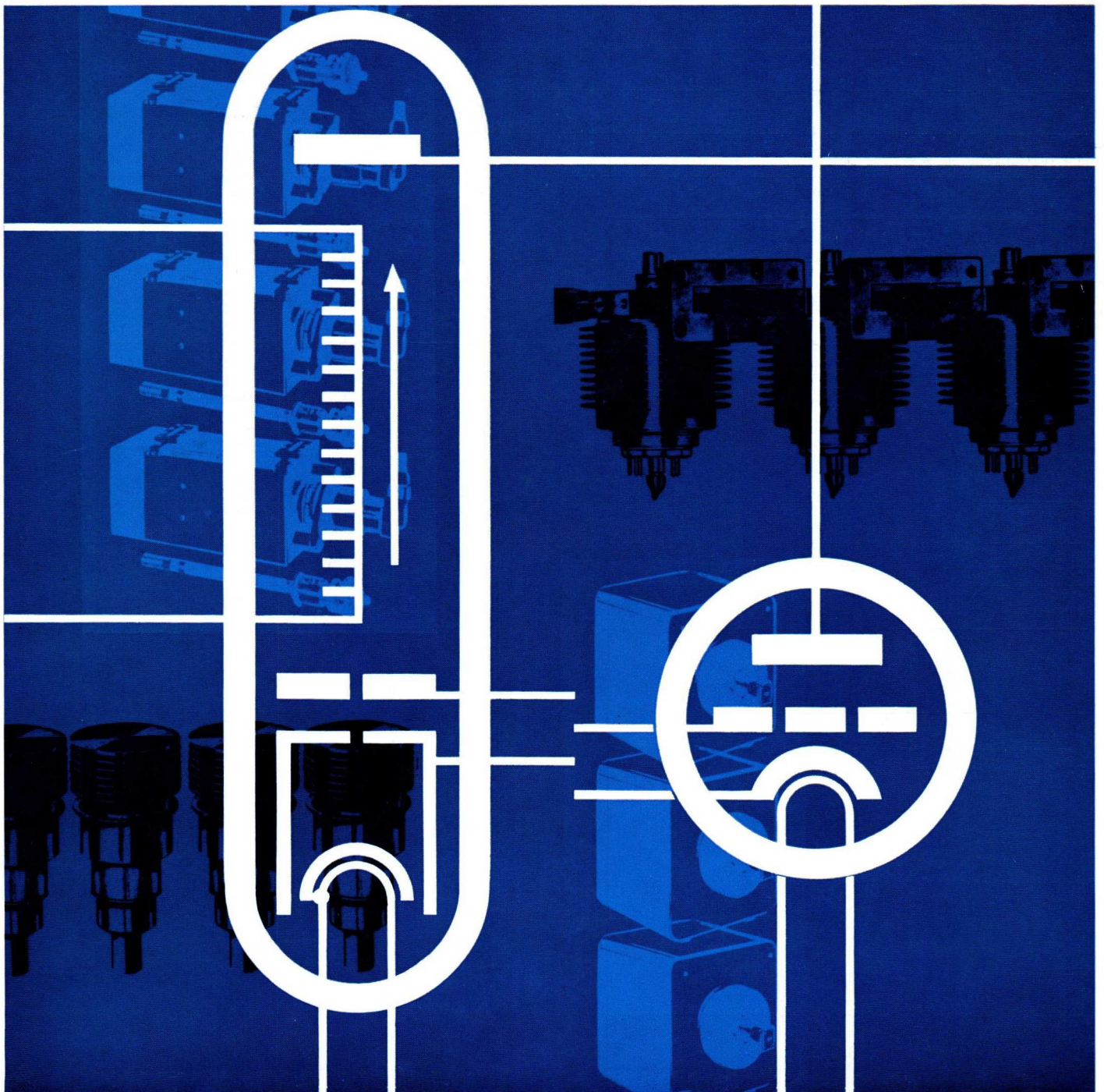


U.K. Agents:-  
**COLE ELECTRONICS LTD.**  
7-15 LANSDOWNE ROAD  
CROYDON, CR9 2HB  
Telephone- 01-686 7581      Telex 262344





