

ProMace

MACE SNAG TESTER

The most accurate and repeatable Mace Snag Tester available with a unique design which offers a significant reduction in the damage to the pin points. Now further enhanced with our intuitive Touchscreen User Interface

MODEL NUMBER: **1722**
STOCK CODE: **901-482**



KEY BENEFITS

REPEATABILITY & ACCURACY

Our aim when designing ProMace was to significantly improve upon the repeatability and accuracy of the mace snag testers available in the market.

VDA COMPLIANT

When used with IMAT-UVE mace balls, ProMace is VDA compliant.

INTUITIVE TOUCHSCREEN

The Touchscreen User Interface is totally intuitive for ease of use and to minimise training time.

SUSPENDED MACE BALLS

Mace balls are stored in non-contact, mace ball holders and the unique design of ProMace reduces the threat of the pin points breaking.

REMOVABLE CYLINDERS

The removable sample holder cylinders make the fitting and drying of the felt sleeves very easy and also aid the mounting of samples.

LABORATORY BENCH SPACE

The vertical 2 x 2 configuration gives a saving of over 50% of valuable laboratory bench space in comparison with other instruments of this type.

MACE INSPECTION HOLDER

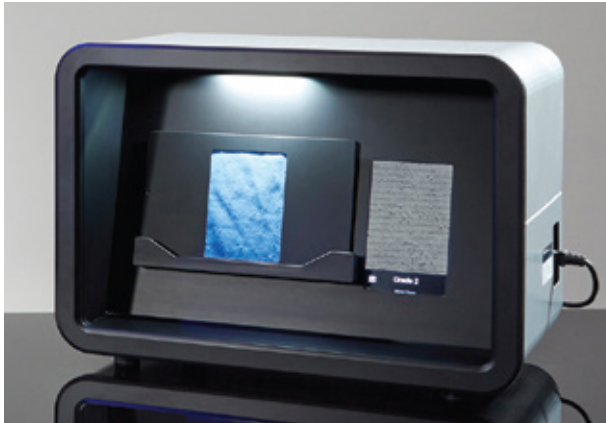
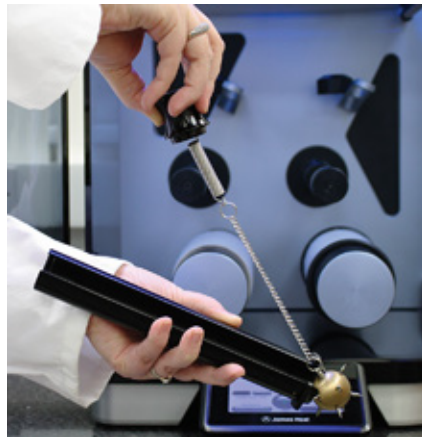
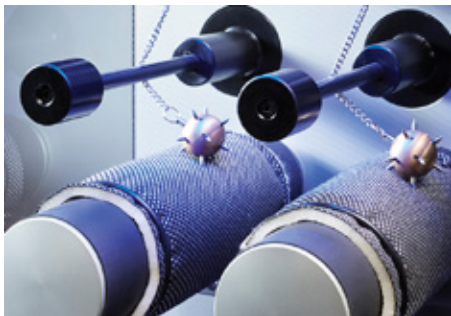
Designed to hold the mace ball safely and securely whilst inspecting the points.

SAFETY GUARD

The safety guard enables testing to be performed with complete safety.

REMOVABLE DEBRIS TRAY

Removable trays collect the test debris.



MARKET POSITION

One target market for ProMace is the VDA Association and the car companies who are members of that organisation. ProMace is compliant with VDA standard VDA 230-220, if IMAT-UVE, VDA approved mace balls are used. The IMAT-UVE mace balls are supplied by James Heal.

Other markets are traditional textile apparel labs, USA and countries supplying USA, competing with SDL who are the sole manufacturer in the ASTM method and also ASTM members whose business includes fabric for military personnel, furnishings, upholstery and heavyweight fabrics.

