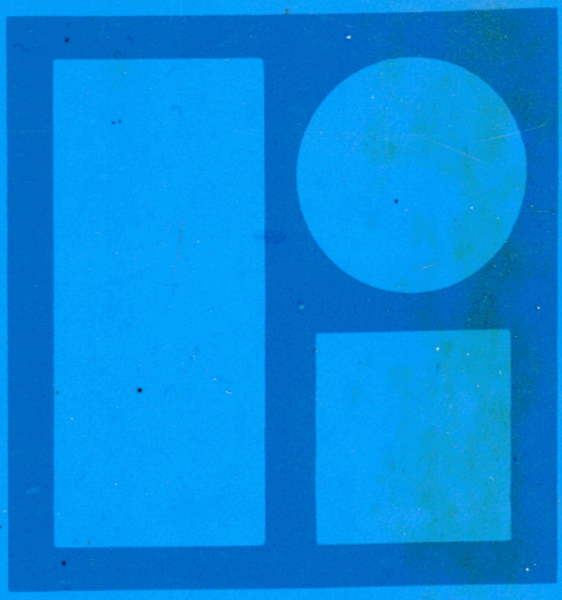
LING WAVE TUBES • SUPER
KLYSTRONS • PULSE MAG
NS • MONITOR DIODES • BA
ONS • BACKWARD WAVE OS
ORS • DISPLAY DEVICES • B
AND KLYSTRON AMPLIFIE
NIATURE MAGNETRONS • R
KLYSTRONS • SWITCH TUB
OSSED FIELD FORWARD W
IPLIFIERS • MILLIMETER
UBES • MICROTRON • C W M
RONS • GAS TUBE NOISE S
S • MICROWAVE TUBE ACC
ITEMS • FLOATING DRIFT
LYSTRON OSCILLATORS • T
E KLYSTRON AMPLIFIERS
LING WAVE TUBES • SUPER
KLYSTRONS • PULSE MAG
NS • MONITOR DIODES • BA
ONS • BACKWARD WAVE OS
ORS • DISPLAY DEVICES • B
AND KLYSTRON AMPLIFIE
NIATURE MAGNETRONS • R
KLYSTRONS • SWITCH TUB
OSSED FIELD FORWARD W
IPLIFIERS • MILLIMETER
UBES • MICROTRON • C W M
RONS • GAS TUBE NOISE S

# DATA/LOG



ELECTRON TUBE DIVISION
OF LITTON INDUSTRIES
SAN CARLOS, CALIFORNIA

This

**LITTON INDUSTRIES**

Electron Tube Division

**DATA/LOG No.** 2052

has been registered to

P. G. Durham

This first edition of the Litton color-coded catalog has been prepared for your convenience to use as a guide in selecting microwave power tubes. New and revised color-coded DATA/LOG sheets will be mailed periodically.

LITTON

6th November, 1964

CARDS FOR ALL SECTIONS EXCEPT ACCESSORIES

*Change of Address?* 2052

■ WE ASK that you fill out this postage-paid card and mail to us if your address changes. *Only by keeping us informed will we be able to keep your DATA/LOG up-to-date.*

NAME_____

COMPANY_____

DIVISION_____

ADDRESS_____

CITY_____ STATE_____

☐ *Please have your representative call on me.*

*Change of Address?* 2052

■ WE ASK that you fill out this postage-paid card and mail to us if your address changes. *Only by keeping us informed will we be able to keep your DATA/LOG up-to-date.*

NAME_____

COMPANY_____

DIVISION_____

ADDRESS_____

CITY_____ STATE_____

☐ *Please have your representative call on me.*

*Change of Address?* 2052

■ WE ASK that you fill out this postage-paid card and mail to us if your address changes. *Only by keeping us informed will we be able to keep your DATA/LOG up-to-date.*

NAME_____

COMPANY_____

DIVISION_____

ADDRESS_____

CITY_____ STATE_____

☐ *Please have your representative call on me.*

FIRST CLASS
PERMIT NUMBER
58
SAN CARLOS
CALIFORNIA

**BUSINESS REPLY MAIL**
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY

LITTON INDUSTRIES
*Electron Tube Division*
960 INDUSTRIAL ROAD
SAN CARLOS, CALIFORNIA

FIRST CLASS
PERMIT NUMBER
58
SAN CARLOS
CALIFORNIA

**BUSINESS REPLY MAIL**
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY

LITTON INDUSTRIES
*Electron Tube Division*
960 INDUSTRIAL ROAD
SAN CARLOS, CALIFORNIA

FIRST CLASS
PERMIT NUMBER
58
SAN CARLOS
CALIFORNIA

**BUSINESS REPLY MAIL**
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY

LITTON INDUSTRIES
*Electron Tube Division*
960 INDUSTRIAL ROAD
SAN CARLOS, CALIFORNIA

**Amendment Supplements for Litton Catalogue**

| Supplement No. | Date of Supplement | Date Filed |
|---|---|---|
| 4 | December 18th, 1964 | February 10th, 1965 |
| 5 | — | January 24th, 1966 |
| 6 | January 16th, 1967 | March 17th, 1967 |
| 7 | January 15th,1968 | February 26th, 1968 |
| 8 | January 2nd, 1969 | 14th April, 1969 |
| 9 | March 30th, 1970 | June 1st, 1970 |
| 10 | July 1st, 1971 | October 26th, 1971 |
| 11 | May 15th, 1972 | July 17th, 1972 |
| 12 | February 28th, 1973 | March 29th, 1973 |
| 13. | June 28th, 1974. | July 12th, 1974. |
| 14. | | |

# INTRODUCTION

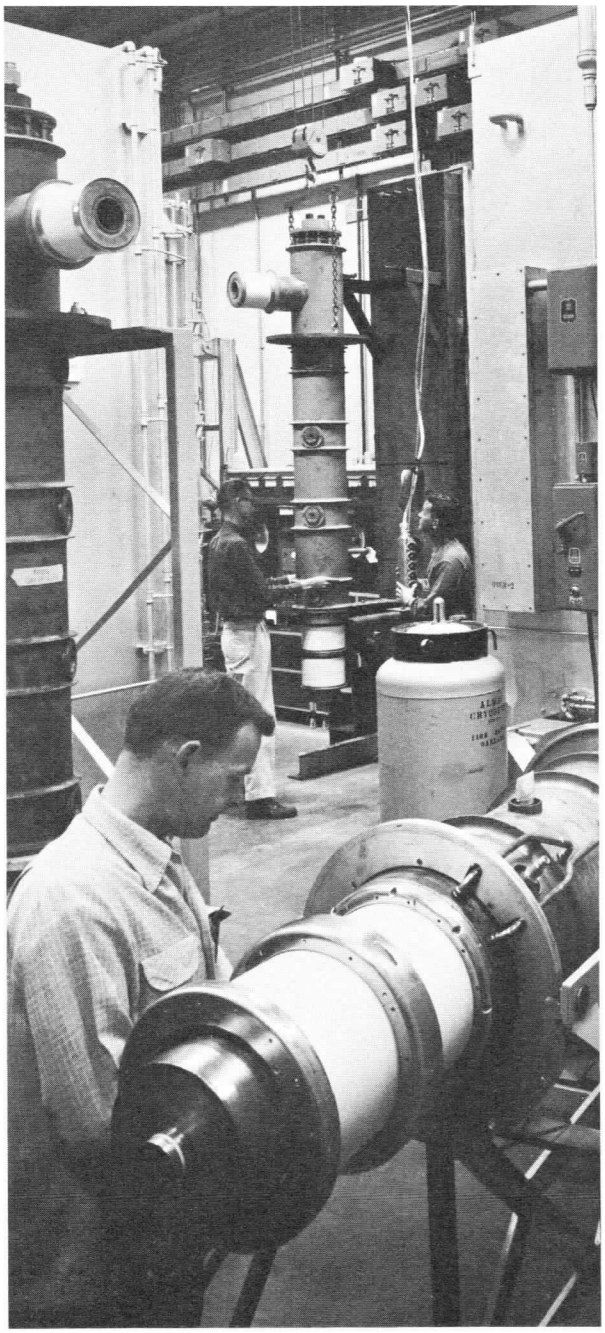
## TABLE OF CONTENTS

### PULSE MAGNETRONS

| Tube Number | Power Output (Minimum) | Center Frequency MHz |
|---|---|---|
| 2J42 | 7.0 KW | 9375 |
| 2J42H [1] | 7.0 KW | 9375 |
| 4J50A | 225 KW | 9375 |
| 4J52A | 70 KW | 9375 |
| 5780 | 250 KW | 9050 |
| 6027 | 18 KW | 9375 |
| 6344A | 175 KW | 5637 |
| 6510 | 65 KW | 9375 |
| 6543A | 65 KW | 9050 |
| 7006 | 190 KW | 9300 |
| 7111 [1] | 200 KW | 9050 |
| 7156A [1] | 250 KW | 5637 |
| 7208 | 100 KW | 16,500 |
| 7208B | 125 KW | 16,500 |
| JAN 7208B | 125 KW | 16,500 |
| 7449A | 70 KW | 24,000 |
| 7503 | 100 W | 9400 |
| 7619 | 40 KW | 34,860 |
| 7950 | 208 KW | 9050 |
| 8945 | 200 KW | 9050 |
| L-3023/6233 | 7.0 KW | 9313 |
| L-3028D | 120 W | 9305 |
| L-3029A | 7.0 KW | 9267 |
| L-3029B | 7.0 KW | 9283 |
| L-3029C | 7.0 KW | 9328 |
| L-3029D | 7.0 KW | 9298 |
| L-3030B | 300 KW | 9000 |
| L-3030C | 300 KW | 9200 |
| L-3030D | 300 KW | 9375 |
| L-3036A | 65 KW | 9410 |
| L-3036B | 65 KW | 9275 |
| L-3036F | 65 KW | 9245 |
| L-3039A | 225 KW | 8757 |
| L-3039D | 225 KW | 8800 |
| L-3039E | 225 KW | 8860 |
| L-3039F | 225 KW | 8920 |
| L-3039G | 225 KW | 8980 |
| L-3039H | 225 KW | 9040 |
| L-3039 I | 225 KW | 9100 |
| L-3039J | 225 KW | 9160 |
| L-3039K | 225 KW | 9220 |
| L-3039L | 225 KW | 9280 |
| L-3039M | 225 KW | 9340 |
| L-3039N | 225 KW | 9400 |
| L-3058 | 1.0 KW | 9340 |
| L-3083A | 60 KW | 16,500 |
| L-3087A | 120 W | 9300 |
| L-3089B | 40 W | 8800 |
| L-3101A | 60 KW | 16,500 |
| L-3101B | 60 KW | 16,500 |
| L-3101C | 60 KW | 16,500 |
| L-3103 | 30 KW | 9050 |
| L-3105 | 100 W | 9300 |
| L-3106 | 65 KW | 9050 |
| L-3156 | 112 KW | 9375 |
| L-3168 | 30 KW | 9375 |
| L-3180 | 120 W | 9210 |
| L-3181 | 120 W | 9260 |
| L-3187 | 120 W | 9260 |
| L-3212 | 120 W | 9010 |
| L-3213 | 120 W | 9060 |
| L-3214 | 120 W | 9110 |
| L-3218 | 120 W | 9160 |
| L-3225 | 1.0 KW | 9330 |
| L-3226 | 120 W | 9190 |

## TABLE OF CONTENTS
## INTRODUCTION 14

- LITTON INDUSTRIES ELECTRON TUBE DIVISION
- APPLICATION ENGINEERING SERVICES AND REGIONAL OFFICES
- CROSS REFERENCE OF MICROWAVE TUBES BY CENTER FREQUENCY
- LIST OF MICROWAVE TUBES AND EQUIPMENT



ISSUE 14 7/15/75

Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

## PULSE MAGNETRONS (Continued)

| Tube Number | Power Output (Minimum) | Center Frequency MHz |
|---|---|---|
| L-3238 | 1.0 KW | 9340 |
| L-3239 | 2.0 KW | 9300 |
| L-3268 | 4.0 KW | 9300 |
| L-3314 | 100 W | 9000 |
| L-3327 | 120 W | 9375 |
| L-3358 | 1.0 KW | 16,250 |
| L-3359 | 2.0 KW | 16,250 |
| L-3381 | 3.0 KW | 9150 |
| L-3383 | 1.0 KW | 16,275 |
| L-3384 | 1.0 KW | 9300 |
| L-3429 | 1.0 KW | 9300 |
| L-3431A | 18 KW | 9375 |
| L-3434 | 100 W | 9950 |
| L-3436 | 100 W | 9550 |
| L-3452 | 2.2 KW | 16,200 |
| L-3460A | 1.8 KW | 2962 |
| L-3461A | 1.5 KW | 4275 |
| L-3462A | 1.5 KW | 8025 |
| L-3463A | 1.2 KW | 9625 |
| L-3464A | 1.2 KW | 1925 |
| L-3465A | 1.5 KW | 1237 |
| L-3467A | 1.5 KW | 5575 |
| L-3468A | 1.5 KW | 6725 |
| L-3496A | 1.0 KW | 16,250 |
| L-3498 | 2.0 KW | 16,300 |
| L-3502A | 800 W | 1237 |
| L-3503A | 800 W | 1925 |
| L-3504A | 800 W | 2962 |
| L-3505A | 800 W | 4275 |
| L-3506A | 800 W | 5575 |
| L-3507A | 800 W | 6725 |
| L-3508A | 800 W | 8025 |
| L-3509A | 800 W | 9625 |
| L-3513 | 20 KW | 9375 |
| L-3601 | 120 W | 9327 |
| L-3616 | 120 W | 9375 |
| L-3635 | 10 KW | 9375 |
| L-3645 [1] | 4.0 KW | 16,200 |
| L-3654A | 24 KW | 9375 |
| L-3695 | 200 KW | 9300 |
| L-3714 | 1.0 KW | 600 |
| L-3759 | 60 KW | 15,550 |
| L-3812 | 1.0 KW | 9300 |
| L-3813 | 500 W | 9300 |
| L-3816 | 25 KW | 16,500 |
| L-3820 | 10 W | 8500 |
| L-3853 | 50 KW | 10,500 |
| L-3854 | 50 KW | 11,500 |
| L-3890A | 24 KW | 9375 |
| L-3915 | 2.2 KW | 16,280 |
| L-3950 | 65 KW | 16,500 |
| L-3951 | 66 KW | 16,500 |
| L-3958 | 9.0 KW | 15,500 |
| L-3958A | 10 KW | 15,500 |

## PULSE MAGNETRONS (Continued)

| Tube Number | Power Output (Minimum) | Center Frequency MHz |
|---|---|---|
| L-3976 | 100 KW | 16,500 |
| L-3978 | 70 KW | 16,250 |
| L-3987 | 66 KW | 16,500 |
| L-3990 | 24 KW | 9375 |
| L-4064A [1] | 125 KW | 34,850 |
| L-4193A/7008 | 200 KW | 9050 |
| L-4193B/7692 | 200 KW | 9375 |
| L-4296/8366 | 50 KW | 33,200 |
| L-4306 missing | 110 KW | 34,850 |
| L-4310 | 200 KW | 8950 |
| L-4328A | 90 KW | 16,500 |
| L-4362/8468 | 60 KW | 16,500 |
| L-4370 | 40 W | 13,325 |
| L-4371 | 200 KW | 9375 |
| L-4380 | 18 KW | 9375 |
| L-4398/8543 | 24 KW | 9375 |
| L-4419 | 60 KW | 16,500 |
| L-4451 | 35 KW | 16,500 |
| L-4469/8855 | 200 KW | 9050 |
| L-4472 [1] | 60 KW | 16,500 |
| L-4502 | 200 KW | 9050 |
| L-4516 missing | 110 KW | 34,815 |
| L-4525/8955 | 90 kw | 16,250 |
| L-4527/8946 [2] | 65 KW | 16,500 |
| L-4553 | 70 KW | 9375 |
| L-4555 | 60 KW | 32,600 |
| L-4575 [1] | 200 KW | 9050 |
| L-4583A | 200 KW | 9375 |
| L-4590/8945 | 200 KW | 9050 |
| L-4593 | 350 KW | 9050 |
| L-4622 | 225 KW | 9375 |
| L-5013 | 5.0 KW | 16,000 |
| L-5035 | 10 KW | 16,200 |
| L-5047 [1] | 65 KW | 9375 |
| L-5048 | 1 KW | 16,250 |
| L-5049 [1] | 60 KW | 16,475 |
| L-5080 | 250 KW | 5637 |
| L-5112 | 2.2 KW | 15,550 |
| L-5191 | 65 KW | 9345 |
| L-5200 | 35 KW | 16,500 |
| L-5211 | 24 KW | 9375 |
| L-5223 | 35 KW | 16,750 |
| L-5224 | 75 KW | 9300 |
| L-5224A | 85 KW | 9250 |
| L-5273 | 95 KW | 9050 |
| L-5274 | 7.5 KW | 9345 |
| L-5328 | 2.5 KW | 15,550 |
| L-5330 | 60 KW | 16,500 |
| L-5359 | 7.0 KW | 9375 |
| L-5365 | 28 KW | 9345 |
| L-5407 | 75 KW | 9250 |
| L-5434 | 70 KW | 16,000 |
| L-5436 | 35 KW | 16,750 |
| L-5498 | 65 kw | 16,000 |

## CW MAGNETRONS

| Tube Number | Minimum Power | Center Frequency MHz |
|---|---|---|
| L-3456 | 200 W | 470 |
| L-3459 | 200 W | 783 |
| L-3460 [1] | 500 W | 2962 |
| L-3461 [1] | 350 W | 4275 |
| L-3462 [1] | 300 W | 8025 |
| L-3463 [1] | 250 W | 9625 |
| L-3464 [1] | 400 W | 1925 |
| L-3465 [1] | 400 W | 1237 |
| L-3467 [1] | 400 W | 5575 |
| L-3468 [1] | 300 W | 6725 |
| L-3500 | 100 W | 470 |
| L-3501 | 100 W | 783 |
| L-3502 [1] | 110 W | 1237 |
| L-3503 [1] | 110 W | 1925 |
| L-3504 [1] | 110 W | 2962 |
| L-3505 [1] | 110 W | 4275 |
| L-3506 [1] | 110 W | 5575 |
| L-3507 [1] | 110 W | 6725 |
| L-3508 [1] | 110 W | 8025 |
| L-3509 [1] | 110 W | 9625 |
| L-3714 | 175 W | 600 |

## BACKWARD WAVE OSCILLATORS

| Tube Number | Minimum Power | Center Frequency MHz |
|---|---|---|
| L-3721 | 200 W | 1200 |
| L-3724 | 180 W | 3025 |
| L-3724A | 220 W | 3025 |
| L-3726 | 165 W | 5675 |
| L-3728 | 125 W | 9750 |
| L-3729A | 220 W | 5135 |
| L-5316 | 100 W | 3050 |
| L-5317 | 100 W | 5450 |
| L-5318 | 100 W | 9000 |

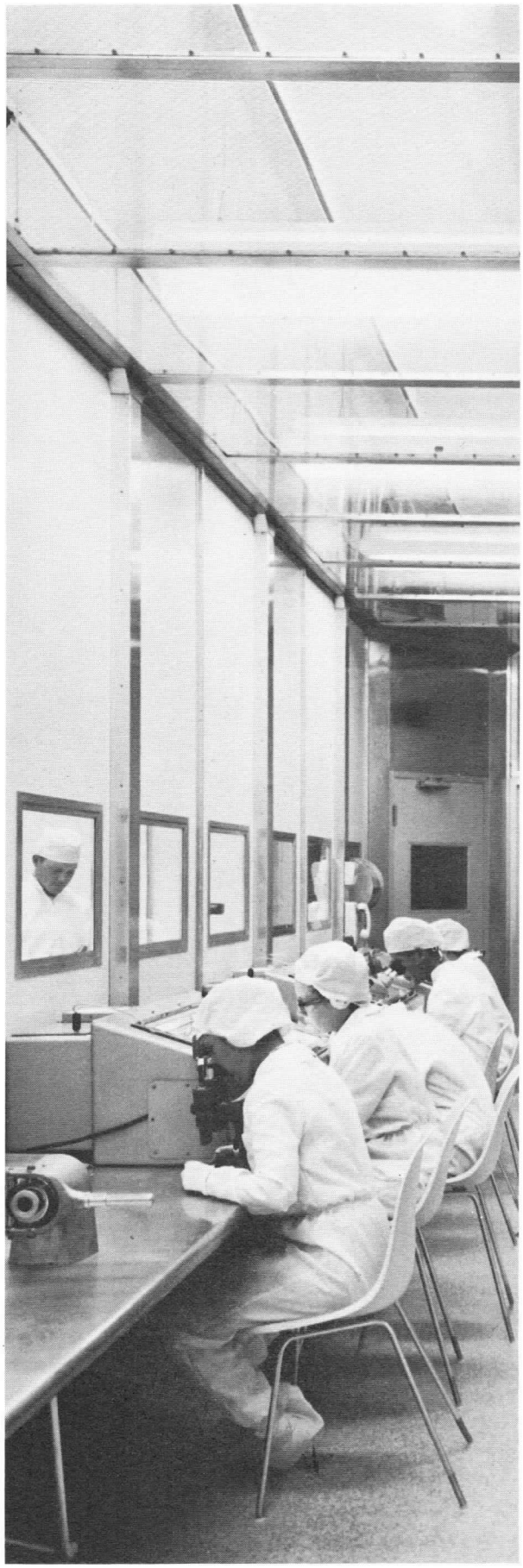
## PLANAR TRIODES

| Tube Number | Power Output | Max. Freq. GHz |
|---|---|---|
| 2C36 | 1.0 W @ CW | 4.0 |
| 2C37 | 2.0 W @ CW | 3.3 |
| 5767/6481 | 2.0 W @ CW | 3.3 |
| 5768 | --- | 3.0 |
| 6503 | 25 mW @ CW | 5.75 |

## KLYSTRONS

| Tube Number | Peak Power (Minimum) | Center Frequency MHz |
|---|---|---|
| 6BL6 | 250 mW | 3950 |
| 6BM6 | 170 mW | 2175 |
| 6BM6A | 170 mW | 2175 |
| L-3035/7504 | 2.2 MW | 1300 |
| L-3250 | 10 MW | 1300 |
| L-3403 [1] | 1.25 MW | 400 |
| L-3660 [1] | 10 MW | 1300 |
| L-3661 [2] | 20 MW | 1300 |
| L-3694 [1] | 1.25 MW | 425 |
| L-3742 | 1.0 MW | 3040 |
| L-3943 [1] | 5.0 MW | 1300 |
| L-3944 [1] | 10.0 MW | 1300 |
| L-5096 | 2.2 MW | 1500 |

# INTRODUCTION 14



ISSUE 14 7/15/75

Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

## TRAVELING WAVE TUBES

| Tube Number | Power Output (Minimum) | Center Frequency MHz |
|---|---|---|
| L-2335 | 2 W | 7500 |
| L-2335-16 | 1 W | 7200 |
| L-2335-17 | 1 W | 6000 |
| L-2337 | 10 mW | 9000 |
| L-2338 | 2 W | 9000 |
| L-2357 | 50 mW | 7500 |
| L-2357-04 | 40 mW | 7200 |
| L-2364 | 1 W | 12,000 |
| L-2365 | 20 mW | 12,000 |
| L-3611 [1] | 20 mW | 9000 |
| L-3928 [2] | 10 W | 8500 |
| L-3957 [1] | 2.0 W | 8050 |
| L-3971 [2] | 2.0 W | 3000 |
| L-3972 [2] | 1.0 W | 8000 |
| L-3998 [1] | 2.0 W | 9000 |
| L-5007 [1] | 2.0 W | 3000 |
| L-5008 [2] | 2.0 W | 10,000 |
| L-5009 [1] | 2.0 W | 6000 |
| L-5010 [2] | 10 W | 3000 |
| L-5011 [2] | 10 W | 6500 |
| L-5014 | 10 mW | 3000 |
| L-5015 | 10 mW | 6000 |
| L-5036 [1] | 10 W | 1500 |
| L-5043 [1] | 10 W | 9000 |
| L-5089 [3] | 1000 W | 9000 |
| L-5095 [1] | 50 W | 3000 |
| L-5117 [2] | 5 W | 16,000 |
| L-5126 [2] | 1000 W | 9000 |
| L-5134 [1] | 10 W | 5100 |
| L-5137 | 2 W | 6000 |
| L-5154 | 5 W | 8500 |
| L-5155 | 20 W | 1500 |
| L-5157 | 100 W | 9000 |
| L-5160 | 20 W | 3000 |
| L-5225 | 10 W | 2000 |
| L-5250 | 25 KW | 9450 |
| L-5252 | 12 KW | 9200 |
| L-5253 | 40 KW | 9750 |
| L-5253-01 | 50 KW | 9650 |
| L-5263 | 1 KW | 6000 |
| L-5283 | 1 KW | 3000 |
| L-5336 | 1 KW | 3000 |
| L-5366-50 | 3.0 kw | 3100 |
| L-5391-01 | 100 KW | 9100 |
| L-5391-51 | 100 KW | 9500 |
| L-5391-52 | 80 KW | 9750 |
| L-5391-53 | 100 KW | 9300 |
| L-5391-54 | 80 KW | 10,500 |
| L-5437-01 | 10 W | 7500 |
| L-5540-50 | 2 KW | 1900 |
| L-5519-51 | 15 KW | 9750 |

## EQUIPMENT-ACCESSORIES

| Model Number | Type |
|---|---|
| 46 | Focus Coil |
| 190 | Focus Coil |
| 200 | Focus Coil |
| 215 | Focus Coil |
| 624 | TWT Power Supply |
| 636 | TWT Power Supply |
| 642 | Microwave Amplifier |
| L-2782 | TWTA |
| L-2785 | TWTA |
| L-2795 | TWTA |
| L-2798 | TWTA |
| 3510 | MICROTRON® 800-2D |
| 201377 | Focus Coil |
| 215000 | Focus Coil |
| | Sockets |
| | Transitions |

## APPLICATIONS ENGINEERING SERVICES AND REGIONAL OFFICES

Main marketing, engineering and applications engineering services for Litton Industries Electron Tube Division are located at 960 Industrial Road, San Carlos, California 94070. Sales information and applications engineering services are immediately available by either writing or telephoning the Marketing Department, Litton Industries, San Carlos, California. Our number is (415) 591-8411. Our TWX number is 910 376-4900.

Sales offices are also located at the Litton Electron Tube Division's Williamsport Facility, 1035 Westminster Drive, Williamsport, Pennsylvania 17701. Telephone (717) 326-3561; Telex 84-1430.

For your convenience Litton applications engineers are located at the following regional offices:

**EAST**
1770 Walt Whitman Road
Melville, L.I., New York 11746
(516) 694-8300

**DISTRICT OF COLUMBIA**
490 L'Enfant Plaza East, S.W.
Suite 8206
Washington, D.C. 20024
(202) 554-2570

**SOUTH**
P.O. Box 00
Warner Robins, Georgia 31093
(912) 923-3397

**MID-WEST**
Suite 270
4130 Linden Avenue
Dayton, Ohio 45432
(513) 258-1243

**SOUTHWEST**
11333 North Central Expressway
Suite 211
Dallas, Texas 75231
(214) 369-2184

**WEST**
960 Industrial Road
San Carlos, California 94070
(415) 591-8411

Sales outside the United States are handled through the following companies:

**REPRESENTATIVES**

**LITTON PRECISION PRODUCTS INTERNATIONAL, INC.**

58 Rue Pottier
78150 Le Chesnay, France
955.21.04

95 High Street
Slough, Buckinghamshire
SL1 1DH England
Slough 28267

Via Arco 4
I20121 Milan, Italy
(2) 89.33.62

Fack
S-100 51 Stockholm 28
Sweden
(8) 142345

Gubelstrasse 28
8050 Zurich
Switzerland
(1) 48.35.44

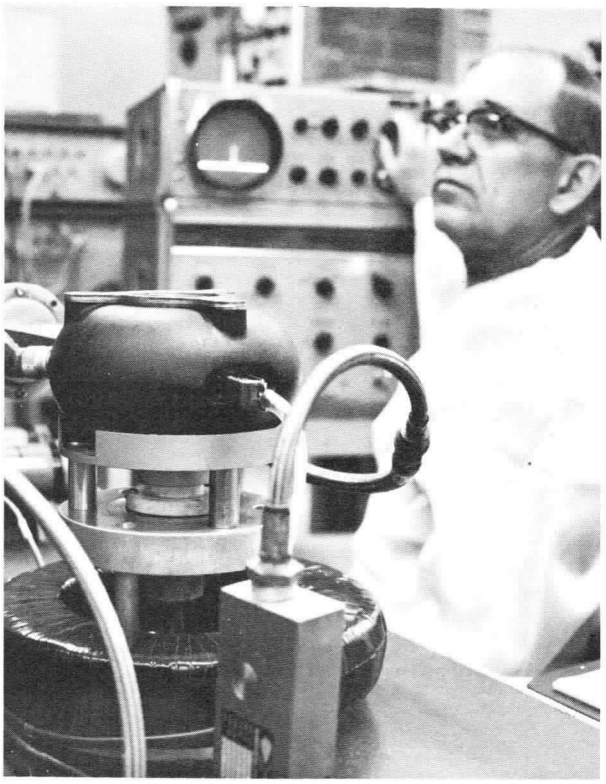
Steenloperstraat 26
Capelle a/d Yssel
Holland
(010) 50.39.02

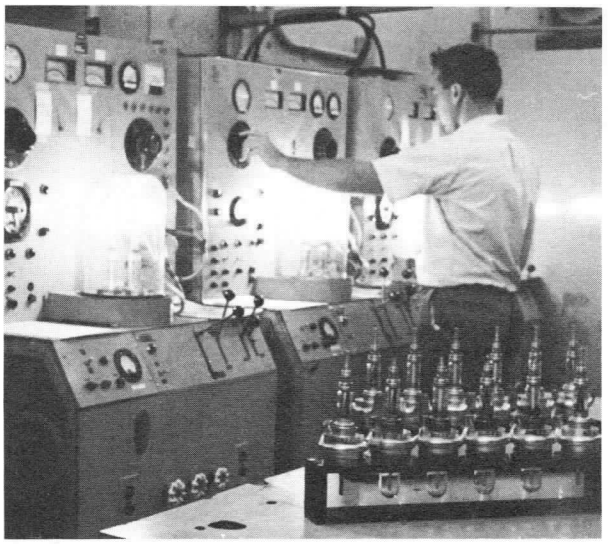
Oberfohringerstrasse 8
8 Munich 80, West Germany
(811) 980547

**CANADA**
Denlen Corporation, Ltd.
23 Guardsman Road
Thornhill, Ontario
(416) 889-7201

**ISRAEL**
M. T. I. Engineering, Ltd.
182 Ben Yehuda Street
Tel-Aviv, Israel
03-236334

**WESTREX COMPANY, ORIENT**
Central P.O. Box 760
Tokyo, Japan
211-6791





ISSUE 14 7/15/75

Litton **ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

## LITTON INDUSTRIES ELECTRON TUBE DIVISION

Founded: ..... Electron Tube Division 1932
..... Litton Industries, Inc. 1953
Plant Locations ..... San Carlos, Calif.
Williamsport, Pa.

## PRODUCTS:

**San Carlos, California**

Traveling wave tubes, pulse and CW klystrons, M-type backward wave oscillators, crossed field forward wave amplifiers, MICROTRON® heating and cooking tubes.

TWT power supplies, focus coils, and other tube-related accessories.

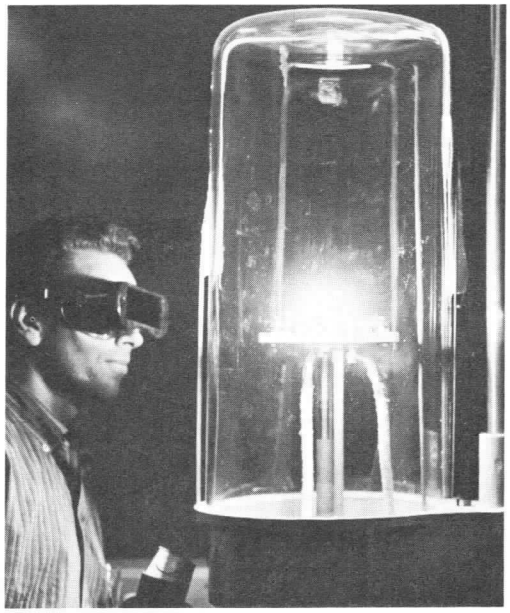
Solid-state microwave oscillators, and Gunn-effect diodes.

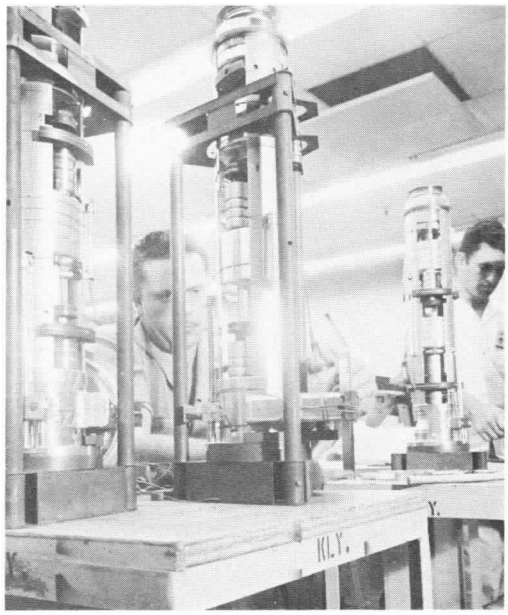
High resolution cathode ray tubes, fiber optic CRT's, image intensifiers, and related equipment.

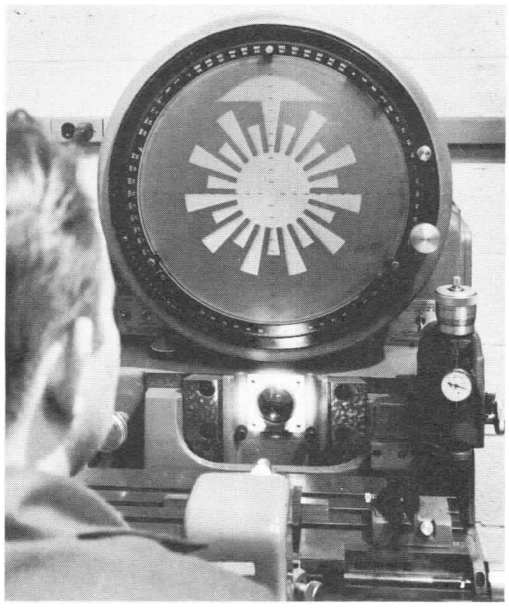
**Williamsport, Pennsylvania**

Pulse and CW magnetrons, reflex klystrons, and planar triodes.

In addition to this DATA/LOG which features microwave tubes and related equipment, Litton Industries publishes a Solid-State Products catalog, a Cathode Ray Tube catalog, and classified catalogs on CW devices.







# MICROWAVE TUBE & EQUIPMENT LISTING BY TYPE NUMBER

| Tube Number | Type | Section |
|---|---|---|
| 2C36 | Planar Triode | Beige |
| 2C37 | Planar Triode | Beige |
| 2J42 | Pulse Magnetron | Gray |
| 2J42H [1] | Pulse Magnetron | Gray |
| 4J50A | Pulse Magnetron | Gray |
| 4J52A | Pulse Magnetron | Gray |
| 6BL6 | Klystron | Lt. Blue |
| 6BM6 | Klystron | Lt. Blue |
| 6BM6A | Klystron | Lt. Blue |
| 5767/6481 | Planar Triode | Beige |
| 5768 | Planar Triode | Beige |
| 5780 | Pulse Magnetron | Gray |
| 6027 | Pulse Magnetron | Gray |
| 6344A | Pulse Magnetron | Gray |
| 6503 | Planar Triode | Beige |
| 6510 | Pulse Magnetron | Gray |
| 6543A | Pulse Magnetron | Gray |
| 7006 | Pulse Magnetron | Gray |
| 7111 [1] | Pulse Magnetron | Gray |
| 7156A [1] | Pulse Magnetron | Gray |
| 7208 | Pulse Magnetron | Gray |
| 7208B | Pulse Magnetron | Gray |
| JAN 7208B | Pulse Magnetron | Gray |
| 7449A | Pulse Magnetron | Gray |
| 7503 | Pulse Magnetron | Gray |
| 7619 | Pulse Magnetron | Gray |
| 7950 | Pulse Magnetron | Gray |
| 8945 | Pulse Magnetron | Gray |
| L-2335 | TWT | Lt. Green* |
| L-2335-16 | TWT | Lt. Green* |
| L-2335-17 | TWT | Lt. Green* |
| L-2337 | TWT | Lt. Green* |
| L-2338 | TWT | Lt. Green* |
| L-2357 | TWT | Lt. Green* |
| L-2357-04 | TWT | Lt. Green* |
| L-2364 | TWT | Lt. Green* |
| L-2365 | TWT | Lt. Green* |
| L-2782 | TWTA | Lt. Green* |
| L-2785 | TWTA | Lt. Green* |
| L-2795 | TWTA | Lt. Green* |
| L-2798 | TWTA | Lt. Green* |
| L-3023/6233 | Pulse Magnetron | Gray |
| L-3028D | Pulse Magnetron | Gray |
| L-3029A | Pulse Magnetron | Gray |
| L-3029B | Pulse Magnetron | Gray |
| L-3029C | Pulse Magnetron | Gray |
| L-3029D | Pulse Magnetron | Gray |
| L-3030B | Pulse Magnetron | Gray |
| L-3030C | Pulse Magnetron | Gray |
| L-3030D | Pulse Magnetron | Gray |
| L-3035/7504 | Klystron | Lt. Blue |
| L-3036A | Pulse Magnetron | Gray |
| L-3036B | Pulse Magnetron | Gray |
| L-3036F | Pulse Magnetron | Gray |
| L-3039A | Pulse Magnetron | Gray |
| L-3039D | Pulse Magnetron | Gray |
| L-3039E | Pulse Magnetron | Gray |
| L-3039F | Pulse Magnetron | Gray |
| L-3039G | Pulse Magnetron | Gray |
| L-3039H | Pulse Magnetron | Gray |
| L-3039 I | Pulse Magnetron | Gray |
| L-3039J | Pulse Magnetron | Gray |
| L-3039K | Pulse Magnetron | Gray |
| L-3039L | Pulse Magnetron | Gray |
| L-3039M | Pulse Magnetron | Gray |
| L-3039N | Pulse Magnetron | Gray |
| L-3058 | Pulse Magnetron | Gray |
| L-3083A | Pulse Magnetron | Gray |

| Tube Number | Type | Section |
|---|---|---|
| L-3087A | Pulse Magnetron | Gray |
| L-3089B | Pulse Magnetron | Gray |
| L-3101A | Pulse Magnetron | Gray |
| L-3101B | Pulse Magnetron | Gray |
| L-3101C | Pulse Magnetron | Gray |
| L-3103 | Pulse Magnetron | Gray |
| L-3105 | Pulse Magnetron | Gray |
| L-3106 | Pulse Magnetron | Gray |
| L-3156 | Pulse Magnetron | Gray |
| L-3168 | Pulse Magnetron | Gray |
| L-3180 | Pulse Magnetron | Gray |
| L-3181 | Pulse Magnetron | Gray |
| L-3187 | Pulse Magnetron | Gray |
| L-3212 | Pulse Magnetron | Gray |
| L-3213 | Pulse Magnetron | Gray |
| L-3214 | Pulse Magnetron | Gray |
| L-3218 | Pulse Magnetron | Gray |
| L-3225 | Pulse Magnetron | Gray |
| L-3226 | Pulse Magnetron | Gray |
| L-3238 | Pulse Magnetron | Gray |
| L-3239 | Pulse Magnetron | Gray |
| L-3250 | Klystron | Lt. Blue |
| L-3268 | Pulse Magnetron | Gray |
| L-3314 | Pulse Magnetron | Gray |
| L-3327 | Pulse Magnetron | Gray |
| L-3358 | Pulse Magnetron | Gray |
| L-3359 | Pulse Magnetron | Gray |
| L-3381 | Pulse Magnetron | Gray |
| L-3383 | Pulse Magnetron | Gray |
| L-3384 | Pulse Magnetron | Gray |
| L-3403 [1] | Klystron | Lt. Blue |
| L-3429 | Pulse Magnetron | Gray |
| L-3431A | Pulse Magnetron | Gray |
| L-3434 | Pulse Magnetron | Gray |
| L-3436 | Pulse Magnetron | Gray |
| L-3452 | Pulse Magnetron | Gray |
| L-3456 | CW Magnetron | Gold |
| L-3459 | CW Magnetron | Gold |
| L-3460 [1] | CW Magnetron | Gold |
| L-3460A | Pulse/CW Magnetron | Gray |
| L-3461 [1] | CW Magnetron | Gold |
| L-3461A | Pulse/CW Magnetron | Gray |
| L-3462 [1] | CW Magnetron | Gold |
| L-3462A | Pulse/CW Magnetron | Gray |
| L-3463 [1] | CW Magnetron | Gold |
| L-3463A | Pulse/CW Magnetron | Gray |
| L-3464 [1] | CW Magnetron | Gold |
| L-3464A | Pulse/CW Magnetron | Gray |
| L-3465 [1] | CW Magnetron | Gold |
| L-3465A | Pulse/CW Magnetron | Gray |
| L-3467 [1] | CW Magnetron | Gold |
| L-3467A | Pulse/CW Magnetron | Gray |
| L-3468 [1] | CW Magnetron | Gold |
| L-3468A | Pulse/CW Magnetron | Gray |
| L-3496A | Pulse Magnetron | Gray |
| L-3498 | Pulse Magnetron | Gray |
| L-3500 | CW Magnetron | Gold |
| L-3501 | CW Magnetron | Gold |
| L-3502 [1] | CW Magnetron | Gold |
| L-3502A | Pulse/CW Magnetron | Gray |
| L-3503 [1] | CW Magnetron | Gold |
| L-3503A | Pulse/CW Magnetron | Gray |
| L-3504 [1] | CW Magnetron | Gold |
| L-3504A | Pulse/CW Magnetron | Gray |
| L-3505 [1] | CW Magnetron | Gold |
| L-3505A | Pulse/CW Magnetron | Gray |
| L-3506 [1] | CW Magnetron | Gold |
| L-3506A | Pulse/CW Magnetron | Gray |
| L-3507 [1] | CW Magnetron | Gold |
| L-3507A | Pulse/CW Magnetron | Gray |
| L-3508 [1] | CW Magnetron | Gold |

*Sheets are White, but included in Green TWT Section.

Litton **ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

ISSUE 14 7/15/75

# MICROWAVE TUBE & EQUIPMENT LISTING BY TYPE NUMBER

| Tube Number | Type | Section |
|---|---|---|
| L-3508A | Pulse/CW Magnetron | Gray |
| L-3509 [1] | CW Magnetron | Gold |
| L-3509A | Pulse/CW Magnetron | Gray |
| L-3513 | Pulse Magnetron | Gray |
| L-3601 | Pulse Magnetron | Gray |
| L-3611 | TWT | Lt. Green |
| L-3616 | Pulse Magnetron | Gray |
| L-3635 | Pulse Magnetron | Gray |
| L-3645 [1] | Pulse Magnetron | Gray |
| L-3654A | Pulse Magnetron | Gray |
| L-3660 [1] | Klystron | Lt. Blue |
| L-3661 [2] | Klystron | Lt. Blue |
| L-3694 [1] | Klystron | Lt. Blue |
| L-3695 | Pulse Magnetron | Gray |
| L-3714 | Pulse/CW Magnetron | Gray, Gold |
| L-3721 | M-BWO | Pink |
| L-3724 | M-BWO | Pink |
| L-3724A | M-BWO | Pink |
| L-3726 | M-BWO | Pink |
| L-3728 | M-BWO | Pink |
| L-3729A | M-BWO | Pink |
| L-3742 | Klystron | Lt. Blue |
| L-3759 | Pulse Magnetron | Gray |
| L-3812 | Pulse Magnetron | Gray |
| L-3813 | Pulse Magnetron | Gray |
| L-3816 | Pulse Magnetron | Gray |
| L-3820 | Pulse Magnetron | Gray |
| L-3853 | Pulse Magnetron | Gray |
| L-3854 | Pulse Magnetron | Gray |
| L-3890A | Pulse Magnetron | Gray |
| L-3915 | Pulse Magnetron | Gray |
| L-3928 [2] | TWT | Lt. Green |
| L-3943 [1] | Klystron | Lt. Blue |
| L-3944 [1] | Klystron | Lt. Blue |
| L-3950 | Pulse Magnetron | Gray |
| L-3951 | Pulse Magnetron | Gray |
| L-3957 [1] | TWT | Lt. Green |
| L-3958 | Pulse Magnetron | Gray |
| L-3958A | Pulse Magnetron | Gray |
| L-3971 [2] | TWT | Lt. Green |
| L-3972 [2] | TWT | Lt. Green |
| L-3976 | Pulse Magnetron | Gray |
| L-3978 | Pulse Magnetron | Gray |
| L-3987 | Pulse Magnetron | Gray |
| L-3990 | Pulse Magnetron | Gray |
| L-3998 [1] | TWT | Lt. Green |
| L-4064A [1] | Pulse Magnetron | Gray |
| L-4193A/7008 | Pulse Magnetron | Gray |
| L-4193B/7692 | Pulse Magnetron | Gray |
| L-4296/8366 | Pulse Magnetron | Gray |
| L-4306 | Pulse Magnetron | Gray |
| L-4310 | Pulse Magnetron | Gray |
| L-4328A | Pulse Magnetron | Gray |
| L-4362/8468 | Pulse Magnetron | Gray |
| L-4370 | Pulse Magnetron | Gray |
| L-4371 | Pulse Magnetron | Gray |
| L-4380 | Pulse Magnetron | Gray |
| L-4398/8543 | Pulse Magnetron | Gray |
| L-4419 | Pulse Magnetron | Gray |
| L-4451 | Pulse Magnetron | Gray |
| L-4469/8855 | Pulse Magnetron | Gray |
| L-4472 [1] | Pulse Magnetron | Gray |
| L-4502 | Pulse Magnetron | Gray |
| L-4516 | Pulse Magnetron | Gray |
| L-4525/8955 | Magnetron | Gray |
| L-4527/8946 [2] | Pulse Magnetron | Gray |
| L-4553 | Pulse Magnetron | Gray |
| L-4555 | Pulse Magnetron | Gray |

| Tube Number | Type | Section |
|---|---|---|
| L-4575 [1] | Pulse Magnetron | Gray |
| L-4583A | Magnetron | Gray |
| L-4590/8945 | Magnetron | Gray |
| L-4593 | Pulse Magnetron | Gray |
| L-4622 | Pulse Magnetron | Gray |
| L-5007 [1] | TWT | Lt. Green |
| L-5008 [2] | TWT | Lt. Green |
| L-5009 [1] | TWT | Lt. Green |
| L-5010 [2] | TWT | Lt. Green |
| L-5011 [2] | TWT | Lt. Green |
| L-5013 | Pulse Magnetron | Gray |
| L-5014 | TWT | Lt. Green |
| L-5015 | TWT | Lt. Green |
| L-5035 | Pulse Magnetron | Gray |
| L-5036 [1] | TWT | Lt. Green |
| L-5043 [1] | TWT | Lt. Green |
| L-5047 [1] | Pulse Magnetron | Gray |
| L-5048 | Pulse Magnetron | Gray |
| L-5049 [1] | Pulse Magnetron | Gray |
| L-5080 | Pulse Magnetron | Gray |
| L-5089 [3] | TWT | Lt. Green |
| L-5095 [1] | TWT | Lt. Green |
| L-5096 | Klystron | Lt. Blue |
| L-5112 | Pulse Magnetron | Gray |
| L-5117 [2] | TWT | Lt. Green |
| L-5126 [2] | TWT | Lt. Green |
| L-5134 [1] | TWT | Lt. Green |
| L-5137 | TWT | Lt. Green |
| L-5154 | TWT | Lt. Green |
| L-5155 | TWT | Lt. Green |
| L-5157 | TWT | Lt. Green |
| L-5160 | TWT | Lt. Green |
| L-5191 | Pulse Magnetron | Gray |
| L-5200 | Pulse Magnetron | Gray |
| L-5211 | Pulse Magnetron | Gray |
| L-5223 | Pulse Magnetron | Gray |
| L-5224 | Pulse Magnetron | Gray |
| L-5224A | Pulse Magnetron | Gray |
| L-5225 | TWT | Lt. Green |
| L-5250 | TWT | Lt. Green* |
| L-5252 | TWT | Lt. Green* |
| L-5253 | TWT | Lt. Green* |
| L-5253-01 | TWT | Lt. Green* |
| L-5263 | TWT | Lt. Green |
| L-5273 | Pulse Magnetron | Gray |
| L-5274 | Pulse Magnetron | Gray |
| L-5283 | TWT | Lt. Green |
| L-5316 | M-BWO | Pink |
| L-5317 | M-BWO | Pink |
| L-5318 | M-BWO | Pink |
| L-5328 | Pulse Magnetron | Gray |
| L-5330 | Pulse Magnetron | Gray |
| L-5336 | TWT | Lt. Green |
| L-5359 | Pulse Magnetron | Gray |
| L-5365 | Pulse Magnetron | Gray |
| L-5366-50 | TWT | Lt. Green |
| L-5391-01 | TWT | Lt. Green* |
| L-5391-51 | TWT | Lt. Green* |
| L-5391-52 | TWT | Lt. Green* |
| L-5391-53 | TWT | Lt. Green* |
| L-5391-54 | TWT | Lt. Green* |
| L-5407 | Pulse Magnetron | Gray |
| L-5434 | Magnetron | Gray |
| L-5436 | Pulse Magnetron | Gray |
| L-5437-01 | TWT | Lt. Green |
| L-5498 | Magnetron | Gray |
| L-5519-51 | TWT | Lt. Green* |
| L-5540-50 | TWT | Lt. Green |

* Sheets are White, but included in Green TWT Section.

# LITTON INDUSTRIES MICROWAVE TUBE CROSS REFERENCE BY CENTER FREQUENCY

| Tube Number | Tube Type | Center Frequency MHz | Power Output (Minimum) | Frequency Range (MHz) | Section (Color) |
|---|---|---|---|---|---|
| L-3180 | Magnetron | 9210 | 120 W | 9200-9220 | Gray |
| L-3039K | Magnetron | 9220 | 225 KW | 9220 ± 20 | Gray |
| L-3036F | Magnetron | 9245 | 65 KW | 9245 ± 30 | Gray |
| L-5224A | Magnetron | 9250 | 85 KW | 9000-9500 | Gray |
| L-5407 | Magnetron | 9250 | 75 KW | 9000-9500 | Gray |
| L-3181 | Magnetron | 9260 | 120 W | 9250-9270 | Gray |
| L-3187 | Magnetron | 9260 | 120 W | 9250-9270 | Gray |
| L-3029A | Magnetron | 9267 | 7.0 KW | 9235-9300 | Gray |
| L-3036B | Magnetron | 9275 | 65 KW | 9275 ± 15 | Gray |
| L-3039L | Magnetron | 9280 | 225 KW | 9280 ± 20 | Gray |
| L-3029B | Magnetron | 9283 | 7.0 KW | 9250-9315 | Gray |
| L-3029D | Magnetron | 9298 | 7.0 KW | 9265-9330 | Gray |
| L-3105 | Magnetron | 9300 | 100 W | 9300 ± 30 | Gray |
| L-3087A | Magnetron | 9300 | 120 W | 9280-9320 | Gray |
| L-3813 | Magnetron | 9300 | 500 W | 9300 ± 30 | Gray |
| L-3384 | Magnetron | 9300 | 1.0 KW | 9280-9320 | Gray |
| L-3429 | Magnetron | 9300 | 1.0 KW | 9300 ± 30 | Gray |
| L-3812 | Magnetron | 9300 | 1.0 KW | 9300 ± 30 | Gray |
| L-3239 | Magnetron | 9300 | 2.0 KW | 9300 ± 30 | Gray |
| L-3268 | Magnetron | 9300 | 4.0 KW | 9300 ± 30 | Gray |
| L-5224 | Magnetron | 9300 | 75 KW | 9100-9500 | Gray |
| L-5391-53 | TWT | 9300 | 100 KW | 8900-9700 | Lt. Green* |
| 7006 | Magnetron | 9300 | 190 KW | 9000-9600 | Gray |
| L-3695 | Magnetron | 9300 | 200 KW | 9000-9600 | Gray |
| L-3028D | Magnetron | 9305 | 120 W | 9280-9330 | Gray |
| L-3023/6233 | Magnetron | 9313 | 7.0 KW | 9280-9345 | Gray |
| L-3601 | Magnetron | 9327 | 120 W | 9315-9340 | Gray |
| L-3029C | Magnetron | 9328 | 7.0 KW | 9295-9360 | Gray |
| L-3225 | Magnetron | 9330 | 1.0 KW | 9310-9350 | Gray |
| L-3058 | Magnetron | 9340 | 1.0 KW | 9320-9360 | Gray |
| L-3238 | Magnetron | 9340 | 1.0 KW | 9340 ± 30 | Gray |
| L-3039M | Magnetron | 9340 | 225 KW | 9340 ± 20 | Gray |
| L-5191 | Magnetron | 9345 | 65 KW | 9345 ± 20 | Gray |
| L-5274 | Magnetron | 9345 | 7.5 KW | 9345 ± 20 | Gray |
| L-5365 | Magnetron | 9345 | 28 KW | 9345 ± 15 | Gray |
| L-3327 | Magnetron | 9375 | 120 W | 9365-9385 | Gray |
| L-3616 | Magnetron | 9375 | 120 W | 9350-9400 | Gray |
| 2J42 | Magnetron | 9375 | 7.0 KW | 9375 ± 30 | Gray |
| 2J42H [1] | Magnetron | 9375 | 7.0 KW | 9375 ± 30 | Gray |
| L-3635 | Magnetron | 9375 | 10 KW | 9375 ± 30 | Gray |
| 6027 | Magnetron | 9375 | 18 KW | 9375 ± 30 | Gray |
| L-3431A | Magnetron | 9375 | 18 KW | 9375 ± 30 | Gray |
| L-4380 | Magnetron | 9375 | 18 KW | 9375 ± 30 | Gray |
| L-3513 | Magnetron | 9375 | 20 KW | 9375 ± 30 | Gray |
| L-3654A | Magnetron | 9375 | 24 KW | 9375 ± 30 | Gray |
| L-3890A | Magnetron | 9375 | 24 KW | 9375 ± 30 | Gray |
| L-3990 | Magnetron | 9375 | 24 KW | 9375 ± 30 | Gray |
| L-4398/8543 | Magnetron | 9375 | 24 KW | 9375 ± 30 | Gray |
| L-5211 | Magnetron | 9375 | 24 KW | 9375 ± 30 | Gray |
| L-3168 | Magnetron | 9375 | 30 KW | 9375 ± 30 | Gray |
| 6510 | Magnetron | 9375 | 70 KW | 9375 ± 30 | Gray |
| 4J52A | Magnetron | 9375 | 70 KW | 9375 ± 30 | Gray |
| L-4553 | Magnetron | 9375 | 70 KW | 9375 ± 20 | Gray |
| L-5047 [1] | Magnetron | 9375 | 65 KW | 9375 ± 30 | Gray |
| L-3156 | Magnetron | 9375 | 112 KW | 9375 ± 30 | Gray |
| L-4193B/7692 | Magnetron | 9375 | 200 KW | 9200-9550 | Gray |
| L-4371 | Magnetron | 9375 | 200 KW | 9300-9450 | Gray |
| L-4583A | Magnetron | 9375 | 200 KW | 9200-9550 | Gray |
| 4J50A | Magnetron | 9375 | 225 KW | 9375 ± 30 | Gray |
| L-3030D | Magnetron | 9375 | 300 KW | 9375 ± 30 | Gray |
| L-4622 | Magnetron | 9375 | 225 KW | 9375 ± 30 | Gray |
| L-5359 | Magnetron | 9375 | 7.0 KW | 9375 ± 5 | Gray |
| 7503 | Magnetron | 9400 | 100 W | 9300-9500 | Gray |
| L-3039N | Magnetron | 9400 | 225 KW | 9400 ± 20 | Gray |
| L-3036A | Magnetron | 9410 | 65 KW | 9410 ± 5 | Gray |
| L-5250 | TWT | 9450 | 25 KW | 9200-9700 | Lt. Green* |
| L-5391-51 | TWT | 9500 | 100 KW | 9000-10,000 | Lt. Green* |
| L-3436 | Magnetron | 9550 | 100 W | 9550 ± 30 | Gray |
| L-3509 [1] | Magnetron | 9625 | 110 W | 8775-10,475 | Gold |

*Sheets are White, but included in Green TWT Section.

# LITTON INDUSTRIES MICROWAVE TUBE CROSS REFERENCE BY CENTER FREQUENCY

| Tube Number | Tube Type | Center Frequency MHz | Power Output (Minimum) | Frequency Range (MHz) | Section (Color) |
|---|---|---|---|---|---|
| L-3509A | Magnetron | 9625 | 110 W, 800 W | 8775-10,475 | Gray |
| L-3463 [1] | Magnetron | 9625 | 250 W | 8775-10,475 | Gold |
| L-3463A | Magnetron | 9625 | 250 W, 1.2 KW | 8775-10.475 | Gray |
| L-5253-01 | TWT | 9650 | 50 KW | 9400-9900 | Lt. Green* |
| L-5519-51 | TWT | 9750 | 15 KW | 9500-10,000 | Lt. Green* |
| L-5253 | TWT | 9750 | 40 KW | 9400-10,100 | Lt. Green* |
| L-5391-52 | TWT | 9750 | 80 KW | 9600-9900 | Lt. Green* |
| L-3728 | M-BWO | 9750 | 125 W | 8500-11,000 | Pink |
| L-3434 | Magnetron | 9950 | 100 W | 9950 ±30 | Gray |
| L-5008 | TWT | 10,000 | 2.0 W | 8000-12,000 | Lt. Green |
| L-3853 | Magnetron | 10,500 | 50 KW | 10,500 ±200 | Gray |
| L-5391-54 | TWT | 10,500 | 80 KW | 10,000-11,000 | Lt. Green* |
| L-3854 | Magnetron | 11,500 | 50 KW | 11,500 ± 200 | Gray |
| L-2364 | TWT | 12,000 | 1 W | 8000-16,000 | Lt. Green* |
| L-2365 | TWT | 12,000 | 20 mW | 8000-16,000 | Lt. Green* |
| L-2795 | TWTA | 12,000 | 1 W | 8000-16,000 | Lt. Green* |
| L-2798 | TWTA | 12,000 | 20 mW | 8000-16,000 | Lt. Green* |
| L-4370 | Magnetron | 13,325 | 40 W | 13,325 ± 30 | Gray |
| L-3958 | Magnetron | 15,500 | 9.0 KW | 15,500 ± 85 | Gray |
| L-3958A | Magnetron | 15,000 | 10 KW | 15,000 ± 85 | Gray |
| L-5112 | Magnetron | 15,500 | 2.2 KW | 15,400 -15,700 | Gray |
| L-3759 | Magnetron | 15,550 | 60 KW | 15,550 ± 100 | Gray |
| L-5328 | Magnetron | 15,550 | 2.5 KW | 15,400-15,700 | Gray |
| L-5117 [2] | TWT | 16,000 | 5 W | 15,500-16,500 | Lt. Green |
| L-5013 | Magnetron | 16,000 | 5.0 KW | 15,500-16,500 | Gray |
| L-5498 | Magnetron | 16,000 | 65 kw | 16,000 | Gray |
| L-5434 | Magnetron | 16,000 | 70 KW | 16,000 ±160 | Gray |
| L-3452 | Magnetron | 16,200 | 2.2 KW | 16,200 ± 75 | Gray |
| L-3645 [1] | Magnetron | 16,200 | 4.0 KW | 16,200 ± 100 | Gray |
| L-5035 | Magnetron | 16,200 | 10 KW | 15,900-16,500 | Gray |
| L-3358 | Magnetron | 16,250 | 1.0 KW | 16,000-16,500 | Gray |
| L-3496A | Magnetron | 16,250 | 1.0 KW | 16,000-16,500 | Gray |
| L-5048 | Magnetron | 16,250 | 1.0 KW | 16,000-16,500 | Gray |
| L-3359 | Magnetron | 16,250 | 2.0 KW | 16,000-16,500 | Gray |
| L-3978 | Magnetron | 16,250 | 70 KW | 16,000-16,500 | Gray |
| L-4525/8955 | Magnetron | 16,250 | 90 kw | 16,000-16,500 | Gray |
| L-3383 | Magnetron | 16,275 | 1.0 KW | 16,250-16,300 | Gray |
| L-3915 | Magnetron | 16,280 | 2.2 KW | 16,260-16,300 | Gray |
| L-3498 | Magnetron | 16,300 | 2.0 KW | 16,280-16,320 | Gray |
| L-5049 [1] | Magnetron | 16,475 | 60 KW | 16,125-16,825 | Gray |
| L-3816 | Magnetron | 16,500 | 25 KW | 16,500 ± 150 | Gray |
| L-4451 | Magnetron | 16,500 | 35 KW | 15,500-17,500 | Gray |
| L-5200 | Magnetron | 16,500 | 35 KW | 16,000-17,000 | Gray |
| L-3083A | Magnetron | 16,500 | 60 KW | 16,000-17,000 | Gray |
| L-3101A | Magnetron | 16,500 | 60 KW | 16,000-17,000 | Gray |
| L-3101B | Magnetron | 16,500 | 60 KW | 16,000-17,000 | Gray |
| L-3101C | Magnetron | 16,500 | 60 KW | 16,000-17,000 | Gray |
| L-4362/8468 | Magnetron | 16,500 | 60 KW | 16,000-17,000 | Gray |
| L-4419 | Magnetron | 16,500 | 60 KW | 16,500 ± 30 | Gray |
| L-4472 [1] | Magnetron | 16,500 | 60 KW | 16,000-17,000 | Gray |
| L-3950 | Magnetron | 16,500 | 65 KW | 16,500 ± 100 | Gray |
| L-4527/8946 [2] | Magnetron | 16,500 | 65 KW | 16,200-16,800 | Gray |
| L-3951 | Magnetron | 16,500 | 66 KW | 16,000-17,000 | Gray |
| L-3987 | Magnetron | 16,500 | 66 KW | 16,000-17,000 | Gray |
| L-4328A | Magnetron | 16,500 | 90 KW | 15,500-17,500 | Gray |
| L-3976 | Magnetron | 16,500 | 100 KW | 16,500 ± 150 | Gray |
| 7208 | Magnetron | 16,500 | 100 KW | 16,000-17,000 | Gray |
| 7208B | Magnetron | 16,500 | 125 KW | 15,500-17,500 | Gray |
| JAN 7208B | Magnetron | 16,500 | 125 KW | 15,500-17,500 | Gray |
| L-5330 | Magnetron | 16,500 | 60 KW | 16,000-17,000 | Gray |
| L-5223 | Magnetron | 16,750 | 35 KW | 16,750 ± 125 | Gray |
| L-5436 | Magnetron | 16,750 | 35 KW | 16,600-16,900 | Gray |
| 7449A | Magnetron | 24,000 | 70 KW | 24,000 ± 200 | Gray |
| L-4555 | Magnetron | 32,600 | 60 KW | 32,100-33,100 | Gray |
| L-4296/8366 | Magnetron | 33,200 | 50 KW | 33,200 ± 200 | Gray |
| L-4516 | Magnetron | 34,815 | 110 KW | 34,700-34,930 | Gray |
| L-4306 | Magnetron | 34,850 | 110 KW | 34,700-35,000 | Gray |
| L-4064A | Magnetron | 34,850 | 125 KW | 34,850 ± 150 | Gray |
| 7619 | Magnetron | 34,860 | 40 KW | 34,860 ± 348 | Gray |

*Sheets are White, but included in Green TWT Section.

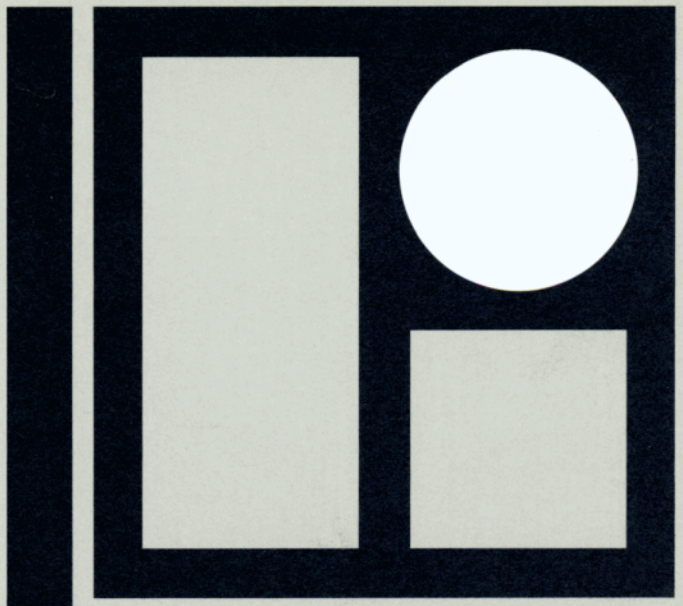
# LITTON INDUSTRIES MICROWAVE TUBE CROSS REFERENCE BY CENTER FREQUENCY

| Tube Number | Tube Type | Center Frequency MHz | Power Output (Minimum) | Frequency Range (MHz) | Section (Color) |
|---|---|---|---|---|---|
| L-3403 [1] | Klystron | 400 | 1.25 MW | 400 | Lt. Blue |
| L-3694 [1] | Klystron | 425 | 1.25 MW | 425 | Lt. Blue |
| L-3500 | Magnetron | 470 | 100 W | 350-590 | Gold |
| L-3456 | Magnetron | 470 | 200 W | 350-590 | Gold |
| L-3714 | Magnetron | 600 | 175 W, I.0 KW | 475-725 | Gray, Gold |
| L-3501 | Magnetron | 783 | 100 W | 590-975 | Gold |
| L-3459 | Magnetron | 783 | 200 W | 590-975 | Gold |
| L-3721 | M-BWO | 1200 | 200 W | 1000-1400 | Pink |
| L-3502 [1] | Magnetron | 1237 | 110 W | 975-1500 | Gold |
| L-3502A | Magnetron | 1237 | 110 W, 800 W | 975-1500 | Gray |
| L-3465 [1] | Magnetron | 1237 | 400 W | 975-1500 | Gold |
| L-3465A | Magnetron | 1237 | 400 W, 1.5 KW | 975-1500 | Gray |
| L-3035/7504 | Klystron | 1300 | 2.2 MW | 1240-1360 | Lt. Blue |
| L-3943 [1] | Klystron | 1300 | 5.0 MW | 1300 | Lt. Blue |
| L-3250 | Klystron | 1300 | 10 MW | 1250-1350 | Lt. Blue |
| L-3660 [1] | Klystron | 1300 | 10 MW | 1295-1305 | Lt. Blue |
| L-3944 [1] | Klystron | 1300 | 10 MW | 1300 | Lt. Blue |
| L-3661 [2] | Klystron | 1300 | 20 MW | 1300 | Lt. Blue |
| L-5036 [1] | TWT | 1500 | 10 W | 1000-2000 | Lt. Green |
| L-5096 | Klystron | 1500 | 2.2 MW | 1500 | Lt. Blue |
| L-5155 | TWT | 1500 | 20 W | 1000-2000 | Lt. Green |
| L-5540-50 | TWT | 1900 | 2 KW | 1800-2000 | Lt. Green |
| L-3503 [1] | Magnetron | 1925 | 110 W | 1500-2350 | Gold |
| L-3503A | Magnetron | 1925 | 110 W, 800 W | 1500-2350 | Gray |
| L-3464 [1] | Magnetron | 1925 | 400 W | 1500-2350 | Gold |
| L-3464A | Magnetron | 1925 | 400 W, 1.2 KW | 1500-2350 | Gray |
| L-5225 | TWT | 2000 | 10 W | 1700-2300 | Lt. Green |
| 6BM6 | Klystron | 2175 | 40-170 mW | 550-3800 | Lt. Blue |
| 6BM6A | Klystron | 2175 | 40-170 mW | 550-3800 | Lt. Blue |
| L-3504 [1] | Magnetron | 2962 | 110 W | 2350-3575 | Gold |
| L-3504A | Magnetron | 2962 | 110 W, 800 W | 2350-3575 | Gray |
| L-3460 [1] | Magnetron | 2962 | 500 W | 2350-3575 | Gold |
| L-3460A | Magnetron | 2962 | 500 W, 1.8 KW | 2350-3575 | Gray |
| 5768 | Planar | --- | --- | to 3000 | Beige |
| L-5014 | TWT | 3000 | 10 mW | 2000-4000 | Lt. Green |
| L-3971 [2] | TWT | 3000 | 2.0 W | 2000-4000 | Lt. Green |
| L-5007 [1] | TWT | 3000 | 2.0 W | 2000-4000 | Lt. Green |
| L-5010 [2] | TWT | 3000 | 10 W | 2000-4000 | Lt. Green |
| L-5095 [1] | TWT | 3000 | 50 W | 2000-4000 | Lt. Green |
| L-5160 | TWT | 3000 | 20 W | 2000-4000 | Lt. Green |
| L-5283 | TWT | 3000 | 1 KW | 2000-4000 | Lt. Green |
| L-5336 | TWT | 3000 | 1 KW | 2000-4000 | Lt. Green |
| L-3724 | M-BWO | 3025 | 180 W | 2500-3500 | Pink |
| L-3724A | M-BWO | 3025 | 220 W | 2500-3500 | Pink |
| 2C37 | Planar | --- | 2.0 W | to 3300 | Beige |
| 5767/6481 | Planar | --- | 2.0 W | to 3300 | Beige |
| L-3742 | Klystron | 3040 | 1.0 MW | 2980-3100 | Lt. Blue |
| L-5316 | M-BWO | 3050 | 100 W | 2600-3500 | Pink |
| L-5366-50 | TWT | 3100 | 3.0 kw | 2700-3500 | Lt. Green |
| 6BL6 | Klystron | 3950 | 30-250 mW | 1400-6500 | Lt. Blue |
| 2C36 | Planar | --- | 1.0 W | to 4000 | Beige |
| L-3505 [1] | Magnetron | 4275 | 110 W | 3575-4975 | Gold |
| L-3505A | Magnetron | 4275 | 110 W, 800 W | 3575-4975 | Gray |
| L-3461 [1] | Magnetron | 4275 | 350 W | 3575-4975 | Gold |
| L-3461A | Magnetron | 4275 | 350 W, 1.5 KW | 3575-4975 | Gray |
| L-5134 [1] | TWT | 5100 | 10 W | 3700-6500 | Lt. Green |
| L-3729A | M-BWO | 5135 | 220 W | 4360-5910 | Pink |
| L-5317 | M-BWO | 5450 | 100 W | 4700-6200 | Pink |
| L-3506 [1] | Magnetron | 5575 | 110 W | 4975-6175 | Gold |
| L-3506A | Magnetron | 5575 | 110 W, 800 W | 4975-6175 | Gray |
| L-3467 [1] | Magnetron | 5575 | 400 W | 4975-6175 | Gold |
| L-3467A | Magnetron | 5575 | 400 W, 1.5 KW | 4975-6175 | Gray |
| 6344A | Magnetron | 5637 | 175 KW | 5450-5825 | Gray |
| 7156A [1] | Magnetron | 5637 | 250 KW | 5450-5825 | Gray |
| L-5080 | Magnetron | 5637 | 250 KW | 5450-5825 | Gray |
| L-3726 | M-BWO | 5675 | 165 W | 4800-6550 | Pink |
| 6503 | Planar | --- | 25 mW | to 5750 | Beige |

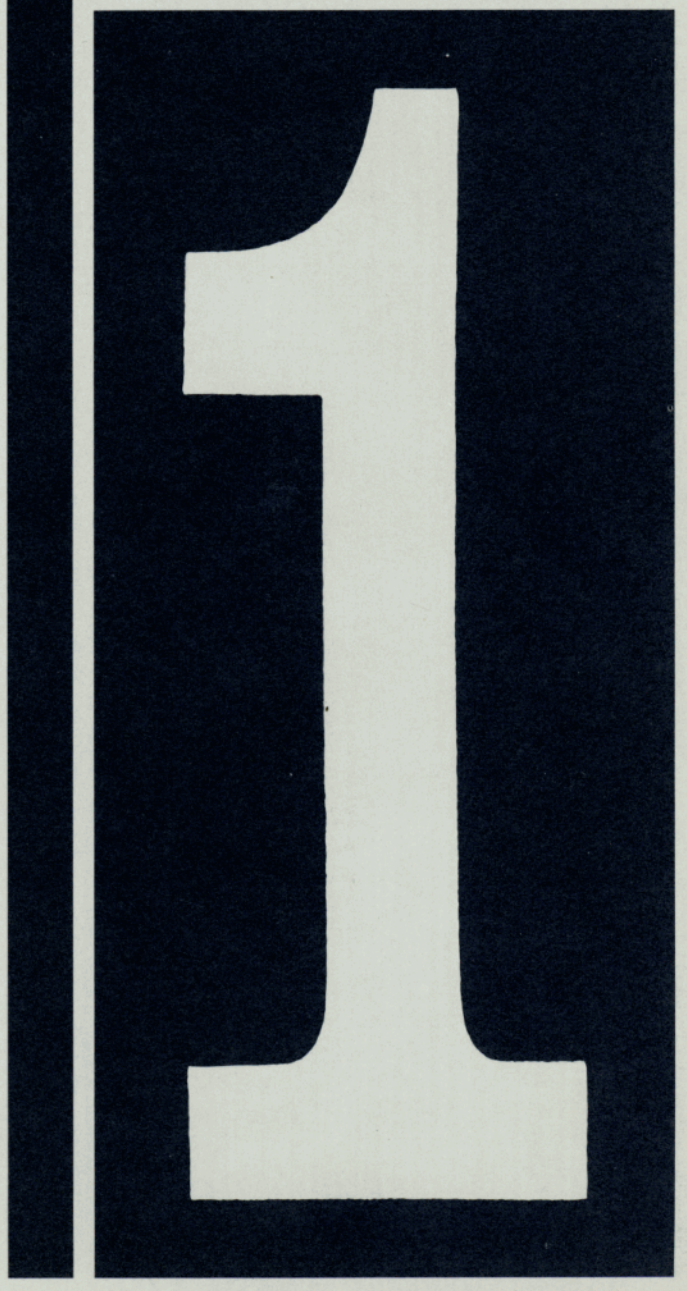
# LITTON INDUSTRIES MICROWAVE TUBE CROSS REFERENCE BY CENTER FREQUENCY

| Tube Number | Tube Type | Center Frequency MHz | Power Output (Minimum) | Frequency Range (MHz) | Section (Color) |
|---|---|---|---|---|---|
| L-5015 | TWT | 6000 | 10 mW | 4000-8000 | Lt. Green |
| L-2335-17 | TWT | 6000 | 1 W | 4000-8000 | Lt. Green* |
| L-5009 | TWT | 6000 | 2.0 W | 4000-8000 | Lt. Green |
| L-5011 [2] | TWT | 6000 | 10 W | 4000-8000 | Lt. Green |
| L-5137 | TWT | 6000 | 2 W | 4000-8000 | Lt. Green |
| L-5263 | TWT | 6000 | 1 KW | 4000-8000 | Lt. Green |
| L-3507 [1] | Magnetron | 6725 | 110 W | 6175-7275 | Gold |
| L-3507A | Magnetron | 6725 | 110 W, 800 W | 6175-7275 | Gray |
| L-3468 [1] | Magnetron | 6725 | 300 W | 6175-7275 | Gold |
| L-3468A | Magnetron | 6725 | 300 W, 1.5 KW | 6175-7275 | Gray |
| L-2357-04 | TWT | 7200 | 40 mW | 4800-9600 | Lt. Green* |
| L-2335-16 | TWT | 7200 | 1 W | 4800-9600 | Lt. Green* |
| L-2335 | TWT | 7500 | 2 W | 5000-10,000 | Lt. Green* |
| L-2357 | TWT | 7500 | 50 mW | 5000-10,000 | Lt. Green* |
| L-5437-01 | TWT | 7500 | 10 W | 5000-10,000 | Lt. Green |
| L-3508 [1] | Magnetron | 8025 | 110 W | 7275-8775 | Gold |
| L-3508A | Magnetron | 8025 | 110 W, 800 W | 7275-8775 | Gray |
| L-3462 [1] | Magnetron | 8025 | 300 W | 7275-8775 | Gold |
| L-3462A | Magnetron | 8025 | 300 W, 1.5 KW | 7275-8775 | Gray |
| L-3957 [1] | TWT | 8050 | 2.0 W | 5400-10,700 | Lt. Green |
| L-3972 [2] | TWT | 8050 | 1.0 W | 5400-10,700 | Lt. Green |
| L-5154 | TWT | 8500 | 5 W | 7000-10,000 | Lt. Green |
| L-3820 | Magnetron | 8500 | 10 W | 8200-8800 | Gray |
| L-3039A | Magnetron | 8757 | 225 KW | 8757 ± 25 | Gray |
| L-3089B | Magnetron | 8800 | 40 W | 8800 ± 25 | Gray |
| L-3039D | Magnetron | 8800 | 225 KW | 8800 ± 20 | Gray |
| L-3039E | Magnetron | 8860 | 225 KW | 8860 ± 20 | Gray |
| L-3039F | Magnetron | 8920 | 225 KW | 8920 ± 20 | Gray |
| L-4310 | Magnetron | 8950 | 200 KW | 8500-9400 | Gray |
| L-3039G | Magnetron | 8980 | 225 KW | 8980 ± 20 | Gray |
| L-2337 | TWT | 9000 | 10 mW | 7000-11,000 | Lt. Green* |
| L-2338 | TWT | 9000 | 2 W | 7000-11,000 | Lt. Green* |
| L-2782 | TWTA | 9000 | 10 mW | 7000-11,000 | Lt. Green* |
| L-2785 | TWTA | 9000 | 2 W | 7000-11,000 | Lt. Green* |
| L-3611 [1] | TWT | 9000 | 20 mW | 7000-11,000 | Lt. Green |
| L-3998 [1] | TWT | 9000 | 2.0 W | 7000-11,000 | Lt. Green |
| L-3928 [2] | TWT | 9000 | 10 W | 7000-11,000 | Lt. Green |
| L-5043 [1] | TWT | 9000 | 10 W | 7000-11,000 | Lt. Green |
| L-3314 | Magnetron | 9000 | 100 W | 9000 ± 30 | Gray |
| L-5157 | TWT | 9000 | 100 W | 7000-11,000 | Lt. Green |
| L-5318 | M-BWO | 9000 | 100 W | 8500-9500 | Pink |
| L-5089 [3] | TWT | 9000 | 1000 W | 7000-11,000 | Lt. Green |
| L-5126 [2] | TWT | 9000 | 1000 W | 7000-11,000 | Lt. Green |
| L-3030B | Magnetron | 9000 | 300 KW | 9000 ± 30 | Gray |
| L-3212 | Magnetron | 9010 | 120 W | 9000-9020 | Gray |
| L-3039H | Magnetron | 9040 | 225 KW | 9040 ± 20 | Gray |
| L-3103 | Magnetron | 9050 | 30 KW | 8500-9600 | Gray |
| 6543A | Magnetron | 9050 | 65 KW | 8500-9600 | Gray |
| L-3106 | Magnetron | 9050 | 65 KW | 8500-9600 | Gray |
| 8945 | Magnetron | 9050 | 200 KW | 8700-9400 | Gray |
| L-4469/8855 | Magnetron | 9050 | 200 KW | 8500-9600 | Gray |
| L-4193A/7008 | Magnetron | 9050 | 200 KW | 8500-9600 | Gray |
| L-4502 | Magnetron | 9050 | 200 KW | 8700-9400 | Gray |
| 7111 [1] | Magnetron | 9050 | 200 KW | 8500-9600 | Gray |
| 7950 | Magnetron | 9050 | 208 KW | 8500-9600 | Gray |
| 5780 | Magnetron | 9050 | 250 KW | 8500-9600 | Gray |
| L-4575 [1] | Magnetron | 9050 | 200 KW | 8500-9600 | Gray |
| L-4590/8945 | Magnetron | 9050 | 200 KW | 8700-9400 | Gray |
| L-4593 | Magnetron | 9050 | 350 KW | 8500-9600 | Gray |
| L-5273 | Magnetron | 9050 | 95 KW | 8500-9600 | Gray |
| L-3213 | Magnetron | 9060 | 120 W | 9050-9070 | Gray |
| L-3039 I | Magnetron | 9100 | 225 KW | 9100 ± 20 | Gray |
| L-5391-01 | TWT | 9100 | 100 KW | 9000-9200 | Lt. Green* |
| L-3214 | Magnetron | 9110 | 120 W | 9100-9120 | Gray |
| L-3381 | Magnetron | 9150 | 3.0 KW | 8800-9500 | Gray |
| L-3218 | Magnetron | 9160 | 120 W | 9150-9170 | Gray |
| L-3039J | Magnetron | 9160 | 225 KW | 9160 ± 20 | Gray |
| L-3226 | Magnetron | 9190 | 120 W | 9180-9200 | Gray |
| L-5252 | TWT | 9200 | 12 KW | 8900-9500 | Lt. Green* |
| L-3030C | Magnetron | 9200 | 300 KW | 9200 ± 30 | Gray |

*Sheets are White, but included in Green TWT Section.



# PULSE MAGNETRONS

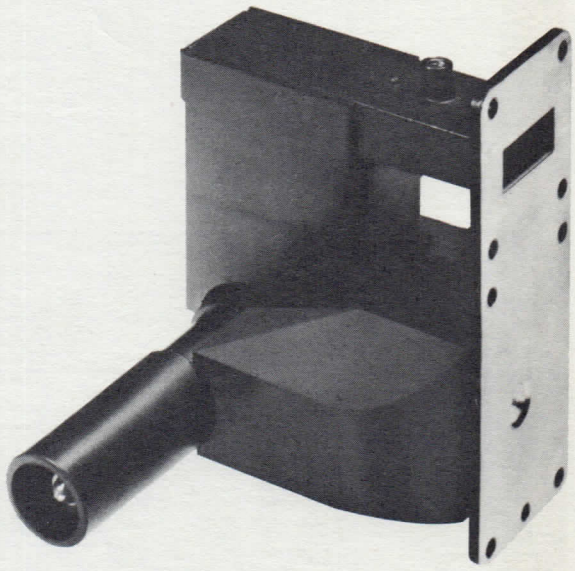


# PULSE MAGNETRON

# 2J42

7.0 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ±30 Mc

This low-power X-band magnetron provides reliable, low-cost service in surface search, navigation and surveillance radar systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current (Standby) | 0.5 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 5.0 to 5.5 kVdc |
| Pulse Current | 4.5 A |
| Rate of Rise Voltage | Max. 75 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.0 a |
| Pulse Length | 2.5 us |
| Pulse Voltage | 6.0 kv |
| Pulse Current | 5.5 a |
| Average Input Power | 82.5 W |
| Duty Cycle | 0.0025 |
| Anode Temperature | 120° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

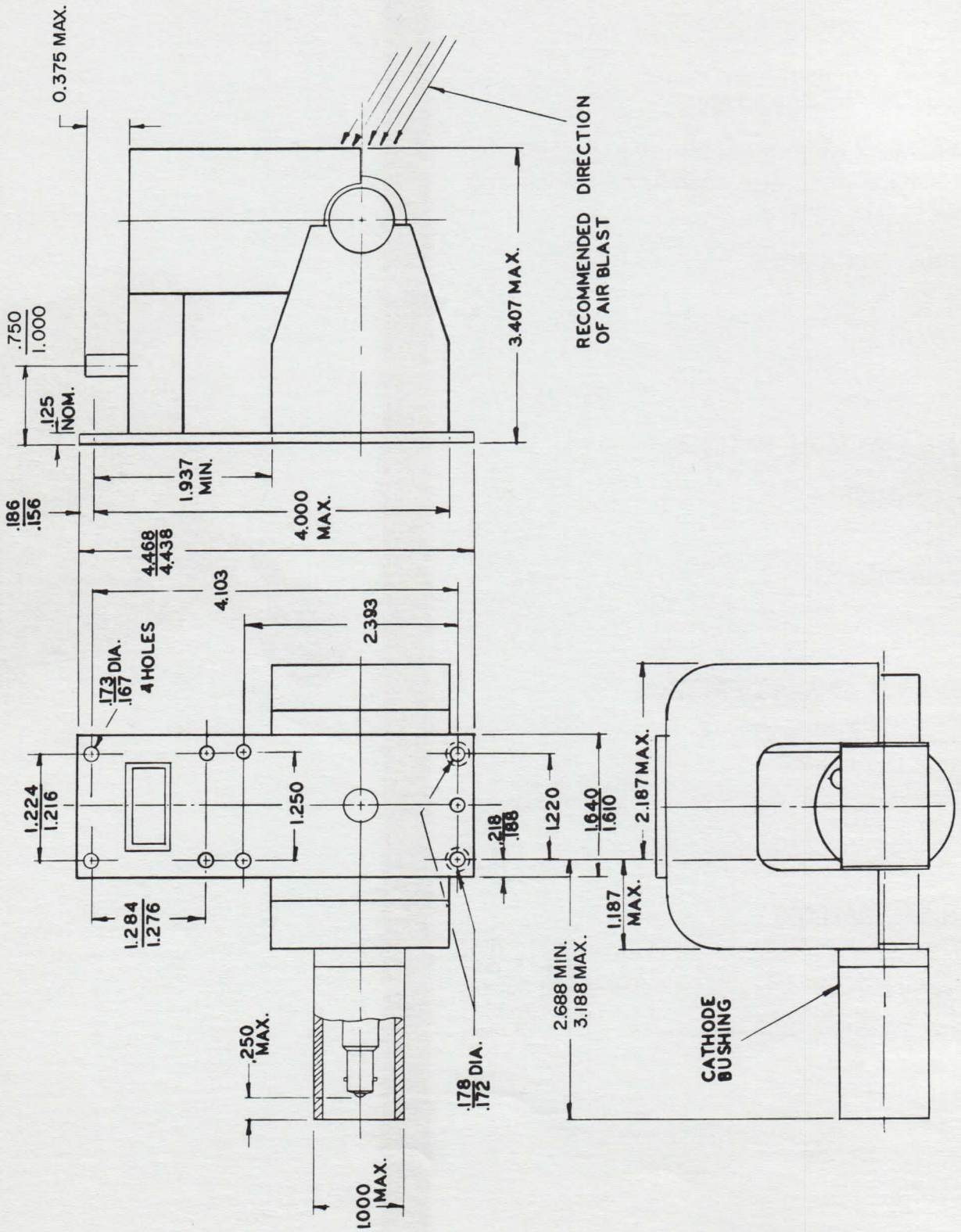
| | |
|---|---|
| Peak Power | Min. 7.0 kW |
| Fixed Frequency | 9375 ± 30 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 15 Mc |
| Missing Pulses | Max. 0.25 Percent |
| Anode Temperature Coefficient | Max. 250 kc/° C |
| Shock (11 ms) | 50 G |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3 lbs. |
| Mating Mounting Flange | UG-40A/U (mod.) |
| Anode Cooling | Convection |
| Input/Output Pressurization | Max. 45 psia |

# PULSE MAGNETRON

# 2J42



# PULSE MAGNETRON

# 2J42H



7.0 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 30 MHz

The 2J42H is similar to the type 2J42 but has pressurized waveguide to permit high altitude operation. It is ideally suited for airborne search and range radar systems.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current (Standby) | 0.5 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 5.0 to 5.55 kv |
| Pulse Current | 4.5 a |
| Rate of Rise Voltage | Max. 75 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.0 A |
| Pulse Length | 2.5 us |
| Pulse Voltage | 6.0 kv |
| Pulse Current | 5.5 a |
| Average Input Power | 82.5 W |
| Duty Cycle | 0.002 |
| Anode Temperature | 120° C |
| VSWR | 1.5:1 Ratio |
| Operating Altitude | Max. 60,000 ft. |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 7.0 kw |
| Fixed Frequency | 9375 ± 30 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 20 MHz |
| Missing Pulses | Max. 0.25 Percent |
| Anode Temperature Coefficient | Max. 250 kHz/° C |
| Shock (11 ms) | 50 G |
| Vibration (50-500 cps) | 5.0 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.0 lbs. |
| Mating Mounting Flange | UG-40A/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |

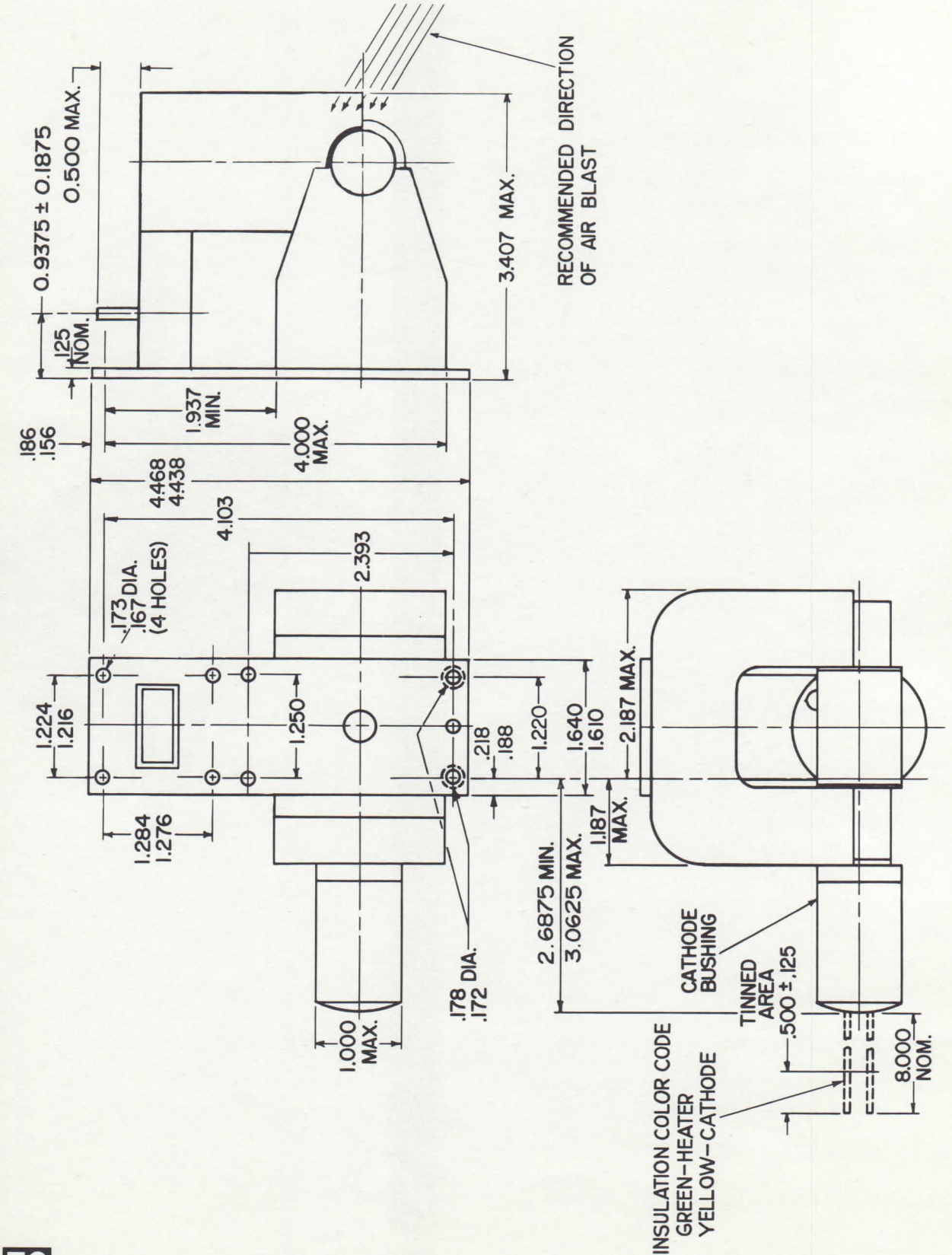
Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

PULSE MAGNETRON

# 2J42H

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.





Litton **ELECTRON TUBE DIVISION**
1035 Westminster Drive, Williamsport, Pennsylvania 17701, (717) 326-3561

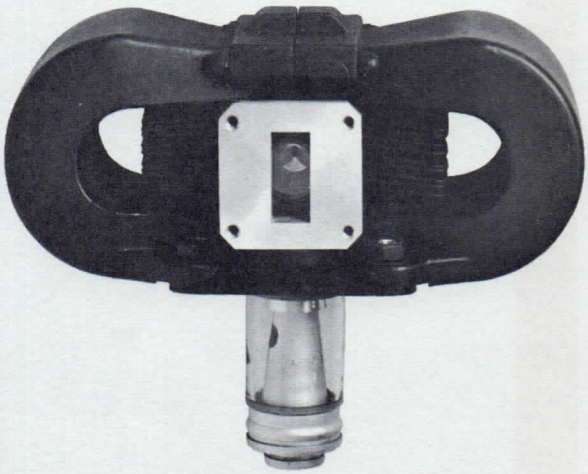
PULSE MAGNETRON

# 4J50A

225 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 30 mcs

This highly reliable, fixed frequency pulse magnetron has extremely rigid electrical specifications. This tube is recommended for any application where power levels of 250 kW nominal are required. Because of its excellent performance and compactness, the 4J50A is highly recommended for airborne applications.

For frequency variations of this tube at X-band, refer to the Litton Industries L-3039 series. When severe environmental conditions are required, the L-3039P magnetron is recommended.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 13.75 V |
| Heater Current | 3.2 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 20.0 to 23.0 kv |
| Pulse Current | 27.5 A |
| Rate of Rise of Voltage | Max. 160 kv/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15 V |
| Heater Surge Current | 15 A |
| Pulse Length | 5.0 us |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 165° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 600 mmHg |

## PERFORMANCE CHARACTERISTICS

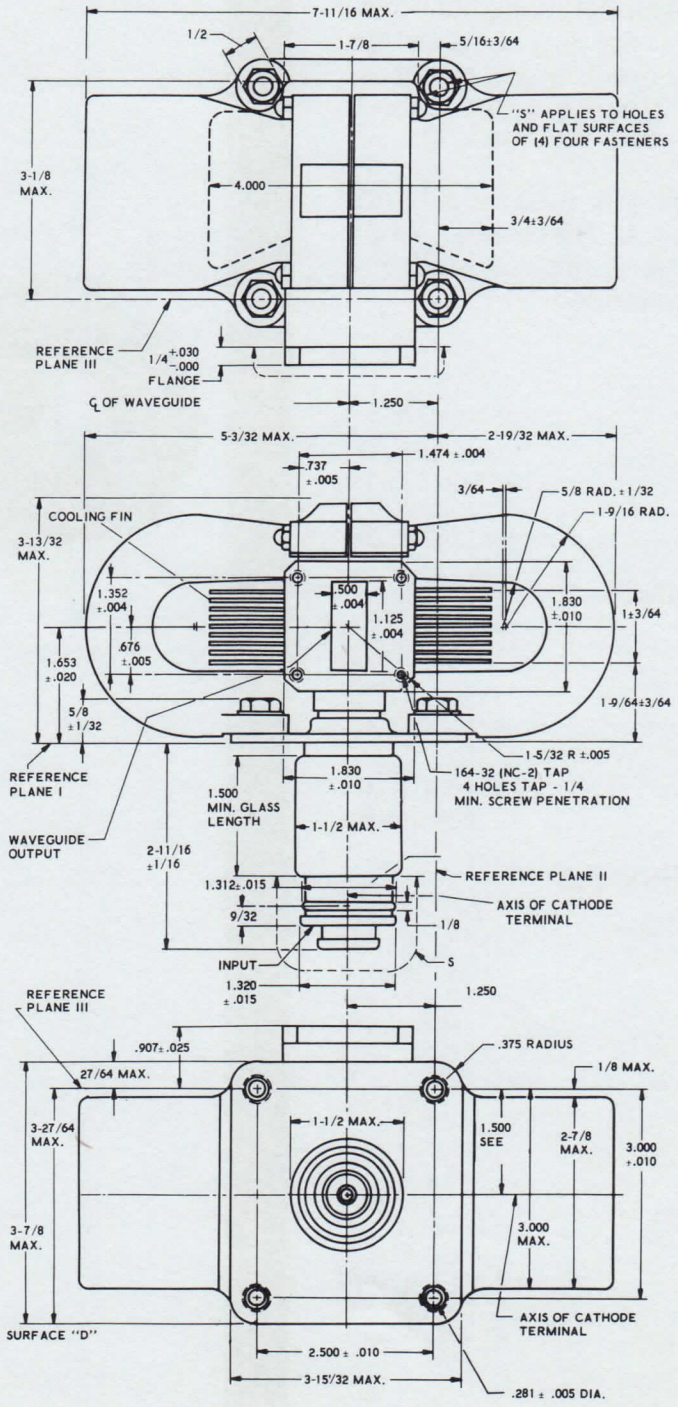
| | |
|---|---|
| Peak Power | Min. 225 kW |
| Fixed Frequency | 9375 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 6 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |
| Rated Cycle Life | 340 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 10 lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# PULSE MAGNETRON

# 4J50A



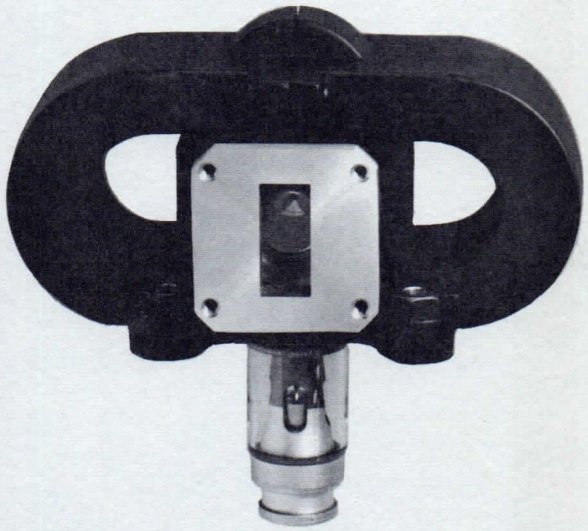
PULSE MAGNETRON

# 4J52A

70 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 30 mcs

This proven fixed frequency pulse magnetron is considered the most reliable magnetron available and has one of the most rigid electrical specifications written for a microwave tube. The 4J52A is recommended for use in all airborne applications where nominal powers of 90 kW are required and in any ground and airborne application, which requires extreme reliability, combined with compactness and high efficiency.

Other versions of this magnetron are available at different center frequencies and with more rugged mechanical characteristics.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.2 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 14 to 16 kv |
| Pulse Current | 15 A |
| Rate of Rise of Voltage | Max. 160 kv/us |
| Anode Cathode Capacitance | Max. 14 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14 V |
| Heater Surge Current | 10 A |
| Pulse Current | 15 A |
| Pulse Length | 5.0 us |
| Average Input Power | 240 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 500 mmHg |

## PERFORMANCE CHARACTERISTICS

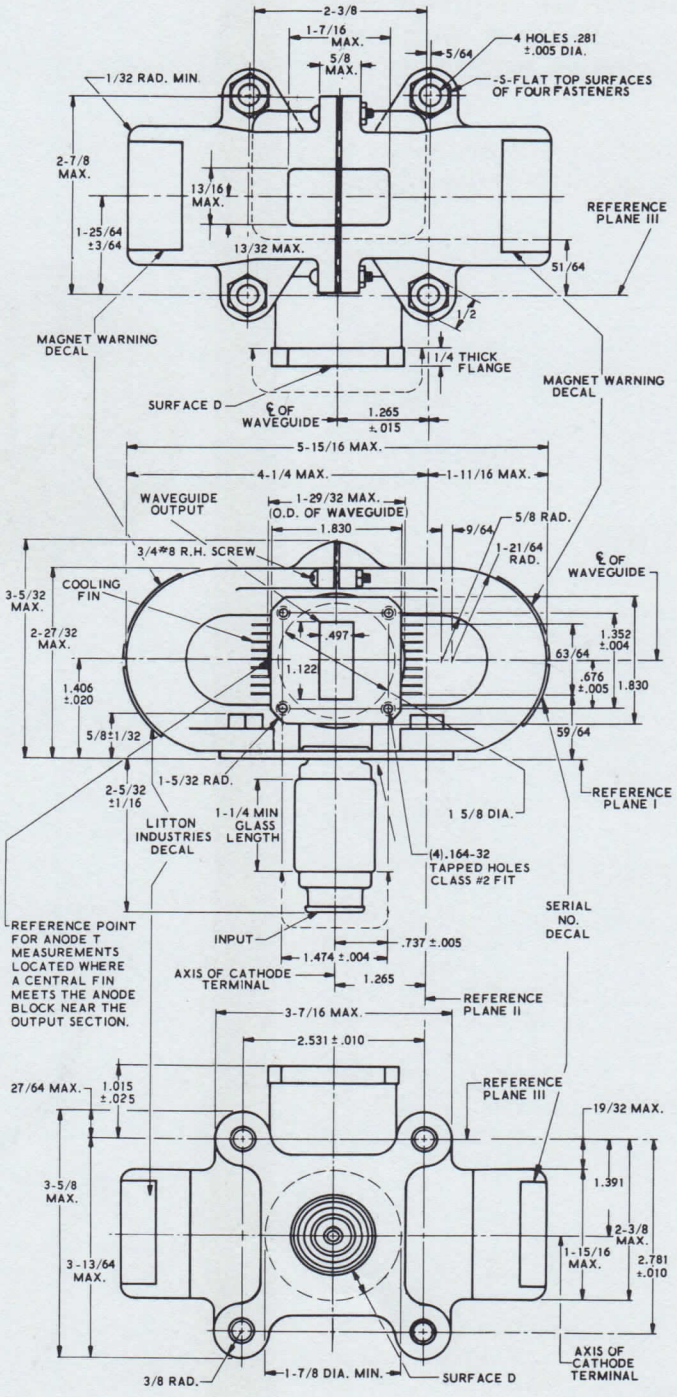
| | |
|---|---|
| Peak Power | Min. 70 kW |
| Fixed Frequency | 9375 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 13 mcs |
| Pushing Figure (± 10% lb) | Max. 0.5 mcs/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/° C |
| Vibration (50 to 500 cps) | 10 G |
| Shock (4 m s) | 50 G |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Approx. 6 lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# PULSE MAGNETRON

# 4J52A

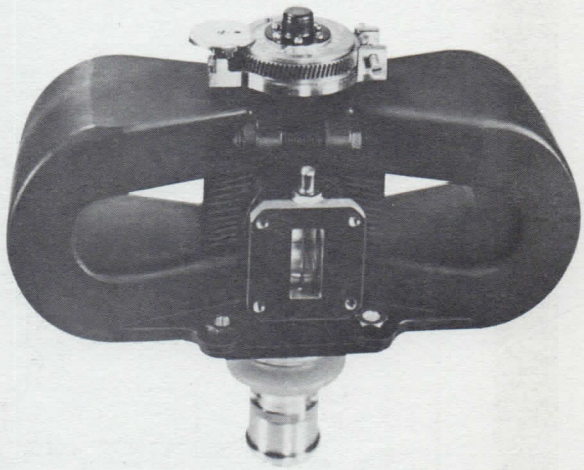


# PULSE MAGNETRON

# 5780

250 Kilowatts Minimum Peak Power
Tunable Frequency 8500 to 9600 Mc

This high-power, servo-tuned magnetron provides long life and reliability for gun and missile fire control, and tracking radar systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 20.0 V |
| Heater Current (Standby) | 4.0 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 32 to 34 kVdc |
| Pulse Current | 32 A |
| Rate of Rise of Voltage | Max. 200 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 22.0 V |
| Heater Surge Current | 16.0 a |
| Pulse Length | 0.3 us |
| Pulse Voltage | 38.0 kv |
| Pulse Current | 36.0 a |
| Average Input Power | 600 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 100° C |
| Cathode Temperature | 300° C |
| VSWR | 2.0:1 Ratio |

## PERFORMANCE CHARACTERISTICS

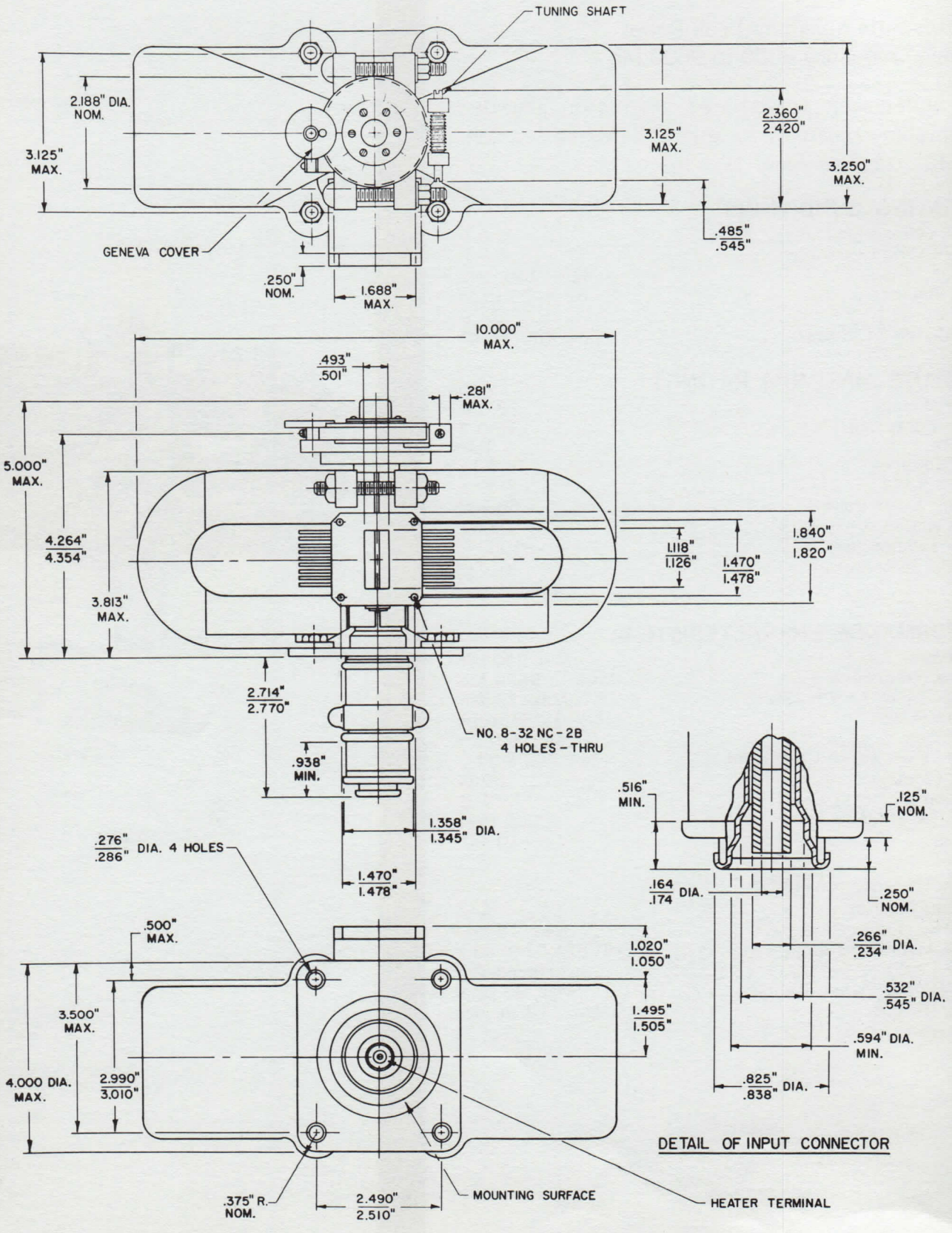
| | |
|---|---|
| Peak Power | Min. 250 kW |
| Tunable Frequency | 8500 to 9600 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 12 Mc |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 6.0 db |
| Anode Temperature Coefficient | Max. 400 kc/°C |
| Shock (4 ms) | 50 G |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 1200 Hrs. |
| Backlash | Max. 10 Mc |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 lbs. |
| Mating Mounting Flange | UG-52A/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 30 psia |
| Tuning Torque | Max. 12 in. oz. |

# PULSE MAGNETRON

# 5780



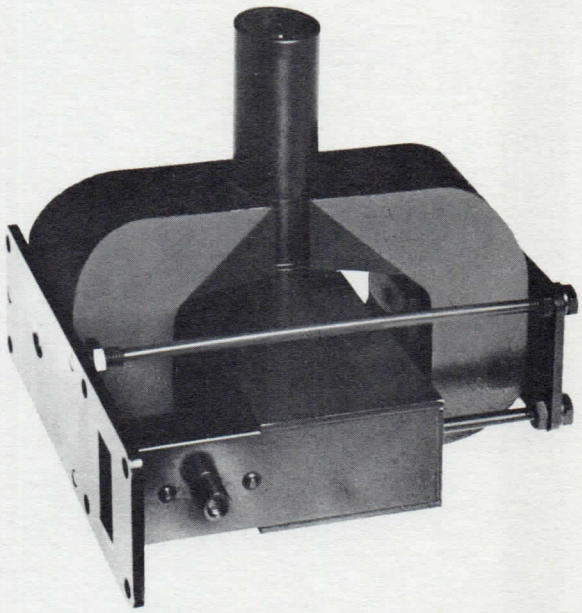

DETAIL OF INPUT CONNECTOR

# PULSE MAGNETRON

# 6027

18 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ±30 Mc

This low-power X-band pulsed magnetron provides reliable performance in military and commercial marine radar systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current (Standby) | 0.5 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 6.4 to 7.4 kVdc |
| Pulse Current | 3.5 A |
| Rate of Rise of Voltage | Max. 60 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.3 ±10% V |
| Heater Surge Current | 0.6 a |
| Pulse Length | 2.5 us |
| Pulse Voltage | 8.0 kv |
| Pulse Current | 8.0 a |
| Average Input Power | 80 W |
| Duty Cycle | 0.0025 |
| Anode Temperature | 120° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

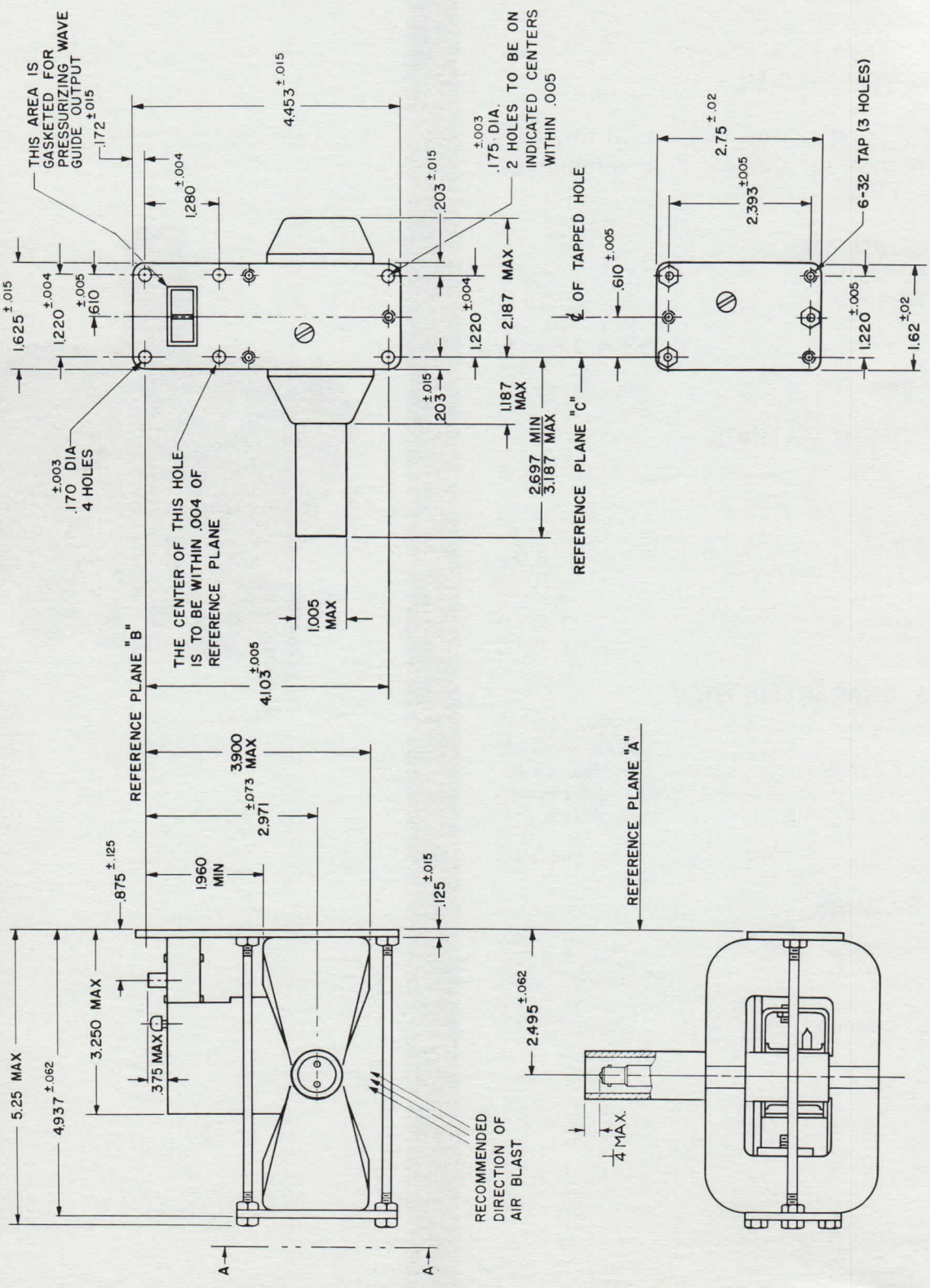
| | |
|---|---|
| Peak Power | Min. 18 kW |
| Fixed Frequency | 9375 ±30 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 15 Mc |
| Missing Pulses | Max. 0.25 Percent |
| Anode Temperature Coefficient | Max. 250 kc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 5.0 lbs. |
| Mating Mounting Flange | UG-40A/U (mod.) |
| Anode Cooling | Convection |
| Input/Output Pressurization | Max. 45 psia |

# PULSE MAGNETRON

# 6027



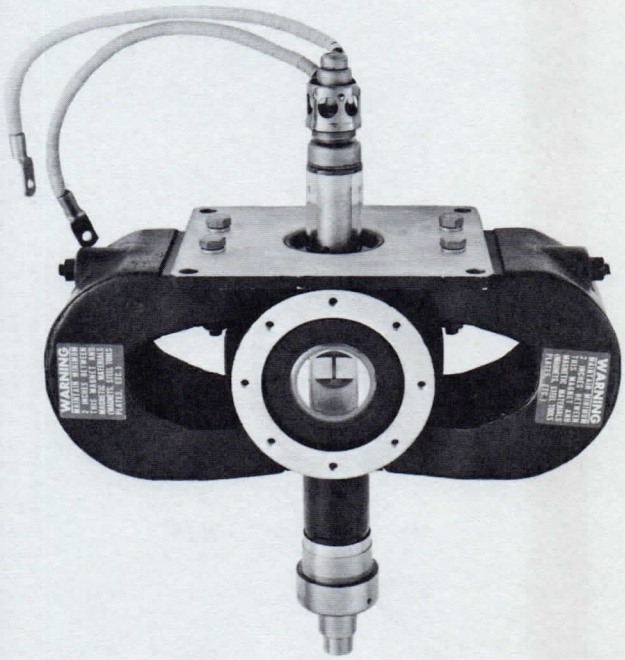

PARTIAL VIEW A-A

# PULSE MAGNETRON

# 6344A

175 Kilowatts Minimum Peak Power
Tunable Frequency 5450 to 5825 mcs

This proven, long life, tunable pulse magnetron at C-band has recorded operational and field life in excess of 2500 rf hours. All Litton Industries' tubes are constructed using the exclusive high temperature bakeout decontaminating process which increases in-service life, improves reliability and stability and eliminates the necessity of aging-in the tube prior to its operation after a lengthy time on the shelf.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 13.5 V |
| Heater Current | 2.5 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 20.0 to 23.0 kVdc |
| Pulse Current | 22.0 A |
| Rate of Rise of Voltage | Max. 160 kv/us |
| Anode Cathode Capacitance | Max. 25.0 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15.5 V |
| Heater Surge Current | 10 A |
| Pulse Voltage | 24.0 kv |
| Pulse Current | 30 A |
| Pulse Length | 2.5 us |
| Average Input Power | 720 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

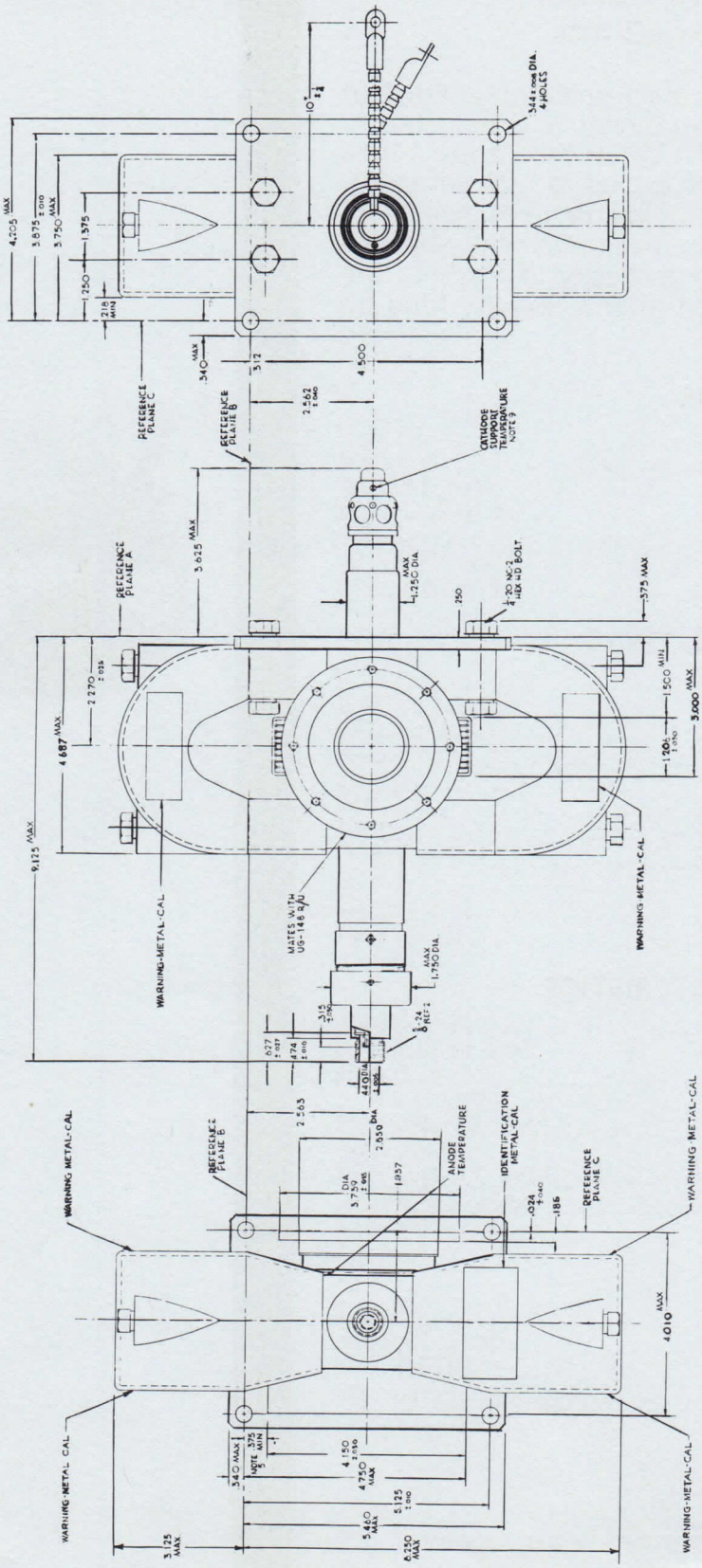
| | |
|---|---|
| Peak Power | Min. 175 kW |
| Tunable Frequency | 5450 to 5825 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Pushing Figure (± 10% Ib) | Max. 2.0 mcs |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |
| Rated Cycle Life | 1200 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 25.0 lbs. |
| Mating Waveguide Flange | UG-148 B/U |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# 6344A



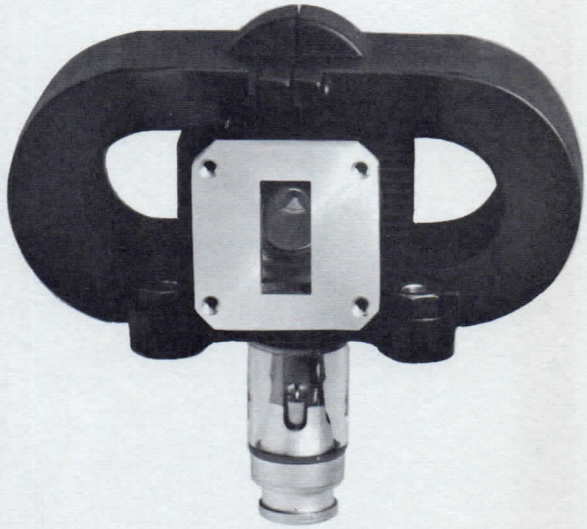

LITTON INDUSTRIES • ELECTRON TUBE DIVISION • SAN CARLOS, CALIFORNIA

# PULSE MAGNETRON

# 6510

70 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 30 mcs

This compact, highly efficient, fixed frequency, pulse magnetron is a version of the Litton Industries type 4J52A built for systems requiring low jitter performance. It has been designed and tested for those characteristics necessary in moving target indicator type radars. The design is such that it is possible to achieve 30 db cancellation ratios in a non-coherent moving target indicator radar.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.2 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 14 to 16 kv |
| Pulse Current | 15 A |
| Rate of Rise of Voltage | Max. 160 kv/us |
| Anode Cathode Capacitance | Max. 14 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14 V |
| Heater Surge Current | 10 A |
| Pulse Length | 5.0 us |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 500 mmHg |

## PERFORMANCE CHARACTERISTICS

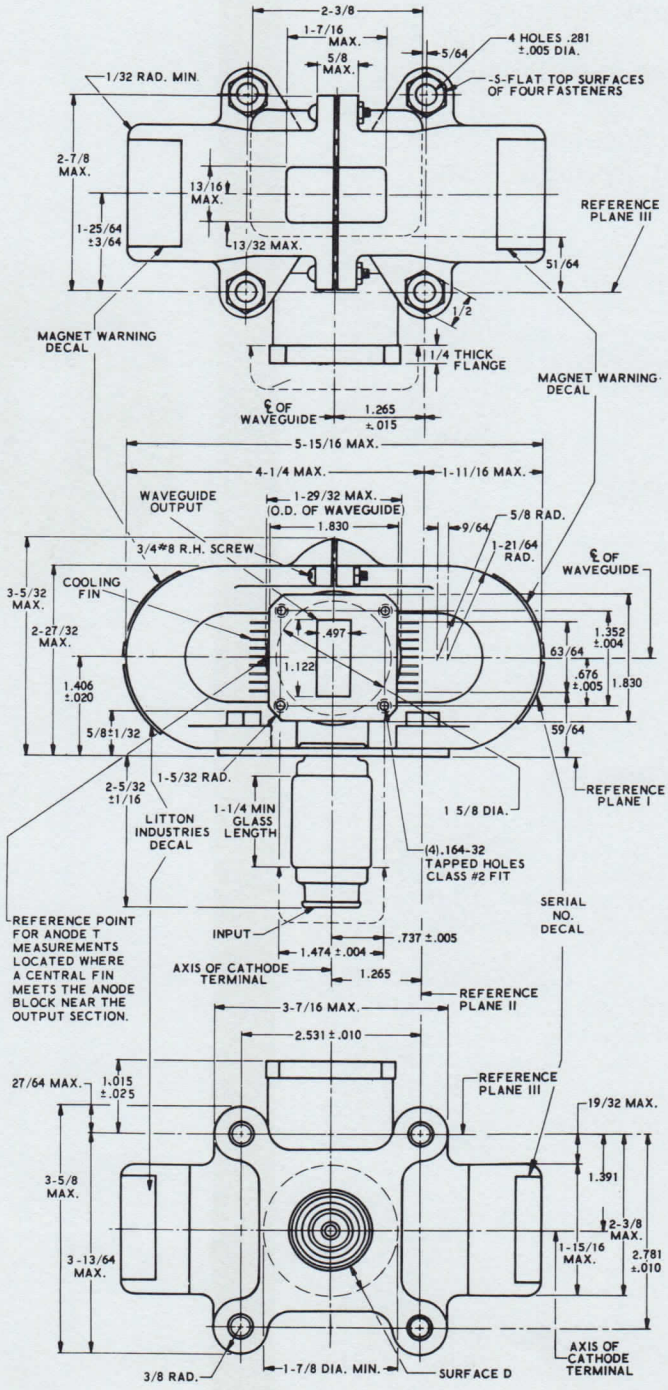
| | |
|---|---|
| Peak Power | Min. 70 kW |
| Fixed Frequency | 9375 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 13 mcs |
| Pushing Figure (± 10% lb) | Max. 0.5 mcs/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. .25 mc/°C |
| Vibration (50 to 500 cps) | 10 G |
| Rated Cycle Life | 300 hrs. |
| Time jitter | 1.5 mu sec. |
| Frequency jitter | 55 kc |
| Ampititude jitter | 0.05 db |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 6 lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced Air |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# PULSE MAGNETRON

# 6510



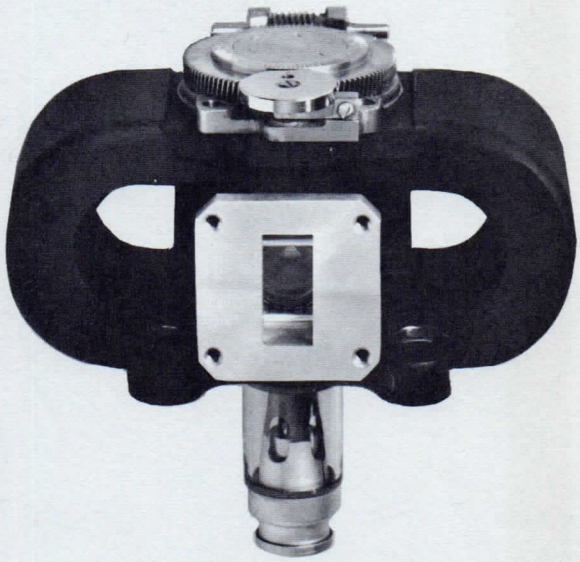
# PULSE MAGNETRON

# 6543A

65 Kilowatts Minimum Peak Power
Tunable Frequency 8500 to 9600 mcs

The 6543 and the 6543A tunable pulse magnetrons are recommended in all new systems requiring a nominal power output of 80 kW and where tunability is a prime requisite. Extensive life testing demonstrates that these tubes are among the most reliable magnetrons available today.

The LT-6543A magnetron is selected for low frequency and time jitter characteristics and is recommended for use in those systems where tunable moving target indicator performance is required.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.2 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 13.5 to 16.5 kVdc |
| Pulse Current | 15 A |
| Rate of Rise of Voltage | Max. 160 kv/us |
| Anode Cathode Capacitance | Max. 12 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 13.7 V |
| Heater Surge Current | 10 A |
| Pulse Current | 18 A |
| Pulse Length | 5.0 us |
| Average Input Power | 350 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 552 mmHg |

## PERFORMANCE CHARACTERISTICS

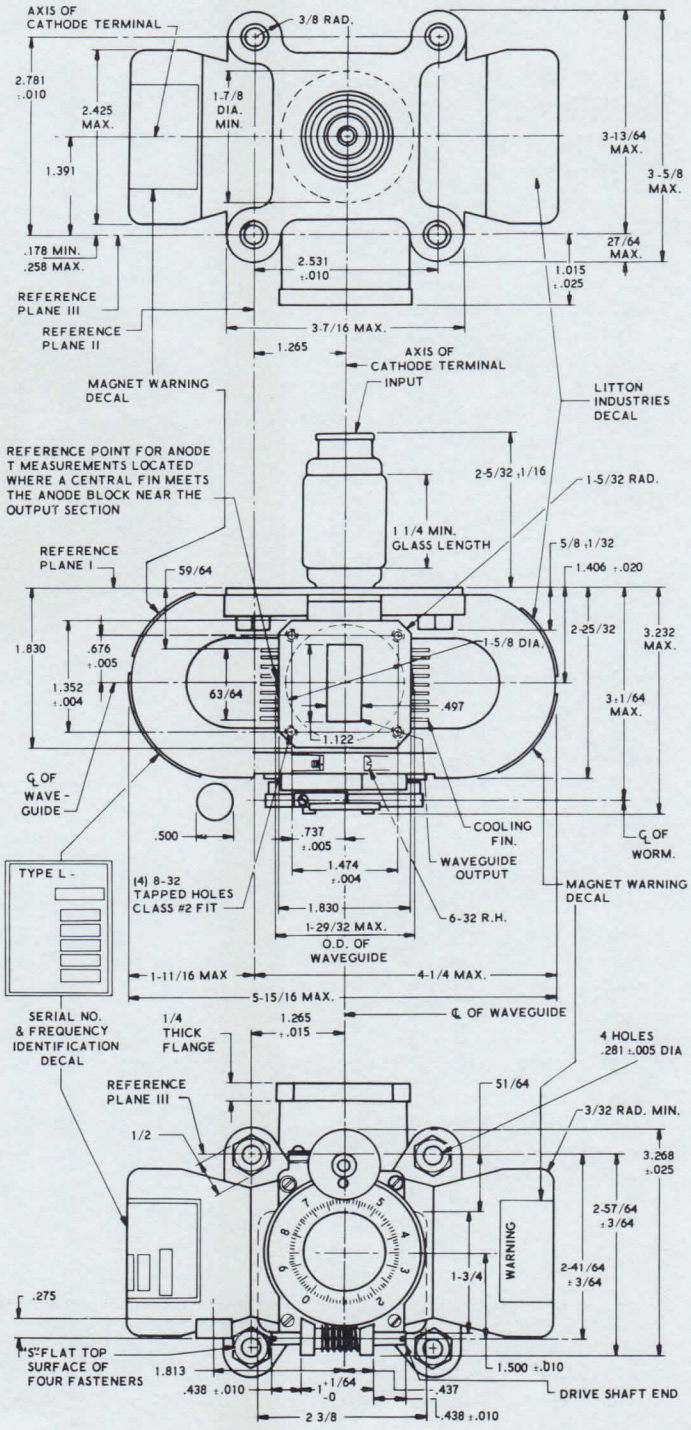
| | |
|---|---|
| Peak Power | Min. 65 kW |
| Tunable Frequency | 8500 to 9600 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Missing Pulses | Max. 1 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |
| Vibration (5 to 500 cps) | 0.01 Da or 5 G |
| Shock (11 m s) | 15 G |
| Rated Cycle Life | 400 hrs. |
| 6543A Only—Frequency Jitter | Max. 60 kc |
| Time Jitter | Max. 1.4 mus |
| Amplitude Jitter | Max. 0.02 db |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | 6 1/8 lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced Air |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# PULSE MAGNETRON

# 6543A

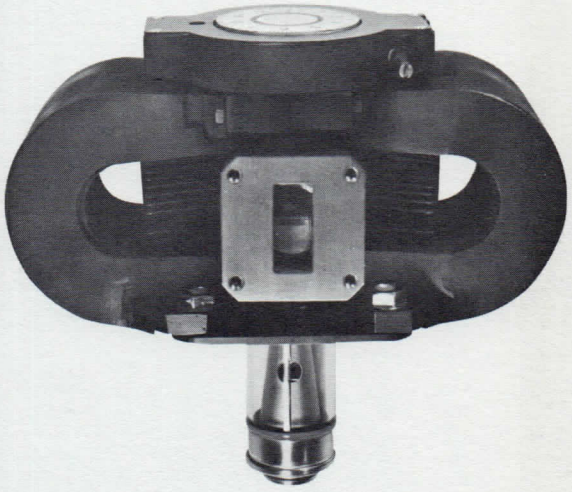


# PULSE MAGNETRON

# 7006

190 Kilowatts Minimum Peak Power
Tunable Frequency 9000 to 9600 Mc

This rugged, high-power magnetron has proven exceptional reliability and long life in ground and airborne multi-purpose radar installations.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 13.75 V |
| Heater Current (Standby) | 3.2 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 19 to 23 kv |
| Pulse Current | 27.5 a |
| Rate of Rise of Voltage | Max. 225 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15.0 V |
| Heater Surge Current | 12.0 a |
| Pulse Length | 2.75 us |
| Pulse Voltage | 23.0 kv |
| Pulse Current | 30.0 a |
| Average Input Power | 690 W |
| Duty Cycle | 0.0013 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

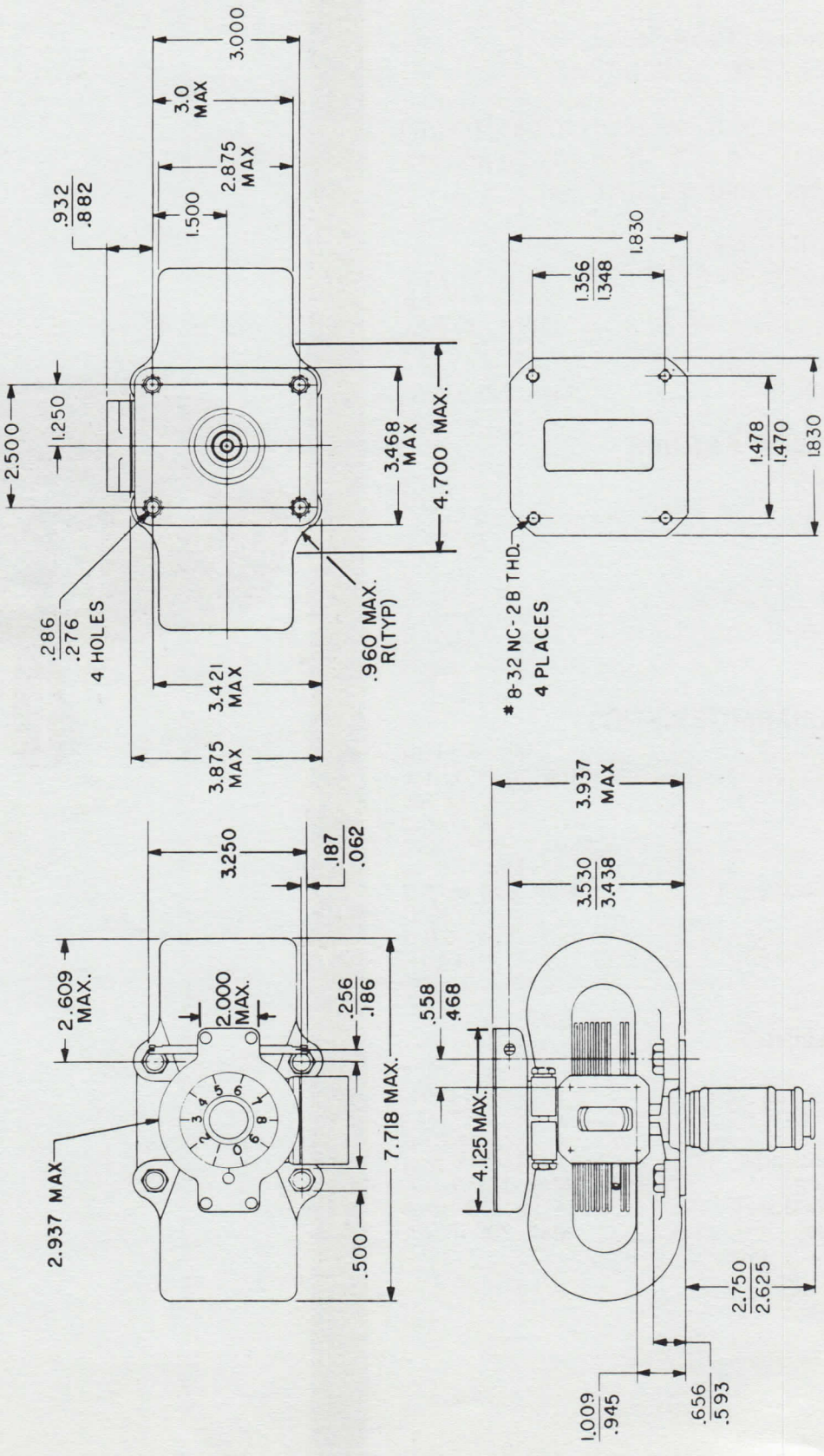
| | |
|---|---|
| Peak Power | Min. 190 kw |
| Tunable Frequency | 9000 to 9600 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 15 Mc |
| Pushing Figure | Max. 0.5 Mc/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 7.0 db |
| Anode Temperature Coefficient | Max. 250 kc/° C |
| Shock (11 ms) | 30 G |
| Vibration (5-500 cps) | 5.0 G |
| Rated Cycle Life | 750 Hrs. |
| Backlash | Max. 10 Mc |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 11 lbs. |
| Mating Mounting Flange | UG-52A/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |
| Tuning Torque, running | Max. 100 in. oz. |
| Tuner Shaft Turns (600 Mc) | 124 to 148 turns |
| Tuner Torque at stops | Max. 200 in. oz. |

# PULSE MAGNETRON

# 7006



# PULSE MAGNETRON

# 7111

1

200 Kilowattts Minimum Peak Power
Tunable Frequency 8500 to 9600 Mc

This high-power magnetron, with its broad band tuning capability, is a rugged, reliable type for multi-purpose radar systems where moderate frequency diversity is required. The Litton tube meets electrical and mechanical requirements of all systems using the type 7111.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 13.75 V |
| Heater Current (Standby) | 3.2 A |
| Preheat Time | Min. 150 sec. |
| Pulse Voltage | 20 to 23 kv |
| Pulse Current | 27.5 a |
| Rate of Rise of Voltage | Max. 225 kV/us |

## ABSOLUTE MAXIMUM RATINGS

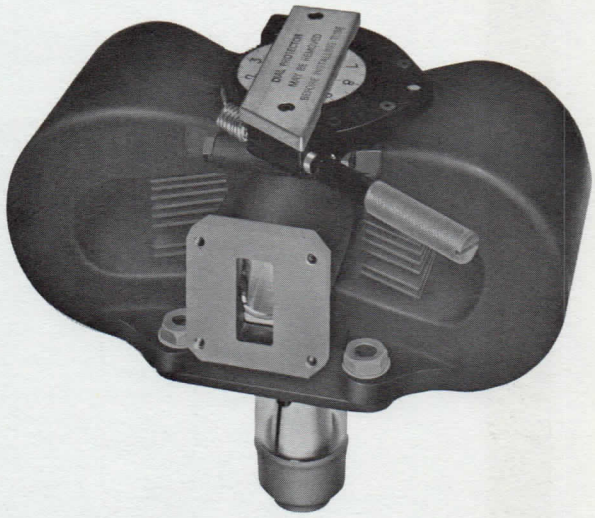
| | |
|---|---|
| Heater Voltage | 15.0 V |
| Heater Surge Current | 12.0 a |
| Pulse Length | 2.75 us |
| Pulse Voltage | 23.0 kv |
| Pulse Current | 27.5 a |
| Average Input Power | 630 W |
| Duty Cycle | 0.0013 |
| Anode Temperature | 150° C |
| Cathode Temperature | 165° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 200 kw |
| Tunable Frequency | 8500 to 9600 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 15 Mc |
| Pushing Figure | Max. 0.5 Mc/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 6.0 db |
| Anode Temperature Coefficient | Max. 250 kc/° C |
| Shock (11 ms) | 30 G |
| Vibration (5-500 cps) | 5.0 G |
| Rated Cycle Life | 800 Hrs. |
| Backlash | Max. 20 Mc |

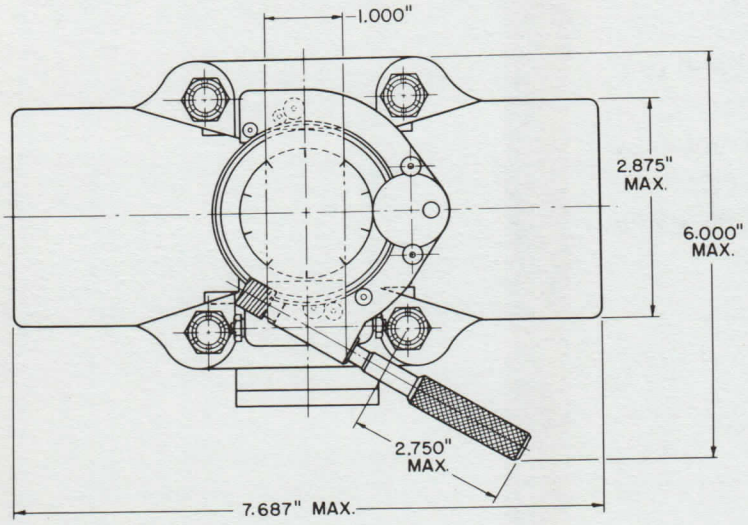
## MECHANICAL RATINGS

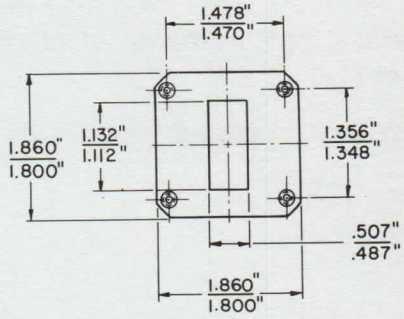
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 10 lbs. |
| Mating Mounting Flange | UG-52A/U (mod.) |
| Anode Cooling | Forced Air, 40 cfm, approx. |
| Input/Output Pressurization | Max. 45 psia |
| Tuning Torque | Max. 150 in. oz. |
| Tuner Shaft Turns (1100 Mc) | 105 to 125 |
| Tuner Torque at stops | Max. 200 in. oz. |



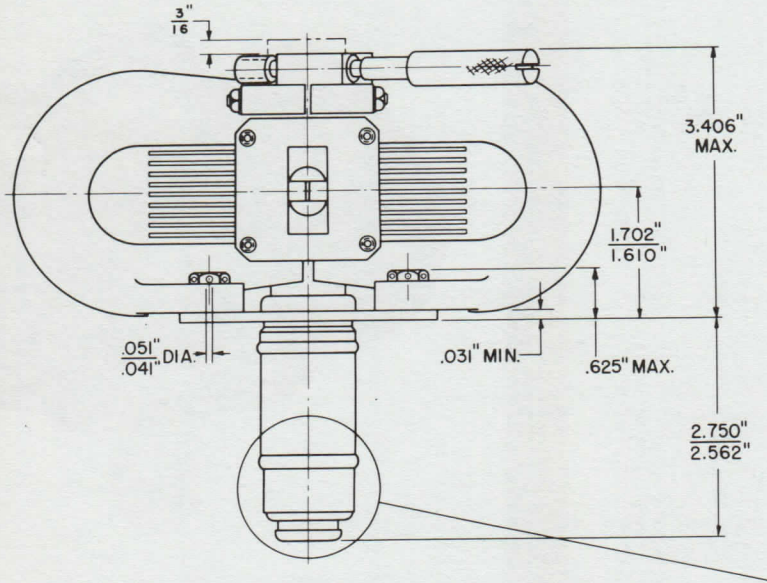
# PULSE MAGNETRON

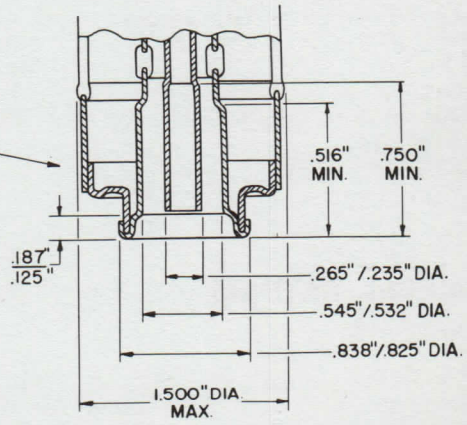
# 7111

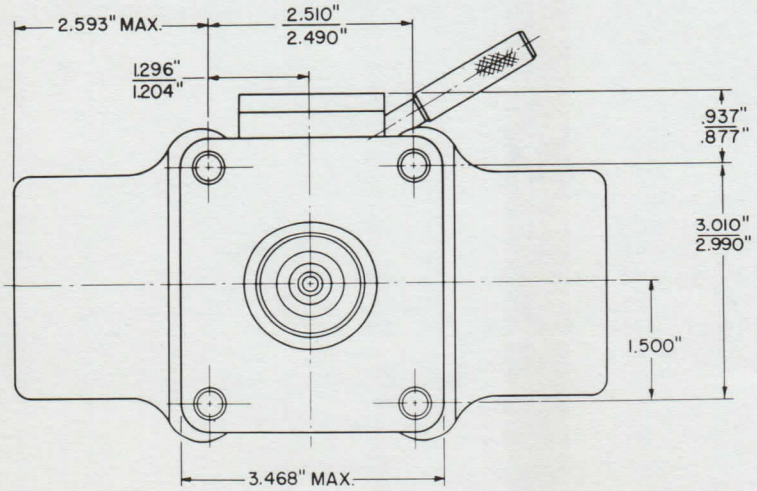



OUTPUT FLANGE



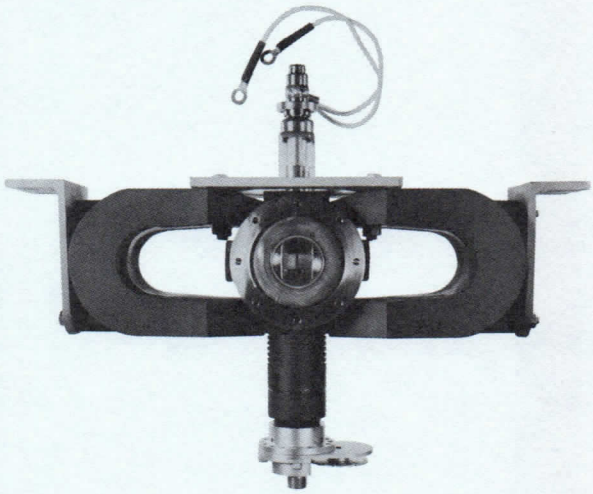
# PULSE MAGNETRON

# 7156A

1

250 Kilowatts Minimum Peak Power
Tunable Frequency 5450 to 5825 MHz

This proven, long life, tunable pulse magnetron at C-band has recorded operational life in excess of 2500 rf hours. All Litton Industries' tubes are constructed using the exclusive high temperature bake-out decontaminating process which increases in-service life, improves reliability and stability and eliminates the necessity of aging-in the tube prior to its operation after a lengthy time on the shelf.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 5.0 V |
| Heater Current | 5.0 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 24.0 to 28.0 kVdc |
| Pulse Current | 24.0 a |
| Rate of Rise of Voltage | Max. 0.1 kv/$\mu$s |
| Anode Cathode Capacitance | Max. 18.0 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.5 V |
| Heater Surge Current | 12 A |
| Pulse Voltage | 28 kv |
| Pulse Current | 30 a |
| Pulse Length | 3.0 $\mu$s |
| Average Input Power | 750 W |
| Duty Cycle | 0.0012 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 250 kw |
| Tunable Frequency | 5450 to 5825 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 15 MHz |
| Pushing Figure ($\pm$ 10% Ib) | Max. 2.0 MHz |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8 dB |
| Bandwidth | Max. 2.0/tpc. MHz |
| Anode Temperature Co-efficient | Max. 0.20 MHz/°C |
| Rated Cycle Life | 1000 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 35 lbs. |
| Mating Waveguide Flange | UG-148 B/U |
| Anode Cooling | Forced Air |
| Output Pressurization | Max. 35 lbs./sq. in. |

Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

# PULSE MAGNETRON

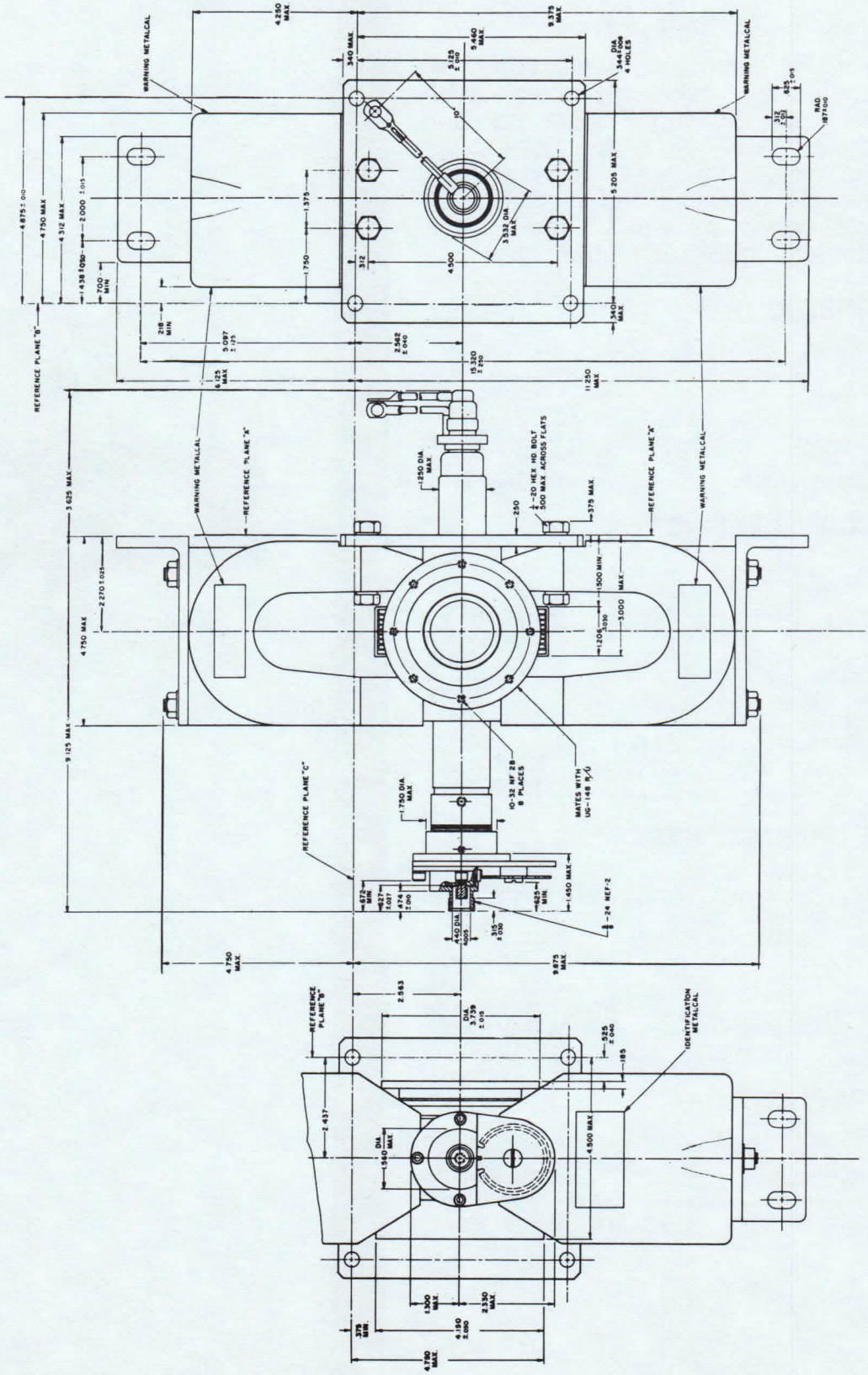
# 7156A

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.





