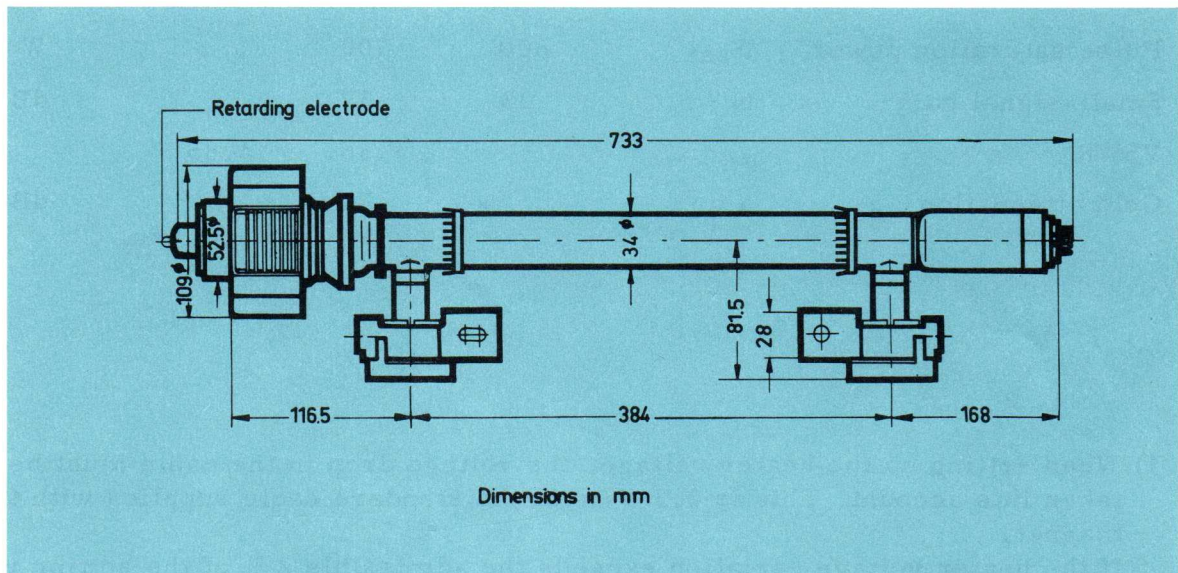


Design and Application

Forced-air cooled high-power traveling-wave tube for the frequency range 470 to 860 MHz. The tube is intended for use in UHF TV transmitters or translators and delivers a video sync output power of 160 W in band IV and 200 W in band V.

It is focused by a permanent magnet and can be replaced in this magnet.

The r.f. input and output connectors are coaxial.



- Base: special 8-pin type (see also page 7) ¹⁾
- Tube weight: 3 kg (6.6 lbs)
- Magnet weight: 40 kg (88 lbs)
- Magnet dimensions: approx. 200 mm x 220 mm x 750 mm (8" x 8 1/2" x 29 1/2")
- R.f. connectors: coaxial, 50 or 60 Ω , (various standardized connectors, see page 9)
- Mounting position: in stationary equipment optional. When mounted vertically, the best position in terms of cooling is with the collector uppermost.

1) The socket with cable is supplied as an accessory (see page 9).

Heating

Heater voltage	E_f	6.3	Vdc ¹⁾
Heater current	I_f	≈ 2.6	Adc

indirect by dc, parallel supply, + pole connected to cathode

Metal capillary dispenser cathode

Characteristics

($F = 700 \text{ MHz}$, $I_k = 1 \text{ A}$)

		min	nom	max	
Pulse saturation power	P_{sat}	600	700		W ²⁾
Small-signal gain	G	33	37		dB
VSWR			1.35	1.85	³⁾
Cold attenuation	α		70		dB

1) When setting up the heater voltage, the voltage drop in the cable must be taken into account. This is 0.3 V/m in the standard cable supplied with the magnet.

If the heater voltage variation exceeds the admissible 2 % of the setting value (absolute limits) the operational performance and life of the tube will be impaired. For standby operation, the heater voltage must be reduced to 5.6 V; the tube is then fully operational when the heater voltage is increased to its nominal value and the electrode voltages and r.f. drive applied simultaneously.

2) The saturation power may only be measured in pulsed operation.

3) Cold match at the tube input and output over the frequency band 470 to 860 MHz.

Typical operation

The collector, helix and grid No. 1 voltages and the cathode current are fixed setting up values which remain unchanged when tubes are replaced. The variation of helix voltage with frequency is shown in the graph on page 10.

Video carrier frequency	F	470 to 600	600 to 790	790 to 860	MHz
Video: Audio ratio		5 : 1	5 : 1	5 : 1	
Video sync output power	P_{syn}	160	200	200	W
Third order intermodulation	IM ₃	≥ 54	≥ 54	≥ 54	dB 1)2)
Gain	G	≥ 29	≥ 32	≥ 30	dB 3)
Collector voltage	E_b	$E_h - 300 \pm 70$	$E_h - 300 \pm 70$	$E_h - 300 \pm 70$	V
Helix voltage	E_h	3600	3400	3250	V
Grid No. 2 voltage	E_{c2}	870	1050	1150	V
Grid No. 1 voltage	E_{c1}	- 100	-100	- 100	V
Retarding electrode voltage	E_{ret}	0	0	0	V 4)
Helix current	I_h	12	12	12	mA
Grid No. 2 current	I_{c2}	± 0.5	± 0.5	± 0.5	V
Cathode current	I_k	1	1	1	A

- 1) With phase compensator. A suitable phase compensator type PK 200 is available for the frequency band 470 to 790 MHz.
- 2) Measured in accordance with the German Post Office specification FTZ Pfl 2, issue 2, October 1966, with undistorted input signal, carrier levels below reference (peak sync): $F_{video} - 8$ dB, $F_{sideband} - 16$ dB, $F_{audio} - 7$ dB.
It should be remembered that the intermodulation products of an amplifier are caused by each stage (see "Determination of Intermodulation products in TV translators").
- 3) When using the phase compensator PK 200, an additional gain loss of 2 dB in the compensator must be allowed for.
- 4) Connect retarding electrode to cathode.