S.T.C. Valves

TECHNICAL DATA

Ref. : Y330/1E

BACKWARD-WAVE OSCILLATOR

Type: 7747

The 7747 is a packaged backward wave oscillator with integral focusing solenoid and is designed for voltage tunable oscillator service over the frequency range 26.5 to 40 Gc/s with a minimum power output of 10 mW.

ELECTRICAL DATA

Cathode

Indirectly heated, oxide coated		
Heater voltage	6.3	V
Heater current (nominal)	0.3	A
Heater warm up time	120	sec

Characteristics

Frequency, electronically tunable over the range	26.5 to 40	Gc/s
Line voltage for tuning over the frequency band	700 to 3000	V
Minimum power output over the frequency band	10	mW

Maximum Ratings (absolute values)

Maximum anode voltage	700	V
Maximum anode current	2	mA
Maximum line voltage	3200	V
Maximum line current	13	mA
Maximum line dissipation	42	W
Maximum cathode current	13	mA

Typical Operating Conditions

Frequency	26.5	30	35	40	kMc/s
1st anode voltage	350	350	350	350	V
1st anode current	0.25	0.25	0.25	0.25	mA
* Line voltage	800	1000	1600	2700	V
Cathode current	10	10	10	10.5	mA
+ Power output	15	25	40	50	mW

* This tube is normally operated with the line earthed and the cathode at a negative potential.

\+ The actual power output will vary above or below the values shown but will not be less than 10 mW and there will be no "dead-spots".

COMPONENTS GROUP

Standard Telephones and Cables Limited

(Registered Office: Connaught House, 63 Aldwych, London, W.C.2)

BRIXHAM ROAD, PAIGNTON, DEVON

Telephone: PAIGNTON 58685 Telegrams: STECO, PAIGNTON

Focusing

Solenoid current	9	A
Solenoid voltage (d.c. nominal)	24	V
Field strength (nominal)	850	oersteds

MECHANICAL DATA

Power input connections	Flying Leads
R.F. output connector	Waveguide 22
	Flange type Z830018
Solenoid plug connector. Inter Services Catalogue No.	Z560050
Envelope	Metal
Maximum overall length	12 inches
Maximum overall diameter	6 inches
Weight	10 lb
Mounting position	Any
Cooling	Forced Air Cooled
	20 cu.ft./min at a Standard Water Gauge pressure of 0.5 inch.

OPERATING NOTES

With a line voltage of 700V, a cathode current of 10 mA is obtained by adjustment of the first anode voltage, the latter then being kept constant as the valve is tuned by variation of the line voltage. Under these conditions, the cathode current will rise to about 11.5 mA with the line voltage increased to 3000V.

The V.S.W.R. of the load connected to the valve should not exceed 2 : 1 if large power variations due to excessive standing wave ratios are to be avoided.

The resistance of the solenoid will increase by about 25% between ambient and normal operating temperature and this should be allowed for in designing the power supply. If the solenoid voltage remains constant, then the valve will operate satisfactorily over the range of solenoid current created by the change in solenoid temperature.

In the event of solenoid power supply failure, the first anode voltage of the valve must be reduced to zero immediately.

Should the cooling air supply fail then the first anode voltage must be reduced to zero and the solenoid supply switched off.

If these precautions are not taken, damage to the valve and/or the solenoid will result.

