteries, their replacement, the maintenance and the replacement of the O-ring plug.

12.2.2.1 Batteries charging

Lithium batteries have a high energy density. To guarantee a long-life time, the lithium-ion batteries must be properly taken care of.

For example, they must not be overcharged, charged at temperatures below zero or discharged during storage. The batteries supplied by M3S are protected from deep discharge. By full or deep discharge of the lithium-ion battery, we mean the complete discharge till capacity is exhausted. The tension of the battery is then below the final tension of the discharge, which can sometimes fully destroy the battery.

Warning:

In order to ensure the quality of the batteries charging, only use the charger supplied by the rebreather.

Good safety practices are :

- Never charge the 2 batteries at the same time
- For the main battery B1, carry out the battery charging after a dive when the autonomy went underneath 30%
- For the secondary battery B2, carry out the battery charging when it reaches 70%.

Recommendation:

We recommend that you charge one battery and then the other. In case of disconnection of the 2 batteries, on the next switch on, you will need to enter the timestamp.

12.2.2.2 Batteries replacement

The lifetime of the lithium-ion batteries is longer than alkaline batteries. However, the quality of charging and the storage of the batteries are essential to maintain a normal battery life.

Recommendation:

We recommend to change the 2 batteries every 3 years.

12.2.2.3 Maintenance of the plug O-ring

Like all O-rings on your rebreather, the battery compartment plug O-ring must be:

- **Greased** using oxygen compatible grease,
- **Stored** in a closed position on the intermediate module,
- **Checked** that they are free of dust or of any other foreign body,
- **Changed** every year.

Recommendation:

We recommend that you only use the MGC 111 Christolube grease.

Recommendation:

The O-ring of the intermediate module plugs must be changed every 12 months, whether used or not.

Warning: If the intermediate module is flooded

It might occur that, in case of improper use, or incorrect assembly, that the intermediate module is flooded during diving. It is therefore necessary to give special care to the electronics by doing a whole flushing of the intermediate module.

The procedure to adopt in case of drowning is as follows:

1. Clean the flooded compartment with clear water,
2. Air dry, no compressed air
3. Return the unit to the manufacturer for a full check.

12.2.3 Display maintenance

We recommend, when diving in the sea, to flush the display, after each dive in order to remove salt on all wet contacts.

Recommendation:

Do not allow salt deposits to accumulate on the dive computer. Flush it with clear water to remove salt and other deposits.

12.2.4 HUD maintenance

Nous recommand that you flush the HUD after each dive.

12.3 Overall maintenance of the NGC

Warning:

The maintenance of the electronics cannot be undertaken by the user. Do not tighten or remove any screws.

The maintenance of the electronics can only be undertaken in the M3S aftersales service workshop in France.

Opening indicators are installed, any violation of one of them, will result in the full loss of warranty.

This maintenance is carried in the in M3S aftersales workshop. It is included in the annual overall maintenance of your rebreather.

This operation consists in a check, cleaning, diagnosis, replacement of cells every 12 months, replacement of batteries every 36 months, replacement of accessible and non-accessible O-rings by the user, according to the recommended maintenance plan and if necessary, the replacement of all defective parts.

A waterproof check is also carried out.

STORAGE AND TRANSPORTATION

13.1 Storage

Electronics can be stored up to -30°C without any consequences unless they undergo repeated frost and unfrost cycles which may damage the waterproof of the probes with eventual leaks. Occasional exposures to temperatures up to 70°C are acceptable, but recurrent exposures to high temperatures will shorten the life the cells

After cleaning and flushing, store away from the sun, in a temperate environment, dry and with no dust. Avoid direct exposures to ultraviolet and heat.

Recommendation for non-temperate climates:

Under tropical climates: in order to best protect the connections, it is recommended to dry in a air conditioned room.

Under cold climates: in order to best protect the whole electronics, it is recommended to dry in a well-ventilated room, heated frost free.

Warning:

Do not expose to direct sunlight for long period.

Recommendation:

Preferably, remove cells from the system unit for a long-time storage. In case of cells leakage, this will prevent the corrosion of surrounding components.

13.2 Transportation

13.2.1 Transportation before diving

Be careful of shocks when transporting your whole rebreather.

Ensure that the HUD is properly set to the loop to avoid snagging.

Ensure that the display is properly set to the rebreather and store its cable in the protective cover in order to avoid shocks and snagging.

13.2.2 Sending the electronics for maintenance

When sending the electronics for a maintenance or service, fill in the following form :

https://form.asana.com/?k=Gai3LsrHv_ps4N0pELw9Jq&d=851071878139876

When sending the electronics for service, do not forget to print this form and to put in in your package. Ensure that the packaging is sturdy and sufficiently protected.

We advise you to shake the package to ensure that the electronics does not move inside.

When we return an overhaul, we recommend that you immediately check on receipt the elements sent to ensure that these were not damaged during transportation.

13.2.3 Travelling with the rebreather

We recommend that you leave the batteries in the intermediate module of the electronics. However, we advise you not to tighten the batteries compartement plugs in order to avoid the NGC to switch istself on during transportation.

We remind you that the next time you use your unit, a setting up of the timestamp will be necessary.

NOTES