

★
UNCLASSIFIED

TECHNICAL MANUAL

for

93
/94

SIDEBAND SELECTOR
MODELS SBS-1 AND SBS-2

THE TECHNICAL MATERIEL CORPORATION
MAMARONECK, N Y. OTTAWA, ONTARIO

CHANGE NO. 1 SBS-1 and SBS-2



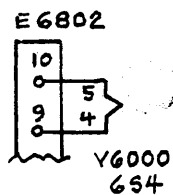
INSTRUCTION BOOK CHANGE NOTICE

Date 6/26/63

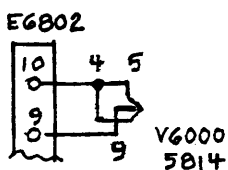
Manual affected: SBS-1 and SBS-2 IN -301

95/96
(a) FILAMENT WIRING CHANGE

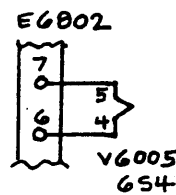
Figure II-8-1 Page II-8-1/II-8-2



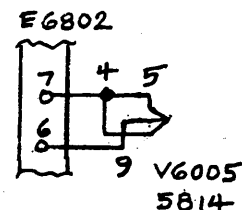
WAS



NOW

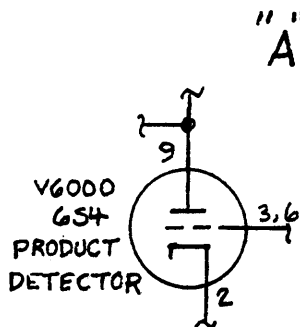


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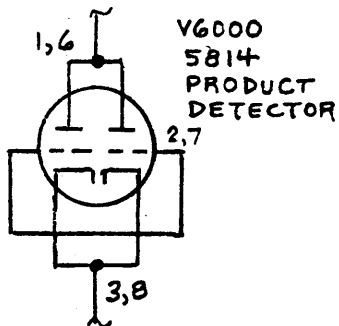


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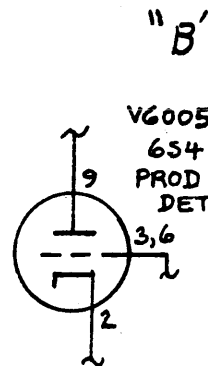
(b) Fig. II-8-1 Page II-8-3/II-8-4



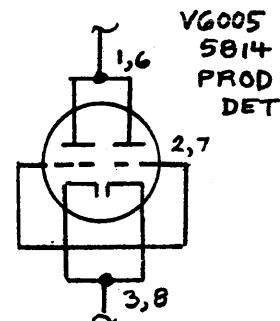
WAS



NOW



WAS



NOW

(c) Fig. II-4-5 Page II-4-9/II-4-10 Change V6000 from "6S4" to "5814" See "A" above

(d) Parts list Page II-7-7

Under description column for V6000 and V6005 change to read "medium-mu dual triode"; under TMC part no. column change "6S4" to "5814"

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Attn.: Director of Eng. Services.

CHANGE NO. 2 SBS-1 and SBS-2



INSTRUCTION BOOK CHANGE NOTICE

Date **2-26-63**

Manual affected: **SBS-1 and SBS-2** IN **-301**

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Page II 7-2

A 6000 under Description Column Change

"253.88625 kc; bandwidth, 250.225 to 257.500 kc"

to read "246.1375 kc; bandwidth 242.500 to 249.775 kc"

A 6003 under Description Column Change

"246.1375 kc; bandwidth 242.500 to 249.775 kc"

to read "253.88625 kc; bandwidth 250.225 to 257.500 kc"

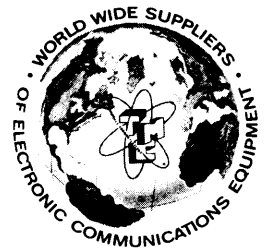
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CHANGE NO. 3



INSTRUCTION BOOK CHANGE NOTICE

Date September 30, 1963

Manual affected: Sideband Selector Models SBS-1 and SBS-2 IN -301

Figure II-8-1, Sheet 1, page II-8-1/II-8-2

change J6804 250 KC IF Input to read

"J6804 250 KC IF Output"

page II-7-15

Y6200 Change Part No. from "CR-27/U - .705P" to
"CR-47/U - .705P"

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/100

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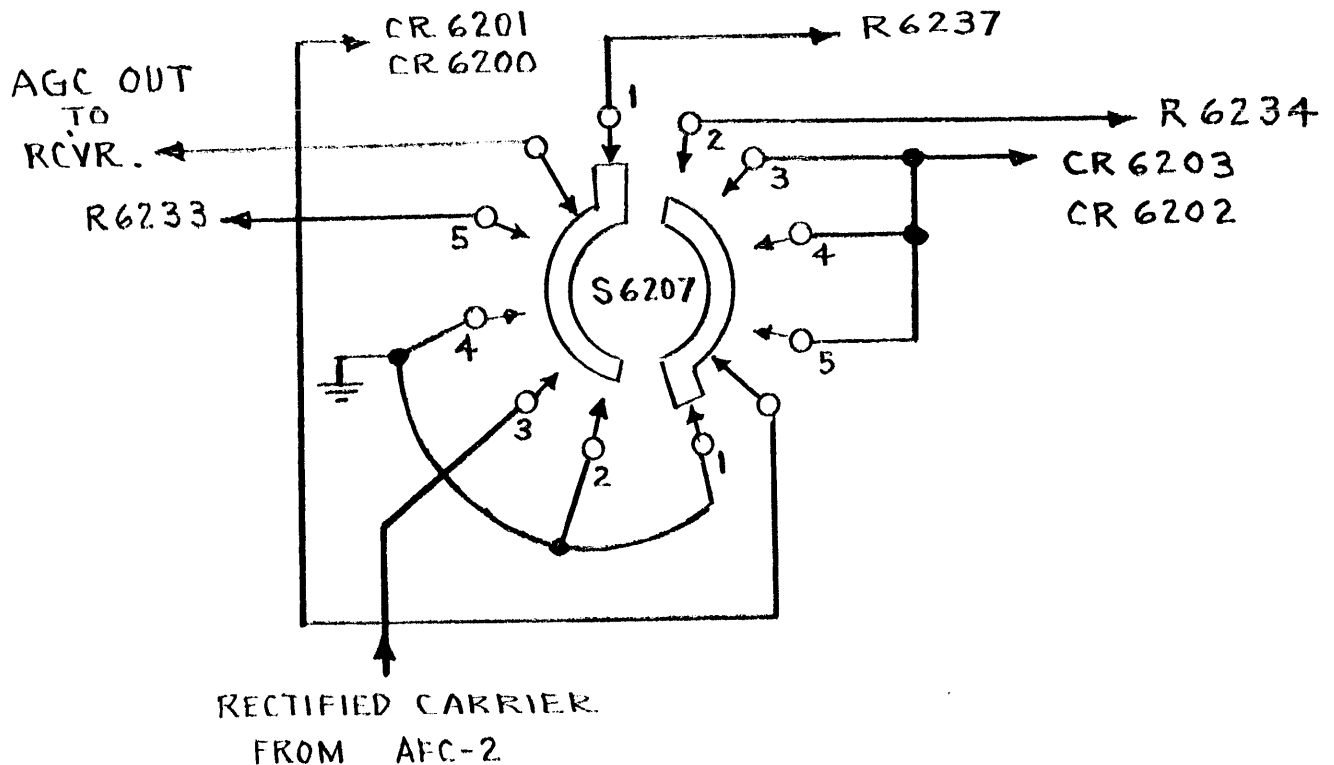