Litton
**ELECTRON TUBE DIVISION**
1035 Westminster Drive, Williamsport, Pennsylvania 17701, (717) 326-3561

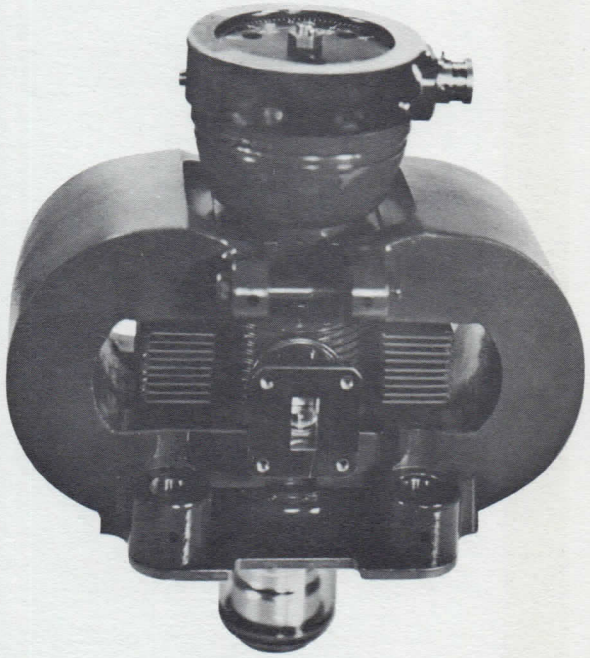

2.5MJA775

# PULSE MAGNETRON

# 7208

100 Kilowatts Minimum Peak Power
Tunable Frequency 15,800 to 17,200 Mc

This high-power Ku-band coaxial magnetron gives reliable performance in multi-purpose airborne systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 12.6 V |
| Heater Current (Standby) | 3.5 A |
| Preheat Time | Min. 270 sec. |
| Pulse Voltage | 16 to 19 kv |
| Pulse Current | 17 a |
| Rate of Rise of Voltage | Max. 120 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 13.9 V |
| Heater Surge Current | 13.6 A |
| Pulse Length | 3.3 us |
| Pulse Voltage | 20.0 kv |
| Pulse Current | 20.0 a |
| Average Input Power | 350 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 300° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

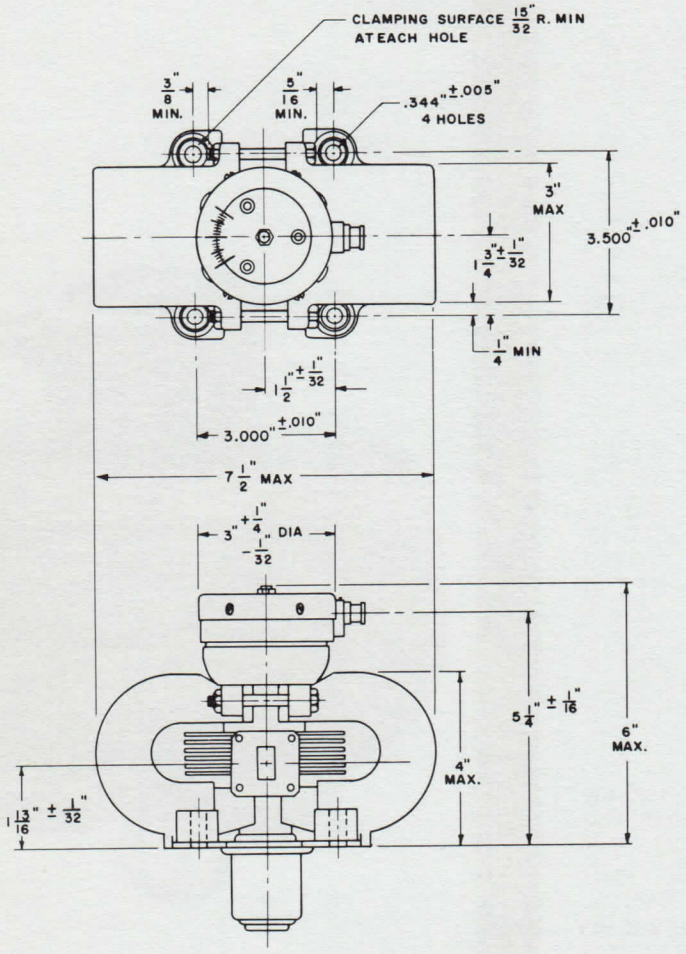
| | |
|---|---|
| Peak Power | Min. 100 kw |
| Tunable Frequency | 15,800 to 17,200 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 8.0 Mc |
| Pushing Figure | Max. 0.15 Mc/amp |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 6.0 db |
| Anode Temperature Coefficient | Max. 500 kc/° C |
| Shock (4 ms) | 50 G |
| Vibration (10-50 cps) | 5.0 G |
| (5-200 cps) | 10 G |
| Rated Cycle Life | 250 Hrs. |
| Backlash | Max. 3.0 Mc |

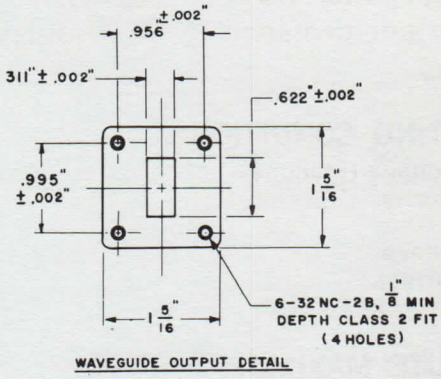
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 14 lbs. |
| Mating Mounting Flange | UG-541/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 60 psia |
| Tuning Torque | Max. 10 in. oz. |
| Tuner Shaft Turns (1400 Mc) | 4.83 to 5.94 turns |

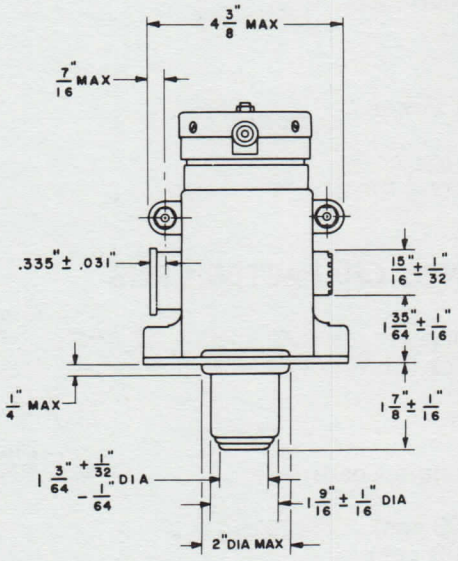
# PULSE MAGNETRON

# 7208

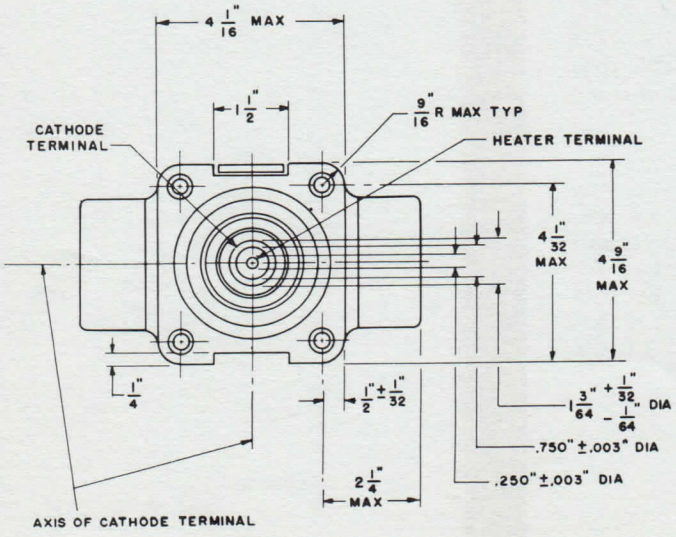


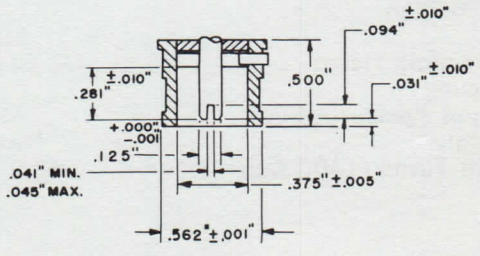




WAVEGUIDE OUTPUT DETAIL




RIGHT SIDE VIEW



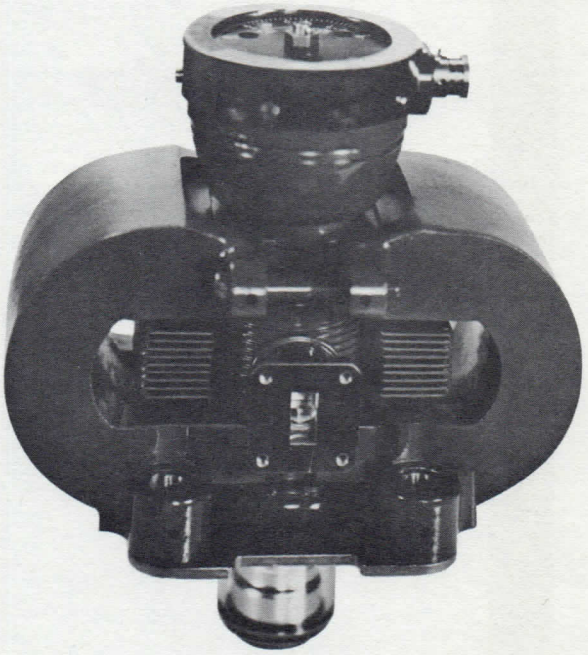

TUNING DRIVE INPUT DETAIL

# PULSE MAGNETRON

# 7208B

125 Kilowatts Minimum Peak Power
Tunable Frequency 15,500 to 17,500 Mc

This reliable Ku-band coaxial magnetron provides a high peak power output over a wide tuning range for multi-purpose airborne systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 12.6 V |
| Heater Current (Standby) | 2.5 A |
| Preheat Time | Min. 270 sec. |
| Pulse Voltage | 16.5 to 18 kv |
| Pulse Current | 19 a |
| Rate of Rise of Voltage | Max. 120 kv/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 13.9 V |
| Heater Surge Current | 13.6 A |
| Pulse Length | 3.3 us |
| Pulse Voltage | 20.0 kv |
| Pulse Current | 20.0 a |
| Average Input Power | 350 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 300° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

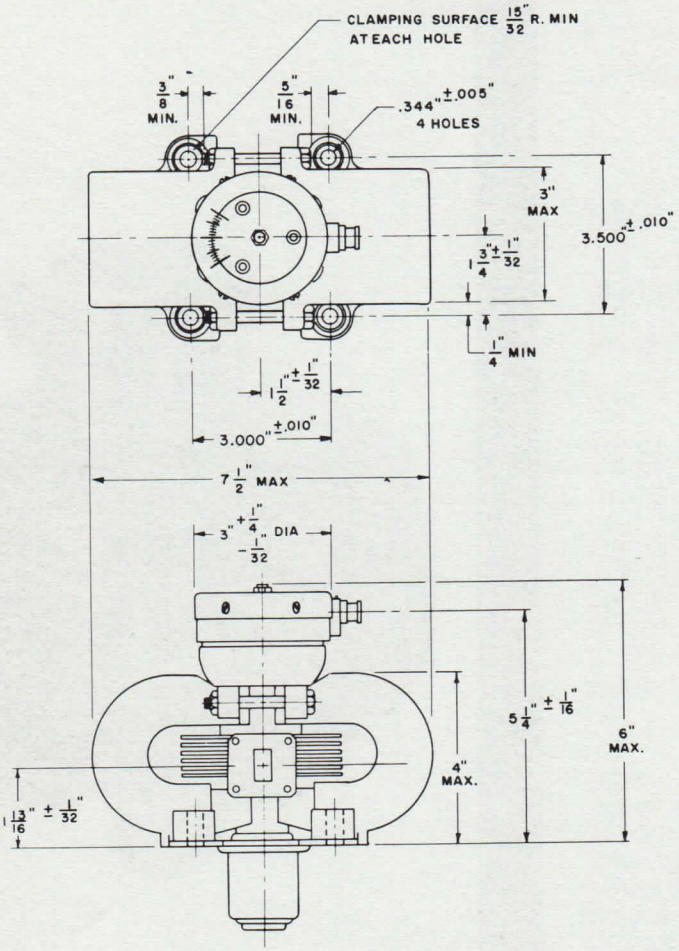
| | |
|---|---|
| Peak Power | Min. 125 kw |
| Tunable Frequency | 15,500 to 17,500 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 8.0 Mc |
| Pushing Figure | Max. 0.15 Mc/amp |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 6.0 db |
| Anode Temperature Coefficient | Max. 500 kc/° C |
| Shock (4 ms) | 50 G |
| Vibration (5-500 cps) | 5.0 G |
| Rated Cycle Life | 500 Hrs. |
| Backlash | Max. 3.0 Mc |
| Thermal Drift | 9.0 Mc |

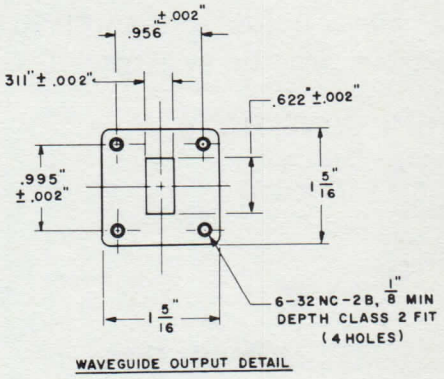
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 14 lbs. |
| Mating Mounting Flange | UG-541/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |
| Tuning Torque | Max. 8.0 in. oz. |
| Tuner Shaft Turns (2000 Mc) | 6.85 to 7.15 |

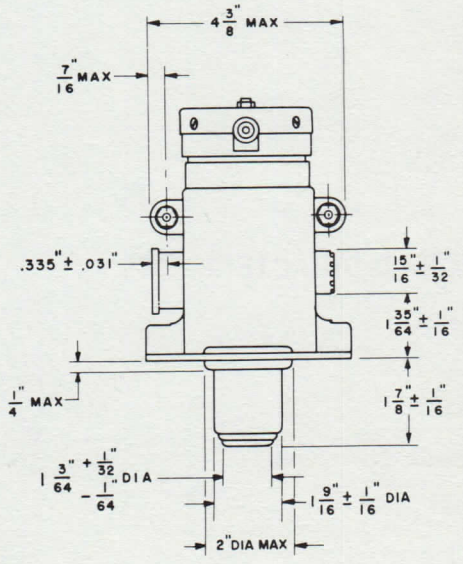
# PULSE MAGNETRON

# 7208B

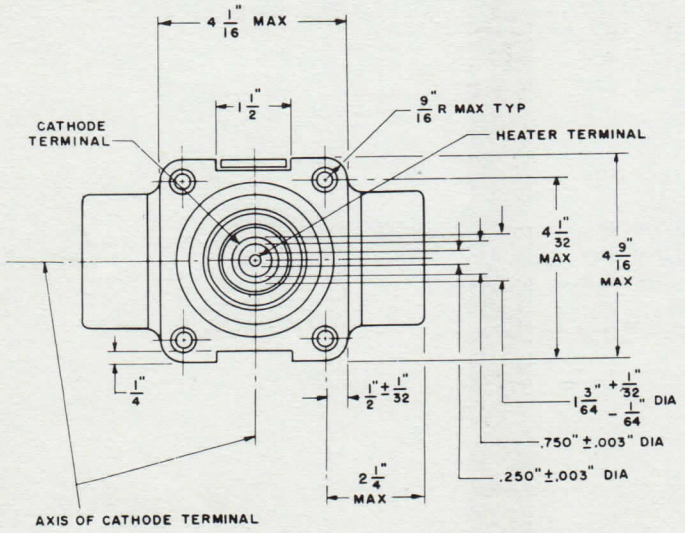


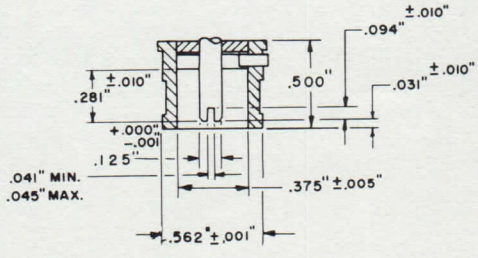




WAVEGUIDE OUTPUT DETAIL




RIGHT SIDE VIEW



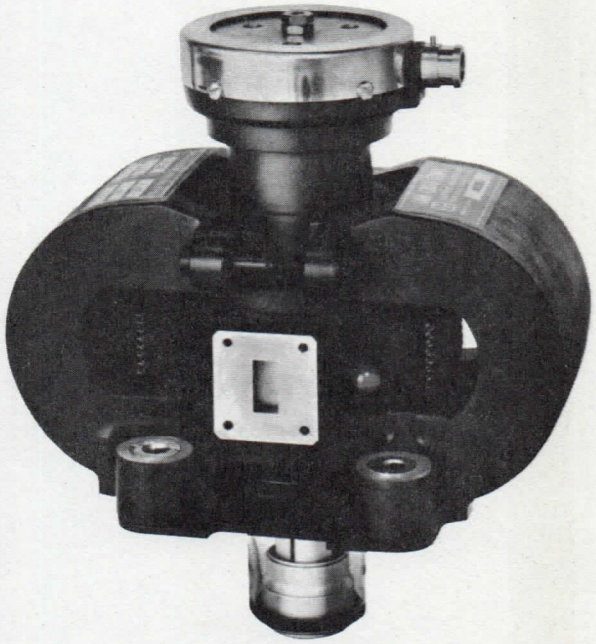

TUNING DRIVE INPUT DETAIL

COAXIAL PULSE MAGNETRON

# JAN7208B

125 Kilowatts Minimum Peak Power
Tunable Frequency 15,500 to 17,500 Mc

This Ku-band coaxial magnetron has been qualified to JAN 7208B military specifications sheet MIL-E-1/1523.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 12.6 V |
| Heater Current (Standby) | 2.5 A |
| Preheat Time | Min. 270 sec. |
| Pulse Voltage | 16.5 to 18 kv |
| Pulse Current | 19 a |
| Rate of Rise of Voltage | Max. 120 kv/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 13.9 V |
| Heater Surge Current | 13.6 A |
| Pulse Length | 3.3 us |
| Pulse Voltage | 20.0 kv |
| Pulse Current | 20.0 a |
| Average Input Power | 350 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 300° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

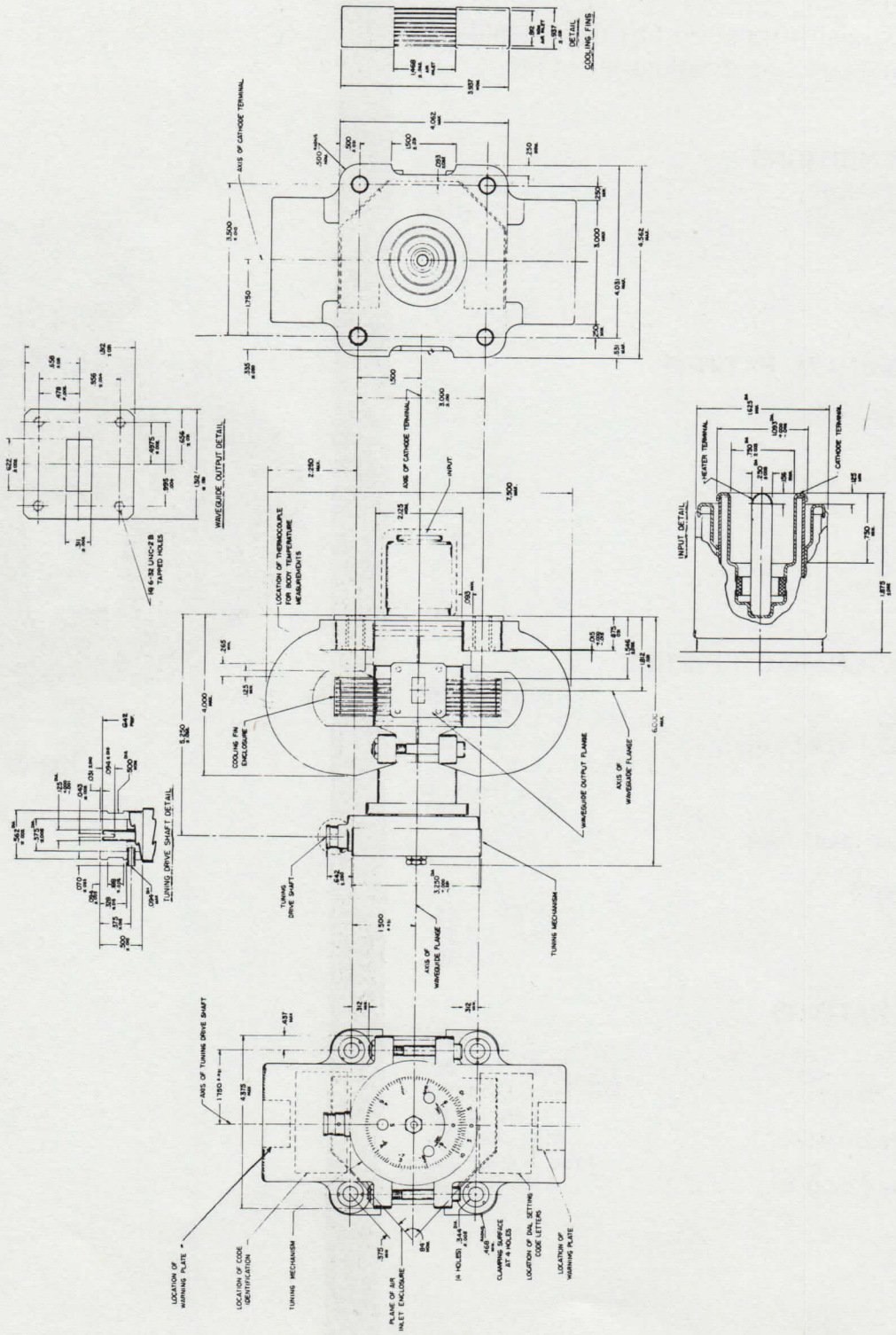
| | |
|---|---|
| Peak Power | Min. 125 kw |
| Tunable Frequency | 15,500 to 17,500 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 8.0 Mc |
| Pushing Figure | Max. 0.15 Mc/amp |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 6.0 db |
| Anode Temperature Coefficient | Max. 500 kc/° C |
| Shock (4 ms) | 50 G |
| Vibration (5-500 cps) | 5.0 G |
| Rated Cycle Life | 500 Hrs. |
| Backlash | Max. 3.0 Mc |
| Thermal Drift | 9.0 Mc |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 14 lbs. |
| Mating Mounting Flange | UG-541/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |
| Tuning Torque | Max. 8.0 in. oz. |
| Tuner Shaft Turns (2000 Mc) | 6.85 to 7.15 |

## COAXIAL PULSE MAGNETRON

# JAN7208B

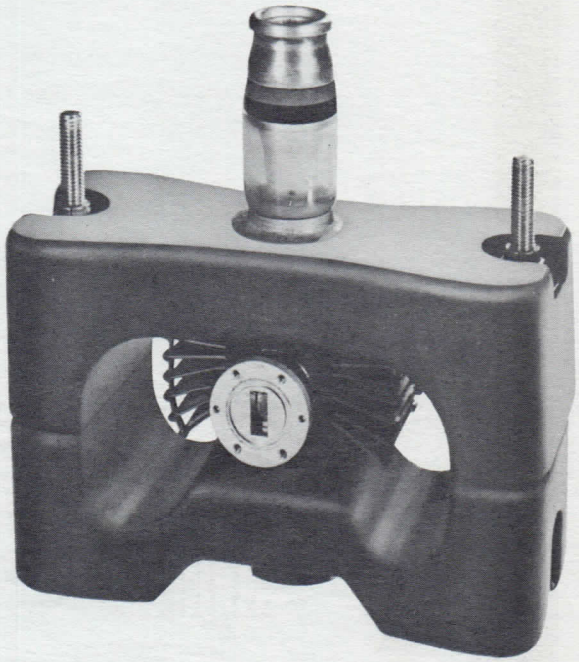


# PULSE MAGNETRON

# 7449A

65 Kilowatts Minimum Peak Power
Fixed Frequency 24,000 ±100 Mc

This K-band magnetron is designed for short range surveillance and missile fuze applications. Its well designed cathode support provides operating stability at 30 G vibration, making it suitable for applications requiring severe acceleration.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 5.0 V |
| Heater Current (Standby) | 3.1 A |
| Preheat Time | Min. 90 sec. |
| Pulse Voltage | 13 to 15 kVdc |
| Pulse Current | 25 A |
| Rate of Rise of Voltage | Max. 400 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 12.0 a |
| Pulse Length | 0.5 us |
| Pulse Voltage | 17.0 kv |
| Pulse Current | 25.0 a |
| Average Input Power | 116 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150°C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

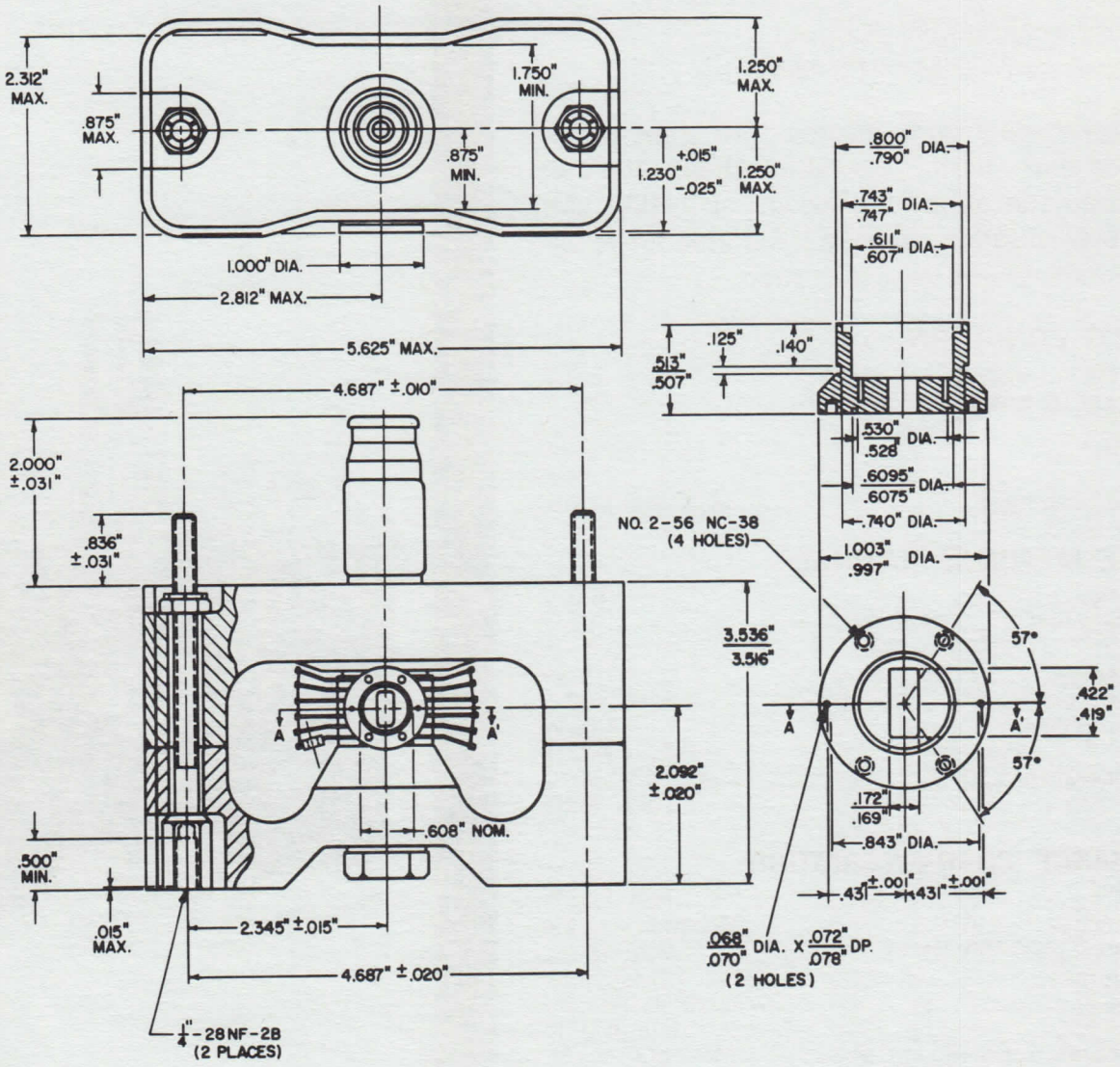
| | |
|---|---|
| Peak Power | Min. 65 kW |
| Fixed Frequency | 24,000 ± 100 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 45 Mc |
| Pushing Figure | Max. 1.0 Mc/amp |
| Missing Pulses | Max. 0.50 Percent |
| Side Lobes | Min. 6.0 db |
| Anode Temperature Coefficient | Max. 600 kc/°C |
| Shock (11 ms) | 50 G |
| Vibration (54-2000 cps) | 30 G |
| Rated Cycle Life | 350 Hrs. |

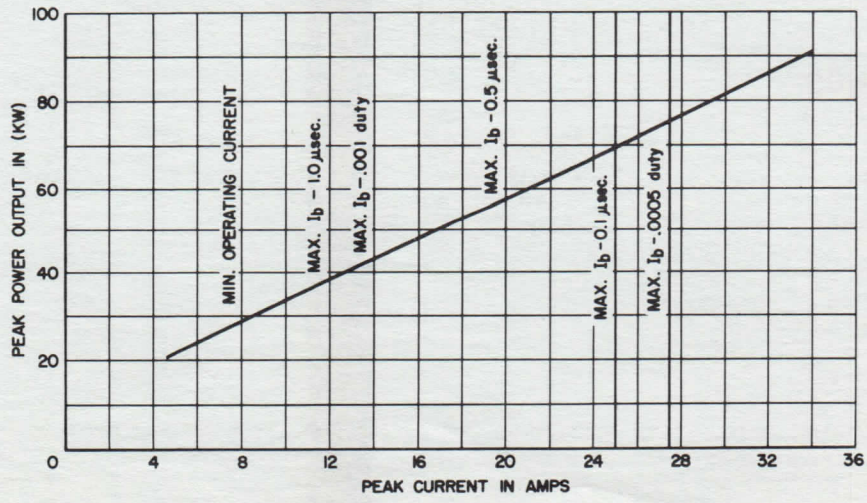
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 7.3 lbs. |
| Mating Mounting Flange | UG-596/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 50 psia |

# PULSE MAGNETRON

# 7449A



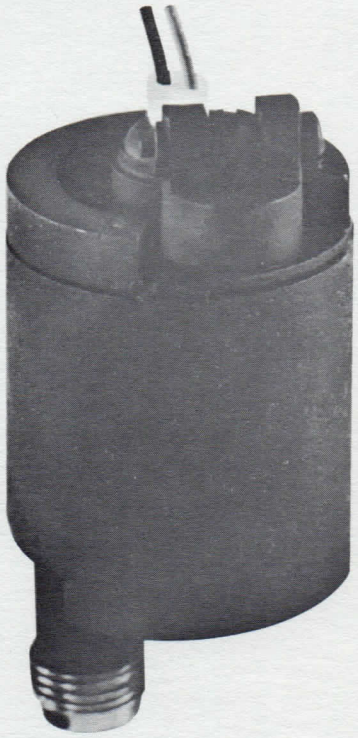



# PULSE MAGNETRON

# 7503

100 Watts Minimum Peak Power
Tunable Frequency 9300 to 9500 Mc

This extremely rugged tunable beacon magnetron of proven reliability and long life is ideal for use in target transponder and telemetry applications in airborne and missile systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 5.0 V |
| Heater Current (Standby) | 0.6 A |
| Preheat Time | Min. 45 sec. |
| Pulse Voltage | 1.35 to 1.55 kVdc |
| Pulse Current | 0.95 A |
| Time of Rise of Voltage | Max. 0.2 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 5.5 V |
| Heater Surge Current | 1.15 a |
| Pulse Length | 1.5 us |
| Pulse Voltage | 2.0 kv |
| Pulse Current | 1.15 a |
| Average Input Power | 3.75 W |
| Duty Cycle | 0.002 |
| Anode Temperature | 100° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

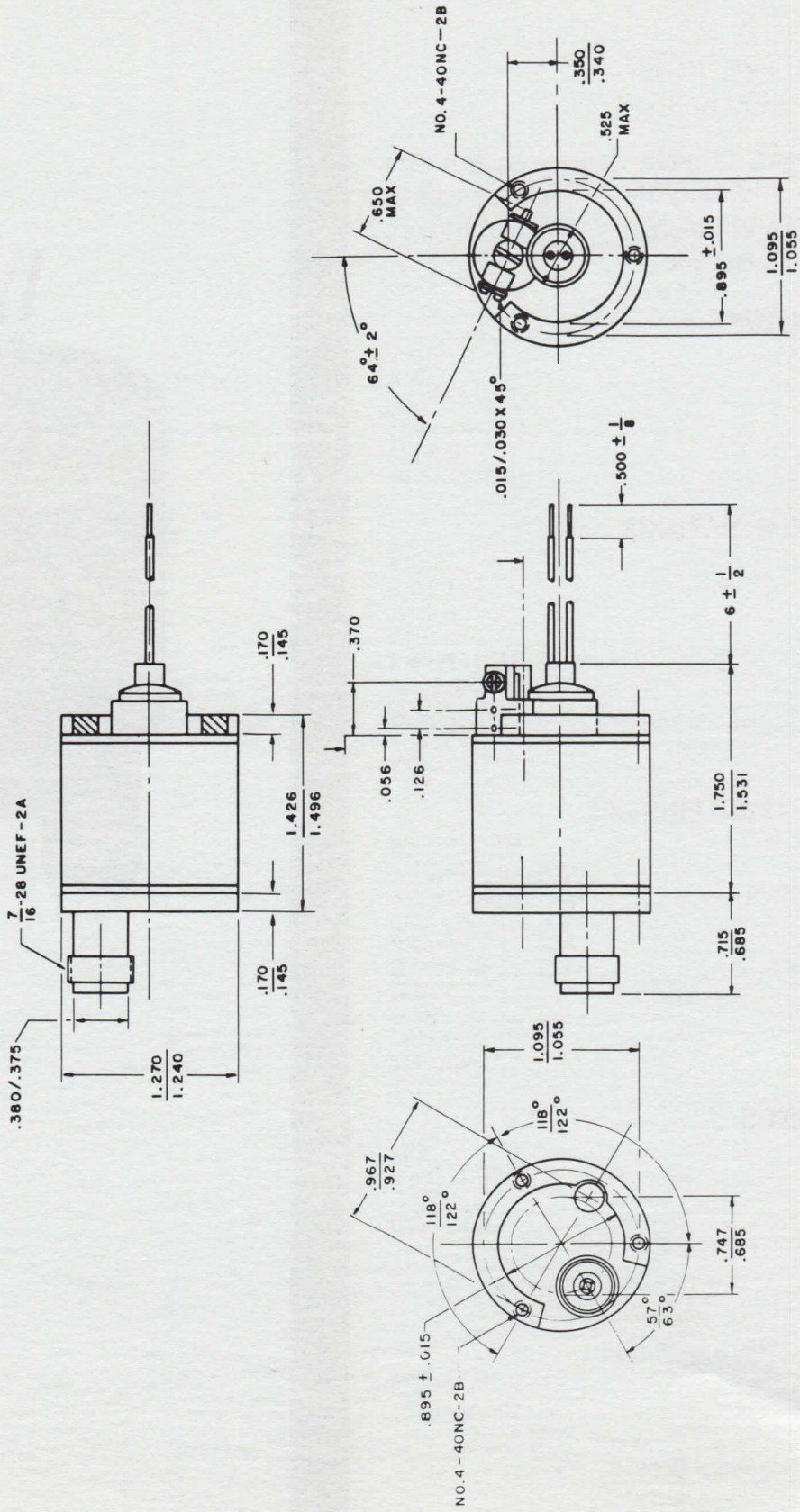
| | |
|---|---|
| Peak Power | Min. 0.1 kW |
| Tunable Frequency | 9300 to 9500 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 15 Mc |
| Pushing Figure | Max. 3.0 Mc/amp |
| Missing Pulses | Max. 0.5 Percent |
| Anode Temperature Coefficient | Max. 100 kc/°C |
| Shock (1 ms) | 500 G |
| Vibration (10-2000 cps) | 15 G |
| Rated Cycle Life | 540 Hrs. |
| Thermal Drift | 5.0 Mc |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 6.0 oz. |
| Output Connector | TNC |
| Anode Cooling | Convection and Conduction |

# PULSE MAGNETRON

# 7503

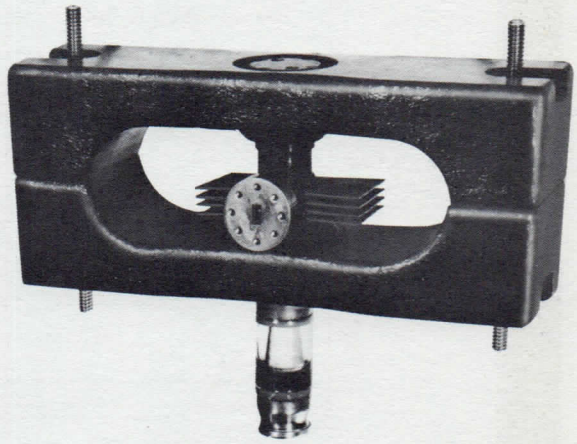


# PULSE MAGNETRON

# 7619

40 Kilowatts Minimum Peak Power
Fixed Frequency 34,860 ±348 Mc

This reliable Ka-band magnetron is designed for use in side-looking radar and other high resolution systems. Its well-designed cathode support provides operating stability at 20 G vibration, making it suitable for applications requiring severe acceleration.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 12.6 V |
| Heater Current (Standby) | 2.8 A |
| Preheat Time | Min. 240 sec. |
| Pulse Voltage | 10 to 13 kVdc |
| Pulse Current | 20 A |
| Rate of Rise of Voltage | Max. 225 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 6.0 a |
| Pulse Length | 1.0 us |
| Pulse Voltage | 13.0 kv |
| Pulse Current | 25.0 a |
| Average Input Power | 176 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 135° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

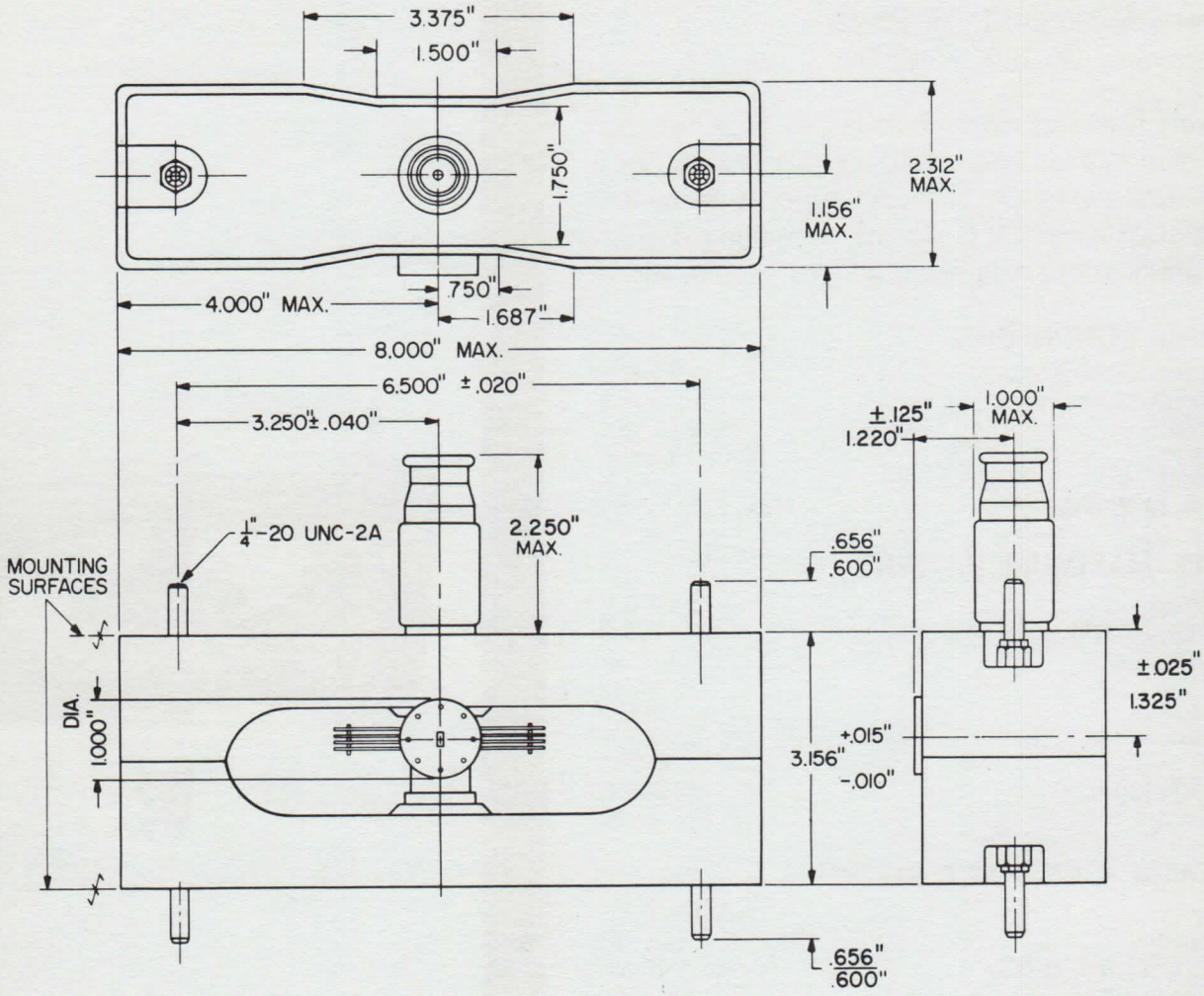
| | |
|---|---|
| Peak Power | Min. 40 kW |
| Fixed Frequency | 34,860 ± 348 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 40 Mc |
| Pushing Figure | Max. 2.5 Mc/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 6 db |
| Anode Temperature Coefficient | Max. 1000 kc/°C |
| Shock (11 ms) | 50 G |
| Vibration (54-2000 cps) | 20 G |
| Rated Cycle Life | 200 Hrs. |

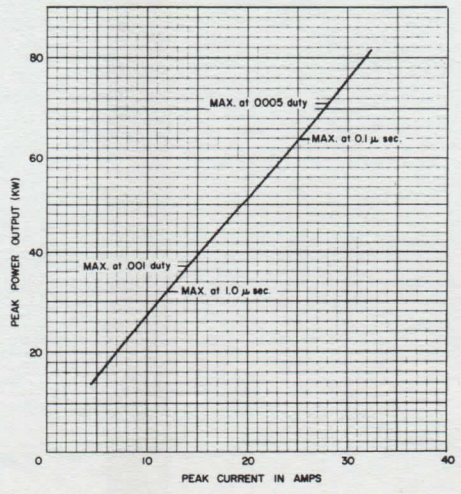
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 9.0 lbs. |
| Mating Mounting Flange | UG-600/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 60 psia |

# PULSE MAGNETRON

# 7619



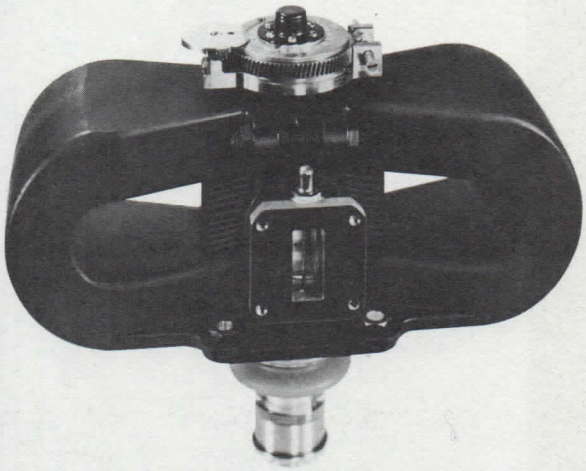



# PULSE MAGNETRON

# 7950

250 Kilowatts Nominal Peak Power
Tunable Frequency 8500 to 9600 MHz

This high-power, servo-tuned magnetron provides long life and reliability for gun and missile fire control, and tracking radar systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 20.0 V |
| Heater Current (Standby) | 4.0 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage (8500 MHz) | 32 to 34 kVdc |
| Pulse Current | (1) = 16 a; (2) = 24 a |
| Rate of Rise of Voltage | 200 kv/us max. |
| Duty Cycle | (1) = .00125; (2) = .000125 |
| Heater Current (Osc.) | (1) = 2.0 A; (2) = 3.6 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 22.0 V |
| Heater Surge Current | 16.0 a |
| Pulse Length | 3.0 us |
| Pulse Voltage | 40.0 kv |
| Pulse Current | 30.0 a |
| Average Input Power | 800 W |
| Duty Cycle | 0.0015 |
| Anode Temperature | 150° C |
| Cathode Temperature | 300° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | (1) | (2) |
|---|---|---|
| Peak Power, min. kw | 180 | 208 |
| Tunable Frequency | (8500-9600 MHz) | |
| Pulling Factor (1.5:1 VSWR) MHz, max. | 16.5 | 16.5 |
| Missing Pulses, %, max. | 1.0 | 1.0 |
| Side Lobes, db, min. | 6.0 | 6.0 |
| Anode Temperature Coef., MHz/°C, max. | 0.5 | 0.5 |
| Shock (4 ms), G | 50 | 50 |
| Vibration (50 cps), G | 10 | 10 |
| Rated Cycle Life, hrs. min. | 250 | 250 |
| Backlash, MHz, max. | 10 | 10 |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 lbs. |
| Mating Mounting Flange | UG-52A/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 30 psia |
| Tuning Torque | Max. 6 in. oz. |

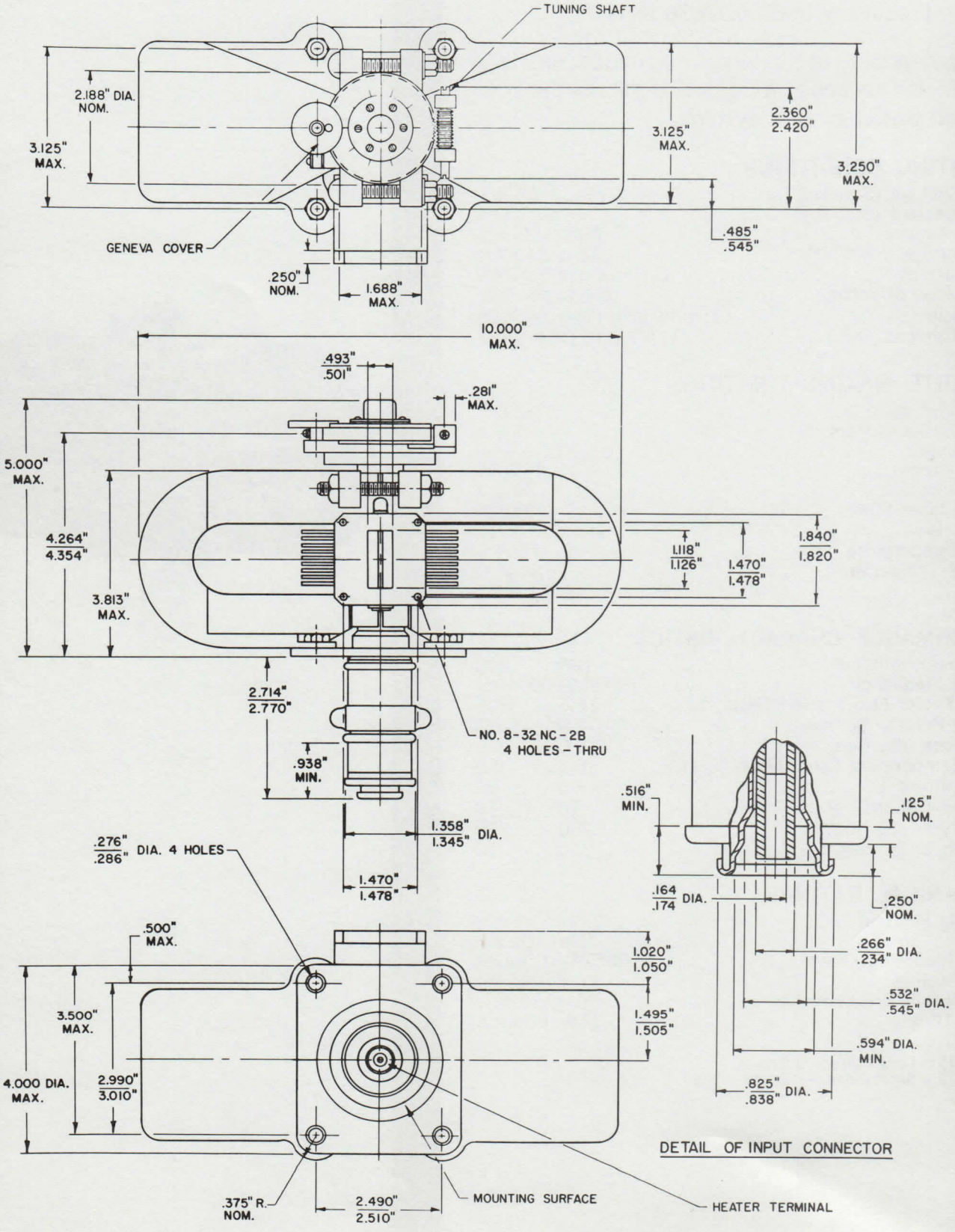
**NOTE:** (1) = Long Pulse — 2.5 us
(2) = Short Pulse — 0.24 us

# PULSE MAGNETRON

# 7950

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output rf connections, waveguide flanges, and gaskets must be rf leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.



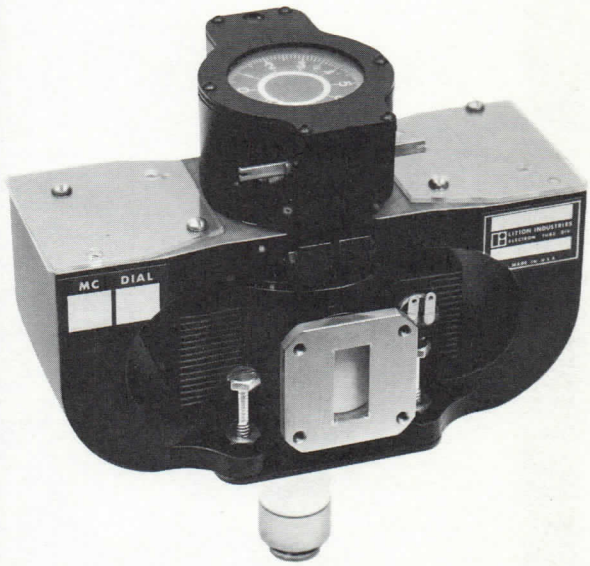

DETAIL OF INPUT CONNECTOR

COAXIAL PULSE MAGNETRON

# 8945

200 Kilowatts Minimum Peak Power
Tunable Frequency 8700 to 9400 MHz

This reliable coaxial magnetron provides exceptional performance in a wide range of environmental conditions. The 8945 is designed for advanced airborne radar systems, and is temperature compensated to minimize frequency changes under environmental extremes. It is electrically interchangeable with the L-4502.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 13.75 V |
| Heater Current (Standby) | 3.1 A |
| Preheat Time | Min. 150 sec. |
| Pulse Voltage | 20.0 to 23.0 kv |
| Pulse Current | 27.5 a |
| Rate-of-Rise of Voltage | Max. 160 kv/$\mu$sec. |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15.0 V |
| Heater Surge Current | 12.0 A |
| Pulse Length | 2.75 $\mu$s |
| Pulse Voltage | 24.0 kv |
| Pulse Current | 30.0 a |
| Average Input Power | 690 W |
| Duty Cycle | 0.0013 |
| Anode Temperature | 150°C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 200 kw |
| Tunable Frequency | 8700 to 9400 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 5.0 MHz |
| Pushing Figure | Max. 0.1 MHz/a |
| Missing Pulses | Max. 0.07% |
| Side Lobes | Min. −10 dB |
| Anode Temperature Coefficient | Max. 200 kHz/°C |
| Shock (11.0 msec) | 30 G |
| Vibration (operating) | Max. 8.0 G |
| Frequency Modulation | Max. 1.0 MHz |
| Frequency Drift Rate | Max. 150 kHz/sec |
| Tuning Linearity | Max. ±25 MHz |
| Rated Cycle Life | 1250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | 13.0 lbs. |
| Mating Output Flange | UG-52A/U (Mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |

# COAXIAL PULSE MAGNETRON

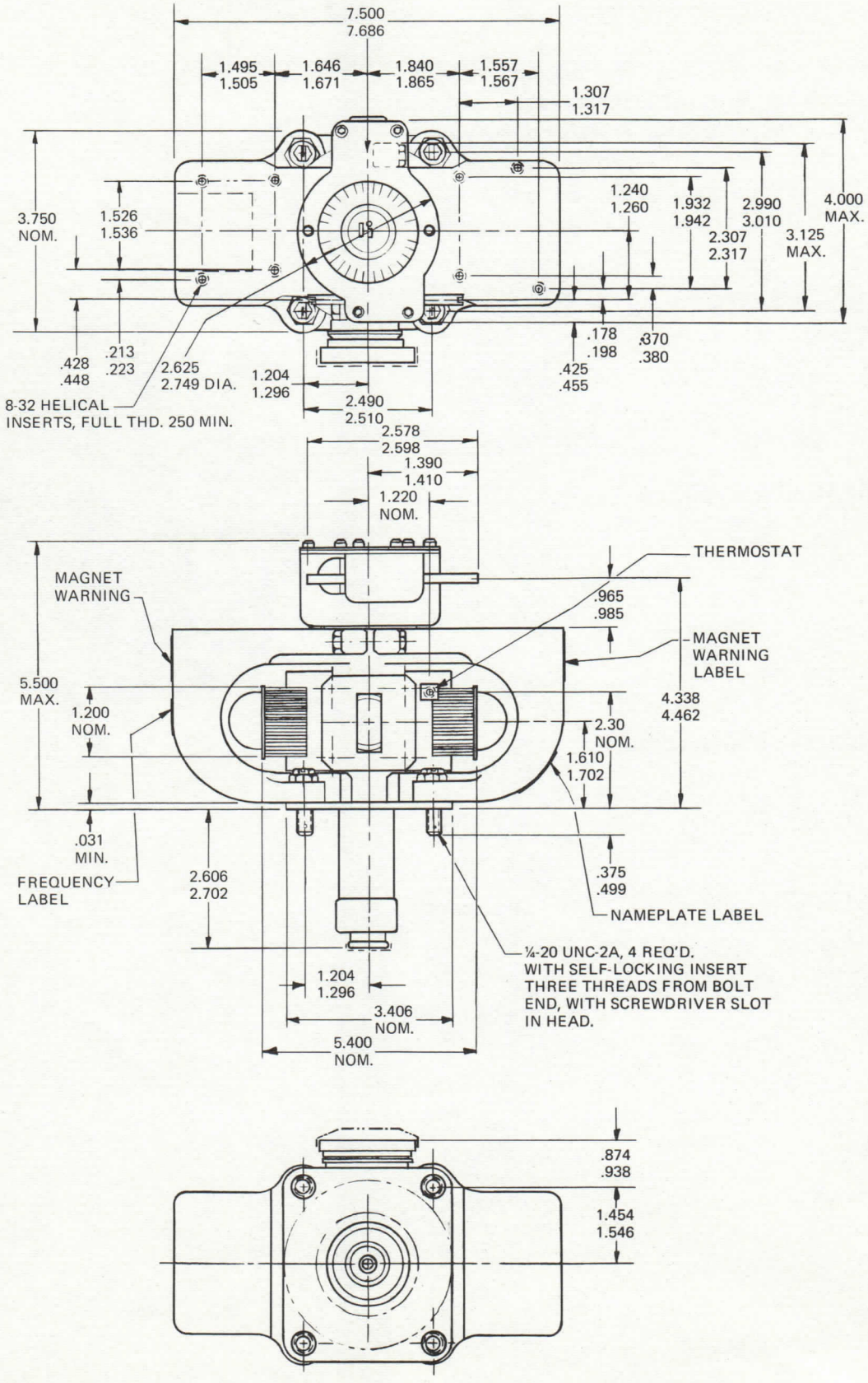
# 8945

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.




LITTON INDUSTRIES • ELECTRON TUBE DIVISION • SAN CARLOS, CALIFORNIA

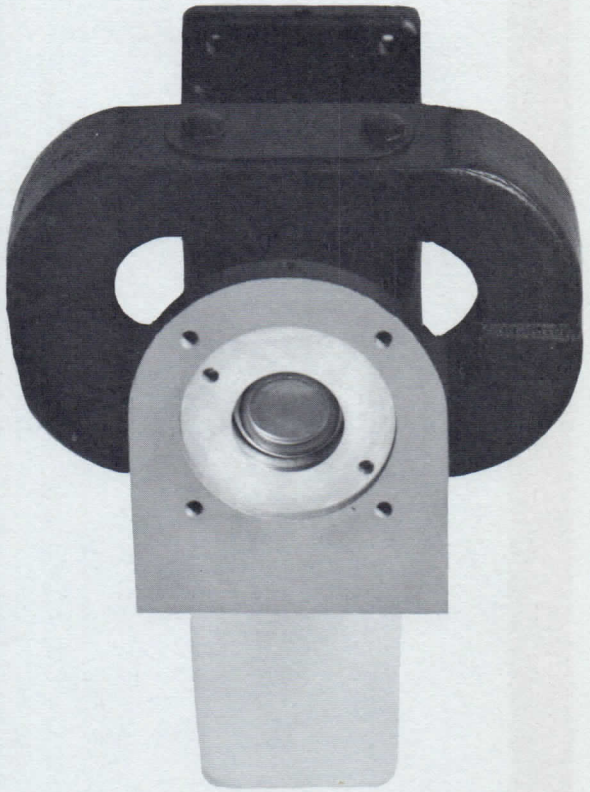
3.5MCA1072

PULSE MAGNETRON

# L-3023
# 6233

7.0 Kilowatts Minimum Peak Power
Tunable Frequency 9280 to 9345 mcs

This proven series of tunable pulse magnetrons has been designed to provide a variety of tuning ranges for use in airborne navigational and rendezvous beacons where stable beacon frequencies are required. These long life magnetrons are mechanically designed to permit the attachment of tuning gears and waveguide output assemblies without the normally required shock and vibration isolation sections.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.0 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 5.5 to 6.0 kVdc |
| Pulse Current | 3.83 A |
| Time of Rise of Voltage | Min. 0.1 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 4.0 A |
| Pulse Voltage | 6.5 kv |
| Pulse Current | 4.2 A |
| Pulse Length | 1.0 us |
| Average Input Power | 75 W |
| Duty Cycle | 0.003 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 7.0 kW |
| Tunable Frequency | 9280 to 9345 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 6.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |
| Rated Cycle Life | 640 Hrs. |

## MECHANICAL RATINGS

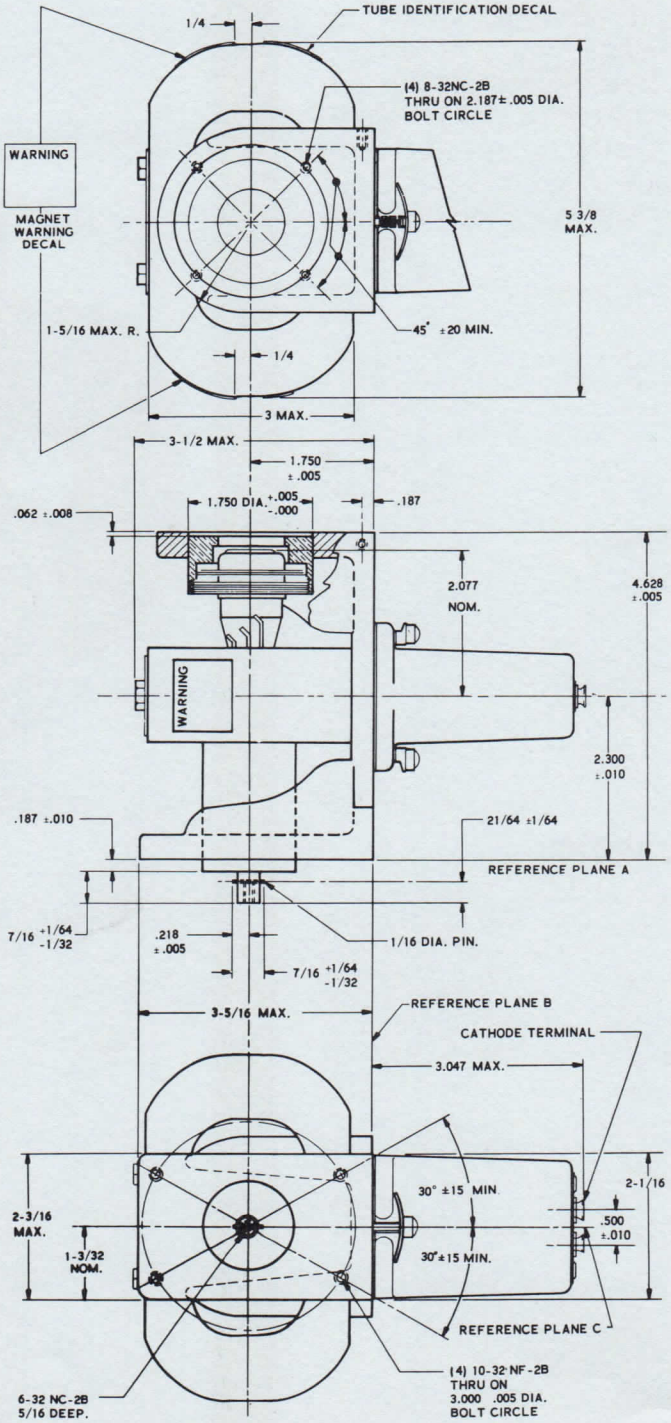
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 4⅛ lbs. |
| Anode Cooling | Forced Air |

NOTE:
Similar tubes at other frequencies: L-3029A, L-3029B, L-3029C, L-3029D.

PULSE MAGNETRON

# L-3023

# 6233

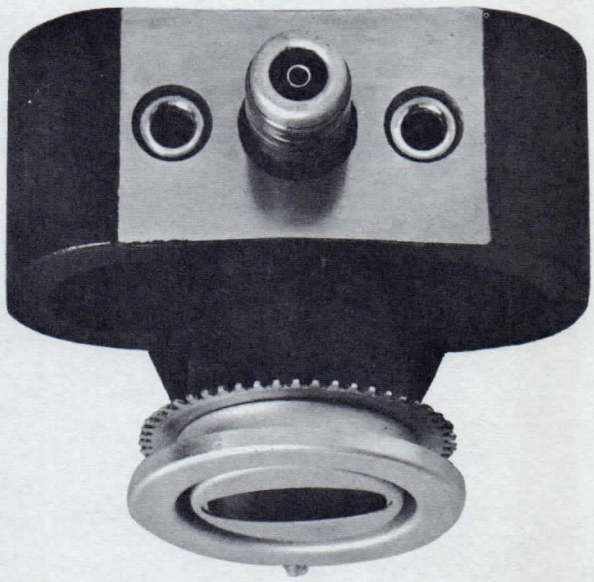


PULSE MAGNETRON

# L-3028D

120 Watts Minimum Peak Power
Tunable Frequency 9280 to 9330 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 850 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 860 V |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 14.0 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9280 to 9330 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% lb) | Max. 1.3 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Vibration (5 to 500 cps) | 0.125 Da or 10 G |
| Shock (11±1 m s) | 15 G |
| Rated Cycle Life | 300 Hrs. |

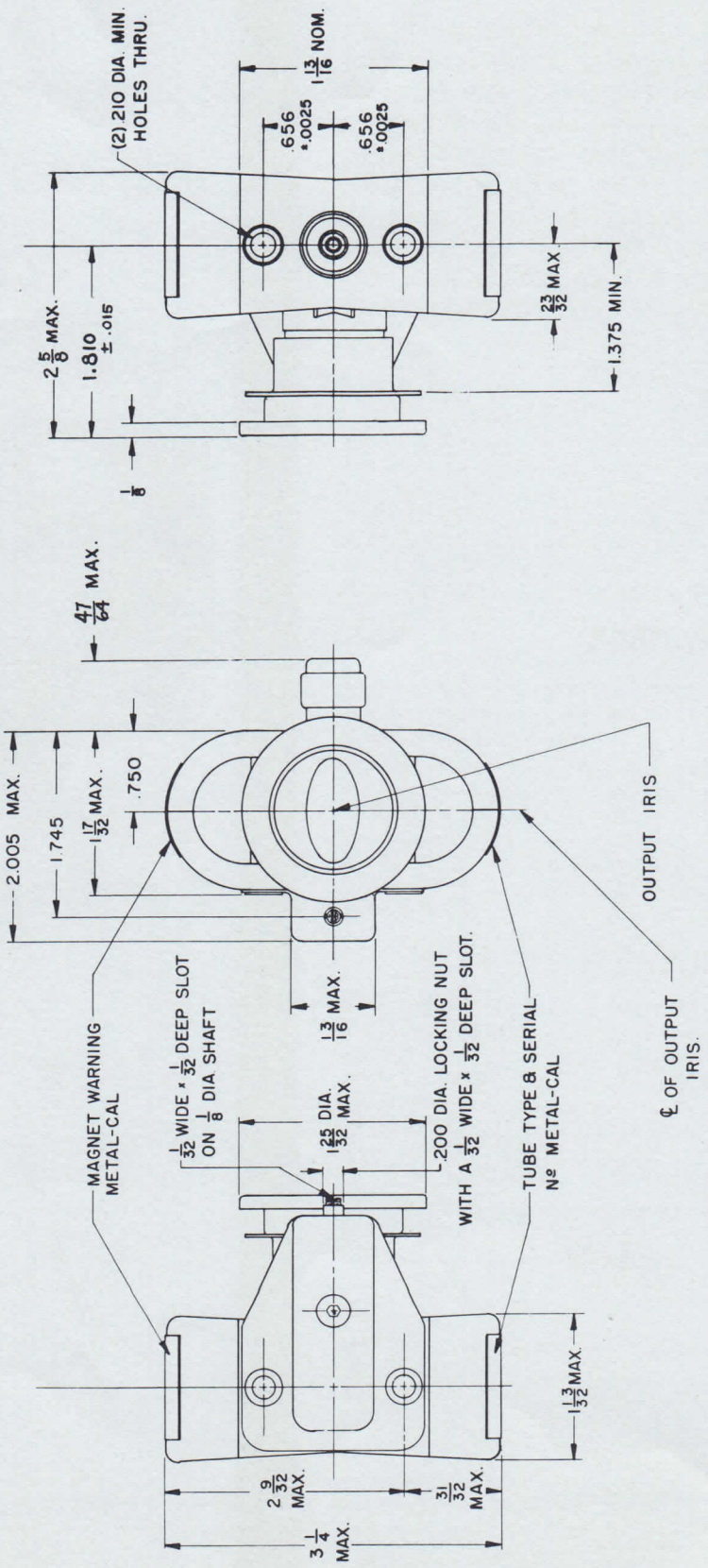
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other frequencies see:
L-3180, L-3181, L-3212, L-3213, L-3214, L-3218, L-3226, L-3327, L-3601

# PULSE MAGNETRON

# L-3028D



# PULSE MAGNETRON

# L-3029

7.0 Kilowatts Minimum Peak Power
Tunable Frequency—See Table

This proven series of tunable pulse magnetrons has been designed to provide a variety of tuning ranges for use in airborne navigational and rendezvous beacons where stable beacon frequencies are required. These long life magnetrons are mechanically designed to permit the attachment of tuning gears and waveguide output assemblies without the normally required shock and vibration isolation sections.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.0 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 5.5 to 6.0 kVdc |
| Pulse Current | 3.83 A |
| Time of Rise of Voltage | Min. 0.2 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 4.0 A |
| Pulse Voltage | 7.0 kv |
| Pulse Current | 5.0 A |
| Pulse Length | 1.0 us |
| Average Input Power | 75 W |
| Duty Cycle | 0.003 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

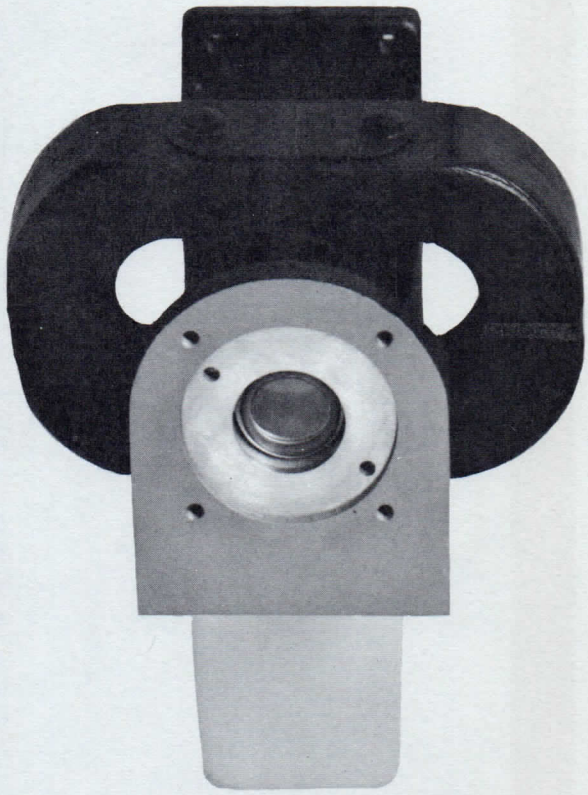
## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 7.0 kW |
| Tunable Frequency | See Table |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 6 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.2 mc/°C |
| Rated Cycle Life | 500 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 4 1/8 lbs. |
| Anode Cooling | Forced Air |

NOTE: For similar tube at another frequency see: L-3023/LT-6233.

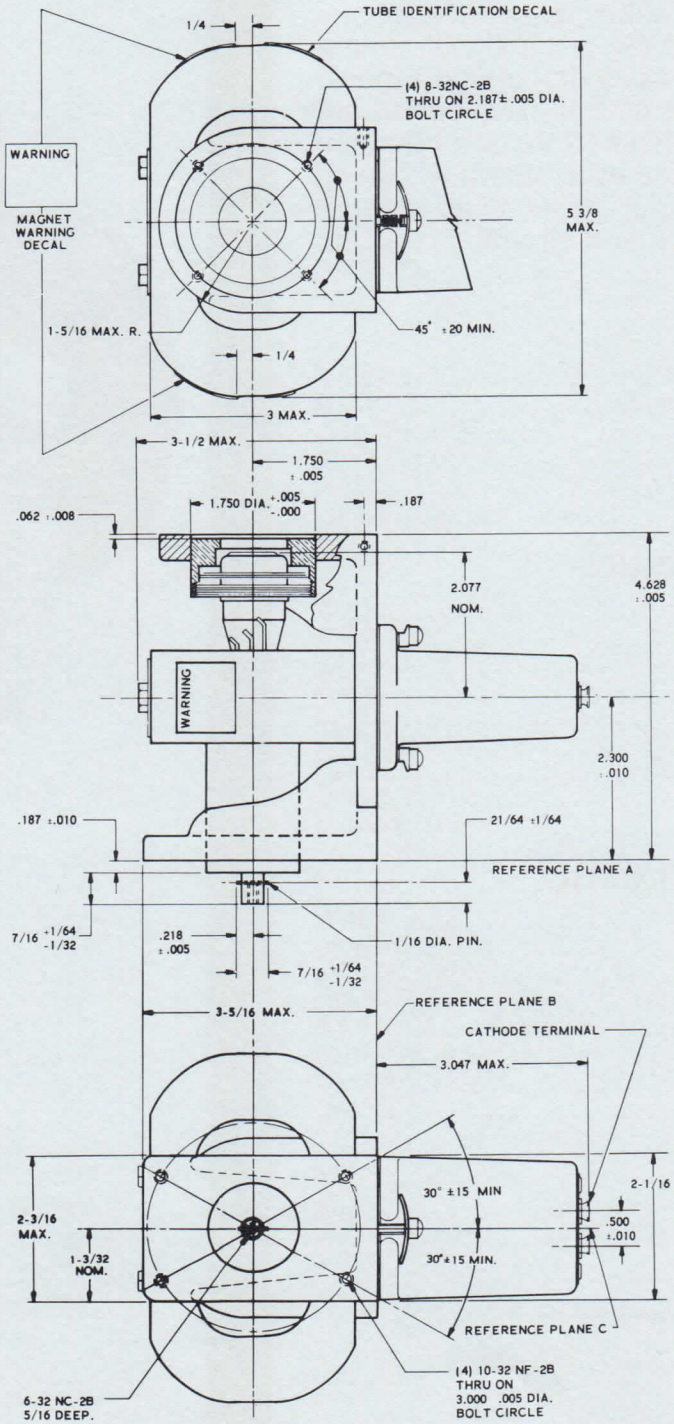


**L-3029 SERIES**

| Type | Tunable Frequency |
|---|---|
| L-3029A | 9235 to 9300 mcs |
| L-3029B | 9250 to 9315 mcs |
| L-3029C | 9295 to 9360 mcs |
| L-3029D | 9265 to 9330 mcs |

# PULSE MAGNETRON

# L-3029



PULSE MAGNETRON

# L-3030

300 Kilowatts Minimum Peak Power
Fixed Frequency—See table.

This series of fixed frequency, high power pulse magnetrons has been especially designed by Litton Industries to deliver peak powers greater than 300 kW. The L-3030 series is similar to a LT-4J50 magnetron, but has enlarged magnets for additional power. These tubes are intended for use as high power laboratory sources to test the waveguide breakdown characteristics of those components to be used with the 4J50A and variations of this tube.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 13.75 V |
| Heater Current | 3.5 A |
| Preheat Time | Min. 240 sec. |
| Pulse Voltage | 26 to 29 kv |
| Pulse Current | 27.5 A |
| Rate of Rise of Voltage | Max. 140 kv/us |

## ABSOLUTE MAXIMUM RATINGS

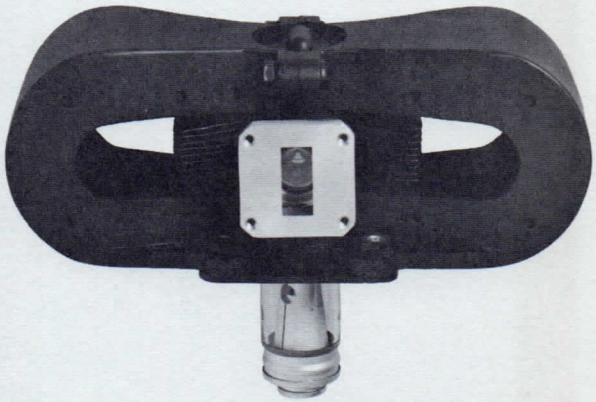
| | |
|---|---|
| Heater Surge Current | 12 A |
| Pulse Current | 27.5 A |
| Average Input Power | 800 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 300 kW |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Missing Pulses | Max. 0.25 Percent |
| Bandwidth | Max. 1.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 14 lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

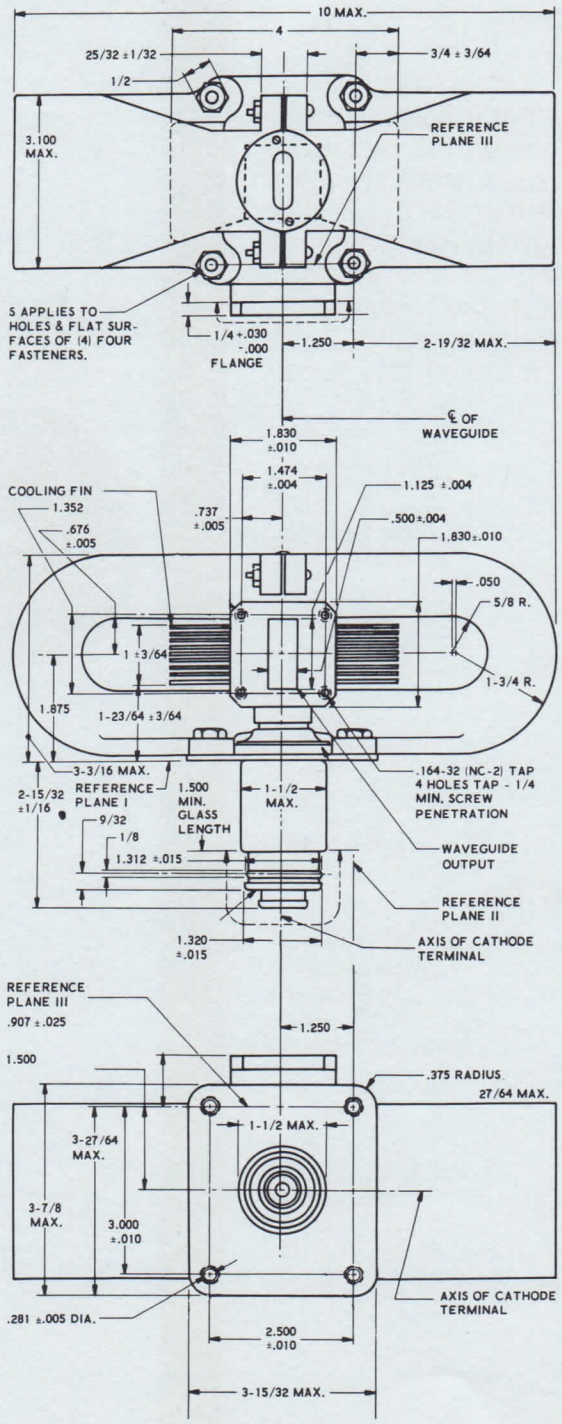


**L-3030 SERIES**

| TYPE | FREQUENCY |
|---|---|
| L-3030B | 9000 ± 30 |
| L-3030C | 9200 ± 30 |
| L-3030D | 9375 ± 30 |

# PULSE MAGNETRON

# L-3030

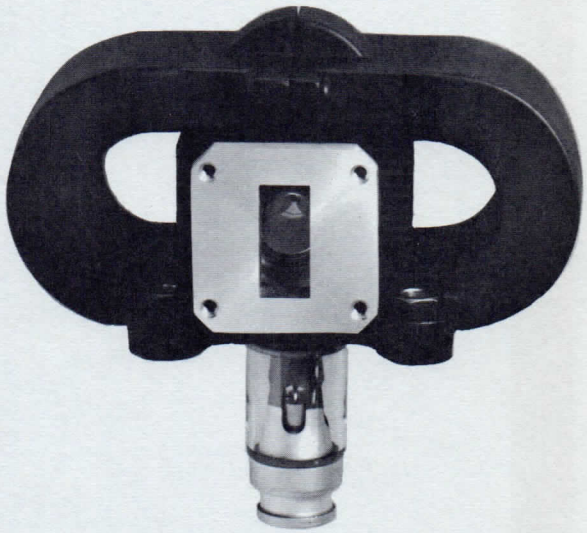


PULSE MAGNETRON

# L-3036

65 Kilowatts Minimum Peak Power
Fixed Frequency—See table

This series of long life, fixed frequency pulse magnetrons provides a variety of center frequencies in tubes possessing the electrical specifications of the LT-4J52 magnetron. Because of the superior reliability of these tubes, they are highly recommended for use in all airborne applications where nominal powers of 90 kW are required and in any application where extreme reliability, combined with compactness and high efficiency, are required.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.2 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 14 to 16 kv |
| Pulse Current | 15 A |
| Rate of Rise of Voltage | Max. 180 kv/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 13.7 V |
| Heater Surge Current | 10 A |
| Pulse Current | 18 A |
| Pulse Length | 5.0 us |
| Average Input Power | 350 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 65 kW |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 3.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

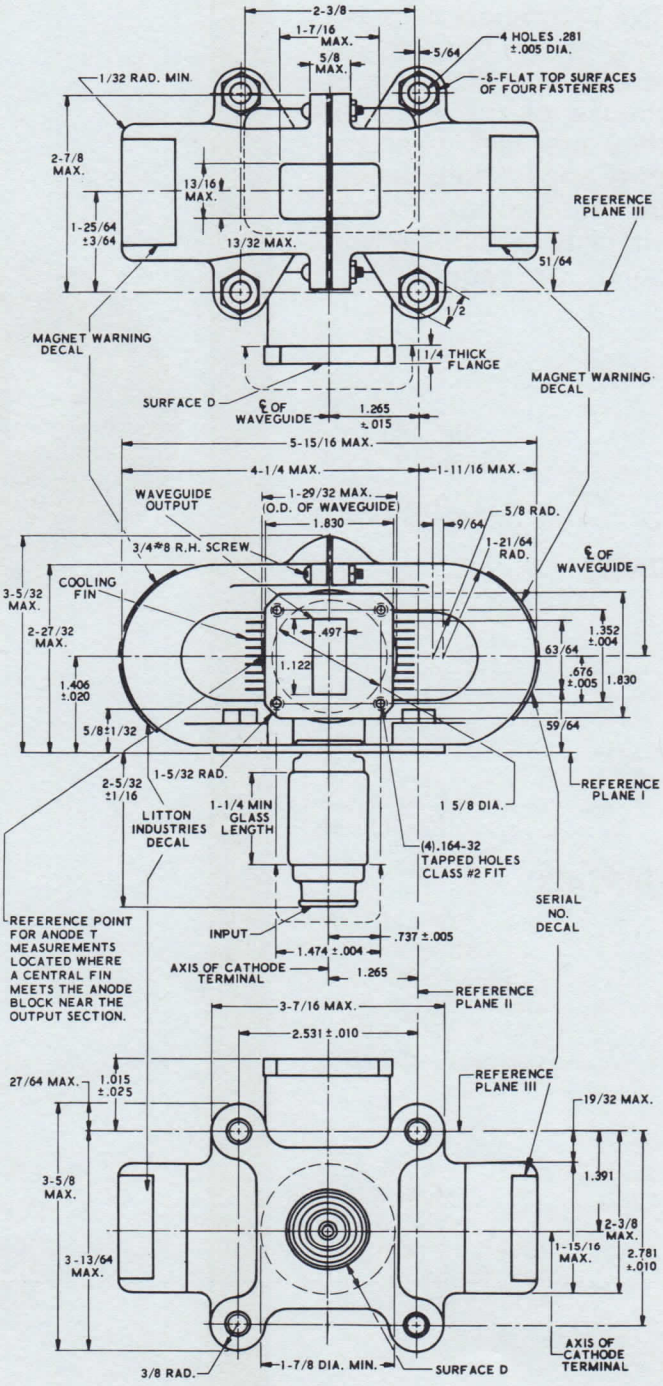
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 6 lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

**L-3036 SERIES**

| TYPE | FREQUENCY |
|---|---|
| L-3036A | 9410 ± 5 |
| L-3036B | 9275 ± 15 |
| L-3036F | 9245 ± 30 |

# PULSE MAGNETRON

# L-3036

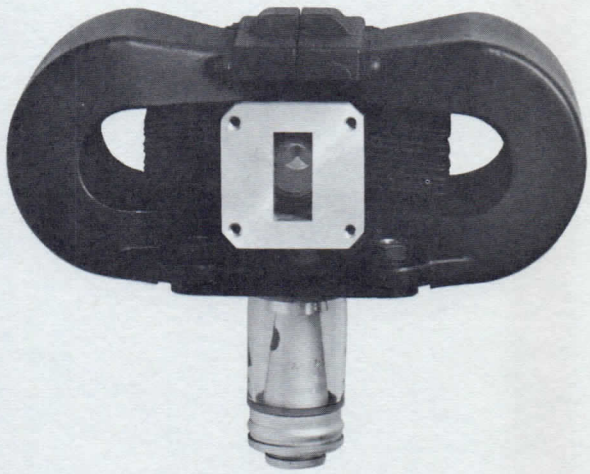


# PULSE MAGNETRON

# L-3039

225 Kilowatts Minimum Peak Power
Fixed Frequency—See table.

This highly reliable series of fixed frequency, medium high power pulse magnetrons provides a wide variety of center frequencies with the same electrical specifications as the 4J50 magnetron. Compactness and efficiency make these tubes especially suitable for airborne fire control systems and other applications requiring multi-frequency operation.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 13.75 V |
| Heater Current | 3.38 A |
| Preheat Time | Min. 240 sec. |
| Pulse Voltage | 20 to 23 kVdc |
| Pulse Current | 27.5 A |
| Rate of Rise of Voltage | Max. 110 kv/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Surge Current | 13.5 A |
| Pulse Voltage | 23 kv |
| Pulse Current | 27.5 A |
| Pulse Length | 6.0 us |
| Average Input Power | 635 W |
| Duty Cycle | 0.002 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 225 kW |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Missing Pulses | Max. 0.25 Percent |
| Bandwidth | Max. 3.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Life | 250 Hrs. |

## MECHANICAL RATINGS

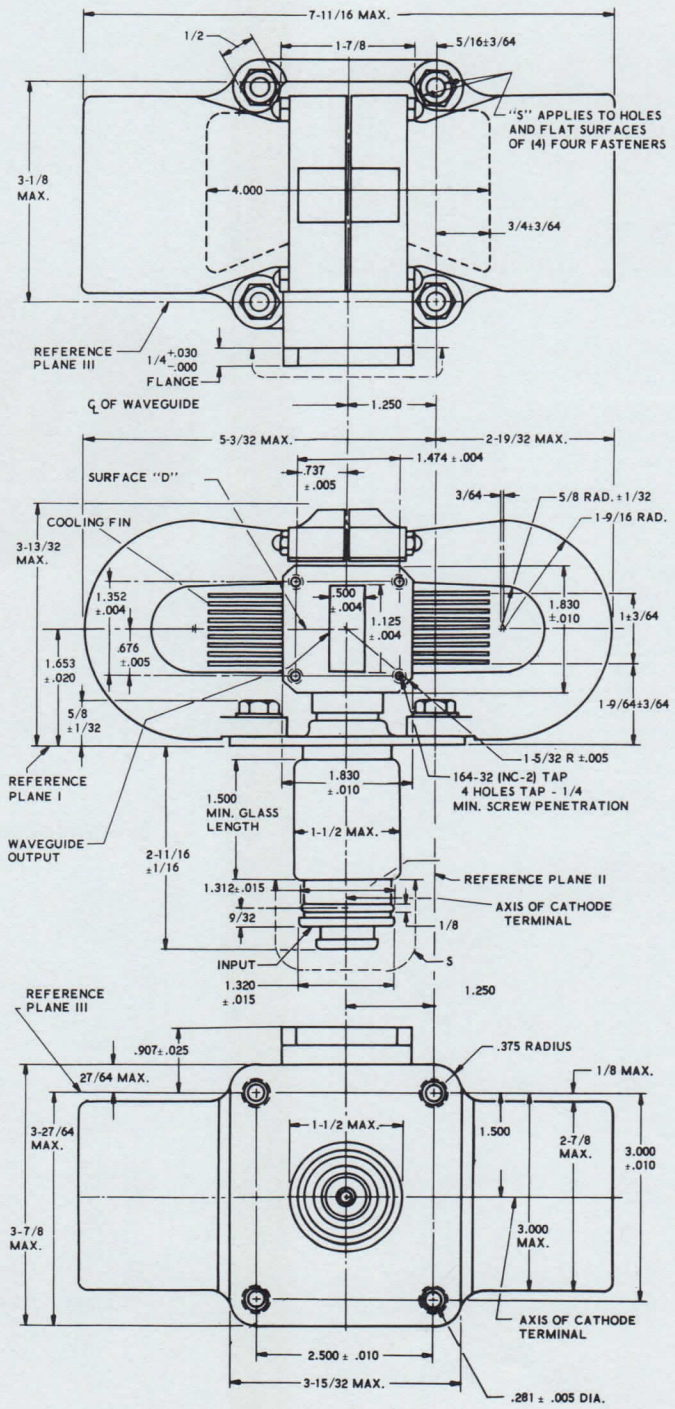
| | |
|---|---|
| Mounting Position | Any |
| Weight | Approx. 10 lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

**L-3039 SERIES**

| TYPE | CENTER FREQ. | TYPE | CENTER FREQ. |
|---|---|---|---|
| 3039A | 8757 ±25 | 3039I | 9100 ±20 |
| 3039D | 8800 ±20 | 3039J | 9160 ±20 |
| 3039E | 8860 ±20 | 3039K | 9220 ±20 |
| 3039F | 8920 ±20 | 3039L | 9280 ±20 |
| 3039G | 8980 ±20 | 3039M | 9340 ±20 |
| 3039H | 9040 ±20 | 3039N | 9400 ±20 |

# PULSE MAGNETRON

# L-3039

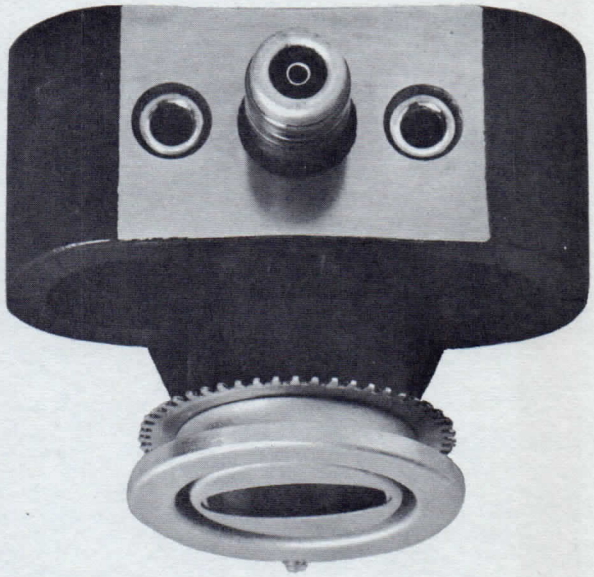


PULSE MAGNETRON

# L-3058

1.0 Kilowatt Minimum Peak Power
Tunable Frequency 9320 to 9360 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 2700 to 2900 V |
| Pulse Current | 1.33 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 2900 V |
| Pulse Current | 1.5 A |
| Pulse Length | 3.0 us |
| Average Input Power | 14 W |
| Duty Cycle | 0.0035 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 1.0 kW |
| Tunable Frequency | 9320 to 9360 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% lb) | Max. 6 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Bandwidth | Max. 3/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Shock (4 m s) | 15 G |
| Rated Cycle Life | 200 Hrs. |

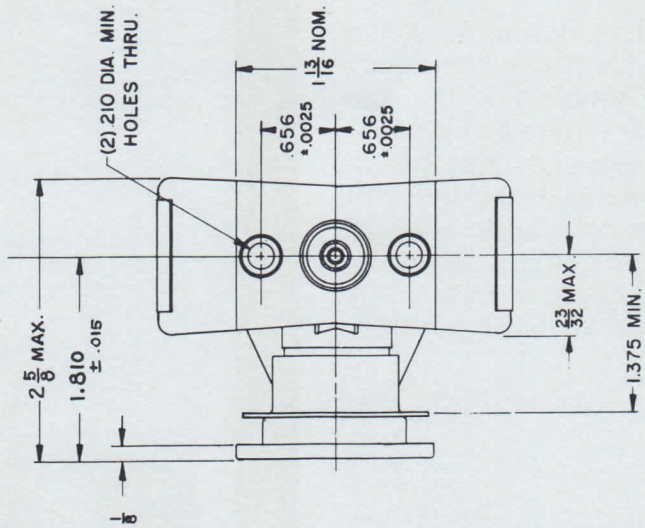
## MECHANICAL RATINGS

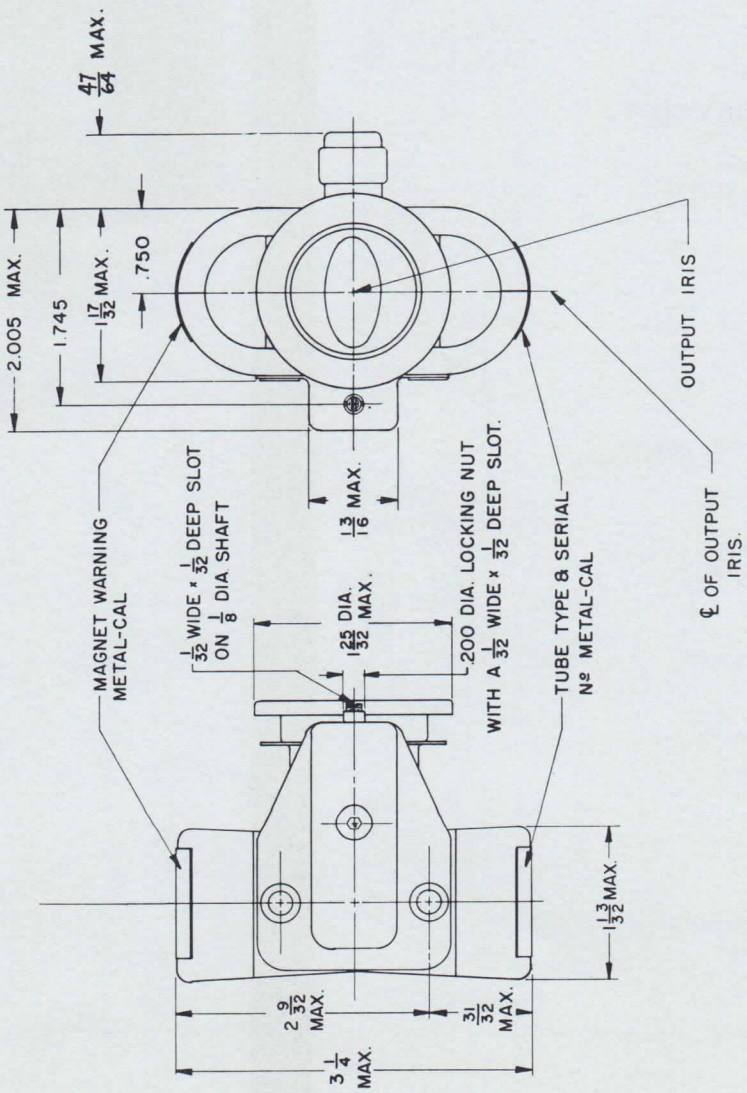
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other frequencies see L-3225, L-3384.

# PULSE MAGNETRON

# L-3058



# PULSE MAGNETRON

# L-3083

60 Kilowatts Minimum Peak Power
Tunable Frequency 16,000 to 17,000 mcs

This series of tunable, Ku-band pulse magnetrons provides long life and highly reliable performance. These magnetrons, L-3083A, L-3083B and L-3083C, are rated, respectively, for 1.0, 2.0 and 3.0 microsecond pulse operation. The special tuner, which sweeps the frequency range in approximately five turns, is designed for use with a multi-position Collins tuner drive.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 15 to 18 kVdc |
| Pulse Current | 16 A |

## ABSOLUTE MAXIMUM RATINGS

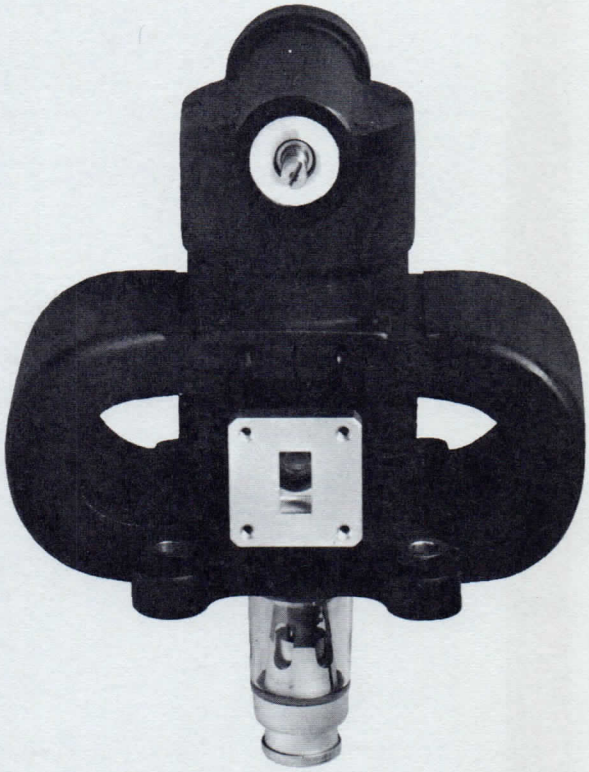
| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 10 A |
| Pulse Voltage | 18 kv |
| Pulse Current | 18 A |
| Average Input Power | 272 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 60 kW |
| Tunable Frequency | 16,000 to 17,000 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 18 mcs |
| Pushing Figure | Max. 1.7 mcs/amp |
| Missing Pulses | Max. 1 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 450 kc/°C |
| Shock (11 m s) | 15 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Approx. 6 lbs. |
| Mating Mounting Flange | UG-541/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

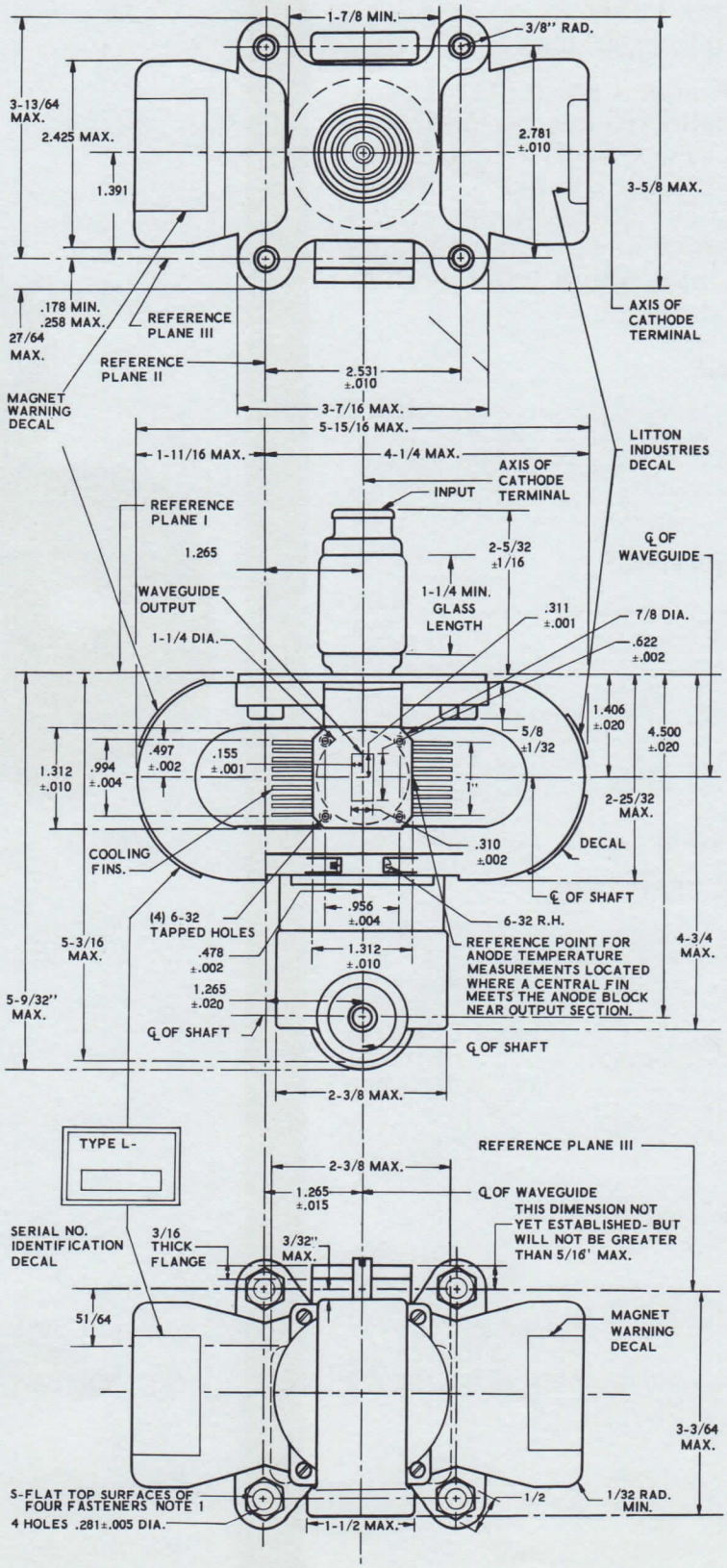


**L-3083 SERIES**

| Type | Absolute Max. Pulse Length |
|---|---|
| L-3083A | 1.0 u sec. |
| L-3083B | 2.0 u sec. |
| L-3083C | 3.0 u sec. |

# PULSE MAGNETRON

# L-3083

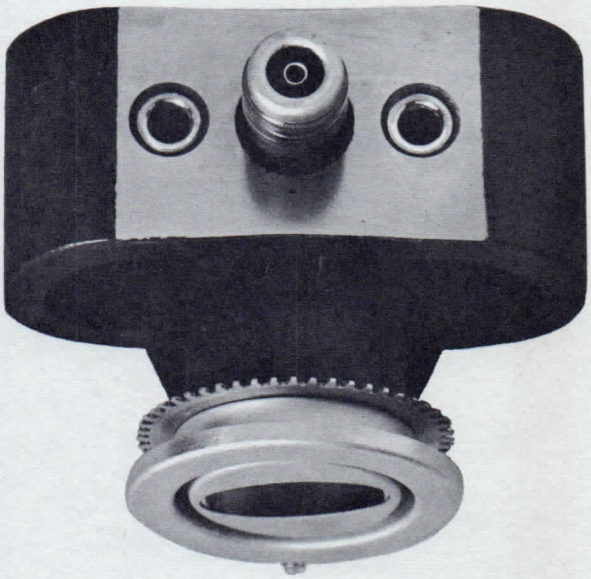


# PULSE MAGNETRON

# L-3087A

120 Watts Minimum Peak Power
Tunable Frequency 9280 to 9320 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation (.020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 5.0 V |
| Heater Current | 0.70 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 2.5 A |
| Pulse Voltage | 910 V |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 14.5 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9280 to 9320 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% Ib) | Max. 3 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Bandwidth | Max. 3/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Rated Cycle Life | 150 Hrs. |

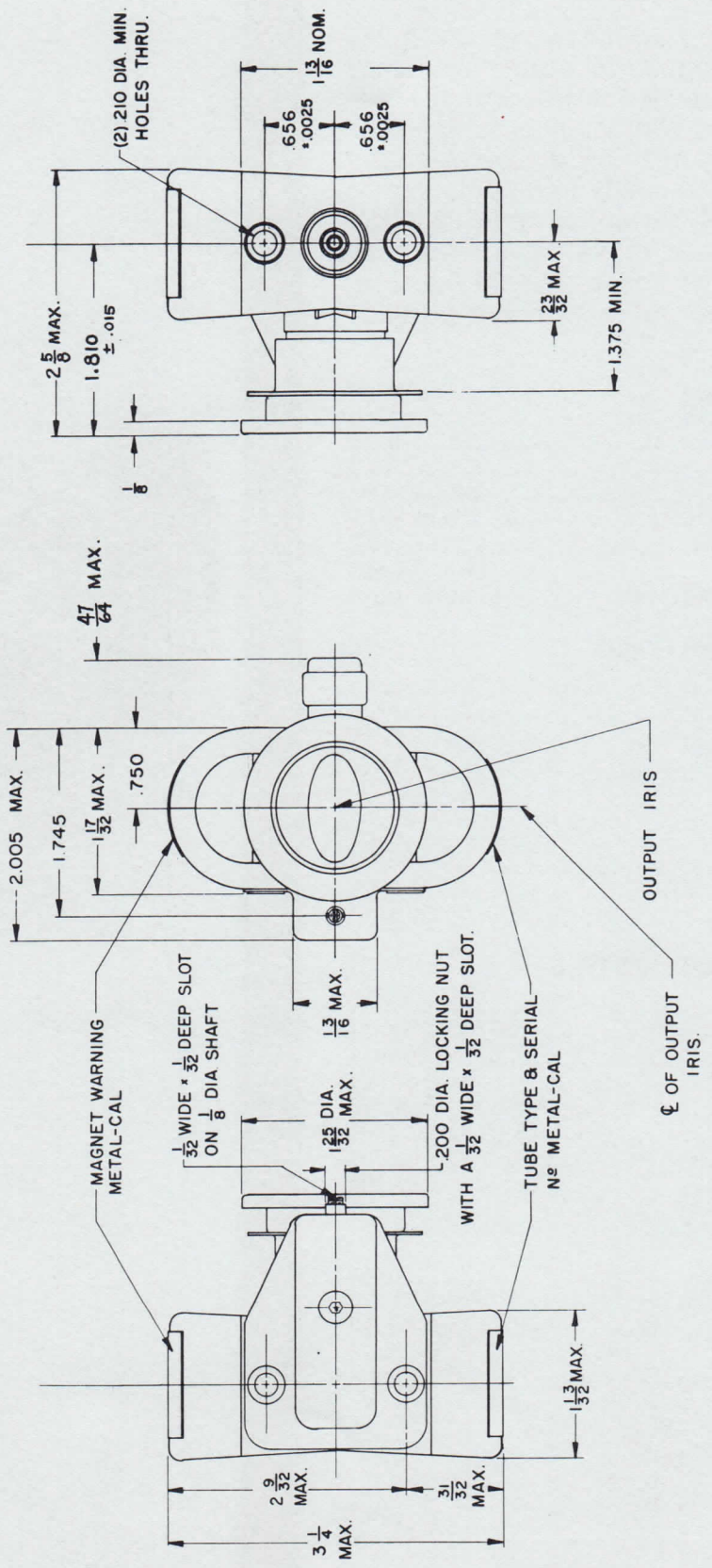
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other frequencies see L-3187.

# PULSE MAGNETRON

# L-3087A

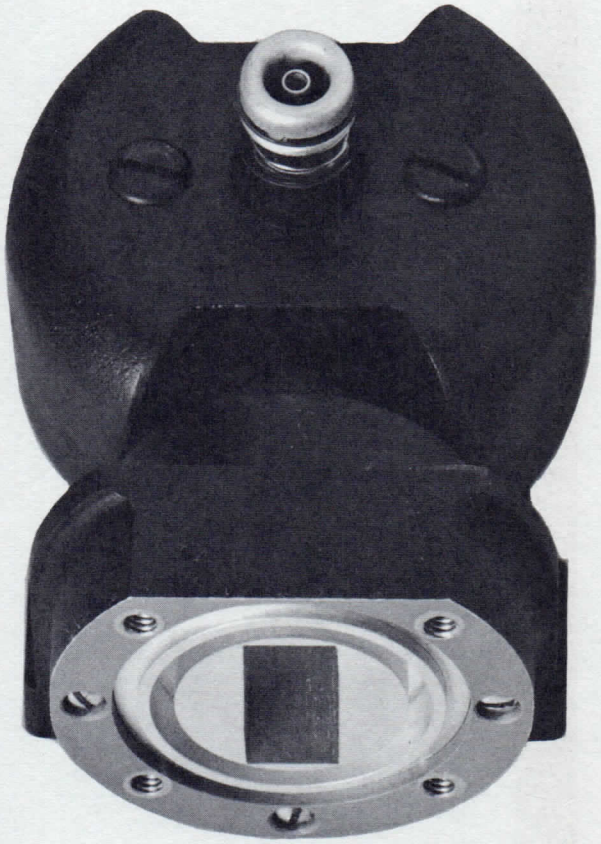


PULSE MAGNETRON

# L-3089B

40 Watts Minimum Peak Power
Fixed Frequency 8800 ± 25 mcs

This long life, low power miniature pulse magnetron is designed for systems, such as pulse doppler and beacon applications, where extremely high duty is required. The L-3089 magnetron is available from Litton Industries with warranted operation for 1000 or 2000 hours.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.9 A |
| Preheat Time | Min. 45 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.2 A |
| Time of Rise of Voltage | Min. 0.15 us |
| Anode Cathode Capacitance | Max. 15 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.0 A |
| Pulse Current | 0.240 A |
| Pulse Length | 5.0 us |
| Average Input Power | 54 W |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 73,500 Feet |

## PERFORMANCE CHARACTERISTICS

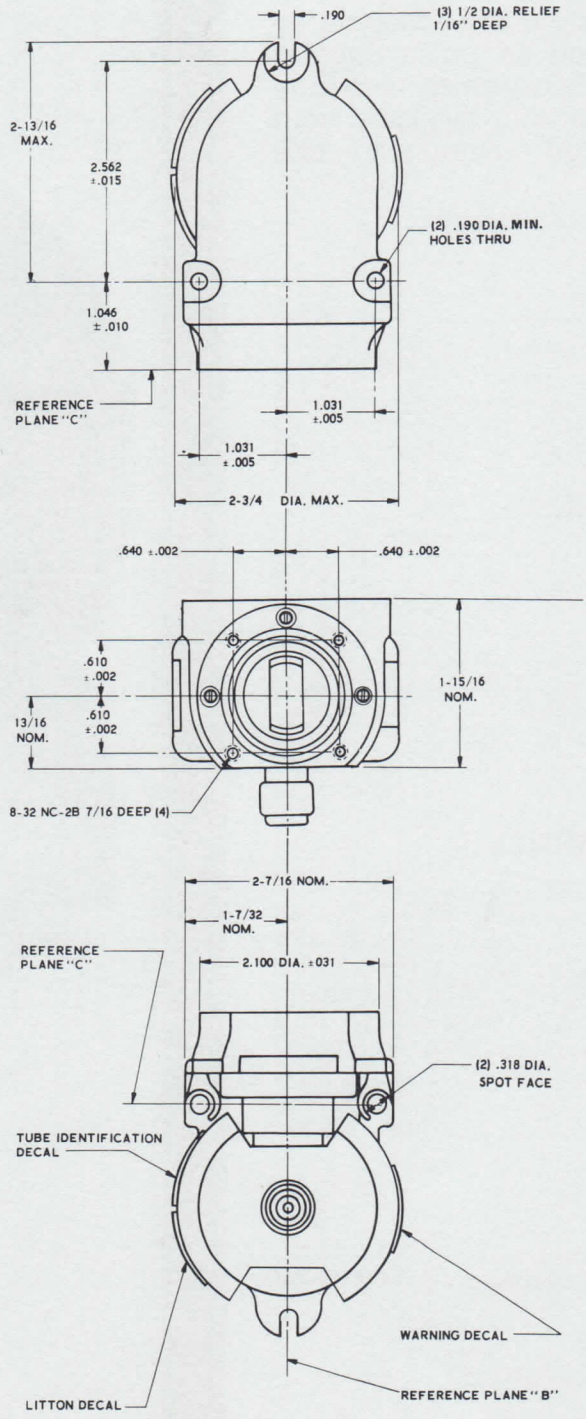
| | |
|---|---|
| Peak Power | Min. 40 W |
| Fixed Frequency | 8800 ± 25 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% lb) | Max. 2 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Bandwidth | Max. 5.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. .130 mc/°C |
| Shock (11 ± 1 m s) | 15 G |
| Rated Cycle Life | 1200 Hrs. |
| Frequency Jitter (RMS) | Max. 500 kc. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 21 oz. |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-3089B



# PULSE MAGNETRON

# L-3101

60 Kilowatts Minimum Peak Power
Tunable Frequency 16,000 to 17,000 mcs

This series of long life, highly reliable, tunable Ku-band pulse magnetrons, rated at 1.0, 2.0 and 3.0 microsecond pulse operation respectively, is similar to the L-3083 series, except that approximately 120 turns are required to traverse the frequency range. Tuning may be manual or by mechanical servo-drive.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 15 to 18 kVdc |
| Pulse Current | 16 A |

## ABSOLUTE MAXIMUM RATINGS

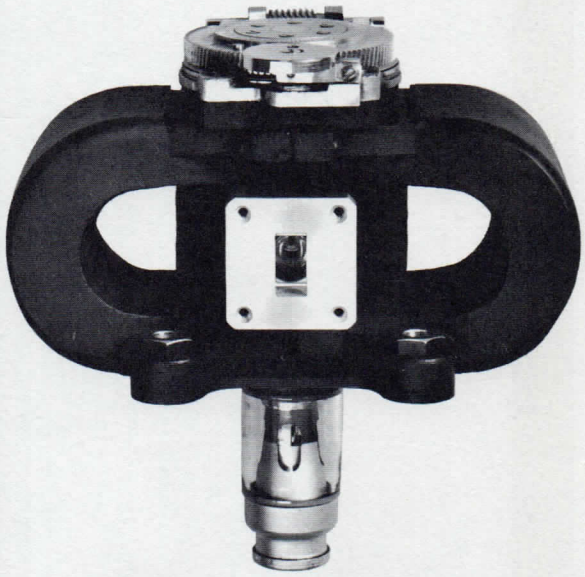
| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 10 A |
| Pulse Current | 17 A |
| Average Input Power | 272 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 60 kW |
| Tunable Frequency | 16.0 to 17.0 kmcs |
| Pulling Factor (1.3:1 VSWR) | Max. 18 mcs |
| Pushing Figure | Max. 5 mcs |
| Missing Pulses | Max. 1 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.450 mc/°C |
| Vibration (5 to 500 cps) | 0.01 Da or 5 G |
| Shock (11 m s) | 15 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 5½ lbs. |
| Mating Mounting Flange | UG-541/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

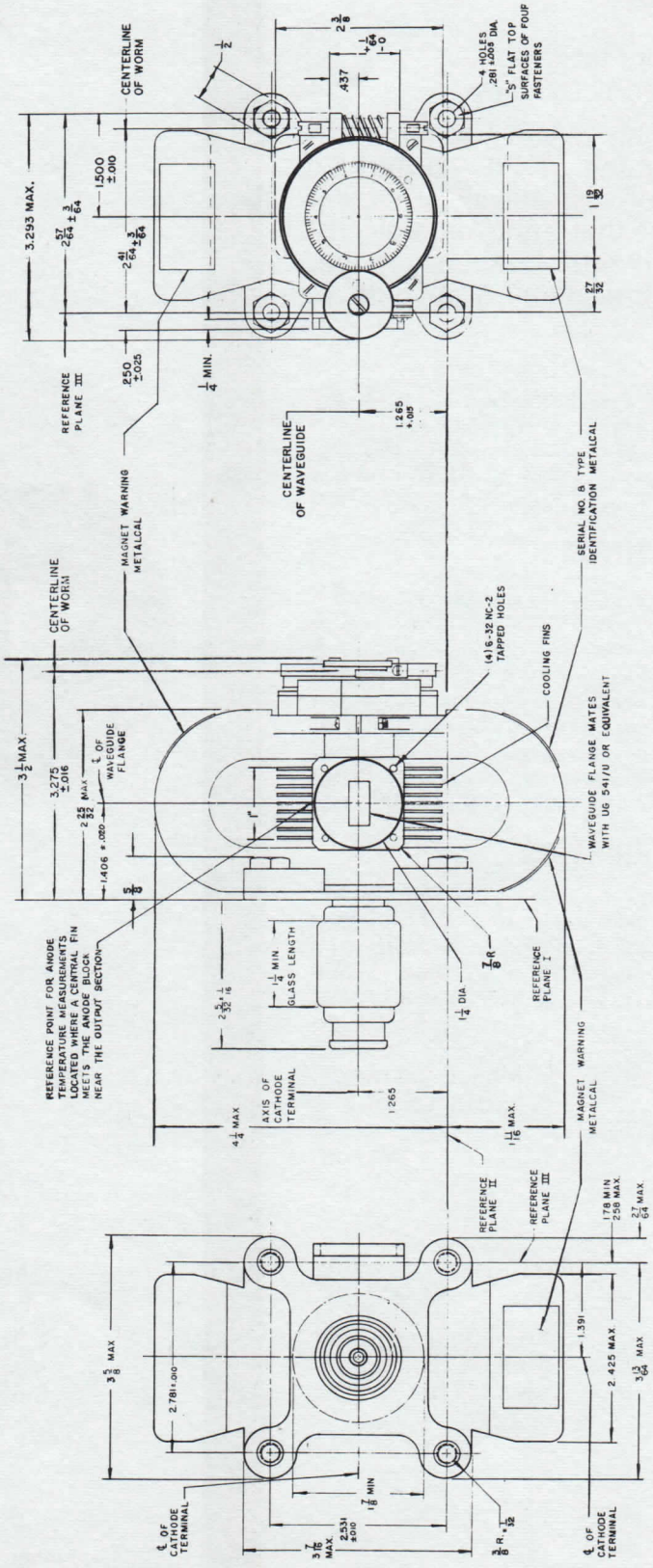


**L-3101 SERIES**

| Type | Absolute Max. Pulse Length |
|---|---|
| L-3101A | 1.0 |
| L-3101B | 2.0 |
| L-3101C | 3.0 |

# PULSE MAGNETRON

# L-3101

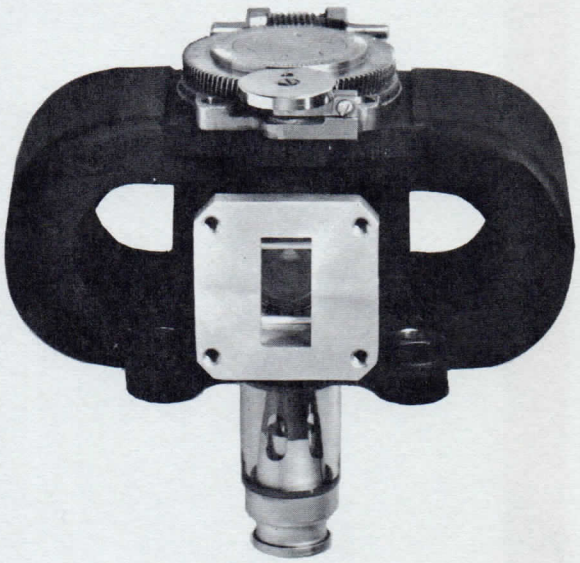


# PULSE MAGNETRON

# L-3103

30 Kilowatts Minimum Peak Power
Tunable Frequency 8500 to 9600 mcs

This long life, tunable pulse magnetron has been designed for systems requiring high duty operation in a tube featuring the tunability and superior electrical and mechanical characteristics of the 6543 pulse magnetron.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Pulse Voltage | Nominal 12.5 kVdc |
| Pulse Current | 10 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 13.7 V |
| Heater Surge Current | 10 A |
| Average Input Power | 350 W |
| Duty Cycle | 0.002 |
| Anode Temperature | 150° C |
| Cathode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

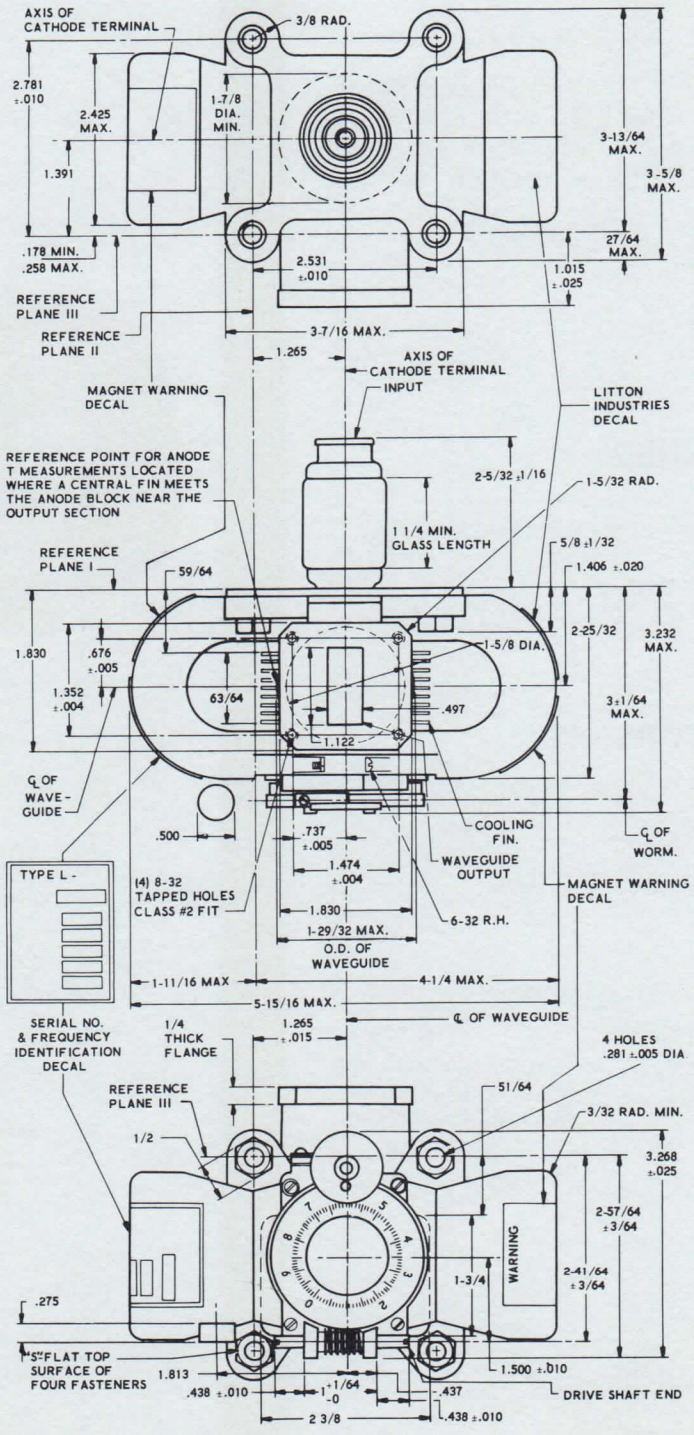
| | |
|---|---|
| Peak Power | Min. 30 kW |
| Tunable Frequency | 8500 to 9600 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Missing Pulses | Max. 1 Percent |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 6 lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# PULSE MAGNETRON

# L-3103

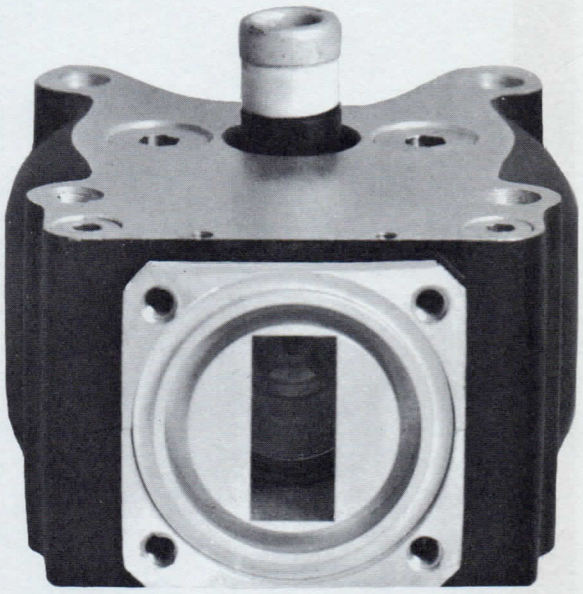


# PULSE MAGNETRON

# L-3105

100 Watts Minimum Peak Power
Fixed Frequency 9300 ± 30 mcs

This ruggedized, fixed frequency, miniature pulse magnetron has been designed with excellent electrical characteristics and shock resistance features, making it particularly applicable for high performance aircraft, missile and satellite systems. Low thermal factors (less than 75 Kc/°C), high frequency stability and short pulse operation ( .020 us and less) make the tube extremely versatile.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.04 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 14.5 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 80,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 W |
| Fixed Frequency | 9300 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% lb) | Max. 3.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 6.0 db |
| Bandwidth | Max. 3.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.1 mc/°C |
| Vibration (40 to 2000 cps) | 15 G |
| Shock (5 ±1ms) | 100 G |
| Rated Cycle Life | 150 Hrs. |

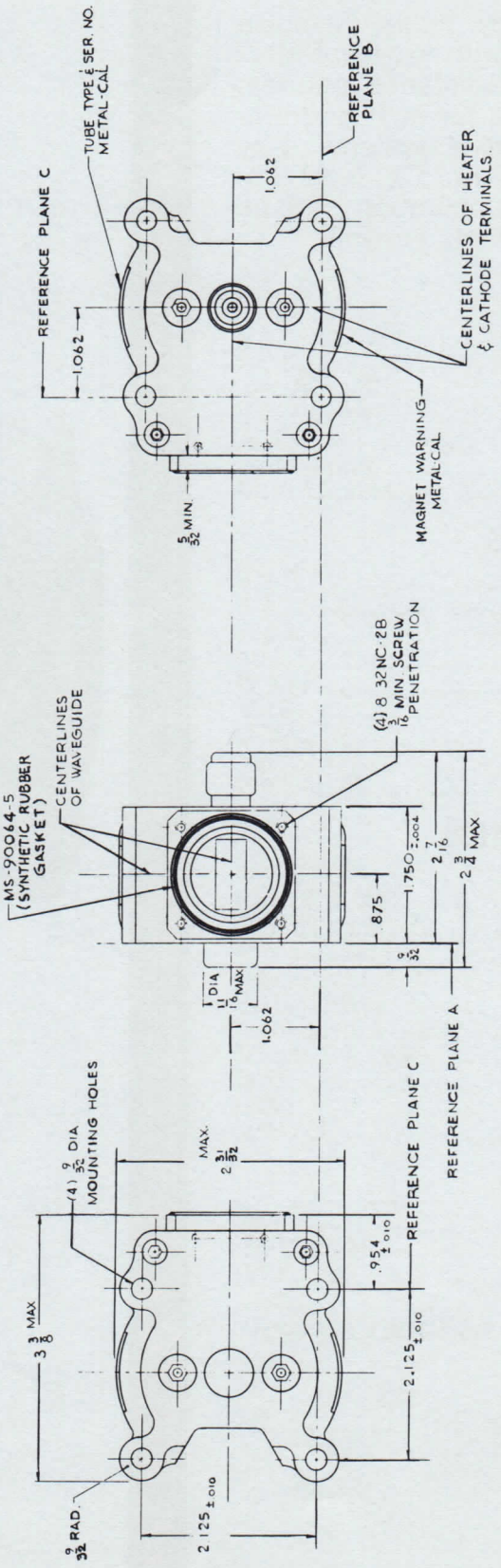
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 22 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other frequencies see: L-3314, L-3436, L-3435, L-3434.

# PULSE MAGNETRON

# L-3105

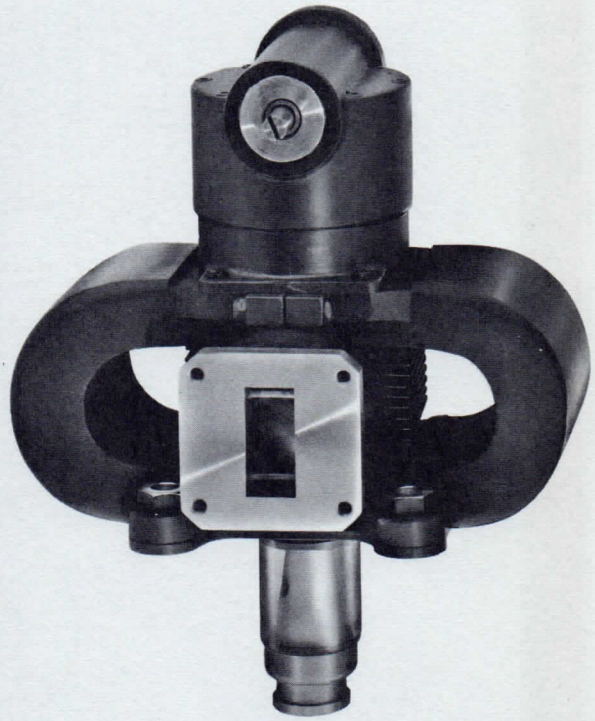


PULSE MAGNETRON

# L-3106

65 Kilowatts Minimum Peak Power
Tunable Frequency 8500 to 9600 mcs

This long life, tunable pulse magnetron has been designed to combine extremely fast mechanical tuning with the superior electrical and mechanical characteristics of the Litton Industries LT-6543. The L-3106 is recommended for use in all systems requiring a nominal power output of 80 kW and rapid mechanical tunability.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.2 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 15 kv |
| Pulse Current | 15 A |
| Tuner Turns | 4.6 turns |
| Tuner Torque | Max. 40 in./oz. |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 13.7 V |
| Heater Surge Current | 10 A |
| Pulse Current | 18 A |
| Pulse Length | 5.0 us |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

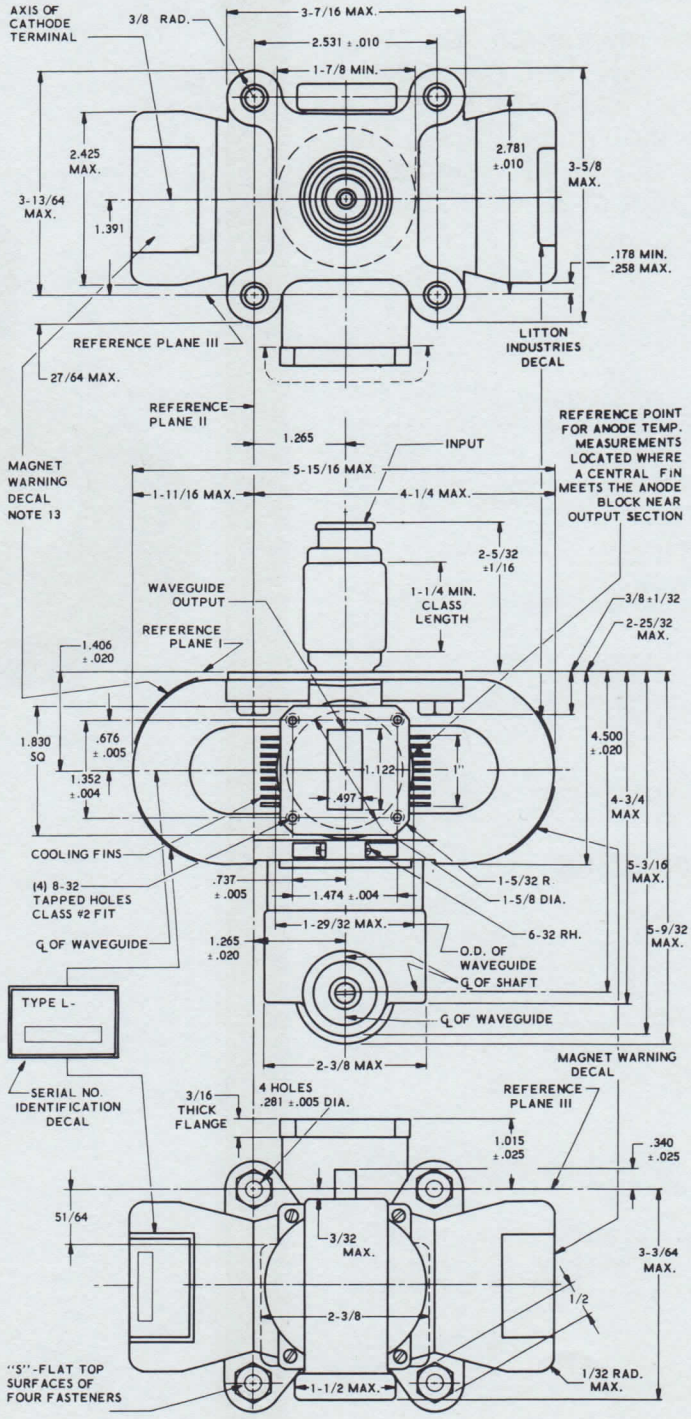
| | |
|---|---|
| Peak Power | Min. 65 kW |
| Tunable Frequency | 8500 to 9600 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Missing Pulses | Max. 1 Percent |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 6¼ lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# PULSE MAGNETRON

# L-3106

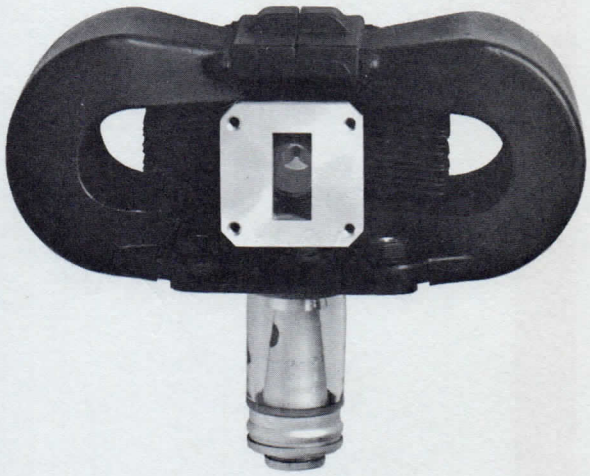


# PULSE MAGNETRON

# L-3156

112 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 30 mcs

This fixed frequency, pulse magnetron has been designed for use when higher duty at a lower power output is desired together with similar performance characteristics of the 4J50A. Compact and highly reliable, the L-3156 is recommended for use in airborne fire control systems, shipboard search radar, and other similar applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 13.75 V |
| Heater Current | 3.2 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 19 to 21 kV |
| Pulse Current | 16 A |
| Rate of Rise of Voltage | Max. 160 kv/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15 V |
| Heater Surge Current | 15 A |
| Duty Cycle | 0.002 |
| Anode Temperature | 150° C |
| Cathode Temperature | 165° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

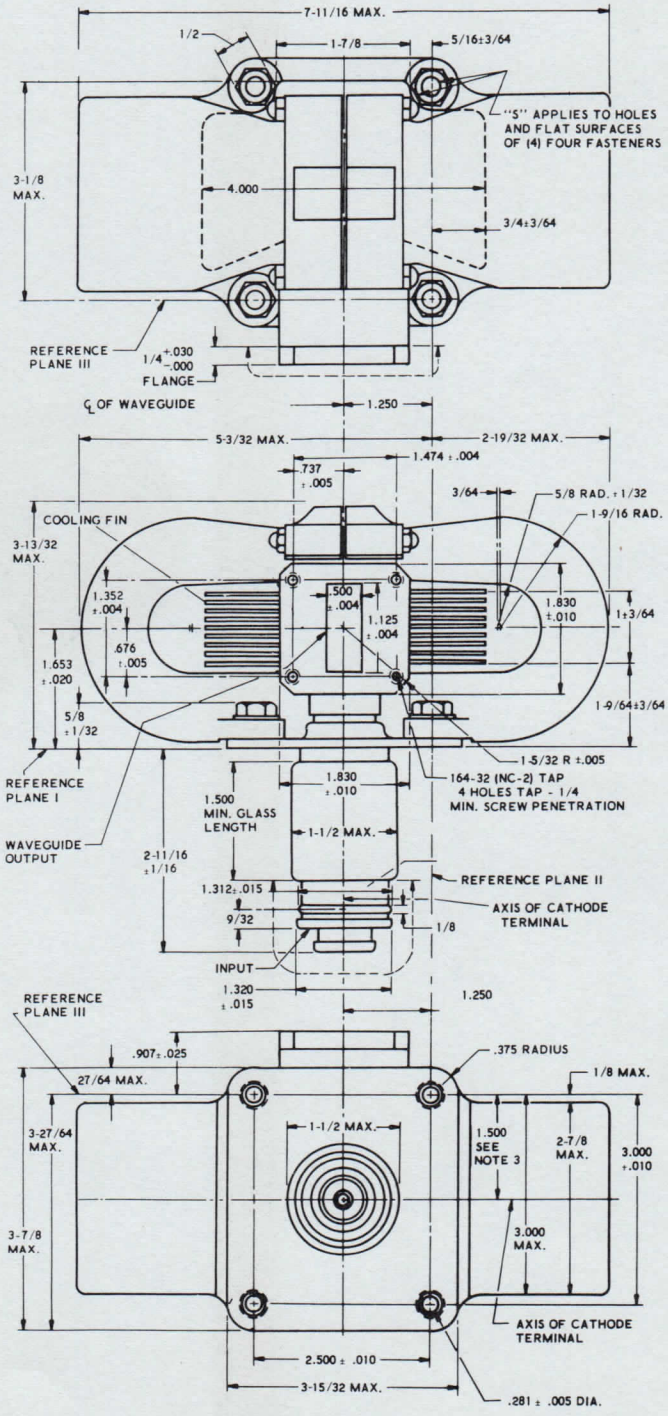
| | |
|---|---|
| Peak Power | Min. 112 kW |
| Fixed Frequency | 9375 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 6 db |
| Bandwidth | Max. 3.0/tpc. mcs |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 10 lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced Air |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# PULSE MAGNETRON

# L-3156



PULSE MAGNETRON

# L-3168

30 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 30 mcs

This compact, highly efficient, fixed frequency, pulse magnetron is a version of the Litton Industries 4J52A series designed for systems requiring higher duty operation. The L-3168 is recommended for use in fire control systems and similar applications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | Nominal 12.5 kV |
| Pulse Current | 10 A |

## ABSOLUTE MAXIMUM RATINGS

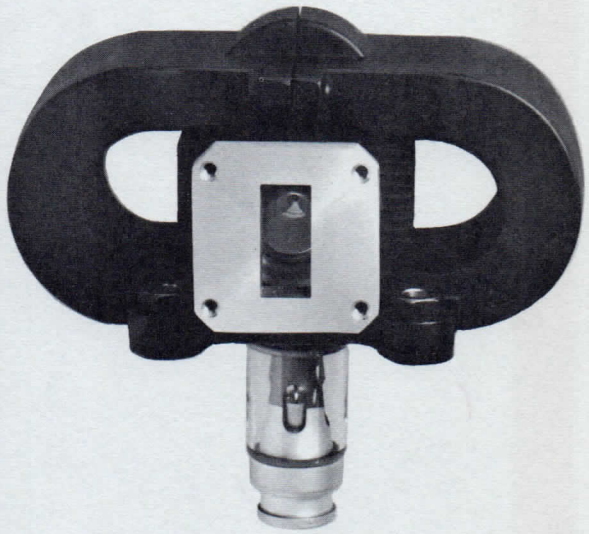
| | |
|---|---|
| Pulse Length | 5.0 us |
| Duty Cycle | 0.002 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 30 kW |
| Fixed Frequency | 9375 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Missing Pulses | Max. 1.0 Percent |

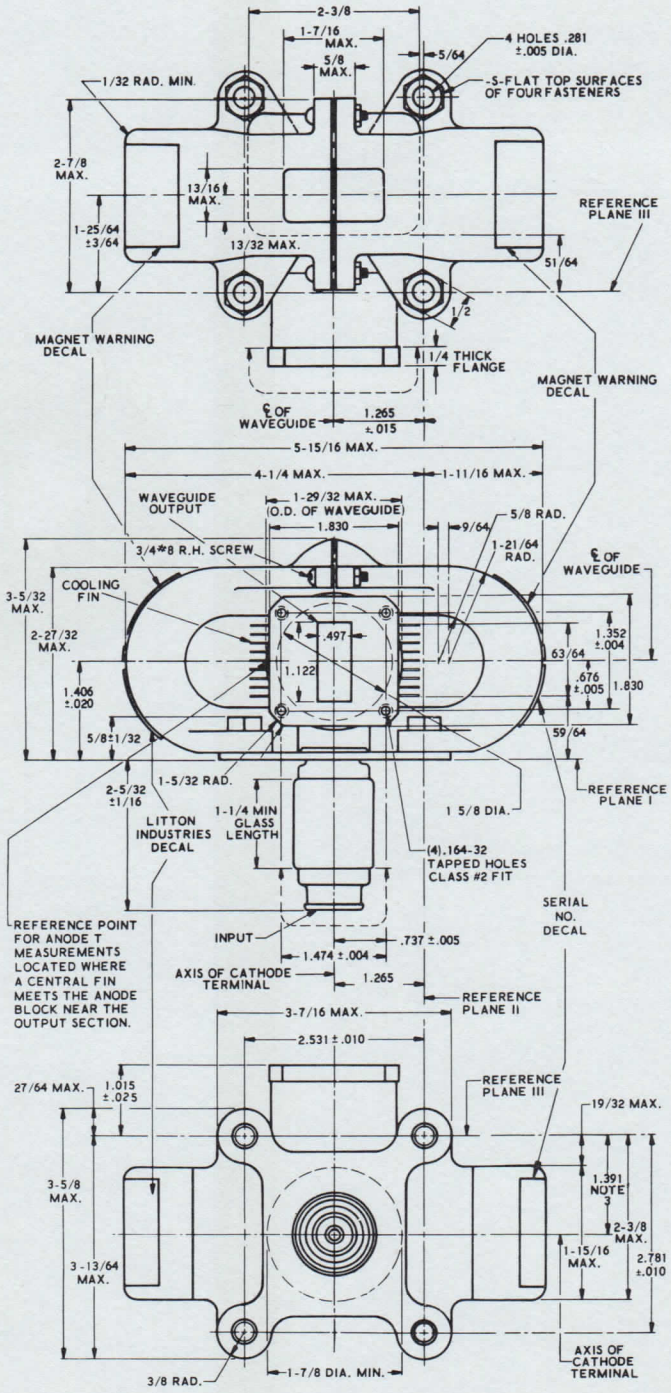
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 6½ lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |



# PULSE MAGNETRON

# L-3168

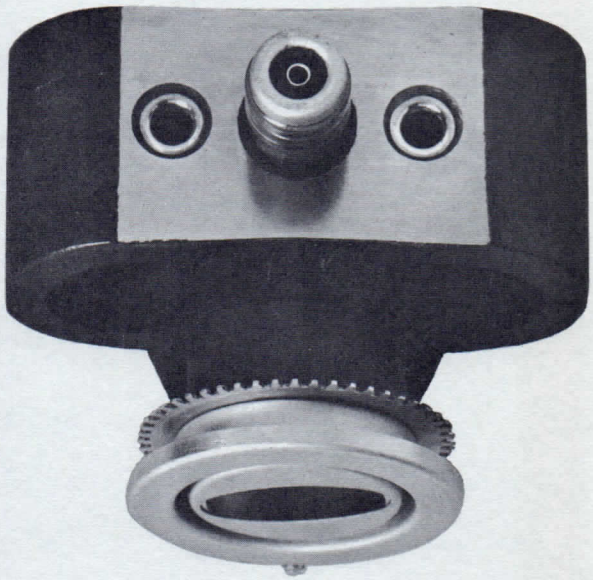


# PULSE MAGNETRON

# L-3180

120 Watts Minimum Peak Power
Tunable Frequency 9200 to 9220 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 920 V |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 15.0 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9200 to 9220 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% Ib) | Max. 2.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Rated Cycle Life | 300 Hrs. |

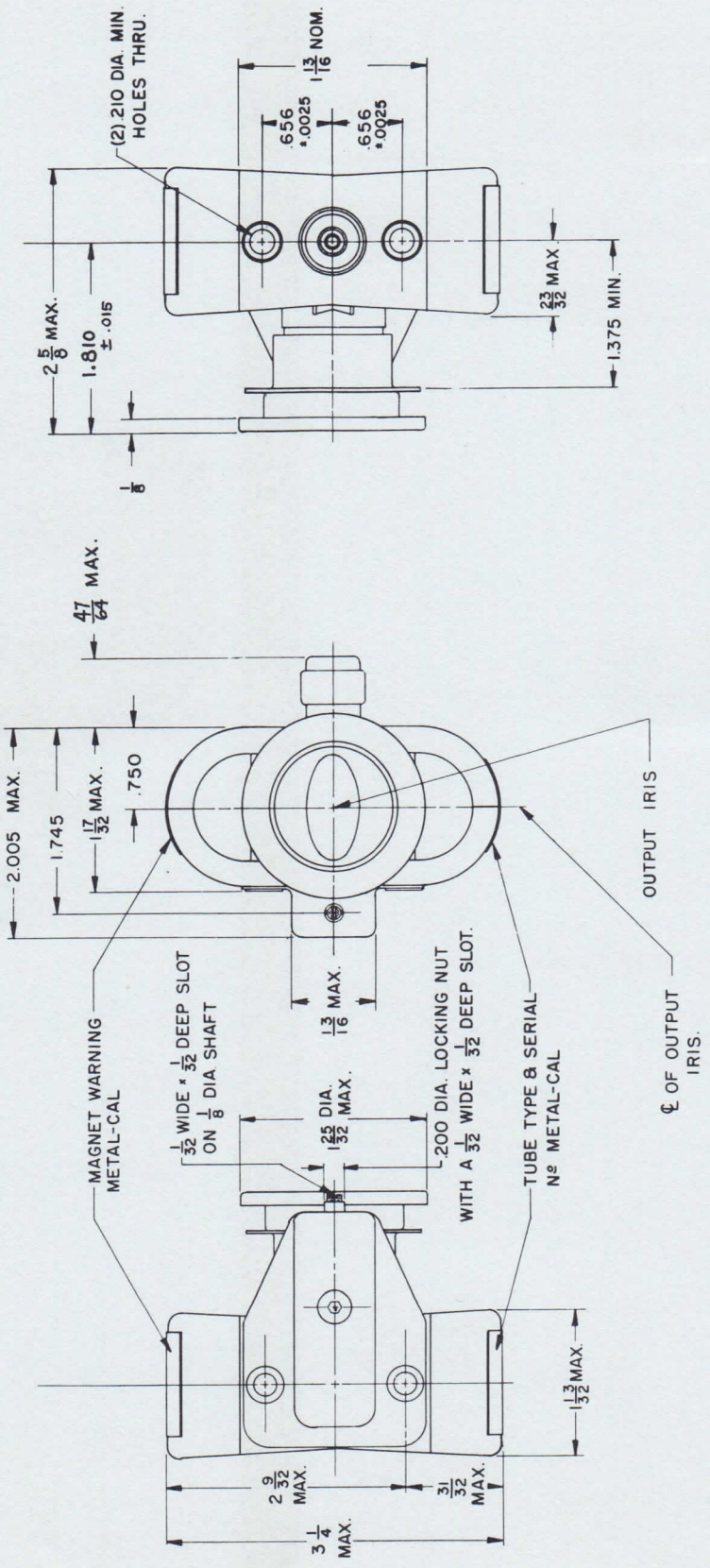
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other frequencies see:
L-3028D, L-3181, L-3212, L-3213, L-3214, L-3218, L-3226, L-3327, L-3601

# PULSE MAGNETRON

# L-3180

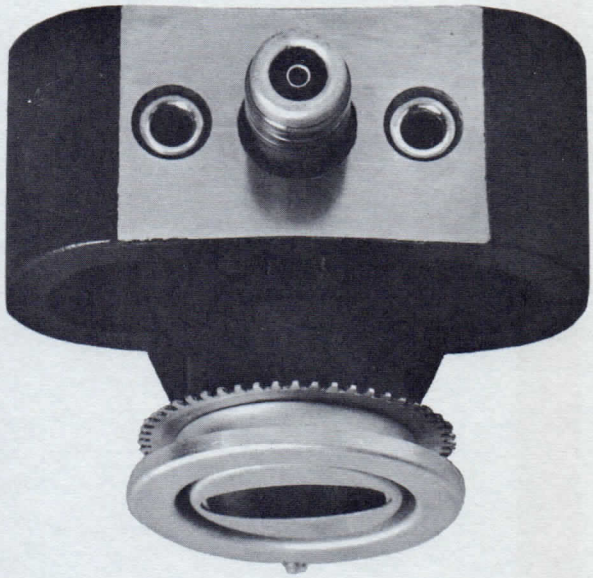


PULSE MAGNETRON

# L-3181

120 Watts Minimum Peak Power
Tunable Frequency 9250 to 9270 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 920 V |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 15.0 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9250 to 9270 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% Ib) | Max. 2.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Rated Cycle Life | 300 Hrs. |

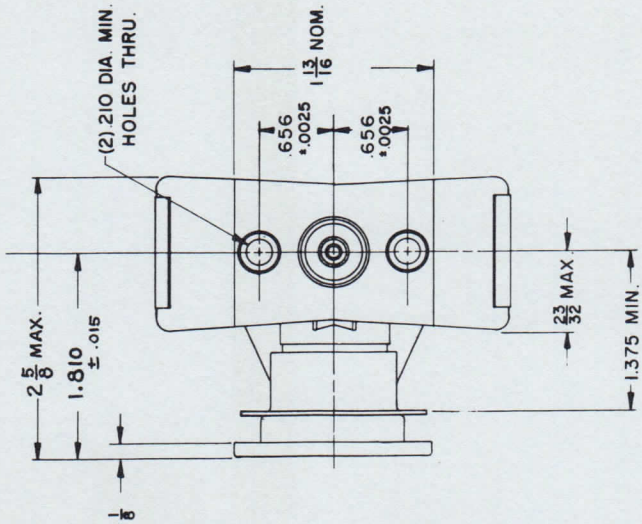
## MECHANICAL RATINGS

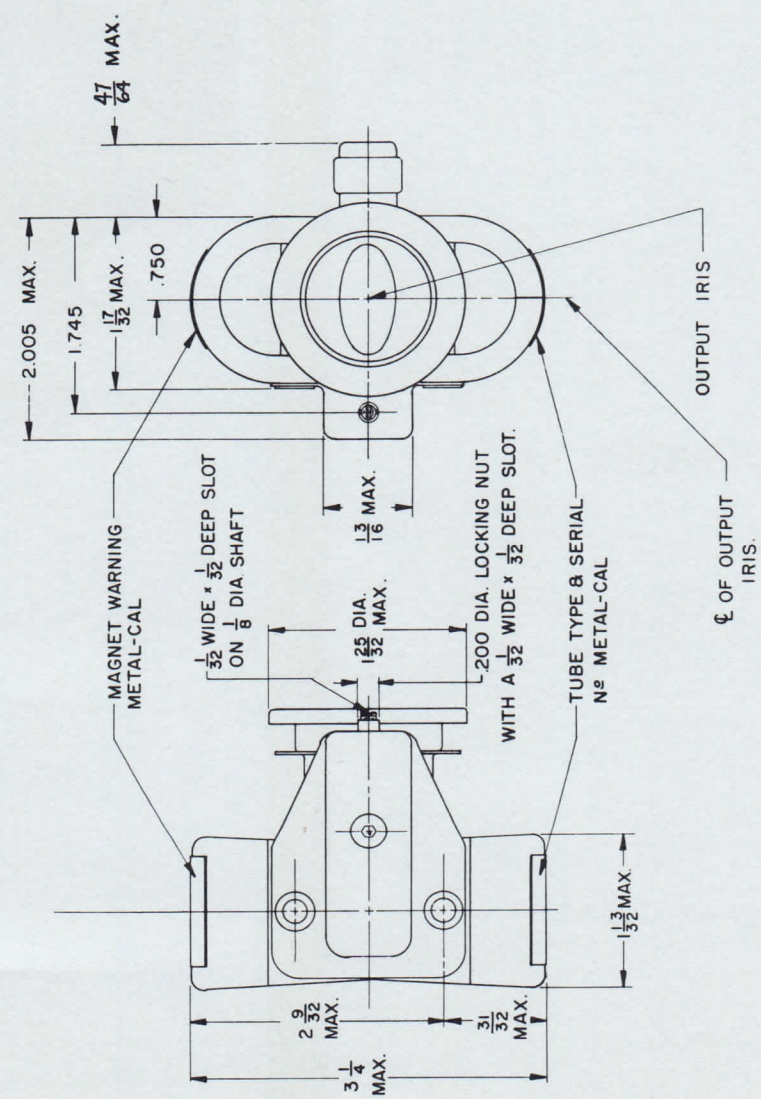
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE: For similar tubes at other frequencies see:
L-3028D, L-3180, L-3212, L-3213, L-3214, L-3218, L-3226, L-3327, L-3601

# PULSE MAGNETRON

# L-3181



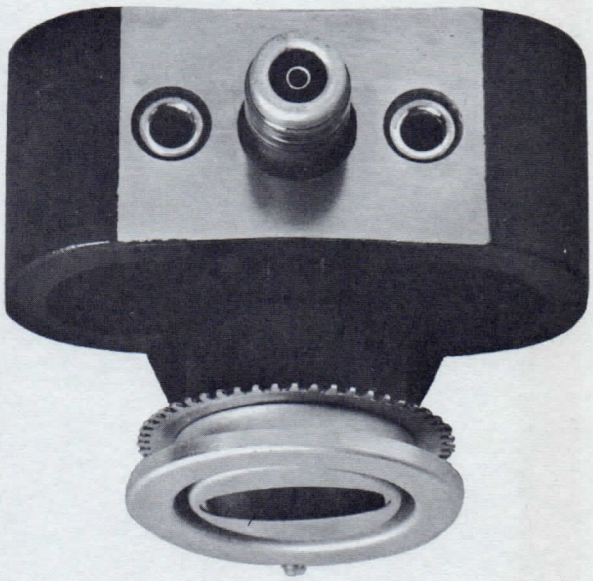



PULSE MAGNETRON

# L-3187

120 Watts Minimum Peak Power
Tunable Frequency 9250 to 9270 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 5.0 V |
| Heater Current | 0.70 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 2.5 A |
| Pulse Voltage | 910 V |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 14.5 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9250 to 9270 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% lb) | Max. 3.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Bandwidth | Max. 3.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Rated Cycle Life | 150 Hrs. |

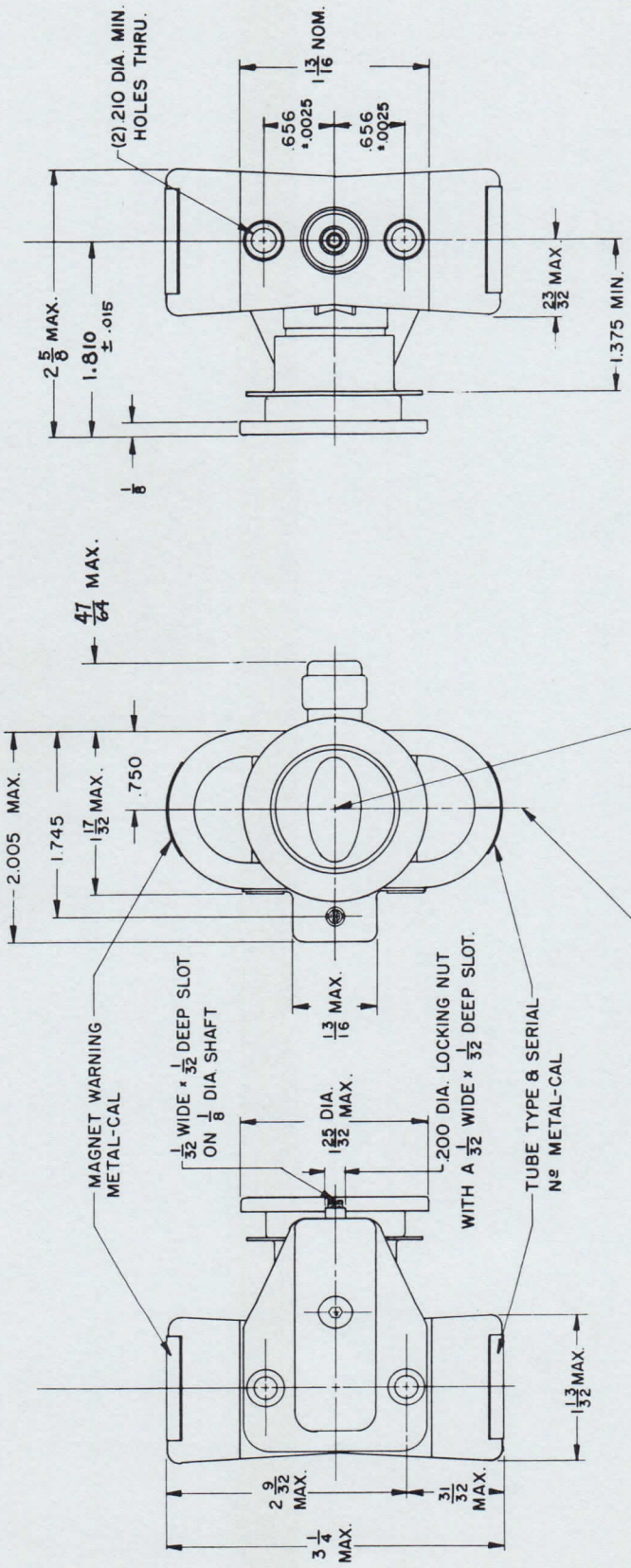
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE: For similar tube at another frequency see L-3087A.

