



T E N T A T I V E

GENERAL CHARACTERISTICS:

The X-388 is a single tube designed to convert UHF signals in the band from 496-897 megacycles to a 50 megacycle intermediate frequency output signal.

The tube consists of a backward-wave amplifier and a backward wave oscillator in the same vacuum envelope. The r-f input signal is fed to the amplifier section where its level is increased. It is then mixed with the oscillator signal in the common electron beam that interacts with both r-f structures, to yield an i-f output signal which can be adjusted over a fairly large frequency range. This tube uses a 50 megacycle i-f.

The X-388 is a glass tube, mounted in an aluminum capsule. Solenoid focusing is required. A type "TNC" r-f input connector and a "TSM" i-f output connector are included as an integral part of the capsule. A type "TNC" l-o output connector can be supplied if required.

ELECTRICAL DATA:

Operating Frequency	496-897 megacycles
Bandwidth	10-25 megacycles
Noise Figure	20 db
I-F Output	50 megacycles
Conversion Gain	Unity
Image Rejection	40 db

Note: The image rejection is dependent upon the intermediate frequency selected. This tube utilizes a 50 megacycle i-f. An increase in the i-f would result in a higher level of image rejection.

\* 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.

MECHANICAL DATA:

Mounting Position	Horizontal (preferred)
Capsule Length	5 1/4 inches
Capsule Outside Diameter	3-1/4 inches
R-F Input Connector	Type "TNC" Coaxial, female
I-F Output Connector	Type "TSM" Coaxial, male
L-O Output Connector (if required)	Type "TNC" Coaxial, female
D-C Connections	Color coded flying leads

MAXIMUM RATINGS:

Heater Voltage	7.5 Volts maximum
Heater Current	4.5 Amperes maximum
Cathode Voltage	-100 to -1200 Volts maximum
Cathode Current	8 ma maximum
Focus Voltage	0 to -10 Volts maximum )
Anode No. 1 Voltage	15 to 80 Volts maximum )
Anode No. 2 Voltage	15 to 100 Volts maximum )
Anode No. 3 Voltage	30 to 300 Volts maximum )
Anode No. 4 Voltage	100 to 500 Volts maximum )
Anode No. 5 Voltage	)
Amplifier Helix No. 1 Voltage	)
Amplifier Helix No. 2 Voltage	)
Capsule Voltage	)
Oscillator Helix Voltage	-100 to +50 Volts maximum
Collector Voltage	250 Volts maximum
Focus Current	.3 ma maximum
Anode No. 1 Current	.3 ma maximum
Anode No. 2 Current	.3 ma maximum
Anode No. 3 Current	.3 ma maximum
Anode No. 4 Current	.3 ma maximum
Anode No. 5 Current	.3 ma maximum
Amplifier Helix No. 1 Current	)
Amplifier Helix No. 2 Current	)
Capsule Current	)
Oscillator Helix Current	.3 ma maximum
Collector Current	8 ma maximum
Solenoid Magnetic Field	500 Gauss maximum

