



OPERATOR'S GUIDE

ProMace

Mace Snag Tester
Model 1722

Covering serial numbers
1722/17/1001 & upwards

**NEW Intuitive
Touchscreen User Interface**

James H. Heal & Co. Ltd.
Halifax, England

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Setting the Standard

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JAMES HEAL

Thank you for investing in a James Heal instrument. 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

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.

ProMace has been designed to rapidly determine the snagging resistance of fabrics in normal wear. It is a very aggressive test and used for robust apparel and home furnishing fabric.

ProMace has been designed with James Heal's unique product signature and has been produced completely with the user in mind. It features our new touchscreen user interface which displays current test conditions, inspection interval alerts and provides easy access to settings. We have combined James Heal's technical and performance expertise, with intuitive design and operation to produce the most ergonomic, user friendly and safest instrument possible.

Key Features

- Sleek, ergonomic design with 2 x 2 roller configuration to reduce the instrument foot print
- James Heal's new touchscreen user interface for incredible ease of use
- Inspection interval displays for felt and points
- Mace ball holders within the test chamber
- Removable rollers
- Removable debris tray
- Mace ball inspection holder
- 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

HEALTH & SAFETY

- Please 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.
- **ProMace** complies with the EU regulations in full.
- Ensure the test chamber is secure before commencing a test.
- Never run the instrument without covers. Covers should only be removed by a qualified engineer or electrician when the instrument is isolated from the electrical supply.
- Have the instrument serviced and calibrated at least once a year by a James Heal Service and Calibration Engineer.
- Use the mace ball inspection holder when examining the points on the **ProMace** ball and wear protective gloves when removing fibres and yarns from the mace points.
- Never allow the mace ball to swing freely, always hold the mace ball by the chain attachment.
- When the instrument is not in use store the mace balls in the mace ball cups above each cylinder.
- Take extra care with the sharp cutting blade when removing the worn felt sleeves from the rollers.
- Remove rollers from the machine to wet out the felt sleeves.
- Wear safety shoes when changing & inspecting the mace ball.
- DO NOT attempt to catch the mace ball if dropped.
- DO NOT use ProMace for anything other than what it is designed for.




INSTALLATION & UNPACKING

- This instrument is heavy and should be moved with care.
- Use a forklift or hydraulic pump truck to move the packing case as near as possible to the final location.
- Remove the tape from the packing case lid and open the lid.
- 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.
- The instrument can now be lifted from the palette and into location using a pump truck if available, or by hand. If lifting by hand a minimum of 2 people will be required to 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.
- 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.

Unpacking Checklist

Please check the serial number plate to confirm that the supply voltage and frequency are in accordance with your order.

Check all items relating to your order are present.

PROMACE TOUCHSCREEN		STOCK CODE			
			ASTM	JIS	VDA
			ASTM D3939	JIS L 1058	VDA 230-220
PROMACE 'BUNDLES' for the relevant standard			901-483	901-483	901-484
ProMace - Mace Snag Tester - Comprises of: 8 x elastic rings (for clamping specimen) 1 x mains lead set angled 2 x Fuse 1A T 20x5mm 1 x 1.3mm hexagon key (for mace pin removal) 1 x 1.5mm hexagon key (for mace pin removal) Felt sleeve for Mace Snag Tester - per pack (4) 1x CD Op Guide ProMace 1x Mace ball holder Reticle Comparator 8x (Magnifying Glass)		901-482			
ProView Universal Assessment Viewer -- Comprises of: 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)		901-475			
Mace Ball	(1 x mace ball with pins plus 1 x chain assembly)	794-772			
Mace Ball	(1 x mace ball with pins plus 1 x chain assembly)	794-773			

