



★  
TECHNICAL MANUAL

*for*

# RECEIVER CONTROL

## MODEL LRCC-1



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

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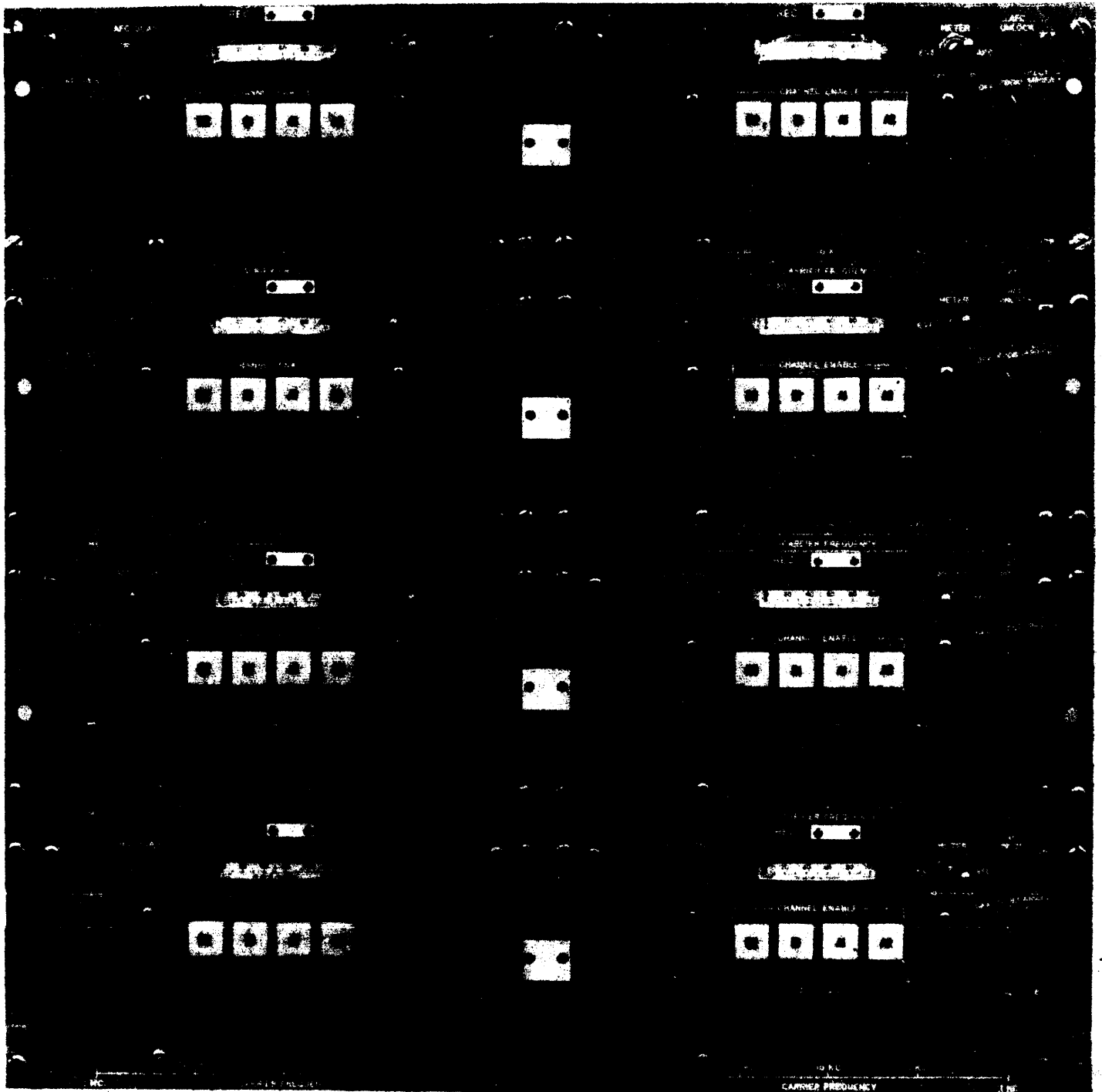
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RECEIVER CONTROL, MODEL LRCC-1

## FOREWORD

RECEIVER CONTROL , MODEL LRCC-1 is a remote control panel used to tune, monitor and control a TMC TechniMatiC\* receiver system comprising eight receivers.

The LRCC-1 comprises eight AX567 receiver control modules, each of which tune, monitor and control an individual receiver. A mounting panel A5037 is used to contain the eight AX567 receiver control modules for mounting into any standard 19 inch wide equipment rack or console.

### NOTE

Since the eight AX567 receiver control modules are all identical in construction and operation, the following text will discuss the operation and function of one AX567, being typical to all eight comprising the LRCC-1.

\*Trademark applied for.



# TABLE OF CONTENTS

<u>Paragraph</u>		<u>Page</u>
<b><u>SECTION 1 - GENERAL DESCRIPTION</u></b>		
1-1	Functional Description . . . . .	1-1
1-2	Physical Description . . . . .	1-1
1-3	Technical Specifications . . . . .	1-2
<b><u>SECTION 2 - INSTALLATION</u></b>		
2-1	Initial Inspection . . . . .	2-1
2-2	Mechanical Installation . . . . .	2-1
2-3	Electrical Installation . . . . .	2-4
<b><u>SECTION 3 - OPERATOR'S INSTRUCTIONS</u></b>		
3-1	General . . . . .	3-1
3-2	Operator's Instructions . . . . .	3-1
3-3	Operator's Maintenance . . . . .	3-4
<b><u>SECTION 4 - PRINCIPLES OF OPERATION</u></b>		
4-1	Introduction . . . . .	4-1
4-2	Circuit Description . . . . .	4-1
<b><u>SECTION 5 - MAINTENANCE</u></b>		
5-1	Preventive Maintenance . . . . .	5-1
5-2	Troubleshooting . . . . .	5-2
5-3	Repair and Replacement . . . . .	5-11
<b><u>SECTION 6 - PARTS LIST</u></b>		
6-1	Introduction . . . . .	6-1
<b><u>SECTION 7 - SCHEMATIC DIAGRAMS</u></b>		



# LIST OF ILLUSTRATIONS

<u>Figure</u>		<u>Page</u>
<u>SECTION 1 - INSTALLATION</u>		
1-1	Receiver Control Module, AX567 . . . . .	1-0
<u>SECTION 2 - INSTALLATION</u>		
2-1	Outline Dimensional Drawing . . . . .	2-2
2-2	Typical Mounting Technique . . . . .	2-3
<u>SECTION 3 - OPERATOR'S SECTION</u>		
3-1	Controls and Indicators . . . . .	3-9
<u>SECTION 4 - PRINCIPLES OF OPERATION</u>		
4-1	Functional Block Diagram, AX567 . . . . .	4-5
<u>SECTION 5 - MAINTENANCE</u>		
5-1	Gear Synchronization Check . . . . .	5-9
5-2	Switch and Connector Identification Diagram . . . . .	5-10
5-3	Parts Location . . . . .	5-12
5-4	Switch Assembly, A5014-1 . . . . .	5-13
<u>SECTION 7 - SCHEMATIC DIAGRAMS</u>		
	Schematic Diagram, AX567 . . . . .	7-1

# LIST OF TABLES

<u>Table</u>		<u>Page</u>
<u>SECTION 3 - OPERATOR'S SECTION</u>		
3-1	Controls and Indicators . . . . .	3-5
3-2	Tuning Procedure . . . . .	3-10
<u>SECTION 5 - MAINTENANCE</u>		
5-1	MC Switch Continuity Checks . . . . .	5-3
5-2	KC Switch Continuity Checks . . . . .	5-4
5-3	Resistance Measurements . . . . .	5-6
5-4	Switch Assembly A5014-1, Parts Breakdown . . .	5-14

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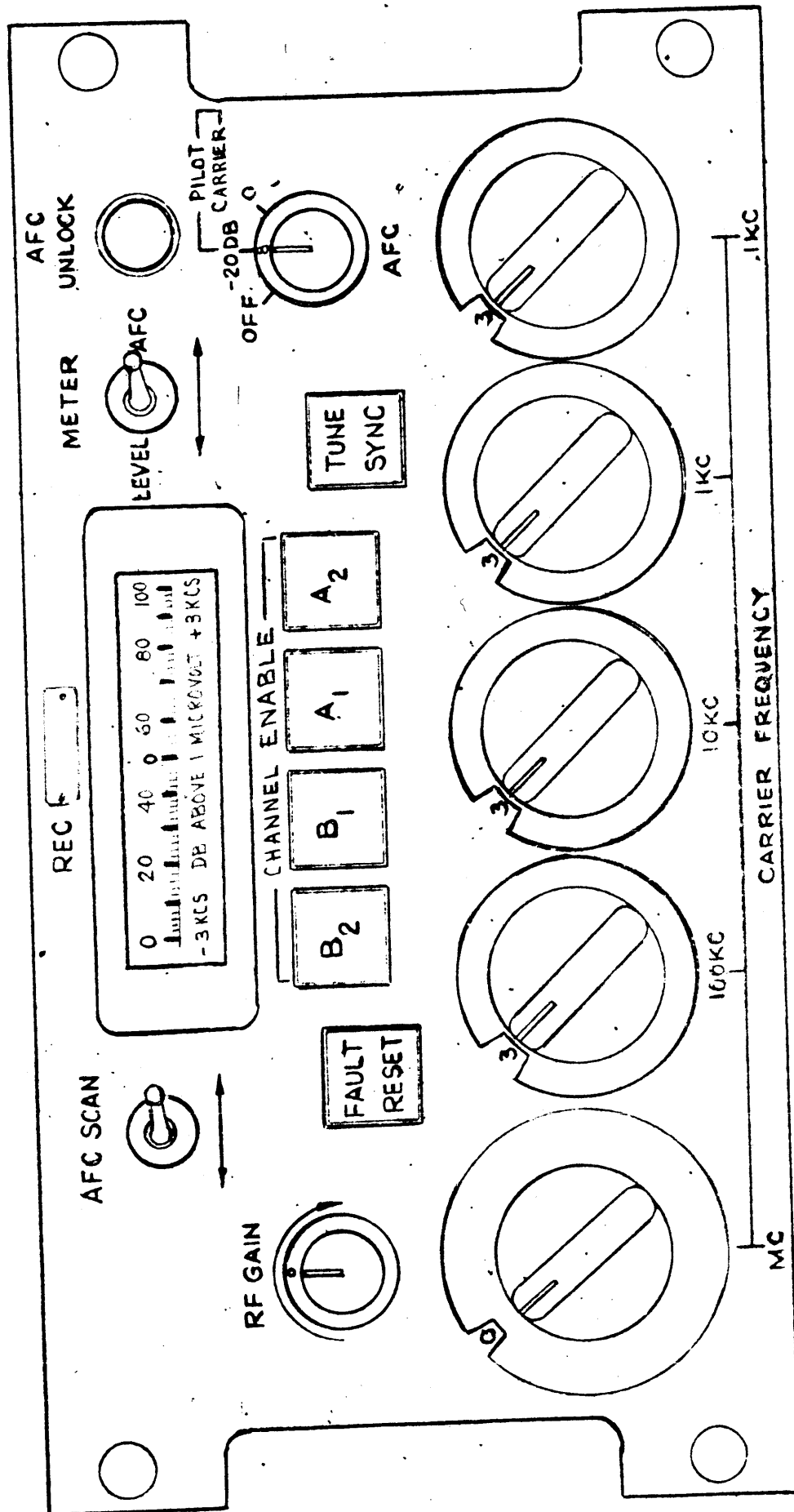


