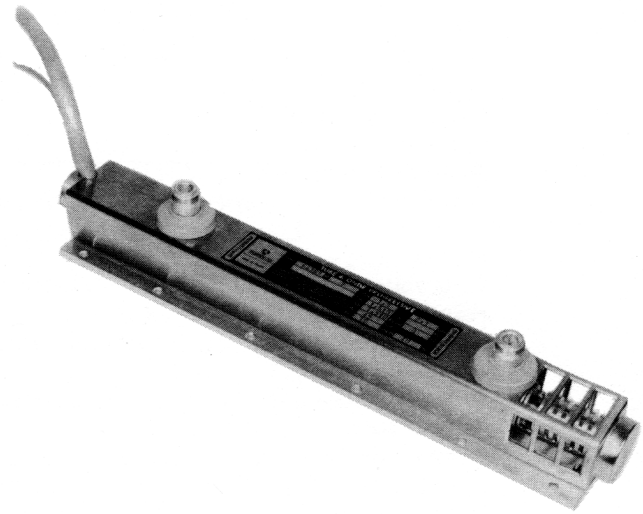
F4189

TRAVELING WAVE TUBE



The F4189 traveling wave tube is a broadband amplifier capable of providing a minimum saturated output power of 10 W from 1. 3 to 2. 1 GHz. The saturation gain is more than 30 dB and the small signal gain is more than 35 dB.

Integral periodic permanent magnet focusing reduces the stray magnetic field and saves weight.

The F4189 is cooled by forced air. Because of its small size, light weight and rugged construction, this tube is ideal for use in mobile radio link communications systems.

The AMP.2070 amplifier, fitted with the F4189 traveling wave tube is ideal for laboratory measurements, wideband amplification for radars and communications, antenna pattern measurements etc... This amplifier incorporates a power supply, a F4189 traveling wave tube with its permanent magnet, a modulating circuit and security devices.

GENERAL CHARACTERISTICS

Electrical (1)

	min.		max.	
Frequency	1. 3		2. 1	GHz
Heater voltage		6. 3		V
Heater current	1. 1		1. 5	A
Output power	10			W
Gain (saturation	30			dB
Gain (small	35			dB
Helix voltage	1. 2		1. 6	kV
Helix current			5	mA
Anode voltage	0. 8		1. 5	kV
Anode current	−1		+3	mA
Collector voltage	1. 2		1. 6	kV
Cathode current			55	mA

(1) - All voltages are referred to the cathode.

Mechanical

Operating position	any
Weight (approx.)	1. 7 kg
RF connections	coaxial N type, UG 58 A/U
Supply connections	flexible leads
Cooling	forced air, 400 1/mn

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ABSOLUTE RATINGS

(non simultaneous values)

	min.	max.	
Heater voltage	6.0	6.6	V
Heater surge current	–	3.0	A
Warm-up time (1)	3	–	mn
Ambient temperature	–	60	°C
Vibrations	–	0.5 mm from 10 to 55	Hz
		0.05 mm from 55 to 100	Hz
Shocks		40 g – 6 ms	
Helix voltage (2) ..... nominal voltage.	– 200	+ 200	V
Helix current	–	5.5	mA
Anode voltage (2) ..... nominal voltage	–	+ 200	V
Anode current		3	mA
Collector voltage (2) ..... nominal voltage	– 200	+ 200	V
Cathode current	–	57	mA
Collector dissipation	–	100	W
Drive power	–	100	mW
Pressure	0.6	2	bar(3)
Load VSWR	–	2:1	

(1) - Not necessary if the supply is shut off for less than 5 seconds.

(2)- Indicated on the Test Data Sheet of each tube.

(3) - 1 bar = approx. 15 psi.

TYPICAL OPERATION

Frequency	1.7	GHz
Heater voltage	6.3	V
Heater current	1.25	A
Drive power	7	mW
Output power saturation	11.5	W
Gain saturation	32	dB
Helix voltage	1.48	kV
Helix current	0.9	mA
Anode voltage	1.02	kV
Anode current	0	mA
Cathode current	46	mA
Collector voltage	1.48	kV
Collector current	45	mA

