James Heal

OPERATOR'S GUIDE

TruBurst
Pneumatic Bursting Strength Tester

With
TestWise Lite Datalogger

And Optional
TestWise Pro Software

Covering Serial Numbers
1440/15/1001 and upwards

James Heal
Halifax, England

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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

TruBurst Pneumatic Bursting Strength Tester

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

Key Features

- 7-inch Capacitive colour TFT touchscreen
- Automatic flow calibration for M&S
- Sliding interlocked safety guard
- Selectable statistics
- Programmable clamp pressure
- TestWise Lite datalogger included
- Additional software features available in TestWise Pro

Service & Calibration

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

Technical Assistance

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

Scope

TruBurst pneumatic bursting strength tester has been developed to test the bursting strength of both woven and knitted materials, including those with elastane, to a maximum of 1000 kPa when 10 bar of air pressure is supplied.

A specimen is clamped over a diaphragm which is expanded to the point of rupture, or where the dome is filled.

A selection of dome sizes and diaphragm thicknesses are available to achieve the desired outcome.

TruBurst is supplied with TestWise Lite datalogger. TruBurst also has the facility to perform cyclic testing with the purchase of TestWise Pro with licensing dongle.

In addition, James Heal offer Titan, our Universal Strength Tester with ball burst accessories to fulfil the requirements of alternative bursting strength test methods.

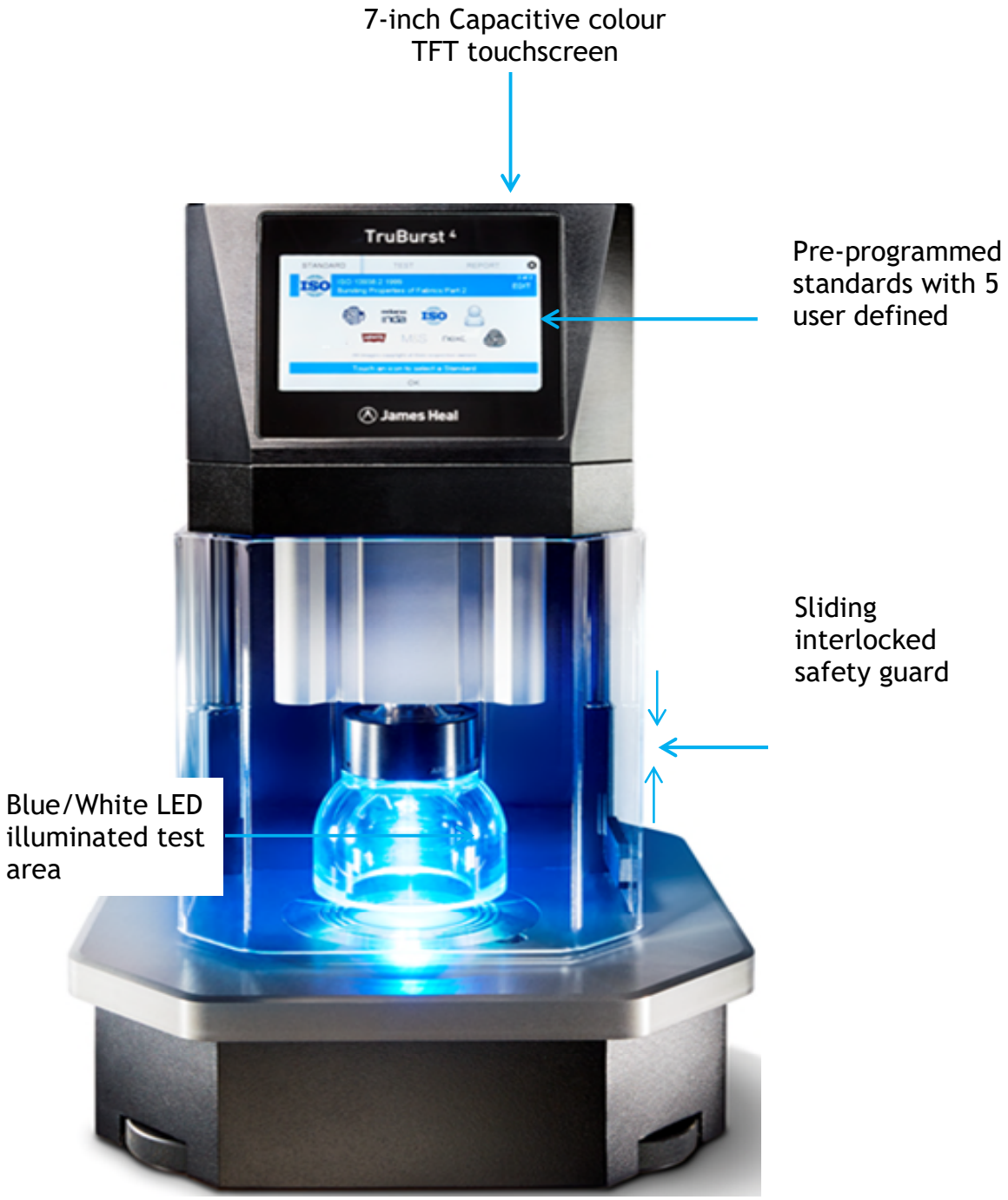
Standards

- ASTM D 3786
- ISO 13938-2
- For GBT 7742.2, select ISO 13938-2
- LEVI STRAUSS & CO
- M&S P27 Fabric
- M&S P27 Lace
- NEXT TEST METHOD 22
- WOOLMARK TM29
- NWSP 030.2.R0 (15)
- + 5 User defined

HEALTH & SAFETY

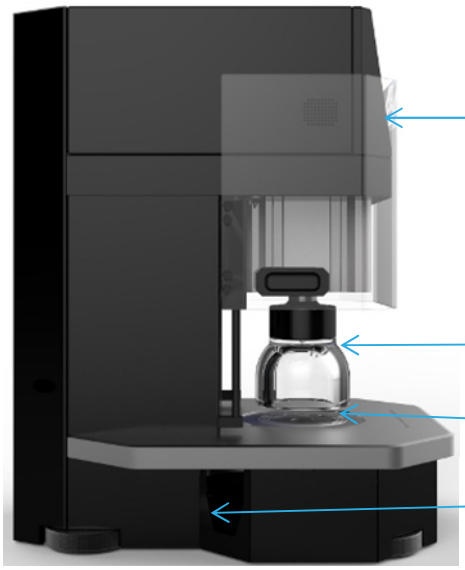
- Read this manual carefully before operating the instrument.
- TruBurst has a mass of approximately 70kg, therefore assistance from a colleague or suitable lifting apparatus is recommended.
- TruBurst complies with the EU Conformity in full
- Ensure the instrument is isolated from the electrical supply 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.
- TruBurst utilises Compressed Air. Compressed air is potentially dangerous if misused. Never apply compressed air to the surface of the human body.
- Do not use any compressed gasses other than compressed air.
- Never use oxygen, nitrogen, argon, helium, hydrogen, acetylene, propane or butane.
- Never tamper with the interlocked safety guard or attempt to use TruBurst without the safety guard in place. Tampering with the safety guard will expose the operator to serious risk from injury.
- Never use TruBurst for anything other than what it is designed for.

THE ESSENTIAL FEATURES OF TRUBURST



Lifting Points

To avoid damaging TruBurst, lift the instrument using only the lifting points indicated.



Left Hand Side View

Touch screen

Dome assembly

Diaphragm area

Mains input

Right Hand Side View

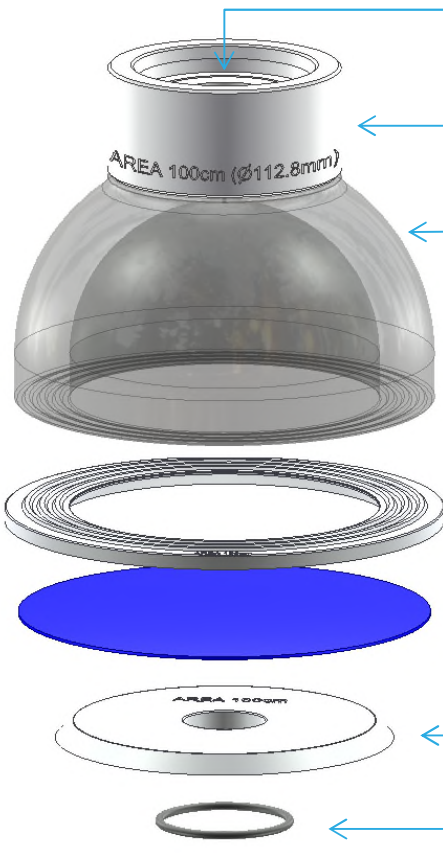
Foot Switch Jack

USB Port

Calibration Port

Compressed Air Input

Dome Assembly



Magnets

Connection Boss

Dome (Test Bell; Test Head)

Clamp Ring

Diaphragm

Raised Insert

“O” Ring Seal

INSTALLATION

These instruments are heavy and should be moved with care.

TruBurst is delivered on a wooden palette. Use a forklift truck, hydraulic pump trolley or other suitable devices to move the packing case as near as possible to the final location.

TruBurst will need to be positioned near to an electrical supply, air supply and computer.

Unpacking

- Once near to the final location, 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.
- Very carefully lift TruBurst from its palette and in to location using a pump truck if available, or by hand. If lifting by hand, a minimum of 3 people will be required.
- 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:

Standard Accessories

905-511	TruBurst Model 1440 90-264V 50/60Hz	1
142-326	Mains Lead Set Angled	1
160-486	TruBurst Footswitch	1
327-266	Flexible Black Nylon Pipe (5 m)	1
794-819	Pneumatic Adaptor for US	1
794-993	TestWise Lite for TruBurst (without dongle)	1
154-195	USB2 Lead A-B Transparent 2m Right Angled	1

Optional Accessories

Recommended Initial Starting Kits

905-511	**1 x TruBurst Model 1440 90-264V 50/60Hz**
794-684	1 x 7.3 cm^2 Dome Assembly
794-683	1 x 10 cm^2 Dome Assembly
794-682	1 x 50 cm^2 Dome Assembly
794-681	1 x 100 cm^2 Dome Assembly
777-133	20 x Packs (10) Diaphragms
202-810	1 x UKAS Certificate of Calibration
783-217	1 x Compressor
140-spares	1 x 2-year Spares Kit
794-994	**TestWise Pro for TruBurst** Supplied with Licensing Dongle to access additional features such as stretch & recovery and creep analysis
	TruBurst is supplied as standard with TestWise Lite for TruBurst (794-993). To access the more advanced features of TestWise Pro, then 794-994 is required.
905-511	**TruBurst Model 1440 90-264V 50/60Hz** Maximum Bursting Pressure: 1000 kPa (145 psi)
	Standard accessories:
142-326	1 x Mains Lead Set Angled
160-486	1 x TruBurst Footswitch
327-266	1 x Flexible Black Nylon Pipe (5 m)
794-819	1 x Pneumatic Adaptor for US
794-993	1 x TestWise Lite for TruBurst (supplied without Dongle)
154-195	1 x USB2 Lead A-B Transparent 2m Right Angled

	Test Areas
794-684	**7.3 cm² Specimen Clamp**
794-683	**10 cm² Specimen Clamp**
794-682	**50 cm² Specimen Clamp**
794-681	**100 cm² Specimen Clamp**
~~794-685~~	~~**7.8 cm² Specimen Clamp (for Paper)**~~
	Diaphragms
777-133	**Reinforced Diaphragms (1mm thick) -** per pack (10)
777-133	**Reinforced Diaphragms (1mm thick) -** per 2 packs (10)
777-133	**Reinforced Diaphragms (1mm thick)** - per 5 packs (10)
777-133	**Reinforced Diaphragms (1mm thick) -** per 10 packs (10)
777-133	**Reinforced Diaphragms (1mm thick) -** per 20 packs (10)
777-134	**Plain Diaphragms [M&S P27] (1mm thick)** - per pack (10)
777-134	**Plain Diaphragms [M&S P27] (1mm thick) -** per 2 packs (10)
777-134	**Plain Diaphragms [M&S P27] (1mm thick) -** per 5 packs (10)
777-134	**Plain Diaphragms [M&S P27] (1mm thick) -** per 10 packs (10)
777-134	**Plain Diaphragms [M&S P27] (1mm thick) -** per 20 packs (10)
777-135	**Reinforced Diaphragms (1.5mm thick) -** per pack (10)
777-135	**Reinforced Diaphragms (1.5mm thick) -** per 2 packs (10)
777-135	**Reinforced Diaphragms (1.5mm thick) -** per 5 packs (10)
777-135	**Reinforced Diaphragms (1.5mm thick) -** per 10 packs (10)
777-135	**Reinforced Diaphragms (1.5mm thick) -** per 20 packs (10)
777-150	**Low Pressure Diaphragms (0.2mm thick) -** per pack (10)
777-150	**Low Pressure Diaphragms (0.2mm) -** per 2 packs (10)
777-150	**Low Pressure Diaphragms (0.2mm) -** per 5 packs (10)
	TruBurst Verification Foils
	Only suitable for use with TruBurst2 TruBurst3 and TruBurst4 (model 1440)
766-600	**TruBurst Verification Foil No.1 for 50 cm² Dome** - 60-140 kPa - per pack (5)
766-601	**TruBurst Verification Foil No.2 for 50 cm² Dome** - 140-260 kPa - per pack (5)
766-602	**TruBurst Verification Foil No.3 for 50 cm² Dome** - 280-410 kPa - per pack (5)
766-603	**TruBurst Verification Foil No.4 for 50 cm² Dome** - 450-550 kPa - per pack (5)
766-604	**TruBurst Verification Foil No.5 for 50 cm² Dome** - 560-700 kPa - per pack (5)
766-605	**TruBurst Verification Foil No.6 for 50 cm² Dome** - 750-920 kPa - per pack (5)
766-607	**TruBurst Verification Foil No.1 for 7.3 cm² Dome** - 160-270 kPa - per pack (5)
766-608	**TruBurst Verification Foil No.2 for 7.3 cm² Dome** - 260-370 kPa - per pack (5)
766-609	**TruBurst Verification Foil No.3 for 7.3 cm² Dome** - 370-480 kPa - per pack (5)
766-610	**TruBurst Verification Foil No.4 for 7.3 cm² Dome** - 480-620 kPa - per pack (5)

Connecting to an Electrical Supply

The instrument is wired for a universal mains input: single phase 85-264VAC 50-60 Hz.