# PULSE MAGNETRON

# L-3187

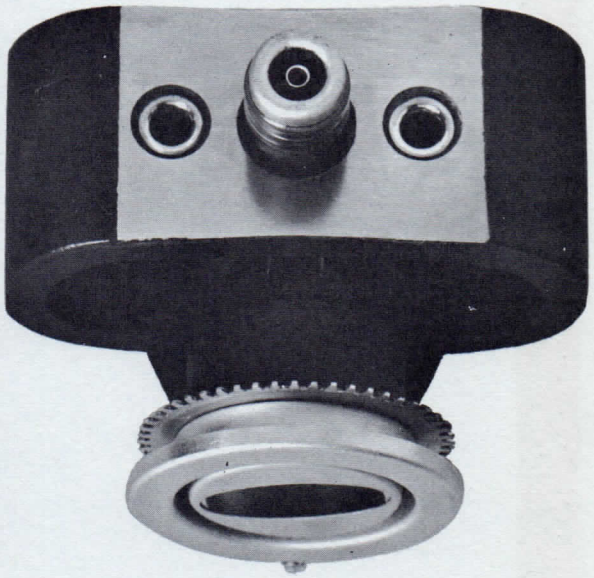


PULSE MAGNETRON

# L-3212

120 Watts Minimum Peak Power
Tunable Frequency 9000 to 9020 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation (.020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 920 V |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 15.0 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9000 to 9020 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% lb) | Max.2 .0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Rated Cycle Life | 300 Hrs. |

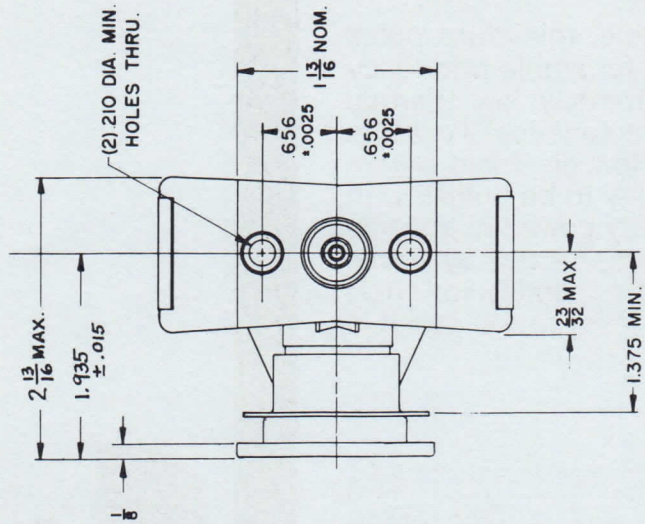
## MECHANICAL RATINGS

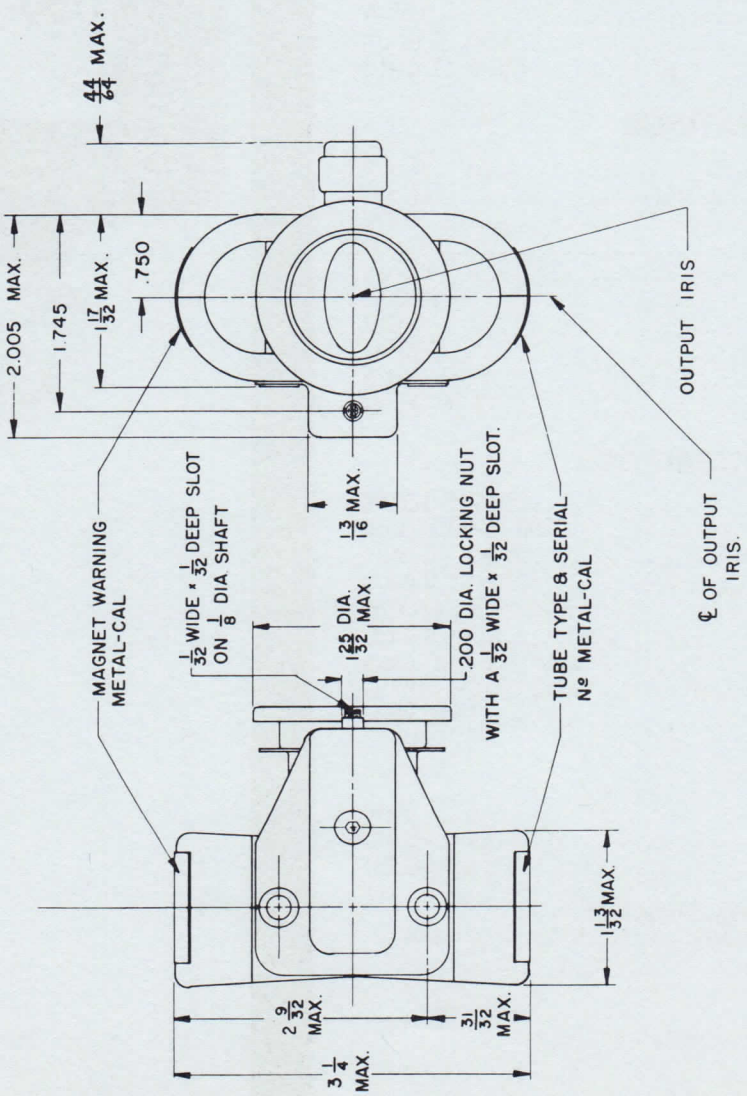
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE: For similar tubes at other frequencies see:
L-3028D, L-3180, L-3181, L-3213, L-3214, L-3218, L-3226, L-3327, L-3601

# PULSE MAGNETRON

# L-3212



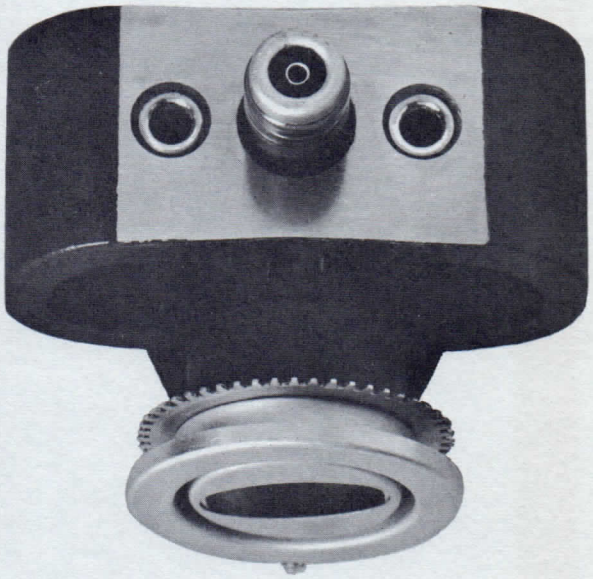



# PULSE MAGNETRON

# L-3213

120 Watts Minimum Peak Power
Tunable Frequency 9050 to 9070 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 920 V |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 15 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9050 to 9070 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% lb) | Max. 2.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Rated Cycle Life | 300 Hrs. |

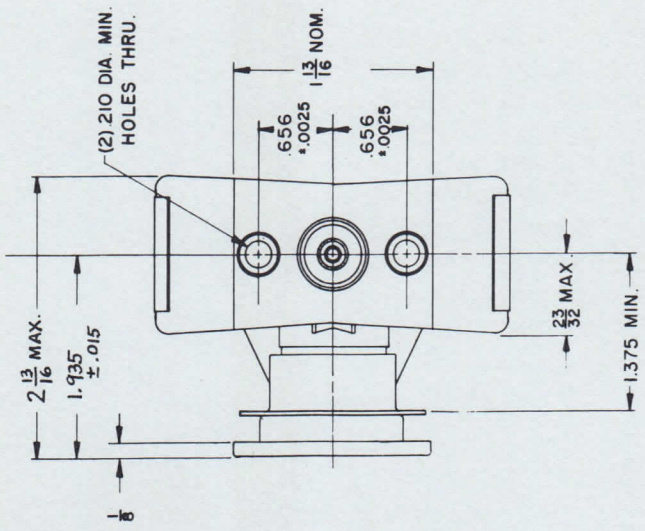
## MECHANICAL RATINGS

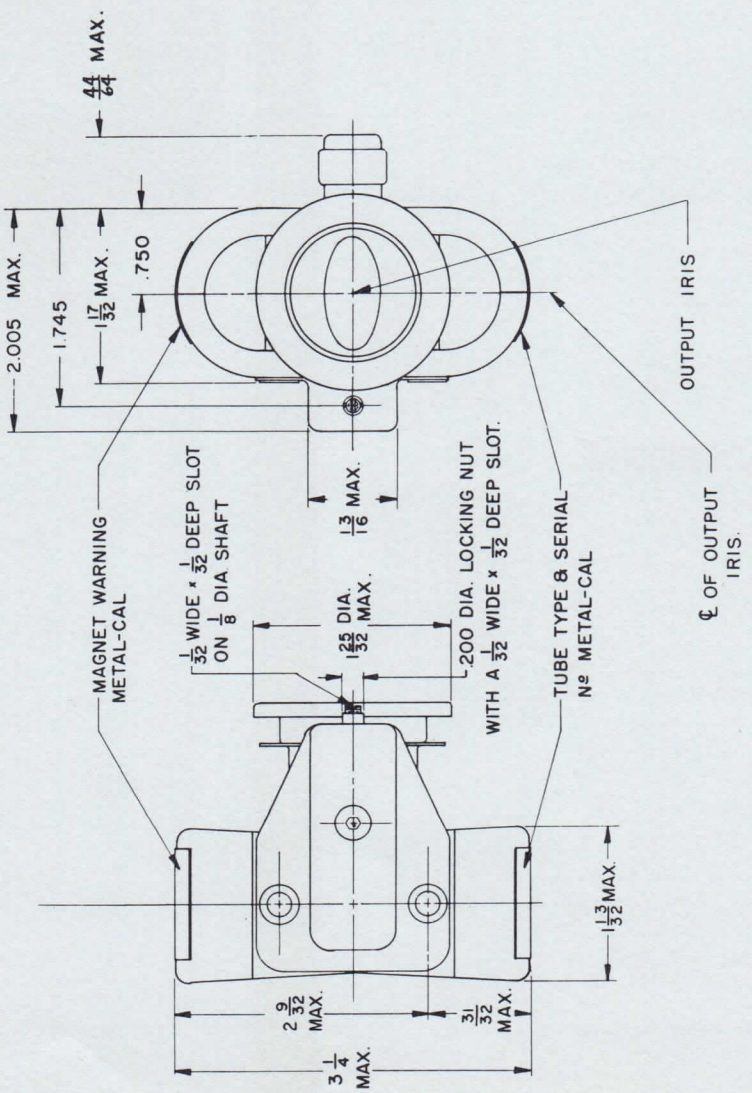
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other frequencies see:
L-3028D, L-3180, L-3181, L-3212, L-3214, L-3218, L-3226, L-3327, L-3601

PULSE MAGNETRON

# L-3213



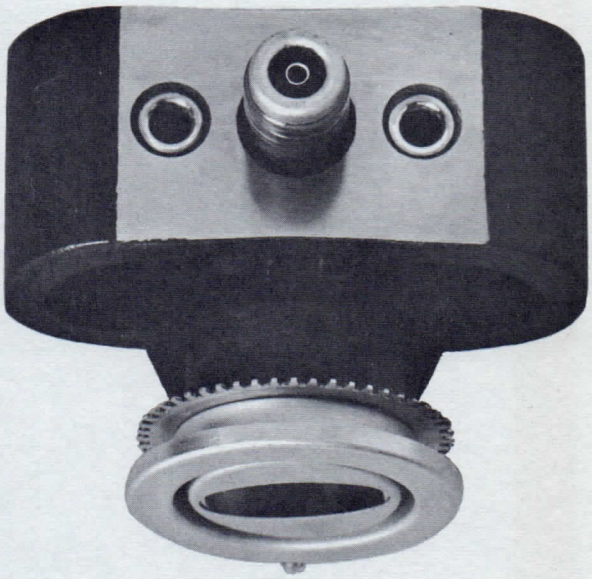



# PULSE MAGNETRON

# L-3214

120 Watts Minimum Peak Power
Tunable Frequency 9100 to 9120 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation (.020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 920 V |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 15.0 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9100 to 9120 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% Ib) | Max. 2.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Rated Cycle Life | 300 Hrs. |

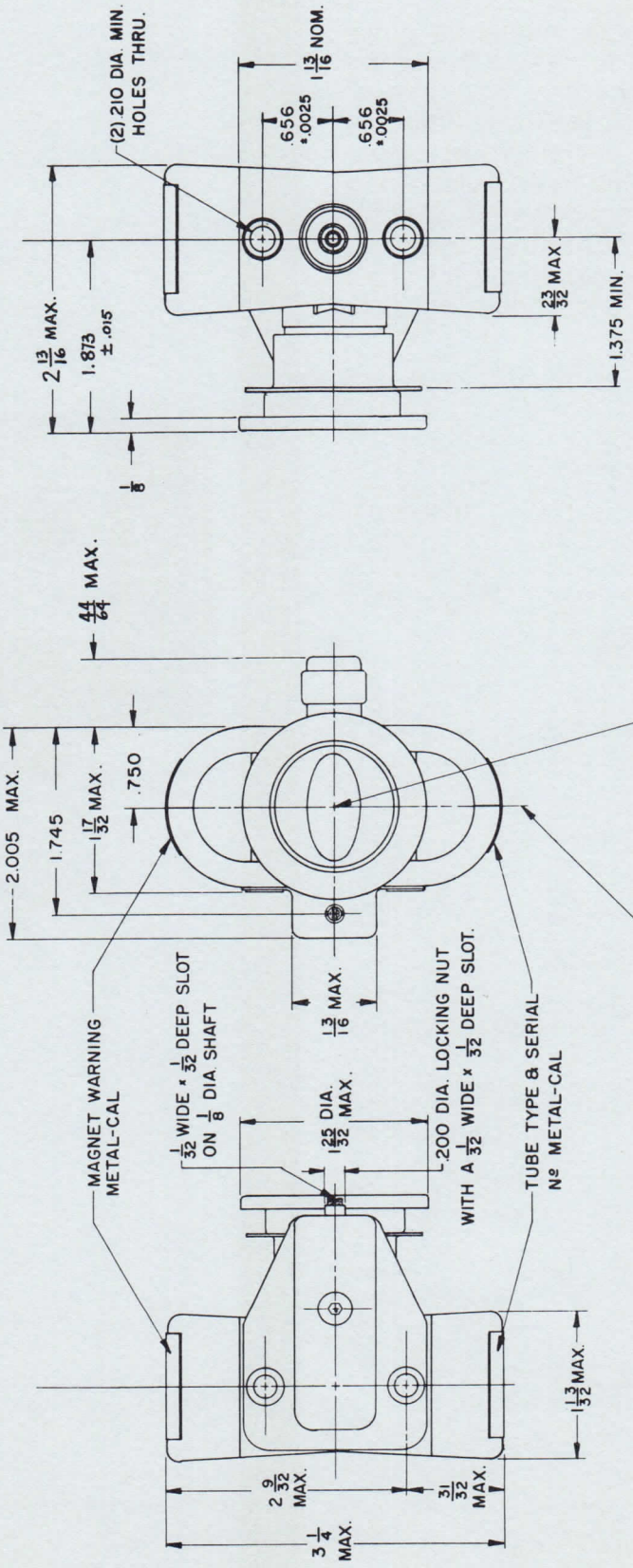
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE: For similar tubes at other frequencies see:
L-3028D, L-3180, L-3181, L-3212, L-3213, L-3218, L-3226, L-3327, L-3601

# PULSE MAGNETRON

# L-3214

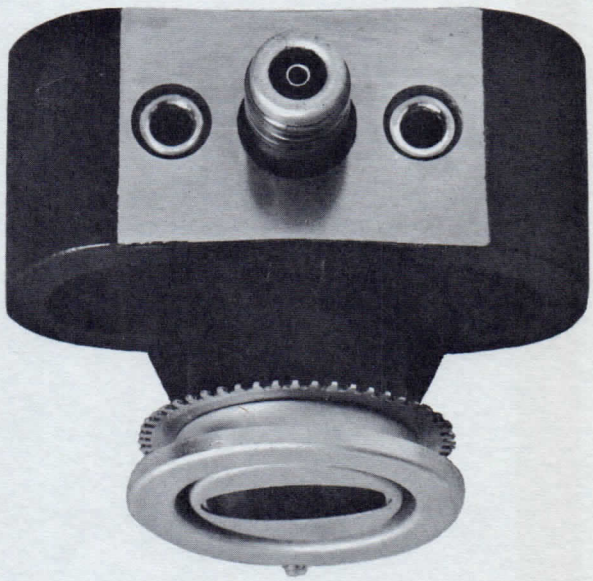


# PULSE MAGNETRON

# L-3218

120 Watts Minimum Peak Power
Tunable Frequency 9150 to 9170 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 920 V |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 15.0 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9150 to 9170 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% lb) | Max. 2.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Rated Cycle Life | 300 Hrs. |

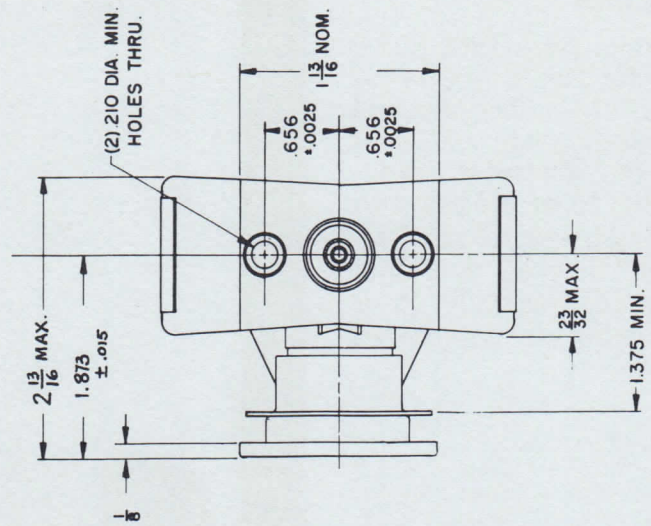
## MECHANICAL RATINGS

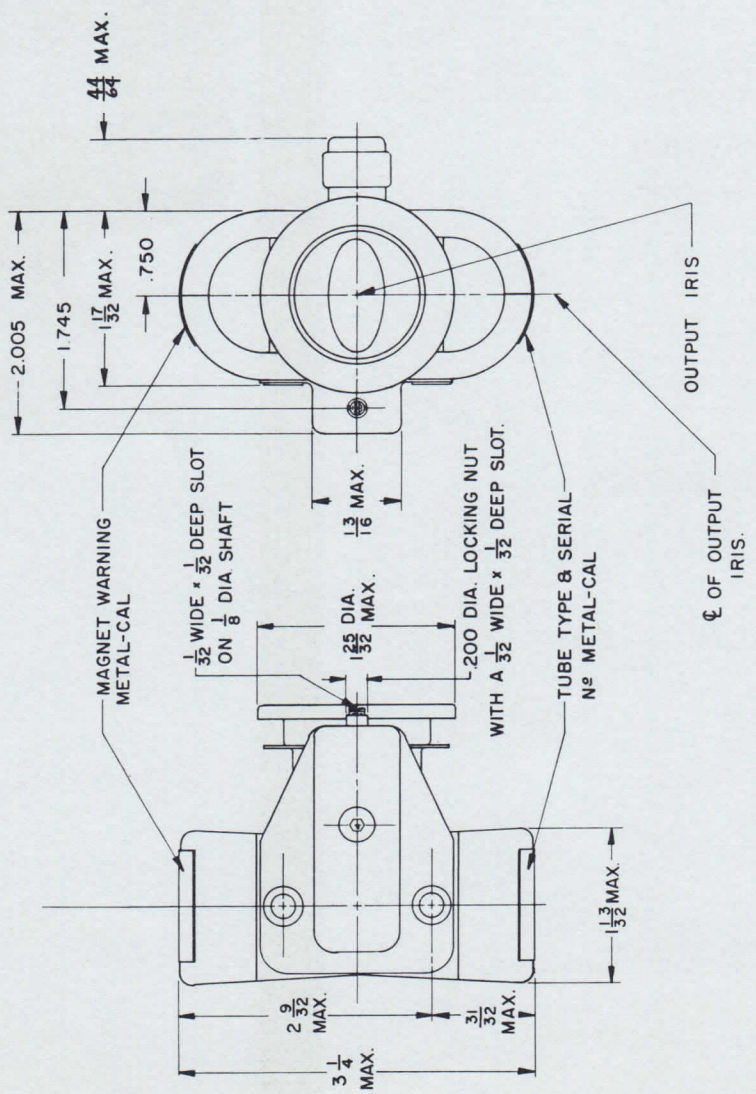
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE: For similar tubes at other frequencies see:
L-3028D, L-3180, L-3181, L-3212, L-3213, L-3214, L-3226, L-3327, L-3601

# PULSE MAGNETRON

# L-3218



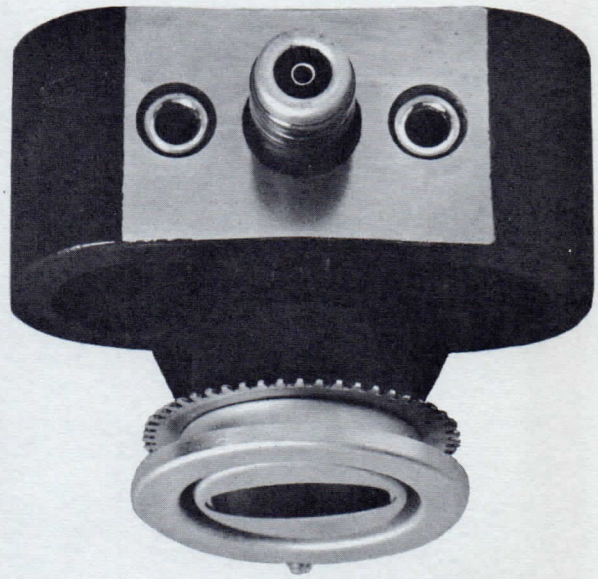



PULSE MAGNETRON

# L-3225

1.0 Kilowatt Minimum Peak Power
Tunable Frequency 9310 to 9350 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 2700 to 2900 V |
| Pulse Current | 1.33 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |
| Heater Cold Resistance | Min. 1.20 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 2950 V |
| Pulse Current | 1.5 A |
| Pulse Length | 3.0 us |
| Average Input Power | 14.5 W |
| Duty Cycle | 0.0033 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

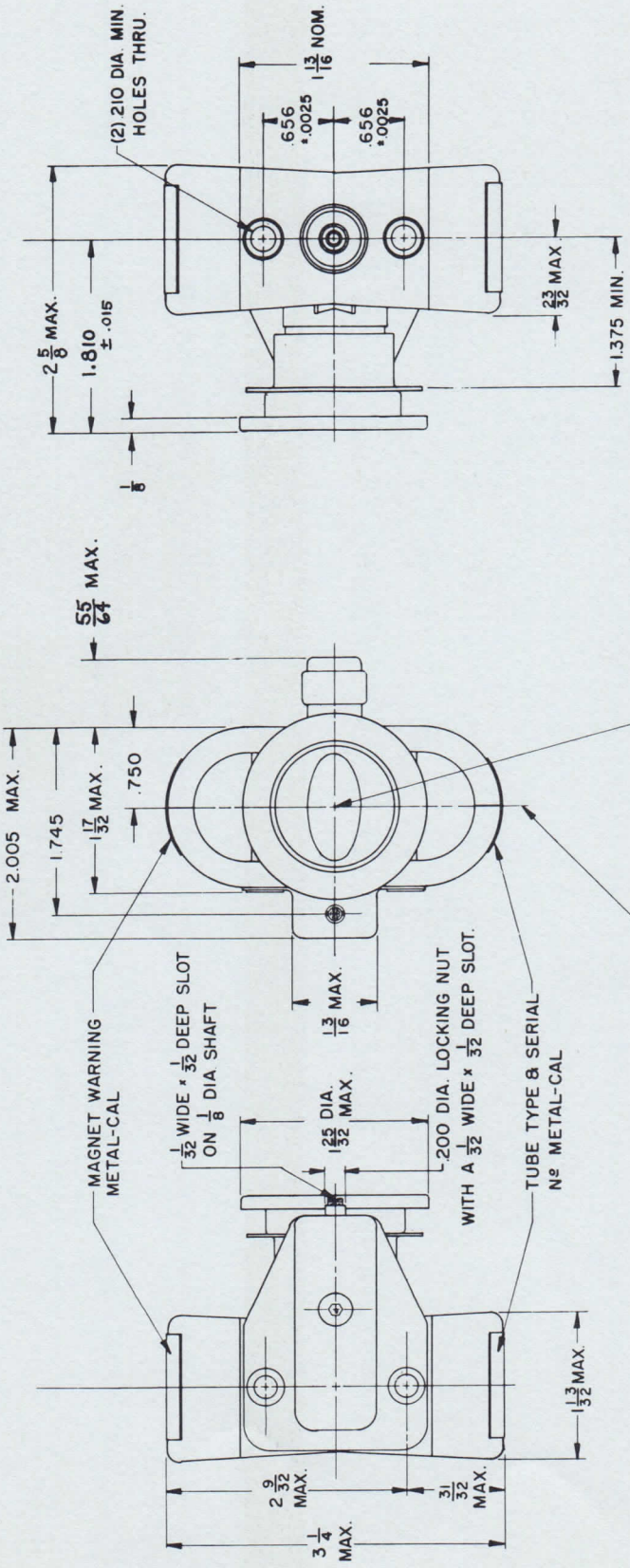
| | |
|---|---|
| Peak Power | Min. 1.0 kW |
| Tunable Frequency | 9310 to 9350 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% lb) | Max. 6.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 3.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Vibration (50 to 500 cps) | 10 G |
| Shock (11 ±1 m s) | 15 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-3225

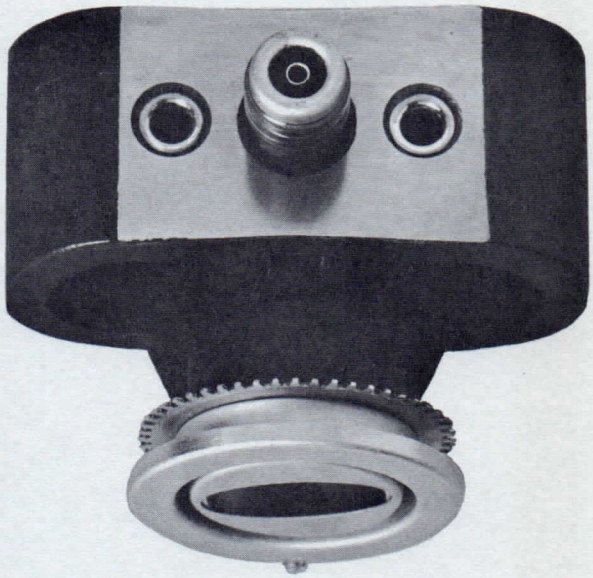


PULSE MAGNETRON

# L-3226

120 Watts Minimum Peak Power
Tunable Frequency 9180 to 9200 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 920 kV |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 15.0 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9180 to 9200 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% lb) | Max. 2.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Rated Cycle Life | 300 Hrs. |

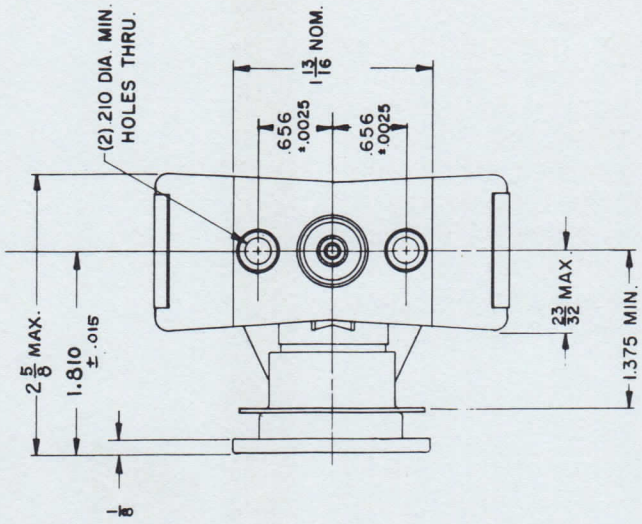
## MECHANICAL RATINGS

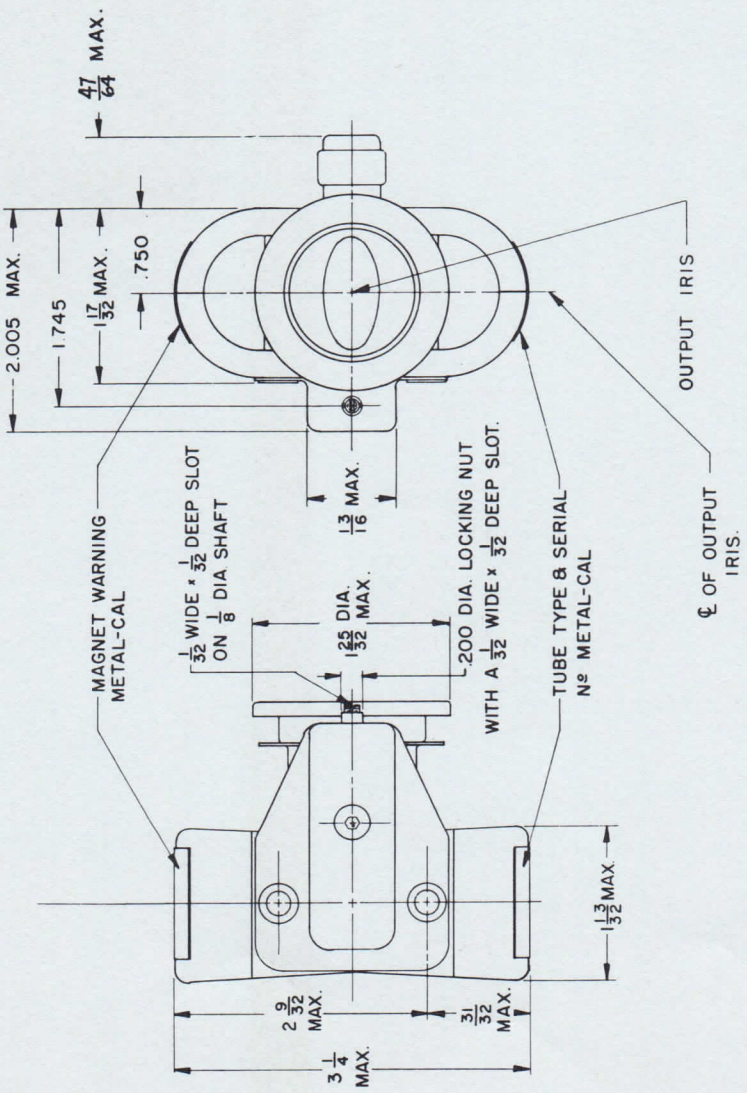
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other frequencies see:
L-3028D, L-3180, L-3181, L-3212, L-3213, L-3214, L-3218, L-3327, L-3601

# PULSE MAGNETRON

# L-3226



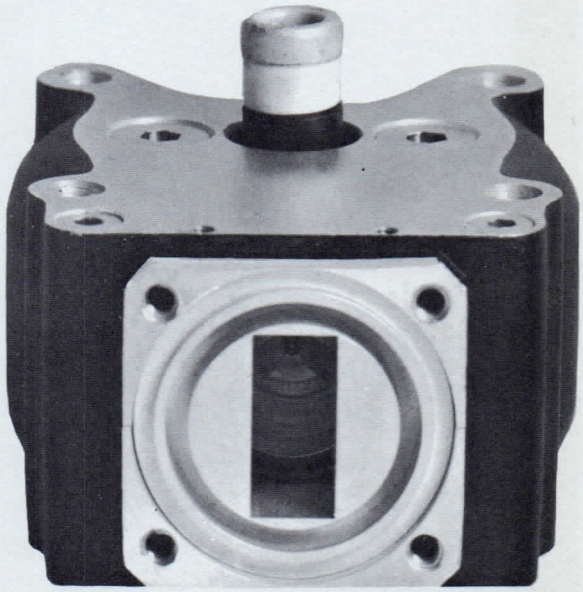



# PULSE MAGNETRON

# L-3238

1.0 Kilowatt Minimum Peak Power
Fixed Frequency 9340 ± 30 mcs

This ruggedized, fixed frequency, miniature pulse magnetron has been designed with excellent electrical characteristics and shock resistance features, making it particularly applicable for high performance aircraft, missile and satellite systems. Low thermal factors (less than 75 Kc/°C), high frequency stability and short pulse operation ( .020 us and less) make the tube extremely versatile.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 2700 to 2900 V |
| Pulse Current | 1.33 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 2950 V |
| Pulse Current | 1.5 A |
| Pulse Length | 3.0 us |
| Average Input Power | 14.5 W |
| Duty Cycle | 0.003 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 1.0 kW |
| Fixed Frequency | 9340 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% lb) | Max. 3.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 3.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Vibration (40 to 2000 cps) | 15 G |
| Shock (5 ±1 m s) | 100G |
| Rated Cycle Life | 150 Hrs. |

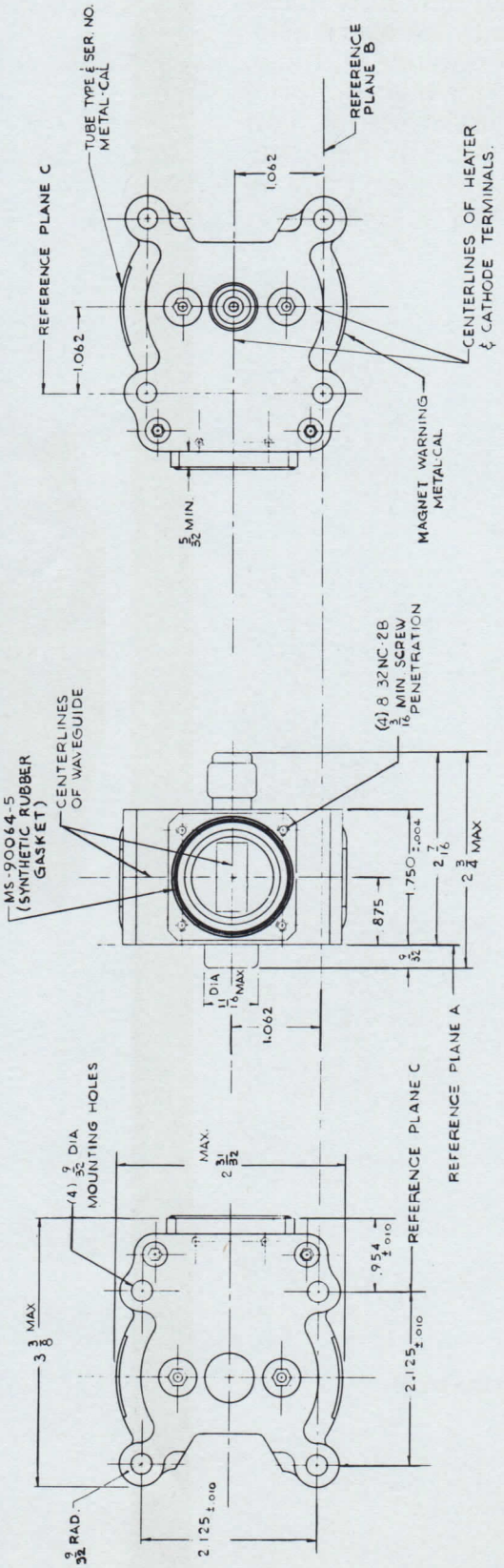
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 22 oz. |
| Anode Cooling | Forced Air |

NOTE: For similar tube at another frequency see L-3604.

# PULSE MAGNETRON

# L-3238

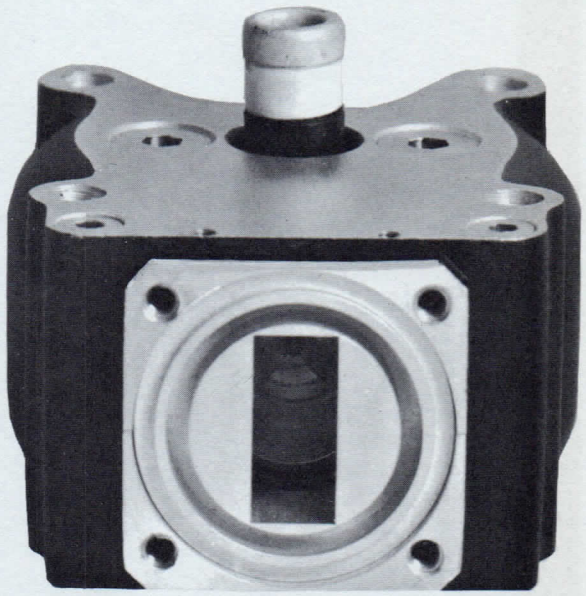


# PULSE MAGNETRON

# L-3239

2.0 Kilowatts Minimum Peak Power
Fixed Frequency 9300 ± 30 mcs

This ruggedized, fixed frequency, miniature pulse magnetron has been designed with excellent electrical characteristics and shock resistance features, making it particularly applicable for high performance aircraft, missile and satellite systems. Low thermal factors (less than 75 Kc/°C), high frequency stability and short pulse operation ( .020 us and less) make the tube extremely versatile.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 3.3 to 3.5 kVdc |
| Pulse Current | 2.25 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 3.55 kv |
| Pulse Current | 2.5 A |
| Pulse Length | 3.0 us |
| Average Input Power | 17.5 W |
| Duty Cycle | 0.002 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 2.0 kW |
| Fixed Frequency | 9300 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% lb) | Max. 3.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Vibration (40 to 2000 cps) | 15 G |
| Shock (5 ± 1 m s) | 100 G |
| Rated Cycle Life | 250 Hrs. |

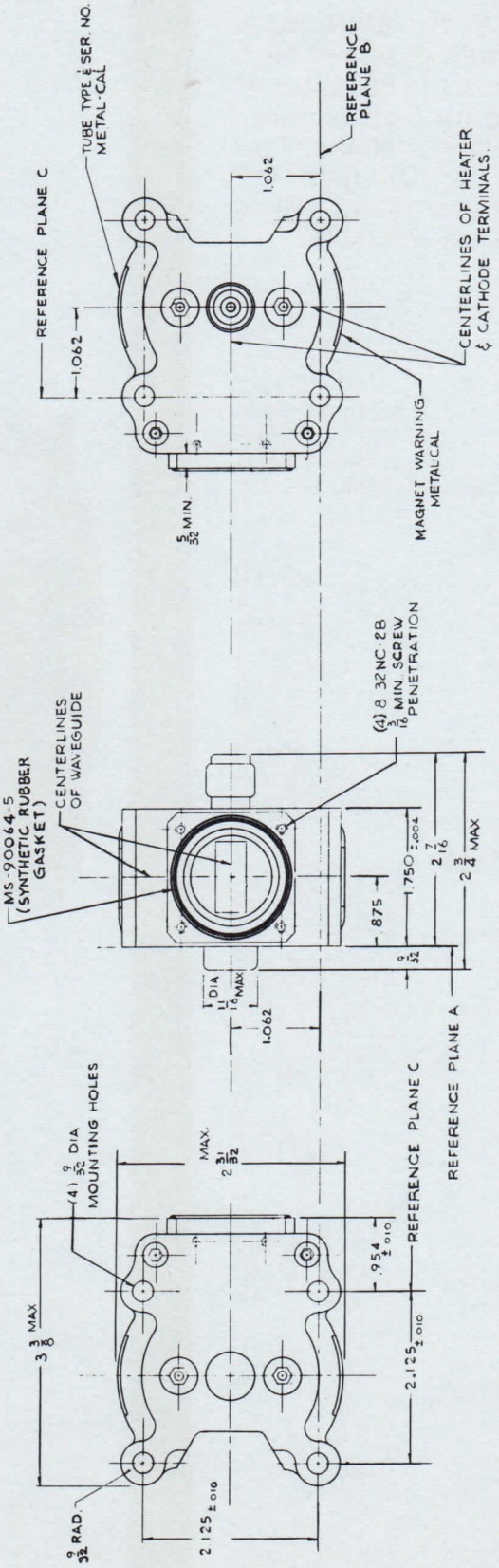
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 22 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other power levels see:
L-3105, L-3603, L-3604, L-3605, L-3268

# PULSE MAGNETRON

# L-3239

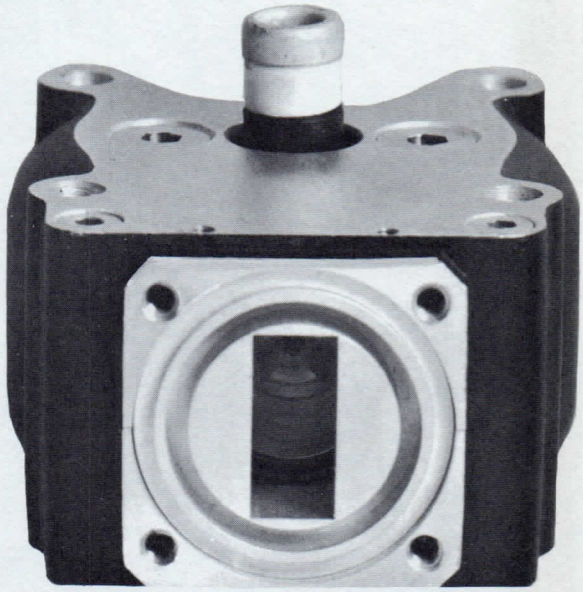


# PULSE MAGNETRON

# L-3268

4.0 Kilowatts Minimum Peak Power
Fixed Frequency 9300 ± 30 mcs

This ruggedized, fixed frequency, miniature pulse magnetron has been designed with excellent electrical characteristics and shock resistance features, making it particularly applicable for high performance aircraft, missile and satellite systems. Low thermal factors (less than 75 Kc/°C), high frequency stability and short pulse operation ( .020 us and less) make the tube extremely versatile.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.9 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 3600 to 3900 V |
| Pulse Current | 3.75 A |
| Time of Rise of Voltage | Min. 0.10 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.75 A |
| Pulse Voltage | 3.9 kv |
| Pulse Current | 4.0 A |
| Pulse Length | 1.0 us |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 30,000 Feet |

## PERFORMANCE CHARACTERISTICS

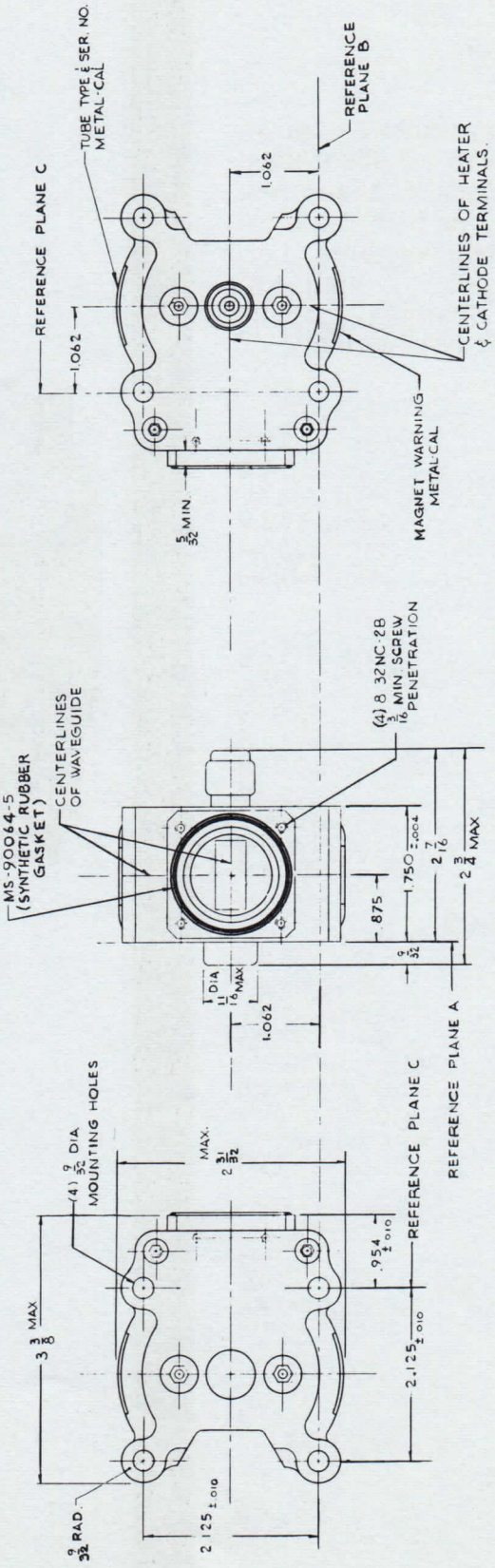
| | |
|---|---|
| Peak Power | Min. 4.0 kW |
| Fixed Frequency | 9300 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% Ib) | Max. 3.0 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.10 mc/°C |
| Vibration (40 to 2000 cps) | 15 G |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 22 oz. |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-3268

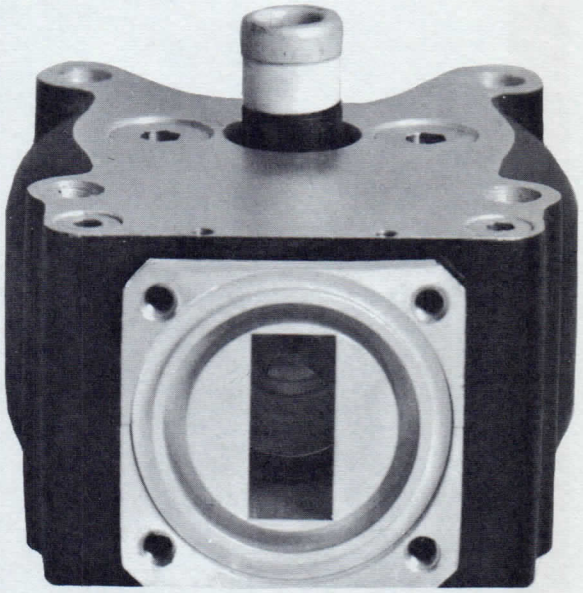


# PULSE MAGNETRON

# L-3314

100 Watts Minimum Peak Power
Fixed Frequency 9000 ± 30 mcs

This light weight fixed frequency pulse magnetron has been designed for high duty capabilities and extremely low thermal drift and pushing figure characteristics. These built-in features permit these tubes to give extremely stable performance as beacon interrogators and transponders. Its light weight and low electrical potentials coupled with its capability of being pulsed with a complex code permit this tube to be used in high performance miniaturized systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.50 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.04 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 925 V |
| Pulse Current | 0.60 A |
| Pulse Length | 1.2 us |
| Average Input Power | 14.5 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 80,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 W |
| Fixed Frequency | 9000 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% Ib) | Max. 3 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 6.0 db |
| Bandwidth | Max. 3/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.1 mc/°C |
| Vibration (40 to 2000 cps) | 15 G |
| Shock (5 ±1 m s) | 100 G |
| Rated Cycle Life | 150 Hrs. |

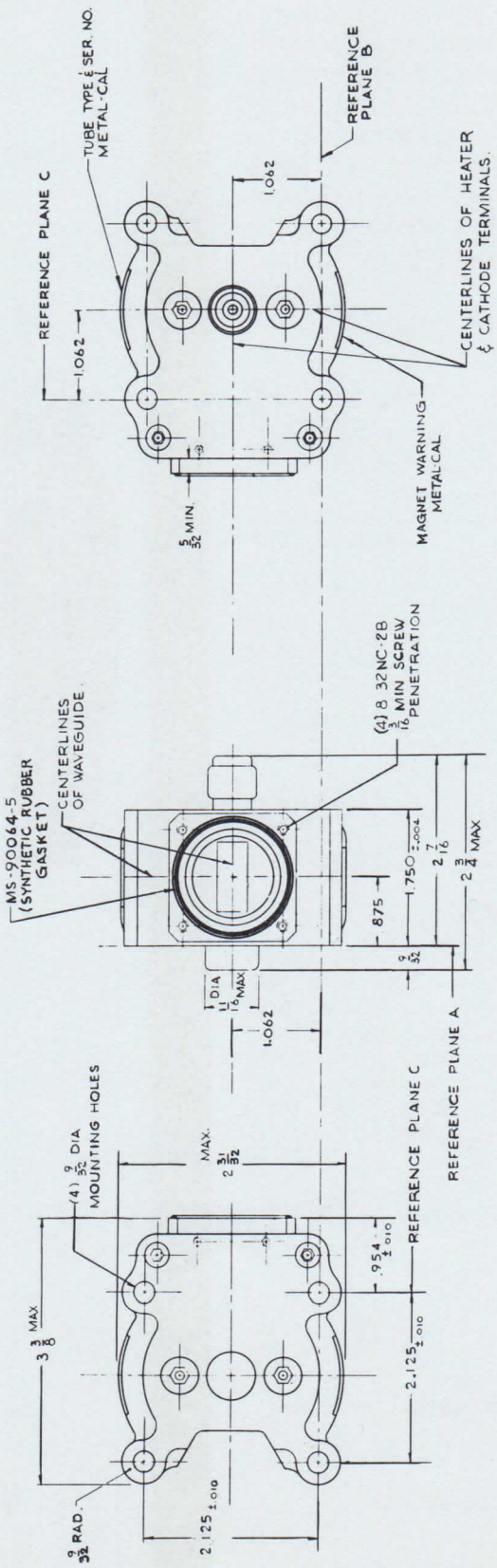
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 22 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other frequencies see: L-3105, L-3436, L-3435, L-3434.

# PULSE MAGNETRON

# L-3314

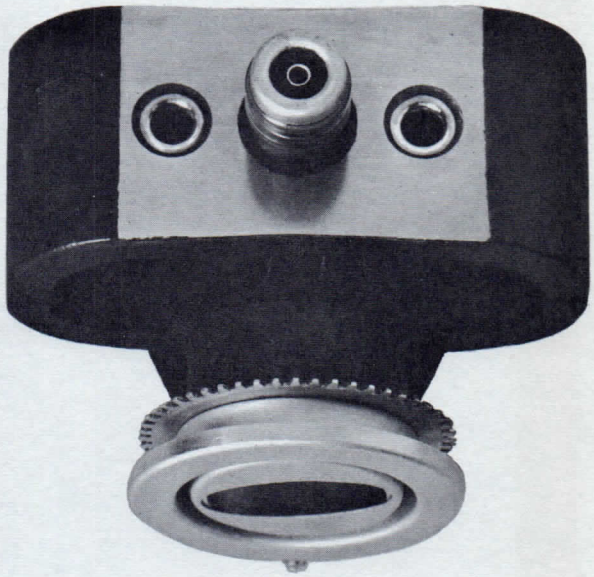


PULSE MAGNETRON

# L-3327

120 Watts Minimum Peak Power
Tunable Frequency 9365 to 9385 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 920 V |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 15.0 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150 °C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9365 to 9385 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% lb) | Max. 2.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Rated Cycle Life | 300 Hrs. |

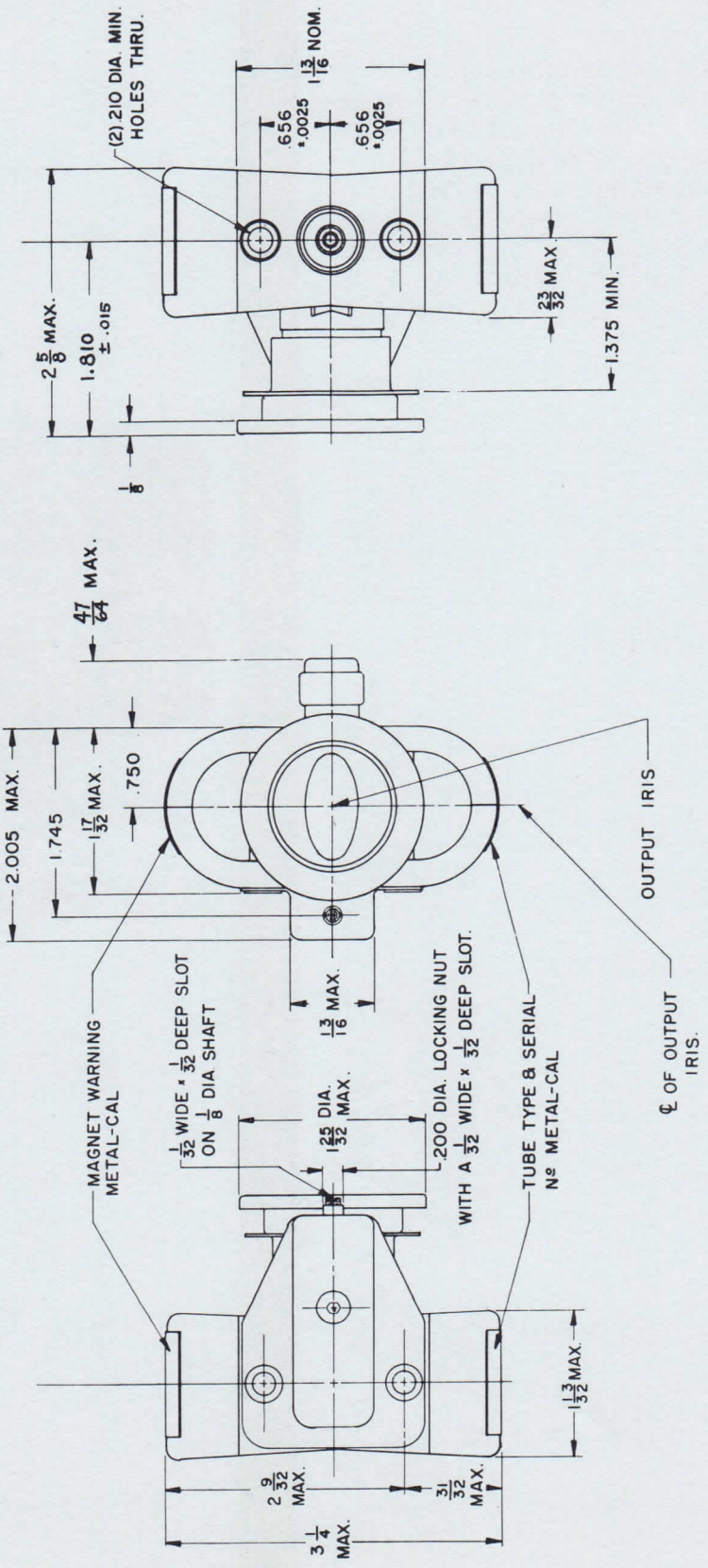
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other frequencies see:
L-3028D, L-3180, L-3181, L-3212, L-3213, L-3214, L-3218, L-3226, L-3601

PULSE MAGNETRON

# L-3327

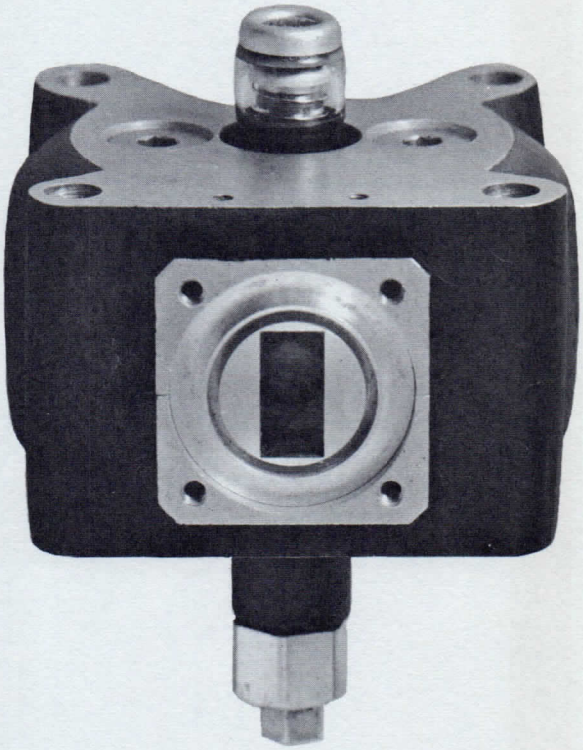


PULSE MAGNETRON

# L-3358

1.0 Kilowatt Minimum Peak Power
Tunable Frequency 16,000 to 16,500 mcs

This highly ruggedized, tunable, miniature Ku-band magnetron may be pulsed with high duty coded pulse groups or with single short pulses. Special design features provide a low thermal factor (less than 150 Kc/°C) and stable frequency operation. This tube is particularly applicable in high performance aircraft or missile systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.0 A |
| Preheat Time | Min. 60 sec. |
| Pulse Voltage | 2900 to 3200 V |
| Pulse Current | 2.0 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 14 uufd |
| Heater Cold Resistance | Max. 1.0 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.75 A |
| Pulse Voltage | 3200 V |
| Pulse Current | 2.5 A |
| Pulse Length | 2.0 us |
| Average Input Power | 24 W |
| Duty Cycle | 0.003 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 30,000 Feet |

## PERFORMANCE CHARACTERISTICS

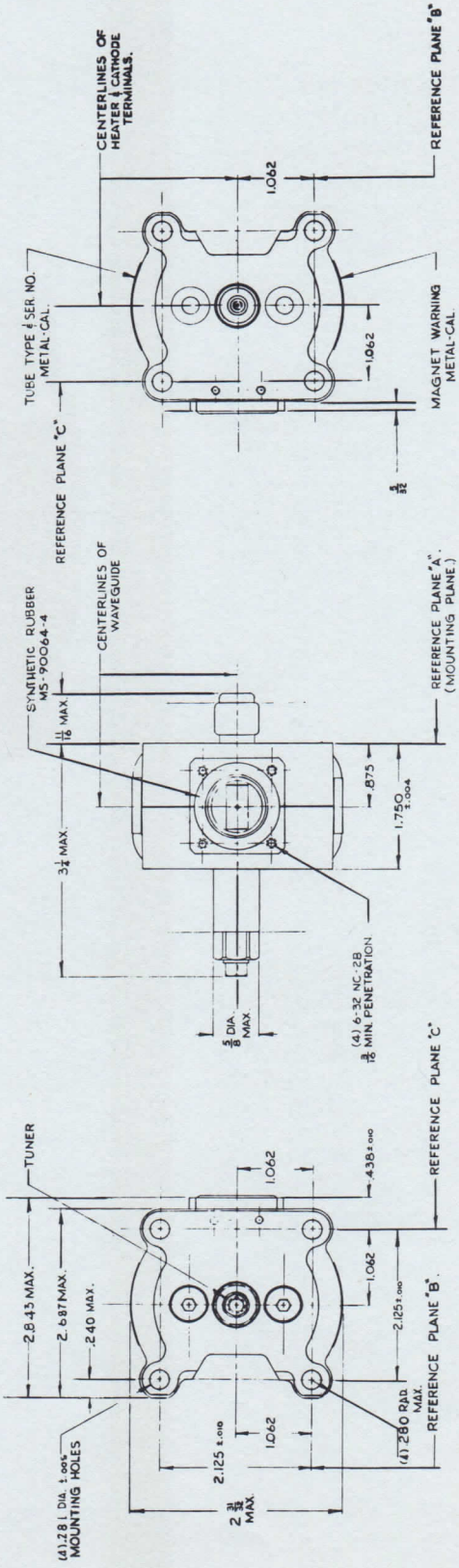
| | |
|---|---|
| Peak Power | Min. 1.0 kW |
| Tunable Frequency | 16,000 to 16,500 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 21 mcs |
| Pushing Figure (± 10% lb) | Max. 2.5 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.15 mc/°C |
| Vibration (5 to 500 cps) | 0.08 Da or 10 G |
| Shock (11 ± 1 m s) | 15 G |
| Rated Cycle Life | 500 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 20.5 oz. |
| Anode Cooling | Forced Air |

PULSE MAGNETRON

# L-3358

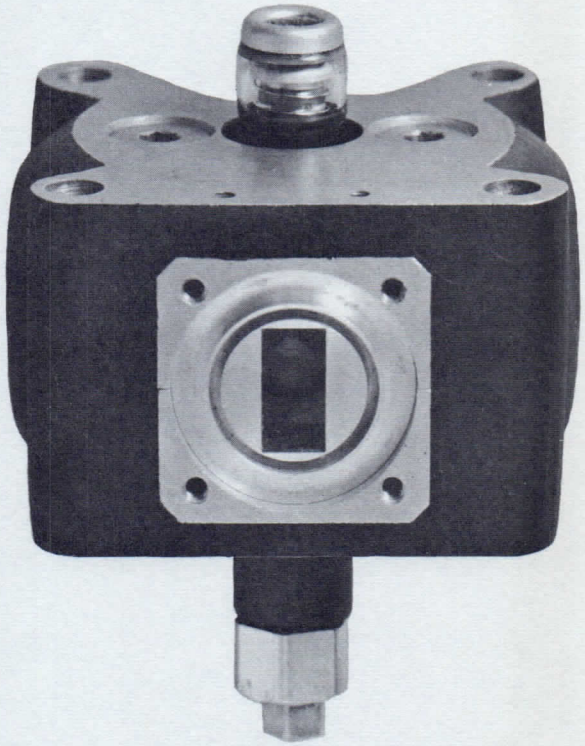


PULSE MAGNETRON

# L-3359

2.0 Kilowatts Minimum Peak Power
Tunable Frequency 16,000 to 16,500 mcs

This highly ruggedized, tunable, miniature Ku-band magnetron may be pulsed with high duty coded pulse groups or with single short pulses. Special design features provide a low thermal factor (less than 150 Kc/°C) and stable frequency operation. This tube is particularly applicable in high performance aircraft or missile systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.0 A |
| Preheat Time | Min. 60 sec. |
| Pulse Voltage | 3400 to 3700 V |
| Pulse Current | 2.75 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 14 uufd |
| Heater Cold Resistance | Max. 1.0 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.75 A |
| Pulse Voltage | 3700 V |
| Pulse Current | 3.0 A |
| Pulse Length | 2.0 us |
| Average Input Power | 30 W |
| Duty Cycle | 0.003 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 30,000 Feet |

## PERFORMANCE CHARACTERISTICS

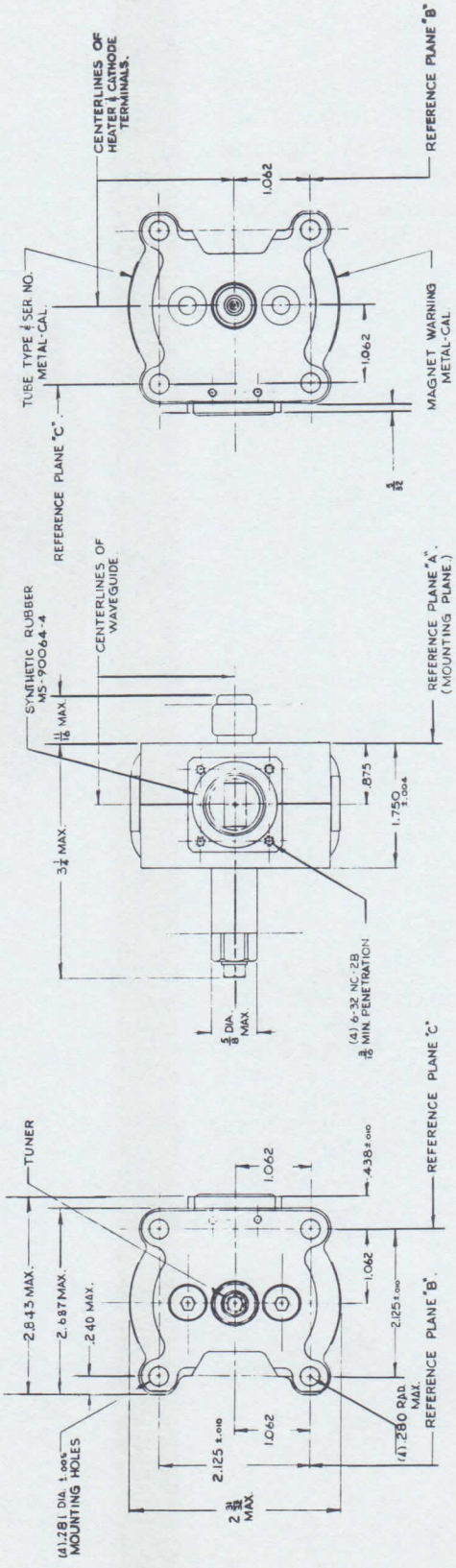
| | |
|---|---|
| Peak Power | Min. 2.0 kW |
| Tunable Frequency | 16,000 to 16,500 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 21 mcs |
| Pushing Figure (± 10% lb) | Max. 2.5 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.15 mc/°C |
| Vibration (5 to 500 cps) | 0.08 Da or 10 G |
| Shock (6—11 m s) | 15 G |
| Rated Cycle Life | 500 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 20.5 oz. |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-3359

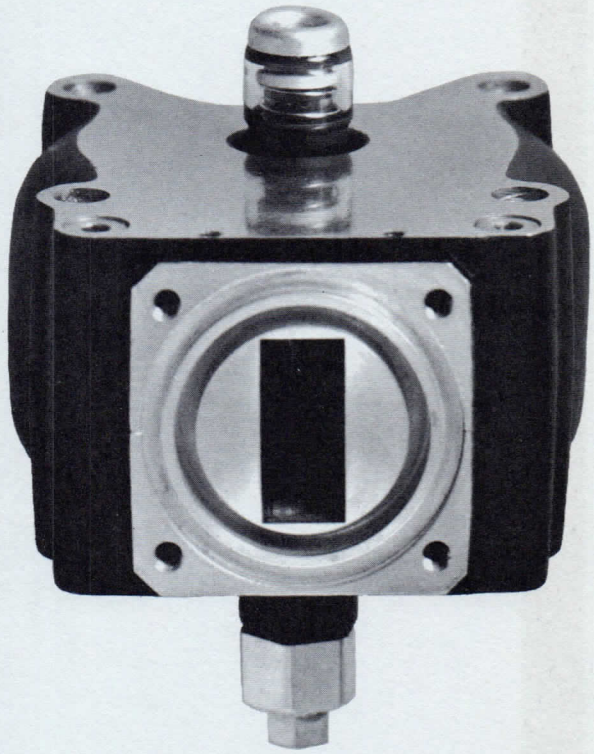


# PULSE MAGNETRON

# L-3381

3.0 Kilowatts Minimum Peak Power
Tunable Frequency 8800 to 9500 mcs

This highly ruggedized, tunable, miniature pulse magnetron makes possible greater flexibility for such applications as beacons, transponders and small radars. Quick warmup, extremely short pulse operation, and stable frequency operation are characteristics of this long life, reliable tube.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.9 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 3400 to 3800 V |
| Pulse Current | 3.25 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 12 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.0 A |
| Pulse Voltage | 3800 V |
| Pulse Current | 3.5 A |
| Pulse Length | 1.2 us |
| Average Input Power | 13.3 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 30,000 Feet |

## PERFORMANCE CHARACTERISTICS

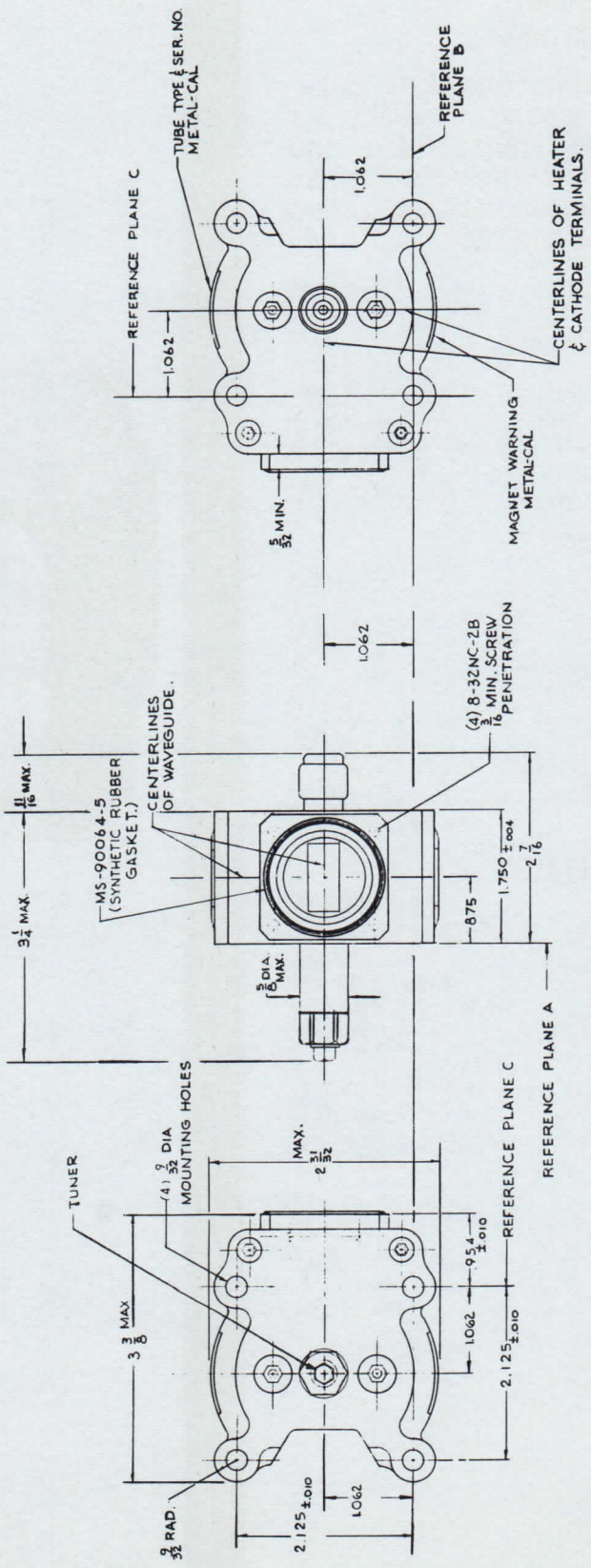
| | |
|---|---|
| Peak Power | Min. 3.0 kW |
| Tunable Frequency | 8800 to 9500 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 18 mcs |
| Pushing Figure (± 10% lb) | Max. 3.0 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.10 mc/°C |
| Vibration (5 to 2000 cps) | 0.08 Da or 10 G |
| Shock (6—11 m s) | 30 G |
| Rated Cycle Life | 500 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 22 oz. |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-3381

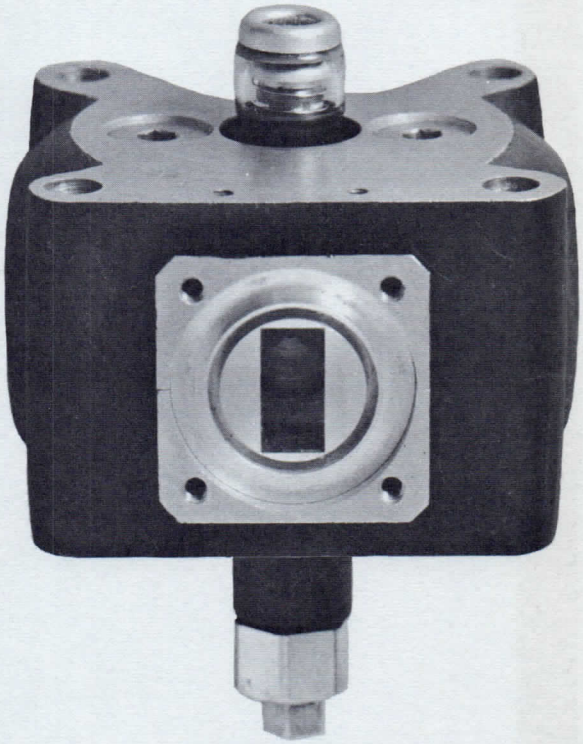


# PULSE MAGNETRON

# L-3383

1.0 Kilowatt Minimum Peak Power
Tunable Frequency 16,250 to 16,300 mcs

This highly ruggedized, tunable, miniature Ku-band magnetron may be pulsed with high duty coded pulse groups or with single short pulses. Special design features provide a low thermal factor (less than 150 Kc/°C) and stable frequency operation. This tube is particularly applicable in high performance aircraft or missile systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.9 A |
| Preheat Time | Min. 60 sec. |
| Pulse Voltage | 2900 to 3100 V |
| Pulse Current | 2.0 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 14 uufd |
| Heater Cold Resistance | Max. 1.0 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.75 A |
| Pulse Voltage | 3100 V |
| Pulse Current | 2.5 A |
| Pulse Length | 2.0 us |
| Average Input Power | 24 W |
| Duty Cycle | 0.003 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 30,000 Feet |

## PERFORMANCE CHARACTERISTICS

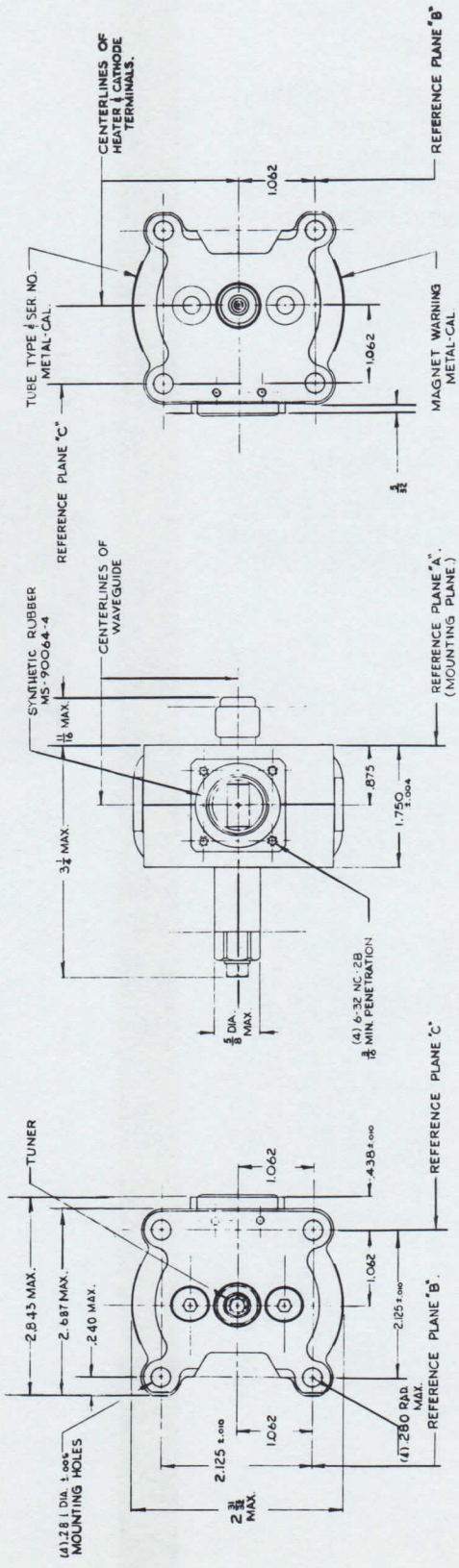
| | |
|---|---|
| Peak Power | Min. 1.0 kW |
| Tunable Frequency | 16,250 to 16,300 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% lb) | Max. 3.0 mcs |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.15 mc/°C |
| Vibration (5 to 1000 cps) | 0.08 Da or 5 G |
| Shock (11 ± 1 m s) | 15 G |
| Rated Cycle Life | 500 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 20.5 oz. |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-3383

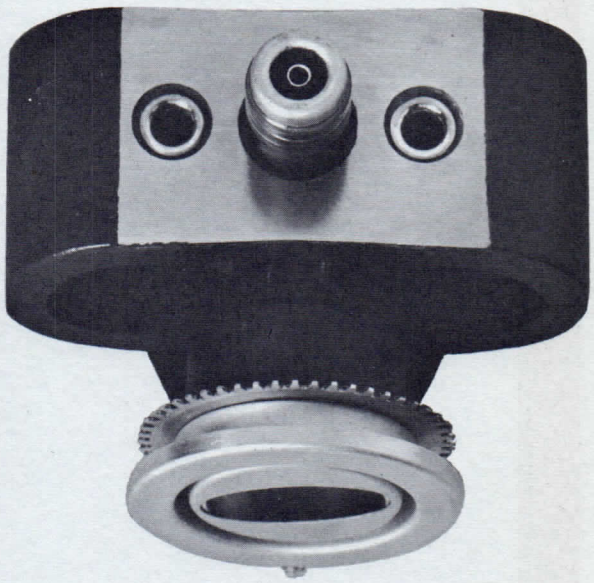


# PULSE MAGNETRON

# L-3384

1.0 Kilowatt Minimum Peak Power
Tunable Frequency 9280 to 9320 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 2700 to 2900 V |
| Pulse Current | 1.33 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 12 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 2900 V |
| Pulse Current | 1.5 A |
| Pulse Length | 3.0 us |
| Average Input Power | 13 W |
| Duty Cycle | 0.003 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

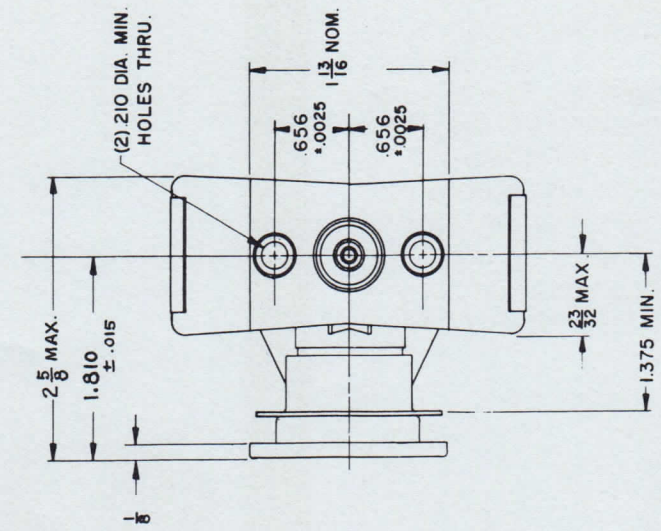
| | |
|---|---|
| Peak Power | Min. 1.0 kW |
| Tunable Frequency | 9280 to 9320 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% lb) | Max. 6.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 3.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Shock (4 m s) | 15 G |
| Rated Cycle Life | 200 Hrs. |

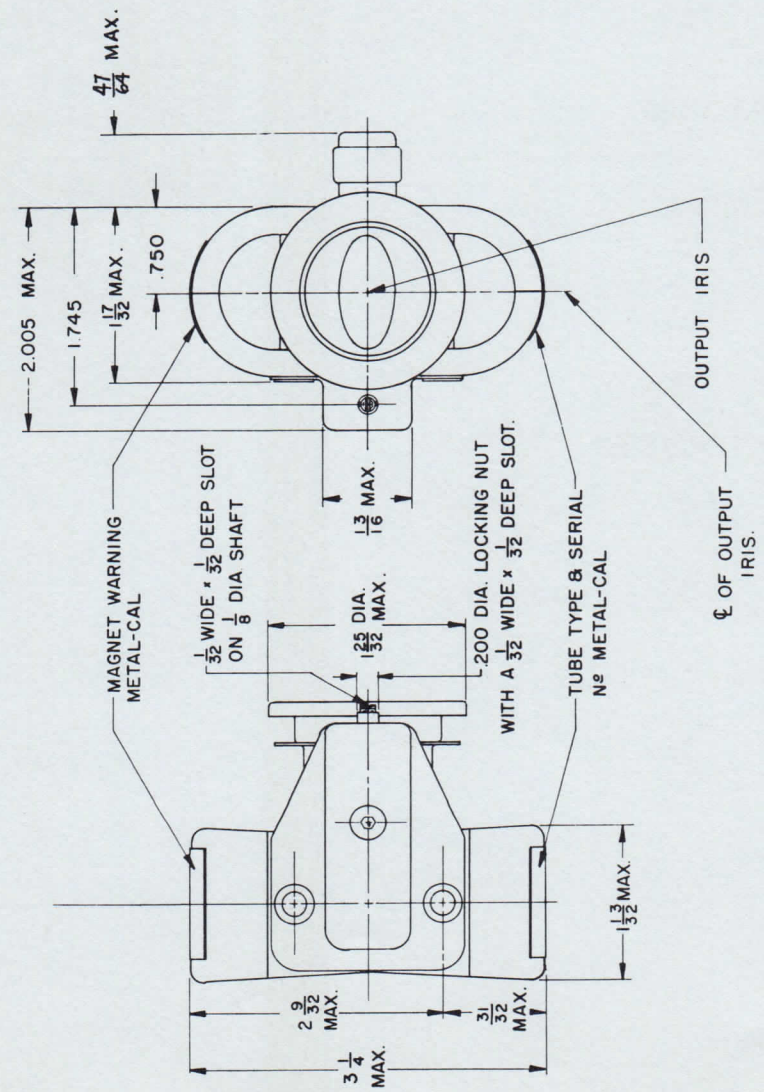
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-3384



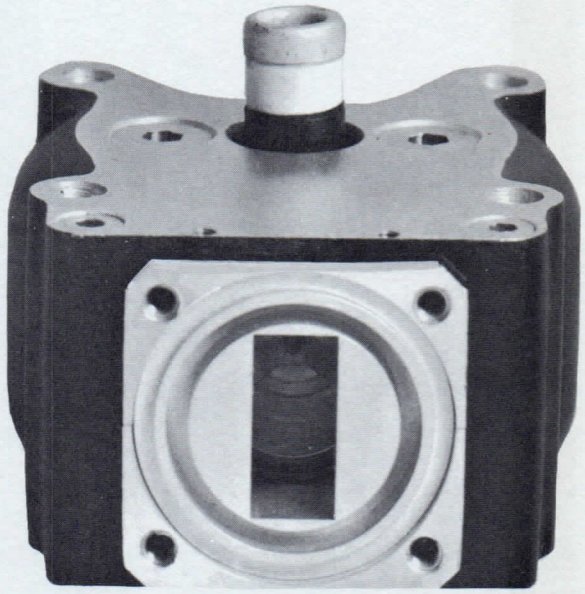



PULSE MAGNETRON

# L-3429

1.0 Kilowatt Minimum Peak Power
Fixed Frequency 9300 ± 30 mcs

This ruggedized, fixed frequency, miniature pulse magnetron has been designed with excellent electrical characteristics and shock resistance features, making it particularly applicable for high performance aircraft, missile and satellite systems. Low thermal factors (less than 75 Kc/°C), high frequency stability and short pulse operation ( .020 us and less) make the tube extremely versatile.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.9 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 1300 to 1500 V |
| Pulse Current | 2.2 A |
| Time of Rise of Voltage | Min. 0.04 us |
| Anode Cathode Capacitance | Max. 20 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Surge Current | 3.75 A |
| Pulse Voltage | 1500 V |
| Pulse Current | 2.5 A |
| Pulse Length | 2.0 us |
| Duty Cycle | 0.005 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 60,000 Feet |

## PERFORMANCE CHARACTERISTICS

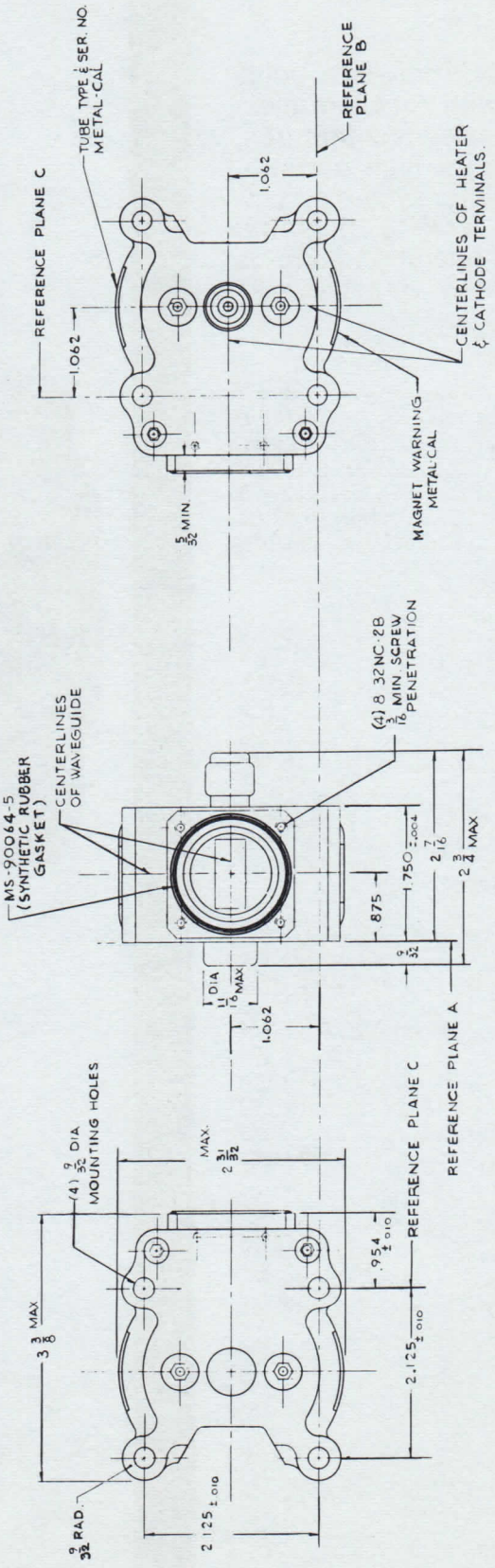
| | |
|---|---|
| Peak Power | Min. 1.0 kW |
| Fixed Frequency | 9300 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% Ib) | Max. 3.0 mcs |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.10 mc/°C |
| Vibration (40 to 2000 cps) | 15 G |
| Rated Cycle Life | 500 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 22 oz. |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-3429

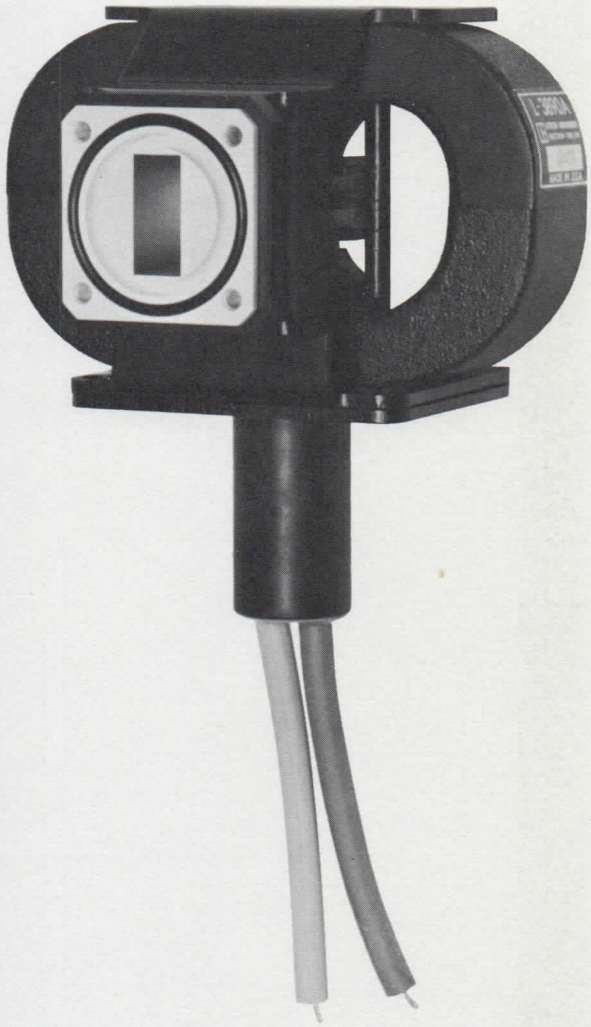


# PULSE MAGNETRON

# L-3431A

18 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 30 mcs

This highly reliable, fixed frequency X-band, pulse magnetron replaces the L-3431. Improvements in the cathode boot, flying leads, and RF coupler have permitted an increase in the altitude rating to 55,000 feet. The L-3431A is identical in construction to the L-3654A, the only difference being the field strength setting of the permanent magnet. The L-3431A is recommended for airborne applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.2 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 6.5 to 7.5 kv |
| Pulse Current | 7.0 A |
| Time of Rise of Voltage | Min. 0.10 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.75 A |
| Pulse Voltage | 8.0 kv |
| Pulse Current | 8.0 A |
| Pulse Length | 2.2 us |
| Average Input Power | 64 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

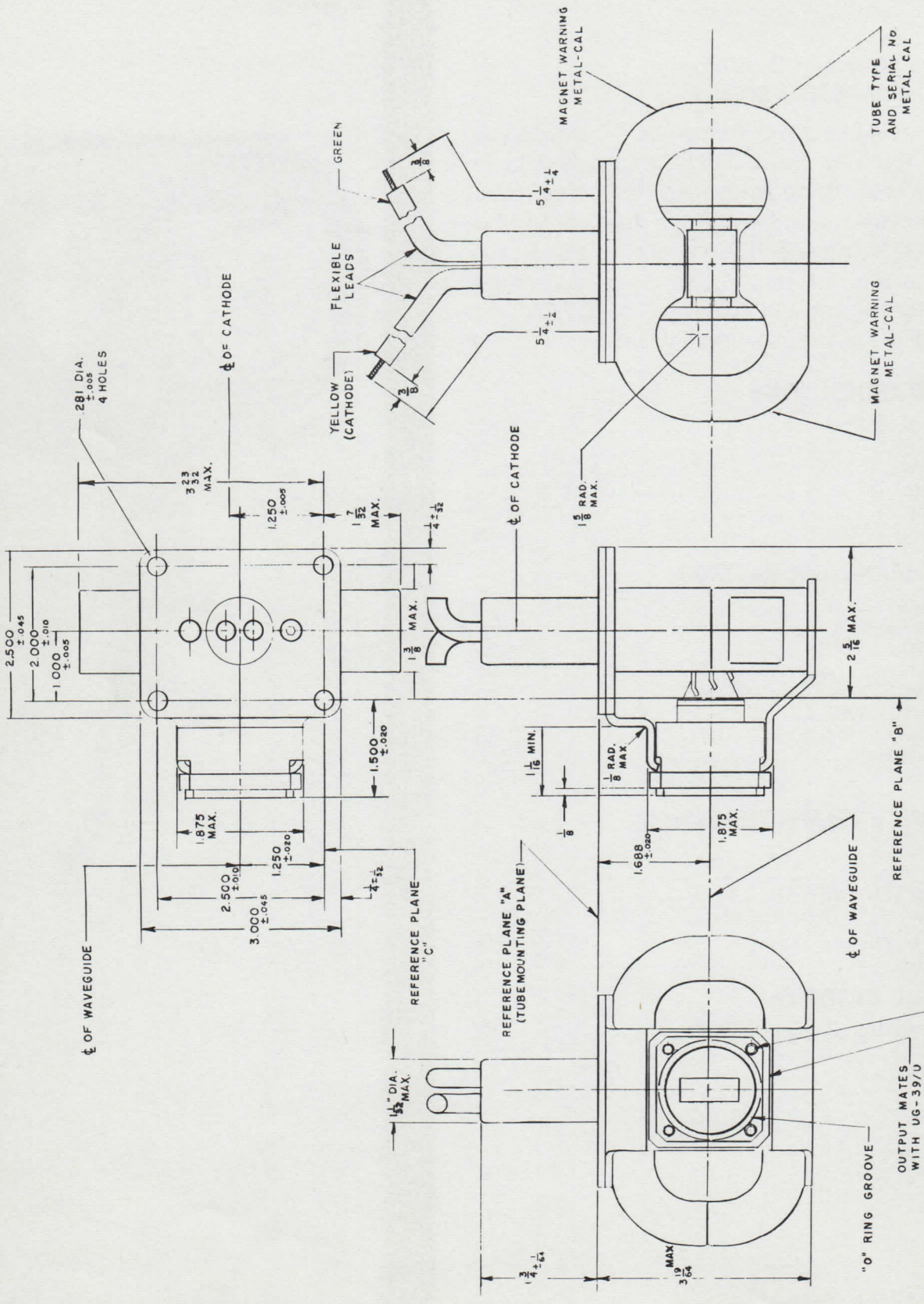
| | |
|---|---|
| Peak Power | Min. 18 kW |
| Fixed Frequency | 9375 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |
| Rated Cycle Life | Min. 500 Hrs. |
| Altitude | 55,000 Feet |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.75 lbs. |
| Anode Cooling | Convection Air |

# PULSE MAGNETRON

# L-3431A

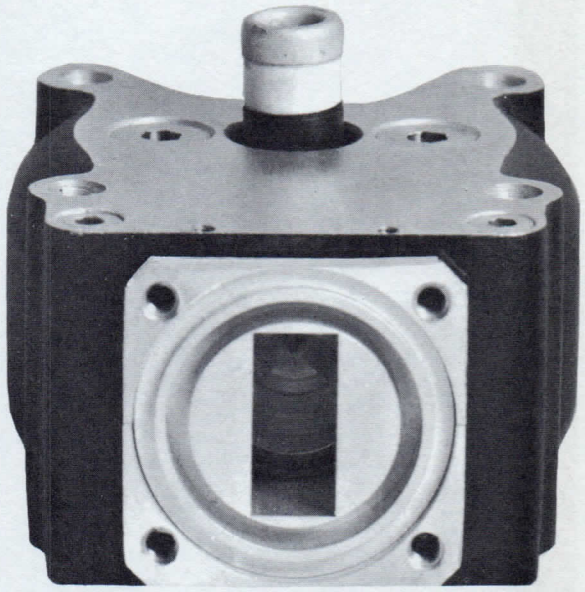


# PULSE MAGNETRON

# L-3434

100 Watts Minimum Peak Power
Fixed Frequency 9950 ± 30 mcs

This ruggedized, fixed frequency, miniature pulse magnetron has been designed with excellent electrical characteristics and shock resistance features, making it particularly applicable for high performance aircraft, missile and satellite systems. Low thermal factors (less than 75 Kc/°C), high frequency stability and short pulse operation ( .020 us and less) make the tube extremely versatile.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.50 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.04 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 925 V |
| Pulse Current | 0.60 A |
| Pulse Length | 1.2 us |
| Average Input Power | 14.5 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 80,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 W |
| Fixed Frequency | 9950 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% Ib) | Max. 3 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 6.0 db |
| Bandwidth | Max. 3/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.1 mc/°C |
| Vibration (40 to 2000 cps) | 15 G |
| Shock (5±1 m s) | 100 G |
| Rated Cycle Life | 150 Hrs. |

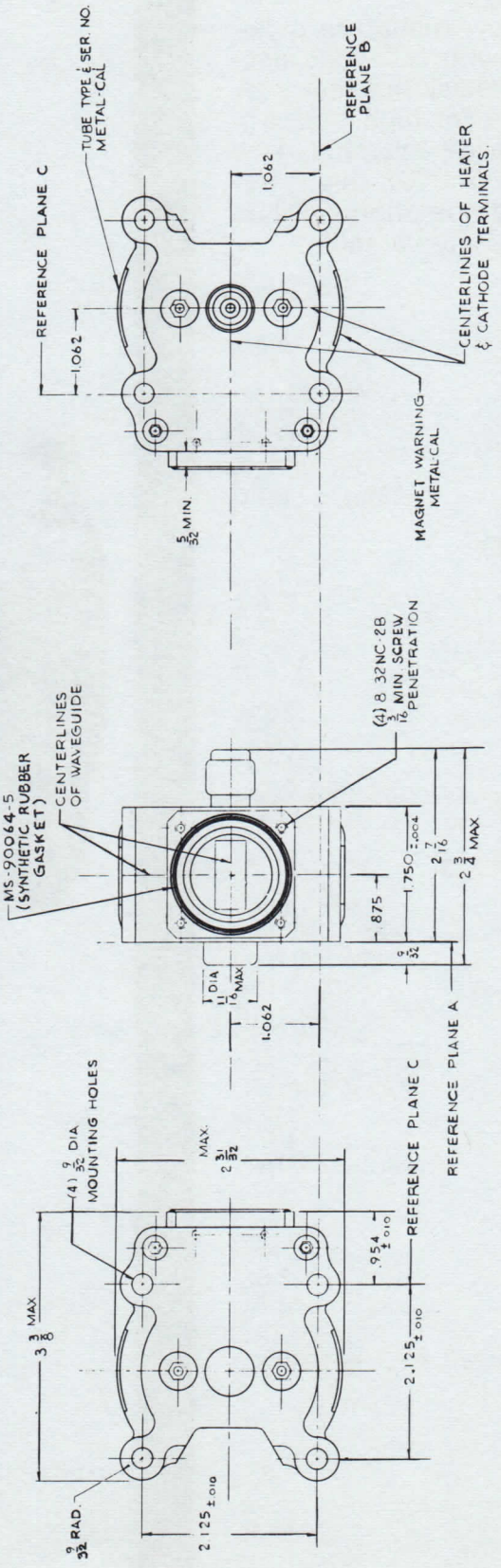
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 22 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other frequencies see: L-3105, L-3314, L-3436, L-3435.

# PULSE MAGNETRON

# L-3434

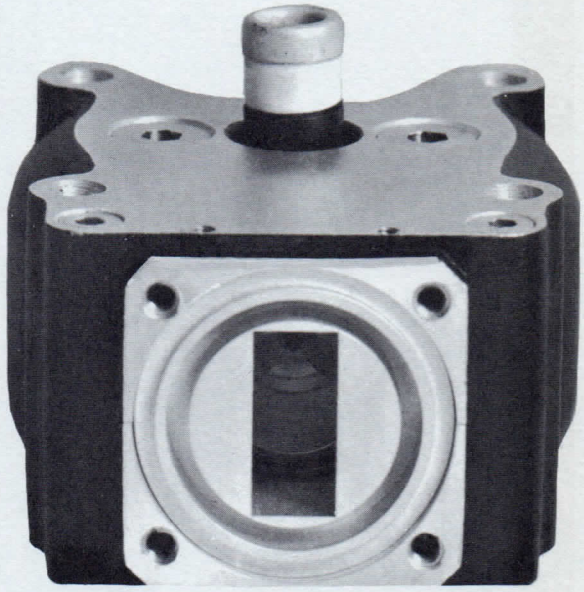


PULSE MAGNETRON

# L-3435

100 Watts Minimum Peak Power
Fixed Frequency 9800 ± 30 mcs

This ruggedized, fixed frequency, miniature pulse magnetron has been designed with excellent electrical characteristics and shock resistance features, making it particularly applicable for high performance aircraft, missile and satellite systems. Low thermal factors (less than 75 Kc/°C), high frequency stability and short pulse operation (.020 us and less) make the tube extremely versatile.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.50 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.04 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 925 V |
| Pulse Current | 0.60 A |
| Pulse Length | 1.2 us |
| Average Input Power | 14.5 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 80,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 W |
| Fixed Frequency | 9800 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% Ib) | Max. 3 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 6.0 db |
| Bandwidth | Max. 3/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.1 mc/°C |
| Vibration (40 to 2000 cps) | 15 G |
| Shock (5 ±1 m s) | 100 G |
| Rated Cycle Life | 150 Hrs. |

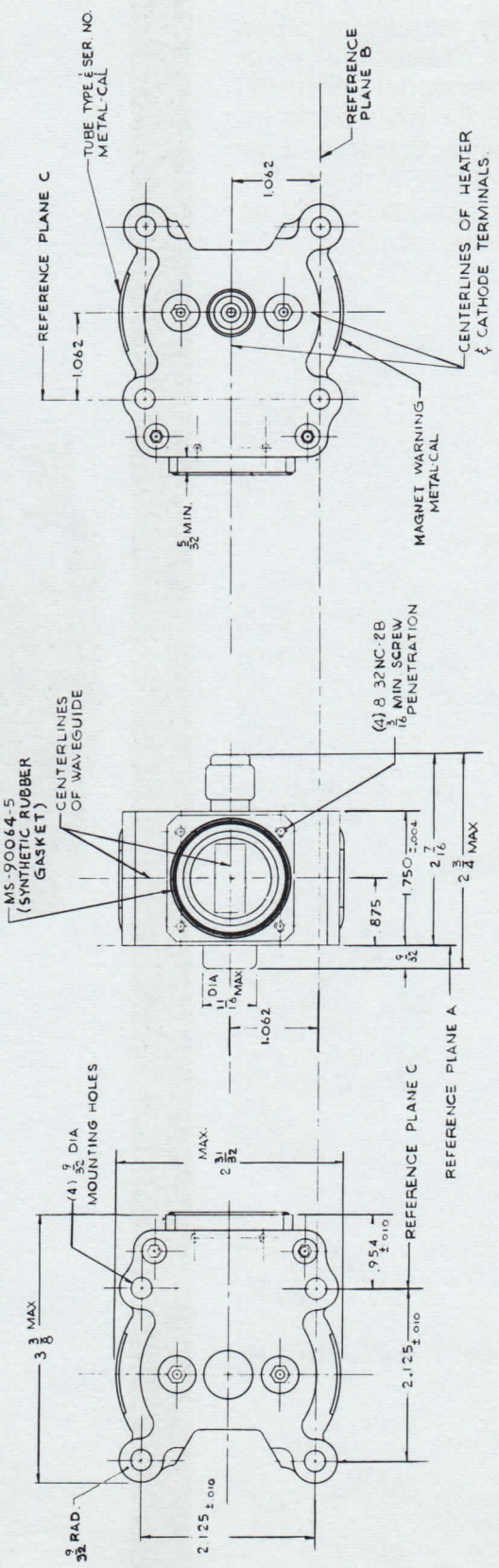
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 22 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other frequencies see: L-3105, L-3314, L-3436, L-3434.

# PULSE MAGNETRON

# L-3435

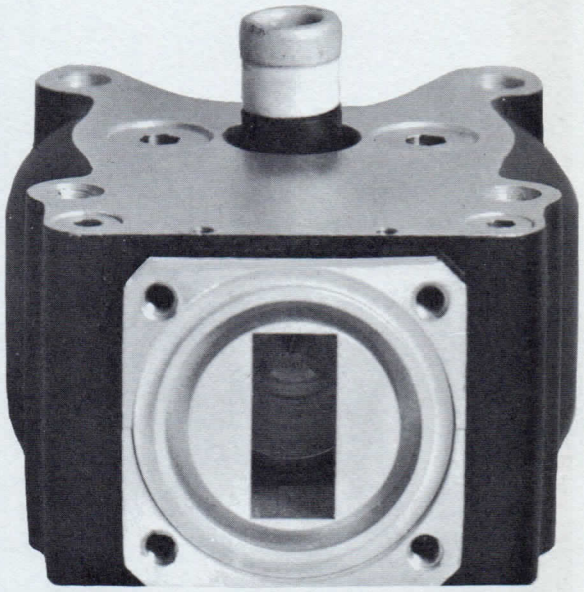


# PULSE MAGNETRON

# L-3436

100 Watts Minimum Peak Power
Fixed Frequency 9550 ± 30 mcs

This ruggedized, fixed frequency, miniature pulse magnetron has been designed with excellent electrical characteristics and shock resistance features, making it particularly applicable for high performance aircraft, missile and satellite systems. Low thermal factors (less than 75 Kc/°C), high frequency stability and short pulse operation (.020 us and less) make the tube extremely versatile.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.50 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 900 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.04 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 925 V |
| Pulse Current | 0.60 A |
| Pulse Length | 1.2 us |
| Average Input Power | 14.5 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 80,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 W |
| Fixed Frequency | 9550 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% Ib) | Max. 3 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 6.0 db |
| Bandwidth | Max. 3/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.1 mc/°C |
| Vibration (40 to 2000 cps) | 15 G |
| Shock (5 ±1 m s) | 100 G |
| Rated Cycle Life | 150 Hrs. |

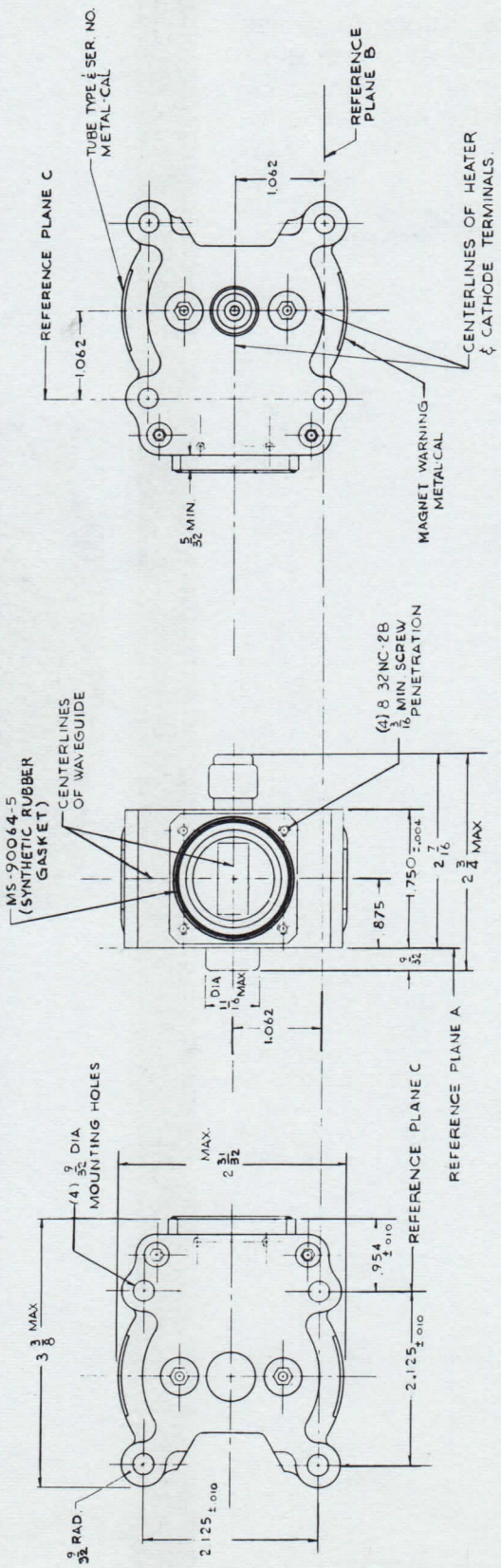
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 22 oz. |
| Anode Cooling | Forced Air |

NOTE:
For similar tubes at other frequencies see: L-3105, L-3314, L-3435, L-3434.

# PULSE MAGNETRON

# L-3436

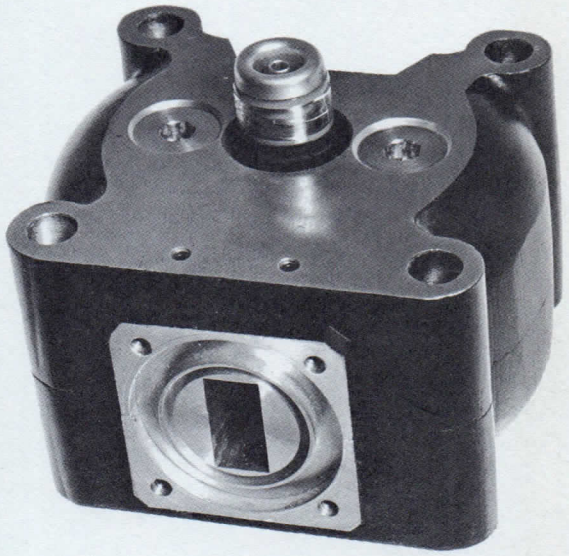


# PULSE MAGNETRON

# L-3452

2.2 Kilowatts Minimum Peak Power
Fixed Frequency 16,200 ± 75 mcs

This highly ruggedized, tunable, miniature Ku-band magnetron may be pulsed with high duty coded pulse groups or with single short pulses. Special design features provide a low thermal factor (less than 150 Kc/°C) and stable frequency operation. This tube is particularly applicable in high performance aircraft or missile systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.90 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 3500 to 3700 V |
| Pulse Current | 2.75 A |
| Time of Rise of Voltage | Min. 0.1 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.75 A |
| Pulse Voltage | 3800 V |
| Pulse Current | 3.0 A |
| Pulse Length | 1.0 us |
| Duty Cycle | 0.003 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |

## PERFORMANCE CHARACTERISTICS

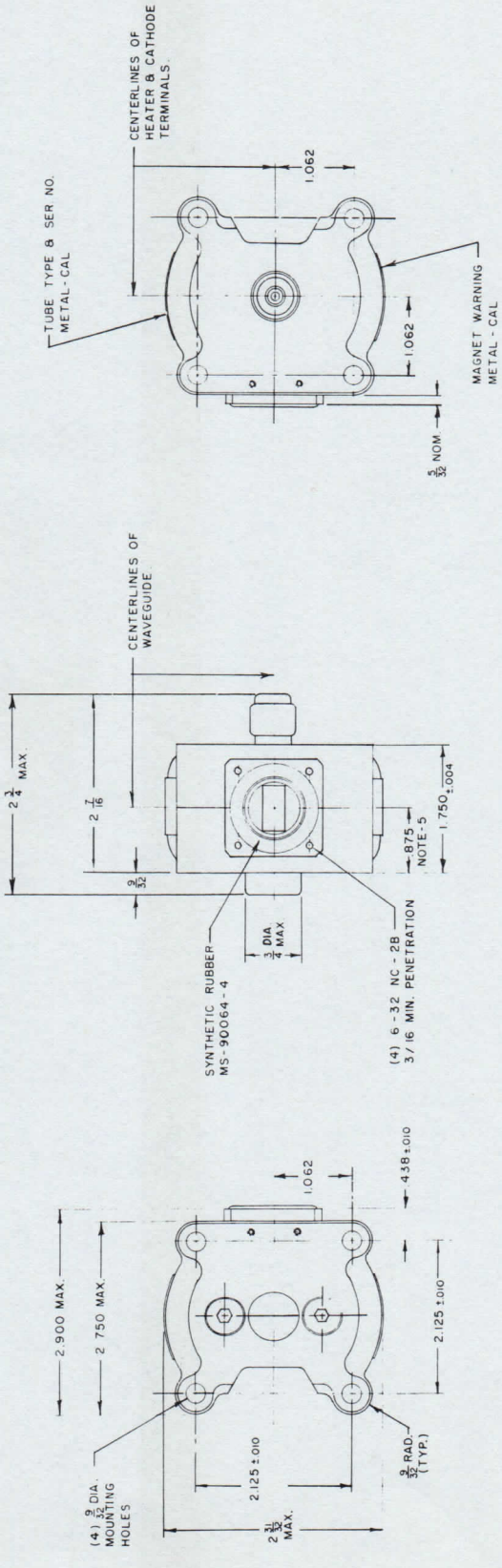
| | |
|---|---|
| Peak Power | Min. 2.2 kW |
| Fixed Frequency | 16,200 ± 75 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% Ib) | Max. 3.0 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.15 mc/°C |
| Vibration (40 to 2000 cps) | 15 G |
| Rated Cycle Life | 500 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 21 oz. |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-3452



1.8 Kilowatts Minimum Peak Power
500 Watts Minimum CW Power
Tunable Frequency 2350 to 3575 MHz

The L-3460A high duty pulse and CW magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 4.2 to 5.2 kv |
| Pulse Current | 0.8 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 5.5 kv |
| Pulse Current | 0.9 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 1.7 kW |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 to 1800 W |
| Tunable Frequency | 2350 to 3575 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 20 MHz |
| Pushing Figure (±10% Ib) | Max. 3 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 0.3 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | 23052 |
| Anode Cooling (water) | Min. 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

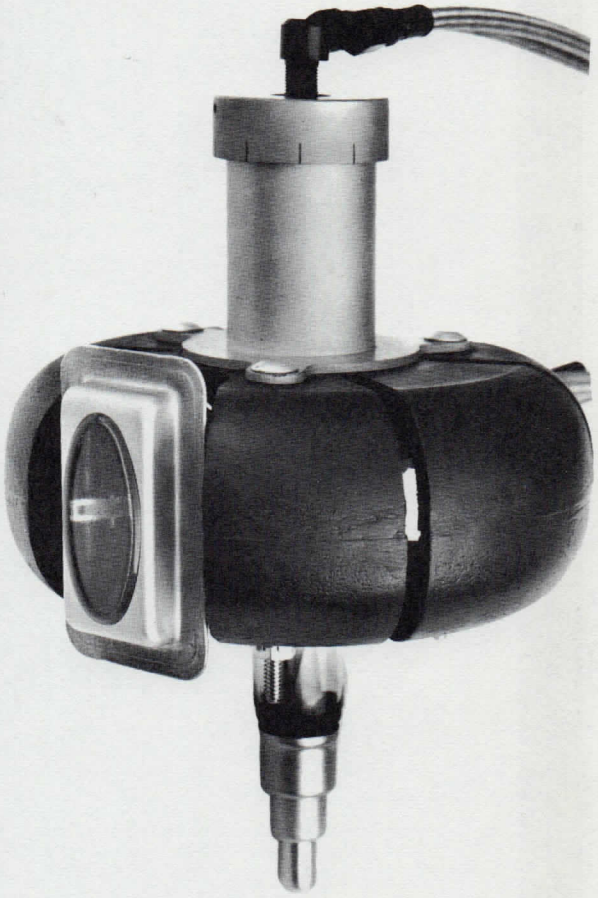
A—Type L-3460A has same CW ratings as type L-3460.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

C—Output power not to exceed 500 watts average.

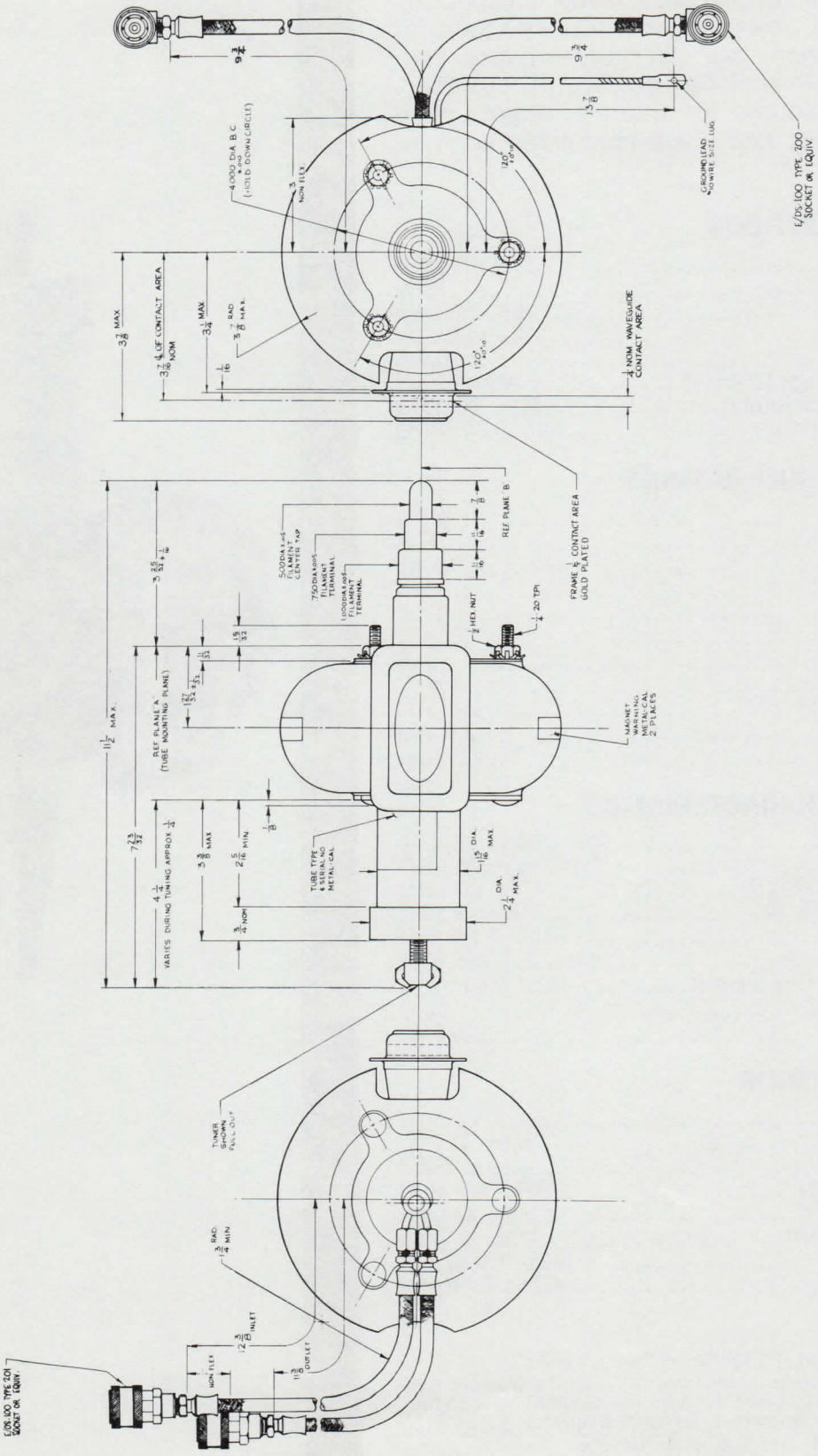
# PULSE/CW MAGNETRON

# L-3460A



## PULSE/CW MAGNETRON

# L-3460A



1.5 Kilowatts Minimum Peak Power
350 Watts Minimum CW Power
Tunable Frequency 3575 to 4975 MHz

The L-3461A high duty pulse and CW magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 4.2 to 5.2 kv |
| Pulse Current | 0.8 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 5.5 kv |
| Pulse Current | 0.9 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 1.7 kW |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 to 1500 W |
| Tunable Frequency | 3575 to 4975 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 20 MHz |
| Pushing Figure (±10% Ib) | Max. 4 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 0.4 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

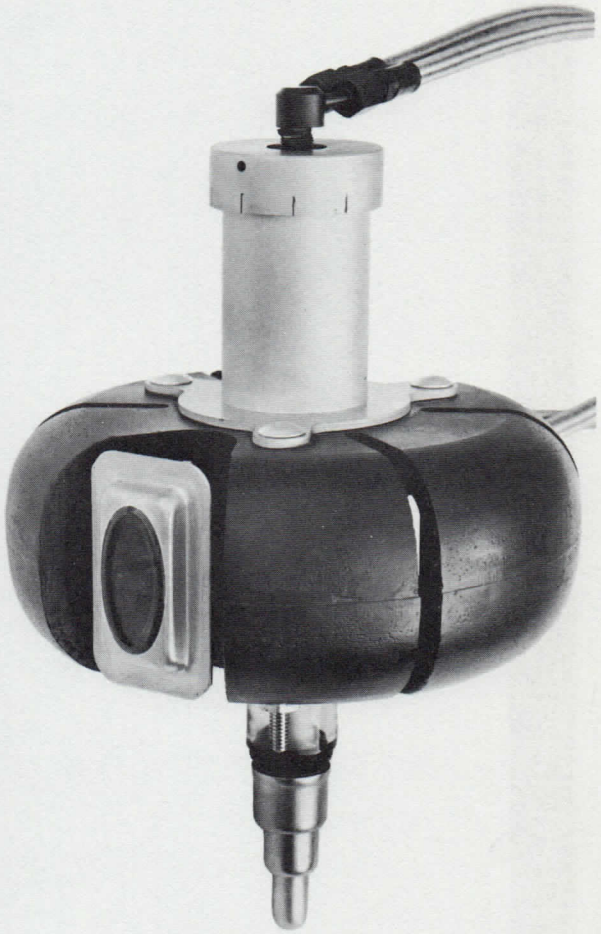
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | T22900 |
| Anode Cooling (water) | 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:
A—Type L-3461A has same CW ratings as type L-3461.
B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.
C—Output power not to exceed 350 watts average.

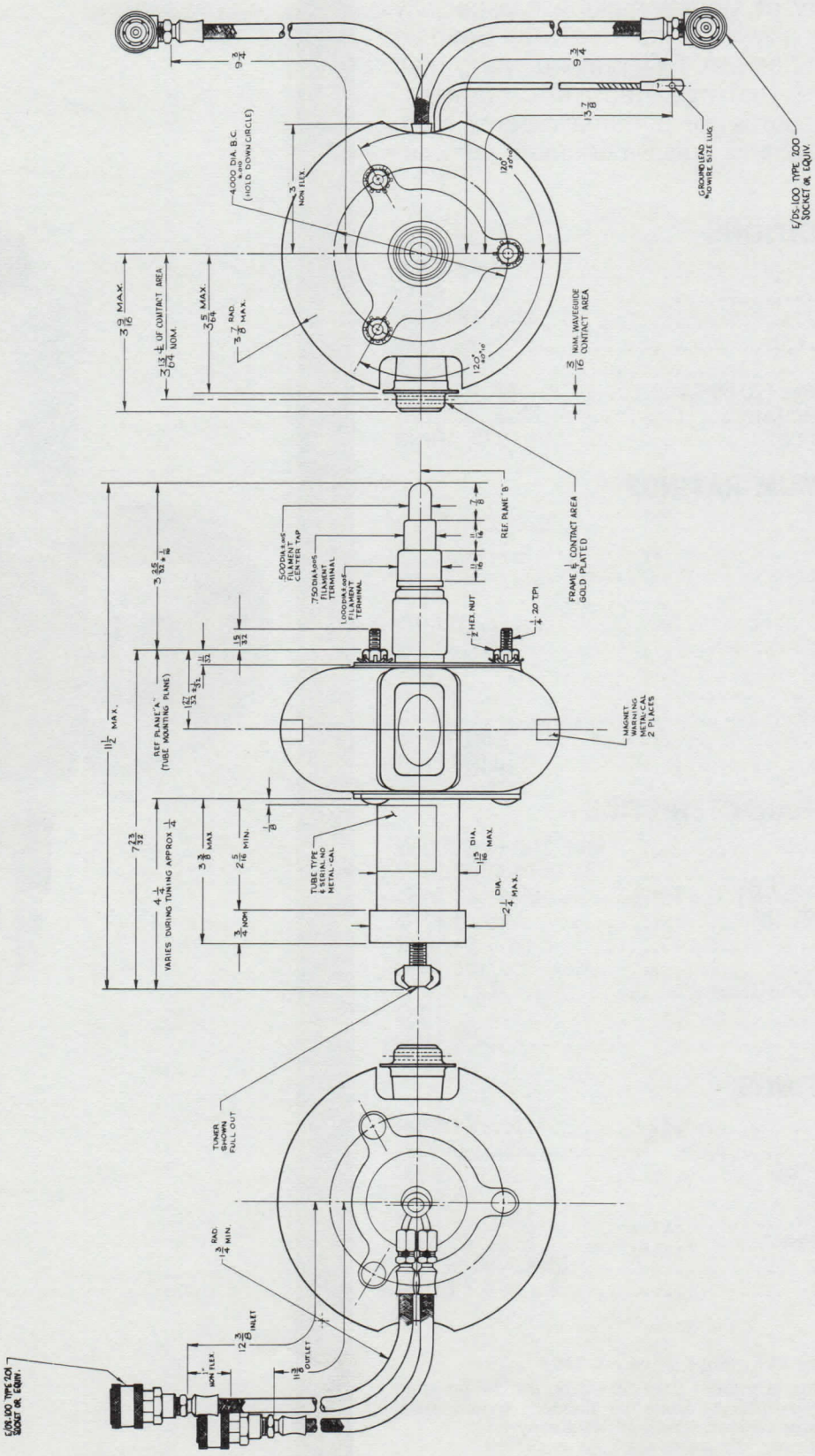
**PULSE/CW MAGNETRON**

# L-3461A



## PULSE/CW MAGNETRON

# L-3461A



1.5 Kilowatts Minimum Peak Power
300 Watts Minimum CW Power
Tunable Frequency 7275 to 8775 MHz

The L-3462A high duty pulse and CW magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 4.5 to 5.5 kv |
| Pulse Current | 0.8 A |
| Time of Rise of Voltage (20-85%) | Min. 0.18 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 |
| Pulse Voltage | 6.0 kv |
| Pulse Current | 0.900 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 1.7 kW |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 to 1500 W |
| Tunable Frequency | 7275 to 8775 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 35 MHz |
| Pushing Figure (±10% lb) | Max. 9 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 1.0 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (water) | 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

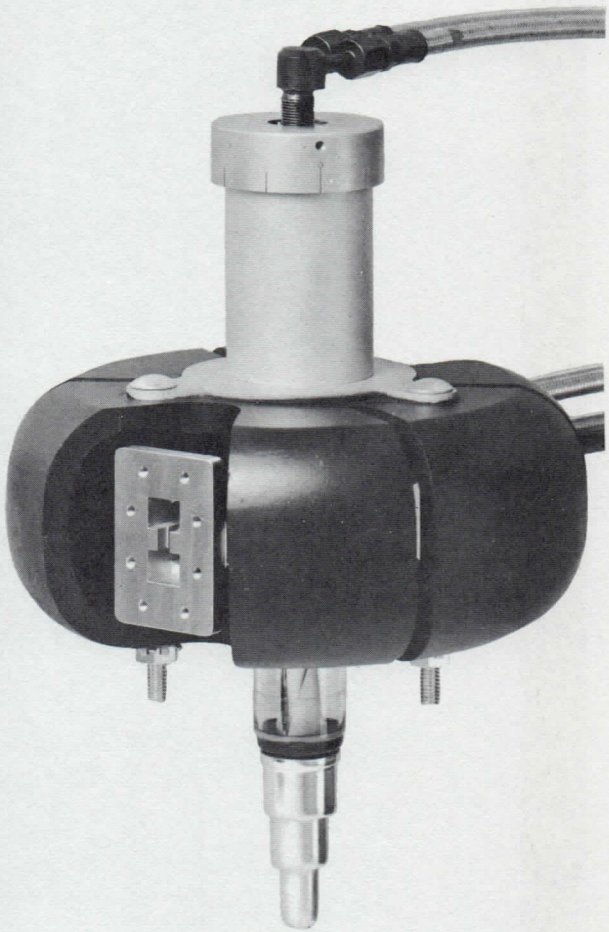
A—Type L-3462A has same CW ratings as type L-3462.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

C—Output power not to exceed 300 watts average.

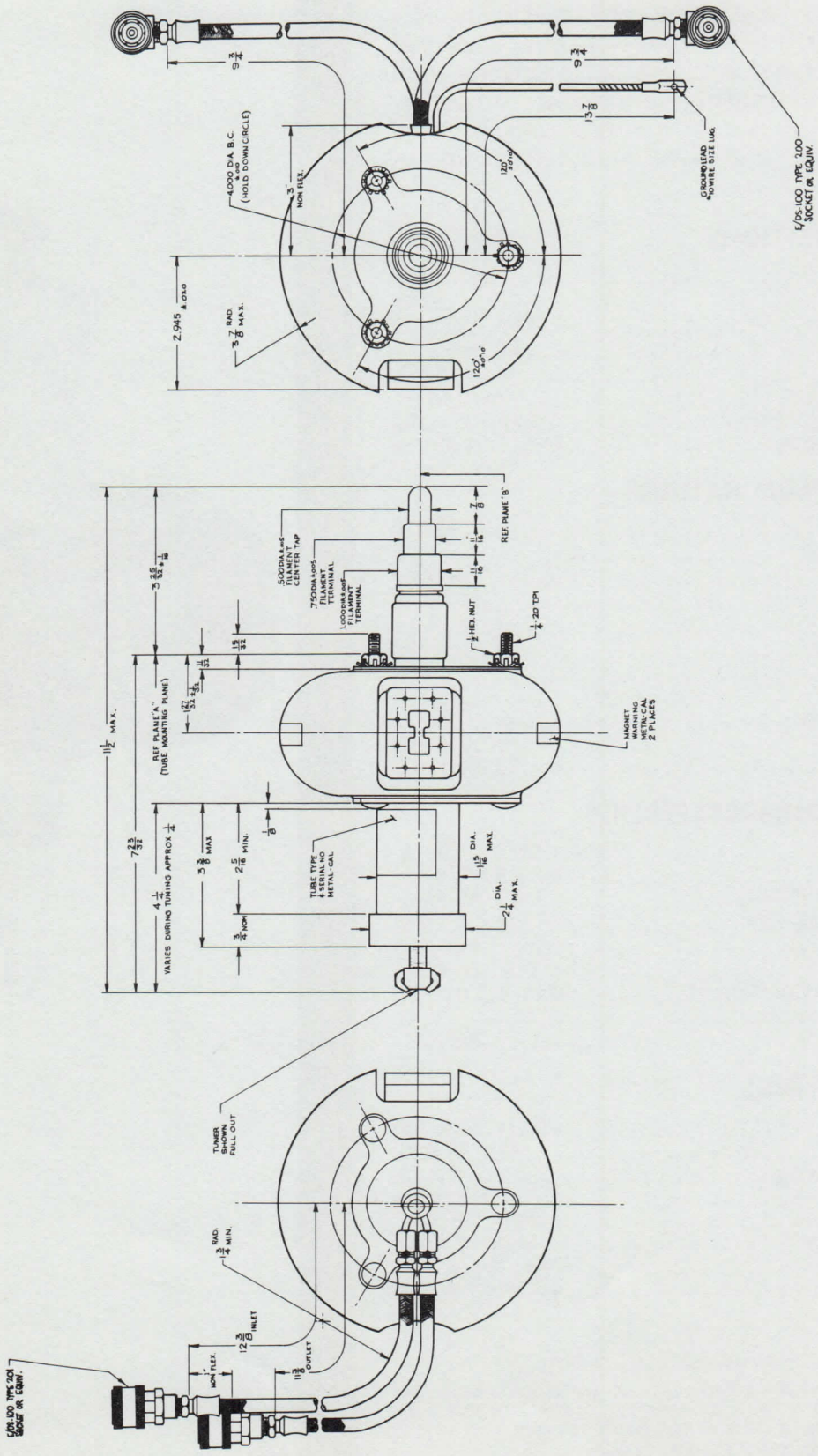
PULSE/CW MAGNETRON

# L-3462A



# PULSE/CW MAGNETRON

# L-3462A



1.2 Kilowatts Minimum Peak Power
250 Watts Minimum CW Power
Tunable Frequency 8775 to 10,475 MHz

The L-3463A high duty pulse and CW magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 4.7 to 5.8 kv |
| Pulse Current | 0.8 A |
| Time of Rise of Voltage (20-85%) | Min. 0.15 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 6.0 kv |
| Pulse Current | 0.80 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 1.7 kW |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 to 1200 W |
| Tunable Frequency | 8775 to 10,475 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 47 MHz |
| Pushing Figure (±10% lb) | Max. 12 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 1.0 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

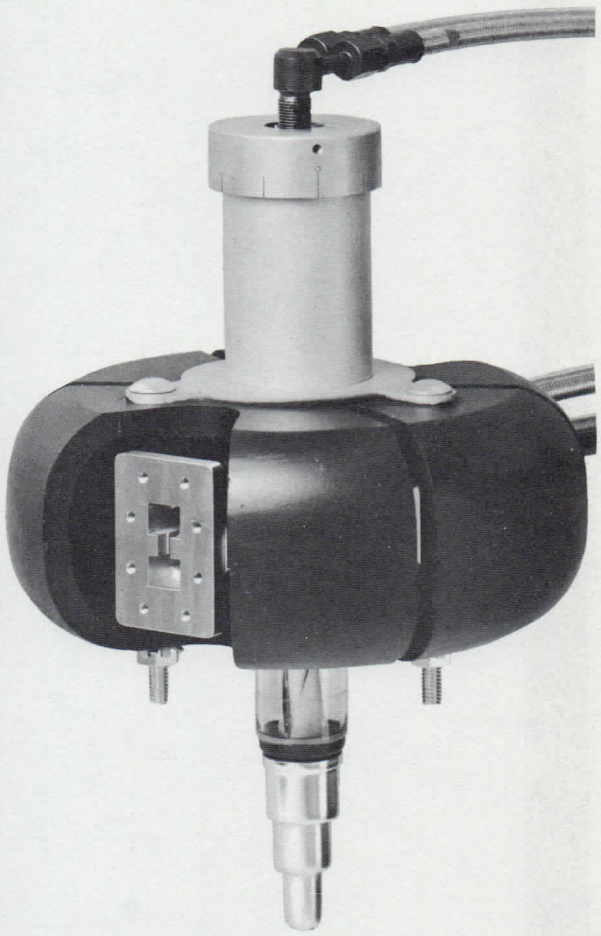
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (water) | 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:
A—Type L-3463A has same CW ratings as type L-3463.
B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.
C—Output power not to exceed 250 watts average.

