

MIL-E-1/981C
31 March 1970
SUPERSEDING
MIL-E-1/981B
3 November 1965

MILITARY SPECIFICATION SHEET

ELECTRON TUBE, KLYSTRON

TYPE 726C

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

This specification is mandatory for use by all Departments and Agencies of the Department of Defense.

DESCRIPTION: Reflex oscillator, integral cavity, tunable frequency 2, 700 to 2, 960 MHz, CW operation

ABSOLUTE RATINGS:

| | | | | | | |
|------------|-----|-----|------|------|-------|--------|
| Parameter: | Ef | Ers | Er | Ik | F | Alt |
| Unit: | V | Vdc | Vdc | mAdc | MHz | ft |
| Maximum: | 6.8 | 330 | -250 | 35 | 2,960 | 10,000 |
| Minimum: | 5.8 | --- | -30 | --- | 2,700 | --- |

PHYSICAL CHARACTERISTICS:

Dimensions: See figure 1
Cathode: Coated unipotential
Mounting position: Any

TEST CONDITIONS: See note 1

| | | | | |
|------------|-----|-----|-------------|--------------|
| Parameter: | Ef | Ers | Er | F |
| Unit: | V | Vdc | Vdc | MHz |
| | 6.3 | 300 | -45 to -135 | 2,800 ± 0.3% |

GENERAL:

Qualification - Required

© denotes changes

726C

| METHOD | REQUIREMENT OR TEST | CONDITIONS | SYMBOL | LIMITS | | UNIT |
|--------|---|---|---|--------|-------|-----------------|
| | | | | MIN | MAX | |
| 1031 | <u>Qualification inspection</u> High-frequency vibration | F = 50; 10G; t = 120; no voltages | --- | --- | --- | --- |
| 4280 | Electronic tuning range | F = 2,800 MHz $\pm 0.3\%$; Er/50% max Po | ΔF | 25 | --- | MHz |
| 4027 | Temperature coefficient | F = 2,800 MHz $\pm 0.3\%$ (see note 2) | Coef | -0.10 | -0.05 | MHz $^{\circ}C$ |
| | <u>Quality conformance inspection, part 1</u> (see note 4) | | | | | |
| 1256 | Electrode current (cathode) | | I _k | --- | 30.0 | mAdc |
| 4214 | Cathode emission | E _f = 5.8V; t = 2 minutes | ΔI_k I _k | --- | 15.0 | % |
| 4213 | Reflector voltage | Er/max Po; F = 2,800 MHz $\pm 0.3\%$ | Er | -75 | -135 | Vdc |
| --- | Tunable frequency | Er = -90 to -165 Vdc; high frequency Er = -45 to -120 Vdc; low frequency | F | 2,960 | --- | MHz |
| --- | | | F | --- | 2,700 | MHz |
| Ⓢ 4250 | Power output | E _f = 6.0 V; Er/max Po; F = 2,700 MHz F = 2,800 MHz F = 2,960 MHz | --- | --- | --- | --- |
| | | | P _o | 30 | --- | mW |
| | | | P _o | 85 | --- | mW |
| | | | P _o | 50 | --- | mW |
| | <u>Quality conformance inspection, part 2</u> | | | | | |
| 1211 | Insulation of electrodes | 300 vdc; tube cold | R _b r _s R _k -r _s | 2 2 | --- | Meg Meg |
| 4229 | Total reflector current | See note 3 | I _r | --- | 7.0 | μ Adc |
| 4229 | Reflector-leakage current | See note 3 | I _r | --- | 5.0 | μ Adc |
| 4229 | Reflector-gas current | See note 3 | I _r | --- | 2.0 | μ Adc |
| 1301 | Heater current | E _f = 6.3 V | I _h | 410 | 470 | mA |
| 1336 | Heater-cathode leakage | E _{hk} = ± 45 Vdc | I _{hk} | 0 | 100 | μ Adc |
| Ⓢ 4280 | Electronic tuning range | F = 2,800 MHz $\pm 0.3\%$; Er/50% max Po | ΔF | 25 | --- | MHz |
| 4231 | Electronic tuning hysteresis (1) | Er/max Po | Ratio | --- | 0.25 | --- |
| | <u>Quality conformance inspection, part 3</u> | | | | | |
| --- | Life-test provisions | Group C; power output; F = 2,800 MHz | t | 500 | --- | hrs |
| --- | Life-test end points | | | | | |
| 4250 | Power output | Er max Po; E _f = 6.0 V; F = 2,800 MHz | P _o | 50 | --- | mW |

NOTES:

1. The tube shall be mounted in a suitable socket and shall be affixed firmly by means of clamps which make contact with the tube only at the flange adjacent to the base. The measurements on the tubes in an oscillating state shall be made using equipment as specified on figure 2, or equal.
2. For the measurement of temperature coefficient, the tube shall be adjusted in free air to the frequency indicated under test conditions. The reflector voltage shall be adjusted for maximum power for the mode specified. If necessary, the mechanical tuning may be cycled to relieve strains which would otherwise release themselves during the temperature cycle. These strains may be released by flexing the tuner bows a number of times. The tube shall be mounted to have that portion above the socket completely inclosed with a metallic cover with an approximate clearance of 1/2 inch (12.7 mm) between the tube and the cover. The walls of the container shall be heated so that an ambient temperature of 80° to 90° C is obtained within. The frequency of oscillation is determined and the walls then cooled at a rate such that the fall of ambient temperature within does not exceed 2° C per minute. When the ambient temperature has been reduced to 25° C or lower, the frequency shall then be recorded. This procedure shall be repeated three times with no readjustment of the frequency on the second two runs. The temperature coefficient shall be computed in frequency units per degree centigrade from the average obtained on the last two runs.
3. This test to be performed at the conclusion of the holding period.
4. The AQL for all tests performed under quality conformance inspection, part 1, shall be 1.0 percent with an inspection level of II.

Custodians:

Army - EL
 Navy - EC
 Air Force - 85

Preparing activity: Navy - EC

Agent: DSA - FS

(Project 5960-2392)

Review activities:

Army - EL, MU
 Navy -
 Air Force - 11, 70, 85
 DSA - ES

User activities:

Army - AV, ME, WC
 Navy - AS, OS, MC, CG, SH
 Air Force -

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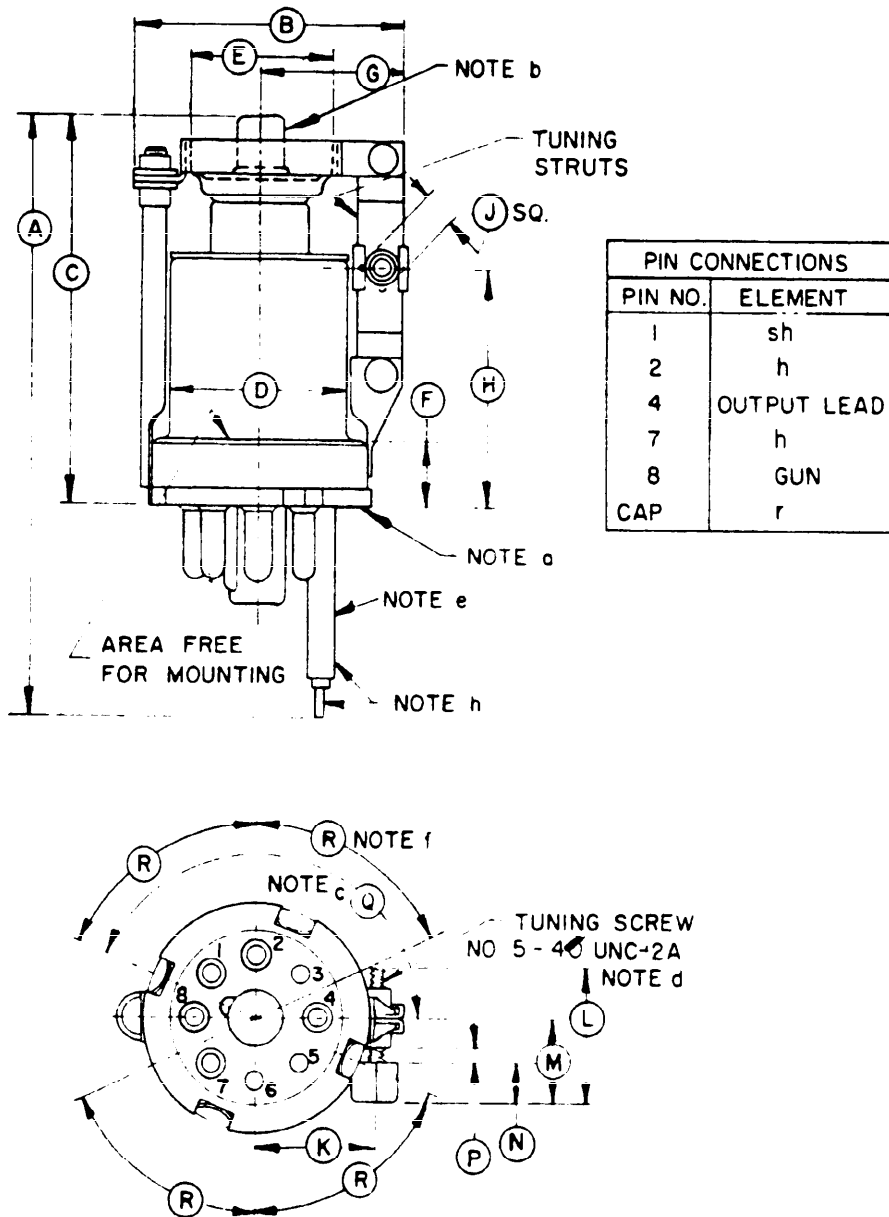


FIGURE 1. Outline drawing of electron tube type 726C.

