

OCT 22 1948

RADIO MANUFACTURERS ASSOCIATION

SUITE 701-4 AMERICAN BUILDING
1317 F STREET, N.W.
WASHINGTON, D. C.



R.M.A. DATA BUREAU
90 West Street
New York, N. Y.

L. L. A.
REGISTRATION
FILE

Release No. 703

October 19, 1948

To
Tube Engineers:

Registration has been made by the RMA
Data Bureau of the vacuum tube type designations

3J21	(	Registration No.	1545)
4J21	{	"	1546)
4J22	{	"	1547)
4J23	{	"	1548)
4J24	{	"	1549)
4J25	{	"	1550)
4J26	{	"	1551)
4J27	{	"	1552)
4J28	{	"	1553)
4J29	{	"	1554)
4J30	{	"	1555)
4J52	{	"	1556)
5J21	{	"	1557)
5J22	{	"	1558)
5J23	{	"	1559)
5J24	{	"	1560)
5J25	{	"	1561)
5J26	{	"	1562)

as defined by the characteristics and ratings given in
the attached data on application of

Western Electric Company
New York, N. Y.

Respectfully yours,

RMA DATA BUREAU

By

LCFHorle/cap
Enc.

WESTERN ELECTRIC 3J21 ELECTRON TUBE

TYPE DESIGNATION REGISTRATION

Reservation No.: 5222 Manufacturers Designation: 1456
Reservation Date: 10/2/44 Data Bureau Designation: 3J21

U.H.F. MAGNETRON - PACKAGED TYPE

Electrical Data - General

Heater Voltage	12.6 volts
Heater Current	1.6 amperes
Cathode Heating Time	3 minutes
Frequency	23,746-24,226 megacycles
Frequency Pulling (max.)	18 megacycles
Frequency Change with Anode Temperature (max.)	0.45 megacycle per degree C

Mechanical Data - See Outline Drawing

Maximum Ratings, Absolute Values

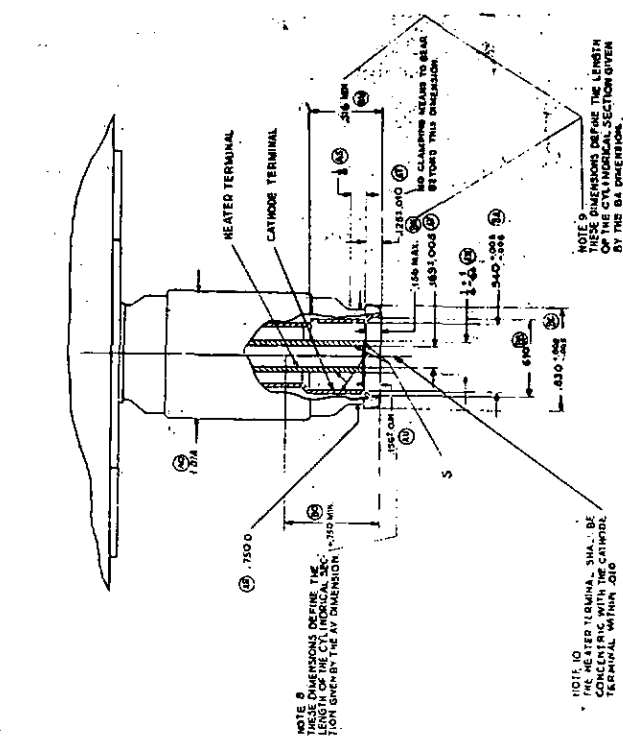
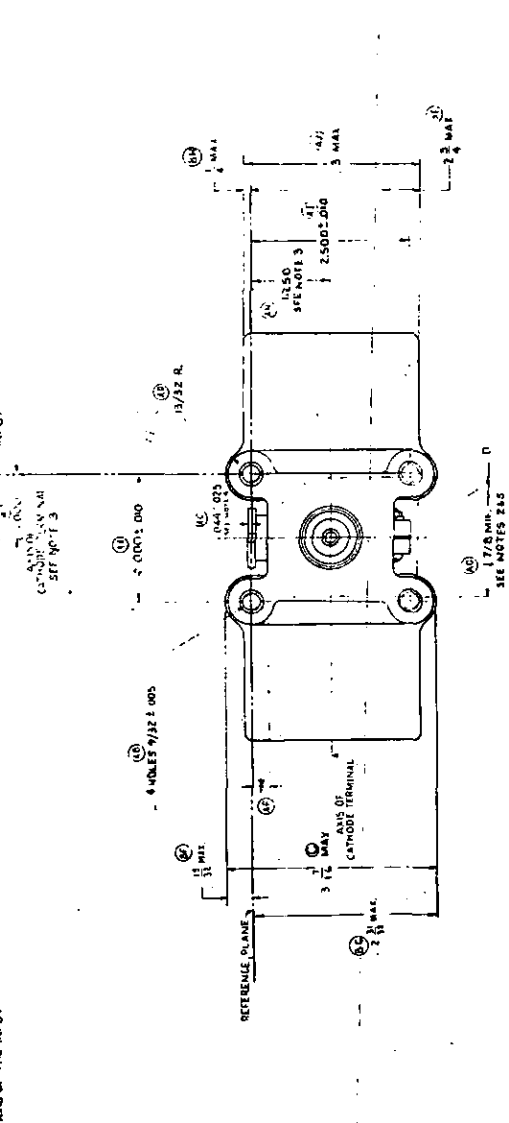
Peak Anode Voltage	15	16 kilovolts
Peak Anode Current	10	16 amperes
Peak Power Input	150	225 kilowatts
Average Power Input	150	110 watts
Duty Cycle	.001	.0006
Pulse Duration	0.55	0.55 microseconds
Anode Temperature	150°	150° Centigrade
Operation Time in 100 Microsecond Interval	0.6	0.6 microsecond

