



Regulators



Photo: Linn Vennberg | Ocean Exposure

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WARNINGS AND IMPORTANT INFORMATION



WARNING INDICATES A POTENTIALY HAZARDOUS SITUATION THAT, IF NOT AVOIDED, COULD RESULT IN SERIOUS INJURY OR DEATH.



CAUTION INDICATES A POTENTIALY HAZARDOUS SITUATION THAT, NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY. IT MAY ALSO ALERT AGAINST UNSAFE PRACTICES.



WARNING

Before using the equipment, thoroughly read and understand all the instructions and warnings contained in this manual.



WARNING

The equipment is limited to the uses described in this manual. Any other applications of equipment use will require written approval by Halcyon Manufacturing.



WARNING

Halcyon regulators are not intended for use by persons who are untrained and may not know the hazards and risks of scuba diving.



CAUTION

The content of this manual is based upon the latest information available at the time of printing. Halcyon reserves the right to make changes at any time. Halcyon refuses all responsibility for damages caused by non-compliance with the instructions contained in this manual. These instructions do not extend the warranty or the responsibilities stated by the terms of sale and delivery by Halcyon Manufacturing.



CAUTION

Should the equipment be serviced or repaired without complying with procedures approved by Halcyon or by untrained personnel not certified by , or should it be used in ways and for purposes other than specifically designated, liability for the correct and safe function of the equipment transfers to the owner/user.



WARNING

Diving in cold water requires special equipment and techniques. We strongly recommend you obtain appropriate levels of training from a recognized training agency before diving in cold waters. If the equipment will be used in cold water (temperatures lower than 10°C (50°F)), it will be necessary to use a regulator suited for such temperatures.



WARNING

Halcyon regulators are not medical devices nor intended for medical use. They must not be used to supply treatment oxygen in any medical emergency.

CE CERTIFICATION AND SCUBA DEFINITIONS AND LIMITS

All HALCYON regulators described in this manual have obtained the European certification issued by RINA according to European rules regulating the conditions for the release on the market and the fundamental safety requirements for third category Personal Protective Equipment (PPE). The 300bar marking on the first stage indicates the maximum supply pressure of the PPE.

Certification tests have been conducted according to the EN250 harmonized standard to verify the compliance of the regulators to the fundamental requirements for health and safety set by European regulation 2016/425/EU.

The CE and EN250 marks on the product denote the conformity to said requirements.

The 0474 number next to the CE marking is the identification code for RINA via Corsica, 12, 16128 Genova (GE) Italy, the notified body controlling production compliance with regulations, as per Module C2 2016/425/EU. The manufacturer of Halcyon regulator is HALCYON DIVE SYSTEMS, 24587 NW 178TH PLACE, HIGH SPRINGS, FL 32643 USA.

THE DECLARATION OF CONFORMITIES ARE AVAILABLE AT HALCYON.NET

EN250: 2014 REGULATIONS AND WHAT THEY MEAN

The requirements and tests defined by the EN 250: 2014 aim to ensure a minimum safety level for the operation of underwater breathing equipment. In Europe, the EN 250: 2014 defines the minimum technical standards of acceptance for recreational diving regulators. All HALCYON regulators have successfully passed the certification test required by this standard.

DEFINITION OF SCUBA ACCORDING TO EN250: 2014

EN250: 2014 defines a SCUBA unit as a self-contained open-circuit underwater breathing apparatus. A SCUBA unit can be composed of component groups.

SCUBA minimum required component groups are elements a) to j) of the following list:

- a. cylinder(s) with valve(s);
- b. demand regulator(s);
- c. pressure indicator
- d. face piece: complete mouthpiece or half-mask for diving or complete mask;
- e. carrying system. The apparatus may also include the following sub-assemblies: f. auxiliary breathing system
- g. lifting harness
- h. depth/time measuring device
- i. additional safety device(s)
- j. voice communication system

LIMITATION PROVIDED BY EN250:2014

The use of the SCUBA unit is limited to underwater diving. The regulator is a PPE that protects the respiratory tracts subjected to the effect of pressure, supplying breathable air under the necessary conditions of use during the dive. The SCUBA unit can be comprised of separate components such as: cylinder(s), regulator(s), and submersible pressure gauge. The Halcyon regulators described in this manual can be used with SCUBA components units certified according to EU regulation 2016/425 and EN250: 2014. The air contained in the cylinder must comply with the requirements for breathable air defined by EN12021.

