

## Revision ID

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Manual | 431-459-JH

1 QuickTest Tension and Compression Test Stand Operating Manual



**James Heal**<sup>TM</sup>

431-459-JH

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## 2 Introduction

This document refers to James Heal QuickTest test stands operating with the latest firmware version.

It is essential that you familiarise yourself with the contents of this manual and the separate **Guide to Safe Use of Mains Powered Test Systems'** before attempting to operate your QuickTest system.

This user manual covers the operation of QuickTest force test stands in conjunction with the use of James Heal digital Force Gauges. Operation of gauges is covered in separate manuals for those products specifically.

The following manuals may aid you in the use of your test stand:



### **Guide to Safe Use of Mains Powered Test Systems (431-398)**

Covers the initial setup, installation and safety implications for intended use of, any James Heal supplied, mains-powered equipment.



### **Force Gauge Operating Manual (431-213-JH)**

Runs through the operation of Force Gauge in conjunction with QuickTest test stands.

## 2.1 User Manual Icons

Throughout this manual, the icons shown below are used to identify important health and safety information as well as additional installation/operation guidance. Do not proceed until each individual message is read and thoroughly understood.

### 2.1.1 Warning

The **warning** icon highlights a situation or condition that may lead to possible personal injury or damage to the associated equipment.

### 2.1.2 Caution

The **caution** icon indicates a situation or condition that could cause the equipment to malfunction leading to possible damage.

### 2.1.3 Information

The **information** icon indicates additional or supplementary information about the action, activity or application.

# 1 QuickTest Tension and Compression Test Stand Operating Manual

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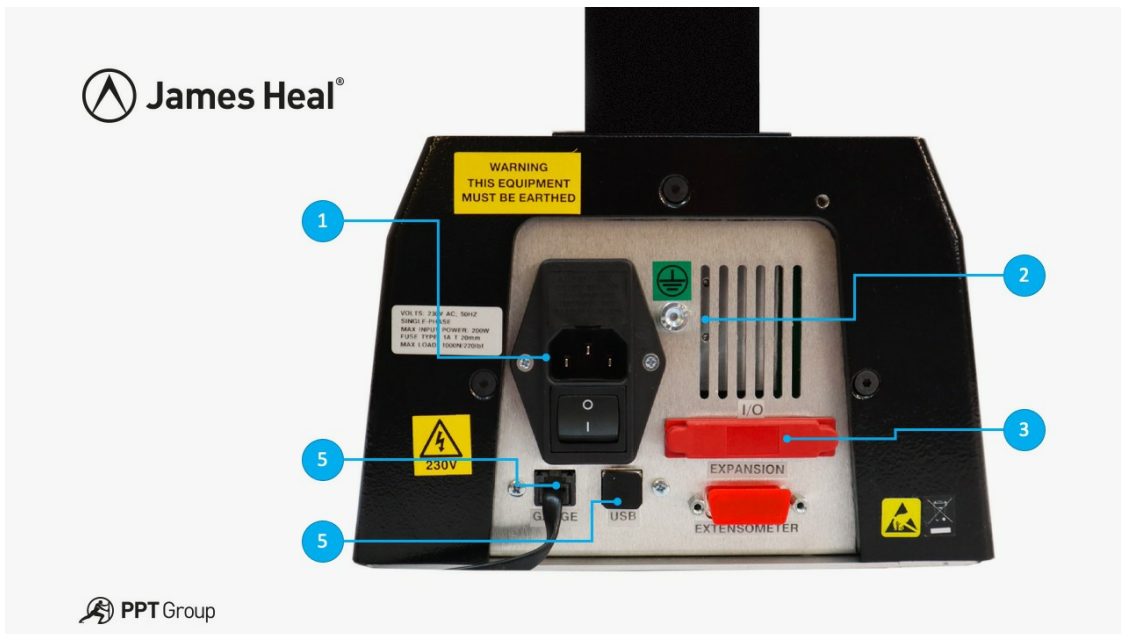
# 3 System Diagram

## 3.0.1 Front View



1	Upper and Lower safety limit switches (located at the rear of column)
2	Moving crosshead (dovetail mount for Force Gauge)
3	Font panel control
4	Emergency stop button
5	Multi-function scroll wheel and menu selection button

## 3.0.2 Rear View



1	Mains connection and Inlet Filter (contains voltage selector and fuse holder)
2	System earth point
3	Digital I/O port (not currently implemented)
4	Sensor input port (currently for Force Gauge)
5	USB connection for PC control

## 4 Unpacking and Parts Supplied

### 4.1 Inspection and Unpacking

Before installing or operating the QuickTest system ensure that no visible damage has occurred during the shipping of the device.

**Important!** If any damage is discovered, do not proceed with the installation and contact your local supplier immediately who will decide the most appropriate action and rectify the situation as quickly as possible.

### 4.2 Packaging

**We strongly recommend that the packaging is retained**, as this can be useful if the machine needs to be returned for calibration or shipped to another location.

'Parts Supplied' with the Test Stand, details the parts that should be included with your test stand. Please contact James Heal or your authorised distributor if any items are missing or damaged.

### 4.3 Moving the Test Stand

The unpackaged weights of each test stand are listed in the Specification tables. Do not try to lift heavy loads unaided. It is advised to use suitable lifting equipment and follow safe handling guidelines when moving your QuickTest system.

### 4.4 Parts Supplied

Please see the table below for the list of the parts supplied with the QuickTest system:

Item	Quantity
QuickTest test stand (0.5, 1.0 or 2.5 kN)	1
Dovetail gauge bracket (for fitting a gauge to the crosshead)	1
Interlock override plug	1
Allen key for tightening crosshead to gauge bracket	1
Mains cable	1
Document: A Guide to Safe Use of James Heal Mains Powered Test Systems	1
Document: Online Manual Information Guide	1

### 4.5 Accessories

For a full range of digital force gauges and accessories, please go to the James Heal website: [www.james-heal.co.uk](http://www.james-heal.co.uk), or contact your local distributor.

- For connection of the stand to your computer, a James Heal supplied 2m USB-B to USB-A cable communications cable is required, (**part no. 351-093**),
- When using a QuickTest Mk1 or Mk2 stand and a James Heal Force Gauge, use communications cable (**part no. 351-092**) to connect the gauge to the test stand,
- When using a QuickTest Mk2 Interlock enabled stand and a James Heal Force Gauge, use communications cable (**part no. 351-103**), to connect the gauge to the test stand.

## 5 Initial Setup

### 5.1 Moving the Test Stand

The unpackaged weights of each test stand are listed in the **Specification** tables. Do not try to lift heavy loads unaided. It is advised to use suitable lifting equipment and follow safe handling guidelines when moving your test system.

### 5.2 Mains Power Supply

QuickTest test stands can be used on 110–120 or 220–240 Vac 50–60 Hz supplies. The rear fuse carrier is set for the local voltage requirement, but is reversible. Should a fuse be replaced, ensure that the correct local voltage is selected.

The voltage that is selected is indicated by which the arrow is pointing to the white line located at the bottom of the device. This is illustrated in the image below, shown within the red circle:

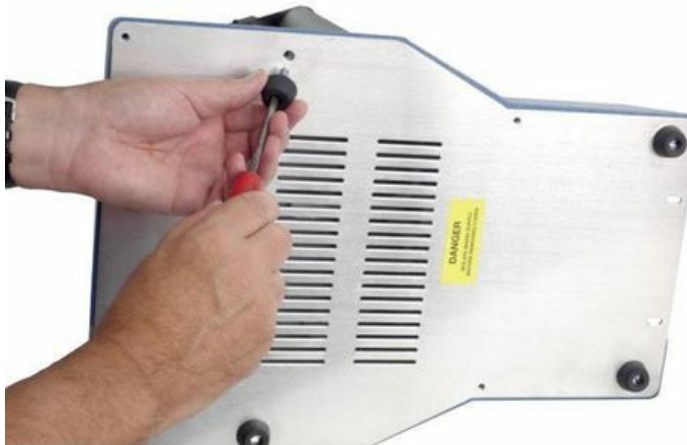


### 5.3 Fuse Specification

QuickTest test stands use two 2A - Time-delay (T), 5 x 20mm fuses. If replacing a blown fuse, replace only the fuse on the active side of the inlet filter with the fuse specified above, or equivalent.

If you are in doubt, please contact your local James Heal support agent for more information.

### 5.4 Fitting the Feet to the Stand



The QuickTest 2.5kN is supplied with four rubber feet. Support the stand and fit the four rubber feet to the base of the stand using an appropriate screwdriver.

