UNCLASSIFIED

TECHNICAL MANUAL

for

SIDEBAND GENERATOR

MODEL SBG-3

THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, N.Y. OTTAWA, ONTARIO

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THE TECHNICAL MATERIEL CORPORATION
COMMUNICATIONS ENGINEERS
700 FENIMORE ROAD MAMARONECK, N. Y.

Warranty

The Technical Materiel Corporation, hereinafter referred to as TMC, warrants the equipment (except electron tubes,* fuses, lamps, batteries and articles made of glass or other fragile or other expendable materials) purchased hereunder to be free from defect in materials and workmanship under normal use and service, when used for the purposes for which the same is designed, for a period of one year from the date of delivery F.O.B. factory. TMC further warrants that the equipment will perform in a manner equal to or better than published technical specifications as amended by any additions or corrections thereto accompanying the formal equipment offer.

TMC will replace or repair any such defective items, F.O.B. factory, which may fail within the stated warranty period, PROVIDED:

1. That any claim of defect under this warranty is made within sixty (60) days after discovery thereof and that inspection by TMC, if required, indicates the validity of such claim to TMC's satisfaction.

2. That the defect is not the result of damage incurred in shipment from or to the factory.

3. That the equipment has not been altered in any way either as to design or use whether by replacement parts not supplied or approved by TMC, or otherwise.

4. That any equipment or accessories furnished but not manufactured by TMC, or not of TMC design shall be subject only to such adjustments as TMC may obtain from the supplier thereof.

Electron tubes*furnished by TMC, but manufactured by others, bear only the warranty given by such other manufacturers. Electron tube warranty claims should be made directly to the manufacturer of such tubes.

TMC's obligation under this warranty is limited to the repair or replacement of defective parts with the exceptions noted above.

At TMC's option any defective part or equipment which fails within the warranty period shall be returned to TMC's factory for inspection, properly packed with shipping charges prepaid. No parts or equipment shall be returned to TMC, unless a return authorization is issued by TMC.

No warranties, express or implied, other than those specifically set forth herein shall be applicable to any equipment manufactured or furnished by TMC and the foregoing warranty shall constitute the Buyers sole right and remedy. In no event does TMC assume any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of TMC Products, or any inability to use them either separately or in combination with other equipment or materials or from any other cause.

*Electron tubes also include semi-conductor devices.

PROCEDURE FOR RETURN OF MATERIAL OR EQUIPMENT

Should it be necessary to return equipment or material for repair or replacement, whether within warranty or otherwise, a return authorization must be obtained from TMC prior to shipment. The request for return authorization should include the following information:

1. Model Number of Equipment.
2. Serial Number of Equipment.
3. TMC Part Number.
4. Nature of defect or cause of failure.
5. The contract or purchase order under which equipment was delivered.

PROCEDURE FOR ORDERING REPLACEMENT PARTS

When ordering replacement parts, the following information must be included in the order as applicable:

1. Quantity Required.
2. TMC Part Number.
3. Equipment in which used by TMC or Military Model Number.
4. Brief Description of the Item.
5. The *Crystal Frequency* if the order includes crystals.

PROCEDURE IN THE EVENT OF DAMAGE INCURRED IN SHIPMENT

TMC's Warranty specifically excludes damage incurred in shipment to or from the factory. In the event equipment is received in damaged condition, the carrier should be notified immediately. Claims for such damage should be filed with the carrier involved and not with TMC.

All correspondence pertaining to Warranty Claims, return, repair, or replacement and all material or equipment returned for repair or replacement, within Warranty or otherwise, should be addressed as follows:

THE TECHNICAL MATERIEL CORPORATION
Engineering Services Department
700 Fenimore Road
Mamaroneck, New York

RECORD OF CORRECTIONS MADE

Change No.	Date of Change	Date Entered	Entered By

FOREWARD

The SBG-3 is normally used as the exciter portion of a complete transmitter system, driving an associated linear power amplifier. When used as part of an overall transmitter system, the SBG is normally contained in the auxiliary or first frame of a multi-frame configuration.

Refer to the applicable system technical manual for SBG system interrelationship.

Due to the various system uses of the SBG, this manual will discuss the operation of the SBG in a typical configuration basis.

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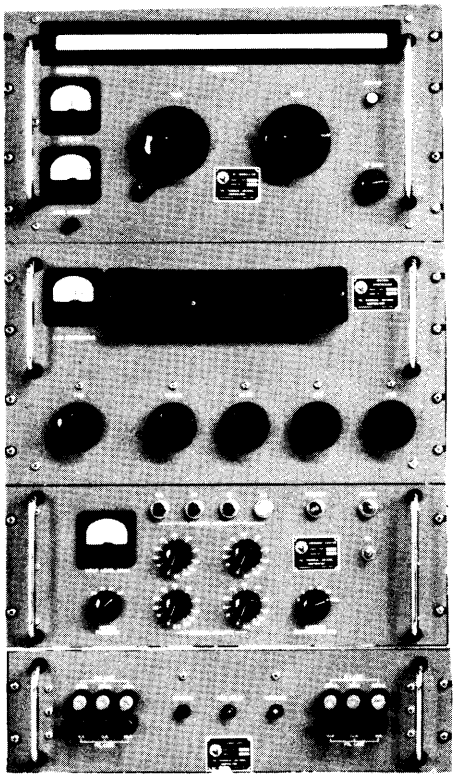

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Figure 1-1. Sideband Generator, Model SBG-3

SECTION 1
GENERAL INFORMATION

1-1. PURPOSE OF EQUIPMENT

Sideband Generator, SBG-3 (figure 1-1) is the exciter portion of a transmitter system operating in the 2 to 32 megacycle frequency range. The exciter is stabilized by a 1-mc frequency standard producing a system stability accurate to 1 part 10^8 per day. The SBG accepts up to four 600-ohm audio inputs which are heterodyned with oscillators (controlled by the 1-mc frequency standard) to produce the desired output frequency.

