

UNCLASSIFIED

TECHNICAL MANUAL

for

TRANSMITTER CONTROL MODULE

AX568



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

★

UNCLASSIFIED

TECHNICAL MANUAL

for

TRANSMITTER CONTROL MODULE

AX568



THE TECHNICAL MATERIEL CORPORATION
MAMARONECK, N.Y.

OTTAWA, ONTARIO

COPYRIGHT 1965
THE TECHNICAL MATERIEL CORPORATION

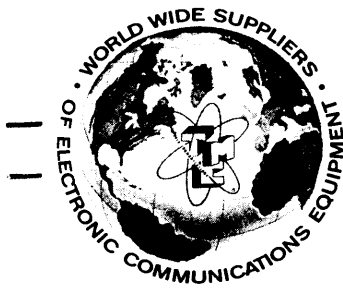
★

IN-299A

Issue Date: 27 Aug. , 1965

NOTICE

THE CONTENTS AND INFORMATION CONTAINED IN THIS INSTRUCTION MANUAL IS PROPRIETARY TO THE TECHNICAL MATERIEL CORPORATION TO BE USED AS A GUIDE TO THE OPERATION AND MAINTENANCE OF THE EQUIPMENT FOR WHICH THE MANUAL IS ISSUED AND MAY NOT BE DUPLICATED EITHER IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER WITHOUT THE WRITTEN CONSENT OF THE TECHNICAL MATERIEL CORPORATION.



THE TECHNICAL MATERIEL CORPORATION

C O M M U N I C A T I O N S E N G I N E E R S

700 FENIMORE ROAD

MAMARONECK, N. Y.

W a r r a n t y

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

TABLE OF CONTENTS

<u>Paragraph</u>		<u>Page</u>
<u>SECTION 1 - GENERAL DESCRIPTION</u>		
1-1	Functional Description	1-1
1-2	Physical Description	1-1
1-3	Technical Specifications	1-2
<u>SECTION 2 - INSTALLATION</u>		
2-1	Initial Inspection	2-1
2-2	Mechanical Installation	2-1
2-3	Electrical Installation	2-4
<u>SECTION 3 - OPERATOR'S SECTION</u>		
3-1	General	3-1
3-2	Operator's Instructions	3-1
3-3	Operator's Maintenance	3-4
<u>SECTION 4 - PRINCIPLES OF OPERATION</u>		
4-1	Introduction	4-1
4-2	Circuit Description	4-1
<u>SECTION 5 - MAINTENANCE</u>		
5-1	Preventive Maintenance	5-1
5-2	Troubleshooting	5-2
5-3	Repair and Replacement	5-8
<u>SECTION 6 - PARTS LIST</u>		
6-1	Introduction	6-1
<u>SECTION 7 - SCHEMATIC DIAGRAMS</u>		

LIST OF ILLUSTRATIONS

<u>Figure</u>		<u>Page</u>
<u>SECTION 1 - GENERAL DESCRIPTION</u>		
1-1	Transmitter Control Module, AX568	1-0
<u>SECTION 2 - INSTALLATION</u>		
2-1	Outline Dimensional Drawing	2-0
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, AX568	4-5
<u>SECTION 5 - MAINTENANCE</u>		
5-1	Gear Synchronization Check	5-6
5-2	Switch and Connector Identification Diagram	5-7
5-3	Parts Location, Bottom Chassis View	5-9
5-4	Parts Location, Top Chassis View	5-10
5-5	Switch Assembly, A5014-2	5-11
<u>SECTION 7 - SCHEMATIC DIAGRAMS</u>		
7-1	Schematic Diagram, AX568	7-2 7-3

LIST OF TABLES

<u>Table</u>		<u>Page</u>
	<u>SECTION 3 - OPERATOR'S SECTION</u>	
3-1	Controls and Indicators	3-5
	<u>SECTION 5 - MAINTENANCE</u>	
5-1	MC Switch Continuity Checks	5-3
5-2	KC Switch Continuity Checks	5-4
5-3	Switch Assembly A5014-2, Parts Breakdown . .	5-11

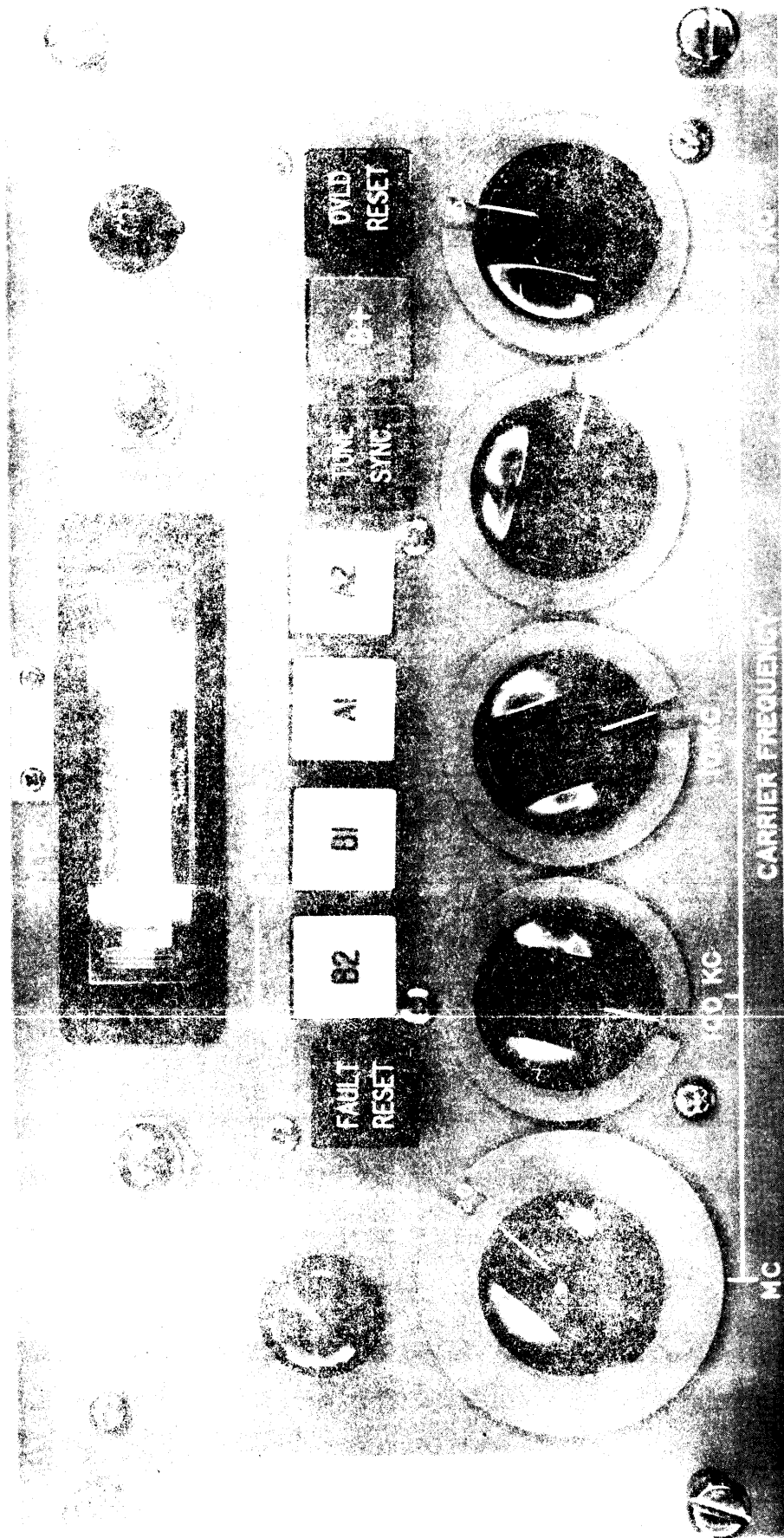


Figure 1-1. Transmitter Control Module, AX568

SECTION 1 GENERAL DESCRIPTION

1-1. FUNCTIONAL DESCRIPTION

Transmitter Control Module, AX568 (figure 1-1), a modular component of TRANSMITTER CONTROL, MODEL LRCM-1, is a remote control tuning module used to tune, control and monitor a single transmitter portion of A TMC TechniMatic* multi-transmitter system.

The AX568 routes the selected tuning data to the remote transmitter system by means of interconnecting cables. Front panel controls, corresponding to the various transmitter system modular unit controls, are tuned in the same manner as at the transmitter system. This design effectively permits accurate fingertip tuning and control of a remotely located transmitter system from a master control center or console.

1-2. PHYSICAL DESCRIPTION

Due to the compact design and construction of the AX568, a 9-15/32 inch wide by 4-47/64 inch high front panel is used. This compact design enables two AX568 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 AX568 units or any other similar sized units. Figure 2-1 provides a complete outline dimensional drawing of the AX568 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 AX568.