TruBurst will automatically adjust for the above voltages.

Connect the instrument to the correct electrical supply using the mains lead supplied.

The power rating for TruBurst (excluding Printer and PC) is 60 watts.

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 ¼ of a turn.

The fuse holder complete with fuse is now released.

Compressed Air Supply

Air consumption will vary according to the type and frequency of testing being carried out.

The following compressed air supply is recommended for normal continuous testing in accordance with ISO 13938-2:

Free Air Delivery:	33 litres/min
Maximum pressure:	10 bar (145psi) regulated
Minimum pressure:	6 bar
Filtration:	5 microns (absolute) or better to remove excess particulates, oil and moisture

The target pressure, test duration and frequency will dramatically affect the compressed air consumption. The compressed air supply should be sized to satisfy testing requirements.

The capacity of TruBurst will be limited to the pressure of the compressed air supply.

The air supply should be clean and dry.

Using the Laboratory or Factory Compressed Air Supply

TruBurst is fitted with on-board filtering. However, a heavily contaminated compressed air supply (not filtered) will result in early blockage of the on-board filter element.

The use of an air compressor expands the upper limit of available pressure from typical factory airlines to 1000kPa/145psi and are supplied with a filter and regulator.

Using an Air Compressor

The air compressor is supplied with a filter and regulator fitted as standard. The compressor has sufficient air delivery for normal testing in accordance with ISO 13938-2 with a 50% duty cycle. This is equivalent to one burst every 60 seconds for continuous use. An air compressor delivers optimal testing conditions for both conventional burst and cyclic testing.

Connecting the Air Supply to TruBurst

- Ensure all equipment used for connection, including pipes and fittings have a safe working pressure greater than that of supply.
- Connect the air supply to the compressed air input socket on the rear of the instrument.
- The pneumatic connection to the instrument is 6mm diameter. An adaptor is supplied to convert 6mm to 1/4 inch BSP.
- **WARNING** – do not attempt to disconnect any pneumatic pipe without first expelling the excess air from the instrument. To do this, shut off the air supply to the instrument and run TruBurst with air injection on, until all air has been expelled.
- When removing the pipe, fully depress the locking ring on the pneumatic fitting, towards the instrument while simultaneously withdrawing the pipe.

  DO NOT FORCE THE PIPE

Connecting TruBurst to a PC

The requirements for connecting TruBurst to a Personal Computer are:

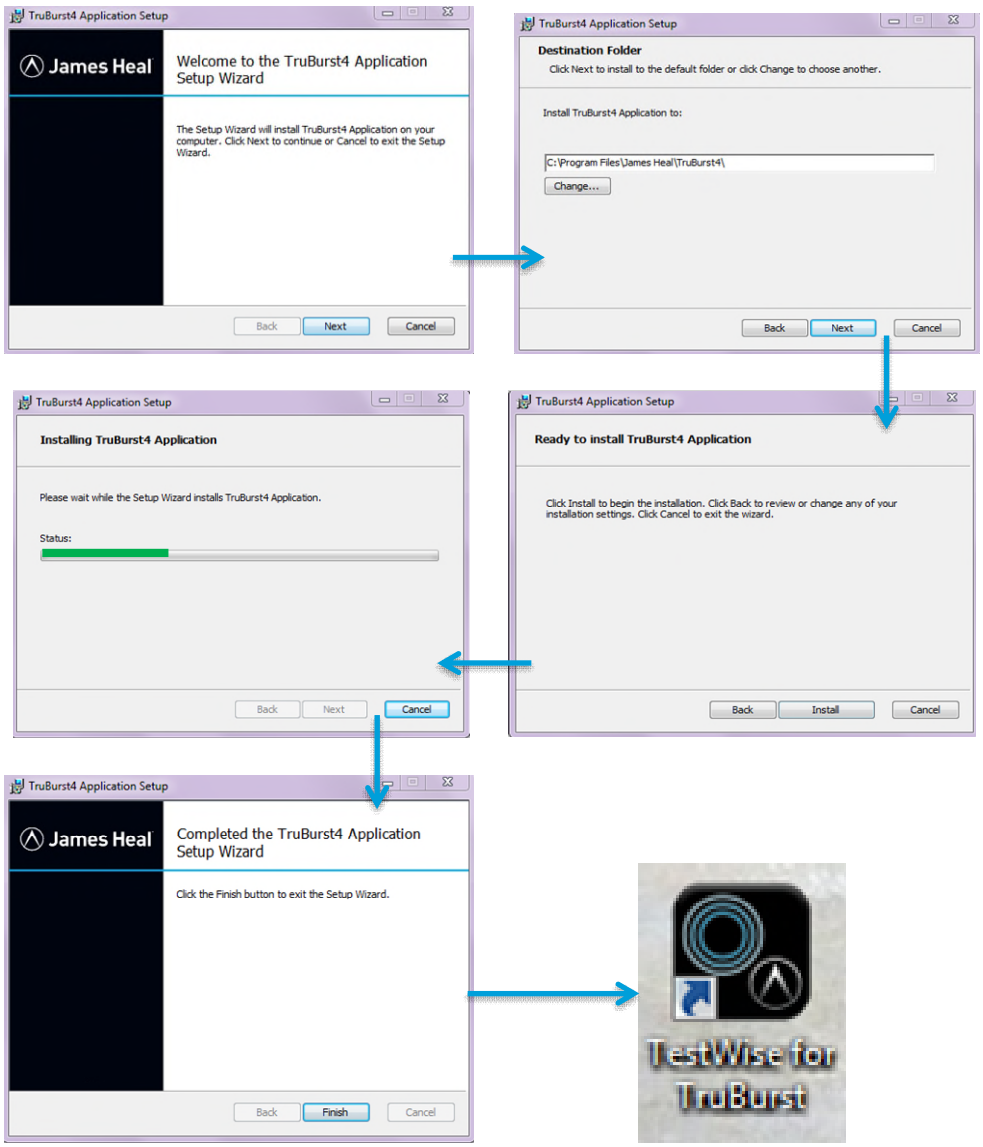
- TruBurst datalogger software (with dongle if purchased)
- USB2 Lead A-B transparent 2m Right Angled
- PC with a spare USB port running Windows 7 or later operating system - *not supplied*

With the power off, connect one end of the cable into the back of TruBurst and the other end to a spare USB port on your PC.

Power up the PC then TruBurst.

INSTALLING TESTWISE FOR TRUBURST SOFTWARE

Insert the USB memory stick containing TestWise for TruBurst into a USB port on the PC.
The set-up program will start the installation wizard, which will guide you through the set-up procedure (images may vary from those shown).

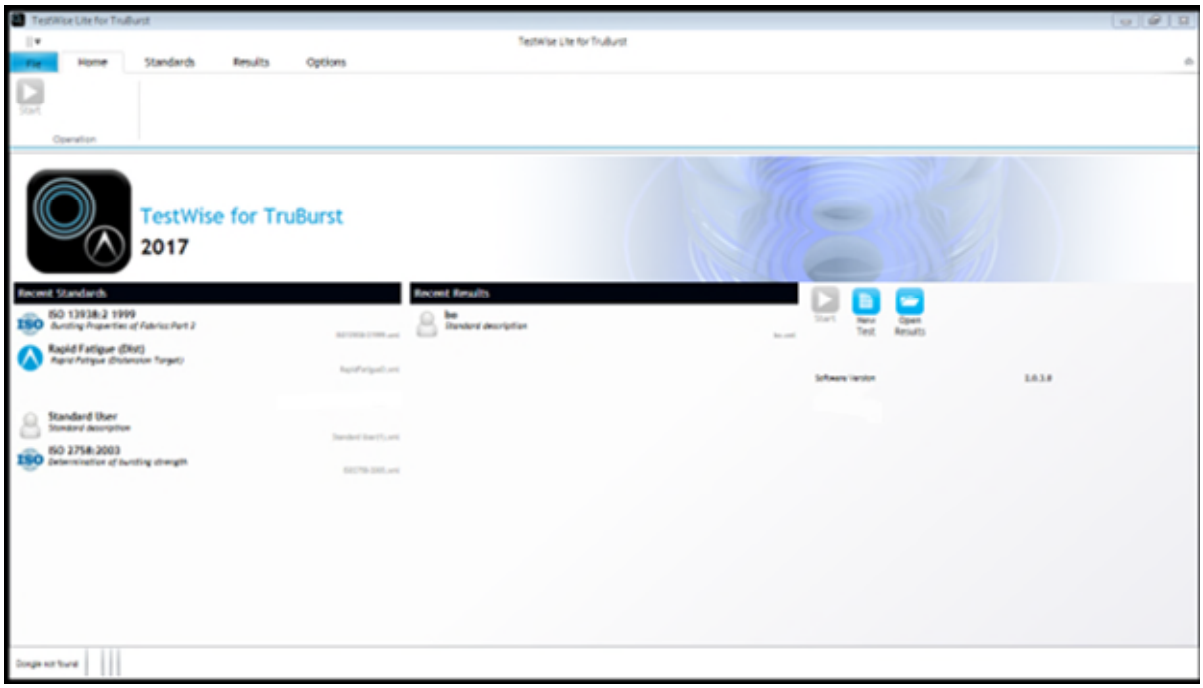


TestWise Lite for TruBurst

The software will run as TestWise Lite without a fully licenced dongle.

TestWise Lite allows for uploading of the data reports created on TruBurst for printing and saving.

TestWise Lite for TruBurst is displayed at the top of the home screen.



TestWise Pro information can be read but cannot be accessed without a dongle.

The bottom bar will display:

- Dongle not found
- Connected to COM3 - if TruBurst is connected
- Test in Progress – during testing

Refer to Using The Touchscreen for further information on tests controlled through the TruBurst instrument and not through the TestWise Pro software.

Select the correct options in TruBurst before sending the report to the PC, e.g. diaphragm thickness and statistics.

After testing on TruBurst, a report can be sent to the PC for printing and saving with TestWise Lite.

James Heal - TruBurst Results

ISO 13938:2 1999

Bursting Properties of Fabrics:Part 2

Woven Orange Fabric

Temperature: 20 'C
Relative Humidity: 65%
Weight: 0
NTests: 5 / 5
Diaphragm: 1.0mm
Test Area: 50cm2 (79.8mm Dia)
Inflation Rate: 10kPa/s
Correction Rate: 3kPa/s
Burst Detect: Normal
Clamp Pressure: 500 kPa
Target Pressure: 0kPa
Target Distension: 0.0mm

Test	kPa	mm	s
1	188.3	15.0	19.9
2	167.3	15.1	17.8
3	178.8	14.7	19.0
4	184.1	14.7	19.5
5	190.0	14.9	20.0
Mean	181.7	14.9	19.2
Q95	11.3	0.2	1.1
Q95 Max	193.0	15.1	20.3
Q95 Min	170.3	14.6	18.2
CV%	5.0	1.3	4.6

Diaphragm Correction: 11.0kPa
Instrument Model: 1440
Instrument Serial: 1440/14/1002
Software Version: 1.0.5.0
Hardware Version: 010714

Test parameter details will appear at the top of the report.

