



REFLEX KLYSTRON

DATA SHEET

oscillator

V-151
63168.5 - 10.0
kMc

1495A

APPLICATION

Intended primarily for radar application, the V-151/6316 klystron's ruggedness and excellent electrical characteristics offer improved local oscillator reliability and performance in radar systems in which it is utilized.

FEATURES

Extremely rugged construction . . . Low microphonics . . . Matched load operation without matching sections . . . Negligible barometric frequency coefficient . . . Waveguide output . . . Removable flange inserts in flange holes simplify insulation when required . . . Rapid warm-up . . . Molded leads and base permitting high altitude operation without pressurization . . . High altitude connector for convenient installation.

GENERAL CHARACTERISTICS

Frequency Range 8.5 to 10.0 kMc
Heater Voltage 6.3 volts
Heater Current 1.2 A

MAXIMUM RATINGS

Resonator Voltage 350 volts
Resonator Current 52 mA
Reflector Voltage . . . 0 to -1000 volts

MECHANICAL CHARACTERISTICS

Cathode Oxide coated, unipotential
Maximum Dimensions 3 x 1-3/4 x 1-7/8 inches
Weight 7 ounces
Output Connection . . . Bolts to UG-39/U flange or UG-40A/U
choke for 1 x 0.50 x 0.050 in. waveguide
Base Molded flexible leads 7-inch leads
terminated in Viking Connector
Mounting Position Any
Cooling Convection¹
Tuner Lock-nut
Shock Withstands up to 250 G
Microphonics Less than 500 kc²

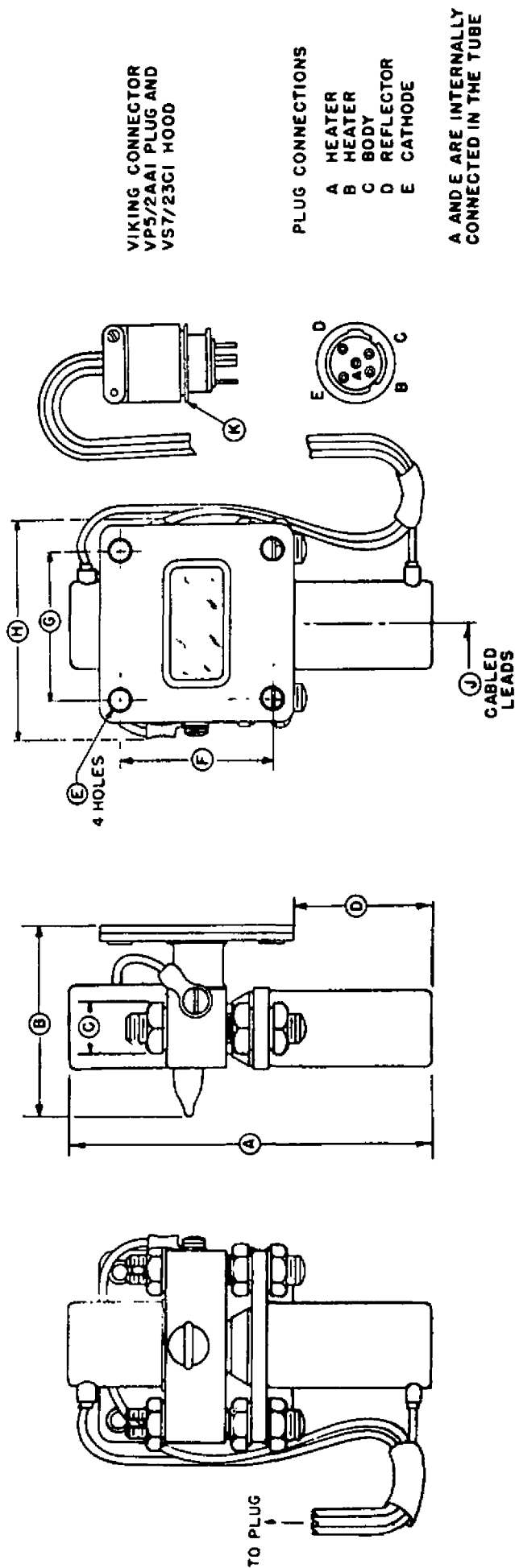
ELECTRICAL CHARACTERISTICS

Operation between 9000 and 9660 Mc, matched load
Ers = 200 volts, Ef = 6.3 Vac, Mode 6 3/4

	Min.	Avg.	Max.	
Resonator Current	-	20	23	mA
Reflector Voltage	-80	-	-160	volts
Power Output	15	25	-	mW
Electronic Tuning Range ³	20	45	-	Mc
Temperature Coefficient	-100	0	+100	kc/°C

- NOTES: 1. Forced air cooling required above 10 watts resonator power input.
2. At resonant peaks, a 10G audio-frequency vibration may produce frequency modulation of as much as 2.5 Mc.
3. Between half-power points.

