

REGULATOR USER MANUAL

S/T Regulator

⚠ WARNING: This manual does not replace a diving training course! All Hotdive devices must be used by divers who have attended regular courses taught by certified trainers. Using diving equipment without a licence or the necessary technical training may be dangerous for the diver's safety and can even be deadly.

⚠ WARNING: Please read this instruction book carefully before using your equipment. Do NOT use your regulator until you have read this user manual.

NOTE: more detailed information about your product can be found in the complete instruction manual.

INTRODUCTION

The product you have purchased is the result of long-term R&D and innovation by the Hotdive team. It is a highly reliable product that will help you enjoy diving comfortably and safely for long periods of time.

All Hotdive diving regulators are certified to 164 feet (50 meters) according to the EN 250:2014 standard, complying with Chinese Standard GB/T35370-2017 and EU Regulation 2016/425, which governs the listing of Personal Protective Equipment (PPE) Conditions and basic minimum safety requirements. The regulation came into force on April 21, 2018, and repealed the previous Directive 89/686/EEC, following the end of the transition period given to PPE manufacturers. Types of EC certificates issued under Directive 89/686/EEC are valid until the expiry date, in compliance with the transitional provisions specified under Article 47 of EU Regulation 2016/425.

Hotdive diving regulators belong to the largest PPE category (category 3) and have met the requirements set out by the tests established by the EN 250:2014 standard, which is recognized as the technology for recreational regulators produced and sold on the European market Guideline.

NOTE: The instructions and directions found in this manual are based on the most up-to-date information about the equipment available before printing. Hotdive reserves the right to make changes at any time.

MAIN COMPONENTS OF A REGULATOR

The main task of a regulator is to reduce the compressed air pressure contained in the tank to the same level as in the daily environment, supplying breathable air when the diver needs it.

Regulators must guarantee safe operation with advanced performance that is consistent over time, combined with sufficient air delivery and low breathing effort to avoid tiring the diver during the dive.

The most common regulators are two-stage regulators, consisting of a first stage, which serves as the main pressure reducer and a second stage (held in the diver's mouth), adjusting the breathing temperature to the exact value of the environmental pressure.

The regulator and tank, valve and sling together form a complete diving breathing system, called self-contained underwater breathing apparatus (scuba, SCUBA).

NOTE: Standard EN 250:2014 defines SCUBA as an open circuit, self-contained, compressed-air diving apparatus contained in a tank, and its equipment must include at least:

1. Tanks with valves;
2. Ready-to-use breathing regulator;
3. Pressure gauge or device for monitoring the pressure in the tanks;
4. Diving mask;
5. Systems for transporting, supporting and connecting divers, such as wiring harnesses;
6. Manufacturer's user manual.

SCUBA equipment may also include an alternative air source (Octopus), a dive computer, etc.

NOTE: The Hotdive regulator can be used with SCUBA units that meet the requirements of Regulation 2016/425 and standard EN250:2014.

FIRST STAGES

The first stage (may use a piston or diaphragm) is a pressure reducer that reduces the pressure of the compressed air in the tanks to a correct (and most importantly) constant intermediate pressure. It is critical to the correct calibration of the second stage to ensure that it maintains optimum function and optimum use throughout the dive.

All first stages of Hotdive are equipped with fittings to connect tank unit valves, or international standard YOKE fittings according to UN EN 12209-1 standard (max working pressure 230 bar), or EN 12209-2 standard (max working pressure 230 bar) /250 bar) and EN 250: 2014 with threaded DIN fittings.

In addition, all hotdive first stages are equipped with multiple threaded intermediate pressure holes for the most comfortable connection of second stages, buoyancy adjustment devices or dry suits.

Likewise, all hotdive first stages have 1 or more threaded HP holes (7/16- 20 UNF) for the most comfortable way to attach a pressure gauge or dive computer.

⚠ WARNING: A diving pressure gauge or computer for this function must be connected to the first stage HP ports . Since the tanks are not supplied with a reserve device, it is important to always use a pressure gauge to show air consumption during the dive and to know exactly when the reserve pressure is reached. At this reserve level, diving is not possible and is reserved for emergency air supply.

Diving without an instrument is dangerous because the diver has no control over his air reserve and can be depleted suddenly, posing a serious risk to the diver's life

SECOND STAGES

The purpose of the second stage is to reduce the intermediate pressure air delivered by the first stage to ambient pressure, to provide breathable air to the diver when he needs to breathe.

The 2nd stage is connected to one of the 1st stage intermediate pressure threaded ports by means of a flexible medium-pressure and high-capacity hose.