INSTRUCTION BOOK CHANGE NOTICE

Date October 7, 1963

Manual affected: Sideband Selector Models SBS-1 and SBS-2 IN -301

page II-4-7 Figure II-4-4 AGC Comparator, Simplifier Schematic
 Wiper contact connected to AGC output should be shown touching
 left hand rotor segment of S6207 as illustrated:



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CHANGE NO. 5



INSTRUCTION BOOK CHANGE NOTICE

Date October 8, 1963

Manual affected: Sideband Selector Models SBS-1 and SBS-2 IN -301

(a) Page II-1-3

Add to Specifications for Input Power 115/230 volts ac, 50/60 cps, single phase approximately "240" watts.

(b) Page II-3-2 Table II-3-2 SBS-1,2 Operation Chart; to Step 8 add

"Note:

AGC manual control adjustment. With antenna disconnected and with no input, set AGC Manual Control (12) so that the receiver RF level meter starts to indicate internal receiver noise."

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CHANGE NO. 6 SBS-1 and SBS-2



INSTRUCTION BOOK CHANGE NOTICE

Date November 1, 1963

Manual affected: Sideband Selector Models SBS-1 and IN -301
SBS-2

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- (a) Page II-6-3 Table II-6-3 title Change to read "705 KC" instead of "750 KC"
 - (b) Page II-6-3 Table II-6-4 Step 1 Change reference to IN LEVEL control R6800 to read fully "clockwise" instead of "counterclockwise"
 - (c) Page II-6-3 Table II-6-4 Step 4 Change last sentence to read "Connect an AC VTVM to J6804"
 - (d) Page II-6-4 Table II-6-4 Step 5 Change last sentence to read "Disconnect the RF VTVM"

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Figure II-1-1. Sideband Selector SBS-1, 2, Front Angle View

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SECTION 1

GENERAL DESCRIPTION

II-1-1. PHYSICAL DESCRIPTION.

The SBS is shown in figure II-1-1. The SBS is mounted on a standard width 19 inch panel for installation into an equipment rack. Physical dimensions are given in paragraph II-1-3. Dust covers are provided for the top and bottom of the unit. All switches, controls, meters, and indicators necessary for operation of the SBS are functionally grouped on the front panel. The channel A switches and meter are grouped at the left while those for channel B are grouped at the right. Controls, switches and indicators common to operation of both channels are grouped in the center of the panel. Located at the rear of the SBS is a self-contained blower cooled regulated power supply. The power supply is removable, as a unit, for maintenance purposes. All vacuum tubes are made readily accessible by removing the top dust cover.

II-1-2. FUNCTIONAL DESCRIPTION.

The SBS accepts AM, CW, MCW, and SSB (independent or double) signals from the receiver IF and reduces them to audio. Single or two channel operation is possible. The 455 kc (SBS-1) or 1750 kc (SBS-2) IF signal from the receiver may be applied to either the high impedance or low impedance inputs of the mixer stage. The mixer converts the incoming IF frequency to 250 kc IF frequency by beating it with a 705 kc (SBS-1) or 2 mc (SBS-2) signal provided by a crystal controlled local oscillator. When the SBS is used in conjunction with the AFC-2, 3 the frequency controlled oscillator in the AFC is used in place of the local oscillator. Selection of the conversion oscillator is made by a switch on the front panel. The 250 kc IF signal provided by the mixer is amplified and applied to four separate IF amplifiers.

Selection of bandwidth and upper and lower sidebands is accomplished by a filter in the input of each IF amplifier and a switching arrangement at the output of the IF amplifiers. By this arrangement, upper or lower sidebands of 3.5 kc or 7.5 kc bandwidth may be

connected to either channel A or channel B. In addition, the lower and upper sideband signals are applied to separate IF OUT amplifiers whose outputs supply channel A and B IF signals to jacks located on the rear panel.

Incorporated into each IF strip is an AGC amplifier which provides agc voltage to control the gain of the IF amplifier and also supplies an agc voltage to an agc comparator circuit. The agc voltage may be obtained from a channel A or channel B signal, from the carrier (when the SBS is used in conjunction with an AFC unit), from channels A and B together, or by manual control. During channel A and B operation the comparator compares the agc voltage from each channel and selects the stronger voltage to be used for agc. The agc voltage from the comparator is applied to the 250 kc mixer amplifier, receiver, and to terminals on a terminal strip on the rear panel of the SBS. Selection of slow, medium, or fast agc response is provided.

By a switching arrangement at the input of the audio section, the signals from the lower and upper sideband IF amplifiers are selected for detection, by a diode detector network for AM signals, or a product detector for CW and SSB signals. The same switch also connects the output of the proper detector to the input of the audio amplifier.

The audio amplifiers for channels A and B each provide a 600 ohm high or low level line output to terminals on the terminal strip at the rear of the SBS. Output level of each channel is monitored by separate VU meters located on the front panel. Channel A and channel B outputs are also available for headset monitoring by means of a jack on the front panel.

Power for the SBS is supplied by a self-contained power supply which provides electronically regulated +200-volts d-c for B+ circuits and zener regulated -105-volts d-c for operation of the agc circuit. Three separate windings on the power transformer supply 6.3-volts a-c for operation of the vacuum tube filaments.

II-1-3. TECHNICAL SPECIFICATIONS OF SBS-1 AND SBS-2.

