COLTRACO
Ultrasonics | since 1987

PORTASCANNER® WATERTIGHT PRO

Ultrasonic Watertight Integrity Quantification Instrument

Made in the UK.

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INTRODUCING THE PORTASCANNER® WATERTIGHT PRO

Coltraco Ultrasonics' **Portascanner® WATERTIGHT PRO** is the only instrument that provides insight from a safety and survivability perspective, on drastic hull breaches, internal leaks, and unexpected water transit through the vessel with **full reporting and exporting capability**.

Based on trusted ultrasonic technology used for **30+ years**, **onboard 10,000 ships**.

Contributing to unrivalled watertightness: An ultrasonic instrument used for the location and quantification of leak-sites, predicting water flow rates in watertight compartment Multiple Cable Transit Areas, hatch covers, bulkheads, and watertight doors at sea.

World-first technology: Allowing any user to calculate the total leakage rate of any compartment, identify the most safety critical elements as a priority and then develop a vessel-wide state of the structural integrity assessment.

Type: Ultrasonic Watertight Leak-Sites Quantifier
Part Number: 509004-PRO
NATO Stock Number: 6625-99-257-8336
IMPA: 652778
Regulation Compliance: SOLAS Reg II-1, IACS Rules

APPLICATIONS

The adaptable **Portascanner® WATERTIGHT PRO** is in many industries such as:


Shipping/Marine


Defence/Naval


Oil & Gas


Hatch-covers


Watertight/ Weathertight Doors


Multiple Cable TRANSIT AREAS

PROVEN EXCELLENCE

While the **Portascanner® WATERTIGHT PRO** is a momentous new development in the field of watertightness testing, Coltraco have been working with the **Royal Navy** with our previous generation of **Portascanner® WATERTIGHT** equipment for **over 15 years**:

- We provide the equipment across the fleet and all prime subcontractors to allow for the continuous inspection of all watertight doors, AFU's and Cable Transit areas (MCTs).

We have developed the **Portascanner® WATERTIGHT PRO** to advance this, knowing that there is a leak in a major bulkhead is useful, but the critical information is whether that leak would result in a leakage of, for example, **2 litres per hour or 200 litres per hour in the event of water flooding**.

Analytically-informed selective maintenance allows a scientific approach to repairs that will ultimately increase a vessel's availability for operation.

UKRI Innovate UK Grant – Ultrasonic Quantification

Originated in our **Portascanner® WATERTIGHT PLUS** range, used for watertight integrity testing at sea, in service for **over 30 years**.

Portascanner® WATERTIGHT PRO

Translated the same hardware into a device for **quantifying water flowrates rather than air**.

Portascanner® COVID-19

In 2020 the company was awarded a **UKRI Innovate UK Grant** for technologies aimed at countering the COVID-19 pandemic and developed the **Portascanner® COVID-19**, a technology that was able to identify and quantify air leaks in NHS hospital wards.

National Physical Laboratory

Our quantification algorithms for air and watertightness: researched by the National Physical Laboratory.

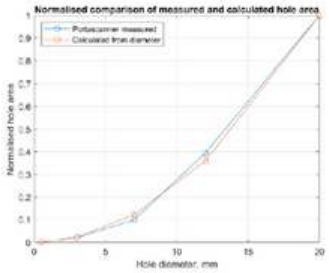
Our in-house laboratory research was independently verified by the country's foremost measurements standards laboratory.

Extract from '*Coltraco Portascanner: Testing and comparisons by acoustic and optic methods (NPL: April 2021)*'

NPL National Physical Laboratory

2.2 MOTORISED ALIGNMENT MEASUREMENTS

Motorised measurements were performed with a 3-axis positioning system capable of <5 μm step resolution (Precision Acoustics, UK). The positioning system was used to control the wand position about the test plate, with the wand's output directly captured by an oscilloscope (Tektronix, DSO-X 3024A) and waveforms saved to text data file. Alignment was achieved through orthogonal line scans over the test hole and centering on the -6 dB beamwidth positions (or -3 dB for low signal amplitudes, e.g. 0.5 and 3 mm). Values for OAV and LV were measured through the Portascanner software.



As seen above, the Portascanner® AIRTIGHT 520 performs well, with measured values differing at most by 5% from the true value.

PROTECT CREW, CARGO AND VESSEL

At the leading edge of good shipping practice and maritime safety, we offer the **Portascanner® Watertight PRO**, designed to accurately quantify the risk of catastrophic water ingress to cargo and crew.

Well maintained seals in hatch covers, watertight doors, bulkheads, and cable transits are **essential** to prevent the catastrophic consequences of water ingress.

