



# INSTRUCTION MANUAL

## FIRST STAGE B2 B2 M SECOND STAGE B2

Warning: read the instructions carefully

### CE CERTIFICATION

OMERSUB's regulators have been certified in accordance with Directive 89/686/EEC and amendments thereto, concerning individual protection devices, namely their sales conditions and safety requirements.

The tests have been performed in accordance with EN 250: 2000.  
The CE certificate has been issued by notified body N.0474:

RINA  
16128 Genova - Italia - Via Corsica, 12

The regulators are provided with the relevant mark.

The (SCUBA) diving regulators are individual protection devices, class 3.  
WARNING: Mention the models certified at 200 bars.

### REFERENCES TO EN 250

**Aim:** The requirements and tests under EN 250 are aimed at offering a minimum safety standard at a **maximum depth of 50 m.**

**Scuba - Definition (EN 132):** Open circuit self-breathing apparatus with compressed air in a tank.

#### Scuba - Basic equipment required (EN 250):

- Air tank/s
- Regulator
- Safety device, e.g. pressure gauge/computer, or spare device or alarm system.
- Support and transport system, e.g. back and/or belts.
- Face (mouthpiece, full mask or scuba diving helmet).
- Operating instructions.

### REGULATOR B2 - FIRST STAGE

The most basic first stage of OMERSUB's stands out as simply designed and easy to maintain. Its performance standard fully meets the requirements, thus translating into remarkably safe dives.

A double, balanced piston runs within a single-block brass body protected by three electrogalvanic layers, 13 microns in thickness (copper 7 µm, nickel 5 µm and chrome 1 µm). The internal components are also made of chrome/nickel-plated brass, with stainless steel springs and NBR seals.

Four low-pressure ports, provided with 3/8 threads, supply an intermediate pressure of 10 bars; both high-pressure ports are provided with 7/16" threads and flow reduction holes 0.20 mm in diameter. Either a diving pressure gauge or the probe of an integrated computer, with a 7/16" male thread, can be connected.

**WARNING: Use hoses provided with standard threads only; do not place any adapter between the first stage and the high-pressure hose connection.** Regulator B2 is designed to easily support a working pressure of 300 bars; however, for working pressures over 200 bars, it is recommended that the version provided with a connection complying with DIN standards should be used instead of the traditional yoke.

**This diving regulator has been certified in accordance with UNI EN 250. Under this standard, regulators should thoroughly tested at a maximum pressure of 200 bars, up to a depth of 50 m.**

### REGULATOR B2 M - FIRST STAGE

This extremely compact, rationally designed regulator is synonymous with outstanding performance. It is provided with a balanced diaphragm, which allows a constant intermediate pressure to be maintained, compared to both tank pressure and depth-related pressure. In addition, the diaphragm isolates the "heart" of the regulator from the external environment, resulting in remarkable reliability for a large number of dives. Either a diving pressure gauge or the probe of an integrated computer, with a 7/16" male thread, can be connected.

**WARNING: Use hoses provided with standard threads only; do not place any adapter between the first stage and the high-pressure hose connection.** Regulator B2 is designed to easily support a working pressure of 300 bars; however, for working pressures over 200 bars, it is recommended that the version provided with a connection complying with DIN standards should be used instead of the traditional yoke.

It consists in a single-block brass body protected by three electro-galvanic layers, 13 microns thick (copper 7 µm, nickel 5 µm and chrome 1 µm). The internal components are also made of chrome/nickel-plated brass, with stainless steel springs and NBR seals. Four low-pressure ports, provided with 3/8 threads, supply an intermediate pressure of 9.5 bars; both high-pressure ports are provided with 7/16" threads and flow reduction holes 0.20 mm in diameter.

### BEFORE DIVING

Make sure not to damage the O-ring when connecting the hoses of the accessories. Remove the cap from the port on the first stage by means of a suitable wrench; tighten the end adapter of the hose into the housing of the first stage, gently yet firmly.

