



OPERATOR'S GUIDE

ProMace

Mace Snag Tester

UniController

James Heal's
Signature user interface

Covering Serial Numbers
1522/15/1001
& upwards



Extraordinary Testing Solutions

James H. Heal & Co. Ltd.
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Setting the Standard



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JAMES HEAL

At James Heal, we are dedicated to designing and developing high precision testing instruments and test materials for physical and colour fastness testing. Our worldwide Service and Calibration division and expert technical assistance complement our product range, adding real value to your laboratory testing activities.

Setting the standard

We are committed to forming close relationships and have established numerous partnerships within the textile industry, from trade and standards organizations, to test houses, customers and distribution partners.

With a heritage spanning more than 140 years, we have evolved and grown through a culture of continuous improvement, resulting in a thorough understanding of the applications, operating conditions and requirements of customers worldwide – from independent testing Laboratories and test houses, to fabric suppliers, manufacturers and retailers.

Using knowledge and expertise, we consistently set the industry standard through product innovation and technology, with customer and user needs, present and future, driving our technological advancements. You can be assured that with James Heal, you will always receive the highest levels of product quality and customer service. We have Agents and Distribution partners all over the globe, ensuring locally available product whenever, and wherever you need it.

Areas of expertise

Textile: Colour Fastness

- Chlorinated Water
- Dry Cleaning
- Dry Heat
- Hot Pressing
- Laundering
- Light
- Perspiration
- Phenolic Yellowing
- Print Durability
- Rubbing
- Washing
- Water

Textile: Physical

- Abrasion
- Bursting Strength
- Compression and Puncture
- Crease and Wrinkle Recovery
- Crimp
- Drape
- Durability
- Flammability
- Mass per unit area
- Pilling and Fuzzing
- Security of Attachments
- Seam Slippage
- Shrinkage
- Snagging
- Spray Rating
- Stretch and Recovery
- Surface Deterioration
- Tear Strength
- Tensile Strength
- Washing and Drying

Non-Textile

- Bursting strength of nonwovens, plastics, paper and medical products
- Micro-scratching of laminates, wooden, painted, automotive and high gloss surfaces
- Physical and colour fastness testing of leather
- Rubbing fastness of laminates and wooden surfaces
- Tear strength of paper and plastics

INTRODUCTION

ProMace - Mace snag tester

ProMace has been designed with James Heal's unique product signature and has been produced completely with the user in mind. We have combined James Heal's technical and performance expertise, with intuitive design and operation to produce the most ergonomic and user friendly instrument.

Key Features

- Sleek, ergonomic design with 2 x 2 roller configuration to reduce the instrument foot print
- James Heal's unique UniController user interface for incredible ease of use
- Mace ball cup
- Removable rollers
- Removable debris tray
- Mace ball inspection jig
- Fully enclosed safety guard with electrical interlock

Service & Calibration

- Worldwide Service
- ISO 17025 based Calibration Service
- 18 Months' Warranty

Technical Assistance

- Operator Training
- Knowledge Transfer
- Applications Support
- Engineering Support

Standards

- ASTM D3939
- JIS L 1058
- VDA 230-220

The Definition of Snagging

A snag is an undesirable surface loop of varying size on woven or knitted fabrics often caused by catching on sharp points or objects.

Other surface defects, generally associated with snagging and, also found to be undesirable, are defined as:

- Protrusions: Not fully formed
- Filamentation: A fibrous or hairy appearance due to broken filaments on the fabric surface.
- Shiners: A thread that is generally tighter than its neighbours, as a result of pulling and snagging of the yarn in the fabric.
- Indentations: A concave distortion of the fabric surface. The opposite of a snag or protrusion.

HEALTH & SAFETY

- Read this manual carefully before operating the instrument.
- **ProMace** has a mass of approximately 75kg, therefore assistance from a colleague or suitable lifting apparatus is recommended.
- Ensure the test chamber is secure before commencing a test.
- **ProMace** complies with the [CE Conformity](#) in full.
- Ensure the instrument is isolated from the electrical supply before removing any covers. Covers should only be removed by a qualified Engineer or Electrician.
- Have the instrument serviced and calibrated at least once a year by a James Heal Service and Calibration Engineer.
- Wear protective gloves when examining the points on the **ProMace** ball or removing fibers and yarns from the mace points.
- Never allow the mace ball to swing freely, always hold the mace ball by the chain attachment
- Take extra care with the sharp cutting blade when removing the worn felt sleeves from the rollers
- Do not damage the rubber on the roller when removing the worn felt.
- Rollers can be removed from the machine for wetting out the felt sleeves, this helps eliminate waterlogging of the instrument.
- Wear safety shoes when changing & inspecting the mace ball.
- DO NOT attempt to catch the mace ball if dropped

FIRST TIME INSTALLATION

If you are commissioning the [ProMace](#) unit, please read the following sections in the following order.

