

WESTERN ELECTRIC 7116 ELECTRON TUBE
TYPE DESIGNATION REGISTRATION

Reservation Date: 10-2-57

Manufacturers Designation: 1958
 JEDEC Designation: 7116

General Characteristics

The 7116 traveling wave tube employs a helix-type wave propagating structure. The tube is used for low-level gain in the 8500 to 9600 megacycles per second frequency range. The power output is approximately +20 dbm. The input and output circuits employ x-band waveguides. A uniform axial magnetic field is provided by a permanent magnet which is an integral part of the tube. It has been specifically designed as a light-weight package for use in a high vibrational environment.

Electrical Ratings, Absolute Values (Note 1)

Heater Voltage	3.5 ± 5%	Vac
Heater Current	0.86	Aac
Maximum Heater-Cathode Voltage	0	Vdc
Maximum Helix Voltage	1500	Vdc
Maximum Helix Current	0.6	mAdc
Maximum Collector Voltage	1500	Vdc
Maximum Collector Current	0.5	mAdc
Maximum Collector Dissipation	7.5	watt
Maximum Grid #1 Voltage		
Negative Value	100	Vdc
Positive Value	0	Vdc
Maximum Grid #1 Current	10	μAdc
Maximum Grid #2 Voltage	1600	Vdc
Maximum Grid #2 Current	200	μAdc
Maximum Cathode Voltage to Ground	{ -100 +0	Vdc

Electrical Information

Maximum Frequency	9600	Mc
Minimum Frequency	8500	Mc
Minimum Cold Transmission Loss	70	db

WESTERN ELECTRIC 7116 ELECTRON TUBETYPE DESIGNATION REGISTRATIONMechanical Information

Type of Cathode	Oxide, unipotential
Base	Special
Mounting Position	Any
Weight	7 pounds
Type of Cooling	Convection
Maximum Ambient Temperature	85°C

Typical Operating Conditions and Characteristics (Note 1)

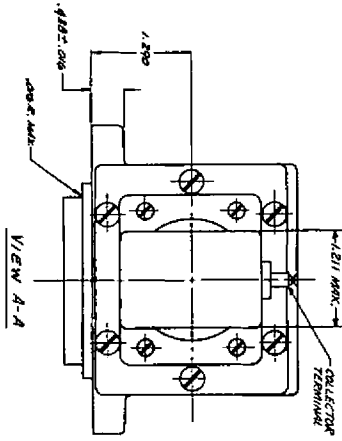
Center Frequency	9000	9000	Mc
Helix Voltage	1130	1130	Vdc
Collector Voltage	1130	1130	Vdc
Grid #1 Voltage (Note 3)	0	-10	Vdc
Collector Current	4.2	2.6	mAdc
Grid #1 Current	0.7	0.9	μAdc
Grid #2 Voltage	1440	1440	Vdc
Grid #2 Current	16	13	μAdc
Helix Current	0.10	0.13	mAdc
Cathode Current	4.3	2.7	mAdc
Gain (Note 2)	43	31	db
Power Output, Saturated	+22	-	dbm
Noise Figure, AM	20	-	db
Vibrational Environment	20G at 5 to 2000 cycles		
Input Match	1.4	1.4	VSWR
Output Match	1.6	1.6	VSWR

Note 1: Reference point for d-c voltages is the cathode.

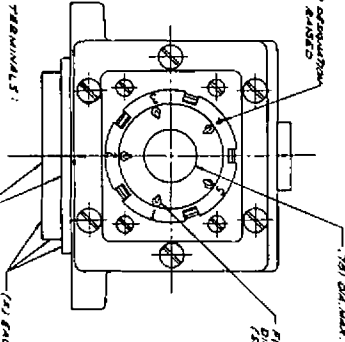
Note 2: Short circuit stable under all conditions.

Note 3: Typical operating conditions for two values of grid #1 voltage are shown.