Figure 1-1. Receiver Control Module, AX567

## **SECTION 1 GENERAL DESCRIPTION**

### 1-1. FUNCTIONAL DESCRIPTION

Receiver Control Module, AX567 (figure 1-1), a modular component of RECEIVER CONTROL, MODEL LRCC-1, is a remote control tuning module used to tune, control and monitor a single receiver portion of a TMC TechniMatiC\* receiver system.

The AX567 routes the selected tuning data to the remote receiver system by means of interconnecting cables. Front panel controls, corresponding to the various receiver system modular unit controls, are tuned in the same manner as at the receiver system. This design effectively permits accurate fingertip tuning and control of a remotely located receiver system from a master control center or console.

### 1-2. PHYSICAL DESCRIPTION

Due to the compact design and construction of the AX567, a 9-15/32 inch wide by 4-47/64 inch high front panel is used. This compact design enables two AX567 units to be mounted side by side, on a specially designed mounting panel A5037, for mounting into any standard 19 inch wide equipment rack or console. The mounting panel A5037 is designed to support eight AX567 units or any other similar sized units. Figure 2-1 provides a complete outline dimensional drawing of the AX567 and its associated mounting panel A5037. Table 3-1, used in conjunction with figure 3-1, provides a description of the various controls and functions of the AX567.

\*Trademark applied for.

### 1-3. TECHNICAL SPECIFICATIONS

#### TUNING AND CONTROLLING:

Remote Synthesizer unit.  
Remote RF Tuner unit.  
Remote AFC unit.  
Remote Multiple Carrier  
Generator unit.  
Remote Multiple Sideband  
Adapter unit.  
Remote Extended Local  
Control unit.

#### MONITORING:

Panel Metering: Receiver tuner r-f input  
level and afc setting.

Indicator lamps: AFC UNLOCK  
**CHANNEL ENABLE**  
FAULT  
SYNC

#### DIMENSIONS:

AX567: 9-15/32 inches wide x  
4-47/64 inches high x  
7 inches deep.

A5037: 19 inches wide x  
19-7/32 inches high.

## **SECTION 2 INSTALLATION**

### **2-1. INITIAL INSPECTION**

Each AX567 unit has been thoroughly checked 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.

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. MECHANICAL INSTALLATION**

The AX567 is equipped with a 9-15/32 inch wide front panel. To mount the AX567 onto a standard 19 inch wide equipment rack or console, a mounting panel A5037 (figure 2-1) must be used.

The above mentioned mounting panel is designed to provide mounting space for eight AX567 units or any combination of other similar sized units. The mounting panel is screw-fastened to an equipment rack or console in the same manner as any other modular component. When the mounting panel has been securely mounted in the desired space, the AX567 unit may be mounted directly onto the mounting panel by means of the four

captive screws attached to the unit front panel. Figure 2-2 illustrates a typical mounting technique of the AX567 and mounting panel A5037.

