DRASS®
UNDERWATERTECHNOLOGY

D-ONE®
DIVINGHELMET

FPXX-XX REVXX
CODICE
FP-4-07-05-06-002-980A-2

D-ONE®

The **D-ONE** represents the highest echelon of product which DRASS proudly offers on the market.
Confident that the proposed innovations will maximize Diver safety and comfort with the implementation of ergonomic, user-friendly features, Drass believes the D-ONE can greatly serve the interests of the Operators in this technological and demanding sector.

ERGONOMICS • EFFICIENCY • DESIGN

VISION

The helmet design places the face closer to the viewport for a far wider field of vision than is found on contemporary helmets across the market. This intelligent design offers increased peripheral vision for greater personal safety and a general sense of comfort in every situation.

REAR ANGLE

The helmet's 30° rear-angled design enables a comfortable donning and removal of the helmet. Helmet donning is incredibly quick and easy, allowing Divers to open and close the helmet autonomously in a safe and efficient manner.

When facing upwards the rear-angled design offers a more natural and comfortable position for head tilting, providing less stress and fatigue even during prolonged dives.

SIMPLE APPROACH FOR EVERYONE

SIDE BLOCK ASSEMBLY

Installation and removal of the side-block for maintenance is done quickly and easily thanks to its design which properly seals with the helmet by means of O-rings, rendering silicone sealant a thing of the past. The helmet is immediately ready for use with no time for sealant curing (typically 24hrs).

NECK-DAM INSTALLATION

Neck-dam replacement is performed by simply removing the collar over the stepped ring and placing the new neck-dam into position while engaging the front and rear alignment notches.

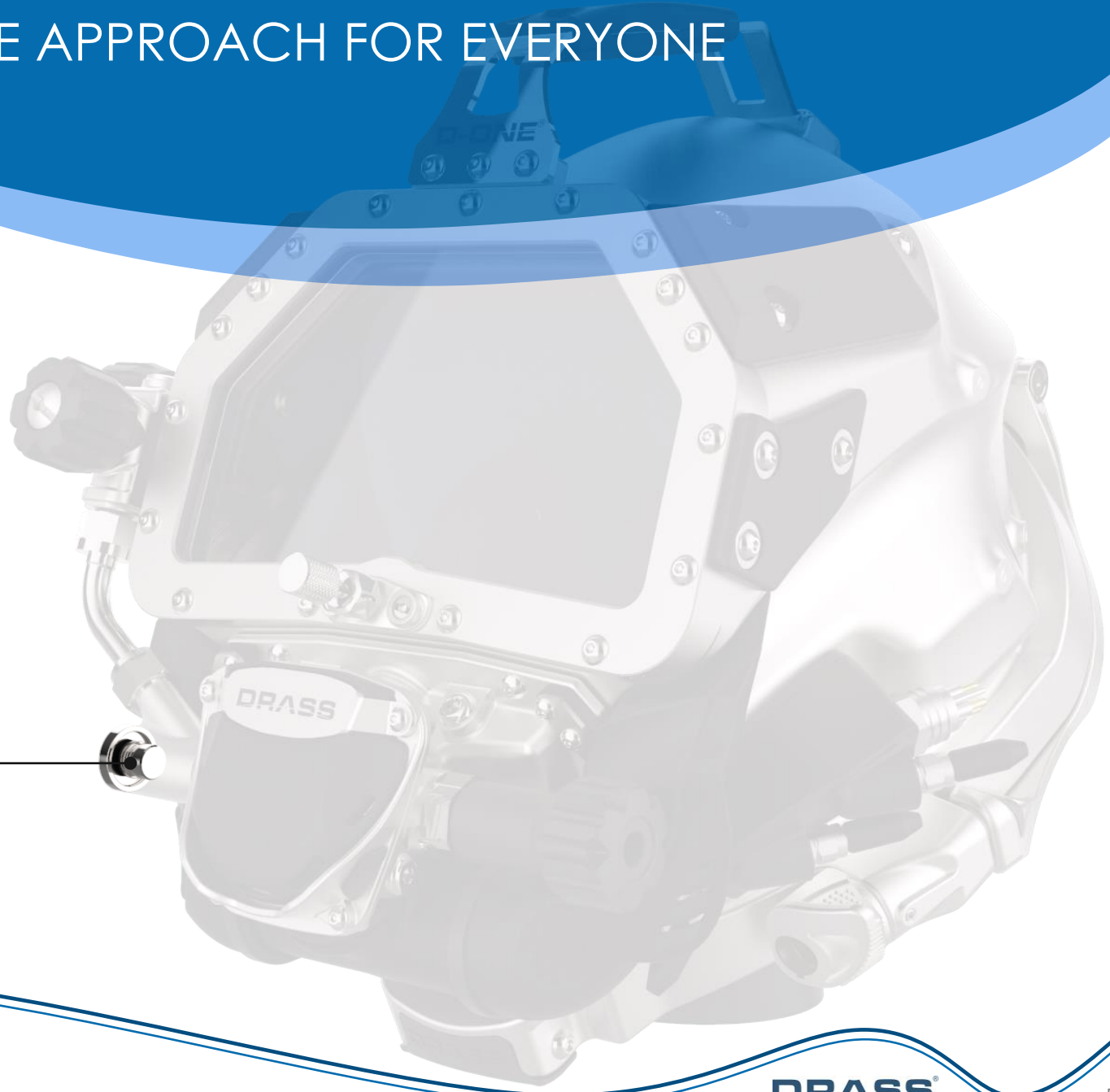
The O-ring shaped rim of the neck-dam mates perfectly with the machined groove in the stepped ring. Once in position, it is simply a matter of screwing in all screws to have the helmet ready for the next dive. No more struggling with neoprene positioning or drilling.