Typical Operation

Heater Voltage *		
Magnetic Field	Integral Magnet	
Peak Anode Voltage	15	15 kilovolts
Peak Anode Current	15	15 amperes
Pulse Repetition Rate	1000	2000 pulses/second
Pulse Duration	0.5	0.25 microseconds
Peak Power Output	60	60 kilowatts
Maximum R.F. Bandwidth	6	12 megacycles

*During high voltage operation the heater voltage must be reduced so that the cathode operates at approximately 820°C.

Note: This sheet does not imply commercial availability of the tube.



ENLARGED VIEW OF INPUT

NOTE 1: ALL METAL SURFACES COVERED BY BLACK FINISH EXCEPT THOSE MARKED S AND D WHICH
: SMALL PV SILVER OR NICKEL PLATED

NOTES: 1. HERMETIC CONNECTIONS CAN BE MADE TO SURFACES D

NOTE 3: THE AXIS OF THE CATHODE-TERMINAL SHALL BE WITHIN A RADIOS OF $3/4\phi$ OF THE SPECIFIED LOCATION LIMIT INCLUDES ANGULAR DEVIATION.

NOTE #1: THIS SURFACE SHALL BE COPLANAR WITH REFERENCE PLANE WITHIN $\pm 1^\circ$.

1000

NOTE 5: WITH THE 1/8 DIA RESTING ON A PLANE SURFACE, A .000 THICKNESS GAGE
 IS A WING SHALL NOT ENTER.

NOTE 6: DIMENSIONS WITHOUT LIMITS ARE FOR EQUIPMENT DESIGN PURPOSES ONLY, AND NEED NOT BE CHECKED.

NOTE 12: ON GOVERNMENT ORDERS THE INITIAL ISSUE OF THIS DRAWING AND ALL SUBSEQUENT CHANGES ARE SUBJECT TO APPROVAL BY THE SERVICES

NOTE 13: THE OPENING IN THE WAVEGUIDE SHALL BE ENCLOSED BY DUSY COVER WHEN TUGRA IS NOT IN USE.