The maximum operating depth is 50 meters (164 ft.) however divers must conform to the limits set by local regulations in force at the diving location.



WARNING

If a SCUBA is configured for and used by more than one diver at the same time, then it shall not be used at depths greater than 30 meters and in water temperature less than 4°C if marked "EN250A", and less than 10°C if marked with "EN250A>10°C"



WARNING

Only SCUBA complying with EN250:2014 and marked "EN250A" or "EN250A>10°C" may be used as an escape device by more than one diver at the same time.

REGULATOR SYSTEMS

REGULATORS

A regulator system is required to reduce the pressure of the compressed air contained in the cylinder to an ambient pressure in order to supply breathable air when needed. It is also possible to connect pressure gauges (analog or digital), IP inflators to supply buoyancy compensators, dry suits, and other devices to this system. The regulator system is composed of a pressure reduction device and one or more breathing devices. In this manual, the pressure-reducing device and the breathing device will be indicated, respectively, by the terms "first stage" and "second stage."

DEFINITION OF FIRST STAGE

A pressure-reducing mechanism that reduces the pressure of the compressed air contained in the cylinder to an intermediate relative pressure of about 9.5bars (138psi). The first stage uses a balanced piston or diaphragm mechanism. All Halcyon first stages are delivered with DIN477/50 screw fittings (300-bar max pressure) for use with up to 40% Nitrox (allowed outside of the European Community).

DEFINITION OF SECOND STAGE

This second stage is supplied with the intermediate pressure coming out of the first stage through the low-pressure hose. The second stage then reduces the pressure to ambient pressure during the inhalation phase. The second stage may be balanced or unbalanced and equipped with an Air Control Vane (A.C.V.).

An example of a complete regulator with a DIN first stage:

1. First stage with DIN connection
2. Second stage
3. DIN inlet protective cap
4. DIN retaining wheel
5. Rotating swivel
6. High-pressure port
7. Purge button
8. Exhaust deflator
9. Inhalation resistance control
10. A.C.V. control
11. Low-pressure ports

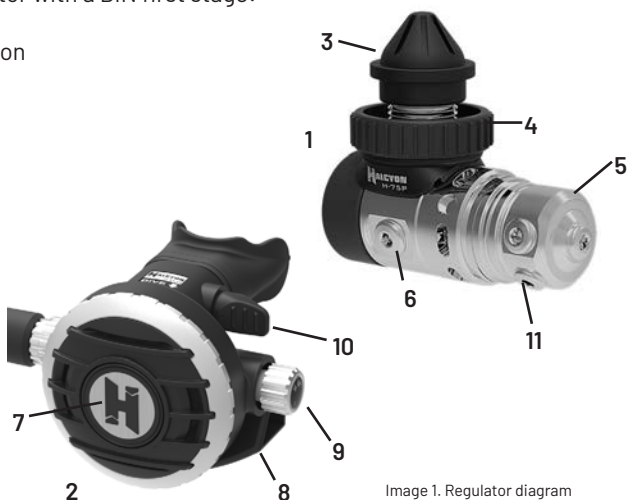


Image 1. Regulator diagram

All Halcyon regulators can be identified via a serial number. The number is printed on the housing of the second stage and on the metal body of the first stage. Halcyon offers a lifetime warranty to the original owner of all Halcyon regulators. This warranty covers material and manufacturing defects (with the exception of consumable materials such as O-rings, seats, filter, mouthpiece, and low-pressure hoses). In order to maintain this warranty, it is mandatory to perform annual service on the regulator by an Authorized Halcyon Dealer service facility and maintain proof of service records. For details on the warranty, please consult a Halcyon Authorized Dealer.