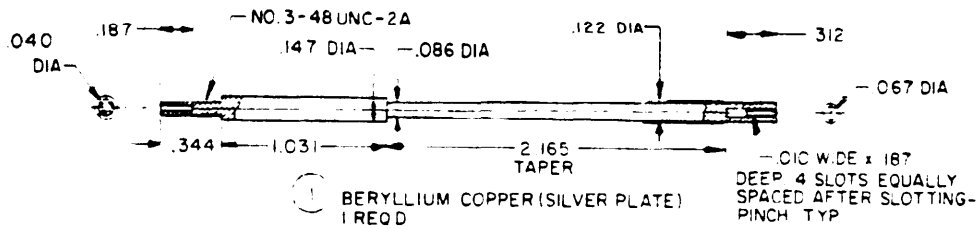
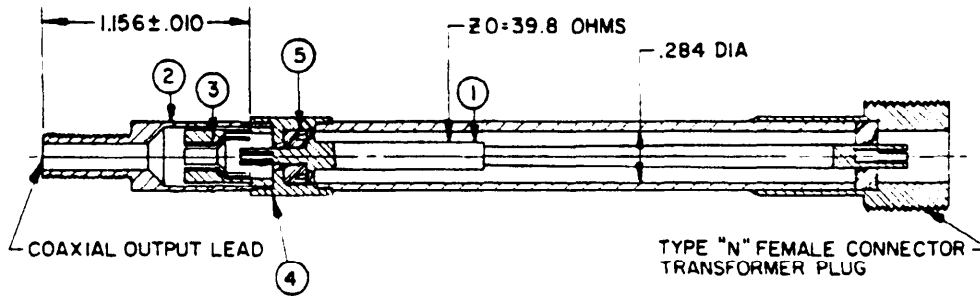
| Ltr | Dimensions in inches with metric equivalents (mm) in parentheses | |
|--|--|---------------|
| | Minimum | Maximum |
| Quality conformance inspection, part 1 | | |
| F | .330 (8.38) | .400 (10.16) |
| H | 1.313 (33.35) | 1.437 (36.50) |
| K | .656 (16.66) | .718 (18.24) |
| Q | 154° 30' | 160° 30' |
| Quality conformance inspection, part 2 | | |
| A | 3.188 (80.98) | 3.625 (92.08) |
| B | | 1.609 (40.87) |
| C | 2.000 (50.80) | 2.375 (60.33) |
| D | 1.000 (25.40) | 1.015 (25.78) |
| G | | .859 (21.82) |
| J | .182 (4.62) | .192 (4.88) |
| M | .485 (12.32) | .516 (13.11) |
| N | .203 (5.16) | .234 (5.94) |
| P | | .116 (2.95) |
| Quality conformance inspection, part 3 (periodic check) | | |
| E | .767 (19.48) | .797 (20.24) |
| L | .766 (19.46) | .797 (20.24) |
| R | 70° | |

NOTES:

- a. Base: B6-90.
- b. Cap: C1-4.
- c. Applies to centerline of coaxial lead and centerline of tuner through struts.
- d. Shall be lubricated with oildag, or equivalent, non-corrosive lubricant and shall be capable of operation throughout entire range without binding.
- e. Nickel (30 MSI silver plate permissible).
- f. Area free for mounting.
- g. For pin alignment use gage GB8-2.
- h. Shall be concentric within .010 (.25 μ m).

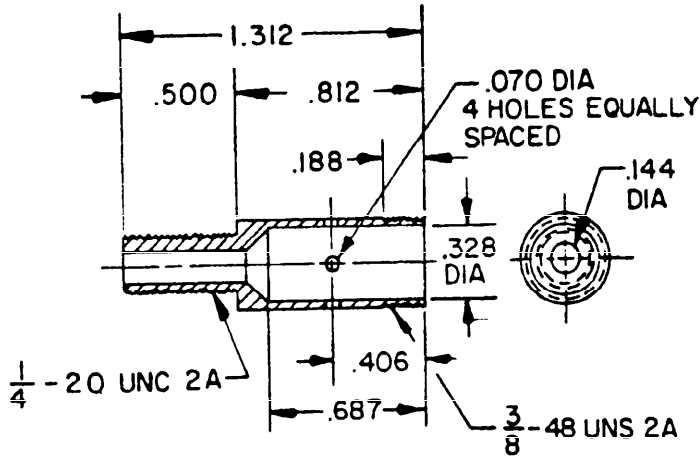
FIGURE 1. Outline drawing of electron tube type 726C - Continued.

