NORTHERN DIVER

MINE WARFARE & MILITARY DIVING SPECIALISTS

OPEN SAFETY

INCURSION CMR

Combined Mode Military Rebreather

O2-CCR, SCR,Switchable CCR / SCR,
Front and Back Mountable

INCURSION CMR

Combined Mode Military Rebreather: O2-CCR, Nitrox SCR & Switched

FEATURES

- State of the art military rebreather supporting O2-CCR and SCR operating modes, both fixed mode and switchable
- CE, NORSOK and NEDU standards compliant
- Clips directly to tactical jacket or to buoyancy aid, front or back mount, with the same unit
- Functional Safety to SIL 3: audited, lifetime product warranties, lifetime free upgrades and full disclosure of test data, FMECA, HAZOPS etc.
- Rugged with low maintenance
- Light: 10.3kg to 17.4kg depending on configuration, ready to dive
- Compact satchel style (35 x 41 x 16cm) including cylinder
- Flood tolerant – can be recovered from a flood without surfacing
- > 4 hour duration
- Lowest Work of Breathing in industry at
  - 0.35 J/L at 10m, 62.5 lpm RMV,
  - 0.6 J/L at 40m on air, 40 lpm RMV,
  - 1.44 J/L at 40msw on air, 75lpm RMV,
  - 0.9 J/L at 100msw Heliox, 75lpm RMV
- Fully field serviceable without tools
- Cylinders are avionic (vacuum) tested for HALO use
- Integrates with OTS through water comms
- Low-Mag as standard and No-Mag options (to NATO STANAG 2897 Class A in all positions, static and dynamic tests)
- Low acoustic signature to NATO STANAG 1158

BENEFITS

- Covers all mission profiles with one unit
- Low cost in capital and ownership: lifetime warranty and free upgrade policy
- Turn around time of minutes, using EACs and ready cleaning access
- No surprises: All test data published, audited and verified

APPLICATIONS

- Shallow Mine Counter Measures (VSWMCM)
- Deep Mine Counter Measures (MCM) Nitrox and Heliox
- Underwater intervention and rescue
- Fleet maintenance / Hull inspections

Exclusive Distributor

Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

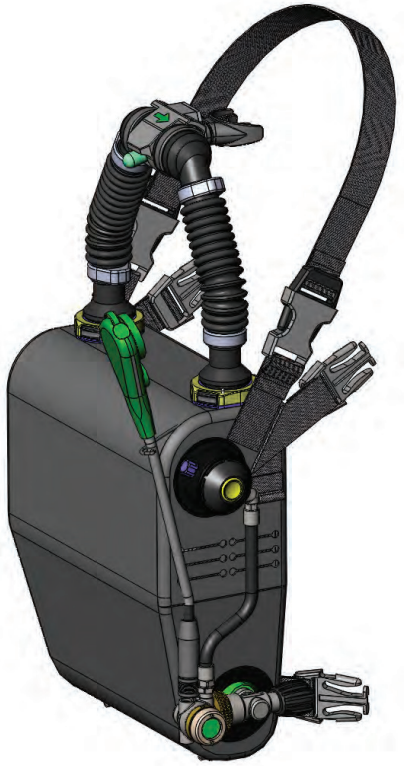
OPEN SAFETY

DESCRIPTION

The rebreather is supplied as a base unit, onto which a mission configuration pack is plugged in. These mission packs are:

1. O2-CCR for shallow water operations
2. SCR for deep water operations
3. O2-CCR & SCR switchable for complex mission profiles or to reduce decompression.
4. Backmount mission pack to provide both instant bailout and enable the diver to perform a manual flush when the rebreather is out of reach.

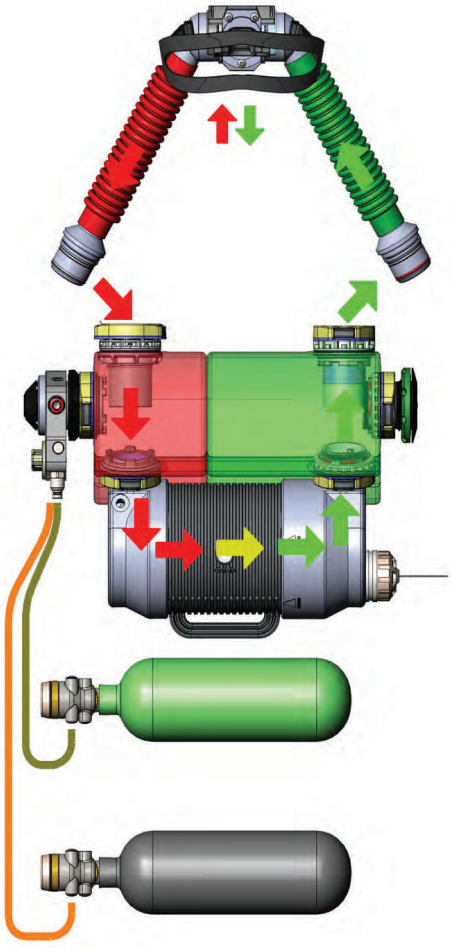
The base unit is Non-Mag, and all configurations are available in both standard low mag and non-mag.



OPERATING PRINCIPLES

A rebreather recycles the gas exhaled by the diver, removing carbon dioxide and adding oxygen, to form a closed loop. This results no bubbles, low noise, and constant buoyancy and dive durations typically five times longer than for an equivalent weight of Open Circuit: gas consumption on a rebreather is independent of depth.

The image on the right shows the gas flow around the Incursion. Dirty gas exhaled by the diver is red. It passes though a counterlung, where the oxygen is added by an automatic diluent loop volume valve (ADV). It then passes into the CO2 absorbent canister ("the scrubber") where the CO2 is removed. The clean gas (green) then passed into the inhale counterlung. The gas then returns to the diver's mouthpiece, clean, ready to breathe. These parts are illustrated below.



Any water is blocked by snorkel tubes and can be dumped from a water dump: even a fully flooded Incursion can be recovered without surfacing. The Micropore EAC Scrubber avoids a caustic cocktail.

The gas switcher allows the rebreather to be switched while underwater from pure O2 use for shallow diving, to Nitrox or Trimix use; in SCR mode it feeds a constant mass of gas per minute into the rebreather – the oxygen is partially metabolised by the diver and the excess is vented via the Over Pressure Valve (OPV).

Exclusive Distributor

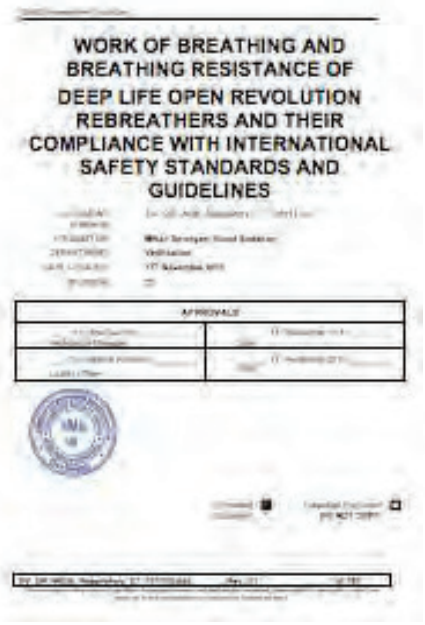
Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

OPEN SAFETY

UNIQUE FEATURES

UNPARALLELED SAFETY

Developed out of the British and Norwegian rebreather safety initiative for commercial North Sea divers, a 200 man-year project, the Incursion CCRs are believed to be the safest rebreather that can be engineered today.