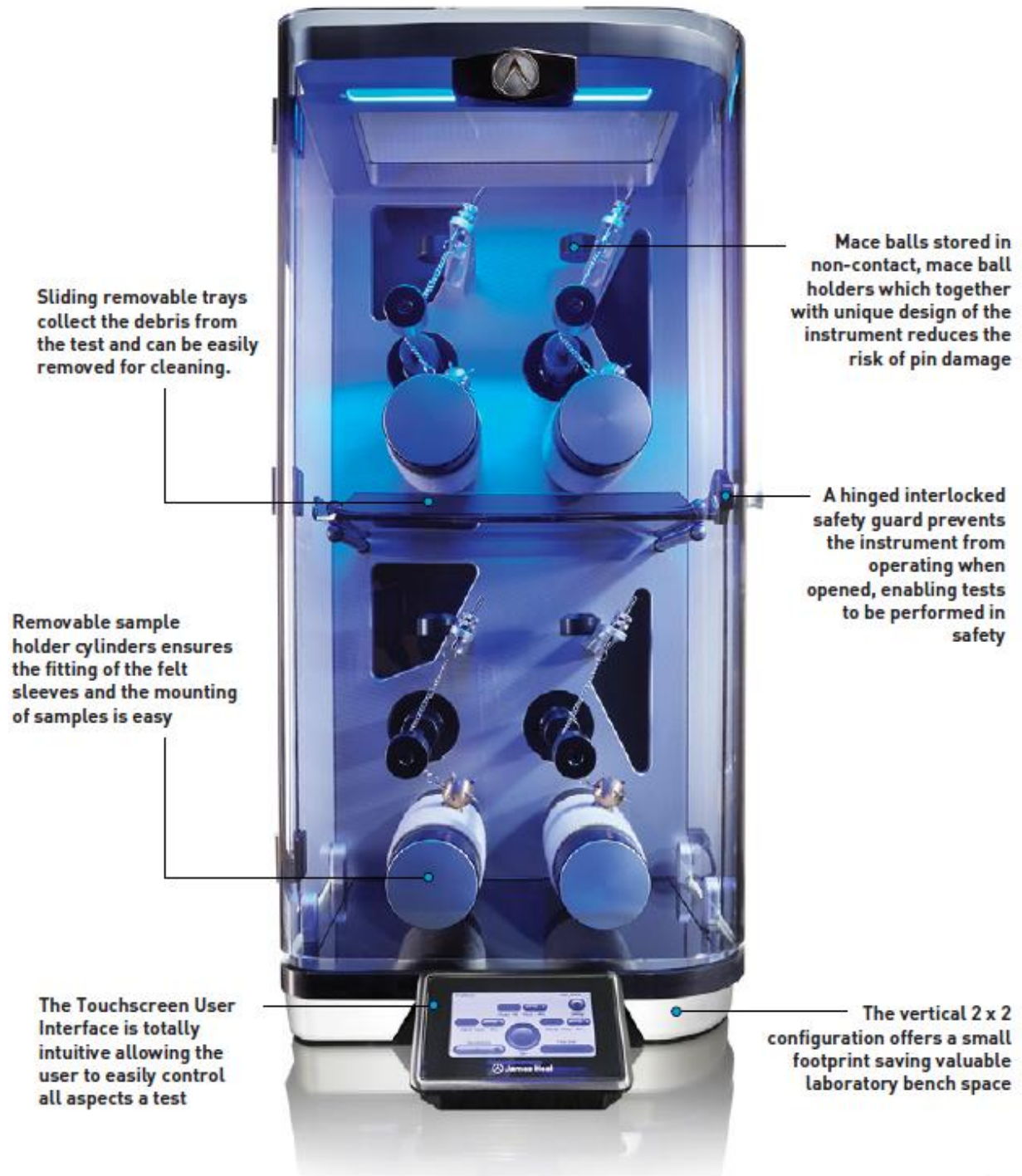
SETTING PIECES, TEMPLATES, CONSUMABLES AND ACCESSORIES					
SETTING PIECES					
Setting Piece	(45mm)	772-154			
Setting Piece	(46mm)	772-153			
Setting Piece	(50mm)	772-152			
TEMPLATES					
Specimen cutting template - samples up to 4mm thickness		772-150			
Specimen cutting template - samples thicker than 4mm		772-151			
CONSUMABLES AND ACCESSORIES					
Replacement mace ball pin set - per pack (11) includes chains		794-775			
Replacement M3 locking screw for mace ball - per pack (11)		319-151			
Hexagon Allen Key 1.5mm A/F		381-523			
Replacement mace ball pin set - (pack of 11)		513-003			
Replacement chain for mace ball - (1)		513-080			
Replacement M2.5 locking screw for mace ball - per pack (11)		319-537			
Allen Key 1.3mm A/F		381-520			
Felt sleeve for Mace Snag Tester - per pack (4)		714-617			
CALIBRATION					
ISO Certificate of Calibration for ProMace (up to 4 positions)		201-995			

