TECHNICAL MANUAL

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL FOR COMMUNICATIONS CONTROL SET AN /FSW-8 (V)

NSN 5895-00-441-4925

This copy is a reprint which includes current pages from Changes 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY

JULY 1974

Change No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
CHANGE WASHINGTON, DC 19 August 1977

Direct Support and General Support
Maintenance Manual
COMMUNICATIONS CONTROL SET
AN/FSW-8(V)
NSN 5895-00-441-4925

TM 11 5895-241-34, 3 July 1974, is changed as follows:

1. The title is changed as shown above.

2. New or changed material is indicated by a vertical bar in the margin.

3. Remove and insert pages as indicated below:

Remove	Insert
1-1 and 1-2	1-1, 1-2, and 1-2.1
4-13 and 4-14	4-13 and 4-14
4-37 and 4-40	4-37 and 4-40
5-1 and 5-2	5-1 and 5-2
5-19 (blank) through 5-22	5-19 (blank) through 5-22
None	5-22.1
5-23 through 5-26	5-23 through 5-26
5-39 and 5-40	5-39 and 5-40
5-45 through 5-48	5-45 through 5-48
5-55 and 5-56	5-55 and 5-56
FO-12[(3)]	FO-12[(3)]

4. File this change sheet in the front of the manual for references purposes.

By Order of the Secretary of the Army:

BERNARD W. ROGERS
General, United States Army
Chief of Staff

Official:
PAUL T. SMITH
Major General, United States Army
The Adjutant General

DISTRIBUTION:

Active Army: To be distributed in accordance with DA Form 12-36A, Direct and General Support maintenance requirements for all geographical areas.

ARNG and USAR: None

TECHNICAL MANUAL
No. 11-5895-241-34

DEPARTMENT OF THE ARMY
HEADQUARTERS
WASHINGTON, DC, 3 July 1974

Direct Support and General Support Maintenance Manual

for

COMMUNICATIONS CONTROL SET AN/FSW-8(V)

*This manual supersedes TM 11-5895-241-35, 16 September 1964, including all changes.

LIST OF ILLUSTRATIONS

CHAPTER 1
GENERAL FUNCTIONING OF EQUIPMENT

Section I. GENERAL

1-1. Scope

a. This manual covers direct and general support and depot maintenance for Communication Control Set AN/FSW-8(V). It includes instructions for direct and general support and depot troubleshooting, testing aligning, repairing the equipment, replacing maintenance parts, and repairing specified maintenance parts. It also lists tools, materials, and test equipment required for direct and general support and depot maintenance. Detailed functions of the equipment are covered in paragraphs 2-4 through 3-43.

NOTE

The communications control set procured on Order No. C-5-20447(E) is similar to Communications Control Set AN/FSW-8(V). Information in this manual applies to Communication Control Sets AN/FSW-8(V), unless otherwise specified.

b. The complete technical manual for this equipment includes TM 11-5895-241-12, TM 11-5895-241-20P, and TM-5895-241-35P.

1-2. Indexes of Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

1-2.1. Reporting of Errors

The reporting of errors, omissions, and recommendations for improving this manual by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to Commander, US Army Electronics Command, ATTN: DRSEL-MA-Q, Fort Monmouth, NJ 07703.

1-2.2. Reporting Equipment Improvement Recommendations (EIR)

EIR will be prepared using DA Form 2407, Maintenance Request. Instructions for preparing EIR's are provided in TM 38-750, The Army Maintenance Management System. EIR's should be mailed directly to Commander, US Army Electronics Command, ATTN: DRSEL-MA-Q, Fort Monmouth, NJ 07703.

1-2.3. Administrative Storage

Administrative storage of equipment issued to and used by Army activities shall be in accordance with TM 74090-1.

1-2.4. Destruction of Army Electronics Material

Destruction of Army electronics material to prevent enemy use shall be in accordance with TM 750-244-2.

1-3. Equipment Analysis

a. Basic nomenclature followed by (V) indicates that any combination of AN/FSW-8 components may be used to provide radio communication control between a ground facility and aircraft traffic.

b. The combination of components (a above) is determined by the class of the airfield, the number of radio channels that must be controlled, and the physical arrangement of the airfield. The number of radio receiving and transmitting channels controlled depends on the degree of aircraft traffic and the existing facilities at a particular airfield and the degree of aircraft traffic anticipated in future expansion of airfield facilities.

c. The functions of the AN/FSW-8(V) are divided into several sections. General theory is covered in a block diagram analysis of the equipment (para 1-6 through 1-9). Detailed theory of the major circuits is covered in a functional diagram analysis (para 2-1 through 2-21); in addition, the individual components of the AN/ FWS-8(V) are analyzed schematically (para 3-1 through 3-43).

1-4. General System Arrangement
(fig. 1-1)

a. Communication Control Set AN/FSW-8(V) provides radio communication control (c below) and displays meteorological data (e below) and field status information (f below) for control towers and ground control approach (GCA) systems as required at class A, B, or C airfields.

b. An AN/FSW-8(V) system may be composed of either two Consoles, Communication Control OA-2055/ FSW-8 or OA-2056/FSW-8, one Meteorological Display Console OA-2054/FSW-8, one Indicator, Field Status ID-877/FSW-8 with Switch Box SA-751/FSW-8 and one Communication Station, Remote Control.

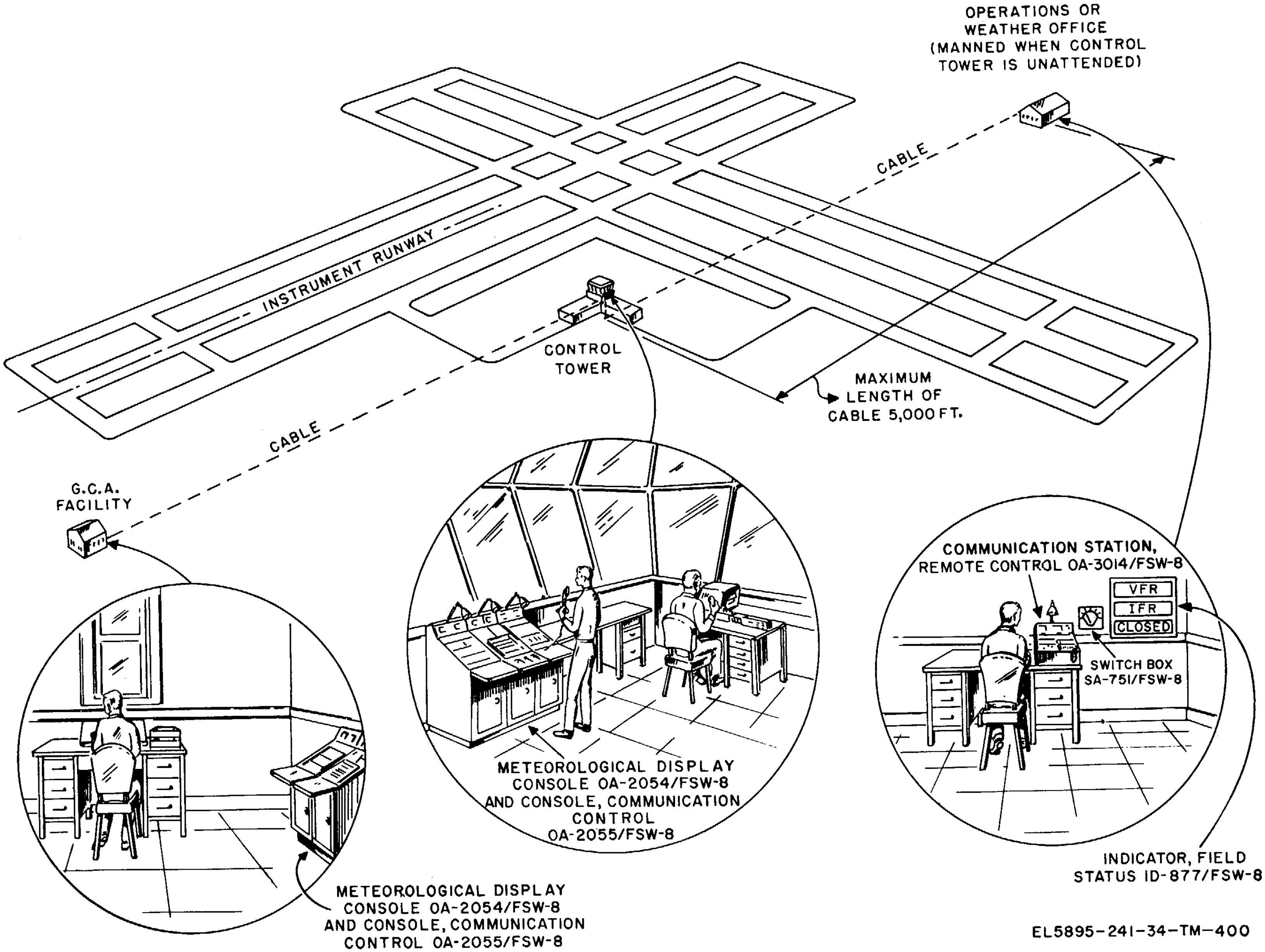


Figure 1-1. Communication Control Set AN/FSW-8 (V), typical system arrangement diagram

OA-3014/FSW-8. One OA-2055/FSW-8 or one OA-2056/FSW-8 is required for each control position provided for at a particular airfield. One OA2054/FSW-8 must be installed in the control tower adjacent to either the OA-2055/FSW-8 or OA-2056/FSW-8, regardless of the class of the airfield. An additional OA-2054/FSW-8 is required at the GCA facility if the GCA equipment does not display the necessary meteorological data.

c. The OA-2055/FSW-8 and OA-2056/FSW-8 are identical except for the number of radio circuits. The OA-2055/FSW-8 provides all controls and circuits necessary for operating and controlling 10 radio channels; the OA-2056/FSW-8 provides all controls and circuits necessary for operating and controlling 20 radio channels. The OA-2055/FSW-8 and OA-2056/FSW-8 also contain appropriate circuitry for up to 10 local telephone connections and contain indicators which repeat the field status condition selected at the SA-751/FSW-8 (f below).

d. The OA-3014/FSW-8, used in conjunction with the OA-2055/FSW-8 or OA-2-56/FSW-8 at installations requiring remote operation, contains control circuitry for up to, 10 radio receiver and 10 radio transmitter channels. The OA3014/FSW-8 cannot operate independently and must be connected to the radio transmitting circuits of the OA-2055/FSW-8 or OA-2056/FSW-8 for normal operation. The OA-3014/FSW-8 also contains the telephone and field status provisions available at the OA-2055/FSW-8 or OA-2056/ FSW-8 (c above).

e. The OA-2054/FSW-8 provides visual display of time of day, windspeed, wind direction, and barometric pressure readings. The unit also contains flight data boards on which the operator maintains flight progress information concerning the landing and departure times of aircraft utilizing the particular airfield.

f. The ID-877/FSW-8 consists of three indicator windows that are lighted from the inside by three incandescent lamps and a four-position rotary selector switch mounted on SA-751/FSW-8. The ID-877/FSW-8 and SA-751/FSW-8 are designed to be mounted on a wall where they are visible to all operations personnel and aircraft pilots. The upper window of the ID-877/ FSW-8 indicates that visual flight regulations (VFR) are in effect, the center window indicates instrument flight regulations (IFR) are in effect, and the bottom window indicates that the airfield is closed (CLOSED) to air traffic. The rotary selector switch on the SA-751/FSW-8 has three positions comparable to the markings on the indicator windows. The flight condition selected at the SA-751/FSW-8 is simultaneously displayed by the field status circuits of the OA2055/FSW-8 or OA-2056/FSW-8 and OA-3014/ FSW-8 (c and d above).

1-5. Differences in Models

a. Communication Control Set AN/FSW-8(V) may be furnished with either an OA-2055/ FSW-8 or an OA-2056/FSW-8 and both units are identical except for the number of radio circuits (para 1-4c). The controls and circuits for the 10 additional radio channels provided by the OA-2056/FSW-8 are contained in modular assemblies that are exact duplicates of the assemblies installed for 10-channel operation. The OA-2055/FSW-8 contains one Control-Monitor C-3445/FSW-8 and one Control, Transmitter C-3446/FSW-8. The OA-2056/FSW-8 contains two Control-Monitors C-3445/FSW-8 and two Control, Transmitters C-3446/FSW-8. Information in this manual applies to both the OA-2055/ FSW-8 and OA-2056/FSW-8 unless otherwise specified.

b. The OA-2054/FSW-8 may be furnished with either a Transmitter, Barometric Data T-772/FSW-8 or T-773/FSW-8. Both units are identical except that the T-772/FSW-8 elevation range is from 100 feet to 3,300 feet and the T-773/FSW-8 elevation range is from 3,200 feet to 6,600 feet.

c. The following chart lists differences in components procured on Order No. C-5-20447(E).

Item	Component	Component
	CY-3020/FSW-8	CY-3020A/FSW-8
Circuit breaker and fuses	Mounted externally on power panel	Mounted internally on assembly.
	CY-2940/FSW-8	CY-2940A/FSW-8
Circuit breakers	Mounted externally on power panel	Mounted internally on assembly.
Clock dimmer control	Not included	Included on power panel.
	PP-2795/FSW-8	PP-2795A/FSW-8
	and	and

Item	Component	Component
	PP-2803/FSW-8	PP-2803A/FSW-8
Transistors	2N167, 2N270, 2N301	2N167A, 2N526, 2N297A.
	ID-854/FSW-8	ID-854A/FSW-8 -
Lamps	ID-854/FSW-8 (1 reqd)	ID-854A/FSW-8 (8 rqd).
Indicator assembly	Can be disassembled	Cannot be disassembled.
	All units	All units.
Diodes 1N253, 1N281	1N253, 1N270.	
	1N305, 1N538	1N270, 1N538.
	1N1451, 1N1451	1N1614, 1N1614R.
	1N1518, 1N1520	1N3823A, 1N3827A.
	1N1523, 1N1591	1N3020B, 1N2970B.
	1N2518, AM1010	1N1616, 1N1200.
Transistors	2N167, 2N270	2N167A, 2N526.

Section II. BLOCK DIAGRAM ANALYSIS

1-6. Communication Control Set AN/FSW-8(V)
(fig. 1-2)

a. The radio control circuits of the AN/FSW8(V) perform two independent functions: receiving and transmitting. Incoming audio signals from distant airfield receivers are applied to a particular radio receiver channel either in the OA-2055/FSW-8, OA-2056/FSW-8, or OA3014/FSW-8. The received signal illuminates an associated receiver supervisory indicator lamp to indicate that the radio channel is in use and a circuit control switch, when operated, will connect the audio signal to either a loudspeaker or headset-microphone circuit (para 2-5). Remote control of the OA-2055/FSW-8 receiving capabilities is provided by an alternate signal connection to the OA-3014/FSW-8.

b. The telephone circuits of the AN/ FSW-8(V) are designed for local battery operation, and either of two methods may be used to cross-connect the telephone circuits. Each telephone line may be connected to a telephone circuit in all components of the AN/FSW-8(V) (party line), or a telephone line may be terminated in only one component of the AN/ FSW-8(V) (private line). The telephone circuits of the AN/FSW-8 (V) may also be interconnected on a line-by-line basis to external telephone facilities (para 2-8).

c. Power for the AN/FSW-8(V) is supplied from an external power source, and the operating voltages for the individual components of the AN/FSW-8(V) are furnished by the power supply circuits (para 2-12 and 2-16).

d. Airfield flight conditions selected at Switch box SA-751/FSW-8 -re displayed at Indicator, Field Status ID-877/FSW-8 and are also repeated by the field status circuits of the OA2055/FSW-8, OA-2056/FSW-8, and OA-3014/ FSW-8 (para 2-11).

e. Meteorological Display Console OA-2054/ FSW-8 contains direct-reading instruments for the display of meteorological data (para 2-17). Windspeed and wind direction data from an external windspeed and wind direction transmitter are applied to windspeed and wind direction circuits for visual display. Atmospheric pressure is converted into an electrical signal within the barometer and digital readout circuits where it is displayed on digital readout indicators.

1-7. Console, Communication Control OA-2055/FSW-8
(fig. 1-3)

The OA-2055/FSW-8 may be operated independently of the other units of the AN/FSW8(V) or by remote control from the OA-3014/ FSW-8 (para 1-8). Remote operation is required when the control tower or GCA facilities are unattended. The communication functions of the OA-2055/FSW-8 include radio receiver circuits for the control and monitoring of audio signals from distant radio receivers (a below), and radio transmitter circuits for the processing and transmission of audio signals to distant radio transmitters (b below). Other special provisions of the OA2055/FSW-8 include receiving and transmitting functions to be used as part of an intercommuni-

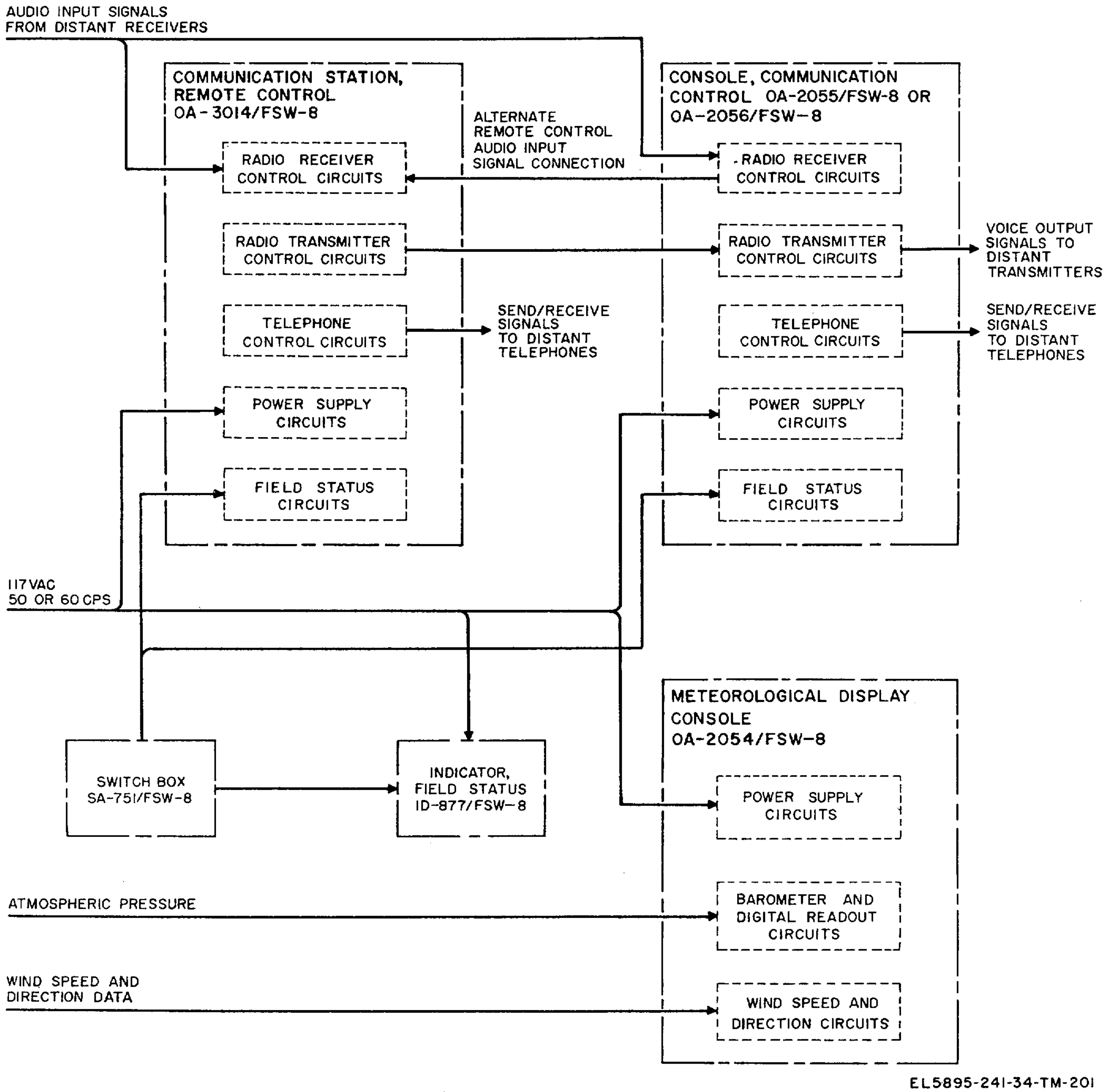


Figure 1-2. Communication Control Set AN/FSW-8(V), block diagram.

cation system (para 2-6) and connection which permit transmitted or received signals to be monitored or recorded by external equipment. Telephone control circuits (c below) are provided to interconnect the OA-2055/FSW-8 to external telephone facilities. All operating voltages for the OA-2055/FSW-8 are furnished by Power Supply PP-2803/FSW-8 (para 2-12). The OA-2055/ FSW-8 also contains a field status indicator which displays the airfield flying conditions selected at the SA-751/FSW-8.

a. Radio Receiver Control Circuits. Audio input signals from distant airfield radio receivers are applied to Control-Monitor C-3445/FSW-8 which contains the controls, supervisory indicator lamps, and preamplifier circuits of 10 radio receiver channels. The audio signals from each radio receiver channel are applied, by switching arrangements, to the following:

(1) Amplifier circuits contained in Amplifier Assembly AM-2827/FSW-8. A circuit control switch selects either Headset-Microphone H-195/

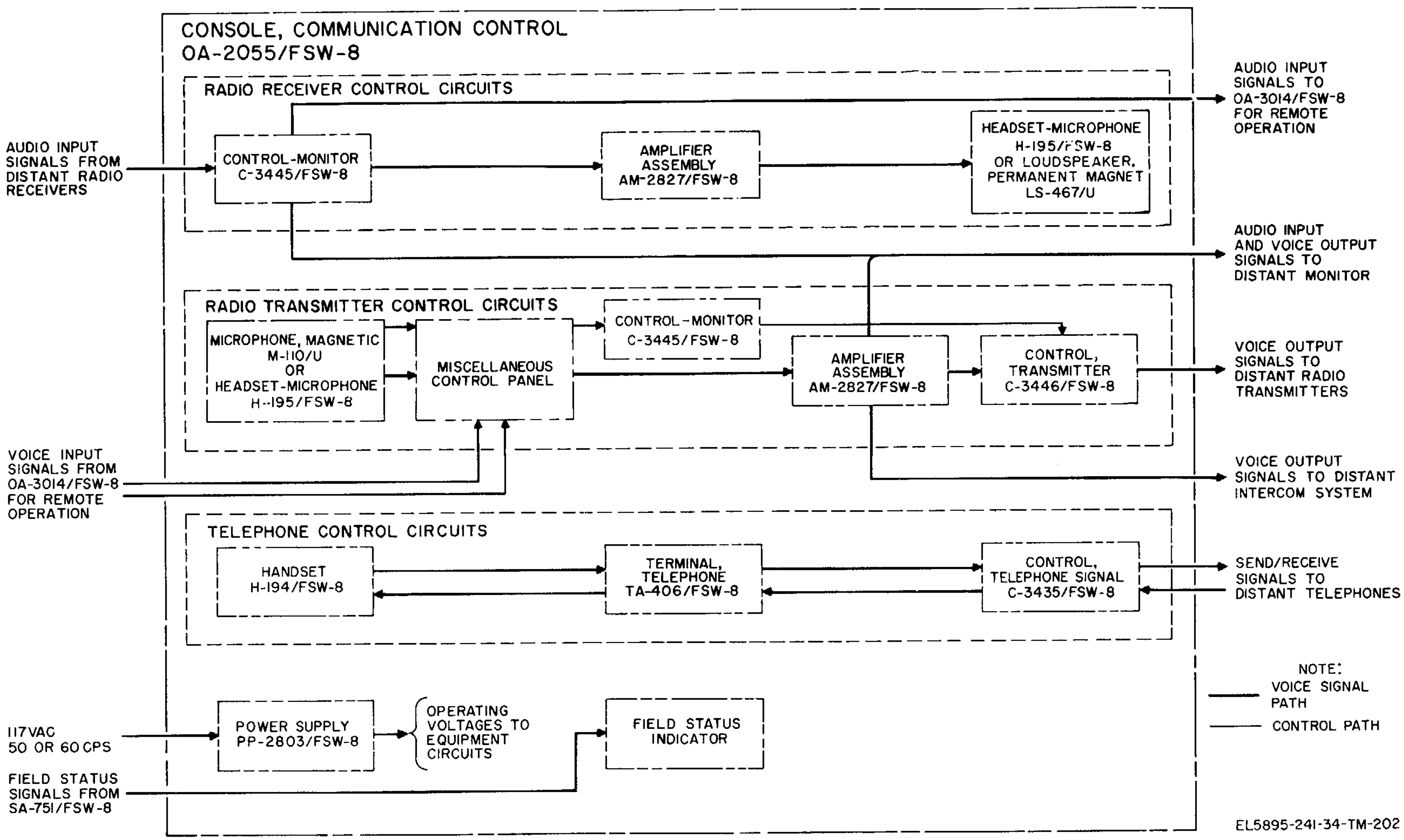


Figure 1-3. Console, Communication Control OA-2055/ FSW-8, block diagram.

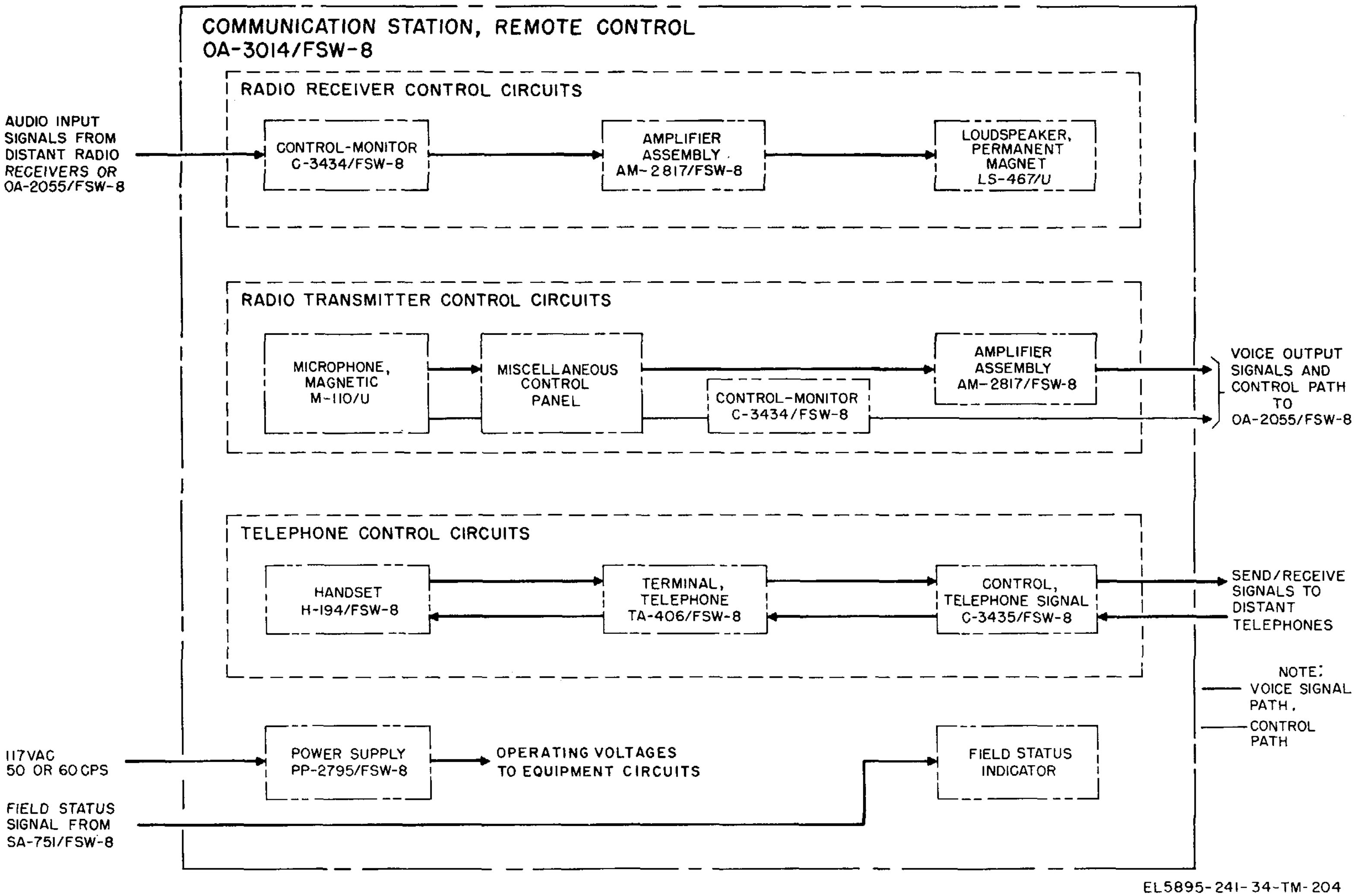


Figure 1-4. Communication Station, Remote Control OA-014/FSW-8, block diagram

FSW-8 or Loudspeaker, Permanent Magnet LS467/U.

(2) Corresponding radio receiver channels in the OA-3014/FSW-8 for remote control operation.

(3) An external monitor, such as a recorder, to record voice transmissions between the control tower operator and the aircraft pilot.

b. Radio Transmitter Control Circuits.

(1) Voice output signals are originated at either Microphone-Magnetic M-110/U or Headset-Microphone H-195/FSW-8, as selected by the control tower operator, and applied to amplifier circuits within the AM-2827/FSW-8. The amplified output from AM-2827/FSW-8 is applied to the following:

(a) Distant radio transmitters by operation of control circuits selected in either Control, Transmitter C-3446/FSW-8 or Control-Monitor C-3445/FSW-8.

(b) External recording or monitoring equipment.

(c) Intercommunication circuits of external airfield communications equipment having similar circuit arrangements as the OA-2055/ FSW-8.

(2) When the OA-2055/FSW-8 is connected for remote operation, voice input signals are originated at the OA-3014/FSW-8 and applied to the distant radio transmitters through the amplifier and transmitter control circuits of the OA-2055/FSW-8.

c. Telephone Control Circuits. The telephone circuits of the OA-2055/FSW-8 provide 10 control channels which may be operated to connect Handset H-194/FSW-8 to 10 distant telephones. Telephone send/receive signals are originated or received at the H-194/FSW-8. Controls and supervisory indicator lamps are contained in Terminal, Telephone TA-406/FSW-8; signaling circuits are provided in Control, Telephone Signal C-3435/FSW-8.

1-8. Communication Station, Remote Control OA-3014/FSW-8
(fig. 1-4)

The OA-3014/FSW-8 is used in conjunction with the OA-2055/FSW-8 or OA-2056/FSW-8 (para 1-7) at installations requiring remote control operation. The OA-3014/FSW-8 contains receiving circuits (a below) to monitor the airfield radio receivers connected to the OA-2055/ FSW-8 or OA-2056/FSW-8, and transmitting circuits (b below) to control the OA-2055/ FSW-8 transmitting capabilities from a remote location. The telephone circuits and field status provisions of the OA-3014/FSW-8 are identical to those of the OA-2055/FSW-8. Primary power is furnished to the OA-3014/FSW-8 from an external power source and all operating voltages are supplied from Power Supply PP-2795/FSW-8 (para 2-15).

a. Radio Receiver Control Circuits. The OA3014/FSW-8 receives audio input signals either directly from the distant airfield radio receivers or by alternate connection from the OA-2055/ FSW-8 or OA-2056/FSW-8 (fig. 1-2). The audio input signals are applied through Control-Monitor C-3434/FSW-8, which contains the controls, supervisory indicator lamps, and preamplifier circuits of 10 radio receiver channels, to Amplifier-Assembly AM-2817/FSW-8. The amplified output of AM-2817/FSW-8 is applied to Loudspeaker, Permanent Magnet LS-467/U.

b. Radio Transmitter Control Circuits. Voice output signals originated at Microphone, Magnetic M-110/U are applied through the microphone amplifier circuits of the AM-2817/FSW-8 or C-3434/FSW-8 to the audio input circuits of the OA-2055/FSW-8 (para 2-7b).

1-9. Meteorological Display Console OA-2054/FSW-8
(fig. 1-5)

a. Windspeed and wind direction signals are applied from an external windspeed and wind direction transmitter (para 3-40) to two directreading instruments of the OA-2054/FSW-8. The windspeed (velocity) is applied to Indicator, Wind Speed ID-855/FSW-8 and displayed in knots; the wind direction, in the form of electrical voltages, is applied to Indicator, Wind Direction ID-856/FSW-8 and displayed in compass degrees.

b. Atmospheric pressure activates the sensing elements of Transmitter, Barometric Data T-772/ FSW-8 or T-773/FSW-8. The atmospheric pressure is converted into an electrical voltage within the T-772/FSW-8 or T-773/FSW-8 and applied to Indicator, digital Display ID-854/FSW-8 where it is displayed on four digital readout indicator drums (para 3-42b).

c. Power for the OA-2054/FSW-8 is provided from an external power source. Other features of the OA-2054/FSW-8 include a Clock, DirectReading TD-393/FSW-8 (para 3-43) and provisions to connect the OA-2054/FSW-8 to an emergency alarm system (not shown).

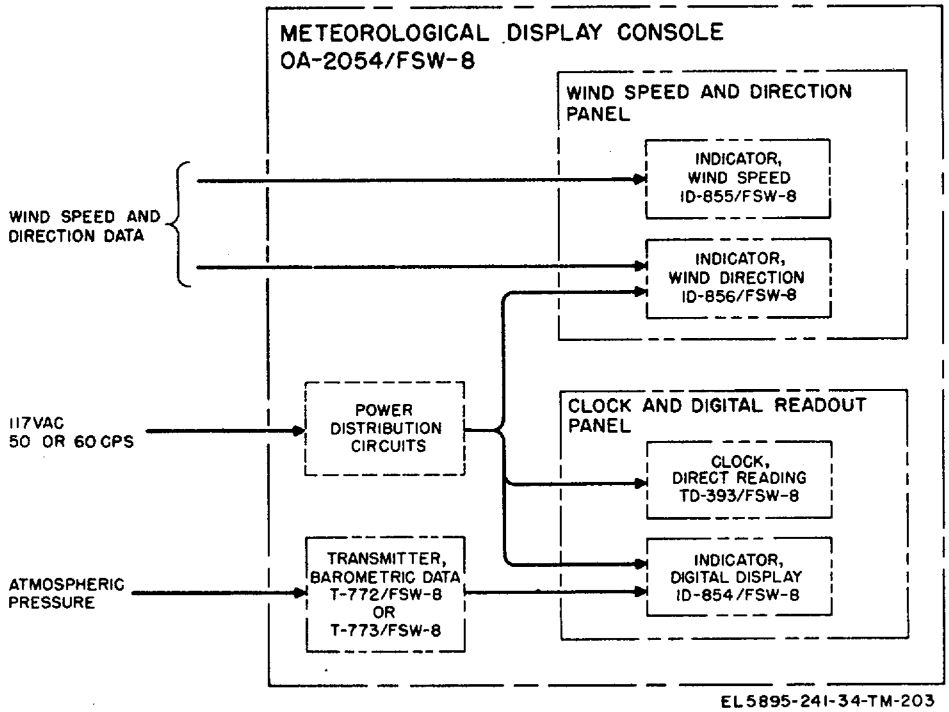


Figure 1-5. Meteorological Display Control OA-2054/FSW-8, block diagram.

CHAPTER 2

FUNCTIONAL DIAGRAM ANALYSIS

Section I. INTRODUCTION

2-1. General

a. This chapter contains a functional diagram analysis of each major component of the AN/ FSW-8(V). The functional diagrams illustrate signal, control, and power distribution paths within the AN/FSW-8(V) from their points of origin to their points of termination (closed loop). The individual circuit paths are traced through units, modular assemblies, subassemblies, and circuit stages regardless of their physical location.

b. Circuit components (piece parts) are not shown on the functional diagrams except where they are necessary to clarify the action of a circuit upon a particular signal. Each function and operational characteristic of the individual components of the AN/FSW-8(V) is described in detail to provide a complete understanding of the operation of the equipment.

c. Many of the circuit stages in the AN/FSW8(V) are identical, differing only in reference designations of component parts. For purposes of this manual, only the transmitting, receiving, and telephone functions of radio channel No. 1 are described. The corresponding components and terminal board connections for radio channels No. 2 through 10 are identified and may be correlated with a particular circuit stage on the applicable schematic diagram (fig. 4-75 through 4-78). Detailed theory of the individual circuit stages within the block symbols shown on the functional diagrams, are covered in paragraphs 3-1 through 3-43.

d. Cross-references to portions of multi-part functional diagrams are made in the text to identify the point on the illustration at which the component and/or connections are made.

2-2. Types of Functional Diagrams

Three types of functional diagrams are used to describe the operational characteristics of the AN/FSW-8 (V):

a. Signal Flow Diagrams. Signal flow diagrams illustrate the circuit paths of transmitted, received, telephone, and field status signals throughout the AN/FSW-8(V). The individual circuit paths are essentially determined by the condition of the control circuits (b below) and various operating conditions of the equipment. Secondary signal flow paths, such as indicating and monitoring functions, are also shown.

b. Control Circuit Diagrams. The control circuit diagrams illustrate the applications of power relay solenoids in accordance with specific operating conditions. The relays and associated contacts, in turn, result in an extended sequence of actions to control the circuit path to be taken by a given signal (a above).

c. Power Distribution Diagrams. The power distribution diagrams illustrate the power input circuits of each component of the AN/FSW8(V), provide an analysis of the individual power supplies, and show the complete distribution of alternating current (ac) and direct (dc) voltages, grounds, and neutrals throughout the equipment, as required by the signal flow (a above) and control (b above) circuits to perform their proper functions.

2-3. Functional Diagram Characteristics

Symbology and other unusual characteristics of functional diagrams are described in a through h below:

a. Each console or cabinet, modular assembly, subassembly, or unit is identified by an enclosure represented by a dashed line in accordance with the physical breakdown of the equipment. A single dashed line indicates the overall unit or console. Two small dashes in the enclosure indicates the next largest subassembly, etc.

b. Official nomenclature, assigned names, or reference designations are used to identify all units, subassemblies, and modular assemblies of the AN/FSW-8(V) shown on the functional diagrams.

c. Circuit stages, other than amplifiers (d below), are shown as rectangular blocks.

d. Amplifier stages are represented by triangular blocks. The point of the triangle indicates the direction of signal flow.

e. Flow lines are used to identify primary and secondary signal flow paths on the functional diagrams. Primary functions are indicated by heavy lines; secondary functions are indicated by lighter lines.

f. Adjustable and variable components are represented by their standard symbol and are shown with their assigned reference designation, name, or equipment panel marking. The method of control (knob or screwdriver) is shown pictorially; screwdriver adjustments are represented by a slotted circle and knob controls are identified by the symbol of a selector knob.

g. Cross-references between functions of the equipment and also between the various parts within a particular function are referenced at the outline or periphery of the equipment enclosure.

h. The functional nomenclature assigned to a circuit, stage, or assembly is descriptive and expressive as possible to establish a clear concept of the item to which it is assigned.

Section II. CONSOLE, COMMUNICATION CONTROL OA-2055/FSW-8

2-4. General

a. A functional analysis of the receiving, transmitting and telephone functions of the OA-2055/FSW-8 is given in paragraphs 2-5 through 2-8. The operation of relay circuits which affect or control a signal path within the OA-2055/ FSW-8 or between the OA-2055/FSW-8 and other components of the AN/FSW-8(V) communication system is described in paragraphs 2-9 and 2-10. A functional analysis of the field status circuits is covered in paragraph 241. An analysis of power distribution in the OA-2055/ FSW-8 is given in paragraph 2-12.

b. For purposes of this manual, only the various equipment functions (a above) for radio channel No. 1 are discussed. The corresponding circuits of radio channels No. 2 through 10 are identical except for reference designations of component parts and terminal board connections. For a detailed circuit analysis of the OA-2055/ FSW-8, refer to paragraphs 3-1 through 3-24.

2-5. Receiving Function
(fig. FO-1)

The receiving circuits of the OA-2055/FSW-8 provide 10 individual radio channels to monitor audio signals from 10 distant airfield radio receivers. Signals applied to the audio input circuit (a below) of each radio receiver channel are isolated, amplified, and applied, by switching arrangements, to a headset circuit (b below) or to one of two loudspeaker circuits (c below). An intercommunication circuit (para 2-6) is provided to use the headset and loudspeaker circuits of the OA-2055/FSW-8 as part of an intercommunication system between the AN/FSW-8(V) and other existing communication facilities at a particular airfield.

a. Audio Input Circuit. Audio signals from a distant radio receiver are applied to the OA2055/FSW-8 at terminals 1 and 2 of terminal board TB1007 and are coupled through impedance matching transformer T1501 to buffer amplifier Q1601 in receiver preamplifier A1601. A muting voltage of +7 vdc is also applied to T1501 to prevent loudspeaker feedback while the corresponding transmitter channel is in use (para 2-10a(2)). Receiver preamplifier A1601 is a plug-in printed-circuit board which functions to isolate the input signal from subsequent stages and to provide initial amplification of the input signal. The output from A1601 is applied to the following:

(1) RECEIVE switch S1501 for application to either the headset (b below) or loudspeaker (c below) circuits.

(2) Amber RECEIVE supervisory indicator lamp DS1501 to indicate audio reception on the receiver channel in use.

(3) Terminal board TB1014 for connection to external monitoring equipment.

b. Headset Circuit. The headset amplifier circuit consists essentially of five transistorized amplifier stages which amplify and limit audio signals to a predetermined level suitable for operation of the receiver element of Headset

Microphone H-195/FSW-8. When RECEIVE switch S1501 is operated to the HEADSET position (contacts 9 and 1), the output of buffer amplifier Q1601 is applied through normally made contacts 13 and 7 of intercom relay K502 to the headset amplifier circuits in Amplifier Assembly AM-2827/FSW-8. Variable HEADSET GAIN resistor R902 varies the audio level of input signals applied to the headset amplifier circuits. The input audio signal is amplified by audio amplifier Q819 and high gain amplifier Q820 and isolated from subsequent stages by buffer amplifier Q821. The output from Q821 is applied to a variable impedance network ((1) below) and to Headset-Microphone H-195/ FSW-8 ((2) below):

(1) A portion of the output signal from Q821 is fed back through a variable impedance network consisting of dc amplifier Q822 and variable COMP. ADJ resistor R894. The variable impedance circuit controls the audio level of the headset circuit in the manner of a delayed automatic gain control (age) by varying the load impedance of audio amplifier Q819 and thus controlling the audio level of signals applied to high gain amplifier Q820. As the output from Q821 tends to increase, the resistance of Q822 decreases and its shunting effect increases, thereby varying the load impedance presented to Q819. This results in a reduction of the gain of the headset amplifier circuits as its output increases.

(2) The output from Q821 is also applied through variable OUTPUT LEVEL resistor R888, driver amplifier Q823, coupling transformer T804, and variable HEADSET resistor R1106 to the receiver element of H-195/FSW-8. Resistor R888 controls the level of input signals applied to Q823, and resistor R1106 is adjusted by the control tower operator to vary the volume of signal applied the headset receiver element.

c. Loudspeaker Circuits. The loudspeaker amplifier circuits consist essentially of five transistorized amplifier stages which preset the audio input level of signals applied to the OA-2055/ FSW-8 loudspeakers. When RECEIVE switch S1501 is operated to the SPEAKER position, the output from A1601 (a above) is applied to loudspeaker amplifier selector switch S701 where provision is made to switch the output of each radio receiver channel to either of the two loudspeaker amplifiers.

(1) *Loudspeaker* LS1401 *amplifier circuit*. When S701 is operated to the SPEAKER No. 1 position, the audio output from buffer amplifier Q1601 (a above) is applied through contacts 9 and 10 of S1501, make contacts 3 and 5 of intercom relay K502, and variable SPKR. NO. 1 GAIN resistor R899 to audio amplifier Q801 in Amplifier Assembly AM-2827/FSW-8. The SPKR. NO. 1 GAIN control is used to preset the audio input level of signals applied to Q801 to prevent overdriving of the input stage and also to minimize distortion of the amplifier circuit. The input audio signals are amplified by Q801 and high gain amplifier Q802 and isolated from subsequent stages by buffer amplifier Q803. The output of Q803 is applied to a variable impedance network ((a) below) and to subsequent loudspeaker amplifier stages ((b) below).

(a) A portion of the output signal from Q803 is fed back to a variable impedance network consisting of dc amplifier Q804 and variable COMP. ADJ resistor R816. The variable impedance circuit controls the audio level of the loudspeaker amplifier circuit in the same manner as the delayed age circuit described in b(1) above.

(b) The output from Q803 is also applied, through variable VOLUME CONTROL 1 resistor R1401, driver amplifier Q805, and coupling transformer T801, to power amplifier Q818. The amplified output of Q818 is coupled to the loudspeaker through coupling transformer T1001. Resistor R1401 varies the audio level of signals applied to Q805. BIAS ADJ resistor R824 establishes the bias level of Q818, thus controlling the gain and output level of signals applied to the loudspeaker.

(2) *Loudspeaker LS1402 amplifier circuit.* When S701 is operated to the SPEAKER NO. 2 position, the output from buffer amplifier Q1601 (a above) is applied to the loudspeaker amplifier circuit through normally made contacts 11 and 2 of intercom relay K502. The signal path from intercom relay K502 to loudspeaker LS1402 is identical to the circuit configuration of LS1401 ((1) above) except for connection points and reference designations of components.

2-6. Intercommunication Circuit
(fig. FO-1)

The receiver circuits of the OA-2055/FSW-8 can be used as part of an intercommunication system when the OA-2055/FSW-8 is connected to other airfield communication equipment having similar intercommunication circuit provisions. The OA-2055/FSW-8 can receive or transmit voice signals alternately, but not simultaneously. The OA-2055/FSW-8 can transmit or receive alternately by selecting the INTERCOM or OFF positions of intercom switch S1103. The external transmitting equipment applies a voice-frequency input to the receiving circuits of the OA-2055/FSW-8 simultaneously with a dc voltage to energize intercom relay K502. Operation of the relay applies the transmitted signals to the receiver headset (para 2-5b) and loudspeaker (para 2-5c) circuits, interrupting the normal audio input from the distant airfield radio receiver. Signal and power are applied to and from the circuits of each equipment by means of a hybrid construction of intercommunication transformer T1101 (para 3-7).

2-7. Transmitting Function

(fig. FO-2)

Controls and appropriate circuitry are provided in the OA-2055/FSW-8 for the operation of 10 distant radio transmitters. These may be controlled locally from the OA-2055/FSW-8 (a below) or remotely from the OA-3014/FSW-8 (b below). The voice input circuit (a(1l) below), microphone amplifier circuit (a(2) below), intercommunication circuit (a(4) below), and metering circuit (a(5) below) are common to all radio channels of the OA-2055/FSW-8. The voice output circuit (a(3) below) is representative of transmitter channel No. 1. The corresponding circuits for transmitter channels No. 2 through 10 are identical to that of channel No. 1 except for terminal board connections and reference designations of components.

a. *Local Transmitter Control.* The transmitter voice input circuits of the OA-2055/FSW-8 consist of the microphone assemblies ((1) below) which apply voice signals to the microphone amplifier circuits ((2) below) and the associated push-to-talk controls that are used to initiate operation of the voice output circuit ((3) below).

(1) *Voice input circuit*. Voice-frequency signals are originated at either Microphone, Magnetic M-110/U or Headset-Microphone H-195/ FSW-8, as selected by MIKE selector switch S1102. When S1102 is operated to the MAGNETIC position, signals from the M-110/U are applied through contacts 7 and 9 of S1102 and contacts 12 and 10 of LOCAL-REMOTE switch S1101 to Amplifier Assembly AM-2827/FSW-8. Similarly, when S1102 is operated to the CARBON position, signals from the H-195/FSW-8 are applied to AM-2827/FSW-8 through contacts 11 and 10 of S1102 and contacts 12 and 10 of S1101. The audio level of signals originated at the M-110/U is determined by the setting of variable MAGNETIC resistor R1104; the audio level of signals originated at the H-195/FSW-8 is determined by variable CARBON resistor R1102.

(2) *Microphone amplifier circuits*. The microphone amplifier circuits of the OA-2055/FSW8 consist of five transistorized amplifier stages which amplify the low-level voice frequency signals, received from the voice input circuit ((1) above), for application to a distant radio transmitter. Input signals are amplified by audio amplifier Q813 and high gain amplifier Q814 and are isolated from subsequent stages by buffer amplifier Q815. The output of Q815 is applied to a variable impedance network ((a) below), distant monitoring equipment ((b) below), voice output circuits ((3) below) and the intercommunication circuit ((4) below).

(a) A portion of the output signal from Q815 is fed back through a variable impedance network consisting of dc amplifier Q816 and variable COMP. ADJ resistor R868. The variable impedance circuit maintains a constant output level in an identical manner to that described in paragraph 2-5b (1).

(b) A portion of the output signal from Q815 is also applied through normally open contacts 16 and 6 of transmit relay K711 for connection to a distant monitor. Transmit relay K711 is energized when the push-to-talk control of the microphone in use is depressed (para 2-10a).

(3) *Voice output circuit.* The high-level voice-frequency output from the microphone amplifier circuits ((2) above) is applied through LINE LEVEL MIKE resistor R862 and driver amplifier Q817 to the primary of impedance matching transformer T803. Signals appearing at the secondary of T803 are applied to power amplifier Q812 which amplifies the signals to the power level ((5) below) required for operation of the distant radio transmitters. The amplified output from power amplifier Q812 is applied to the primary of output transformer T701. The design of

T701 (para 3-4) provides for the simultaneous operation of 10 individual transmitting channels (fig. FO-12(1) and (2)) from a single primary input winding. Thus, the output of each transmitter channel appears at separate secondary terminals of T701 and is applied to the distant radio transmitter through contacts of transmit relay K711, when the individual transmitter channel is operated. Operation of transmit relay K711 for transmitting radio channel No. I is covered in paragraph 2-10. A sample of transmitted audio signal is also applied to a metering circuit ((5) below) for monitoring purposes.

(4) *Intercommunication circuit*. The transmitter and receiver circuits (para 2-6) of the OA-2055/FSW-8 can be used for interequipment ground communication when connected to another OA-2055/FSW-8 or OA-2056/FSW-8 or to other airfield communication equipments having similar circuit provisions. The circuit functions as a two-way hot line between the transmitting circuits of one equipment and the receiving circuits of the other equipment. When intercom switch S1103 is operated to the momentary INTERCOM position, the output from buffer amplifier Q815 ((2) above) is applied through contacts 7 and 8 of S1103 and intercommunication transformer T1101 to the distant intercommunication system. When switch S1103 is operated to the normally OFF position, voice input signals from a distant communication equipment can be applied to the OA-2055/FSW-8.

(5) *Metering circuit*. Meter M1101 is an audio level meter which indicates in decibels (db) above 1 milliwatt (dbm) the audio output level of the particular OA-2055/FSW-8 transmitting channel in use. The audio level on any transmitted line should be at least + 6 dbm. Since the signals appearing across each pair of secondary windings of T701 are identical ((3) above), the audio level indicated on M1101 is identical for all transmitting channels. Resistor R701 is used to terminate the line in 600 ohms until the individual transmitter channel is operated (para 3-4b). Operation of push-to-talk relay K501 is covered in paragraph 2-10a.

b. *Remote Transmitter Control*. The transmitting capabilities of the transmitter channels of the OA-2055/FSW-8 are transferred to the OA3014/FSW-8 when LOCAL-REMOTE switch S1101 in the OA-2055/FSW-8 is operated to the REMOTE position. The OA3014/FSW-8 utilizes the microphone amplifier circuits (a(2) above) and voice output circuits (a(3) above) of the OA-2055/FSW-8 and thus, cannot be operated independently. The voice output circuit ((1) below) and microphone amplifier circuit ((2) below) are identical to all OA3014/FSW-8 transmitter channels.

(1) *Voice input circuit*. Voice-frequency signals originated at Microphone, Magnetic M110/U are applied through variable MIKE VOLUME resistor R1901 to the microphone amplifier circuits ((2) below) in Amplifier Assembly AM2817/FSW-8. The audio level of signals originated at M-110/U is determined by the setting of resistor R1901.

(2) *Microphone amplifier circuits.* The microphone amplifier circuits of the OA3014/ FSW-8 consist of four transistorized amplifier stages which amplify the low-level voice-frequency signals received from the voice input circuit ((1) above) for application to the OA-2055/ FSW-8 transmitting circuits. The input audio signal is amplified by audio amplifier Q2407 and high gain amplifier Q2408 and isolated from subsequent stages by buffer amplifier Q2409. To maintain a constant output level, a portion of the output signal from Q2409 is fed back through a variable impedance network consisting of dc amplifier Q2410 and variable MIKE COMP resistor R2443. The variable impedance circuit maintains a constant output level in an identical manner to that described in paragraph 2-5b(1). The signal output from Q2409 is also applied through isolation transformer T2403 to input transformer T1102 in the OA-2055/FSW-8. The signal progression from T1102 is identical with that of the audio signals applied from the OA-2055/FSW-8 microphone amplifier circuits (a(2) above).

2-8. Telephone Function
(fig. FO-3)

The telephone circuits of the OA-2055/FSW-8 provide two-way voice communication between Handset H-194/FSW-8 and 10 distant telephones. Each telephone channel of the OA-2055/ FSW-8 has provisions to send (a below) or receive (b below) telephone signals and provide individual switching and relay arrangements to complete signaling circuits (c below) between the two stations. In the following analysis, discussion is limited to telephone channel No. 1. The corresponding circuits for telephone channels No. 2 through 10 are identical except for terminal board connection points and reference designations of components.

a. *Sending Voice Signals*. When the push-to talk switch of H-194/FSW-8 is depressed and TELEPHONE switch S1301 is operated to the TALK position, voice-frequency signals originating at the transmitting element of the handset are applied through impedance matching network Z1301 and contacts of S1301 to the distant telephone. Sidetone balance and antisidetone functions are provided by Z1301. Power (-3 vdc) to the carbon transmitting element of the handset is applied through Z1301.

b. *Receiving voice signals*. When the push-to talk switch of the handset is released and switch S1301 is operated to the TALK position, incoming voice-frequency signals from a distant telephone are applied through contacts of S1301 and Z1301 to the receiver element of the handset.

c. Signaling Circuits.

(1) *Outgoing signal.* When S1301 is operated to the momentary RING position, 100 vdc is applied to ring generator Z601 through contacts 10 and 9 of S1301 and a direct connection from Power Supply PP-2803/FSW-8 (para 2-12a). A 20 cycle-per-second (cps) ring voltage is produced at terminals 3 and 4 of Z601 and applied to operate a ringing circuit in the distant telephone. The 20-cps ring signal is also applied to ring relay K601 ((2) below) to provide a visual indication that the signaling circuits are operating properly.

(2) *Incoming signal*. When S1301 is operated to OFF or RING ((1) above), an incoming 20-cps ring voltage from a distant telephone is applied to the coil of ring relay K601. When K601 is energized, contacts 7 and 8 make, applying +48 vdc to energize hold relay K611 and illuminate TELEPHONE supervisory indicator lamp DS-1301, and contacts 6 and 5 make, completing the 117-vac circuit to buzzer DS1311. Ring relay K601 will be released when the incoming ring voltage is removed. Hold relay K611 remains locked in and DS1301 remains illuminated by the +48 vdc applied from contacts 2 and 1 of S1301. When S1301 is operated to the TALK position, the +48 vdc is removed and K611 releases and DS1301 extinguishes.

2-9. Control Relay Circuits

a. System operation of the AN/FSW-8(V) requires that the radio transmitter control functions (para 16) of the OA-2055/FSW-8 and OA-3014/FSW-8 be coordinated in such a manner that control of the individual radio transmitting channels may be transferred from one unit to the other.

b. In a similar manner, the operation of the individual field status circuits (para 2-11) in the AN/FSW-8(V) are interrelated to accomplish the simultaneous display of airfield flight conditions at each operating facility.

c. In the following paragraphs, each of the 10 control relay circuits of the OA-2055/FSW-8 and OA-3014/FSW-8 are identical except for terminal board connection points and reference designation of individual components.

2-10. Transmitter Control Circuits
(fig. FO-4)

a. *Local Transmitter Control.*

(1) Local operation of the transmitting circuits of the OA-2055/FSW-8 is initiated by depression of the push-to-talk switch at either Headset-Microphone H-195/FSW-8 or Microphone, Magnetic M-11O/U or by depressing switch S1002 in Switch, Foot SA-754/FSW-8.

The groundpath from the H-195/FSW-8, M-110/U, or S1002 to the coil of push-to-talk relay K501 is completed through contacts 6 and 4 of LOCAL-REMOTE switch S1101. When K501 is energized, contacts 6 and 5 make and apply + 48 vdc through TRANSMIT switch S1511 (contacts 1 and 2) to energize transmit relay K711. When relay K711 is energized, contacts 15 and 5 make and apply + 48 vdc to energize lockout relay K701 and contacts 2 and 3 make to .complete a connection which provides for the keying of an external transmitter.

NOTE

Transmit relay K711 can only be energized if lockout relay K701 is initially deenergized and TRANSMIT switch S1511 is in the OPERATE position.

(2) When relay K701 is energized, make contacts 3 and 2 break and remove the ground from relay K711. However, a ground lockup path for K711 is provided through its own contacts 14 and 4. Operation of relays K711 and K701 also provides for the application of +48 vdc to TRANSMIT supervisory indicator lamp DS1511 in the OA-2055/FSW-8 and the corresponding TRANSMIT supervisory indicator lamp DS1811 in the OA3014/FSW-8 to indicate that the radio transmitting channel is in use. Simultaneously a muting voltage of +7 vdc is applied through contacts 7 and 8 of K701 to impedance matching transformer T1501 (fig. FO-12(1)). Voice output

signals to the distant radio transmitter and monitoring equipment are applied as described in paragraph 2-7a(3). If prior to the above sequence of operation, relay K701 is energized by the application of +48 vdc from a distant lockout control circuit, the +48 vdc from contacts 6 and 7 of relay K501 illuminate the TRANSMIT supervisory indicator lamps in the OA-2055/ FSW-8 and OA-3014/FSW-8 and indicate that the radio transmitting channel is in use.

b. *Remote Transmitter Control.* When S1101 and S1511 (a above) are operated to the REMOTE position, control of the radio transmitting channels is transferred to the OA-3014/FSW-8. Operation of the remote circuits is initiated when the push-to-talk switch of the M-110/U in the OA-3014/FSW-8 is depressed and completes the groundpath to energize push-to-talk relay K501 in the OA-2055/FSW-8. Operation of relay K501 applies +48 vdc through make contacts 6 and 5 and contacts 7 and 8 of S1101 to energize push-to-talk relay K1801 in the OA-3014/FSW-8. With K1801 energized, contacts 4 and 3 make and apply +48 vdc through TRANSMIT switch S1811 (set to the OPERATE position) and TRANSMIT switch S1511 (set to the REMOTE position) to the coil of transmit relay K711 in the OA-2055/FSW-8. Simultaneously, a muting voltage of +7 vdc is applied through make contacts 6 and 5 of K1801 and TRANSMIT switch S1811 to impedance matching transformer T1801 (fig. FO-12(1)). The sequence of operation and application of voice signals from the OA-3014/ FSW-8 through the OA-2055/FSW-8 transmitting circuits is identical to that described in a above.

2-11. Field Status Circuits
(fig. FO-4)

The field status circuits of the OA-2055/FSW-8 are part of an indicating system between units of the AN/FSW-8(V). The field status indicating system enables operating personnel to select either instrument flight regulations (IFR), visual flight regulations (VFR) or closed (CLOSED) airfield flight conditions and display the selected flight condition at the various communication control stations in use. The flight condition is selected at Switch Box SA-751/ FSW-8 (a below) and is displayed by Indicator, Field Status ID-877/FSW-8 (b below) and the field status circuits of the OA-2055/FSW-8 and OA-3014/FSW-8 (c below).

a. Switch Box SA-751/FSW4. Field status selector switch S2201 is a four-position rotary wafer switch which completes a +48 vdc power circuit from the OA-3014/FSW-8 to energize field status indicator relays in the ID-877/ FSW-8, OA-2055/FSW-8, and OA-3014/FSW-8, which, in turn, operate to apply 117 vac power to illuminate the selected field status indicator lamp. When switch S2201 is operated to the VFR position, the +48 vdc from the OA-3014/FSW-8 is completed to field status indicator lamp DS2101 in the ID-877/FSW-8 (b below), indicating that weather conditions are suitable for contact flight. When S2201 is operated to the IFR position, the +48-vdc circuit is completed to field status indicator lamp DS-2102 in the ID877/FSW-8, indicating that all flights must be performed using navigational aids. With S2201 in the CLOSED position, the completed circuit to field status indicator lamp DS2103 indicates that adverse weather conditions exist and that the airfield is closed to all flight traffic.

b. *Indicator*, Field Status ID-877/FSW-8. When switch S2201 (a above) is operated to the VFR position, +48 vdc is applied through section B of S2201 and terminal 1 of terminal board TB2201 to energize field status indicator relay No. 1 K2101. When relay K2101 is energized, contacts 3 and 2 make and apply 117 vac to illuminate VFR indicator lamp DS2101. When S2201 is operated to the IFR position, +48 vdc is applied through sections A and B of S2201 to energize relay K2101 and field status indicator relay No. 2 K2102. When relay K2102 is energized, contacts 5 and 4 make and apply 117 vac to illuminate the IFR indicator lamp DS2102. When S2201 is operated to the CLOSED position, +48 vdc is applied through section A of S2201 and terminal 4 of terminal board TB2101 to energize relay K2102. When relay K2102 is energized, 117 vac is applied through break contacts 3 and 4 of K2101 and make contacts 2 and 3 of K2102 to illuminate CLOSED indicator lamp DS-2103.

c. *OA-2055/FSW-8 and OA-3014/FSW-8 Field Status Circuits.* The field status circuits of the OA-2055/FSW-8 and OA-3014/FSW-8 operate in an identical manner with those of the ID-877/FSW-8 (b above) except for terminal board and field status indicator relay and indicator lamp reference designations.

2-12. Power Distribution
(fig. FO-5)

Power Supply PP-2803/FSW-8 consists essentially of four separate transistorized power supplies (*a* through *d* below) which furnish the various operating voltages required for circuit operation of the OA-2055/FSW-8. Input power for the PP-2803/FSW-8 is furnished from a 117 vac, 50- or 60-cps, external power source. When MAIN POWER circuit breaker CB-1001 is operated to the ON position, 117 vac line power is applied to primary windings 1 and 3 of input transformer T501 and also to MAIN POWER indicator lamp DS1001 and desk lamp DS1002. Variable BRIGHT-LAMP-OFF resistor R1001 controls the brightness of DS1002. Convenience receptacle J1001 may be used to furnish the 117 vac line power to other components of the AN/FSW-8(V). The 117 vac power supplied to the Control, Telephone Signal C-3435/FSW-8 and Terminal, Telephone TA-406/FSW-8 panels is used to complete the operating path for buzzer DS1311 (para 2-8c(2)), and application of the 117 vac to the loudspeaker and indicator panel completes the operate path for the field status indicator lamps (para 2-11c).

a. 100 Vdc Power Supply. The ac voltage appearing across secondary windings 9 and 10 of T501 is applied to a bridge rectifier consisting of diodes CR505 through CR508. The rectified 100 vdc unregulated output is distributed to ring generator Z601 in the telephone circuits of the OA-2055/FSW-8 (para 2-8c(1) and fig. FO-12 (1)).

b. +48 Vdc Power Supply. The ac voltage appearing across secondary windings 4 and 5 of T501 is applied to a bridge rectifier consisting of diodes CR501 through CR504. The rectified and filtered +48 vdc is distributed as a relay control signal to various units of the OA-2055/FSW-8 and also to distant transmitters keyed with a series dc circuit. A portion of the +48 vdc output is also applied to a voltage divider network consisting of resistor R501 and dc reference diode CR514. The +7 vdc output from the voltage divider network is applied as a muting voltage (para 2-10a(2)) to the transmitting circuits of the OA-2055/FSW-8 (fig. FO-12(1)).

c. 7.5 Vdc Power Supply. The -7.5 vdc power supply consists of a bridge rectifier and filter network, a preregulator network ((1) below) and a voltage regulator and sensing circuit ((2) below). The ac voltage appearing across second ary windings 6, 7, and 8 of T501 is applied to one-half of a bridge rectifier (para 53) consisting of diodes CR509 through CR512. The rectifier de output is filtered and applied through -7.5V 8 AMP fuse F501 to the preregulator network described in (1) below:

(1) Preregulator network. The basic action of a voltage regulator circuit is to provide a buffer effect so that the voltage output is independent of load variations and input voltage changes. The series regulator consisting of Q507 and Q512 acts like a variable resistor. As the base current in a transistor increases, its resistance decreases, so that if the output voltage drops, base current must increase to return the output voltage to its original level. When the input voltage to Q507 and Q512 changes due to input voltage fluctuations, dc amplifier Q508 senses this voltage change across voltage dropping resistor R512 and dc reference diode CR513. The error voltage is amplified by Q508 and applied to Q507 and Q512 to return the output voltage to its original value.

(2) Voltage regulator and sensing circuit. The voltage regulator and sensing circuit acts in a manner similar to that of the preregulator network ((1) above). When the output voltage from series regulator Q509 and Q511 changes due to load or input voltage fluctuations, reference amplifier Q506 senses this voltage change across variable -7.5 ADJ resistor R515. As the voltage across resistor R515 varies, Q506 compares this variation with the voltage output from dc reference diode CR517. The variation or error voltage is amplified by de amplifiers Q505 and Q510 and applied to Q509 and Q511 to return the output voltage to its original value. The regulated -7.5 vdc is distributed to various units of the OA2055/FSW-8 as transistor bias voltage, and the -3 vdc obtained across voltage dropping resistor R517 is distributed to operate the carbon transmitting element of the H-194/FSW-8 (para 2-8a).

d. -15 Vdc Power Supply. The operation of the 15 vdc regulator circuit is identical with that of the voltage regulator and sensing circuit described in c(2) above, except for reference designation of component parts. The regulated -15 vdc output is distributed to various units of the OA2055/FSW-8 for use as transistor operating voltage.

Section III. COMMUNICATION STATION, REMOTE CONTROL OA-3014/FSW-8

2-13. General

a. The OA-3014/FSW-8 is an auxiliary unit of the AN/FSW-8(V) and performs the operating functions of the OA-2055/FSW-8 from a remote location (para 1-7 and 1-8). The OA-3014/ FSW-8 contains receiving circuits (para 2-14) to monitor the distant airfield radio receivers connected to the OA-2055/FSW-8 and provides transmitting circuits (para 2-15) for remote operation of the radio transmitting channels of the OA-2055/FSW-8. The telephone circuits of the OA-3014/FSW-8 provide two-way voice communication between 10 distant telephones and the operation is identical with that of the OA-2055/FSW-8 telephone circuits (para 2-8), except for terminal board connections (fig. FO-14(1)). The field status circuits of the OA-3014/,' FSW-8 are shown in figure FO-4 and operate as described in paragraph 2-11c. An analysis of OA-3014/FSW-8 power distribution is given in paragraph 2-16.

b. For purposes of this manual, only the various equipment functions (a above) for radio channel No. 1 are discussed. The corresponding circuits of radio channels No. 2 through 10 are identical except for reference designation of component parts and terminal board connections. For a detailed circuit analysis of the OA-3014/ FSW-8, refer to paragraphs 3-25 through 3-38.

2-14. Receivinq Function
(fig. FO-6)

The receiving circuits of the OA-3014/FSW-8 provide 10 individual radio channels to monitor audio signals from the OA-2055/FSW-8 or from 10 distant airfield radio receivers when the OA2055/FSW-8 facility is not in use. Signals applied to the audio input circuit (a below) of each radio receiver channel are isolated and amplified to the level required to drive a loudspeaker circuit (b below).

a. Audio Input Circuit. Audio signals from a distant radio receiver or the OA-2055/FSW-8 are applied to the OA3014/FSW-8 at terminals 1 and 2 of terminal board TB1704 and are coupled through impedance matching transformer T1801 to buffer amplifier Q1601 in receiver preamplifier A1601. Receiver preamplifier A1601 is a plug-in printed circuit board which functions to isolate the input signal from subsequent stages and to provide initial amplification of the input signal. The amplified output is applied through RECEIVE switch S1801 to the loudspeaker amplifier circuits (b below) and to amber RECEIVE supervisory indicator lamp DS1801 to indicate audio reception on the receiver channel in use. A muting voltage of +7 vdc is also applied to impedance matching transformer T1801 to prevent loudspeaker feedback while the corresponding transmitter channel is in use (para 2-10b).

b. Loudspeaker Amplifier Circuit. The loudspeaker amplifier circuit consists essentially of six transistorized amplifier stages which amplify and limit audio signals to the level required for operation of the loudspeaker. Operation of RECEIVE switch S1801 to the SPEAKER position, applies the audio signals from A1601 (a above) through variable SPEAKER GAIN resistor R2426 to audio amplifier Q2401 in Amplifier Assembly AM-2817/FSW-8. The SPEAKER GAIN control is used to preset the audio input level of the signals applied to Q2401 to prevent overdriving of the input stage and also to minimize distortion of the amplifier circuit. The input audio signals are amplified by Q2401 and high gain amplifier Q2402 and isolated from subsequent states by buffer amplifier Q2403. The output of Q2403 is applied to a variable impedance network ((1) below) and to subsequent loudspeaker amplifier stages ((2) below).

(1) A portion of the output signal from Q2403 is fed back to a variable impedance network consisting of dc amplifier Q2404 and variable SPEAKER COMP resistor R2416. The variable impedance circuit controls the audio level of the loudspeaker amplifier circuit in the same manner as the delayed agc circuit described in paragraph 2-5b(1).

(2) The output from Q2403 is also applied, through variable VOLUME CONTROL resistor R2001, driver amplifier Q2405, and coupling transformer T2401, to power amplifier Q2406. The amplified output of Q2406 is coupled to loudspeaker LS2001 through coupling transformer T2402. Resistor R2001 varies the audio level of signals applied to Q2405. SPEAKER BIAS resistor R2449 establishes the bias level of Q2406, and thus controls the gain and output level of signals applied to the loudspeaker.

2-15. Transmitting Function

The transmitting circuits of the OA3014/FSW-8 provide for the remote operation of the OA2055/FSW-8 radio transmitting channels and cannot be operated independently. Voice-frequency signals originating at the OA-3014/FSW-8 are applied to the transmitting circuits of the OA-2055/FSW-8 as described in paragraph 2-7b. The various switching and control relay arrangements which permit the operation of the OA-3014/FSW-8 to control the radio transmitter channels of the OA-2055/FSW-8 are described in paragraph 2-10b.

2-16. Power Distribution
(fig. FO-7)

Power Supply PP-2795/FSW-8 consists essentially of four separate transistorized power supplies (a through d below) which furnish the various operating voltages required for circuit operation of the OA-3014/FSW-8. Input power for the PP-2795/FSW-8 is furnished through power connector P1701 from a 117-vac, 50-or 60-cps, external power source. When circuit breaker CB1901 is operated to the ON position, 117-vac line power is applied to primary windings 1 and 3 of input transformer T2301 and also to MAIN POWER indicator lamp DS1901 and desk lamp DS1701. Variable BRIGHT-LAMP-OFF resistor R2002 controls the brightness of DS1701.

a. 100-Vdc Power Supply. The ac voltage appearing across secondary windings 9 and 10 of T2301 is applied to a bridge rectifier consisting of diodes CR2305 through CR2308. The rectified 100-vdc unregulated output is distributed as a ringing signal (para 2-8c(1)) to the telephone circuits of the OA-3014/FSW-8.

b. +48-Vdc Power Supply. The ac voltage appearing across secondary windings 4 and 5 of T2301 is applied to a bridge rectifier consisting of diodes CR2301 through CR2304. The rectified and filtered +48 vdc is distributed as a relay control signal to various units of the OA-3014/ FSW-8 and also to Switch Box SA-751/FSW-8 for use in the field status circuits of the AN/ FSW-8(V) (para 2-11 and fig FO-4). A portion of the +48-vdc output is also applied to a voltage divider network consisting of resistor R2301 and dc reference diode CR2313. The +7-vdc output from the voltage divider network is applied as a muting voltage (para 2-14a) to the receiving circuits of the OA-3014/FSW-8.

c. -15-Vdc Power Supply. The operation of the -15-vdc power supply is identical to that of the -15-vdc power supply in the OA2055/FSW-8 (para 2-12d) except for reference designation of component parts. The regulated -15-vdc output is directly connected to Amplifier Assembly AM-2817/FSW-8 and also distributed to various units of the OA-3014/FSW-8 for use as transistor operating voltage.

d -7.5-Vdc Power Supply. The operation of the -7.5-vdc power supply is identical with that of the -15-vdc power supply (c above) except for voltage values and reference designations of component parts. The regulated 7.5-vdc output is distributed to various units of the OA3014/FSW-8 as transistor bias voltage and the -3 vdc obtained across the voltage divider network, consisting of voltage dropping resistor R2315 and dc reference diode CR2315, is distributed to operate the carbon transmitting element of the H-194/FSW-8.

Section IV. METEOROLOGICAL DISPLAY CONSOLE OA-2054/FSW-8

2-17. General

The OA-2054/FSW-8 provides direct-reading instruments and associated circuitry for the display of meteorological data. The indicating and monitoring circuits that provide visual indications of windspeed, wind direction, time of day, and altimeter readings are covered in paragraphs 2-18, 2-19, and 2-20. An analysis of power distribution is given in paragraph 2-21. For a detailed circuit analysis of the OA-2054/FSW-8, refer to paragraphs 3-39 through 3-43.

2-18. Windspeed and Wind Direction Circuit
(fig. 2-1)

a. Windspeed and wind direction data are furnished to the OA-2054/FSW-8 from an external windspeed and wind direction transmitter. The data, in the form of electrical voltages, are applied to Indicator, Wind Speed ID-855/FSW-8 and Indicator, Wind Direction ID-856/FSW-8 where the voltages are converted into corresponding dial readings.

b. Meter M201 in the ID-855/FSW-8 is a velocity meter calibrated to display in knots (O to

120) the input from the external windpseed transmitter.

c. Indicator DS201 in the ID-856/FSW-8 is a torque-receiver synchro containing a rotor which rotates freely within a fixed stator. The rotor of DS201 is a single-phase winding connected to 117-vac line power and is designed to follow, within close limits, the rotor of the external wind direction transmitter synchro. Angular displacement (with respect to the stator) of a pointer affixed to the rotor displays the wind direction on a 360° direct-reading dial.

2-19. Time-of-Day Circuit
(fig. 2-1.)

Clock, Direct Reading TD-398/FSW-8 is used to provide a known time standard for use in recording the arrival and departure times of aircraft utilizing the airfield facilities. The TD-393/FSW8 operates on 117-vac, 50or 60-cps line power applied directly to clock drive mechanism motor M101.

2-20. Altimeter Circuits
(fig. 2-1.)

a. The pressure sensing elements of Transmitter, Barometric Data T-772/FSW-8 or T-773/ FSW-8 are activated by atmospheric pressure obtained through a vent tube external to the equipment enclosure. The T-772/FSW-8 and T773/FSW-8 are identical except for elevation ranges (para 1-5).

b. The atmospheric pressure (a above) is converted into electrical voltages within the T-772/ FSW-8 or T-773/FSW-8 and applied through connectors J1 and P1 and internal harness cabling to Indicator, Digital Display ID-854/FSW8. The ID-854/FSW-8 displays the data on four digital readout drums which rotate to display corresponding numerals equivalent to the barometric data.

c. PUSH TO TEST OR RESET switch S1 is used to reset a timing mechanism within the T772/FSW-8 or T-773/FSW-8 and also to test the operation of the digital readout drums. TEST KEY switch S2 is used to test the operation of the digital readout circuitry of the ID-854/FSW8. When S2 is operated to the momentary 3333 or 7777 position, the associated readout circuitry will interrupt the display of barometric data (b above) and display the test configuration of 3333 or 7777, as selected.

2-21. Power Distribution
(fig. FO-8.)

The OA-2054/FSW-8 is operated from 117-vac, 50or 60-cps power applied from an external power source. The input power is applied to terminals 1 and 2 of terminal board TB401 and connected to the equipment circuits through MAIN POWER circuit breaker CB402 and CLOCK circuit breaker CB401. Variable BRIGHT-LAMPOFF resistor R401 controls the brightness of desk lamp DS401. MAIN POWER indicator lamp DS402 is used to indicate that power is applied to the OA-2054/FSW-8, and convenience receptacle J401 may be used to furnish the 117vac line power to other components of the AN/ FSW-8(V). The 117-vac power is distributed to the various units of the OA-2054/FSW-8 and also applied through terminals 9 and 1 of terminal board TB402 to a distant wind direction and windspeed transmitter. Variable DIM resistor R31 controls the brightness of lamp DS106 in Indicator. Digital Display ID-854/FSW-8, and PUSH TO TEST OR RESET switch S1 controls the application of 117 vac to test the sensing element in Transmitter, Barometric Data T-772/ FSW-8 or T-773/FSW-8.

NOTE

In the OA-2054A/FSW-8, variable BRIGHT-LAMP-OFF resistor R401 controls the brightness of desk lamp DS402. MAIN POWER indicator lamp DS401 indicates that power is applied to the OA-2054A/FSW-8. Variable DIM resistor R31 controls the brightness of ID-854A/FSW-8 lamps DS112 through DS119.

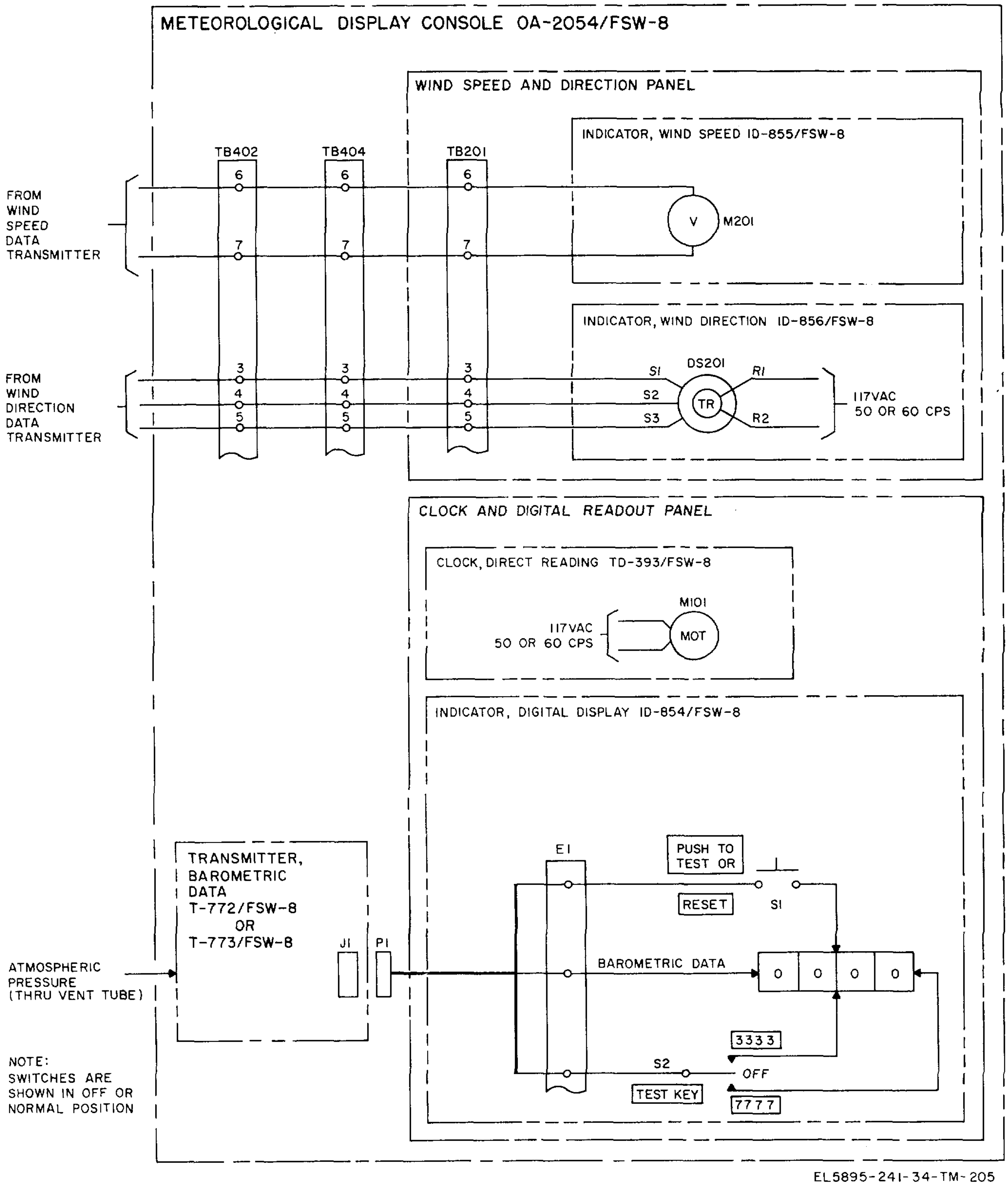


Figure 2-1. Meteorological Display Console OA-2054/FSW-8, indicating and monitoring signal flow diagram.

CHAPTER 3
DETAILED CIRCUIT ANALYSIS

Section I. CONSOLE, COMMUNICATION CONTROL OA-2055/FSW-8

3-1. General

a. This section contains a detailed circuit analysis of the OA-2055/FSW-8. Each function of the equipment is described in detail (para 3-2 through 3-24). Many of the circuit stages in the OA-2055/FSW-8 are identical, differing only in reference designations of component parts.

b. For purposes of this manual, only the transmitting, receiving, and telephone functions for radio channel No. 1 are discussed. The corresponding components and terminal board connection points for radio channels No. 2 through No. 10 are identical and may be correlated with a particular stage in the applicable schematic diagram. Cross-references to portions of multipart schematic diagrams are made in the text to identify the point on the illustration at which the component and/or connections are made. Figure FO-13 illustrates the harness cabling required to convert the OA-2055/FSW-8 to an OA2056/FSW-8.

c. The transmitter input circuits of the OA2055/FSW-8 consist of microphone assemblies (para 3-2) which apply voice-frequency signals to the microphone amplifier circuits (para 3-3) and associated push-to-talk controls that are used to initiate operation of the voice output circuits (para 3-4). The receiver input circuits of the OA-2055/FSW-8 consist of audio input circuits (para 3-9) which apply voice-frequency signals to either headset amplifier circuits (para 3-10) or loudspeaker amplifier circuits (para 3-11). The telephone capabilities of the OA-2055/FSW-8 are discussed in paragraphs 3-14 through 3-17.

3-2. Microphone Assemblies (fig. Fo-12(1).)

Microphone Magnetic M-110/U (a below) or Headset-Microphone H-195/FSW-8 (b below) are connected to the microphone amplifier circuits by selection of either the MAGNETIC or CARBON position of rotary, multiple-contact MIKE selector switch S1102. When the OA2055/FSW-8 is arranged for remote operation (c below), voice input signals from the OA3014/FSW-8 microphone are applied through impedance matching transformer T1102 and rotary, multiple-contact LOCAL-REMOTE selector switch Sl101 to the microphone amplifier circuits.

a. Microphone Magnetic M-110/U is a low impedance, magnetic-type, desk microphone connected to the Cabinet, Electrical Equipment CY-3020/FSW-8 through self-locking connectors P1104 and J1104. When the push-talk switch of the M-110/U is depressed and switch S1102 is operated to the MAGNETIC position, voice-frequency signals produced at MK-1101 are applied to the microphone amplifier circuits (para 3-3) through pin A of connectors P1104 and J1104, variable MAGNETIC resistor R1104, contacts 7 and 9 of S1102 and contacts 12 and 10 of S1101. Capacitor C1103 at contract 10 and ground of S1101 suppresses radiofrequency interference. Resistor R1104 is used to adjust the voice-frequency output level of MK1101 to that of the HT1101 (b below). Voice-frequency signals applied to the microphone amplifier circuits will be terminated in the voice output circuits (para 3-4) unless the corresponding radio transmitter channel has been energized. The push-to-talk switch of M110/U, H-195/FSW-8 (b below), or foot switch S1002 is used to initiate operation of the voice output circuit. One side of each switch is grounded; the other side is connected through contacts 6 and 4 of S1101 to the coil of push-to-talk relay K501. When the push-to-talk microphone switches or S1002 is depressed, the ground circuit required to energize K501 is completed and the voice output circuit of the selected radio transmitter channel is energized as described in paragraph 3-4.

b. The transmitting element of Headset-Microphone H-195/FSW-8 is connected to the CY-3020/FSW-8 by three-conductor plug P1103 and MIKE CARBON connector J1103. When switch S1102 is operated to the CARBON position, a -3 vdc, required to operate the carbon transmitting element of RTl101 is applied from the power supply (para 3-24) through terminals 10 and 14 of terminal boards TB1102 and TB1017 respectively, contacts 1 and 2 of S1102, current limiting resistor R1103, and contacts 10 and 11 of S1102 to the tip of connectors J1103 and P1103. Voice-frequency signals originating at HTl101 are applied to the microphone amplifier circuits through the ring of connectors P1103 and J1103, contacts 11 and 10 of S1102, blocking capacitor Cl101, variable CARBON resistor R1102, isolation resistor Rl101, and contacts 12 and 10 of S1101. Capacitor Cl101 prevents the -3 vdc applied to the HT1101 transmitting element from entering the voice signal circuits. Resistor R1102 is used to adjust the voice-frequency output level of RT1101 to that of MK1101. The ground of the HT1101 and MK1101 (a above) is returned (through contacts of S1101) to the ground circuit of the microphone amplifier circuits to eliminate hum pickup through the individual microphone cables.

c. Voice input signals from the OA-3014/ FSW-8 are applied to the OA-2055/FSW-8 microphone amplifier circuits when switch S1101 is operated to the REMOTE position. The voice input signals from the OA3014/FSW-8 are applied through terminals 4 and 5 of terminal board TB1017 and pins D and E of connectors P1101 and J1101 to primary winding 1 and 3 of impedance matching transformer T1102. The induced signal appearing across secondary winding 4 and 5 of T1102 is applied to the microphone amplifier circuits through impedance matching resistors R1107 and R1108 and contacts 11 and 10 of S1101.

3-3. Microphone Amplifier Circuits (fig. FO-12(1)

The microphone amplifier circuits consist of six transistorized amplifier stages (a through f below) which amplify the low-level voice frequency signals received from the voice input circuits (para 3-2). The amplified output is applied to the voice output circuits (para 3-4) for transmission to distant airfield radio transmitters and monitoring equipment and also to a distant intercommunication system (para 3-7).

a. Audio Amplifier Q813. Input signals from Sl101 (para 3-2 a and b) are applied to audio amplifier Q813 through pin J of connectors J1101 and P1101, terminals 9 and 18 of terminal boards TB1017 and TB1028, respectively, pin B of connectors P801 and J801, and coupling capacitor C835. Audio amplifier Q813 functions primarily as a preamplifier. Low-level signals applied to the base of Q813 are amplified and the collector output is applied through coupling capacitor C837 to the base of high gain amplifier Q814 (b below). Base bias for Q813 is obtained from the junction of a voltage divider network comprised of resistors R853 and R854. Emitter bias is obtained from the voltage drop across resistor R855 and is held at a constant value by bypass capacitor C836. Resistor R911 is used to improve the frequency response of Q813 by providing signal degeneration. Resistor R856 functions as the collector load resistor and bypass capacitor C867 provides a low impedance path to ground for any high frequency signals that may appear at the collector of Q813. The load impedance of Q813 and, consequently, the audio level of signals applied to Q814 is automatically varied by means of a variable impedance network consisting of dc amplifier Q816 and associated components (d below).

b. High Gain Amplifier Q814. Voice-frequency signals applied from the collector of Q813 (a above) to the base of high gain amplifier Q814 are amplified, and the output appearing at the collector is directly coupled to the base of buffer amplifier Q815 (c below). Base bias for Q814 is obtained from the voltage divider network comprised of resistors R857 and R858. Emitter bias is obtained from the voltage drop across resistor R859 and is held at a constant value by bypass capacitor C838. Resistor R860 is the collector load resistor. Bypass capacitor C868 eliminates any high frequency signals which may appear at the collector of Q814 in the same manner as bypass capacitor C867 (a above).

c. Buffer Amplifier Q815. Buffer amplifier Q815 isolates the initial amplification (a and b above) from subsequent stages and couples the voice frequency-signal through MIKE LINE LEVEL resistor R862 and coupling capacitor C847 to the base of driver amplifier Q817 (e below). Signals appearing at the emitter of Q815 are also applied through coupling capacitor

C852 to the distant monitoring equipment (para 3-5 b) and intercommunication system (para 3-7). A portion of the emitter output from Q815 is also applied through coupling capacitor C843 to the variable impedance network (d below). Collector bias for Q815 is obtained from the junction of the voltage divider network comprised of resistors R863 and R864. Audio bypass for the amplifier stage is accomplished by capacitor C841. Resistor R861 and capacitors C839 and C840 form a low bandpass filter network which prevents voice-frequency signals from entering the power supply.

d. Dc Amplifier Q816. Dc amplifier Q816 and its associated components ((1) through (3) below) comprise a variable impedance network which controls the audio level of the microphone amplifier circuits by varying the load impedance of audio amplifier Q813 (a above). The variable impedance network may be considered in terms of three separate circuits consisting of a voltage doubler circuit ((1) below), a dc amplifier circuit ((2) below), and an impedance circuit ((3) below). For purposes of this manual, the discussion of the variable impedance network is limited to operation when an increase in audio input level occurs; the network also compensates in a similar manner for a decrease in audio input level.

(1) Voltage doubler circuit. Voice-frequency signals from buffer amplifier Q815 (c above) are applied to a voltage doubler circuit consisting of capacitors C843 and C844, diodes CR809 and CR810, and bleeder resistor R865. When, and if, the input voltage to Q815 increases to cause a greater voltage drop across the emitter, the difference in potential across C843 will increase and place the anode of CR810 at a more positive potential than its cathode and the cathode of CR809 at a more positive potential than its anode. On the negative half-cycle of the input signal, capacitor C843 will discharge through diode CR809, resistor R865, diode CR820, and resistor R910 to ground. This action will double the potential difference across capacitor C844 and thereby increase the voltage at the base of dc amplifier Q816 ((2) below).

(2) Dc amplifier circuit. Dc amplifier Q816 utilizes the output from the voltage doubler circuit ((1) above) to control the output of the impedance circuit ((3) below) and maintain the overall amplification of the microphone amplifier circuits constant. With no output from the voltage doubler circuit, the cathode of CR 820 is forward biased and the base of Q816 is clamped to the voltage level appearing at the junction of resistors R910 and R909. When the output of the voltage doubler exceeds the clamp level, the base current of Q816 rises and results in an output across emitter load resistor R866 Collector bias for Q816 is provided by resistor R867.

(3) Impedance circuit. Diodes CR811 and CR812, capacitors C842, C845, and C846, resistor R869, and variable COMP. ADJ resistor R868 comprise the variable impedance circuit. The increase in negative bias of Q816 ((2) above) in conjunction with the output from the voltage divider network comprised of resistors R868 and R869 determines the level at which gain control takes place. Diodes CR811 and CR812 will be reversed biased when the output across resistor R866 is less positive than the output across resistors R868 and R869; conversely, CR811 and CR812 will be forward biased and effectively connected in parallel across the output of audio amplifier Q813 when the output voltage across resistor R866 is more positive than that across resistors R868 and R869. Consequently, as the output from Q816 increases, the resistance of CR811 and CR812 decreases and their shunting effect increases. This action results in a reduction of the gain of Q813 and maintains the amplification of the stage at a constant level.

e. Driver Amplifier Q817. The output signal from Q815 (c above) is amplified by driver amplifier Q817 and coupled through impedance matching transformer T803 and blocking capacitor C850 to the base of power amplifier Q812 (f below). The primary (terminals 1 and 2) of T803 serves as the emitter load of Q817; base bias is obtained from the junction of voltage divider resistors R870 and R871, and resistors R872 and R873 and capacitors C848 and C849 from a frequency compensation network which improves the frequency response of the amplifier stage.

f. Power Amplifier Q812. Power amplifier Q812 functions primarily to amplify the low-level voice-frequency signals from driver amplifier Q817 (e above) to the proper power level required for operation of the distant radio transmitters. Signals appearing across secondary winding 3 and 4 of T803 are coupled through blocking capacitor C850 to the base of Q812. Capacitor C850 blocks the dc bias, obtained at the junction of resistors R875 and

R876, from being applied to the emitter of Q812. Emitter bias is obtained from the voltage drop across resistor R877 and is maintained at a constant value by bypass capacitor C851. Resistor R912 is used to provide signal degeneration. The output from the collector if Q812 is coupled through terminals 1 of terminal boards TB805 and TB701, respectively, to the voice output circuits (para 3-4.).

3-4. Voice Output Circuits (fig. Fo-12(1)

The voice output circuits of the OA-2055/FSW8 provide for the simultaneous operation and control of 10 individual radio transmitter channels and for the application of voice-frequency signals to distant monitoring or recording equipment when a particular transmitter channel is energized.

a. The high-level, voice-frequency output from the microphone amplifier circuits (para 3-3. f) are applied to primary winding 1 and 2 of output transformer T701. The output of each transmitter channel appears at separate secondary windings which are terminated in a 600-ohm resistor until the individual transmitter channel is operated.

b. Signals applied to the primary of T701 appear across 20 secondary windings, each having an output impedance of 150-ohms (fig. FO-12(2)). The output voltage induced across each pair of secondary windings is connected to contacts of a transmit relay (K711-K720) for each individual radio channel and are terminated by a 600-ohm resistor (R701-R710) until the selected transmit relay is energized.

c. The sequence of operation for the voice output circuits of transmitter channel No. 1 is given in paragraph 3-5. Circuit operation for transmitter channels No. 2 through 10 are identical to that of channel No. 1, except for reference designations (fig. FO-12(2)).

3-5. Transmitter Channel No.1 Sequence of Operation (fig. Fo-12(1))

When LOCAL-REMOVE switch S1101 is operated to the LOCAL position and TRANSMIT switch S1511 is operated to the OPERATE position, transmitter channel No. 1 is in a standby condition. Operation of the transmitter channel is initiated when the push-to-talk switch of the microphone in use or foot switch S1102 is depressed, completing the groundpath to energize push-to-talk relay K501 (para 2-10. a).

a. The sequence of operation is as follows: a. When K501 is energized, +48 vdc is applied through make contacts 6 and 5 of K501, pin J of connectors J502 and P502, terminals 8 of terminal boards TB1027 and TB1017, pin H of connectors P1101 and J1101, contacts 7 and 9 of Sl101, pin G of connectors J1101 and P1101, terminal 7 of terminal board TB1017, terminal 21 of terminal board TB1D04, pin r of connectors P1503 and J1503, contacts 1 and 2 of S1511, pin A of connectors J1503 and P1503, and terminal 34 of connectors P702 and J702 to the coil transmit relay K711.

b. When transmit relay K711 is energized, contacts 17 and 10 and 8 and 7 break, removing terminating resistor R701 from secondary winding 3 and 6 of output transformer T701. Voice frequency signals appearing at the secondary of T701 (para 3-4b.) are applied to the distant radio transmitters through make contacts 17 and 18 and 8 and 9 of K711, terminals 1 and 4 of connectors J701 and P701, and terminals 1 and 2 of terminal board TB1004. Simultaneously, voice-frequency signals from buffer amplifier Q815 (para 3-3c.) are applied through make contacts 16 and 6 of K711, terminal 13 of connectors J702 and P702, and terminal 1 of terminal board TB1003 for connection to distant monitoring equipment. Contacts 2 and 3 of relay K711 make to complete a connection for the keying of an external transmitter. A portion of the output signal across T701 is also applied to one side of audio level meter Ml101 through make contacts 3 and 4 of K501. Meter Ml101 indicates in decibels above 1 milliwatt (dbm). The audio level is indicated between 0 and + 6 dbm.

NOTE

The ground circuit required to energize transmit relay K711 is provided through normally made contacts 2 and 3 of lockout relay K701 (c below). Once energized, however, K711 remains locked in by the ground provided through its make contacts 14 and 4.

c. If prior to the sequence described in a and b above, + 48 vdc is applied from a distant lockout circuit to the coil of lockout relay K701, make contacts 2 and 3 break and remove the ground from relay K711. The transmitting channel remains inoperative as long as this condition exists.

d. When relay K711 is energized (b above), +48 vdc is applied through make contacts 15 and 5 to energize the coil of relay K701. If more than one airfield communications equipment is used to control the operation of a distant radio transmitter, +48 vdc is also applied from contact 5 of K711 through pin 24 of connectors J702 and P702 and terminal 7 of terminal board TB1006 to the distant lockout control circuit for the particular radio transmitter.

e. When relay K701 is energized (d above), +48 vdc from make contacts 12 and 11 of relay K711 is applied through make contacts 5 and 6 of K701, pin 58 of connectors J701 and P701, terminal 2 of terminal board TB1015, and pin L of connectors P1503 and J1503 to TRANSMIT supervisory indicator lamp DS1511. Indicator lamp DS1511 provides a visual indication that the particular radio transmitting channel is in use. If the OA-2055/FSW-8 is connected to the OA-3014/FSW-8, +48 vdc from terminal board TB1015 is applied to illuminate a similar supervisory indicator lamp for the corresponding radio transmitter channel in the remote equipment (para 3-28c.).

f. Simultaneously, a muting voltage of +7 vdc is applied from the power supply (para 5-1) through make contacts 7 and 8 of K701, pin 1 of connectors J702 and P702 and pin X of connectors P1502 and J1502 to terminal 4 of impedance matching transformer T1501 (para 3-9a(1)) to prevent loudspeaker feedback from the corresponding radio receiver channel while it is in operation.

3-6. Remote Operation of Transmitter Channel No. 1 (fig. Fo-12(1))

The control functions of the OA-2055/FSW-8 are transferred to the OA-3014/FSW-8 when LOCAL-REMOTE switch S1101 and TRANSMIT switch S1511 are operated to the REMOTE position. The sequence of operation is as follows: a. When the push-to-talk switch of the OA3014/FSW-8 microphone is depressed, the ground circuit required to energize push-to-talk relay K501 (para 3-5.) is applied from the OA-3014/FSW-8 (para 3-26b.) through terminal 3 of terminal board TB1017, pin C of connectors P1101 and J1101, and contacts 5 and 4 of Sl101.

b. When relay K501 is energized (para 2-10 a.), +48 vdc is applied through make contacts 6 and 5 of K501, pin J of connectors J502 and P502, terminals 8 of terminal boards TB1027 and TB1017 respectively, pin H of connectors P1101 and J1101, contacts7 and 8 of S1101, pin F of connectors J1101 and P1101, and terminal 6 of terminal board TB1017 to energize a push-to-talk relay in the OA-3014/FSW8 (para 3-28a(4).).

c. When the push-to-talk relay in the OA3014/FSW-8 is energized, +48 vdc is applied to the OA-2055/FSW-8 through terminal 1 of terminal board TB1015, pin X of connectors P1503 and J1503, and contacts 3 and 2 of S1511 to the coil of transmit relay K711.

d. When relay K711 is energized, the sequence of operation of radio transmitter channel No. 1 is identical to that described in paragraph 3-5 b through f.

3-7. Intercommunication Circuit (fig. Fo-12(1))

The transmitter and receiver circuits of the OA-2055/FSW-8 can be used for interequipment ground communication when connected to another OA-255/FSW-8 or to other ground communication equipment having similar circuit provisions. This is accomplished by an intercommunication circuit that functions as a two-way hot line between the transmitting circuits of one unit and the receiving circuits of the other unit. Each equipment can transmit (a below) or receive (b below) alternately, by switching arrangements. The transmitting equipment applies a voice-frequency output simultaneously with a dc voltage to energize a relay in the receiving equipment. Operation of the relay applies the transmitted signals to the headset and loudspeaker circuits of the receiving equipment, interrupting the normal audio input from the airfield radio receivers. Voice-frequency signals and dc power are applied to and from the transmitter and receiver circuits of each equipment by means of the hybrid construction of an intercommunication transformer.

a. Transmitting Function. When intercom switch S1103 is operated to the momentary INTERCOM position, voice-frequency signals from the emitter of buffer amplifier Q815 (para 3-3c.) are applied through make contacts

7 and 8 of S1103 and current limiting resistor R105 to winding 4 and 5 of intercommunication transformer Tl101. Simultaneously, +48 vdc is applied to terminal 2 of Tl101 through make contacts 1 and 2 of S1103. Voice-frequency signals induced across winding 1 and 3 and the +48 vdc from terminal 2 of Tl101 are applied to terminals 20 and 19 of terminal board TB1017 for connection to the corresponding circuit in the distant equipment.

b. Receiving Function. When S1103 (a above) is operated to the OFF position, voicefrequency signals and +48 vdc are applied to winding 1 and 3 of Tl101 from the distant equipment. The dc power applied across winding 1 and 3 flows in opposite directions through winding 1 and 2 and 3 and 2 and induces an opposing voltage across winding 4 and 5 thereby isolating the incoming dc voltage at terminal 2. The isolated +48 vdc is applied from terminal 2 through break contacts 2 and 3 of S1103 to the coil of intercom relay K502. When relay K502 is energized, the voice-frequency signals across winding 4 and 5 of Tl101 are applied through break contacts 5 and 6 of S1103 and make contacts 6 and 7, 4 and 5, and 12 and 2 of K502 to the headset and loudspeaker amplifier circuits of the radio receiver channel (para 3-10 and 3-11.).

3-8. Receiver Input Circuits (fig. Fo-12(1))

The receiving circuits of the OA-2055/FSW-8 provide 10 individual radio channels for the reception of audio signals from 10 distant airfield radio receivers. Signals applied to the audio input circuit of each radio receiver channel are isolated and amplified to a level required for operation of a headset circuit or one of two loudspeaker circuits. The audio signals applied to each receiver channel are also available for connection to external recording or monitoring equipment.

3-9. Audio Input Circuits (fig. Fo-12(1))

Audio input signals from a distant airfield radio receiver are connected to the OA-255/FSW-8 at terminals 1 and 2 of terminal board TB1007 and applied to the primary windings of 1 and 3 of impedance matching transformer T1501. The primary of T1501 offers a 600-ohm load which matches the impedance of the distant airfield radio receiver. The voltage induced across the secondary windings 4 and 5 of T1501 is applied to buffer amplifier Q1601 in receiver preamplifier A1601 (a below). The output of A1601 is applied through switching arrangements (b and c below), to either the headset (para 3-10) or one of the loudspeaker amplifier circuits (para 3-11.).

a. Receiver Preamplifier A1601. A1601 nomenclature is Preamplifier-Monitor, Audio Frequency AM-2818/FSW-8. Receiver preamplifier A1601 is a plug-in printed circuit board that functions to isolate the audio input signals from subsequent stages and to provide sufficient amplification to illuminate amber RECEIVE supervisory indicator lamp DS1501. Illumination of DS1501 indicates audio reception on the particular radio receiver channel in use.