WESTERN ELECTRIC 4J21 to 4J25 ELECTRON TUBES

TYPE DESIGNATION REGISTRATION

Reservation Nos.: 5077 to 5081 Manufacturers Designation: 1402M
Reservation Date: 7/2/43 Data Bureau Designation: 4J21 to 4J25

U.H.F. MAGNETRONS

Electrical Data - General

Heater Voltage	20.5 volts
Heater Current	2.2 amperes
Cathode Heating Time	3 minutes
Frequency	4J21 = 1336-1350 megacycles
	4J22 = 1322-1336 megacycles
	4J23 = 1308-1322 megacycles
	4J24 = 1294-1308 megacycles
	4J25 = 1280-1294 megacycles
Frequency Pulling (Max.)	6.0 megacycles
Frequency Change with Anode Temperature (Max.)	.03 megacycles per degree C

Mechanical Data - See Outlint Drawing

Maximum Ratings, Absolute Values

Peak Anode Voltage	30 kilovolts
Peak Anode Current	60 amperes
Peak Power Input	1500 kilowatts
Average Power Input	1500 watts
Duty Cycle	0.002
Pulse Duration	6.0 microseconds
Anode Temperature	100° Centigrade
Operation Time in 100 Microsecond Interval	8 microseconds

Typical Operation

Heater Voltage *	
Magnetic Field	1400 gauss
Peak Anode Voltage	26.5 kilovolts
Peak Anode Current	48 amperes
Pulse Repetition Rate	200 pulses/second
Pulse Duration	5 microseconds
Peak Power Output	640 kilowatts
Maximum R.F. Bandwidth	4 megacycles

* During high voltage operation, the heater voltage must be reduced so that the cathode operates at approximately 820°C.

Note: This sheet does not imply commercial availability of the tube.

NOTE 1
CONCENTRICITY OF THESE DIMENSIONS
WITH RESPECT TO EACH OTHER SHALL BE
CONSIDERED SATISFIED IF THEY MEET THE
FOLLOWING CONDITIONS: CONCENTRIC TUBES
AND PINS MEASURING 1.25 IN. DIA. TO 1.5
IN. DIA. MUST BE LOCATED WITHIN THE
DISTANCES INDICATED IN NOTES
2 AND 5.

REFERENCE PLANE FOR
ELECTRICAL TESTS

NOTE 2
0.125 ± 0.015 THE
1.000 ± 0.010 DIA. PIN
PENETRATE

NOTE 3
NOTES A-A MUST BE CAPABLE OF BEING
LOCATED BETWEEN TWO PARALLEL PLANES
2.500 APART WHICH ARE EQUIDISTANT
FROM THE AXIS OF A 2.315 DIA. TUBE
THE LOCATING PIN MUST FALL BETWEEN
PARALLEL PLANES ALSO APART EQUIDISTANT
FROM THE Y AXIS AND NORMAL TO THE
ABOVE NOTED PLANES 3.440 APART.

NOTE 4
THE TUBES MUST BE CAPABLE OF
ACCOMMODATING A 1.000 DIA. PIN
ANGLED AT 6° AND A BASE DIAMETER OF 2.34
AND SHALL REFLECT A SIMILAR CONE
HAVING A BASE DIAMETER OF .854

NOTE 5
0.02 TH. TO WHICH THE .530 DIA.
PLUG IN NOTE 1 MUST PENETRATE

NOTE 6
REMOVED EDGES

NOTE 7
0.01 TH. TOP OF GLASS WAX
VARY FROM THAT SHOWN
WITHIN LIMITING BOUNDS
OF NOTE.