MARKET SECTORS / PRODUCT TYPES



MILITARY FABRICS

Heavyweight fabrics used for military uniforms



AUTOMOTIVE

Car seat covers - compliant with VDA 230-220 when used with IMAT-UVE mace balls



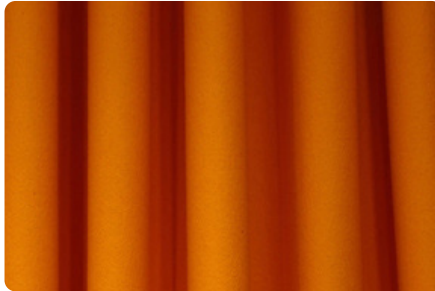
HEAVYWEIGHT APPAREL

Heavyweight fabrics with long floats or continuous filament fabrics



UPHOLSTERY

Domestic upholstery



HEAVYWEIGHT HOMEWARE

Home furnishing such as curtains



COMMERCIAL SEAT FABRICS

Commercial seat cover fabric for coaches, trams and trains

PROMACE STANDARDS



ASTM

ASTM D3939



JIS

JIS L 1058



VDA

VDA 230-220

PROMACE AT A GLANCE

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

VDA

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

Sliding removable trays collect the debris from the test and can be easily removed for cleaning.

Mace balls stored in non-contact, mace ball holders which together with unique design of the instrument reduces the risk of pin damage

A hinged interlocked safety guard prevents the instrument from operating when opened, enabling tests to be performed in safety

Removable sample holder cylinders ensures the fitting of the felt sleeves and the mounting of samples is easy

The Touchscreen User Interface is totally intuitive allowing the user to easily control all aspects a test

The vertical 2 x 2 configuration offers a small footprint saving valuable laboratory bench space



HISTORY OF MACE SNAG TESTERS

This type of instrument was originally designed in the 1960's by ICI for testing polyester fabric and the design rights were later passed to SDL Atlas who continue to manufacture this instrument.

Mace snag testers are used by the VDA Association (Verband der Automobilindustrie e. V.). The VDA is the German Association of the Automotive Industry and includes Audi, BMW, Daimler, Volkswagen and many more car manufacturers.

However, the VDA has experienced problems with the performance of our competitor's instruments and approached James Heal for help with the design of a replacement Mace snag tester.

PRÉCIS OF THE INSTRUMENT

ProMace is a four station mace snag tester in a vertical 2 x 2 cylinder configuration giving this instrument a significantly smaller footprint than comparative instruments. The ProMace include many features to facilitate efficiency the testing process and to ensure operator safety. These are detailed on pages 7, 8 and 9.

PURPOSE OF THE MACE TEST

Designed to rapidly determine the snagging resistance of fabrics, (pull yarn loops from fabric) in normal wear. The test is very aggressive and is used for robust apparel and home furnishings fabrics.

The instrument is provided with 4 rotating cylinders fitted with sleeves of felt, test fabric and mace balls with tungsten carbide points.

SCOPE OF THE INSTRUMENT

It is suitable for testing woven and knitted fabrics made from textured yarn, untextured filament yarns and spun yarn or combinations of these yarns.

It is not suitable for open construction fabrics (such as a net or mesh) as the points on the mace ball will snag the felt pad rather than the specimen, very heavy or very stiff fabrics that cannot be made to fit tightly on the drum and felt pad, and tufted, towelling or nonwoven fabrics as the instrument is designed for woven and knitted fabrics.

ALTERNATIVE TEST OPTIONS

The ProMace is used to test robust fabrics. An instrument which is less severe, which conforms with standards such as 'BS 8479 Textiles: Method for Determination of the Propensity of Fabrics to Snagging and Related Surface Defects - Rotating Chamber Method' is the **James Heal Orbitor fitted with the SnagPod**.

