1. Description
The high pressure mercury lamp supplies a light with high luminosity. The line spectrum of the radiation, which has a high UV component, is in the wavelength range from about 579 nm to 248 nm.

When warmed up, the linewidth of the pressure broadened lines is some tenths of nanometers.

Experiment examples
- Diffraction, Interference
- Hg-Spectrum
- Fluorescence, Phosphorescence
- Planck’s constant

2. Technical Data
(1) Socket, E27
(2) Metal housing
(2.1) Window Diameter: 30 mm
(3) inside: Hg-ampoule: quartz tube filled with mercury and sealed electrodes

Ignition voltage: ca. 200 V
Operating voltage: ca. 115 V
Operating current: ca. 0.8 A
Power: 80 W
Luminance: 600 cd/cm²
Mercury content: 14.6 mg

3. Scope of delivery
Lamp

4. Accessories
Additionally required:
451 195 Power supply unit for high-pressure mercury lamp or
451 19 Lamp socket E27, multi-pin connector
451 30 Universal choke 230 V, 50 Hz
Optional mechanical fasteners
300 02 Stand base, V-shaped

5. Operation
Lamp must only be operated with a choke. Do not screw into a socket E27 without ballast.
Socket E 27 (451 19 or 451 195) Connect to the power supply only when lamp is screwed in.
Warm-up time up to full light output: 10 minutes.
Re-ignition of a warmed up lamp can be difficult. Let it cool down to switch it on again.

6. Safety

For the safety instructions here are some detailed explanations

6.1. UV

The exposure limits in the Annexes to 2006/25 / EC have to be obeyed in the EU. For example, the UV line at 254 nm is allowed to reach a limit \( \text{Limit E (254nm)} = 60 \text{ J/m}^2 \text{ per day.} \)

The mercury lamp 451 15 emits small amounts of UV radiation and reaches this limit at short distances (cm) within minutes. At 10 cm we measured an intensity that would allow a daily exposure of 1.7 hours.

The employer might have to do a risk assessment.

Basic safety recommendations:
- Do not look into the light
- UV radiation area might need some marking
- Close eyes and avert when the light seems to be to bright

The lamp needs to be declared as RG3 according to EN 62471, actinic hazard <1000 s.

Working in the direct light for a longer time might require gloves.

6.2. Mercury

This lamp contains 14.6 mg of mercury. A break of the inner ampoule releases no mercury, while the outer glass bulb is still intact, and vice versa.

In an unlikely breakdown of both glass bulbs, the mercury is released. In cold condition the remains of the lamp are packed air-tight and given for disposal.

If the glass breaks in hot condition the mercury is immediately released into the room air. The amount of 14.6 mg contained presents no acute health hazard for a one time exposure.

PEL (permissible exposure limits) are around 100 \( \mu\text{g/m}^3 \). Diluting the mercury vapour with 150 m\(^3\) of air is sufficient.

In case the lamp breaks completely:
- Leave the immediate surroundings of the lamp glass breakage
- Ventilate the room
- Leave the room
- Do not work near the just ruptured lamp. prefer to use a remote emergency stop

6.3. Broken glass

The outer glass tube holds back any splinters of a bursting burner. A violent destruction of the complete lamp from the outside can make glass splinters fly around.

6.4. EU-ban

7. Note: The directive 2005/32 / EG in conjunction with EU Regulation 245/2009 prohibits some mercury lamps for lighting purposes because of mercury content and electrical inefficiency. The 451 15 lamp is not affected because they are used as spectral lamps and are neither "white" nor used for lighting.

8. Transport

Despite the mercury content, the originally packed lamp is not subject to air transport regulations in quantities <2000 pieces.

IATA: Exception 1.2.11
ADR: Section 1.1.3.10 b