For frequencies up to 960 MHz

Coaxial metal-ceramic tetrode with integrated resonance suppression, forced-air-cooled or vapor-condensation-cooled, particularly suitable for TV transmitters, band IV/V.

Forced-air-cooled version

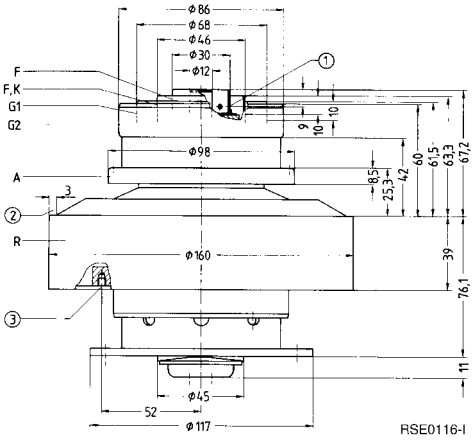
RS 1034 L

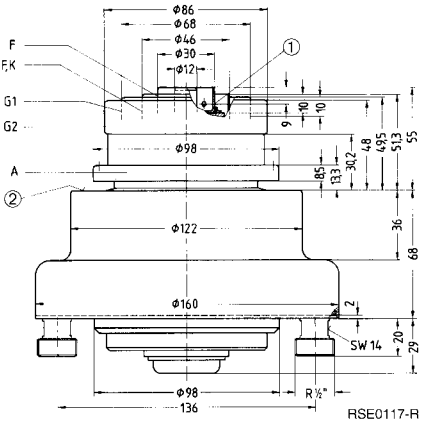
Ordering code Q51-X1034

Vapor-condensation-cooled version

RS 1034 SK

Ordering code Q53-X1034





Dimensions in mm

① 8 tapholes Ø 3 (8 × 45°)
② Tube support in the cavity
③ Taphole M4 for tube fuse RöSich2

Approx. weight 5,3 kg

Approx. 7 kg

The radiator or boiler and the terminals are of concentric design with the following diameters:

Radiator (R)	Ø 161,5	G1 terminal	Ø 69,0
Boiler	Ø 123,5	Heater/cathode terminal	Ø 47,0
Anode terminal	Ø 99,0	Heater terminal	Ø 30,6
G2 terminal	Ø 87,0		

Heating

Heater voltage	U_F	4,5	V
Heater current	I_F	≈ 200	A
Heating: direct			
Cathode: thoriated tungsten			

Characteristics

Emission current at $U_A = U_{G2} = U_{G1} = 300$ V	I_{em}	45	A
Amplification factor of screen grid at $U_A = 2$ kV, $U_{G2} = 500$ to 800 V, $I_A = 3$ A	μ_{g2g1}	7,5	
Transconductance at $U_A = 2$ kV, $U_{G2} = 800$ V, $I_A = 2$ to 4 A	s	120	mA/V

Capacitances

Cathode/control grid	c_{kg1}	≈ 100	pF
Cathode/screen grid	c_{kg2}	≈ 7,80	pF
Cathode/anode	c_{ka}	≈ 0,05	pF [1]
Control grid/screen grid	c_{g1g2}	≈ 184	pF
Control grid/anode	c_{g1a}	≈ 0,55	pF [1]
Screen grid/anode	c_{g2a}	≈ 23,5	pF [2]

Accessories RS 1034 L		**Ordering code**
Socket wrench for tube fuse	RöZub10	Q81-X2110
Tube extractor	RöZub134	Q81-X2115
Tube fuse	RöSich2	Q81-X1402
Pull switch for tube fuse	RöKt11	Q81-X1311
Cavity band IV/V, 10 kW vision	TK8305 or	Q94-X8305
	TK8311	Q94-X8311
5 kW vision/sound	TK8305 or	Q94-X8305
	TK8311	Q94-X8311

RS 1034 SK

Tube extractor	RöZub134SK	Q81-X2116
LL electrolytic target for 1/2″-hose	RöEl5	Q81-X365
Cavity band IV/V, 20 kW vision	TK8306 or	Q94-X8306
	TK8312	Q94-X8312
10 kW vision/sound	TK8306 or	Q94-X8306
	TK8312	Q94-X8312

1) Measured by a Ø 50 cm screening plate in the screen-grid terminal plane.
2) Measured by a Ø 50 cm screening plate in the anode ceramic plane.

