

LAARMANN[®]

Innovators in Solids



PENETRATION TEST USER MANUAL

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PENETRATION TEST MANUAL

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1 Safety Information

Before using the machine, make sure to read and understand this manual thoroughly. Keep the manual close to the machine, easily accessible to all the users. Improper operation can cause injury to persons or damage to the equipment.

1.1 Warning symbols



This symbol indicates a potential risk and alerts you to proceed with caution.



This symbol indicates the presence of high voltage and warns the user to proceed with caution.



This symbol indicates risks of sharp parts.

1.2 Warning symbols



Safety instructions

Claims for damages in any form whatsoever, for injury to persons or damage to the machine, caused through non-observance of the following safety instructions, are excluded.



Use according to the intended purpose

Do not make any alterations to the machine and use only approved spare parts and accessories. Otherwise the Declaration of Conformity will lose its validity and this will also lead to the loss of any guarantee



Transport

Do not knock, shake or throw the TML penetration test machine during transport. Otherwise the electronic and mechanical components may be damaged.



Packing material

Please keep the packing material for the duration of the guarantee period. In case of a complaint and return of the machine in unsuitable packing material, your guarantee claim will be lost.



Temperature variations

If the TML penetration test machine is subjected to high temperature variations, protect it against condensed water. Otherwise the electronic components may be damaged.



Ambient temperature

If the temperature drops below 5°C or exceeds 40°C, electronic and mechanical components can be damaged. Performance can be changed to an unknown extent.



Electrical connection

If the values for the mains power supply on the name plate are not observed, the electrical and mechanical components may be damaged.



Repair

For your own safety, repairs must be carried out only by authorized service technicians.

2 General description

A penetration test is used to determine whether the Transportable Moisture Limit has been reached. The sample is placed in a cylinder with a weight placed on top and then vibrated. If the weight sinks the sample has a low shear strength. The Flow Moisture Point is determined on the basis of the penetration depth of the weight.



3 Technical features

3.1 Construction

The housing of LMTML is made of steel plate varnished with powder coating RAL5005. All other accessories are according to the norm. Control box is according to IP66 protection level and is equipped with a digital screen.

3.2 Technical data

Dimensions W x D x H	600 x 500 x 1150 mm
Power supply	220/240 V 60 Hz
Rated power	300 W
Weight	90kg
Speed setting	1600 – 4006rpm
Time setting	0 - 60 minutes
Cylinder inner diameter	194mm (large) 146mm (small)
Cylinder wall thickness	10.3mm (large) 9.6mm (small)

4 Installation

4.1 Unpacking

Before the installation, carefully examine the delivery for possible damage or missing parts. Open the box and take the machine out of the box. Check that the machine has not been visibly damaged during the transport.

Please keep the packing material for the duration of the guarantee period. In case of a complaint and return of the machine in unsuitable packing material, your guarantee claim will be lost.

Check that the main cord is compatible with the local standard, or connect a local plug to the machine.

If any kind of damage occurred during transport, immediately make a complaint to the carrier. Any incorrect delivery or missing parts should be reported to the dealer.

4.2 Safety

When selecting the right place for the machine, please consider the following:

- Put the device on smooth and stable surface.
- Leave enough space beyond the device.
- Mount the controlbox to a safe place for exaple on the wall
- Leave enough space around the device, that you will easy control and maintain it.
- Don't use the device in surroundings, where there are fast temperature and humidity changes. Also avoid places exposed to direct sunlight and places nearby heating devices.
- Avoid places, where the possibility of shocks and vibrations exists.

4.3 Connecting the power cord

The correct voltage and frequency for the LMTML are given on the name plate. Ensure that these values correspond to the available power supply system. Connect the power cord to a grounded wall socket.

To avoid interference from noise, surges and spikes, a dedicated line is preferred. If no such line is available, avoid lines to which powerful electric motors, refrigerators and similar devices are connected.