A snag tester is a very simple instrument;

- A tubular specimen is placed on a cylindrical drum
- The spiked mace balls, suspended on a chain bounce randomly on the surface of a rotating fabric specimen.
- The contact between the mace ball and the fabric specimen generates snags.
- The snagged fabric specimen is then compared against a visual standard, either fabric or photographic assessment pictures, and reported on a scale.

THE TEST PROCESS

Felt Sleeves

To undertake the test the felt sleeves are first removed from the vacuum sealed pack and immersed in hot/warm water for approximately 5 seconds. These are then fitted immediately onto the four cylinders and positioned centrally. The felt sleeve will shrink tightly onto the cylinders as it dries.

A benefit of the James Heal ProMace is that these four cylinders are removable.

To remove, hold the cylinders and turn clockwise to remove. Removable cylinders assists the fitting of the felt sleeves. This is in contrast with other instruments of this type for which the cylinders are fixed.

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

The various standards required the felt sleeves to be replaced every 200 hours (or whenever its surface becomes rough, perforated, or shows excessive wear). A benefit of the ProMace is that the UniController can be programmed to indicate when the felt is required to be changed.

To remove the felt sleeves from the cylinder a sharp blade should be used to carefully cut the worn Felt Sleeve, taking care not to damage the rubber covering of the cylinder.



The Mace Balls

To fit the mace balls guide the chain behind the black rod & insert into the upper coupling and secure.

When the instrument is not in use the mace balls should be stored in the mace ball cup above each of the four cylinders. This helps to minimise damage to the pin points which is critical element of the mace snags testers.

Inspecting the Mace Balls

As mentioned, the pin points are a critical element of mace snag testers. Therefore the James Heal ProMace supply a mace ball inspection holder. This designed for the user to safely and securely hold the mace ball whilst inspecting the points.



1 Remove the top coupling from the ball chain and attach the ball and chain to the spring clip.



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



3 The mace ball is now safe and secure in the holder ready for inspection of 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.

To inspect the Pins the supplied Reticle Comparator (Magnifying Glass) is used. The Pins are changed with the supplied Allen key. Once the pin is loose, remove & replace with a new one. In one of the Standards it suggests the pins are checked daily.

Preparation of the Specimens

The test specimens should be prepared in accordance with the relevant standard. They are fitted onto the cylinders and clamped in place using two elastic rings for each cylinder.

Once the mace ball is placed upon the specimen the exact distance between the mace from the lower guide rod should be adjusted in accordance with the relevant standard and checked with the relevant template supplied by James Heal. This distance is also dependent upon the thickness of the specimen.

Touchscreen User Interface

Testing is actioned using the intuitive James Heal Touchscreen User Interface which controls all aspects of the test, including setting number of Revolutions and the required time periods for the inspection of Points, the change of Points and the change of the Felt Sleeves.

The ProMace Touchscreen also clearly displays the time until End of Test.

SAFETY

The James Heal ProMace is undoubtedly the safest mace snag tester available on the market.

Other snag testers have the potential to injure the operator as, unlike the ProMace, the moving parts are exposed. One Standard advises that the operator does not wear loose or dangling clothing that could get caught in the mace points or moving parts and asks that the operator does not attempt to change a specimen while the cylinder is rotating.

These issues are eliminated with the ProMace as all the moving parts are fully enclosed within the hinged safety guard – the instrument will not operate while the safety guard is open. Consequently the testing can be performed with complete safety

Likewise, another standard warns of injury to hands from the sharp mace point. However by using the mace ball inspection holder mentioned above such risk can be dramatically reduced.

VDA COMPLIANT

When used with IMAT-UVE mace balls the James Heal ProMace is **VDA compliant**. The VDA is Verband der Automobilindustrie e. V. – the German Automotive Industry Association



SUSPENDED MACE BALLS

When not in use the mace balls are stored in **non-contact, mace ball holders**. These have been specifically designed to remove the risk of damage to the pins. This is in contrast to other instruments whose storage method can have a detrimental effect on the pin points.



