

Specification AD/CV2797 incorporating MIL-E-1/152A Issue 3 Dated 10.12.64 To be read in conjunction with K1006	<u>SECURITY</u>	
	<u>Specification</u> Unclassified	<u>Valve</u> Unclassified

<u>TYPE OF VALVE</u> - R.F. Power Double Beam-Tetrode	<u>MARKING</u> See K1001/4
<u>CATHODE</u> - Indirectly Heated	
<u>ENVELOPE</u> - Glass	
<u>PROTOTYPE</u> - QQV06-40 robust version	

<u>RATING, BASE AND CONNECTIONS</u> See Specification MIL-E-1/152A	<u>BASE</u> BS448 / B7A	Amnt-1
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<u>DIMENSIONS</u> As in MIL-E-1/152A except as follows:- Maximum overall length 104.5 mms Maximum diameter 46.0 mms	See drawing Page 4 dated February 1967	Amnt-1
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<u>JOINT SERVICES CATALOGUE NO.</u> 5960-99-000-2797

<u>TESTS</u>	Amnt-1
The tests shown in MIL-E-1/152A shall apply with the following exceptions: As in MIL-E-1/152A except that overall dimensions are to be as shown under DIMENSIONS above.	
(a) <u>Acceptance Inspection Part 2 (Design)</u>	
(i) <u>Power Output, class C Amplifier (1)</u>	
The following test may be applied as an alternative: With $F = 300$ Mc/s, $E_b = 400$ Vd.c., $I_b = 200$ mA d.c. max., $E_{c2} = 250$ Vd.c. max., $E_{c1} = -60$ Vd.c. the Power Output shall be 35 W min., Total I_{g1} shall be 2mA min., 8mA max., Total I_{g2} shall be 18mA max.	
(ii) <u>Power Output class C Amplifier (2)</u>	
This test may be omitted	

TESTS contd(b) Acceptance Inspection Part 3 (Life)

Life tests may be carried out under either of the following alternative conditions:-

(i) As class C oscillator with $F = 200 \text{ Mc/s}$, $E_b = 600 \text{ V d.c.}$,
 $I_b = 200 \text{ mA d.c.}$, $E_c = 250 \text{ V d.c. max.}$, $R_g = 10-25 \text{ kohms.}$

The end point power output under the conditions of test (i) above shall be 35 W min.

(ii) As class C amplifier under the conditions of test (i) above. The end point power output shall be 35 W min.

Answer 1

Answer 2

Answer 3

CV2797

MIL-E-1/152A
12 JUNE 1963
 SUPERSEDING
 MIL-E-1/152
 20 May 1953

MILITARY SPECIFICATION SHEET

ELECTRON TUBE, RECEIVING

JAN-5894

The complete requirements for procuring electron tube described herein shall consist of this document and the issue in effect of specification MIL-E-1.

Description: Twin tetrode, push-pull RF beam amplifier

F1 = 250 Mc
 F2 = 500 Mc

ABSOLUTE-MAXIMUM RATINGS:

Parameter:	Ef	Eb	Ec1	Ec2	Ehk	Ik	Ib	Ic1	Pg1	Pg2	Pp	Pi	TE	Alt
Unit:	V	Vdc	Vdc	Vdc	Vdc	mAdc	mAdc	mAdc	W	W	W	W	°C	Ft
Maximum:														
C Teleg:	6.9/13.8	450	-175	250	100	---	2x80	2x5	2x1 (See note 8)	2x13.5	2x36 (See note 10)	10,000		
C Teleg:	6.9/13.8	600	-175	250	100	2x120	2x110	2x5	2x1	7	2x20	2x60 (See note 10)	10,000	
Minimum:														
C Teleg:	5.7/11.4	---	---	---	---	---	---	---	---	---	---	---	---	---
C Teleg:	5.7/11.4	---	---	---	---	---	---	---	---	---	---	---	---	---
TEST CONDITIONS:	6.3/12.6	600 adjust	250	--	---	40	---	---	---	---	---	---	---	---

HEIGHT: 4-5/16 in. Max, 3-15/16 in. Min

DIAMETER: 1-15/16 in max

PIN NO.: 1 2 3 4 5 6 7 ENVELOPE: See figure 1.
 ELEMENTS: f 2g1 g2 k f 1g1 f
 int sd hct