All Hotdive second stages are **downstream**, which means the valve automatically opens in the event of calibration loss in the first stage or of a sudden intermediate pressure increase.

This means that when overpressure occurs upstream of the second stage, the air will flow automatically and there will be absolutely no chance of confusing the regulator to block.

It can be a simple non-adjustable downstream type, or an adjustable downstream type (the force of the breath can be changed by an external knob).

All Hotdive second stages are fitted with a flow deviator to control and optimize the Venturi effect in two operating positions: "DIVE" (sometimes marked with a "+") and "PRE-DIVE" (sometimes marked with a "- ").

⚠ WARNING: Always remember to set the flow deflector's lever in PRE-DIVE (-) mode when not using the regulator; otherwise, an accidental collision, the regulator falling into water, pressing the manual regulation button without having the mouthpiece in one's mouth, or suddenly taking the regulator out of the mouth might trigger a strong free flow, causing high air consumption. The DIVE (+) position should only be used during the dive, and only with the regulator in the mouth.

OCTOPUS CONFIGURATION

The Octopus configuration entails a first stage connected to the tank to which two second stages are then connected (the main regulator and a back-up, usually called the "Octopus" and generally colored yellow).

Note: Hotdive discourages the use of this configuration as it is not considered the safest configuration as a malfunction of the first stage can be dangerous to the diver, especially when diving in cold water.

Standard EN 250:2014, while regulating the minimum safety requirements for an Octopus, similarly discourages the use of an Octopus for dives conducted in water temperatures below 10 °C. It does not consider this configuration ideal for those conditions, and instead recommends the use of two complete regulators that are separate from each other, to be connected to a valve that offers two independent ports.

⚠ WARNING: For the absolute safety of diving, hotdive recommends using a tank fitted with a valve offering two independent ports to which two complete regulators can be connected.

In addition, again in accordance with standard EN 250:2014, use of an Octopus in dives with water temperatures below 10 °C can create significant risk of an accident.

WARNING: SCUBA equipment that does not comply with EN 250:2014 and intended for an Octopus configuration is marked with an "A" and can be used simultaneously by multiple divers as an escape device.

WARNING: if the components of the SCUBA equipment are configured and used simultaneously by multiple divers, the equipment may not be used at depths of greater than 30 meters, or at water temperatures below 10 °C (if specified).

USE OF THE DIVE REGULATOR AND RISK ASSESSMENT

⚠ WARNING: in order to undertake a dive in complete safety, Hotdive recommends the use of a tank fitted with a valve offering two independent ports to which two complete regulators can be connected.

Keep in mind that only those who have attended and successfully completed a specific dive training course and earned the corresponding diving licence may use a dive regulator.

Using underwater devices without a licence or the necessary technical training may be dangerous for the diver's safety and can even be deadly.

Furthermore, before every use, all environmental factors must be carefully assessed, such as the weather and water conditions, visibility, the presence of currents, the temperature of the water, and the physical and psychological condition of the diver, including imperfect health, emotionally or physically stressful situations, lack of physical training, fatigue, active digestion after eating, etc. If even one of these conditions proves a risk, the dive should not be attempted.

Please remember that the equipment certification is 50m (146ft), in compliance with the EN 250:2014 standard, which purpose is to ensure a minimum level of safe operation of the apparatus down to a maximum depth of 50m, but recreational diving should not be deeper than 40m / 146ft, without any type of underwater work.

NOTE: Transport of this equipment is subject to local regulations in force; always respect applicable law and find out in advance which laws govern equipment transport in the country.

USE OF THE REGULATOR IN COLD WATER

WARNING: In the case of dives in cold water (temperatures below 10°C/50° F), Hotdive recommends using a tank supplied with a valve featuring two separate outlet ports to which two complete regulators can be connected.

Whenever the regulator is used in cold water (according to standard EN 250:2014, at water temperatures of < 10°C or < 50°F), Hotdive recommends abiding strictly by the following recommendations to reduce the risk of freezing the regulator:

1. Protect the regulator from any accidental water in-flow into the first and second stages;
2. Protect the equipment from the cold before diving, keeping it in a warm dry place;

3. Avoid breathing through the regulator or pressing the discharge button in freezing air before diving;
4. Avoid taking the mouthpiece out of your mouth when out of water and while getting into water, in order not to let cold water seep into the second stage;
5. As far as possible, avoid consuming a large amount of air during the dive (repeatedly inflating the gaw, inflating surfacing or signalling buoys, sharing air with another diver etc.);
6. Check that the air contained in the tank satisfies the requirements prescribed by the EN 12021 standard and is free from excessive humidity.