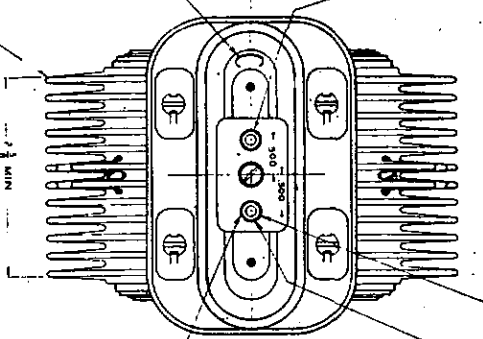
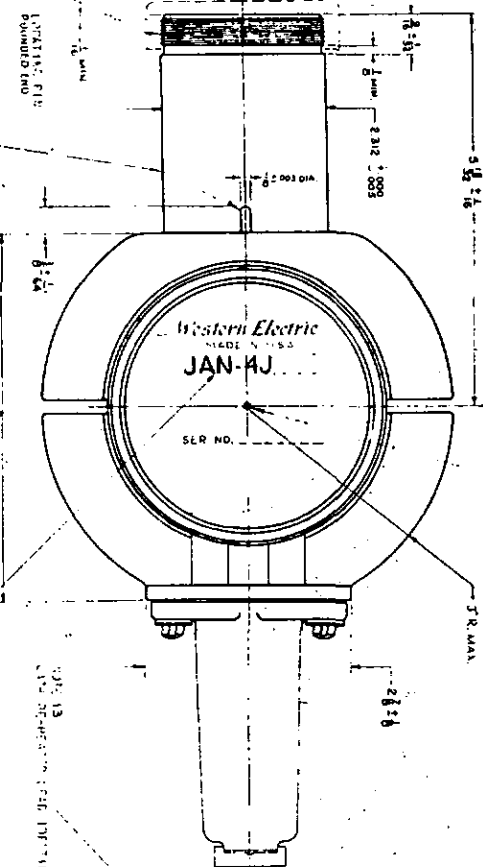
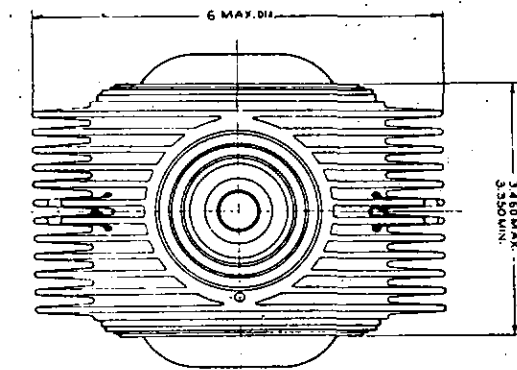
NOTE 8
PROTECTIVE CAP SHALL BE IN PLACE WHEN
TUBE IS NOT IN USE.

12 1/2 MAX.

NOTE 10
JACK HOLES - .169 ± .005 DIA.
19/32 DEEP MIN.

CHARGE-REPAIR TERMINAL

HEATER TERMINAL



NOTE 12
ALL DIMENSIONS IN THIS ACT
TO HAVE A BLACK FINISH.

NOTE 14
RADIATORS
NUMBER OF RADIATOR
TUBES MAY VARY

NOTE 16
THE JACK HOLES SHALL BE WITHIN A
RADIUS OF .250 OF THE SPECIFIED LOCATIONS
BUT SHALL BE SPACED .005 ± .001
WITHIN EACH OTHER. THE
CENTER LINES OF THE JACK HOLES
SHALL BE PARALLEL TO ONE ANOTHER
WITHIN .5°

NOTE 11
2.312" - .16 W.S.F.
TYPICAL
3 FULL THREADS MIN
WAX. VINCOR DIA.
-2.3120
-2.2956
-2.2714
-2.2562
-2.2353

NOTE 15
JAX AND MTT SHALL BE CONSIDERED AS
AXIS OF SYMMETRY.

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JAN-4J-99
JAN-4J-100

WESTERN ELECTRIC 4J26 to 4J30 ELECTRON TUBES
TYPE DESIGNATION REGISTRATION

Reservation Nos.: 5083 to 5087 Manufacturers Designation: 1402M
Reservation Date: 7/16/43 Data Bureau Designation: 4J26 to 4J30

U.H.F. MAGNETRONS

Electrical Data - General

Heater Voltage	23.5 volts
Heater Current	2.2 amperes
Cathode Heating Time	3 minutes
Frequency	4J26 = 1268-1280 megacycles
	4J27 = 1256-1268 megacycles
	4J28 = 1244-1256 megacycles
	4J29 = 1232-1244 megacycles
	4J30 = 1220-1232 megacycles
Frequency Pulling (Max.)	5.5 megacycles
Frequency Change with Anode Temperature (Max.)	.03 megacycles per degree C