TV vision transmitter,
grounded control-grid screen-grid circuit, negative modulation standard G

Maximum ratings

Frequency		f	960	MHz
Anode voltage (dc)	(RS 1034 L)	U_A	5,5	kV
Anode voltage (dc)	(RS 1034 SK)	U_A	7,5	kV
Screen grid voltage (dc)		U_{G2}	1000	V
Control grid voltage (dc)		U_{G1}	– 200	V
Cathode current (dc)		I_K	6,0	A
Peak cathode current		$I_{K\,M}$	40	A
Anode dissipation	(RS 1034 L)	P_A	13	kW
Anode dissipation	(RS 1034 SK)	P_A	25	kW
Screen grid dissipation		P_{G2}	180	W
Control grid dissipation		P_{G1}	80	W

Operating characteristics [1])

Frequency	f	470 … 800	470 … 800	MHz
Bandwidth (1 dB)	B	12	12	MHz
Output power, sync level	$P_{2\,SY}$	24	12,4	kW [2])
Output power, black level	$P_{2\,SW}$	13,6	7,0	kW [2]) [3])
Gain	V_p	15,5	16	dB
Anode voltage (dc)	U_A	6,6	5,1	kV
Screen grid voltage (dc)	U_{G2}	800	800	V
Control grid voltage (dc)	U_{G1}	– 110	– 110	V
Peak control grid voltage (ac), sync level	$U_{g1\,m\,SY}$	104	100	V
Zero-signal anode current (dc)	$I_{A\,0}$	2,2 [4])	1,6 [4])	A
Anode current (dc), black level	$I_{A\,SW}$	5,3 [4])	3,6 [4])	A
Screen grid current (dc), black level	$I_{G2\,SW}$	140	60	mA
Anode input power, black level	$P_{B\,A\,SW}$	35	18,4	kW
Drive power, sync level	$P_{1\,SY}$	675	310	W
Anode dissipation, black level	$P_{A\,SW}$	21,4	11,4	kW
Screen grid dissipation, black level	$P_{G2\,SW}$	110	48	W
Anode load resistance	R_A	460	450	Ω

1) Only for RS 1034 SK.
2) Without taking circuit losses into account.
3) Black level with gated sync. pulses.
4) Average value ± 0,2 A.

Amplifier for TV transmitters with common vision and sound carrier transmission, grounded control-grid screen-grid circuit, vision-to-sound ratio 10:1, standard G

Maximum ratings

Frequency		f	960	MHz
Anode voltage (dc)	(RS 1034 L)	U_A	5,5	kV
Anode voltage (dc)	(RS 1034 SK)	U_A	7,5	kV
Screen grid voltage (dc)		U_{G2}	1000	V
Control grid voltage (dc)		U_{G1}	– 200	V
Cathode current (dc)		I_K	6,0	A
Peak cathode current		$I_{K\,M}$	40	A
Anode dissipation	(RS 1034 L)	P_A	13	kW
Anode dissipation	(RS 1034 SK)	P_A	25	kW
Screen grid dissipation		P_{G2}	180	W
Control grid dissipation		P_{G1}	80	W

Operating characteristics [1])

Frequency	f	470 … 800	470 … 800	MHz
Output power, sync level	$P_{2\,SY}$	12,6/1,26	6,3/0,63	kW [2])
Gain	V_p	15,5	16	dB
3-tone intermodulation ratio	a_{IM3}	≥ 50	≥ 52	dB
Anode voltage (dc)	U_A	6,3	5,1	kV
Screen grid voltage (dc)	U_{G2}	800	800	V
Control grid voltage (dc)	U_{G1}	– 112	– 108	V
Peak control grid voltage (ac), sync level	$U_{g1\,m\,SY}$	100	70	V
Zero-signal anode current (dc)	$I_{A\,0}$	1,8	1,8	A [3])
Anode current (dc), black level	$I_{A\,SW}$	3,9	2,8	A
Screen grid current (dc), black level	$I_{G2\,SW}$	90	50	mA
Anode input power, black level	$P_{B\,A\,SW}$	24,6	14,3	kW
Drive power, sync level	$P_{1\,SY}$	360	160	W
Drive power, sound	$P_{1\,Ton}$	36	16	W
Anode dissipation, black level	$P_{A\,SW}$	16,2	10,1	kW
Anode load resistance	R_A	440	520	Ω

1) Only for RS 1034 SK.
2) Without taking circuit losses into account.
3) Average value ± 0,2 A.

Tube mounting

Axis vertical, anode up or down.

Spring contact rings are suitable connectors for cathode, control grid, screen grid and anode. The spring tension must be dimensioned such that the required power for inserting and withdrawing the tube remains below 150 N. Recommended pull-off power per spring contact ring is approx. 20 N. For further details see “Explanations on Technical Data”.

