

BACKWARD WAVE OSCILLATOR

RESERVATION DATE: JUNE 24, 1960

MANUFACTURER'S DESIGNATION: LOU-2C/316H
JEDEC DESIGNATION: 7785

GENERAL CHARACTERISTICS

High speed electronic tuning over the frequency range of 12.4 to 18.0 kMc distinguishes the type 7785 Backward Wave Oscillator. This traveling wave tube, designed for CW or pulse oscillator service, develops a useful power output of 30 to 70 milliwatts over the major portion of its frequency coverage. The smooth and continuous tuning curve, expressing the helix voltage vs. the operating frequency relationship, is exceedingly useful in the design of swept frequency circuits. The mechanical construction, employing precision machine methods, is typified by a voltage tuning curve uniformity from tube to tube held to $\pm 1\%$. The compact rugged housing and its associated permanent magnet form a structure which facilitates handling, and insures reliable operation during its normal life expectancy of several thousand hours.

ELECTRICAL RATINGS ABSOLUTE VALUES

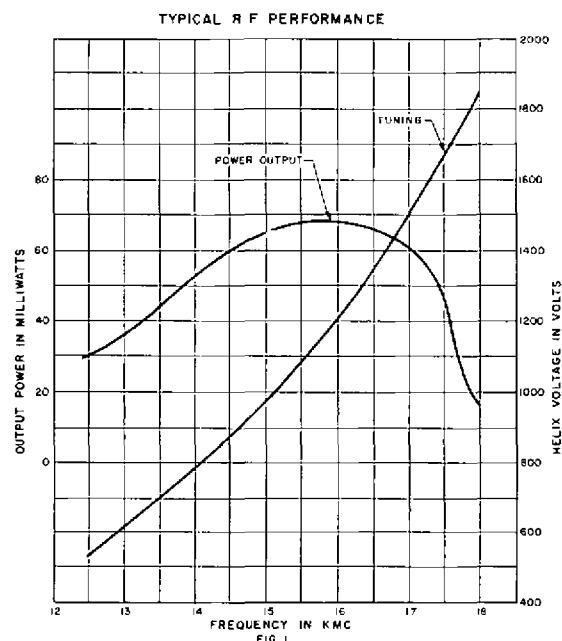
Maximum Heater Voltage	7 V
Minimum Cathode Warmup Time	2 Minutes
Maximum Heater Cathode Voltage	10 V
Maximum First Anode Voltage	300 Vdc
Maximum First Anode Current	2 mAdc
Maximum Second Anode Voltage	2 kVdc
Maximum Second Anode Current	4 mAdc
*Maximum Helix and Collector Voltage	2 kVdc
Maximum Helix and Collector Current	10 mAdc
Maximum Collector Dissipation	10 W
Maximum Helix Voltage to Ground	2 kVdc

*Helix and Collector connected internally

ELECTRICAL INFORMATION

Maximum Frequency	18.0 kMc
Minimum Frequency	12.4 kMc

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(LOU-2C/316H)



MECHANICAL INFORMATION

Type of Cathode	Impregnated Tungsten
Type of Envelope	Special
Magnetic Field Strength	650 Gauss
Mounting Position	Any
Weight	12½ Pounds
RF Output Connector	RG91/U Waveguide UG541/U Choke Flange
DC Connector	Winchester Receptacle PM6S-LR6N
Type of Cooling	Convection Air at 20°C Ambient
Ambient Temperature	-55°C to 85°C
Maximum Collector Temperature	170°C

TYPICAL OPERATION

Heater Voltage	6.3 V
Heater Current	.84 A
First Anode Voltage	230 Vdc
First Anode Current	.40 mAdc
Second Anode Voltage	503 - 1936 kVdc
Second Anode Current	1.7 mAdc
Helix and Collector Voltage	503 - 1936 kVdc
Helix and Collector Current	5 mAdc
Power Output (See Fig. 1)	10 mW min.
*Spectrum Width	.19 Mc
*Pulling Figure	3.23 Mc
*Pushing Figure	4.18 Mc
Noise Figure	
(±.2 Mc or more from carrier frequency)	-30 db
(Total power in a 4 Mc band)	-96 dbm

*At 16.683 kMc

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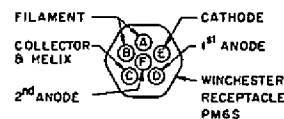
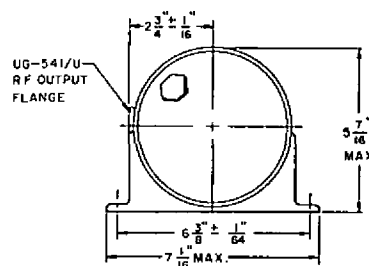
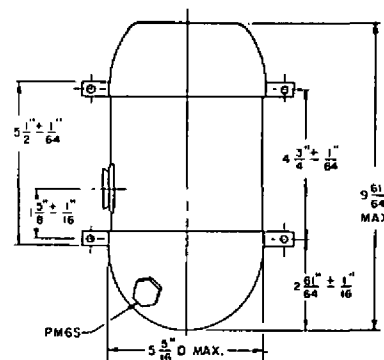


FIG. 2

MECHANICAL DIMENSIONS

Mechanical dimensions are given on the outline drawing, Fig. 2. If two or more tubes are operated adjacent to each other the packages should be oriented in the same direction.

HUGHES AIRCRAFT COMPANY

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MICROWAVE TUBE DIVISION

11105 ANZA AVENUE • LOS ANGELES 45, CALIFORNIA • TELEPHONE: SPRING 6-1515 ORCHARD 0-1515