

**INSTRUCTION MANUAL FOR THE
ASPHALT ROLLER COMPACTOR
(ARC)**



ASPHALT ROLLER COMPACTOR (ARC)

Asphalt Mixture Slab
Compaction System

Rev 3, Copyright March 2016



Innovators in Instrumentation Technology

Rev.	Description	Edited/Managed	Approved	Cod.Ident.	Page	Date Ed.
03	Operation Manual	Technical Office	Tech. Manager	B039.M01.EN.02	3/50	03/2016

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Chapter 1 GENERAL INFORMATION

1.01 WARNINGS

The manufacturer does not accept any responsibility for direct or indirect damage to people, property or the environment for using the machine in a manner different than the conditions described in this manual. The manufacturer reserves the right to make changes to the information in this manual without advance notice. Check that the machine meets the standard requirements (in-house, state, or national) developed for this machine.

Carefully read the entire manual before operating the machine. It is vital to know the information and limitations contained in this manual to ensure safe, correct operation of the machine. The operator must be knowledgeable of the machine's operations and mechanisms. All necessary preventive maintenance for the machine is the operator's responsibility.

Service is only permitted if the operator is competently trained. Safety, reliability and optimum performance is guaranteed when using original parts. Any tampering or modifying of the machine (electrical, mechanical or other) which has not been previously authorized in writing by the manufacturer is considered abusive and absolves the manufacturer from any responsibility for any resulting damage.

The purchaser must ensure that operators are trained and aware of all the information in the supplied documentation. The operator must be informed and therefore aware of potential risks when operating the machine.

1.02 WARNING AND DANGER INDICATIONS - SIGNS

The machine has been designed and constructed according to the current safety standards. Therefore, it has mechanical and electrical safety devices designed to protect the operator or user from possible physical damage. Residual risks during use or in some intervention procedures on the device are however present. Such risks can be reduced by carefully following manual procedures, using the suggested individual protection devices and respecting the legal and safety norms in force.

This manual includes "Warning" and "Danger" indications in relevant chapters. These indications are shown with the words "Danger" or "Warning" in bold font and uppercase to make them highly visible.

	WARNING	Indicates that the machine could be damaged if the warnings are ignored.
	DANGER	Indicates that the machine could be damaged and/or a worker injured if warnings are ignored.

"**DANGEROUS ZONE**" indicates any zone inside or in the proximity of the appliance in which a person is exposed to a risk of injury or damage to health.

1.03 AIM OF THE INSTRUCTION MANUAL

This manual has been developed to provide machine operators with the necessary information for installation, use and maintenance for the life of the machine. It is written to be comprehensive as possible.

IMPORTANT: The manual does not substitute for experience and technical training of the operator. It must be considered a guide for operating the machine. Furthermore, the rules and safety procedures for correct use of the machine and/or test performance can be found in this manual.

All the procedures regarding foreseeable emergency situations have been listed by the manufacturer and can be verified during use.

This manual has been written for machine operators. They are responsible for operating the machine themselves or provide careful oversight to another user to prevent injury to the operator and damage to the machine. The instruction manual must be carefully consulted by laboratory or site safety managers, equipment operators and any internal and external maintenance workers. The manual is integral to the product and refers to this machine only. The manual must be safeguarded and kept near the equipment so that it can be easily consulted whenever necessary. This responsibility is entrusted to the installer and Laboratory or Site Manager where the machine is installed.

The manufacturer is available to provide further information.

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1.04 STRUCTURE OF THE INSTRUCTION MANUAL

The manual can consist of a number of documents, as shown in the table of contents.

Verify that all documents are present; otherwise request the missing parts from the Manufacturer before using the machine.

Instructions can be supplied with enclosures containing diagrams and designs, which are necessary for understanding the correct machine use and maintenance.

1.05 MODIFICATIONS AND ENCLOSURES OF THE INSTRUCTION MANUAL

This manual reflects the configuration of the machine at the time the machine was sold. If any modifications, improvements or adjustments have been made since then, the Manufacturer does not have to change this manual.

1.06 MANUFACTURER IDENTIFICATION

MODEL: B039

PRODUCTION DATA: see EC declaration

INSTRUCTIONS MANUAL CODE: B039.M01.EN.03

1.07 EC STAMP

SEE EC DECLARATION

1.08 USAGE

The Asphalt Roller Compactor (ARC) is an electromechanical compactor for producing asphalt mixture slabs. The ARC is the best and closest method to simulate road compaction; this machine allows users to produce asphalt slabs with a thickness ranging between 25 and 150 mm with characteristics very similar to those of an actual road layer. Slabs are compacted up to a selected density or height to obtain specimens compatible for wheel-tracking tests such as the InstronTek SmarTracker.

The ARC is to be used exclusively for the purpose for which it has been conceived. Any other use is considered improper and therefore negligent. The use of the roller compactor is allowed only in places free of potential sources of explosion or fire.

Before and during operations, check for dangerous conditions. Immediately stop the machine if it is working improperly, and consult the authorized dealer's Service department. It is the Client's responsibility to verify at installation and during normal use the machine is used as described in this manual. Refer to the manufacturer when in doubt.

1.09 OPERATORS

	<p>WARNING DANGER</p>	<p>The use, transportation, installation, maintenance, demolition and disposal of the appliance are only permitted by "QUALIFIED PERSONNEL". This manual is exclusively aimed at "QUALIFIED PERSONNEL" and contains the necessary information for machine use.</p>
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"QUALIFIED PERSONNEL" means people who, due to their training, experience and education, as well as knowledge of the relevant standards, limitations and measures, have been authorized by the "PLANT SAFETY MANAGER" to carry out any necessary activity and are able to recognize and prevent possible dangers.

The manufacturer recommends that the instructions, procedures and recommendations in this manual and the work safety legislation in force be followed carefully, including the use of appropriate personal protection equipment (PPE) (whether individual or part of the machine).

Knowledge and respect of the instructions, safety warnings and danger in this manual are all necessary for installation, operation, management and machine maintenance with a minimal risk.

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The "PLANT SAFETY MANAGER" has the following responsibilities and duties:

- To know the machine functions, its commands, safety and protection devices, possible dangers of use and all the information in this manual in detail. This knowledge can only be learned from detailed reading of this manual.
- To know in detail the safety regulations in force on how to operate the machine
- To recognize the "QUALIFIED PERSONNEL" for transportation, handling, installation, use, maintenance, disposal, etc.
- Correctly train and educate the "QUALIFIED PERSONNEL" before allowing them access to the machine. The personnel must also be exhaustively trained with regards to the machine's protection devices.
- Ensure the machine's safety devices are not tampered with or removed and are checked on a daily basis. Provide the operator appropriate individual protection devices according to the laws in force.
- The manufacturer is available for clarification, assistance and training and declines all responsibility for damage to things or people resulting from improper, incorrect and negligent use by untrained personnel.

1.10 STORAGE



WARNING

The appliance must be stored in the original packaging and in a closed environment, protected from weather with a minimum temperature of 5°F, and a maximum of 140°F and a maximum humidity of 70%.

1.11 TRANSPORTATION AND MOVEMENT



WARNING

In order to avoid irreparable damage to the machine, move it with care, do not overturn, protect from rain, do not stack, protect the packaging and its contents from bumps and sources of heat.

During transportation and movement, it is important to avoid bumps, overloading with other packages, exposure to freezing or hot environments, or any other potentially harmful condition to the device, things or people. Machine transportation and movement must be entrusted to Qualified Personnel who can ensure safe and proper movement.



WARNING DANGER

Do not transport or move the product if it is impossible to comply with the conditions on the packaging or in this manual. If there are any doubts, request information from the manufacturer.

1.12 REMOVING PACKAGING

After removing the packaging, check the machine matches the order and that there are no visibly damaged parts. DO NOT USE THE ASPHLT ROLLER COMPACTOR and contact the manufacturer when in doubt.



DANGER

The components used for packaging (plastic bags, polystyrene, nails, screws, wood, etc.) must be kept out of reach of children, as they are sources of danger. These components should be placed in the appropriate containers.



WARNING

In order to avoid bumps and overturning, adopt the following precautions: Before disposing of the packaging check all machine components such as accessories, utensils, instructions, documents, etc. have been removed.

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Chapter 2 TECHNICAL CHARACTERISTICS

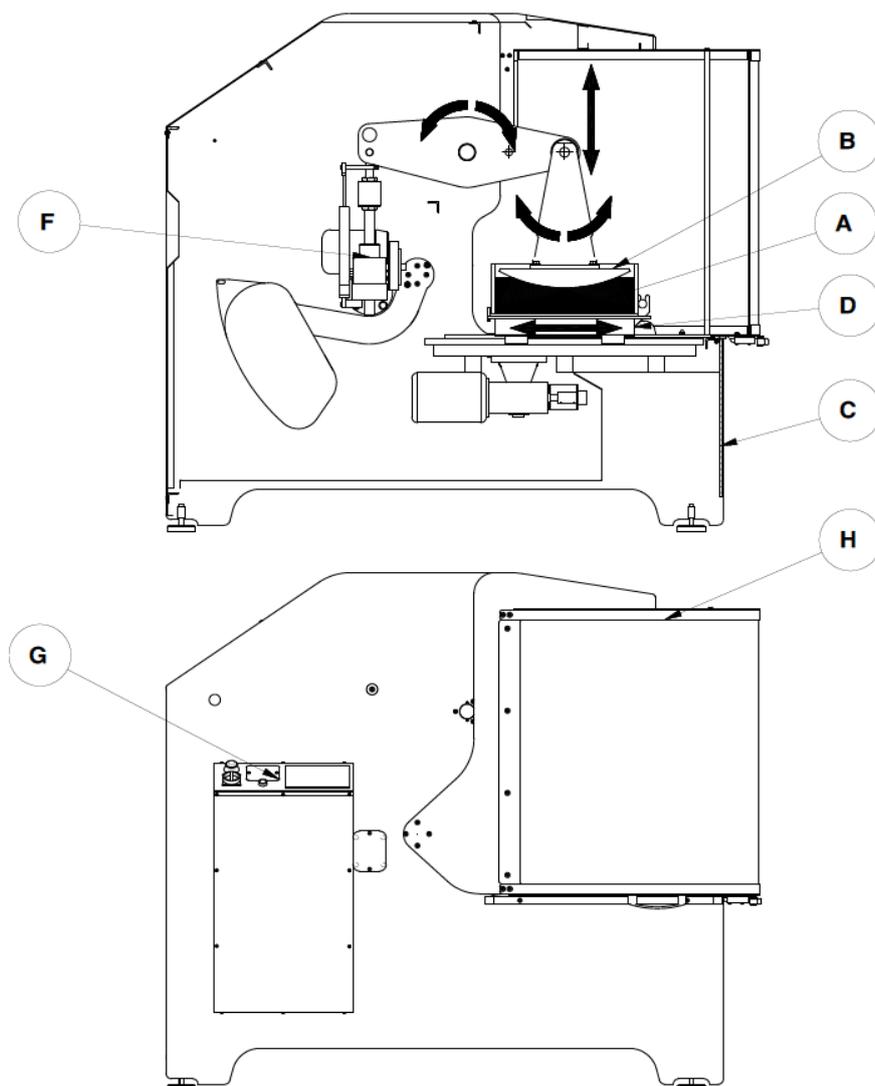
2.01 GENERAL MACHINE DESCRIPTION

The InstroTek Asphalt Roller Compactor (ARC) (picture 1) is designed and manufactured to compact slabs of asphalt (bituminous) mixture to a specified density or height. The machine applies constant or gradually increasing loads to the mixture, contained in a mold "A", by using a section of a roller "B" or the roller compactor foot with alternating movements that simulate the compacting action of an actual steel-wheeled roller used for paving real roads..

The ARC is mechanically operated by an electronic control panel; it consists of a stiff frame "C" equipped with the following parts:

- Sliding cart "D"
- Compacting roller "B" with lever-load group "F"
- Control panel "G"
- Lid "H" equipped with safety switch.

Compaction features and parameters can be set using the control unit located on Compactor's side. Mold movement, slab thickness and load applied by the roller are measured and displayed in real time during compaction operations. Once the target density or thickness of the slab is reached, compaction stops automatically. The control unit controls all compactor functions, displays and registers all data collected during compaction and makes them available for download to a PC.



