FERRANTI

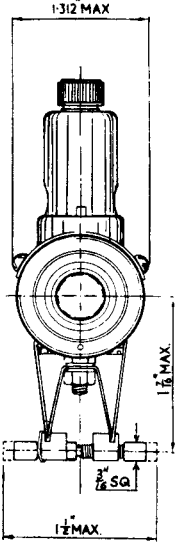
T.R. CELL

QF40

Type QF40 is an integral cavity, high 'Q'. T-R Cell for operation in the 3 cm. band. It is designed for coupling to $\frac{7}{8}$in. I.D. circular waveguide.

PHYSICAL DIMENSIONS.

Max. overall height ... ... 3$\frac{11}{16}$ins. (100 mm.)
Max. overall width ... ... 2·065ins. (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. ± 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) 0·72in. ± 0·03in.
	(b) 0·67in. ± 0·03in.
Max. Recovery time (to 6 db. loss)	4 μsecs.
Max. Keep-alive Breakdown voltage	1000 volts.

TYPICAL PERFORMANCE DATA.

Low Level Characteristics.

Q_L	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 μsecs.

Keep Alive Characteristics.

Breakdown Voltage	700 volts.
Potential Drop	350 volts.

* 1 μsec. 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 μsec. pulse lengths at all power levels, discharge is confined to the cones, and the effective short is at 0·72in. ±0·03in.

(b) At peak powers above approximately 15 kW. with pulse lengths greater than 0·1 μsec., a window discharge occurs as well and the effective short is at 0·67in. ± 0·03in.

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 A¹ on the drawing.

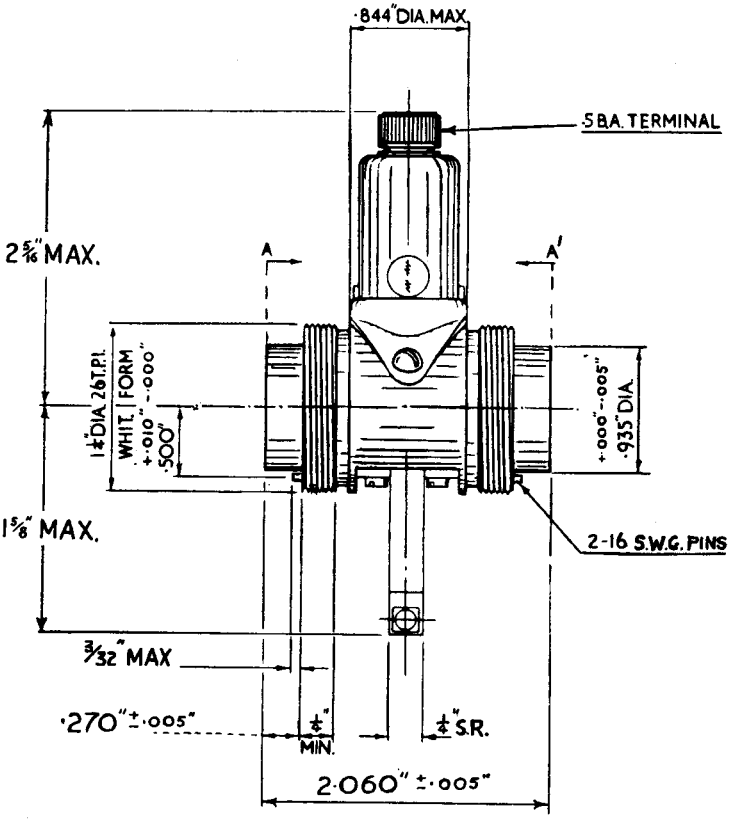
All dimensions shewn are in inches.

Issue 3.
Jan., 1955.

Formerly known as Type TTR31.

FERRANTI LIMITED, Crewe Toll, Ferry Road, EDINBURGH, 5.

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 μA and 150 μA 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.