Mechanical Data - See Outline Drawing

Maximum Ratings, Absolute Values

Peak Anode Voltage	30 kilovolts
Peak Anode Current	60 amperes
Peak Power Input	1500 kilowatts
Average Power Input	1500 watts
Duty Cycle	.002
Pulse Duration	6.0 microseconds
Anode Temperature	100° Centigrade
Operation Time in 100 Microsecond Interval	8 microseconds

Typical Operation

Heater Voltage *	
Magnetic Field	1400 gauss
Peak Anode Voltage	27 kilovolts
Peak Anode Current	46 amperes
Pulse Repetition Rate	200 pulses/second
Pulse Duration	5 microseconds
Peak Power Output	700 kilowatts
Maximum R.F. Bandwidth	4 megacycles

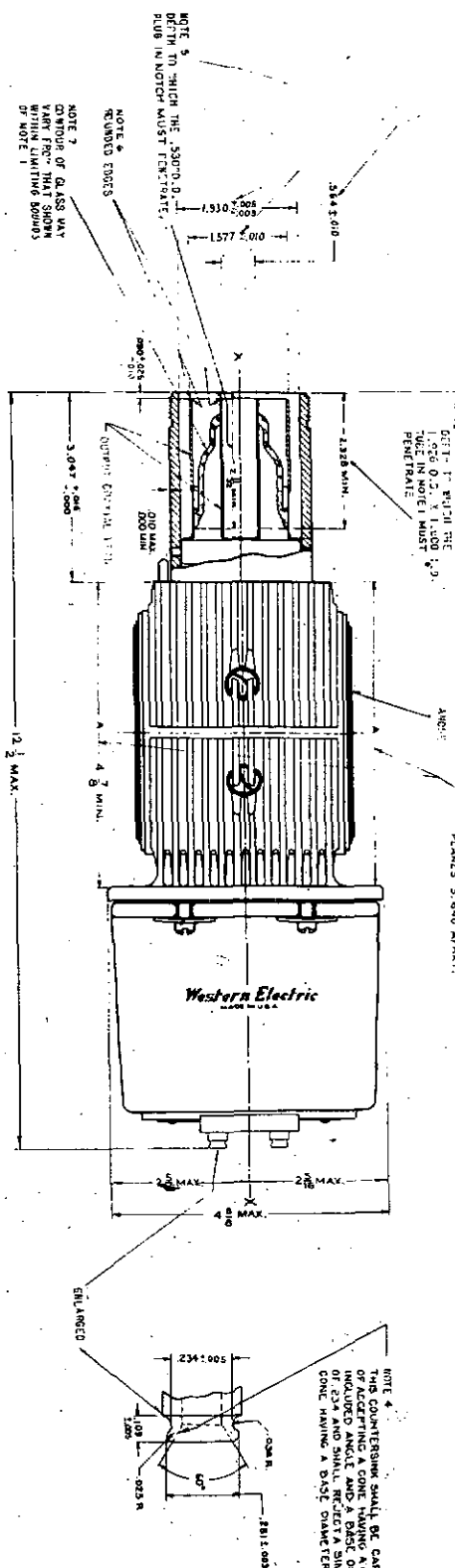
* During high voltage operation, the heater voltage must be reduced so that the cathode operates at approximately 820°C.

Note: This sheet does not imply commercial availability of the tube.

REFERENCE PLANE FOR ELECTRICAL TESTS.

NOTE: 3-A MUST BE OFF-BLE OF BEING
INSTALLED BETWEEN THE PARALLEL PLATES
3.640 AT 77; INCREASE EVIDENT
FROM THE AXIS OF 2.315 DIA. THERE
WITHIN THE SLIP-OF-TO. IS ASSUMED
THE LOCATING. MUST FALL BEING PARALLEL
PLATES. 3.50 APART EQUIDISTANT FROM THE
Y-Y AXIS AND NORMAL TO THE ABOVE NOTED
PLATES 3.640 APART.