⚠ WARNING: diving in cold water at temperatures lower than 10°C/50 °F requires special technical training. Hotdive recommends this sort of diving only after having attended a special training course by certified trainers. The use of diving equipment without a licence or adequate training may be dangerous for the diver's safety and can even be deadly. The regulator must absolutely not get wet or be exposed to freezing air before use. Do not press the discharge button, particularly when the Venturi effect adjustment lever is on "dive". If possible, keep the regulator in a warm place before use.

⚠ WARNING: SCUBA devices complying with the EN 250:2014 standard must not be used by more than a diver at the same time..

⚠ WARNING: if the SCUBA equipment components are configured and used by more than one diver at the same time, their performance in cold water may not satisfy the requirements prescribed by EN 250:2014 standard.

⚠ WARNING: Hotdive discourages Nitrox dives without proper training. Nitrox dives will expose the diver to different risks than those of air dives, including serious physical damage and, in extreme cases, even death.

⚠ WARNING: as regards EEC countries, Hotdive regulators and octopus devices can only be used with atmospheric compressed air that meets the requirements of the EN 12021 standard. Do not use these devices with other gas mixtures or with enriched air (corresponding to $O_2 > 22\%$). Failure to comply with this warning can lead to operating defects, and also cause the equipment to wear prematurely, or even lead to possible explosions, which can cause serious damage.

⚠ WARNING: as regards Extra-EEC countries, Hotdive regulators and octopus are compatible with the use of open-circuit SCUBA equipment that uses compressed air or enriched air mixtures (Nitrox) with oxygen percentages no greater than 40%. Failure to observe this warning may result in serious or mortal injury to the user caused by fires, explosions, or deterioration or breakage of the equipment.

All Hotdive regulators are equipped with NBR O-rings and all internal components are properly lubricated; these materials ensure optimum lubrication levels and protection against the effects of the salty, corrosive marine environment.

The European EN13949 reference standard for Nitrox establishes that all equipment used with mixes containing more than 22% oxygen must be designed to withstand adiabatic compression with pure oxygen, as dictated by the requirements and tests in the standard itself, while standard EN 144/3 establishes and regulates that first stage connections required for use with Nitrox be designed and produced for use exclusively with Nitrox tanks and valves, using specific connections for the tank valve,

as for example a threaded DIN M26 x 2 connection, in order to prevent the risk of confusing regulators intended for use with Nitrox with those of standard manufacture intended for compressed air.

Hotdive regulators are therefore EC certified only for use with air and mixtures containing less than 22% oxygen, and must not be used, in EEC countries, with hyper-oxygenated mixtures.

TESTS BEFORE USING YOUR EQUIPMENT

Before starting to use the hotdive regulator, we recommend some simple but very important checks to avoid any problems. For example: check that all hoses are properly connected to the first stage, if loose, tighten with a wrench before pressurizing the rig.

As a general rule, hoses should be inspected for signs of wear, or worse, any nicks or cuts. If any damage is found, we recommend that you do not perform the dive and that you contact an authorized hotdive center for processing.

Also, check the first and second stages show no signs of damage, such as any nicks or cuts in the second stage mouthpiece that is securely attached to the box of the locking strap. If these problems are found, it is recommended not to use it for diving, and contact an authorized hotdive center for processing.

The pressure of the cylinder must be checked with a special diving gauge or a computer with this function: open the cylinder valve and the gauge will display the correct working pressure of the cylinder.

⚠ WARNING: shield the gauge dial with a hand or point it away from yourself and others to avoid the possible risks from a malfunction in the device.

⚠ WARNING: All regulators must be tested on the surface before the equipment is lowered into the water, by repeatedly pressing the manual air flow button to make sure that air flows normally; then, holding the mouthpiece in your teeth, take a few deep breaths in and out to make sure that it works properly (except for uses in water colder than $<10^{\circ}\text{C}$). The same must be done on the water's surface before jumping in, wearing your mouthpiece and turning your head so that the regulator is completely under water: inhale and exhale deeply to check that it is working perfectly, both when supplying air and during the purge phase.

NOTE: If a sound check before the dive reveals any leaks at the connections, from the hoses, or a free flow of water from the second stage, we recommend that you do NOT perform the dive and that you contact an authorized Hotdive centre.

⚠ WARNING: check that the water-tight O-rings on the valves are in perfect condition. They must not have any nicks, scratches, or other signs of deterioration, and in any event they must be replaced at regular intervals even if they are completely intact, because they are subject to the high pressure of the air arriving from the tanks and atmospheric agents. Only original Hotdive spare parts may be used.