# Planar Tubes



Type	Order No.	Design.	Max. Frequency $F$ GHz	Heating		Typical. Operation					
				$E_f$ V	$I_f$ A	$F_b$ GHz	$E_b$ kV	$I_b$ mA	$P_o$ W	$P_{o\text{syn}}$ W	$P_{o\text{p}}$ W

## Triodes

YD 1100	Q 35-X 4651	metal-ceramic	5	5.6 ac dc	0.3	2	0.25	22	2		
YD 1101	Q 35-X 4661	metal-ceramic	5	5.6 ac dc	0.3	2	0.25	22	2		
YD 1102	Q 35-X 4662	metal-ceramic	7	6.0 ac dc	0.45	1.1	1.1	900 <sup>1)</sup>			600 <sup>1)</sup>
YD 1104	Q 35-X 4664	metal-ceramic	5	5.6 ac dc	0.4	0.86	0.35	50		1.25	
YD 1106	Q 35-X 4666	metal-ceramic	5	5.6 ac dc	0.5	0.86	0.35	70		2.5	
RH 6 C (YD 1060, 8412)	Q 35-X 3251	metal-ceramic	7	6.0 ac	0.8	4	0.4	60	4.5		
RH 7 C (YD 1070, 8413)	Q 35-X 3252	metal-ceramic	9	6.0 ac	0.8	3	0.4	60	6		
2 C 39 A	Q 35-X 5001	metal-glass	3	6.3 ac dc	1.0	2.5	0.8	100	18		
2 C 39 BA	Q 35-X 5002	metal-ceramic	3	6.0 ac dc	0.95	2.5	0.8	100	24		
7289	Q 35-X 8001	metal-ceramic	3	6.0 ac dc	0.95	3	3.5 <sup>2)</sup>	3000 <sup>2)</sup>			2000 <sup>2)</sup>
YD 1040	Q 35-X 4652	metal-ceramic	3	6.0 ac dc	1.05	2.5	3.5 <sup>3)</sup>	3000 <sup>3)</sup>			2000 <sup>3)</sup>
YD 1041	Q 35-X 4657	metal-ceramic	3	6.0 ac dc	1.05	2.5	3.5 <sup>3)</sup>	3000 <sup>3)</sup>			2000 <sup>3)</sup>
YD 1046	Q 35-X 4660	metal-ceramic	3	6.0 ac dc	1.05	1.1	1.7	1300 <sup>4)</sup>			1500 <sup>4)</sup>
YD 1048	Q 35-X 4659	metal-ceramic	3	6.3 ac dc	1.1	2.5	8 <sup>5)</sup>	1400 <sup>5)</sup>			4000 <sup>5)</sup>
YD 1050	Q 35-X 4653	metal-ceramic	2.5	6.0 ac dc	1.0	0.86	0.8	100		10	
YD 1270	Q 35-X 4670	metal-ceramic	2	6.3 ac dc	1.2	0.86	1.5	120		25	
YD 1276	Q 51-X 3144	metal-ceramic	2	6.0 ac dc	1.0	0.86	0.4	45		2	

## Tetrodes

YL 1042	Q 51-X 1042	metal-ceramic	2	6.3 ac dc	1.05	0.86	0.9	120		15	
RS 1062 C*	Q 51-X 1062	metal-ceramic	1.25	6.3 ac dc	6.5	0.8	2.5	500	600		
RS 1072 C*	Q 51-X 1072	metal-ceramic	0.05	3.8 ac dc	20.5	0.05	3.0	700	1100		
YL 1050*	Q 51-X 1050	metal-ceramic	0.96	3.8 ac dc	20.5	0.86	2.7	800	1200		
YL 1052*	Q 51-X 1049	metal-ceramic	1.215	3.8 ac dc	20.5	0.86	2.3	800	1200		
						0.86	3.3	650		500	
YL 1055*	Q 51-X 1055	metal-ceramic	0.96	3.8 ac dc	20.5	0.86	2.5	425		250	

\* Cylindrical electrode

## Reflex-Klystron

Type	Order No.	Frequency Range Gc	Heating		Typical Operation					
			$E_f$ V	$I_f$ A	$E_{rs}$ V	$I_{rs}$ mA	$S_m$ Mc/V	$\frac{\Delta S_m}{S_m}$ %	$\Delta F$ Mc	
RK 25	Q 44-X 3253	3.6 to 4.5	6.3 ac	0.85 ac	310	38	2.7	4	50	

For further information detailed data sheets and publications are available.

