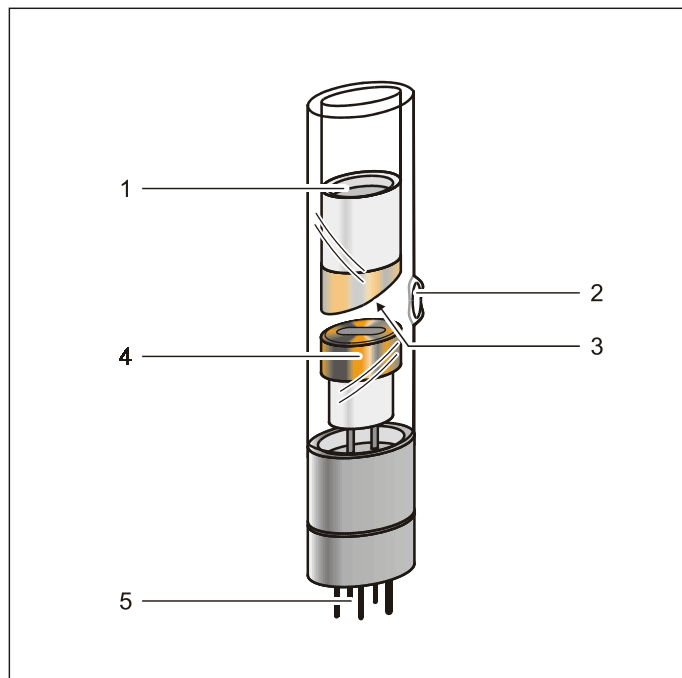


04/04-W97-Sel



Instruction sheet 554 85

X-ray tube Cu (554 85)

- 1 Thread, for heat sink
- 2 Outlet window
- 3 Copper anode
- 4 Hot cathode
- 5 Pin socket base

Administrative requirements

Before putting the X-ray tube Cu into operation for the first time, it is your responsibility to notify all relevant authorities and obtain any permits required by the laws and regulations of your country.

Safety notes

The type approval for school use in Germany NW 807/97 R_ö for the X-ray apparatus (554 81) includes also the operation of the X-ray tube Cu.

- Operate the X-ray tube Cu only in the X-ray apparatus (554 81).

Do not remove the lead glass tube from the tube chamber. The mounting screws of the tube are compound-filled to prevent this.

- Never loosen the mounting screws.

Do not allow the anode of the X-ray tube Cu to overheat.

- When putting the X-ray apparatus into operation, make sure that the ventilator in the tube chamber is turning.

1 Description

The X-ray tube Cu is a directly heated hot cathode tube with a 6-pin socket base for mounting in the X-ray apparatus (554 81).

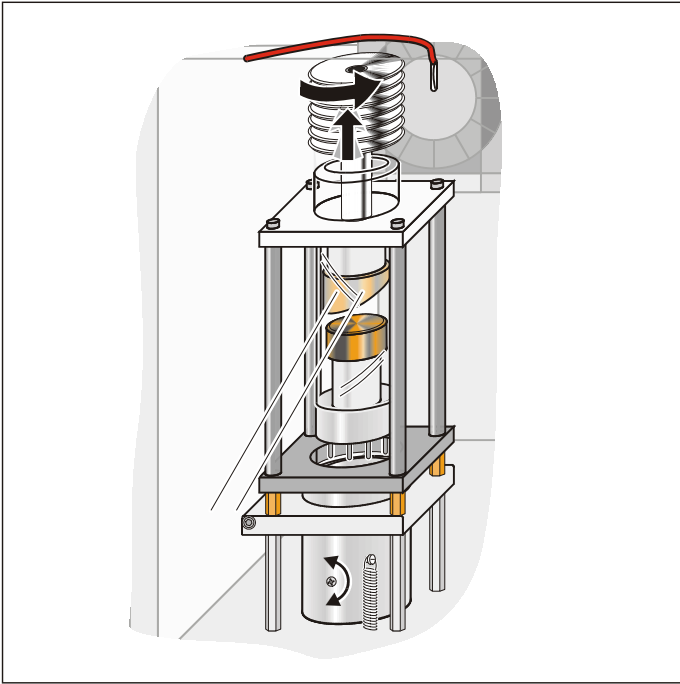
2 Scope of supply

- 1 X-ray tube Cu
- 2 Quality certificates (for X-ray tube Cu, in German)
- 2 Copies of type approval NW 807/97 R_ö (for X-ray apparatus 554 81, in German)
- 1 Ni-Filter (554 833)
- 1 Instruction sheet 554 85
- 1 Instruction sheet 554 833

3 Technical data

Anode material:	Copper $K_{\alpha} = 8.05 \text{ keV (154 pm)}$, $K_{\beta} = 8.91 \text{ keV (139 pm)}$
Max. anode voltage:	35 kV
Max. emission current:	1 mA
Size of focal spot:	approx. 2 mm^2
Minimum service life:	approx. 300 h
Connection for cathode heating and tube detection:	6-pin plug with centering aid
Thread:	matches heat sink in tube chamber of X-ray apparatus
Dimensions:	$20 \text{ cm} \times 4.5 \text{ cm dia.}$
Weight:	0.25 kg

4 Mounting and demounting



Note:

Always switch off or unplug the X-ray apparatus before mounting or demounting the X-ray tube Cu.