TYPES OF RECEPTION:	SSB or ISB (with full carrier or with total carrier suppression) AM, MCW, or CW.
SIDEBAND SELECTION:	Upper sideband, lower sideband, or independent sideband, by means of front panel switch.
INPUT FREQUENCY:	455 kc for SBS-1 and 1750 kc for SBS-2 (others available on special order).
INPUT IMPEDANCE:	50 ohms nominal, also Hi-Z.
CARRIER REINSERTION:	A. Reconstructed carrier. B. Local carrier or crystal oscillator.
CARRIER SUPPRESSION:	Will operate with FULL carrier suppression.
INPUT VOLTAGE RANGE:	50 ohms: 0.001 to 1.0 volts; Hi-Z: up to 10 volts.
UNWANTED-SIDEBAND REJECTION:	Undesired sidebands, removed more than 250 cps from the carrier, are attenuated at least 60 db. 112
INBAND DISTORTION:	-45 db.
CROSS CHANNEL DISTORTION:	-60 db.
AGC SYSTEM:	The SBS has provisions to control the receiver gain from an AGC voltage derived from upper sideband, lower sideband, or carrier. The AGC system has a fast attack time and an adjustable release time.
IF BANDWIDTHS:	A. Normally supplied: 1. ± 1.5 -db 250- to 7500-cps, USB 2. ± 1.5 -db 250- to 7500-cps, LSB 3. ± 1.5 -db 250- to 3300-cps, USB 4. ± 1.5 -db 250- to 3300-cps, LSB
	B. Available on special order: 1. ± 1.5 -db 250- to 6000-cps, USB 2. ± 1.5 -db 250- to 6000-cps, LSB 3. ± 1.5 -db 1-kc, symmetrical 4. ± 1.5 -db 6-kc, symmetrical 5. ± 1.5 -db 15-kc, symmetrical
AUDIO OUTPUTS:	A. High Level: Two 0- to 1-watt balanced 600-ohm audio channels.
	B. Low Level: Two 0- to 1-milliwatt balanced 600-ohm audio channels.
AUDIO RESPONSE:	The amplitude response of the audio amplifier is ± 1.5 db over the frequency range of 100 to 22,000 cps.
AUDIO DISTORTION:	-45 db.
METERING	Independent meters are provided to monitor each low-level 600-ohm channel.
MONITORING:	A separate monitoring circuit is provided to permit headphone monitoring of either audio channel without disturbing the audio output circuits.
HUM OUTPUT:	-50 db.
ENVIRONMENT:	Designed for continuous duty within a temperature range of 0 to 50 degrees C and any value of humidity up to 90%.

II-1-3. TECHNICAL SPECIFICATIONS OF SBS-1 AND SBS-2. (C nt.)

ORIENTATION:	Any.
INPUT POWER:	115/230 volts ac, 50/60 cps, single phase, approximately watts.
UNCRATED DIMENSIONS:	7" h x 19" w x 18-1/8" d.
CRATED DIMENSIONS:	14-5/8" h x 25-1/2" w x 21-5/8" d.
UNCRATED WEIGHT:	58 lbs.
SHIPPING WEIGHT AND CUBE:	88 lbs. and 6.2 cu.ft.
COMPONENT AND CONSTRUCTION:	All equipment manufactured in accordance with JAN/MIL specifications wherever practicable.

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TABLE II-1-1. VACUUM TUBE COMPLEMENT

SYMBOL	TYPE	FUNCTION
V101	6BA6	IF amplifier
V102	6CE5	IF amplifier
V103	6CE5	Agc amplifier
V6000	6S4	Channel A product detector
V6001	12AX7	Channel A audio amplifier
V6002	12AX7	Channel A audio amplifier and phasesplitter
V6003 V6004	6AK6 6AK6	Channel A power amplifiers
V6005	6S4	Channel B product detector
V6006	12AX7	Channel B audio amplifier
V6007	12AX7	Channel B audio amplifier and phasesplitter
V6008 V6009	6AK6 6AK6	Channel B power amplifiers
V6200	6S4	Mixer
V6201	6BA6	250 kc IF amplifier
V6202	6AW8	705 kc oscillator and amplifier
V6203	6AW8	250 kc carrier oscillator and amplifier
V6204	6BA6	Channel A IF out amplifier
V6205	6BA6	Channel B IF out amplifier
V6206	12AX7	Agc comparator
V7001	6336A	Series regulator
V7002	6AH6	Regulator control

SECTION 2 INSTALLATION

II-2-1. INITIAL INSPECTION.

Each SBS has been calibrated and tested at the factory before shipment. Upon arrival at the operating site, inspect the 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". Although the carrier is liable for any damage to the equipment, Technical Materiel Corporation will assist in describing and providing for repair or replacement of damaged items.

The equipment is shipped with all tubes and other plug-in components installed. Check that all such components are properly seated in their sockets.

II-2-2. 115- VS. 230-VOLT POWER SUPPLY CONNECTIONS.

SBS's power supply is designed for 115- or 230-volt, 50- or 60-cps, single-phase power; it is factory-wired for 115 volts. If 230-volt operation is required, minor wiring changes to SBS's power supply section are necessary. These are shown in figure II-2-1. The 6-amp fuse should be replaced with a 3-amp fuse for 230-volt operation.

II-2-3. MECHANICAL INSTALLATION.

a. The SBS is equipped with a standard 19 inch rack panel but due to its extra depth it will not fit into a standard rack cabinet. Approximately 20 inches of clearance from the back of the panel to the rear of the rack is required. Figure II-2-2 is the outline dimension drawing of the SBS.

b. In some instances, according to the user's requirements, the SBS is supplied with slides for mounting in a suitable equipment rack.

CAUTION

Under no circumstances should the SBS be supported by the front panel alone.

c. To install a SBS without slides place the unit into a suitable housing and secure the front panel to the housing with screws.

CAUTION

When handling the SBS take care not to push in the screen on the blower housing. If this screen is pushed in it will bind the blower motor causing it to burn out when power is applied.

d. To install a SBS equipped with slides, proceed as follows:

(1) Set the SBS in position on the tracks. Note: It may be necessary to hold the tracks in the extended position while positioning the component.

(2) Slide the SBS on the tracks until the release buttons catch.

(3) Press the release buttons and push the SBS into the equipment rack until the release buttons engage the holes in the equipment.

(4) Secure the front panel to the equipment rack with screws.

II-2-4. ELECTRICAL INSTALLATION.

Figure II-2-3 illustrates the interconnections, input connections and output connections for the SBS. The interconnections shown are for connections to an AFC-2 or AFC-3 as used in the SBC-1 or SBC-2 systems. No connection is made to jack J7004.

a. Power is applied to the SBS immediately upon connection of the line cord to a suitable power source. Place the POWER switch in the STANDBY position and allow the SBS to warm-up for 24 hours before placing it in operation. This warm-up period is necessary in order for the temperature of the crystal ovens to stabilize. The connections described in the following paragraphs may be accomplished while the SBS is warming up.