Note: They may not necessarily appear in the same order in the manual as listed below. If you are using a softcopy of the manual, you can click on each section in turn in the contents menu or on the links below and the document will automatically skip to the correct page.

- [Unpacking](#)
- [Installation](#)
- [Electrical](#)

Once the [ProMace](#) is commissioned, follow these sections:

- [The Essential Features of ProMace](#)
- [Using the UniController](#)
- [Starting a Test](#)

THE ESSENTIAL FEATURES OF PROMACE

2 X 2 roller configuration which are removable to facilitate fitting/drying of new felt sleeves

Electrical interlock



Removable debris tray

Removable debris tray

Uni-Controller

JAMES HEAL SERVICE & CALIBRATION

James Heal Service & Calibration is a totally comprehensive, worldwide support programme.

When you buy instrumentation from us, it is the beginning rather than the end of an association.

Our aim is simple:

To provide precisely the services you need to maintain and protect the value of your investment.

For any enquires you may have regarding your instrument please contact James Heal Service & Calibration by e-mail, phone or fax.

In all communications please quote the serial number of your instrument and the software version number

For example: 1522/15/1001 and V1.00.

James Heal Service & Calibration contact details:

E-mail support@james-heal.co.uk

Telephone +44 (0) 1422 366355

Fax +44 (0) 1422 352440

UNPACKING

- Remove the tape from the packing case lid and open.
- Carefully remove the packaging and contents from the packing case. Note that any accessories ordered with the instrument are packed with the instrument.
- Remove the sleeve and then very carefully lift the instrument and place it on a firm flat surface.
- Do not dispose of any packaging material until all standard and optional accessories ordered are fully accounted for. If there are any discrepancies, please contact your supplier immediately.

Unpacking Checklist

Please check the serial number plate to confirm that the supply voltage and frequency are in accordance with your order. Also, check the items listed in the tables below are present

Item number	Item name	Quantity
901-474	ProMace Snag tester	1
297-026	CD Operators guide, ProMace	1
142-326	1 x mains lead set angled	1
318-520	1 x 1.3mm hexagon key (for mace pin removal) ASTM	1
318-523	1 x 1.5mm hexagon key (for mace pin removal) VDA	1
714-617	Felt sleeve for Mace Snag Tester - per pack (4)	1
356-440	4 x elastic rings (for clamping specimen)	1
513-140	Mace ball holder	1
130-825	2 x Fuse 1A T 20x5mm 130-825	1
794-776	Reticle Comparator 8x (Magnifying Glass)	1

HOW TO ORDER SUPPLIES

901-474	<p>ProMace Snag Tester - Model 1522 85-264VAC 50/60Hz</p> <p>Comprising:</p> <ul style="list-style-type: none">1x ProMace Snag Tester - Model 15224 x elastic rings (for clamping specimen) 356-4401 x mains lead set angled 142-3262 x Fuse 1A T 20x5mm 130-8251 x 1.3mm hexagon key (for mace pin removal) 381-5201 x 1.5mm hexagon key (for mace pin removal) 381-523Felt sleeve for Mace Snag Tester - per pack (4) 714-6171x CD Op Guide ProMace 297-0261x Mace ball holder 513-140Reticle Comparator 8x (Magnifying Glass) 794-776 <p><i>Order mace balls for VDA, ASTM and JIS standards separately</i></p> <p><i>Order consumables and other accessories separately</i></p> <p><i>Instrument is supplied as standard with 4 working positions</i></p> <p><u>Accessories - VDA 230-220</u></p>
794-773	<p>Mace ball - VDA</p> <p>Comprising:</p> <ul style="list-style-type: none">1 x mace ball with pins1 x chain assembly
772-152	<p>1x setting piece VDA 50mm</p> <p><u>Accessories - ASTM 3939</u></p>
794-772	<p>Mace ball - ASTM</p> <p>Comprising:</p> <ul style="list-style-type: none">1 x mace ball with pins1 x chain assembly
772-154	<p>1x setting piece ASTM 45mm</p> <p><u>Accessories - JIS L 1058:2011</u></p>
	<p>Mace ball - use the ASTM mace ball - 794-772</p> <p>Comprising:</p> <ul style="list-style-type: none">1 x mace ball with pins1 x chain assembly
772-153	<p>1x setting piece JIS 46mm</p> <p><u>ProView Universal Assessment Viewer - model 1523</u></p>
901-475	<p>1x Universal Assessment Viewer</p> <p>Pre-programmed with the following images:</p>

