

OPERATING INSTRUCTIONS

Screw Extruder – Hand Operated

23-1370

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<p><i>In the interests of improving and updating its equipment, ELE reserves the right to alter specifications to equipment at any time.</i> ELE International 2020 ©</p>		

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1 General Information

1.1 Warnings

The manufacturer is not responsible for any damages due to misapplication or misuse of this product including, without limitation, direct, incidental and consequential damages, and disclaims such damages to the full extent permitted under applicable law. The user is solely responsible to identify critical application risks and install appropriate mechanisms to protect processes during a possible equipment malfunction.

The manufacturer reserves the right to make changes to the documentary information or to the appliance without advance notice.

Check the machine responds to the standards in force in the country in which it has been installed.

All operations necessary for maintaining machine efficiency before and throughout use are the operator's responsibility. Carefully read the entire manual before operating the machine.

It is vital to know the information and limitations contained in this manual for correct machine use by the operator. Interventions are only permitted if the operator is accordingly competent and trained. The operator must be knowledgeable about machine operations and mechanisms. The purchaser must ensure that operators are trained and aware of all the information and clarifications in this manual and aware of potential risks when operating the machine.

Safety, reliability and optimum performance is guaranteed when using original parts. Any tampering or modifying of the appliance which has not been previously authorised in writing by the manufacturer is considered abusive and disclaims the manufacturer from any responsibility for resulting damage.

All necessary operations to maintain the efficiency of the machine before and throughout use are the responsibility of the operator.

1.2 Warning and danger indications - signs

The machine has been designed and constructed with mechanical and electrical safety devices designed to protect the operator 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 the manual procedures, using the suggested individual protection devices and respecting the legal and safety regulations 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 machine damage could be caused should instructions be ignored
	DANGER	Indicates that machine damage and/or injury to the operator could be caused should instructions be ignored

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

1.3 Instruction manual

This manual has been prepared with the aim of providing machine operators with all the necessary information on installation, use and maintenance in as comprehensive and clear manner as possible.

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

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 appliance only. The manual must always be kept near the equipment so that it can be easily consulted whenever necessary.

IMPORTANT: The manual does not substitute the experience and technical training of the operator but must be considered a guide for carrying out its functions.

Complete instructions which the operator must be aware of for the correct use of this machine and/or test performance can be found in the manual.

1.4 Machine identification data

Model: 23-1370

Production Data: EC declaration specific to serial number of product and can be supplied on request from ELE International.

1.5 CE marking

CE statement specific to serial number of product and can be supplied on request from ELE International.

1.6 Use

The extruder is used for the smooth and rapid extrusion of soil samples from tubes and thin walls with minimum disturbance. The unit extrudes samples from 35 mm up to 101.6 mm with maximum stroke of 650 mm.

Supplied complete with adaptors to extrude samples with diameter 38.1 (1½”), 83, 100 mm, supporting bench and sample receiving table, both adjustable in height.

This appliance is for the exclusive use for which it was intended. Any other use is considered improper and therefore negligent.

The machine must only be used in areas free from danger of explosion or fire.

Immediately stop the machine should it be working irregularly and consult the authorised dealer’s Sales Service department.

It is the client’s responsibility to ensure that the equipment is installed correctly.

1.7 Operators

	DANGER WARNING	The use, transportation, installation, maintenance, demolition and disposal of the appliance must only be carried out by “QUALIFIED PERSONNEL”. This manual is exclusively aimed at “QUALIFIED PERSONNEL” and contains the necessary information for machine use.
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“QUALIFIED PERSONNEL” refers to people who, due to their training, experience and knowledge of the relevant standards, limitations and measures, have been authorised by the “PLANT SAFETY MANAGER” to carry out any necessary activity and are able to recognise and avoid any possible danger.

The manufacturer recommends that the instructions, procedures and recommendations in this manual, together with the relevant safety legislation in force, be scrupulously adhered to, even with the use of appropriate protection devices (whether individual or part of the machine).

The instructions, safety warnings and potential danger outlined in this manual are all necessary for the installation, operation, management and machine maintenance to ensure minimal risk.

The “PLANT SAFETY MANAGER” has the following responsibilities and duties:

- To know the machine functions, commands, safety and protection devices, possible dangers of use and all the information in this manual in detail. This knowledge can only be gleaned from detailed reading of this manual.
- To know the safety legislation in force in detail in order to operate the machine.
- To recognise 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 fully trained with regard to the machine’s safety devices.
- Ensure the machine’s safety devices are not tampered with or removed and are checked on a daily basis. Provide the operator with the 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.

