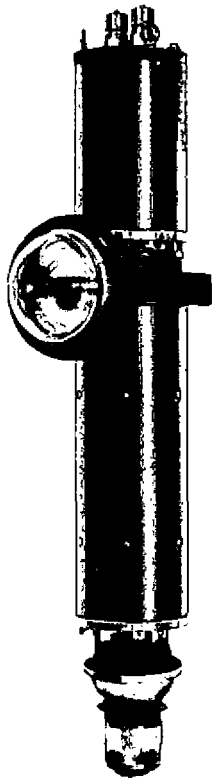
7504

klystron

The 7504 is a pulsed amplifier klystron capable of producing a peak power output of 2.2 megawatts at a .003 duty cycle. It has three integral cavities which can be mechanically tuned to cover the frequency band from 1240-1360 mcs. The ability to operate at pulse lengths up to 9 μs and to provide a gain of 36 db makes it ideally suited for use in ground based radar systems.

The unique high temperature processing used in all Litton Industries' tubes permits the 7504 klystron to provide reliable, long-life operation.



ELECTRICAL DATA — GENERAL

Heater Voltage (ac)	16 volts
Heater Current at 16 Volts	7.0-9.5 amps
Heater Cold Resistance	0.261 ohms
Input Connector	Type C
Output Connection	Special transition to RG-69/U or RG-103/U Waveguide

MECHANICAL DATA — GENERAL

Base and Physical Dimensions	See Outline Drawing
Mounting Information	Any Position
Cooling Data, Water	

	COLLECTOR	BODY
Flow	7.5 gpm	1.5 gpm
Pressure drop	50 psi	50 psi
Net Weight		Approx. 110 lbs.

ABSOLUTE RATINGS

	MIN.	MAX.
Heater Voltage, E_f	15	17 Volts ac
Heater Current, I_f (surge)		20 amps
Anode Voltage, epy		125 KV
Anode Voltage, epx		30 KV
Cathode Current, Peak I_k		87 amps
Cathode Current Avg. I_k		260 ma
Peak Power Input		9.5 MW
Average Power Input		27.5 KW
Frequency	1240	1360 Mcs
Pulse Length, t_p (epy)		9 μs
R-F Input Power, Peak		1 KW
R-F Input Power, avg.		100 W
Load VSWR		1.5:1
Cathode Heating Time	20	minutes
Window Pressure		50 psia
Cathode Seal Temp		175°C
Window Seal Temp		125°C
Hydrostatic Pressure		75 psig
Tuner Torque		500 in/oz.
Fluid Coolant Outlet Temp		70°C

TYPICAL OPERATION

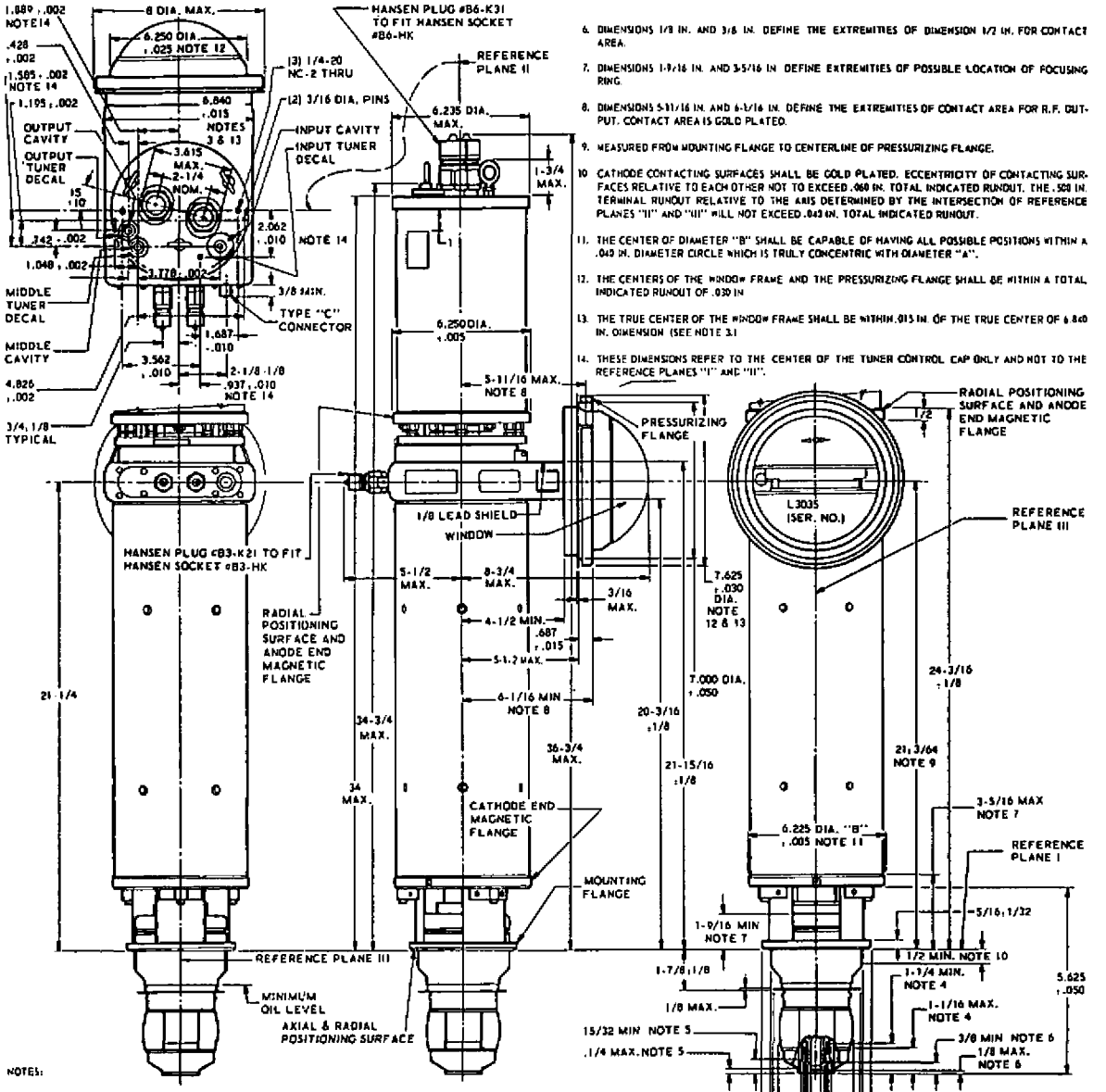
Peak Voltage	115 KV
Peak Current	78 a
Pulse Width	8 μs
Duty	0.003
Peak Power Output	2.2 MW
Gain	36 db
Time Jitter, rms	5 mμs
Phase Jitter, rms	0.5°

