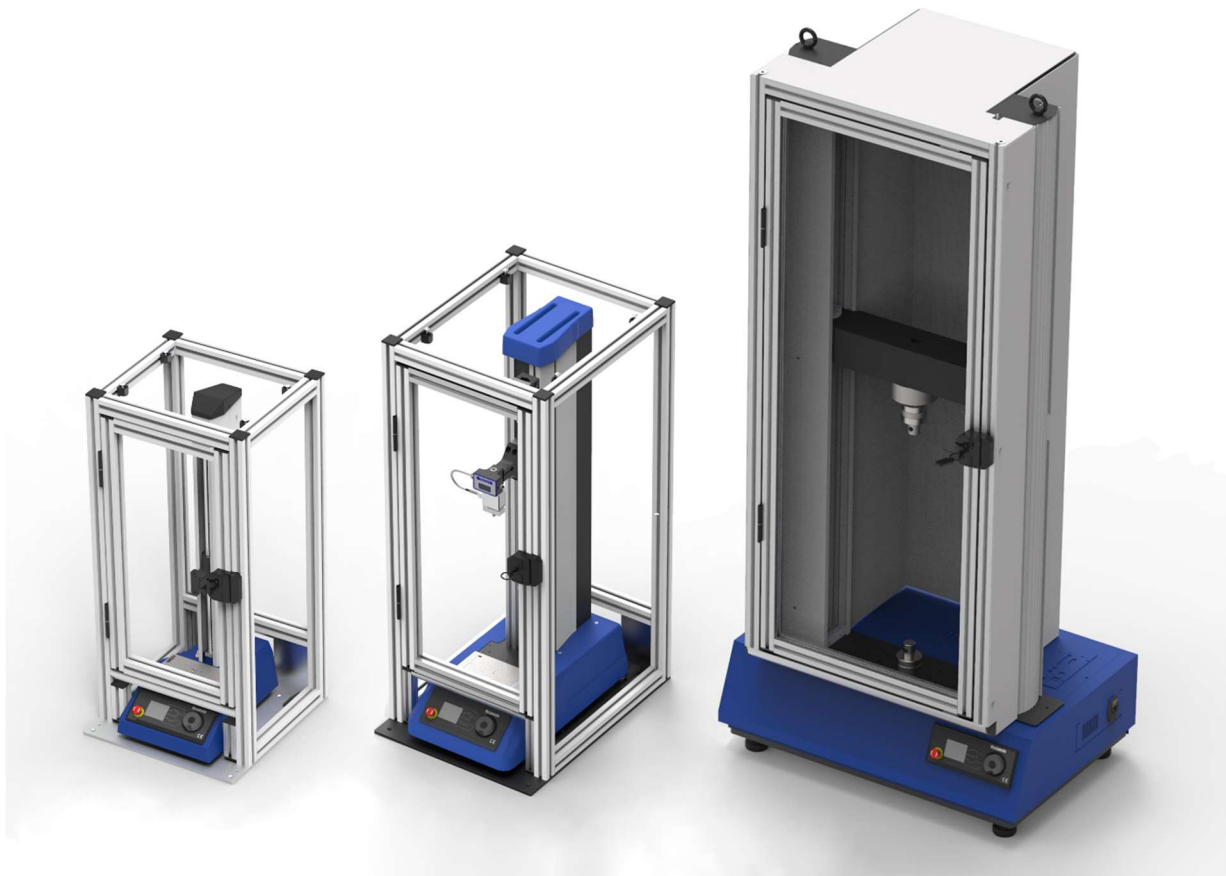




Installation & Operation of Mecmesin Interlocked Machine Guarding



Scope of this document

Mecmesin standard interlocked guarding is designed to seamlessly integrate with a Mecmesin OmniTest, MultiTest-*dV* and MultiTest-*i* motorised test stand. This document covers the installation and operation of the following products:

Single Column Test Stands

- 432-680 MultiTest 0.5 kN Interlocked Guard
- 432-681 MultiTest 1.0 kN Interlocked Guard
- 432-682 MultiTest 2.5 kN Interlocked Guard
- 432-684 OmniTest 5.0 & 7.5 kN Interlocked Guard

Twin Column Test Stands

- 805-017+G MultiTest-10*i* & Interlocked Guard
- 805-016+G MultiTest-25*i* & Interlocked Guard
- 805-023+G MultiTest-50*i* & Interlocked Guard
- 815-004+G MultiTest-10*xt* & Interlocked Guard
- 815-005+G MultiTest-25*xt* & Interlocked Guard
- 815-006+G MultiTest-50*xt* & Interlocked Guard
- 820-010+G OmniTest-10 & Interlocked Guard
- 820-025+G OmniTest-25 & Interlocked Guard
- 820-050+G OmniTest-50 & Interlocked Guard

For further guidance relating to individual test stands or software, please refer to their individual user manuals.

Alternatively, electronic copies are available at – <https://help.mecmesin.com>

MECMESIN SUPPLIED INTERLOCKED MACHINE GUARDING HAS BEEN DESIGNED AND MANUFACTURED IN A CONTROLLED SYSTEM TO ENSURE COMPLIANCE WITH ALL RELEVANT EUROPEAN COMMUNITY DIRECTIVES.
--

DECLARATION OF CONFORMITY: A copy of the relevant Declarations of Conformity can be found in the rear of this manual – **See Section 11.**

2019 © Mecmesin Ltd, supplied with Mecmesin test systems and not for redistribution

Part no. 431-971-01

Contents

1.	User Manual Guidance	6
2.	Guard Safety Overview	7
3.	Operator Safety	8
3.1	Training	8
3.2	Eye Protection and Protective Clothing	8
3.3	Recommended Operating Position	9
4.	System Diagrams	10
4.1	MultiTest - 0.5 kN, 1.0 kN & 2.5 kN	10
4.2	OmniTest - 5.0 kN & 7.5 kN	11
4.3	Twin Column Test Stands - 10 kN & 25 kN	12
4.4	Twin Column Test Systems - 50 kN	13
5.	Unpacking and Parts Supplied	14
5.1	Single Column Test Stands - Inspection and Unpacking	14
5.2	Twin Column Test Stands - Inspection and Unpacking	14
5.3	Packaging	14
5.4	Safe Handling of Single Column Interlock Guards	15
5.5	Additional Items Supplied with Your Guard	15
6.	Single Column Guard Installation	17
6.1	Prerequisites	17
6.2	MultiTest Single Column - Installation Guide	18
6.3	OmniTest Single Column - Installation Guide	24
6.4	xt Console Installation	35
6.5	Single Column Override Plug	40
6.6	Twin Column Guard Bung	41
6.7	Checking the Interlock Function and Operation	42
6.8	MultiTest-dV and OmniTest Interlock Function Test	43
6.9	MultiTest-i Interlock Function Test	44
7.	Operation	45
7.1	Scope of Use	45
7.2	MultiTest-dV and OmniTest Interlocked Guard Examples	46
7.3	MultiTest-i and xt Interlocked Guard Examples	49
7.4	Responsible Use of Interlock Override	51

8.	Servicing, Maintenance and Repair	52
8.1	Servicing	52
8.2	Maintenance & Cleaning	52
8.3	Repair	52
9.	Specifications	53
9.1	Single Column Test Systems	53
9.2	Twin Column Test Systems	54
10.	Dimensions	55
11.	EC Declaration of Conformity	59
12.	Operator Notes	61

1. User Manual Guidance

Throughout this manual the icons shown below are used to identify important health and safety information as well as additional installation/operation guidance.

WARNING



The following icon highlights a situation or condition that may lead to possible personal injury or damage to the associated equipment. Do not proceed until the warning is read and thoroughly understood.

Warning messages will be highlighted throughout the manual using bold text.

CAUTION



The following icon indicates a situation or condition that could cause the equipment to malfunction leading to possible damage. Do not proceed until the caution message is read and thoroughly understood.

Caution messages will be highlighted throughout the manual using bold text.

INFORMATION



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

Information notes will be highlighted throughout the manual using bold text.

2. Guard Safety Overview

Mecmesin interlocked guarding seamlessly integrates with a Mecmesin OmniTest, MultiTest-*dV* and MultiTest-*i* motorised test stand. The guarding helps to provide additional ingress protection to your test system, helping to reduce the risk of an operator or object coming into contact with a moving test stand.

The guard is designed to be used in a dry, clean and tidy environment and should be placed on a stable and load appropriate work platform away from potentially hazardous environments or items.

Mecmesin motorised test stands are designed to be used while under constant supervision, the addition of an interlocked guard does not alter this requirement, failure to monitor a test stand in operation could lead to damage to the equipment or injury to others.



A standard Mecmesin guard is designed to prevent object ingress and operator access to moving parts, and load bearing surfaces, while the machine is in use.

For materials or test methods where there is a potential for high energy impacts with the guarding, Mecmesin recommend consultation with their design team, (directly or through a local agent) to correctly specify application and safety requirements.



Before use, it is recommended that all operators of the machinery are given comprehensive training covering both the test stand and interlock guarding's functionality. Preventative safety measures prior to operation, in accordance with all relevant operator manuals, should also be considered.

Risk assessment of the guarding and associated test stand is recommended and should be carried out where appropriate. Internal company operating procedures should also be generated where necessary.

Mecmesin supplied interlocked guarding systems should only be serviced by a trained Mecmesin employee or approved agent. Any attempt by non-approved personnel may invalidate any warranty claim and could lead to damage of equipment or injury. Always ensure correct PPE procedures are in-place and followed where stated.



All standard Mecmesin supplied guards are fitted with clear Polycarbonate sheeting to help maximise viewing of the test area. These sheets are fitted to the front of twin column systems and all sides of single column guarding (Front, rear and sides).

3. Operator Safety

3.1 Training

Before using either the test stand or guarding, it is essential that each person operating the equipment is fully trained in the safe use of motorised testing machines and the guarding's functionality. Training can be arranged by contacting Mecmesin Ltd or an authorised distributor.



Mecmesin 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 should be kept away from the moving crosshead and shroud opening.



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.

3.2 Eye Protection and Protective Clothing

Although a standard Mecmesin interlocked guard will provide some protection against projectiles that may be ejected when a brittle sample fails, the device has primarily been designed to provide ingress protection to prevent the operator and other items from coming into contact with the moving test stand.

For materials or test methods where there is a potential for high energy impacts with the guarding, Mecmesin recommend consultation with their design team, (directly or through a local agent) to correctly specify application and safety requirements.



Eye protection should always be used. Ensure an approved pair of safety spectacles are worn at all times.



Additional personal protection may be necessary if destructive testing or volatile failure of a test piece is likely. Consideration needs to be given to the likely behaviour of the samples being tested and the use of any appropriate personal protective equipment that may be needed.

A risk assessment should be carried out prior to using the test stand to ensure that all necessary safety measures have been considered and carried out. It is important to review the risk assessment if new tests or new samples are introduced.

3.3 Recommended Operating Position



Mecmesin recommends that the test stand and guard assembly are placed so that the front panel is clearly visible and can be reached. For single column test stands, this will typically require the base of the machine to be approximately at waist height.

An example of the recommended operation position is shown in the image above. Here the operator has easy access to the front panel as well as a clear view over the entire test stand.

Please Note: The illustration shown above is not to scale.



Improper mounting of the test stand can lead to injury or damage to the machine. This may occur instantly or over time, test stands that are placed too high or low can lead to repetitive strain injuries.



For twin column and taller single column models the level at which the test stand can be placed may be restricted by the height of the ceiling.

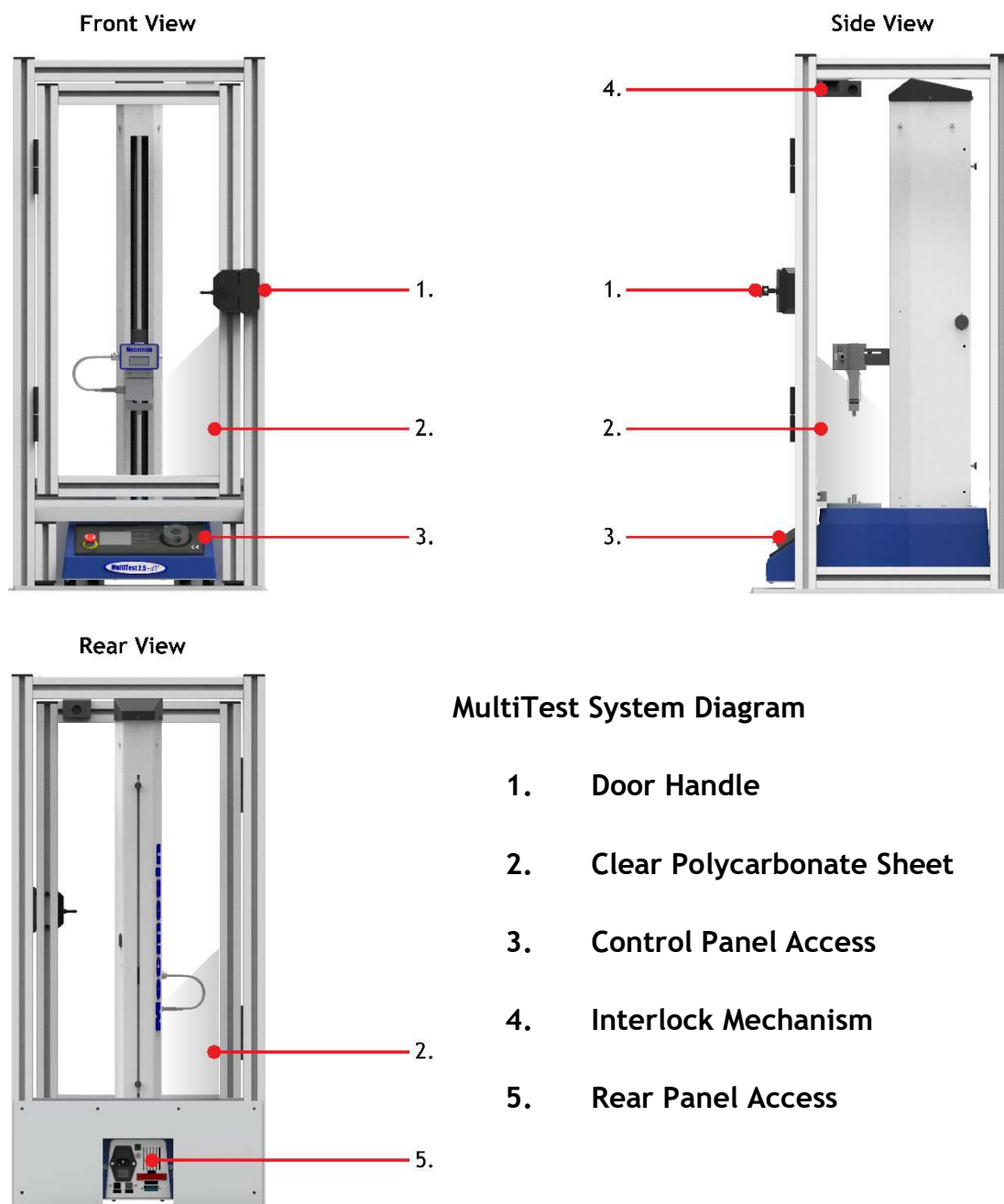
4. System Diagrams

4.1 MultiTest - 0.5 kN, 1.0 kN & 2.5 kN

Below is a list of Mecmesin Interlocked Guards compatible with single column MultiTest systems (please note that only 432-682 is shown in the system diagrams):