(1) Buffer amplifier Q1601. Audio input signals from the secondary of T1501 are applied to the base of buffer amplifier Q1601 through pin B of connectors J1504 and P1601. Impedance matching resistor R1601, at the input of the stage, is placed in series with the base of Q1601 to provide a constant load to T1501. The output from the emitter of Q1601 is applied simultaneously through coupling capacitor C1602 and pin 6 of connectors P1601 and J1504 to RECEIVE switch S1501 (b below) and also through coupling capacitor C1601 to the base of signal amplifier Q1602 ((2) below). Emitter bias for Q1601 is obtained from the voltage drop across resistor R1604; negative base bias is obtained from the voltage divider network comprised of resistors R1602 and R1603. If the corresponding transmitter channel is operated, a+7 vdc muting voltage (para 3-5f.) is applied to terminal 4 of T1501, which reduces the net negative bias of Q1601 to the point of cutoff.

(2) Signal amplifier Q1602. Audio signals applied to the base of signal amplifier Q1602 are amplified and the collector output is applied through coupling capacitor C1603 to the base of power amplifier Q1603 ((3) below). Base bias for Q1602 is obtained from the junction of the voltage divider network comprised of resistors R1605 and R1606. Emitter bias for Q1602 is obtained from the voltage drop across resistors R1608 and R1609 and the value is held at a constant level by bypass capacitor C1604. Resistor R1607 is the collector load.

(3) Power amplifier Q1603. Power amplifier Q1603 functions to amplify the output from Q1602 ((2) above) to the level required to illuminate amber RECEIVE supervisory in

dicator lamp DS1501. Base bias for Q1603 is provided by the voltage drop across resistor R1611; resistor R1612 is the collector load, and DS1501 serves as the emitter load.

b. RECEIVE Switch S1501. RECEIVE switch S1501 is a three-position (HEADSETSPEAKER-OFF) locking-type lever switch is operated to apply the audio signals from buffer amplifier Q1601 (a(1l) above) to either the headset or loudspeaker amplifier circuits of the OA-2055/FSW-8.

(1) When S1501 is operated to the HEADSET position, contacts 4 and 5 break and remove the ground connection from DS1501 to the headset amplifier circuits. Audio signals from Q1601 (a(1) above) are applied through make contacts 2 and 1 of S1501, current limiting resistor R1501, and contacts 13 and 7 of intercom relay K502 to the headset amplifier circuit (para 3-10).

(2) When S1501 is operated to the SPEAKER position, contacts 4 and 5 make and apply the ground connection from DS1501 to the headset circuits and contacts 9 and 10 make and apply the audio signals from Q1601 through current limiting resistor R1502 to loudspeaker selector switch S701 (c below).

c. Loudspeaker Selector Switch S701. Loudspeaker selector switch S701 is a two-position toggle switch that functions to apply the audio output signal from A1601 (a above) to either of two loudspeakers (para 3-11 and 3-12.).

(1) When S701 is operated to the SPEAKER NO. 1 position, contacts 2 and 1 make and complete the audio signal path to loudspeaker No. 1 through make contacts 3 and 5 of intercom relay K502. The alternate path to loudspeaker No. 2 is removed by the ground provided through make contacts 4 and 5 of S701.

(2) When S701 is operated to the SPEAKER NO. 2 position, contacts 2 and 3 make and complete the audio signal path to loudspeaker No. 2 through make contacts 11 and 2 of intercom relay K502.

3-10. Headset Amplifier Circuit (fig. FO-12(1))

The headset amplifier circuit consists essentially of five transistor stages (a through e below) which amplify and limit the audio signals applied to the amplifier circuit to a predetermined level suitable for operation of the receiver element of Headset-Microphone H-195/FSW-8 (f below). Signals from the audio input circuit of each radio receiver channel are applied from receiver preamplifier A1601 (para 3-9a(1)), when the RECEIVE switch for the particular radio channel is operated to the HEADSET position. The audio signals are connected through normally made contacts 13 and 7 of intercom relay K502 (para 3-9b(1).), and applied to the amplifier stage through pin j of connectors P801 and J801.

a. Audio Amplifier Q819. Audio input signals are applied across variable HEADSET GAIN resistor R902 and coupling capacitor C853 to the base of audio amplifier Q819. The signals are amplified by Q819, and the collector output is applied through coupling capacitor C855 to the base of high gain amplifier Q820 (b below). The load impedance of Q819 and consequently the audio level of signals applied to Q820 is varied by means of a variable impedance circuit (d below). Base bias for Q819 is obtained from the junction of voltage divider comprised of resistors R878 and R879. Emitter bias is obtained from the voltage drop across resistor R880, and resistor R882 functions as the collector load. HEADSET GAIN resistor R902 is used to preset the audio input level of the signal applied to Q819, to prevent overdriving of the input stage and also to minimize distortion of the headset amplifier circuit.

b. High Gain Amplifier Q820. Audio signals applied from audio amplifier Q819 (a above) to the base of the high gain amplifier Q820 are amplified, and the collector output directly coupled to the base of buffer amplifier Q821 (c below). Base bias for Q820 is obtained from the voltage divider consisting of resistors R883 and R885. Emitter bias is obtained from the voltage drop across resistor R884 and is held constant by bypass capacitor C856. Resistor R866 functions as a collector load.

c. Buffer Amplifier Q821. Buffer amplifier Q821 isolates high gain amplifier Q820 (b above) from subsequent stages and couples the audio signal across variable OUTPUT LEVEL resistor R888 and coupling capacitor C865 to the base of driver amplifier Q823 (e below). The output of Q821 is also fed back across OUTPUT LEVEL resistor R888, through coupling capacitor C860 to the base Rf dc amplifier Q822 (d below). Collector bias for Q821 is obtained from the junction of the voltage divider network consisting of resistor R889 and R890. Audio bypass for the amplifier stage is accomplished by capacitor C859. Resistor R887 and capacitors C857 and C858 form a low pass filter network which prevents audio signals from entering the power supply and prevents interstage coupling through the power supply. OUTPUT LEVEL resistor R888 is used to vary the audio level of signals applied to Q823.

d. Dc Amplifier Q822. Dc amplifier Q822 and its associated components comprise a dc amplifier circuit which controls the audio level of the headset amplifier circuit in an identical manner of the delayed automatic gain control (agc) as described in paragraph 3-3d.

e. Driver Amplifier Q823. Driver amplifier Q823 amplifies the output signal applied from buffer amplifier Q821 (c above). The amplified signal, appearing at the emitter of Q823, is coupled through impedance matching transformer T804 and HEADSET volume control resistor R1106 to the receiver element of Headset-Microphone H-195/FSW-8 (f below). The primary (windings 1 and 2) of transformer T804 serves as the emitter load for Q823; base bias is obtained from the voltage divider consisting of resistors R896 and R897, and emitter bias is obtained from the voltage drop across resistor R898. Capacitor C866 improves the frequency response of the amplifier.

f. Headset-Microphone H-195/FSW-8. The receiver element of Headset-Microphone H-195/ FSW-8 is connected to the equipment cabinet through two-conductor plug P1102, and HEADSET connector J1102. Signals applied to the receiver element from driver amplifier Q823 (e above) are varied in volume by adjustment of HEADSET volume control resistor R1106.

3-11. Loudspeaker Amplifier Circuits (fig. FO-12(1))

The amplifier circuit for loudspeaker No. 1 and No. 2 consists essentially of six transistor stages (a through f below) which amplify or limit audio signals applied to the circuit to a predetermined level suitable for the operation of the equipment loudspeaker (g below). Signals from the audio input circuit of each radio receiver channel (para 3-9.) are applied from receiver preamplifier A1601 when the RECEIVE switch for the particular channel utilized is operated to the SPEAKER position and the loudspeaker selector switch is operated to the SPEAKER NO. 1 position.. The audio input signals are connected through normally make contacts 3 and 5 of intercom relay K503 and applied to audio amplifier Q801 (a below) through pin i of connectors P801 and J801.

a. Audio Amplifier Q801. Audio input signals to audio amplifier Q801 are applied across variable SPKR NO. 1 GAIN resistor R899 and coupling capacitor C801 to the base of Q801. The signals are amplified by Q801, and the collector output is applied through coupling capacitor C803 to the base of high amplifier Q802 (b below). The load impedance of Q801, and consequently the audio level of signals applied to Q802, is varied by means of the variable impedance circuit of dc amplifier Q804 (d below). Base bias for Q801 is obtained from the junction of the voltage divider network consisting of resistors R801 and R802. Emmitter bias is obtained from the voltage drop across resistor R803. Resistor R805 functions as the collector load for the stage. SPKR NO. 1 GAIN resistor R899 is used to preset the audio input level of signals applied to Q801, to prevent overdriving of the input stage and also to minimize distortion of the amplifier circuit.

b. High Gain Amplifier Q802. Audio signals applied from audio amplifier Q801 (a above) to the base of high gain amplifier Q802 are amplified, and the output appearing at the collector is directly coupled to the base of buffer amplifier Q803 (c below). Base bias for Q802 is obtained from the voltage divider consisting of resistors R806 and R807. Emitter bias is obtained from the voltage drop across resistor R808, and is held constant by bypass capacitor C804. Resistor R809 functions as the collector load.

c. Buffer Amplifier Q803. Buffer amplifier Q803 isolates high gain amplifier Q802 (b above) from subsequent stages and couples the audio signal across VOLUME CONTROL 1 resistor R1401 and coupling capacitor C813 to the base of driver amplifier Q805. The output of Q803 is also fed back through coupling capacitor C808 to the base of dc amplifier Q804 (d below). Collector bias for Q803 is obtained from the voltage divider consisting of resistors R811 and R812.
Capacitor C807 functions as an audio bypass capacitor. Resistor R810 and capacitors C805 and C806, form a low pass filter network which prevents audio signals from entering the power supply, and prevents interstage coupling through the power supply. VOLUME CONTROL 1 resistor R1401 is used to vary the audio level of signals applied through subsequent stages to loudspeaker LS1401 (g below). Resistor R1403 and C1402 comprise a decoupling network to

improve the frequency response of the amplifier circuit.

d. Dc Amplifier Q804. DC amplifier Q804 and its associated components comprise a dc amplifier circuit which controls the audio level of the loudspeaker amplifier circuit in an identical manner to that described in paragraph 3-3d.

e. Driver Amplifier Q805. Driver amplifier Q805 amplifies the output signal applied from buffer amplifier Q803 (c above). The amplified signal, appearing at the emitter of Q805, is coupled through impedance matching transformer T801 to the base of power amplifier Q818 (f below) Base bias for Q805 is obtained from the voltage divider consisting of resistors R818 and R819 and emitter bias is obtained from the voltage drop across resistors R820 and R821. The primary winding 1 and 2 of transformer T801 serves as the emitter load; capacitors C814 and C815 function to improve the frequency response of the stage.

f. Power Amplifier Q818. Power amplifier Q818 amplifies signals from driver amplifier Q805 (e above) to the power level required for operation of loudspeaker LS1401 (g below). Signals appearing at the secondary of impedance matching transformer T801 are applied to the base of Q818. The collector of Q818 develops a signal voltage across the primary of transformer T1001 which is applied to the secondary of LS1401. Base bias for Q818 is provided by a voltage divider consisting of resistors R822, R823, and BIAS ADJ resistor R824. The bias voltage from the junction of R822 and R823 is applied to the base of Q818 through the secondary of T801. Capacitor C816 blocks the dc base bias voltage from being applied to the emitter of Q818. Emitter bias is obtained from the voltage drop across resistor R825 and is maintained at a constant voltage by bypass capacitor C817. Resistor R826 provides signal degeneration and increases the frequency reaponse of Q818.

g. Loudspeaker LS1401. Loudspeaker LS1401 is a permanent-magnet, dynamic-type loudspeaker with a 5-inch cone. The level of audio signals applied to LS1401 is varied by the control tower operator by adjustment of VOLUME CONTROL 1 resistor R1401 (c above), mounted adjacent to the loudspeaker on the front panel of the equipment cabinet (fig. 4-29.).

3-12. Loudspeaker No.2 Amplifier Circuit (fig. FO-12(1))

The amplifier circuit for loudspeaker No. 2 is identical with that of loudspeaker No. 1 described in paragraph 3-11 except for the reference symbol designations of components and controls.

3-13. Telephone Circuits, General

The telephone circuits in the OA-255/FSW-8 provide two-way voice communication between the control tower operator and 10 distant parties. Each telephone channel may be operated to complete a voice circuit between Handset H-194/ FSW-8 and a distant telephone, and individual switching and relay arrangements are provided to complete signaling circuits between the two stations. The theorectical analysis of telephone channel No. 1 is described in paragraphs 3-14 through 3-17.

3-14. Telephone Send Voice Signal Circuits (fig. FO-12(1))

a. Voice-Frequency Signal. The transmitter element of the H-194/FSW-8 is connected in series with -3-volt dc from the power supply (para 3-24.), to produce a voice-frequency signal. The -3 vdc from the power supply is applied through coil E of impedance matching network Z1301 to the transmitter element when the H-194/FSW-8 push-to-talk switch is depressed. Coil E has high impedance to the transmitter element voice signals; this condition prevents the signal from being applied to the power supply.

b. Voice Signal Path. When TELEPHONE control switch S1301 is operated to the TALK position, voice-frequency signals, originating at the transmitter element of the H-194/FSvT-8 are applied through the blue and red transmitter leads, terminals 1 and 4 of terminal board TB1201, dc blocking capacitor M, surge suppressor resistor N, winding A, and make contacts 6 and 7 and 3 and 4 of S1301 to terminals 1 and 2 of terminal board TB1024. Capacitor M isolates the telephone line from the -3 vdc applied to the transmitter element (a above).

c. Telephone Receive Voice Signal Circuits. When TELEPHONE switch S1301 is operated to the TALK position, incoming voice signals from a distant party are applied to the receiving circuits from terminals 1 and 2 of terminal board TB1024, through contacts 7 and 6 and 4 and 3 of S1301, resistor N, capacitor M, winding H, and capacitor F, to the black receiver lead, and through windings A and C, to the white receiver lead.

3-15. Antisidetone (fig. FO-12(1))

a. Windings A, C, and H of impedance matching network Z1301 form an antisidetone circuit. For sidetone reductions, a portion of the transmitter element signal is shunted through winding H from resistor B, capacitors F and D, and varistor CR2. Consequently, only a portion of the transmitter current is picked up by the receiver as sidetone. Voice signals originating at the distant party flow through winding A and divide; part of the signals flow through the transmitter and the remainder through winding H. The voice signals in winding A and H are in the same direction; therefore, they aid in inducing a voltage in winding C. The net effect is to eliminate current in the receiver and hence the sidetone effects.

b. A balancing network, made up of capacitors D and F, resistor B, and varistor CR2, matches the impedance characteristics of the telephone line and maintains sidetone balance over a wide range of voice frequencies and power supply voltages. Varistor CR2 limits the effect of any power supply variations. When the transmitter voice signal is high, the resistance of varistor CR2 decreases. Winding H then shunts the transmitter element, capacitor F shunts the receiver element, and the transmitter voice signal is decreased. When the transmitted voice signal is low, the resistance of varistor CR2 is high and has very little effect on the circuit. Capacitor D bypasses some of the voice signals and lowers the effect of varistor CR2 to provide the required reception level.

3-16. Signaling Distant Telephone (fig. FO-12(1))

TELEPHONE switch S1301 is operated to the RING position when signaling a distant telephone. Voltage from the power supply (100 vdc) from terminal 21 of terminal board TB1024 is applied through pins 1L and 1R of connectors P1301 and J1301, make contacts 10 and 9 of S1301, pins 1L and LR of connectors J1301 and P1301, and pin 42 of connectors J601 and P601, to terminal 1 of ring generator Z601. Terminal 2 of Z601 is returned to the power supply through pin 43 of connectors P601 and J601 to terminal 22 of terminal board TB1024. A 20-cps ring voltage is produced on terminals 3 and 4 of Z601 and transmitted to the distant telephone through the following path: pins 49 and 50 of connectors J601 and P601, pins 3R and 3L of connectors P1301 and J1301, make contacts 8 and 7 and 5 and 4 of S1301, pins 4L and 4R of connectors J1301 and P1301 to terminals 1 and 2 of terminal board TB1024. As long as S1301 is held in the RING position, the ring voltage will be transmitted to the distant telephone. When S1301 is operated to the OFF position, contacts 9 and 10 break and thus prevent the 100 vdc from being applied to Z601.

3-17. Incoming Signal From Distant Party (fig. FO-12(1))

When TELEPHONE switch S1301 is operated to the OFF position, an incoming 20-cps ring voltage from a distant telephone can cause buzzer DS1311 to sound and TELEPHONE supervisory indicator lamp DS1301 to illuminate. The 20cps ring voltage from a distant telephone is applied through terminals 1 and 2 of terminal board TB1024, pins 4 and 1 of connectors P601 and J601 to the coil of ring relay K601. With K601 energized, 117 vac is applied through terminal 19 of terminal board TB1025, pin 29 of connectors J601 and P601, make contacts 6 and 5 of K601, pin 30 of connectors J601 and P601, and pin C of connectors P1031 and J1301 to buzzer DC1311. The neutral side of the 117 vac is connected through terminal 20 of terminal board TB1025 and pin A of connector P1301 and J1301 to DS1311. Hold relay K611 is energized by the application at +48 vdc through tertninal 18 of terminal board TB1025, pin 33 of connectors J601 and P601 and make contacts 7 and 8 of K601 and remains locked in by the application of +48 vdc from terminal 18 of terminal board TB1025, pins 2L and 2R of connectors P1301 and J1301, make contacts 2 and 1 of S1301, pins 14L and 14R of connectors J1301 and P1301, pin 55 of connectors P601 and J601, and make contacts 3 and 2 of K611, to the coil of K611. Terminal 4 of K611 is grounded through pin 46 of connectors J601 and P601, and terminal 21 of terminal board TB1025. As soon as the incoming ring voltage ceases, K601 is deenergized and contacts 5 and 6 break, preventing the 117 vac from energizing buzzer DS1311. Hold relay K611, however, remains energized by the +48 vdc applied to its coil even when the ring voltage is no longer applied to K601. The +48 vdc that holds K611 energized also illuminates TELEPHONE supervisory indicator lamp DS1301 from terminal 1 of relay K611, pin 31 of connectors J601 and P601 pins 14L and 14R of connectors P1301 and J1301. The other side of lamp

DS1301 is grounded through pins 2L and 2R of connectors J1301 and P1301, terminal 21 of terminal board TB1025, terminal 23 of terminal board TB1020, terminal 20 of terminal board TB1012, and terminal 2 of terminal board TB1002. With S1301 in the OFF position, DS1301 remains illuminated by the +48 vdc applied through the locked-in contacts of K611. Indicator DS1301 remains illuminated until S1301 is operated to the TALK position.

3-18. Field Status Circuit (fig. FO-12(1))

a. The field status circuits of the 0A2055/ FSW-9 are part of an indicating system, connected between units of the AN/FSW-8(V), which permits airfield operational personnel to display airfield flying conditions at the various units of the equipment in voice communication with aircraft. Operation of the field status circuit consists of the application of a +48 vdc from Switch box SA-751/FSW-8 to energize field status indicator relays alternately, or in combination, which in turn operate to apply ac power to illuminate the selected indicator lamp. A detailed description of circuit operation is given in b below.

b. When the appropriate flight condition is selected at the SA-751/FSW-9, +48 vdc is applied through terminals 20 and 21 of terminal board TB1016, terminals 11 and 12 of terminal board TB1031, and terminals 5 and 4 of terminal board TB1401 to the coils of field status indicator relays K1401 and K1402. When relay K1401 is energized, contacts 3 and 2 make and apply 117 vac through the normally made contacts 5 and 6 of field status indicator relay No. 2 K1402 to illuminate the VFR indicator lamp DS1401. Illumination of DS1401 indicates that weather conditions are suitable for visual flight. When relay K1402 is energized in combination with relay K1401, contacts 5 and 4 of relay K1402 make and apply the 117 vac to illuminate IFR indicator lamp DS1402. Illumination of DS1402 indicates that navigational aids must be used. When only relay K1402 is energized, contacts 2 and 3 make and apply 117 vac through the normally made contacts 3 and 4 of relay K1401 to illuminate CLOSED indicator lamp DS1403. Illumination of DS1403 indicates that the airfield is closed to all traffic.

3-19. Power Supply PP-2803/FSW-8 (fig. FO-12(3))

a. General. Power Supply PP-2803/FSW-8 consists primarily of four individual transistorized power supplies (para 3-20 through 3-24) which furnish the various operating voltages required for circuit operation of the OA-2055/FSW8.

b. Ac Input Circuit. When MAIN POWER circuit breaker CB1001 is operated to the ON position, 117-vac line power, from an external power source, is applied to the primary of input transformer T501 and also to red MAIN POWER indicator lamp DS1001, convenience receptable J1001, and through terminals 19 and 20 of terminal board TB1025 (fig. FO-12(1)) to desk lamp DS1002. Convenience receptacle J1001 is used to furnish line power to other components of the AN/FSW-8(V) or other airfield equipment utilizing 117-vac input power. BRIGHT-LAMP-OFF resistor R1001 is used to vary the brightness of DS1002. EMER. ALARM switch S1001 is provided to interconnect the OA-2055/FSW-8 to an external emergency alarm system.

3-20. 100-Volt Dc Power Supply (fig. FO-12(3))

The 117-volt root-mean-square (rms) voltage appearing across secondary winding 9 and 10 of input transformer T501 is applied to a full-wave bridge rectifier circuit consisting of diodes CR505, CR506, CR507, and CR508. The rectified, unregulated 100-vdc output is applied to a ring generator to provide a ringing signal to the telephone circuits of the AO-2055/FSW-8 (para 3-16).

3-21. +48-Volt Dc-Power Supply (fig. FO-12(3))

The 60-volts rms and appearing across secondary winding 4 and 5 of T501 is applied through surge protection resistors R528 and R529 to a conventional full-wave bridge rectifier circuit consisting of diodes CR501, CR502, CR503, and CR504. The pulsating dc is filtered by chokes L501 and L502 and capacitors C501, C502, and C512, and applied as a relay control signal to the OA-2055/ FSW-8 and also through TRANSMIT 1 AMPfuse F1001 to distant transmitters. A portion of the rectified and filtered +48-vdc output is also applied to reference diode CR514 through voltage dropping resistor R501. The +7-vdc output from the junction of R501 and CR514 is applied to +7V test jack J506 and distributed as a muting voltage to the receiving circuits (para 3-5f) of the OA-2055/FSW-8.

3-22. Minus-15-Volt Dc Power Supply (fig. FO-12(3))

The 24.5 volts rms across secondary windings 6 and 8 of T501 is applied to a full-wave bridge rectifier circuit consisting of diodes CR509, CR510, CR511, and CR512. In the PP-2803A/FSW8, capacitors C513, C514, and C515 at T501 suppress radiofrequency interference. The dc output from the bridge rectifier circuit is filtered by capacitors C503 and C505 and resistor R502 and applied to the collector of series regulator Q501 (a below). The -15V, 1.5 AMP fuse F502 provides protection to the bridge rectifier circuit and the -15-volt dc power supply. Resistor R503 and capacitor C504 form a resistance-capacitance (rc) filter network.

a. Regulator Circuit. The regulator circuit provides a constant dc output voltage so that the -15-vdc power supply is independent of load variations or ac input voltage fluctuations. Output voltage variations in the -15-volt dc power supply are sensed by a voltage divider network comprised of resistors R506 and R510 and -15V ADJ resistor R509, and applied to the base of dc amplifier Q503. Voltage reference diode CR515, which operates from the current through voltage dropping resistor R508, applies a fixed bias voltage to the emitter of reference amplifier Q504. Reference amplifier Q504 amplifies the fixed bias voltage and directly couples the amplified output to the emitter of Q503. Dc amplifier Q503 compares a sample of the -15-volt output obtained from the junction of resistors R506 and R509 with the fixed current output from Q504. Should the output voltage of the -15-volt dc power supply increase, the base current of Q503 will decrease; the decrease is directly coupled to the base of dc amplifier Q502, producing a corresponding decrease in its emitter current. Dc amplifier Q502 and series regulator Q501 are dc coupled; therefore, any decrease in the emitter current of Q502 will cause a corresponding decrease in the base and emitter currents of series regulator Q501. A decrease in the emitter current of Q501 consequently causes the output voltage of the -15-volt dc power supply to return to its original value. Conversely, a decrease in the output voltage will produce an increase in Q501 emitter current, and the output voltage will tend to rise to its original value. The output from the series regulator Q501 circuit is applied to the -7.5-vdc power supply (para 3-23) -15V test jack J505, and through pins A and B of connectors J509 and P509 to the OA-2055/FSW-8 equipment circuits (b) below. Resistor R504 is the collector load for Q503; the emitter load for Q502 is provided by resistor R505. Capacitor C508 improves the high frequency transient response of the series regulator circuit, and capacitor C506 is used to stabilize the feedback from Q503 to Q502.

b. Minus 15 Volts Dc Distribution. The output of the regulator circuit (a above) is applied through connectors J509 and P509 to the receiver preamplifier of each radio receiver channel (fig. FO-12(1) and (2)), the microphone amplifier circuit, the headset amplifier circuit and the loudspeaker amplifier circuits (fig. FO-12(1)).

3-23. Minus 7.5-Volt Dc Power Supply (fig. FO-12(3))

The 24.5-volts rms from secondary winding 6, 7, and 8 of T501 is applied to a full-wave rectifier circuit consisting of diodes CR509 and CR512. The dc output from the rectifier circuit is filtered by capacitor C509 and applied through -7.5V 8 AMP fuse F501 to the collector of regulators Q507 and Q512 (a below); through shunt resistor R511 to the collector of dc amplifiers Q510 and Q505 respectively. The -7.5V, 8 AMP fuse F501 provides protection to the full-wave rectifier circuit and the -7.5 vdc power supply.

a. Regulator Circuit. The regulator circuit provides a constant dc output voltage so that the -7.5-vdc power supply is independent of load variations and ac input voltage fluctuations. The regulator circuit uses two transistorized regulating elements: a preregulator circuit ((1) below) and a series regulator circuit ((2) below). Regulation occurs as a result of maintaining a constant current output from the preregulator circuit to the series regulator circuit.

(1) Preregulator circuit. Input voltage variations from the full-wave rectifier and filter circuits are sensed by a voltage divider network comprising voltage dropping resistor R512 and voltage reference diode CR513. An increase in the input voltage will cause an increase in the breakdown current of diode CR513 and also a corresponding increase in the voltage across resistor R512. Reference amplifier Q508 functions as an emitter follower of which the base-collector input is the voltage across resistor R512. With an increase in the voltage drop across resistor R512, the emitter current of Q508 will increase. The increase in Q508 emitter current is applied to the base of series regulators Q507 and Q512 and will

produce a decrease in their base current. The decrease in base current of Q507 and Q512 produces a decrease in the emitter current; consequently, the output voltage of the preregulator circuit applied to the series regulator circuit ((2) below) will decrease to near its original value. Conversely, a decrease in the input voltage will produce an increase in the emitter currents of Q507 and Q512, and the voltage to the series regulator will rise to near its original value. Series regulators Q507 and Q512 are connected in parallel, and therefore divide the current load of the circuit. Resistors R525 and R526 are used to match the base currents of Q507 and Q508.

(2) Series regulator circuit. Output voltage variations in the -7.5-volt dc power supply, sensed by a voltage divider network comprising resistor R516 and -7.5V ADJ resistor R515, are applied to the base of reference amplifier Q506. Voltage reference diode CR517, which operates from the current through voltage dropping resistor R518, applies a fixed bias voltage to the emitter of reference amplifier Q506. Reference amplifier Q506 compares a sample of the output voltage from resistor R515 with the reference voltage applied from diode CR517. Should the output voltage of the -7.5-volt dc power supply increase, the base-emitter voltage of Q506 will increase and cause more collector current to flow. The increase in Q506 collector current is directly coupled to the base of dc amplifier Q505, and produces a corresponding decrease in Q505 emitter current. The decrease in Q505 emitter current is directly coupled to the base of dc amplifier Q510 and causes a decrease in its emitter current. A decrease in the emitter current of Q510 will produce a similar decrease in the base current of series regulators Q509 and Q511. A decrease in the base current of Q509 and Q511 produces a decrease in their emitter current; consequently the output voltage of the -7.5-vdc power supply will decrease, returning the output voltage to its original value. Conversely, a decrease in the output voltage will produce an increase in the emitter currents of Q509 and Q511, and the output voltage will tend to rise to its original value.

b. Minus 7.5-Volts Dc Distribution. The output from the series regulator (a(2) above) is applied to the -7.5V test jack J507 and through pins G and H of connectors J509 and P509 to the equipment circuits for use as a bias voltage. The -7.5-vdc regulated output is also applied to the -3-vdc power supply (para 3-24.).

3-24. Minus 3-Volt Dc Power Supply (fig. FO-12(3))

The -3,vdc output is obtained from the -7.5vdc power supply (para 3-23b.) through current limiting resistor R517. Resistor R517 is inserted in series with the transmitter elements of Headset-Microphone H-195/FSW-8 or Handset H-194/ FSW-8 to limit the current drain on the -7.5 vdc power supply (fig. FO-12(1).). The voltage at -3V test jack J508 is approximately -3 vdc when MIKE selector switch S1102 is operated to the CARBON position and the push-to-talk switch of either the H-194/FSW-8 or H-195/FSW-8 is depressed. Unless either push-to-talk switch is depressed, the -3 vdc power supply is an open circuit and the voltage at test jack J508 is -7.5 vdc.

Section II. COMMUNICATION STATION, REMOTE CONTROL OA-3014/FSW-8

3-25. General

a. This section contains a detailed circuit analysis of the OA-3014/FSW-8. Many of the circuit stages in the OA-3014/FSW-8 are identical to those contained in the OA-2055/FSW-8, differing only in reference designations of component parts.

b. For purposes of this manual, only the transmitting, receiving, and telephone functions for radio channel No. 1 are discussed. The corresponding components and terminal board connection points for radio channels No. 2 through 10 are identified and may be correlated with a particular stage in the applicable schematic diagram.

3-26. Transmitter Input Circuits . (fig. FO-14(1))

The transmitter circuits of the OA-3014/FSW-8 consist of a microphone assembly (a below) that applies voice-frequency signals to the microphone amplifier circuits (para 3-27.) and the associated push-to-talk controls that are used to initiate operation of the voice output circuits (b below).

a. Microphone-Magnetic M-110/U is a low impedance, magnetic-type, desk microphone connected to Cabinet, Electrical Equipment CY3019/FSW-8 through self-locking connector P1901 and MIKE connector J1901. When the push-to-talk switch of the M-110/U is depressed, voice-frequency signals produced at MK1901 are applied to the microphone amplifier circuits (para 3-27) through pin A of connectors P1901 and J1901, MIKE VOLUME resistor R1901, terminal 20 of terminal board TB1901, and connectors P2402 and J2402. Resistor R1901 is used to adjust the output level of MK1901.

b. Voice-frequency signals applied to the microphone amplifier circuit from the MK1901 (a above) will be terminated in the OA-2055/FSW8 voice output circuits unless the corresponding transmitter channel has been energized (para 3-2o). The push-to-talk switch of MK1901 is used to initiate operation of the voice output circuit by completing the groundpath required to energize push-to-talk relay K501 (para 3-6a).

3-27. Microphone Amplifier Circuits (fig. FO-14(1))

The microphone amplifier circuits of the OA3014/FSW-8 consist of four transistor stages (a through d below) which amplify the voice-frequency signals applied from MK1901 (para 3-26). The amplified output is applied to the voice input circuits of the OA-2055/FSW-8 for transmission to distant airfield radio transmitters.

a. Audio Amplifier Q2407. Audio amplifier Q2407 functions primarily as a preamplifier. Low-level signals applied to the base of Q2407 through coupling capacitor C2418 are amplified, and the collector output is applied to the base of high gain amplifier Q2408 (,b below). Base bias for Q2407 is obtained from the junction of a voltage divider network consisting of resistors R2427 and R2428. Emitter bias is obtained from the voltage drop across resistor R2429 and is held at a constant value by bypass capacitor C2419. Resistor R2430 is used to improve the frequency response by providing signal degeneration for the amplifier stage. Resistor R2431 functions as a collector load. The load impedance of Q2407 and, consequently, the audio level of signals applied to Q2408 are varied by means of a variable impedance network (d below).

b. High Gain Amplifier Q2408. Voice-frequency signals applied from the collector of audio amplifier Q2407 (a above) through coupling capacitor C2420 to the base of high gain amplifier Q2408 are amplified, and the output appearing at the collector is directly coupled to the base of buffer amplifier Q2409 (e below). Base bias is obtained from the voltage divider network comprised of resistors R2432 and R2433. Emitter bias is obtained from the voltage drop across resistor R2434 and held at a constant value by bypass capacitor C2421. Resistor R2435 is the collector load resistor.

c. Buffer Amplifier Q2409. Buffer amplifier Q2409 isolates the initial amplification stages (a and b above) from subsequent stages and couples the voice-frequency signal through impedance matching resistor R2439 to primary windings 5 and 4 of impedance matching transformer T2403. Signals appearing across the secondary windings 3 and 1 of T2403 are applied through pins W and X of connectors J2401 and P2401 to terminals 9 and 8 of terminal board TB1705 from which they are applied by interunit wiring to the voice input circuits of the OA-2055/FSW-8. A portion of the output of Q-2409 is also fed back through coupling capacitor C2426 to the base of dc amplifier Q2410 (d below). Collector bias for Q2409 is obtained from the junction of a voltage divider network consisting of resistors R2437 and Q2438. Audio bypass for the amplifier stage is accomplished by capacitor C2424. Resistor R2436 and capacitors C2422 and C9A23 form a low pass filter network which prevents voice-frequency signals from entering the power supply, and prevents interstage coupling through the power supply.

d. Dc Amplifier Q2410. Dc amplifier Q2410 and its associated components comprise a dc amplifier circuit which controls the audio level of the microphone amplifier circuits in an identical manner to that described in paragraph 3-3d.

3-28. Transmitter Control Circuits (fig. FO-14(1))

The OA-3014/FSW-8 provides relay and switching arrangements that permit control of the radio transmitter channels of the OA-2055/FSW-8 when the AN/FSW-8 (V) has been adjusted for remote operation (a below). The transmitter control circuits consist of the individual controls of 10 radio transmitter channels and push-to-talk relay K1801 (b below).

a. Operating Conditions. The remote switching provisions (para 3-6) of the OA-2055/FSW8 establish the required operating conditions for radio transmitter channel control from the OA3014/FSW-8. A summary of the operating conditions is outlined in (1) through (4) below: (1) Push-to-talk control is transferred to the OA-3014/FSW-8 when LOCAL-REMOTE switch Sl101 is operated to the REMOTE position.

(2) Radio transmitter channel control is transferred when the TRANSMIT switch of each transmitter channel in the OA-2055/FSW8 is operated to the REMOTE position.

(3) Operation of the push-to-talk switch of the M-110/U (para 3-26b) completes the groundpath through contacts 5 and 4 of S1101 to energize push-to-talk relay K501 in the OA-2055/ FSW-8.

(4) Operation of K501 applies +48 vdc power through contacts 7 and 8 of Sl101 to energize push-to-talk relay K1801 (b below) in the OA-3014/FSW-8.

b. Push-to-Talk Relay K1801. When the AN/ FSW-8(V) is arranged for remote control operation (a above), push-to-talk relay K1801 is energized by operation of push-to-talk relay K501 in the OA-2055/KSW-8. Operation of K1801 applies + 48 vdc and + 7 vdc to contacts of TRANSMIT switch S1811 (c below) which is used to initiate operation of a selected transmitter channel.

c. TRANSMIT switch S1811. When push-to-talk relay K1801 (b above) is energized, +48 vdc is applied through make contacts 4 and 3 of K1801 and make contacts 4 and 3 of TRANSMIT switch S1811 (OPERATE position), pin F of connectors J1812 and P1812, and terminal 11 of terminal board TB1703 to TRANSMIT switch S1511 (para 3-6) in the OA-2055/FSW-8. Simultaneously, +7-vdc muting voltage is applied through make contacts 6 and 5 of K1801 and contacts 2 and 1 of S1811 to terminal 4 of impedance matching transformer T1801 to cut off operation of the corresponding radio receiver channel in the same manner as that described in paragraph 3-5f. TRANSMIT supervisory indicator lamp DS1811 is illuminated whenever the lockout relay for channel No. 1 in the OA-2055/ FSW-8 is energized para 3-5e.).

3-29. Receiver Circuits

The receiving circuits of the OA-3014/FSW-8 provide 10 individual radio receiver channels to monitor the airfield radio receivers connected to the OA-2055/FSW-8. Each radio receiver channel of the OA-3014 FSW-8 may be connected to the corresponding audio input circuit of the OA-2055/FSW-8, or connected directly to the individual airfield radio receivers. Signals applied to the audio input circuit of each radio receiver channel are isolated and amplified to a level required for operation of a loudspeaker circuit.

3-30. Audio Input Circuits (fig. FO-14(1))

Audio input signals from a distant airfield radio receiver or the OA-2055/FSW-8 are connected to the OA-3014/FSW-8 at terminals 1 and 2 of terminal board TB1704 and are applied through pins A and B of connectors P1811 and J1811 to primary winding 1 and 3 of impedance matching transformer T1801. The primary of T1801 presents a 600-ohm load which matches the output impedance of the distant airfield radio receiver or the audio output circuit of the OA2055/FSW-8. The voltage induced across secondary winding 4 and 5 of T1801 is applied through receiver preamplifier A1601 and a switching arrangement to the loudspeaker amplifier circuits (para 3-31.). Operation of A1601 and RECEIVE switch S1801 is identical with that described in paragraph 3-9 for the OA-2055/FSW-8.

3-31. Loudspeaker Amplifier Circuit (fig. FO-14(1))

The loudspeaker amplifier circuit of the OA3014/FSW-8 consists of six transistor stages (a through f below) which amplify and limit audio signals applied to the amplifier circuit to a predetermined level suitable for the operation of loudspeaker LS2001. Signals from the audio input circuit are applied from receiver preamplifier A1601 when RECEIVE switch S1801 for the channel is operated to the SPEAKER position. The signals are applied across variable SPEAKER GAIN resistor R2426 and coupling capacitor C2401 to the base of audio amplifier Q2401 (a below). SPEAKER GAIN resistor R2426 is adjusted to vary the level of audio signals applied to the loudspeaker amplifier circuit.

a. Audio Amplifier Q2401. Audio input signals are applied across SPEAKER GAIN resistor R2426 and coupling capacitor C2401 to the base of audio amplifier Q2401. The signals are amplified by Q2401, and the collector output is applied through coupling capacitor C2403 to the base of high gain amplifier Q2402 (b below). The load impedance of Q2401 aid, consequently, the audio level of signals applied to Q2402 are varied by means of a variable impedance circuit (d below). Base bias for Q2401 is obtained from the junction of a voltage divider network comprised of resistors R2401 and R2402. Emitter bias for Q2401 is obtained from the voltage drop across resistor R2403, and resistor R2405 functions as the collector load for the amplifier stage. SPEAKER GAIN resistor R2426 is used to preset the audio input level of signals applied to Q2401 to prevent overdriving of the input stage and to minimize distortion of the loudspeaker amplifier circuit.

b. High Gain Amplifier Q2402. Audio signals applied from audio amplifier Q2401 (a above) to the base of high gain amplifier Q2402 are amplified, and the collector output is directly coupled to the base of buffer amplifier Q2403 (c below). Base bias is obtained from the junction of the voltage divider network consisting of resistors R2406 and R2407. Emitter bias is obtained from the voltage drop across resistor R2408 and held at a constant value by bypass capacitor C2404. Resistor R2409 functions as a collector load resistor.

c. Buffer Amplifier Q2403. Buffer amplifier Q2403 isolates high gain amplifier Q2402 (b above) from subsequent stages and couples the audio signal across VOLUME CONTROL resistor R2001 and coupling capacitor C2413 to the base of driver amplifier Q2405 (e below). Collector bias for Q2403 is obtained from a voltage divider consisting of resistors R2411 and R2412. Audio bypass for the amplifier stage is accomplished by capacitor C2407. Resistor R2410 and capacitors C2405 and C2406, form a low pass filter network which prevents audio signals from entering the power supply and prevents interstage coupling through the power supply. VOLUME CONTROL resistor R2001 is adjusted to vary the audio level of signals applied through subsequent stages to loudspeaker LS2001. Resistor R2003 and capacitor C2001 comprise a decoupling network to improve the frequency response of the amplifier stage.

d. Dc Amplifier Q2402. Dc amplifier Q2404 and its associated components comprise a dc amplifier circuit which controls the audio level of the loudspeaker amplifier circuit in an identical manner to that of the delayed automatic gain control (agc) described in paragraph 3-3d.

e. Driver Amplifier Q2405. Driver amplifier Q2405 amplifies the output signal applied from buffer amplifier Q2403 (c above). The amplified signal, appearing at the emitter of Q2405, is coupled through impedance matching transformer T2401 to the base of power amplifier Q2406 (f below). The primary of transformer T2401 serves as the emitter load for Q2405; base bias is obtained from the junction of the voltage divider network consisting of resistors R2418 and R2419, and emitter bias is obtained from the voltage drop across resistor R2420. Resistor R2421 and capacitors C2414 and C2415 form a frequency compensation network which improves the frequency response of the amplifier stage.

f. Power Amplifier Q2406. Power amplifier Q2406 amplifies signals from driver amplifier Q2405 (e above) to the power level required for operation of loudspeaker LS2001. Signals appearing at secondary winding 3 and 4 of impedance matching transformer T2401 (e above) are applied to the base of Q2406. The collector of Q2406 develops a signal voltage across the primary of output transformer T2402 which is applied from the secondary of T2402 to LS2001. Base bias for Q2406 is provided by the voltage divider consisting of resistors R2422, R2423, and variable SPEAKER BIAS resistor R2449. The bias voltage from the junction of resistors R2422 and R2423 is applied to the base of Q2406 through secondary winding 3 and 4 of T2401. Capacitor C2416 blocks all dc bias components from being applied to the emitter of Q2406. Emitter bias is obtained from the voltage drop across resistor R2425 and is maintained at a constant value of bypass capacitor C2417. Resistor R2424 provides signal degeneration and thereby increases the frequency response of Q2406.

3-32. Telephone Circuit

Except for terminal board connections and reference designations of component parts, the theoretical analysis of the OA-3014/FSW-8 telephone circuits is identical to that of the telephone circuit in the OA-2055/FSW-8 (para 3-14 through 3-17.).

3-33. Field Status Indicating Circuit (fig. FO-14(1))

The field status indicating circuit of the OA3014/FSW-8 provides a visual indication of the airfield flight regulations in effect. Except for terminal board connections and field status relay designations, the theory of operation is identical to that of the field status indicating circuits of the OA-2055/FSW-8 (para 3-18).

3-34. Power Distribution (fig. FO-14(3))

a. Power Supply PP-2795/FSW-8 consists essentially of four individual transistorized power supplies (para 3-35 through 3-38) which furnish the various operating voltages necessary for the OA-3014/FSW-8.

b. Input power for the PP-2795/FSW-8 is furnished through power connector P1701 from a 117-vac, 50or 60-cps, single-phase external power source. When the MAIN POWER circuit breaker CB1001 is operated to ON, the 117-vac line power is applied to the primary windings 1 and 3 of input transformer T2301 and also to MAIN POWER indicator lamp DS1901 and desk lamp DS1701. Variable BRIGHT-LAMP-OFF resistor R2002 is used to vary the brightness of DS1701. EMER ALARM switch S1901 is provided for connection to an external airfield emergency alarm system.

3-35. 100-Volt Dc Power Supply (fig. FO-14(3))

The 117-vac rms voltage appearing across secondary winding 9 and 10 of T2301 is applied to a full-wave bridge rectifier consisting of diodes CR2305, CR2306, CR2307, and CR2308. The rectified 100-vdc unregulated output is applied to ring generator Z601 (fig. FO-14(1).) to provide a ringing signal in the telephone circuits.

3-36. Plus 48-Volt Dc Power Supply (fig. FO-14(3))

a. The 60-rms voltage appearing across secondary winding 4 and 5 of T2301 is applied through surge protection resistors R2717 and R2318 to a conventional full-wave bridge rectifier consisting of diodes CR2301, CR2302, CR2303, and CR2304. Capacitors C23160 and C2301 and choke L2301 form the filter network for the rectified + 48vdc output. The + 48 vdc is applied to + 48V test jack J2302 and is distributed as a relay control signal within the OA-3014/FSW-8 and also applied to Switch Box SA-751/FSW-8 from terminal 4 of terminal board TB1702 (fig. FO-14(1).).).

b. A portion of the + 48-vdc output is also applied to a voltage divider network comprised of regulator diode CR2313 and resistor R2301. The constant + 7 vdc appearing at the junction of voltage dropping resistor R2301 and diode CR2313 is applied as a muting voltage to the receiving circuits of the OA-3014/FSW-8 (para 3-28c.).

3-37. Minus 15-Volt Dc Power Supply (fig. FO-14(3))

The -15-vdc power supply of the OA-3014/FSW-8 consists essentially of a bridge rectifier and filter network (a below) and a series regulator circuit and voltage sensing network (b below).

a. Bridge Rectifier and Filter Circuit. The 24.5 volts rms from secondary winding 6 and 8 of T2301 are applied to a conventional full-wave bridge rectifier circuit consisting of diodes CR2309, CR2310, CR2311, and CR2312. The dc output from the bridge rectifier circuit is filtered by capacitors C2302 and C2303 and resistor R2302 and applied to the collector of series regulator Q2301 (b below). The -15V, 1 AMP fuse F2301 provides protection to the bridge rectifier circuit and -15 vdc power supply. Resistor R2303 and capacitor C2304 form an RC filter network.

b. Series Regulator Circuit. The series regulator circuit functions primarily to provide a constant dc output voltage to prevent variations in the -15 vdc power supply from any load or ac input voltage variations. Output voltage variations in the -15 vdc power supply, sensed by a voltage divider network comprised of resistors R2307 and R2309 and -15V ADJ resistor R2308 are applied to the base of reference amplifier Q2305. Voltage reference diode CR2316, which operates from the current through voltage dropping resistor R2316, applies a fixed bias voltage to the emitter of Q2305. Reference amplifier Q2305 compares a sample of the output voltage obtained from resistor R2308 with the reference voltage from CR2316. If the output voltage of the -15 vdc power supply increases, the baseemitter voltage of Q2305 will increase and cause more collector current to flow. The increase in Q2305 collector current is directly coupled to the base of dc amplifier Q2302, producing a corresponding decrease in its emitter current. Dc amplifier Q2302 and series regulator Q2301 are dc coupled; therefore, a decrease in the emitter current of Q2302 will cause a corresponding decrease in the base current of Q2301. A decrease in the base current of Q2301 produces a decrease in its emitter current, and consequently, the output voltage of the -15 vdc power supply will decrease, returning the output voltage to its original value. Conversely, a decrease in the output voltage will produce an increase in Q2301 emitter current, and the output voltage will tend to rise to its original value. The output from the series regulator circuit is directly applied to the -7.5 vdc power supply (para 469) and to -15V test jack J2304. Resistor R2304 is the collector load for Q2305. The emitter load for Q2302 is provided by resistor R2305.

Capacitor C2306 improves the high frequency transient response of the series regulator circuit and capacitor C2305 is used to stabilize the feedback from Q2305 and Q2302. The regulated -15-vdc output is distributed to various circuits of the OA-3014/FSW8.

3-38. Minus 7.5-Volt Dc Power Supply (fig. FO-14(3).)

a. The 24.5-rms voltage appearing across secondary winding 6, 7, and 8 of T2301 are applied to the full-wave rectifier consisting of diodes CR2309 and CR2312 (one-half of the bridge rectifier). The rectified output is filtered by capacitor C2307 and applied through -7.5V 2 AMP fuse F2302 to a filter network comprised of re sistor R2310 and capacitor C2308. Overload protection to the full-wave rectifier is provided by fuse F2302. The rectified and filtered -7.5 vdc is applied to a series voltage regulator and sensing circuit and is then distributed to the various circuits of the OA-3014/FSW-8.

b. The operation of the series voltage regulator and sensing circuit (a above) is identical to that of the -15-vdc power supply (para 3-37.) except for voltage values and reference designations of component parts. A portion of the regulated 7.5vdc output is also applied across voltage dropping resistor R2315 and diode CR2315. Diode CR2315 functions as a reference diode and maintains the -3 vdc at a constant value. The -3 vdc is used to operate the carbon transmitting element of Handset H-194/FSW-8.

Section III. METEOROLOGICAL DIPLAY CONSOLE OA-2054/FSW-8

3-39. General

This section contains a detailed circuit analysis of the OA-2054/FSW-8. The OA-2054/FSW8 provides visual displays of time of day and meteorological data for attendants of the AN/ FWS-8(V), and is not connected electrically to other units of the communication system. The windspeed and wind direction circuits (para 3-40 and 3-41.) consist of instruments which display data furnished from external meteorological equipment. The atmospheric pressure readout circuit (para 3-42.) displays barometric data from a self-contained altimeter. The electric clock circuit (para 3-43.) and all indicating circuits operate from an external ac power source. Power distribution of the OA-2054/FSW-8 is identical to that described in paragraph 2-21.

3-40. Windspeed Circuit (fig. FO-15.)

The windspeed circuit of the OA-2054/FSW--8 consists of dc velocity meter M201 mounted in Indicator, Wind Speed ID-855/FSW-8 and the windspeed transmitting circuits of Wind Measuring Set AN/GMQ-11 (not supplied), or equivalent. The external transmitting circuit consists of a tachometer-generator which applies varying dc voltages equivalent to windspeed measurements to dc velocity meter M201. Input voltages are applied at terminals 6 and 7 of terminal boards TB402, TB404, and TB201 to velocity meter M201. The applied voltages deflect the pointer of M201 across the face of its direct reading dial, which is calibrated from 0 to 120 knots, to indicate the windspeed. The external transmitting equipment is designed for use with two windspeed indicators each having an internal resistance of 2300 ohms. Load resistor R201, connected in parallel across the input terminals of M201, is used when necessary to simulate the load of a second indicator.

3-41. Wind Direction Circuit (fig. FO-15.)

The wind direction circuit of the OA-2054/FSW8 consists of a torque receiver synchro DS201 mounted in Indicator, Wind Direction ID-856/ FSW-8 and the wind direction transmitting circuits of AN/GMQ-11. The external circuit in the AN/GMQ-11 consists essentially of a transmitter synchro containing a fixed stator and a freely moving rotor that is activated by changes in wind direction (b below). A change in the relative position of the external rotor and stator induces voltages that are applied to the stator of DS201, causing the rotor of DS201 to seek a corresponding position (b below).

a. When both synchro rotors are in positions that cause induced voltages of equal magnitude and phase in the corresponding stator windings, a condition of electrical balance exists. Since equal voltages oppose each other, no current flows in the stator circuits and consequently no torque is produced in either synchro.

b. When a change in wind direction causes the transmitter vane to move the rotor of the transmitter synchro to another position, the induced voltages in the transmitter synchro stator windings change. The condition of electrical balance (a above) no longer exists, current flows in the stator circuits, and a torque is produced in both synchros.

3-42. Atmospheric Pressure Readout Circuit (fig. FO-15.)

The circuits provided to display atmospheric pressure consist of Transmitter, Barometric Data T-772/FSW-8 (or T-773/FSW-8) and Indicator, Digital Display ID-854/FSW-8. Atmospheric pressure measured by the T-772/FSW-8 (a below) is converted into pulsed dc voltages which are used to drive four indicator drums in the digital readout circuits (b below) of the ID-854/FSW-8. Test and reset circuits (c below) are provided by the ID-854/FSW-8 to test the operation of the digital readout circuits, and to reset the timing mechanism of the T-772/FSW-8 after testing.

a. Atmospheric Pressure Circuit.

(1) The OA-2054/FSW-8 may be operated with Transmitter, Barometric Data T-772/FSW8 or T-773/FSW-8 (para 1-5b). The T-772/ FSW-8 contains an aneroid sensing element which measures atmospheric pressure at elevations from -100 to 3,300 feet above sea level. The T-773/FSW-8 contains similar provisions for operation at elevations between 3,200 and 6,600 feet above sea level. Either unit may be installed in the OA-2054/FSW-8, depending on the elevation of the airfield. The aneroid element of each equipment is activated by atmospheric pressure ((2) below) through a vent tube external to the equipment enclosure (TM 11-5895-24112). The pressure reading is also converted into pulsed dc voltages which are applied through connectors J1 and P1 and terminal board El to the digital readout circuits (b below) of the ID854/FSW-8.

(2) The aneroid barometer reacts to changes in atmospheric pressure by means of a stack of hollow, elastic, thin metal wafers. The wafers contract as a unit, depending on the pressure of the atmosphere surrounding them. One end of the wafer stack is attached to the instrument case, and the other end is linked by a lever to a shaft. Expansion and contraction of the wafer stack causes the shaft to rotate. This rotation, through a gearing mechanism, positions the numerals on the dial of the altimeter and converts the atmospheric pressure to an altimeter indication (fig. 5-1).

(3) The conversion ((2) above) is based on a fixed set of values known as the U.S. Standards of Atmosphere. A portion of these values is tabulated in the following chart:

Standard Pressure and temperature at 1,000-foot intervals

Feet	**Procedure (inches of mercury)**	**Temperature (centigrade)**
16,000	16.21	-17°
15,000	16.88	-15°
14,000	17.57	-13°
13,000	18.29	-11°
12,000	19.03	-9°
11,000	19.79	-7°
10,000	20.58	-5°
9,000	21.38	-3°
8,000	22.22	-1°
7,000	23.09	+ 1°
6,000	23.98	+3°
5,000	24.89	+5°
4,000	25.84	+7°
3,000	26.81	+9°
2,000	27.82	+11°
1,000	28.86	+13°
SEA LEVEL	29.92	+15°

b. Digital Readout Circuits. The digital readout circuits of the ID-854/FSW-8 consist of four permanent magnet motor-type indicator drums (DS1 through DS4) which rotate when pulsed dc voltages are applied from the atmospheric pressure circuit (a above). Each indicator drum contains numerals on the outer display surface corresponding to the sequence of numerals of the atmospheric pressure reading. For example, if the pressure reading is 28.40, DS4 will display numeral 2, DS3 will display numeral 8, DS2 will display numeral 4, and DS1 will display numeral 0. Rotation of each indicator drum is accomplished by coils mounted on opposite sides of a drum magnet. When a dc voltage is applied through any pair of opposing coils, a magnetic field is created which causes the drum assembly to move into a new field, displaying the corresponding numeral. The particular numeral remains in the display position until voltages applied from T-772/FSW-8 energize other coils and cause the drum to rotate to a new position. The circuit path for each numeral of each indicator drum is completed through connectors J1 and P1.

c. Test and Reset Circuit. The test and reset circuit consists of PUSH TO TEST OR RESET switch S1, TEST KEY SWITCH S2, and indicator lamps DS102 through DS105.

When S1 is depressed, and S2 is operated to the momentary 3333 or 7777 position, the circuit path of pulsed dc voltages (b above) to the digital readout indicator drums is interrupted. Dc power is applied from the T-772/FSW-8 through pin J of connectors J1 and P1 and contacts of S2 to energize the coils of each drum that control the display of numeral 3 or 7. A failure of the digital readout circuits will be indicated if each drum does not display the numeral selected. Simultaneously, indicator lamps DS102 through DS105 will be illuminated by a dc power circuit completed through pin S of connectors J1 and P1 and contacts of switch S2. Each indicator lamp provides a test function for the operation of the corresponding indicator drum. Normal operation of all digital readout drums is indicated if the indicator lamps are illuminated with equal brilliance. A failure in an indicator drum circuit will cause a change in current flow in the circuit of the corresponding indicator lamp, causing the lamp to illuminate with more or less brilliance than the other indicators. Operation of the atmospheric readout circuit is resumed when S2 is released and S1 is depressed a second time to the RESET position.

3-43. Electric Clock Circuit (fig. FO-15)

Clock, Direct Reading TD-393/FSW-8 is an electric clock which displays hours, minutes, and seconds on five digital drums. Alternate selfstarting synchronous motors are provided for operation from 117-ac, 50-or 60-cps power. The clock assembly contains indicator lamps DS107 through DS111 which illuminate each drum. Primary power is applied to the clock motor when CLOCK POWER circuit breaker CB401 is operated to the ON position.

CHAPTER 4

DIRECT SUPPORT MAINTENANCE

Section I. GENERAL TROUBLESHOOTING INFORMATION

WARNING

High voltage exists on or near the input transformer in the power supply units of the AN/FSW-8(V). Always disconnect the power before working on the interior of the equipment.

4-1. General Instructions

a. The direct support maintenance procedures supplement the procedures performed at the organizational level (TM 11-5895-241-12), and include any additional techniques required to perform maintenance on the AN/FSW-8(V). When trouble occurs, certain definite observations and measurements may be made to help determine whether the AN/FSW-8(V) is at fault or whether the trouble exists elsewhere in the airfield communication system. Troubleshooting at direct support normally is performed while the defective unit is operating as part of the AN/ FSW-8 (V).

NOTE

When a defective unit is checked, the AN/FSW-8(V) may become inoperative for a period of time. Notify all personnel utilizing the AN/FSW-8(V) that airfield communication traffic may be interrupted during the performance of required maintenance.

b. Direct support maintenance of the AN/ FSW-8(V) includes the troubleshooting and repair of units given in (1) through (14) below and alignment and adjustment of the units given in (4), (6), and (8) through (14) below.

(1) Control-Monitor C3445/FSW-8.

(2) Terminal, Telephone TA-406/FSW-8.

(3) Control-Transmitter C3446/FSW-8.

(4) Amplifier Assembly AM-2827/FSW-8.

(5) Control, Telephone Signal C3435/ FSW-8.

(6) Power Supply PP-2803/FSW-8.

(7) Control-Monitor C3434/FSW-8.

(8) Power Supply PP-2795/FSW-8.

(9) Indicator, Wind Direction ID-856/ FSW-8.

(10) Indicator, Wind Speed ID-855/ FSW-8.

(11) Clock, Direct Reading TD-393/ FSW-8.

(12) Amplifier Assembly AM-2817/FSW-8.

(13) Miscellaneous control panel.

(14) Loudspeaker and indicator panel.

4-2. Troubleshooting Procedure

a. General. Sectionalization procedures normally performed at the organizational level (TM 11-5895-241-12) sectionalize the trouble to a defective unit or to a printed-circuit board. When a defective unit is referred to direct support, localize the trouble to a circuit or to a stage (b below) and then isolate the trouble within the particular circuit or stage (c below).

b. Localization. Perform the applicable operational tests with the defective unit installed in the AN/FSW-8(V). If the correct results are not obtained during the operational tests, refer to the appropriate troubleshooting chart to localize the trouble to a particular circuit or stage.

c. Isolation. When the trouble has been localized to a particular stage or circuit, whether through operational tests or the troubleshooting charts, isolate the defective component by voltage measurements at the transistor terminals and other points related to the particular circuit stage in question.

NOTE

Repair of printed-circuit board A1601 is not accomplished at direct support. A1601 is not a maintenance item and is discarded if inoperative.

4-3. Removal of Components

Information for the removal of chassis-mounted components is given below:

NOTE

When removing any chassis-mounted component, make note of the wire number and color connected to each terminal of the component before unsoldering the wires. If the part (such as a transformer) has numerous connections, make sketches and notes of the original location and placement of parts and lead wires. This assures proper lead wire dress and parts locations to duplicate the original condition, and minimizes the possibility of wiring errors.

a. All lever switches are secured to the front panels with hexagonal nuts and lockwashers. All MAIN POWER indicator lamps, desk lamps, radio RECEIVE supervisory indicator lamps, field status indicator lamps, and digital readout test lamps are bayonet-base type and are replaced in the same manner (para 4-4.). The clock, radio TRANSMIT supervisory indicator lamps, and telephone control lamps are equipped with friction-type lamps. The connection at the rear of each equipment chassis is secured by a nut and screw at opposite corners of the connector.

b. Most chassis-mounted components are readily accessible from the top of the units; however, the removal of the components mounted within the unit may require the removal of the control panel. To remove any control panel of the AN/FSW-8(V), proceed as follows:

(1) Unfasten the mounting screws or cam loc fasteners that hold the unit to the equipment cabinet.

(2) Remove the unit from the equipment cabinet and support the unit in a manner that will enable the interconnecting wiring and cables to be disconnected.

(3) Disconnect and tag any leads from the cabinet wiring at the terminal board on the unit; disconnect and tag any interconnecting cabling.

(4) Remove the unit to a workbench for service or parts replacement.

4-4. Replacement of Indicator Lamps

a. Bayonet-Base Type. Replace the bayonet-base indicator lamps as follows:

(1) Remove the lampholder plate or lens cap.

(2) Press in on the defective indicator lamp and turn it to the right.

(3) Grasp the indicator lamp firmly and pull up slowly. Remove the defective indicator lamp.

(4) Visually line up the guide pins on the base of the new indicator lamp with the guide holes in the base of the lampholder.

(5) Place the indicator lamp in the lampholder while pressing in on the lampholder.

(6) Turn the indicator lamp to the right to lock it in the lampholder.

(7) Replace the lens cap or lampholder plate.

b. Friction-Type. Replace the friction-type indicator lamps as follows:

(1) Remove the lamp cover plate or lens cap.

(2) Using a lamp extractor, grasp the defective indicator lamp and pull it out of the lampholder.

(3) Visually line up the metal side of the new indicator lamp with the metal clips inside the lampholder.

(4) Slide the indicator lamp into the lampholder.

(5) Replace the lamp cover plate or lens cap.

4-5. Tools, Test Equipment, and Materials Required

a. There are no special tools or test cables assemblies required for maintenance of the AN/ FSW-8(V). All maintenance procedures can be adequately performed by use of Tool Equipment TE-113.

b. The test equipment and materials required for maintenance of the AN/FSW-8(V) are listed in the following chart and in the appropriate sections or paragraphs in which the test procedures are given. The specified test equipment, or suitable equivalents, should be used to determine compliance with the requirements of this chapter.

NOTE

Before using the test equipment, carefully read the operating instructions. For maximum accuracy in all measurements, use the range that will produce a meter indication as close to midscale as possible.

Technical manual or	Test equipment or material Federal stock No.
Attenuator TS-402/U------------	TM 11-2044
Audio Oscillator TS-382/U (2 required).	TM 11-6625-261-12
Electrical Test Set TS-914/U p/o UPM-100.	TM 11-6625-303-12
Electronic Multimeter TS-505/ U (3-required).	TM 11-5511
Multimeter AN/URM-105 ------	TM 11-6625-203-12
Multimeter ME-26/U-------------	TM 11-6625-200-15
Multimeter TS-352/--------------	TM 11-6625-366-15
Oscilloscope OS-8A/ -----------	TM 11-1214
Output Meter TS-585C/U ------	TM 11-5017
Power Supply PP-2803/FSW-8	FSN 5895-752-2557
Telephone Set TA-312/P ------	TM 11-5805-201-12
Test Set, Diode, Semi-Conductor TS-873/U.	
Test Set 1-181 ------------------	TM 11-6625-202-10
Transmitter, Barometric Data T-772/FSW-8 or T-773/ FSW-8.	FSN 6660-788-7476 FSN 6660-788-7470
Voltmeter, Meter ME-30/U ----	TM 11-6625-320-12
Synchro (Type LG, 1HG, or 1F) -	FSN 5990-553-6711
Clock, Standard 24 hours direct reading.	
Test dial and jig	
Multimeter ME-77/U -----------	TM 11-6625-203-12
Connector, Plug, Electrical, 1 male contact, phone type.	FSN 5935-192-4760
Connector, Plug, Electrical, 34 female contacts.	FSN 5975-681-4609
Resistor, Variable, 1,000 ohms, ± 10%, 2 watts.	FSN 5905-752-7181
Resistor, Composition, 100 ohms, ± 5%, 1 watt.	FSN 5905-106-9344
Resistor, Film, 499 ohms, -+l%, 2 watts.	
Resistor, Film, 243 ohms -+1%, 2 watts.	
Resistor, Composition, 16 ohms, ± 5 %, 2 watts.	FSN 5905-279-1951
Resistor, Film, 600 ohms, -+1%, 2 watts.	
Capacitor, Electrolytic, 100 uf, 15 WVDC.	
Wire, Electrical, 16 Gage AWG MW-C16(19).	
Connector, Plug, Electrical, 5 male contacts.	FSN 5935-823-0161

Test equipment or material	Technical manual or Federal stock No.
Switch, Toggle Single-pole single-throw.	FSN 5930-655-1522
Resistor, Wirewound, 15 ohms, ± 5%, 26 watts.	FSN 5905-843-2809
Transformer, Audio Frequency, 8Z primary, 16Z secondary.	FSN 5950-823-1135
Resistor, Composition, 500 ohms, ± 5%, 2 watts.	
Switch, Toggle, Single pole-double throw.	
Connector, Plug, Electrical 26 female contacts.	
Connector, Plug, Electrical, 4 male contacts.	FSN 5935-259-5970
Resistor, Wirewound (R1, R3), 50 ohms, +5%c,75 watts.	
Resistor, Wirewound (R2), 1.2 ohms, +5G%, 50 watts.	
Connector, receptacle, electrical, 12 female contacts.	
Lamp, incandescent --------------------	FSN 6240-155-8683
Lampholder, miniature bayonet	
Connector, Plug, Electrical, 37 female contacts.	FSN 5935-552-6560
Connector, Plug, Electrical, 37 female contacts.	FSN 5935-552-6652
Switch, Toggle, Single-pole double-throw.	
Switch, toggle (S2), Double-pole single-throw.	
Resistor, composition (R1, R2), 2,700 ohms, +5%, 2 watts.	FSN 5930-655-1582
Connector, Plug, Electrical, 14 female contacts.	FSN 5935-352-2760
Switch, Toggle, Single-pole single-throw.	
Resistor, Wirewound, 1,700 ohms, ± 5%, 25 watts.	
Resistor, Wirewound, 30 ohms, + 5%, 21 watts.	FSN 5905-837-7837
Resistor, Wirewound, 48 ohms, ± 5%, 75 watts.	
Resistor, Film, 35 ohms, +1%, 2 watts.	
Resistor, Wirewound, 7.5 ohms, ± 5%, 11 watts.	FSN 5905-855-2662
Wire, Electrical, 14 gage AWG MW-C14(19).	
Connector, Plug, Electrical, 24 female contacts.	FSN 5935-553-3345
Connector, Plug, Electrical, 37 female contacts.	FSN 5935-195-8022
Switch, Rotary, three-pole ten-throw.	FSN 5930-501-1249
Switch, Toggle, Double-pole double-throw.	FSN 5930-655-1502
Connector, Plug, Electrical (P1) 34 female contacts.	FSN 5925-841-7130

Section II. TROUBLESHOOTING CONSOLE, COMMUNICATION CONTROL OA-2055-FSW-8 OR OA-2056/FSW-8

4-6. General

a. This section contains information and procedures for troubleshooting the OA-2055/FSW8 or OA-2056/FSW-8 (fig. 1-5, TM 11-5895241-12, and 4-1, 4-2, and 4-3). Performance tests are given for each major function of the equipment, with accompanying troubleshooting data that indicates the possible symptoms of failure, probable cuase, and method of correction. For purposes of this manual, only the troubleshooting data for the particular functions of radio channel No. 1 are discussed. Refer to the applicable schematic diagram for reference designations and connections for the remaining radio channels.

b. Pretest procedures are given for the test connections and preliminary control settings required, followed by an operational test to determine overall performance of the equipment. If unsatisfactory performance is observed during

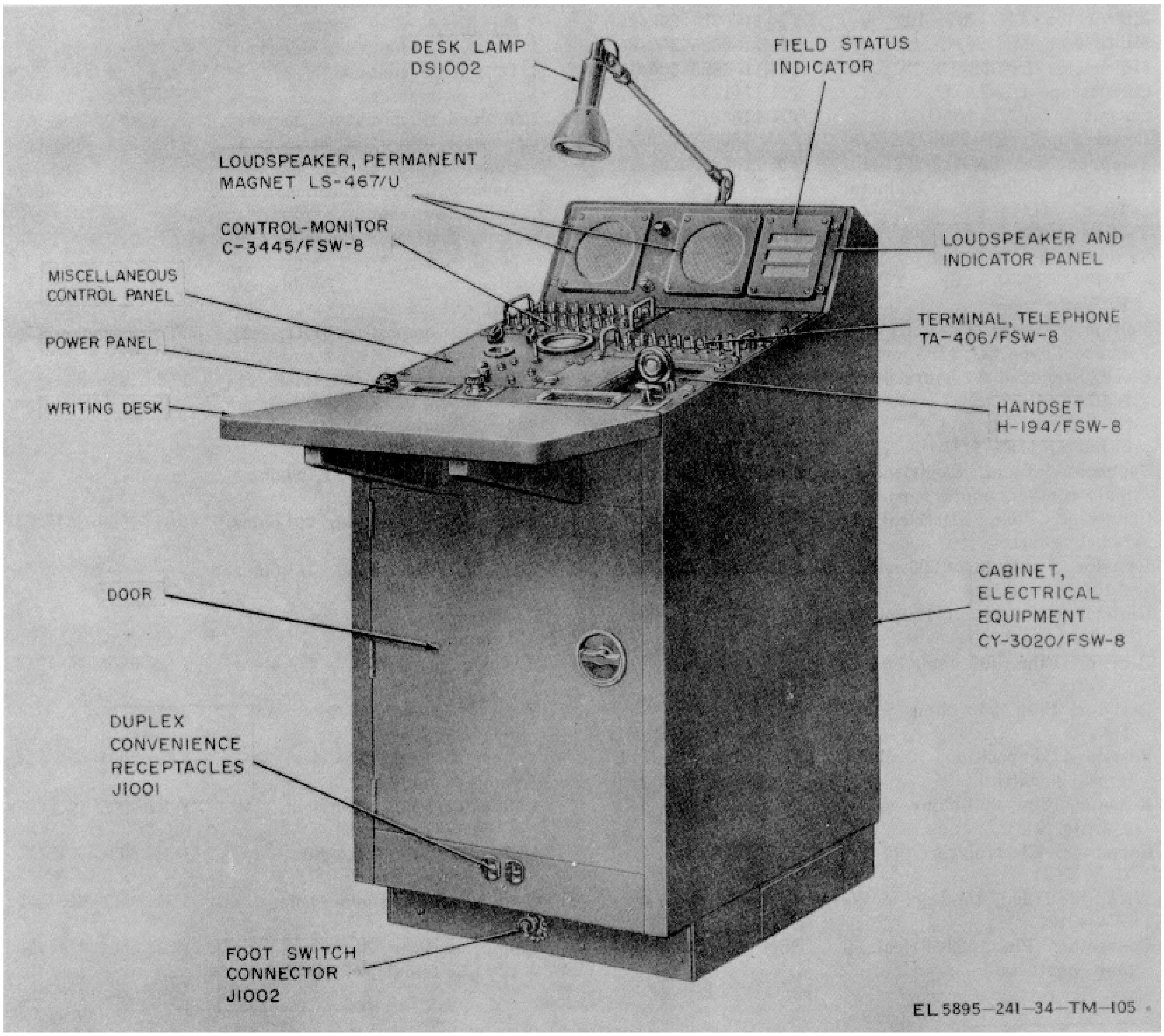


Figure 4-1. Console Communication Control OA-2055/FSW-8, front view.

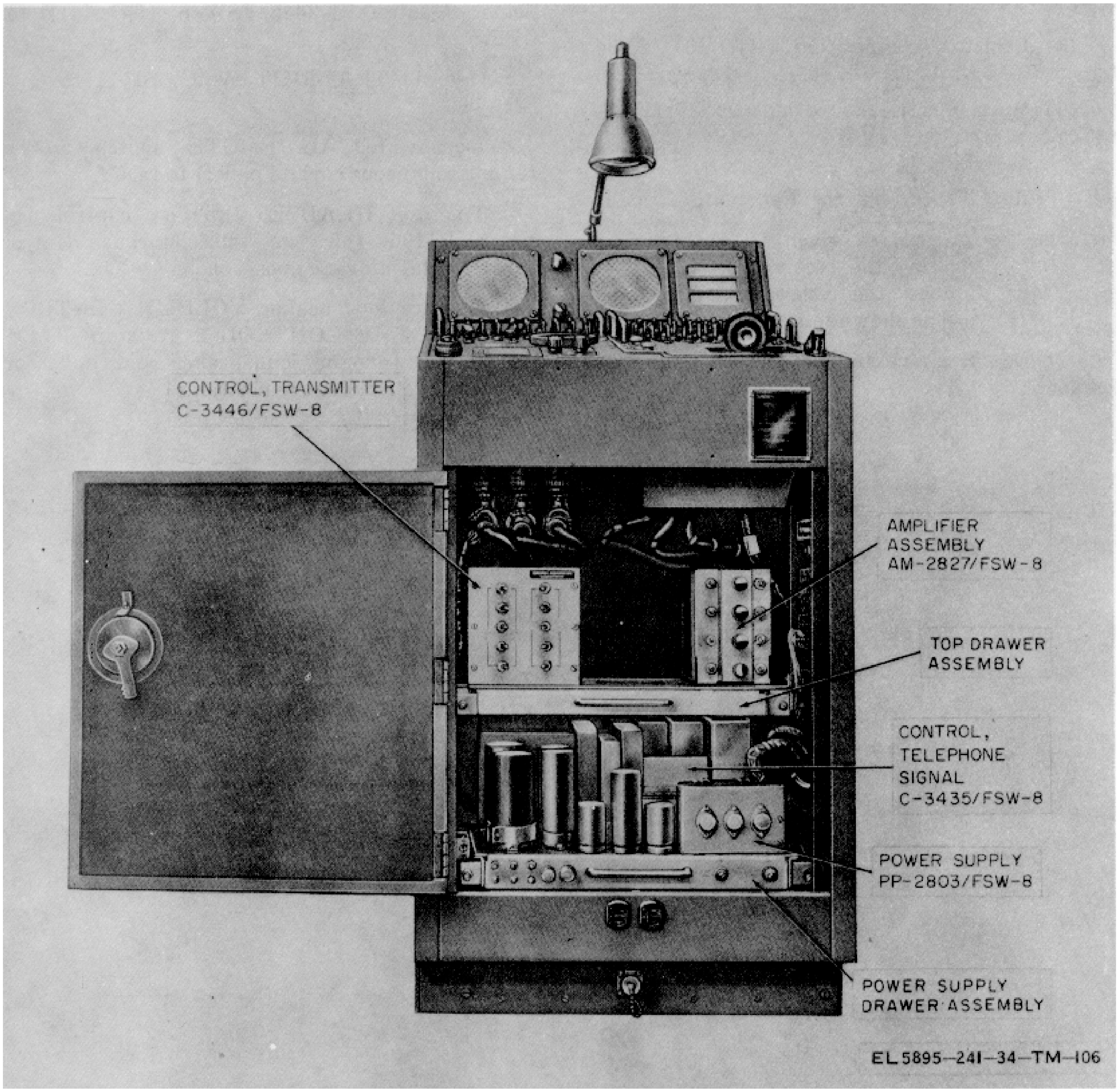


Figure 4-2. Console Communication Control OA-2055/FSW-8, front view, with access doors open.

the prescribed test, refer to the information given for localizing the trouble to a faulty component.

4-7. Test Equipment and Materials Required for Testing Receiving Circuits

The following test equipment and materials are required for testing the operation of the receiving circuits of the OA-2055/FSW-8.

a. Test Equipment.

(1) Audio Oscillator TS-382/U (2 required).

(2) Power Supply PP-2803/FSW-8.

(3) Electronic Multimeter TS-505/U.

b. Materials.

(1) Switch, toggle (S1), single pole single throw.

(2) Switch, toggle (S2), double pole single throw.

(3) Resistor, composition (R1, R2), 2,700 ohms ± 5%C, 2 watts (FSN 5905-279-1920).

(4) Wire, electrical, 16 gage AWG MWC16(19).

4-8. Pretest Procedure for Receiving Circuits

Perform the procedures given in a through j below before making the receiving circuits test (para 4-9). Connect the test equipment to the OA-2055/FSW-8 as shown in figure 10.

a. Operate test switches S1 and S2 to the off position.

b. Operate RECEIVE switch S1501 (on Control-Monitor C-3445/FSW-8 (fig. 4-1) to OFF.

c. Operate TRANSMIT switch S1511 to OPERATE.

d. Operate LOCAL-REMOTE switch Sl101 (on miscellaneous control panel) to I,OCAL.

e. Operate HEADSET volume control resistor R1106 (on the miscellaneous control panel) to the midrange position.

f. Operate loudspeaker VOLUME CONTROL 1 and VOLUME CONTROL 2, resistors R1401 and R1402 (on the loudspeaker and indicator panel) to their midrange positions.

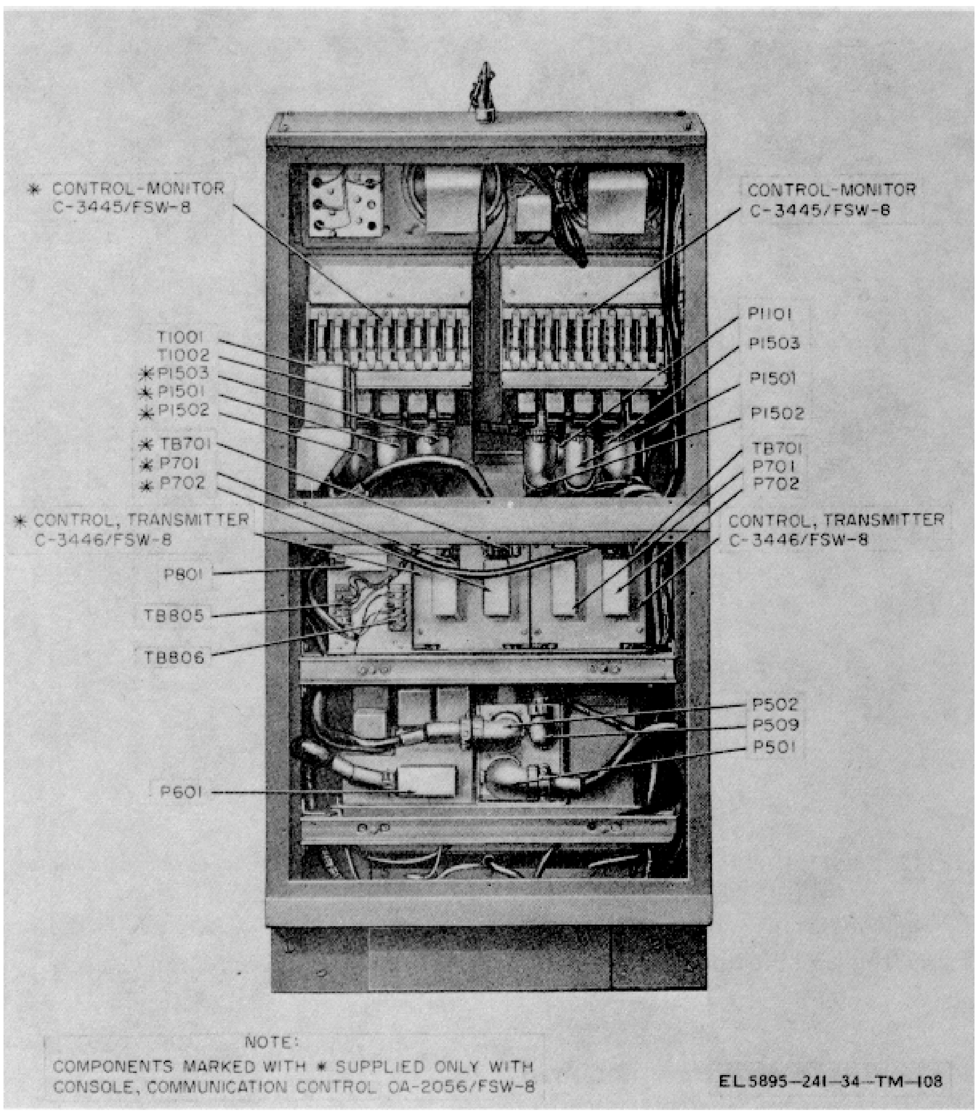


Figure 4-3. Console, Communication Control OA-2056/FSW-8, rear view.

g. Turn on the power to all test equipment and operate the OA-2055/FSW-8 MAIN POWER circuit breaker CB1001 (on power panel) to ON.

h. Adjust the TS-505/U range switch to 4V. Connect the AC probe and COMMON lead to the output terminals of each TS-382/U, in turn (i and j below).

i. Adjust the No. 1 TS-382/U for 1,000-cps output at a level of 0 dbm (0.77 volt rms) as indicated on the TS-505/U.

j. Adjust the No. 2 TS-382/U for 400-cps output at a level of 0 dbm (0.77 volt rms) as indicated on the TS-505/U.

4-9. Test Procedure for Receiving Circuits (fig. 4-4)

Perform the procedures given in a through n below to test the operation of the OA-2055/FSW8 receiving circuits. When a failure is observed, refer to paragraph 4-10 for localization of the fault to the specific unit or component involved.

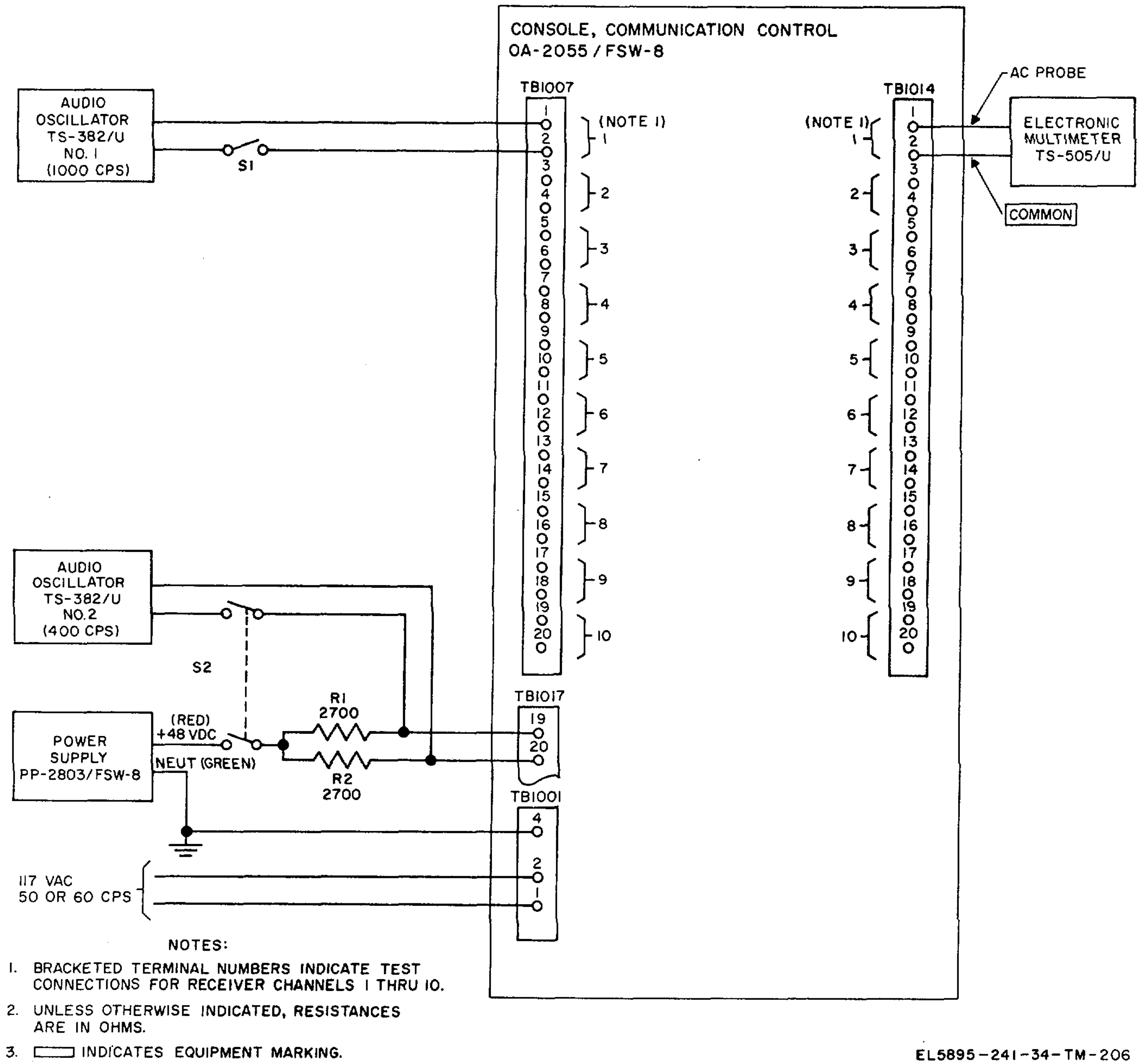


Figure 4-4. Console, Communication Control OA-2055/FSW-8, receiving circuit test connection diagram.

a. Operate test switch S1 to the on position. Observe that the following conditions exist:

(1) RECEIVE supervisory indicator lamp DS1501 (on Control-Monitor C-3445/FSW-8 (fig. 4-1) illuminates.

(2) The TS-505/U indicates a minimum of +.07 volt rms.

(3) No audio signal is heard over either OA-2055/FSW-8 loudspeaker or Headset-Microphone H-195/FSW-8.

b. Operate loudspeaker selector switch S701 (on Control-Transmitter C-3446/FSW-8 (fig. 4-2)) to SPEAKER NO. 1.

c. Operate RECEIVE switch S1501 (on Control-Monitor C-3445/FSW-8 (fig. 4-1)) to SPEAKER. A clear, sharp, audible tone should be heard over loudspeaker No. 1.

d. Rotate variable VOLUME CONTROL 1 resistor R1401 (on loudspeaker and indicator panel) clockwise and counterclockwise. The intensity of the audio tone noted in c above should increase or decrease, as the control is rotated.

e. Operate loudspeaker selector switch S701 to SPEAKER NO. 2. A clear, sharp audible tone should be heard over loudspeaker No. 2.

f. Rotate variable VOLUME CONTROL 2 resistor R1402 clockwise and counterclockwise. The intensity of the audio tone noted in e above should increase or decrease, as the control is rotated.

g. Operate RECEIVE switch S1501 to HEADSET. A clear, sharp audio tone should be heard from the receiver element of the H-195/FSW-8.

h. Operate the HEADSET volume control resistor R1106 (on miscellaneous control panel) clockwise and counterclockwise. The intensity of tone (noted in g above) heard in the H-195/ FSW-8 should increase or decrease as the control is rotated.

i. Operate the push-to-talk switch of Microphone, Magnetic M-110/U and observe that RECEIVE supervisory indicator lamp DS1501 extinguishes and that no audio signal is heard in the H-195/FSW-8. Release the push-to-talk switch and observe that the following conditions exist:

(1) RECEIVE supervisory indicator lamp DS1501 illuminates.

(2) Audio signal is heard on the receiver element of the H-195/FSW-8.

j. Operate test switch S2 to the on position. A clear, sharp tone from the No. 2 TS-382/U (400 cps) should be heard simultaneously over loudspeaker No. 1 and No. 2 and the H-195/ FSW-8.

k. Operate test switch S2 alternately to the on and off positions. The 1,000-cps tone should be heard from the H-195/FSW-8 when S2 is operated to the off position; the 400-cps tone should be heard from each loudspeaker and H195/FSW-8 (j above) when S2 is operated to the on position.

l. Operate test switches S1 and S2 to the off position.

m. Operate MAIN POWER circuit breaker CB1001 to OFF.

n. Repeat the pretest procedures (para 81) and reconnect the No. 1 TS-382/U and TS505/U alternately to the corresponding terminal board connection points for radio receiver channels No. 2 through 10. Repeat the tests outlined in a through m above for each receiver channel.

4-10. Localizing Troubles in Receiving Circuits

a. General. The following chart (b below) indicates the symptoms of failure that may be observed during the receiving circuit tests (para 4-9), the probable cause of failure, and the method of correction. The possible troubles indicate defective circuits, stages, or components that may cause each symptom. The corrective measures indicate methods used to localize the trouble to the defective part or printed-circuit board.

NOTE

If, after replacement of printed-circuit board A1601, the equipment does not operate properly, replace the complete unit and refer it to higher level maintenance. Do not replace parts on the printed-circuit board.

b. Receiving Circuits, Troubleshooting Chart.

Symptom	Probable Trouble	Correction
RECEIVE supervisory indicator lamp DS1501 does not illuminate and no readings are obtained on the TS-505/U (para 4-9*a*(1) and (2)).	*a.* Receiver preamplifier A1601 (fig. 2-9) defective. *b.* Connector J1504 (fig. 4-14) improperly seated. *c.* Audio input connection from distant radio receivers faulty. *d.* Transformer T1501 (fig. 4-14) defective. *e.* Power Supply PP-2803/FSW-8 defective (fig. 1-5, TM 11-5895-241-12, and 4-2. *f.* Lockout relay K701 (fig. 4-24) energized.	*a.* Remove receiver preamplifier A1601 (para 4-132*a*) and re- place *b.* Check the seating of connectors J1504 and replace connector if defective. *c.* Check the seating of connectors P1501 and J1501 (fig. 4-14). Replace, if defective (para 4-132 *i* and fig. 4-13). *d.* With AN/URM-105 arranged as an ohmmeter, check dc resistance of transformer T1501 para 4-36*b*). Replace if defective (para 4-132*a*) and fig. 4-91). *e.* Check operation of Power Supply PP-2803/FSW-8 (para 4-25). Replace if defective (para 4-125 and fig. 4-83). *f.* Check operation of lockout relay K701 (para 4-169f). Replace if defective (para 4-124 and fig. 4-82).
RECEIVE supervisory indicator lamp DS1501 illuminates but no reading is obtained on TS-505/U (para 4-9*a*(2)).	*a.* Connector J1504 (fig. 4-14) improperly seated, or defective. defective. *b.* Connector J1502 (fig. 4-14) defective. *c.* Terminal 1 or 2 of terminal board TB1014 (fig. 4-40) open.	*a.* Check seating of connectors J1504 and P1601. Replace connector if *b.* Check seating of connectors J1502 and P1502. Replace if defective. *c.* With AN/URM-105, check continuity of wiring between terminal 1 of terminal board TB 1014 and pin L of connector P1502. Replace any defective wiring.
RECEIVE supervisory indicator lamp DS1501 does not illuminate but normal readings are obtained on the TS-505/U (para 4-9*a*(1)).	RECEIVE supervisory indicator lamp DS1501 (fig. 4-10) defective.	Replace RECEIVE supervisory indicator lamp DS1501 (para 4-4a):
Audio tone is not heard on Headset-Microphone H-195/FSW-8 when RECEIVE switch S1501 is operated to HEADSET position (para 4-9*g*).	*a.* RECEIVE switch S1501 (fig. *a.* 4-10) defective. tive (para 4-132 and fig. 4-91). *b.* Intercom relay K502 (fig. 4-34) defective. *c.* HEADSET GAIN potentiometer R902 (fig. 4-18) defective. *d.* Headset amplifier terminal board TB804 (fig. 4-19) defective. *e.* OUTPUT LEVEL potentiometer R888 (fig. 4-19) open. *f.* Transformer T804 (fig. 4-18) defective.	Check continuity of RECEIVE switch S1501. Replace if defec- *b.* Check operation of Intercom relay K502 (para 4-169*d*). Replace if defective (para 4-127*e* and fig. 4-85). *c.* Check HEADSET GAIN potentiometer R902 and replace if defective (para 4-123*c* and fig. 4-81. *d.* Check operation of Amplifier Assembly AM-2827/FSW-8 (para 4-42). Replace headset amplifier terminal board TB-804 if defective (para 4-123 and fig. 4-81). *e.* Check OUTPUT LEVEL potentiometer R888 and replace if defective. *f.* With AN/URM-1OS arranged as an ohmmeter, check dc resistance of transformer T804 (para 4-45). Replace if defective (para 4-123*o* and fig 4-81).

Symptom	Probable Trouble	Correction
	g. HEADSET potentiometer R1106 (fig. 4-26) defective.	*g.* Check HEADSET potentiometer R1106 and replace if defective (para 4-131*i* and fig 4-89).
	h. HEADSET connectors J1102 and P1102 (fig. 4-26) not properly seated.	*h.* Check seating of connector P-1102 HEADSET connector J1102. Replace if defective (para 4-131*i* and fig. 4-89).
	i. Receiver element of Headset-Microphone H-195/FSW-8 defective.	*i.* Check operation of Headset-Microphone H-195/FSW-8. Replace if defective (para 4-119*b* and fig. 4-76).
	j. Current limiting resistor R1501 defective (fig. FO-12(1).	*j.* Check resistor R1501 and replace if defective.
Audio tone is not heard over loudspeaker when loudspeaker selector switch S701 is operated to corresponding SPEAKER position and RECEIVE switch S1501 operated to SPEAKER position (para 4-86 *b, c,* and *e*).	*a.* RECEIVE switch S1501 (fig. 4-10) defective.	*a.* Check, continuity of RECEIVE switch S1501. Replace if defective (para 4-132 and fig. 4-91).
	b. Loudspeaker selector switch S701 (fig. 4-25) defective.	*b.* Check continuity of loudspeaker selector switch S701. Replace if defective (para 4-124 and fig. 4-82).
	c. Intercom relay K502 (fig. 4-34) defective.	*c.* Check operation of intercom relay K502 (para 4-169*d*). Replace if defective (para 4-127 and fig. 4-85).
	d. GAIN SPKR NO. 1 potentiometer R899 (fig. 4-19) or GAIN SPKR NO. 2 potentiometer R901 defective.	*d.* Check applicable potentiometer (R899 or R901) and replace if defective (para 4-123*b* and fig. 4-81).
	e. Loudspeaker amplifier terminal board TB801 or TB802 (fig. 4-17 and 4-18) defective.	*e.* Check operation of Amplifier As-Sembly AN-2827/FSW-8 (para 4-42). Replace loudspeaker amplifier terminal board TB801 or TB802 if defective (para 4-123f and fig. 4-81).
	f. Transformer T801 or T802 (fig. 4-17 and 4-18) defective.	*f.* With AN/URM-105 arranged as an ohmmeter, check dc resistance of transformers T801 and T802 (para 4-45). Replace if defective (para 4-123 and fig. 4-81).
	g. VOLUME CONTROL 1 or 2 potentiometer R1401 or R1402 defective.	*g.* Check potentiometer R1401 or R1402. Replace if defective (para 4-133k and fig. 4-92).
	h. BIAS ADJ potentiometer R824 (fig. 4-19) or R849 (fig. 4-18) defective.	*h.* Check potentiometer R824 or R849. Replace if defective.
	i. Transformer Tl101 or T1102 (fig. 4-26) defective. of transformer T-1101 or T1102 (para 4-51*b*.). Replace if defective (para 4-131*e* and fig. 4-89).	*i.* With AN/URM-105 arranged as an ohmmeter, check the dc resistance
	j. Power Supply PP-2803/FSW-8 defective (fig. 1-5, TM 11-5895-241-12, and 4-2.	*j.* Check operation of Power Supply PP-2803/FSW-8 (para 4-24). Replace if defective (para 4-125 and fig. 4-83).
	k. Loudspeaker LS1401 or LS1402 (fig. 4-28 and 4-29) defective.	*k.* Replace loudspeaker LS1401 or LS1402 (para 4-133*h* and fig. 4-14).
Audio tone heard over either loudspeaker to erratic when VOLUME CONTROL 1 or 2 is adjusted (para 4-10*d* and *f*).	*a.* Current limiting resistor R1502 defective (fig. FO-12(1).	*a.* Check resistor R1502 and replace if defective.
	b. VOLUME CONTROL 1 or 2 potentiometer R1401 or R1402 (fig. 4-28 and 4-29) defective.	*b.* Check potentiometers R1401 and R1402. Replace if defective, (para 4-133*k* and fig. 4-92).

Symptom	Probable Trouble	Correction
	c. Capacitor C1401 or C1402 (fig. 4-28) defective.	*c.* Check capacitors C1401 and C1402. Replace if defective.
Audio tone heard in Headset-Microphone H-195/FSW-8 is erratic when HEADSET volume control is adjusted (para 4-10*h*).	*a.* Current limiting resistor R1501 defective (fig. FO-12(1). *b.* HEADSET potentiometer R1106 (fig. 4-26) defective. *c.* Receiver element of H-195/ FSW-8 defective.	*a.* Check resistor R1501. Replace if defective. *b.* Check potentiometer R1106. Replace if defective (para 4-131*j* and fig. 4-89). *c.* Check operation of Headset-Microphone H-195/FSW-8. Replace if defective (para 4-120*b* and fig. 4-76).
Audio tone is not heard over either loudspeaker or Headset-Microphone H-195/FSW-8 when test switch S2 is operated to on position (para 4-10*j*).	*a.* Voice input connections from distant intercom system faulty (fig. 4-3 and 4-40). *b.* Intercommunication transformer T1101 (fig. 4-26) defective. *c.* Intercom relay K502 (fig. 4-34) defective. *d.* INTERCOM switch S1103 (fig. 4-26 defective.	*a.* Check seating of connectors P-1101 and J1101. Replace if defective (para 4-131*c* and fig. 4-89). Check continuity of wiring between terminals 19 and 20 of terminal board TB1017 and pins *a* and *b* of connector P1101. Replace any defective wiring. *b.* With AN/URM-105 arranged as an ohmmeter, check dc resistance of intercommunication transformer T1101 (para 4-51*b*). Replace if defective (para 4-131 and fig. 4-89). *c.* Check operation of Intercom relay K502 (para 4-169*d*). Replace if defective (para 4-127*e* and fig. 4-85). *d.* Check continuity of INTERCOM switch S1103. Replace if defective (para 4-131*n* and fig. 4-89).
RECEIVE supervisory indicator lamp DS1501 does not extinguish when push-to-talk switch of Microphone, Magnetic M-11O/U is depressed (TRANSMIT switch S1511 in the OPERATE position).	*a.* Microphone, Magnetic M-11O/U defective. *b.* LOCAL-REMOTE switch Sl101 (fig. 4-26) defective. *c.* Push-to-talk relay K501 (fig. 4-34 defective. *d.* TRANSMIT switch S1511 (fig. 4-10) defective. *e.* Transmit relay K711 (fig. 4-24) defective. *f.* Lockout relay K701 (fig. 4-24) defective. *g.* Transformer T1501 (fig. 4-14) defective.	*a.* Check operation of Microphone Magnetic M-110/U. Replace if defective (para 4-140*i* (2) and fig. 4-76). *b.* Check continuity of LOCAL-REMOTE switch S1101. Replace if defective (para 4-131*m* and fig. 4-89). *c.* Check operation of push-to-talk relay K501 (para 4-169*c*). Replace if defective (para 4-127k and fig. 4-85). *d.* Check continuity of TRANSMIT switch S1511. Replace if defective (para 4-132 and fig. 4-91). *e.* Check operation of transmit relay K711 (para 4-169g). Replace if defective (para 4-124, fig. 4-82). *f.* Check operation of lockout relay K701 (para 4-169f). Replace if defective (para 4-124, fig. 4-82). *g.* With AN/URM-105 arranged as an ohmmeter, check dc resistance of transformer T1501 (para 4-137b). Replace if defective (para 4-132*g* and fig. 4-91).

Symptom	Probable Trouble	Correction
	h. Power Supply PP-2803/FSW-8 defective (fig. 1-5, TM 11-5895-241-12, and 4-2).	*h.* Check operation of Power Supply PP-2803/FSW-8 (para 4-24). Replace if defective (para 4-125 and fig. 4-83).
RECEIVE supervisory indicator lamp does not extinguish for any channel tested when the Microphone, Magnetic M-110O/U push-to-talk switch is depressed.	Microphone, Magnetic M-110O/U push-to-talk switch is defective.	Replace the M-1100/U (para 4-120*i* (2) and fig. 4-76).
RECEIVE supervisory indicator lamp does not extinguish for any channel tested when the Headset-Microphone H-195/FSW-8 push-to-talk switch is depressed.	Headset-Microphone H-195/FSW-8 push-to-talk switch is defective.	Replace the H-195/FSW-8 (para 4-120*b* and fig. 4-76).
RECEIVE supervisory indicator lamp does not extinguish for any channel tested when Switch, Foot SA-754/FSW-8 is depressed.	Switch, Foot SA-754/FSW-8 is defective.	Replace the SA-754/FSW-8 (para 4-120*f* and fig. 4-76).
RECEIVE supervisory indicator lamp does not extinguish for an individual channel tested when the Microphone, Magnetic M-110O/U, Headset-Microphone H-195/FSW-8 push-to-talk switch, or Switch, Foot SA-754/FSW-8 is depressed.	*a.* Lockout relay for channel being tested is defective.	*a.* Check the operation of lockout relay (K701-K710) (fig. 4-24 and 4-25) for channel tested (para 4-168*f*). Replace if defective (para 4-124 and fig. 4-82).
	b. Transmit relay for channel being tested is defective.	*b.* Check the operation of transmit relay (K711-K720) (fig. 4-24 and 4-25) for channel tested (para 4-169*g*). Replace if defective (para 4-124 and fig. 4-82).
	c. TRANSMIT switch for channel being tested is defective.	*c.* Check the continuity of TRANSMIT switch (fig. 4-10) for channel tested (S1511-S1520). Replace if defective (para 4-132 and fig. 4-91).

4-11. Transmitting Circuits Test

Procedures are given in paragraphs 4-13, 4-14, and 4-15 for troubleshooting the transmitting circuits of the OA-2055/FSW-8. Pretest procedures (para 4-13) are given for the test connections and preliminary control settings required, followed by an operational test (para 4-14) to determine performance of the transmitting circuits. If unsatisfactory performance is observed during the test, refer to the transmitting function signal flow diagram (fig. FO-2), control function diagram (fig. FO-4), and the localization of the trouble to a faulty component (para 4-93).

4-12. Test Equipment and Materials Required for Testing Transmitting Circuits

The following test equipment and materials are required for testing the operation of the transmitting circuits of the OA-2055/FSW-8.

a. Test Equipment.

(1) Audio Oscillator TS-382/U.
(2) Attenuator TS-402/U.
(3) Electronic Multimeter TS-505/U (3 required).
(4) Voltmeter, Meter ME-30/U.
(5) Multimeter TS-352/U.
(6) Multimeter ME-77/U.

b. Material.

(1) Connector, Plug, Electrical (P1) 5 male contacts (FSN 5935-826-0142).
(2) Switch, Toggle, (S1) Single pole-single throw, momentary (FSN 5930-655-1522).
(3) Switch, Toggle, (S2) Double pole, double throw (FSN 5930-050-2707).
(4) Switch, Toggle (S3) Single pole-single throw.
(5) Switch, Toggle (S4) Single pole-double throw.

(6) Resistor, Film (RI) 499 ohms, 1%, 2 watts.

(7) Resistor, Film (R2) 243 ohms, 1%, 2 watts.

(8) Resistor, Composition (R3, R4) 2,700 ohms, 5%, 2 watts (FSN 5905-279-1920).

(9) Wire, Electrical 16 Gage AWG MW-C16 (19).