1-2. EQUIPMENT MAKE-UP

The major components comprising the SBG are listed in table 1-1. See figure 1-1 for equipment used and paragraph 1-3 for component description.

1-3. DESCRIPTION OF EQUIPMENT

a. SIDEBAND EXCITER, CMR-1 - The CMR provides the primary stage of frequency conversion and multiplexing of 4-channel independent sideband information. The CMR accepts up to four 600-ohm audio input signals, each of these signals are processed separately by independent amplification, modulation, filtering, and gain-control circuits (channels A1, A2, B1 and B2). The outputs of each of these channel circuits are then combined to yield an independent sideband output that is centered at a frequency of 1.75 mc.

The 1.75 mc carrier (used for channels A1 and B1) and the multiplexing sub-carriers (1.75371 mc and 1.75629 mc used for channels A2 and B2) are synthesized with a 1 mc reference signal supplied from an associated control synthesizer (HFS).

b. RF TRANSLATOR, CHG-3 - The CHG receives a 1.75 mc input from the sideband exciter (CMR) and heterodynes this signal to the desired output frequency. A sample of the CHG high frequency oscillator output (3.75 to 33.75 mc) is applied to the control synthesizer (HFS). The control synthesizer in turn, supplies a d-c control voltage to the CHG to stabilize the high frequency oscillator. The

CHG output is in the 2 to 32 mc frequency range, selectable in eight bands.

c. CONTROL SYNTHESIZER, HFS-2 - The HFS is a reference signal generator operating in the 2-32 mc frequency range. This unit contains a 1-mc frequency standard and is used as a comparator, with a correction loop, that provides a d-c correction voltage to stabilize the 3.75 to 33.75 mc high frequency oscillator in the associated r-f translator (CHG).

d. POWER SUPPLY, HFP-1 - The HFP is a dual-regulated power supply that provides regulated B+, regulated bias and filament voltages to the associated system components.

1-4. TECHNICAL SPECIFICATIONS

Frequency Range:	2-32 mc (MHz)
Output Impedance:	50 ohms unbalanced.
Harmonic Suppression:	Second harmonic at least 40 db down and all others at least 50 db down from PEP output.
Signal/Distortion Ratio:	Better than 40 db down relative to PEP output.
Frequency Stability:	Synthesized, 1 part 10^8.
Input Power Requirements:	115/230 vac $\pm$10% single phase 50/60 cps. Power consumption approximately 500 watts.
Tuning:	All tuning and bandswitching controls on front panels (no plug-in components).
Metering:	Front panel meters indicate operation of all critical circuits.

TABLE 1-1. MAJOR COMPONENTS SBG-3

TMC DESIGNATION
EXCITER SECTION
SIDEBAND EXCITER, MODEL CMR-1
CONTROL SYNTHESIZER, MODEL HFS-2
RF TRANSLATOR, MODEL CHG-3
POWER SUPPLY, MODEL HFP-1

SECTION 2
INSTALLATION

2-1. UNPACKING AND HANDLING

Each modular unit comprising the SBG section has been thoroughly inspected and tested at the factory before shipment. Upon arrival of the equipment, inspect each packing case and its contents immediately for possible damage. Unpack the equipment carefully. Inspect all packing material for parts which may have been shipped as loose items.

With respect to damage to the equipment for which the carrier is liable, The Technical Materiel Corporation will assist in describing methods of repair and the furnishing of replacement parts.

2-2. INSTALLATION

All of the units used in the SBG section are equipped with standard width 19-inch front panels. These units are to be mounted in the equipment rack as shown in figure 1-1. See associated system manuals that illustrate electrical interconnections of the SBG modular units. Refer to the individual technical and subsystem manuals for detailed connection and installation procedures.

a. INSTALLATION OF MODULAR UNITS. - Refer to figure 1-1 for modular units used. All major units when used in a transmitter are slide-mounted on pull-out, or tilt-lock drawer slides. To install any slide-mounted unit in its compartment, see figure 2-1 and proceed as follows:

1. Untape or unstrap cable assemblies and all other components fastened to the rack frame for shipment.

CAUTION

Start by installing bottom units first in order to avoid rack tipping over from extended center of gravity.

2. Pull center section of associated compartment track out until it locks in an extended position.

3. Position slide mechanisms of modular unit in tracks and ease modular unit forward into rack until release buttons engage holes in track.

4. Make necessary cable and electrical connections as shown in figure 2-3. To prevent cables from snagging, utilize the cable retractors, located at the inside-rear of the rack.