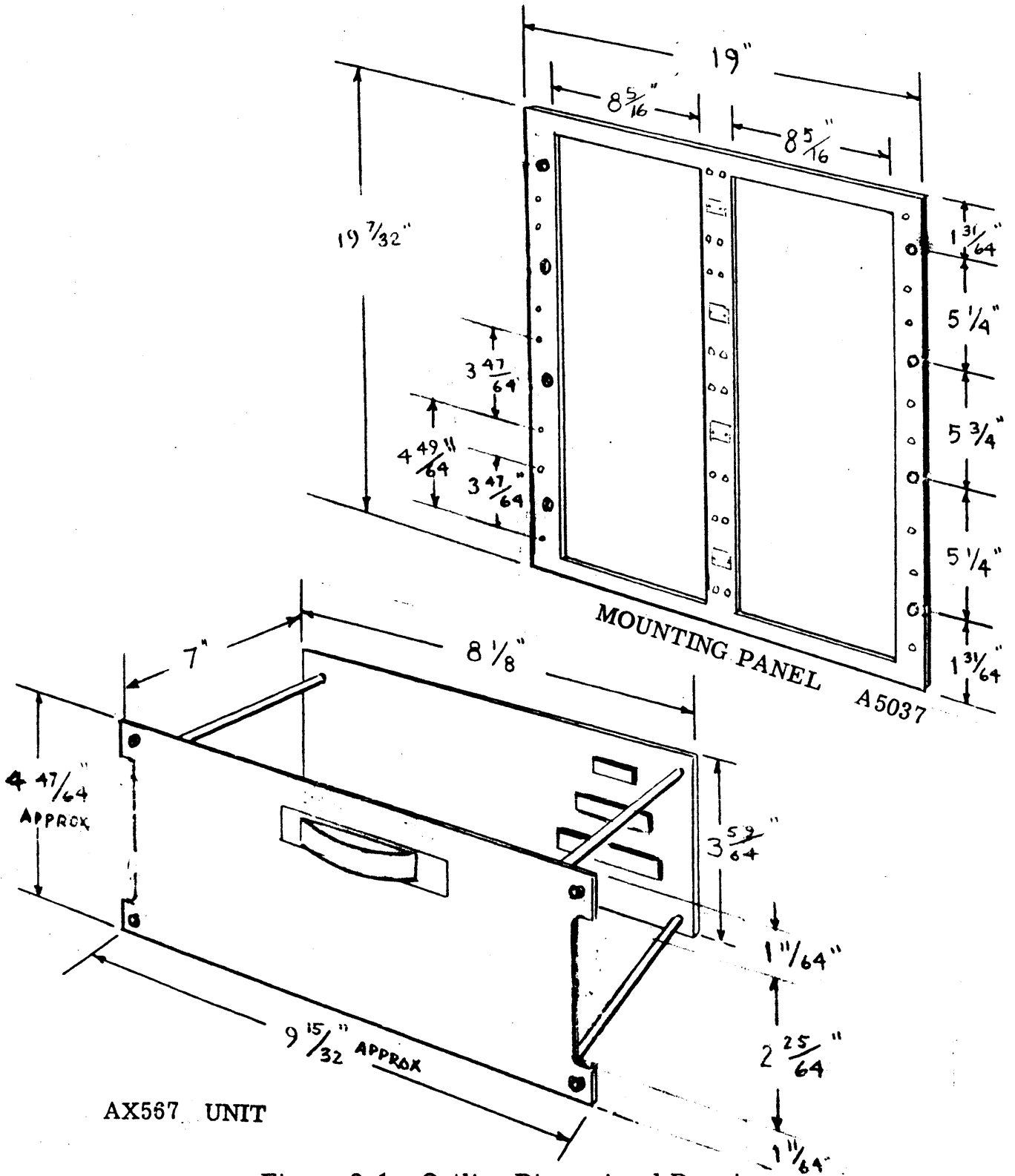


Figure 2-1. Outline Dimensional Drawing



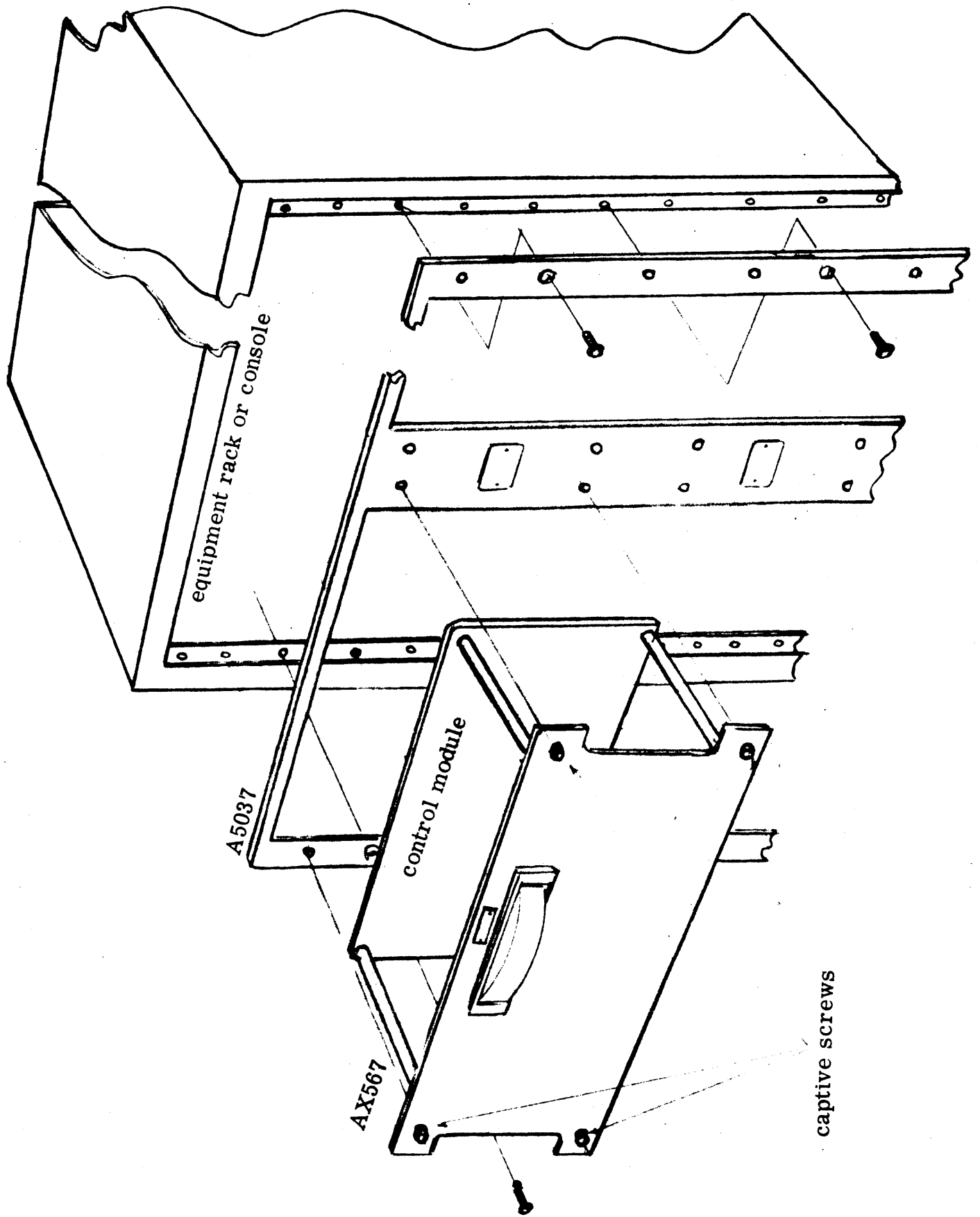


Figure 2-2. Typical Mounting Technique

### 2-3. ELECTRICAL INSTALLATION

The rear panel mounted connector receptacles J2001, J2002 and J2003 are provided for connection of the AX567 to an associated receiver system. The necessary wiring, routing and termination data for use with a TMC TechniMatiC receiver system is shown in the associated receiver system technical manual.

#### NOTE

Before installing the interconnecting cable wires, the installer must first establish proper AX567 and receiver correspondence, noting this correspondence on the AX567 front panel REC identification plate. For example, AX567 REC identification plate marked REC #1 will function in conjunction with receiver #1 in an eight receiver system.

## **SECTION 3 OPERATOR'S SECTION**

### **3-1. GENERAL**

The AX567 enables an operator to remotely tune and control a TMC TechniMatiC receiver system. All front panel controls are functionally grouped and operated in the same general manner as for the modular units in which they control. Front panel meter monitoring of the remote receiver AFC dial positioning and r-f level in db's is also available to the operator. Indicator lamps are also provided to indicate various operating faults or conditions of the remote receiver system.

### **3-2. OPERATOR'S INSTRUCTIONS**

The five CARRIER FREQUENCY control knobs are used to set the remote receiver system synthesizer to the desired operating carrier frequency.

The FAULT RESET pushbutton lamp will light when a d-c correction voltage, from the receiver system synthesizer unit, is not available to the receiver tuner. Therefore, when the FAULT RESET pushbutton lamp lights, the operator may manually retune the remote receiver tuner to the correct frequency setting or he may simply push the FAULT RESET pushbutton. Pushing the FAULT RESET pushbutton will activate the receiver tuner servo circuitry, thus automatically retuning the receiver tuner to the proper frequency setting.

The TUNE SYNC pushbutton will extinguish when the remote receiver is not synchronized with the synthesizer. To clear this fault, the operator may manually retune the remote receiver to synchronize with the synthesizer or he may simply push the TUNE SYNC pushbutton. Pushing the pushbutton will cause the servo circuitry to automatically retune the remote receiver to synchronize with the synthesizer; the TUNE SYNC pushbutton lamp will then light when synchronized.

The CHANNEL ENABLE pushbuttons are used to select the desired operating receiver channel. To select a particular channel, simply push the pushbutton indicating the channel desired, i. e., B2, B1, A1, or A2. The selected channel pushbutton will extinguish when pressed.

The RF GAIN control is used to vary the receiver r-f gain or level, as indicated on the front panel r-f level db meter scale. Clockwise rotation increases r-f gain.

The METER toggle switch is used to select either AFC or LEVEL monitoring at the panel meter. At the AFC position, the panel meter indicates the AFC dial setting at the remote receiver system. At the LEVEL position, the panel meter indicates the r-f level of the remote receiver system.

The dual-scale panel meter operates in conjunction with the aforementioned METER toggle switch. The red scale is calibrated to indicate AFC dial settings of the remote receiver system and the black scale is calibrated to indicate the r-f level (in db's above 1-microvolt) of the remote receiver system.

The AFC selector switch enables the operator to remotely select any of three demultiplexing signal sources. This is accomplished by remotely positioning the afc control of the remote multiple carrier generator unit to two of the three selectable positions.

With the AFC selector switch set at OFF position, the remote afc control is set to the SYN position, thereby utilizing the remote synthesizer 250 kc signal output.

With the AFC selector switch set at -20 DB position, the remote afc control is set to the AFC position, thereby utilizing the remote afc unit 2 mc signal output.

With the AFC selector switch set at 0 position, a ground return is provided for activation of a switching relay in the remote afc unit. This action effectively inserts a 20 db attenuation to the 250 kc carrier and sidebands from the remote multiple sideband adapter unit to the input of the remote afc unit.

The AFC UNLOCK indicator lamp provides a visual indication, when lit, of a deep fade of the received signal. This lamp is paralleled with the FADE indicator lamp located on the remote afc unit.

The AFC SCAN toggle switch enables the operator to remotely adjust the tuning kcs control of the remote afc unit. By alternating the position of the AFC SCAN toggle switch, left or right, it should be possible to reach a position (monitored on the AFC meter scale) that causes the AFC UNLOCK indicator lamp to extinguish. Extinguishing of the AFC UNLOCK indicator lamp signifies a capture of one of the three tones at the remote afc unit. The AFC SCAN toggle switch may be manipulated left and right to ascertain the location of the upper and lower sideband tones in relation to the carrier.

action of tuning is accomplished while observing the panel meter AFC scale with the METER toggle switch at the AFC position.

The rear panel mounted TUNE OVERRIDE toggle switch is electrically connected in parallel with the TUNE SYNC pushbutton. In the ON position, the TUNE SYNC pushbutton is bypassed or shorted across, thereby effectively routing a continuous control voltage to the remote extended local control unit relay circuitry.

### 3-3. OPERATOR'S MAINTENANCE

The operator may, at certain times, be required to perform various aspects of operator's maintenance. This type of maintenance may consist of simply keeping the unit clean and observing for normal panel indications and secure interconnections. However, should normal operating procedures produce unsatisfactory results, a check of the interconnecting cables and associated equipment levels to the AX567 may clear the fault.

When an indicator lamp is known to be defective, the operator is to replace the defective lamp by pulling the appropriate pushbutton straight out, thereby exposing the lamp and its socket. Refer to Section 6, Parts List for proper replacement lamp part number and type.

Table 3-1. Controls and Indicators

REF DESIG. (Figure 3-1)	PANEL DESIGNATION	COMPONENT DESCRIPTION	FUNCTION
①	RF GAIN	Potentiometer, 100K, 2 watts R2002	Adjusts receiver r-f level.  Used in conjunc- tion with r-f level meter scale.
②	AFC SCAN	Toggle switch, momentary, center off. S2009 SPDT	Adjusts receiver afc setting.  Used in conjunc- tion with afc meter scale (red markings).
③		Meter, M2001	50 ma full scale panel meter. Used to monitor receiver r-f level and receiver afc setting.
④	METER AFC/LEVEL	Toggle switch, SPDT S2005	Used to select meter monitor- ing of either re- ceiver r-f level or afc setting (red markings).
⑤	AFC	Rotary switch, S2008	Selects type of receiver afc control.
⑥	AFC UNLOCK	Indicator lamp, 28 v DS2005  Amber	When lit, indicate deep fade of re- ceived signal.  Paralleled with remote AFC unit FADE indicator lamp.



Table 3-1. Controls and Indicators (cont)

