



# PORTAGAUGE™

**Portagauge® 3**

**Portagauge® 4**

Portable Ultrasonic  
Thickness Gauge

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TECHNICAL  
SPECIFICATIONS

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**COLTRACO**

Ultrasonics | since 1987

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# OUR MISSION: THE SAFESHIP & THE SAFESITE

We welcome you to enter into our mission to create accurate, reliable and easy to use instrumentation, which enhance our customers' safety management.

The issue is not just about compliance with the regulations; it is about the safe ship offshore and the safe site onshore.

This helps our customers to ensure lower risk, higher protection and business continuity.

Safety for safety's sake.



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# PORTAGAUGE™ 3

## THE SINGLE ECHO ULTRASONIC THICKNESS GAUGE

MODEL: PORTAGAUGE 3

TYPE: Portable Ultrasonic Single Echo Thickness Gauge

PART NUMBER: 2099382-PG3

NSN: 5520-99-382-6449

### THREE CORE BENEFITS

#### 1. Quick

A few short steps allows the user to test a large range of metals within a short period of time.

#### 2. Simple

Designed to be simple enough for any operator, including non-native English speakers, to be quickly trained so they can reliably and accurately carry out testing.

#### 3. Low-Cost

We understand in a competitive world market every company needs to keep overheads down. The simplicity of the Portagaugue III means high manufacturing quality and reliable results are achievable at the lowest possible cost to our customers.

### FEATURES

- **FUNCTION:** For measuring metal thickness and testing for corrosion by checking inconsistencies in readings
- **IDEAL FOR** a wide range of industrial applications: fire cylinders, ship hulls, bulk heads, ship deck plate, pipework, pre-purchase inspections, pressure vessels, chemical equipment, boilers, oil storage tanks, and industrial pipe work amongst others
- **EFFECTIVE** method of inspecting metals
- Simple set-up and ease of operation with digital processing
- Portable: Lightweight, compact and with long-term reliability
- Accurate measurement in steps of 0.1mm from 1.5mm – 99.9m
- Ability to work on heavily corroded metal



# PORTAGAUGE™ 4

## The Triple Echo Ultrasonic Thickness MultigaUGE

MODEL: PORTAGAUGE® 4

TYPE: Portable Ultrasonic Triple Echo Thickness MultigaUGE

PART NUMBER: 2099382-PG4

### THREE CORE BENEFITS

#### 1. Precise

Triple Echo technology ensures all coatings are completely eliminated from the measurement

#### 2. Accurate

readings and perfect linear accuracy – not affected by V-beam error

#### 3. Robust

on heavily corroded surfaces, despite whether they are coated

### FEATURES

- **FUNCTION:** For measuring the true metal thickness ie. Excluding coating and paint thickness
- **IDEAL FOR:** Most common thickness gauging applications onboard ships by marine superintendents
- **RECOMMENDED FOR:** Bridges, pilings storage tanks, lighting columns, ship hulls, bulk heads, pipe work, steel/stainless steel, cast iron, aluminium, copper, brass, zinc, quartz, glass, PVC, polyehtyience, grey cast iron amongst others
- **Automatic Measurement Verification System (AMVS)** ensures only true measurements are displayed by checking a minimum of three echoes each time the ultrasound pulses through the metal
- **Intelligent Probe Recognition (IPR)** which automatically adjusts settings in the gauge at the same time as transmitting recognition data
- **Large colour LCD Display** giving user information
- **Single crystal soft** faced probe protected by a membrane
- **Easy calibration** with menu driven buttons
- **Echo strength** indicator
- **No zero-ing required:** all sensors use a single crystal which means that no specific alignment is required when measuring on curved or rounded surfaces
- **User friendly** with soft moulded rubber surround which is also comfortable to hold and provides extra protection



# PORTAGAUGE™ 3

## TECHNICAL SPECIFICATIONS

<b>Thickness Measuring Range</b>	<b>1.5mm – 99.9mm</b>
Accuracy	+/- 0.1mm
<b>Sound Velocity</b>	<b>500-9000 m/s</b>
Lower Limit Steel Pipes	1.5 x 2.0 mm, 20 x 30 mm determined by the transducer
<b>Resolution</b>	<b>0.1 mm</b>
Power Supply – Battery	PP3 Alk (replaceable) – Average 25,000 plus measurements per battery low charge indication
<b>Operating Conditions</b>	<b>0-4C / 10-90 &amp; RH</b>
Dimensions	140 x 80 x 30mm
<b>Weight</b>	<b>300 grams</b>