PAR. NO.	TEST	CONDITIONS	SYM.	LIMITS		UNITS
				MIN	MAX	
3.1	<u>General</u> Qualification	Required	---	---	---	---
3.6	Performance	(See note 1)	---	---	---	---
4.5	Holding period	t = 72 hours	---	---	---	---
4.9.19.1	<u>Qualification inspection (See note 2)</u> Low-frequency vibration	F = 50 cps; Amp = .040 in.; t = 900; No voltage	---	---	---	---
3.4.3	Base connections		---	---	---	---
---	Cathode	Oxide coated	---	---	---	---
4.10.8	<u>Acceptance inspection part 1 (production)</u> Heater current	Ef = 6.3 V; t = 300	If	1.6	2.0	A
4.10.4.3	Screen-grid current	(See note 3)	Ic2	---	6	mAdc
4.10.5.2	Grid voltage	(See note 3)	Ec1	-19.0	-27.0	dc
4.10.6.1	Total grid current	(See note 3); t = 180	Ic1	---	-6	uAdc
4.10.1.3	Peak emission	eb = ec1 = ec2 = 225v (See note 5)	is	1.8	---	a

CV2797

PAR. NO.	TEST	CONDITIONS	SYM.	LIMITS		UNITS
				MIN	MAX	
	<u>Acceptance inspection</u> <u>part 2 (design)</u>					
4.9.19.3	Bump	Angle 30°	---	---	---	---
4.9.19.1	Low frequency vibration	Eb = 250 Vdc; Ec1/Ib = 10 mAdc; Rp = 2000 (See note 3)	Ep	---	800	mvac
4.10.11.1	Amplification factor	(See notes 3 and 6)	Mu	6.7	9.6	
4.10.2.2	Power output Class C amplifier (1)	F = 250 Mc Eb = 600 Vdc Ib = 200 mAdc max Ic1 = 5 mAdc Ec2 = 250 Vdc max Ic2 = 25 mAdc max Rg = 10,000-20,000 \sim (See notes 7 and 9)	Po	75	---	W
4.10.2.2	Power output Class C amplifier (2)	F = 460-490 MC Eb = 500 Vdc Ib = 200 mAdc max Ic1 = 6 mAdc max Ec2 = 250 Vdc max Ic2 = 25 mAdc max Rg = 10,000 - 25000 \sim (See notes 7 and 9)	Po	50	---	W
4.10.14	Interelectrode capacitance	(See note 4)	Cgp Cin Cout	0.05 9.40 2.60	0.08 11.60 3.70	uuf uuf uuf
	<u>Acceptance inspection</u> <u>part 3 (life)</u>					
4.11	Life test (500 hours)	Class "C" amplifier (1) Group C	---	---	---	---
4.11.4	Life test end point (500 hours)	Total grid current Power output Peak emission	Ic1 Po is	--- 70 1.4	-100 --- ---	uA W a
4.9.18	Container drop	Required				
Section 5	Preparation for delivery	(See note 11)				

NOTES:

- In addition to the paragraphs specified hereon, the following tests and requirements listed in 3.6 shall apply: 3.3, 3.3.1, 3.4.1, 3.4.2, 3.4.3, 3.7, 3.7.7, 3.8, 4.1, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.9.1, 4.9.2, 4.9.4, 4.9.8, 4.9.21.
- All tests listed hereon shall be performed during qualification inspection; however, these tests are normally performed during qualification inspection only.
- Read each unit separately. Control grid of unit not under test shall be connected -100 volts.
- Duplicate test on each unit separately; tie unit not under test to ground.
- Both units connected in parallel.
- Screen grid mu is determined by measuring grid voltage required to adjust plate current for grid 2 voltages of 250 and 200 volts.

$$\mu = 50 / \Delta E_{c1}$$

$$\text{at } E_b = 600 \text{ Vdc} \\ I_b = 40 \text{ mAdc}$$

CY2797

MIL-E-1/152A

NOTES: (Cont'd)

7. Power Output is total power at drive frequency delivered to load. Drive power is not subtracted from total output.
8. For carrier condition with plate and screen modulation, screen grid dissipation rating is 4.5 Watts. With plate modulation only, screen grid dissipation rating is 7 Watts.
9. Output circuit adjusted so that anode dissipation does not exceed 2x20 Watts.
10. T anode seal maximum 200°C.
T bottom seal maximum 180°C.
11. Tubes shall be packaged and packed as specified in the contract or order, in accordance with specification MIL-E-75 and appendix thereto.
12. Reference specification shall be of the issue in effect on the date of invitation for bids.

