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Burroughs Corporation

ELECTRONIC COMPONENTS DIVISION

PLAINFIELD, NEW JERSEY

Bulletin No. 1048

6713

October 15, 1963

(BX–1203) Wide Band Noise Generating High Vacuum Electron Tube

The 6713 (BX–1203) is a wide band noise generating high vacuum electron tube containing internal permanent magnets. It is capable of producing wide band noise in excess of 95 db above 1 uV/Mc over the frequency range of .150 Mc to 30 Mc.

ELECTRICAL CHARACTERISTICS

RATINGS, ABSOLUTE MAX.	VALUE
Target Voltage (Eta)	200 Vdc
Beam Forming Spade Voltage (Ebf)	±100 Vdc
Lagging Spade Voltage (Els)	0-60 Vdc
Anode Voltage (Ebb)	150 Vdc
Heater Cathode Voltage (Ehk)	±100 V
Individual Target Dissipation (P/ta)	0.8W
Heater Voltage (Ef)	6.3 V±5%
Cathode Current (Ik)	10 ma
Frequency (F)	0.150 - 30 Mc

ENVIRONMENTAL CHARACTERISTICS

		NOTES
Shock	G = 30, 11±1 msec duration; half sine wave	5
Vibration	50 cps, 10 G's	6
Altitude	60,000 ft.	

MECHANICAL CHARACTERISTICS

Outline	See Figure 1	
Envelope Connection	See Figures 2, 3	
Mounting Position	Any	2
Weight	1.75 oz.	

TEST CONDITIONS AND TEST LIMITS

The 6713 (BX–1203) is tested in the circuit shown in Figure 4. Although the tube is tested only at particular frequencies within the specified band, indications are that it will produce a minimum of 95 db above 1 μV/Mc over complete spectrum from .150 Mc to 30 Mc.

TEST CONDITIONS	VALUE	NOTES
Target Resistance (Rta)	50 ohm 1% 2W carbon	
Target Voltage (Eta)	125 Vdc	4
Beam Forming Spade Voltage (Ebf)	-6.0 Vdc	4
Anode Voltage (Ebb)	125 Vdc	4
Heater Voltage (Ef)	6.3 V	
Lagging Space Voltage (Els)	0 to 60 Vdc	3
Frequency (F)	.150 Mc to 30 Mc	2

TEST LIMITS	VALUE	NOTES
Noise Output F = .150 Mc	95 db above 1 uV/Mc min.	1
F = .500 Mc	95 db above 1 uV/Mc min.	
F = 1.0 Mc	95 db above 1 uV/Mc min.	
F = 5.0 Mc	95 db above 1 uV/Mc min.	
F = 10 Mc	95 db above 1 uV/Mc min.	
F = 20 Mc	95 db above 1 uV/Mc min.	
F = 30 Mc	95 db above 1 uV/Mc min.	
Cathode Current (Ik)	8 mAdc max.	
Heater Current (If)	150 ma ± 10%	

NOTES:

1. Noise output measurements are taken with Empire Devices' Noise and Field Intensity Measuring Receiver, Model NF–105, Plug-In Tuning Unit T–A/NF105 .15 to 30 Mc, and Switching Unit SU–105, using the following procedure: Set switching unit to READ. Set receiver function switch to PEAK. Set SINE WAVE OSC–OFF–IMPULSE GEN switch to OFF. Switch SIGNAL INPUT ATTENUATOR control to get approximately mid-scale reading on the large meter, keeping the IF GAIN control below its halfway mark. Adjust IF GAIN control to read 10 db on the large meter. The IF GAIN control should not be advanced more than 180° from its extreme counterclockwise position. Then flip the Switching unit to CALIBRATE position. Set SINE WAVE OSC–OFF–IMPULSE GEN switch to IMPULSE GEN. Adjust IMPULSE GENERATOR OUTPUT ATTENUATOR to get reading on large meter, and with ADD TO IMPULSE GENERATOR OUTPUT control adjust large meter to 10 db. Then read noise output on IMPULSE GENERATOR OUTPUT ATTENUATOR plus small meter. If the reading is above 97 db then it is necessary to switch the SIGNAL INPUT ATTENUATOR control down to the next lower setting (20 db lower). Adjust IMPULSE GENERATOR OUTPUT ATTENUATOR to get reading on large meter, and with ADD TO IMPULSE GENERATOR OUTPUT control adjust large meter to 10 db. Then read noise output on IMPULSE GENERATOR OUTPUT ATTENUATOR plus 20 db plus small meter. This represents the noise output of the tube in db above 1 microvolt per megacycle.
2. In order to avoid possible operational changes in the characteristics of this tube, do not place the tube in close proximity (less than 3.5") to magnetic materials and fields.
3. Adjust the lagging Spade (Els) voltage for optimum noise output.
4. To insure optimum noise output in the frequency spectrum specified it is recommended that the target supply voltage (Eta), anode supply voltage (Ebb), and the beam form supply voltage (Ebf) be regulated within ± 2%.
5. Each tube shall be subjected to a total of 20 shocks, i.e.; five shocks in each of positions X1, X2, Y1, and Y2 in any sequence.
6. Each tube shall be vibrated for 1 minute in each of positions X1, and X2.