SIMPLE APPROACH FOR EVERYONE

BALANCED DEMAND REGULATOR SETTING

The setting of the Balanced Demand Regulator is simple when using the proper tool.

All regulator parts remain in position, the tool is installed by removing a dedicated plug and the regulator is set to the correct pressure value quickly and easily.



INTEGRATED COMPONENTS SYSTEM

VIDEOCAMERA AND LIGHT

Two polyurethane lateral plates act as bumpers, but once removed, a video camera and light can be installed.

The owner is, however, free to install his own or an aftermarket video camera and light, with the design of the supporting brackets allowing flexible assembly. If the dedicated DRASS video camera and light are chosen, the built-in concept design takes advantage of the DMSM™ system.

DRASS Diving Monitoring System Module™ consists of a pod installed on the port side of the helmet, similar to the comms pod. The system foresees the routing of the video camera and light cables inside the helmet, thereby preventing the usual tangle and flutter of cables around the helmet, preventing damage to the connectors and thus ensuring a long-lasting life cycle to the installed systems.

INTEGRATED COMPONENTS SYSTEM

DIVER MONITORING SYSTEM MODULE

Another interesting feature of the DMSM™, is a cutting-edge, smart technology for enhanced diver safety. Consisting of sensors that remotely monitor the diver's vital signs and operational parameters, the following will be tracked in real-time:

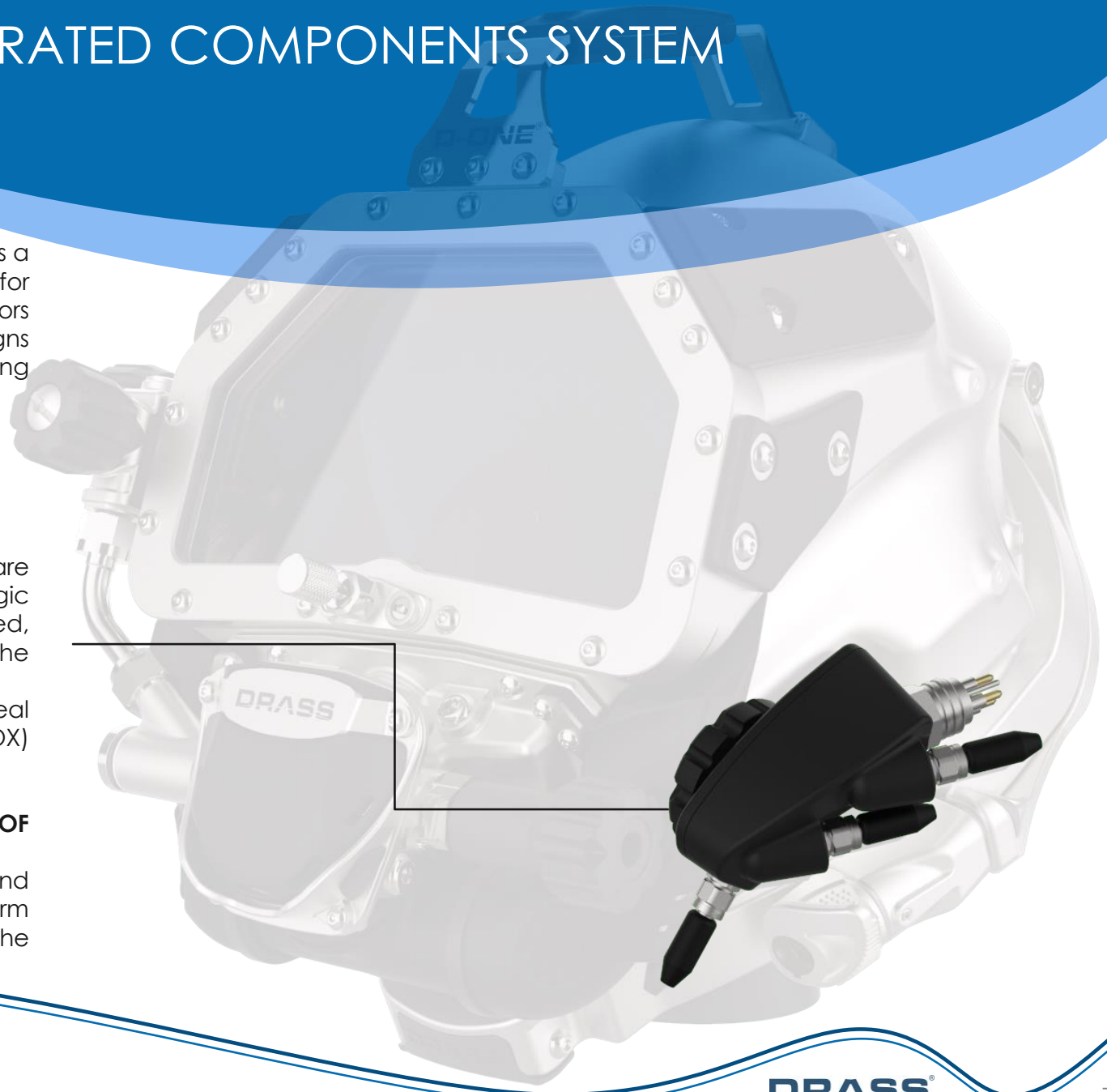
- Breathing Pattern (Respiratory Rate)
- Orientation and Inclination
- Hot Water Temperature
- Depth
- Bail-Out Pressure

All of the above diver parameters are gathered by sensors placed at strategic positions and the relevant signals are routed, via the diver umbilical, to the surface at the Diving Supervisor's diving control panel.

