



**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. × 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 . . . . .	±0.1 Mc/°C Maximum
Operational Altitude . . . . .	50,000 Feet Maximum
Operational Vibration Frequency Deviation at 15G, 20 to 2000 cps . . . . .	3.0/tp Mc, Max. Bandwidth
Frequency Shift due to constant acceleration 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 us



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

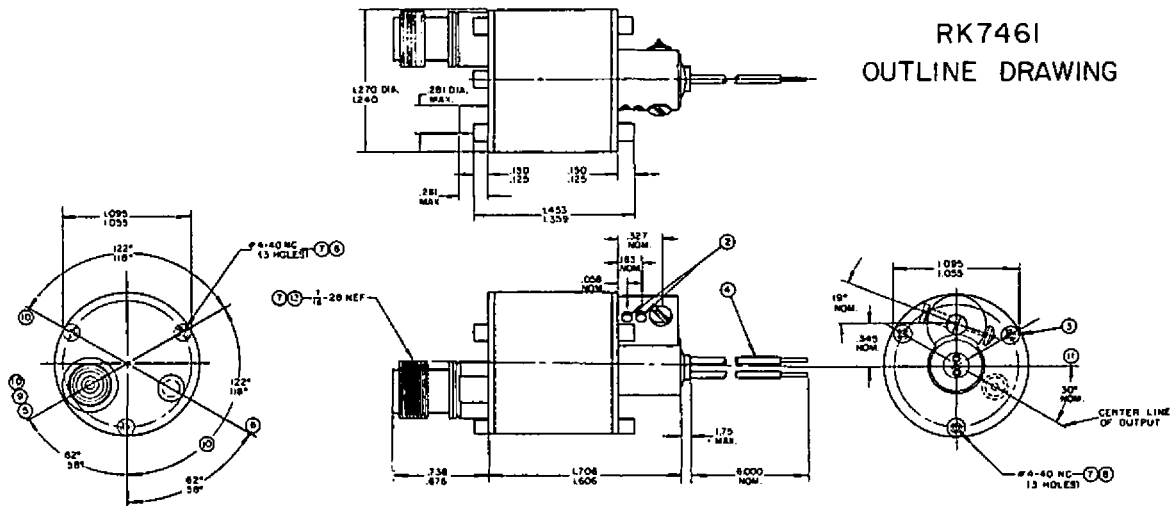
Mates with TNC male coaxial fitting or TNC to 1/2" x 1" O.D. Waveguide Transition.

TUNER

The tuning mechanism is actuated by a screwdriver adjustable cam. Bristol set screws are provided to lock the tuner in position. The tuner must be locked prior to the subsection 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.



RK7461 OUTLINE DRAWING

- NOTES
1. NON-MAGNETIC TOOLS MUST BE USED WHEN INSPECTING THIS TUBE
2. LOCATION OF #2-56 DPT SCREWS (NO. 2-4 FLUTE MULTIPLE-SPINE ROCKET SCREW KEY TO BE USED)
3. TAPPED HOLE IN MOUNTING NUT TO BE USED FOR MEASURING ANODE TEMPERATURE
4. RED LEAD IS COMMON CATHODE CONNECTION
5. CENTER OF OUTPUT TO LIE ON .185-.147 DIAMETER CIRCLE AS SHOWN
6. CENTER OF EXHAUST GUARD TO LIE ON .189-.151 DIAMETER CIRCLE AS SHOWN
7. PITCH DIAMETER MUST ACCEPT CLASS 2 GO GAUGE ONLY
8. MINOR DIAMETER MUST NOT BE GREATER THAN .6196
9. LOCATION OF MOUNTING NUTS WITH RESPECT TO OUTPUT
10. LOCATION OF MOUNTING NUTS ON OPPOSITE END TO BE WITHIN # OF POSITION OF MOUNTING NUTS SHOWN
11. THIS PLANE PASSES THROUGH THE CENTER OF DIAMETER "XX" 10" FROM OUTPUT AS SHOWN
12. ONE OF THE FOLLOWING GENERAL RADIO STANDARD FITTINGS OR THEIR EQUIVALENT SHOULD BE USED TO ATTACH THE LOAD TO THE MAGNETRON:
GRFF #18A (FITTING) WITH RG55 OR RG58 (CABLE)
GRFF #20A (FITTING) WITH RG8 OR RG7A (CABLE)
13. MAJOR DIAMETER MUST NOT BE LESS THAN .4215

Figure 1

MICROWAVE AND POWER TUBE DIVISION

RAYTHEON COMPANY

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