- Make sure all the hoses are connected to the first stage properly and no cuts or any other signs of wear or damage are shown. If the hoses can be loosened manually, retighten them by means of a wrench, before applying pressure.
- Make sure the first and second stages are free from clearly visible damage.
- Place the tank valve, making sure the air port is turned towards the diver.
- Remove the dust cap from the port of the first stage and place the yoke or the inlet complying with DIN standards, in the middle of the tank valve inlet.
- Place the body of the first stage, making sure the hose connected to the second stage comes out at the diver's right shoulder.
- Tighten the screw of either the yoke or the port complying with DIN standards manually; if any port complete with yoke is available, be careful not to damage the O-ring seal on the port of the tank valve.
- Check the diving pressure gauge, making sure pressure equals zero.
- Open the tank valve very slowly, gradually letting air flow into the regulator.
- During this operation, press the manual purge button of the second stage.  
This allows the impact on the valve to be reduced. **DO NOT CARRY OUT THIS OPERATION AT TEMPERATURES BELOW 10° C.**
- Do not rotate the first stage connected to the tank while pressure is being applied to the system.
- Check the diving pressure gauge, making sure it indicates the pressure established for the tank and it is enough for the planned dive.
- Make sure no leaks occur while connecting the tank to the regulator. Any leak may result from either failure to mount the regulator onto the tank valve correctly or a damaged O-ring in the tank valve.
- To make sure air is correctly released from the regulator, breathe out through the mouthpiece to discharge any impurities from the second stage; then breathe in. Repeat this operation a few times, to promptly detect any self-evident problems.

### WARNING!

**USING ANY OCTOPUSES OTHER THAN THE APPROVED STAGE WILL MAKE THE CE CERTIFICATE NULL AND VOID.**

### WARNING!

**The regulator alone shall not be understood as comprehensive self-breathing apparatus (SCUBA); it means only part of it. Under EN 250, a comprehensive SCUBA should include the following basic equipment:**  
a) Air tank/s  
b) Regulator  
c) Safety device, e.g. pressure gauge/computer, or spare device or alarm system.  
d) Support and transport system, e.g. back and/or belts.  
e) Face (mouthpiece, full mask or scuba diving helmet).  
f) Operating instructions.

### WARRANTY

All of Omersub's products are covered by warranties guaranteeing Omersub's responsibility for any material or manufacturing defects **over a period of twelve months as from the purchasing date.**

PRODUCT: .....

SERIAL NUMBER: .....

SHOP NAME: .....

SEAL: .....

DATE OF PURCHASE: .....

NAME: .....

ADDRESS: .....

CITY: .....

**NB: This warranty shall not cover any damage resulting from the following:**

- Misuse.
- Changes made or repairs carried out by unauthorized personnel.
- Prolonged use in chlorinated water.
- Use in polluted water.
- Use in any liquids other than water.
- Prolonged exposure to high temperatures or sunlight.

**Omersub shall not be liable for any damage to the user caused by misused equipment, or for any immediate or consequential damage to people or things caused by failure to use the product for some time.**

### WARNING!

**OMERSUB's regulators and octopuses are designed and manufactured to be used only with atmospheric compressed air. Do not use this equipment with any other gases or enriched air mixtures. Failure to follow this recommendation may cause early wear, malfunctions and explosions, which may result in serious damage.**

### WARNING!

**The diving equipment should be used by trained divers. Training courses on the use of these regulators should be held by certified diving instructors. To provide maximum safety, your equipment should be maintained by OMERSUB or any AUTHORIZED ASSISTANCE CENTRE.**

### FUNCTIONING

The regulators reduce the feeding pressure of the tanks to a level suitable for breathing. Modern regulators perform this operation by relying on two parts or stages connected with each other by means of a hose.

The first stage supplies the second stage with reduced and, above all, constant pressure despite the major changes pressure is subject to in the tanks while diving (from 200/300 to a few dozens of bars).

The second stage should bring the pressure to the same level as ambient pressure and supply divers with air after breathing.

Each stage of the regulator is provided with an internal valve.

When pressure is unbalanced in the regulator, as the result of the diver's breathing (start of breathing), the valves open and let air out, until pressure is balanced again (end of breathing).

For the second stage to function correctly, the first stage should supply air at proper, and, above all, constant intermediate pressure.

This feature, to be found in OMERSUB's first stages, is a key ingredient, if the second stage is to be optimally calibrated; the latter can offer remarkable performance while diving, despite the amount of pressure available in the tanks.

The second stage is designed to supply air at ambient pressure only while breathing. When the diver breathes in, pressure in the second stage decreases, thus resulting in a difference in pressure (unbalance) on the diaphragm.

The diaphragm then folds inwards; push the air supply lever and open the valve of the second stage.

This allows air to flow into the second stage and towards the diver until he or she stops breathing.

Consequently, pressure increases and pushes the diaphragm in the opposite direction, allowing the valve to close and stop supplying air.