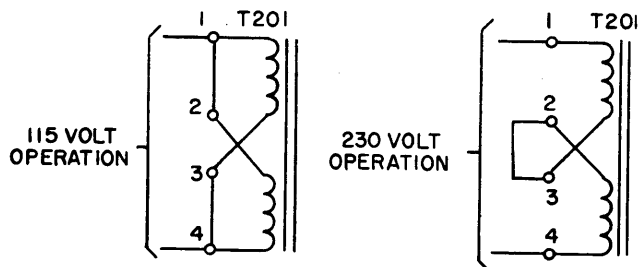


Figure II-2-1. Installation Diagram Showing 115- Vs. 230-Volt Power Supply Connections

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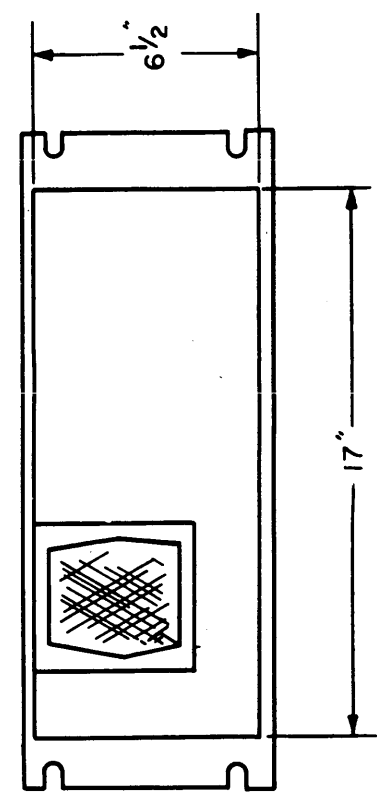
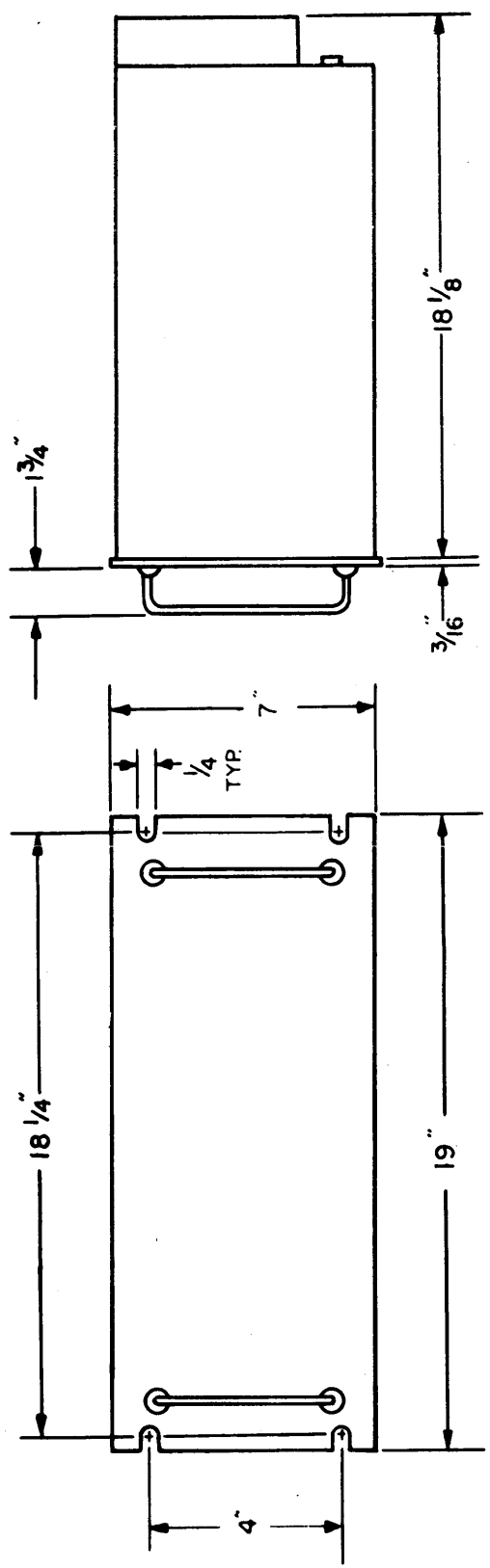


Figure II-2-2. Outline Dimensional Drawing, SBS-1, 2

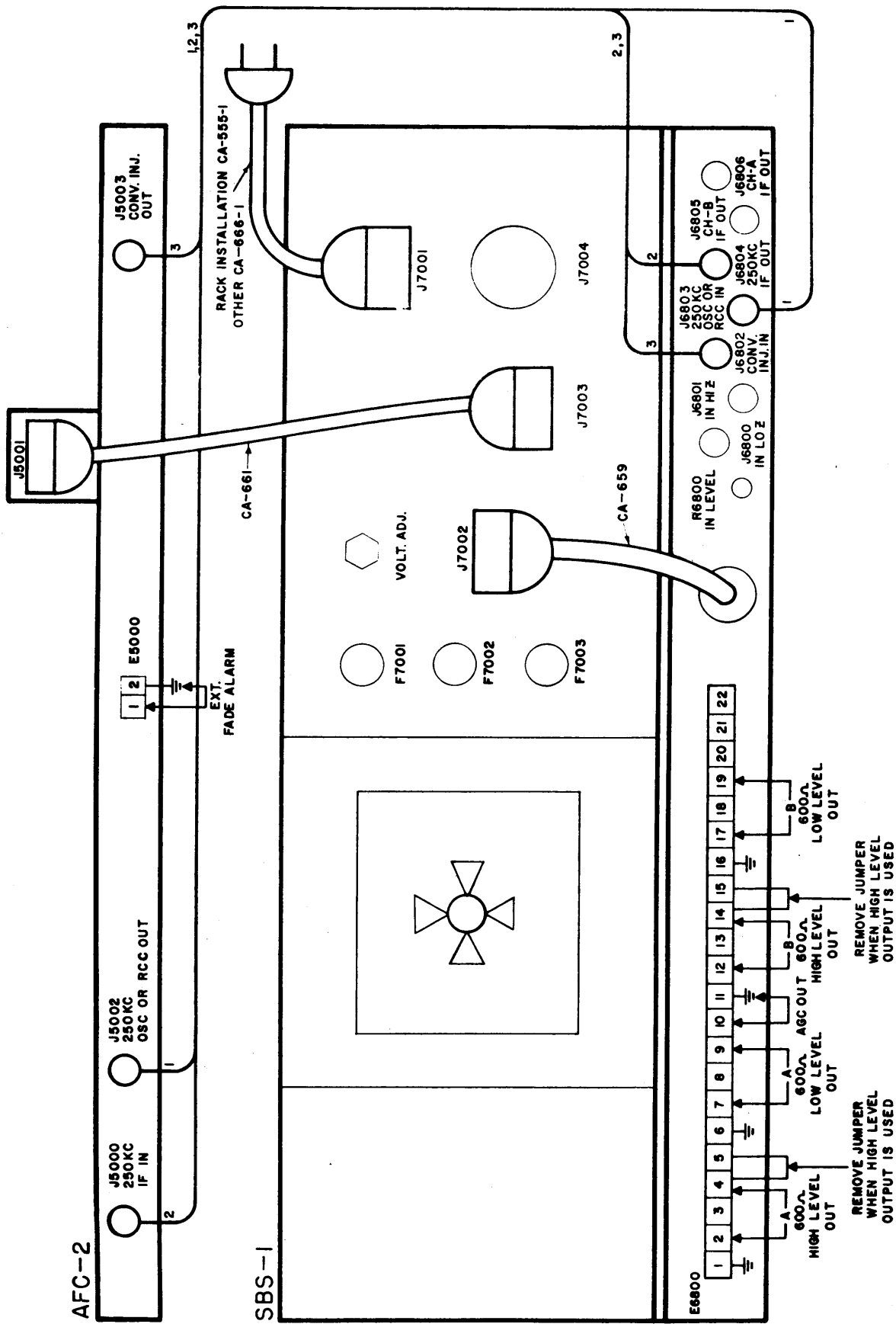


Figure II-2-3. Interconnection Diagram, SBS-1, 2

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b. High impedance and low impedance inputs (jacks J6801 and J6800 respectively) are provided on the rear apron to accept the 455 kc (SBS-1) or 1.75 mc (SBS-2) IF signals from the receiver.