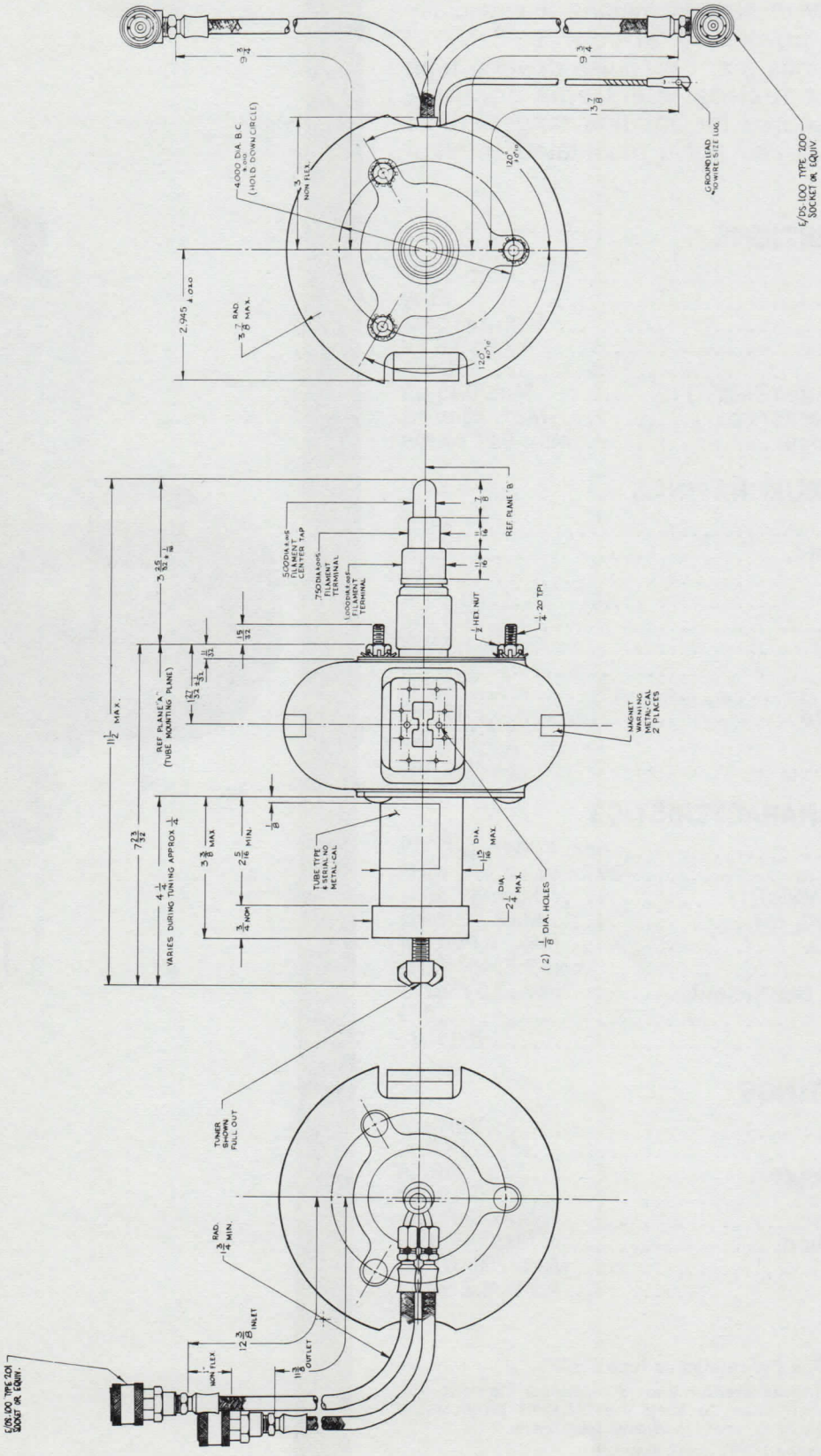
PULSE/CW MAGNETRON

# L-3463A



# PULSE/CW MAGNETRON

# L-3463A



1.2 Kilowatts Minimum Peak Power
400 Watts Minimum CW Power
Tunable Frequency 1500 to 2350 MHz

The L-3464A high duty pulse and CW magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 4.6 to 5.3 kv |
| Pulse Current | 0.8 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 5.5 kv |
| Pulse Current | 0.900 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 1.7 kW |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 to 1200 W |
| Tunable Frequency | 1500 to 2350 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 15 MHz |
| Pushing Figure (±10% lb) | Max. 2 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 0.2 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (water) | 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

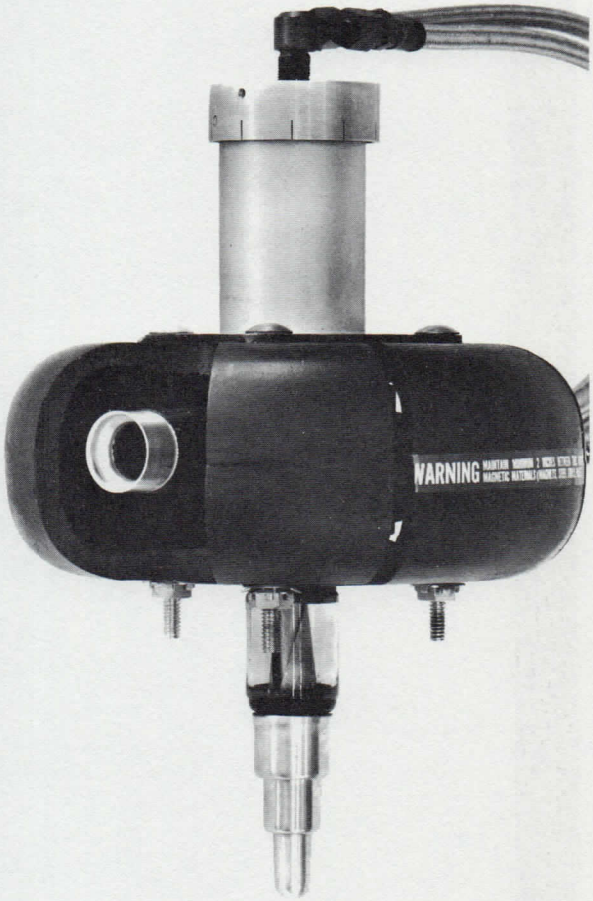
A—Type L-3464A has same CW ratings as type L-3464.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

C—Output power not to exceed 400 watts average.

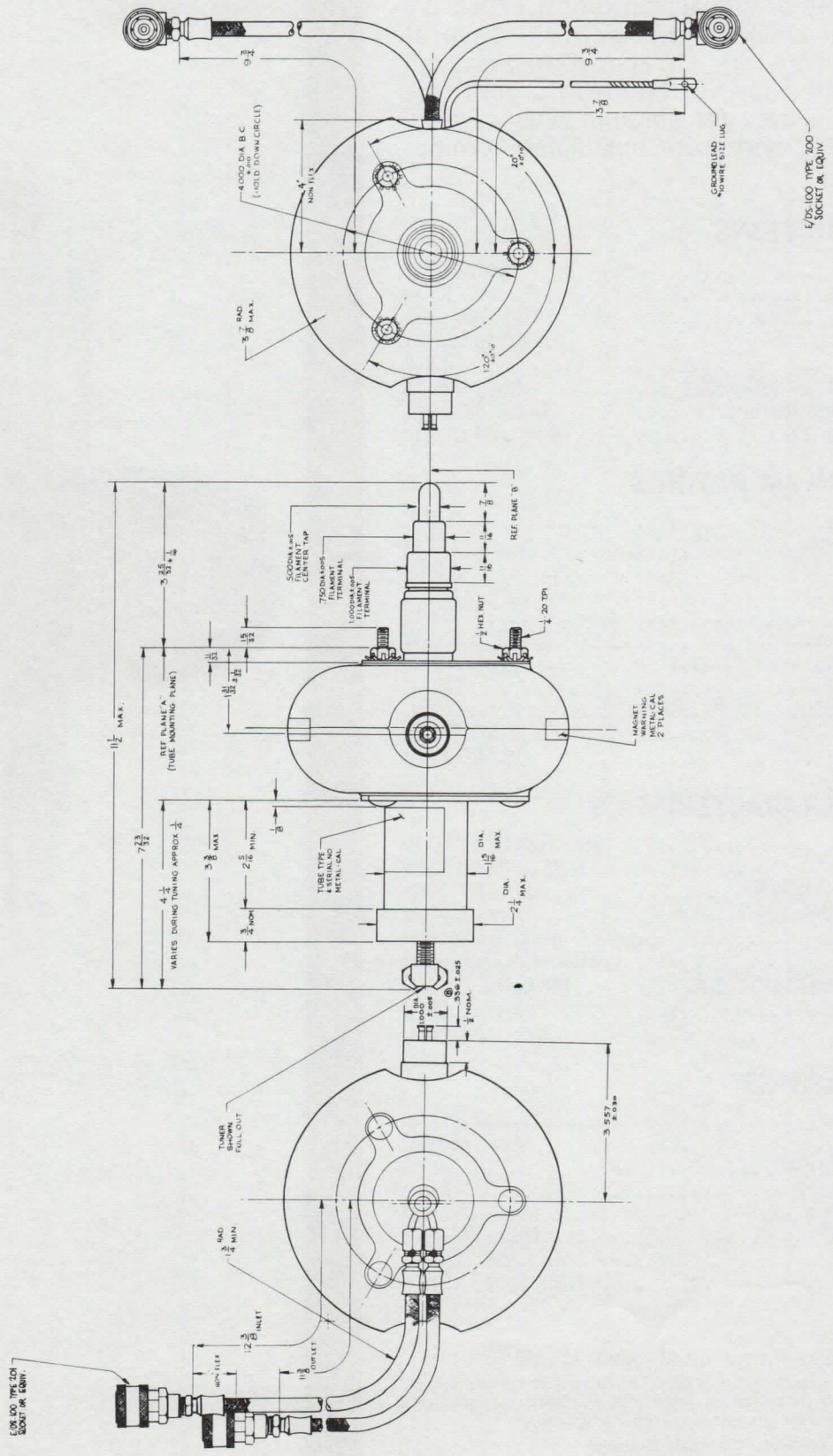
# PULSE/CW MAGNETRON

# L-3464A



## PULSE/CW MAGNETRON

# L-3464A



1.5 Kilowatts Minimum Peak Power
400 Watts Minimum CW Power
Tunable Frequency 975 to 1500 MHz

The L-3465A high duty pulse and CW magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 4.1 to 5.0 kv |
| Pulse Current | 0.8 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 5.5 kv |
| Pulse Current | 0.9 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 1.7 kW |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 to 1500 W |
| Tunable Frequency | 975 to 1500 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 10 MHz |
| Pushing Figure (±10% lb) | Max. 1 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 0.2 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (water) | 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

A—Type L-3465A has same CW ratings as type L-3465.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

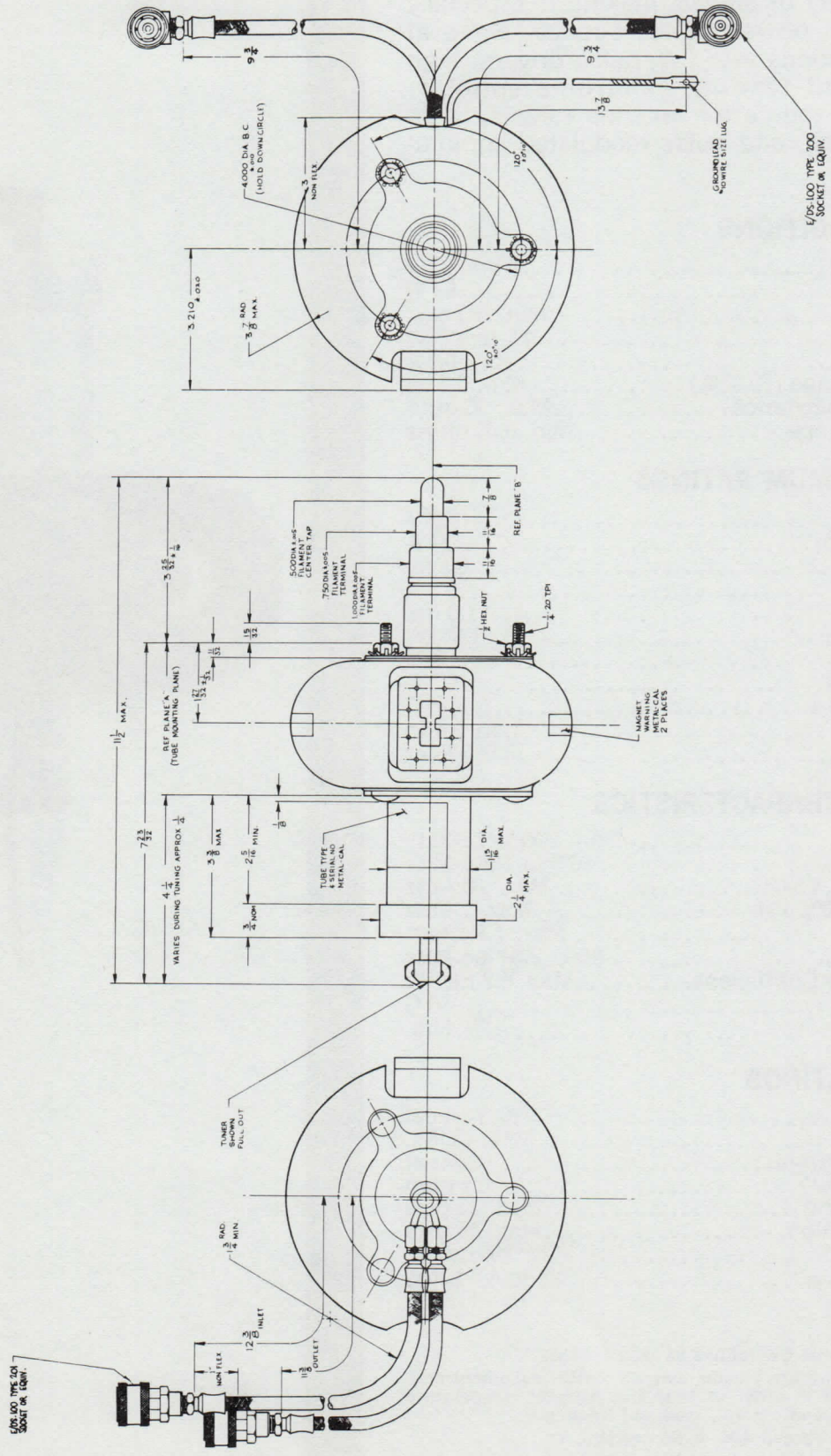
C—Output power not to exceed 400 watts average.

**PULSE/CW MAGNETRON**

# L-3465A

## PULSE/CW MAGNETRON

# L-3465A



1.5 Kilowatts Minimum Peak Power
400 Watts Minimum CW Power
Tunable Frequency 4975 to 6175 MHz

The L-3467A high duty pulse and CW magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 4.3 to 5.5 kv |
| Pulse Current | 0.8 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 6.0 kv |
| Pulse Current | 0.900 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 1.7 kW |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 to 1500 W |
| Tunable Frequency | 4975 to 6175 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 25 MHz |
| Pushing Figure (±10% Ib) | Max. 5 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 0.7 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (water) | 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

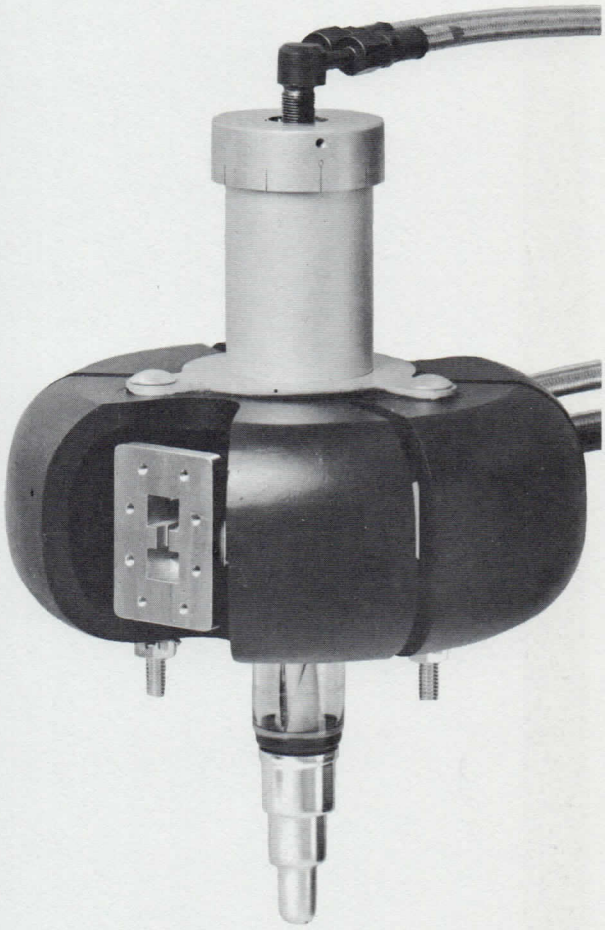
A—Type L-3467A has same CW ratings as type L-3467.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

C—Output power not to exceed 400 watts average.

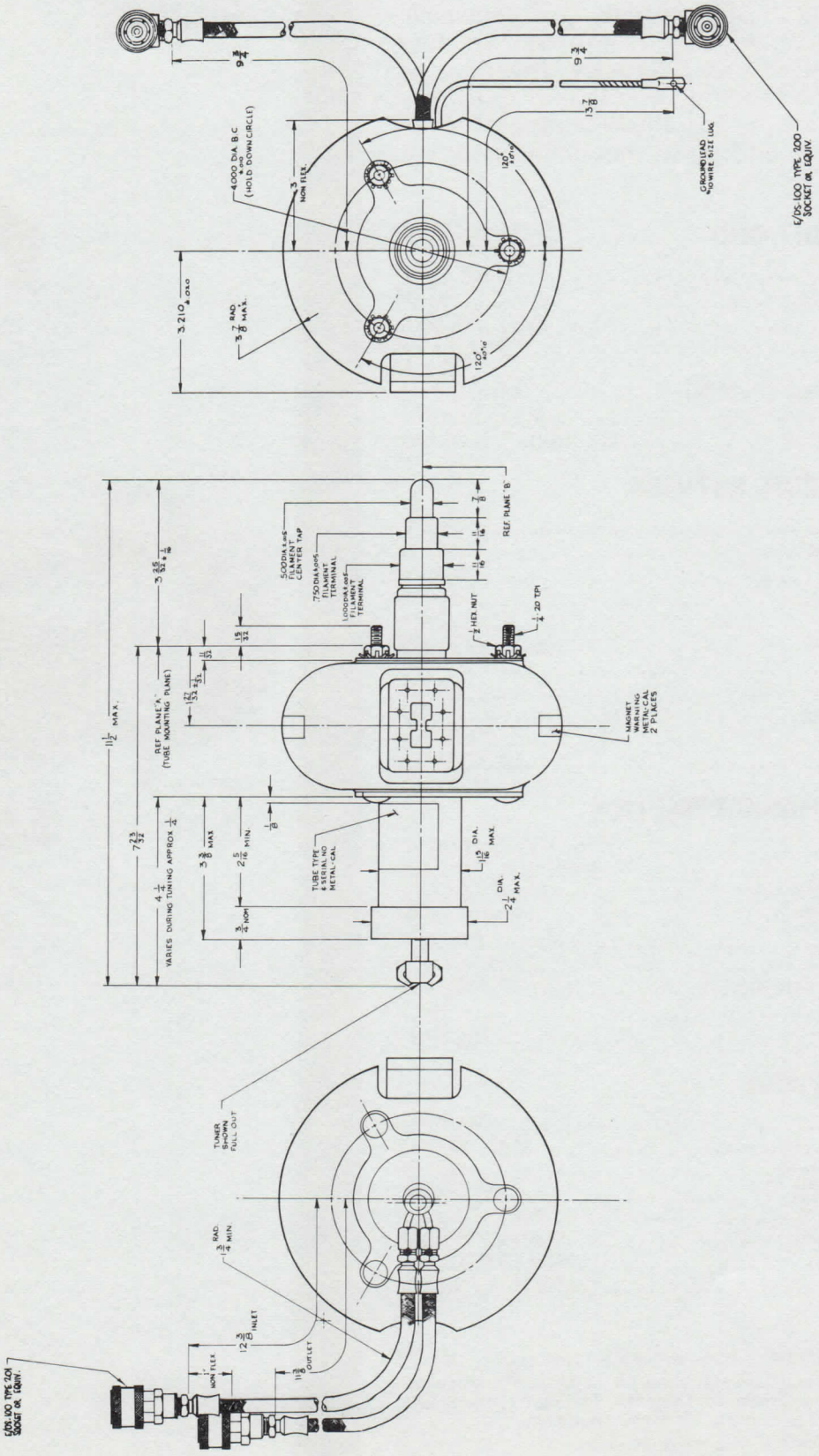
# PULSE/CW MAGNETRON

# L-3467A



## PULSE/CW MAGNETRON

# L-3467A



1.5 Kilowatts Minimum Peak Power
300 Watts Minimum CW Power
Tunable Frequency 6175 to 7275 MHz

The L-3468A high duty pulse and CW magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 4.2 to 5.3 kv |
| Pulse Current | Max. 0.8 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 5.5 kv |
| Pulse Current | 0.9 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 1.7 kW |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 100 to 1500 W |
| Tunable Frequency | 6175 to 7275 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 25 MHz |
| Pushing Figure (±10% Ib) | Max. 7 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 0.8 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (water) | 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

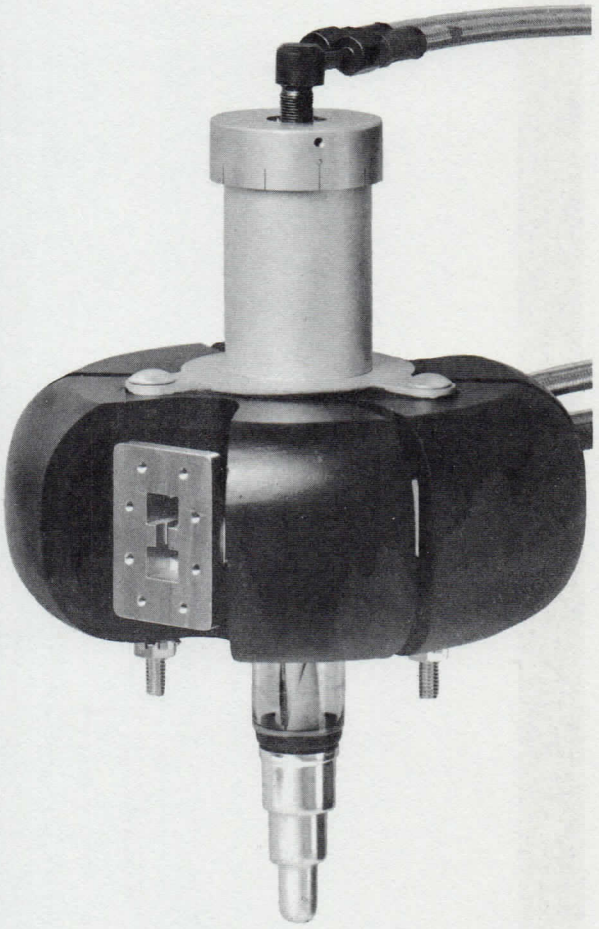
A—Type L-3468A has same CW ratings as type L-3468.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

C—Output power not to exceed 300 watts average.

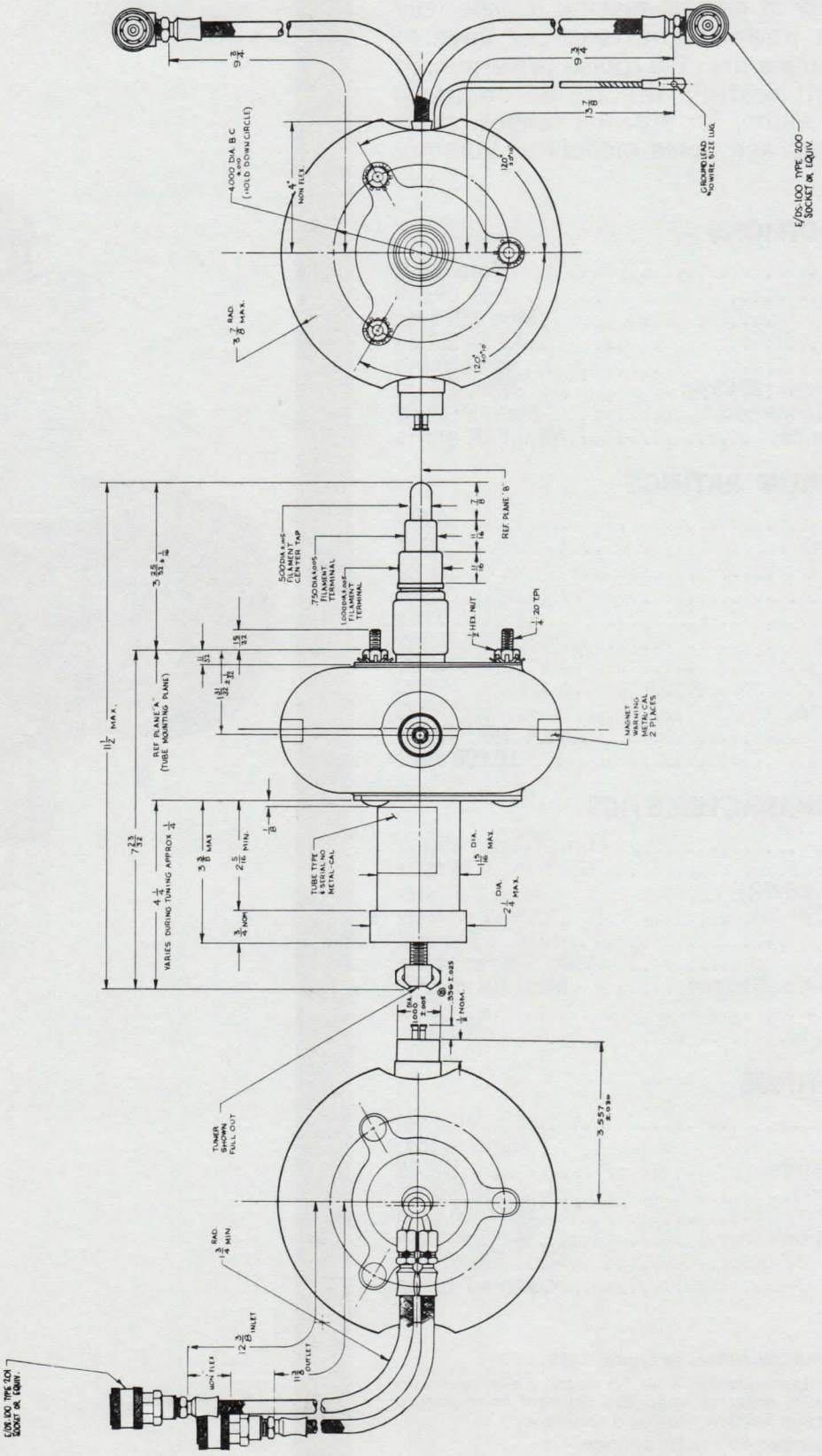
PULSE/CW MAGNETRON

# L-3468A



## PULSE/CW MAGNETRON

# L-3468A

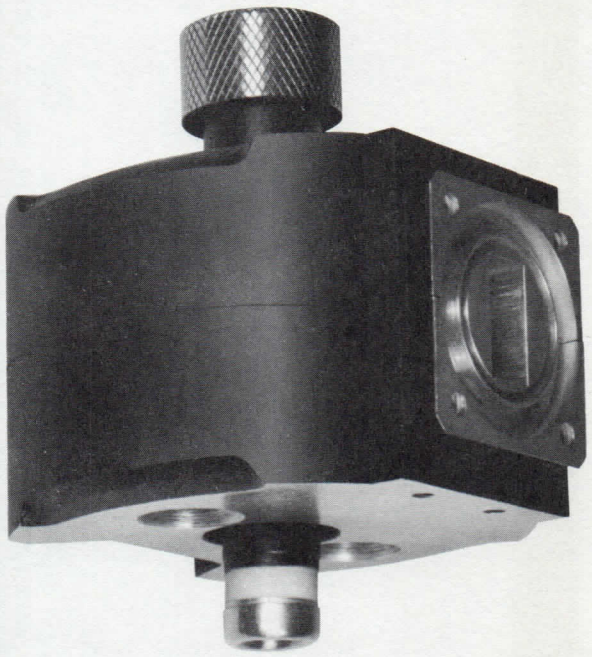


PULSE MAGNETRON

# L-3496A

1.0 Kilowatts Minimum Peak Power
Tunable Frequency 16,000 to 16,500 mcs

This improved, tunable, miniature Ku-band magnetron replaces the L-3496. Special design features provide a low thermal factor (less than 75 Kc/°C), stable frequency operation. This tube is particularly applicable in ground radar systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 4.75 V |
| Heater Current | 0.6 A |
| Preheat Time | Min. 60 sec. |
| Pulse Voltage | 2900 to 3100 V |
| Pulse Current | 1.6 A |
| Time of Rise of Voltage | Min. 0.08 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Current | 2.5 A |
| Pulse Voltage | 3100 V |
| Pulse Current | 2.0 A |
| Pulse Length | 2.0 us |
| Average Input Power | 10 W |
| Duty Cycle | 0.0015 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 30,000 Feet |

## PERFORMANCE CHARACTERISTICS

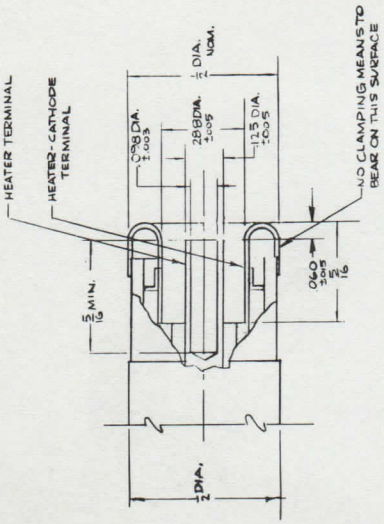
| | |
|---|---|
| Peak Power | Min. 1.0 kW |
| Tunable Frequency | 16,000 to 16,500 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% Ib) | Max. 3.5 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.10 mc/°C |
| Shock (5 ±1 m s) | 100 G |
| Tested Cycle Life | Min. 500 Hrs. |

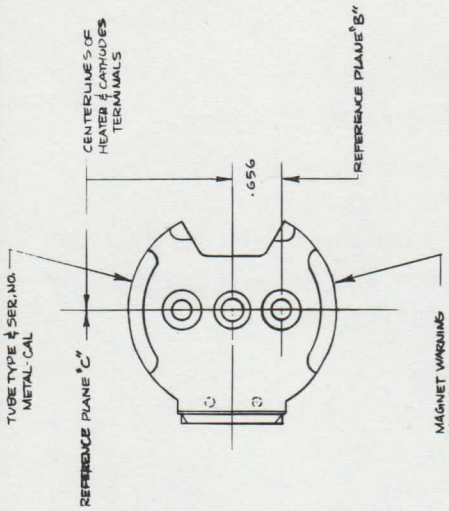
## MECHANICAL RATINGS

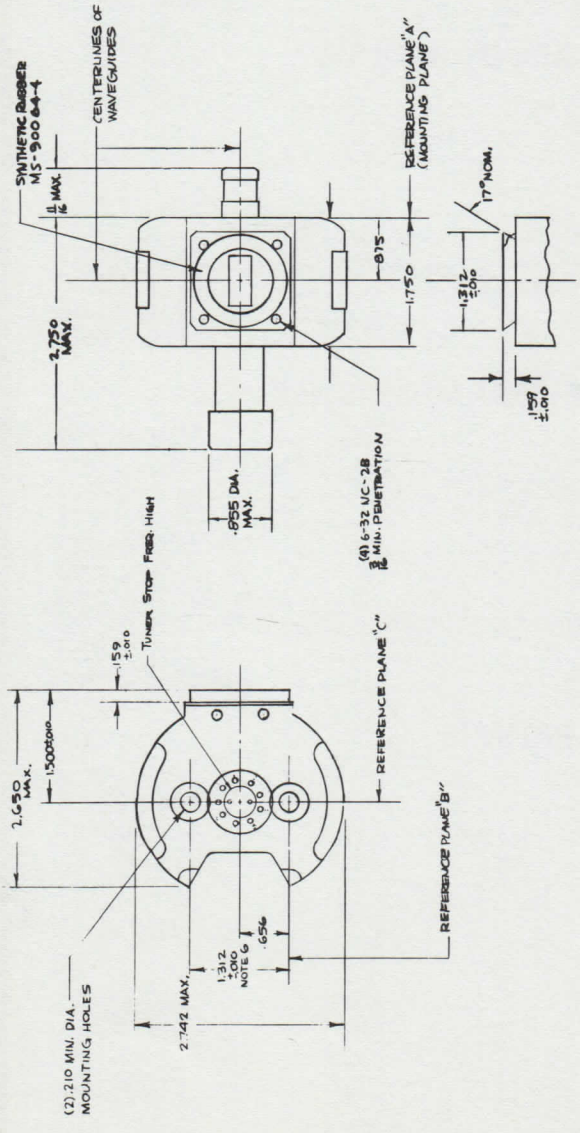
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 21 oz. |
| Anode Cooling | Conduction |

# PULSE MAGNETRON

# L-3496A



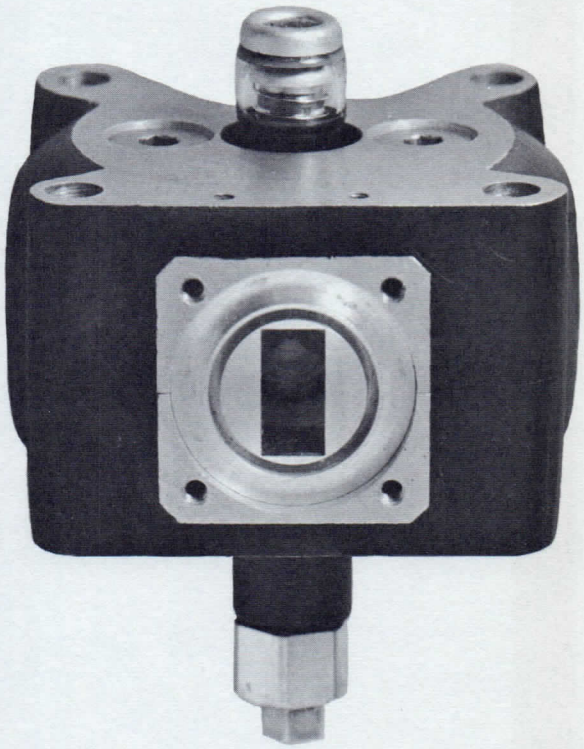



# PULSE MAGNETRON

# L-3498

2.0 Kilowatts Minimum Peak Power
Tunable Frequency 16,280 to 16,320 mcs

This highly ruggedized, tunable, miniature Ku-band magnetron may be pulsed with high duty coded pulse groups or with single short pulses. Special design features provide a low thermal factor (less than 150 Kc/°C) and stable frequency operation. This tube is particularly applicable in high performance aircraft or missile systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.0 A |
| Preheat Time | Min. 60 sec. |
| Pulse Voltage | 3400 to 3650 V |
| Pulse Current | 2.75 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 14 uufd |
| Heater Cold Resistance | Max. 1.0 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.75 A |
| Pulse Voltage | 3650 V |
| Pulse Current | 3.0 A |
| Average Input Power | 33 W |
| Duty Cycle | 0.003 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 30,000 Feet |

## PERFORMANCE CHARACTERISTICS

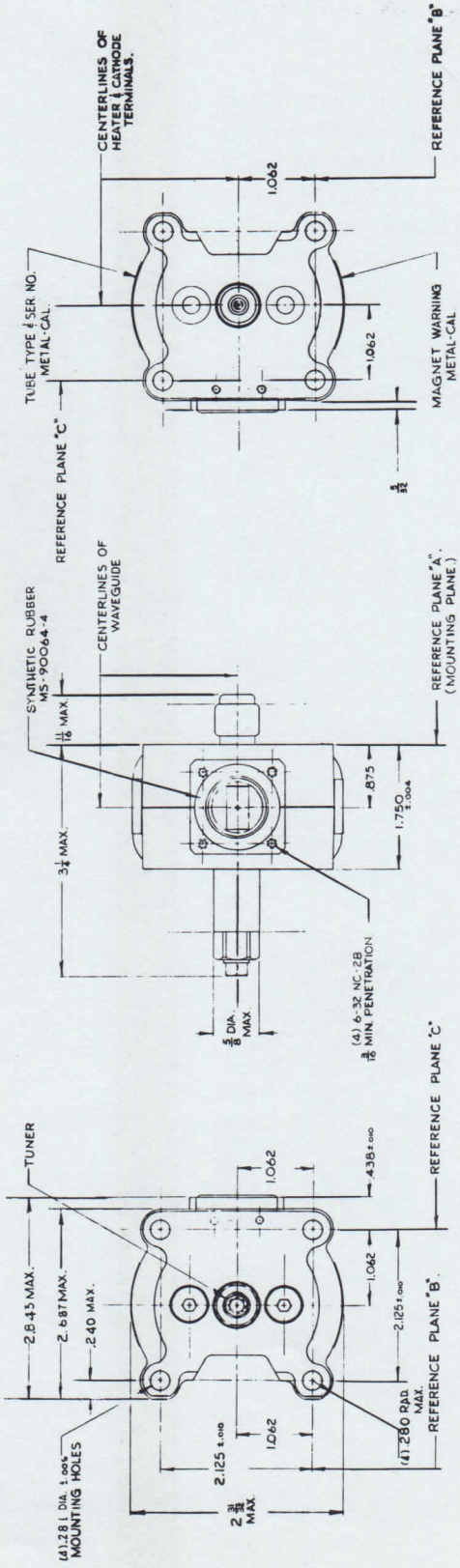
| | |
|---|---|
| Peak Power | Min. 2.0 kW |
| Tunable Frequency | 16,250 to 16,320 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 21 mcs |
| Pushing Figure (± 10% lb) | Max. 2.5 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.15 mc/°C |
| Vibration (5 to 1000 cps) | 0.08 Da or 5 G |
| Shock (11 ± 1 m s) | 15 G |
| Rated Cycle Life | 500 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 20.5 oz. |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-3498

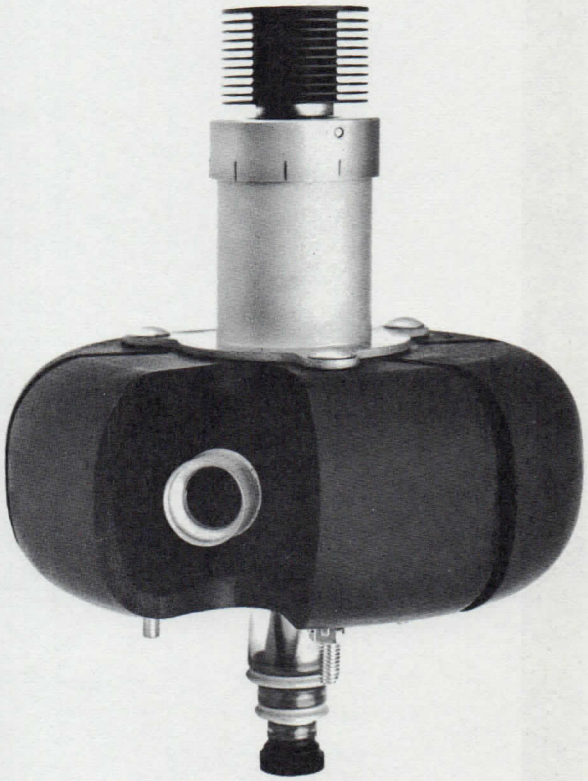


800 Watts Minimum Peak Power
110 Watts Minimum CW Power
Tunable Frequency 975 to 1500 MHz

# PULSE/CW MAGNETRON

# L-3502A

The L-3502A high duty pulse and CW magnetron is a mechanically tuned, forced air cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 3.5 to 4.1 kv |
| Pulse Current | 0.6 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 |
| Pulse Voltage | 4.5 kv |
| Pulse Current | 0.7 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 525 W |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 50 to 800 W |
| Tunable Frequency | 975 to 1500 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 10 MHz |
| Pushing Figure (±10% lb) | Max. 1 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 0.2 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (air) | 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

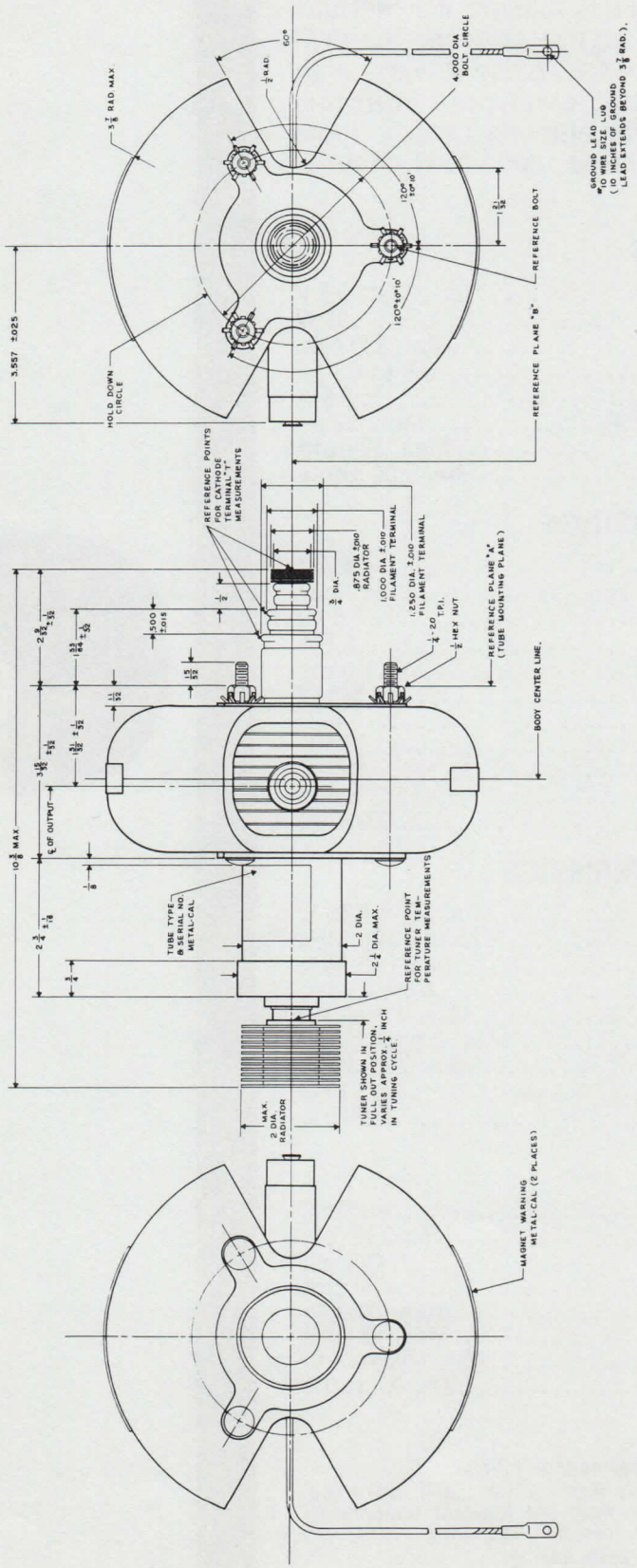
A—Type L-3502A has same CW ratings as type L-3502.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

C—Output power not to exceed 110 watts average.

## PULSE/CW MAGNETRON

# L-3502A

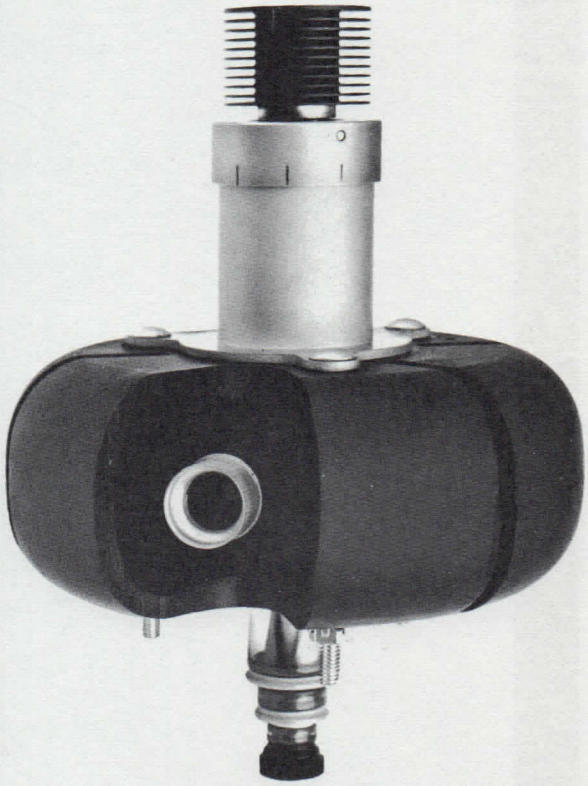


800 Watts Minimum Peak Power
110 Watts Minimum CW Power
Tunable Frequency 1500 to 2350 MHz

# PULSE/CW MAGNETRON

# L-3503A

The L-3503A high duty pulse and CW magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 3.8 to 4.4 kv |
| Pulse Current | 0.6 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 4.6 kv |
| Pulse Current | 0.7 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 525 W |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 50 to 800 W |
| Tunable Frequency | 1500 to 2350 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 15 MHz |
| Pushing Figure (±10% lb) | Max. 2 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 0.2 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (air) | 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

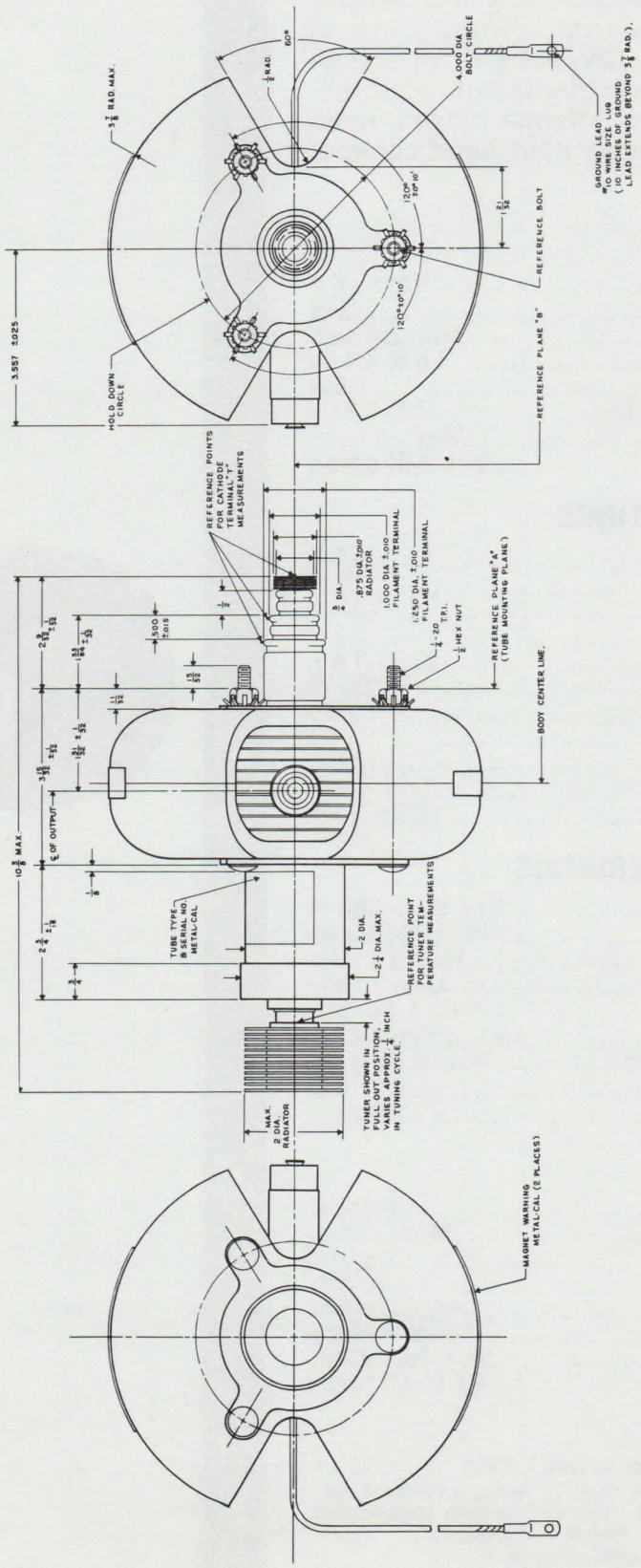
A—Type L-3503A has same CW ratings as type L-3503.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

C—Output power not to exceed 110 watts average.

## PULSE/CW MAGNETRON

# L-3503A



800 Watts Minimum Peak Power
110 Watts Minimum CW Power
Tunable Frequency 2350 to 3575 MHz

The L-3504A high duty pulse and CW magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 3.5 to 4.1 kv |
| Pulse Current | 0.6 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 4.5 kv |
| Pulse Current | 0.7 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 525 W |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 50 to 800 W |
| Tunable Frequency | 2350 to 3575 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 20 MHz |
| Pushing Figure (±10% Ib) | Max. 3 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 0.3 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | 23052 |
| Anode Cooling (air) | 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

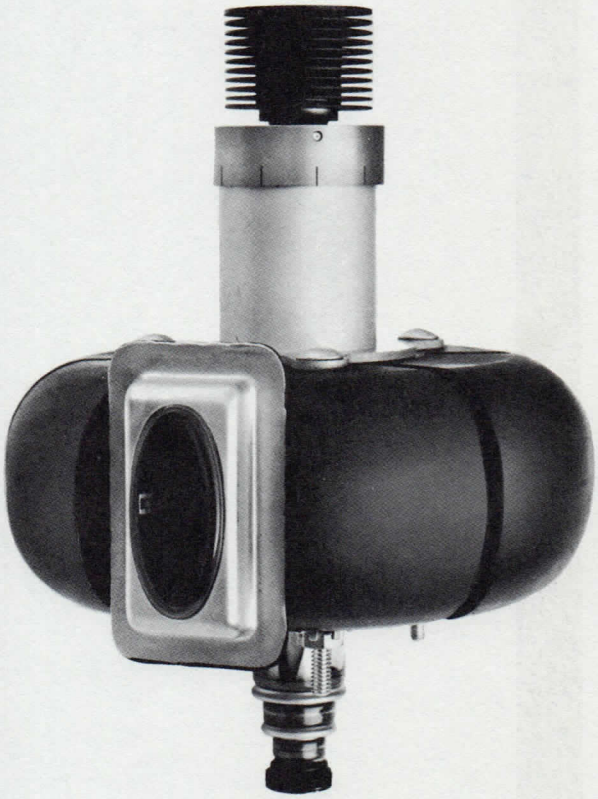
A—Type L-3504A has same CW ratings as type L-3504.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

C—Output power not to exceed 110 watts average.

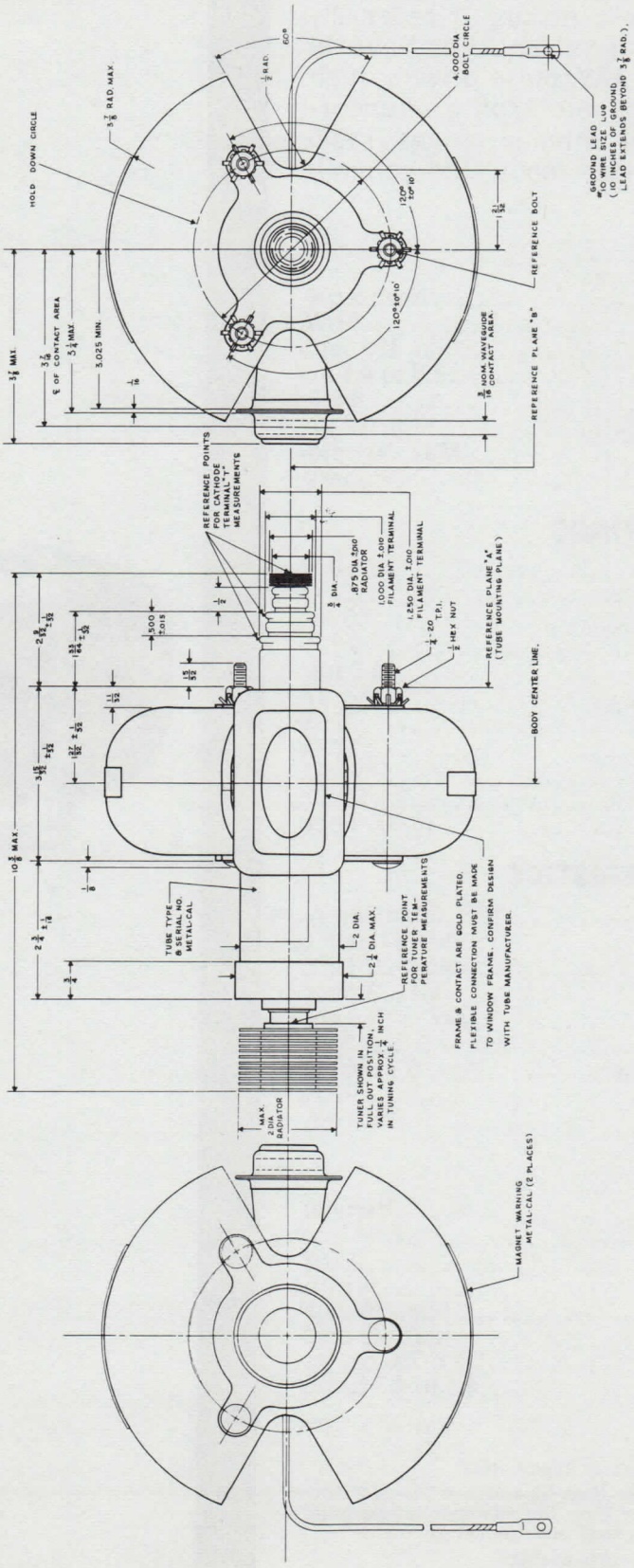
PULSE/CW MAGNETRON

# L-3504A



## PULSE/CW MAGNETRON

# L-3504A

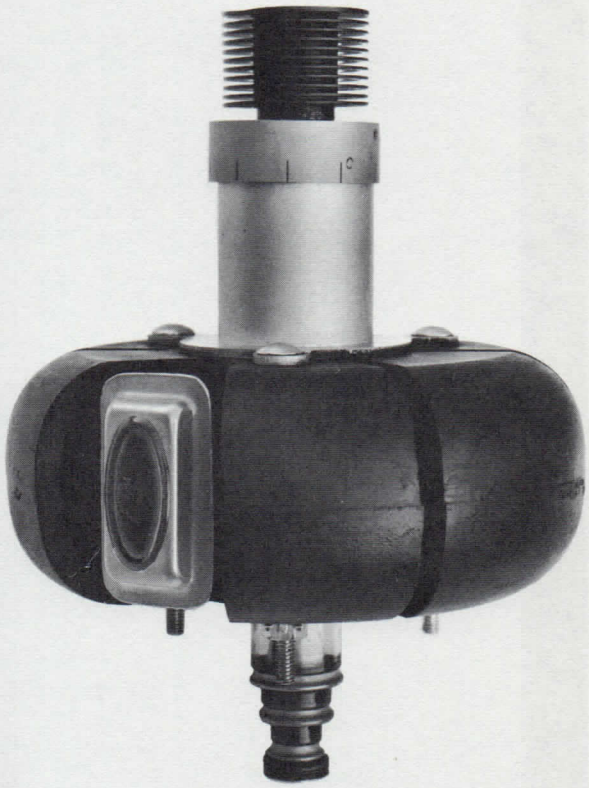


800 Watts Minimum Peak Power
110 Watts Minimum CW Power
Tunable Frequency 3575 to 4975 MHz

# PULSE/CW MAGNETRON

# L-3505A

The L-3505A high duty pulse and CW magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 3.5 to 4.1 kv |
| Pulse Current | 0.6 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 4.5 kv |
| Pulse Current | 0.7 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 525 W |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 50 to 800 W |
| Tunable Frequency | 3575 to 4975 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 20 MHz |
| Pushing Figure (±10% lb) | Max. 4 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 0.4 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | T22900 |
| Anode Cooling (air) | 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

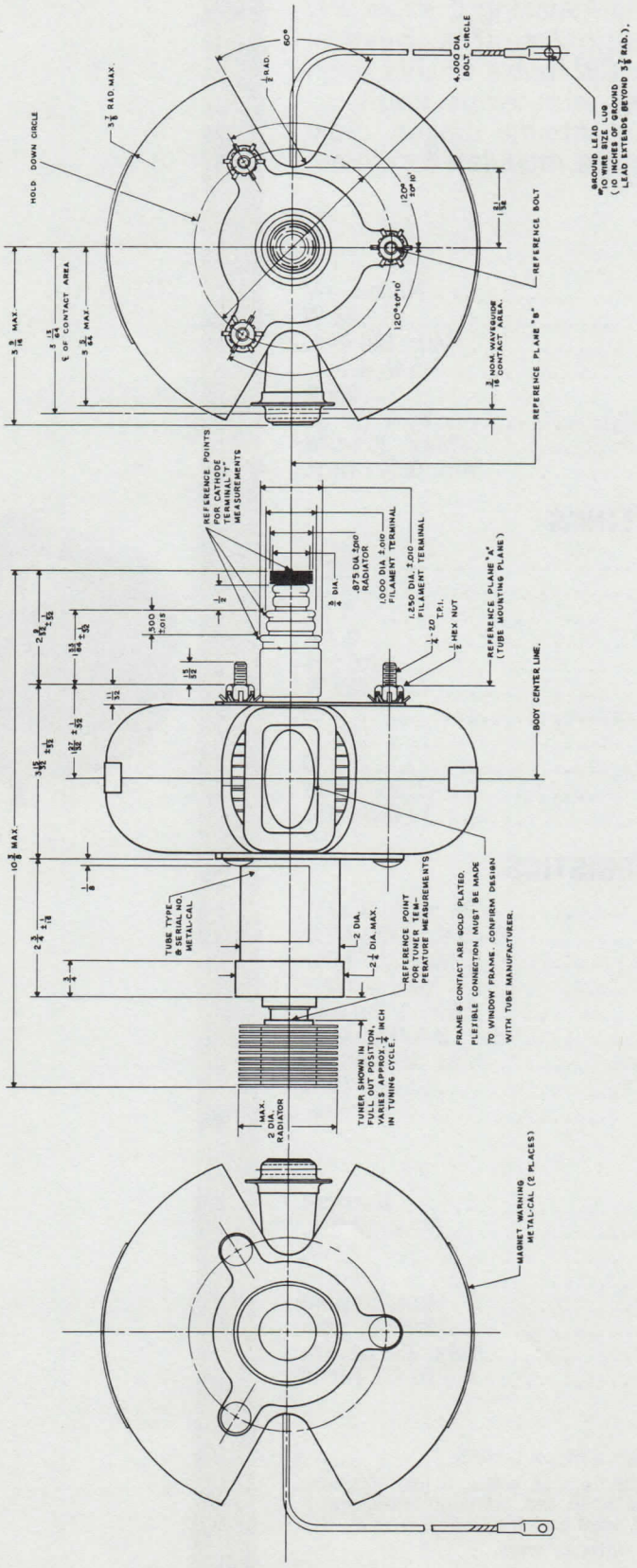
A—Type L-3505A has same CW ratings as type L-3505.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

C—Output power not to exceed 110 watts average.

## PULSE/CW MAGNETRON

# L-3505A



800 Watts Minimum Peak Power
110 Watts Minimum CW Power
Tunable Frequency 4975 to 6175 MHz

The L-3506A high duty pulse and CW magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 3.5 to 4.1 kv |
| Pulse Current | 0.6 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 |
| Pulse Voltage | 4.5 kv |
| Pulse Current | 0.7 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 525 W |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 50 to 800 W |
| Tunable Frequency | 4975 to 6175 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 25 MHz |
| Pushing Figure (±10% lb) | Max. 5 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 0.7 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (air) | 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

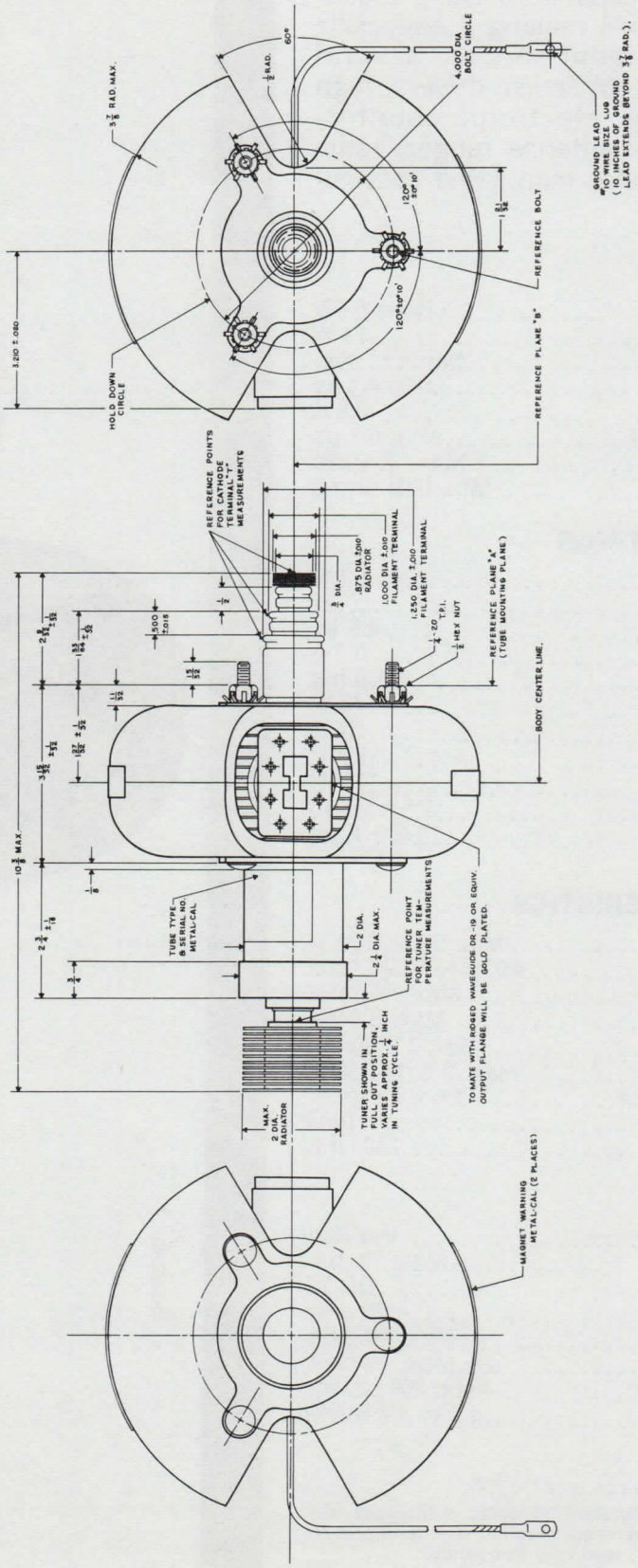
NOTES:
A—Type L-3506A has same CW ratings as type L-3506.
B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.
C—Output power not to exceed 110 watts average.

PULSE/CW MAGNETRON

# L-3506A

## PULSE/CW MAGNETRON

# L-3506A

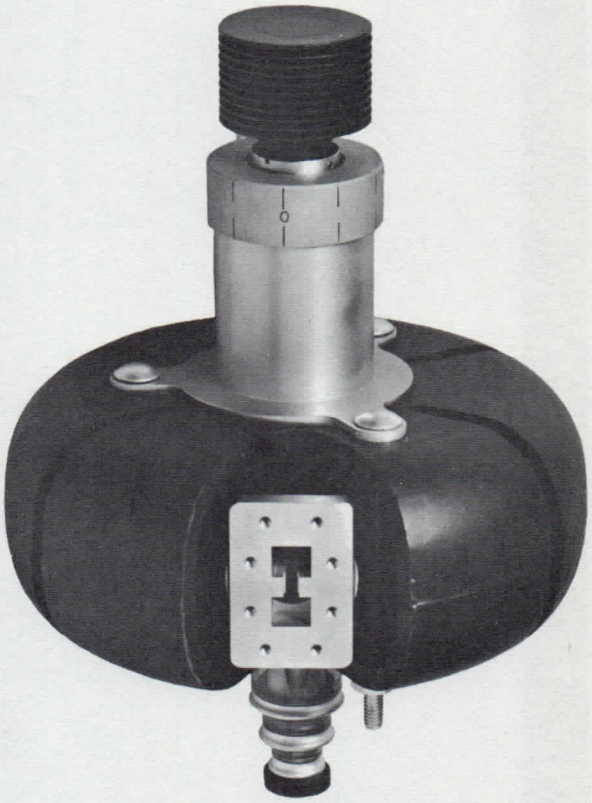


800 Watts Minimum Peak Power
110 Watts Minimum CW Power
Tunable Frequency 6175 to 7275 MHz

# PULSE/CW MAGNETRON

# L-3507A

The L-3507A high duty pulse and CW magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 3.4 to 4.0 kv |
| Pulse Current | 0.6 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 4.5 kv |
| Pulse Current | 0.7 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 525 W |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 50 to 800 W |
| Tunable Frequency | 6175 to 7275 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 25 MHz |
| Pushing Figure (±10% lb) | Max. 7 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 0.8 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (air) | 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

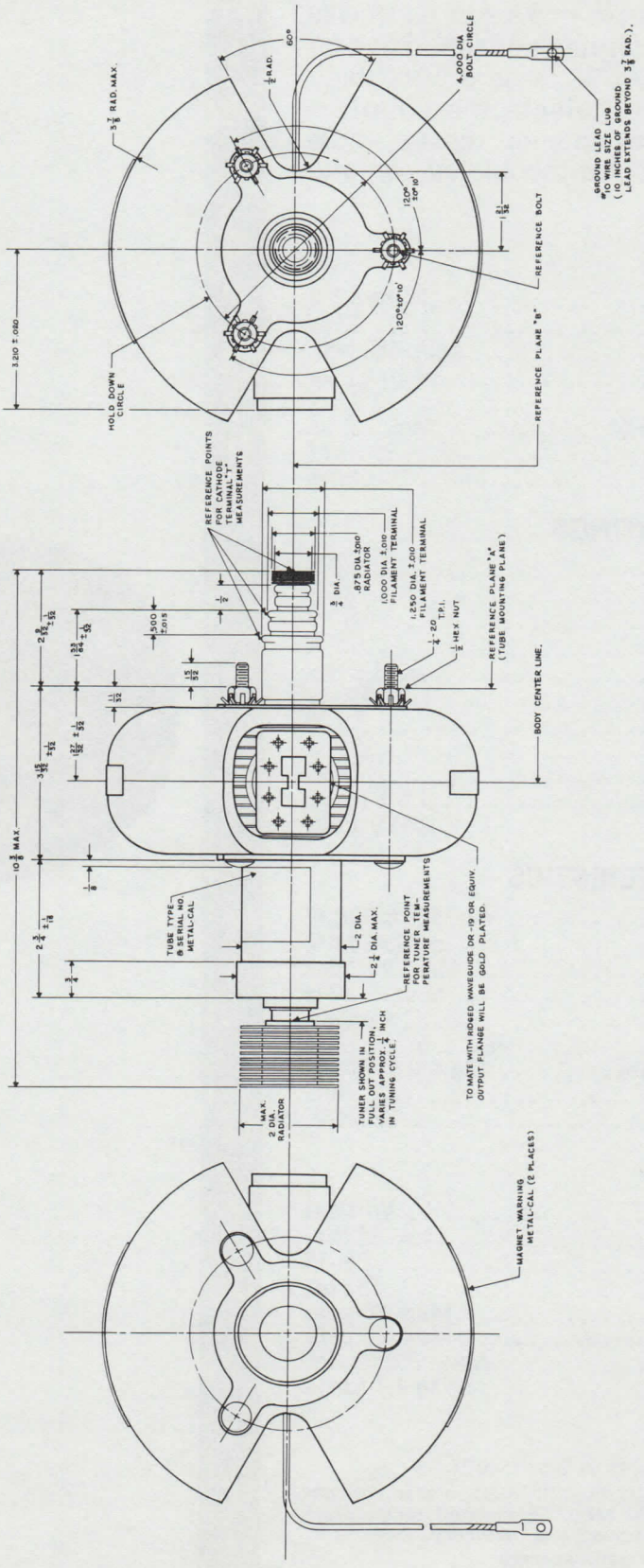
A—Type L-3507A has same CW ratings as type L-3507.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

C—Output power not to exceed 110 watts average.

# PULSE/CW MAGNETRON

# L-3507A



800 Watts Minimum Peak Power
110 Watts Minimum CW Power
Tunable Frequency 7275 to 8775 MHz

The L-3508A high duty pulse and CW magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 3.5 to 4.1 kv |
| Pulse Current | 0.6 A |
| Time of Rise of Voltage (20-85%) | Min. 0.18 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 4.5 kv |
| Pulse Current | 0.7 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 525 W |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 50 to 800 W |
| Tunable Frequency | 7275 to 8775 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 35 MHz |
| Pushing Figure (±10% lb) | Max. 9 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 1.0 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | per DR-19 |
| Anode Cooling (air) | 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

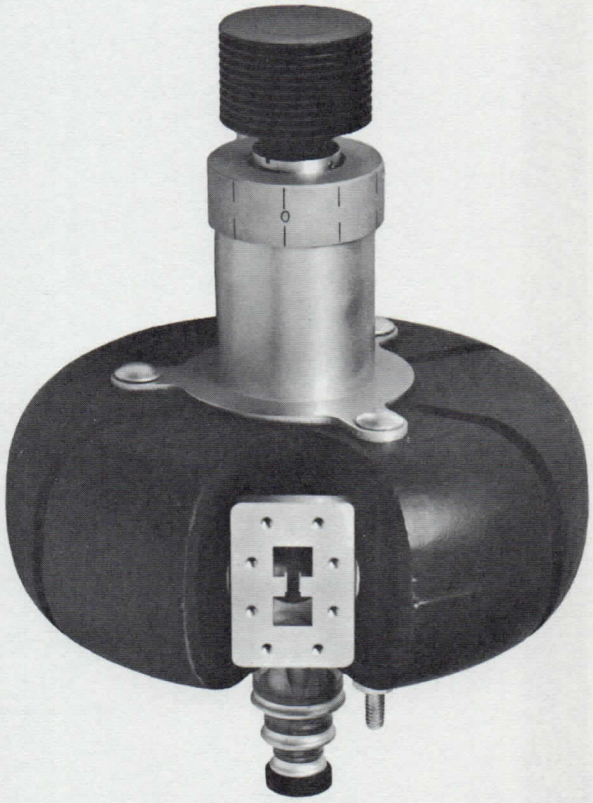
A—Type L-3508A has same CW ratings as type L-3508.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

C—Output power not to exceed 110 watts average.

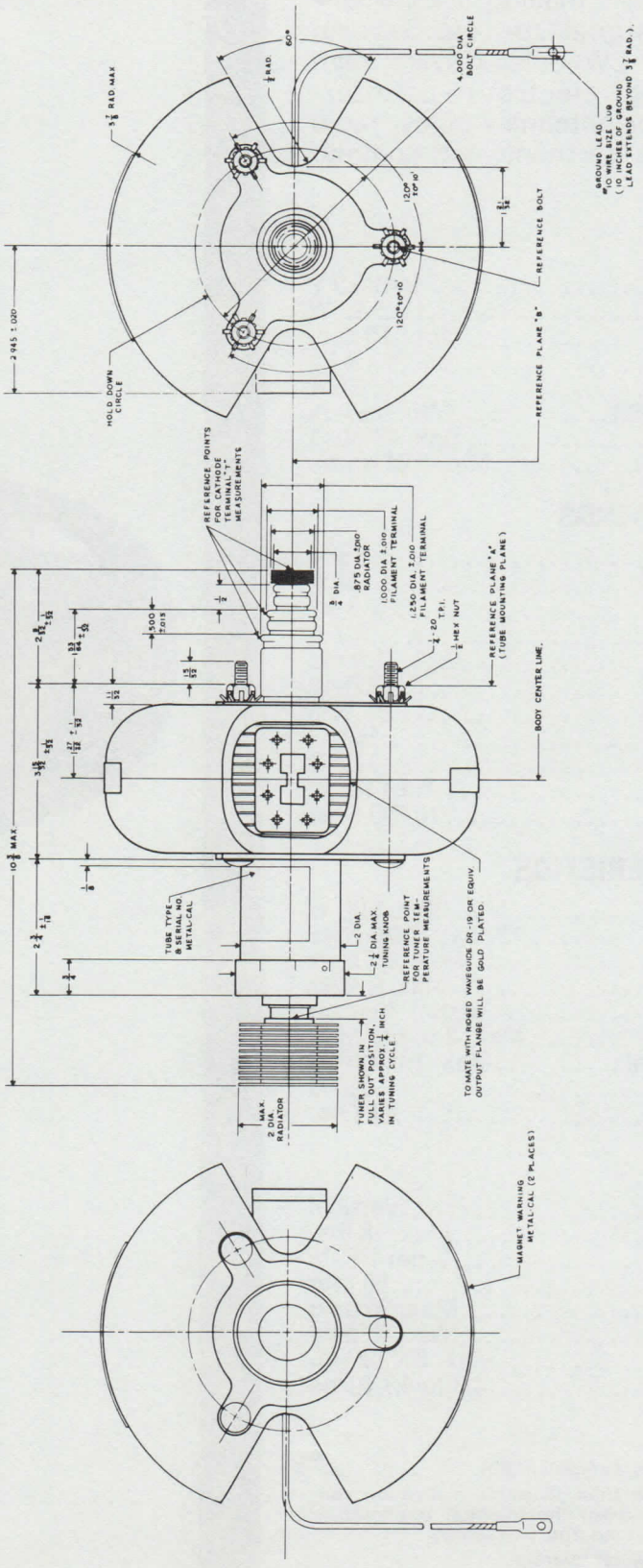
**PULSE/CW MAGNETRON**

# L-3508A



## PULSE/CW MAGNETRON

# L-3508A



800 Watts Minimum Peak Power
110 Watts Minimum CW Power
Tunable Frequency 8775 to 10,475 MHz

The L-3509A high duty pulse and CW magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 3.4 to 4.0 kv |
| Pulse Current | 0.6 A |
| Time of Rise of Voltage (20-85%) | Min. 0.2 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 4.5 kv |
| Pulse Current | 0.7 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 525 W |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 50 to 800 W |
| Tunable Frequency | 8775 to 10,475 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 47 MHz |
| Pushing Figure (±10% lb) | Max. 12 MHz |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc MHz |
| Anode Temperature Coefficient | Max. 1.0 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (air) | 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:

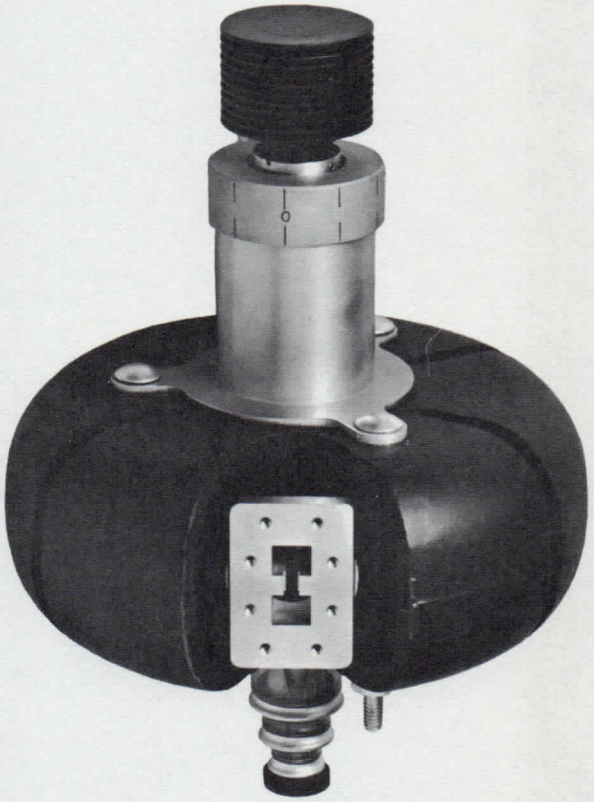
A—Type L-3509A has same CW ratings as type L-3509.

B—For average power outputs greater than 55 watts, a filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

C—Output power not to exceed 110 watts average.

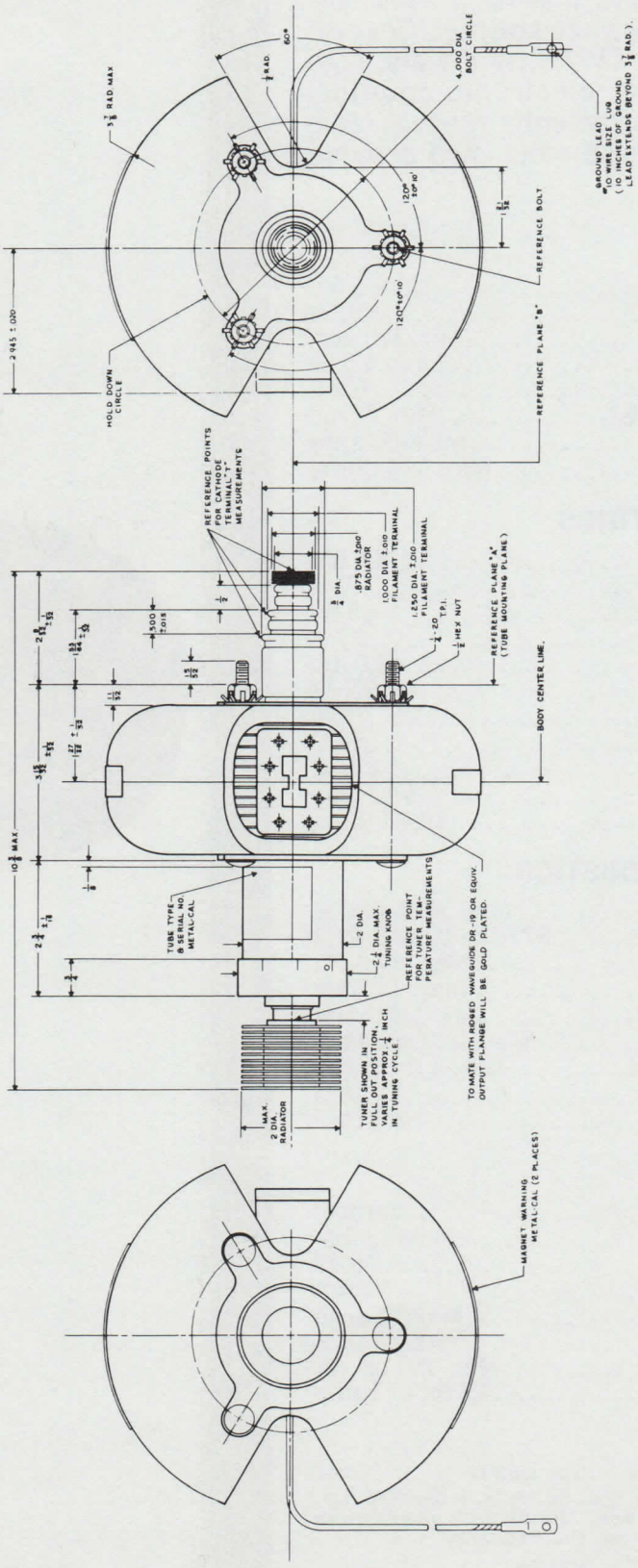
PULSE/CW MAGNETRON

# L-3509A



## PULSE/CW MAGNETRON

# L-3509A

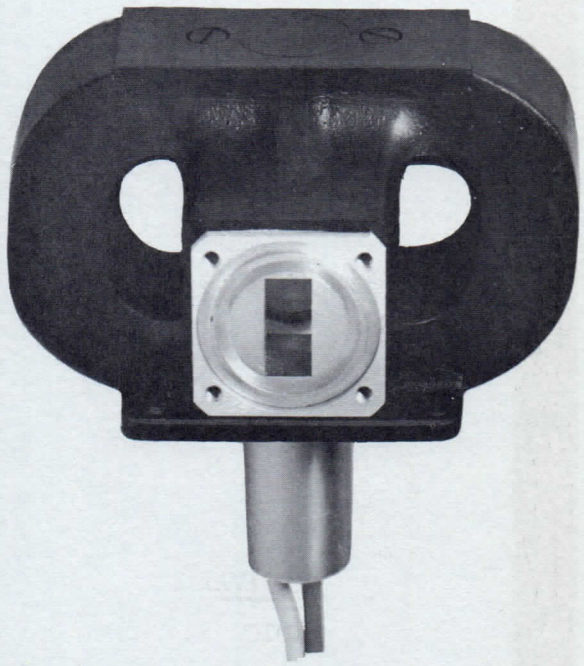


PULSE MAGNETRON

# L-3513

20.0 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 30 mcs

This highly reliable, fixed frequency, pulse magnetron provides many thousands of hours of stable performance. As a result of conservative design and rigorous processing, warranted operation for 1000 or 2000 hours is available from Litton Industries.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.0 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 6.75 to 7.5 kVdc |
| Pulse Current | 7.5 A |
| Time of Rise of Voltage | Min. 0.1 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Surge Current | 3.75 A |
| Pulse Voltage | 8.0 kv |
| Pulse Current | 8.5 A |
| Pulse Length | 2.2 us |
| Average Input Power | 68 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 40,000 Feet |

## PERFORMANCE CHARACTERISTICS

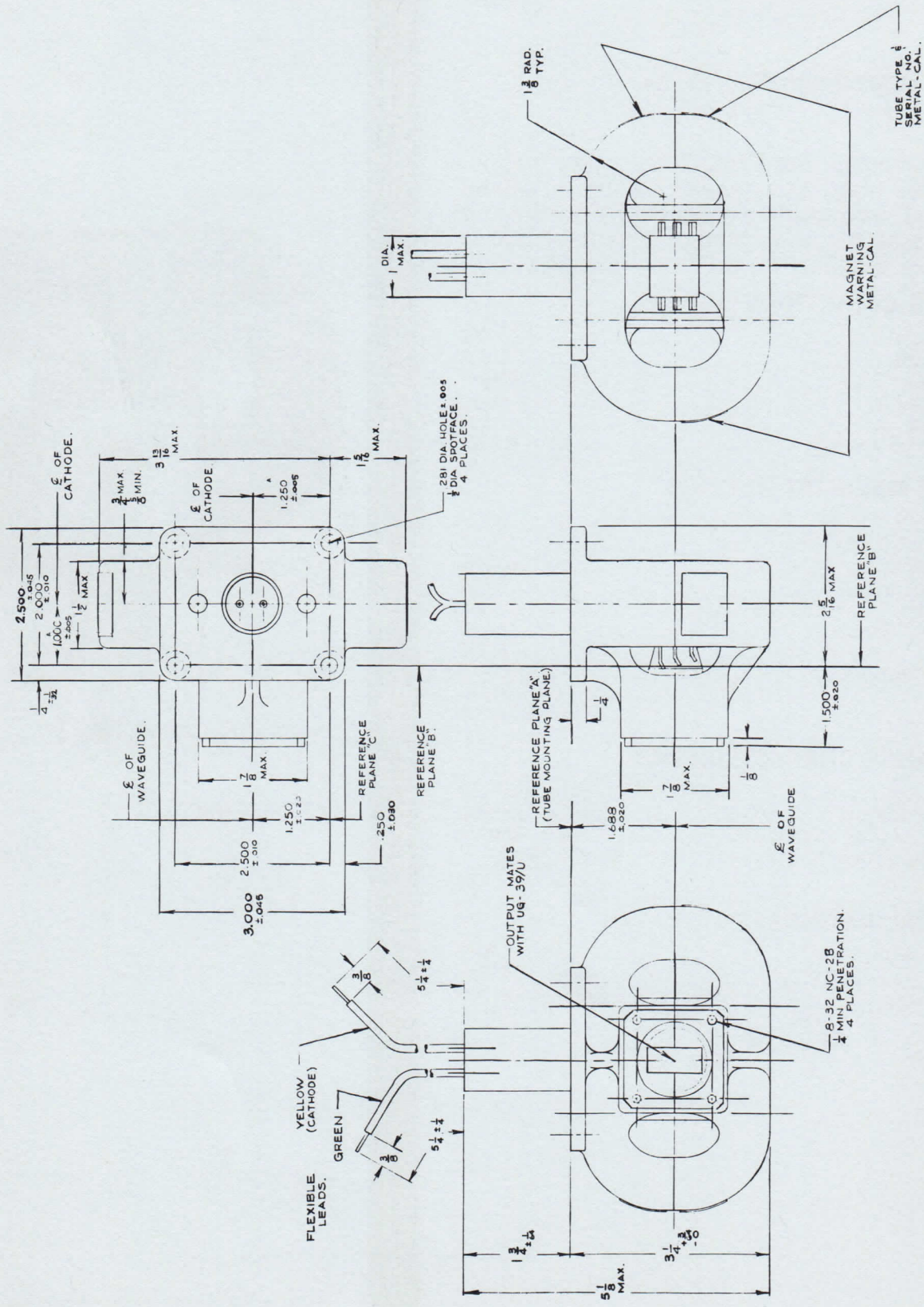
| | |
|---|---|
| Peak Power | Min. 20.0 kW |
| Fixed Frequency | 9375 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Anode Temperature Co-efficient | Max. 0.20 mc/°C |
| Rated Cycle Life | 500 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.75 lbs. |
| Anode Cooling | Convection Air |

# PULSE MAGNETRON

# L-3513



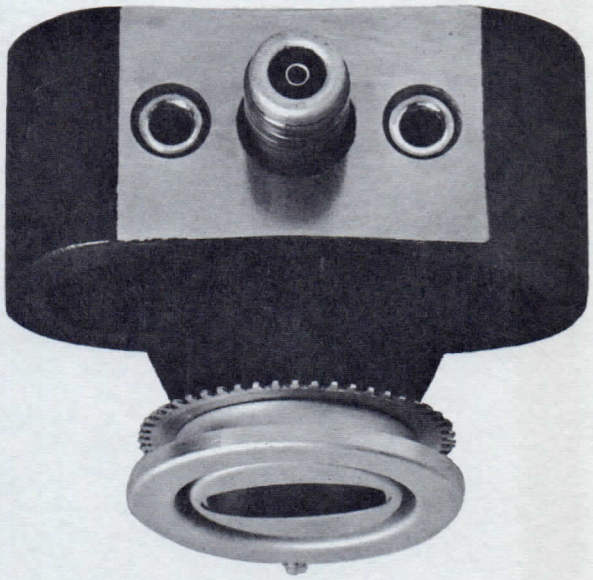

LITTON INDUSTRIES • ELECTRON TUBE DIVISION • SAN CARLOS, CALIFORNIA

# PULSE MAGNETRON

# L-3601

120 Watts Minimum Peak Power
Tunable Frequency 9315 to 9340 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 775 to 850 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 860 V |
| Pulse Current | 0.6 A |
| Pulse Length | 1.2 us |
| Average Input Power | 14.0 W |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9310 to 9340 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% Ib) | Max. 2.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Vibration (5 to 500 cps) | 0.10 Da or 10 G |
| Rated Cycle Life | 300 Hrs. |

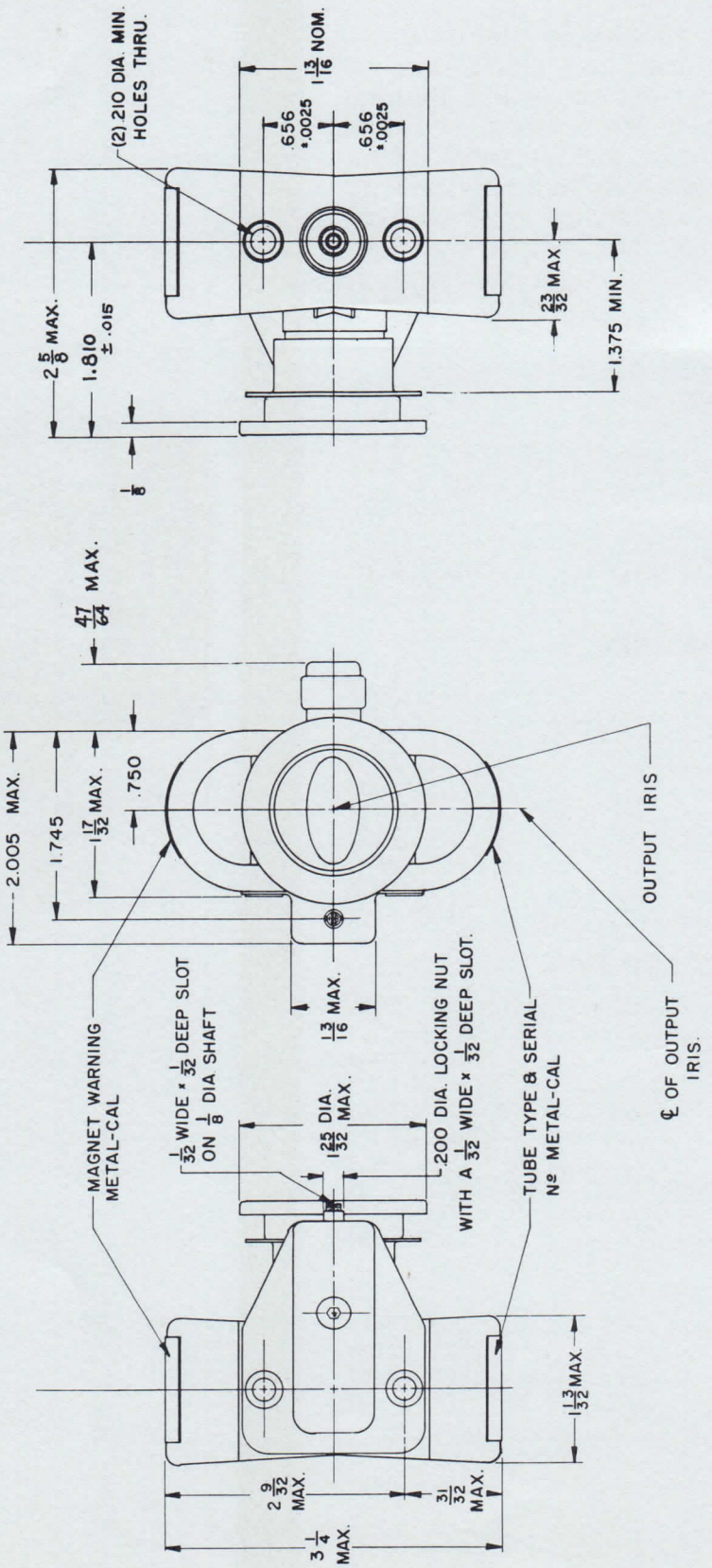
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

NOTE. For similar tubes at other frequencies see:
L-3028D, L-3180, L-3181, L-3212, L-3213, L-3214, L-3218, L-3326, L-3327

# PULSE MAGNETRON

# L-3601

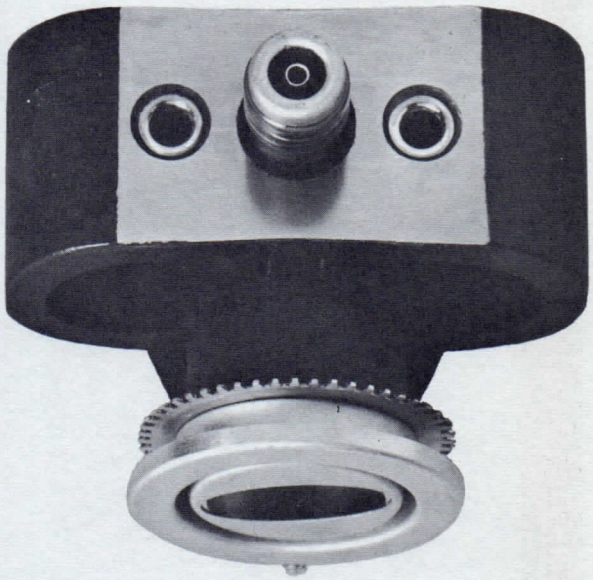


# PULSE MAGNETRON

# L-3616

120 Watts Minimum Peak Power
Tunable Frequency 9350 to 9400 mcs

This rugged, lightweight, tunable, miniature pulse magnetron has been designed for stable frequency operation, high duty, and extremely low thermal drift and pushing figure characteristics. Features such as narrow tuning range, low electrical potentials, filament voltage, and ability to be pulsed with a complex code, permit battery-powered applications in high performance miniaturized systems. High average duty ratings and capability for short pulse operation ( .020 us and less) make possible many applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.5 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 700 to 850 V |
| Pulse Current | 0.55 A |
| Time of Rise of Voltage | Min. 0.10 us |
| Anode Cathode Capacitance | Max. 17 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 1.5 A |
| Pulse Voltage | 900 V |
| Pulse Current | 0.65 A |
| Pulse Length | 2.0 us |
| Duty Cycle | 0.027 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 70,000 Feet |

## PERFORMANCE CHARACTERISTICS

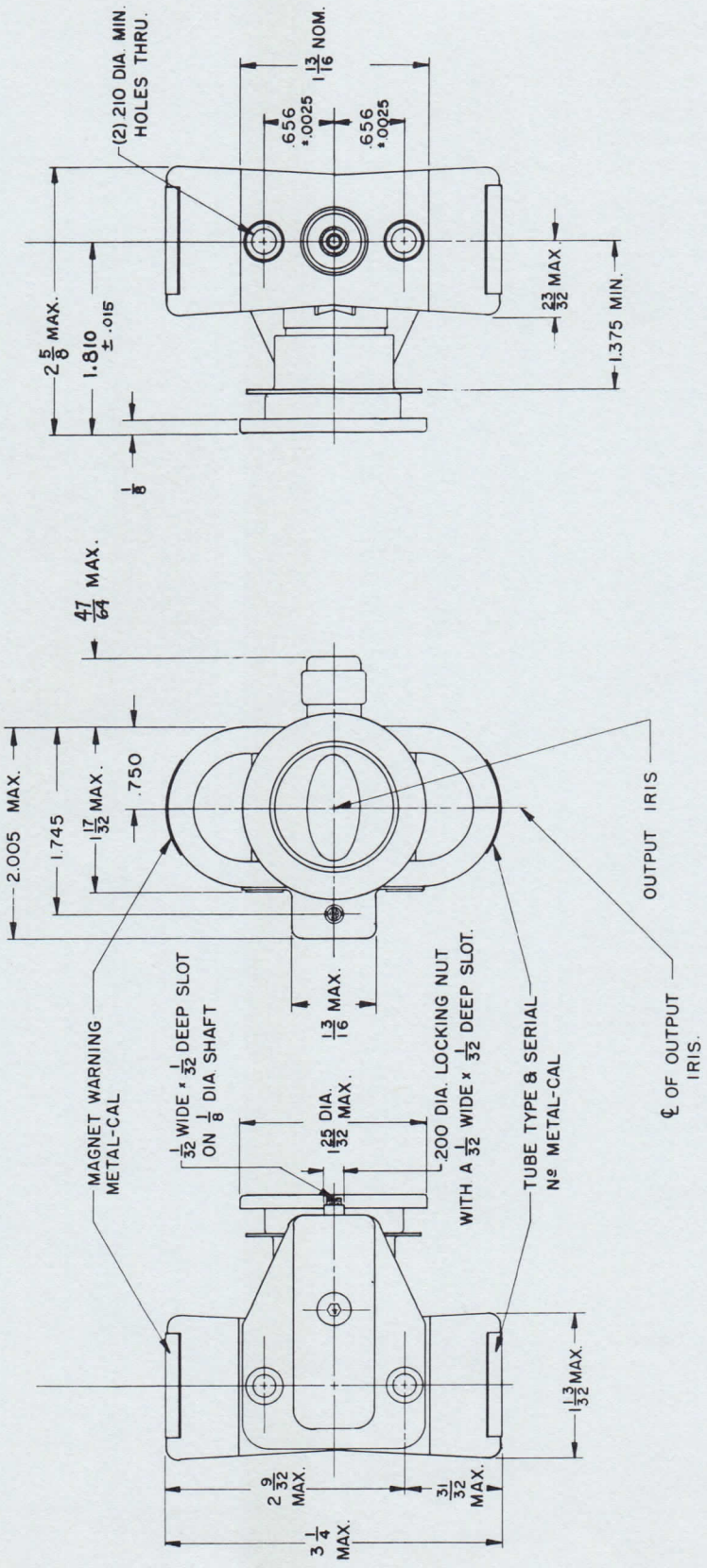
| | |
|---|---|
| Peak Power | Min. 120 W |
| Tunable Frequency | 9350 to 9400 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure ( ± 10% Ib) | Max. 2.0 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Vibration (5 to 500 cps) | 0.10 Da or 10 G |
| Rated Cycle Life | 300 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-3616

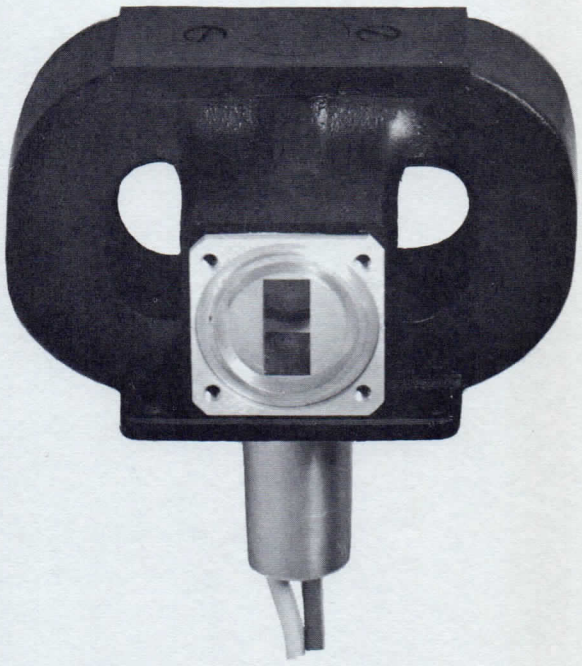


PULSE MAGNETRON

# L-3635

10 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 30 mcs

This highly reliable, fixed frequency, pulse magnetron provides many thousands of hours of stable performance. As a result of conservative design and rigorous processing, warranted operation for 1000 or 2000 hours is available from Litton Industries.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.2 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 5.5 to 6.5 kv |
| Pulse Current | 6.0 A |
| Time of Rise of Voltage | Min. 0.10 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.75 A |
| Pulse Voltage | 7.0 kv |
| Pulse Current | 7.0 A |
| Pulse Length | 2.2 us |
| Average Input Power | 49 W |
| Duty Cycle | 0.002 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 40,000 Feet |

## PERFORMANCE CHARACTERISTICS

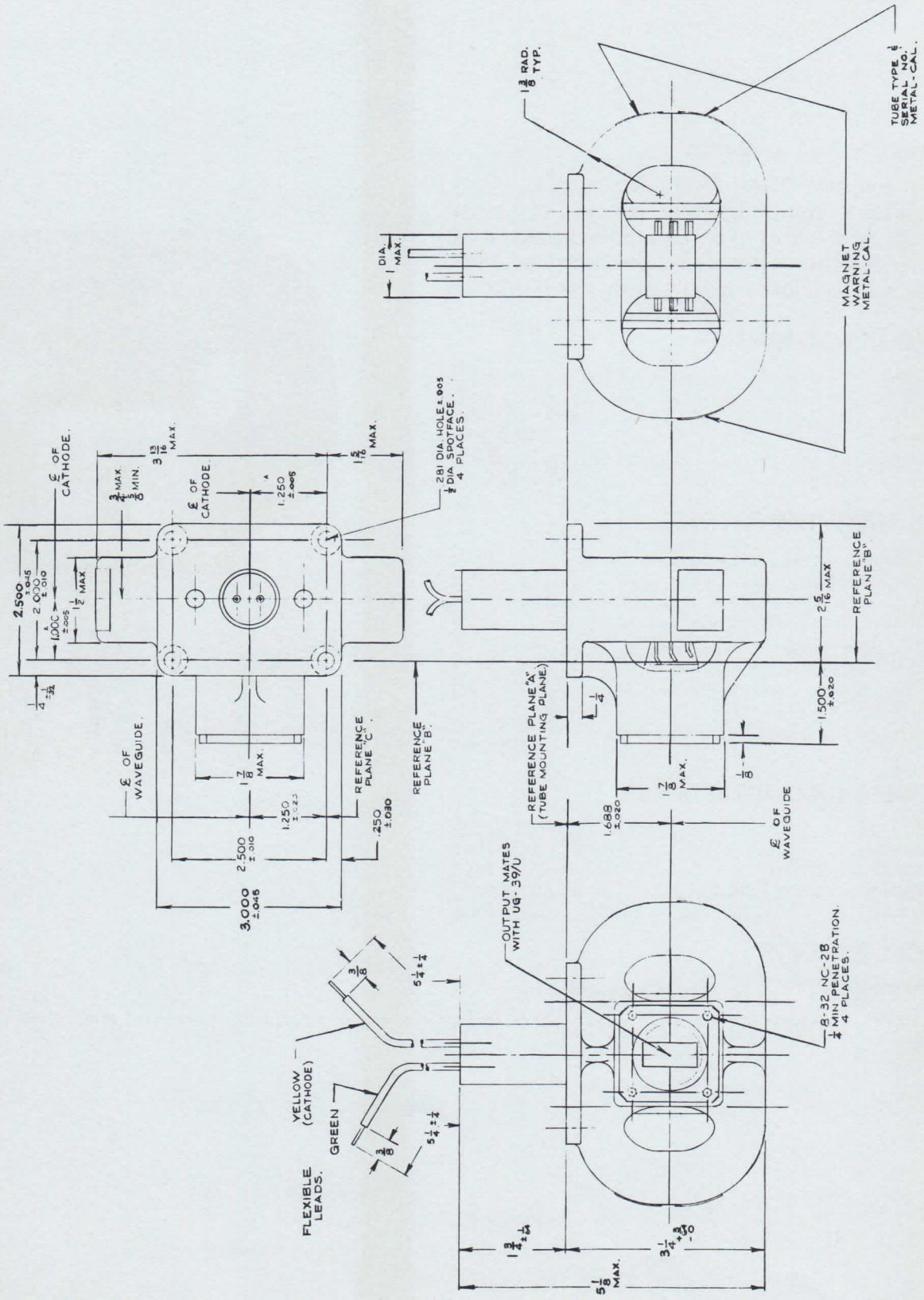
| | |
|---|---|
| Peak Power | Min. 10 kW |
| Fixed Frequency | 9375 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |
| Rated Cycle Life | 500 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.75 lbs. |
| Anode Cooling | Convection Air |

# PULSE MAGNETRON

# L-3635



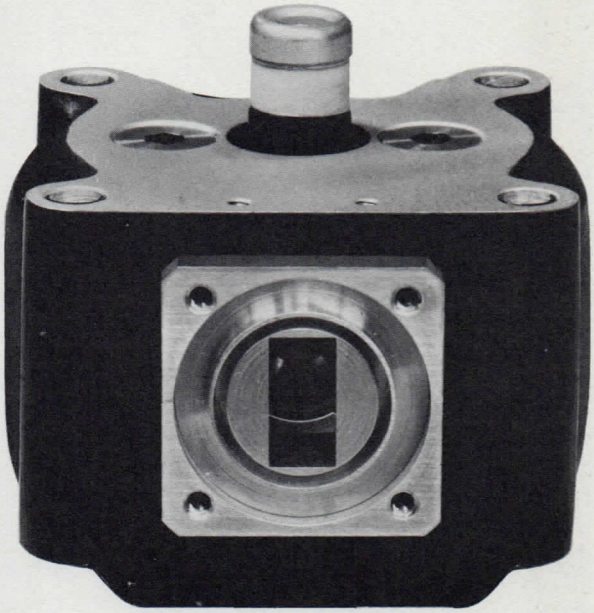
# PULSE MAGNETRON

# L-3645



4.0 Kilowatts Minimum Peak Power
Fixed Frequency 16,200 ± 100 mcs

This highly ruggedized miniature Ku-band magnetron may be pulsed with high duty coded pulse groups or with single short pulses. Special design features provide a low thermal factor (less than 150 Kc/°C) and stable frequency operation. This tube is particularly applicable in high performance aircraft or missile systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.1 A |
| Preheat Time | Min. 60 sec |
| Pulse Voltage | 3900 to 4300 V |
| Pulse Current | 3.75 A |
| Time of Rise of Voltage | Min. 0.05 us |
| Anode Cathode Capacitance | Max. 20 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.75 A |
| Pulse Current | 4.0 A |
| Pulse Length | 2.0 us |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |
| Duty Cycle | 0.001 |

## PERFORMANCE CHARACTERISTICS

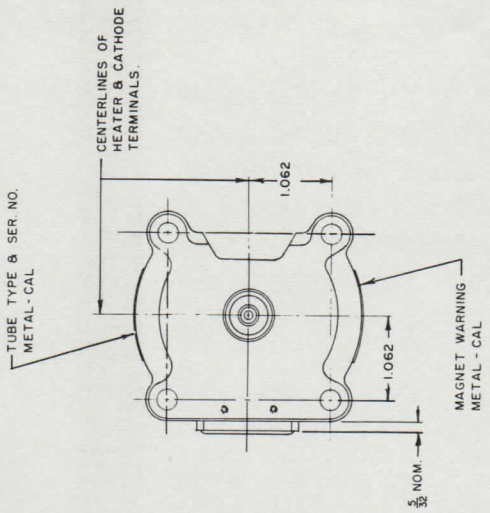
| | |
|---|---|
| Peak Power | Min. 4.0 kW |
| Fixed Frequency | 16,200 ± 100 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% Ib) | Max. 3.0 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.15 mc/°C |
| Vibration (5 to 2000 cps) | 0.125 Da or 15 G |
| Shock (5±1 ms) | 25 G |
| Rated Cycle Life | 500 Hrs |

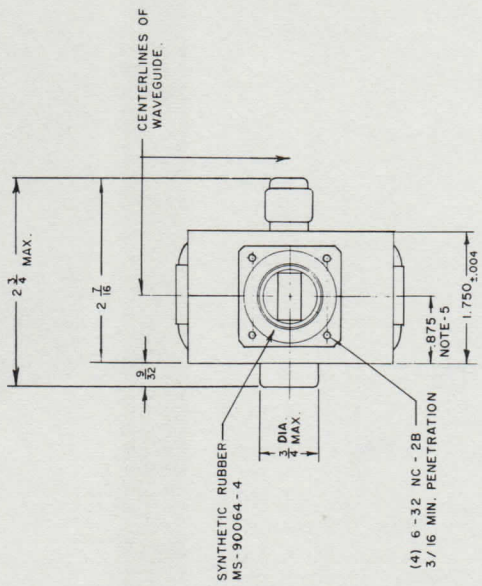
## MECHANICAL RATINGS

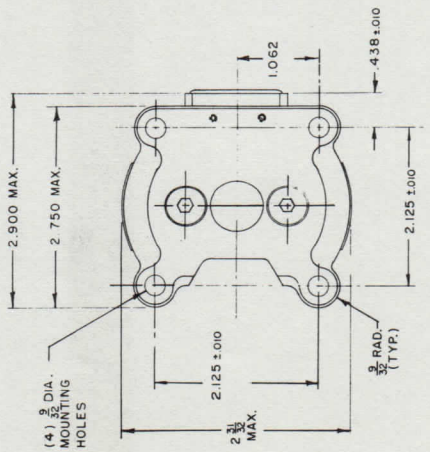
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 21 oz. |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-3645



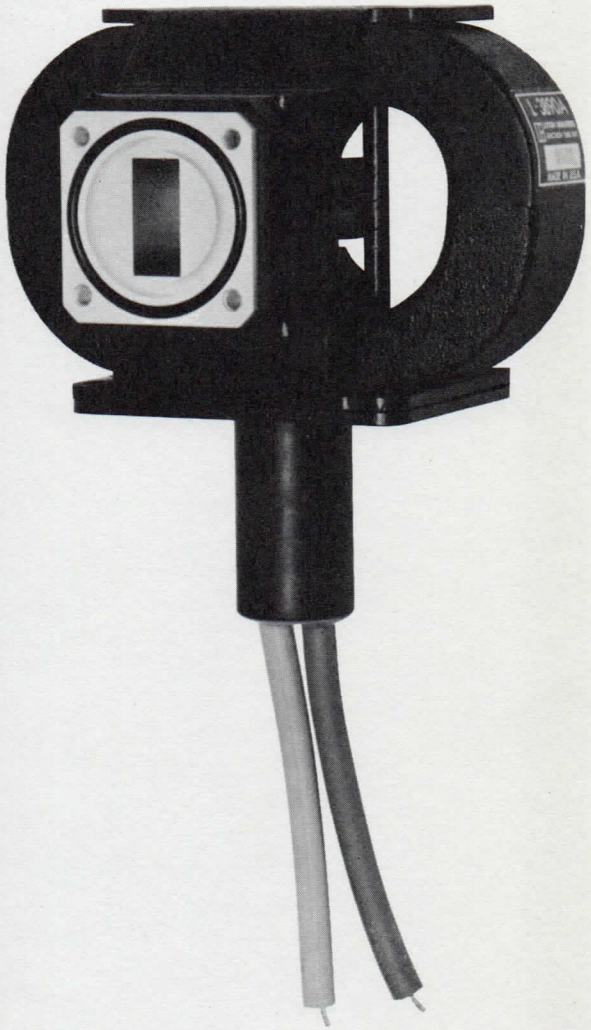



PULSE MAGNETRON

# L-3654A

24 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 30 mcs

This highly reliable, fixed frequency, X-band, pulse magnetron replaces the L-3654. Improvements in the cathode boot, flying leads and RF coupler have permitted an increase in the altitude rating to 55,000 feet. The L-3654A is identical to the L-3890A with the exception of the polarity of the magnetic field. The L-3654A is recommended for airborne applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.2 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 7.75 to 8.25 kv |
| Pulse Current | 8.25 A |
| Time of Rise of Voltage | Min. 0.10 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 4.0 A |
| Pulse Voltage | 9.0 kv |
| Pulse Current | 9.25 A |
| Pulse Length | 2.2 us |
| Average Input Power | 83 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

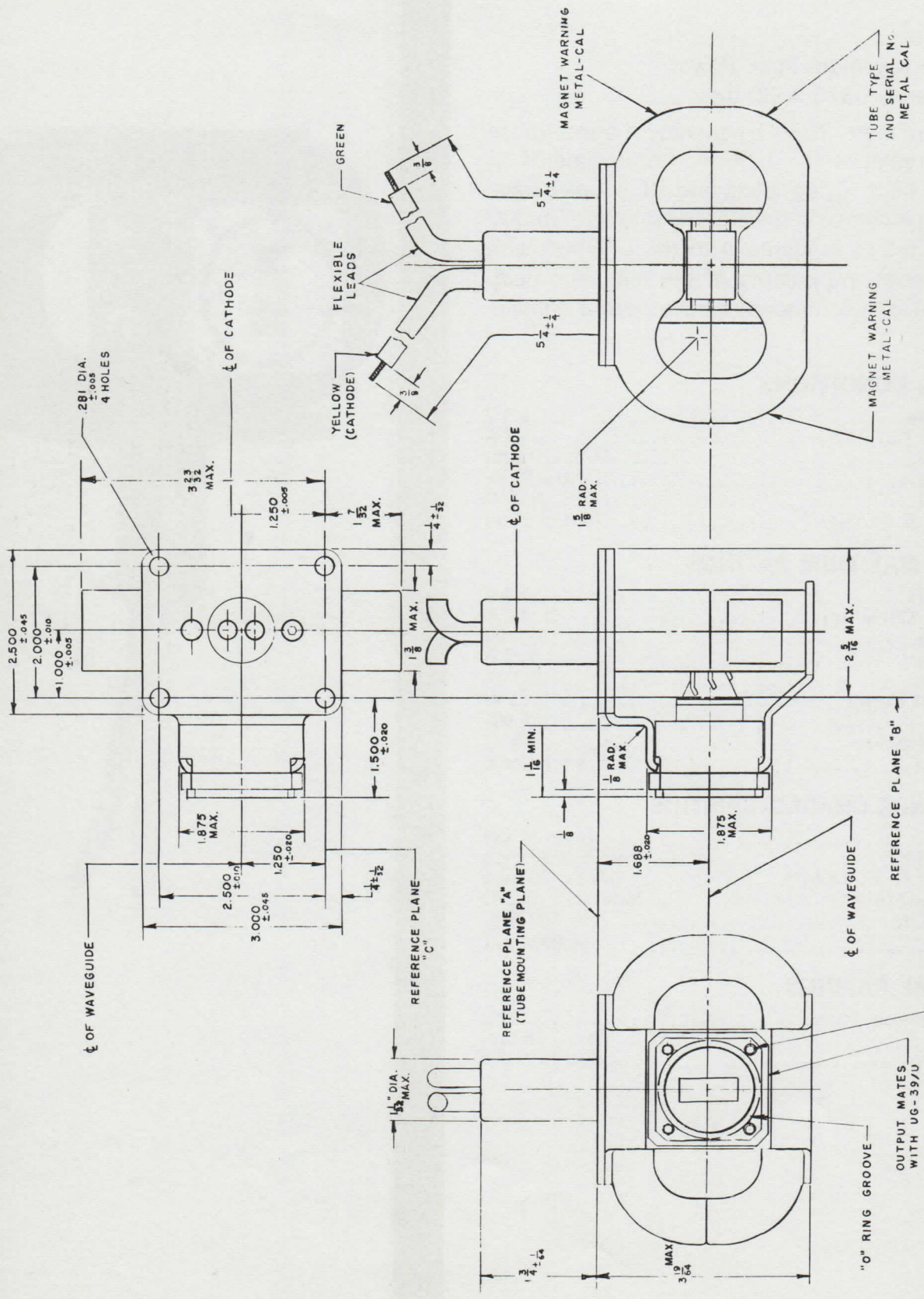
| | |
|---|---|
| Peak Power | Min. 24 kW |
| Fixed Frequency | 9375 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |
| Rated Cycle Life | Min. 500 Hrs. |
| Altitude | 55,000 Feet |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.75 lbs. |
| Anode Cooling | Convection Air |

# PULSE MAGNETRON

# L-3654A

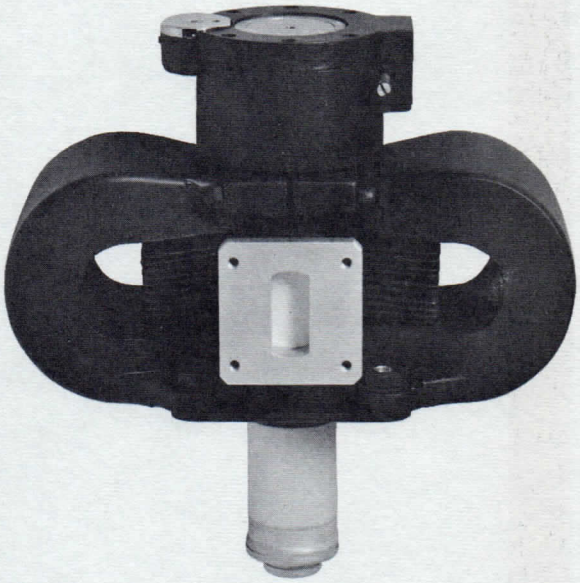


PULSE MAGNETRON

# L-3695

200 Kilowatts Minimum Peak Power
Tunable Frequency 9000 to 9600 mcs

This all-metal and ceramic, ruggedized, pulse magnetron is similar to tube type L-3312, except that the tuning range is limited to 9000-9600 Mc. The magnetron utilizes the Litton Industries type inductive contacting pin tuner, which provides a linear tuning characteristic. High reliability and excellent stability characterize this tube, designed to be electrically interchangeable with the type 7111.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 13.75 V |
| Heater Current | 3.2 A |
| Preheat Time | Min. 150 sec. |
| Pulse Voltage | 20 to 23 kV |
| Pulse Current | 27.5 A |
| Rate of Rise of Voltage | Max. 225 kv/us |
| Anode Cathode Capacitance | Max. 13 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15 V |
| Heater Surge Current | 12 A |
| Pulse Current | 30 A |
| Pulse Length | 2.75 us |
| Average Input Power | 650 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

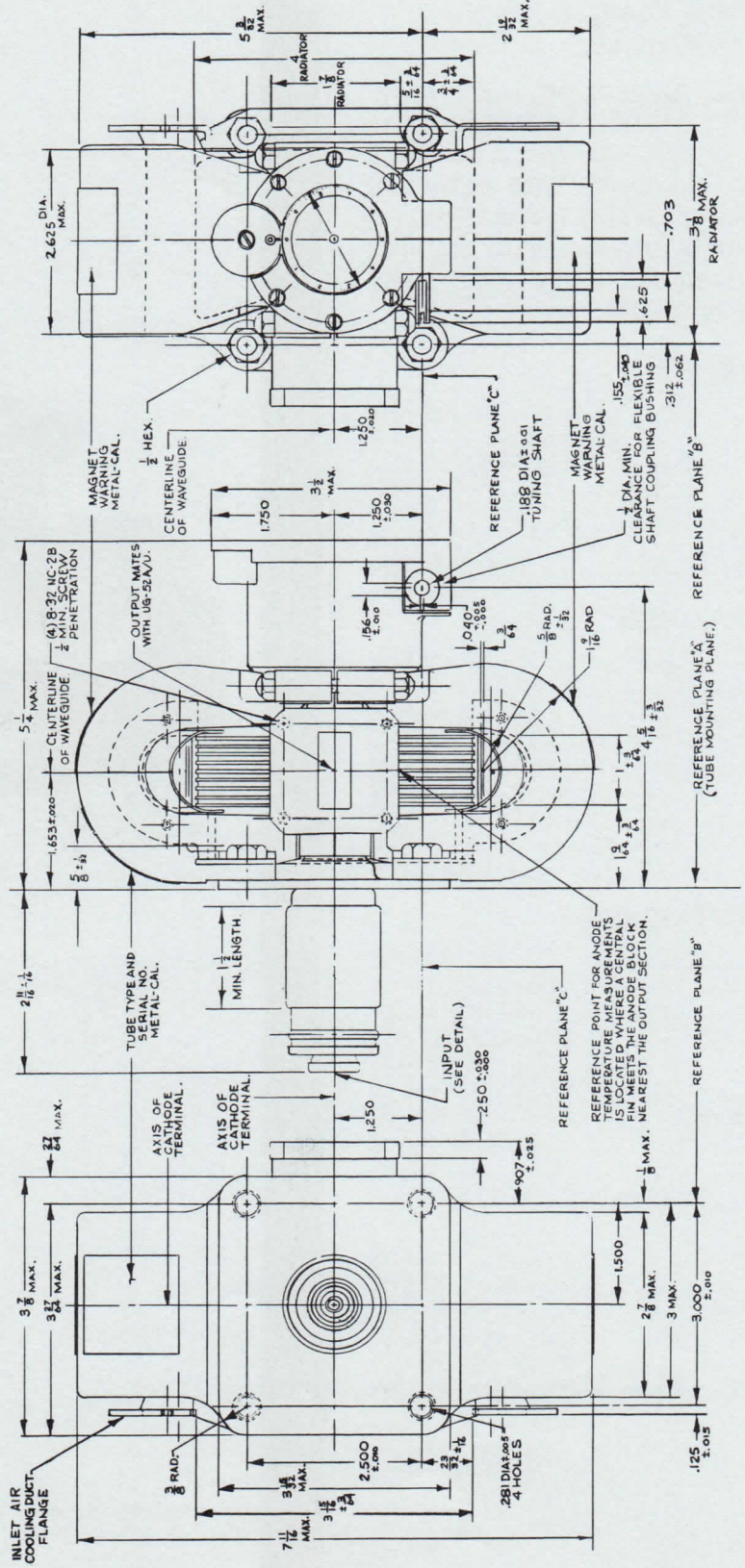
| | |
|---|---|
| Peak Power | Min. 200 kW |
| Tunable Frequency | 9000 to 9600 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |
| Vibration (5 to 500 cps) | 0.01 Da or 5 G |
| Shock (11 ±1 ms) | 30 G |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 12 lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced Air |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# PULSE MAGNETRON

# L-3695



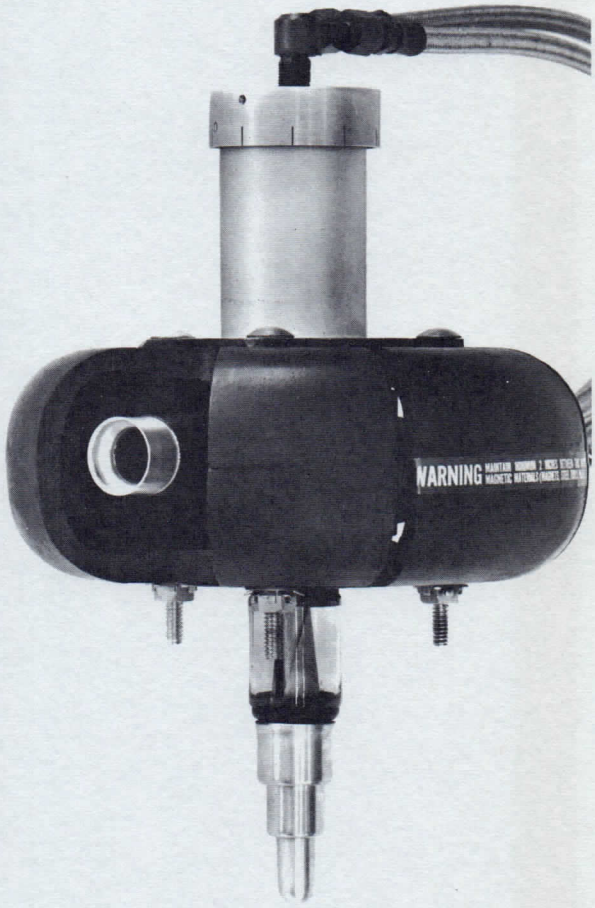

LITTON INDUSTRIES • ELECTRON TUBE DIVISION • SAN CARLOS, CALIFORNIA

# PULSE MAGNETRON

# L-3714

1.0 Kilowatts Minimum Peak Power
Tunable Frequency 475 to 725 mcs

The L-3714 high duty pulse magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW/pulse drivers, high power component testing, electronic countermeasures, power source for antenna ranges, radio interference testing, and pulse modulated communications.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 3.5 to 4.2 kVdc |
| Pulse Current | Max. 0.800 A |
| Time of Rise of Voltage (20-85%) | Min. 0.25 us |
| Anode Cathode Capacitance | Max. 30 uufd |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Pulse Voltage | 5.0 kv |
| Pulse Current | 0.900 A |
| Pulse Length | 1.0 ms |
| Average Input Power | 1.5 kW |
| Duty Cycle | 0.25 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 50 to 1000 W |
| Tunable Frequency | 475 to 725 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 3 mcs |
| Pushing Figure (±10% lb) | Max. 1 mcs |
| Missing Pulses | Max. 1 Percent |
| Bandwidth | Max. 2.5/tpc mcs |
| Anode Temperature Coefficient | Max. 0.2 mc/°C |
| Vibration 50 cps | 10 G |
| Rated Cycle Life | 250 Hrs. |

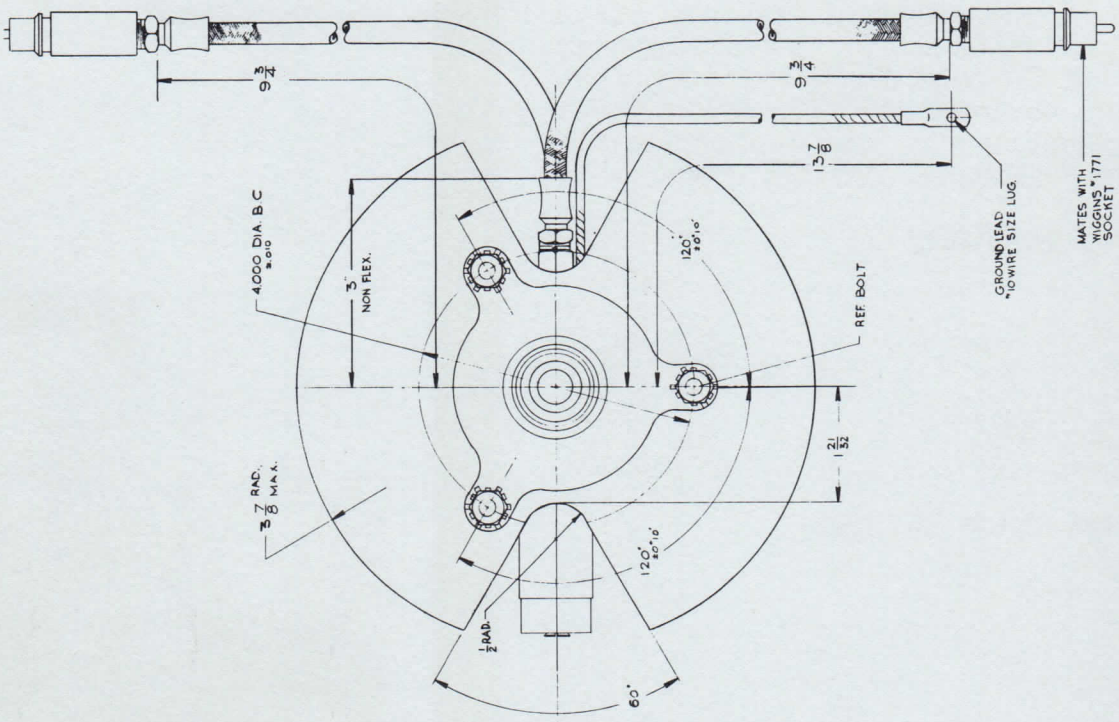
## MECHANICAL RATINGS

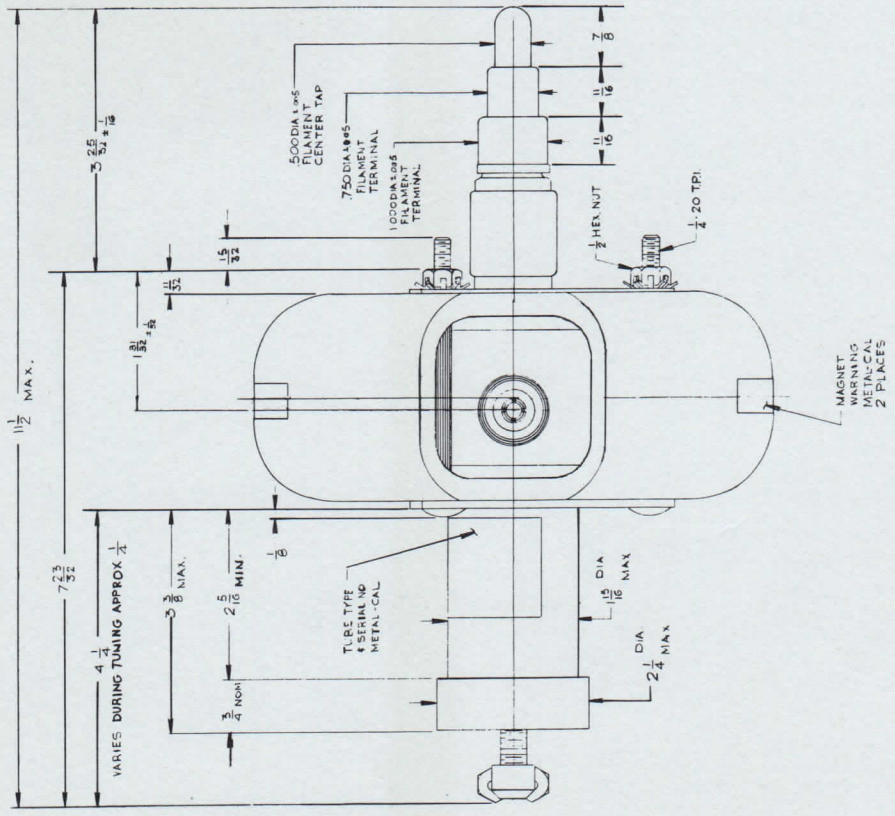
| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs. |
| Mating Mounting Flange | Mytron 7508984 |
| Anode Cooling (water) | 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.-in. |
| Tuner Travel | 4.3 to 4.7 turns |

NOTES:
A—See CW section for L-3714 CW ratings.
B—A Magnetron filament controller must be used if average power exceeds 55 watts.

# PULSE MAGNETRON

# L-3714



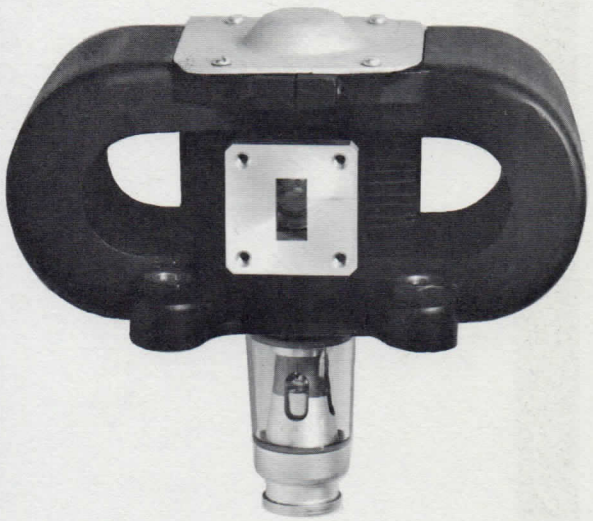



PULSE MAGNETRON

# L-3759

60 Kilowatts Minimum Peak Power
Fixed Frequency 15,550 ± 100 mcs

The L-3759 is a 60 kilowatt fixed frequency pulse magnetron operating in the aeronautical radio navigation frequency band. The tube is highly ruggedized for airborne application and designed for long life and high reliability.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 15 to 17 kVdc |
| Pulse Current | 16 A |
| Rate of Rise Voltage | Max. 180 kv/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Surge Current | 10 A |
| Pulse Current | 18 A |
| Pulse Length | 1.0 us |
| Duty Cycle | 0.001 |
| Anode Temperature | 150°C |
| Cathode Temperature | 175°C |
| VSWR | 1.3:1 Ratio |
| Altitude | 30,000 feet |

## PERFORMANCE CHARACTERISTICS

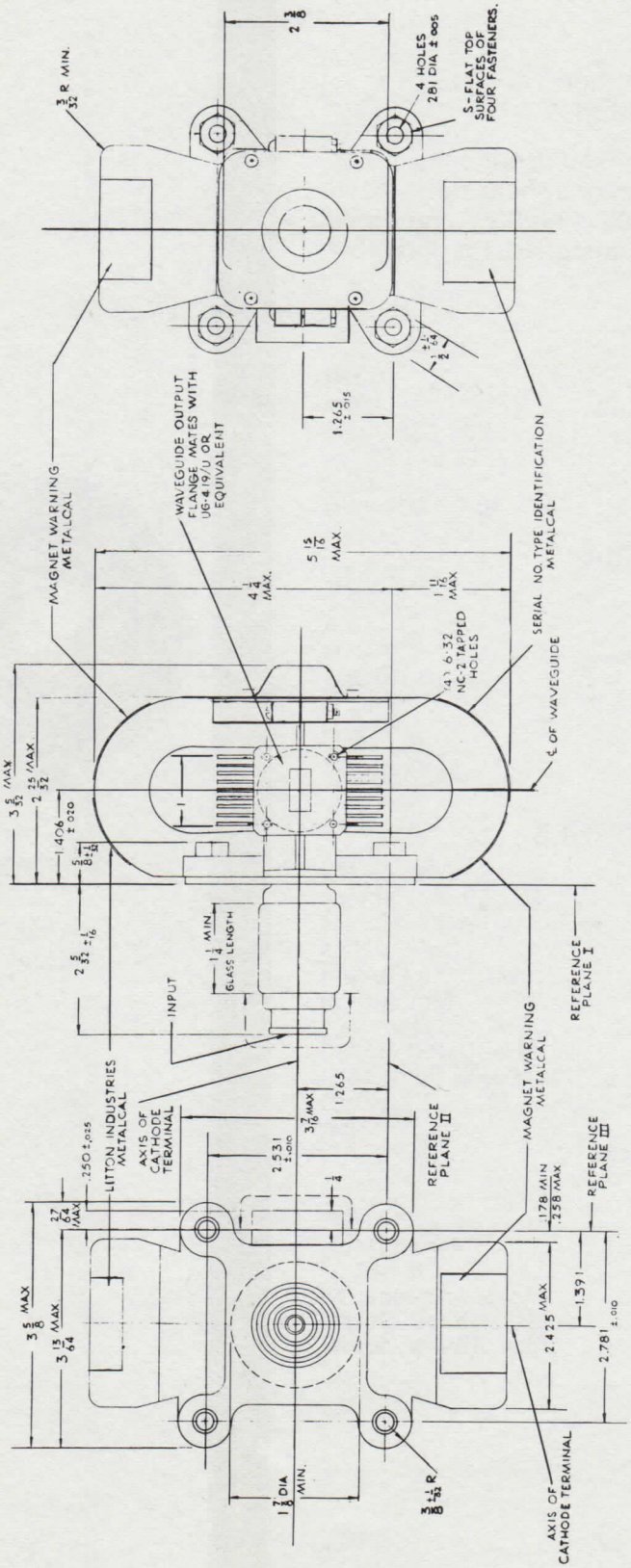
| | |
|---|---|
| Peak Power | Min. 60 kW |
| Fixed Frequency | 15,550 ± 100 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 15 mcs |
| Pushing Figure $i_h$ = 15 to 17 A | Max. 2.0 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.450 mc/°C |
| Vibration (10 to 500 cps) | 0.036 Da or 10 G |
| Shock (11 ms) | 15 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 6.0 lbs. |
| Mating Mounting Flange | UG-541/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# PULSE MAGNETRON

# L-3759

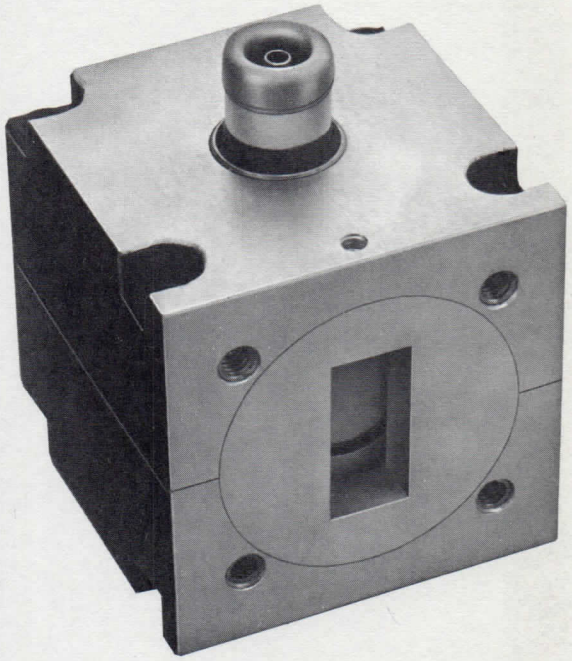


# PULSE MAGNETRON

# L-3812

1.0 Kilowatt Minimum Peak Power
Fixed Frequency 9300 ± 30 mcs

This highly ruggedized miniature pulse magnetron is packaged in a 2 inch cube, including built-in permanent magnets, and weighs under 16 ounces. The all ceramic-metal magnetron is assembled in a carefully controlled environment and processed at high temperatures. The X-band miniature provides highly reliable performance at high efficiency, negligible missing pulses, and nearly constant power with life. Meeting all missile environmental requirements for vibration, shock and acceleration, this tube is ideal for use in beacon, fuse, IFF, interrogation, transponder, and small portable radar systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.85 A |
| Preheat Time | Min. 13 sec. |
| Pulse Voltage | 1300 to 1500 V |
| Pulse Current | 2.2 A |
| Time of Rise of Voltage | Min. 0.05 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.75 A |
| Pulse Voltage | 1500 V |
| Pulse Current | 2.5 A |
| Pulse Length | 1.0 us |
| Duty Cycle | 0.005 |
| Anode Temperature | 250° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 60,000 Feet |

## PERFORMANCE CHARACTERISTICS

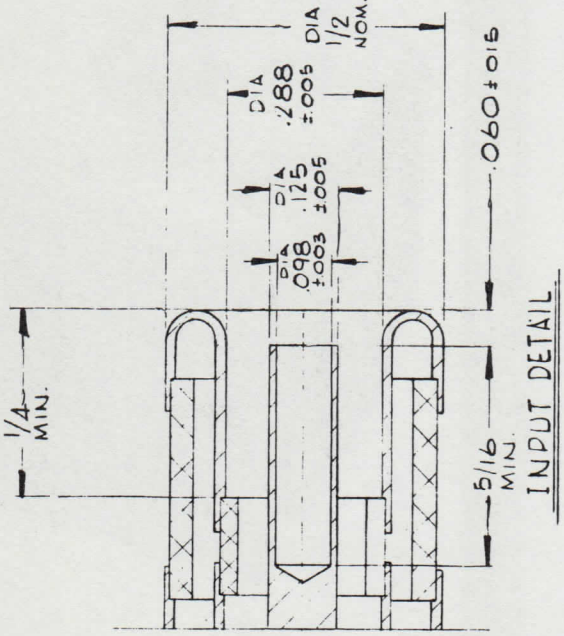
| | |
|---|---|
| Peak Power | Min. 1.0 kW |
| Fixed Frequency | 9300 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% Ib) | Max. 3.0 mcs |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Vibration (20 to 2000 cps) | 20 G |
| Shock (2-5 ms) | 100 G |
| Rated Cycle Life | 500 Hrs. |

## MECHANICAL RATINGS

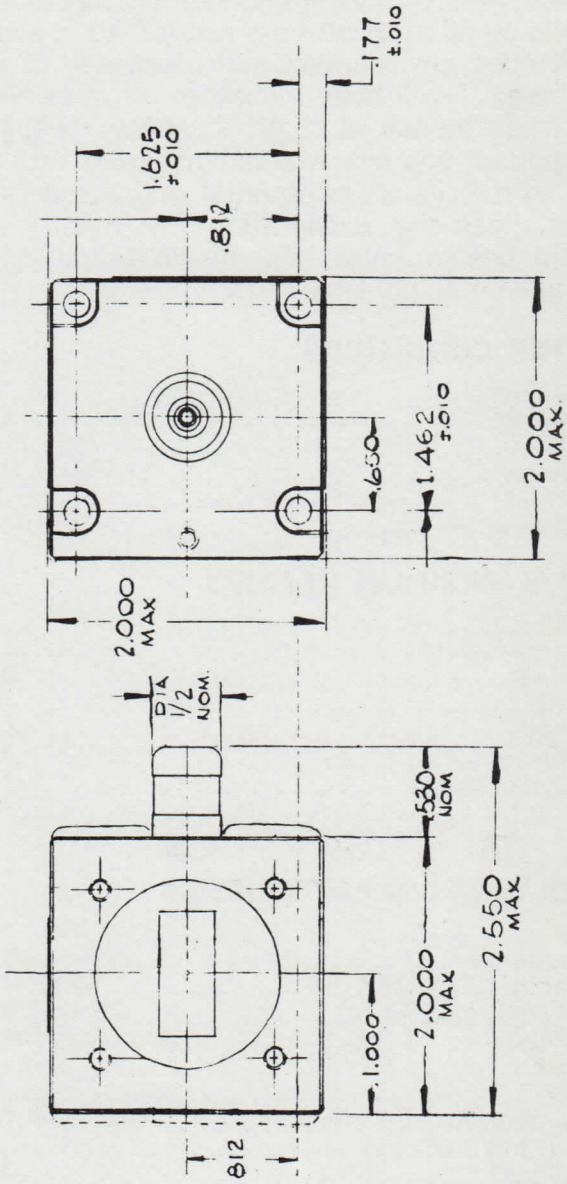
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Conduction |

PULSE MAGNETRON

# L-3812




INPUT DETAIL

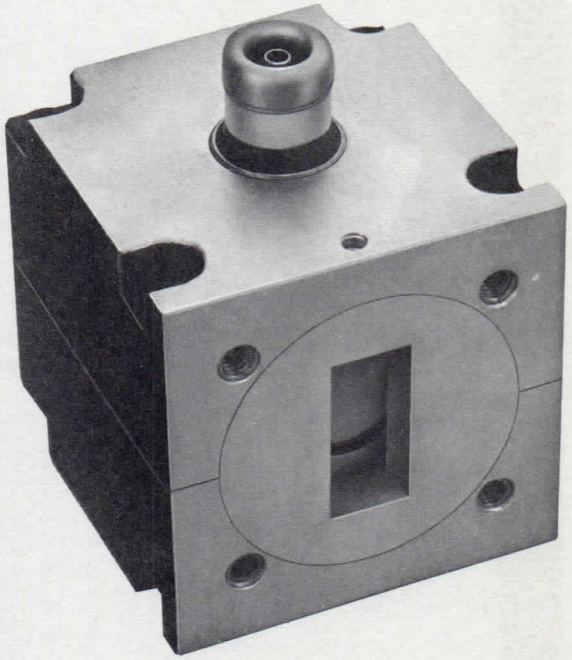


# PULSE MAGNETRON

# L-3813

500 Watts Minimum Peak Power
Fixed Frequency 9300 ± 30 mcs

This highly ruggedized miniature pulse magnetron is packaged in a 2 inch cube, including built-in permanent magnets, and weighs under 16 ounces. The all ceramic-metal magnetron is assembled in a carefully controlled environment and processed at high temperatures. The X-band miniature provides highly reliable performance at high efficiency, negligible missing pulses, and nearly constant power with life. Meeting all missile environmental requirements for vibration, shock and acceleration, this tube is ideal for use in beacon, fuse, IFF, interrogation, transponder, and small portable radar systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 0.85 A |
| Preheat Time | Min. 13 sec. |
| Pulse Voltage | 1200 to 1400 V |
| Pulse Current | 1.3 A |
| Time of Rise of Voltage | Min. 0.05 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 3.75 A |
| Pulse Voltage | 1400 V |
| Pulse Current | 1.5 A |
| Pulse Length | 2.0 us |
| Duty Cycle | 0.01 |
| Anode Temperature | 250° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 60,000 Feet |

## PERFORMANCE CHARACTERISTICS

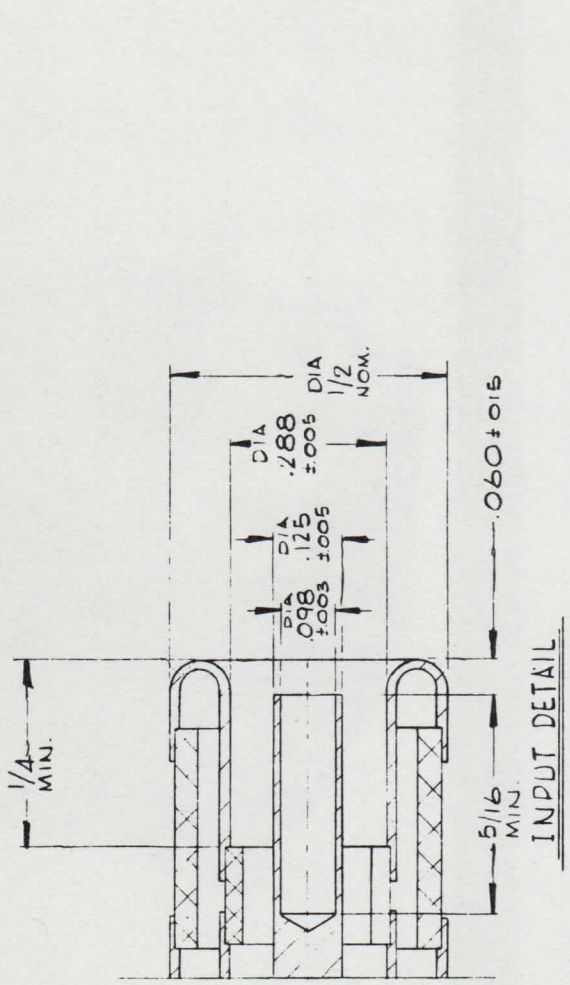
| | |
|---|---|
| Peak Power | Min. 500 W |
| Fixed Frequency | 9300 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% Ib) | Max. 3.0 mcs |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.075 mc/°C |
| Vibration (20 to 2000 cps) | 20 G |
| Shock (2-5 ms) | 100 G |
| Rated Cycle Life | 500 Hrs. |

## MECHANICAL RATINGS

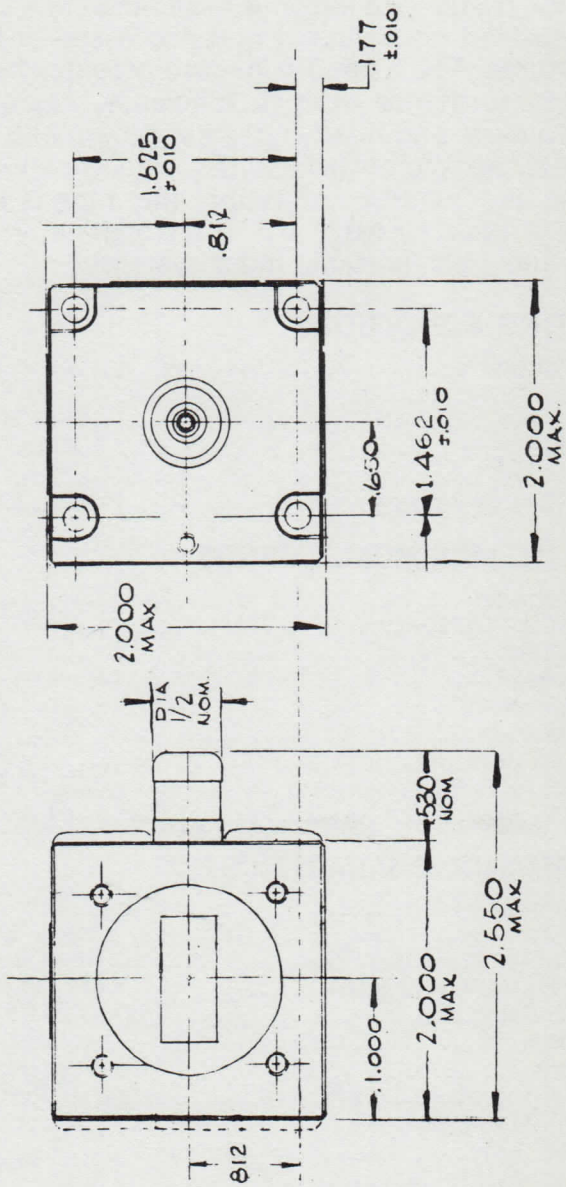
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 oz. |
| Anode Cooling | Conduction |

# PULSE MAGNETRON

# L-3813




INPUT DETAIL



# PULSE MAGNETRON

# L-3816

25 Kilowatts Minimum Peak Power
Fixed Frequency 16,500 ± 150 mcs

This fixed frequency pulse magnetron is similar to the tube type L-3326, except that minimum peak power is 25 kW. Rigorous processing at high temperatures, standard with all Litton Industries' products, makes possible long life, reliable Ku-band fixed frequency magnetrons such as the L-3816.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 11 to 13 kV |
| Pulse Current | 12.0 A |
| Rate of Rise of Voltage | Max. 160 kv/us |

## ABSOLUTE MAXIMUM RATINGS

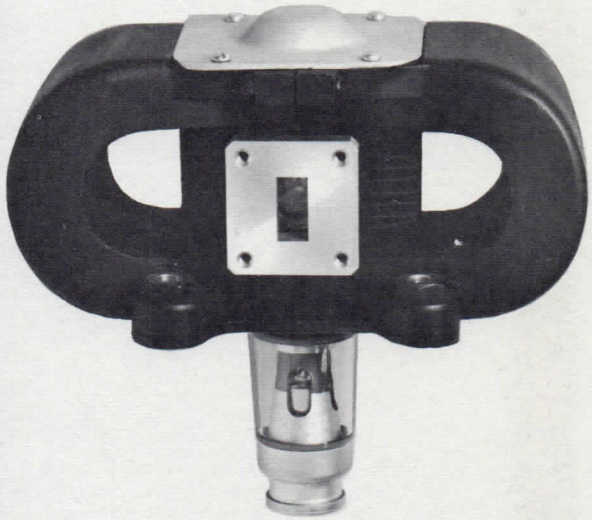
| | |
|---|---|
| Heater Voltage | 14 V |
| Heater Surge Current | 10 A |
| Pulse Current | 14 A |
| Pulse Length | 1.0 us |
| Average Input Power | 288 W |
| Duty Cycle | 0.002 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 30,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 25 kW |
| Fixed Frequency | 16,500 ± 150 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 15 mcs |
| Pushing Figure (± 10% Ib) | Max. 5 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.450 mc/°C |
| Vibration (5 to 500 cps) | 0.080 Da or 10 G |
| Shock (11 ms) | 15 G |
| Rated Cycle Life | 500 Hrs. |

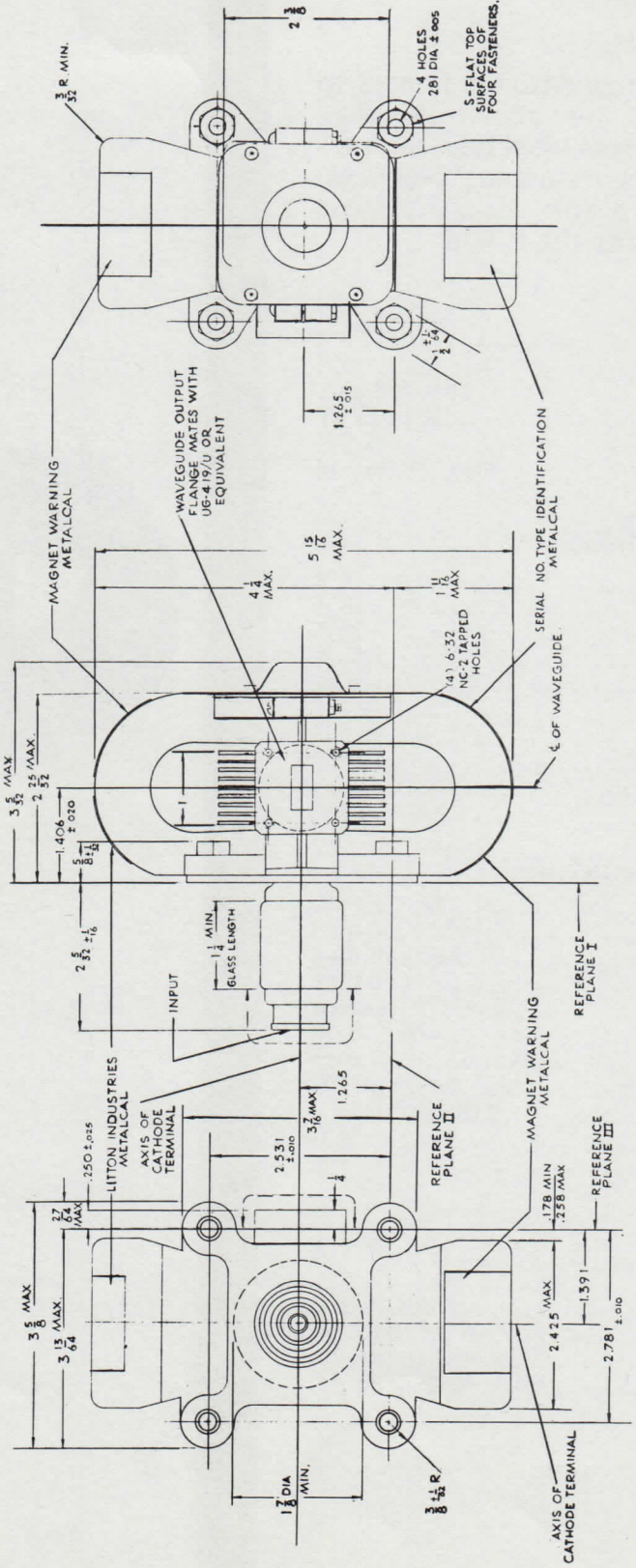
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 5½ lbs. |
| Mating Mounting Flange | UG-541/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |



# PULSE MAGNETRON

# L-3816



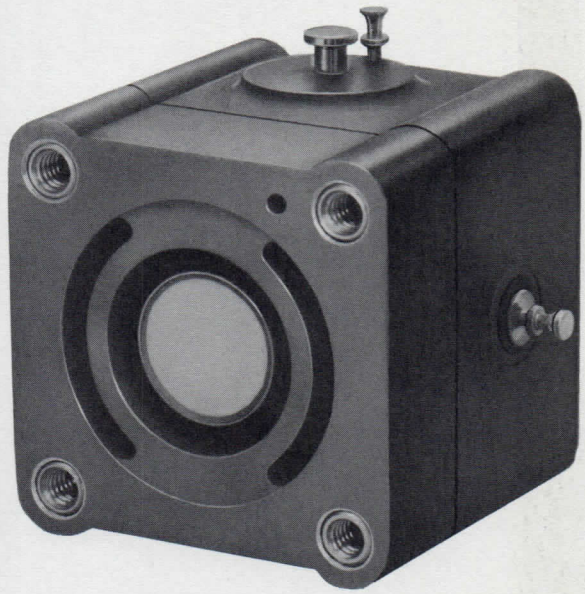
# PULSE/CW MAGNETRON

# L-3820

10 Watts Minimum Peak Power

1.0 Watt Minimum CW Power

Small, rugged and lightweight, this positive anode high duty pulse magnetron is available to a selected frequency in the range of 8,200 to 8,800 megacycles at a tolerance of ±30 megacycles. As a CW device this tube is capable of delivering 1.0 watt minimum power. The rugged construction permits use in environments of high acceleration, shock, vibration, and wide temperature variation.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 Volts |
| Heater Current | 0.5 Amperes |
| Preheat Time | 20 sec. |

### Pulse Operation

| | |
|---|---|
| Pulse Voltage | *425-520 Volts |
| Pulse Current | 0.13 Amperes |
| Duty Cycle | 0.1 |
| Anode Cathode Capacitance | Max. 20 uufd |

### CW Operation

| | |
|---|---|
| Voltage | 330-440 Volts |
| Current | 0.013 Amperes |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.6 Volts |
| Heater Surge Current | 1.4 Amperes |
| Anode Current | 14 ma |
| Pulse Length | CW |
| Anode Temperature | 185°C |
| VSWR | 1.5:1 Ratio |
| Altitude | 100,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 10 Watts |
| CW Power | Min. 1.0 Watt |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% lb) | Max. 3.0 mcs |
| Missing Pulses | Max. 0.01 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.0/tpc mcs |
| Anode Temperature Co-efficient | Max. 100 kc/°C |
| Vibration (5 to 2,000 cps) | 35 G |
| Shock (20 ± 1 ms) | 120 G |

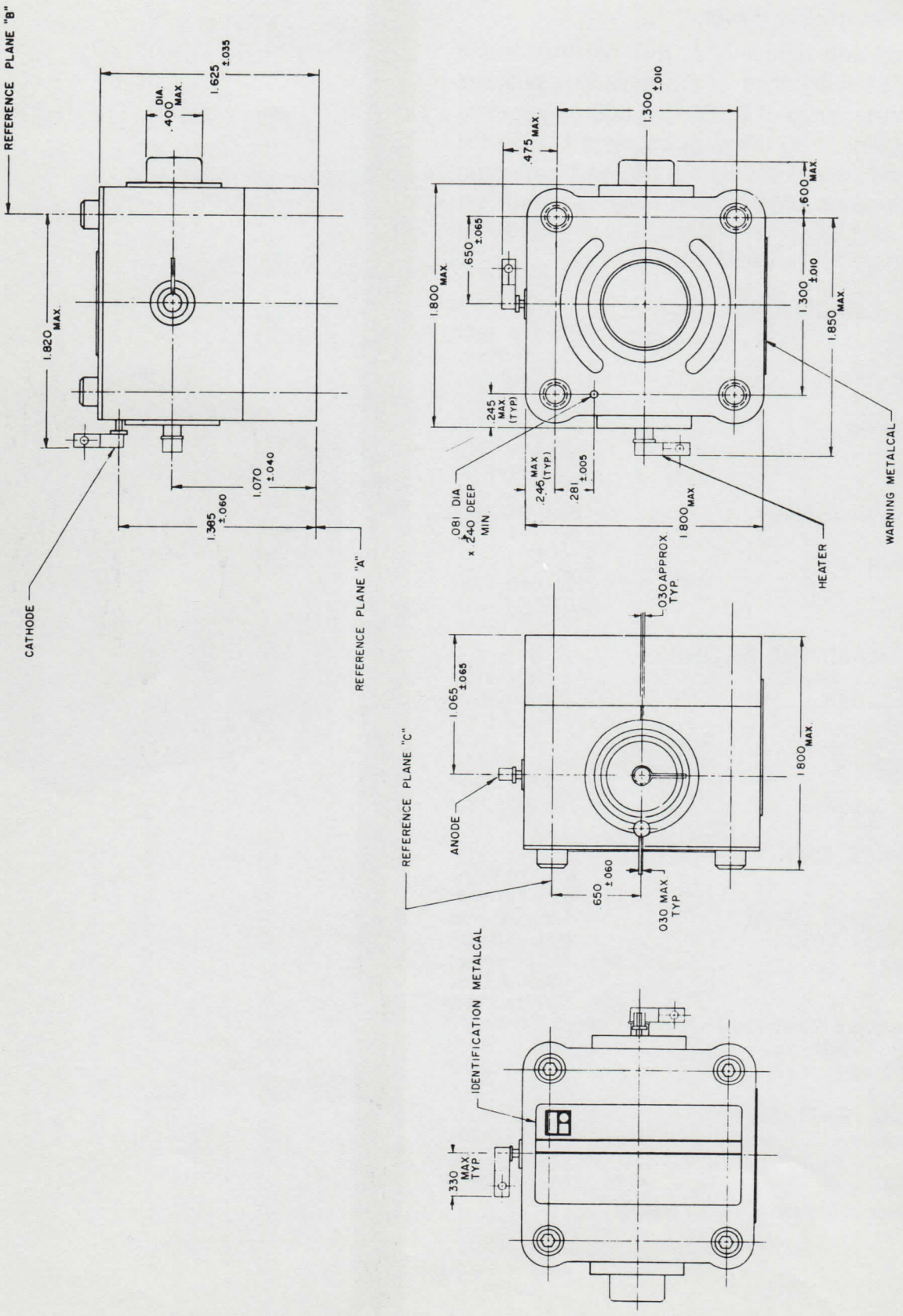
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 11 oz. |
| Anode Cooling | Convection air-cooled |

*d. c. bias voltage of 325-430 V. can be applied.