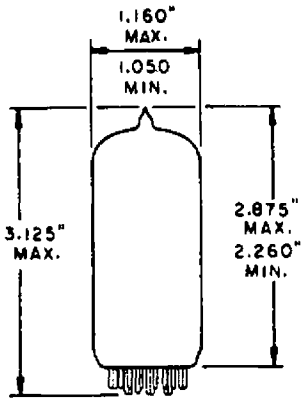

FIG. 1 OUTLINE DRAWING

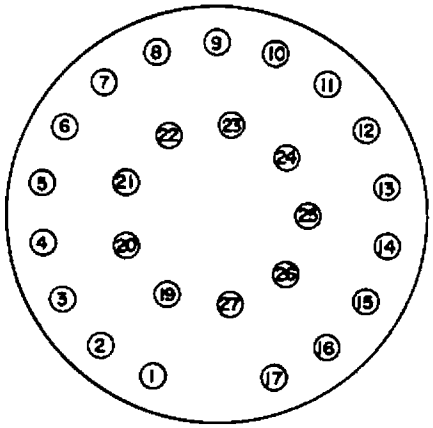

FIG. 2 PIN NUMBERING DIAGRAM

Pin Number	Element	Pin Number	Element
1	Beam Form-1	14	Anode
2	Anode	15	Anode
3	Anode	16	Anode
4	Anode	17	Target-1
5	Anode	19	Lagging Spade
6	Anode	20	Anode
7	Anode	21	Heater
8	Target-2	22	Anode
9	Beam Form-2	23	Lagging Spade
10	Anode	24	Anode
11	Anode	25	Heater
12	Anode	26	Anode
13	Anode	27	Cathode

FIG. 3 PIN CONNECTION CHART

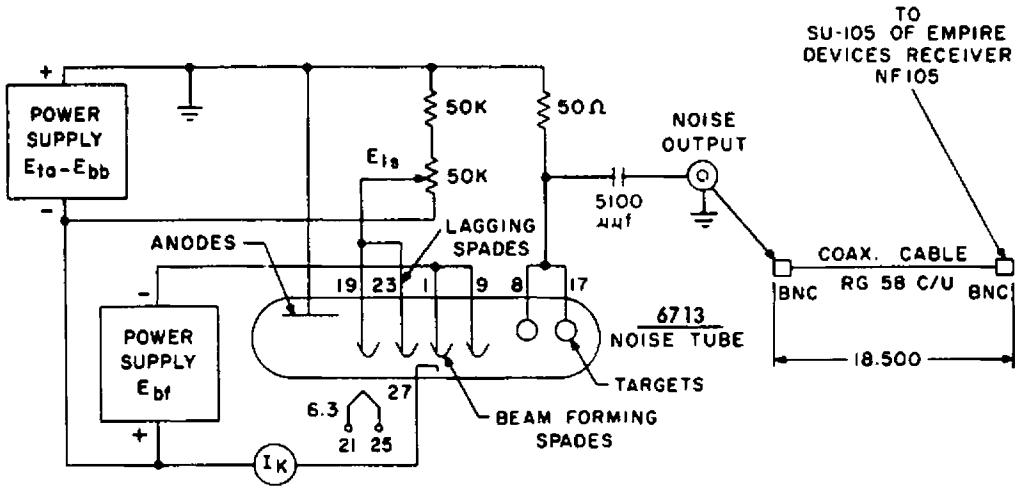

FIG. 4 TEST CIRCUIT