THE ESSENTIAL FEATURES OF PROMACE

PROMACE AT A GLANCE

When used with IMAT-UVE mace balls the James Heal ProMace is VDA compliant

Mace ball inspection holder enable the user to hold the mace ball safely whilst inspecting the points and reduces the risk if pin damage

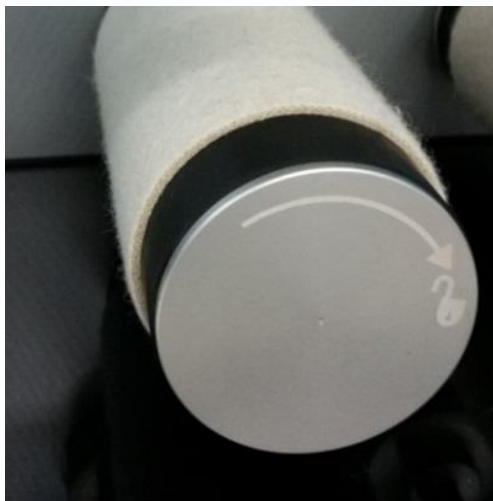


GETTING STARTED

Mounting the Felt Sleeve



Rollers should be removed from ProMace to facilitate the fitting and drying of new felt sleeves and to prevent the instrument becoming wet.



To remove, hold the roller firmly and turn clockwise to unlock, then slide off the shaft.

Immerse the new felt sleeve in hot/warm water for approximately 5 seconds.

Remove from the hot/warm water and slide centrally on to the roller; 65mm of rubber should be exposed at each end.

The felt sleeve will shrink tightly onto the roller as it dries. This can be accelerated by placing the roller in a drying oven (60°C maximum).



Slide the roller back on to the shaft making sure that the bayonet fitting is lined up. Slide to the back and sharply turn anticlockwise to lock.

Replace the felt sleeve every 200 hours or sooner if the surface becomes rough, perforated, or shows excessive wear.

To remove the felt, cut along the length with a sharp blade, taking care not to damage the rubber cylinder covering.

Attaching the Mace Ball



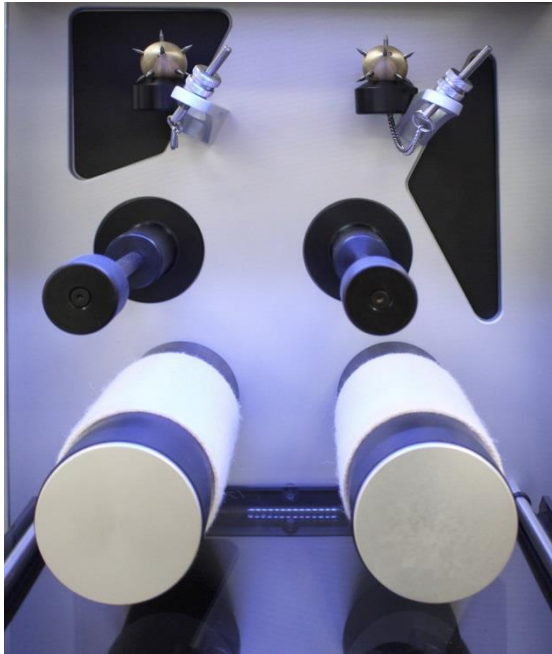
Guide the chain behind the black rod & insert into the upper coupling.



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

Mace Ball Cup

When the instrument is not operating the mace balls should be stored in the mace cups located above each cylinder. This is for safety and also to prevent damage to the pins.



Stationary position



Running position

Use the appropriate setting gauge to create the correct distance to the ball.

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.



Attach the ball & chain to the spring clip and carefully place the mace ball in the cup.