- 432-680 MultiTest 0.5 kN Interlocked Guard
- 432-681 MultiTest 1.0 kN Interlocked Guard
- 432-682 MultiTest 2.5 kN Interlocked Guard

MultiTest - 0.5 kN, 1.0kN & 2.5 kN

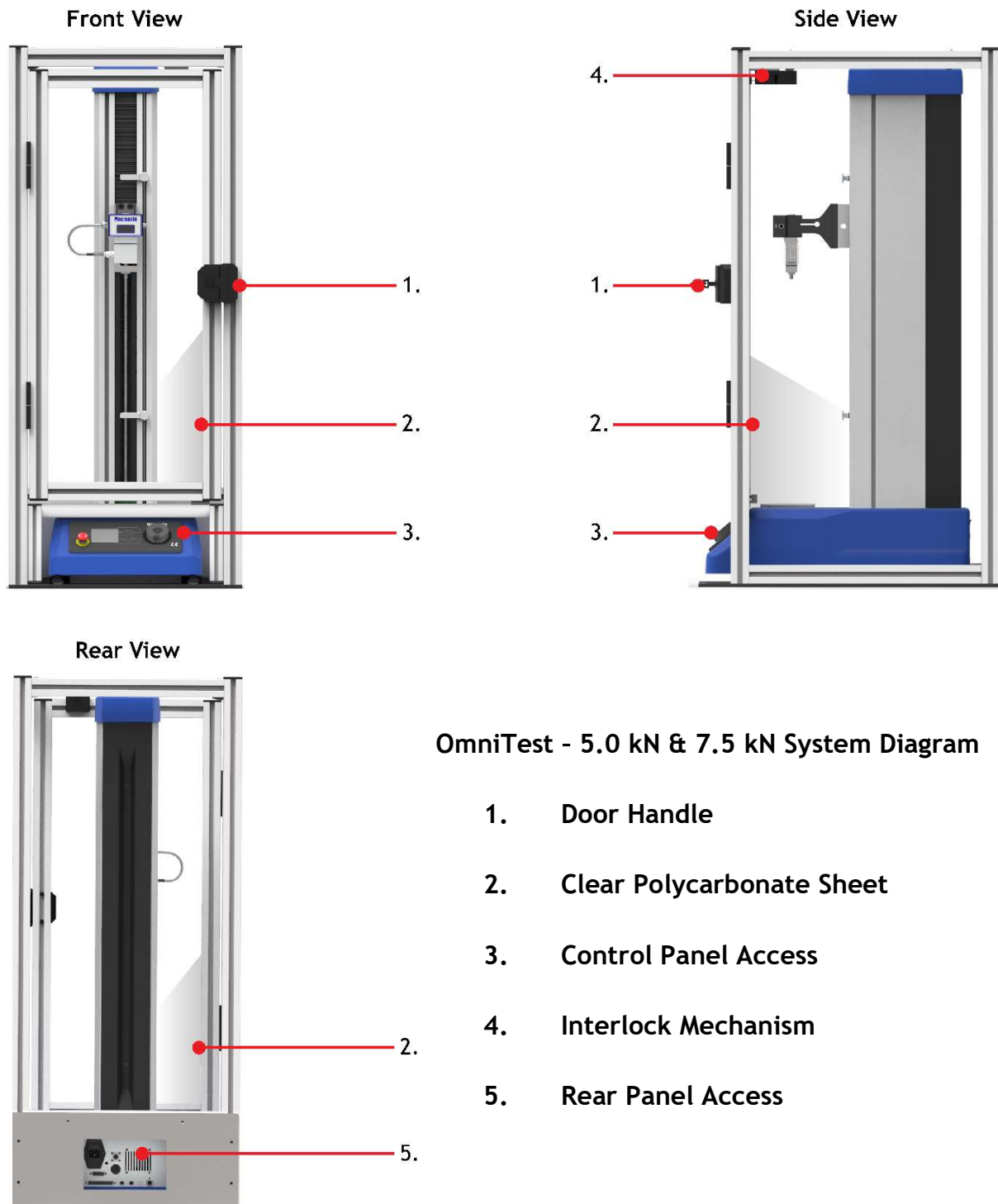


4.2 OmniTest - 5.0 kN & 7.5 kN

Below is a list of Mecmesin Interlocked Guards compatible with single column OmniTest systems:

- 432-684 OmniTest 5.0 & 7.5 kN Interlocked Guard

OmniTest - 5.0 kN & 7.5 kN

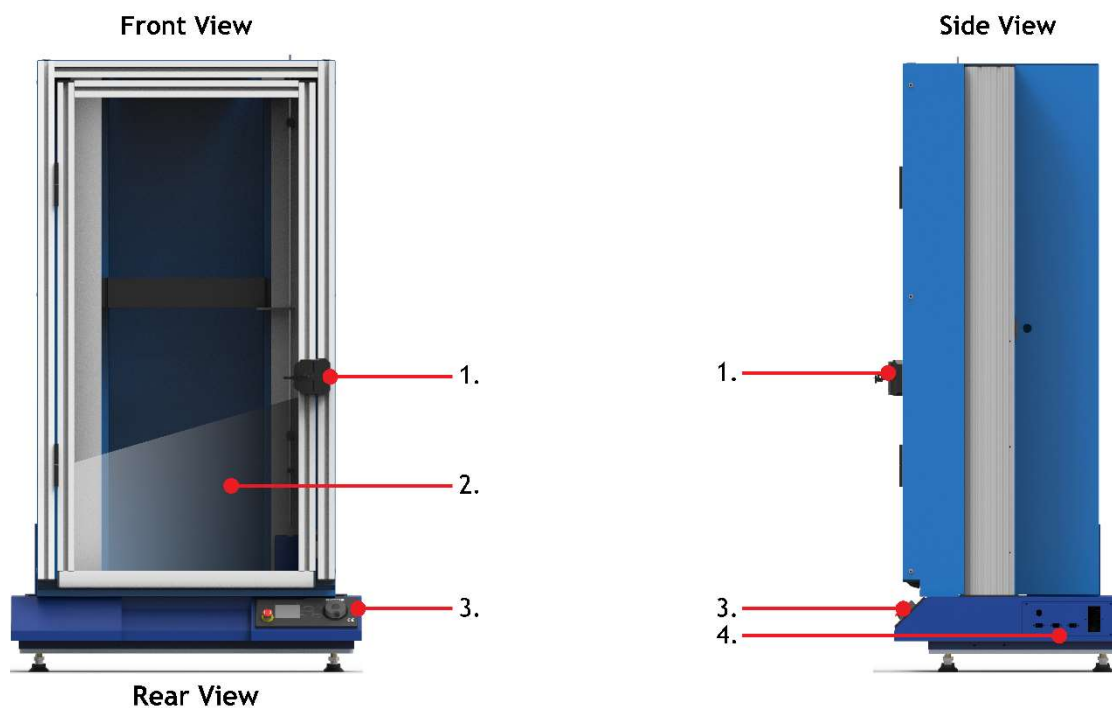


4.3 Twin Column Test Stands - 10 kN & 25 kN

Below is a list of all available 10 kN and 25 kN Mecmesin twin column test systems fitted with interlocked guards (please note that 820-010+G/820-025+G is shown in the system diagrams):

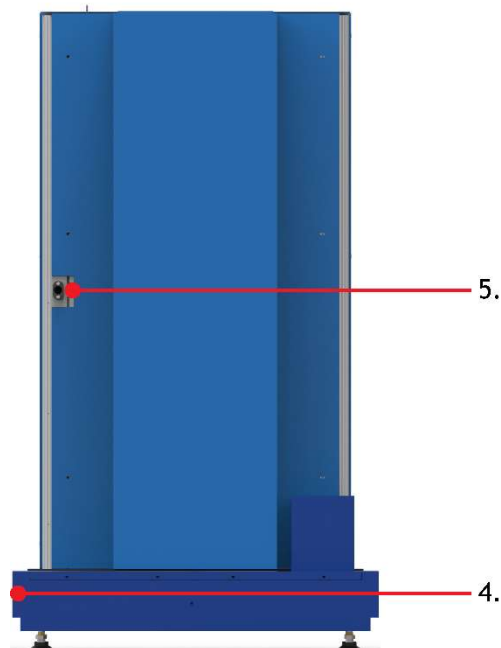
- 805-017+G MultiTest-10*i* & Interlocked Guard
- 805-016+G MultiTest-25*i* & Interlocked Guard
- 815-004+G MultiTest-10*xt* & Interlocked Guard
- 815-005+G MultiTest-25*xt* & Interlocked Guard
- 820-010+G OmniTest-10 & Interlocked Guard
- 820-025+G OmniTest-25 & Interlocked Guard

Twin Column Test System - 10 kN & 25 kN



Twin Column - 10 kN & 25 kN System Diagram

1. Door Handle
2. Clear Polycarbonate Sheet
3. Control Panel Access
4. Side Connectors Panel
5. Force/Transducer Socket

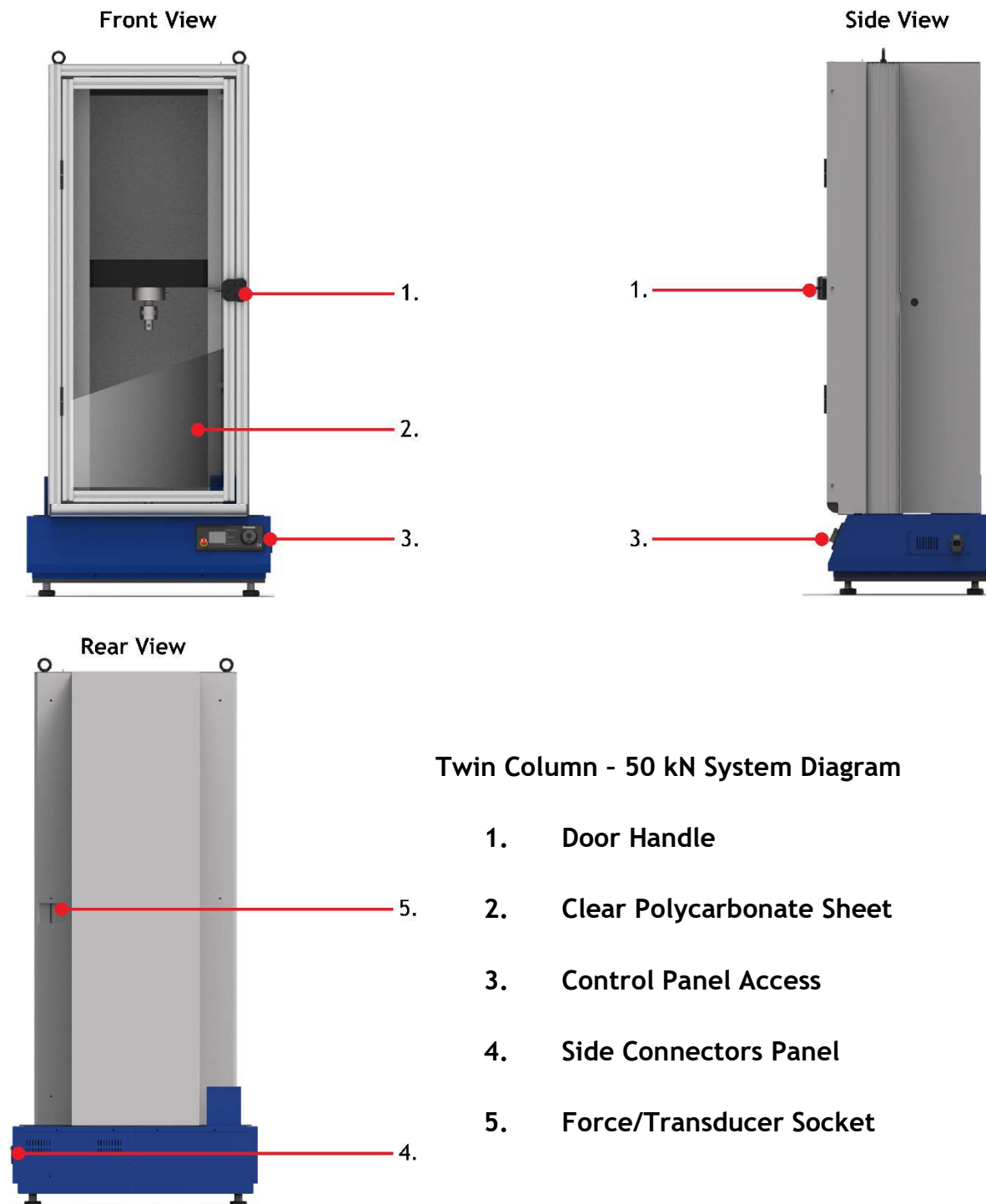


4.4 Twin Column Test Systems - 50 kN

Below is a list of all available 50 kN Mecmesin twin column test systems fitted with interlocked guards (please note that only 820-050+G is shown in the system diagrams):

- 805-023+G MultiTest-50i & Interlocked Guard
- 815-006+G MultiTest-50xt & Interlocked Guard
- 820-050+G OmniTest-50 & Interlocked Guard

Twin Column Test System - 50 kN



5. Unpacking and Parts Supplied

5.1 Single Column Test Stands - Inspection and Unpacking

The specification for the interlocked guarding is located in **Section 9** of this manual. Here you can find the weight and dimensions of each interlocked guard model.

