

Rebreather Technician's Toolkit

FEATURES

- Complete mobile workshop: All tools to service and maintain Open Safety Incursion(TM) rebreathers and common SCUBA equipment.
- All essential and recommended PPE.
- Quality tools guaranteed 5 years.
- Magnehelic flow gauges for ALV and OPV calibration, regulator testing.
- All O2 cleaning equipment for regulators, cylinders and gas lines.
- All essential gas charging equipment.
- SCUBA service manual and Incursion Technician's manual.
- Supplied in a Formula 1 pit style mobile tool chest made from 5052 Aluminium alloy, with lock.
- Dimensions (L x W x H): 118 x 56 x 107cm when lid is down, height 160cm with lid up (bench open). Weight 140kg.



DESCRIPTION

The Rebreather Technician's Toolkit provides a turn-key mobile workshop, filled with quality tools to support servicing and maintenance of Open Safety rebreathers and ancillary dive equipment.

The trolley contains all tools required by a rebreather dive technician, to inspect, test, calibrate and service the Open Safety Incursion™ rebreathers and common ancillary diving equipment.

Additionally, the trolley contains all equipment needed for gas blending other than a booster, all Personal Protective Equipment (PPE) for the safety of technicians using HP gas, Open Safety's technician's manuals with the exploded drawings and service instructions, and the Scubatools SCUBA service manual covering all common SCUBA equipment.

All tools are high quality and guaranteed for five years.

The lockable trolley is made from 5052 alloy, resisting salt spray and rust, with a navy blue paint finish. Tool drawers are self locking, requiring the user to lift their handle before they open – avoiding drawers opening when being transported or on a vessel. The trolley is fitted with steering arm and pneumatic tyres, providing 6 self locking drawers and two cabinets loaded with tools.

Northern Diver International Ltd

Summary of Contents

Regulator Service Tools:

- ScubaTools A.I.R. Analyser: Magnehelic bench, with gas inflator/deflator for ALV, OPV and regulator setup
- ALV and Second Stage inline seat adjuster with analogue gauge
- 3 piece Incursion port tools for P-ports and star connectors, in titanium
- +/- 40mbar manometer for device calibration.
- A320 C spanner
- Adjustable pin spanner
- HP module removal blade
- Seat balance test needles
- Regulator vice
- Leak sprayer
- Counterlung for OPV test

Gas Blending Tools:

- Analox Oxygen Analyser
- Transfer whip
- 4x thread adapters
- HP digital pressure gauge, UK calibrated to Swiss standards
- LP digital pressure gauge, UK calibrated to Swiss standards

Basic Tools:

- 25 pce Neilsen spanners 6 – 32 mm
- 10 pce Hex key set
- 10 pce Torx key set
- 10 pce Wiha German Screwdrivers: Flat, Philips, Posidrive, for ancillary equipment
- Thin adjustable spanner
- Std adjustable spanner
- Long socket set 12" fittings
- Calibrated Torque wrench 1/2" fittings
- Rubber Mallet
- External circlip pliers
- Internal circlip pliers
- Band wrench
- 8 pce O-ring picks
- 3 pce Tweezers
- Digital Vernier 150mm
- Record Heavy Vice
- 3mm silicone bench mat

Gas Handling PPE:

- Ear defenders, x2
- Eye protection goggles, x2
- Hazchem gloves, x1
- Eyewash x10

Oxygen Cleaning Toolkit:

- Ultrasonic cleaner, with heater to 80C, 2L capacity. Digital readout.
- Ph meter
- Ion level meter
- UV source & filter
- Cylinder inspection camera
- Hose wash pump with 5/16 UNF and 3/8" UNF fittings.
- Non-ionising Detergent 100 tabs.
- Virkon 5kg
- Bubble finder brush
- Open Safety cylinder service labels, x50
- Funnel and jug set
- Tank valve to torque wrench adapter, G5/8 and M26
- 80L Open Safety box for water fill.

All tools are high quality and guaranteed for 5 years. Recalibration service available on gauges.

Supplied on pallet crate: 130 x 60 x 150cm, weight 160kg gross.