* Trademark applied for

1-3. TECHNICAL SPECIFICATIONS

TUNING AND CONTROLLING:

Remote Synthesizer Unit
Remote Terminator Control Unit
Remote Sideband Exciter Unit
Remote RF Translator Unit

MONITORING: Panel Metering:

Forward or reflected transmitter output power.

Indicator Lamps:

ON AIR
CHANNEL ENABLE
FAULT
SYNC
OVL D
E+

DIMENSIONS:

AX568:

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

A5037:

19-inches wide x 19-7/32-inches high

SECTION 2

INSTALLATION

2-1. INITIAL INSPECTION

Each AX568 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 AX568 is equipped with a 9-15/32 inch wide front panel. To mount the AX568 onto a standard 19 inch wide equipment rack or console, a mounting panel A5037 (figures 2-1 and 2-2) must be used.

The above mentioned mounting panel is designed to provide mounting space for eight AX568 units or any combination of other similar sized units. The mounting panel is to be 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 AX568 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 AX568.

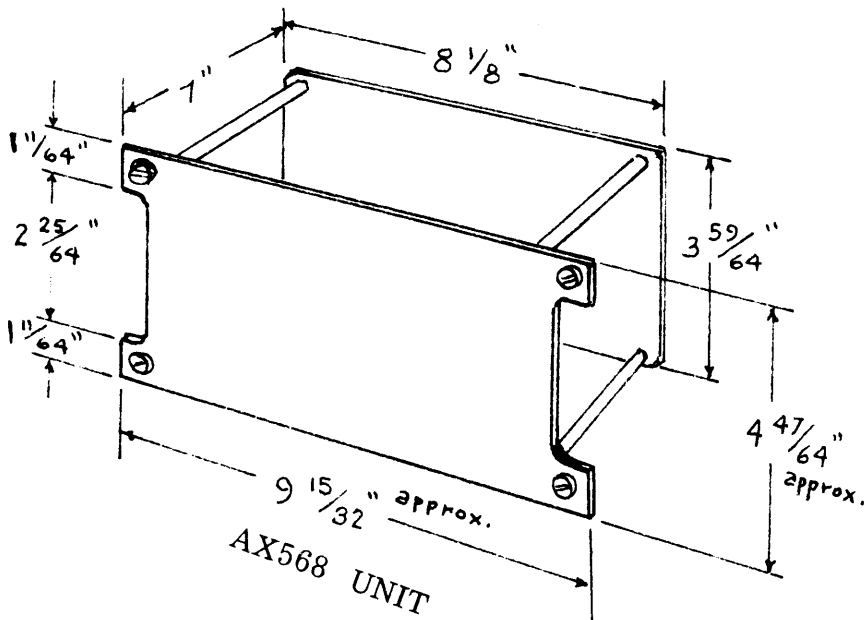
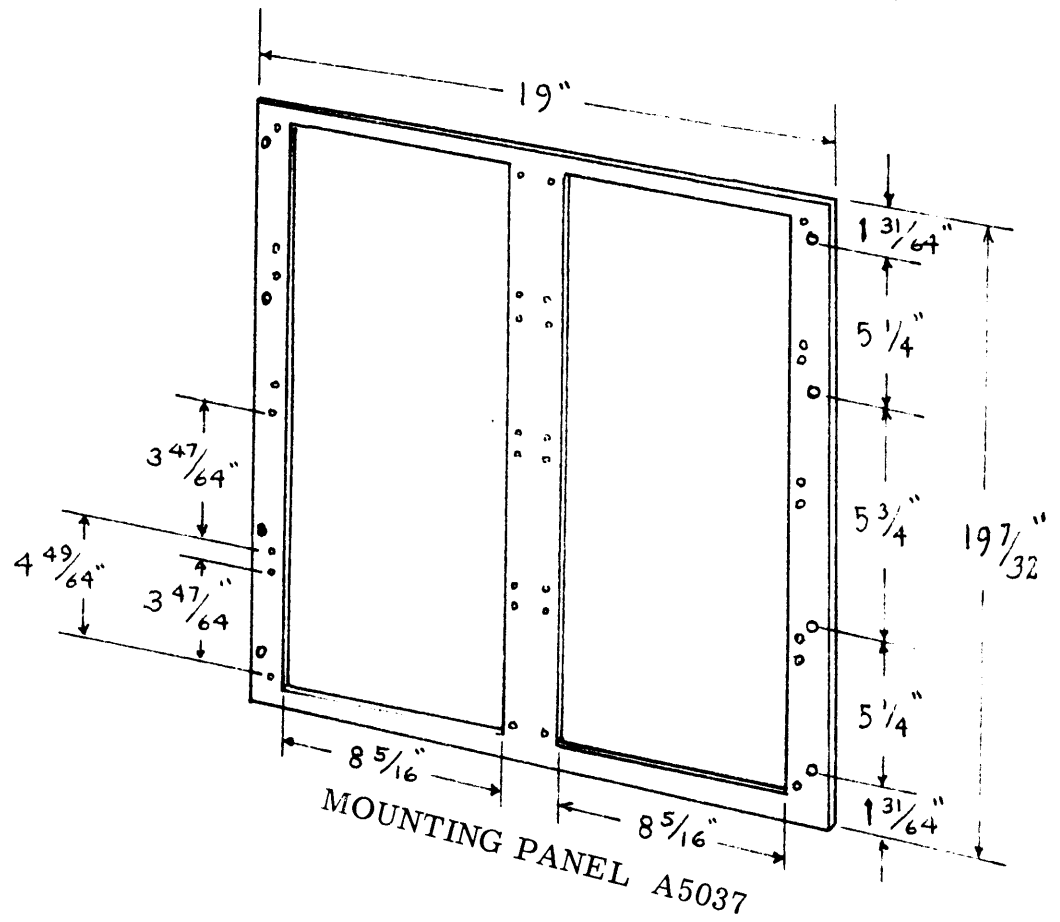


Figure 2-1. Outline Dimensional Drawing

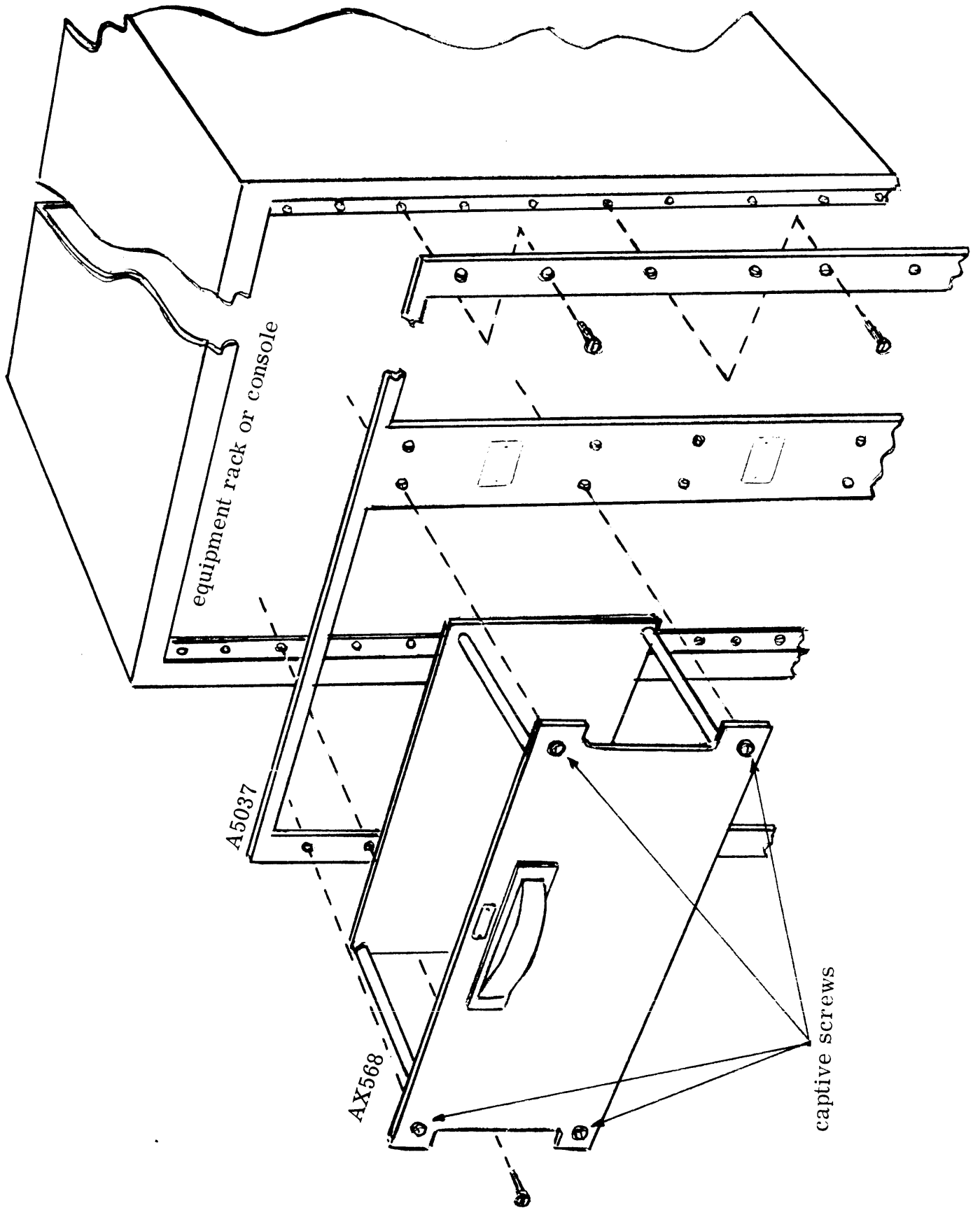


Figure 2-2. Typical Mounting Technique

2.3. ELECTRICAL INSTALLATION

The rear panel mounted connector receptacles J4001, J4002 and J4003 are provided for connection of the AX568 to an associated transmitter system. The necessary wiring, routing and termination data for use with a TMC TechniMatiC transmitter system is shown in the associated transmitter system technical manual.