PICTURE 1

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SPEED OF MOLD DISPLACEMENT	6 m/min (19.5 ft/min)
MAX COMPACTION LOAD	40 kN (9,000 lbf)
MIN COMPACTION THICKNESS	1 inch (25 mm)
MOLDS AVAILABLE FOR THIS MODEL	B038-09 (320x260x180) B038-10 (305x305x50) B038-11 (305x305x100) B038-12 (305x400x50) B038-13 (305x400x50) B038-18 (400x500x180) B038-19 (305x400x120) B038-20 (320x260x50)

Minimum slab height

A slab can be compacted to a minimum height of 25 mm in each mold. To obtain a height less than 25 mm it is necessary to put a reduction plate inside the mold (available upon request).

Maximum slab height

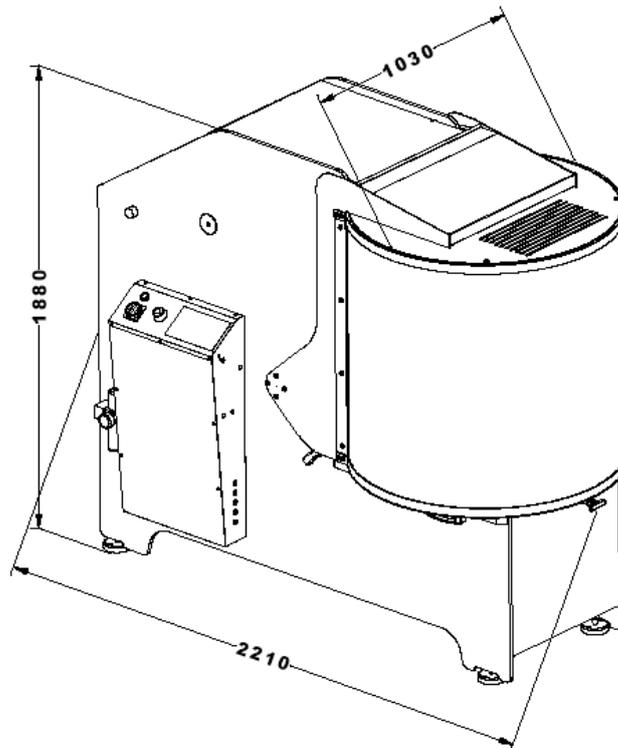
The maximum height of a compacted slab is equal to the height of the mold used for the test minus the compaction % the operator would like to apply.

NOTE: the compaction height of the slab cannot equal the height of the mold used for the test because this would mean that the asphalt mixture had not been compacted!

Intermediate heights between the minimum and maximum described above can be obtained with appropriate quantities of asphalt mixture based on the calculated bulk density.

2.02 DIMENSIONS AND WEIGHT

LENGTH	2210 mm (87 inches)
WIDTH	1030 mm (41 inches)
HEIGHT	1880 mm (74 inches)
WEIGHT	1600 kg (3520 lbs)



PICTURE 2

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2.03 ELECTRICAL REQUIREMENTS

The complete identification data and the electrical features are reported on the ID label placed on the Roller Compactor.

VOLTAGE	230V
PHASE NUMBERS	1
FREQUENCY	50/60 Hz
POWER	3600 WATT



2.04 NOISE

The noise levels shown do not necessarily imply the levels of exposure to the worker. The level of exposure to the operator is linked to the emission levels of the appliance; however other factors influence the levels of exposure to the operator: length of exposure, environmental characteristics, the presence of other machines, etc.

The appliance emission levels provide an estimate of the dangers due to noise.

	DANGER	Continuous use of the machine may heighten the daily personal exposure to noise.
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The noise emissions produced by the roller compactor during use are not disturbing and, therefore, not considered a danger for the operator's health. Individual safety devices are not required.

If the daily personal exposure is equal to or more than 85 dB (A) it is advisable to use the Individual Protection Devices (protective headphones, plugs, etc.). If the daily personal exposure is equal to or more than 90 dB (A) it is compulsory to use Individual Protection Devices (protective headphones, plugs, etc.). For further information consult the standards in force in the country of installation.

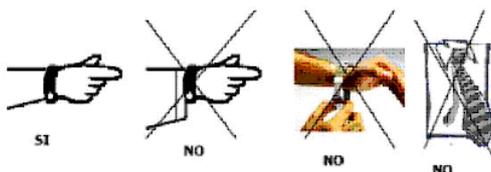
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Chapter 3 GENERAL SAFETY STANDARDS

3.01 GENERAL STANDARDS

To ensure the safety of the machine operators:

- Any tampering with the machine not pre-authorized by the manufacturer exempts the manufacturer from any responsibility for damage caused to or by it.
- The removal or tampering with safety devices is a violation of the safety standards.
- Machine use is only allowed in areas where there is no risk of explosions or fires.
- Only the original fittings can be used. The use of different fittings releases the manufacturer from all responsibility.
- Check that the appliance is in ideal working conditions and that its parts are not worn or faulty before carrying out all necessary maintenance
- Do not wear loose clothing, ties, chains or anything else which could become caught in the frame or other moving parts of the appliance.
- Be aware of the danger of electrical shocks from direct or indirect contact due to unforeseen electrical faults.
- Do not subject the appliance to violent impact.
- Do not expose the appliance to fire, welding sparks or extreme temperatures.
- Do not bring the appliance into contact with corrosive substances.
- Do not wash the appliance with jets of water.
- Check the workspace around the machine is clear from potentially dangerous objects.
- The machine operator must wear appropriate work clothing such as protective glasses, gloves and a mask in order to avoid exposure from harmful dust, for example. Wear a lower back support when lifting heavy parts. There should be no hanging objects such as bracelets or otherwise, long hair should be protected with relevant precautions, shoes must be appropriate for the type of operation to be carried out.



DURING USE

When operating check there are no dangerous conditions. Immediately stop the machine if it is functioning improperly. Contact the authorized Sales Service department.

- For the operator's safety, do not touch any part of the appliance when testing and use the appropriate personal protective equipment (PPE) in order to keep the operator safe.

RISK OR DANGER	SAFETY DEVICES
CRUSHING FINGER OR HANDS	REINFORCED GLOVES
ABRASION - CUT	REINFORCED GLOVES
MATERIAL FALLING	REINFORCED SHOES TO AVOID INJURIES

3.02 ROLLER COMPACTOR SAFETY DEVICES AND PROTECTION

DEFINITION: Protections are all the safety measures that consist of the use of specific technical means (repairs, safety devices) to protect people from dangers which cannot be limited reasonably in design.

	DANGER	<p>Tampering with the protections or any appliance modification could cause risks to users or other exposed people.</p> <p>The manufacturer does not assume any responsibility for direct or indirect damage to people, things or animals following tampering with the protections.</p>
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3.03 ACTIVE SAFETY DEVICE

Active safety devices are the devices that eliminate or reduce the risks to the operator and require active and conscious intervention by the operator to stop the machine.

The roller compactor is supplied with the following active safety device:

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1. On the control panel, a red button (picture 5) works as an emergency switch in case the user needs to immediately stop the action of the compactor.



PICTURE 5

Chapter 4 | INSTALLATION INSTRUCTIONS

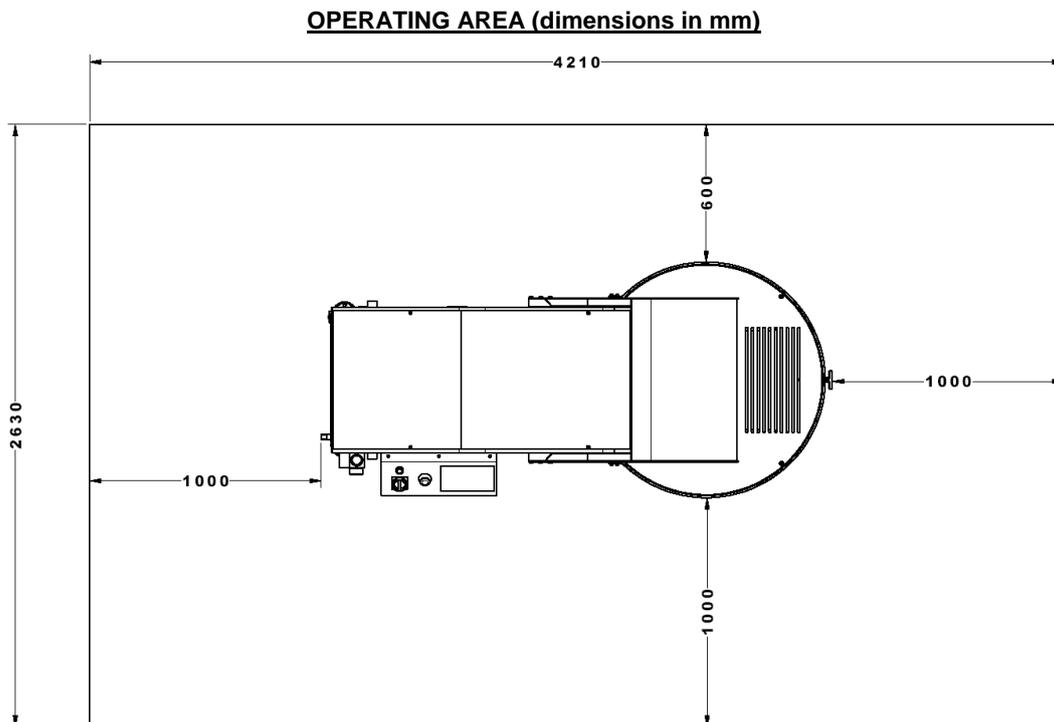
The asphalt roller compactor (ARC) is a heavy piece of equipment and may require special equipment to move and place the machine. The machine should be placed by a qualified moving operator. It must be placed in an enclosed laboratory protected from the outdoor weather to operate as designed.

ALLOWABLE TEMPERATURE: from +40°F to +104°F
ALLOWABLE RELATIVE HUMIDITY: from 30% to 70%

GENERAL ADVICE

- The ARC must be installed in an area which allows easy access to all sides of the machine so that maintenance can be performed (see the “operating area” picture for guidance).
- Unauthorized people, objects, and other potential sources of danger must not be permitted in the area surrounding the roller compactor.

Do not position the compactor near instruments or appliances which could produce vibrations or are sensitive to vibrations.



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This picture to the right shows a suggested positioning of the ARC for an efficient workspace; this setup allows the operator to open the lid, place the mold, open the rear panel for maintenance, and operate the control panel.

During compaction, the user can observe the specimen through the clear lid and watch the height and load outputs on the control unit touch screen.

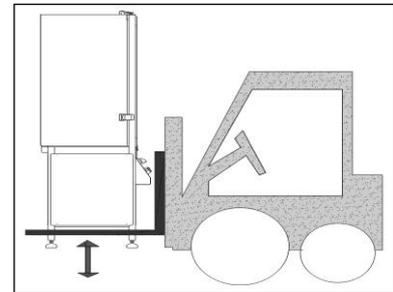


4.01 TRANSPORTATION AND MOVEMENT

These instructions are for machine installers.

Ensure the compactor is correctly supported at the lifting point and that the machine does not slip.

Do not remain in direct line with the application of force and do not allow personnel where loads are inadequately supported by mechanical means.

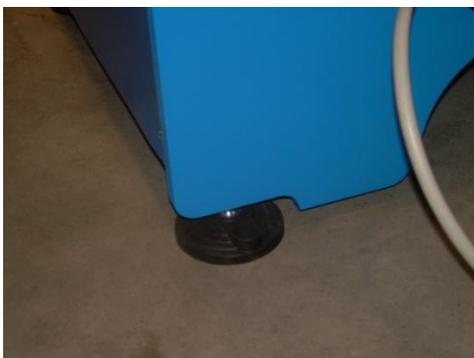


4.02 ASSEMBLING PROCEDURE

After unpacking, make sure the compactor is in perfect conditions, with no observable damage. If in doubt, **DO NOT USE THE MACHINE** and contact InstroTek, Inc. (1-919-875-8371).

ARC is shipped mostly assembled. Install the metal ball joint and plastic feet seen below while removing the ARC from the pallet and *before* placing it on the floor.

After placing the ARC, adjust the adjustable feet to level the machine at a suitable height; the compactor can be fixed to the floor by drilling a hole through pre-marked spots in the feet. Then secure the machine to the floor using metal anchors and bolts.



