CLASS INSTRUMENTATION LTD
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Cargo-Safe™
Ultrasonic Hatch Cover Tightness Tester

The choice of marine surveyors across the globe

CLASS INSTRUMENTATION LTD

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ABS TYPE APPROVED Certificate Number LD750707

ABS Product Design Assessment Certificate Number 05-LD485608/1-PDA

ABS Manufacturing Assessment Certificate Number 06-LD750707-X

ISO 9001:2008 Certificate Number GB13487

IIMS Corporate Membership Number C508

NCAGE Number U0B22

CARGO–SAFE™ Ultrasonic Hatch Cover Tester

The ingress of water through hatch covers is a main cause of damage to cargo. It is in the interest of ship owners, managers and insurers to guarantee the cargo hold is watertight, as damaged cargo caused by water leaking through hatch covers can result in large claims against insurance companies and P&I clubs.

CARGO–SAFE is an ABS Type Approved hatch cover leak detector. CARGO–SAFE provides a quick and simple method of establishing weather tightness of hatch covers, bow, stern and side doors, but unlike hose testing, it has no negative side effects on the port or harbour environment and can be performed in sub zero temperatures.
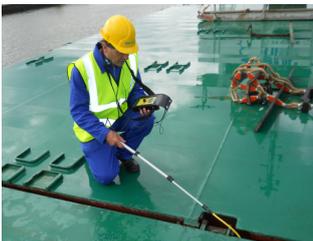
The complete CARGO–SAFE™ kit includes:
· Ultrasonic Transmitter unit
· Receiver unit
· Hard hat compatible headphones
· 2 Flexible inspection microphones (1 spare)
· Protective IP66 storm-proof leather cases with
   neck and waist straps for hands free operation
· Telescopic microphone extension, up to 1.15m (45")
· Full operating instructions
· Emergency microphone lead
· Emitter, microphone and extension arm tester
· Batteries and global charger (with 12V car adaptor)
· 12-24V auxiliary power input lead
· 450 x 320 x 100mm carry case (17.7"x12.6"x3.9")
· Total weight of kit in carry case as shown: 2.7kg (5.95lb)
· Operational weight 2.4kg (5.3lb)

Top photo courtesy of ABP

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## CARGO-SAFE™ Features

Unlike hose testing, ultrasonic hatch cover tightness testing:

- is compliant with port and harbour environment management plans as it does not pollute the marine environment
- can locate holes and tears in hatch seals with pinpoint accuracy
- causes no damage to cargo
- can be conducted in sub-zero temperatures
- can be carried out with the cargo in place
- does not interfere with other crew activities.

- Each CARGO-SAFE comes with its own certificate of calibration and conformity.
- No training needed to operate - full instructions given.
- Does not need frequent periodic recalibration.
- Suitable to be carried as hand luggage on aircraft.
- The most powerful ultrasonic hatch tester available on the market with a 157 dB transmitter – suitable for any sized ship.
- 3 year warranty on Receiver and Transmitter.
- Durable and storm proof, environmental protection to IP66.

How the CARGO-SAFE™ Ultrasonic Hatch Cover Tester Works

The principle for ultrasonic hatch cover testing is very simple. A transmitter generating an ultrasonic signal is placed in the cargo hold (empty or loaded with cargo) and the hatch covers are closed. The surveyor or operator then uses the CARGO-SAFE ultrasonic receiver to listen from the outside of the hold and is able to detect any ultrasound that passes through holes in the hatch cover sealing system with pin-point accuracy. The size of the problem can be established from the strength of the signal detected.
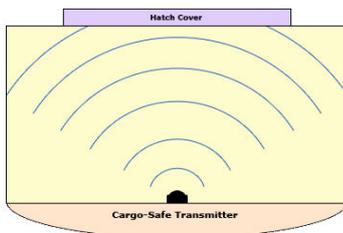
The CARGO-SAFE hatch cover leak detection system has three levels of emitters: upper, lower and vertical. This means that all the ultrasound is directed to the hatch covers, optimising its effectiveness. The diagram shows the dispersion pattern of the ultrasonic signal emanating from the CARGO-SAFE transmitter. The high sound pressure level is ample to fill the largest of holds enabling reliable and accurate readings to be taken.