NOTE

Before installing the interconnecting cable wires, the installer must first establish proper AX 568 and transmitter correspondence, noting this correspondence on the AX 568 front panel XMTR identification plate. For example, AX568 XMTR identification plate marked XMTR #1 will function in conjunction with transmitter #1 in a six transmitter system.

SECTION 3

OPERATOR'S SECTION

3-1. GENERAL

The AX568 enables an operator to remotely tune and control a TMC TechniMatiC* transmitter 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 transmitter output power, both forward and reflected, is also available to the operator. Indicator lamps are also provided to indicate various operating faults or conditions of the remote transmitter system.

3-2. OPERATOR'S INSTRUCTIONS

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

The FAULT RESET pushbutton will light when the transmit carrier frequency setting is incorrect. To clear this fault, the operator may manually retune the remote transmitter synthesizer to the exact frequency setting or he may simply push the FAULT RESET pushbutton. Pushing the reset pushbutton will cause the servo circuitry to automatically retune the remote synthesizer to the proper setting; the FAULT RESET pushbutton lamp will then extinguish.

The CARRIER SUPPRESSION selector switch is used to select the desired amount of carrier suppression at the remote sideband exciter unit.

The four CHANNEL ENABLE lighted pushbuttons are used to activate the desired operating channel or channels. When pressed, the pushbutton lamp will light to indicate channel activation.

The B+ lighted pushbutton, when pressed, activates the remote transmitter high voltage circuits. When pressed, the pushbutton lamp will light to indicate presence of B+ at the remote transmitter.

The OVLD RESET pushbutton switch lamp will light when the B+ circuits fail in the remote transmitter and an overload condition is present. Pressing the OVLD RESET pushbutton will reset the transmitter overload relay.

The SIMPLEX/DUPLEX toggle switch is used to select either SIMPLEX or DUPLEX method of transmitter excitation. SIMPLEX allows for push-to-talk excitation and DUPLEX allows for voice-operated excitation (VOX).

The POWER OUTPUT METER toggle switch is used to select either forward or reflected power output monitoring on the front panel meter.

The ON AIR indicator lamp will light when the remote transmitter is activated or on-the-air.

The TUNE SYNC pushbutton lamp will light when the remote transmitter is operating in synchronization. When the pushbutton lamp extinguishes,

It indicates a loss of synchronization. Pushing the pushbutton will clear the fault by resynchronizing the transmitter.

The TUNE OVERRIDE toggle switch S4012, mounted on the rear panel, is used to provide a steady tune condition. When set ON, the carrier frequency controls on the remote transmitter synthesizer unit are directly controlled by the AX568. Each time the carrier frequency is changed at the AX568, there will be a corresponding change in the carrier frequency at the remote transmitter synthesizer unit. When set OFF, the carrier frequency at the remote transmitter synthesizer unit will correspond to carrier frequency changes made at the AX568 only after the TUNE SYNC pushbutton is pressed.

3-3. OPERATOR'S MAINTENANCE

The operator may, at certain times, be required to perform various aspects of 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 AX568 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. Fig. 3-1)	PANEL DESIGNATION	COMPONENT DESIGNATION	FUNCTION
1	CARRIER SUPPRESSION	Rotary switch, S4003	Selects degree of transmitter carrier suppression.
2	OVL D RESET	Lighted pushbutton switch. SPST S4009 DS4009 Red	Used to indicate and correct overload condition at remote transmitter.
3	B+	Lighted pushbutton switch. DPST S4008 DS4008 Green	Used to indicate and activate B+ at remote transmitter.
4		Meter, M4001	Used to monitor transmitter output forward or reflected power.
5	POWER OUTPUT METER, FWD/REFL	Toggle switch, momentary, center off. S4010	Used to select meter monitoring of transmitter forward or reflected output power on panel meter.

Table 3-1. Controls and Indicators (cont)

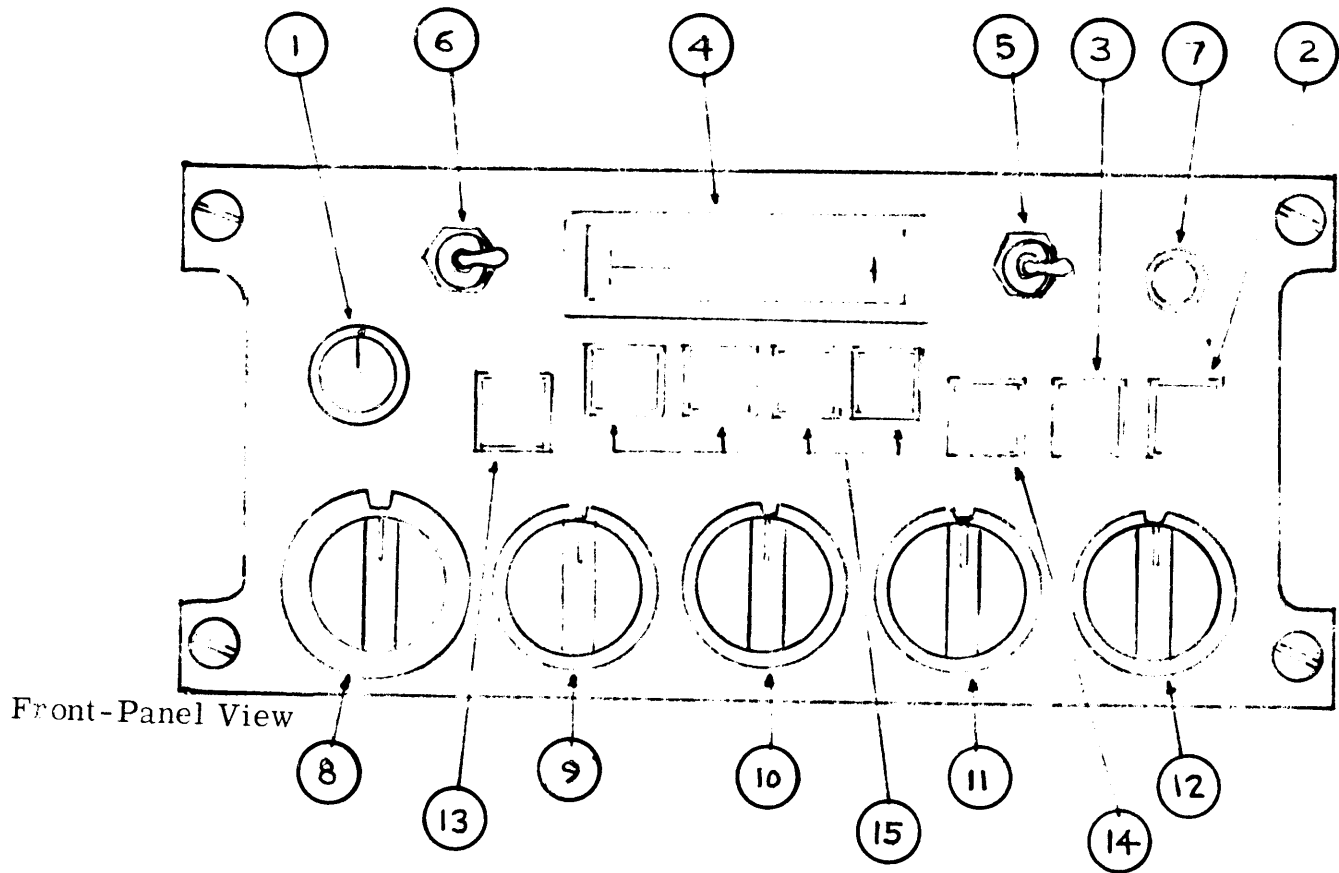
REF DESIG. (Fig. 3-1)	PANEL DESIGNATION	COMPONENT DESIGNATION	FUNCTION
3	SIMPLEX/DUPLEX	Toggle switch. S4011	SIMPLEX permits push-to-talk operation DUPLEX permits VOX (voice-oper- ated-excitation) operation.
7	ON AIR	Indicator lamp, DS4003 Green	Used to indicate remote transmitter is activated or on the air.
8	MC	Binary 32-pos rotary switch. S4013	Used to set the transmitter oper- ating frequency to the desired mega- cycle increment.
9	100 KC	Binary 12-pos rotary switch. S4014	Used to set the transmitter oper- ating frequency to the desired 100 KC increment.
10	10 KC	Binary 12-pos switch. S4015	Used to set the transmitter oper- ating frequency to the desired 10 KC increment.