For QuickTest, 0.5kN and 1.0kN test stands it is recommended that the system is mounted to a suitable work surface using the supplied bench mount adapters. Please see the next section for more information.



## 5.5 Bolting the Test Stand to the Work Surface

To comply with European regulations and ensure the safe use of the equipment, single column stands should be secured to the bench as follows:

Test Stand Capacity (kN)	Height (Mm)	Feet/Fixing Supplied	Bolting Recommended
0.5	1616	Anchor brackets	Yes
1	1416	Anchor brackets	Yes
2.5	941	Rubber feet	No

The extended-length test stands (QuickTest 0.5 and QuickTest 1) are supplied with base anchoring brackets to allow the test stands to be bolted to a bench.

Screw the anchoring brackets to the four positions on the base plate of the QuickTest 0.5 or 1 using the M6 screws provided (Shown below). Secure the test stand to the bench using suitable fasteners.



## 5.6 Fitting and Connecting an Force Gauge digital force gauge

The QuickTest has a dovetail bracket attached to the moving crosshead. This is used to mount Force Gauges.

To fit an Force Gauge, first attach the Force Gauge mounting bracket (**part no. 432-427**) to the back of a James Heal Force Gauge.

Then slide the gauge sideways onto the dovetail and secure it by tightening the dovetail screw with an Allen key.



To prevent damage, do not over-tighten the grub screw in the dovetail when a gauge bracket is not present.

**Please Note:** Take care when handling lower capacity Force Gauges, as damage can easily occur from mishandling. It is also essential to ensure that the attached grips and fixtures do not overload the gauge. If in doubt, please check the weight of any addition grips and fixtures before fitting these.

### 5.6.1 Connecting a Force Gauge to the QuickTest

For QuickTest a James Heal Force Gauge digital force gauge is connected to the test stand using cable **part no. 351-092**). Connect the 15-pin D connector to the top socket of the Force Gauge, and the opposite end of the cable to the RJ11 plug (marked 'Gauge'), located on the rear of the stand:



1	RJ11 connection for Force Gauge digital force gauge
2	USB-B connection for PC

### 5 Force Gauge communication settings

To achieve communication between a QuickTest test system and a Force Gauge device you need to apply the correct settings within the Force Gauge's communication menu. The following Force Gauge buttons are used in the instruction below:

Force Gauge Button	Button Name
	UNITS/MENU
	ZERO/DOWN
	RESET/ENTER
	MAX/ESC

Step 1

Hold **'UNITS/MENU'** on the Force Gauge until the main menu is displayed.

Step 2

```
RATE
FOOTSWITCH1
FOOTSWITCH2
COMMS ←
INFORMATION
CALIBRATION
X CONSTANT
PAGE 2
```

Press **'UNITS/MENU'** once to continue to menu page 2, as shown in the image above.

### Step 3

```
RATE
FOOTSWITCH1
FOOTSWITCH2
COMMS ←
INFORMATION
CALIBRATION
X CONSTANT
PAGE 2
```

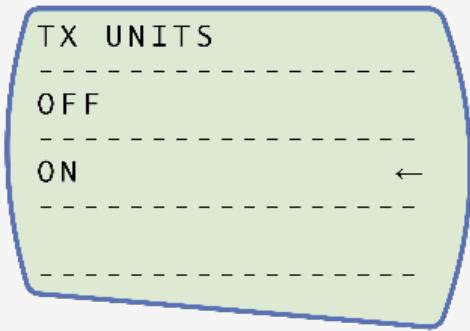
Scroll down using the **'ZERO/DOWN'** button, then press **'RESET/ENTER'** to select the **'COMMS'** menu.

### Step 4

```
PORT ←
-----
STORE MEN
-----
SEND MEN
-----
CLEAR MEN
-----
```

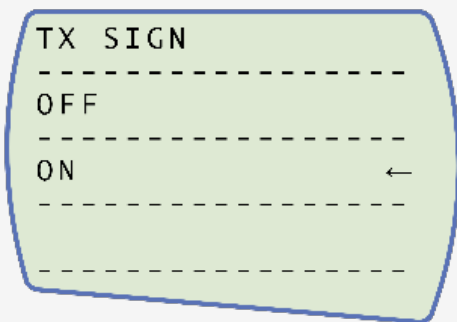
Now press **'RESET/ENTER'** on **'PORT'**.

### Step 5



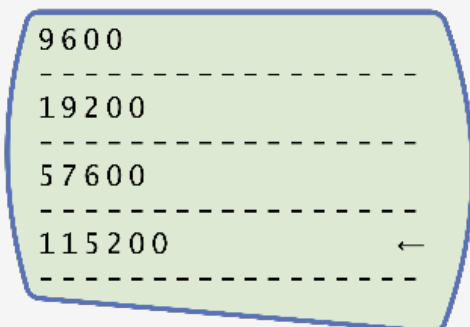
Set **TX UNITS** to **'ON'**, press **'RESET/ENTER'** to continue.

#### Step 6



Set **TX SIGN** units to **'ON'**, press **'RESET/ENTER'** to continue.

#### Step 7



Set the baud rate to **'115200'**, press **'RESET/ENTER'** to continue.

#### Step 8

```
NULL
-----
CR
-----
LF
-----
CR LF      ←
-----
```

Set **CR LF**, press **RESET/ENTER** to continue

#### Step 9

```
LINE DELAY
-----
SECONDS: 0
-----
-----
-----
```

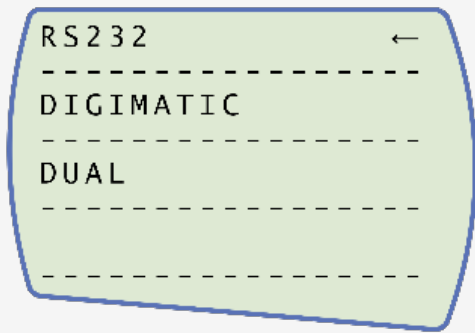
Ensure the line delay is set to **0**, press **RESET/ENTER** to continue.

#### Step 10

```
TX THRESHOLD
-----
SET%      0
-----
-----
-----
```

Ensure the TX threshold is set to **0**, press **RESET/ENTER** to continue.

#### Step 11



Set **'RS232'**, press **'RESET/ENTER'** to continue.

#### Step 12

Press **'RESET/ENTER'** twice to return to the measurement screen.

## 5.7 Cable Management

It is essential that no cables interfere with the controls or any moving parts. Failure to do so could lead to injury or damage to the equipment.

## 5.8 Attaching Grips and Fixtures

For flexibility, attachment of a variety of accessories and improved alignment, the QuickTest is fitted with an anvil plate. This plate will accept fixtures with different screw threads (5/16, 10/32 and M6), as well as fixing points for a standard 20mm 'type C' - QC adapter.

This anvil plate is attached with four bolts using an Allen key. For alignment, the anvil plate can be loosened, moved forwards or back, and the bolts retightened.



Upper grips and accessories are attached directly to the ELS device being used.

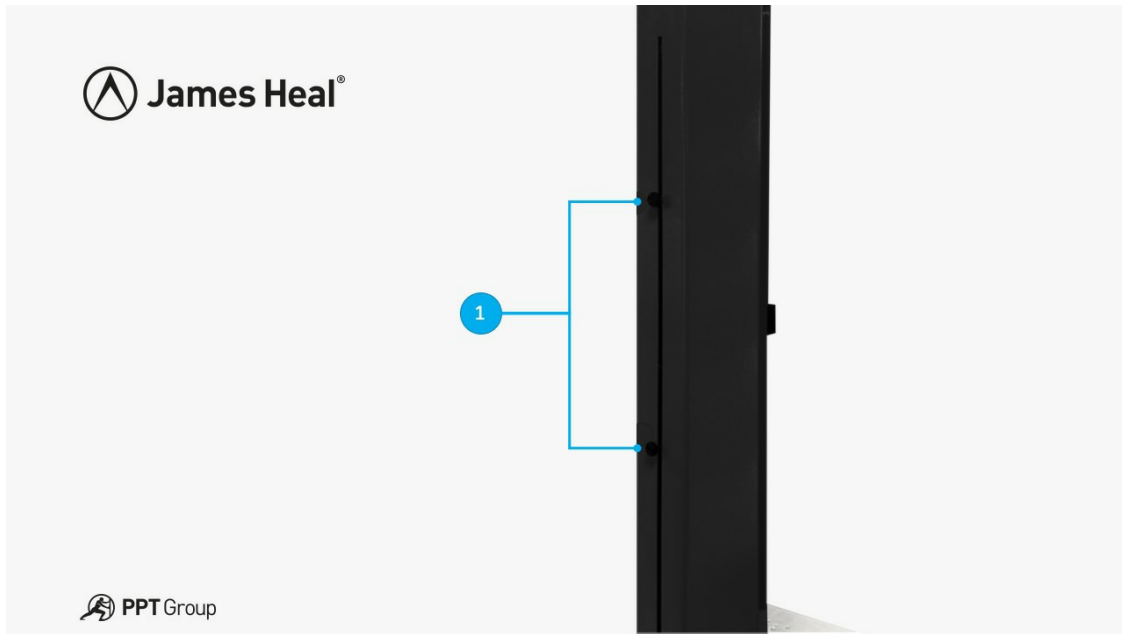
## 5.9 Setting the Limit Stops

'Limit stops' help prevent damage to load cells and fixtures by interrupting the crosshead movement before any moving parts or fixtures can come into contact with static parts of the stand. Their positions are adjusted after the fitting of fixtures and

test samples.

