

## Tube Holder S 1014525

### Instruction sheet

10/15 ALF



- 1 Base plate
- 2 Slot for accommodating the Helmholtz coils
- 3 Ramp for accommodating the auxiliary coil
- 4 LED
- 5 Terminal panel (backside)
- 6 Neck brace
- 7 Tail stock with plug connectors

### 1. Safety instructions

When the tube is in operation, the terminals of the tube may be at high voltages with which it is dangerous to come into contact.

- Only use safety experiment leads to connect up the circuitry.
- Only change circuits with power supply equipment switched off.
- Only exchange tubes with power supply equipment switched off.

### 2. Description

The tube holder accommodates the entire range of tubes model S designed for practical experiments, along with their accessories such as Helmholtz coils S (1000611) and an auxiliary coil (1000645), and can also serve as the base for the discharge tube S (1000624).

The tube holder consists of a base plate with a holder for the tube set at an angle with terminal panel attached. The tail-stock for the neck of the tube contains an octal plug connector and a central bore. Five sockets are electrically connected

to the terminal panel with its 4-mm safety sockets. A filament protection circuit is also integrated into the neck brace to prevent excess voltage being applied to the cathode heater circuit and thus protecting the sensitive heater filament from damage. The relay cuts out at a filament voltage of about 10.5 V DC or about 8.5 V AC. It switches back on again when the filament voltage is once again below the limit. Excess voltage is indicated by a red LED. The base also contains a slot for accommodating Helmholtz coils either transversely to the tube and up to 150 mm away from it or in standard Helmholtz configuration (marked). The ramp at the front of the tube holder accommodates the Helmholtz coils in an axial configuration and also provides a base for the auxiliary coil. The tube holder is mounted on three rubber feet and is thus unable to slide.

| Terminal | Tube pin | Function                         | Comment   |
|----------|----------|----------------------------------|---|
| A1       | 1        | Anode                            | Connected directly  |
| F3       | 3        | Cathode heater                   | Filament protection circuit                                       |
| F4       | 4        | Cathode heater                   | Filament protection circuit connected to C5 via a 400 kΩ resistor |
| C5       | 5        | Depends on the tube e.g. cathode | Connected directly and to F4 via a 400 kΩ resistor                |
| G7       | 7        | Depends on the tube e.g. grid    | Connected directly  |

### 3. Technical data

Dimensions: 130x190x250 mm<sup>3</sup> approx.  
 Weight: 0.570 kg approx.

## 4. Operation

### 4.1 Setting up and removing tubes

- Press tube gently into the stock and push until the pins are fully inserted. Take note of the unique positions of the guide pin (refer to Fig. 1).
- To remove the tube, apply pressure with the index finger of the right hand on the guide pin until the pins loosen, then pull out the tube.

### 4.2 Setting up the Helmholtz coils for a transverse field

- Insert the coils into the middle of the coil slot and push them out as far as they go. Make sure the connectors point outwards (refer to Fig. 2).
- Insert the hot cathode tube into the holder as described above.
- For Helmholtz configuration  $d = r$  the outer edges of the coil base should be flush with the dashed lines.

### 4.3 Setting up the Helmholtz coils for an axial field

- Insert the hot cathode tube into the holder as described above.
- Slot the base of the coil into the groove from the front making sure that the connectors point forwards.
- When using both coils, attach the base of the second coil to the plug of the first coil (refer to Fig. 3a).

### 4.4 Setting up the auxiliary coil

- Connect up the coil using experiment leads (refer to Fig. 3b).
- Place the coil onto the ramp of the tube holder so that the plugs slide into the corresponding slot.
- The leads may be trailed through the mouth of the ramp.
- Insert the hot cathode tube into the holder as described above.