c. Jacks CH-A IF OUT J6806 and CH-B IF OUT J6805 provide channel A and channel B outputs from the 250 kc IF amplifiers. The outputs from these jacks must be connected to an external detection and audio system in order to provide intelligence.

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d. Terminal strip E6800 provides audio and agc output connections for the SBS. Channel A and channel B each are provided with a 600 ohm high level and low level output. The high level output provides 1 watt of audio (at OVU) while the low level output provides 1 milliwatt of audio at OVU. Only the low level or high level output may be used at any one time. It should be noted that when the high level output connections are used, the jumpers between terminals 4 and 5 and terminals 14 and 15 of E6800 must be removed. Terminals 10 and 11 of E6800 provide an output connection for the agc voltage developed in the SBS. Terminals 20, 21, and 22 are not used.

II-2-5. INITIAL ADJUSTMENT.

Before any SBS unit is shipped, it is aligned and thoroughly checked against the manufacturers specifications. However, checks for the proper setting of

the IN LEVEL control R6800 on the rear apron and the two LEVEL ADJUST controls on the front panel should be made.

Perform the procedure for setting the IN LEVEL and LEVEL ADJUST controls as follows:

- (1) Set the CHANNEL A IF BANDWIDTH KC switch to LSB 3. 5.
- (2) Set the CHANNEL A IF BANDWIDTH KC switch to USB 3. 5.
- (3) Set AGC SELECTOR switch to CH-A-B.
- (4) Set the IN LEVEL and the two LEVEL ADJUST controls to approximately mid-position.
- (5) Tune the receiver to a weak AM signal.
- (6) Adjust the IN LEVEL and LEVEL ADJUST controls until the desired line operating level is obtained.

NOTE

The SBS output level may be adjusted without being connected to a 600 ohm line by connecting a 1 watt 600 ohm resistor between terminals 7 and 9 and between terminals 17 and 19 on terminal board E6800.

SECTION 3 OPERATOR'S SECTION

II-3-1. GENERAL.

Operation of the SBS has been designed for a high degree of versatility. Each channel has identical controls which are functionally grouped. By means of the IF Bandwidth switches, either lower or upper sideband may be switched to channel A or B use. For example, lower sideband signals may be fed to channel A or B or the upper sideband signals may be fed to channel A or B. This type of versatility is helpful especially during independent sideband operation where voice information may be transmitted on one sideband while multichannel information may be transmitted on the other sideband. In this manner sideband orientation of information need not be maintained at the transmitter.

II-3-2. OPERATOR'S INSTRUCTIONS.

Table 3-1 provides equivalent control designations for the operating controls shown in figure II-3-1 and the component designations of figure II-8-1. Table II-3-2 is an operating chart to be used in conjunction with figure II-3-1 and table II-3-1.

II-3-3. OPERATOR'S MAINTENANCE.

The operator should note general condition of panel switches, observe whether the panel indicator lamps light, and check the condition of the fuses as well as that of all the tubes.

If the STANDBY or POWER ON lamps or all the tube filaments fail to glow, check the lamps and fuse F7002. F7002 is in series with the primary of the AC power supply transformer and is a "quick-acting" type for protecting the unit from overload due to shorts in the SBS.

CAUTION

Do not replace the fuse with one of higher rating. If a fuse burns out immediately after replacement, do not replace it a second time until the trouble has been located and corrected.

If, while the majority of tube filaments glow, any tube filament fails to glow, remove the questionable tube and test it with a reliable tube tester. Reinstall tube shields after testing or replacing tubes.