REMOVABLE CYLINDERS

The sample holder cylinders are removable, which can be done **without tools**. This makes the **fitting of the felt sleeves extremely easy** and also **aids the mounting of samples**.

Removable cylinders are also beneficial for the **drying of felt sleeves**, which before use should be immersed in hot/warm water for approximately 5 seconds then fitted immediately onto the cylinder.

As the cylinders are removable the drying of the felt can be accelerated by placing the rollers in a drying oven (60°C maximum). **Extra sets of cylinders can be purchased** to enable heavy duty users to further improve the efficiency of the testing process.



2 x 2 ROLLER CONFIGURATION

The vertical 2 x 2 configuration of the James Heal ProMace has a footprint of only 450 x 600 mm.

This gives a **saving of over 50% of valuable laboratory bench space** in comparison with other instruments of this type.



INTUITIVE TOUCHSCREEN

The Touchscreen User Interface allows the user to control all aspects of the test in a simple and intuitive way. The ease of use and will reduce training times and can be used by all levels of Operator.

Amongst its features are:

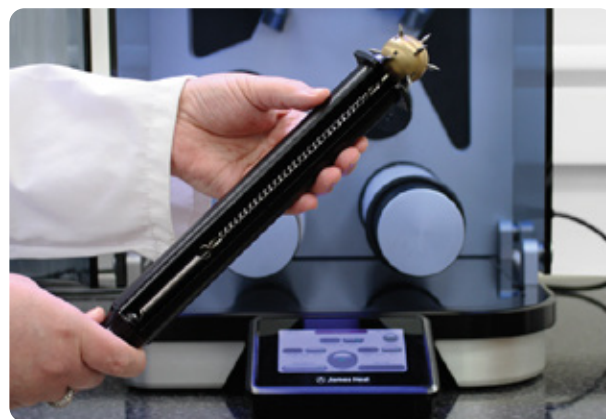
- Fast, easy editing of test conditions
- Fully editable inspection of points setting
- Fully editable change of points setting
- Fully editable change of felt setting
- Clear display of end of test time



MACE INSPECTION HOLDER

The mace ball inspection holder has been specifically designed for the user to **hold the mace ball safely and securely** whilst inspecting the points.

The unique collar design enables the user to rest the mace ball on a surface without damaging the points or work surface. This also allows the pins to be changed easily and without pin damage or injury to the user.



REMOVABLE DEBRIS TRAY

Sliding **removable trays collect the debris** from the test and they can be easily removed for cleaning.



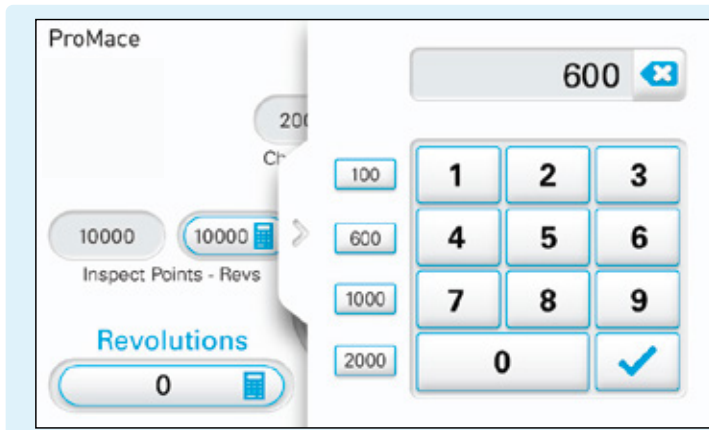
FULLY ENCLOSED SAFETY GUARD

A hinged interlocked safety guard enables the testing to be performed with **complete safety**.

The instrument will not operate while the safety guard is open.



