

# OPERATING INSTRUCTIONS

## 10 kN Flexural/Tensile Testing Machine

### 39-7100

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<i>In the interests of improving and updating its equipment, ELE reserves the right to alter specifications to equipment at any time</i> <b>ELE International 2003 ©</b>		

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## **1 Introduction**

- 1.1 This single lever machine is designed for flexural tests on 40 x 40 x 160 mm mortar prisms and tensile tests on briquettes. The unit incorporates a rate of applied load of 2.67 kN/minute for flexural testing of AFNOR P15-451 and DIN 1164, and tensile testing to ASTM C190.
- 1.2 Load is applied by a weight travelling along the beam at a constant rate, driven by a miniature motor/gearbox. A scale engraved on the beam ranges from 0 – 10 kN (2248lbf) and is graduated in 0.02 kN divisions. Readings are obtained by means of a cursor visible through a window in the moving weight.
- 1.3 Failure of the specimen triggers a microswitch that brings the weight to a halt instantly. On completion of a test, the drive may be disengaged by means of a small lever and the weight returned to zero where the drive must be engaged immediately.
- 1.4 To prevent overloading, a pressure sensing switch built into the weight will automatically stop the machine at its maximum capacity of 10 kN.

## **2 Safety**

Whilst the test is in operation do not remove any covers or attempt to adjust any part of the machine.

Ensure all moving parts are thoroughly secured before attempting any maintenance.

Ensure all appropriate measures are taken to protect the operator from excessive noise.

See noise certificate (when supplied).

### *Electrical safety*

**Warning:** Before removing any covers or performing maintenance repair and service, isolate from electrical supply by removing mains plug. Where mains supply is required during these activities, only competent persons should perform the work.

## **3 Controls**

### **3.1 Clutch, lock**

Situated on the underside of the mobile weight, the right hand lever operates the clutch lock, when engaged the clutch is inoperative and the drive mechanism is locked in.

- 3.2 To disengage pull the lever towards the operator, a red tab indicating disengagement will be seen to emerge from the face of the weight.
- 3.3 With the clutch lock withdrawn, the drive may be disengaged from the rack by moving the clutch lever situated on top of the weight fully over to the right.
- 3.4 When disengaging drive, support the weight to prevent it from jarring against the stop where damage may be caused. Never under any circumstances leave the equipment with the drive disengaged, and always on re-engaging drive ensure the clutch lock is engaged.

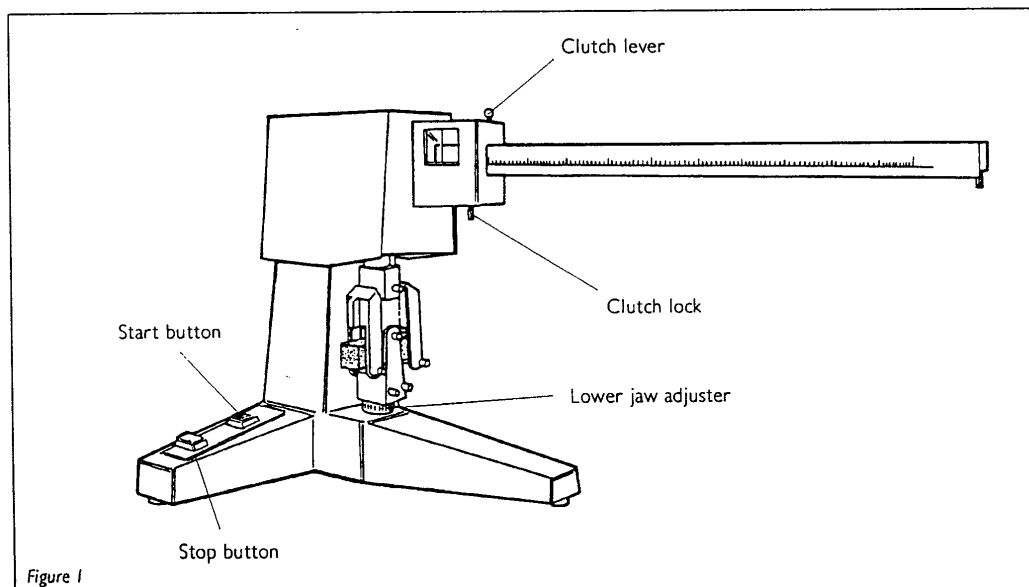
### **3.5 Zero**

The lever beam system is balanced and calibrated before leaving the factory and no adjustment should be necessary. The operator should not attempt to make any adjustments without the availability of the required lever arm calibration equipment.