The right is reserved to make certain changes during the course of further development or improvement Bereich Röhren, München

Maximum Ratings			Cooling	Max. Dimensions		Characteristics and applications	fig.
$E_b$ kV	$I_k$ mA	$P_p$ W		Length mm	$\varnothing$ mm		
0.45	30	15	contact cooling	48.4	13.15	rf amplifier and oscillator	4
0.45	30	15	forced air cooling	61.3	23.4	rf amplifier and oscillator	3
1.3	1500 <sup>1)</sup>	15	contact cooling	46.7	13.15	grid or plate pulsed amplifier, oscillator <sup>1)</sup> Peak pulse values in grid-pulsed operation	4
0.6	60	20				TV transposer, common vision and sound, Solid-state driver possible	4
0.6	80	25				TV transposer, common vision and sound Solid-state driver possible	4
0.6	75	30	$P_p \geq 10$ W forced air cooling	61.3	23.4	C-amplifier, multiplier, oscillator	3
0.6	75	25	contact cooling	48.4	13.15	C-amplifier, multiplier, oscillator	4
1.0	125	100	$P_p \geq 10$ W forced air cooling	69.85	32.14	universal as amplifier, oscillator	2
1.0	125	100		68.61	32.11	<sup>2)</sup> Peak pulsed values in plate-pulsed operation, $t_p = 3 \mu s, \tau = 0.0025$	2
3.5 <sup>2)</sup>	3000 <sup>2)</sup>	100					
3.5 <sup>3)</sup>	3000 <sup>3)</sup>	100		<sup>3)</sup> Peak pulse values in plate-pulsed operation, $t_p = 5 \mu s, \tau = 0.003$	2		
3.5 <sup>3)</sup>	3000 <sup>3)</sup>	100	contact cooling	68.61	30.35		
2.5	3000 <sup>4)</sup>	100	forced air cooling	68.61	32.11	grid or plate pulsed amplifier, oscillator <sup>4)</sup> Peak pulse values in grid-pulsed operation	2
8.5	5800 <sup>5)</sup>	200		67	32	grid or plate pulsed amplifier, oscillator <sup>5)</sup> Peak pulse values in plate-pulsed operation	2
0.85	125	100	$P_p \geq 10$ W	68.61	32.11	TV transposer, common vision and sound, Solid-state driver possible	2
1.6	180	200	forced air cooling	88.62	50.50	TV transposer, common vision and sound, $G = 20$ dB, Solid-state driver possible	2
0.6	60	20	natural air cooling	86	50	TV transposer, common vision and sound, Solid-state driver possible	

1.0	180	115	forced air cooling	49.6	32.0	TV transposer, common vision and sound	1
2.6	500	700		61	53	C-amplifier, TV transmitter	
3.5	1300	1600		115.1	95.3	SSB and linear amplifier	5
3.3	1300	1600		115.1	95.3	linear amplifier, TV transmitters	5
3.5	1300	1800		115.1	95.3	linear amplifier, TV transmitters	5
3.5	1300	1800		115.1	95.3	TV transposer, common vision and sound, $G = 16$ dB	5
2.7	900	1600		115.1	95.3	TV transposer, common vision and sound, $G = 18$ dB	5