1.8 Transportation and movement

	WARNING	In order to avoid irreparable machine damage, move with care, do not overturn, protect from rain, do not stack, protect the packaging and its contents from bumps and sources of heat.
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During transportation and movement of the equipment it is important to avoid bumps, overloading with other packages, exposure to freezing or heating atmospheric agents, or any other condition which could potentially be harmful to the machine, things or people. Machine transportation and movement must be carried out by qualified personnel who can ensure correct movement.

 	DANGER WARNING	Do not transport or move this product if it is not possible to ensure these instructions are followed. If any doubts exist contact the manufacturer.
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1.9 Packaging removal

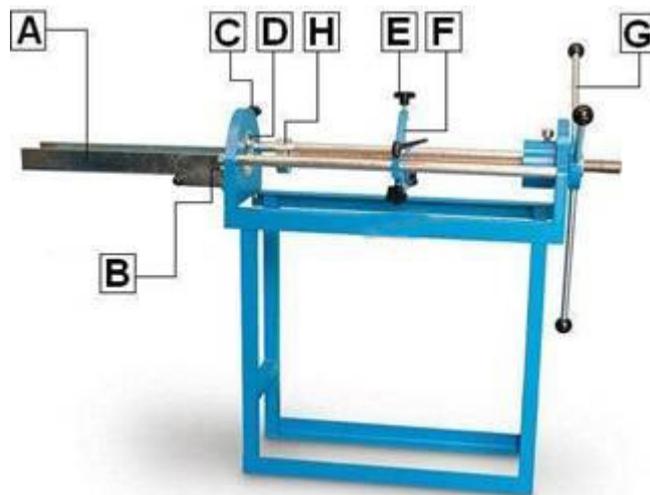
After removing the packaging check the machine is complete and that there are no visibly damaged parts. **DO NOT USE THE MACHINE** but refer to the manufacturer when in doubt.

	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.
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	WARNING	Before disposing of the packaging check all machine components such as accessories, utensils, instructions, documents etc, have been removed.
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2 Technical Characteristics

2.1 General machine description



A Hopper

The hopper holds the specimen after extruding it from the mould.

B Clamping/adjustment screws for the hopper

The clamping/adjustment screws adjust the height of the hopper to allow for different sample diameters and fix it in this position. The screws are placed on the left side of the appliance.

C Clamping screws of the hollow plate

The clamping screws fix the hollow plate **D** on the extruder.

D Hollow Plate

The hollow plate is placed between the hopper and the mould. Its diameter depends on the diameter of the specimen to be extruded and must combine with the tamper **H** correctly.

E Mould Steady

The mould steady clamps the mould in the correct position.

F Centring bracket

The centring bracket holds and centres the mould with the hollow plate. Its position is adjustable to allow for the different lengths of mould.

G Lever

By turning this lever the extrusion tamper will move forward or backward.

H Tamper

The tamper is fixed to the piston. Its diameter depends on the diameter of the specimen to be extruded and must combine with hollow plate **D** correctly.

2.2 Dimensions and weight

LENGTH	1700 mm
WIDTH	700 mm
HEIGHT	1200 mm
WEIGHT	90 kg

3 General Safety Standards

3.1 General standards

To ensure the safety of machine operators:

- Any tampering with the appliance not pre-emptively authorised by the manufacturer exempts the manufacturer from any responsibility for damage caused by or to it.
- The removal or tampering with safety devices entails 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 non-original fittings exonerates the manufacturer from all responsibility.
- Check the appliance is situated in suitable working conditions and that its parts are not worn or faulty before carrying out any necessary maintenance.
- Do not wear loose clothing, ties, jewellery or items which could become caught in the frame or other moving parts of the appliance. Long hair should be tied back.
- 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.
- Check the workspace around the machine is clear from potentially dangerous objects.
- The machine operator must wear appropriate protective clothing such as glasses, gloves and masks to prevent damage from, for example, harmful dust projection. Wear a lower back support when lifting heavy parts, together with heavy duty shoes.
- Do not touch any part of the appliance when testing and use the appropriate protection devices.

When the machine is in operation, check that no dangerous conditions exist. Immediately stop the machine when it is functioning irregularly and contact the authorised service department.

RISK OR DANGER	PROTECTIVE DEVICE
Fingers and hands	Reinforced Gloves
Abrasions and cuts	Reinforced Gloves
Eyes	Protective Glasses

3.2 Machine 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	Tampering with the safety devices, or any unauthorised appliance modifications, could cause severe harm to operators. The manufacturer does not assume any responsibility for direct or indirect damage to people, objects or animals following tampering with the safety devices.
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There are no specific safety devices fitted to this equipment.