# PULSE/CW MAGNETRON

# L-3820

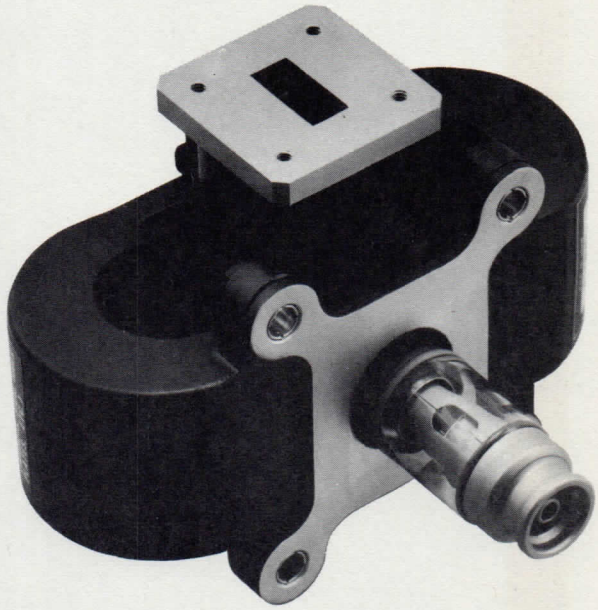


# PULSE MAGNETRON

# L-3853

50 Kilowatts Minimum Peak Power
Fixed Frequency 10,500 ± 200 mcs

This fixed frequency pulse magnetron delivers 50 kW peak power in the 10.5 Gc frequency band.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.2 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 14 to 16 kv |
| Pulse Current | 15 A |
| Rate of Rise of Voltage | Max. 160 kv/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14 V |
| Heater Surge Current | 10 A |
| Pulse Current | 18 A |
| Pulse Length | 5.0 us |
| Average Input Power | 350 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 522 mmHg |

## PERFORMANCE CHARACTERISTICS

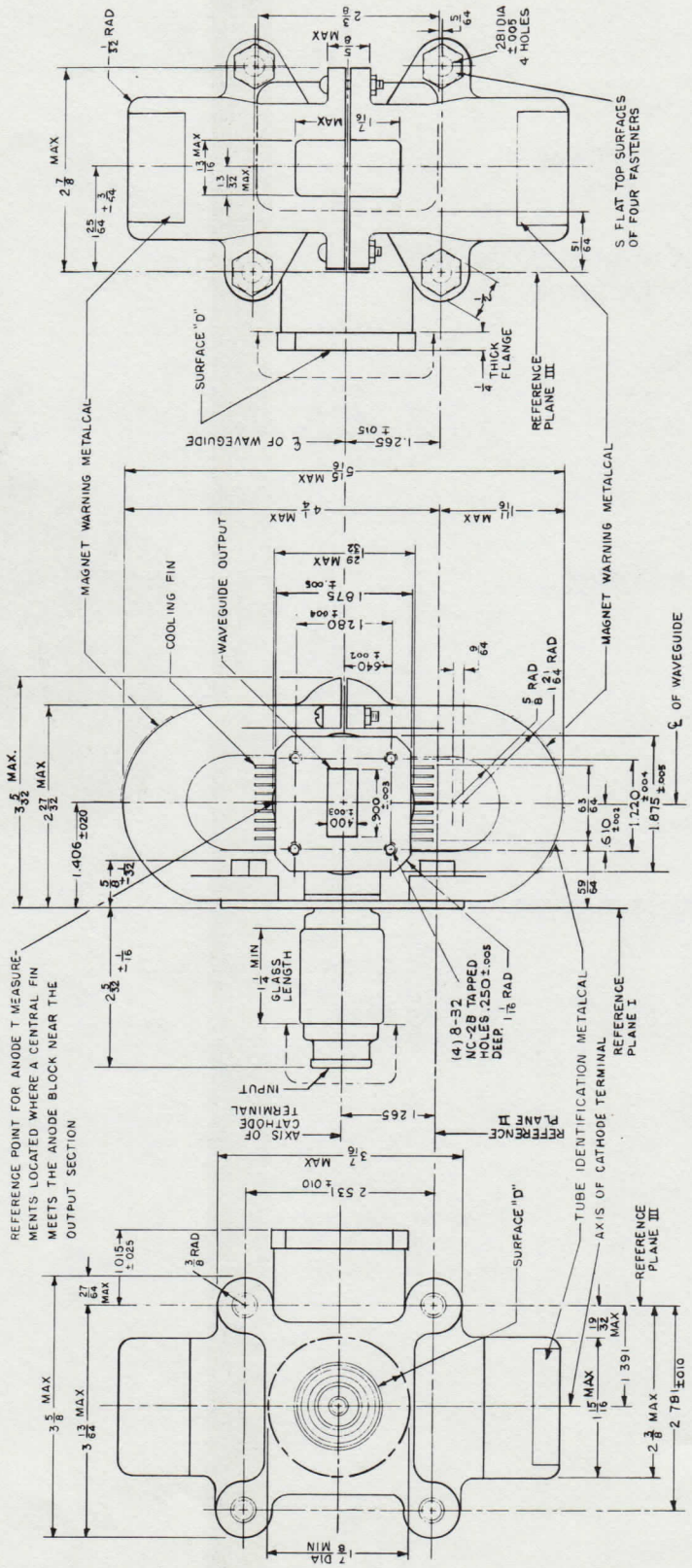
| | |
|---|---|
| Peak Power | Min. 50 kW |
| Fixed Frequency | 10,500 ± 200 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Missing Pulses | Max. 2.0 Percent |
| Bandwidth | Max. 2.5/tpc. mcs |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | 5 lbs. |
| Mating Mounting Flange | UG-40A/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# PULSE MAGNETRON

# L-3853



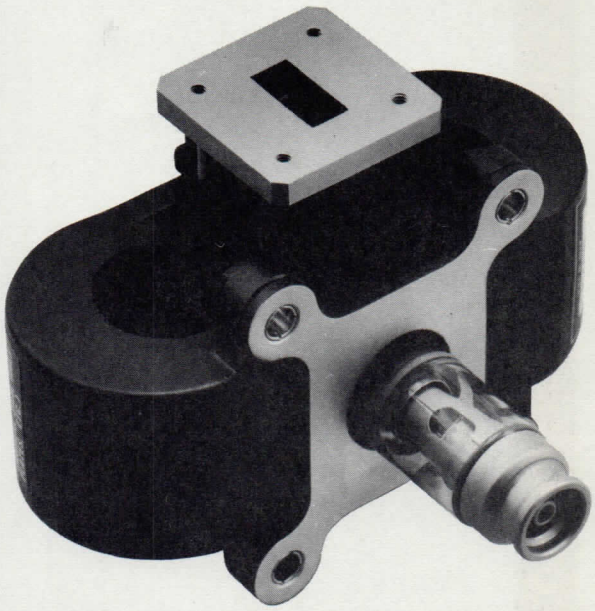

LITTON INDUSTRIES • ELECTRON TUBE DIVISION • SAN CARLOS, CALIFORNIA

# PULSE MAGNETRON

# L-3854

50 Kilowatts Minimum Peak Power
Fixed Frequency 11,500 ± 200 mcs

This fixed frequency pulse magnetron delivers 50 kW of pulse power in the common carrier frequency band allocation and has application in point-to-point communications, utilizing pulse code modulation, and other applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.2 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 14 to 16 kv |
| Pulse Current | 15 A |
| Rate of Rise of Voltage | Max. 160 kv/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14 V |
| Heater Surge Current | 10 A |
| Pulse Current | 18 A |
| Pulse Length | 5.0 us |
| Average Input Power | 350 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 522 mmHg |

## PERFORMANCE CHARACTERISTICS

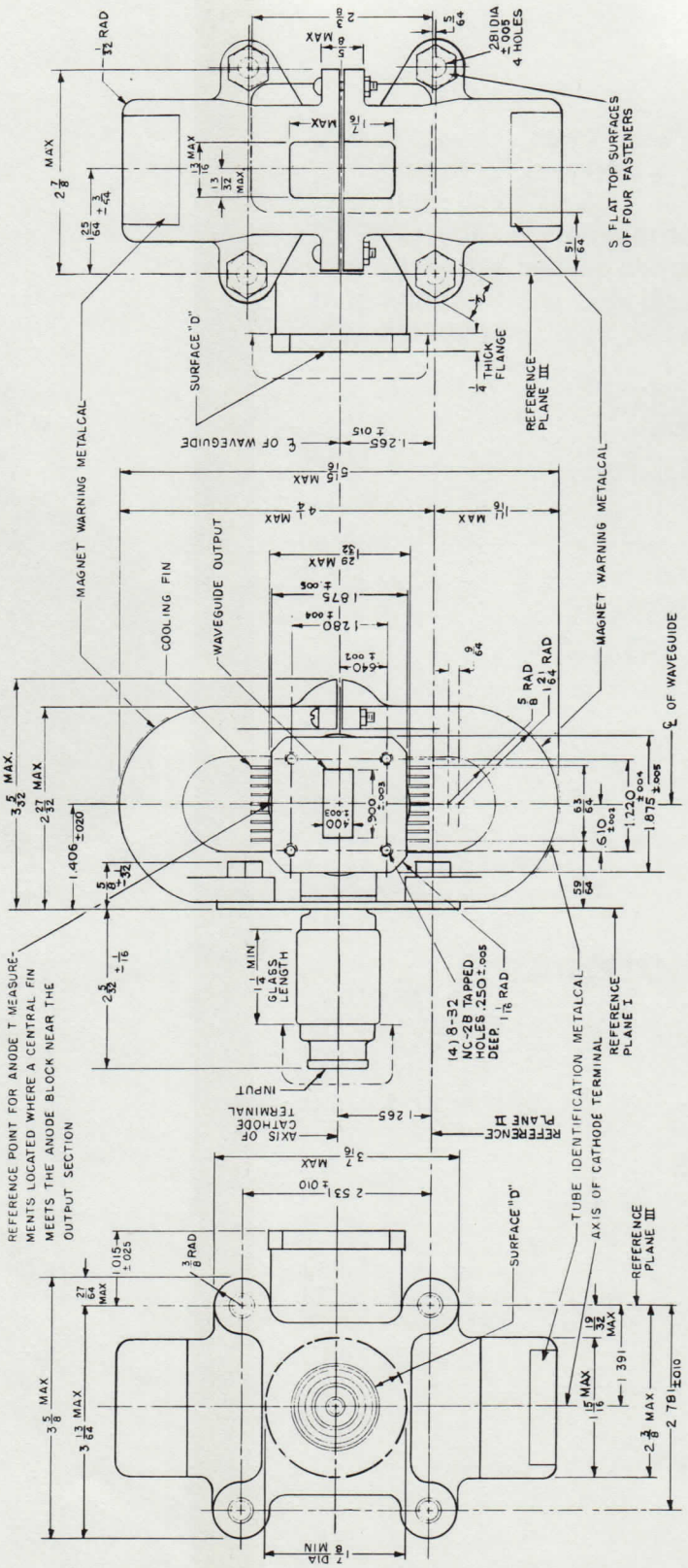
| | |
|---|---|
| Peak Power | Min. 50 kW |
| Fixed Frequency | 11,500 ± 200 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Missing Pulses | Max. 2.0 Percent |
| Bandwidth | Max. 2.5/tpc. mcs |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | 5 lbs. |
| Mating Mounting Flange | UG-40A/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# PULSE MAGNETRON

# L-3854




LITTON INDUSTRIES • ELECTRON TUBE DIVISION • SAN CARLOS, CALIFORNIA

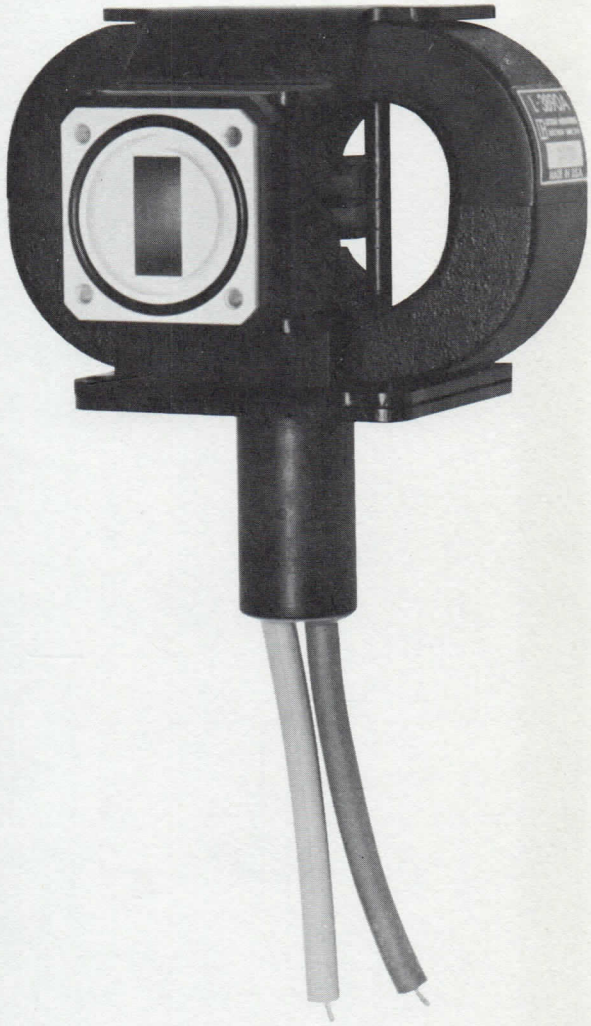
PULSE MAGNETRON

# L-3890A

24 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 30 mcs

This highly reliable fixed frequency, X-band, pulse magnetron replaces the L-3890. Improvements in the cathode boot, flying leads, and RF coupler have permitted an increase in the altitude rating to 55,000 feet. The L-3890A is identical to the L-3654A with the exception of the polarity of the magnetic field.

The L-3890A is recommended for airborne applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.2 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 7.75 to 8.25 kv |
| Pulse Current | 8.25 A |
| Time of Rise of Voltage | Min. 0.10 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 4.0 A |
| Pulse Voltage | 9.0 kv |
| Pulse Current | 9.25 A |
| Pulse Length | 2.2 us |
| Average Input Power | 83 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

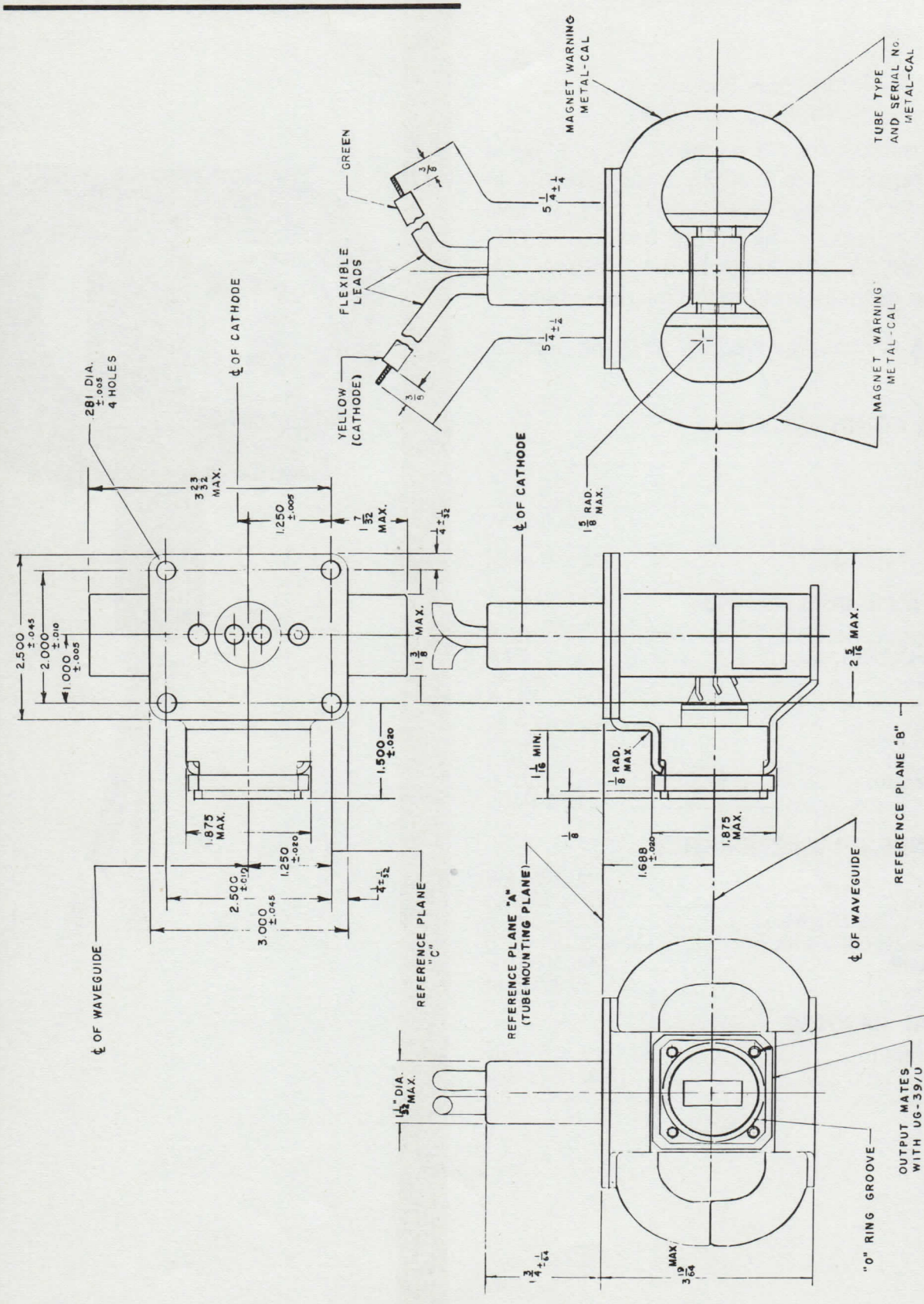
| | |
|---|---|
| Peak Power | Min. 24 kW |
| Fixed Frequency | 9375 ± 30 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 20 mcs |
| Anode Temperature Co-efficient | Max. 0.25 mc/°C |
| Rated Cycle Life | Min. 500 Hrs. |
| Altitude | 55,000 Feet |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.75 lbs. |
| Anode Cooling | Convection Air |

# PULSE MAGNETRON

# L-3890A



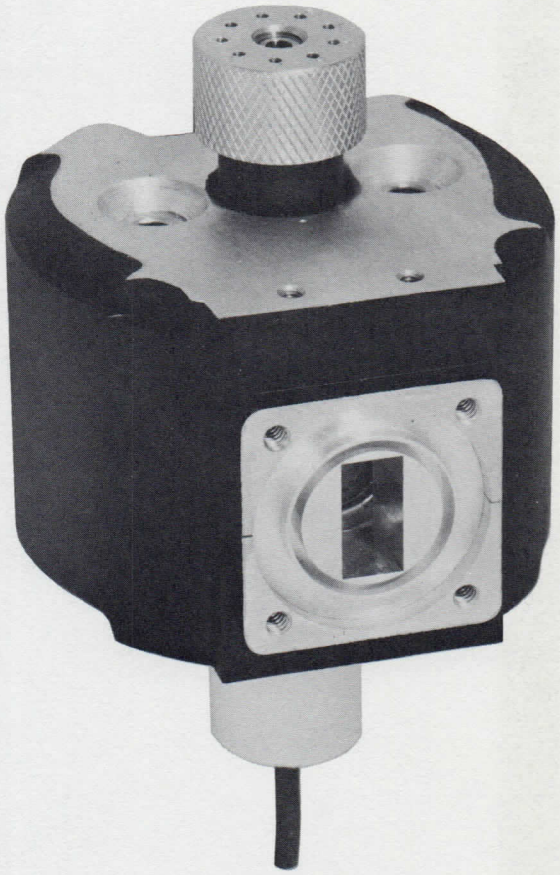
# PULSE MAGNETRON

# L-3915

2.2 Kilowatts Minimum Peak Power

Tunable Frequency 16,260 to 16,300 mcs

This highly ruggedized, tunable, miniature Ku-band magnetron may be pulsed with high duty coded pulse groups or with single short pulses. Special design features provide a low thermal factor (less than 130 Kc/°C) and stable frequency operation. This tube is particularly applicable in high performance aircraft or missile systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 Volts |
| Heater Current | 0.9 Amperes |
| Preheat Time | 60 sec. |
| Pulse Voltage | 3,500 to 3,700 Volts |
| Pulse Current | 2.75 Amperes |
| Time of Rise of Voltage | 0.1 usec. |
| Anode Cathode Capacitance | Max. 30 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 Volts |
| Heater Surge Current | 3.75 Amperes |
| Pulse Current | 3.0 Amperes |
| Pulse Length | 2.0 us |
| Duty Cycle | 0.003 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 60,000 Feet |

## PERFORMANCE CHARACTERISTICS

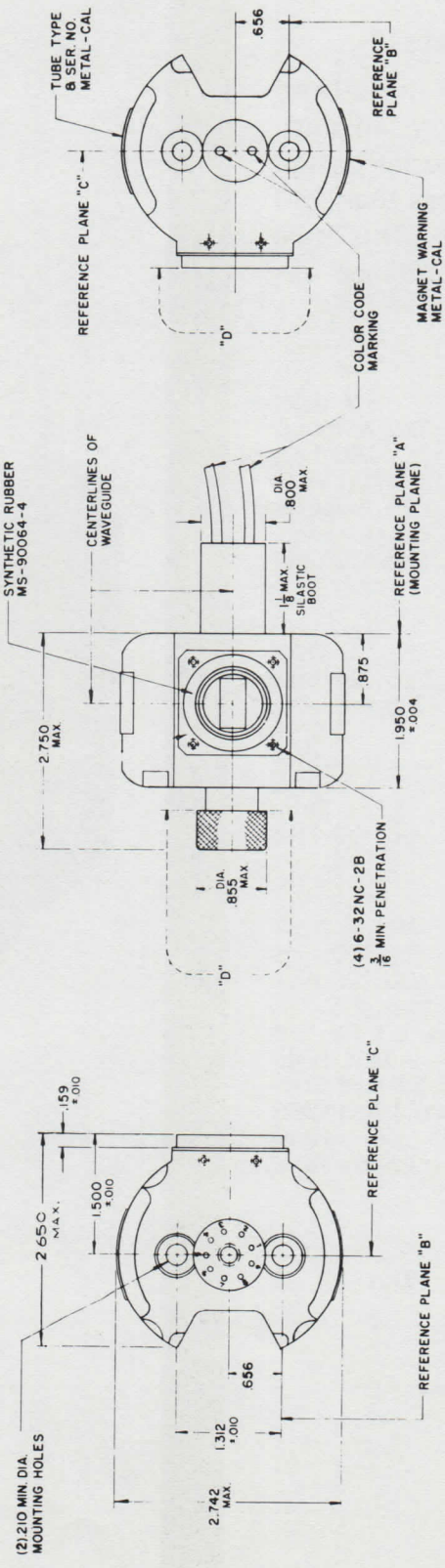
| | |
|---|---|
| Peak Power | Min. 2.2 kW |
| Tunable Frequency | 16,260 to 16,300 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 20 mcs |
| Pushing Figure (± 10% lb) | Max. 2.5 mcs |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 130 kc/°C |
| Vibration (5 to 1,000 cps) | 10 G |
| Shock (11 ± 1 ms) | 30 G |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 23 oz. |

# PULSE MAGNETRON

# L-3915

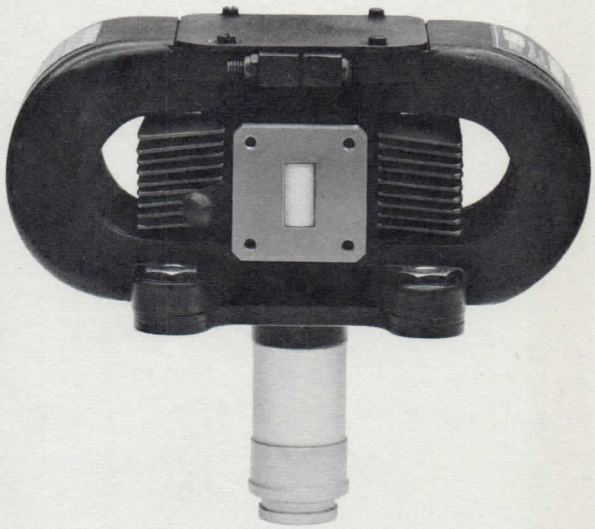


COAXIAL PULSE MAGNETRON

# L-3950

75 Kilowatts Peak Power
Fixed Frequency 16,500 ± 100 Mc

This all metal-ceramic coaxial magnetron, operating in the Ku-band range, offers high efficiency and improved pushing and pulling performance. Families of stable coaxial magnetrons feature the same high rating of long life and reliability as found in all Litton devices. Production models are available at many power levels in both tunable and fixed tuned versions. Applications include weather and surveillance radar, airborne, missile and pulse doppler systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 16 to 18 kVdc |
| Pulse Current | 16 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 10 A |
| Pulse Current | 18 A |
| Pulse Length | 2.0 us |
| Duty Cycle | 0.0012 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

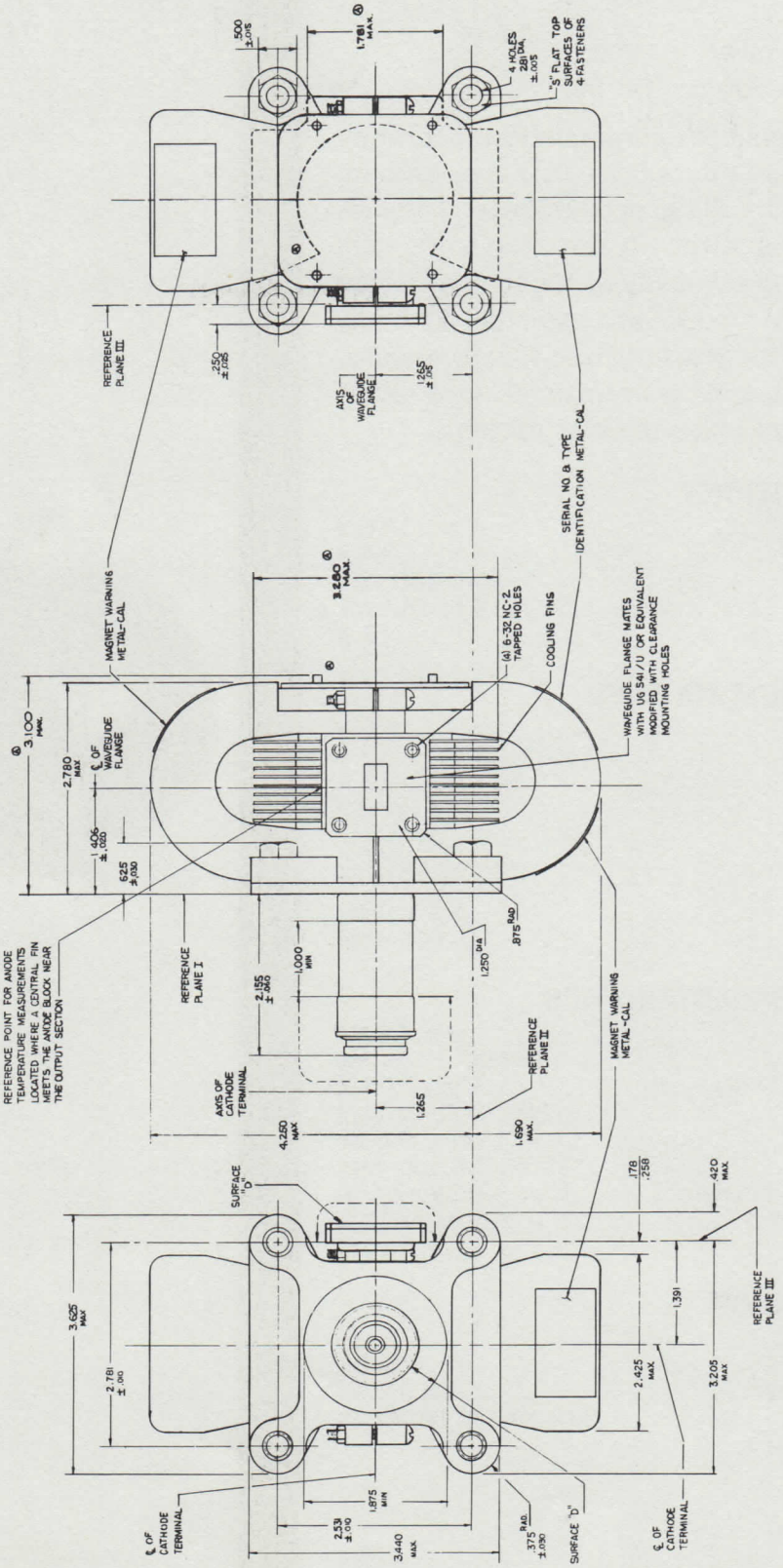
| | |
|---|---|
| Peak Power | Min. 65 kW |
| Fixed Frequency | 16,500 ±100 Mc |
| Pulling Factor (1.3:1 VSWR) | Max. 7.0 Mc |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 9.0 db |
| Bandwidth | Max. 2.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. —0.35 mc/° C |
| Vibration (10 to 500 cps) | 0.036 Da or 10 G |
| Shock (11 ms) | 15 G |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | 6.0 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Heat sink or forced air |

## COAXIAL PULSE MAGNETRON

# L-3950

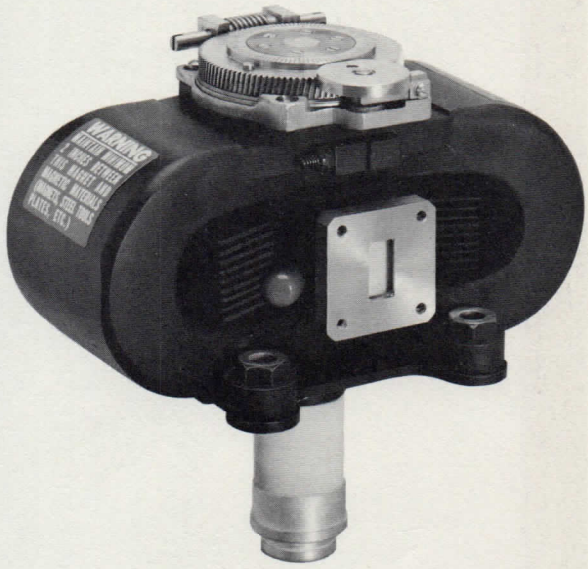


COAXIAL PULSE MAGNETRON

# L-3951

75 Kilowatts Peak Power
Tunable Frequency 16,000 to 17,000 Mc

This all metal-ceramic coaxial magnetron, operating in the Ku-band range, offers high efficiency and improved pushing and pulling performance. Families of stable coaxial magnetrons feature the same high rating of long life and reliability as found in all Litton devices. Production models are available at many power levels in both tunable and fixed tuned versions. Applications include weather and surveillance radar, airborne, missile and pulse doppler systems.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 15 to 18 kVdc |
| Pulse Current | 16 A |
| Tuner Turns | 108 turns |
| Tuner Torque | Max. 16 in./oz. |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 10 A |
| Pulse Current | 18 A |
| Pulse Length | 2.0 us |
| Duty Cycle | 0.0012 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

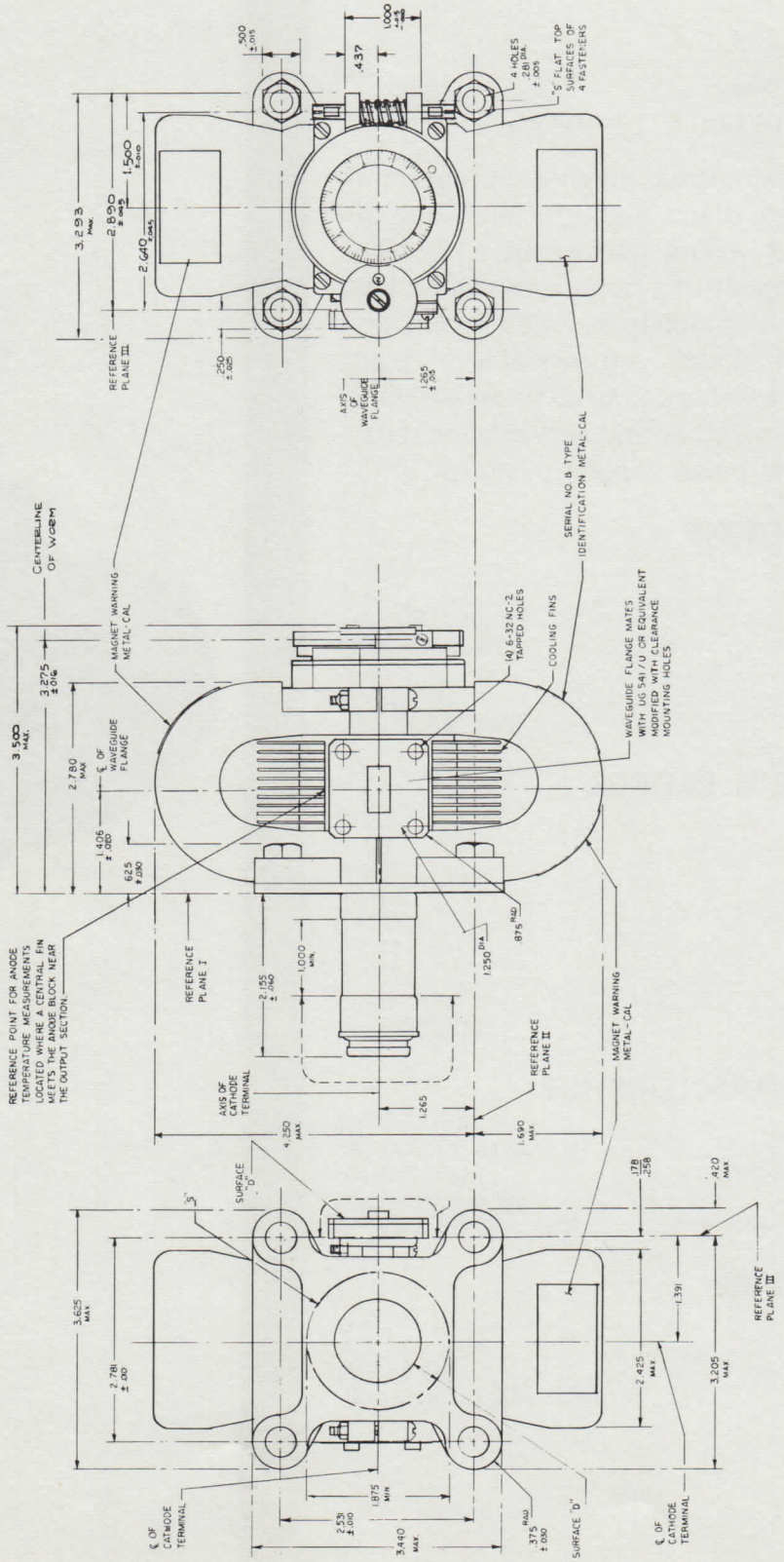
| | |
|---|---|
| Peak Power | Min. 60 kW |
| Tunable Frequency | 16,000 to 17,000 Mc |
| Pulling Factor (1.3:1 VSWR) | Max. 7.0 Mc |
| Missing Pulses | Max. 0.25 Percent |
| Anode Temperature Co-efficient | Max. —0.35 mc/° C |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 6.5 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Heat sink or forced air |

## COAXIAL PULSE MAGNETRON

# L-3951

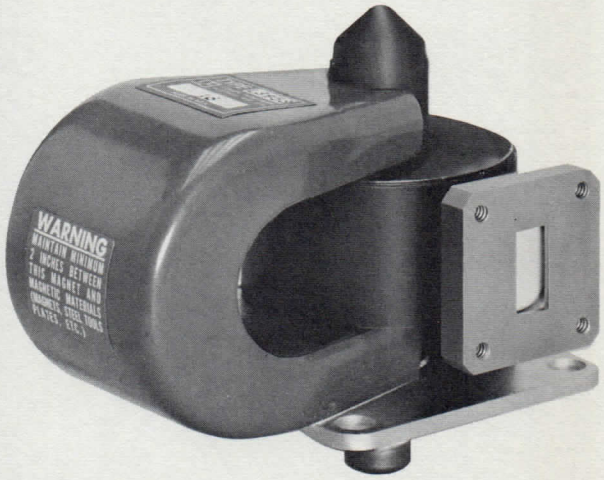


COAXIAL PULSE MAGNETRON

# L-3958

10 Kilowatts Peak Power
Fixed Frequency 15,500 ± 85 Mc

This all metal-ceramic coaxial magnetron, operating in the Ku-band range, offers high efficiency and improved pushing and pulling performance. Families of stable coaxial magnetrons feature the same high rating of long life and reliability as found in all Litton devices. Production models are available at many power levels in both tunable and fixed tuned versions. Applications include weather and surveillance radar, airborne and missile systems and pulse doppler systems.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.6 A |
| Preheat Time | Min. 60 sec. |
| Pulse Voltage | Nominal 5.0 kVdc |
| Pulse Current | 5.0 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Pulse Length | 2.0 us |
| Duty Cycle | 0.002 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 25,000 Feet |

## PERFORMANCE CHARACTERISTICS

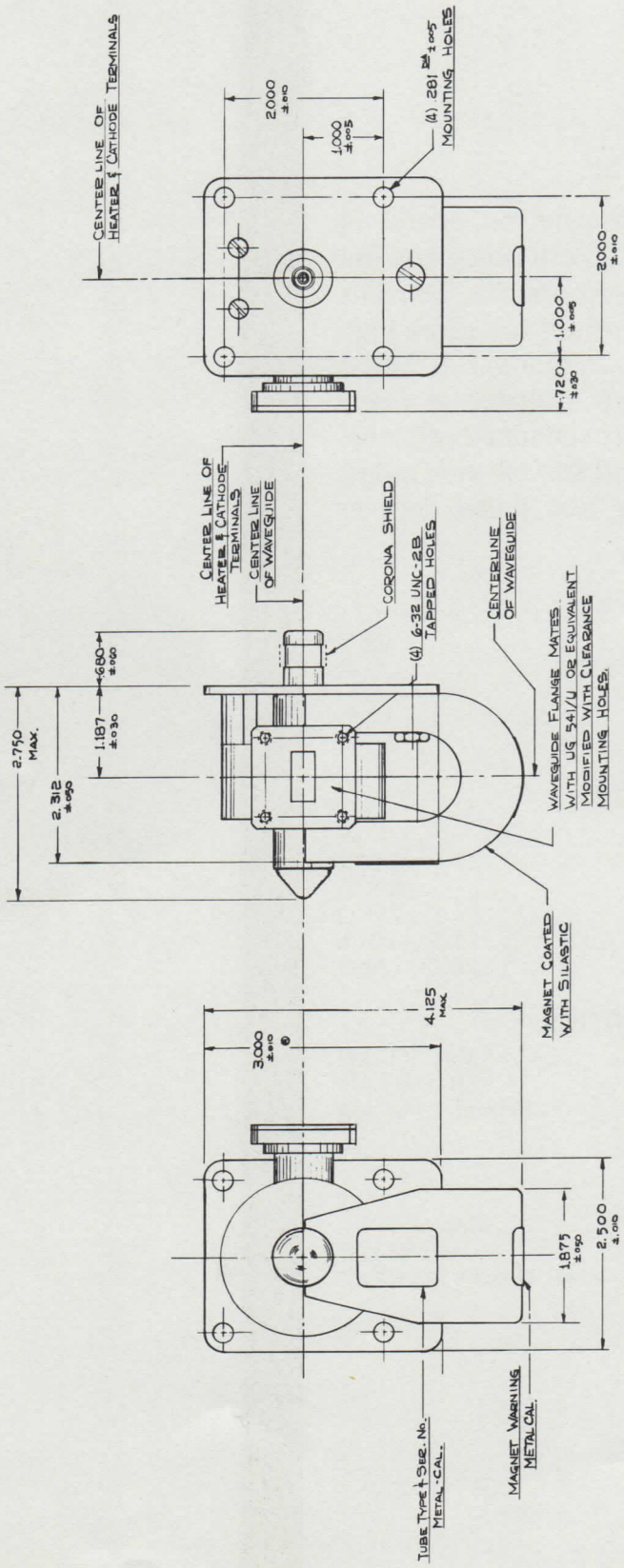
| | |
|---|---|
| Peak Power | Min. 9.0 kW |
| Fixed Frequency | 15,500 ± 85 Mc |
| Missing Pulses | Max. 0.1 Percent |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.0 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Heat sink or forced air |

## COAXIAL PULSE MAGNETRON

# L-3958

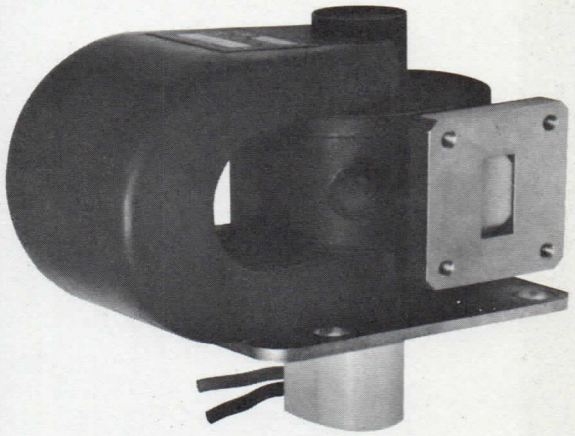


COAXIAL PULSE MAGNETRON

# L-3958A

10 Kilowatts Peak Power
Fixed Frequency 15,500 ± 85 Mc

This all metal-ceramic coaxial magnetron, operating in the Ku-band range, offers high efficiency and improved pushing and pulling performance. The L-3958A is identical in construction to the L-3958, with the exception of a cathode boot and flying leads which increase the altitude rating. Applications include weather and surveillance radar, airborne and missile systems and pulse doppler systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.6 A |
| Preheat Time | Min. 60 sec. |
| Pulse Voltage | Nominal 5.0 kVdc |
| Pulse Current | 5.0 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Pulse Length | 2.0 us |
| Duty Cycle | 0.002 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 55,000 Feet |

## PERFORMANCE CHARACTERISTICS

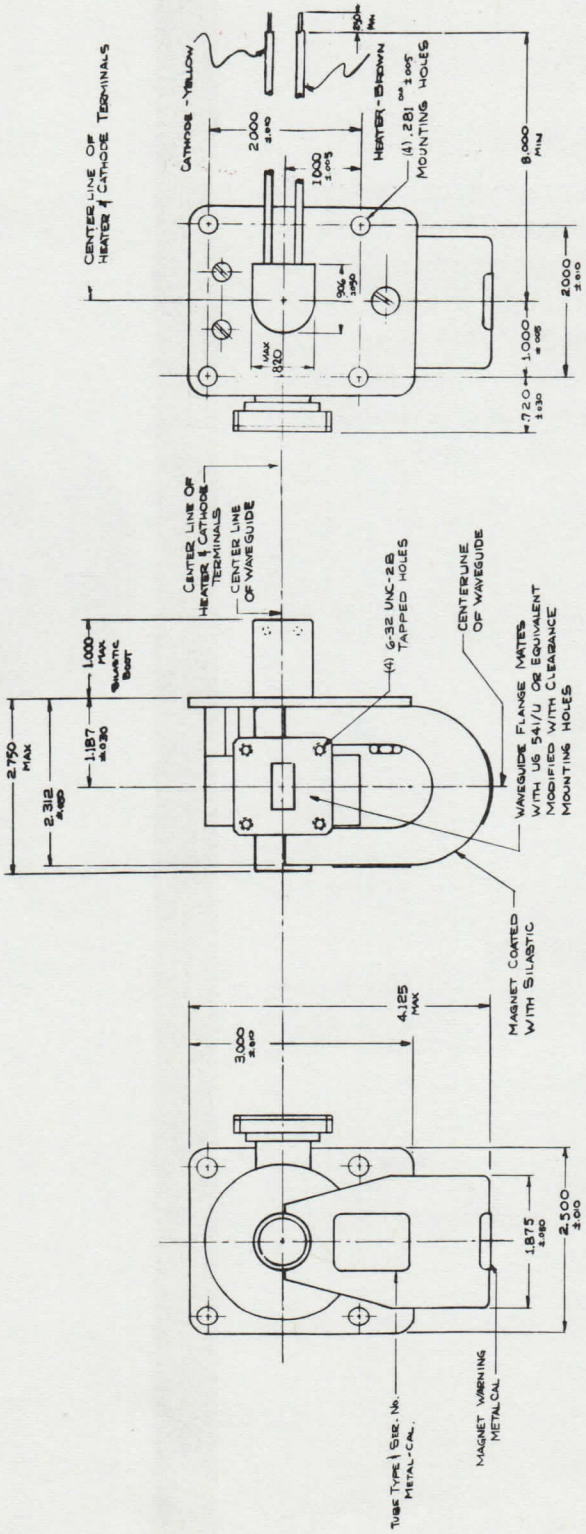
| | |
|---|---|
| Peak Power | Min. 9.0 kW |
| Fixed Frequency | 15,500 ± 85 Mc |
| Missing Pulses | Max. 0.1 Percent |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.0 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Heat sink or forced air |

## COAXIAL PULSE MAGNETRON

# L-3958A

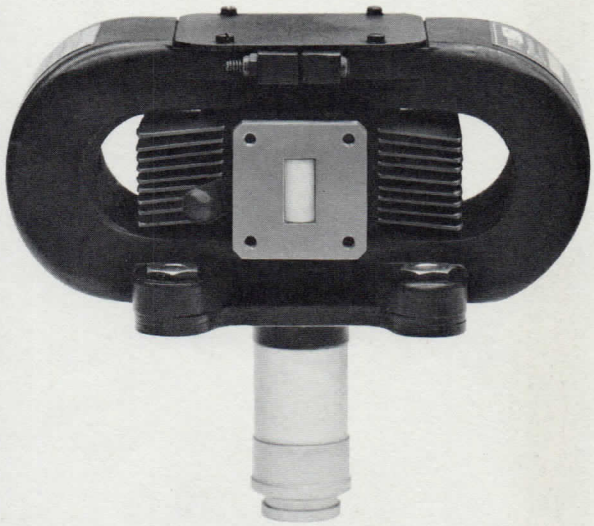


COAXIAL PULSE MAGNETRON

# L-3976

110 Kilowatts Peak Power
Fixed Frequency 16,500 ± 150 Mc

This all metal-ceramic coaxial magnetron, operating in the Ku-band range, offers high efficiency and improved pushing and pulling performance. Families of stable coaxial magnetrons feature the same high rating of long life and reliability as found in all Litton devices. Production models are available at many power levels in both tunable and fixed tuned versions. Applications include weather and surveillance radar, airborne, missile and pulse doppler systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 16 to 18 kVdc |
| Pulse Current | 18 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 10 A |
| Pulse Current | 19 A |
| Pulse Length | 1.5 us |
| Duty Cycle | 0.0012 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

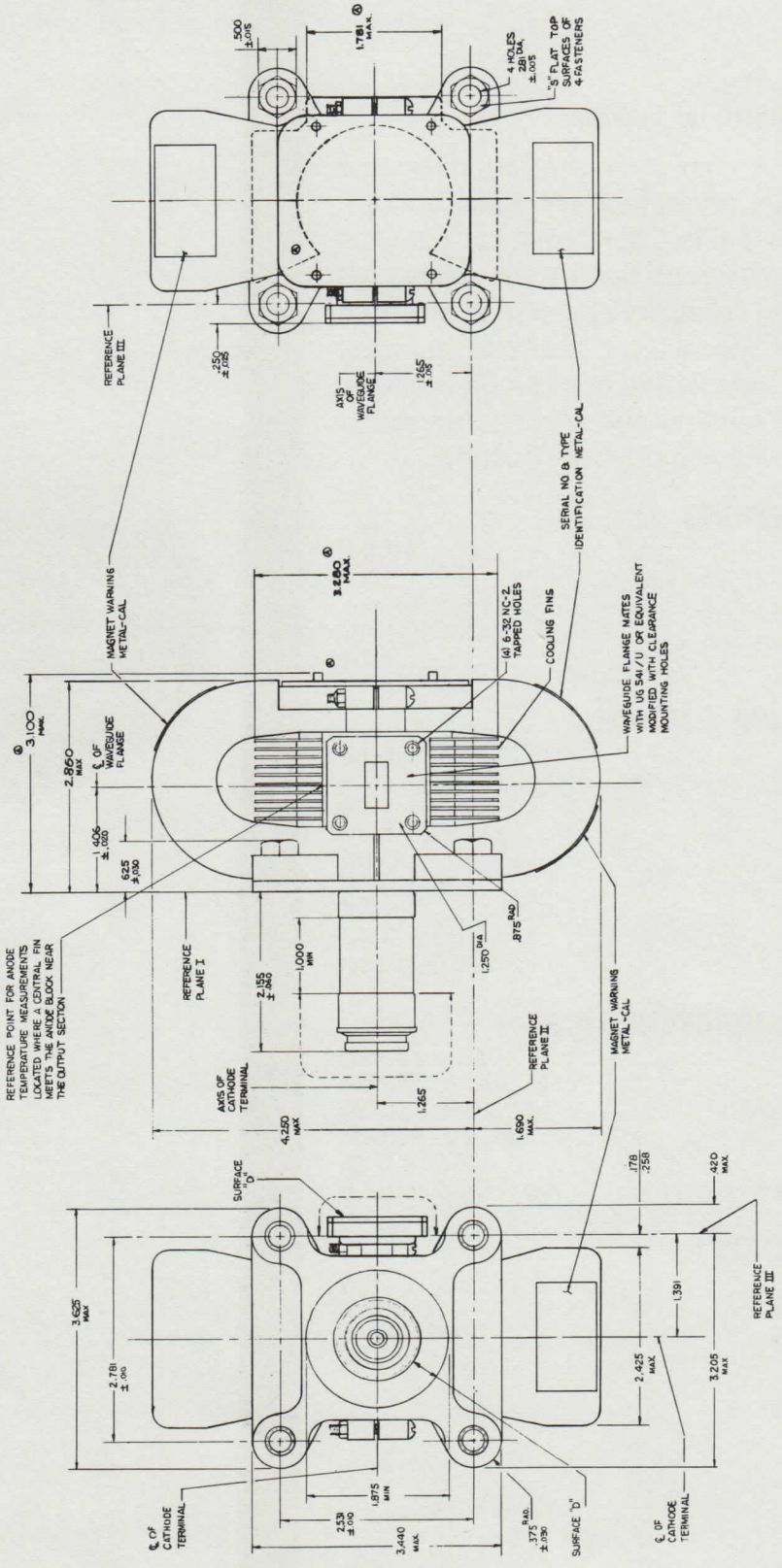
| | |
|---|---|
| Peak Power | Min. 100 kW |
| Fixed Frequency | 16,500 ± 150 Mc |
| Pulling Factor (1.3:1 VSWR) | Max. 10 Mc |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 8.0 db |
| Anode Temperature Co-efficient | Max.—0.35 mc/° C |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | 6.0 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Forced Air |

## COAXIAL PULSE MAGNETRON

# L-3976

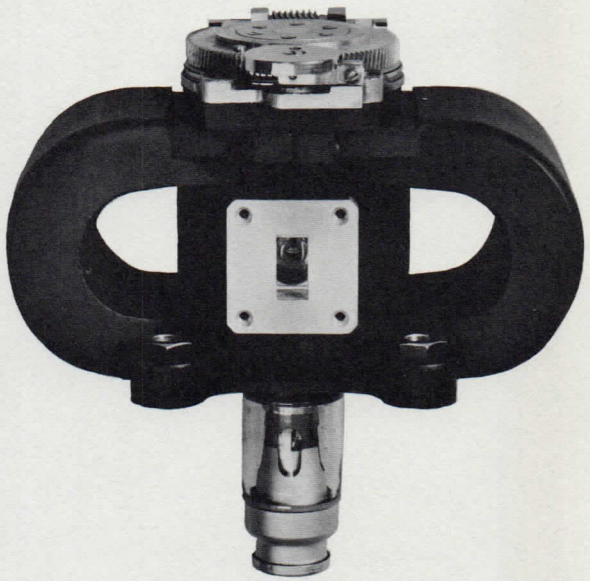


# PULSE MAGNETRON

# L-3978

70 Kilowatts Minimum Peak Power
Tunable Frequency 16,000 to 16,500 Mc

This long life, highly reliable, tunable Ku-band pulse magnetron is rated at 1.0 microsecond pulse operation. Tuning may be manual or by mechanical servo-drive.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 15 to 18 kVdc |
| Pulse Current | 16 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 10 A |
| Pulse Current | 18 A |
| Average Input Power | 272 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

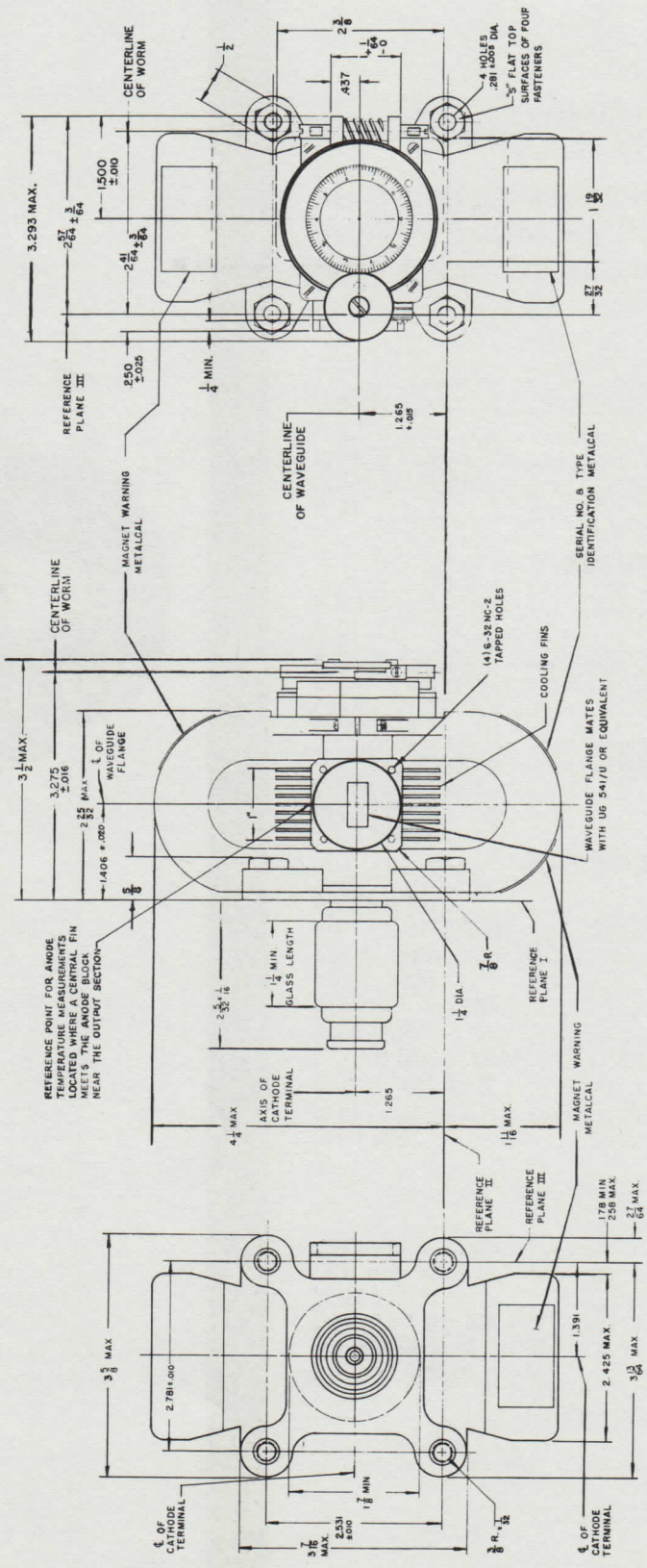
| | |
|---|---|
| Peak Power | Min. 70 kW |
| Tunable Frequency | 16,000-16,500 Mc |
| Pulling Factor (1.3:1 VSWR) | Max. 25 Mc |
| Pushing Figure | Max. 5 Mc |
| Missing Pulses | Max. 1 Percent |
| Side Lobes | Min. 8 db |
| Anode Temperature Co-efficient | Max. 0.450 mc/°C |
| Vibration (5 to 500 cps) | 0.01 Da or 5 G |
| Shock (11 m s) | 15 G |
| Rated Cycle Life | 250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 5½ lbs. |
| Mating Mounting Flange | UG-541/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# PULSE MAGNETRON

# L-3978



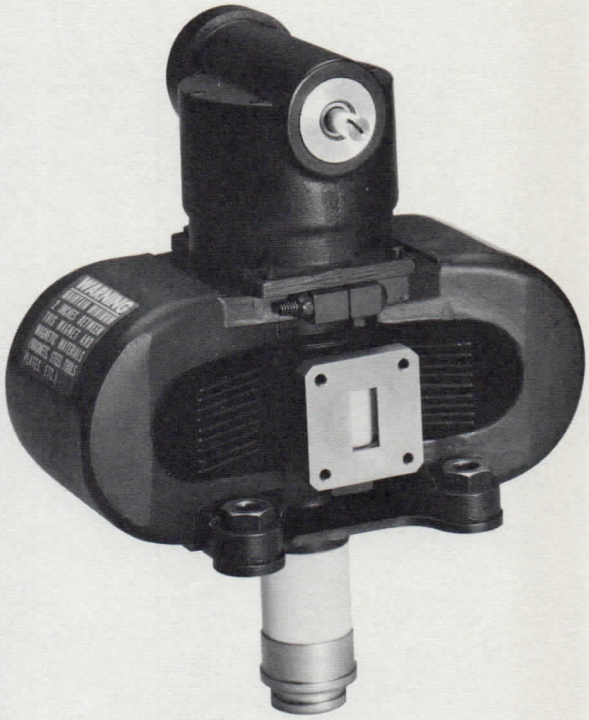

LITTON INDUSTRIES • ELECTRON TUBE DIVISION • SAN CARLOS, CALIFORNIA

COAXIAL PULSE MAGNETRON

# L-3987

75 Kilowatts Peak Power
Tunable Frequency 16,000 to 17,000 Mc

This all metal-ceramic coaxial magnetron, operating in the Ku-band range, offers high efficiency and improved pushing and pulling performance. Families of stable coaxial magnetrons feature the same high rating of long life and reliability as found in all Litton devices. Production models are available at many power levels in both tunable and fixed tuned versions. Applications include weather and surveillance radar, airborne and missile systems and pulse doppler systems.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 15 to 18 kVdc |
| Pulse Current | 16 A |
| Tuner Turns | 4.9 turns |
| Tuner Torque | Max. 16 in./oz. |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 10 A |
| Pulse Current | 18 A |
| Pulse Length | 2.0 us |
| Duty Cycle | 0.0012 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

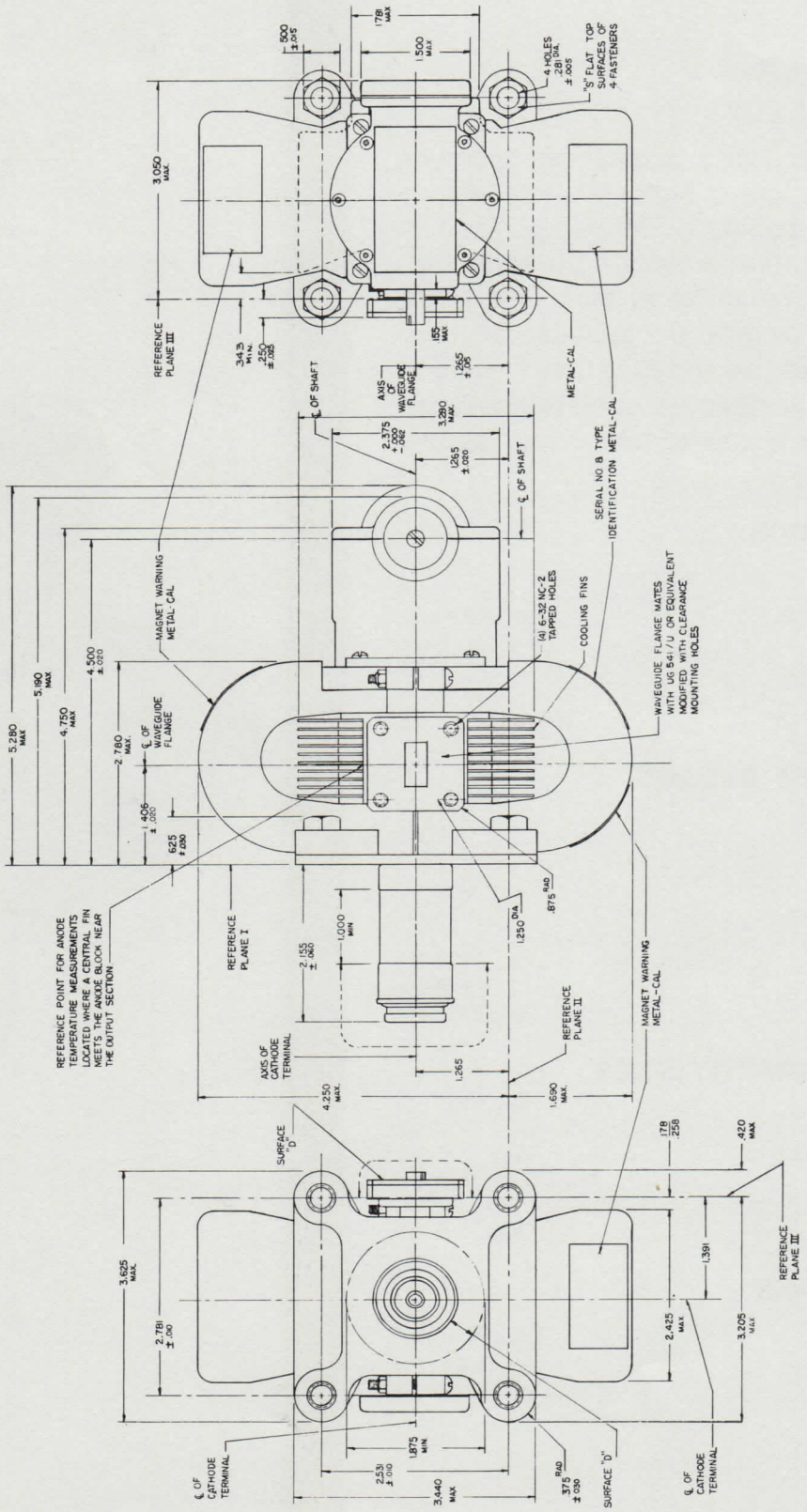
| | |
|---|---|
| Peak Power | Min. 60 kW |
| Tunable Frequency | 16,000 to 17,000 Mc |
| Pulling Factor (1.3:1 VSWR) | Max. 7.0 Mc |
| Missing Pulses | Max. 0.25 Percent |
| Anode Temperature Co-efficient | Max. —0.35 mc/° C |
| Side Lobes | Min. 9.0 db |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 7.5 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Heat sink or forced air |

## COAXIAL PULSE MAGNETRON

# L-3987

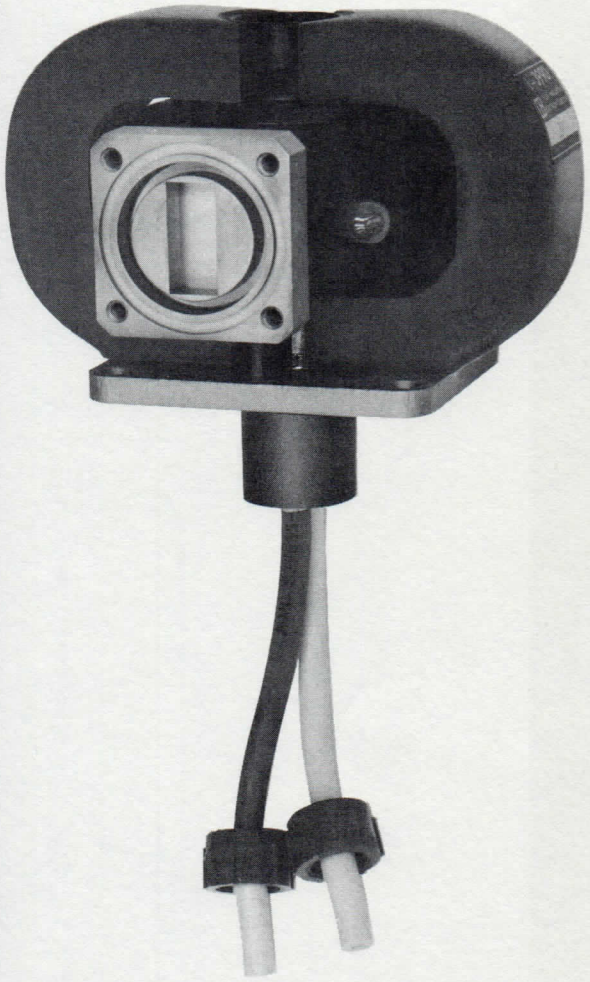


COAXIAL PULSE MAGNETRON

# L-3990

28 Kilowatts Peak Power
Fixed Frequency 9375 ± 30 MHz

This coaxial X-band pulse magnetron was designed using a very conservative load factor. Its low cathode emission density, and large anode structure provide many thousands of hours of service life. The coaxial design provides high efficiency and excellent spectrum shape. The L-3990 is recommended for all new 28 KW radar systems as well as a replacement magnetron to upgrade life, power output, and spectrum of existing radars. The center frequency can be set to suit individual requirements.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current | 1.2 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 7.75 to 8.25 kv |
| Pulse Current | 8.25 A |
| Time of Rise of Voltage | Min. 0.10 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 4.0 A |
| Pulse Voltage | 9.0 kv |
| Pulse Current | 9.25 A |
| Pulse Length | 5.0 us |
| Average Input Power | 100 W |
| Duty Cycle | 0.0015 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 24 kW |
| Fixed Frequency | 9375 ± 30 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 6 MHz |
| Anode Temperature Co-efficient | Max. 0.25 MHz/°C |
| Altitude (Cathode) | 55,000 Feet |

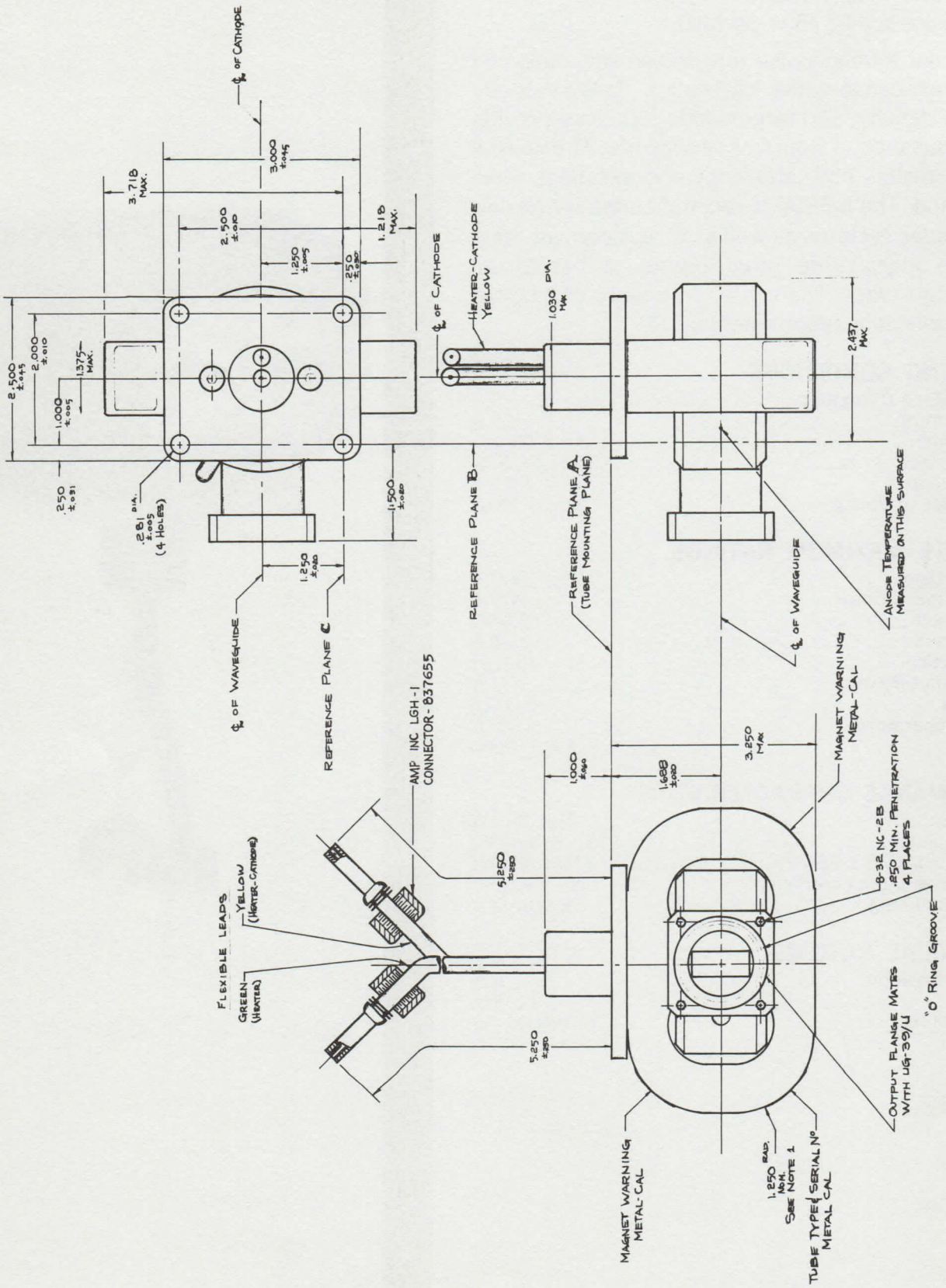
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 4.5 lbs. |
| Anode Cooling | Convection Air |

## COAXIAL PULSE MAGNETRON

# L-3990

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output rf connections, waveguide flanges, and gaskets must be rf leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.



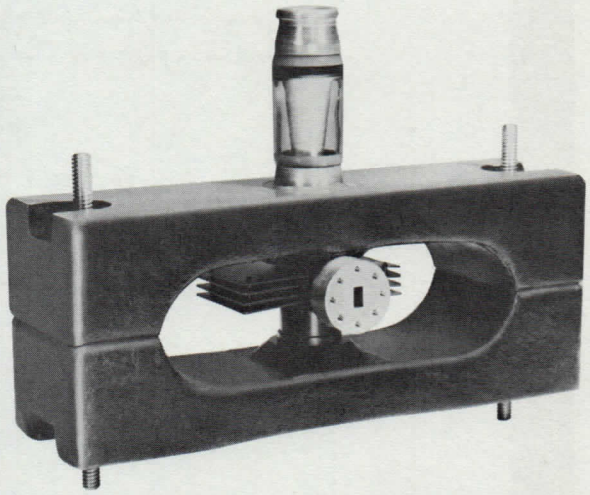
# PULSE MAGNETRON

# L-4064A

1

125 Kilowatts Minimum Peak Power
Fixed Frequency 34,850 ±150 Mc

This rugged millimeter-wave pulsed magnetron provides an unusually high power to weight ratio. It is designed for a wide range of pulse width and duty cycle service and to provide operating frequency stability and mode stability under severe environmental conditions. These features assure reliable performance in airborne reconnaissance and mapping radar systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current (Standby) | 3.5 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 17 to 21 kv |
| Pulse Current | 27 a |
| Rate of Rise of Voltage | Max. 220 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.9 V |
| Heater Surge Current | 10.0 A |
| Pulse Length | 1.0 us |
| Pulse Voltage | 21.0 kv |
| Pulse Current | 30a |
| Average Input Power | 220 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 135° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

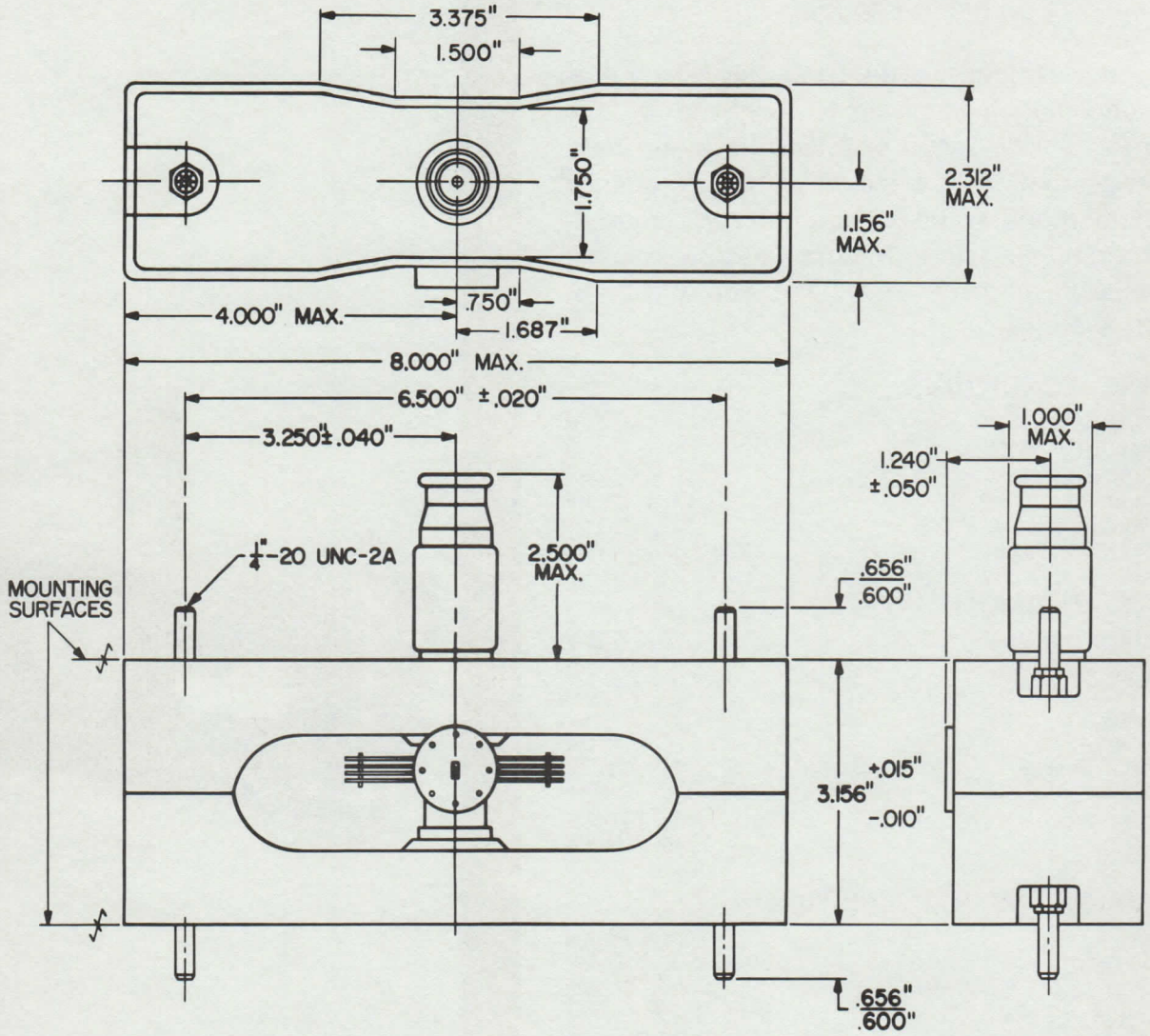
| | |
|---|---|
| Peak Power | Min. 125 kw |
| Fixed Frequency | 34,850 ± 150 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 40 Mc |
| Pushing Figure | Max. 3.7 Mc/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 6.0 db |
| Anode Temperature Coefficient | Max. 1000 kc/°C |
| Shock (11 ms) | 30 G |
| Vibration (54-2000 cps) | 20 G |
| Rated Cycle Life | 200 Hrs. |

## MECHANICAL RATINGS

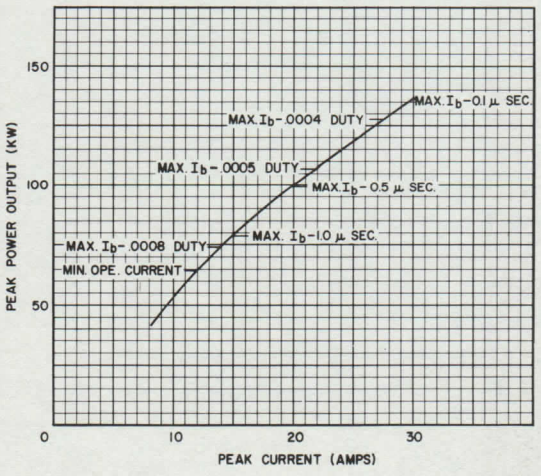
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 9.0 lbs. |
| Mating Mounting Flange | UG-600/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 60 psia |

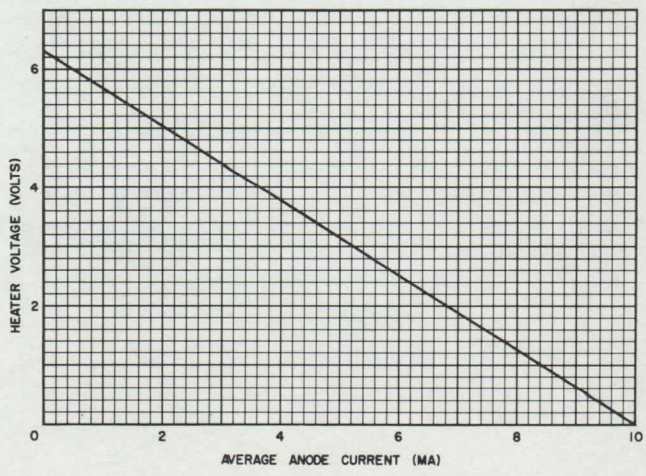
# PULSE MAGNETRON

# L-4064A




HEATER SCHEDULE



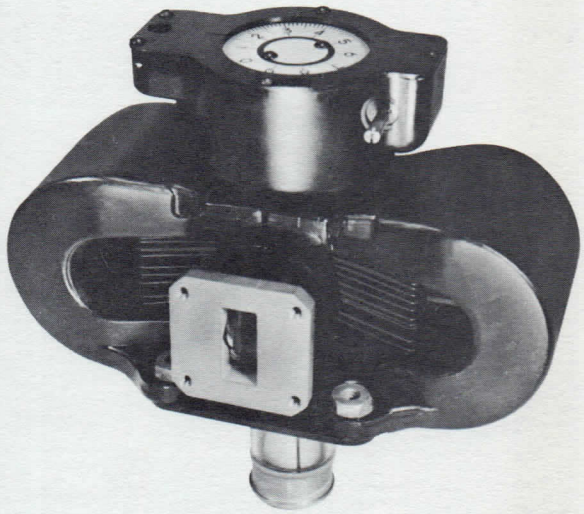
PULSE MAGNETRON

# L-4193A

# 7008

200 Kilowatts Minimum Peak Power
Tunable Frequency 8500 to 9600 Mc

This reliable, long-life magnetron is designed for use in airborne fire control systems with MTI capabilities, and other systems requiring true tuning linearity and excellent frequency stability.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 13.75 V |
| Heater Current (Standby) | 3.2 A |
| Preheat Time | Min. 150 sec. |
| Pulse Voltage | 20 to 23 kv |
| Pulse Current | 27.5 a |
| Rate of Rise Voltage | Max. 225 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15.0 V |
| Heater Surge Current | 12.0 a |
| Pulse Length | 2.75 us |
| Pulse Voltage | 23.0 kv |
| Pulse Current | 30.0 a |
| Average Input Power | 690 W |
| Duty Cycle | 0.0013 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 200 kw |
| Tunable Frequency | 8500 to 9600 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 13.5 Mc |
| Pushing Figure | Max. 0.25 Mc/amp |
| Missing Pulses | Max. 0.03 Percent |
| Side Lobes | Min. 6.0 db |
| Anode Temperature Coefficient | Max. 250 kc/° C |
| Shock (11 ms) | 30 G |
| Vibration (5-500 cps) | 5.0 G |
| Rated Cycle Life | 520 Hrs. |
| Backlash | Max. 10 Mc |
| Partial Moding | Max. 0.03 Percent |

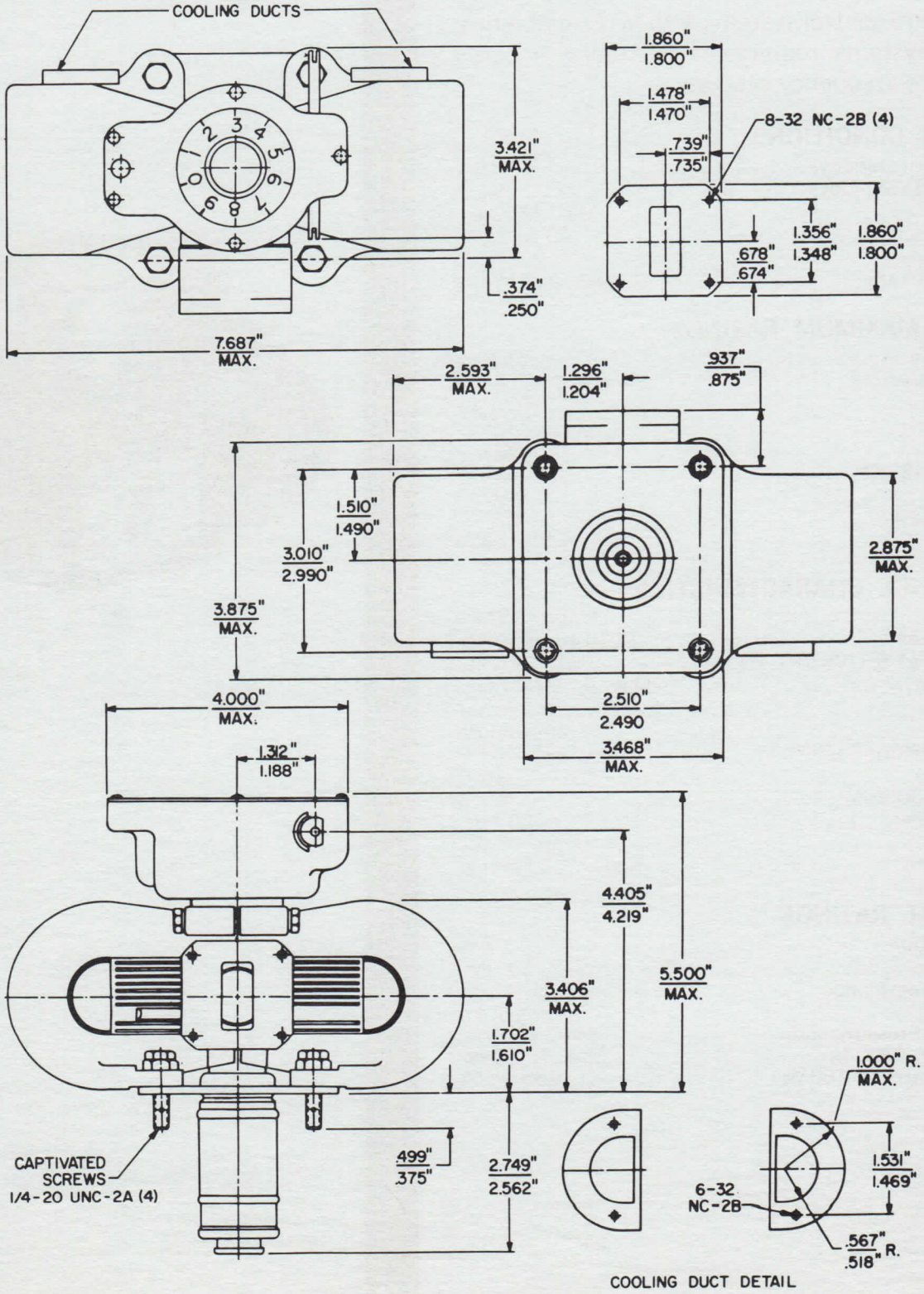
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 11 lbs. |
| Mating Mounting Flange | UG-52A/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |
| Tuning Torque, running | Max. 12 in. oz. |
| Tuner Shaft Turns (1100Mc) | 148 to 168 |

# PULSE MAGNETRON

# L-4193A

# 7008



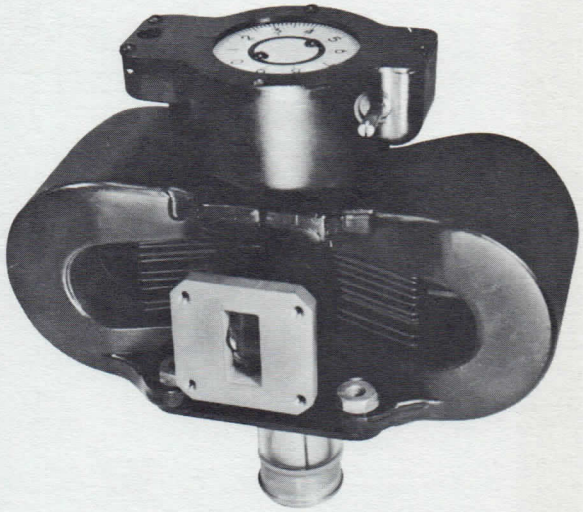
PULSE MAGNETRON

# L-4193B

# 7692

200 Kilowatts Minimum Peak Power
Tunable Frequency 9200 to 9550 Mc

This rugged, high-power magnetron has demonstrated long life and reliability in many airborne navigational and search radar systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 13.75 V |
| Heater Current (Standby) | 3.2 A |
| Preheat Time | Min. 150 sec. |
| Pulse Voltage | 20 to 23 kv |
| Pulse Current | 27.5 a |
| Rate of Rise of Voltage | Max. 225 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15.0 V |
| Heater Surge Current | 12.0 A |
| Pulse Length | 2.75 us |
| Pulse Voltage | 23.0 kv |
| Pulse Current | 30.0 a |
| Average Input Power | 690 W |
| Duty Cycle | 0.0013 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 200 kw |
| Tunable Frequency | 9200 to 9550 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 15 Mc |
| Pushing Figure | Max. 0.5 Mc/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 6.0 db |
| Anode Temperature Coefficient | Max. 250 kc/° C |
| Shock (11 ms) | 30 G |
| Vibration (5-500 cps) | 5.0 G |
| Rated Cycle Life | 250 Hrs. |

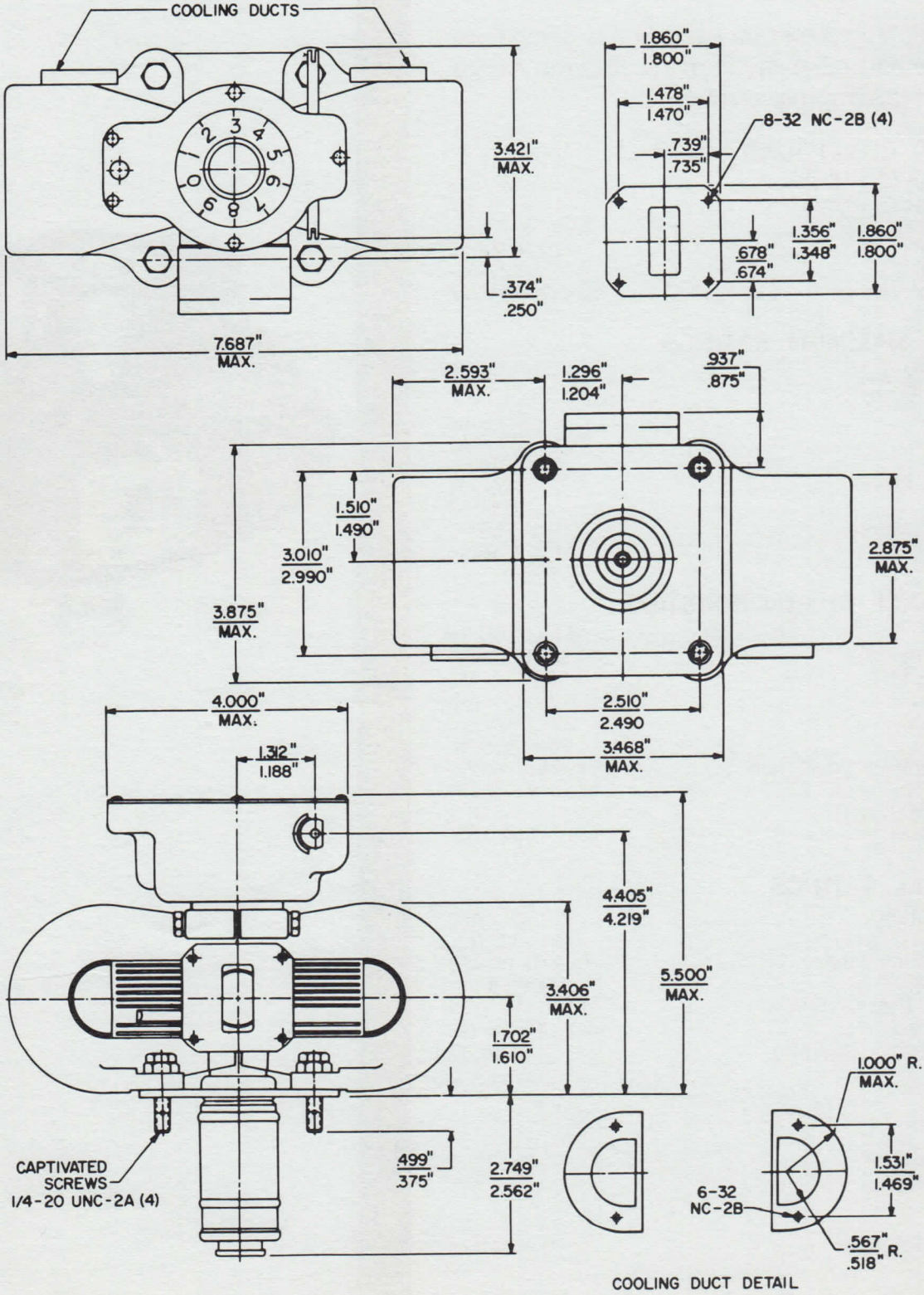
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 11 lbs. |
| Mating Mounting Flange | UG-52A/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |
| Tuning Torque | Max. 16 in. oz. |
| Tuner Shaft Turns (350 Mc) | 31 to 37 |

PULSE MAGNETRON

# L-4193B

# 7692



PULSE MAGNETRON

# L-4296
# 8366

50 Kilowatts Minimum Peak Power
Fixed Frequency 33,200 ±200 Mc

A reliable Ka-band magnetron for use in either land-based or carrier automatic landing systems.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 12.6 V |
| Heater Current (Standby) | 2.8 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 11 to 13 kVdc |
| Pulse Current | 25 A |
| Rate of Rise of Voltage | Max. 250 kV/us |

## ABSOLUTE MAXIMUM RATINGS

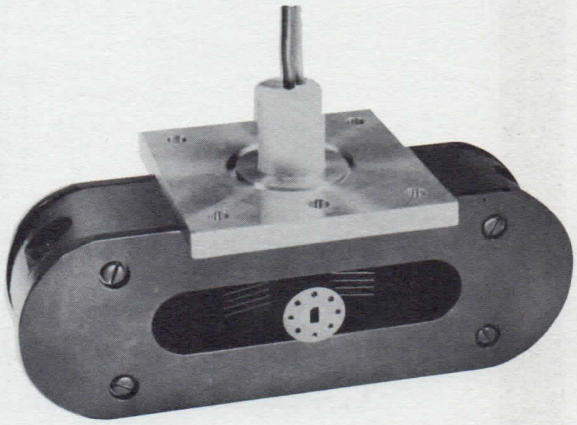
| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 10.0 a |
| Pulse Length | 1.0 us |
| Pulse Voltage | 13.0 kv |
| Pulse Current | 25.0 a |
| Average Input Power | 176 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 50 kW |
| Fixed Frequency | 33,200 ±200 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 40 Mc |
| Pushing Figure | Max. 2.0 Mc/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 6 db |
| Anode Temperature Coefficient | Max. 1000 kc/°C |
| Shock (11 ms) | 50 G |
| Vibration (54-2000 cps) | 10 G |
| Rated Cycle Life | 200 Hrs. |

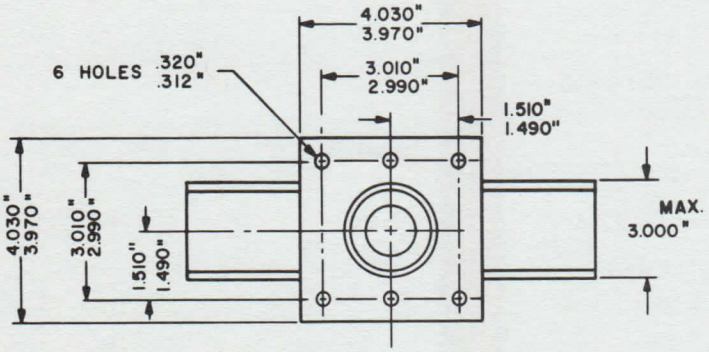
## MECHANICAL RATINGS

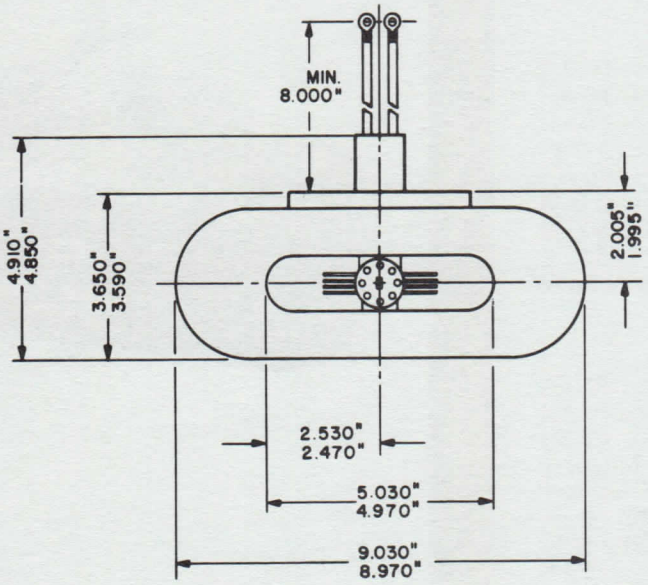
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 10.5 lbs. |
| Mating Mounting Flange | UG-600/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 60 psia |

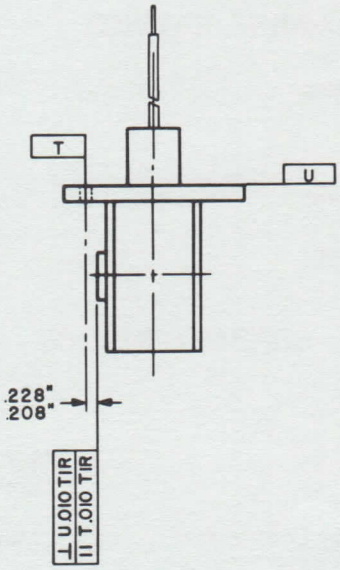


PULSE MAGNETRON

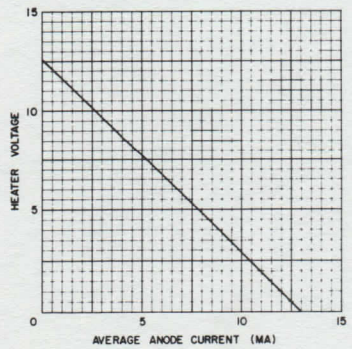
# L-4296
# 8366

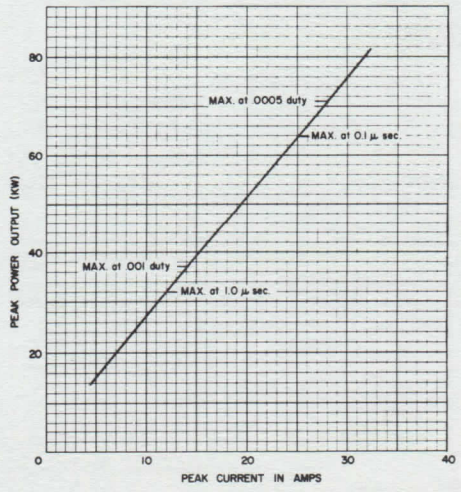



## HEATER SCHEDULE



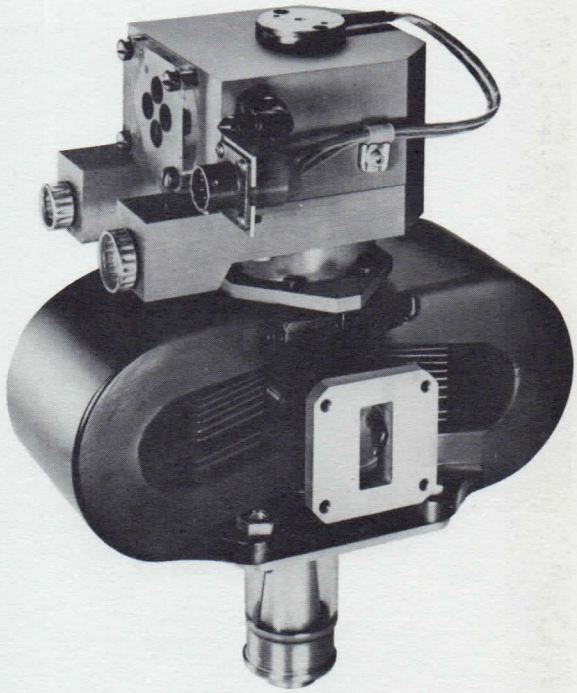



# PULSE MAGNETRON

# L-4310

200 Kilowatts Minimum Peak Power
Tunable Frequency 8500 to 9400 Mc

This high-power, hydraulically tuned magnetron provides high-speed tuning capability with a turn-around time of less than 3.0 milliseconds for frequency agile radar systems. Its precisely linear tuning characteristic simplifies problems of AFC tracking.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 13.75 V |
| Heater Current (Standby) | 3.2 A |
| Preheat Time | Min. 150 sec. |
| Pulse Voltage | 20 to 23 kVdc |
| Pulse Current | 27.5 A |
| Rate of Rise of Voltage | Max. 225 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15.0 V |
| Heater Surge Current | 12.0 a |
| Pulse Length | 2.75 us |
| Pulse Voltage | 23.0 kv |
| Pulse Current | 30.0 a |
| Average Input Power | 690 W |
| Duty Cycle | 0.0013 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

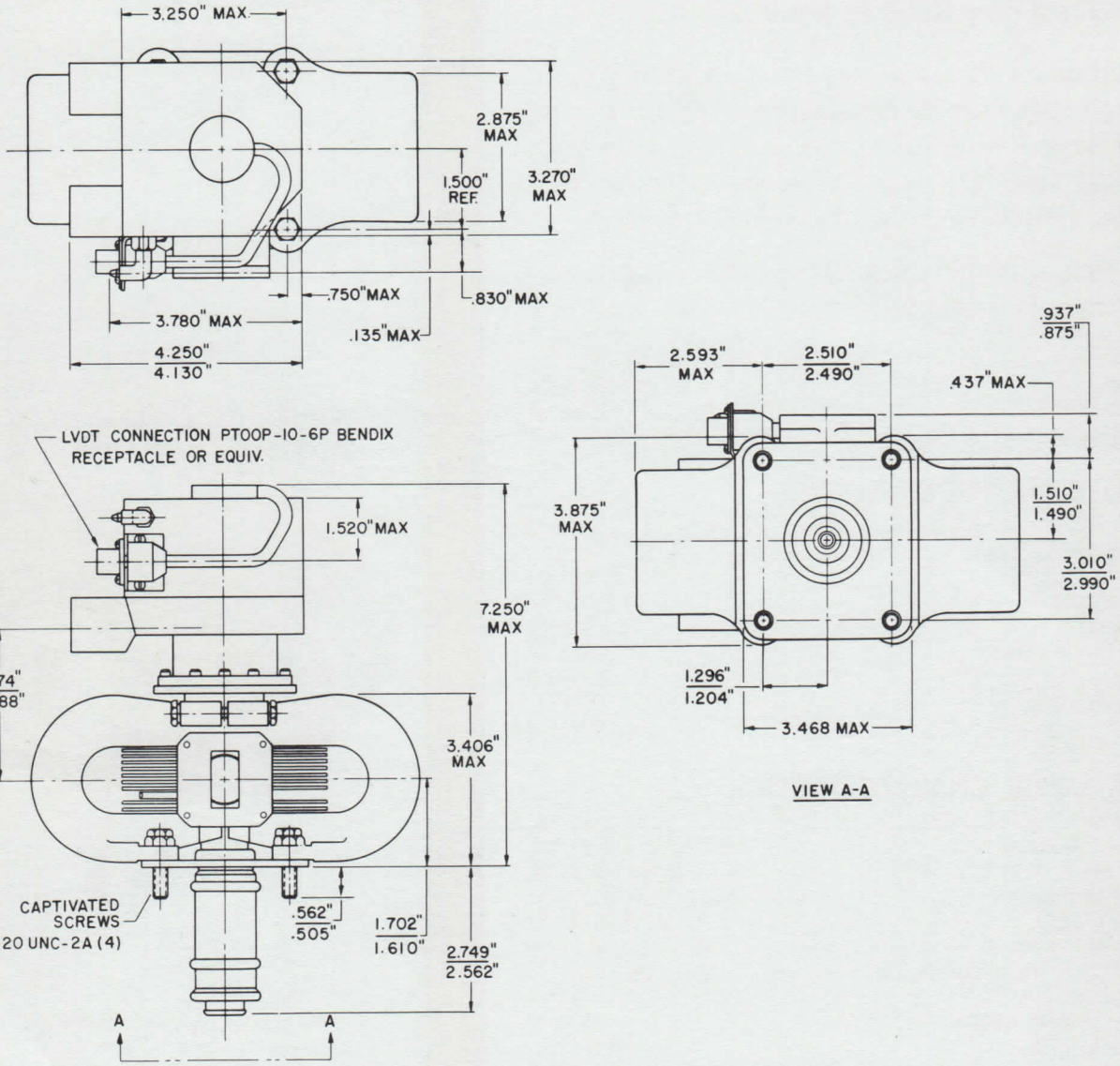
| | |
|---|---|
| Peak Power | Min. 200 kW |
| Tunable Frequency | 8500 to 9400 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 13.5 Mc |
| Pushing Figure | Max. 0.5 Mc/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 6.0 db |
| Anode Temperature Coefficient | Max. 250 kc/° C |
| Shock (11 ms) | 30 G |
| Vibration (5-500 cps) | 5.0 G |
| Rated Cycle Life | 500 Hrs. |
| Tuning Rate | 4.55 Mc/0.001" |
| Waveform | Any |
| Turnaround Time | Max. 3.0 msec. |
| Tuning Speed | 60 cps |

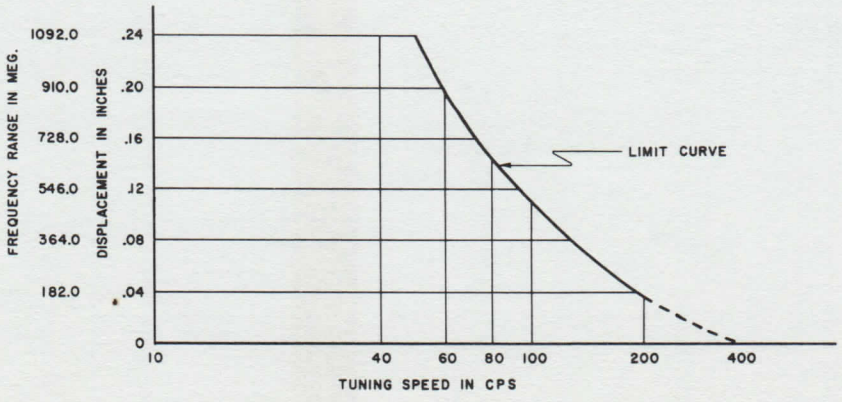
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 13.5 lbs. |
| Mating Mounting Flange | UG-52A/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |

# PULSE MAGNETRON

# L-4310



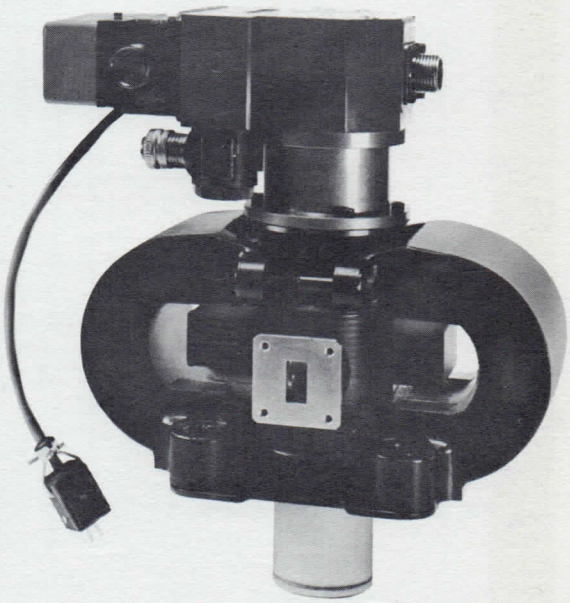



# PULSE MAGNETRON

# L-4328A

90 Kilowatts Minimum Peak Power
Tunable Frequency 15,500 to 17,500 Mc

The hydraulic actuator and positional feedback transducer of this coaxial cavity magnetron provide high-speed random tuning capability for advanced radar systems requiring frequency agility.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 12.6 V |
| Heater Current (Standby) | 2.4 A |
| Preheat Time | Min. 150 sec. |
| Pulse Voltage | 16.5 kVdc |
| Pulse Current | 16 A |
| Rate of Rise of Voltage | Max. 125 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 10.0 a |
| Pulse Length | 3.3 us |
| Pulse Voltage | 18.0 kv |
| Pulse Current | 19.0 a |
| Average Input Power | 350 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

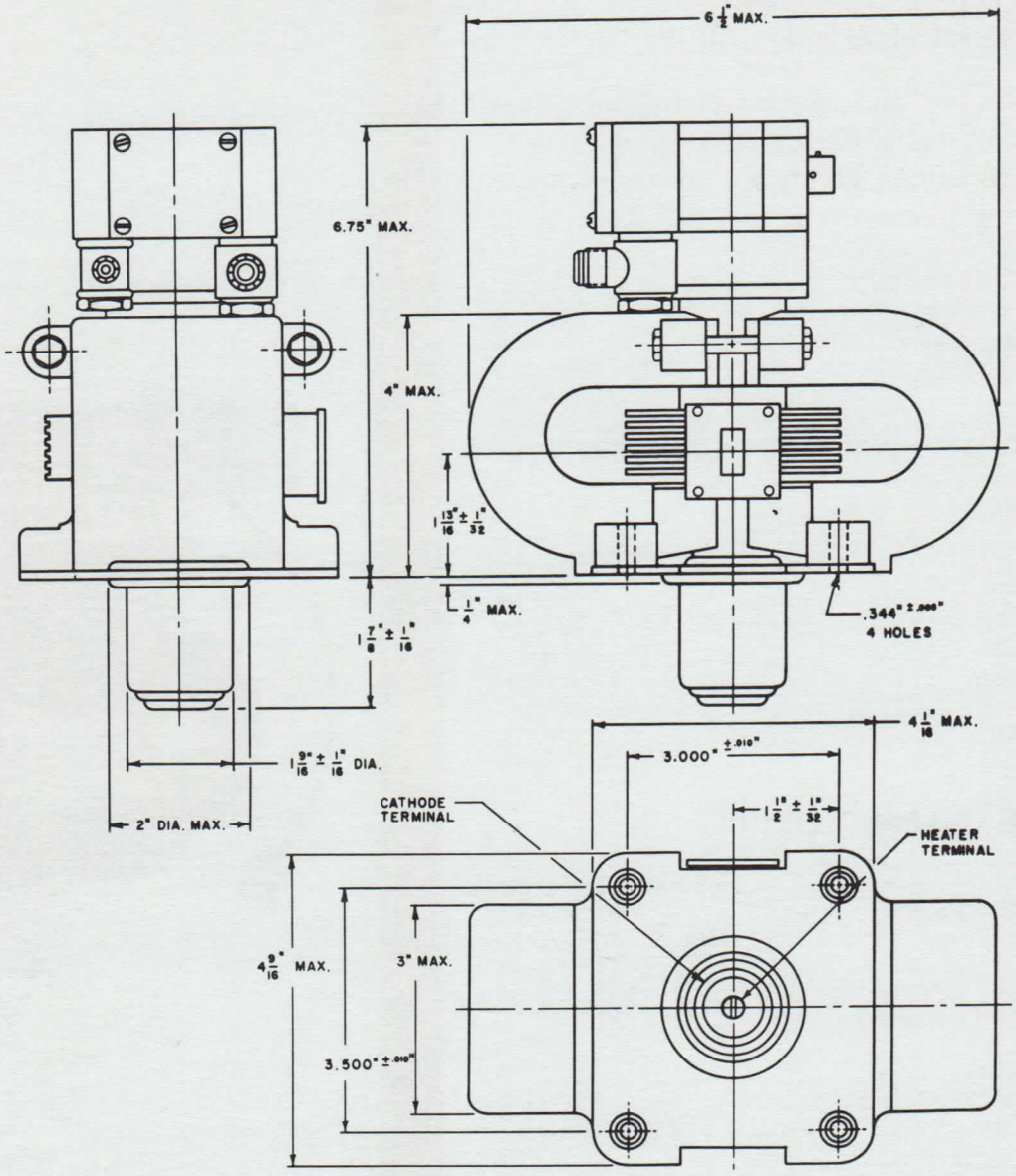
| | |
|---|---|
| Peak Power | Min. 90 kW |
| Tunable Frequency | 15,500 to 17,500 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 6.0 Mc |
| Pushing Figure | Max. 0.12 Mc/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8.0 db |
| Anode Temperature Coefficient | Max. 500 kc/°C |
| Shock (11 ms) | 30 G |
| Vibration (5-500 cps) | 15 G |
| Rated Cycle Life | 500 Hrs. |
| Tuning Rate | 13.2 Mc/0.001" |
| Waveform | Any |
| Turnaround Time | Max. 5.0 msec. |
| Tuning Speed | 60 cps |

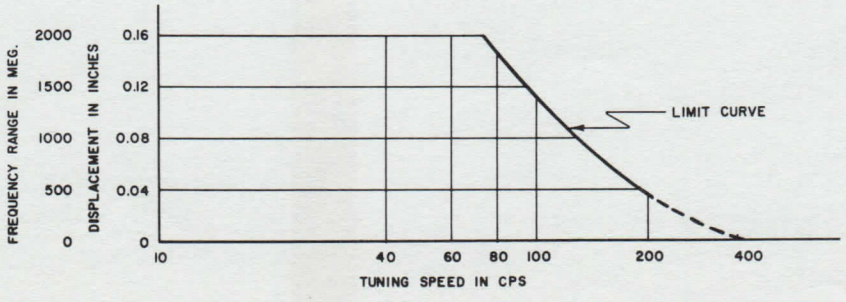
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 10 lbs. |
| Mating Mounting Flange | UG-541/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |

# PULSE MAGNETRON

# L-4328A



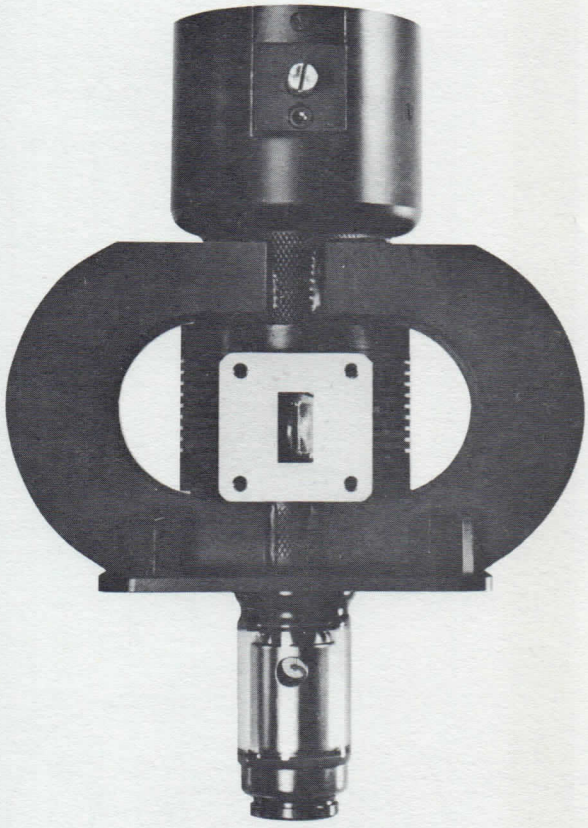



PULSE MAGNETRON

# L-4362
# 8468

60 Kilowatts Minimum Peak Power
Tunable Frequency 16,000 to 17,000 Mc

This servo-tunable coaxial-cavity Ku-band magnetron provides long life and highly reliable performance. Its extremely stable operation under severe environmental and vibration conditions makes it suitable for the most demanding applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 12.6 V |
| Heater Current (Standby) | 2.6 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 15 to 17 kv |
| Pulse Current | 16 a |
| Rate of Rise of Voltage | Max. 180 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 10.0 A |
| Pulse Length | 3.3 us |
| Pulse Voltage | 18.0 kv |
| Pulse Current | 18.0 a |
| Average Input Power | 272 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

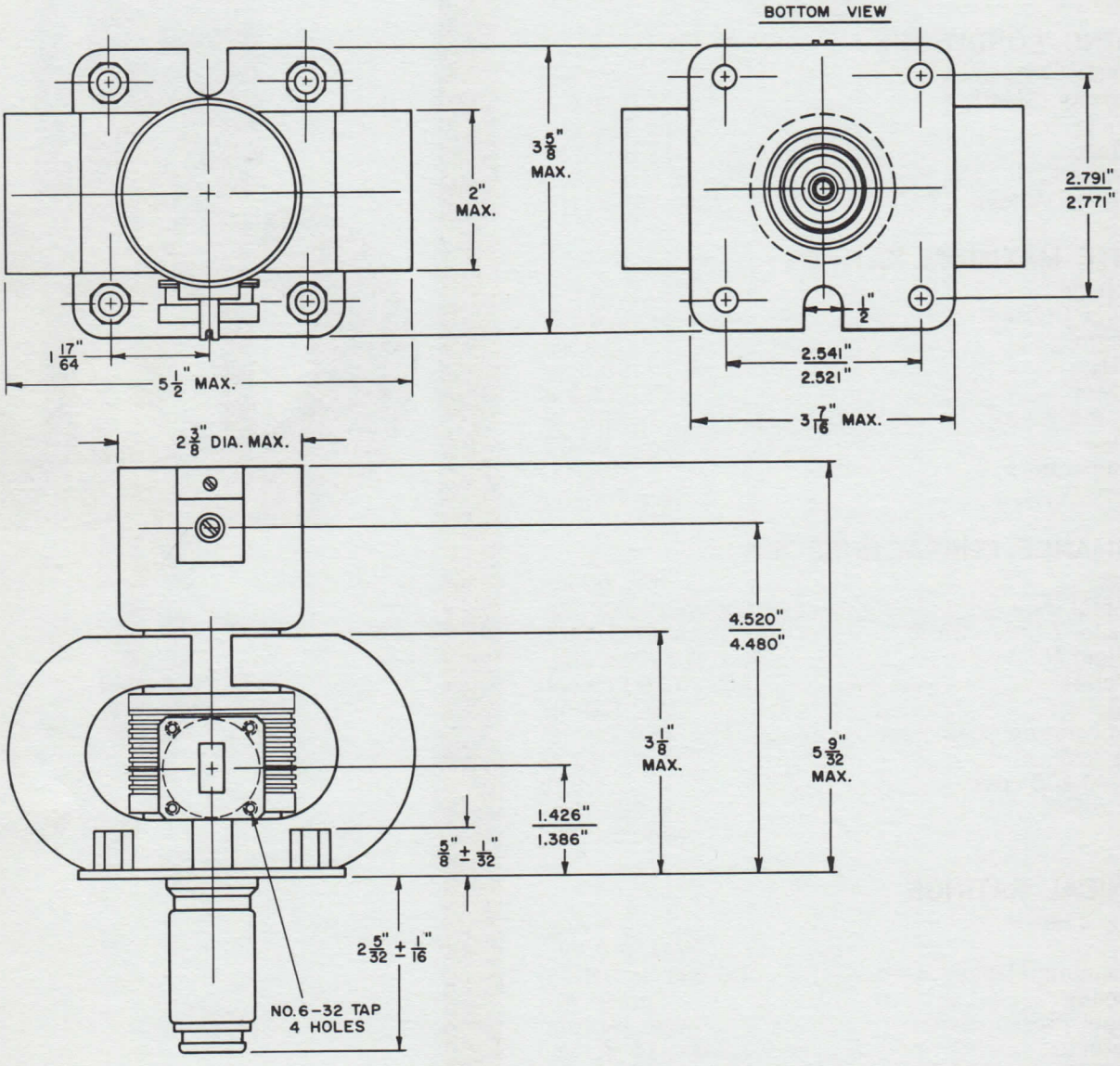
| | |
|---|---|
| Peak Power | Min. 60 kw |
| Tunable Frequency | 16,000 to 17,000 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 8.0 Mc |
| Pushing Figure | Max. 0.15 Mc/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8.0 db |
| Anode Temperature Coefficient | Max. 450 kc/° C |
| Shock (11 ms) | 15 G |
| Vibration (20-500 cps) | 5.0 G |
| Rated Cycle Life | 250 Hrs. |
| Backlash | Max. 5.0 Mc |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 8.0 lbs. |
| Mating Mounting Flange | UG-541/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 60 psia |
| Tuning Torque | Max. 16 in. oz. |
| Tuner Shaft Turns (1000 Mc) | 4.63 to 4.92 turns |

PULSE MAGNETRON

# L-4362
# 8468

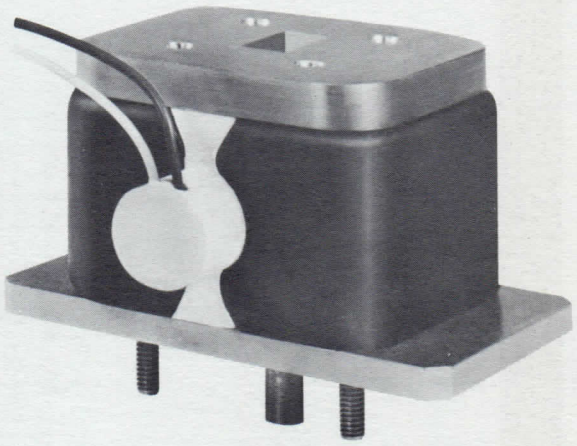


PULSE MAGNETRON

# L-4370

40 Watts Minimum Peak Power
Fixed Frequency 13,325 ±30 Mc

This miniature magnetron's light weight, rugged construction and superior performance under exacting environmental conditions make it ideally suited for doppler navigation systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current (Standby) | 1.0 A |
| Preheat Time | Min. 30 sec. |
| Pulse Voltage | 0.7 to 0.95 kv |
| Pulse Current | 0.24 a |
| Time of Rise of Voltage | Max. 0.1 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.62 V |
| Heater Surge Current | 3.33 a |
| Pulse Length | 5.0 us |
| Pulse Voltage | 0.950 kv |
| Pulse Current | 0.28 a |
| Average Input Power | 63 W |
| Duty Cycle | 0.25 |
| Anode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

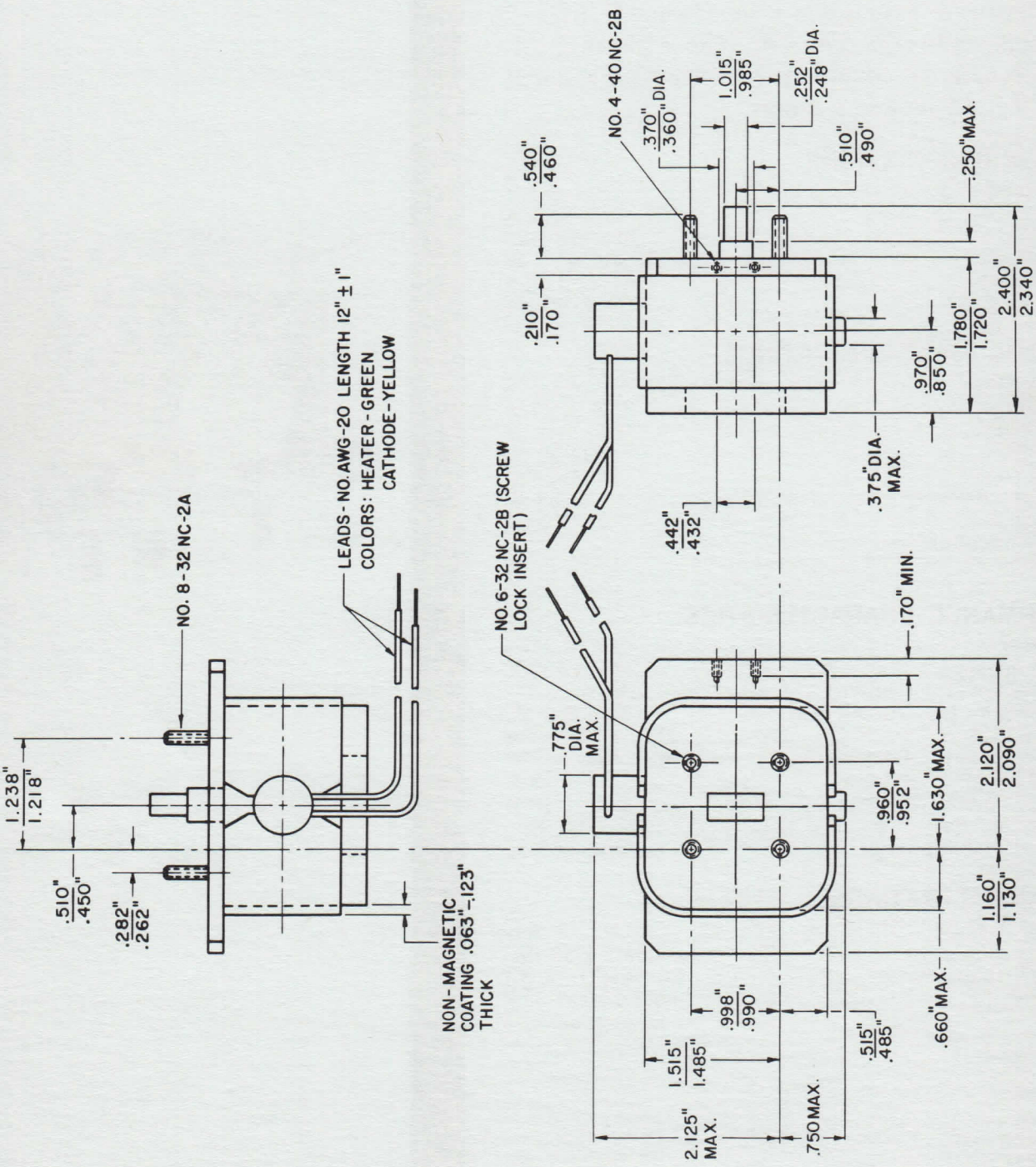
| | |
|---|---|
| Peak Power | Min. 0.04kw |
| Fixed Frequency | 13,325 ±30 Mc |
| Pulling Factor (1.3:1 VSWR) | Max. 15 Mc |
| Pushing Figure (ib 220-260 ma) | Max. 2.0 Mc |
| Missing Pulses | Max. 1.0 Percent |
| Anode Temperature Coefficient | Max. 200 kc/°C |
| Shock (11 ms) | 15 G |
| Vibration (55-500 cps) | 10 G |
| Rated Cycle Life | 566 Hrs. |
| Frequency Stability | Max. 600 kc |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 1.56 lbs. |
| Mating Mounting Flange | UG-541/U (mod.) |
| Anode Cooling | Integral Heat Sink |

# PULSE MAGNETRON

# L-4370

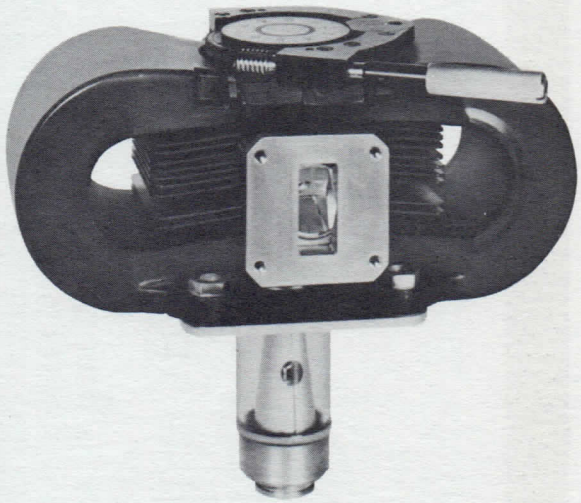


# PULSE MAGNETRON

# L-4371

200 Kilowatts Minimum Peak Power
Tunable Frequency 9300 to 9450 Mc

This rugged, reliable pulsed magnetron is designed with wide frequency pulling capability for radar systems using pulse compression techniques.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 13.75 V |
| Heater Current (Standby) | 3.2 A |
| Preheat Time | Min. 150 sec. |
| Pulse Voltage | 20 to 23 kVdc |
| Pulse Current | 27.5 A |
| Rate of Rise of Voltage | Max. 225 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15.0 V |
| Heater Surge Current | 12.0 a |
| Pulse Length | 3.3 us |
| Pulse Voltage | 23.0 kv |
| Pulse Current | 30.0 a |
| Average Input Power | 690 W |
| Duty Cycle | 0.0013 |
| Anode Temperature | 150° C |
| Cathode Temperature | 165° C |
| VSWR | 2.0:1 Ratio |

## PERFORMANCE CHARACTERISTICS

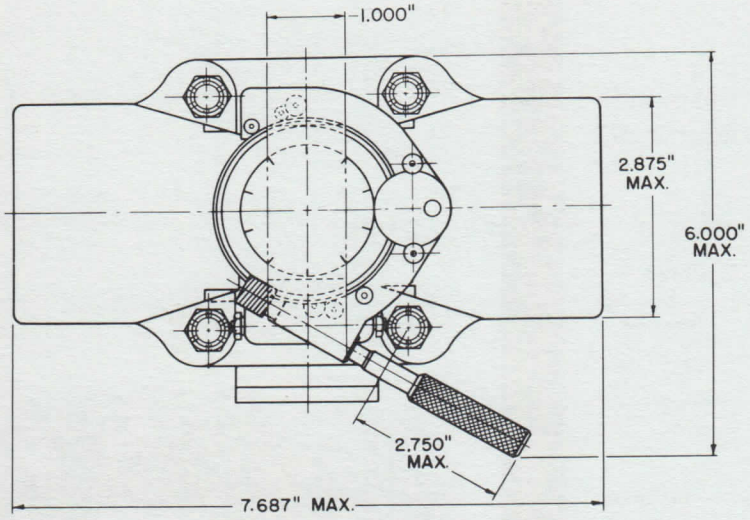
| | |
|---|---|
| Peak Power | Min. 200 kW |
| Tunable Frequency | 9300 to 9450 Mc |
| Pulling Factor (1.5:1 VSWR) | Min. 35 Mc |
| Pushing Figure | Max. 0.5 Mc/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 6.0 db |
| Anode Temperature Coefficient | Max. 250 kc/° C |
| Shock (11 ms) | 30 G |
| Vibration (5-500 cps) | 5.0 G |
| Rated Cycle Life | 250 Hrs. |
| Backlash | Max. 20 Mc |

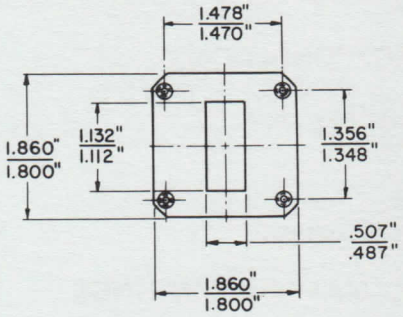
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 10 lbs. |
| Mating Mounting Flange | UG-52A/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |
| Tuning Torque | Max. 150 in. oz. |
| Tuner Shaft Turns (150 Mc) | 14 to 18 turns |

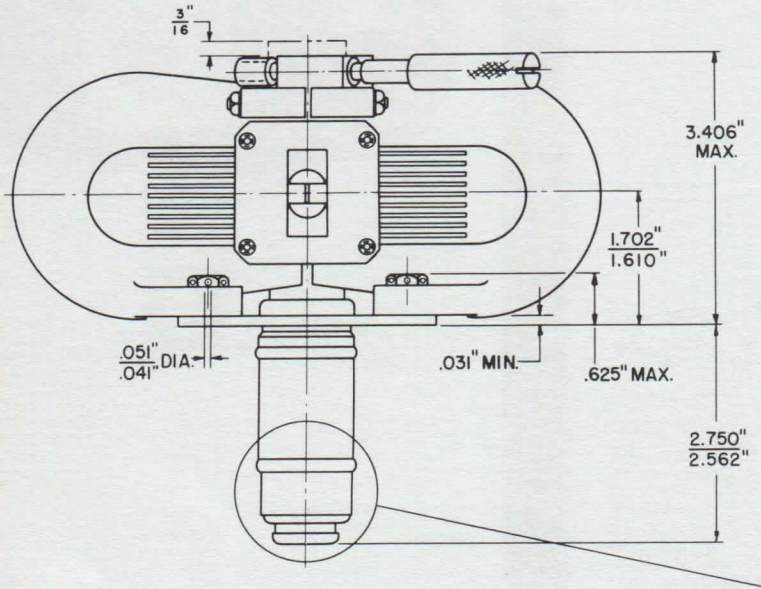
# PULSE MAGNETRON

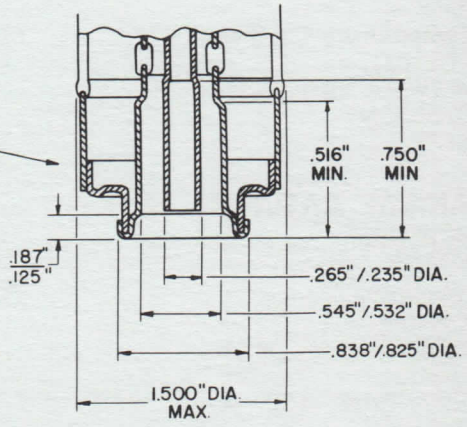
# L-4371

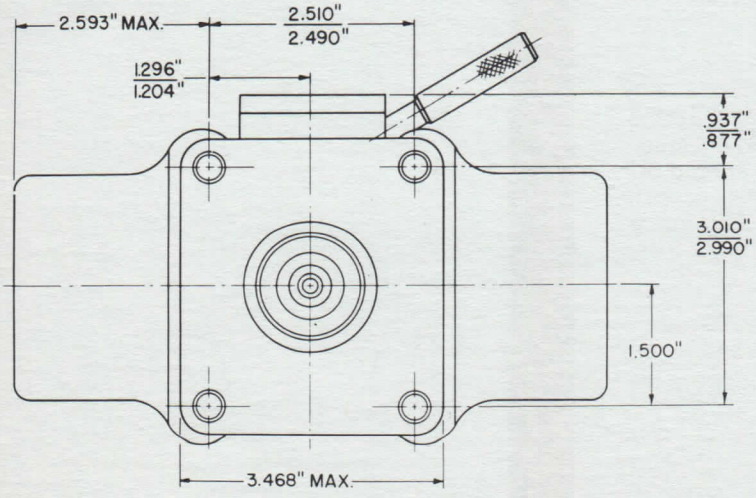



OUTPUT FLANGE



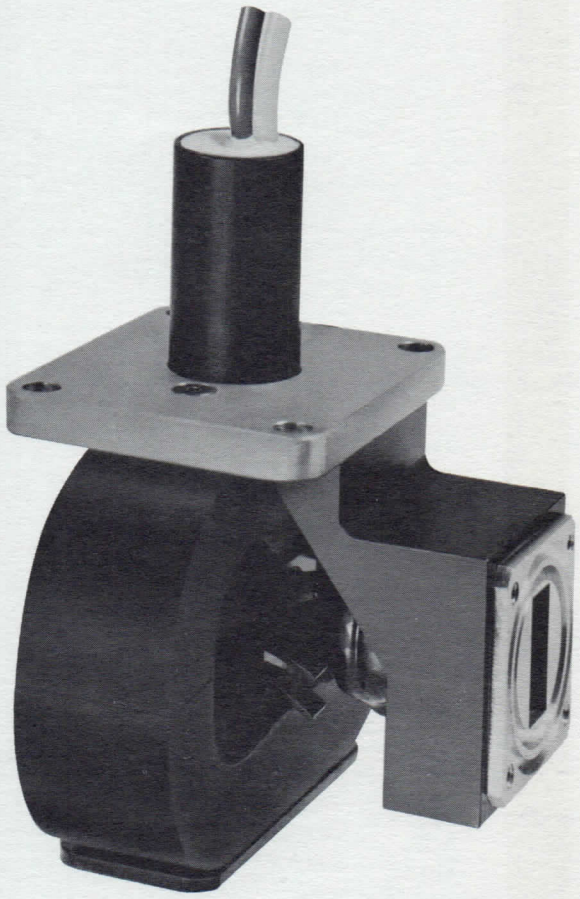



# PULSE MAGNETRON

# L-4380

18 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 30 Mc

This low power X-band pulsed magnetron gives reliable performance and is ideally suited to applications such as airborne weather radar.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current (Standby) | 1.1 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 6.5 to 7.5 kv |
| Pulse Current | 7.0 a |
| Time of Rise of Voltage | Max. 0.1 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 4.0 A |
| Pulse Length | 2.2 us |
| Pulse Voltage | 8.0 kv |
| Pulse Current | 8.0 a |
| Average Input Power | 64 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