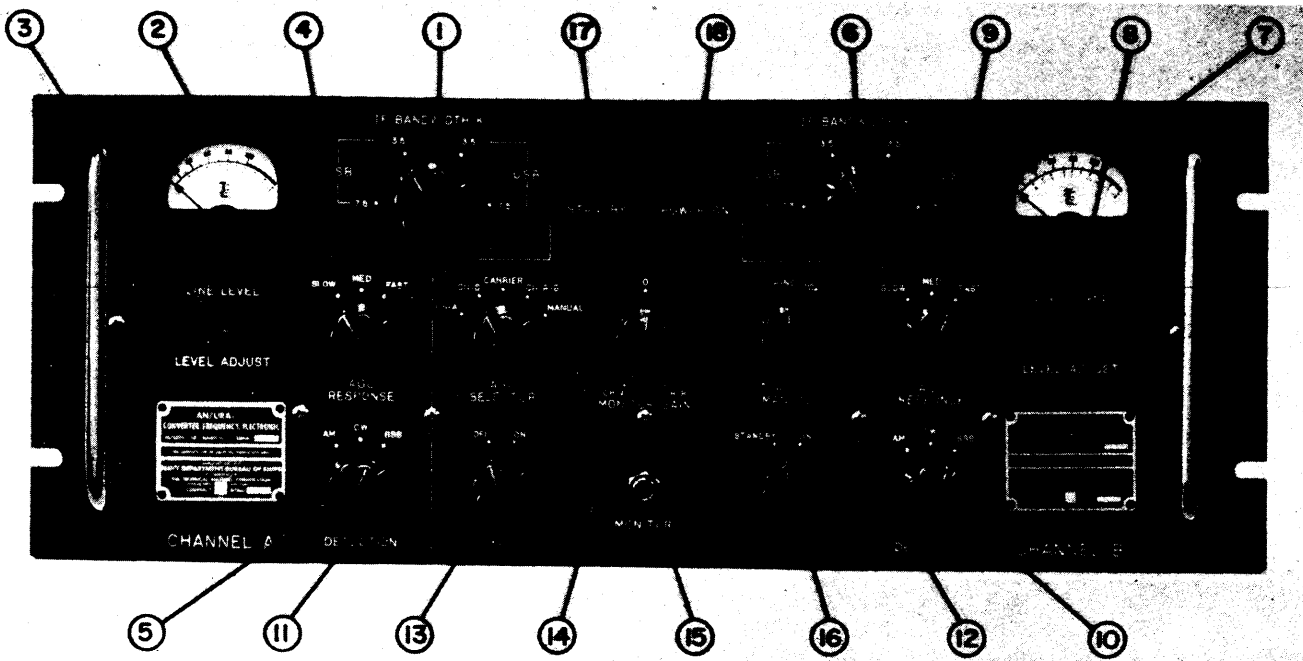


Figure II-3-1. Panel View of SBS-1, 2, Showing Operating Controls

**TABLE II-3-1. TABLE OF EQUIVALENT CONTROL
DESIGNATIONS.**

Serial Designation	Panel Designation	Component Reference Designation on Overall Schematic (See section 8)
1	CHANNEL A IF BANDWIDTH KC switch	S6201
2	CHANNEL A LINE LEVEL meter	M6200
3	CHANNEL A LEVEL ADJUST control	R6237
4	CHANNEL A AGC RESPONSE switch	S6203
5	CHANNEL A DETECTION switch	S6206
6	CHANNEL B IF BANDWIDTH KC switch	S6202
7	CHANNEL B LINE LEVEL meter	M6201
8	CHANNEL B LEVEL ADJUST control	R6234
9	CHANNEL B AGC RESPONSE switch	S6204
10	CHANNEL B DETECTION switch	S6205
11	AGC SELECTOR switch	S6207
12	AGC MANUAL control	R6233
13	AFC switch	S6200
14	MONITOR GAIN control	R6244
15	MONITOR jack	J6202
16	POWER switch	S6208
17	STANDBY indicator lamp	I6200
18	POWER ON indicator lamp	I6201

TABLE II-3-2. SBS-1, 2, OPERATION CHART.

STEP	CONTROL	OPERATION	PURPOSE
1	POWER switch (16)	Turn ON (POWER ON indicator (18) lights: STANDBY indicator (17) goes out)	Energizes SBS
2a, b	a. CHANNEL A IF BANDWIDTH KC switch (1)	Turn to desired channels and bandwidths	Determines audio channels and bandwidths
	b. CHANNEL B IF BANDWIDTH KC switch (6)	Turn to desired channels and bandwidths	Determines audio channels and bandwidths
3	AFC switch (13)	Turn to ON	Channels 705-kc output of AFC unit to mixer of SBS (6S4) and 250-kc output to product detectors

TABLE II-3-2. SBS-1, 2, OPERATION CHART. (C nt.)

STEP	CONTROL	OPERATION	PURPOSE
4a, b	a. CHANNEL A DETECTION switch (5) b. CHANNEL B DETECTION switch (10)	Turn to desired mode of transmission	Channels AM or product detector's output to audio output
5a, b	a. CHANNEL A AGC RESPONSE switch (4) b. CHANNEL B AGC RESPONSE switch (9)	Normally turn to MED NOTE On fast deep fades, AGC RESPONSE switches may require adjustment to maintain constant readings on CHANNEL A LINE LEVEL meter (2) and CHANNEL B LINE LEVEL meter (7)	
6	MONITOR GAIN control (14)	Turn clockwise or counterclockwise from 0	- Alters gain on phones plugged into MONITOR jack (15)
7a, b	a. CHANNEL A LEVEL ADJUST control (3) b. CHANNEL B LEVEL ADJUST control (8)	Turn screwdriver adjustment in order to zero CHANNEL A LINE LEVEL meter (2) on zero input Turn screwdriver adjustment in order to zero CHANNEL B LINE LEVEL meter (7) on zero input	Line level meters track audio levels
8	AGC SELECTOR switch (11)	Select channel to provide AGC: Set at CH-A when channel A only is in use; set at CH-B when channel B only is in use; set at CARRIER when carrier is strong; set at CH-A-B when both channels are in use; if manual AGC is desired, set at MANUAL and operate AGC MANUAL control (12)	Modifies AGC action

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SECTION 4

PRINCIPLES OF OPERATION

II-4-1. INTRODUCTION.

The following descriptions pertain to the SBS-1 and the SBS-2. Where the information pertains to both, reference is made to SBS unit. Where the information pertains to the SBS-1 or the SBS-2 only, it is so referenced. To supplement the individual schematic diagrams accompanying each description, reference should be made to the overall schematic diagram figure II-8-1.

II-4-2. 250KC MIXER CIRCUIT.

As shown in figure II-4-1 the 250 kc mixer has a low impedance and high impedance input to accept the receiver IF (455 kc for SBS-1 and 1.75 mc for SBS-2). For the purpose of this discussion a receiver IF frequency of 455 kc is assumed. The 455 kc IF is applied to the grid of V6200 and beat with a 705 kc signal from the 705 kc local conversion oscillator (refer to paragraph II-4-3) to produce a 250 kc IF frequency. The 250 kc IF is tuned and coupled to 250 kc amplifier V6201 by transformer T6200. Amplified 250 kc IF from V6201 is applied to the lower and upper sideband IF amplifiers through transformer T6201. In order to compensate for varying signal levels, amplifier V6201 has agc voltage applied to its control grid through the secondary of T6200. Placing AFC ON-OFF switch S6200 in the ON position disconnects the local 705 kc conversion oscillator from the mixer and connects the frequency controlled 705 kc conversion oscillator located in the AFC unit.

II-4-3. 250KC AND 705KC OSCILLATORS.

The 250 kc and 705 kc oscillators are identical in operation, differing only in the values of certain circuit components. As shown in figure II-4-2 the oscillators are crystal controlled and are provided with fine frequency adjustments to adjust the oscillator frequency (C6231 for the 250 kc oscillator and C6214 for the 705 kc oscillator) and also with degeneration adjustments for setting the output level. The oscillators are provided with an amplification stage which supplies a 1-volt signal at the secondary of the output transformer. Jacks are provided on the rear of the SBS unit for supplying a signal from an external oscillator in place of the internal 705 kc or 250 kc oscillator. In the SBS-2 a 2 mc. crystal is substituted for the 705 kc crystal to provide operation of the SBS with a 1.75 mc. IF input.

II-4-4. 250KC LOWER AND UPPER SIDEBAND IF AMPLIFIERS.

Four 250 kc IF amplifiers are incorporated in the SBS unit; one each for lower and upper sideband am-

plification providing a 7.5 kc bandwidth and one each for providing a bandwidth of 3.5 kc. Selection of lower or upper sideband and bandwidth is accomplished by a selective filter (Z1) in the input of each IF amplifier. Except for the filter, operation and circuitry of the four IF amplifiers is identical. As shown in figure II-4-3, the 250 kc IF amplifier has two tuned amplifier stages and a agc amplifier. The IF output is coupled out to jack J102 by a coupling capacitor from one secondary winding of IF output transformer T103, while the signal for the agc amplifier is derived from a second secondary winding. Output level of the IF amplifier and agc voltage is set by adjusting AVC DELAY ADJ control R116.