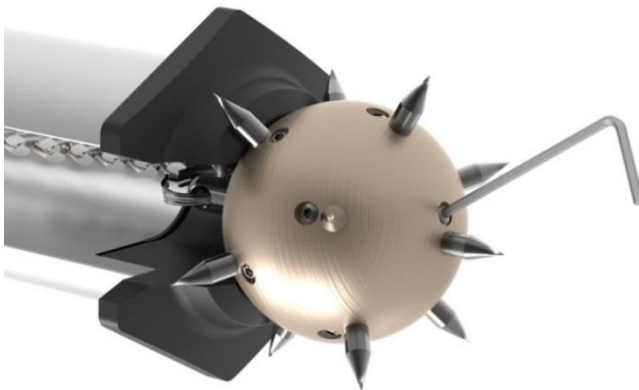
Gently pull the spring clip down into the bottom connector with the chain running inside the holder.



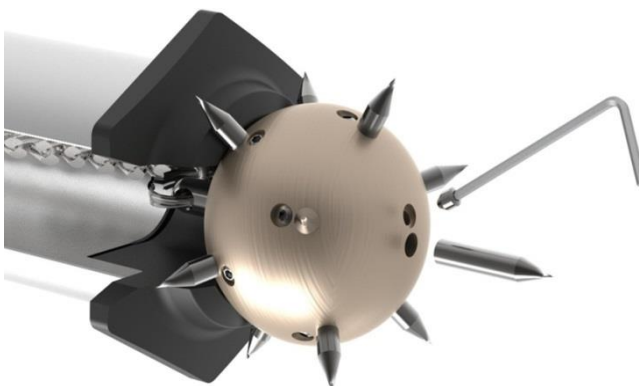
The mace ball is now safe & secure in the holder ready for point inspection.



With the mace ball held in the inspection holder, use the magnifying glass supplied to examine the points.



To remove a pin, insert the Allen key into the corresponding screw and turn.



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

Dispose of used pins safely.

TOUCHSCREEN USER INTERFACE

Introduction

The **touchscreen** is our all new, signature user interface.

The **touchscreen** brings new levels of ease of use and functionality.

Elegantly designed, the **touchscreen** will reduce training times and can be used by all levels of Operator.

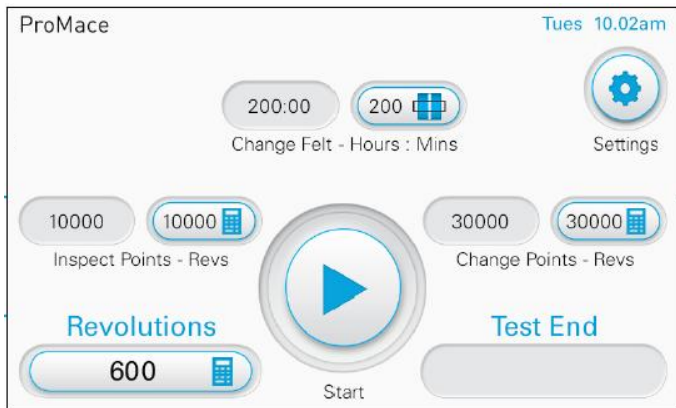
Amongst its many features are:

- Fast, easy editing of test conditions
- Fully editable inspection of points setting
- Fully editable change of points setting
- Fully editable change of felt setting
- IP4X rated




The touchscreen allows the user to control all aspects of the test in a simple and intuitive way.

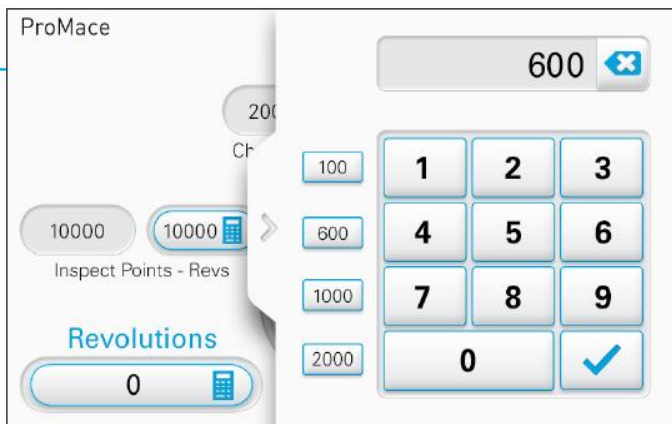
Using the Touchscreen




Home Page

To set the revolutions press the Revolutions  button.