LITTON INDUSTRIES ELECTRON TUBE DIVISION

960 INDUSTRIAL ROAD, SAN CARLOS, CALIF.

from JEDEC release #2560, Aug. 17, 1959

7504



NOTES:

1. REFERENCE PLANE "I" IS THE MOUNTING PLANE AND MUST SUPPORT THE ENTIRE WEIGHT OF THE TUBE
2. REFERENCE PLANE "II" PASSES THROUGH THE CENTERS OF THE ANODE MAGNETIC FLANGE AND THE MOUNTING FLANGE AND IS AT 90 DEGREES TO REFERENCE PLANE "I".
3. REFERENCE PLANE "III" PASSES THROUGH THE CENTERS OF THE COLLECTOR END MAGNETIC FOCUSING RING, THE MOUNTING FLANGE AND THE MIDDLE OF THE SPACE BETWEEN THE GUIDE BLOCKS AND IS AT 90 DEGREES TO REFERENCE PLANES "I" and "II".
4. DIMENSIONS 1-1 16 IN. AND 1-1 4 IN. DEFINE THE EXTREMITIES OF DIMENSION .937 IN. FOR CONTACT AREA.
5. DIMENSIONS 9.4 IN. AND 15/32 IN. DEFINE THE EXTREMITIES OF DIMENSION 1.390 IN. FOR CONTACT AREA.
6. DIMENSIONS 1/8 IN. AND 3/8 IN. DEFINE THE EXTREMITIES OF DIMENSION 1/2 IN. FOR CONTACT AREA.
7. DIMENSIONS 1-9/16 IN. AND 3-5/16 IN. DEFINE EXTREMITIES OF POSSIBLE LOCATION OF FOCUSING RING.
8. DIMENSIONS 5-11/16 IN. AND 6-1/16 IN. DEFINE THE EXTREMITIES OF CONTACT AREA FOR R.F. OUTPUT. CONTACT AREA IS GOLD PLATED.
9. MEASURED FROM MOUNTING FLANGE TO CENTERLINE OF PRESSURIZING FLANGE.
10. CATHODE CONTACTING SURFACES SHALL BE GOLD PLATED. ECCENTRICITY OF CONTACTING SURFACES RELATIVE TO EACH OTHER NOT TO EXCEED .060 IN. TOTAL INDICATED RUNOUT. THE .500 IN. TERMINAL RUNOUT RELATIVE TO THE AXIS DETERMINED BY THE INTERSECTION OF REFERENCE PLANES "II" AND "III" WILL NOT EXCEED .040 IN. TOTAL INDICATED RUNOUT.
11. THE CENTER OF DIAMETER "B" SHALL BE CAPABLE OF HAVING ALL POSSIBLE POSITIONS WITHIN A .040 IN. DIAMETER CIRCLE WHICH IS TRULY CONCENTRIC WITH DIAMETER "A".
12. THE CENTERS OF THE WINDOW FRAME AND THE PRESSURIZING FLANGE SHALL BE WITHIN A TOTAL INDICATED RUNOUT OF .030 IN
13. THE TRUE CENTER OF THE WINDOW FRAME SHALL BE WITHIN .015 IN. OF THE TRUE CENTER OF 6.860 IN. DIMENSION (SEE NOTE 3.)
14. THESE DIMENSIONS REFER TO THE CENTER OF THE TUNER CONTROL CAP ONLY AND NOT TO THE REFERENCE PLANES "I" AND "II".

ISSUE L

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960 INDUSTRIAL ROAD, SAN CARLOS, CALIF.