5. Depress release buttons and slide modular unit completely into compartment.

6. Secure front panel of modular unit to rack with screws and washers.

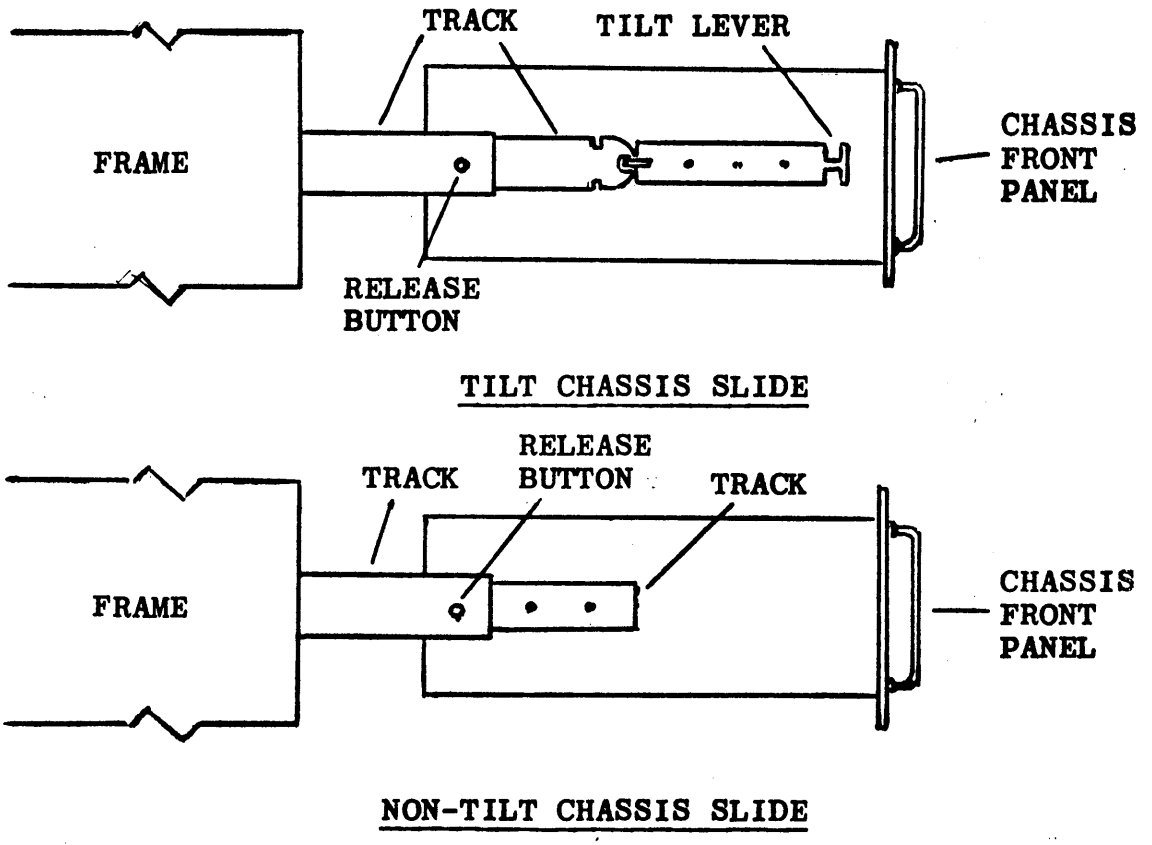

Figure 2-1. Slide Mounting Details

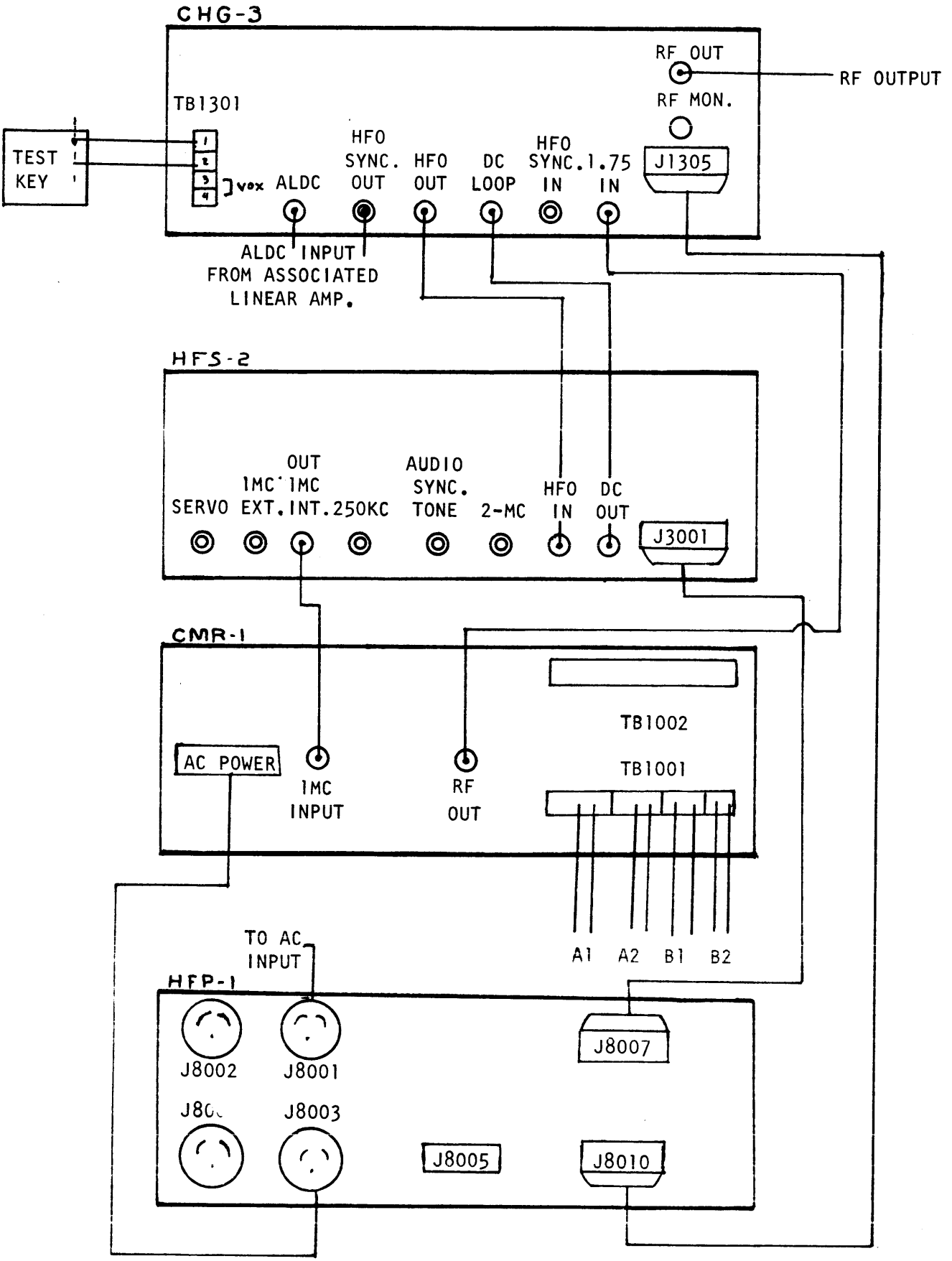

Figure 2-2. Typical Interconnection Cabling Diagram, Model SBG-3

2-3. PRE-OPERATIONAL CHECKOUT

The following pre-operational checkout procedures are to be performed after final installation is completed; all interconnections and input power cables are to be connected (see Figure 2-2). Further checkout procedures for the individual modular units are presented in their associated technical manuals. Refer to table 2-1 for test equipment required.