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4.03 ELECTRICAL CONNECTION

	DANGER	<p>Wiring of the electrical system must be carried out by qualified personnel. Before wiring, consult the electric requirements included in this instruction manual and on the registration plate of the machine for information regarding power supply, frequency and nominal current.</p> <p>Connect the ground wire system via the PE terminal (yellow-green) before any other connection.</p> <p>Apply a switch at the top of the connecting cable of the machine to the power system. The switch must be combined with a safety device which prevents overloading with a differential switch (safety switch). The technical features of the safety device must be in accordance with electrical code where the machine has been installed.</p>
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ELECTRIC TOLERANCES:

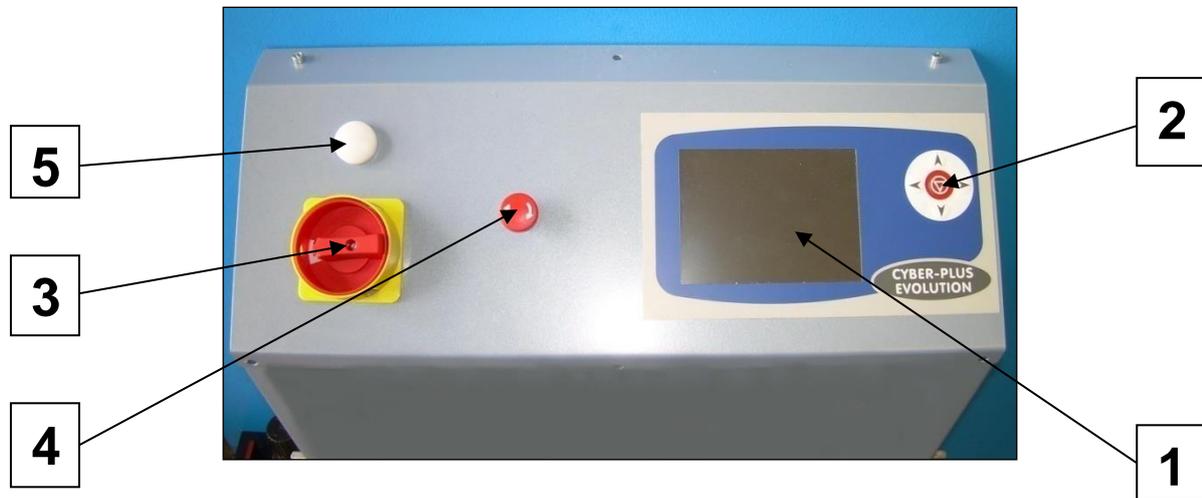
- Real voltage $\pm 10\%$ of the nominal one
- Frequency:
 - $\pm 1\%$ of the nominal one in a continuous way
 - $\pm 2\%$ of the nominal one for a short period
- The harmonic distortion of the sum from the second to the fifth harmonics not more than 10 % of the total voltage as a real value between the conductors. A further distortion of 2% is accepted for the sum from the sixth to the thirtieth harmonics of the real total value between the conductors.
- With reference to the voltage imbalance of the three-phase voltage, the inverted sequence component and the zero sequence component must not be more than 2% of the direct sequence component of the voltage.
- The voltage pulses must not last more than 1.5 ms with an up/down time between 500 ms and 500 ms and a peak value not higher than 200 % of the real value of the nominal tension.
- The electric supply must not be interrupted or zeroed for more than 3 ms at any time. Between two interruptions it must not take more than 1 s.
- The interruptions must not overcome 20 % of the tension peak for more than one cycle. Between two interruptions it must not take more than 1 s.

The manufacturer assumes no liability for any damages to people, things and animals caused by the non-compliance of the above instructions

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Chapter 5 CONTROL UNIT INTERFACE

This picture shows the control unit. The table below describes the different elements for machine operation.



	COMMAND	DESCRIPTION
1	DISPLAY TOUCH SCREEN - LCD TFT QVGA (320x240 pixel)	Allows setup of compacting parameters and functionalities, and real-time view of compaction data.
2	KEYBOARD	Arrows and enter (center) key allow navigation and selection of items in the program displayed on the screen.
3	MAIN SWITCH	Turns the machine ON and OFF
4	EMERGENCY	STOPS machine operation immediately
5	POWER LED	Once machine is switched ON, if this led is turned ON, it indicates presence of electrical power. If this LED stays OFF, it indicates no electrical power.

The control unit can be used through the touch-screen and the 5 arrows on the keypad. All functions can be accessed through the touch screen and the 5 arrows keypad.

The content of the working area of the compactor and the functions of the “cross-shaped” keypad can vary depending on the active screen page. Some buttons may be disabled or assume special meanings depending on the screen. Consult the chapter related to the screen of interest to check the exact functions of the keypad.

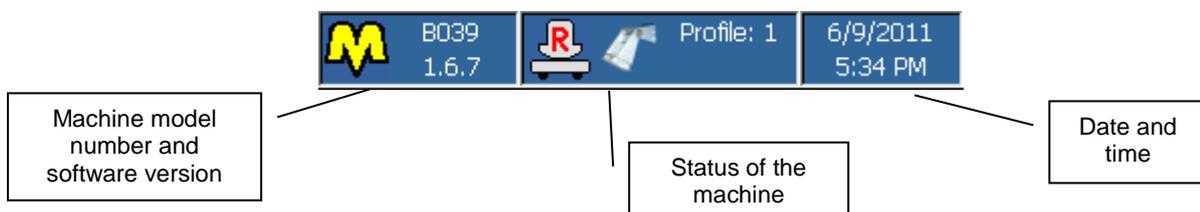
5.01 SCREEN LAYOUT

Operating area

It is the most important area of each screen (most of the display).

Status Bar

It is always at the bottom of the screen and is divided into three parts. It provides a summary of the machine configuration and current status.



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The central part is divided into four subparts to highlight the following information:



- (1) It shows the presence of one or more alarms (, the absence of a configuration () file or the operation status of the machine (consult the relevant chapter).
- (2) This icon shows the current menu. The list does not include the icons that represent the compaction program (see the relevant chapter – **CHAPTER 8 - CONTROLLING THE COMPACTION**).

-  : View the active alarms.
-  : Manually position the roller.
-  : Configure the analog input channel (the icon shows the number of the selected channel).
-  : Calibrate the input analog channel (the icon shows the number of the selected channel).
-  : View the input analog channel calibration (the icon shows the number of the selected channel).
-  : Configure the output analog channel.
-  : Calibrate the output analog channel.
-  : View the output analog channel calibration.
-  : Machine configuration.
-  : Machine calibration.
-  : Date and time set up.
-  : International settings.
-  : Network configuration.
-  : Change the passwords.
-  : Software maintenance.

When the machine is running, the operation the machine is performing is found below.

- (1)  : Raising roller
- (2)  : Moving cart forward
- (3)  : Moving cart backwards (Return)
- (4)  : Moving roller downwards

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- (5)  : Moving cart backwards while the roller applies a load to the specimen
- (6)  : Moving cart forwards
- (7)  : Manual activation.
- (8)  : Pause.
- (9)  : Ready (awaiting commands from the operator).

5.02 INTERACTION WITH THE MACHINE

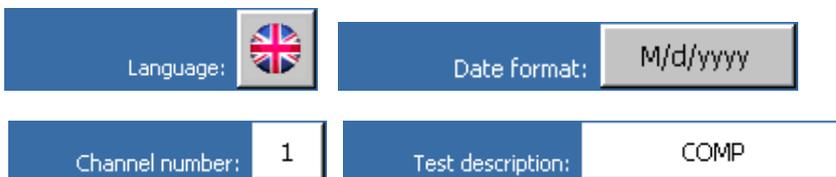
BUTTONS

All controls on the screens are shown as buttons and can be classified as follows:

1. "Command" button:
 - a. Execute a machine function; this button is usually shown on the right column side of the screen



2. "Parameter" button:
 - a. Modify a value using a scrolling list (examples below)



HIGHLIGHT

The Highlight function shows which button on the screen will be controlled by the Enter key ().

A button with the highlight function *activated* has dashed sides ().

A button with the highlight function *deactivated* has no dashed sides ().

Select a button through the touch-screen.

Touch the button and wait for the function to execute ("command" button) or for the relevant value to change ("parameter" button).

Select a button using the keyboard.

1. Move the highlighted function to the desired button using the arrow keys ( and ).

2. Push the Enter key () and wait for the function to execute ("command" button) or for the relevant value to change ("parameter" button).

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SCROLLING LIST

A scrolling list is for a “parameter” button with multiple pre-selected values. The example below shows a scrolling list for selecting the language (found on the screen of the international settings).



❑ How to select a scrolling value with the touch-screen

1. Touch the desired value.
2. a) Touch the value again to accept the selection.
- b) Touch any point of the LCD display outside the scrolling area to cancel the selection.

❑ How to select a scrolling value with the keyboard

1. Select the desired image by skimming through the list with the arrow keys



2. a) Push the Enter key () to accept the selection.

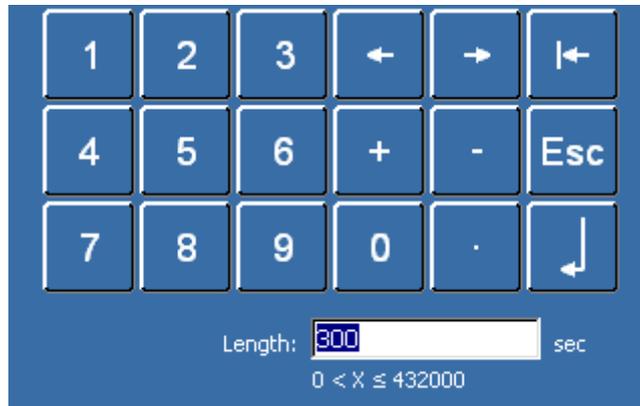
- b) Push one of these keys,  or , to cancel the selection.

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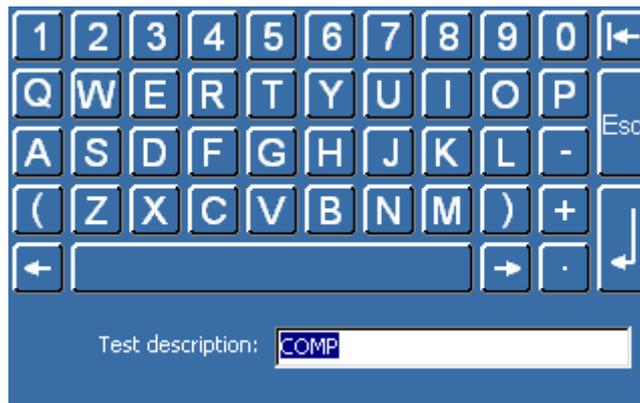
VIRTUAL KEYBOARD

The virtual keyboard appears when a “parameter” button requires an alphanumeric value.

Virtual numeric keyboard



Virtual alphanumeric keyboard



❑ How to change a numeric/alphanumeric value with the virtual keyboard.

1. Press the appropriate keys to enter the desired value.

2. Touch the Enter key  /  or  to confirm the new value.

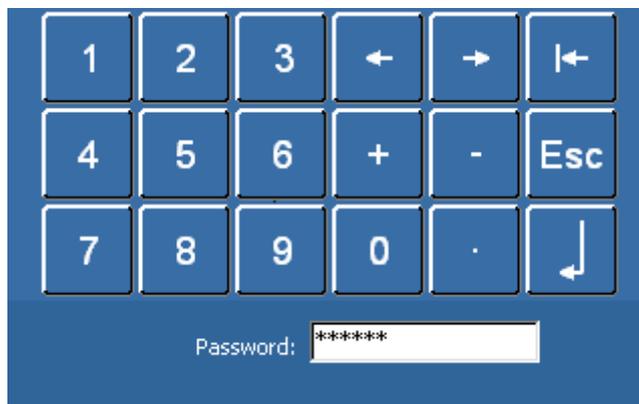
❑ How to cancel the change of a numeric/alphanumeric value with the virtual keyboard.

- Touch the  /  key.

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PASSWORD

The following screen appears when a function requires a password.



