

## Ball with Ring 1000831

### Instruction Sheet

09/15 ALF



- 1 Bracket with hole
- 2 Ball on chain
- 3 Handle

### 1. Safety instructions

When working with naked flames there is a risk of burns or other injuries!

- Always stand Bunsen burner on a fire-resistant surface.
- Never leave the burner unattended.
- Do not allow inflammable objects to come near the flame.
- Long hair must be tied back.
- Do not stand close to the flame.
- Never work above the flame.
- Do not touch the ball with your hands when it is hot.
- Before putting the apparatus away, allow the ball to cool.

### 2. Description

The ball with ring is used to demonstrate the thermal expansion of solid bodies.

The apparatus consists of a U-shaped metal bracket with a ring-shaped hole and a steel ball attached to a handle by a chain. The ball can

only pass through the hole at room temperature. If it is heated, its thermal expansion prevents it from passing through.

### 3. Technical data

Dimensions of the bracket:	40×50×40 mm <sup>3</sup>
Diameter of ball:	22 mm
Length of handle including rod:	225 mm approx.
Weight:	175 g approx.

### 4. Experiment procedure

#### 4.1 Heating with a Bunsen burner

Additional apparatus needed:

1 Bunsen burner

- First verify that the ball passes through the hole in the bracket at room temperature.
- Hold the ball in the flame of the burner and heat it.
- Carry out the hole-passing test.

## 4.2 Heating with boiling water

Additional apparatus needed:

1 Glass beaker

Boiling water

- First verify that the ball passes through the hole in the bracket at room temperature.
- Immerse the ball in boiling water for about 30 seconds.
- Test whether the ball passes through the hole.
- Cool the ball in cold water and test again whether the ball goes through the ring.