NOTE 4:
THIS COUNTERSINK SHALL BE CAPABLE
OF ACCEPTING A CONE HAVING A 60°
INCLUDED ANGLE AND A BASIC DIAMETER
OF .234 AND SHALL REJECT A SIMILAR
CONE HAVING A BASIC DIAMETER OF .254



NOTE 9
PROTECTIVE CAP SHALL BE IN PLACE
WHEN TUBE IS NOT IN USE.

OUTLINE OF GLASS WAY
VARY FROM THAT SHOWN
WITHIN LIMITING BOUNDS
OF NOTE 1

NOTE
REUMBED

NOTE 14	
2.3120-16 R.S.F.	
THREED	
5 FULL THREEDS MIN.	
MAX. MAJ. DIA.	-2.3120
MIN. MAJ. DIA.	-2.2960
MAX. PITCH DIA.	-2.2714
MIN. PITCH DIA.	-2.2629
MAX. MINOR DIA.	-2.2353

NOTE 12
ALL SURFACES IN THIS AS-
TO HAVE A BLACK FINISH.

NOTE 15
"KX" AND "YY" SHALL BE CONSIDERED AS
A-15 OF SUPPORT.

JAN 4 3 27 CODE NUMBER TO
JAN 4 3 28 CORRESPOND TO
JAN 4 3 29 TUBE TYPE
JAN 4 3 30

JAN MARKING TO BE IN ACCORDANCE
WITH PARA. 85 TO ETC INCLUSIVE
SPEC. JAN-1A.

NOTE 16
THE JACK HOLES SHALL BE WITHIN A
RADIUS OF .250 OF THE SPECIFIED LOCK-
ING BUT SHALL BE SPACED 1.000 ± .010
WITH RESPECT TO EACH OTHER. THE
CENTER LINES OF THE JACK HOLES SHALL
BE PARALLEL TO ONE ANOTHER WITHIN
3.

NOTE 10
JACK HOLES - 169 x .005 DIA.
19/32 DEEP MAX

HEATER TERMINAL

NUMBER OF RADIATION
FINS MAY VARY

WESTERN ELECTRIC 4J52 ELECTRON TUBE
TYPE DESIGNATION REGISTRATION

Reservation No.: 5233 Manufacturers Designation: 1471
Reservation Date: 11/6/44 Data Bureau Designation: 4J52

U.H.F. MAGNETRON - PACKAGED TYPE

Electrical Data - General

Heater Voltage	12.6 volts
Heater Current	2.1 amperes
Cathode Heating Time	4 minutes
Frequency	9345-9405 megacycles
Frequency Pulling (Max.)	15 megacycles
Frequency Change with Anode Temperature (Max.)	.25 megacycles per degree C

Mechanical Data - See Outline Drawing

Maximum Ratings, Absolute Values

Peak Anode Voltage	16	16 kilovolts
Peak Anode Current	20	30 amperes
Peak Power Input *	300	450 kilowatts
Average Power Input	300	450 watts
Duty Cycle	.002	.002
Pulse Duration	6.0	1.2 microseconds
Anode Temperature	150	150° Centigrade
Operation Time in 100 Microsecond Interval	6	6 microseconds

Typical Operation

Heater Voltage **		
Magnetic Field	Integral Magnet	
Peak Anode Voltage	15	15 kilovolts
Peak Anode Current	15	15 amperes
Pulse Repetition Rate	1000	200 pulses/second
Pulse Duration	1	5.5 microseconds
Peak Power Output	100	100 kilowatts
Maximum R.F. Bandwidth	3	3 megacycles