An interface for an external diver real time monitoring system (ECG, RVM, pulse OX) is available.

RECOGNITION OF UNCONSCIOUSNESS OF DIVER

The combination of breathing pattern and diver orientation activates an alarm indicating possible unconscious diver to the surface.

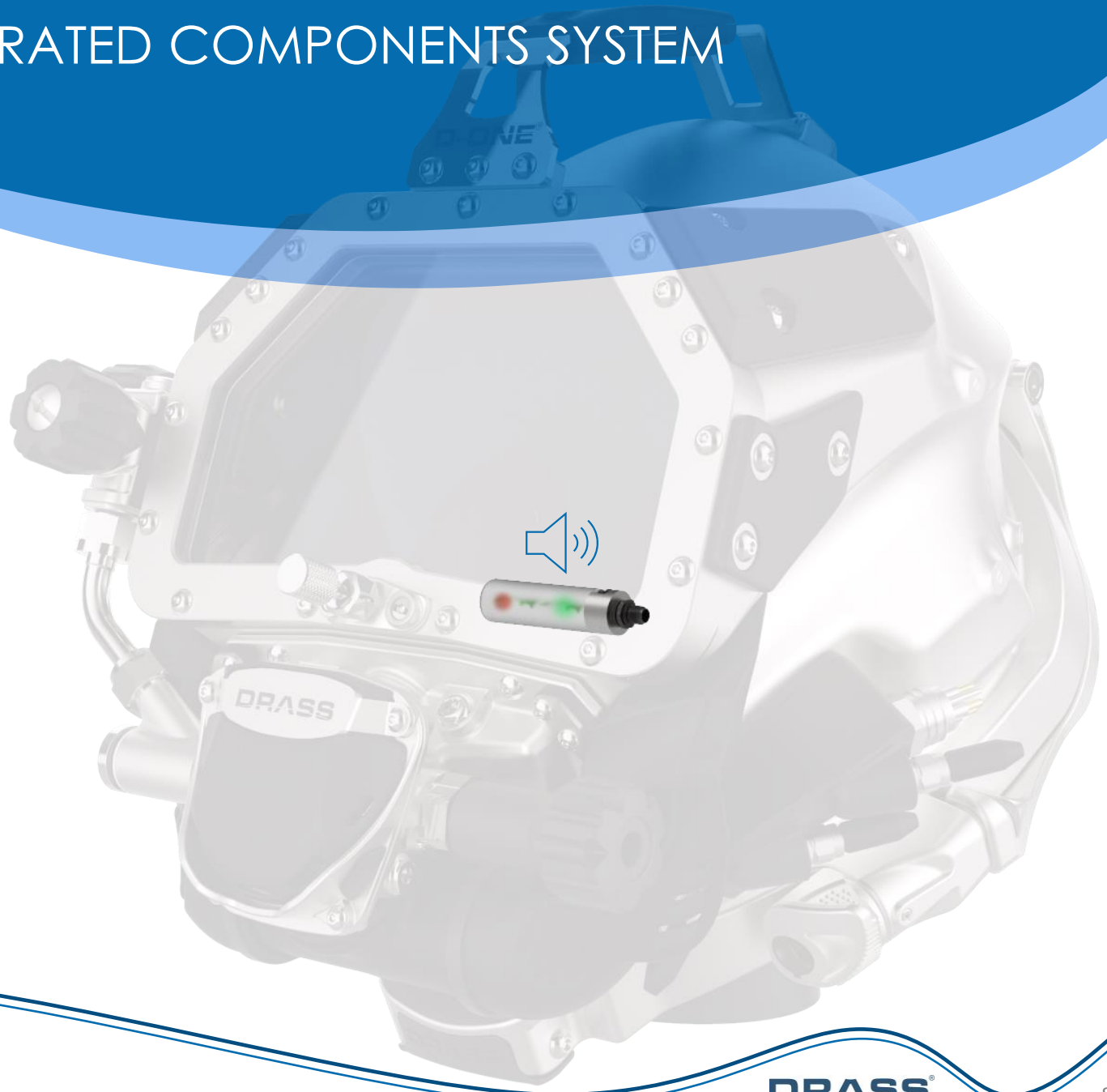


INTEGRATED COMPONENTS SYSTEM

DIVER OLED DISPLAY.
During dives where divers are working with their hands, the most important alarm information is conveyed to the diver in a simple manner:

- Hot Water Temperature
- Depth
- Bail-Out Pressure

This is incredibly helpful, for example when divers are working with both hands, surveying work, etc.
Using OLED Display, the values are displayed very quickly.



CUSTOMISE YOUR D-ONE

DEFOGGER

The Defogging system is made up of a second lens that, by means of a dedicated frame, is installed on the outer face of the viewport and is connected to the hot water supply. The hot water flowing between the 2 lenses prevents the buildup of fog inside the helmet whilst diving in cold water, thereby providing increased diver.

WATER SHROUD

The Helmet CE certification considers a water temperature ranging from 4°C to 34°C, however, the helmet may be used at lower temperatures with the installation of the water shroud. In case of sand blasting or diving in polluted/contaminated waters, the installation of the water shroud can isolate the helmet from the outside. This can prevent the ingress of sand or other materials as well as preventing contact with the polluted/contaminated waters, enabling a safer approach to these types of activities.