	<p>ASTM D 3939 Mace snagging (9 images) BS 5811:1979 & M&S - Woven (5 images) BS 5811:1979 - Single jersey (5 images) BS 5811:1979 - Double jersey (5 images) SM 50 for woven fabrics - Martindale (20 images) SM 54 for knitted fabrics - Pilling box (20 images)</p> <p>Comprising:</p> <p>1x ProView Universal Assessment Viewer - model 1523 1x Op Guide ProView 290-1523-1 1x CD Op Guide ProView 297-030 1 x mains lead set angled 142-326 2x Fuse 1A T 20x5mm 130-825 1x Cover Plate For Hsg - Blank 513-122 1x Cover Plate For Hsg - Abrading 513-123 1x Sample Carrier - ProMace 513-124 1x Mask - ProMace Sample 513-125 1x Mask for EMPA 513-***</p>
	<p><u>Consumables</u></p> <p>-</p>
714-617	Felt sleeve for Mace Snag Tester - per pack (4)
	<p><u>Optional Accessories</u></p>
794-775	Replacement mace ball pin set - VDA per pack (11)
513-080	Replacement chain for mace ball - VDA (1)
319-151	Replacement M3 locking screw for mace ball - VDA - per pack (11)
381-523	Hexagon Allen Key 1.5mm A/F
513-001	Replacement mace ball pin set - ASTM 3939/JIS L 1058:2011 (pack of 220)
513-080	Replacement chain for mace ball - ASTM/JIS L 1058:2011 3939
319-537	Replacement M2.5 locking screw for mace ball - ASTM/JIS L 1058:2011 - per pack (11)
381-520	Allen Key 1.3mm A/F
	<p><u>Calibration</u></p>
201-995	<i>ISO Certificate of Calibration for ProMace (up to 4 positions)</i>
1522-spares	<p><u>2-year Spares Kit</u></p> <p>-</p> <p>Comprising:</p>
130-825	Fuse 1A T 20x5mm (2)
195-347	Varistor 250VAC (6)
150-448	Power Supply, 60W, 24V (1)
383-408	Drive belt 383 (1)
383-409	Drive belt (1)
383-410	Drive belt (1)
513-079	Plastic sleeve (covers mace ball chain guide bar) (4)

GETTING STARTED

Mounting the felt sleeve

Remove the replacement Felt Sleeve from the vacuum sealed pack.

Immerse in hot/warm water for approximately 5 seconds.

Remove from the hot/warm water and fit immediately onto the cylinder.

Slide on the new Felt Sleeve, positioning centrally on the cylinder, 65mm of rubber should be exposed at each side of the felt sleeve

Repeat the procedure for the three (3) remaining cylinders.

Individual rollers can be removed from [ProMace](#) to facilitate fitting/drying of new felt sleeves.

The drying of newly fitted felt sleeves can be accelerated by placing the rollers in a drying oven (60°C maximum).

To remove, hold the roller and turn clockwise to remove.



The felt sleeve will shrink tightly onto the roller when wetted.

Replace the felt every 200 hours (or whenever its surface becomes rough, Becomes perforated, or shows excessive wear)

Removing the felt sleeve

Using a sharp blade *carefully* cut the worn Felt Sleeve and remove, taking care not to damage the rubber covering of the cylinder.

Attaching The Mace Ball



Guide the chain behind the black rod & insert into the upper coupling



Secure the mace ball in place with the locking screws located at the top

Mace Ball Cup

The mace ball cup is safe place to store the mace ball when the instrument is not operating



Running position



Stationary position

Inspecting the Mace Ball Points

The mace ball inspection holder is designed for the user to safely and securely hold the mace ball whilst inspecting the points.

The unique collar design on the mace ball inspection holder enables the user to rest the mace ball on a surface without damaging the points or work surface.