$P_o$ W	rf connection	Remarks
0.180	coax. 3.5/9.5 $Z_o = 60 \Omega$	forced air cooling





fig. 1



fig. 2



fig. 3



fig. 4

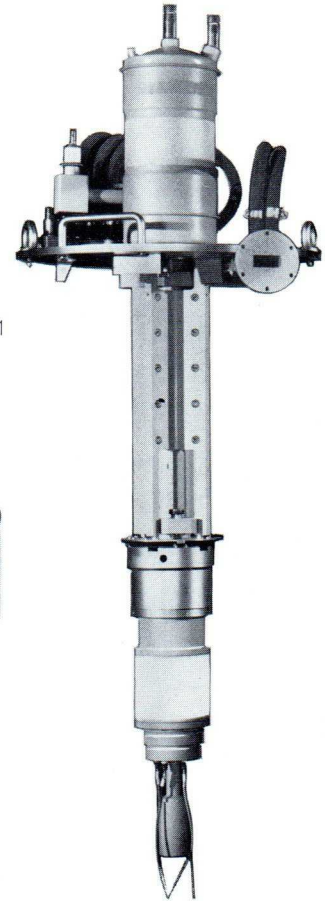


fig. 11

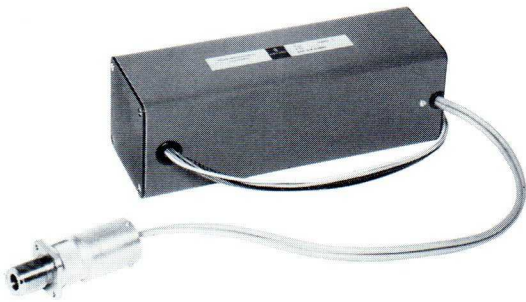


fig. 6



fig. 5

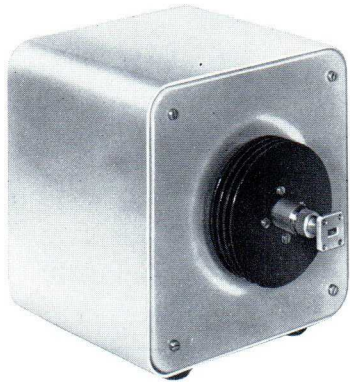


fig. 7

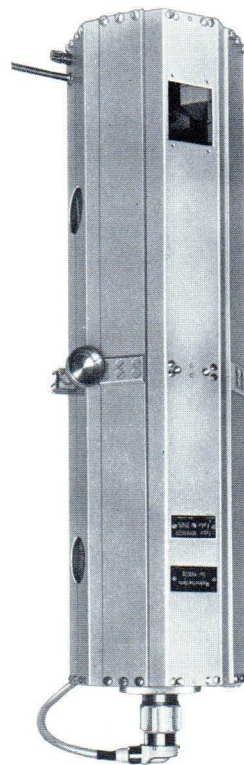


fig. 9

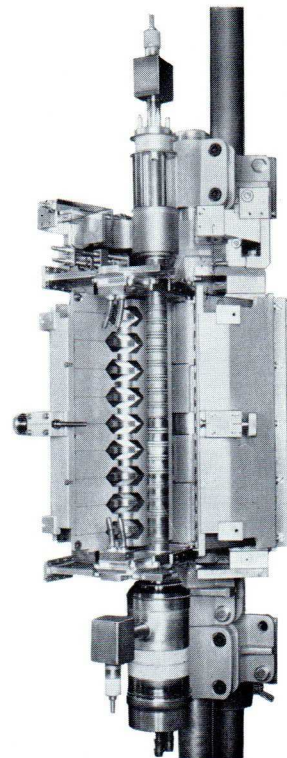


fig. 10

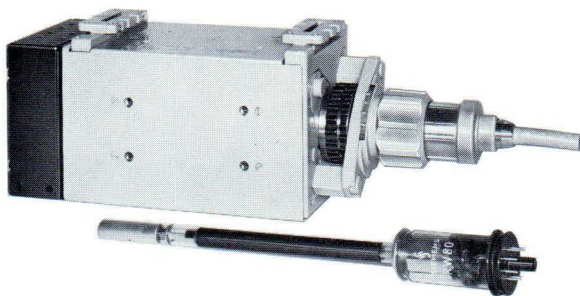


fig. 8



## Traveling Wave Tubes of average power output

Type	Order No.	Frequency range Gc	$P_{sat}$ W	Heating		Typical Operation					
				$E_f$ V	$I_f$ A	$F$ Gc	$E_h/E_{dl}$ kV	$E_b$ kV	$I_h/I_{dl}$ mA	$I_k$ mA	$G$ db
RW 2	Q 41-X 3251	1.7 to 2.3	30	6.3 ac	0.8 ac	2	1.9	1.6	3	85	40
RW 21	Q 41-X 3256	2.5 to 2.8	30	6.3 ac	0.8 ac	2.6	1.85	1.6	1	85	>37
RW 4	Q 41-X 3253	3.6 to 4.3	16	6.3 ac	0.8 ac	4	2.0	1.3	2.5	60	40
RW 42	Q 41-X 3261	3.6 to 4.2	30	6.3 ac	0.8 ac	4	2.3	1.5	2.5	70	39
RW 45	Q 41-X 3264	4.4 to 5.0	22	6.3 ac	0.8 ac	4.7	2.0	1.1	2	65	41
RW 70	Q 41-X 3258	7.1 to 7.8	7	6.3 <sup>ac</sup> <sub>dc</sub>	0.5 <sup>ac</sup> <sub>dc</sub>	7.5	1.6	1.6	2	31	38
RW 80 (YH 1110)	Q 41-X 3255	5.8 to 8.5	30 to 16	6.3 ac	0.8 ac	6.0 8.4	2.85 2.75	1.5 1.3	2 2	50 50	40.5 37.5
RW 81	Q 41-X 3259	5.8 to 8.5	36 to 22	6.3 ac	0.8 ac	6	2.9	1.6	1.5	65	41
