

U14380 Gas discharge tube, large

Instruction sheet

1/04 ALF



The discharge tube is for observing light produced during electrical discharges in gases at reduced pressure and for studying cathode and canal rays that are observed outside the path of the discharge at low pressure.

1. Safety instructions

- Operating precautions for the avoidance of X rays: Discharge tubes are capable of producing X-rays at operating voltages $\geq 5\text{kV}$ and are thus subject to legal stipulations for X rays in the Federal Republic of Germany (§ 1, para.1 of the X ray stipulations). They are thereby defined as an illegal emitter. Operation of the equipment does not require approval if used with a low-current 6 kV high voltage power supply. This does not result in impermissible emission of X-rays. The power at a point 0.1 m from the surface of the tube is much smaller than $1\ \mu\text{Sv/h}$ (§5, para. 2 of the X ray stipulations). Use of voltages above 5kV from other voltage sources (such as a spark generator) is forbidden in the Federal Republic of Germany. Similar laws must be observed in other countries.
- Do not subject the discharge tube to any mechanical stresses and use it with care.
- Check the tube for damage before using it in an experiment. A damaged tube may implode when evacuated.

2. Description, technical data

The discharge tube is a T-shaped glass tube with a smooth flange and two drilled, disc-shaped electrodes with 4-mm sockets for connecting a power supply approximately 15 cm from either end.

Dimensions: 700 mm x 40 mm \varnothing approx.

Vacuum connection: Smooth flange NS 19/26

3. Instructions for use

- Carefully make the mechanical connections to the vacuum apparatus.
- Smear the smooth flange of the discharge tube evenly with vacuum grease.
- Place the tube on the core flange without using force.
- Apply a 5 kV/2mA voltage to demonstrate visible light discharges.
- Connect the cathode to the ground terminal of the power supply (protective conductor).
- After applying the operating voltage, evacuate the tube with the inlet valve closed.
- Darken the room and observe the visible light discharges.
- By carefully using the inlet valve, the duration of the observation may be extended.
- After the experiment has been completed, close the ball valve and open the inlet valve of the discharge tube.
- Turn off the pump and open the tap again.

Equipment required in addition:

- 1 6 kV high voltage power supply (U21060)
- 1 Rotary vane pump PK 2 DC (U14500)
- 1 Pirani vacuum gauge (U14505)
- 1 2-way ball valve (U14510)
- 1 Crosspiece (U14511)
- 1 Ventilation valve DN 16/5 (U14513)
- 1 Adapter flange DN 16 – core NS 19/26 (U14516)
- 5 Standard clamping ring KF DN 10/16 (U14517)