A **regular inspection programme** of the quality of seals, revealing potential leakage points and quantifying their associated flow rates, allows ship managers to better understand the risks of excessive water ingress, flooding, and ultimately foundering.

Safe compartmentation saves lives and the only way to guarantee the maintenance of safe compartmentation is to know where the leaks are and how much water they will let through.

This is why, alongside our simpler models of **Portascanner®**, Coltraco developed the **Portascanner® WATERTIGHT PRO** with **full scientific reporting** of watertight seal surveys, including **photographic evidence of watertightness**, **leak locations**, **leak sizes**, and **water flow rates**.

Knowing the risks enables ship owners to make effective decisions about the safety of the ship, **reducing the cost of repair**, **reducing the risk of catastrophe**, and **keeping cargo and crew safe**. To **save costs** in the long-run, smart shipowners choose **Portascanner® WATERTIGHT PRO**.

Did you know...

Chalk Test & Hose Tests are outdated methods of testing, with significant shortfalls in accuracy and reliability. Chalk Testing simply confirms contact between the seal and compression bar rather than weathertightness, so it is easy to overlook small leaks / damage which may affect the overall weathertightness of a hatch. Chalk/Hose Testing cannot test MCT's. Hose Testing requires volumes of water to be sprayed to check for leaks, which can potentially harm water sensitive cargoes like grains, urea, and steel, posing a threat to the vessel and its cargoes it aims to protect.

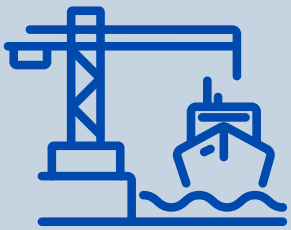
– NorthStandard, 2024 deduce Chalk and Hose Tests are "an undesirable method to measure weathertightness."

ENHANCING NAVAL AVAILABILITY

Maintaining the overall structural integrity of the vessel is the key element that will **enhance vessel survivability** in the event of major leak events and we have seen several occasions over the years where closer attention to this matter would have led to the avoidance of vessel loss. **Quantifying water ingress in terms of flowrates** is a further step to facilitate informed decision-making, reducing the risk of severe vessel damage and improving the overall availability of the Fleet.

As such, the **Portascanner® WATERTIGHT PRO** can be used in port and at sea:

IN PORT



Scientifically locate and assess areas that require remedial work to enhance and advance Damage Control and Safety & Survivability in warships and submarines.

AT SEA

Test whilst the vessel is undergoing dynamic stresses at sea to understand and prioritise water leakages. Assess leakage **before a compartment floods,** and contribute to the **internal "damage control battle"** of warships at the damage moment.

Further **enhancing watertight integrity is crucial** to ensure that all five fighting arms of navies have maximum availability. Whether the vessel in question is a **surface ship**, a **submarine**, or an **amphibious vehicle**, watertightness and the ability to minimise intercompartmental ingress is essential to limit the damage caused by an external breach.

With a greater confidence in watertight integrity, it could...

- **Reduce the chance that extensive maintenance is required**
- When a vessel is damaged by an impact or has undergone severe mechanical stress as a result of sea conditions, the means to **efficiently assess watertight integrity allows for targeted repairs and a reduction in maintenance time**.

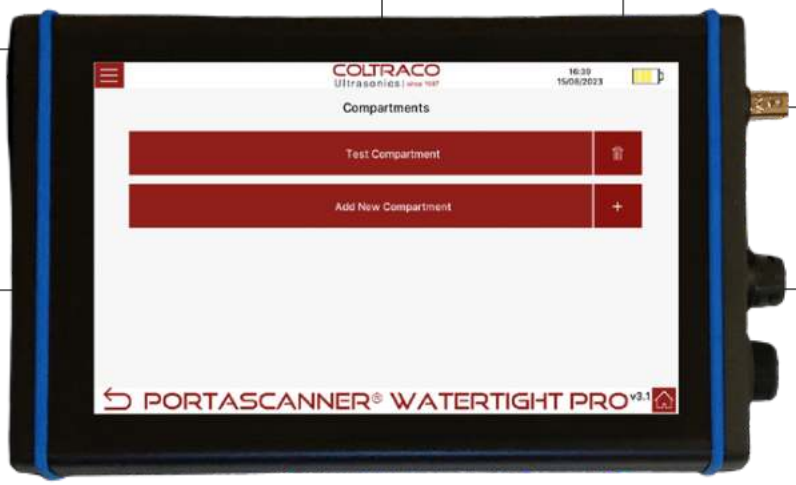
To be able to efficiently locate and quantify areas of concern in regard to watertight integrity is therefore of great benefit in **maximising the availability of vessels over an extended period of time**.

