

FERRANTI

T.R. CELL

Type QF40 is an integral cavity, high 'Q', T-R Cell for operation in the 3 cm. band. It is designed for coupling to $\frac{1}{2}$ in. I.D. circular waveguide.

PHYSICAL DIMENSIONS.

Max. overall height ... 3 $\frac{1}{2}$ ins. (100 mm.)
 Max. overall width ... 2.065 ins. (52.4 mm.)
 For other dimensions see drawings in margin and overleaf.
 The Keep-alive electrode is connected to a 5 BA terminal at the top of the cell.

RATINGS.

Max. Transmitter Power level ... 50 kW. Peak.
 Tuning Range ... 9,500 Mc/s. $\pm$ 5 %
 Voltage Standing Wave Ratio ... 2.0
 Max. Insertion loss ... 1.5 db.
 *Max. Leakage at 40 kW. Peak—
 spike ... 0.04 ergs/pulse.
 flat ... 15 mW.
 †Min. Breakdown Power ... > 100 mW.
 ‡Effective R.F. short circuit ... (a) 0.72 in. $\pm$ 0.03 in.
 (b) 0.67 in. $\pm$ 0.03 in.
 Max. Recovery time (to 6 db. loss) ... 4 μ secs.
 Max. Keep-alive Breakdown voltage ... 1000 volts.

TYPICAL PERFORMANCE DATA.

Low Level Characteristics.
 Q_t ... 400 (approx.)
 Voltage Standing Wave Ratio ... 1.4 approx.
 Insertion Loss ... 1.2 db.
 High Power Characteristics.
 *Leakage at 40 kW.— spike ... 0.02 ergs/pulse.
 — flat ... 10 mW.
 †Breakdown Power ... 40 mW.
 Recovery time (to 6 db. loss) ... 2.5 μ secs.
 Keep Alive Characteristics.
 Breakdown Voltage ... 700 volts.
 Potential Drop ... 350 volts.

* 1 μ sec. pulses.

† For protection from external transmitters.

‡ The position of the R.F. short has two alternative values depending on whether a window discharge occurs or not, but in either case the crystal protection is not affected.

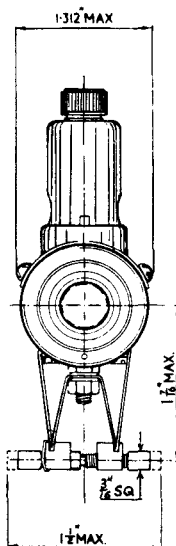
(a) At peak powers below approximately 15 kW. or with 0.1 μ sec. pulse lengths at all power levels, discharge is confined to the cones, and the effective short is at 0.72 in. $\pm$ 0.03 in.

(b) At peak powers above approximately 15 kW. with pulse lengths greater than 0.1 μ sec., a window discharge occurs as well and the effective short is at 0.67 in. $\pm$ 0.03 in.

These distances are measured from the input edge of the cell, i.e., from either of the positions indicated by the broken lines A or A' on the drawing.

Formerly known as Type TTR31.

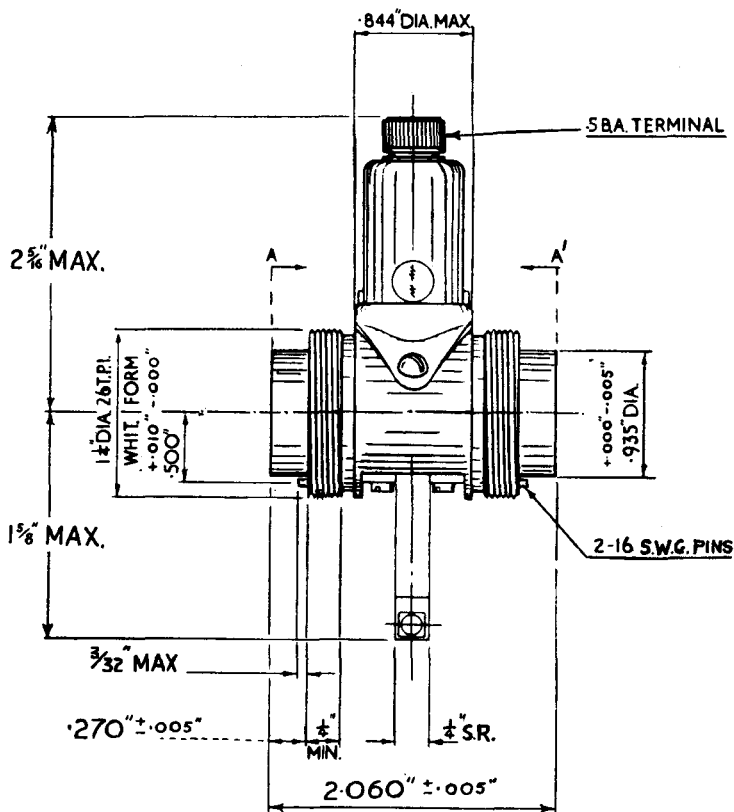
QF40



All dimensions shown are in inches.



QF40



OPERATING NOTES.

This T.R. Cell in a simple duplexer, gives complete protection to all types of crystals both from the local and neighbouring transmitters, with an appreciable margin of safety and long life.

To ensure rapid breakdown a negative voltage of 1000V. D.C. should be applied to the keep-alive electrode. The keep-alive current should be restricted to between $100 \mu\text{A}$ and $150 \mu\text{A}$ by means of a suitable limiting resistance. Some of this resistance may be located in the power supply but at least 1 megohm should be connected directly on to the keep-alive terminal to prevent relaxation oscillations at the keep-alive. It is advisable to arrange that the keep-alive current is passing for a few seconds before the transmitter begins to operate.

The cell is provided with a tuner free from backlash which gives a sensitive adjustment of frequency over the specified tuning ranges.

To give protection from neighbouring transmitters when the set is not operating and the keep-alive unenergised a suitable gate or crystal shutter must be fitted.