PROMACE TOUCHSCREEN



Simple to set a test

Simple and intuitive control enables the test to be set up easily

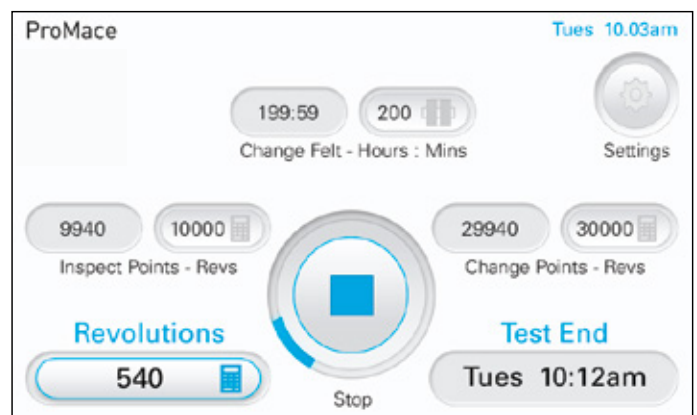
Touch 'Revolutions' on the Home screen to open the keypad for the user to enter the number of revolutions required of the keypad

Then press 'Start' on Home screen

Time to Test End

The Test End time is clearly displayed

The number of Revolutions counts down as does the Inspect points, Change Points and Change Felt displays

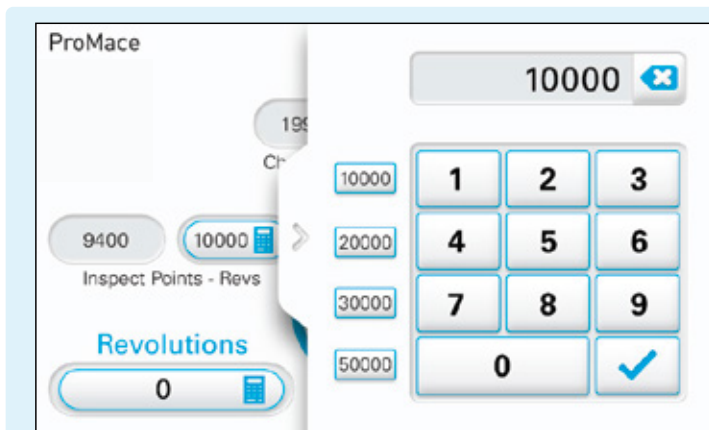


Setting the Inspect & Change Points

Simple and intuitive.

It is easy to set the time frequency for inspecting and changing the points

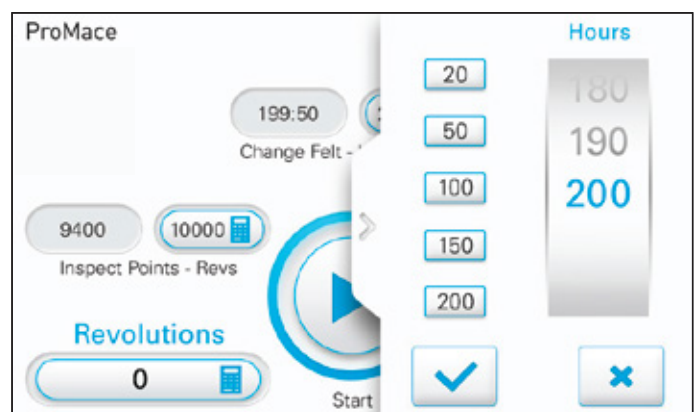
Touch the relevant area of the Home screen and enter the required number on the keypad or select one of the presets



Setting the Felt Life time

Simply touch 'Change Felt' on Home screen

Use the scroll set up to tab to set the required hours or use one of the preset is set the Change Felt timer



FOR TESTING TO ASTM & JIS
STANDARDS YOU MAY ALSO WANT ...