a. PRELIMINARY SETUP, EXCITER SECTION

1. CHG- RF GAIN control set at mid-range

2. CMR- CHANNEL PRIORITY controls set at 100.
   METER FUNCTION switch set at A1.
   CARRIER SUPPRESSION control set at FULL
   POWER switch set at ON.

3. Connect primary a-c input power to exciter.

b. PRELIMINARY CHECKS

1. Set HFP power switch (on rear of unit) at ON. This applies power to the HFP. The delay circuit in the HFP will apply power to the HFS and CHG after a 90-second time delay. Ascertain that this 90-second time delay is functional.

2. Connect a d-c VTVM to test point TB8001 of the HFP. The voltage should measure +200 vdc; if not, adjust with voltage adjust control "A".

3. Connect a d-c VTVM to test point TB8002 of the HFP. The voltage should measure +200 vdc; if not, adjust with voltage adjust control "B".

4. Perform inter-modulation distortion carrier suppression, and spurious checks as outlined in Section 5 of this manual.

TABLE 2-1. TEST EQUIPMENT REQUIRED

ITEM	MANUFACTURER
Voltohmeter	Simpson, Model 260 or equivalent.
VTVM	Hewlett-Packard, Model 410B or equivalent.
RF Spectrum Analyzer	TMC, Model PTE-4 or equivalent.
Square Wave Generator	Boonton Model 71 or equivalent.
Dummy Load, 50-ohms, 1KW	

SECTION 3
OPERATOR'S SECTION

3-1. GENERAL

The exciter section is comprised of modular units, each of which perform a particular function in the overall system. The tuning procedures for each unit may vary in accordance with the desired mode and frequency or transmission. Therefore, reference to the applicable modular unit technical manual will denote proper control and level settings for the desired mode of transmission.

3-2. OPERATOR'S INSTRUCTIONS

Table 3-1, used in conjunction with figure 3-1, provides control and indicator functions of the modular units comprising the SBG section.

Tables 3-2, 3-3 and 3-4 provide operating procedures and control settings, to be used in conjunction with the tuning charts supplied as part of the test data package (supplied with the equipment).

Refer to the individual modular unit technical manuals for detailed operating instructions.

NOTE

The operating procedures listed in table 3-4 are to be performed after the pre-operational check-out procedures have been completed.

TABLE 3-1. CONTROLS AND INDICATORS

ITEM NO. (See Figure 3-1)	CONTROL or INDICATOR	FUNCTION
EXCITER SECTION		
RF TRANSLATOR, CHG		
1	MEGACYCLES dial	Displays illuminated RF band dial, selected by operating BAND control knob, item 3.
2	TUNE control	Moves pointer to appropriate frequency along dial of selected band. (TUNE control is fitted with a lock, item 6.)

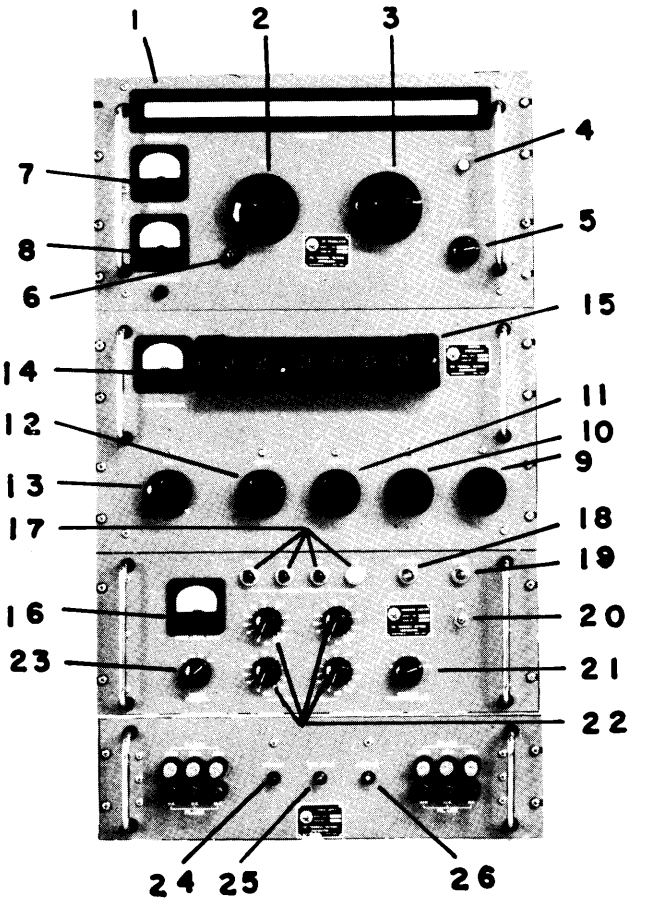

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Figure 3-1. Control and Indicator Locations

TABLE 3-1. CONTROLS AND INDICATORS (CONT)