Table 3-1. Controls and Indicators (cont)

REF DESIG. (Fig. 3-1)	PANEL DESIGNATION	COMPONENT DESIGNATION	FUNCTION
11	1 KC	Binary 12-pos rotary switch. S4016	Used to set the trans- mitter operating frequency to the desired 1 KC incre- ment.
12	.1 KC	Binary 12-pos rotary switch. S4017	Used to set the transmitter operating frequency to the desired .1 KC incre- ment.
13	FAULT RESET	Lighted push- button. S4002 DS4002 Red (momentary)	When lit, indicates d-c correction voltage not pre- sent at remote terminator control unit. When pressed, activates relay sequence to clear fault.
14	TUNE SYNC	Lighted push- button. S4001 DS4001 Amber (momentary)	When not lit, indicates d-c correction voltage not generated by synthesizer. When pressed, activates terminator control unit to clear fault.
15	CHANNEL ENABLE B 2	Lighted push- button switch, DPST. S4007 DS4007 White	When pressed, channel B2 becomes operative; switch lights to indicate channel is active.

Table 3-1. Controls and Indicators (cont)

REF DESIG. (Fig. 3-1)	PANEL DESIGNATION	COMPONENT DESIGNATION	FUNCTION
15 (cont)	CHANNEL ENABLE B1	Lighted push- button switch, DPST. S4006 DS4006 White	When pressed, channel B1 becomes operative; switch lights to indicate channel is active.
	CHANNEL ENABLE A1	Lighted push- button switch, DPST. S4004 DS4004 White	When pressed, channel A1 becomes operative; switch lights to indicate channel is active.
	CHANNEL ENABLE A2	Lighted push- button switch, DPST. S4005 DS4005 White	When pressed, channel A2 becomes operative; switch lights to indicate channel is active.
16	TUNE OVERRIDE	Toggle switch SPST S4012	ON position overrides TUNE pushbutton switch causing steady tune con- dition.



AX568

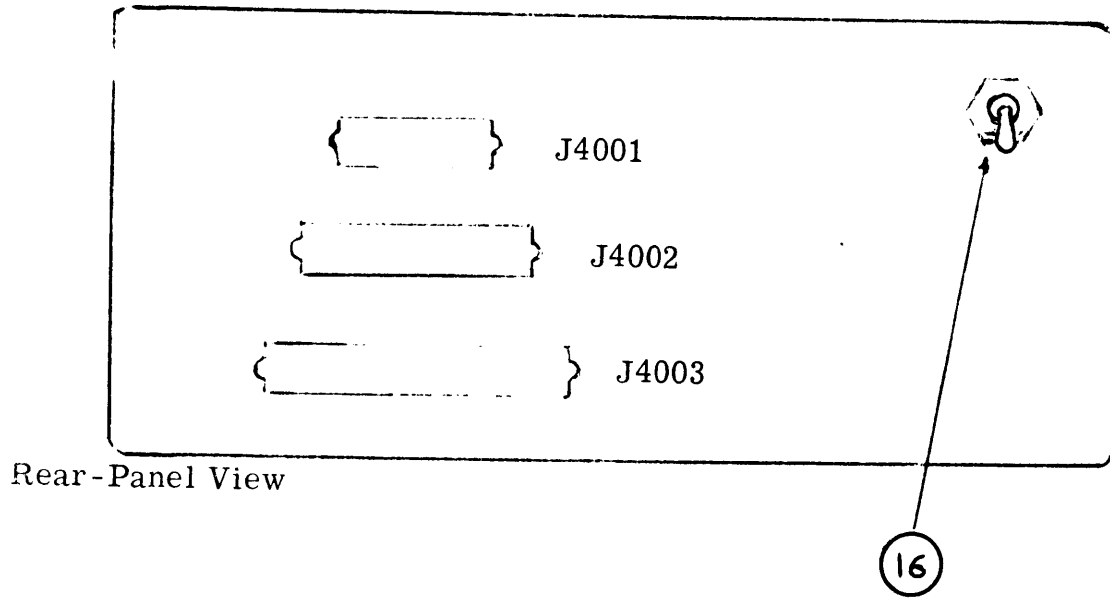


Figure 3-1. Controls and Indicators

SECTION 4

PRINCIPLES OF OPERATION

4-1. INTRODUCTION.

The AX538 is a remote control panel enabling an operator to tune and control the various modular units comprising a remote transmitter 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 synthesizer unit. Therefore, when a particular setting is made on any of the five AX538 control knobs, a d-c voltage is routed to the corresponding slave stepping wafer switch on the remote synthesizer unit. This control voltage activates the servo motor of the particular carrier frequency control, positioning the control to the predetermined setting made at the AX538 unit.

The four CHANNEL ENABLE pushbuttons are used to select and activate any one or combination of the four transmission channels at the remote transmitter. Pushing either one of the four CHANNEL ENABLE pushbuttons B2, B1, A1 or A2, will activate that particular channel for transmission. The CHANNEL ENABLE pushbutton will light when pressed, indicating channel is active.

The CARRIER SUPPRESSION rotary switch is comprised of a master stepping wafer switch electrically connected to a slave stepping wafer switch in the remote sideband exciter unit. Adjustment of the CARRIER SUPPRESSION control at the AX558 will cause a similar adjustment, the desired carrier suppression level setting, at the remote sideband exciter.

The OVLD RESET pushbutton switch lamp will light when B+ is present and an overload condition exists at the remote transmitter. Pushing the OVLD RESET pushbutton switch resets the remote transmitter reset relay.

The B+ pushbutton switch, when pushed, applies B+ to the remote transmitter. The B+ pushbutton switch lamp will light to indicate presence of B+ at the remote transmitter.

The SIMPLEX / DUPLEX toggle switch is used to select either a simplex or duplex method of transmission. When set at the SIMPLEX position, the remote transmitter is set for a push-to-talk method of transmission or excitation. When set at the DUPLEX position, the remote transmitter is set for a VOX (voice-operated-excitation) method of transmission or excitation.

The POWER OUTPUT METER toggle switch is used to select either forward or reflected transmitter output power readings. These readings are transferred to the panel meter for observation. The panel meter is a non-linear scale power meter, calibrated in kilowatts.

The ON AIR indicator lamp is used to indicate that the remote transmitter is operational or on the air.

The FAULT RESET pushbutton lamp, when lit, indicates that a d-c correction voltage is not being received at the remote transmitter terminator control unit. This lamp indication, activated after a 45-second time delay, indicates that the remote synthesizer unit is not generating a d-c correction voltage for use by the terminator control unit servo amplifiers. The d-c correction voltage is used for the tuning servo motor control at the remote transmitter.

The FAULT RESET pushbutton switch, when pushed, routes a reset voltage to the terminator control unit relays and servo amplifier circuitry, thereby clearing the fault.

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

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

The TUNE OVERRIDE toggle switch is electrically connected across the TUNE SYNC pushbutton switch. When set to the ON position, a steady tune condition exists, i. e. , any touch-up tuning adjustment made at any of the five CARRIER FREQUENCY controls will immediately be transferred to the remote transmitter. The OFF position returns full tuning control to the TUNE SYNC pushbutton.