4-13. Pretest Procedure for Transmitting Circuits

Perform the procedures given in a through n below before making the transmitting circuits test (para 4-14).

a. Operate the OA-2055/FSW-8 MAIN POWER circuit breaker CBIOOI (on power panel (fig. 1-7)) to OFF.

b. Disconnect Microphone, Magnetic M-110/U from connector J1104 and connect the test equipment to the OA-2055/FSW-8 as shown in figure 4-5.

c. Operate MIKE selector switch S1102 (on miscellaneous control panel (fig 1-7)) to MAGNETIC.

d. Operate LOCAL-REMOTE switch SI 101 to LOCAL..

e. Adjust the TS-402/U to provide an output of 60-db attenuation.

f. Operate MAIN POWER circuit breaker CB1001 to

g. Adjust the No. 2 and No. 3 TS-505/U range switch to 2V and the function switch to AC.

h. Adjust the ME-30/U range selector switch to 3.

i. Adjust the TS-352/U function switch to OHMS and the range switch to RXI.

j. Adjust the No. I TS-505/U range switch to 4V and the function switch to AC. Connect the AC probe and COMMON lead to the output terminals of the TS-382/U.

k. Adjust the ME-77/U selector switch to 100 D.C. VOLTS range.

l. Operate test switch S2 and S4 to the No. 2 position.

m. Adjust the TS-382/U for 1,000-cps output at a level of 3.0 volts as indicated on the No. I TS-505/U.

n. Connect foot switch S1002 and Headset-Microphone H-195/FSW-8 to the CY-3020/FSW-8.

4-14. Test Procedure for Transmitting Circuits
(fig. 4-5)

Perform the steps given in a through x below to test the operation of the OA-2055/FSW-8 transmitting cir-cuits. Where a failure is observed, refer to the information given in paragraph 4-15 for localizing the fault to a specific unit or component involved.

a. Operate TRANSMIT Switch S1511 to OPERATE and operate test switch S1 momentarily to the on position. Observe that the following conditions exist:

(1) Dbm meter M I01 indicates 6 dbm minimum.

(2) The No. 2 TS-505/U indicates 1.6 volts minimum.

(3) The ME-30/U indicates 1 volt minimum.

(4) The TS-352/U indicates O ohm.

(5) TRANSMIT supervisory indicator lamp DS 1511 illuminates.

b. Operate the OA-2055A/FSW-8 MAIN POWER circuit breaker CBIOOI on the circuit breaker box (fig. 1-5, TM 5895-241-12) to OFF.

c. Operate TRANSMIT switch S1511 to OFF and test switch S3 to the on position. TRANSMIT supervisory indicator lamp DA1511 should illuminate.

d. Operate TRANSMIT switch S1511 to OPERATE and test switch SI momentarily to the on position. Observe that the following conditions exist:

(1) Dbm meter Ml 101 indicates a 6 dbm minimum.

(2) The No. 2 TS-505/U, ME-30/U, and the TS-352/U show no indication.

(3) TRANSMIT supervisory indicator lamp DS1511 extinguishes.

e. Release test switch S1. Observe that dbm meter M 1101 shows no indication and that TRANSMIT supervisory indicator lamp DS1511 illuminates.

f. Operate test switch S3 to the off position.

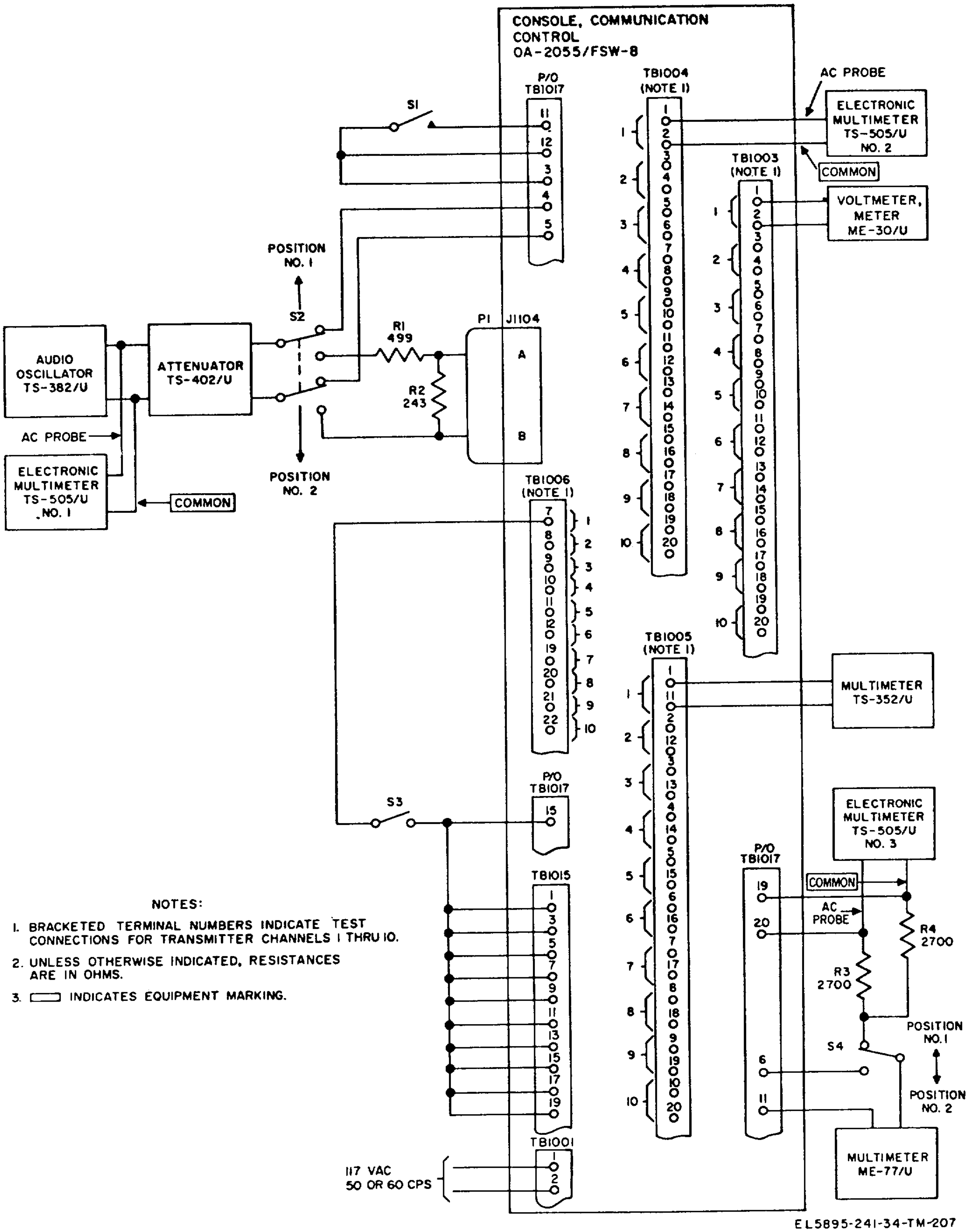


Figure 4-5. Console, Communication Control OA-2055/FSW-8, transmitting circuits test connection diagram.

g. Operate TRANSMIT switch S1511 to RE-MOTE. Observe that TRANSMIT supervisory indicator lamp DS1511 illuminates and that the TS-352/U indicates 0 ohm.

h. Operate TRANSMIT switch S1511 to OFF.

i. Connect the test equipment at terminal boards TB1003, TB1004, TB1005, and TB1006 (fig. 4-40) to the corresponding terminals for each transmitter channel and repeat the procedures given in a through g above for channels No. 2 through 10. Operate the corresponding TRANSMIT switch for each transmitter channel under test.

j. Operate test switch S4 (fig. 4-5) to No. 1 position. Operate intercom switch S1103 to the momentary INTERCOM position. Observe that the following conditions exists.

(1) The No. 3 TS-505/U indicates 1.0 volts minimum.

(2) The ME-77/U indicates approximately 48 volts.

k. Release the intercom switch to OFF and adjust the TS-402/U for 20-db attenuation.

l. Operate test switch S2 to the No. 1 position.

m. Operate test switch S4 to the No. 2 position.

n. Operate LOCAL-REMOTE switch S1101 to REMOTE.

o. Operate test switch S1 momentarily to the on position. Dbm meter Ml101 should indicate 6 dbm minimum and the ME-77/U should indicate approximately 48 volts.

p. Disconnect the test equipment (fig. 2-2) from connector J1104 and reconnect Microphone, Magnetic M-110/U to connector J1104.

q. Operate test switch S2 to the No. 2 posi-tion.

r. Operate LOCAL-REMOTE switch Sl101 to LOCAL.

s. Operate the TRANSMIT switch for the radio transmitter channel to be tested to the OP-ERATE position.

t. Depress the push-to-talk switch of Micro-phone Magnetic M-110/U. The TRANSMIT supervisory indicator lamp for the radio transmit-ter channel tested should illuminate.

u. Speak into the microphone. Dbm meter M-1101 should show an indication. Release the push-to-talk switch.

v. Operate MIKE selector switch S1102 to CARBON.

w. Depress the push-to-talk switch of Headset-Microphone H-195/FSW-8. The TRANSMIT supervisory indicator lamp for the radio transmit-ter channel tested should illuminate.

x. Speak into the H-195/FSW-8 microphone. Dbm meter Ml101 should show an indication.

y. Operate footswitch S1002. The TRANSMIT supervisory indicator lamp for the radio trans-mitter channel under test should illuminate.

4-15. Localizing Troubles In Transmitting Circuits

a. General. The following chart (b below) gives the symptoms of failure which may be observed during the transmitting circuit tests (para 4-14), the probable cause of the failure, and the method of correction. The possible troubles indicate defective circuits, stages, or components that may cause each symptom. The corrective measures indicate methods used to localize the trouble to the defective part or printed-circuit board.

NOTE

If, after replacement of printed-circuit boards, the equipment does not operate properly, replace the complete unit and refer it to higher level maintenance. Do not replace parts on the printed-circuit board; discard if inoperative.

b. Transmitting Circuits Troubleshooting Chart.

Symptom	Probable Trouble	Correction
TRANSMIT supervisory indicator lamp DS1511 does not illuminate and no indication is obtained on output level meter Ml101 or on the TS-505/U or ME-30/U (para 4-14a).	*a.* Transformer T701 defective (fig. 4-24).	*a.* With the AN/URM-105 arranged as an ohmmeter, check the dc resistance of transformer T701 (para 121b). Replace if defec-tive (para 4-124k and fig. 4-82).

Symptom	Probable Trouble	Correction
	b. Amplifier Assembly AM-2827/ FSW-8 defective (fig. 1-8). (para 4-42).	*b.* Check the operation of Amplifier Assembly AM-2827/FSW-8 Replace if defective (para 4-122 and fig. 4-79).
	c. LOCAL-REMOTE switch S1101 (fig. 4-26 and 4-27) defective.	*c.* Check the continuity of LOCAL-REMOTE switch S1101. Replace if defective (para 4-131m and fig. 4-89 and 4-90).
	d. MIKE selector switch S1102 (fig. 4-26 and 4-27) defective.	*d.* Check the continuity of MIKE selector switch S1102. Replace if defective.
	e. Power Supply PP-2803/FSW-8 defective (fig. 1-8).	*e.* Check the operation of Power Supply PP-2803/FSW-8 (para 4-24). Replace if defective (para 4-125 and fig. 4-83).
	f. Transmitting element of Micro-phone, Magnetic M-110/U defective.	*f.* Check the operation of Micro-phone, Magnetic M-11O/U. Replace if defective (para 4-120i (2) and fig. 4-76 and 4-77).
	g. Transmitting element of Headset-Microphone H-195/ FSW-8.	*g.* Check the operation of Headset-Microphone H-195/FSW-8. Replace if defective (para 4-140b and fig. 4-76 and 4-77).
	h. Push-to-talk relay K501 (fig. 4-34) defective.	*h.* Check the operation of push-to-talk relay K501 (para 4-169c). Replace if defective (para 4-126k and fig. 4-85).
	i. Transmit relay K711 (fig. 4-24) defective.	*i.* Check the operation of transmit re-lay K711 (para 4-169g). Replace if defective (para 4-124 and fig. 4-82).
	j. Lockout relay K701 (fig. 4-24) defective.	*j.* Check the operation of lockout relay K701 (para 4-169f). Replace if defective (para 4-124 and fig. 4-82).
TRANSMIT supervisory indicator lamp DS1511 illuminates but no indication is observed on output level meter Ml101 or on the TS-505/U or ME-30/U (para 4-14b).	*a.* Push-to-talk relay K501 defective (fig. 4-34 and 4-35).	*a.* Check the operation of push-to talk relay K501 (para 4-169c). Replace if defective (para 4-127k and fig. 4-85).
	b. Output level dbm meter M1101 (fig. 4-26 and 4-27) defective.	*b.* Replace output level dbm meter M1101 (para 4-131 and fig. 4-89 and 4-90).
	c. Contacts 6 and 16, 8 and 9, and 17 and 18 of transmit relay K711 defective (fig. 4-24 and FO-12(1).	*c.* Check the operation of transmit relay K711 (para 4-169g). Replace if defective (para 4-124 and fig. 4-82).
	d. Output transformer T701 defective (fig. 4-24).	*d.* With the AN/URM-105 arranged as an ohmmeter, check the dc resistance of transformer T701 (para 4-48b). Replace if defective (para 4-124k and fig. 4-82).
	e. Amplifier Assembly AM-2827/ FSW-8 defective (fig. 1-8). (para 4-42).	*e.* Check the operation of Amplifier Assembly AM-2827/FSW-8 Replace if defective (para 4-122b and fig. 4-79).
	f. LOCAL-REMOTE switch S1101 (fig. 4-26 and 4-27) defective.	*f.* Check the continuity of LOCAL-REMOTE switch Sl101. Replace if defective (para 4-131m and fig. 4-89 and 4-90).
	g. MIKE selector switch S1102 (fig. 4-26 and 4-27) defective.	*g.* Check the continuity of MIKE selector switch S1102. Replace if defective.

Symptom	Probable Trouble	Correction
	h. Transmitting element of Headset-Microphone H-195/ FSW-8 defective. *i.* Transmitting element of Microphone, Magnetic M-11O/U defective.	*h.* Check the operation of Headset-Microphone H-195/FSW-8. Replace if defective (para 4-120b and fig. 4-76 and 4-77). *i.* Check the operation of Micro-phone, Magnetic M-110/U. Replace if defective (para 4-120i and fig. 4-76 and 4-77).
No reading is obtained on output level dbm meter Ml101 and all other indications are normal.	*a.* Otuput level dbm meter M1101 (fig. 4-26 and 4-27) defective. 4-89 and 4-90). *b.* Coupling capacitor C1102 open (fig. 4-26 and 4-27) defective.	*a.* Replace output level dbm meter M111 (para 4-131h and fig. *b.* Check capacitor C1102. Replace if defective.
No reading is obtained on the ME-30/U and all other indications are normal.	*a.* Contacts 6 and 16 of transmit relay K711 defective (fig. 4-24 and FO-12(1). *b.* Capacitor C852 open (fig. 4-23). *a.* Terminals 1 and 2 of terminal board TB1003 open (fig. 4-40). *d.* Power Supply PP-2803/FSW-8 defective (fig. 1-8). *e.* Amplifier Assembly AM-2827/ FSW-8 defective (fig. 1-8). (para 4-42). *f.* Transmit relay K711 (fig. 4-24) defective. *g.* Lockout relay K701 (fig. 4-24) defective. *h.* Push-to-talk relay K801 (fig. 4-49) (OA-3014/FSW-8)) defective. *i.* TRANSMIT switch S1811 (fig. i. 4-48) (OA-3014/FSW-8)) defective.	*a.* Check the operation of transmit relay K711 (para 4-169g). Replace if defective (para 4-124 and fig. 4-82). *b.* Check capacitor C852. Replace if defective. *c.* Check the continuity of wiring between terminal 1 of terminal board TB1003 and pin 14 of connector P701. *d.* Check the operation of Power Supply PP-2803/FSW-8 (para 4-24). Replace if defective (para 4-125 and fig. 4-83). *e.* Check the operation of Amplifier Assembly AM-2827/FSW-8 Replace if defective (para 4-123b and fig. 4-79). *f.* Check the operation of transmit relay K711 (para 4-169g). Replace if defective (para 4-124 and fig. 4-82). *g.* Check the operation of lockout relay K701 (para 4-169f). Replace if defective (para 4-124 and fig. 4-82). *h.* Check the operation of push-to-talk relay K1801. Replace if defective (para 4-143h and fig. 4-100). Check the continuity of TRANS-MIT switch S1811. Replace if defective (para 4-143 and fig. 4-100).
TRANSMIT supervisory indicator lamp DS1511 illuminates but no indication is observed on output level dbm meter Ml101 when the push-to-talk switch of Headset-Microphone H-195/FSW-8 is de-pressed and MIKE selector switch S1102 is operated to the CARBON position.	*a.* Coupling capacitor C1102 open (fig. 4-26 and 4-27). *b.* Contacts 3 and 4 of push-to-talk relay K501 (fig. 4-34 and 4-35) defective. *c.* Output level dbm meter Ml101 (fig. 4-26 and 4-27) defective.	*a.* Check coupling capacitor C1102. Replace if defective. *b.* Check the operation of push-to-talk relay K501 (para 4-169c). Replace if defective (para 4-127k and fig. 4-85). *c.* Replace output level dbm meter M1101 (para 4-131h and fig. 4-89 and 4-90).
TRANSMIT supervisory indicator lamp DS1511 does not illuminate and no indication is obtained on the TS-505/U, ME-30/U, or TS-352/U,	a. Transmitting element of Microphone, Magnetic M-110/U defective.	a. Check the operation of Micro-phone, Magnetic M-11O/U. Re-place if defective (para 4-120i (2) and fig. 4-76 and 4-77).

Symptom	Probable Trouble	Correction
TS-505/U (No. 3), or ME-77/U when TRANSMIT switch S1511 is operated to either the REMOTE or OPERATE position and test switch S3 is in the off position.	*b.* Transmitting element of Headset-Microphone H-195/FSW-8 defective.	*b.* Check the operation of Headset-Microphone H-195/FSW-8. Replace if defective (para 4-120b and fig. 4-76 and 4-77).
	c. LOCAL-REMOTE switch S1101 (fig. 4-26 and 4-27) defective.	*c.* Check the continuity of LOCAL-REMOTE switch S1101. Replace if defective (para 4-131 m and fig. 4-89 and 4-90).
	d. Push-to-talk relay K501 (fig. 4-34 and 4-35) defective.	*d.* Check the operation of push-to-talk relay K501 (para 4-169c). Replace if defective (para 4-127k and fig. 4-85).
	e. Power Supply PP-2803/FSW-8 defective (fig. 1-8).	*e.* Check the operation of Power Supply PP-2803/FSW-8 (para 4-24). Replace if defective (para 4-125 and fig. 4-83).
	f. TRANSMIT switch S1511 (fig. 4-10) defective.	*f.* Check the continuity of TRANSMIT switch S1511. Replace if defective (para 4-132 and fig. 4-91).
No indication is observed on the M-77/U or TS-505/U (No. 3) when intercom switch S1103 is operated to the INTERCOM position.	*a.* Intercom transformer T1101 defective (fig. 4-26 and 4-27).	*a.* With the AN/URM-105 arranged as an ohmmeter, check the dc resistance of intercommunication transformer Tl101 (para 4-51b). Replace if defective (para 4-131 and fig. 4-91).
	b. Intercom switch S1103 (fig. 4-26 and 4-27) defective.	*b.* Check the continuity of intercom switch S1103. Replace if defective (para 4-131n and fig. 4-89 and 4-90).
	c. Amplifier Assembly AM-2827/FSW-8 defective (fig. 1-8). (para 4-42).	*c.* Check the operation of Amplifier Assembly AM-2827/FSW-8 Replace if defective (para 4-122b and fig. 4-79).
	d. Power Supply PP-2803/FSW-8 defective (fig. 1-8).	*d.* Check the operation of Power Supply PP-2803/FSW-8 (para 4-24). Replace if defective (para 4-125, and fig. 4-83).
	e. LOCAL-REMOTE switch Sl101 (fig. 4-26 and 4-27) defective.	*e.* Check the continuity of LOCAL-REMOTE switch S1101 and replace if defective (para 4-131 and fig. 4-89 and 4-90).
	f. Wiring from terminals 19 and 20 of terminal board TB1017 (fig. 4-40) defective.	*f.* Check the continuity of wiring from terminals 19 and 20 of terminal board TB 1017 to pins b and a of connector P1101. Replace if defective (para 4-139 and fig. 4-96).
The TRANSMIT supervisory indicator lamp for any channel tested does not illuminate when the Microphone, Magnetic M-110/U push-to-talk switch is depressed.	Microphone, Magnetic M-110/U push-to-talk switch defective.	Replace the M-11O/U (para 4-120i (2), and fig. 4-76 and 4-77).
The TRANSMIT supervisory indicator lamp for any channel tested does not illuminate when the Headset-Microphone H-195/FSW-8 push-to-talk switch is depressed.	Headset-Microphone H-195/FSW-8 push-to-talk switch defective.	Replace the H-195/FSW-8 (para 4-120b and fig. 4-76 and 4-77.

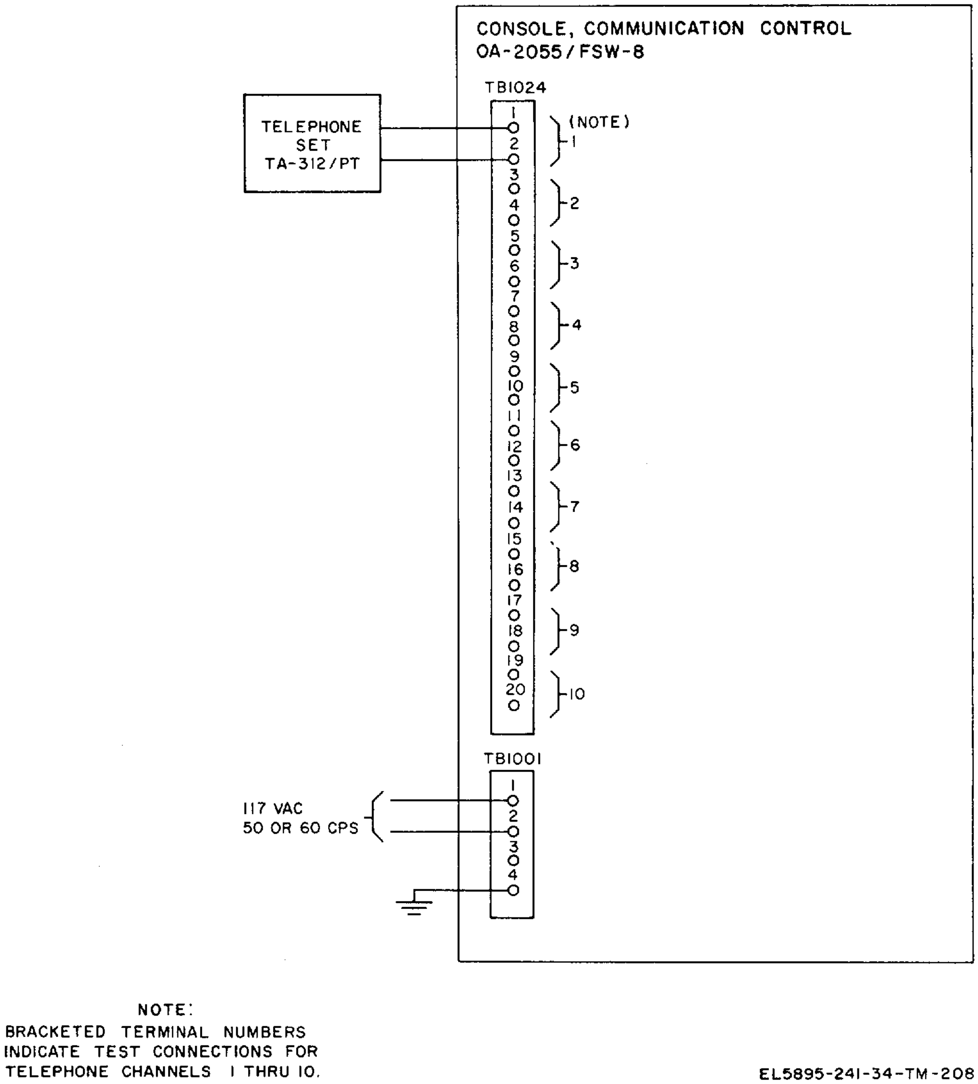


Figure 4-6. Console, Communication Control OA-2055/FSW-8, telephone circuits test connection diagram.

4-16. Telephone Circuits Test

Procedures are given in paragraph 4-17, 4-18, and 4-19 or troubleshooting the telephone circuits of the OA-2055/FSW-8. Pretest procedures (para 4-17) are given for the test connections and preliminary adjustments required, followed by an operational test (para 4-18) to determine perform-ance of the telephone circuit. If unsatisfactory performance is observed during the test, refer to the telephone function signal flow diagram (fig. FO-3), telephone circuit test connection diagram (fig. 4-6), and the localization of the trouble to a faulty component (para 4-19). The components of the individual telephone channels are shown on figure FO-12 **(1)** and **(2).**

4-17. Pretest Procedure

Connect the test equipment to the OA-2055/FSW-8 as shown in figure 4-6. Operate each TLEPHONE switch (fig. 4-7) to the OFF position. Operate MAIN POWER circuit breaker CB1001 (fig. 4-38) to the ON position. On the OA-2055A/FSW-8, CB1001 is located on the circuit breaker and fuse assembly (fig. 1-5, TM 11-5895-241-12).

4-18. Test Procedure for Telephone Circuits
(fig. 4-6)

Perform the steps outlined in a through h below to test the operation of the OA-2055/FSW-8 telephone circuits. When a failure is observed, refer to the information given in paragraph 4-19 for localizing the fault to a specific unit or component.

a. Operate TELEPHONE switch S1301 (on Terminal, Telephone TA-406/FSW-8 (fig. 1-7)) to the TALK position.

b. Depress the push-to-talk switch on Handset H-194/FSW-8 and speak into the mouthpiece. Speech should be heard from the TA-312/PT handset receiver element.

c. Depress the push-to-talk switch on the TA312/PT handset and speak into the mouthpiece. Speech should be heard from the H-194/FSW-8 receiver element.

d. Operate TELEPHONE switch S1301 to the RING position. Observe that the following conditions exist:

(1) The buzzer of the TA-312/PT sounds as long as S1301 is held in the RING position.

(2) TELEPHONE supervisory indicator lamp DS1301 illuminates and remains illuminated.

(3) Buzzer DS1311 sounds as long as S1301 is held in the RING position.

e. Operate TELEPHONE switch S1301 to the TALK and then to the OFF positions. TELEPHONE supervisory indicator lamp DS1301 should extinguish.

f. Turn the hand crank generator of the TA312/PT. Buzzer DS1311 should sound as long as the handcrank is turned. TELEPHONE supervisory indicator lamp DS1301 should illuminate and remain illuminated even after cranking ceases.

g. Operate TELEPHONE switch S1301 to the TALK position and then to the OFF position. TELEPHONE supervisory indicator lamp DS-1301 should extinguish.

h. Connect the TA-312/PT alternately to the corresponding terminal board connection points for each telephone channel and repeat the test procedures given in a through g above for each telephone channel.

4-19. Localizing Troubles in Telephone Circuits

a. General. The following chart (b be-low) gives the probable symptoms of failure which may be observed during the telephone cir-cuits test (para 4-18), the probable cause of failure, and the method of correction. The possible troubles indicate defective circuits, stages, or components that may cause each symptom. The corrective measures indicate methods used to localize the trouble to the defective component part.

b. Telephone Circuits Troubleshooting Chart.

Symptom	Probable Trouble	Correction
The TRANSMIT supervisory indicator lamp for any channel tested does not illuminate when Switch, Foot SA-754/FSW-8 is depressed.	Switch, Foot SA-754/FSW-8 defective.	Replace the SA-754/FSW-8 (para 4-120f and fig. 4-76 and 4-77).
No speech is heard from the receiving element of Handset H-194/FSW-8.	*a.* Receiver element of Handset H-194/FSW-8 defective.	*a.* Check the operation of Handset H-194/FSW-8. Replace if defective (para 4-129f and fig. 4-87).
	b. Power Supply PP-2803/FSW-8 defective (fig. 1-5, TM 11-5895-241-12, and 4-2).	*b.* Check the operation of Power Supply PP-2803/FSW-8 (para 4-103). Replace if defective (para 4-125 and fig. 4-83).
	c. TELEPHONE switch S1301 (fig. 4-7) defective.	*c.* Check the continuity of TELEPHONE switch S1301. Replace if defective (para 4-130 and fig. 4-88).
	d. Impedance matching network Z1301 (fig. 4-30) defective.	*d.* Check the dc resistance of impedance matching network Z1301 (para 4-50b). Replace if defective (para 4-124k and fig. 4-88).
Speech is received on Handset H-194/FSW-8 but cannot be transmitted.	*a.* Transmitter element of Handset H-194/FSW-8 defective.	*a.* Check the operation of Handset H-194/FSW-8. Replace if defective (para 4-129f and fig. 4-87).
	b. Power Supply PP-2803/FSW-8 defective (fig. 1-5, TM 11-5895 241-12, and 4-2).	*b.* Check the operation of Power Supply PP-2803/FSW-8 (para 4-24). Replace if defective (para 4-125 and fig. 4-83).

Symptom	Probable Trouble	Correction
	c. TELEPHONE switch S1301 (fig. 4-7) defective.	*c.* Check the continuity of TELEPHONE switch S1301. Replace if defective (para 4-130 and fig. 4-88).
Handset H-194/FSW-8 operates properly but buzzer DS1311 does not operate and TELEPHONE supervisory indicator lamp DS-1301 does not illuminate.	*a.* Ring relay K601 (fig. 4-31) defective.	*a.* Check the operation of ring relay K601 (para 4-169e). Replace if defective (para 4-126 and fig. 4-84).
	b. Buzzer DS1311 (fig. 4-30) defective.	*b.* Replace buzzer DS1311 (para 4-130j and fig. 4-88).
	c. TELEPHONE supervisory indicator lamp DS1301 defective (fig. 4-7).	*c.* Replace TELEPHONE supervisory indicator lamp DS1301(para 4-4).
	d. Wiring from terminal 20 of terminal board TB1025 to terminal 2 of terminal board TB1001 (fig. 4-40) defective.	*d.* Check the continuity of wiring between terminal 20 of terminal board TB 1025 and terminal 2 of terminal board TB-1001 Replace any defective wiring
TELEPHONE supervisory indicator lamp DS1301 does not illuminate and buzzer DS1311 does not operate when TELEPHONE switch S1301 is operated to the RING position.	*a.* Power Supply PP-2803/FSW-8 defective (fig. 1-5, TM-11-5995 241-12, and 4-2).	*a.* Check the operation of Power Supply PP-2803/FSW-8 (para 4-24). Replace if defective (para 4-125 and fig. 4-83).
	b. TELEPHONE switch S1301 (fig. 4-7) defective.	*b.* Check the continuity of TELEPHONE switch S1301. Replace if defective (para 4-130 and fig. 4-88).
	c. Ring generator Z601 (fig. 4-31) defective.	*c.* Replace ring generator Z601 (para 4-126c and fig. 4-84).
	d. Ring relay K601 (fig. 4-31) defective.	*d.* Check the operation of ring relay K601 (para 4-169e). Replace if defective (para 4-126 and fig. 4-84).
	e. Hold relay K611 (fig. 4-31) defective.	*e.* Check the operation of hold relay K611 (para 4-169e). Replace if defective (para 4-126 and fig. 4-84).
	f. Buzzer DS1311 (fig. 4-30) defective or TELEPHONE supervisory indicator lamp DS1301 defective.	*f.* Replace buzzer DS1311 (para 4-130j and fig. 4-88) or replace TELEPHONE supervisory indicator lamp DS1301 (para 4-81b.).
TELEPHONE supervisory indicator lamp DS1301 does not illuminate and buzzer DS1311 does not operate when the TA-312/PT hand generator is cranked and TELEPHONE switch S1301 is in the OFF position.	*a.* Buzzer DS1311 (fig. 4-30) defective or TELEPHONE supervisory indicator lamp DS1301 defective.	*a.* Replace buzzer DS1311 (para 4-130j and fig. 4-88) or replace TELEPHONE supervisory indicator lamp DS1301 (para 4-81b.).
	b. Ring relay K601 (fig. 4-31) defective.	*b.* Check the operation of ring relay K601 (para 4-169e). Replace if defective (para 4-126 and fig. 4-84).
	c. Hold relay K611 (fig. 4-31) defective.	*c.* Check the operation of hold relay K611 (para 4-169e). Replace if defective (para 4-126 and fig. 4-84).
	d. Power Supply PP-2803/FSW-8 defective (fig. 1-5, TM 11-5895-241-12, and 4-2).	*d.* Check the operation of Power Supply PP-2803/FSW-8 (para 4-24). Replace if defective (para 4-125 and fig. 4-83).
TELEPHONE supervisory indicator lamp DS1301 does not illuminate but buzzer DS1311 oeprates when	*a.* TELEPHONE supervisory indicator lamp DS1301 defective.	*a.* Replace TELEPHONE supervisory indicator lamp DS1301 DS 1301 (para 4-4b).

Symptom	Probable Trouble	Correction
the TA-312/PT hand generator is cranked.	b. Hold relay K611 (fig. 4-31) defective. c. TELEPHONE switch S1301 (fig. 4-7) defective. d. Power Supply PP-2803/FSW-8 defective (fig. 1-5, TM 11-5895-241-12, and 4-2).	b. Check the operation of hold relay K611 (para 4-169e). Replace if defective (para 4-126 and fig. 4-84). c. Check the continuity of TELEPHONE switch S1301. Replace if defective (para 4-130 and fig. 4-88). d. Check the operation of Power Supply PP-2803/FSW-8 (para 4-24). Replace if defective (para 4-125 and fig. 4-83).
TELEPHONE supervisory indicator lamp DS1301 does not remain illuminated after the TA-312/PT handcrank generator is stopped.	a. Hold relay K611 (fig. 4-31) defective. b. TELEPHONE switch S1301 (fig. 4-7) defective. c. Ring relay K601 (fig. 4-31) defective.	a. Check the operation of hold relay K611 (para 4-169e). Replace if defective (para 4-12b and fig. 4-84). b. Check the continuity of TELEPHONE switch S1301. Replace if defective (para 4-130 and fig. 4-88). c. Check the operation of ring relay K601 (para 4-169e). Replace if defective (para 4-126 and fig. 4-84).
TELEPHONE supervisory indicator lamp DS1301 does not extinguish after TELEPHONE switch S1301 is operated from the RING to the TALK position.	a. Ring relay K601 (fig. 4-31) defective. b. Hold relay K611 (fig. 4-31) defective. c. TELEPHONE switch S1301 (fig. 4-7) defective.	a. Check the operation of ring relay K601 (para 4-159e). Replace if defective (para 4-126 and fig. 4-84). b. Check the operation of hold relay K611 (para 4-169e). Replace if defective (para 4-126 and fig. 4-84). c. Check the continuity of TELEPHONE switch S1301. Replace if defective (para 4-130 and fig. 4-88).

4-20. Field Status Circuits Test
(fig. 4-8 and FO-12(1)

The field status circuits of the OA-2055/FSW-8 are operated as part of the AN/FSW-8(V) field status indicating system. The circuits may be tested independently of the communication system as described in a and b below.

a. Test Procedure. The following test is per-formed by connecting an external source (such as Power Supply PP-2803/FSW-8) of +48 vdc to terminals 20 or 21 of terminal board TB1016. Two power leads are required from the external power source. Ground the negative side of the external power source at terminal 22 of terminal board TB1016 and operate MAIN POWER circuit breaker CBl101 to ON.

(1) Connect one +48 volts dc power lead to terminal 20 of terminal board TB1016. The VFR field status indicator lamp (DS1401) should illuminate.

(2) Disconnect the power lead (not shown) from terminal 20 and connect it to terminal 21 of terminal board TB1016. The CLOSED field status indicator lamp (DS1403) should illuminate.

(3) Connect the +48 volts dc power leads to terminals 20 and 21 of terminal board TB1016. The IFR field status indicator lamp (DS1402) should illuminate.

b. *Localizing Trouble in Field Status Circuits*. If a failure is indicated during the operational test (la above), isolate the trouble to a circuit component as described below. The components of the field status circuits are mounted on the loudspeaker and indicator panel (fig. 1-7). Refer to parts location views shown in figures 4-28 and 4-29.

(1) If the incorrect field status indicator lamp illuminates when power is applied to terminal 20 or 21 of terminal board TB1016 (a(l) through (3) above), check field status indicating relays K1401 and K1402 (fig. 4-29). Test operation of the relays (para 4-169h) and replace

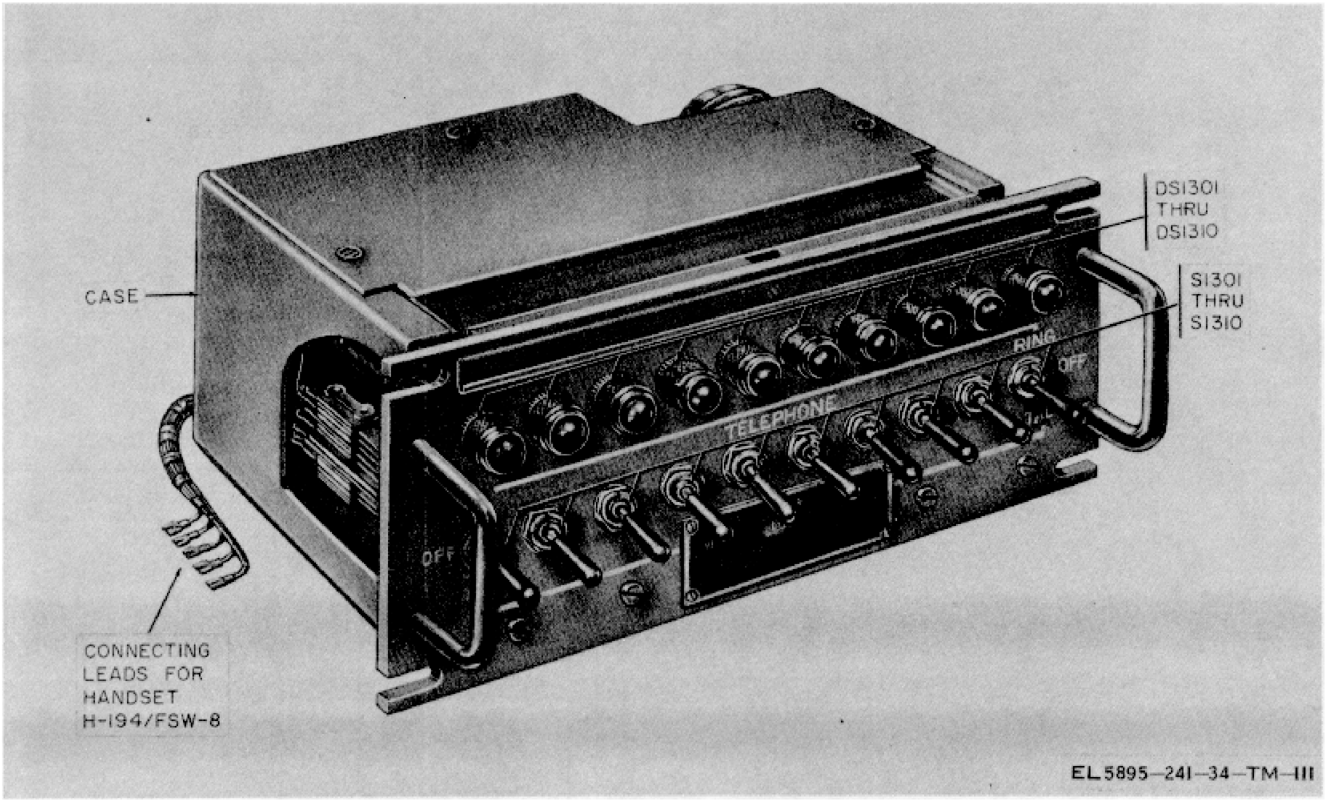


Figure 4-7. Terminal, Telephone TA-4061/FSW-8, front view.

the relay if found to be defective. Check the wir-ing between the relays and terminal board TB-1016.

(2) If the field status indicator lamps do not illuminate during the test procedures, check for 117 vac line power at terminals 3 and 2 of terminal board TB1401 (fig. FO-12(1)). Check the equipment cabinet wiring. Check field status in-dicator lamps DS1401 through DS1403 (fig. 4-29) and replace if found to be defective (para 4-4a).

4-21. Power Supply Circuits Test

Procedures are given in paragraphs 4-24 and 4-25 for troubleshooting Power Supply PP-2803/FSW-8 of the OA-2055/FSW-8. Pretest procedures (para 4-23) are given for the test connections and preliminary control setting required, followed by an operational test (para 4-24) to determine performance of the circuits. If unsatisfactory performance is observed during the test, refer to paragraph 4-25 for information to localize the trouble to a faulty component.

4-22. Test Equipment Required for Power Supply Circuits

The following test equipment is required for troubleshooting the power supply circuits of the OA-2055/FSW-8:

a. Electronic Multimeter TS-505/U.

b. Multimeter TS--52/U.

4-23. Pretest Procedure for Power Supply Circuits

Perform the pretest procedure outlined in a through c below before starting the operational test of the power supply circuits. Connect the test equipment to the OA-2055/FSW-8 as shown in figure 4-9.

a. Operate MAIN POWER circuit breaker CB-1001 to OFF.

b. Adjust the TS-505/U function switch to +DC and the range switch to 10OV.

c. Adjust the TS-352/U function switch to DIRECT and the range switch to 2.5 AMP.

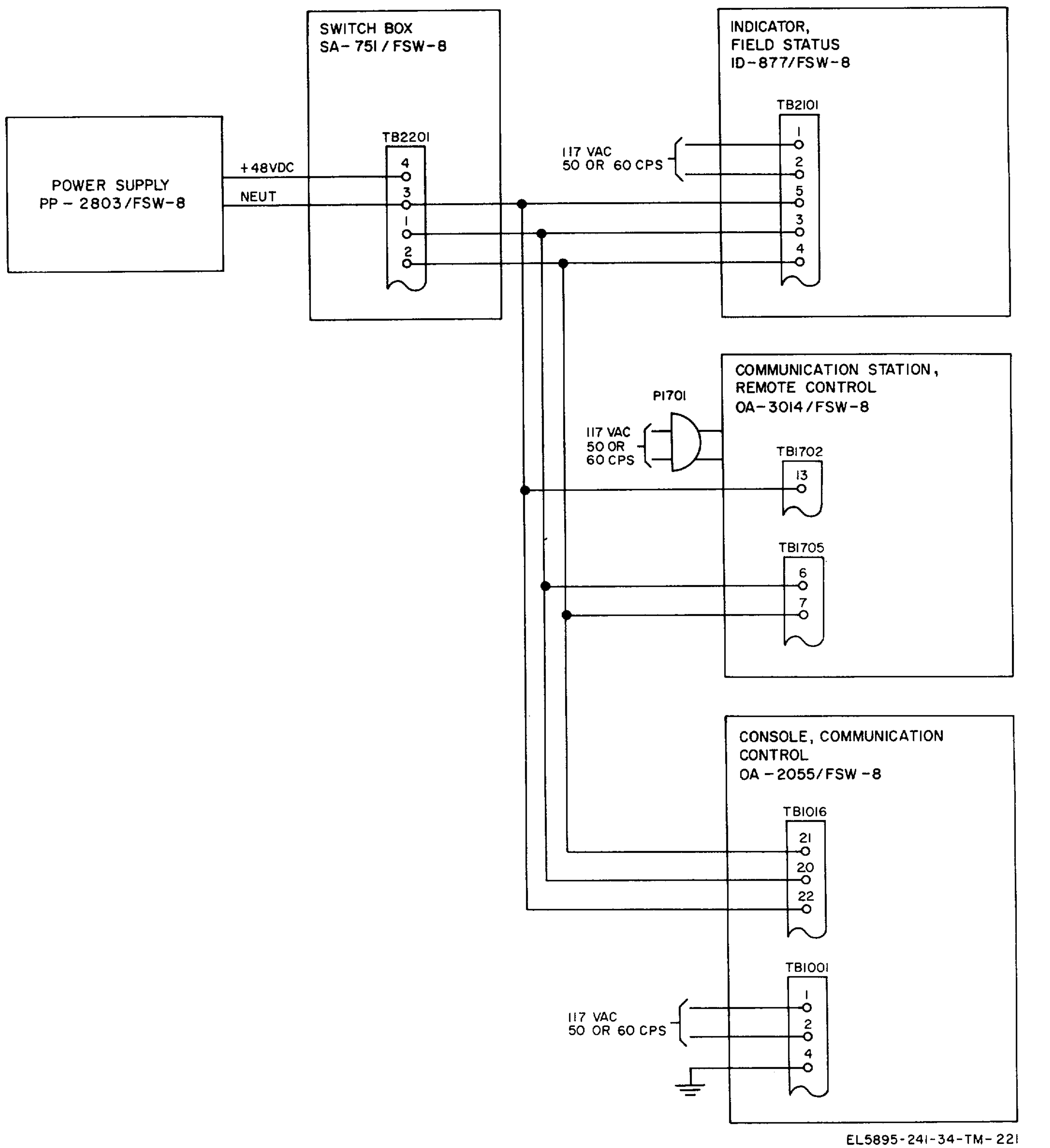


Figure 4-8. Communication Control Set AN/FSW-8 (V) field status indicator circuits, test connection diagram.

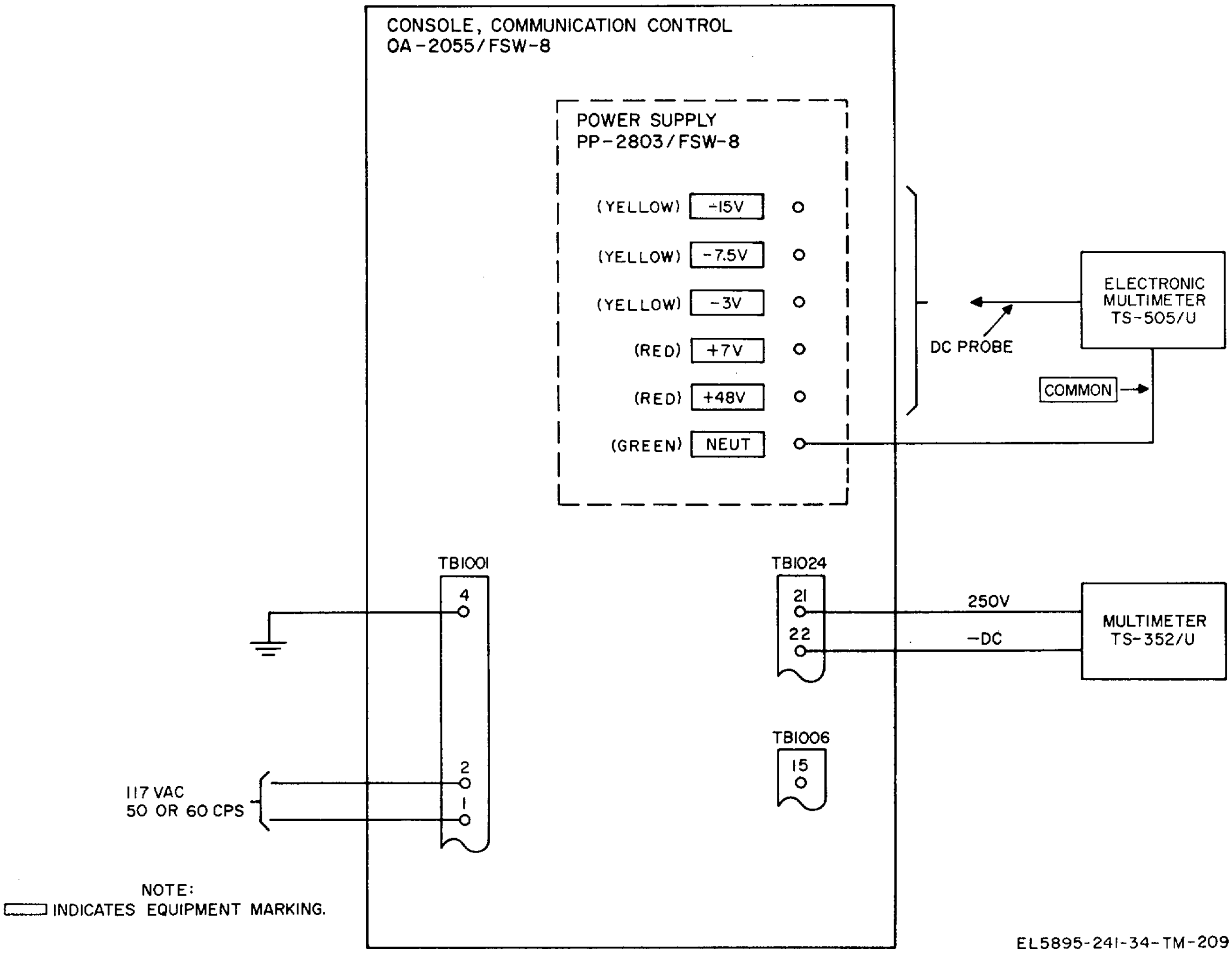


Figure 4-9. Console, Communication Control OA-2055/FSW-8, power supply circuit test.

4-24. Operational Test Procedure for Power Supply Circuits

Perform the steps outlined in a through k below to test the operation of the OA-2055/FSW-8 power supply circuits. Where a failure is observed, refer to paragraphs 4-25 and 4-61 for localization of the fault to a specific circuit, or component.

a. Operate MAIN POWER circuit breaker CB-1001 to ON. Observe that MAIN POWER indica-tor DS1001 illuminates and the TS-352/U indicates between 95 and 105 vdc.

b. Connect the dc probe of the TS-505/U to the +7V (red) test jack (fig. 4-9). The TS-505/U should indicate between 6 and 10 volts.

c. Adjust the TS-505/U range switch to 100 V.

d. Connect the dc probe of the TS/505/U to the +48V (red) test jack. The TS-505/U should indicate between 40 and 56 volts.

e. Connect the dc probe of the TS-505/U to terminal 1 of terminal board TB1002. The TS-505/U should indicate between 38 and 58 volts.

f. Remove the dc probe of the TS-505/U from terminal board TB1002.

g. Adjust the TS-505/U function switch to the -DC position and the range switch to 10OV.

h. Connect the dc probe of the TS-505/U to the -7.5V (yellow) test jack. The TS-505/U should indicate -7.5 volts.

i. Connect the dc probe of the TS-505/U to the -3V (yellow) test jack and depress the push-to-talk switch on the H-194/FSW-8. The TS-505/U should indicate approximately -3 volts. Release the H-194/FSW-8 push-to-talk switch.
The TS-505/U should indicate -7.5 volts.

j. Adjust the TS-505/U range switch to 20V.

k. Connect the dc probe of the TS-505/U to the -15V (yellow) test jack. The TS-505/U should indicate -15 volts.

4-25. Localizing Troubles in Power Supply PP-2803/FSW-8

a. General. The following chart (b below) gives the probable symptoms of failure which may be observed during the power supply tests (para 4-24), the probable cause of failure, and the method of correction. The possible troubles indicate defective circuits, stages, or components that may cause each symptom. The corrective measures indicate methods used to localize the trouble to the defective component.

b. Power Supply PP-2803/FSW-8 Troubleshooting Chart.

Symptom	Probable Trouble	Correction
No indication is observed on the TS-505/U or TS-352/U and MAIN POWER indicator lamp DS1001 does not illuminate.	*a.* MAIN POWER circuit breaker CB1001 open (fig. 1-5, TM 11-5895-241-12, and 4-38 and 4-39).	*a.* Reset MAIN POWER circuit breaker CB1001.
	b. Wiring from terminals 1 and 2 of terminal board TB1001 (fig. 4-40 and 4-41) to external power source defective.	*b.* Check the continuity of wiring between terminals 1 and 2 of terminal board TB1001 and the external power source. Replace any defective wiring.
MAIN POWER indicator lamp DS-1001 illuminates but no indications are observed on the TS-505/U and TS-352/U.	*a.* Wiring from terminals 2 and 3 of terminal board TB1001 (fig. 4-40) to power supply connector P501 (fig. 1-9) defective.	*a.* Check the continuity of wiring between terminals 2 and 3 of terminal board TB1001 to pins A and J of connector P501 and J501. Replace any defective wiring.
	b. Input transformer T501 defective (fig. 4-34 and 4-35).	*b.* With the AN/URM-105 arranged as an ohmmeter, check the dc resistance of input transformer T501 (para 4-62c). Replace if defective (para 4-127n and fig. 4-84).
Output voltage (100 vdc) observed on the TS-352/U is low; all other outputs are normal.	*a.* Bridge rectifier circuit defective	*a.* Check diodes CR505 through CR508 (para 4-64) and replace if defective (fig. 4-36 and 4-37).
	b. Input transformer T501 defective (fig. 4-34 and 4-35).	*b.* With the AN/URM-105 arranged as an ohmmeter, check the dc resistance of input transformer T501 (para 4-62c). Replace if defective (para 4-127h and fig. 4-85).
	a. Capacitors C513, C514, and C516 (fig. 4-37).	*a.* Check capacitors and replace if defective.
Abnormal indication is observed when the dc probe of the TS-505/U is connected to terminal 1 of terminal board TB1002 or +48V (red) test jack J503.	*a.* Bridge rectifier circuit defective -- CR504 (para 4-64) and replace if defective (fig. 4-36).	*a.* Check diodes CR501 through
	b. Filter networks defective --------	*b.* Check capacitors C512 and C501 and inductor L501. Replace if defective (para 4-127 and fig. 4-85).
	c. Surge resistors R528 and R529 fig. 4-36 and 4-37 defective.	*c.* Check surge resistors R528 and R529. Replace if defective (para 4-128r and fig. 4-86).
Abnormal indication is observed when the dc probe of the TS-505/U is connected to the +7V (red) test jack J506.	*a.* Defective reference diode CR514 (fig. 4-36 and 4-37).	*a.* Check reference diode CR514. Replace if defective (para 4-128w and fig. 4-86).
	b. Voltage dropping resistor R501 (fig. 4-36 and 4-37) defective.	*b.* Check voltage dropping resistor R501. Replace if defective (para 4-127gc and fig. 4-85).

Symptom	Probable Trouble	Correction
No indication is observed when the ds probe of the TS-505/U is con-nected to --1V (yellow) test jack J505.	*a.* Bridge rectifier circuit defective	*a.* Check diodes CR509 through CR512 (para 4-132). Replace if defective para 4-128g and fig. 4-86).
	b. Input transformer T501 (fig. 4-34 and 4-35) defective.	*b.* With the AN/URM-105 arranged as an ohmmeter, check the dc resistance of input transformer T501 (para 4-130c). Replace if defective (para 4-126n and fig. 4-85).
	c. Filter capacitors defective --------	*c.* Check capacitors C503 and C504. Replace if defective (para 4-127b and fig. 4-85).
	d. -15V 1.5 AMP fuse F502 (fig. 4-34 and 4-35) defective.	*d.* Replace fuse F502.
	e. Resistors R502 through R504 (fig. 4-34, 4-35, 4-36 and 4-37) defective.	*e.* Check resistors R502, R503 and R504. Replace if defective (para 4-127p and fig. 4-85).
	f. Series regulator network defective.	*f.* Check dc amplifier Q502 and series regulator Q501 (para 4-62). Replace if defective (para 4-127 and fig. 4-85).
	g. Sensing network defective --------	*g.* Check reference amplifier Q504, dc amplifier Q503 (para 4-63), and reference diode CR515. Replace if defective (fig. 4-36).
	h. -15V ADJ potentiometer R509 (fig. 4-36 and 4-37) defective.	*h.* Check -15V ADJ potentiometer R509 and replace if defective.
No output is observed when the dc probe of the TS-505/U is connected to the -7.5V (yellow) tested jack J507.	*a.* Input transformer T501 (fig. a. 4-34 and 4-35) defective.	With the AN/URM-105 arranged as an ohmmeter, check the dc resistance of input transformer T501 (para 4-62c). Replace if defective (para 4-127n and fig. 4-85).
	b. Full-wave rectifier circuit defective.	*b.* Check diodes CR509 and CR512 (para 4-64). Replace if defective (para 4-128g and fig. 4-86).
	c. Preregulator network defective	*c.* Check reference amplifier Q508 and series regulators Q507 and Q512 (para 4-63). Replace if defective (para 4-128l and fig. 4-86).
	d. Series regulator circuit defective	*d.* Check series regulators Q509 and Q511 (para 4-63). Replace if defective (fig. 4-36).
	e. Sensing network defective --------	*e.* Check reference amplifier Q506 (para 4-63) and diode CR517. Replace if defective (fig. 4-36).
	f. -7.5 V ADJ potentiometer R515 (fig. 4-36 and 4-37) open.	*f.* Check the -7.5V ADJ potentiometer R515. Replace if defective (para 4-128f and fig. 4-86).
	g. Diode CR513 defective ---------	*g.* Check diode CR513. Replace if defective (fig. 4-36).
No output is observed when the de probe of the TS-505/U is connected to the -3V (yellow) test jack J508.	*a.* Voltage dropping resistor R517 defective.	*a.* Check voltage dropping resistor R517. Replace if defective (fig. 4-36).
	b. -7.5 vdc power supply defective	*b.* Check the operation of the -7.5-vdc power supply (para 4-24h) and replace if defective (para 4-125b and fig. 4-83).

4-26. Control-Monitor C-3445/FSW-8
(fig. 4-10)

The C-3445/FSW-8 is mounted on the upper panel of the OA-2055/FSW-8 (fig. 4-1). The unit contains all TRANSMIT switches and super-visory indicator lamps of each radio transmitter channel. It also contains the audio input trans-former, receiver preamplifier A1601, and RE-CEIVE switches and supervisory indicator lamps for each radio receiver channel. When perform-ance of the receiving circuit test (para 4-8, 4-9, and 4-10) or the transmitter circuits test (para 4-13 through 4-16) indicates a failure in the C-3445/FSW-8, refer to the troubleshooting data provided in paragraphs 4-28 through 4-38 below.

4-27. Test Equipment and Materials Required for Control-Monitor C-3445/FSW-8

The following test equipment and materials are required for testing the operation of Control-Monitor C-3445/FSW-8.

a. Test Equipment.

(1) Audio Oscillator TS-382/U.
(2) Voltmeter, Meter ME-30/U.
(3) Electronic Multimeter TS-505/U.
(4) Power Supply PP-3802/FSW-8.

b. Material.

(1) Connector, Plug, Electrical (P1) 24 female contacts (FSN 5935-553-3345).
(2) Connector, Plug, Electrical (P2) 37 female contacts (FSN 5935-552-6560).
(3) Connector, Plug, Electrical (P3) 37 female contacts (FSN 5935-552-6652.
(4) Switch, Rotary (S1) Three pole-ten throw.
(5) Switch, Toggle (S2) Single polesingle throw, (FSN 5930-655-1522).
(6) Switch, Toggle (S3, S4) Single pole-double throw.
(7) Wire, Electrical 16 Gage AWG MW-C1619).

4-28. Pretest Procedure for Control-Monitor C-3445/FSW-8

The C-3445/FSW-8 can be tested independently of the OA-2055/FSW-8 by the pretest procedures described in a through h below. Perform the pre-test procedures before starting the operational tests (para 4-29).

a. Connect the test equipment to the C-3445/ FSW-8 as shown in figure 4-11.

b. Operate test switches S3 and S4 to the No. 1 position.

c. Operate the TRANSMIT switch for each radio transmitting channel (fig. 4-10) to OP-ERATE.

d. Operate the RECEIVE switch for each radio receiving channel (fig. 4-10) to OFF.

e. Adjust the ME-30/U range selector switch to 1 VOLTS.

f. Adjust the TS-505/U range switch to 2V and the function switch to AC. Connect the AC probe and COMMON lead to the output terminals of the TS-382/U.

g. Adjust the TS-382/U for an output of 1,000 cps at a level of 0 dbm (.77 volt rms) as indi-cated on the TS-505/U.

h. Turn on power to all the test equipment.

4-29. Operational Tests for Control-Monitor C-3445/FSW-8
(fig. 4-11)

Perform the procedures given in a through c below to test the operation of the C-3445/FSW-8. If a failure is observed, refer to the localization of the fault to a specific component or circuit (para 4-30).

a. Receiver Preamplifier A1601 Circuit.

(1) Operate test switch S1 to the No. 1 position.
(2) Adjust the output of the TS-382/U to obtain a reading of 0.7 volt rms on the ME-30/U.
(3) RECEIVE supervisory indicator lamp DS1501 should illuminate.
(4) Operate test switch S2 to the on posi-tion.
(5) RECEIVE supervisory indicator lamp DS1501 should extinguish.
(6) Operate test switch S2 to the off posi-tion.
(7) RECEIVE supervisory indicator lamp DS1501 should illuminate, and the ME-30/U should indicate 0.7 volts rms.
(8) Repeat the procedures outlined in (1) through (7) above to test each radio receiver channel by setting test switch S1 to positions No. 2 through No. 10. A reading of 0.7 volt should be obtained on the ME-30/U for each channel, and the corresponding RECEIVE super-

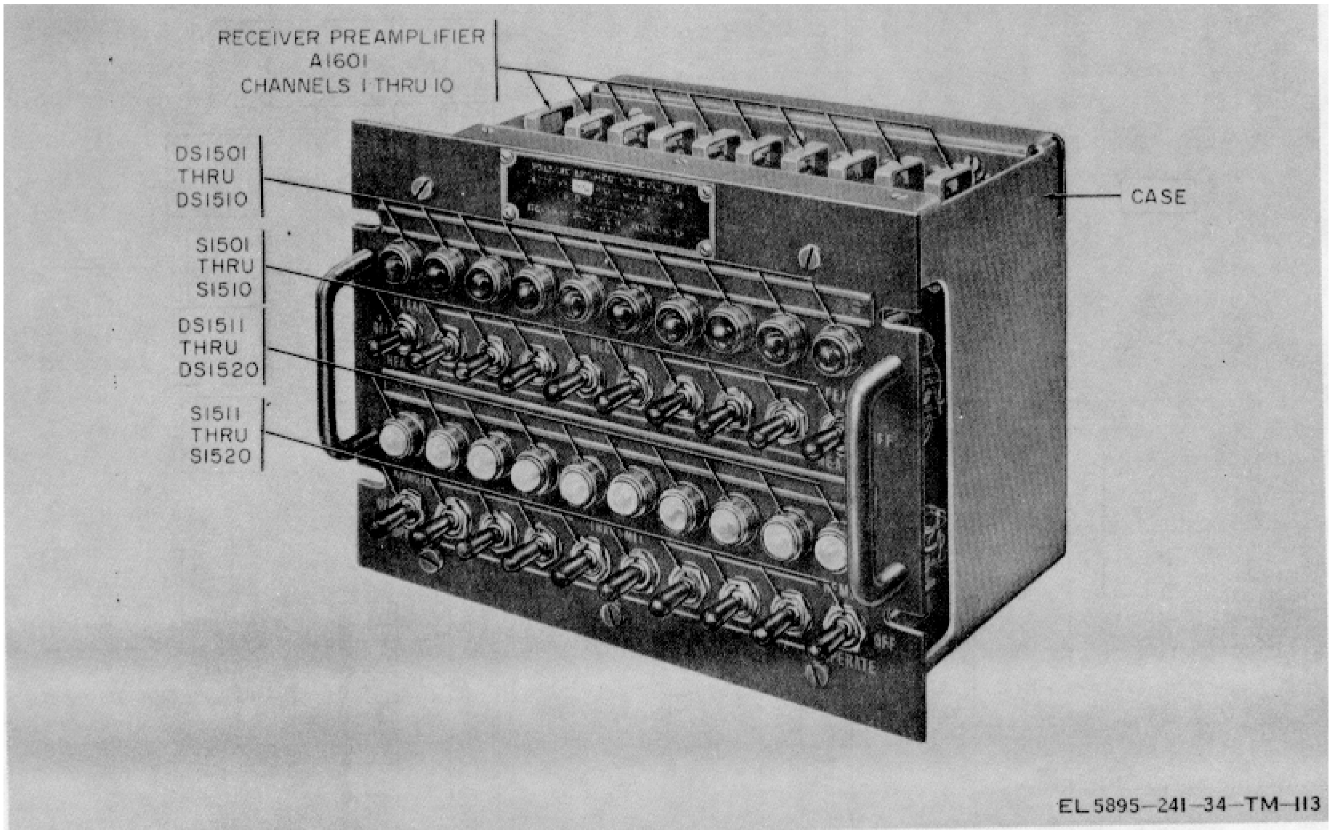


Figure 4-10. Control-Monitor C-$445/FSW-8, front view.

visory indicator lamp should illuminate and extinguish accordingly.

b. RECEIVE-Switch Circuit.

(1) Operate test switch S1 to the No. 1 position.

(2) Adjust the output of the TS-382/U to obtain a reading of 0.7 volt on the ME-30/U.

(3) Operate RECEIVE switch S1501 to HEADSET.

(4) Operate test switch S4 to the No. 1 position.

(5) A definite indication should be observed on the TS-505/U.

(6) Operate RECEIVE switch S1501 to SPEAKER.

(7) The TS-505/U should indicate 0 volt.

(8) Operate test switch S4 to the No. 2 position.

(9) A definite indication should be observed on the TS-505/U.

(10) Operate RECEIVE switch S1501 to HEADSET.

(11) The TS-505/U should indicate 0 volt.

(12) Repeat the procedures outlined in (1) through (11) above to test each radio receiver channel by setting switch S1 to positions No. 2 through No. 10.

c. TRANSMIT Switch Circuit.

(1) Operate test switch S3 to the No. 1 position.

(2) Operate TRANSMIT switch S1511 to REMOTE.

(3) TRANSMIT indicator lamp DS1511 should illuminate.

(4) Operate TRANSMIT switch S1511 to OFF.

(5) TRANSMIT indicator lamp DS1511 should extinguish.

(6) Operate test switch S3 to the No. 2 position.

(7) Operate TRANSMIT switch S1511 to OPERATE.

(8) TRANSMIT indicator lamp DS1511 should illuminate.

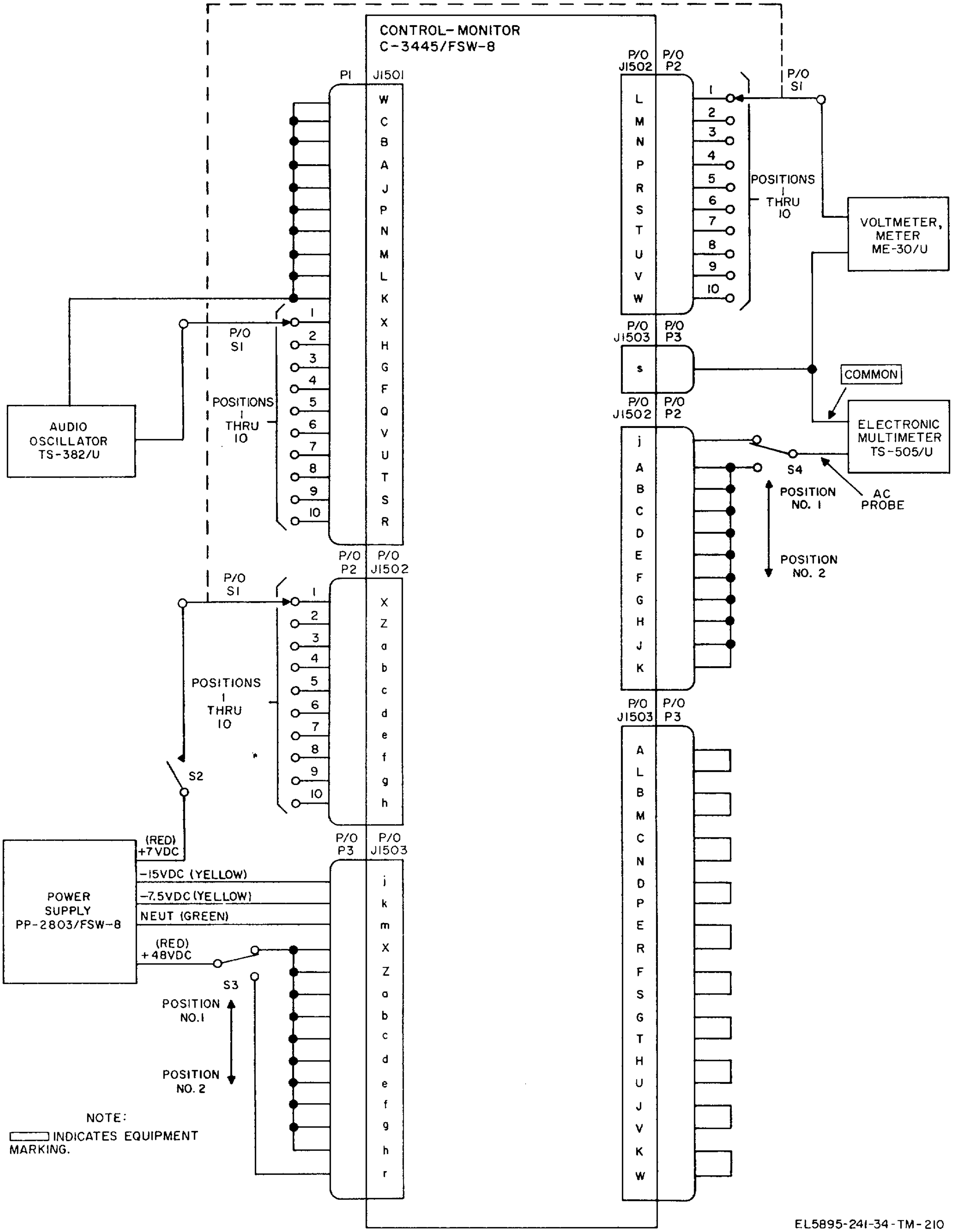


Figure 4-11. Control-Monitor C-3445/FSW-8, test connection diagram.

(9) Operate TRANSMIT switch S1511 to OFF.

(10) Repeat the procedures outlined in (1) through (8) above to test each radio transmitter channel by setting test switch S1 to positions No. 2 through No. 10.

4-30. Localizing Troubles in Control-Monitor C-3445/FSW-8

a. General. The following chart gives the prob-able symptoms of failure which may be observed during operational tests of the C-3445/FSW-8, the probable cause of failure, and the method of correction.

b. Control-Monitor C-3445/FSW-8 Troubleshooting Chart.

Symptom	Probable Trouble	Correction
RECEIVE supervisory indicator lamp for a channel tested does not illuminate and no reading is obtained on the ME-30/U for the channel tested.	*a.* Audio input transformer for channel being tested defective. *b.* Receiver preamplifier A1601 for channel being tested defective (fig. 4-12).	*a.* Check audio input transformer of channel tested (T1501-T1510). Measure dc resistance (para 4-36b). Replace if defective (para 4-132g and fig. 4-91). *b.* Check operation of A1601 and replace if defective (para 4-132a and fig. 4-91).
The RECEIVE supervisory indicator lamp for a channel tested does not illuminate, but a reading is obtained on the ME-30/U for the channel tested.	*a.* Receiver preamplifier A1601 for channel being tested defective (fig. 4-12). *b.* RECEIVE supervisory indicator lamp for channel being tested defective.	*a.* Check operation of A1601 and replace if defective (para 4-132a and fig. 4-91). *b.* Check RECEIVE supervisory indicator lamp (fig. 4-10) of channel tested (DS1501-DS1510). Replace if defective (para 4-4g).
The RECEIVE supervisory indicator lamp for a channel tested illuminates but no reading is obtained on the ME-30/U for the channel tested.	Receiver preamplifier A1601 for channel being tested defective (fig. 4-12).	Remove A1601 (para 4-132a) and check capacitor C1602 (fig. 4-12). Replace A1601 if defective.
No indication is observed on the TS-505/U for a channel tested when RECEIVE switch is operated to the HEADSET or SPEAKER position, and test switch S4 is operated to the No. 1 and No. 2 position.	RECEIVE switch for channel being tested defective (fig. 4-10).	Check RECEIVE switch (S1501-S1510) for channel tested. Inspect and clean contacts (para 4-167). Replace if defective (para 4-132 and fig. 4-91).
No indication is observed on the TS-505/U for a channel tested when RECEIVE switch is operated to the HEADSET position, and test switch S4 is operated to the No. 1 position.	*a.* RECEIVE switch for channel being tested defective (fig. 4-10). *b.* Impedance matching resistor for the HEADSET position of RECEIVE switch defective.	*a.* Check RECEIVE switch (S1501-S1510) for channel tested. Inspect and clean contacts (para 4-167). Replace if defective (para 4-132 and fig. 4-91). *b.* Check odd-numbered resistors R1501-R1519 for channel tested (fig. 4-15). Replace if defective.
No indication is observed on the TS-505/U for channel tested when RECEIVE switch is operated to SPEAKER position, and test switch S4 is operated to the No. 2 position.	*a.* RECEIVE switch for channel being tested defective (fig. 4-10). *b.* Impedance matching resistor for the SPEAKER position of RECEIVE switch defective.	*a.* Check RECEIVE switch (S1501-S1510) for channel tested. Inspect and clean contacts (para 4-167). Replace if defective (para 4-132 and fig. 4-91). *b.* Check even-numbered resistors R1502-R1520 for channel tested (fig. 4-15). Replace if defective.
The TRANSMIT supervisory indicator lamp for a channel tested does not illuminate when corresponding TRANSMIT switch is operated to the OPERATE or REMOTE position and test switch S3 is operated to the No. 1 or No. 2 position.	*a.* TRANSMIT supervisory indicator lamp for channel being tested defective. *b.* TRANSMIT switch for channel being tested defective (fig. 4-10).	*a.* Check TRANSMIT supervisory indictor lamp (DS1511-DS1520) of channel tested (fig. 4-10). Replace if defective (para 4-46). *b.* Check TRANSMIT switch (S1I11-S1520) for channel tested. Inspect and clean contacts (para

Symptom	Probable Trouble	Correction
		4-167). Replace if defective (para 4-132 and fig. 4-13).
The TRANSMIT supervisory lamp for a channel tested does not illuminate when corresponding TRANSMIT switch is operated to the OPERATE position, and test switch S3 is operated to the No. 2 position.	TRANSMIT switch for channel being tested is defective (fig. 4-10).	Check TRANSMIT switch (S1511-S1520) for channel tested. Inspect and clean contacts (para 4-167). Replace if defective (para 4-132 and fig. 4-13).
The TRANSMIT supervisory lamp for a channel tested does not illuminate when corresponding TRANSMIT switch is operated to the REMOTE position and test switch S3 is operated to the No. 1 position.	TRANSMIT switch for channel being tested is defective (fig. 4-10).	Check TRANSMIT switch (S1511-S1520) for channel tested. Inspect and clean contacts (para 4-167). Replace if defective (para 4-132 and fig. 4-91).

4-31. Receiver Preamplifier A1601
(fig. 4-12)

The operation of receiver preamplifier A1601 (for each radio receiver channel) can be tested during the performance tests of the C-3445/FSW-8. The components of each A1601, however, are not accessible for troubleshooting while the unit is installed. If a failure of the A1601 for a particular radio receiver channel is indicated, refer to the troubleshooting data given in paragraph 4-33 through 4-38 for testing the unit independently of the C-3445/FSW-8.

4-32. Test Equipment and Materials Required for Receiver Preamplifier A1601

The following test equipment and materials are required for testing and troubleshooting A1601.

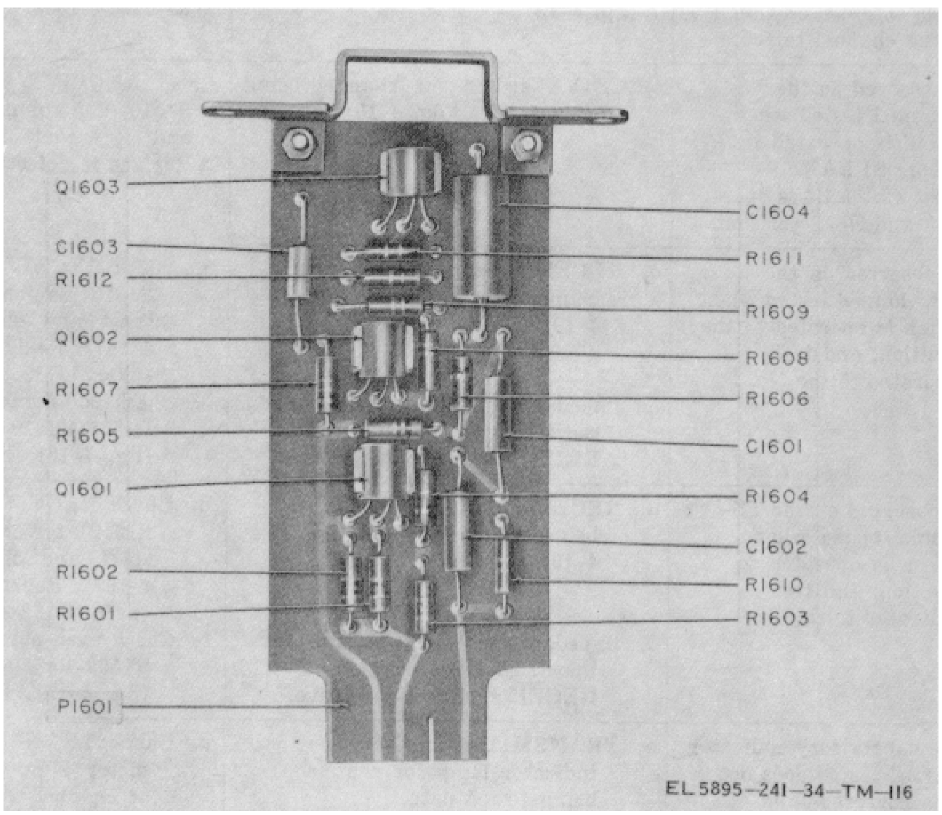


Figure 4-12. Receiver preamplifier A1601, parts location.

a. Test Equipment.
(1) Audio Oscillator TS-382/U.
(2) Voltmeter, Meter ME-30/U.
(3) Power Supply PP-2803/FSW-8.
(4) Electronic Multimeter TS-505/U.
(5) Oscilloscope OS-8A/U.

b. Materials.
(1) Switch, toggle (S1) Single pole-single throw (FSN 5390-050-2680).
(2) Connector, receptacle, electrical (J1), 12 female contacts (FSN 5935-823-0160).
(3) Lamp, incandescent (DS1) (FSN 6240-155-8683).
(4) Lampholder, miniature bayonet (XD-S1) (FSN 6250-826-6896).
(5) Wire, electrical, 16 gage AWG MWC16 (19).

4-33. Pretest Procedure for Receiver Preamplifier Al 601
(fig. 4-13)

Perform the procedures given in a through f be-low before testing A1601.

a. Remove A1601 (for the radio channel tested) from the C-3445/FSW-8 (para 4-132a) or from the C-3434/FSW-8 (para 4-143a).

b. Connect the test equipment to A1601 as shown in figure 4-13.

c. Operate test switch S1 to the off position.

d. Adjust the TS-505/U range switch to the 4V position and the function switch to AC. Con-nect the ac probe and COMMON leads to the output terminals of the TS-382/U.

e. Apply power to the test equipment, and adjust the TS-382/U for 1,000 cps output at a level

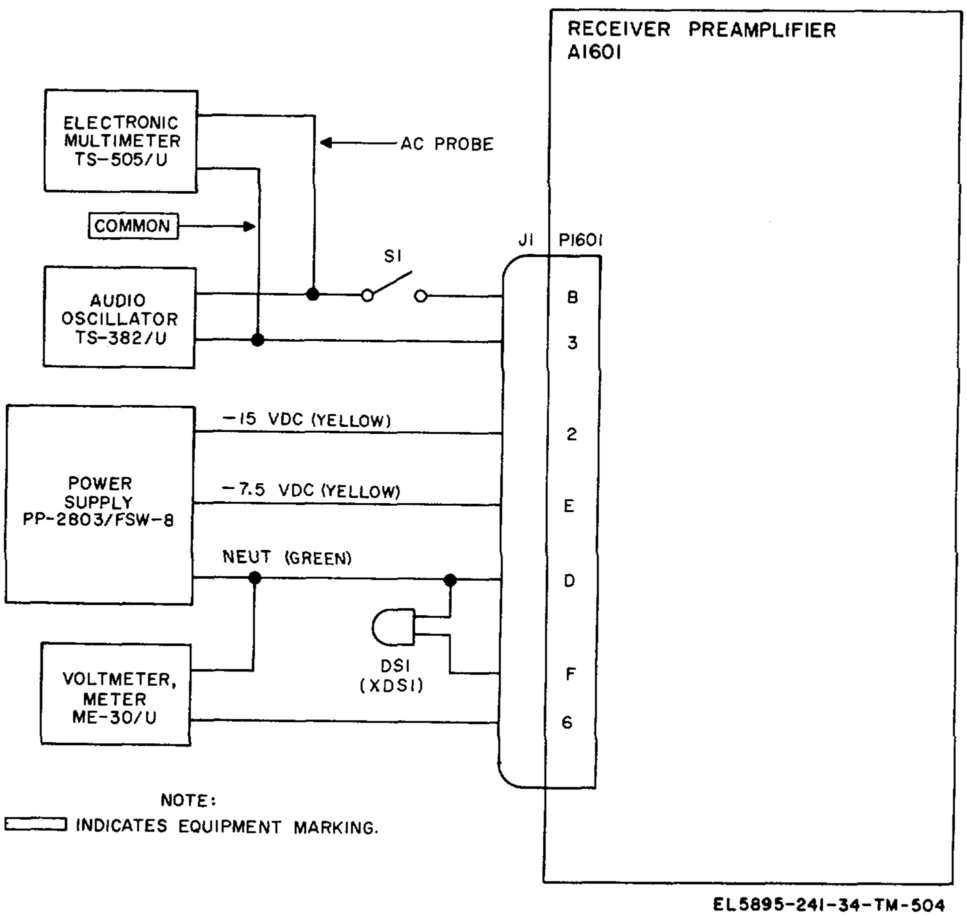


Figure 4-13. Receiver preamplifier A1601, test connection diagram.

of 0 dbm (0.77 volts rms) as indicated on the TS-505/U.

f. Adjust the ME-30/U range selector switch to 3V.

4-34. Test Procedure for Receiver Preamplifier A1601
(fig. 4-13)

Perform the following procedure to test the operation of A1601. When a failure is observed, refer to the information given in paragraph 4-35 for localizing or isolating the fault to a stage or component.

a. Operate test switch S1 to the on position.

b. Test lamp DS1 should illuminate, and a read-ing of 0.5 volt rms minimum should be indicated on the ME-30/U.

c. Operate test switch S1 to the off position.

d. Test lamp DS1 should extinguish, and no indication should be observed on the ME-30/U.

4-35. Localizing Troubles in Receiver Preamplifier A1601

a. General. The chart in b below given the symptoms of failure which may be observed when testing receiver preamplifier A1601 (para 4-34), the probable cause of failure, and the method of correction.

NOTE

Repair of printed-circuit board A1601 is not accomplished at direct support. A1601 is not a maintenance item and is discarded if inoperative.

b. Receiver Preamplifier A1601 Troubleshooting Chart.

Symptom	Probable Trouble	Correction
Test lamp DS1 does not illuminate, and no indication is observed on the ME-30/U when test switch S1 is operated to the on position.	Signal amplifier circuit defective ----	Check transistor Q1601 (fig. 4-12) and associated components. Replace A1601 if defective.
Test lamp DS1 illuminates, but no indication is observed on the ME-30/U when test switch S1 is operated to the on position.	Coupling capacitor C1602 defective -- Replace A1601 if defective.	Check capacitor C1602 (fig. 4-12),
Proper indication is observed on the ME-30/U, but test lamp DS1 does not illuminate when test switch S1 is operated to the on position.	Buffer amplifier or power amplifier circuit defective.	Check transistors Q1602, Q1603, and associated components (fig. 4-12). Replace A1601 if defective.

4-36. Continuity and Resistance Measurements

a. General.

(1) If no output is obtained during the test procedures described in paragraph 4-28 or 4-29, or an incorrect indication is observed from a radio receiving or transmitting channel, isolate the trouble to a defective component by making re-sistance and continuity measurements, and volt-age or current measurements.

CAUTION

When measuring unknown voltage or current values, start at the highest range of the test equipment being used and reduce the range a step at a time until midscale deflection is obtained on the meter.

(2) Disconnect all test equipment and use the TS-505/U to make the indicated measure-ments. The C-3445/FSW-8 wiring diagram (fig. FO-16), lever switch contact arrangement (fig. 4-125), and OA-2055/FSW-8 schematic diagram (fig. FO-10) will be useful for this purpose. Additional component parts locations are shown in figures 4-15 and 4-16.

NOTE

Receiver preamplifier A1601 is transistorized and must be removed before making any measurements (para 4-132a).

b. The dc resistance of the preamplifier input transformers in C-3445/FSW-8 is listed below.

Transformer	Terminal	Resistance (ohms)
T1501 through T1510	1-3	30
	4-5	60

4-37. Isolating Troubles Within Stage, Receiver Preamplifier A1601

When trouble in receiver preamplifier A1601 has been localized to a stage or circuit, through op-erational tests (para 4-34) or by means of the symptoms and probable troubles given in para-graph 4-35b use the procedure given in a through d below to isolate the failure by signal tracing and transistor voltage measurements (para 111).

a. Connect the suspected defective A1601 as shown in figure 4-13.

b. Operate test switch S1 to the on position.

c. Use Oscilloscope OS-8A/U to isolate the trouble; by signal tracing. Refer to the wiring diagram of A1601 shown in figure 4-128.

d. Transistor failure may be determined by voltage measurements. Arrange a dc voltmeter (lowest range) and measure the voltage at the transistor terminals listed in paragraph 4-38. A reading that differs widely from those listed can, when !used with the schematic diagram (fig. FO-12), often localize the trouble to a specific component part. Voltages measured at the emitter and base terminals of replaced transistors may vary as much as 15 to 20 percent from the volt-ages listed. Collector voltages, however, should not vary by more than 10 percent. Bias (difference of voltage from emitter to base) should remain approximately the same.

4-38. Transistor Voltage Measurements, Receiver Preamplifier A1601
(fig. 4-128)

The voltage measurements of transistors located on A1601 are as follows:

CAUTION

Do not make any resistance measurements on transistors. The multimeter battery can destroy the transistors by causing excessive current to flow through them.

	Dc voltage to ground		
Transistor	Emitter	Collector	Base
Q1603 (PNP)	15	-4.8	0.4
Q1602 (PNP)	-1.0	-9.0	-0.4
Q1601 (PNP)	-8.8	-15.0	-9.0

4-39. Amplifier Assembly AM-2827/FSW-8

The AM-2827/FSW-8 is mounted inside the OA-2055/FSW-8 on the top drawer assembly (fig. 1-5, TM 11-5895-241-12, and 4-2) and contains the transmitter microphone amplifier circuits, and the receiver headset and loudspeaker amplifier circuits. When performance of the receiving circuits test (para 4-8, 4-9, and 4-10) or the transmitting circuits test (para 4-12 through 4-15) indicates a failure in the AM-2827/FSW-8, refer to the troubleshooting data and opera-tional checks and test provided in paragraphs 4-41 through 4-47. Adjustments required after servicing or repair are given in paragraph 4-171 through 4-176. Parts location are shown in figures 4-17 through 4-23.

4-40. Test Equipment and Materials Required for Amplifier Assembly AM-2827/ FSW-8

The following test equipment and materials are required for testing the operation of the AM-2827/FSW-8.

a. Test Equipment.
(1) Audio Oscillator TS-382/U.
(2) Attenuator TS-402/U.
(3) Voltmeter, Meter ME-30/U.
(4) Power Supply PP-2803/FS.W-8.
(5) Oscilloscope OS-8A.
(6) Electronic Multimeter TS-505/U.

b. Material.

(1) Connector, Plug, Electrical (P1) 34 female contacts (FSN 5925-841-7130).

(2) Switch, Toggle (S1) Single pole-double throw.

(3) Switch, Toggle (S2, S3, S4) Single pole-single throw (FSN 5930-050-2680).

(4) Resistor, variable (R1, R4) 1,000 ohms, ±10%, 2 watts (FSN 5905-752-7181).

(5) Resistor, Composition (R2, R3) 100 ohms, ±+5%7, 1 wattt (FSN 5905-106-9344).

(6) Resistor, Composition (R5) 500 ohms, ±5%, 2 watts.

(7) Resistor, Composition (R6) 16 ohms, ±5%, 2 watts (FSN 5995-279-1951).

(8) Transformer, Audio Frequency (T1) 8Z primary, 16Z secondary (FSN 5950-823-1135).

(9) Capacitor, Electrolytic (C1, C2) 100 uf, 15 WVDC.

(10) Wire, Electrical 16 Gage AWG MW-C16(19).

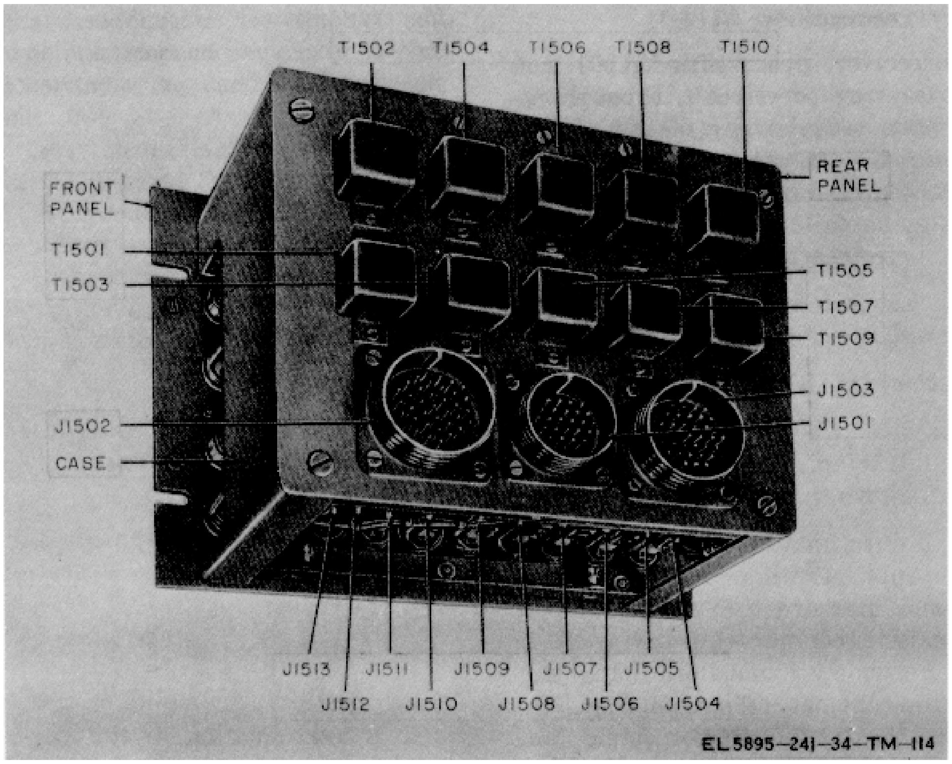


Figure 4-14. Control-Monitor C3445/FSW-8, rear view, parts location.

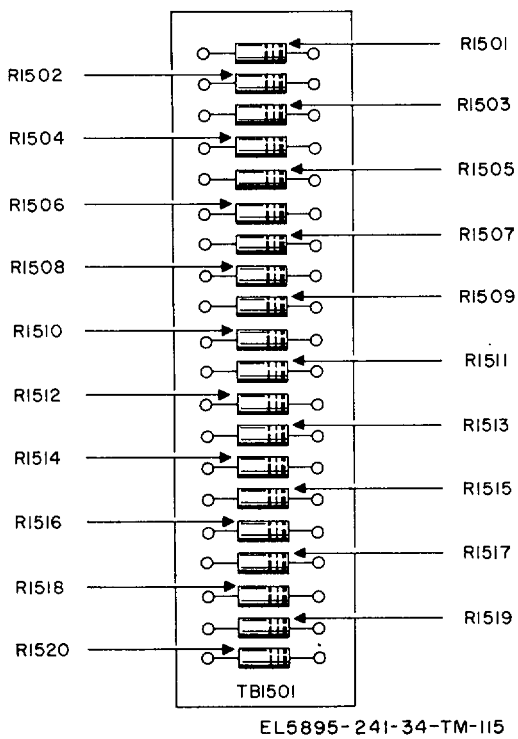


Figure 4-15. Control-Monitor C3445/FSW-8, terminal board TB1501, parts location.

4-41. Pretest Procedure for AM-2827/FSW-8

To test the AM-2827/FSW-8 independently of the OA-2055/FSW-8, remove the top drawer from the equipment cabinet (par 4-120d) and perform the pretest procedure given in *a* through *g* below.

a. Before connecting the test equipment, ad-just the TS-382/U for 1,000-cps output as de-scribed below.

(1) Adjust the ME-30/U range selector switch to 3V.

(2) Connect the ME-30/U across the output terminals of the TS-382/U.

(3) Apply power to the test equipment, and adjust the TS-382/U for 1,000-cps output, at a level of 3 volts as indicated on the ME-30/U.

(4) Turn off the power and disconnect the ME-30/U from the TS-382/U.

b. Connect the test equipment to the AM-2827/FSW-8 as shown in figure 4-16.

c. Adjust the TS-402/U to insert 40 db of attenuation.

d. Operate test switches S2, S3, and S4 to the off position.

e. Adjust test resistors R1 and R4 to their mid-range position.

f. Adjust the ME-30/U range selector switch to 3V.

g. Turn on the power to all test equipment.

4-42. Operational Test for Amplifier Assembly AM-2827/FSW-8

Perform the procedures given in a through d below to test the operation of the AM-2827/ FSW-8. If a failure is observed, refer to the information given for localization of the fault to a specific component or circuit (para 4-43).

a. Headset Amplifier Circuit. Perform the fol-lowing procedures to test the operation of the headset amplifier circuit.

(1) Operate test switch S1 to the No. 1 position. The ME-30/U should indicate a mini-mum of 1.0 volts rms.

(2) Operate the AM-2827/FSW-8 headset OUTPUT LEVEL control clockwise and counter-clockwise. The voltage indication observed on the ME-30/U should increase or decreaase, as the control is rotated.

(3) Adjust the TS-402/U to insert 10 db of attenuation. The voltage indication observed on the ME-30/U should not show more than a 4-db deviation from the indication obtained in (1) above.

(4) Adjust the TS-402/U to insert 40 db of attenuation.

b. Microphone Amplifier Circuit. Perform the following procedures to test the operation of the microphone amplifier circuit.

(1) Operate test switch S2 to the on posi-tion, and test switch S1 to the No. 2 position. The ME-30/U should indicate a minimum of 1.0 volts rms.

(2) Operate the AM-2827/FSW-8 MIKE LINE LEVEL control cockwise and counter-clockwise. The voltage indication observed on the ME-30/U should increase or decrease, as the control is rotated.

(3) Adjust the TS-402/U to insert 10 db of attenuation. The voltage indication observed on the ME-30/U should not vary by more than 4-db from the indication obtained in (1) above.

(4) Adjust the TS-402/U to insert 40 db of attenuation.

(5) Operate test switch S2 to the off posi-tion.

c. Loudspeaker Amplifier No.. 1 Circuit. Per-form the following procedures to test the opera-tion of the loudspeaker amplifier No. 1 circuit.

(1) Operate test switch S3 to the on posi-tion, and test switch S1 to the No. 2 position. The ME-30/U should indicate a minimum of 1.0 volt rms.

(2) Operate test resistor R1 clockwise and counterclockwise. The voltage indication observed on the ME-30/U should increase or decrease, as the control is rotated.

(3) Adjust the TS-402/U to insert 10 db of attenuation The voltage indication observed on the ME-30/U should vary by more than a 4 db from the indication observed in (1) above.

(4) Adjust the TS-402/U to insert 40 db of the attenuation. Operate test switch S3 to the off position.

d. Loudspeaker Amplifier No. 2 Circuit. Per-form the following procedures to test the opera-tion of the loudspeaker amplifier No. 2 circuit.

(1) Operate test switch S4 to the on position, and test switch S1 to the No. 2 position.

The ME30/U should indicate a minimum of 1.0 volts rms.

(2) Operate test resistor R4 clockwise and counterclockwise. The voltage indication observed on the ME-30/U should increase or de-crease, as the control is rotated.

(3) Adjust the TS-402/U to insert 10 'db of attenuation. The voltage indication observed on the ME30/U should not vary by more than a 4-db from the indication observed in (1) above.

(4) Adjust the TS-402/U to insert 40 db of attenuation.

(5) Operate test switch S4 to the off posi-tion.

4-43. Localizing Troubles in Amplifier Assembly AM-2827/FSW-8

a. General. If abnormal operation of the AM 2827/FSW-8 is indicated, refer to the chart in b below to localize the trouble. Refer also to the techniques given in paragraph 4-44 to isolate troubles within a stage, and to the voltage and resistance measurements given for transistors (para 4-46), transformers (para 4-45), and diodes (para 4-47).

b. Amplifier Assembly AM-2827/FSW-8 Troubleshooting Chart.

Symptom	Probable Trouble	Correction
No indication is observed on the ME-30/U when test switch S1 is operated to the No. 1 position, and test switches S2, S3, and S4 are operated to the off position.	Defective component in headset amplifier circuit.	Check transistors Q819, Q820, Q821, and Q823 (para 4-46) and their associated components on terminal board TB803 (fig. 4-22). Check HEADSET GAIN resistor R902 (fig. 4-18). OUTPUT LEVEL resistor R888 (fig. 4-19), and transformer T804 (fig. 4-18). Use signal tracing to isolate faulty component. Replace any defective components.
Indication observed on the ME-30/U is erratic when the headset OUTPUT LEVEL control is operated.	Headset OUTPUT LEVEL control defective.	Check resistor R888 (fig. 4-19). Re-place if defective.
Indication observed on the ME-30/U varies more than 4 db when the input level is increased 30db.	Defective component in the dc amplifier stage of the headset amplifier circuit.	Check transistor Q822, (para 4-46) and diodes CR813, CR814, CR815. CR816, and CR819 (para 4-47) and their associated components on terminal board TB-803 (fig. 4-22). Check COMP. ADJ resistor R894 (fig. 4-18). Replace defective components.
No indication is observed on the ME-30/U when test switch S1 is operated to the No. 2 position, test switch S2 is operated to the on position, and test switches S3 and S4 are operated to the off posi-tion.	Defective component in microphone amplifier circuit.	Check transistors Q813, Q814, Q815 and Q817 (para 4-46) and their associated components on terminal board TB804 (fig. 4-23). Check transistor Q812 (fig. 4-19) and its associated components. Check trans-former T803 (fig. 4-18). MIKE LINE LEVEL resistor R-962 (fig. 4-18), and BIAS ADJ resistor R874 (fig. 4-19). Use signal tracing to isolate faulty component. Replace any defective component.
Indication observed on the ME-30/U is erratic when the MIKE LINE LEVEL control is operated.	MIKE LINE LEVEL control R862 defective.	Check resistor R862 (fig. 4-18). Re place if defective.
Indication observed on the ME-30/U varies more than 4 db when the input level is increased 30 db.	Defective component in the dc amplifier stage of the microphone amplifier circuit.	Check transistor Q816, (para 4-46) and diodes CR812, and CR820 (pare 4-47) and their associated components on terminal board TB804 (fig. 4-23). Check COMP. ADJ resistor R868 (fig. 4-18). Replace any defective component.

Symptom	Probable Trouble	Correction
No indication is observed on the ME-30/U when test switch S1 is operated to the No. 2 position, test switch S3 is operated to the on position, and test switches S2 and S4 are operated to the off position.	Defective component in microphone amplifier circuit.	Check transistors Q801, Q802, Q803, and Q805 (para 4-46) and their associated components on terminal board TB801 (fig. 4-20). Check transistor Q818 (fig. 4-17), and its associated components. Check SPKR. NO. 1 GAIN resistor R899, BIAS ADJ resistor R824. and transformer T801 (fig. 4-17). Use signal tracing to isolate faulty component. Replace any defective component.
Indication observed on the ME-30/U varies more than 4 db when the Input level is increased 30 db.	Defective component in the dc amplifier stage of loudspeaker No. 1 amplifier circuit.	Check transistor Q804, (para 4-46) and diodes CR801, CR802, CR803. CR804, and CR817 (para 4-47) and their associated components on terminal board TB801 (fig. 4-20). Check COMP. ADJ resistor R816 (fig. 4-17). Replace any defective components.
No indication is observed on the ME-30/U when test switch S1 is operated to the No. 2 position, test switch S4 is operated to the on position, and test switches S2 and S3 are operated to the off position.	Defective component in loud speaker No. 2 amplifier circuit.	Check transistors Q807, Q808, Q809, and Q811 (para 4-46) and their associated components on terminal board TB802 (fig. 4-21). Check transistor Q806 (fig. 4-17) and its associated components. Check SPKR. NO. 2 GAIN resistor R901, BIAS ADJ resistor R849, and transformer T802 (fig. 4-18). Use signal tracing to isolate faulty component. Replace any defective component.
Indication observed on the ME-30/U varies more than 4 db when the input level is increased 30 db.	Defective component in the dc amplifier stage of loudspeaker No. 2 amplifier circuit.	Check transistor Q810 (para 4-46) and diodes CR805, CR806, CR807, CR808, and CR818 (para 4-47) and their associated components on terminal board TB802 (fig. 4-21). Check COMP. ADJ resistor R842 (fig. 4-19). Replace any defective component.

4-44. Signal Tracing

If no output is obtained from the amplifier circuit during the operational test (para 4-29), isolation of the trouble to a stage within the circuit can be accomplished by signal tracing. Use Oscilloscope OS-8A/U to perform the signal tracing. Ground one side of the OS-3A/U to the AM-2827/FSW-8 chassis, and connect the other side to the input and output of each amplifier stage. The receiving function signal flow diagram (fig. FO-1) and transmitting function signal flow diagram (fig. FO-2) will be useful for this purpose. Refer also to the AM-2827/FSW-8 wiring diagram (fig. FO-21). Begin the signal tracing tests at the output of the last audio stage and work back toward the first audio stage.

4-45. Dc Resistance for Transformers for AM-2827/FSW-8

The dc resistance of transformers located in the AM-2827/FSW-8 is given below.

Transformer	Terminal	Resistance (ohms)
T801	1-2	1.0
	3-4	less than 1
T802	1-2	1.0
	3-4	less than 1
T803	1-2	1.0
	3-4	less than 1
T804	1-2	1.0
	3-4	less than 1

4-46. Transistor Voltage Measurements for AM-2827/FSW-8

The following chart lists the various transistors located in the AM-2827/FSW-8 and the operating voltages that should be obtained.