Open Safety Equipment is part of the Deep Life Group

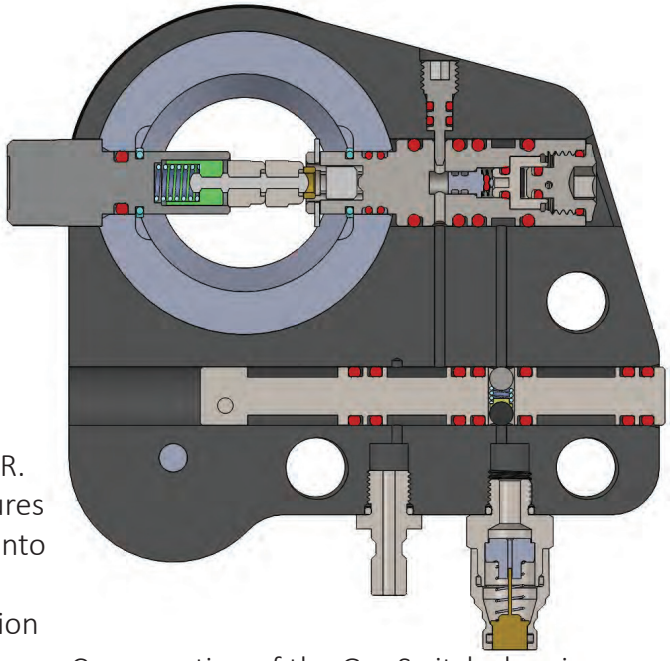
Full compliance with all applicable safety standards, with open publication of the safety documentation are cornerstones of the design: the test results, failure analysis, performance measurements and compliance matrices are audited and published for critique. The Incursion complies with the Gold Standard in Functional Safety, IEC 61508: it is the first military rebreather to be certified to any Functional Safety standard.

THOROUGH TESTING, WITH FULL RESULTS AVAILABLE

Evaluating new rebreathers can be time consuming and labour intensive. To minimise that overhead, the Incursion family of rebreathers has been the subject of one the most stringent testing regimes ever, and the results are either published or available to professional buyers.

FAULT-TOLERANT AND FAIL SAFE

Fail evident, fail safe and triple redundancy of critical safety barriers are unique aspects in the Incursion CMR. A good example is in the Gas Switch, where three failures must occur simultaneously before nitrox gas can leak into the oxygen circuit- something that requires just one failure of competitors' products. Moreover, the Incursion CMR Switch uses multiple technologies to avoid any common-mode failures.



Cross-section of the Gas Switch showing many layers of safety. It contrasts with contemporary switches where there is no safety margin.

Exclusive Distributor

Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

OPEN SAFETY

- **Use O2 near surface and switch to and from Nitrox underwater.**
- **Single knob control** to switch from pure O2 use, to Nitrox. In O2 position, routes O2 to ALV (Automatic Loop-Volume valve). In SCR position, routes Nitrox to ALV, and routes Nitrox via a twin orifice to the scrubber gas port.
- **Safety interlock**: requires two simultaneous actions to switch from O2 to Nitrox, or back: press button down and turn.
- **Proven Safety Principle**: proven constant mass flow (CMF) using twin orifices, with choice of traditional high flow rates, or modern flow rates by adjustment of intermediate pressure.
- **PPO2 Monitoring Option**: When using modern low flow rates, Open Safety's PPO2 monitor is recommended, using three O2 cells.
- **Functional safety:** triple redundant, dual technology.

Gas Switch

The O2 to Nitrox selector converts the Incursion O2 CCR into an SCR when the selector is moved to the SCR position, but still retains the O2 CCR mode for use in shallow depths.

In O2 CCR mode, the Nitrox inlet port is closed off, and the SCR gas feed outlet is also closed. The O2 inlet is connected directly to the ALV outlet. The ALV (Automatic Loop Volume valve) allows the diver to purge the loop, and maintain adequate loop volume using pure oxygen alone.

In SCR mode, the O2 inlet port is closed off and the Nitrox inlet is connected to both the ALV outlet and also the SCR outlet. This outlet is fitted with colour coded twin orifices, to provide a constant mass flow.

The Nitrox hose uses zero-face connectors that can be interchanged underwater without contamination of the gas lines- shown on the left.

Exclusive Distributor

Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

OPEN SAFETY

EAC SCRUBBER

The scrubber uses a 125mm diameter Micropore ExtendAir Cartridge (EAC): this has benefits over older granular scrubber systems of:

- no dust
- no tunneling or bypass
- greatly reduced caustic risks,
- can be unpacked and fitted in one minute,

Scrubber housing has a viewing window to check the scrubber is fitted.

FLOOD TOLERANT

The entire unit can be flooded, water drained using the counterlung dumps underwater, and the dive continued.

The EAC scrubber can be put in water for five minutes and then fitted without any significant loss of scrubber capacity or risk of caustic cocktail. This is a new technology that greatly enhances the overall safety.

TURN-AROUND-TIME AS LOW AS TWO MINUTES

The Incursion takes under two minutes to remove an old scrubber, rinse the breathing loop, unpack then fit a new scrubber, and pressurise for the positive pressure test that starts the pre-dive checks. This fast turnaround time is a reflection of the ease of scrubber access, and the use of Micropore EAC scrubber cartridges.

ERGONOMICS

The ergonomics focus on reliable service, with fast deployment: the absolute minimum time for changeover between dives. This is coupled with a light and versatile package that can be fully dismantled, checked and reassembled even in pitch black darkness. The Incursion clips to tactical jackets in common use or can be supplied with a surface inflation jacket as an optional extra item.
The diver mouthpiece assembly is one of the most comfortable in the industry, with hoses angled around the diver's face for the maximum visibility, with swivel action on the hoses to avoid fatigue, and mouthpiece retention strap.

NO TOOLS NEEDED

The whole construction of the Incursion CM is extremely robust, using parts that clip together using at least two independent actions. It is not possible to assemble the unit incorrectly in a way that would create a hazard to the diver.

Exclusive Distributor

Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

OPEN SAFETY

LOWEST WORK OF BREATHING, ALLOWS DIVERS TO SWIM FASTER, FURTHER & LONGER

Work of Breathing has been identified by the US Navy's NEDU as a primary factor affecting the diver's health and ability to work. At 0.6 J/L at 40msw depth on air, 40 lpm RMV, the work of breathing of the Incursion is by far the best ever achieved: it is around a half that of military front mounted rebreathers claiming exceptional low work of breathing, and a third that of some others.

With diver delivery vehicles and diver propulsion systems, work of breathing can be easily overlooked, until the diver needs to use the rebreather operationally or to conduct a rescue of a team member, where sudden strenuous exertion may occur. In these circumstances, the work of breathing can mean the difference between mission success and failure.