ITEM NO. (See Figure 3-1)	CONTROL or INDICATOR	FUNCTION
	EXCITER SECTION	
	RF TRANSLATOR, CHG	
3	BAND switch	Rotates MEGACYCLES dial, item 1, and switches is desired RF band, as follows: BAND 1 = 2 - 3 mc BAND 2 = 3 - 4 mc BAND 3 = 4 - 6 mc BAND 4 = 6 - 8 mc BAND 5 = 8 - 12 mc BAND 6 = 12 - 16 mc BNAD 7 = 16 - 24 mc BAND 8 = 24 - 32 mc
4	SYNC IND lamp	Lights to indicate system is synchronized (indicates only when CHG is in synthesized operation).
5	RF GAIN control	Controls amplitude of RF output signals.
6	LOCK knob	Locks TUNE control, item 2, to prevent accidental shift off selected frequency.
7	SYNCHRONIZE meter	Indicates amount and polarity of DC voltage. When system is out of synchronization, meter reads zero (meter functions only when CHG is in synthesized operation).
8	RF LEVEL meter	Indicates level of r-f output signal.
	CONTROL SYNTHESIZER, HFS	
9	.1KC switch S3101	Tunes the synthesizer in 100-cycle steps.
10	1 KC switch S3201	Tunes the synthesizer in 1000-cycle steps.
11	10 KC switch S3301	Tunes the synthesizer in 10-kc steps.
12	100 KC switch S3401	Tunes the synthesizer in 100-kc steps.
13	1 MC switch S3501	Tunes the synthesizer in 1-mc steps between 2 and 32-mc.
14	1 MC COMPARATOR meter M3001	Indicates frequency error in internal 1-mc standard.
15	Digital display indicators DS3001.	Indicates the frequency components set by controls.

TABLE 3-1. CONTROLS AND INDICATORS (CONT)

ITEM NO. (See fig. 3-1)	CONTROL or INDICATOR	FUNCTION
	SIDEBAND EXCITER, CMR	
16	INPUT LEVEL (dbm)	Indicates power input level (to each channel) between -20 dbm and +3 dbm, as selected by METER FUNCTION switch, item 23.
17	CHANNEL ACTIVITY lamps (one for each channel)	Lights to indicate that corresponding channel is active (channel audio input level is -26 dbm or higher)
18	STANDBY lamp	Lights when all channels are inactive (no audio input)
19	POWER lamp	Lights to indicate unit is in operation.
20	ON switch	When at ON position, energizes the unit.
21	CARRIER SUPPRESSION (db) switch	Reinserts carrier at indicated levels below full power output.
22	CHANNEL PRIORITY controls (one for each channel)	Controls apportionment of output power for each channel (graduated in percentages).
23	METER FUNCTION switch	Selects channel input signal for monitoring by INPUT LEVEL meter, item 16.
	POWER SUPPLY, HFP	
26	STANDBY, lamp	Indicates HFP is in STANDBY condition (i.e., HFP is sending power to oscillator ovens and frequency standard in system units)
27	TIME DELAY lamp	Indicates HFP is going through time delay stage between standby and operative conditions.
28	OPERATE lamp	Indicates HFP is in OPERATE condition, (sending power to all units in system).
	MAIN POWER switch, on rear of unit.	STANDBY position applies power to frequency standard and oscillator ovens; OFF position disconnects main line voltage input to HFP.

TABLE 3-2. CHANNEL PRIORITY CONTROL SETTING, CMR

MODE OF TRANSMISSION	CONTROL	SETTING
1 Channel SSB	A1 or B1	100
2 Channel ISB*	A1 and B1	50
4 Channel ISB*	A1, A2, B1, and B2	25
AME	A1 or B1	50
AM	A1 and B1	30
CW (Keyed Carrier)	A1, A2, B1, and B2	0
Tone CW, FSK, FAX*	A1	50
	A2, B1, and B2	0

* If one channel of an ISB transmission is to be used for FSK or FAX, set the priority control of the channel containing the single-tone modulation at 25 (for 2 channel ISB), or at 12.5 (for 4 channel ISB).

TABLE 3-3. CARRIER SUPPRESSION SWITCH SETTINGS, CMR

MODE OF TRANSMISSION	SETTING
CW (Keyed carrier telegraphy)	0 DB
AME	3 DB
AM	6 DB
SSB or two-channel ISB with reduced carrier	20 DB
Four channel ISB with reduced carrier	30 DB
SSB or ISB with suppressed carrier; tone CW, FSK, or FAX	FULL

TABLE 3-4. OPERATING PROCEDURES

STEP	UNIT CONTROL	OPERATION
1	CHG-TUNE and BAND controls	Set at proper operating band and frequency settings.

TABLE 3-4. OPERATING PROCEDURES, (CONT)

STEP	UNIT CONTROL	OPERATION
2	CHG - RF GAIN control	Set fully counterclockwise
3	HFS - MC and KC controls	Set at proper operating frequency settings.
4	CMR - CHANNEL PRIORITY control	Set to appropriate position as listed in table 3-2.
5	CMR - CARRIER SUPPRESSION control	Set to appropriate position as listed in table 3-3.
6	CMR - POWER switch	Set at ON.
7	HFP-MAIN POWER switch (rear of unit)	Set at ON.

SECTION 4
PRINCIPLES OF OPERATION

4-1. GENERAL

The SBG accepts the audio input intelligence, translates and combines the audio input with a 1-mc frequency standard. The 1-mc signal is a highly stable frequency standard that constitutes the accuracy of the output frequency (1 part 10^8). The output frequency within the 2 to 32 mc frequency range is then applied to a linear amplifier varying with each particular system where the SBG-3 is employed.

4-2. OVERALL FUNCTIONAL ANALYSIS

a. EXCITER SECTION (figure 4-1) - The Sideband Exciter CMR provides the primary stage of frequency conversion and multiplexing for the four-channel independent sideband transmitting system. The CMR accepts up to four 600-ohm audio input signals. The four signals are processed separately by independent amplification, modulation, filtering and gain control circuits (channels A1, A2, B1, and B2). The outputs of each of these channel circuits are then combined to yield an independent sideband output that is centered at a frequency of 1.75 mc.