Transistor	De voltage to ground		
	Emitter	Collector	Base
Q801 (NPN)	-11.4	- 6.4	-11.2
Q802 (NPN)	-11.6	- 7.4	-11.0
Q803 (NPN)	- 7.6	- 4.6	- 7.4
Q804 (NPN)	-13.5	- 0.25	-13.2
Q805 (PNP)	-10.2	-15	-10.4
Q806 (PNP)	- 2.3	- 7.2	- 2.4
Q807 (NPN)	-11.5	- 6.5	-11.0
Q808 (NPN)	-11.8	- 7.5	-11.2
Q809 (NPN)	- 7.7	- 4.8	- 7.5
Q810 (NPN)	-13.7	- 0.3	-12.4
Q811 (PNP)	-10.0	-15	-10.2
Q812(PNP)	- 2.3	- 7.4	- 2.4
Q812 (NPN)	-11.5	- 6.6	-11.2
Q814 (NPN)	-12.0	- 7.6	-11.8
Q815 (NPN)	- 7.8	- 4.9	- 7.6
Q816 (NPN)	-13.0	- 0.45	-13.0
Q817 (PNP)	-10.2	-15	-10.4
Q818 (PNP)	- 2.3	- 7.4	- 2.6
Q819 (NPN)	-11.5	- 7.0	-11.0
Q820 (NPN)	-11.5	- 7.2	-11.0
Q821 (NPN)	- 7.4	- 4.8	- 7.2
Q822 (NPN)	-14.0	- 0.15	-13.5
Q823 (PNP)	-11.5	-15.0	-11.5

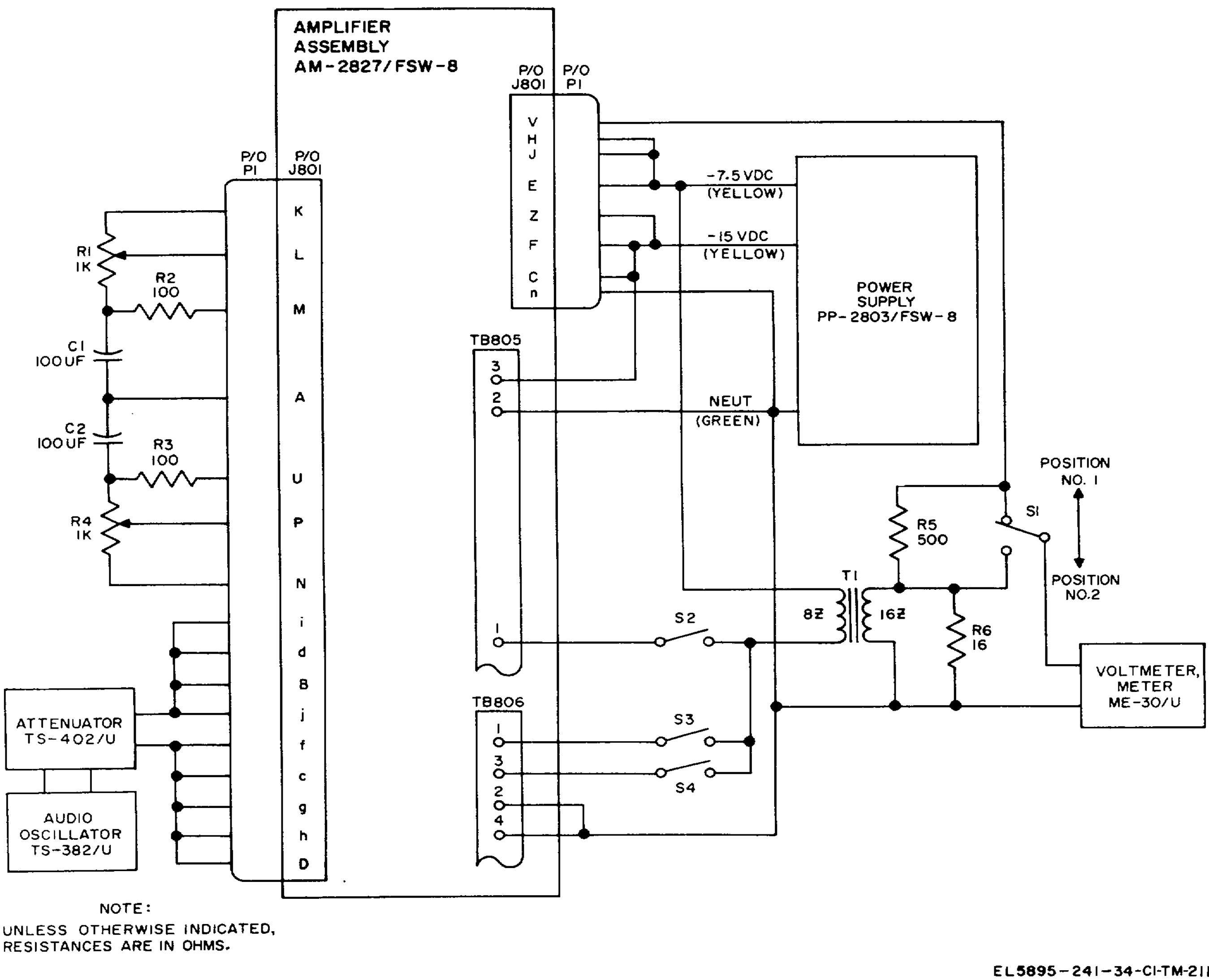


Figure 4-16. Amplifier Assembly Am-2827/FSW-8. test connection diagram.

4-47. Dc Resistance for Diodes for AM-2827/FSW-8

The chart below lists the diodes located in the AM-2827/FSW-8 and the resistance that should be obtained. Disconnect one end of the diodes in the circuit or stage and measure the forward and reverse resistance using a TS-505/U arranged as an ohmmeter.

Type	Reference designations	Forward resistance (ohms)	Reverse resistance (ohms)
1N305 or 1N270	CR803, CR804, CR807, CR808, CR811, CR812, CR815, CR816	5 max	1 meg min
1N281 or 1N270	CR801, CR802, CR805, CR806, CR809, CR810, CR813, CR814, CR817, CR818, CR819, CR820	5 max	1 meg min

4-48. Control, Transmitter C-3446/FSW-8 (fig. 4-24 and 4-25)

a. The C-3446/FSW-8 is mounted in side the OA-2055/FSW-8 on the top drawer assembly (fig. 1-5, TM 11-5895-241-12, and 4-2) and contains output transformer T701, the individual transmit and lockout relays for each radio transmitter channel, and the loudspeaker selector switches for each radio receiver channel. When performance of the receiving circuits test (para 4-8, 4-9, and 4-10) or the transmitting circuits test (para 4-13 through 4-15) indicates a failure in the C-3446/FSW-8, refer to the additional troubleshooting data provided in b below and in paragraphs 4-49 and 4-50.

b. The dc resistance of transformer T701 located in C-3446/FSW-8 is as follows:

Terminals (series pairs)	Transmitter channel	Resistance (ohms) across each series pair
3-6	1	30 (max)
7-10	2	30
11-14	3	30
15-18	4	30
19-22	5	30
23-26	6	30
27-30	7	30
31-34	8	30
35-38	9	30
39-42	10	30

4-49. Test Equipment Required for C-3446/FSW-8

Electronic Multimeter TS-505/U and Test Set I-181 are required for testing or troubleshooting the C-3446/FSW-8.

4-50. Isolating Troubles for C-3446/FSW-8

Since the C-3446/FSW-8 contains components of both the OA-2055/FSW-8 receiving and transmitting circuits, but does not contain complete

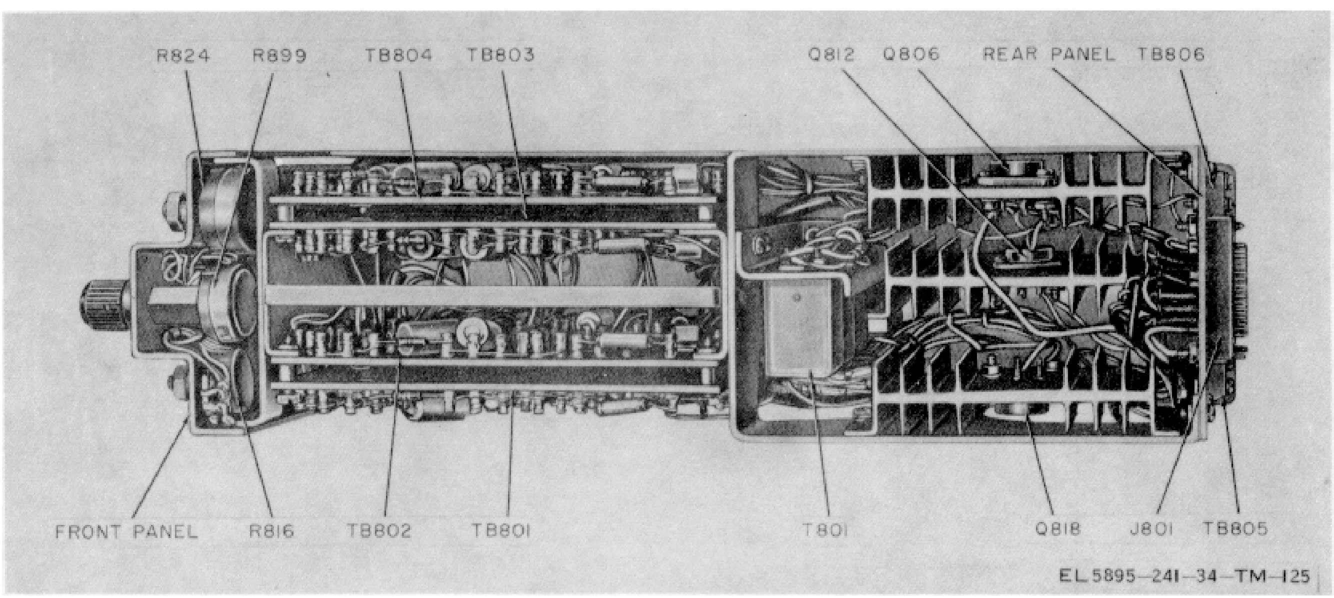


Figure 4-17. Amplifier Assembly AM-2827/FSW-8, top view, parts location.

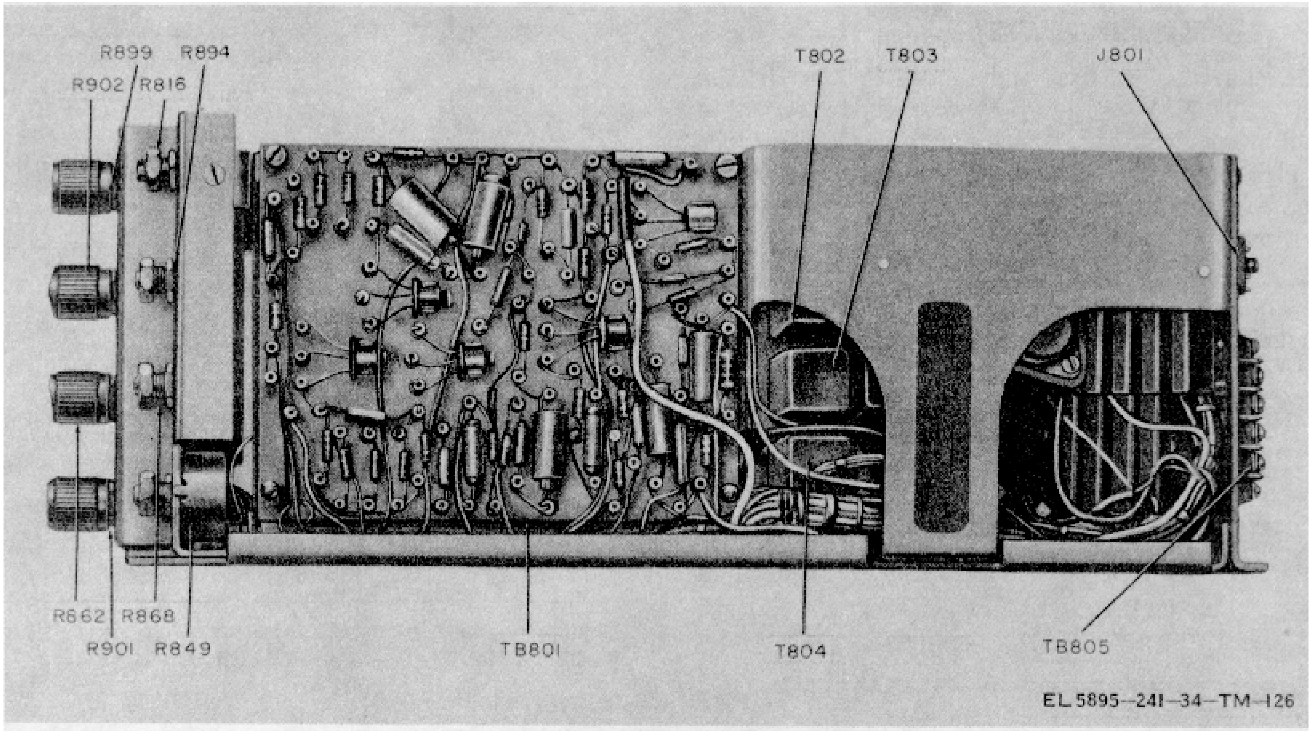


Figure 4-18. Amplifier Assembly AM-2827/FSW-8, right side view, parts location.

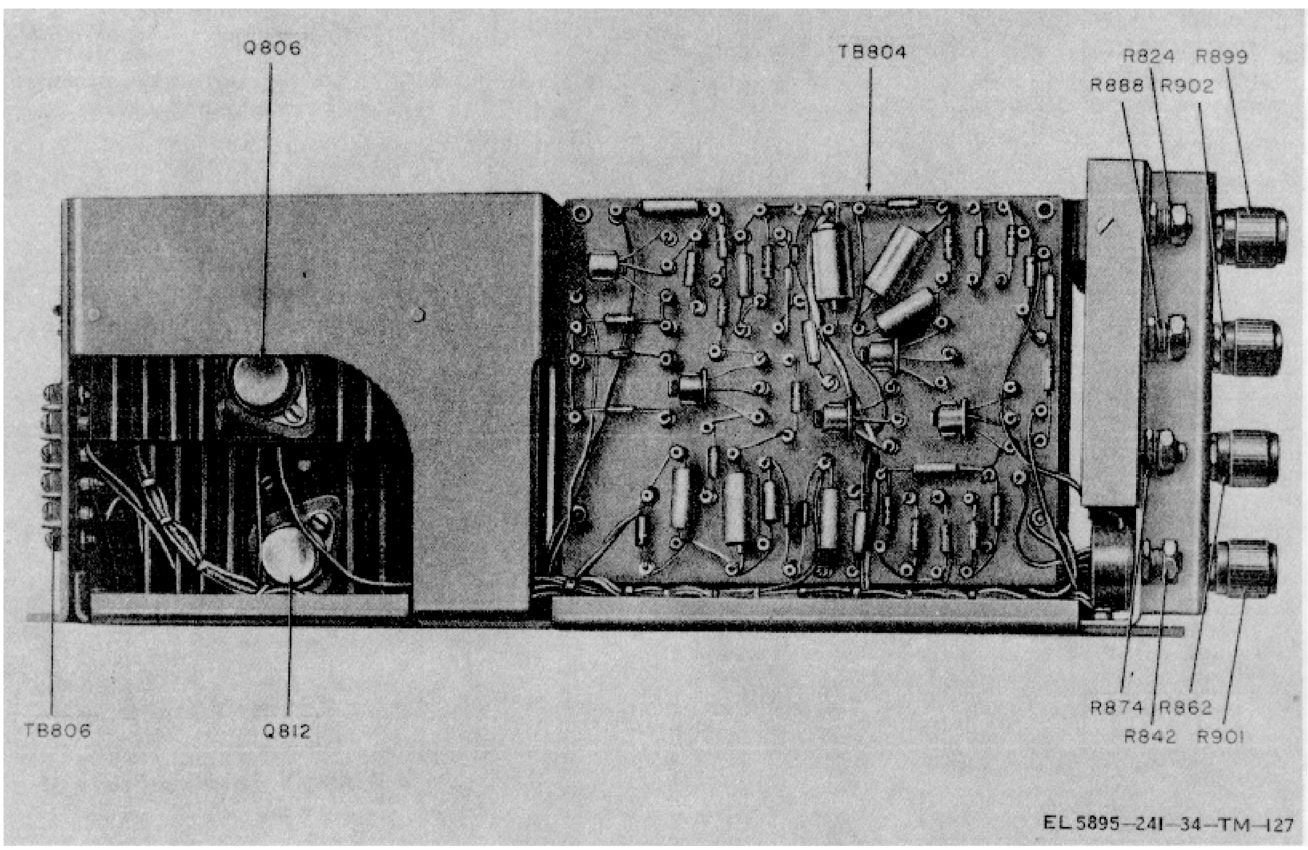


Figure 4-19. Amplifier Assembly AM-2827/FSW-8, left side view, parts location.

operating circuits or stages, failure in the unit can best be localized by performing the receiving circuits test or the transmitting circuits test. When performance of these tests indicates a failure in the C-3446/FSW-8 which does not localize the fault to a specific component, use the following methods to isolate the trouble:

a. Continuity Measurements. Continuity measurements provide a quick method of verifying individual connector and component wiring. Proceed as follows:

(1) Remove the top drawer assembly from the OA-2055/FSW-8 (para 4-120d). and remove the C-3446/FSW-8 from the top drawer assembly (para 4-122b).

(2) Arrange the TS-505/U as an ohmmeter.

(3) Use the TS-505/U to make continuity measurements of the C-3446/FSW-8 and refer to the unit wiring diagram (fig. FO-17) and to the OA-2055/FSW-8 schematic diagram (fig. FO-12(1)and (2).

(4) A reading of 0 ohm or infinity should be obtained as applicable.

b. Relay Check. Check the operation of the

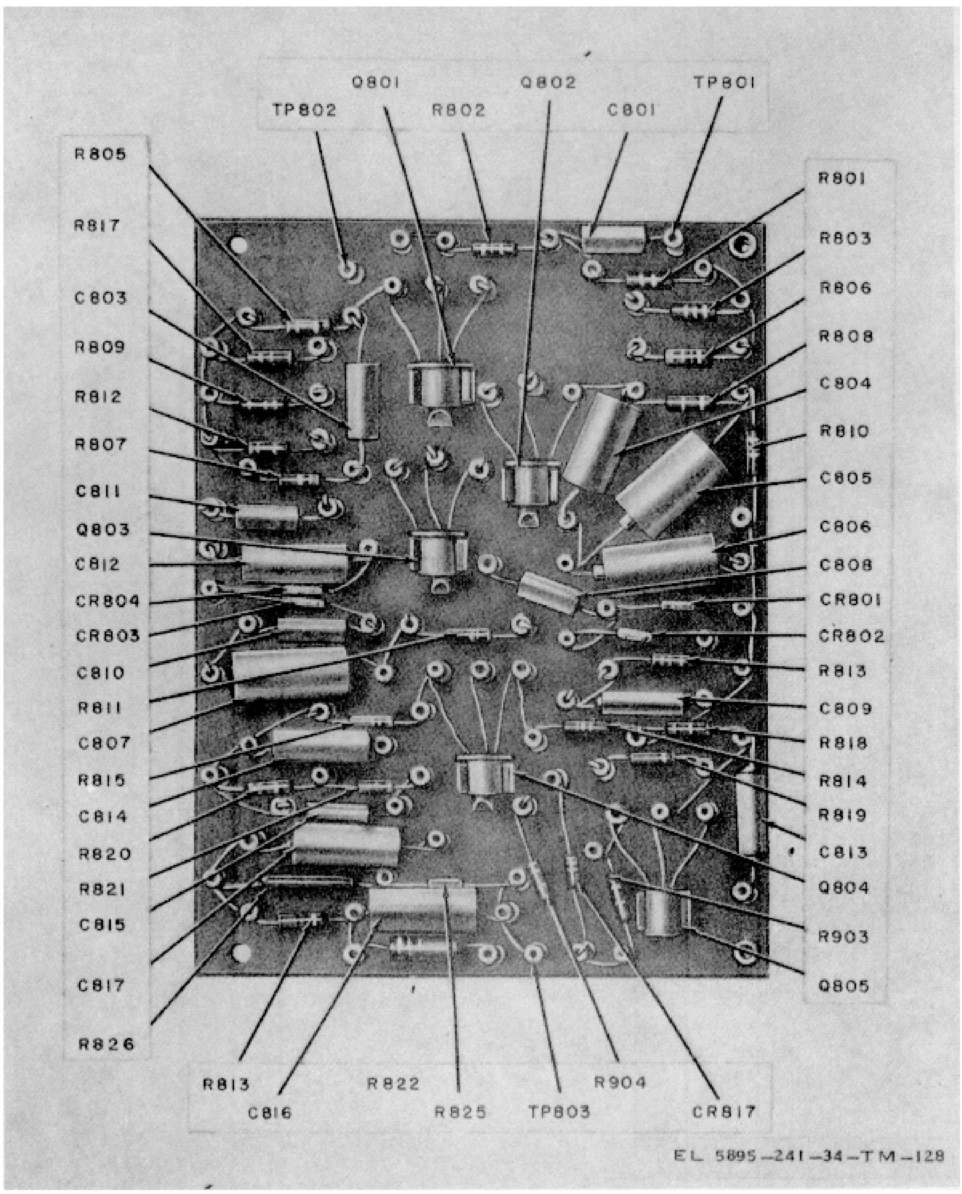


Figure 4-20. Amplifier Assembly AM-2827/FSW-8, terminal board TB801, parts location.

individual transmit and lockout relays; use Test Set I-181, as described in paragraphs 4-168 and 4-169.

c. Dc Resistance of Transformer T701. Check the dc resistance acress each series pair of terminals (for radio channels No. 1 through No. 10) of transformer T701. Use the TS-505/U arranged as an ohm-meter, and compare the results with the measurements given in paragraph 4-48b.

4-51. Miscellaneous Control Panel

a. The miscellaneous control panel (fig. 4-26) mounted on the CY-3020/FSW-8 (fig. 4-1) contains LOCAL-REMOTE switch S1101, the microphone and headset connectors J1103 and J1104, variable MAGNETIC and CARBON volume control resistors R1102 and R1104, MIKE selector switch S1102, intercom switch S1103, transmitter audio level meter Ml101, and transformers Tl101 and T1102. Refer to the troubleshooting data provided in paragraphs 4-10 and 4-15 and the additional data in b below when performance of the receiving circuit tests (para 4-8, 4-9, and 4-10) or transmitting circuit tests (para 4-13, 4-14, and 4-15) indicates a failure in the unit.

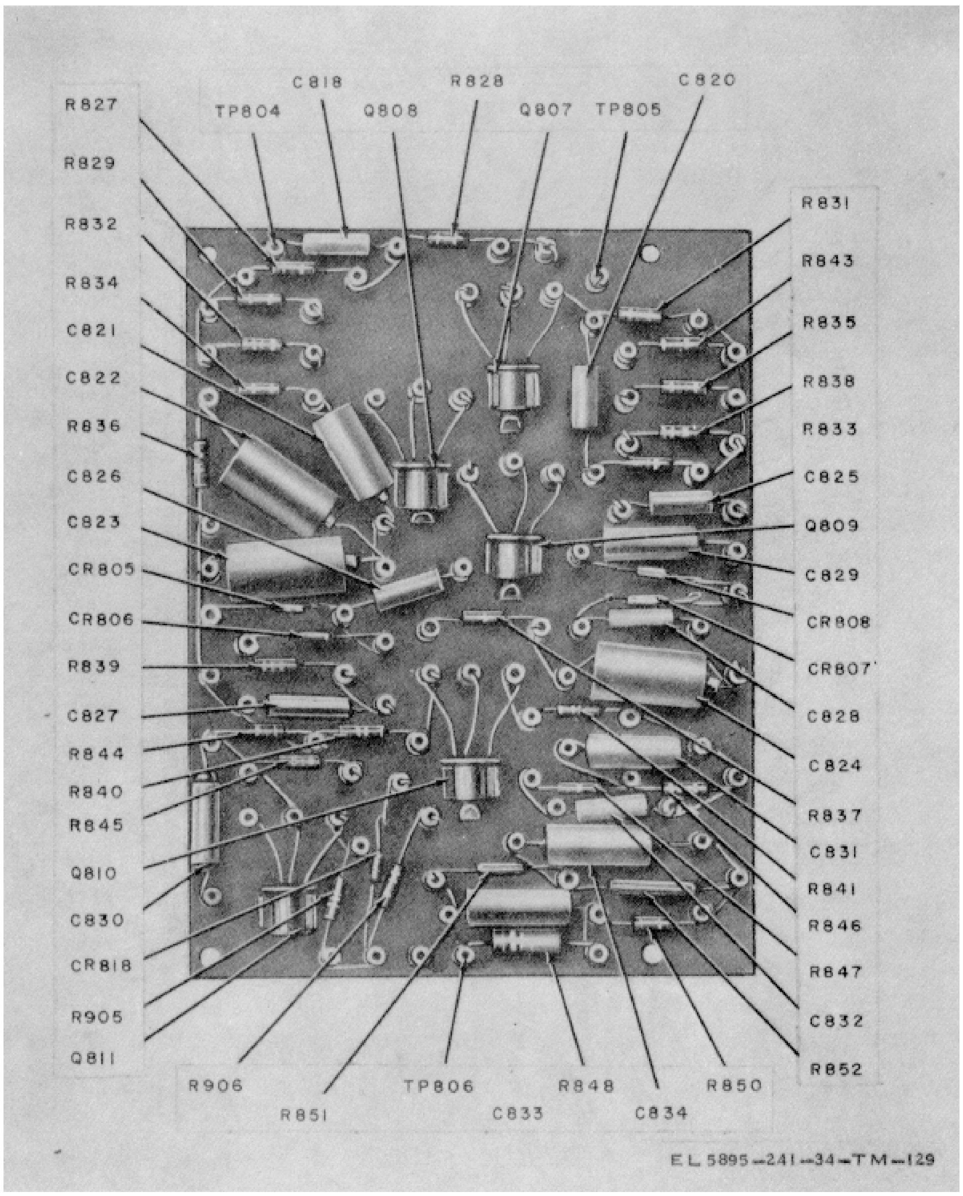


Figure 4-21. Amplifier Assembly AM-2827/FSW-8, terminal board TB802, parts location.

b. The dc resistance of Tl101 and T1102 is as follows:

Transformers	Terminals	Resistance (ohms)
T1101	1-3	30
	4-5	60
T1102	1-3	30
	4-5	60

4-52. Loudspeaker and Indicator Panel

The loudspeaker and indicator panel (fig. 4-28 and 4-29) is mounted on the CY-3020/FSW-8 and contains loudspeakers LS1401 and LS1402, the loudspeaker VOLUME CONTROL, resistors R1401 and R1402, field status indicator relays K1401 and K1402, and field status indicator lamps DS1401 through DS1403.

4-53. Test Equipment Required for Loudspeaker and Indicator Panel

Electronic Multimeter TS-505/U and Test Set I-181 are required for testing or troubleshooting the loudspeaker and indicator panel.

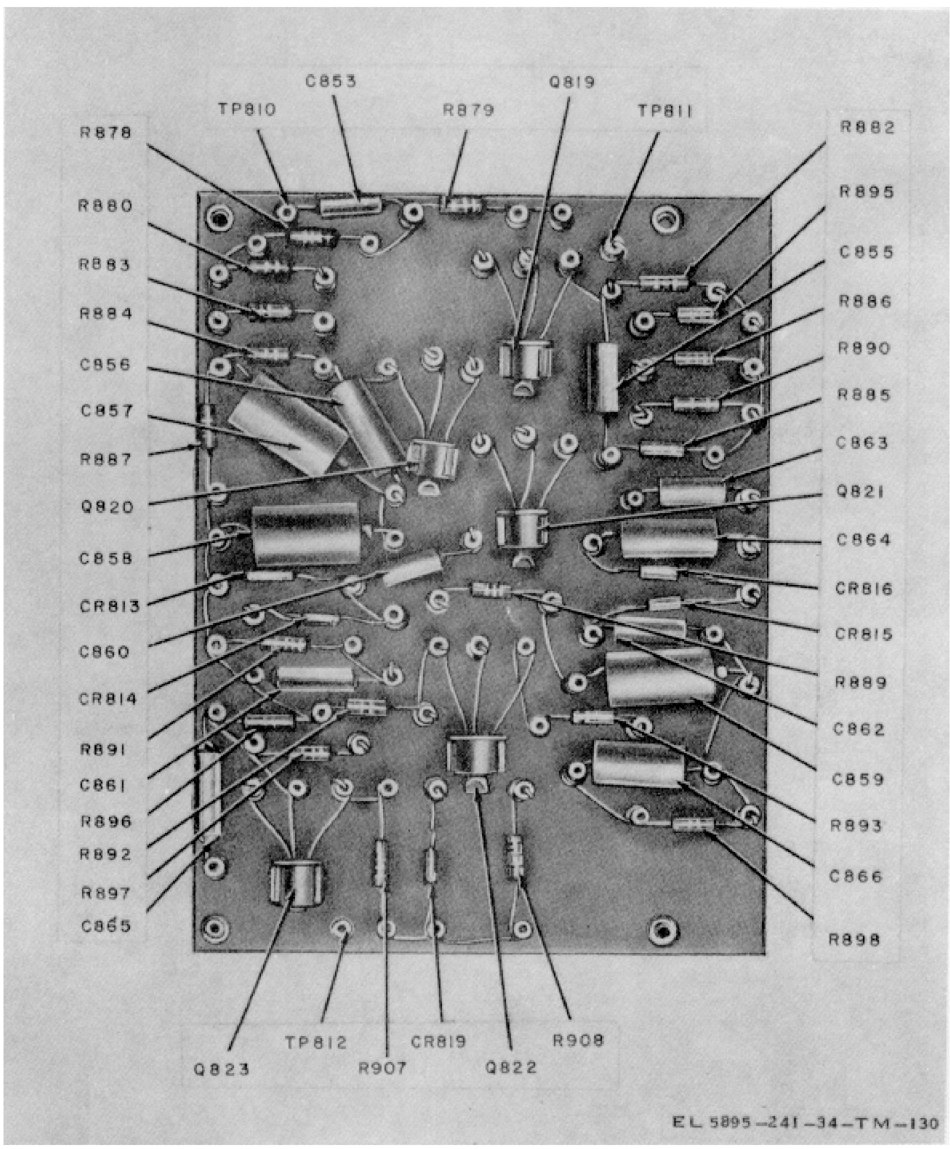


Figure 4-22. Amplifier Assembly AM-2827/FSW-8, terminal board TB804, parts location.

4-54. Isolating Troubles for Loudspeaker and Indicator Panel

Since the loudspeaker and indicator panel contains components of both the OA-2055/FSW-8 receiving and field status circuits, but does not contain complete operating circuits or stages, a failure in the unit can best be localized by performing the receiving circuits test (para 4-9) or the field status circuits test (para 4-20). When performance of these tests indicates a failure, which does not localize the fault to a specific component, use the following methods to isolate the trouble:

a. Continuity Measurements. Continuity measurements provide a quick method of verifying individual connector and component wiring. Proceed as follows:

(1) Remove the loudspeaker and indicator panel from the OA-2055/FSW-8 (para 4-133).

(2) Arrange the TS-505/U as an ohmmeter.

(3) Use the TS-505/U to make continuity measurements of the panel, referring to the unit wiring diagram and to the OA-2055/FSW-8 schematic diagram (fig. FO-12(1) and (2).

(4) A reading of 0 ohm or infinity should be obtained as applicable.

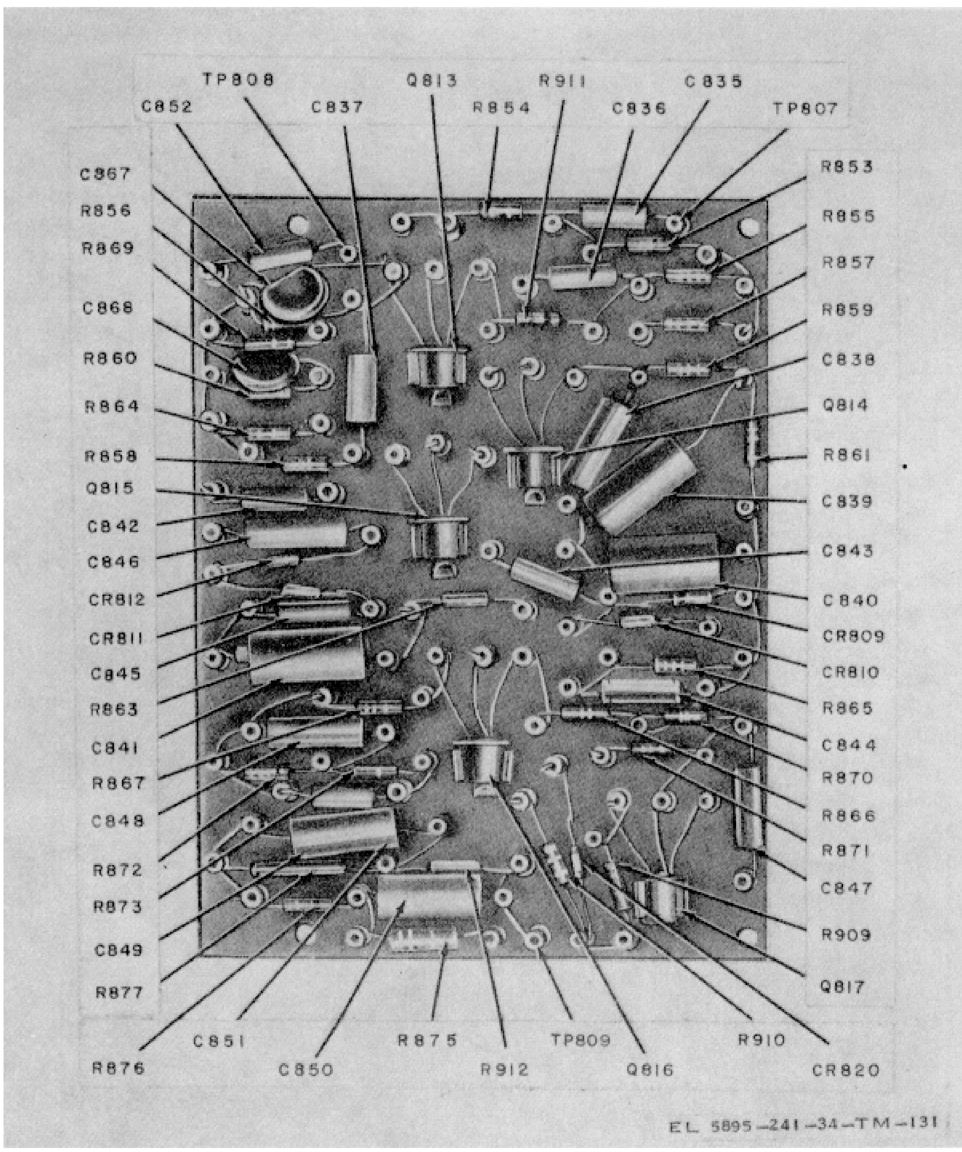


Figure 4-23. Amplifier Assembly AM-2827/FSW-8, terminal board TB80, parts location.

b. Relay Check. Check the operation of field status relays K1401 and K1402 (fig. 4-28); use Test Set 1-181, as described in paragraph 4-169h and replace if defective (para 4-133n).

c. Loudspeaker Check. Check the resistance across the input terminals of loudspeakers LS1401 and LS1402 (fig. 4-28) use the TS-505/U arranged as an ohm-meter. Compare the results

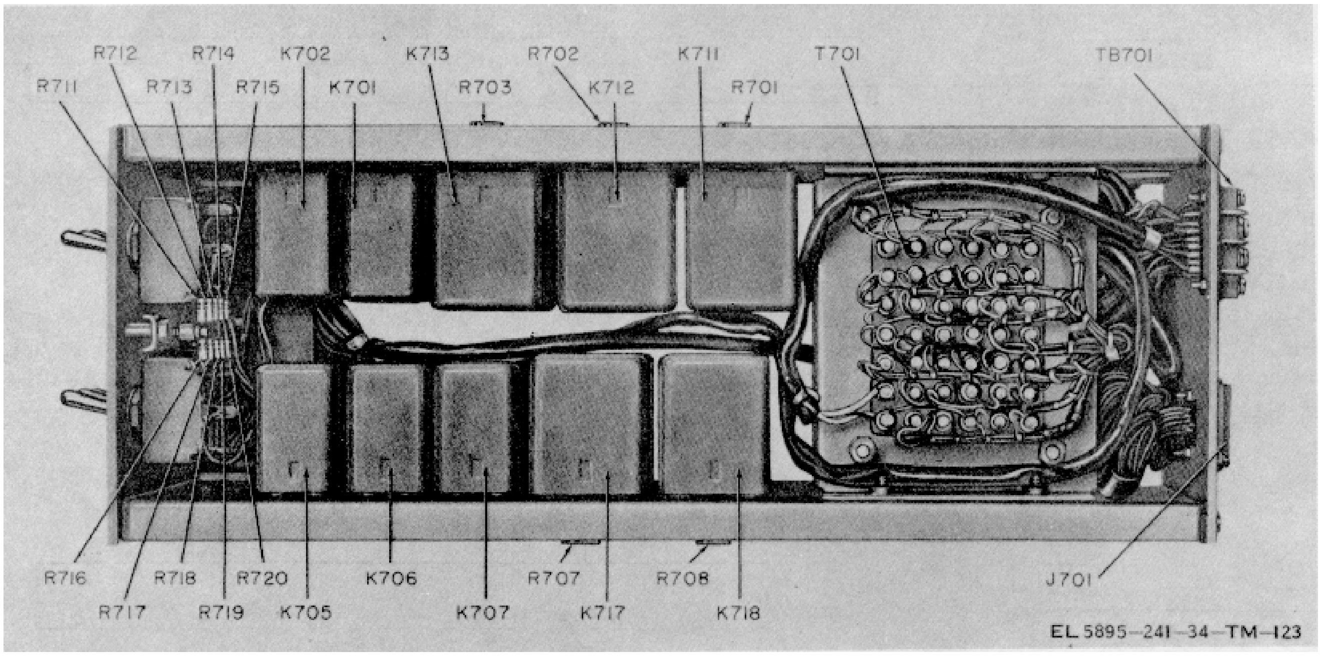


Figure 4-24. Control, Transmitter C-3446/FSW-8, top view, parts location.

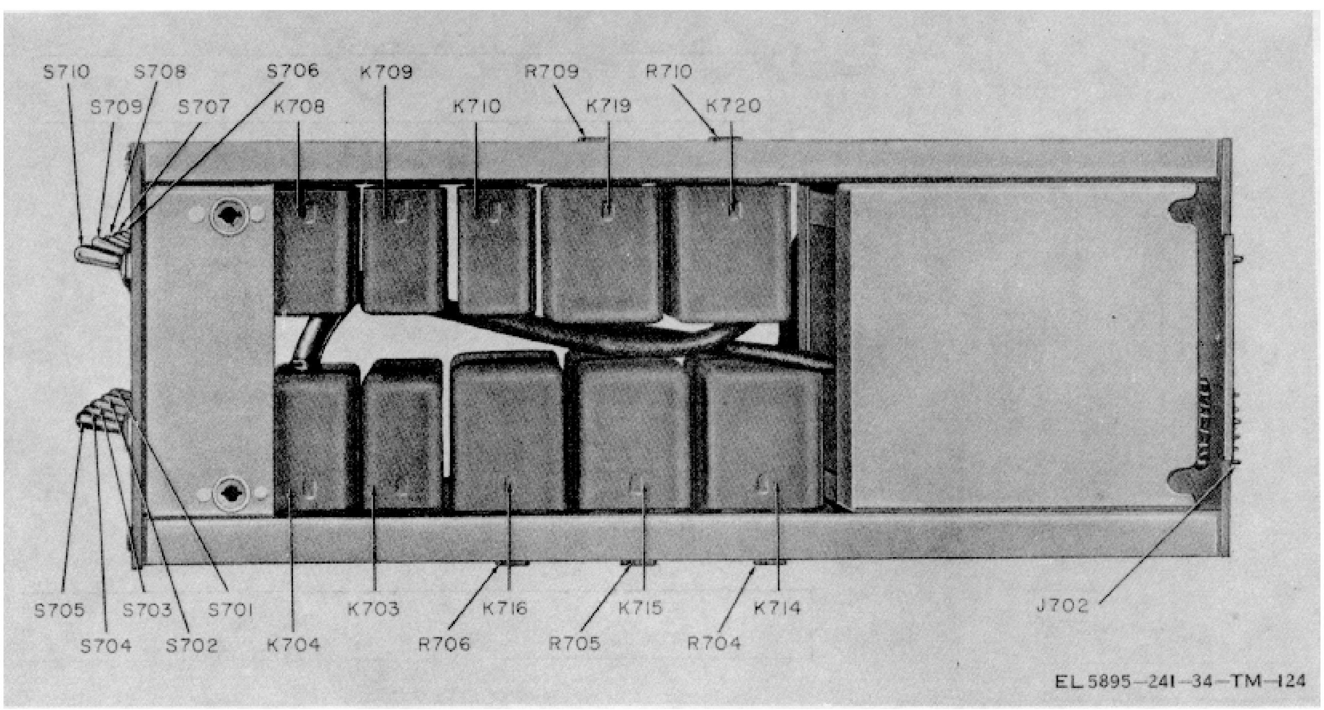


Figure 4-25. Control, Transmitter C-S446/FSW-8, bottom view, parts location.

with the measurements given in d below. Replace if defective (para 4-133h).

d. Dc Resistance of Loudspeakers.

Loudspeaker	Resistance (ohms) across input terminals
LS1401	13
LS1402	13

4-55. Terminal, Telephone TA-406/FSW-8

a. The TA-406/FSW-8 (fig. 4-30), mounted on the upper panels of both the CY-3020/FSW-8 and the CY-3019/FSW-8, contains the TELEPHONE switches and supervisory indicator lamps of 10 individual telephone control channels, buzzer DS1311, and impedance matching network Z1301. Refer to the troubleshooting data provided in paragraphs 4-10 and 4-15 and b below when performance of the telephone circuit test of the OA-2055/FSW-8 or OA-3014/ FSW-8 indicates a failure in the TA-406/FSW-8.

b. The dc resistance of impedance matching network Z1301 is as follows:

Terminals	Resistance (ohms)
7-10	100+10
8-10	27+3
9-10	12-+1
2-3	8.5+9

4-56. Control, Telephone Signal C-3435/FSW-8

The C-3435/FSW-8 (fig. 4-31 and 4-32) is used in both the OA-2055/FSW-8 and the OA-3014/FSW-8. It is mounted inside the OA-2055/FSW-

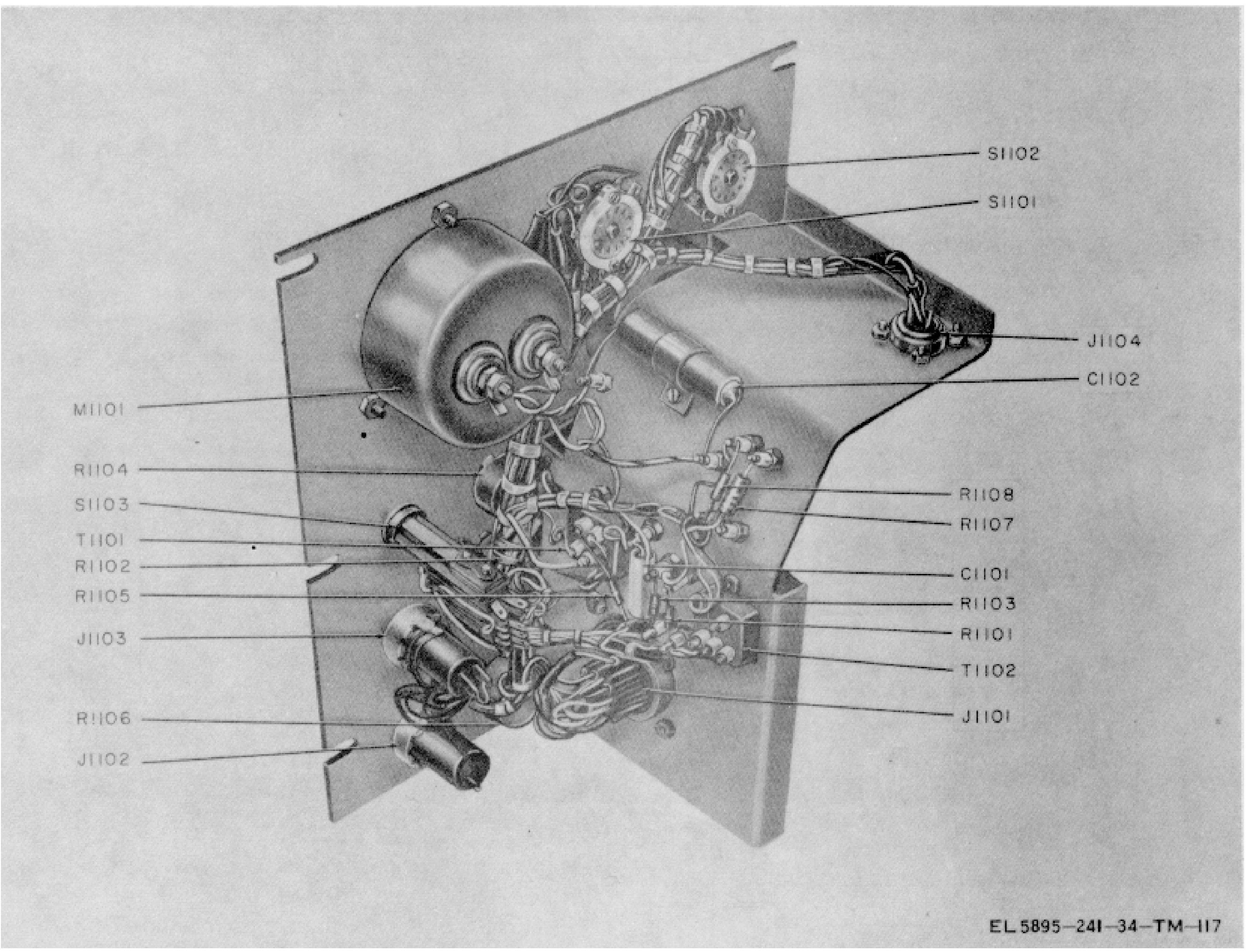


Figure 4-26. Console, Communications Control OA-2055/FSW-8, miscellaneous control panel, parts location.

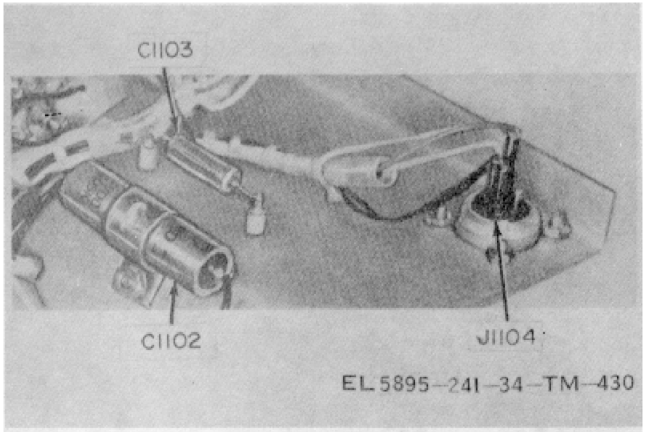


Figure 4-27. Console, Communications Control OA-2055A/FSW-8, miscellaneous control panel, added parts not on Console Communications Control OA-2055/FSW-8.

8 at the rear of the power supply drawer (fig. 1-5, TM-11-5895-241-12, and 4-2), and in the OA-3014/FSW-8, it is attached to the amplifier and power supply drawer (fig. 4-52). The C-3435/ FSW-8 contains ring generator Z601 and the individual ring and hold relays of 10 individual telephone channels. Refer to the troubleshooting data provided in paragraphs 4-57 and 4-58 when performance of the telephone circuits test of the OA-2055/FSW-8 or OA-3014/FSW-8 indicates a failure in the C-3435/FSW-8.

4-57. Test Equipment Required for C-3435/FSW-8

Electronic Multimeter TS-505/U and Test Set I-181 are required for testing or troubleshooting the C-3435/FSW-8.

4-58. Isolating Troubles for C-3435/FSW-8

a. Remove the power supply drawer from the OA-2055/F'SW-8 (para 4-120e), or the OA-3014/ FSW-8 (para 4-141h), to reach the C-3435/ FSW-8. Access to interior wiring and components is accomplished (without removing the unit from the power supply drawer) by releasing the two slide fasteners which retain the hinged upper chassis as illustrated in figure 4-31.

b. Arrange the TS-505/U as an ohm-meter

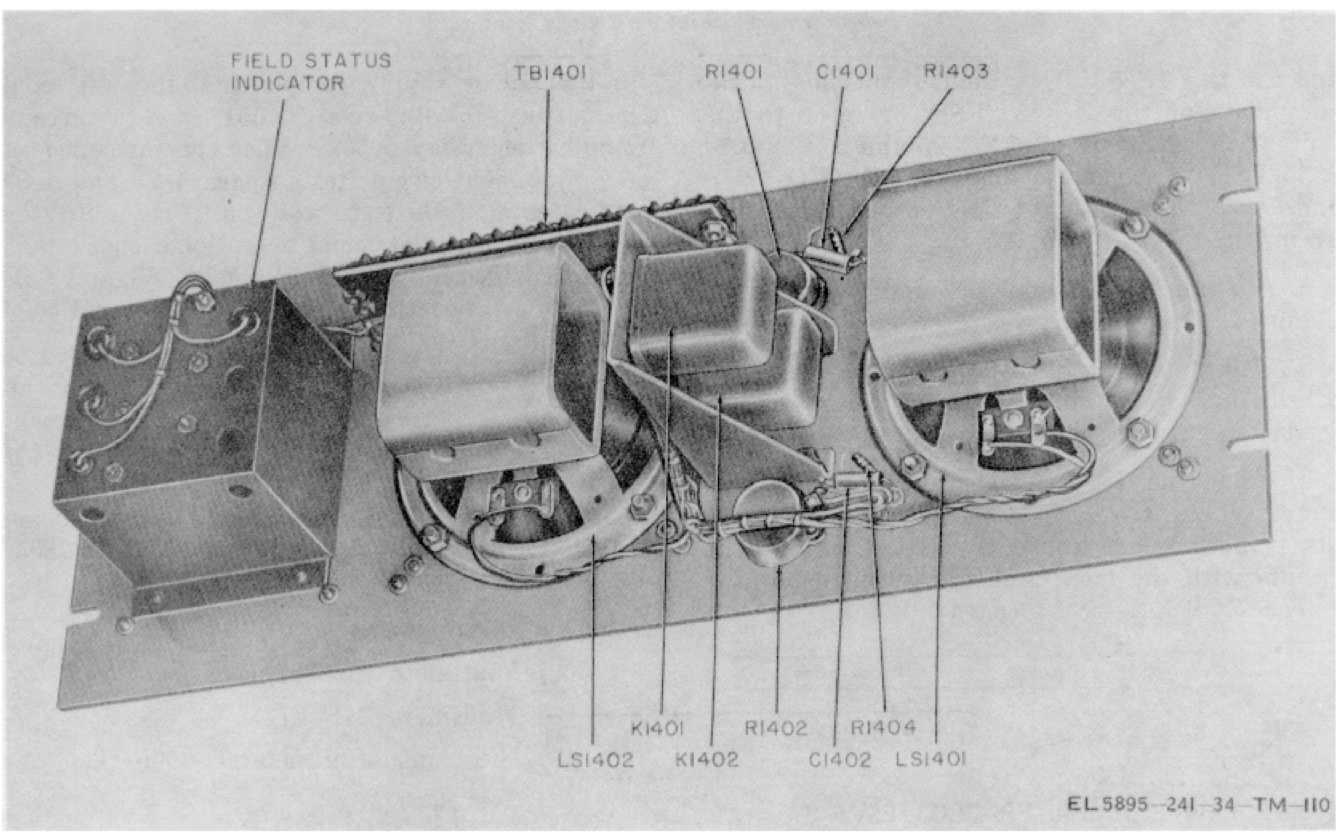


Figure 4-28. Console, Communication Control OA-2055/FSW-8, loudspeaker and indicator panel, rear view, parts location.

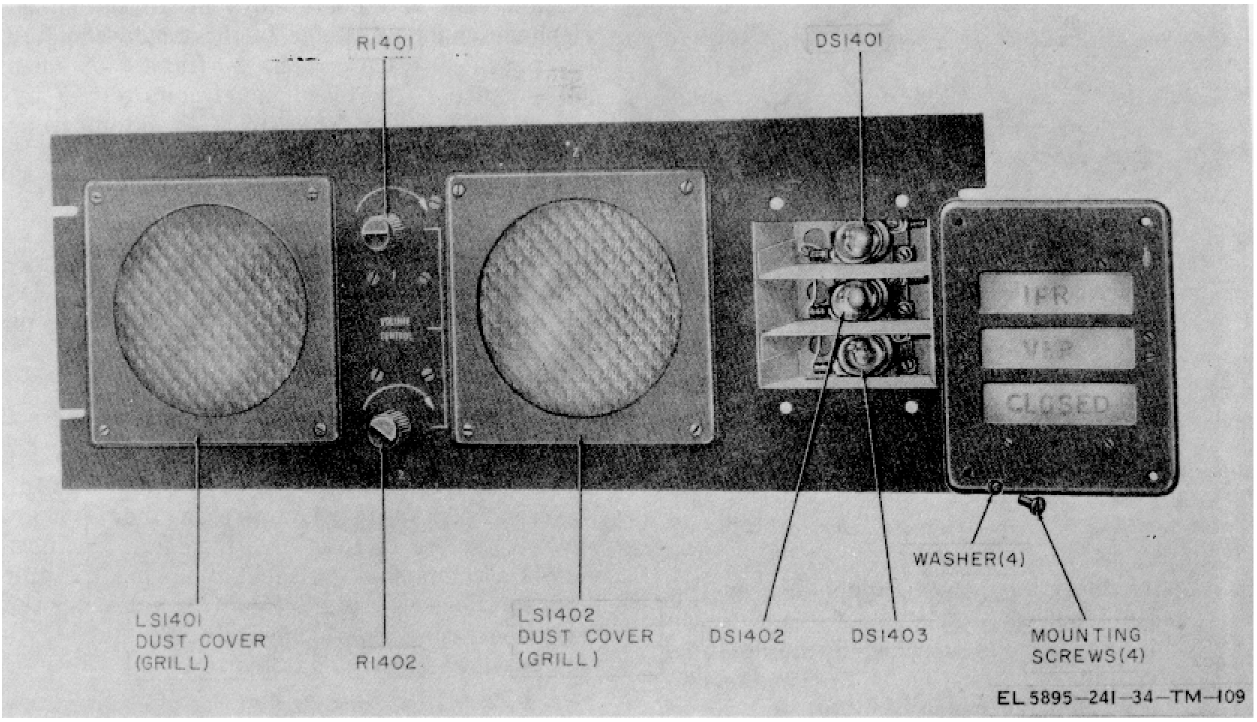


Figure 4-29. Console, Communication Control OA-2055/FSW-8, loudspeaker and indicator panel, front view, parts location.

and use the TS-505/U to make continuity measurements of the C-3435/FSW-8; refer to the unit wiring diagram (fig. FO-25 and to the OA2055/FSW-8 schematic diagram (fig. FO-12(1) and (2) or the OA-3014/FSW-8 schematic diagram (fig. FO-14(1) and (2).

c. A reading of 0 ohm or infinity should be obtained as applicable.

d. Using Test Set I-181, check the operation of the individual ring and hold relays as described in paragraph 4-169e.

e. Using the TS-505/U arranged as an ohmmeter, check the dc resistance across terminals 1 and 2 and 3 and 4 of Z601. Compare the results with the measurements given below and replace Z601 if defective (para 4-125c).

Terminals	Resistance (ohms)
1 2	3,000
3 4	Infinity

4-59. Power Supply PP-2803/FSW-8

The PP-2803/FSW-8 is mounted on the power supply drawer inside the CY-3020/FSW-8 (fig. 1-5, TM 11-5895-241-12, and 4-2. In addition 4-50 to the power supply components, the unit contains push-to-talk relay K501, and intercommunication relay K502. When performance of the equipment circuit tests (para 4-23 and 4-24 indicates a failure in the unit, refer to the troubleshooting data, and operational checks and tests provided in paragraphs 4-62, 4-63, and 4-64 below. Parts locations are shown in figures 4-34 and 4-36.

4-60. Test Equipment and Materials Required for PP-2803/FSW-8

The following test equipment and materials are required for testing operation of the PP-2803/ FSW-8:

a. Test Equipment.
(1) Multimeter TS-352/U.
(2) Multimeter ME-77/U.
(3) Electronic Multimeter TS-505/U.
(4) Test Set I-181.

b. Material.

(1) Connector, Plug, Electrical (P1) 26 female contacts.

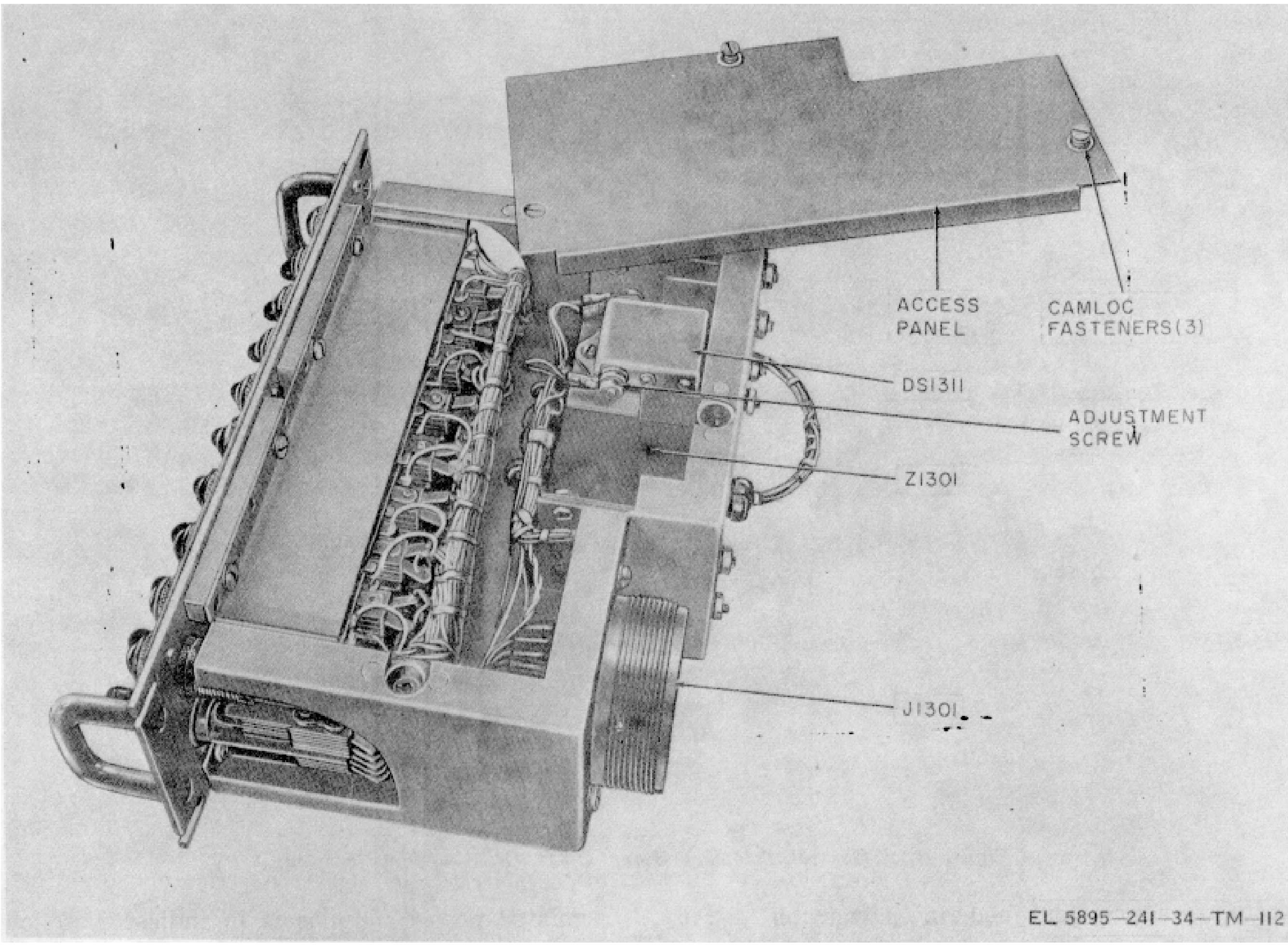


Figure 4-30. Terminal, Telephone TA-406/FSW-8, bottom view, parts location.

(2) Connector, Plug, Electrical (P2) 4 male contacts (FSN 5935-259-5970).

(3) Switch, Toggle (S1, S2) single pole-single throw.

(4) Resistor, Wirewound (R1, R3) 50 ohms, ± 5 %, 75 watts.

(5) Resistor, Wirewound (R2) 1.2 ohms, ± 5 %, 50 watts.

(6) Resistor, Wirewound (R4) 30 ohms, ± 5%, 11 watts (FSN 5905-837-7837).

(7) Resistor, Film (R5) 35 ohms, ± 1%, 2 watts.

(8) Resistor, Wirewound (R6) 1,700 ohms, ± 5%, 25 watts.

(9) Resistor, Wirewound (R7) 15 ohms, ± 5%, 26 watts (FSN 5905-843-2809).

(10) Wire, Electrical 14 gage AWG MWC14 (19).

4-61. Test Procedure for PP-2803/FSW-8

The procedures given in *a* through *e* below test the operation of the PP-2803/FSW-8 when it is removed from the OA-2055/FSW-8. If faulty operation is observed, refer to the procedure given in paragraph 4-62 for localizing the trouble.

a. Remove the power supply drawer from the CY-3020/FSW-8 (para 4-120*e*).

b. Connect the test equipment to the PP-2803/FSW-8 as shown in figure 4-33.

c. Adjust the ME-77/U selector switch to the 100 D.C. VOLTS position and perform the pre-test

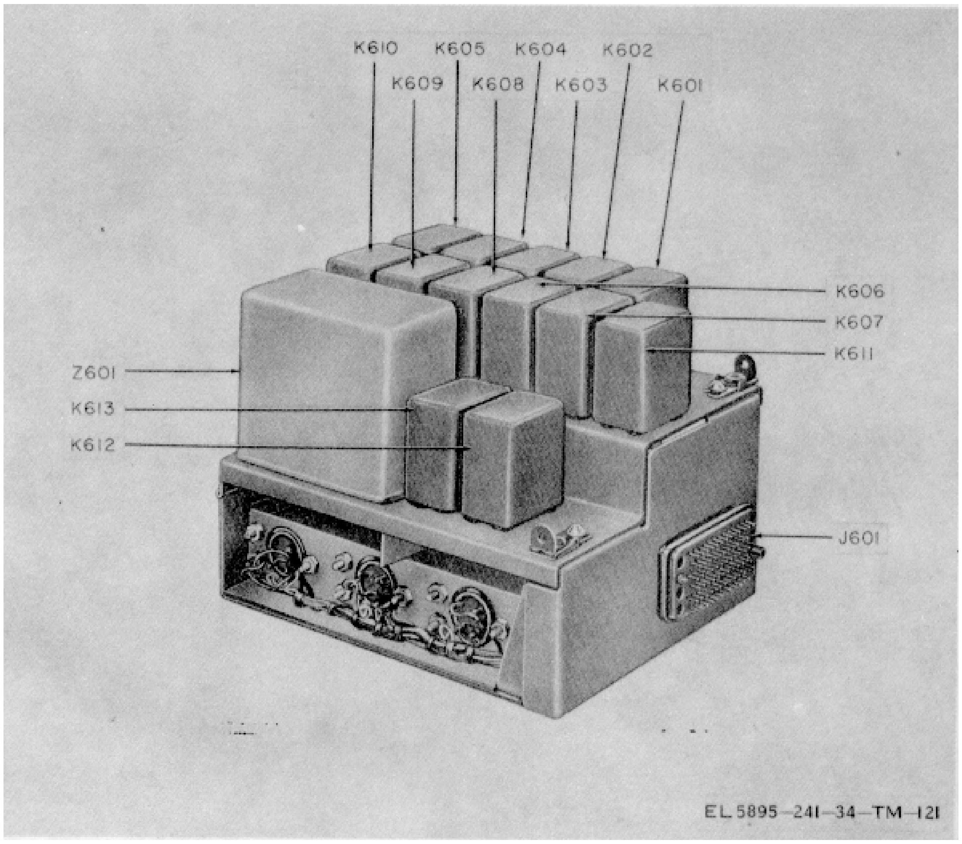


Figure 4-31. Control, Telephone Signal C-3435/FSW-8, parts location.

procedures outlined in paragraph 4-24*b* through *k*.

d. To simulate normal operating load on the PP-2803/FSW-8 -7.5-dc supply, operate test switch S1 to the on position. Observe that there is no variation in the -7.5-volt indication on the TS-505/U.

e. Adjust the TS-505/U range switch to the 20V position, and connect the dc probe to the -15 V (yellow) test jack. A reading of -15 volts should be observed. To simulate normal operating load on the PP-2803/FSW-8 -15-volt dc supply, operate test switch S2 to the on position. There should be no variation in the -15volt indication on the TS-505/U.

4-62. Localizing Troubles

If abnormal operation of the unregulated power supplies is indicated (para 4-61*a* through *e*), refer to the troubleshooting chart given in paragraph 4-25 for localizing the trouble to a faulty circuit component. If abnormal operation of the regulated power supplies is indicated, follow the instructions given in *a* through *c* below to localize the trouble.

a. Regulated -7.5-Volt DC Supply (fig. FO-12(3)).

(1) Check components of the regulator circuit: transistors Q507 and Q509 through Q512; resistors R511 and R524 through R527.

(2) Check components of the input reference circuit: transistor Q508, resistor R512, and diode CR513.

(3) Check components of the output reference circuit: transistors Q505, Q506, and Q510; resistors R507, R513, R516, R518, R523, and -7.5V ADJ control R515; capacitor C507; and diode CR617.

b. Regulated -15-Volt Dc Supply (fig. FO-12(3)).

(1) Check components of the regulator circuit: transistors Q501, Q502, and resistor R505.

(2) Check components of the reference circuit: transistors Q503 and Q504; resistors R506,

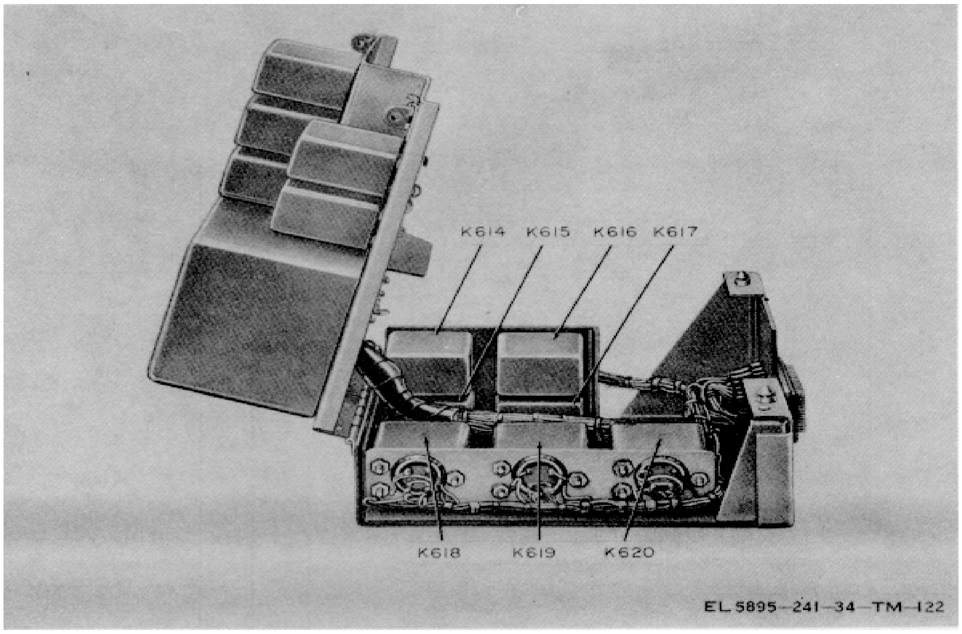


Figure 4-32. Control, Telephone Signal C-3435/FSW-8, interior view.

R508, R510, and -15V ADJ control R509; capacitor C508; and diode CR515.

(3) Check filter network: capacitor C504 and resistor R503.

c. Dc Resistance of Transformers and Coils.

Transformers and coils	Terminals	Resistance (ohms)
L501	1-2	2.5
L502	1-2	5.0
T501	1-2	3.0
	2-3	Less than 1
	1-3	3.2
	4-5	1.8
	6-7	Less than 1
	7-8	Less than 1
	6-8	Less than 1
	9-10	50

4-63. Transistor Voltage Measurements for PP-2803/FSW-8

The following chart lists the various transistors located in the PP-2803/FSW-8 and the operating voltages that should be obtained:

Transistors (PNP)	Dc voltage to ground		
	Emitter	Collector	Base
Q501	-15.0	-23.0	-16.0
Q502	-16.0	-23.0	-16.0
Q503	- 8.6	-16.0	- 8.7
Q504	- 6.0	- 8.6	- 6.2
Q505	- 8.4	-10.2	- 8.7
Q506	- 6.0	- 8.7	- 6.0
Q507	-10.2	-15.0	-10.5
Q508	-10.5	-15.0	-10.6
Q509	- 7.6	-10.2	- 8.2
Q510	- 8.2	-10.2	- 8.4
Q511	- 7.6	-10.2	- 8.2
Q512	-10.2	-15.0	-10.5

4-64. Dc Resistance of Diodes for PP-2803/FSW-8

The dc resistance of diodes located in the PP-2803/FSW-8 is shown in the following chart:

Type	Reference designations	Forward resistance (ohms)	Reverse resistance (ohms)
1N538 or Jan 1N538	CR505, CR506, CR507, CR508	5 max	10 meg min
1N1451 or USA1614R	CR501, CR502, CR503, CR504	5 max	10 meg min
1N251	CR510, CR511	5 max	10 meg min
AM1010 or USA1N1200	CR509, CR512	5 max	10 meg min

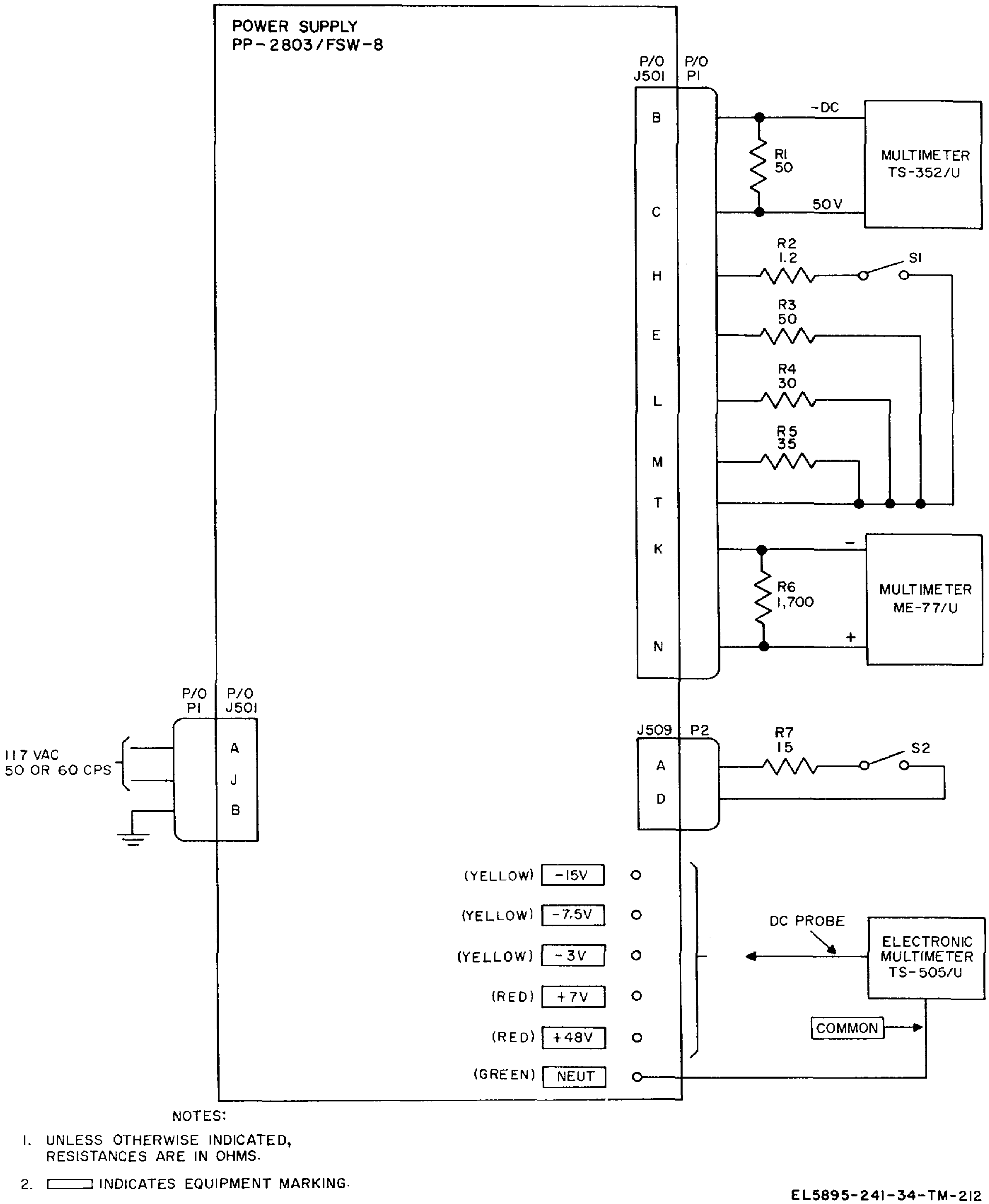


Figure 4-33. Power Supply PP-2803/FSW-8, test connection diagram.

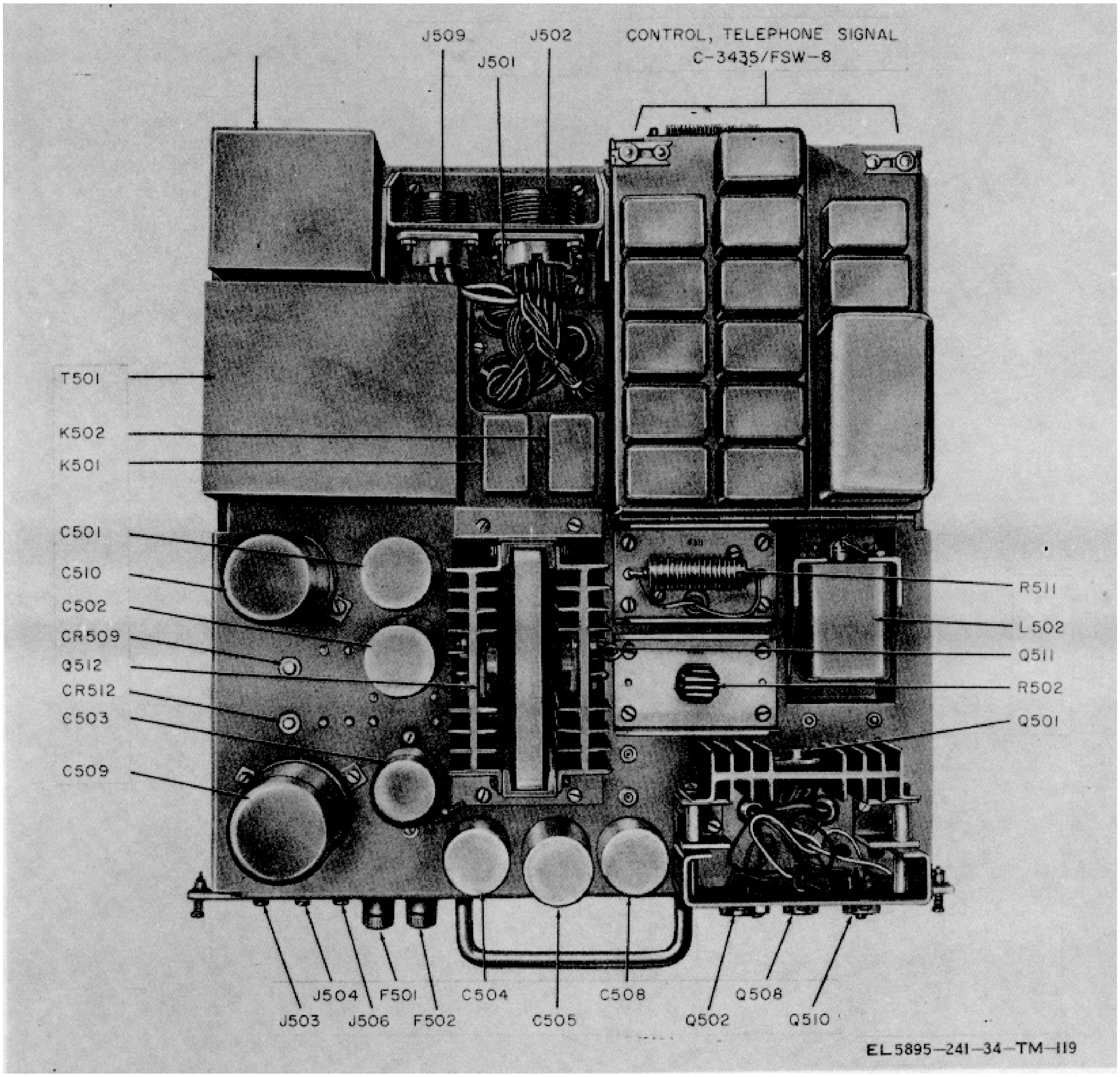


Figure 4-34. Power Supply PP-2803/FSW-8, top view, parts location.

4-65. Cabinet, Electrical Equipment CY-3020/FSW-8

a. The CY-3020/FSW-8 provides mounting facilities for each of the major electrical subassemblies of the OA-2055/FSW-8 (para 4-26 through 4-58). The CY-3020/FSW-8 also mounts the writing desk, telephone storage well, desk lamp assembly, power panel components (fig. 4-38 and 4-39), transformers T1001 and T1002, and the terminal boards (fig. 4-40) used to connect the electrical assemblies of the OA 2055/FSW-8 to the other units of the AN/FSW-8(V) communications system and to other external airfield communication equipment.

b. The dc resistance of transformers mounted in CY-3020/FSW-8 is as follows:

Transformer	Terminal	Resistance (ohms)
T1001	1-2 3-4	Less than 1
T1002	1-2 3-4	Less than 1

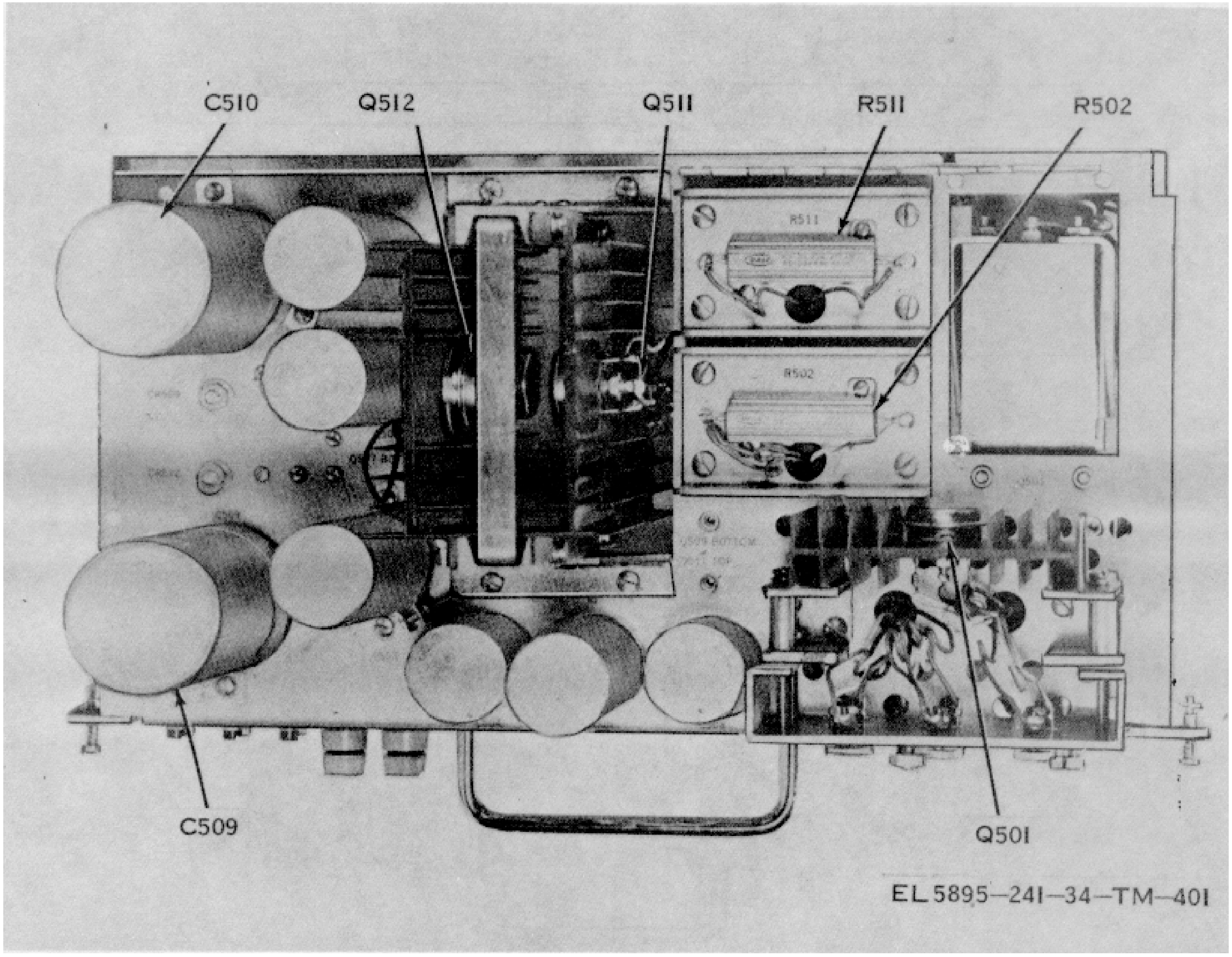


Figure 4-35. Power Supply PP-2803A/FSW-8, partial top view, parts changes differing from Power Supply PP-2803/FSW-8.

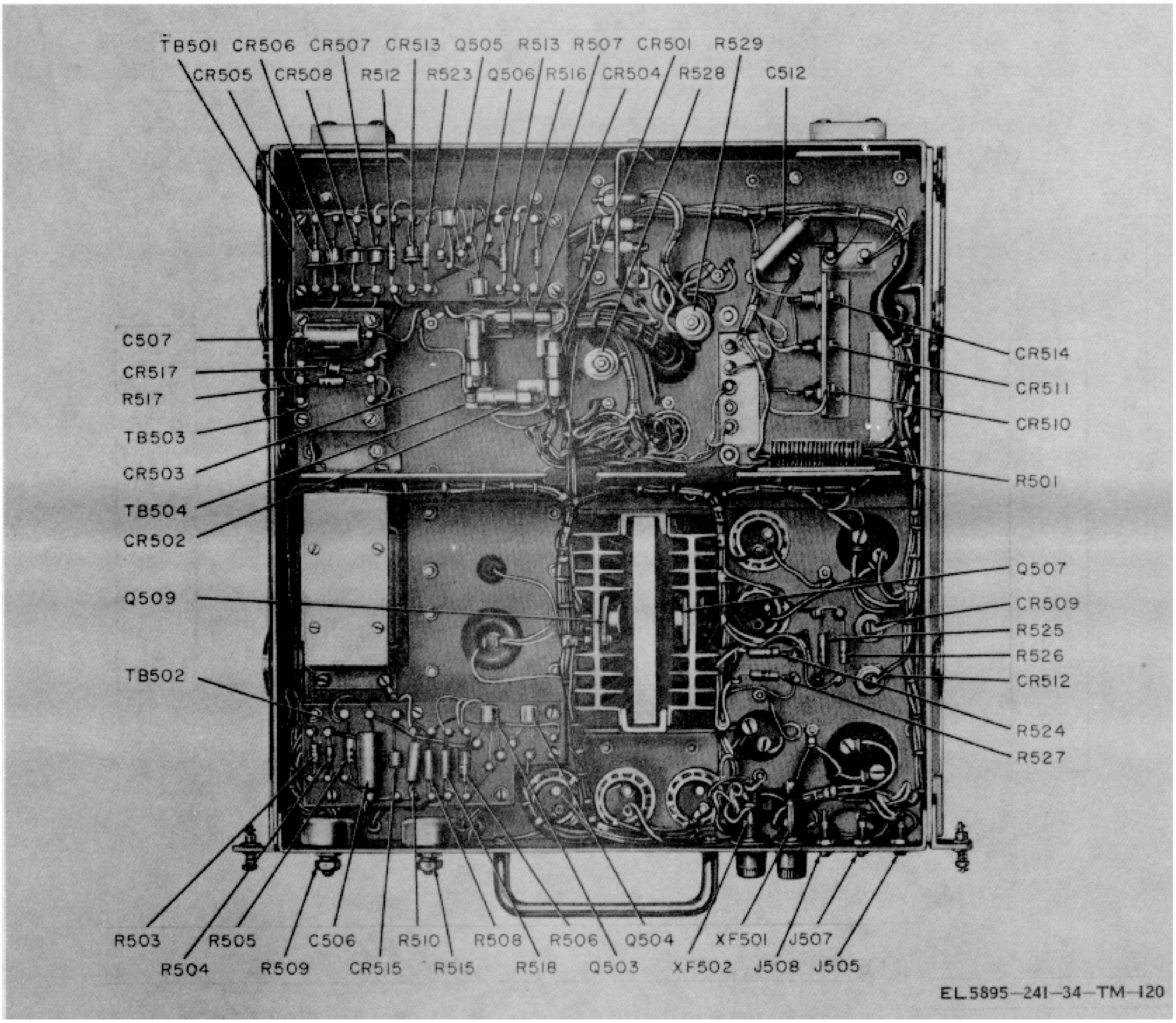


Figure 4-36. Power Supply PP-2803/FSW-8, bottom view, parts location.

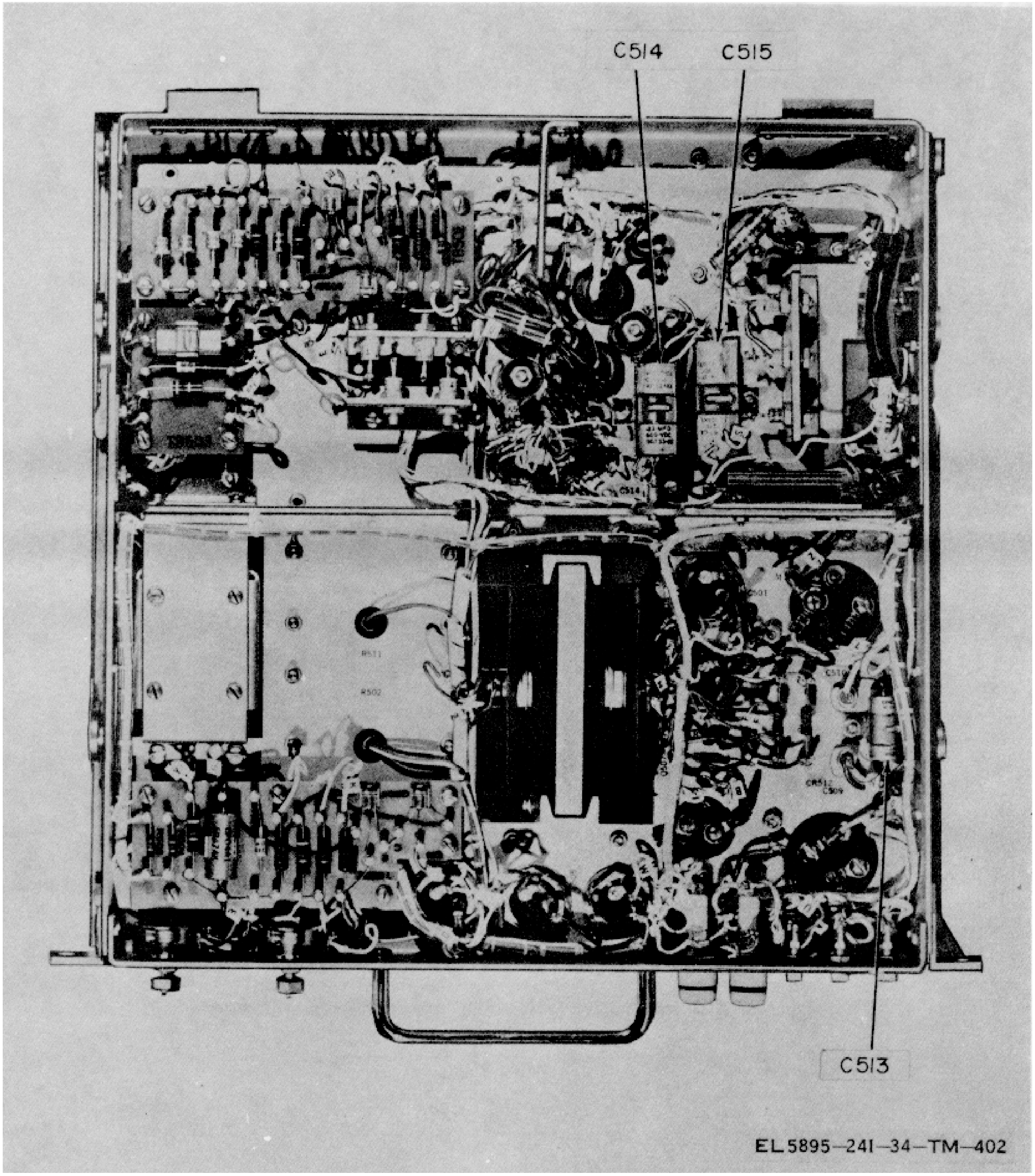


Figure 4-37. Power Supply PP-2803A/FSW-8, bottom view, added parts not on Power Supply PP-2803/FSW-8.

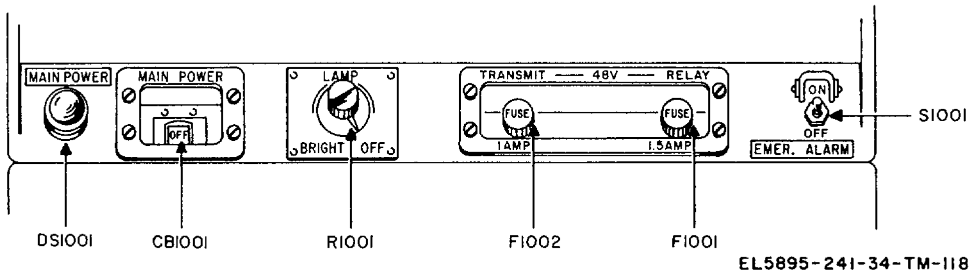


Figure 4-38. Console, Communication Control OA-2055/FSW-8, power panel, front view.

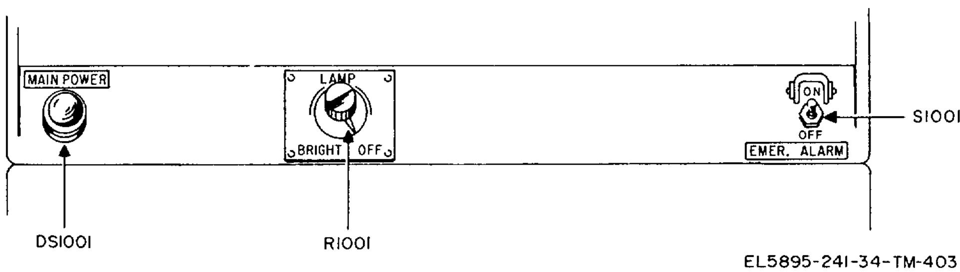


Figure 4-39. Console, Communication Control OA-2055A/FSW-8, power panel, front view.

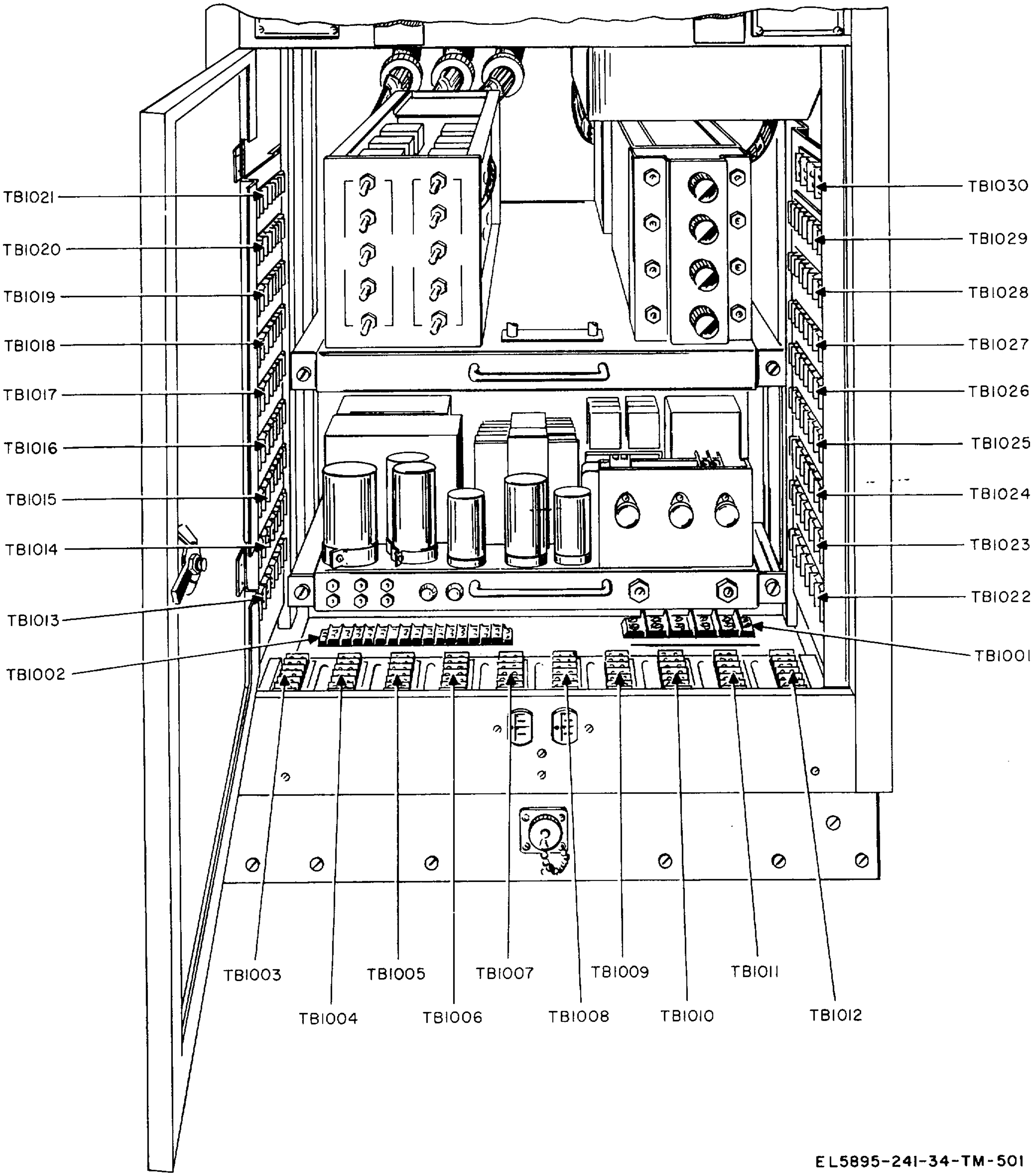


Figure 4-40. Console, Communication Control OA-2055/FSW-8, terminal board locations.

Section III. TROUBLESHOOTING COMMUNICATION STATION, REMOTE CONTROL OA-3014/FSW-8

4-66. General

This section contains information and procedures for troubleshooting the OA-3014/FSW-8 (fig. 4-41). Performance tests are given for each major circuit function of the equipment, with accompanying troubleshooting tables that indicate the symptom of failures, probable cause, and method of correction. References are made from each table to the applicable troubleshooting data and illustration provided for the assemblies of the equipment.

4-67. Receiving Circuit Test

Procedures are given in paragraphs 4-69, 4-70, and 4-71 for troubleshooting the receiving circuits of the OA-3014/FSW-8. Pretest procedures (para 4-69) are given for the test connections and preliminary control settings required, followed by an operational test (para 4-70) to determine performance of the receiving circuits. If unsatisfactory performance is observed during the test, refer to paragraph 4-71 for the localization of the trouble to a faulty component. Refer to the receiving function signal flow diagram (fig. 4-71) and parts locations (fig. 4-48).

4-68. Test Equipment and Material Required for Receiving Circuits

The following test equipment and materials are required for testing the operation of the receiving circuits of the OA-3014/FSW-8:

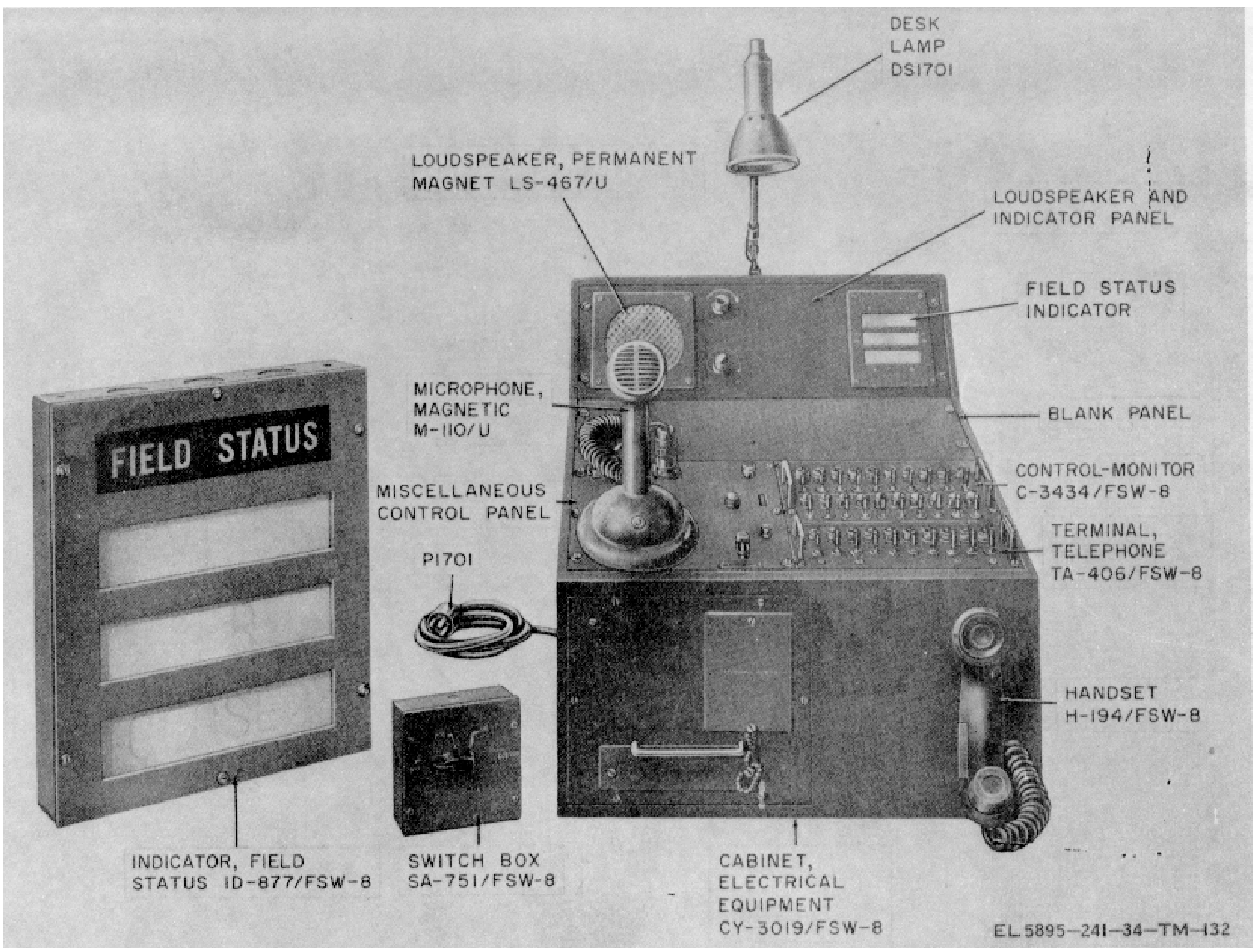


Figure 4-41. Communication Station Remote Control OA-3014/FSW-8, front view.

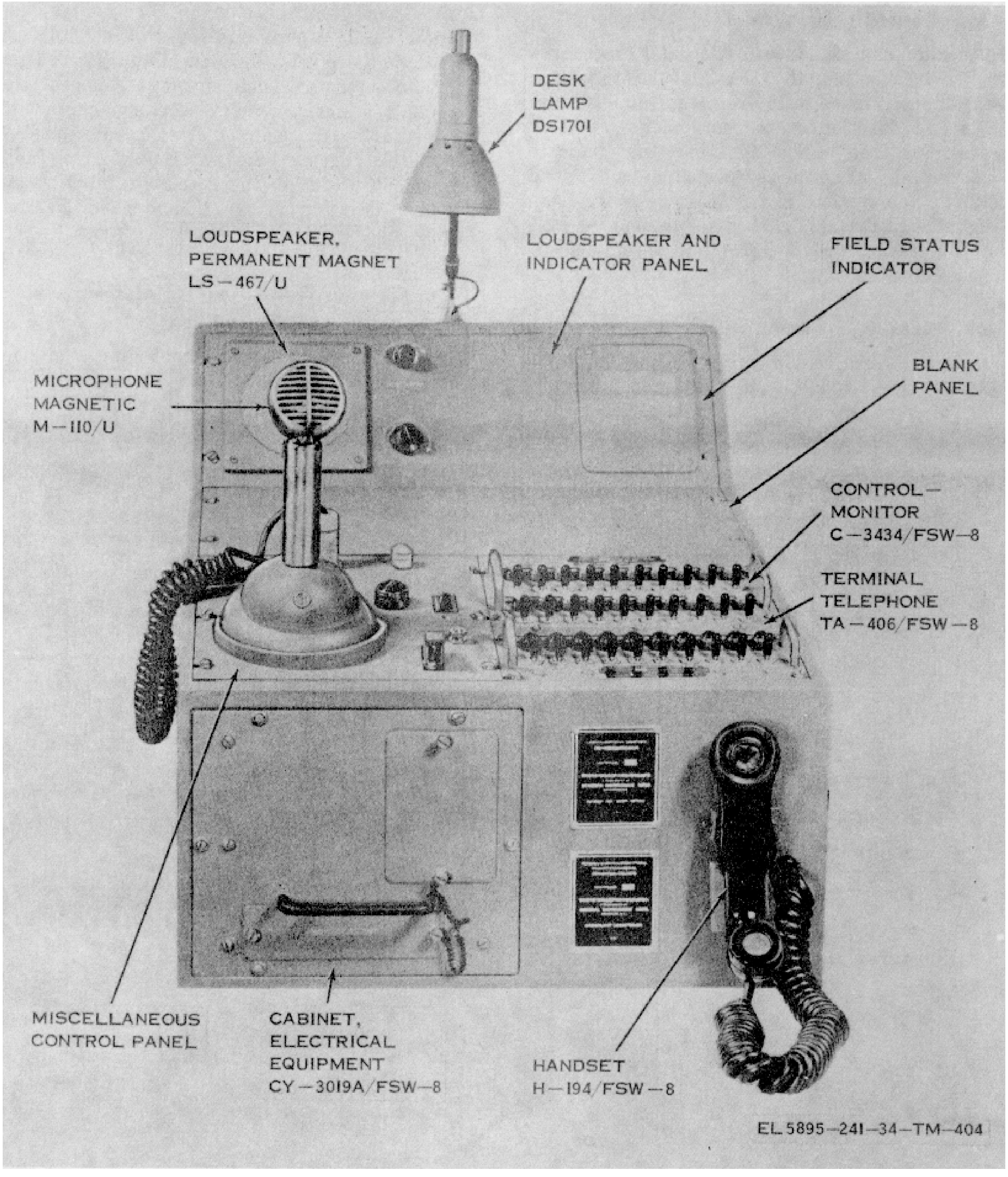


Figure 4-42. Cabinet, Electrical Equipment CY-3019A/FSW-8, front view.

a. Test Equipment.