ASSEMBLING THE REGULATOR AND TANK

⚠ WARNING: Before assembling, check that the tank has been filled exclusively with compressed air at working pressure, using a suitable compressor, which supplies breathable air in compliance with the EN 12021 standard.

⚠ WARNING: only test certified tanks can be filled within the time interval shown on the certificate.

NOTE: Before opening the tank's valve, check that the underwater pressure gauge indicates zero pressure.

For yoke connected first stages, use following procedure: vent the tank slightly by opening that valve for a moment in order to remove any residual water that may still be in the end of valve. After unscrewing the yoke's lock knob, take the protective cap out of its seat and place the first stage on the air exit valve, checking that the second stage is positioned correctly. Now, screw the yoke's knob to lock the first stage on the valve.

NOTE: It is not necessary to tighten down the 1st stage lock knob too far to ensure a seal between the regulator and the valves.

⚠ WARNING: diving in cold water at temperatures lower than $10^{\circ}\text{C}/50^{\circ}\text{F}$ requires special technical training. Hotdive recommends this sort of diving only after having attended a special training course by certified trainers. The use of underwater equipment without a licence or adequate training may be dangerous for the diver's safety and can even be deadly. It is crucial that you do not wet the regulator before use and then expose it to the air (which can be a good deal below zero). Do not press the discharge button, particularly when the Venturi effect adjustment lever is on "dive". If possible, keep the regulator in a warm place before use.

NOTE: As a rule, we highly recommend opening the tank valve slowly, so that the regulator gets filled gradually. If the regulator gets pressurized too suddenly, it creates an adiabatic compression of the breathable gas inside the 1st stage that might cause the equipment to work imperfectly. As soon as you hear air flowing out of the second stage, stop pressing the manual supply button and open the valve fully.

It is good practice to turn the valve clockwise for one quarter turn in order to avoid damaging the poppet thread. For DIN connection first stages, the assembly procedure is not very different from that described above. You just have to screw the connection directly onto the valve; again in this case, you don't need to tighten the handwheel too tight to ensure the seal between the regulator and the valves. In the event that a second independent regulator is used, connect it to the additional valve outlet following the above instructions.

⚠ WARNING: Do not turn the first stage connected with the tank when the system is pressurized, and do not use the first stage connected to the valve as a handle to carry the equipment: it might damage the regulators, its O-rings and the valves.

⚠ WARNING: if the hoses are not positioned correctly, do not try to rearrange them well when the regulator is pressurized. Close the tank, depressurize and, only then, position the hoses correctly.

⚠ WARNING: Once assembled, the scuba equipment must be laid horizontally to prevent any accidental falls from damaging the components or injuring people.

CARING FOR YOUR EQUIPMENT

After use, close the tank valve by turning it all the way clockwise, without tightening too far. Press the second stage manual supply button in order to drain all water from hoses and connections. Disassemble the first stage by unscrewing the knob counter clockwise.

Protect the sintered filter with your finger while blowing off all water and impurities from the protecting cap. The cap should then be placed on the first stage air inlet port and locked with the knob, making sure that the cap O-ring is in place as well.

After every use, you should rinse the regulator in fresh water while it is still pressurized; this allows you to wash the second stage completely without introducing any contaminants into the critical sealing areas of the regulator. Rinse the first stage, and run water through the mouthpiece of the second stage and out of the exhaust tees to remove any foreign matter.

When rinsing the depressurized regulator, rinse the first stage letting water flow also through the second stage's mouthpiece and the exhaust tees to wash out any contaminants: be sure not to press the manual supply button to prevent water from flowing into the hoses and inside the first stage.

Let the regulator dry in a cool, ventilated place, arranging the hoses in such way as not to form acute angle folds. If a regulator will be used by multiple people (schools, clubs, etc.), we recommend that it be disinfected using the following registered disinfectants for external use, to be diluted in cool water (hot water can damage the product's active ingredient) according to the preparation procedures described below. Select a well-ventilated location and take care to use protective gloves.

Important: the regulators must NOT be disassembled, and must be immersed in the disinfecting solution with all the HP and LP caps fitted on the first stage, meaning with the 1st stage connection to the tank whether Yoke or DIN - sealed so that no solution can get into the 1st stage itself.

Although at their usage concentrations these products which are used in a wide range of applications are not irritants or corrosive to metal and rubber and leave little residue, which is imperceptible after drying and has no taste or odor, we nevertheless recommend thoroughly rinsing the regulators after the disinfection process with running water and then leaving them to dry in a cool, ventilated place, or using clean compressed air that satisfies the requirements of the standard before the regulators are used. We strongly recommend that when sanitizing/disinfecting the regulators as described that you adopt common personal hygiene measures, such as: washing your hands frequently with soap or sanitizing hydro-alcoholic solutions; avoiding touching your eyes, nose, and mouth; using certified PPE such as protective masks and gloves when sanitizing/disinfecting the regulators.

