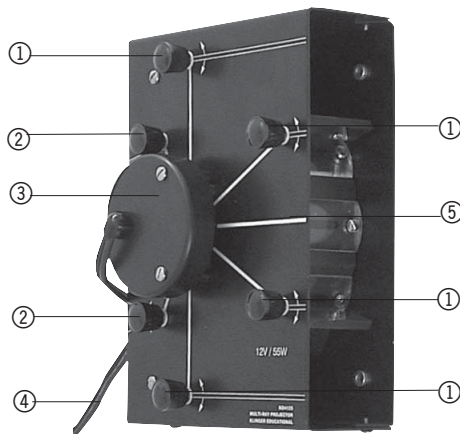


## U40110 Multiple Beam Lamp

### Operating instructions

1/03 ALF



- ① Rotary mirror for focused, parallel light beams
- ② Rotary mirror for divergent light beams
- ③ Protective cover
- ④ Electrical power cable with a 4-mm plug
- ⑤ Central ray

The multiple beam lamp allows numerous demonstrations in the areas of ray and wave optics when used with the equipment set for optics on magnetic boards, basic set (U14600) and supplementary set (U14601). The demonstrations include casting of shadows, chromatics, reflection laws, refraction laws, total reflection, minimum angle of deflection in a prism, ascertaining the focal length of mirrors and lenses, lens laws and aberrations.

#### 1. Safety instructions

- Caution: Lamps heat up during extended periods of operation.
- Do not touch the glass bulb of the lamp with your bare hands when changing the bulb, for example. Lamp bulbs are clouded by fat deposits on the skin.

#### 2. Description, technical data

The device comprises a halogen lamp in a metal housing lined with magnetic foil. The light source emits up to 5 narrow beams which are deflected by rotary mirrors so as to emerge parallel, convergent or divergent. Up to 2 divergent light beams whose area of overlap can be adjusted by means of mirrors are available on the rear of the multi-beam lamp.

Lamp: 12V, 55W  
Power cable: 1.5 m long with a 4-mm plug

Dimensions: 150 mm x 200 mm x 50 mm  
Weight: 0.9 kg

#### 2.1 Accessories:

U40113 Spare halogen light for the multiple beam lamp U40110.

### 3. Procedure

#### 3.1 Setting a parallel light beam

- Attach the lamp to the board.
- Plug the lamp into a power supply unit, for instance, U11735.
- Adjust the beam via rotary mirror 1.

#### 3.2 Setting a divergent light beam

- Attach the lamp to the board.
- Plug the lamp into a power supply unit, for instance, U11735.
- Adjust the beam via rotary mirror 2.

#### 3.3 Changing bulbs

- Loosen the screws, remove the round protective cover (A) and the spacers.
- Remove the flat plug (E), loosen the knurled screws (B), remove the plate (C) and the lamp (D).
- Insert a new lamp. Fasten the plate again with knurled screws such that the lamp can still be moved.
- Do not touch the glass bulb of the lamp with your bare hands when changing it. Lamp bulbs are

- clouded by fat deposits on the skin.
- Insert the flat plug.
- Place the lamp on a level tabletop, turn all rotary mirrors outward, and connect the lamp to a 6V source.

- Adjust the lamp so that all beams are equally bright.
- Tighten the knurled screws.
- Install the spacers and the protective cover, and tighten the screws.

**Figure 1: Bulb replacement**