(1) Audio Oscillator TS-382/U.
(2) Electronic Multimeter TS-505/U.

b. Material.

(1) Switch, Toggle (S1) single pole-single throw.
(2) Wire, Electrical 16 Gage AWG MWC16 (19).

4-69. Pretest Procedure for Receiving Circuits

Perform the procedure outlined in a through h below before making the receiving circuits test (para 4-70). Connect the test equipment to the OA-3014/FSW-8 as shown in figure 4-43.

a. Operate test switch S1 to the off position.

b. Operate MAIN POWER circuit breaker CB1901 (on miscellaneous control panel (fig. 4-41 and 4-42) to OFF.

c. Operate RECEIVE switch S1801 (on Control-Monitor C-3434/FSW-8 (fig. 4-48)) to OFF.

d. Operate TRANSMIT switch S1811 to OFF.

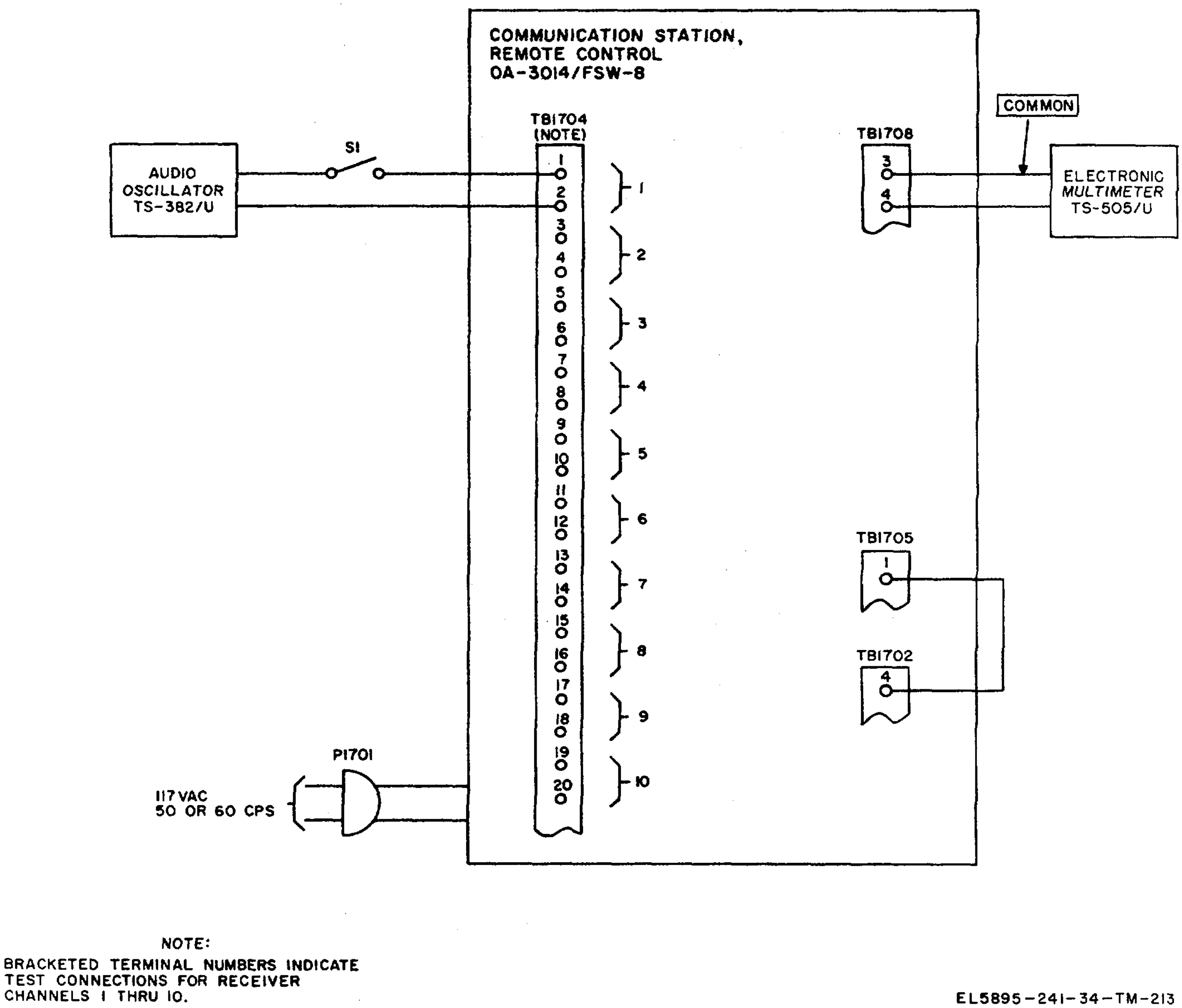


Figure 4-43. Communication Station, Remote Control OA-3014/FSW-8, receiving circuit test connection diagram.

e. Operate loudspeaker VOLUME CONTROL resistor R2001 (on loudspeaker and indicator panel (fig. 4-41 and 4-42) to the midrange position.

f. Adjust the TS-505/U range switch to 4V and the function switch to AC. Connect the COMMON lead and AC probe to the output terminals of the TS-382/U.

g. Adjust the TS-382/U for 1,000-cps output at a level of 0 dbm (.7 volts rms) as indicated on the TS-505/U.

h. Turn on the power to the TS-382/U and operate MAIN POWER circuit breaker CB1901 to ON.

4-70. Test Procedure for Receiving Circuits
(fig. 4-43)

Perform the procedures given in a through h below to test the operation of the OA-3014/FSW-8 receiving circuits. When a failure is observed, refer to paragraph 4-71 for the localization of the fault to the specific unit or component involved.

a. Operate test switch S1 to the on position and observe that the following conditions exist:

(1) The RECEIVE supervisory indicator lamp DS1801 illuminates.

(2) The TS-505/U indicates a minimum of +0.7 volt rms.

(3) No audio signal is heard over the OA-3014/FSW-8 loudspeaker.

b. Operate RECEIVE switch S1801 to SPEAKER. A clear, sharp tone should be heard over the loudspeaker.

c. Operate loudspeaker VOLUME CONTROL resistor R2001 both clockwise and counterclockwise. The intensity of the tone noted in b above should increase or decrease as the control is rotated.

d. Operate TRANSMIT switch S1811 to OPERATE. RECEIVE supervisory indicator lamp DS1801 should extinguish and no audio signal should be heard over loudspeaker.

e. Operate RECEIVE switch S1801 and TRANSMIT switch S1811 to OFF.

f. Operate test switch S1 to the off position.

g. Operate MAIN POWER circuit breaker CB1901 to OFF.

h. Repeat the pretest procedures outlined in *a* through *g* above and connect the TS-382/U alternately to the corresponding terminal board connection points for radio receiver channels No. 2 through 10.

4-71. Localizing Trouble in Receiver Circuits

a. General. The following chart (*b* below) gives the symptoms of failure which may be observed during the receiving circuit test (para 4-70), the probable cause of the failure, and the method of correction. The possible troubles indicate defective circuits, stages, or components that may cause each symptom. The corrective measures indicate methods used to localize the trouble to the defective component part.

b. Receiving Circuits Troubleshooting Chart.

Symptom	Probable Trouble	Correction
RECEIVE supervisory indicator lamp DS1801 does not illuminate and no readings are obtained on the TS-505/U (para 4-70*a*).	*a.* Receiver preamplifier A1601 (fig. 4-12) defective.	*a.* Remove Receiver preamplifier A1601 (para 4-143*a*) and replace.
	b. Connector J1801 (fig. 4-49) improperly seated.	*b.* Check the seating of connector J1801 and replace the connector if defective.
	c. Audio input connection from distant radio receivers or from the OA-2055/FSW-8 faulty.	*c.* Check the seating of connectors P1811 and J1811 (fig. 4-49). Replace if defective.
	d. Transformer T1801 (fig. 4-49) defective.	*d.* With the AN/URM-105 arranged as an ohmmeter, check the dc resistance of transformer T1801 (para 4-89*b*). Replace if defective (para 4-143 and fig. 4-100).
	e. Power Supply PP-2795/FSW-8 defective.	*e.* Check the operation of Power Supply PP-2795/FSW-8 (para 156). Replace if defective (para 4-14/*h* and fig. 4-98).
	f. Transmitting channel of the OA-2055/FSW-8 defective.	*f.* Check the operation of the OA-2055/FSW-8 transmitting circuits (para 4-93).

Symptom	Probable Trouble	Correction
RECEIVE supervisory indicator lamp DS1801 illuminates but no reading is obtained on the TS-505/U.	*a.* Connector P1812 improperly seated. *b.* Connector J1801 (fig. 4-49) defective. *c.* Terminal 4 of terminal board TB1708 (fig. 4-65) open.	*a.* Check the seating of connectors P1812 and J1812 (fig. 4-49). Replace the connector if defective (para 4-143 and fig. 4-100). *b.* Check the seating of connectors J1801 and P1601. Replace the connector if defective. *c.* With the AN/URM-105, check the continuity of wiring between terminals 4 of terminal board TB1708 and pin e of connector P1812. Replace any defective wiring.
RECEIVE supervisory indicator lamp DS1801 does not illuminate, But normal readings are obtained on theTS-505/U.	RECEIVE supervisory indicator lamp DS1801 (fig. 4-48) defective.	Replace RECEIVE supervisory indicator lamp DS1801 (para 4-4*a*).
Audio tone is not heard over loudspeaker LS2001 when RECEIVE switch S1801 is operated to the SPEAKER position. ALL other indications are normal.	*a.* RECEIVE switch S1801 (fig. 4-48) defective. *b.* Amplifier Assembly AM-2817/FSW-8 defective (fig.4-52). *c* Transformer T2401 (fig. 4-52) defective. *d* Power Supply PP-2795/FSW-8 defective. *e.* Transformer T2402 (fig. 4-52) defective. *f.* Loudspeaker LS2001 (fig. 4-57 and 4-58) defective. *g.* VOLUME CONTROL potentiometer R2001 defective. *h.* SPEAKER GAIN potentiometer R2426 (fig. 4-53) defective.	*a.* Check the continuity of RECEIVE switch S1801. Replace if defective (para 4-143 and fig. 4-100). *b.* Check the operation of Amplifier Assembly AM-2817/FSW-8 (para 166). Replace if defective (para 4-145*b* and fig. 4-102). *c.* With the AN/URM-105 arranged as an ohmmeter, check the dc resistance of transformer T2401 (para 4-97). Replace if defective (para 4-146*i* and fig. 4-103). *d.* Check the operation of Power Supply PP-2795/FSW-8 (para 4-83 Replace if defective (para 4-141*h* and fig. 4-98). *e.* With the AN/URM-105 arranged as an ohmmeter, check the dc resistance of transformer T2402 (para 4-97). Replace if defective (para 4-146*i* and fig. 4-103). *f.* Replace loudspeaker LS2001 (para 4-142*h* and fig. 4-99). *g.* Check VOLUME CONTROL resistor R2001. Replace if defective (para 4-142*i* and fig. 4-99). *h.* Check SPEAKER GAIN potentiometer R2426. Replace if defective (para 4-146*e* and fig. 4-103).
Loudspeaker operation cannot be selected by RECEIVE switch S1801.	*a.* RECEIVE switch S1801 (fig. 4-48) defective. *b.* Current limiting resistor R1801 defective (fig. FO-12(1)).	*a.* Check the continuity of RECEIVE switch S1801. Replace if defective (para 4-143 and fig. 4-100). *b.* Check resistor R1801 and replace if defective (fig. 4-50).
Audio tone heard over loudspeaker is erratic when VOLUME CONTROL potentiometer is adjusted.	*a.* VOLUME CONTROL potentiometer R2001 (fig. 4-57) defective. *b.* Power Supply PP-2795/FSW-8 defective.	*a.* Check VOLUME CONTROL potentiometer R2001. Replace if defective (para 4-142*j* and fig. 4-99). *b.* Check the operation of Power Supply PP-2795/FSW-8 (para 4-83). Replace if defective (para 4-141*h* and fig. 4-98).

Symptom	Probable Trouble	Correction
RECEIVE supervisory indicator lamp DS1801 does not extinguish when TRANSMIT switch S1811 is operated to the OPERATE position.	*a.* Push-to-talk relay K1801 (fig. 4-49) defective.	*a.* Check the operation of push-to-talk relay K1801 (para 4-169*i*) Replace if defective (para 4-143*h* and fig. 4-100).
	b. TRANSMIT switch S1811 (fig. 4-48) defective.	*b.* Check the continuity of TRANSMIT switch S1811. Replace if defective (para 4-143 and fig. 4-100).
	c. Power Supply PP-2795/FSW-8 defective.	*c.* Check the operation of Power Supply PP-2795/FSW-8 (para 4-83). Replace if defective (para 4-141*h* and fig. 4-98).

4-72. Transmitting Circuits Test

Procedures are given in paragraphs 4-74, 4-75, and 4-76 for troubleshooting the transmitting circuits of the OA-3014/FSW-8 with the equipment disconnected from the OA-2055/FSW-8. Pretest procedures (para 4-74) are given for the test connections and preliminary control settings required, followed by an operational test (para 4-75) to determine performance of the transmitting circuits. If unsatisfactory performance is observed during the test, refer to the localization of the trouble to a faulty component (para 4-76). Refer to the AN/FSW-8(V) transmitting function signal flow diagram (fig. 4-68) and the control function diagram (fig. 4-70).

4-73. Test Equipment and Materials Required for Transmitting Circuits

The following test equipment and materials are required for testing operation of the transmitting circuits of the OA-3014/FSW-8:

a. Test Equipment.
(1) Audio Oscillator TS-382/U.
(2) Electronic Multimeter TS-505/U.
(3) Attenuator TS-402/U.
(4) Voltmeter, Meter ME-30/U.
(5) Multimeter TS-352/U.
(6) Multimeter ME-77/U.

b. Material.

(1) Connector, Plug, Electrical (P1) 5 male contacts (FSN 5935-823-0161).
(2) Switch, Toggle (S1) Single pole-single throw (FSN 5930-655-1522).
(3) Resistor, Film (R1) 499 ohms, ± 1%, 2 watts.
(4) Resistor, Film (R2) 243 ohms, ± 1%, 2 watts.
(5) Wire Electrical 16 Gage AWG MW-C16(19).

4-74. Pretest Procedure for Transmitting Circuits

Perform the procedures outlined in *a* through *h* below before making the transmitting circuits test (para 4-75).

a. Operate MAIN POWER circuit breaker CB-1901 to the OFF position.

b. Disconnect Microphone, Magnetic M-110/U from connector J1901, and connect the test equipment to the OA-3014/FSW-8 as shown in figure 4-44.

c. Adjust the TS-402/U to insert 50-db attenuation.

d. Adjust the TS-505/U range switch to 2V and the function switch to AC.

e. Adjust the ME-30/U range selector switch to 3.

f. Adjust the TS-352/U function switch to OHMS and the range switch to RX1.

g. Adjust the ME-77/U selector switch to the 100 D.C. VOLTS range.

h. Adjust the TS-382/U for 1,000-cps output at a level of +3.0 volts as indicated on the TS-505/U.

4-75. Test Procedure for Transmitting Circuits fig. 4-44)

Perform the procedures given in a through h below to test the operation of the transmitting circuits. Where a failure is observed, refer to paragraph 4-76 for the localization of the fault to a specific unit or component involved.

a. Turn on the power to all test equipment, and operate MAIN POWER circuit breaker CB-1901 to ON.

b. A reading of +0.3 volts minimum should be indicated on the ME-30/U.

c. Disconnect the test equipment from connector J1901 and reconnect the M-110/U to J1901. Speak briefly into the microphone. The ME-30/U should show a definite indication.

d. Depress the push-to-talk switch of the M-110/U. The TS-352/U should indicate 0 ohm.

e. Operate test switch S1 to the on position. TRANSMIT supervisory indicator lamp DS1811 should illuminate.

f. Operate TRANSMIT switch S1811 to OPERATE. The ME-77/U should indicate +48 volts.

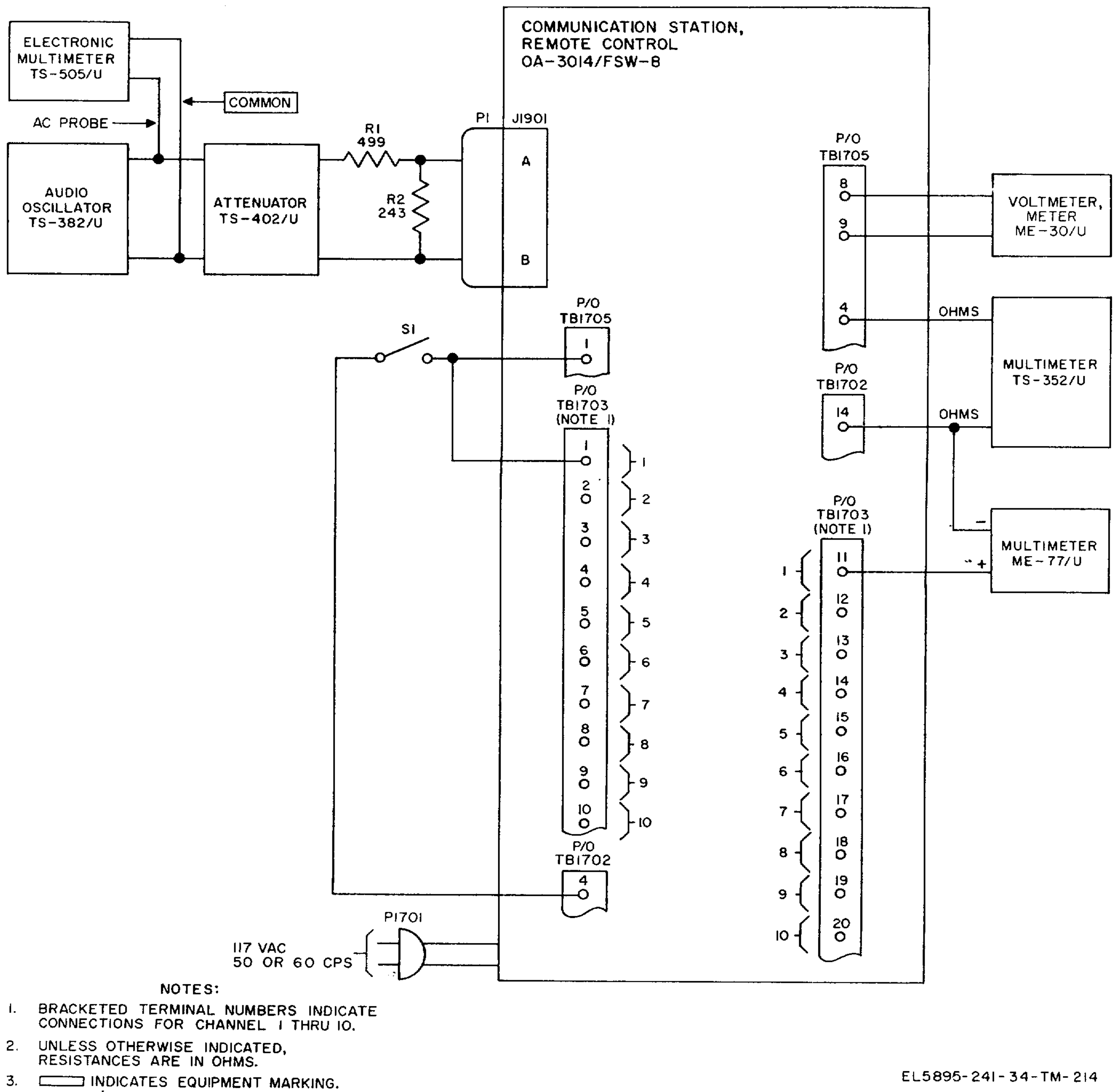


Figure 4-44. Communication Station, Remote Control OA-3014/FSW-8, transmitting circuits test connection diagram.

g. Operate test switch S1 to the off position. The ME-77/U should show no indication.

h. Connect the test equipment to terminal board TB1703 at the corresponding terminals for each radio transmitter channel and repeat *c* through *g* above for channels No. 2 through 10. Operate the corresponding TRANSMIT switch for each radio channel tested.

4-76. Localizing Troubles in Transmitting Circuits

a. General. The following chart (*b* below) gives the symptoms of failure which may be observed during the transmitting circuit test (para 4-75), the probable cause of the failure, and the method of correction. The possible troubles indicate defective circuits, stages, or components that may cause each symptom. The corrective measures indicate methods used to localize the trouble to the defective component part.

b. Transmitting Circuits; Troubleshooting Chart.

Symptom	Probable Trouble	Correction
No indication is observed on the ME-30/U when the push-to-talk switch Microphone, Magnetic M-110/U is depressed.	*a.* Transmitting element of Headset-Microphone M-110/U defective.	*a.* Check the operation of Microphone, Magnetic M-110/U and replace if defective (para 4-141*b* and fig. 4-98).
	b. MIKE connector improperly seated (fig. 4-56).	*b.* Check the seating of MIKE connector J1901. Replace if defective (para 4-144*b* and fig. 4-101).
	c. Amplifier-Assembly AM-2817/FSW-8 defective (fig. 4-52).	*c.* Check the operation of Amplifier Assembly AM-2817/FSW-8 (para 4-93). Replace if defective (para 4-145*b* and fig. 4-102).
	d. Transformer T2403 (fig. 4-52) defective.	*d.* With the AN/URM-105 arranged as an ohmmeter, check the dc resistance of transformer T2403 (para 4-97). Replace if defective (para 4-146 and fig. 4-103).
	e. Power Supply PP-2795/FSW-8 defective.	*e.* Check the operation of Power Supply PP-2795/FSW-8 (para 4-83). Replace if defective (para 4-141*h* and fig. 4-98).
No indication is observed on the TS-352/U when the push-to-talk switch of Microphone, Magnetic M-110/U is depressed.	*a.* Microphone, Magnetic M-110/U push-to-talk switch defective.	*a.* Check the push-to-talk switch on Microphone, Magnetic M-110/U. Replace M-110/U if defective (para 4-141*b* and fig. 4-98).
	b. Wiring from terminal 4 of terminal board TB1705 (fig. 4-65) to terminal 5 of terminal board TB1901 (fig. 4-56) defective.	*b.* Check the wiring between terminal 4 of terminal board TB1705 and terminal 5 of terminal board TB1901 or to pin E of connector J1901. Replace any defective wiring.
No indication is observed on the ME-77/U when test switch S1 is operated to the on position and TRANSMIT switch S1811 is in the OPERATE position.	*a.* Push-to-talk relay K1801 (fig. 4-49) defective.	*a.* Check the operation of push-to-talk relay K1801 (para 4-169). Replace if defective (para 4-143*h* and fig. 4-100).
	b. TRANSMIT switch S1811 (fig. 4-48) defective.	*b.* Check the continuity of TRANSMIT switch S1811. Replace if defective (para 4-143 and fig. 4-100).
	c. Power Supply PP-2795/FSW-8 defective.	*c.* Check the operation of Power Supply PP-2795/FSW-8 (para 4-83). Replace if defective (para 4-141*h* and fig. 4-98).
	d. Push-to-talk switch to Microphone, Magnetic M-110/U defective.	*d.* Check the operation of Microphone, Magnetic M-110/U. Replace if defective (para 4-141*b* and fig. 4-98).

Symptom	Probable Trouble	Correction
TRANSMIT supervisory indicator lamp DS1811 does not illuminate when TRANSMIT switch S1811 is in the OPERATE position and test switch S1 is in the on position.	*a.* TRANSMIT supervisory indicator lamp DS1811 (fig. 4-48) defective. *b.* TRANSMIT switch S1811 (fig. 4-48) defective. *c.* Push-to-talk relay K1801 (fig. 4-49) defective. *d.* Power Supply PP-2795/FSW-8 defective.	*a.* Replace TRANSMIT supervisory indicator almp DS1811 (para 4-4). *b.* Check the continuity of TRANS-MIT switch S1811. Replace if defective (para 4-143 and fig. 4-100). *c.* Check the operation of push-to-talk relay K1801 (para 4-33*j*. Replace if defective (para 4-143*h* and fig. 4-100). *d.* Check the operation of Power Supply PP2795/FSW-8 (para 4-83). Replace if defective (para 4-141*h* and fig. 4-98).

4-77. Telephone Circuits Test

Procedures are given in paragraphs 4-78 and 4-79 for troubleshooting the telephone circuits of the OA-3014/FSW-8. Pretest procedures (para 4-79*a*) are given for the test connections and preliminary adjustments required, followed by an operational test (para 4-78*b*) to determine performance of the telephone circuit. If unsatisfactory performance is observed during the test, refer to paragraph 4-79 for localization of the trouble to a faulty component. When performing the test, refer to the OA-2055/FSW-8 telephone function signal flow diagram (fig. FO-3) and to the telephone circuit test connection diagram (fig. 4-45). The components of the individual telephone channels are shown on figure FO-12(1) and (2).

4-78. Pretest Procedure for Telephone Circuits

a. Connect the test equipment to the OA-3014/ FSW-8 as shown in figure 4-45. Operate each TELEPHONE switch to OFF. Operate MAIN POWER circuit breaker CB1901 to the ON position.

b. Perform the procedures given in (1) through (8) below to test the operation of the telephone circuits. When a failure is observed, refer to paragraph 4-78 for localization of the fault to a specific unit or component.

(1) Operate TELEPHONE switches S1301 to TALK.

(2) Depress the push-to-talk switch on Handset H-194/FSW-8 and speak into the mouthpiece. Speech should be heard in the TA-312/PT handset.

(3) Depress the push-to-talk switch on the TA-312/PT handset and speak into the mouthpiece. Speech should be heard in the receiver of H-194/FSW-8.

(4) Operate TELEPHONE switch S1301 to RING. The buzzer of the TA-312/PT should sound as long as S1301 is held in the RING position. TELEPHONE supervisory indicator lamp DS1301 should illuminate and remain illuminated; the OA-3014/FSW-8 buzzer DS1311 should sound as long as S1301 is held in the RING position.

(5) Operate TELEPHONE switch S1301 to TALK and OFF. TELEPHONE supervisory indicator lamp DS1301 should extinguish.

(6) Turn the hand crank generator of the TA-312/PT. Buzzer DS1311 should sound so long as the hand crank generator is turned. TELEPHONE supervisory indicator lamp DS1301 should illuminate and remain illuminated even after cranking ceases.

(7) Operate TELEPHONE switch S1301 to TALK and then to OFF. TELEPHONE supervisory indicator lamp DS1301 should extinguish.

(8) Connect the TA-312/PT alternately to the corresponding terminal board connection points for each telephone channel and repeat the test procedures ((1) through (7) above) for each telephone channel.

4-79. Localizing Troubles in Telephone Circuits

a. General. The following chart (*b* below) gives the symptoms of failure which may be observed during the telephone circuits test (para 4-78*b*), the probable cause of failure, and the method of correction. The possible

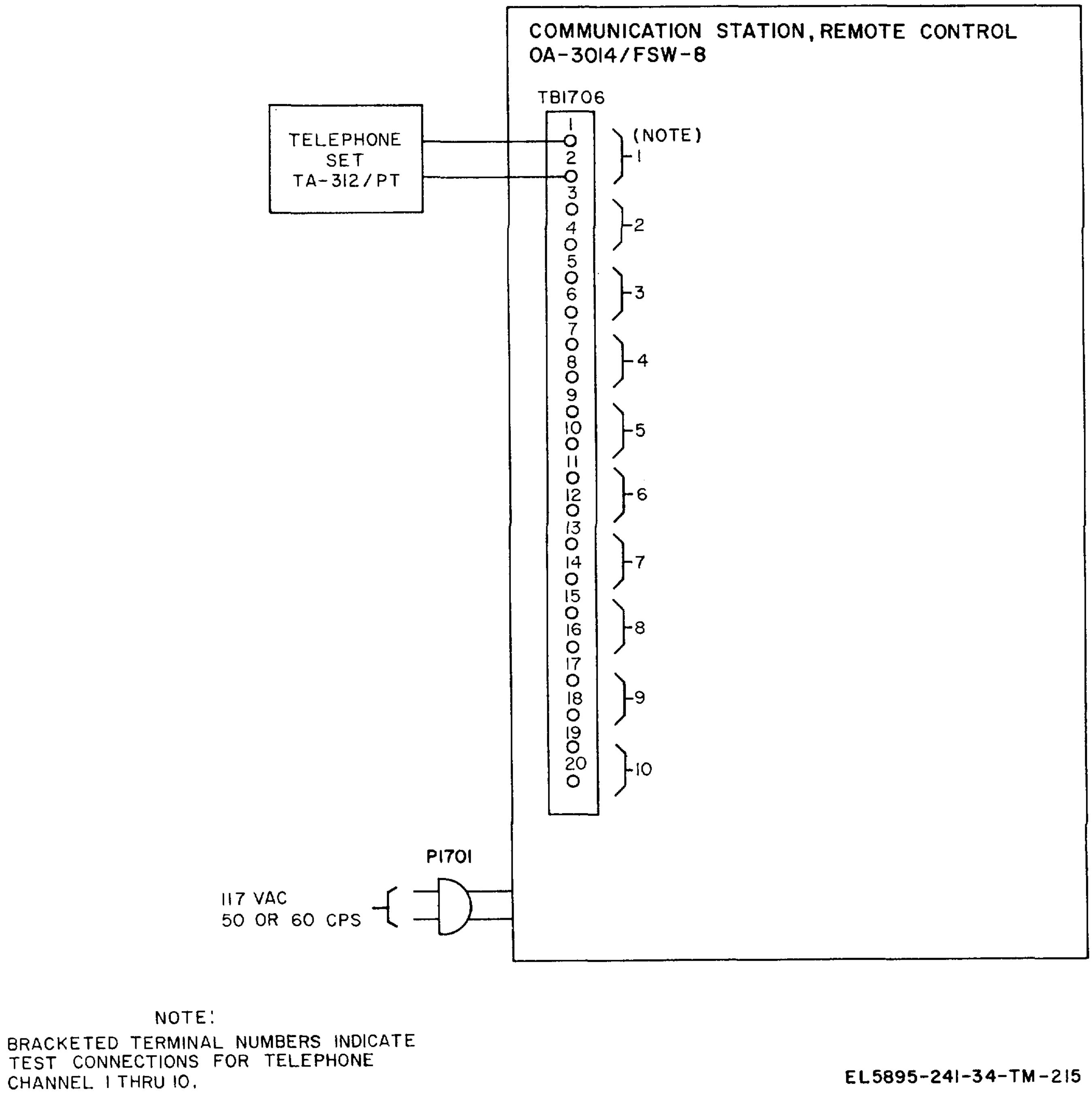


Figure 4-45. Communication Station, Remote Control OA-3014/FSW-8, telephone circuits test connection diagram.

troubles indicate defective circuits, stages, or component that cause each symptom. The corrective measures indicate methods used to localize the trouble to the defective component part.

b. Telephone Circuits Troubleshooting Chart.

Symptom	Probable Trouble	Correction
TELEPHONE supervisory indicator lamp DS1301 does not illuminate and buzzer DS1311 does not operate when TELEPHONE switch S1301 is operated to RING.	*a.* Power Supply PP-2795/FSW-8 defective. *b.* TELEPHONE switch S1301 defective (fig. 4-7). *c.* Ring generator Z601 (fig. 4-31) defective. *d.* Ring relay K601 (fig. 4-31) defective. *e.* Hold relay K611 (fig. 4-31) defective. *f.* Buzzer DS1311 (fig. 4-30) defective or TELEPHONE supervisory indicator lamp DS1301 defective.	*a.* Check the operation of Power Supply PP-2795-FSW-8 (para 4-83). Replace if defective (para 4-141*h* and fig. 4-98). *b.* Check the continuity of TELEPHONE switch S1301. Replace if defective (para 4-130 and fig. 4-88). *c.* Replace ring generator Z601 (para 4-126*c* and fig. 4-81). *d.* Check the operation of ring relay K601 (para 4-169*e*). Replace if defective (para 4-126 and fig. 4-84). *e.* Check the operating of hold relay K611 (para 4-169*e*. Replace if defective (para 4-126 and fig. 4-84). *f.* Replace buzzer DS1311 (para 4-130*j* and fig. 4-88) or replace TELEPHONE supervisory indicator lamp DS1301 (para 4-82*b*).
TELEPHONE supervisory indicator lamp DS1301 does not illuminate and buzzer DS1311 does not operate when the TA-312/PT hand generator is cranked and TELEPHONE switch S1301 at OFF.	*a.* Buzzer DS1311 (fig. 4-30) defective or TELEPHONE supervisory indicator lamp DS1301 defective. *b.* Ring relay K601 (fig. 4-31) defective. *c.* Hold relay K611 (fig. 4-31) defective. *d.* Power Supply PP-2795/FSW-8 defective.	*a.* Replace buzzer DS1311 (para 4-130*j* and fig. 4-88). Replace TELEPHONE supervisory indicator lamp DS1301 (para 4-82*b*). *b.* Check the operation of ring relay K601 (para 4-169*e*). Replace if defective (para 4-126 and fig. 4-84). *c.* Check the operation of hold relay K611 (para 4-169*e*). Replace if defective (para 4-126 and fig. 4-84). *d.* Check the operation of Power Supply PP-2795/FSW-8 (para 4-83). Replace if defective (para 4-149*h* and fig. 4-98).
TELEPHONE supervisory indicator lamp DS1301 does not illuminate but buzzer DS1311 operates when the TA-312/PT hand generator is cranked.	*a.* TELEPHONE supervisory indicator lamp DS1301 defective. *b.* Hold relay K611 (fig. 4-31) defective. *c.* TELEPHONE switch S1301 defective (fig. 4-7). *d.* Power Supply PP-2795/FSW-8 defective.	*a.* Replace Telephone supervisory indicator lamp DS1301 (para 4-82*b*)- *b.* Check the operation of hold relay K611 (para 4-169*e*). Replace if defective (para 4-126 and fig. 4-84). *c.* Check the continuity of TELEPHONE switch S1301. Replace if defective (para 4-130 and fig. 4-88). *d.* Check the operation of Power Supply PP-2795/FSW-8 (para 4-83). Replace if defective (para 4-141*h* and fig. 4-98).
TELEPHONE supervisory indicator lamp DS1301 does not remain illuminated after the TA-312/PT hand crank generator is stopped.	*a.* Hold relay K611 (fig. 4-31) defective. *b.* TELEPHONE switch S1301 defective (fig. 4-7).	*a.* Check the operation of hold relay K611 (para 4-169*e*). Replace if defective (para 4-126 and fig. 4-84). *b.* Check the continuity of TELEPHONE switch S1301. Replace if

Symptom	Probable Trouble	Correction
	c. Ring relay K601 (fig. 4-31) defective.	defective (para 4-130 and fig. 4-88). *c.* Check the operation of ring relay K601 (para 4-169*e*). Replace if defective (para 4-126 and fig. 4-84).
TELEPHONE supervisory indicator lamp DS1301 does not extinguish after TELEPHONE switch S1301 is operated from RING to TALK.	*a.* Ring relay K601 (fig. 4-31) defective. *b.* Hold relay K611 (fig. 4-31) defective. *c.* TELEPHONE switch S1301 defective (fig. 4-7).	*a.* Check the operation of ring relay K601 (para 4-169*e*). Replace if defective (para 4-126 and fig. 4-84). *b.* Check the operation of hold relay K611 (para 4-169*e*). Replace if defective (para 4-126 and fig. 4-84). *c.* Check the continuity of TELEPHONE switch S1301. Replace if defective (para 4-130 and fig. 4-88).
No speech is heard from the receiving element of Handset H-194/FSW-8.	*a.* Receiver element of Handset H-194/FSW-8 defective. *b.* Power Supply PP-2795/FSW-defective. *c.* TELEPHONE switch S1301 defective (fig. 4-7). *d.* Impedance matching network Z1301 (fig. 4-30) defective.	*a.* Check the operation of Handset H-194/FSW4-8. Replace if defective (para 4-144*i* and fig. 4-98). *b.* Check the operation of Power Supply PP-2795/FSW-8 (para 4-83). Replace if defective (para 4-141*h* and fig. 4-100). *c.* Check the continuity of TELEPHONE switch S1301. Replace if defective (para 4-130 and fig. 4-88). *d.* Check the de resistance of impedance matching network Z1301 (para 4-56*b*). Replace if defective 4-130*k* and fig. 4-88).
Speech is received on Handset H-194/FSW-8 but cannot be transmitted.	*a.* Transmitter element of Handset H-194/FSW-8 defective. *b.* Power Supply PP-2795/FSW-8 defective. *c.* TELEPHONE switch S1301 defective.	*a.* Check the operation of Handset H-194/FSW-8. Replace if defective (para 4-141j and fig. 4-98). *b.* Check the operation of Power Supply PP-2795/FSW-8 (para 4-83). Replace if defective (para 4-141*h* and fig. 4-98). *c.* Check the continuity of TELEPHONE switch S1301. Replace if defective (para 4-130 and fig. 4-88).
Handset H-194/FSW-8 operates properly but buzzer DS1311 does not operate and TELEPHONE supervisory indicator lamp DS-1301 does not illuminate.	*a.* Ring relay K601 (fig. 4-31) defective. *b.* Buzzer DS1311 (fig. 4-30) defective or TELEPHONE supervisory indicator lamp DS1301 defective.	*a.* Check the operation of ring relay K601 (para 4-169*e*). Replace if defective (para 4-126 and fig. 4-84). *b.* Replace buzzer DS1311 (para 4-130*j* and fig. 4-88) or replace TELEPHONE supervisory indicator lamp DS1301 (para 4-82*b*).

4-80. Field Status Circuit Test

The field status circuits of the OA-3014/FSW-8 are operated as part of the AN/FSW-8(V) field status indicating system. Procedures to test the circuits of the OA-3014/FSW-8 for operation with the field status system are given in paragraph 4-20. The circuits may be tested independently of the system as described in a and b below. Refer to the AN/FSW-8(V) system test connection diagram (fig. 4-8) and to the AN/FSW8(V) control function diagram (fig. FO-4).

a. Test Procedure. The test is performed by application of +48 volts dc to terminal 6 or 7 of terminal board TB1705. Two power leads are required to perform the test, each connected to terminal 4 of terminal board TB1702. Operate MAIN POWER circuit breaker CB1901 to ON.

(1) Connect one +48-volt dc power lead to terminal 6 of terminal board TB1705. The VFR indicator lamp (DS2001) should illuminate.

(2) Disconnect the power lead from terminal 6 and connect it to terminal 7 of terminal board TB1705. The CLOSED indicator lamp (DS2003) should illuminate.

(3) Connect one power lead to terminal 6 and one to terminal 7 of terminal board TB1705. The IFR indicator lamp (DS2002) should illuminate.

b. Localizing Trouble in Field Status Circuits. If a failure is indicated during the operation test (a above), isolate the trouble to a circuit component as described below. The components of the field status circuits are mounted on the loudspeaker and indicator panel (fig. 4-57 and 4-58).

(1) If the incorrect field status indicator lamp illuminates when dc power is applied to terminal 6 or7 of terminal board TB1705 (*a*(1) through *a*(3) above), check field status indicator relays K2001 and K12002 (fig. 4-57). Test operation of the relays (para 4-169*j* and replace the relays if found to be defective (para 4-146o). Check all wiring between the relays and terminal boards TB1705 and TB2001. Replace any defective or unserviceable wiring.

(2) If the field status indicator lamps do not illuminate during testing, check for 117volt ac line power at terminals 9 and 10 of terminal board TB2001 (fig. FO-23). Check all equipment wiring. Check field status indicator lamps DS2001, DS2002, and DS2003 (fig. 4-58) and replace if defective (para 4-4*a*).

4-81. Power Supply Circuits Test

Procedures are given in paragraphs 4-81, 4-82, and 4-83 for troubleshooting the power supply circuits of the OA-3014/FSW-8. Pretest procedures (para 4-81) are given for the test connections and preliminary control settings required, followed by an operational test (para 4-83) to determine performance of the circuits. If unsatisfactory performance is observed during the test, refer to paragraph 4-84 for the localization of the trouble to a faulty component. Refer to the OA-3014/FSW-8 power distribution diagram (fig. FO-7) and to the power supply circuit test connection diagram (fig. 4-46).

4-82. Pretest Procedures for Power Supply

Perform the pretest procedures outlined in *a* through *c* below before starting the operational test of Power Supply PP-2795/FSW-8 circuits. Connect the test equipment to the OA-3014/ FSW-8 as shown in figure 4-46.

a. Operate MAIN POWER circuit breaker CB1901 to OFF.

b. Adjust the TS-505/U range switch to 10V and the function switch to +D.C.

c. Adjust the TS-352/U to the 250-volt range.

4-83. Operational Test Procedures for Power Supply Circuits
(fig. 4-46)

Perform the procedures given in *a* through *i* below to test the operation of the OA-3014/FSW-8 power supply circuits. Where a failure is observed, refer to paragraph 4-84 for the localization of the fault to a specific circuit or component.

a. Operate MAIN POWER circuit breaker CB1901 to ON. Observe that MAIN POWER indicator lamp DS1901 illuminates and that the TS352/U indicates between +95 and +105 volts.

b. Connect the dc probe of the TS-505/U to the +7V test jack. The TS-505/U should indicate between +6 and +10 volts.

c. Adjust the TS-505/U range switch to 100V.

d. Connect the dc probe of the TS-505/U to the +48V test jack. The TS-505/U should indicate between +40 and + 56 volts.

e. Adjust the TS-505/U function switch to -DC and the range switch to 10V.

f. Connect the dc probe of the TS-505/U to the -7.5V test jack. The TS-505/U should indicate -7.5 volts.

g. Connect the dc probe of the TS-505/U to the -3V test jack. The TS-505/U should indicate approximately -3 volts.

h. Adjust the TS-505/U range switch to 15V.

i. Connect the dc probe of the TS-505/U to the -15V test point. The TS-505/U should indicate 15 volts.

4-84. Localizing Troubles in Power Supply PP-2795/FSW-8

a. General. The following chart (b below) gives the symptoms of failure which may be observed during the power supply test (para 4-84), the probable cause of failure, and the method of correction. The possible troubles indicate defective circuits, stages, or components that may cause each symptom. The corrective measures indicate methods used to localize the trouble to the defective component part.

b. Power Supply Circuits Troubleshooting Chart.

Symptom	Probable Trouble	Correction
No indication is observed on the TS-505/U, TS-352/U, and MAIN POWER indicator lamp DS1901 does not illuminate.	*a.* Defective MAIN POWER circuit breaker CB1901. *b.* Ac power input connections to OA-3014/FSW-8 loose or defective.	*a.* Check MAIN POWER circuit breaker CB1901 (fig. 4-56). Replace if defective (para 4-144*b* and fig. 4-101). *b.* Check connector P1701 (fig. 4-41).
MAIN POWER circuit CB1901 breaker does not remain ON	Defective MAIN POWER circuit breaker CB1901	Check MAIN POWER circuit breaker CB1901 (fig. 4-56). Replace if defective (para 4-144*j* and fig. 4-101).
MAIN POWER indicator lamp DS1901 illuminates, but no indication is observed on the TS-505/U or TS-352/U	*a* Ac power connection to Power Supply PP-2795/FSW-8 defective. *b* Power Supply PP-2795/FSW-8 defective.	*a* Check connector P2301 (fig. 4-66). *b* Replace Power Supply PP-2795/FSW-8 (para 4-141*h* and fig. 4-98).
MAIN POWER indicator lamp DS1901 does not illuminate but normal indication are observed on the TS-505/U or TS-352/U.	MAIN POWER INDICATOR lamp DS1901 defective.	Check MAIN POWER indicator lamp DS1901. Replace if defective (para 4-144 and fig. 4-101).
Abnormal indication observed on TS-352/U, but all other indications are normal.	Defective 100-volt power supply	Replace Power Supply PP-2795/FSW-8 (para 4-141h and fig. 4-98).
Abnormal indication observed on the TS-505/U when DC probe is connected to the +48V test point and the +7V test point, but all other indications are normal.	*a.* Defective +48-volt power supply. *b.* Defective 48V 1 AMP fuse F1901.	*a.* Check the +48-volt dc distribution in the OA3014/FSW-8 for short circuit (fig. FO-7). Repair if defective. *b.* Check fuse F1901 (fig. 4-56). Replace if defective.
Abnormal indication observed on TS-505/U when DC probe is connected to the +7V test point, but all other indications are normal.	Defective + 7-volt power supply	Check the +7-volt dc distribution in the OA-3014/FSW-8 for short circuit (fig. FO-7). Repair if defective.
Abnormal indication observed on the TS-505/U when DC probe is connected to the -7.5V test point, -15V test point, and the -3V test point, but all other indications are normal.	Defective --15-volt power supply .	Check the --15-volt dc distribution in the OA-3014/FSW-8 for short circuit (fig. FO-7). Repair if defective.
Abnormal indication observed on the TS-505/U when DC probe is connected to the -7.5V test point and -3V test point, but all other indications are normal.	*a.* Defective --7.5-volt power supply. *b.* -7.5V 2 AMP fuse F2302 defective.	*a.* Check the --7.5-volt dc distribution in the OA-3014/FSW-8 for short circuit (fig. FO-7). Repair if defective. *b.* Check fuse F2302 (fig. 4-53). Replace if defective.
Abnormal indiction observed on the TS-505/U when DC probe is connected to the -3V test point, but all other indications are normal.	Defective -3-volt power supply	Check the -3-volt dc distribution in the OA-3014/FSW-8 for short circuit (fig. FO-7). Repair if defective.

Symptom	Probable Trouble	Correction
Abnormal indication observed on the TS-505/U when DC probe is connected to the -15V test point, but all other indications are normal.	*a.* Defective --15-volt power supply. *b.* -15V 1 AMP fuse F2301 defective.	*a.* Check the --15-volt dc distribution in the OA-3014/FSW-8 for short circuit (fig. FO-7). Repair if defective. *b.* Check fuse F2301 (fig. 4-53). Replace if defective.
Desk lamp does not illuminate, or brightness cannot be controlled by adjustment of BRIGHT-LAMP-OFF control.	*a.* Desk lamp DS1701 defective. *b.* Faulty ac power connections to desk lamp DS1701. *c.* BRIGHT-LAMP-OFF control R2002 defective.	*a.* Check desk lamp DS1701 and replace if defective. *b.* Check the 117-volt ac distribution in the OA-3014/FSW-8 for open circuit (fig. FO-7). Repair if defective. *c.* Check resistor R2002 (fig. 4-58). Replace if defective.

4-85. Control-Monitor C-3434/FSW-8

The C-3434/FSW-8 (fig. 4-48) is mounted on the upper panel of the OA-3014/FSW-8 (fig. 4-41 and 4-42) and contains the TRANSMIT switch and supervisory indicator lamp of each radio transmitter channel, push-to-talk relay K1801, and the audio input transformer, receiver preamplifier, RECEIVE switch, and supervisory indicator lamp for each radio receiver channel. When performance of the receiving circuit test (para 4-70) or the transmitting circuit test (para 4-75) indicates a failure in the C-3434/FSW-8, refer to the additional troubleshooting data provided in paragraph 4-80 and to the operational checks and test provided in paragraphs 4-88 and 4-89. Parts locations are shown in figures 4-48 through 4-50.

4-86. Test Equipment and Materials Required for C-3434/FSW-8

The following test equipment and materials are required for testing the operation of Control-Monitor C-3434/FSW-8:

a. Test Equipment.

(1) Audio Oscillator TS-382/U.
(2) Voltmeter, Meter ME-30/U.
(3) Power Supply PP-3803/FSW-8.

b. Material.

(1) Connector, Plug, Electrical (P1) 24 female contacts (FSN-5935-553-3345).
(2) Connector, Plug, Electrical (P2) 37 female contacts (FSN-5935-552-6652).
(3) Switch, Rotary (S1) three-pole-ten-throw.
(4) Switch, Toggle (S2), single-pole single-throw (FSN-5930-050-2680).
(5) Wire, Electrical 16 Gage AWG MW-C16(19).

4-87. Pretest Procedure for C-3434/FSW-8

The C-3434/FSW-8 can be tested independently of the OA-3014/FSW-8 by use of the test procedure described in paragraph 4-88. Perform the pretest procedures outlined in *a* through *f* below before starting the operational tests.

a. Connect the test equipment to the C-3434/FSW-8 as shown in figure 4-47.

b. Operate the TRANSMIT switch for each channel to OPERATE.

c. Operate the RECEIVE switch for each channel to OFF.

d. Adjust the ME-30/U to the 1V range.

e. Adjust the TS-382/U for the 1,000-cps output.

f. Turn on power to all the test equipment.

4-88. Operational Tests for C-3434/FSW-8 (fig. 4-47)

Perform the procedures given in *a* and *b* below to test the operation of the C-3434/FSW-8. If a failure is observed, refer to paragraph 4-90 for the localization of the fault to a specific component or circuit.

a. Receiver Preamplifier A1601 Circuit.

(1) Operate test switch S1 to the No. 1 position.

(2) Adjust the output of the TS-382/U to obtain a reading of +1 volt on the ME-30/U.

(3) RECEIVE supervisory indicator lamp DS1801 should illuminate.

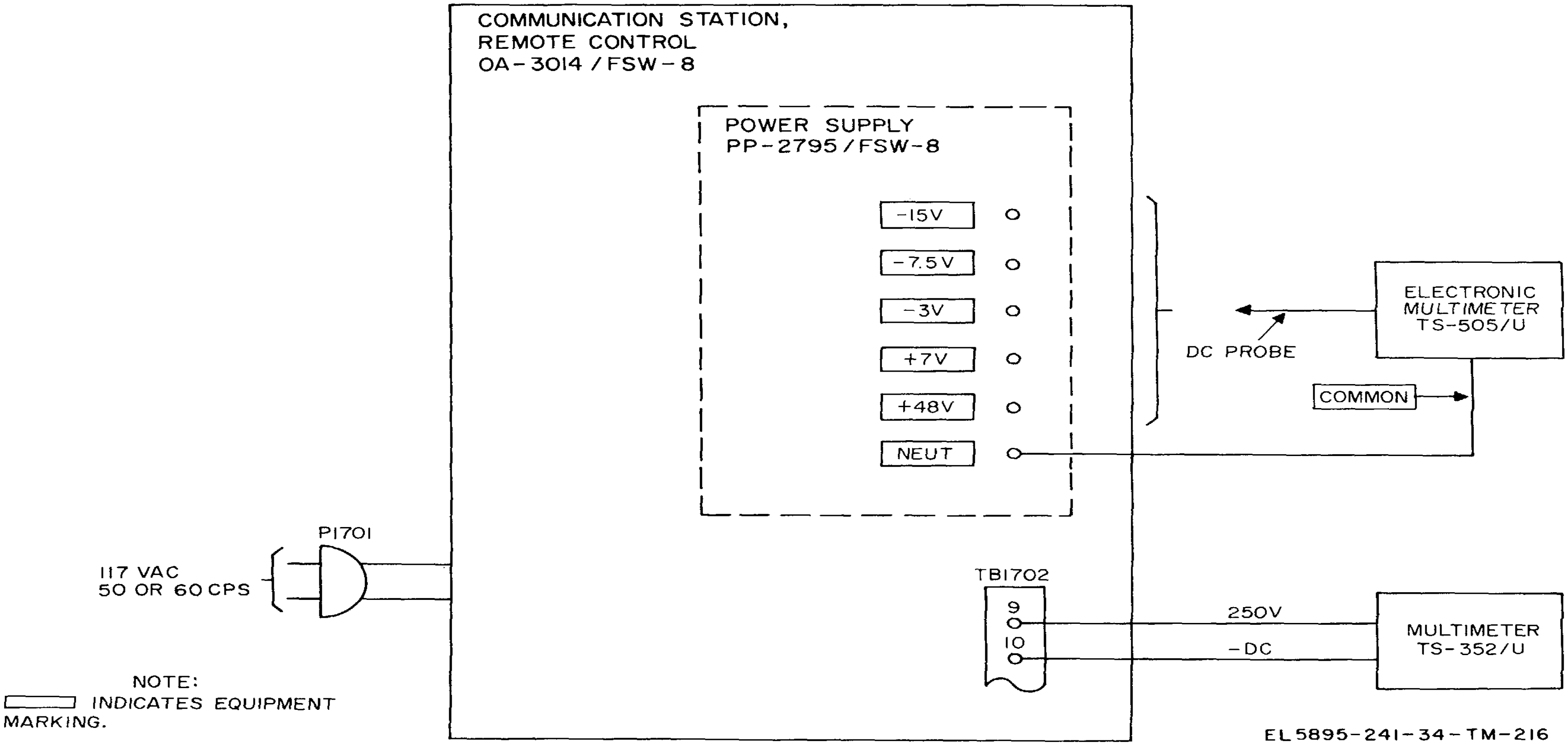


Figure 4-46. Communication Station, Remote Control OA-3014/FSW-8, power supply circuit test.

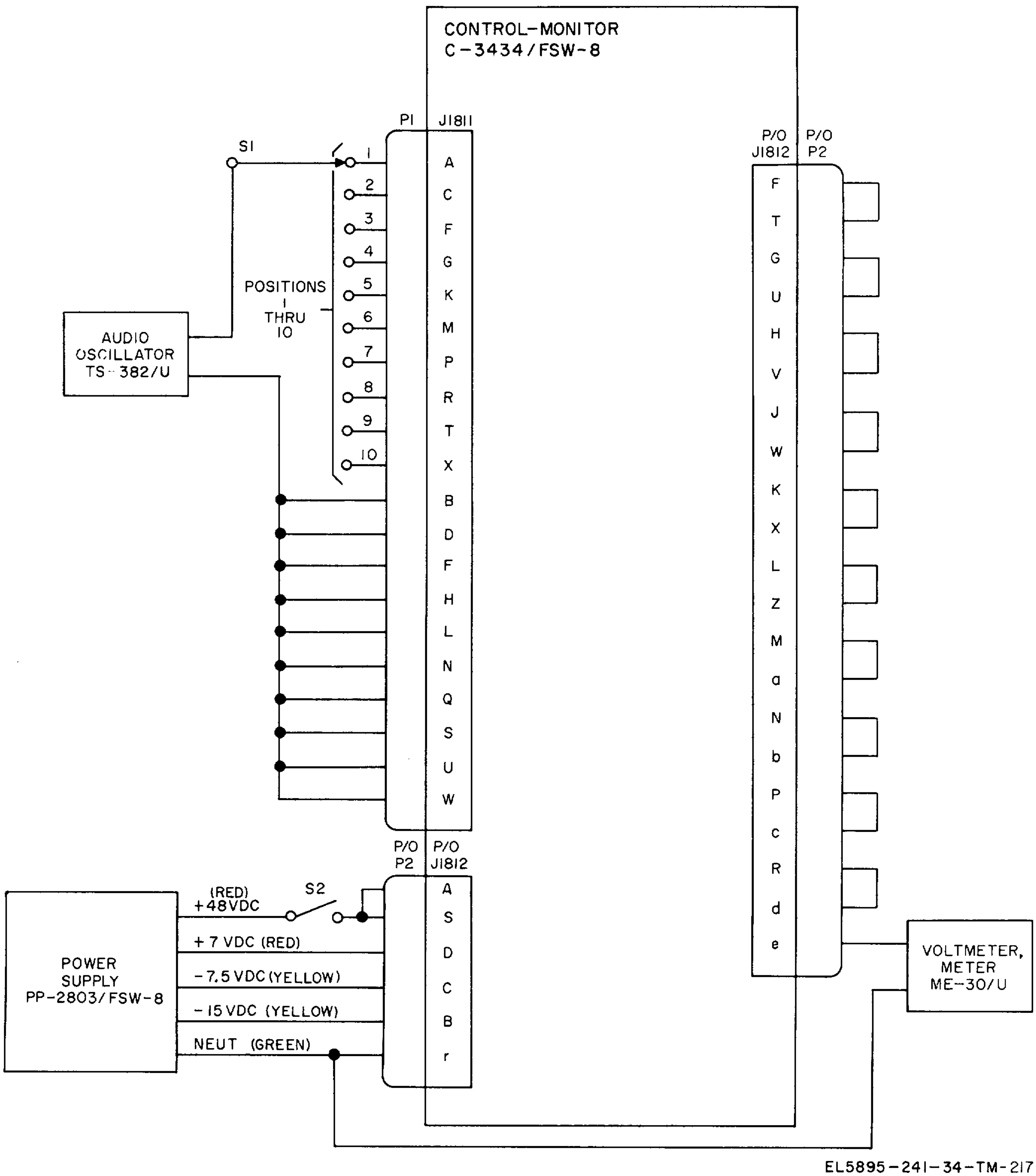


Figure 4-47. Control-Monitor C-3434/FSW-8 test connection diagram.

(4) Operate RECEIVE switch S1801 to SPEAKER.

(5) RECEIVE supervisory indicator lamp DS1801 should remain illuminated.

(6) Repeat the procedures given in (1) through (5) above to test receiver channels No. 2 through 10. A reading of +1 volt should be obtained for each channel, and the corresponding RECEIVE supervisory indicator lamp should illuminate.

b. Transmit Muting Circuit.

(1) Operate test switch S1 to the No. 1 position.

(2) Adjust the output of the TS-382/U to obtain a reading of +1 volt on the ME-30/U.

(3) RECEIVE supervisory indicator lamp DS1801 should extinguish.

(4) Operate test switch S2 to the off position.

(5) RECEIVE supervisory indicator lamp DS1801 should illuminate.

(6) Repeat the procedures given in (1) through (5) above to test transmit muting circuits No. 2 through 10. A reading of +1 volt should be obtained for each channel, and the corresponding RECEIVE supervisory indicator lamp should illuminate and extinguish.

4-89. Continuity and Resistance Measurements

a. If no output is obtained or an incorrect indication is observed from a channel during the operational test (para 4-88) isolate the trouble to a particular component by making resistance and continuity measurements. Receiver preamplifier A1601 is a transistorized printed-circuit board and *must* be removed before making any continuity or resistance measurements. Disconnect all test equipment and use the TS-505/U to make the measurements. The C-3434/FSW-8 wiring diagram (fig. FO-24) lever switch contact arrangements (fig. 4-125) and the Communication Station, Remote Control OA-3014/FSW-8 schematic diagram (fig. FO-14) will be useful for this purpose.

NOTE

Receiver preamplifier A1601 is not a maintenance item and is discarded if inoperative.

b. The dc resistance of transformers (fig. 4-49) in C-3434/FSW-8 is as follows:

Transformer	Terminal	Resistance (ohms)
T1801 through T1810	1-3 4-5	30 60

4-90. Localizing Troubles in Control-Monitor C-3434/FSW-8

a. General. If abnormal operation of the C-3434/FSW-8 is indicated, refer to the chart in *b* below to localize the trouble. Refer also to the dc resistance measurements of transformers given in paragraph 4-89.

b. Control-Monitor C-3434/FSW-8 Troubleshooting Chart.

Symptom	Probable Trouble	Correction
The RECEIVE supervisory indicator lamp for a channel tested does not illuminate and reading not obtained on ME-30/U for the channel tested.	*a.* Audio input transformer for channel tested defective.	*a.* Check audio input transformer (fig. 4-49) of channel tested (T1801-T1810). Measure dc resistance (para 4-89*b*). Replace if defective (para 4-143 and fig. 4-100).
	b. Receiver preamplifier A1601 for channel tested defective (fig. 4-12).	*b.* Replace A1601 (para 4-143*a* and fig. 4-100).
The RECEIVE supervisory indicator lamp for a channel tested does not illuminate, but a reading is obtained on ME-30/U for the channel tested.	*a.* Receiver preamplifier A1601 for channel tested defective (fig. 4-12).	*a.* Replace A1601 (para 4-143*a* and fig. 4-100).
	b. RECEIVE supervisory indicator lamp for channel tested defective.	*b.* Check RECEIVE supervisory indicator lamp (fig. 4-48 of channel tested (DS1801-DS1810). Replace if defective (para 4-4*a*).
The RECEIVE supervisory indicator lamp for a channel tested illuminates but no reading is obtained on ME-30/U for the channel tested.	*a.* Receiver preamplifier A1601 for channel tested defective.	*a.* Remove A1601 (para 4-143*a*) and check capacitor C1602 (fig. 4-12). Replace if defective.
	b. RECEIVE switch for channel	*b.* Check RECEIVE switch (S1801-

Symptom	Probable Trouble	Correction
(RECEIVE switch operated to the SPEAKER position.)	tested defective (fig. 4-48).	S1810) for channel tested. Inspect and clean contacts (para 4-167). Replace if defective (para 4-143 and fig. 4-100).
	c. Impedance matching resistor for channel tested defective.	*c.* Check resistor (R1801-R1810) for channel tested (fig. 4-50). Replace if defective.
The TRANSMIT supervisory indicator lamp for a channel tested does not illuminate when corresponding TRANSMIT switch is operated to the OPERATE position, and test switch S2 is operated to the on position.	*a.* TRANSMIT supervisory indicator lamp for a channel tested defective.	*a.* Check TRANSMIT supervisory indicator lamp (DS1811-DS1820) of channel tested (fig. 4-48). Replace if defective (para 4-4*b*).
	b. TRANSMIT switch for channel tested defective (fig. 4-48).	*b.* Check TRANSMIT switch (S1811-S1820) for channel tested. Inspect and clean contacts (para 4-167). Replace if defective (para 4-143) and fig. 4-100).
	c. Push-to-talk relay K1801 defective (fig. 4-48).	*c.* Check relay K1801. Check operation of relay (para 4-169*i*). Replace if defective (para 4-143*h* and fig. 4-100).
The TRANSMIT supervisory indicator lamp for channel tested illuminates, but corresponding RECEIVE lamp does not extinguish when TRANSMIT switch is operated to the OPERATE position and S2 is operated to the on position.	*a.* TRANSMIT switch for channel tested defective (fig. 4-48).	*a.* Check TRANSMIT switch (S1811-S1820) for channel tested. Inspect and clean contacts (para 4-167). Replace if defective (para 4-167). Replace if defective (para 4-143 and fig. 4-100).
	b. Push-to-talk relay K1801 defective (fig. 4-49).	*b.* Check relay K1801. Check operation of relay (para 4-169*i*). Replace if defective (para 4-143*h* and fig. 4-100).

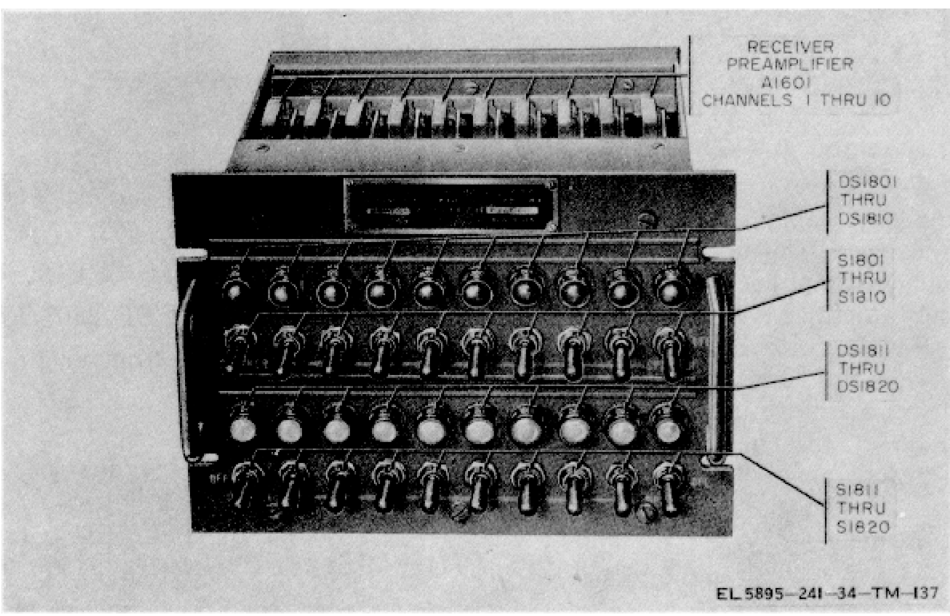


Figure 4-48. Control-Monitor C-3434/FSW-8, front view, parts location.

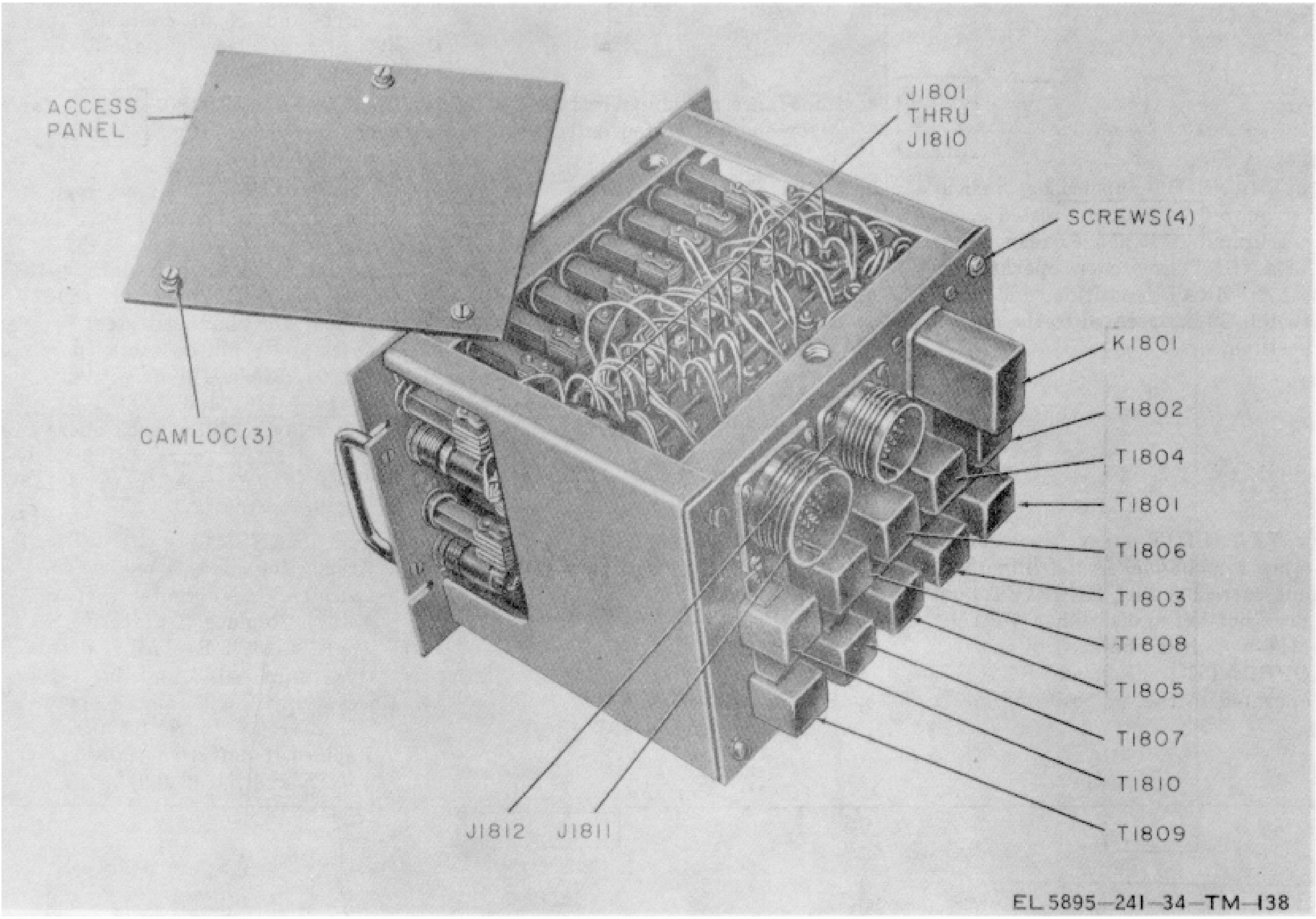


Figure 4-49. Control-Monitor C-3434/FSW-8, rear view, parts location.

4-91. Amplifier Assembly AM-2817/FSW-8

The AM-2817/FSW-8 is mounted inside the OA-3014/FSW-8 equipment cabinet at the rear of the power supply drawer. The unit contains the transmitter microphone amplifier circuits and the receiver loudspeaker amplifier circuits. When performance of the receiving circuits test (para 4-67 through 4-70) or the transmitting circuits (para 4-75) indicates a failure in the AM-2817/FSW-8, refer to the additional troubleshooting data provided in paragraphs 4-92 through 4-98. Adjustments required after servicing or repair are given in paragraphs 4-176, 4-177, and 4-178. Parts locations are shown in figures 4-52 through 4-55.

4-92. Test Equipment and Materials Required for AM-2817/FSW-8

The following chart lists test equipment and materials required for testing the operation of the AM-2817/FSW-8:

a. Test Equipment.

(1) Audio Oscillator TS-382/U.
(2) Attenuator TS-402/U.
(3) Voltmeter, Meter ME-30/U.
(4) Power Supply PP-2803/FSW-8.
(5) Electronic Multimeter TS-505/U.

b. Material.

(1) Connector, Plug, Electrical (P1) 1 male contact, phone type.

(2) Connector, Plug, Electrical (P2) 34 female contacts (FSN 5975-681-4609).

(3) Resistor, Variable (R1) 1,000 ohms, ±10%, 2 watts (FSN 5905-752-7181).

(4) Resistor, Composition (R2) 100 ohms, ±5%, 1 watt (FSN 5905-166-9344).

(5) Resistor, Film (R3) 499 ohms, ±1%, 2 watts.

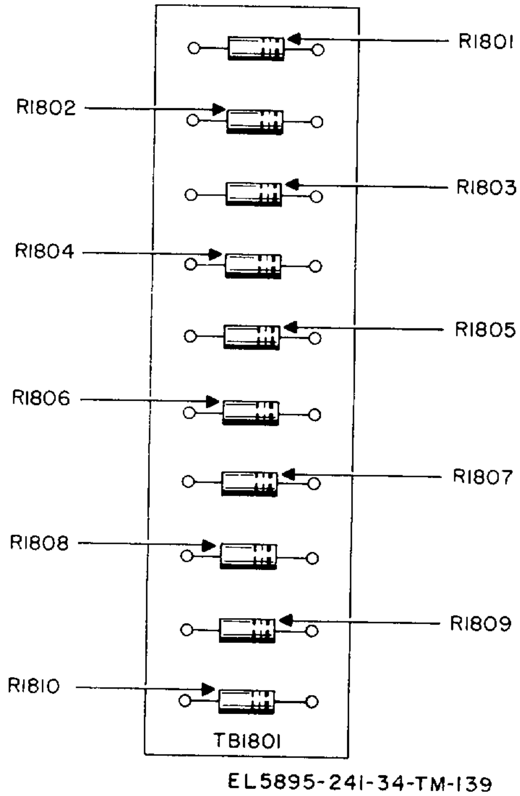


Figure 4-50. Control-Monitor C-3434/FSW-8, terminal board TB1801, parts location

(6) Resistor, Film (R4) 243 ohms, ± 1%, 2 watts.

(7) Resistor, Composition (R5) 16 ohms, ± 5%, 2 watts (FSN 5905-279-1951).

(8) Resistor, Film (R6) 600 ohms, ±.1%, 2 watts.

(9) Capacitor, Electrolytic (C1) 100 uf, 15 WVDC (FSN 5910-834-4877).

(10) Wire, Electrical 16 Gage AWG MW-C16(19).

4-93. Operational Checks for AM-2817/FSW-8

(fig. 4-51)

a. Pretest Procedure. To test the AM-2817/FSW-8 independently of the OA-3014/FSW-8, remove the power supply drawer from the equipment cabinet (para 4-141b) and perform the pretest procedure given in (1) through (9) below before starting the operational test (b below).

(1) Adjust the ME-30/U range selector switch to 3.

(2) Connect the ME-30/U across the output terminals of the TS-382/U.

(3) Apply power to all the test equipment and adjust the TS-382/U for 1,000-cps output at a level of 3 volts as indicated on the ME-30/U. Turn off all power and disconnect the ME-30/U from the TS-382/U.

(4) Connect the test equipment to the AM-2817/FSW-8 as shown in figure 4-51.

(5) Adjust the TS-402/U to insert 40 db of attenuation.

(6) Operate test resistor R1 to its midrange position.

(7) Arrange the TS-505/U range switch to the 4V position and the function switch to AC.

(8) Adjust the ME-30/U range selector switch to 3.

(9) Turn on the power to all test equipment.

b. Operational Tests. Test the operation of the AM-2817/FSW-8 as instructed below. If a failure is observed, refer to paragraph 4-94 for localization of the fault to a specific component or circuit.

(1) *Loudspeaker amplifier circuit*.

(a) Turn on power to all the test equipment and observe that the ME-30/U indicates a minimum of 1.0 volt rms.

(b) Operate test resistor R1 both clockwise and counterclockwise. As the control is

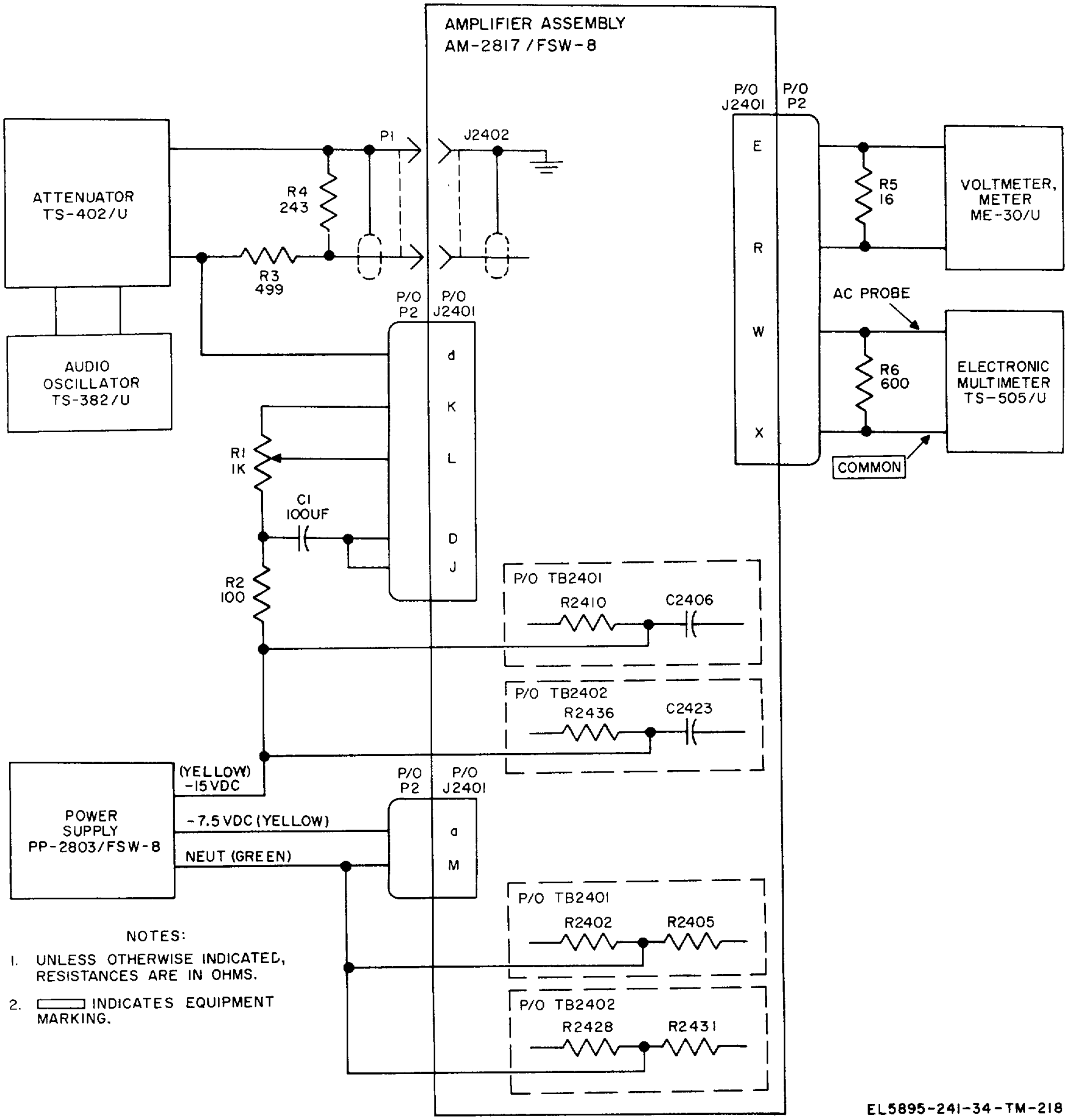


Figure 4-51. Amplifier Assembly AM-2817/FSW-8, test connection diagram.

rotated, the voltage indication observed on the ME-30/U should increase or decrease.

(c) Adjust the TS-402/U to insert 10 db of attenuation. The voltage indication observed on the ME-30/U should vary by more than a 4 db from the indication noted in (a) above.

(d) Adjust the TS-402/U to insert 40 db of attenuation.

(2) *Microphone amplifier circuit.*

(a) Turn on power to all the test equipment, and observe that the TS-505/U indicates a minimum of 0.3 volt rms.

(b) Adjust the TS-402/U to insert 10 db of attenuation. The voltage indication observed on the TS-505/U should not vary by more than 4 db from indication noted in (*a*) above.

4-94. Localizing Troubles in Amplifier Assembly AM-2817/FSW-8

a. General. If abnormal operation of the AM-2817/FSW-8 is indicated, refer to the chart in *b* below to localize the trouble.

b. Amplifier Assembly AM-2817/FSW-8 Trouble-shooting Chart.

Symptom	Probable trouble	Correction
No indication is observed on the ME-30/U when test equipment is turned on.	Defective component in the loudspeaker amplifier circuits.	Check transistors Q2401, Q2402, Q2403, Q2405, (para 4-96) and their associated components on terminal board TB2401 (fig. 4-54). Check transistors Q2406, and its associated components terminal boards T2401 and T2402 (fig. 4-52). Check SPEAKER GAIN control R2426 (fig. 4-53). Use signal tracing to isolate faulty components. Replace defective components.
Indication observed on the ME-30/U varies by more than 4 db when the input level is increased 30 db.	Defective component in the dc amplifier stage of the loudspeaker amplifier circuit.	Check transistor Q2404, (para 4-96) and diodes CR2401, CR2402, CR2403, CR2404, and CR2409 (para 4-99) and their associated components on terminal board TB2401 (fig. 4-54). Check SPEAKER COMP control R2416 (fig. 4-53). Replace defective components.
No indication is observed on the TS-505/U when test equipment is turned on.	Defective component in the microphone amplifier circuit.	Check transistors Q2407, Q2408, Q2409 (para 4-96) and their associated components on terminal board TB2402 (fig. 4-55). Check transformer T2403 (fig. 4-52). Use signal tracing to isolate faulty component. Replace defective components.
Indication observed on the TS-505/U varies more than 4 db when the input level is increased 30 db.	Defective component in the dc amplifier stage of the microphone amplifier circuit.	Check transistor Q2410, (para 4-96) and diodes CR2405, CR2406, CR2407, CR2408, CR2410 (para 171) and their associated components on terminal board TB2402 (fig. 4-55). Check MIKE COMP control R2443 (fig. 4-53).

4-95. Isolating Troubles Within Stage of Amplifier Assembly AM-2817/FSW-8

When trouble in the AM-2817/FSW-8 has been localized to a stage or circuit, through operational tests (para 4-93) or the symptoms and probable troubles given in paragraph 4-94*b* use the following techniques to isolate the defective part.

a. Signal Tracing. If no output is obtained from an amplifier circuit during the operational tests (para 4-93*b*) isolate the trouble to a particular stage within the amplifier circuit by signal tracing. Use the OS-8A/U (with all other test equipment connected as shown in figure 4-51). Ground one of the OS-8A/U probes to the AM-2817/FSW-8 circuit ground (pin M of connector J2401), and use the other OS-8A/U probe to signal trace. The receiving function signal flow diagram (fig. FO-6) and the AM/FSW-8(V) transmitting function signal flow diagram (fig. FO-2) will be useful for this purpose. Refer also to the AM-2817/FSW-8 wiring diagram (fig. FO-29) and the OA-3014/FSW-8 schematic diagram (fig. FO-14 (1) and (2). Begin the signal tracing tests at the output of the last audio stage of the amplifier circuit and work back toward the first audio stage.

b. Transistors. With the equipment connected as shown in figure 4-51, measure the *voltage* at the transistor terminals listed in paragraph 4-96; use a dc voltmeter. A reading that differs widely from those listed in the chart in paragraph 4-96 can, when used with the schematic diagram (fig. FO-14(1)) localize the trouble to a specific part.

Voltages measured at the emitter and base terminals of the replaced transistors may vary as much as 15 to 20 percent from the voltages listed in the chart (para 4-96). Collector voltages, however, should not vary by more than 10 percent. Bias (difference of voltages from emitter to base) should remain approximately the same.

CAUTION

Do not make any resistance measurements on the transistors. The multimeter battery can destroy the transistors by causing excessive current through them.

c. Transformers. Check the dc resistance of transformers in the amplifier circuit or stage; use the TS-505/U arranged as an ohmmeter. Compare the results against the resistance measurements given in paragraph 4-97.

d. Diodes. Disconnect one end of the diodes in the circuit or stage and measure the forward and reverse resistance by use of the TS-505/U arranged as an ohmmeter (lowest range). Compare the results against the resistance measurements given in paragraph 4-98.

4-96. Transistor Voltage Measurements AM-281 7/FSW-8

The following chart lists the various transistors located in AM-2817/FSW-8 and the operating voltage that should be obtained:

	Dc voltage to ground		
Transistor	Emitter	Collector	Base
Q2401 (NPN)	-11.5	- 6.1	-11.2
Q2402 (NPN)	-11.6	- 7.0	-11.1
Q2403 (NPN)	- 7.4	- 4.6	- 7.0
Q2404 (NPN)	-13.5	- 0.2	-13.3
Q2405 (PNP)	-10.2	-15.0	-10.4
Q2406 (PNP)	- 2.3	- 7.4	- 2.5
Q2407 (NPN)	-11.4	- 6.5	-11.2
Q2408 (NPN)	-11.7	- 7.6	-11.2
Q2409 (NPN)	- 8.0	- 4.6	- 7.6
Q2410 (NPN)	-13.5	- 0.7	-12.5

4-97. Dc Resistance of Transformers AM-2817/FSW-8

The dc resistance of transformers located in AM-2817/FSW-8 are as follows:

Transformer	Terminal	Resistance (ohms)
T2401	1-2 3-4	Less than 1 less than 2
T2402	1-2 3-4	Less than 2 less than 2
T2403	1-2 3-4	30 60

4-98. Dc Resistance of Diodes AM-2817/FSW-8

The dc resistance of diodes located in AM-2817/FSW-8 is as follows:

Type	Reference designations	Forward resistance (ohms)	Reverse resistance (ohms)
1N305 or 1N270	CR2403, CR2404, CR2407, CR2408	5 max	1 meg min
1N281 or 1N270	CR2401, CR2402, CR2405, CR2406, CR2409, CR2410	5 max	1 meg min

4-99. Miscellaneous Control Panel
(fig. 4-56)

The miscellaneous control panel mounted on the upper panel of the OA-3014/FSW-8 (fig. 4-41 and 4-42) contains MIKE connector J1901 and MIKE VOLUME control resistor R1901, the MAIN POWER indicator lamp DS1901, 48V 1 AMP fuse F1901, and EMER ALARM switch S1901.

4-100. Loudspeaker and Indicator Panel
(fig. 4-57 and 4-58)

The loudspeaker and indicator panel mounted at the top of tile OA-3014/FSW-8 cabinet (fig. 4-41 and 4-42) contains loudspeaker LS2001 and VOLUME CONTROL resistor R2001, LAMP dimmer control resistor R2002, and the relays and indicator lamps of the OA-3014/FSW-8 field status circuits.

4-101. Power Supply PP-2795/FSW-8

The PP-2795/FSW-8 is mounted on the power supply drawer inside the OA-3014/FSW-8. When performance of the equipment circuit tests (para 4-82 and 4-83) indicates a failure in the unit, refer to the troubleshooting data provided and to the operational checks and tests provided in paragraphs 4-102 through 4-106. Parts locations are shown in figure 4-60 through 4-64.

4-102. Test Equipment and Materials Required for PP-2795/FSW-8

The following test equipment and materials are required for testing the operation of the PP-2795/FSW-8.

a. Test Equipment.
(1) Multimeter ME-77/U.
(2) Electronic Multimeter TS-505/U.

b. Material.

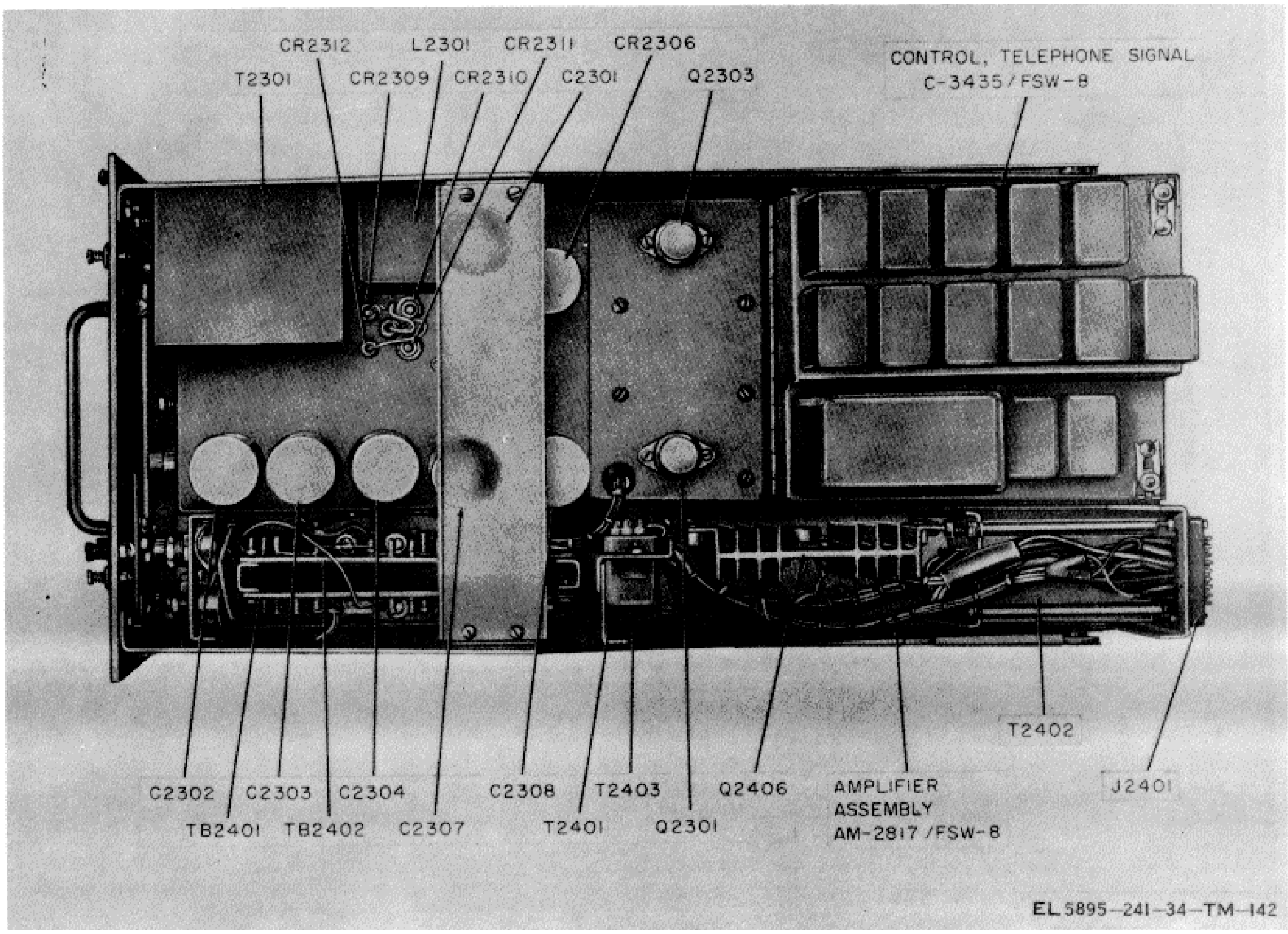


Figure 4-52. Amplifier Assembly AM-2817/FSW-8 and Power Supply PP-2795/FSW-8, top view, parts location.

(1) Connector Plug Electrical (P1) 14 female contacts (FSN 5935-352-2760).

(2) Switch, Toggle (S1, S2) Single pole-single throw.

(3) Resistor, Wirewound (R1) 1,700 ohms, ± 5 %, 25 watts.

(4) Resistor, Wirewound (R2, R4) 30 ohms, ± 5%, 21 watts (FSN 5905-837-7837).

(5) Resistor, Wirewound (R3) 48 ohms, ± 5%, 75 watts.

(6) Resistor, Film (R5) 35 ohms, ± 1%, 2 watts.

(7) Resistor, Wirewound (R6) 7.5 ohms, ±5%, 11 watts (FSN 5905-855-2662).

(8) Wire, Electrical 14 gage AWG MVC14-(19).

4-103. Test Procedure for PP-2795/FSW-8
(fig. 4-59)

The procedures outlined in a through m below may be used to test the operation of PP-2795/FSW-8 (removed from the OA-3014/FSW-8), and to check the operation of the -15- and -7.5-volt regulated power supplies. If faulty operation is observed, refer to the procedures given for localizing the trouble (para 4-104).

a. Remove the power supply drawer from the OA-3014/FSW-8 (para 4-141).

b. Connect the test equipment to the PP-2795/FSW-8 as shown in figure 4-59.

c. Adjust the ME-77/U selector switch to the 100V D.C. VOLTS range.

d. Adjust the TS-505/U range switch to 10V.

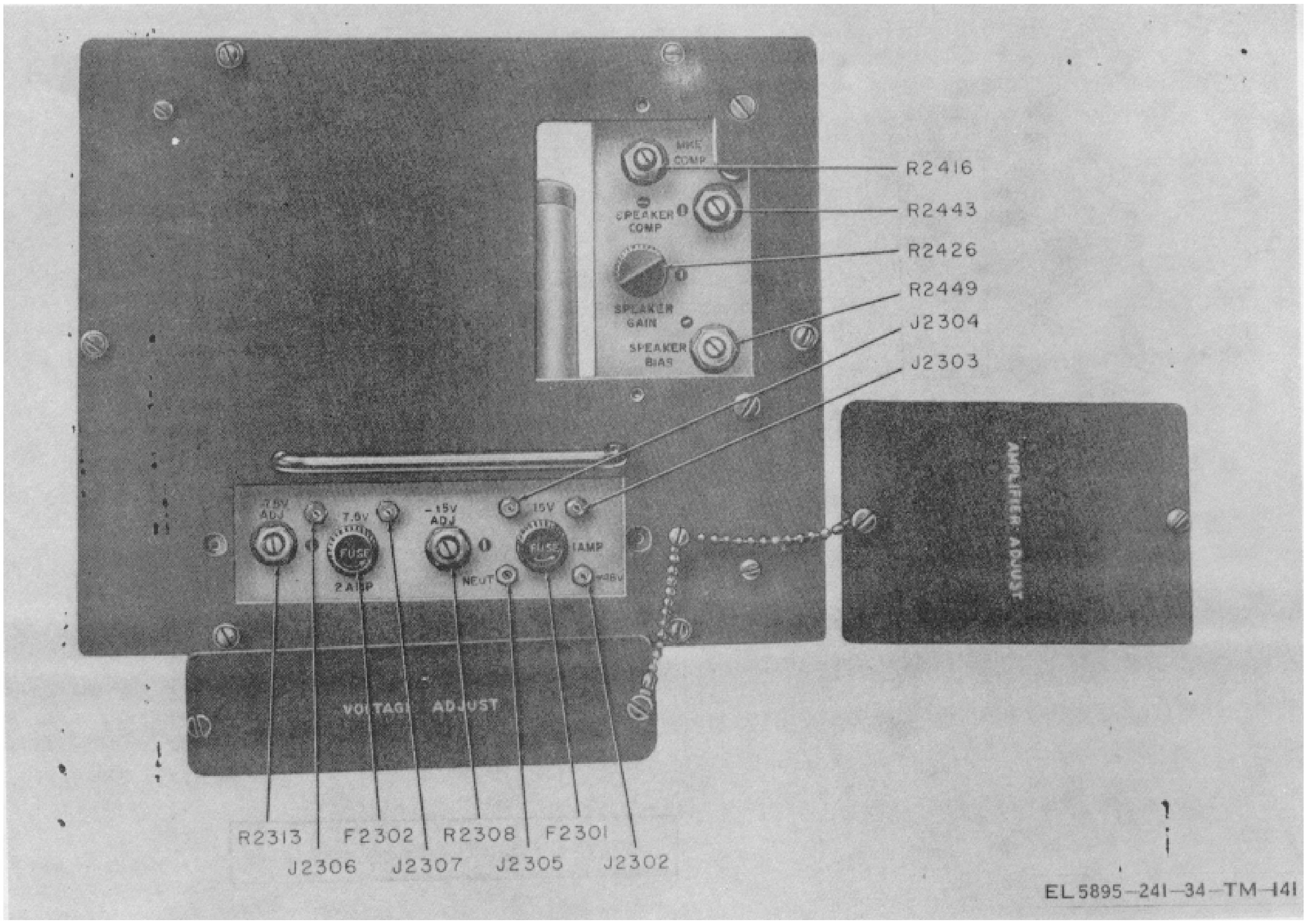


Figure 4-53. Amplifier Assembly AM-2817/FSW-8 and Power Supply PP-£795/FSW-8, front view, parts location.

e. Connect the PP-2795/FSW-8 to a source of 117-volt ac, 50- or 60-cps power.

f. When 117-vac line power is applied to the equipment, a reading of +95 to +105 volts should be indicated on the ME-77/U.

g. Connect the dc probe of the TS-505/U to the +7 V test jack. A reading of +6 to + 10 volts should be indicated.

h. Adjust the TS-505/U range switch to 100V and connect the dc probe to the +48 V test jack. A reading of +40 to +58 volts should be indicated.

i. Adjust the TS-505/U range switch to 4V and connect the dc probe to the -3 V test jack. A reading of -3 to -4 volts should be indicated.

j. Adjust the TS-505/U range switch to 10V and connect the dc probe to the -7.5 test jack. A reading of -7.5 volts should be indicated.

k. To simulate normal operating load on the PP-2795/FSW-8 - 7.5-volts dc supply, operate test switch S2 to the on position. There should be no variation in the -7.5-volts indication noted in *j* above on the TS-505/U.

l. Adjust the TS-505/U range switch to 20V and connect the probe to the -15 V test jack. A reading of -15 volts should be indicated.

m. To simulate normal operating load on the -15-volt dc supply, operate test switch S1 to the on position. There should be no variation in the -15-volt indication noted in *l* above on the TS-505/U.

4-104. Localizing Troubles

If abnormal operation of the unregulated power supplies is indicated (para 4-103*g* and *h*), refer to the chart given in paragraph 4-84*b* for the localization of the trouble to a faulty circuit component. If abnormal operation of the regulated power supplies is indicated (para 4-103*l* and *m*),

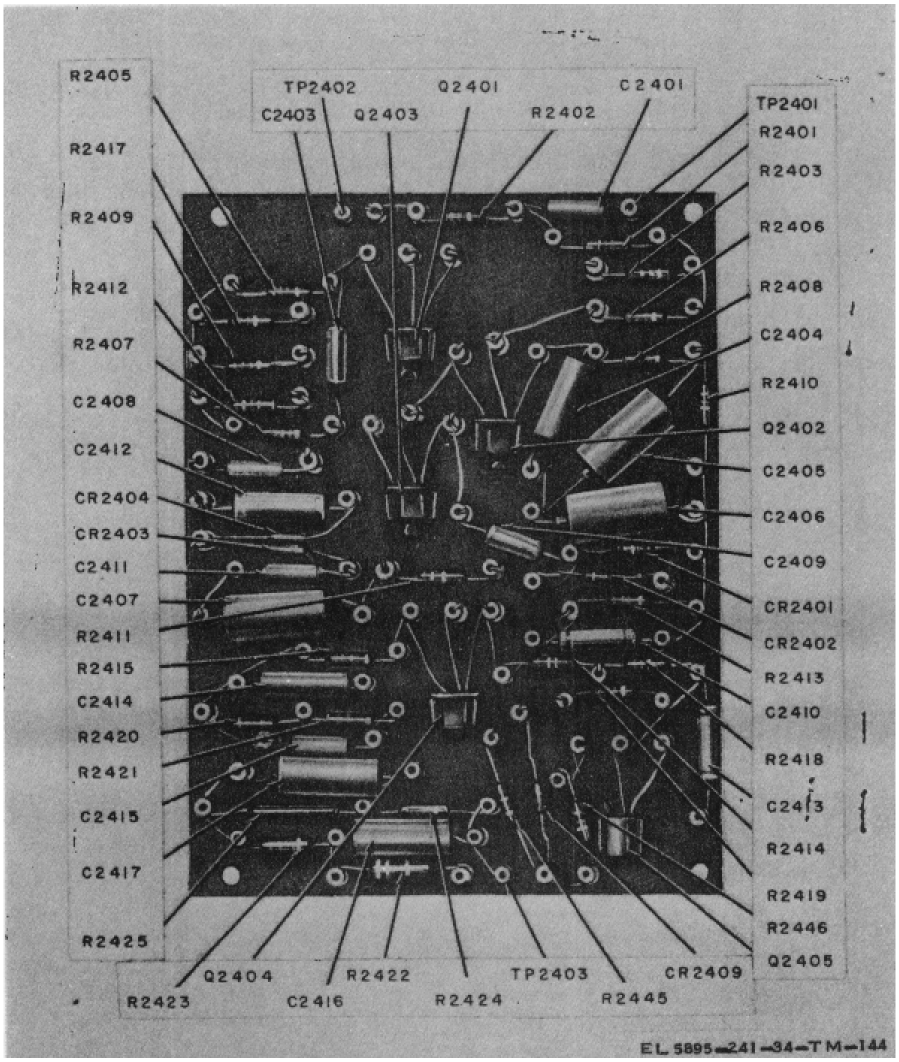


Figure 4-54. Amplifier Assembly AM-2817/FSW-8, terminal board TB2401, parts location.

follow the instructions given in a through c below to localize the trouble.

a. Regulated -7.5 volts Dc Supply (fig. FO-14(3)). Check components of the regulator circuit; transistor Q2303 and resistor R2311. Check components of the reference circuit: transistors Q2304 and Q2306; resistors-R2312 and -7.5V ADJ control R2313; capacitor C2309 and diode CR2314.

b. Regulated -15-Volt Dc Supply (fig. FO-14(3)).

(1) Check components of the regulator circuit; transistor Q2301, Q2302 and resistor R2305.

(2) Check components of the reference circuit; transistor Q2305, capacitor C2306, resistors -15V ADJ R2308, R2307, R2309, and R2316.

(3) Check components of filter network: capacitor C2304 and resistor R2303.

c. Dc Resistance of Transformers and Coils.

Transformers and coils	Resistance (ohms)	Terminals
L2301	1-2	2.5
T2301	1-2	3.0
	2-3	less than 2
	1-3	3.2
	4-5	1.8
	6-7	less than 1
	7-8	less than 1
	6-8	less than 1
	0-10	50

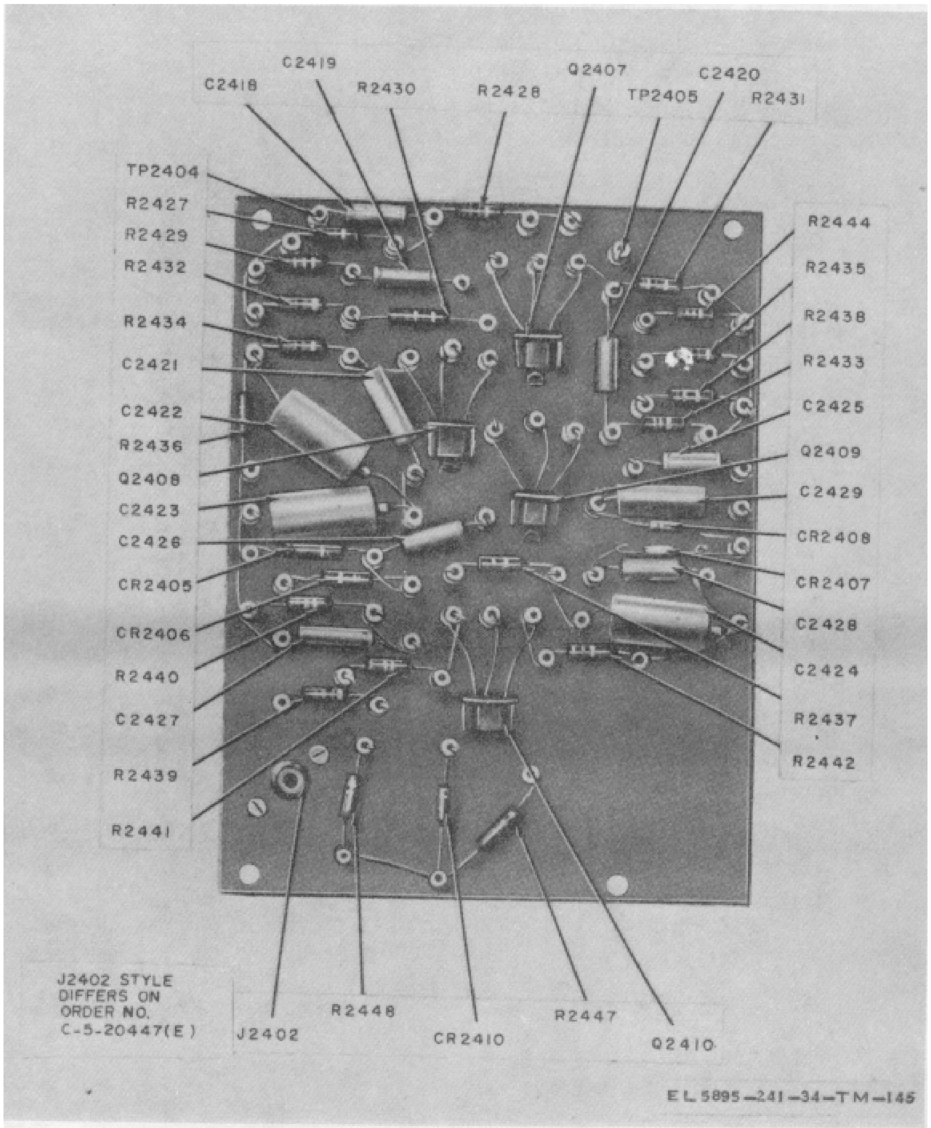


Figure 4-55. Amplifier Assembly AM-2817/FSW-8, terminal board TB2402, parts location.