Before installing or operating your Mecmesin guarding please ensure that no visible damage has occurred during the shipping of the guarding.

Important! If any damage is discovered do not proceed with the installation.

If any damage is present, contact your local supplier immediately who will decide the most appropriate action and rectify the situation as quickly as possible.



Use safe handling procedures to remove heavy items from the packaging, if you are unsure how to safely move the guarding consult your organisation's health and safety representative or contact your local Mecmesin agent for assistance.



Once the guarding is safely removed from the packaging, place it onto a stable and level surface. Ensure this surface can safely carry the weight of the guarding and is suitable to secure the system to.

5.2 Twin Column Test Stands - Inspection and Unpacking

Mecmesin twin column test stands ordered with interlocked guarding come pre-assembled as one unit. For weight and dimensions of twin column test systems with an additional interlocked guard, please see **Section 9** of this manual.

For safe handling and placement of the test stand, please refer to your systems user manual for more information.

5.3 Packaging

We strongly recommend that you retain the packaging for the machine guard as this can be re-used if the device needs to be returned to your authorised Mecmesin distributor for any servicing or modification.

5.4 Safe Handling of Single Column Interlock Guards

To install the test stand's guarding it is required to lift and move the interlocked guard, improper lifting technique or handling of the guard could lead to injury or damage to the equipment.

Before moving the guard, an assessment should be carried out by a qualified individual to determine how to move the guarding safely.



Due to the weight and size of the guarding it is recommended that at least two people are needed to lift a single column guard during the installation phase. Refer to Section 9 for the precise weight of the guard.

5.5 Additional Items Supplied with Your Guard

The items supplied with your guard varies depending on the model. The next section contains a list of the parts supplied with the interlocked guard. Please note some items are only supplied for *xt* systems.



For single column test stands, a set of metric Allen keys are required to remove and refit screws supplied in the guard assembly

5.5.1 432-680, 432-681, 432-682 - MultiTest 0.5 kN, 1.0 kN, 2.5 kN

Part No.	Description	Qty
409-080	Guard Foot Spacer Block	4
420-638	M6 x 35 Skt Cap	4
-	Guard Door Key	2
408-843	10mm Tee Slot Nut <i>(only required for xt-console mounting)</i>	1
408-921	Console Arm Mounting Bracket <i>(only required for xt-console mounting)</i>	1
420-076	M5x5 Grub Screw <i>(only required for xt-console mounting)</i>	2
420-536	M8x12 Skt Cap <i>(only required for xt-console mounting)</i>	2

5.5.2 432-684 - OmniTest 5.0 kN & 7.5 kN Only

Part No.	Description	Qty
-	Guard Door Key	2

5.5.3 10 kN, 25 kN and 50 kN Twin Column Guarded Systems

Part No.	Description	Qty
-	Guard Door Key	2
408-921	Console Arm Mounting Bracket <i>(only required for xt-console mounting)</i>	1
420-536	M8x12 Skt Cap <i>(only required for xt-console mounting)</i>	2

6. Single Column Guard Installation

Before installing a single column guard, it is important to read the next section in full, failure to do so could lead to injury or damage to the test equipment.

6.1 Prerequisites

Before installing your single column guarding, ensure you are working in a suitable area. It is important that there is a clear, stable work surface to place both the guard and the associated test stand that is suitable to secure the system to, and that all potential risks have been assessed before starting the installation phase.

Installation of interlocked machine guarding should only be carried out by qualified, authorised personnel.

Failure to follow the installation instructions within this manual could result in serious injury to the user or those around the machinery. It could also cause damage to the equipment or surrounding environment.



Due to the weight and size of the guarding, it is recommended that at least two people are needed to lift single column guarding during the installation phase. Refer to Section 9 for the precise weight of the guard.



Mecmesin recommends that a full risk assessment is carried out covering the placement and operation of the interlocked guard in conjunction with your test stand fixtures. This should be carried out by the end user.



When fitted, the guard is designed to enclose the test stand and its working area. The machine itself is placed within the enclosed assembly. Although the guard will be supplied assembled, there is a requirement for some dismantling in order to complete the installation process.

6.2 MultiTest Single Column - Installation Guide

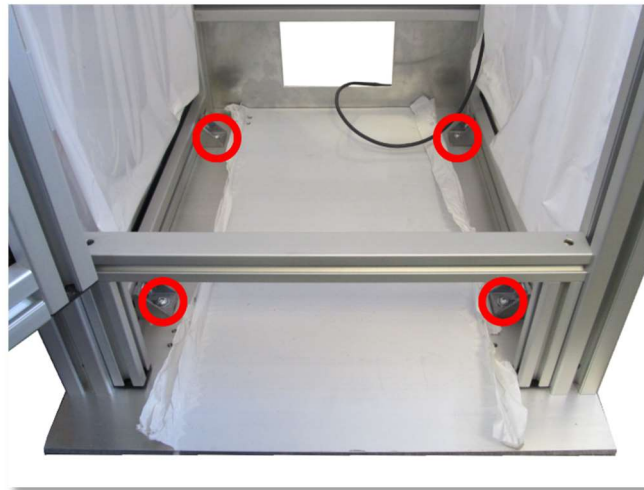
Step 1 - Unpacking the Guard

Unpack the guard assembly and safely lift it on to a stable work surface that is suitable to secure the system to. Ensuring that the lower plate can be easily accessed. Unlock the guard door using the key supplied.

Step 2 - Disconnecting the MultiTest System

Ensure that all connections, including the mains power lead, are disconnected from the MultiTest's rear panel.

Step 3 - Disassembling the Guard



Locate the four right-angled brackets that connect the guard to the lower base plate. These are circled in the image above.



Using a suitable metric Allen key remove the existing fixings from the lower section of the right-angled bracket as shown in the image above. This will release the lower base plate from the guard.

Step 4 - Removing the Guard's Base Plate



Carefully lift the upper guard away from the base plate and place it to one side on a suitable work surface.



Ensure safe handling procedures are followed when lifting the guarding assembly.

Step 5 - Removing the MultiTest's Feet



Remove the four rubber feet from their threaded holes located on the bottom of the MultiTest system using a suitable flat head screwdriver. This is shown in the image above.

These holes will be used to mount the guard's baseplate to the bottom of the test stand.

Step 6 - Mounting the MultiTest to the Guard's Base Plate

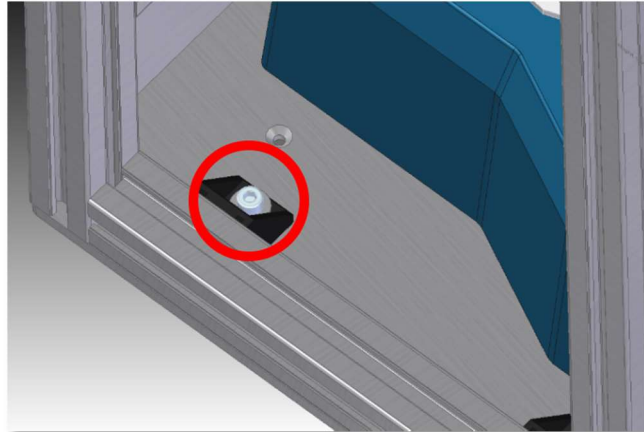


Secure the guard's base plate to the test stand using the four supplied M6 x 35 countersunk screws (420-638). Each screw should pass through the guard's baseplate, then through one of the supplied spacers (409-080), before locating in the threaded holes on the bottom of the test stand. This is shown in the image below.

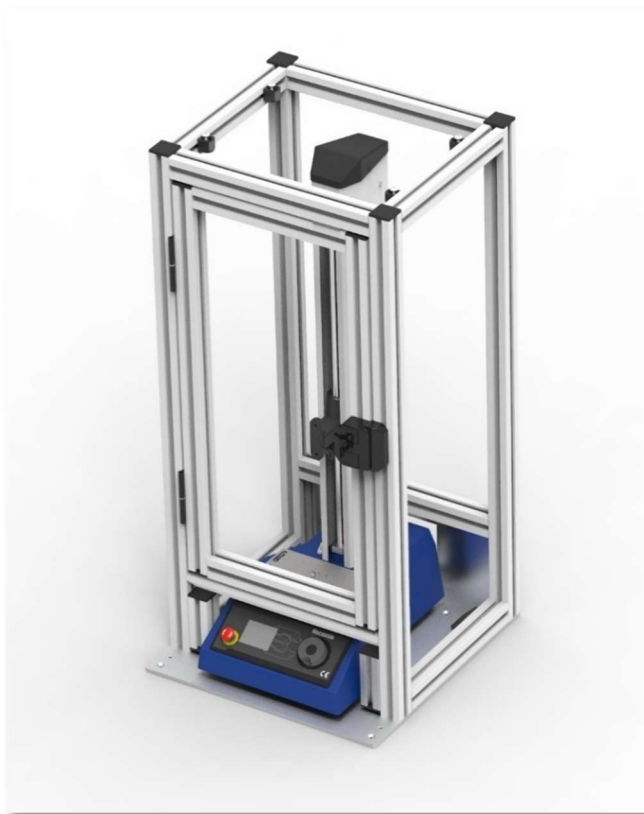


These spacers must be fitted between the guard's baseplate and the test stand to ensure the stand is sufficiently cooled during operation.

Step 7 - Fitting the Guard Assembly



For taller test stands (0.5 kN and 1.0 kN), it may be necessary to lay the stand on its back to fit the cover. Ensure that the stand is supported when placed in this position. Lower the main guard body over the test stand and secure it to the base plate using the four supplied screws that had been previously removed. This is shown in the image above.

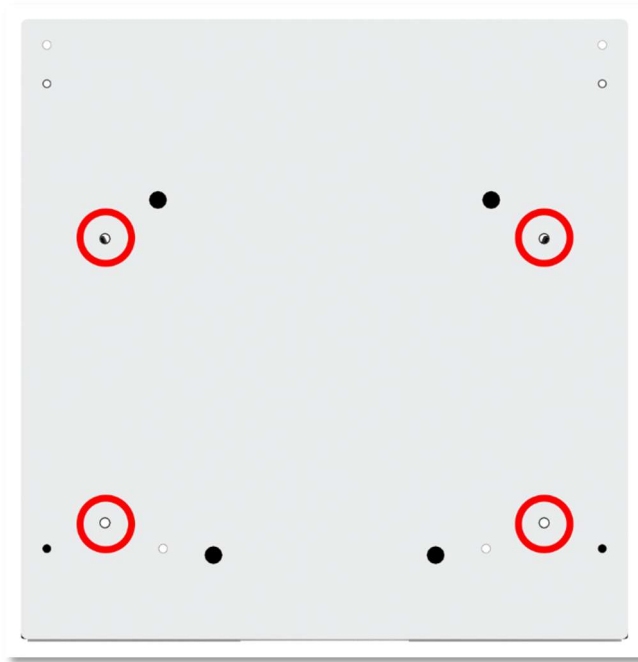


▲ Interlocked guard fitting to a MultiTest-dV 2.5 kN

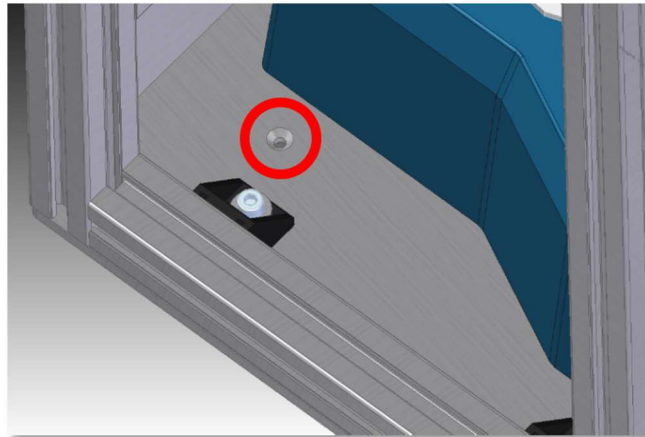


Ensure safe handling procedures are followed when lifting the guard assembly onto the base plate.