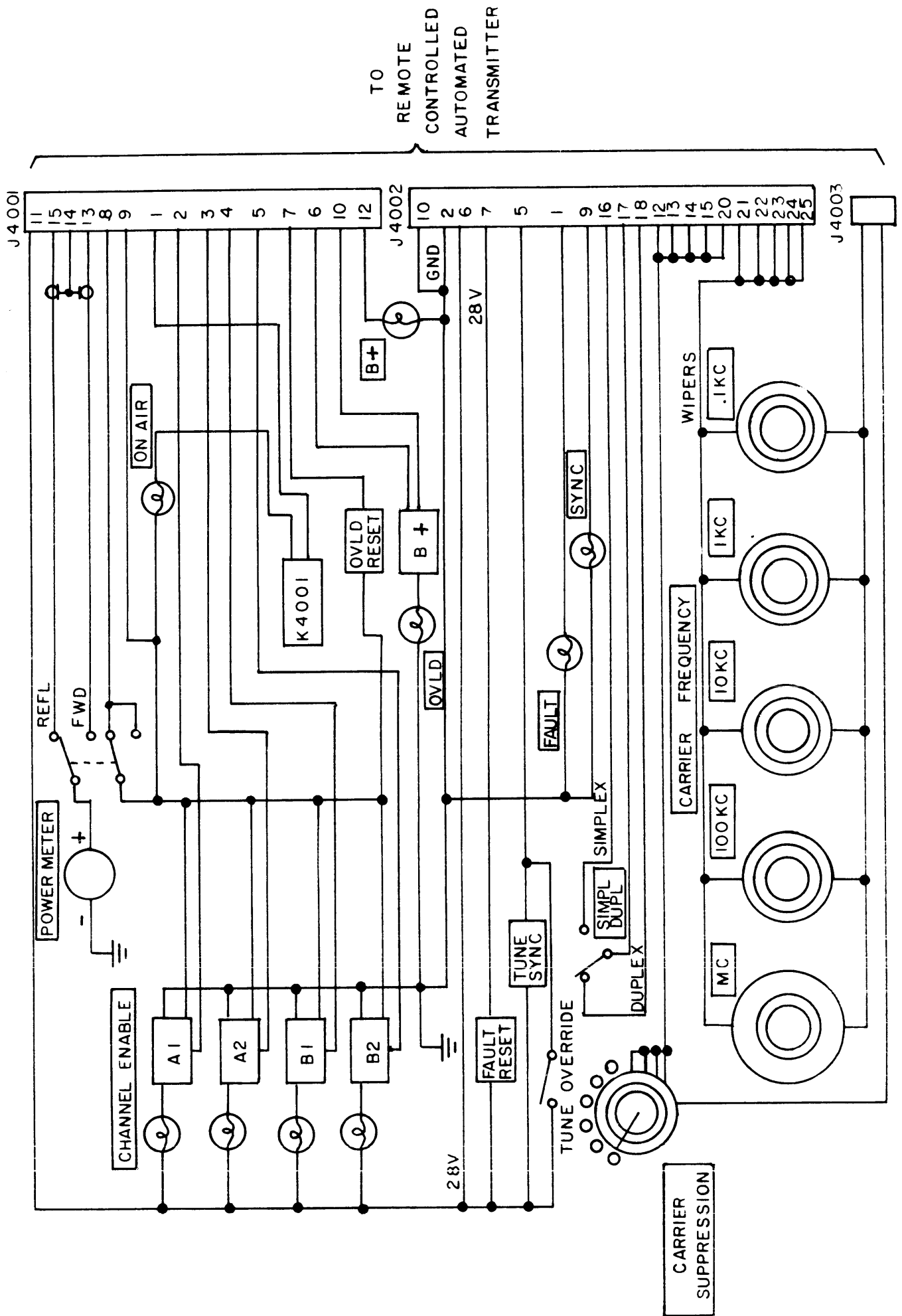


Figure 4-1. Functional Block Diagram, Model AX568

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. Such schedules may vary in accordance with unit environmental operating conditions.

At periodic intervals (at least every six months under normal duty conditions), 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 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 AX568 requires a familiarity of the various unit control functions as used in conjunction with the associated remote equipment. Therefore, before attempting to troubleshoot the AX568, a knowledge of the unit functions and use of the schematic diagram is a primary requirement.

At first indication of a fault, the technician should first ascertain that all input signal connections and levels to the AX568 are correct and operational.

NOTE

When a second or spare AX568 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 AX568 is believed to be a fault, perform the continuity checks shown in the following text and tables. Figures 5-1 through 5-4 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 J4002 pin 21 to J4003 pin 1. Continuity should be observed at MC switch S4013 positions 1 through 16.

Connect ohmmeter to observe continuity from J4002 pin 21 to J4003 pin 2. Continuity should be observed at MC switch S4013 positions 17 through 32.

With the MC switch S4013 at the 2 mc position, physically check wiper of S4013 (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 S4013 to S4018 and S4019.

Proceed with continuity checks listed in table 5-1.

Table 5-1. MC SWITCH CONTINUITY CHECKS

MC SWITCH POSITION	J4003		MC SWITCH POSITION	J4003	
	PIN	PIN		PIN	PIN
1	1	7	17	2	20, 23
2	1	3, 5	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, 5, 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.

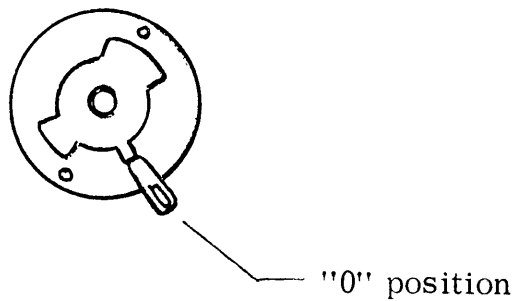
TABLE 5-2. KC SWITCH CONTINUITY CHECKS

FROM	TO	CONTROL AND POSITION
J4002-22	J4003-25	100 KC switch S4014 position 0
	-26	" " " " 1
	-27	" " " " 2
	-28	" " " " 3
J4002-23	J4003-8	10 KC switch S4015 position 0
	-9	" " " " 1
	-10	" " " " 2
	-11	" " " " 3
J4002-24	J4003-29	1 KC switch S4016 position 0
	-30	" " " " 1
	-31	" " " " 2
	-32	" " " " 3
J4002-25	J4003-12	.1 KC switch S4017 position 0
	-13	" " " " 1
	-14	" " " " 2
	-15	" " " " 3

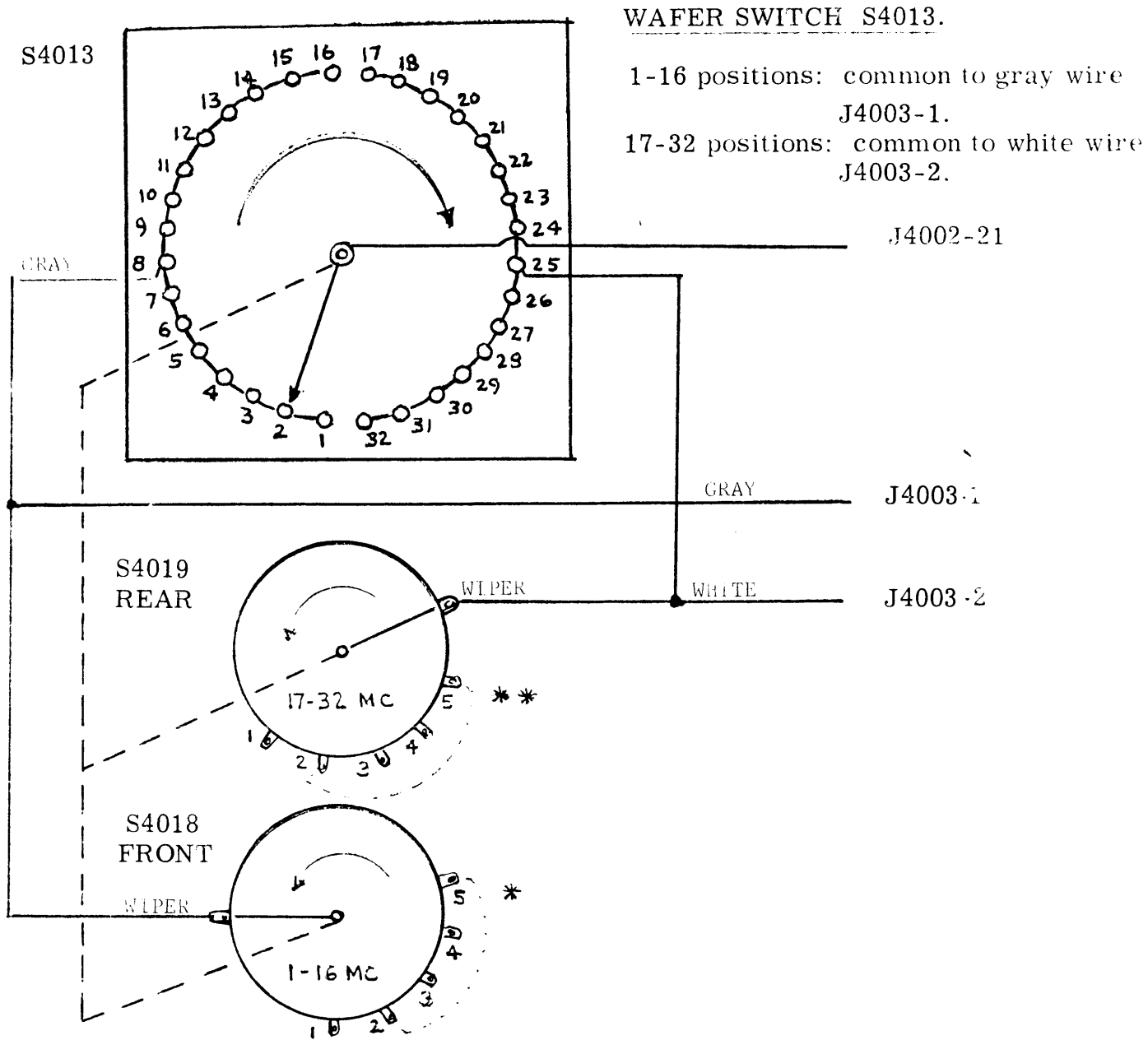
TABLE 5-2. KC SWITCH CONTINUITY CHECKS (CONT)

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.



