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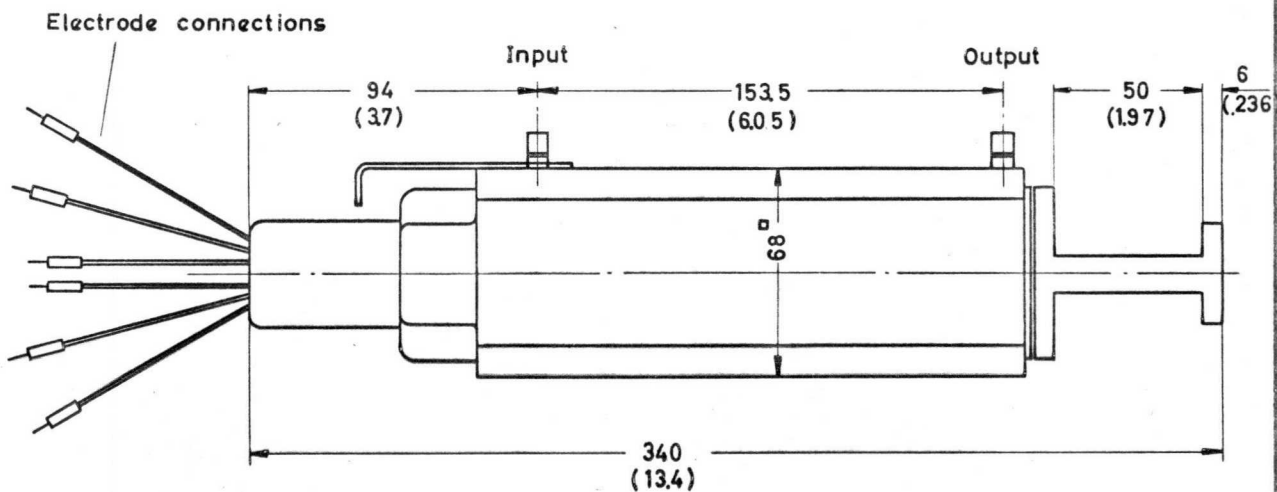
## Power Traveling Wave Tube

$F = 10.7 \text{ to } 13.2 \text{ GHz}$

### Design and Application

Conduction cooled power traveling wave tube for the frequency range 10.7 to 13.2 GHz with an average CW power output of 20 W and a minimum gain of 40 db.

The RW 1120 is focused by an integrated periodic permanent magnet; tube and magnet are arranged replaceable in its case. The tube is designed to operate with depressed collector. The rf power is coupled in and out by way of waveguides.



Dimensions in mm  
in ( ) inches

- Weight of tube with magnet : 3.5 kg
- Weight of tube with magnet and case : 6.5 kg
- Dimensions of the tube with case : 400 mm x 110 mm x 80 mm
- Waveguide : WR 75, 19.05 mm x 9.53 mm
- Flange : see page 7 (M band)
- Mounting position : any (see Cooling, page 5)

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### Heating

Heater voltage	Ef	6.3	Vac	1)
Heater current	If	≈ 0.8	Aac	
Cathode heating time	tk	> 45	sec	2)

indirekt by ac, parallel supply  
Metal capillary dispenser cathode

### Characteristics (f = 12 GHz, Ik = 60 mAdc)


		min	nom	max	
Pulse saturation power	Psat		40		W
Gain (Po = 20 W)	G	40	43		db
VSWR			2		3)
Cold attenuation	α		80		db

### Typical Operation

Operating frequency	F	12	GHz
Power output	Po	20	W
Gain	G	43	db
Collector voltage	Eb	2500	Vdc 4)
Helix voltage	Eh	4200 ± 400	Vdc 5)
Grid No.2 voltage	Ec2	1250 ± 400	Vdc 5)
Grid No.1 voltage	Ecl	-70	Vdc 4)6)
Helix current	Ih	≈ 0,5	mAdc
Grid Nr.2 current	Ic2	< 0.1	mAdc
Cathode current	Ik	60	mAdc 4)
AM/PM conversion	kp	≈ 3,5	°/db
Noise factor	NF	≈ 25	db

All voltages are referred to the cathode

- 1) The voltage drop in the heater supply leads must be taken into account. The voltage must be set such that it is exactly 6.3 V at the socket. The total voltage drop in the cable is 0.1 V/m. If the maximum variation of the heater voltage exceeds the absolute limits of ± 3 %, the operating performance of the tube will be impaired and its life shortened.
- 2) For the first starting the tube must be preheated a minimum of 2 minutes.
- 3) At input and output of the tube operated in the frequency range of 10.7 to 13.2 GHz.
- 4) Setting values
- 5) The spreads quoted are intended for use when designing the power supply.
- 6) It is advisable to obtain Ecl by means of cathode resistor.

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Maximum Ratings (absolute values)


Collector voltage	Eb	max	3500	Vdc	
Collector dissipation	Pp	max	200	W	
Helix voltage	Eh	max	4800	Vdc	
Helix current	Ih	max	2	mAdc	1)
Grid No. 2 voltage	Ec2	max	2000	Vdc	
Grid No. 2 dissipation	Pc2	max	0.2	W	
Grid No. 1 voltage	-Ecl	max	150	Vdc	
Grid No. 1 voltage	+Ecl	max	0	Vdc	
Cathode current	Ik	max	80	mAdc	
Load VSWR		max	2		
Case temperature	T	max	115	°C	2)
Ambient temperature	TA	min	-20	°C	
Ambient temperature	TA	max	55	°C	2)

1) Switch-off value of the protection relay (see Operating Instructions, page 4).

2) See Cooling, page 5.

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