The 1.75 mc carrier (used for channels A1 and B1) and the multiplexing subcarriers (1.75471 mc and 1.75629 mc used for channels A2 and B2) are synthesized within the CMR by a 1-mc reference signal from the associated Control Synthesizer HFS.

The 1.75 mc CMR output is applied to the RF Translator CHG, where the 1.75 mc signal is heterodyned with an ultra stable High frequency oscillator output signal to produce the desired output frequency. A sample of high frequency oscillator output (3.75 mc to 33.75 mc) of the CHG is routed to the Control Synthesizer HFS, which in turn supplies a d-c control voltage back to the CHG to stabilize the high frequency oscillator. The resulting output of the CHG is a stabilized r-f output, containing the input intelligence at a selected frequency within the 2 to 32 mc frequency range.

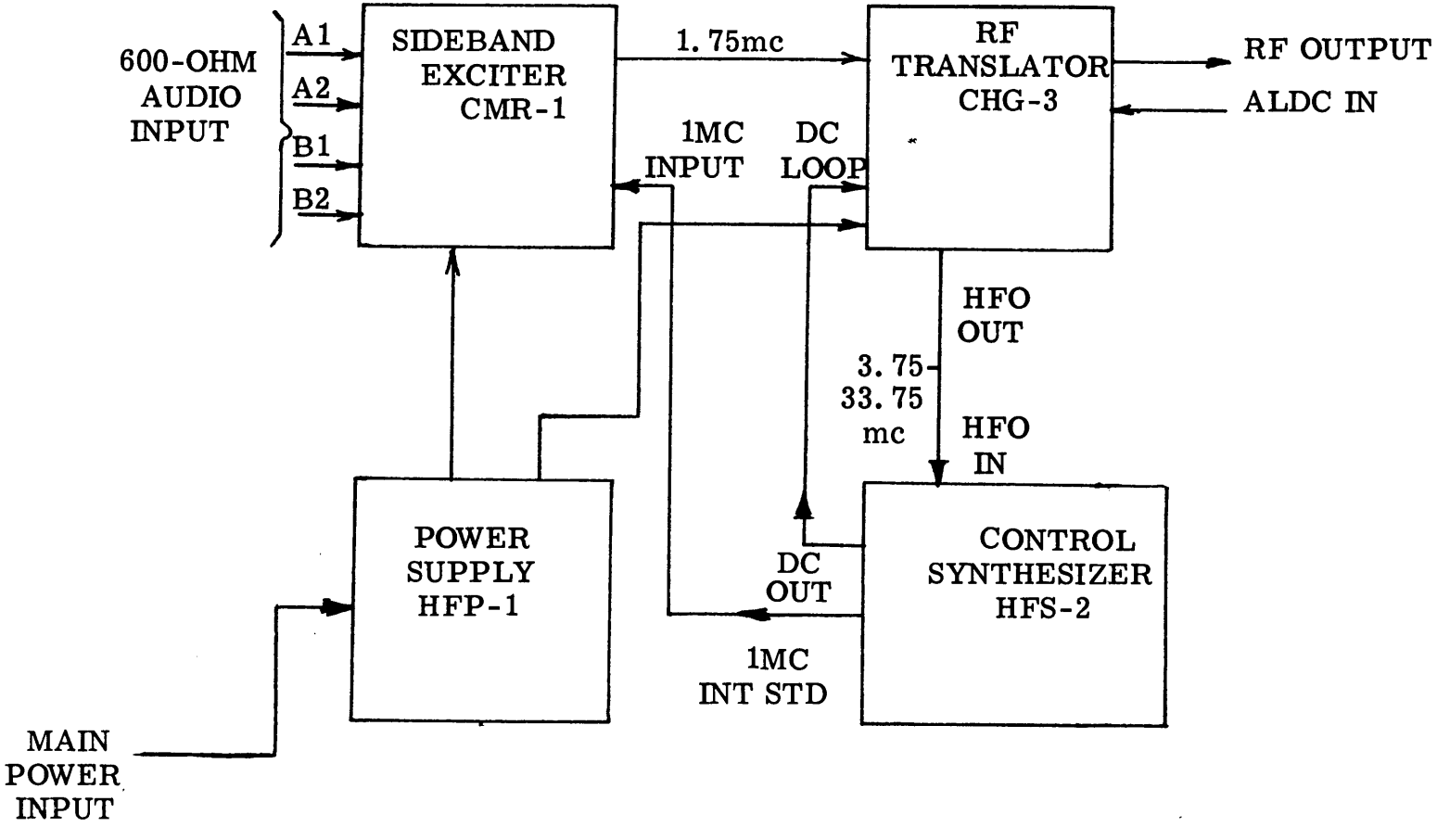

Figure 4-1. Block Diagram,Exciter

SECTION 5
MAINTENANCE

5-1. PREVENTIVE MAINTENANCE.

In order to prevent equipment failure due to dust, dirt or other destructive elements, it is suggested that a schedule of preventive maintenance be set up and adhered to.

At periodic intervals, the equipment should be removed from its mounting for cleaning and inspection. The wiring and all components should be inspected for dirt, dust, corrosion, grease or other harmful conditions. Remove dust with a soft brush or vacuum cleaner. Remove dirt or grease with any suitable cleaning solvent. Use of carbon tetrachloride should be avoided due to its highly toxic effects. Trichlorethylene or methyl chloroform may be used, providing the necessary precautions are observed.

WARNING

When using toxic solvents, make certain that adequate ventilation exists. Avoid prolonged or repeated breathing of the vapor. Avoid prolonged or repeated contact with skin. Flammable solvents shall not be used on energized equipment or near any equipmnet from which a spark may be received. Smoking, "hot work", etc. is prohibited in the immediate area.

CAUTION

When using trichlorethylene, avoid contact with painted surfaces, due to its paint removing effects.