CUSTOMISE YOUR D-ONE

WELDING SHIELD

For welding and/or oxy-arc cutting activities, D-ONE can be equipped with a dedicated shield for added eye protection.

The screws of the helmet's viewport are also used for the installation of the optional welding shield where standard welding lenses may be installed.

DRASS UNDERWATERTECHNOLOGY

OUR DNA

INTERLOCKING CHIN SWING-ARM RETAINER

This is a safety system that does not allow the helmet to be closed unless both swing-arms are properly positioned.

Working in conjunction with the neck pad, it prevents the Helmet from accidentally slipping off the diver's head.

DOUBLE-ACTION PULL-PIN & SAFETY RETAINER

The helmet, once donned, is held in position by means of the locking collar. Opening and closing of the locking collar is performed by means of a latching system made with a double-action operated pull-pin and safety retainer.

This prevents the helmet from being dislodged and floating upwards from the air inside leading to flooding and/or drowning.

TAILORED FOR DIVERS

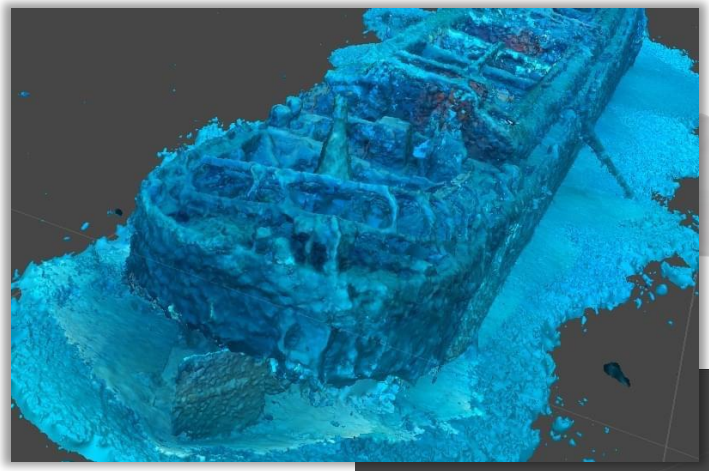
“BAFFO” EXHAUST SYSTEM CONFIGURATION

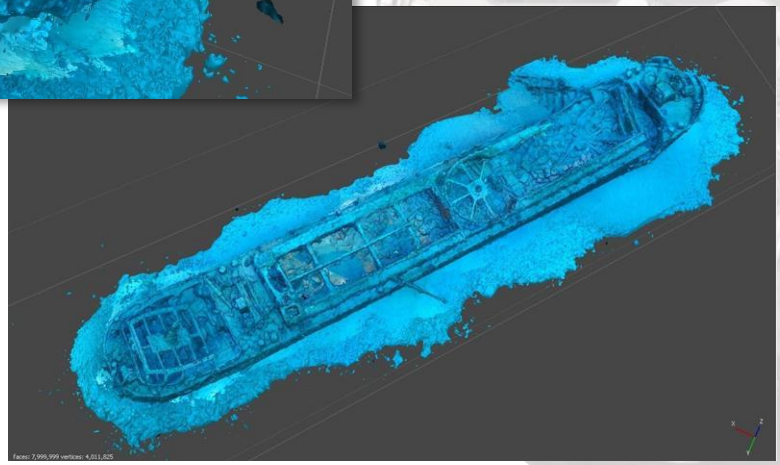
The optimized exhaust system dubbed “Baffo” has been conceived and designed to allow the final user to exhale more comfortably. The synergy between the Balanced Demand Regulator exhaust valve and the “Baffo” design, drastically lowers the exhalation effort for maximum diver comfort.

POLYURETHANE GASKETS

The majority of the gaskets utilized for helmet seals are made of polyurethane. This material has been proven to be resistant to the saline environment in which the helmet is generally used. Gaskets sealing the Balanced Demand Regulator Pod and the port view lens are made of this durable material.

TECHNOLOGICAL INNOVATION





PHOTOGRAMMETRY
is the science and technology of obtaining reliable information about physical objects and the environment through the process of recording, measuring and interpreting photographic images.

D-ONE Camera system is designed to enable 3D reconstruction of objects in the diver's field of view or as a result of a planned survey.

MODULARITY

REBREATHER & RECLAIM POD

D-ONE has been designed around the concept of modularity: One helmet shell to suit varying dive environments by means of interchangeable pods:

- Standard Pod for Air Diving
- Reclaim Pod for Air Diving in polluted/contaminated waters
- Rebreather & Reclaim Pod

GAS RECLAIM VALVE – GRV - 01

The Gas Reclaim Back Pressure Regulator **(GRV-01)** is a valve used for the recovery of Helium/Oxygen mixture exhaled by a diver during dives in deep water using saturation.

The valve is developed using the most modern manufacturing techniques and materials.

BASIC TECHNICAL SPECIFICATIONS			
SERIES	MATERIAL		
GRV-01	STAINLESS STEEL, TITANIUM, SILICON, VITON		
PERFORMANCES			
MAXIMUM DEPTH	COMPLIANCE		
400 MSW	NORSOK U-100 – DNV OS-E-402		
SLOT CONFIGURATIONS			
DEPTH	CODE	NR. OF SLOT	COLOUR
0-100 MSW	G	8	GREEN
80-220 MSW	W	12	WHITE
200-320 MSW	R	16	RED
300-400 MSW (*)	B	18	BLACK
(*) There is the optional possibility to extend the maximum depth from 300 to 400 upon request			

GAS RECLAIM VALVE – GRV - 01

Lightness.
The proper engineering and machinery of the SS body reduces the weight by 0.5 Kg in comparison with other commercial valves.