4.3 Assessoires



large and small cylinder with an inner diameter 194mm (large) 146mm (small) Cylinder wall thickness 10.3mm (large) 9.6mm (small) and with and tools to mount them

5 Unpacking details

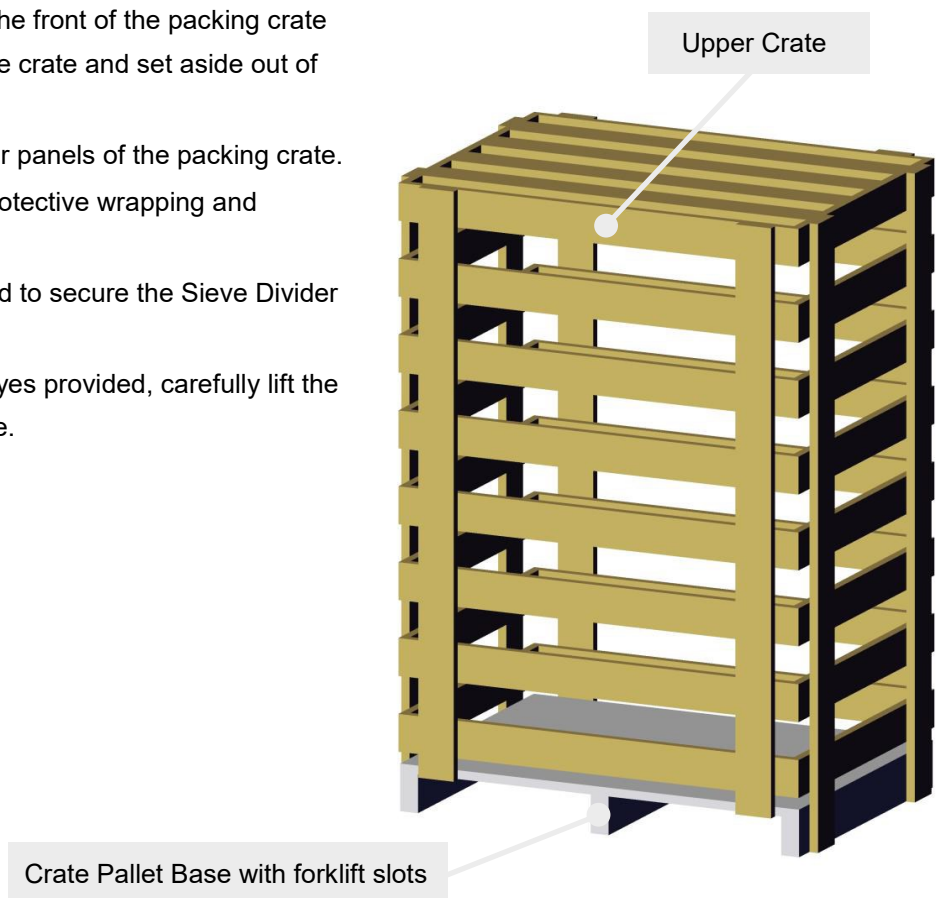
5.1 before unpacking

Prior to unpacking, make a visual inspection of the packaging for transit damage. If any damage is evident, advise the transport company at the time of delivery or take photos and notes to forward to your supplier or LAARMANN in case more serious damage is detected once the machine is unpacked.

5.2 Unpacking

On delivery, the device is screwed onto the transport pallet. Remove the screws from the transport pallet. Using a forklift, lift the Sieve Divider up. Always use the forklift to lift and move the Sieve Divider. Placing the Crusher close to the installation point, prior to unpacking, will prevent unnecessary moving and therefore reduce the risk of injury. In summary, please follow the next steps after receiving the machine

- Ensure a visual inspection upon delivery and take note of any damage that may have taken place.
- Remove the screws that hold the front of the packing crate in place, release the front of the crate and set aside out of the way.
- Remove the top, sides and rear panels of the packing crate.
- Carefully remove the plastic protective wrapping and discard.
- Carefully cut the strapping used to secure the Sieve Divider to the crate base and discard.
- Using a forklift and the lifting eyes provided, carefully lift the Sieve Divider off the crate base.



Typical open slat type packing crate.

6 Transport

6.1 General transport information

Guarantee or compensation claims are null and void when the damage has been caused by improper transport or improper handling. Examine the TML penetration test machine for any signs of transport damage immediately after transport, have any such damage acknowledged in writing by the carrier, inform the insurance company and the supplier.

6.2 General safety instructions

Check as follows:

- Check all fixing screws
- Check all safety fasteners.