DETAILED TOOL LISTING

See Annex overleaf

ORDERING INFORMATION

Model Description





RB-Toolkit: Open Safety's Dive Technician tool trolley containing all tools as listed above.

Dive technician training available at factory or on your site.

Northern Diver International Ltd

Unit 5, East Quarry, Apply Lane North, Appley Bridge, Wigan, WN6 9AE, UK | www.ndiver-military.com
Mel Simm, email: mel@ndiver.com or tel: +44 (0) 1257 25 69 36
Neil Tordoff, email: neil@ndiver.com or tel: +44 (0) 1257 25 69 49

ANNEX: DETAILED TOOL LISTING

<p>Regulator Service Tools:</p>  <p>Test Criteria:</p> <ul style="list-style-type: none"> • Precision Cracking Effort • Precise IP Levels • Demand Effort vs. Flow • Venturi Performance • Venturi Cross-Over • Dynamic IP • Chatter Free <p>Accurate Efficient Cost Effective User Friendly</p>	<p>ScubaTools A.I.R. Flow Analyser is designed to test diving regulators under both static and dynamic conditions.</p> <p>The rebreather technician uses the analyser to test and set up Incursion ALV and OPVs, measure cracking pressure and gas flow rates while monitoring the first stage intermediate pressure.</p> <p>In addition to the standard “static tests” for cracking effort and intermediate pressure, the “dynamic performance” of the complete regulator (first and second stage) can be monitored while the regulator is flowing air at different flow levels.</p> <p>These dynamic tests are very important on modern regulators that use venturi assists as part of the overall work of breathing. If the regulator venturi overpowers the mechanical resistance of the demand valve, the crossover flow rate can be determined and adjusted for optimum performance.</p> <p>Supplied with all hoses to drive the flow analyser.</p>
	<p>Inline seat adjuster enables the cracking pressure of the ALV and second stage regulators to be adjusted with gas attached.</p>
	<p>Three piece Incursion port toolset, in 4mm titanium (plain or oxide finish).</p> <p>Enables over-tightened ports to be removed, including P-ports, star connectors and OPV or ALV nuts.</p>
	<p>Calibration manometer, +/-40cm of H2O</p> <p>110cm x 10cm</p>

Northern Diver International Ltd

	<p>C spanner for removing A320 ring</p>
	<p>Adjustable pin spanner, XLC TO-S09 Black, Pins custom to Open Safety Used to remove A320 top cap.</p>
	<p>A320 HP Module removal and insertion tool, in Grade 5 Titanium</p>
	<p>A320 Seat balance hole check needles, ultra fine. Pack of 10.</p>
	<p>Heinrich Grip Master Vice that features a cam operated clamping device that was originally patented by Heinrich in 1946. This lever operated mechanism is time “tested tough” and produces an adjustable holding pressure of 400-1100 lbs. A simple push or pull on the center bar knob slides the movable jaw in position, and an easy press on the locking lever cams the jaw forward to securely hold the part. The total amount of clamping force is determined by the force applied to the locking lever.</p>

Northern Diver International Ltd

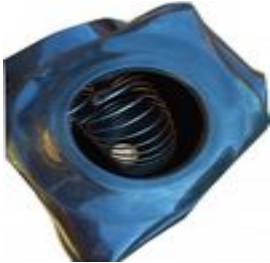
Unit 5, East Quarry, Apply Lane North, Appley Bridge, Wigan, WN6 9AE, UK | www.ndiver-military.com

Mel Simm, email: mel@ndiver.com or tel: +44 (0) 1257 25 69 36

Neil Tordoff, email: neil@ndiver.com or tel: +44 (0) 1257 25 69 49



Stainless steel leak finder spray bottle.
The sprayer is filled with water and soap, for finding small leaks.



OPV Test Counterlung with pressure bias spring.

Gas Blending Tools



Analox O2EII Pro Oxygen Analyser
For measuring the fraction of oxygen in gas, and for Nitrox blending.



