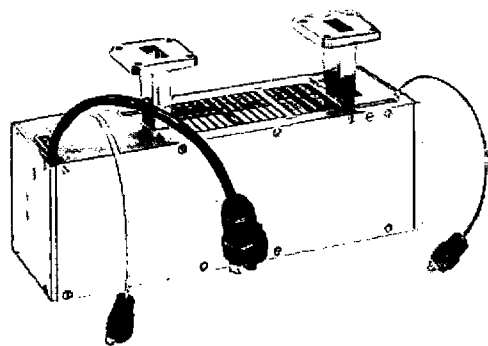


TRAVELING-WAVE TUBE

LESS THAN 10 DB NOISE FIGURE
25 DB GAIN

8000-12,000 MEGACYCLES
METAL-CERAMIC

LOW NOISE

The GL-7394 is a ruggedized, low-noise, broadband traveling-wave tube for use in the 8000-to-12,000 megacycle frequency range. It has a noise figure of less than 10 decibels across the entire band with a power output of 5 milliwatts.

The tube is of metal-and-ceramic construction and is supplied as a complete packaged assembly which includes permanent focusing magnets, connectors, and housing. The entire assembly weighs ap-

proximately 11.5 pounds.

The broad bandwidth, low-noise, high gain, freedom from tuning adjustments, and rugged construction make this tube particularly useful in military systems. As the input tube for radar receivers, it has the decided advantages of low noise and protection to the crystal mixer. Other applications include electronic counter-measures equipment, microwave relay systems, and radiometry.

Electrical			Mechanical		
Frequency.....	8000 to 12,000	Megacycles	Mounting Position—Any		
Heater			Connectors		
Voltage.....	6.3	Volts	DC Socket—Winchester PM6P-LS (or equivalent)		
Current, nominal.....	0.3	Ampere	Helix—Winchester PM1P-LS (or equivalent)		
A heater-voltage regulation of ± 2 percent is recommended to realize optimum gain and noise figure.			Collector—Winchester PM1P-LS (or equivalent)		
Focusing Method—Permanent Magnet			RF Connectors, Waveguide		
Noise Figure*, maximum.....	10	Decibels	Input—UG-39/U		
Small-Signal Gain, minimum.....	25	Decibels	Output—UG-39/U		
Saturated Power Output, nominal.....	5.0	Milliwatts	Over-all Dimensions		
Collector Dissipation.....	1.0	Watt	Length.....	9.25	Inches
Waveguide VSWR			Width.....	4.6	Inches
Input.....	Less than 2.5 to 1		Height.....	3.0	Inches
Output.....	Less than 3.5 to 1		Weight, Tube and Magnet, approximate.....	11.5	Pounds
			Shock.....	50	G
			Vibration.....	15	G
			Altitude.....	100,000	Feet Mean Sea Level
			Thermal		
			Cooling—Convection		
			Operating Temperature		
			Ambient.....	—20 to +70	C

TYPICAL OPERATING CONDITIONS**

Electrode-No. 1 Voltage, Grid.....	—10 to —25	Volts
Electrode-No. 2 Voltage, Anode.....	30 to 60	Volts
Electrode-No. 3 Voltage.....	40 to 150	Volts
Electrode-No. 4 Voltage.....	250 to 450	Volts
Helix		
Voltage.....	700 to 850	Volts
Current, maximum.....	50	Microamperes
Collector Voltage.....	900 to 1000	Volts
Beam Current.....	400 to 700	Microamperes
Magnetic Field Strength, approximate.....	600	Gausses

*Over band with the same operating voltages that provide minimum gain variation.

**All voltages may be isolated from ground; i.e., it is not necessary to operate the cathode, helix, collector, or any other electrode at ground potential. Voltages shown are measured with respect to cathode. For minimum noise and optimum gain characteristics, voltages should be adjusted to values specified by instructions accompanying each tube.

PERFORMANCE ASSURANCE SPECIFICATIONS

Shock (energized)	30 G for 11 milliseconds on each of three mutually perpendicular axes.
Vibration (operating)	0.031 inches double amplitude from 5 to 55 cycles per second and 5 G from 55 to 1500 cycles per second with sweep over 5 to 1500 cycles per second for 100 minutes on each of three mutually perpendicular axes.
Humidity (non-operating)	MIL-E-5272 C, Paragraph 4.4.1 (Procedure I); i.e., non-operating tube in 95 percent relative humidity atmosphere for 10 days with temperature cycled slowly from approximately 30 C to 71 C each day.
Acoustic noise (operating)	135 decibels, 25 to 12,000 cycles per second random noise.