Check electric system (only by an electrician)

- Operating voltage using a voltmeter
- Electrical fuses
- Check electric cables for any signs of damage
- Check connections

6.3 Erection site

The machine can be easily moved within the laboratory or the workshop. The following points must be observed at the erection site of the machine:

- A constant temperature must be guaranteed. It should not be under +5°C or above +40°C.
- The humidity may not exceed 85% continuously.

6.4 Storage

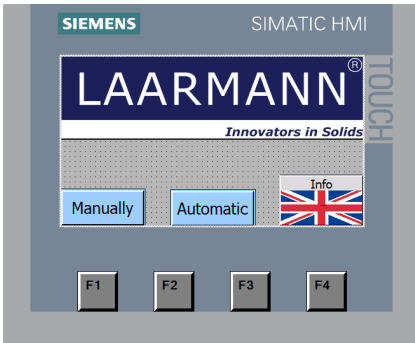
The TML penetration test machine is to be stored in a dry room. Protect from the damp, from a corrosive atmosphere and from temperatures below +5°C and above +40°C.

6 Overview



Parts	Name	Function
A	TML penetration test tool	The main tool that is used for the penetration test
B	Safety lock	Mixing and grinding material, scraping down the material from the mortar
C	Emergency break	Emergency break
G	Control panel	Used to control machine with time settings or direct start up
H	Mounting tool	To mount the control box to the wall for example
I	Anti vibration stands	For reducing the vibration on the table or desk
J	Cylindrical vessels	To place the material into

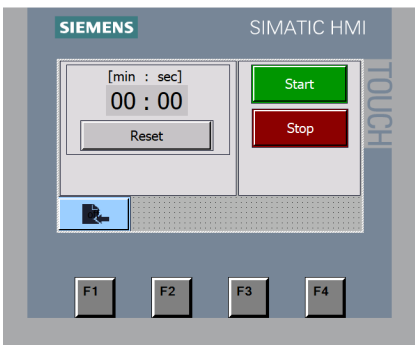
7 Operating the machine



Starting Screen

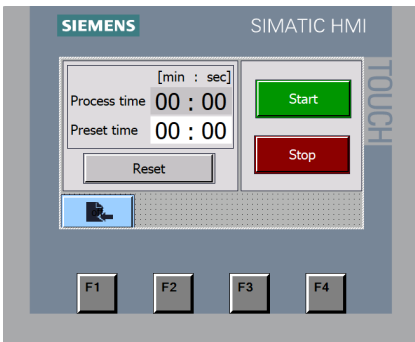
This is the starting screen for the installation.

Starting screen: Here you can select Automatic or Manual control mode. The info button takes you to the information page.



Manual control

Press start/stop for starting/stopping the machine. The elapsed time since starting the machine will be shown, and can only be reset to zero when the machine is off.



Automatic control

Press start/stop for starting/stopping the machine. The process time will be shown, and can only be reset to the preset value when the machine is off. The preset time can be adjusted only when the machine is off. When the process time has elapsed the machine will stop automatically, and then can only be restarted once the process time has been reset.



In case of this message, please check all the emergency stops and verify that the installation doors are correctly closed.

To release the emergency stop you need to turn it and it will come up.

After verifying that all stops are checked press the message to continue.



Reset the fault by pressing the screen. If the fault is still active the appropriate screen will re-appear.



TML Penetration test

Product	Penetration tester
Power supply	220-240V - 50/60Hz

This declaration of conformity confirms compliance of the above mentioned equipment to the relevant sections of the following European Directives:

91/368EWG	European machine guideline
73/23/EWG EC	EC Low Voltage Guidelines
EN 292, 294, 418	Safety guidelines
VBG 1,4,5 en 22	General electrical facilities
89/336/EEC	Electromagnetic Compatibility Directive (EMC)
EN 5008-1-1992	Emissions
EN 50082-1-1992	Immunity
EN 60204-1 Part 1	Safety of Machinery – Electrical Equipment of Machines

WARNING:

This equipment is required to be operated strictly in accordance with the instructions given in the operating manual supplied with the product. All supply voltages and frequencies as stated on the rating plate must be used. External power cables and connectors must be supplied by LAARMANN. Any additional equipment used must be of a type approved by LAARMANN. This conformity certificate will lose its validity in case of:

- Usage of unlicensed spares
- Usage of unlicensed accessories
- Any self made modifications of the machine