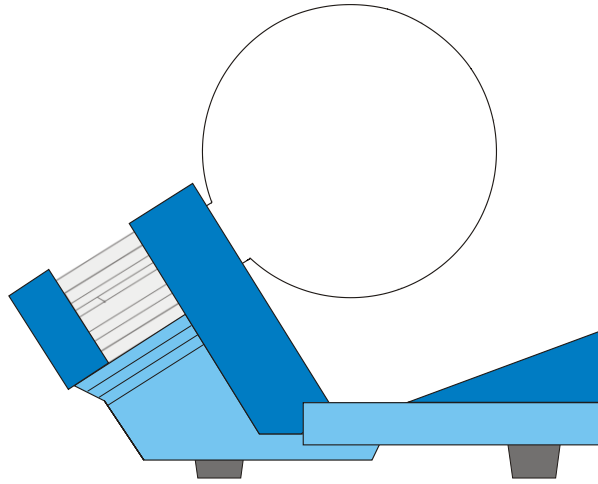


Fig. 1 Setting up a tube

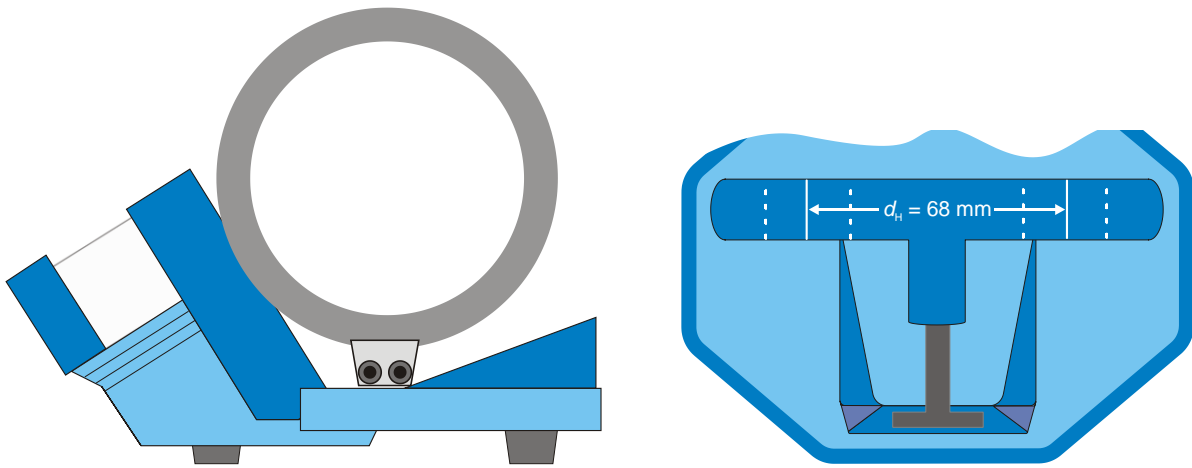


Fig. 2 Setting up the coils for a transverse field

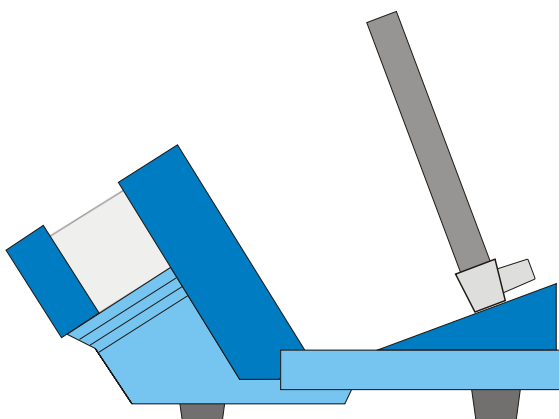


Fig. 3a Setting up a coil for an axial field

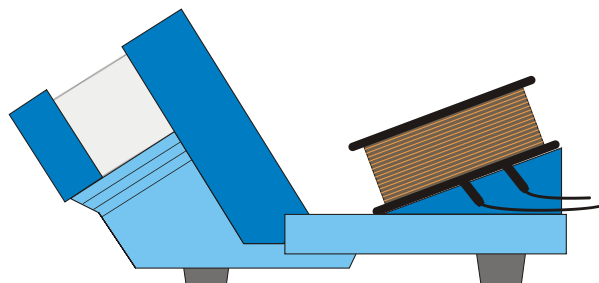


Fig. 3b Setting up the auxiliary coil