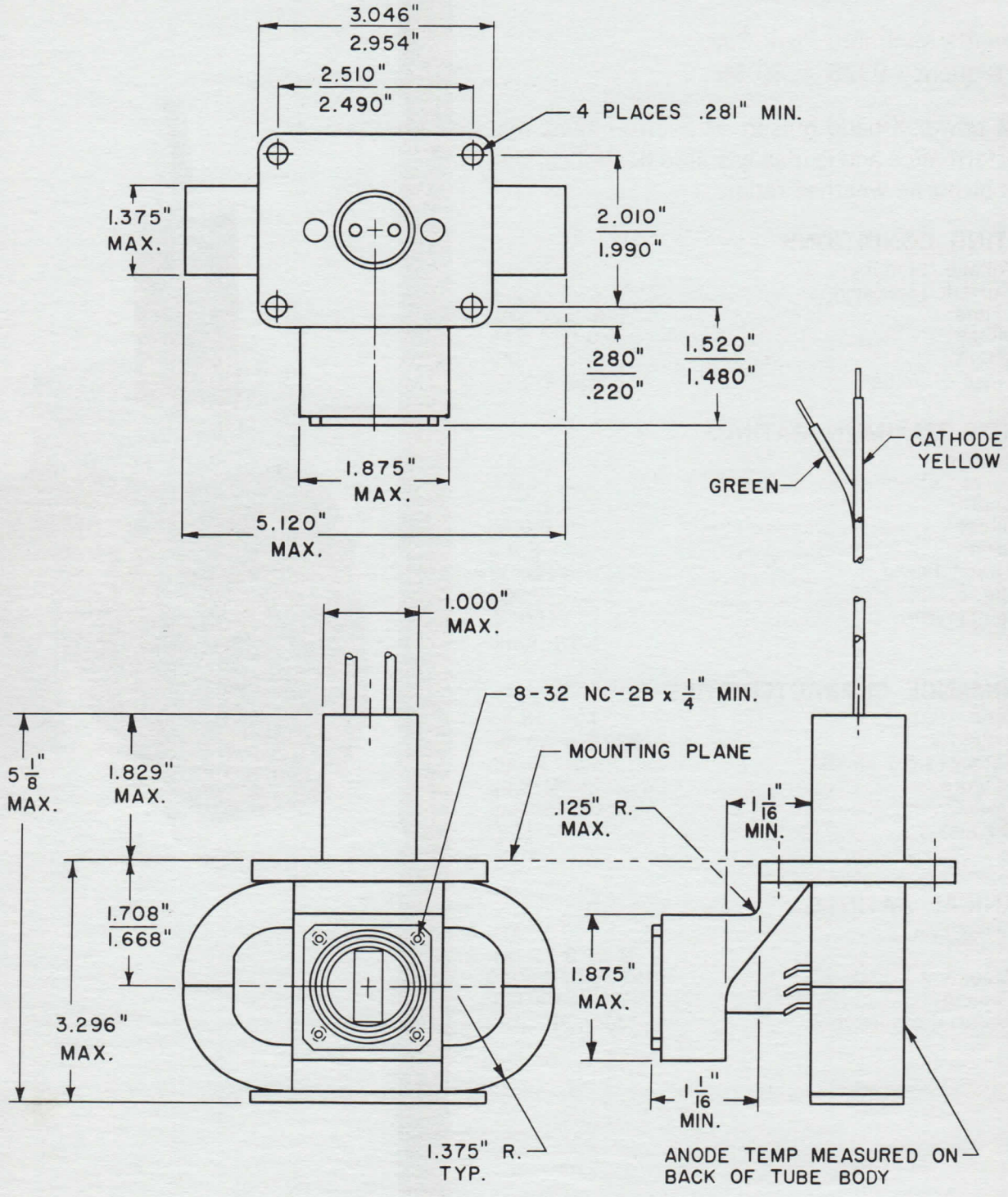
| | |
|---|---|
| Peak Power | Min. 18 kw |
| Fixed Frequency | 9375 ± 30 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 15 Mc |
| Pushing Figure | Max. 0.2 Mc/amp |
| Missing Pulses | Max. 0.5 Percent |
| Shock (11 ms) | 15 G |
| Vibration | 10 G |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.75 lbs. |
| Mating Mounting Flange | UG-39/U (mod.) |
| Anode Cooling | Convection |
| Input/Output Pressurization | Max. 45 psia |

PULSE MAGNETRON

# L-4380

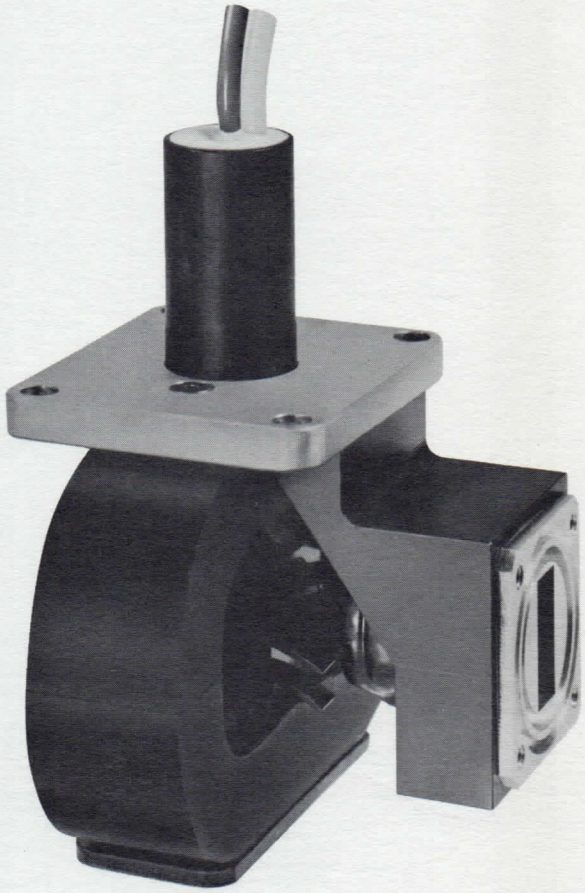


PULSE MAGNETRON

# L-4398
# 8543

24 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ±30 Mc

This highly reliable pulse magnetron is ruggedized for use in airborne weather radars. It is designed to be used at altitudes of more than 50,000 feet without pressurization of the input terminal.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current (Standby) | 1.1 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 7.75 to 8.25 kVdc |
| Pulse Current | 8.25 A |
| Time of Rise of Voltage | Max. 0.1 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 4.0 a |
| Pulse Length | 2.2 us |
| Pulse Voltage | 9.0 kv |
| Pulse Current | 9.0 a |
| Average Input Power | 83 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 24 kW |
| Fixed Frequency | 9375 ± 30 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 16 Mc |
| Pushing Figure | Max. 0.2 Mc/amp |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 6.0 db |
| Anode Temperature Coefficient | Max. 250 kc/°C |
| Shock (11 ms) | 15 G |
| Vibration (5-500 cps) | 5.0 G |

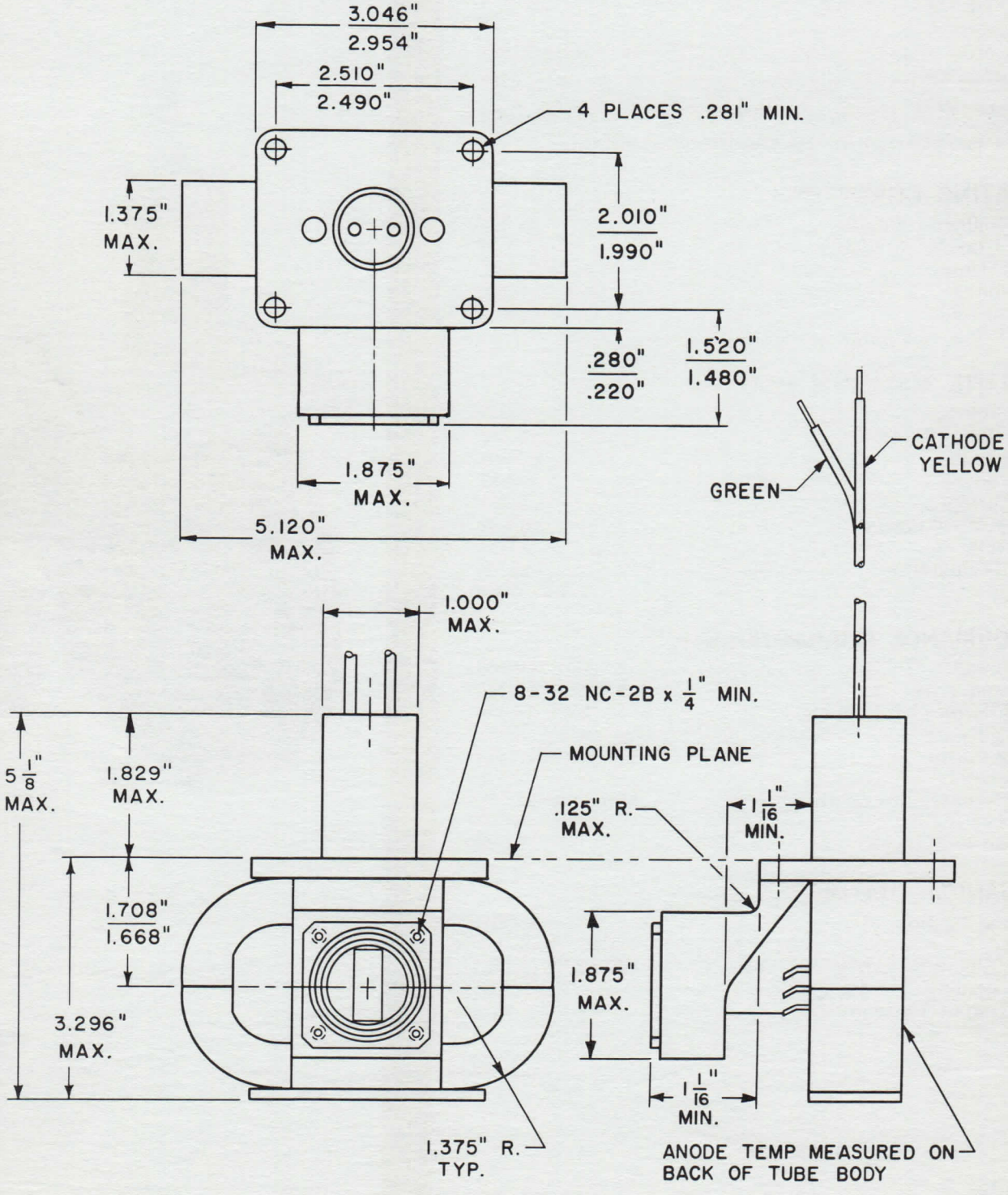
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.75 lbs. |
| Mating Mounting Flange | UG-39/U (mod.) |
| Anode Cooling | Convection |
| Input/Output Pressurization | Max. 45 psia |

PULSE MAGNETRON

# L-4398

# 8543

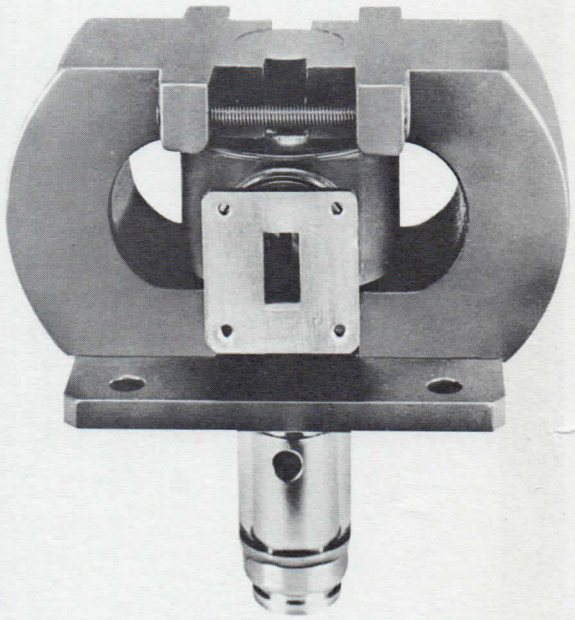


# PULSE MAGNETRON

# L-4419

65 Kilowatts Minimum Peak Power
Fixed Frequency 16,500 ± 25 Mc

This coaxial Ku-band magnetron weighs only 5 lbs. —an extremely good power-to-weight ratio. The special cathode design provides exceptional life and reliability for airborne systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 12.6 V |
| Heater Current (Standby) | 2.6 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 14 to 16 kv |
| Pulse Current | 16 a |
| Rate of Rise of Voltage | Max. 160 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 10.0 A |
| Pulse Length | 3.0 us |
| Pulse Voltage | 18.0 kv |
| Pulse Current | 18.0 a |
| Average Input Power | 272 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

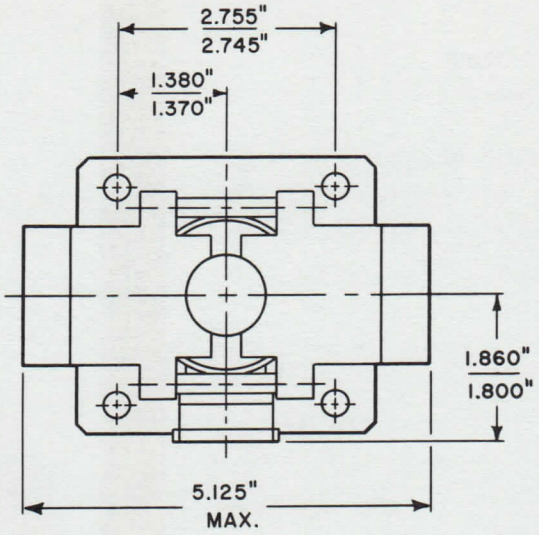
| | |
|---|---|
| Peak Power | Min. 65 kw |
| Fixed Frequency | 16,500 ± 25 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 12 Mc |
| Pushing Figure | Max. 0.2 Mc/amp |
| Missing Pulses | Max. 0.5 Percent |
| Side Lobes | Min. 9.0 db |
| Anode Temperature Coefficient | Max. 500 kc/° C |
| Shock (11 ms) | 15 G |
| Vibration (20-500 cps) | 5.0 G |
| Rated Cycle Life | 400 Hrs. |

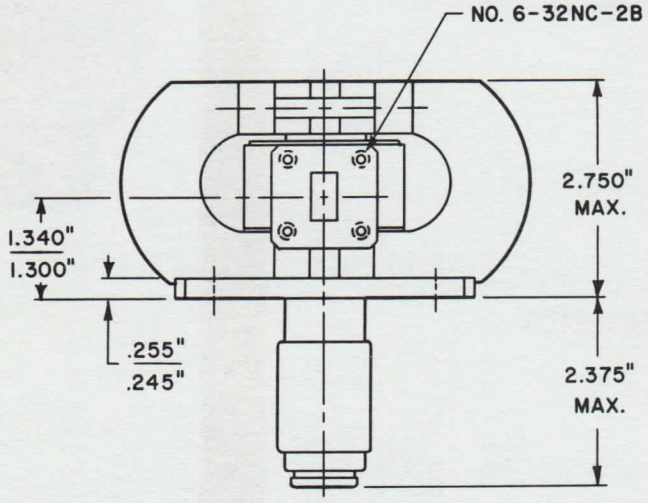
## MECHANICAL RATINGS

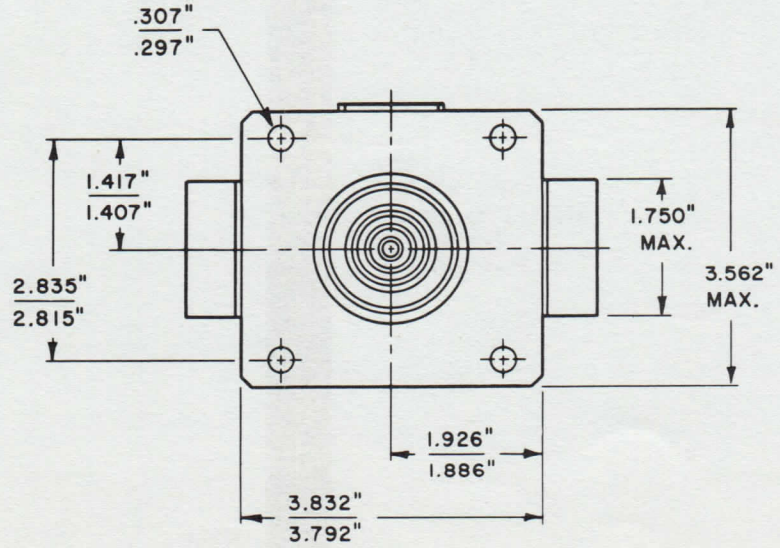
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 5.0 lbs. |
| Mating Mounting Flange | UG-541/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 60 psia |

PULSE MAGNETRON

# L-4419



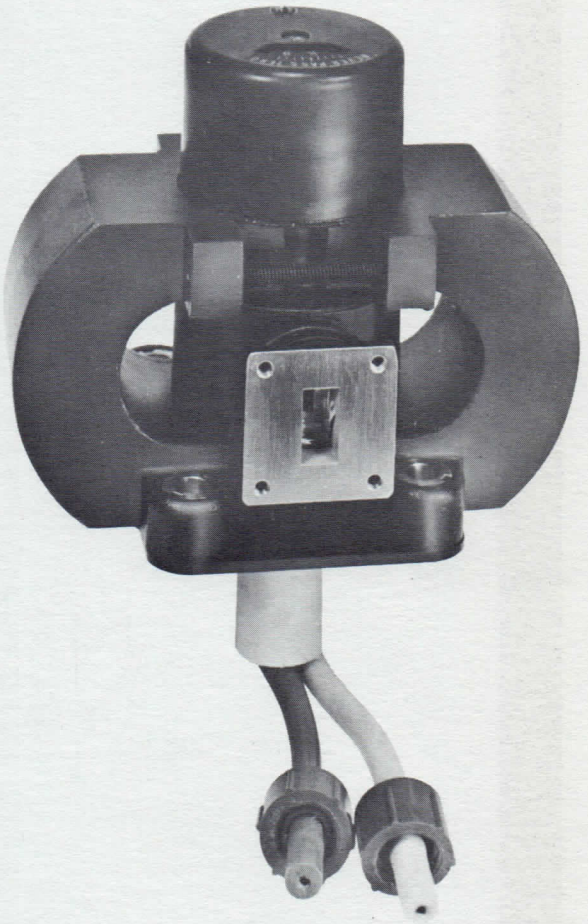



PULSE MAGNETRON

# L-4451

35 Kilowatts Minimum Peak Power
Tunable Frequency 16,600 to 17,100 Mc

This lightweight, coaxial cavity Ku-band magnetron is "screwdriver tunable," permitting presetting of frequency for airborne systems. Other frequency coverage within the range of 15.5 to 17.5 Gc is available on special order.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 12.6 V |
| Heater Current (Standby) | 1.7 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 11 to 13 kVdc |
| Pulse Current | 9.5 A |
| Rate of Rise of Voltage | Max. 90 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 8.0 a |
| Pulse Length | 3.0 us |
| Pulse Voltage | 14.0 kv |
| Pulse Current | 13.0 a |
| Average Input Power | 135 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

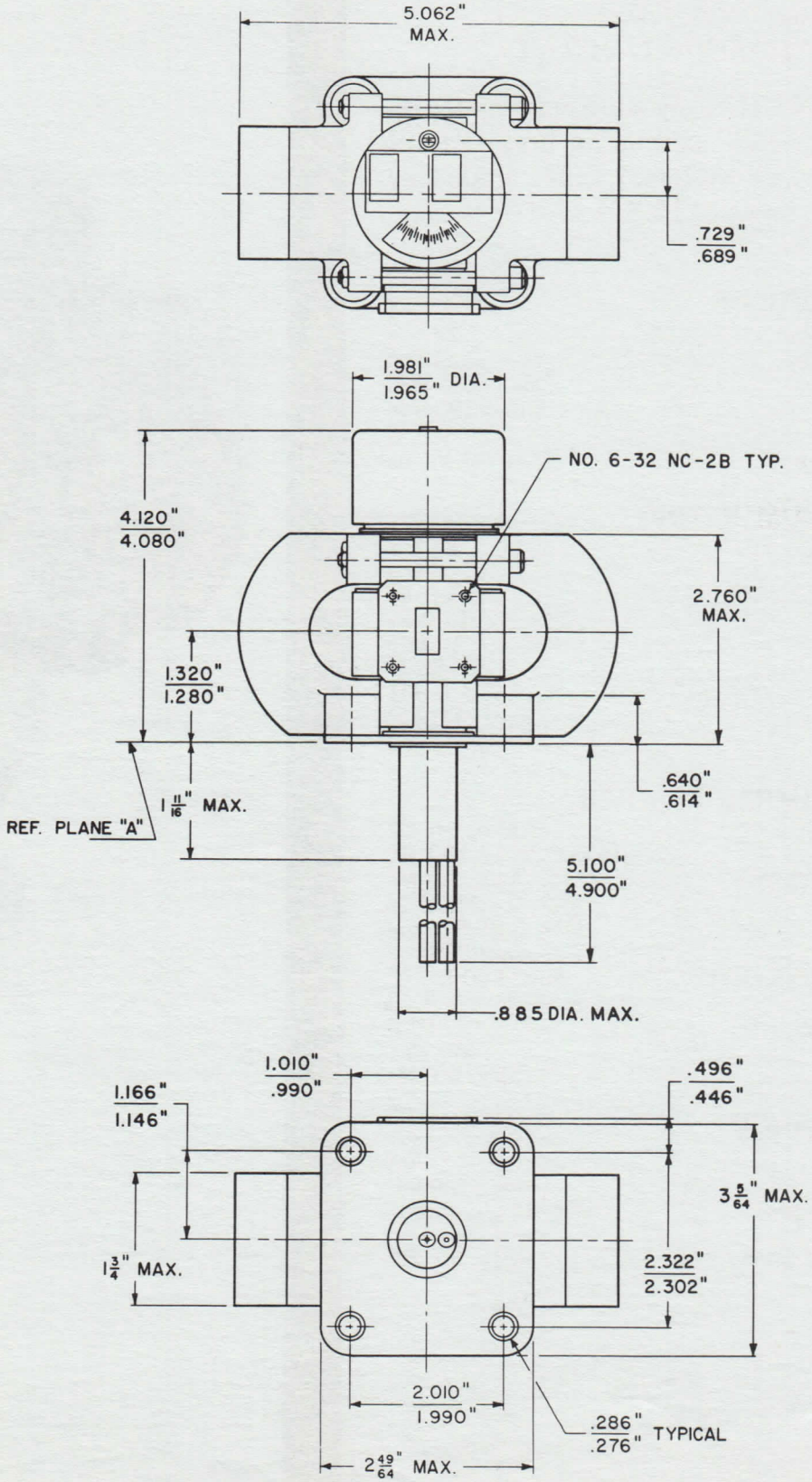
| | |
|---|---|
| Peak Power | Min. 35 kW |
| Tunable Frequency | 16,600 to 17,100 Mc |
| Pulling Factor (1.5:1 VSWR) | Max. 9.0 Mc |
| Pushing Figure | Max. 0.2 Mc/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 9.0 db |
| Anode Temperature Coefficient | Max. 500 kc/°C |
| Shock (11 ms) | 30 G |
| Vibration (22-500 cps) | 10 G |
| Rated Cycle Life | 500 Hrs. |
| Backlash | Max. 5.0 Mc |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 5.0 lbs. |
| Mating Mounting Flange | UG-541/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 60 psia |

PULSE MAGNETRON

# L-4451



COAXIAL PULSE MAGNETRON

# L-4469
# 8855

200 Kilowatts Minimum Peak Power
Tunable Frequency 8500 to 9600 MHz

This rugged, reliable coaxial pulse magnetron features a unique design which results in low cathode loading, and gives the tube exceptionally long life. The L-4469 is designed for use in multi-purpose radar systems and is electrically interchangeable with the JAN7111.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 13.75 V |
| Heater Current (Standby) | 3.1 A |
| Preheat Time | Min. 150 sec. |
| Pulse Voltage | 20 to 23 kv |
| Pulse Current | 27.5 a |
| Rate of Rise of Voltage | Max. 160 kV/$\mu$sec |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15.0 V |
| Heater Surge Current | 12.0 a |
| Pulse Length | 2.8 $\mu$sec |
| Pulse Voltage | 24.0 kv |
| Pulse Current | 30.0 a |
| Average Input Power | 680 W |
| Duty Cycle | 0.0011 |
| Anode Temperature | 200° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 200 kw |
| Tunable Frequency | 8500 to 9600 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 5 MHz |
| Pushing Figure | Max. 0.1 MHz /amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8.0 db |
| Anode Temperature Coefficient | Max. 250 KHz/°C |
| Shock (11 ms) | 30 G |
| Vibration (30-500 cps) | 2.0 G |
| Rated Cycle Life | 1250 Hrs |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | 13.0 lbs. |
| Mating Mounting Flange | UG-52A/U (mod.) |
| Anode Cooling | Forced Air, 40 cfm, approx. |
| Input/Output Pressurization | Max. 45 psia |

## COAXIAL PULSE MAGNETRON

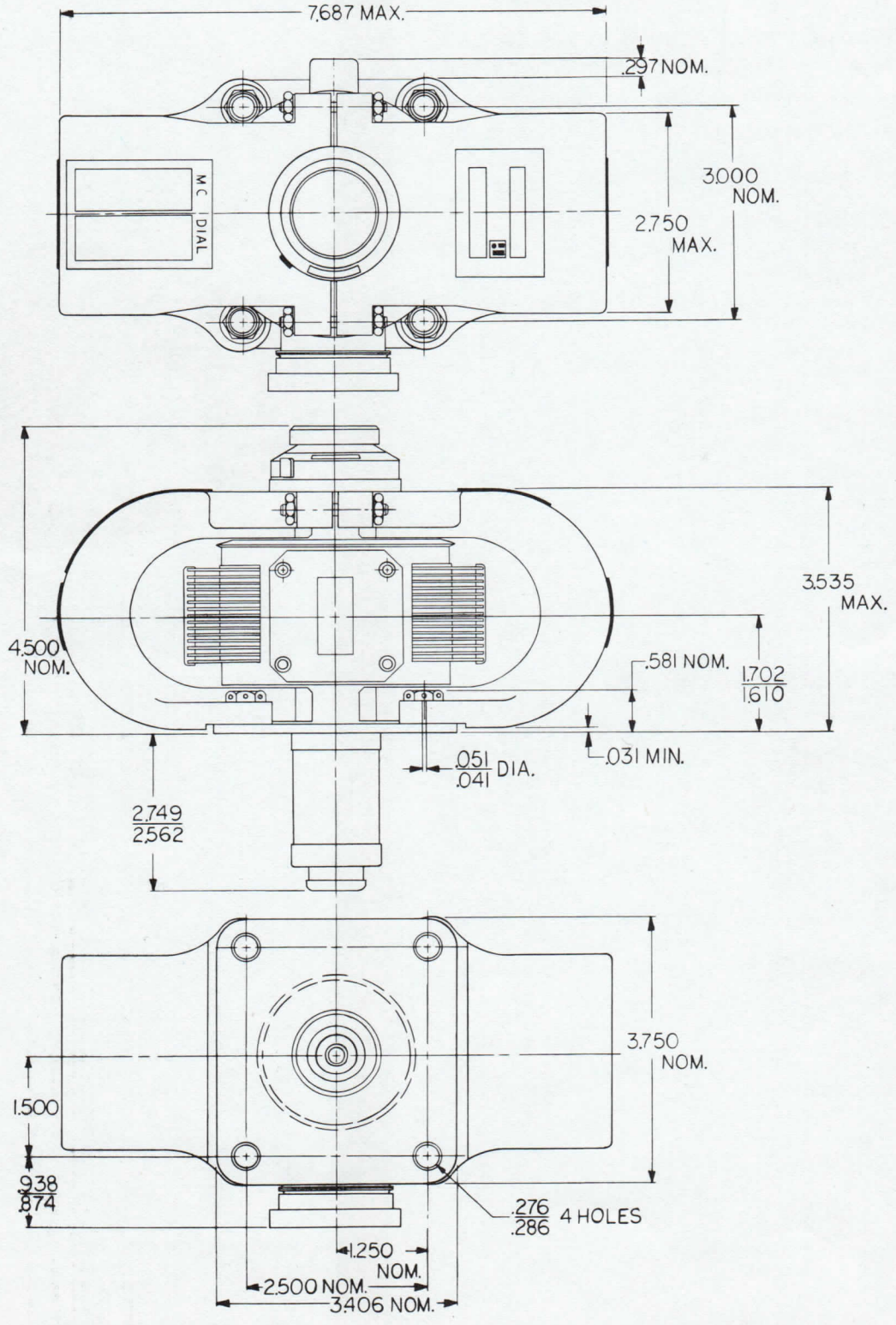
# L-4469
# 8855

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.



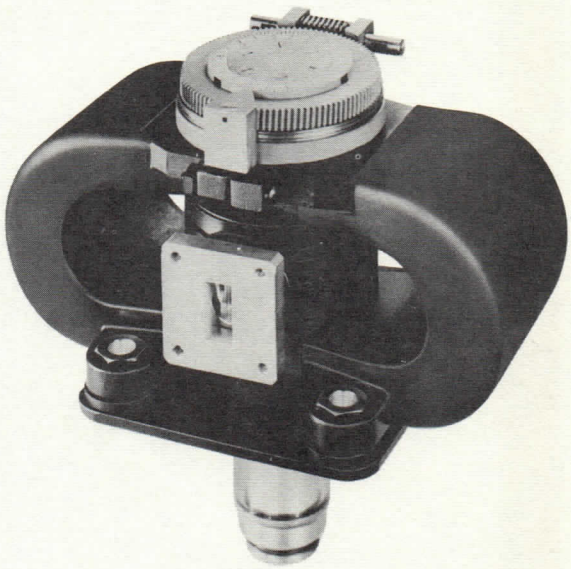
# PULSE MAGNETRON

# L-4472

1

65 Kilowatts Minimum Peak Power
Tunable Frequency 16,000 to 17,000 MHz

This lightweight servo-tunable coaxial cavity magnetron has electrical performance similar to the type 8468, but is designed for exceptionally low jitter. It has a flat, dial-indicator tuner and weighs only 6.5 lbs.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 12.6 V |
| Heater Current (Standby) | 2.6 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 15 to 17 kVdc |
| Pulse Current | 16 A |
| Rate of Rise of Voltage | Max. 160 kV/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 10.0 a |
| Pulse Length | 3.3 us |
| Pulse Voltage | 18.0 kv |
| Pulse Current | 18.0 a |
| Average Input Power | 272 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 65 kW |
| Tunable Frequency | 16,000 to 17,000 MHz |
| Pulling Factor (1.3:1 VSWR) | Max. 8.0 MHz |
| Pushing Figure | Max. 0.15 MHz/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 9.0 dB |
| Anode Temperature Coefficient | Max. 450 kc/° C |
| Shock (11 ms) | 15 G |
| Vibration (55-500 cps) | 5.0 G |
| Rated Cycle Life | 250 Hrs. |
| Backlash | Max. 5.0 MHz |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 6.5 lbs. |
| Mating Mounting Flange | UG-541/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |
| Tuning Torque | Max. 16 in. oz. |
| Tuner Shaft Turns (1000 Mc) | 90 to 126 turns |

Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

# PULSE MAGNETRON

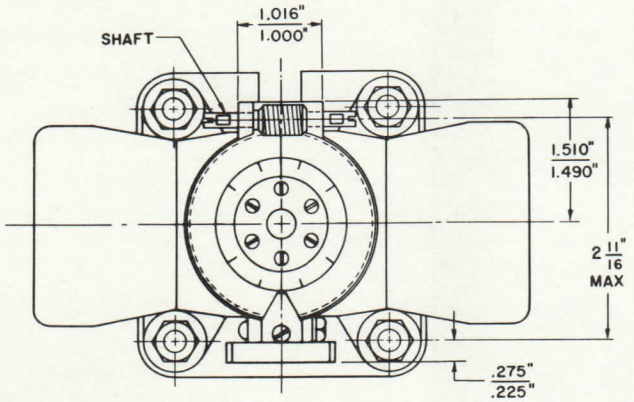
# L-4472

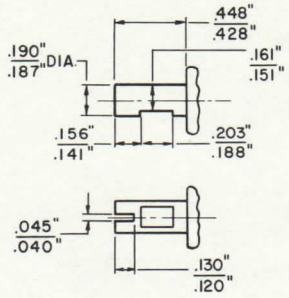
**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

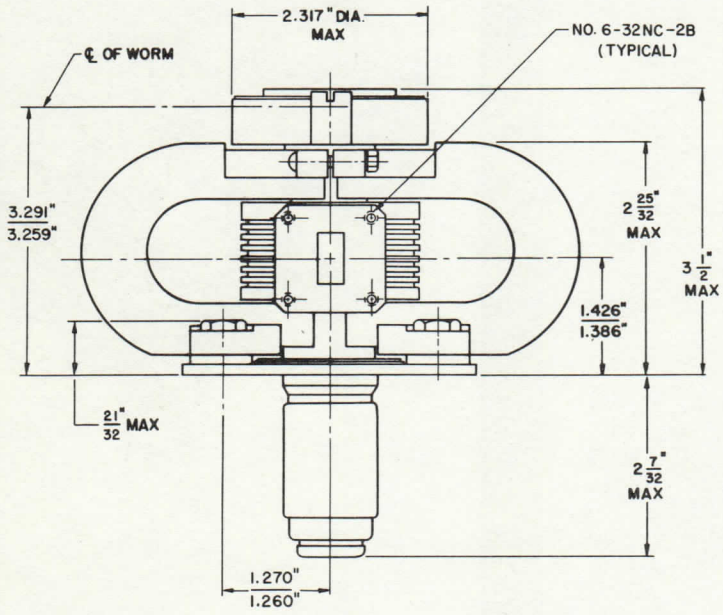
**CAUTION**
**X-RAYS**

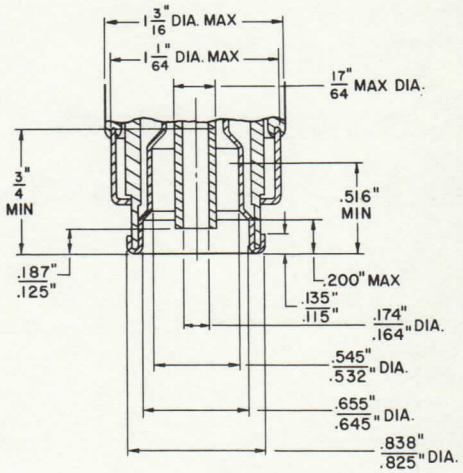
This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.



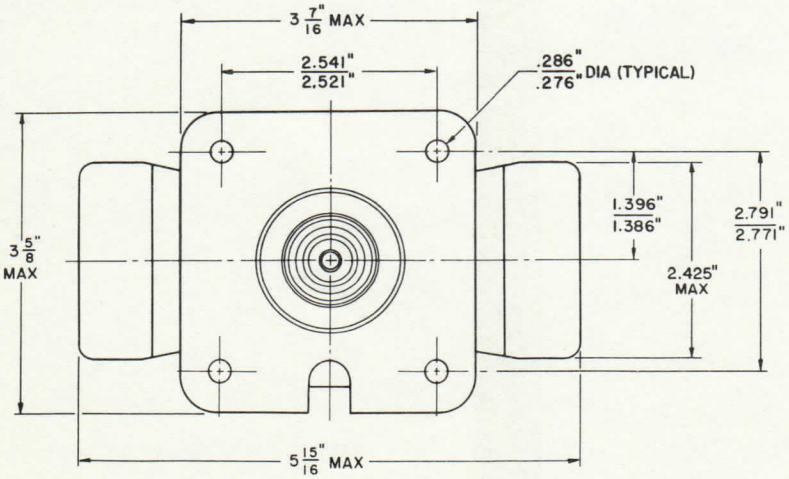




DETAIL OF SHAFT ENDS




DETAIL OF INPUT





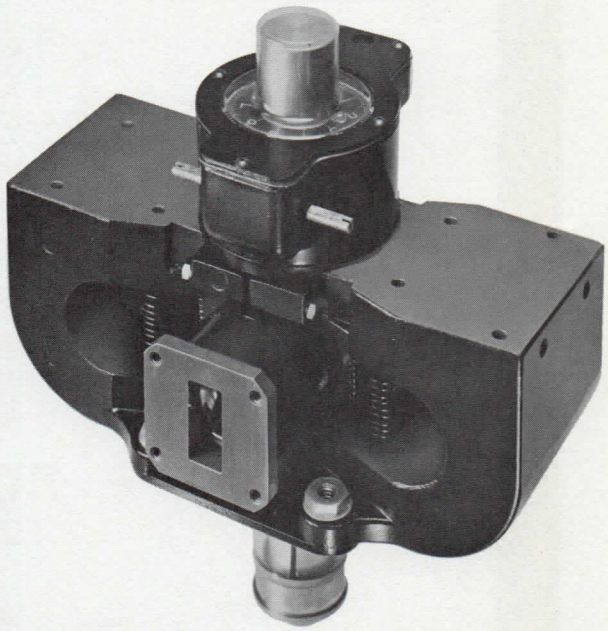
Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

PULSE MAGNETRON

# L-4502

200 Kilowatts Minimum Peak Power, Closed Loop Servo/Mechanically Tuned, 8700-9400 MHz (Note 1)

This highly ruggedized and RF stable magnetron is designed for use with coherent type receivers and severe environmental airborne conditions, where maximum thermal and pulse-pulse stability as well as tuning sensitivity is demanded. Servo equipment may be mounted on the tube.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage, warm-up | 13.75 V |
| Heater Current, warm-up | 3.15 A |
| Heater warm-up time | Min. 150 sec |
| Pulse Voltage | 19-23 kv |
| Pulse Current (Note 1) | 23.5-27.5 a |
| Rate of Rise of Voltage | Max. 200 kv/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15 V |
| Heater Surge Current | 12 A |
| Pulse Length (Note 1) | 2.5 usec |
| Pulse Voltage | 23.0 kv |
| Pulse Current | 30.0 a |
| Average Input Power | 690 W |
| Duty Cycle (Note 1) | 0.0013 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS (Note 1)

| | |
|---|---|
| Power Output | Min. 200 kw |
| Pulling Factor @ 1.5:1 VSWR | Max. 13 MHz |
| Pushing Factor | Max. 100 KHz/a |
| Missing Pulses | Max. .07 Percent |
| Tuning Stability, 2100 RPM | Max. 0.10 Percent |
| Minor Lobes | Min. 8 dB |
| Thermal Factor | Max. .05 MHz/° C |
| Thermal Drift | Max. .15 MHz/sec |
| Tuner Backlash | Max. ±5 Deg |
| Vibration, 6.5 G; and Acoustic Noise, 130 db: | |
| Peak Sinusoidal FM | Max. 14 KHz |
| RMS Random FM | Max. 46 KHz |
| Peak Sinusoidal AM | Max. 1.0 Percent |
| Leading Edge Jitter, rms | Max. 1.25 ns |
| Missing Pulses | Max. .10 Percent |
| Tuner Life | Min. $10^6$ cycles |
| Rated RF cycle life | 1000 hours |

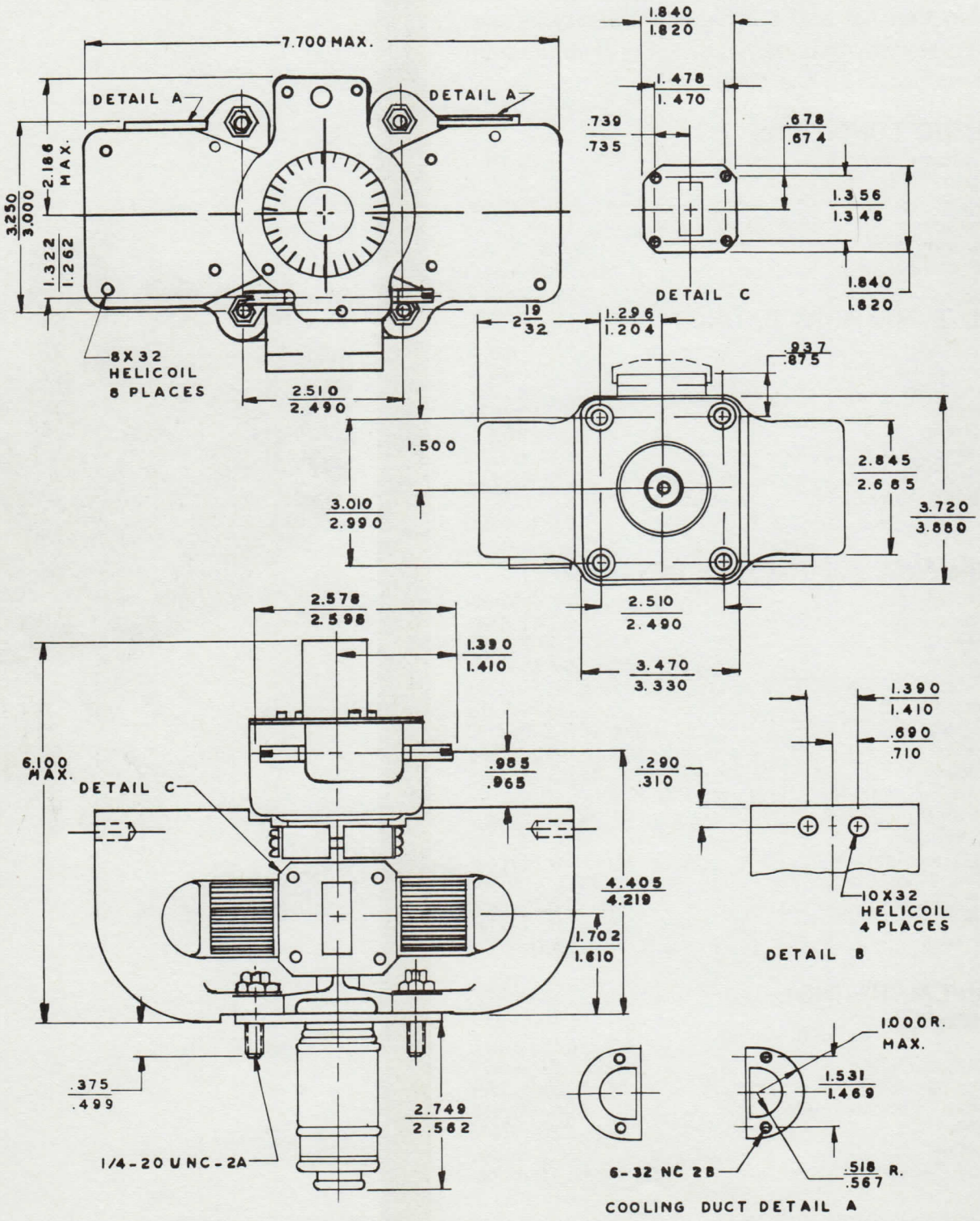
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Approx. 12 lbs. |
| Mating Output Flange | UG 52A/U (mod.) |
| Anode Cooling | Forced Air |
| Output/Input Pressurization | Max. 45 psia |
| Tuner Speed | Max. 2200 RPM |
| Tuner Torque | Max. 8 in. oz. |
| Tuner Stop Back-off Torque | Max. 10 in. oz. |

Note 1: Consult manufacturer for specific applications.

# PULSE MAGNETRON

# L-4502

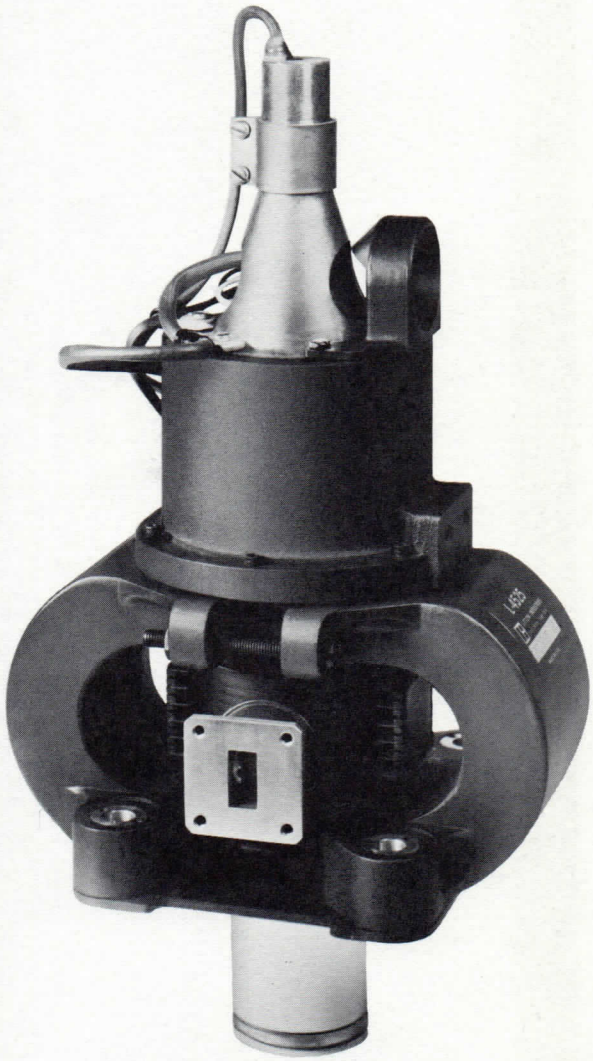


COAXIAL PULSE MAGNETRON

# L-4525
# 8955

90 Kilowatts Minimum Peak Power
Tunable Frequency 16,000 to 16,500 MHz

This coaxial pulse magnetron is tunable over 500 MHz of Ku-band, at rates up to 130 cps.* The electromagnetic tuner and position and velocity feedback transducers (LVDT and LVT) provide high-speed random tuning capability with outstanding output frequency monitoring accuracy under all environmental conditions.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.5 A |
| Preheat Time | Min. 270 sec. |
| Pulse Voltage | 15 to 17 kVdc |
| Pulse Current | 16 a |
| Rate of Rise of Voltage | Max. 175 kv/$\mu$s |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14 V |
| Heater Surge Current | 10 A |
| Pulse Length | 3.3 $\mu$s |
| Pulse Voltage | 17 kv |
| Pulse Current | 18 a |
| Average Input Power | 310 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 160° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Max. Average Power Input to Actuator | 40 W |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 90 kw |
| Tunable Frequency | 16,000 to 16,500 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 8.0 MHz |
| Pushing Figure | Max. 0.12 MHz/amp |
| Missing Pulses | Max. 0.1 Percent |
| Side Lobes | Min. 9.0 dB |
| Anode Temperature Coefficient | Max. 750 kHz/°C |
| Shock (11 ms) | Max. 15 G |
| Vibration (5-500 cps) | Max. 5 G |
| Tuning Rate (Full Tuning Range)† | 125 kMHz/sec |
| Waveform† | Sine*, Triangular or Square |
| Turnaround Time† | Max. 0.40 msec |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Approx. 12.5 lbs. |
| Mating Mounting Flange | UG-541/U |
| Anode Cooling | Forced Air Required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

†Contact Litton Industries for applications information.

Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

# COAXIAL PULSE MAGNETRON

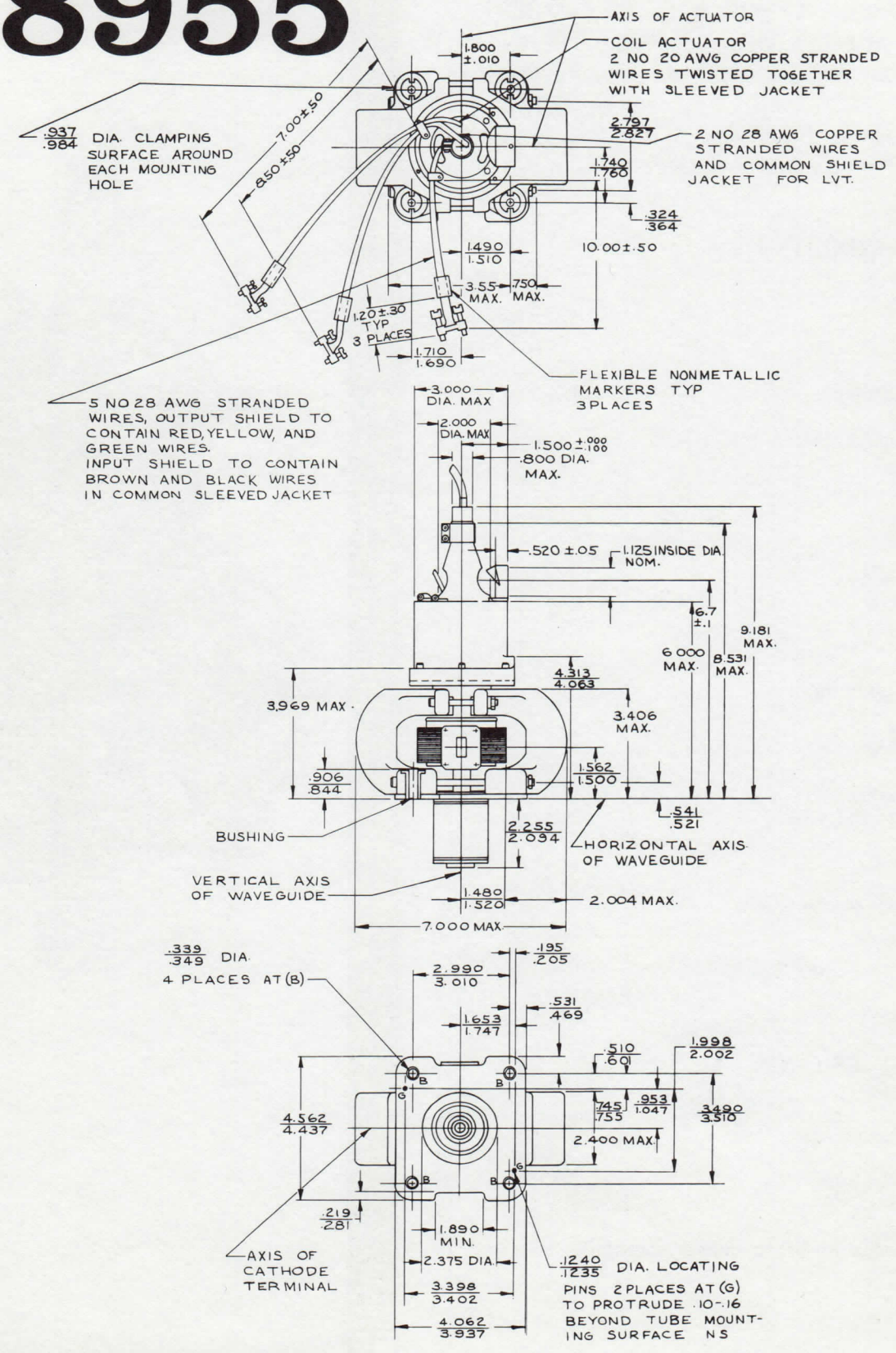
# L-4525
# 8955

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.





Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

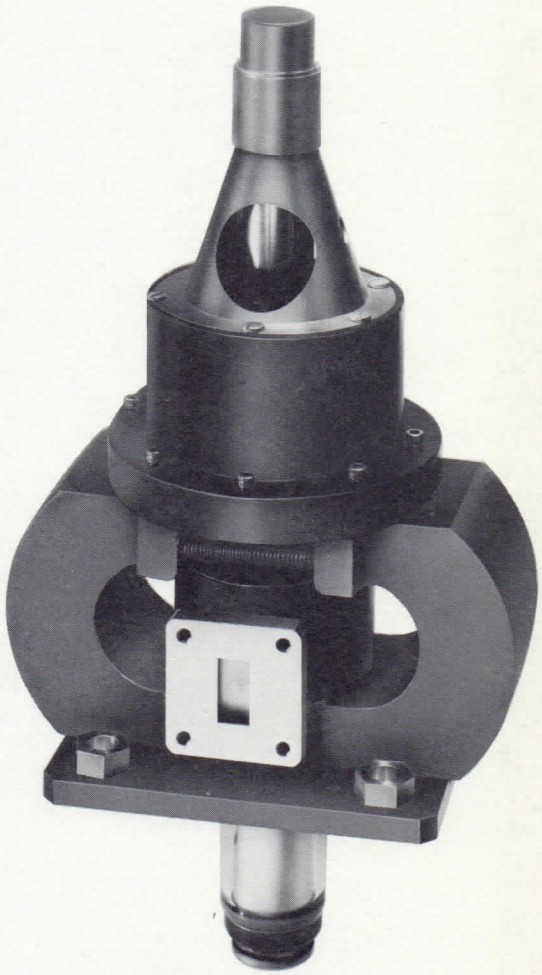
PULSE MAGNETRON

# L-4527
# 8946 [2]

## TENTATIVE SPECIFICATIONS

65 Kilowatts Minimum Peak Power
Tunable Frequency 16,200 to 16,800 MHz

This coaxial pulse magnetron is tunable over 800 MHz of Ku-band, at rates up to 100 cps. The electromagnetic tuner and position and velocity feedback transducers (LVDT and LVT) provide high-speed random tuning capability with outstanding output frequency monitoring accuracy under all environmental conditions.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Preheat Time | Min. 180 sec |
| Pulse Voltage | 13 to 15 kVdc |
| Pulse Current | 14 a |
| Rate of Rise of Voltage | Max. 150 kv/us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14 V |
| Heater Surge Current | 10 A |
| Pulse Length | 3.3 us |
| Pulse Voltage | 16 kv |
| Pulse Current | 17 a |
| Average Input Power | 350 W |
| Duty Cycle | 0.0015 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Max. Power Input to Actuator (Average) | 45 W |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 65 kw |
| Tunable Frequency | 16,200 to 16,800 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 8.0 MHz |
| Pushing Figure | Max. 0.15 MHz/amp |
| Missing Pulses | Max. 1.0 Percent |
| Side Lobes | Min. 9.0 dB |
| Anode Temperature Coefficient | Max. 150 kHz/° C |
| Shock (11 ms) | 15 G |
| Vibration (5-500 cps), no voltages | 14.5 G |
| Tuning Rate | 125 kMHz/sec |
| Waveform | Sine, Triangular or Square |
| Turnaround Time | Min. 0.40 msec |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Approx. 7 lbs. |
| Mating Mounting Flange | UG-541/U |
| Anode Cooling | Forced Air Required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

PULSE MAGNETRON

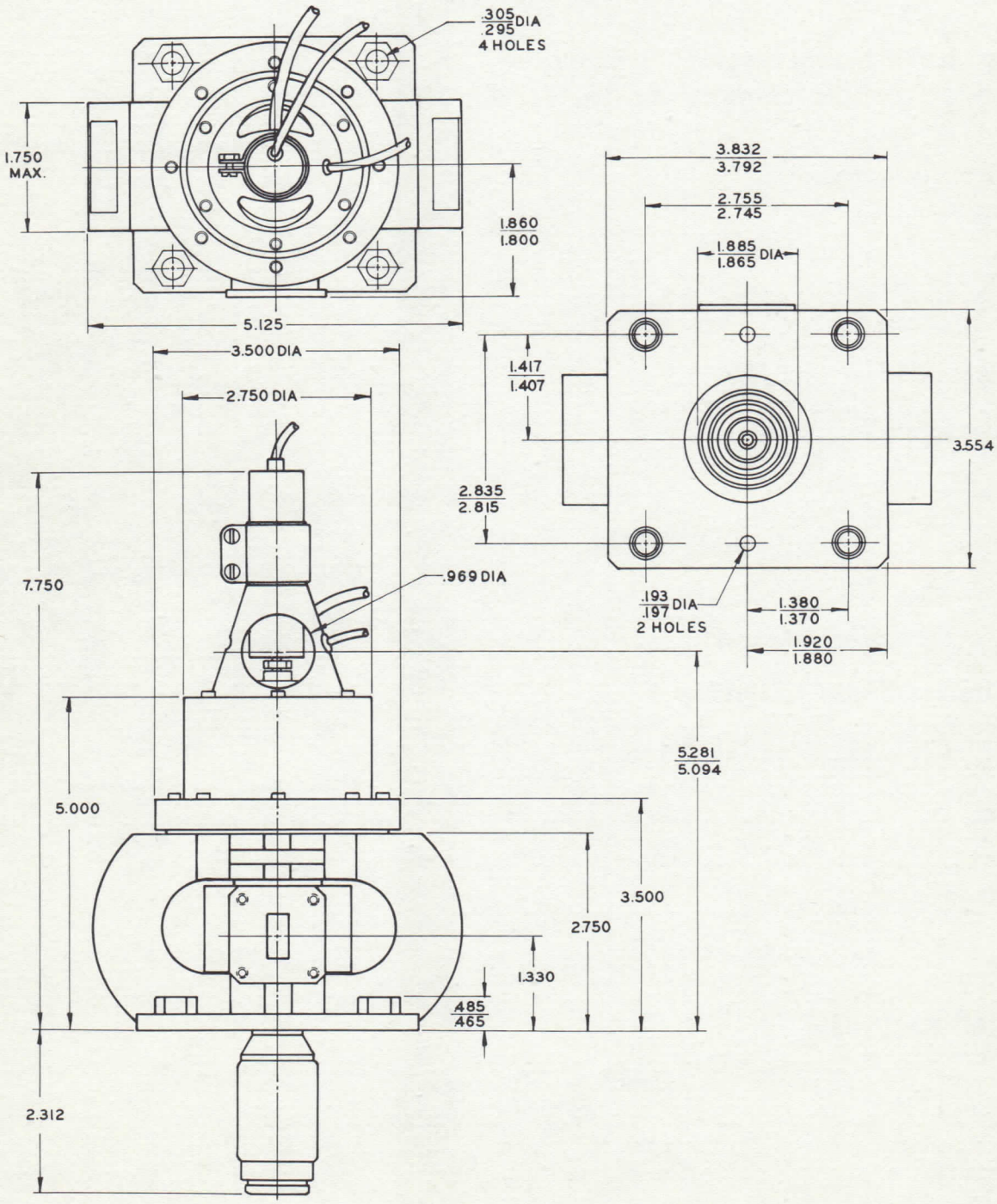
# L-4527
# 8946

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.





Litton **ELECTRON TUBE DIVISION**
1035 Westminster Drive, Williamsport, Pennsylvania 17701, (717) 326-3561

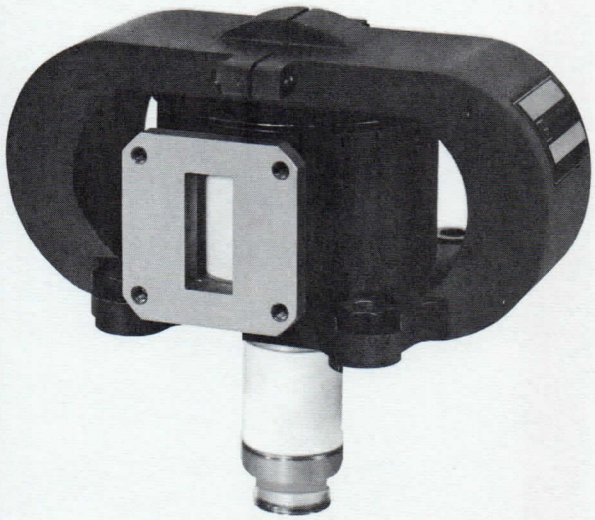
COAXIAL PULSE MAGNETRON

# L-4553

70 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ± 20 MHz

The L-4553 is a coaxial, fixed frequency pulse magnetron designed as a replacement version of the JAN 4J52A. The tube exceeds the maximum environmental conditions of the older tube design. The L-4553 is recommended for use in all airborne applications where nominal powers of 80 KW are required, and in any ground and airborne application which requires extreme reliability, combined with compactness and high efficiency.

Versions of this magnetron are available at other center frequencies and with more rugged mechanical characteristics.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.2 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 14 to 16 kv |
| Pulse Current | 15 A |
| Rate of Rise of Voltage | Max. 160 kv/$\mu$s |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14 V |
| Heater Surge Current | 10 A |
| Pulse Current | 15 A |
| Pulse Length | 5.5 $\mu$s |
| Average Input Power | 240 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 150°C |
| Cathode Temperature | 175°C |
| VSWR | 1.5:1 Ratio |
| Altitude | 500 mmHg |
| Anode Cathode Capacitance | Max. 14 $\mu\mu$fd |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 70 kW |
| Fixed Frequency | 9375 ± 20 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 4 MHz |
| Pushing Figure (±10% Ib) | Max. .09 MHz/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.0/tpc. MHz |
| Anode Temperature Coefficient | Max. 0.18 MHz/°C |
| Vibration (50 to 500 c.p.s.) | 10 G |
| Shock (4 ms) | 50 G |

## MECHANICAL RATINGS

| | |
|---|---|
| Dimensions | See Outline Drawing |
| Mounting Position | Any |
| Weight | Approx. 6 lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced air required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |

# COAXIAL PULSE MAGNETRON

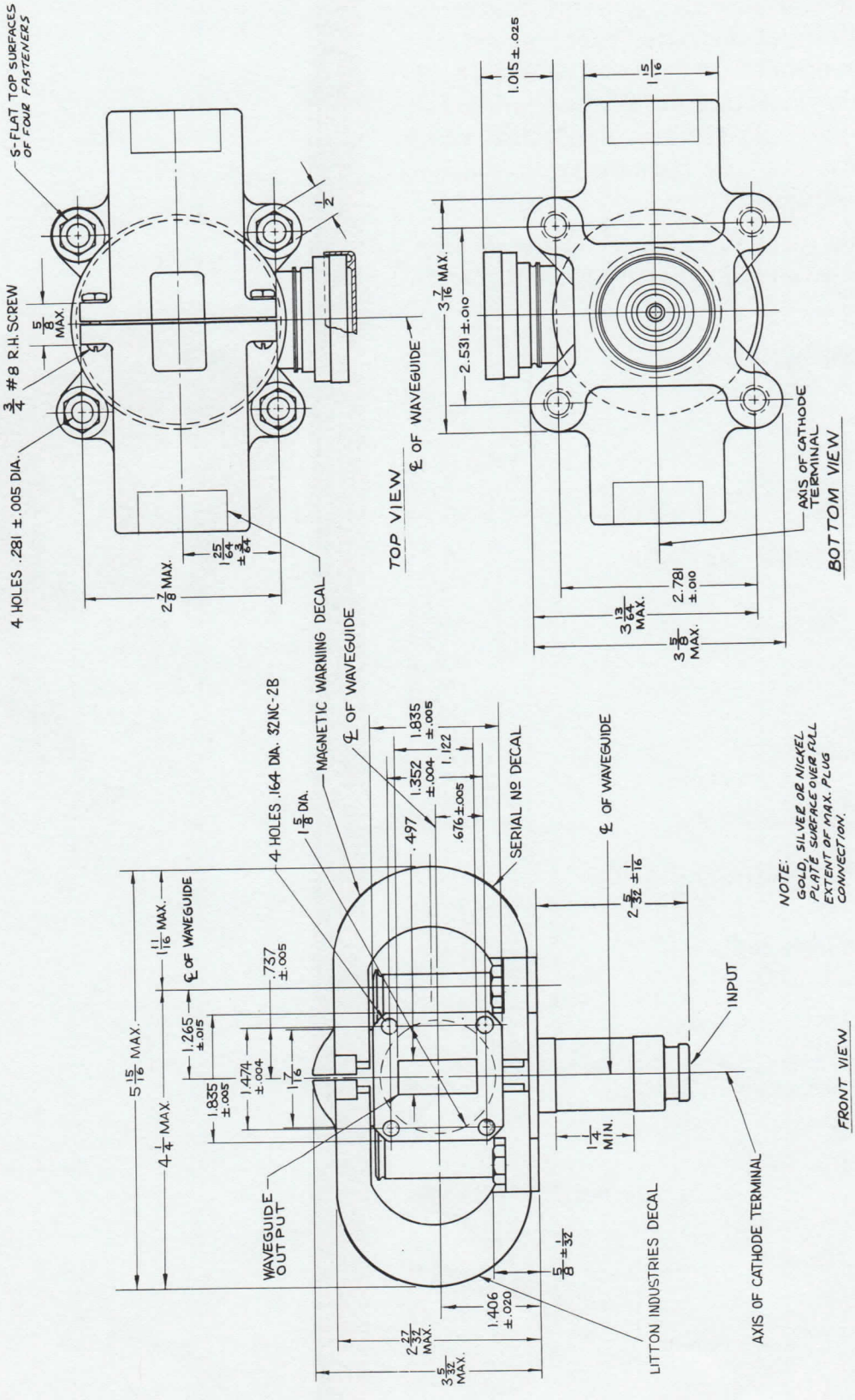
# L-4553

CAUTION
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

CAUTION
X-RAYS

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.




LITTON INDUSTRIES • ELECTRON TUBE DIVISION • SAN CARLOS, CALIFORNIA

3.5MCA2/71

COAXIAL PULSE MAGNETRON

# L-4555

60 Kilowatts Minimum Peak Power
Tunable Frequency 32,100 to 33,100 MHz

The L-4555 is a rugged, compact, light-weight, tunable, Ka-band coaxial magnetron capable of delivering 60 KW peak output power across the frequency range of 32.1 to 33.1 GHz. Tuning is achieved with a low backlash, low torque, tuning mechanism designed for manual locking at any frequency within the tuning band. The tube is designed for long life, and high reliability is ensured through simplified design and construction.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current (Standby) | 3.5 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 15 to 17 kv |
| Pulse Current | 16.2 A |
| Rate of Rise of Voltage | Max. 150 kV/usec. |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.9 V |
| Heater Surge Current | 10.0 A |
| Pulse Length | 1.0 us |
| Pulse Voltage | 18 kv |
| Pulse Current | 20 A |
| Average Input Power | 215 W |
| Duty Cycle | 0.001 |
| Anode Temperature | 135°C |
| VSWR | 1.5:1 Ratio |

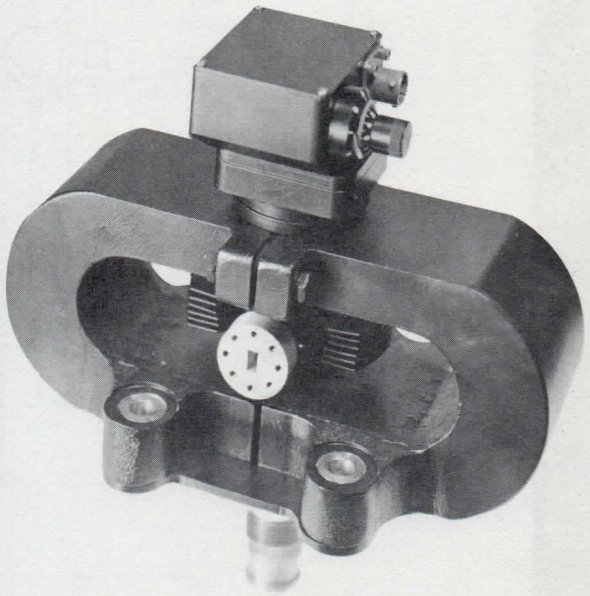
## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Typical 75.0 KW |
| Frequency* | 32,100 to 33,100 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 15 MHz |
| Pushing Figure | Max. 1.0 MHz/amp |
| Missing Pulses | Max. 0.25 Percent |
| Side Lobes | Min. 8.0 db |
| Anode Temperature Coefficient | Max. 1000 kc/°C |
| Shock (11 ms) | 15 G |
| Vibration (54-200 cps) | 10 G |
| Rated Cycle Life | 500 Hrs |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Approx. 10 lbs. |
| Mating Mounting Flange | UG-600/U (mod.) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 60 psia |

*Also available in Tuning Ranges of up to 3,000 MHz, from 31.0 to 36.0 GHz.

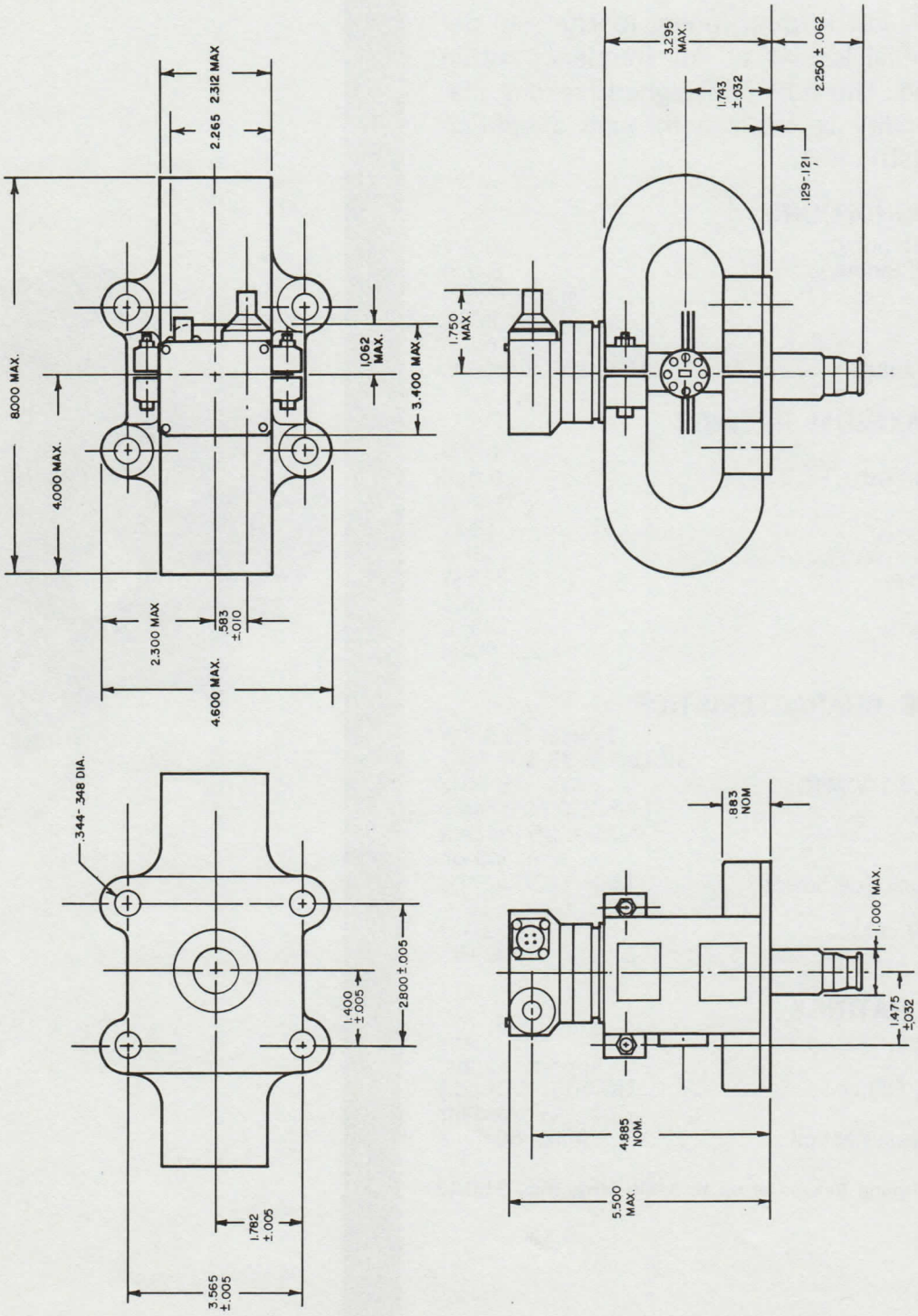


## COAXIAL PULSE MAGNETRON

# L-4555

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output rf connections, waveguide flanges, and gaskets must be rf leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.



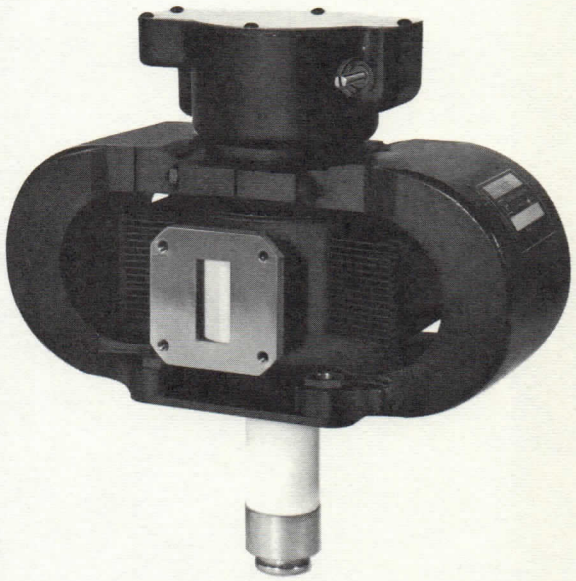
COAXIAL PULSE MAGNETRON

# L-4575

1

200 Kilowatts Minimum Peak Power
Tunable Frequency 8500 to 9600 MHz

Designed for use in advanced capability lightweight radar systems, this highly stable coaxial magnetron has a very linear tuning characteristic and may be used in systems which require low tuning torque and linear response. This magnetron is a direct replacement for the 7008.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 13.75 V |
| Heater Current (Standby) | 3.2 A |
| Preheat Time | Min. 150 sec. |
| Pulse Voltage | 20 to 23 kv |
| Pulse Current | 27.5 a |
| Rate of Rise of Voltage | Max. 180 kv/$\mu$sec |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15.0 V |
| Heater Surge Current | 12.0 A |
| Pulse Length | 2.75 $\mu$sec |
| Pulse Voltage | 23.0 kv |
| Pulse Current | 30.0 a |
| Average Input Power | 690 W |
| Duty Cycle | 0.0012 |
| Anode Temperature | 150°C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 200 kw |
| Tunable Frequency | 8500 to 9600 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 5.0 MHz |
| Pushing Figure | Max. 0.10 MHz/amp |
| Missing Pulses | Max. 0.05% |
| Side Lobes | Min. —10 dB |
| Anode Temperature Coefficient | Max. 0.25 MHz/°C |
| Shock (11 ms) | 30 G |
| Vibration (5-500 CPS) | 5 G |
| Rated Cycle Life | 1250 hours |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Approx. 12 lbs. |
| Mating Waveguide Flange | UG-52A/U Modified |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |
| Tuning Torque | Max. 2 oz-in. |
| Tuner Shaft Turns (1100 MHz) | 158 ±10 |

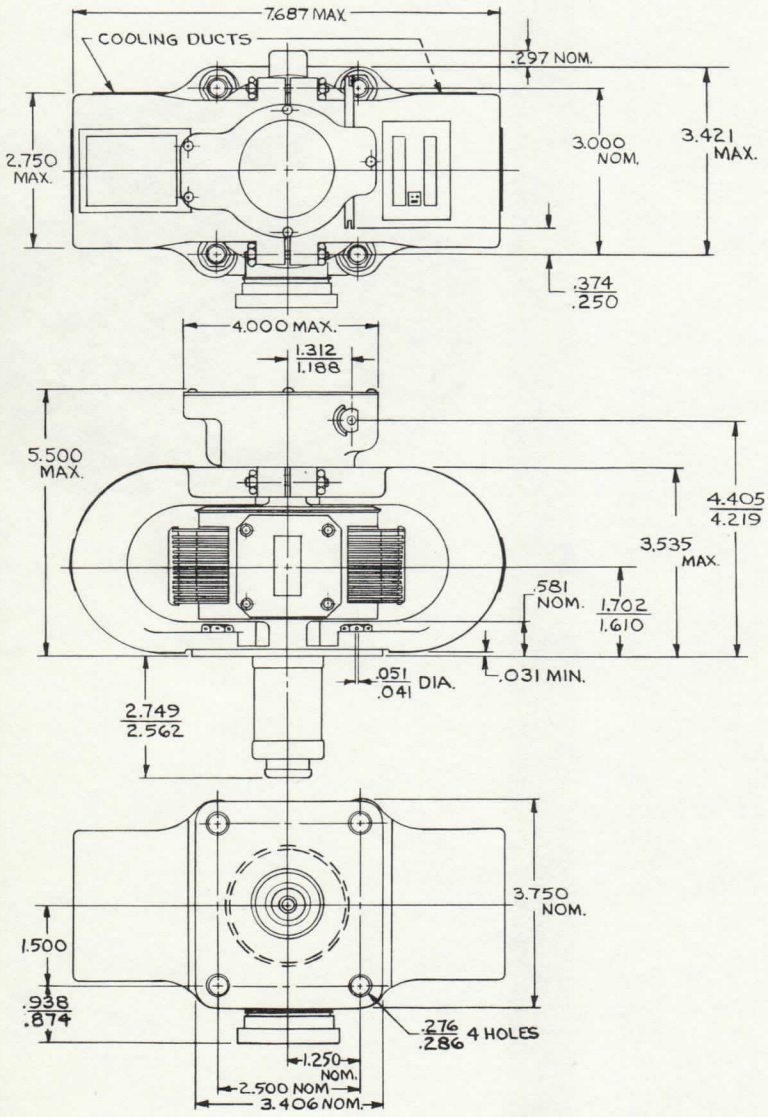
Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

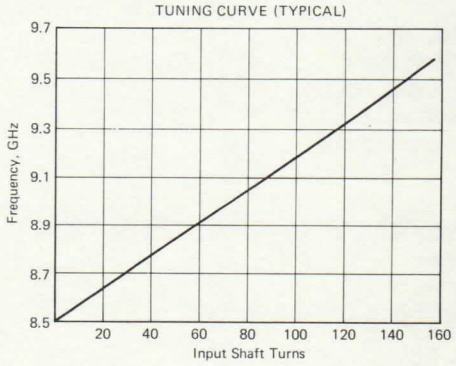
# COAXIAL PULSE MAGNETRON

# L-4575

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.



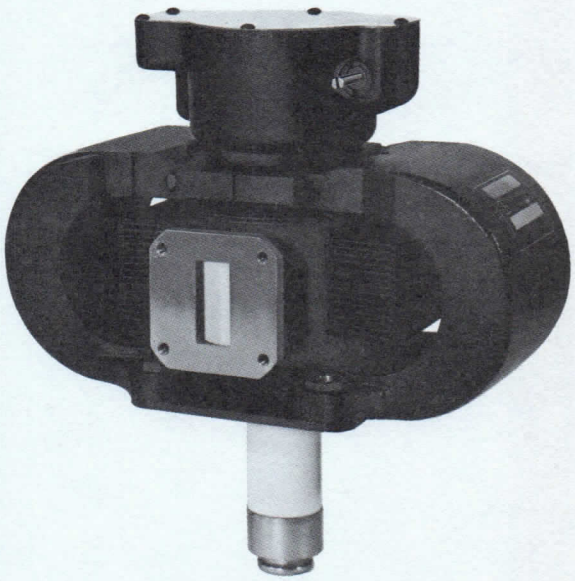

Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

COAXIAL PULSE MAGNETRON

# L-4583A

200 Kilowatts Minimum Peak Power
Tunable Frequency 9200 to 9550 MHz

This highly stable coaxial magnetron has been designed for use in advanced airborne navigation and fire control radars. The L-4583A is a direct replacement for the L-4193B/7692.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 13.75 V |
| Heater Current (Standby) | 3.1 A |
| Preheat Time | Min. 150 sec. |
| Pulse Voltage | 20 to 23 kv |
| Pulse Current | 27.5 a |
| Rate-of-Rise of Voltage | Max. 180 kv/$\mu$sec. |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15 V |
| Heater Surge Current | 12 A |
| Pulse Length | 2.8 $\mu$s |
| Pulse Voltage | 23 kv |
| Pulse Current | 30 a |
| Average Input Power | 690 W |
| Duty Cycle | 0.0011 |
| Anode Temperature | 165°C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 200 kw |
| Tunable Frequency | 9200 to 9550 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 5 MHz |
| Pushing Figure | Max. 0.100 MHz/a |
| Missing Pulses | Max. 0.5% |
| Side Lobes | Min. —8 dB |
| Anode Temperature Coefficient | Max. 250 kHz/°C |
| Shock (11 msec) | 30 G |
| Vibration (operating) | Max. 2 G |
| Frequency Modulation | Max. 0.100 MHz |
| Rated Cycle Life | 1250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Tuner Shaft Turns (350 MHz) | 31 to 37 |
| Tuning Torque | Max. 12 in. oz. |
| Mounting Position | Any |
| Weight | 13.5 lbs. |
| Mating Output Flange | Modified UG-52B/U |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |

Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

# COAXIAL PULSE MAGNETRON

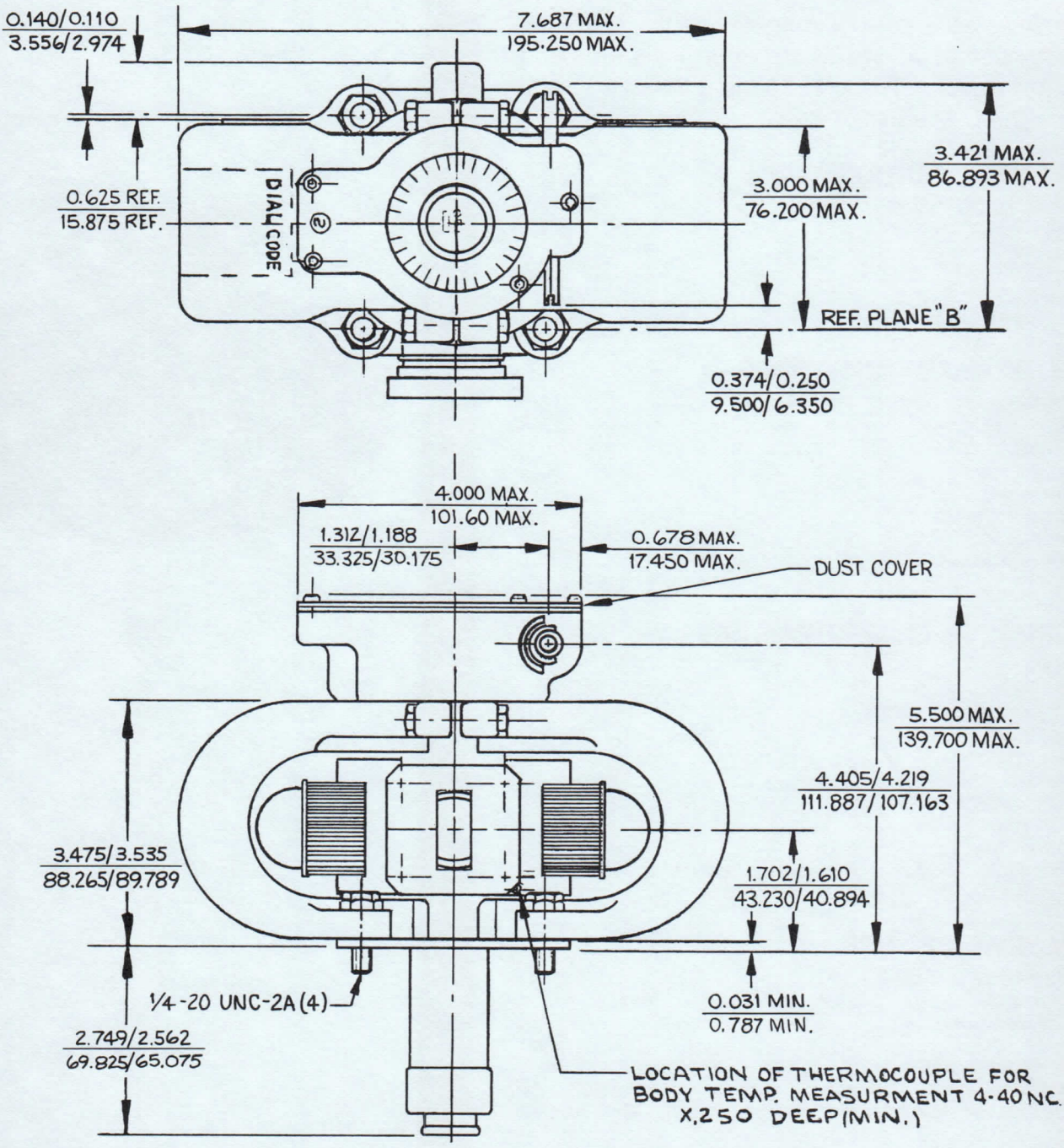
# L-4583A

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
X-RAYS

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.




INCHES
MILLIMETERS


Litton
**ELECTRON TUBE DIVISION**
1035 Westminster Drive, Williamsport, Pennsylvania 17701, (717) 326-3561

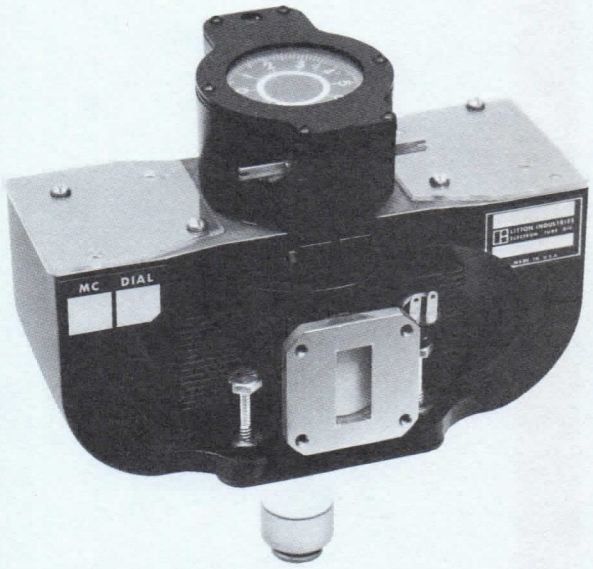
COAXIAL PULSE MAGNETRON

# L-4590
# 8945

200 Kilowatts Minimum Peak Power
Tunable Frequency 8700 to 9400 MHz

This ruggedized, highly stable coaxial magnetron is designed for use in severe environmental conditions where maximum thermal and pulse-to-pulse stability are required.

Provisions have been made for mounting tuning servo equipment on the tube.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 13.75 V |
| Heater Current (Standby) | 3.1 A |
| Preheat Time | Min. 150 sec. |
| Pulse Voltage | 20 to 23 kv |
| Pulse Current | 27.5 a |
| Rate-of-Rise of Voltage | Max. 160 kv/$\mu$sec. |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15 V |
| Heater Surge Current | 12 A |
| Pulse Length | 2.75 $\mu$s |
| Pulse Voltage | 24 kv |
| Pulse Current | 30 a |
| Average Input Power | 690 W |
| Duty Cycle | 0.0013 |
| Anode Temperature | 150°C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 200 kw |
| Tunable Frequency | 8700 to 9400 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 5 MHz |
| Pushing Figure | Max. 0.100 MHz/a |
| Missing Pulses | Max. 0.07% |
| Side Lobes | Min. —8 dB |
| Anode Temperature Coefficient | Max. 0.20 MHz/°C |
| Shock (11 msec) | 30 G |
| Vibration (operating) | Max. 15 G |
| Frequency Modulation | Max. 1.0 MHz |
| Frequency Drift Rate | Max. +150 kHz/sec |
| Tuning Linearity | Max. ±25 MHz |
| Rated Cycle Life | 1250 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Tuner Shaft Turns (700 MHz) | 90 to 110 |
| Tuner Torque | 8 in. oz. |
| Mounting Position | Any |
| Weight | 13 lbs. |
| Mating Output Flange | Modified UG-52B/U |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | Max. 45 psia |

Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

# COAXIAL PULSE MAGNETRON

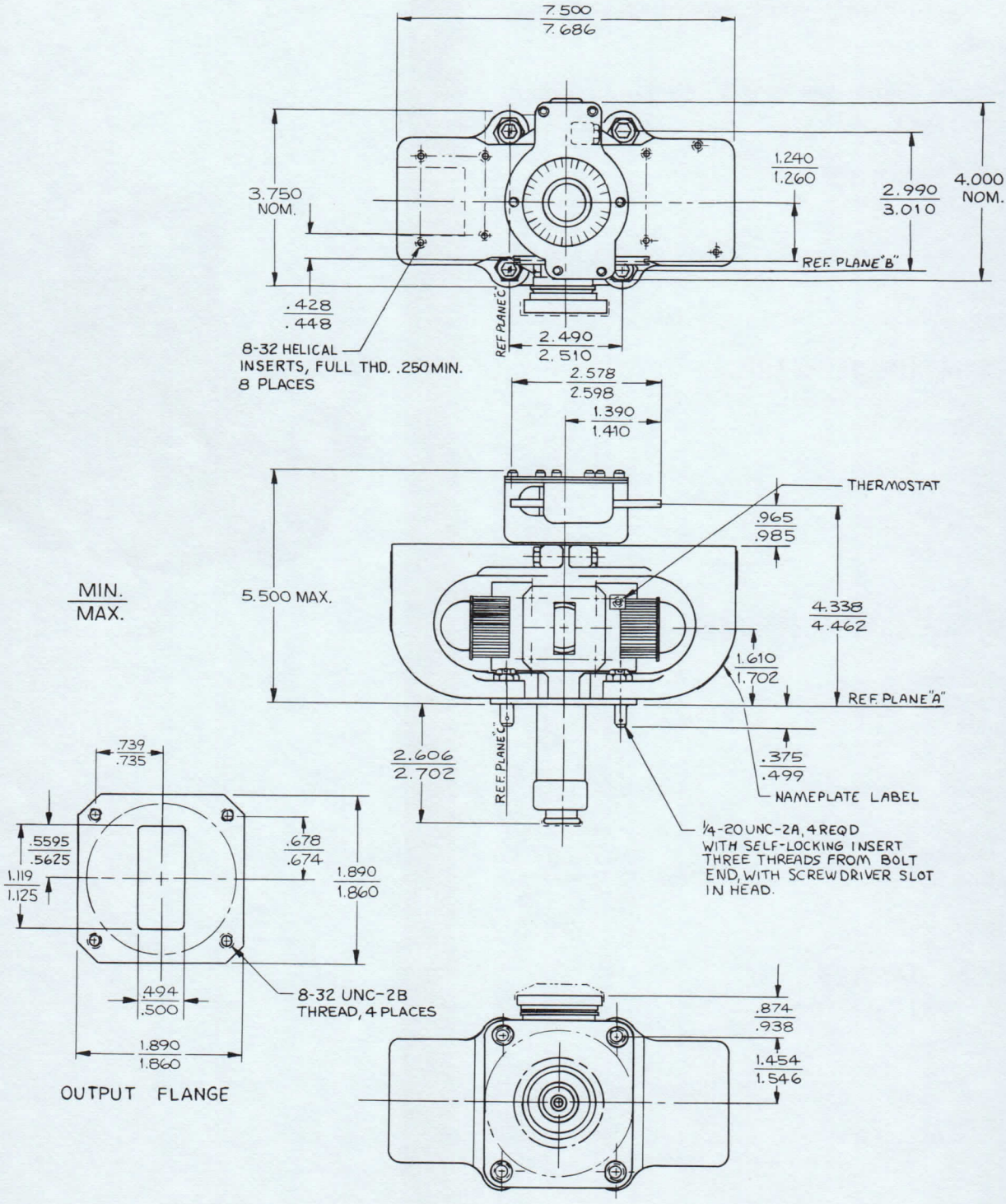
# L-4590
# 8945

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.





Litton
**ELECTRON TUBE DIVISION**
1035 Westminster Drive, Williamsport, Pennsylvania 17701, (717) 326-3561


2.5MJA675

COAXIAL PULSE MAGNETRON

# L-4593

350 Kilowatts Minimum Peak Power
Tunable Frequency 8500 to 9600 MHz

Designed for use in high power advanced airborne and surface based radar systems, this magnetron is characterized by its high stability and long life in a wide range of operating environments.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 13.75 V |
| Heater Current (Standby) | 3.2 A |
| Preheat Time | Min. 150 Sec. |
| Pulse Voltage | 25 to 28 kv |
| Pulse Current | 30 a |
| Rate of Rise of Voltage | Max. 200 kv/$\mu$sec. |

## ABSOLUTE MAXIMUM RATINGS

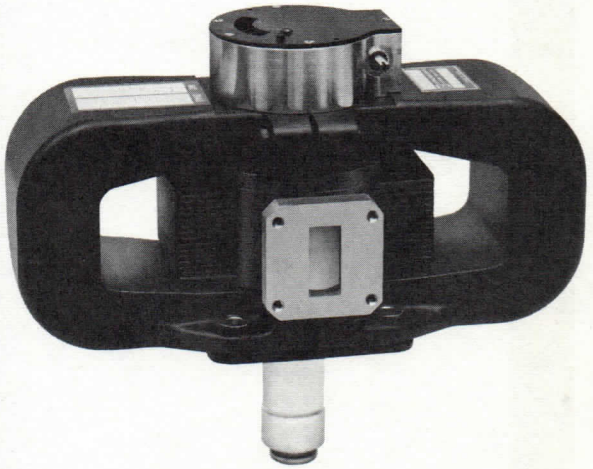
| | |
|---|---|
| Heater Voltage | 15.0 V |
| Heater Surge Current | 12.0 A |
| Pulse Length | 2.5 $\mu$sec. |
| Pulse Voltage | 30.0 kv |
| Pulse Current | 32.0 a |
| Average Input Power | 850 W |
| Duty Cycle | 0.0011 |
| Anode Temperature | 130°C. |
| VSWR | 1.5:1 |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 350 kw |
| Tunable Frequency | 8500 to 9600 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 5.0 MHz |
| Pushing Figure | Max. 125 kHz/a |
| Missing Pulses | Max. 0.25% |
| Side Lobes | Min. —8.0 dB |
| Anode Temperature Coefficient | Max. 0.25 MHz/°C. |
| Shock, 11 ms | 30 G |
| Vibration, Variable Frequency | per MIL-STD-1311A |
| Rated Cycle Life | 1250 hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | 18 lbs. |
| Mating Waveguide Flange | UG-52B/U (Modified) |
| Anode Cooling | Forced Air |
| Input/Output Pressurization | 45 psia, Max. |
| Tuning Torque | Max. 10 in.-oz. |



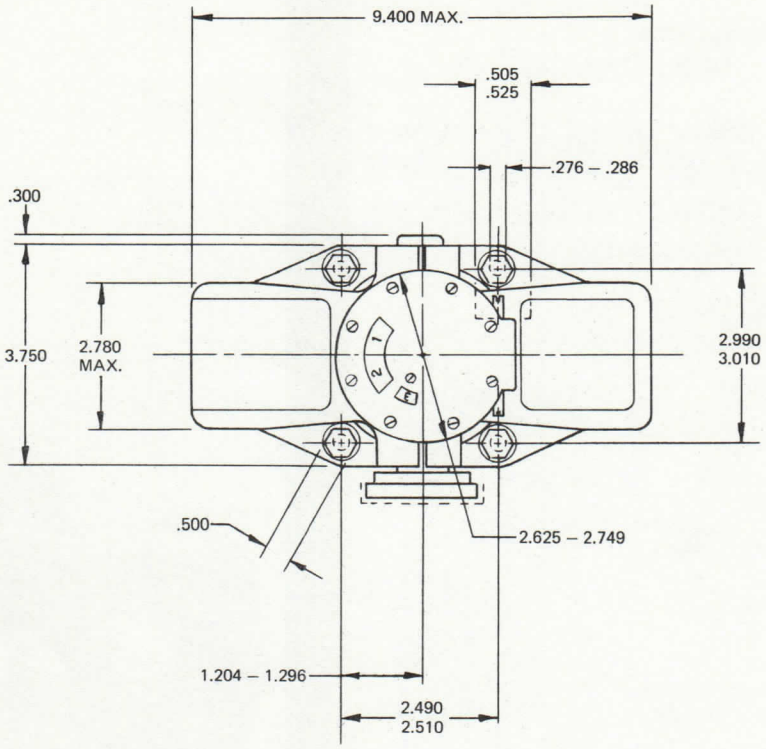
Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

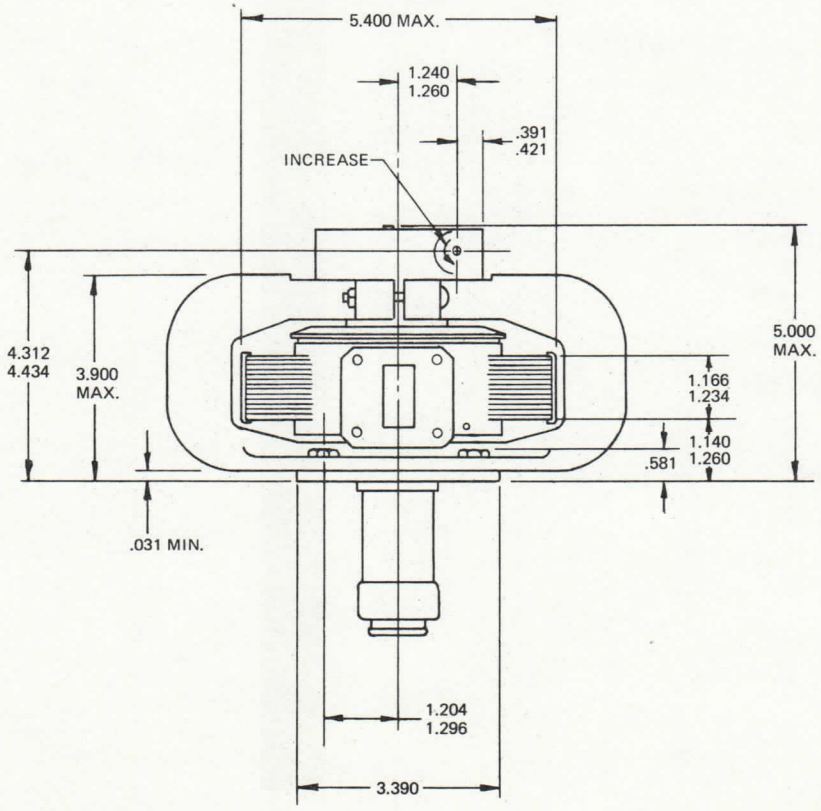
# COAXIAL PULSE MAGNETRON

# L-4593

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.




Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

COAXIAL PULSE MAGNETRON

# L-4622

225 Kilowatts Minimum Peak Power
Fixed Frequency 9375 ±30 MHz

This highly reliable, fixed frequency coaxial pulse magnetron features extremely rigid electrical specifications, and is recommended for any application where power levels of 250 kw nominal are required. Because of its performance and compactness, the L-4622 is an excellent choice for airborne systems.

Other versions of this magnetron are available with center frequencies at any point between 8800 and 9400 MHz, to meet your special requirements.

This tube type is recommended as a replacement for the 4J50A magnetron.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 13.75 V |
| Heater Current | 3.2 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 20.0 to 23.0 kv |
| Pulse Current | 27.5 a |
| Rate-of-Rise of Voltage | Max. 180 kv/$\mu$sec. |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15.0 V |
| Heater Surge Current | 15.0 A |
| Pulse Length | 5.0 $\mu$s |
| Duty Cycle | 0.001 |
| Anode Temperature | 150°C |
| Cathode Temperature | 180°C |
| VSWR | 1.5:1 Ratio |
| Altitude | 600 mmHg |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 225 kw |
| Fixed Frequency | 9375 ±30 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 5.0 MHz |
| Missing Pulses | Max. 0.5% |
| Side Lobes | Min. 10 dB |
| Bandwidth | Max. 2.0/tpc. MHz |
| Anode Temperature Coefficient | Max. 0.25 MHz/°C |
| Rated Cycle Life | 1000 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 13 lbs. |
| Mating Mounting Flange | UG-52A/U |
| Anode Cooling | Forced Air Required |
| Output Pressurization | Max. 45 lbs./sq. in. |
| Cathode Pressurization | Max. 45 lbs./sq. in. |
| Vibration | 5G, 5-2000 cps |
| Shock | 30G, 11 msec. |

# COAXIAL PULSE MAGNETRON

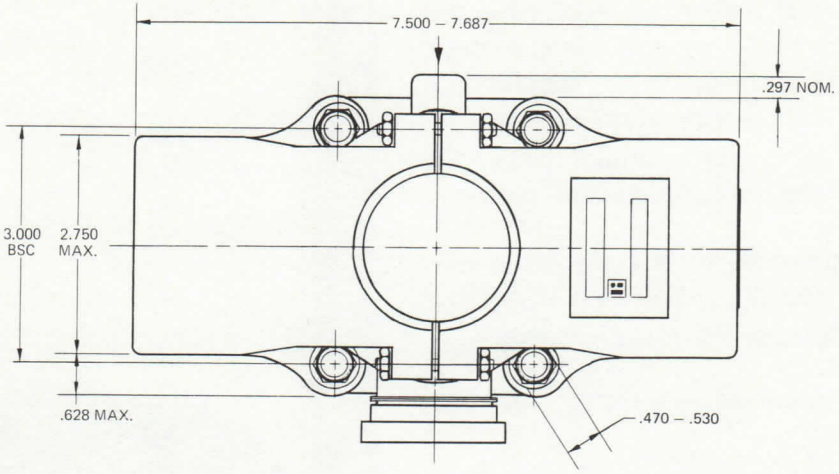
# L-4622

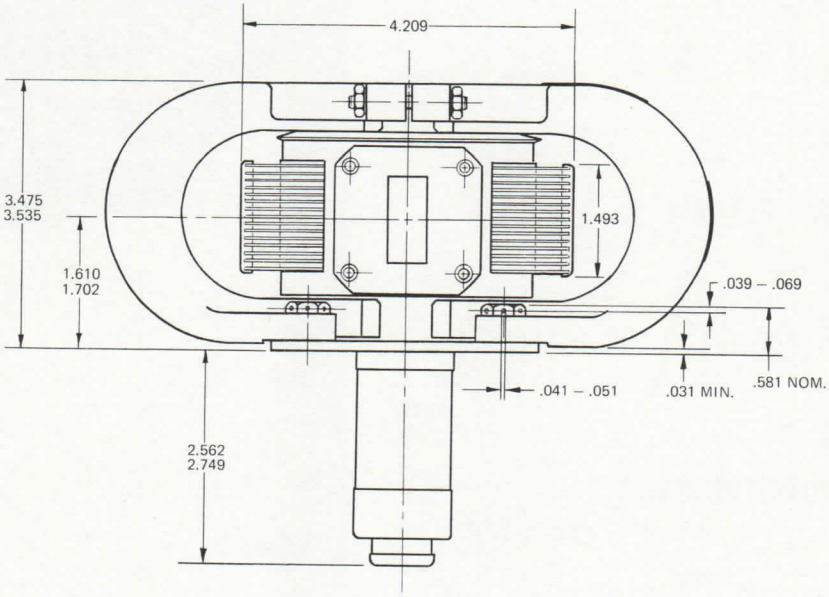
**CAUTION**
MICROWAVE RADIATION

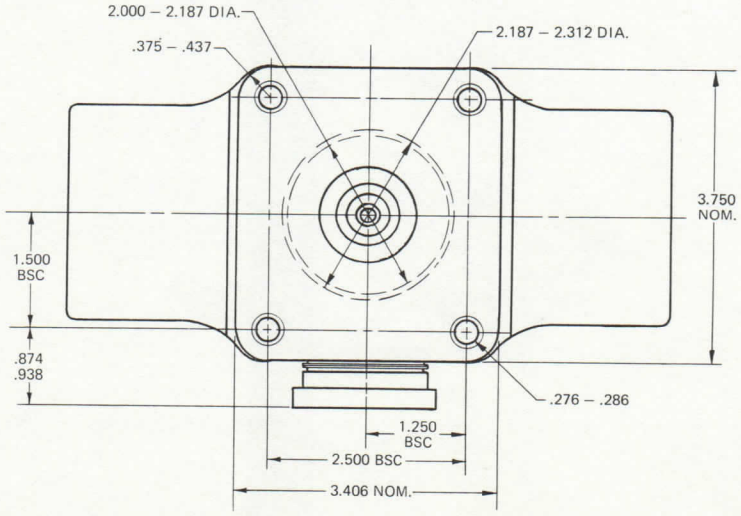
Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.




LITTON INDUSTRIES • ELECTRON TUBE DIVISION • SAN CARLOS, CALIFORNIA

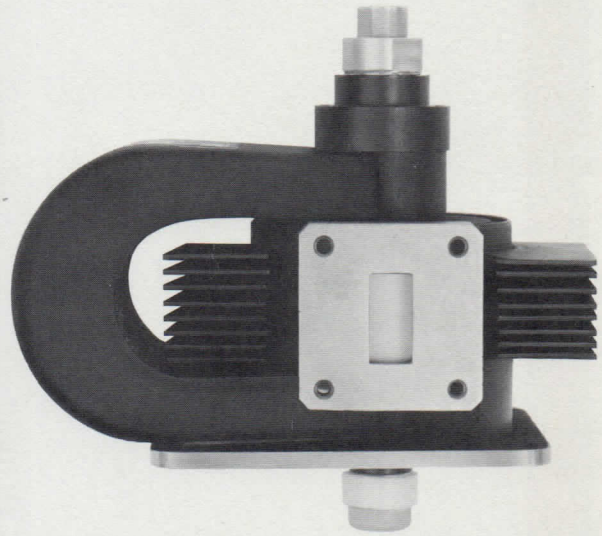
3.5MCA1072

COAXIAL PULSE MAGNETRON

# L-5013

5.0 Kilowatts Peak Power
Tunable Frequency 15,500 to 16,500

This all metal-ceramic coaxial magnetron, operating at Ku-band, offers high efficiency and improved pushing and pulling performance. This magnetron is capable of sustained operation at 40 watts average power. Variations of its design are readily producible at higher or lower peak powers. Applications include surveillance radar, airborne and missile systems and pulse doppler systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.6 A |
| Preheat Time | Min. 60 sec. |
| Pulse Voltage | Nominal 4.5 kVdc |
| Pulse Current | 3.5 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Pulse Length | 2.5 us |
| Duty Cycle | 0.01 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 25,000 Feet |

## PERFORMANCE CHARACTERISTICS

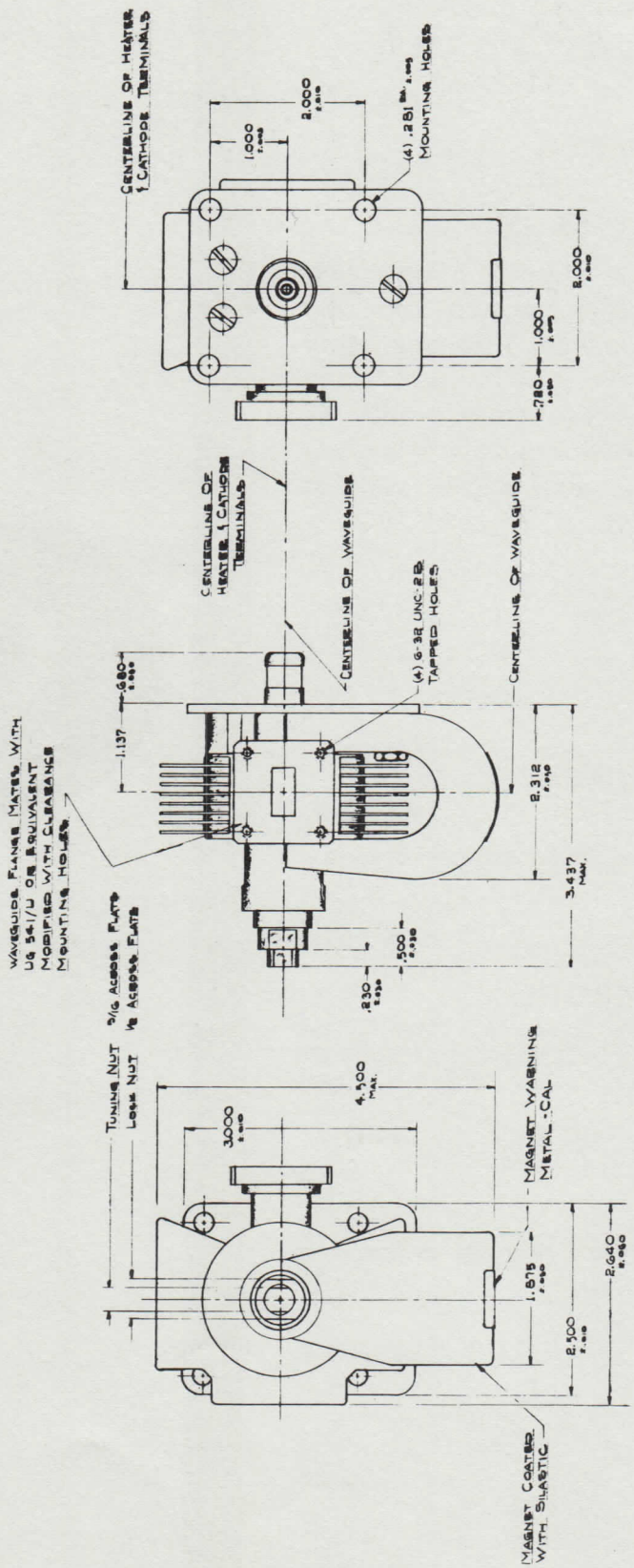
| | |
|---|---|
| Peak Power | Min. 4.0 kW |
| Tunable Frequency | 15,500 to 16,500 Mc |
| Missing Pulses | Max. 0.1 Percent |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.0 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Heat sink or forced air |

COAXIAL PULSE MAGNETRON

# L-5013

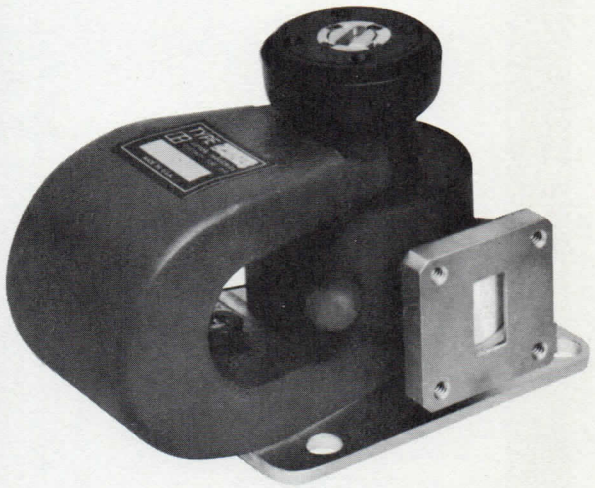


COAXIAL PULSE MAGNETRON

# L-5035

10 Kilowatts Peak Power
Tunable Frequency 15,900 to 16,500

This all metal-ceramic coaxial magnetron, operating at Ku-band, offers high efficiency and improved pushing and pulling performance. This magnetron is capable of sustained operation at 40 watts average power. Variations of its design are readily producible at higher or lower peak powers. Applications include surveillance radar, airborne and missile systems and pulse doppler systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.6 A |
| Preheat Time | Min. 60 sec. |
| Pulse Voltage | Nominal 5.0 kVdc |
| Pulse Current | 6.0 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Pulse Length | 2.5 us |
| Duty Cycle | 0.04 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 25,000 Feet |

## PERFORMANCE CHARACTERISTICS

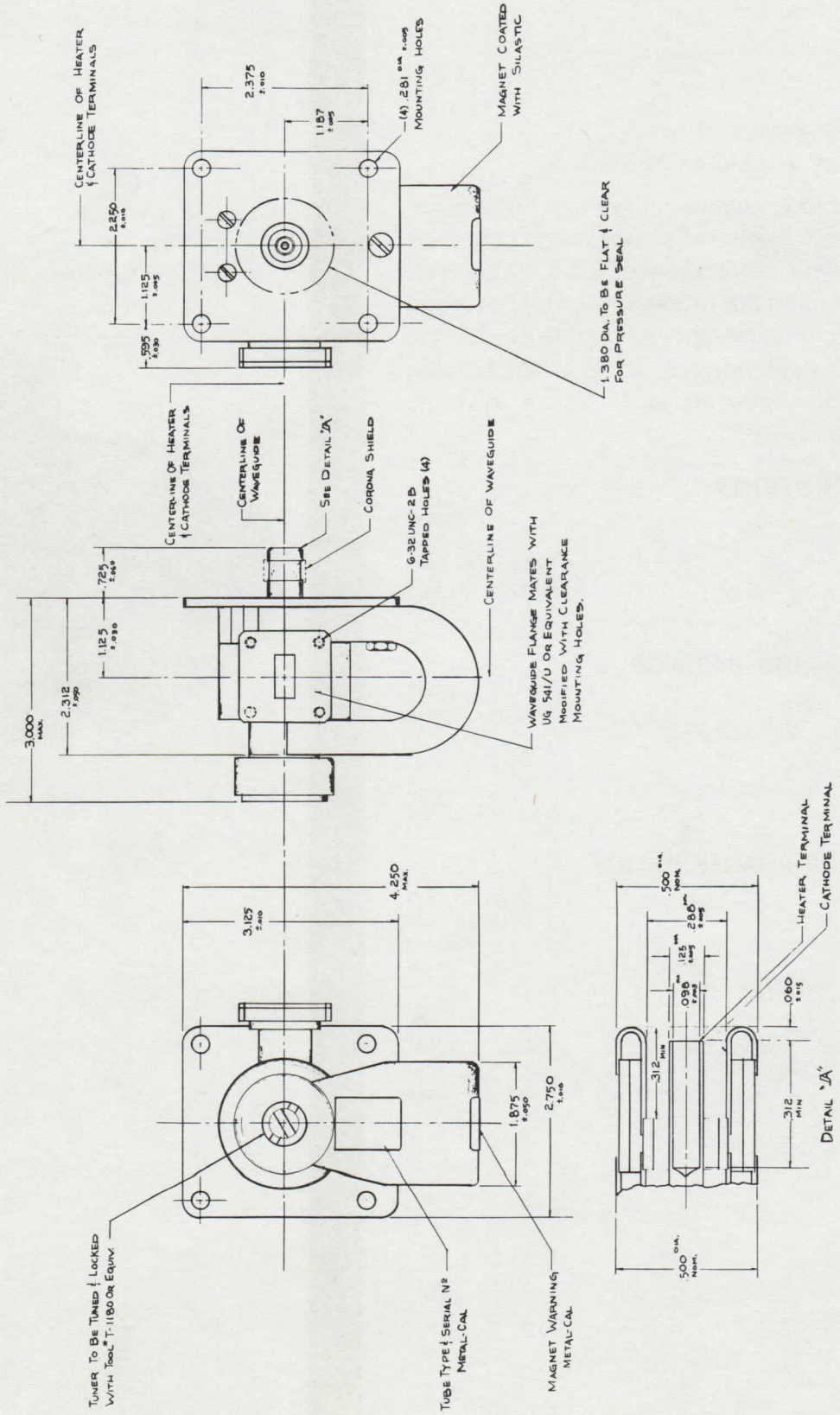
| | |
|---|---|
| Peak Power | Min. 8.0 kW |
| Tunable Frequency | 15,900 - 16,500 |
| Missing Pulses | Max. 0.1 Percent |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.0 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Conduction to mounting base |

## COAXIAL PULSE MAGNETRON

# L-5035



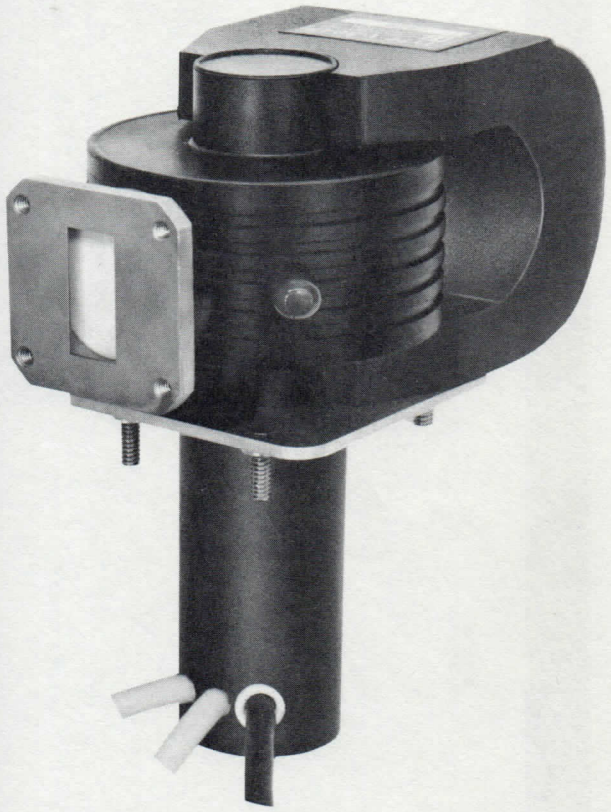
COAXIAL PULSE MAGNETRON

# L-5047

1

75 Kilowatts Peak Power
Fixed Frequency 9375 ± 30 MHz

This coaxial X-band pulse magnetron was designed using a very conservative load factor. Its low cathode emission density, and large anode structure provide many thousands of hours of service life. The coaxial design provides high efficiency and excellent spectrum shape. The L-5047 is recommended for all new 75 KW radar systems as well as a replacement magnetron to upgrade life, power output, and spectrum of existing radars. The center frequency can be set to suit individual requirements. Tunable versions are available.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 14.0 V |
| Heater Current | Max. 1.5 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | Nominal 13 kv |
| Pulse Current | 12 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15.5 V |
| Heater Surge Current | 6 A |
| Pulse Current | 16 A |
| Pulse Length | 7.0 us |
| Average Input Power | 250 W |
| Duty Cycle | 0.0013 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175°C |
| VSWR | 1.3:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 65 kW |
| Fixed Frequency | 9375 ± 30 MHz |
| Pulling Factor (1.3:1 VSWR) | Max. 5 MHz |
| Missing Pulses | Max. 0.1 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.0/tpc. MHz |
| Anode Temperature Co-efficient | Max. 0.25 MHz/°C |

## MECHANICAL RATINGS

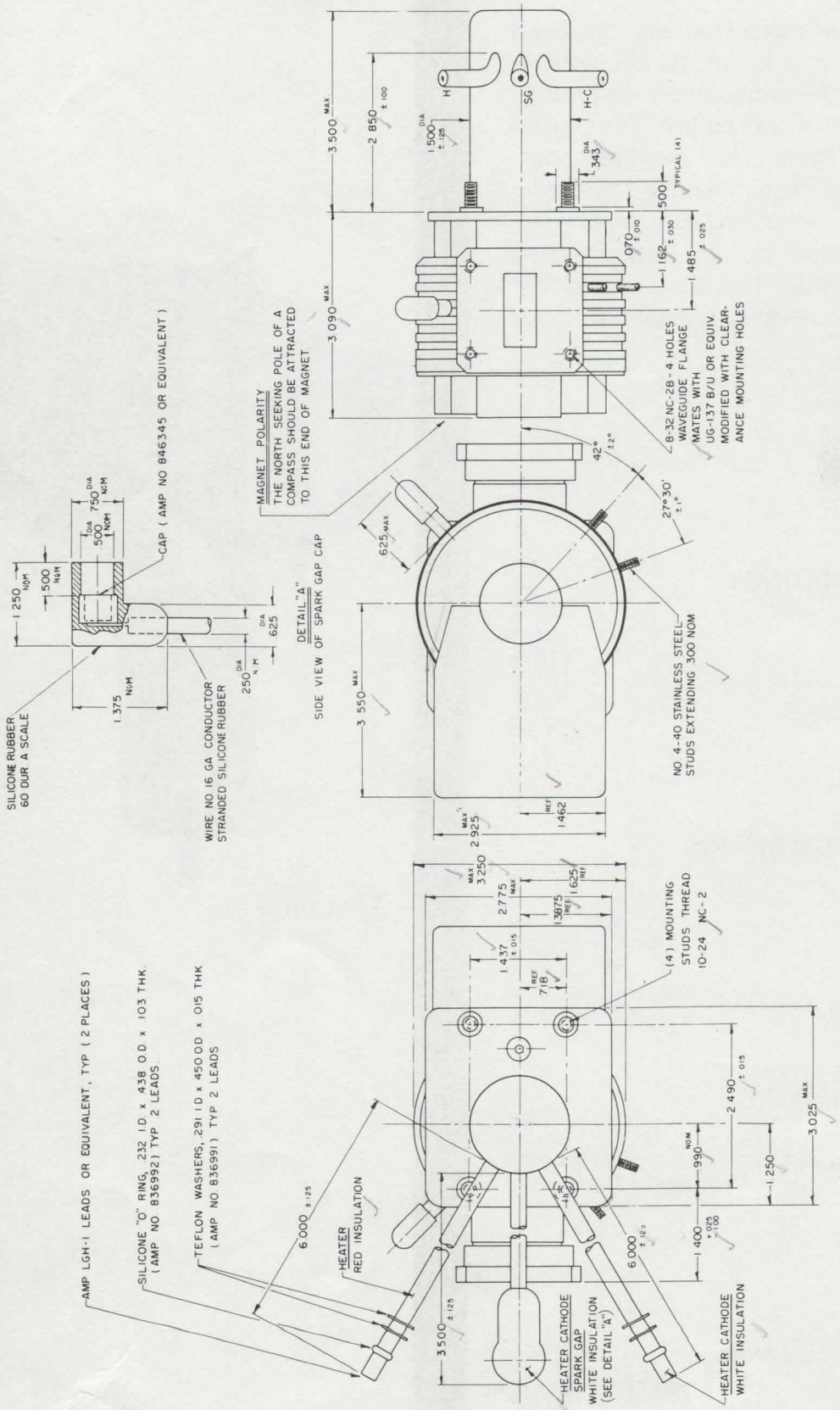
| | |
|---|---|
| Mounting Position | Any |
| Weight | Approx. 7 lbs. |
| Mating Mounting Flange | UG-137 B/U or equivalent modified with clearance mounting holes. |
| Anode Cooling | Forced Air or Conduction |

# COAXIAL PULSE MAGNETRON

# L-5047

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output rf connections, waveguide flanges, and gaskets must be rf leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.

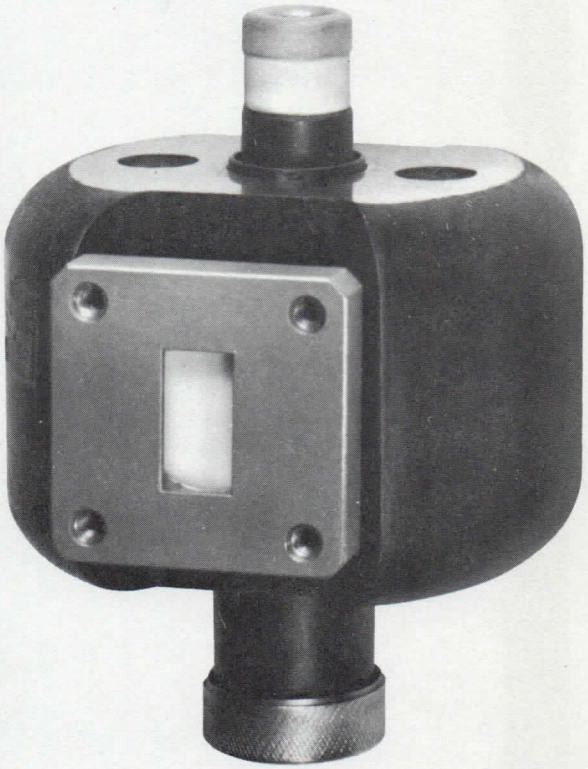


COAXIAL PULSE MAGNETRON

# L-5048

1.0 Kilowatts Minimum Peak Power
Tunable Frequency 16,000 to 16,500 mcs

This all metal-ceramic coaxial magnetron operating at Ku-band, offers high efficiency, long life, and improved pushing and pulling performance. Its small size and weight and excellent spectrum shape makes it desirable for portable radar and beacon applications.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 4.75 V |
| Heater Current | 0.6 A |
| Preheat Time | Min. 60 sec. |
| Pulse Voltage | 2900 to 3100 V |
| Pulse Current | 1.6 A |
| Time of Rise of Voltage | Min. 0.08 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Current | 2.5 A |
| Pulse Current | 2.0 A |
| Pulse Length | 2.0 us |
| Average Input Power | 10 W |
| Duty Cycle | 0.0015 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 30,000 Feet |

## PERFORMANCE CHARACTERISTICS

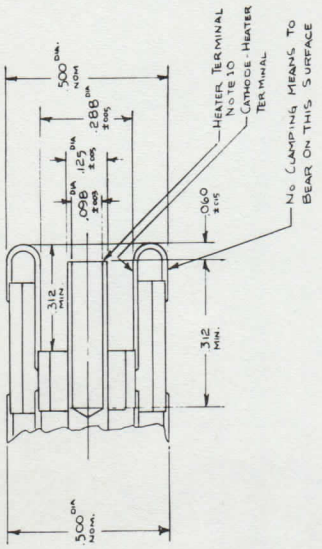
| | |
|---|---|
| Peak Power | Min. 1.0 kW |
| Tunable Frequency | 16,000 to 16,500 mcs |
| Pulling Factor (1.3:1 VSWR) | Max. 8.0 mcs |
| Pushing Figure (± 10% Ib) | Max. 1.0 mcs |
| Missing Pulses | Max. 0.1 Percent |
| Side Lobes | Min. 8 db |
| Bandwidth | Max. 2.5/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.15 mc/°C |
| Shock (5 ±1 m s) | 100 G |
| Rated Cycle Life | min. 500 Hrs. |

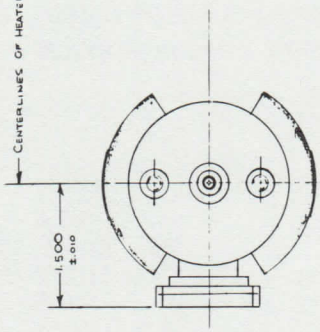
## MECHANICAL RATINGS

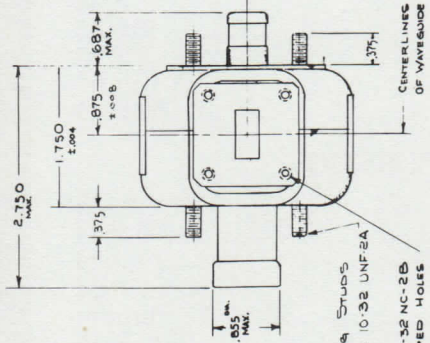
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 20 oz. |
| Anode Cooling | Conduction |

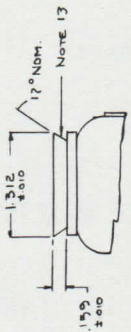
## COAXIAL PULSE MAGNETRON

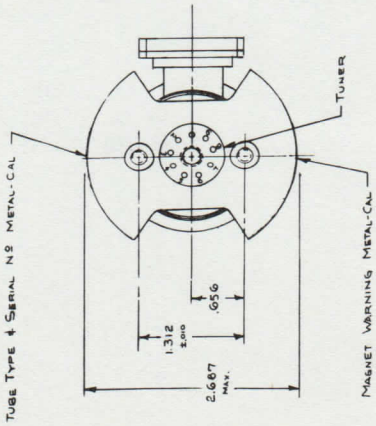
# L-5048



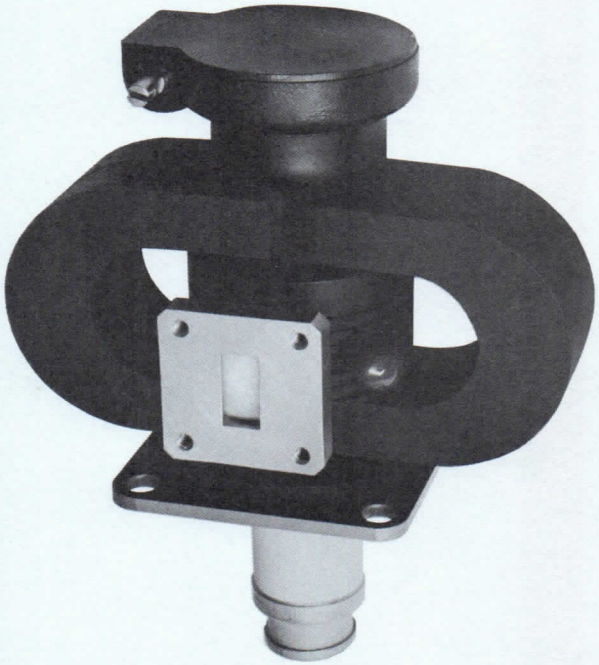
COAXIAL PULSE MAGNETRON

# L-5049

1

60 Kilowatts Peak Power
Tunable Frequency 16, 125 to 16,825 MHz

This lightweight, metal-ceramic coaxial magnetron, operating in the Ku-band range, offers high efficiency and improved pushing and pulling performance. Choose this magnetron when light weight and reliability are important. Applications include weather and surveillance radar, airborne, missile and pulse doppler systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 1.5 a |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | Nominal 13 kVdc |
| Pulse Current | 11 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 6 A |
| Pulse Current | 15 a |
| Pulse Length | 1.2 $\mu$s |
| Duty Cycle | 0.001 |
| Anode Temperature | 150°C |
| Cathode Temperature | 175°C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 50 kw |
| Tunable Frequency | 16,125 to 16,825 MHz |
| Pulling Factor (1.3:1 VSWR) | Max. 8.0 MHz |
| Missing Pulses | Max. 0.10 Percent |
| Anode Temperature Coefficient | Max. —0.35 MHz/°C |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.5 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Heat sink or forced air |

Litton
ELECTRON TUBE DIVISION
San Carlos, California • Williamsport, Pennsylvania

# COAXIAL PULSE MAGNETRON

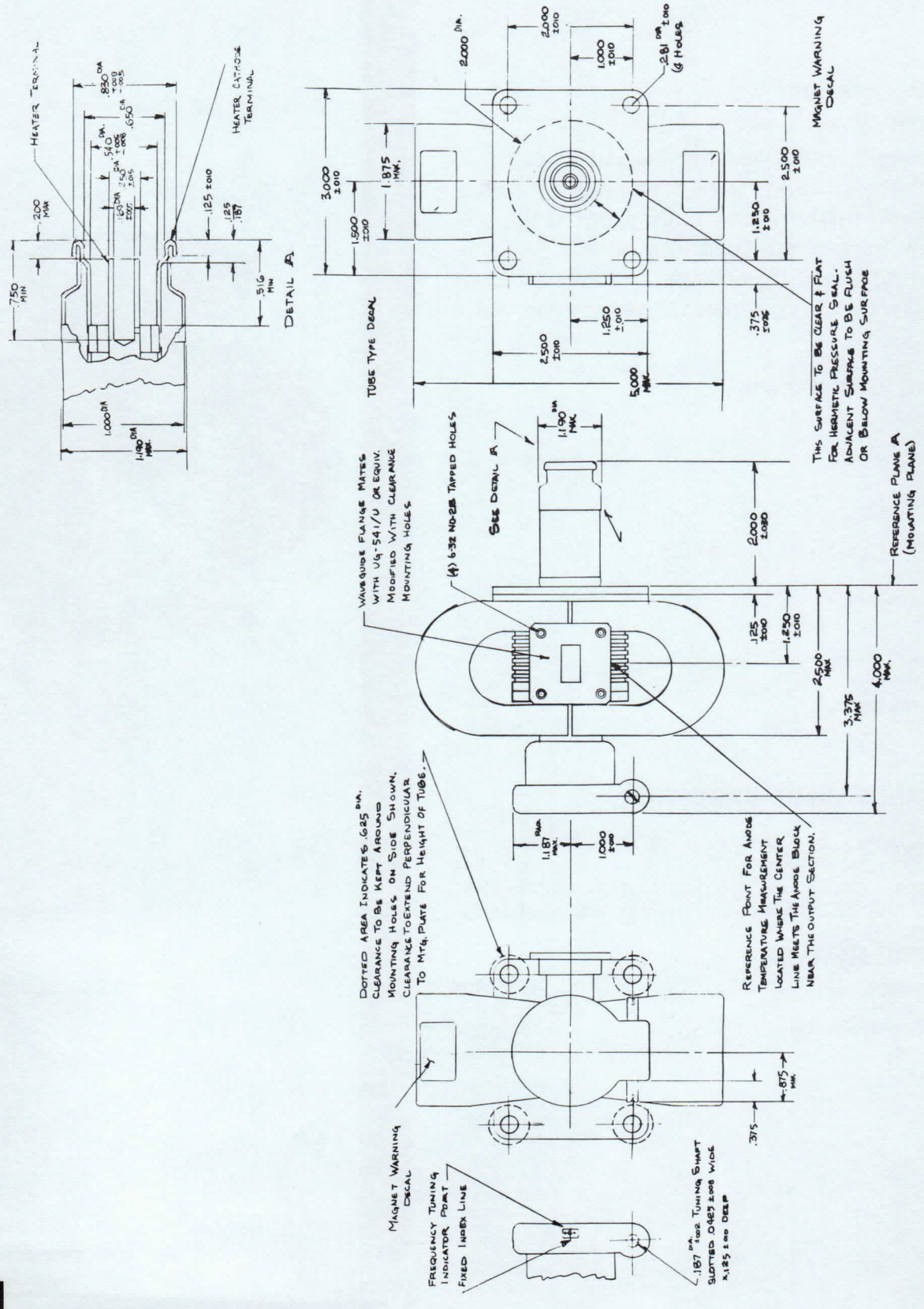
# L-5049

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.





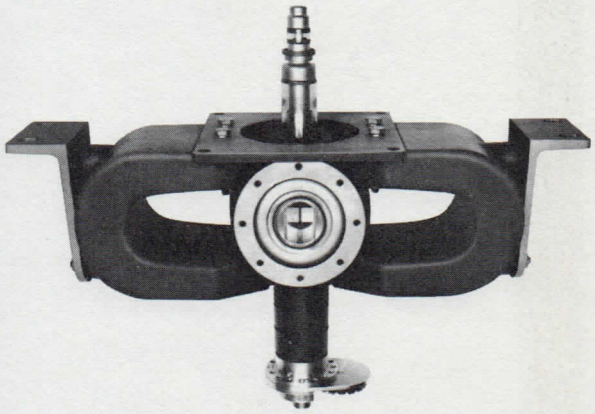
**ELECTRON TUBE DIVISION**
Litton 1035 Westminster Drive, Williamsport, Pennsylvania 17701, (717) 326-3561

# PULSE MAGNETRON

# L-5080

250 Kilowatts Minimum Peak Power
Tunable Frequency 5450 to 5825 mcs

This proven, long life, tunable pulse magnetron at C-band has recorded operational life in excess of 2500 rf hours. All Litton Industries' tubes are constructed using the exclusive high temperature bakeout decontaminating process which increases in-service life, improves reliability and stability and eliminates the necessity of aging-in the tube prior to its operation after a lengthy time on the shelf.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 5.0 V |
| Heater Current | 5.0 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | 24.0 to 26.0 kVdc |
| Pulse Current | 24.0 A |
| Anode Cathode Capacitance | Max. 18.0 uufd |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.5 V |
| Heater Surge Current | 12 A |
| Pulse Voltage | 28 kv |
| Pulse Current | 30 A |
| Pulse Length | 2.5 us |
| Average Input Power | 750 W |
| Duty Cycle | 0.0012 |
| Anode Temperature | 120°C |
| Cathode Temperature | 270°C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

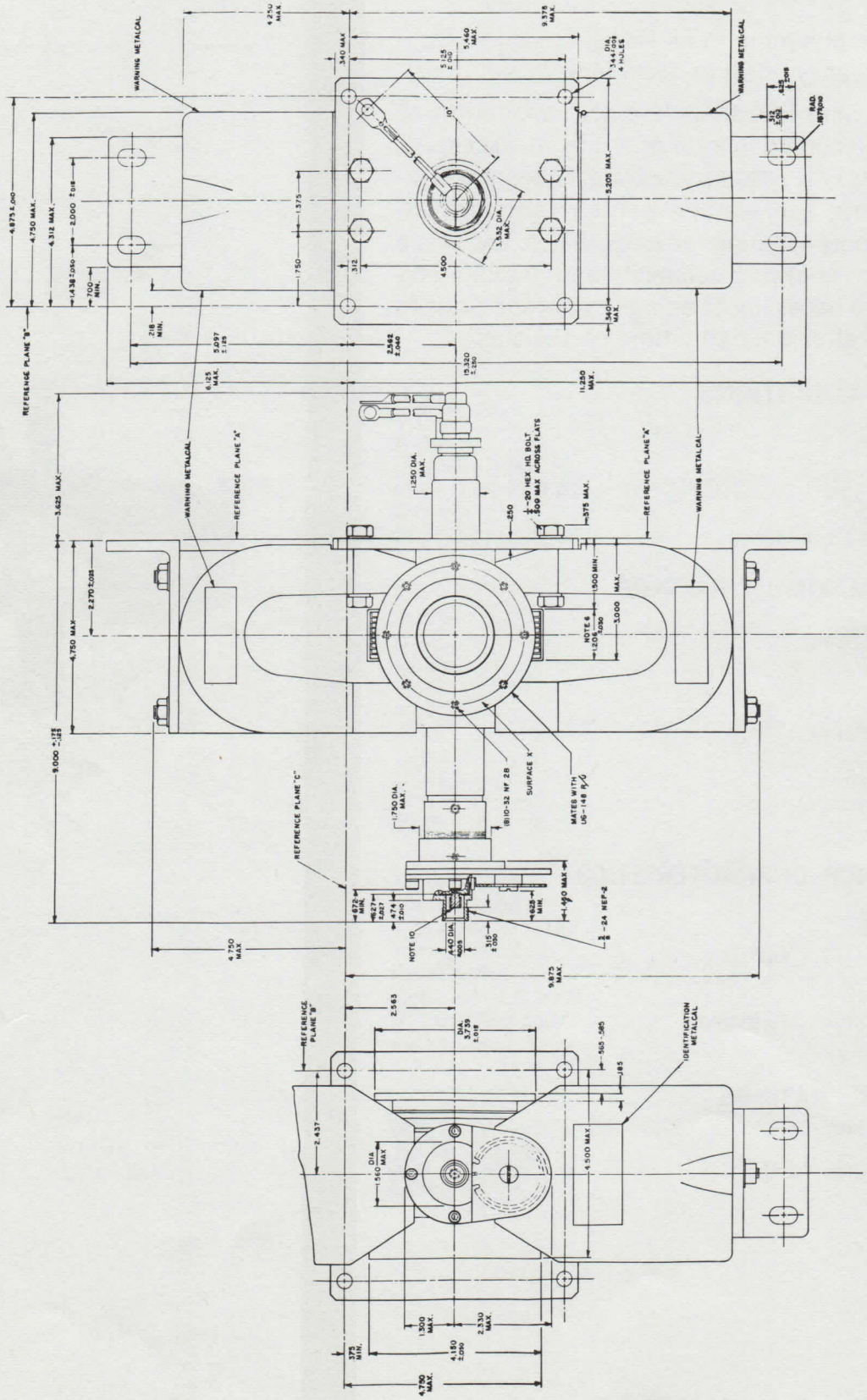
| | |
|---|---|
| Peak Power | Min. 250 kW |
| Tunable Frequency | 5450 to 5825 mcs |
| Pulling Factor (1.5:1 VSWR) | Max. 15 mcs |
| Side Lobes | Min. 6 db |
| Bandwidth | Max. 3.0/tpc. mcs |
| Anode Temperature Co-efficient | Max. 0.20 mc/°C |
| Altitude | 10,000 Feet |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Approx. 35 lbs. |
| Mating Waveguide Flange | UG-148 B/U |
| Anode Cooling | Forced Air |

# PULSE MAGNETRON

# L-5080

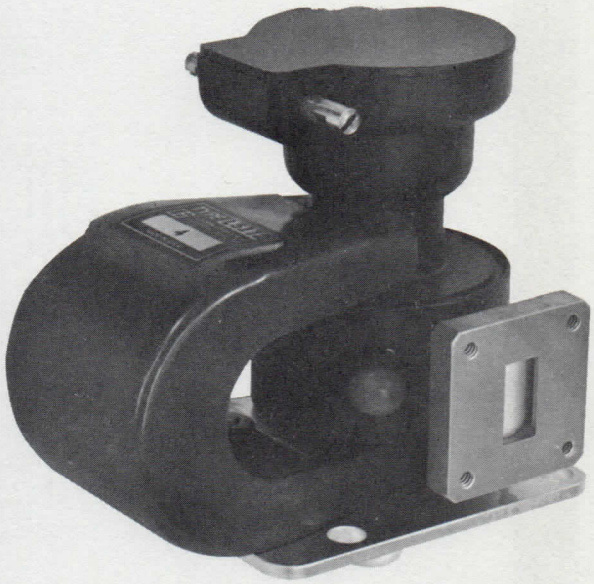


COAXIAL PULSE MAGNETRON

# L-5112

2.2 Kilowatts Minimum Peak Power
Tunable Frequency 15,400 to 15,700

This all metal-ceramic coaxial magnetron, operating at Ku-band, offers high efficiency and improved pushing and pulling performance. This magnetron is capable of sustained operation at 20 watts average power. Variations of its design are readily producible at higher or lower peak powers. Applications include aircraft landing systems, airborne and missile systems and pulse doppler systems.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.6 A |
| Preheat Time | Min. 60 sec. |
| Pulse Voltage | Nominal 3.6 kVdc |
| Pulse Current | 3.1 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Pulse Length | 2.5 us |
| Duty Cycle | 0.01 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.3:1 Ratio |
| Altitude | 25,000 Feet |

## PERFORMANCE CHARACTERISTICS

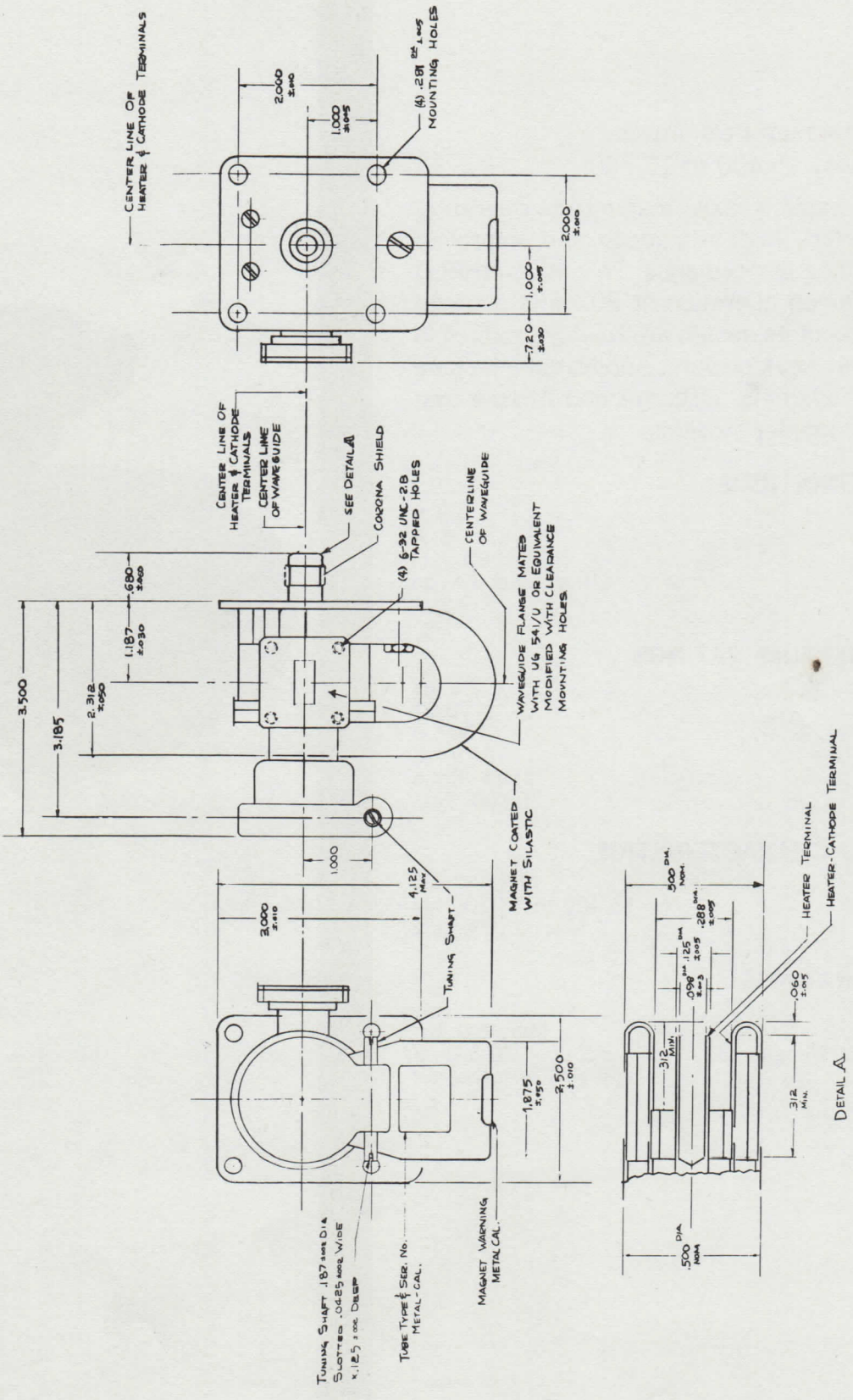
| | |
|---|---|
| Peak Power | Min. 2.2 kW |
| Tunable Frequency | 15,400 to 15,700 Mc |
| Missing Pulses | Max. 0.1 Percent |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.0 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Heat sink or forced air |

## COAXIAL PULSE MAGNETRON

# L-5112

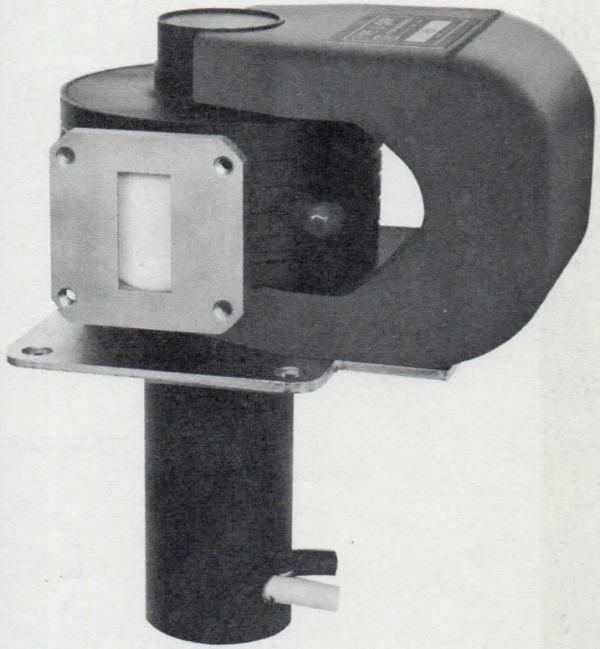


COAXIAL PULSE MAGNETRON

# L-5191

75 Kilowatts Peak Power
Fixed Frequency 9345 ± 20 MHz

This coaxial X-band pulse magnetron was designed using a very conservative load factor. Its low cathode emission density, and large anode structure provide many thousands of hours of service life. The coaxial design provides high efficiency and excellent spectrum shape. The L-5191 is recommended for all new 75 KW radar systems as well as a replacement magnetron to upgrade life, power output, and spectrum of existing radars. The center frequency can be set to suit individual requirements. Tunable versions are available.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 14.0 V |
| Heater Current | Max. 1.5 A |
| Preheat Time | Min. 180 sec. |
| Pulse Voltage | Nominal 13 kv |
| Pulse Current | 12 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 15.5 V |
| Heater Surge Current | 6 A |
| Pulse Current | 16 A |
| Pulse Length | 7.0 us |
| Average Input Power | 250 W |
| Duty Cycle | 0.0013 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175°C |
| VSWR | 1.3:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 65 kW |
| Fixed Frequency | 9345 ± 20 MHz |
| Pulling Factor (1.3:1 VSWR) | Max. 5 MHz |
| Missing Pulses | Max. 0.1 Percent |
| Side Lobes | Min. 8.0 db |
| Bandwidth | Max. 2.0/tpc. MHz |
| Anode Temperature Co-efficient | Max. 0.25 MHz/°C |

## MECHANICAL RATINGS

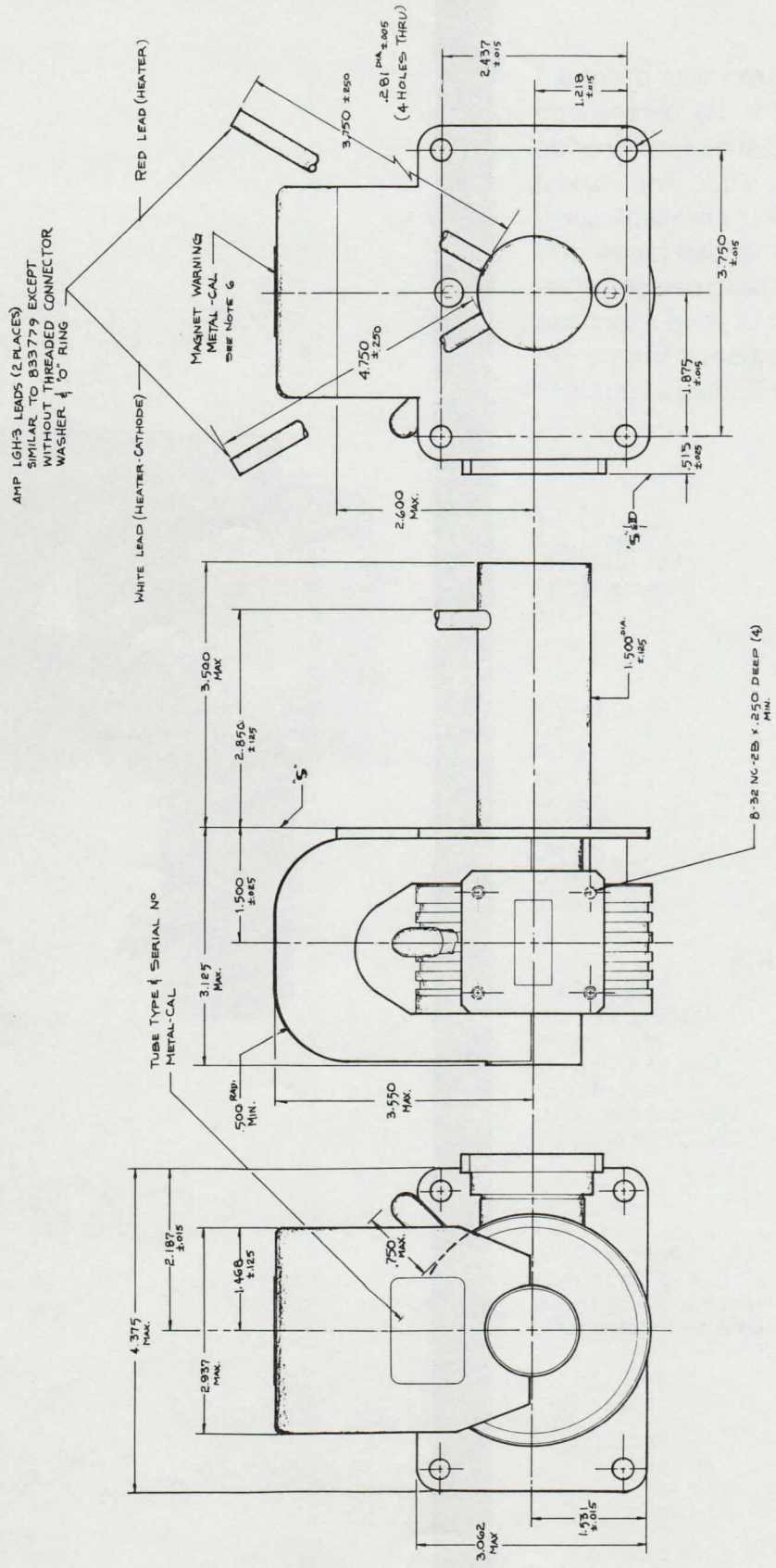
| | |
|---|---|
| Mounting Position | Any |
| Weight | Approx. 7 lbs. |
| Mating Mounting Flange | UG-137 B/U or equivalent modified with clearance mounting holes. |
| Anode Cooling | Forced Air or Conduction |

# COAXIAL PULSE MAGNETRON

# L-5191

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output rf connections, waveguide flanges, and gaskets must be rf leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.