WORK OF BREATHING AGAINST DEPTH AND WORK RATE

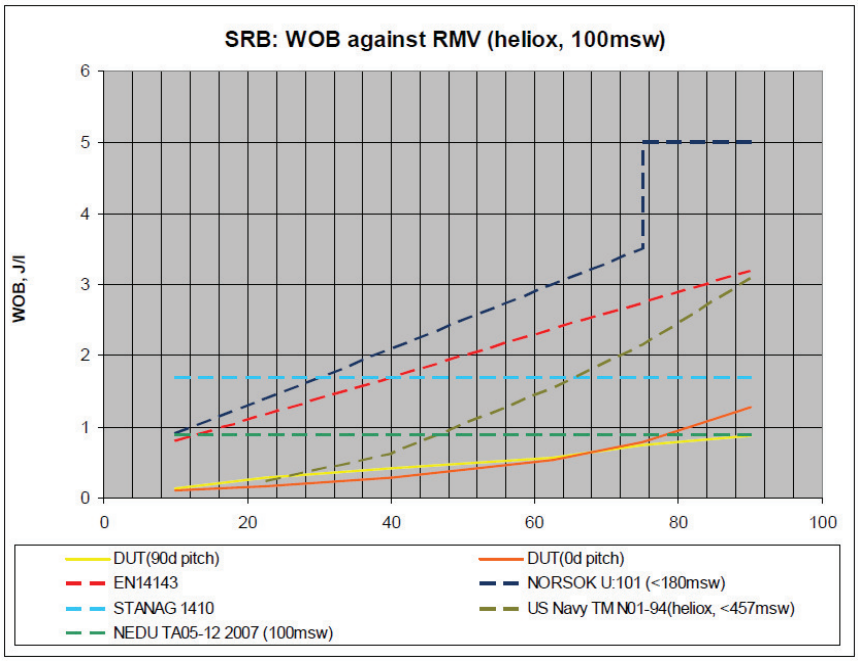
The charts on the right show the Work of Breathing imposed by the Incursion at 40m (on air) and 100m on heliox, against Respiratory Minute Volume (essentially, work rate).

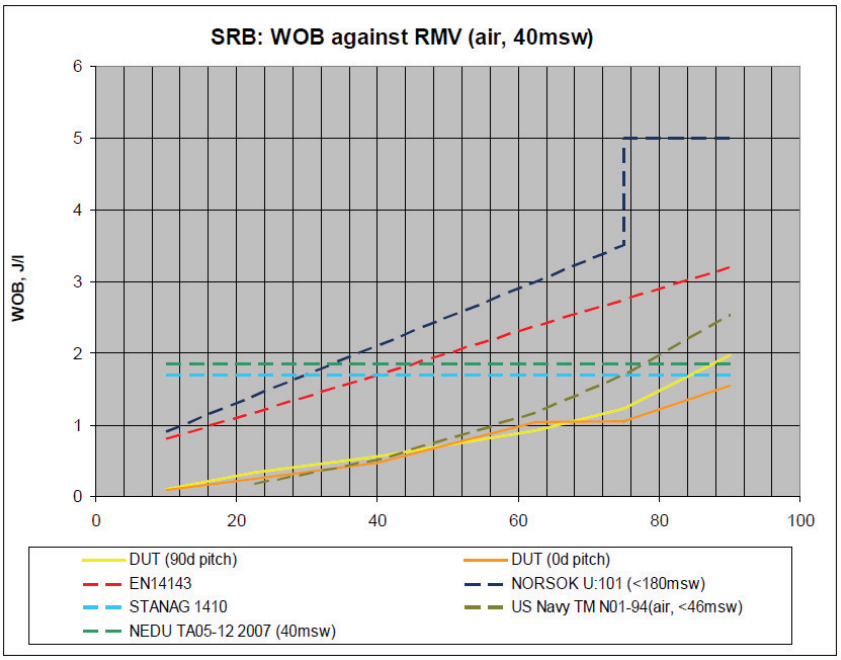
Even at 100m depth, (possible with the eCCR module), the Incursion imposes a load on the diver that is 3 to 5 times lower than envisaged by the standards.

This level of performance has never been achieved before by any other rebreather family.

Beware of claims of Lowest Work of Breathing where there is no full disclosure of the test and results. Those claims are false. Where there is one false claim, there is often a lot more.

Open Safety's data is fully disclosed and available on http://opensafety.co.uk/or_dv.php





Exclusive Distributor

Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

OPEN SAFETY

MODERN LOW FLOW RATES DOUBLE THE NITROX DURATIONS SCR

The tables below show the range of PPO2 for the diver with different depths and metabolic rates.

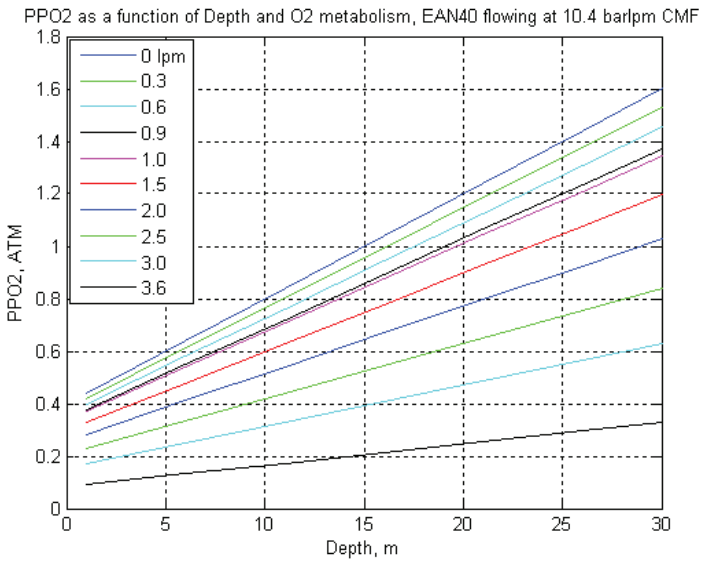
In interpreting these tables, the following information may be useful:

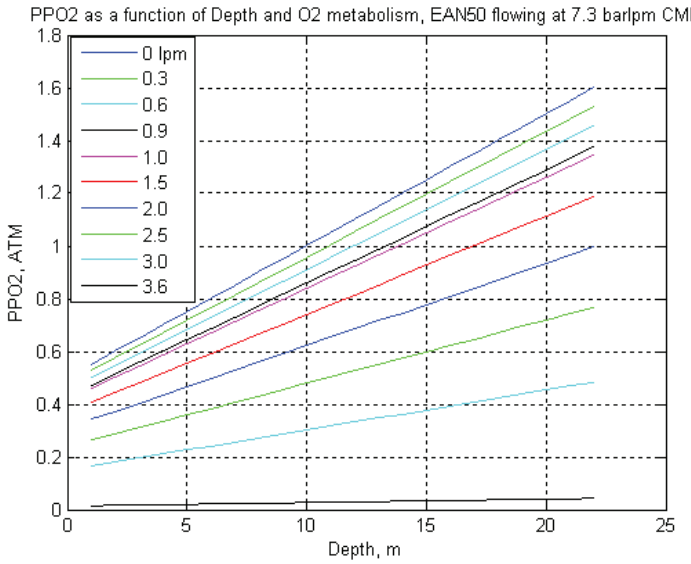
- Diver at absolute rest metabolises 0.35 lpm of O2 metabolism
- Diver stationary or floating metabolises 0.7 lpm of O2 metabolism
- Average dive metabolism metabolises 0.9 to 1.2 lpm of O2
- Dive with active work metabolises 1.35 lpm of O2
- Very hard work metabolises 2.0 lpm of O2. Unlikely to be sustainable for more than a few minutes underwater.