The specimen description can be edited in either TruBurst or in the PC report before saving.

The report will save as a .tbr file. A pdf can also be created by selecting the pdf button and choosing the file destination to save into.

TestWise Pro for TruBurst

With the fully licenced dongle in a USB port, the title of the software will change to TestWise Pro for TruBurst.

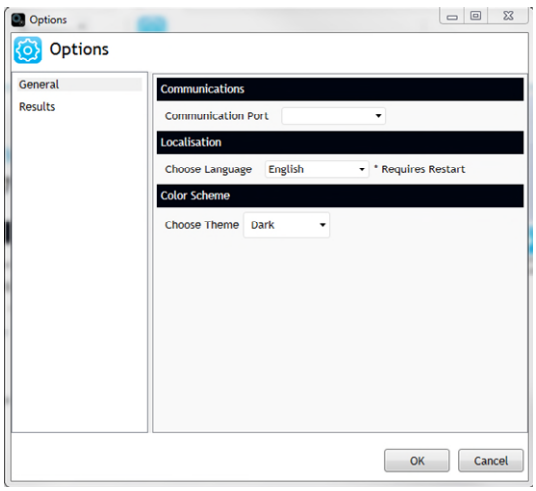
TruBurst can now be controlled through the PC software and all the features can be accessed. This allows for the creation of a multitude of stage combinations such as cyclic testing for pressure and distension, target pressure and distension, hold and burst.

There are 5 pages / tabs – File, Home, Standards, Results and Options.

File

From the File tab, the user can close the application or select Options.

Options in the File tab has 2 options – General and Results. Note: the same information can also be accessed through the Options tab and Settings button.

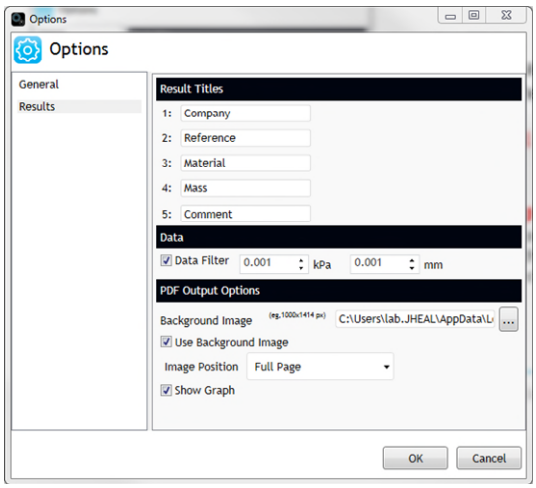


General

Communications allows the user to select the correct virtual COM port.

Localisation is where the language can be changed – this requires a restart after selection.

The graph background can be changed between dark (black) and light (white) in the **Colour Scheme** option.



Results

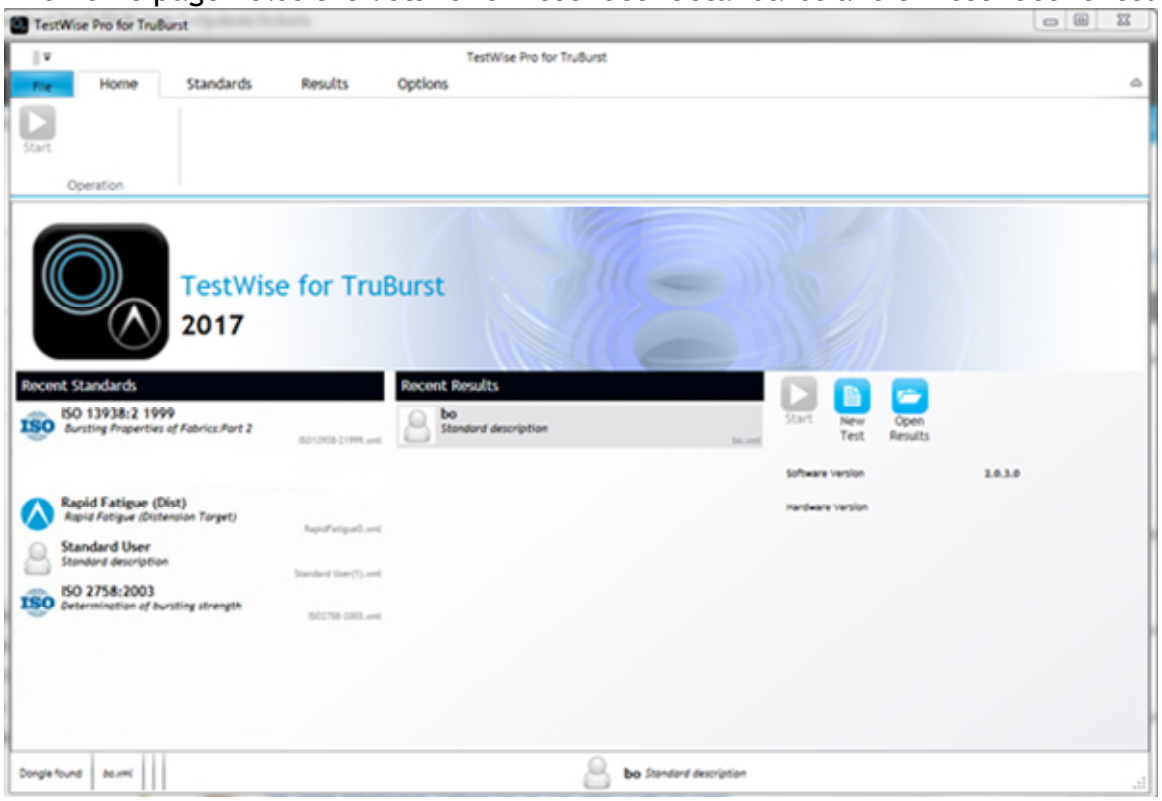
Result Titles allows the user to input details that will appear on the report. This section is also in **Results** under **Information**.

Data Filter will remove pressure and distension readings which have not changed since the last reading. This is useful for long cyclic or holding tests.

In **PDF Output Options** an image can be added to the background and the position adjusted. The graph can be de/selected.

Home

The home page holds the lists for 5 most recent standards and 5 most recent results.



To select a **Recent Standard**, click on the standard and then on **Start** to begin a new test using that standard.

Double click on a **Recent Result** to open.

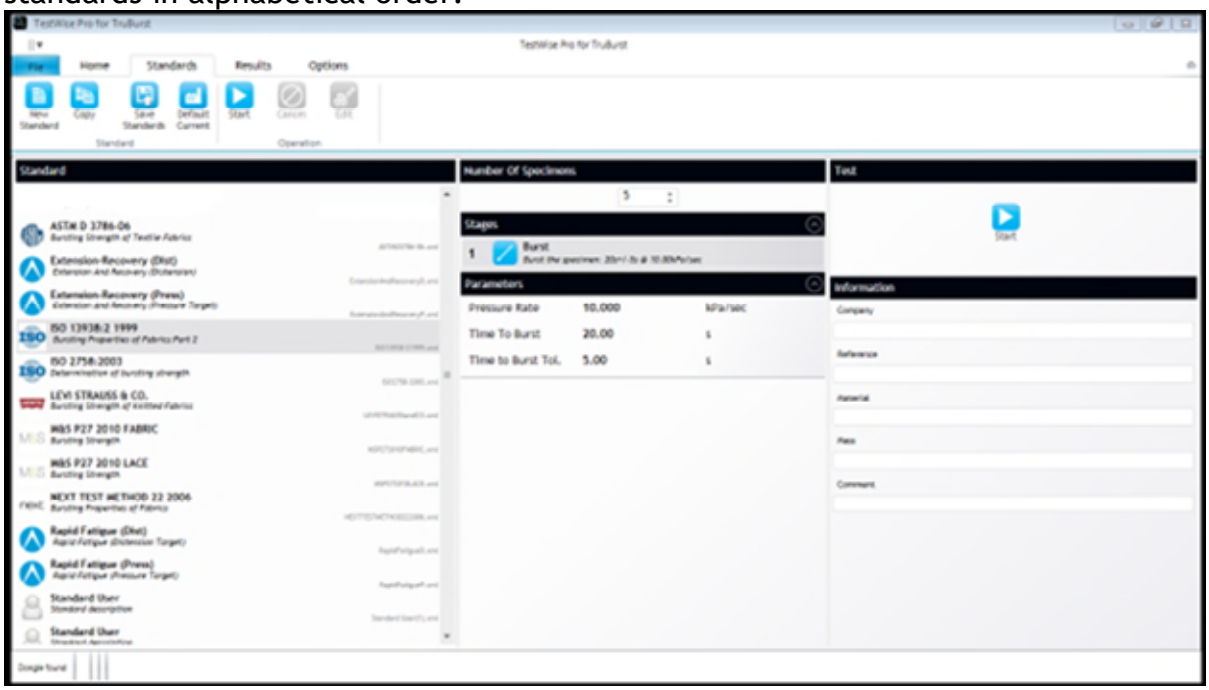
Click on **Open Results** to open a saved test.

Select **New Test** and this will take the user to the **Standards** page where a new test can be started using an existing standard, or a new standard can be created.

Once a new test is generated, move over to TruBurst and follow the instructions on the screen.

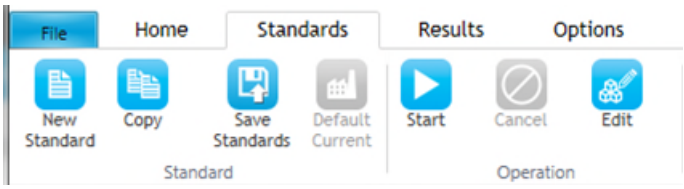
Standards

The **Standards** screen displays a combined list of all pre-loaded and created standards in alphabetical order.



To start a test from the list, click on the title of the standard. The number of specimens, stages of the test and parameters for that standard will appear in the central column. Click on the dropdown arrows to hide or reveal details. Add test information in the third column. Click on **Start** to begin.

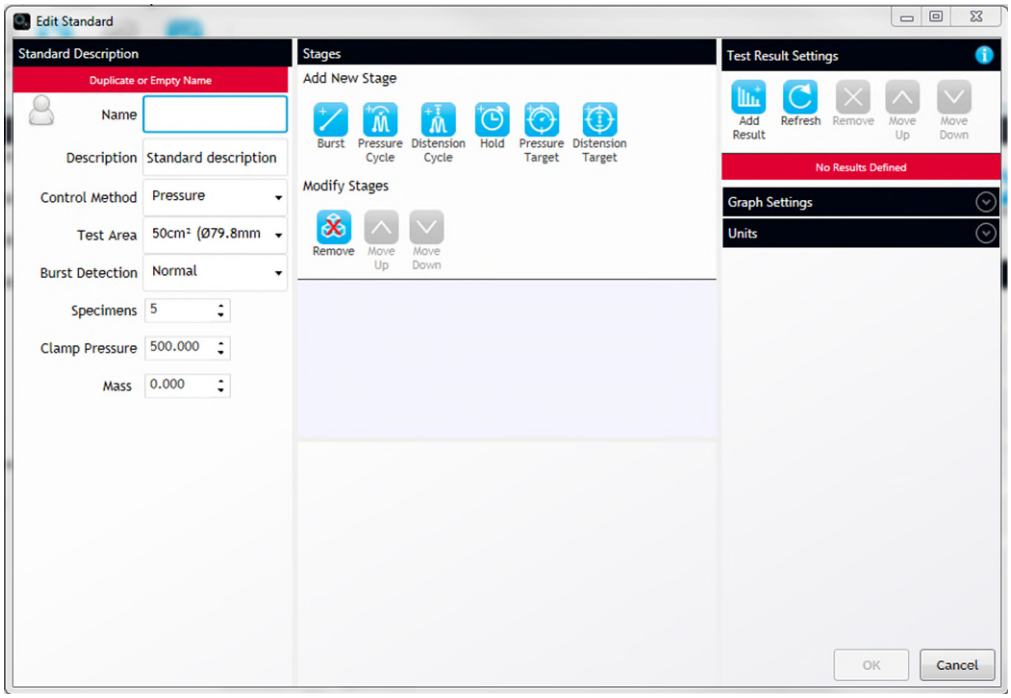
Standards can be created and edited from this page using these buttons:



The function of each button can be displayed in TestWise Pro by hovering over with the cursor as explained in each bulletpoint below.