II-4-5. AGC COMPARATOR.

As shown in figure II-4-4 AGC comparator V6206 receives agc voltage from channels A and B. V6206 is a dc amplifier operating as a cathode follower to supply AGC voltage for the 250 kc IF amplifier (V6201) and receiver. With AGC SELECTOR switch S6207 in CH-A or CH-B position an agc signal is applied to V6206 from the channel A or channel B sideband IF amplifier. Placing S6207 in the CARRIER position applies a rectified voltage from the carrier in the AFC-2 to V6206 and allows the carrier to control the agc voltage. In the CH-A-B position agc voltage is applied to V6206 from channels A and B. The two voltages are compared and the stronger voltage is applied as agc out voltage. Manual agc operation is obtained by placing S6207 to MANUAL. Slow, medium, or fast agc response may be selected by S6203 for channel A and S6204 for channel B.

II-4-6. AUDIO SECTION.

Two identical audio circuits are incorporated into the SBS unit; one detects and amplifies channel A signals while the other performs the same function for channel B signals. For purposes of this discussion the action of only one channel will be described. Figure II-4-5 is a simplified schematic of the audio circuit.

Two detectors are used in the detection portion of each audio circuit. Detection of AM signals is accomplished by diode CR6001 and its associated circuitry. CW and SSB signals are detected by product detector V6005. The specific type of detection is selected by DETECTION switch S6205. In the AM position, (position 1) switch S6205 connects the 250 kc IF output from T103 (via IF BANDWIDTH KC switch S6201) to the primary T6002 and connects the output of the diode detector circuit to the input of the first