DIVING WITH HALCYON REGULATORS

SETTING UP YOUR REGULATORS

- Before assembling the SCUBA units, verify that all components comply with local or European standards.
- Prior to connecting the first stage to the cylinder, verify that the connection is free from dirt (sand, debris) and that the O-ring is undamaged.
- If using an adapter with your DIN connection, check to see it is free from dirt or debris before fitting it to the cylinder valve. Check that the contact surfaces are in the correct position and then tighten the yoke screw.
- DIN connection: Screw the first stage connector on the cylinder valve after checking that this is also free from dirt or debris. Before tightening the hand-wheel and while screwing it in, confirm that the threads on the DIN connection and on the valve correspond correctly and are not crossed (see Image 2). In order to obtain the maximum comfort, the low-pressure hose connecting the first stage to the second stage should be horizontal and directed toward the diver's right shoulder.
- Be sure the SCUBA system is fit properly (refer to the appropriate user instruction guide). After fitting the SCUBA system, be sure the cylinder is secure and can't work its way loose.
- When opening the valve cylinder the second stage purge button should be slightly depressed, so that the second stage valve is open. This purge procedure should not be used in colder temperatures (lower than 10°C (50°F)) where the gas flow can encourage regulator freezing.
- Vacuum leak test: With the cylinder valve closed, slowly inhale from the second stage. It should be possible to achieve and maintain a minimal negative pressure without air entering the system. This test must be repeated for all regulator second stages connected to the SCUBA unit in use.
- High-pressure leak test: Depress the purge slightly while slowly opening the cylinder valve; release the purge and continue opening the valve.
- With the system pressurized, check for any leaks and read the pressure registered on the pressure gauge.
- Close the cylinder valve and check the pressure gauge. The displayed pressure should not decrease over the first minute. Reopen the valve. Image 2. DIN connection to cylinder.
- Check the entire SCUBA unit by performing several complete breathing cycles (deep inhalation/exhalation) with the cylinder valve open and the second stage mouthpiece in the mouth.
- Check that all devices connected to the SCUBA unit are operating correctly. For example, check that the buoyancy compensator inflator (or the dry suit inlet



WARNING

While opening the cylinder valve, the pressure gauge face should be directed away from all parties to avoid injury in the event of a failure.



Image 2. DIN connection to cylinder.



WARNING

Never connect a low-pressure hose to a high pressure port. These connection threads are different sizes and are not compatible. Do not use adapters of any kind to connect low pressure devices to high pressure ports. Doing so could cause serious damage to both the user and equipment.

POST DIVE

Close the cylinder valve and drain the regulator system by pushing on the purge button of each second stage. After the system has been depressurized, disconnect the first stage regulator from the valve. All first stage inlets must be closed with the provided protective caps to avoid the entry of debris, dirt, or moisture (see Image 3).



Image 3. Protective cap on DIN inlet



WARNING

Diving in cold water requires special equipment and techniques. Before diving in cold water, we strongly recommend you obtain adequate training from a recognized training agency.

COLD WATER USE

EN250: 2014 norm defines “cold waters” as those having a temperature lower than 10°C (50 °F) and re-quires that regulators certified for use in such conditions must be tested and approved to work properly in temperatures of 4°C (39 °F). If the SCUBA equipment is used in water with a temperature lower than 10 °C (50 °F), it is important to keep in mind the following:

1. Use only regulators certified in these conditions. Halcyon regulators are certified for use in cold water in accordance with norm EN250: 2014.
2. Prior to the dive, keep the regulator in a warm environment before fitting your regulator on the tank.
3. If the regulator is exposed to colder conditions, much lower than 0°C (32°F), set the A.C.V. control on “pre-dive” to avoid the risk of spontaneous and uncontrolled free-flow.
4. With high air flows, the regulator first stage cools rapidly; therefore avoid high consumption rates during cold water dives. For example, avoid simultaneously using the buoyancy compensator and dry suit inflator and the alternate air source. It's also advised to avoid checking the second stage function via the purge button, unless absolutely necessary. Ensure that the cylinder is filled only with air compliant with norm EN12021.
5. In extremely cold water diving, Halcyon recommends the use of a cylinder equipped with two separate valves, connected to two complete regulators.



WARNING

Do not push down on the purge button in low temperatures, as this may cause a second stage freeze-up.



WARNING

The presence of moisture in the cylinder will cause corrosion of the cylinder and it may cause freezing and subsequent malfunction of the regulator during dives carried out in cold water temperatures (lower than 10°C (50°F)). Cylinders must only be filled with atmospheric compressed air, according to the EN12021 norm. Other gases must comply with the appropriate governing regulations. For example, the use of nitrox in Europe is regulated by EN13949 and EN144-3. Cylinders must be transported according to local rules provided for the transport of dangerous goods. Cylinder use is subjected to the laws regulating the use of gases and compressed air.