How to enter a password using the virtual keyboard

1. Enter a password using the virtual keyboard

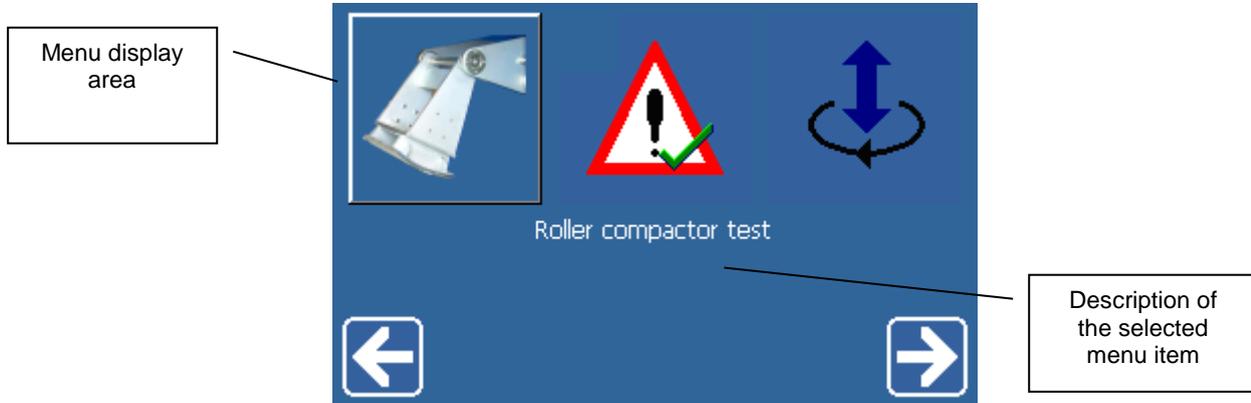
2. Touch Enter button,  or , to confirm the password. Wait for the activation of the secured function (correct password) or for an error message (wrong password).

3. Touch  to cancel the password entry and activation of the secured function.

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Chapter 6 MAIN MENU

The main menu allows the selection of the machine main functions. It has been organized to show a series of fixed functions and a series of variable functions.



The following list includes the icons for the machine functions.

-  : Compaction program (see Chapter 8).
-  : Explanation of the current alarms.
-  : Manual positioning.
-  : System configuration.
-  : Control panel.

❑ How to select an item on the main menu with the touch-screen

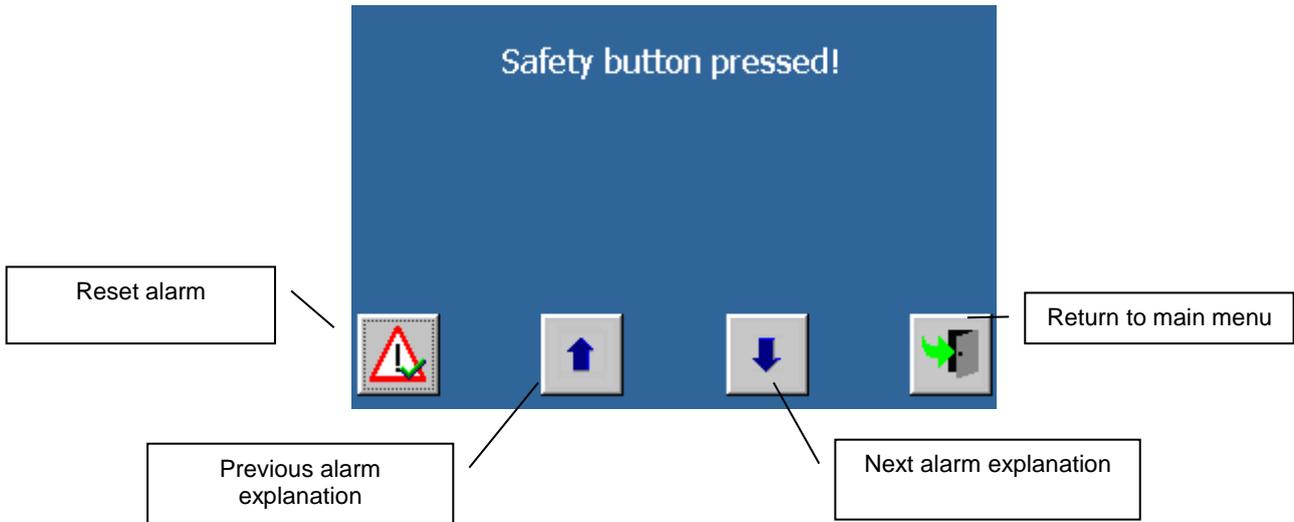
1. Scroll through the menu ( or ) until the desired function is shown.
2. Touch the desired function.

❑ How to select an item of the main menu with the keyboard.

1. Scroll through the menu ( or ) until the desired item is shown.
2. Push the Enter key ().

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6.01 ALARMS



How to confirm and reset an alarm.

1. Scroll through the list of the active alarms ( or ) until the desired alarm is shown.
2. Confirm and reset the alarm by pressing .

 	WARNING IMPORTANT	An alarm that has been reset could immediately appear again if the causes/problems have not been resolved.
--	------------------------------	--

 	WARNING IMPORTANT	If the alarm has been activated by pressing the emergency button, it is not necessary to reset the alarm; the operator only has to release the button to its initial position.
--	------------------------------	--

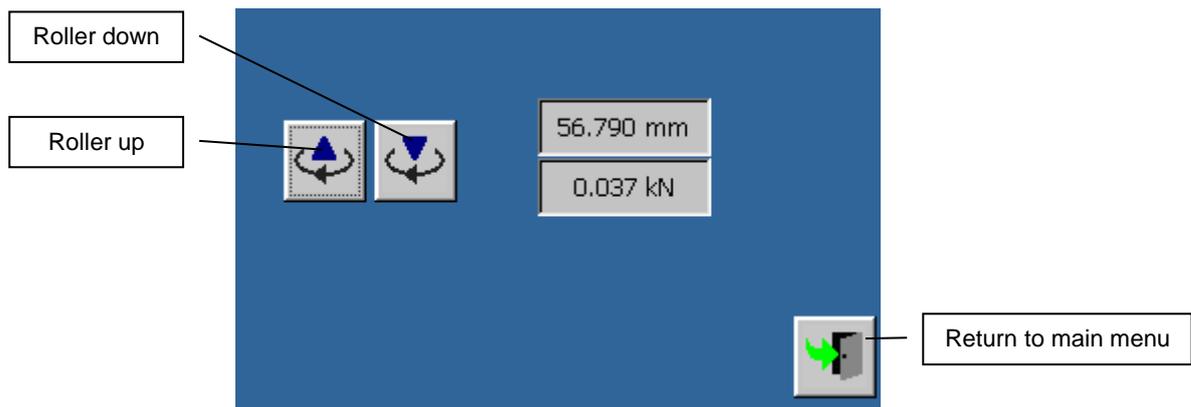
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6.02 MANUAL POSITIONING

This function allows the manual positioning of the roller to make mounting/dismounting the roller easier.

	WARNING IMPORTANT	Manual positioning must only be executed by trained personnel. Improper operations might CAUSE DAMAGE to the machine.
---	------------------------------	--

If this function is activated, the machine will bring the cart to the center position and allow the roller to descend to its maximum limit.



1. Press  or  to lower roller or to stop it if it is rising. Keep pressing  to increase the descent speed up to the maximum possible speed (this function is not enabled during the time interval defined by the “**high touch time**” parameter – SEE CHAPTER “SYSTEM CONFIGURATION”).

	WARNING IMPORTANT	<p>Roller descent stops ONLY when the user is NOT pressing the , increasing descent speed. After passing the touch point, the automatic stop will be disabled until the raise button  or  is pressed.</p> <p>Therefore, the roller can move downwards after the touch point, but can only be stopped by the operator.</p>
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2. Press  of  to move the roller upwards or to stop it if it is descending. Keep pressing  to increase the ascent speed up to the maximum possible speed.

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Chapter 7 CONTROL PANEL

The control panel menu allows the configuration of general functions of the machine. The menu includes the following items:

-  : Date and time.
-  : International settings.
-  : Touch screen calibration.
-  : Network connection.
-  : Password change (**protected by PASSWORD – contact manufacturer**).
-  : Software maintenance (**protected by PASSWORD – contact manufacturer**).

❑ How to select an item of the control panel menu with the touch-screen

1. Scroll through the menu ( or ) until the desired item is shown.
2. Touch the desired item to select the function.

❑ How to go back to the main menu with the touch-screen

1. Touch .

❑ How to select an item of the control panel menu using the keyboard

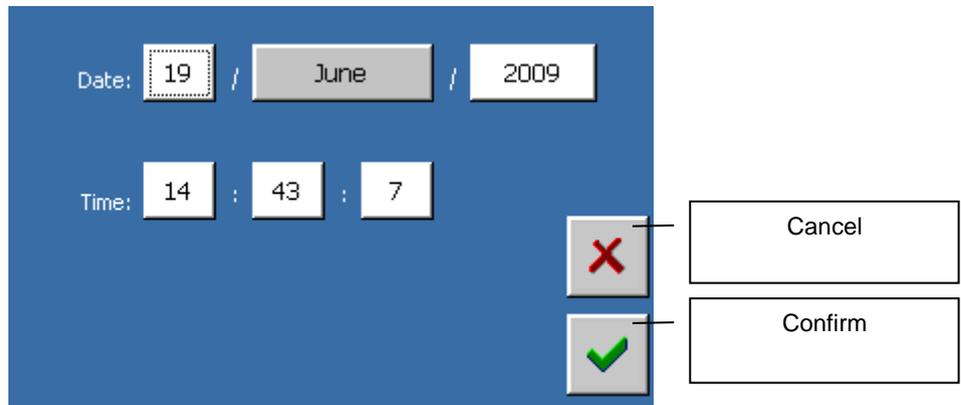
1. Scroll through the menu ( or ) until the desired item is shown.
2. Push the Enter key ().

❑ How to go back to the main menu using the keyboard

1. Push the  key.

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7.01 DATE AND TIME



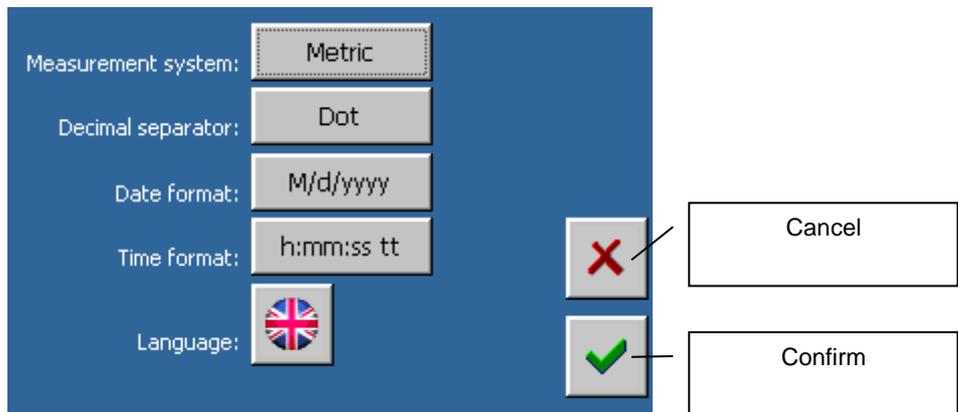
Parameters

Parameter	Values
Day	<ul style="list-style-type: none"> ➤ 1-31 for the following months: January, March, May, July, August, October, December; ➤ 1-30 for April, June, September, November; ➤ 1-29 for February in case of al leap year; ➤ 1-28 for February if it is not a leap year.
Month	➤ "January", "February", "March", "April", "May", "June", "July", "August", "September", "October", "November", "December".
Year	➤ 1970-2069
Hour	➤ 0-23
Minutes	➤ 0-59
Seconds	➤ 0-59

	WARNING IMPORTANT	The date and time settings will be lost if the equipment is turned off for more than 10 consecutive days.
---	------------------------------	--