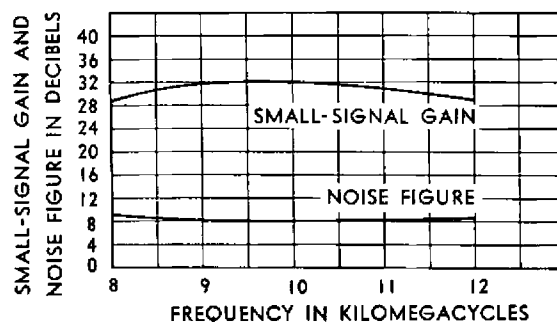
PERMANENT-MAGNET PRECAUTIONS

This tube uses a uniform-field permanent magnet as the focusing structure. A label on the tube specifies a nominal lower limit of two inches on magnetic-material proximity. It must be realized that strong external magnets or large amounts of magnetic material at this distance may permanently damage the tube. A small screwdriver will not, while a large a-c transformer or a large sheet of steel at this distance may cause damage by defocusing the tube.

In addition, a related caution is important and must be remembered whenever handling a uniform-field tube. The permanent magnets of these tubes cause a large attractive force between the tube and magnetic material. Unless one is always careful to hold the tube and/or magnetic objects near the tube firmly, the result is sudden direct contact. The magnetic object may cause tube damage due to violations of the minimum spacing requirement.

For small steel hand tools, a two-inch limit is sufficient. For large magnetic objects with magnetic fields of their own, the lower minimum distance should be determined accurately by testing. To accomplish this, the tube may be secured to a suitable three-foot-long dielectric support and the tube case grounded. With the tube operating and its helix current being measured, the tube may be moved slowly by the dielectric support toward the magnetic object. (CAUTION: Appropriate electrical safety procedures should be followed at all times.) The minimum distance for which there is no degradation in r-f performance is the point at which the helix current starts to increase. If a slight degradation in noise figure can be accepted, the helix current may be allowed to increase somewhat as long as it stays below its operating maximum.

NOISE FIGURE AND SMALL-SIGNAL GAIN VS. FREQUENCY



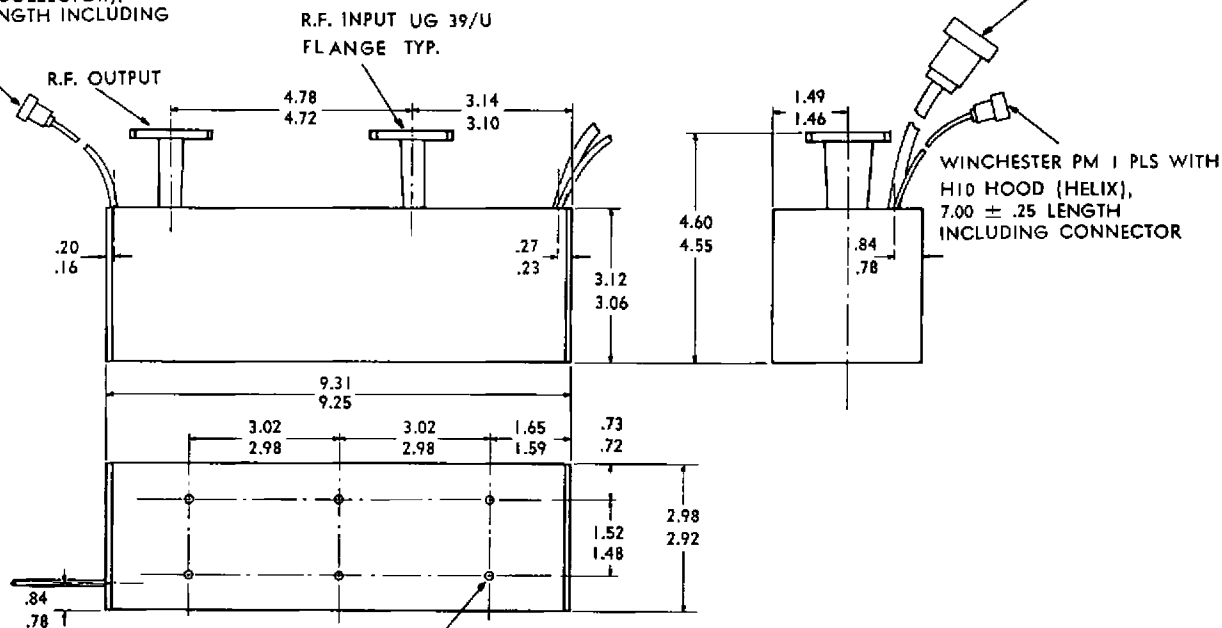
WINCHESTER PM 1 PLS WITH
H10 HOOD (COLLECTOR),
7.00 $\pm$.25 LENGTH INCLUDING
CONNECTOR

R.F. OUTPUT

R.F. INPUT UG 39/U
FLANGE TYP.

WINCHESTER PM 6 PLS WITH PM 6H HOOD
7.75 $\pm$.25 LENGTH INCLUDING CONNECTOR

WINCHESTER PM 1 PLS WITH
H10 HOOD (HELIX),
7.00 $\pm$.25 LENGTH
INCLUDING CONNECTOR



MOUNTING HOLES 10-32 NF2 x .25 DEEP TYP. 6 HOLES

PIN CONNECTIONS PM 6 PLS

ELECTRODE	PIN
CATHODE	F
HEATER	A
NO. 1, GRID	B
NO. 2, ANODE	C
NO. 3, FOCUS	D
NO. 4, FOCUS	E