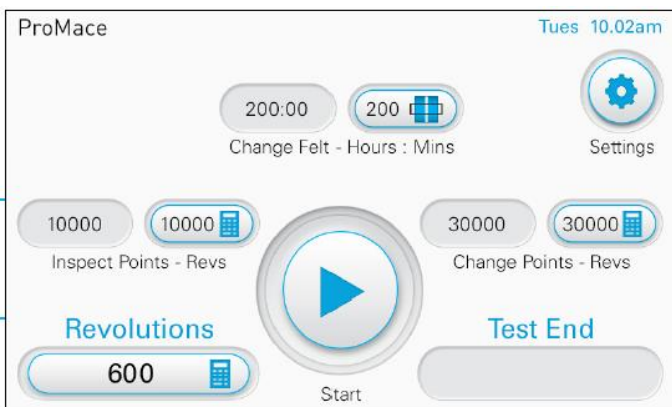
This will pull out the keypad.




Revolutions

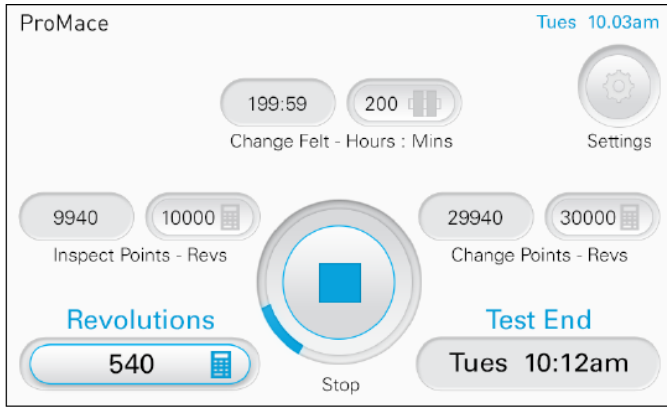
Set the required number of revolutions and then press the  button.

The operator may also use the pre-set buttons* at the left of the keypad to set the revolutions.



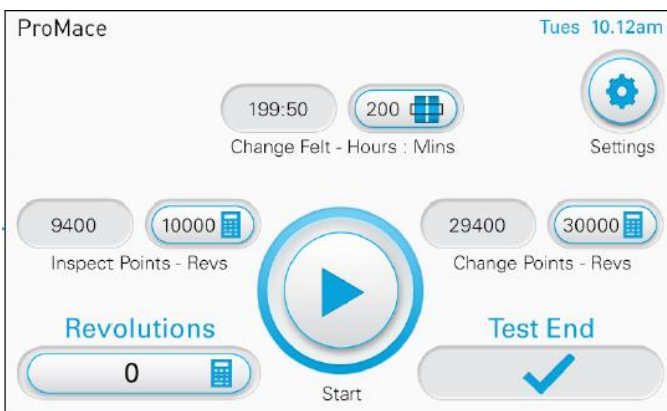
Test Set Up

Once the revolutions have been entered the test can be started by pressing the Start  button.





Test in Progress

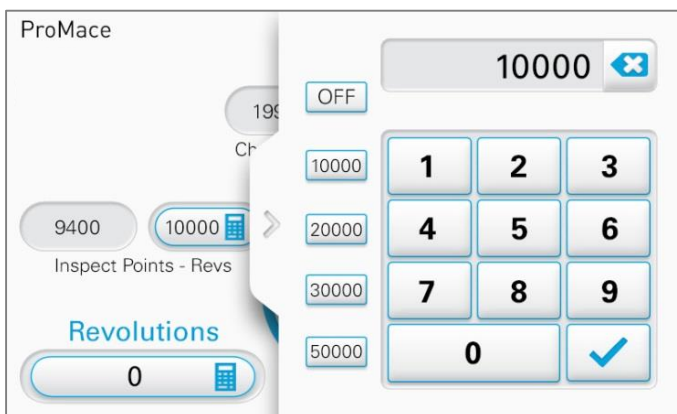
- The Test End display will inform the operator when the test will finish
- The revolutions count down and the progress ring shows the progress of the test
- The buttons grey out and become inactive to stop test conditions being inadvertently altered
- The 3 Inspect and Change displays all count down