4-105. Transistor Voltage Measurements PP-2795/FSW-8

The voltage measurements of transistors located in PP-2795/FSW-8 are as follows:

Transistor	Dc voltage to ground		
(PNP)	Emitter	Collector	Base
Q2301	-15.0	-18.0	-15.5
Q2302	-15.5	-18.0	-15.5
Q2303	- 7.5	- 8.5	- 8.0
Q2304	- 8.0	- 8.5	- 8.4
Q2305	- 5.5	-15.5	- 5.7
Q2306	- 5.5	- 8.4	- 5.6

4-106. Dc Resistance of Diodes PP-2795/FSW-8

The dc resistance of diodes located in PP-2795/FSW-8 is as follows:

Type	Reference designations	Forward resistance (ohms)	Reverse resistance (ohms)
1N538 or Jan 1N538	CR2305, CR2306, CR2307, CR2308	5 max	10 meg min
1N1451 or USA 1N1614	CR2301, CR2302, CR2303, CR2304	5 max	10 meg min
1N253 or Jan 1N253	CR2309, CR2310, CR2311, CR2312	5 max	10 meg min

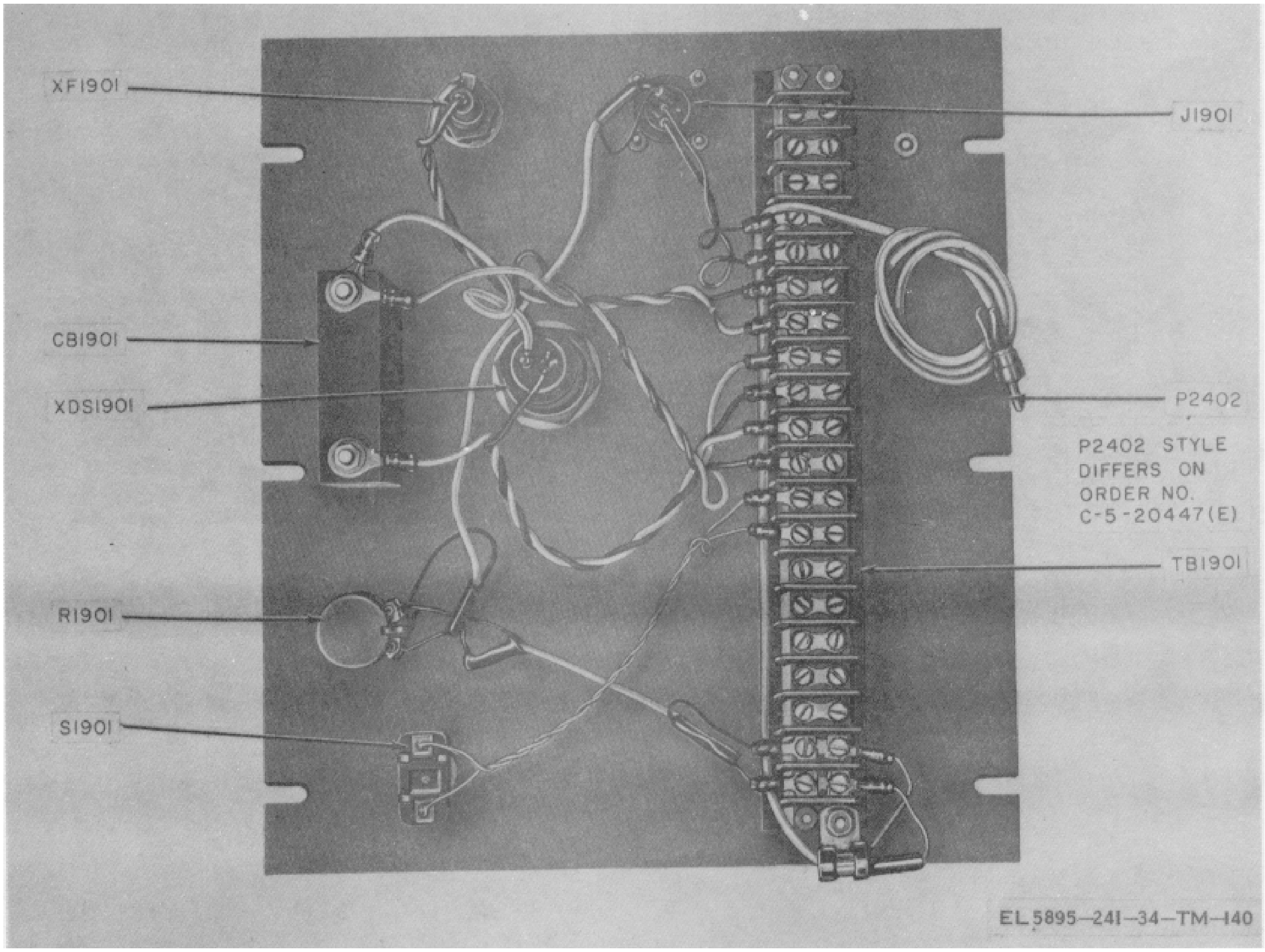


Figure 4-56. Communication Station, Remote Control OA-3014/FSW-8, miscellaneous control panel, parts location.

4-107. Cabinet, Electrical Equipment CY-30 1 9/FSW-8
(fig. 4-65)

The CY3019/FSW-8 provides mounting facilities for each of the major electrical subassemblies of the OA-3014/FSW-8 and also contains the terminal boards used to connect the electrical assemblies of the OA-3014/FSW-8 to the other units of the AN/FSW-8(V) and to the distant airfield radio receivers. When a failure is indicated in the CY-3019/FSW-8, refer to the troubleshooting data given in a and b below.

a. Test Equipment Required. Electronic Multimeter TS-505/U is required for testing the CY-3019/FSW-8.

b. Isolating Troubles. Since the CY-3019/FSW-8 contains harness wiring and terminal board connections related to all operating functions of the OA-3014/FSW-8, a failure in the unit can best be localized by performing the various equipment circuit tests (para 4-67 through 4-84). When performance of these tests indicate a failure in the CY-3019/FSW-8, use continuity measurements, as described in (1) through (3) below, to isolate the trouble.

(1) Arrange the TS-505/U as an ohmmeter.

(2) Use the TS-505/U to make continuity measurements of the equipment wiring; refer to the CY-3019/FSW-8 wiring diagram (fig. FO-24), and the OA-3014/FSW-8 schematic diagram (fig. FO-14).

(3) A reading of 0 ohm or infinity should be obtained, as applicable.

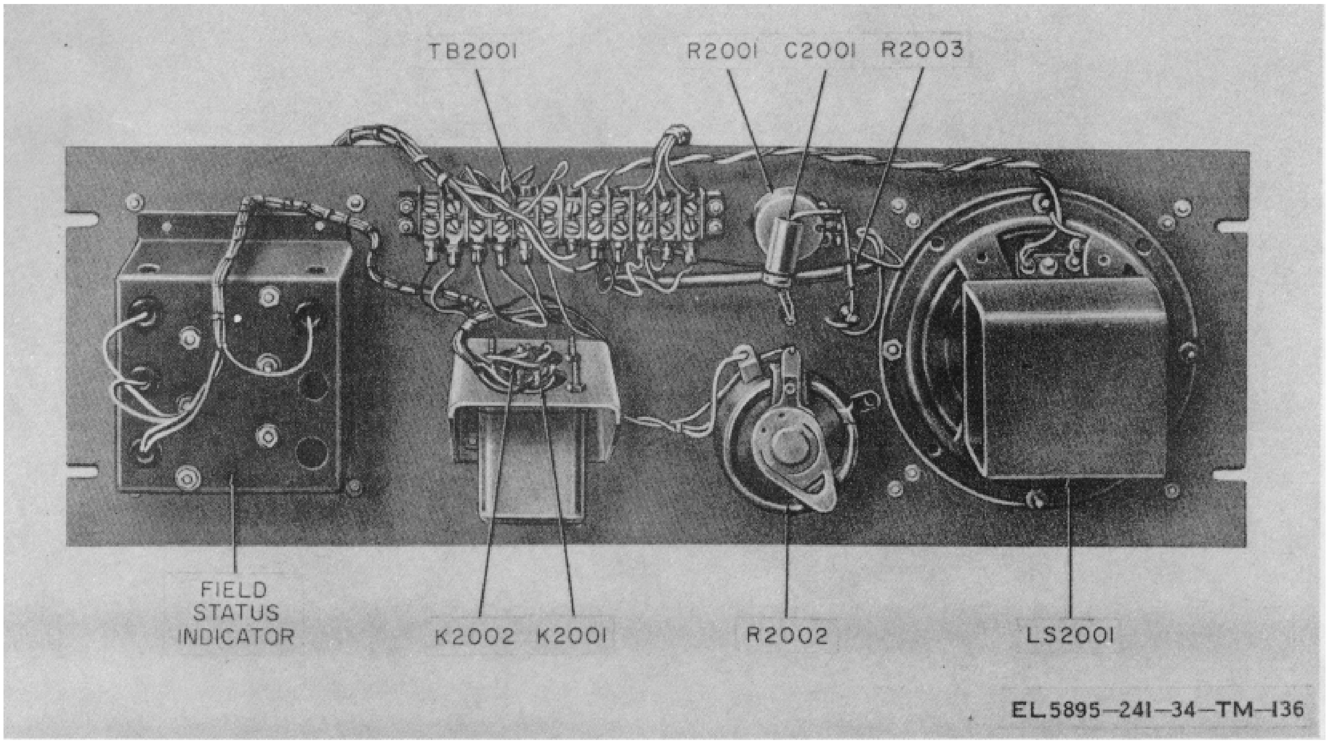


Figure 4-57. Communication Station, Remote Control OA-3014/FSW-S, loudspeaker and indicator panel, rear view, parts location.

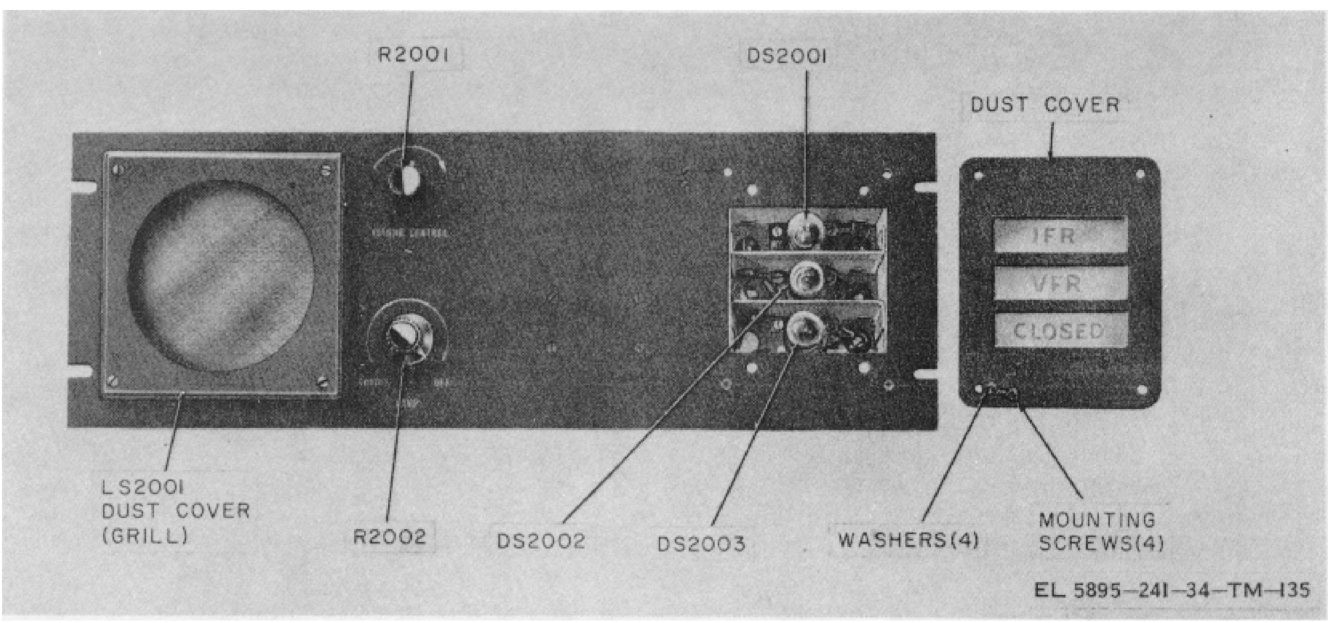
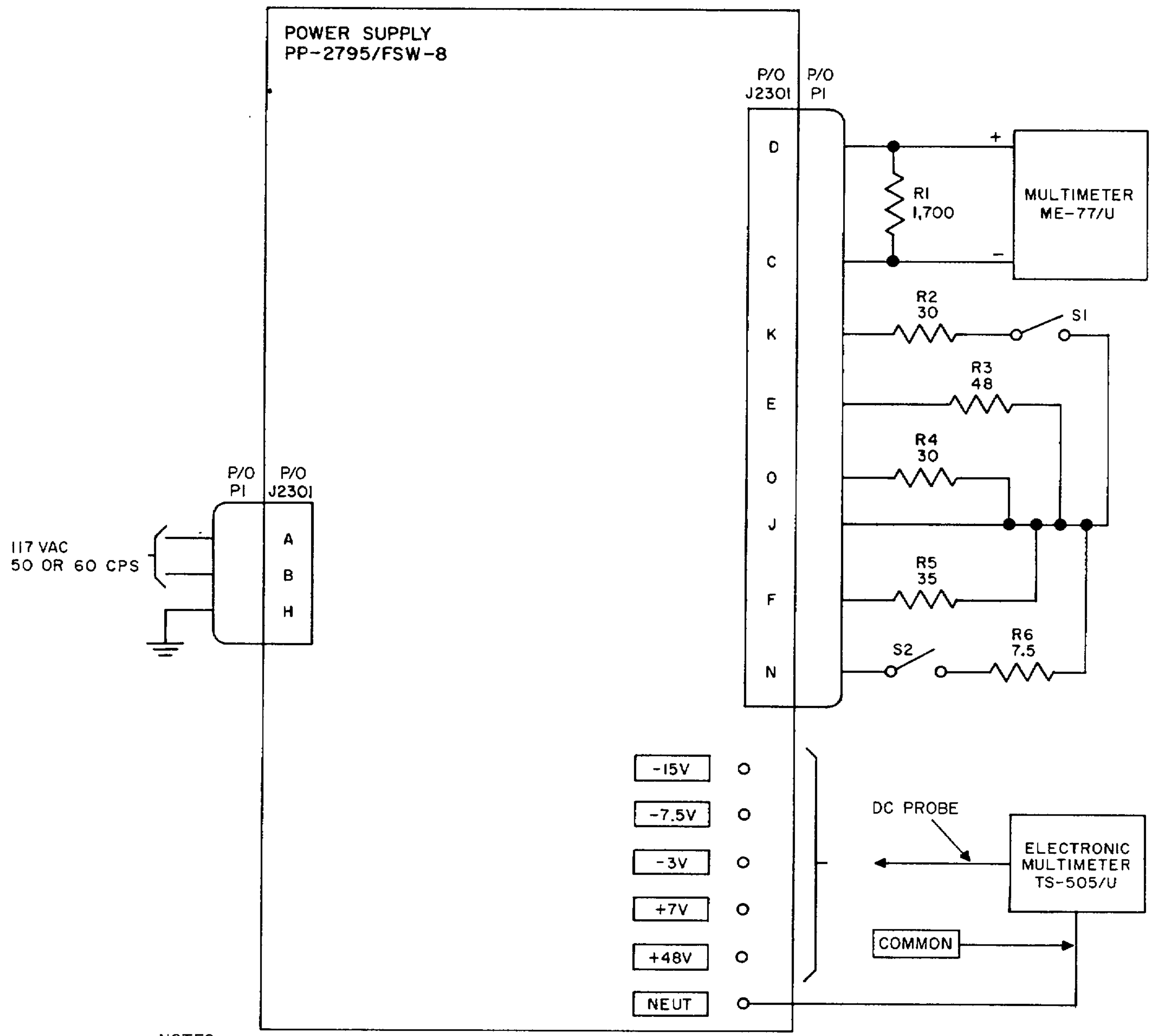


Figure 4-58. Communication Station, Remote Control OA-3014/FSW-S, loudspeaker and indicator panel, front view, parts location.



NOTES:

1. UNLESS OTHERWISE INDICATED, RESISTANCES ARE IN OHMS.
2. ▭ INDICATES EQUIPMENT MARKING.

EL5895-241-34-TM-219

Figure 4-59. Power Supply PP-2795/FSW-8, test connection diagram.

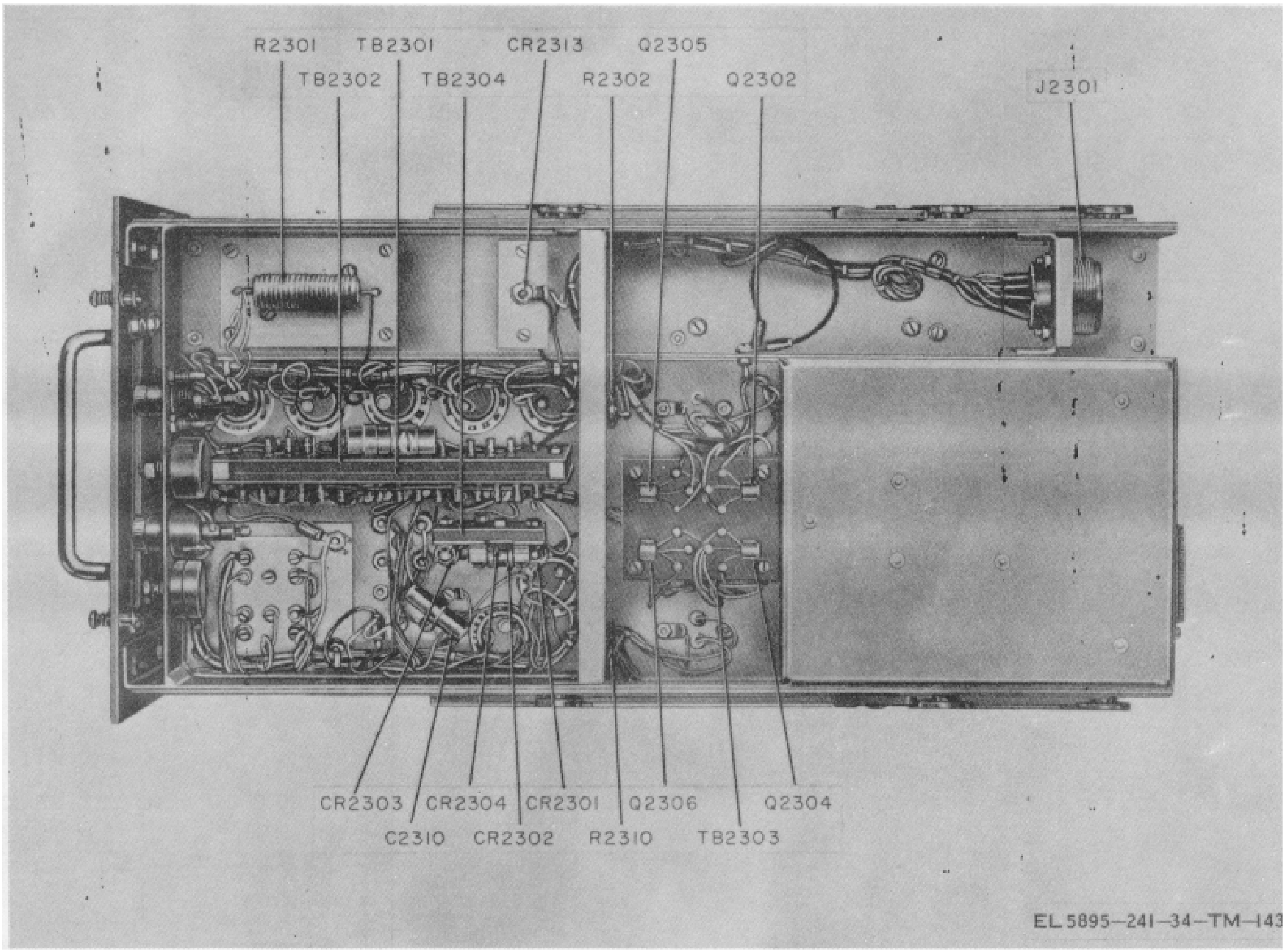


Figure 4-60. Power Supply PP-2795/FSW-8, bottom view, parts location.

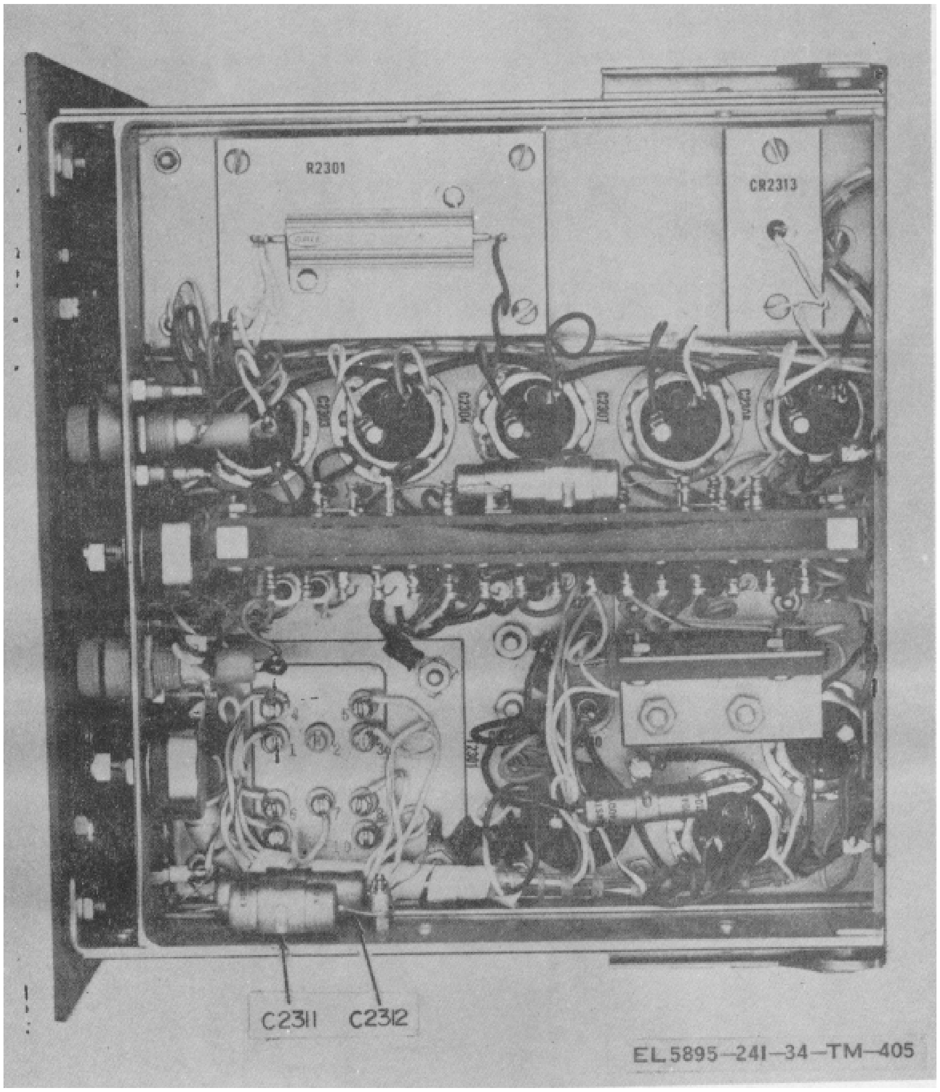


Figure 4-61. Power Supply PP-2795/FSW-8, partial bottom view, parts location for added parts not on Power Supply PP-2795/FSW-8.

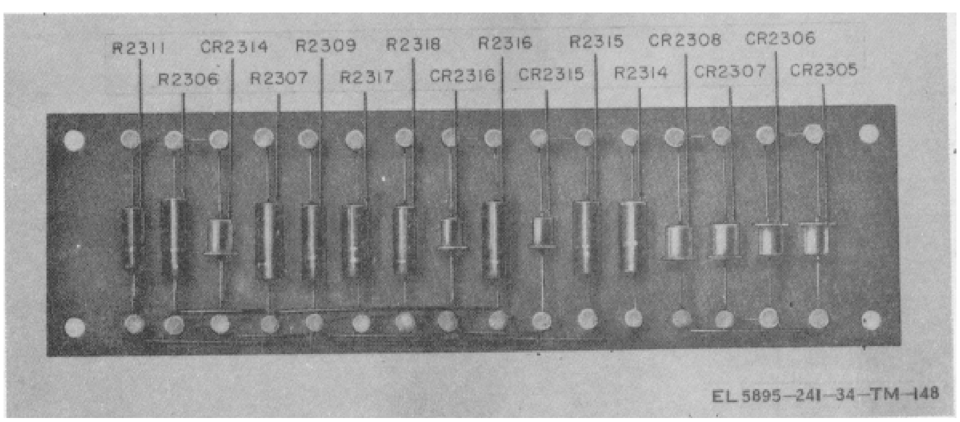


Figure 4-62. Power Supply PP-2795/FSW-8, terminal board TB2801, parts location.

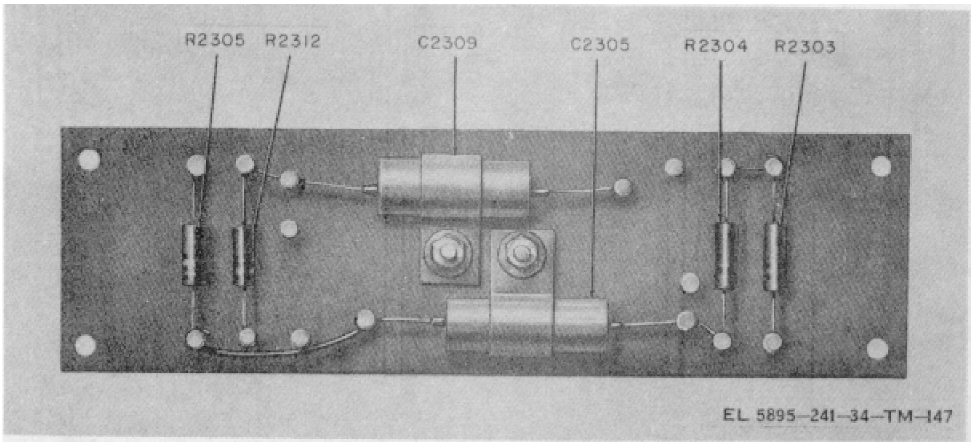


Figure 4-63. Power Supply PP-2795/FSW-8, terminal board TB2302, parts location.

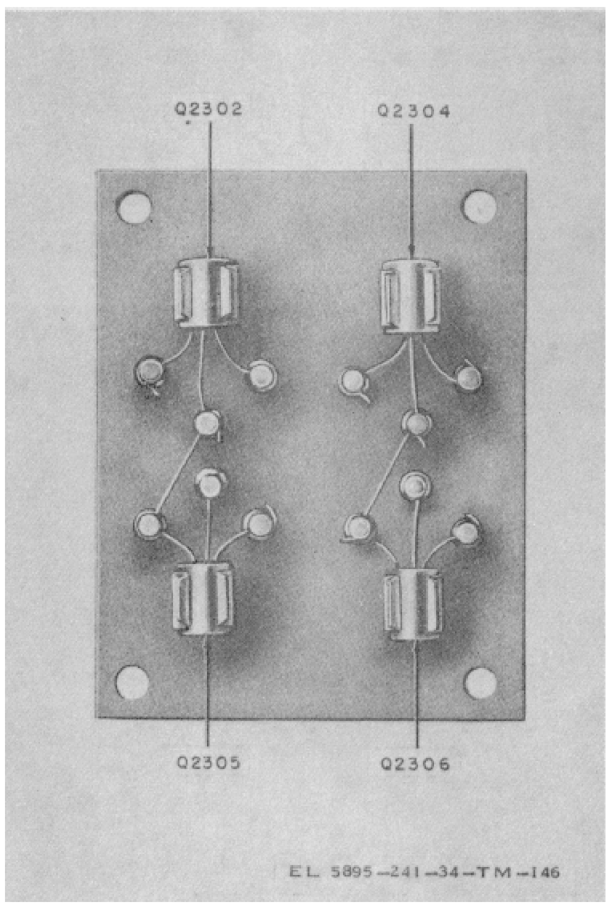


Figure 4-64. Power Supply PP-2795/FSW-8, terminal board TB2SOS, parts location.

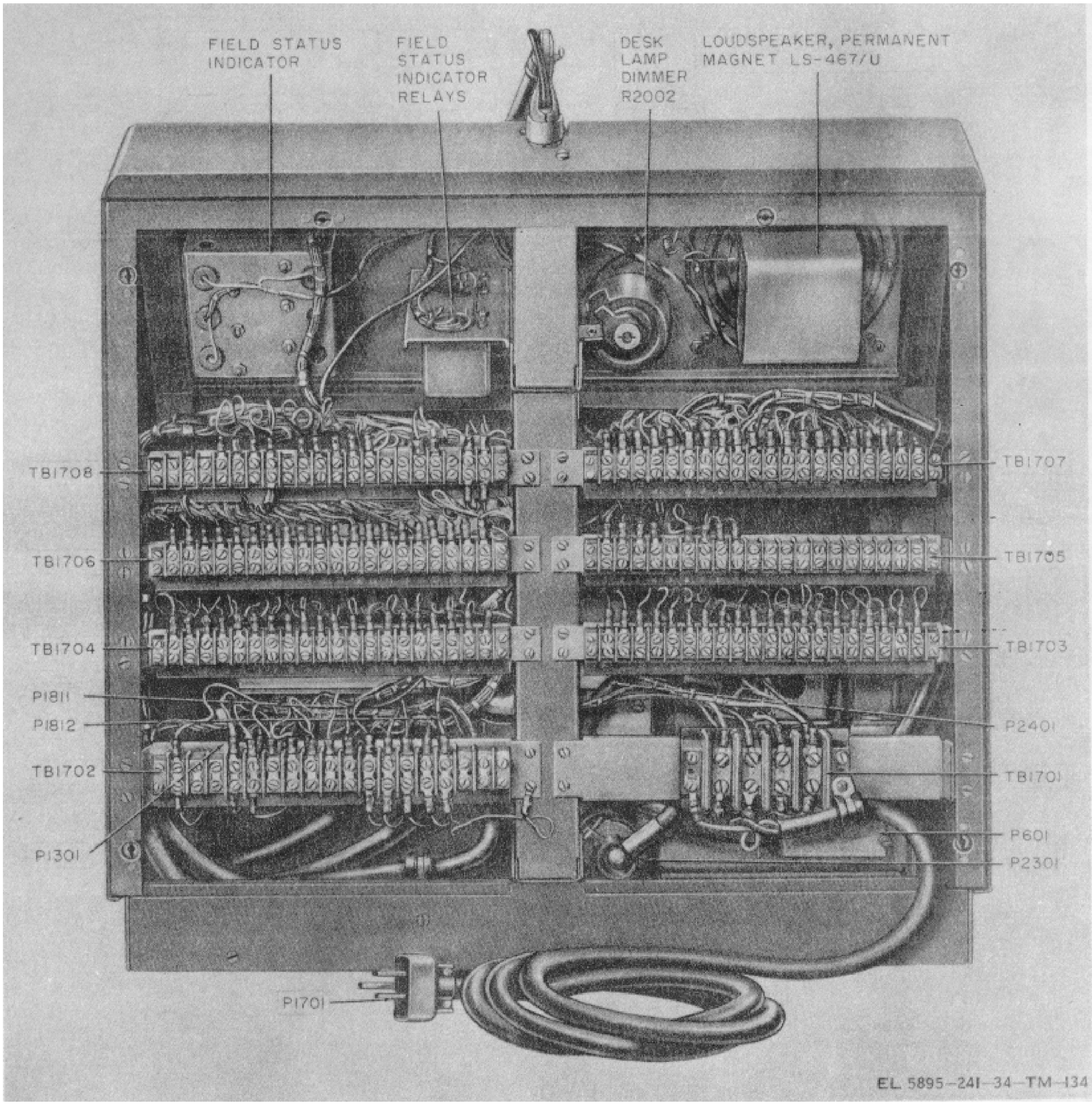


Figure 4-65. Communication Station, Remote Control OA-3014/FSW 8 rear view, showing terminal board locations.

Section IV. TROUBLESHOOTING METEOROLOGICAL DISPLAY CONSOLE OA-2054/FSW-8

4-108. General

This section contains information and procedures for troubleshooting the OA-2054/FSW-8 (fig. 4-66). Included are performance tests for each major circuit function of the equipment and a troubleshooting chart that indicates the symptoms of failures, probable cause, and method of correction. Parts locations are shown in figures 4-67 through 4-75.

4-109. Test Equipment and Materials Required for OA-2054/FSW-8

The following test equipment and materials are required for testing operation of the OA-2054/FSW-8.

a. Test Equipment.

(1) Power Supply PP-2803/FSW-8.

(2) Multimeter ME-26/U.

(3) Electronic Multimeter TS-505/U.

(4) Synchro, torque transmitter, type T23-TX6a.

(5) Test dial and jig (fig. 5-11).

b. Materials.

(1) Resistor, Variable (R1) 5,000 ohms, ±10%, 2 watts (FSN 5905-846-2276).

(2) Wire Electrical 16 Gage AWG MWC16 (19).

4-110. Windspeed Circuits Test

Procedures are given in a through e below to test the operation of Indicator, Wind Speed ID-855/FSW-8 (M201). Refer to the functional test connection diagram for the OA-2054/FSW-8 fig. FO-9).

a. Disconnect the wind transmitting equipment and connect the test equipment to terminals 6 and 7 of terminal board TB402 as shown in figures FO-10 and FO-11.

CAUTION

Do not apply voltage in excess of 15 volts dc to M201.

b. Adjust the ME-26/U to indicate DC volts on the 0 to 30 scale.

c. Adjust the variable resistor for an indication of +14.6 volts dc (±.05 volt) on the ME-26/U. A reading of 120 knots (±2.4) should be indicated on M201.

d. Readjust the variable resistor to reduce the applied dc voltage as indicated in the chart below. Observe the corresponding readings on M201.

De voltage applied	M201 Windspeed indication knots	Tolerance (knots)
14.6	120	±2.4
12.1	100	±2.4
9.7	80	±2.4
7.3	60	±1.2
4.85	40	±1.2
2.43	20	±1.2
1.22	10	±1.2
0.61	5	±1.2

e. If faulty or irregular operation is observed (*d* above), check the windpseed circuit as described below.

(1) Inspect wiring connections between M201 (fig. 4-67) and terminal boards TB201, TB404, and TB402.

(2) Arrange the ME-26/U as an ohmmeter and test the continuity of the circuit. Replace any wiring if defective.

(3) Check resistor R201 (fig. 4-67) for a resistance of 2,300 ohms. Replace if defective (para 4-154*i*).

(4) Check resistance of M201 (4,600 ohms +23). Replace M201 if defective (para 4-154*f*).

4-111. Wind Direction Circuits Tests

Procedures are given in a and b below for testing the operation of Indicator, Wind Direction ID-856,'FSW-8 (DS201). Refer to the functional test connection diagram for the OA-2054/FSW-8 (fig. FO-9).

a. Pretest Procedure. The wind direction test requires the construction of a test fixture ((1) below) and a type IF, 1HG, or 1G synchro (para 4-5b) to simulate the operation of a wind direction transmitter.

(1) Construct the test dial and test jig shown in figure 5-11.

(2) Attach the test dial firmly to the rotor shaft of the synchro so that the dial and rotor move together when rotated.

(3) Install the synchro in the test jig. Tighten the assembly screws until the synchro is held firmly in the test jig.

(4) Connect the rotor leads R1 and R2 and the stator leads S1, S2, and S3 of the synchro to terminal board TB402 as shown in figure FO-9.

b. Operational Test. Test the wind direction circuits as given below. If unsatisfactory performance is observed, refer to trouble localization (c below).

(1) Operate MAIN POWER circuit breaker CB402 to ON.

(2) Rotate the test dial until one of the 15° markers is aligned with the pointer of the test jig.

(3) Hold the test dial and test jig firmly

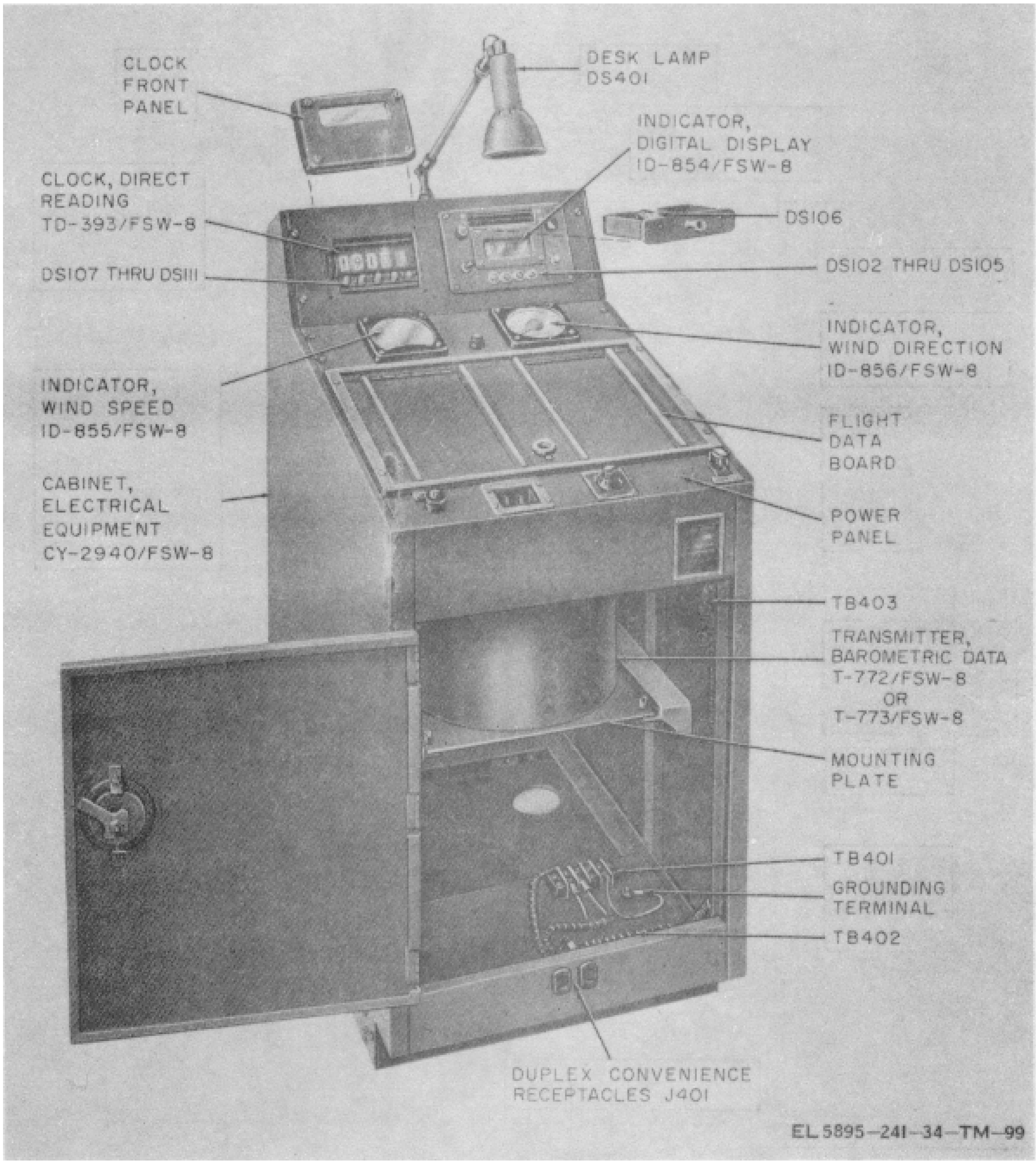


Figure 4-66. Meteorological Display Console OA-2054/FSW-8 front view.

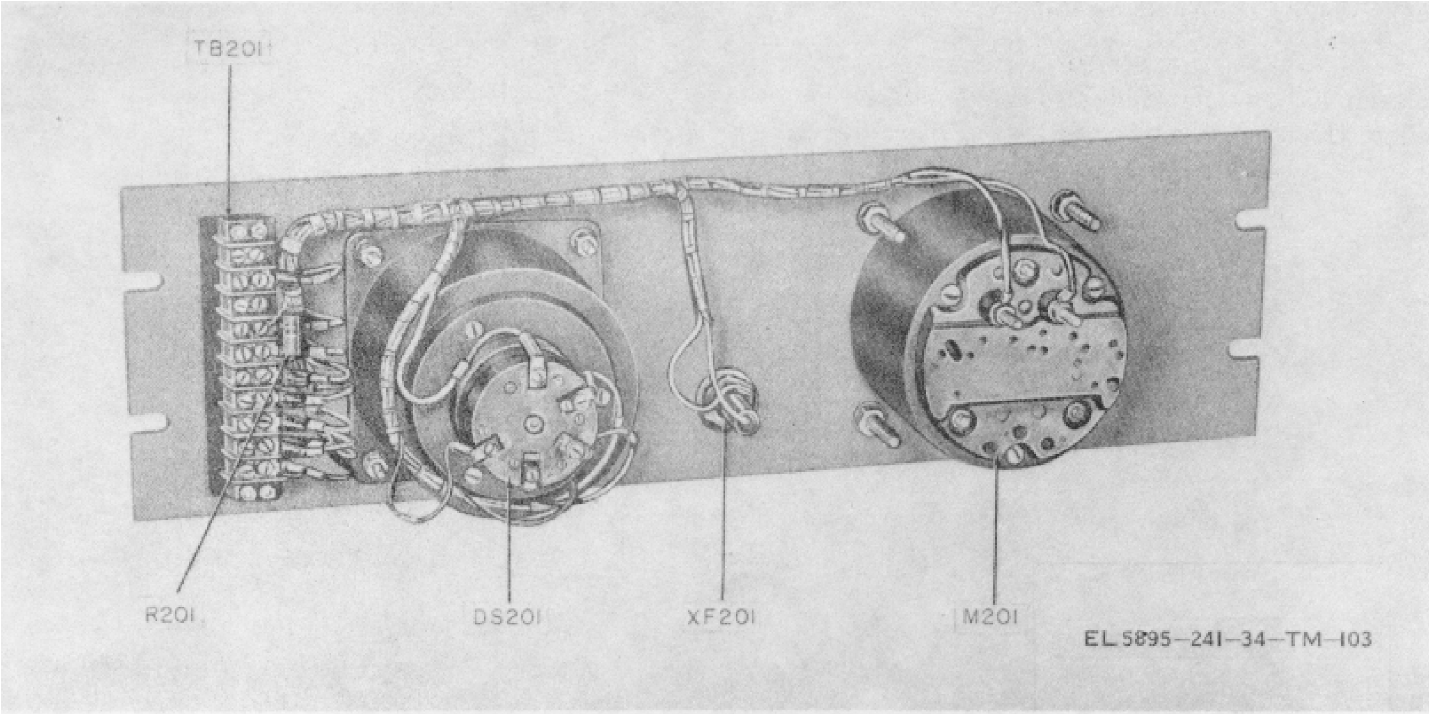


Figure 4-67. Meteorological Display, Console OA-2054/FSW-8, wind direction and windspeed panel, rear view.

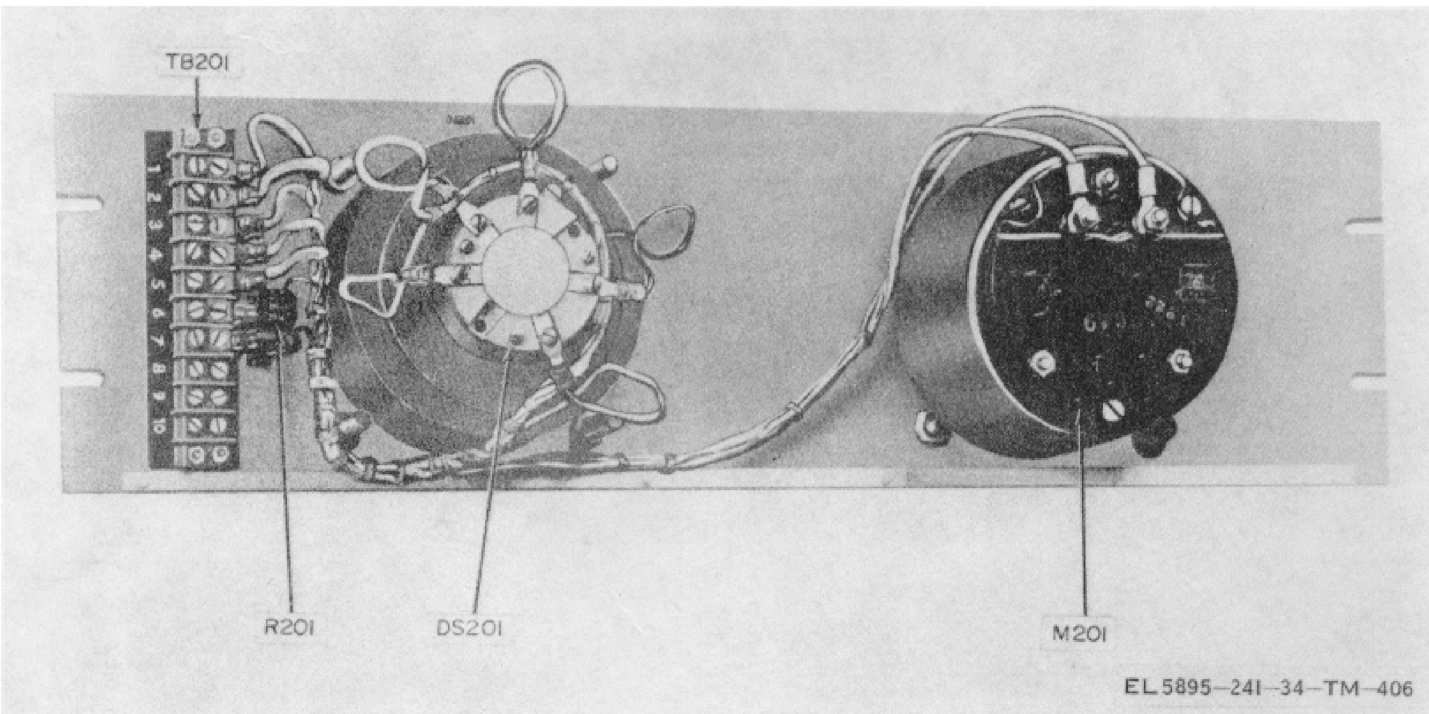


Figure 4-68. Meteorological Display Console OA-2054A/FSW-8, wind direction and windspeed panel, rear view.

together, and rotate the synchro until the pointer of the DS201 points to N (north).

(4) Rotate the test dial clockwise and stop at each 15° marker. The pointer of DS201 should follow the movement of the test dial within 3°.

(5) Rotate the test dial counterclockwise stop at each 15° marker. The pointer of DS201 should follow the movement of the test dial within 3°.

(6) Operate MAIN POWER circuit breaker CB402 to OFF.

c. Wind Direction Circuit Troubleshooting Chart. The following chart will serve as an aid to localize troubles in the ID-856/FSW-8.

Symptom	Probable Trouble	Correction
Indicator DS201 does not function at any position of the test dial.	a. Power connections faulty --------	a. Check continuity of wiring to terminals 1 and 9 of terminal board TB201 (fig. FO-10).
	b. 2 AMP fuse F201 defective ------	b. Check and replace fuse F201 (para 4-154b).
	c. Rotor and stator connections defective.	c. Check continuity of wiring from terminal boards TB402 to TB201 (fig. FO-10).
	d. Indicator DS201 defective -------	d. Check DS201 (fig. 4-67). Replace if defective (para 4-154d and fig. 4-114).
Pointer of DS201 rotates in opposite direction of that of the test dial.	Stator leads S1 and S3 reversed----	Check continuity of wiring to terminals 3 and 5 of terminal board TB201 (fig. FO-10).
Pointer of DS201 oscillates or spins intermittently.	Defective stator winding ------------	Replace DS201 (para 4-154d and e and fig. 4-114).
Pointer of DS201 does not follow test dial within prescribed accuracy.	Rotor binding ------------------------	Replace DS201 (para 4-154d and e and fig. 4-114).
Pointer when rotated follows test dial 180° out of phase.	Rotor leads R1 and R2 reversed ----	Check continuity of wiring to terminals 1 and 2 of terminal board TB201 (fig. FO-10).

4-112. Clock Circuit Test
(fig. 4-69)

Procedures are given in a below to check the operation of Clock, Direct Reading TD-393/ FSW-8, and in b below to localize faulty operation of the clock circuit.

CAUTION

Do not set or reset the clock with power applied.

a. Operational Test. Test the operation of the clock against a known time standard as follows:

(1) Operate CLOCK circuit breaker CB401 to OFF.

(2) Remove the clock front panel (para 4-151b).

(3) Obtain the correct time from a known standard.

CAUTION

Do not rotate the clock setting gears downward; the clock mechanism will become damaged.

(4) Rotate the minute setting gear (fig. 4-69) upward until the appropriate minute and 10minute settings are obtained. Set the minute drum 2-minutes ahead of a selected synchronizing time.

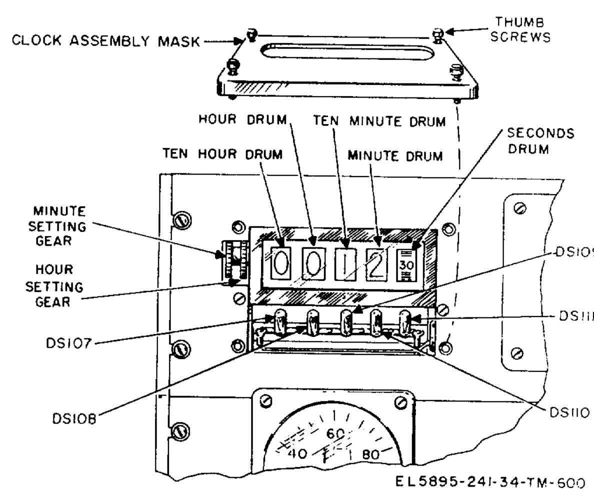


Figure 4-69. Clock, Direct Reading TD-393/FSW-8, controls.

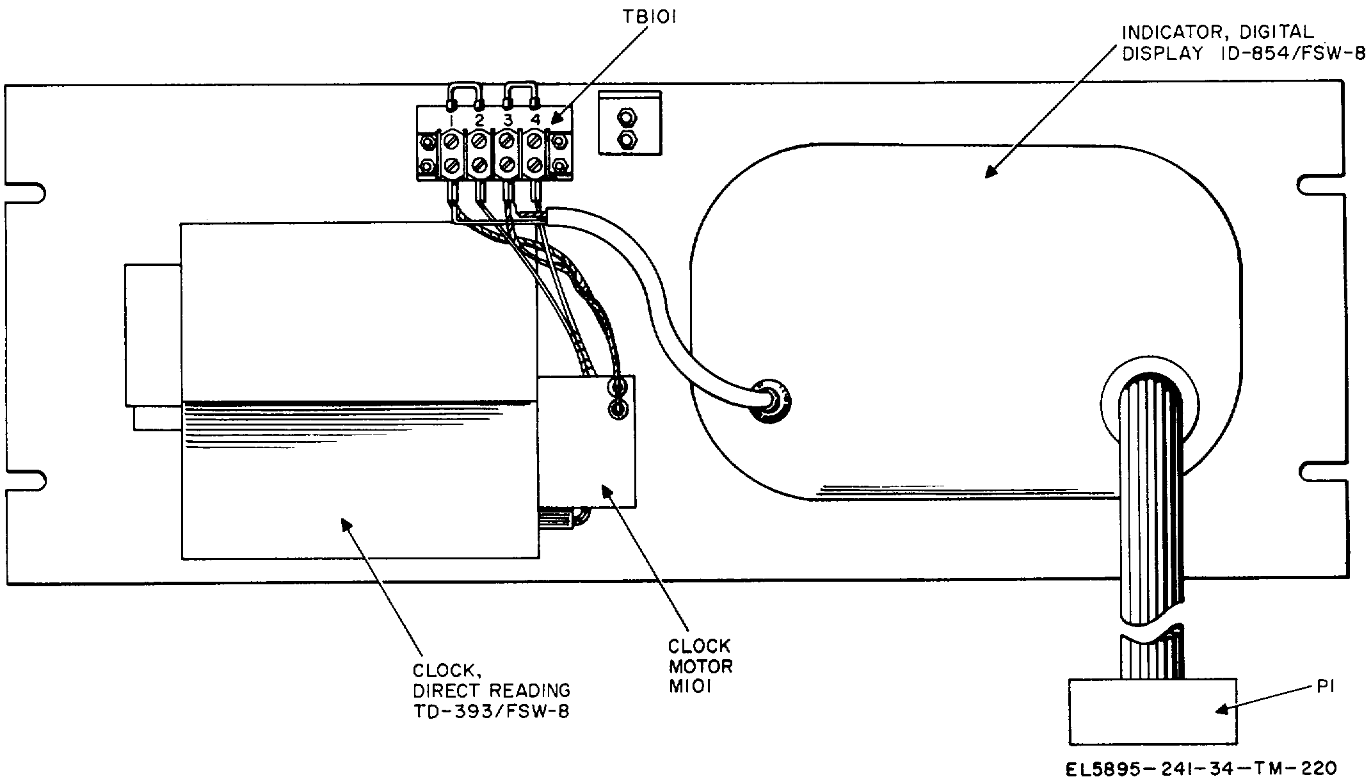


Figure 4-70. Cabinet, Electrical Equipment CY-2940/FSW-8, power panel, parts location.

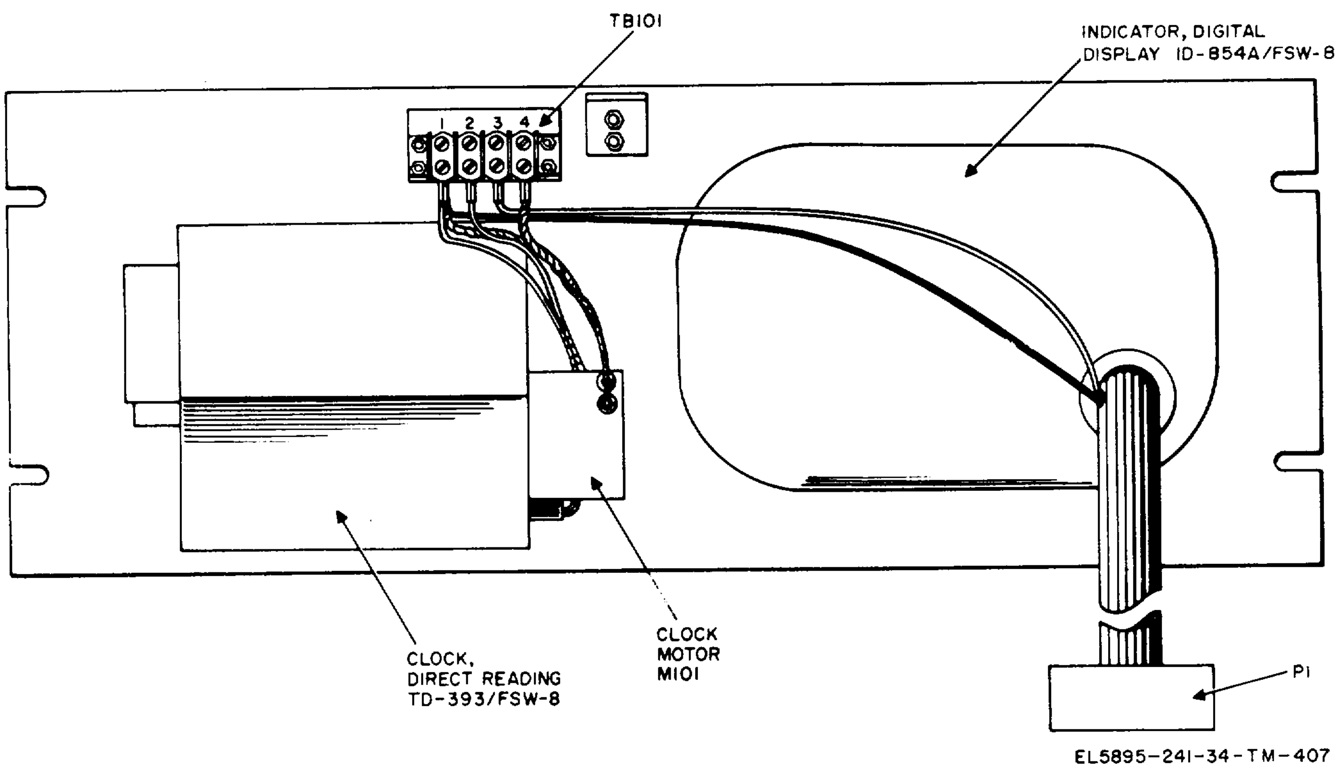


Figure 4-71. Meteorological Display Console OA-2054A/FSW-8, clock and digital readout panel, rear view.

(5) Rotate the hour-setting gear upward until the proper hour and 10-hour settings are obtained.

(6) Operate CLOCK circuit breaker CB401 to ON. Allow the clock to run until the selected synchronizing time appears.

(7) At the instant the seconds drum registers 00, operate CLOCK circuit breaker CB401 to OFF.

(8) Observe the time of the standard clock. At the instant the standard clock reaches the selected synchronizing time, operate CLOCK circuit breaker CB401 to the ON position.

(9) Allow the clock to run for 24 hours. At the end of that period, check the clock against the time standard.The two readings should agree.

b. Localizing Troubles in Clock Circuit. Follow the procedures given below if a failure is indicated during the operational test (a above).

(1) If the clock runs considerably slower or faster than the known time standard, the 50or 60-cps motor has not been installed to conform with the ac input line power. Remove the clock motor from the clock assembly (para 4-151b) and install the alternate motor.

(2) If the clock stops humming during testing, check CLOCK circuit breaker CB401. Replace CB401 if defective (para 4-158b). Check cabinet wiring to terminals 1 and 4 of terminal board TB101 (fig. 4-70, 4-71).

(3) If the failure cannot be corrected, replace the clock.

4-113. Cabinet, Electrical Equipment CY-29460/FSW-8

The EMER ALARM circuit and the controls for the ac power and clock circuits are part of Cabinet, Electrical Equipment CY-2940/FSW-8. Test the operation of these circuits as instructed below. Refer to the functional test connection diagram for the OA-2054/FSW-8 (fig. FO-10).

a. Circuit Breaker Test (fig. 1-5, TM 115895-241-12, and 4-72).

(1) Operate MAIN POWER circuit breaker CB402 to ON and then OFF. MAIN POWER indicator lamp DS402 should illuminate and extinguish respectively.

(2) Operate CLOCK circuit breaker CB401 to ON. The five clock lamps DS107 through DS111 (fig. 4-69) should illuminate and the clock should run.

(3) Operate the CLOCK circuit breaker to OFF. The lamps should extinguish and the clock should stop.

b. Lamp Control Test (fig. FO-10, FO-11).

(1) Operate MAIN POWER circuit breaker CB402 to ON. Adjust LAMP control resistor R401 to the extreme counterclockwise (BRIGHT) position. Desk lamp DS401 should become brighter.

(2) Adjust LAMP control resistor R401 clockwise (OFF). The brightness of the desk lamp should decrease until it is extinguished.

(3) Adjust DIM control resistor R31 in a clockwise direction. Digital readout lamp DS106 (fig. 4-66) should become brighter.

(4) Adjust DIM control resistor R31 in a counterclockwise direction. The brightness of the digital readout lamp should decrease but not extinguish.

c. EMER ALARM Circuit Test (fig. FO-10, FO-11).

(1) Label and disconnect wires from the emergency alarm system connected to terminals 10 and 11 of terminal board TB402.

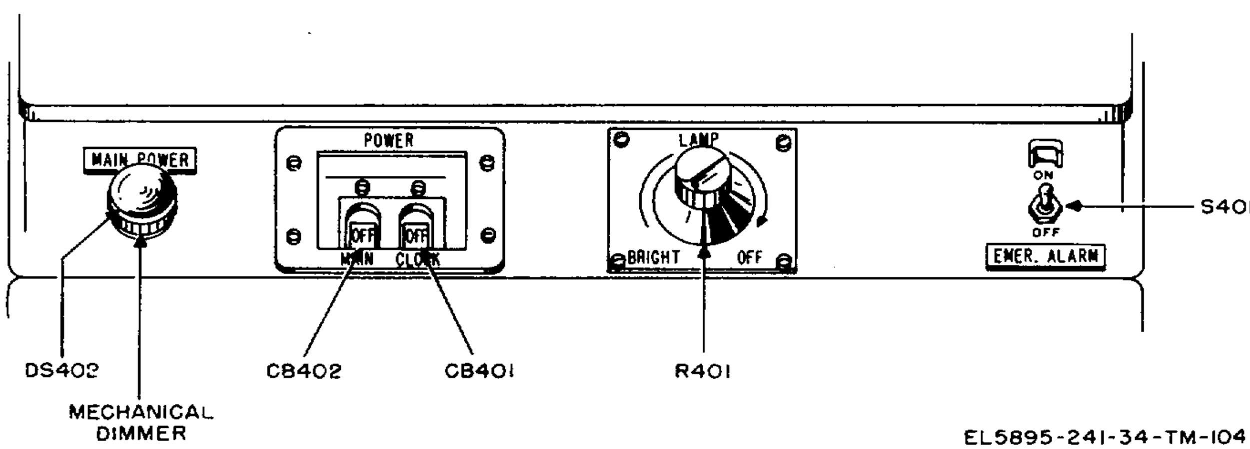


Figure 4-72. Cabinet, Electrical Equipment CY-2940/FSW-8, power panel, parts location.

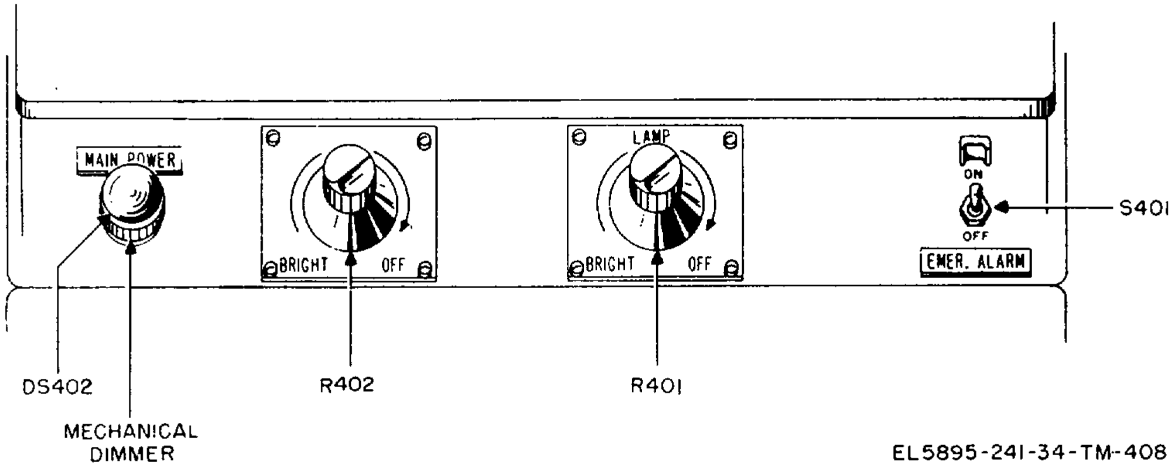


Figure 4-73. Cabinet, Electrical Equipment CY-2940A/FSW-8, power panel, parts location.

(2) Arrange the TS-505/U as an ohmmeter. Connect the test leads to terminals 10 and 11 of terminal board TB402.

(3) Operate EMER ALARM switch S401 to OFF. An indication of infinity should be obtained on the TS-505/U. Operate S401 to ON. An indication of 0 should be obtained on the TS-504/U.

(4) Reconnect the wires from the emergency alarm system.

Section V. TROUBLESHOOTING INDICATOR, FIELD STATUS ID-877/FSW-8, SWITCH BOX SA-751 /FSW-8, AND FIELD STATUS INDICATOR CIRCUITS

4-114. General

This section contains information and procedures for troubleshooting the components of the AN/ FSW-8(V) field status indicating system. A performance test (para 4-115) is given to test the operation of the system and localize troubles to a unit or component (para 4-116 and 4-117).

4-115. Field Status Indicator Circuits Test (fig. 4-131 and 4-132)

Procedures are given below for testing the ANFSW-8(V) field status indicator circuits. Refer to the system test connection diagram (fig. 4-8) and to the AN/FSW-8(V) control function diagram (fig. FO-4). If unsatisfactory performance is observed during the performance test (a below), refer to the information (b below) for localizing the trouble to a faulty component.

a. Operational Test Procedure. Connect the units of the AN/FSW-8(V) and PP-2803/FSW-8 as shown in figure 4-8. Operate field status selector switch S2201 on the SA-751/FSW-8 (fig. 4-75) to OFF. Operate the MAIN POWER switch of the OA-2055/FSW-8 and OA-3014/ FSW-8 to ON.

(1) Operate S2201 to VFR. The VFR indicator lamp on the ID-877/FSW-8, OA-2055/ FSW-8, and OA-FSW-8 should illuminate.

(2) Operate S2201 to IFR. The IFR indicator lamp on each equipment should illuminate.

(3) Operate S2201 to CLOSED. The CLOSED indicator lamp on each equipment should illuminate.

(4) Operate S2201 to OFF. All indicator lamps should be extinguished.

b. Field Status Indicator Circuits Troubleshooting Chart. The following chart will serve as an aid in localizing troubles in the field status indicating circuits.

Symptom	Probable Trouble	Correction
Field status indicator lamps do not illuminate on any equipment.	a. Field status selector switch defective. b. Faulty wiring in SA-751/FSW-8	a. Check field status selector switch S2201 (fig. 4-75). Replace if defective. b. Check continuity of wiring from S2201 to terminal board TB2201 (fig. 4-75). Check AN/FSW-8(V) system wiring from terminal board TB2201 to each equipment.

Symptom	Probable Trouble	Correction
	c. Faulty power connection to SA-751/FSW-8.	c. Check power connections to terminals 3 and 4 of terminal board TB2201.
Field status indicator lamp on each equipment illuminates, but does not correspond with position selected by field status selector switch.	Wiring to SA-751/FSW-8 faulty --------	Check connections to terminals 1 and 2 of terminal board TB2201.
Field status indicator lamp illuminated on one equipment does not correspond with position selected by field status selector switch.	a. Faulty wiring to field status indicator circuits. b. Faulty relay operation -----------	a. Check continuity of wiring to terminal boards on each equipment. b. Check field status relays in defective circuits: K2102 and K2101 in ID-877/FSW-8 (fig. 4-74); K1401 and K1402 in OA-2055/FSW-8 (fig. 428); K2001 and K2002 in OA-3014/FSW-8 (fig. 4-57). Check operation of relays (para 4-169k); replace if defective.
Field status indicator lamp does not illuminate in one equipment.	a. Indicator lamp defective ---------- b. Indicator lamp and relay circuit defective.	a. Check indicator lamp and replace if defective. b. Check ID-877/FSW-8 (fig. 4-74). Check loudspeaker and indicator panel in OA-2055/FSW-8 (para 4-52 through 4-54) and OA-3014/FSW-8 (para 4-80).

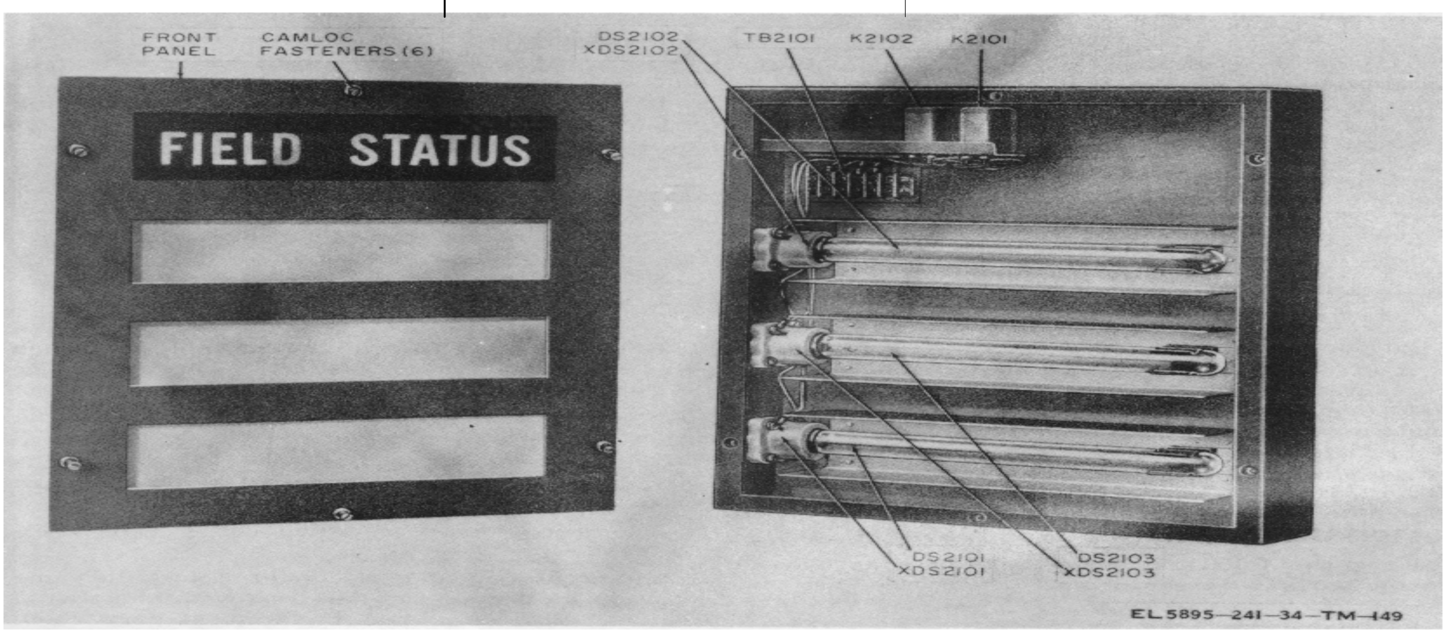


Figure 4-74. Indicator, Field Status ID-877/FSW-8, parts location.

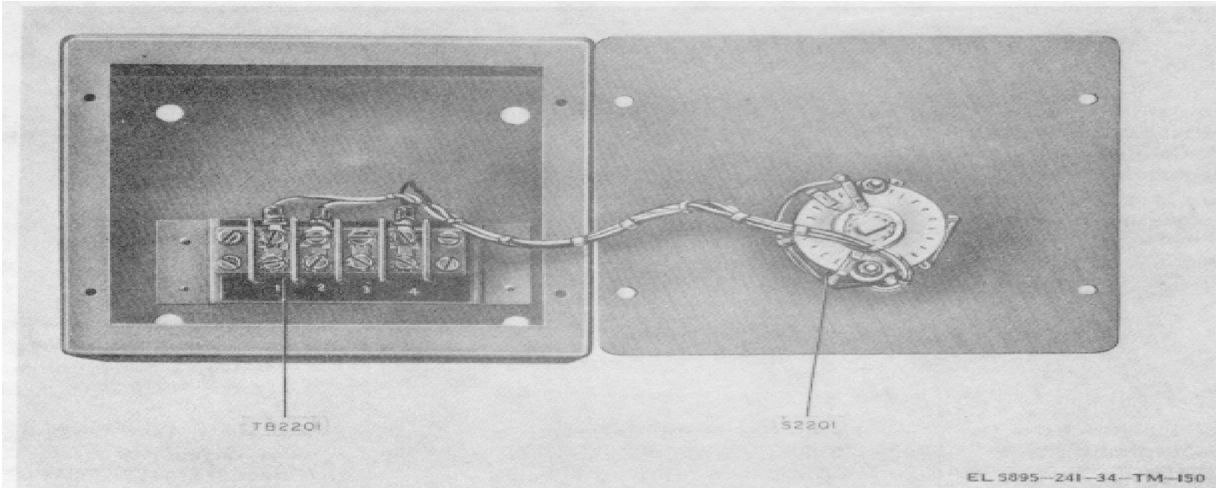


Figure 4-75. Switch Box SA-751/FSW-8, parts location.

4-116. Indicator, Field Status ID-877/FSW-8
(fig. 4-74)

The ID-877/FSW-8 is a wall-mounted indicator containing the CLOSED, IFR, and VFR indicator lamps (DS2101, DS2202, and DS2203), and field status indicating relays K2101 and K2102.

4-117. Switch Box SA-751/FSW-8
(fig. 4-75 and 4-136)

The SA-751/FSW-8 contains selector switch S- 2201 and terminal board TB2201 from which all connections are made to the field status indicator circuits of the AN/FSW-8(V) communication system.

Section VI. GENERAL PARTS REPLACEMENT

4-118. General Instructions
This section contains instructions and procedures required for removing and replacing the assemblies, subassemblies, and components of the AN/ FSW-8(V). Instructions are given in paragraphs 4-120 through 4-163 for the removal and replacement of assemblies of the equipment, including procedures for the complete dismantling of each equipment cabinet. The procedure for the removal or disassembly of each component is keyed to an exploded view diagram and numerical legend which indicates the sequence of disassembly and identifies the parts removed.

4-119. General Parts Replacement Techniques
Observe the following when removing and replacing parts in the equipment.

NOTE
Where several similar parts are mounted on the same control panel chassis, disassembly procedures are only given for part; disassembly procedures for the other parts are identical.

a. Use the techniques listed in (1), (2), and (3) below when removing an assembly from one of the units of the AN/FSW-8(V) for service on parts replacement.

(1) Disconnect and tag any interconnecting cabling.

(2) Disconnect and tag any leads from the equipment cabinet wiring at the terminal board on the assembly.

(3) Remove the assembly to a convenient working area.

b. A replacement part should occupy the same position as that of the part removed, and should be an exact duplicate. A replacement part which has the same electrical value as the original part but differs in physical size may cause difficulty in reassembling the unit.

c. In replacing parts, use the same ground point as that used for the original wiring.

d. Before unsoldering a part, note the position of its leads. If the part, such as a transformer or relay has many connections to it, tag each of the leads for ease in identification.

e. Be very careful when replacing transistors in the amplifier circuits of the OA-2055/FSW-8 and OA-3014/FSW-8. Use a pencil soldering iron, with 25-watt maximum capacity. If the iron must be connected to an ac power source, use an isolating power transformer (such as TF-12/F (FSN 5950-646-4451)) between the iron and the ac power line. Do not use a soldering gun; it may induce damaging voltages in components.

f. When soldering transistor leads, solder quickly. When wiring permits, use a heat sink (such as long-nose pliers) between the soldered joint and the transistor. For additional information on soldering and unsoldering techniques, refer to TB SIG 222. Use approximately the same length and dress of the original transistor leads.

g. Reverse the disassembly procedure sequence for reassembly and replacement of assemblies.

Section VII. DISASSEMBLY OF CONSOLE, COMMUNICATIONS CONTROL OA-2055/FSW-8

4-120. Removal and Replacement of Assemblies

(fig. 4-76 and 4-77)

a. General. Procedures are given below for the removal of each major assembly of the OA2055/FSW-8. Reverse the procedures given in b through p below to replace the major assemblies of OA-2055/FSW-8. Paragraphs 4-121 through 4-140 give detailed instructions for the disassembly of the major assemblies. (When the OA-2055/FSW-8 and OA-2054/FSW-8 are attached, and it is necessary to separate the two cabinets, remove the four panhead machine screws (1) and lock-washers (2) from the joiner plate (2).

b. Headset-Microphone H-195/FSW-8. Proceed as follows to remove the H-195/FSW-8.

(1) Release the Camloc fastener (6) from the Camloc receptacle (7) and open the headset-microphone access door (5); remove the H-195/ FSW-8 (4) from the telephone storage well (27).

(2) Remove connectors P1103 (8) and P1102 (9) from their respective receptacles to disconnect the H-195/FSW-8 (4) from the miscellaneous control panel (39).

c. Writing Desk. Remove the writing desk (12) by removing the four panhead machine screws (10) and lockwashers (11). Refer to paragraph 4-122 for instructions on disassembly of the writing desk.

d. Top Drawer Assembly. Proceed as follows to remove the top drawer assembly (15):

NOTE

The power panel is an integral part of the CY-3020/FSW-8. Circuit breaker CB1001 and fuse F1001 in the OA-2033A/FSW-8 are located in Cabinet, Electrical Equipment CY-3020A/FSW-8, mounted below and on the right side of the power panel.

(1) Open the front access door (66) and release the two Camloc fasteners (13) from their Camloc receptacles (14).

(2) Slide the top drawer assembly (15) forward to the stop.

(3) Release the two drawer locks (16) and side the top drawer assembly (15) clear of the CY-3020/FSW-8 (67). Refer to paragraph 4-122 for instruction on disassembly of the top drawer assembly (15).

e. Power Supply Drawer Assembly. Proceed as follows to remove the power supply drawer assembly:

(1) Release the two Camloc fasteners (17) from the Camloc receptacles (18).

(2) Slide the power supply drawer assembly (19) forward to the stop.

(3) Release the two drawer locks (20) and side the power supply drawer assembly (19) clear of the CY-3020/FSW-8 (67). Refer to paragraph 4-125 for instructions on disassembly of the power supply drawer assembly (19).

f. Switch, Foot SA-754//FSW-8. Remove the SA-754/FSW-8 (23) by disconnecting connector P1002 (21) from connector J1002 (22) on the base of the CY-3020/FSW-8 (67).

g. Telephone Storage Well. To remove the telephone storage well (27), remove the four panhead machine screws (24), lockwashers (25), and flat washers (26). Handset H-194/FSW-8

(28) may remain in its compartment in the telephone storage well (27) during removal. Refer to paragraph 4-130 for instructions on disassembly of the telephone storage well.

h. Terminal, Telephone TA-406/FSW-8. Remove the TA-406/FSW-8 (32) by removing the four panhead machine screws (29), lockwashers (30), and flat washers (31). Refer to paragraph 4-130 for instructions on disassembly of the TA406/FSW-8.

i. Miscellaneous Control Panel and Microphone, Magnetic M-110/U. Proceed as follows to remove the miscellaneous control panel and the M-110/U.

(1) Remove the six panhead machine screws (36), lockwashers (37), and flat washers (38). Refer to paragraph 4-131 for instructions on disassembly of the miscellaneous control panel.

(2) Remove the M-110/U (35) by disconnecting connector P1104 (33) from connector J1104 (34).

j. Control-Monitor C-3445/FSW-8.

(1) Remove the C-3445/FSW-8 (43) by removing the four panhead screws (40), lockwashers (41), and flat washers (42).

(2) Detach the black panel (47) by removing the four panhead machine screws (44), lock-washers (45), and flat washers (46) on the OA2055/FSW-8. Refer to paragraph 4-132 for instructions on disassembly of the C-3445/FSW8.

k. Loudspeaker and Indicator Panel. Remove the loudspeaker and indicator panel (51.) by removing the four panhead machine screws (48), lockwashers (49), and flat washers (50). In the OA-2055A/FSW-8, first remove the machine screw (71) and the lockwasher (72) that hold the loudspeaker and indicator before removing the panel or desk lamp assembly. Refer to paragraph 4-133 for instructions on disassembly of the loudspeaker and indicator panel.

I. Desk Lamp Assembly. To remove the desk lamp assembly (55), remove the four panhead machine screws (52), lockwashers (53), and flat washers (54). In the OA-2055A/FSW-8, first remove the machine screw (71) and the lockwasher (72) that hold the loudspeaker and indicator before removing either the panel or the desk lamp assembly. Refer to paragraph 4-134 for instructions on disassembly of the desk lamp assembly.

m. Circuit Breaker and Fuse Assembly (fig. 4-77) Remove the fuse and circuit breaker assembly (68) by removing the four panhead machine screws (69) and the lockwashers (70). Refer to paragraph 4-135 for instructions on

Figure 4-76. Console, Communications Control OA-2055/FSW-8, exploded view-Continued

1----Panhead machine screw (No. ¼-20)
2----Lockwasher (No. 1/4)
3----Joiner plate
4----Headset-Microphone H-195/FSW-8
5----Headset-Microphone access door
6----Camloc fastener
7----Camloc receptacle
8----Connector P1103
9----Connector P1102
10----Panhead machine screw (No. 10-32)
11----Lockwasher (No. 10)
12----Writing desk
13----Camloc fastener
14----Camloc receptacle
15----Top drawer assembly
16----Drawer lock
17----Camloc fastener
18----Camloc receptacle
19----Power supply drawer assembly
20----Drawer lock
21----Connector P1002
22----Connector J1002
23----Switch, Foot SA-754/FSW-8
24----Panhead machine screw (No. 10-32)
25----Lockwasher (No. 10)
26----Flat washer (No. 10)
27----Telephone storage well
28----Handset H-194/FSW-8
29----Panhead machine screw (No. 10-32)
30----Lockwasher (No. 10)
31----Flat washer (No. 10)
32----Terminal, Telephone TA-406/FSW-8
33----Connector P1104
34----Connector J1104 CY-3020/FSW-8
35----- Microphone, Magnetic M-110/U
36----- Panhead machine screw (No. 10-32)
37----- Lockwasher (No. 10)
38----- Flat washer (No. 10)
39----- Miscellaneous control panel
40----- Panhead machine screw (No. 10-32)
41----- Lockwasher (No. 10)
42----- Flat washer (No. 10)
43----- Control-Monitor C-3445/FSW-8
44----- Panhead machine screw (No. 10-32)
45----- Lockwasher (No. 10)
46----- Flat washer (No. 10)
47----- Blank panel
48----- Panhead machine screw (No. 10-32)
49----- Lockwasher (No. 10)
50----- Flat washer (No. 10)
51----- Loudspeaker and indicator panel
52----- Panhead machine screw (No. 10-32)
53----- Lockwasher (No. 10)
54----- Flat washer (No. 10)
55----- Desk lamp assembly
56----- Panhead machine screw (No. 6-32)
57----- Lockwasher (No. 6)
58----- Upper rear panel
59----- Lower rear panel
60----- Flathead machine screw (No. 6-32)
61----- Hexagonal plain nut (No. 6-32)
62----- Lockwasher (No. 6)
63----- Doorlock
64----- Panhead machine screw (No. 6-32)
65----- Lockwasher (No. 6)
66----- Front access door
67----- Cabinet, Electrical Equipment

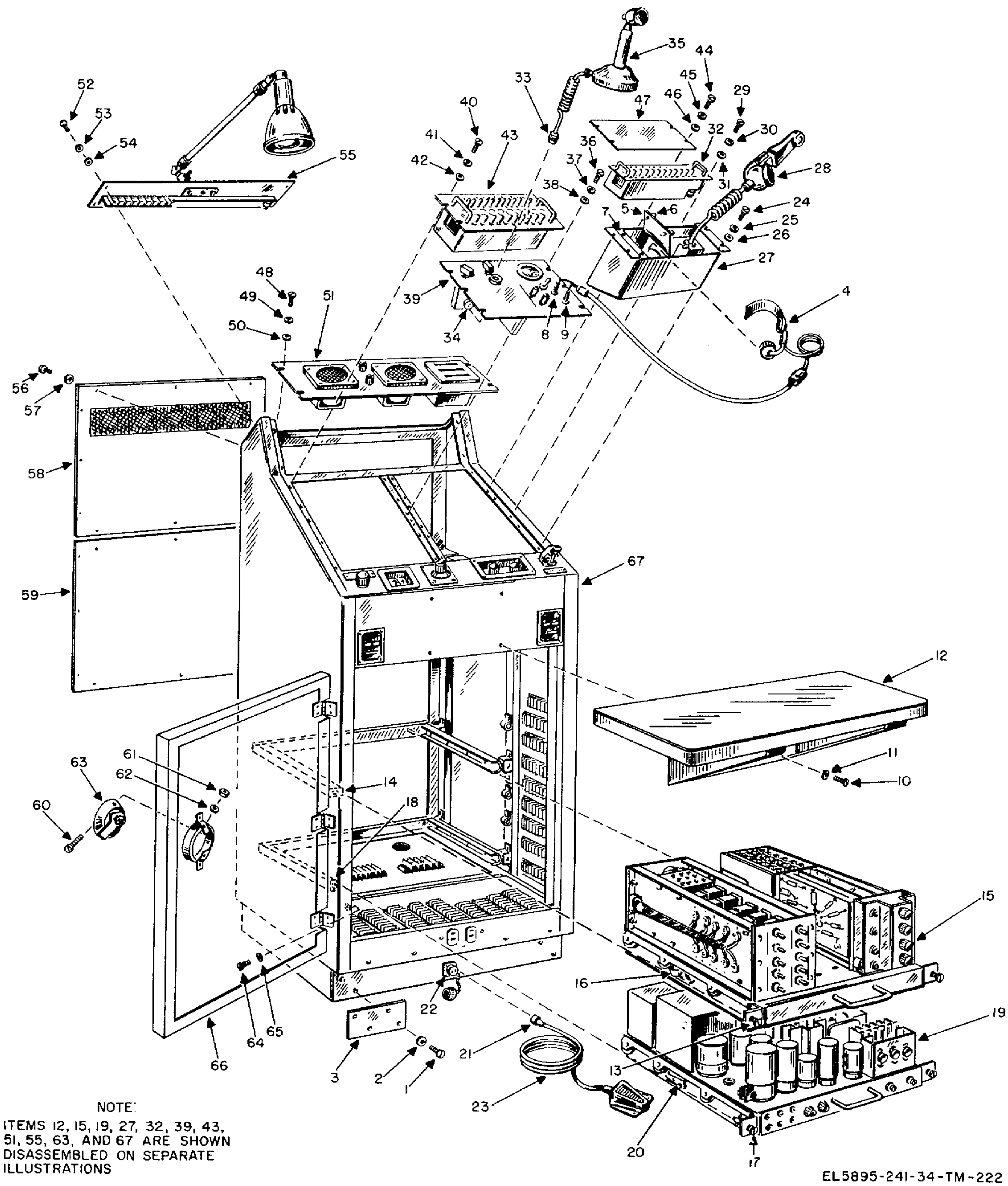
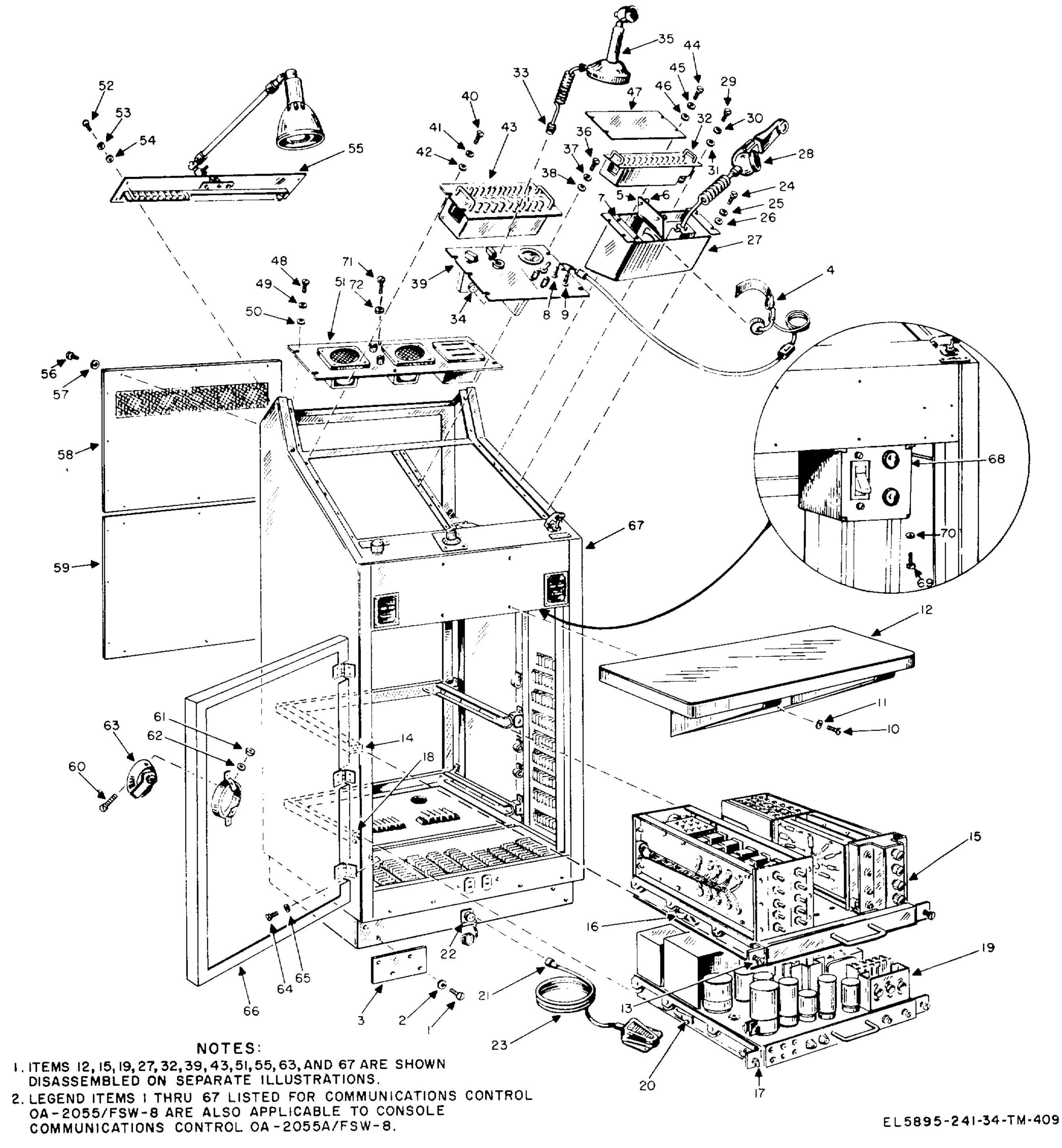


Figure 4-76. Console, Communications Control OA-2055/FSW-8, exploded view.



68—Fuse and circuit breaker assembly
69—Panhead machine screw (No. 8–32)
70—Lockwasher (No. 8)
71—Panhead machine screw (No. 10-32)
72—Lockwasher (No. 10)

Figure 4-77. Console, Communication Control OA-2055A/FSW-8, exploded view.

disassembly of the circuit breaker and fuse assembly.

n. Rear Panels. To remove the upper rear panel (58) and the lower rear panel (59), remove the 20 panhead machine screws (56) and lockwashers (57).

o. Front Access Door. To remove the front access door (66), remove the six panhead machine screws (64) and lockwashers (65).

p. Doorlock. To remove the doorlock (63) from the front access door (66), remove the flathead machine screw (60), hexagonal plain nut (61) and lockwashers (62). Refer to paragraph 4-136 for instructions on disassembly of the doorlock.

q. Cabinet, Electrical Equipment CY-3020/ FSW-8. After all of the assemblies (b through o above) have been removed, the equipment cabinet may be disassembled. Refer to paragraphs 4-137, 4-139, and 4-140 for the disassembly of the CY-3020/FSW-8.

4-121. Disassembly of Wiring Desk (fig. 4-78)

Remove the writing desk from the OA-2055/ FSW-8 as described in paragraph 4-120c. Follow the procedures given in a and b below to disassemble the unit.

a. To remove the desk top (3) from the frame (7), remove the 10 hexagonal plain nuts (1) and lockwashers (2).

b. Remove the support (6) from the frame (7) by removing the six panhead machine screws (4) and lockwashers (5).

4-122. Disassembly of Top Drawer Assembly

a. General. Remove the top drawer assembly from the OA-2055/FSW-8 as described in paragraph 4-120d. Follow the procedures given in b below to remove Amplifier Assembly AM--2827/ FSW-8 and Control, Transmitter C-3446/FSW8 from the top drawer chassis. Disassembly procedures for the top drawer chassis are given in c below. Disassembly procedures for the AM-2827/ FSW-8 and C-3446/FSW-8 are given in paragraphs 4-123 and 4-124.

b. Removal of Top Drawer Assemblies (fig. 75)

(1) Release the two Camloc fasteners (1) to remove the Camloc receptacle assembly (2).

NOTE

When the OA-2056/FSW-8 is used, the Camloc receptacle assembly (2) is replaced by a second C-3446/FSW-8 which is removed as described in (2) below.

(2) To remove Control, Transmitter C344 6FSW-8 (5) from the top drawer chassis (9), release the two Camloc fasteners (3), and slide the C-3446/FSW-8 (5) forward slowly to release it from the two shoulder bolts (4).

(3) To remove Amplifier Assembly AM2827/FSW-8 (8) from the top drawer chassis (9), remove the four panhead machine screws (6) and lockwashers (7).

c. Disassembly to Top Drawer Chassis (fig. 4-80). After removal of the top drawer assemblies (b above), proceed as follows to disassemble the top drawer chassis (14).

(1) Remove the 10 flathead machine screws (1), hexagonal plain nuts (2), and lockwashers (3) to remove the stiffener (4).

(2) Remove the two slotted hexagonal head machine screws (5) and lockwashers (6) to remove the reinforcement plate (7) and handle (8).

(3) Remove the four shoulder bolts (9) to remove the single bracket (10).

(4) Remove the two panhead screws (11) and lockwashers (12) to remove the guide pin plates (13).

4-123. Disassembly of Amplifier Assembly AM-2827/FSW-8
(fig. 4-81)

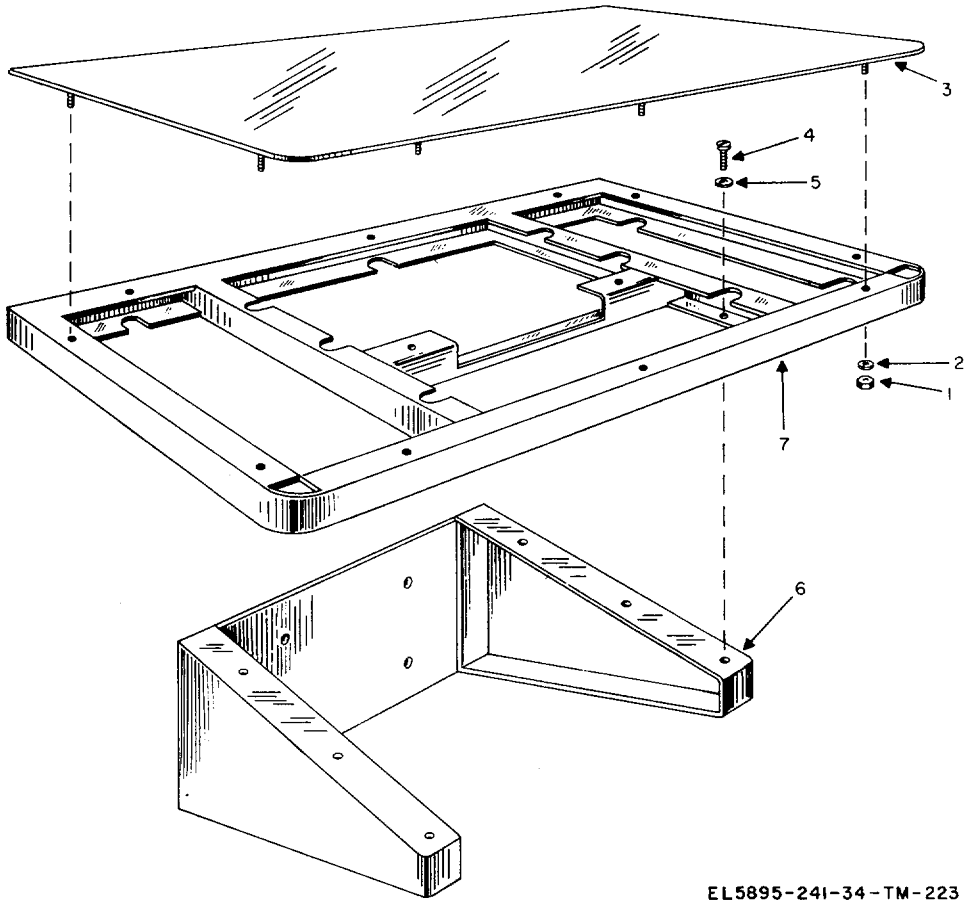
After removal of the AM-2827/FSW-8 from the top drawer chassis (para 4-122j) disassemble the chassis (84) as outlined in a through r below. For the location of electrical parts, refer to figures 4-17 through 4-23.

a. To remove the control mounting bracket (18), remove the two flathead machine screws (1) and two flathead machine screws (2).

b. To remove GAIN SPKR. NO. 1 resistor R899 (8), proceed as follows:

(1) Remove the control knob (4) by loosening the setscrew (3).

(2) Remove GAIN SPKR. NO. 1 resistor R899 (8) by removing the hexagonal plain nut (5) and lockwasher (6). Remove the spacer stud (7), and separate it from resistor R899 (8).



1—Hexagonal plain nut (No. 8–32)
2—Lockwasher (No. 8)
3—Desk top
4—Panhead machine screws (No. 10–32)
5—Lockwasher (No. 10)
6—Support
7—Frame

Figure 4-78. Writing desk (part of OA-2055/FSW-8),exploded view.

c. To remove GAIN HEADSET resistor R902 (13), proceed as follows:

(1) Remove the control knob (10) by loosening the setscrew (9).

(2) Remove GAIN HEADSET resistor R902 (13) by removing the hexagonal plain nut (11) and lockwasher (12).

d. To remove COMP. ADJ resistor R816 (17), remove the hexagonal self-locking nut (14), hexagonal plain nut (15), and lockwasher (16).

e. To remove terminal board TB801 (28), proceed as follows:

(1) Remove the retaining rings (20) from the two captive screws (19).

(2) Separate terminal board TB801 (28) from the two spacer bars (27), by removing the two posts (26).

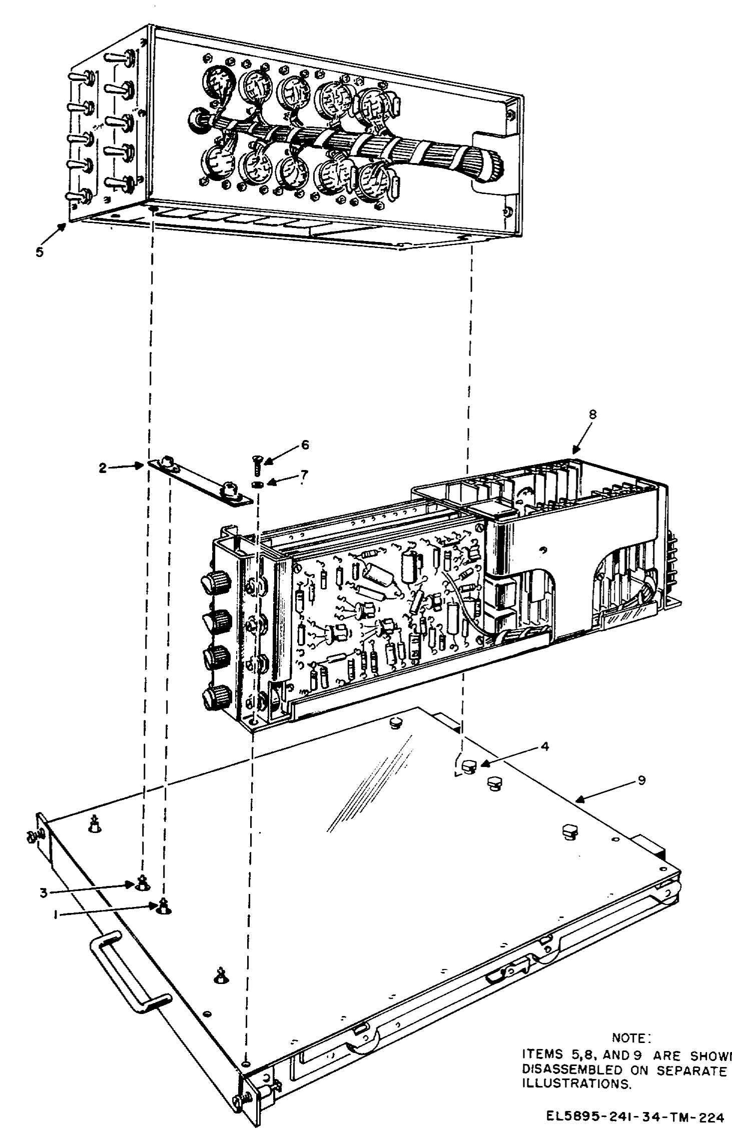
f. To remove terminal board TB802 (29), remove the two panhead machine screws (23), lockwashers (24), and flat washers (25).

g. To remove the two spacer bars (27), proceed as follows:

(1) While holding the plain stud (22) rigid, remove the two locknuts (21) (one from each end).

(2) Slide the plain stud (22) forward (out from the chassis) and remove the two spacer bars (27).

h. To remove the reinforcement bar (33), remove the two panhead machine screws (30), lockwashers (31), and one keyway washer (32).



1—Camloc fastener
2—Camloc receptacle assembly
3—Camloc fastener
4—Shoulder bolt
5—Control, Transmitter C-3446/FSW-8
6—Panhead machine screws (No. 10-32)
7—Lockwasher (No. 6)
8—Amplifier Assembly AM-2827/FSW-8
9—Top drawer chassis

Figure 4-79. Top drawer assembly (part of OA-2055/FSW-8), removal of assemblies.

i. To remove terminal boards TB804 and TB803 (36 and 37), remove the four panhead machine screws (34) and lockwashers (35).

j. To remove the rear panel (54), remove the six panhead machine screws (38) and lockwashers (39).

k. To remove terminal board TB806 (43) and marker strip (44), remove the four panhead machine screws (40), lockwashers (41), and flat washers (42).

l. To remove connector J801 (53), proceed as follows:

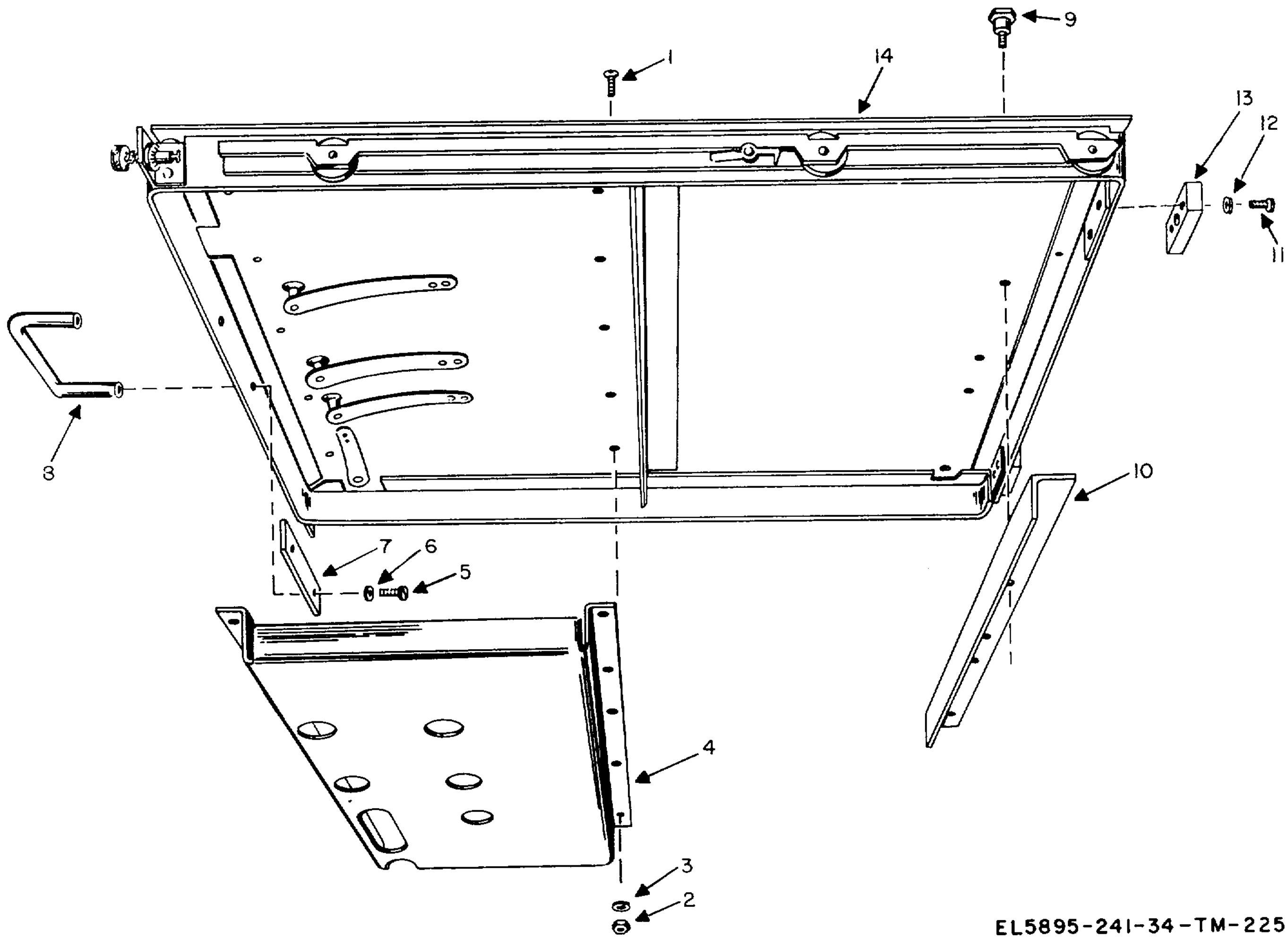
(1) Remove the four fillister head machine screws (45), four hexagonal plain nuts (46), four lockwashers (47), and one terminal lug (48).