Maximum tube surface temperature

The temperature of the electrode terminals and ceramic insulators must not exceed 220 °C. For keeping below this maximum temperature an air flow is required to cool the terminal rings. For this purpose the terminal contacts must be designed for providing a uniform cooling effect.

Forced-air cooling (RS 1034 L)

The minimum air flow rate required for maximum anode dissipation is given in the cooling air diagram, valid for 25 °C inlet temperature at 1 bar air pressure (sea level). The cooling air must be supplied from the electrode terminal side. For detailed information on forced-air cooling refer to “Explanations on Technical Data”.

Vapor condensation cooling (RS 1034 SK)

The cooling water diagram gives the minimum water flow rate (distilled or deionized water) for maximum anode dissipation, as well as pressure drop and water outlet temperature at 70 °C water inlet temperature. The diagram applies to a hermetically sealed cooling system with 1,5 bar overpressure at the tube’s cooling water outlet and with a maximum permissible water outlet temperature of 100 °C.

Operation with open cooling cycle (without overpressure) is also possible if the maximum outlet temperature remains below 70 °C (sea level, air pressure ≈ 1 bar) with lower inlet temperature and, if required, increased water flow rate.

For more information on vapor condensation cooling refer to “Explanations on Technical Data”.

Automatic heating power regulation

Recommendations for automatic heating power stabilization are contained in the instruction “UHF TV Tetrodes, Heating Power Adjustment”, which is supplied upon request.

Safety precautions

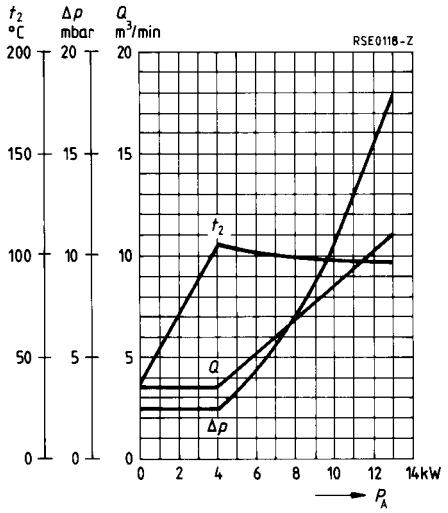
The section “Safety precautions” under “Explanations on Technical Data” describes how the tube is to be protected against damage due to electric overload or insufficient cooling. A copper wire with Ø 0,12 mm should be used to test the anode overcurrent trip circuit.

For protecting RS 1034 L against thermal anode overload the tube fuse RöSich2 is recommended. In conjunction with pull switch RöKt11 it disconnects the voltages at the tube in case of overload (accessories).

Transmitter off-periods

Frequent switching of the heating reduces lifetime. So the heating (and cooling) should be left on during transmitter off-periods of up to two hours. Continuous heating with reduced power (black heating) should be provided for longer off-periods. Refer to “Explanations on Technical Data”.

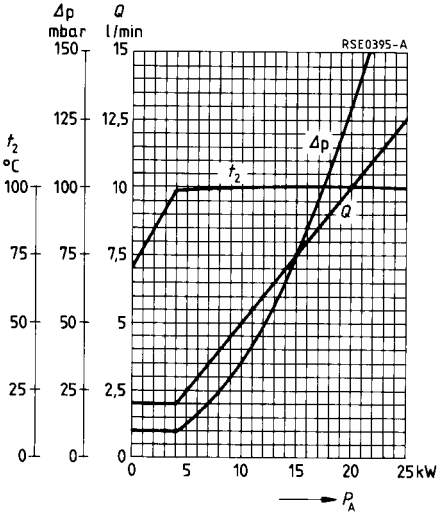
Cooling air diagram (RS 1034 L)



The cooling air is supplied from the electrode terminal side.