HP Transfer Whip, G5/8 300 bar to G5/8.
Fitted with analogue gauge.
Note digital gauge may be used with the whip as supplied below.



Thread Adapters to G5/8
Four adapters covering Draeger, BS Bullnose, European Bullnose, Russian DIN, converting to G5/8 300 bar. Material SS316 and Brass, nickel plated.
DIN Capping plug (plastic)

Northern Diver International Ltd



Open Safety IP Gauge (Pressure Gauge) 30 bar.
Calibrated. 0.2% FSD.

Supplied with adapter to 3/8 UNF and gas release.



Open Safety IP Gauge (Pressure Gauge) 30 bar.
Calibrated. 0.1% FSD

Calibration to 0.01% FSD available as a cost option.

Supplied with adapter to M10.

Personal Protective Equipment



Ear Defenders x2

ZOHAN 054 Electronic Shooting Ear Defenders, Active Noise Reduction Safety Earmuff, Tactical Headset Sound Amplification

SNR27dB electronically reduced, reduces sound of gas release, as well as gunshot, explosion or other sound over 82dB




Built-in omni-directional microphone to enhance sound and talk

Northern Diver International Ltd

Unit 5, East Quarry, Apply Lane North, Appley Bridge, Wigan, WN6 9AE, UK | www.ndiver-military.com

Mel Simm, email: mel@ndiver.com or tel: +44 (0) 1257 25 69 36

Neil Tordoff, email: neil@ndiver.com or tel: +44 (0) 1257 25 69 49

	<p>Eye Protection goggles, x2 Safety Glasses with Clear Anti-fog Scratch Resistant coating.</p> <p>Full Frame Protective Eye Wear Adjustable. Provides UV Protection and protection from small particles entrained in gas being released.</p> <p>Black frame&Transparent lens.</p>
	<p>Rubber Latex Gloves Safety Work Protective gloves Heavy Duty Gauntlet Industrial Chemical Gloves Resist Strong Acid, Alkali and Oil.</p> <p>Protects the technician during oxygen cleaning operations involving boiling solvents.</p>
	<p>Steroplast Eyewash Pod Station.</p> <p>For safety of persons working with pressurised gas in case of particle impingement.</p> <ul style="list-style-type: none"> •The open aspect of the station allows the contents to be accessed easily in an emergency •Made from rigid plastic & can be wall mounted •Fitted with Shatterproof mirror •10 x Eyewash Pods (20ml) Sterile saline solution

Basic Tools:

Oxygen Cleaning Toolkit:

- | | |
|--|--|
| <ul style="list-style-type: none"> • 25 pce Neilsen spanners 6 – 32 mm • 10 pce Hex key set • 10 pce Torx key set • 10 pce Wiha German Screwdrivers: Flat, Philips, Posidrive, for ancillary equipment • Thin adjustable spanner • Std adjustable spanner • Long socket set 12" fittings • Calibrated Torque wrench 1/2" fittings • Rubber Mallet • External circlip pliers • Internal circlip pliers | <ul style="list-style-type: none"> • Ultrasonic cleaner, with heater to 80C, 2L capacity. Digital readout. • Ph meter • Ion level meter • UV source & filter • Cylinder inspection camera • Hose wash pump with 5/16 UNF and 3/8" UNF fittings. • Non-ionising Detergent 100 tabs. • Virkon 5kg • Bubble finder brush • Open Safety cylinder service labels, x50 • Funnel and jug set |
|--|--|

Northern Diver International Ltd

- Band wrench
- 8 pce O-ring picks
- 3 pce Tweezers
- Digital Vernier 150mm
- Record Heavy Vice
- 3mm silicone bench mat
- Tank valve to torque wrench adapter, G5/8 and M26
- 80L Open Safety box for water fill.

Northern Diver International Ltd

Unit 5, East Quarry, Apply Lane North, Appley Bridge, Wigan, WN6 9AE, UK | www.ndiver-military.com
Mel Simm, email: mel@ndiver.com or tel: +44 (0) 1257 25 69 36
Neil Tordoff, email: neil@ndiver.com or tel: +44 (0) 1257 25 69 49