Test End

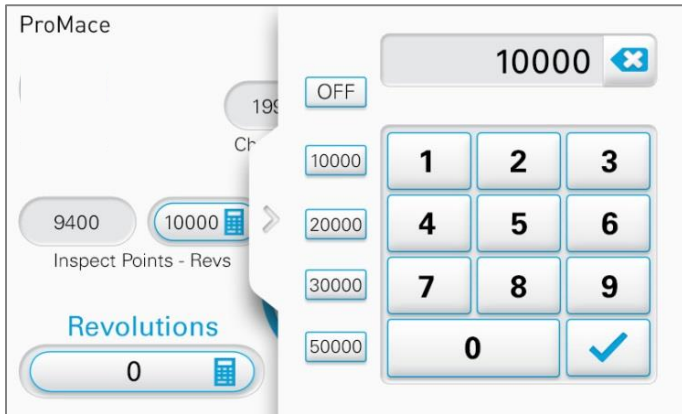
Once the test is complete:

- The Test End display will display as 
- The revolutions button will display as 
- The buttons are active again
- The progress ring will be complete





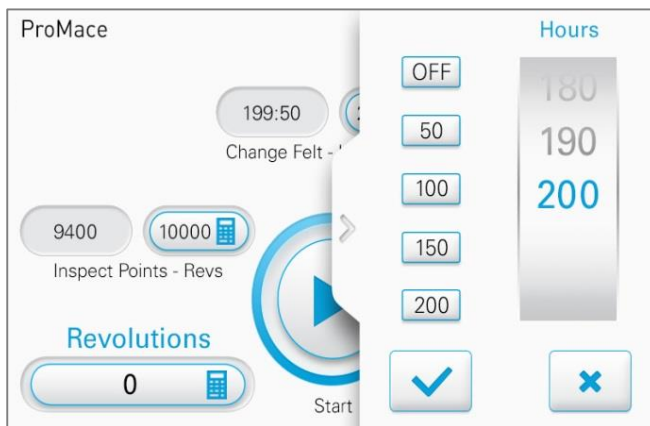
Set the Points Inspection Interval

To set the intervals that the points need to be inspected, press the inspect points button . This will pull out the keypad. Set the required revolutions and then press the  button. The pre-set buttons* at the left of the keypad can also be used.




Set the Points Change Interval

Press the change points button . This will pull out the keypad. Set the required revolutions and then press the  button. The pre-set buttons* at the left of the keypad can also be used.



Set the Felt Change Interval

Press the change felt button. This will pull out the scroll tab. Set the required hours by swiping up and down to set the time, or tap for fine alterations, then press the  button. The pre-set buttons* at the left of the keypad can also be used.

*The pre-set buttons are pre-loaded with typical values. These can be altered by selecting a value on the scroll or keypad and then holding on the selected button.

USEFUL HINTS AND TIPS

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

If the operator selects a number of revolutions which will overrun one or more of the inspect/change alerts, a pop up will appear alerting the operator. The operator can choose to override the message and run the test, or inspect/change the relevant component early and reset the corresponding timer.

There are 2 different mace balls available for ProMace with very subtle differences between them. It is essential that the correct ones are used for each standard. If there is ever any doubt over which have been supplied or if there is confusion over which is which, the following is a basic guide.



ASTM D 3939 and JIS L1058 require the use of these mace balls (stock code 794-722).

The screws which lock the pins in place are almost flush with the surface of the mace ball.



VDA 230-220 requires the use of these mace balls (stock code 794-773).

The screws which hold the pins in place are recessed/sunken.

The chain to the mace ball is also thinner than the one used for the other 2 standards.

When fitting new felt sleeves the drying and shrinking process can be accelerated by placing the roller in a drying oven (60°C maximum). As the felt dries it will shrink to fit tightly on to the roller.