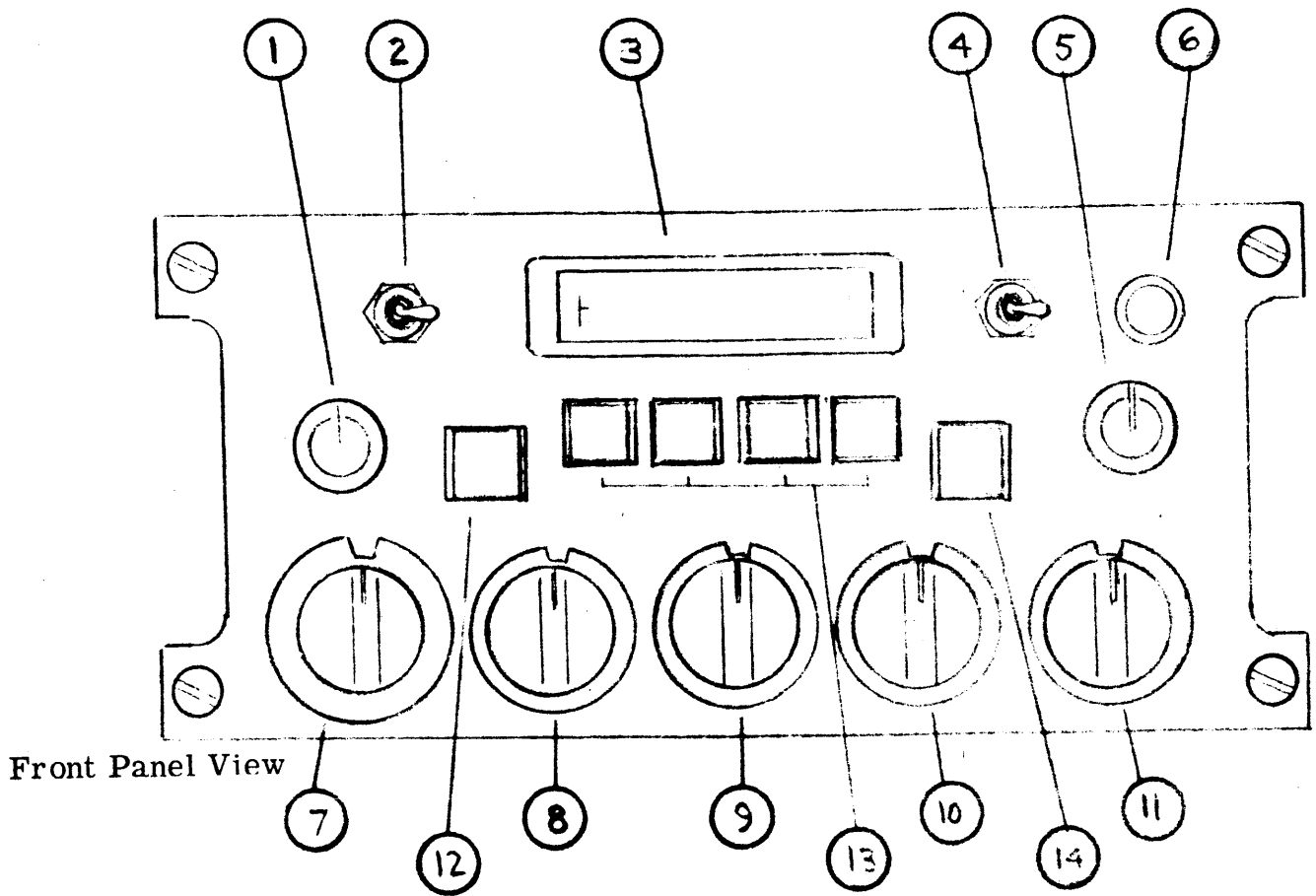
REF DESIG. (Figure 3-1)	PANEL DESIGNATION	COMPONENT DESCRIPTION	FUNCTION
⑦	MC	Binary 32-pos. rotary switch S2011	Used to set the receiver oper- ating frequency to the desired megacycle incre- ment.
⑧	100 KC	Binary 12-pos. rotary switch. S2012	Used to set the receiver oper- ating frequency to the desired 100 kilocycle increment.
⑨	10 KC	Binary 12-pos. rotary switch. S2013	Used to set the receiver oper- ating frequency to the desired 10 kilocycle increment.
⑩	1 KC	Binary 12-pos. rotary switch. S2014	Used to set the receiver oper- ating frequency to the desired 1 kilocycle incre- ment.
⑪	.1 KC	Binary 12-pos. rotary switch. S2015	Used to set the receiver oper- ating frequency to the desired .1 kilocycle incre- ment.

Table 3-1. Controls and Indicators (cont)

REF DESIG. (Figure 3-1)	PANEL DESIGNATION	COMPONENT DESCRIPTION	FUNCTION
12	FAULT RESET	Lighted push-button switch. S2006 SPST DS2006  Red  (momentary)	When lit, indicates no d-c correction voltage present at LRCB-1. When pressed, activates LRCB-1 relay sequence to clear fault.
13	CHANNEL ENABLE B2	Lighted push-button switch DPST. S2004 DS2004  White	When pressed, channel B2 becomes operative; lamp extinguishes indicating channel activation.
	CHANNEL ENABLE B1	Lighted push-button switch DPST S2003 DS2003  White	When pressed, channel B1 becomes operative; lamp extinguishes indicating channel activation.
	CHANNEL ENABLE A1	Lighted push-button switch DPST S2002 DS2002  White	When pressed, channel A1 becomes operative; lamp extinguishes indicating channel is activated.
	CHANNEL ENABLE A2	Lighted push-button switch DPST S2001 DS2001  White	When pressed, channel A2 becomes operative; lamp extinguishes indicating channel activation.

Table 3-1. Controls and Indicators (cont)

REF DESIG. (Figure 3-1)	PANEL DESIGNATION	COMPONENT DESIGNATION	FUNCTION
⑭	TUNE SYNC	Lighted push- button switch. S2007 DS2007 Amber (momentary)	When lit, indicates no d-c correction voltage generated by synthesizer. When pressed, activates LRCB-1 to clear fault.
⑮	R2004	Potentiometer 5K, 2 watts	Meter adjust con- trol for AFC meter scale.
⑯	TUNE OVERRIDE S2010	Toggle switch SPST	In ON position, overrides TUNE pushbutton switch causing steady tune condition.



AX567

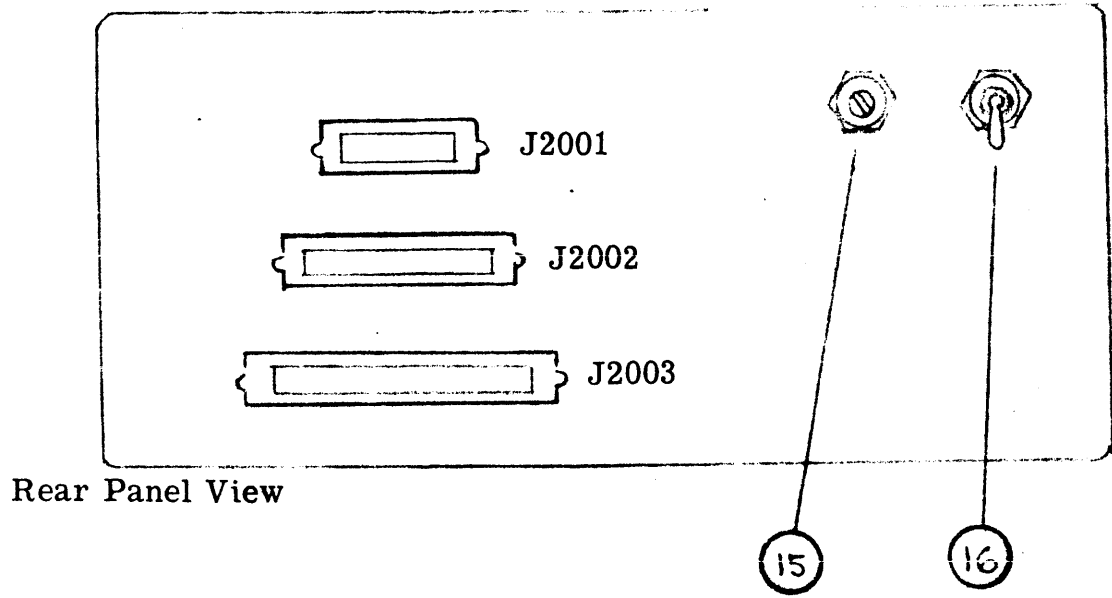


Figure 3-1. Controls and Indicators.

Table 3-2. Tuning Procedure

STEP	PROCEDURE (see figure 3-1)
1	Set the tune override toggle switch S2010 (16) (rear panel mounted) at OFF.
2	Set the MC CARRIER FREQUENCY control (7) to the desired carrier frequency in megacycles. Example: Desired carrier frequency = 26.5781 Set MC control at position 26.
3	Set the 100 KC CARRIER FREQUENCY control (8) to the setting corresponding to the highest digit in kilocycles of the desired carrier frequency. Example: Desired carrier frequency = 26.5781 Set 100 KC control at position 5.
4	Set the 10 KC CARRIER FREQUENCY control (9) to the setting corresponding to the second highest digit in kilocycles of the desired frequency. Example: Desired carrier frequency = 26.5781 Set 10 KC control at position 7.
5	Set the 1 KC CARRIER FREQUENCY control (10) to the setting corresponding to the third highest digit in kilocycles of the desired carrier frequency. Example: Desired carrier frequency = 26.5781 Set 1 KC control at position 8.
6	Set the .1 KC CARRIER FREQUENCY control (11) to the setting corresponding to the lowest digit in kilocycles of the desired carrier frequency. Example: Desired carrier frequency = 26.5781 Set .1 KC control at position 1.
7	Set AFC selector switch (5) to select desired demultiplexing signal source. OFF: Remote synthesizer unit 2 mc and 250 kc output utilized.  <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <input type="checkbox"/> -20 DB: PILOT CARRIER         </div> <div>           Remote afc unit 2 mc and 250 kc output utilized through a 20 db attenuator pad.         </div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <input type="checkbox"/> 0         </div> <div>           Remote afc unit 2 mc and 250 kc output utilized.         </div> </div>

Table 3-2. Tuning Procedure (cont)

STEP	PROCEDURE (see figure 3-1)
8	Press the desired CHANNEL ENABLE pushbuttons (13) to activate the desired audio channels for reception at the remote receiver system.
9	Adjust the RF GAIN control (1) for desired remote receiver r-f input level. Monitor r-f level on panel meter with METER AFC/LEVEL toggle switch (4) at the LEVEL position.
10	Press the TUNE SYNC pushbutton (14) to tune the remote synthesizer to the selected carrier frequency.

## **SECTION 4**

### **PRINCIPLES OF OPERATION**

#### 4-1. INTRODUCTION

The AX567 is a remote receiver control panel enabling an operator to tune and control the various modular units comprising a remote receiver system. The front panel controls and indicators may be compared to as an extension of some of the remote modular unit panel controls and indicators. The tuning, controlling, and readback signals are routed via a series of interconnecting cables.

#### 4-2. CIRCUIT DESCRIPTION

The five CARRIER FREQUENCY control knobs are connected to five master control stepping wafer switches. These controls correspond to the five carrier frequency control knobs on the remote reference signal generator unit. Therefore, when a particular setting is made on any of the five AX567 control knobs, a d-c voltage is routed to the corresponding slave stepping wafer switch in the remote reference signal generator unit. This control voltage activates the servo motor of the particular carrier frequency control, positioning the control to the predetermined setting made at the AX567 unit.

The four CHANNEL ENABLE pushbuttons are used to select and activate any of the four audio channels in the remote multiple sideband adapter unit. Pushing either one of the four CHANNEL ENABLE pushbuttons, B2, B1, A1 or A2, will cause a bias voltage to be applied to the selected audio channel a-f amplifier circuit, thereby activating that selected channel



The CHANNEL ENABLE pushbutton will extinguish when pressed indicating channel is active.

The AFC UNLOCK indicator lamp is electrically paralleled with the fade indicator lamp located on the remote afc unit front panel.