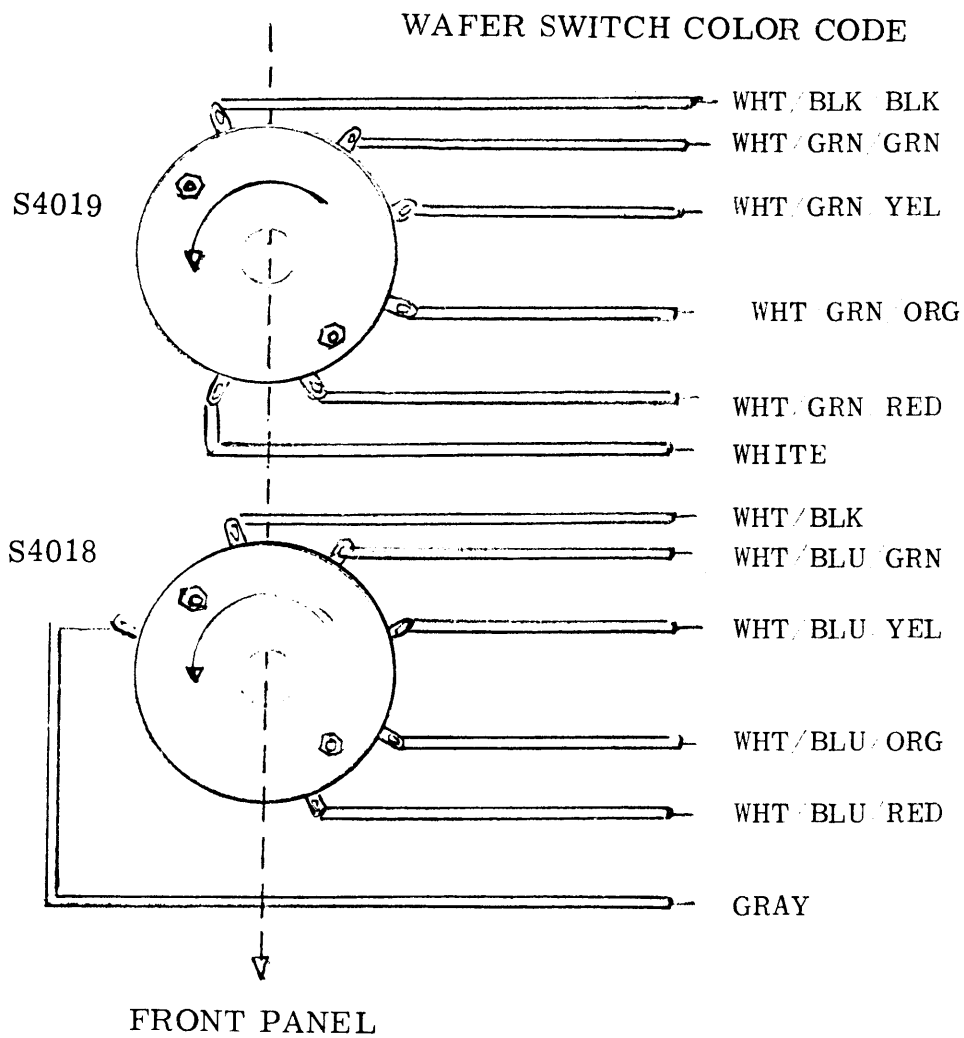
Rear View - S4014 thru S4017



*When MC switch is at 2 mc position, S4018 should read short between positions 2 and 5 as shown.

**When MC switch is at 17 mc position, S4019 should read short between positions 2 and 5 as shown.

Figure 5-1. Gear Synchronization Check.



Contact Arrangements
(PIN VIEW)

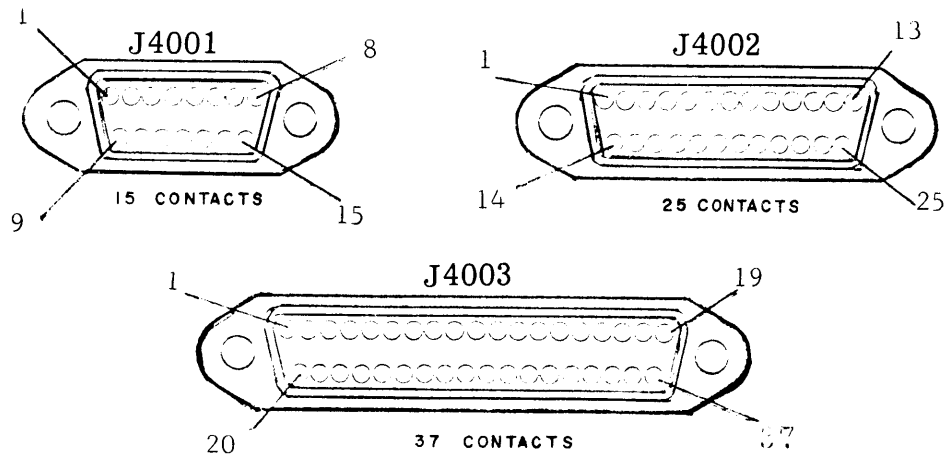


Figure 5-2. Switch and Connector Identification Diagram

5-3. REPAIR AND REPLACEMENT

Maintenance of the AX568 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 3. Polarity and positioning of certain components should be observed before removing so that the replacement component will fit and operate correctly.

a. SWITCH ASSEMBLY A5014-2. - When replacing any of the two switch wafers (S4018 or S4019), 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 5-5 (used in conjunction with table 5-3).