### 3.6 **Lower jaw adjuster**

To facilitate the insertion of prisms or briquettes into their respective holders, the lower jaw height has been made adjustable.

By rotating the handwheel at the base of the jaw in a clockwise direction, the jaw will be raised and conversely in an anticlockwise direction, lowered.



## 4 **Installation**

4.1 Set the machine base and column on a firm solid bench free from surface deflection.

4.2 Electrical supply

Check that the power supply is compatible with the requirements stated on the label and connect in accordance with IEE regulations or to local requirements.

Local isolation of machine required.

This machine may be operated through a standard 13 amp socket outlet when fitted with an appropriate 3 pin plug fused in accordance with the label.

**Note:** the power cable is coded as follows:

Brown wire	L	Live or Power
Blue wire	N	Neutral
Green/Yellow wire	E	Earth or Ground

### **Portable Appliance Tests (PAT)**

All ELE designed products are tested for electrical safety prior to sale.

An electrical safety test label is fitted, (usually adjacent to the mains input socket).

Should no label be found, please contact ELE Service Department quoting the serial number of the equipment.

Organisations have an obligation to ensure equipment is maintained and is safe for use. Regular PAT testing is one means of ensuring equipment continues to be electrically safe.

**Important: do not connect PAT leads to sensitive components such as PCBs, control switches and the like.**

**DO NOT FLASH TEST ELECTRONIC EQUIPMENT.**

**If in doubt as to the most suitable connection point (which will usually be an earth stud or an external earth connection) contact ELE Service Department for assistance.**

## **5 Operation – Flexural Mode**

### **5.1 Fitting of jaws**

- 5.1.1 Insert the top jaw cradle into the shackle and engage the retaining pin. Check that the cradle is free to swing.
- 5.1.2 Remove both interlock and upper prism support pins from the lower jaw, and place the jaw over the sample failure switch stem engaging both retaining pins to hold the jaw in position.
- 5.1.3 Replace both interlock and support pins in the lower jaw, and by means of the lower jaw adjuster, interlock top and bottom jaws.
- 5.1.4 Add both lower prism support links to the top jaw cradle, ensuring they are free to swing.

### **5.2 Operation**

- 5.2.1 Place the mobile weight in the zero minus position, checking that the drive is properly engaged.
- 5.2.2 Adjust the height of the lower jaw until a 40 x 40 x 160 mm prism can be inserted between the top and bottom prism supports, and flush with the end of the top jaw cradle.
- 5.2.3 Turn the lower jaw adjuster in an anticlockwise direction until the beam swings upwards to an inclination of approximately 10° and contacts the step.  
Turn the lower jaw adjuster clockwise until the beam is just perceptibly away from the step. This may be felt or seen as a very slight downward movement of the beam.
- 5.2.4 Press the start button to commence the test.

**Do not touch or vibrate the machine after the mobile weight has begun to move or false readings will occur.**

- 5.2.5 At the instant of prism failure, the mobile weight will stop and a reading may be taken from the cursor sweeping the scale.
- 5.2.6 After failure the beam will drop, until contact with a linear decelerator cradles the arm down to approximately 15° below horizontal.
- 5.2.7 Withdraw the clutch lock and disengage the drive. Return the mobile weight to the zero minus position, re-engage the drive and insert the clutch lock.
- 5.2.8 Remove the broken prism and clear away the debris, paying particular attention to the area around the lower jaw adjuster.