The RF GAIN potentiometer control is used to provide an r-f gain control voltage to the remote receiver tuner. This voltage, controlled at the AX567, is routed to the remote multiple sideband adapter unit. At the multiple sideband adapter unit, either the controlled r-f gain voltage or a composite agc voltage is supplied to the remote receiver r-f tuner.

The AFC SCAN toggle switch is used to apply a counterclockwise or clockwise direction of rotation voltage to the remote afc unit's afc tuning control drive motor. This voltage, 110 volts ac, is routed to the remote afc unit by means of four wires, the direction of rotation selected by a spring return center-off position, 2-way toggle switch.

The FAULT RESET pushbutton lamp, when lit, indicates that no d-c correction voltage is being received at the remote extended local control unit. This lamp indication, activated after a 45-second time delay, indicates that the remote reference signal generator is not generating a d-c correction voltage for use by the remote control terminator unit servo amplifiers. The d-c correction voltage is used for the tuning servo motor control of the remote receiver r-f tuner.

The FAULT RESET pushbutton switch, when pressed, routes a reset voltage to the remote control terminator unit relays and servo amplifier circuitry. This voltage is used for the receiver r-f tuner motor-control relays and the receiver r-f tuner tuning servo motor-control amplifiers in the remote control terminator unit.

The TUNE SYNC pushbutton lamp, when lit, indicates that a d-c correction voltage is being generated by the remote reference signal generator and that the receiver system is synchronized. When this lamp extinguishes, it indicates that the servo amplifiers, in the remote control terminator unit, are not receiving a d-c correction voltage from the remote reference signal generator. After a 45-second time delay, the FAULT RESET pushbutton lamp will light.

The TUNE SYNC pushbutton switch, when pressed, routes operating voltage from the remote control terminator unit power source back to its own relay circuitry.

The TUNE OVERRIDE toggle switch is electrically connected across the TUNE SYNC pushbutton switch.

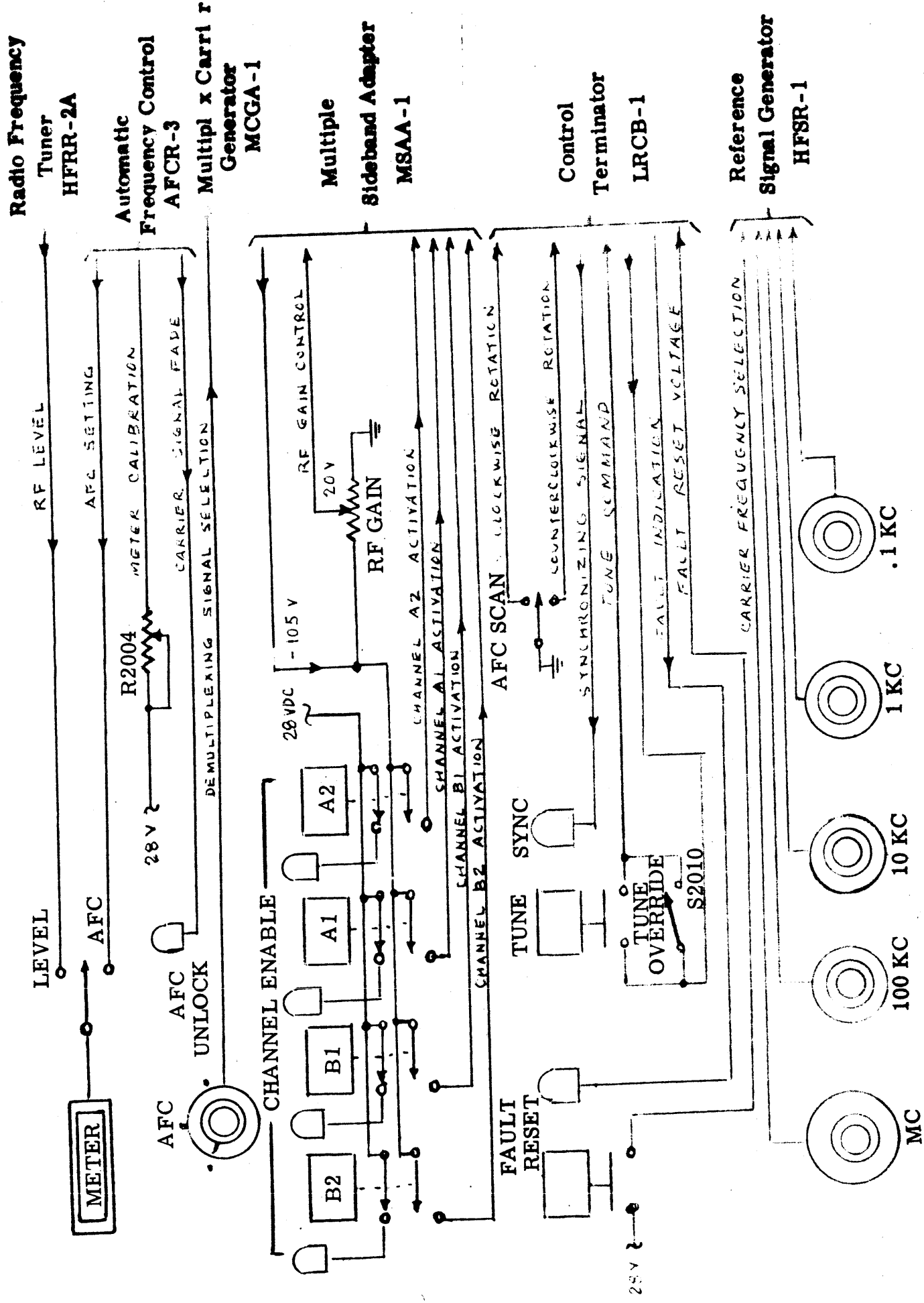
The AFC three-position rotary selector switch is used to select the desired receiver demultiplexing signal source. The desired demultiplexing signal source is selected by remotely positioning the selector switch on the remote multiple carrier generator unit. When the AFC selector switch is set at OFF, a positioning signal voltage is routed to the slave stepping switch in the remote multiple carrier generator unit, causing the connected reference signal generator (synthesizer) 2 mc and 250 kc output to be utilized.

When the AFC selector switch is set at PILOT CARRIER -20DB position, a positioning signal voltage is routed to the slave stepping switch in the remote multiple carrier generator unit, causing the connected afc unit's 2 mc and 250 kc output to be utilized through a 20 db attenuator pad.

When the AFC selector switch is set at PILOT CARRIER 0 position, a positioning signal voltage is routed to the slave stepping switch in the remote multiple carrier generator unit, causing the connected afc unit's 2 mc and 250 kc output to be utilized.

The METER AFC/LEVEL toggle switch is used to select panel meter monitoring of the remote receiver input signal level (in the LEVEL position) and afc setting (in the AFC position) utilizing the red marked meter scale.

The rear panel mounted R2004 potentiometer is used to calibrate the afc meter scale. This is accomplished by holding the AFC SCAN toggle switch to the right. When the meter reads maximum + KC's (meter in AFC position), adjust R2004 for full scale deflection.



## **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 prolong 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 equipment 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

Troubleshooting the AX567 requires a familiarity of the various unit control functions as used in conjunction with the associated remote equipment. Therefore, before attempting to troubleshoot the AX567, a knowledge of the unit functions and use of the schematic diagram is a primary requirement.

At the first indication of a fault, the technician should first ascertain that all input signal connections and levels to the AX567 are correct and operational.

### **NOTE**

When a second or spare AX567 unit is used, either as a replacement or to verify a fault or maladjustment, the replacement unit controls must be set to the same operational settings as were on the original or replaced unit unless retuning is intentional.

If the AX567 is believed to be at fault, perform the continuity checks shown in the following text and tables. Figures 5-1 through 5-3 are provided as an aid and reference to facilitate troubleshooting. When performing continuity checks, disconnect all rear panel connectors from unit.

a. CARRIER FREQUENCY MC SWITCH. - Remove all interconnecting cables from rear of unit. Using an ohmmeter (Simpson Model 260 or equivalent), check for continuity from J2002 pin 21 to J2003 pin 1. Continuity should be observed at MC switch S2011 positions 1 through 16.

Connect ohmmeter to observe continuity from J2002 pin 21 to J2003 pin 2. Continuity should be observed at MC switch S2011 positions 17 through 32.

With the MC switch S2011 at the 2 mc position, physically check wiper of S2011 (extreme rear). Wiper should be one position CW from notch at 1 mc position as shown in figure 5-1.

Use figure 5-1 to check gear synchronization of S2011 to S2016 and S2017.

Proceed with continuity checks listed in table 5-1.

Table 5-1. MC SWITCH CONTINUITY CHECKS

MC SWITCH POSITION	J2003		MC SWITCH POSITION	J2003	
	PIN	PIN		PIN	PIN
1	1	7	17	2	20, 23
2	1	3, 6	18	2	20
3	1	3	19	2	21, 24
4	1	4, 7	20	2	20, 21
5	1	3, 4	21	2	20, 22
6	1	3, 5	22	2	20, 21, 22
7	1	3, 4, 5	23	2	20, 21, 23
8	1	3, 4, 6	24	2	20, 21, 22, 23
9	1	3, 4, 5, 6	25	2	21, 22, 24
10	1	4, 5, 7	26	2	21, 22, 23, 24
11	1	4, 5, 6, 7	27	2	20, 22, 23
12	1	3, 5, 6	28	2	22, 23, 24
13	1	5, 6, 7	29	2	21, 23, 24
14	1	4, 6, 7	30	2	23, 24
15	1	6, 7	31	2	22, 24
16	1	5, 7	32	2	24



b. CARRIER FREQUENCY KC SWITCHES. - Remove all interconnecting cables from rear of unit. Using an ohmmeter (Simpson model 260 or equivalent), perform continuity checks listed in table 5-2.