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7.02 INTERNATIONAL SETTINGS



Parameters

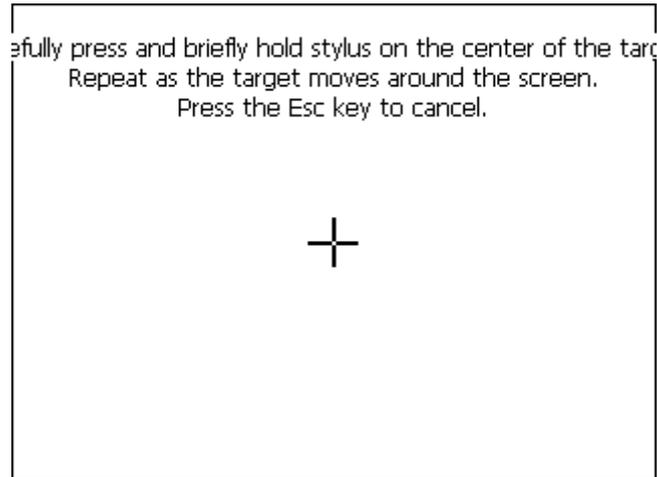
Parameter	Value
Unit of measurement system	<ul style="list-style-type: none"> ➤ Select the "Metric" measuring system to have the load values expressed in "kN", the displacement values in "mm", the deformation values in "με", and the temperature values in "°C". ➤ Select the "U.S." measuring system to have the load values expressed in "lbs", the displacement values in "in", the deformation values in "με", and the temperatures values in "°F".
Decimal separator	➤ "Dot", "Comma".
Date format	Types of Date format (i.e. June 1st 2009) <ul style="list-style-type: none"> ➤ "d/M/yy" → i.e. "1/6/09" ➤ "dd/MM/yy" → i.e. "01/06/09" ➤ "d/M/yyyy" → i.e. 1/6/2009 ➤ "dd/MM/yyyy" → i.e. 01/06/2009 ➤ "M/d/yy" → i.e. 6/1/09 ➤ "MM/dd/yy" → i.e. 06/01/09 ➤ "M/d/yyyy" → i.e. 6/1/2009 ➤ "MM/dd/yyyy" → i.e. 06/01/2009 ➤ "yyyy/M/d" → i.e. 2009/1/6 ➤ "yyyy/MM/dd" → i.e. 2009/01/06 ➤ "yy/M/d" → i.e. 09/1/6 ➤ "yy/MM/dd" → i.e. 09/01/06
Hour format	Types of hour format (i.e. time 14.27.05): <ul style="list-style-type: none"> ➤ "h:mm:ss tt" (or "h:mmtt") → "2:27:05 PM" (or "2:27 PM") ➤ "H:mm:ss" (or "H:mm") → "14:27:05" (or "14:27")
Language	➤ ITALIAN, ENGLISH, FRENCH, GERMAN, SPANISH, POLISH, RUSSIAN

7.03 TOUCH-SCREEN CALIBRATION

The touch-screen calibration screen will be as shown:

	<p>WARNING IMPORTANT</p>	<p>Once the calibration procedure has been activated, it cannot be interrupted and has to be concluded.</p>
--	-------------------------------------	--

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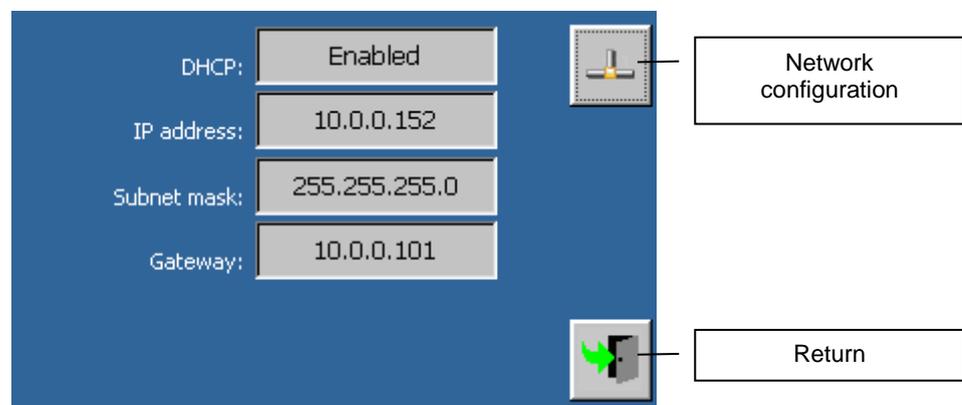
❑ How to calibrate the touch-screen

1. Press and hold your finger or pen in the center of the crosshairs. Wait for the acquisition of the coordinates; the cross will move to the next position when ready.
2. Repeat the procedure described step 1 for five positions (the positions, in order, are: center, down to the right, up to the right, up to the left, down to the left).
3. Confirm the calibration by touching the LCD or by pressing the Enter key . If key does not work, turn off the machine for 10 seconds and then restart. The program will save the calibration.

IMPORTANT! To obtain an accurate calibration, it is necessary to keep the pen as firm and still as possible during the 5 steps of the calibration procedure.

7.04 NETWORK CONNECTION

The network connection screen shows the configuration parameters of the TCP/IP protocol set by the operator (when the DHCP is disabled) or assigned by the DHCP automatically (when enabled).



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The change of the parameters can be enabled pressing the button

□ Parameters

Parameters	Value
DHCP	Select "Enabled" to activate the configuration of a dynamic IP address (assigned by the DHCP). Select "Disabled" to activate the configuration of a static IP address (assigned by the operator).
IP address	This parameter is available only when the DHCP is disabled. In this case, the operator can insert a valid IP address
Subnetmask	This parameter is available only when the DHCP is disabled. In this case, the operator can insert a valid subnet mask.
Gateway	This parameter is available only when the DHCP is disabled. In this case, the operator can insert the gateway IP address. This parameter is not required if the machine is connected to a local network.

IMPORTANT! Refer to the network Administrator for a correct network configuration or consult the relevant helpsheet.

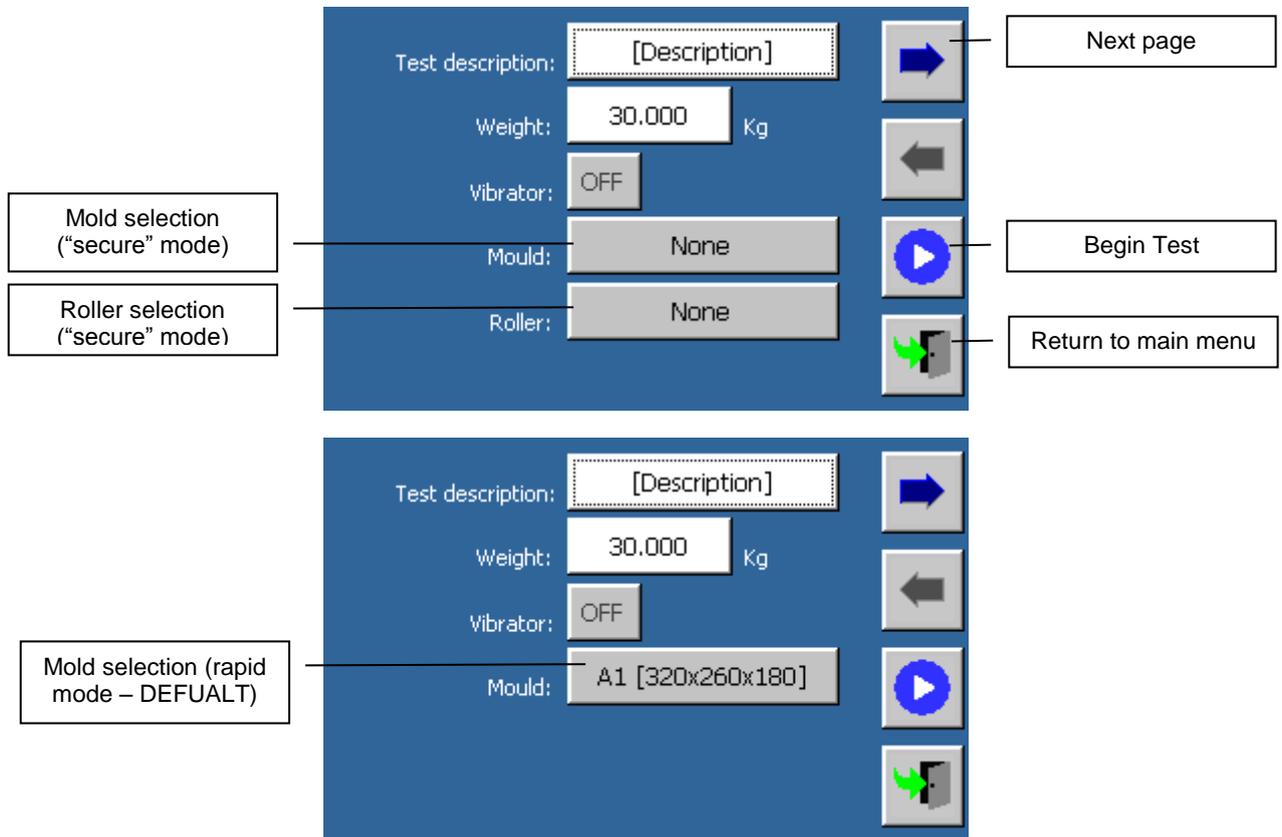
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Chapter 8 FUNCTIONS FOR CONTROLLING THE COMPACTION

8.01 MAIN FUNCTIONS

- Test configuration

Test configuration parameters can be set through the following screens:

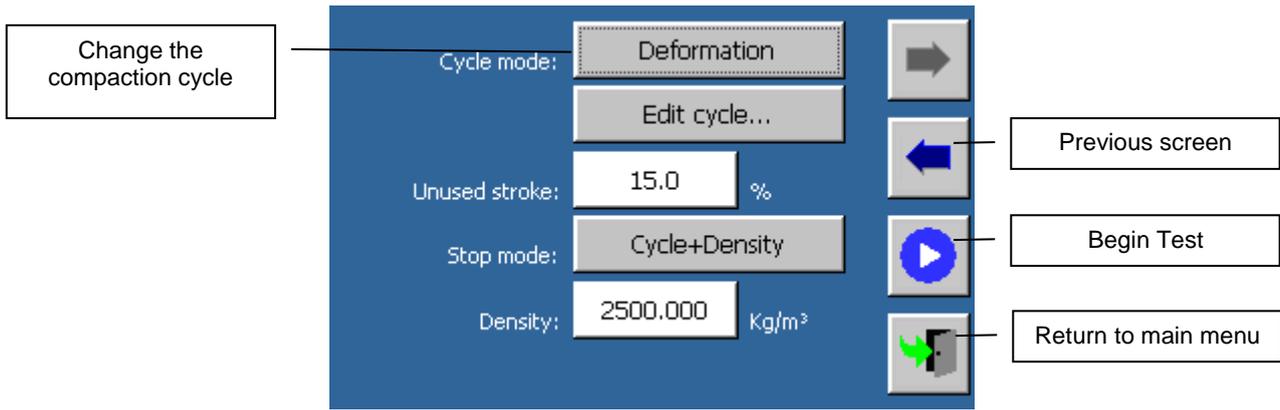


Parameters

Parameter	Values
Test description	Insert an alphanumeric value to describe the test and/or the customer.
Roller	Select the roller assembled on the machine: <ul style="list-style-type: none"> • A [320x260] • B [500x400] • C [305x400] (compaction in 305 mm direction) • D [305x305] • E [400x305] (compaction in 400 mm direction)
Mold	Select the mold positioned on the cart <ul style="list-style-type: none"> • A1 [320x260x180] • A2 [320x260x50] • B1 [500x400x180] • C1 \ E1 [305x400x50] • C2 \ E2 [305x400x100] • C3 \ E3 [305x400x120] • D1 [305x305x50] • D2 [305x305x100]
Weight	Insert the weight of the material poured into the mold ("Kg" when using "metric" measuring system, "lbs" when using "U.S." measuring system).
Vibrator	Attention! This option is currently not available.

- (1) Roller/mold possible combination: A-A1, A-A2, B-B1, C-C1, C-C2, C-C3, D-D1, D-D2, E-C1, E-C2, E-C3.
- (2) Roller/mold possible, but not suggested combinations: D-C1, D-C2, D-C3.