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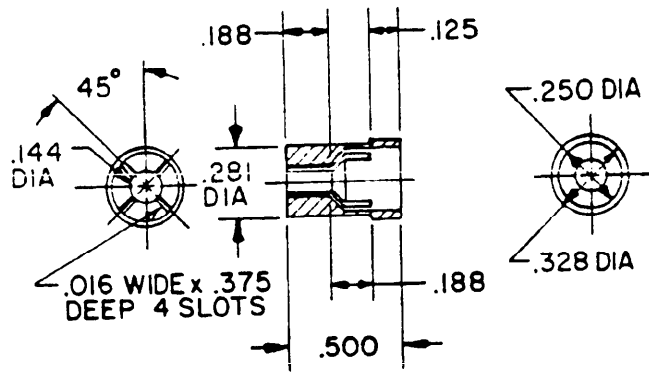
| INCHES | MM |
|--------|-------|
| .010 | .25 |
| .040 | 1.02 |
| .067 | 1.70 |
| .086 | 2.18 |
| .147 | 3.73 |
| .187 | 4.75 |
| .284 | 7.21 |
| .312 | 7.92 |
| .344 | 8.74 |
| 1.031 | 26.19 |
| 1.156 | 29.36 |
| 2.165 | 54.99 |

FIGURE 2. Transducer.



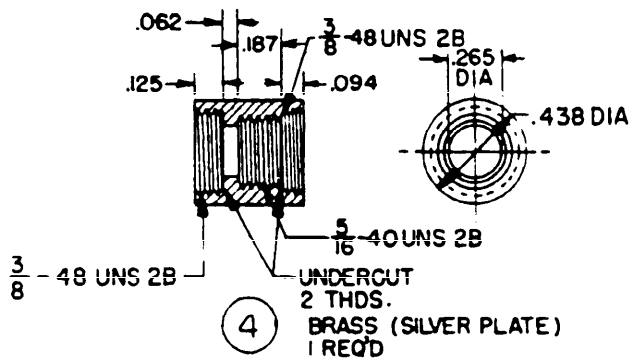
| INCHES | MM |
|--------|-------|
| .016 | .41 |
| .070 | 1.78 |
| .125 | 3.18 |
| .144 | 3.66 |
| .188 | 4.78 |
| .250 | 6.35 |
| .281 | 7.14 |
| .328 | 8.33 |
| .375 | 9.53 |
| .406 | 10.31 |
| .500 | 12.70 |
| .687 | 17.45 |
| .812 | 20.62 |
| 1.312 | 33.32 |

2 BRASS (SILVER PLATE)
1 REQ D

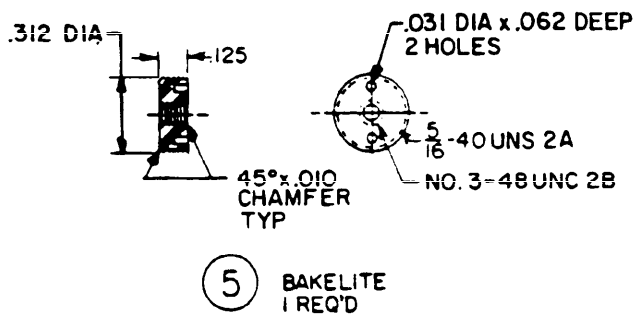


3 BRASS (SILVER PLATE)
1 REQ D

FIGURE 2. Transducer - Continued.



| INCHES | MM |
|--------|------|
| .010 | .25 |
| .031 | .79 |
| .062 | 1.57 |
| .094 | 2.39 |
| .125 | 3.18 |
| .187 | 4.75 |
| .265 | 6.73 |
| .312 | 7.92 |



NOTES:

- a. Dimensions are in inches.
- b. Unless otherwise specified tolerance is $\pm .005$ (.13 mm).

FIGURE 2. Transducer - Continued.

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NAVAL ELECTRONIC SYSTEMS COMMAND
WASHINGTON, D. C. 20360

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| SPECIFICATION ANALYSIS SHEET | | Form Approved Budget Bureau No. 119-11004 |
|---|----------------------------|--|
| <u>INSTRUCTIONS</u> | | |
| <p>This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).</p> | | |
| SPECIFICATION | | |
| ORGANIZATION (of submitter) | | CITY AND STATE |
| CONTRACT NO. | QUANTITY OF ITEMS PROCURED | DOLLAR AMOUNT \$ |
| MATERIAL PROCURED UNDER A | | |
| <input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SURCONTRACT | | |
| 1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? A. GIVE PARAGRAPH NUMBER AND WORDING. | | |
| B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES. | | |
| 2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID? | | |
| 3. IS THE SPECIFICATION RESTRICTIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO IF "YES", IN WHAT WAY? | | |
| 4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity) | | |
| SUBMITTED BY (Printed or typed name and activity) | | DATE |