Air pressure = 1 bar
t_1 = 25 °C

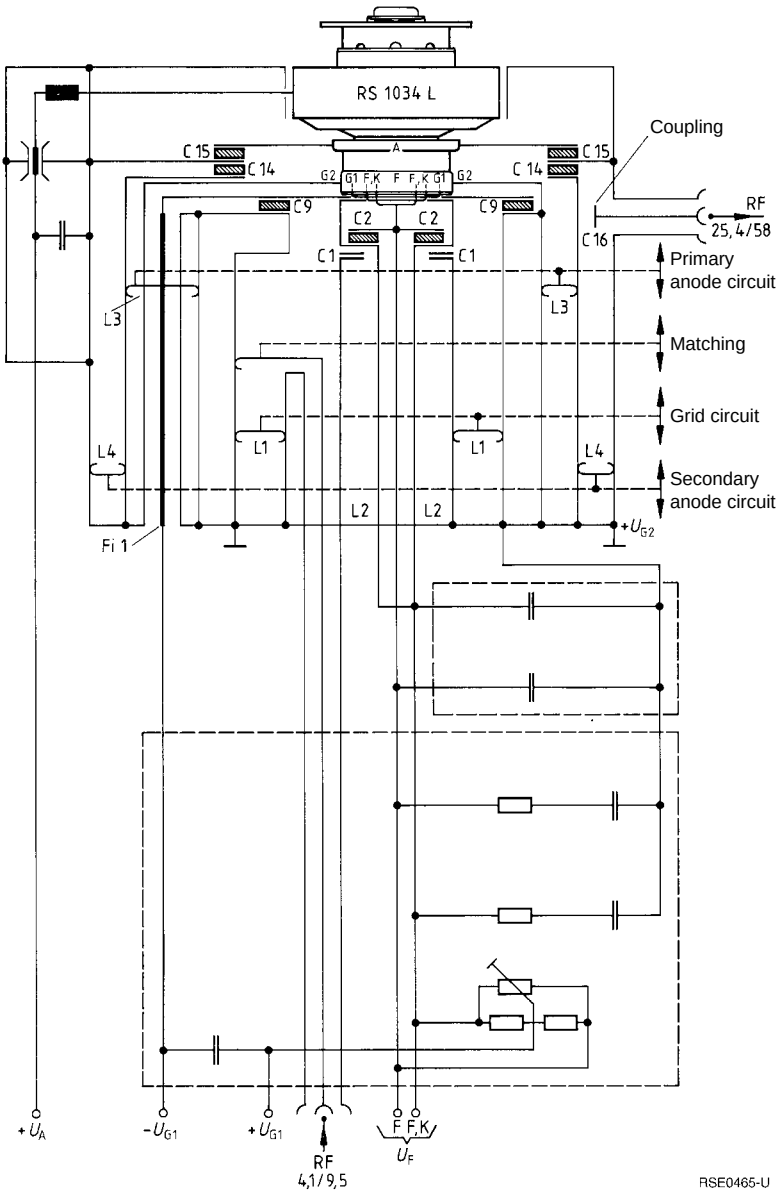
Cooling water diagram (RS 1034 SK)



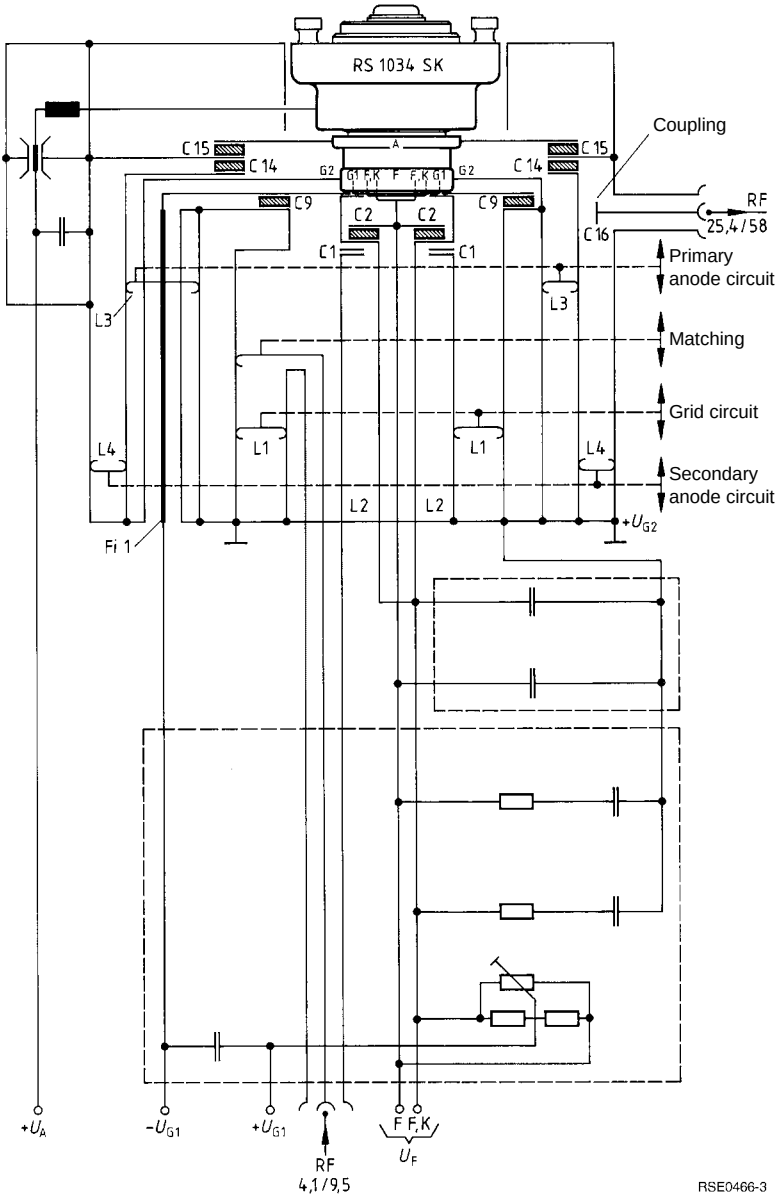
Closed cooling cycle with distilled water.