Pub. 370 4.5M857 Litho U.S.A.



NOTE: Eyelet-type inserts in the flange mounting holes are 0.219 O.D., 0.185 I.D., nominal, and are easily removable from rear of flange. With inserts in place, the mounting holes provide clearance for 48 screws. With inserts removed, the mounting holes permit use of insulating bushings where d-c isolation between tube flange and waveguide system is desired.

REF.	DIMENSIONS
*A	3.00 MAX.
B	1.75 MAX.
*NC	.438 NOM.
*ND	1.00 MAX.
*E	.219 DIA. NOM. WITH .185 DIA. NOM. REMOVABLE INSERTS
F	1.284 MAX. 1.276 MIN.
G	1.224 MAX. 1.216 MIN.
*HH	1.9 MAX.
*JTK	7.0 NOM.

SPECIFICATION DRAWING V-151/6316 KLYSTRON



1495A

SPECIFICATION

TYPE V-151/6316 REFLEX KLYSTRON

Description: Klystron, Integral Cavity, Tuner, Waveguide Output

Ratings:	Ef	Ers	Er	Ik	Tuner Plate Temp	Altitude
Absolute	V	Vdc	Vdc	mAdc	°C	Feet
Maximum:	6.3 ± 10%	350	0 to -1000	42	200	No Limit
Test Cond:	6.3	200	-55 to -225	--	Notes 1 & 2	

Dimensions: As per Outline **Cathode: Coated Unipotential

Pack in sealed moisture resistant bag. If opaque bag is used, type number shall be stamped thereon.

Ref.	Test	Conditions	Min.	Max.
4.5	Holding Period:	t=168 hours		
4.8	*Electrode Insulation:	300 Vdc, Tube Cold	Rh-rs: 2.0 Rk-rs:	Meg
4.9.18	*Carton Drop:	(d)Package Group 1 Carton Size N		
4.9.19	**Vibration(1):	Power Output(1) 10G; F=50 to 1000 cps t=5 min		
4.9.19	*Vibration(2):	10G; F=60; t=120 Note 3	Ir: 0	10 uAdc
4.9.20.5	**Shock:	Power Output(1) G=200		
4.10.8	*Heater Current:		If: 1.32	A
4.10.6.7.1	/Total Reflector Current:	Notes 4 & 5	Ir: --	3 uAdc
4.10.1.1	/Emission:	Ef=5.7; Note 5	△ Ik/Ik: --	-15 %
4.10.4.6	Cathode Current:	Er(Mode 6)/max Po F=9660 ± .3% Mc	Ik: --	23 uAdc
4.10.7.3.2	*Tunable Frequency:		F: 8500	10,000 Mc
4.15.1	Power Output(1):	Er(Mode 6)/max Po F=9000 ± .3% Mc	Po: 10	-- mW

<u>Ref.</u>	<u>Test</u>	<u>Conditions</u>	<u>Min.</u>	<u>Max.</u>	
4.15.1	Power Output(2):	Er(Mode 6)/max Po F=9660 $\pm$.3% Mc	Po: 10	--	mW
4.15.1	**Power Output(3):	Er(Mode 5)/max Po F=8500 to 10,000 Mc Ers=300 Vdc	Po: 25	--	mW
4.10.5.4	Reflector Voltage(1):	Power Output(1)	Er: -80	-135	Vdc
4.10.5.4	*Reflector Voltage(2):	Power Output(2)	Er: -100	-160	Vdc
4.15.3	*Electronic Tuning Range:	Mode 6; 50% max Po F=9000 to 9660 Mc	Δ F: 20	--	Mc
4.15.5	**Temperature Compensation:	Power Output(1) TA=20 ^o to 60 ^o C F=9300 $\pm$.3%	Coeff: --	.1	Mc/ ^o C
--	**Frequency Modulation:	Power Output(2) Ef=5.7 to 7.0 Vdc	Δ F: --	.1	Mc
4.11	Life Tests:	Group C Power Output(1)	t: 500		hrs
4.11.4	Life Test End Point:	Power Output(1) Reflector Current t=5 min	Δ Po/Po: 0 Ir: --	-20 10	% uAdc

References are to paragraphs in "Military Specifications for Electron Tubes MIL-E-1C".

Note 1: All oscillation tests except vibration test shall be made with the tube rigidly connected to a UG-39/U flange on appropriate RG-52/U waveguide equipment and the load VSWR for the tube shall be less than 1.1. Forced air cooling is required for power inputs above 10 watts.

Note 2: The temperature of the insulation should not exceed 120^oC.

Note 3: The reflector current shall be recorded with a Brush Model BL202 recorder or equivalent. There shall be no reflector current bursts greater than the limit shown.

Note 4: After two minutes with all voltages applied, total reflector current shall not exceed the specified limits.

Note 5: The tube shall not be oscillating during the test.