From the tables, it can be seen that the traditional high CMF flow rates provide a large safety margin. Even

Operating Mode	Orifice Colour / NATO Gas Colour	EAN (O2%)	CMR Dose Rate at 12 bar intermediate pressure (at STP)	Gas Duration from 300bar 2L cylinders returning with 50 bar	Max Depth
CCR	**-**	**100**	**Auto**	**>6 hours**	**6/8/10m**
SCR	**Black**	**60**	**5.8 lpm**	**172 mins**	**18m**
SCR	**Red**	**50**	**7.4 lpm**	**128 mins**	**24m**
SCR	**Blue**	**40**	**10.4 lpm**	**96 mins**	**32m**
SCR	**Yellow**	**32**	**15.6 lpm**	**64 mins**	**50m**
SCR Switched	**Yellow**	**21**	**22 lpm**	**45 mins**	**80m**
SCR Switched	**Green**	**16**	**22 lpm**	**44 mins**	**100m**

Gas durations tabulated above use a single cylinder in SCR mode and two 2L 300 bar cylinders in the SCR modes. Switched modes use an oxygen cylinder in addition to the trimix cylinder: the time on O2 is additional to figures above.



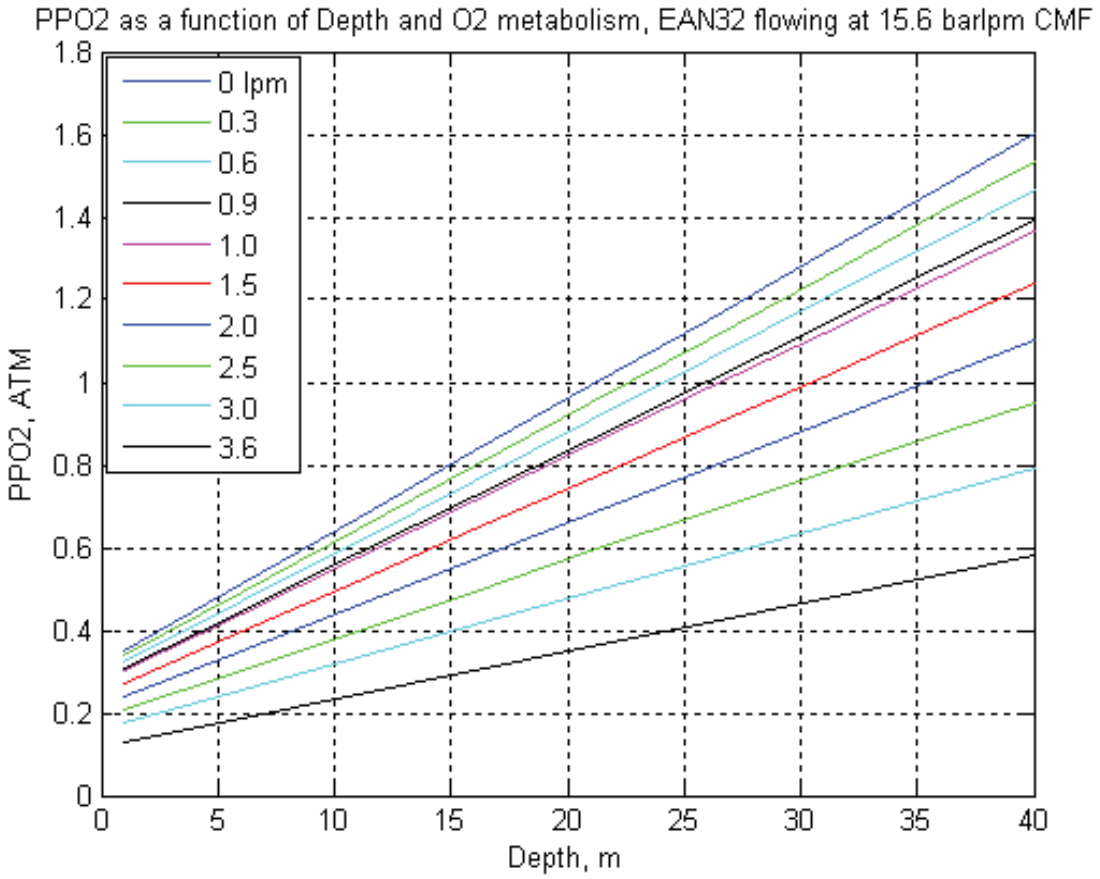


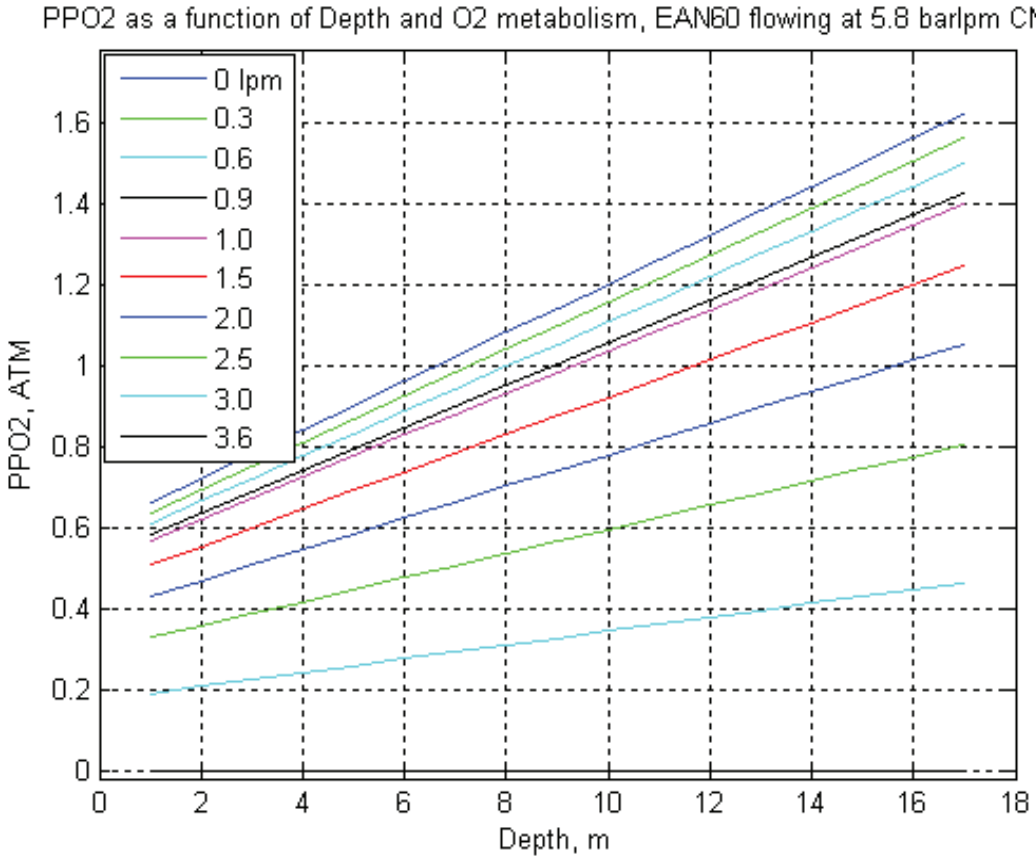
Exclusive Distributor

Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

OPEN SAFETY

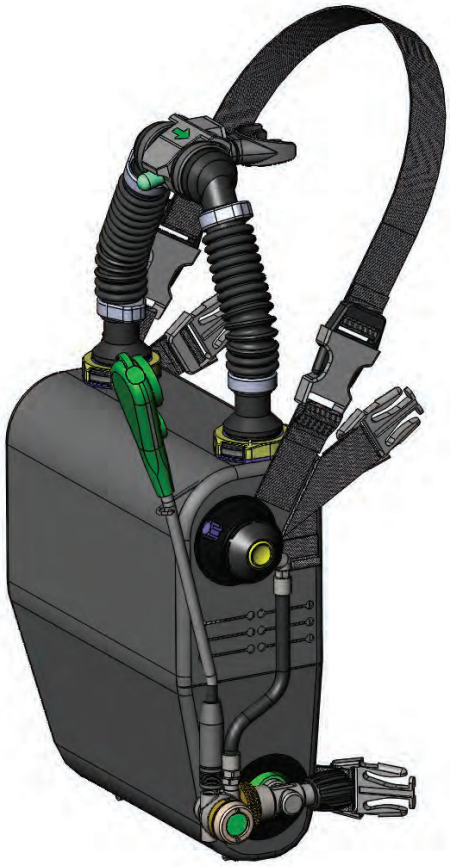
FLOW RATES CONT. SCR





MISSION CONFIGURATION PACKS

INCURSION CMR BASE UNIT

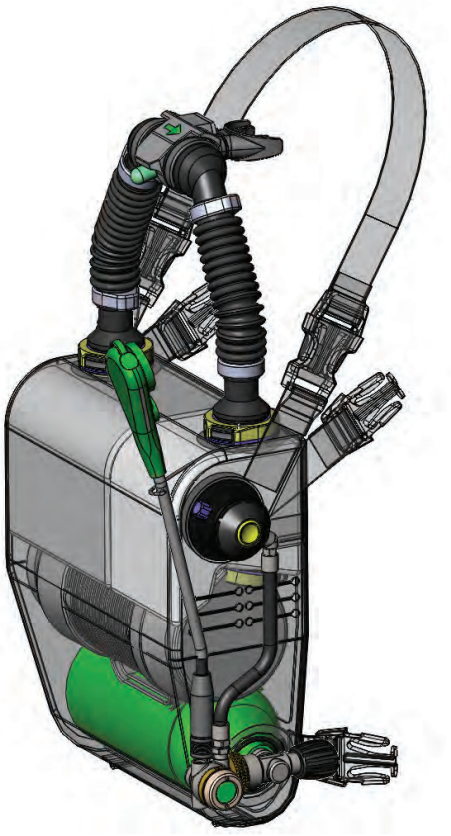


Includes:

- Satchel
- Inhale and Exhale Counterlungs,
- OPV,
- scrubber assembly,