(2) Remove the male threaded lockpin stud (49) and female threaded lockpin stud (52) by removing the two hexagonal plain nuts (50) and lockwashers (51).

m. To remove the heat sink (58), remove the two panhead machine screws (55), lockwashers (56), and flat washers (57).

n. To remove the transformer mounting bracket (68), remove the two panhead machine screws (59), lockwashers (60), hexagonal plain nuts (61), and lockwashers (62).

o. To remove transformer T804 (67), remove the two hexagonal plain nuts (63), lockwashers (64), one terminal lug (65), and two flat washers (66).



1—Flathead machine screw (No. 6-32)
2—Hexagonal plain nut (No. 6-32)
3—Lockwasher (No. 6)
4—Stiffener
5—Slotted hexagonal head machine screws (No. 8-32)
6—Lockwasher (No. 8)
7—Reinforcement plate
8—Handle
9—Shoulder bolt (1/4-20)
10—Angle bracket
11—Panhead machine screw (No. 8-32)
12—Lockwasher (No. 8)
13—Guide pin plate
14—Top drawer chassis

Figure 4-80. Top drawer chassis (part of OA-2055/FSW-8), exploded view.

p. To remove the heat sink (83), remove the two panhead machine screws (71), lockwashers (72), and flat washers (73).

q. To remove the rectangular post (74), remove the flathead machine screw (69) and lockwasher (70).

r. To remove transistor Q812 (81) and mica washer (82), remove the two panhead machine screws (75) from the two hexagonal plain nuts (76), one terminal lug (77), two flat washers (78), two shoulder washers (79), and two lockwashers (80).

4-124. Disassembly of Control, Transmitter C-3446/FSW-8
(fig. 4-82)

After removal of the C-3446/FSW-8 from the top drawer chassis (para 4-123), proceed as outlined in a through n below to disassemble the unit. For the location of electrical parts, refer to figures 4-24 and 4-25.

a. To separate the front panel (16) from the right sideplate (19) and left sideplate (20), remove the six panhead machine screws (1) and lockwashers (2).

b. To remove loudspeaker selector switch S710 (7), remove the hexagonal plain nut (3), lockwasher (4), and key washer (6). (The hexagonal plain nut (5) does not have to be removed to remove loudspeaker selector switch S710 (7).)

c. To remove the bracket (15), remove the two flathead machine screws (8), spacers (9), hexagonal plain nuts (10), and lockwashers (11).

d. To remove the terminal stud (13), remove the panhead machine screw (12) and lockwasher (14).

e. To separate the rear panel (42) from the right sideplate (19) and left sideplate (20), remove the four panhead machine screws (17) and lockwashers (18).

f. To remove terminal board TB701 (24) and marker strip (25), remove the four panhead machine screws (21), flat washers (22), and lockwashers (23).

g. To remove connector J701 (33), proceed as follows:

(1) Remove the four fillister head machine screws (26), hexagonal plain nuts (27), and lockwashers (28).

(2) Remove the male threaded lockpin stud (31) and female threaded lockpin stud (32) by removing the two hexagonal plain nuts (29) and lockwashers (30).

h. To remove connector J702 (41), proceed as follows:

(1) Remove the four fillister head machine screws (34), hexagonal plain nuts (35), and lockwashers (36).

(2) Remove the female threaded lockpin stud (39) and male threaded lockpin stud (40) by removing the two hexagonal plain nuts (37) and lockwashers (38).

i. To separate the rear brace (45) from the right sideplate (19) and left sideplate (20), remove the six panhead machine screws (43) and lockwashers (44).

j. To separate the transformer support bracket (48) from the right sideplate (19) and left sideplate (20), remove the four panhead machine screws (46) and lockwashers (47).

k. To remove transormer T701 (51), remove the hexagonal plain nut (49) and lockwasher (50).

l. To separate the front brace (54) from the right sideplate (19) and left sideplate (20), remove the four panhead machine screws (52) and lockwashers (53).

m. To remove transmit relay K716 (57), remove the hexagonal plain nut (55) and lockwasher (56).

n. To remove lockout relay K704 (60), remove the hexagonal plain nut (58) and lockwasher (59).

4-125. Disassembly of Power Supply Drawer
(fig. 4-83)

a. General. Instructions for removing the power supply drawer from the equipment are given in paragraph 4-120. The procedures given in b below are for the removal of the C-3435/ FSW-8 and PP-2803/FSW-8, mounted on the power supply drawer. Disassembly procedures for the C-3435/FSW-8 and PP-2803/FSW-8 are given in paragraphs 4-126 and 4-127.

b. Removal of Power Supply Drawer Assemblies. To remove the power supply drawer assemblies, proceed as follows:

(1) Remove the power supply drawer from the cabinet (para 4-120*e*).

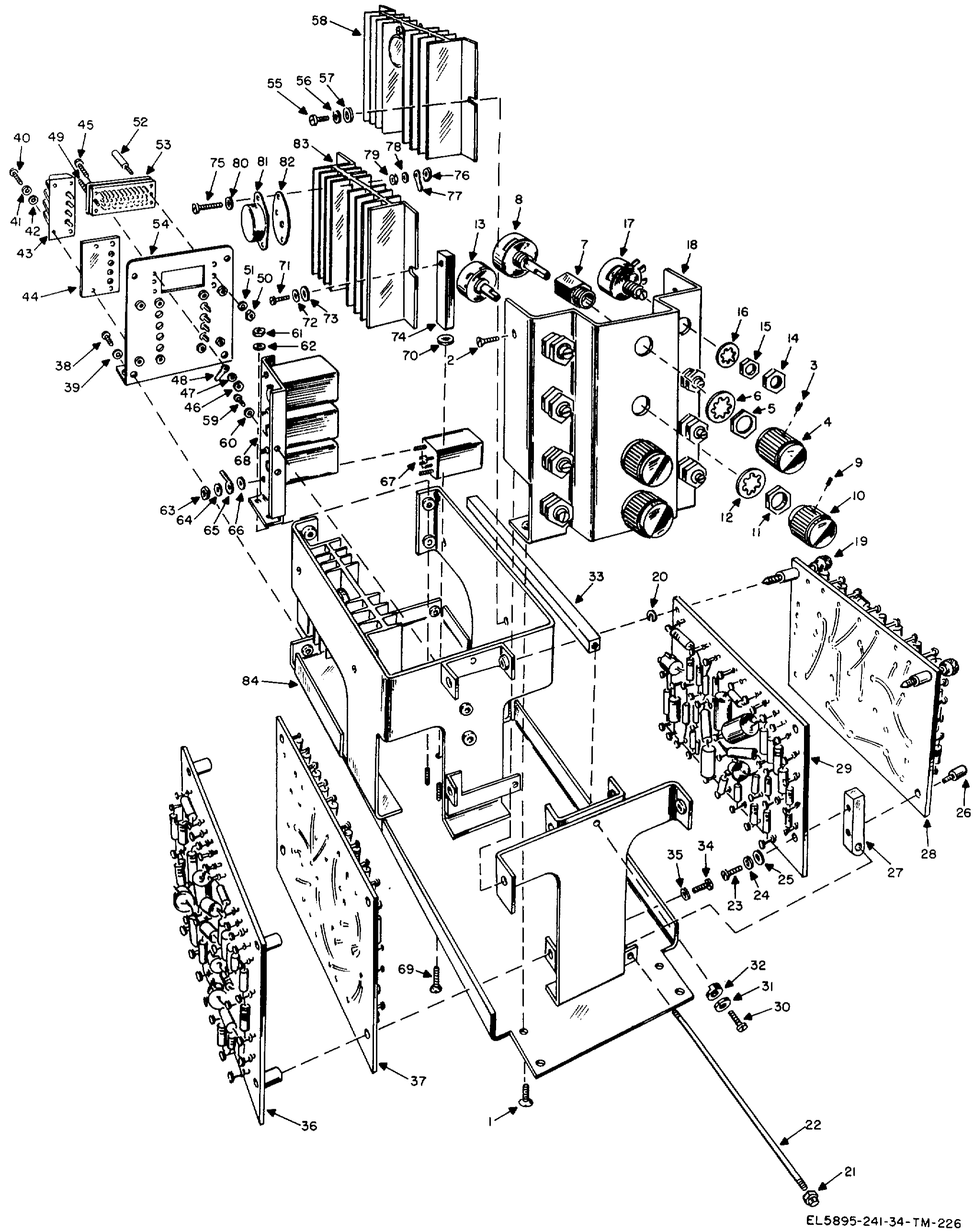


Figure 4-81. Amplifier Assembly AM-2827/FSW-8 (part of OA-2055/FSW-8), exploded view.

Figure 4-81. Amplifier Assembly AM-2827/FSW-8 (part of OA-2055/FSW-8), exploded view-Continued

1------Flathead machine screw (No. 8-32)
2------Flathead machine screw (No. 6-32)
3------Setscrew (part of control knob)
4------Control knob
5------Hexagonal plain nut (part of R899)
6------Lockwasher (part of R899)
7------Spacer stud
8------GAIN SPKR. NO. 1 resistor R899
9------Setscrew (part of control knob)
10------Control knob
11------Hexagonal plain nut (part of R902)
12------Lockwasher (part of R902)
13------GAIN HEADSET resistor R902
14------Hexagonal self-locking nut (part of R816)
15------Hexagonal plain nut (part of R816)
16------Lockwasher (part of R816)
17------COMP. ADJ resistor R816
18------Control mounting bracket
19------Captive screw
20------Retaining ring
21------Locking nut (No. 4-40)
22------Plain stud
23------Panhead machine screw (No. 6-32)
24------Lockwasher (No. 6)
25------Flat washer (No. 6)
26------Post
27------Spacer bar
28------Terminal board TB801
29------Terminal board TB802
30------Panhead machine screw (No. 8-32)
31------Lockwasher (No. 8)
32------Keyway washer (No. 8)
33------Reinforcement bar
34------Panhead machine screw (No. 6-32)
35------Lockwasher (No. 6-32)
36------Terminal board TB804
37------Terminal board TB803
38------Panhead machine screw (No. 4-40)
39------Lockwasher (No. 4)
40------Panhead machine screw (No. 4-40)
41------Lockwasher (No. 4)
42------Flat washer (No. 4)
43------Terminal board TB806
44------Marker strip
45------Fillister head machine screw (No. 4-40)
46------Hexagonal plain nut (No. 4-40)
47------Lockwasher (No. 4)
48------Terminal lug
49------Male threaded lockpin stud
50------Hexagonal plain nut (No. 2-56)
51------Lockwasher (No. 2)
52------Female threaded lockpin stud
53------Connector J801
54------Rear panel
55------Panhead machine screw (No. 8-32)
56------Lockwasher (No. 8)
57------Flat washer (No. 8)
58------Heat sink
59------Panhead machine screw (No. 6-32)
60------Lockwasher (No. 6)
61------Hexagonal plain nut (No. 4-40)
62------Lockwasher (No. 6)
63------Hexagonal plain nut (No. 4-40)
64------Lockwasher (No. 4)
65------Terminal lug
66------Flat washer (No. 4)
67------Transformer T804
68------Transformer mounting bracket
69------Flathead machine screw (No. 8-32)
70------Lockwasher (No. 8)
71------Panhead machine screw (No. 8-32)
72------Lockwasher (No. 8)
73------Flat washer (No. 8)
74------Rectangular post
75------Panhead machine screw (No. 6-32)
76------Hexagonal plain nut (No. 6-32)
77------Terminal lug
78------Flatwasher (No. 6)
79------Shoulder washer (No. 6)
80------Lockwasher (No. 6)
81------Transistor Q812
82------Mica washer
83------Heat sink
84------Amplifier chassis

(2) Slide the two positive lock studs (1) from the positive lock receptacles (2) and lift the C-3435/FSW-8, hinged section (3).

(3) To remove the C-3435/FSW-8 (7) from the PP-2803/FSW-8 chassis (8), remove the four panhead machine screws (4), lockwashers (5), and flat washers (6).

4-126. Disassembly of Control, Telephone Signal C-3435/FSW-8 (fig. 4-84)

After removal of the C-3435/FSW-8 (para 4-125), proceed as outlined in a through f below to disassemble the unit. For the location of electrical parts, refer to figures 4-31 and 4-32.

a. To remove ring relay K605 (3), remove the three hexagonal plain nuts (1) and lockwashers (2).

NOTE

Removal of relays on the telephone signal control chassis (21) is identical with that of ring relay K605 (a above).

b. To remove hold relay K612 (6), remove the three hexagonal plain nuts (4) and lockwashers (5).

c. To remove ring generator Z601 (9), remove the four hexagonal plain nuts (7) and lockwashers (8).

d. To remove the stiffener (11), proceed as follows:

(1) Remove the 18 hexagonal plain nuts (1) and lockwashers (2).

(2) Remove the four hexagonal plain nuts (7) and lockwashers (8).

e. The grommet (10) is glued into place. To remove the grommet (10) from the stiffener (11), free of grommet (10) from the glue.

f. To remove connector J601 (20), proceed as follows:

(1) Remove the four fillister head machine screws (12) hexagonal plain nuts (13), lockwashers (14), and flat washers (15).

(2) Remove the male threaded lockpin stud (18) and female threaded lockpin stud (19) by removing the two hexagonal plain nuts (16) and lockwashers (17).

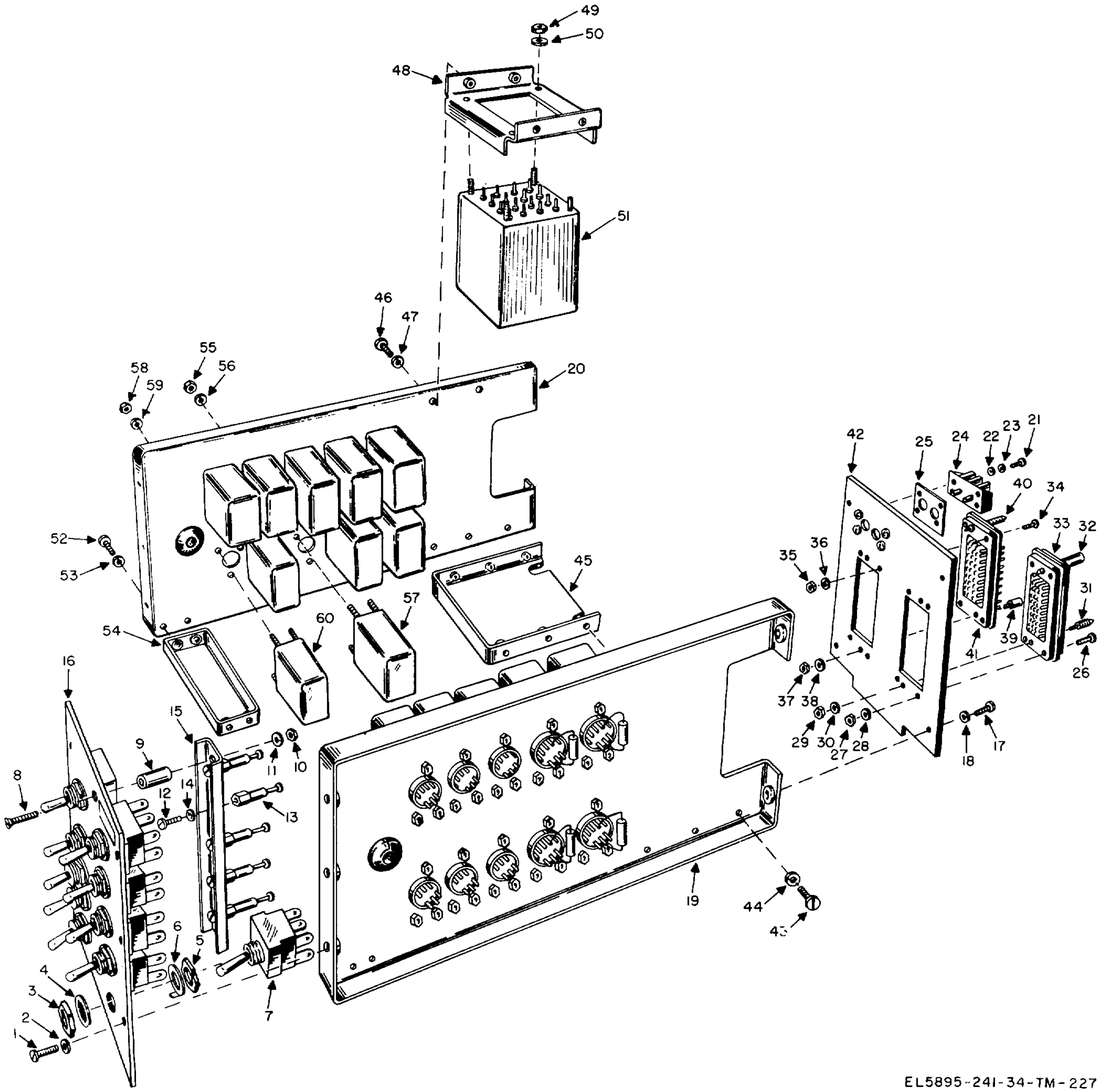


Figure 4-82. Control, Transmitter C-3446/FSW-8 (part of OA-2055/FSN-8), exploded view.

Figure 4-82. Control, Transmitter C-3446/FSW-8 (part of OA-2055)FSW-8, exploded view-Continued

1------Panhead machine screw (No. 8-32)
2------Lockwasher (No. 8)
3------Hexagonal plain nut (part of S710)
4------Lockwasher (part of S710)
5------Hexagonal plain nut (part of S710)
6------Key washer (part of S710)
7------Loudspeaker selector switch S710
8------Flathead machine screw (No. 6-32)
9------Spacer
10------Hexagonal plain nut (No. 6-32)
11------Lockwasher (No. 6)
12------Panhead machine screw (No. 4-40)
13------Terminal stud
14------Lockwasher (No. 4)
15------Bracket
16------Front panel
17------Panhead machine screw (No. 8-32)
18------Lockwasher (No. 8)
19------Right sideplate
20------Left sideplate
21------Panhead machine screw (No. 4-40)
22------Flat washer (No. 4)
23------Lockwasher (No. 4)
24------Terminal board TB701
25------Marker strip
26------Fillister head machine screw (No. 4-40)
27------Hexagonal plain nut (No. 4-40)
28------Lockwasher (No. 4)
29------Hexagonal plain nut (No. 2-56)
30------Lockwasher (No. 2)
31------Male threaded lockpin stud
32------Female threaded lockpin stud
33------Connector J701
34------Fillister head machine screw (No. 4-40)
35------Hexagonal plain nut (No. 4-40)
36------Lockwasher No. (4)
37------Hexagonal plain nut (No. 2-56)
38------Lockwasher (No. 2)
39------Female threaded lockpin stud
40------Male threaded lockpin stud
41------Connector J702
42------Rear panel
43------Panhead machine screw (No. 8-32)
44------Lockwasher (No. 8)
45------Rear brace
46------Panhead machine screw (No. 8-32)
47------Lockwasher (No. 8)
48------Transformer support bracket
49------Hexagonal plain nut (No. 10-32)
50------Lockwasher (No. 10)
51------Transformer T701
52------Panhead machine screw (No. 8-32)
53------Lockwasher (No. 8)
54------Front brace
55------Hexagonal plain nut (No. 6-32)
56------Lockwasher (No. 6)
57------Transmit relay K716
58------Hexagonal plain nut (No. 6-32)
59------Lockwasher (No. 6)
60------Lockout relay K704

4-127. Disassembly of Power Supply PP-2803/FSW-8, Drawer Upper Section

(fig. 4-85)

After removal of the PP-2803/FSW-8 upper section, proceed as follows to disassemble the unit. For the location of electrical parts, refer to figures 4-34 and 4-36.

a. Remove capacitor C502 (3) by removing the hexagonal plain nut (1) and lockwasher (2).

b. Remove capacitor C504 (6) by removing the hexagonal plain nut (4) and lockwasher (5).

c. Remove capacitor C505 (9) by removing the hexagonal plain nut (7) and lockwasher (8).

d. Remove capacitor C508 (12) by removing the hexagonal plain nut (10) and lockwasher (11).

e. Remove capacitor C503 (16) by removing the panhead machine screw (13), hexagonal plain nut (14), and lockwasher (15) from the clamp (32).

f. Remove capacitor C509 (20) by removing the panhead machine screw (17), hexagonal plain nut (18), and lockwasher (19) from the clamp (40).

g. Remove capacitor C510 (24) by removing the panhead machine screw (21), hexagonal plain nut (22), and lockwasher (23) from the clamp (48).

h. To remove the clamp (32), remove the panhead machine screw (25), hexagonal plain nut (26), lockwasher (27), and terminal lug (28). Remove the panhead machine screw (29) lockwasher (30), and flat washer (31).

i. To remove the clamp (40), remove the panhead machine screw (33), hexagonal plain nut (34), lockwasher (35), and terminal lug (36). Remove the two panhead machine screws (37)lockwashers (38), and flat washer (39).

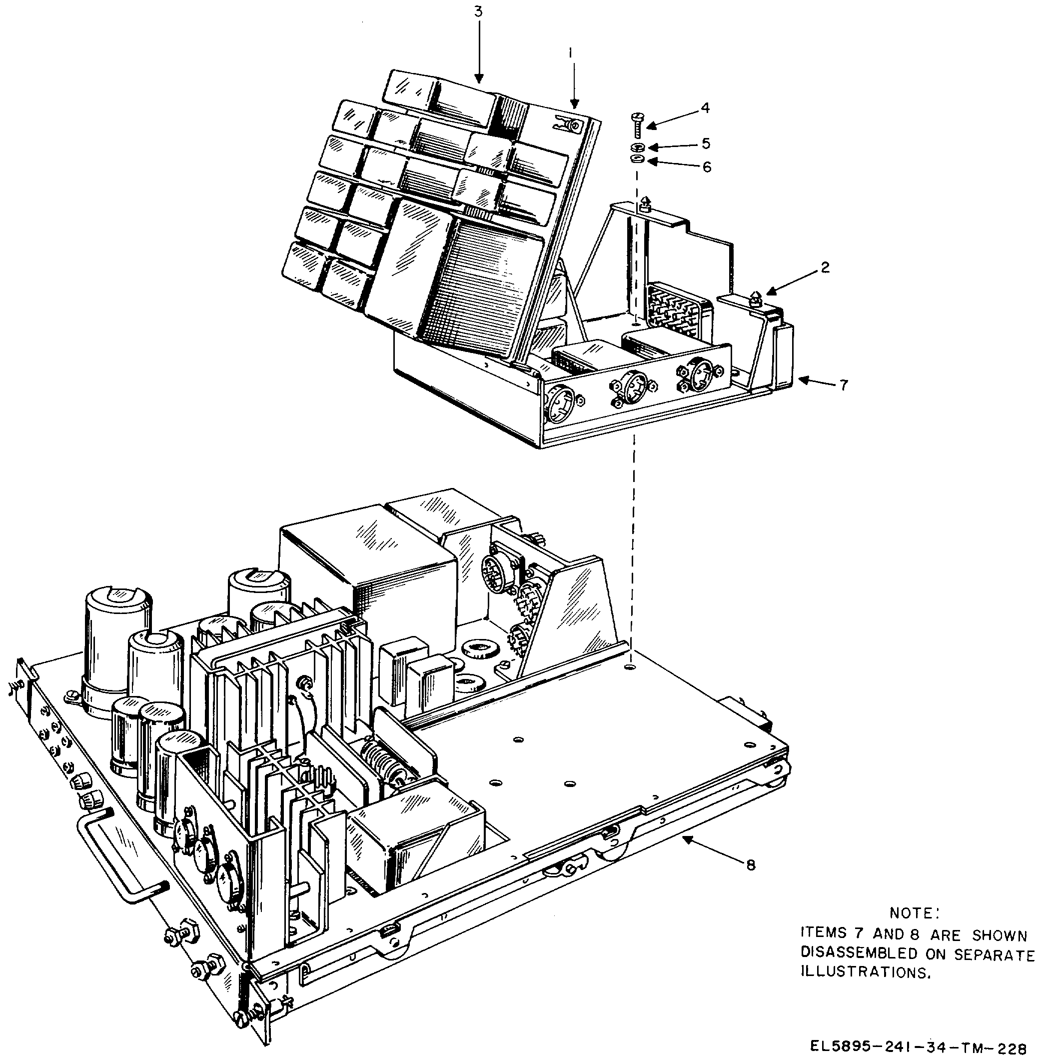
j. To remove the clamp (48), remove the panhead machine screw (41), hexagonal plain nut (42), lockwasher (43), and terminal lug (44). Remove the two panhead machine screws (45) lockwashers (46), and flat washers (47).

k. To remove push-to-talk relay K501 (52), remove the three hexagonal plain nuts (49), lockwashers (50), and one terminal lug (51).

i. To remove intercom relay K502 (56), remove the three hexagonal plain nuts (53), lockwashers (54), and one terminal lug (55).

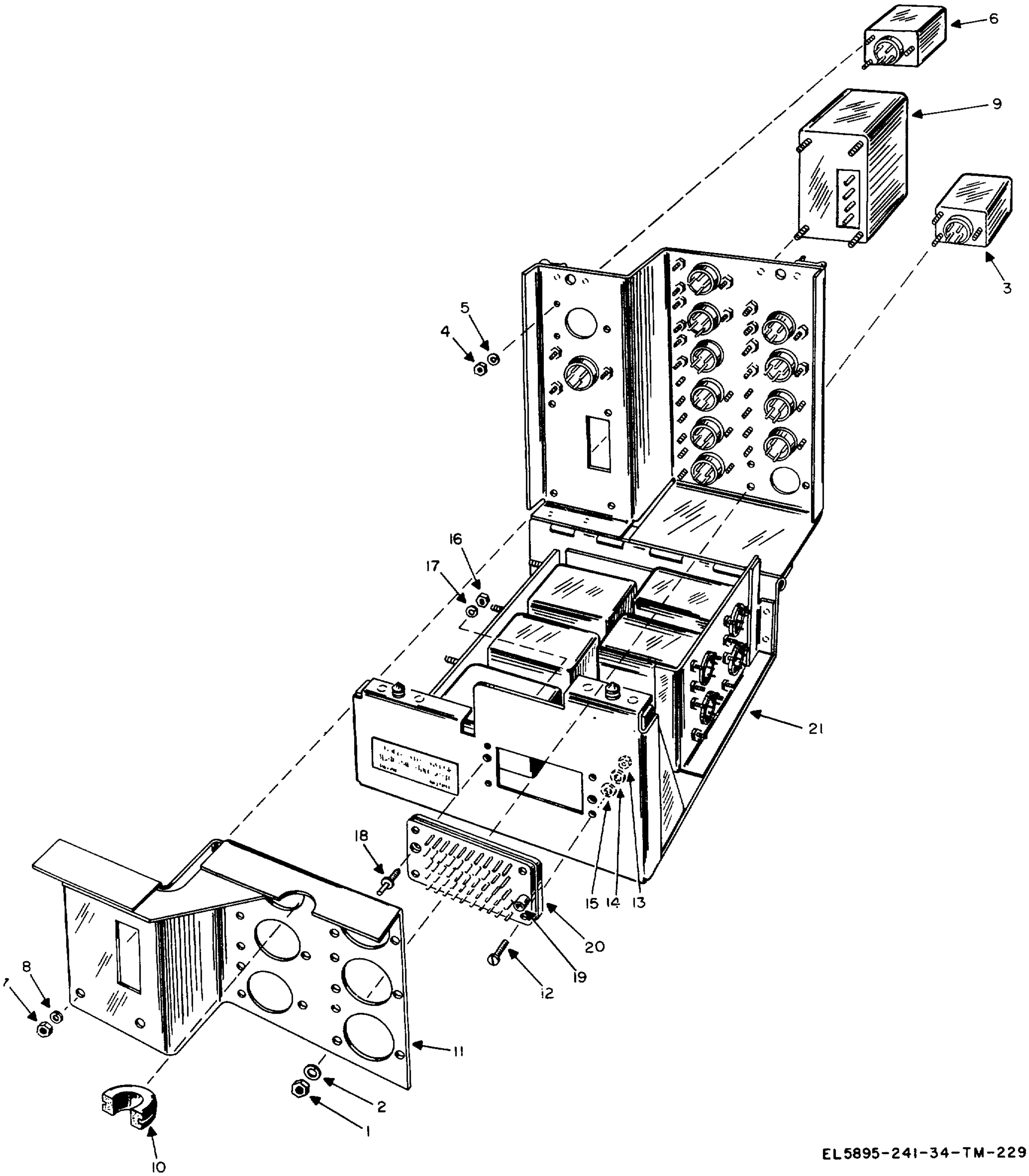
m. To remove inductor L501 (60), remove the four hexagonal plain nuts (57), lockwashers (58), and one terminal lug (59).

n. To remove transformer T501 (63), remove the four hexagonal plain nuts (61) and lockwashers (62).



1—Positive lock stud
2—Positive lock receptacle
3—Control, Telephone Signal C-3435/FSW-8, hinged section
4—Panhead machine screw (No. 8-32)
5—Lockwasher (No. 8)
6—Flat washer (No. 8)
7—Control, Telephone Signal C-3435/FSW-8
8—Power Supply PP-2803/FSW-8 chassis

Figure 4-83. Power supply drawer (part of OA-2055/FSW-8). removal of assemblies.



1—Hexagonal plain nut (No. 6–32)
2—Lockwasher (No. 6)
3—Ring relay K605
4—Hexagonal plain nut (No. 6–32)
5—Lockwasher (No. 6)
6—Hold relay K612
7—Hexagonal plain nut (No. 4–40)
8—Lockwasher (No. 4)
9—Ring generator Z601
10—Grommet
11—Stiffener
12—Fillister head machine screw (No. 4–40)
13—Hexagonal plain nut (No. 4–40)
14—Lockwasher (No. 4)
15—Flat washer (No. 4)
16—Hexagonal plain nut (No. 2–56)
17—Lockwasher (No. 2)
19—Female threaded lockpin stud
20—Connector J601
21—Telephone signal control chassis

Figure 4-84. Control, Telephone Signal C-345/FSW-8 (part of OA-2055/FSW-8), exploded view.

o. To remove the resistor mounting bracket (66), remove the four panhead machine screws (64) and lockwashers (65).

p. Remove resistor R502 (68) from the resistor mounting bracket (66) by removing the hexagonal plain nut (67).

q. Remove the resistor mounting bracket (71) by removing the four panhead machine screws (69) and lockwashers (70).

r. Remove resistor R511 (74) from the resistor mounting bracket (71) by removing the two panhead machine screws (72) and lockwashers (73).

s. Remove the connector assembly (77) by removing the four panhead machine screws (75) and lockwashers (76).

t. To remove connector J509 (81) from the mounting bracket (90), remove the four panhead machine screws (78), hexagonal plain nuts (79), and lockwashers (80).

u. To remove connector J502 (85) from the mounting bracket (90), remove the four panhead machine screws (82), hexagonal plain nuts (83), and lockwashers (84).

v. To remove connector J501 (89) from the mounting bracket (90), remove the four panhead machine screws (86), hexagonal plain nuts (87), and lockwashers (88).

w. Remove the heat sink assembly (93) by removing the four panhead machine screws (91) and lockwashers (92).

x. To remove the heat sink (98), remove the two panhead machine screws (94), lockwashers (95), and flat washers (96) from the spacing bracket (97).

y. To remove transistor Q501 (105) and mica washer (106) from the heat sink (98), remove the two panhead machine screws (99), hexagonal plain nuts (100). one terminal lug (101), two flat washers (102), shoulder washers (103), and lockwashers (104).

z. To remove the spacing bracket (97) from the transistor mounting plate (121), remove the panhead machine screw (107), hexagonal plain nut (108), and lockwasher (109). Remove the panhead machine screw (110) and lockwasher (111). This also removes spacer (112).

aa. To remove transistor Q502 (119) and mica washer (120) from the transistor mounting plate (121), remove the two panhead machine screws (113), hexagonal plain nuts (114), one terminal lug (115), two flat washers (116), shoulder washers (117), and lockwashers (118).

ab. To remove the bracket (125) from the power supply chassis (133), remove the three flathead machine screws (122), hexagonal plain nuts (123), and lockwashers (124).

ac. To remove resistor R501 (129), remove the panhead machine screw (126), hexagonal plain nut (127), and lockwasher (128).

ad. Remove the rubber grommets (130), (131), and (132).

4-128. Disassembly of Power Supply PP-803/FSW-8 Drawer Lower Section (Fig. 4-86)

After removal of the PP-2803/FSW-8, lower section (para 4-125), proceed as follows to disassemble the unit. For the location of electrical parts, refer to figures 4-34 and 4-36.

a. To remove -7.5V 8-ampere fuse F501 (2) from fuseholder X501 (5), remove fuseholder cap (1).

b. To remove fuseholder XF501 (5), remove the hexagonal plain nut (3) and lockwasher (4).

c. To remove +48V connector J505 (8), remove the hexagonal plain nut (6) and lockwasher (7).

d. To remove terminal board TB502 (12), remove the six panhead machine screws (9), lockwashers (10), and flat washers (11).

e. To remove the spacer (14), remove the flathead machine screw (13).

NOTE

The remaining spacers below terminal board TB502 are part of the power supply chassis (125) and cannot be removed.

f. To remove -7.5V ADJ resistor R515 (18), remove the hexagonal self-locking nut (15), hexagonal plain nut (16), and lockwasher (17).

g. To remove diode CR509 (21), remove the hexagonal plain nut (19) and lockwasher (20).

h. To remove the terminal stud (24), remove the panhead machine screw (22) and lockwasher (23).

i. To remove capacitor C513 (136), remove the hexagonal plain nut (134) and the split lockwasher (135) mounted at diode CR512 (138).

j. To remove the handle (28), remove the two panhead machine screws (25), two lockwashers (27), and one terminal lug (26).

k. To remove the heat sink assembly (34), proceed as follows:

(1) Remove the two panhead machine screws (29) and lockwashers (30).

(2) Remove the two panhead machine screws (31), hexagonal plain nuts (32), and lockwashers (33).

l. To remove the heat sink (45) from the heat sink mounting bracket (46), remove the two panhead machine screws (35), lockwashers (36), and flat washers (37).

m. To remove transistor Q507 (44) and mica washer (43) from the heat sink (45), remove the two panhead machine screws (38), two hexagonal plain nuts (39), one terminal lug (40), two lockwashers (41), and two insulated shoulder washers (42).

n. To remove terminal board TB503 (50), remove the four panhead machine screws (47), lockwashers (48), and flat washers (49).

o. To remove diode mounting board TB504 (55), proceed as follows:

(1) Remove diode CR501 (51) and the other three diodes mounted on diode mounting board TB504 (55).

(2) Remove the four panhead machine screws (52), lockwashers (53), and flat washers (54).

p. Remove terminal board TB504 (132) as follows:

(1) Remove diode CR502 (126) and the other three diodes mounted on terminal board TB504 (132) be removing the hexagonal plain nut (128) and the flat washer (127).

(2) Remove the four panhead machine screws (129), the split lockwashers (130), and the flat washers (131).

q. To remove terminal board TB501 (59), remove the four panhead machine screws (56), lockwashers (57), and flat washers (58).

r. To remove the terminal lugs (63 and 64), remove the flathead machine screws (60), hexagonal plain nut (61), and lockwasher (62).

s. To remove the terminal stud (67), remove the panhead machine screw (65) and lockwasher (66).

t. To remove resistor R529 (73), remove the panhead machine screws (68), hexagonal plain nut (69), lockwasher (70), flat washer (71), mica washers (72 and 74), and flat washer (75).

u. To remove capacitor C512 (78) from the spacer (79), remove the panhead machine screw (76) and lockwasher (77).

v. To remove the terminal lug (80), remove the spacer (79) from inductor L501 mounting stud (81).

w. To remove the terminal mounting bracket (88), proceed as follows:

(1) Remove the panhead machine screws (82), hexagonal plain nut (83), lockwasher (84), and flat washer (85).

(2) Remove the panhead machine screw (86) and lockwasher (87).

x. To remove the diode mounting bracket (99), proceed as follows:

(1) If present on upper side of chassis, remove transformer T501 as described in paragraph 4-127n.

(2) Remove the two flathead machine screws (89).

y. To remove capacitor C515 (142) at transformer T501 (143), remove the hexagonal plain nut (139), the split lockwasher (140) and the capacitor mounting strap (141).

z. To remove capacitor C514 (146), remove the panhead machine screw (144), the split lockwasher (145), and the capacitor mounting strap (147).

aa. To remove the terminal stud (150) from the center chassis angle bracket, remove the panhead machine screw (148) and the split lockwasher (149).

ab. To remove diode CR514 (95) from the diode mounting bracket (99), remove the hexagonal plain nut (90), lockwasher (91), terminal lug (92), and mica washers (93 and 94).

ac. To remove diode CR510 (98) from the diode mounting bracket (99), remove the hexagonal plain nut (96) and lockwasher (97).

ad. To remove the guide pin plate (102), remove the panhead machine screw (100) and lockwasher (101).

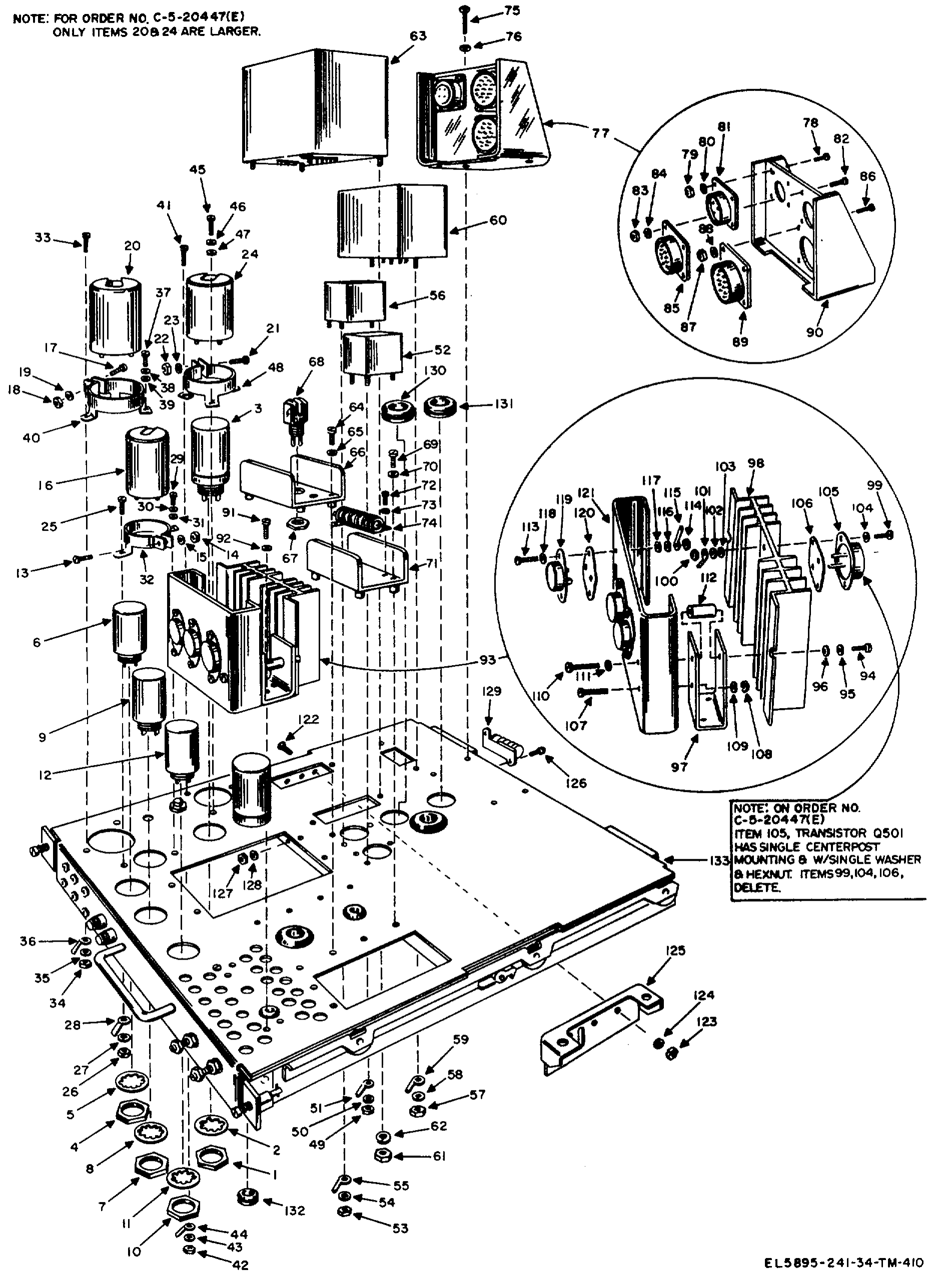


Figure 4-85. Power Supplies PP-2803/FSW-8 and PP-2803A/FSW-8 (part of OA-2055/FSW-8 and OA-2055A/FSW-8), upper drawer section, exploded view.

Figure 4-85. Power Supplies PP-2803/FSW-8 and PP-2803A/FSW-8 (part of OA-2055/FSW-8 and OA-2055A/FSW-8), upper drawer section, exploded view-Continued

1------Hexagonal plain nut (part of C502)
2------Lockwasher (part of C502)
3------Capacitor C502
4------Hexagonal plain nut (part of C504)
5------Lockwasher (part of C504)
6------Capacitor C504
7------Hexagonal plain nut (part of C505)
8------Lockwasher (part of C505)
9------Capacitor C505
10------Hexagonal plain nut (part of C508)
11------Lockwasher (part of C508)
12------Capacitor C508
13------Panhead machine screw (No. 6-32)
14------Hexagonal plain nut (No. 6-32)
15------Lockwasher (No. 6)
16------Capacitor C503
17------Panhead machine screw (No. 8-32)
18------Hexagonal plain nut (No. 8-32)
19------Lockwasher (No. 8)
20------Capacitor C509
21------Panhead machine screw (No. 8-32)
22------Hexagonal plain nut (No. 8-32)
23------Lockwasher (No. 8)
24------Capacitor C510
25------Panhead machine screw (No. 6-32)
26------Hexagonal plain nut (No. 6-32)
27------Lockwasher (No. 6)
28------Terminal lug
29------Panhead machine screw (No. 6-32)
30------Lockwasher (No. 6)
31------Flat washer (No. 6)
32------Clamp
33------Panhead machine screw (No.642)
34------Hexagonal plain nut (No. 6-32)
35------Lockwasher (No. 6)
36------Terminal lug
37------Panhead machine screw (No. 6-32)
38------Lockwasher (No. 6)
39------Flat washer (No. 6)
40------Clamp
41------Panhead machine screw (No. 6-32)
42------Hexagonal plain nut (No. 6-32)
43------Lockwasher (No. 6)
44------Terminal lug
45------Panhead machine screw (No. 6-32)
46------Lockwasher (No. 6)
47------Flat washer (No. 6)
48------Clamp
49------Hexagonal plain nut (No. 6-32)

50------Lockwasher (No. 6)
51------Terminal lug
52------Push-to-talk relay K501
53------Hexagonal plain nut (No. 6-32)
54------Lockwasher (No. 6)
55------Terminal lug
56------Intercom replay K502 (No. 80 2
57------Hexagonal plain nut (No. 8-32)
58------Lockwasher (No. 8)
59------Terminal lug
60------Inductor L501
61------Hexagonal plain nut (No. 1/4-20)
62------Lockwasher (No. 1/4)
63------Transformer T501
64------Panhead machine screw (No. 8-32)
65------Lockwasher (No. 8)
66------Resistor mounting bracket
67------ Hexagonal plain nut (part of R502)
68------ Resistor R502
69------ Panhead machine screw (No. 8-32)
70------ Lockwasher (No. 8)
71------ Resistor mounting bracket
72------ Panhead machine screw (No. 4-40)
73------ Lockwasher (No. 4)
74------ Resistor R511
75------ Panhead machine screw (No. 4-40)
76------ Lockwasher
77------ Connector assembly
78------ Panhead machine screw (No. 4-40)
79------ Hexagonal plain nut (No. 4-40)
80------ Lockwasher (No. 4)
81------ Connector J509
82------ Panhead machine screw (No. 6-32)
83------ Hexagonal plain nut (No. 6-32)
84------ Lockwasher (No. 6)
85------ Connector J502
86------ Panhead machine screw (No. 6-32)
87------ Hexagonal plain nut (No. 6-32)
88------ Lockwasher (No. 6)
89------ Connector J501
90------ Mounting bracket
91------ Panhead machine screw (No. 8-32)
92------ Lockwasher (No. 8)
93------ Heat sink assembly
94------ Panhead machine screw (No. 8-32)
95------ Lockwasher (No. 8)
96------ Flat washer (No. 8)
97------ Spacing bracket
98------ Heat sink
99------ Panhead machine screw (No.6-32)
100------ Hexagonal plain nut (No. 6-32)
101------ Terminal lug
102------ Flat washer (No. 6)
103------ Shoulder washer (No. 6)
104------ Lockwasher (No. 6)
105------ Transistor Q501
106------ Mica washer
107------ Panhead machine screw (No. 8-32)
108------ Hexagonal plain nut (No. 8-32)
109------ Lockwasher (No. 8)
110------ Panhead machine screw (No. 8-32)
111------ Lockwasher (No. 8)
112------ Spacer
113------ Panhead machine screw (No. 6-32)
114------ Hexagonal plain nut (No. 6-32)
115------ Flat washer (No.6)
116------ Flat washer (No. 6)
117------ Shoulder washer (No. 6)
118------ Lockwasher (No. 6)
119------ Transistor Q502
120------ Mica washer
121------ Transistor mounting plate
122------ Flathead machine screw (No. 6-32)
123------ Hexagonal plain nut (No. 6-32)
124------ Lockwasher (No.6)
125------ Bracket
126------ Panhead machine screw (No. 6-32)
127------ Hexagonal plain nut (No. 6-32)
128------ Lockwasher (No. 6)
129------ Resistor R501
130------ Rubber grommet
131------ Rubber grommet
132------ Rubber grommet
133------ Power supply chassis

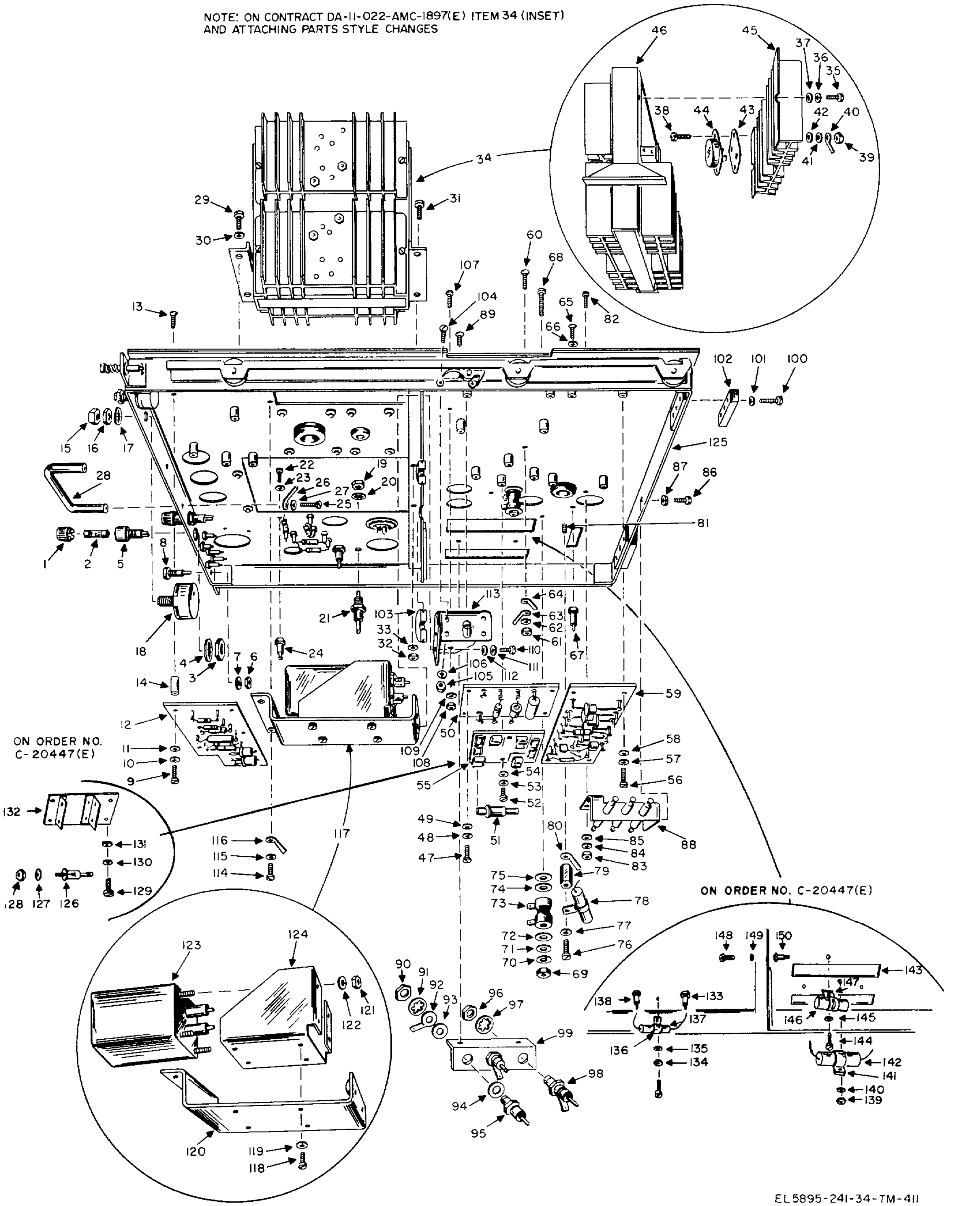


Figure 4-86. Power Supplies PP-2803/FSW-8 and VIP-2603A/FSW-8 (part of OA-2055/FSW-8 and OA-2055A/FSW-8), drawer lower section, exploded view.

Figure 4-86. Power Supplies PP-2803/FSW-8 and PP-2803A/FSW-8 (part of OA-2055/FSW-8 and OA-2055A/FSW-8), drawer lower section, exploded view-Continued

1------- Fuseholder cap
2------- 7.5V 8-ampere fuse F501
3------- Hexagonal plain nut (part of XF501)
4------- Lockwasher (part of XF501)
5------- Fuseholder XF501
6------- Hexagonal plain nut (part of J505)
7------- Lockwasher (part of J505)
8------- +48V connector J505
9------- Panhead machine screw (No. 6-32)
10------- Lockwasher (No. 6)
11------- Flat washer (No. 6)
12------- Terminal board TB502
13------- Flathead machine screw (No. 6-32)
14------- Spacer
15------- Hexagonal self-locking nut (part of R515)
16------- Hexagonal plain nut (part of R515)
17------- Lockwasher (part of R515)
18------- -7.5V ADJ resistor R515
19------- Hexagonal plain nut (part of CR509)
20------- Lockwasher (part of CR509)
21------- Diode CR509
22------- Panhead machine screw (No. 4-40)
23------- Lockwasher (No. 4)
24------- Terminal stud
25------- Panhead machine screw (No.1042)
26------- Terminal lug
27------- Lockwasher (No. 10)
28------- Handle
29------- Panhead machine screw (No. 8-32)
30------- Lockwasher (No. 8)
31------- Panhead machine screw (No. 8-32)
32------- Hexagonal plain nut (No. 8)
33------- Lockwasher (No. 8)
34------- Heat sink assembly
35------- Panhead machine screw (No. 8-32)
36------- Lockwasher (No. 8)
37------- Flat washer (No. 8)
38------- Panhead machine screw (No. 6-32)
39------- Hexagonal plain nut (No. 6-32)
40------- Terminal lug
41------- Lockwasher (No. 6)
42------- Insulated shoulder washer (No. 6)
43------- Mica washer
44------- Q507
45------- Heat sink Transistor

46------- Heat sink mounting bracket
47------- Panhead machine screw (No. 6-32)
48------- Lockwasher (No. 6)
49------- Flat washer (No.-6)
50------- Terminal board TB503
51------- Diode CR501
52------- Panhead machine screw (No. 6-32)
53------- Lockwasher (No. 6)
54------- Flat washer (No. 6)
55------- Diode mounting board TB504
56------- Panhead machine screw (No. 6-32)
57------- Lockwasher (No. 6)
58------- Flat washer (No. 6)
59------- Terminal board TB5O1
60------- Flathead machine screw (No. 6-32)
61------- Hexagonal plain nut (No. 6-32)
62------- Lockwasher (No. 6)
63------- Terminal lug
64------- Terminal lug
65------- Panhead machine screw (No. 4-40)
66------- Lockwasher (No. 4)
67------- Terminal stud
68------- Panhead machine screw (No. 832)
69------- Hexagonal plain nut (No. 8-32)
70------- Lockwasher (No. 8)
71------- Flat washer (No. 8)
72------- Resistor washer (No. 8)
73------- Resistor R29
74------- Mica washer (No. 8)
75------- Flat washer (No. 8)
76------- Panhead machine screw (No. 6-32)
77------- Lockwasher (No. 6)
78------- Capacitor C512
79------- Spacer
80------- Terminal lag
81------- Inductor L501 mounting stud
82------- Panhead machine screw (No. 4-40)
83------- Hexagonal plain nut (No. 4-40)
84------- Lockwasher (No. 4)
85------- Flat washer (No. 4)
86------- Panhead machine screw (No. 8-32)
87------- Lockwasher (No. 8)
88------- Terminal mounting bracket
89------- Flathead machine screw (No. 6-32)
90------- Hexagonal plain nut (No. 10-32)
91------- Lockwasher (No. 10)
92------- Terminal lug
93------- Mica washer (part of CR514)
94------- Mica washer (part of CR514)
95------- Diode CR514
96------- Hexagonal plain nut (No. 10-32)
97------- Lockwasher (No. 10)
98------- Diode CR510
99------- Diode mounting bracket
100------- Panhead machine screw (No. 10-32)
101------- Lockwasher (No. 10)
102------- Guide pin plate
103------- Grommet
104------- Flathead machine screw (No. 6-32)
105------- Hexagonal plain nut (No. 6-32)
106------- Lockwasher (No. 6)
107------- Flathead machine screw (No. 6-32)
108------- Hexagonal plain nut (No. 6-32)
109------- Lockwasher (No. 6)
110------- Panhead machine screw (No. 8-32)
111------- Lockwasher (No. 8)
112------- Flat washer (No. 8)
113------- Bracket
114------- Panhead machine screw (No. 8-32)
115------- Lockwasher (No. 8)
116------- Terminal lug
117------- Inductor assembly
118------- Panhead machine screw (No. 6-32)
119------- Lockwasher (No. 6)
120------- Inductor support bracket
121------- Hexagonal plain nut (No. 6-32)
122------- Lockwasher (No. 6)
123------- Inductor L502
124------- Inductor mounting bracket
125------- Power supply chassis
126------- Diode CR502
127------- Flat washer (No. 6)
128------- Hexagonal plain nut (No. 6-32)
129------- Panhead machine screw (No. 6-32)
130------- Split lockwasher (No. 6)
131------- Flat washer (No. 6)
132------- Terminal board TB504
133------- Diode CR509
134------- Hexagonal plain nut (No. 6-32)
135------- Split lockwasher (No. 6)
136------- Capacitor C513
137------- Capacitor mounting strap
138------- Diode CR512
139------- Hexagonal plain nut (No. 6-32)
140------- Split lockwasher (No. 6)
141------- Capacitor mounting strap
142------- Capacitor C515
143------- Transformer T501 (cutout)
144------- Panhead machine screw (No. 6-32)
145------- Split lockwasher (No. 6)
146------- Capacitor C514
147------- Capacitor mounting strap
148------- Panhead machine screw (No. 6-32)
149------- Split lockwasher (No. 6)
150------- Terminal stud

ae. The grommet (103) is glued into place. To remove the grommet (103), free it from the glue.

af. To remove the bracket (113), proceed as follows:

(1) Remove the two flathead machine screws (104), hexagonal plain nuts (105), and lockwashers (106).

(2) Remove the two flathead machine screws (107), hexagonal plain nuts (108), and lockwashers (109).

(3) Remove the two panhead machine screws (110), lockwasher (111), and flat washers (112).

ag. To remove the inductor assembly (117), proceed as follows:

(1) Remove the two panhead machine screws (110), lockwasher (111), and flat washers (112).

(2) Remove the two panhead machine screws (114), two lockwashers (115), and one terminal lug (116).

ah. To disassemble the inductor assembly (117), proceed as follows:

(1) Separate the inductor support bracket (120) from the inductor mounting bracket (124) by removing the four panhead machine screws (118) and lockwashers (119).

(2) Separate inductor L502 (123) from the inductor mounting bracket (124) by removing the four hexagonal plain nuts (121) and lockwashers (122).

4-129. Disassembly of Telephone Storage Well
(fig. 4-87)

After removing the telephone storage well (28) as described in paragraph 4-120g, perform the procedures outlined in a through g below to disassemble the unit.

a. Release the two Camloc fasteners (1) on the headset-microphone access door (7) from the Camloc receptacles (2) on the telephone storage well (28).

b. To remove the headset-microphone access door (7) from the telephone storage well (28), remove the three panhead machine screws (3), hexagonal plain nuts (4), lockwashers (5), and flat washers (6).

c. To remove the cover assembly (10) from the telephone storage well (28), remove the four panhead machine screws (8) and lockwashers (9).

d. Remove the two panhead machine screws (11), hexagonal plain nuts (12), and lockwashers (13) from the terminal board bracket (14).

e. To separate the terminal board bracket (14), marker strip (15), and terminal board TB1201 (16), remove the four fillister head machine screws (17), hexagonal plain nuts (18), lockwashers (19), and flat washers (20).

f. To remove Handset H-194/FSW-8 (23), remove the strain relief bushing (21) from the cover assembly (10) and withdraw the telephone cable (22) through the hole in the cover assembly (10).

g. To remove the telephone handset holding bracket (27) from the telephone storage well (28), remove the three panhead machine screws (24), hexagonal plain nuts (25), and lockwashers (26).

4-130. Disassembly of Terminal, Telephone TA-406/FSW-8
(fig. 4-88)

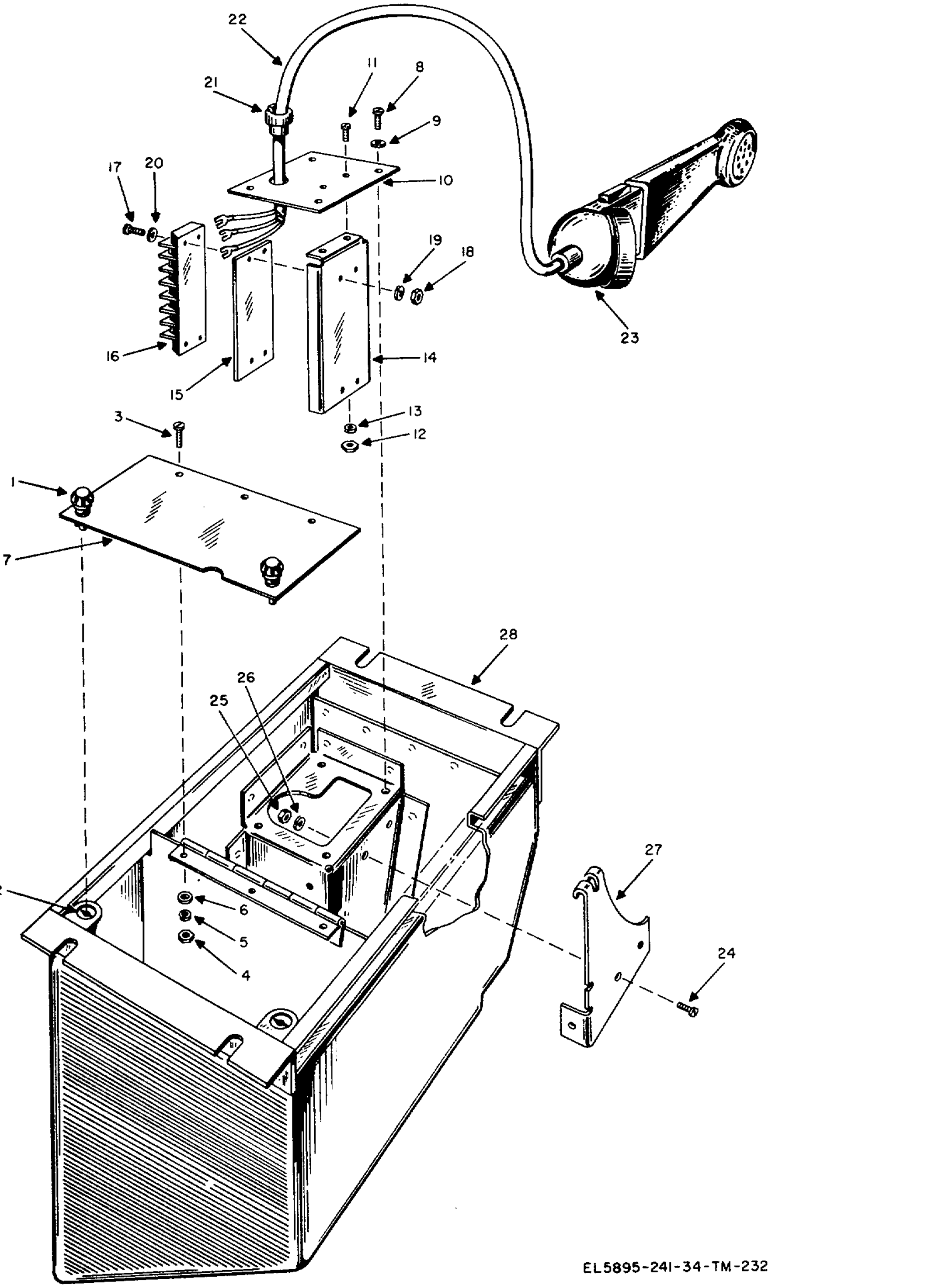
After removing the TA-406/FSW-8 as described in paragraph 4-120h, proceed as outlined in a through n below to disassemble the unit. For the location of electrical parts, refer to figure 4-30.

a. To remove the cover plate (3) from the telephone terminal chassis assembly (59), release the three Camloc fasteners (1) from the Camloc receptacles (2).

b. To separate the telephone control panel (28) from the telephone terminal chassis assembly (59), remove the four panhead machine screws (4), lockwashers (5), four panhead machine screws (6), and lockwashers (7).

c. To remove TELEPHONE supervisory indicator lamp DS1301 (9) from lampholder XDS1301 (13), remove the lens cap (8) and pull out TELEPHONE supervisory indicator lamp DS1301 (9).

d. To remove lampholder XDS1301 (13) from the telephone control panel (28), remove the knurled nut (10) from lampholder XDS1301 (13). (The knurled nuts (11 and 12) do not have to be removed to remove lampholder XDS1301.)



1—Camloc fasteners
2—Camloc receptacles
3—Panhead machine screw (No. 4-40)
4—Hexagonal plain nut (No. 4-40)
5—Lockwasher (No. 4)
6—Flat washer (No. 4)
7—Headset-microphone access door
8—Panhead machine screw (No. 6-32)
9—Lockwasher (No. 6)
10—Cover assembly
11—Panhead machine screw (No. 6-32)
12—Hexagonal plain nut (No. 6-32)
13—Lockwasher (No. 6)
14—Terminal board bracket
15—Marker strip
16—Terminal board TB1201
17—Fillister head machine screw (No. 4-40)
18—Hexagonal plain nut (No. 4-40)
19—Lockwasher (No. 4)
20—Flat washer (No. 4)
21—Strain relief bushing
22—Telephone cable
23—Handset H-194/FSW-8
24—Panhead machine screw (No. 10-32)
25—Hexagonal plain nut (No. 10-32)
26—Lockwasher (No. 10)
27—Telephone handset holding bracket
28—Telephone storage well

Figure 4-87. Telephone storage well (part of OA-2055/FSW-8), exploded view.

e. To remove TELEPHONE switch S1310 (18) from the telephone control panel (28), remove the hexagonal plain nut (14) and lockwasher (15). (The hexagonal plain nut (16) and lockwasher (17) do not have to be removed to remove TELEPHONE switch S1310.) f. To remove the designation stripholder (22) from the telephone control panel (28), remove the three flathead machine screws (19), hexagonal plain nuts (20), and lockwashers (21).

g. To remove the identification plate (25) from telephone control panel (28), remove the four flathead machine screws (23) and lockwashers (24).

h. To remove the handle (27) from the telephone control panel (28), remove the two flathead machine screws (26).

i. To remove the buzzer mounting bracket (31) from the telephone terminal chassis (60), remove the three panhead machine screws (29) and lockwashers (30).

j. To remove buzzer DS1311 (34) from the buzzer mounting bracket (31), remove the two panhead machine screws (32) and lockwashers (33).

k. Proceed as follows to remove impedance network Z1301 (49).

(1) Remove the two panhead machine screws (35), hexagonal plain nuts (36), and lockwashers (37) that attach the right mounting bracket (38) to the telephone terminal chassis (60).

(2) Remove the two panhead machine screws (39), hexagonal plain nuts (40), and lockwashers (41) that attach the left mounting bracket (42) to the telephone terminal chassis (60).

(3) To remove the right mounting bracket (38) from impedance matching network Z1301 (49), remove the two panhead machine screws (43), hexagonal plain nuts (44), and lockwashers (45).

(4) To remove the left mounting bracket (42) from impedance matching network Z1301 (49), remove the two panhead machine screws (46), hexagonal plain nut (47), and lockwashers (48).

l. To remove the reinforcement plate (53) from the telephone terminal chassis (60), remove the four flathead machine screws (50), hexagonal plain nuts (51), and lockwashers (52).

m. To remove connector J1301 (57) from the telephone terminal chassis (60), remove the four panhead machine screws (54), hexagonal plain nuts (55), and lockwashers (56).

n. Remove the strain relief bushing (58) from the telephone terminal chassis (60).

Figure 4-88. Terminal, Telephone TA-406/FSW-8, exploded view-Continued

1----Camloc fastener
2----Camloc receptacle
3----Cover plate
4----Panhead machine screw (No. 8-32)
5----Lockwasher (No. 8)
6----Panhead machine screw (No. 8-32)
7----Lockwasher (No. 8)
8----Lens cap (part of XDS1301)
9----TELEPHONE supervisory indicator lamp DS1301
10----Knurled nut (Dart of XDS1301)
11----Knurled nut (part of XDS1301)
12----Knurled nut (part of XDS1301)
13----Lampholder XDS1301
14----Hexagonal plain nut (part of S1310)
15----Lockwasher (part of S1310)
16-Hexagonal plain nut (part of S1310)
17----Lockwasher (part of S1310)
18----TELEPHONE switch S1310
19----Flathead machine screw (No. 4-40)
20----Hexagonal plain nut (No. 2)
21----Lockwasher (No. 2)
22----Designation stripholder
23----Flathead machine screw (No. 4-40)
24----Lockwasher (No. 4)
25----Identification plate
26----Flathead machine screw (No. 8-32)
27----Handle
28----Telephone control panel
29----Panhead machine screw (No. 6-32)
30----Lockwasher (No. 6)
31----- Buzzer mounting bracket
32----- Panhead machine screw (No. 6-32)
33----- Lockwasher (No. 6)
34----- Buzzer DS1311
35----- Panhead machine screw (No. 6-32)
36----- Hexagonal plain nut (No. 6-32)
37----- Lockwasher (No. 6)
38----- Right mounting bracket
39----- Panhead machine screw (No. 6-32)
40----- Hexagonal plain nut (No. 6-32)
41----- Lockwasher (No. 6)
42----- Left mounting bracket
43----- Panhead machine screw (No. 6-32)
44----- Hexagonal plain nut (No. 6)
45----- Lockwasher (No. 6)
46----- Panhead machine screw (No. 6-32)
47----- Hexagonal plain nut (No. 6)
48----- Lockwasher (No. 6)
49----- Impedance matching network Z1301
50----- Flathead machine screw (No. 832)
51----- Hexagonal plain nut (No. 8-32)
52----- Lockwasher (No. 8)
53----- Reinforcement plate
54----- Panhead machine screw (No. 8-32)
55----- Hexagonal plain nut (No. 8-32)
56----- Lockwasher (No. 8)
57----- Connector J1301
58----- Strain relief busing
59----- Telephone terminal chassis assembly
60----- Telephone terminal chassis

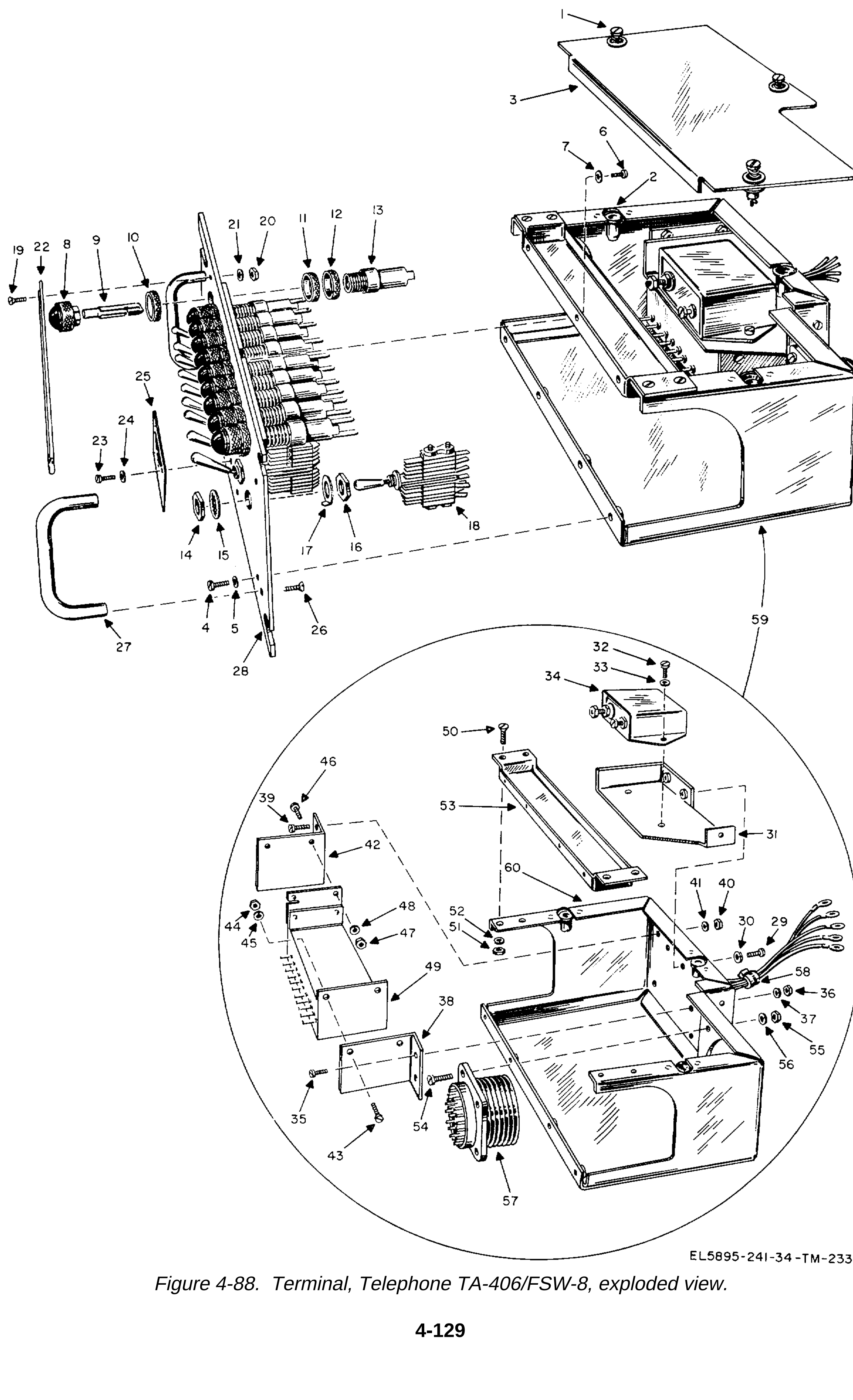


Figure 4-88. Terminal, Telephone TA-406/FSW-8, exploded view.

4-131. Disassembly of Miscellaneous Control Panel (fig. 4-89)

After removing the miscellaneous control panel as described in paragraph 4-120*i,* proceed as outlined in a through o below to disassemble the panel. For the location of electrical parts, refer to figure 4-26.

a. To remove the control panel (54) from the mounting bracket (4), remove the five flathead machine screws (1), hexagonal plain nuts (2), and lockwashers (3).

b. To remove capacitor C1102 (8) from the mounting bracket (4), remove the panhead machine screw (5), hexagonal plain nut (6), and lockwasher (7).

c. To remove connector J1101 (12) from the mounting bracket (4), remove the four panhead machine screws (9),'hexagonal plain nuts (10), and lockwashers (11).

d. To remove connector J1104 (16) from the mounting bracket (4), remove the four panhead machine screws (13), hexagonal plain nuts (14), and lockwashers (15).

e. To remove transformer T1102 (20) from the mounting bracket (4), remove the two panhead machine screws (17), hexagonal plain nuts (18), and lockwashers (19).

f. To remove the standoff terminal (23) from the mounting bracket (4), remove the panhead machine screw (21) and lockwasher (22).

g. To remove connector J1102 (26) from the control panel (54), remove the hexagonal plain nut (24) and lockwasher (25).

h. To remove meter Ml101 (30) from the control panel (54), remove the roundhead machine screws (27), hexagonal plain nuts (28), and lockwashers (29).

i. Loosen the setscrew (31) and remove the HEADSET volume control knob (32) from the shaft on HEADSET volume control resistor R1106 (36).

j. To remove HEADSET volume control resistor R1106 (36) from the miscellaneous control panel (54), remove the hexagonal plain nut (33) and lockwasher (34). (The hexagonal plain nut (35) does not have to be removed to remove HEADSET volume control resistor R1106.) k. To remove MAGNETIC volume control re4-130 sistor R1104 (41), remove the hexagonal selflocking nut (37), hexagonal plain nut (38), and lockwasher (39). (The hexagonal plain nut (40) does not have to be removed to remove MAGNETIC volume control resistor R1104.) 1. Loosen the setscrew (42) and remove the LOCAL-REMOTE control knob (43) from the shaft on LOCAL-REMOTE switch S1101 (47).

To remove LOCAL-REMOTE switch S1101 (47) from the control panel (54), remove the hexagonal plain nut (44) and lockwasher (45). (The hexagonal plain nut (46) does not have to be removed to remove LOCAL-REMOTE switch S1101.)

n. To remove INTERCOM-OFF switch S1103 (51), remove the hexagonal plain nut (48), lockwasher (49), and key washer (50).

o. To remove the guide (53), remove the four flathead machine screws (52).

p. To remove capacitor C1103 (58) from the mounting bracket (62), remove the panhead machine screw (61), the lockwasher (60), and the standoff terminal (59).

q. To remove the designation plate (55) from the control panel (63), remove the panhead machine screw (57), and the lockwasher (56).

4-132. Disassembly of Control-Monitor C-3445/FSW-8 (fig. 4-91)

After removing the C-3445/FSW-8 as described in paragraph 4-120*j*, proceed as follows to disassemble the unit. For the location of electrical parts, refer to figures 4-10, 4-14, and 4-15.

a. To remove receiver preamplifier A1601 (4) from the printed circuit case (23), remove the two panhead machine screws (1), lockwashers (2), and flat washers (3), and pull receiver preamplifier A1601 (4) upward.

b. To remove the handle (9) from the printed circuit board (10), remove the two panhead machine screws (5), flat washers, (6) hexagonal plain nuts (7), and lockwashers (8).

c. To remove the bottom plate (13) from the chassis (76), release the three Camloc fasteners (11) from the Camloc receptacles (12).

d. To remove the printed circuit case (23), remove the six panhead machine screws (14).

e. To remove connector J1513 (22) from the printed circuit case (23), remove the two panhead machine screws (15), hexagonal plain nuts (16), lockwashers (17), cable clamp (18), flat washers (19), lockwashers (20), and flat washers (21).

f. To remove the rear panel (39), remove the four panhead machine screws (24) and lockwashers (25).

g. To remove transformer T1501 (30), remove the two panhead machine screws (26), hexagonal plain nuts (27), lockwashers (28), and terminal lugs (29).

h. Remove connector J1502 (34) by removing the four panhead machine screws (31), hexagonal plain nuts (32), and lockwashers (33).

i. Remove connector J1501 (38) by removing the four panhead machine screws (35), hexagonal plain nuts (36), and lockwashers (37).

j. To remove the front panel (73), remove the five panhead machine screws (40) and lockwashers (41).

k. To remove RECEIVE supervisory indicator lamp DS1501 (43) from lampholder XDS1501 (47), remove the lens cap (42) and twist and pull out RECEIVE supervisory indicator lamp DS1501 (43).

l. To remove lampholder XDS1501 (47), remove the knurled nut (44). (The knurled nuts (45 and 46) do not have to be removed to remove lampholder XDS1501 (47).)

m. To remove RECEIVE switch S1510 (52), remove the hexagonal plain nut (48) and lockwasher (49). (The flat washer (50) and hexagonal plain nut (51) do not have to be removed to remove RECEIVE switch S1510 (52).)

n. To remove TRANSMIT switch S1520 (57), remove the hexagonal plain nut (53) and lockwasher (54). (The flat washer (55) and hexagonal plain nut (56), do not have to be removed to remove TRANSMIT switch S1520 (57).)

o. In Control-Monitor C-3445/FSW-8, the two lower right TRANSMIT switches (S1517 and S1518) only have switch guards. To remove TRANSMIT switches S1517 and S1518 (57), remove the hexagonal plain nut (53), the lockwasher (54), and the switch guard (77). (The flat washer (55) and the hexagonal plain nut (56), do not have to be removed to remove any TRANSMIT switch.)

p. To remove TRANSMIT supervisory indicaTM 11-5895-241-34 tor lamp DS1520 (59) from lampholder XDS1520 (63), remove the lens cap (58) and pull out TRANSMIT supervisory indicator lamp DS1520 (59).

q. To remove lampholder XDS1520 (63), remove the lens cap (58) and knurled nut (60). (The knurled nuts (61 and 62) do not have to be removed to remove lampholder XDS1520 (63).)

r. To remove the handle (65), remove the two flathead machine screws (64).

s. To remove the designation stripholder (69), remove the three flathead machine screws (66), hexagonal plain nuts (67), and lockwashers (68).

t. To remove the identification plate (72), remove the four panhead machine screws (70) and lockwashers (71).

u. To remove terminal board TB1501 (75) from the top of the chassis (76), remove the six flathead machine screws (74).

4-133. Disassembly of Loudspeaker and Indicator Panel (fig. 4-92 and 4-127)

After removing the loudspeaker and indicator panel as described in paragraph 4-120, proceed as follows to disassemble the panel. For location of electrical parts, refer to figure 4-28 and 4-29.

a. To remove the field status indicator cover (2) from the loudspeaker and indicator panel (56), remove the four panhead machine screws (1).

b. To remove the retainer (6) from the field status indicator cover (2), remove the two flathead machine screws (3), hexagonal plain nuts (4), and lockwashers (5).

c. To remove the VFR indicator strip (7), IFR indicator strip (8), CLOSED indicator strip (9), and frosted glass (10), slide them up and out.

d. To remove the retaining bracket (14) from the field status indicator cover (2), remove the two flathead machine screws (11), hexagonal plain nuts (12), and lockwashers (13).

e. To remove indicator lamp DS1403 (19), twist and lift it from lampholder XDS1403 (20).

f. To remove lampholder XDS1403 (20), remove the two panhead machine screws (15), hexagonal plain nuts (16), lockwashers (17), and flat washers (18).

g. To remove the loudspeaker cover (22) from the loudspeaker and indicator panel (56), remove the four panhead machine screws (21).

h. To remove loudspeaker LS1401 (27) from the loudspeaker mounting plate (28), remove the four flathead machine screws (24), hexagonal plain nuts (25), and lockwashers (26).

i. To remove the loudspeaker mounting plate (28) from the loudspeaker and indicator panel (56), remove the four panhead machine screws (23).

j. Loosen the setscrew (29) on the knob (30), and remove the knob from the potentiometer shaft.

k. To remove VOLUME CONTROL resistor R1402 (34), remove the hexagonal plain nut (31) and lockwasher (32). The hexagonal plain nut (33) does not have to be removed to remove VOLUME CONTROL resistor R1402 (34)).

l. To remove the terminal stud (37), remove the flathead machine screw (35) and lockwasher (36).

m. To remove the relay mounting bracket (41), remove the four panhead machine screws (38), hexagonal plain nuts (39), and lockwashers (40).

n. To remove field status indicator relay No.1 K1401 (44) from the relay mounting bracket (41), remove the three hexagonal plain nuts (42) and lockwashers (43).

o. To remove the terminal board bracket (52) from the loudspeaker and indicator panel, remove the two flathead machine screws (45), hexagonal plain nuts (46), and lockwashers (47).

p. To separate the terminal board bracket (52), marker strip (53), and terminal board TB1401 (54), remove the four panhead machine screws (48), flat washers (49), hexagonal plain nuts (50), and lockwashers (51).

q. Remove the rubber grommet (55).

4-134. Disassembly of Desk Lamp Assembly
(fig. 4-93)

After removing the assemblies as described in paragraph 4-120k and i, proceed as follows to disassemble the unit.

a. Remove incandescent lamp DS1002 (1) from the lamp arm and holder assembly (5).

b. Loosen the hexagonal plain nut (2) from the setscrew (3).

Figure 4-89. Miscellaneous control panel (part of OA-2055/FSW-8 and OA-2055A/FSW-8), exploded view-Continued

1 ---- Flathead machine screw (No. 8-32)
2 ---- Hexagonal plain nut (No. 8-32)
3 ---- Lockwasher (No. 8)
4 ---- Mounting bracket
5 ---- Panhead machine screw (No. 6-32)
6 ---- Hexagonal plain nut (No. 6-32)
7 ---- Lockwasher (No. 6)
8 ---- Capacitor C1102
9 ---- Panhead machine screw (No. 6-32)
10 ---- Hexagonal plain nut (No. 6-32)
11 ---- Lockwasher (No. 6)
12 ---- Connector J1101
13 ---- Panhead machine screw (No. 4-40)
14 ---- Hexagonal plain nut (No. 4-40)
15 ---- Lockwasher (No. 4)
16 ---- Connector J1104
17 ---- Panhead machine screw (No. 4-40)
18 ---- Hexagonal plain nut (No. 4-40)
19 ---- Lockwasher (No. 4)
20 ---- Transformer T1102
21 ---- Panhead machine screw (No. 4-40)
22 ---- Lockwasher (No. 4)
23 ---- Standoff terminal
24 ---- Hexagonal plain nut (part of J1102)
25 ---- Lockwasher (part of J1102)
26 ---- Connector J1102
27 ---- Roundhead machine screw (No. 6-32)
28 ---- Hexagonal plain nut (No. 6-32)
29 ---- Lockwasher (No. 6)
30 ---- Meter Ml101
31 ---- Setscrew (part of control knob)
32 ---- HEADSET volume control knob
33 ----- Hexagonal plain nut (part of R1106)
34 ----- Lockwasher (part of R1106)
35 ----- Hexagonal plain nut (part of R1106)
36 ----- HEADSET volume control resistor R1106
37 ----- Hexagonal self-locking nut (part of R1104)
38 ----- Hexagonal plain nut (part of R1104)
39 ----- Lockwasher (part of R1104)
40 ----- Hexagonal plain nut (part of R1104)
41 ----- MAGNETIC volume control resistor R1104
42 ----- Setscrew (part of control knob)
43 ----- LOCAL-REMOTE control knob
44 ----- Hexagonal plain nut (part of S1101)
45 ----- Lockwasher (part of S1101)
46 ----- Hexagonal plain nut (part of S1101)
47 ----- LOCAL-REMOTE switch S1101
48 ----- Hexagonal plain nut (part of S1103)
49 ----- Lockwasher (part of S1103)
50 ----- Key washer (part of S1103)
51 ----- INTERCOM-OFF switch S1103
52 ----- Flathead machine screw (No. 4-40)
53 ----- Guide
54 ----- Control panel
55 ----- Designation plate
56 ----- Lockwasher (No. 2)
57 ----- Panhead machine screw (No. 2-56)
58 ----- Capacitor C1103
59 ----- Standoff terminal
60 ----- Lockwasher (No. 4)
61 ----- Panhead Machine screw (No. 4)
62 ----- Mounting bracket (reference only)
63 ----- Control panel (for reference only)

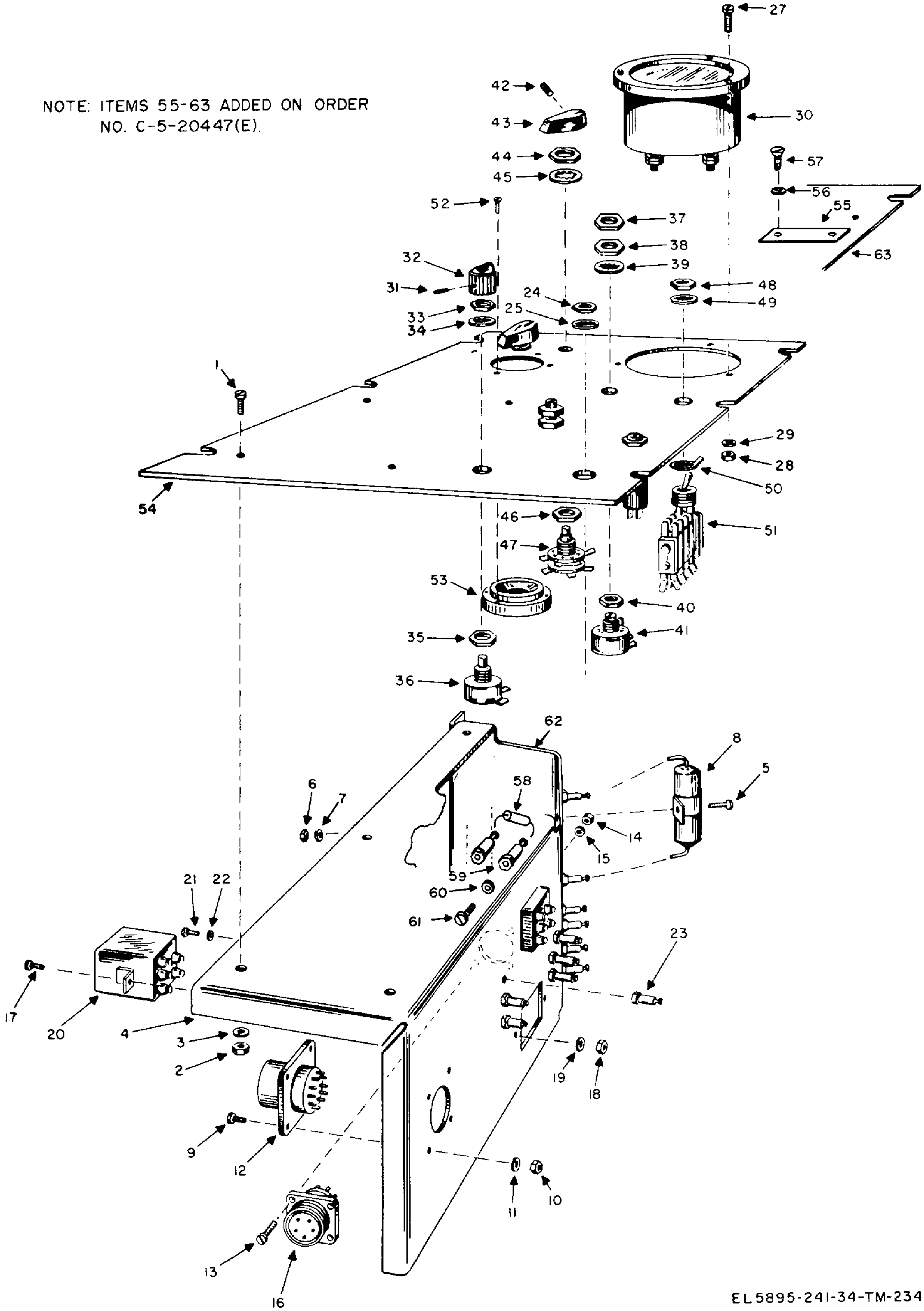
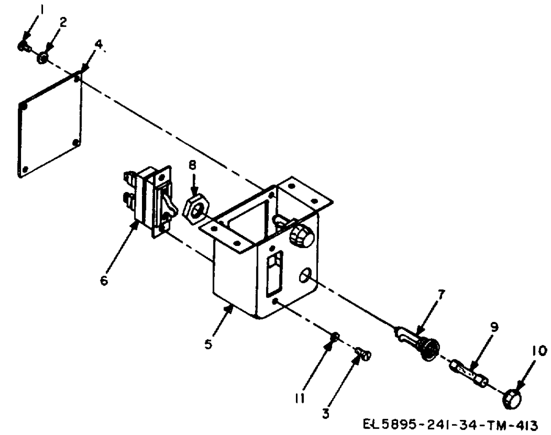


Figure 4-89. Miscellaneous control panel (part of OA-2055/FSW-8 and OA-2055A/FSW-8), exploded view.



1—Panhead machine screw (No. 6-32)
2—Lockwasher (No. 6)
3—Panhead machine screw (No. 6-32)
4—Rear plate
5—Housing
6—Circuit breaker (CB402)
7—Fuseholder
8—Hexagonal plain nut (No. 6)
9—Fuse, F401
10—Fuseholder cap
11—Lockwasher (No. 6)

Figure 4-90. Circuit breaker and fuse assembly (part of OA-2055A/FSW-8), exploded view.

Figure 4-91. Control-Monitor C-3445/FSW-8 (part of OA-2055/FSW-8) and Control-Monitor C-3445A/FSW-8 (part of OA-2055A/FSW-8, exploded view-Continued

1----Panhead machine screws (No. 4-40)
2----Lockwasher (No. 4)
3----Flat washer (No. 4)
4----Receiver preamplifier A1601
5----Panhead machine screw (No. 4-40)
6----Flat washer (No. 4)
7----Hexagonal plain nut (No. 4-40)
8----Lockwasher (No. 4)
9----Handle
10----Printed circuit board
11----Camloc fastener
12----Camloc receptacle
13----Bottom plate
14----Panhead machine screw (No. 6-32)
15----Panhead machine screw (No. 4-40)
16----Hexagonal plain nut (No. 4-40)
17----Lockwasher (No. 4)
18----Cable clamp
19----Flat washer (No. 4)
20----Lockwasher (No. 4)
21----Flat washer (No. 4)
22----Connector J1513
23----Printed circuit case
24----Panhead machine screw (No. 10-32)
25----Lockwasher (No. 10)
26----Panhead machine screw (No. 4-40)
27----Hexagonal plain nut (No. 4-40)
28----Lockwasher (No. 4)
29----Terminal lug
30----Transformer T1501
31----Panhead machine screw (No. 6-32)
32----Hexagonal plain nut (No. 6-32)
33----Lockwasher (No. 6)
34----Connector J1502
35----Panhead machine screw (No. 6-32)
36----Hexagonal plain nut (No. 6-32)
37----Lockwasher (No. 6)
38----Connector J1SO1
39----Rear panel
40----- Panhead machine screw (No. 8-32)
41----- Lockwasher (No. 8)
42----- Lens cap
43----- RECEIVE supervisory indicator lamp DS1501
44----- Knurled nut (part of XDS1501)
45----- Knurled nut (part of XDS1501)
46----- Knurled nut (part of XDS1501)
47----- Lampholder XDS1501
48----- Hexagonal plain nut (part of S1510)
49----- Lockwasher (part of S1510)
50----- Flatwasher (part of S1510)
51----- Hexagonal plain nut (part of S1510)
52----- RECEIVE switch S15I0
53----- Hexagonal plain nut (part of S1520)
54----- Flat washer (part of S1520)
56----- Hexagonal plain nut (part of S1520)
57----- TRANSMIT switch S1520
58----- Lens cap
59----- TRANSMIT supervisory indicator lamp DS1520
60----- Knurled nut (part of XDS1520)
61----- Knurled nut (part of XDS1520)
62----- Knurled nut (part of XDS1520)
63----- Lampholder XDS152O
64----- Flathead machine screw (No. 8-32)
65----- Handle
66----- Flathead machine screw (No. 2-56)
67----- Hexagonal plain nut (No. 2-56)
68----- Lockwasher (No. 2)
69----- Designation stripholder
70----- Panhead machine screw (No. 4-40)
71----- Lockwasher (No. 4)
72----- Identification plate
73----- Front panel
74----- Flathead machine screws (No. 8-32)
75----- Terminal board TB1501
76----- Chassis
77----- Switch guard on S1517 and S1518 only.
Hexagonal (56-plain nut not used)

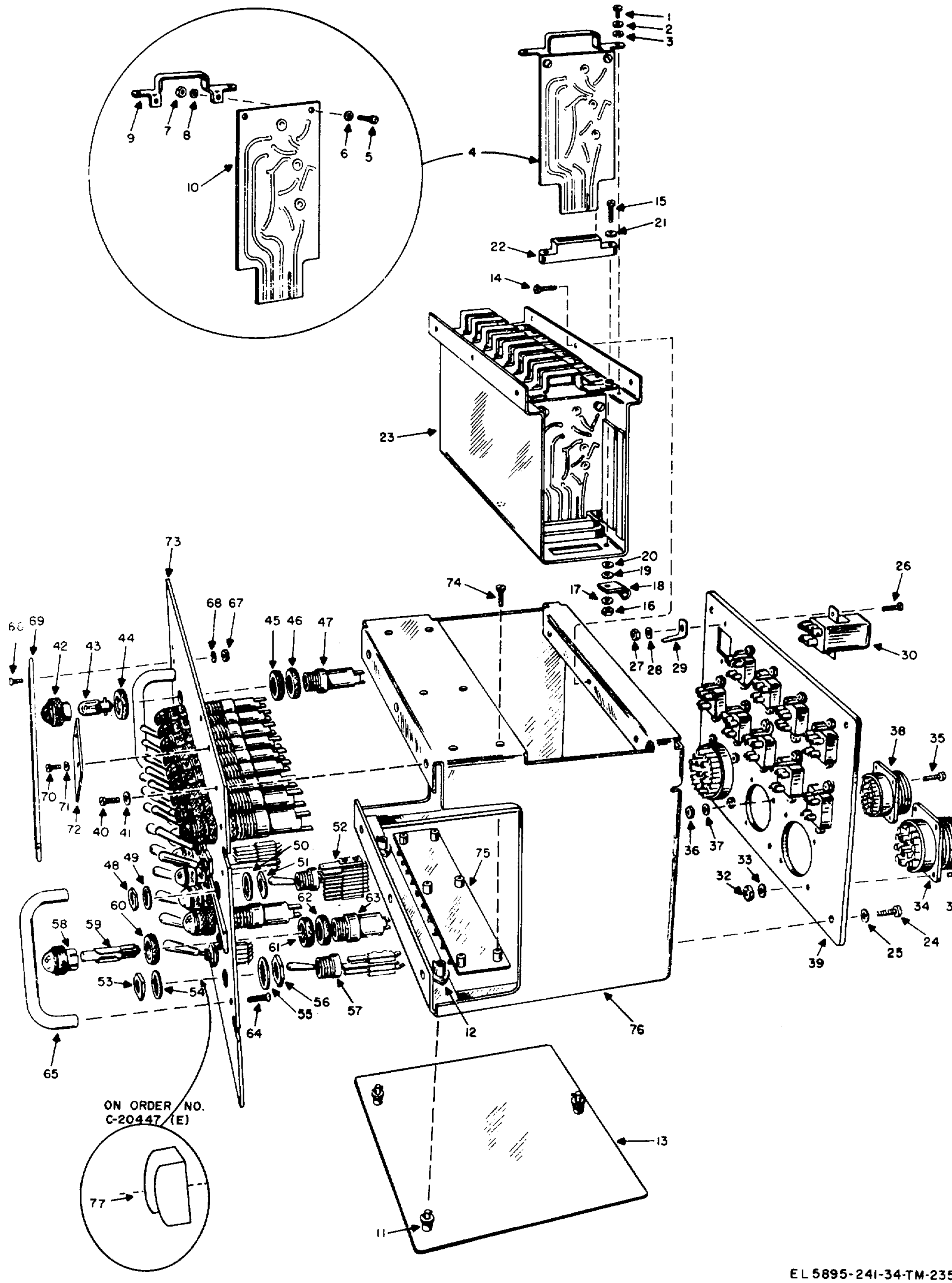


Figure 4-91. Control-Monitor C-8445/FSW-8 (part of OA-2055/FSW-8) and Control-Monitor C--445A/FSW-8 (part of OA-2055A/FSW-8), exploded view.

c. Loosen the setscrew (3) on the collar (4) and slide the collar back. Remove the lamp arm and holder assembly (5) from the lamp mounting plate (10).

d. Remove the lamp mounting plate (10) by removing the two flathead machine screws (6), hexagonal plain nuts (7), flat washers (8), and lockwashers (9).

e. Remove terminal board TB1031 (15) and the marker strip (16) by removing the four panhead machine screws (11), hexagonal plain nuts (12), lockwashers (13), and flat washers (14).

f. Separate the terminal bracket (21) from the desk lamp panel (22) by removing the five flathead machine screws (17), hexagonal plain nuts (18), lockwashers (19), and cable clamp (20).

4-135. Disassembly of Circuit Breaker ond Fuse Assembly (fig. 4-90)

After removing the circuit breaker and fuse assembly as described in paragraph 4-120*n*, disassemble the unit as follows:

a. Remove the rear plate (4) from the housing (5), and remove the four panhead screws (1) and the lockwashers (2).

b. Remove the circuit breaker (6) from the housing (5), and remove the two panhead screws (3) and lockwashers (11).

c. Remove each fuseholder (7) from the housing (5) by removing each hexagonal plain nut (8).

d. Remove the fuse (9) from each fuseholder (7) by removing the fuseholder cap (10).

4-136. Disassembly of Doorlock (fig. 4-94)

After removing the doorlock as described in paragraph 4-120*o*, proceed as follows to disassemble the doorlock.

a. Remove the hexagonal plain nut (1) after releasing the tabs of the tab lockwasher (2).

b. Remove the tab lockwasher (2) spring washer (3), latch (4), large spacer (5), and cotter pin (6) from the milled shaft (8).

c. Separate the milled shaft (8) from the small spacer (7), the door handle (9), and the handle recess ring (10).

4-137. Removal of Power Control Panel Components (fig. 4-95)

Proceed as follows to remove the controls and indicators mounted on the power control panel.

a. Remove the circuit breaker pan (4) and ac supply bezel (3) from the power panel (42) by removing the four panhead machine screws (1) and lockwashers (2).

b. Remove MAIN POWER circuit breaker CB1001 (7) from the circuit breaker pan (4) by removing the two panhead machine screws (5) and lockwashers (6).

c. Remove the control knob (9) from dimmer control resistor R1001 (2) by loosening the setscrew (8).

d. Remove dimmer control resistor R1001 (12) from the power panel (42) by removing the hexagonal plain nut (10) and lockwasher (11). (The hexagonal plain nut (13) does not have to be removed to remove dimmer control resistor R1001.)

e. Remove the LAMP dimmer control designation plate (16) by removing the four panhead machine screws (14) and lockwashers (15).

f. Remove the fuseholder pan (20) and fuseholder bezel (19) from the power panel (42) by removing the four panhead machine screws (17) and lockwashers (18).

g. Remove fuseholder XF1002 (23) from the fuseholder pan (20) by removing the hexagonal plain nut (21) and lockwasher (22).

h. Remove 48V-RELAY-1.5 AMP fuse F1002 (25) from fuseholder XF1002 (23) by removing the fuseholder cap (24).

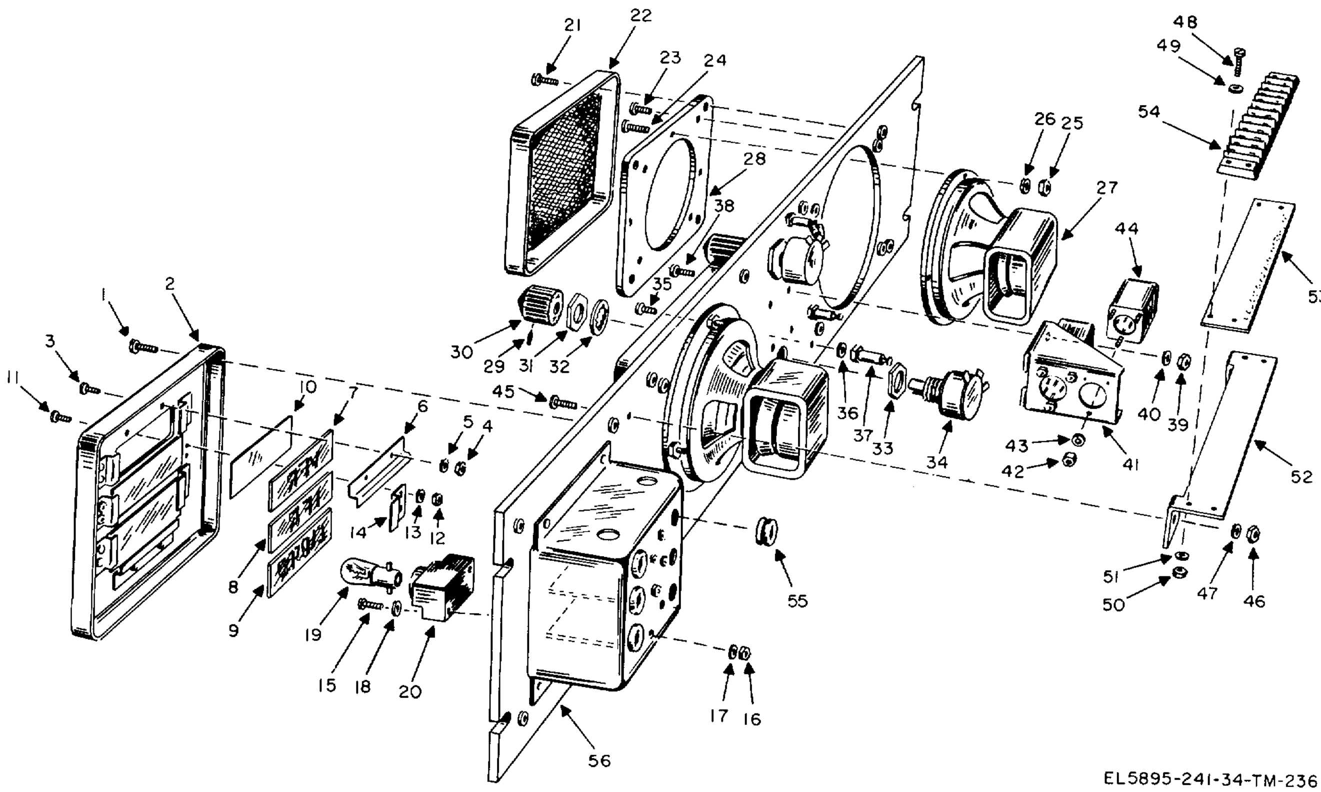
i. Remove EMER. ALARM switch S1001 (29) and mechanical protector (30) by removing the hexagonal plain nut (26) and lockwasher (27). (The hexagonal plain nut (28) does not have to be removed to remove EMER. ALARM switch S1001.)

j. Remove the EMER. ALARM designation plate (33) from the power panel (42) by removing the two panhead machine screws (31) and lockwashers (32).

k. Remove lampholder XDS1001 (35) from the power panel (42) by removing the hexagonal plain nut (34).

l. To remove MAIN POWER indicator lamp DS1001 (38), lift the lens cap (37) and twist and lift incandescent lamp DS1001 (38). (The knurled nut (36) does not have to be removed to remove MAIN POWER indicator lamp DS1001.)

m. Remove the MAIN POWER designation plate (41) by removing the two panhead machine screws (39) and lockwashers (40).