RW 1120	Q 41-X 3260	10.7 to 13.2	40	6.3 ac	0.8 ac	12	4.2	1.25	0.5	60	43

## Traveling wave tubes for TV transposer

YH 1010	Q 42-X 4610	0.47 to 0.86	700	6.3 dc	2.6 dc	0.7	3.3	3.0	8	1000	37
YH 1011	Q 42-X 4611	0.47 to 0.6	700	6.3 dc	2.6 dc	0.55	3.48	3.18	12	1200	36
YH 1012	Q 42-X 4612	0.6 to 0.79	700	6.3 dc	2.6 dc	0.7	3.4	3.1	12	1000	38
YH 1020	Q 42-X 4651	0.47 to 0.86	600	6.3 ac	2.6 ac	0.7	3.1	2.9	6	700	33
						0.7	3.15	2.95	8	750	34.5

## Traveling wave tubes of high power output

YH 1041	Q 42-X 4653	5.925 to 6.425	5000	6.5 ac	2.5 ac	6.3	18.0	11.0-13.0	160	1400	30
YH 1043	Q 42-X 4655	5.925 to 6.425	1500	6 <sup>ac</sup> <sub>dc</sub>	2.8	6.2	9.5	7	1.5	900	33
YH 1045	Q 42-X 4657	5.925 to 6.425	12000	4 to 6 <sup>ac</sup> <sub>dc</sub>	15 <sup>ac</sup> <sub>dc</sub>	6.2	18.0	13.5	40	3000	> 08
YH 1046	Q 42-X 4658	5.925 to 6.425	<del>8000</del> 12000	7 to 12dc	6 dc	6.2	18.0	13.5	40	3000	> 37
YH 1047	Q 42-X 4659	7.9 to 8.4	8000	11 dc	6 dc	8.3	18.5	13.5	80	3000	> 36

Siemens traveling-wave-tubes are plug-in matches in the  
The variations in position of the cooler and supply voltage

## Traveling wave clystrons

YK 1170	Q 44-X 1170	0.47 to 0.63		8 to 12dc	16 to 22dc	0.55	10.0	10.0	30	5000	≥ 47
YK 1180	Q 44-X 1180	0.62 to 0.86		8 to 12dc	10 to 16dc	0.7	10.0	10.0	30	5000	≥ 47