Step 8 - Securing the Interlocked Guard

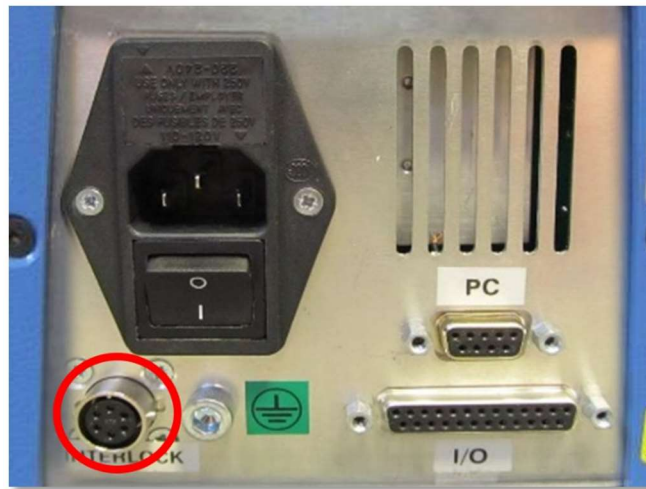


To prevent the test stand from toppling it is strongly advised that the test stand and guard assemblies are secured to a level workbench. The holes circled in the image above should be used to secure the assembly. Dimensions are available in Section 10.



Using suitable fixings secure the test stand and guard assembly to the workbench using the countersunk mounting holes circled in the image above. It is recommended that through bolts are used with retaining nuts on the underside of the work surface; washers should be used between the work surface and the retaining nuts.

Step 9 - Connecting the Interlocked Guarding



Locate the external interlock guard loom and feed it around to the MultiTest's rear connectors panel. Ensuring that the cable is not trapped or close to any moving parts.

Remove the plastic covering from the end of the cable and connect it to the MultiTest's rear panel 6-way socket marked "INTERLOCK", as shown in the image above.

6.3 OmniTest Single Column - Installation Guide

Step 1 - Unpacking the Guard

Unpack the guard assembly and safely lift it on to a stable work surface that is suitable to fix the system to. While ensuring that the lower plate can be easily accessed. Unlock the guard door using the key supplied.

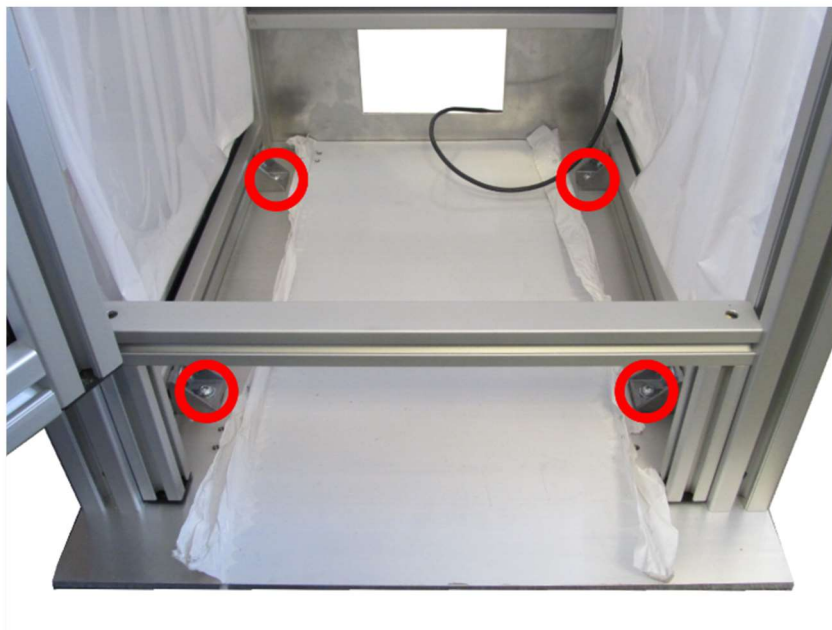
Step 2 - Disconnecting the OmniTest System

Ensure that all connections, including the mains power lead, are disconnected from the OmniTest's rear panel.

Step 3 - Disassembling the Guard

The guard can be fitted by either lowering it over the test stand or sliding it in from the rear (used if ceiling height prevents the first method).

If the guard is to be lowered on to the test stand continue to **Step 3**. If the guard is to be slid in from the rear of the test stand proceed to **Section 6.3.1. – Rear Slid Assemble**.



Locate the four right-angled brackets that connect the guard to the lower base plate, these are circled in the image above.



Using a suitable metric Allen key remove the fixings screws from the lower section of the right-angled bracket, as shown in the image above. This will release the lower base plate from the guard.

Step 4 - Removing the Guard's Base Plate



Carefully lift the upper guard away from the base plate and place it to one side on a suitable work surface.



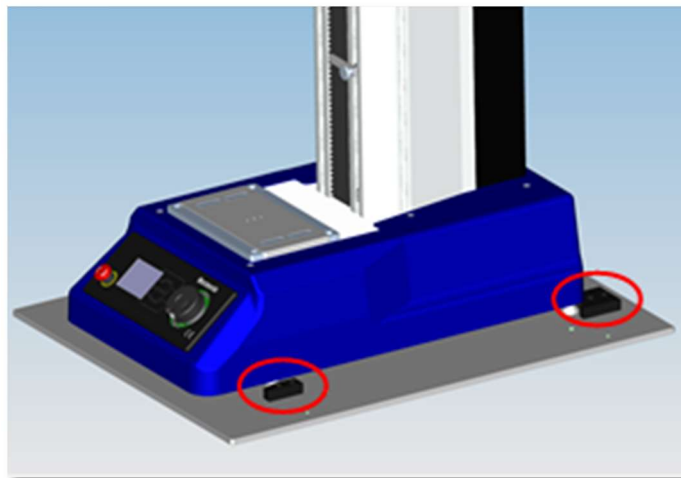
Ensure safe handling procedures are followed when lifting the guarding assembly.

Step 5 - Mounting the OmniTest to the Guard's Base Plate



First, the front foot stops will need to be removed before locating the Omnitest-5 to the base plate.

Next, carefully slide the OmniTest on to the plate locating the test stand's rear feet between the two rear foot stops. The rear foot stops are shown in the image above.



Once the OmniTest is located in the rear two stops, fit and secure the front foot stops using the supplied cap head screws. The secured assembly is shown in the image above.



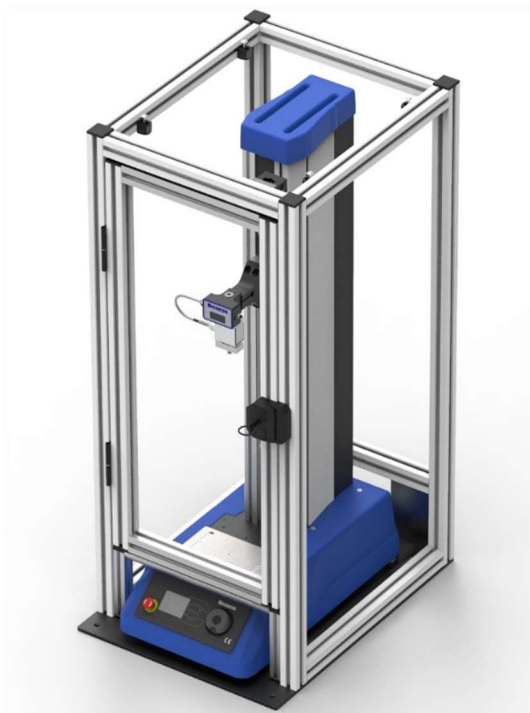
Ensure safe handling procedures are followed when lifting the Omnitest system onto the base plate.

Step 6 - Fitting the Guard Assembly



It may be necessary to lay the stand on its back to fit the cover. Ensuring that the stand is supported when placed in this position.

Lower the main guard body over the test stand and secure it to the base plate using the four screws that had been previously removed. This is shown in the image above.

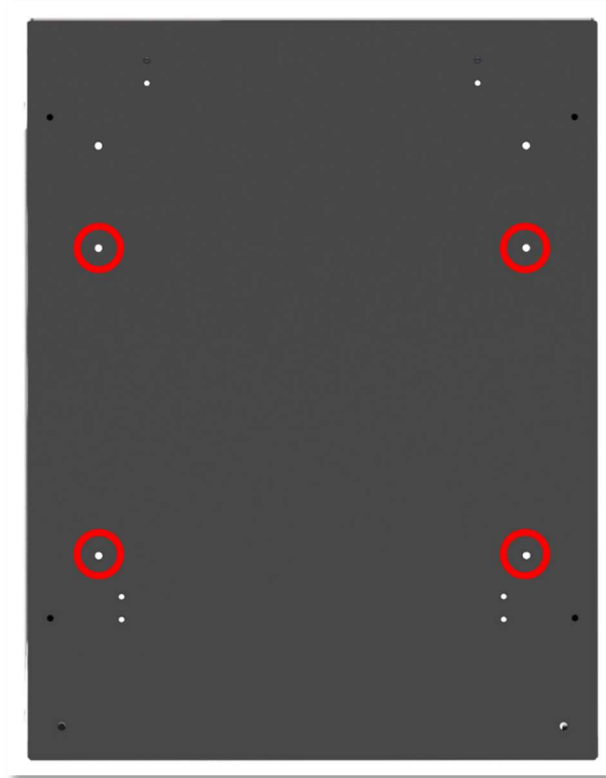


Interlocked guard fitted to an OmniTest-5.0 kN



Ensure safe handling procedures are followed when lifting the guard assembly onto the base plate.

Step 7 - Securing the Interlocked Guard



To prevent the test stand from toppling it is advised that the test stand and guard assemblies are secured to a level workbench. The holes circled in the image above should be used to secure the assembly. The holes are 6mm in diameter and are countersunk. Dimensions for the holes can be found in Section 10.

It is recommended that through bolts are used with retaining nuts on the underside of the work surface; washers should be used between the work surface and the retaining nuts.

Step 8 - Connecting the Interlocked Guarding

Locate the external interlock guard loom and feed it around to the OmniTest's rear connectors panel. Ensuring that the cable is not trapped or close to any moving parts.

Remove the plastic covering from the end of the cable and connect it to the OmniTest's rear panel 6-way socket marked "INTERLOCK", as shown in the image to the right.

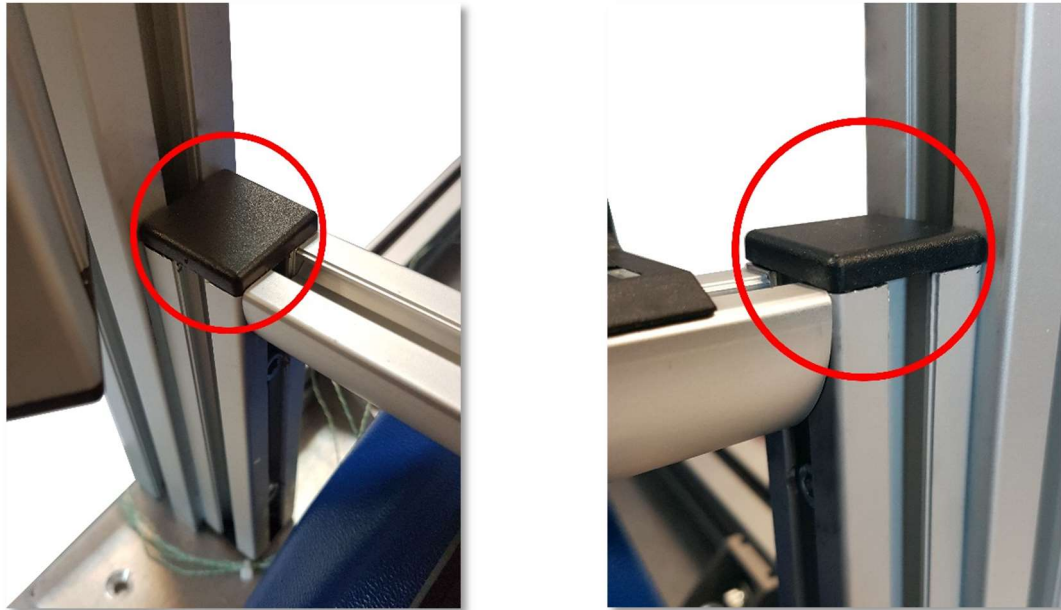


6.3.1 Rear Slide Assemble

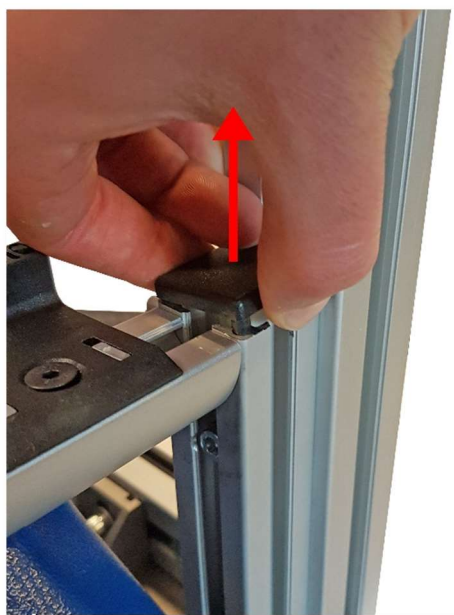
The following steps cover how to fit the guarding from the rear of the test stand.

Step 3 - Remove the Front of the Guard

To slide the guard in from the rear of the test stand, as opposed to lowering it from the top of the test stand, the front extrusion will need to be removed.



