



BS810

**X-BAND
TR TUBE**

Service Type CV1923

The data should be read in conjunction with the Duplexer Device Preamble.

DESCRIPTION

Tunable high Q TR tube, intended for marine radar.

CHARACTERISTICS

Frequency range (see note 1)	9245 to 9575	MHz
V.S.W.R. at resonance (see note 2)	1.4. 1	max
Maximum leakage:		
spike energy (see note 3)	8.0	nJ/pulse
total power (see note 4)	30	mW
low power, primed (see note 5)	100	mW
low power, unprimed (see note 5)	250	mW
Recovery period to -6db:		
at 2.5kW peak power		see note 6
at 25kW peak, 0.1 μ s pulse length, 1000p.p.s.	1.5	μ s max
Insertion loss at resonance (see note 2)	0.8	db max
Arc loss (see note 7)	0.15	db max
Position of short circuit (see note 8):		
with gap discharge	0.240 $\pm$ 0.020 inch (6.10 $\pm$ 0.51mm)	
with window discharge	0.189 $\pm$ 0.020 inch (4.80 $\pm$ 0.51mm)	
Loaded Q	125 to 170	

MAXIMUM AND MINIMUM RATINGS

	Min	Max	
Transmitter power (peak)	0.001	75	kW
Primer supply voltage (negative) (see note 9)	700	1500	V
Primer current	100	200	μ A
Primer operating voltage	250	450	V
Temperature range:			
non-operating	-40	+100	$^{\circ}$ C
operating	-25	+80	$^{\circ}$ C

GENERAL

Overall dimensions	1.000 x 1.625 x 3.813 inches nom 25.40 x 41.28 x 96.85mm nom
Waveguide size	no. 16 (0.900 x 0.400 inch internal)
Coupler	UG-39/U
Finish	flanges brass
Mounting position	any
Net weight	7 ounces (200g) approx

NOTES

1. Tuning knob set to 9410MHz against pointer on leaving factory. Approximate frequency corresponding to knob scale is given on page 3.
2. Measured at power level below 10mW at centre frequency of 9410MHz.
3. Measured at 25kW peak power, 0.1 μ s pulse length and 1000p.p.s. Primer current set to 150 μ A.
4. Measured at 25kW peak power, 1.0 μ s pulse length and 1000p.p.s. Primer current set to 150 μ A.
5. Primed and unprimed low power breakthrough are measured by increasing the incident r.f. power at 1.0 μ s pulse length and 1000p.p.s. from zero until breakdown occurs inside the TR tube.
6. The recovery characteristic is determined by measuring the transmission through a peak response tuned TR tube of a low level c.w. signal at the transmitter frequency, which will be within the range 9410 ± 65 MHz, following a transmitter pulse of 0.1 μ s duration at 3000p.p.s.

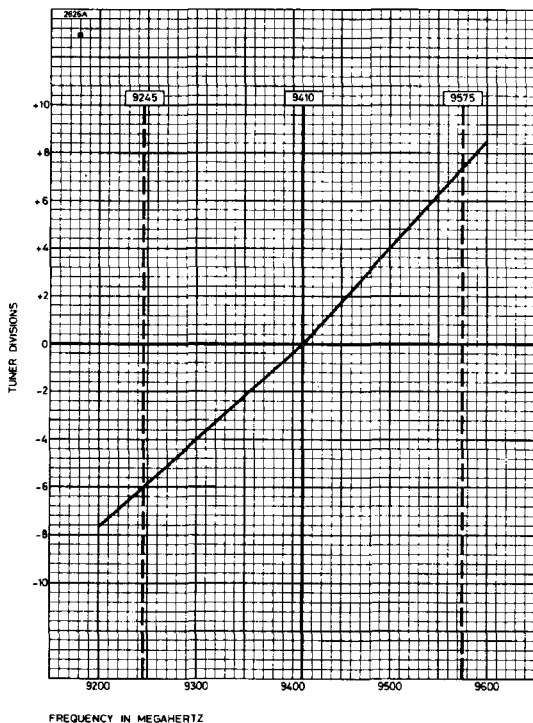
Time after end of pulse, μ s

Maximum attenuation, db

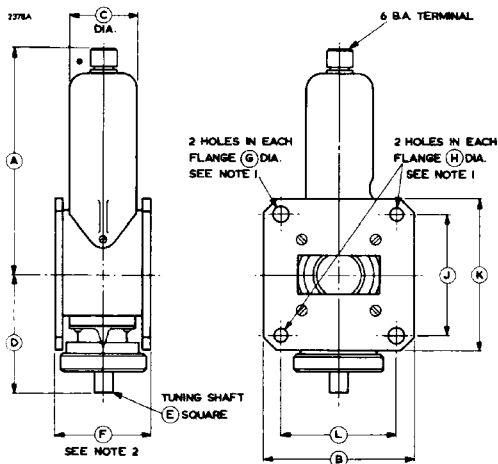
0.1	40
0.2	30
0.4	20
0.6	15
0.9	10
1.4	6

7. Measured at 1.5kW peak power, 0.1 μ s pulse length and 3000p.p.s. at a TR tube frequency of 9410MHz. Sample test only.
8. Transition of v.s.w. minimum from cone gap to windows occurs at following conditions approximately.
 - 9kW peak power, 1.0 μ s pulse length and 1000p.p.s.
 - 10.5kW peak power, 1.0 μ s pulse length and 500p.p.s.
 - 17.5kW peak power, 0.5 μ s pulse length and 1000p.p.s.
9. The primer supply voltage must be applied at least 5 seconds before the tube is required to operate. The primer current should be adjusted to 150 μ A by means of series resistance, around the value of 5.5M Ω , of which at least 0.5M Ω must be adjacent to the primer top cap terminal.

TYPICAL TUNER CHARACTERISTIC



OUTLINE (All dimensions without limits are nominal)



Ref	Inches	Millimetres	Ref	Inches	Millimetres
A	2.375 max	60.33 max	G*	0.169 ± 0.004	4.3 ± 0.1
B	1.625	41.28	H*	0.150 ± 0.004	3.8 ± 0.1
C	0.750	19.05	J	1.280 ± 0.003	32.512 ± 0.076
D	1.437 max	36.50 max	K	1.625	41.28
E	0.187	4.75	L	1.220 ± 0.003	30.988 ± 0.076
F	1.000 ± 0.005	25.40 ± 0.13			

Millimetre dimensions have been derived from inches except where indicated thus *.

Outline Notes

1. The corresponding holes in both flanges will be coaxial. Two of the diametrically opposite holes are suitable for locating on dowel pegs, while the remaining two are used for clamping.
2. The two flanges are flat and parallel within 0.008 inch (0.20mm).