**This diving regulator has been certified in accordance with UNI EN 250. Under this standard, regulators should be thoroughly tested at a maximum pressure of 232 bars, up to a depth of 50 m, at a temperature of 4° C.**

### WARNING!

**For safety reasons, do not use any second stages other than OMERSUB's certified ones. OMERSUB shall not be liable for any damage to people or things resulting from the use of second stages other than the above-mentioned ones.**

### REGULATOR B2 - SECOND STAGE

Case made of synthetic resin, highly resistant to impacts, abrasion, UV rays and chemical agents. Diaphragms and valve seat made of silicone; internal components made of chrome-plated brass and stainless steel.

Anatomically shaped mouthpiece made of antiallergenic silicone.

The regulator is provided with a "downstream" valve and an airflow channel based on the Venturi effect: air supply is steadily controlled by the breathing diver; normal breathing means an extremely light airflow; whereas heavier breathing (resulting from tiring dives at depth) requires plenty of air to be supplied (Venturi effect).

This system means low air consumption and reducing air wastes, as it fully satisfies breathing requirements; in addition, it provides maximum safety, as it can also work in case of first stage overpressure, releasing any excess air and translating into regular breathing.

A standard hose is available (76 cm long, with a 3/8" thread).

### OCTOPUS B2 - SECOND STAGE

**For safety reasons, make sure the first stage Octopus B2 is mounted on has been manufactured by OMERSUB; otherwise, make sure intermediate pressure ranges between 9.5 bars and 10 bars. Failure to follow this recommendation may cause the regulator to work improperly; in addition, serious accidents may occur.**

Case made of synthetic resin, highly resistant to impacts, abrasion, UV rays and chemical agents. Diaphragms and valve seat made of silicone; internal components made of chrome-plated brass and stainless steel.

Anatomically shaped mouthpiece made of antiallergenic silicone.

The regulator is provided with a "downstream" valve and an airflow channel based on the Venturi effect: air supply is steadily controlled by the breathing diver; normal breathing means an extremely light airflow; whereas heavier breathing (resulting from tiring dives at depth) requires plenty of air to be supplied (Venturi effect).

This system means low air consumption and reducing air wastes, as it fully satisfies breathing requirements; in addition, it provides maximum safety, as it can also work in case of first stage overpressure, releasing any excess air and translating into regular breathing.

The second stage in the Octopus version is provided with a hose (100 cm long, with a 3/8" thread) to support any of the diver's mates.

The yellow hose and cover retaining ring of the front make the hose easy to recognize under any visibility conditions.

**Your OMERSUB regulator is designed to be used with units of the SCUBA certified in accordance with Directive 89/686/EEC, marked CE. The air in the tanks should meet breathable air requirements under CEN EN 12021.**

**BEFORE FITTING TOGETHER THE COMPONENT PARTS OF YOUR SCUBA, READ ALL THE OPERATING INSTRUCTIONS AND ANY RESTRICTIONS CONTAINED THEREIN CAREFULLY.**

### WARNING!

**Do not use any adapter to connect the low-pressure hose to the high-pressure port; this might cause serious accidents. The low-pressure component parts are not designed for pressure exceeding 20 bars.**

### WHILE DIVING

- If any second stage is used as an Octopus, it is recommended that a dust cap should be used, to prevent any foreign bodies from being let in through the mouthpiece.
- If the regulator is not kept in the mouth, air may be self-supplied.  
This problem can be easily dealt with by turning the regulator upside down and filling it up with water. If air keeps being self-supplied, stop the dive.

### MAINTENANCE

Ideally, your regulator should be rinsed with fresh water while pressure is being applied to it. This allows the interior of the second stage to be washed, avoiding letting any impurities into the key parts, which results in enhanced seal.

Rinse the first stage and let water also flow into the mouthpiece of the second stage as well as through the exhaust tees, to remove any impurities.

If no pressure is being applied to the regulator, do not press the supply button while washing. If it is pressed, impurities might be let into the valve seat, which might result in leakage.

To prevent both the filter and the first stage from being contaminated, do not let any water into the air port of the first stage.

Cover the filter of the first stage with the dust cap. Leave the regulator to dry thoroughly, before replacing it. If the regulator is exposed to direct light or left in any fat, dusty rooms for prolonged periods of time, some of its component parts might be damaged. No lubricants are needed; indeed, they should not be used for any routine maintenance jobs.

### WARNING!

**Proper maintenance is a prerequisite condition of the regulator running efficiently. Therefore, it is recommended that it should be overhauled by an authorized workshop, at least once a year. In particular, it is recommended that the valve of the first stage should be replaced every two years or every 200 hours' diving.**