Custodians:

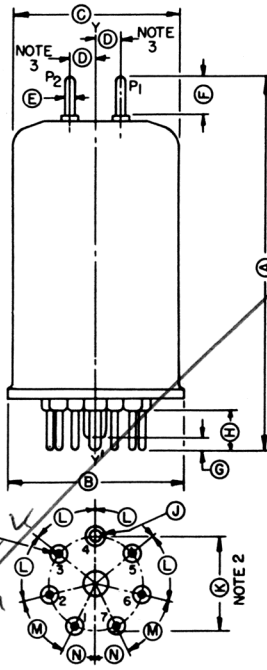
Army - EL
Navy - Ships
Air Force - ASD

Preparing Activity:
Navy - Ships

(Project No. 5960-1582)

CV 2797

REF	DIMENSIONS
A	4 1/8 ± 3/16
B	1 15/16 MAX
C	1 13/16 MAX
D	.275
E	.080 ± .003
F	.475 MIN
G	.000 MIN
H	.375 MIN .500 MAX
I	.058 DIA ± .003 6 PINS
J	.125 DIA ± .003
K	1.000
L	51°
M	52°
N	26°



Amble-1

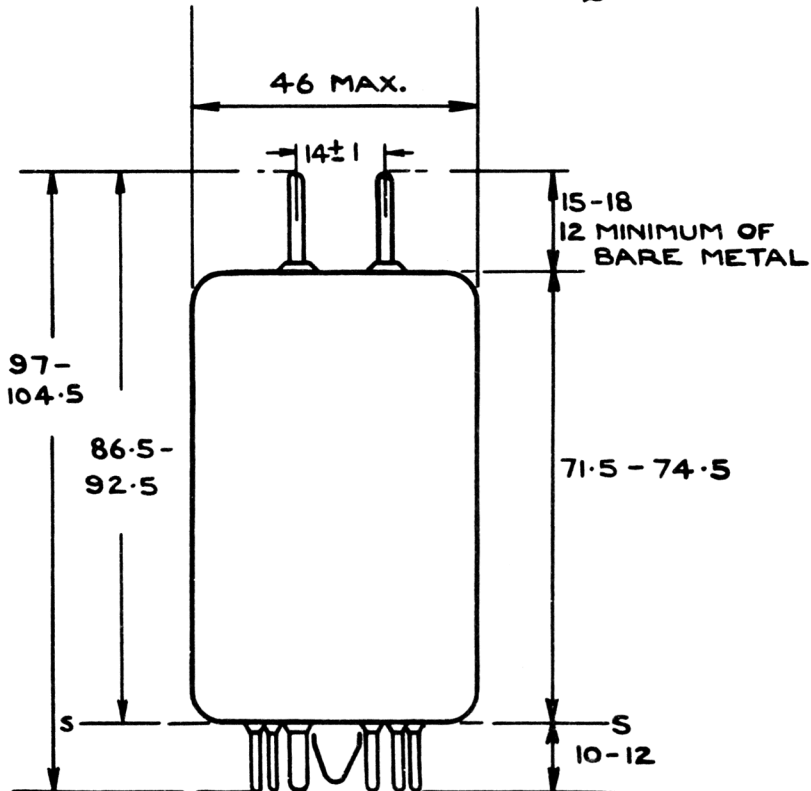
REPLACED BY
DATED FEBRUARY 1967

NOTES:

1. The axis Y-Y' is defined as the axis of the base pin gage described in note 2.
2. The tube base shall be capable of entering to a distance of 0.375" a flat-plate gage having six holes 0.800" ± 0.0005" and one hole 0.1450 ± .0005" all arranged on a 1.0000" ± 0.0005" circle at the angles ±5° specified on the outline. A 0.500" ± 0.010" diameter hole at the center of the pin circle is also required. The axis Y-Y' is defined by the center of this hole.
3. The plate leads shall be capable of entering a flat plate gage of .375" ± .001" thickness having two holes .1400" ± .0005" in diameter spaced .275 ± .001 from a point coincident with the axis Y-Y'. The axis of the holes shall be parallel to Y-Y' and the plane of these axis shall be 90° ± 5' from the plane through Y-Y' and pin no. 4.

