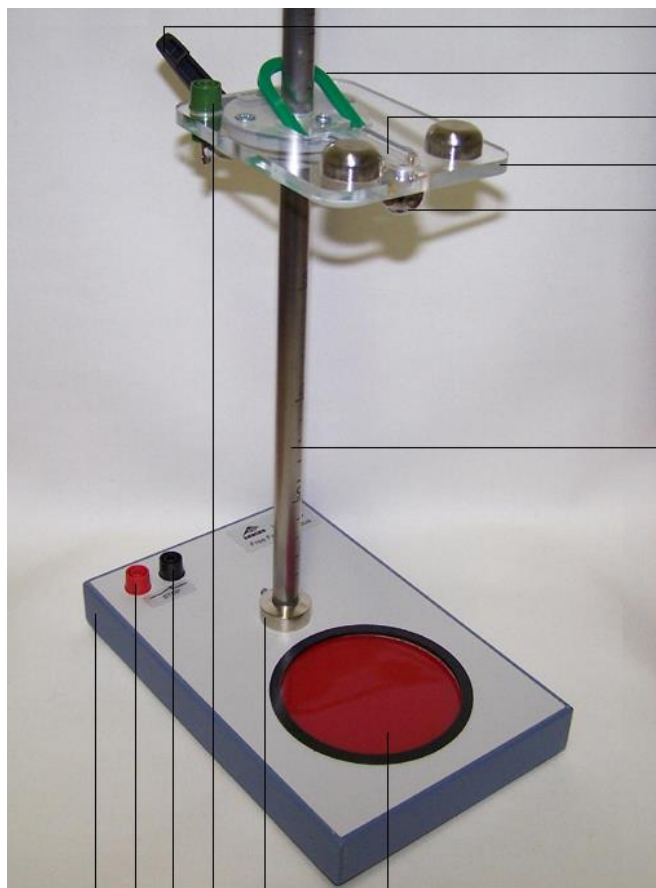


## Free Fall Apparatus 1000738

### Instruction sheet

09/15 TLE/ALF



1 2 3 4 5 6

- 7 8 9 10 11 12
- 1 Base plate
  - 2 Stop socket
  - 3 Ground socket
  - 4 Start socket
  - 5 Socket for stand rod with fixing screw
  - 6 Contact plate
  - 7 Stand rod with scale
  - 8 Steel ball
  - 9 Start fitting with release mechanism
  - 10 Retaining lug with micro-magnet
  - 11 Release lever
  - 12 Clamping lever for start fitting

### 1. Description

System for measuring the time it takes a steel ball to fall from a height which can be precisely set to between 20 and 960 mm.

A stand rod with a height scale is attached to a base plate with a built-in contact surface. A start fitting is attached to the rod at a height that can be accurately adjusted. The start fitting includes a mechanism to release the falling object (a steel ball). Underneath the release mechanism there are three contact pins that ensure that the initial position of the ball is precisely defined. The contacts and the conducting surface of the ball form a switch that opens when the ball starts to fall away. A retaining lug with a micro-magnet at its tip holds the ball in its initial position. Measurement of the fall time is halted when

the ball strikes a contact plate at the bottom of the apparatus. The contact plate is designed in such a way that when the ball hits it, it stops dead and remains on the plate rather than bouncing away onto the floor.

Measurements can be reproduced with a high degree of reliability.

### 2. Contents

- 1 Base plate
- 1 Stand rod
- 1 Start fitting
- 3 Steel balls, 16 mm dia.
- 1 Allen key

### 3. Technical data

Range of heights	20 to 960 mm
Switch contacts:	
Start:	Mechanical
Stop:	Electronic
Dimensions:	200 x 130 x 730 mm <sup>3</sup>

### 4. Set-up

- Insert the stand rod into the socket in the base plate as far as it will go, and turn it so that the scale faces towards the red contact plate.
- Tighten the fixing screw using the Allen key provided.

If the stand rod has been set up correctly, the scale will be exactly at the correct height and the instrument is ready for operation.

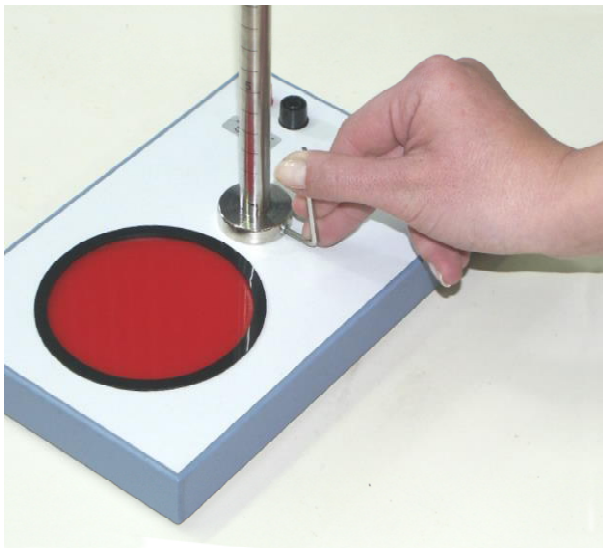


Fig. 1 Setting up the stand rod

The height of fall can be read off the scale on the rod and is referenced to the top edge of the bore on the start fitting (see Fig. 2). The reading on the scale corresponds to the distance covered, i.e. the distance between the ball and the contact plate at the bottom.

- Place the steel ball between the contact pins from below so that it is held in place by the retaining lug when the latter is pressed down.
- Allow the ball to fall by pushing lightly on the release lever.

For optimum precision and reproducibility, the release must be operated gently and carefully.

The micro-magnet moves away from the surface of the ball. The start contact opens at the instant the ball begins to fall.

When the ball hits the contact plate at the bottom, the stop contact is opened briefly and the time measurement is stopped.

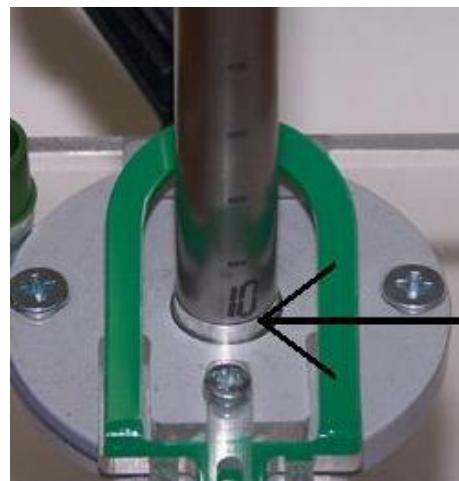


Fig.2 Adjusting the height of fall

### 5. Operation

The following equipment is also required to perform the experiment:

1 Digital counter/timer@230 V	1001033
or	
1 Digital counter/timer@115 V	1001032
1 Set of experiment leads	1002848

- Connect the free-fall apparatus to a timer. Make sure you keep to the colour coding of the sockets.
- Set the release lever and adjust the height of fall.