## Backward Wave Oscillators

Type	Order No.	Frequency range Gc	Heating		Typical Operation			
			$E_f$ V	$I_f$ A	$E_h$ kV	$I_h$ mA	$P_o$ nom mW	$P_o$ min mW
RWO 5	Q 46-X 3326	5.8 to 8.5	6.3 <sup>ac</sup> <sub>dc</sub>	0.9 <sup>ac</sup> <sub>dc</sub>	0.65 to 2.3	8	100	30
RWO 40	Q 46-X 3301	26.5 to 42	6.3 ac	1 ac	0.5 to 2.6	12	60	10
RWO 60	Q 46-X 3302	40 to 61	6.3 ac	1 ac	0.5 to 2.4	13	20	2
RWO 75	Q 46-X 3323	50 to 75	6.3 ac	1 ac	0.5 to 2.5	13	15	5
RWO 80	Q 46-X 3303	60 to 90	6.3 ac	1 ac	0.5 to 2.5	13	5	1

Power supply for all RWO types (excludes RWO 5):  
Type RWON 14 Order No. Q 87-X 302

The right is reserved to make changes during the  
course of further development or improvement.



$P_O$ W	$N_F$ db	Magnet Systems		Cooling	rf connections Remarks	fig.
		Focusing	Dimensions mm			
20	26	periodic permanent- magnet	MRW2a } MRW2b } 100 × 130 × 384	Conduction Convection	6/16; 7/16; 3.5/9.5; N-connector 3/7	8
10*	25		MRW21a } MRW21b } 100 × 130 × 384		Conduction Convection	
10	< 25		MRW4a } MRW4b } 100 × 120 × 275	Conduction Convection		
16	25		MRW42a } MRW42b } 100 × 120 × 275		Conduction Convection	
7	< 20		MRW 45 100 × 120 × 275	Conduction		
4		permanent- magnet	MRW70 136 × 128 × 230	Conduction	F 70 34.85 × 5 waveguide for R 70 available	8
15	22	periodic permanent- magnet	MRW80a } MRW80b } 100 × 112 × 264	Conduction Convection	F 70 34.85 × 5 waveguide for R 70 available	
10	22		MRW81a } MRW81b } 100 × 112 × 264			
20 to 15	22					
20	25		400 × 110 × 80	Conduction	R 120 19.05 × 9.53	

250		permanent- magnet	MYH 1010 200 × 220 × 750	forced air cooling	6/16; 7/16; 3.5/9.5; 4.1/9.5; N-connector; C-connector; BNC-connector; Dezifix B	9
250			MYH 1011 200 × 220 × 750			
250			MYH 1011 200 × 220 × 750			
210*			MYH 1020 200 × 220 × 750			
100**						

3000		periodic perma- nent-magnet	MYH 1041 250 × 330 × 920	water cooling	waveguide R 70 31 × 15	10
1200		electrical- magnet	MS 1043	forced air cooling	WR 137	
2 × 2000			MS 1045 1168 × 420	water cooling	WR 137 (R 70) 34 × 15	
2 × 1675			MS 1046 1168 × 420		RG 50/U	11
2 × 1250					RG 51/U	

air low leakage magnet systems. The magnet system with tube and supply cable are shielded to rf.  
The connector socket enable the systems engineer to design the magnet system into the equipment in a way best suited to the general layout.

22000*		electrical- magnet	MYK 1170 430 × 700 × 1590	forced air cooling	Koaxial, 50 Ω	
22000*			MYK 1180 430 × 700 × 1380		Koaxial, 50 Ω	

\* TV transmission, peak synchron power \*\* TV transposer (common sound and vision)  
Power supplies with tube and magnet system together in rack or separately as slide in unit on request.

Tuning	Dimensions mm	rf connection	fig.
electrical by $E_H$	64 × 64 × 190	N-connector, socket	6
	159 × 159 × 255	waveguide R 320 flange UG-599/U	7
	159 × 159 × 235	waveguide R 620 flange UG-385/U	
	159 × 159 × 240	waveguide R 120 DIN 47302 flange UG-385/U	
	159 × 159 × 240	waveguide R 740 flange UG-387/U	

For further informations concerning traveling wave tubes detailed data sheets and publications please write to Bereich Röhren, 8000 München 80, St.-Martin-Straße 76