

## JETEC TYPE DESIGNATION REGISTRATION FORM

### TR and SHUTTER TUBE WITH ATTACHED HYBRIDS

March 6, 1957

Manufacturer's Designation: BL-509  
JETEC Designation: 6604  
Manufacturer: Bomac Laboratories, Inc.  
Beverly, Massachusetts

### GENERAL CHARACTERISTICS

The 6604 is an integral shutter and dual broad-band TR tube with attached short slot hybrids designed to provide a balanced duplexer with RG-52/U size waveguide. The shutter mechanism, when closed, insures protection of the receiver crystal from nearby transmitters when the radar is not in use. When the shutter is open, the gas switching tube functions normally. It is an integral cavity type with fixed tuned gaps. Its operational band is from 8490 to 9578 megacycles.

### ELECTRICAL DATA - TYPICAL VALUES

#### TR Tube (With Shutter Open)

|                                                                    |                           |
|--------------------------------------------------------------------|---------------------------|
| Operational Band                                                   |                           |
| VSWR 1.4 maximum                                                   | 8490 to 9578 Mc/s         |
| VSWR 1.2 maximum                                                   | 8565 to 9478 Mc/s         |
| Ignitor Ignition Time (max.) (each electrode)                      | 5.0 sec.                  |
| Ignitor Voltage drop (each electrode) $I_i = 100 \mu\text{A}_{dc}$ | 200 - 375 V <sub>dc</sub> |
| Spike Leakage Energy (max.)                                        | 0.1 ergs                  |
| F=9000 Mc; po=40kw; tp1=1.0 $\mu\text{s}$ ;                        |                           |
| tp2=0.5 $\mu\text{s}$ ; prr=1000pps;                               |                           |
| $I_i = 100 \mu\text{A}_{dc}$ on each electrode                     |                           |
| Flat Leakage Power (max.)                                          | 20 mw.                    |
| (See Spike Leakage for test conditions)                            |                           |
| Duplexer Loss (max.)                                               |                           |
| from 8490 to 9578Mc and $I_i = 100 \mu\text{A}_{dc}$               | 1.2 db                    |
| from 8565 to 9487Mc and $I_i = 100 \mu\text{A}_{dc}$               | 1.0 db                    |
| Isolation (min.)                                                   |                           |
| from 8490 to 9578Mc                                                | 15 db                     |
| from 8565 to 9487Mc                                                | 18 db                     |
| at 9000Mc                                                          | 20 db                     |

### ELECTRICAL DATA - TYPICAL VALUES (cont.)

|                                                |             |
|------------------------------------------------|-------------|
| Recovery Time (max. ) at 200 kw peak 3db down  | 7.0 $\mu$ s |
| High Level VSWR (max. )                        | 1.2         |
| F=9000Mc; po=40kw; tp1=1.0 $\mu$ s             |             |
| pr=1000pps; Ii=100 $\mu$ Adc on each electrode |             |

### SHUTTER TUBE

|                                             |               |
|---------------------------------------------|---------------|
| Attenuation 8490 to 9578Mc (shutter closed) | 40 db min.    |
| Shutter Circuit Voltage (nom. )             | 28 Vdc.       |
| Shutter Circuit Pull-In Current (min. )     | 220 $\mu$ Adc |
| Shutter Circuit Holding Current (min. )     | 110 $\mu$ Adc |

### MECHANICAL DATA-GENERAL

|                       |           |
|-----------------------|-----------|
| Mounting Position     | Any       |
| Number of Ignitors    | Two       |
| Weight, approximately | 1.25 lbs. |