The Flow-disc is made of Titanium; it is very light and can be unscrewed to reach the inner parts of the valve.

Ergonomics
Simple and comfortable ball-valve installation position. The reclaim isolation ball-valve is located to mirror the Diving Helmet Emergency valve, at the same height, being very convenient and easy to reach in case of need.

Easy maintenance:
No special tools are required for installation. GRV-01 supplied parts can be easily installed using ordinary maintenance tools.

No more than 15 minutes are required to open and close the valve for maintenance, cleaning or Flow-Disc replacement.

Dirt or obstructions can be easily removed. This is impossible with other valves available on the market.

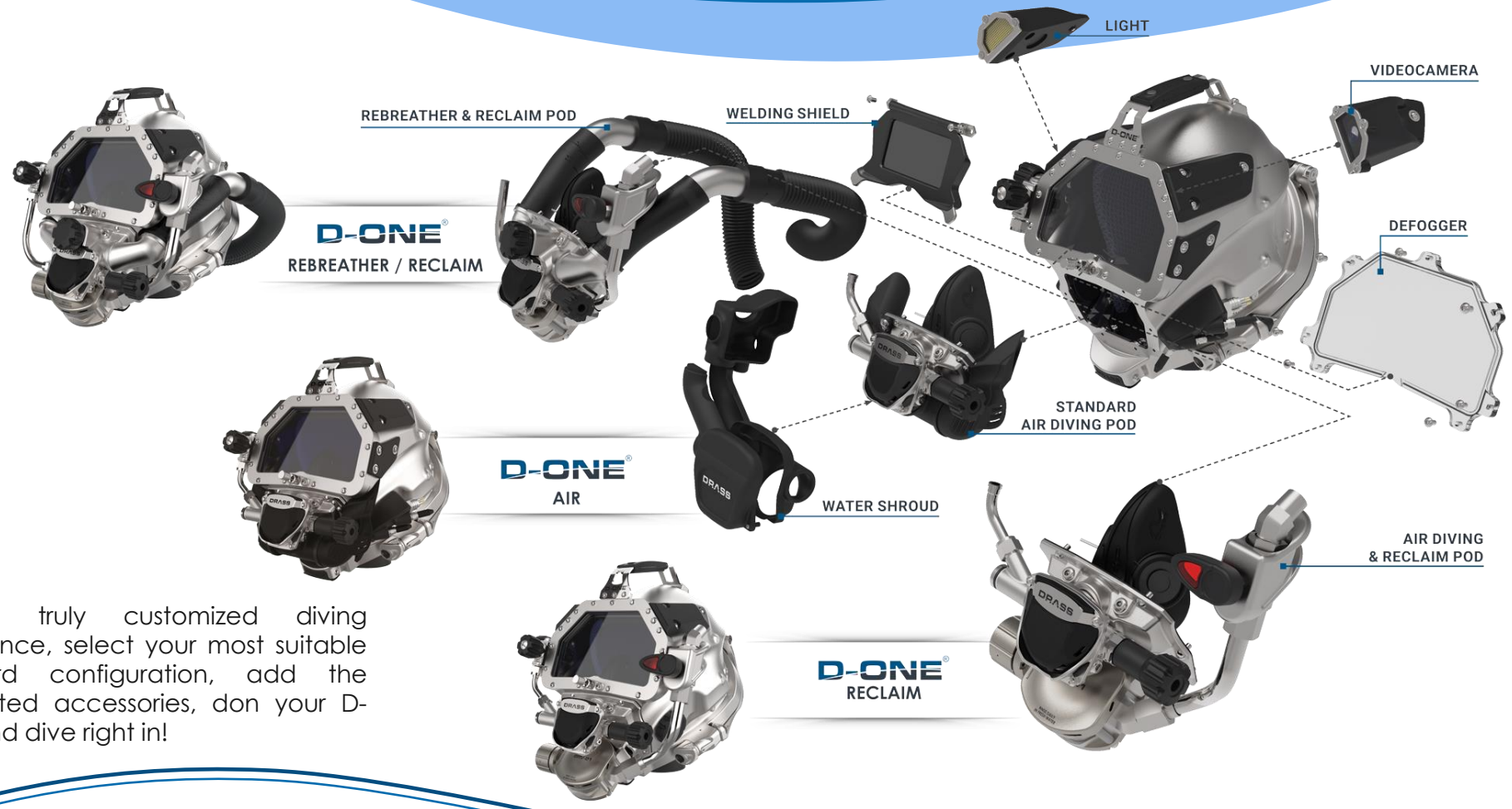
GAS RECLAIM VALVE – GRV - 01

Optimized Breathing Effort:
The perfect synergy of the two critical elements (the volume of the valve and the shape of the Flow-Disc) considerably reduce the Breathing Effort and allow a maximized reclaim of the exhausted gas at all depths.

Efficiency.
Different Flow-Discs are available on request to match the working depth for maximum recovery of gas.
The sleets for the gas-flow have been perfectly engineered to grant the maximum efficiency of the system.