# GYRO-TUNED COAXIAL PULSE MAGNETRON

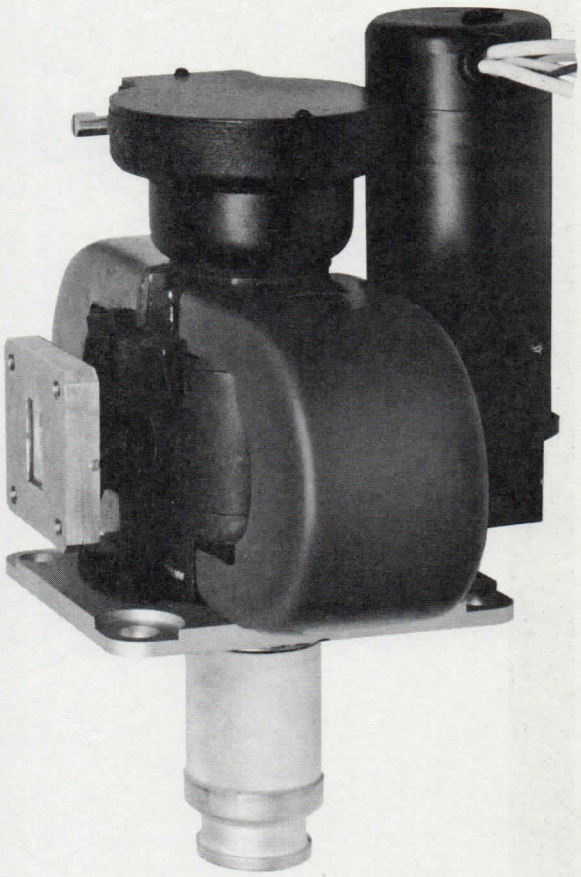
# L-5200

35 Kilowatts Peak Power

Mechanical Tuning Range 16,000 to 17,000 MHz
Gyro-Tuning Range 200 MHz

This lightweight, metal-ceramic coaxial magnetron features gyro-tuning to provide a high degree of frequency tuning and reliability in airborne search, navigation, terrain following and missile seeker radar applications.

Gyro-tuning employs a ring gear which drives a set of rotating dielectric paddles within the magnetron coaxial cavity. A high speed synchronous motor drives the entire mechanism, which is external to the tube vacuum envelope. The complete tuner assembly is compact and adds only ½ pound to the basic magnetron weight.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 1.5 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | Nominal 13 kVdc |
| Pulse Current | 11 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 7 A |
| Pulse Current | 15 A |
| Pulse Length | 2.0 us |
| Duty Cycle | 0.0015 |
| Anode Temperature | 150°C |
| Cathode Temperature | 175°C |
| VSWR | 1.4:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 35 kW |
| Slow Tuner Range | 16,000 to 17,000 MHz |
| Frequency Agility (Gyro-tuning) | Min. 100 MHz |
| Frequency Agility Tuner Rate* | 400 Hz Max. |
| Frequency Agility Read-out Accuracy | ±2 MHz |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 4.5 lbs. |
| Mating Waveguide Flange | UG-541 / U |
| Anode Cooling | Heat sink or forced air |

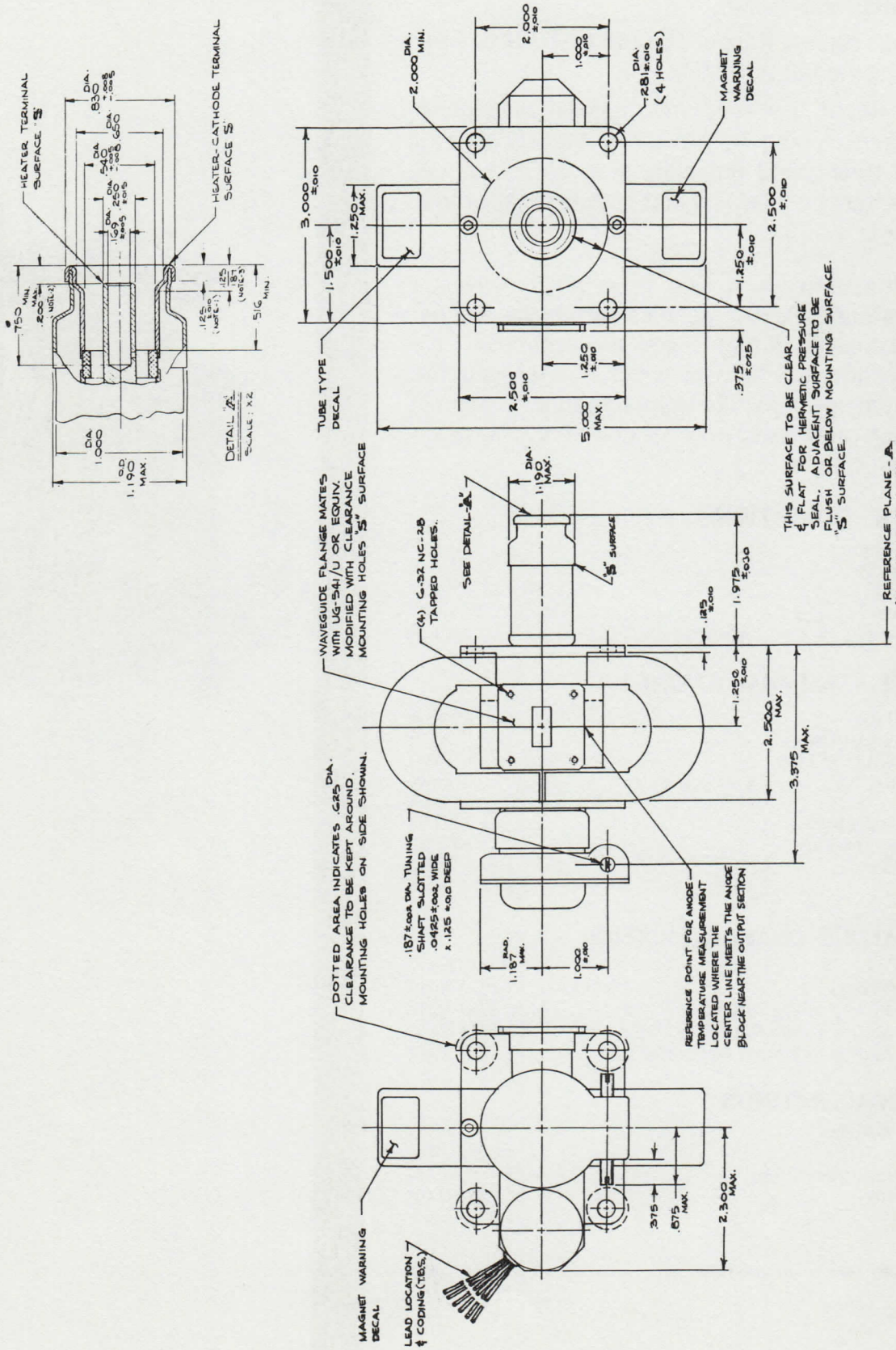
***Specify agility rate when ordering.**

# GYRO-TUNED COAXIAL PULSE MAGNETRON

# L-5200

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output rf connections, waveguide flanges, and gaskets must be rf leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.

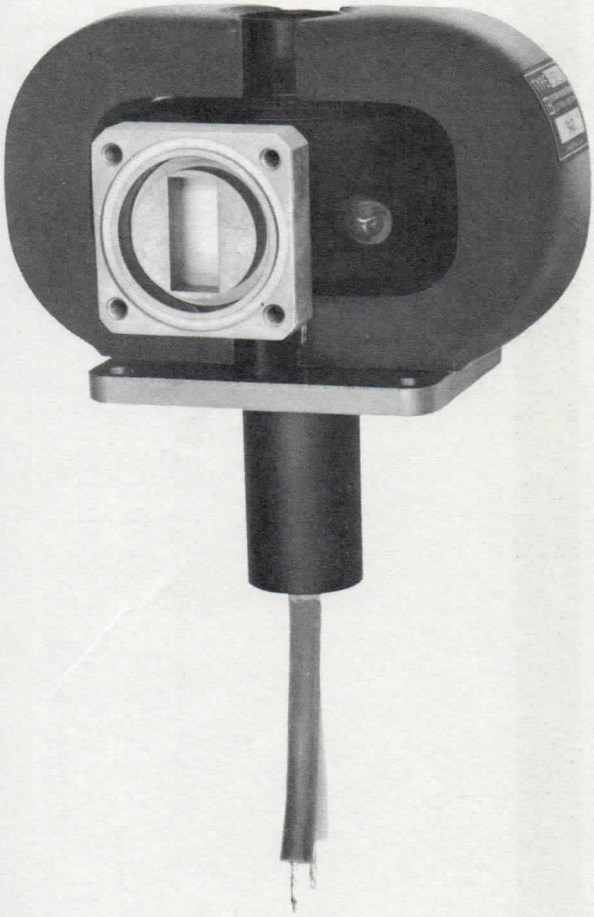


COAXIAL PULSE MAGNETRON

# L-5211

28 Kilowatts Peak Power
Fixed Frequency 9375 ± 30 MHz

This coaxial X-band pulse magnetron was designed using a very conservative load factor. Its low cathode emission density, and large anode structure provide many thousands of hours of service life. The coaxial design provides high efficiency and excellent spectrum shape. The L-5211 is recommended for all new 28 KW radar systems as well as a replacement magnetron to upgrade life, power output, and spectrum of existing radars. The center frequency can be set to suit individual requirements.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current | 1.2 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 7.75 to 8.25 kv |
| Pulse Current | 8.25 A |
| Time of Rise of Voltage | Min. 0.10 us |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 4.0 A |
| Pulse Voltage | 9.0 kv |
| Pulse Current | 9.25 A |
| Pulse Length | 5.0 us |
| Average Input Power | 100 W |
| Duty Cycle | 0.0015 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 24 kW |
| Fixed Frequency | 9375 ± 30 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 6 MHz |
| Anode Temperature Co-efficient | Max. 0.25 MHz/°C |
| Rated Cycle Life | Min. 500 Hrs. |
| Altitude | 55,000 Feet |

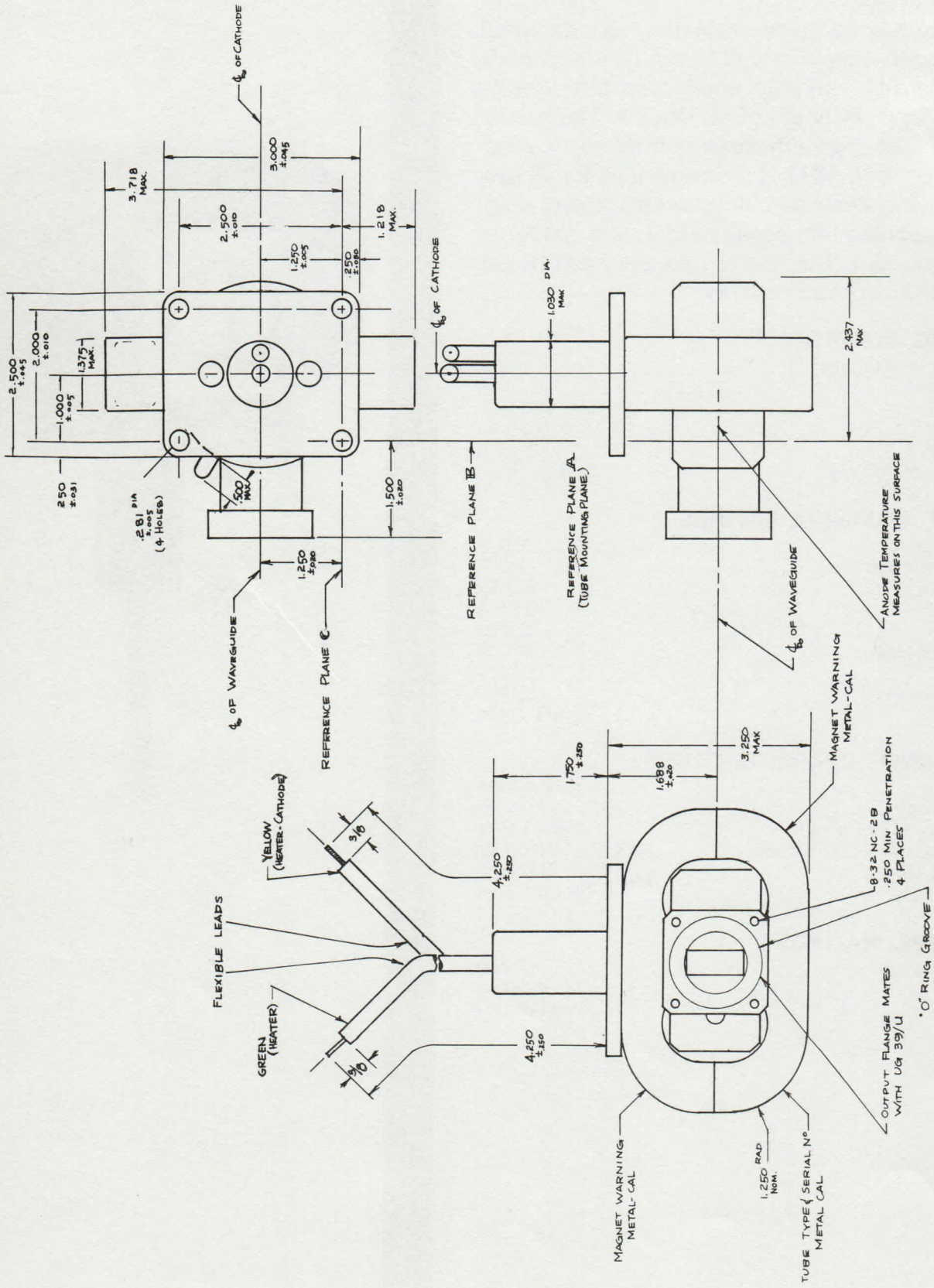
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 4.5 lbs. |
| Anode Cooling | Convection Air |

# COAXIAL PULSE MAGNETRON

# L-5211

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output rf connections, waveguide flanges, and gaskets must be rf leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.



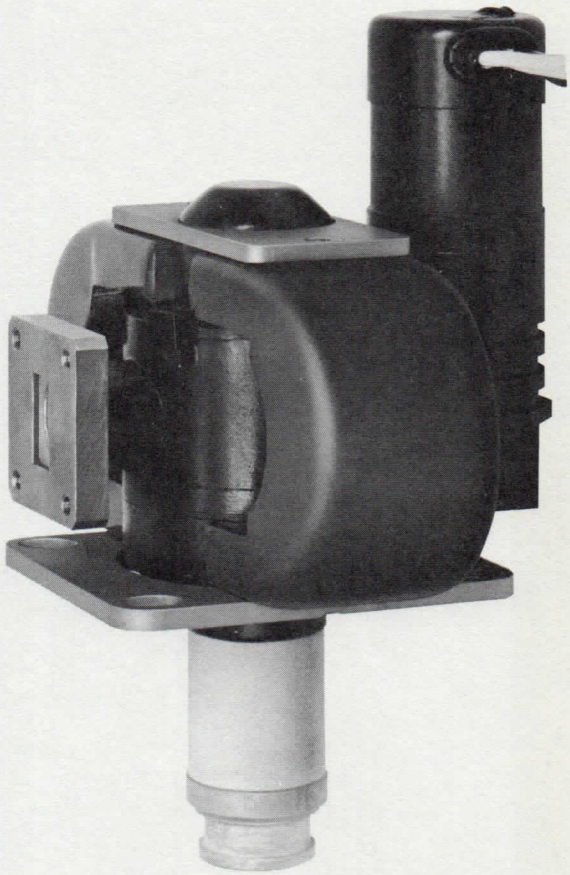
# GYRO-TUNED COAXIAL PULSE MAGNETRON

# L-5223

40 Kilowatts Peak Power
Fixed Center Frequency 16,750 ± 125 MHz
Gyro-Tuning Range 275 MHz

This lightweight, metal-ceramic coaxial magnetron features gyro-tuning to provide a high degree of frequency tuning and reliability in airborne search, navigation, terrain following and missile seeker radar applications.

Gyro-tuning employs a ring gear which drives a set of rotating dielectric paddles within the magnetron coaxial cavity. A high speed synchronous motor drives the entire mechanism, which is external to the tube vacuum envelope. The complete tuner assembly is compact and adds only ½ pound to the basic magnetron weight.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 1.5 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | Nominal 13 kVdc |
| Pulse Current | 11 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 7 A |
| Pulse Current | 15 A |
| Pulse Length | 2.0 us |
| Duty Cycle | 0.0015 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175°C |
| VSWR | 1.4:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 35 kW |
| Fixed Center Frequency | 16,750 ± 125 MHz |
| Frequency Agility (Gyro-tuning) | Min. 200 MHz |
| Frequency Agility Tuner Rate* | Max. 400 Hz |
| Frequency Agility Read-out Accuracy | ±2 MHz |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 4.5 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Heat sink or forced air |

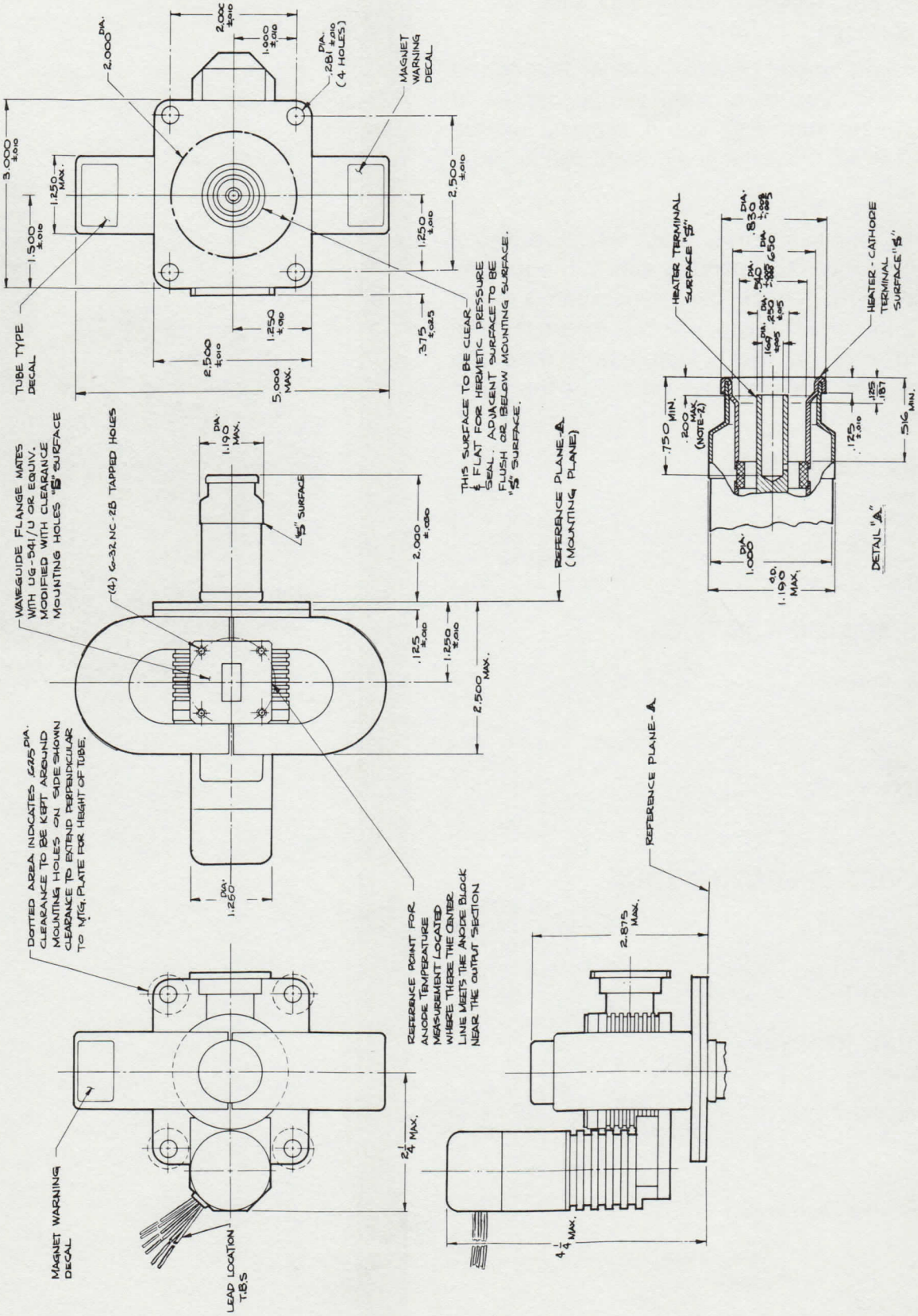
***Specify agility rate when ordering.**

# GYRO-TUNED
# COAXIAL PULSE MAGNETRON

# L-5223

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output rf connections, waveguide flanges, and gaskets must be rf leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.



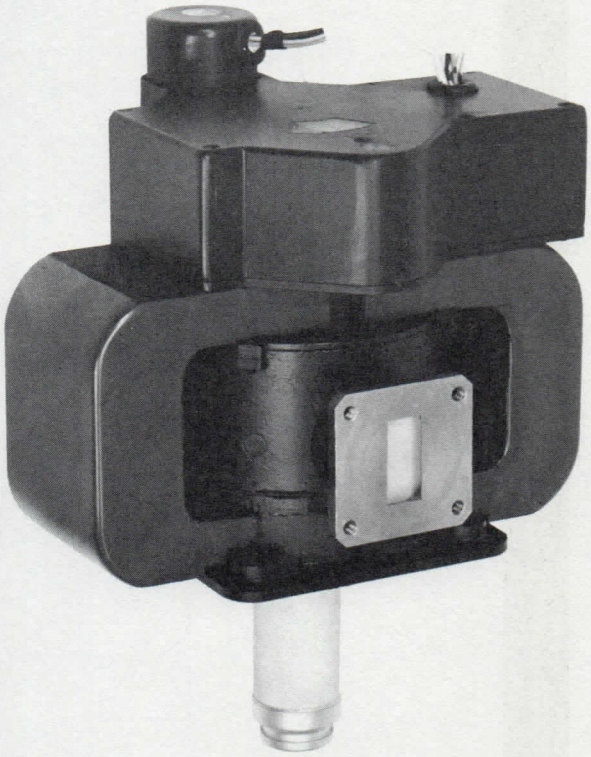
**GYRO-TUNED**
**COAXIAL PULSE MAGNETRON**

# L-5224

85 Kilowatts Peak Power
Mechanical Tuning Range 9.1 to 9.5 GHz
Gyro-Tuning Range 75 MHz

This lightweight, metal-ceramic coaxial magnetron features gyro-tuning to provide a high degree of frequency tuning and reliability in airborne search, navigation, terrain following and missile seeker radar applications.

Gyro-tuning employs a ring gear which drives a set of rotating dielectric paddles within the magnetron coaxial cavity. A high speed synchronous motor drives the entire mechanism, which is external to the tube vacuum envelope. The complete tuner assembly is compact and adds only ½ pound to the basic magnetron weight.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.0 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | Nominal 15 kVdc |
| Pulse Current | 15 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 6 A |
| Pulse Current | 18 A |
| Pulse Length | 5.0 us |
| Duty Cycle | 0.0015 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175°C |
| VSWR | 1.3:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | 75 kW Min. |
| Slow Tuner Range | 9.1 to 9.5 GHz |
| Frequency Agility (Gyro-tuning) | Min. 60 MHz |
| Frequency Agility Tuner Rate* | 75 - 400 Hz |
| Frequency Agility Read-out Accuracy | ±2 MHz |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Approx. 11 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Heat sink or forced air |

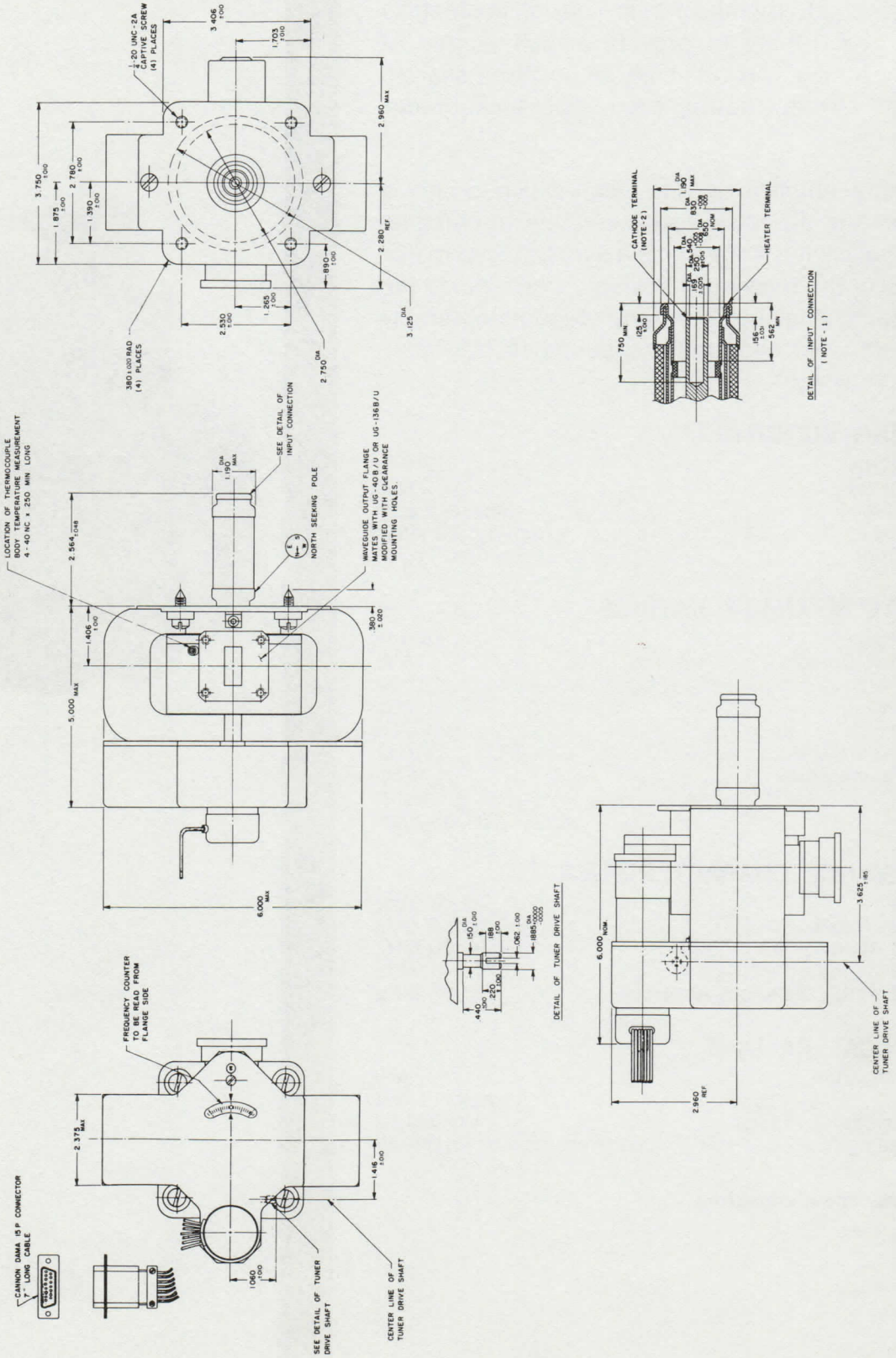
***Specify agility rate when ordering.**

# GYRO-TUNED
# COAXIAL PULSE MAGNETRON

# L-5224

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output rf connections, waveguide flanges, and gaskets must be rf leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.



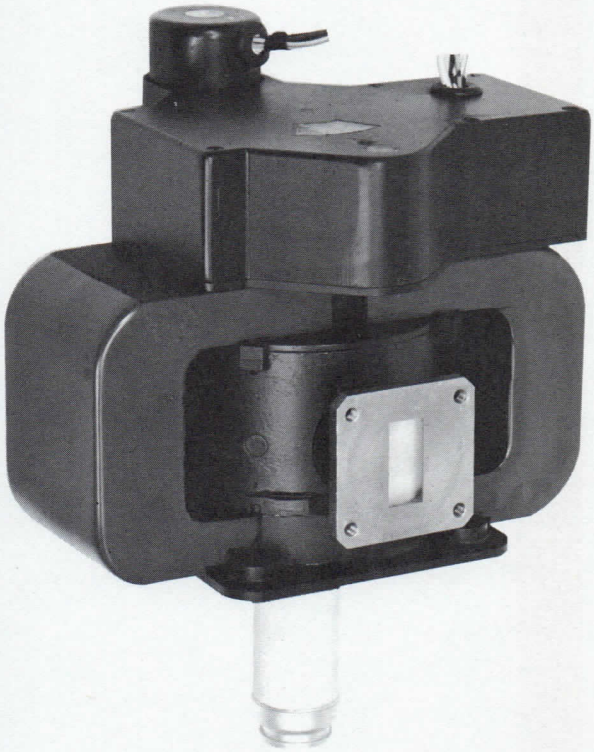
**GYRO-TUNED**
**COAXIAL PULSE MAGNETRON**

# L-5224A

85 Kilowatts Minimum Peak Power
Mechanical Tuning Range 9.0 to 9.5 GHz
Gyro-Tuning Range 75 MHz, Nominal
Gyro-Tuning Rate 75 Hz

This lightweight, metal-ceramic coaxial magnetron features gyro-tuning to provide frequency agility in airborne search, navigation, terrain following and missile seeker radar applications.

Gyro-tuning employs a ring gear which drives a set of rotating dielectric paddles within the magnetron coaxial cavity. A high speed synchronous motor drives the entire mechanism, which is external to the tube vacuum envelope. The complete tuner assembly is compact and adds only ½ pound to the basic magnetron weight.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 10.0 V |
| Heater Current | 1.6 A |
| Preheat Time | Max. 180 sec. |
| Pulse Voltage | Nominal 15 kVdc |
| Pulse Current | 15 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Surge Current | 10.0 A |
| Pulse Current | 16 A |
| Pulse Length | 5.0 μsec |
| Duty Cycle | 0.0011 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 50,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | 85 kw Min. |
| Slow Tuner Range | 9.0 to 9.5 GHz |
| Frequency Agility (△f) | 60-95 MHz |
| Frequency Agility Tuner Rate | 75 Hz |
| Frequency Agility Read-out Accuracy | ±2 MHz |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | 12.5 lbs. Max. |
| Mating Waveguide Flange | UG-40/U |
| Anode Cooling | Forced air |

# GYRO-TUNED
# COAXIAL PULSE MAGNETRON

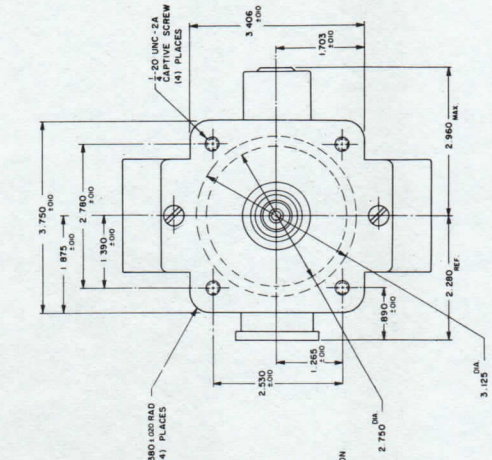
# L-5224A

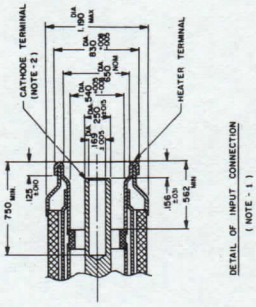
**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

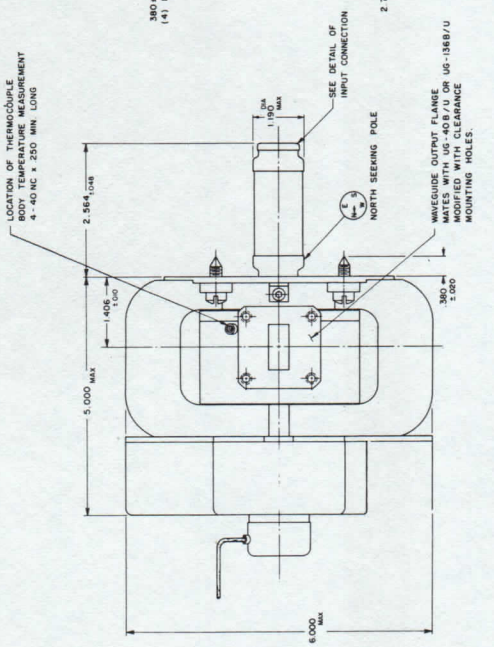
**CAUTION**
**X-RAYS**

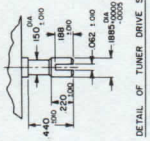
This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.



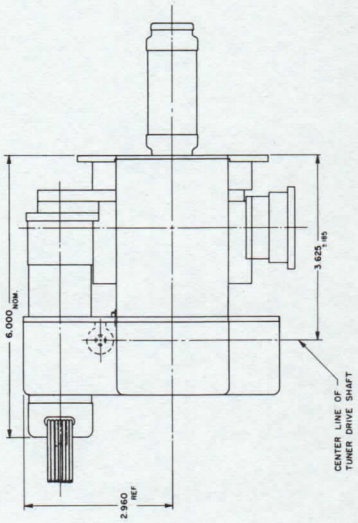



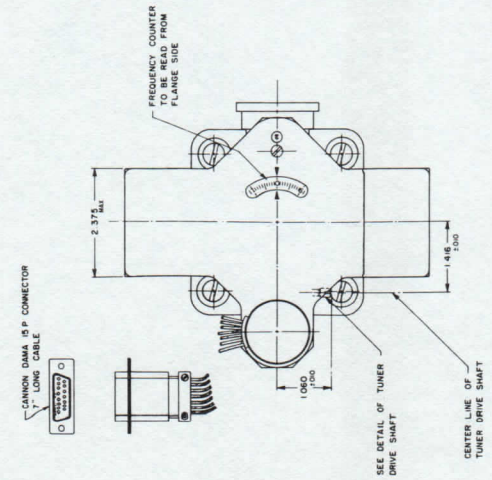

DETAIL OF INPUT CONNECTION
( NOTE - 1 )




DETAIL OF TUNER DRIVE SHAFT



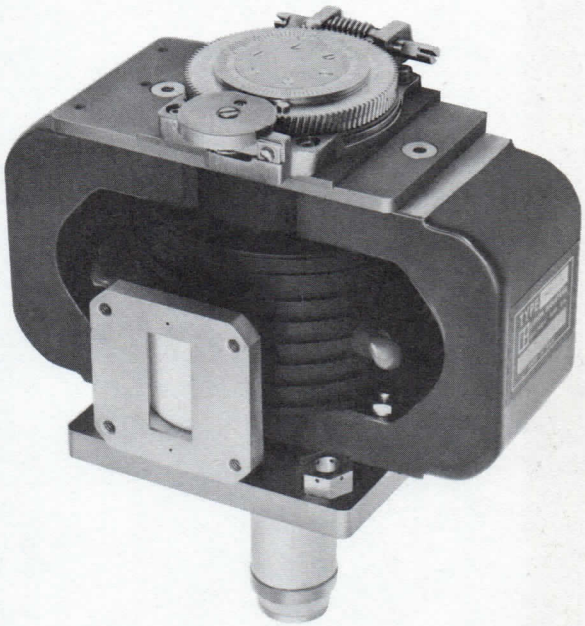



COAXIAL PULSE MAGNETRON

# L-5273

95 Kilowatts Minimum Peak Power
Tunable Frequency 8,500 to 9,600 MHz

This tunable X-band coaxial magnetron is recommended for new systems which require more power output than the 6543 series offers. The coaxial design also provides increased efficiency and longer service life for new equipments.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 12.6 V |
| Heater Current | 3.2 A |
| Pre-heat Time | Min. 150 sec. |
| Pulse Voltage | 17 kv |
| Pulse Current | 15 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14 V |
| Heater Surge Current | 12 A |
| Pulse Current | 16 A |
| Pulse Length | 3.0 $\mu$sec |
| Duty Cycle | 0.0011 |
| Average Input Power | 300 W |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 95 kw |
| Tunable Frequency | 8,500-9,600 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 5 MHz |
| Anode Temperature Coefficient | Max. 0.25 MHz/°C |
| Missing Pulses | 0.1% |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Nominal 10 lbs. |
| Anode Cooling | Forced Air |
| Mating Waveguide Flange | UG-52A/U |

# COAXIAL PULSE MAGNETRON

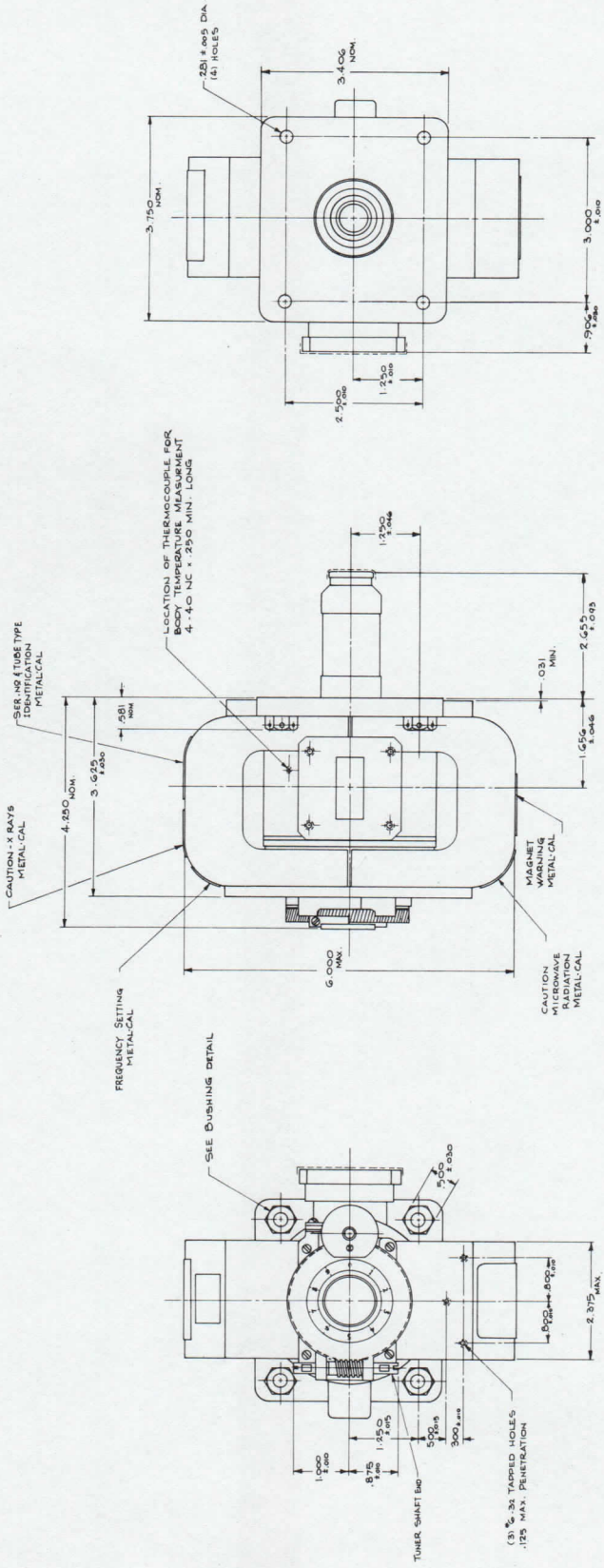
# L-5273

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**

**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.

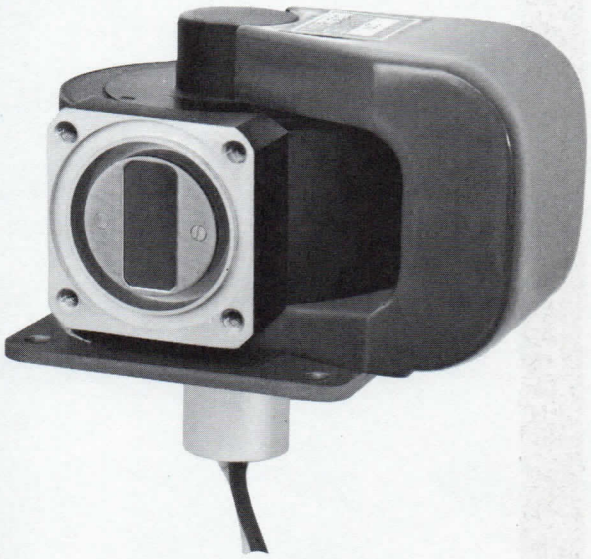


COAXIAL PULSE MAGNETRON

# L-5274

7.5 Kilowatts Minimum Peak Power
Fixed Frequency 9345 ± 20 MHz

This X-band, coaxial magnetron is specifically designed to provide long life in commercial airborne weather radar applications. While it is not a direct mechanical replacement for the 2J42 and 2J42H magnetrons, it is recommended for new equipments requiring this performance.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current | 1.7 A |
| Pre-heat Time | Min. 60 sec. |
| Pulse Voltage | 4.0 to 4.5 kv |
| Pulse Current | 4.5 A |
| Time of Steepest Rise of Voltage | Min. 0.1 μsec |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 13.8 V |
| Heater Surge Current | 6.0 A |
| Pulse Voltage | 5.0 kV |
| Pulse Current | 6.0 A |
| Pulse Length | 6.0 μsec. |
| Duty Cycle | 0.0013 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 7.5 kw |
| Fixed Frequency | 9345 ± 20 MHz |
| Pulling Figure (1.3:1 VSWR) | Max. 5 MHz |
| Anode Temperature Coefficient | Max. 0.25 MHz/°C |
| Altitude | 65,000 Feet |

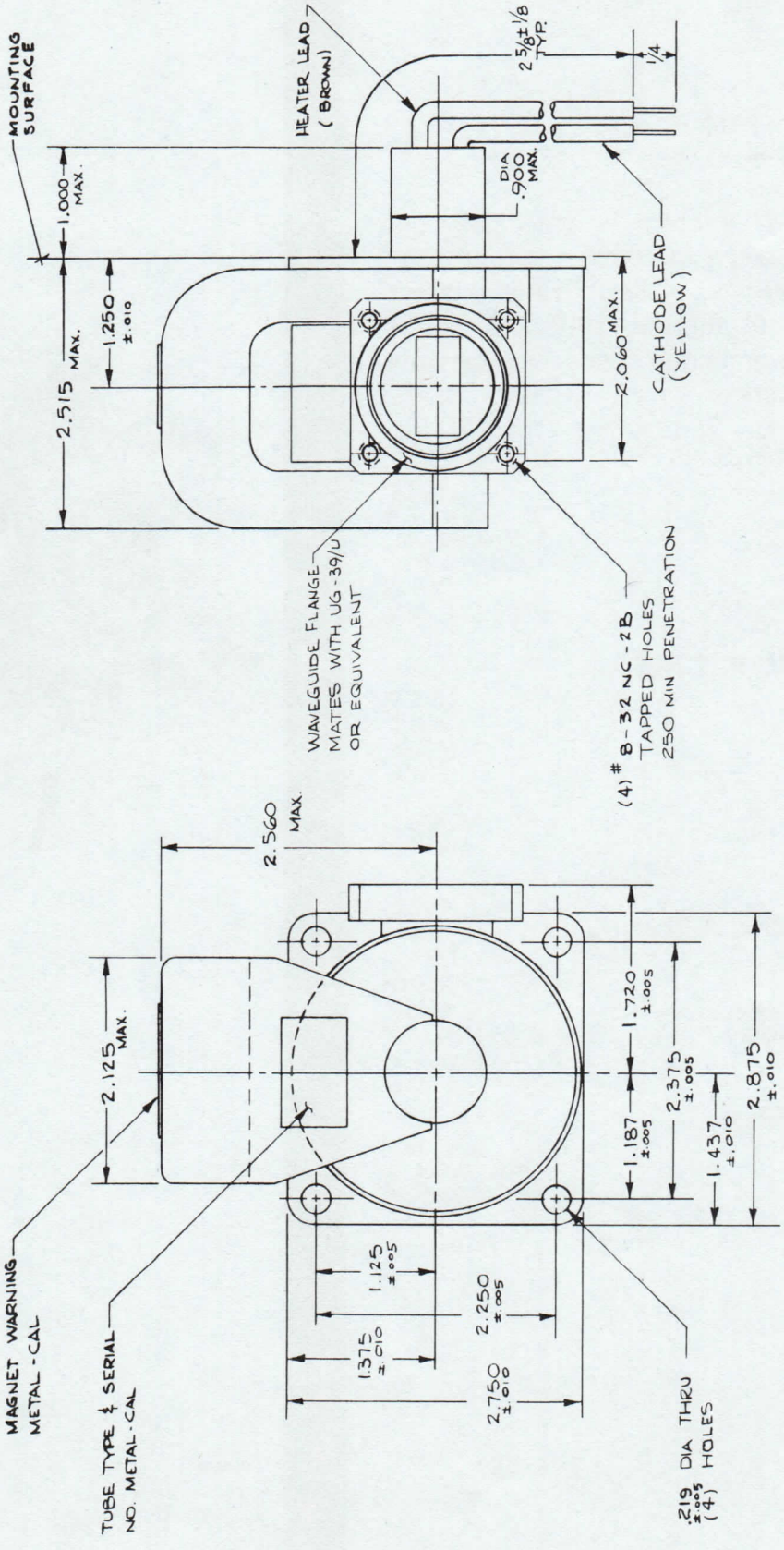
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 2.5 lbs. |
| Anode Cooling | Forced Air or Conduction |

## COAXIAL PULSE MAGNETRON

# L-5274

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.



COAXIAL PULSE MAGNETRON

# L-5328

2.5 Kilowatts Minimum Peak Power
Tunable Frequency 15,400 to 15,700 MHz

This Ku-band coaxial magnetron features a very low temperature coefficient and is capable of reliable operation over a wide range of duty cycles without heater programming. It is especially suited for use in all-weather aircraft instrument landing systems.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current | 2.0 A |
| Pre-heat Time | Min. 60 sec. |
| Pulse Voltage | 3.6 kv |
| Pulse Current | 3.0 A |
| Time of Steepest Rise of Voltage | Min. 0.06 $\mu$sec |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 6.0 A |
| Pulse Voltage | 3.8 kv |
| Pulse Current | 3.1 A |
| Pulse Length | 1.0 $\mu$sec |
| Duty Cycle | 0.005 |
| Average Input Power | 60 watts |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 2.5 kw |
| Tunable Frequency | 15,400-15,700 MHz |
| Pulling Figure (1.3:1 VSWR) | Max. 5 MHz |
| Anode Temperature Coefficient | Max. 24 KHz/°C |
| Altitude | 10,000 Feet |
| Missing Pulses | 0.1% |

## MECHANICAL RATINGS

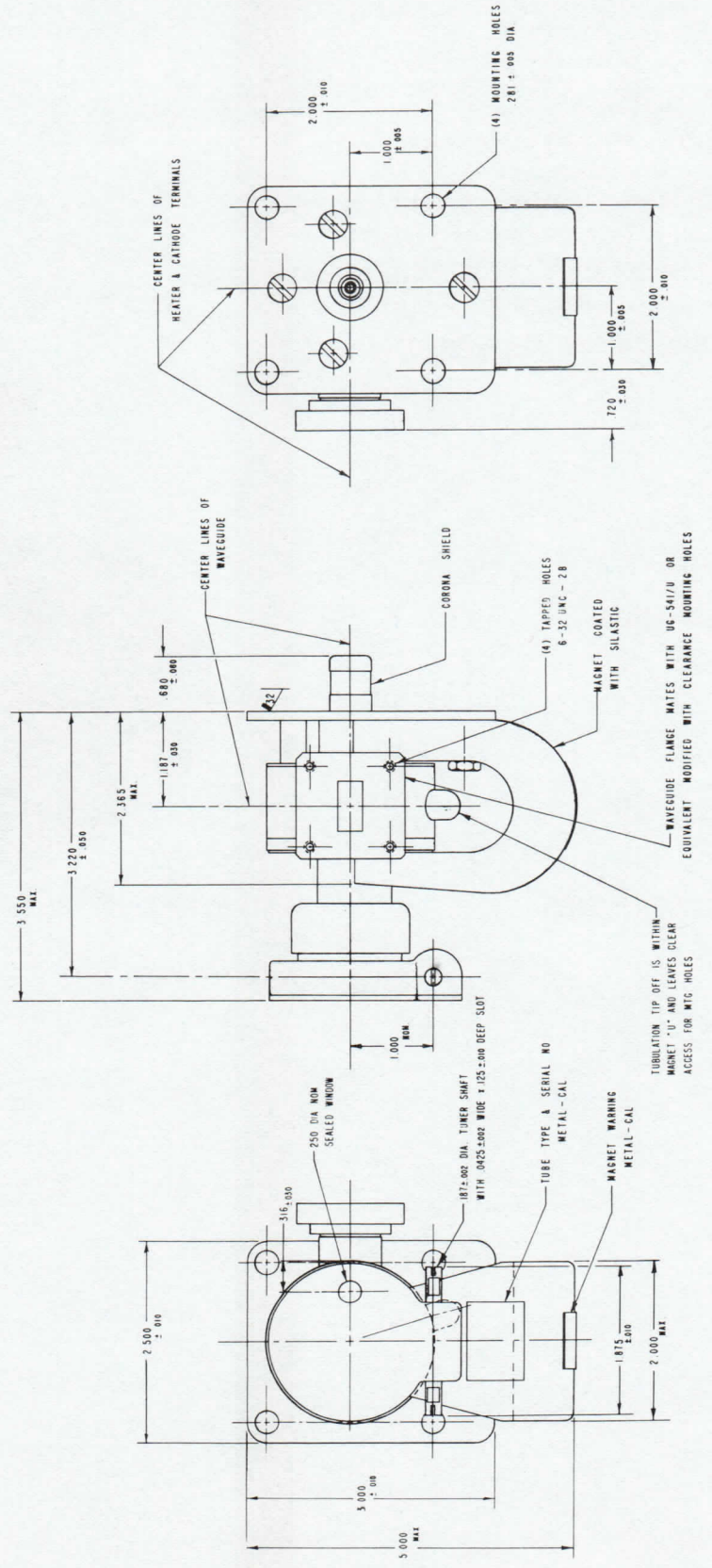
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 4.0 lbs. |
| Anode Cooling | Conduction & Convection |
| Tuner Torque | Max. 20 oz. in. |
| Shock | 200 G @ 3 ms |

## COAXIAL PULSE MAGNETRON

# L-5328

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.



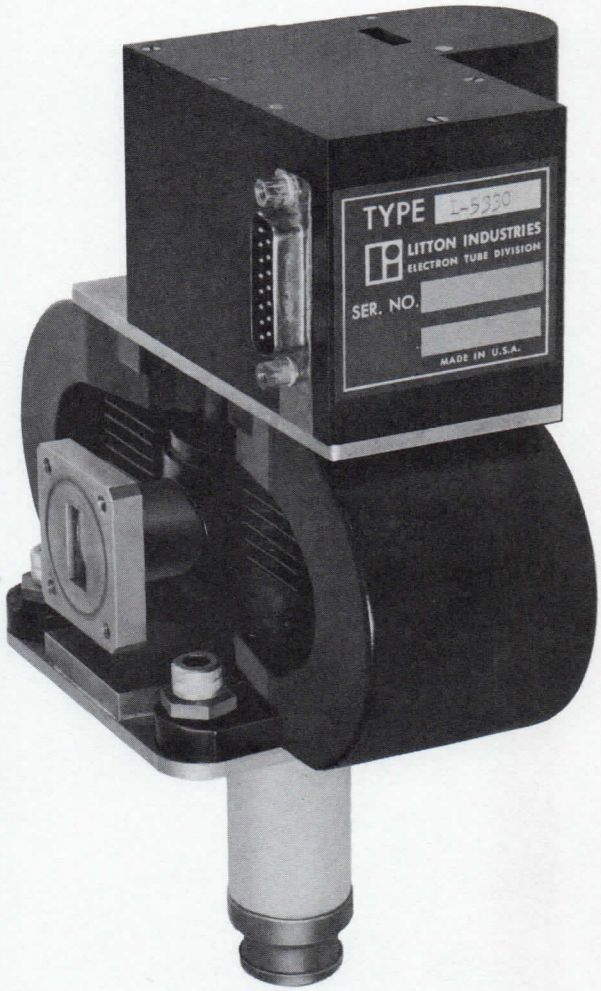
## GYRO-TUNED
## COAXIAL PULSE MAGNETRON

# L-5330

60 Kilowatts Minimum Peak Power
Mechanical Tuning Range 16,000 to 17,000 MHz
Gyro-Tuning Range 40 MHz, Nominal
Gyro-Tuning Rate 200 Hz

This lightweight, metal-ceramic coaxial magnetron features gyro-tuning to provide a high degree of frequency tuning and reliability in airborne search, navigation, terrain following and missile seeker radar applications.

Gyro-tuning employs a ring gear which drives a set of rotating dielectric paddles within the magnetron coaxial cavity. A high speed synchronous motor drives the entire mechanism, which is external to the tube vacuum envelope. The complete tuner assembly is compact and adds only ½ pound to the basic magnetron weight.




### OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.4 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | Nominal 15 kV |
| Pulse Current | 15 A |

### ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 13.0 V |
| Heater Surge Current | 13 A |
| Pulse Current | 18 A |
| Pulse Length | 3.5 $\mu$s |
| Duty Cycle | 0.0012 |
| Anode Temperature | 150°C |
| Cathode Temperature | 175°C |
| VSWR | 1.5:1 Ratio |

### PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 60 kW |
| Slow Tuner Range | 16,000 to 17,000 MHz |
| Frequency Agility ($\triangle$f) | 20-50 MHz |
| Frequency Agility Tuner Rate | 200 Hz |
| Frequency Agility Read-out Accuracy | ±1.0 MHz |

### MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 8.5 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Heat sink or forced air |

# GYRO-TUNED COAXIAL PULSE MAGNETRON

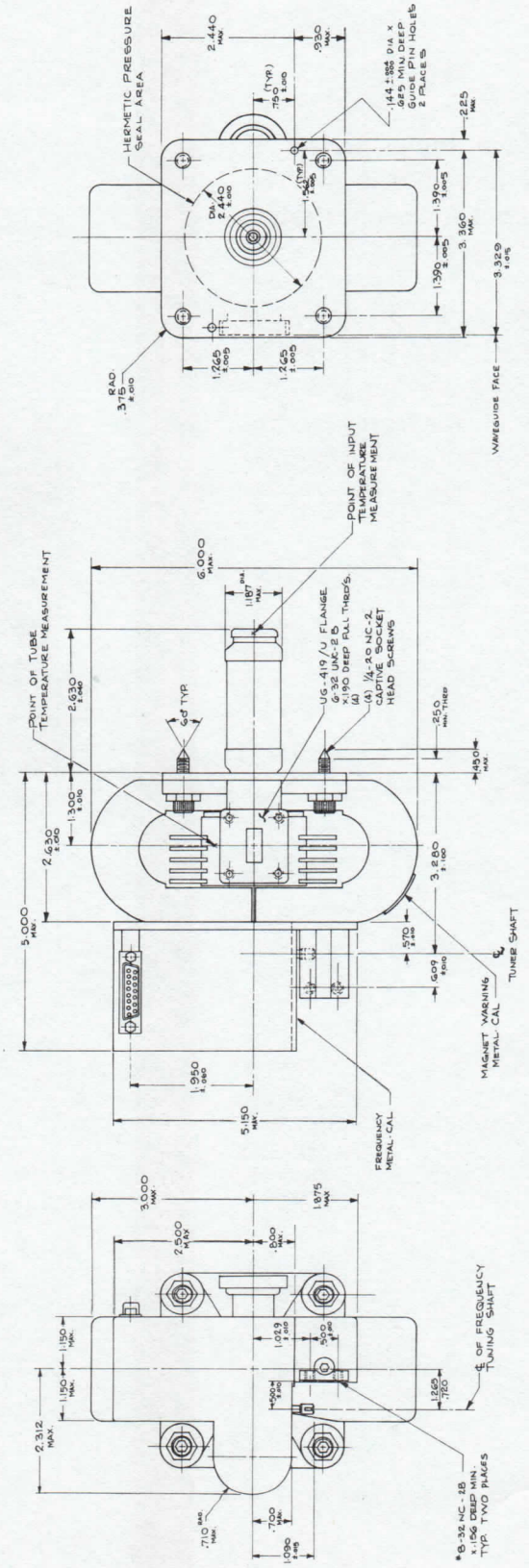
# L-5330

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.

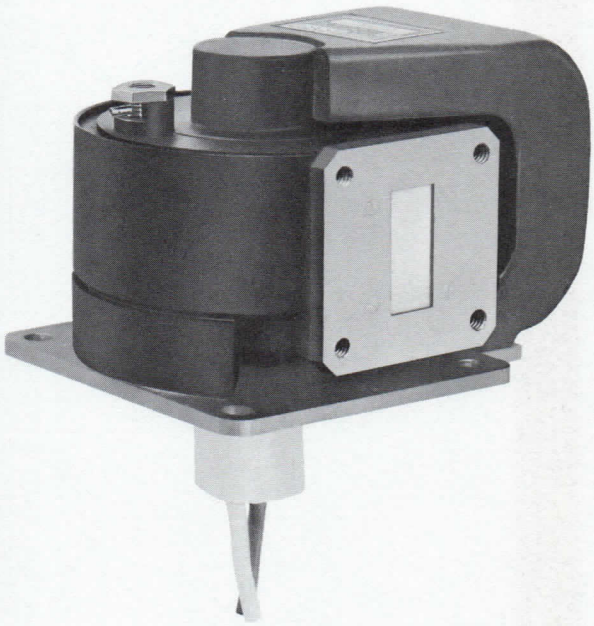


COAXIAL PULSE MAGNETRON

# L-5359

7.0 Kilowatts Minimum Peak Power
Adjustable Frequency 9375 ± 5 MHz

This X-band coaxial magnetron features a low temperature coefficient and adjustable frequency making it ideal for radar systems which require higher than normal frequency stability.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 6.3 V |
| Heater Current | 1.6 A |
| Pre-heat Time | Min. 60 sec. |
| Pulse Voltage | 4.0 to 4.5 kv |
| Pulse Current | 4.5 A |
| Time of Steepest Rise of Voltage | Min. 0.100 μsec |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 7.0 V |
| Heater Surge Current | 6.0 A |
| Pulse Voltage | 5.0 kv |
| Pulse Current | 6.0 A |
| Pulse Length | 6.0 μsec |
| Duty Cycle | 0.0013 |
| Anode Temperature | 150° C |
| VSWR | 1.3:1 |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 7.0 kw |
| Adjustable Frequency | 9375 ±5 MHz |
| Pulling Figure (1.3:1 VSWR) | Max. 5 MHz |
| Anode Temperature Coefficient | Max. 0.05 MHz/°C |
| Altitude | 25,000 Feet |
| Missing Pulses | 0.25% |

## MECHANICAL RATINGS

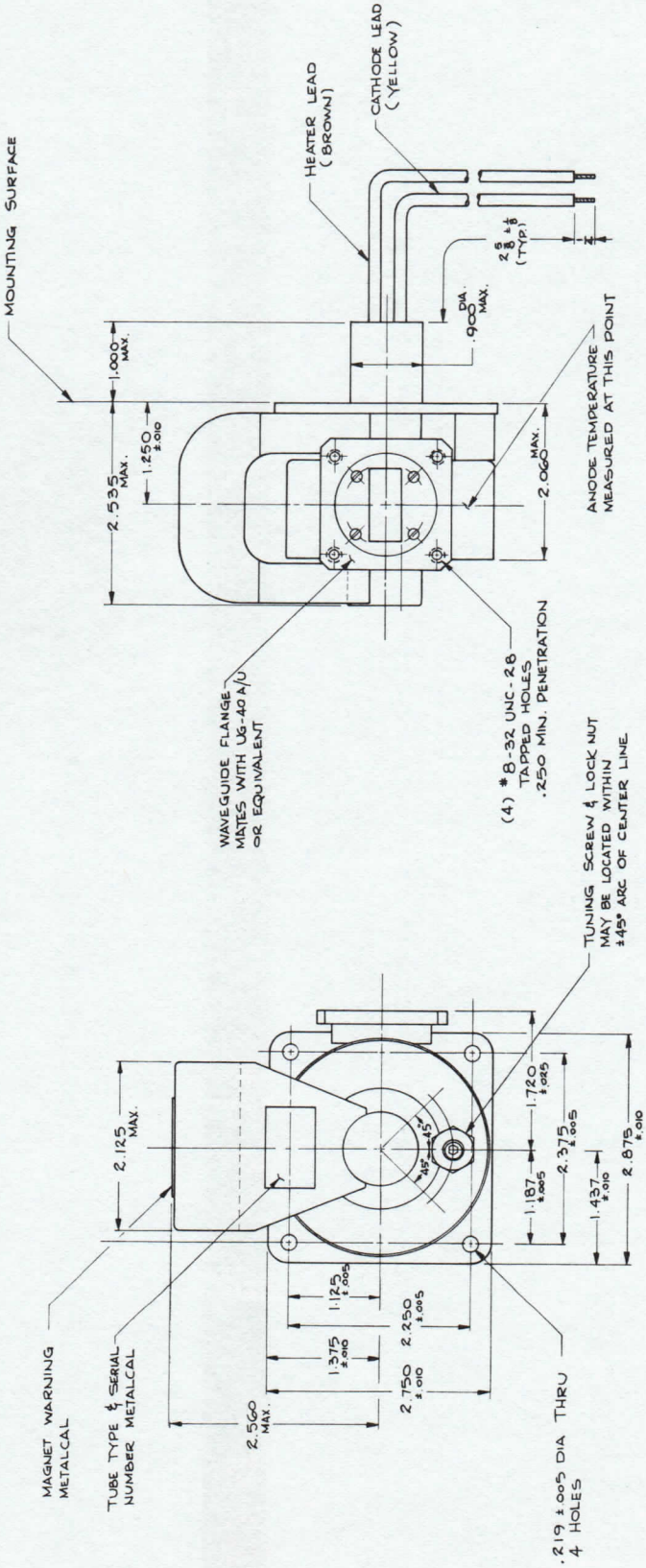
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 3.0 lbs. |
| Anode Cooling | Forced Air or Conduction |

# COAXIAL PULSE MAGNETRON

# L-5359

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

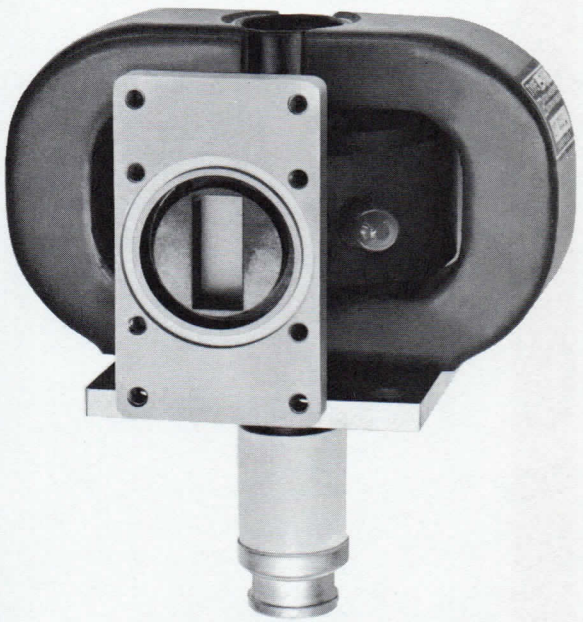


COAXIAL PULSE MAGNETRON

# L-5365

28 Kilowatts Minimum Peak Power
Fixed Frequency 9345 ± 15 MHz

This coaxial X-band pulse magnetron was designed using a very conservative load factor. Its low cathode emission density and large anode structure provide many thousands of hours of service life. The coaxial design provides high efficiency and excellent spectrum shape. The L-5365 is recommended for all new 28 kw radar systems. The center frequency can be set to suit individual requirements.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 12.6 V |
| Heater Current | 0.9-1.3 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | 8.25 to 8.75 kv |
| Pulse Current | 8.5 A |
| Time of Rise of Voltage | Min. 0.10 μsec |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.5 V |
| Heater Surge Current | 4.0 A |
| Pulse Voltage | 9.0 kv |
| Pulse Current | 13.0 A |
| Pulse Length | 6.0 μsec |
| Average Input Power | 125 W |
| Duty Cycle | 0.0015 |
| Anode Temperature | 150° C |
| VSWR | 1.5:1 Ratio |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 28 kw |
| Fixed Frequency | 9345 ± 15 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 6 MHz |
| Anode Temperature Coefficient | Max. 0.25 MHz/°C |
| Altitude | 60,000 Feet |

## MECHANICAL RATINGS

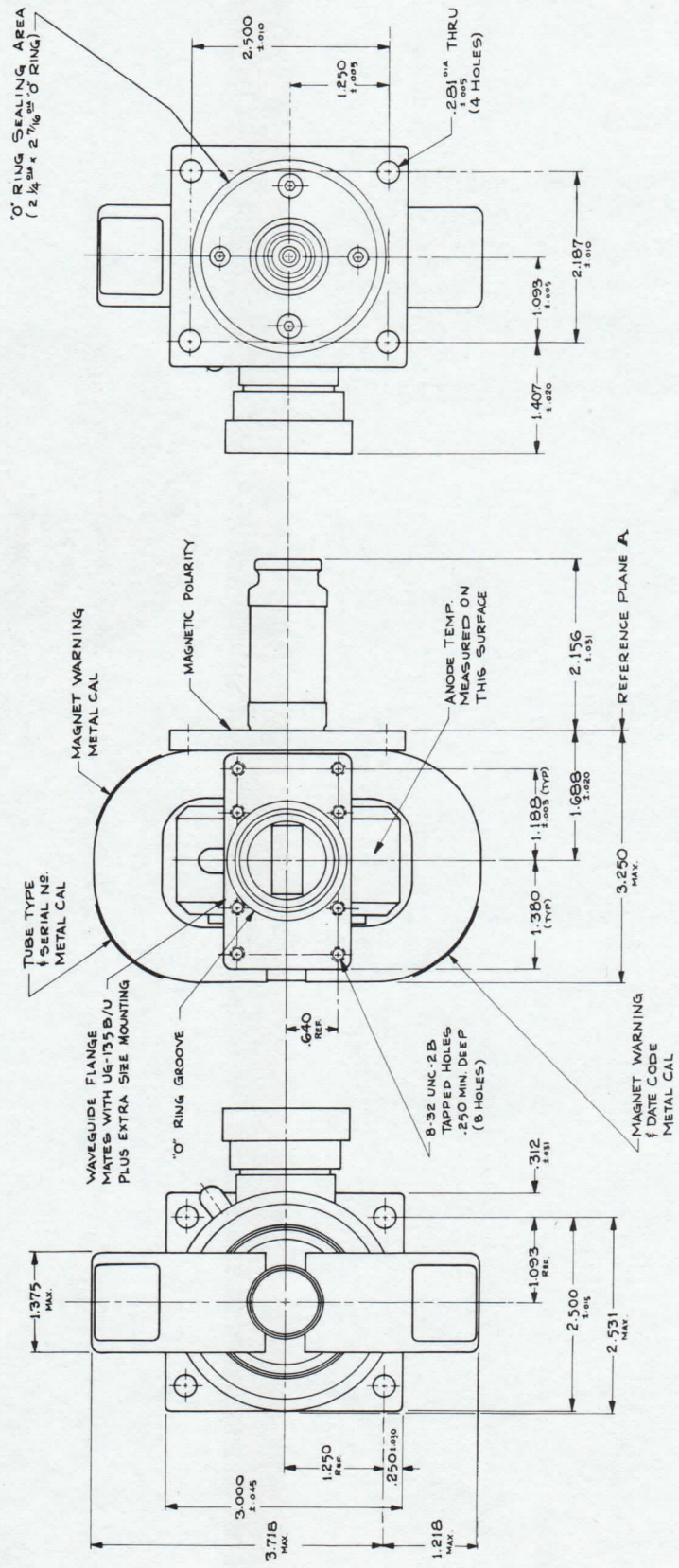
| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 4.5 lbs. |
| Anode Cooling | Conduction |

# COAXIAL PULSE MAGNETRON

# L-5365

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.



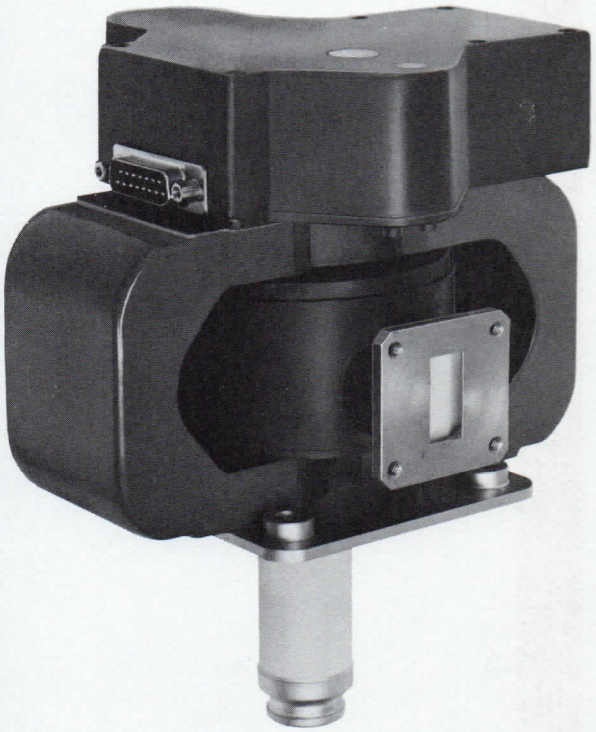
# GYRO-TUNED COAXIAL PULSE MAGNETRON

# L-5407

75 Kilowatts Minimum Peak Power
Mechanical Tuning Range 9.0 to 9.5 GHz
Gyro-Tuning Range 175 MHz, Nominal
Gyro-Tuning Rate 200 Hz

This lightweight, metal-ceramic coaxial magnetron features gyro-tuning to provide frequency agility in airborne search, navigation, terrain following and missile seeker radar applications.

Gyro-tuning employs a ring gear which drives a set of rotating dielectric paddles within the magnetron coaxial cavity. A high speed synchronous motor drives the entire mechanism, which is external to the tube vacuum envelope. The complete tuner assembly is compact and adds only ½ pound to the basic magnetron weight.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2.0 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | Nominal 15 kVdc |
| Pulse Current | 15 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 6 A |
| Pulse Current | 18 A |
| Pulse Length | 5.0 μsec |
| Duty Cycle | 0.0011 |
| Anode Temperature | 150° C |
| Cathode Temperature | 185° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 50,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | 75 kw Min. |
| Slow Tuner Range | 9.0 to 9.5 GHz |
| Frequency Agility (Δf) | 150-200 MHz |
| Frequency Agility Tuner Rate | 200 Hz |
| Frequency Agility Read-out Accuracy | ±2 MHz |

## MECHANICAL RATINGS

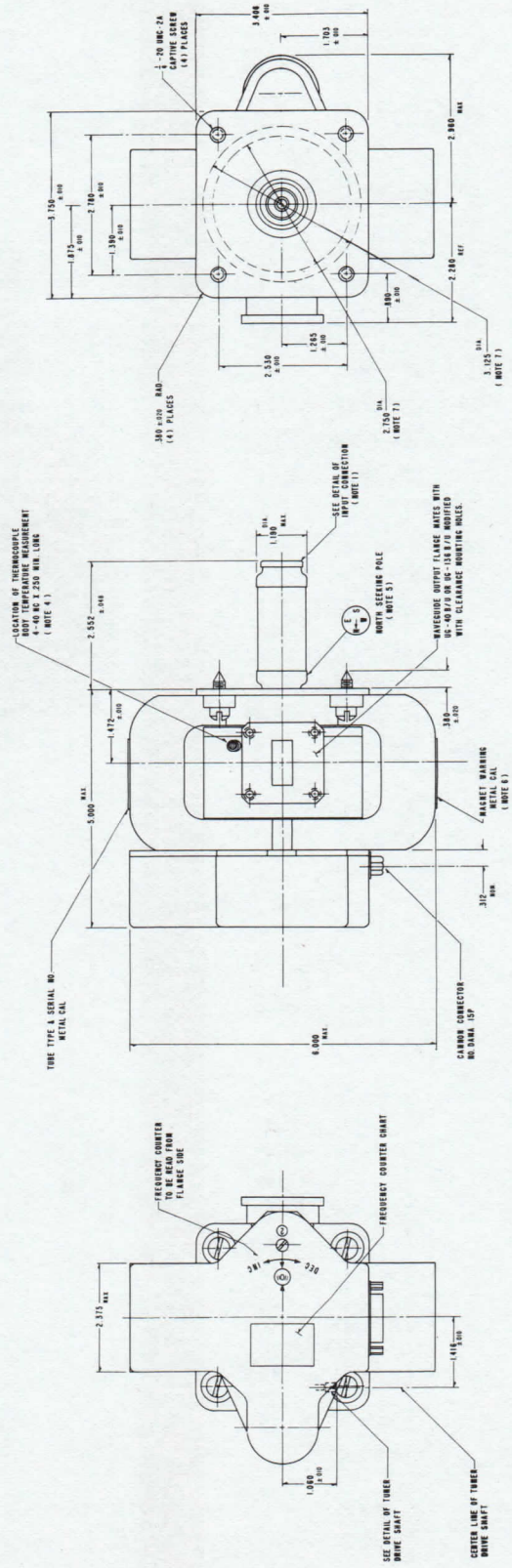
| | |
|---|---|
| Mounting Position | Any |
| Weight | 12.5 lbs. Max. |
| Mating Waveguide Flange | UG-40/U |
| Anode Cooling | Forced air |

# GYRO-TUNED COAXIAL PULSE MAGNETRON

# L-5407

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.



COAXIAL PULSE MAGNETRON

# L-5434

70 Kilowatts Minimum Peak Power
Fixed Frequency 15,840 to 16,160 MHz

This highly reliable coaxial magnetron has been designed for use in precision ranging surface radar systems. The L-5434 is a direct replacement for the 7452A.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Standby) | 4.8 V |
| Heater Current (Standby) | 11 A |
| Preheat Time | Min. 270 sec. |
| Pulse Voltage | 22 to 26 kv |
| Pulse Current | 12 a |
| Rate-of-Rise of Voltage | Max. 155 kv/$\mu$sec. |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 5.3 V |
| Heater Surge Current | 70 A |
| Pulse Length | 0.3 $\mu$s |
| Pulse Voltage | 26 kv |
| Pulse Current | 14 a |
| Average Input Power | 575 W |
| Duty Cycle | 0.002 |
| Anode Temperature | 150°C |
| VSWR | 1.5:1 |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 70 kw |
| Frequency | 15,840 to 16,160 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 20 MHz |
| Pushing Figure | Max. 1.3 MHz/a |
| Missing Pulses | Max. 0.75% |
| Anode Temperature Coefficient | Max. 750 kHz/°C |
| Shock (11 msec) | 15 G |
| Rated Cycle Life | 1000 Hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight (Approximate) | 23 lbs. |
| Mating Output Flange | Modified UG-541/u |
| Anode Cooling | Forced Air |
| Output Pressurization | Max. 50 psia |

Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

# COAXIAL PULSE MAGNETRON

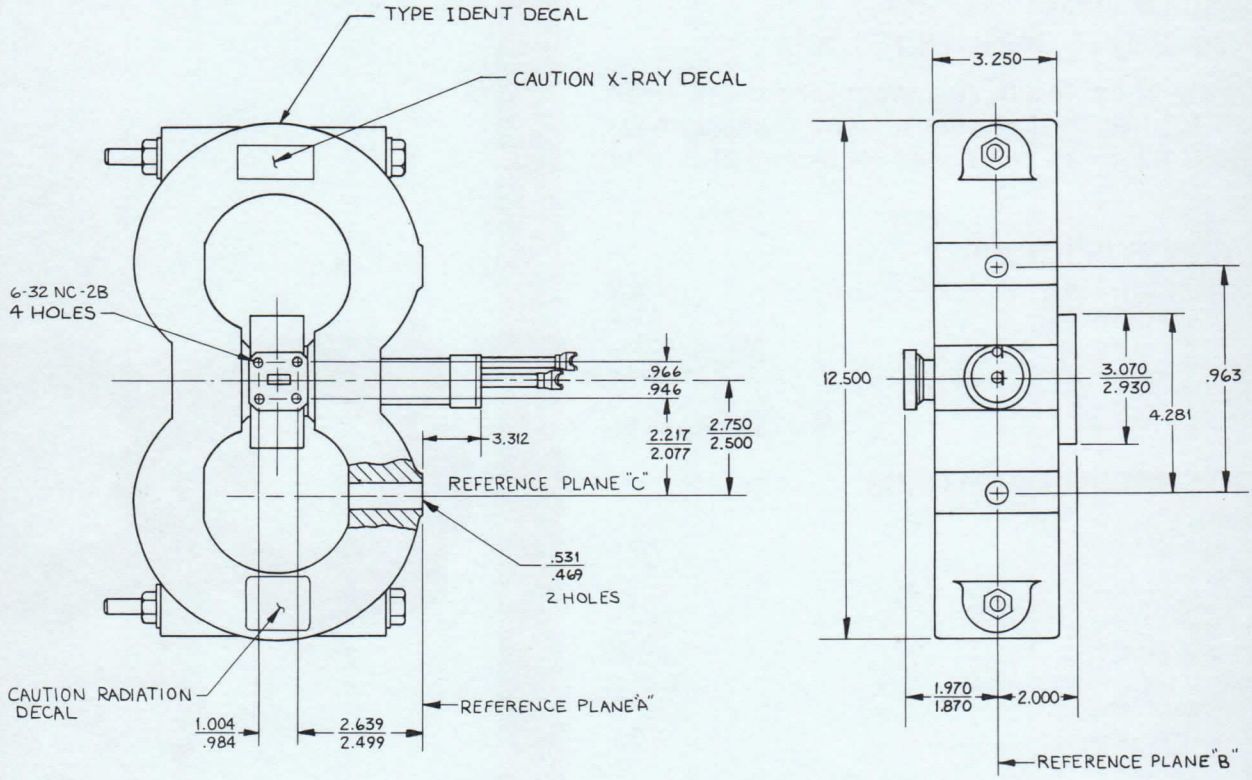
# L-5434

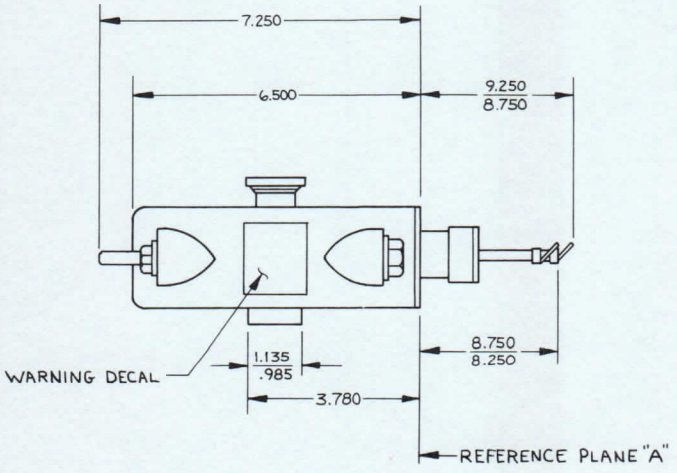
**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.




MIN.
MAX.


Litton
**ELECTRON TUBE DIVISION**
1035 Westminster Drive, Williamsport, Pennsylvania 17701, (717) 326-3561

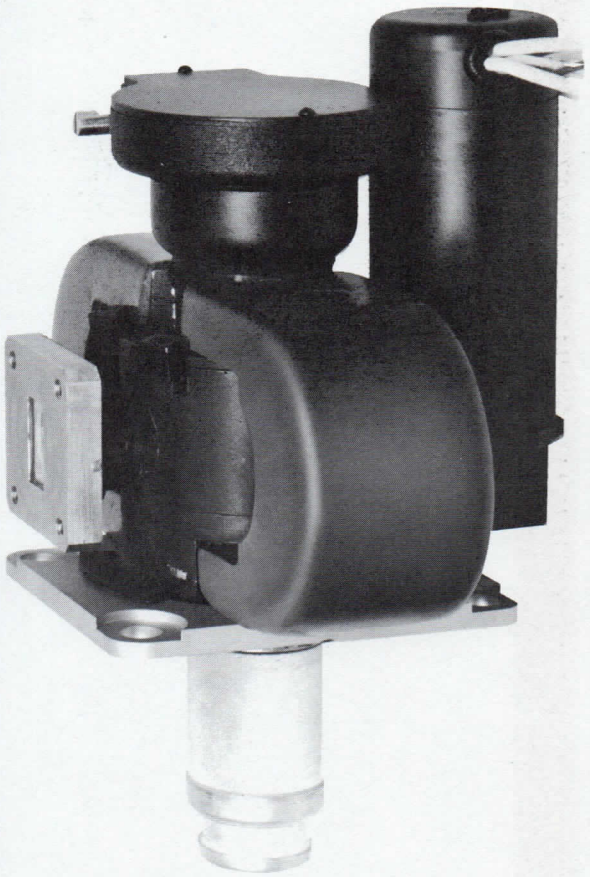
# GYRO-TUNED COAXIAL PULSE MAGNETRON

# L-5436

35 Kilowatts Minimum Peak Power
Mechanical Tuning Range 16,600 to 16,900 MHz
Gyro-Tuning Range 250 MHz, Nominal
Gyro-Tuning Rate 200 Hz

This lightweight, metal-ceramic coaxial magnetron features gyro-tuning to provide frequency agility in airborne search, navigation, terrain following and missile seeker radar applications.

Gyro-tuning employs a ring gear which drives a set of rotating dielectric paddles within the magnetron coaxial cavity. A high speed synchronous motor drives the entire mechanism, which is external to the tube vacuum envelope. The complete tuner assembly is compact and adds only ½ pound to the basic magnetron weight.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 1.5 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | Nominal 13 kVdc |
| Pulse Current | 11 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14.0 V |
| Heater Surge Current | 7 A |
| Pulse Current | 15 A |
| Pulse Length | 2.0 μsec |
| Duty Cycle | 0.0015 |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.4:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power | Min. 35 kw |
| Slow Tuner Range | 16,600 to 16,900 MHz |
| Frequency Agility (Δf) | Min. 225 MHz @ 16.8 GHz |
| Frequency Agility Tuner Rate | 200 Hz |
| Frequency Agility Read-out Accuracy | ±1% of Δf |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 4.5 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Anode Cooling | Heat sink or forced air |

# GYRO-TUNED COAXIAL PULSE MAGNETRON

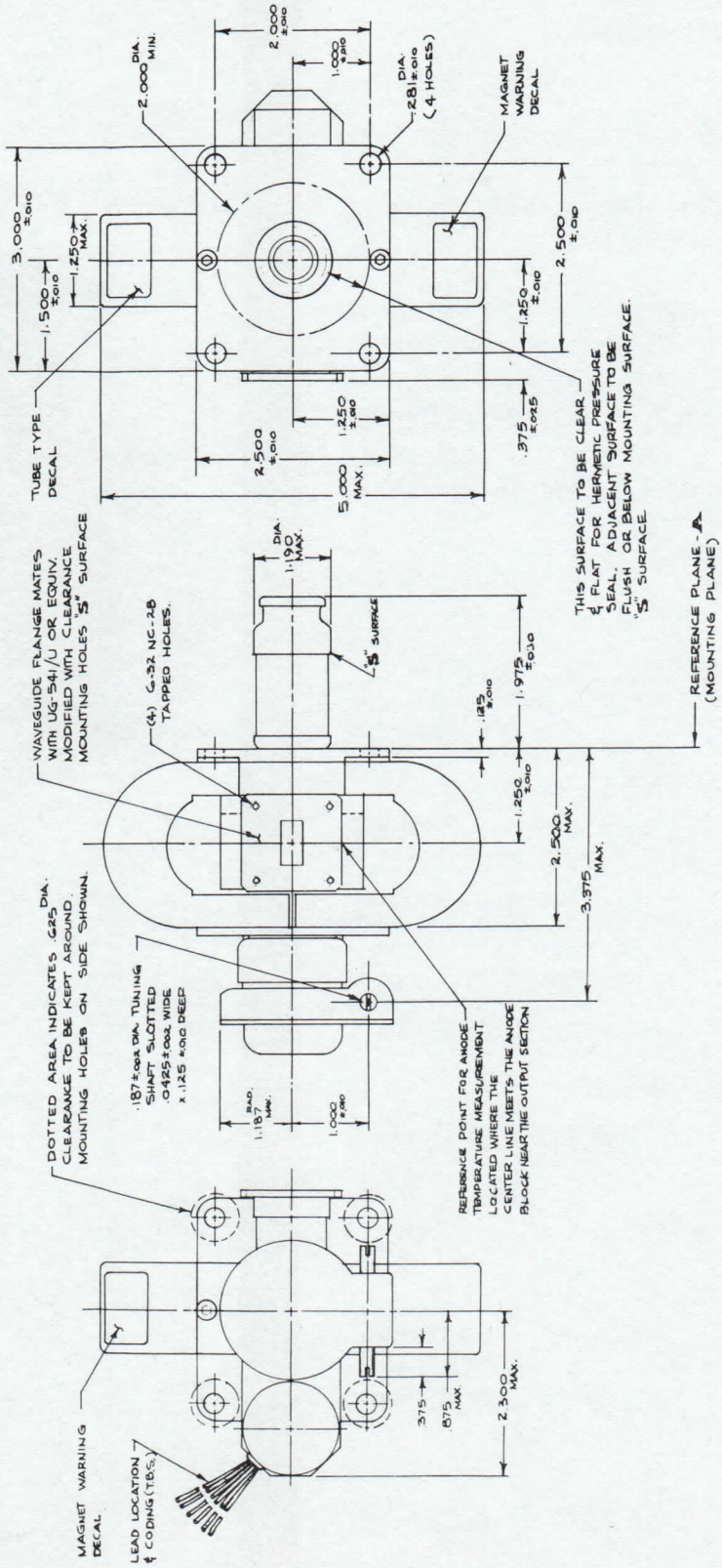
# L-5436

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.



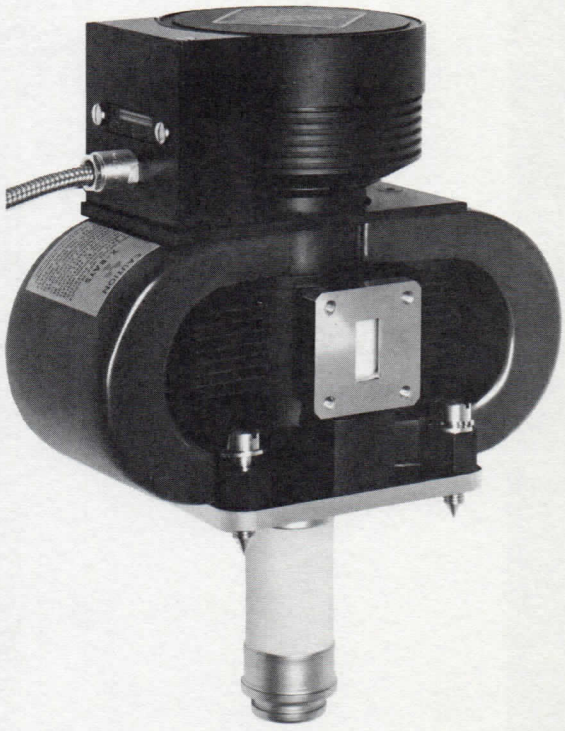
**GYRO-TUNED™**
**COAXIAL PULSE MAGNETRON**

# L-5498

65 Kilowatts Minimum Peak Power
Fixed Center Frequency 16,000 MHz
Gyro-Tuning Range 300 MHz, Minimum
Gyro-Tuning Rate 800 Hz, Nominal

This compact, metal-ceramic coaxial magnetron features very high speed gyro-tuning to provide frequency agility in airborne search, navigation, terrain following and missile seeker applications.

The L-5498 incorporates improved gyro-tuning technology to achieve its high tuning rate. Gyro-tuning employs a high speed synchronous motor and gears to drive a set of rotating dielectric paddles within the magnetron coaxial cavity. The entire mechanism is external to the tube vacuum envelope.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 12.6 V |
| Heater Current | 2 A |
| Preheat Time | Min. 120 sec. |
| Pulse Voltage | Nominal 17 kv |
| Pulse Current | 17 A |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 14 V |
| Heater Surge Current | 13 A |
| Pulse Current | 18 a |
| Pulse Length | 1 μsec |
| Duty Cycle | 0.0013 |
| Anode Temperature | 125°C |
| Cathode Bushing Temperature | 175°C |
| VSWR | 1.3:1 |
| Altitude | 5,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Peak Power Output | Min. 65 kw |
| Fixed Center Frequency | 16,000 MHz |
| Frequency Agility (Δf) | Min. 300 MHz |
| Frequency Agility Tuner Rate | Min. 760 Hz |
| Frequency Agility Read-out Accuracy | ±3 MHz |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | 8 lbs. |
| Mating Waveguide Flange | UG-541/U |
| Mating Cathode Connector | Jettron 9000 |
| Cooling | Conduction and forced air |

Litton
**ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

# GYRO-TUNED™ COAXIAL PULSE MAGNETRON

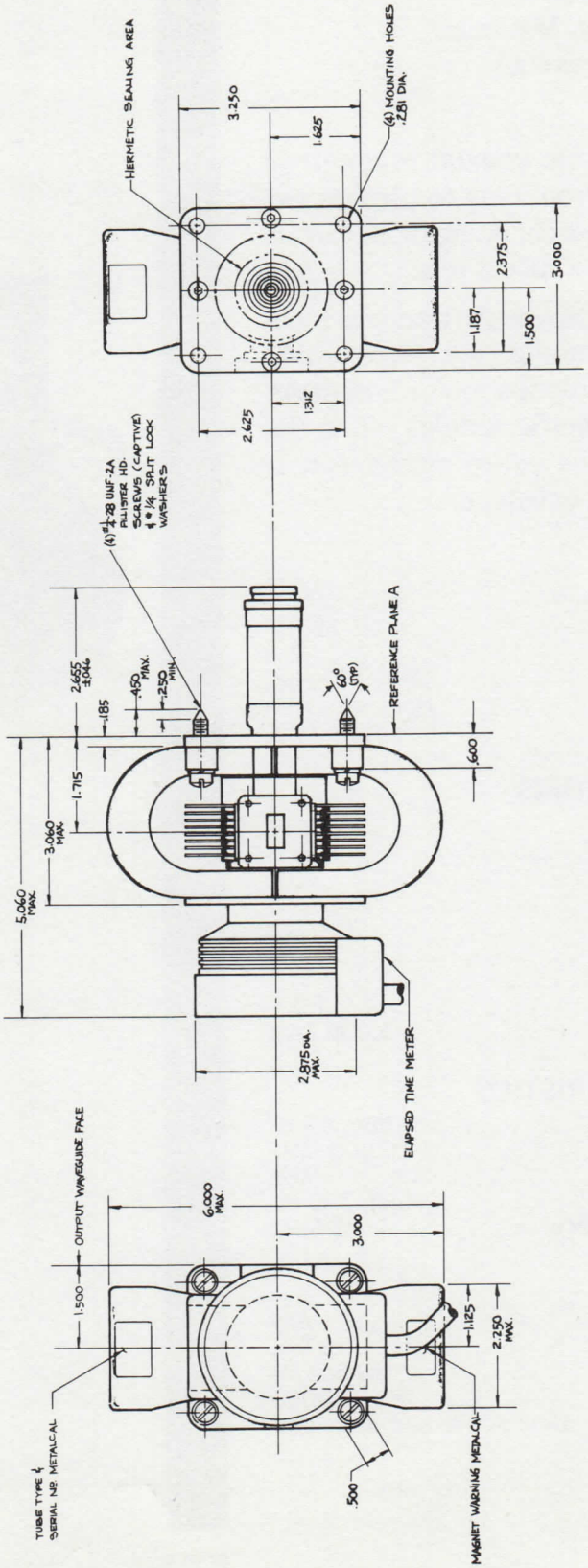
# L-5498

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

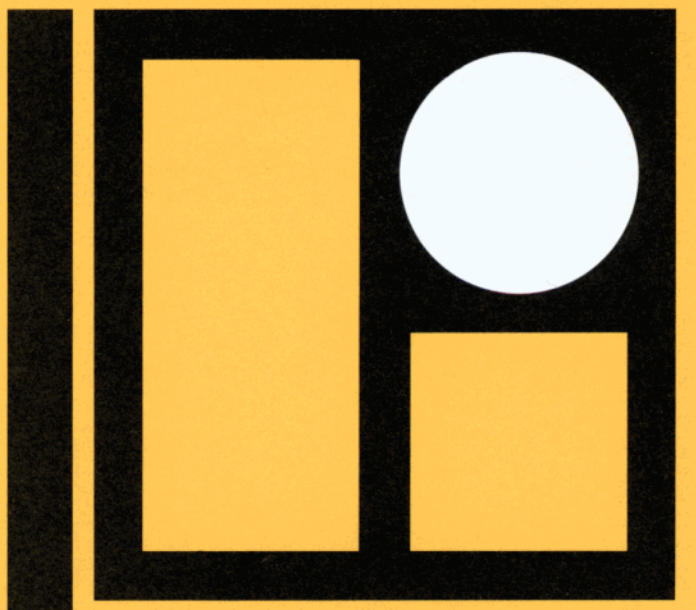
**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.




Litton **ELECTRON TUBE DIVISION**
San Carlos, California • Williamsport, Pennsylvania

3MJA573



# CW MAGNETRONS

# INTRODUCTION

## ENGINEERING GUIDE

LITTON INDUSTRIES
CONTINUOUS WAVE MAGNETRONS

A complete family of Litton Industries CW Magnetrons provides power from 110 to 500 watts in the frequency range 350 to 10,475 megacycles. All microwave tubes in this series are packaged in 7½ inch diameter bowl magnets and are equipped with tuning knobs. Each tube weighs approximately 18 pounds and varies from 10½ to 11½ inches high.

The following considerations, along with the data contained on the individual DATA/LOG sheets, will assist the reader in achieving optimum performance and life from Litton Industries continuous wave magnetrons. Questions concerning any operation or performance requirement not covered here should be reviewed with a member of the Applications Engineering staff.

### MOUNTING

Litton CW magnetrons are built with a thoriated carburized tungsten filament, which has a tendency to sag if the tube is operated in any plane other than vertical. Consequently, it is necessary for the tube to be mounted in a vertical plane with the cathode terminals up or down. Mounting is accomplished by means of the three tapped studs projecting through the bowl shaped magnet. The mounting plane is defined as a surface of the nuts on these studs.

### INPUT CONNECTIONS

The CW magnetron's 93-watt filament is rather fragile and its mechanical placement is extremely important to the electrical performance characteristics of the magnetron. Therefore, it is necessary to mount the cathode socket separately from the magnetron so that the cathode socket does not hang on the magnetron or transmit any mechanical stresses to the filament terminals. For liquid cooled magnetrons, the Litton Model 5001 Cathode Socket is recommended. Ucinite socket No. 119368 is recommended for the air cooled series.

### COOLING

**Liquid.** Liquid cooling can be accomplished with any fluid normally used for such purposes. The flow rate for water should be at least that given on the individual DATA/LOG sheets. The flow rate for any other coolant should be such that its temperature at the outlet is sufficiently less than the boiling temperature of the coolant to insure that boiling of the coolant is not occurring within the cooling lines of the magnetron. The tuner and body cooling lines can be connected in series or parallel, providing that the minimum flow requirement is met.

# INTRODUCTION

**Air.** On any of the CW magnetrons, forced air cooling of the filament terminals is required. The lower powered magnetrons are designed to permit forced air cooling of the body and tuner. The high power series of X-band magnetrons require additional forced air cooling of the output seal. The air cooling supply should be so designed as to permit the delivery of a constant mass of air rather than a constant volume to permit adequate cooling at higher altitudes.

## FILAMENT SUPPLY

Because of the back heating effects common to all magnetrons, it is necessary that the filament voltage of the magnetron be reduced during operation. In a tunable magnetron with a directly emitting cathode such as is available in the Litton CW magnetrons, it is necessary that this reduction of filament voltage be done with a compensator that reacts to different amounts of back heating rather than providing a pre-programmed reduction schedule as is common in pulse magnetrons.

## USE FILAMENT CONTROLLER

Litton Industries has available a filament controller, Model 5003B, capable of providing necessary back heating regulation characteristics for the Litton CW magnetron.

## PLATE SUPPLY

Any magnetron should be regarded as a current-fed rather than a voltage-fed device. In discussing the characteristics of the plate supply, it is necessary to regard this as a current supply rather than a voltage supply. The necessary current voltage characteristics of the supply are contained on the data sheet for the particular magnetron. For optimum performance it is necessary that the power supply be continually adjustable to permit the supply to deliver the optimum current to the magnetron.

## HANDLING

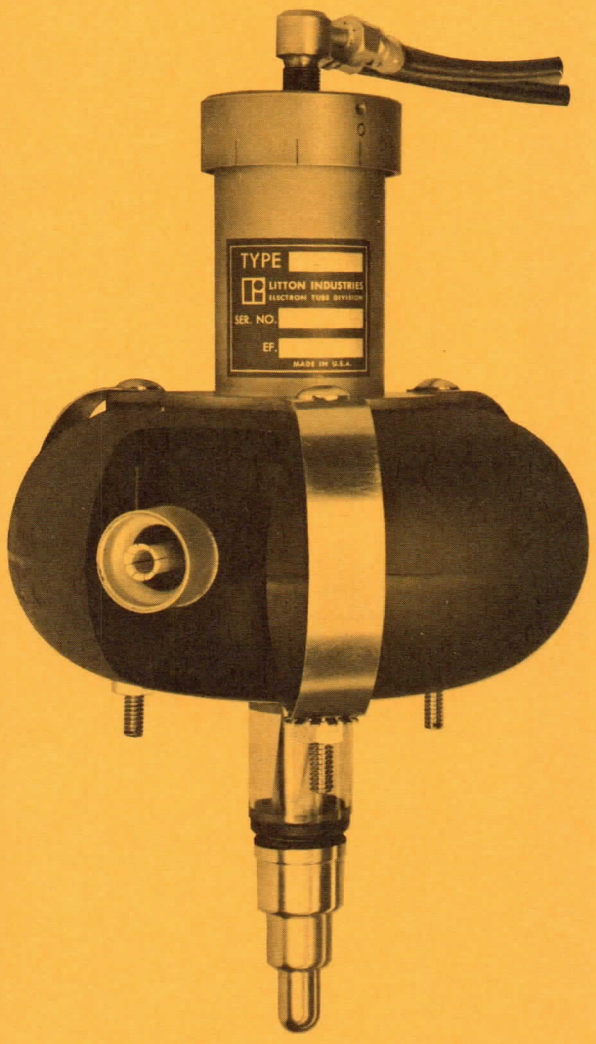
The CW magnetron is a fragile device despite its rugged appearance because of the characteristics of the filament, which is rather brittle when cold. The magnetron should never be handled by the filament terminals and the magnetron should be so stored that no physical contact with the filament terminals is possible. It is suggested that the magnetron be stored in the aluminum shipping container.

The operating characteristics of the magnetron are effected by the magnetic field strength delivered by the pertinent magnet. For this reason it is necessary to insure that no magnetic materials are brought near the magnetron that will degauss the magnets and so impair the operating effectiveness of the tube. Non-magnetic tools should be used at all times in working with the magnetron.

# CW MAGNETRON
# L-3456

200 Watts Minimum Power
Tunable Frequency 350 to 590 MHz

The L-3456 continuous wave magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom. 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 3.4 to 4.6 kVdc |
| Average Current | 0.200 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 5.0 kVdc |
| Average Current | 0.210 A |
| Modulation Peak Current | 0.800 A |
| Average Input Power | 1.7 kW |
| Anode Temperature | 150°C |
| Cathode Temperature | 175°C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 100 to 200 W |
| Tunable Frequency | 350 to 590 MHz |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

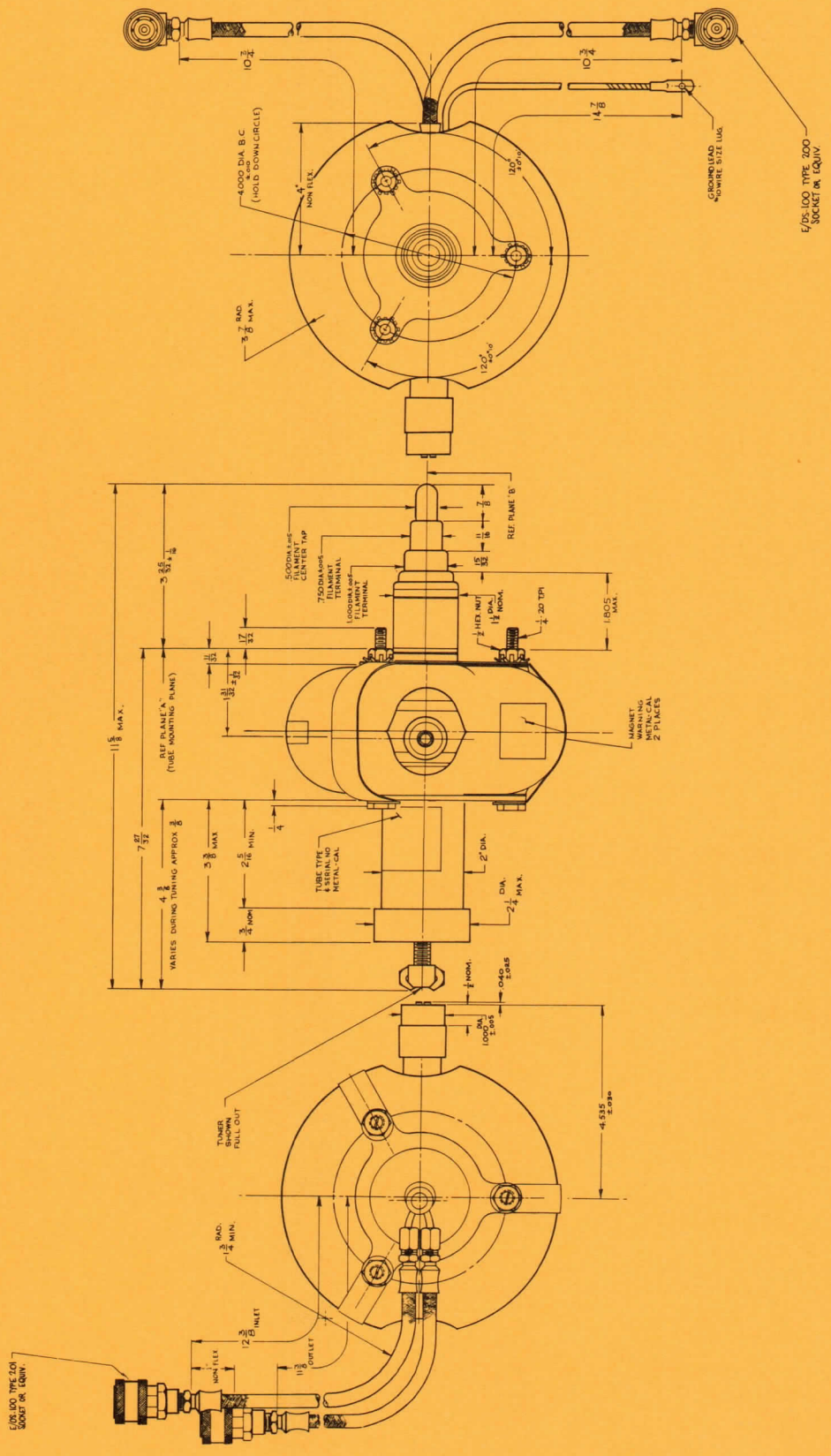
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (water) | Min. 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz. in. |
| Tuner Travel | 5.8 to 6.2 turns |

**Note:** A — Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3456

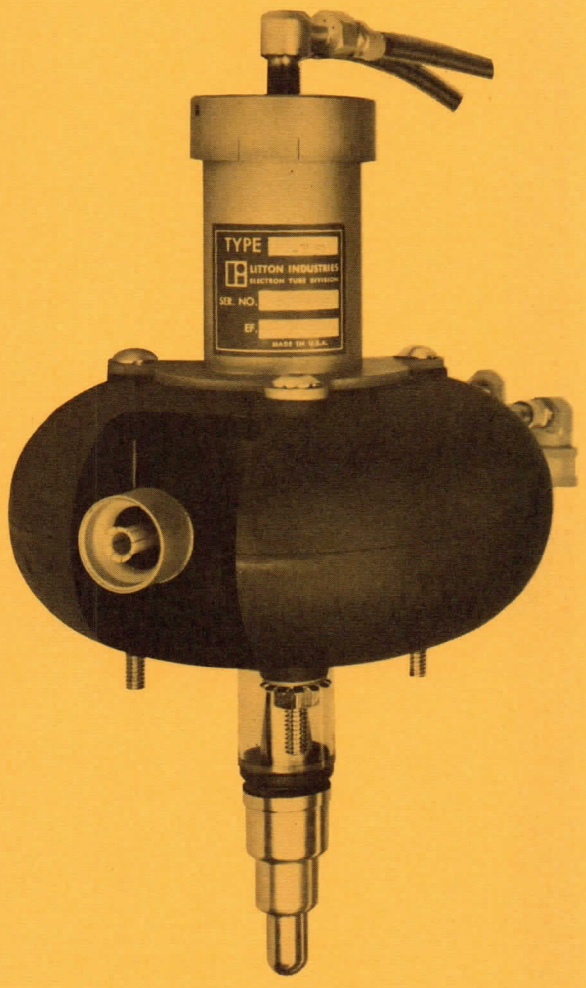


CW MAGNETRON

# L-3459

200 Watts Minimum Power
Tunable Frequency 590 to 975 MHz

The L-3459 continuous wave magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom. 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 3.4 to 4.6 kVdc |
| Average Current | 0.200 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 5.0 kVdc |
| Average Current | 0.210 A |
| Modulation Peak Current | 0.800 A |
| Average Input Power | 1.7 kW |
| Anode Temperature | 150°C |
| Cathode Temperature | 175°C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 100 to 200 W |
| Tunable Frequency | 590 to 975 MHz |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

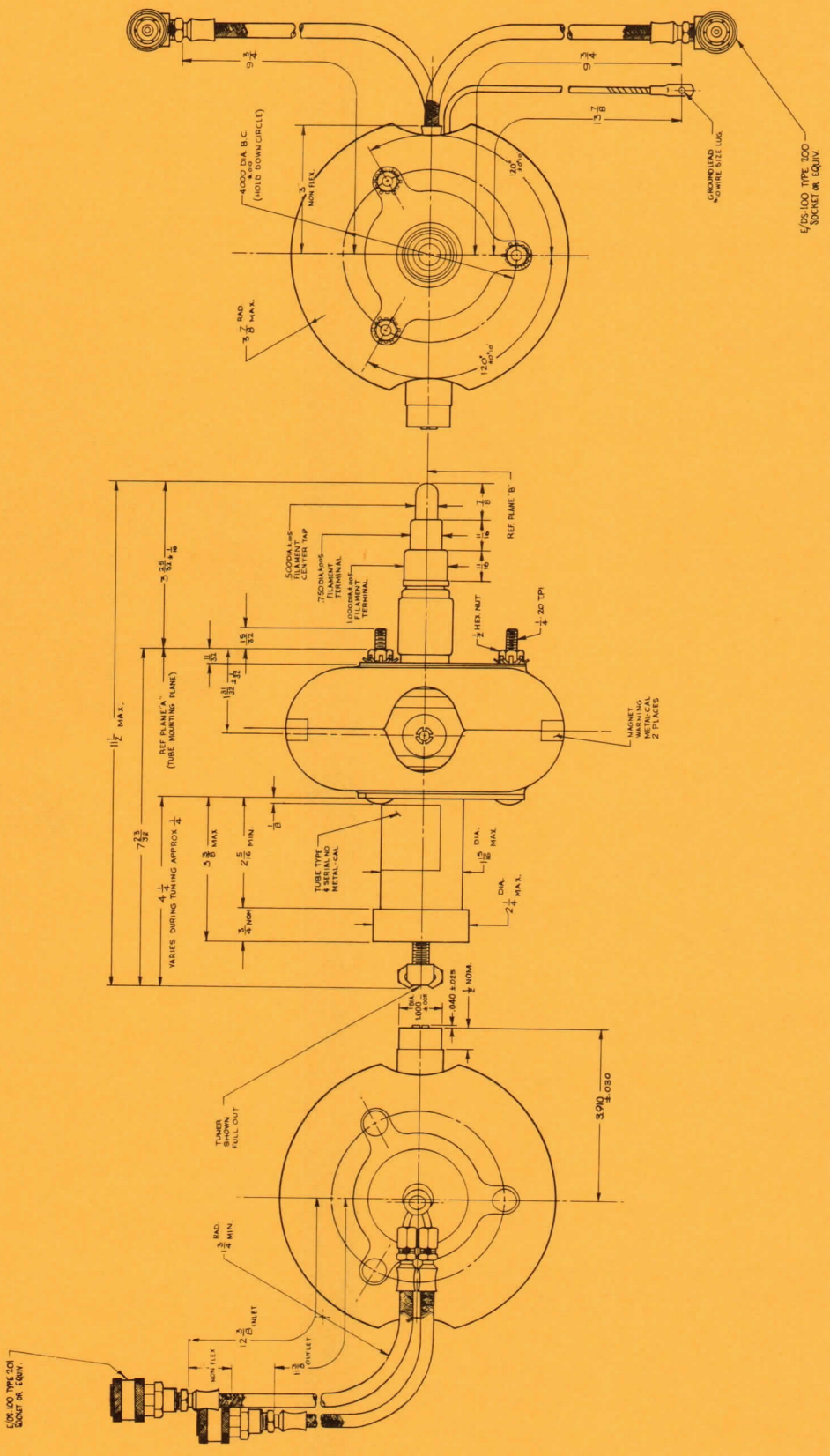
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (water) | Min. 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz. in. |
| Tuner Travel | 5.8 to 6.2 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3459

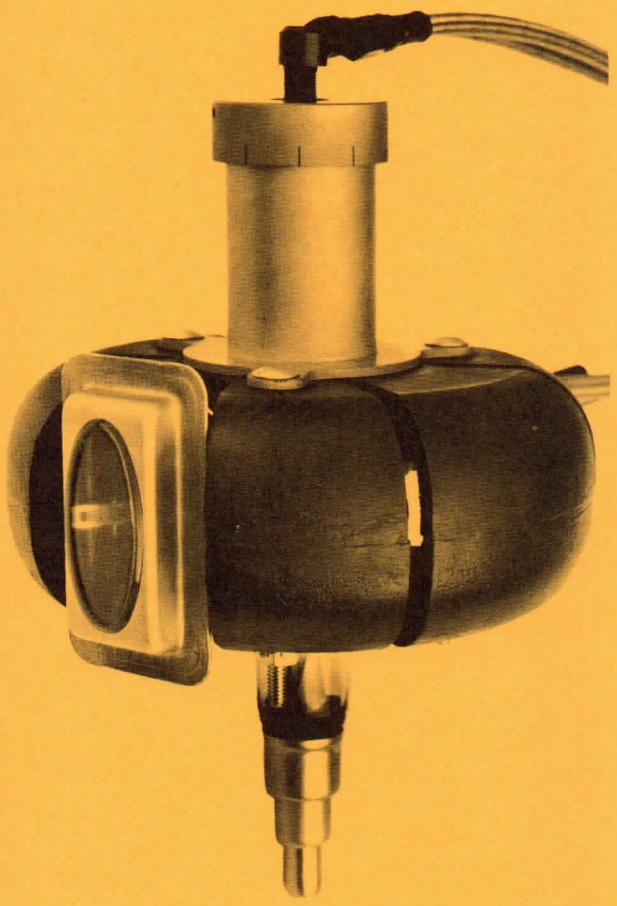


CW MAGNETRON

# L-3460

500 Watts Minimum Power
Tunable Frequency 2350 to 3575 MHz

The L-3460 continuous wave magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 3.6 to 4.5 kVdc |
| Average Current | 0.300 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 5.5 kVdc |
| Average Current | 0.350 A |
| Modulation Peak Current | 0.800 A |
| Average Input Power | 1.7 kW |
| Anode Temperature | 150 °C |
| Cathode Temperature | 175 °C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 100 to 500 W |
| Tunable Frequency | 2350 to 3575 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 20 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 30 MHz |
| Anode Temperature Coefficient | Max. 0.3 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

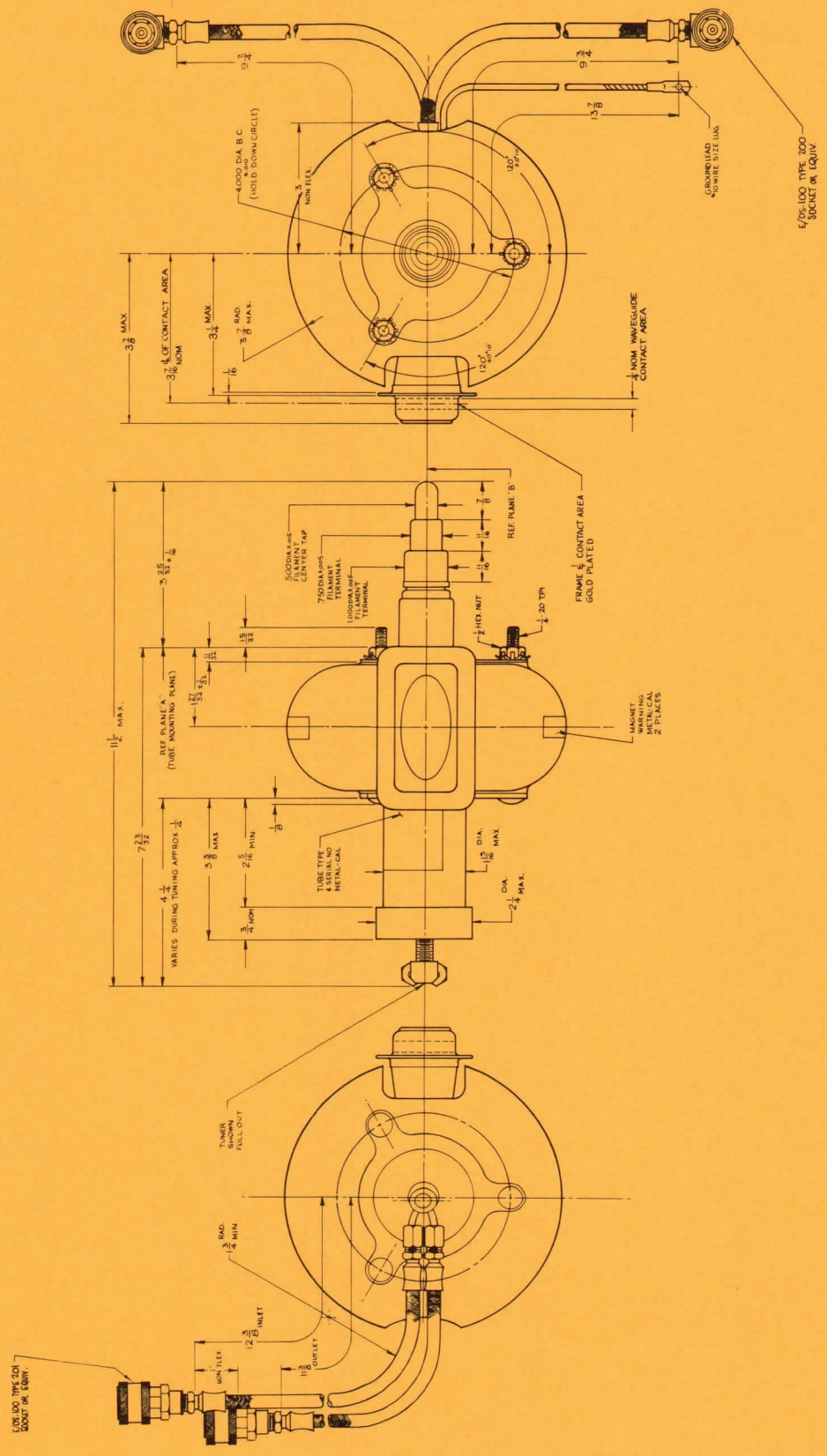
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | T23722 |
| Anode Cooling (water) | Min. 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A — Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3460



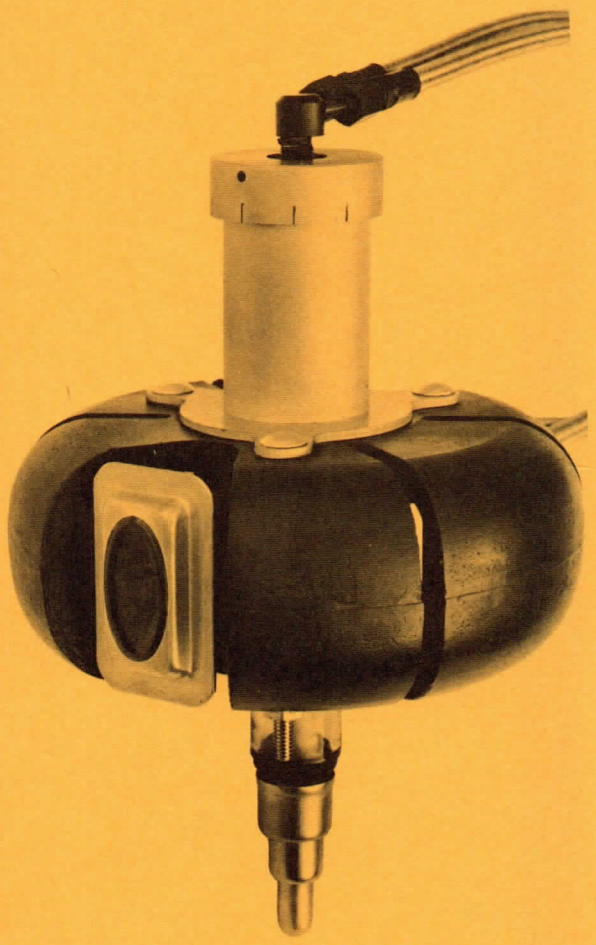
CW MAGNETRON

# L-3461

1

350 Watts Minimum Power
Tunable Frequency 3575 to 4975 MHz

The L-3461 continuous wave magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 3.6 to 4.3 kVdc |
| Average Current | 0.250 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 5.5 kVdc |
| Average Current | 0.300 A |
| Modulation Peak Current | 0.800 A |
| Average Input Power | 1.7 kW |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 100 to 350 W |
| Tunable Frequency | 3575 to 4975 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 20 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 35 MHz |
| Anode Temperature Coefficient | Max. 0.4 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

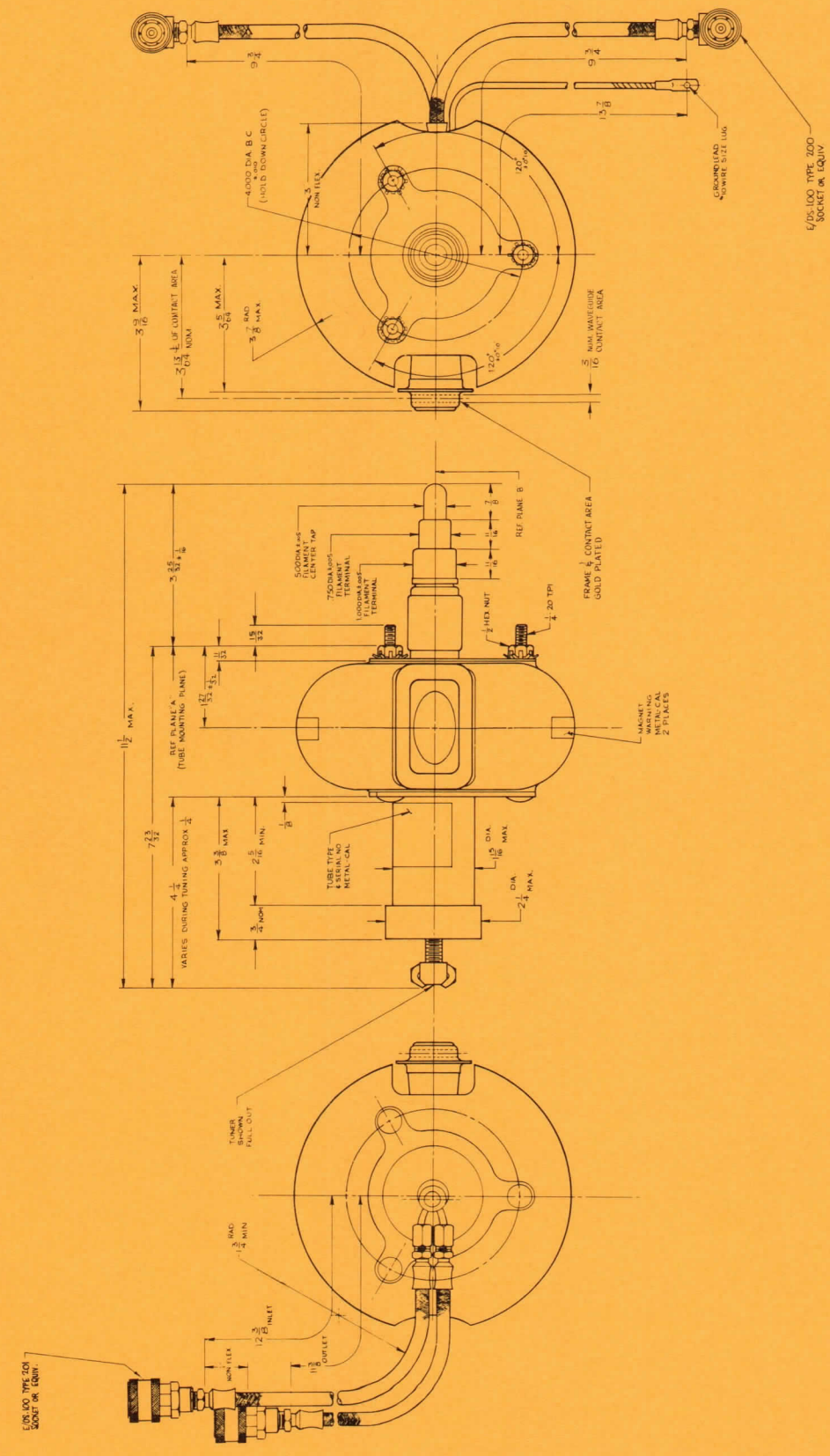
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | T22990 |
| Anode Cooling (water) | Min. 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |
| Socket | Model #5001 |

**Note:** A — Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3461

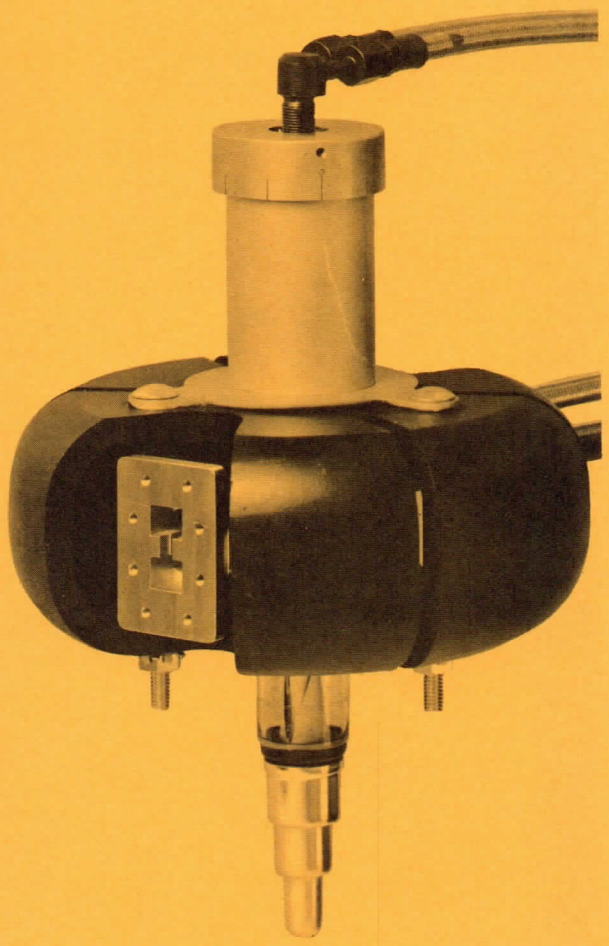


# CW MAGNETRON

# L-3462

300 Watts Minimum Power
Tunable Frequency 7275 to 8775 MHz

The L-3462 continuous wave magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 3.7 to 4.8 kVdc |
| Average Current | 0.250 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 6.0 kVdc |
| Average Current | 0.300 A |
| Modulation Peak Current | 0.800 A |
| Average Input Power | 1.7 kW |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 100 to 300 W |
| Tunable Frequency | 7275 to 8775 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 35 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 70 MHz |
| Anode Temperature Coefficient | Max. 1.0 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

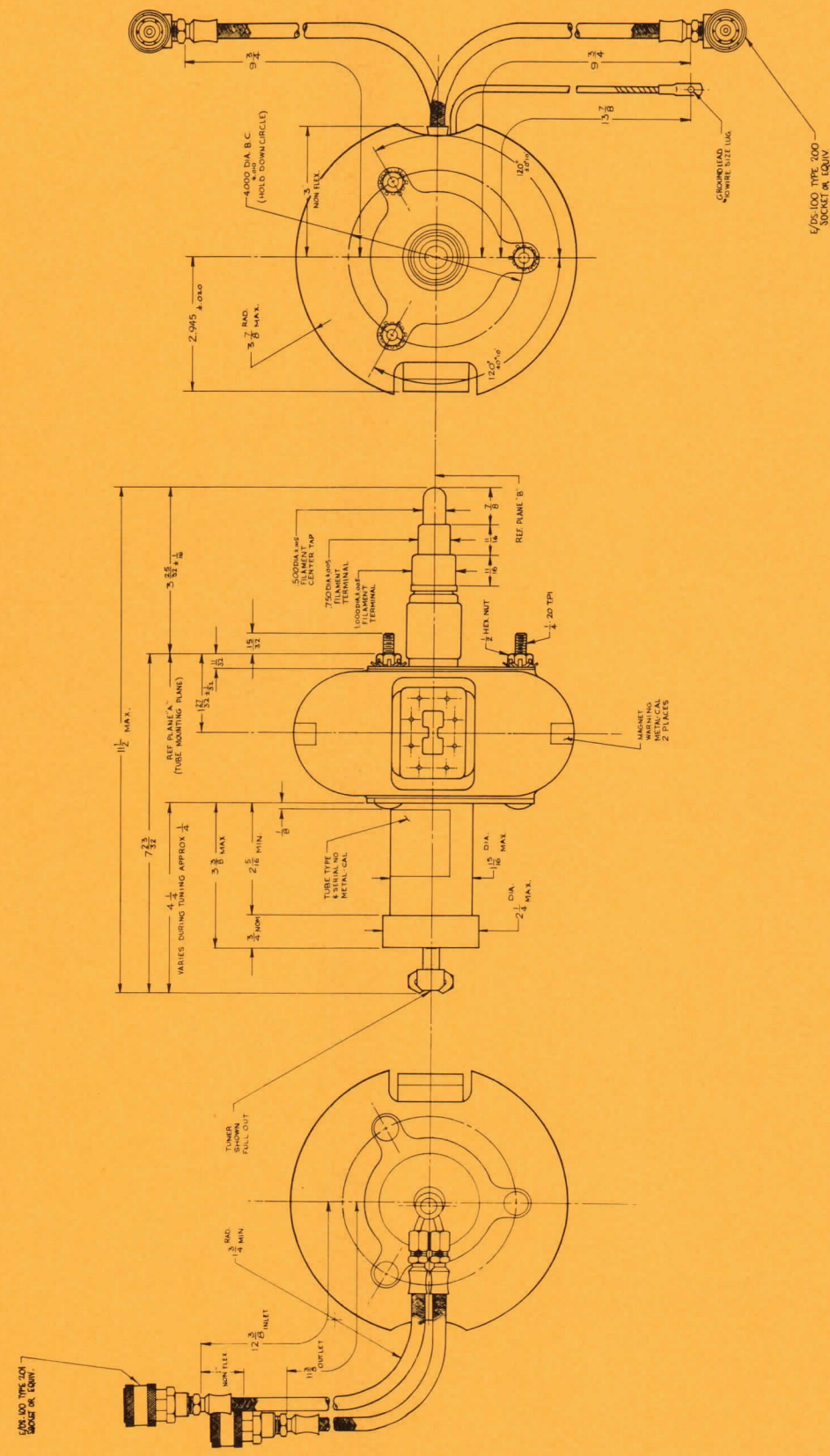
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (water) | Min. 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A — Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3462



# CW MAGNETRON

# L-3463

250 Watts Minimum Power
Tunable Frequency 8775 to 10,475 MHz

The L-3463 continuous wave magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.

## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 3.7 to 4.8 kVdc |
| Average Current | 0.200 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 6.0 kVdc |
| Average Current | 0.300 A |
| Modulation Peak Current | 0.800 A |
| Average Input Power | 1.7 kW |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

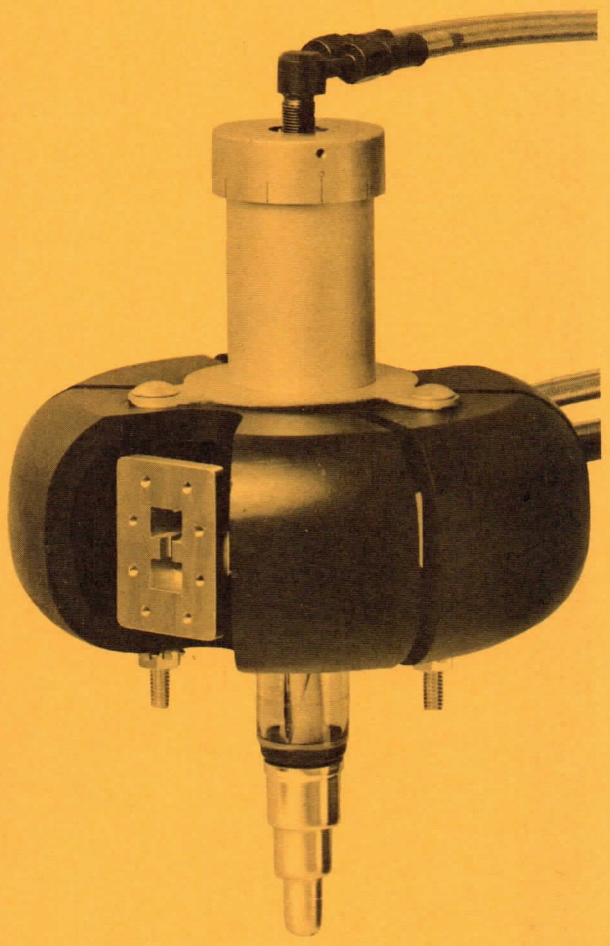
## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min.100 to 250 W |
| Tunable Frequency | 8775 to 10,475 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 47 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 70 MHz |
| Anode Temperature Coefficient | Max. 1.0 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

## MECHANICAL RATINGS

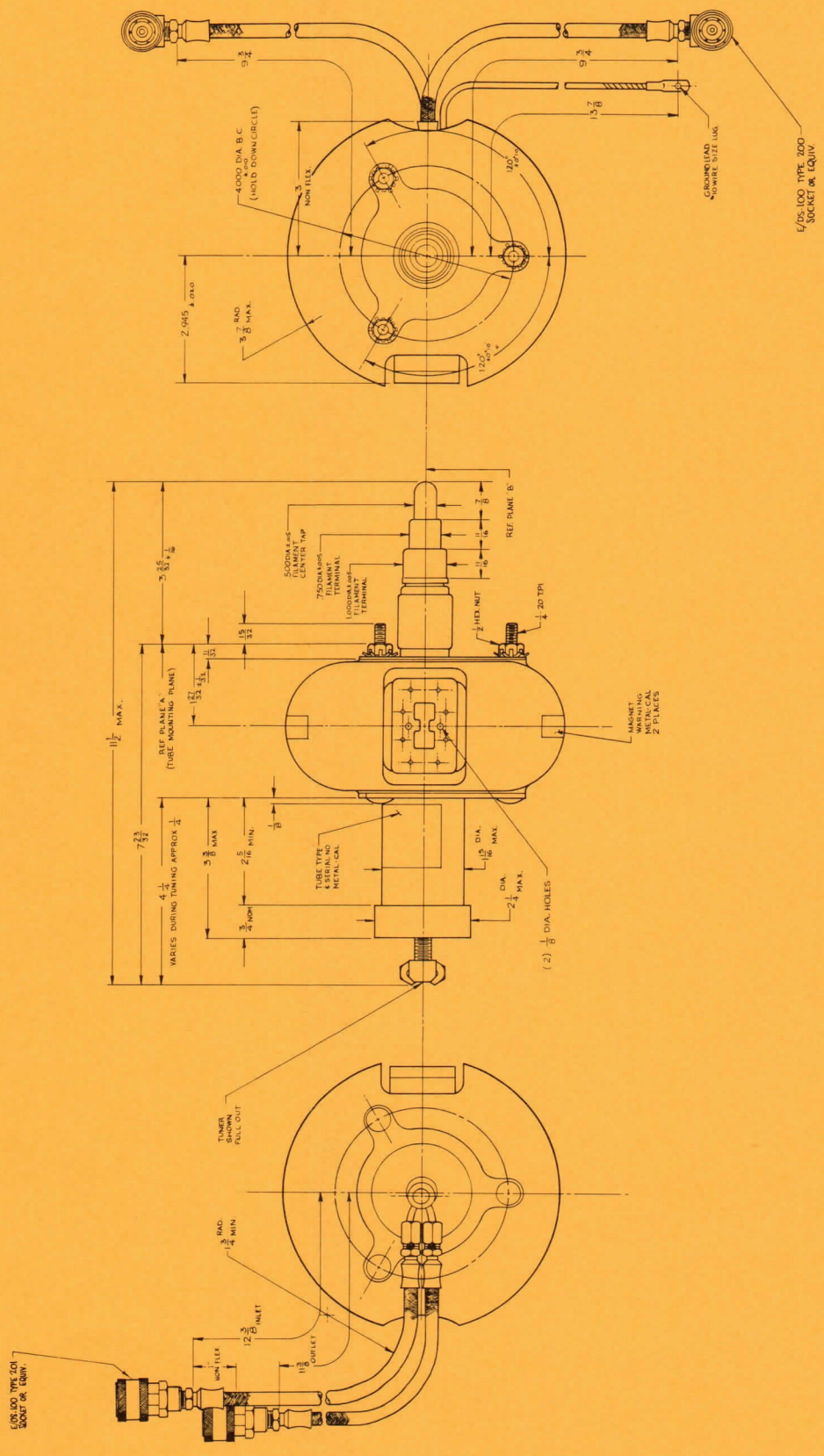
| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (water) | Min. 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A — Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.