HIGHLIGHTED FEATURES

Variable output power of generator to **allow detection** and **quantification of leaks** no matter the size of the structure or compartment

Camera to photograph test areas, **save location** and **leak-sizes**, **export records via USB**

Unbeatable sensitivity, detecting leaks **as small as 0.06mm**



Built-in data collection and reporting feature

Ability to fully assess a compartment or vessel **prior to and during transit**

Portable, lightweight, hand-held instrument

STAY COMPLIANT WITH REGULATIONS

SOLAS Reg II-1/11.1

"Where a hose test is not practicable [sic] it may be replaced by [sic] an ultrasonic leak test or an equivalent test. In any case a thorough inspection of the watertight bulkheads shall be carried out."

IMO SOLAS Reg II-1/21.3

"The watertight doors and all mechanisms and indicators connected therewith[sic] shall be periodically inspected at sea at least once a week."

IMO SOLAS Reg II-1/13-1.1

"Where penetrations of watertight bulkheads and internal decks are necessary for access, piping, ventilation, electrical cables, etc., arrangements are to be made to maintain the watertight integrity."

IACS Rules - Requirements for Ultrasonic Watertight Integrity Service Providers

"2. Firms engaged in tightness testing of closing appliances such as hatches, doors etc. with ultrasonic equipment."

International Association of Classification Societies (IACS) Mandate Z28 provides requirements on surveying MCTs for all vessels contracted for construction after 1 July 2021.

"*All transits are to be examined to confirm their satisfactory condition and the Register is to be reviewed to confirm it is being maintained (4.1.1)"*

Z28 dictates this must be by a surveyor or firm approved as a service supplier.

"The owner is to maintain the Register to record any disruption (repair, modification or opening out and closing) to a cable transit (2.2.1)"

WHATS IN THE BOX?

- Portascanner® WATERTIGHT PRO
- Portascanner® 1-Transducer Ultrasonic Generator
- Portascanner® 3-Transducer Ultrasonic Generator
- Portascanner® Receiver Wand
- 3m BNC Coaxial Cable
- Charging Cable
- Headphones: Audio Feedback Of Leak Detection
- Coltraco USB Drive
- USB WiFi Adaptor
- USB Splitter
- Generator Tripod Stand
- User Manual
- Calibration Certificate
- Robust Carrying Case

BENEFIT FROM WARRANTY AND SUPPORT

- Main Unit: 3 years
- Sensors: 1 year
- Lifetime customer support

CHOOSE FROM OUR WATERTIGHT RANGE

PRODUCT FEATURES	PORTASCANNER® WATERTIGHT II	PORTASCANNER® WATERTIGHT PLUS	PORTASCANNER® WATERTIGHT PRO
Measurement Type	Linear, Decibels	Linear, Decibels, % Open Hatch Value	Linear, Decibels, % Open Hatch Value, Cross-sectional Leak Size, Volumetric Flow Rate of Water through a leak
Display	55 x 28mm backlit LCD	55 x 28mm backlit LCD	7" Capacitive Touchscreen, 1024 x 600
Generator Type	Wide range generator, 3 transducers, one power output only	Wide range generator, 5 transducers, variable power	Supplied with two generators: Precision generator with variable power (1 - 100%), Wide range generator, 3 transducers, one power output only
Accuracy	0.06mm	0.06mm	0.06mm
Classifications & Approvals	CE, ABS Type Approved, RINA Accepted	CE, ABS Type Approved, RINA Accepted	CE
Sensor Type	270mm Solid Sensor Wand with 270mm length aluminium extension rod on 1.8m coaxial cable	350mm Flexible Wand with 540mm length aluminium extension rods on 1.8m Coaxial Cable	350mm Flexible Wand with 540mm length aluminium extension rods on 1.8m Coaxial Cable
Battery Life - Generator	10 hours	10 hours	Precision generator: 6 hours, Wide Range generator: 10 hours
Battery Life - Receiver	10 hours	10 hours	6 hours
Special Features	Signal output via headphones	Signal output via headphones, Automatic % Open Hatch Value Calculation	Signal output via headphones, Automatic % Open Hatch Value Calculation, Record and export data through USB, Generator tripod for better positioning