- breathing hoses,
- DSV with head strap,
- internal weight pouch,
- Neck strap,
- Sample EAC scrubber cartridge,
- Field spares kit,
- Printed Manual,
- Technical Passport.
- Carry case, 40 litre size, providing free air ventilation to the rebreather, and preparation mat.
- Shipping case (2 rebreathers per case): 80 litre fixed lid.
- Copy of Production Checklist.
- Lifetime guarantee certificates: covering workmanship, materials and all safety upgrades.
- Non-Mag units are supplied with magnetometer polar plots.

Requires a mission pack to be dived.

O2-CCR MISSION PACK



Includes:

- 2L 300 bar carbon wrapped SS904L Non-Mag cylinder
- Valve with M26 DIN outlet
- A320 1st stage regulator with M26 DIN inlet
- Auto Loop Volume Valve
- Oxygen SPG
- Pressure Relief Valve
- All gas hoses
- M26 to G5/8 fill adapter
- Technical Passport
- Certificates of Conformity.
- Copy of Production Checklist
- Lifetime guarantee certificates: covering workmanship materials and all safety upgrades.
- Non-Mag units are supplied with magnetometer polar plots

Exclusive Distributor

Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

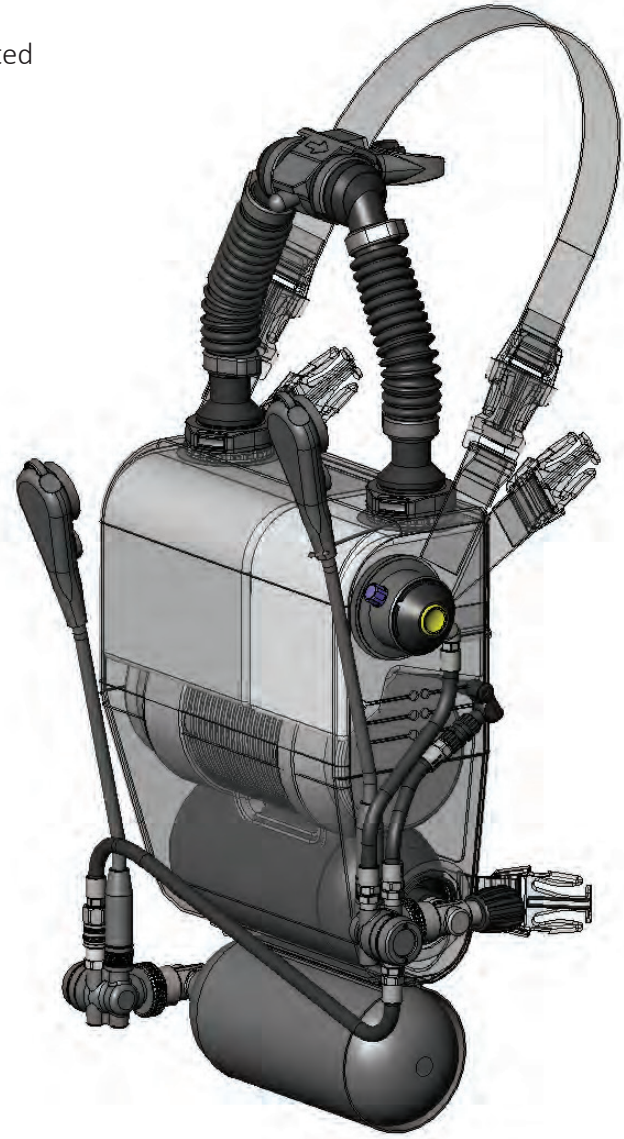
OPEN SAFETY

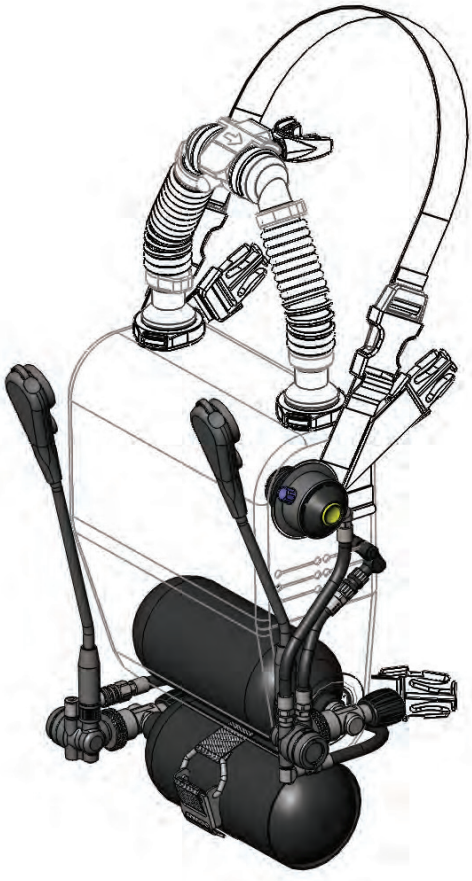
SCR MISSION PACK

Mission pack to configure the Incursion-CMR as a dedicated Nitrox Semi-Closed Rebreather –

