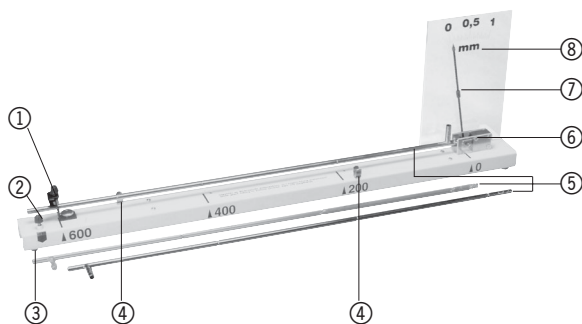


## U15400 Dilatometer/linear expansion apparatus

### Instruction sheet

3/03 ALF



- ① Fixed mount with screw for securing tube and securing screw
- ② Screw for stand (see Fig. 2)
- ③ Base strip
- ④ Spring clip for securing hose
- ⑤ Guide mount with gears for pointer
- ⑥ Testing tubes
- ⑦ Pointer
- ⑧ Scale

The dilatometer is for the proof and quantitative determination of linear expansion of solid materials as a function of material, length and temperature.

are three testing tubes made of steel, brass and glass. Suitable for projection using a daylight projector (see Fig. 2).

#### 1. Safety instructions

- Caution. The experimental procedure results in hot steam.
- Do not touch heated tubes with your fingers. Use cloths when replacing tubes.
- Do not subject the glass tube to mechanical stresses.

Dimensions:	730 mm x 50 mm x 200 mm
Scale dimensions:	140 mm x 200 mm
Scale:	140 mm x 200 mm
Measuring range:	1 mm
Accuracy:	0.05 mm
Length of tube:	650 mm approx.
Weight:	2 kg approx.

#### 2. Description, technical data

The dilatometer consists of a base strip with fixed mount, guide mount, pointer and projectable scale. Also included

#### 3. Principle

To determine the linear expansion coefficient  $\alpha$  for various materials, it is necessary to measure the ex-

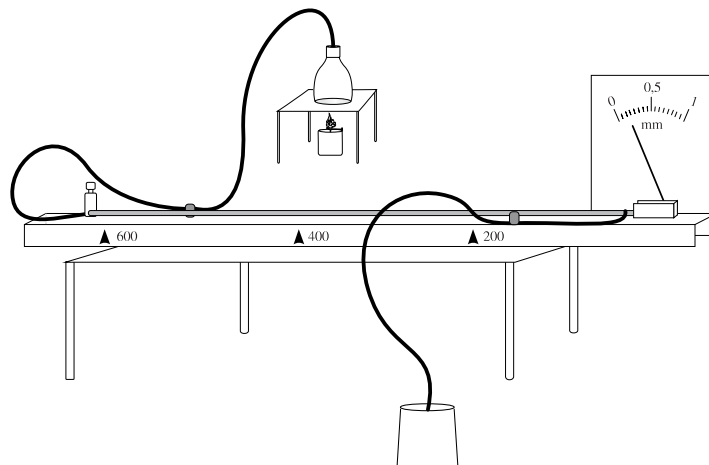


Figure 1

pansion for a certain temperature rise  $\Delta T$ . Thus the tubes are heated to  $100^{\circ}\text{C}$  by means of steam and the temperature difference  $\Delta T$  from room temperature is calculated. The expansion is determined from the movement of the pointer, where a pointer movement of 50 mm indicates an expansion of 1 mm. The expansion coefficient is determined from the length of the tube  $\Delta l$  between the two fixed points by means of the formula:

$$\alpha = \frac{\Delta l}{l \cdot \Delta T}$$

#### 4. Instructions for use

- Attach the fixed mount at marking 200, 400 or 600.
- Attach the open end of the tube to be tested into

the fixed mount and secure it with the screw. The screw should grip the ring nut of the tube.

- Hoses should be attached as in Figure 1 and the run-off bowl should be placed under the hose.
- Adjust the point to zero if necessary.

Also required for heating the tube under test:  
Vapor generator or a bunsen burner heating an Erlenmeyer flask

#### 5. Storage

The glass tube should be secured beneath the base strip to avoid damage.

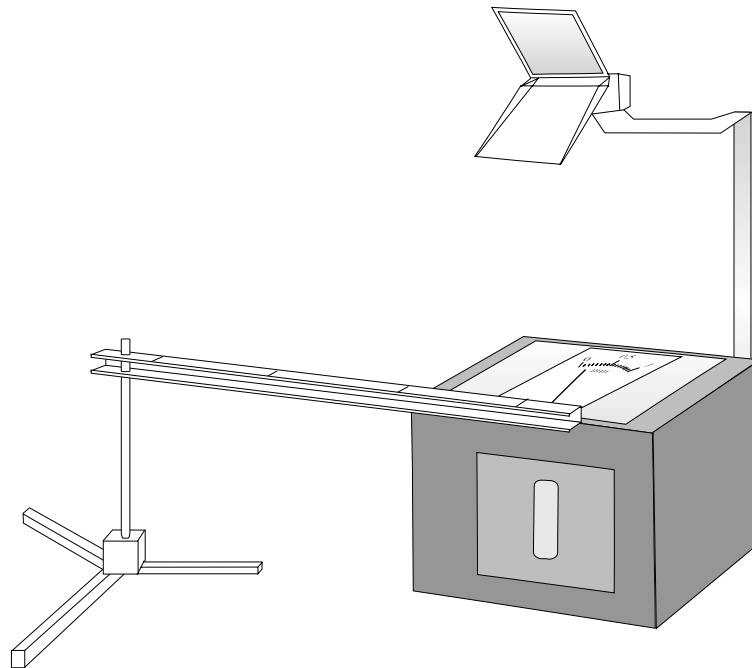


Figure 2