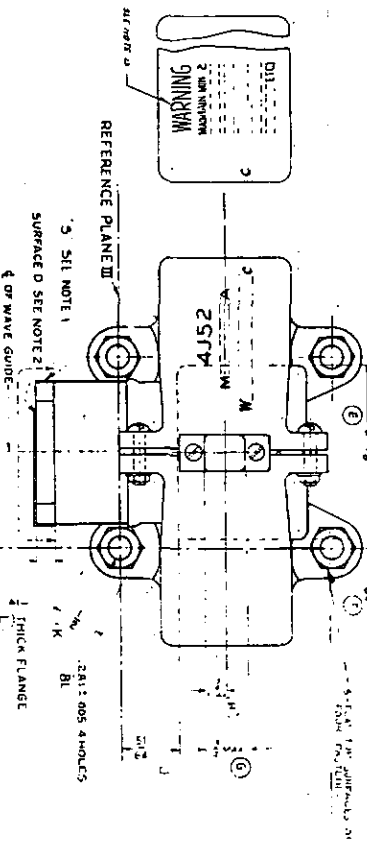
* Tube shall not be operated at maximum peak input power at pressure of less than 60 cm Hg.

** During high voltage operation, the heater voltage must be reduced so that the cathode operates at approximately 820°C.

Note: This sheet does not imply commercial availability of the tube.

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WARNING



WESTERN ELECTRIC 5J21 to 5J25 ELECTRON TUBES

TYPE DESIGNATION REGISTRATION

Reservation Nos.: 5038 to 5042 Manufacturers Designation: 1382M
Reservation Date: 1/22/43 Data Bureau Designation: 5J21 to 5J25

U.H.F. MAGNETRONS

Electrical Data - General

Heater Voltage	20.5 volts
Heater Current	3.4 amperes
Cathode Heating Time	3 minutes
Frequency	5J21 = 1098-1110 megacycles
	5J22 = 1086-1098 megacycles
	5J23 = 1074-1086 megacycles
	5J24 = 1062-1074 megacycles
	5J25 = 1050-1062 megacycles
Frequency Pulling (Max.)	5.5 megacycles
Frequency Change with Anode Temperature (Max.)	.03 megacycles per degree C

Mechanical Data - See Tube Outline

Maximum Ratings, Absolute Values

Peak Anode Voltage	25 kilovolts
Peak Anode Current	30 amperes
Peak Power Input	750 kilowatts
Average Power Input	750 watts
Duty Cycle	.001
Pulse Duration	2.0 microseconds
Anode Temperature	100° Centigrade
Operation Time in 100 Microsecond Interval	5 microseconds

Typical Operation

Heater Voltage *	
Magnetic Field	900 gauss
Peak Anode Voltage	19 kilovolts
Peak Anode Current	24 amperes
Pulse Repetition Rate	1000 pulses/second
Pulse Duration	1.5 microseconds
Peak Power Output	250 kilowatts
Maximum R. F. Bandwidth	4 megacycles

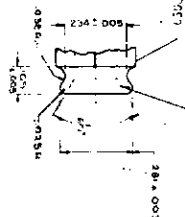
* During high voltage operation, the heater voltage must be reduced so that the cathode operates at approximately 820°C.

Note: This tube is obsolete and manufacturing facilities are no longer available.

Environ. Biol. Fish. (2015) 98:1117–1129

SAYS A WOMAN CAPABLE OF BEING
TIED BETWEEN TWO PARALLEL PLATES
THIRTY APART, AND ARE EVIDENTIARY
FROM THE LAY OF A BLOOD-SPILLING.
THEY WERE NOT SUPPORTING THEM IN THE POSITION
IN WHICH THEY WERE FOUND, BUT THAT IT WAS
A MATTER OF FACT, THAT SHE COULD DO IT
EASILY HERSELF.

THIS COUNTERSINK SHALL BE CAPABLE OF ACCEPTING A CONE HAVING A 60 INCL. DED. ANGLE AND A BASE DIAMETER OF .234 AND SHALL REJECT A SIMILAR CONE HAVING A BASE DIAMETER OF .254.