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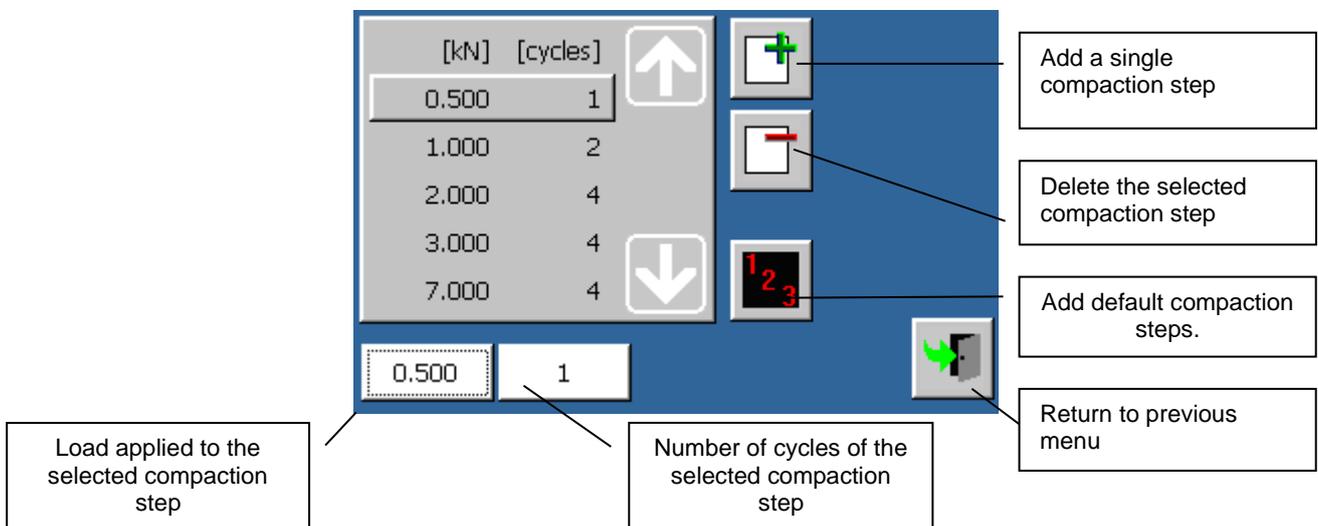
Parameters

Parameter	Value
Cycle mode	Select "Load" to compact the specimen using the load control, or select "Deformation" to compact it with deformation control.
Unused stroke	During the deformation compaction mode, the roller's descent is constantly increasing except on two border areas, where the descent level is maintained. To define these areas, a percentage value on the cart's travel must be defined. (Default value is 15 %.)
Stop Mode	Select the appropriate Test Stop Mode: <ul style="list-style-type: none"> • Cycles: the test stops at the end of the last programmed cycle (this function is not available if the deformation control has been selected). • Cycles + Height: the test stops at the end of the last programmed cycle or when the defined height of the sample is obtained. • Cycles + Density: the test stops at the end of the last programmed cycle or when the defined density of the sample is obtained.
Expected density	Insert the value of the sample density expected at the end of the test ("Kg/m³" for the Metric System - "lbs/in³" for the US system). The parameter can be changed only when the stop mode is set to "Cycles + density".
Expected height	Insert the value of the sample height expected at the end of the test ("mm" for the Metric System - "in" for the US system). The parameter can be changed only when the stop mode is set to "Cycles + height".

**WARNING
IMPORTANT**

Select "Deformation" cycle mode to obtain the best compaction result.

The compaction cycles for the **load control mode** can be changed through the following screen:



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The compaction cycle with for the **deformation control mode** can be modified through the following screen:

- **Test execution**

When the test is running, the compaction progress can be viewed in two different ways:

- **Numerical test view**

IMPORTANT! When pressing the button for the compaction Pause Mode, the test does not stop immediately. The pause starts only when the cart moves from the FRONT position. Only when the machine is fully Paused, the operator can open the cover without restarting the test loading history.

- **Stop Test**



The test can be stopped by pressing the  or  buttons.

In an emergency, stop the machine by pressing the emergency button located on the top cover of the digital control unit.

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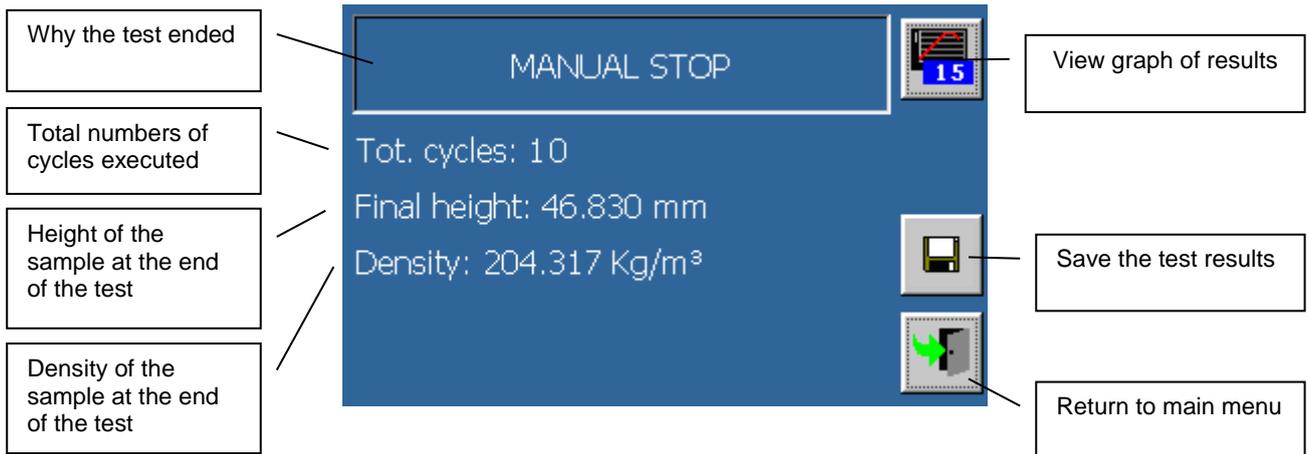
- **Graphic test view.**



- **Test results**

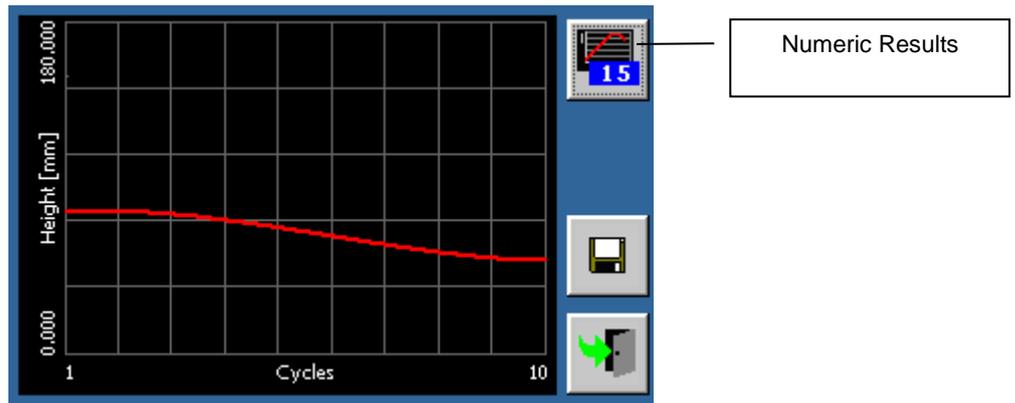
At the end of the test execution, the test results can be viewed in two different screens.

- Numerical test view



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- **Graphic test view.**



- **Printing and storing test results**

This menu allows users to choose how to handle test results. It features three main options: saving to a storage device, printing on a thermal printer, and printing on a USB printer. A 'Mode' selector is set to 'Complete'. A return icon is located at the bottom right.

- Save the test results to a SD-Card or thumb drive.
- Print the results with a thermal printer.
- Print the test results with a USB printer (PCL compatible).
- Selection of the save/print mode
- Return / Close the screen

Mode: Complete

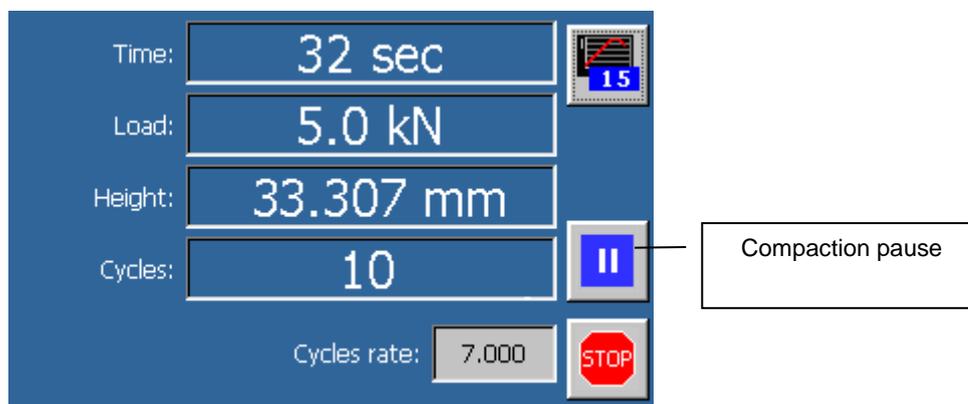
Printing the test results and saving the test data on an SD-Card or thumb drive can be *Partial* (only "numeric" data) or *Complete* (numeric data and graphs).

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8.02 "PAUSE" MODE

During every compaction cycle, it is possible to temporarily pause the machine so that the operator can open the lid and check compaction of the slab. After closing the lid, it is possible to restart the test from the current point and complete the remaining cycles.

This procedure can be activated through the function "**COMPACTION PAUSE**".



This is the **only** function that allows the user to pause and restart the compaction. There is no need to stop the current test and start another test from the beginning.

After pressing the COMPACTION PAUSE button, the cart moves to the starting position, while the roller remains fixed in position.

After pressing the COMPACTION PAUSE button, it disappears from the screen; as soon as the cart stops moving, the TEST EXECUTION button will appear in the place of the COMPACTION PAUSE button.

In this phase, it is possible to open lid; even if on the display shows an ALARM message when the lid is open. The test is not cancelled.

After executing the necessary checks on the slab, close the lid and confirm that the ALARM message disappears. Press the "TEST EXECUTION" button. The compaction restarts from the previously point and completes the remaining cycles.

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Chapter 9 CONTROLLING THE HEATING OF THE ROLLER

The roller heating function allows the roller to be heated to the compaction temperature to prevent heat loss through contact with the roller during compaction.

9.01 TURNING ON THE HEATER

The heater for the roller is activated when the main power switch is turned on. Allow the roller adequate time to heat to the compaction temperature.

	WARNING	It may take up to 2 hours to heat the roller to the compaction temperature.
---	----------------	--

9.02 SETTING THE COMPACTION TEMPERATURE



To set the compaction temperature, enter the system configuration menu . The configuration menu is protected by a password (**2222**). Tab over until the roller temperature option is showing. Enter the desired compaction temperature and press the return button.

9.03 VERIFYING THE CURRENT TEMPERATURE OF THE ROLLER

The roller heater will heat and regulate the roller when the machine is turned on. To verify if the roller is at the appropriate temperature, open the roller compactor function.



At the bottom of the screen, the temperature for the roller will be shown. This value will change as the roller heats and cools.

 	WARNING DANGER	The roller compactor has a very large thermal mass; therefore, the roller can take several hours to cool to room temperature. Extreme care and insulated gloves \ long-sleeved lab coats should be used when reaching into the compaction chamber to prevent serious burns.
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Chapter 10 COMPACTING A SLAB

	WARNING DANGER	Before using the roller compactor, it is essential that the Operator and Safety Manager have read this instruction manual and understand all the Risks, Dangers, Functions, Operations, and Safety Precautions necessary to operate the machine.
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10.01 ROLLER COMPACTOR CALIBRATION

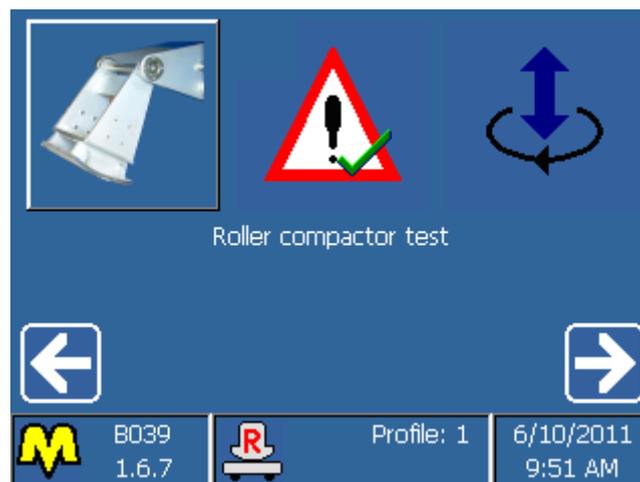
The machine is checked in the factory, using equipment calibrated on a regular basis. These calibrations cannot guarantee that the machine, meters and indicators will provide accurate values and results conforming to the standards in force where the machine has been installed and used.

Ideally, the calibration would be checked whenever it is moved. To obtain correct values and results it is VITAL that the an officially recognized body check the machine characteristics, its calibration and the reliability of results/values once the machine has been installed and set up and *before* official tests. The manufacturer is exempt from all responsibility in the case of direct and indirect damage from use of the machine without official approval by the relevant bodies.

10.02 SWITCHING ON THE ROLLER COMPACTOR

To start the compactor, turn "ON" the main switch (see the chapter "COMMANDS AND SIGNALS").