## KIT CONTENTS: THE READY-TO-GO PACKAGE



# PORTAGAUGE™ 4

## TECHNICAL SPECIFICATIONS

<b>Sound Velocity Range</b>	<b>From 1000m/s to 8000m/s (0.0394 in/us to 0.3150 in/us)</b>		
Single Crystal Soft Faced Sensor Options	2.25 MHz	3.5 MHz	5 MHz
<b>Sensor Measurement Range</b>	<b>3-250 mm (0.120" to 10")</b>	<b>2-150mm (0.080" to 6")</b>	<b>1-50mm (0.040" to 2")</b>
Sensor Sizes	13mm (0.5") & 19mm (0.75")	13mm (0.5") & 13mm (0.5")	6mm (0.25")
<b>Resolution</b>	<b>0.1mm (0.005") or 0.05mm (0.002")</b>		
Accuracy	+/- 0.1mm (0.005") or +/-0.05mm (0.002")		
<b>Display</b>	<b>Colour LCD</b>		
Batteries	3x disposable AA alkaline batteries or rechargeable NiHM/NiCD		
<b>Battery Life</b>	<b>20 Hours continuous use using alkaline batteries</b>		
Gauge Dimensions	147mm x 90mm x 28mm (5.75" X 3.5" X 1")		
<b>Gauge Weight</b>	<b>325 g (11.5 ounces) including batteries</b>		
Environmental	Case rated to IP65. RoHS and WEEE compliant		
<b>Operating Temperature</b>	<b>-10 C to +50 C (14 F to 122 F)</b>		
Storage Temperature	-10 c to +60 c (14 F to 140 F)		
<b>Compliant</b>	<b>British Standard BS EN 15317:2007 which covers the characterization and verification of ultrasonic thickness measuring equipment</b>		

\* Membranes

all sensors have protective membranes so they should last the lifetime of the gauge. Membranes are easily replaceable and we supply spares with every kit.

## KIT CONTENTS: THE READY-TO-GO PACKAGE



# HOW PORTAGAUGE™ 3 WORKS

- 1 The Portagauge® III unit makes use of single echo technology
- 2 The unit sends a strong electrical signal to the probe, causing it to emit a high energy pulse of ultrasound
- 3 This ultrasonic signal then enters into the material being tested, echoes off the back of the material and returns to the probe (Shown in Figure 1)
- 4 The receiver listens for this single returning pulse of ultrasound
- 5 The received ultrasound signal is then converted into an electronic signal which is sent to the main unit
- 6 This electric signal is then analysed by the device allowing the thickness results to be instantly displayed on the main unit LCD screen