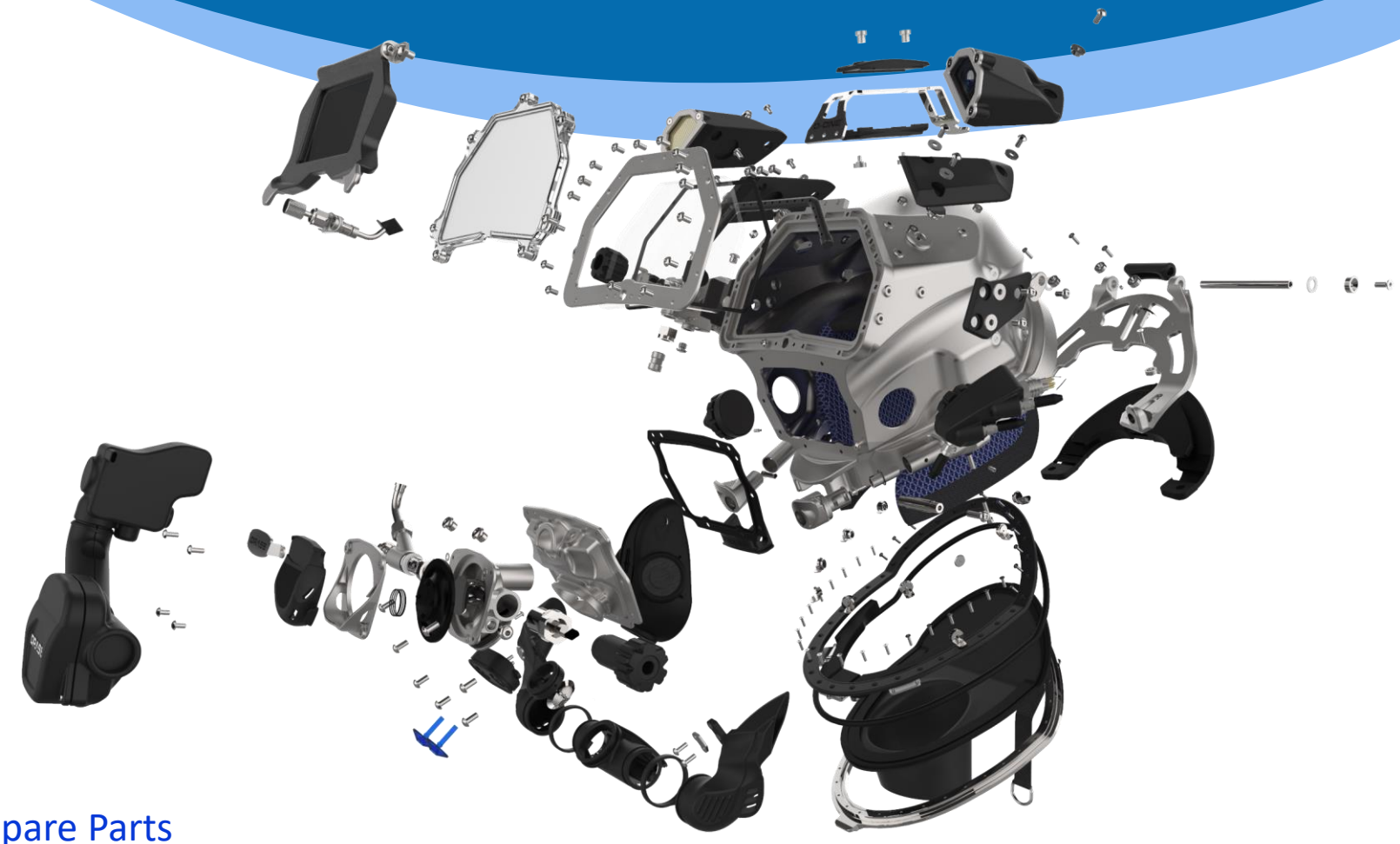
Interchangeability of parts.
The inner shape of the valve is perfectly machined in order for the valve to be easily replicated.
The volume has been perfectly calculated to match the new developed Flow-Disc.

YOUR D-ONE HELMET, UNIQUE TO YOU



For a truly customized diving experience, select your most suitable standard configuration, add the dedicated accessories, don your D-ONE and dive right in!

EVERYTHING YOU NEED TO KEEP YOUR D-ONE MISSION-READY



Drass D-ONE Spare Parts

TESTING FACILITIES

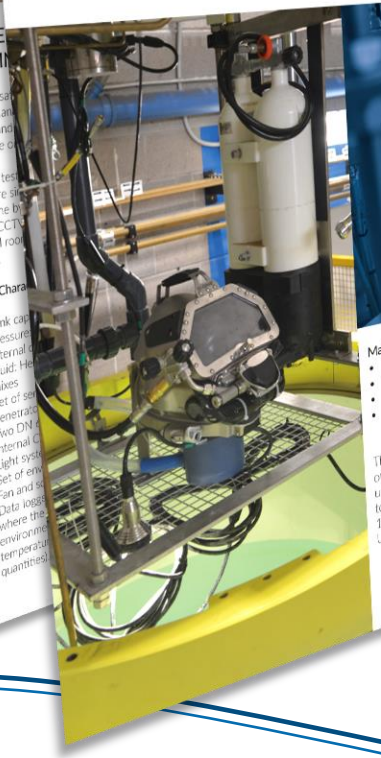
TEST POOL

A large rectangular atmospheric tank assisted by a 23-ton overhead crane is available to carry out specific tests in water, trimming of crafts, familiarisation and training with underwater equipment and tools.

- Size: L12.5 m x W2.8 m, H 2.5 m
- Tank capacity: 85 m^3
- Pressure: atmospheric
- Fluid: Water

BREATHING EQUIPMENT TEST MACHINE

Born to test Drass D-One Helmet, this unique facility rated to an impressive 520 msw has been fully integrated and built by Drass with the aim of testing every type of breathing equipment, from a simple oral-nasal mask to a sophisticated diving rebreather and other large size tools. The associated wet and dry test tank is reclining and can simulate the various conditions to which the equipment is subjected, including low temperatures and carbon dioxide accumulation.