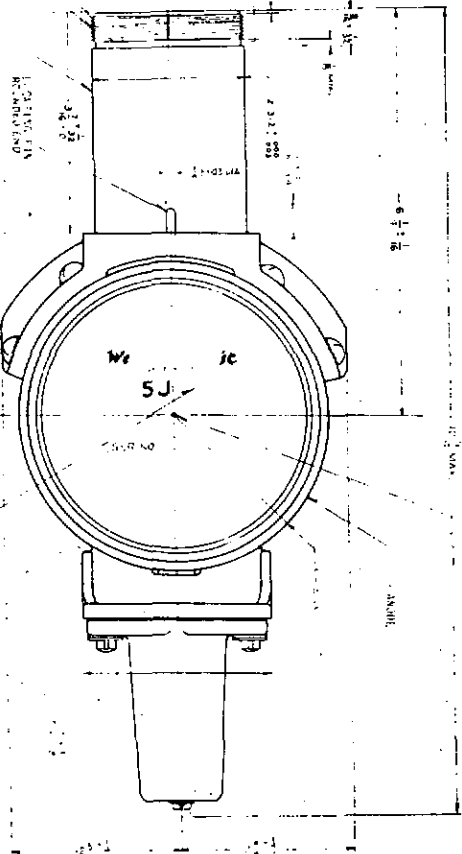


THE UNIVERSITY OF CHICAGO

REPORT OF ADVISORY

SELF-LO
FINANCIAL CONSULTING
CORPORATION - 1511 TAUT,

NOTE 7
PROTECTIVE CAP SHALL
BE IN PLACE WHEN TUGT
IS NOT IN USE.

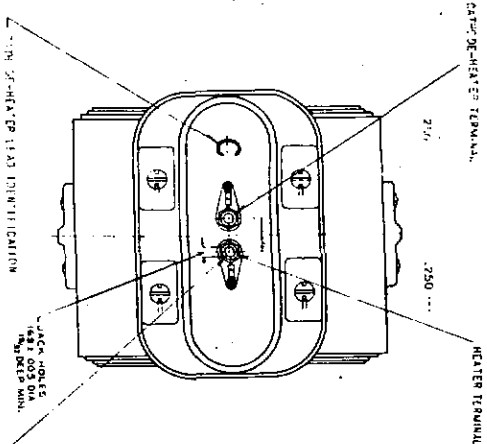


WILLIAM H. J.

MAX. MAJ. DIA.	-2.3120
MIN. MAJ. DIA.	-2.2960
MAX. PITCH DIA.	-2.2714
MIN. PITCH DIA.	-2.2529
MAX. MINOR DIA.	-2.2353

$$A = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}, \quad B = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}, \quad C = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}.$$

5-21	CODE NUMBER TO
5-22	CORALSPONG TO
5-23	TURF TYPE
5-24	
5-25	



ARTICLE 13
THE JACK HOLES SHALL BE WITHIN A -
RADIUS OF .250 OF THE SPECIFIED LOCAL-
IZATION BUT SHALL BE SPACED .002 INGS
WITHIN THAT RADIUS TO EACH OTHER. THE DIST-
ANCE BETWEEN EACH JACK HOLE SHALL BE
WITHIN .002 INGS. WITHIN .002 INGS.

WESTERN ELECTRIC 5J26 ELECTRON TUBE
TYPE DESIGNATION REGISTRATION

Reservation No.: 5290 Manufacturers Designation: 1475M
Reservation Date: 3/14/45 Data Bureau Designation: 5J26

U.H.F. MAGNETRON

Electrical Data - General

Heater Voltage	23.5 volts
Heater Current	2.2 amperes
Cathode Heating Time	3 minutes
Frequency	1220-1350 megacycles

Mechanical Data - See Outline Drawing

Maximum Ratings, Absolute Values

Peak Anode Voltage	31 kilovolts
Peak Anode Current	60 amperes
Peak Power Input	1800 kilowatts
Average Power Input	1800 watts
Duty Cycle	.002
Pulse Duration	6.0 microseconds
Anode Temperature	125° Centigrade
Operation Time in 100 Microsecond Interval	8 microseconds

Typical Operation

Heater Voltage *	
Magnetic Field	1400 gauss
Peak Anode Voltage	27 kilovolts
Peak Anode Current	46 amperes
Pulse Repetition Rate	1000 pulses/second
Pulse Duration	1 microsecond
Peak Power Output	600 kilowatts

* During high voltage operation the heater voltage must be reduced so that the cathode operates at approximately 820°C.

Note: This sheet does not imply commercial availability of the tube.