Remove the top coupling from the ball chain



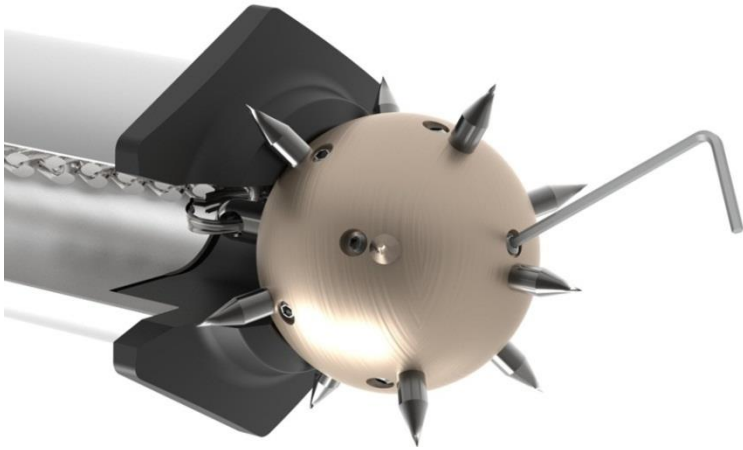
Attach the ball & chain to the spring clip



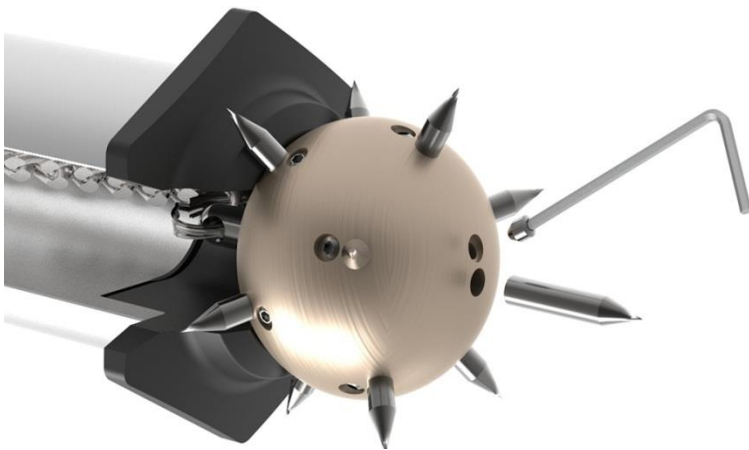
Carefully place the mace ball in the cup & gently pull the spring down into the bottom connector.



The mace ball is now safe & secure in the holder ready for point inspection.



To remove the pin, insert the Allen key & turn.



Once the pin is loose, remove & replace with a new one.

UNICONTROLLER

Introduction

The [UniController](#) is our all new, signature user interface.

The [UniController](#) brings new levels of ease of use and functionality.

Elegantly designed, the [UniController](#) will reduce training times and can be used by all levels of Operator.

Amongst its many features are:

- Fast, easy editing of cycle time
- Set Inspection of points
- Set change of points
- Set change of felt sleeve
- IP 64 Rated to ensure waterproofness.



The [UniController](#) allows the user to control all aspects of the test in a simple and intuitive way.