Image 4. Diaphragm first stage regulator

1. H-50D DIN first stage
2. Dry balance chamber
3. Protective cap
4. DIN retaining wheel
5. DIN inlet, with protective cap



DIN uses a threaded connection complying with ISO 12209-2 norm (300-bar).

YOKE Adapter: Halcyon regulators can be used with a yoke adapter.* This is composed of a yoke and screw and can be used up to 230-bar, according to the ISO norm.

*Halcyon does not sell a yoke adapter. The regulators will fit any standard yoke adapter.

SPECIFICATIONS

The main technical features of Halcyon regulators are detailed below. To verify which of these features apply to any specific first and second stage combination, refer to the tables at the end of this chapter.

HALCYON FIRST STAGE FEATURES

BALANCED PISTON

First stages with air-balanced pistons offer unaffected performance with changing tank pressure and deliver more air to the second stage than any other first stage design. A balanced system has ultra-fast breathing response, instant air-on-demand delivery, and extra high air flow, due to the use of lighter and more sensitive components.

FREEZE RESISTANT PISTON DESIGN

Halcyon piston regulators are designed with a special heat-retaining cold water piston, featuring a Teflon coated spring to aid in antifreeze protection. These features aid in heat retention from the cooling affects of a gas pressure drop.

ROTATING SWIVEL ON PISTON CONFIGURATION

Allows optimal hose positioning to reduce jaw fatigue. This feature allows all inter-stage pressure hoses attached with the swivel to rotate in the best possible position for the diver.

BALANCED DIAPHRAGM

Balanced diaphragm first stages isolate the inner mechanism from the surrounding water. Balanced diaphragm first stages allow air to flow through a seat and pin assembly, which is controlled by a loaded diaphragm. This first stage system also resists changes in performance with changing tank pressures because the seat receives equal interstage pressure from both sides. Balanced diaphragm systems deliver a slightly lower flow than piston regulators, which are only noticeable at deeper depths and/or with dense breathing gases such as air. This is due to the smaller diameter air passageways.

DRY BALANCE CHAMBER – COLD WATER DIVING

The dry chamber prevents water from entering the balancing chamber and ensures the best performance in cold water. In extremely cold water conditions, the formation of ice crystals around the main spring is thus eliminated.

HIGH-PRESSURE PORTS

Halcyon regulators feature two high-pressure ports, allowing a submersible pressure gauge, computer hose, or transmitter to be positioned on the right or left side of the diver according to preference and/ or correct transmitter orientation.

INTERMEDIATE-PRESSURE PORTS

The availability of at least four intermediate pressure ports enables the connection of equipment such as an octopus second stage, buoyancy compensator, dry suit hose, or other accessories.

HF PORTS

High Flow ports have a 15% higher flow compared to the standard ports, and thus are especially suited to connect the second stages. Halcyon's H-50D has two HF ports, and the H-75P has five HF ports.

DIN VS YOKE CONNECTIONS

Halcyon first stages come standard with DIN tank valve connections, that can be converted for use on a yoke tank valve by using a yoke converter.

HALCYON SECOND STAGE FEATURES

BALANCED SYSTEM

By using a balanced first stage design, Halcyon is able to use a much lighter spring, decreasing the inhalation resistance and providing a smoother breathing second stage.

DIVER ADJUSTABLE INHALATION RESISTANCE CONTROL

Halcyon adjustable second stages have an external control knob acting directly on the spring tension (see Img. 1, point 9 on p. 5). This adjustment allows the diver to adjust the inhalation resistance in order to adapt it to the needs of the dive conditions. Adjusting the control knob (clockwise rotation) causes an increase in inhalation resistance. Adjusting with a counterclockwise rotation reduces the spring tension for lower inhalation effort. Divers may adjust this breathing tension to counteract heavy exertion or conversely the tendency for free flow in certain positions.



WARNING

A higher inhalation resistance does not necessarily imply a lower air consumption, in fact it may even have the opposite effect, due to the higher effort required to trigger the air flow increasing your work of breathing.