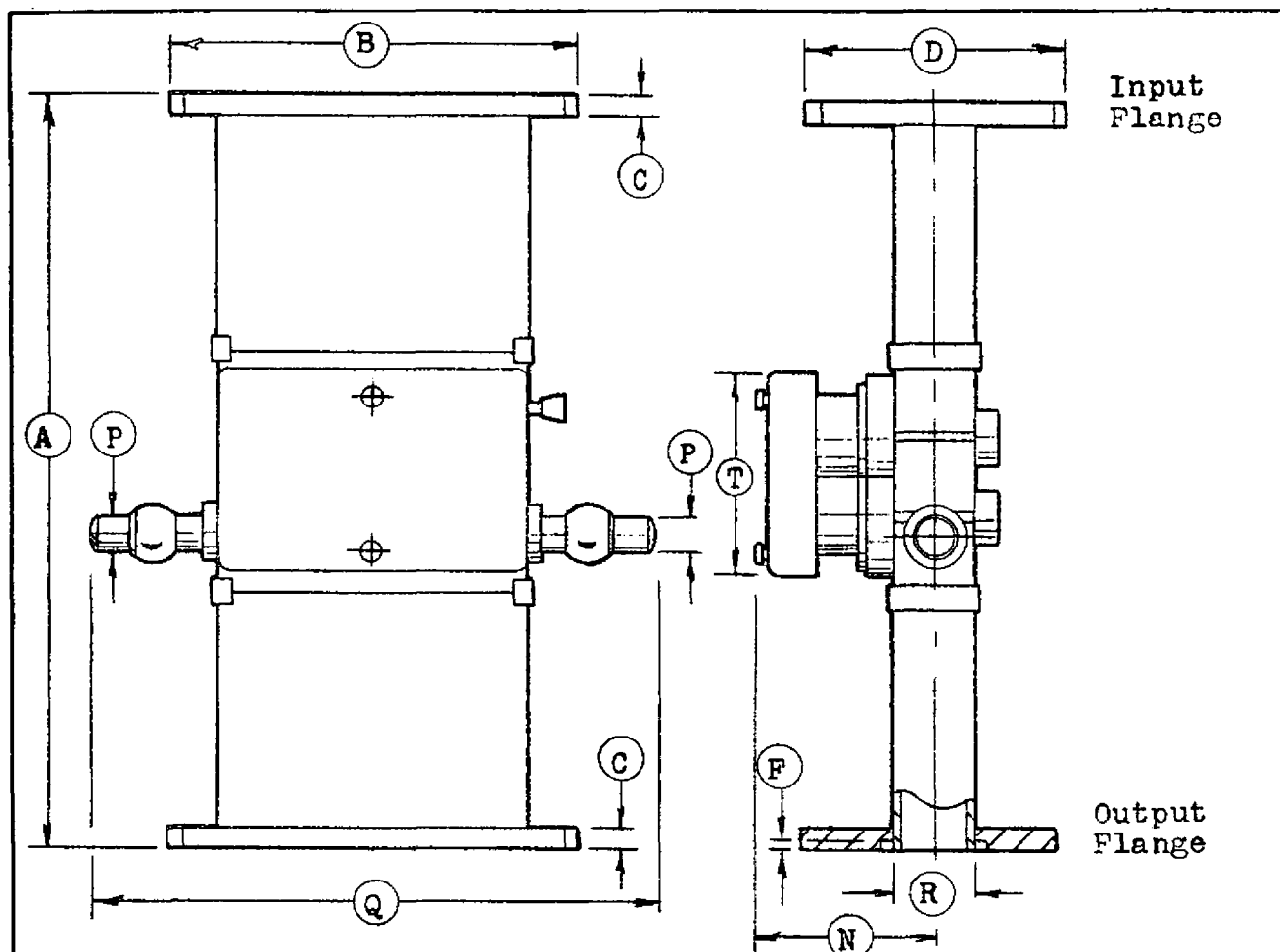
### ABSOLUTE MAXIMUM RATINGS

|                                  |               |
|----------------------------------|---------------|
| Transmitter Peak Power (Note 1)  | 250 kw        |
| Transmitter Average Power        | 250 W         |
| Ignitor Current (each electrode) | 200 $\mu$ Adc |
| Shutter Circuit Holding Current  | 320 $\mu$ Adc |

Note 1: The shutter is not intended for applications involving the switching of peak power greater than one kilowatt, therefore, this rating applies only when the shutter is open or closed.

### OUTLINE DRAWING

As per attached drawing dated 3-6-57.



| Ref. | Dimension             |
|------|-----------------------|
| A    | 4.974 $\pm$ .015      |
| B**  | 2.575 $\pm$ .015      |
| C**  | 0.220 $\pm$ .010      |
| D**  | 1.625 $\pm$ .015      |
| E*   | 1.085 $\pm$ .003      |
| F    | 0.070 $\pm$ .001 Typ. |
| G    | 2.204 $\pm$ .005      |
| H*   | 1.280 $\pm$ .004      |
| J    | 0.754 $\pm$ .005      |
| K    | #8-32 NC              |
|      | #18(.1695)            |
|      | 6 Holes               |
| L**  | 1 1/16 Rad.           |
| M    | 3/64 Rad.             |
| N*   | 1 7/8 Max.            |
| P**  | 0.250 Dia.            |
| Q*   | 4.000 Max.            |
| R**  | 0.500 $\pm$ .005      |
| S**  | 1.950 $\pm$ .005      |
| T**  | 1.500 Max.            |

Note:-

Input flange has tapped holes, Dimensions same as output.  
Output flange has clearance holes.

|                            |             |                                                                 |
|----------------------------|-------------|-----------------------------------------------------------------|
| <b>SPECIFICATION SHEET</b> |             | BOMAC LABORATORIES INC.<br>SALEM ROAD<br>BEVERLY, MASSACHUSETTS |
|                            | Outline     |                                                                 |
|                            | 6604/BL-509 |                                                                 |
|                            |             | 3-6-57 clr                                                      |