After the activation, the control unit automatically lifts the roller in the upper position and moves the cart completely back to allow positioning the mold. The following screen will appear on the display:



10.03 POSITIONING OF THE ROLLER MOVING STIRRUP BASED ON THE MOLD USED

The roller's rotation follows the mold's movement: it is absolutely necessary that the roller turns precisely on the material surface and does not slip, which may cause a non-homogenous compaction and therefore alter the test results of that specimen.

The link between the rotation of the roller and the movement of the mold is determined by a locking stirrup attached to the roller and connected to the cart. The stirrup can be fixed to the roller in two different positions, depending on the mold placed on the cart: if the mold is 500 mm long, the stirrup must be placed in the '500' position, while if the mold is 305 mm or 320 mm long then the stirrup must be placed in the '305' position.

Check this setup before starting every compaction.

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	WARNING	Tighten the 4 screws of the stirrup. Use only an 8 mm Allen wrench: no other tools are required.
	WARNING	If the stirrup position and mold size do NOT match during the compaction, the compaction of the sample will be altered, but the machine will not be damaged.

10.04 CHECKING THE TIGHTNESS OF THE SCREWS OF THE STIRRUP THAT MOVES THE ROLLER

The previous chapter describes the procedure that must be followed to specify to the controller which mold is used.

Another important step that must be performed before starting a new test (even if the position of the stirrup has not been changed) is the verification of the tightness of the 4 screws on the stirrup. This simple step has to be performed before each test to ensure that the machine compacts the material correctly. To perform this operation, the roller must be in the ready lifted position (as shown in the picture); use an 8mm Allen wrench (CH8) to lock the screws. Tighten the screws of the stirrup. Use only the Allen wrench CH8; no other tools have to be used.

	WARNING	Tighten the 4 screws of the stirrup. Use only the 8 mm Allen wrench (CH8); no other tools have to be used.
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10.05 POSITIONING THE MOLD



WARNING

Before placing the mold on the sliding cart, make sure that the roller on the compactor is suitable for the mold used for the test. Once the mold and roller are verified, proceed with placing the mold in the machine using the following procedure.

Open the lid. To prevent the asphalt mixture from attaching on the roller's surface, it is recommended to **spread manually or with a sprayer, a thin layer of lubricating oil** (silicone spray for example) on the roller's surface. Follow the same procedure for the inside surface of the mold.

- Pour the heated asphalt mixture inside the pre-heated mold.



WARNING

A good compaction (uniform density, smooth surface, etc.) is highly influenced by the way the asphalt mixture is placed in the mold. Techniques may need to change based on the mixture. An experimental method is recommended to determine the best method to evenly distribute the asphalt mixture in the mold. The weight of material in the mold must match the weight entered in the program menu.

- Place the mold on a cart (preferably a lift cart) to move the mold easily and lift the mold into the machine.
NOTE: the mold can be placed on the tray before adding the heated mixture.
- Move the mold on the cart to place it in the machine.



WARNING

The mold must be placed as quickly as possible to avoid cooling the asphalt mixture below the compaction temperature.



WARNING

To correctly position the molds, B038-10 (305x305x50mm) and B038-11 (305x305x100mm) need the centering plate, part #B039-22 ; the centering plate B039-21 is required for the molds B038-12 (305x400x50mm), B038-13 (305x400x50mm) and B038-19 (305x400x120mm); the centering plate B039-23 is required for molds B038-09 (320x260x180) and B038-20 (320x260x50). B038-18 mold (400x500x180mm) does not require any centering plate.

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Preparing mixture in mold to compact slab: (1)/(2) Scoop material evenly into heated mold, (3) Use multiple layers to ensure even density, (4) spread mixture evenly to improve density, (5) place mold in ARC, (6) lock mold into place with rubber mallet.

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	WARNING	The mold is very heavy and is heated up to 160°C-180°C; it is recommended to use all the personal protective equipment (PPE) and to be extremely alert when moving the mold to avoid dangers and injures.
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- Insert the rod into the lateral slots, selecting the slot closest to the mold. The rod can be fixed into position using a plastic or rubber mallet.



- Close the lid and make sure the latch engages. The machine will not start if the latch does not engage.

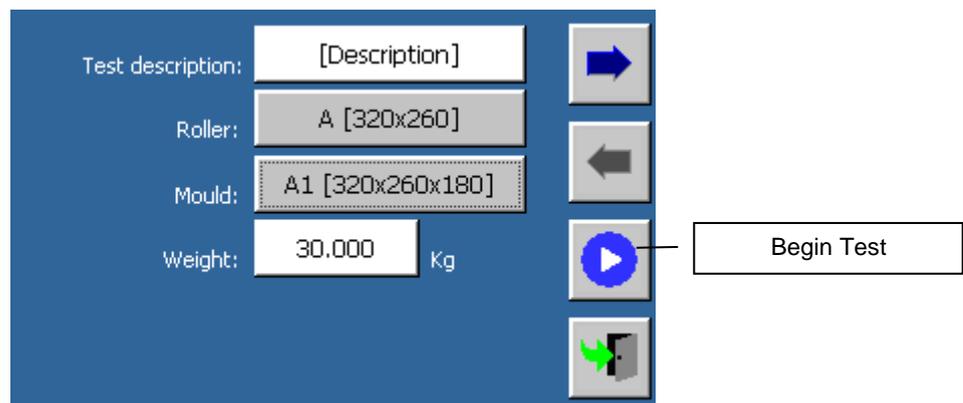
	WARNING	Be careful when opening and closing the lid to avoid injuries to the hands.
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10.06 COMPACTION PHASE ACTIVATION

- To start the compaction please follow the instructions included in the chapter “ **FUNCTIONS FOR CONTROLLING THE COMPACTION**”

	WARNING	<input type="checkbox"/> To reduce the time to prepare the compaction and prevent cooling of the asphalt mixture, enter the test parameters before moving the mold and asphalt mixture. Carefully read the instructions in “FUNCTIONS FOR CONTROLLING THE COMPACTION”
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- After all the parameters have been entered, touch the ‘Play’ button to start the compaction



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- During the compaction, the screens described in "Test execution" section will be shown
- Once the compaction procedure is completed, the 'Test results' menu is shown; the control unit automatically lifts the roller to the upper position and moves the cart completely forward to allow removal of the mold.
- At the end of the test, it is possible to save or print the compaction results as described in the section " How to print and save the test results".

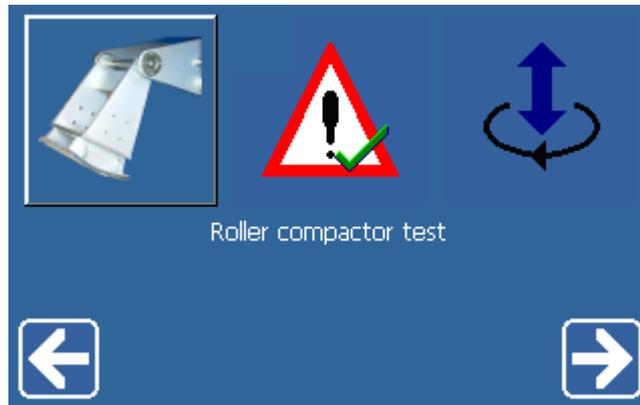
10.07 TEST STOP DUE TO ALARM

The compaction test will stop automatically if the machine displays an alarm:

- On the status bar (bottom side of the display) the alarm icon will appear



- The test ends and the machine stops. The screen will state that the test stopped because an alarm.
- It is possible to save or print the results by pushing the relevant buttons.
- Go back to the main menu



- Go to the alarm menu and check the activated alarms (follow the instructions in the "Alarms" section)
- After solving the problem(s) that caused the test to stop and resetting the alarms, the roller will rise and the cart will move to the initial test position.
- It is possible to repeat the test that was previously stopped and canceled, but the number of cycles and height for each cycle will be different.

10.08 PAUSE FUNCTION

During every compaction cycle, it is possible to temporarily pause the machine so that the operator can open the lid and check compaction of the slab. After closing the lid, it is possible to restart the test from the current point and complete the remaining cycles.

Activate this function by pressing the PAUSE function (see the "PAUSE MODE" section).

10.09 STOPPING TEST



The test can be stopped by pressing the  or  buttons.

In an emergency, stop the machine by pressing the emergency button located on the top cover of the digital control unit.

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10.10 EMERGENCY STOP



The test can be stopped in anytime by pushing the red safety (emergency stop) button; the active alarm icon will be shown on the display.

	WARNING	If the test is stopped using the emergency button, the test cycle is cancelled and it is necessary to start a new one.
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It is recommended to find the causes that stop the test and reset the initial conditions; reset the emergency button by turning it. Carefully check that the safety guards are closed; when the red button is in its correct position, the control system automatically lifts the roller to the upper position and moves the cart forward.

10.11 TEST STOPPED BY SAFETY SWITCHES

As described in the previous chapters, each guard has a safety button which stops the roller if the guard is opened during the test. Therefore, if one of the guards is opened during the compaction and not during the pause phase, the test



is immediately stopped and the alarm icon will be displayed.

	WARNING	IMPORTANT! If the compaction is stopped using the emergency button, the test cycle is cancelled and it is necessary to start a new one.
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		WARNING DANGER	Before restarting the test, find and fix whatever caused the safety alarm activation.
--	--	---------------------------	--

It is recommended to find the causes that stop the test and reset the initial conditions; reset the emergency button by turning it. Carefully check that the lid is closed; when the red button is in its correct position, the control system automatically lifts the roller to the upper position and moves the cart forward.

10.12 SWITCHING OFF THE MACHINE

- Remove the mold from the cart
- Close the lid
- Turn the main switch to OFF to turn off the power

10.13 TEST START UP

Before using the machine, regularly check that it is working correctly by performing at least one complete empty cycle according to the previous instructions.

Should there be any problem, consult the chapter "DIAGNOSTICS".

If the instructions in this manual do not provide the solution to the problem, contact InstroTek (919-875-8371).

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Chapter 11 MAINTENANCE

11.01 PERIODIC CHECKS

	DANGER	<p>All maintenance and control operations must be carried out by personnel trained to use the machine. All the operations must be carried out when the machine is switched off and with the cable unplugged from the outlet.</p> <p>It is permitted to use only the original spare parts. Use of different parts releases the manufacturer from responsibility of machine malfunctions.</p>
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It is recommended to perform all the periodical inspections described below in a timely manner. This will help prevent failures and malfunctions.

OPERATION	CHECK OF THE GENERAL CONDITION OF THE ARC
PROCEDURE	Carry out a visual inspection of the roller compactor and check that all parts (gears, screws, load cell, etc.) are in good working conditions and have not been damaged.
FREQUENCY	ALWAYS BEFORE EACH USE

OPERATION	ROLLER COMPACTOR CLEANNESS – LUBRIFICATION OF THE CART GUIDE BARS
PROCEDURE	<p>Remove all the residual particles and asphalt mixtures from the guide bars of the cart by using a vacuum cleaner or specific cleaning products. After cleaning the guide bars, spread a layer of lubricating grease on the surface using a brush.</p> 
FREQUENCY	ALWAYS BEFORE EACH SINGLE USE

OPERATION	CHECK THE FUNCTION OF THE SAFETY DEVICES
PROCEDURE	<p>Let the machine run for a few minutes; then simulate a test. Check the function of the safety devices: the switch on the lid, the emergency button, the main power switch and the STOP command in the program.</p> <p>If the machine stops the test, the safety device works correctly; if not, the operator has to stop the test immediately and follow the instructions of the chapter “GUIDE TO RECOGNIZING DAMAGE AND ANOMALIES”.</p>
FREQUENCY	WEEKLY

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11.02 ORDINARY MAINTENANCE

<p style="text-align: center; margin: 0;">DANGER</p> <p style="text-align: center; margin: 0;">WARNING</p>	<p>Do not perform maintenance – interventions on the machine which have not been quoted and described in this instructions manual without first contacting the manufacturer.</p> <p>Periodically clean all machine parts and oil the unpainted parts in order to preserve the machine and its efficiency.</p> <p>Avoid the use of solvents which damage the paint and parts made of synthetic materials.</p>
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The Manufacturer suggests keeping all rotating or moving parts well lubricated and clean.

11.03 EXTRAORDINARY MAINTENANCE

For extraordinary maintenance operations refer directly to the Manufacturer.

11.04 VERIFICATION OF THE FUNCTIONING OF THE SAFETY DEVICES

Before using the compactor, verify the safety devices function properly. Before starting any routine use of the compactor, verify that the emergency stop functions correctly

This verification can be executed by:

- turning on and switching off the roller compactor through the general switch;
- turning on the roller compactor and opening the lid;
- turning on the roller compactor and pressing the emergency stop.