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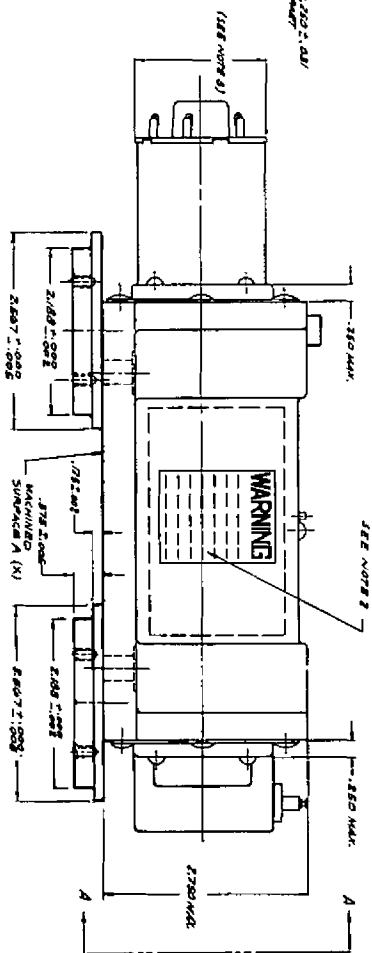
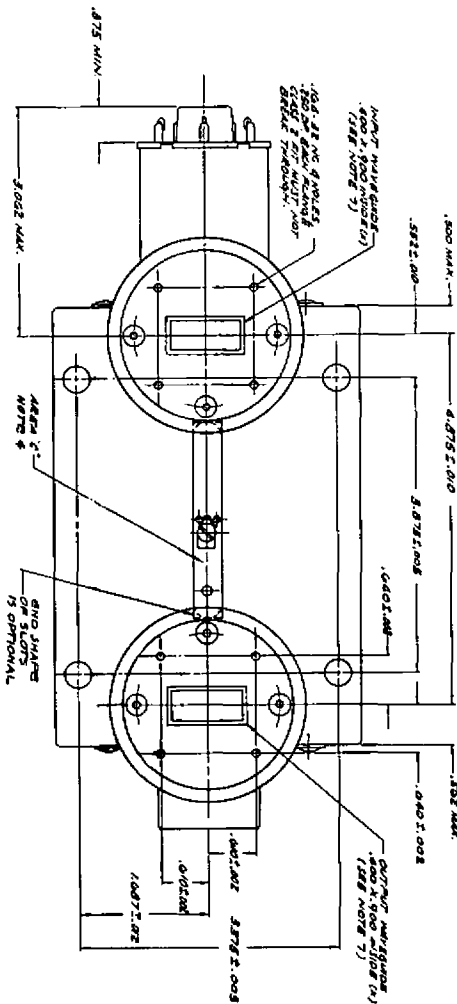


- TERMINALS:**
- 1. WELLS
 - 2. ANODE
 - 3. MESH
 - 4. BRAY FORMING ELECTRODE
 - 5. MESH - CENTER



7. THE DRAWING OF THE HOUSING SHALL BE MODIFIED BY A DOTTED LINE WHEN TUBE IS NOT IN USE.

- NOTES:**
1. THE ANGLE ORIENTATION OF THE NUMERALS TO INDICATE THE SIDING SHALL SHOW.
 2. FINISH ON HOUSING: 2 INCHES BETWEEN THE MAXIMUM FINISHING AND MINIMUMS INTERLARS (MOUNTS, TUBES, PLATES, ETC).
 3. A CYLINDER 1.716 DIAMETER, WITH THE MAXIMUM HOUSING AS INDICATED, SHALL BE OVER THE TUBE.
 4. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS SHALL BE IN INCHES UNLESS OTHERWISE SPECIFIED.
 5. EACH HOUSING SUBJECT TO 2" SHALL BE PLAT AND MESHED WITHIN .005 T. IS WITH SPACERS TO BE PLACED WITHIN THE HOUSING. THE SPACERS SHALL BE AT LEAST .010 INCHES THICK AND BE SUPPORTED TO HOLD WITHIN THE HOUSING. THE SPACERS SHALL BE MADE OF BRASS OR ANOTHER SUITABLE MATERIAL WITHIN .001 OF TOLERANCE AND SHOWN IN SECTIONS (1) & (2).
 6. THE TUBE SHALL BE PLACED WITHIN THE HOUSING WITHIN .005 T. IS WITH SPACERS TO BE PLACED WITHIN THE HOUSING. THE SPACERS SHALL BE AT LEAST .010 INCHES THICK AND BE SUPPORTED TO HOLD WITHIN THE HOUSING. THE SPACERS SHALL BE MADE OF BRASS OR ANOTHER SUITABLE MATERIAL WITHIN .001 OF TOLERANCE AND SHOWN IN SECTIONS (1) & (2).
 7. THE DRAWING OF THE HOUSING SHALL BE MODIFIED BY A DOTTED LINE WHEN TUBE IS NOT IN USE.



(1) SEE DRAWING HOUSING (2) SEE DRAWING HOUSING