It is advised that 'Limit stops' are set each time a new application is started, to prevent damage or potential injury to the user.

There are two manually set limit stops, located on the rear column of the QuickTest. These are set by loosening the thumbscrew, moving the stop to a new position and retightening. When the crosshead meets a stop, it activates a switch. This stops the crosshead movement at an upper or lower limit.



1 Upper and Lower Limit Stops

**Please Note:** Limit switches are also used to set cyclic test start and end positions (see section **Limits**).

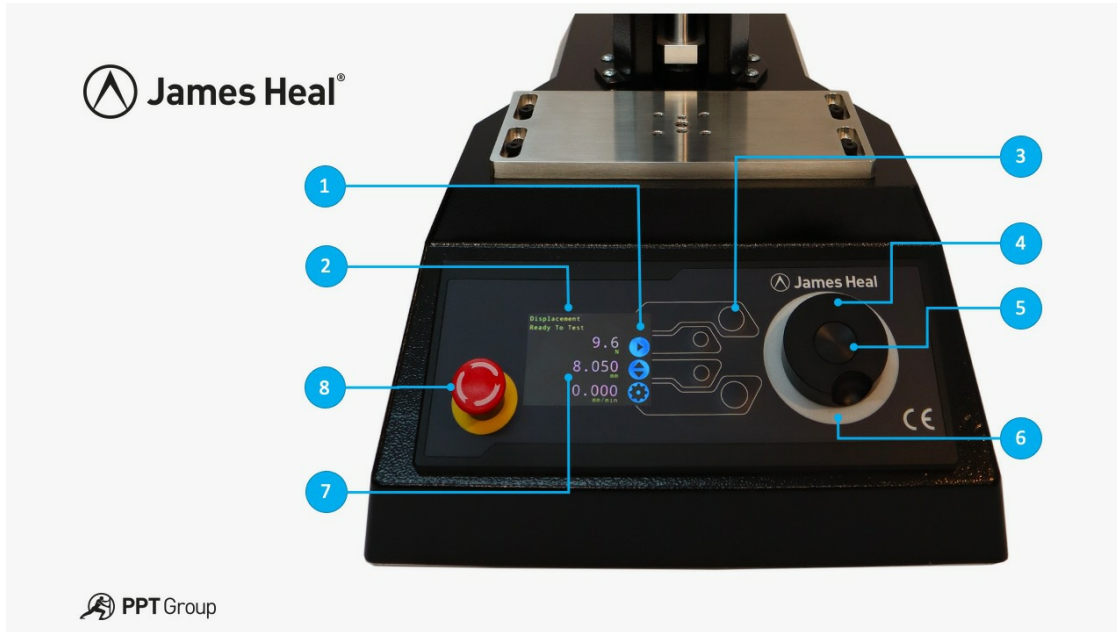
## 5.10 Test Stand States

The test stand can be in one of five states:

1. **Test readiness** - ready to start, or complete,
2. **Testing** - test operation sequence is running,
3. **Stopped** - test interrupted or emergency stop pressed,
4. **Jog mode** - for jogging or positioning the crosshead manually,
5. **Settings menu** - for adjusting your test stands settings,

In each state, the selector buttons have functions described by the on-screen icons.

## 6 Front Panel Controls



1	Status messages and information
2	Button function icons
3	Multi-function selection buttons
4	Multi-function scroll wheel
5	Scroll wheel button (used in function menus)
6	LED dial status ring
7	Colour display
8	Emergency Stop button

### 6.1 Emergency Stop Button



Push to stop the crosshead movement. Rotate the button to release it and resume crosshead control. If pressed during a test, do not restart a test, ensure you remove any residual force using the test stand's jog controls.

### 6.2 Multi-function Scroll Wheel Control

#### 6.2.1 Scroll Wheel Colours

The lights surrounding the wheel illuminate in three colours, indicating the status of the test stand:



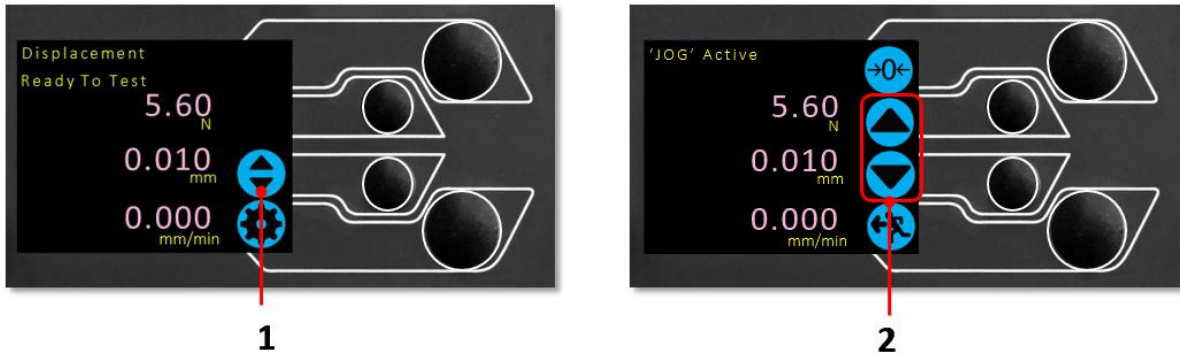
Colour	Status	Indication
Green	Pulsating	Ready to start a test
Green	Rotating	Scrolling through menus
Green	Flashing	Test completed
Amber	Static	In jog mode menu



Colour	Status	Indication
Amber	Rotating	Crosshead moving
Red	Static	Test aborted / limit triggered

### 6.2.2 Jog Mode

When in jog mode, the scroll wheel drives the crosshead up (clockwise turn) or down (anticlockwise turn). This method offers more variable control when compared to the two fixed-speed jog control buttons (circled in red below).



1	Enter Jog Mode
2	Jog keys up and down

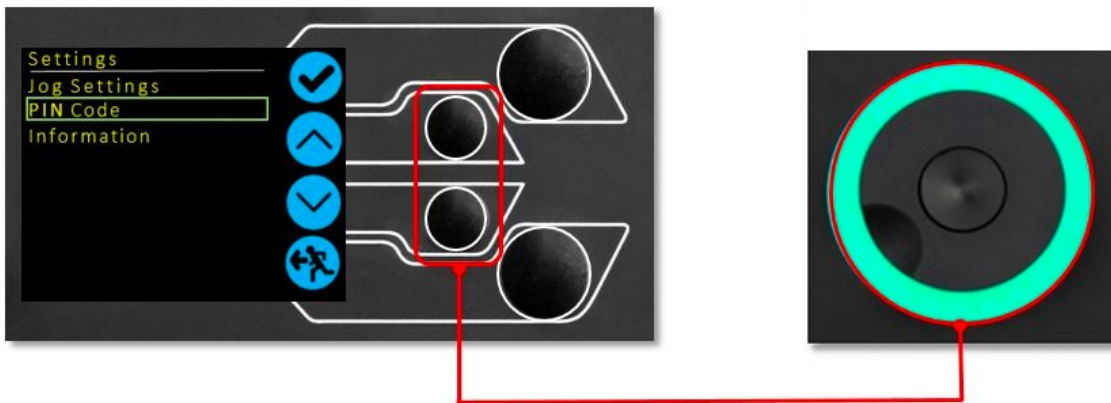
The scroll wheel can also be used as a speed controller. The jog buttons move the crosshead at the set speeds (configured in the 'Jog Settings' menu picture below).

Rotating the wheel clockwise while holding a jog button increases the speed and rotating the wheel anticlockwise while holding a jog button decreases the speed.