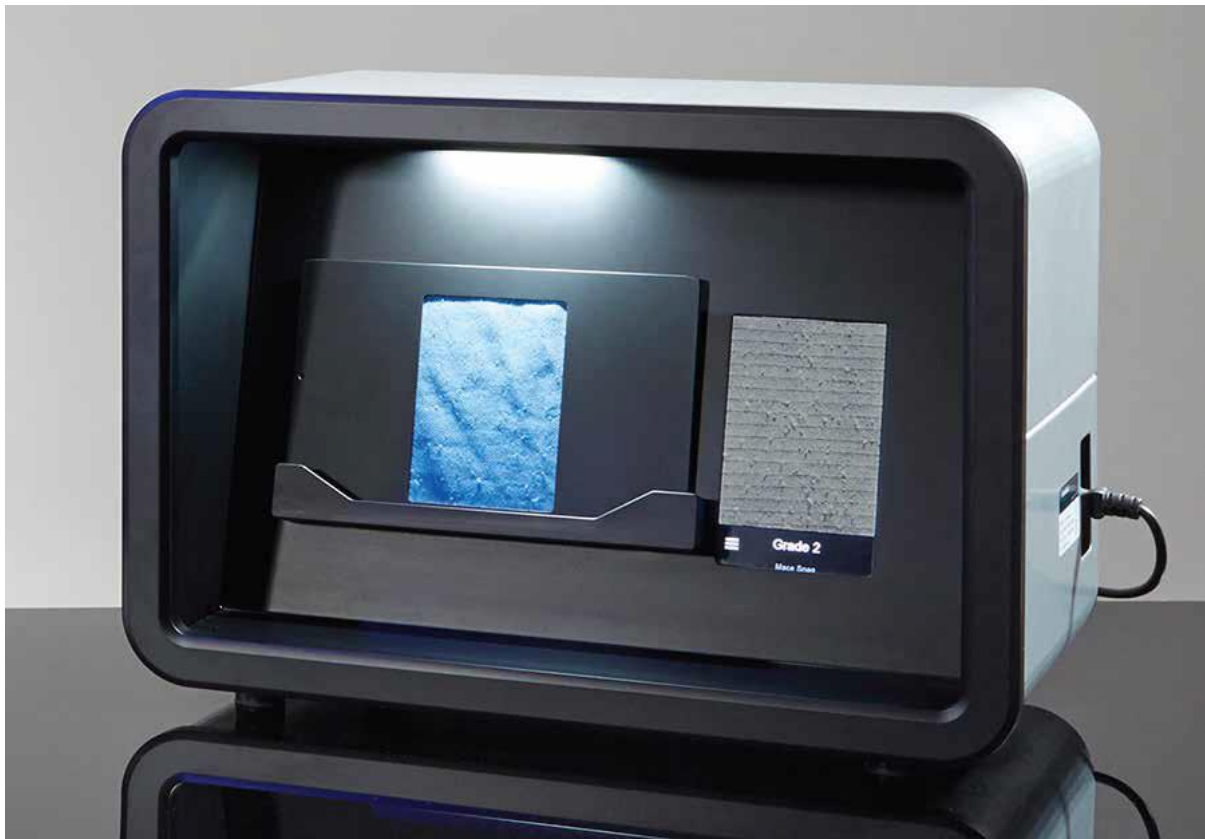
The preset buttons can all be edited. To replace an unwanted preset value, select the new value required and then press and hold the unwanted preset value. The old preset value will be replaced.

ASSESSMENT

After testing, the specimens must be graded.

This can be carried out ProView Universal Assessment Viewer, using the Mace Snag images.

See the ProView Operator's Guide for further details.