5-2. TROUBLESHOOTING

When a piece of equipment has been operating satisfactorily and suddenly fails, the cause of failure may be due to symptoms of past failures or due to component aging.

The first step in troubleshooting is to ascertain that proper equipment voltages are present, interconnecting cables are secure, and that all fuses are in functional condition. Refer to table 5-2, used in conjunction with figure 5-1, for system fuse locations and functions.

NOTE

Never replace a fuse with one of a high rating unless brief continued operation is more important than probable equipment damage. If a fuse burns out immediately after replacement, do not replace it a second time until the cause has been located and corrected.

If the above mentioned checks fail to locate the fault, perform the pre-operational checkout procedure shown in paragraph 2-3 and outlined in the associated equipment manuals. Use of this procedure will help localize the particular fault at hand.

Visual troubleshooting of the modular unit chassis components and tube conditions may also help localize the fault. Refer to the individual modular unit technical manuals for associated unit troubleshooting procedures.

The following troubleshooting aids are provided:

a. Interconnection diagram (Figure 2-2)

b. Pre-operational checkout procedures (Paragraph 2-3).

c. Exciter system block diagram (Figure 4-1).

d. System fusing (Table 5-2 and Figure 5-1).

e. Cable/wire run list (Table 5-3).

5-3. REPAIR AND REPLACEMENT

Maintenance of the SBG will consist mainly of component replacement. It should be noted that when replacing components having many wires connected, such as switches, relays, etc., the wires should be tagged and marked for accurate identification when replacing.

When replacing components, the technician should observe for exact or equivalent replacements by referring to the parts list of the appropriate modular unit technical manual.

Polarity and positioning of certain components should be observed before removing so that the replacement component will fit and operate correctly.

5-4. OPERATIONAL CHECKS

The following checks should be performed to insure proper operation of equipment.

NOTE

If the proper operation cannot be obtained refer to the allignment procedures contained in the individular modular unit manuals.

a. EXCITER SECTION

1. Connect output from a two-tone audio generator to channel A1 on TB3002 with a shielded pair. TB3002 is located on the rear of exciter rack. Parallel connect a 50 ohm, 2W load and an AC VTVM via a "T" connector to J-3001. Connect the input of a spectrum analyzer to the Monitor jack, (J1002) on the CHG-3 unit.

2. Place the meter function switch on the CMR to A1 and adjust audio output for a -10 dBm which can be read on the input level meter on the CMR.

3. The first frequency to be tuned will be 2 MCS. Set RF Gain Control on CHG to mid range. On the HFS place the MC switch at 2, 100 KC at zero, 10 KC zero, 1 KC zero, .1 KC also at zero. The HFS nixie lights will indicate 2 MCS. Turn the bandswitch on the CHG to band #1, and the CHG TUNE to 2 MCS. When it reaches 2 MCS the sync. light on the CHG will light and there should be some output indicated on the CHG RF level meter. Adjust RF gain control on the CHG for an output of 2.5 volts as indicated on the AC VTVM.

a. Adjust analyzer input attenuator switch as required to place two-tone signal peaks on the ZERO db reference line but maintaining the gain control at approximately full clockwise. Position the two tone signal presentation in the center of the analyzer screen. The displayed signal in conjunction with the 2.5 volts across the 50 ohm load represents the rated PEP output on a scale from 0 to 40 db.

b. Place the IF attenuator switch to 0 db thus expanding the scale to 60 db (0 db line now becomes 20 db).

c. Read the 3rd order products from this presentation. The 3rd order products shall be not less than 40 db below either tone of the two tone signal at the rated output which is 2.5 volts RMS.

d. Repeat the above procedure for all frequencies. (See table 5-1).

e. Upon completion of the Channel A1 check, repeat the procedure at 2 MCS for Channels B1, B2 and A2. Audio connections for the channels can be made on TB902 for all channels.

CARRIER SUPPRESSION

1. Leaving the set up as in Intermodulation check remove the A.F. tones from Channel A1 connection.

2. Turn carrier suppression control on the CMR to "0".

3. Again adjust the output of the CHG to 2.5 volts RMS as indicated on the AC-VTVM with the RF gain control on the CHG and the CHG tuned to 2 Mcs.

4. Adjust the displayed signal on the analyzer screen with the IF Antenuator in the -20db position to the 0 db line and center the signal on the screen.

5. Vary the carrier reinsertion on the CMR from its zero position to 3, 6, 20, 30 and FULL and back to the other extreme. Note the value of carrier suppression.

6. The carrier suppression and a maximum carrier suppression of not less than 55 db below the rated output.

SPURIOUS CHECK

1. Set up the exciter to 2 MCS at its rated output, 2.5 volts RMS across a 50 ohm load with carrier drive only.

Set carrier suppression to 0 on CMR. Set up the analyzer presentation as in previous test to the 0 db reference line with IF antenuator to -20 db position.

2. Set the analyzer sweep frequency to 14 KC. Position the displayed signal so that the carrier is centered on the screen.

3. Set the IF attenuator to 0 db and read the level of all the spurious signals.

4. Spurious signals shall be at least 40 db below rated output .250 W PEP or 2.5 volts RMS.

TABLE 5-1. EXCITER INTERMODULATION DISTORTION FREQUENCY TEST SETTINGS.

