ELECTRON TUBE DEPARTMENT ■ COMPONENTS DIVISION
INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION, CLIFTON, NEW JERSEY

X-393* BACKWARD WAVE AMPLIFIER TUBE

T E N T A T I V E

GENERAL CHARACTERISTICS

The X-393 is an S-band backward wave amplifier tube with a helical wave propagation structure employing continuous beam operation. The tube is designed for use as a narrow band medium noise r-f amplifier with a pass band that can be electronically tuned over the frequency range of 1470 to 2670 megacycles.

The X-393 is a glass envelope tube mounted in an aluminum capsule and requires a solenoid to focus the electron beam. Type "TNC" female r-f connectors are included as an integral part of the capsule.

ELECTRICAL DATA

Frequency Range	1470 - 2670 mcs
Pass Band (3 db)	3 - 15 mcs
Small Signal Gain	20 db minimum
Noise Figure	15 db maximum

MECHANICAL DATA

Mounting Position	Horizontal (preferred)
Capsule Length	32 inches
Capsule Diameter	2 inches
Net Weight	5 pounds
R-F Connectors	Type "TNC" Female
D-C Connections	Color Coded Flying Leads
Cooling	Not Required

*This number identifies a particular experimental tube design, such number and identification data being subject to change without notice. This tube is for experimental purposes only, carries no obligation for future manufacture and should not be used for design purposes without prior arrangement.

MAXIMUM RATINGS

Heater Voltage	6.5 Volts dc maximum
Heater Current	4 Amperes maximum
Cathode Voltage	-200 to -1350 Volts maximum
Cathode Current	4 ma maximum
Focus Voltage	-10 to +10 Volts maximum)
Anode No. 1 Voltage	+5 to +70 Volts maximum)
Anode No. 2 Voltage	+10 to +150 Volts maximum) with respect
Anode No. 3 Voltage	+20 to +250 Volts maximum) to cathode
Anode No. 4 Voltage	+70 to +700 Volts maximum)
Anode No. 5 Voltage)	
Helix No. 1 Voltage)	
Helix No. 2 Voltage)	Zero Volts (Ground)
Capsule Voltage)	
Collector Voltage	250 Volts maximum
Focus Current	.2 ma maximum
Anode No. 1 Current	.2 ma maximum
Anode No. 2 Current	.2 ma maximum
Anode No. 3 Current	.2 ma maximum
Anode No. 4 Current	.2 ma maximum
Anode No. 5 Current	.2 ma maximum
Helix No. 1 Current)	
Helix No. 2 Current)	.3 ma maximum
Capsule Current)	
Collector Current	4 ma maximum
Solenoid Magnetic Field	700 Gauss maximum

TYPICAL OPERATION

Frequency (Center of Pass Band)	2200 megacycles
Pass Band (3 db)	9 megacycles
Small Signal Gain	23 db
Noise Figure	12 db
Heater Voltage	6.3 Vdc
Heater Current	3.5 ADC
Cathode Voltage	-680 Vdc with respect to ground
Cathode Current	2.0 ma
Focus Voltage	-7 Vdc)
Anode No. 1 Voltage	+18 Vdc)
Anode No. 2 Voltage	+15 Vdc) with respect to cathode
Anode No. 3 Voltage	+210 Vdc)
Anode No. 4 Voltage	+450 Vdc)
Anode No. 5 Voltage)	
Helix No. 1 Voltage)	
Helix No. 2 Voltage)	Zero Volts (Ground)
Capsule Voltage)	
Collector Voltage	200 Volts with respect to ground
Focus Current	0 ma
Anode No. 1 Current	.03 ma

Anode No. 2 Current	.01 ma
Anode No. 3 Current	.01 ma
Anode No. 4 Current	.01 ma
Anode No. 5 Current	.01 ma
Helix No. 1 Current)	
Helix No. 2 Current)	.03 ma
Capsule Current)	
Collector Current	1.9 ma
Magnetic Field	650 gauss

Additional information for specific applications can be obtained from the

Electron Tube Applications Section
ITT Components Division
P.O. Box 412
Clifton, New Jersey

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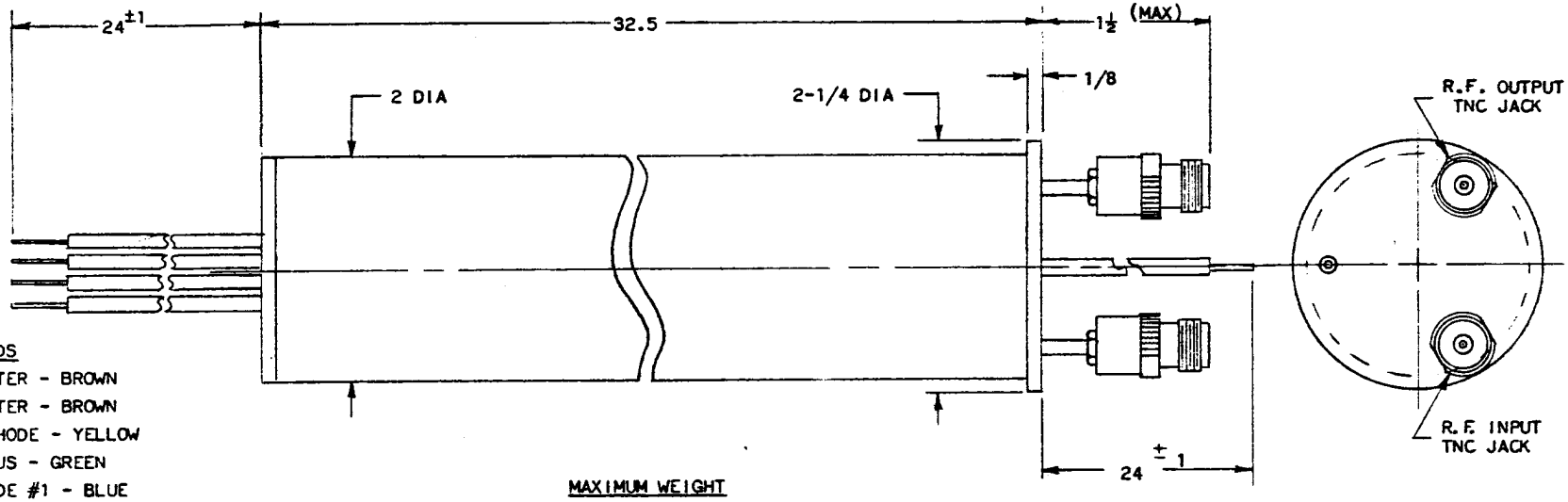
INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION, CLIFTON, NEW JERSEY



LEADS
HEATER - BROWN
HEATER - BROWN
CATHODE - YELLOW
FOCUS - GREEN
ANODE #1 - BLUE
ANODE #2 - GREY
ANODE #3 - PURPLE
ANODE #4 - WHITE
ANODE #5
AMPL. HELIX #1 } GROUND-BLACK
AMPL. HELIX #2
COLLECTOR - RED

MAXIMUM WEIGHT
5 POUNDS

BACKWARD WAVE AMPLIFIER

TYPE X-393