QuickTest test stands also feature a 'precision jog mode'. Rotating the scroll wheel while holding in the central scroll wheel button moves the test stand at its minimum speed, this is useful when fitting specimens into grips or if precision positional control is required.

### 6.2.3 Navigational Control

The scroll wheel can also be used to navigate the menus. When in a selection menu, the scroll wheel cycles through the selections and their values. This is an alternate navigational option to using the up and down arrow buttons.



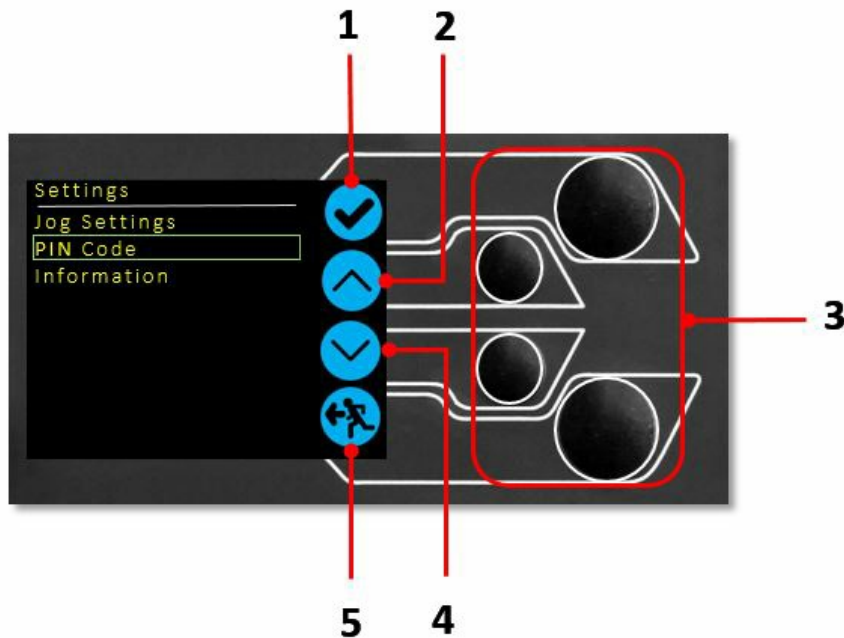
### 6.2.4 Central Button

The central button is used to confirm a menu selection. It is equivalent to selecting the tick button function.

## 6.3 QuickTest Display Panel

The display indicates the stand's status, displays live values and is used to configure the test stand's settings.

The purpose of the four multi-function buttons is indicated on-screen by an adjacent icon. Below is an image showing a typical example of the on-screen icons in relation to the physical buttons.



1	The top icon is ' <b>Confirm</b> '
2	The mid-upper icon is ' <b>Up</b> '
3	<b>Menu selection</b> buttons
4	The mid-lower icon is ' <b>Down</b> '
5	The bottom icon is ' <b>Back/Exit</b> '

## 6.4 On-Screen Icons

On-screen icons vary depending on the current state of the test stand. What functions the physical buttons perform at that point, depends upon which menu is currently displayed. Below are reference tables to help explain the icon definitions, in relation to the test stand state.





### 6.4.1 Pre-Test

Icon	Action
	No Force Gauge connected
	Start a test sequence
	Enable jog mode
	Go to settings
	Move to the home position






### 6.4.2 During a Test

Icon	Action
	<b>Pause test</b> - This stops the crosshead movement, leaving the stand in a state of test readiness. The status message is ' <b>Interrupted: User</b> ' and the ' <b>Play</b> ' and ' <b>Stop</b> ' buttons will be displayed.
	<b>Emergency stop button pushed: Message: 'Emergency Stop!!!'</b> . Release the emergency stop to regain control and remedy the situation before resuming testing.  Note there is no on-screen icon for the emergency stop.
	<b>Upper limit switch triggered</b> - The crosshead has reached the upper travel limit, as set by the QuickTest's limit switches, and stopped. Further travel in this direction is prevented.
	<b>Lower limit switch triggered</b> - The crosshead has reached the lower travel limit, as set by the QuickTest's limit switches, and stopped. Further travel in this direction is prevented.





### 6.4.3 Paused/Stopped

Icon	Action
	<b>Start test</b> - Continue test sequence.
	<b>Stop test</b> - Shown when the Pause button is pressed. This ends the test at this point
	<b>Move to the home position (start position from the beginning of the previous test)</b> - This icon is only visible after pressing the 'Stop' button.
	<b>Exit to the test ready screen, leaving the crosshead in its current position</b> - This icon is only visible after pressing the 'Stop' button.

#### 6.4.4 Jog Mode

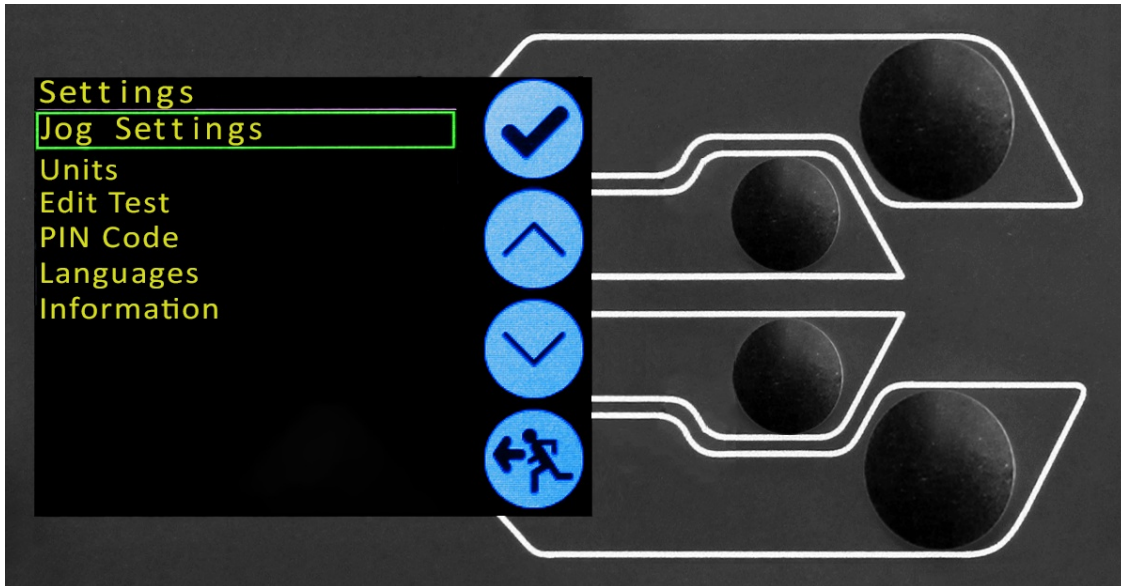
Icon	Action
	Zero (tare) all system values.
	Move the crosshead upward at the set jog speed.
	Move the crosshead downward at the set jog speed.
	<b>User Warning!</b> Crosshead has reached an upper limit (load signal from a connected gauge, set to Stop, or a limit switch) and stopped.
	<b>User Warning!</b> Crosshead has reached a lower limit (load signal from a connected gauge, set to Stop, or a limit switch) and stopped.

#### 6.4.5 Settings Menu

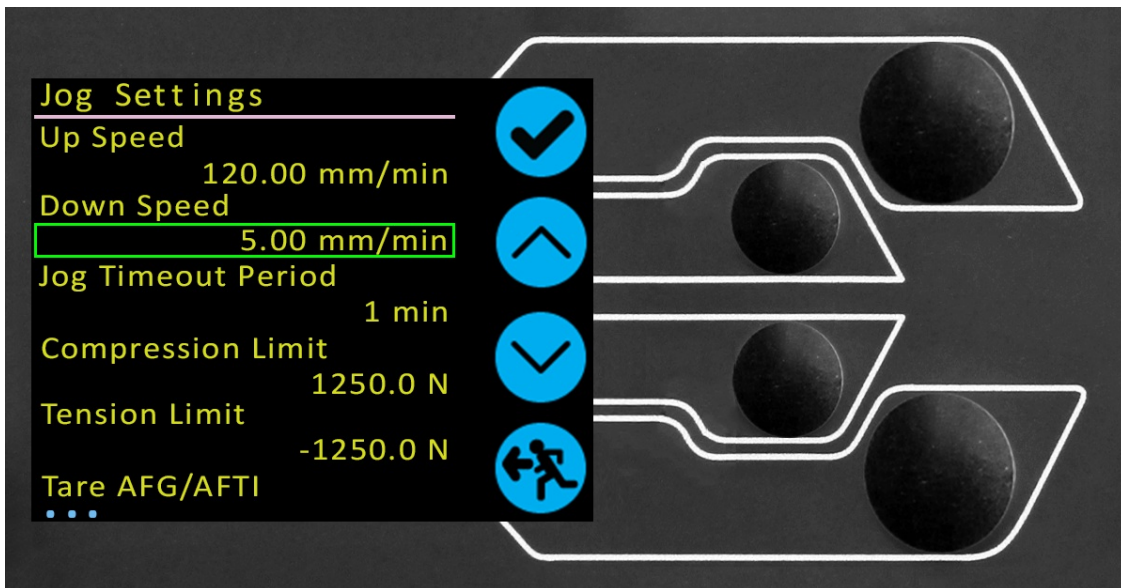
Icon	Action
	Confirm selection (or press the centre scroll wheel button).
	Navigate up a menu selection or value (or turn the wheel clockwise).
	Navigate down a menu selection or value (or turn the wheel anticlockwise).
	Go back to the previous screen.