Remove the top caps from both each side of the lower front extrusion, as shown in the images above. The cap should be moved upward to release it from the extrusion, this is displayed in the image below.



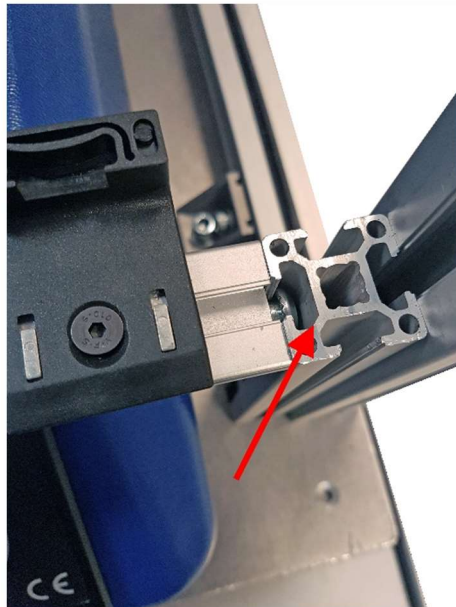
Step 4 - Removing the Extrusion



Use an Allen key to loosen the two retaining screws in the front extrusion as shown in the image above.



The image shown includes the test stand. However, in reality, the test stand would not be in the picture at this stage of installation.



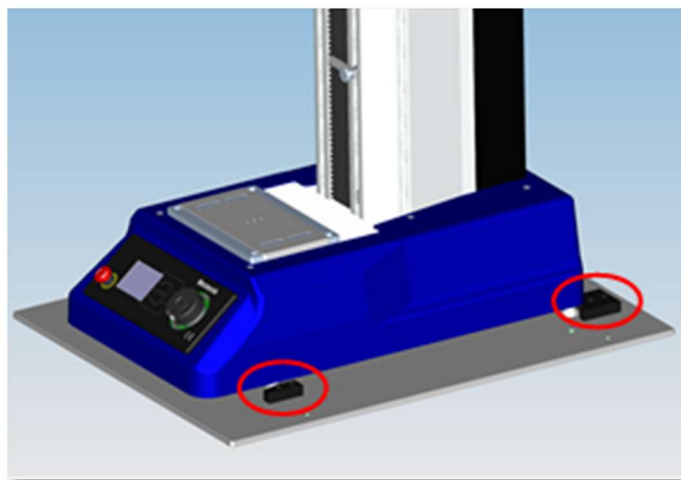
Once both screws have been loosened, carefully lift the extrusion section upwards to remove.

Step 5 - Mounting the OmniTest to the Guard's Base Plate



First, the front foot stops will need to be removed before locating the Omnitest-5 to the base plate.

Next, carefully slide the OmniTest on to the plate locating the test stand's rear feet between the two rear foot stops. The rear foot stops are shown in the image above.



Once the OmniTest is located in the rear two stops, fit and secure the front foot stops using the supplied cap head screws. The secured assembly is shown in the image above.

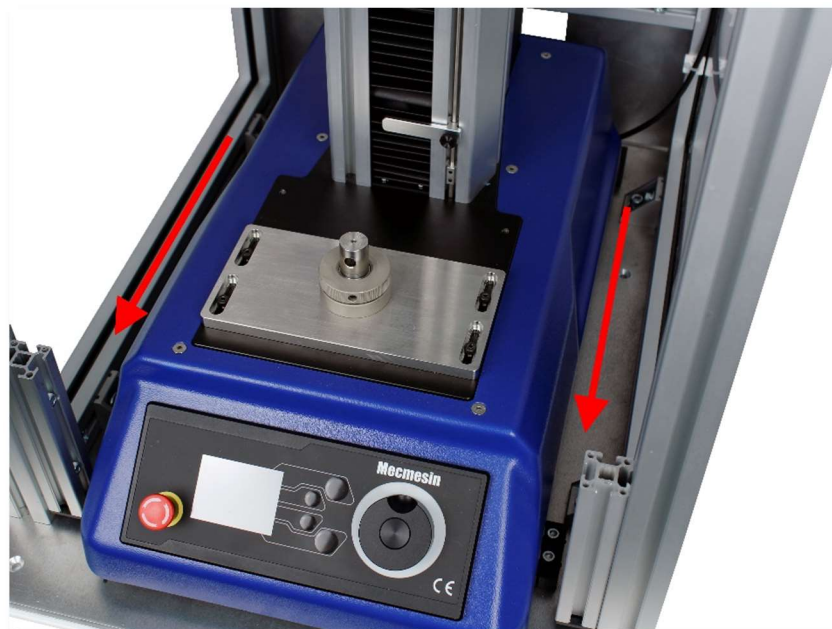


Ensure safe handling procedures are followed when lifting the Omnitest system onto the base plate.

Step 6 - Fitting the Guard Assembly



Pictured above is the guard, with front section and door removed, ready to be fitted to the test stand.



The guard can now be slid into place from the rear of the test stand, taking care not to impact the test stand.



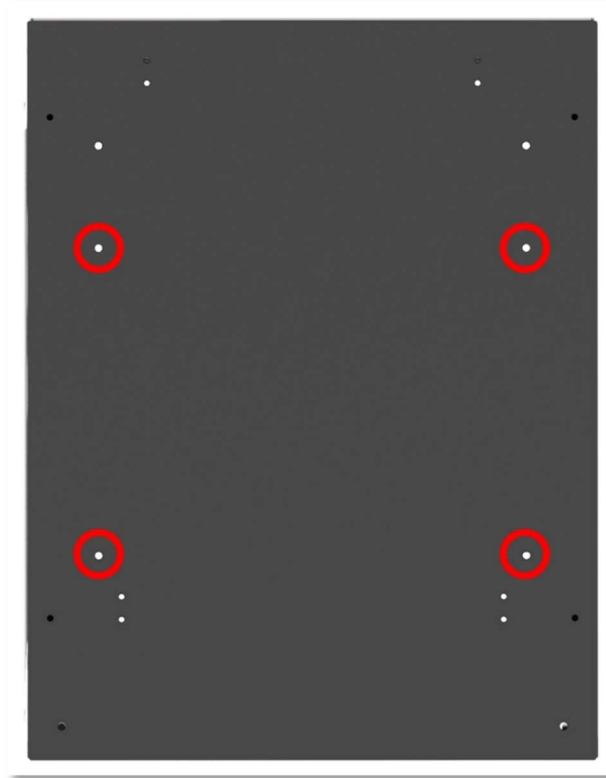
The next step is to re-attach the front extrusion. First, position the extrusion as shown in the image above, then tighten the fixings as shown in the image below.



Once the extrusion is secured, re-fit the top caps to each section. This is shown in the image below.



Step 7 - Securing the Interlocked Guard



To prevent the test stand from toppling it is advised that the test stand and guard assemblies are secured to a level workbench. The holes circled in the image above should be used to secure the assembly. The holes are 6mm in diameter and are countersunk. Dimensions for the holes can be found in Section 10.

It is recommended that through bolts are used with retaining nuts on the underside of the work surface; washers should be used between the work surface and the retaining nuts.

Step 8 - Connecting the Interlocked Guarding

Locate the external interlock guard loom and feed it around to the OmniTest's rear connectors panel. Ensuring that the cable is not trapped or close to any moving parts.

Remove the plastic covering from the end of the cable and connect it to the OmniTest's rear panel 6-way socket marked "INTERLOCK", as shown in the image to the right.



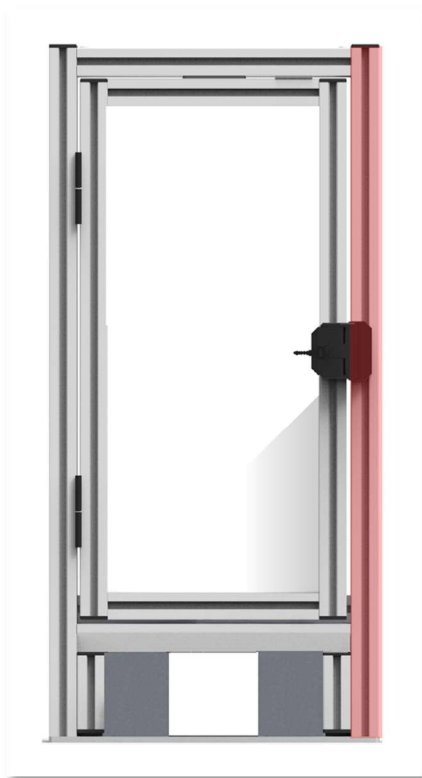
6.4 *xt* Console Installation

For *xt* systems, the console needs to be fitted to the guarding, instead of the test stand. This can be completed by following the steps below. Please note Steps 1 and 2 only apply to single column test stands; twin column test stands come with the Tee-slot nut fitted.



For single column guards, ensure that the guarding assembly has been mechanically secured to a stable work surface (as detailed in section 7), before fitting the *xt* console. This is to prevent the risk of toppling or tilting with the extra weight and work needed to fit the console assembly.

Step 1 - Remove the Top Cap



To prevent the console from being obscured by the guarding's door, it is recommended that the *xt* console is fitted to the right-front extrusion, (this is highlighted in the image above). Remove the top cap from the right-hand extrusion in the direction shown by the red arrow above.

Step 2 - Fitting the Tee-Slot Nut



Slide the supplied 10mm Tee-slot nut (part number 408-843) into the extrusion. Ensure that the Tee-slot nut is oriented, so the two M8 holes are at the top.



Position the nut as per the image above; this should be just above the door latch. Lock the Tee-slot nut in place using the two supplied grub screws provided into the holes highlighted above.

Step 3 - Secure the Console Bracket



With the Tee-slot nut in position, align the holes in the console arm mounting bracket with the M8 holes in the Tee-slot nut.



The image above shows the mounting bracket secured to the guarding's extrusion. When fitting, ensure the bracket is correctly aligned to the frame before securing it in place with the two supplied cap screws.

Step 4 - Fit the Console Arm



Fit the console arm to the rear of the mounting bracket using the two supplied countersunk Torx-head screws.



The image above shows the console arm and *xt* console correctly fitted to the guarding.



It is recommended that two people are used to fit the console; one to hold the console arm and one to secure the fixing screws. Improper handling could lead to damage to the equipment or injury.

Step 5 - Adjusting the Height of the Console



If the height of the console arm needs adjusting, unscrew both supplied socket cap screws and remove the mounting bracket with the console.



Slacken off the M5 grub screws using an Allen key and slide the bracket to the desired height. Tighten the grub screws and then refit the mounting bracket and console.

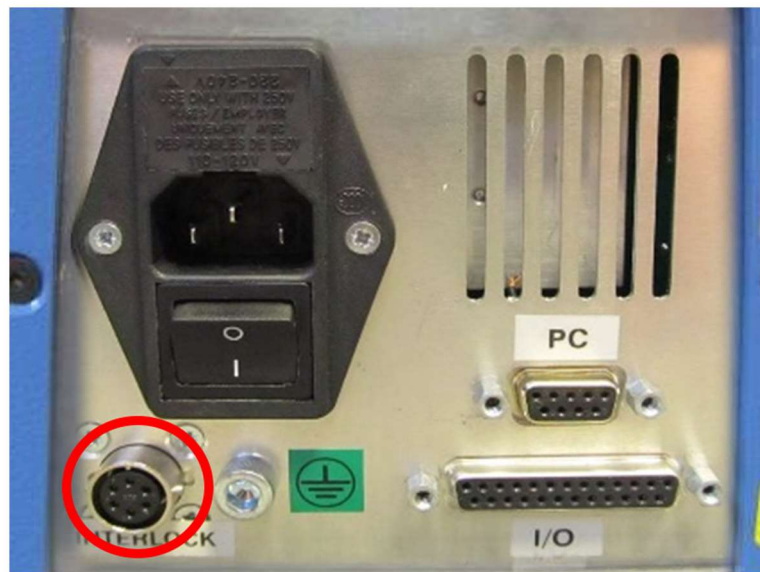


It is recommended that two people are used to fit the console; one to hold the console arm and one to secure the fixing screws. Improper handling could lead to damage to the equipment or injury.

6.5 Single Column Override Plug



Single column test stands below 5 kN use an override plug, instead of a key switch, to override the interlock circuit. The override plug is shown in the image above.



To override the guard and allow the use of the test stand without the guard's interlock function active, fit the override plug to the interlock socket located on the test stand's rear connectors panel, as highlighted in the image above.

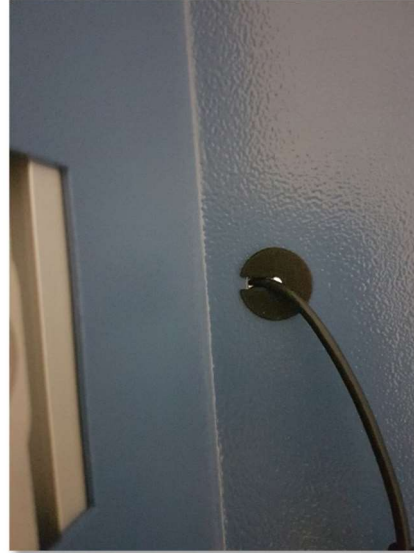
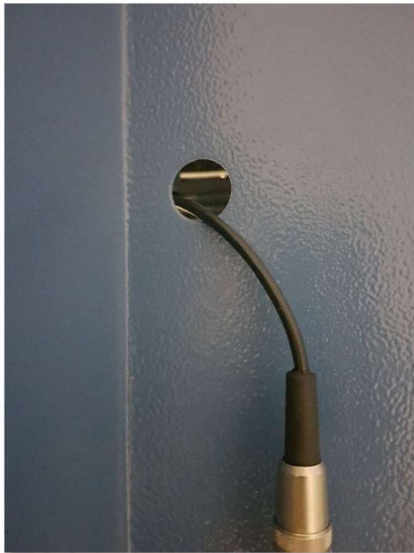
To activate the interlock guard, remove the override plug, ensuring it is stored in a safe location, and connect the guard's loom to the interlock socket located on test stand's rear connectors panel.