Includes:

- 2 Nitrox 2L 300 bar carbon wrapped SS904L Non-Mag cylinders, each with:
  - valve with G5/8 DIN outlet,
  - A320 1st stage regulator with G5/8 DIN inlet,
  - Nitrox SPG.
  -Pressure Relief Valve
- cylinder connectors,
- all gas hoses
- swivel and zero-face connectors linking regulators
- serial orifices for 60%, 50%, 40%, 32% Nitrox
- Flow Gauge with hoses
- Technical Passport.
- Certificates of Conformity.
- Copy of Production Checklist
- Lifetime guarantee certificates: covering workmanship, parts and materials, and all safety upgrades.
- Non-Mag units are supplied with magnetometer polar plots





Exclusive Distributor

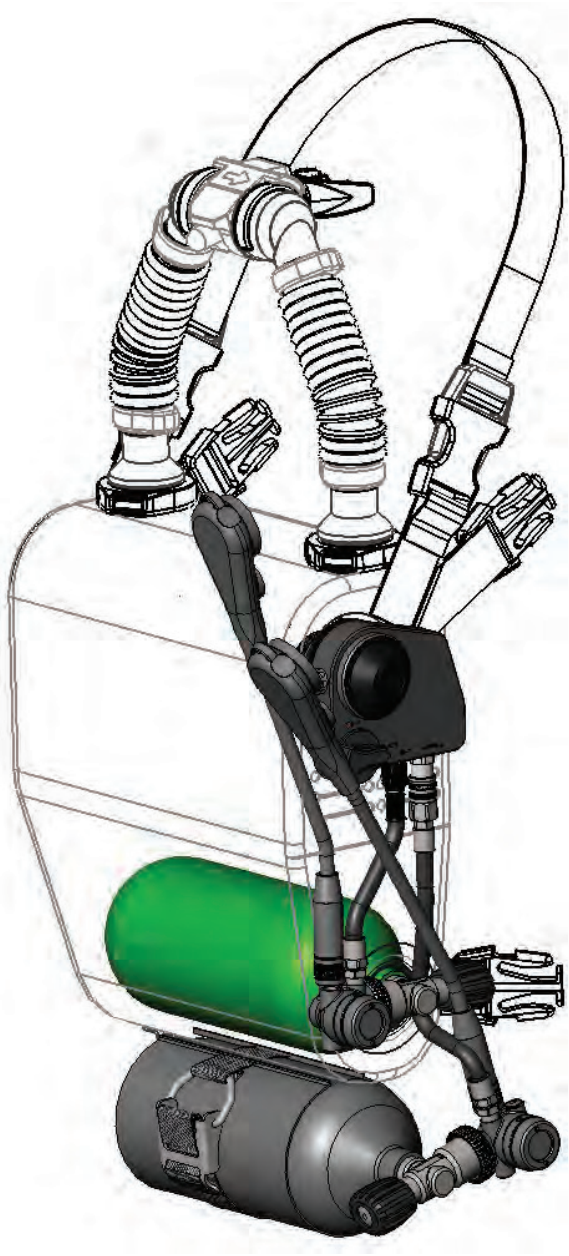
Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

OPEN SAFETY

SWITCHED MODE MISSION PACK

The Switch Mode Mission Pack can either be supplied as a single configuration or as add on products to either the the O2 CCR and SCR mission packs.

The Switchable Mode allows the diver to operate the rebreather as a Nitrox or Heliox SCR during the deep portions of the dive and switch to O2-CCR Mode underwater for shallow approach or reduced decompression time.



Includes:

- 2L 300 bar oxygen carbon wrapped SS904L Non-Mag (green) cylinder, with:
  - valve with M26 DIN outlet
  - A320 1st stage absolute pressure regulator with M26 DIN inlet
  - Oxygen SPG
  - Pressure Relief Valve
  - M26 to G5/8 fill adapter
  - Hose with international fitting
- Nitrox 2L 300 bar carbon wrapped SS904L Non-Mag (black) cylinder, with:
  - valve with G5/8 DIN outlet
  - A320 1st stage absolute pressure regulator with G5/8 DIN inlet
  - Nitrox SPG
  - Pressure Relief Valve
  - Hose with zero-face fitting
- Cylinder connectors
- both single ended and serial orifices for pure O2 60%, 50%, 40%, 32% Nitrox for diving to 40m
- all gas hoses
- CCR-SCR switch with integrated ALV
- Technical Passport
- Certificates of Conformity
- Copy of Production Checklist
- Lifetime guarantee certificates: covering workmanship, parts and materials, and all safety upgrades.
- Non-Mag units are supplied with magnetometer polar plots

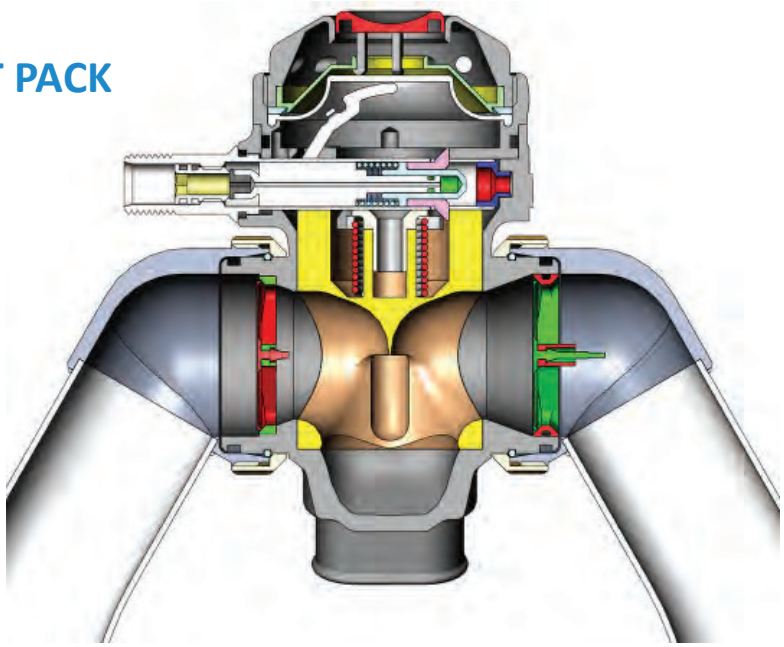
Exclusive Distributor

Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

OPEN SAFETY

BACKMOUNT PACK and BAIL OUT PACK

The Incursion CMR clips directly to the front or back of the Incursion tactical vest. For backmount use, the ALV is replaced by an ALVBOV- an integrated Auto Loop Volume and Bail Out Valve. This replaces the diver's DSV, with valve that combines the function of the rebreather DSV, a high performance open circuit bail out demand valve, and a rebreather ALV.