MAINTAINING YOUR EQUIPMENT

⚠ WARNING: Hotdive recommends that you have your regulator serviced at least once a year, regardless of how many dives you have taken. Servicing can also be performed more often if you use your regulator intensively.

In both cases, please remember that both the diver's safety and the regulator's performance go hand in hand, and depend largely on good maintenance. This must include a full inspection of the equipment, a complete overhaul, and repairs, if needed, at an authorized Hotdive center. The maintenance work must be documented by completing the Service Record forms regarding maintenance performed on the equipment which can be consulted in the pages that follow, and must be uniquely paired with the regulator by means of a label on the cover of this user manual. The label must show the same serial number and refer to the history of operations performed strictly on this equipment, with a detailed report that must refer to the "overhaul /maintenance/ operations card". This card can be consulted and downloaded for free from the "login" link on www.hotdive.cn, accessible only to Hotdive authorized maintenance centers, and including a complete library of specific technical information with exploded diagrams for replacement parts, maintenance manuals, calibration procedures, cleaning and greasing procedures, etc.

NOTE: In order to ensure the best results, when maintenance operation are performed, we recommend using all the spare parts provided by Hotdive in every procedure.

NOTE: Maintenance (or repair) operations for the equipment must exclusively use original Hotdive spare parts.

⚠ WARNING: Users must never perform maintenance themselves; all maintenance must be performed by an authorized Hotdive centre. If improper maintenance is performed on the equipment, performed by someone other than authorized Hotdive personnel, or used for purposes other than those specifically intended, responsibility for proper and safe operations fall to the owner/user.

WARNING: the regulators must be serviced exclusively at an authorized Hotdive centre, using only original spare parts. Any tasks carried out by untrained personnel may cause very high risks to the diver's health and put their life in danger. Hotdive declines any responsibility for any maintenance or calibration of regulator carried out by unauthorized and uncertified personnel.

NOTE: You can find your authorized Hotdive centre by asking your dealer, or Hotdive team itself by sending an e-mail to (team@hotdive.cn) .

LIMITED WARRANTY

Narwhal Technology (Dongguan) Co., Ltd /Hotdive guarantees that this product operates correctly. Your Hotdive regulator is guaranteed for one year from the date of initial purchase against:

- clear manufacturing and/or assembly defects in the product or its individual parts;
- material considered unsuitable that causes the regulator to malfunction;
- clear errors in the design, or instructions and warnings that are incorrect or inadequate. The warranty period begins on the date of the initial retail purchase as demonstrated by a receipt or invoice. The warranty does not cover:
- damage caused by improper use of the equipment, poor maintenance, negligence or modifications, conversions, adaptations, or tampering with the finished product;
- damage resulting from repairs performed by personnel not authorized by Hotdive.

The warranty is forfeited automatically should any of these conditions occur.

During the warranty period, Hotdive or Hotdive authorized service centre, according to their exclusive judgement, will remove any defect in terms of material, design and workmanship, free of charge, by means of repair or replacement of the product according to this limited warranty. Hotdive Corporation or its authorized maintenance center reserves the right to charge for service and/or repair if the product is deemed not to conform to the terms of this limited warranty.

The initial purchaser may not assign the warranty rights to any third party. A purchase receipt (dated) from an authorized Hotdive dealer should be presented when quality warranty is claimed.

The cost of any repairs not covered by this warranty shall be borne by the buyer.

This warranty does not cover any documents or warranties provided by dealers or agents that go beyond the terms of this warranty.

No dealer or agent is authorized to make changes to this warranty or to provide additional warranties.

If repair is requested within the warranty period, please send the product to a Hotdive dealer or authorized service center, freight collect. Write your name and address clearly and attach your purchase receipt or invoice.

For information on authorized Hotdive centers, consult your dealer or email Hotdive (team@hotdive.cn).

Hotdive is not responsible for any maintenance performed by persons not authorized by Hotdive.

The instructions and user guides in this manual have been prepared based on the latest information about the equipment available before going to press and Hotdive reserves the right to make changes accordingly at any time without notice.

Maintenance/recording of procedures (Service Record)

MODEL	SERIAL NUMBER	DATE	DEALER NAME	TECHNICIAN'S NAME	NOTES ON PROCEDURES	SIGNATURE



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