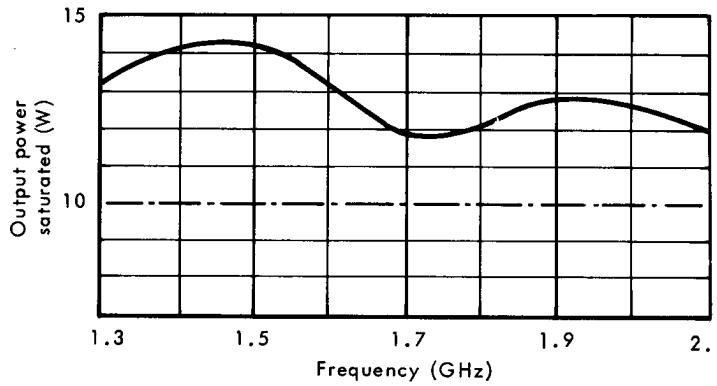
OPERATING INSTRUCTIONS

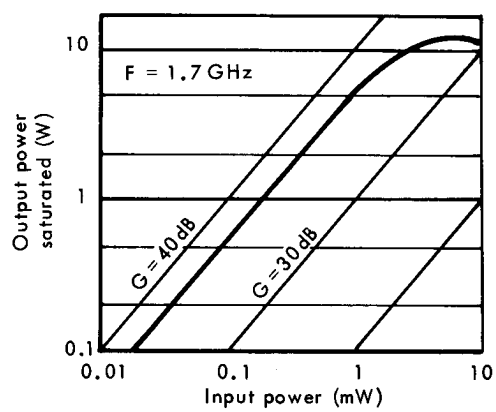
Application of voltages

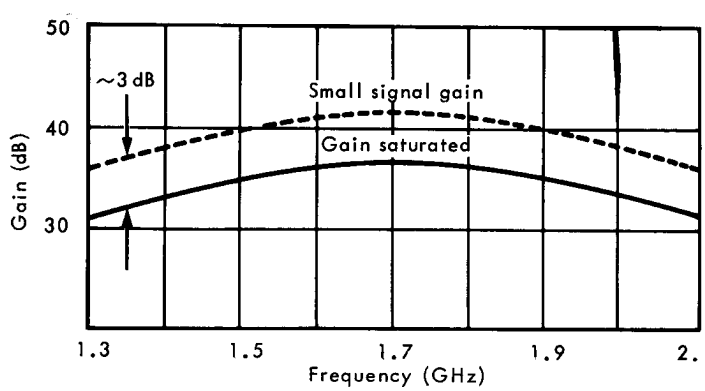
Voltages should be applied in the following order :

- Heater, allow three minutes for cathode warm-up.
- Grid,
- Helix,
- Collector,
- Anode, (Anode voltage should not be applied if other voltages are not applied or if the thermal safety relay is open).

CHARACTERISTIC CURVES







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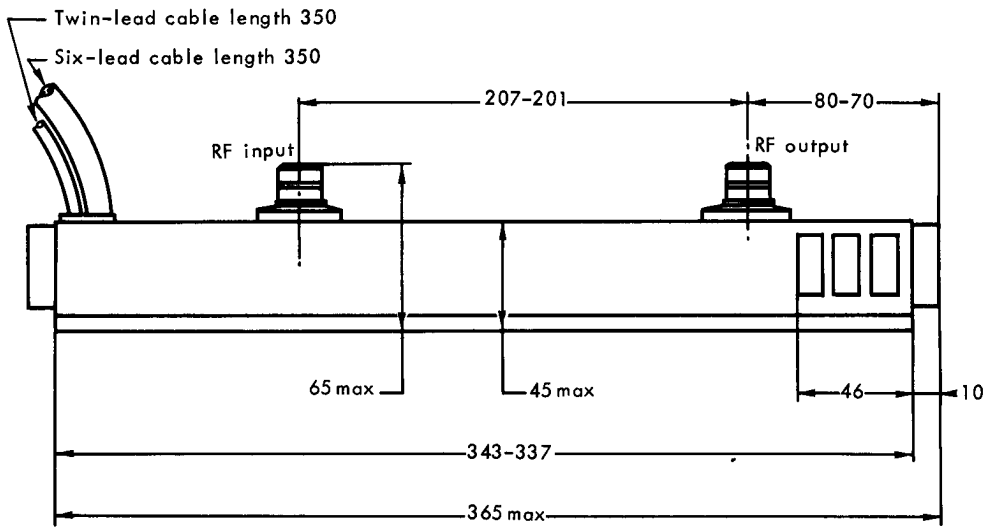
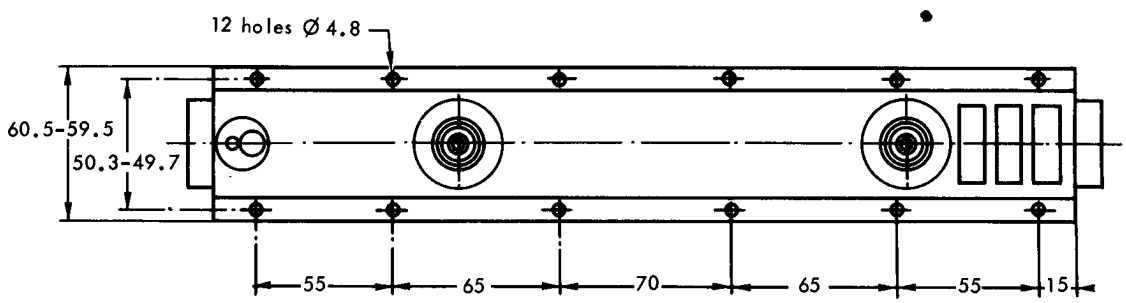
OUTLINE DRAWING





CONNECTIONS	
Blue	Anode
Orange	Helix
Red	Collector-ground
Brown	Heater
Yellow	Heater-cathode
Green	Wehnelt
White	Protection circuit
Grey	Protection circuit

Dimensions in mm.