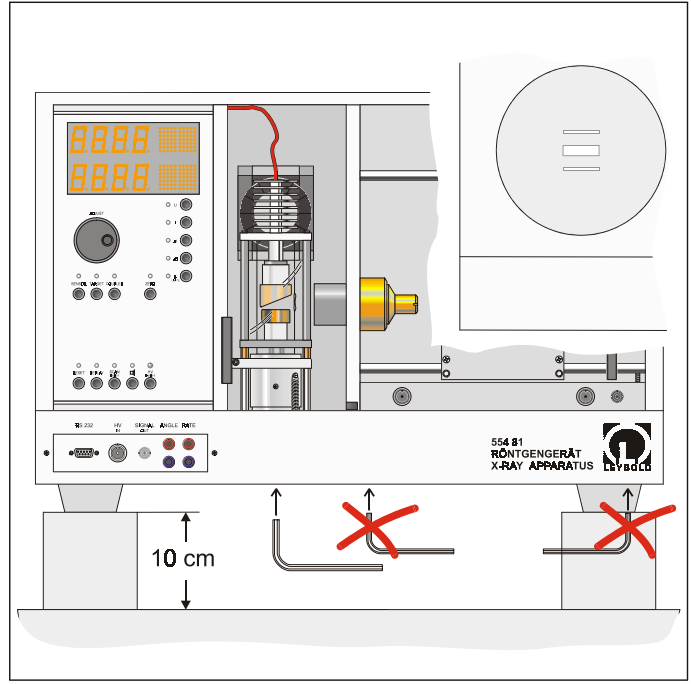
4.1 Mounting:

- Slide the X-ray tube Cu halfway into the lead glass cylinder and hold it firmly.
- Screw on the heat sink finger-tight and plug the X-ray tube into its socket, observing the centering aid, so that the slanted face of the anode is toward the measuring chamber.
- Tighten the mounting screw at the round tube base securely.
- Plug the high voltage cable into the heat sink vertically from above so that the insulation also goes into the hole.
- Check the height adjustment of the X-ray tube Cu.

4.2 Demounting:

- Allow the X-ray tube Cu to cool down if necessary.
- Withdraw the high-voltage cable vertically upward out of the heat sink.
- Loosen the mounting screw at the round tube base.
- Hold the X-ray tube Cu by the heat sink and take it out of the socket while carefully and gently rocking it from side to side (Take care not to damage the glass bulb).
- Hold the X-ray tube Cu by the glass bulb and unscrew the heat sink (normal clockwise thread).
- Remove the X-ray tube Cu and the heat sink.

5 Height adjustment



Note:

The height is adjusted using only the height adjustment screws beneath the tube chamber. The two other height adjustment screws are used for adjusting the height of the goniometer and are not to be used here.

The position of the focal spot on the anode must be within certain tolerances, so you will need to adjust the height of the X-ray tube Cu after mounting it.

- Place the X-ray apparatus on four blocks approx. 10 cm high; be sure that the weight of the X-ray apparatus is only on the feet.
- Open the lead glass sliding door of the tube chamber, loosen the clamping screw of the tube mount with the 4 mm Allen wrench and close the glass door again.
- Mount the collimator (if this has not already been done), remove the cover plate and make sure that the ray path between the collimator and the fluorescent screen is unobstructed.
- Set the tube high voltage $U = 35.0$ kV and the emission current $I = 1.0$ mA and switch on the tube high voltage.
- Adjust the height of the X-ray tube Cu using the 4 mm Allen wrench on the screw in the bottom beneath the tube; shift the narrow horizontal strip of the collimator slit that appears on the fluorescent screen one time each to the top and bottom limit of visibility.
- Mark these limits of visibility on a piece of adhesive tape (which you previously taped to the screen), find the midpoint between them and set the height of the X-ray tube Cu to that level.
- Alternatively, count the number of screw turns between the top and bottom visibility limits and set the X-ray tube Cu to the middle.
- Secure the X-ray tube Cu with the clamping screw of the tube support.