6.6 Twin Column Guard Bung

Twin Column Guards will be provided with a slotted guard bung pre-fitted to the side panel.



To allow a load cell cable to pass through, the bung will need to be removed by pushing it out from the inside of the guard. Once removed, pass the load cell cable through and re-fit the bung, as shown in the images below. Mecmesin strongly advises that the guard bung is left fitted to the side panel at all times during a test.



Remove any load from the test stand and ensure the power supply is switch off before removing the guard bung. Failure to do so could lead to damage to the equipment or injury.

6.7 Checking the Interlock Function and Operation

Once the installation is complete, the next step is to test the interlock circuit. First, ensure that all required cables have been connected to the machine and the device is switched on and ready to use. The interlock's functionality is described below.

A set of interlock keys are provided, these are used to enable and disable the interlock circuit.

For single column test stands below 5 kN, an interlock override plug is provided with the test stand. This is fitted to the MultiTest's rear panel connector to disable the test stand's interlock circuit instead of using a key switch.

6.7.1 Interlock Key Switch Set to '0' (Override Plug Connected)

With the key switch set to the '0' position (key horizontal), the interlock circuit is disabled and the guard door can be opened without error.

The test stand can be moved up or down freely and cannot be interrupted by the interlocked guard.

For single column test stands below 5 kN, the interlock override plug should be fitted in place of the guard's connector.

This will allow the system to be moved freely without interruption from the interlock circuit.



6.7.2 Interlock Key Switch Set to '1' (Interlocked Guard Connected)

With the interlock cable fitted and the key switch set to the '1' position (key vertical), the interlock circuit function is enabled.

For single column test stands below 5 kN, simply fit the interlocked guard's connector in place of the override plug.

Opening the door will inhibit the motor drive of the test stand, and a warning will be displayed on the front panel (OmniTest and *dV* test stands only) and software (if connected). The user can not move the machine. If a test is in operation as the door is opened, the test will be immediately stopped.



It is recommended that after successful completion of installation and training that the interlock switch is set to key position '1' (interlocked guard connected for MultiTest test stands below 5 kN).

The key (or override plug) should then be removed and given to an assigned supervisor or safety officer within the organisation and stored away. The key (or override plug) is still required for calibration and service requirements.







6.8 MultiTest-dV and OmniTest Interlock Function Test

The following section only applies to MultiTest-dV and OmniTest systems.

Work through the table below row-by-row setting the interlock key switch as per the first column and the guard door position as per the second column.

For MultiTest-dV test stands, fit the interlock override plug when the first column states a switch position of '0' and the interlocked guard's connector at switch position of '1'.

Next, invoke the test stand operation stated in the third column. This will involve either manually jogging the test stand or attempting to run a test. Check the error message and front panel status of the test stand against the 'Error Message' and 'Front Panel' columns:

Switch Position	Guard Door Status	Stand Operation	Error Message	Front Panel	VectorPro
0	DOOR CLOSED	JOG UP or DOWN	NONE		None
0	OPEN GUARD DOOR	JOG UP or DOWN	NONE		None
0	OPEN GUARD DOOR	RUN TEST	NONE		None
1	DOOR CLOSED	JOG UP or DOWN	NONE		None
1	OPEN GUARD DOOR	JOG UP or DOWN	INTERLOCK ACTIVE		Warning Message Displayed
1	OPEN GUARD DOOR	RUN TEST	INTERLOCK ACTIVE		Warning Message Displayed

Please refer to **Section 7.2.1** for more information relating to VectorPro warning messages.



Should any of the above checks fail to indicate the correct test stand state or operation, then consult your test stand's relevant user manuals. Seek assistance from a local agent or Mecmesin Technical Support if the fault cannot be rectified.

Failure to adhere to these checks could cause damage to both the end user and test equipment. It may also affect the warranty terms.

6.9 MultiTest-*i* Interlock Function Test

The following section only applies to MultiTest-*i* test stands.

Work through the table below row-by-row setting the interlock key switch as per the first column and the guard door position as per the second column.

Next, invoke the stand operation stated in the third column, this will involve either jogging the test stand in Emperor or attempting to run a test. Check any error message in Emperor against the 'Error Message' column in the table::

Switch Position	Guard Door Status	Stand Operation	Software Error Message
0	DOOR CLOSED	JOG UP or DOWN	NONE
0	OPEN GUARD DOOR	JOG UP or DOWN	NONE
0	OPEN GUARD DOOR	RUN TEST	NONE
1	DOOR CLOSED	JOG UP or DOWN	NONE
1	OPEN GUARD DOOR	JOG UP or DOWN	INTERLOCK OPENED
1	OPEN GUARD DOOR	RUN TEST	INTERLOCK OPENED

Please refer to **Section 7.3.1** for more information relating to Emperor warning messages.



Should any of the above checks fail to indicate the correct test stand state or operation, then consult your test stand's relevant user manuals. Seek assistance from a local agent or Mecmesin Technical Support if the fault cannot be rectified.

Failure to adhere to these checks could cause damage to both the end user and test equipment. It may also affect the warranty terms.

7. Operation

7.1 Scope of Use

Mecmesin interlocked guarding helps to provide additional ingress protection against foreign objects while also reducing the risk of an operator coming into contact with a moving test stand.

The guard is designed to be used in a dry, clean and tidy environment and should be placed on a stable and load appropriate work platform away from potentially hazardous environments or items.

Mecmesin motorised test stands are designed to be used while under constant supervision, the addition of an interlocked guard does not alter this requirement, failure to monitor a test stand in operation could lead to damage to the equipment or injury to others.

The interlocked machine guard has the following primary functions:

- Provide ingress protection to operators when using the machine. To prevent hand trap conditions or deliberate interaction with the test area during the test sequence.
- The ability to end a test sequence or ensure that the machine motor drive is inhibited if the interlock circuit is broken (door opened).
- Permanently enable/disable interlock function with a removable key or override plug.




Although the guarding's design will stop ejection of some materials, it is not designed to act as a shield against projectiles created during a test. The primary function of the guarding is to provide ingress protection.



Should there be a need to calibrate the machine, or perform maintenance or service tasks to be completed, the interlock can be disabled with appropriate authorisation.

7.2 MultiTest-dV and OmniTest Interlocked Guard Examples


Example 1

Switch Position	Guard Door Status	Stand Operation	Error Message	Front Panel
0	OPEN GUARD DOOR	JOG UP or DOWN	NONE	

In this example, the authorised user requires the door to be open while jogging the test stand. A scenario where jogging the machine with the door open may be beneficial is when first fitting a set of grips to the test stand.

As the interlock key switch is set to '0' (override plug connected for MultiTest-dV test stands), the guarding does not restrict the test stand's movement and the system can be jogged with the door open. If the interlock key switch is set back to '1' (interlock guard connected for MultiTest-dV test stands) the operator will be unable to jog the machine with the door open.


Example 2

Switch Position	Guard Door Status	Stand Operation	Error Message	Front Panel
1	OPEN GUARD DOOR	JOG UP or DOWN	INTERLOCK ACTIVE	

In this example, the operator is attempting to jog the test stand with the door open, but the stand will not move.

As the interlock system is active, the test stand is displaying the error message 'INTERLOCK ACTIVE'. The test stand's motor will remain restricted until the door is closed. Once the door is closed the error condition will disappear, allowing the test stand to be moved.

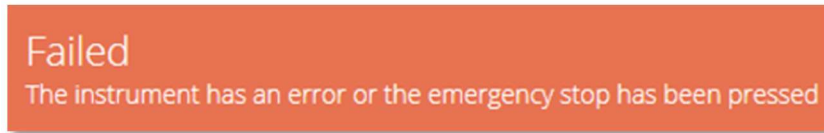
Example 3

Switch Position	Guard Door Status	Stand Operation	Error Message	Front Panel	VectorPro
1	OPERATOR OPENS DOOR	TEST RUNNING	INTERLOCK ACTIVE		Warning Message Displayed

In this example, the operator has opened the guard door while the test was running. As the interlock system is active, the test will immediately stop, and the test stand will display the following message 'INTERLOCK ACTIVE'. If the test stand is being used in conjunction with VectorPro, the data capture for the sample will be aborted and a warning message will be displayed. The motor drive will remain inhibited until the door is closed.

7.2.1 VectorPro™ - Warning Message

If the interlocked guard door is opened during a test (and the interlock system is active) the warning message shown below will be displayed:

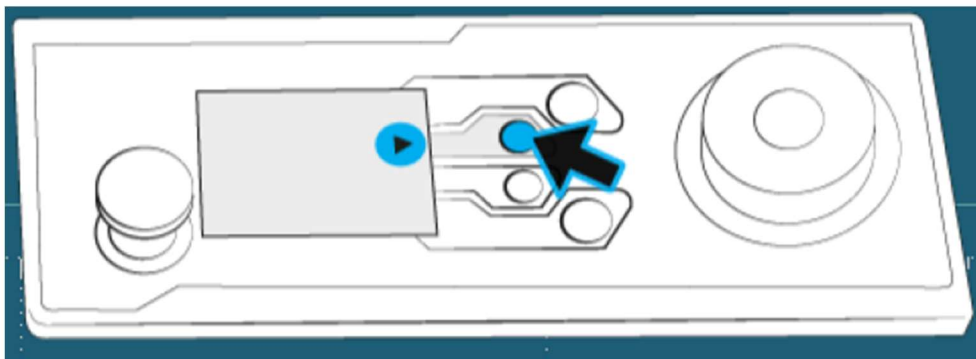


At this point, the test will be aborted, and the machine drive will be inhibited. Closing the guard door will remove the machine display panel error, but the test sample being recorded in VectorPro cannot be continued. The test is automatically aborted.

7.2.2 VectorPro™ - Pause Operation

When using VectorPro in conjunction with an interlocked machine guard, certain operations allow for the guard warnings to be overwritten. These timeline operations are in the 'Pause' section of VectorPro and they allow the door to be opened without aborting a test.

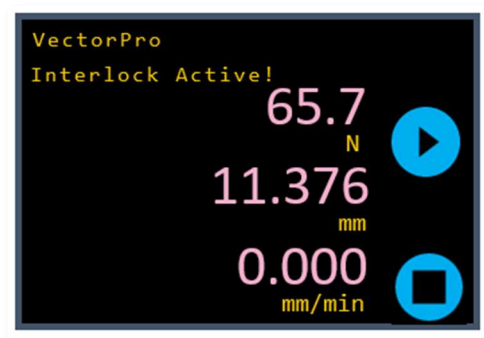
When a 'Pause' operation in the test timeline is reached, the test stand will stop and the window shown below is displayed onscreen. This indicates which button to press on the front panel to continue the test.



While the test is paused, the guard door may be opened and closed. Once 'Play' is pressed, the test will continue. If the door is left open when pressing 'Play', the test will immediately abort. Opening the guard door without a software 'Pause' active will also operate the interlock circuit in the usual manner.

During a 'Pause' operation, the following message will be displayed on the test stand's front panel when opening the guard; 'Interlock Active!'. This is shown in the image to the right.

For more information relating to 'Pause' operations, please refer to your VectorPro user manual.



7.2.3 VectorPro™ - Pause Operation Safety

When using a 'Pause' function in conjunction with a Mecmesin interlocked guard, the following information should be observed:



During a test, if the door is opened the test stand's motor drive will be halted. Potential high forces could still be applied in the specimen under test and risk of damage or injury could be present to the operator.



With the interlock enabled, should any part of the interlock circuit connectivity become faulty, then the interlock will fail in a safe manner and activate the standard warnings.



Should these warnings be active when the interlocking door is closed and the interlock is enabled, then seek assistance and do not proceed with any operations. Seek qualified help and arrange for service of the machine.

7.3 MultiTest-*i* and *xt* Interlocked Guard Examples

Example 1

Switch Position	Guard Door Status	Stand Operation	Software Error Message
0	OPEN GUARD DOOR	JOG UP or DOWN	NONE

In this example, the authorised user requires the door to be open will jogging the test stand. A scenario where jogging the machine with the door open may be beneficial is when first fitting a set of grips to the test stand.

As the interlock key switch is set to '0' (override plug fitted for single column systems) the guarding does not restrict the test stand's movement. The system can be jogged with the door open.

If the interlock key switch is set back to '1' (override plug removed for single column test stand and the guard loom connected) the operator will be unable to jog the machine with the door open.

Example 2

Switch Position	Guard Door Status	Stand Operation	Software Error Message
1	OPEN GUARD DOOR	JOG UP or DOWN	INTERLOCK OPENED

In this example, the operator is attempting to jog the test stand with the door open, but the stand will not move as the interlock system is active.

Emperor will display a pop-up window with the following message 'Emergency stop button pressed or interlock opened...'.

The test stand's motor will remain restricted until the error condition is removed. To re-enable the test stand's motor drive, close the door and press 'OK' on the pop-up window displayed in Emperor. See **Section 7.3.1** for more information.