# 7 Settings

## 7.1 QuickTest Operation



### 7.1.1 Jog settings



Within the jog settings menu (pictured above), configuration of the jog speed limits while in jog mode, can be set. Below is a detailed breakdown of each setting and the options available for each setting.

Setting	Action	Range
<b>Up Speed</b>	Configure the jog speed in an upward motion	0.1 to 1200 mm/min 0.004 to 47.2 Inch/min
<b>Down Speed</b>	Configure the jog speed in a downward motion	0.1 to 1200 mm/min 0.004 to 47.2 Inch/min

Setting	Action	Range
<b>Jog Timeout Period</b>	Set the timeout (in minutes) that the machine will keep the motor drive engaged, before the motor drive is disabled. The load applied to the Force Gauge and stand, must reach at least 25 % of the test stand's capacity before the timeout activation is applied. At the end of the timeout period, the 'Jog Active' menu screen is automatically switched back to the 'Ready to Test' menu screen.  ( <b>Example:</b> QuickTest 2.5 kN stand fitted with a 1 kN Force Gauge, must reach 625 N in Tension or Compression, before the timeout activation is applied. Forces below the 25 % limit will not activate the timeout and the stand will actively hold the load applied.	1 to 59 minutes
<b>Tension Limit</b>	Configure the tensile force limit while in jog mode	0 to +200 N
<b>Compression Limit</b>	Configure the compressive force limit while in jog mode	0 to -200 N
<b>Tare Force Gauge</b>	Configure whether or not the Force Gauge maximum or minimum retained value is tared when pressing the tare button in jog mode or starting a test.	Yes or No

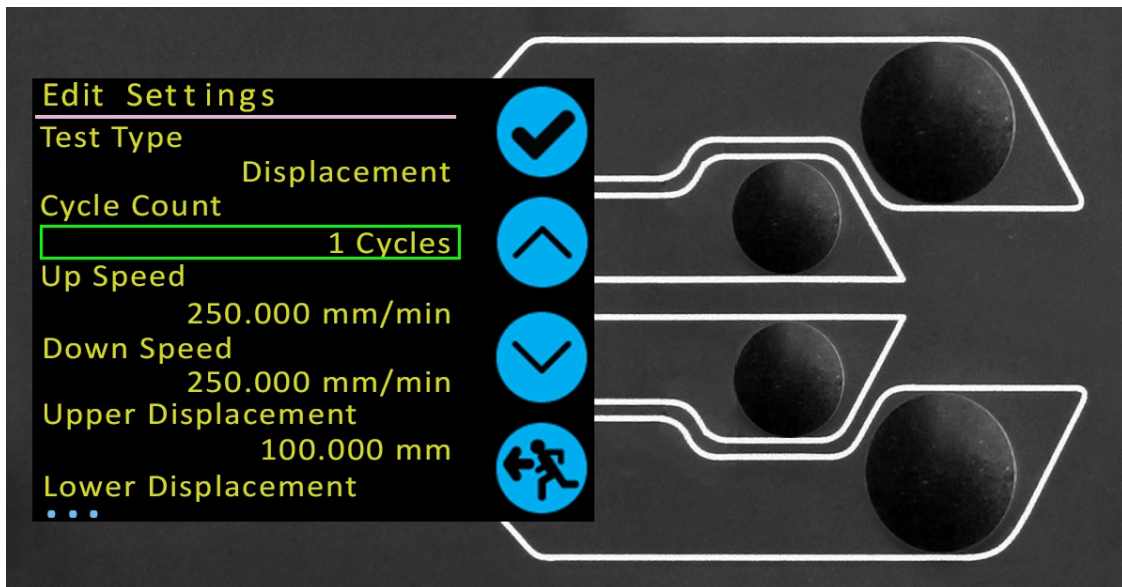
**Please Note: Jog Timeout Period:** When activated, may result in the current load being released and the stand and sample relaxing after the timeout period has been reached.

## 7.1.2 Units

Within the units menu, the test stands units for displacement and speed can be configured. Force units are configured using the Force Gauge.

Setting	Units Available
<b>Displacement</b>	mm, in
<b>Speed</b>	mm/min, mm/sec, in/min, in/sec
<b>Force</b>	N, gf, kgf, ozf, lbf, mN, kN

## 7.1.3 Edit Test



The 'Edit Test' menu, as shown above, allows configuration of the QuickTest's test settings.

**Important:** For more information relating to **Start Direction** and **Move to Start**, please see **QuickTest Operation Sequence and Move to Start**.

### 7.1.3.1 Displacement Control

In a displacement test, the crosshead moves between two reference points that are relative to tared zero. Ensure that the limit switches allow the required travel.

Setting	Options
---------	---------

Setting	Options
Cycle Count	0-9999
Up Speed	0-1200mm/min
Down Speed	0-1200mm/min
Upper Displacement	A positive displacement is above tared zero and a negative value is below. Available displacement depends on the test setup.
Lower Displacement	A positive displacement is above tared zero and a negative value is below.
Start Direction	Choose whether the test direction is upward or downward.
Move to Start	Select if the test moves to the start position first.

#### Example

- **Upper displacement:** +10 mm
- **Lower displacement:** -20 mm
- **Initial stroke:** Up
- **Move to Start:** Yes

Unless already at -20 mm the crosshead will first travel to that point. The stand will then move to 10 mm above tared zero, followed by a final movement back to -20mm.

#### 7.1.3.2 Force Gauge Control/Force Control

The Force Gauge control test operation consists of two main functions:

- **Force Gauge Control** - Control of the test stand using the Force Gauge's limit or break settings,
- **Force Control** - Control of the test stand using the front panel to program limit, break or cycle settings,

Within Force Gauge Control/Force Control there are four subtests:

Sub-Test	Description
<b>Force Gauge Control</b>	Move in a set direction until a force limit or break condition is hit and then stop. Configured using the Force Gauge.
<b>Force Limit</b>	Move in the configured direction until a force limit is hit and then stop. Configured using the front panel.
<b>Force Cycle</b>	Cycle between a limit force and a return force. Configured using the front panel.
<b>Break</b>	Move in the configured direction until a break condition is detected. Configured using the front panel.

#### 7.1.3.3 Force Gauge Control

With an additional cable (351-092), a James Heal Force Gauge digital force gauge can be used to set load limits to control crosshead movement.

Load setpoint, action (reverse/stop) are all set on the gauge under the **STAND** menu. Here, select the action when the limit is reached; **REVERSE** or **STOP** and the type of control limit **BREAK** or **LIMIT**.

Please note for cyclic tests the front panel force control must be used. Force Gauge cycling is not compatible with QuickTest test stands

#### Example Test Setup

1. On the test stand's front panel under **Edit Test** select the test type **Force Gauge Control** and sub-type **Force Gauge Control**,
2. Configure the speed and direction settings located within the **Edit Test** menu,
3. On the Force Gauge gauge hold **UNITS/MENU** button
4. On page one of the Force Gauge menus select **STAND** using the **RESET/ENTER** button,
5. Next select the action when the limit is hit, either **REVERSE** or **STOP**. For reverse, select the test direction either **UP** or **DOWN**,
6. Once the action has been selected configure the limit control. This limit can be either a **BREAK** condition or force/torque **LIMIT**. For **BREAK** set the break threshold, for **LIMIT** select the limit force/torque.

#### 7.1.3.4 Force Control – Force Limit, Force Cycle and Move to Break

Force control tests can be used to set load limits or a break condition to control crosshead movement.

Within the three sub-tests (Force Limit, Force Cycle and Move to Break) the following settings are available, please note some of the settings are specific to the test type:

Setting	Options
Up Speed	0-1200mm/min
Down Speed	0-1200mm/min
Start Direction	Choose whether the test direction is upward or downward.

