

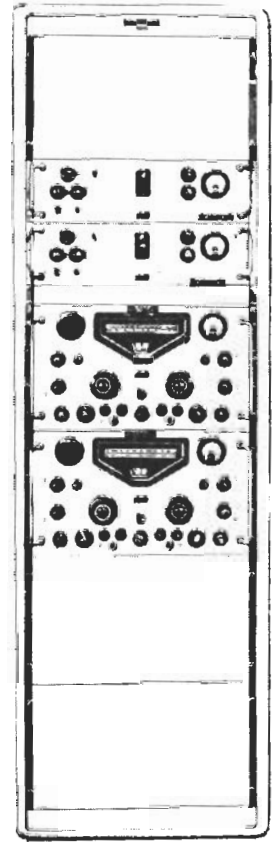
SUMMARY OF DATA

**PURPOSE**

Receiver Outfit CGS(1) is used for the reception of independent or single sideband transmissions, with or without a carrier. The corresponding dual diversity equipment is Receiver Outfit (CGS(2)). Used with telegraph terminal equipment, CGS(2) is to be superseded by CGT.

**BRIEF DESCRIPTION**

Incoming signals between 980 kHz and 30 MHz are mixed with the output of a vfo operating in the range 40.5 to 69.5 MHz to produce an output of 40 MHz ± 500 kHz. Megahertz harmonics up to 32 MHz, derived from a 1 MHz crystal oscillator, are also mixed with the output of the vfo to give a signal acceptable to a filter tuned to 37.5 MHz ± 150 kHz. The 40 MHz and the 37.5 MHz signals are mixed in a further stage to produce an output between 2 and 3 MHz which is acceptable to the conventional superheterodyne receiver stages. The 100 kHz output of the receiver is mixed with 118 kHz from an oscillator, variable ± 1 kHz manually or by automatic frequency control. To provide afc the carrier is passed through narrow bandwidth filters to a discriminator circuit and this develops the control voltage to drive the tuning-capacitor motor of the 118 kHz oscillator. The output from the mixer, centred on 18 kHz is passed through usb and lsb filters and mixed with the output of a high-accuracy 18 kHz oscillator in a product detector. The final product is an af signal between 350 and 6000 Hz.



OUTFIT CGS(2)

**TYPE OF RECEPTION**

Amplitude modulated signals with carrier between 0 and -26 dB. In the suppressed carrier condition an external frequency standard may be used. The reception of a double sideband signal with the sidebands detected separately may be an advantage under conditions of selective fading or adjacent channel interference.

**FREQUENCY RANGE**

1 to 30 MHz but extending to 500 kHz if a slightly degraded output is acceptable.

**MAJOR UNITS**

NSN or AP No.	Description	CGS(1)	CGS(2)
5820-99-999-9292	Receiver Radio RA17L (supplied as Receiver Outfits CHC(2))	1	2
AP 105890	Converter Independent Sideband	1	2
AP 105876	Cabinet Electrical Equipment*		1
AP 105880	Selector Aerial Dual Diversity		1
—	Cabinet, Racal DA16310* *or 19 in. rack	1	

**PHYSICAL DIMENSIONS**

	Height	Width	Depth	Weight
Each Receiver:	26.7 cm (10.5 in.)	48.3 cm (19 in.)	50.8 cm (20 in.)	30 Kg (67 lb)
Each Converter	13.3 cm (5.25 in.)	48.3 cm (19 in.)	35.6 cm (14 in.)	14 Kg (30 lb)
CGS(2) Cabinet:	182.9 cm (72 in.)	54.6 cm (21.5 in.)	69.2 cm (27.25 in.)	

**ELECTRICAL CHARACTERISTICS**

- Input Impedance : 75 ohm unbalanced.
- Sensitivity : For 18 dB signal/noise ratio and 3 kHz bandwidth:—  
1 μV cw or 3 μV voice at 30% modulation.

Selectivity	: On the bandwidth selected the attenuation is as shown:—														
	<table> <tr> <td>—6 dB</td> <td>—66 dB</td> </tr> <tr> <td>1. 13 kHz</td> <td>28 kHz</td> </tr> <tr> <td>2. 6.5 kHz</td> <td>20 kHz</td> </tr> <tr> <td>3. 3.0 kHz</td> <td>15 kHz</td> </tr> <tr> <td>4. 1.2 kHz</td> <td>8 kHz</td> </tr> <tr> <td>5. 0.2 kHz</td> <td>Less than 2 kHz</td> </tr> <tr> <td>6. 0.1 kHz</td> <td>Less than 1.5 kHz</td> </tr> </table>	—6 dB	—66 dB	1. 13 kHz	28 kHz	2. 6.5 kHz	20 kHz	3. 3.0 kHz	15 kHz	4. 1.2 kHz	8 kHz	5. 0.2 kHz	Less than 2 kHz	6. 0.1 kHz	Less than 1.5 kHz
—6 dB	—66 dB														
1. 13 kHz	28 kHz														
2. 6.5 kHz	20 kHz														
3. 3.0 kHz	15 kHz														
4. 1.2 kHz	8 kHz														
5. 0.2 kHz	Less than 2 kHz														
6. 0.1 kHz	Less than 1.5 kHz														
Stability	: After two hours warm-up, within 50 Hz.														
Accuracy	: A 100 kHz calibration signal, derived from a 1 MHz crystal, provides check points at 100 kHz intervals. The crystal oscillator has an accuracy of $5:10\beta$ .														
Intermodulation	: At least —100 dB for interfering signals 10% removed from the wanted signal.														
Cross Modulation	: With wanted signal between $3\ \mu\text{V}$ and 1 mV, an interfering signal 10 kHz removed and modulated 30% must be 50 dB greater than the wanted signal to produce cross modulation of 3%.														
Blocking	: With conditions similar to those for cross modulation, an unwanted signal must be 60 dB greater before the af output of the wanted signal is reduced by 3 dB because of blocking.														
Image and Spurious Responses	: With wideband or tuned input external image signals are at least 60 dB down. Internally generated spurious responses are below the noise level at all times.														
B.F.O.	: Range $\pm 8$ kHz. With constant temperature and supply voltage, drift after warm-up does not exceed 50 Hz. For an input level variation from $10\ \mu\text{V}$ to 1 mV bfo drift is negligible.														
A.G.C.	: Increase of 60 dB on $1\ \mu\text{V}$ input to the receiver increases the output by not more than 6 dB. Optional noise limiting.														
A.F.C.	: Electro-mechanical afc by carrier of 0 to —26 dB relative PSP.														
A.F. Output	: 50 mW into 600 ohm balanced, for each sideband, and attenuated output of a selected sideband for monitoring.														

## POWER REQUIREMENTS

100 to 125 V or 200 to 250 V, 45 to 65 Hz, single-phase ac. Consumption is approximately 90 W for each receiver, 50 W for each converter.

## HANDBOOKS

BR 2393	Handbook for Receiver Outfits CGS(1) and CGS(2).
BR 1171	Handbook for Receiver Outfits CHB and CHC series.
BR 2371	Handbook for Converter ISB, AP 105890.

## ASSOCIATED AERIAL

Outfits AFQ, AFT or AGL

## COMMERCIAL EQUIVALENT

Receiver	Racal RA17L
Converter	Racal RA98A

## ESTABLISHMENT LIST

E 1354

## INSTALLATION SPECIFICATION