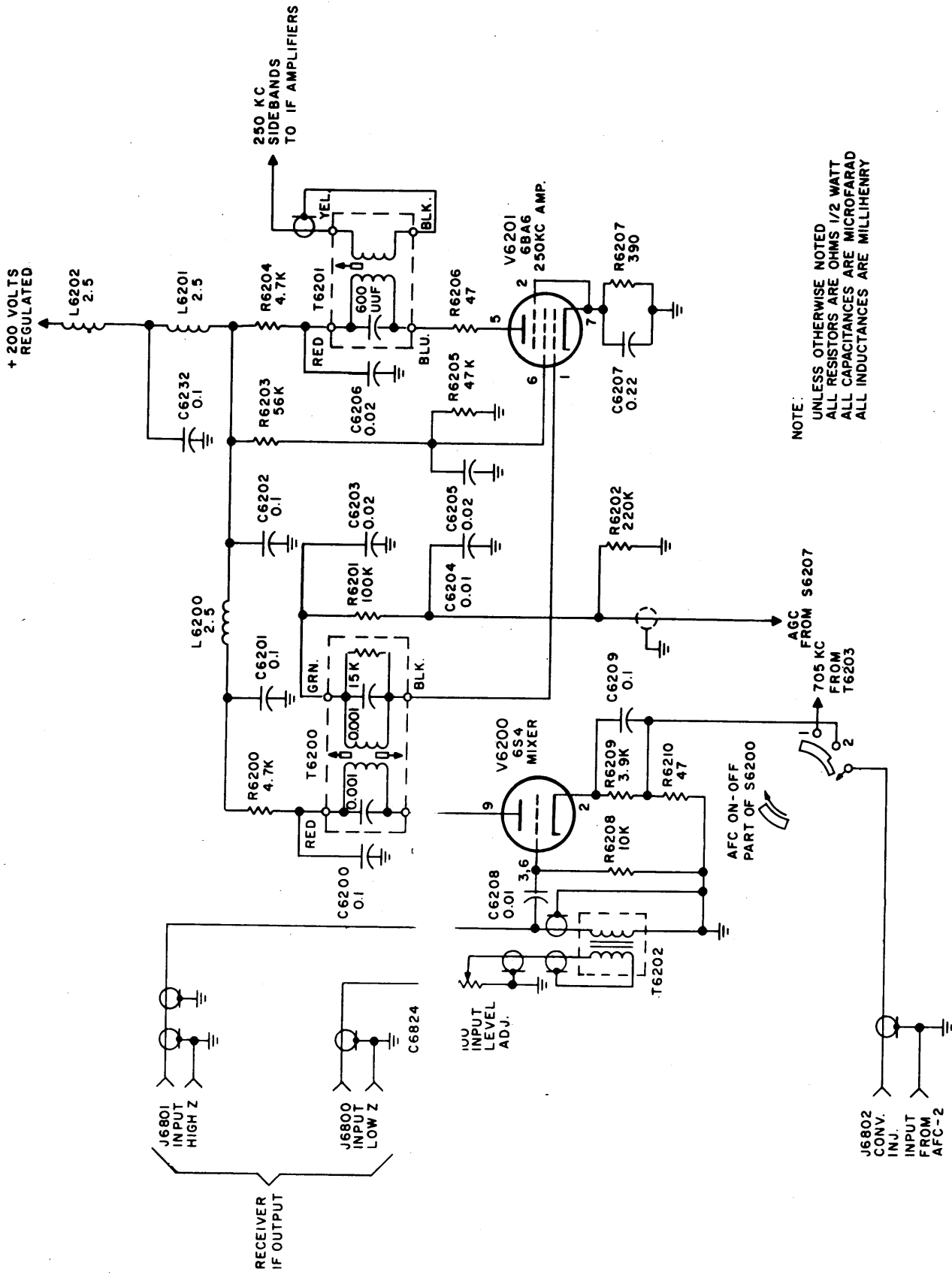
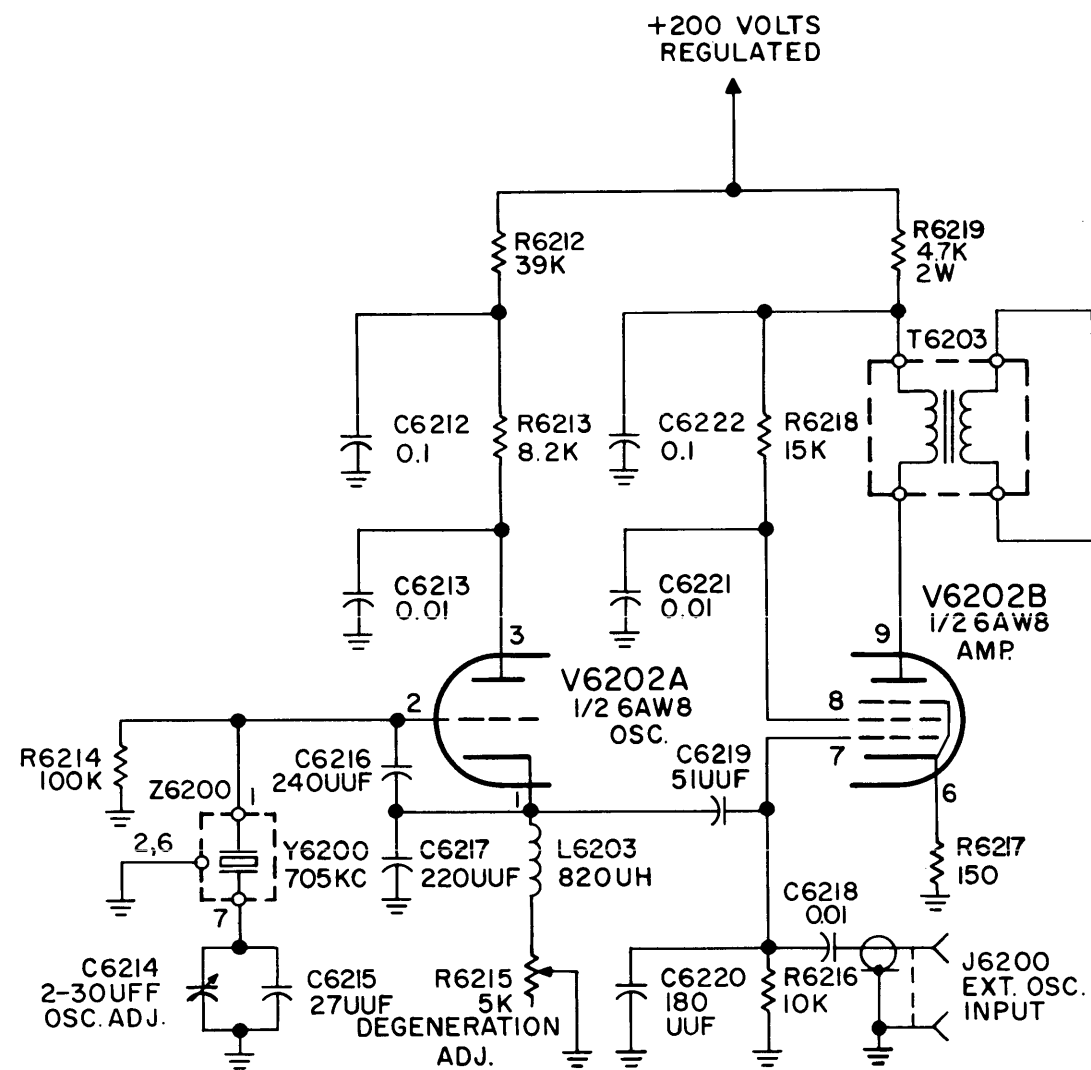
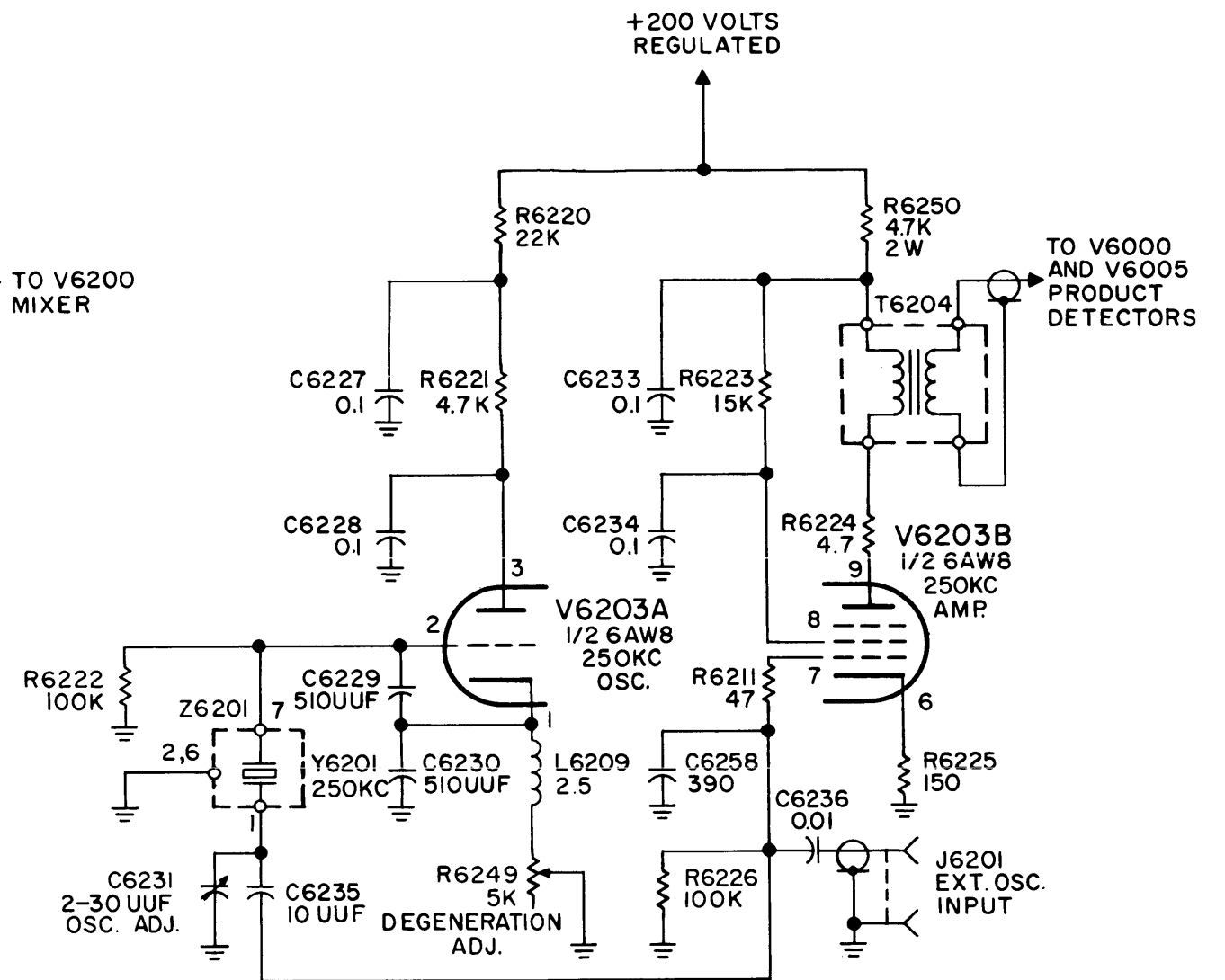


Figure II-4-1. 250 KC Mixer, Simplified Schematic

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705 KC OSCILLATOR



250 KC OSCILLATOR

NOTE:
UNLESS OTHERWISE NOTED: 1. ALL RESISTORS ARE OHMS, 1/2 WATT
2. ALL CAPACITANCES ARE MICROFARAD
3. ALL INDUCTANCES ARE MILLIHENRY

Figure II-4-2. 250 KC and 705 KC Oscillators, Schematic Diagrams