Setting	Options
<b>Test Sub-Type</b>	Select the test sub-type (Options are listed above).
<b>Limit Force</b>	<b>Limit and Cyclic Tests Only</b> - Enter the target load for the test.
<b>Return Force</b>	<b>Cyclic Tests Only</b> - Enter the start load for the test.
<b>Cycle Count</b>	<b>Cyclic Tests Only</b> - Enter the number of cycles to be completed.
<b>Break Threshold</b>	<p><b>Move to Break Test Only</b> - Enter the percentage drop from current maximum load recorded, to activate the break detection.</p> <p><b>Example:</b> Current load maximum reading is 1000N, with 80% setting the load drop must reach 200N before break detection activates.</p>
<b>Min Break Threshold</b>	<p><b>Move to Break Test Only</b> - Enter the minimum break threshold. Value of Load that the test load reading must rise above for a break condition to be detected.</p> <ul style="list-style-type: none"> <li>• <b>Force Gauge must be connected and ON to set this parameter</b></li> <li>• <b>1 % of Force Gauge capacity is the lowest setting.</b></li> </ul>

#### Examples

##### Force Limit

- **Up Speed:** 100 mm/min
- **Down Speed:** 100 mm/min
- **Start Direction:** Down
- **Test Sub-Type:** Force Limit
- **Limit Force:** 50 N

The crosshead moves down at 100 mm/min until the applied load is 50 N from tared zero, once the limit force is reached the test stops.

##### Force Cycle

- **Up Speed:** 100 mm/min
- **Down Speed:** 20 mm/min
- **Start Direction:** Down
- **Test Sub-Type:** Force Cycle
- **Limit Force:** 200 N
- **Return Force:** 50 N
- **Cycle Count:** 10

The crosshead moves down at 20 mm/min until the applied load is 200 N from tared zero. Once the limit force is reached the crosshead moves upward at 100 mm/min until a load of 50 N is reached, this cycle repeats 10 times at which point the test stops.

##### Break

- **Force Gauge Capacity** 500 N
- **Up Speed:** 50 mm/min
- **Down Speed:** 100 mm/min
- **Start Direction:** Up
- **Test Sub-Type:** Break
- **Break Threshold:** 5 %
- **Min Break Threshold:** 10 N

The crosshead moves up at 50 mm/min until a break condition is detected. The drop in load must be at least 25 N (5 % of 500 N) and also occur above 10 N (2 % of 500 N), for the break detection to activate.

#### 7.1.3.5 Limits Control

In a limit test, the crosshead cycles between the limit switches. To set the limit switches loosen either screw, located on the rear of the test stand, and move the switch to the required position.

A cycle starts when the crosshead is at the first limit switch and ends back at the same limit switch.

At the end of the test, the home button appears on the stand to enable the crosshead to be moved back to the starting position.

Setting	Options
<b>Cycle Count</b>	0-9999
<b>Up Speed</b>	0-1200mm/min
<b>Down Speed</b>	0-1200mm/min
<b>Start Direction</b>	Choose whether the test direction is upward or downward.

Setting	Options
<b>Move to Start</b>	Select if the test moves to the start position first.

#### Example

1. Load the grips and sample,
2. Set the upper limit switch at the desired upper displacement point,
3. Set the lower limit switch at the desired lower displacement point,
4. Set the desired start direction and whether to move to start,
5. Configure the number of cycles,
6. Execute the test. The stand moves between the two displacements for the configured number of cycles and then stop.

#### 7.1.3.6 Half Cycle Control

A half-cycle test is to a displacement relative to tared zero. A cycle starts when the crosshead is at the first displacement position and ends back at the second position.

Setting	Options
<b>Cycle Count</b>	0-9999
<b>Up Speed</b>	0-1200mm/min
<b>Down Speed</b>	0-1200mm/min
<b>Upper Displacement</b>	A positive displacement is above tared zero and a negative value is below. Available displacement depends on the test setup.
<b>Lower Displacement</b>	A positive displacement is above tared zero and a negative value is below.
<b>Start Direction</b>	Choose whether the test direction is upward or downward.
<b>Move to Start</b>	Select if the test moves to the start position first.

#### Example

- **Upper displacement:** +30 mm
- **Lower displacement:** -20 mm
- **Initial stroke:** Down
- **Move to Start:** Yes

Unless already at 30 mm above tared zero, the crosshead will travel to that point and then move to 20 mm below tared zero, and stop.

#### 7.1.3.7 QuickTest Operation Sequence and Move to Start

QuickTest operations, such as the displacement cycle and half cycle consist of two datum points, an upper displacement and a lower displacement.

For operations with the primary direction being down, the following is true:

- The '**Upper Displacement**' is the start position for the test and the '**Lower Displacement**' is the finishing position.

For operations with the primary direction, being up the following is true:

- The '**Lower Displacement**' is the start position for the test and the '**Upper Displacement**' is the finishing position.

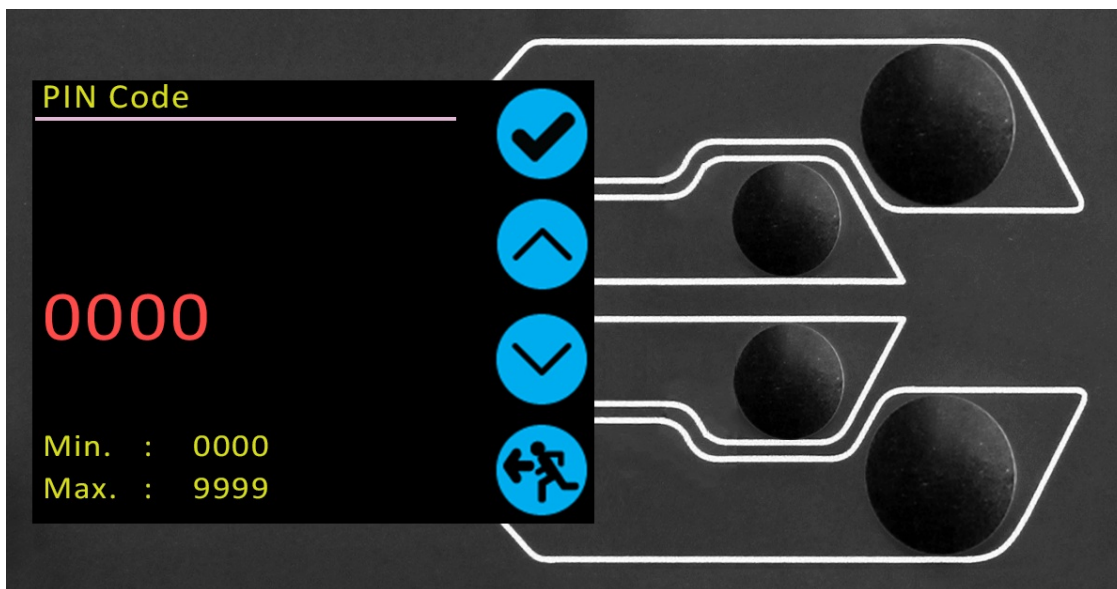
Within the '**Edit Test**' display on your test stands front panel there is an option called '**Move to Start**', setting this feature to '**Yes**' means that the stand always moves to the start position.

In some instances, this means the first direction of movement is opposite to the primary test movement.

For example, if the start displacement is +10 mm and the crosshead is at 0 mm, with move to start enabled a downward test will first move up to +10 mm before moving down to the end position. With this feature set to '**No**', the stand moves straight to the end position.

#### 7.1.4 PIN Code

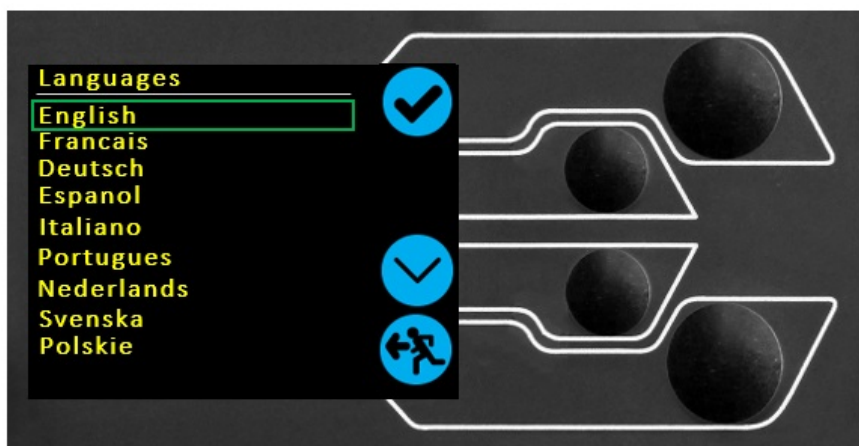




Within the PIN code menu, it is possible to set a four-digit number that can be used to lock the menu feature of your QuickTest test stand. Please note once this has been set you cannot access the menu without the PIN, so it is crucial that you keep a record of this safe.