4 Operation

	DANGER WARNING	Prior to operation it is essential that the operator and Safety Officer have read and completely understood the instructions and potential risks associated with this equipment.
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4.1 Choice of adaptors

Three hollow plates with internal diameter of 38, 83, 100 mm and three tampers, to be combined with the relevant hollow plate, are supplied with the extruder.

In order to assemble the hollow plate **D** on the extruder, it is necessary to place it into the frame (see Figure 1) and to lock it through the special security dowel **C**.

After assembling the hollow plate, assemble the correct size of tamper **H** on the piston.

NB: To correctly use the appliance, check that the hollow plate has been assembled on the frame, together with a tamper of the same size.

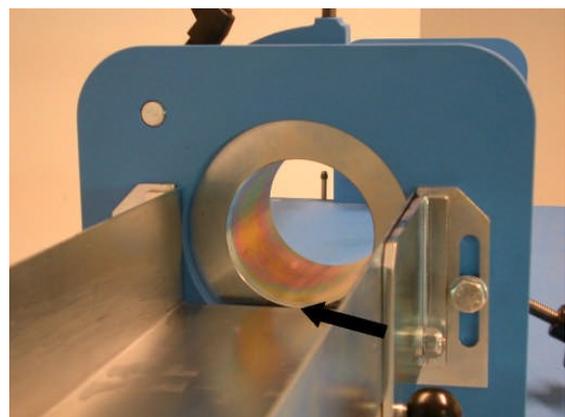


Figure 1

4.2 Placement of sample to extrude

To place the sample to extrude, proceed as follows:

- Insert the mould in the appropriate centring in the die (see Figure 2).
- Put the tamper **H** and the adaptor hollow **D** plate into the frame (see ‘Choice of adapters’ section).
- Adjust the height of the hopper **A** through the relevant screws **B** and put it level with the hopper hole.
- Put the mould with the specimen to be extruded between the three centring hand grips **E** and tighten the screws evenly (see Figure 2).
- Put the mould group close to the hollow plate **D** by means of the fixing lever placed on the bracket **F** in order to insert the mould into the relevant centring placed on the hollow plate (see Figure 2).
- Fix the bracket **F** in that position.

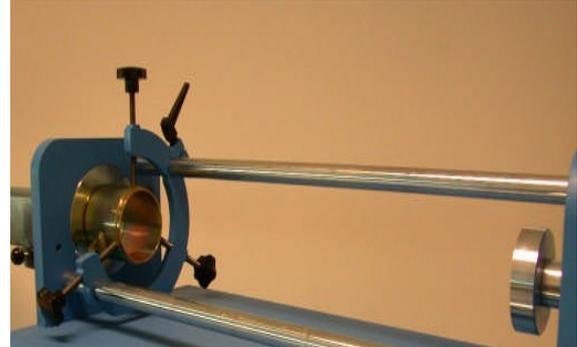


Figure 2

4.3 Practical example of use

Below is a description of a “standard-procedure” which allows an operator with limited experience to carry out a test. However, a fully trained operator will allow full optimisation of the machine to suit the customer’s requirements.

- Equip the appliance as described in ‘Placement of sample to extrude’ above.
- Rotate the lever **G** until the tamper **H** contacts with the specimen to be extruded.
- Keep on rotating the lever **G** until the specimen is removed from the mould.

4.4 Test start-up

Before using the appliance, regularly check it is working correctly by carrying out at least one complete empty cycle as per the previous instructions.

Should any problems occur, contact the service department of ELE International.

5 Maintenance

	DANGER WARNING	All the operations of maintenance, checking and control must be carried out by professionally qualified personnel.
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6 Accessories (Adaptors)

	DANGER WARNING	Only original spare parts must be used. Use of non-original spare parts exempts the manufacturer from all responsibility. Spare parts are available from the manufacturer's service department.
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Adaptors (hollow plate and tamper) for extruder:

38.1 mm (1½")
50.8 mm (2")
76.2 mm (3")
101.6 mm (4")
83 mm
100 mm
35 mm

7 Inactivity

Ensure all machine parts are in safe working order before operating it again. Should the machine be inactive for a long period of time please contact the manufacturer for instructions.

8 Decommissioning the Machine

Should it be decided that the machine is no longer required, proceed as follows:

- Make safe any potential sources of danger, such as sharp or protruding parts.
- Dismantle the machine carefully and dispose of according to the relevant standards.