A.C.V. (AIR CONTROL VANE)

The Air Control Vane (A.C.V.) directs high-speed air flow over a special vane that creates an area of low pressure inside the second stage housing. This depression pulls the diaphragm inside the housing, maintaining pressure on the valve lever and keeping the valve open without requiring additional effort on the part of the diver. On some Halcyon second stages, the A.C.V. can be adjusted during the dive by changing the position of the flow vane via the knob positioned on the outside of the second stage. On Halcyon second stages not equipped with an external knob, the A.C.V. position is preset to provide high performance while resisting free-flow. This vane can be adjusted by any Halcyon Authorized service technician.



Image 5. Second stage Halo



Image 6. Second stage Aura

COMPARISON OF REGULATOR FEATURES

The following tables summarize the specific features of Halcyon first and second stages.

First Stage	H-75P	H-50D
Technology		
Piston	*	
Air-balanced-flow-through Classic downstream		
Balanced diaphragm		*
Materials		
Chrome-plated brass body	*	*
Cold water		
Freeze resistant piston	*	
Dry chamber		*
Nitrox compatibility		
Nitrox compatible to 40% from the factory	*	*
Ports		
Intermediate-pressure Ports (IP)	5	4
High Flow Ports (HFP)	5	2
High-pressure (HP) Ports	2	2
Swivelling turret with IP Ports	*	
Configuration		
	*	*
Externally adjustable intermediate pressure		
	*	
Weight DIN 300 (g/oz)		
	592 / 20.9	625 / 22
Air Flow at 200-bar (l/min / SCFM)		
	>8500 / 301	>6500 / 230
Intermediate pressure (bar/psi)		
	9-9.8 / 130-142	9-9.8 / 130-142

Second Stage	Halo	Aura
Technology		
Air-balanced	*	
Classic downstream valve		*
Materials		
Precision-molded carbon fiber & technopolymer housing	*	
Nitrox compatible to 40% from the factory		
	*	*
Breathing comfort		
Diver's adjustable inhalation effort	*	
Diver's adjustable A.C.V. (Air Control Vane)	*	*
High comfort orthodontic mouth piece		
	*	*
Left and right attachment for extra convenience		
		*
Weight (g/oz)		
	158 / 5.6	168 / 5.9
Air Flow at 200-bar (l/min / SCFM)		
	1850 / 66	1400 / 50
Maximum low pressure (bar/psi)		
	14 / 203	14 / 203

REGULATOR CARE AND MAINTENANCE

Regulators are life-support devices and should be maintained properly. To keep your regulators in top condition, it is important to have a routine of regular care and maintenance. After every dive (salt or fresh water), rinse the regulator with fresh water. This is also important after diving in chlorinated water (such as a pool). It is important to keep water from entering the system while rinsing them. To avoid getting water inside the regulator during post-dive rinsing, consider the following:

1. Ensure that the high-pressure inlet of the first stage regulator is closed with the specially designed protective cap.
2. Verify the anti-set (where applicable) is not engaged.
3. Should water accidentally enter the low-pressure hose, connect the regulator to the cylinder, open the valve, and press the purge button on the second stage until all water has been expelled.
4. Allow your regulator to dry completely, away from heat and direct sunlight, in a well-ventilated, dry place.

REGULATOR STORAGE GUIDELINES

- Prior to storage, engage the anti-set device by slightly depressing and turning the purge button. Only on the
- Halo second stage (see Image 7).
- On second stage regulators equipped with an inhalation assistance knob, unscrew the adjustment knob fully.
- Confirm that the protective cap, on the first stage's high pressure inlet, is in the correct position.
- Soak the second stage mouthpiece in a disinfecting solution then rinse thoroughly and completely remove the disinfectant before storage. Choose a mild disinfectant to avoid damaging the mouthpiece.
- Be sure your regulators are completely dry before putting them away. It is best to store regulators in a dry place, away from heat and direct sunlight.



Image 7. Anti-set device



WARNING

Repairs and maintenance must be carried out by an Authorized Halcyon Dealer service facility, with the exclusive use of original Halcyon spare parts. Equipment must be serviced by qualified personnel at the prescribed intervals.

MAINTENANCE

Maintenance procedures beyond the simple operations described in the preceding paragraph should not be carried out by the user; these should only be conducted by a Halcyon Authorized service technician. A Halcyon authorized technician must verify the correct operation of the regulator every year or every 100 dives, whichever comes first. Conducting an annual service is also mandatory in order to maintain the limited lifetime warranty.