If the PIN code has been set and then lost or is unknown, please contact your local agent or James Heal Technical Support.

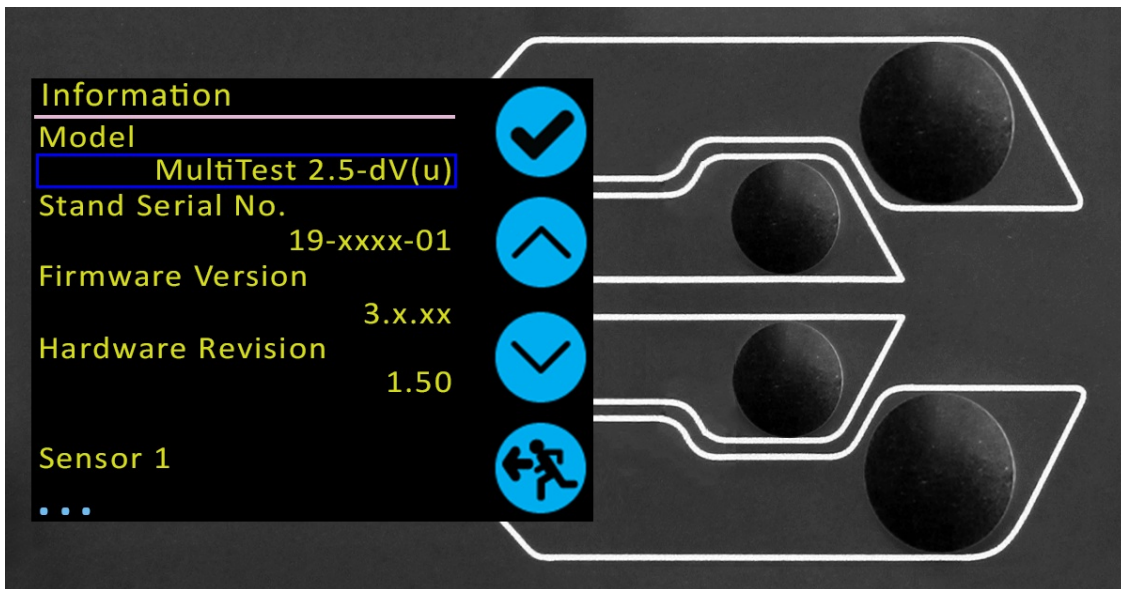
## 7.1.5 Languages



dV Screen Menu Languages

Select the desired language. Upon confirmation, the user is returned to the settings menu in the language chosen.

## 7.1.6 Information



This screen is used to display vital information relating to the QuickTest and connected devices. Here you can see software, hardware and firmware properties.

## 8 Interlocked Guarding Overview

James Heal test stands have the ability to generate forces large enough to cause permanent injury to human limbs when placed between the crosshead and the base.

Fingers, hands and other parts of the body, or clothing, should be kept away from the moving crosshead and shroud opening. Appropriate personal protective equipment should be worn and full local risk assessments should have been completed before use.

Please refer to the **Installation & Operation of James Heal Interlocked Machine Guarding (431-971)** manual for full details of safety and operation.

Interlocked machine guards should be considered in all test methods as they provide additional ingress protection to the end-user. This helps to reduce the risk of injuries occurring due to contact between the test stand and the operator.

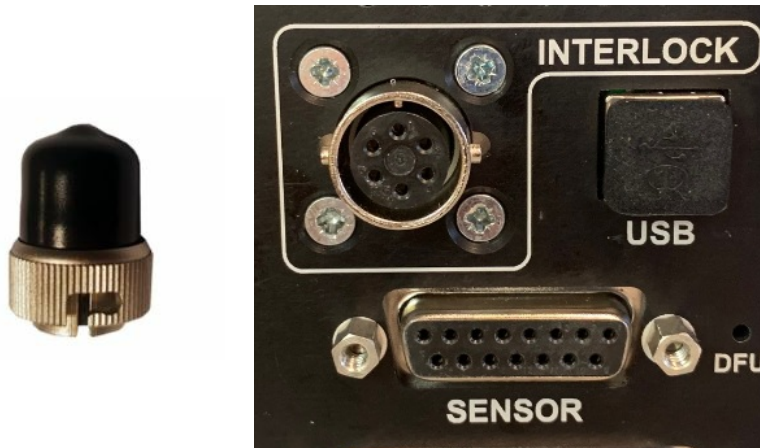
From May 2020, all QuickTest test stands will be supplied at a Mark 2 Interlock enabled level. This means they are electrically and mechanically ready to use with a James Heal supplied guarding system.

QuickTest test stands can be ordered with an interlock guard, or a supplementary guard can be ordered for an existing QuickTest Mark 2. Please contact your James Heal sales representative or local approved supplier for more details.

### 8.1 Operating a QuickTest Test Stand Without a Guard

QuickTest test stands and their derivative models can be operated 'normally' without a supplied guard, for applications that do not warrant a guard to be used.

The stands have an **Override** feature that allows an interlock override plug (**part no. 351-102**), supplied as an accessory to be fitted, that enables the use of the stand without a guard fitted. This plug will be supplied in the accessories and must be fitted to use the stand in normal operation.



Interlock override plug (**351-102**) and Interlock rear panel connection on a Mark 2 Interlock enabled QuickTest

The interlock plug is a simple twist-fit both on and off and is locked in place in a clockwise direction. To fit, push the connector on with light pressure and turn clockwise. To remove, again apply light pressure and turn anti-clockwise.

With the override plug fitted, normal operation of the QuickTest function and menus will be possible.

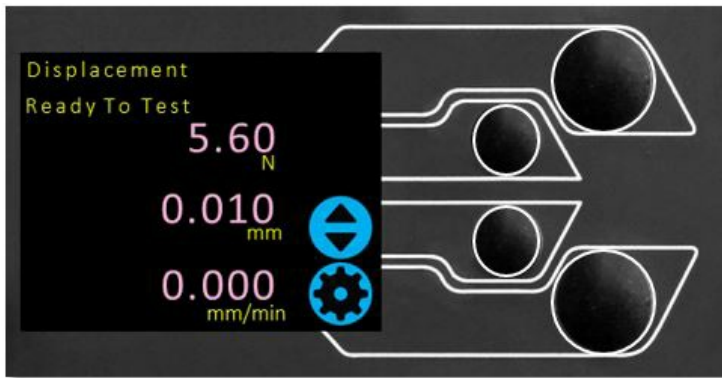
### 8.2 Operating a QuickTest Test Stand With an Interlocked Guard

James Heal interlocked guarding is fitted with a cable and plug from the guard, that must be fitted to the rear of the stand panel **Interlock** connection, in place of the removed override plug.

When a guard is fitted and connected to the QuickTest there is no need for any menu updates or user interaction to make it functional. The stand will have certain operations and user status warnings when the guard is opened and closed.

## 8.2.1 Guard Closed

With the guard door closed, normal menu displays and operations will be seen:



## 8.2.2 Guard Opened

### 8.2.2.1 With a Test Running

The guard door should never be opened whilst a test is running. Extremely high forces and energy can be present in the machine, grips or sample under test and personal injury or damage can occur. Allow the machine to complete the test sequence or stop the machine manually and safely remove any residual loading before attempting to open the guard and access the machine, grips or sample under test.

### 8.2.2.2 QuickTest Without PC Control

When running a QuickTest standalone without software control, opening the guard will result in a test being aborted and the **'Interlock Active!'** status message on the front panel display:



### 8.2.2.3 QuickTest with Software Control

When controlling the QuickTest test stand with software functionality, the test stand front panel will behave with same actions as above.