The James Heal [UniController](#) consists of

- LCD Display
- 2 selection buttons
- Push-Rotate Selector

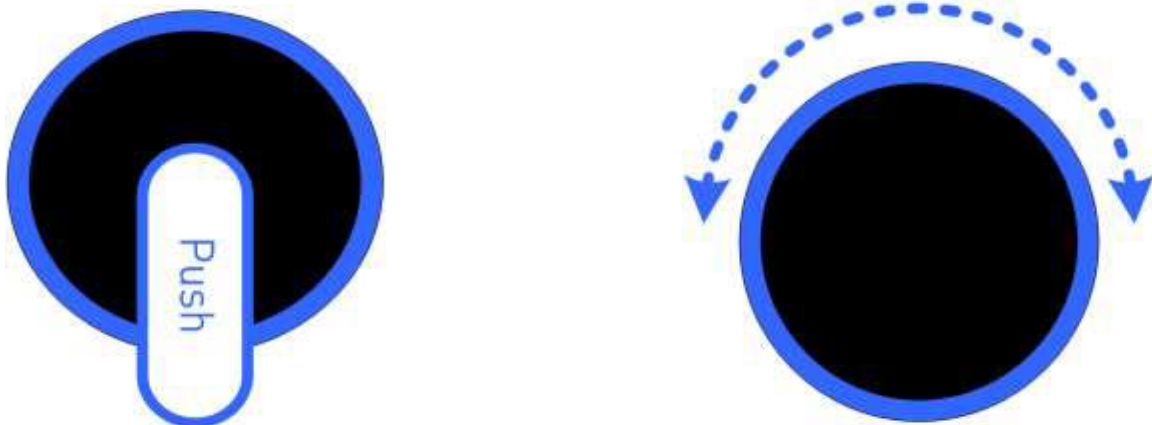
Using the UniController

When **ProMace** is initially powered up, the James Heal icon will be briefly displayed followed by a brief display of the Firmware version number. These are only displayed when the unit is powered up.

The Push-Rotate (PR) Selector

The Push-Rotate (PR) Selector has two main modes of operation:

- **Push** to Start, Select or Enter
- **Rotate** to cycle through the options



At the end of a test, the blue LED illumination will pulse on and off to indicate the **ProMace** requires attention from the Operator.

Buttons

For the purposes of this Operators Guide, the top selection button will be called 'Button1' and the bottom selection button will be called 'Button 2'

The function of the Button 1 and Button 2 can change throughout the testing process.

Normal Options

Using the [UniController](#) for [ProMace](#) you can set or change the following:

- Cycle Time
- Point Inspection
- Change points
- Change Felt sleeve

Additional Options

Note: To make this selection, you must turn the PR Selector in the first 30 seconds after powering up the [ProMace](#) in order to access these settings.

- Language
- Volume

Setting the Cycle Time



While ProMace is not running, turn the PR selector clockwise.



The display changes.

Push the PR Selector to move to edit mode.



Rotate the PR Selector to change the cycle time required.

Rotate clockwise to increase and counter clockwise to decrease



When the correct time is displayed, push the PR Selector to enter the new value.

Inspect Points



While ProMace is not running, turn the PR selector clockwise.



The display changes.

Push the PR Selector to move to edit mode.



Rotate the PR Selector to change the inspection cycle time as required.

Rotate clockwise to increase and counter clockwise to decrease



When the correct time is displayed, push the PR Selector to enter the new value.

Change Points



While ProMace is not running, turn the PR selector clockwise.



The display changes

Push the PR Selector to move to edit mode.



Rotate the PR Selector to change the cycle time required

Rotate clockwise to increase and counter clockwise to decrease



When the correct time is displayed, push the PR Selector to enter the new value.

Change Felt Sleeve

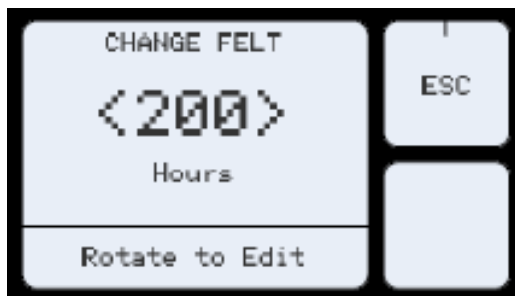


While ProMace is not running, turn the PR selector clockwise.



The display changes.

Push the PR Selector to move to edit mode.



Rotate the PR Selector to change the cycle time required

Rotate clockwise to increase and counter clockwise to decrease

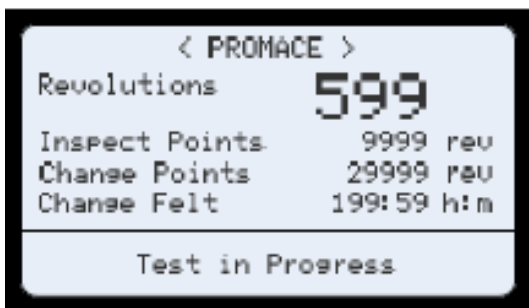


When the correct time is displayed, push the PR Selector to enter the new value.

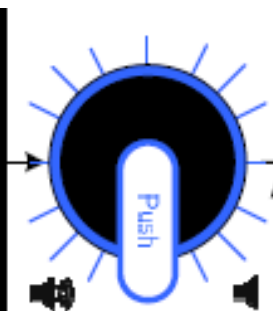
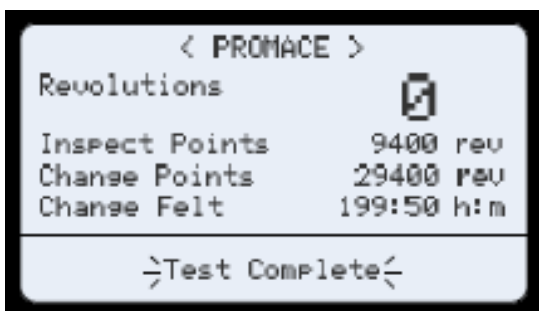
Starting a Test



Push the PR Selector to Start the test.