## **6 Operation – Tensile Mode**

### **6.1 Fitting of jaws**

- 6.1.1 Check free rotational movement of both ejector and briquette roller as in the bottom jaw, and then place the jaw over the sample failure switch stem engaging both retaining pins to hold the jaw in position.
- 6.1.2 Check free rotational movement of the briquette rollers in the top jaw and then insert the top jaw into the shackle, and engage the retaining pin.
- 6.2 Operation
  - 6.2.1 Place the mobile weight in the zero minus position checking that drive is properly engaged.
  - 6.2.2 Adjust the height of the lower jaw until a briquette can be inserted between the rollers of both jaws and pushed back against the ejector.
  - 6.2.3 Turn the lower jaw adjuster in an anticlockwise direction until the beam swings upwards to an inclination of approximately  $10^\circ$  and contacts the step. Turn the lower jaw adjuster clockwise until the beam is just perceptibly away from the step, this may be felt or seen as a very slight downward movement of the beam.

Press the start button to commence the test.

**Do not touch or vibrate the machine after the mobile weight has begun to move or false readings will occur.**

- 6.2.4 At the instant of briquette failure, the mobile weight will stop and a reading may be taken from the cursor sweeping the scale.
- 6.2.5 After a failure the beam will drop, until contact with a linear decelerator cradles the arm down to approximately  $15^\circ$  below horizontal.
- 6.2.6 Withdraw the clutch lock and disengage the drive. Return the mobile weight to the zero minus position, re-engage the drive and insert the clutch lock.
- 6.2.7 Eject the bottom half of the broken briquette from the lower jaw by moving the ejector handle to the right.

The top half of the briquette may be lifted from the top jaw with the fingers.
- 6.2.8 Clear away all debris, paying particular attention to particles trapped in the rollers and around the lower jaw adjuster.

## **7 Maintenance**

- 7.1 Every time prior to use, wipe the top and bottom surfaces of the beam to ensure particles are not jammed into the mobile weight rollers.
- 7.2 Monthly
  - 7.2.1 Examine the power supply cable to the mobile weight for damage or deterioration.
  - 7.2.2 Rotate the lower jaw adjuster to bring the stem out from the adjuster by approximately 20 mm, coat threads with light machine oil. Retract stem.
  - 7.2.3 Using a thin wire, run one or two drops of oil down into each bearing in the beam pivot and multiplier block.
  - 7.2.4 **Tensile jaws**

Examine rollers for damage, lubricate axles with several drops of machine oil and ensure freedom of rotation.

Lubricate ejector pivot point.

7.3 Yearly

- 7.3.1 After this prescribed period of service, the machine should be recalibrated by ELE International or by an authorised distributor.

**Under no circumstances should the machine be adjusted or dismantled and used again for testing purposes without recalibration.**

# Declaration of Conformity

Issued By: **ELE International**

Date of Issue: 1 January 1998    ELE doc ref: 9901X0037

**ELE**  
International

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Approved  
Signatory



We, ELE International, Chartmoor Road, Chartwell Business Park, Leighton Buzzard, Beds LU7 4WG, England, declare under sole responsibility that the following product(s) to which this declaration relates is (are) in conformity with the provisions of:

73/23/EEC Electrical Equipment Directive implemented in the UK by S1728/1989 amended by 93/68/EEC 1/1/1997.

Electrical Safety tested to BS EN 60204-1.

89/392/EEC, 91/368/EEC, 93/44/EEC and 93/68/EEC Machinery Directive implemented in the UK by S13073/1992 and S12063/1994.

89/336/EEC, 91/263/EEC, 92/31/EEC (the EMC Directive) amended by 93/68/EEC and implemented in the UK by SI/2372/1992 and SI/3080/1994.

Emissions tested to BS EN 50081-1 Domestic/Light Industrial.  
Immunity tested to prEN 50082-2 Industrial.

Product Description	Serial No.
39-7100 series      10 kN Flexural/Tensile Testing Machine	(See details on product identification plate)



BS EN ISO9001: 1994 approved  
Certificate number 860461

Responsible person's/approved signatory  
M Green, Managing Director

This Declaration of Conformity complies with BS  
7514 (EN 45014), General Criteria for suppliers'  
Declaration of Conformity

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