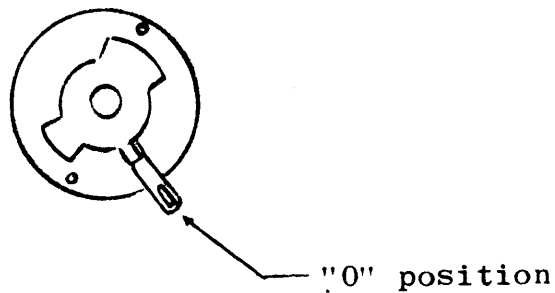
Table 5-2. KC Switch Continuity Checks

FROM	TO	CONTROL AND POSITION
J2002-22	J2003-25	100 KC switch S2012 - position 0
	-26	" " " " 1
	-27	" " " " 2
	-28	" " " " 3
J2002-23	J2003-8	10 KC switch S2013 - position 0
	-9	" " " " 1
	-10	" " " " 2
	-11	" " " " 3
J2002-24	J2003-29	1 KC switch S2014 - position 0
	-30	" " " " 1
	-31	" " " " 2
	-32	" " " " 3
J2002-25	J2003-12	.1 KC switch S2015 - position 0
	-13	" " " " 1
	-14	" " " " 2
	-15	" " " " 3

Table 5-2. KC Switch Continuity Checks (Cont).

NOTE

The first four (0-3) positions of each switch assures normal operating sequence of remaining multi-shorting wafers. Make sure that "0" position lines up with single contact at rear of all switches as shown below.



Rear View - S2012 thru S2015

c. RESISTANCE MEASUREMENTS - Table 5-3 provides a list of resistance measurements to be performed with all rear panel connectors disconnected from the unit. All resistance measurements are performed with an ohmmeter (Simpson model 260 or equivalent). Use of the schematic diagram figure 7-1 will prove to be of great assistance.

Table 5-3. Resistance Measurements.

CONTROL	FROM	TO	INDICATION
AFC switch S2008 at off	J2002-8	J2003-16	Continuity
AFC switch S2008 at -20DB and 0-Carrier	J2002-8	J2003-17	Continuity
AFC switch S2008 at off	J2002-10	J2003-35	Continuity Inf. at -20DB and 0
AFC switch S2008 at 0-Carrier	J2002-10	J2003-33	Continuity
28 VOLT LINE CONTROLS			
S2010 (rear panel) at ON (up)	J2002-6	J2002-5	Continuity
S2010 (rear panel) at OFF (down)	J2002-6	J2002-5	Infinity
Press TUNE SYNC pushbutton			Continuity
FAULT RESET pushbutton	J2002-6	J2002-7	Infinity
Press FAULT RESET push- button			Continuity
Rotate R2004 (rear panel) CCW	J2002-6	J2003-36	22K-27K

Table 5-3. Resistance Measurements. (cont).

28 VOLT PILOT LIGHTS			
Clear all CHANNEL ENABLE pushbuttons by depressing for lowest reading. Push-buttons lock ON or OFF. Infinity at all OFF positions.	J2002-6	J2002-2	Infinity
Press B2 pushbutton and release (DS2003)	J2002-6	J2002-2	680
Press B1 pushbutton and release (DS2003)	J2002-6	J2002-2	680
Press A1 pushbutton and release (DS2001)	J2002-6	J2002-2	680
Press A2 pushbutton and release	J2002-6	J2002-2	680
AFC switch to OFF (DS2005)	J2002-6	J2002-10	330
FAULT RESET (DS2006)	J2002-1	J2002-2	330
TUNE SYNC (DS2007)	J2002-9	J2002-2	330
CHANNEL ENABLE			
Press A2 pushbutton and release (inf.)	J2001-5	J2001-1	Infinity
Press A1 pushbutton and release (inf.)	J2001-5	J2001-2	Infinity
Press B1 pushbutton and release (inf.)	J2001-5	J2001-3	Infinity
Press B2 pushbutton and release (inf.)	J2001-5	J2001-4	Infinity
RF GAIN			
Rotate RF GAIN potentiometer control (no change in reading)	J2001-5	Ground	490K
Rotate RF GAIN potentiometer control CW	J2001-5	J2001-7	390K-490K
Rotate RF GAIN potentiometer control CW	J2001-7	Ground	100K-0

Table 5-3. Resistance Measurements. (cont).

AFC SCAN			
Set AFC SCAN toggle switch to the right	J2002-2	J2002-3	Infinity
Set AFC SCAN toggle switch to the left	J2002-2	J2002-4	Infinity

PANEL METER M2001

CAUTION

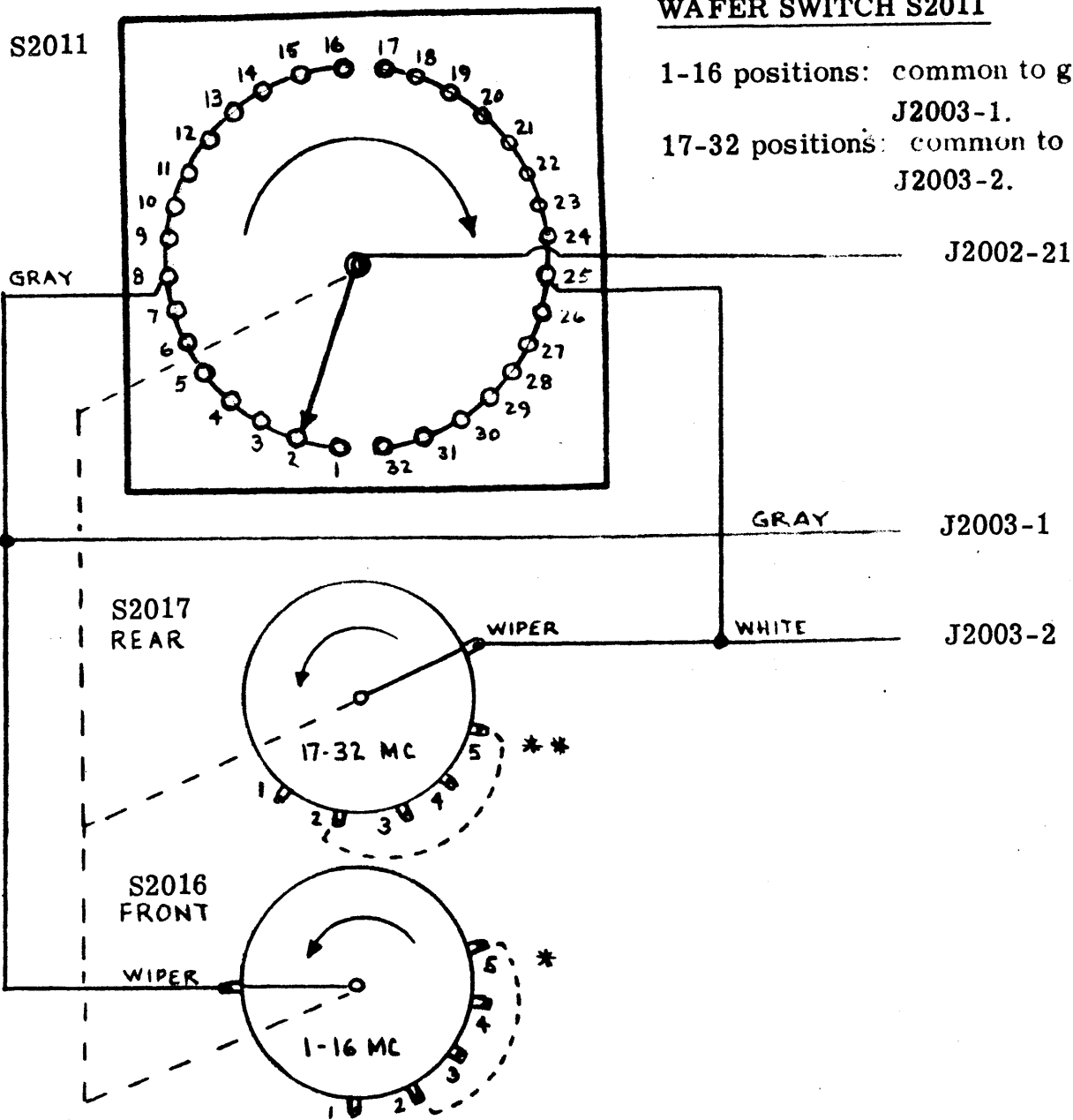
The following ohmmeter functions using a Simpson model 260 or equivalent) are to be performed on the RX10,000 range.

1. Connect a 33,000 ohm resistor to J2001-pin 6.
2. Connect the ohmmeter negative lead (black) to the free end of the 33,000 ohm resistor.
3. Connect the ohmmeter positive lead (red) to the ground. Ohmmeter set at RX10,000 range.
4. Set METER toggle switch S2005 at LEVEL position. Panel meter M2001 should reach 100. Disregard ohmmeter reading.
5. Connect 33,000 ohm resistor to J2003-pin 37.
6. Connect the ohmmeter positive lead (red) to free end of 33,000 ohm resistor.
7. Connect the ohmmeter negative lead (black) to the ground. Ohmmeter set at RX10,000 range.
8. Set METER toggle switch S2005 at AFC position. Panel meter M2001 should reach 90. Disregard ohmmeter reading.

NOTE

Panel meter M2001 reads positive voltage at AFC position and negative voltage at LEVEL position. Check switch wiring if reversal occurs.

