



# TECHNICAL INFORMATION

## TENTATIVE DATA

*Excellence in Electronics*

### TYPE RK7461

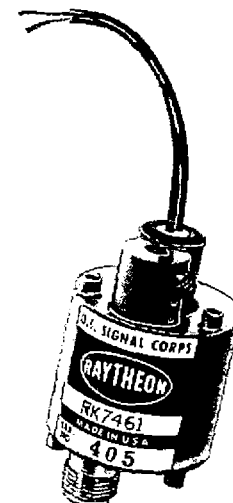
### GENERAL DESCRIPTION

The RK7461 is a mechanically tunable pulsed type magnetron oscillator delivering a peak power output of 60 to 120 watts. It is capable of being tuned to any frequency within the 9300 to 9500 Mc range.

The RK7461 is small (1.25" dia.  $\times$  2.5") lightweight (6 ounces) and has been designed primarily for missile beacon transponder applications where extreme environmental conditions are encountered. The RK7461 is capable of sustaining shock acceleration of 500G and vibrational acceleration during operation of 15G at frequencies up to 2000 cycles per second.

### GENERAL PRECAUTIONS

The precautions to be observed during the application of the RK7461 magnetron are the same as for any oscillator of this type. Experience has indicated that the areas where application problems frequently arise include the magnetron voltage pulse shape—particularly its rate of rise—the load VSWR, and anode current regulation. It is recommended that the Applications Engineering Department be consulted regarding the details of any contemplated equipment design utilizing the RK7461.



PULSED-TYPE  
MAGNETRON  
OSCILLATOR

### GENERAL CHARACTERISTICS

#### ELECTRICAL

|                                                                               |                                    |
|-------------------------------------------------------------------------------|------------------------------------|
| Heater Voltage — Preheat and Operate . . . . .                                | 5.0 to 5.5 volts                   |
| Heater Current . . . . .                                                      | 0.65 Ampere at 5.0 Volts           |
| Minimum Preheat Time . . . . .                                                | 45 seconds                         |
| Temperature Coefficient . . . . .                                             | $\pm 0.1$ Mc/ $^{\circ}$ C Maximum |
| Operational Altitude . . . . .                                                | 50,000 Feet Maximum                |
| Operational Vibration Frequency Deviation<br>at 15G, 20 to 2000 cps . . . . . | 3.0/tp Mc, Max. Bandwidth          |
| Frequency Shift due to constant acceleration<br>500G . . . . .                | 2.5 Mc Maximum                     |

#### Typical Operation

|                                         |                          |
|-----------------------------------------|--------------------------|
| Pulse Duration . . . . .                | 0.35 to 1.0 Microseconds |
| Duty Cycle . . . . .                    | .0001 to .002            |
| Peak Anode Current . . . . .            | 0.95 Amperes             |
| Peak Anode Voltage . . . . .            | 1.35 to 1.55 Kilovolts   |
| Peak Power Output . . . . .             | 60 to 120 Watts          |
| Voltage Rise Time (20 to 85%) . . . . . | 0.11 $\mu$ s             |



TYPE RK7461

## PULSED-TYPE MAGNETRON OSCILLATOR

TENTATIVE DATA

### DETAILED MECHANICAL INFORMATION

#### MOUNTING

The tube may be mounted in any position by means of the tapped mounting studs or by a suitably designed holder made of non-ferrous material which will utilize the diameter of the tube for support. When mounted by studs, both ends must be secured in order for the tube to meet environmental requirements. Compression, rather than tension, should be put on the studs when mounted in this manner.

Magnetic material should not be mounted within 2 inches of the tube.

#### INPUT CONNECTIONS

Two flexible leads approximately 5 inches long provide connections for heater voltage and pulse voltage. One lead is black, the other red. The red lead is the common heater-cathode to which negative high voltage should be connected.

Ground return is accomplished through the output connector or the mounting screws.

#### R.F. OUTPUT COUPLING

Mates with TNC male coaxial fitting or TNC to  $\frac{1}{2}$ "  $\times$  1" O.D. Waveguide Transition.

#### TUNER

The tuning mechanism is actuated by a screw-driver adjustable cam. Bristol set screws are provided to lock the tuner in position. The tuner must be locked prior to the subjection of the tube to environmental conditions. Care should be taken not to mechanically tune the tube beyond the extremes of its normal operating range, 9300 to 9500. Permanent damage may result from attempting to tune the tube with the tuner locked.

#### DIMENSIONS

Figure 1 is the mechanical outline drawing.

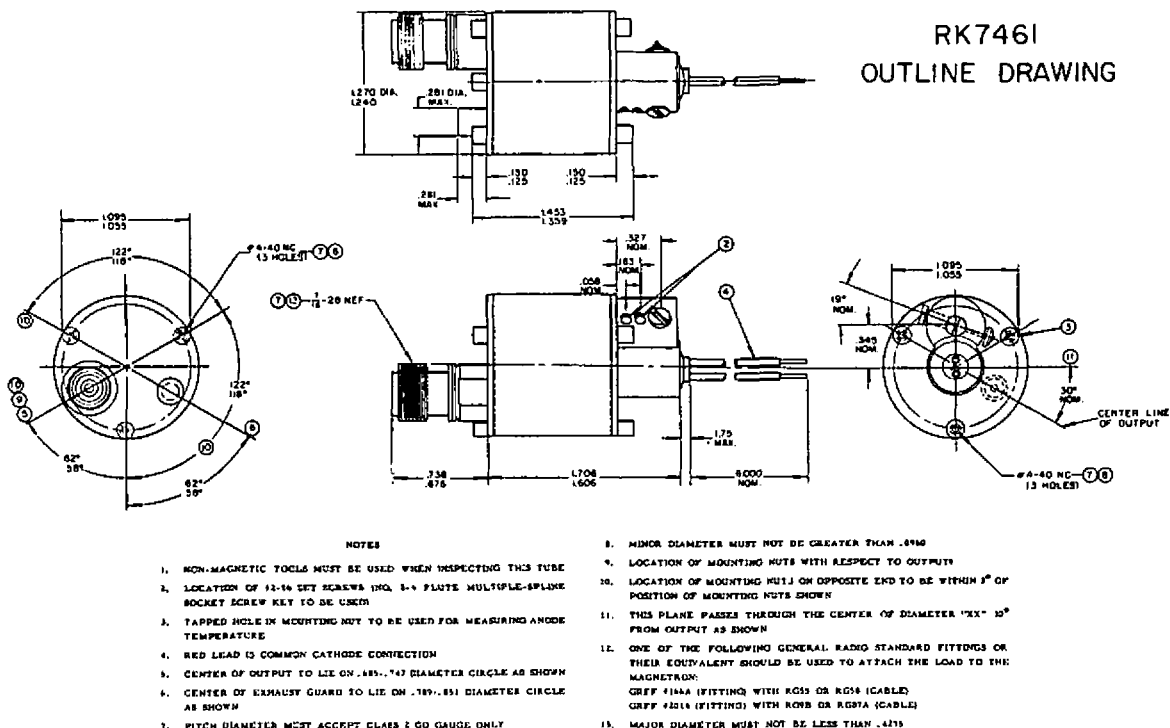


Figure 1

MICROWAVE AND POWER TUBE DIVISION

RAYTHEON COMPANY

FOUNDRY AVE., WALTHAM 54, MASS.