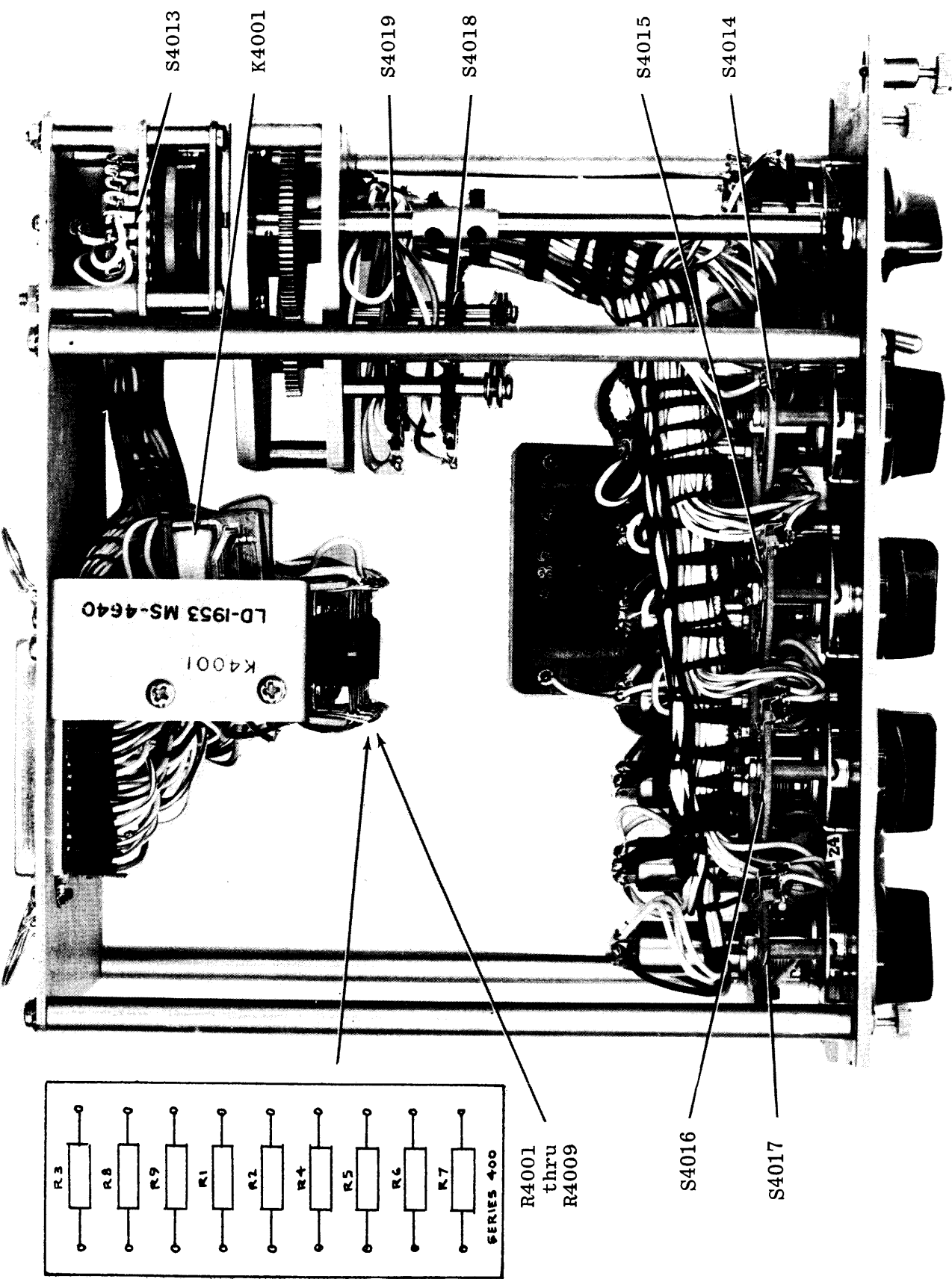


Figure 5-3. Parts Location, Bottom Chassis View

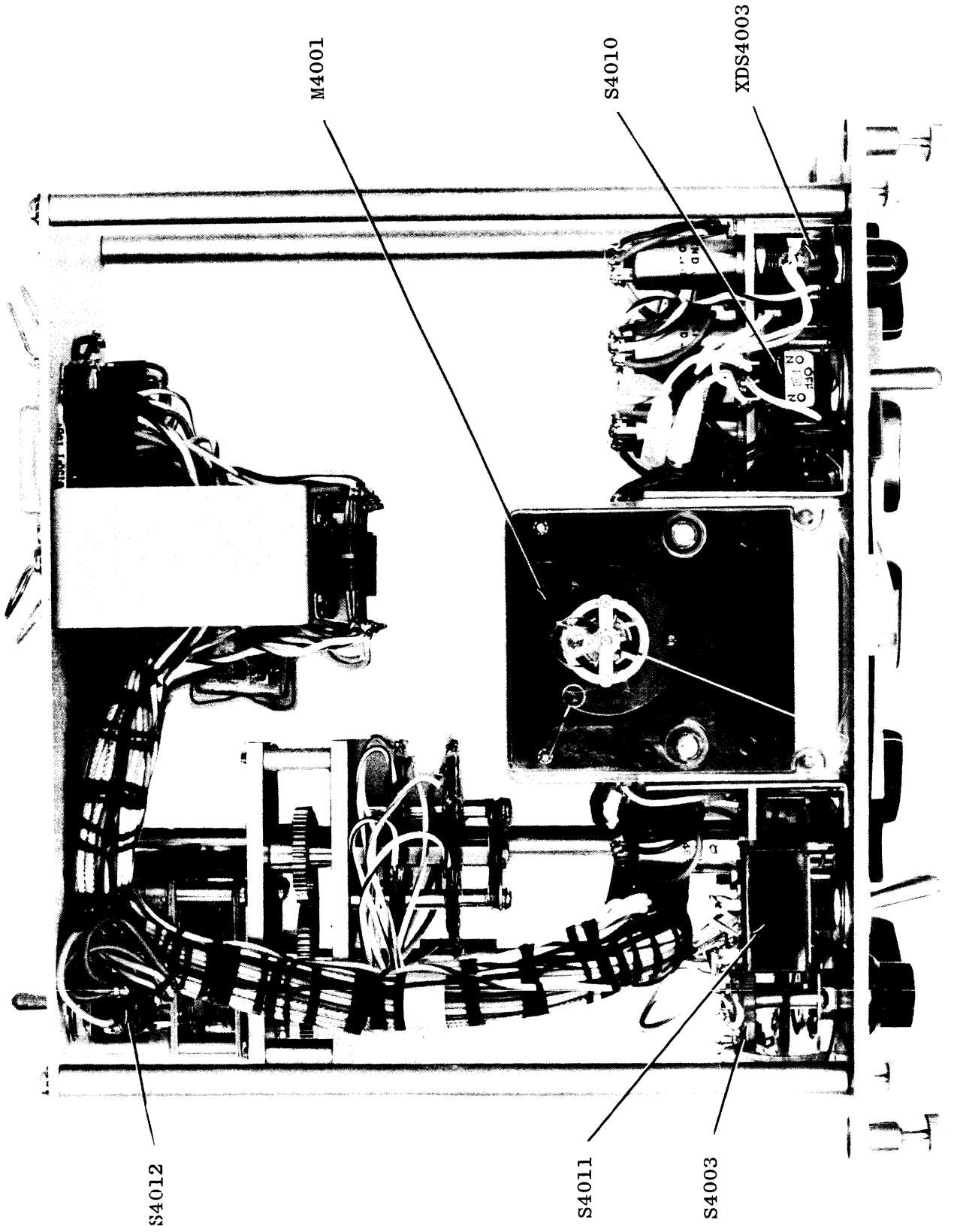


Figure 5-4. Parts Location, Top Chassis View

NOTE: See table 5-3 for parts descriptions.
Part numbers and quantities.

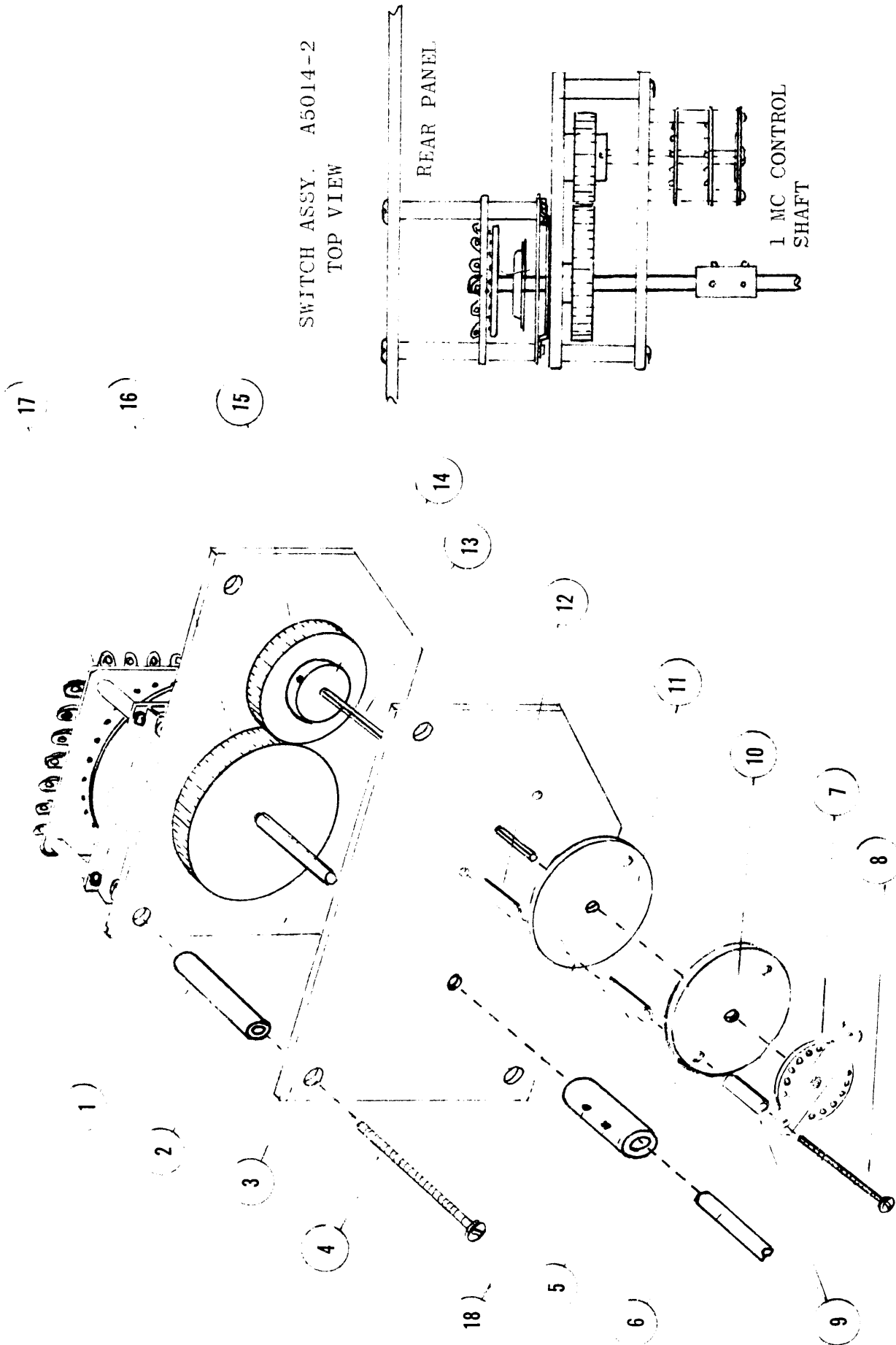


Figure 5-5. Switch Assembly A5014-2.

Table 5 3. Switch Assembly A5014-2 Parts Breakdown

ITEM	DESCRIPTION	TMC PART NO.	QTY.
1	SPACER, SLV	TE140	3
2	PLATE, GR, REAR	PM1244	1
3	PLATE, CR, 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	SCBP0440BN2	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	SLHC0632SI	4

SECTION A PARTS LIST

6-1. INTRODUCTION.