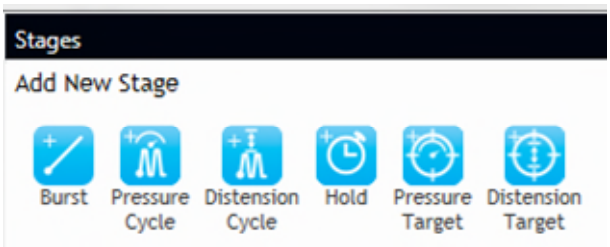
- **New Standard** - create a new standard test procedure.

Click on **New Standard** and the **Edit Standard** screen will appear.



Name the new standard with a unique reference and add a description. Complete the remaining 6 fields in the first column with the correct details.

Stages

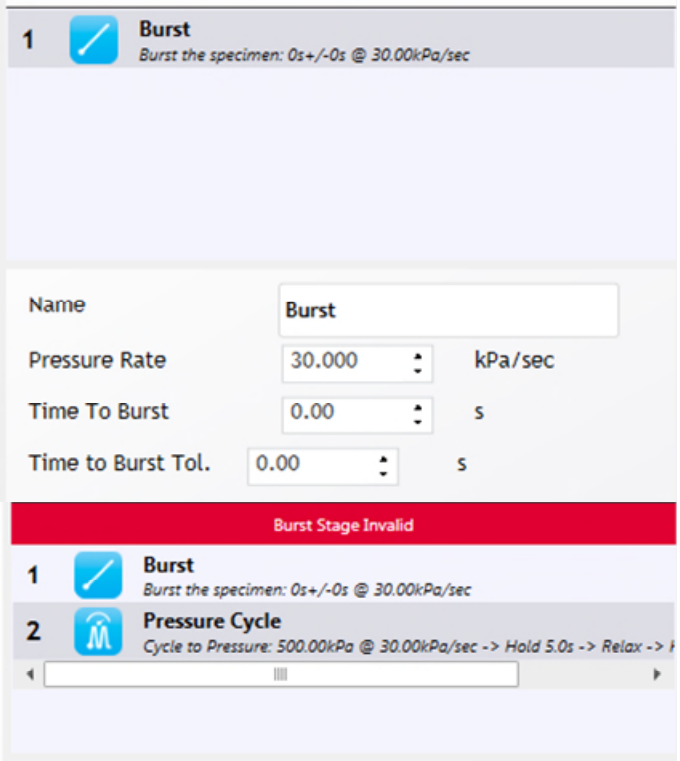


In the next column, create the stages of the new standard by first selecting one of the 6 stages.

The test may consist of multiple stages as chosen by the user.

To delete or amend the order of stages, select the stage in the list created, then use the **Modify Stages** buttons to remove or move the stage.

Burst

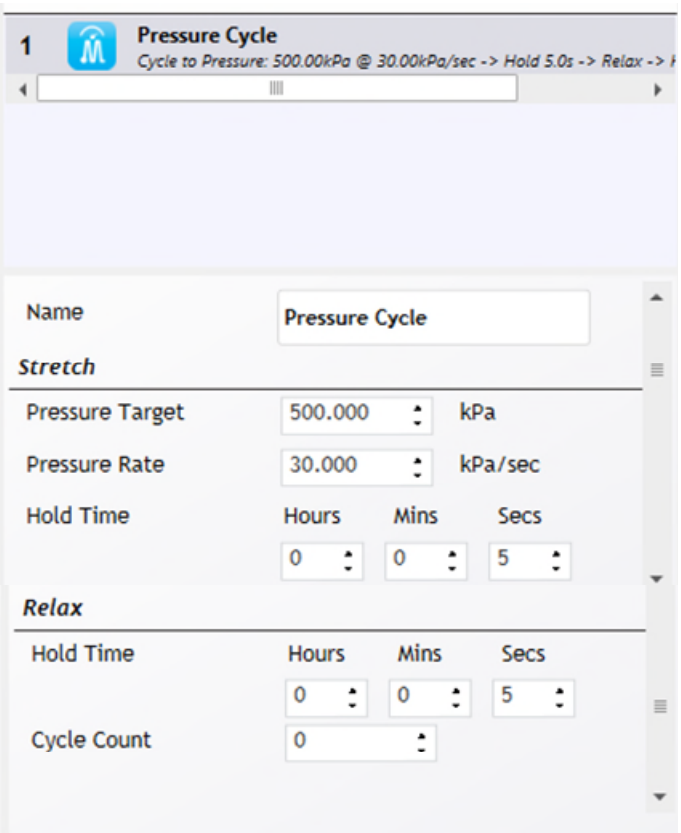


The burst parameters can be altered once the **Burst** stage has been selected:

- Pressure Rate
- Time to Burst
- Time to Burst Tolerance

If a burst is selected as the first stage for test with multiple stages, a warning will appear - **Burst Stage Invalid,** as the fabric cannot burst before other stages occur.
To amend, select **Burst** then use the **Modify Stages** buttons to remove or move the stage.

Pressure Cycle

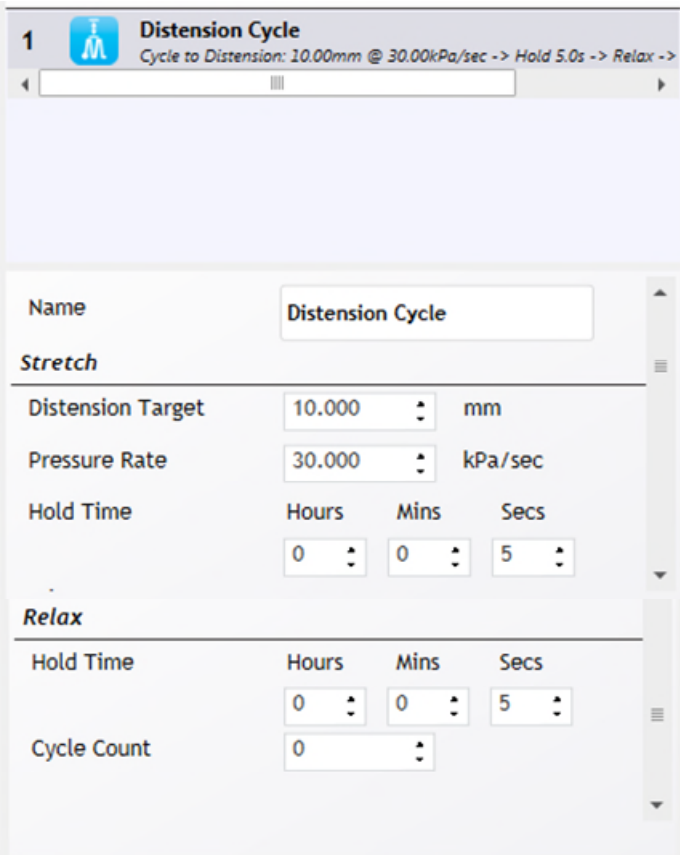


For cyclic testing to a known pressure, select **Pressure Cycle** to set the **Stretch :**

- Pressure Target
- Pressure Rate
- Hold Time

Scroll down to reveal and then set the **Relax Hold Time** and **Cycle Count.**

Distension Cycle

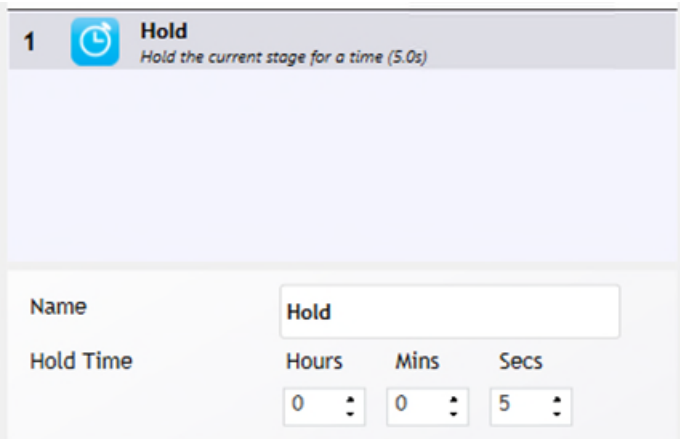


For cyclic testing to a known distension, select **Distension Cycle** to set the **Stretch :**

- Distension Target
- Pressure Rate
- Hold Time

Scroll down to reveal and then set the **Relax Hold Time** and **Cycle Count.**

Hold



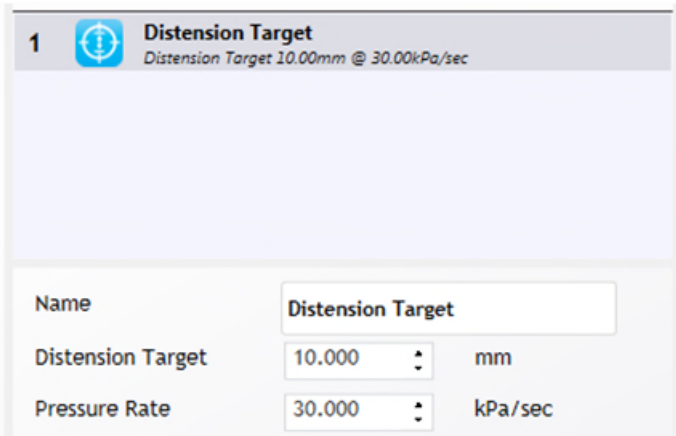
The instrument will hold for the selected duration.

Pressure Target

Set the required **Pressure Target** and **Pressure Rate.**

Select this option when creating a test where the fabric must be capable of stretching to a particular pressure without bursting. If the fabric bursts before reaching this pressure, it fails the test.

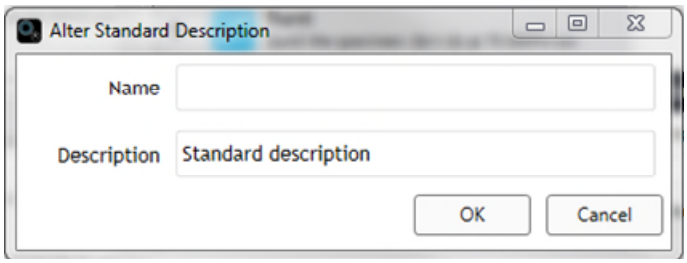
Distension Target



Set the required **Distension Target** and **Pressure Rate.**

Select this option when creating a test where the fabric must be capable of stretching to a particular distension without bursting. If the fabric bursts before reaching this pressure, it fails the test.

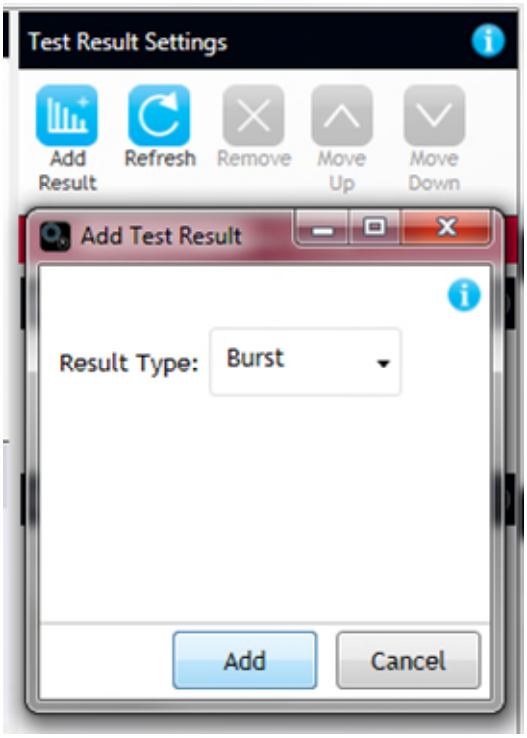
- **Copy** – copy the selected test method and create a new one.



A box will appear to fill in the new name and description.
Press OK and it will be added to the list of standards.
Select and then click **Edit** to modify.

- **Save Standards** – save the current standard now. Normally standards are saved when closing the application.
- **Default Current** – Reset the selected standard to factory settings (NB It will not alter custom / user standards).
- **Start** – run the selected standard now.
- **Cancel** – cancel the current test in progress.
- **Edit** – edit the currently selected standard (double clicking a standard will also allow it to be edited).

Test Results Settings



Select **Add Result** and a drop down list will appear for selecting the results to be shown after testing.

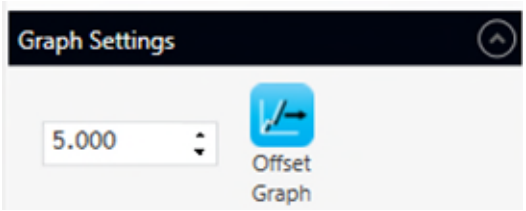
The target amounts and cyclic change parameters are also set here.

- Burst
- Burst corrected
- Maximum
- Minimum
- Pressure target - select
- Distension target - select
- Time target - select
- Cyclic change at pressure – actual / %
- Cyclic change at distension – actual / %

To delete, select the result then click on **Remove.**

This section can also be amended on the **Results** page.