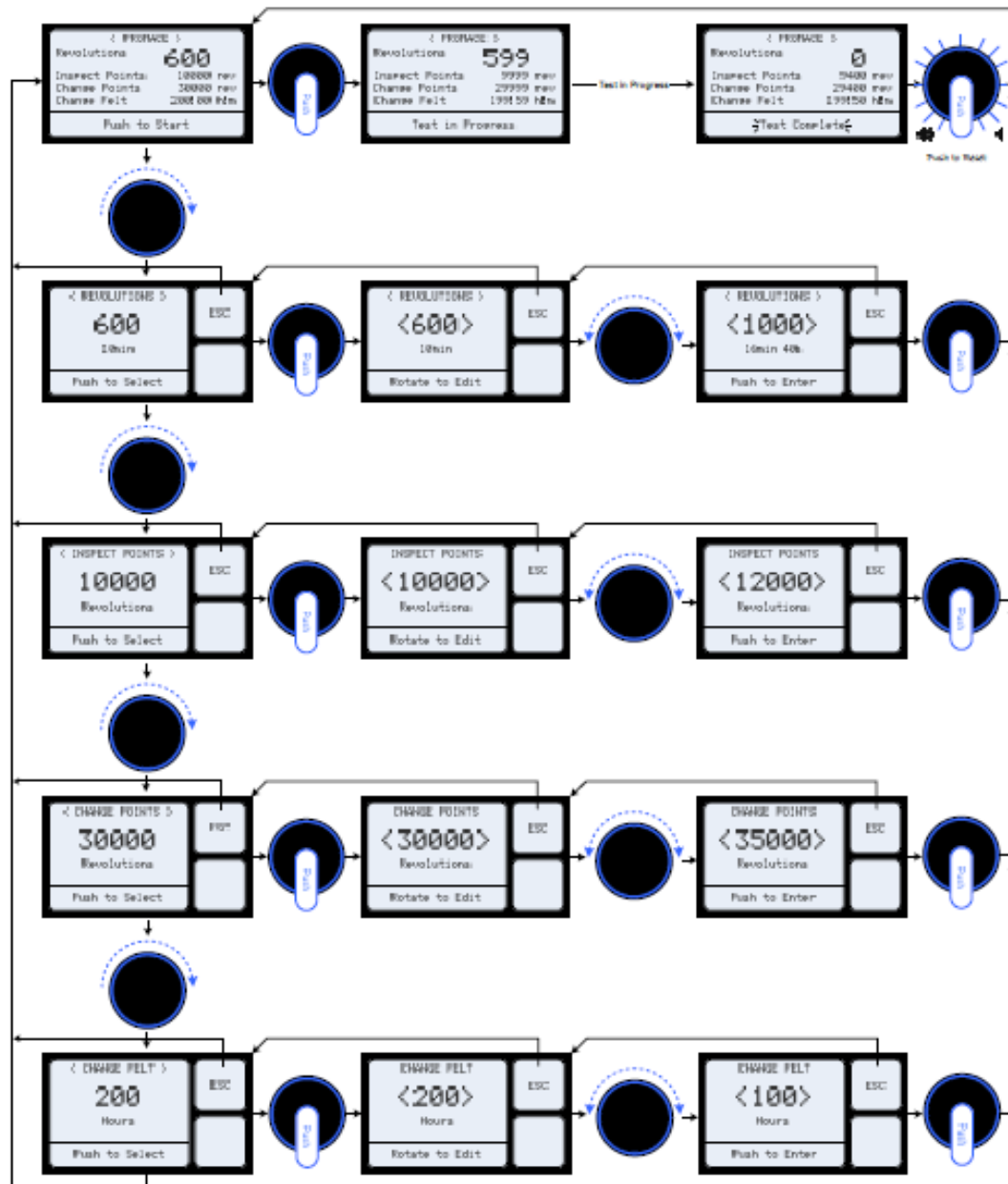


The counter will count-down to zero.



At the end of a test, the blue LED illumination will pulse on and off to indicate the ProMace requires attention from the Operator.