11.05 AUTHORISED MAINTENANCE CENTRES

For information on the nearest authorized service center, contact the manufacturer.

InstroTek, Inc.
5908 Triangle Dr.
Raleigh, NC 27617
(919) 875-8371

Chapter 12 ROLLER COMPACTOR ADJUSTMENT AND SETTING

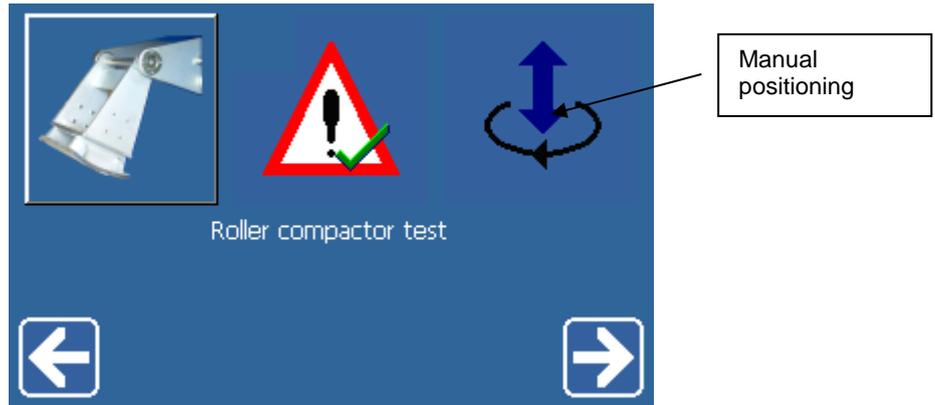
These operations must be performed by qualified personnel in the presence of the operator in charge when done for the first time.

12.01 REMOVING ROLLER FOOT

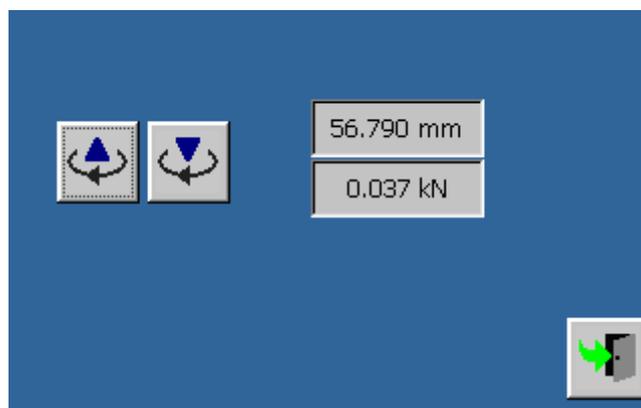
For easy replacement of the compaction roller foot, please follow the following procedure:

- Open the lid and remove the mold (if present)
- With the main power off, disconnect the heating power supply from the roller if heater is installed.
- Place (2) - 2x4 wood spacers under the roller compactor foot. These spacers will be used to support the foot when the bolts are unscrewed.
- Close the lid.
- From the main menu, press the button "Manual positioning"

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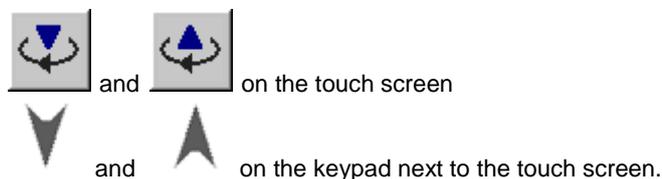
- The following screen will appear:



	WARNING IMPORTANT	Manual positioning operation must only be executed by trained personnel. Improper operations might CAUSE DAMAGE to the machine.
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This is the screen that allows the operator to manually raise and lower the roller into the correct position for assembling and disassembling it. In this function, the compactor moves the cart to its central position, thereby letting the roller move down along its entire stroke.

- The controls to move the roller compactor foot up and down are:



- If the down or up arrows are tapped, the foot will move incrementally up or down.
- If the arrows *on the keypad* are held for more than 10 seconds, the foot will move in that direction at an increasingly rapid speed. The roller will stop when the arrow is released.

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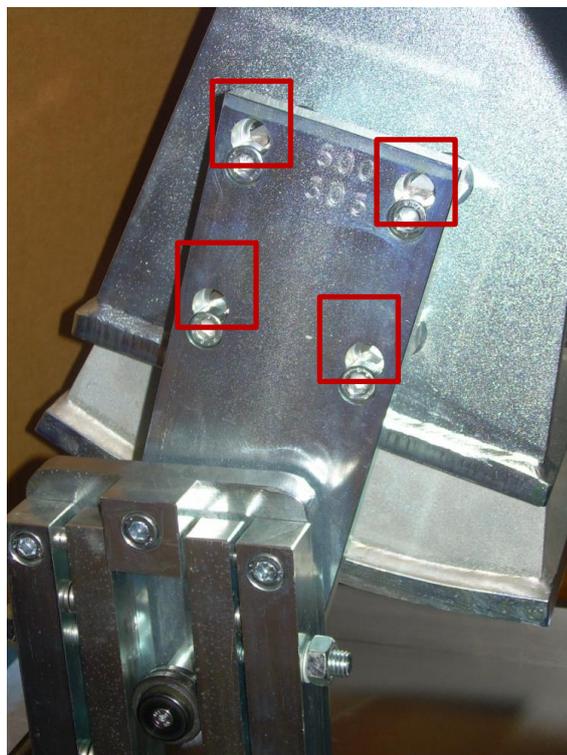
	WARNING IMPORTANT	<p>Roller descent stops ONLY when the user is NOT pressing the  , increasing descent speed. After passing the touch point, the automatic stop will be disabled until the raise button  or  is pressed.</p> <p>Therefore, the roller can move downwards after the touch point, but can only be stopped by the operator.</p>
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- Lower the roller until it is slightly above the wood spacers.
- Press the emergency stop button to prevent the roller from moving
- Open the lid and loosen the 4 screws that fix the roller to the compactor until the roller foot leans on the plate.
- Remove the old roller foot from the compactor and insert the new one.

	WARNING	<p>The roller foot weighs over 50 kg (100 lbs). Lift the roller foot with the assistant of several people or a machine hoist to prevent injuries.</p>
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12.02 INSTALLING ROLLER FOOT

- Use the screws to attach the new roller. Be careful to center the four screws in their screw holes.
 - Align the 4 screws on the side of the compactor arm with the appropriate foot size (305 or 500 mm) (305 should be used for 400 mm).
- NOTE: Use the manual mode to incrementally move the arm up or down to align the bolts in the correct slots.

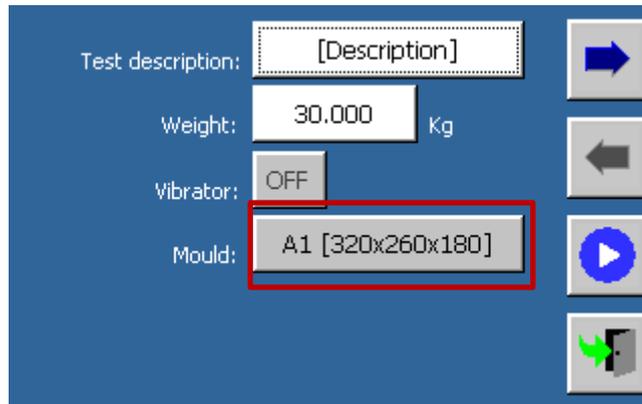


- With the main power off, reconnect the heating power supply to the roller if heater is installed.
- Remove the wood spacers and close the lid.

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12.03 CONFIGURING MACHINE FOR ROLLER FOOT

- Change the mold dimensions in the test parameters, as shown below.



- Press PLAY , and then STOP  to save the new settings.
- If a "Run time" error displays when trying to compact a slab, you will need to change the time limit for the machine to contact the mixture surface.
 - Press  on the main menu to enter system configuration. Then press  to enter the device configuration menu.
 - Enter the password (default - 2222).
 - Find the touch time limit and increase it.

Chapter 13 DIAGNOSTICS GUIDE

This chapter presents and discusses simple problems that could occur during machine use. Appropriately qualified, professional personnel must carry out all the maintenance procedures, calibrations, and operations of the machine. All repair operations on parts of the machine or the electrical system should be done by qualified personnel.

Contact Technical Sales Assistance if any other problem arises or should the malfunction persist after the intervention of the operator in accordance with the previously mentioned courses of action.

Correct

PROBLEM	POSSIBLE CAUSE	REMEDY
After activating the main switch, the roller compactor does not turn on (the power light is off)	No power supply	<input type="checkbox"/> Check that the electrical cable is not damaged and it is well connected to the power source <input type="checkbox"/> Check the breaker for the electrical circuit <input type="checkbox"/> Check that the roller compactor main switch works properly.
	The electric system is damaged	Contact technical support
The compactor is on (the power light is on), but the display is off	The electronics system is damaged	Contact technical support
During the initialization phases – mold positioning, compaction test execution – the program activates the functions, but the cart or the roller does not work properly	The test parameters are wrong	Check if the parameters have been set correctly.

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Chapter 14 SPARE PARTS AND ACCESSORIES

WARNING

DANGER

Only original spare parts can be used.
Use of other spare parts exempts the manufacturer from all responsibility.
Procedures for substitution of spare parts will be provided by the manufacturer along with the part. For spare parts contact the manufacturer's Sales Service department.

B039-04 ROLLER FOR 320x260mm MOLD

This model is used to compact slabs contained in a 320x260mm mold

B039-05 ROLLER FOR 500x400mm MOLD

This model is used to compact slabs contained in a 500x400mm mold

B039-06 ROLLER FOR 400 x 305mm MOLD

This model is used to compact slabs contained in a 400x305mm mold

B039-06 ROLLER FOR 305 x 305mm MOLD

This model is used to compact slabs contained in a 350x350mm mold

B039-15 ROLLER VIBRATING DEVICE

Device used to compact the specimen.

B039-21 CENTERING PLATE FOR 400 x 305mm MOLD

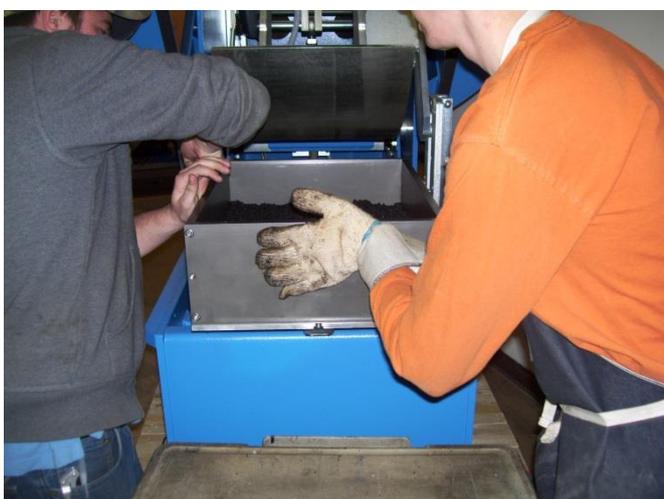
B039-22 CENTERING PLATE FOR 305 x 305mm MOLD

B039-23 CENTERING PLATE FOR 320 x 260mm MOLD

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Appendix A PREPARING MOLD AND MIXTURE FOR COMPACTION

- 1) Heat asphalt mixture and tools to compaction temperature.
 - a. Tools include any item needed to create a uniform asphalt mixture mat. Suggested tools include a scoop, a short-handled garden rake, a spatula, etc.
- 2) Prepare the mold
 - a. Assemble the mold (using a 6 mm Allen wrench)
 - b. Coat the mold with a release agent
 - c. The mold should be heated in an oven as well to reduce the temperature loss during the introduction of the mixture into the slab and compaction. CAUTION: Mold is heavy and should be lifted by two people.



- 3) Turn on the ARC and allow the heated roller to reach compaction temperature.
 - a. The temperature can be adjusted in the Configuration Menu (Password: 2222).
 - b. Adjust the set point to the desire value, then the return arrow to save.
 - c. Heating the roller to the desired temperature takes approximately 2 hours.
 - d. Lubricate the sliding rails.
 - e. Check the tightness of the roller guide connected to the sliding cart.
- 4) Set up the test configuration

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Preparing mixture in mold to compact slab: (1)/(2) Scoop material evenly into heated mold, (3) Use multiple layers to ensure even density, (4) spread mixture evenly to improve density, (5) place mold in ARC, (6) lock mold into place with rubber mallet.