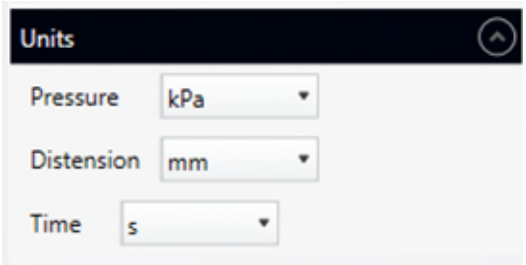
Graph Settings



The results will be overlayed, unless this setting is selected and a value given.

The results can be offset in the graph to a chosen amount in the X axis.

Units



The pressure, distension and time units can be altered.

Options are:

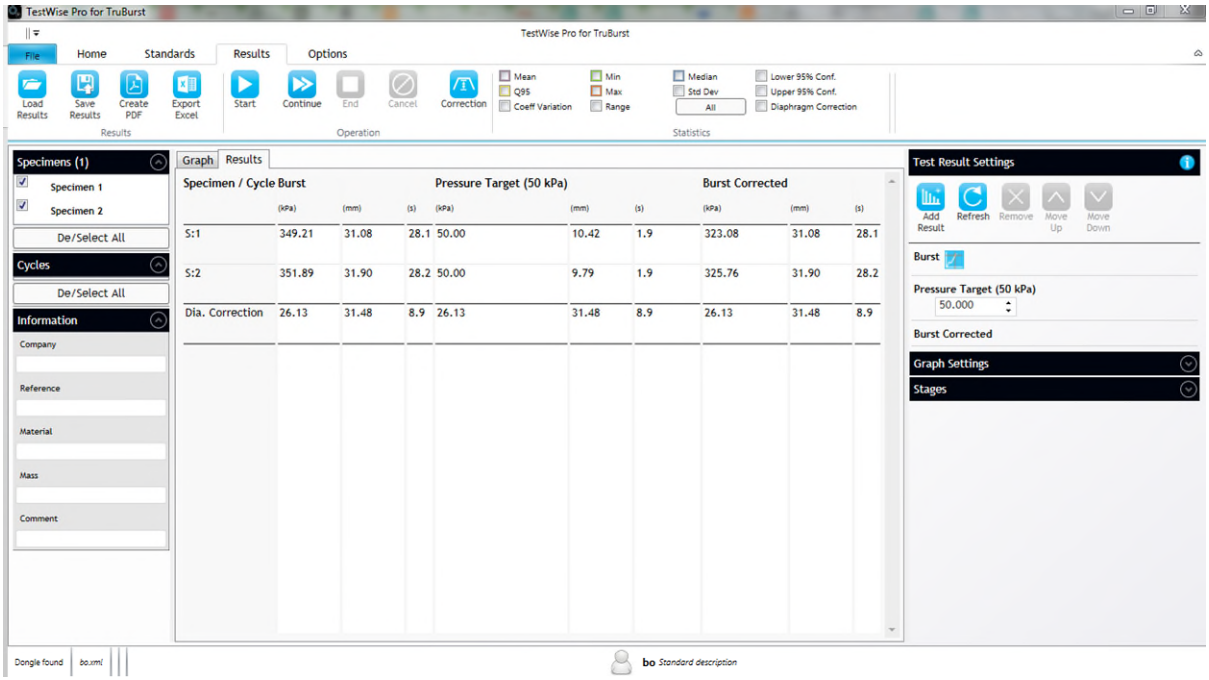
Pressure: kPa, kg/cm2, psi, bar, kN/m2
Distension: mm,cm, inch
Time: ms, s, min

These can also be altered in the **Settings** button in the **Options** tab / page.

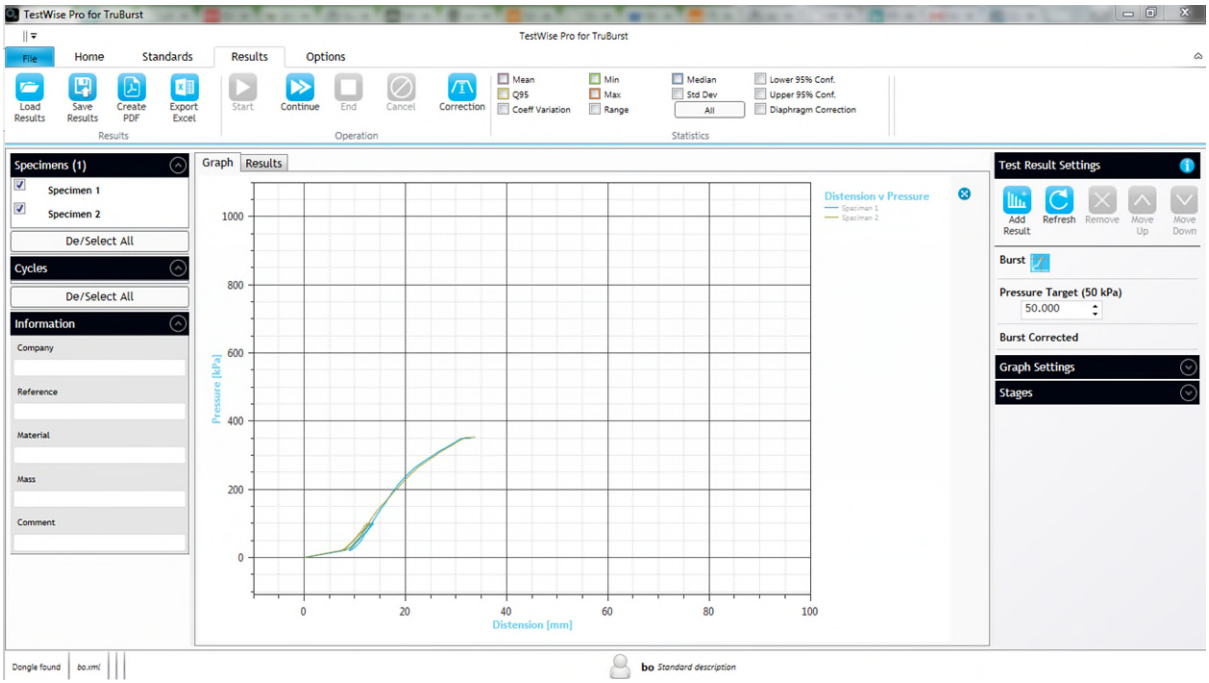
Results

The **Results** screen contains 2 tabs:

Results



Graph



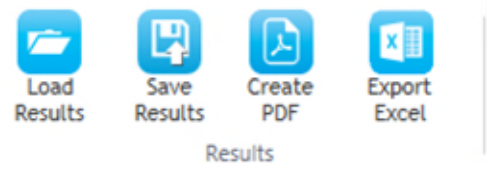
Specimens and cycles can be selected for the graph and results.

Information can be amended.
All 3 sections can be expanded or hidden.

The Test Results Settings (p.29) can be changed here.
The Graph Settings can also be changed.
The test stages are displayed.

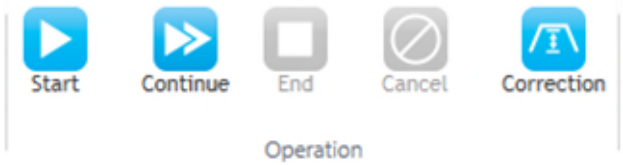
The top bar remains across the top on both tabs – this contains **Results** and **Operations** buttons, along with a **Statistics** selection section.

Results Buttons



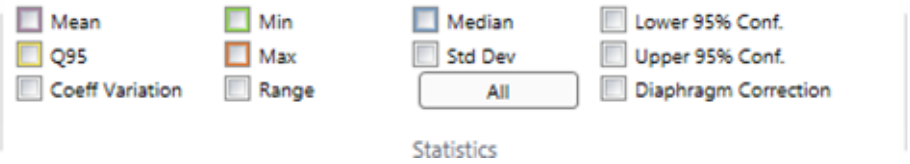
- **Load Results** – re-open previously stored results
- **Save Results** – save the current results to file
- **Create PDF** – print the current results via .pdf file
- **Export Excel** – automatically create an excel file with graphs of the results

Operation Buttons



- **Start** – run the selected standard now
- **Continue** – continue testing from the current results
- **End** – finish the test early
- **Cancel** – cancel the current test in progress
- **Correction** – perform diaphragm correction to current mean distension. A Burst or Maximum result type must be defined.

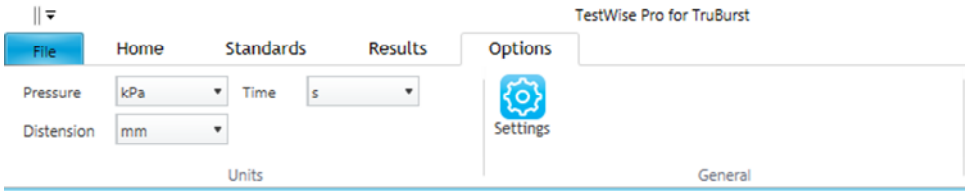
Statistics



A variety of statitics are available to select from for presenting the optimum display of results. Click on the box to select and they will appear on the **Results** tab and on the report.

Options

In addition to the **Settings** button as described in **File**, this tab also functions as the Home screen with access to recent standards and recent results, new tests and saved tests. See Home section for full details.



There are also options for changing the units for pressure, distension and time before or after a test is performed:

- **Pressure**: kPa, kg/cm2, psi, bar, kN/m2
- **Distension**: mm,cm, inch
- **Time**: ms, s, min

These parameters can be altered when editing a standard.

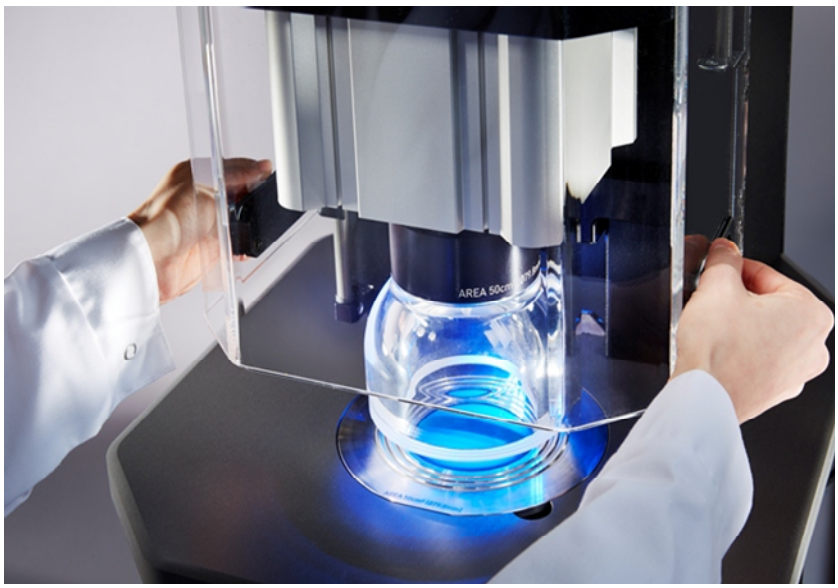
GETTING STARTED

Instrument Setup

Switch TruBurst on using the switch at the left hand side of the instrument. Allow the instrument to warm up for 5 minutes before commencing testing.

Changing the Dome

The dome is also referred to as the test area or bell. It is not necessary to switch off the instrument to change the dome. Ensure the instrument is in the unclamped (open) position with any specimens removed.

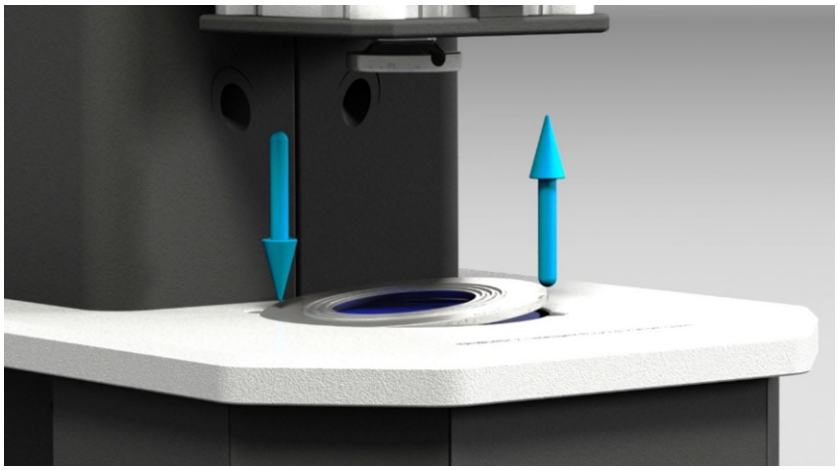


Standing in front of the instrument, using both side handles, slide the safety guard upwards until it locks into place.