Overview of the UniController for ProMace



INSTALLATION

The **ProMace** is delivered on a wooden palette. Use a forklift truck or hydraulic pump trolley to move the packing case as near as possible to the final location. Once in position, follow the instructions in the Unpacking Section to remove the outer case.

The **ProMace** can now be lifted from its palette and in to location using a pump truck if available, or a by hand. If lifting by hand a minimum of 3 people will be required.

These instruments are heavy and should be moved with care.

Do not dispose of any packaging material until everything is accounted for.

Electrical

- Stand the instrument on a firm and level surface.
- Connect the electrical power supply to the mains input using the lead provided.
- The power rating for **ProMace** is 20W.

Fuses

Two (2) fuses are fitted, located at the rear of the machine beneath the mains lead socket.

To replace a fuse, isolate from the mains supply, place a screw driver blade in the slot of the fuse holder, then press and turn anti-clockwise approximately $\frac{1}{4}$ of a turn. The fuse holder complete with fuse is now released.

TECHNICAL DATA

Instrument Specification

Rotational Speed: 60 rpm \pm 2 rpm
Calibration Service UKAS accredited (based on ISO 17025)
Dimensions 448 x 520 x 888 mm (W x D x H)
Weight 75kg (approx.)
Power Supply 85 to 264 VAC, 50/60 Hz, 20 W

CE Conformity

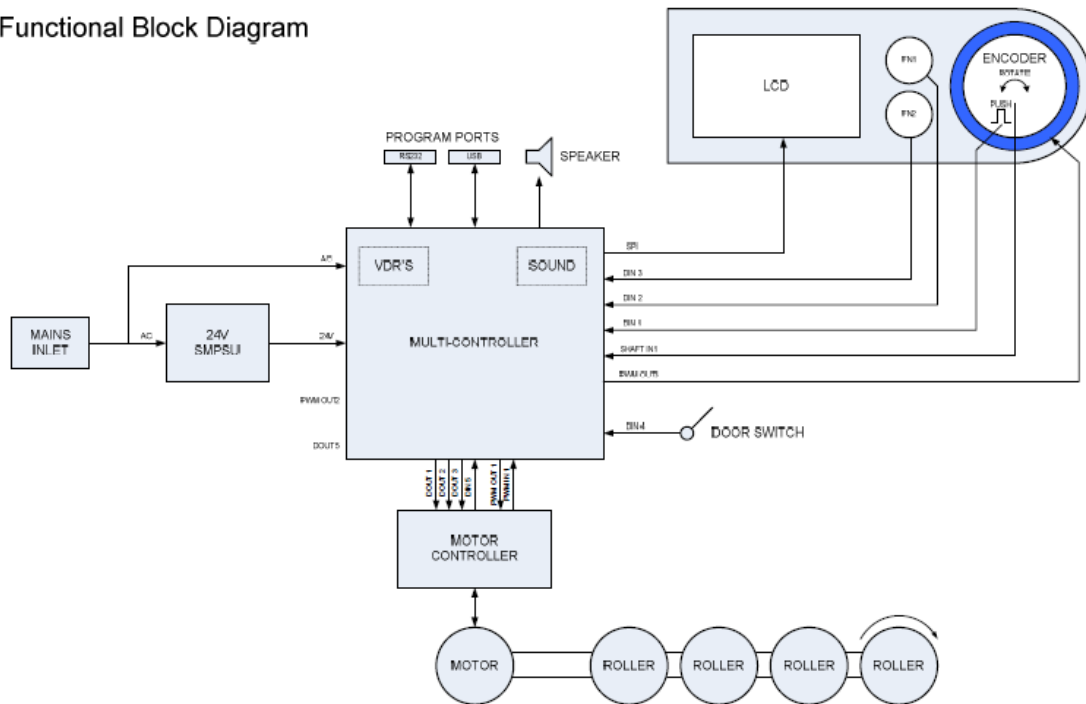
ProMace is CE marked.

It therefore complies with the following directives:

- Machinery Directive 2006/42/EC
- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC
- WEEE Directive 2002/96/EC
- RoHS Directive 2002/95/EC

Electrical Scheme

Functional Block Diagram



REVISION HISTORY

See front cover for Publication number, e.g., 290-1522-1

Revision	Date	Originator	Details Of Revision
A	18/03/2015	LW	Operators Guide Created
B	01/05/2015	LW	Additional Information Added