The parts list presented in this section is a cross-reference list of parts identified by reference designation and TMC part number. In most cases, parts appearing on schematic diagrams are assigned reference designations in accordance with MIL-STD-16. Whenever practicable, the reference designation is marked on the equipment, close to the part it identifies. In most cases, mechanical and electro-mechanical parts have TMC part numbers stamped on them.

To expedite delivery when ordering any part, specify the following:

- a. Generic name.
- b. Reference designation.
- c. TMC part number.
- d. Model and serial numbers of the equipment containing the part being replaced; this can be obtained from the equipment nameplate.

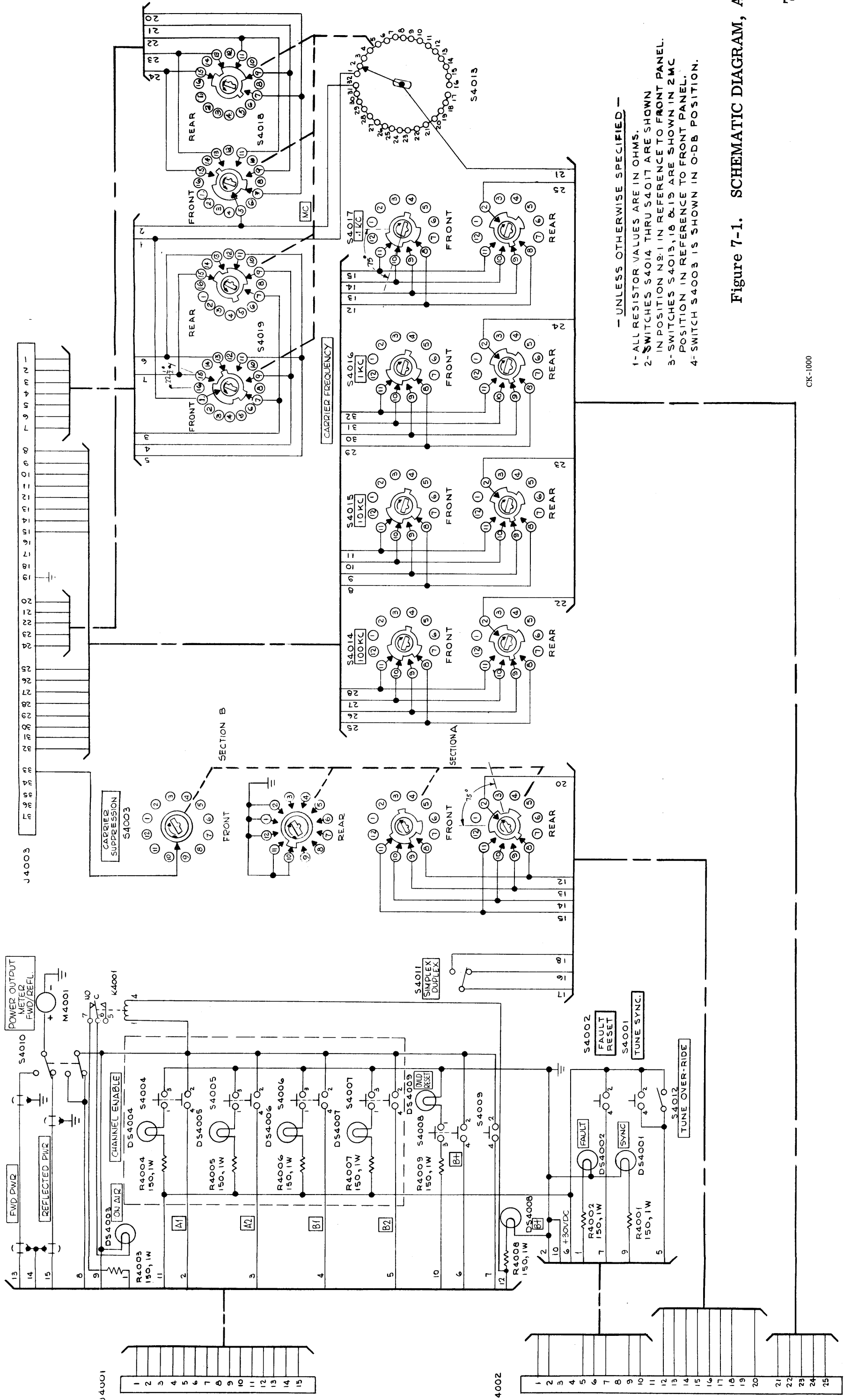
For replacement parts not covered by warranty (refer to the warranty sheet in front of manual); address all purchase orders to:

The Technical Materiel Corporation
Attention: Sales Department
700 Fenimore Road
Mamaroneck, New York

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
DS4001	LAMP, incandescent: 28 v. .04A single contact, miniature, T-1-3/4 bulb.	BI110-7
DS4002 thru DS4009	Same as DS4001.	
J4001	CONNECTOR, receptacle, electrical: male, 15 pins.	JJ313-1
J4002	CONNECTOR, receptacle, electrical, male, 25 pins.	JJ313-2
J4003	CONNECTOR, receptacle, electrical, male, 37 pins.	JJ313-3
K4001	RELAY, arm. DPDT	RL156-1
M4001	METER: 100 ma F.S. edgewise	MR191-2
R4001	RESISTOR, fixed, composition: 150 ohms, +10%, 1 w.	RC32GF151K
R4002 thru R4009	Same as R4001.	
S4001	SWITCH, pushbutton: SPST, comprises XDS4001.	SW394-1-A2
S4002	SWITCH, pushbutton: SPST, comprises XDS4002.	SW394-1-R1
S4003	SWITCH, rotary.	SW415
S4004	SWITCH, pushbutton: DPDT, comprises XDS4004.	SW394-2-W3
S4005	SWITCH, pushbutton: DPDT, comprises XDS4005.	SW394-2-W4
S4006	SWITCH, pushbutton, DPDT, comprises XDS4006.	SW394-2-W5
S4007	SWITCH, pushbutton: DPDT, comprises XDS4007.	SW394-2-W6
S4008	SWITCH, pushbutton: DPST, comprises XDS4008.	SW394-2-G7

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
S4009	SWITCH, pushbutton; SPDT, comprises XDS4009.	SW394-1-RB
S4010	SWITCH, toggle; momentary contact, center off, DPDT.	ST107-SX
S4011	SWITCH, toggle; SPDT.	ST22D
S4012	SWITCH, toggle; SPDT.	ST103-11-62
S4013	SWITCH, rotary; 32-position.	SW398
S4014 Type S4017	SWITCH, rotary:	SW397
S4018	SWITCH SECTION, rotary; 16-pos. part of sw. assy. A5014-2.	WS135
S4019	SWITCH SECTION, rotary; 600 assy. A5014-2.	WS136
XDS4001	Non-replaceable item, P O S4001.	
XDS4002	Non-replaceable item, P O S4002.	
XDS4003	SOCKET, lamp; miniature.	TS153-2
XDS4004	Non-replaceable item, P O S4004.	
XDS4005	Non-replaceable item, P O S4005.	
XDS4006	Non-replaceable item, P O S4006.	
XDS4007	Non-replaceable item, P O S4007.	
XDS4008	Non-replaceable item, P O S4008.	
XDS4009	Non-replaceable item, P O S4009.	
XK4001	SOCKET, relay w retainer.	TS171-1
<u>LOOSE ITEMS SUPPLIED</u>		
P4001	CONNECTOR, electrical; 15 contacts.	JJ310-1H
P4002	CONNECTOR, electrical; 25 contacts.	JJ310-2H
P4003	CONNECTOR, electrical; 37 contacts.	JJ310-3H

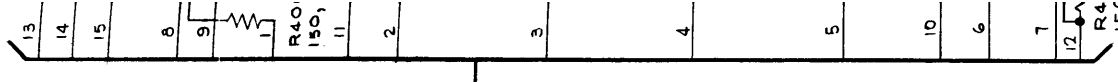
SECTION 7
SCHEMATIC DIAGRAMS



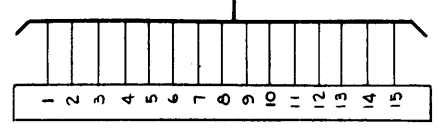
— UNLESS OTHERWISE SPECIFIED —

- 1- ALL RESISTOR VALUES ARE IN OHMS.
- 2- SWITCHES S4014 THRU S4017 ARE SHOWN IN POSITION NO. 1 IN REFERENCE TO FRONT PANEL.
- 3- SWITCHES S4013, 18 & 19 ARE SHOWN IN ZMC POSITION IN REFERENCE TO FRONT PANEL.
- 4- SWITCH S4003 IS SHOWN IN O-DB POSITION.

Figure 7-1. SCHEMATIC DIAGRAM, AX568



J4001



J4002