ProView

UNIVERSAL ASSESSMENT VIEWER

Easy and efficient grading with access, via a swipe of the integrated touch screen, to a library of photographic assessment images



MODEL 1523 STOCK CODE: 901-475

For testing to the **ASTM** and **JIS** standards an assessment cabinet is required to assess the level of snagging. The ProView assessment cabinet is supplied for that purpose for markets which work to those standards. An assessment cabinet **is not required** to comply to the **VDA** standard. There are two separate stock codes for these two different end-uses:

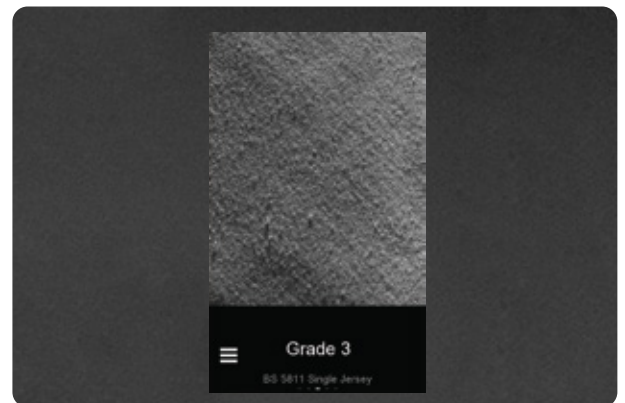
	ASTM & JIS		VDA	
	Model	Stock code	Model	Stock code
1x ProMace Snag Tester	1722	901-482	1722	901-482
1x Universal Assessment Viewer	1523	901-475	-	-
4x Mace ball - ASTM	-	794-772	-	-
4x Mace ball - VDA	-	-	-	794-773

FEATURES AND BENEFITS

PRELOADED LIBRARY OF ASSESSMENT IMAGES

ProView contains a preloaded library of photographic images to grade a range of test methods including Martindale, Mace Snag Testing and SnagPod.

A full list of the preloaded standards is on Page 12



EASY TO NAVIGATE MENU

The preloaded library of standards are accessed via an easy to navigate menu which leads to an extensive range of photographic standards.



EMPA PILLING STANDARD PHOTOGRAPHS

In 2015 James Heal entered into an exclusive agreement with Swisstat Testmaterialien AG (formerly EMPA Testmaterialien AG) who own the so-called EMPA images. Pilling Standard Photographs for EMPA Woven and Knitted standards are preloaded into the ProView to increase the range of images available.



EASY ACCESS VIA TOUCH SCREEN

Once the relevant standard has been selected the grading photographs are accessed via a 'swipe' of the integrated 7" touch screen.



SAMPLE HOLDERS

A range of sample holders make the process of assessing and grading the samples very clear.



COMPLETE SOLUTION

Everything you need for visual assessment is housed within this easy to use viewer.



ATSM & JIS STANDARDS FOR MACE SNAG TESTS

For mace snag testing to the **ASTM** and **JIS** standards an assessment cabinet is required to assess the level of snagging.

The ProView assessment cabinet is supplied for that purpose for markets which work to those standards.



RANGE OF STANDARDS




In addition to the EMPA Pilling Standards from Swissatest, grading photographs for other standard bodies and retailers are also preloaded.



PRE-LOADED IMAGES

ASTM D 3939 Mace snagging		9 images
SnagPod (complies with BS8479:2008 and BHS TM46)		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	- Plain Weave	5 images
	- Twill Black	5 images
	- Twill White	5 images
	- Woven Blanket	5 images
SM 54 for knitted fabrics - Pilling box	- Botany Knitted	5 images
	- Double Jersey	5 images
	- Lambswool Knitted	5 images
	- Shetland Knitted	5 images
EMPA Pilling Standard Photographs - Woven - W1		4 images
	- W2	4 images
	- W3	4 images
EMPA Pilling Standard Photographs - Knitted	- K1	4 images
	- K2	4 images
	- K3	4 images
M&S Pilling		5 images

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			

ProMace is supplied as standard with 4 working positions and has been designed and built to meet American standard ASTM 3939, Verband der Automobilindustrie e. V. standard VDA 230-220 and the Japanese standard JIS L 1058:2011, when used with the appropriate Mace balls.