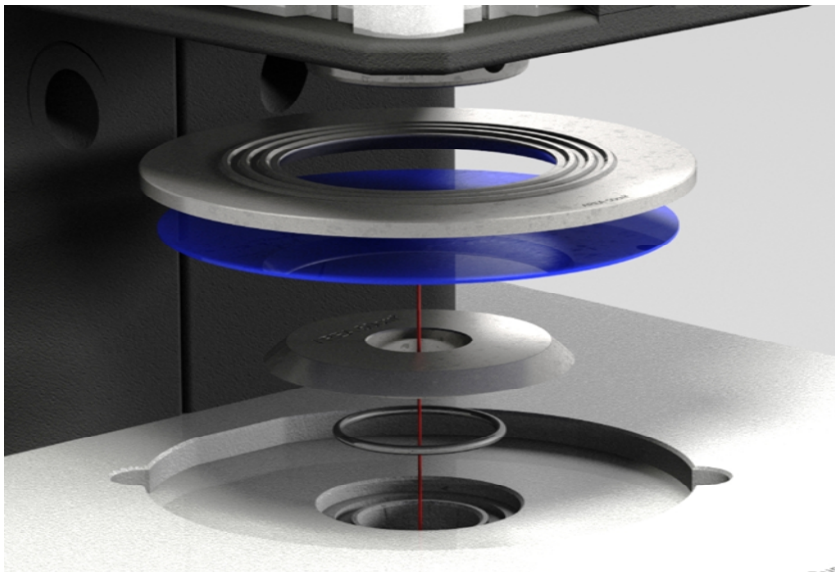
The instrument will not operate when the guard is up.

Remove the test dome from the end of the clamp piston by carefully pulling downwards; the dome is held secure by magnetic force.

Keep the test dome upright.



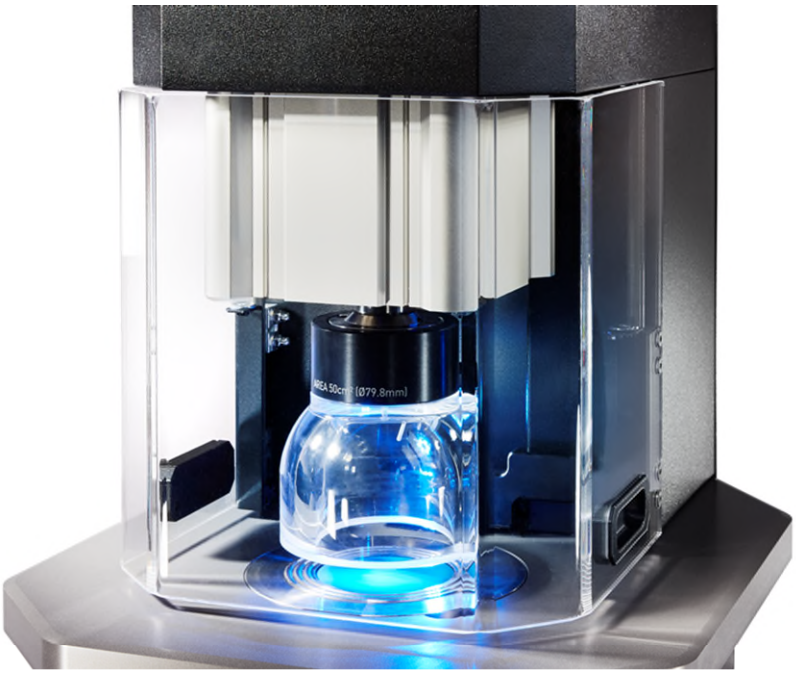
With the test dome removed, the stainless steel clamp ring can be removed by pressing on the top surface close to the outer edge. The clamp ring will lift up at the opposite edge.



The rubber diaphragm should be replace if damaged or worn. The stock code for re-ordering is marked on the diaphragm, or see accessories list.

Remove the raised insert by pulling vertically upwards.

Ensure the rubber O-ring seal remains seated in the groove - replace if damaged.



Replace the raised insert with the corresponding one to the chosen test dome.

Note: the test area (cm^2) and diameter (mm) is marked on each part.

Place the rubber diaphragm centrally over the raised insert.

Note: it is advisable to use a different diaphragm for different test areas.

Place the correct clamp ring over the top of the diaphragm and locate in the diaphragm housing.

Note: the clamp ring has a flat edge. This is an anti-rotation feature and must be aligned with the profile of the diaphragm housing.

Assemble the test dome onto the end of the clamp piston – this is held in place by magnetic force.

Slide the safety guard back down to the test position.

The size of the test dome to be used is specified in the standard. There are occasions where fabric will not burst readily and in some cases, the selection of a different dome may help, with the agreement of all parties:

- strong fabrics – increase the dome size
- stretchy fabrics - decrease the dome size

Dome Specifications

Dome area	Dome Specimen	Maximum distension
7.3 cm^2	30.5 mm	30 mm
7.8 cm^2	31.5 mm	30 mm
10 cm^2	35.7 mm	30 mm
50 cm^2	79.8 mm	70 mm
100 cm^2	112.8 mm	70 mm

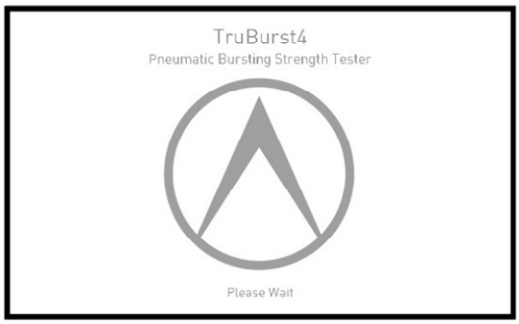
Dome or Test Head Selector Table

Dome / Test Head				
Test Area (cm^2)	**7.3**	**10**	**50**	**100**
Diameter (mm)	30.5	35.7	79.8	112.8
Distension (mm)	30	30	70	70
Stock Code	794-684	794-683	794-682	794-681
Standard				
ASTM D3786	●			
GB/T 7742.2	o	o	●	o
ISO 13938-2	o	o	●	o
M&S P27 (Fabric)			●	
M&S P27 (Lace)	●			
Next TM22	●			
Woolmark TM29	●			
NWSP 030.2	o	o	●	o

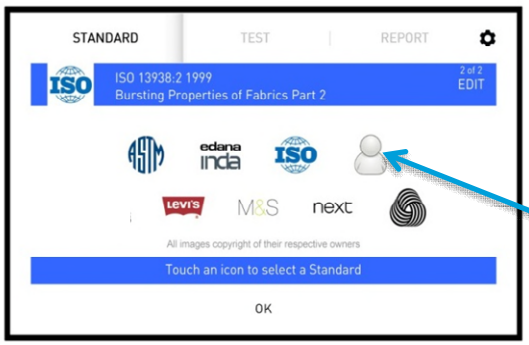
● = preferred o = optional

USING THE TOUCHSCREEN

Standard Screen - Main Menu



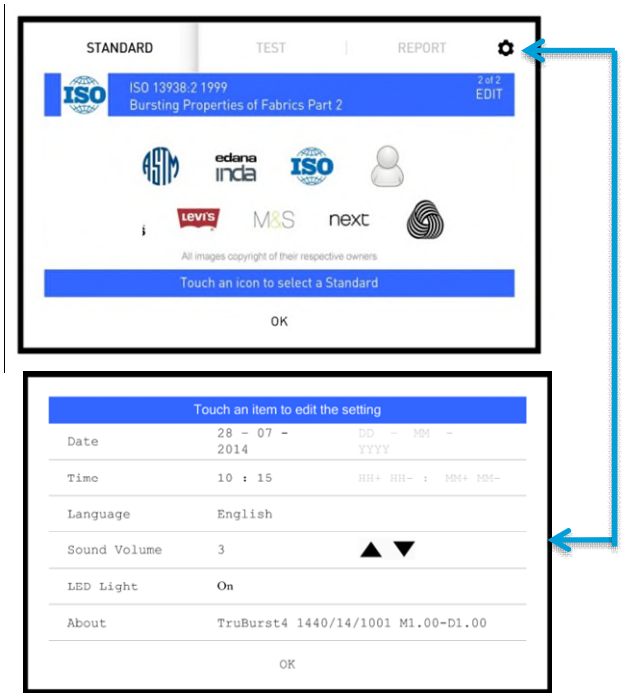
Main start up screen when TruBurst is powered up.



The main menu is on the STANDARD screen / tab.

The pre-programmed standards can be accessed here.

New standards can be created in the user defined option.



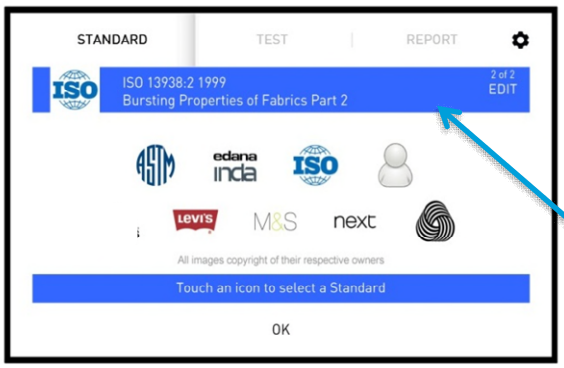
Touch the settings button in the top right hand corner on the main screen to edit:

- Date
- Time
- Language
- Sound Volume
- LED Light

Touch the item to enable editing.

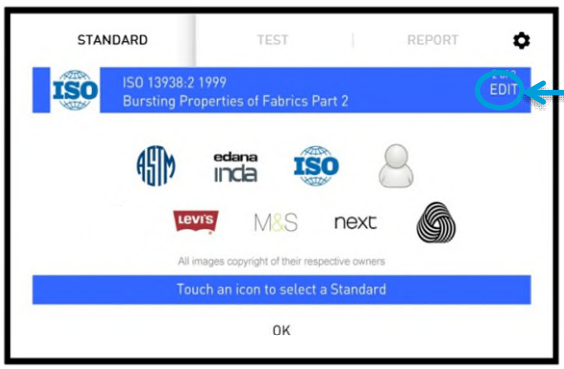
This screen also displays the serial number of the instrument.

Pre-programmed Standards



On the STANDARD screen, to select a standard, touch the relevant icon.

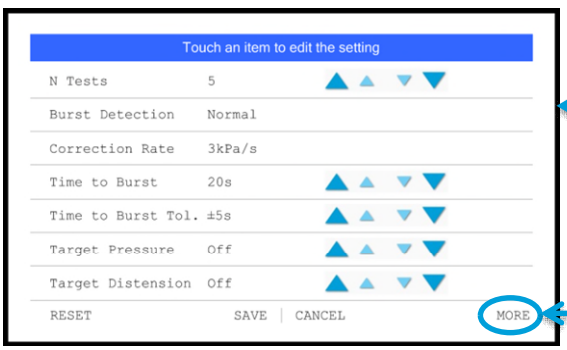
Some icons have more than one standard. To accesss these, either touch the icon again, or the blue bar along the top after the icon.



To change the test parameters touch EDIT.

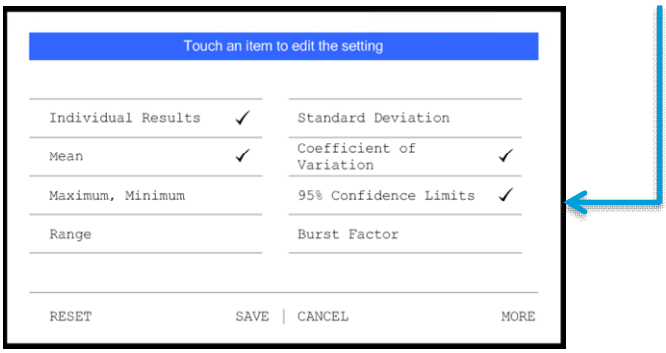
If required, touch an item to edit.

Touch MORE for additional settings.



If required, use the arrows to edit.

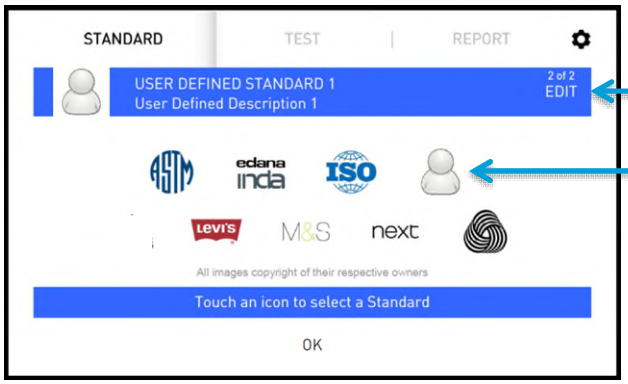
Touch MORE for additional settings.