OXYGEN SHOCK TEST MACHINE

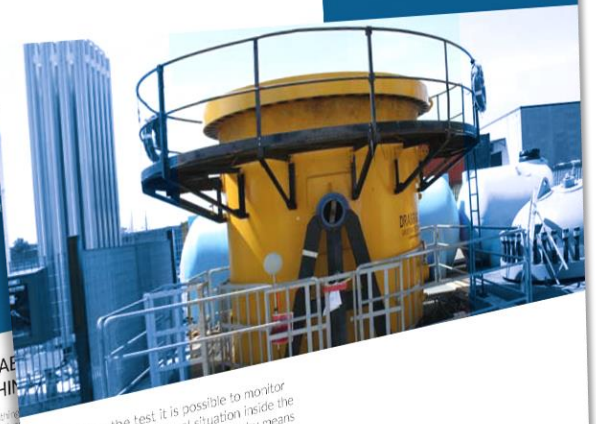
This service, carried out at Drass facilities, provides testing of components for oxygen use carried out by highly skilled personnel in full safety. Adopted test rules are:

- EN 13949:2003 Respiratory equipment. Open-circuit self-contained diving apparatus for use with compressed Nitrox and Oxygen;
- EN ISO 2503:2009 Gas welding equipment. Pressure regulators with flow metering devices for gas cylinders used in welding, cutting and allied processes up to 300 bar;
- EN ISO 10524-2:2018 Pressure regulators for use with medical gases.

EXTRA-LARGE DEPTH SIMULATOR

This extra-large depth simulator and test facility is fitted with service flanges, electrical and mechanical penetrations to check and manage the parameters of the equipment under testing, as per Customer requirements. It can be used to test devices against external pressure and where awareness of an object's performance under high pressure underwater is required in advance. The large size allows introducing large objects such as Drass diving bells.

- External body made up of two parts, one fixed and one removable;
- Set of service flanges with electric and gas penetrators;
- Water systems for tank filling and pressurization;
- Multifunctional sensors, cameras and lights that can be connected to monitoring devices according to customer requirements.



During the test it is possible to monitor and record the actual situation inside the pressure simulator in real-time, by means of multifunctional sensors connected to a dedicated control room, located next to the Water pressure test vessel.

Main Characteristics:

- Tank capacity: 53 m^3
- Pressure: 0–72 bar
- Internal diameter: 3 m
- Max internal height: ~8 m
- Fluid: Water

BREATHING EQUIPMENT TEST MACHINE

Born to test Drass D-One Helmet, this unique facility rated to an impressive 520 msw has been fully integrated and built by Drass with the aim of testing every type of breathing equipment, from a simple oral-nasal mask to a sophisticated diving rebreather and other large tools.
The associated wet and dry test tank is reclining and can simulate the various conditions to which the equipment is subjected, including low temperatures and carbon dioxide accumulation.
The machine is ready to use, with a computerized data acquisition system that allows assessment and recording of the dynamic respiratory effort performance of the breathing system under test in real-time, printing the test results report to demonstrate its compliance with specific standards.

Main Characteristics:

- Tank capacity: 1.5 m3
- Pressure: 0–52 bar
- Internal diameter: 1200 mm
- Fluid: Helium, Nitrogen, Water, other gas mixes

The machine is qualified to test a wide variety of personal protection equipment used for underwater and hyperbaric breathing according to EN 250:2004, EN 15333-1:2008, EN 14143:2013, BS 8547:2016, and NORSOK U-101.

CERTIFICATION

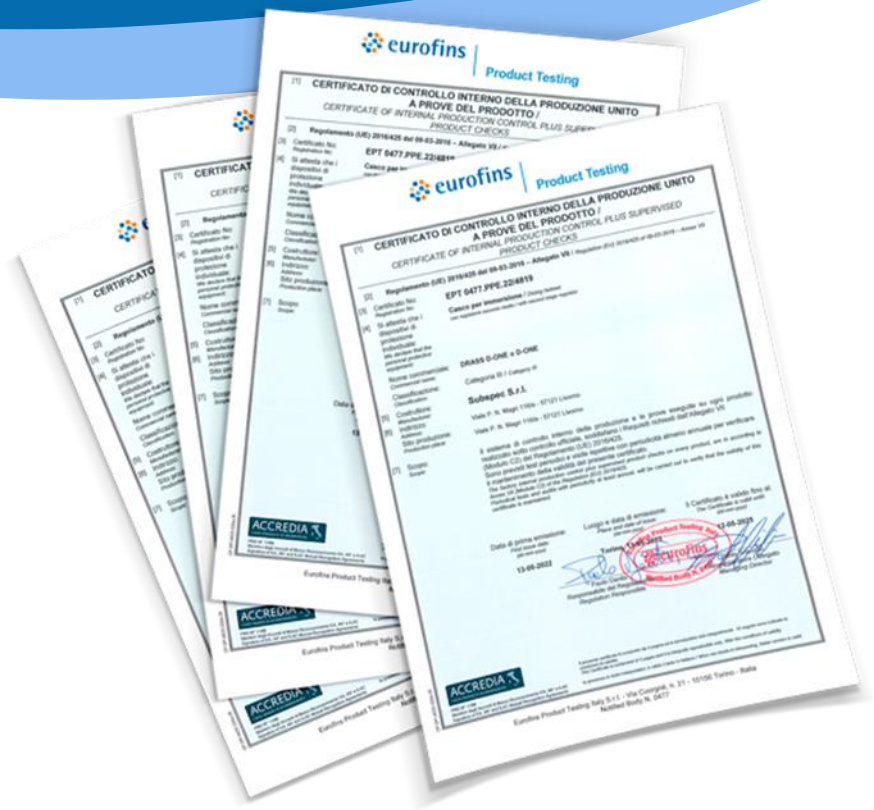
The abbreviation "CE" stands for "Conformité Européene" and translated means "European Conformity". A mandatory requirement for the issue of the CE marking and the associated selling of the respective product in the European Economic Area is the EU Declaration of Conformity.