Figure 1. Outline drawing.

POSITION OF ANODE PINS IN SPACE. THEY SHALL BE WITHIN TWO CIRCLES 6mm DIA., WHOSE CENTRES ARE EACH 7mm EITHER SIDE OF THE ϕ OF THE VALVE BASE ON A PLANE $90^\circ \pm 5'$ TO THE PLANE THROUGH THE CATHODE PIN AND ϕ OF THE VALVE.



NOTES.

1. SEALING-OFF PIP TO BE SHORTER THAN PIN LENGTH.
 2. ANY GLASS ON THE PINS SHALL NOT EXTEND MORE THAN 3 mm FROM THE SOLE SS.
 3. DIAMETER OF PINS 1,2,3,5,6 & 7 TO BE 1.33 TO 1.52 mm.
 4. DIAMETER OF PIN 4 TO BE 3.10 TO 3.25.
 5. DIAMETER OF ANODE PINS TO BE $2 \pm .05$ mm.
 6. THE PINS SHALL BE ACCEPTED BY THE PIN POSITION GAUGE IN B.S. 448, SECTION B7A TO WITHIN 1mm. OF THE SOLE SS.
- ALL DIMENSIONS ARE IN MILLIMETRES.

ELECTRONIC VALVE SPECIFICATIONS
SPECIFICATION AD/CV2797 ISSUE 3, DATED 10TH DECEMBER, 1964
AMENDMENT NO. 1

PAGE A

Add "BASE, B.S.448/B7A"

Under DIMENSIONS replace all the data shown by "See drawing, Page 4, dated February, 1967".

Under TESTS delete "As in Mil-E-1/152A above" and substitute:-

"The tests shown in MIL-E-1/152A shall apply with the following exceptions:-

(a) Acceptance Inspection Part 2 (Design)

(i) Power Output, Class C Amplifier (1)

The following test may be applied as an alternative:-

With $F = 300 \text{ Mc/s}$, $E_b = 400\text{V d.c.}$, $I_b = 200 \text{ mA d.c. max.}$,
 $E_{c2} = 250\text{V d.c. max.}$, $E_{c1} = -60\text{V d.c.}$ the Power Output shall
be 35W min. , Total I_{g1} shall be 2 mA min. , 8 mA max. , Total
 I_{g2} shall be 18 mA max.

(ii) Power Output Class C Amplifier (2)

This test may be omitted.

(b) Acceptance Inspection Part 3 (Life)

Life tests may be carried out under either of the following alternative conditions:-

(i) As Class C oscillator with $F = 200 \text{ Mc/s}$, $E_b = 600\text{V d.c.}$,
 $I_b = 200 \text{ mA d.c.}$, $E_{c2} = 250\text{V d.c. max.}$, $R_g = 10-25 \text{ kohms.}$
The end point power output under the conditions of test (b)(i)
above shall be 35W min.

(ii) As Class C amplifier under the conditions of test (b)(i) above,
The end point power output shall be 35W min. "

PAGE 4

Delete but do not remove page 4 and replace by new page 4, February, 1967.

March 1967

(229305)

T.V.C. for A.S.W.E.

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RAB
2/68

ELECTRONIC VALVE SPECIFICATIONS
SPECIFICATION AD/CV2797 ISSUE 3
DATED 10th DECEMBER, 1964

AMENDMENT No. 2

Page A

Under TESTS, in each of the sub paragraphs (b) (i) and (ii) added by Amendment No. 1 amend the wording "conditions of test (b) (i) above" to read "conditions of test (a) (i) above."

December, 1967

TVC for ASWE

(532872)

JRAS
28/68