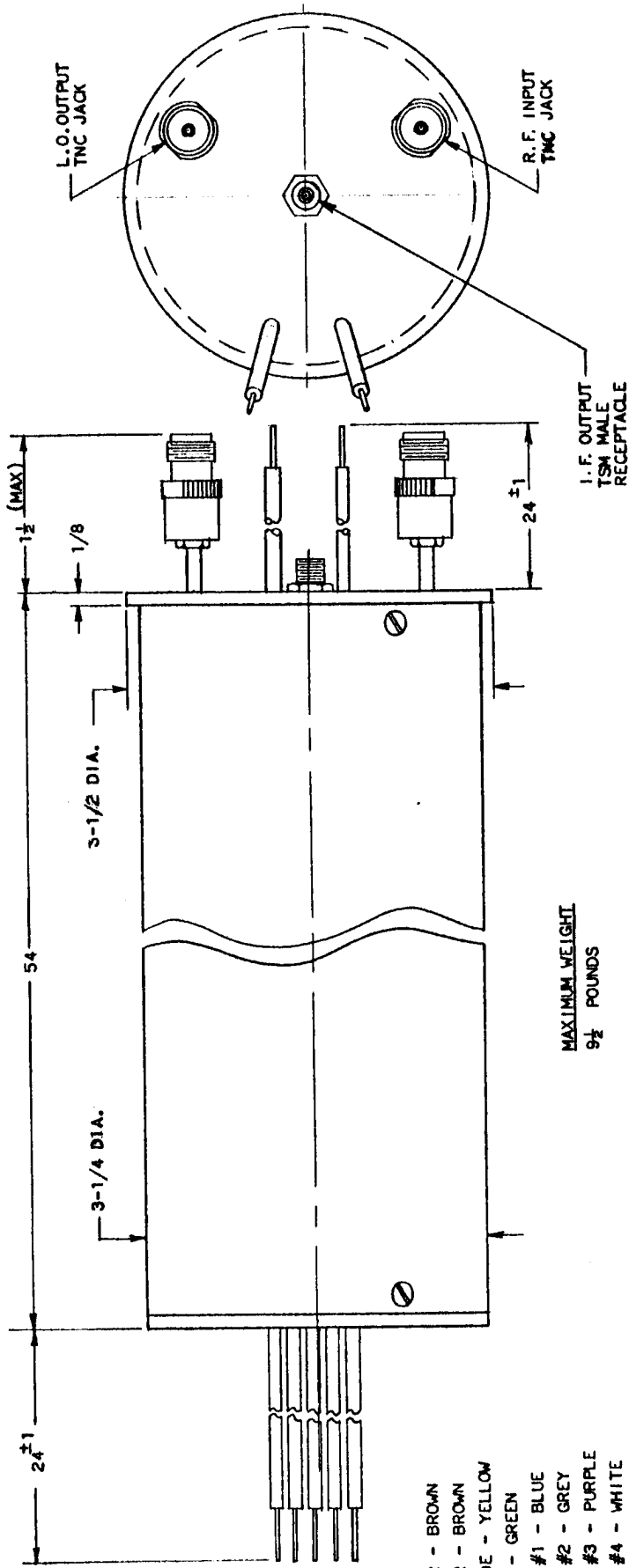
TYPICAL OPERATION:

R-F Frequency	750 megacycles
L-O Frequency	700 megacycles
I-F Frequency	50 megacycles
Conversion Gain	0 db
Heater Voltage	7.0 Volts dc
Heater Current	3.9 Amperes
Cathode Voltage	-410 Volts with respect to ground
Cathode Current	3.0 ma
Focus Voltage	0 Volts )
Anode No. 1 Voltage	42 Volts )
Anode No. 2 Voltage	49 Volts ) with respect to cathode
Anode No. 3 Voltage	56 Volts )
Anode No. 4 Voltage	164 Volts )
Anode No. 5 Voltage	) 0 Volts (Ground)
Amplifier Helix No. 1 Voltage	
Amplifier Helix No. 2 Voltage	
Capsule Voltage	)
Oscillator Helix Voltage	-55 Volts )
Collector Voltage	200 Volts ) with respect to ground
Focus Current	0 ma
Anode No. 1 Current	.06 ma
Anode No. 2 Current	.05 ma
Anode No. 3 Current	.05 ma
Anode No. 4 Current	.06 ma
Anode No. 5 Current	.04 ma
Amplifier Helix No. 1 Current	) .08 ma
Amplifier Helix No. 2 Current	
Capsule Current	)
Oscillator Helix Current	.02 ma
Collector Current	2.6 ma
Solenoid Magnetic Field	450 Gauss

Additional information for specific application can be obtained from the

Electron Tube Application Section  
 ITT Components Division  
 P.O. Box 412  
 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
  - OSCILLATOR HELIX - ORANGE

MAXIMUM WEIGHT  
9 1/2 POUNDS

BACKWARD WAVE CONVERTER

TYPE X-388