Select the statistics to be displayed on the test report.

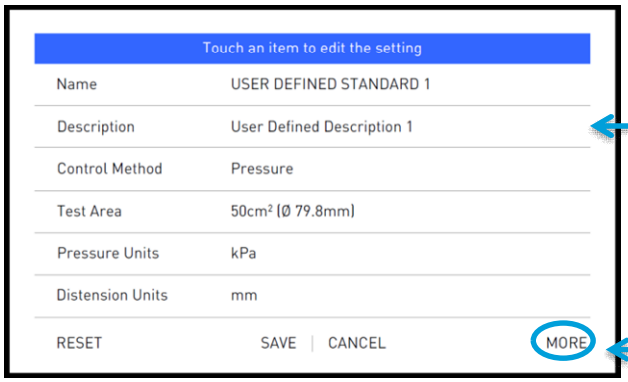
Touch SAVE.

User Defined Standards



To create a new standard, touch the user defined standard icon.

To change the test parameters touch EDIT.



Touch an item to edit the setting.

Touch MORE for additional settings.

Touch an item to edit the setting.

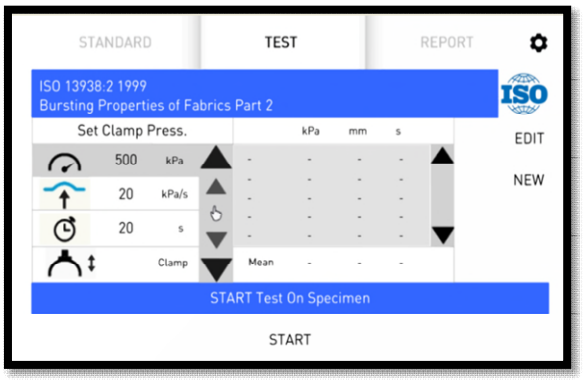
Touch MORE for additional settings.

Selectable Statistics

Select the statistics to be displayed on the test report.

Touch SAVE.

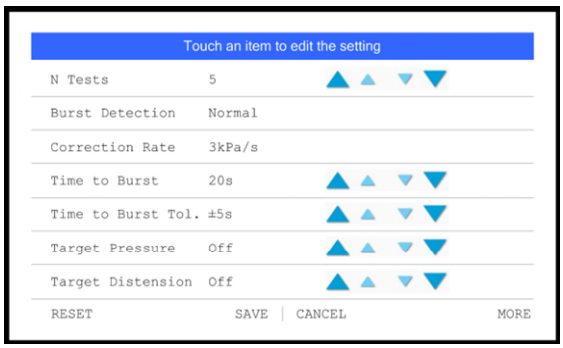
Test Screen



The **TEST** screen shows live data and stores each result temporarily.

The following settings can also be accessed on this screen:

- Clamp pressure
- Inflation rate
- Time to burst setting
- Manual clamp control
- Start NEW test
- EDIT standard



The EDIT button through the TEST screen allows for alteration of testsettings.

This screen can also be accessed after standard selection – press EDIT on the blue bar and then MORE.

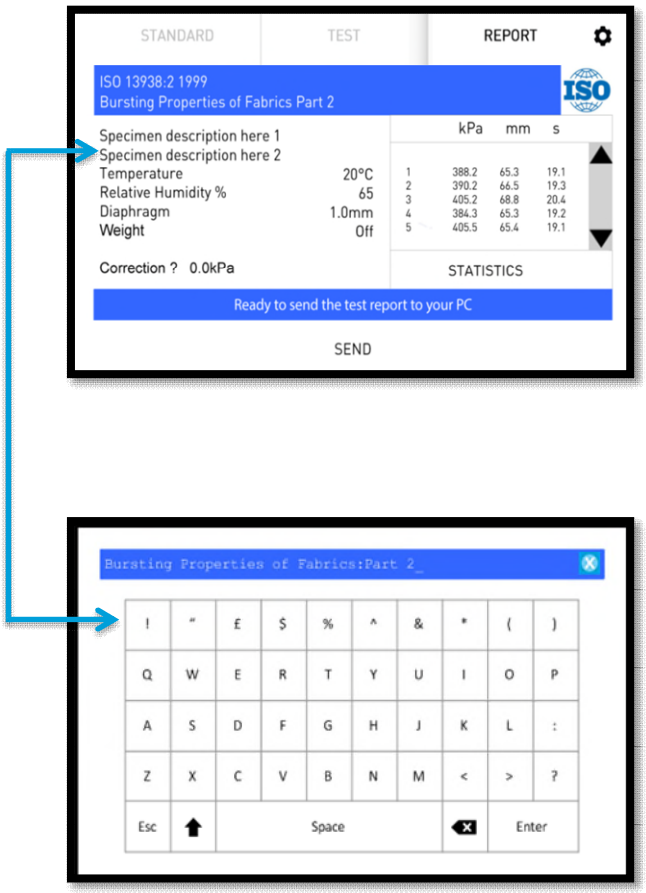
Burst Detection

There are 5 levels of burst detection settings: very low, low, normal, high and very high. The settings should be on normal unless the user finds dificulty achieving a result for example with stretchy fabric that bursts near the top of the dome. In this case, the setting should be increased in stages until a result is achieved. If a fabric is very stretchy it may not burst. In this case it should be reported that the fabric fills the dome and does not rupture.

Target Pressure and Target Distension

Target pressure and target distension should be set to ‘Off’ during normal testing. A target value for either parameter should be set in isolation for the creation of a pass or fail bursting test.

Report Screen



The REPORT screen displays the chosen parameters and the test results.

Edit any item by touching e.g. measurement units, diaphragm etc.

Edit specimen description lines by touching to access the keypad. Use the cross to delete the whole line.

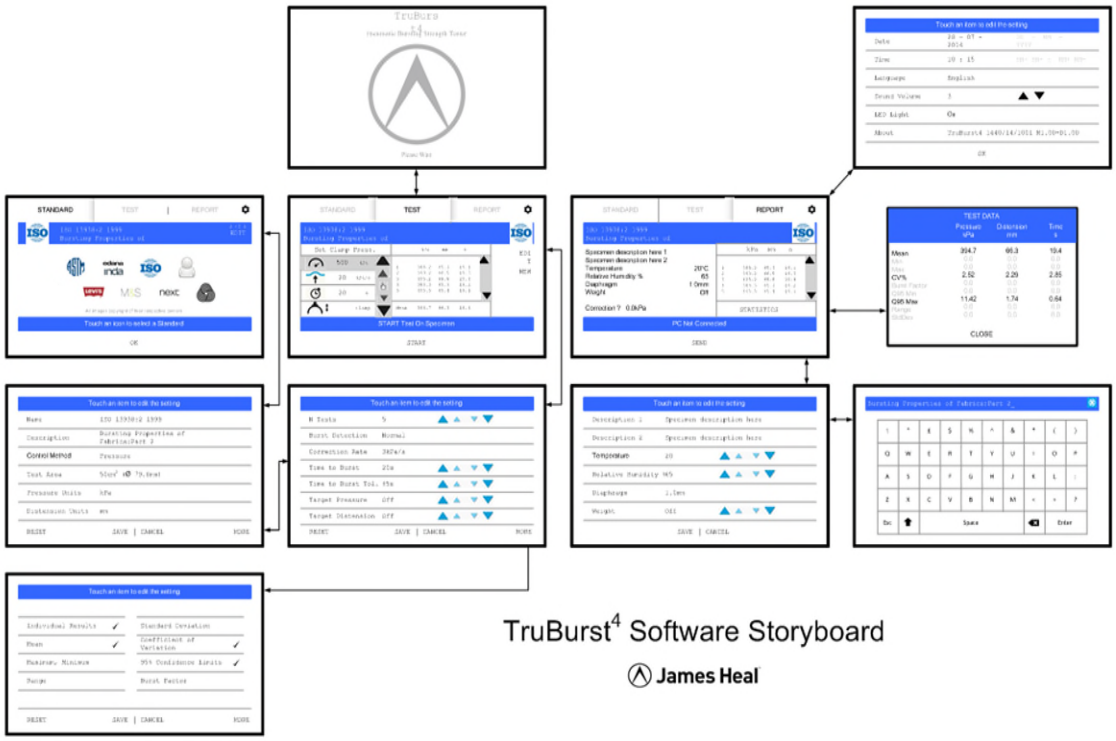
Touch statistics to access the data – select items to appear on the report and save.

To send the report to the PC, press send.

The specimen description can also be editing in the PC report before saving.

Refer to TestWise Lite for TruBurst.

Touchscreen Overview

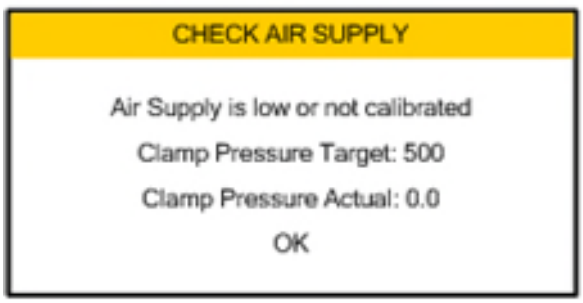


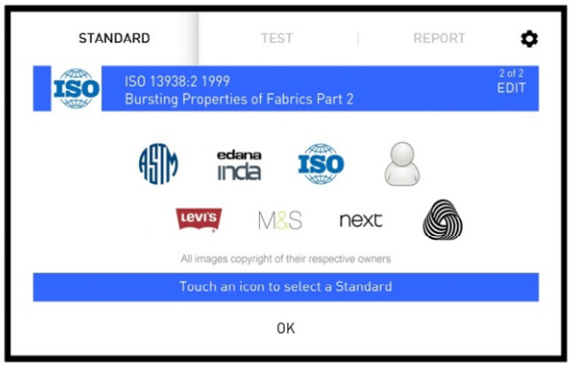
PERFORMING BURSTING TESTS

Pressure Control Method

This example uses the standard ISO 13938-2 test method and guides you through performing a burst test, applying a diaphragm correction and sending the results to the TruBurst Data Logger (TestWise Lite) on a PC.

Before commencing with a test, check the air supply is on and the correct test area is being used:

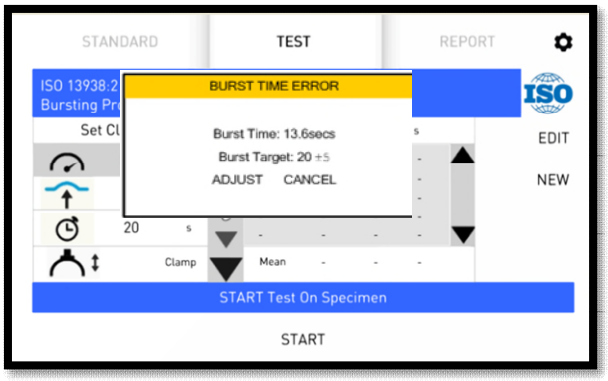




Touch the ISO icon then touch OK.

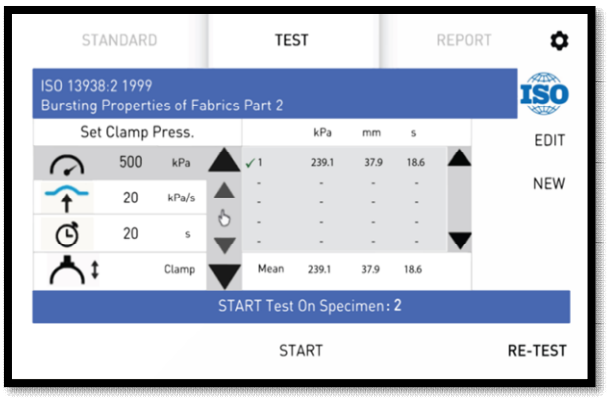
Start the Test
Place your specimen under the Test Dome and make sure it is perfectly flat. Now touch START and the clamp will be lowered onto the specimen & the test will begin.

For hands-free operation of the clamp, use the supplied footswitch.

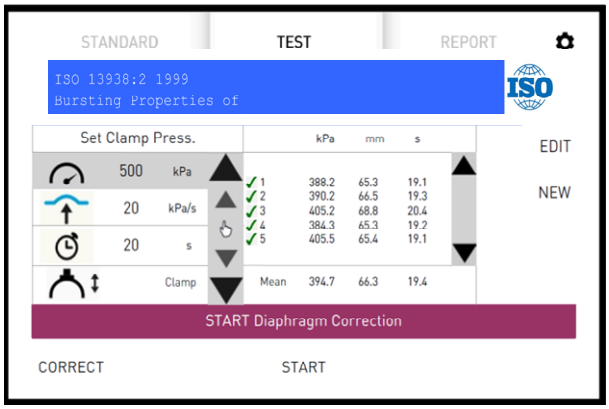


ISO 13938:2 requires the time to burst to be 20 ± 5 seconds. If the first test is not with in the correct time an error message will appear on the screen.