Overpressure = 1,5 bar
t_1 = 70 °C

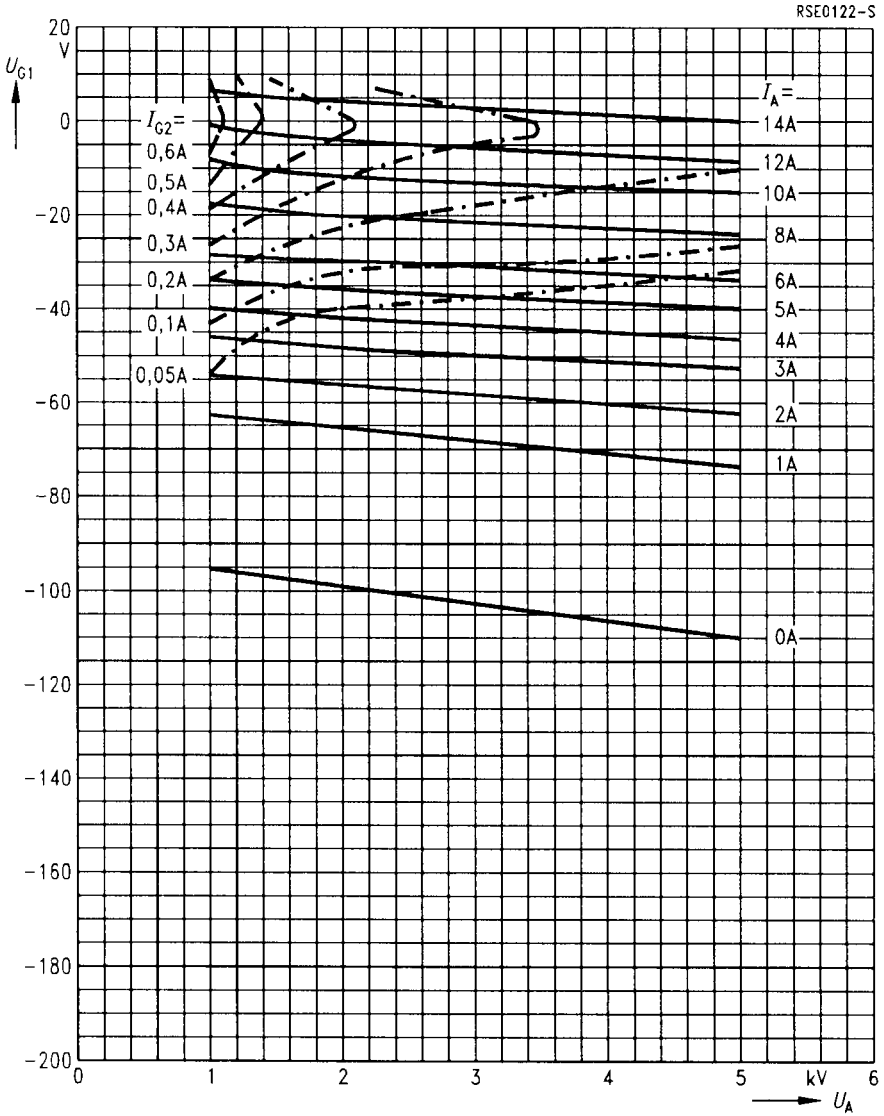
Basic circuit diagram of final-stage cavity



Basic circuit diagram of final-stage cavity



$U_{G1} = f(U_A)$ Parameter = I_A ——————
U_{G2} = 500 V Parameter = I_{G2} —∘—∘—∘—∘—∘—∘—



$U_{G1} = f(U_A)$ Parameter = I_A ——————————
U_{G2} = 800 V Parameter = I_{G2} —∘—∘—∘—∘—∘—∘—