TECHNICAL DATA

Instrument Specification

- Power Supply 85 to 264 VAC, 50/60 Hz, 20W
- Rotational Speed: 60 rpm \pm 2 rpm
- Calibration Service UKAS accredited (based on ISO 17025)

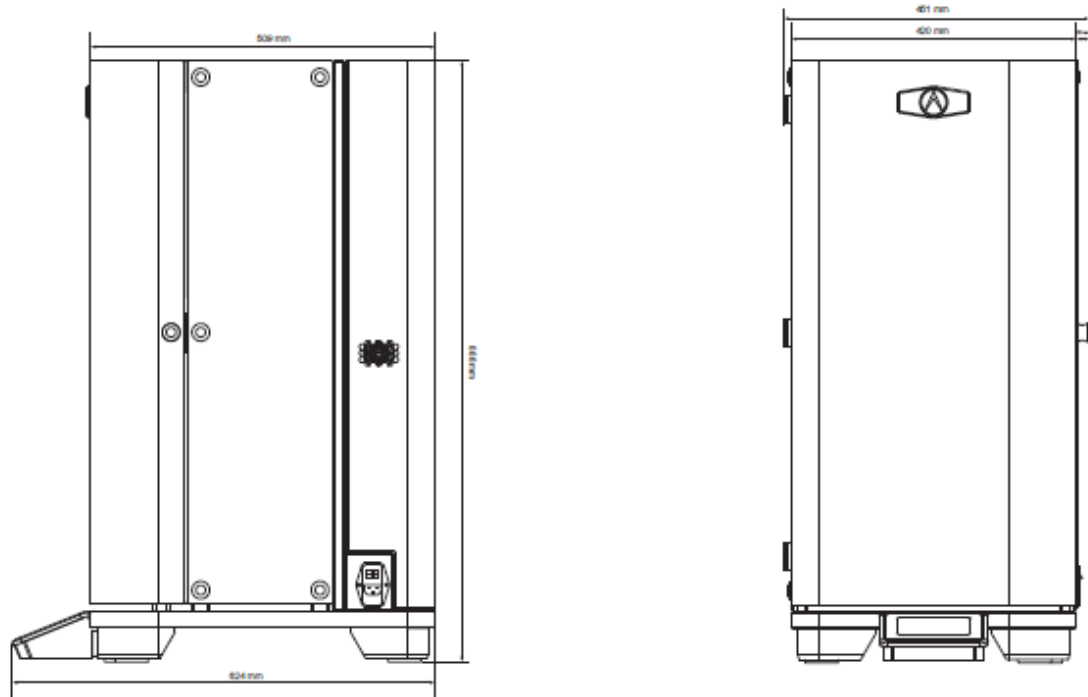
Fuses

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.

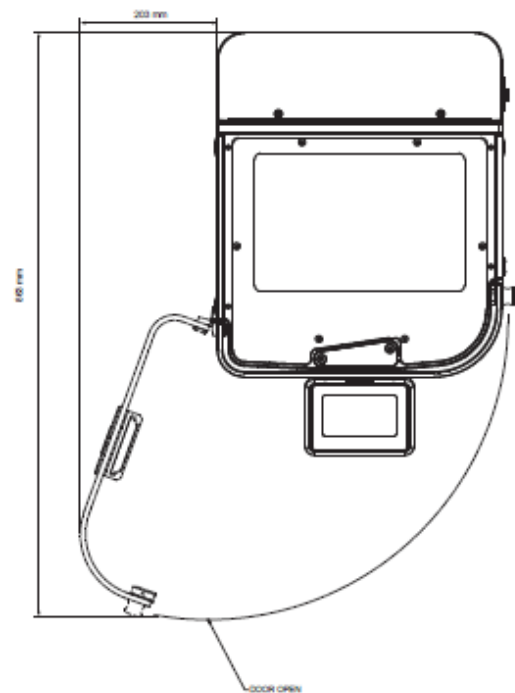
EU Conformity

- Machinery Directive 2006/42/EC
- Low Voltage Directive (LVD) 2014/35/EU
- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Waste Electrical and Electronic Equipment recycling (WEEE) Directive 2012/19/EU
- Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU

Dimensions & Weights



Dimensions (mm)	Height	Width	Depth	Weight (kg)
ProMace	888	451	624	73



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: 1722/15/1001 and V1.00.

James Heal Service & Calibration contact details:

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REVISION HISTORY

See front cover for publication number, e.g., 290-1722-1&A

Revision	Date	Originator	Details Of Revision
A	15/08/2017	CL / CB	Operators Guide created