

## BACKWARD-WAVE OSCILLATOR

# BAI6-10

Frequency: 'J' Band, electronically tunable.

Power output: 10mW minimum.

Construction: Demountable, prefocused capsule, with d.c. voltage isolation between the output connection and delay structure.

Modulation: Amplitude, pulse or frequency.

### PRELIMINARY DATA

This data should be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS – MICROWAVE DEVICES: INTRODUCTION and BACKWARD-WAVE OSCILLATORS which precede this section of the handbook.

### CHARACTERISTICS

	Min.	Max.	
Frequency electronically tunable over the range	11	18	Gc/s
Delay structure voltage			
f=11Gc/s	500	650	V
f=18Gc/s	2.2	2.6	kV
Sensitivity over frequency range	2.0	9.0	Mc/s per V
Power output over frequency range	10	—	mW
Grid voltage for maximum output	—	0	V
for zero output	—	-100	V

### CATHODE

Indirectly heated

$V_h$		6.3	V
$I_h$		1.5	A
$I_{h(\text{surge}) \text{ max.}}$		4.0	A

The cathode must be heated for at least 2 minutes before application of h.t. voltage.

### CAPACITANCES

$C_{g-h,k}$	<10	pF
$C_{g-h,k}$ (anode floating)	<13	pF
$C_{a-g}$	<6.0	pF
$C_{a-\text{delay structure}}$	<8.0	pF

### TYPICAL OPERATION

f	11	14.5	17.5	Gc/s
$V_{\text{delay structure}}$	0.575	1.2	2.2	kV
$I_{\text{delay structure}}$	15	15	15	mA
$V_a$	400	400	400	V
$I_a$	2.0	2.0	2.0	mA
$V_g$	0	0	0	V
$P_{\text{out}}$	15	35	25	mW

### OPERATING SEQUENCE

See appropriate section in General operational recommendations—microwave devices: backward-wave oscillators.



# BA16-10

## BACKWARD-WAVE OSCILLATOR

### COOLING

Forced air		
$T_{\text{mount max.}}$ (at specified point)	120	°C

### LIMITING VALUES (absolute ratings)

$V_{\text{delay structure max.}}$	2.6	kV
$V_{\text{delay structure min.}}$	500	V
$P_{\text{delay structure max.}}$	40	W
$I_k$ max.	30	mA
$V_a$ max.	500	V
$I_a$ max.	10	mA
$+V_g$ max.	0	V
$-V_g$ max.	150	V

### MOUNTING POSITION

Any

### PHYSICAL DATA

Weight (mount only)	PB-1	13	lb
	SB-1, SB-2	11	lb
	SB-3	25	lb

### OUTPUT CONNECTION

Rectangular waveguide WG18 with bolted flange joint-services type 5985-99-0830030 to fit choke flange joint-services type 5985-99-0830029.

### ACCESSORIES

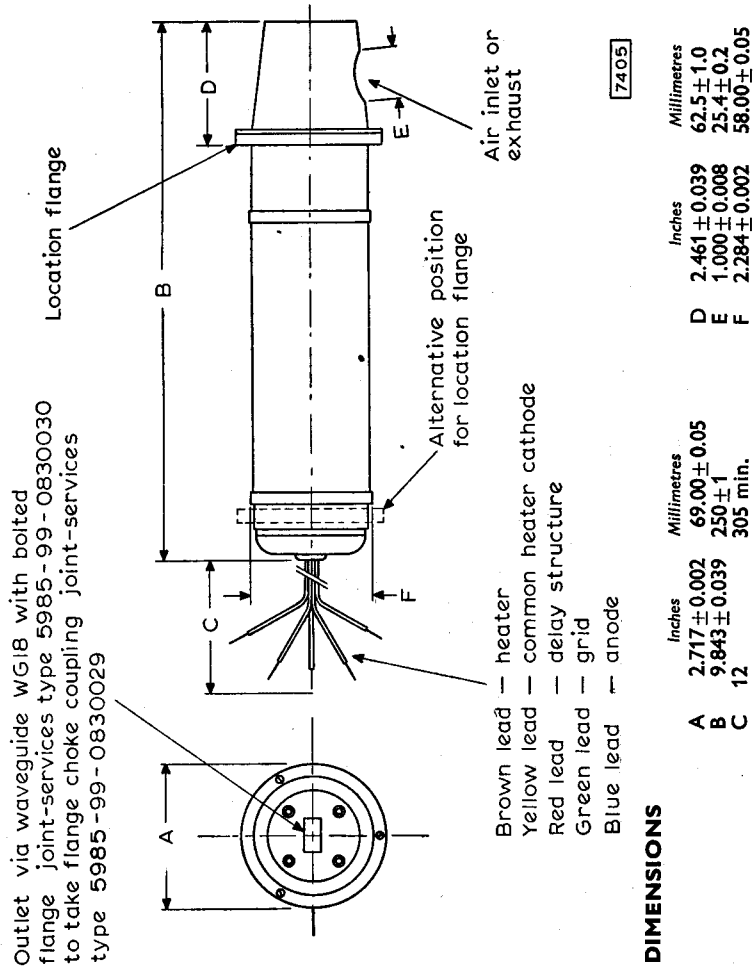
Permanent magnet mount	PB-1
Mount with aluminium foil solenoid for operation at low ambient temperatures	SB-1
Mount with aluminium foil solenoid for operation at high ambient temperatures	SB-2
Mount with copper foil solenoid for low power consumption	SB-3