FREQ. in mc/s	VOX setting	BAND SW
2.0000	2500	1
3.0000	3500	1
3.0000	3500	1
3.0000	3500	2
4.0000	2250	2
4.0000	2250	3
6.0000	3250	3
6.0000	3250	4
8.0000	2125	4
8.0000	2125	5
12.0000	3125	5
12.0000	3125	6
16.0000	2062.5	6
16.0000	2062.5	7
24.0000	3062.5	7
24.0000	3062.5	8
28.0000	3562	8
32.0000	2031	8
Channel A2 2.0000	2500	1
Channel B1 2.0000	2500	1
Channel B2 2.0000	2500	1

TABLE 5-2. FUSE FUNCTIONS

ITEM No. (Figure 5-1)	PANEL DESIGNATION	FUNCTION
	SIDEBAND EXCITER, CMR	
1	B+, F3, 1 amp, 250 wvdc, quick-acting	Protects external +12 volt supply.
2	B-, F2, 1 amps, 250 wvdc, quick-acting	Protects external -12 volts supply.
3	AC, F1, 1 amp, time lag, slow-blow	Protects external power supply.
4	DC, F4, 1 amps, 250 wvdc, quick-acting	Protects internal components.
	POWER SUPPLY, HFP	
5	B- LINE .125 A	Section "B" B- output to J8010.
6	B- LINE .125 A	Section "B" B- output to J8008.
7	B+ LINE .250 A	Section "B" B+ output to J8005 and J8008.
8	B- LINE .125 A	Section "B" B- output to J8006.
9	B+ LINE .375 A	Section "A" B+ output to J8007.
10	B+ LINE .375 A	Section "A" B+ output to J8005.
11	FIL LINE 4 A	6.8 vac output to J8006.
12	FIL LINE 5 A	6.8 vac output to J8009.
13	FIL LINE 15 A	6.8 vac output to J8007.
14	FIL LINE	6.8 vac output to J8010.
15	FIL LINE 10 A	6.8 vac output to J8008.
16	FIL LINE 10 A	6.8 vac output to J8005.
17	F8003 4A/115V 2A/230V	Line voltage supply to J8009 and J8010; 6.3 vac supply to J8005; time delay and circuit in HFP.
18	F8007 .750 A	Input to section "A" B+ regulator in GFP.
19	F8008 .750 A	Input to section "B" B+ regulator in HFP
20	F8001 15A/115V 8A/230V	Main line voltage input and line voltage output to J8002.

TABLE 5-2. FUSE FUNCTIONS (CONT)

ITEM No (Figure 5-1)	PANEL DESIGNATION	FUNCTION
	POWER SUPPLY, HFP (CONT)	
21	F8004 4A/115V 2A/230V	Line voltage supply to J8009 and J8010; 6.3 vac supply to J8005; time delay and filament circuits in HFP.
22	F8005 2A/115V 1A/230V	Line voltage supply J8004.
23	F8006 1/10A	Input to bias supply in HFP.
24	F8002 15A/115V 8A/230V	Main line voltage input and line voltage output to J8002.

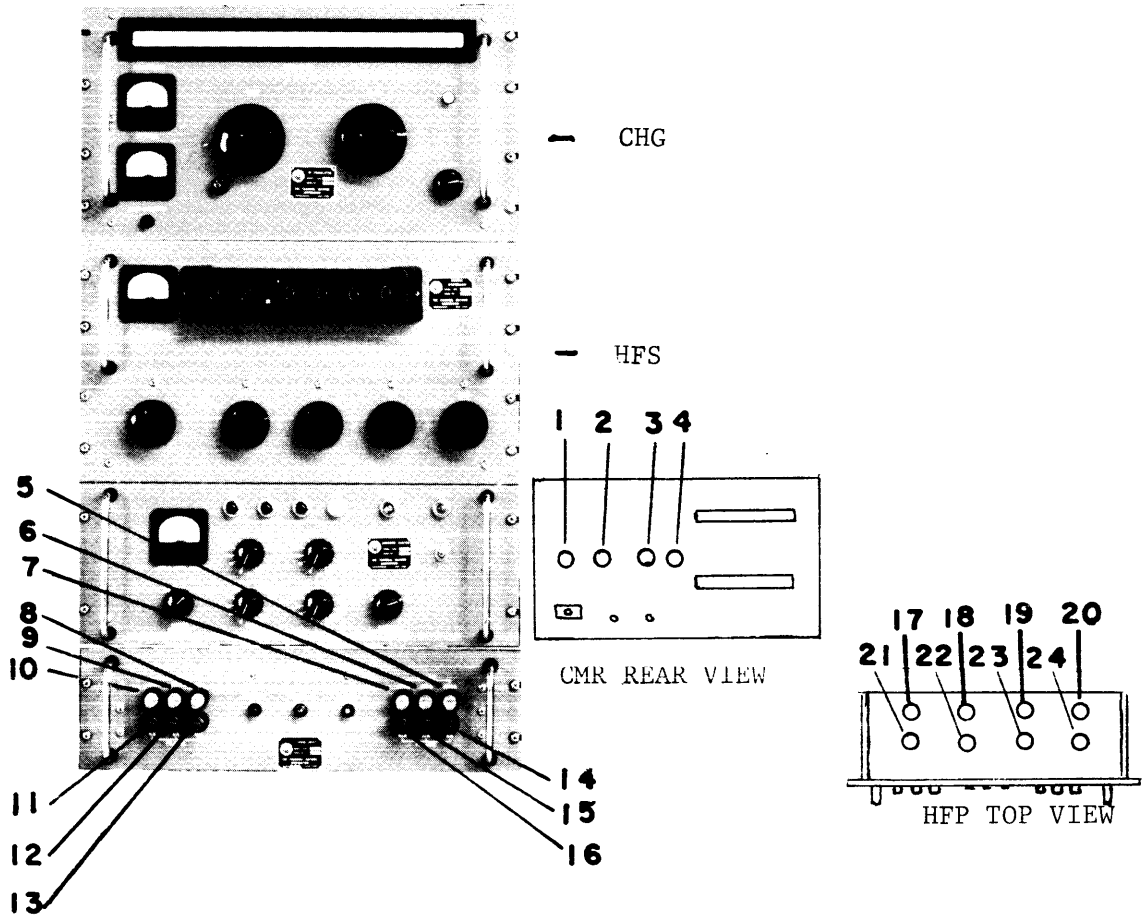

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Figure 5-1. Fuse Locations