**Introduction**

This manual is issued to all Operators authorised to operate the Testometric Machine either as part of production or training. It's simple steps will enable all employees to train and operate in the same manner - therefore adhering to the most efficient method. All operations shall be performed in numerical sequence.

Any deviations necessary shall be reported to the Team Leader. All non-conforming product to the defined specification shall be reported to the Shift Manager/Team Leader. Throughout this specification blue text refers to Quality issues and red text refers to Health and Safety issues.

**Health and Safety**

At all times Health and Safety requirements shall take precedence whilst operating machinery and guards shall not be removed by Operators.

<table>
<thead>
<tr>
<th>Possible causes of injury</th>
<th>To reduce risk of injury</th>
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| (a) Crushing hands between moving tools  
(b) Cuts to hands when cutting samples | (1) Do not put hands around tools when machine in operation especially between the compression platens  
(2) Take care when cutting samples especially 3-point bend rigidity samples.  
(3) Take care changing blades in tool for compression samples |

AN EMERGENCY STOP IS PROVIDED ON FRONT OF MACHINE IF IN DIFFICULTY
To turn machine on:
Switch on at the mains. If machine is not operational, check emergency stop and reset if necessary

To switch off:
Use mains switch

Function keys:- Information Display, Speed, Sensitivity
Operational keys:- key pad

Changing tools:-
1. Detach the tool from the bottom of the load cell, by loosening locking nut and withdrawing the pin from the shaft.
2. Disconnect the lead at the rear of the control unit.
3. Whilst holding the load cell, undo the allen bolt on the top of the cross frame and remove the load cell.
4. To install a load cell do the reverse of the above.

The 500Kgf load cell is for Flat Crush
The 10Kgf load cell is for 3 Point Bend Rigidity

Load cells can be easily damaged. Ensure that correct load cell is in place BEFORE performing a test.
Platens and Rigs
1. Loosen the locking nuts on the bottom of the load cell and the top of the base.
2. Whilst holding the tool withdraw the pins from the shafts and lower the tool away.
3. To install a tool perform the opposite of the above.

To Change from Crush Test to 3 Point Bend Rigidity
1. Detach and remove the unwanted tool eg. flat crush platens.
2. Detach and remove the unwanted load cell.
3. Install the correct load cell.
4. Install the correct tool.
5. Refer to control panel:
   (a) Press the "options" key on the top right hand side of keypad.
   (b) Select Option 5
   (c) Select Cell/Mode
   (d) Answer "N" then "Y" to toggle the correct load cell.
   (d) Confirm "Compression Mode" by pressing "Y".
6. The machine is now ready to perform the desired test.
PROCEDURE FOR PERFORMING FLAT CRUSH TESTS

To prepare the instrument for testing flat crush:

(a) Check that the crush platens are attached firmly and that the correct load cell of 500 KgF is installed.

(b) Set the distance between the platens to about 1cm using the crosshead limit adjusters.

(c) In the open position Tare off the machine.

(d) Check that the sensitivity button is at about the 9 o'clock position.

(e) Check the speed is set to 10mm/min.

To prepare a sample for flat crush test:

There are 3 disc cutters 50sq cm, 20sq cm and 10sq cm under normal circumstances the 20sq cm cutter used -this size is shown on standard "flat crush template"
(a) Initially cut a disc using the 20sq cm cutter and take samples across a full width sheet. If in subsequent testing the display shows "overload", then cut all future samples with the 10sq cm sample cutter( it will then be necessary to change sample size on "template record".

(b) The number of samples taken is dependant on sheet size - minimum of 6 samples across width of sheet

**To perform a flat crush test:**

(a) Using the guide, insert the sample between the platens.

(b) Press the down operation key.

(c) Record the value of force at sample break.

(d) Press the "Fast Return" operation key

(e) Press the "End Test" function key

(f) Repeat stages (a) to (e) for the remaining samples

**PROCEDURE FOR PERFORMING 3-POINT BEND RIGIDITY TEST**

**To prepare the instrument for performing 3-point bend rigidity:**

(a) Check that the 3-point bend rig is installed correctly and that the correct load cell of 10Kgf is installed.

(b) Set the distance between the two lower supports to 100cm.

(c) Set the distance between the upper probe and the lower supports to about 1cm using the crosshead limit adjusters.

(d) In the fully open position Tare off the machine.

(e) Check that the sensitivity button is at about the 9 o'clock position

(f) Check the speed is set to 10mm/min.

**To prepare a sample for 3-point bend rigidity test:**

(a) Using a 25mm wide steel rule cut 25mm wide strips along the flute direction and across the flute direction. Make each strip at least 150mm long.
(b) Take 6 sample strips of each direction across the width of the sheet under test.

**To perform a 3-point bend rigidity test:**

(a) Rest a sample strip on the two supports as squarely as possible, leaving equal amounts protruding at both ends.

(b) Press the down operation key.

(c) Record the value of force at sample break.

(d) Press the "Fast Return" operation key.

(e) Press the "End Test" function key.

(f) Repeat stages (a) to (e) for the remaining samples.

**Recording your results**

Attached are examples of the standard results forms. The results can be transferred from the machine into the "flat crush" or "3-point bend" test directory of 1.2.3 Windows on the computer and filed in the memory under "save as". A print out is to be taken after each batch of tests and put in the archive file.