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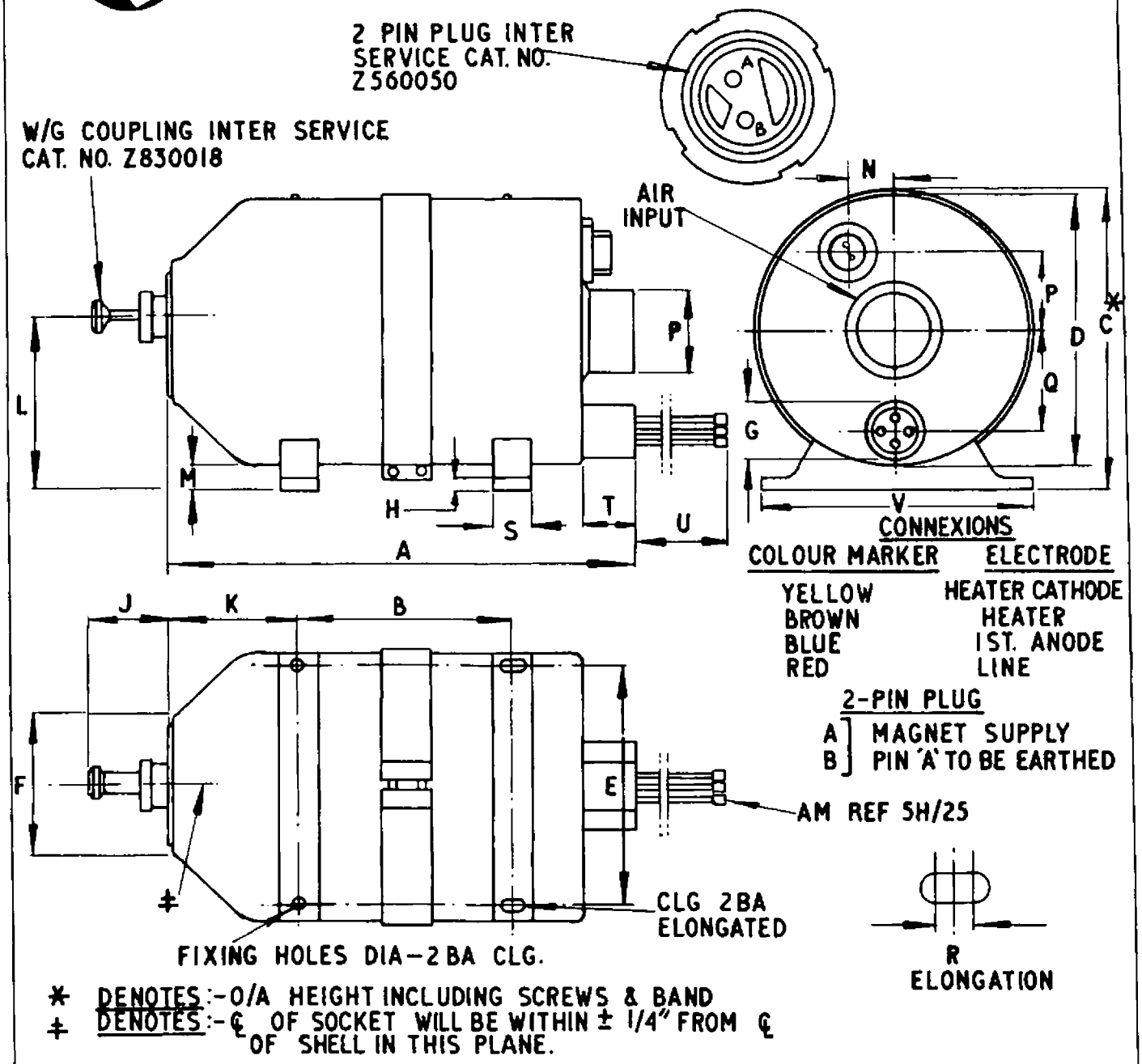
VALVE DIVISION
(PAIGNTON)

7747 OUTLINE



CONNEXIONS

COLOUR MARKER	ELECTRODE
YELLOW	HEATER CATHODE
BROWN	HEATER
BLUE	1ST. ANODE
RED	LINE

2-PIN PLUG

A] MAGNET SUPPLY
B] PIN 'A' TO BE EARTHED

* DENOTES:- O/A HEIGHT INCLUDING SCREWS & BAND

‡ DENOTES:- ℄ OF SOCKET WILL BE WITHIN ± 1/4" FROM ℄ OF SHELL IN THIS PLANE.

NOTE:- BASIC DIMENSIONS ARE INCHES

DIM	MILLIMETRES	INCHES	DIM	MILLIMETRES	INCHES
A	247·7 MAX	9 3/4 MAX	L	88·9±6·4	3 1/2 ± 1/4
B	95·3±1·6	3 3/4 ± 1/16	M	12·7±1·6	1/2 ± 1/16
C	152·4 MAX	6 MAX	N	21·4±0·8	27/32± 1/32
D	136·5 DIA MAX	5 3/8 DIA MAX	P	41·3±1·6	1 5/8 ± 1/16
E	120·6±0·13	4 3/4 ±0·005	Q	44·4±1·6	1 3/4 ± 1/16
F	76·2 DIA MAX	3" DIA MAX	R	3·2	1/8
G	33·3 DIA±0·8	1 5/16 DIA± 1/32	S	12·7±0·8	1/2 ± 1/32
H	6·4±1·6	1/4 ± 1/16	T	19·1±1·6	3/4 ± 1/16
J	38·1 APPROX	1 1/2 APPROX	U	228·6 MIN	9 MIN
K	68·3±1·6	2 11/16± 1/16	V	133·4±0·8	5 1/4 ± 1/32

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