The software will be aborted and the current test will not be recorded or stored. The software screen will briefly show the message shown below to indicate the guard had been opened during a test:

**Failed**  
The instrument has an error or the emergency stop has been pressed

## 8.3 Clearing the Interlock Active Message

Apart from the **'Pause'** function above, if the guard is opened at any time on the test stand, the **'Interlock Active!'** status message will be displayed and the scroll wheel indication will turn red:



To clear the message, do the following:

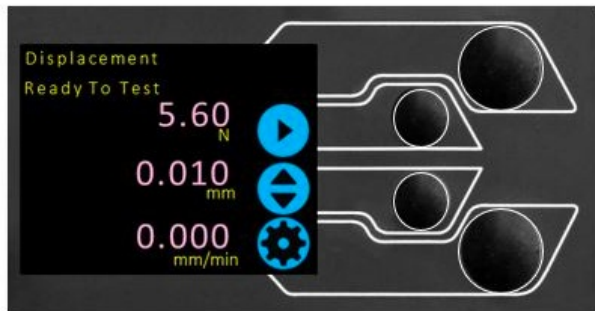
	Operation Type	Action
1	Normal opening and closing of door (no test running)	Close the door and continue.
2	If a test is running and the door has been opened (test aborted)	Close the door. Press the <b>Exit</b> button to return to the ready to test screen. Use jog mode to safely remove the residual load and then specimen. Or, press the <b>Home</b> if it is safe to do so, to return to the ready to test screen.

In cases 1 and 2 above, closing the door will change the status message to **Interlock Opened** and the **Home** and **Exit** button icons will appear on the display:



When the **Exit** button is pressed the ready to test screen is displayed and the operator can choose the next appropriate action.

When the **Home** button is pressed, the stand will back to the set home or test start position and the ready to test screen is displayed and the operator can choose the next appropriate action.



In Case 3 above, the guard door can be opened and closed whilst the **Pause** function is active.



Pressing the **Play** button will advance the test sequence to the next operation and potentially the machine will start moving again.

Pressing the **Stop** button will abort the test in the test stand.

## 9 Specification

<b>QuickTest</b>				
<b>Rated Capacity</b>	kN	0.5	1	2.5
	kgf	50	100	250
	lbf	110	220	550
<b>Displacement</b>				
Crosshead Travel*		1186mm (46.7")	986mm (38.8")	507mm (20")
Maximum Headroom*		1205mm (47.4")	1005mm (39.6")	526mm (20.7")
Displacement Resolution		1 µm (0.000025")		
Displacement Accuracy		±0.130mm per 300mm travel (±0.005" per 11.81")		
<b>Speed</b>				
Speed Range†	mm/min	0.1 to 1200	0.1 to 1200	0.1 to 1200††
	in/min	0.004 to 47.2	0.004 to 47.2	0.004 to 47.2
Speed Accuracy (at steady state)		±2% of indicated speed or ±20 µ/min whichever is greater		
Speed Resolution		0.1mm/min (0.004"/min)		
Maximum Number of Cycles Per Test		9999 (Cycling testing is not available in dV(u) mode)		
<b>Dimensions</b>				
Height		1616 mm (64")	1416 mm (56")	941 mm (37")
Width		290 mm (11.4")	290 mm (11.4")	290 mm (11.4")
Depth		414 mm (16.3")	414 mm (16.3")	414 mm (16.3")
Vertical Daylight*		1267 mm (49.9")	1067 mm (42")	588 mm (23.1")
Throat Depth**		70.5 mm (2.8")	70.5 mm (2.8")	70.5 mm (2.8")
Weight		26 kg (57 lbs)	25 kg (55 lbs)	24 kg (53 lbs)
<b>Electrical Supply</b>				
Voltage		230 V AC 50 Hz or 110 V AC 60 Hz		
Maximum Power Requirement		120W		
<b>Force Gauge, 10 models from 2.5 N to 2500 N</b>				
Sensor Measurement Accuracy***		0.1% of full-scale		
<b>Environment Specification</b>				
Operating Temperature		10°C – 35°C (50°F – 95°F)		
Operating Relative Humidity		Normal Industry and laboratory conditions. (30% to 80% non-condensing)		
<b>Display &amp; Data Output</b>				
Front Panel Display Indication		Load / Displacement / Speed		
Output of Test Results	Stand	Via USB		
	Force Gauge	Via Cable		

\* Measured on centreline of gauge.

\*\* Measured with a force gauge and short extension rod fitted.

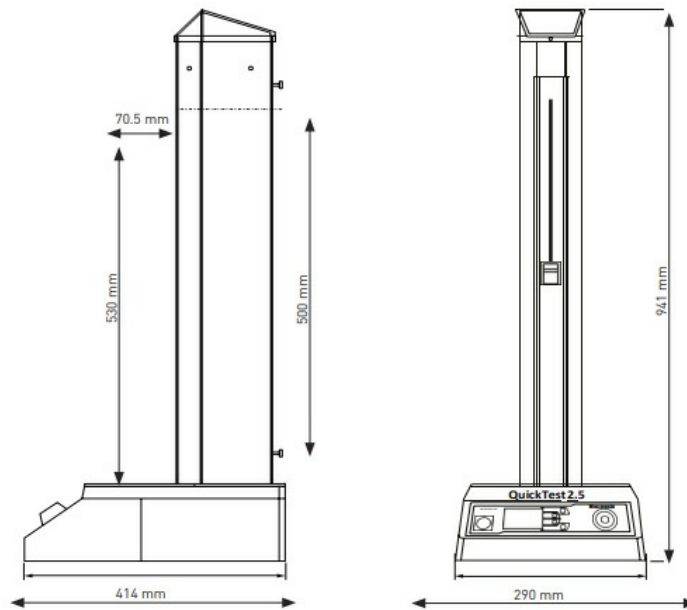
\*\*\* Due to the variety of environmental conditions the device may be used in, this value does not include uncertainty of measurement.

†† 2.5 kN: recommended maximum speed = 750 mm/min (30 in/min) above 2 kN/min (30 in/min) above 2 kN.

## 10 Dimensions

### 10.1 QuickTest 2.5kN Dimensions

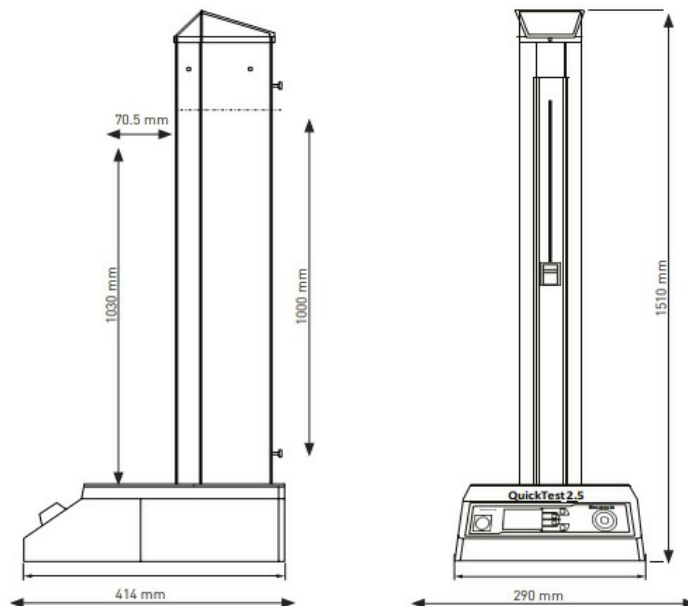
#### 2.5 kN Model



**Please Note:** The above drawing is not to scale!

### 10.2 QuickTest 1.0kN Dimensions

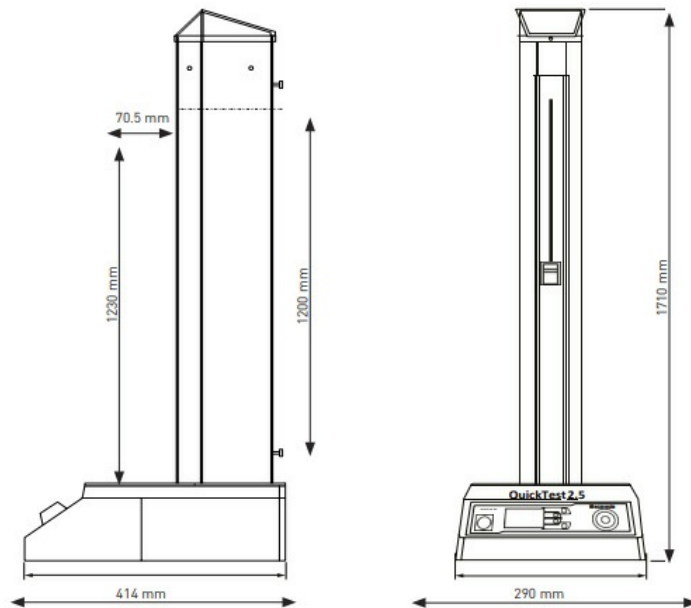
#### 1.0 kN Model



**Please Note:** The above drawing is not to scale!

## 10.3 QuickTest 0.5kN Dimensions

### 0.5 kN Model



**Please Note:** The above drawing is not to scale!

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