The pack comprises:

1. ALVBOV (integrated Auto Loop Volume and Bail Out Valve)
2. Intermediate Pressure Hose 1.0m from cylinder to ALVBOV, O2 Clean

The main parts of the ALVBOV are shown in cross section above and on the colour coded image on the left: all parts are normally black.

The ALVBOV can be triggered to close the breathing loop automatically when it is removed from the mouth: in this mode, open circuit is available. This works by pressure on the trigger necklace cord, and is reliable: it operates every time when needed and never activates accidentally when setup correctly

The purge button (highlighted in yellow) allows the diver to flush the rebreather by depressing the button in front of his mouth.

A water dump enables the diver to keep the mouthpiece completely clear of condensate.

PPO2 MONITORING PACKS

Several options are supported for PPO2 monitoring, including:

- Head Up Display with compass, depth gauge and dive computer
- Wrist Mount Dive Computer, with compass
- Depth Gauge

Exclusive Distributor

Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

OPEN SAFETY

TECHNICAL SPECIFICATION

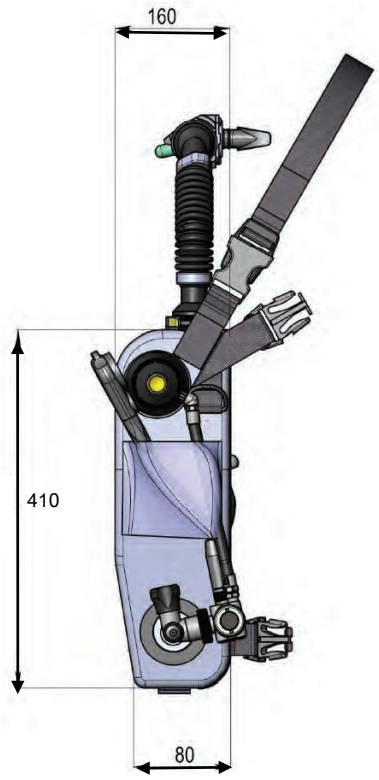
Type	Flexible multi-role chest or back mounted rebreather with automatic gas addition. Oxygen mode: fully closed rebreather. Nitrox & trimix modes: Constant Mass Flow SCR.
Size	35 x 39 x 16 cm including a 2 litre 300bar Carbon Wrapped cylinder and valves in O2-CCR configuration. 50 x 39 x 16cm including 2 litre 300 bar O2 cylinder and 2L external Nitrox cylinder. Dimensions are of satchel case and cylinders.
Weight	Weight ready to dive in O2 only configuration including scrubber, cylinder and a trim weight, is 10.3kg. In SCR configuration with two cylinders, the ready to dive weight is under 17.4kg. A total of up to 5kg of trim weights can be fitted.
Mounting	Chest or back mounted, clips to tactical vest or webbing harness.
Performance	The Incursion CMR is modular, meets all CE and NORSOK respiratory requirements to depths of 350m. To 100m advisory limit using Heliox or Trimix (depth is limited only by bailout) To 50m advisory limit using Nitrox (depth is limited only by narcosis risk) To 8m using oxygen only (CNS limit for all oxygen rebreathers to a PPO2 of 1.6 atm where the diver has applied 3 purges)
Gas Duration	Pure O2 Mode: 370 minutes using internal 2 litre 300bar cylinder. SCR Mode: as per tables herein. Durations stated are at NEDU conditions of 1.35 lpm consumption, for cylinders filled to their rated pressures and returned with 50 bar remaining.
Scrubber Duration	At 22.5 lpm RMV: 6msw constant depth O2 mode, 4ºC, 340 min to 0.5% SEV, 390 mins to 2% SEV 6msw constant depth O2 mode, 24ºC, 340 min to 0.5% SEV, 550 mins to 2% SEV 9msw constant depth, 15ºC, 380 minutes to 0.5% SEV, 460 mins to 2% SEV. 40msw constant depth with SCR module fitted, 4ºC, 236 min to 0.5% SEV, 318 mins to 2% SEV 40msw constant depth with SCR module fitted, 24ºC, 328 min to 0.5% SEV, 387 mins to 2% SEV 90msw constant depth with eCCR module fitted, 14ºC, 340 min to 0.5% SEV, 367 mins to 2% SEV At 30 lpm RMV:
	At 30lpm RMV, 6msw constant depth, 4C, 254 min to 0.5% SEV, 285 mins to 2% SEV 6msw constant depth, 24ºC, 254 min to 0.5% SEV, 295 mins to 2% SEV 90msw constant depth, 14ºC, 164 min to 0.5% SEV, 253 mins to 2% SEV At 40 lpm RMV: 6msw constant depth O2 mode, 4ºC, 160 mins to 0.5% SEV, 180 mins to 2% SEV, 9msw constant depth O2 mode, 15ºC, 300 minutes to 0.5% SEV, 360 mins to 2% SEV. 40msw max dive profile SCR module fitted, 4ºC, 126 mins to 0.5% SEV, 175 mins to 2% SEV All 2%SEV CO2 figures are for true Volume Weighted Inspired CO2. 2%SEV = 2kPa.
Scrubber Type	ExtendAir Cartridge 2.2kg (flood tolerant, non-dusting). Granular scrubber 2.6kg.
Work of Breathing	Under 0.2 J/L in Oxygen mode depths at 75 lpm RMV At 40msw depth on air with SCR module: 0.6 J/L at 40 lpm RMV, 1.4 J/L at 75 lpm RMV Recommended depth limit is 60msw due to bail out requirements deeper than 60msw. However, for extreme applications such as submarine emergency egress, the Incursion at 350msw on Heliox, has a 2.6 J/L WOB at 75 lpm RMV. The Incursion is within the CE EN 14143 maximum of 2.75 J/L at 75 lpm RMV even at 450msw!
Counterlung Volume	Dual counterlungs. Physical volume 6L, supporting dive lung capacities to 6L with 4.5L T.V.

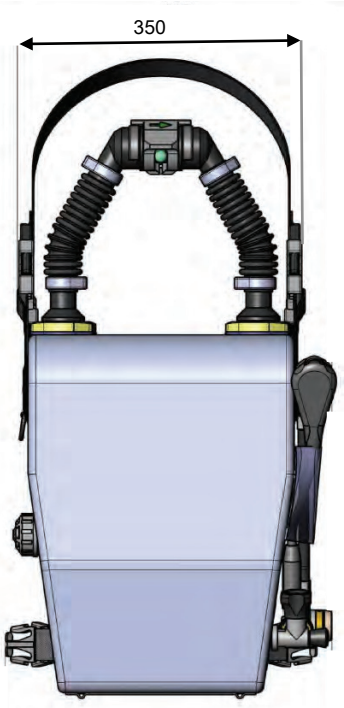
TECHNICAL SPECIFICATION CONT.