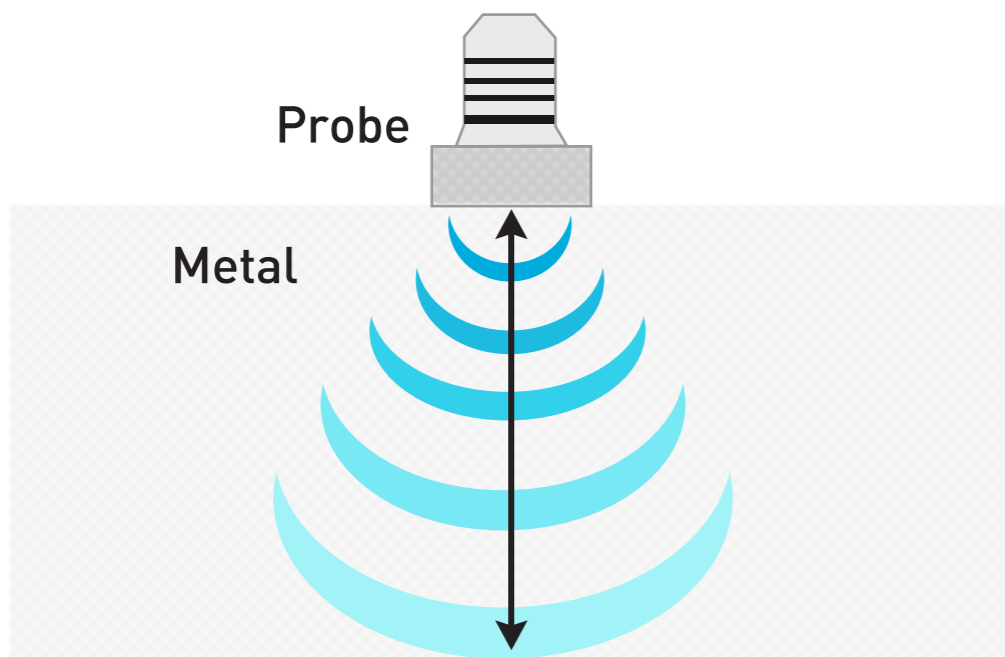


Figure 1

# HOW PORTAGAUGE™ 4 WORKS

- 1 The unit sends a strong electrical signal to the probe, causing it to emit a high energy pulse of ultrasound
- 2 The transmitted ultrasound pulse travels through both the coating and the metal and reflects from the back wall
- 3 The returned echo then reverberates within the metal, with only a small portion of the echo travelling back through the coating each time (Figure 2)
- 4 The timing between the small echoes travelling back through the coating gives the timing of the echoes within the metal, which relate to the metal thickness
- 5 The returned echoes need not be consecutive as the gauge will interpret them automatically and calculate the thickness
- 6 A minimum of three echoes are checked each time. This is referred to as the Automatic Measurement Verification System (AMVS)
- 7 The gauge will show an increasing number of bars on the right hand side of the display to indicate the strength of the returning echoes. The stronger the returning echoes are, the more bars will be displayed



Echo Strength Indicator

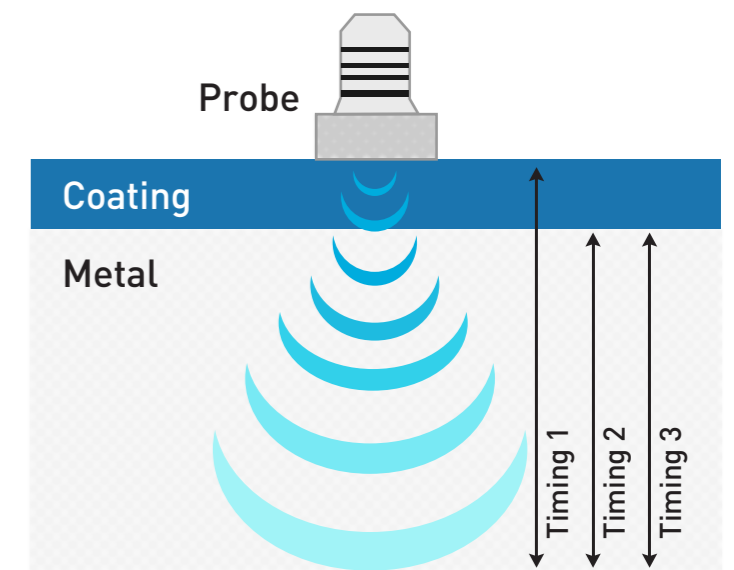


Figure 2

# PORTAGAUGE™

## OPERATION

A basic outline of how the Portagauge® is operated:

1. Unscrew the probe knurled ring and apply a few drops of membrane oil to the face of the probe.
2. Re-screw the knurled ring.
3. Connect the probe, cable and gauge together.
4. Turn on the gauge.
5. Making sure the surface being measured is free from dirt and debris, apply a small amount of gel to this surface.
6. Apply the sensor firmly to the surface, ensuring good contact, and take the measurement.
7. Remove debris from the probe face between measurements.



# APPLICATIONS

## MARKET SECTORS

### SHIPPING

- Monitoring corrosion levels is critical to maintain the safety of the crew, cargo and vessel
- Salt water can be very corrosive
- Portagauge is handheld and light-weight making testing easy onboard vessels

### PIPES & TUBINGS

- Testing piping, in factories for example, for external and internal corrosion or blockage
- Pinpoints where additional testing needs to take place

### PETROCHEMICAL

- Coltraco has a wealth of experience working offshore
- Portagauge can be used onshore in many petrochemical areas and pipeline networks
- Portgauge is resilient and able to work in harsh environments

**OTHER:** For pipes, pipeline networks, beams, vessel hulls, storage tanks, bridges, road tankers, lighting columns, rope access, steeplejacks, boilers, casting and other structures.

Both Portagauge units can be used for a wide range of applications and general maintenance in industries including airports, agriculture, transportation, power generation, manufacturing/other industrial infrastructure, metals, mining & pharmaceuticals.