Servicing is available through Halcyon Authorized dealers identified by the Authorized Halcyon Dealer sign or by visiting www.halcyon.net.

NITROX

The term nitrox (oxygen-enriched air) defines breathable mixes composed of oxygen and nitrogen and containing oxygen in a percentage higher than 21% (atmospheric air). Higher oxygen concentrations limit the use of these mixes with standard scuba equipment and require the use of materials and procedures that differ from those required by the use of atmospheric air.

All Halcyon regulators are equipped with Nitrox components designed for oxygen concentrations of up to 40%. Kits including components suitable for oxygen levels of up to 100% are available for purchase. All Halcyon regulators are distributed with DIN connections. Please note that our regulator systems are not CE certified compliant with EN13949 and EN144-3, which is required by the EU for Nitrox use.

If a Halcyon Halcyon regulator is used with Nitrox make sure the regulator does not come in contact with hydrocarbons. These can ignite in the presence of a high concentration of oxygen. In case of such a contamination, before using the regulator again with Nitrox, it will be necessary to disassemble it and perform an oxygen-specific cleaning in compliance with special procedures carried out by a Halcyon certified technician trained in oxygen cleaning and procedures. Components requiring lubrication (O-rings, etc.) must be treated only with suitable products. In any case, never use silicone grease on components used in the high-pressure parts of the regulator. Never use solvents as they might damage rubber and plastic components. Slowly open the cylinder valve in order to minimize the risk of ignition of the higher oxygen content mixes. For further guidance on compliance with relevant regulations regarding Nitrox and oxygen usage, please consult your local country representative.


WARNING

 If Halcyon regulators have been used with standard compressed air, it will be necessary to perform a new maintenance and cleaning procedure specifically designed for the use of Nitrox mixes and carried out by a Halcyon authorized technician, before using them again with Nitrox.


WARNING

 Maximum operating depth (MOD) and exposure times to Nitrox (oxygen-enriched air) mixes are dependent upon the oxygen concentration of the mix in use.

WARNING

 To prevent severe and potentially lethal injuries, DO NOT dive using Nitrox (oxygen-enriched air) mixes unless you have first obtained adequate training and certification in their use by a recognized certification agency.

WARNING

 Do not use silicone grease on silicone components, as this may cause some parts to deform. In addition, do not use silicone grease on components in the high-pressure area of the first stage as this would compromise compatibility with Nitrox mixes.

WARNING

 Second stage regulators, pressure gauges, consoles, and other accessories used in combination with Nitrox first stage regulators must also be compatible with the use of Nitrox mixes.

WARRANTY

Halcyon Manufacturing regulators include a limited lifetime warranty to the original owner. This limited lifetime warranty covers material and manufacturing defects excluding consumable parts such as O-rings, seats, filter, mouthpiece, and low-pressure hose, etc. Abuse, neglect, improper use or improper maintenance, unauthorized repairs, modifications, accidents, fire or other casualty are also not covered under this warranty. This warranty does not extend to equipment used for commercial including rental, governmental or military purposes.

All warranty requests must be accompanied by proof of original purchase from an Authorized Halcyon Dealer. Be sure to save your sales receipt, and present it whenever returning your regulator for warranty service.

Should your Halcyon regulator prove to be defective for any reason (other than those listed above) it will be repaired or replaced (at Halcyon's discretion) free of charge excluding shipping and handling charges.

Some states in the U.S. and certain foreign countries do not allow limitations on the duration of implied warranties, so this may not apply to you. This warranty gives you specific legal rights. You may have rights which vary from state to state and country to country.



WARNING

It is dangerous for untrained and inexperienced persons to use the equipment covered by this warranty. Therefore, use of these products by an untrained person renders any and all warranties null and void. Use of scuba equipment by anyone who is not a certified diver, or receiving training through a recognized certification agency, shall render void all warranties, expressed or implied.



WARNING

Proposition 65 Notice for Residents of the State of California - Visit at <https://halcyon.net/>



The authorized representative for placing HALCYON regulators in the European market:

HALCYON EUROPE
Wodnika 50 Street
Gdańsk, 80-299 Poland