### SOLENOID OPERATING CONDITIONS

The three types are intended for constant current operation.

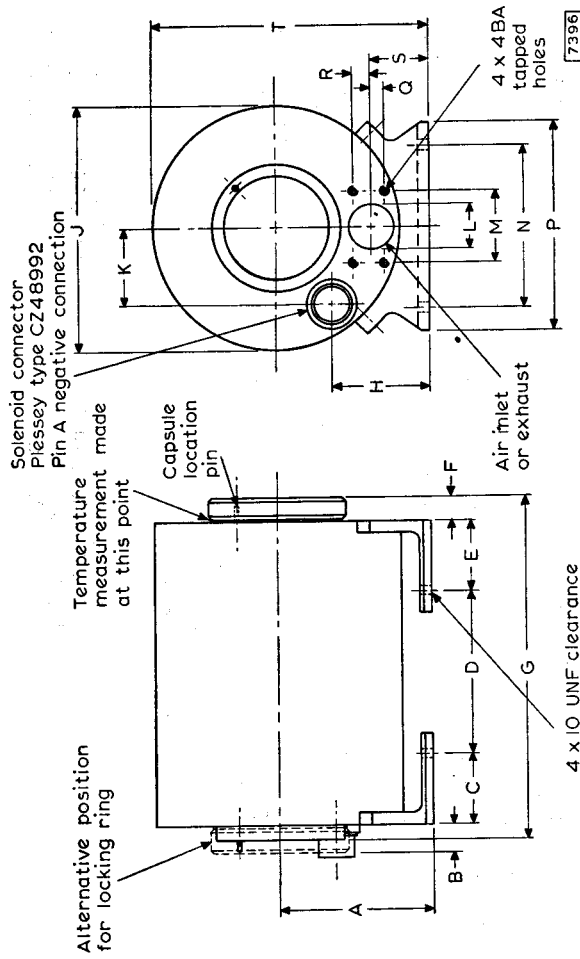
	SB-1	SB-2	SB-3	
Current	7.5	13	6.5	A
Voltage	26	17	22	V
$T_{\text{ambient}}$	25	25	25	°C
Cooling	Forced air	Forced air	Forced air	





# BA16-10

## BACKWARD-WAVE OSCILLATOR



### DIMENSIONS

	Inches	Millimetres	Inches	Millimetres	Inches	Millimetres	
A	3.248 ± 0.197	82.5 ± 5	G	7.520 ± 0.079	191 ± 2	N	3.543 ± 0.008
B	0.591 ± 0.039	15 ± 1	H	2.283 ± 0.197	58 ± 5	P	4.606 ± 0.020
C	1.535 ± 0.039	39 ± 1	J	5.354	136 max.	Q	0.276 ± 0.004
D	3.543 ± 0.008	90.0 ± 0.2	K	1.772 ± 0.197	45 ± 5	R	0.394 ± 0.004
E	1.535 ± 0.039	39 ± 1	L	1.000 ± 0.008	25.4 ± 0.2	S	1.260 ± 0.079
F	0.591 ± 0.039	15 ± 1	M	1.575 ± 0.004	40.0 ± 0.1	T	6.043
							153.5 max.