Quick Guide to a Hatch Cover Survey

1. The CARGO-SAFE Transmitter is placed in the cargo.
2. On the deck, with the hatches closed, the microphone and headphones are plugged into the Receiver.
3. The surveyor begins to inspect the hatch, holding the microphone against the hatch seals. Any gaps through which air or water can pass, will allow the ultrasonic signal to pass and can be detected.
4. The display on the Receiver will show the decibel level of any ultrasound leaking through the hatch seals. It can also be heard through the headphones.
5. The flexible microphone and the extension arm allow the position of any potential leaks to be identified with pin-point accuracy. The size of the problem can also be established from the strength of the signal detected.

CARGO-SAFE™ Calibration and Maintenance

The CARGO-SAFE hatch leak detector is sold with a device that can be used to check the emitters, the inspection microphones, the extension arm and microphone emergency lead (The E.M.EA Tester). It is recommended that this is done before each survey, to ensure accurate results.

The CARGO-SAFE is calibrated at the factory and is predicted to stay in calibration for 5 years. The constant output circuitry guarantees the ultrasonic output of the Transmitter to be constant over the entire discharge cycle of the batteries, validated by the green flashing LEDs.

CARGO-SAFE™ Certificates and ABS Type Approval Compliance

Each CARGO-SAFE unit is sold with a certificate of calibration and conformity, giving full details of serial numbers and warranty periods. This certificate is evidence of each unit's calibration and ABS Type Approval compliance. CARGO-SAFE complies with the IACS UR Z.17 Directive. The certificate of origin confirms that CARGO-SAFE is manufactured in the United Kingdom.

CARGO-SAFE™ After Sales Support

Class Instrumentation Limited guarantees the instrument to be free from defects in materials and workmanship for a period of three years from the date of dispatch for the Receiver & Transmitter and six months for the accessories. Free technical support is available throughout the life of the product.

CARGO-SAFE is a lightweight ultrasonic system for testing the water tightness of cargo hatch covers. The complete system is contained in one carry case for convenient transportation.

Shipping Weight: 4kg (6.8lb)

Operational Weight: 2.4kg (5.3lb)

Transmitter

- Weight: 200g (7oz)
- Dimensions in leather case: 220 x 120 x 80mm
  (8.7 x 4.7 x 3.1") (max)
- Output: 157 dB @ 40 KHz
- Radio control standby saves battery life when not in use
- Power Supply: 6 x AA rechargeable or alkaline batteries
  – 4.5 hours of operation
- Storm proof leather case to IP66, designed to protect if dropped with neck strap for hands free use

Receiver

- Weight: 225g
- Dimensions in case: 160x100x30mm
  (7.3 x 5.1 x 2")
- Power Supply: 1 x 9vPP3 rechargeable or alkaline battery
  – 40 hours of operation
- dB – OHV switchable
- Internal loudspeaker – can be used instead of headphones
- Internal microphone – can be used in the event of mic loss
- Storm proof leather case - IP66, designed to protect if dropped
- MAX HOLD capability to record the maximum reading
- Backlight button with ON/OFF or auto OFF after 30 seconds
- Neck and waste straps for hands free use

Microphone

- Weight: 110g (3.9oz)
- 330x10mm (13"x0.4")
- Bright yellow to aid visibility

Emitter, Microphone and Extension Arm Tester

- Weight: 17g (0.6oz)
- Dimensions: 46x31x20mm (1.8x1.2x0.8")
- Use to check the performance of emitters, microphone and extension arm before a survey

Extension Arm

- Weight: 150g (5.3oz)
- Dimensions: 360 x 40 x 30mm
  (14.2 x 1.6 x 1.2")
- Extended: 1150 x 40 x 30mm
  (45 x 1.6 x 1.2")
- Wrist strap

Spare Microphone and Emergency Lead

- To be used in the event of either the microphone or extension arm loss

Battery Charger and Batteries

- 12 rechargeable AA batteries
- 2 PP3 9v batteries
- Global battery charger with car adaptor

Headphones

- Weight: 50g (1.8oz)
- 3.5mm stereo jack plug
- Hard hat compatible

Emergency Power Lead

- Offers emergency power to the Transmitter in the event of a failed battery
- Can accept an external power supply of 9 to 24 volts DC