CW MAGNETRON

# L-3463



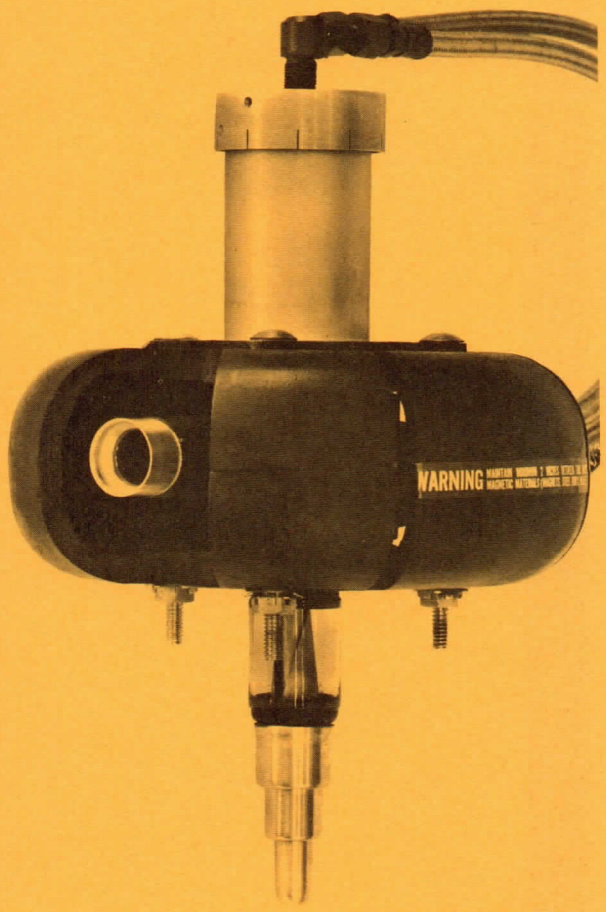
CW MAGNETRON

# L-3464

1

400 Watts Minimum Power
Tunable Frequency 1500 to 2350 MHz

The L-3464 continuous wave magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 3.6 to 4.3 kVdc |
| Average Current | 0.325 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 5.5 kVdc |
| Average Current | 0.350 A |
| Modulation Peak Current | 0.800 A |
| Average Input Power | 1.7 kW |
| Anode Temperature | 150 °C |
| Cathode Temperature | 175 °C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 100 to 400 W |
| Tunable Frequency | 1500 to 2350 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 15 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 12 MHz |
| Anode Temperature Coefficient | Max. 0.2 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

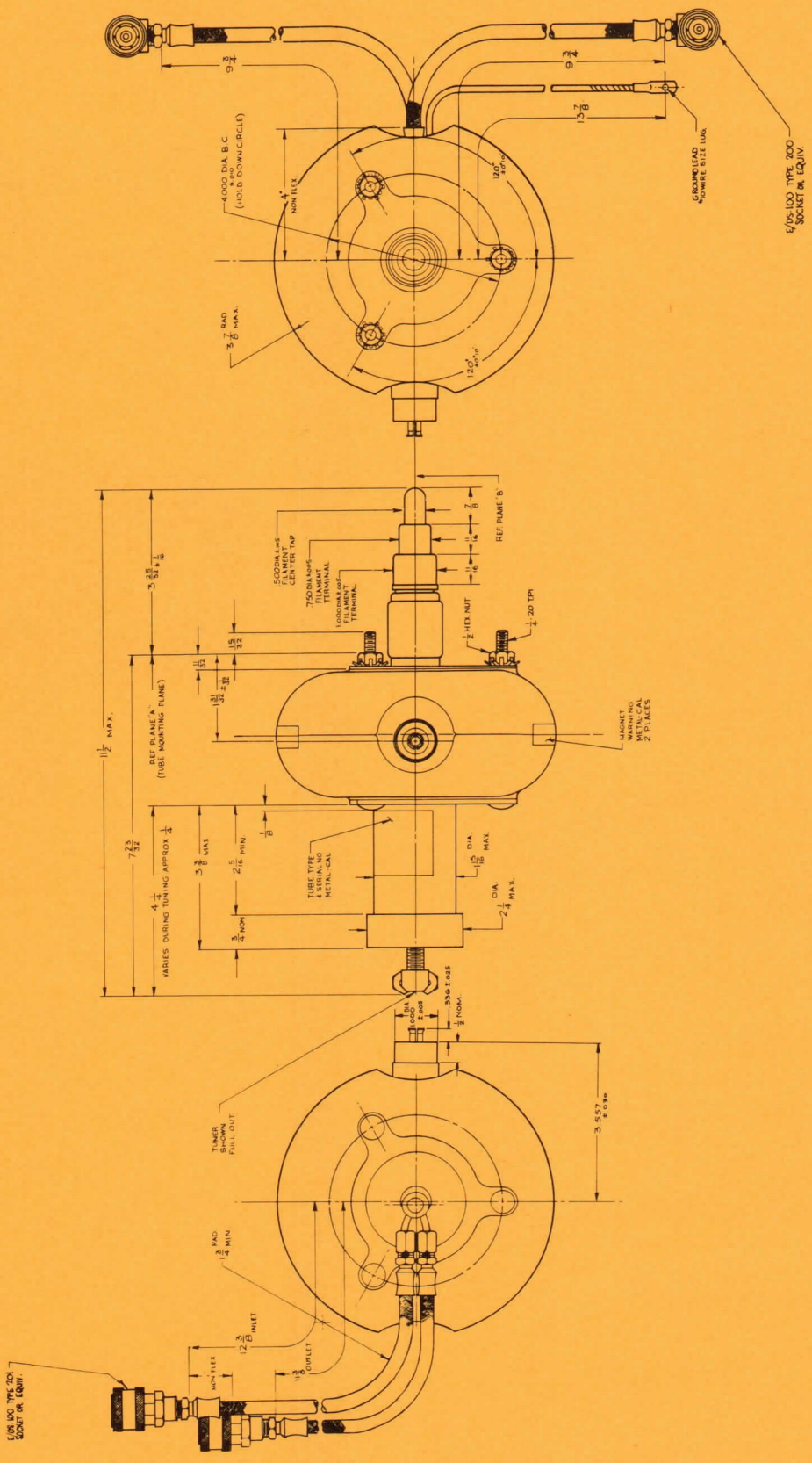
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (water) | Min. 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

# CW MAGNETRON

# L-3464



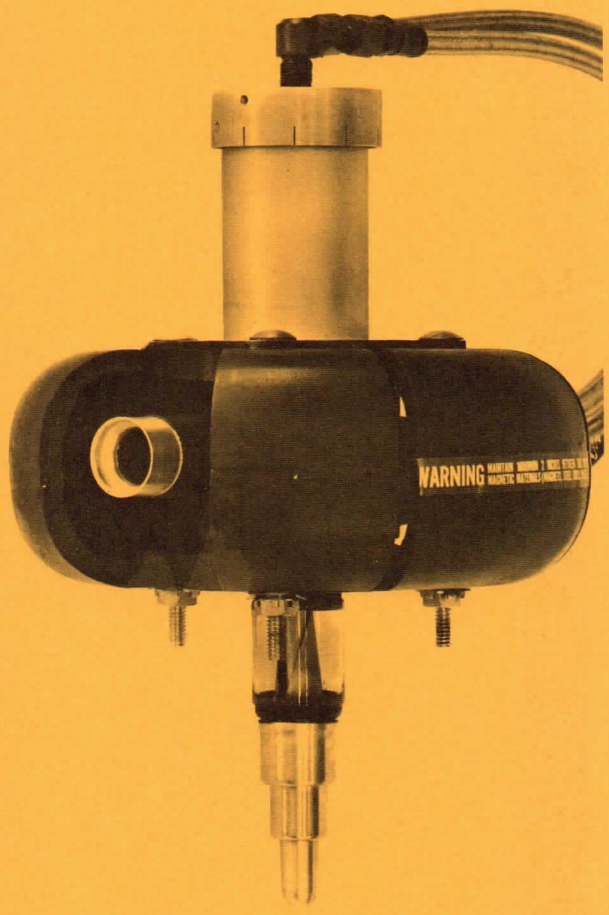
# CW MAGNETRON

# L-3465

1

400 Watts Minimum Power
Tunable Frequency 975 to 1500 MHz

The L-3465 continuous wave magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 3.4 to 4.3 kVdc |
| Average Current | 0.300 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 5.5 kVdc |
| Average Current | 0.350 A |
| Modulation Peak Current | 0.800 A |
| Average Input Power | 1.7 kW |
| Anode Temperature | 150 °C |
| Cathode Temperature | 175 °C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 100 to 400 W |
| Tunable Frequency | 975 to 1500 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 10 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 10 MHz |
| Anode Temperature Coefficient | Max. 0.2 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

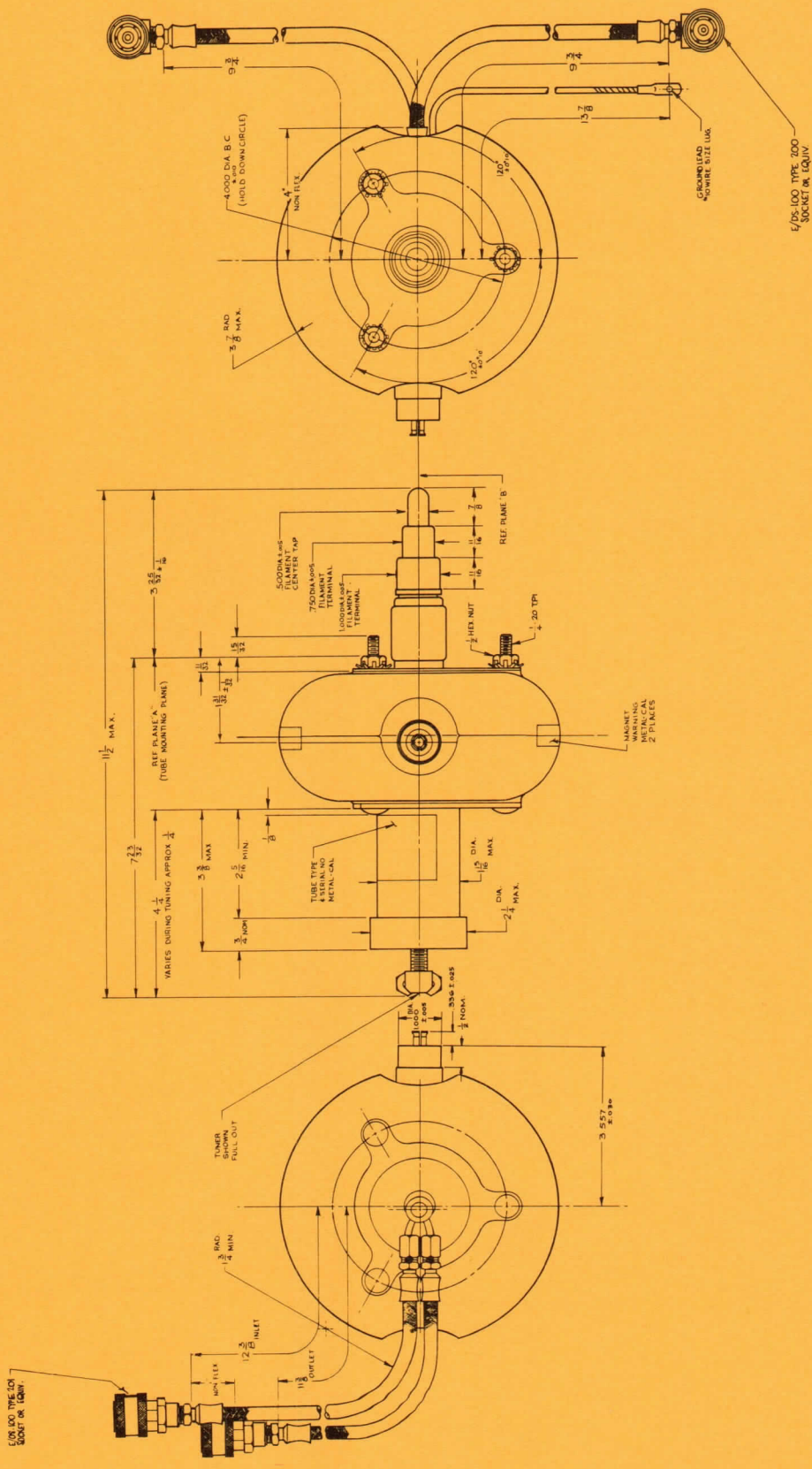
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (water) | Min. 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3465




LITTON INDUSTRIES • ELECTRON TUBE DIVISION • SAN CARLOS, CALIFORNIA

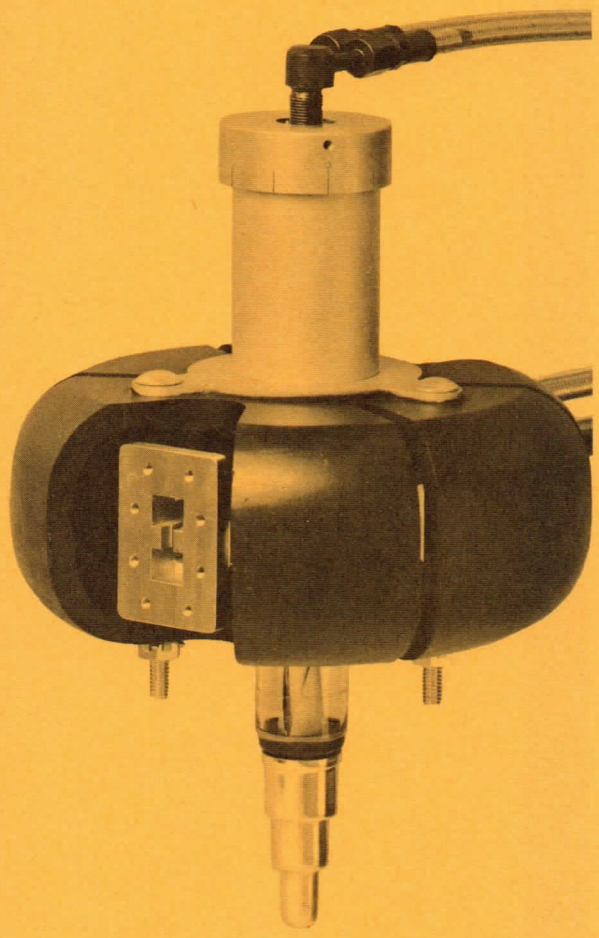
CW MAGNETRON

# L-3467

1

400 Watts Minimum Power
Tunable Frequency 4975 to 6175 MHz

The L-3467 continuous wave magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 3.6 to 4.8 kVdc |
| Average Current | 0.300 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 6.0 kVdc |
| Average Current | 0.250 A |
| Modulation Peak Current | 0.800 A |
| Average Input Power | 1.7 kW |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 100 to 400 W |
| Tunable Frequency | 4975 to 6175 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 25 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 35 MHz |
| Anode Temperature Coefficient | Max. 0.7 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

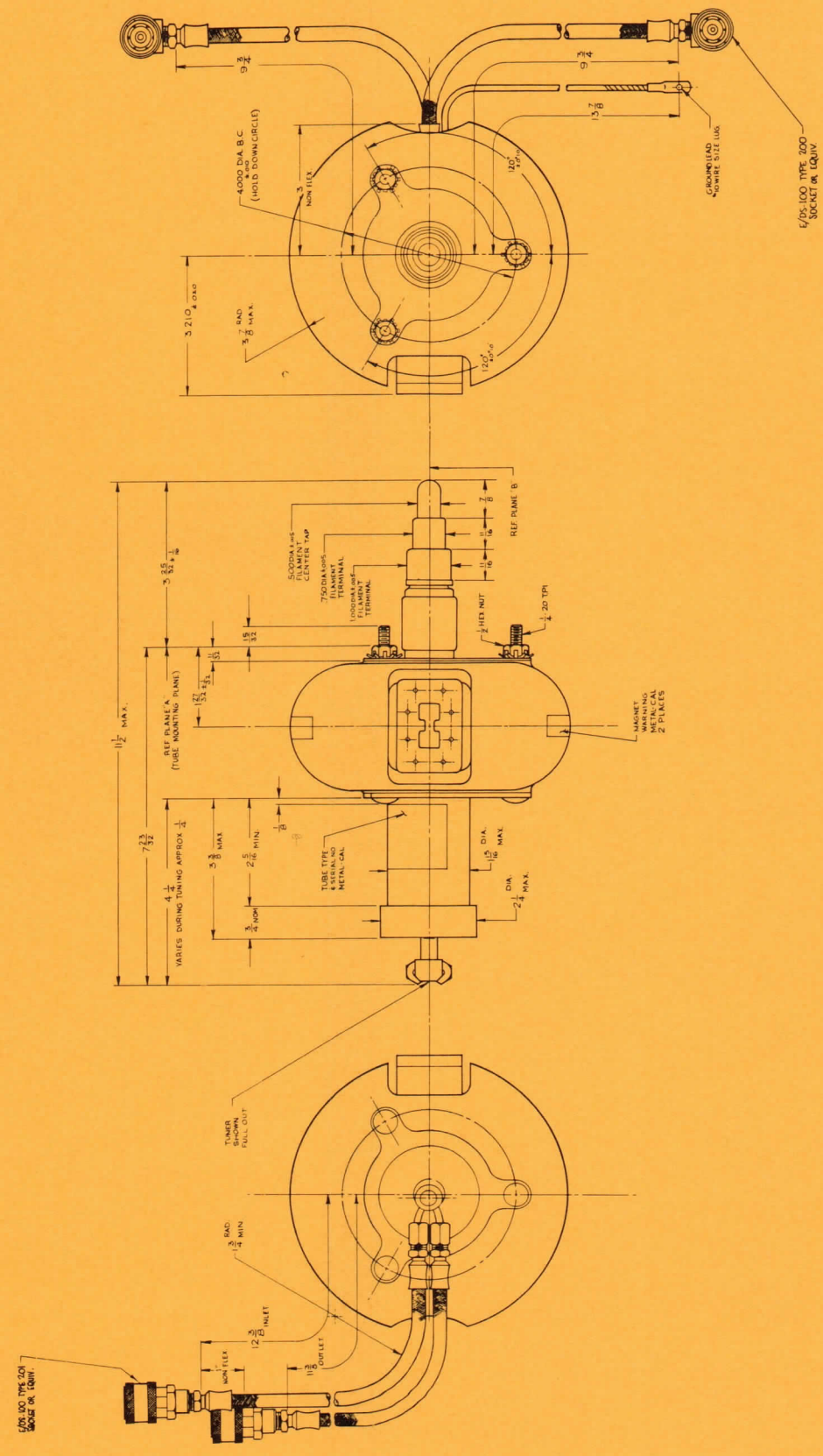
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (water) | Min. 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 50 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A — Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3467

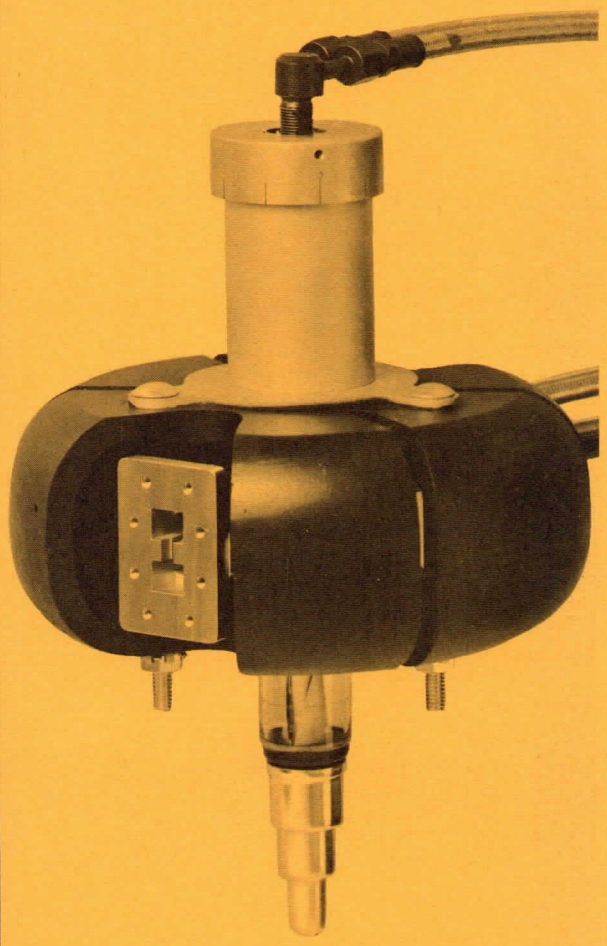


# CW MAGNETRON

# L-3468

300 Watts Minimum Power
Tunable Frequency 6175 to 7275 MHz

The L-3468 continuous wave magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 3.6 to 4.8 kVdc |
| Average Current | 0.200 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 5.5 kVdc |
| Average Current | 0.300 A |
| Modulation Peak Current | 0.700 A |
| Average Input Power | 1.7 kW |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 100 to 300 W |
| Tunable Frequency | 6175 to 7275 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 25 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 35 MHz |
| Anode Temperature Coefficient | Max. 0.8 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

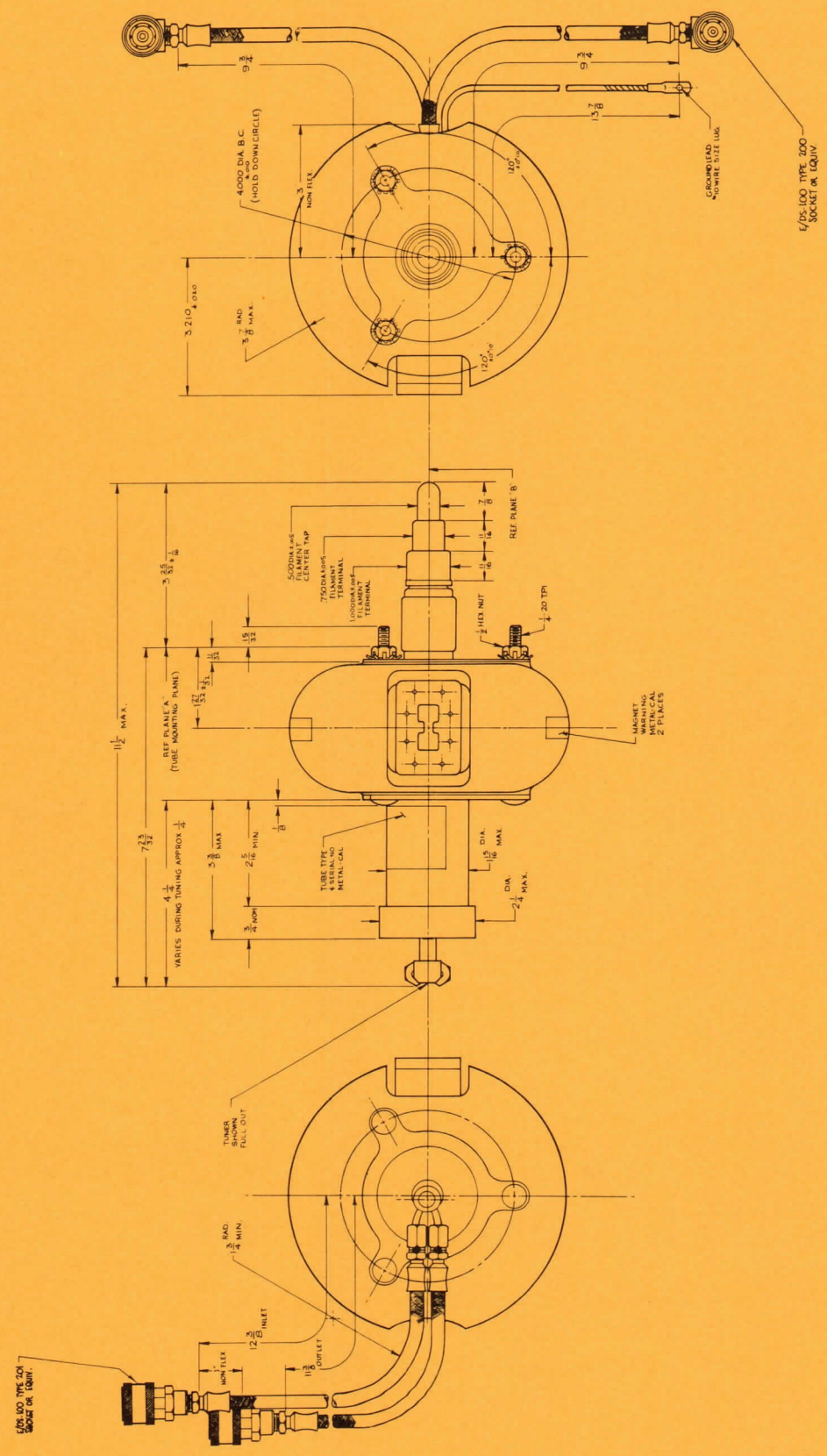
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (water) | Min. 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A — Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3468

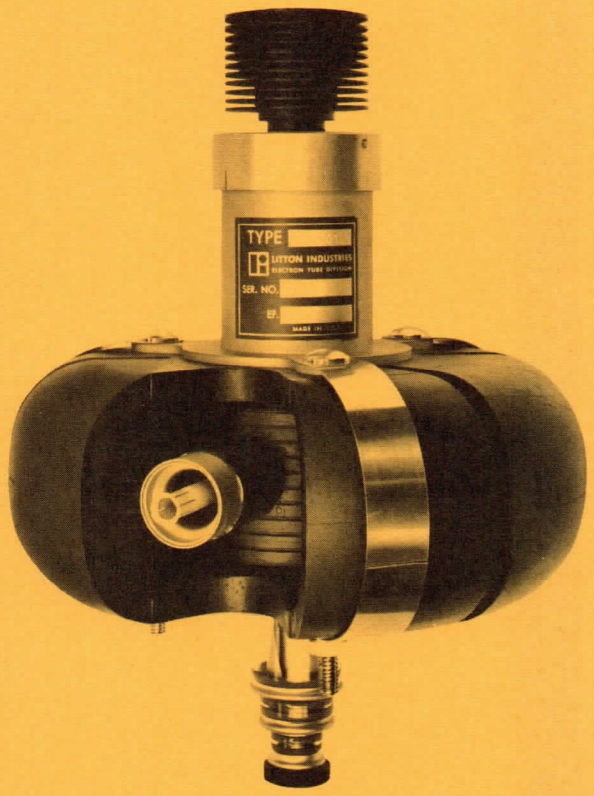


# CW MAGNETRON

# L-3500

100 Watts Minimum Power
Tunable Frequency 350 to 590 MHz

The L-3500 continuous wave magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 2.8 to 3.4 kVdc |
| Average Current | 0.130 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 4.5 kVdc |
| Average Current | 0.140 A |
| Modulation Peak Current | 0.5 A |
| Average Input Power | 525 W |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 40 to 100 W |
| Tunable Frequency | 350 to 590 MHz |
| Anode Temperature Coefficient | Max. 0.2 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

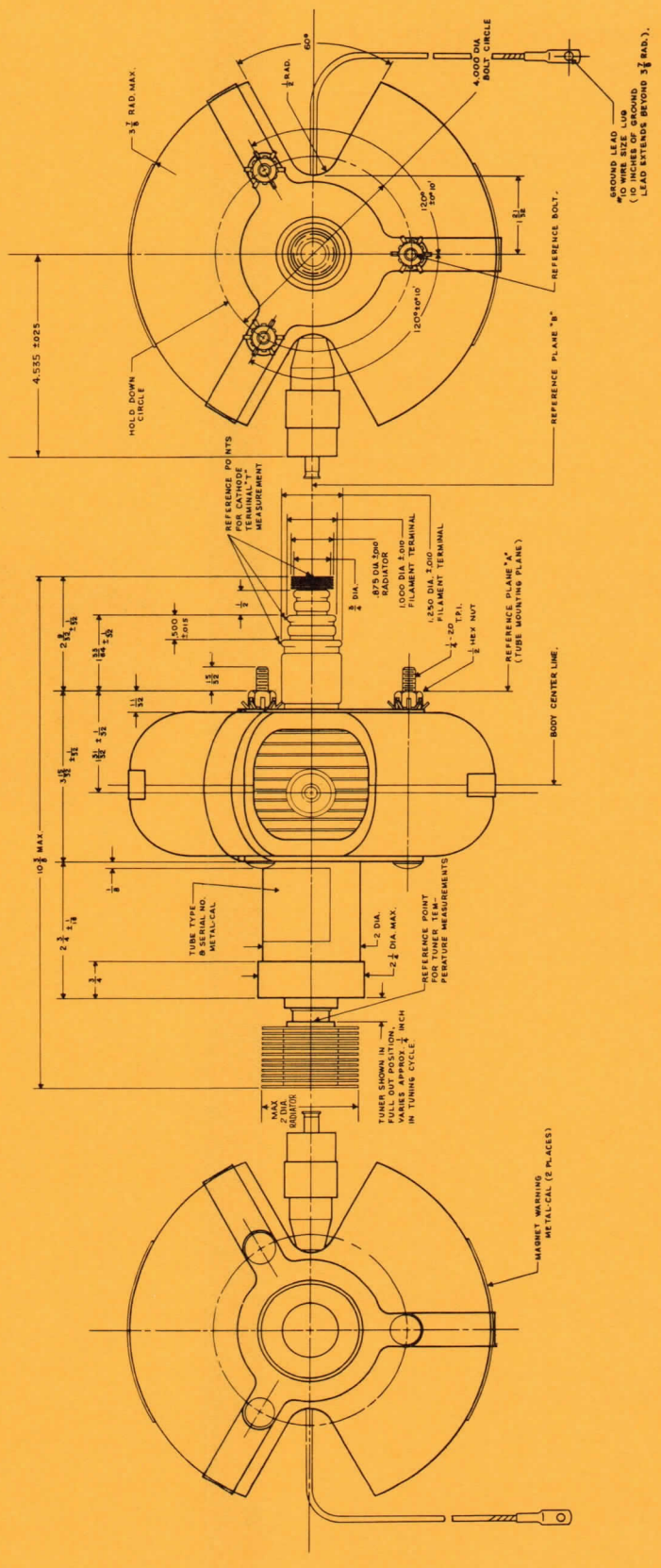
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (air) | Min. 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 43 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

# CW MAGNETRON

# L-3500

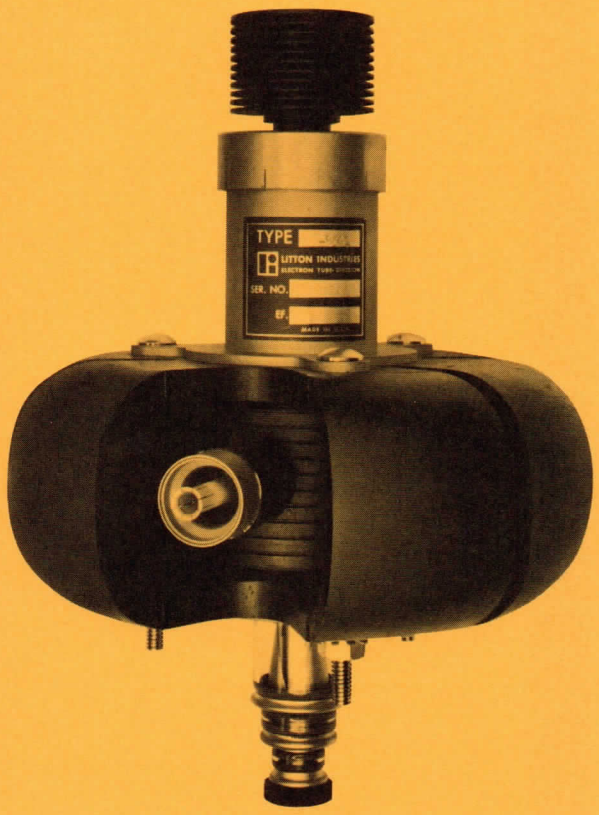


CW MAGNETRON

# L-3501

100 Watts Minimum Power
Tunable Frequency 590 to 975 MHz

The L-3501 continuous wave magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 2.8 to 3.4 kVdc |
| Average Current | 0.130 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 4.5 kVdc |
| Average Current | 0.140 A |
| Modulation Peak Current | 0.5 A |
| Average Input Power | 525 W |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 40 to 100 W |
| Tunable Frequency | 590 to 975 MHz |
| Anode Temperature Coefficient | Max. 0.2 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

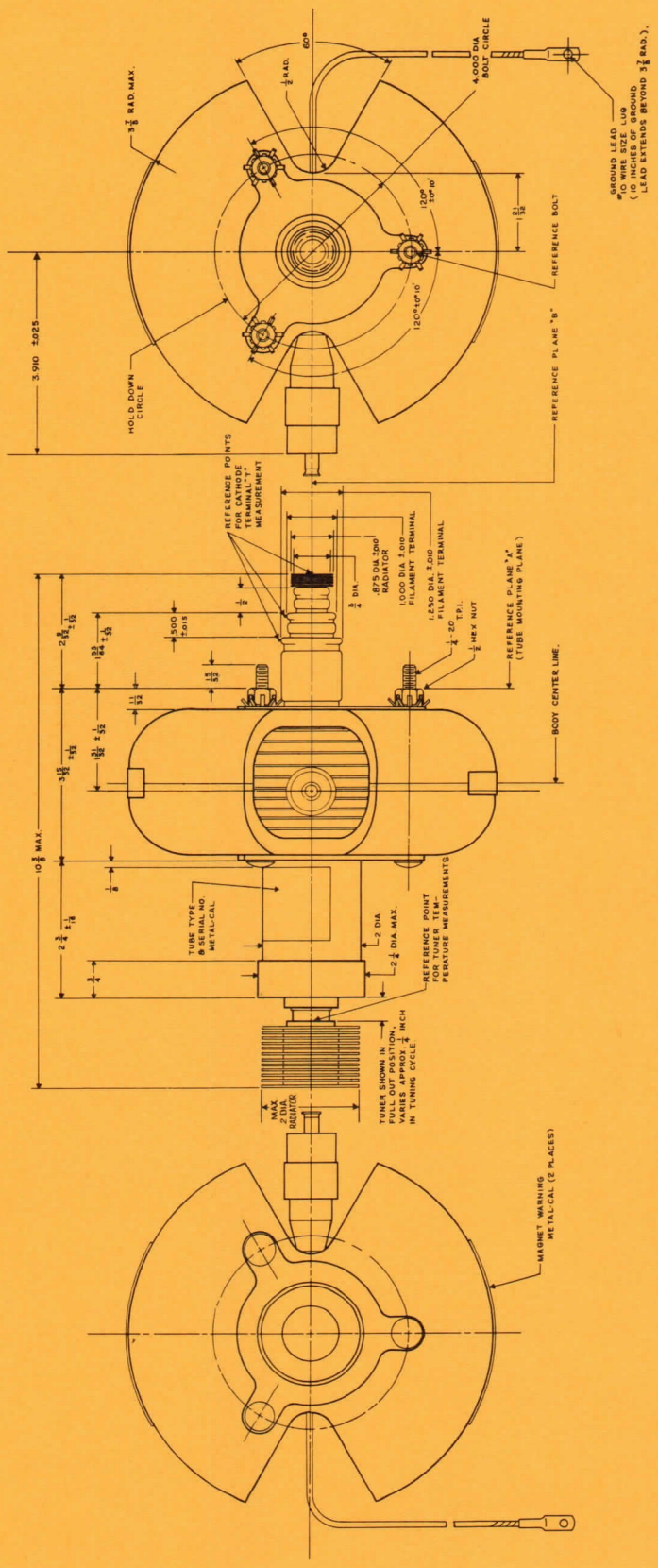
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (air) | Min. 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 43 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

# CW MAGNETRON

# L-3501



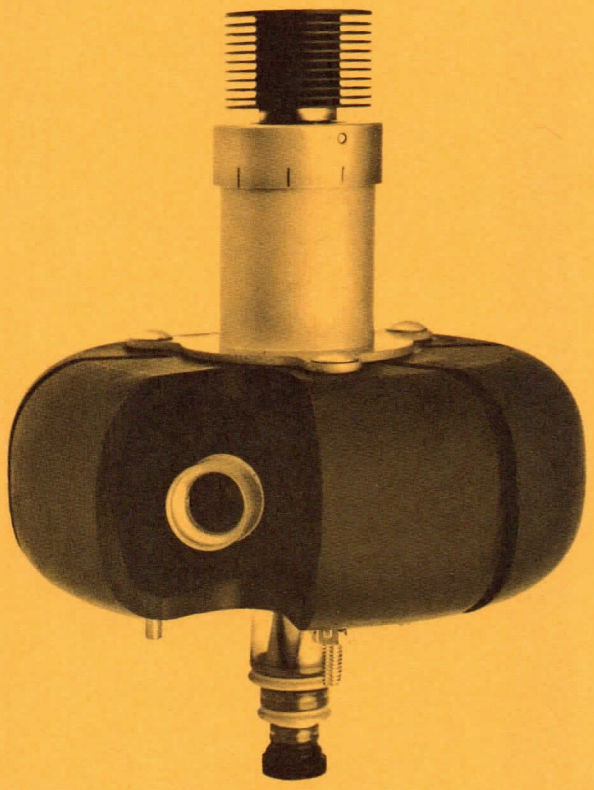
# CW MAGNETRON

# L-3502

1

110 Watts Minimum Power
Tunable Frequency 975 to 1500 MHz

The L-3502 continuous wave magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 2.8 to 3.4 kVdc |
| Average Current | 0.130 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 4.5 kVdc |
| Average Current | 0.150 A |
| Modulation Peak Current | 0.6 A |
| Average Input Power | 525 W |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 40 to 110 W |
| Tunable Frequency | 975 to 1500 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 10 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 10 MHz |
| Anode Temperature Coefficient | Max. 0.2 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

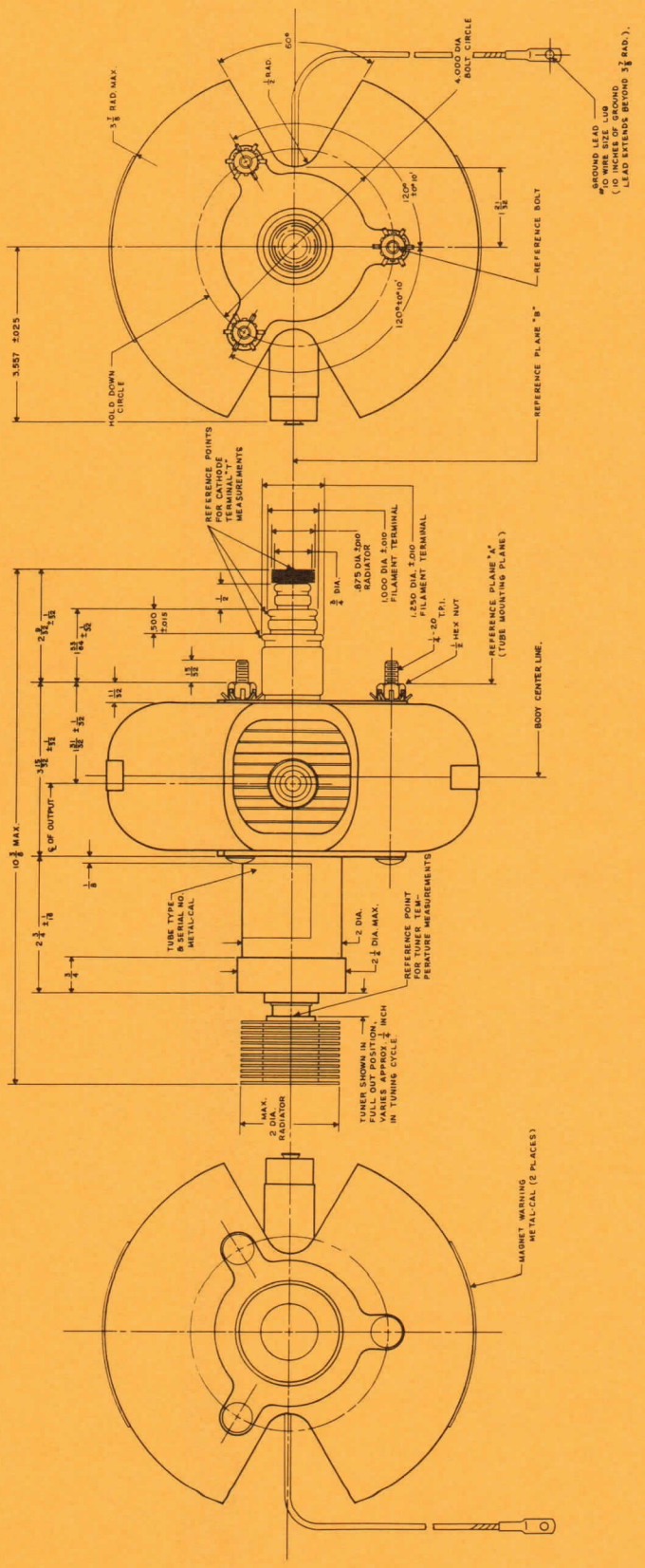
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (air) | Min. 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 43 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3502



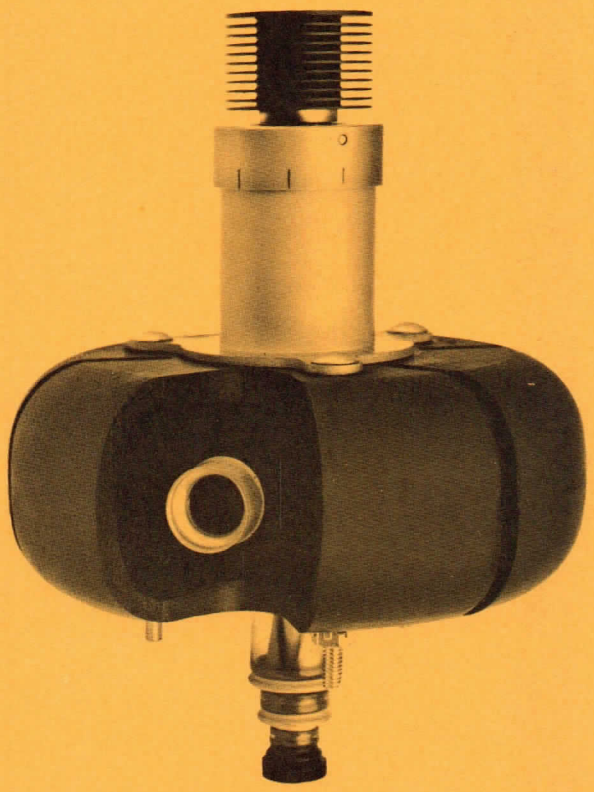
# CW MAGNETRON

# L-3503

1

110 Watts Minimum Power
Tunable Frequency 1500 to 2350 MHz

The L-3503 continuous wave magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 2.8 to 3.4 kVdc |
| Average Current | 0.130 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 4.5 kVdc |
| Average Current | 0.140 A |
| Modulation Peak Current | 0.6 A |
| Average Input Power | 525 W |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 40 to 110 W |
| Tunable Frequency | Min. 1500 to 2350 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 15 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 12 MHz |
| Anode Temperature Coefficient | Max. 0.2 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

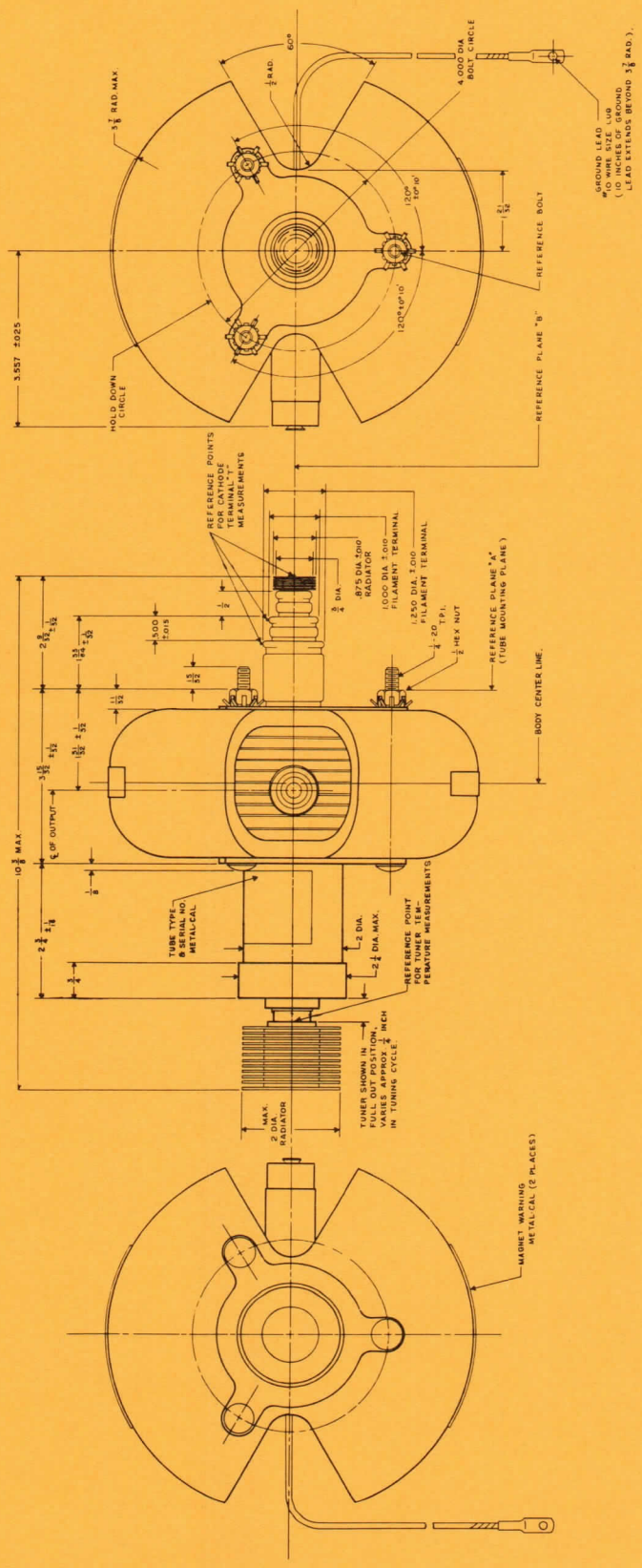
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (air) | Min. 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3503



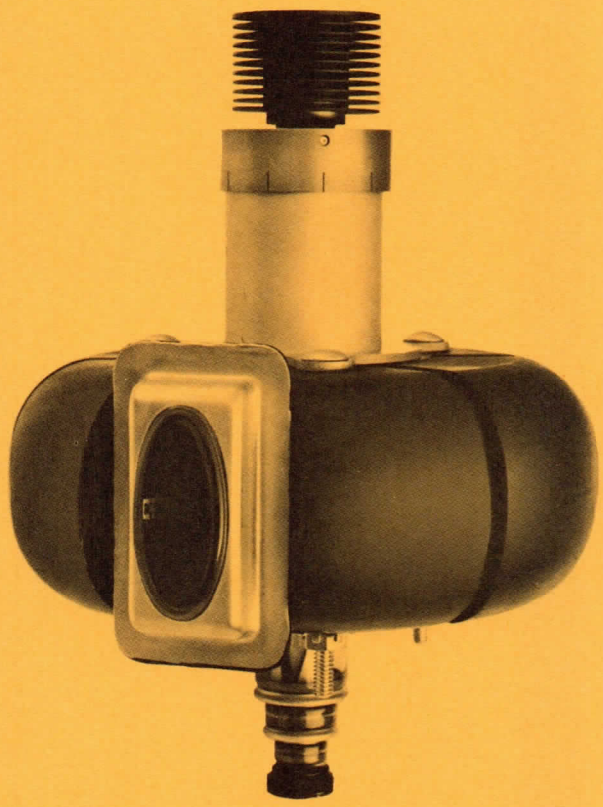
CW MAGNETRON

# L-3504

1

110 Watts Minimum Power
Tunable Frequency 2350 to 3575 MHz

The L-3504 continuous wave magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 2.8 to 3.4 kVdc |
| Average Current | 0.130 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 4.5 kVdc |
| Average Current | 0.140 A |
| Modulation Peak Current | 0.6 A |
| Average Input Power | 525 W |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 40 to 110 W |
| Tunable Frequency | 2350 to 3575 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 20 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 30 MHz |
| Anode Temperature Coefficient | Max. 0.3 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

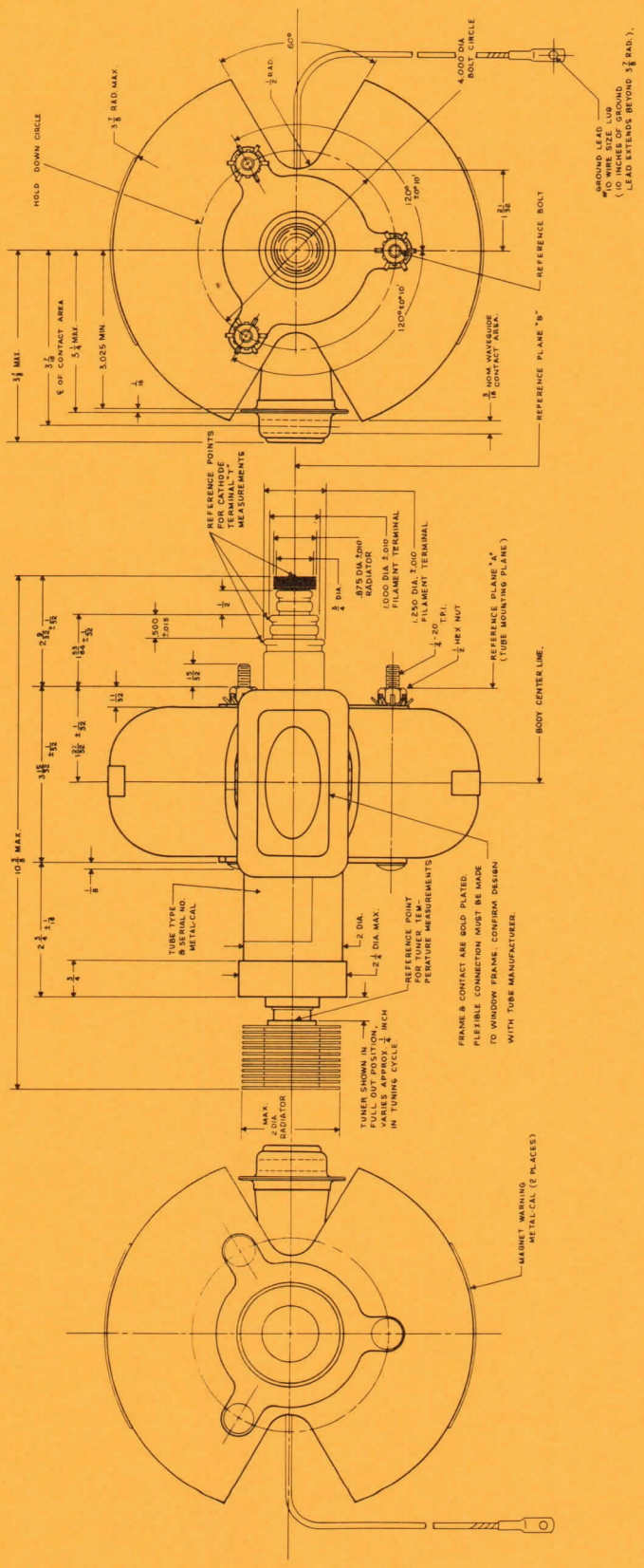
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | T23722 |
| Anode Cooling (air) | Min. 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3504



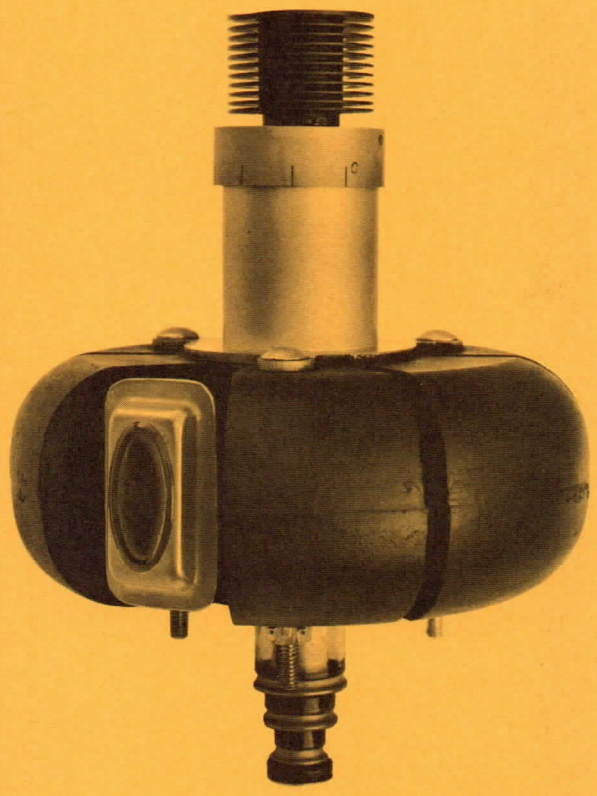
CW MAGNETRON

# L-3505

1

110 Watts Minimum Power
Tunable Frequency 3575 to 4975 MHz

The L-3505 continuous wave magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 2.8 to 3.4 kVdc |
| Average Current | 0.130 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 4.5 kVdc |
| Average Current | 0.140 A |
| Modulation Peak Current | 0.6 A |
| Average Input Power | 525 W |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 40 to 110 W |
| Tunable Frequency | 3575 to 4975 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 20 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 35 MHz |
| Anode Temperature Coefficient | Max. 0.4 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

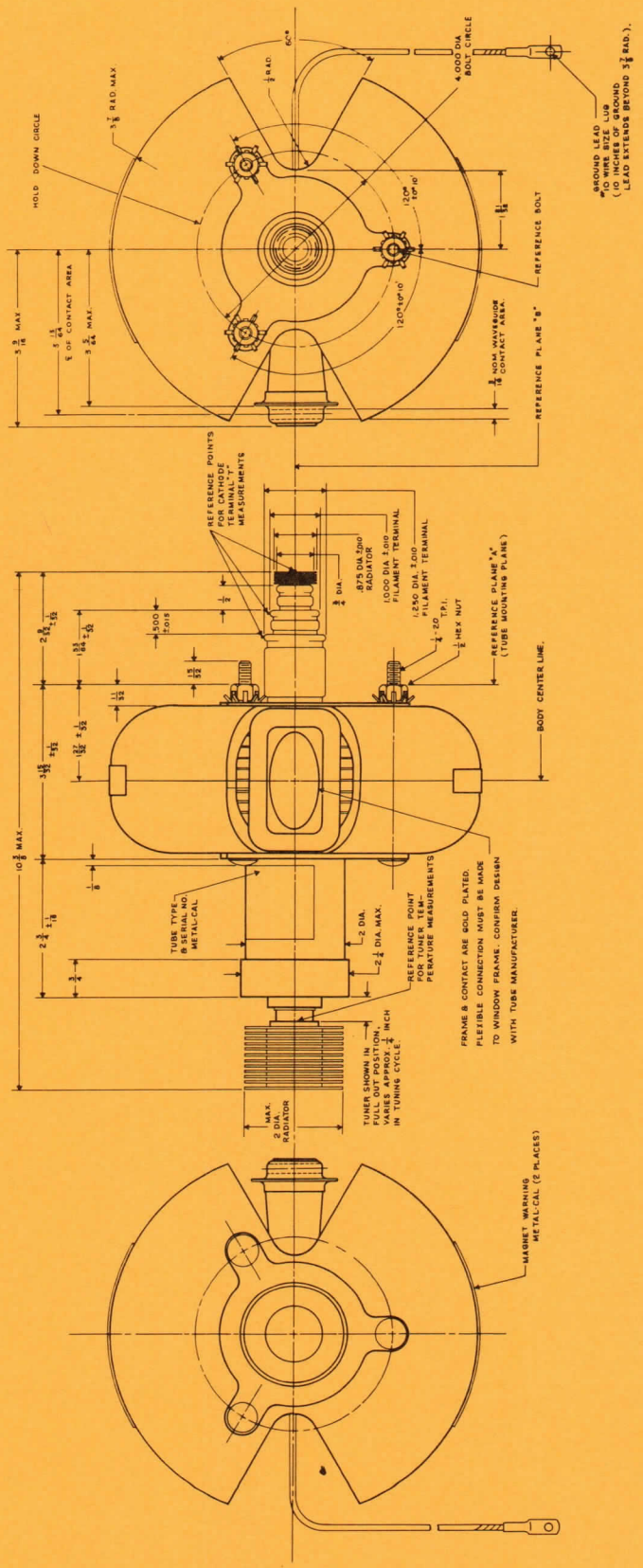
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | T 22990 |
| Anode Cooling (air) | Min. 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3505



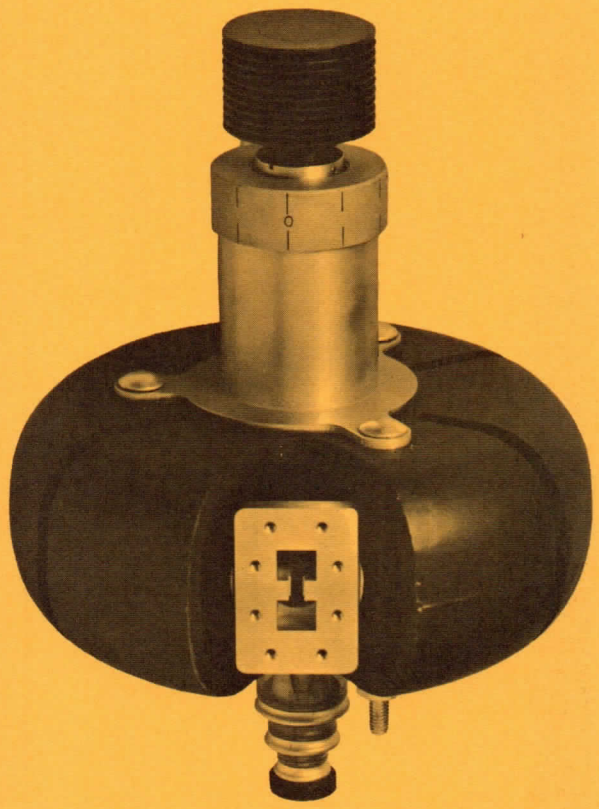
CW MAGNETRON

# L-3506

1

110 Watts Minimum Power
Tunable Frequency 4975 to 6175 MHz

The L-3506 continuous wave magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 2.8 to 3.4 kVdc |
| Average Current | 0.130 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 4.5 kVdc |
| Average Current | 0.140 A |
| Modulation Peak Current | 0.6 A |
| Average Input Power | 525 W |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 40 to 110 W |
| Tunable Frequency | 4975 to 6175 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 25 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 35 MHz |
| Anode Temperature Coefficient | Max. 0.7 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

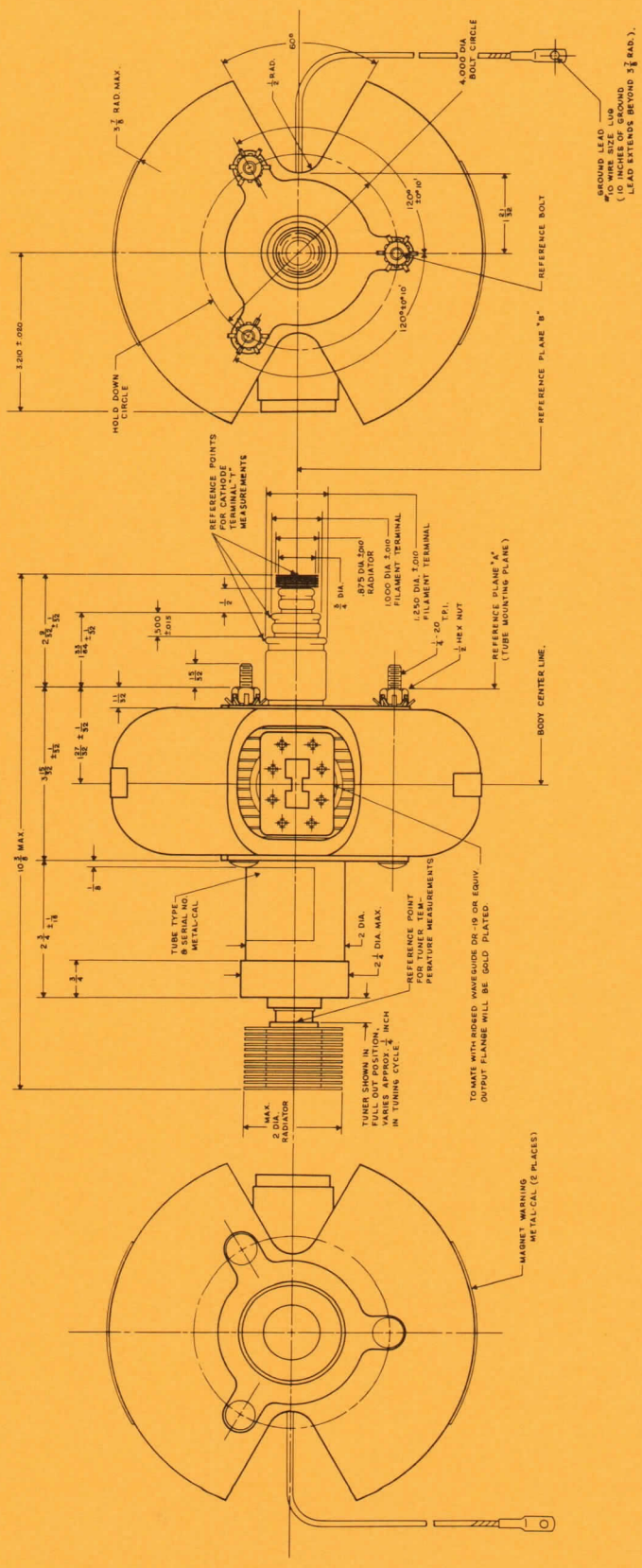
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (air) | Min. 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3506



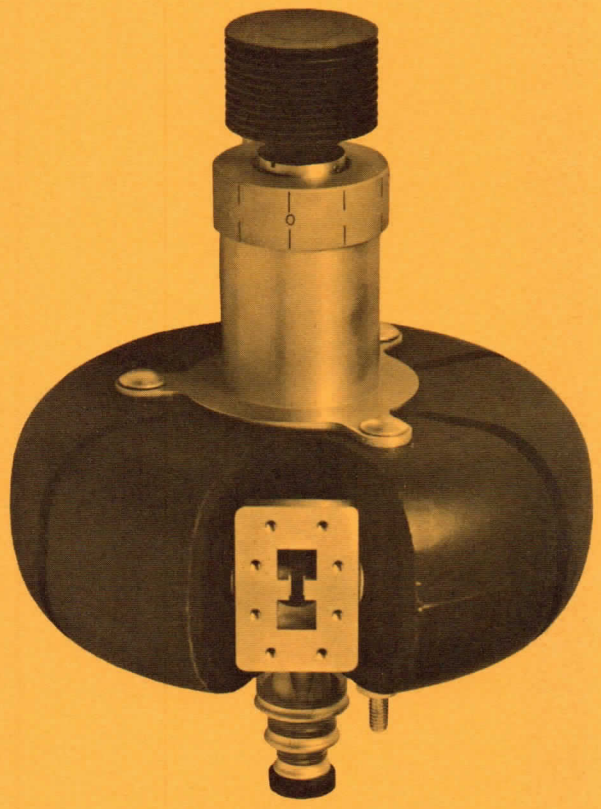
# CW MAGNETRON

# L-3507

1

110 Watts Minimum Power
Tunable Frequency 6175 to 7275 MHz

The L-3507 continuous wave magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 2.8 to 3.4 kVdc |
| Average Current | 0.130 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 4.5 kVdc |
| Average Current | 0.140 A |
| Modulation Peak Current | 0.6 A |
| Average Input Power | 525 W |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 40 to 110 W |
| Tunable Frequency | 6175 to 7275 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 25 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 35 MHz |
| Anode Temperature Coefficient | Max. 0.8 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

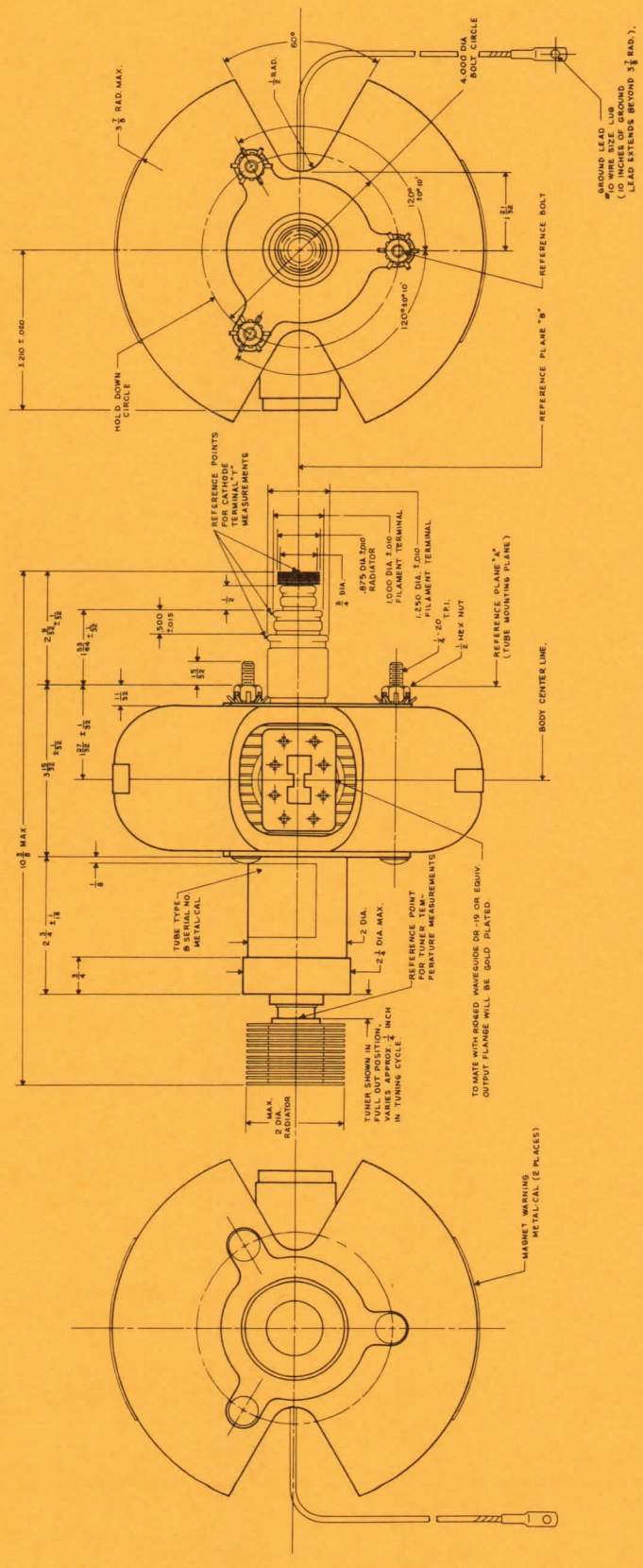
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (air) | Min. 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3507



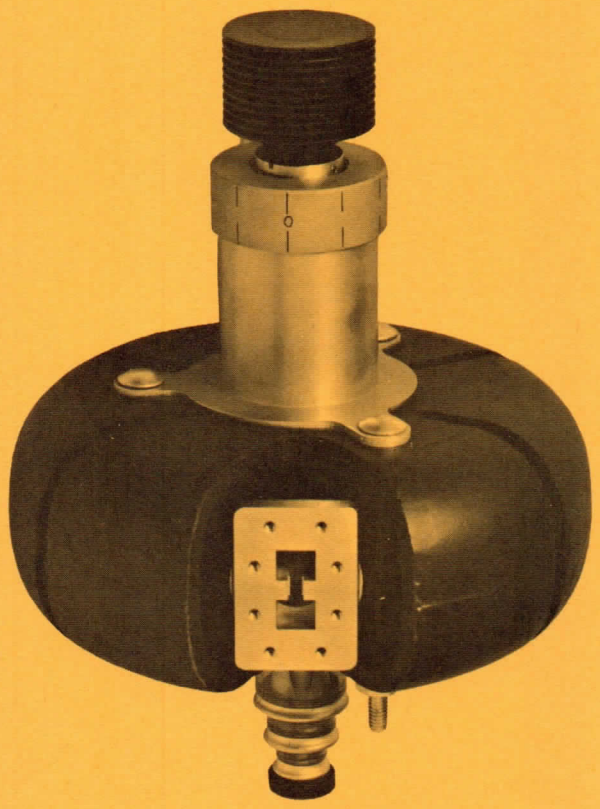
# CW MAGNETRON

# L-3508

1

110 Watts Minimum Power
Tunable Frequency 7275 to 8775 MHz

The L-3508 continuous wave magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 2.8 to 3.4 kVdc |
| Average Current | 0.130 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 4.5 kVdc |
| Average Current | 0.140 A |
| Modulation Peak Current | 0.6 A |
| Average Input Power | 525 W |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 40 to 110 W |
| Tunable Frequency | 7275 to 8775 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 35 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 70 MHz |
| Anode Temperature Coefficient | Max. 1.0 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

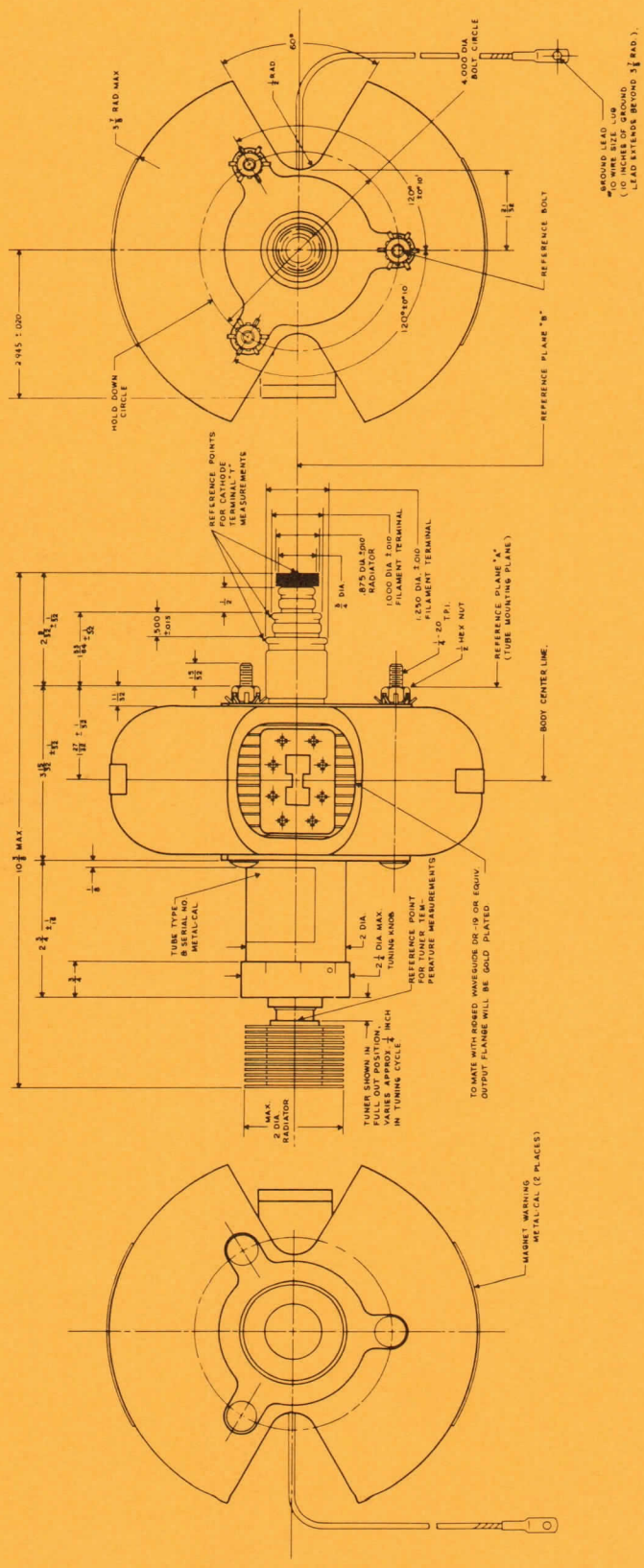
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (air) | Min. 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3508

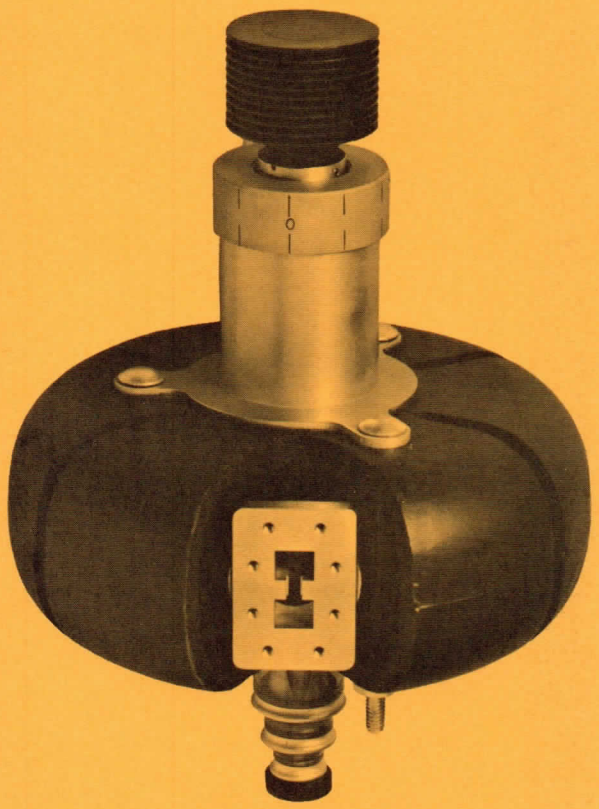


# CW MAGNETRON

# L-3509

110 Watts Minimum Power
Tunable Frequency 8775 to 10,475 MHz

The L-3509 continuous wave magnetron is a mechanically tuned, forced air cooled, medium power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 2.8 to 3.4 kVdc |
| Average Current | 0.130 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 5.0 kVdc |
| Average Current | 0.150 A |
| Modulation Peak Current | 0.6 A |
| Average Input Power | 525 W |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 40 to 110 W |
| Tunable Frequency | 8775 to 10,475 MHz |
| Pulling Factor (1.5:1 VSWR) | Max. 47 MHz |
| Pushing Figure (0.15 to 0.6A) | Max. 70 MHz |
| Anode Temperature Coefficient | Max. 1.0 mc/°C |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

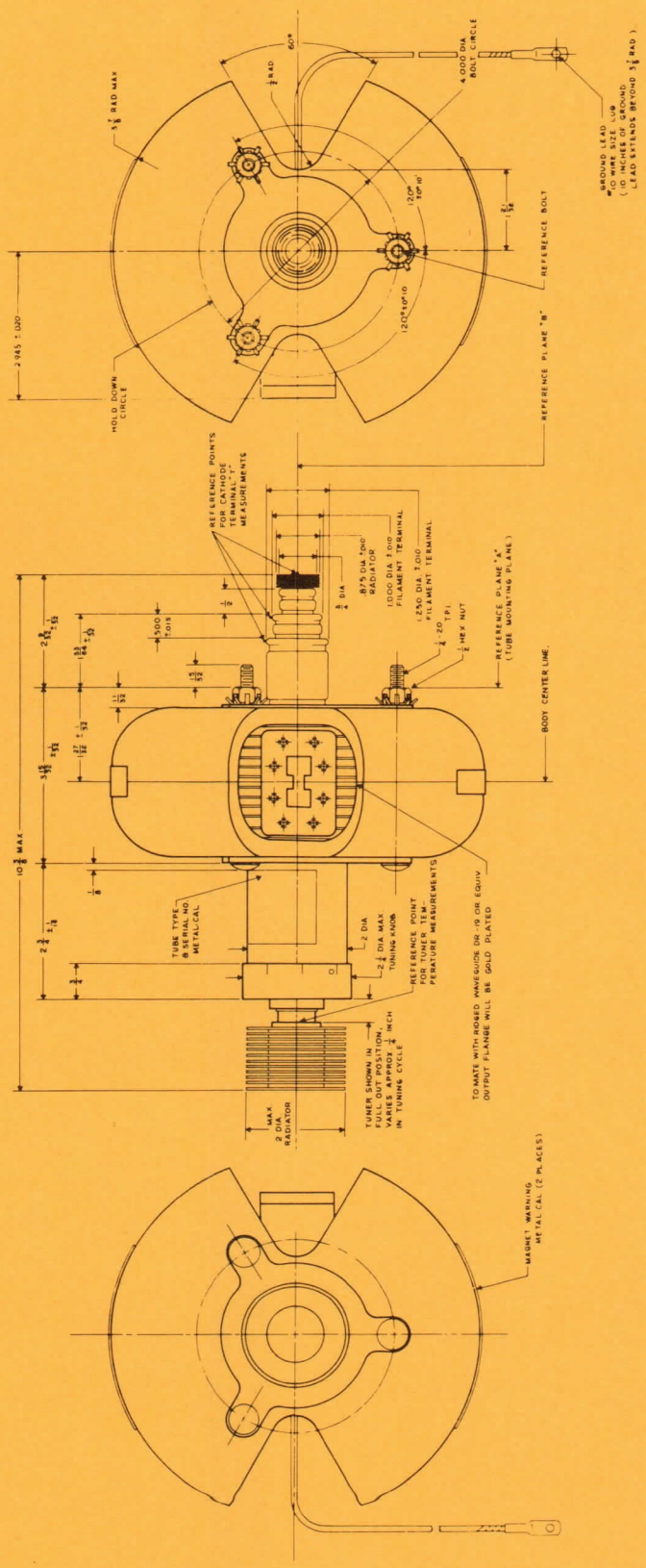
## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (air) | Min. 50 cfm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |

**Note:** A—Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3509

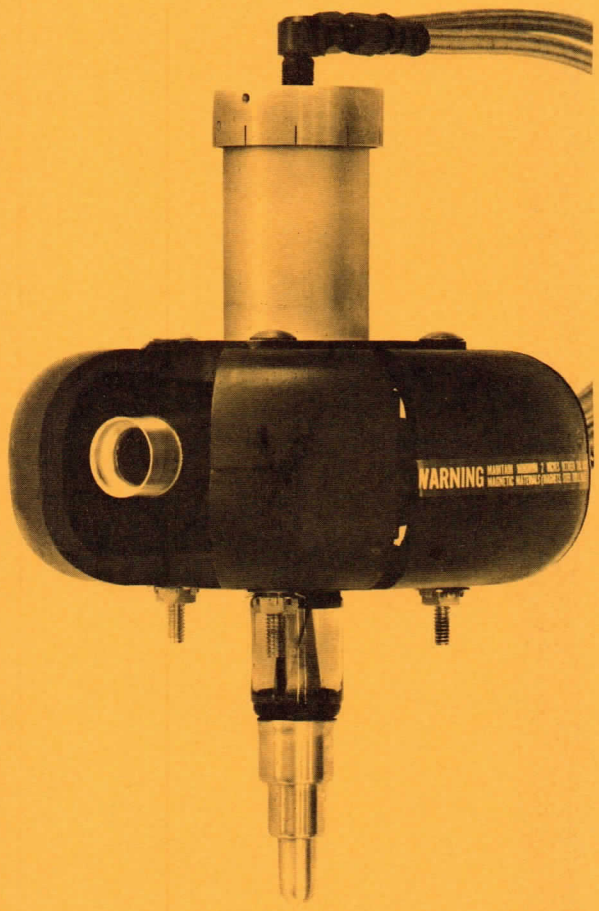


# CW MAGNETRON

# L-3714

175 Watts Minimum Power
Tunable Frequency 475 to 725 MHz

The L-3714 continuous wave magnetron is a mechanically tuned, liquid cooled, high power microwave generator. It is capable of being modulated with a variety of signals making it especially useful as a high power signal source. Several suggested applications are: CW drivers, high power component testing, electronic countermeasures, power source for antenna ranges, and radio interference testing.




## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage (Note A) | Nom 5.5 V |
| Heater Power | 93 W |
| Preheat Time | Min. 180 sec |
| Cathode Voltage | 2.7 to 3.4 kVdc |
| Average Current | 0.200 A |
| Anode Cathode Capacitance | Max. 30 uuf |
| Heater Cold Resistance | Min. 0.04 ohms |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Heater Voltage | 6.0 V |
| Heater Surge Current | 27 A |
| Cathode Voltage | 5.0 kVdc |
| Average Current | 0.210 A |
| Modulation Peak Current | 0.800 A |
| Average Input Power | 1.7 kW |
| Anode Temperature | 150° C |
| Cathode Temperature | 175° C |
| VSWR | 1.5:1 Ratio |
| Altitude | 10,000 Feet |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Power | Min. 100 to 175 W |
| Tunable Frequency | 475 to 725 MHz |
| Vibration (50 cps) | 10 G |
| Rated Cycle Life | 250 Hrs |

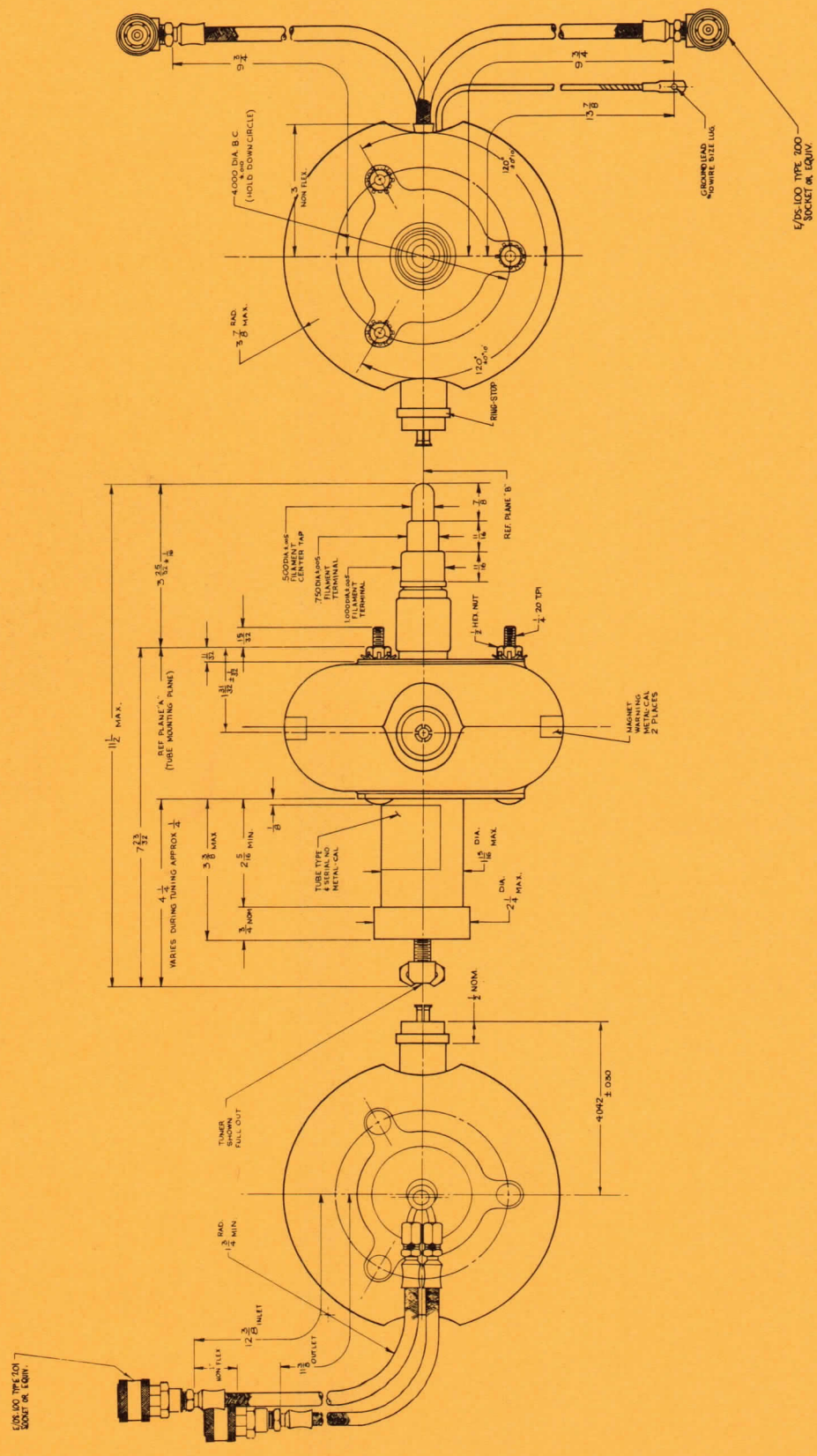
## MECHANICAL RATINGS

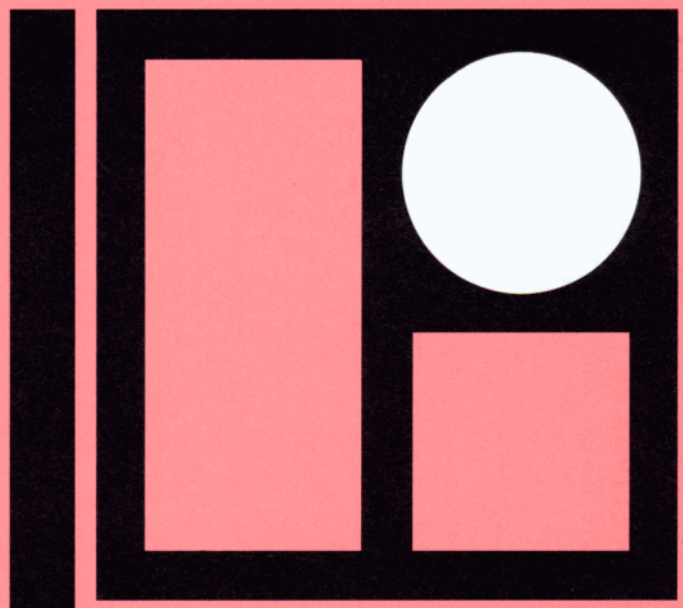
| | |
|---|---|
| Mounting Position | Vertical |
| Weight | Max. 18 lbs |
| Mating Mounting Flange | Coaxial |
| Anode Cooling (water) | Min. 0.5 gpm |
| Output Pressurization | Max. 20 psia |
| Cathode Pressurization | Max. 45 psia |
| Tuning Torque | Max. 200 oz.in. |
| Tuner Travel | 4.3 to 4.7 turns |
| Socket | Model #5001 |

**Note:** A — Filament controller must be used in order to keep the filament temperature constant with changes in current, load and frequency.

CW MAGNETRON

# L-3714





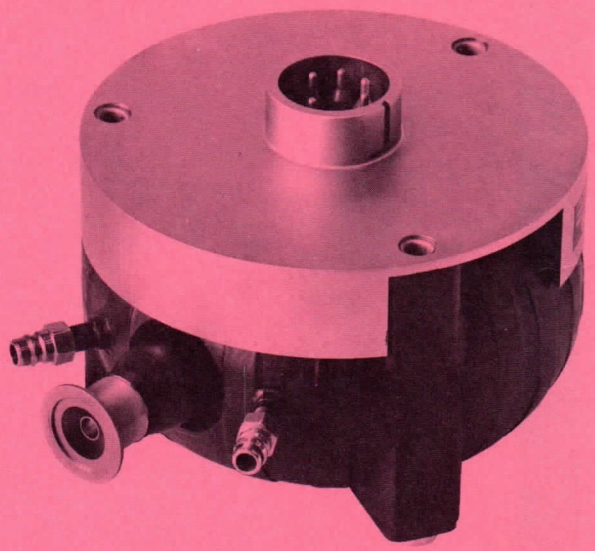
# BACKWARD WAVE OSCILLATORS

M-TYPE BACKWARD WAVE OSCILLATOR

# L-3721

200 Watts Minimum Power
Tunable Frequency: 1000 to 1400 Mc

This rugged voltage tunable CW oscillator has been designed for long reliable performance into a mismatch of 1.5:1 without discontinuities. A large variety of applications include high power sweep oscillators, frequency modulated or amplitude modulated transmitters or as barrage countermeasures power sources. This tube is capable of rapid broadband sole tuning.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.6 to 3.5 A |
| Preheat Time | Min. 60 sec. |
| Delay Line Voltage * | +2300 to +4000 V |
| Delay Line Current | Max. 300 mA |
| Sole Voltage * | −900 to −3400 V |
| Sole Current | −20 to +5 mA |
| Accelerator Voltage * | +900 to +1900 V |
| Accelerator Current | 0 to +3 mA |
| Grid Voltage * | −100 to −700 V |
| Grid Current | −3 to +3 mA |
| Accelerator Capacity | Max. 25 uufd |
| Sole Capacity | Max. 70 uufd |
| Heater Cold Resistance | Min. 0.23 ohms |

* with respect to Cathode

## ABSOLUTE RATINGS

| | |
|---|---|
| Heater Voltage | 6.8 V |
| Heater Current | 4.5 A |
| Delay Line Voltage | +2000 to +5200 V |
| Delay Line Current | Max. 500 mA |
| Sole Voltage | −900 to −3500 V |
| Sole Current | −20 to +5 mA |
| Accelerator Voltage | Max. +2200 V |
| Accelerator Current | Max. 3 mA |
| Grid Voltage | −100 to −700 V |
| Grid Current | −3 to +3 mA |
| Body Temperature | 150° C |

## PERFORMANCE CHARACTERISTICS

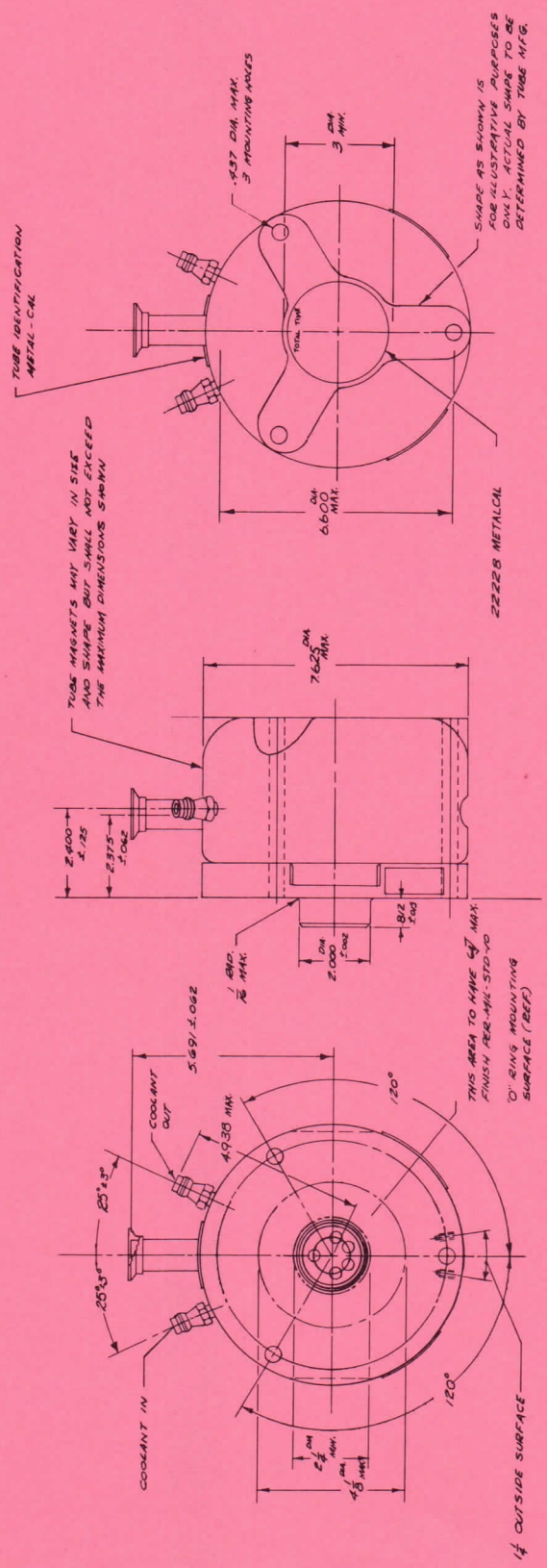
| | |
|---|---|
| Average Power | Min. 200 to 300 W |
| Tunable Frequency | 1000 to 1400 Mc |
| Spurious Output Ratio | Min. 15 db |
| Amplitude Modulation | Max. 25% |
| Thermal Frequency Drift | Max. 4 Mc |
| Thermal Frequency Transit Time | Max. 2 min. |
| Vibration-Operational (5 to 1500 cps) | 0.06 Da or 2 G |
| Vibration-Non Operating (5 to 1500 cps) | 0.06 Da or 5 G |
| Shock-Non Operating (11 ms) | 15 G |
| Rated Cycle Life | 400 hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 27 lbs. |
| Mating Mounting Flange | Litton Dwg. # T-1224 |
| Anode Cooling (oil) | Min. 1.0 gpm |
| Electrical Input Pressurization | Max. 100 psia |
| Coolant Pressure | Max. 13 psia |
| Output Pressurization | Max. 5 psia |

M-TYPE BACKWARD WAVE OSCILLATOR

# L-3721

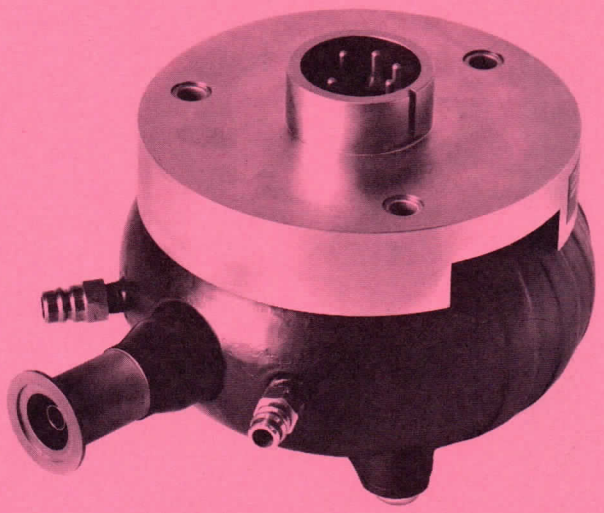


M-TYPE BACKWARD WAVE OSCILLATOR

# L-3724

180 Watts Minimum Power
Tunable Frequency: 2500 to 3550 Mc

This rugged voltage tunable CW oscillator has been designed for long reliable performance into a mismatch of 1.5:1 without discontinuities. A large variety of applications include high power sweep oscillators, frequency modulated or amplitude modulated transmitters or as barrage countermeasures power sources. This tube is capable of rapid broadband sole tuning.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.6 to 3.5 A |
| Preheat Time | Min. 60 sec. |
| Delay Line Voltage * | +2300 to +4000 V |
| Delay Line Current | Max. 300 mA |
| Sole Voltage * | −900 to −3400 V |
| Sole Current | −20 to +5 mA |
| Accelerator Voltage * | +900 to +1900 V |
| Accelerator Current | 0 to +3 mA |
| Grid Voltage * | −100 to −700 V |
| Grid Current | −3 to +3 mA |
| Accelerator Capacity | Max. 25 uufd |
| Sole Capacity | Max. 65 uufd |
| Heater Cold Resistance | Min. 0.23 ohms |

* with respect to Cathode

## ABSOLUTE RATINGS

| | |
|---|---|
| Heater Voltage | 6.8 V |
| Heater Current | 4.5 a |
| Delay Line Voltage | +2000 to +5200 V |
| Delay Line Current | Max. 350 mA |
| Sole Voltage | −900 to −3500 V |
| Sole Current | −20 to +5 mA |
| Accelerator Voltage | Max. +2200 V |
| Accelerator Current | Max. 3 mA |
| Grid Voltage | −100 to −700 V |
| Grid Current | −3 to +3 mA |
| Body Temperature | 150° C |

## PERFORMANCE CHARACTERISTICS

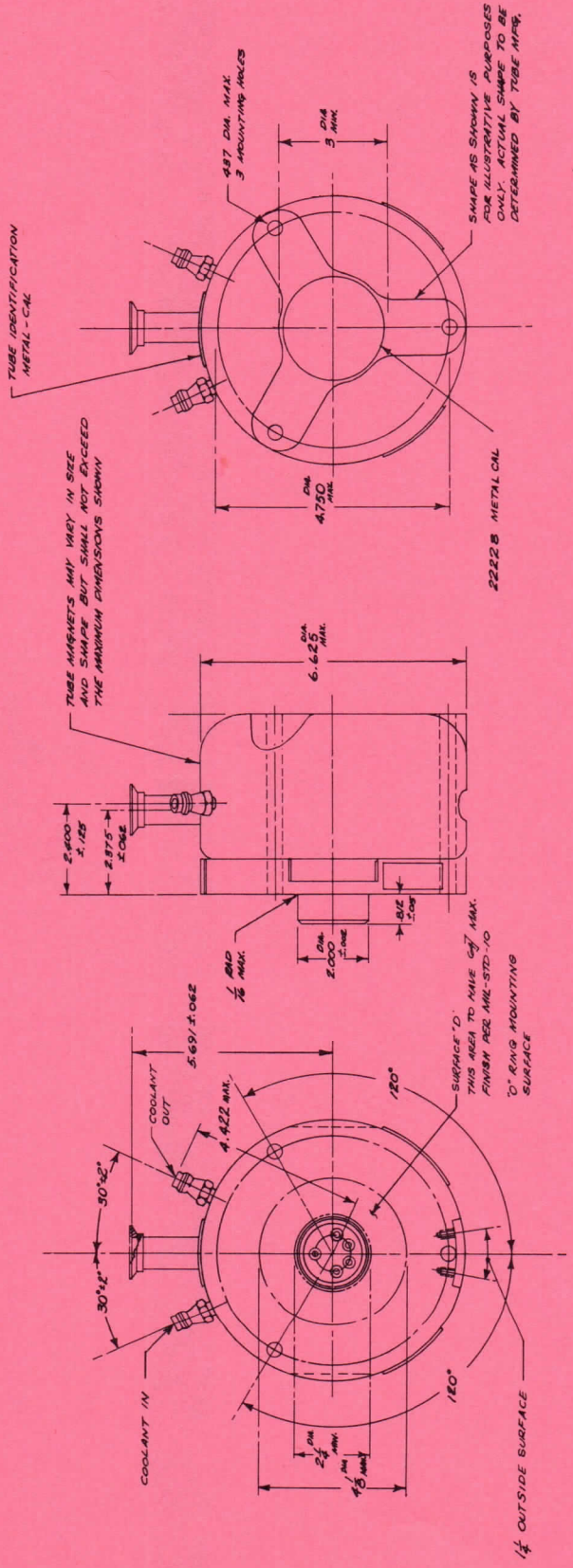
| | |
|---|---|
| Average Power | Min. 180 to 250 W |
| Tunable Frequency | 2500 to 3550 Mc |
| Spurious Output Ratio | Min. 15 db |
| Amplitude Modulation | Max. 25% |
| Thermal Frequency Drift | Max. 9 Mc |
| Thermal Frequency Transit Time | Max. 2 min. |
| Vibration-Operational (5 to 1500 cps) | 0.06 Da or 2 G |
| Vibration-Non Operating (5 to 1500 cps) | 0.06 Da or 5 G |
| Shock-Non Operating (11 ms) | 15 G |
| Rated Cycle Life | 400 hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 lbs. |
| Mating Mounting Flange | Litton Dwg. # T-1224 |
| Anode Cooling (oil) | Min. 1.0 gpm |
| Electrical Input Pressurization | Max. 100 psia |
| Coolant Pressure | Max. 13 psia |
| Output Pressurization | Max. 5 psia |

M-TYPE BACKWARD WAVE OSCILLATOR

# L-3724

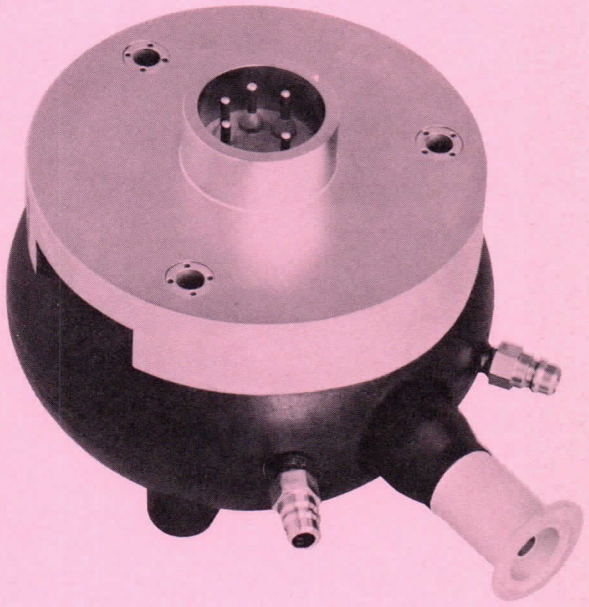


M-TYPE BACKWARD WAVE OSCILLATOR

# L-3724A

220 Watts Minimum Power
Tunable Frequency: 2500 to 3550 Mc

This rugged voltage tunable CW oscillator has been designed for long reliable performance into a mismatch of 1.5:1 without discontinuities. A large variety of applications include high power sweep oscillators, frequency modulated or amplitude modulated transmitters or as barrage countermeasures power sources. This tube is capable of rapid broadband sole tuning.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.6 to 3.5 A |
| Preheat Time | Min. 60 sec. |
| Delay Line Voltage * | +2300 to +4000 V |
| Delay Line Current | Max. 300 mA |
| Sole Voltage * | −900 to −3400 V |
| Sole Current | −20 to +5 mA |
| Accelerator Voltage * | +900 to +1900 V |
| Accelerator Current | 0 to +3 mA |
| Grid Voltage * | −100 to −700 V |
| Grid Current | −3 to +3 mA |
| Accelerator Capacity | Max. 25 uufd |
| Sole Capacity | Max. 70 uufd |
| Heater Cold Resistance | Min. 0.23 ohms |

* with respect to Cathode

## ABSOLUTE RATINGS

| | |
|---|---|
| Heater Voltage | 6.8 V |
| Heater Current | 4.5 a |
| Delay Line Voltage | +2000 to +5200 V |
| Delay Line Current | Max. 350 mA |
| Sole Voltage | −900 to −3500 V |
| Sole Current | −20 to +5 mA |
| Accelerator Voltage | Max. +2200 V |
| Accelerator Current | Max. 3 mA |
| Grid Voltage | −100 to −700 V |
| Grid Current | −3 to +3 mA |
| Body Temperature | 150° C |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Average Power | Min. 220 to 300 W |
| Tunable Frequency | 2500 to 3550 Mc |
| Spurious Output Ratio | Min. 15 db |
| Amplitude Modulation | Max. 25% |
| Thermal Frequency Drift | Max. 12 Mc |
| Thermal Frequency Transit Time | Max. 2 min. |
| Vibration-Operational (5 to 1500 cps) | 0.06 Da or 2 G |
| Vibration-Non Operating (5 to 1500 cps) | 0.06 Da or 5 G |
| Shock-Non Operating (11 ms) | 15 G |
| Rated Cycle Life | 400 hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 lbs. |
| Mating Mounting Flange | Litton Dwg. # T-1224 |
| Anode Cooling (oil) | Min. 1.0 gpm |
| Electrical Input Pressurization | Max. 100 psia |
| Coolant Pressure | Max. 13 psia |
| Output Pressurization | Max. 5 psia |

**M-TYPE BACKWARD WAVE OSCILLATOR**

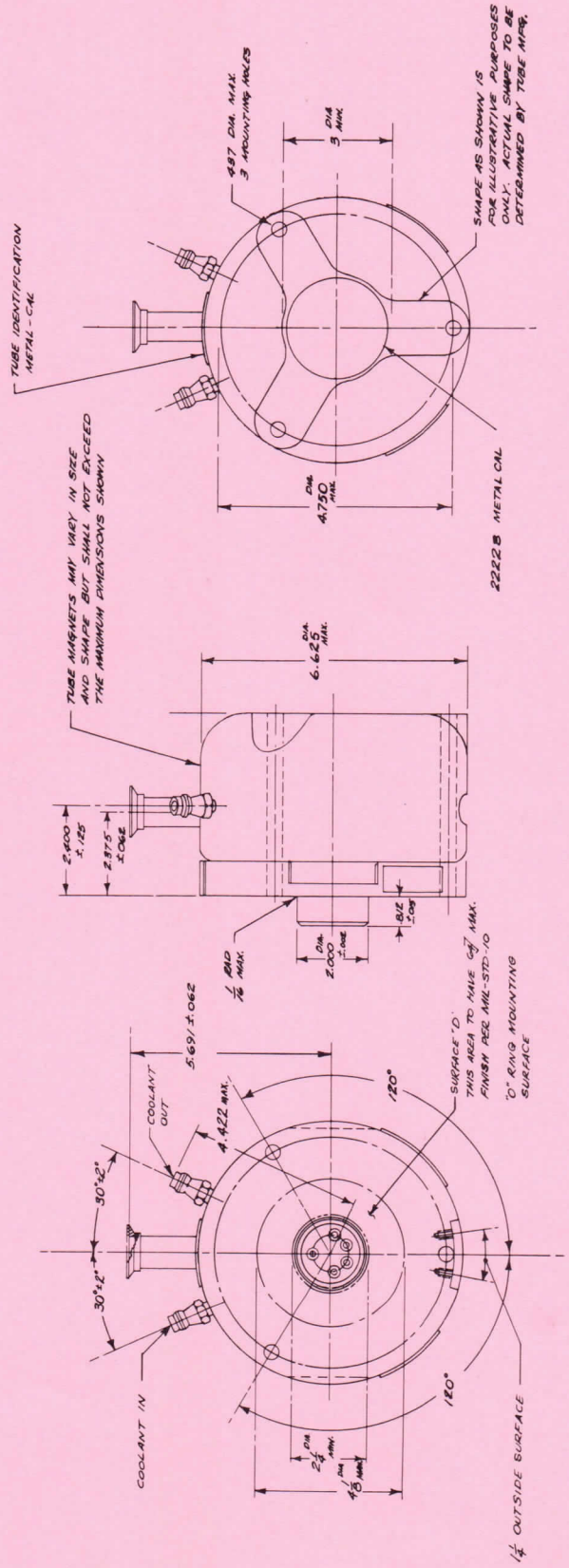
# L-3724A

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.

**CAUTION**
**X-RAYS**

This device may produce X-radiation when energized. Operating personnel must be protected by appropriate shielding. X-ray caution signs or labels should be permanently attached to equipment directing operating personnel never to operate this device without X-ray shielding in place.

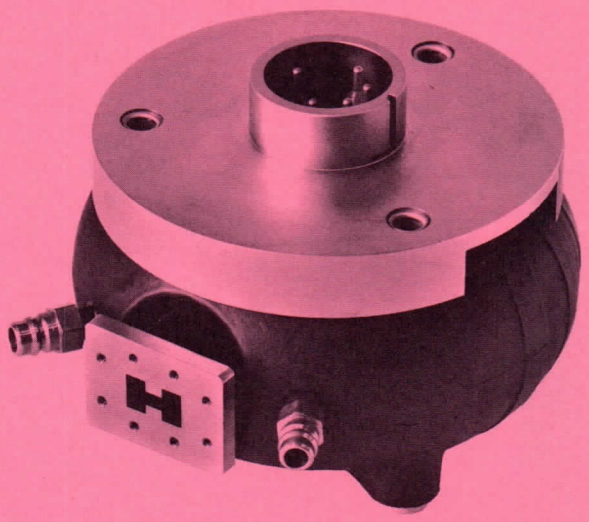


M-TYPE BACKWARD WAVE OSCILLATOR

# L-3726

165 Watts Minimum Power
Tunable Frequency: 4800 to 6550 Mc

This rugged voltage tunable CW oscillator has been designed for long reliable performance into a mismatch of 1.5:1 without discontinuities. A large variety of applications include high power sweep oscillators, frequency modulated or amplitude modulated transmitters or as barrage countermeasures power sources. This tube is capable of rapid broadband sole tuning.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.6 to 3.5 A |
| Preheat Time | Min. 60 sec. |
| Delay Line Voltage * | +2300 to +4000 V |
| Delay Line Current | Max. 275 mA |
| Sole Voltage * | −900 to −3400 V |
| Sole Current | −20 to +5 mA |
| Accelerator Voltage * | +900 to +1900 V |
| Accelerator Current | 0 to +3 mA |
| Grid Voltage * | −100 to −700 V |
| Grid Current | −3 to +3 mA |
| Accelerator Capacity | Max. 25 uufd |
| Sole Capacity | Max. 65 uufd |
| Heater Cold Resistance | Min. 0.3 ohms |

* with respect to Cathode

## ABSOLUTE RATINGS

| | |
|---|---|
| Heater Voltage | 6.8 V |
| Heater Current | 4.5 A |
| Delay Line Voltage | +2000 to +5200 V |
| Delay Line Current | Max. 350 mA |
| Sole Voltage | −900 to −3500 V |
| Sole Current | −20 to +5 mA |
| Accelerator Voltage | Max. +2200 V |
| Accelerator Current | Max. 3 mA |
| Grid Voltage | −100 to −700 V |
| Grid Current | −3 to +3 mA |
| Body Temperature | 150° C |

## PERFORMANCE CHARACTERISTICS

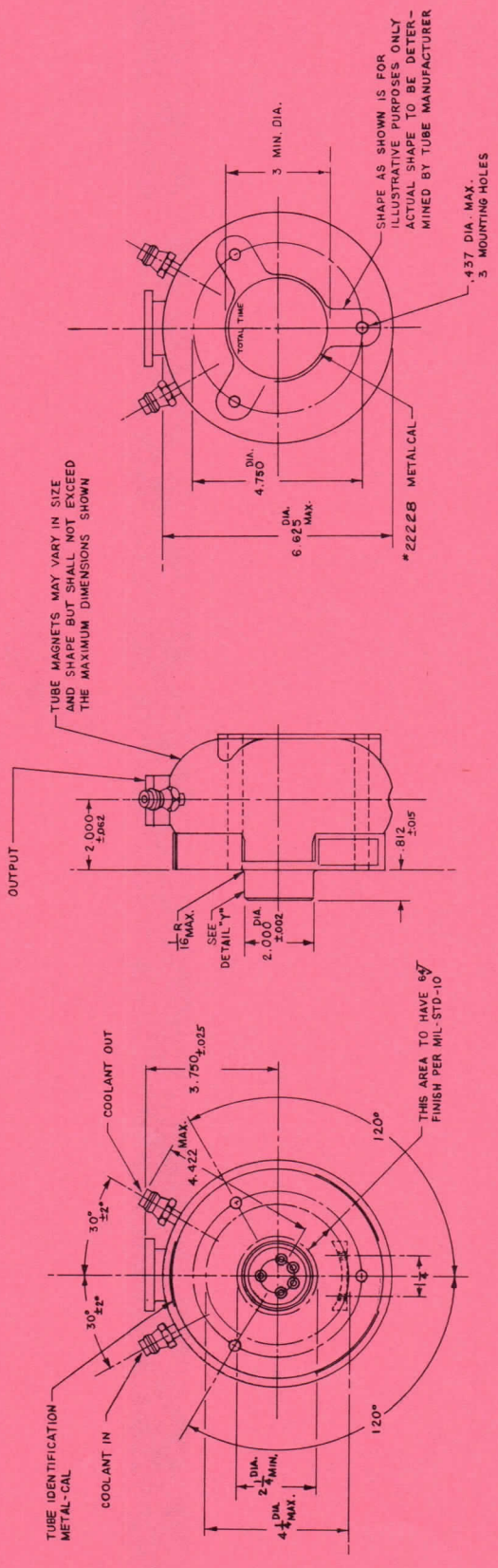
| | |
|---|---|
| Average Power | Min. 165 to 200 W |
| Tunable Frequency | 4800 to 6550 Mc |
| Spurious Output Ratio | Min. 15 db |
| Amplitude Modulation | Max. 25% |
| Thermal Frequency Drift | Max. 16 Mc |
| Thermal Frequency Transit Time | Max. 2 min. |
| Vibration-Operational (5 to 1500 cps) | 0.06 Da or 2 G |
| Vibration-Non Operating (5 to 1500 cps) | 0.06 Da or 5 G |
| Shock-Non Operating (11 ms) | 15 G |
| Rated Cycle Life | 400 hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16.5 lbs. |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (oil) | Min. 1.0 gpm |
| Electrical Input Pressurization | Max. 100 psia |
| Coolant Pressure | Max. 13 psia |
| Output Pressurization | Max. 5 psia |

M-TYPE BACKWARD WAVE OSCILLATOR

# L-3726

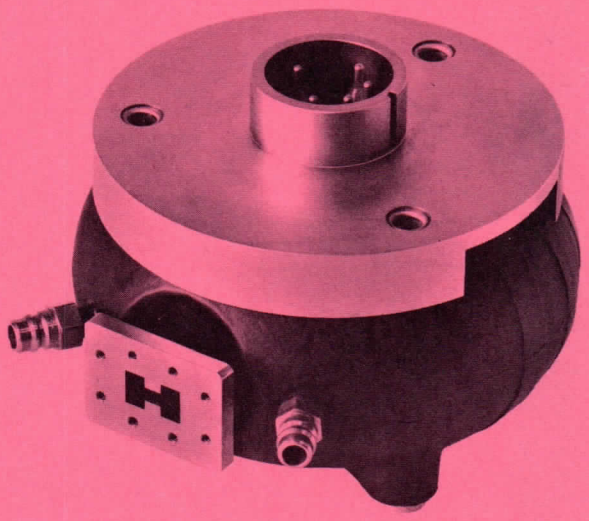


M-TYPE BACKWARD WAVE OSCILLATOR

# L-3728

125 Watts Minimum Power
Tunable Frequency: 8500 to 11,000 Mc

This rugged voltage tunable CW oscillator has been designed for long reliable performance into a mismatch of 1.5:1 without discontinuities. A large variety of applications include high power sweep oscillators, frequency modulated or amplitude modulated transmitters or as barrage countermeasures power sources. This tube is capable of rapid broadband sole tuning.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.6 to 3.5 A |
| Preheat Time | Min. 60 sec. |
| Delay Line Voltage * | +2300 to +4000 V |
| Delay Line Current | Max. 275 mA |
| Sole Voltage * | −900 to −3400 V |
| Sole Current | −20 to +5 mA |
| Accelerator Voltage * | +900 to +1900 V |
| Accelerator Current | 0 to +3 mA |
| Grid Voltage * | −100 to −700 V |
| Grid Current | −3 to +3 mA |
| Accelerator Capacity | Max. 25 uufd |
| Sole Capacity | Max. 55 uufd |
| Heater Cold Resistance | Min. 0.23 ohms |

* with respect to Cathode

## ABSOLUTE RATINGS

| | |
|---|---|
| Heater Voltage | 6.8 V |
| Heater Current | 4.5 A |
| Delay Line Voltage | +2000 to +5200 V |
| Delay Line Current | Max. 300 mA |
| Sole Voltage | −900 to −3500 V |
| Sole Current | −20 to +5 mA |
| Accelerator Voltage | Max. +2200 V |
| Accelerator Current | Max. 3 mA |
| Grid Voltage | −100 to −700 V |
| Grid Current | −3 to +3 mA |
| Body Temperature | 150° C |

## PERFORMANCE CHARACTERISTICS

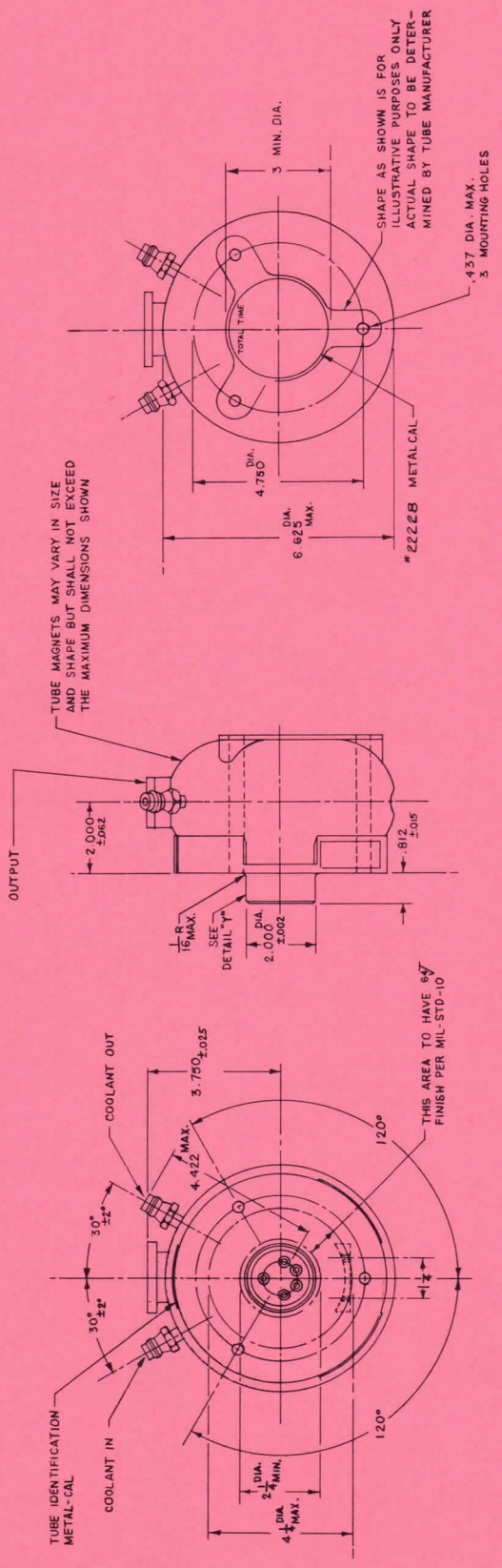
| | |
|---|---|
| Average Power | Min. 125 to 200 W |
| Tunable Frequency | 8500 to 11,000 Mc |
| Spurious Output Ratio | Min. 15 db |
| Amplitude Modulation | Max. 25% |
| Thermal Frequency Drift | Max. 28 Mc |
| Thermal Frequency Transit Time | Max. 2 min. |
| Vibration-Operational (5 to 1500 cps) | 0.06 Da or 2 G |
| Vibration-Non Operating (5 to 1500 cps) | 0.06 Da or 5 G |
| Shock-Non Operating (11 ms) | 15 G |
| Rated Cycle Life | 400 hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16 lbs. |
| Mating Mounting Flange | DR-19 |
| Anode Cooling (oil) | Min. 1.0 gpm |
| Electrical Input Pressurization | Max. 100 psia |
| Coolant Pressure | Max. 13 psia |
| Output Pressurization | Max. 5 psia |

M-TYPE BACKWARD WAVE OSCILLATOR

# L-3728

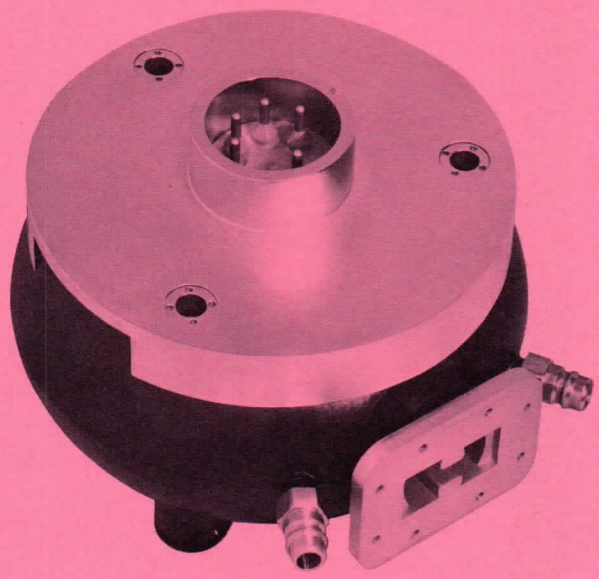


M-TYPE BACKWARD WAVE OSCILLATOR

# L-3729A

220 Watts Minimum Power
Tunable Frequency: 4360 to 5910 Mc

This rugged voltage tunable CW oscillator has been designed for long reliable performance into a mismatch of 1.5:1 without discontinuities. A large variety of applications include high power sweep oscillators, frequency modulated or amplitude modulated transmitters or as barrage countermeasures power sources. This tube is capable of rapid broadband sole tuning.



## OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage | 6.3 V |
| Heater Current | 1.6 to 3.5 A |
| Preheat Time | Min. 60 sec. |
| Delay Line Voltage * | +2300 to +4000 V |
| Delay Line Current | Max. 300 mA |
| Sole Voltage * | −900 to −3400 V |
| Sole Current | −20 to +5 mA |
| Accelerator Voltage * | +900 to +1900 V |
| Accelerator Current | 0 to +3 mA |
| Grid Voltage * | −100 to −700 V |
| Grid Current | −3 to +3 mA |
| Accelerator Capacity | Max. 25 uufd |
| Sole Capacity | Max. 65 uufd |
| Heater Cold Resistance | Min. 0.3 ohms |

* with respect to Cathode

## ABSOLUTE RATINGS

| | |
|---|---|
| Heater Voltage | 6.8 V |
| Heater Current | 4.5 A |
| Delay Line Voltage | +2000 to +5200 V |
| Delay Line Current | Max. 350 mA |
| Sole Voltage | −900 to −3500 V |
| Sole Current | −20 to +5 mA |
| Accelerator Voltage | Max. +2200 V |
| Accelerator Current | Max. 3 mA |
| Grid Voltage | −100 to −700 V |
| Grid Current | −3 to +3 mA |
| Body Temperature | 150° C |

## PERFORMANCE CHARACTERISTICS

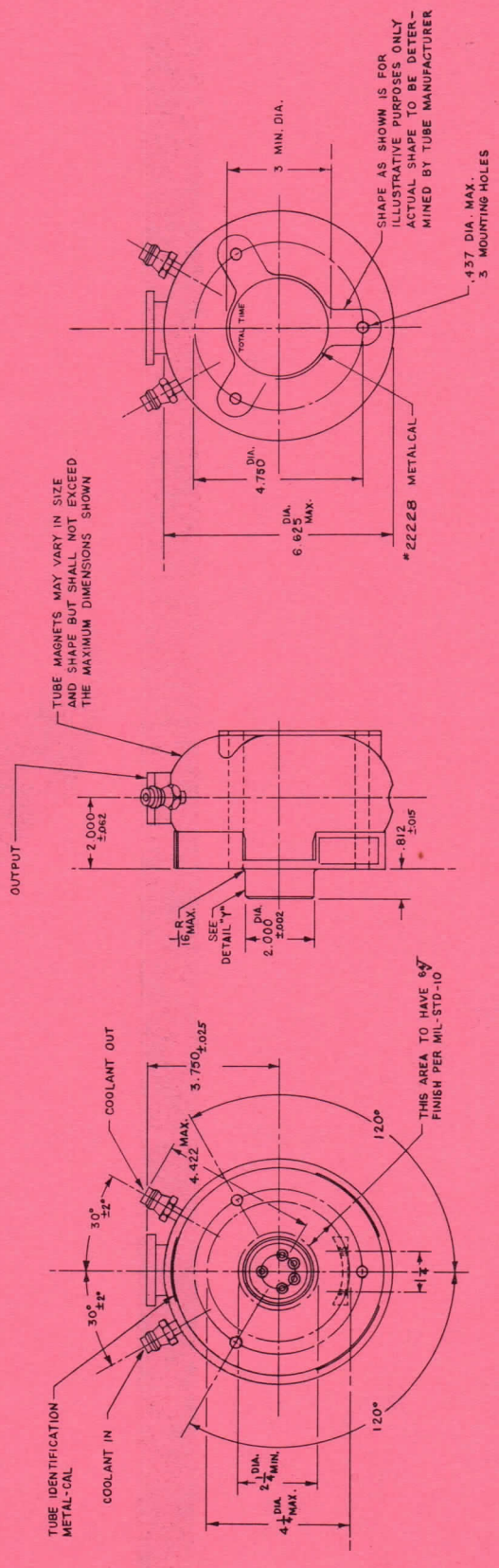
| | |
|---|---|
| Average Power | Min. 220 to 275 W |
| Tunable Frequency | 4360 to 5910 Mc |
| Spurious Output Ratio | Min. 15 db |
| Amplitude Modulation | Max. 25% |
| Thermal Frequency Drift | Max. 15 Mc |
| Thermal Frequency Transit Time | Max. 2 min. |
| Vibration-Operational (5 to 1500 cps) | 0.06 Da or 2 G |
| Vibration-Non Operating (5 to 1500 cps) | 0.06 Da or 5 G |
| Shock-Non Operating (11 ms) | 15 G |
| Rated Cycle Life | 400 hrs. |

## MECHANICAL RATINGS

| | |
|---|---|
| Mounting Position | Any |
| Weight | Max. 16.5 lbs. |
| Mating Mounting Flange | ARA−150 |
| Anode Cooling (oil) | Min. 1.0 gpm |
| Electrical Input Pressurization | Max. 100 psia |
| Coolant Pressure | Max. 13 psia |
| Output Pressurization | Max. 5 psia |

M-TYPE BACKWARD WAVE OSCILLATOR

# L-3729A

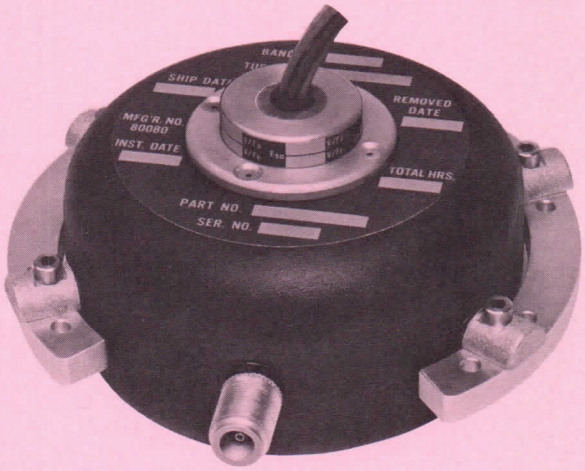


M-TYPE BACKWARD WAVE OSCILLATOR

# L-5316

100 W (CW) Minimum Power
Tunable Frequency: 2.6 - 3.5 GHz

The L-5316 is a miniature M-type backward wave oscillator, voltage tunable over the frequency range of 2600 to 3500 MHz with CW power in excess of 100 watts. This tube is ruggedized for operation under a variety of environmental conditions and is conduction cooled. The L-5316 can be amplitude or frequency modulated and is engineered to be tuned by simultaneous changes in the delay line and the sole voltages. A wide variety of applications include high power sweep oscillators, communications and data link transmitters, and as barrage countermeasures power sources.




## TYPICAL OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage ($E_f$) | 6.3 V |
| Heater Current ($I_f$) | 0.8 to 1.5 A |
| Preheat Time | 60 sec. |
| Delay Line Voltage ($E_{b2}$) | 1925 to 3440 +V |
| Delay Line Current ($I_{b2}$) | Max. 210 mA |
| Sole Voltage ($E_{so}$) | 875 to 2235 −V |
| Sole Current ($I_{so}$) | −10 to +5 mA |
| Accelerator Voltage ($E_{bl}$) | Max. 2000 +V |
| Accelerator Current ($I_{bl}$) | 0 to +3 mA |
| Grid Voltage ($E_c$) | 0 to 500 −V |
| Grid Current ($I_c$) | −2 to +2 mA |
| Accelerator Capacity | Max. 35 pf |
| Sole Capacity | Max. 75 pf |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Frequency Range | 2,600 to 3,500 MHz |
| Power Output (CW) | Min. 100 W |
| Spurious Output Ratio | Min. 15 db |
| Rated Life | 500 hrs. |
| Tuning Sensitivity (nominal) | 0.51 V/MHz |

## MECHANICAL DESCRIPTION

| | |
|---|---|
| Mounting Position | Any |
| Weight | 7.0 lbs. |
| Dimensions | See Outline Drawing |

## ENVIRONMENTAL RATINGS

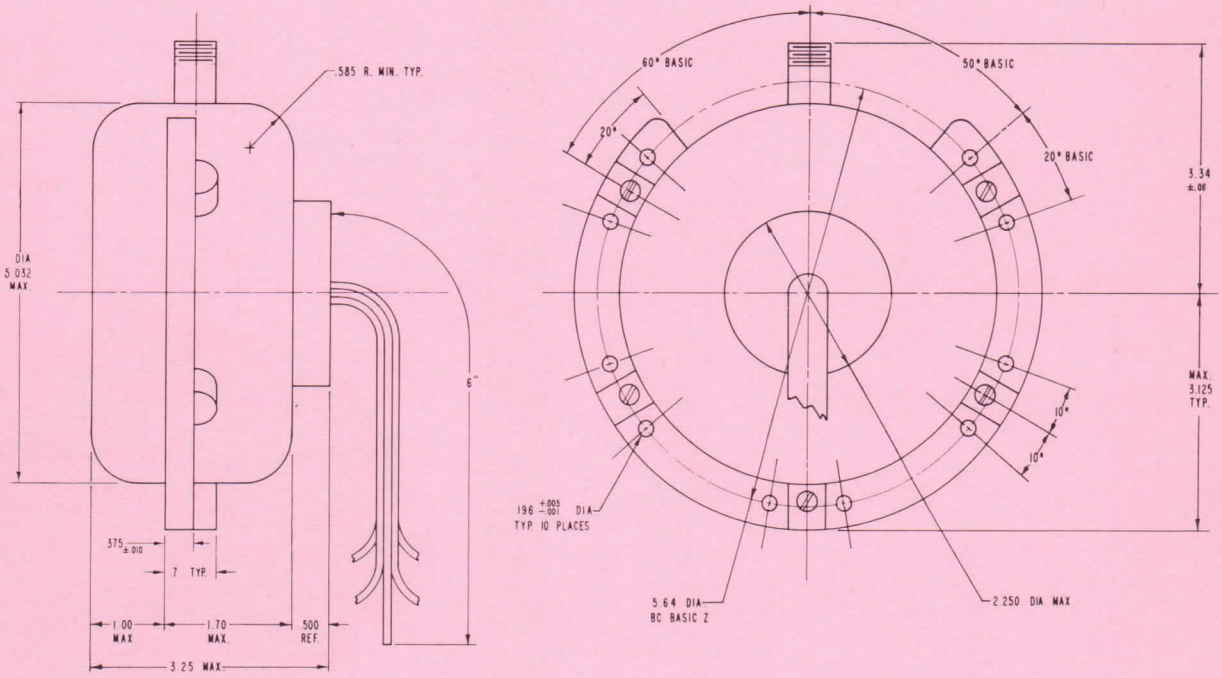
| | |
|---|---|
| Cooling | Conduction |
| Maximum Temperature (Mounting Ring) | +115°C |
| Minimum Temperature | −54°C |
| Vibration (Operating) (5-500 Hz) | 5.0 G |
| Shock (Non-operating) (11 mS) | 15.0 G |

M-TYPE BACKWARD WAVE OSCILLATOR

# L-5316

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.



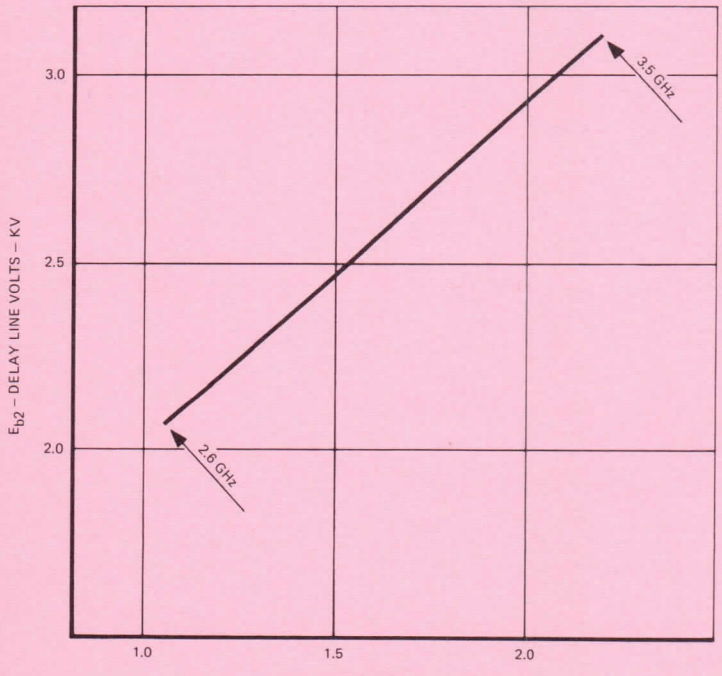




Figure 1 – Typical Tuning

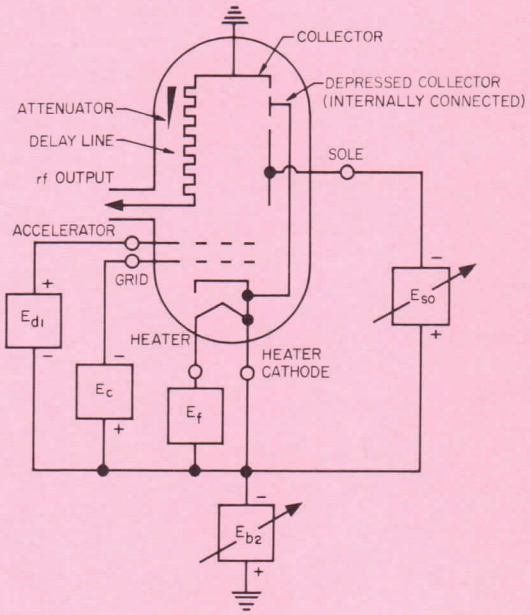



Figure 2 – Schematic Diagram of MBWO

LITTON INDUSTRIES • ELECTRON TUBE DIVISION • SAN CARLOS, CALIFORNIA

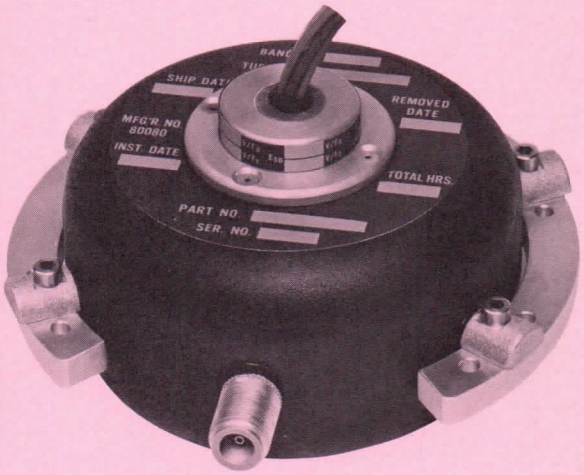
3.5MCA470

M-TYPE BACKWARD WAVE OSCILLATOR

# L-5317

100 W (CW) Minimum Power
Tunable Frequency: 4.7 - 6.2 GHz

The L-5317 is a miniature M-type backward wave oscillator, voltage tunable over the frequency range of 4700 to 6200 MHz with CW power in excess of 100 watts. This tube is ruggedized for operation under a variety of environmental conditions and is conduction cooled. The L-5317 can be amplitude or frequency modulated and is engineered to be tuned by simultaneous changes in the delay line and the sole voltages. A wide variety of applications include high power sweep oscillators, communications and data link transmitters, and as barrage countermeasures power sources.




## TYPICAL OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage ($E_f$) | 6.3 V |
| Heater Current ($I_f$) | 0.8 to 1.5 A |
| Preheat Time | 60 sec. |
| Delay Line Voltage ($E_{b2}$) | 1925 to 3440 +V |
| Delay Line Current ($I_{b2}$) | Max. 210 mA |
| Sole Voltage ($E_{so}$) | 875 to 2235 −V |
| Sole Current ($I_{so}$) | −10 to +5 mA |
| Accelerator Voltage ($E_{b1}$) | Max. 2000 +V |
| Accelerator Current ($I_{b1}$) | 0 to +3 mA |
| Grid Voltage ($E_c$) | 0 to 500 −V |
| Grid Current ($I_c$) | −2 to +2 mA |
| Accelerator Capacity | Max. 35 pf |
| Sole Capacity | Max. 75 pf |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Frequency Range | 4.7 to 6.2 GHz |
| Power Output (CW) | Min. 100 W |
| Spurious Output Ratio | Min. 15 db |
| Rated Life | 500 hrs. |
| Tuning Sensitivity (nominal) | 0.91 V/MHz |

## MECHANICAL DESCRIPTION

| | |
|---|---|
| Mounting Position | Any |
| Weight | 7.0 lbs. |
| Dimensions | See Outline Drawing |

## ENVIRONMENTAL RATINGS

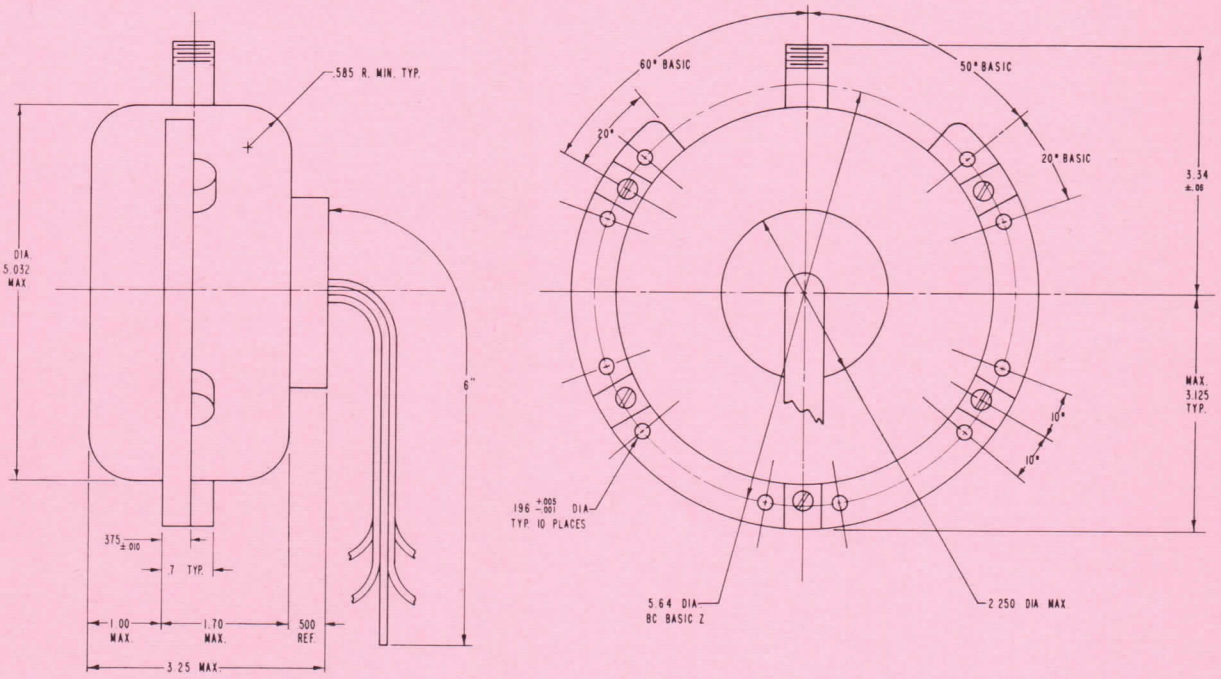
| | |
|---|---|
| Cooling | Conduction |
| Maximum Temperature (Mounting Ring) | +115°C |
| Minimum Temperature | −54°C |
| Vibration (Operating) (5-500 Hz) | 5.0 G |
| Shock (Non-operating) (11 mS) | 15.0 G |

M-TYPE BACKWARD WAVE OSCILLATOR

# L-5317

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.



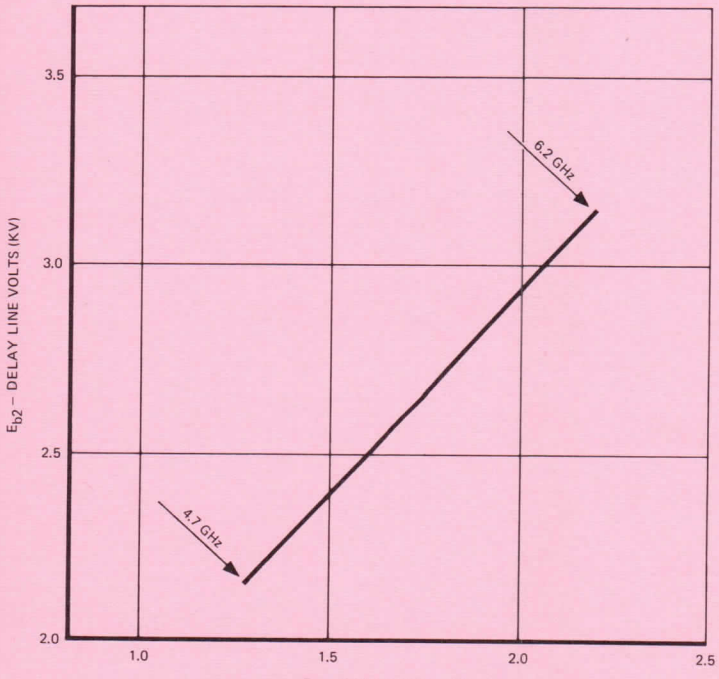




Figure 1 – Typical Tuning

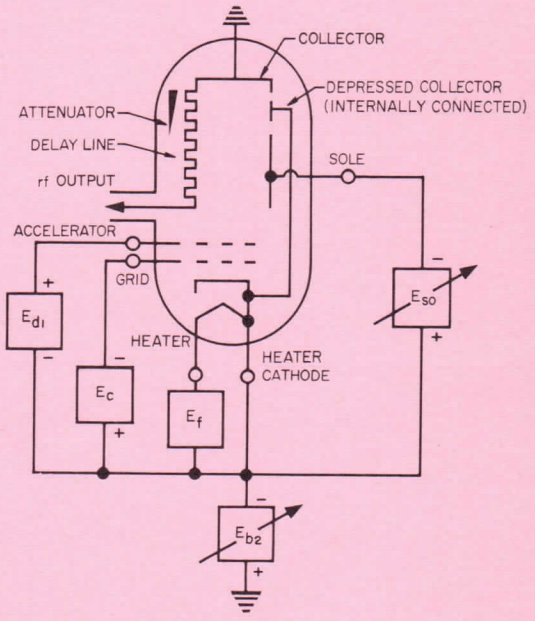



Figure 2 – Schematic Diagram of MBWO

LITTON INDUSTRIES • ELECTRON TUBE DIVISION • SAN CARLOS, CALIFORNIA

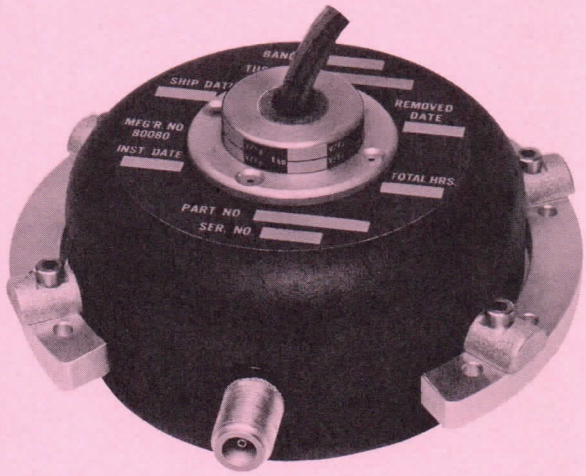
3.5MCA470

M-TYPE BACKWARD WAVE OSCILLATOR

# L-5318

100 W (CW) Minimum Power
Tunable Frequency: 8.5 - 9.5 GHz

The L-5318 is a miniature M-type backward wave oscillator, voltage tunable over the frequency range of 8500 to 9500 MHz with CW power in excess of 100 watts. This tube is ruggedized for operation under a variety of environmental conditions and is conduction cooled. The L-5318 can be amplitude or frequency modulated and is engineered to be tuned by simultaneous changes in the delay line and the sole voltages. A wide variety of applications include high power sweep oscillators, communications and data link transmitters, and as barrage countermeasures power sources.




## TYPICAL OPERATING CONDITIONS

| | |
|---|---|
| Heater Voltage ($E_f$) | 6.3 V |
| Heater Current ($I_f$) | 0.8 to 1.5 A |
| Preheat Time | 60 sec. |
| Delay Line Voltage ($E_{b2}$) | 1900 to 2675 V |
| Delay Line Current ($I_{b2}$) | Max. 180 mA |
| Sole Voltage ($E_{so}$) | 875 to 2235 −V |
| Sole Current ($I_{so}$) | −10 to +5 mA |
| Accelerator Voltage ($E_{b1}$) | Max. 2100 V |
| Accelerator Current ($I_{b1}$) | 0 to +3 mA |
| Grid Voltage ($E_c$) | 0 to 500 −V |
| Grid Current ($I_c$) | ±2 mA |
| Accelerator Capacity | Max. 20 pf |
| Sole Capacity | Max. 45 pf |

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Frequency Range | 8.5 to 9.5 GHz |
| Power Output (CW) | Min. 100 W |
| Spurious Output Ratio | Min. 15 db |
| Rated Life | 250 hrs. |
| Tuning Sensitivity (nominal) | 1.51 MHz/V |

## MECHANICAL DESCRIPTION

| | |
|---|---|
| Mounting Position | Any |
| Weight | 7.0 lbs. |
| Dimensions | See Outline Drawing |

## ENVIRONMENTAL RATINGS

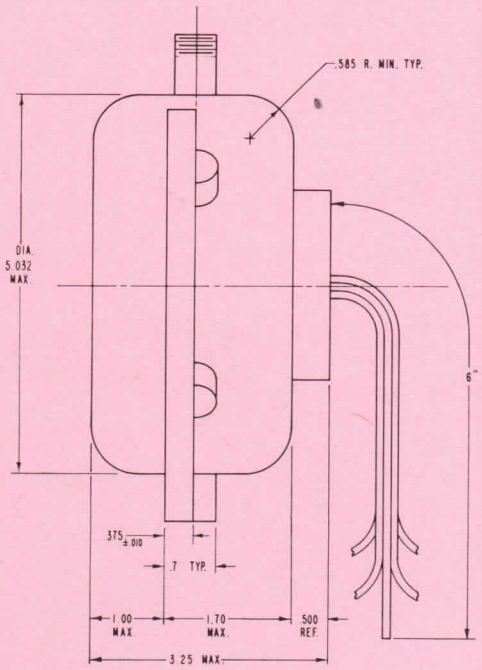
| | |
|---|---|
| Cooling | Conduction |
| Maximum Temperature (Mounting Ring) | +115°C |
| Minimum Temperature | −54°C |
| Vibration (Operating) (5-500 Hz) | 5.0 G |
| Shock (Non-operating) (11 mS) | 15.0 G |

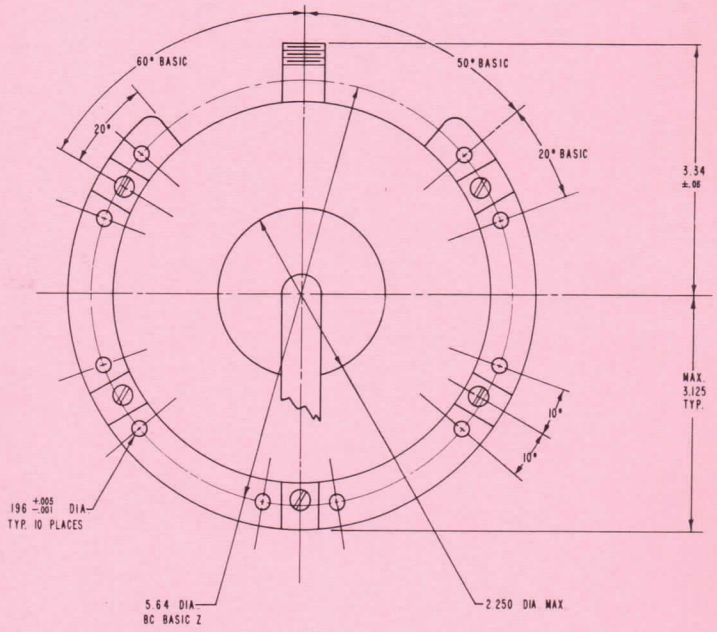
## M-TYPE BACKWARD WAVE OSCILLATOR

# L-5318

**CAUTION**
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from this device if improperly used or connected. All input and output microwave connections, waveguide flanges and gaskets must be microwave leak proof and properly engaged. Never operate this device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while this device is energized.



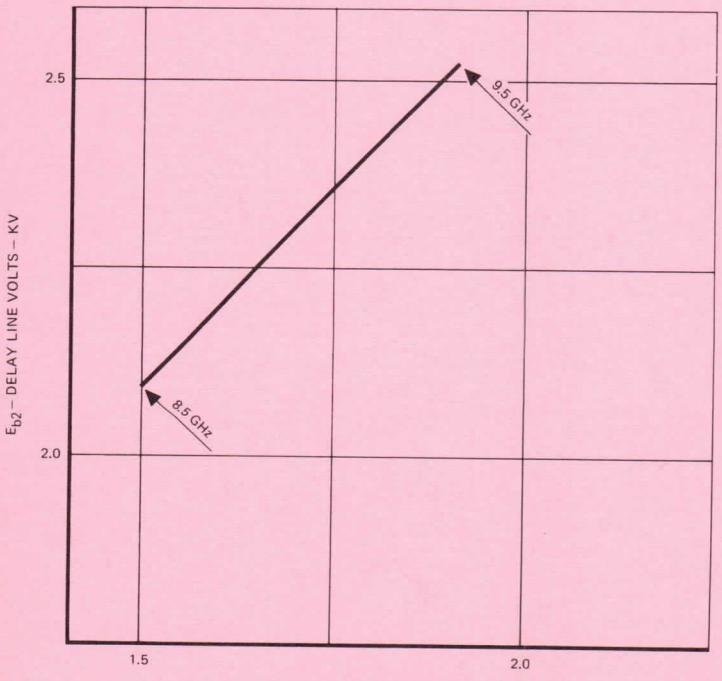




Figure 1 – Typical Tuning

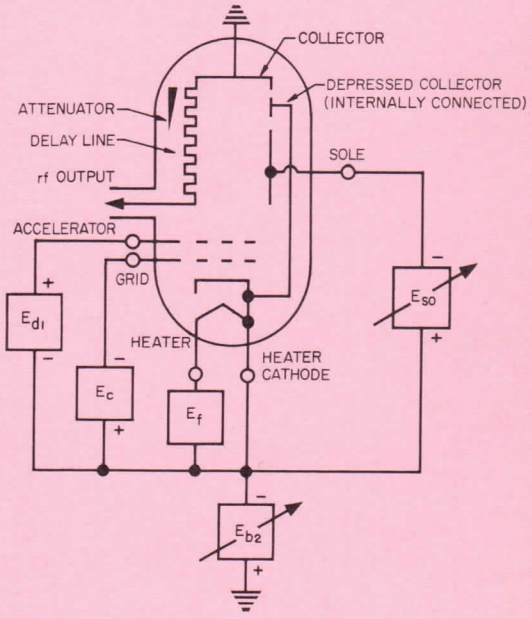
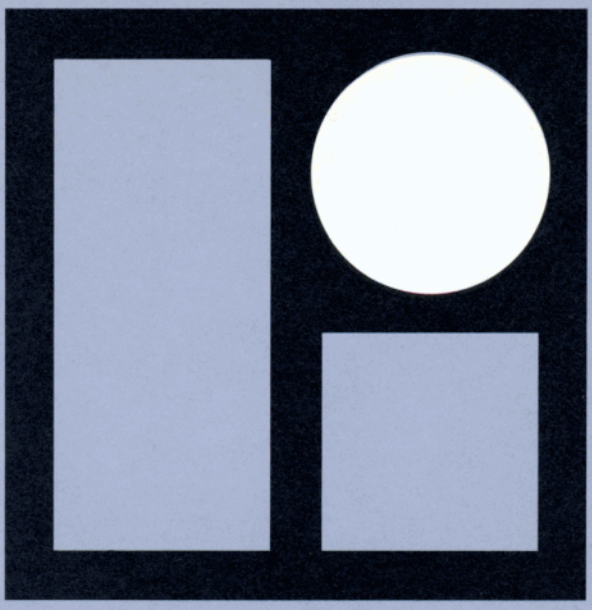



Figure 2 – Schematic Diagram of MBWO



# CROSSED FIELD AMPLIFIERS