

## VAPOUR COOLED R.F. INDUSTRIAL TRIODE

Vapour cooled triode of metal-ceramic construction intended for use as an industrial oscillator.

### QUICK REFERENCE DATA

Oscillator output power ( $W_o - W_{\text{feedb}}$ ), typical	$W_{\text{osc}}$	120	kW
Frequency for full ratings	f	max.	100 MHz

To be read in conjunction with "General Recommendations Transmitting tubes, Tubes for heating."

### R.F. CLASS C OSCILLATOR FOR INDUSTRIAL USE

#### OPERATING CONDITIONS

Frequency	f	30	30	MHz
Oscillator output power ( $W_o - W_{\text{feedb}}$ )	$W_{\text{osc}}$	120	120	kW
Anode voltage	$V_a$	10	12	kV
Anode current	$I_a$	16.0	13.0	A
Anode input power	$W_{ia}$	160	156	kW
Anode dissipation	$W_a$	36.0	32.5	kW
Anode output power	$W_o$	124	123.5	kW
Anode efficiency	$\eta_a$	77.5	79.2	%
Oscillator efficiency	$\eta_{\text{osc}}$	75	77	%
Feedback ratio	$V_{\text{gp}}/V_{\text{ap}}$	12.8	11.6	%
Grid resistor	$R_g$	200	330	$\Omega$
Grid current, on load	$I_g$	3.5	2.7	A
Grid voltage, negative	$-V_g$	700	891	V
Grid dissipation	$W_g$	1.5	1.1	kW
Grid resistor dissipation	$W_{Rg}$	2.45	2.4	kW

**LIMITING VALUES** (Absolute max. rating system)

Frequency for full ratings	$f$	up to	100	MHz
Anode voltage	$V_a$	max.	14.4	kV
Anode current	$I_a$	max.	18	A
Anode input power	$W_{ia}$	max.	220	kW
Anode dissipation	$W_a$	max.	80	kW
Grid voltage	$-V_g$	max.	2.0	kV
Grid current, on load	$I_g$	max.	4	A
off load	$I_g$	max.	5.5	A
Grid dissipation	$W_g$	max.	2.0	kW
Grid circuit resistance	$R_g$	max.	10	$k\Omega$
Cathode current, mean	$I_k$	max.	22	A
peak	$I_{kp}$	max.	100	A
Envelope temperature	$t_{env}$	max.	240	$^{\circ}C$

**HEATING:** direct; filament thoriated tungsten

Filament voltage	$V_f$		12.2	V
Filament current	$I_f$		255	A
Peak filament starting current	$I_{fp}$	max.	1500	A
Cold filament resistance	$R_{fo}$		5.3	$m\Omega$

The filament is designed to accept temporary fluctuations of +5 % and -10 %.

**CAPACITANCES**

Anode to filament	$C_{af}$		2.7	pF
Grid to filament	$C_{gf}$		170	pF
Anode to grid	$C_{ag}$		55	pF

**CHARACTERISTICS** measured at  $V_a = 10$  kV,  $I_a = 8$  A

Transconductance	$S$		150	mA/V
Amplification factor	$\mu$		30	

1) When the tubes are to be used at frequencies above 30 MHz the manufacturer should be consulted for more detailed information.

**COOLING**

See also cooling curves

With integrated boiler condenser type K735

Anode + grid dissipation $W_a + W_g$ (kW)	Inlet temperature $t_i$ (°C)	Rate of flow $Q$ min ( $l/min$ )	Pressure drop $P_i$ (atm)	Outlet temperature $t_o$ (°C)
80	20	29	0.20	60
	35	48	0.51	59
60	20	16	0.08	75
	35	24	0.14	72
	50	45	0.45	70
40	20	10	0.04	80
	35	13.5	0.06	80
	50	20	0.10	80

Absolute max. water inlet temperature  $t_i$  max. 50 °C

Cooling of the seals can be accomplished by a low velocity air flow or by watercooling of the filament connectors. The cooling circuit of these accessories may be connected in series. A water flow of approximately 0.51/min. will be sufficient.

To obtain optimum life, the seal/anode temperature under continuously loaded conditions should be kept at or below 200°C.

**ACCESSORIES**

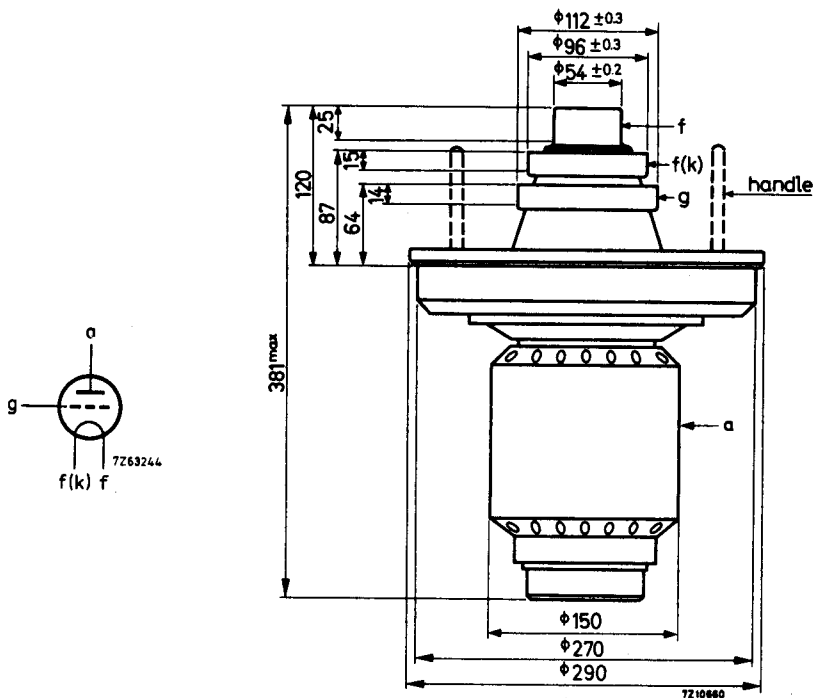
Filament connector	type	40695	net weight	710	g
Filament / cathode connector	type	40696	net weight	860	g
Filament cables (both required)	type	40716	net weight	975	g
	and type	40717	net weight	980	g
Grid connector	type	40694	net weight	270	g
Boiler condenser	type	K735	net weight	≈ 70	kg

MECHANICAL DATA

Dimensions in mm

Mounting position: vertical with anode down

Net weight: approx. 16.7 kg



Note: The handles should be removed before switching on the tube.