Gas fittings	CE DIN type fittings for cylinders and regulators. M26 to O2 cylinder, G5/8 to Nitrox.
Battery life	O2 and SCR modules have no batteries.
Monitoring	PPO2, 3 cell, monitor and dive computer available as optional extra item.
Temp Operating	1ºC to 37ºC fresh water; -2ºC to 37ºC sea water; -40ºC to 37ºC in air
Temp Storage	-40ºC to +50ºC with cells, -40ºC to 70ºC without oxygen cells
Water dumps	Fitted as standard. Entire rebreather can be fully flooded, with scrubber fitted, and recovered during the dive, with dive continuing after flood.
Auto Loop Volume	Automatic Loop Volume valve as standard, with manual gas addition (purge) button.
Oxygen monitor	Optional extra item. Three cell, with sensor fusion meeting IEC EN 61508 at SIL 3, including capability to manage up to two faulty cells simultaneously: built in calibration and cell self-test. Cells protected from water and moisture. Advanced Active OLED display, with black neoprene blackout cover. Automatic on: no buttons to fail. Gel filled electronics to total flood protection.
Safety Monitor	Built in configurable alarm settings for dive time, maximum depth, ascent rate, altitude, imperial / metric units. Decompression computer options also available for display.
Communications	Integrates with OTS through water comms.
Diver hydration	Integrates fully with Camel-back hydration system
Construction	Highly rugged, Injection moulded in metal replacement plastics in satchel semi-rigid case. Options for large bore (36mm ID) and narrow bore (28mm ID) hoses.
Colours	Matt black (standard), also available in Green and high visibility yellow. Ceramic Cerakote finish on all metal parts. Stainless steel finish available as no-cost option.
Made in	Scotland, U.K from raw materials manufactured in Europe.

COMPACT AND LIGHT

The Incursion CMR is compact, and light. The basic package is shown below: the diver adds an SCR cylinder below with a volume suitable for the dive profile. The rebreather clips onto the front or back of a tactical jacket, supplied as an option, or to the front of an International Safety tactical vest in widespread use within NATO forces. The Open Safety tactical vest includes a surface buoyancy aid, and integral cylinder.





Exclusive Distributor

Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

OPEN SAFETY

FREE LIFETIME UPGRADES

Open Safety Equipment Ltd, ("OSEL") strives to achieve the highest levels of safety across all its products and maintains a programme of research and engineering development with that purpose.

When improvements in materials, design or technology are found, that improve the safety of the product, an upgrade free of charge will be issued to the buyer of this equipment. This guarantee is valid for the lifetime of the equipment, and may be transferred with the equipment if it is sold.

This upgrade policy relates to the model type sold, and does not include upgrades that are not primarily of a safety nature, such as upgrades to add features, or to improve features not of a safety nature.

LIFETIME WARRANTY AND FREE UPGRADES

One of the benefits of Functional Safety compliance, is the Incursion CMR comes with a lifetime warranty on parts, labour and materials. It is also unique in having a lifetime safety upgrade warranty.

What this means is if Open Safety become aware of any means to improve the reliability or performance of the rebreather, it is obliged to implement the upgrade and after re-testing, to provide it without charge to all its customers. This is a new concept in the diving industry, and is a tangible aspect of the Functional Safety compliance of the equipment.

Exclusive Distributor

Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire,
WN6 9AE, UK | www.ndiver-military.com

OPEN SAFETY

ORDERING INFORMATION

Product Code	Description
Incursion-CMR	Incursion Bare Unit, comprising satchel, counterlungs, OPV, scrubber assembly, breathing hoses, DSV with head strap, internal weight pouch, straps, Sample EAC, Field spares kit, Manual, Technical Passport. Requires a mission pack to be dived.
MPack-O2-CCR	Mission pack to configure the Incursion-CMR as a dedicated O2 Closed-Circuit Rebreather Configuration – 2L 300 bar cylinder, valve with M26 DIN outlet, A320 1st stage regulator with M26 DIN inlet, ALV, Oxygen SPG, all gas hoses, M26 to G5/8 fill adapter. Technical Passport.
MPack-SCR	Mission pack to configure the Incursion-CMR as a dedicated Nitrox Semi-Closed Rebreather – 2 Nitrox 2L 300 bar cylinders, each with valve with G5/8 DIN outlet, A320 1st stage regulator with G5/8 DIN inlet, and Nitrox SPG, cylinder connectors, serial orifices for pure O2, 60%, 50%, 40%, 32% Nitrox for diving to 40m, all gas hoses and connectors. Technical Passport.
MPack-SWITCH	Mission pack to configure the Incursion-CMR as a O2-CCR or SCR (switchable underwater between modes), comprising 2L 300 bar oxygen cylinder, valve with M26 DIN outlet, A320 1st stage regulator with M26 DIN inlet, ALV, SPG, all gas hoses, M26 to G5/8 fill adapter, Nitrox 2L 300 bar cylinder, valve with G5/8 DIN outlet, A320 1st stage regulator with G5/8 DIN inlet, Nitrox SPG, cylinder connectors, single ended orifices for pure O2, 60%, 50%, 40%, 32% Nitrox for diving to 40m, all gas hoses and connectors. Technical Passport.
MPack-AllModes	Mission packs covering dedicated O2-CCR, dedicated SCR and switchable O2-CCR to SCR modes. Comprises comprising 2L 300 bar oxygen cylinder, valve with M26 DIN outlet, A320 1st stage regulator with M26 DIN inlet, ALV, SPG, all gas hoses, M26 to G5/8 fill adapter, Nitrox 2L 300 bar cylinder, valve with G5/8 DIN outlet, A320 1st stage regulator with G5/8 DIN inlet, Nitrox SPG, cylinder connectors, both single ended and serial orifices for pure O2, 60%, 50%, 40%, 32% Nitrox for diving to 40m, all gas hoses and connectors, O2-Nitrox switch. Technical Passport.
MPack-Backmount	The ALVBOV, combining the ALV with flush/purge button, DSV and a high performance open circuit bail out valve. Enables the Incursion to be dived when back-mounted, in O2-CCR or dedicated SCR modes.
Additional Items	
INC-EAC	CO2 Scrubber Cartridges, box of 8
INC-PPO2M	PPO2 Monitor and Dive Computer
INC-BCD	Incursion Surface Buoyancy Vest with inflator and cylinder, integrated with a tactical vest.
INC-TVEST	Incursion tactical vest.
Guardian-FFMAdapter	DSV adapter for OTS Guardian Full Face Mask, to enable the DSV to plug into the Guardian socket.
Sorb-Sock	The convert sock to enable appropriate granular CO2 absorbent to be used in the Incursion-CMR, e.g. Molecular Products 797, Draegersorb or approved locally produced equivalents. Accepts 2.6kg of Molecular Products 797.
For Non-Magnetic option, add "NM" as suffix to Product Code	

NORTHERN DIVER

Exclusive Distributor
Northern Diver International Ltd
East Quarry, Appley Lane North,
Appley Bridge, Lancashire,
WN6 9AE, UK

Contact details
Mel Simm | Military Sales Director
Office: +44 (0) 1257 25 69 36
Mobile: +44 (0) 7877 693 876
Email: mel@ndiver.com

Neil Tordoff | Commercial Sales Director
Office: +44 (0) 1257 25 69 49
Mobile: +44 (0) 7972 061 533
Email: neil@ndiver.com

Visit website
www.ndiver-military.com

Designed and manufactured in
the UK by:

OPEN SAFETY

Open Safety Equipment Ltd
6 Newhailes Industrial Estate,
Musselburgh, EH21 6SY