With this declaration, the manufacturer DRASS confirms that D-ONE complies with the highest health, safety, and environmental protection standards of all the relevant European directives.

This designated CE marking guarantees that DRASS D-ONE has passed the certification process as overseen and attested to by a third-party notification body. This certification confirms that the D-ONE Diving Helmet is in accordance with European Regulation (EU) 2016/425, as Personal Protective Equipment (PPE) Category III, and in accordance with EN15333 technical standards.

The certificate was obtained following product quality and production process audits, as well as an extensive range of stringent performance tests conducted at DRASS Life Support Equipment Test Facility - LSETF, the most advanced laboratory of its kind for the testing of underwater technology.

In addition to helmet certification, D-ONE has obtained Class A certification on Impact Protection, guaranteeing maximum safety and comfort for users.



CERTIFICATION

Breathing System	Breathing performance
	Upstream demand valve
	Downstream demand valve
	Volume weighted average inhaled CO_2
	Exhalation valve
	Hydrostatic imbalance

Facepiece	Mechanical strength of connections between facepiece and connector
	Visor Impact Resistance
	Head protection
	Noise Assessment
	Field of vision
	Sea Water Resistance

Resistance to Temperature	-20 °C / +50 °C conditioning -20 °C and performance +50 °C and performance
	-30 °C / +70 °C - conditioning -30 °C and performance +70° C and performance
	Cold Water Testing

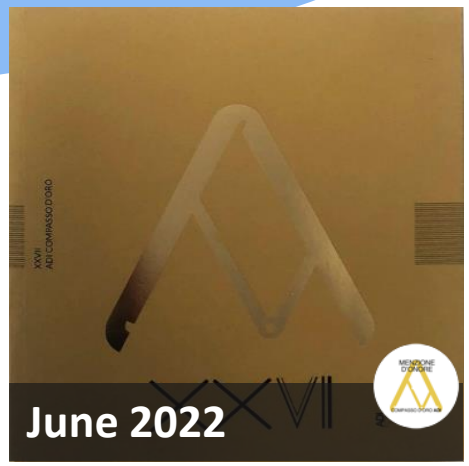
Generic	Cleaning and Disinfection
	Oxygen Pressure Surge Test
	Practical Performance

RECOGNITION

D-ONE's launch at Offshore Europe exhibition created a buzz in the oil and gas industry amongst commercial diving professionals and provided an opportunity to get hands-on with the most advanced diving helmet on the market.

D-ONE shortlisted by ADI (Italian Association of Industrial Design) from hundreds of design entries during the prestigious ADI Design Index 2020.

At national level, D-ONE was selected to showcase the very best of Italian technology and innovation at the G20 World Summit of Heads of State and Government held in Rome.
With an emphasis on design excellence, production quality and social responsibility, this unique event recognized DRASS' endeavor with a fully modular, reconfigurable solution incorporating innovative fail-safe functionality and ease of operability. D-ONE was featured at La Nuvola Convention Centre in Rome for the G20 delegation.

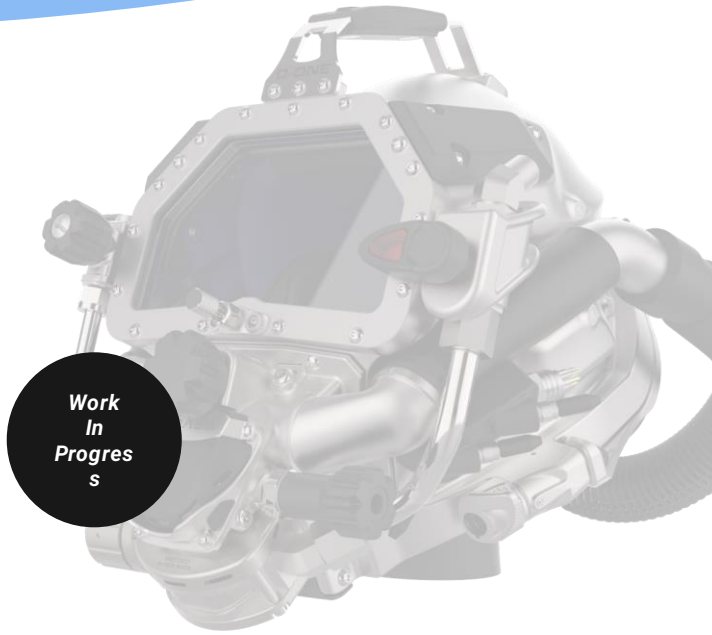


D-ONE awarded the esteemed Menzione d'Onore (Honourable Mention) from ADI - Italian Association of the Industrial Design. D-ONE was chosen by the ADI panel of judges that assessed 500 products from the last 3 years of design projects.
This prestigious award gives DRASS D-ONE a permanent place on display at the world-renowned ADI Museum in Milan.

ALL FOR ONE AND D-ONE FOR ALL

D-ONE®
AIR

D-ONE®
RECLAIM



D-ONE®
RECLAIM / REBREATHER

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