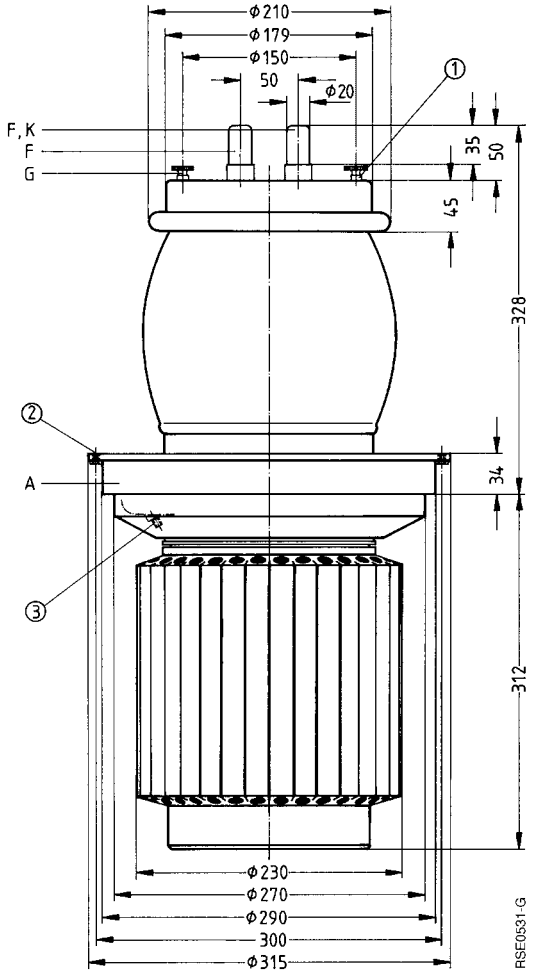
Ordering code Q53-X2051

Vapor-cooled triode with coaxial grid lead-through, particularly suitable for modulator operation at low grid current in transmitters up to 600 kW.



Dimensions in mm

① 12 tapholes M5 (12 × 30°)
② Taphole M8 for screw-in handle RöZub41V
③ Taphole M5 for tube fuse RöSich4

Approx. weight 51,5 kg

Heating

Heater voltage	U_F	17	V
Heater current	I_F	≈ 265	A
Heating: direct			
Cathode: thoriated tungsten			

Characteristics

Emission current at $U_A = U_G = 650$ V	I_{em}	160	A
Amplification factor at $U_A = 4$ to 10 kV, $I_A = 5$ A	μ	15	
Transconductance at $U_A = 4$ kV, $I_A = 5$ A	s	105	mA/V

Capacitances

Cathode/grid	c_{kg}	≈ 260	pF
Cathode/anode	c_{ka}	≈ 14	pF [1)]
Grid/anode	c_{ga}	≈ 140	pF

Accessories		**Ordering code**
Mounting instruction	RöMo14	
Mounting instruction	RöMo15	
Cathode connecting strip (2 for each tube)	RöKat41	Q81-X1141
Socket wrench for tube fuse	RöZub10	Q81-X2110
Handle	RöZub41V	Q81-X2141
Tube fuse	RöSich4	Q81-X1404
Pull switch for tube fuse	RöKt11	Q81-X1311
Boiler	RöKüV41	Q81-X1641
Insulating pipe at vapor outlet	RöKüV41Zub3	Q81-X1643
Insulating pipe at water inlet	RöKüV41Zub4	Q81-X1644
Insulator	RöKüV41Zub5K	Q81-X1646
Union at water inlet	RöKüV41Zub7	Q81-X1647
Gasket at vapor outlet	RöKüV41Zub8	Q81-X1648
Water level stabilizer with control electrodes	RöZubV4	Q81-X2105
LL electrolytic target	RöEl23	C65055-A667-A23
Gasket ring for boiler	RöN9374	C65051-A202-C553

1) Measured by means of a 40 cm × 40 cm screening plate in the grid terminal plane.

AF amplifier and modulator,
class B operation, 2 tubes in push-pull circuit

Maximum ratings

Anode voltage (dc)	U_A	12	kV
Grid voltage (dc)	U_G	– 1500	V
Cathode current (dc)	I_K	40	A
Peak cathode current	$I_{K\,M}$	160	A
Anode dissipation	P_A	180	kW
Grid dissipation	P_G	2,5	kW

Operating characteristics at modulator operation for

		600 kW carrier power		500 kW carrier power		
Output power	P_{trg}	0	420	0	350	kW
Anode voltage (dc)	U_A	11	11	11	11	kV
Grid voltage (dc)	U_G	– 720	– 720	– 740	– 740	V
Peak control grid voltage (ac) between the 2 tubes	$U_{gg\,m}$	0	2200	0	2100	V
Anode current (dc)	I_A	2×3	$2 \times 31{,}4$	2×2	2×26	A
Grid current (dc)	I_G	0	$2 \times 1{,}1$	0	$2 \times 0{,}9$	A
Peak grid current	$I_{G\,M}$	0	2×8	0	2×7	A
Anode input power	$P_{B\,A}$	2×33	2×345	2×22	2×286	kW
Drive power	P_1	0	2×1050	0	2×850	W
Anode dissipation	P_A	2×33	2×135	2×22	2×111	kW
Grid dissipation	P_G	0	2×280	0	2×180	W
Efficiency	η	—	61	—	61	%
Effective load resistance (anode to anode)	R_{AA}	—	350	—	420	Ω

Tube mounting

Axis vertical, anode down.

For connection of the cathode use the terminals listed under “Accessories”.

A number of M5 tapholes is provided at the grid terminal ring for grid connection; the delivery includes knurled head screws for this purpose.

Maximum tube surface temperature

The temperature of the glass and metal parts and of the cathode terminals must not exceed 220 °C at any point.

Vapor cooling

Cooling specifications for maximum anode dissipation	$P_{A\,max}$ = 180 kW
Total power to be dissipated by the cooling system ($P_A + P_G + 0{,}8\ P_F$)	188 kW
Equivalent thermal output	11300 kJ/min (2700 kcal/min)
Flow rate of returning water	
at returning water temperature of 20 °C	approx. 4,4 l/min
at returning water temperature of 90 °C	approx. 5,1 l/min
Volume of generated vapor	
at returning water temperature of 20 °C	approx. 7,3 m^3/min
at returning water temperature of 90 °C	approx. 8,3 m^3/min

Detailed information on vapor cooling upon request. Please observe instructions on vapor cooling given under “Explanations on Technical Data”.

Safety precautions

The section “Safety precautions” under “Explanations on Technical Data” describes how the tube is to be protected against damage due to electric overload or insufficient cooling. A copper wire with 0,26 mm diameter should be used to test the anode overcurrent trip circuit.

For protection against thermal anode overload the tube fuse RöSich4 is recommended. In conjunction with pull switch RöKt11 it disconnects the voltages at the tube in case of overload (accessories).

$U_G = f(U_A)$ Parameter = I_A ——————
Parameter = I_G — — — — — — —