Example 3

Switch Position	Guard Door Status	Stand Operation	Software Error Message
1	OPERATOR OPENS DOOR	TEST RUNNING	INTERLOCK OPENED

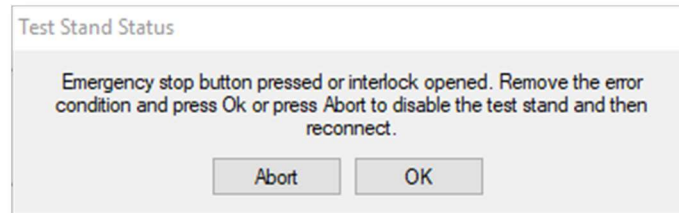
In this example, the operator has opened the guard door while the test was running. As the interlock system is active, the test will immediately stop, and the Emperor will display a pop-up window with the following message 'Emergency stop button pressed or interlock opened...'.

The test stand's motor will remain restricted until the error condition is removed.

To re-enable the test stand's motor drive, close the door and press 'OK' on the pop-up window displayed in Emperor. See **Section 7.3.1** for more information.

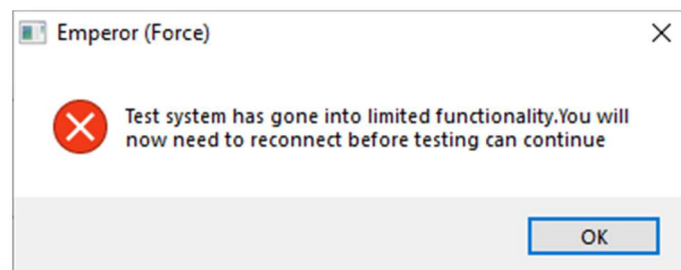
7.3.1 Emperor - Warning Message

If the interlocked guard door is opened (and the interlock system is active) the warning message shown below will be displayed:



At this point, the test stand's motor drive will be inhibited. If a test is in operation, it will be aborted. To re-enable the test stand's motor drive, close the door and press 'OK' on the pop-up window displayed in Emperor.

Pressing 'Abort' will disconnect the test stand and the message shown below will be displayed:



7.4 Responsible Use of Interlock Override

Overriding the guard interlock enables the door to be opened without interrupting the test stand's ability to move. Although the interlock should, typically, always be functioning (not overridden) there are some scenarios where the interlock may need to be disabled, examples include:

- **Test Setup** - When first setting up the test stand with grips and sample, it is often necessary to make several manual adjustments to the fixtures. In this scenario overriding the interlock enables better access and visibility of the fixtures, thus helping to reduce setup time when compared to the same procedure with the guard's interlock active. The interlock should be reactivated upon completing the setup.
- **Test Stand Servicing** - Certain service procedures will require the interlock to be overridden. Servicing is only to be undertaken by Mecmesin or an approved distributor.



A full risk assessment should be carried out for the process of operating the test stand with the interlocked guard overridden. Clear procedures should be defined to determine when it is safe to operate under these conditions.

8. Servicing, Maintenance and Repair

Once the guard is installed, it should provide a trusted long-term resource for safe and reliable testing.

8.1 Servicing

Mecmesin guards contain no user-serviceable parts and are designed to be service free.

Periodic inspection and maintenance such as cleaning and lubrication of hinges with a machine grade oil are recommended.

8.2 Maintenance & Cleaning

It is advised that periodic inspection of the outside of your guard is performed and your guard is cleaned to enable clear viewing of the test stand and to prevent the build-up of debris or dust.

To clean the guard first remove any loose debris with a soft brush, then wipe down the surfaces of the guarding using a damp cloth. A dry cloth may be used to dry surfaces and remove any watermarks.



Ensure that the mains power supply is disconnected from the test stand before cleaning any part of the guarding.



When cleaning, care must be taken to avoid corrosive liquids and abrasive tools. The polycarbonate glass sheets can scratch or discolour with certain cleaning products. Avoid the use of organic solvents or any other cleaning fluid.

8.3 Repair



If the guard fails or appears to behave unusually, contact your local supplier for support. Do not continue to use the test stand until the guarding has been inspected and, if necessary, repaired by Mecmesin or a Mecmesin authorised distributor.

Do not attempt any repairs without consulting Mecmesin or an authorised distributor, doing so may lead to injury, damage of equipment and loss of warranty.

9. Specifications

9.1 Single Column Test Systems

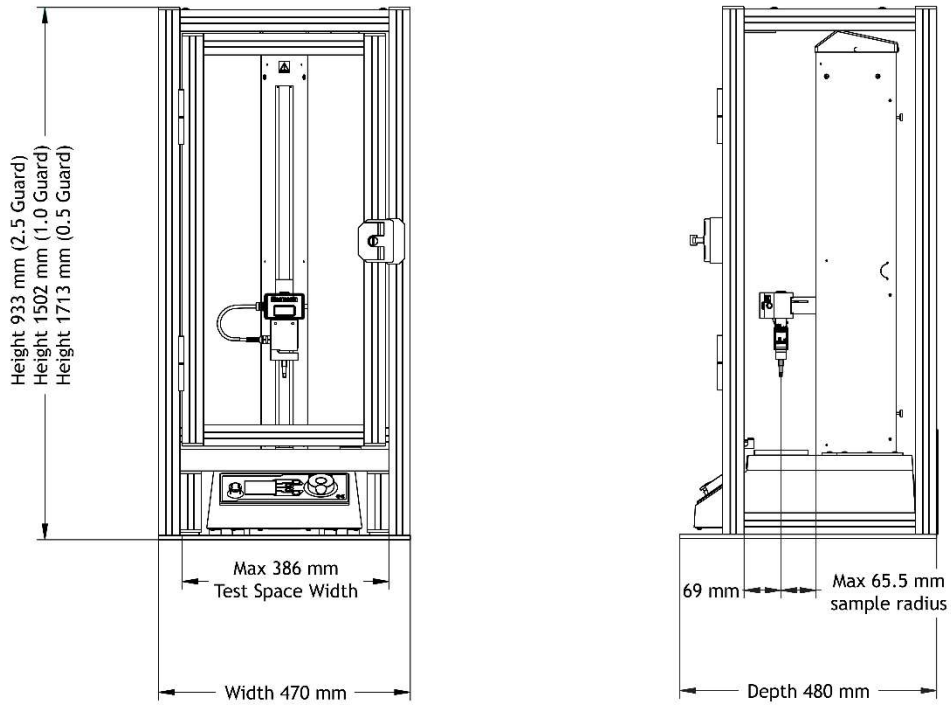
Machine Guarding	0.5	1.0	2.5	5.0
Guard part number	432-680	432-681	432-682	432-684
Compatible Mecmesin Test Systems	MultiTest 0.5- <i>i</i>	MultiTest 1.0- <i>i</i>	MultiTest 2.5- <i>i</i>	OmniTest 5kN
	MultiTest 0.5xt	MultiTest 1.0xt	MultiTest 2.5xt	OmniTest 7.5kN
	MultiTest 0.5- <i>dV</i>	MultiTest 1.0- <i>dV</i>	MultiTest 2.5- <i>dV</i>	
Dimensions				
Height	1713 mm	1502 mm	993 mm	1163 mm
Width	470 mm	470 mm	470 mm	500 mm
Depth (door closed)	480 mm	480 mm	480 mm	652 mm
Max Depth (door open)	803 mm	803 mm	803 mm	1015 mm
Weight (guard only)	42 kg	39 kg	30 kg	40 kg
Sample/Accessory Space				
Max Width	386 mm	386 mm	387 mm	420 mm
Max Diameter++	131 mm	131 mm	131 mm	180 mm (OmniTest 5.0) 134 mm (OmniTest 7.5)
Interlocking Device				
Type	Tongue-actuated position switch			
Installation of Guarding				
Approved Operator(s)	Authorised End-user or Mecmesin representative			
Environment Specification				
Operating temperature	10 °C to 35 °C			
Operating relative humidity	30% - 80 % (non-condensing)			

9.2 Twin Column Test Systems

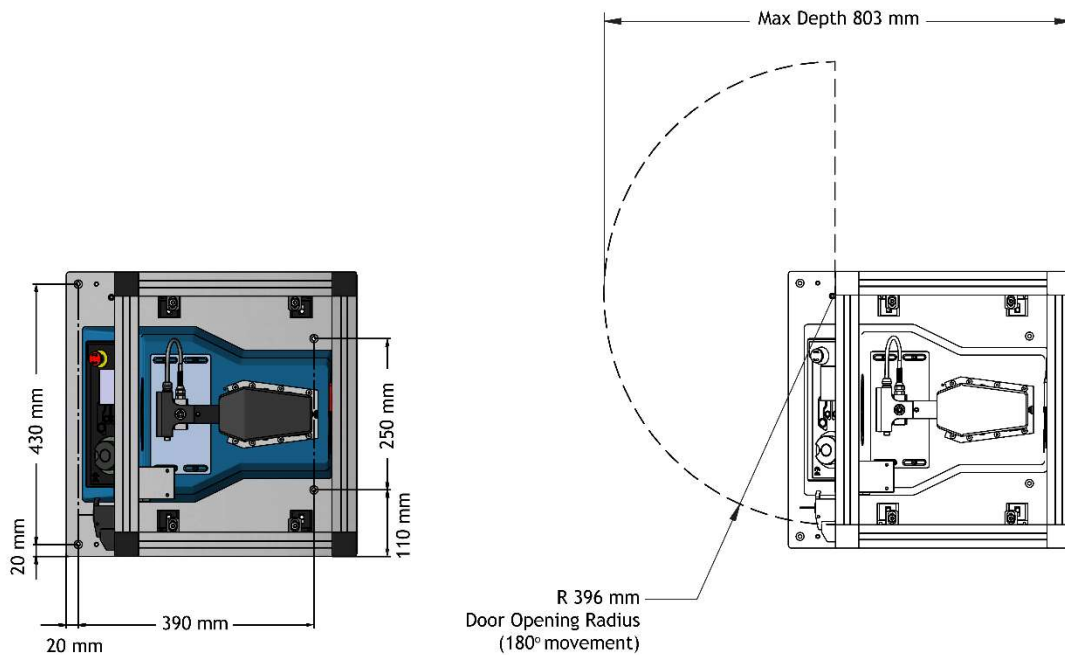
Machine Guarding	10	25.0	50
Compatible Mecmesin Test Systems - guards supplied fitted to test stand. Part number of complete test system shown in brackets	(805-017+G) MultiTest 10- <i>i</i> + <i>Guard</i>	(805-016+G) MultiTest 25- <i>i</i> + <i>Guard</i>	(805-023+G) MultiTest 50- <i>i</i> + <i>Guard</i>
	(815-004+G) MultiTest 10- <i>xt</i> + <i>Guard</i>	(815-005+G) MultiTest 25- <i>xt</i> + <i>Guard</i>	(815-006+G) MultiTest 50- <i>xt</i> + <i>Guard</i>
	(820-010+G) OmniTest 10kN + <i>Guard</i>	(820-025+G) OmniTest 25kN + <i>Guard</i>	(820-059+G) OmniTest 50kN + <i>Guard</i>
Dimensions			
Height	1500 mm	1500 mm	1931 mm
Width (excl key)	826 mm	826 mm	864 mm
Depth (door closed)	556 mm	556 mm	613 mm
Max Depth (door open)	1150 mm	1150 mm	1215 mm
Weight (system)	192 kg	192 kg	354 kg
Sample/Accessory Space			
Max Width	366 mm	366 mm	420 mm
Max Diameter	330 mm	330 mm	322 mm
Interlocking Device			
Type	Tongue-actuated position switch		
Environment Specification			
Operating temperature	10 °C to 35 °C		
Operating relative humidity	30% - 80 % (non-condensing)		