Additional mace balls can also be purchased as accessories using the relevant stock code detailed above.

TECHNICAL SPECIFICATION

Rotational Speed: 60 rpm \pm 2 rpm

SPARE PARTS, SERVICE & CALIBRATION

A **2-year Spares Kit** is available, stock code **1522-spares**, comprising of the items below;

Code	
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)

These items can also be ordered individually.

Service & Calibration: ProMace has a 18 month warranty. It is recommended the instrument is serviced and calibrated annually by a James Heal Service and Calibration Engineer.

INSTALLATION GUIDE

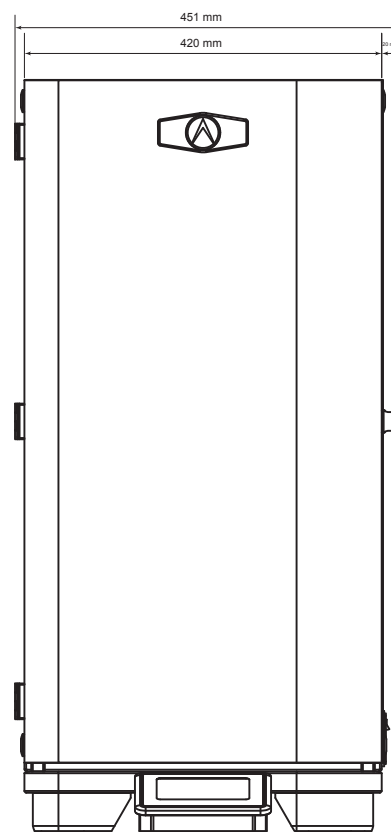
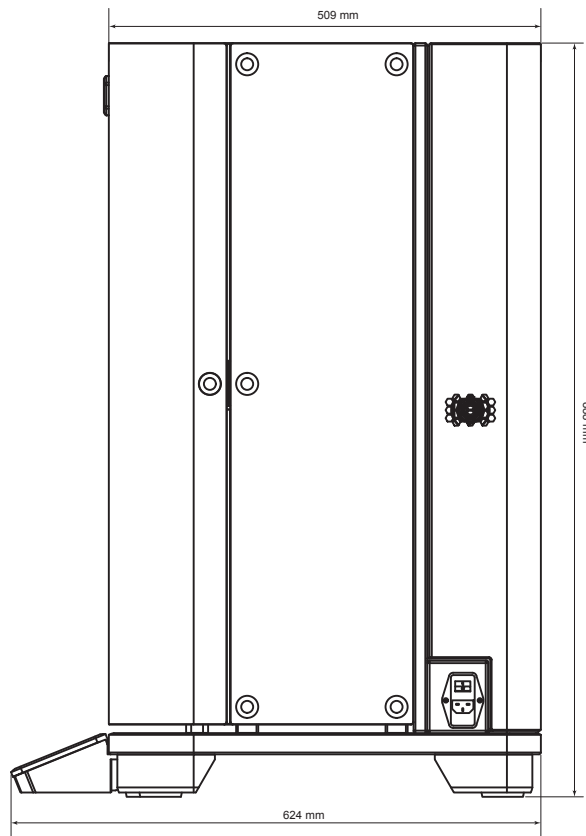
Item	Comment
Electricity	85 to 264V AC 50/60Hz Single Phase 0.5 / 1 A 20 W
Air	Not required
Bench or Floor Standing	ProMace and ProView are designed to be placed upon on a Bench
Water Supply	Not required
Drainage	Not required
Air Extraction	Not required
Conditioning	It is recommended the instruments are located within a conditioned atmosphere.

CE Conformity: ProMace is CE marked and is therefore compliant 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

DIMENSIONS & WEIGHT

ProMace is designed to be placed upon on a bench which should be firm and level. It is recommended the instrument is located within a conditioned atmosphere.



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