### RAIL

- From mass transit rail services, high-speed and heavy-haul networks, to urban and industrial railways
- Test for corrosion to ensure there is a strong internal metallurgical structure

### FIRE PROTECTION

- Extreme corrosion in fire systems with pressurised gas could lead to leaks or an explosion
- Portagauge is a must-have tool for maintenance checks to test for any dangerous inconsistencies in the readings

### TELECOMMUNICATIONS

- Ground water can lead to corrosion at the base of telecommunications masts and columns as well as condensation further inside
- Inspections using Portagauge ensure they are structurally sound



# COMPARING PORTAGAUGE™ MODELS

	PORTAGAUGE™ 3	PORTAGAUGE™ 4
Ideal for use by Crew	✓	✗
Ideal for use by Marine Superintendent	✓	✓
Ideal for use by Marine Surveyor	✗	✓
Low cost model	✓	✗
Very simple to use	✓	✗
Reliable	✓	✓
Robust	✓	✓
Accounts for coatings on materials	✗	✓
Accurate	✓ to ± 0.5 %	✓ to ± 0.1 mm
Echo type	Single Echo	Triple Echo
Verifiable materials	Steel, Aluminum, Brass, Quartz, Polyethylene, Grey Cast Iron, Cast Iron, Copper, Zinc, Glass, PVC	Steel, Aluminium, Brass, Grey Cast Iron, Cast Iron, Copper, Zinc
Can test some plastics	✓	✗
Colour LCD display	✗	✓

# ACCESSORIES

## PORTAGAUGE™ 3

### 6mm Thin Material Probe

- Ideal for thin material thicknesses or for small diameter application testing such as small pipes
- Measuring Range : 0.1 – 50mm, Operating Temp: -10C - +60C



### 10mm Standard Probe

- Designed to cater for the vast majority of applications including flat metal testing or larger pipes
- Measuring Range: 1.5mm – 99.9mm, Operating Temp: -10C - +60C



### 12mm High Temperature Probe

- Designed for high temperature surface applications
- Measuring range (Steel): High Temp 4.0 – 100mm, Normal Temp 1.0 – 99.9mm. Operating Temp: -10C - +70C



## PORTAGAUGE™ 4

### 2.25MHz Probe

- 2.25MHz 19mm (3/4") Remote Probe (yellow)
- 2.25 MHz 13mm (1/2") Remote Probe (yellow)

### 2.25 MHz Probe

- 2.25 MHz 13mm (1/2") Marinised Remote Probe (yellow) including 1m (3") of Marinised cable

### 3.5 MHz Probe

- 3.5 MHz (1/2") Remote Probe (green)

### 5 MHz Probe

- 5 MHz 13mm (1/2") Remote Probe (blue)
- 5 MHz 6mm (1/4") Remote Probe (blue)

### Leather Carrying Case

Please ask for details of other spares such as oil, batteries and cases.

# WHY BUY FROM COLTRACO?

## STORY OF COLTRACO

Since 1987 Coltraco Ultrasonics have been designing and manufacturing ultrasonic instrumentation for safety and servicing. In 2012 we partnered with a fellow well-respected UK OEM of thickness gauges to design our current models.

## WHY ARE THERE TWO MODEL TYPES?

Today we offer two thickness gauge models to suit our diverse customer needs.

Portagauge® 3 and Portagauge® 4 satisfy different requirements but both have the same base-line similarities with regard to their quality, reliability and customer support.

Non-destructive testing (NDT) using ultrasonic technology is advantageous for those wishing to test without having to dismantle or shut down the system.

## OUR COMMITMENT TO SAFETY

We are dedicated to being a Safeship® and Safesite™ company, encouraging safety for safety's sake.

Our two Portagauge models are part of our range of 14 products and systems which are all designed to offer alternative methods to traditional means of testing, for example fire suppression systems, watertight integrity, flow testing and more.

## QUALITY

All gauges are carefully hand built and undergo rigorous quality testing to ensure they meet the high standards expected by our customers, and provide them with long term reliability

## ADVANTAGES

- 1 – Simple, Robust and Durable
- 2 – Easy to Use
- 3 – Accuracy (+/- 0.1mm - +/- 0.05mm)
- 4 - Long-term reliability

# AFTER SALES

- Optional Leather Case
- 10mm standard sensor (included in standard package),
- 6mm sensor for curved surfaces
- High temperature sensor
- Other models for underwater use are available upon request

## COLTRACO CUSTOMER CARE

- By purchasing from Coltraco you can be assured of our full support to ensure you become a confident and competent user
- 1 year warranty for Portagauge 3
- 3 year warranty for Portagauge 4
- Support for the life-time of the equipment via telephone/email
- Guaranteed against defects in materials & workmanship

## PORTACARE® PLAN

In addition to our Coltraco standard after sales customer care, you can opt to upgrade to our Portacare® plan. This is our 3-5 year total care maintenance package which will:

- Cap the cost of ownership during the term you choose
- Guarantee maximum operational ability so your equipment is ready to go whenever you need to test
- Back-up units provided in the event of fault
- We promise to support you above and beyond the warranty
- Providing you with peace of mind so you can have confidence that your Portagauge is wellmaintained



**COLTRACCO**  
Ultrasonics | since 1987