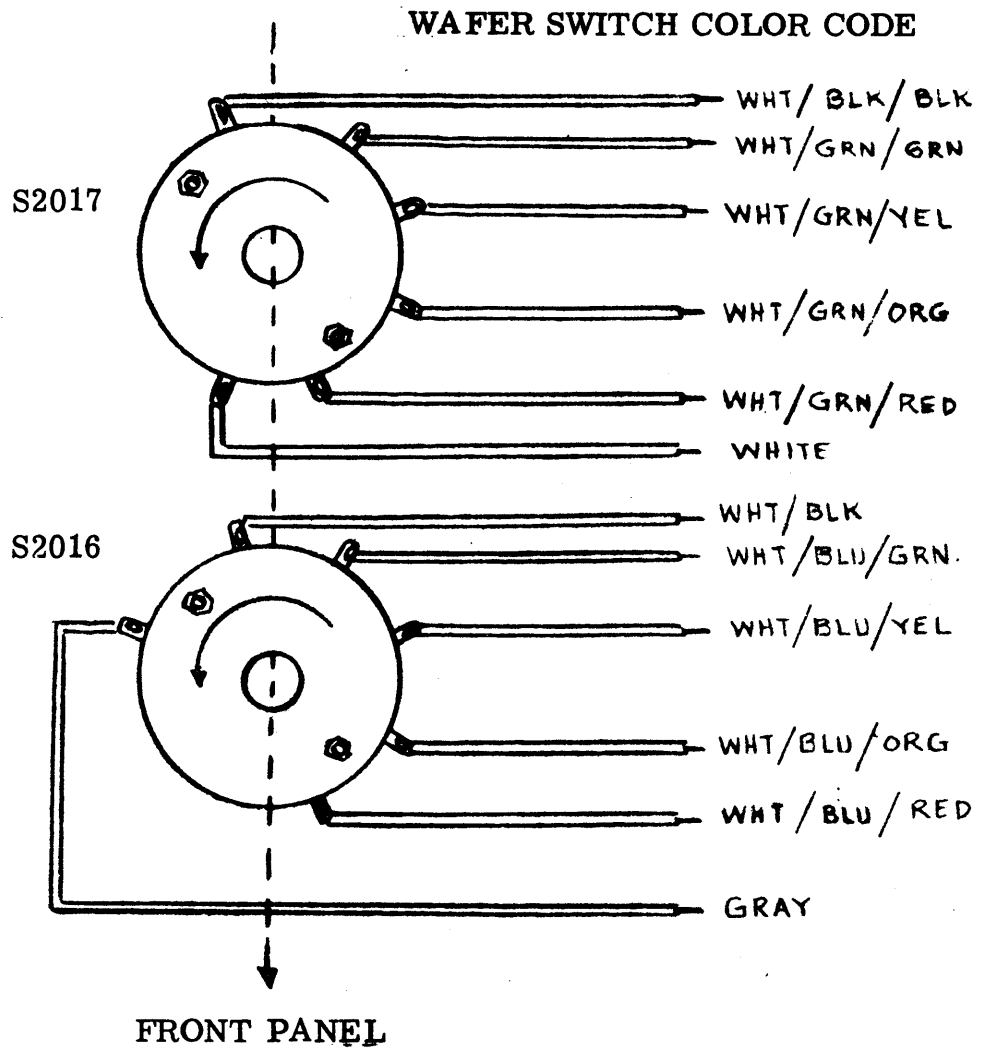
**WAFFER SWITCH S2011**



\*When MC switch is at 2 mc position, S2016 should read short between positions 2 and 5 as shown.

\*\*When MC switch is at 17 mc position, S2017 should read short between positions 2 and 5 as shown.

Figure 5-1. Gear Synchronization Check.



**Contact Arrangements  
(PIN VIEW)**

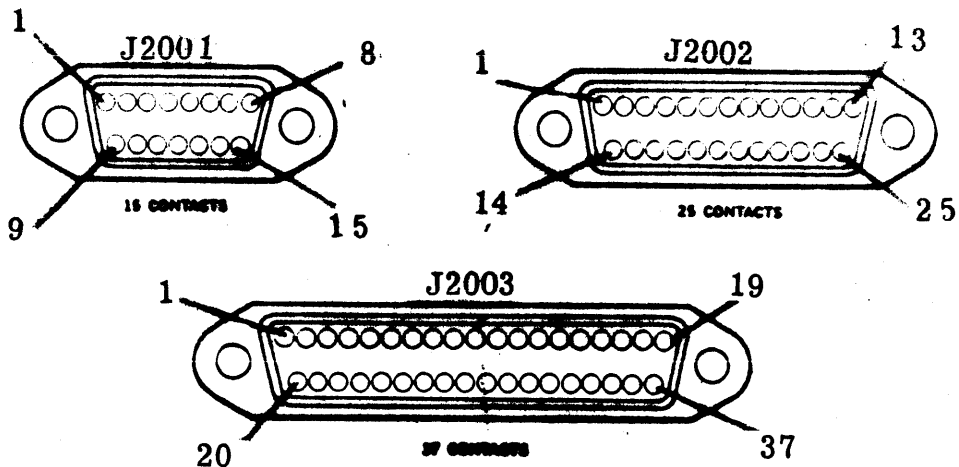


Figure 5-2 . Switch and Connector Identification Diagram

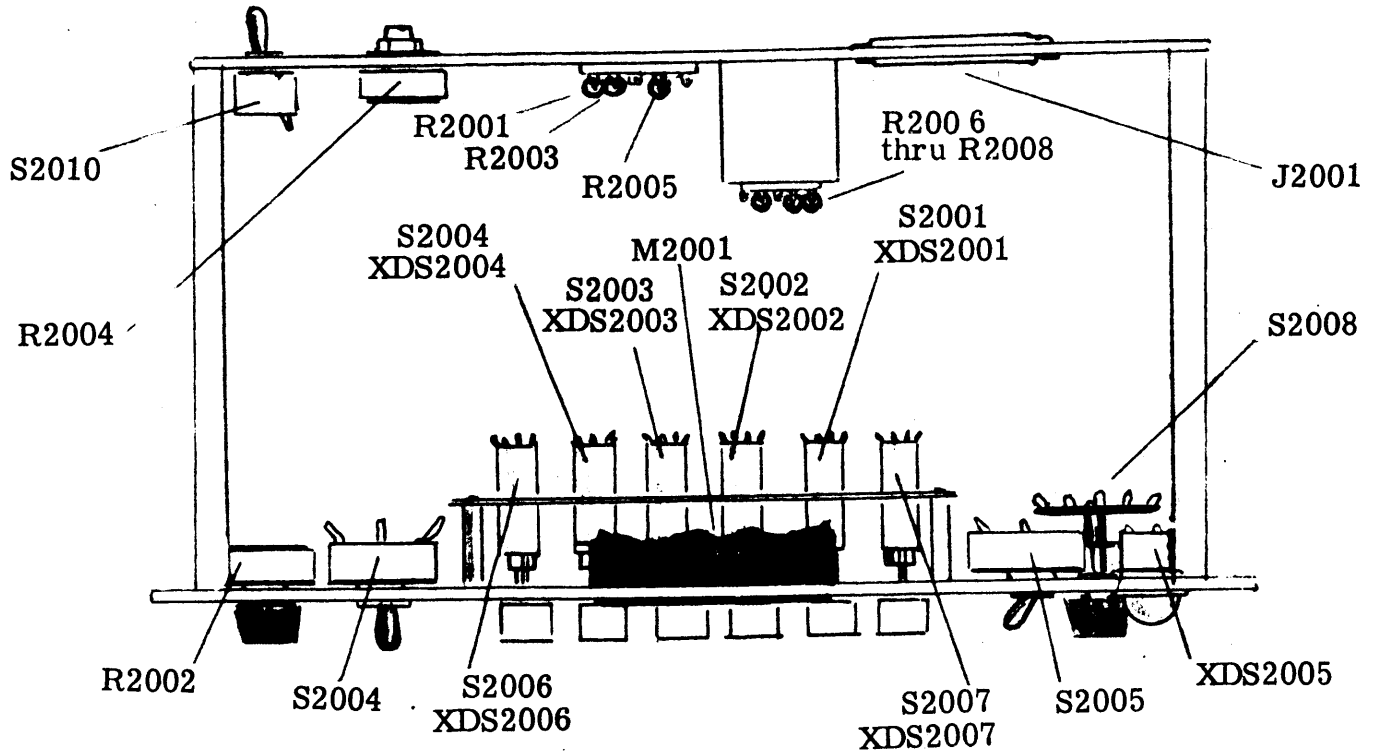
### 5-3. REPAIR AND REPLACEMENT

Maintenance of the AX567 will consist mainly of component replacement. It should be noted that when replacing components, the technician should observe for exact or equivalent replacements by referring to the parts list in section 6. Polarity and positioning of certain components should be observed before removing so that the replacement component will fit and operate correctly.

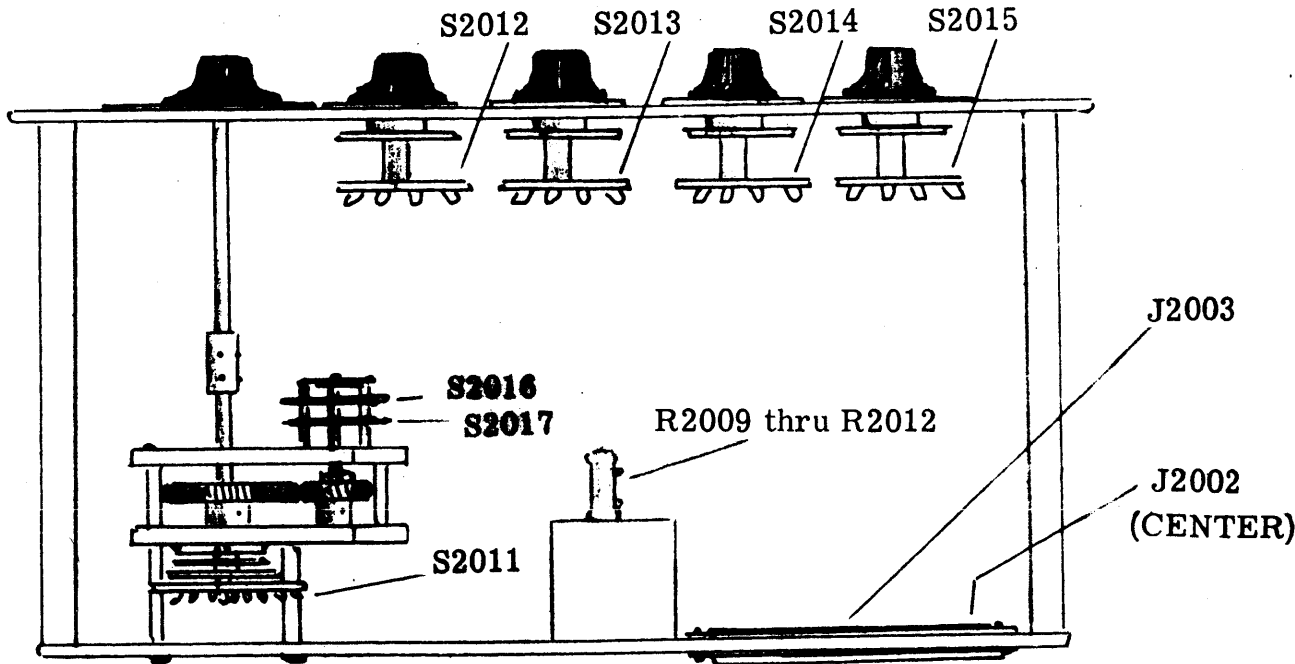
a. SWITCH ASSEMBLY A5014-1. - When replacing any of the two switch wafers (S2016 or S2017), the technician should first tag each wire before removing thereby ensuring proper replacement identification. The replacement wafers must be replaced in the same manner and positioned as when first removed to ensure proper switch assembly electrical relationship.