10. Dimensions

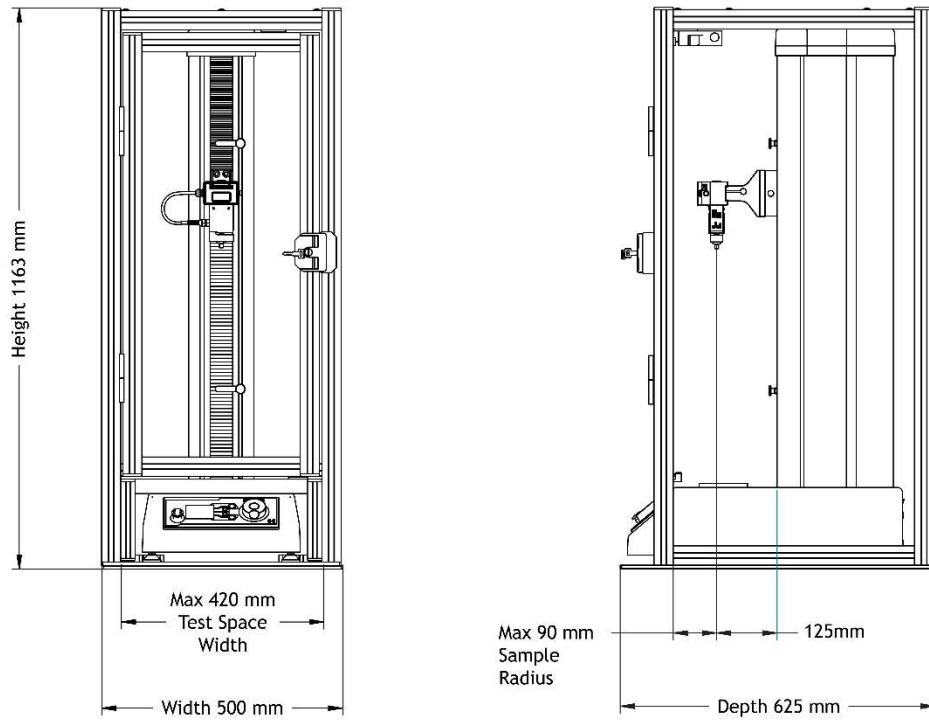
MultiTest Single Column



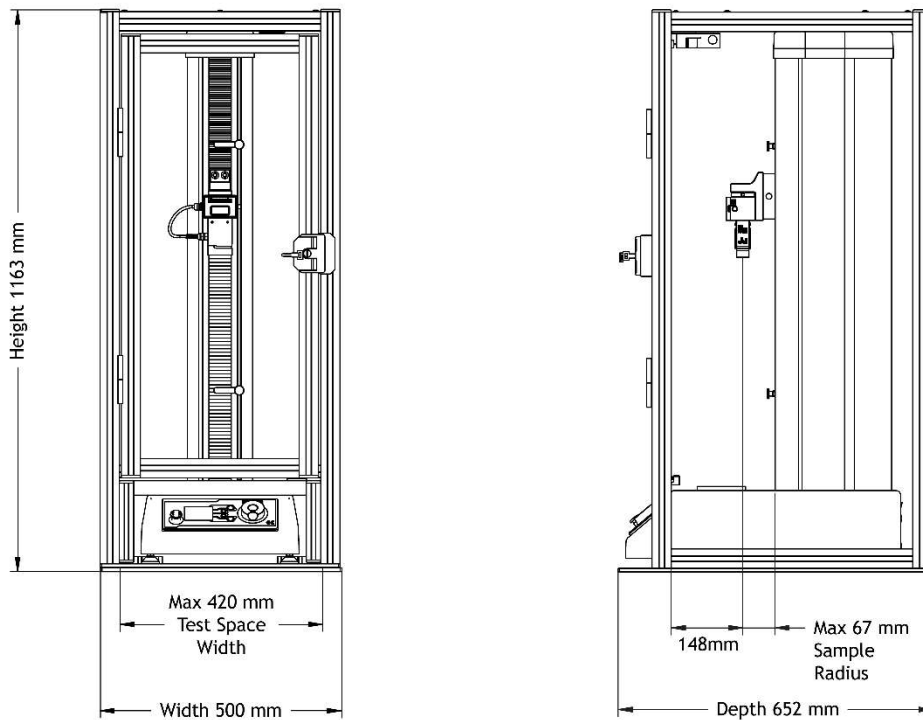
MultiTest Single Column



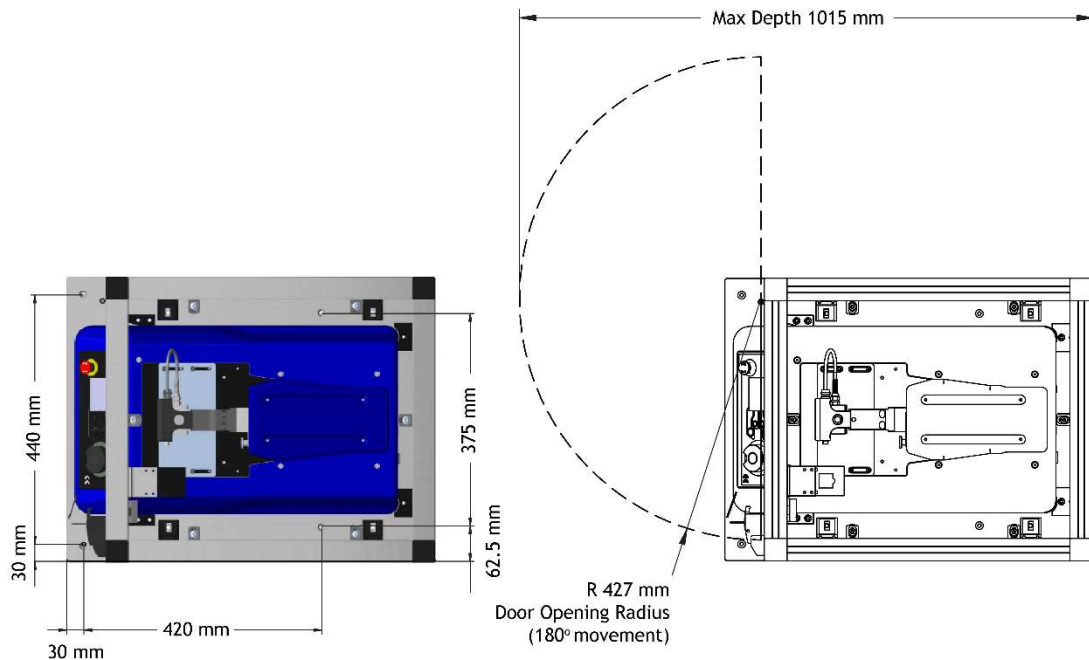
OmniTest 5.0



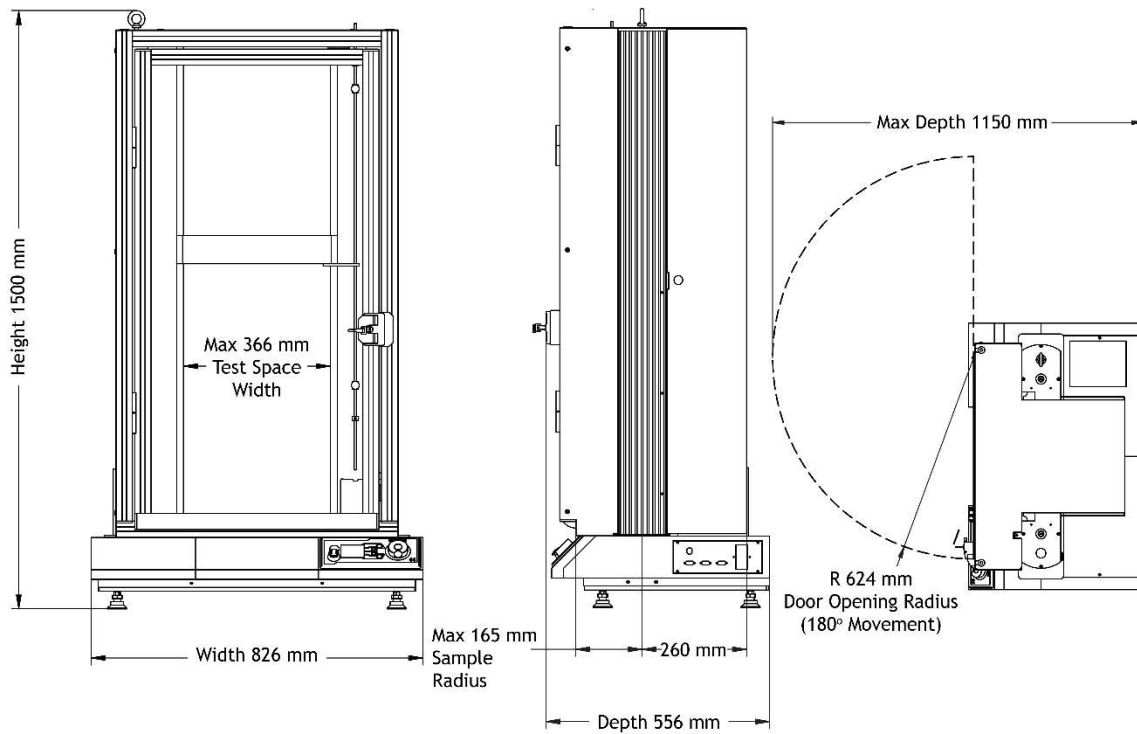
OmniTest 7.5



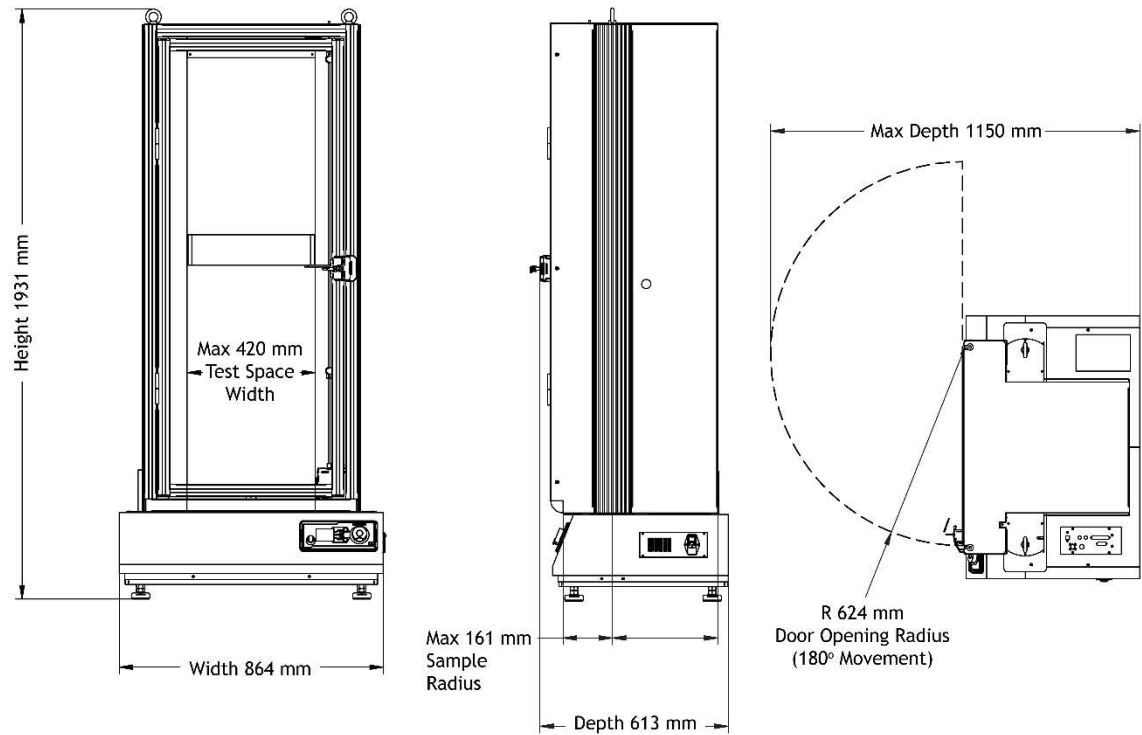
OmniTest Single Column



10 kN & 25 kN Twin Column



50 kN Twin Column



11. EC Declaration of Conformity

Mecmesin Ltd
Newton House
Spring Copse Business Park
Slinfold
West Sussex, RH13 0SZ
United Kingdom

Mecmesin
FORCE & TORQUE TEST SOLUTIONS

Date of Issue 14th June 2019

EC DECLARATION OF CONFORMITY

We confirm that the Technical Construction Files for the product(s) identified on this certificate comply with the essential safety requirements of the following EU Council directives. Technical documentation to support this is available from the above address.

- Machinery Directive 2006/42/EU

They were tested to the following standards and other normative documents:

- BS EN ISO 12100:2010 Safety of machinery - General principles for design -Risk assessment and risk reduction
- BS EN ISO 14120:2015 Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards
- BS EN ISO 14119:2013 Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
- BS EN ISO 13855:2010 Safety of machinery - Positioning of safeguards with respect to the approach speeds of parts of the human body
- BS EN ISO 13857:2008 Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs

Primary Product Name(s): 2.5 Standard Machine Guard

Derivative Product(s): 0.5 Standard Machine Guard, 1.0 Standard Machine Guard

Signed on behalf of Mecmesin Ltd



Technical Director: Patrick Collins
Place: Slinfold, GB



Registered in England No. 1302639

431-DoC32-01_L00

Mecmesin

testing to perfection

Mecmesin : a world leader in affordable force and torque testing solutions

Since 1977, Mecmesin has assisted thousands of companies achieve enhanced quality control in design and production. The Mecmesin brand represents excellence in accuracy, build, service, and value. In production centres and research labs worldwide, designers, engineers, operators, and quality managers endorse Mecmesin force and torque testing systems for their high performance across countless applications.

www.mecmesin.com

Algeria	Estonia	Lithuania	Slovakia
Argentina	Finland	Macedonia	Slovenia
Australia	France	Malaysia	South Africa
Austria	Germany	Mexico	Spain
Bangladesh	Greece	Morocco	Sri Lanka
Belgium	Hungary	Myanmar (Burma)	Sweden
Brazil	India	Netherlands	Switzerland
Bulgaria	Indonesia	New Zealand	Syria
Cambodia	Iran	Norway	Taiwan
Canada	Ireland	Paraguay	Thailand
Chile	Israel	Peru	Tunisia
China	Italy	Philippines	Turkey
Colombia	Japan	Poland	UK
Costa Rica	Korea South	Portugal	United Arab Emirates
Croatia	Kosovo	Romania	Uruguay
Czech Republic	Kuwait	Russia	USA
Denmark	Laos	Saudi Arabia	Vietnam
Ecuador	Latvia	Serbia	
Egypt	Lebanon	Singapore	

The Mecmesin global distribution network guarantees your testing solution is rapidly delivered and efficiently serviced, wherever you are.



FS 58553

Head Office - UK

Mecmesin Limited

w: www.mecmesin.com

e: sales@mecmesin.com

North America

Mecmesin Corporation

w: www.mecmesincorp.com

e: info@mecmesincorp.com

France

Mecmesin France

w : www.mecmesin.fr

e: contact@mecmesin.fr

Asia

Mecmesin Asia Co. Ltd

w: www.mecmesinasia.com

e: sales@mecmesinasia.com

Germany

Mecmesin GmbH

w: www.mecmesin.de

e: info@mecmesin.de

China

Mecmesin (Shanghai) Pte Ltd

w: www.mecmesin.cn

e: sales@mecmesin.cn