Touch ADJUST and TruBurst will automatically adjust to the correct pressure.



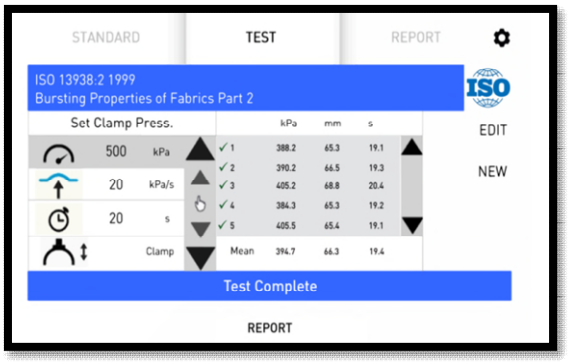
The instrument will automatically stop if it detects a burst and will display the final test result.



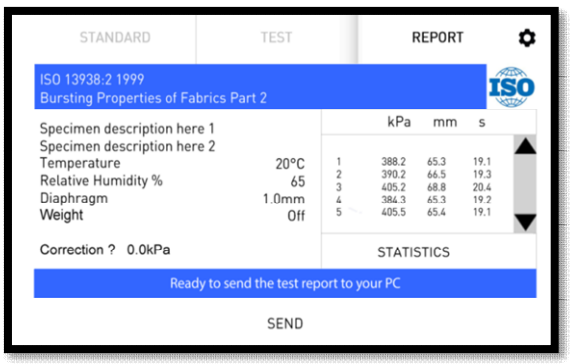
This screen is automatically displayed when you have completed the required number of tests.

Touch START to continue with Diaphragm Correction.

TruBurst will inflate to the average distension height of the tests just performed.

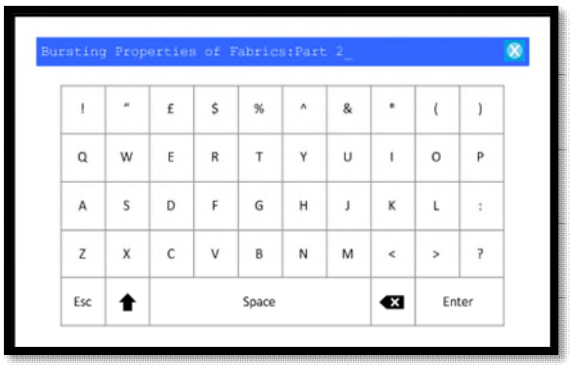


Once the Diaphragm correction is complete, touch REPORT.



Touch specimen description & enter sample reference using the key pad below.

Touch SEND to transfer your results to the PC.

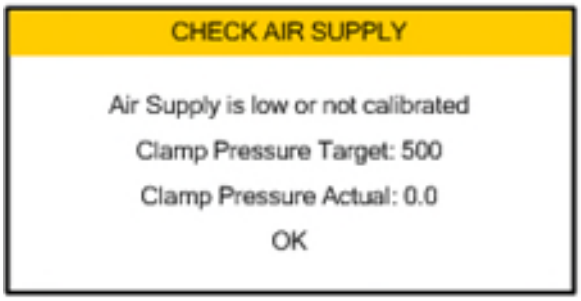


Flow Control Method

This method is used for Marks & Spencer standard M&S P27:2010 and other similar test methods. This is a guide to performing a burst test and sending the results to the TruBurst datalogger (TruBurst Lite) on a PC.

Select the standard and check that the correct test area is being used.

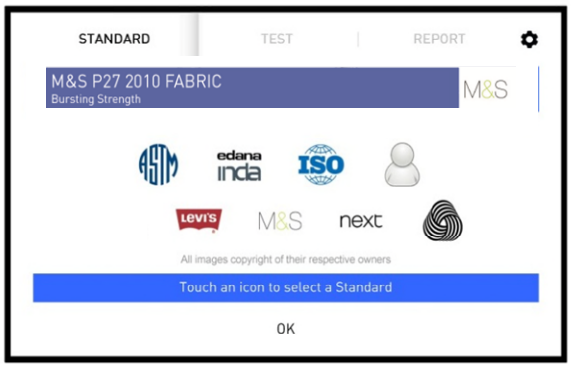
Check that the air supply is on and connected to TruBurst.



For M&S P27, set the supply pressure from the compressor to 6 ± 0.2 bar (600 ± 20 kPa or 87± 3 PSI).

For Adidas 4.09, set the supply pressure from the compressor to 10 ± 0.2 bar (1000 ± 20 kPa or 145 ± 3 PSI).

Only use the 777-134 Plain Diaphragm (1mm) pack 10 for M&S test method. These are **green** in colour to differentiate them from the reinforced varieties, which are **blue**.



Select the correct test method by touching the icon again if required, then OK.

Ensure the correct dome is in use and change if required.

Before testing can commence, the flow needs to be calibrated.

Place the 550-005 Calibration Blanking Plate between the test dome and the clamp ring / diaphragm, with the recessed side downwards.

Touch YES to start automatic flow calibration.

TruBurst will automatically calibrate to the rate of:

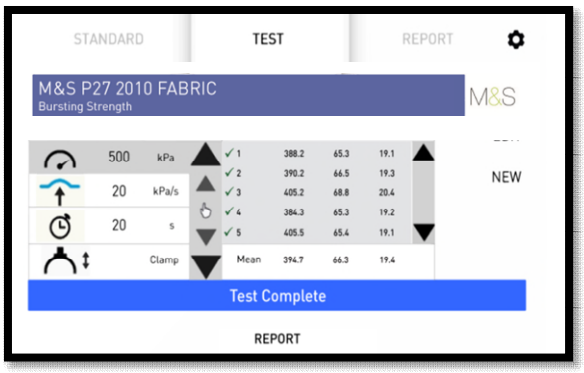
- 24 ± 1kPa/s M&S P27 Fabric
- 45 ± 1kPa/s M&S P27 Lace
- 70 ± 1kPa/s Adidas 4.09

If the instrument is not working, check that the:

- Perspex safety guard is in place
- correct test dome is fitted
- compressed air supply is connected correctly
- air supply is at the correct pressure
- O-ring below the clamp ring is in place
- green diaphragm is fitted
- calibration plate is in position
- diaphragm is not damaged / leaking

Start the Test
Place your specimen under the test dome and make sure it is perfectly flat. Now touch START and the clamp will lower onto the specimen & the test will begin.

Did you know?
For hands-free operation of the Clamp you can use the supplied footswitch.



Once the required number of specimens is complete, touch REPORT.

Diaphragm correction is not required for these test methods.

Touch specimen description & enter sample reference using the key pad below.

Touch SEND to transfer your results to the PC.

CARE AND MAINTENANCE

TruBurst has been designed using specially selected materials and components to ensure maintenance free operation for long periods of time. Although TruBurst is almost maintenance free, it is recommended that the following checks be made:

Daily Checks

- Ensure the TruBurst is clean and free from fibres or debris.
- Test Domes should be cleaned with a non-abrasive cotton cloth and a non-solvent cleaning solution.
- Check the condition of the Diaphragm for abrasion or excessive deformation. Replace if necessary.
- Check transparency of the safety guard and test domes. Frosted or cracked test domes/safety guard must be replaced to maintain safety.
- If the optional high-pressure compressor has been purchased, refer to compressor instruction manual for maintenance checks. Check the oil level and drain condensation from the air reservoir on a weekly basis.
- Check for air leaks. Leaks can usually be heard. Excessive leakage wastes electricity and could cause the compressor to overheat.
- TruBurst has an integral self-draining air filter that removes particles and moisture. Occasionally a few droplets of water may be found underneath the instrument when the filter automatically drains. This is perfectly normal and any water should evaporate quickly.

Annual Checks

- Check the condition of the O-ring seal. This should be free from cuts or abrasion - replace if necessary.
- Check the general condition of the Perspex test Domes. Test Domes should be highly transparent and free from scratches or abrasion, replace if necessary.
- Check the transparency of the Safety Guard. A frosted or damaged guard must be replaced to maintain safety.
- Powerful magnets are used on the Dome assemblies. These magnets may attract iron particles. These can be easily removed using an adhesive tape.

TruBurst Verification Between Calibrations

Verification foils are a quick and easy way to check if a TruBurst is performing correctly between instrument calibrations. They should be used if:

- Questionable results are seen
- The instrument appears to be performing incorrectly
- Increased validity for specific testing is needed

Foils are available in a range of sizes and thicknesses. They will burst within different pressure ranges and are available for use with different dome sizes. The foil type must be selected that require the dome size and bursting pressure range similar to the type of results typically worked with.

Foil Type	Stock Code	Dome Area cm^2	Dome Diameter mm	Foil Size mm	Range kPa	Gauge mm
1	766-600	50	79.8	150 x 150	60 - 140	0.04
2	766-601	50	79.8	150 x 150	140 - 260	0.06
3	766-602	50	79.8	150 x 150	280 - 410	0.1
4	766-603	50	79.8	150 x 150	420 - 550	0.15
5	766-604	50	79.8	150 x 150	560 - 700	0.2
6	766-605	50	79.8	150 x 150	750 - 1000	0.25
1s	766-607	7.3	30.5	100 x 100	160 - 270	0.04
2s	766-608	7.3	30.5	100 x 100	260 - 370	0.05
3s	766-609	7.3	30.5	100 x 100	370 - 480	0.06
4s	766-610	7.3	30.5	100 x 100	480 - 620	0.075

In each packet of 5 foils, the product information sheet gives the actual test result of the batch when tested under specific conditions. The foils should be tested on the instrument, under the same test conditions. The same result should be achieved (within the given tolerance) as on the product information sheet.

If the same results are achieved, then the instrument can be used with confidence.

If the same results are not achieved, it indicates a problem with the instrument and further assistance is required from a James Heal Engineer before carrying out further testing.

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: 1440/15/1001 and V1.00.

James Heal Service & Calibration contact details:

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

Telephone +44 (0) 1422 366355

TECHNICAL DATA

COMPRESSED AIR

Free air delivery	33	l/min
Maximum pressure	10	bar
	145	psi
Minimum pressure	6	bar
Filtration	≤5	micron

PRESSURE RANGE

10 bar Subject to suitable air supply Accuracy +/- 0.5% of full scale			
0.2	-	1000.0	kPa
0.002	-	10.197	kg/cm^2
0.04	-	145.04	PSI
0.002	-	10.000	bar
0.2	-	1000.0	kN/m^2

PRESSURE INFLATION RATE

0.1	-	100.0	kPa/s
0.002	-	1.020	$kg/cm^2/s$
0.04	-	14.50	PSI/s
0.002	-	1.000	bar/s
0.2	-	100.0	$kN/m^2/s$

DISTENSION RANGE

Non-contact Class 2 laser measurement Accuracy +/- 0.5% of full scale			
0.1	-	70.0	mm
0.01	-	7.00	cm
0.001	-	2.756	inches

SPECIMEN

Area	Diameter	Height
$7.3cm^2$	30.5mm	30mm
$7.8cm^2$	31.5mm	30mm
$10cm^2$	35.7mm	30mm
$50cm^2$	79.8mm	70mm
$100cm^2$	112.8mm	70mm

STATISTICS Mean, maximum, minimum, range, standard deviation, coefficient of variation, 95% confidence limits, burst factor/index and % decay analysis for up to 500 tests

SERIAL INTERFACE RS232 9-way male 'D' type connector
38400-baud, 8-data bits, 1-stop bit, no parity
Data logger software supplied on USB Memory Stick for PC

DIMENSIONS 520mm x 400mm x 633mm

WEIGHT 70kg

ELECTRICAL Single Phase 85-264Vac 50-60Hz 60W max

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

REVISION HISTORY

See front cover for Publication number, e.g., 290-1440-1$A

Revision	Date	Originator	Details of Revision
A	25/02/15	LW	
B	31/07/17	CB	Verification Foils TruBurst Lite and Pro software Scope NWSP / GBT
C	24/04/19	SEW	ISO 2758 removed
D	12/06/19	SEW	Dome Specifications Inserted
E	21/03/23	LK	Removed customer details from document
F	20/07/23	PG	Added Test Head selector table against standards. Other minor editorial changes.
G	20/05/25	PG	Updated Flow Control method details. Removed reference to CDs/CD-ROMs. Updated company details on second page.