TECHNICAL DATA

MAIN UNIT DIMENSIONS	Main Unit: 225mm (L) x 135mm (W) x 35mm (D) Wand: 1.8m length with 3m BNC cable. Sensor portion is (265mm + 50mm) (L) x 25mm (∅) Aluminium extension sections provided for additional length, 1.8m as standard. BNC cable length approx. 3000mm. Longer cables available upon request. Precision Generator: 112mm (L) x 67mm (W) x 25mm (D) Wide Range Generator: 215mm (L) x 82mm (W) x 30mm (D)
READINGS	Visual: Displayed on user interface as percentage and in decibels (dB SPL) Audible: Ultrasound converted to audible frequencies. Played via headphones (provided). Measures cross-sectional area of leak sites and predicted flow rates. Metric and imperial units available (via settings).
PRECISION	Detects and locates leaks as small as 0.06mm.
ACCURACY	Quantifies leaks between 0.5mm and 20mm in equivalent diameter to an accuracy of within ±10%.
DISPLAY	7-inch Capacitive Touchscreen, LCD back-lit. Resolution: 1024x600.
POWER SUPPLY	Main Unit & Precision Generator: Rechargeable (micro-USB) LiPo Battery, 6+ hours continuous use. Wide-Range Generator: 1 x PP3 9V battery, 10 hours continuous use.
OUTPUT	Precision Generator: Single 40kHz Transducer. Variable Power Settings (1-100%). Wide-Range Generator: Triple 40kHz transducers
OPERATING TEMPERATURE	Main Unit: -10°C to +65°C
IP RATING	Main Unit: IP65 USB Connectors: IP68
CAMERA	8-megapixel camera on rear of device
CERTIFICATIONS	CE, Coltraco is ISO 9001:2015 and ISO 14001 approved
WARRANTY	Main Unit + Generators: 3 years Sensor Wand: 1 year Lifetime customer support
STANDARD PACKAGE CONTENTS	1 x Portascanner® WATERTIGHT PRO Main Receiver Unit 1 x Portascanner® Ultrasound Sensor Wand 2 x Aluminium Wand Sections and 1 x Wand Handle 1 x 5cm Sensor Positioning Guide Wand Attachment 1 x Portascanner® Precision Generator 1 x Portascanner® Wide Range Generator 1 x Tripod Stand and Clamp 1 x Pair of Headphones 1 x Micro-USB Charger 1 x USB Thumb Drive 1 x USB WiFi Dongle 1 x USB Splitter 1 x Operating Manual 1 x Calibration Certificate 1 x Robust Carrying Case

OUR THROUGH-LIFE COMMITMENT TO YOU

We look after our customers throughout the lifetime of your equipment.

Every main unit is supplied with **3 years warranty** and **1 year warranty on its sensors and accessories.**

We are proud to offer free lifetime technical support and online training is available on request with a range of solutions designed to meet your calibration requirements:

Onshore Calibration
This can be done in our UK laboratory or in one of our 11 ODA Service Centres present globally
We also support 1-1 exchanges with a pre-calibrated unit to reduce processing time
We also offer a unit collection service for customers who are not used to sending equipment out of their respective countries.

Remote Calibration
This can be done remotely onboard the vessel by a competent crew member to reduce the hassle of offloading the instrument while the vessel is at sea

ABOUT COLTRACO ULTRASONICS

Coltraco is ISO 9001:2015 and ISO 14001 approved

"To see the sounds that others cannot hear"
"To measure the hitherto unmeasurable"

Our organisation comprises:

- Our **Company**
- Our **Laboratory**, co-located with the Centre for Advanced Instrumentation at Durham University
- Our **Research Organisations**, the Durham Institute of Research, Development & Invention (DIRDI)
- Our **Centre for Underwater Acoustic Analysis** (CUAA)

BY BEING SCIENCE-LED:

We identify and nurture brilliant minds, creating a unique research environment at Durham University, which is a globally outstanding centre of teaching and research excellence.

In our research at DIRDI, we undertake fundamental research into the physical laws of the universe, alongside applied research in Physics, Mathematics, Engineering and Computer Science in acoustics, electromagnetism and information engineering.

It is this research and manufacturing excellence, and our enduring commitment to the sustainment of our technologies in the field, that makes Coltraco Ultrasonics the partner of choice for customers and distributors in 120 countries.

We deliver genuine value for our customers through our scientific and institutional values, and the global quality of our commercial and technical services.

Engaged in Research, Design, Development, Manufacture, Integration & Sustainment of high-exporting advanced technology systems, products and services.
We monitor and measure an array of specialised environments to deliver the Safesite™ on land and the Safeship™ at sea.

Safeship™
Today our instruments are aboard 17% of the world's 60,000 ships, preventing ships' catastrophic failure, by monitoring watertight integrity on the one hand, and the safe contents of fire extinguishing gases such as CO2, on the other. These are the basic principles by which we became a Safeship™ company in the maritime sector.

Contact and support

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British manufacturer of ultrasonic technologies, exporting to 120 countries and twice winners of The Queen's Award 2019 and 2022.