For disassembly and replacement part data, see figure 5-4 (used in conjunction with table 5-4).





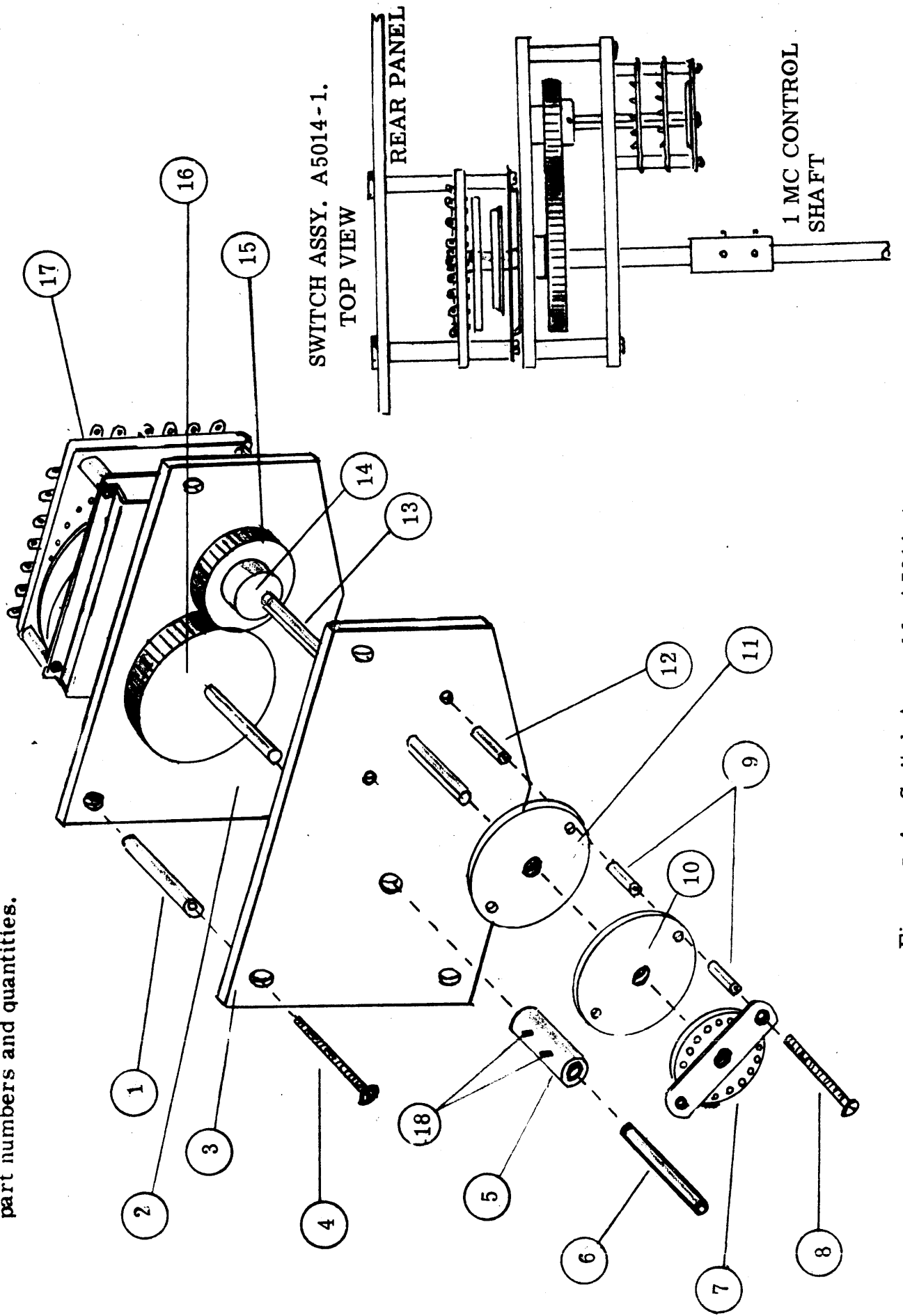
AX567, TOP CHASSIS VIEW



AX567, BOTTOM CHASSIS VIEW

Figure 5-3. Parts Locations

NOTE: See table 5-4 for parts descriptions, part numbers and quantities.



SWITCH ASSY. A5014-1.  
TOP VIEW

REAR PANEL

1 MC CONTROL  
SHAFT

Figure 5-4. Switch Assembly A5014-1.

Table 5-4. Switch Assembly A5014-I, Parts Breakdown

ITEM	DESCRIPTION	TMC PART NO.	QTY.
1	SPACER, SLV	TE140	3
2	PLATE, GR, REAR	PM1244	1
3	PLATE, GR, FRONT	PM1245	1
4	SCREW, MACH	SCFP0632BN16	3
5	COUPLING, SFT., RIG.	MC102	1
6	SHAFT, STR - 1/4 D	PM1051RF4.062	1
7	DETENT, ROTARY	DT109	1
8	SCREW, MACH	SCBP0440BN 24	2
9	SPACER, SLV	TE117-28	4
10	SW SECT, ROTARY	WS135	1
11	SW SECT, ROTARY	WS136	1
12	SPACER, SLV	TE117-33	2
13	SHAFT, STR - 1/4 D	PM691FF2.250S	1
14	SPACER, SLV	TE117-69	1
15	GEAR, SPUR	GR205-22	1
16	GEAR, SPUR	GR205-2	1
17	SWITCH, ROTARY	SW398	1
18	SETSCREW	SLHC0632SP2	7

## **SECTION 6**

### **PARTS LIST**

#### **6-1. INTRODUCTION**

Reference designations have been assigned to identify all electrical parts of the equipment. These designations are used for marking the equipment (adjacent to the part they identify) and are included on drawings, diagrams and the parts list. The letters of a reference designation indicate the kind of part (generic group), such as resistor, capacitor, transistor, etc. The number differentiates between parts of the same generic group. Sockets associated with a particular plug-in device, such as transistor or fuse, are identified by a reference designation which includes the reference designation of the plug-in device. For example, the socket for crystal Y501 is designated XY501. To expedite delivery, when ordering replacement parts, specify the TMC part number and the model number of the equipment.

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
DS2001	LAMP, incandescent; 28 v, .04A, single contact, miniature, T-1-3/4 bulb.	BI110-7
DS2002 thru DS2007	Same as DS2001.	
J2001	CONNECTOR, receptacle, electrical; male, 15 con- tacts.	JJ313-1
J2002	CONNECTOR, receptacle, electrical; male, 25 con- tacts.	JJ313-2
J2003	CONNECTOR, receptacle, electrical; male, 37 con- tacts.	JJ313-3
M2001	METER, 50 ma F.S., edgewise.	MR191-1
R2001	RESISTOR, fixed, composition; 22,000 ohms, +10%, 1 W.	RC32GF223K
R2002	RESISTOR, variable, composition; 100,000 ohms, +10%, 2 W, linear taper A.	RV4NAYSA 104B
R2003	RESISTOR, fixed, composition; 390,000 ohms, +10%, 1 W.	RC32GF394K
R2004	RESISTOR, variable, composition; 5,000 ohms, 2 W.	RV4NAYSD 502A
R2005	RESISTOR, fixed, composition; 18,000 ohms, +10%, 1 W.	RC32GF183K
R2006	RESISTOR, fixed, composition; 150 ohms, 1 W.	RC32GF151K
R2006 thru R2008	Same as R2006.	
R2009	RESISTOR, fixed, wirewound; 500 ohms, 5 W.	RW107-28
R2010 thru R2012	Same as R2009.	

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
S2001	SWITCH, pushbutton; dpst, comprises XDS2001.	SW394-2-W4
S2002	SWITCH, pushbutton; dpst, comprises XDS2002.	SW394-2-W3
S2003	SWITCH, pushbutton; dpst, comprises XDS2003.	SW394-2-W5
S2004	SWITCH, pushbutton; dpst, comprises XDS2004.	SW394-2-W6
S2005	SWITCH, toggle; spdt, 3 amp; 250 v.	ST12D
S2006	SWITCH, pushbutton; spst; comprises XDS2006	SW394-1-R1
S2007	SWITCH, pushbutton; spst, comprises XDS2007.	SW394-1-A2
S2008	SWITCH, rotary; 3-pole, 3-pos.	SW148
S2009	SWITCH, toggle; spdt, momentary contact, center.	ST40G
S2010	SWITCH, toggle; spdt.	ST103-11-62
S2011	SWITCH, rotary; 32-position.	SW398
S2012	SWITCH, rotary; 12-position.	SW397
S2013 thru S2015	Same as S2012.	
S2016	SWITCH SECTION, rotary; 16-pos. part of SW. assy. A5014-1.	WS135
S2017	SWITCH SECTION, rotary, 16-pos. part of SW. assy. A5014-1.	WS136
XDS2001	Non-replaceable item, P/O S2001.	
XDS2002	Non-replaceable item, P/O S2002.	
XDS2003	Non-replaceable item, P/O S2003.	
XDS2004	Non-replaceable item, P/O S2004.	
XDS2005	SOCKET, lamp; miniature, amber lens.	TS153-3

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
XDS2006	Non-replaceable item, P/O S2006.	
XDS2007	Non-replaceable item, P/O S2007.	
<u>LOOSE ITEMS SUPPLIED</u>		
P2001	CONNECTOR, receptacle female electrical; 15 contacts.	JJ310-1H
P2002	CONNECTOR, receptacle female electrical; 25 contacts.	JJ310-2H
P2003	CONNECTOR, receptacle female electrical; 37 contacts.	JJ310-3H