1—Panhead machine screw (No. 6–32)
2—Field status indicator cover
3—Flathead machine screw (No. 2–56)
4—Hexagonal plain nut (No. 2–56)
5—Lockwasher (No. 2)
6—Retainer
7—VFR indicator strip
8—IFR indicator strip
9—CLOSED indicator strip
10—Frosted glass
11—Flathead machine screw (No. 2–56)
12—Hexagonal plain nut (No. 2–56)
13—Lockwasher (No. 2)
14—Retaining bracket
15—Panhead machine screw (No. 6–32)
16—Hexagonal plain nut (No. 6–32)
17—Lockwasher (No. 6)
18—Flat washer (No. 6)
19—Indicator lamp DS1403
20—Lampholder XDS1403
21—Panhead machine screw (No. 6–32)
22—Loudspeaker cover
23—Panhead machine screw (No. 6–32)
24—Flathead machine screw (No. 8–32)
25—Hexagonal plain nut (No. 8–32)
26—Lockwasher (No. 8)
27—Loudspeaker LS1401
28—Loudspeaker mounting plate
29—Setscrew (part of knob)
30—Knob
31—Hexagonal plain nut (part of R1402)
32—Lockwasher (part of R1402)
33—Hexagonal plain nut (part of R1402)
34—VOLUME CONTROL resistor R1402
35—Flathead machine screw (No. 4–40)
36—Lockwasher (No. 4)
37—Terminal stud
38—Panhead machine screws (No. 6–32)
39—Hexagonal plain nut (No. 6–32)
40—Lockwasher (No. 6)
41—Relay mounting bracket
42—Hexagonal plain nut (No. 6–32)
43—Lockwasher (No. 6)
44—Field status indicator relay No. 1 K1401
45—Flathead machine screw (No. 6–32)
46—Hexagonal plain nut (No. 6–32)
47—Lockwasher (No. 6)
48—Panhead machine screw (No. 4–40)
49—Flat washer (No. 4)
50—Hexagonal plain nut (No. 4–40)
51—Lockwasher (No. 4)
52—Terminal board bracket
53—Marker strip
54—Terminal board TB1401
55—Rubber grommet
56—Loudspeaker and indicator panel

Figure 4-92. Loudspeaker and indicator panel (part of OA-2055/FSW-8), exploded view.

4-138. Removal of Power Control Panel Components (Part of OA-2055A/ FSW-8) (fig. 4-95)

To disassemble the power control panel components (part of OA-2055A/FSW-8), perform the procedures given in paragraph 4-137*c, d, e* and *i* through *m.*

4-139. Removal of Components from Cabinet, Electrical Equipment CY-3020/FSW-8 (fig. 4-96)

Proceed as follows to remove components from the CY-3020/FSW-8.

a. Remove the transformer bracket (6) by removing the four panhead machine screws (1) and lockwashers (2). Remove the two panhead machine screws (3), hexagonal plain nuts (4), and lockwashers (5).

b. Remove transformer T1001 (9) from the transformer bracket (6) by removing the four hexagonal plain nuts (7) and lockwashers (8).

c. To remove the right side terminal board pan (15), remove the five flathead machine screws (10), hexagonal plain nuts (11), and lockwashers (12). Remove the five panhead machine screws (13) and lockwashers (14).

d. To remove the cable clamp (19) from the left side terminal board pan (20), remove the panhead machine screw (16), lockwashers (17), and flat washer (18).

e. To separate terminal board TB1030 (25) and marker strip (26) from the right side terminal plan board pan (15), remove the four panhead machine screws (21), hexagonal plain nuts (22), lockwashers (23), and flat washers (24).

f. To separate terminal board TB1027 (31) and marker strip (32) from the right side terminal pan board pan (15), remove the four fillister head machine screws (27), hexagonal plain nuts (28), lockwashers (29), and straddle plate (30).

g. To remove the bottom terminal board pan (37), remove the five panhead machine screws (33), lockwashers (34), hexagonal plain nuts (39), lockwashers (40), five panhead machine screws (35), and lockwashers (36).

h. To separate terminal board TB1010 (42) and marker strip (43) from the bottom terminal board pan (37), remove the four fillister head machine screws (38), hexagonal plain nuts (39), lockwashers (40), and straddle plate (41).

i. To remove the convenience receptacle (47), remove the two panhead machine screws (44), hexagonal plain nuts (45), and lockwashers (46).

j. Remove the cable clamp (51) by removing the panhead machine screw (48), lockwashers (49), and flat washer (50).

k. Remove the channel (53) from the bracket (58) by removing the seven flathead machine screws (52).

l. To remove the bracket (58), remove the four panhead machine screws (54), lockwashers (55), and flat washers (56). This also removes cable clamp (57).

m. To remove the guide pin support (61), remove the four panhead machine screws (59) and lockwashers (60).

n. Remove the angle bracket (65) by removing the two panhead machine screws (62), lockwashers (63), and flat washers (64).

o. To remove the angle bracket (69), remove the two panhead machine screws (66), lockwashers (67), and flat washers (68).

p. Remove the guide pin (72) from the guide pin support (61) by removing the hexagonal plain nut (70) and lockwasher (71).

q. Detach the base assembly (75) from the cabinet (80), by tilting the cabinet on its back and removing the 12 panhead machine screws (73) and lockwashers (74).

NOTE

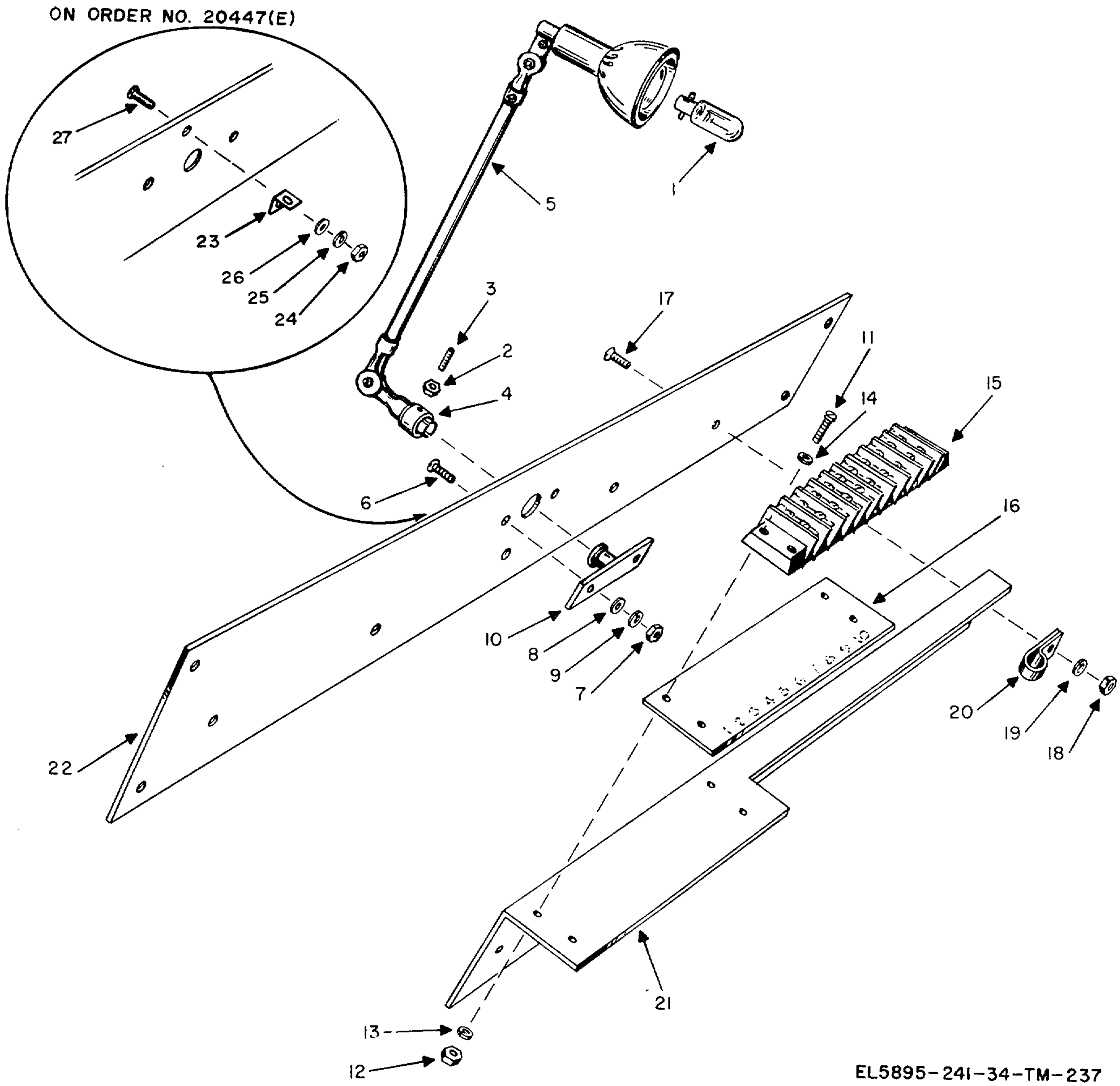
Disassembly procedures for the base assembly (75) are given in paragraph 4-140.

r. To remove the identification plates (78 and 79), remove the four panhead machine screws (76) and lockwashers (77).

4-140. Disassembly of Cabinet, Electrical Equipment CY-3020/FSW-8, Base Assembly (fig. 4-97)

After removal of the base assembly from the cabinet (para 4-139 *q*, proceed as follows to disassemble the base assembly:

a. To remove the base plate (7), proceed as follows:



1—Incandescent lamp DS1002
2—Hexagonal plain nut (No. 6-32)
3—Setscrew (No. 6-32)
4—Collar
5—Lamp arm and holder assembly
6—Flathead machine screw (No. 10-32)
7—Hexagonal plain nut (No. 10-32)
8—Flat washer (No. 10)
9—Lockwasher (No. 10)
10—Lamp mounting plate
11—Pan head machine screw (No. 6-32)
12—Hexagonal plain nut (No. 6-32)
13—Lockwasher (No. 6)
14—Flat washer (No. 6)
15—Terminal board TB1031
16—Marker strip
17—Flathead machine screw (No. 8-32)
18—Hexagonal plain nut (No. 8-32)
19—Lockwasher (No. 8)
20—Cable clamp
21—Terminal bracket
22—Desk lamp panel
23—Angle bracket
24—Hexagonal plain nut (No. 8)
25—Lockwasher (No. 8)
26—Flat washer (No. 8)
27—Flathead machine screw (No. 8-32)

Figure 4-93. Desk lamp assembly (part of OA-2055/FSW-8), exploded view.

(1) Remove the five panhead machine screws (1), lockwashers (2), two panhead machine screws (27), and lockwashers (28) to remove front base channel (34).

(2) Remove the five panhead machine screws (3) and lockwashers (4) from each side base channel (23).

(3) Remove the two panhead machine screws (5), lockwashers (6), two panhead machine screws (21) and lockwashers (22) to remove the rear base channel (38).

b. To remove terminal board TB1002 (11) and marker strip (12) from the base plate (7), remove the four panhead machine screws (8), lockwashers (9) and flat washers (10).

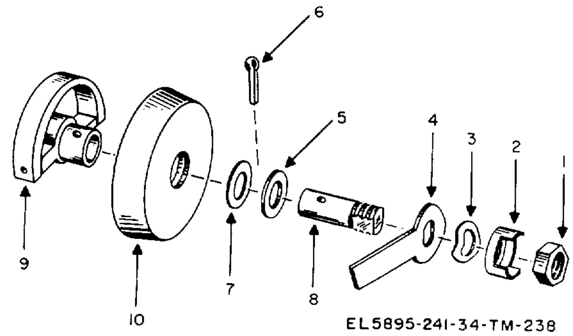
c. To remove terminal board TB1002 (16) and marker strip (17) from the base plate (7), remove the four panhead machine screws (13), lockwashers (14), and flat washers (15).

d. To remove the side base channel (23) from the front base channel (34) and rear base channel (38), remove the four panhead machine screws (18), lockwashers (19), and flat washers (20).

e. To remove the side cable access plate (26) from the side base charnel (23), remove the four panhead machine screws (24) and lockwashers (25).

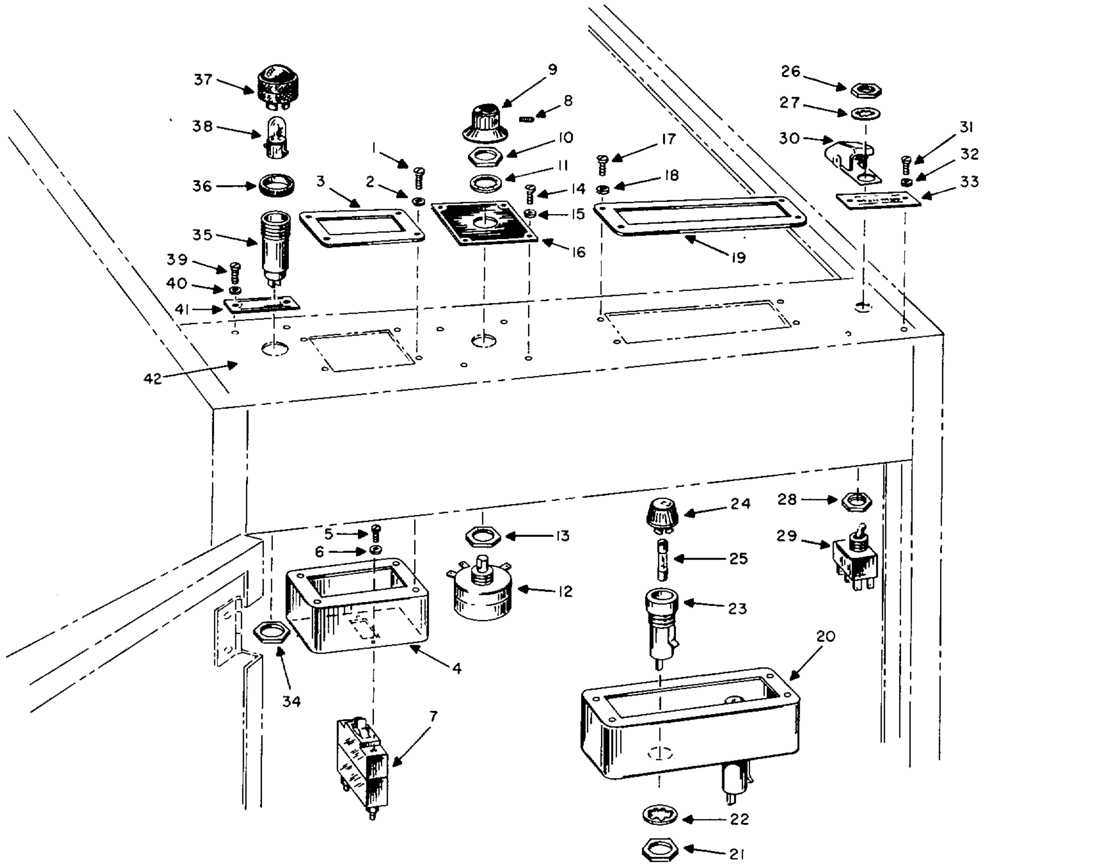
f. To remove connector J1002 (33), remove the four panhead machine screws (30) and lockwashers (31). This also removes the dust cover (32).

g. To remove the rear cable access plate (37) from the rear base channel (38), remove the four panhead machine screws (35) and lockwashers (36).



1—Hexagonal plain nut
2—Tab lockwasher
3—Spring washer
4—Latch
5—Large spacer
6—Cotter pin
7—Small spacer
8—Milled shaft
9—Door handle
10—Handle recess ring

Figure 4-94. Door lock (part of OA-2055/FSW-8), exploded view.



1—Panhead machine screw (No. 6–32)
2—Lockwasher (No. 6)
3—Ac supply bezel
4—Circuit breaker pan
5—Panhead machine screw (No. 6–32)
6—Lockwasher (No. 6)
7—MAINPOWER circuit breaker CB1001
8—Setscrew (part of control knob)
9—Control knob
10—Hexagonal plain nut (part of R1001)
11—Lockwasher (part of R1001)
12—Dimmer control resistor R1001
13—Hexagonal plain nut (part of R1001)
14—Panhead machine screw (No. 2–56)
15—Lockwasher (No. 2)
16—LAMP dimmer control designation plate
17—Panhead machine screw (No. 6–32)
18—Lockwasher (No. 6)
19—Fuseholder bezel
20—Fuseholder pan
21—Hexagonal plain nut (part of XF1002)
22—Lockwasher (part of XF1002)
23—Fuseholder XF1002
24—Fuseholder cap (part of XF1002)
25—48V-RELAY-1.5 AMP fuse F1002
26—Hexagonal plain nut (part of S1001)
27—Lockwasher (part of S1001)
28—Hexagonal plain nut (part of S1001)
29—EMER. ALARM switch S1001
30—Mechanical protector
31—Panhead machine screw (No. 2–56)
32—Lockwasher (No. 2)
33—EMER. ALARM designation plate
34—Hexagonal plain nut (part of XDS1001)
35—Lampholder XDS1001
36—Knurled nut (part of XDS1001)
37—Lens cap (part of XDS1001)
38—MAIN POWER indicator lamp DS1001
39—Panhead machine screw (No. 2–56)
40—Lockwasher (No. 2)
41—MAIN POWER designation plate
42—Power panel

Figure 4-95. Power control panel (part of OA-2055/FSW-8), removal of components.

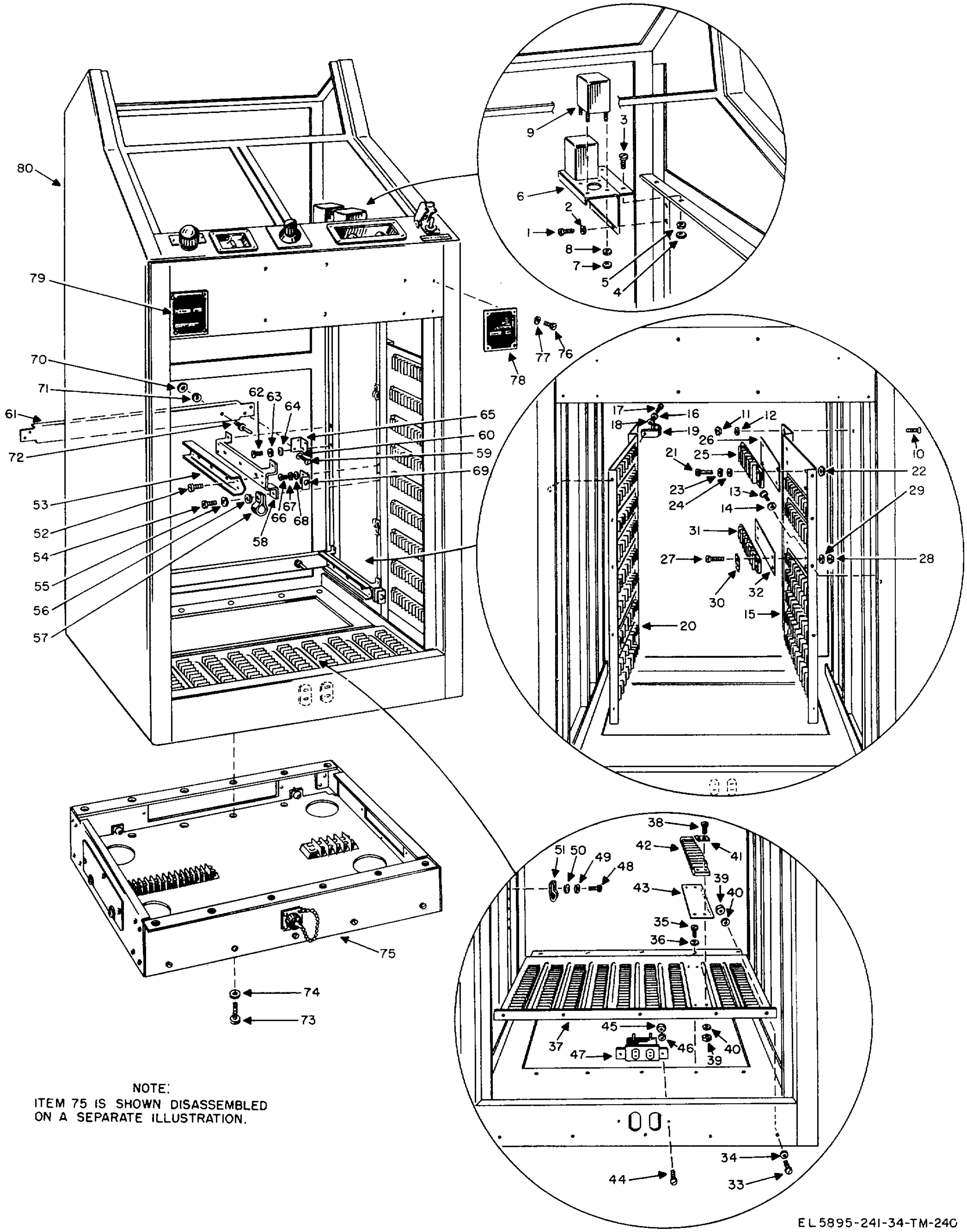


Figure 4-96. Cabinet, Electrical Equipment CY-0200/FSW-8 (part of OA-2055/ FSW-8), removal of components.

Figure 4-96. Cabinet, Electrical Equipment CY-020/FSW-8 (part of OA-2055/FSW-8), removal of components-Continued

1-Panhead machine screw (No. 8-32)
2-Lockwasher (No. 8)
3-Panhead machine screw (No. 832)
4-Hexagonal plain nut (No. 8-32)
5-Lockwasher (No. 8)
6-Transformer bracket
7-Hexagonal plain nut (No. 6-32)
8-Lockwasher (No. 6)
9-Transformer T1001
10-Flathead machine screw (No. 6-32)
11-Hexagonal plain nut (No. 6-32)
12-Lockwasher (No. 6)
13-Panhead machine screw (No. 6-32)
14-Lockwasher (No. 6)
15-Right side terminal board pan
16-Panhead machine screw (No. 6-32)
17-Lockwasher (No. 6)
18-Flat washer (No. 6)
19-Cable clamp
20-Left side terminal board pan
21-Panhead machine screw (No. 6-82)
22-Hexagonal plain nut (No. 6-32)
23-Lockwasher (No. 6)
24-Flat washer (No. 6)
25-Terminal board TB1030
26-Marker strip
27-Fillister head machine screw (No. 4-40)
28-Hexagonal plain nut (No. 4-40)
29-Lockwasher (No. 4)
30-Straddle plate
31-Terminal board TB1027
32-Marker strip
33-Panhead machine screw (No. 6-82)
34-Lockwasher (No. 6)
35-Panhead machine screw (No. 6-32)
36-Lockwasher (No. 6)
37-Bottom terminal board pan
38-Fillister head machine screw (No. 4-40)
39-Hexagonal plain nut (No. 4-40)
40-Lockwasher (No. 4)
41-Straddle plate
42-Terminal board TB1010
43-Marker strip
44-Panhead machine screw (No. 6-32)
45-Hexagonal plain nut (No. 632)
46-Lockwasher (No. 6)
47-Convenience receptacle
48-Panhead machine screw (No. 8-32)
49-Lockwasher (No. 8)
50-Flat washer (No. 8)
51-Cable clamp
52-Flathead machine screw (No. 6-32)
53-Channel
54-Panhead machine screw (No. 8-32)
55-Lockwasher (No. 8)
56-Flat washer (No. 8)
57-Cable clamp
58-Bracket
59-Panhead machine screw (No. 8-32)
60-Lockwasher (No. 8)
61-Guide pin support
62-Panhead machine screw (No. 8-32)
63-Lockwasher (No. 8)
64-Flat washer (No. 8)
65-Angle bracket
66-Panhead machine screw (No. 8-32)
67-Lockwasher (No. 8)
68-Flat washer (No. 8)
69-Angle bracket
70-Hexagonal plain nut (No. 10-32)
71-Lockwasher (No. 10)
72-Guide pin
73-Panhead machine screw (No. 1/4-20)
74-Lockwasher (No. 1/4)
75-Base assembly
76-Panhead machine screw (No. 2-56)
77-Lockwasher (No. 2)
78-Identification plate
79-Identification plate
80-Cabinet

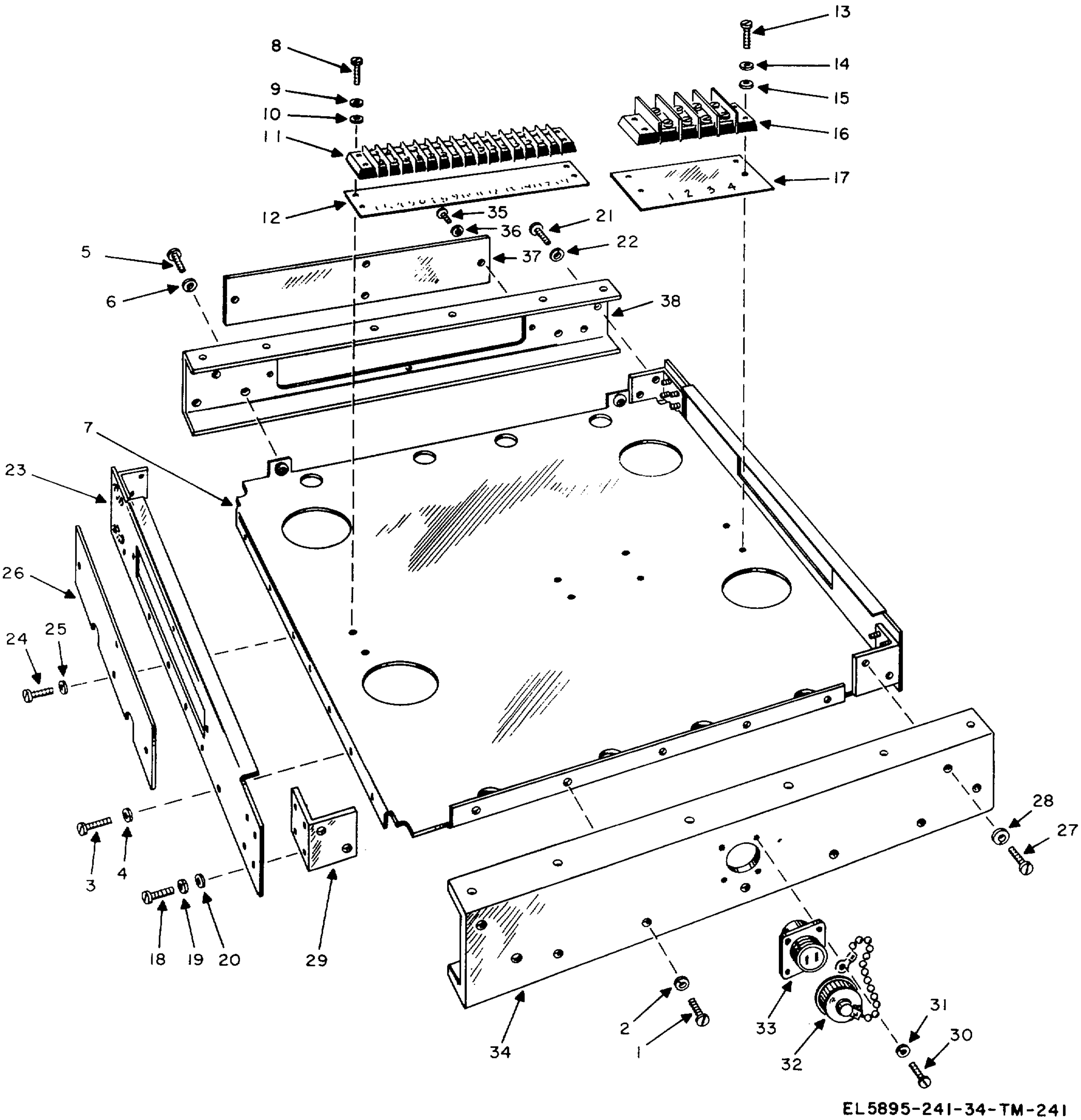


Figure 4-97. Cabinet, Electrical Equipment CY-3020/FSW-8 base assembly (part of OA-2055/FSW-8), exploded view.

Figure 4-97. Cabinet, Electrical Equipment CY-3020/FSW-8 base assembly (part of OA-2055/FSW-8), exploded view Continued

1-Panhead machine screws (No. 632)
2-Lockwasher (No. 6)
3-Panhead machine screw (No. 6-32)
4-Lockwasher (No. 6)
5-Panhead machine screw (No. 6-32)
6-Lockwasher (No. 6)
7-Base plate
8-Panhead machine screw (No. 6-32)
9-Lockwasher (No. 6)
10-Flat washer (No. 6)
11-Terminal board TB1002
12-Marker strip
13-Panhead machine screw (No. 632)
14-Lockwasher (No. 6)
15-Flat washer (No. 6)
16-Terminal board TB1001
17-Marker strip
18-Panhead machine screw (No.8-32)
20-Flat washer (No. 8)
21-Panhead machine screw (No. 1/4-20)
22-Lockwasher (No. 1/4)
23-Side base channel (No. 632)
24-Panhead machine screw (No. 6-32)
25-Lockwasher (No. 6)
26-Side cable access plate
27-Panhead machine screw (No. 1/4-20)
28-Lockwasher (No. 1/4)
29-Angle bracket
30-Panhead machine screw (No. 4-40)
31-Lockwasher (No. 4)
32-Dust cover
33-Connector J1002
34-Front base channel
35-Panhead machine screw

36-Lockwasher (No. 6)
37-Rear cable access plate
38-Rear base channel

Section VIII. DISASSEMBLY OF COMMUNICATIONS STATION, REMOTE CONTROL OA-3014/FSW-8

4-141. Removal and Replacement of Assemblies (fig. 4-98)

a. General. Procedures are given in a through *i* below for the removal of each major assembly of the OA-3014/FSW-8. Reverse the procedures given in *b* through *i* below to replace the assemblies of the OA-3014/FSW-8.

b. Microphone, Magnetic M-110/U. Proceed as follows to remove the M-110/U (7):

(1) Remove the loop clamp (4) by removing the panhead machine screw (1), flat washer (2), and lockwasher (3).

(2) Disconnect connector P1901 (5) from MIKE connector J1901 (6).

c. Loudspeaker and Indicator Panel. To remove the loudspeaker and indicator panel (11), remove the four panhead machine screws (8), flat washer (9), and lockwashers (10). Refer to paragraph 4-142 for instructions on the disassembly of the loudspeaker and indicator panel.

d. Blank Panel. To remove the blank panel (15), remove the four panhead machine screws (12), flat washers (13), and lockwashers (14).

e. Control-Monitor C-3434/FSW-8. To remove the C-3434/FSW-8 (19), remove the four panhead machine screws (16), flat washers (17), and lockwashers (18). Refer to paragraph 4-143 for instructions on the disassembly of the C3434/FSW-8.

f. Telephone, Terminal TA-406/FSW-8. To remove the TA-406/FSW-8 (23), remove the four panhead machine screws (20), flat washers (21), and lockwashers (22). Refer to paragraph 4-130 for instructions on the disassembly of the TA-406/FSW-8.

g. Miscellaneous Control Panel. To remove the miscellaneous control panel (27), remove the four panhead machine screws (24), flat washers (25), and lockwashers (26). Refer to paragraph 4-144 for instructions on the disassembly of the miscellaneous control panel.

h. Power Supply Drawer. Proceed as follows to remove the power supply drawer (31):

(1) Release the two Camloc fasteners (28) from the Camloc receptacles (29).

(2) Slide the power supply drawer (31) to the stop.

(3) Release the two drawer locks (30) and slide the power supply drawer (31) clear of the CY-3019/FSW-8 (39). Refer to paragraph 4-145 for instructions on the disassembly of the power supply drawer (31).

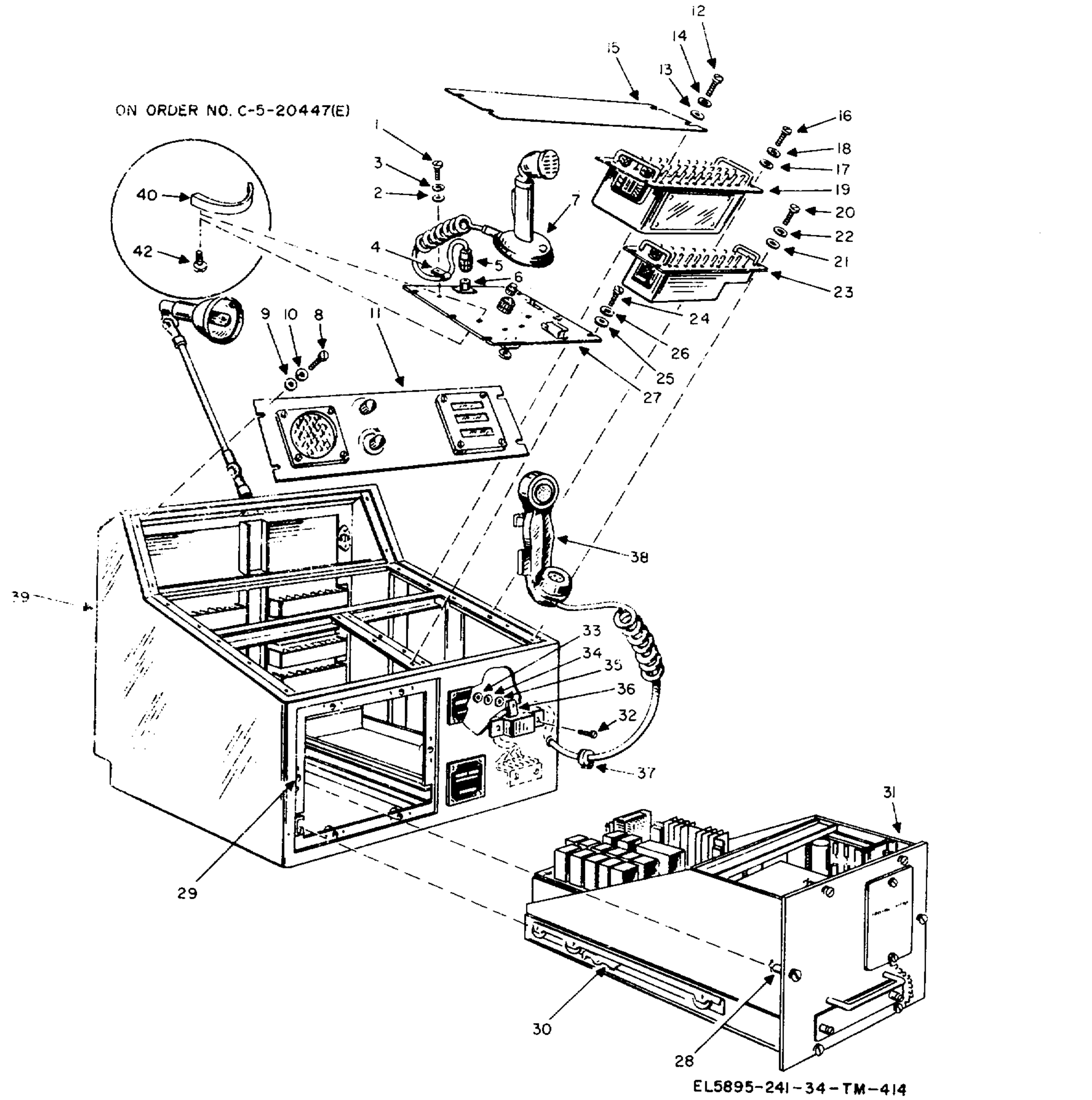
i. Handset H-194/FSW-8. Proceed as follows to remove Handset H-194/FSW-8 (38):

(1) Remove the loop clamp (36) by removing the panhead machine screw (32), hexagonal plain nut (33), lockwasher (34), and flat washer (35).

(2) Remove the strain relief bushing (37).

4-142. Disassembly of Loudspeaker and Indicator Panel (fig. 4-99)

After removing the loudspeaker and indicator



1—Panhead machine screw (No. 8-32)
2—Flat washer (No. 8)
3—Lockwasher (No. 8)
4—Loop clamp
5—Connector P1901
6—MIKE connector J1901
7—Microphone, Magnetic M-110/U
8—Panhead machine screw (No. 10-32)
9—Flat washer (No. 10)
10—Lockwasher (No. 10)
11—Loudspeaker and indicator panel
12—Panhead machine screw (No. 10-32)
13—Flat washer (No. 10)
14—Lockwasher (No. 10)
15—Blank panel
16—Panhead machine screw (No. 10-32)
17—Flat washer (No. 10)
18—Lockwasher (No. 10)
19—Control-Monitor C-3434/FSW-8
20—Panhead machine screw (No. 10-32)
21—Flat washer (No. 10)
22—Lockwasher (No. 10)
23—Telephone, Terminal TA-406/FSW-8
24—Panhead machine screw (No. 10-32)
25—Flat washer (No. 10)
26—Lockwasher (No. 10)
27—Miscellaneous control panel
28—Camloc fastener
29—Camlock receptacle
30—Drawer lock
31—Power supply drawer
32—Panhead machine screw (No. 6-32)
33—Hexagonal plain nut (No. 6)
34—Lockwasher (No. 6)
35—Flat washer (No. 6)
36—Loop clamp
37—Strain relief bushing
38—Handset H-194/FSW-8
39—Cabinet, Electrical Equipment CY-3019/FSW-8
40—Microphone retaining bracket
41—Flathead machine screw (No. 8-32)

Figure 4-98. Communication Stations, Remote Control OA-3014/FSW-8 and OAJO14A/FSW-8, exploded view.

panel as described in paragraph 4-141, proceed as follows to disassemble the loudspeaker and indicator panel. For location of electrical parts, refer to figures 4-51 and 4-58.

a. To remove the field status indicator cover (3) from the panel (61), remove the four panhead machine screws (1) and lockwashers (2).

b. To remove the retainer (7), remove the two flathead machine screws (4), hexagonal plain nuts (5), and lockwashers (6).

c. To remove the VFR indicator strip (8), IFR indicator strip (9), CLOSED indicator strip (10), and frosted glass (11), slide them up and out.

d. To remove the retaining bracket (15), remove the two flathead machine screws (12), hexagonal plain nuts (13), and lockwashers (14).

e. To remove indicator lamp DS2003 (16), twist and lift it from lampholder XDS2003 (17).

f. To remove lampholder XDS2003 (17), remove the two panhead machine screws (18) hexagonal nuts (19), lockwashers (20), and flat washers (21).

g. To remove the loudspeaker cover (24), remove the four panhead machine screws (22) and lockwashers (23).

h. To remove loudspeaker LS2001 (28) from the loudspeaker mounting plate (29), remove the four flathead machine screws (25), hexagonal plain nuts (26), and lockwashers (27).

i. To remove the loudspeaker mounting plate (29), remove the four panhead machine screws (30) and lockwashers (31).

j. Proceed as follows to remove VOLUME CONTROL resistor R2001 (37).

(1) Loosen the two setscrews (32), and then remove the knob (33).

(2) Remove VOLUME CONTROL resistor R2001 (37) by removing the hexagonal plain nut (34) and lockwasher (35). (The hexagonal plain nut (36) does not have to be removed to remove VOLUME CONTROL resistor R2001 (37).)

k. To remove the terminal stud (40), remove the flathead machine screw (38) and lockwasher (39).

l. Proceed as follows to remove LAMP resistor R2002 (46):

(1) Loosen the two setscrews (4*i*), and then remove the knob (42).

(2) Remove LAMP resistor R2002 (46f) by removing the hexagonal plain nut (43) and (lockwasher (44). (The hexagonal plain nut (45) does not have to be removed to remove LAMP resistor R2002 (46).)

m. To remove terminal board T12001 (51) and marker strip (52), remove the four flathead machine screws (47), hexagonal plain nuts (48), lockwashers (49), and filat washers (50)

n. To remove the mounting bracket (56), remove the four flathead -machine screws (53), hexagonal plain nuts (54), and lockwasher is (55).

o. To remove field status indicator No. 1. K2001 (59) from the relay mounting bracket ((56) remove the three hexagonal plain nuts (57) qnd lockwashers (58).

4-143. Disassembly of Control-Monitor C-3434/FSW-8 (fig. 4-100)

After removing the C-3434/FSW-8 as described in paragraph 4-142, proceed as follows to disassemble the C-3434/FSW-8. For location of electrical parts, refer to figures 4-48, 4-49, and 4-50.00

a. To remove receiver preamplifier A1601 (4) from the printed circuit case (23), remove the two panhead machine screws (1), lockwashers (2), and flat washers (3); pull receiver preamplifier A1601 (4) upward.

b. To remove the handle (9) from the printed circuit board (10), remove the two panhead machine screws (5), flat washers (6), hexagonal plain nuts (7), and lockwashers (8).

c. To remove the bottom plate (13), release the three Camloc fasteners (11) from the Camloc receptacles (12).

d. To remove the printed circuit case (23), remove the six panhead machine screws (14).

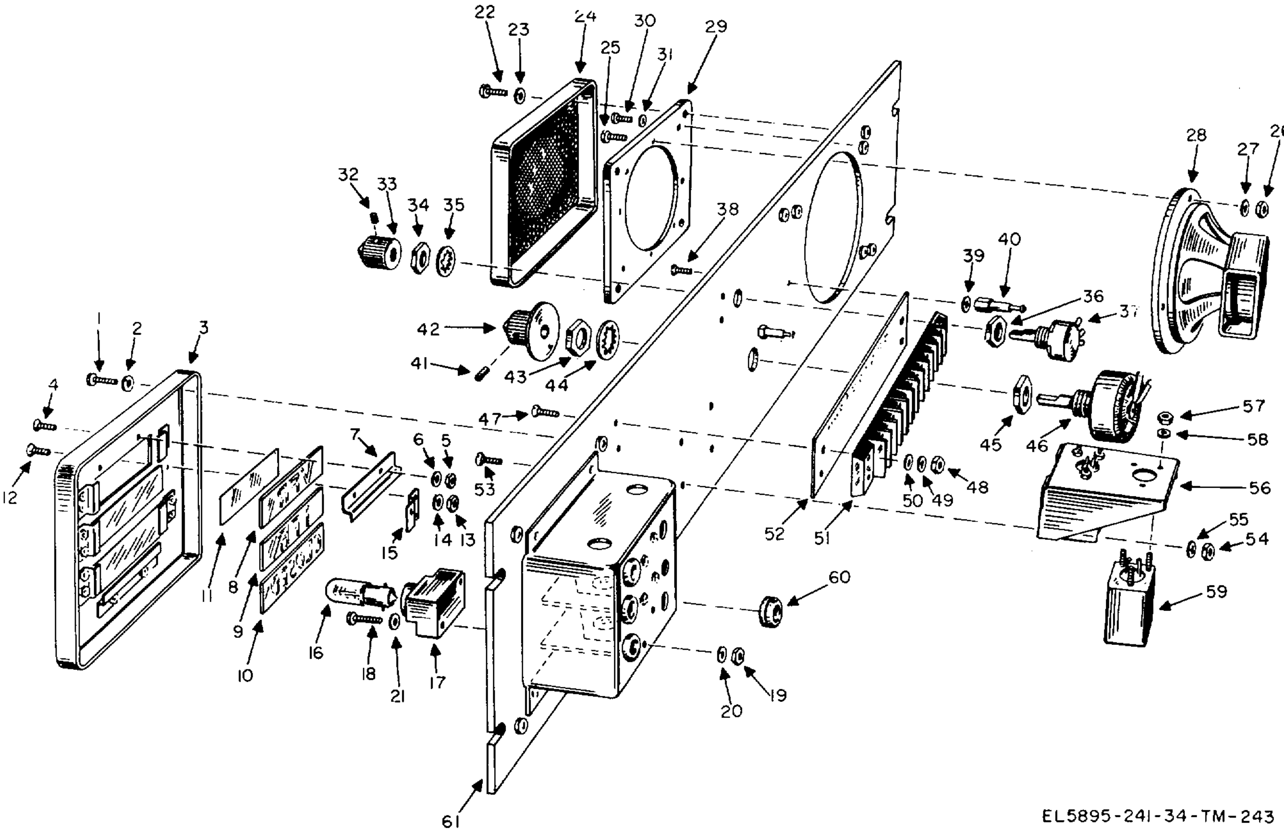
e. To remove connector J1810 (22) from the printed circuit case (23), remove the two panhead machine screws (15), hexagonal plain nuts (16), lockwashers (17), cable clamp (18), flat washers (19), lockwashers (20), and flat washers (21).

f. To remove the rear panel (42), remove the four panhead machine screws (24) and lockwashers (25).

g. To remove transformer T1809 (30), remove the two panhead machine screws (26), hexagonal plain nuts (27), lockwashers (28), and terminal lugs (29).

h. To remove push-to-talk relay K1801 (33), remove the three hexagonal plain nuts (31) and lockwashers (32).

i. To remove connector J1812 (37), remove the four panhead machine screws (34), hexagonal plain nuts (35), and lockwashers (36).



1—Panhead machine screw (No. 6-32)
2—Lockwasher (No. 6)
3—Field status indicator cover
4—Flathead machine screw (No. 2-56)
5—Hexagonal plain nut (No. 2-56)
6—Lockwasher (No. 2)
7—Retainer
8—VFR indicator strip
9—IFR indicator strip
10—CLOSED indicator strip
11—Frosted glass
12—Flathead machine screw (No. 2-56)
13—Hexagonal plain nut (No. 2-56)
14—Lockwasher (No. 2)
15—Retaining bracket
16—Indicator lamp DS2003
17—Lampholder XDS2003
18—Panhead machine screws (No. 6-32)
19—Hexagonal plain nut (No. 6-32)
20—Lockwasher (No. 6)
21—Flat washer (No. 6)
22—Panhead machine screw (No. 6-32)
23—Lockwasher (No. 6)
24—Loudspeaker cover
25—Flathead machine screw (No. 6-32)
26—Hexagonal plain nut (No. 6-32)
27—Lockwasher (No. 6)
28—Loudspeaker LS2001
29—Loudspeaker mounting plate
30—Panhead machine screw (No. 6-32)
31—Lockwasher (No. 6)
32—Setscrew (part of knob)
33—Knob
34—Hexagonal plain nut (part of R2001)
35—Lockwasher (part of R2001)
36—Hexagonal plain nut (part of R2001)
37—VOLUME CONTROL resistor R2001
38—Flathead machine screw (No. 4-40)
39—Lockwasher (No. 4)
40—Terminal stud
41—Setscrew (part of knob)
42—Knob
43—Hexagonal plain nut (part of R2002)
44—Lockwasher (part of R2002)
45—Hexagonal plain nut (part of R2002)
46—LAMP resistor R2002
47—Flathead machine screw (No. 4-40)
48—Hexagonal nut (No. 4-40)
49—Lockwasher (No. 4)
50—Flat washer (No. 4)
51—Terminal board TB2001
52—Marker strip
53—Flathead machine screw (No. 6-32)
54—Hexagonal plain nut (No. 6-32)
55—Lockwasher (No. 6)
56—Relay mounting bracket
57—Hexagonal plain nut (No. 6-32)
58—Lockwasher (No. 6)
59—Field status indicator relay No. 1, K2001
60—Rubber grommet
61—Panel

Figure 4-99. Loudspeaker and indicator panel (part of OA-3014/FSW-8), exploded view.

j. To remove connector J1811 (41), remove the four panhead machine screws (38), hexagonal plain nuts (39), and lockwashers (40).

k. To remove the front panel (76), remove the five panhead machine screws (43) and lockwashers (44).

l. To remove RECEIVE supervisory indicator lamp DS1801 (46) from lampholder XDS1801 (50), remove the lens cap (45) and twist and pull out RECEIVE supervisory indicator lamp DS1801 (46).

m. To remove lampholder XDS1801 (50), remove the knurled nut (47). (The knurled nuts (48 and 49), do not have to be removed to remove lampholder XDS1801 (50).)

n. To remove RECEIVE switch S1810 (55), remove the hexagonal plain nut (51) and lockwasher (52). (The flat washer (53) and hexagonal plain nut (54) do not have to be removed to remove RECEIVE switch S1810 (55).)

o. To remove TRANSMIT switch S1820 (60), remove the hexagonal plain nut (56) and lockwasher (57). (The flat washer (58) and hexagonal plain nut (59) do not have to be removed to remove TRANSMIT switch S1820 (60).

p. To remove TRANSMIT supervisory indicator lamp DS1820 (62) from lampholder XDS1820 (66), remove the lens cap (61) and pull out TRANSMIT supervisory indicator lamp DS1820 (62).

q. To remove lampholder XDS1820 (66), remove the knurled nut (63). (The knurled nuts (64 and 65) do not have to be removed to remove lampholder XDS1820 (66).)

r. To remove the handle (68), remove the two flathead machine screws (67).

s. To remove the designation stripholder (72), remove the fithree flathead machine screws (69), hexagonal plain nuts (70), and lockwashers (71).

t. To remove the identification plate (75), remove the four panhead machine screws (73) and lockwashers (74).

u. To remove terminal board TB1801 (78) from the top of the chassis (79), remove the six flathead machine screws (77).

4-144. Disassembly of Miscellaneous Control Panel
(fig. 4-101and 4-127)

After removing the miscellaneous control panel as described in paragraph 4-141*g*, proceed as follows to disassemble the miscellaneous control panel. For location of electrical parts, refer to figure 4-56.

a. To remove terminal board TB1901 (6), marker strip (7), and loop clamp (5), remove the four flathead machine screws (1), hexagonal plain nuts (2), lockwashers (3), and flat washers (4).

b. To remove MIKE connector J1901 (11), remove the four panhead machine screws (8), hexagonal plain nuts (9), and lockwashers (10).

c. To remove 48V 1 AMP fuse F1901 (13), remove the fuseholder cap (12).

d. To remove fuseholder XF1901 (16), remove the hexagonal plain nut (14) and lockwasher (15).

e. To remove MAIN POWER indicator lamp DS1901 (18), lift the lens cap (17), and twist and pull out MAIN POWER indicator lamp DS1901 (18).

f. To remove lampholder XDS1901 (22), remove the hexagonal plain nut (19) and lockwasher (20). (The knurled nut (21) does not have to be removed to remove lampholder XDS1901 (22).)

g. To remove MAIN POWER circuit breaker CB1901 (25), remove the two panhead machine screws (23) and lockwashers (24).

h. To remove MIKE VOLUME resistor R1901 (30), remove the hexagonal selflocking nut (26), hexagonal plain nut (27), and lockwasher (28). (The hexagonal plain nut (29) does not have to be removed to remove MIKE VOLUME resistor R1901 (30).)

i. To remove the mechanical protector (33) and EMER. ALARM switch S1901 (35), remove the hexagonal plain nut (31) and lockwasher (32). (The hexagonal plain nut (34) does not have to be removed to remove the mechanical protector (33) and EMER. ALARM switch S1901 (35).)

j. To remove the microphone bracket (37) from the panel (36), remove the four flathead machine screws (38).

4-145. Disassembly of Power Supply Drawer Assembly

a. General. After removing the power supply drawer from the equipment as described in para

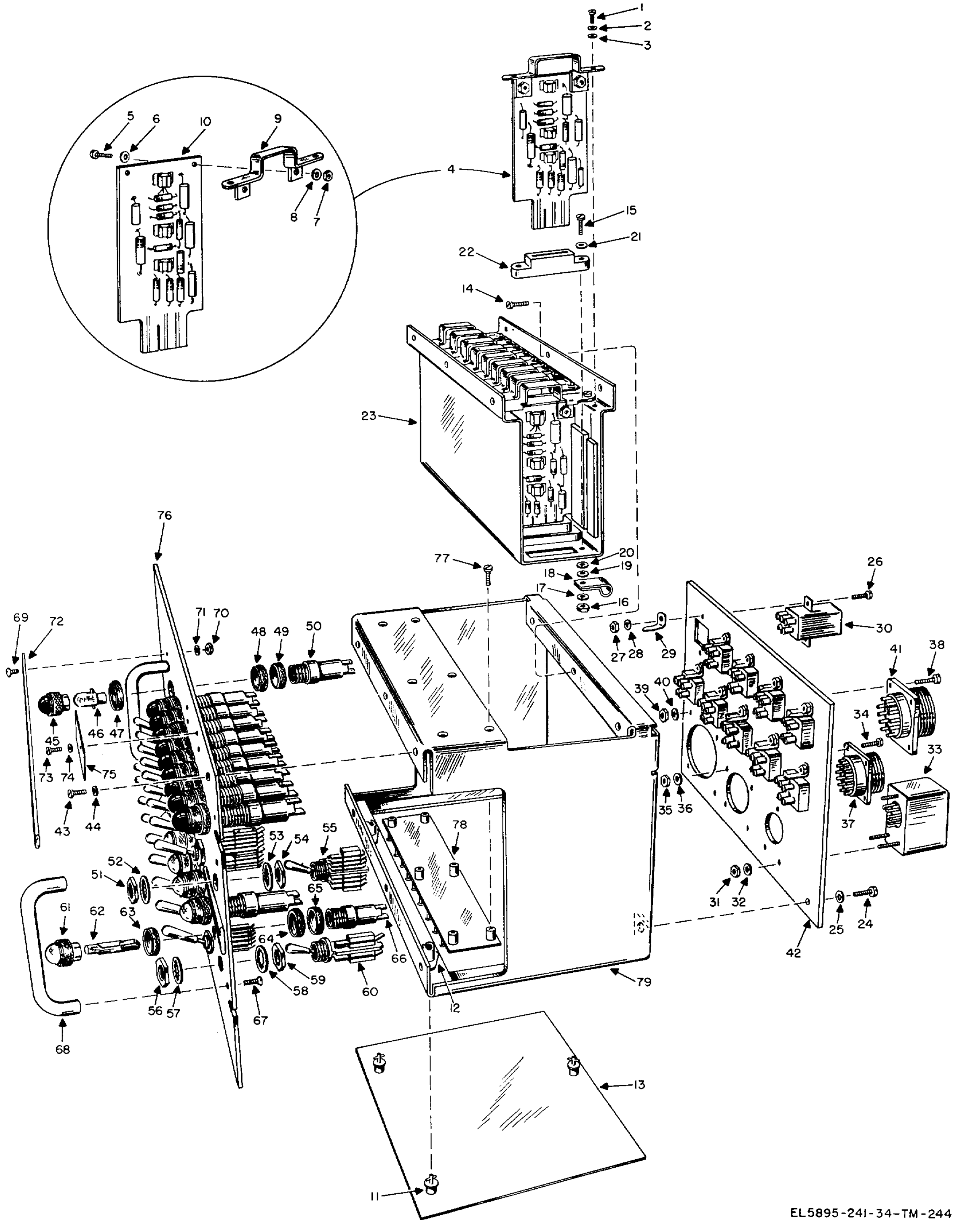


Figure 4-100. Control-Monitor C-434/FSW-8 (part of OA-014/FSW-8), exploded view.

Figure 4-100. ControlMonitor C-3434/FSW-8 (part of OA-014/FSW-8), exploded view-Continued

1-Panhead machine screw (No. 4-40)
2-Lockwasher (No. 4)
3-Flat washer (No. 4)
4-Receiver preamplifier A1601
5-Panhead machine screw (No. 4-40)
6-Flat washer (No. 4)
7-Hexagonal plain nut (No. 4-40)
8-Lockwasher (No. 4)
9-Handle
10-Printed circuit board
11-Camloc fastener
12-Camloc receptacle
13-Bottom plate
14-Panhead machine screw (No. 6-32)
15-Panhead machine screw (No. 4-40)
16-Hexagonal plain nut (No. 4-40)
17-Lockwasher (No. 4)
18-Cable clamp
19-Flat washer (No. 4)
20-Lockwasher (No. 4)
21-Flat washer (No. 4)
22-Connector J810
23-Printed circuit case
24-Panhead machine screw (No. 10-32)
25-Lockwasher (No. 10)
26Panhead machine screw (No. 4-40)
27-Hexagonal plain nut (No. 4)
28-Lockwasher (No. 4)
29-Terminal lug
30-Transformer T1809
31-Hexagonal plain nut (No. 6-32)
32-Lockwasher (No. 6)
33-Push-to-talk relay K1801
34-Panhead machine screw (No. 6-32)
35-Hexagonal plain nut (No. 6-32)
36-Lockwasher (No. 6)
37-Connector J1812
38-Panhead machine screw (No. 6-32)
39-Hexagonal plain nut (No. 6-32)
40-Lockwasher (No. 6)
41-Connector J1811
42-Rear panel
43-Panhead machine screw (No. 10-32)
44-Lockwasher (No. 10)
45-Lens cap
46-RECEIVE supervisory indicator lamp DS1801
47-Knurled nut (part of XDS1801)
48-Knurled nut (part of XDS1801)
49-Knurled nut (part of XDS1801)
50-Lampholder XDS1801
51-Hexagonal plain nut (part of S1810)
52-Lockwasher (part of S1810)
53-Flat washer (part of S1810)
54-Hexagonal plain nut (part of S1810)
55-RECEIVE switch S1810
56-Hexagonal plain nut (part of S1820)
57-Lockwasher (part of S1820)
58-Flat washer (part of S1820)
59-Hexagonal plain nut (part of S1820)
60-TRANSMIT switch S1820
61-Lens cap
62-TRANSMIT supervisory indicator lamp DS1820
63--Knurled nut (part of XDS1820)
64-Knurled nut (part of XDS1820)
65-Knurled nut (part of XDS1820)
6--Lampholder XDS1820
67-Flathead machine screw (No. 8-32)
68-Handle
69-Flathead machine screw (No. 2-56)
70-Hexagonal plain nut (No. 2)
71-Lockwasher (No. 2)
72-Designation stripholder
73-Panhead machine screw (No. 4-40)
74-Lockwasher (No. 4)
75-Identiflcation plate
76-Front panel
77-Flathead machine screw (No. 8-32)
78-Terminal board TB1801
79-Chassis

graph 4-140*h*, proceed as given in b below to remove assemblies mounted on the power supply drawer (14). Disassembly procedures of Amplifier Assembly AM-2817/FSW-8 and Power Supply PP-2795/FSW-8 are given in paragraphs 4-146 and 4-147.

b. Removal of Power Supply Drawer Assemblies. Proceed as follows to remove the power supply drawer assemblies:

(1) Slide the two positive lock studs (1) from the positive lock receptacles (2) and lift Control, Telephone Signal C-3435/FSW-8, hinged section (3).

(2) To remove Control, Telephone Signal C-3435/FSW-8 (7), remove the six panhead machine screws (4), lockwashers (5), and flat washers (6). The C-3435/FSW-8 is identical with the corresponding assembly of the OA-2055/FSW-8; refer to disassembly instructions given in paragraph 4-126.

(3) To remove the reinforcement plate (10), remove the four panhead machine screws (8) and lockwashers (9).

(4) To remove Amplifier Assembly AM2817/FSW-8 (13), remove the four panhead machine screws (11) and lockwashers (12).

4-146. Disassembly of Amplifier Assembly AM-281 7/FSW-8 (fig. 4-103)

After removal of the AM-2817/FSW-8 from the power supply drawer (para 4-1456), proceed as follows to disassemble the unit. For location of electrical parts, refer to figures 4-52 through 4-55.

a. To remove the terminal board assembly (10 and 11), remove the two panhead machine screws (1) and lockwashers (2) from the mounting brackets (3).

b. To separate terminal boards TB2401 (10) and terminal board TB2402 (11) from the mounting brackets (3), remove the six panhead machine screws (4), lockwashers (5), flat washers (6), six panhead machine screws (7), lockwashers (8), and flat washers (9).

c. To separate the front chassis (23) from the rear chassis (24), remove the two panhead machine screws (12), hexagonal plain nuts (13), and lockwashers (14).

d. To remove MIKE COMP resistor R2416 (17), remove the hexagonal self-locking nut (15) and hexagonal plain nut (16).

e. Proceed as follows to remove SPEAKER GAIN resistor R2426 (22):

(1) Loosen the two setscrews (18), and then remove the knob (19).

(2) Remove the hexagonal plain nut (20) and lockwasher (21).

f. To remove the heat sink (39) and mounting posts (27), remove the two panhead machine screws (25) and lockwashers (26).

g. To separate the head sink (39) from its mounting posts (27), remove the two panhead machine screws (28), lockwashers (29), and flat washers (30).

h. To remove transistor Q2406 (37) and mica washer (38) from the heat sink (39), remove the two panhead machine screws (31), hexagonal plain nuts (32), one terminal lug (33), flat washers (34), shoulder washers (35), lockwashers (36).

i. To remove transformer T2401 (42), remove the two hexagonal plain nuts (40) and lockwashers (41).

j. To remove transformer T2403 (46), remove the two panhead machine screws (43), hexagonal plain nuts (44), and lockwashers (45).

k. Proceed as follows to remove the transformer assembly ((49) through (56)):

(1) Remove the two panhead machine screws (47) and lockwashers (48).

(2) Remove the spacer bar (53) by removing the two panhead machine screws (50), lockwashers (51), and flat washers (52).

l. To remove transformer T2402 (56), remove the four hexagonal plain nuts (54) and lockwashers (55).

m. To remove connector J2401 (61), remove the two hexagonal plain nuts (57), two lockwashers (58), female threaded lockpin stud (59), and male threaded lockpin stud (60).

4-147. Disassembly of Power Supply PP-2795/FSW-8 (fig. 4-104 and 4-105)

After removal of the AM-2817/FSW-8 and C3435/FSW-8 (para 4-145b), proceed as follows to disassemble the PP-2795/FSW-8. For location of electrical parts, refer to figures 4-60 through 4-64.

a. To remove the cover assembly (4) from the power supply chassis (123), remove the six panhead machine screws (1), six hexagonal plain nuts (2), and six lockwashers (3).

b. To separate the chains (8 and 9) from the front cover (17), remove the shoulder screw (5), hexagonal plain nut (6), lockwasher (7).

c. To remove the AMPLIFIER ADJUST cover plate (11), loosen the two captive screws (10).

d. To remove the VOLTAGE ADJUST cover plate (13), loosen the two captive screws (12).

e. To remove the handle (16), remove the two panhead machine screws (14) and lockwashers (15).

f. To remove connector J2305 (20), remove the hexagonal plain nut (18) and lockwasher (19).

g. To remove 7.5V 2 AMP fuse F2302 (22), remove the fuseholder cap (21) and pull out 7.5V 2 AMP fuse F2302 (22).

Figure 4-101. Miscellaneous control panel (part of OA-3014/FSW-8 and OA-3014A/FSW-), exploded view.

1-Flathead machine screw (No. 6-32)
2-Hexagonal plain nut (No. 6-32)
4-Lockwasher (No. 6)
5-Loop clamp
6-Terminal board TB1901
7-Marker strip
8-Panhead machine screw (No. 4-40)
9-HexNago4naplain nut (No. 4-40)
10-Lockwasher (No. 4)
11-MIKE connector J1901
12-Fuseholder cap
13-48V 1 AMP fuse F1901
14-Hexagonal plain nut (part of XF1901)
15-Lockwasher (part of XF1901)
16-Fuseholder XF1901
17-Lens cap
18-MAIN POWER indicator lamp DS1901
19-Hexagonal plain nut (part of SDX1901)
20-Lockwasher (part of SDX1901)
21-Knurled nut (part of SDX1901)
22-Lampholder XDS1901
23-Panhead machine screw (No. 6-32)
24-Lockwasher (No. 6)
2-MAIN POWER circuit breaker CB1901
26Hexagonal self-locking nut (part of R1901)
27-Hexagonal plain nut (part of R1901)
28-Lockwasher (part of R1901)
29-Hexagonal plain nut (part of R1901)
30-MIKE VOLUME resistor R1901
31-Hexagonal plain nut (part of S1901)
32-Lockwasher (part of S1901)
33-Mechanical protector
34-Hexagonal plain nut (part of S1901)
85-EMER. ALARM switch S1901
86--Miscellaneous control panel
37-Microphone bracket
38-Flathead machine screw (No. 8-32)

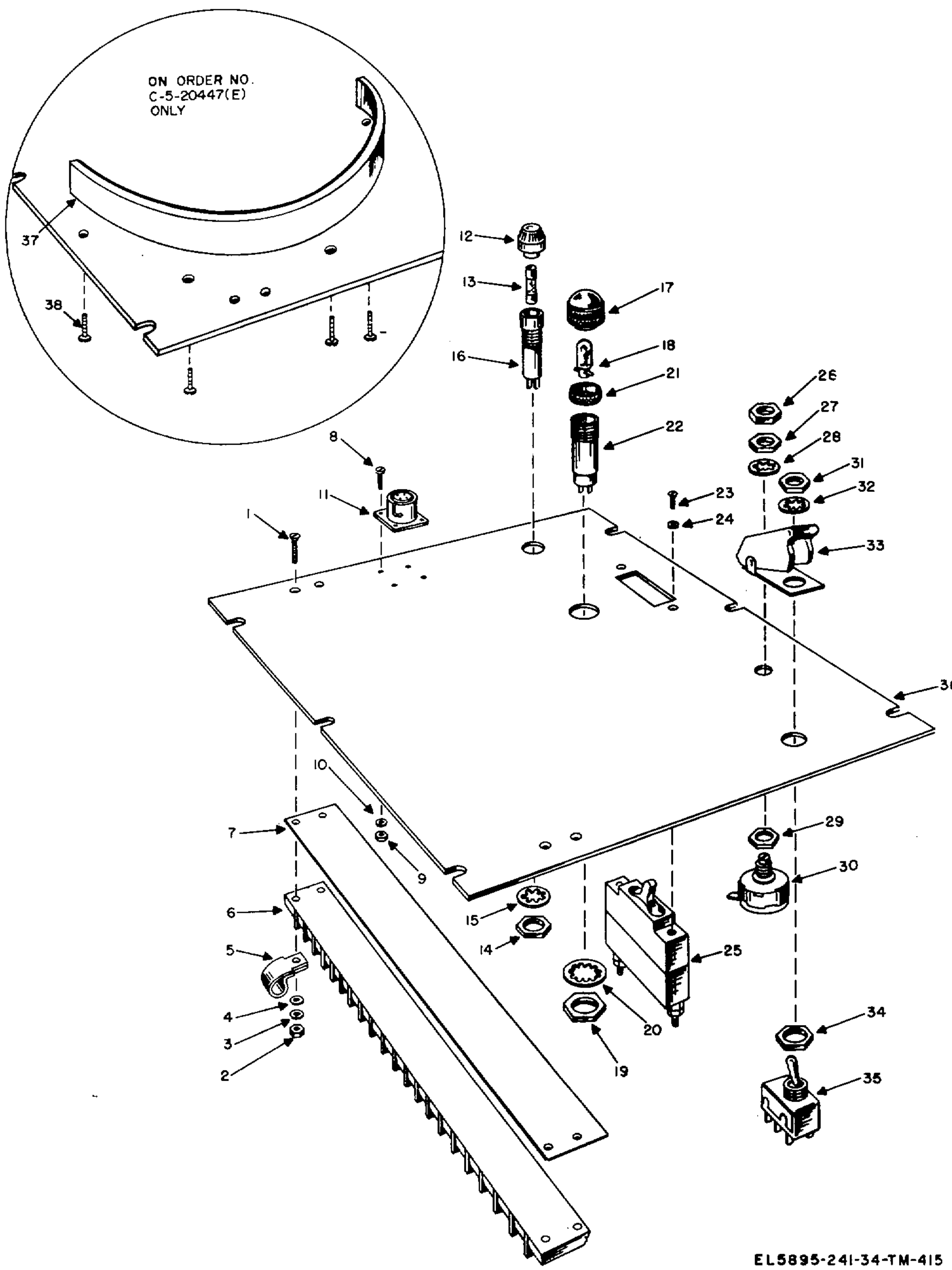


Figure 4-101. Miscellaneous control panel (part of OA-O21/4FSW-8 and OA-014A/ exploded view-Continued

h. To remove fuseholder XF2302 (25), remove the hexagonal plain nut (23) and lockwasher (24).

i. To remove -7.5 ADJ resistor R2313 (29), remove the hexagonal self-locking nut (26), hexagonal plain nut (27), and lockwasher (28).

j. To remove the transformer reinforcement plate (32) and transformer T2301 (33), remove the four hexagonal plain nuts (30) and flat washers (31).

k. To remove capacitor C2302 (36), remove the hexagonal plain nut (34) and lockwasher (35).

l. To remove diode CR2312 (43), remove the hexagonal plain nut (87), lockwasher (38), terminal lug (39), flat washer (40), and mica washers (41 and 42).

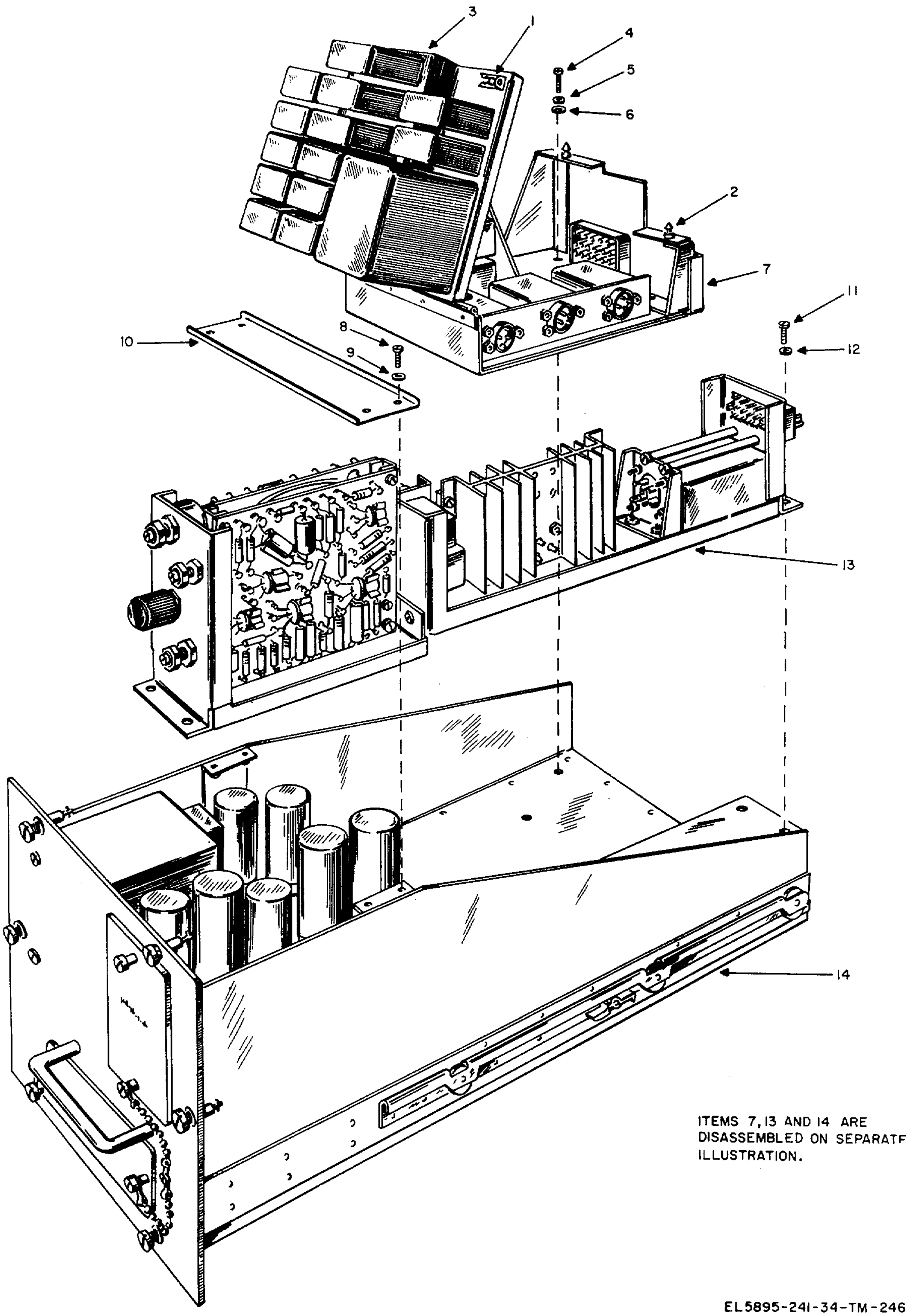


Figure 4-102. Power supply drawer assembly (part of OA-3014/FSW-8), removal of assemblies.

Figure 4-102. Power supply drawer assembly (part of OA-3014/FSW-8), removal of assemblies-Continued

1-Positive lock stud
2-Positive lock receptacle
3-Control, Telephone Signal C-3435/FSW-8, hinged section
4-Panhead machine screw (No. 6-32)
5-Lockwasher (No. 6)
6-Flat washer (No. 6)
7-Control, Telephone Signal C-3435/FSW-8
8-Panhead machine screw (No. 6-32)
9-Lockwasher (No. 6)
10-Reinforcement plate
11-Panhead machine screw (No. 6-32)
12-Lockwasher (No. 6)
13-Amplifier Assembly AM-2817/FSW-8
14-Power supply drawer

m. To remove the resistor mounting plate (46), remove the four panhead machine screws (44) and lockwashers (45).

n. To remove resistor R2301 (50) from the resistor mounting plate (46), remove the two panhead machine screws (47), hexagonal plain nuts (48), and lockwashers (49).

o. To remove the spacer (53), remove the panhead machine screw (51) and lockwasher (52).

p. To remove capacitor C2310 (56) from the spacer stud (58), remove the panhead machine screw (54) and lockwasher (55). The lockwasher (57) is also freed.

q. The spacer stud (58) is removed by unscrewing it from inductor L2301 mounting stud (62). When this is accomplished, the lockwasher (59), terminal lug (60), and lockwasher (61) are freed.

r. To separate terminal board TB2302 (71) and terminal board TB2301 (72) from the spacer bars (65 and 66), remove the four panhead machine screws (67), hexagonal plain nuts (68), lockwashers (69), and flat washers (70).

s. To remove the spacer bars (65 and 66), remove the two panhead machine screws (63) and lockwashers (64).

t. To separate the diode board mounting bracket (76) from the diode board (80), remove the four panhead machine screws (77), hexagonal plain nuts (78), and lockwashers (79).

u. To remove the diode mounting bracket (76), remove the two panhead machine screws (73), hexagonal plain nuts (74), and lockwashers (75).

v. To remove the diode mounting plate (91), remove the two panhead machine screws (83), and lockwashers (84).

w. To remove diode CR2313 (90) from the diode mounting plate (91), remove the hexagonal plain nut (86) and lockwasher (87). When this is accomplished, the mica washer (88) and terminal lug (89) are freed.

x. To remove the spacer (85), remove the panhead machine screw (81) and lockwasher (82).

y. To remove resistor R2302 (94), remove the hexagonal plain nut (92) and lockwasher (93).

z. To remove transistor Q2301 (101) and mica washer (102), remove the two panhead machine screws (95), hexagonal plain nuts (96), terminal lug (97), flat washers (98), insulator shoulder washers (99), and lockwashers (100).

aa. To remove terminal board TB2303 (109), remove the four panhead machine screws (103), lockwashers (104), and flat washers (105).

ab. To remove the spacer (108), remove the panhead machine screw (106) and lockwasher (107).

ac. To remove the terminal stud (113), remove the panhead machine screw (111) and lockwasher (112).

ad. To remove connector J2301 (117), remove the four hexagonal plain nuts (116), panhead machine screws (114), and lockwashers (115).

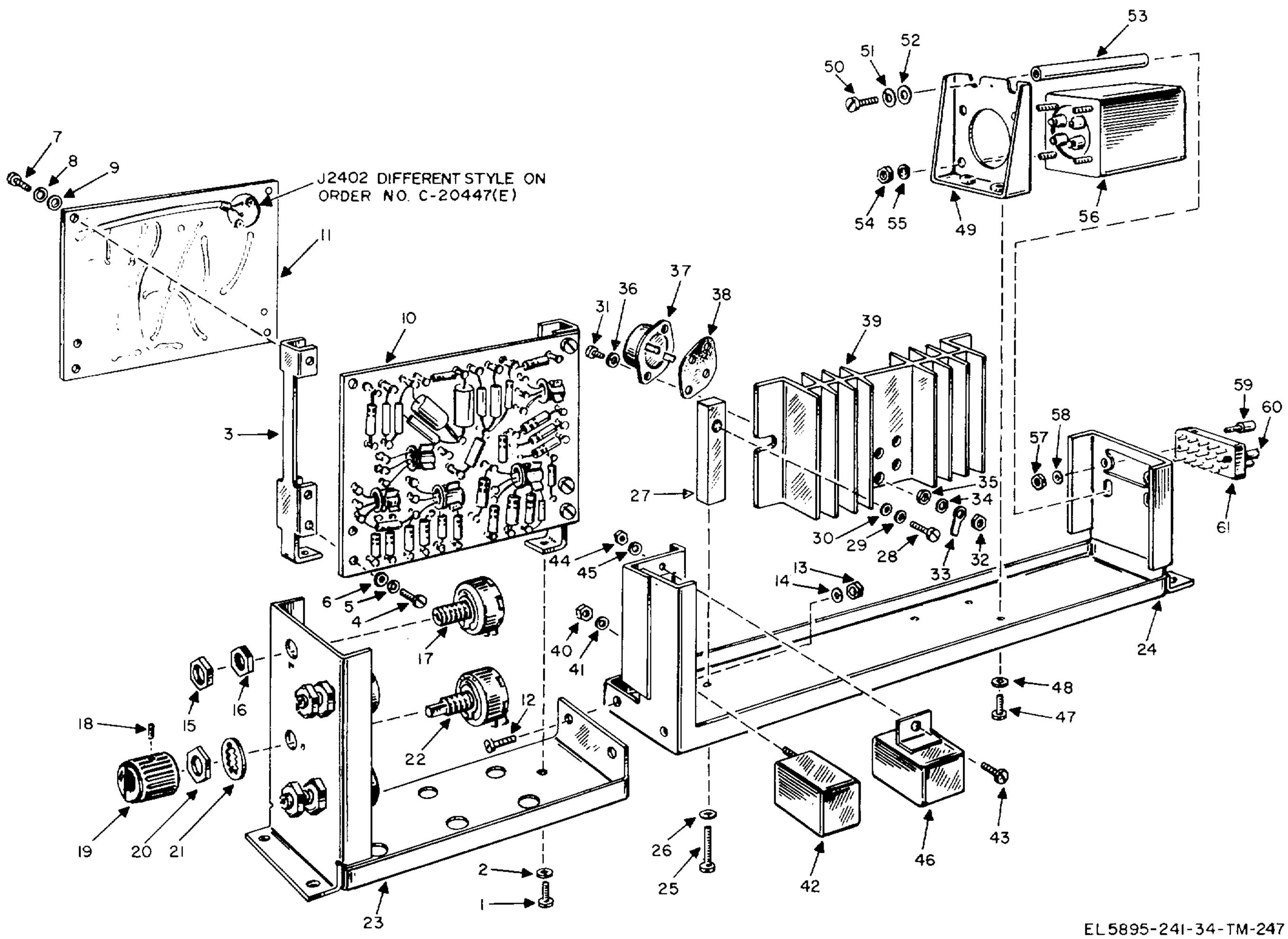
ae. To remove the grounding screw (118), remove the hexagonal plain nut (119), lockwasher (120 and 121), and flat washer (122).

af. To remove capacitor C2311 (132), remove the leads from the terminal studs (124 and 127). Remove the s tuds by removing the panhead machine screws (126 and 129) and the split lockwashers (125 and 128).

ag. To remove capacitor C2312 (130), remove the leads from the terminal stud (127) and the terminal lug (131). Terminal lug (131) is removed when the hexagonal plain nut (133) is removed.

4-148. Removal of Components from Cabinet, Electrical Equipment CY-3019/FSW-8 (fig. 4-106)

Proceed as follows to disassemble the CY-3019/ FSW-8:



1—Panhead machine screw (No. 6–32)
2—Lockwasher (No. 6)
3—Mounting bracket
4—Panhead machine screw (No. 6–32)
5—Lockwasher (No. 6)
6—Flat washer (No. 6)
7—Panhead machine screw (No. 6–32)
8—Lockwasher (No. 6)
9—Flat washer (No. 6)
10—Terminal board TB2401
11—Terminal board TB2402
12—Panhead machine screw (No. 8–32)
13—Hexagonal plain nut (No. 8–32)
14—Lockwasher (No. 8)
15—Hexagonal self-locking nut (part of R2416)
16—Hexagonal plain nut (part of R2416)
17—MIKE COMP resistor R2416
18—Setscrew (part of knob)
19—Knob
20—Hexagonal plain nut (part of R2426)
21—Lockwasher (part of R2426)
22—SPEAKER GAIN resistor R2426
23—Front chassis
24—Rear chassis
25—Panhead machine screw (No. 8–32)
26—Lockwasher (No. 8)
27—Mounting post
28—Panhead machine screw (No. 8–32)
29—Lockwasher (No. 8)
30—Flat washer (No. 8)
31—Panhead machine screw (No. 6–32)
32—Hexagonal plain nut (No. 6–32)
33—Terminal lug
34—Flat washer (No. 6)
35—Shoulder washer (No. 6)
36—Lockwasher (No. 6)
37—Transistor Q2406
38—Mica washer
39—Heat sink
40—Hexagonal plain nut (No. 4–40)
41—Lockwasher (No. 4)
42—Transformer T2401
43—Panhead machine screw (No. 4–40)
44—Hexagonal plain nut (No. 4–40)
45—Lockwasher (No. 4)
46—Transformer T2404
47—Panhead machine screw (No. 6–32)
48—Lockwasher (No. 6)
49—Transformer mounting bracket
50—Panhead machine screw (No. 8–32)
51—Lockwasher (No. 8)
52—Flat washer (No. 8)
53—Spacer bar
54—Hexagonal plain nut (No. 6–32)
55—Lockwasher (No. 6)
56—Transformer T2402
57—Hexagonal plain nut (No. 4–40)
58—Lockwasher (No. 4)
59—Female threaded lockpin stud
60—Male threaded lockpin stud
61—Connector J2401

Figure 4-103. Amplifier Assembly AM-2817/FSW-8 (part of OA-014/FSW-8) and AMA-2817A/FSW-8 (part of OA-3014A/FSW-8), exploded view.

a. Remove incandescent lamp DS1701 (1), twist and lift it from the desk lamp assembly (6).

b. To remove the desk lamp assembly (6), proceed as follows:

(1) Loosen the hexagonal plain nut from the Setscrew (3).

(2) Loosen the two setscrews (3) on the collar (4) and slide it back.

(3) Remove the desk lamp assembly (6) from the desk lamp mounting plate (5).

c. To remove the desk lamp mounting plate (5), remove the two panhead machine screws (7), hexagonal plain nuts (8), lockwashers (9), and flat washers (10).

d. To remove the pack panel (13), release the six Camloc fasteners (11) from the Camloc receptacles (12).

e. To remove terminal board TB1704 (17) and marker strip (18), remove the four panhead machine screws (14), lockwashers (15), and flat washers (16).

f. To remove terminal board TB1701 (23) and marker strip (24), remove the four panhead machine screws (19), four lockwashers (20), four flat washers (21), and one loop clamp (22).

g. To remove the terminal board mounting bracket (30), remove the two panhead machine screws (25), lockwashers (26), flathead machine crews (27), hexagonal plain nuts (28), and lockwashers (29).

h. To remove the hanger bracket (34), remove the panhead machine screw (31), hexagonal plain nut (32), and lockwasher (33).

i. To remove terminal board TB1709 (39) and marker strip (40) from the terminal board bracket (44), remove the four fillister head machine screws (35), hexagonal plain nuts (36), lockwashers (37), and two spacer bars (38).

j. To remove terminal board bracket (44), remove the machine screws (41), hexagonal plain nuts (42), and lockwashers (43).

k. To remove the identification plate (49), remove the four panhead machine screws (45), hexagonal plain nuts (46), lockwashers (47), and flat washers (48).

l. To remove the right side channel (51) from the right side bracket (52), remove the four flathead machine screws (50).

m. To remove the four feet (55), remove the hexagonal plain nut (53) and lockwasher (54).

n. To remove the loop clamp (60), remove the two panhead machine screws (56), lockwashers (57), flat washers (58), and one spacer bar (59).

o. To remove the right side bracket (52), remove the five flathead machine screws (61), hexagonal plain nuts (62), and lockwashers (63).

Figure 4-104. Power Supply PP-2795/FSW-8 (part of OA-3014/FSW-8), exploded view.

1-Panhead machine screw (No. 10-32)
2-Hexagonal plain nut (No. 10-32)
3-Lockwasher (No. 10)
4-Cover assembly
5-Shoulder screw (No. 4-40)
6-Hexagonal plain nut (No. 4-40)
7-Lockwasher (No. 4)
8-Chain
9-Chain
10-Captive screw
11-AMPLIFIER ADJUST cover plate
12-Captive screw
13-VOLTAGE ADJUST cover plate
14-Panhead machine screw (No. 10-32)
15-Lockwasher (No. 10)
16-Handle
17-Front cover
18-Hexagonal plain nut (part of J2305)
19-Lockwasher (part of J2305)
20-Connector J2305
21-Fuseholder cap
22-7.5V 2 AMP fuse F2302
23-Hexagonal plain nut (part of XF2302)
24-Lockwasher (part of XF2302)
25-Fuseholder XF2302
26-Hexagonal self-locking nut (part of R2313)
27-Hexagonal plain nut (part of R2313)
28-Lockwasher (part of R2313)
29-7.5 ADJ resistor R2313
30-Hexagonal plain nut (No. 8-32)
31-Flat washer (No. 8)
32-Transformer reinforcement plate
33-Transformer T2301
34-Hexagonal plain nut (part of C2302)
35-Lockwasher (part of C2302)
36-Capacitor C2302
37-Hexagonal plain nut (part of CR2312)
38-Lockwasher (part of CR2312)
39-Terminal lug
40-Flat washer (part of CR2312)
41-Mica washer (part of CR2312)
42-Mica washer (part of CR2312)
43-Diode CR2312
44-Panhead machine screw (No. 6-32)
45-Lockwasher (No. 6)
46-Resistor mounting plate
47-Panhead machine screw (No. 4-40)
48-Hexagonal plain nut (No. 4-40)
49-Lockwasher (No. 4)
50-Resistor R2301
51-Panhead machine screw (No. 6-32)
52-Lockwasher (No. 6)
53-Spacer
54-Panhead machine screw (No. 6-32)
55-Lockwasher (No. 6)
56-Capacitor C2310
57-Lockwasher (No. 6)
58-Spacer stud
59-Lockwasher (No. 6)
60-Terminal lug
61-Lockwasher (No. 6)
62-Inductor L2301 mounting stud
63-Panhead machine screw (No. 6-32)
64-Lockwasher (No. 6)
65-Spacer bar
66-Spacer bar
67-Panhead machine screw (No. 6-32)
68-Hexagonal plain nut (No. 6-32)
69-Lockwasher (No. 6)
70-Flat washer (No. 6)
71-Terminal board TB2302
72-Terminal board TB2301
73-Panhead machine screw (No. 6-32)
74-Hexagonal plain nut (No. 6-32)
75-Lockwasher (No. 6)
76-Diode board mounting bracket
77-Panhead machine screw (No. 6-32)
78-Hexagonal plain nut (No. 6-32)
79-Lockwasher (No. 6)
80-Diode board
81-Panhead machine screw (No. 6-32)
82-Lockwasher (No. 6)
83-Panhead machine screw (No. 6-32)
84-Lockwasher (No. 6)
85-Spacer
86-Hexagonal plain nut (part of CR2313)
87-Lockwasher (part of CR2313)
88-Mica washer
89-Terminal lug
90-Diode CR2313
91-Diode mounting plate
92-Hexagonal plain nut (part of R2302)
93-Lockwasher (part of R2302)
94-Resistor R2302
95-Panhead machine screw (No. 6-32)
96-Hexagonal plain nut (No. 6-32)
97-Terminal lug
98-Flat washer (No. 6)
99-Insulator shoulder washer (No. 6)
100-Lockwasher (No. 6)
101-Transistor Q2301
102-Mica washer
103-Panhead machine screw (No. 6-32)
104-Lockwasher (No. 6)
105-Flat washer (No. 6)
106-Panhead machine screw (No. 6-32)
107-Lockwasher (No. 6)
108-Spacer
109-Terminal board TB2303
110-Rubber grommet
111-Panhead machine screw (No. 4-40)
112-Lockwasher (No. 4)
113-Terminal stud
114-Panhead machine screw (No. 6-32)
115-Lckwasher (No. 632)
116-Hexagonal plain nut (No. 6-32)
117-Connector J2301
118-Grounding screw (No. 8-32)
119-Hexagonal plain nut (No. 8-32)
120-Lockwasher (No. 8)
121-Lockwasher (No. 8)
122-Flat washer (No. 8)
123-Power supply chassis

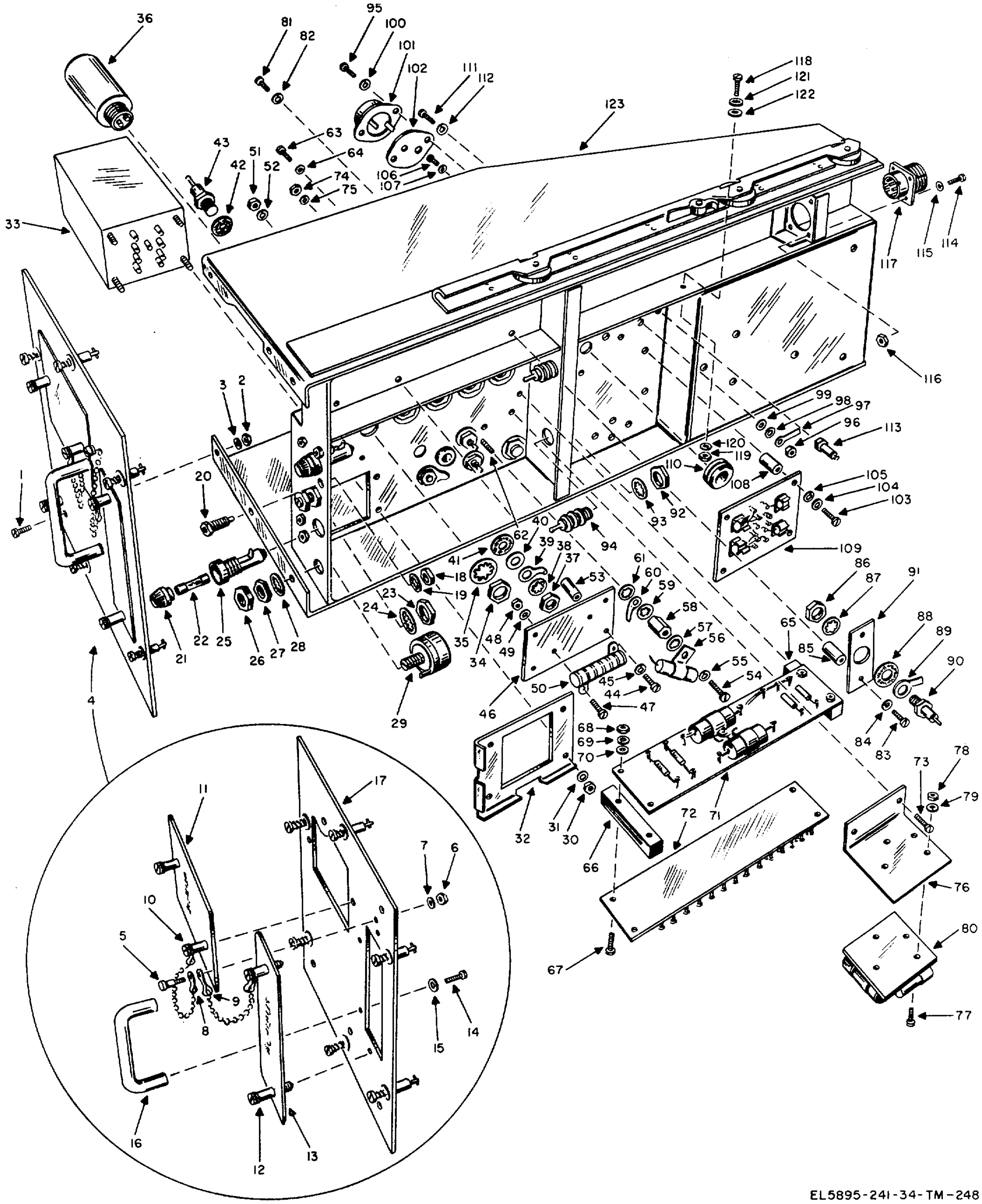
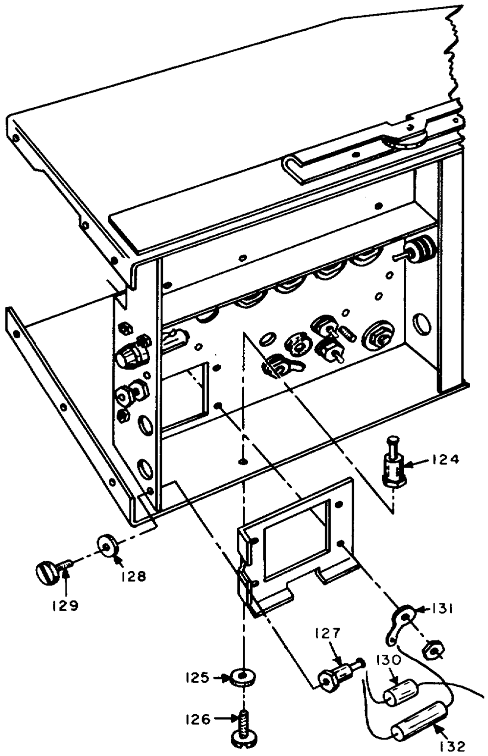


Figure 4-104. Power Supply PP-2795/FSW-8 (part of OA-3014/FSW-8), exploded view-Continued



124—Terminal stud
125—Split lockwasher (No. 4)
126—Panhead machine screw (No. 4-40)
127—Terminal stud
128—Split lockwasher (No. 4)
129—Panhead machine screw (No. 4-40)
130—Capacitor C2312
131—Terminal lug
132—Capacitor C2311
133—Hexagonal plain nut (No. 8-32)

Figure 4-105. Power Supply PP-2795/FSW-8 (part of OA-3014A/FSW-8), added components, partial exploded view.

1-Incandescent lamp DS1701
2-Hexagonal plain nut (part of desk lamp assembly)
3-Setscrew (part of desk lamp assembly)
4-Collar
5-Desk lamp mounting plate
6-Desk lamp assembly
7-Panhead machine screw (No. 10-32)
8-Hexagonal plain nut (No. 10-32)
9-Lockwasher (No. 10)
10-Flat washer (No. 10)
11-Camloc fastener
12-Camloc receptacle
13-Back panel
14-Panhead machine screw (No. 440)
15-Lockwasher (No. 4)
16-Flat washer (No. 4)
17-Terminal board TB1704
18-Marker strip
19-Panhead machine screw (No. 6-32)
20-Lockwasher (No. 6)
21-Flat washer (No. 6)
22-Loop clamp
23-Terminal board TB1701
24-Marker strip
25-Panhead machine screw (No. 6-32)
26-Lockwasher (No. 6)
27-Flathead machine screw (No. 6-32)
28-Hexagonal plain nut (No. 6-32)
29-Lockwasher (No. 6)
30-Terminal mounting bracket
31-Panhead machine screw (No. 6-32)
32-Hexagonal plain nut (No. 6-32)
33-Lockwasher (No. 6)
34-Hanger bracket
35-Fillister head machine screw (No. 4-40)
36-Hexagonal plain nut (No. 4-40)
37-Lockwasher (No. 4)
38-Spacer bar
39-Terminal board TB 1709
40-Marker strip
41-Panhead machine screw (No. 6-32)
42-Hexagonal plain nut (No. 6-32)
43-Lockwasher (No. 6)
44-Terminal board bracket
45-Panhead machine screw (No. 2-56)
46-Hexagonal plain nut (No. 2-56)
47-Lockwasher (No. 2)
48-Flat washer (No. 2)
49-Identification plate
50-Flathead machine screw (No. 6-32)
51-Right side channel
52-Right side bracket
53-Hexagonal plain nut (No. 10-32)
54-Lockwasher (No. 10)
55-Foot
56-Panhead machine screw (No. 6-32)
57-Lockwasher (No. 6)
58-Flat washer (No. 6)
59-Spacer bar
60-Loop clamp
61-Flathead machine screw (No. 8-32)
62-Hexagonal plain nut (No. 8-32)
63-Lockwasher (No. 8)
64-Bumper
65-Cabinet, Electrical Equipment CY-3019/FSW-8

Figure 4-106. Cabinet, Electrical CY-3019/FSW-8 (part of OA-3014/FSW-8), removal of components.

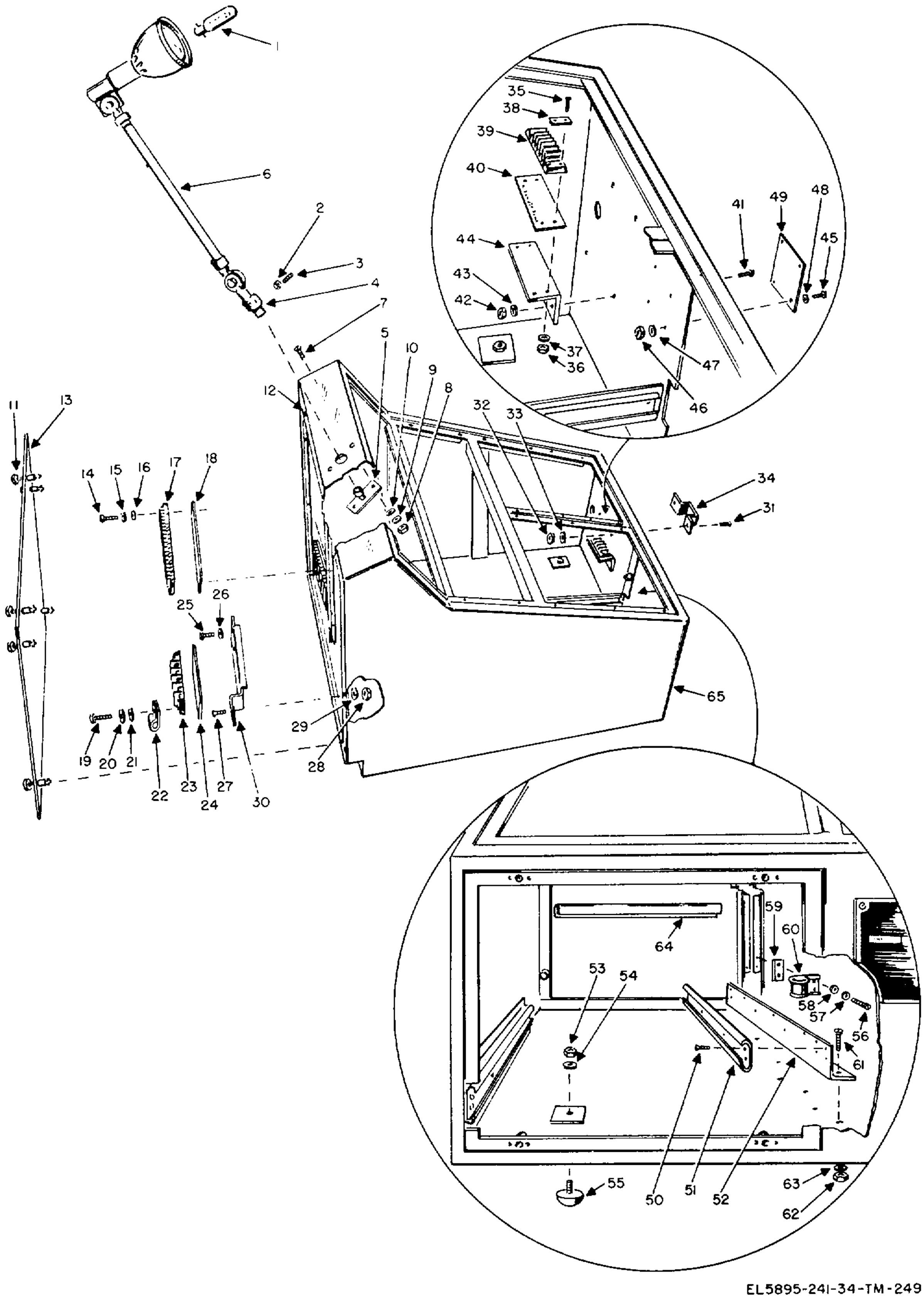


Figure 4-106. Cabinet, Electrical CY-3019/FSW-8 (part of OA-3014/FSW-8), removal of components-Continued

Section IX. DISASSEMBLY OF METEOROLOGICAL DISPLAY CONSOLE OA-2054/FSW-8

4-149. Removal and Replacement of Assemblies

a. General. Procedures are given below for removal of each major assembly of the OA-2054/ FSW-8. Reverse the procedures given in *b* through *j* below to replace the assemblies of the OA-2054,/FSW-8. Paragraphs 4-150 through 4-161 give detailed instructions for disassembly of the major assemblies.

b*. Transmitter, Barometric Data T-772/FSW-8 or T-773/FSW-8*. Proceed as follows to remove the T-772/FSW-8 or T-773/FSW-8 from the equipment cabinet:

(1) Open the cabinet door (32) and loosen the two wing-type Camloc fasteners (1) from the Camloc receptacles (2) in the mounting plate of the T-772/FSW-8 or T-773/FSW-8 (3).

CAUTION

Cage the T-772/FSW-8 before removal from the cabinet by turning the caging screw clockwise. The caging screw is located under the center of the mounting plate. Do not tip or invert the T-772/FSW-8 or T-778/FSW-8 at any time. With the Camloc fasteners loosened, the T-772/FSW-8 or T-773/ FSW-8 will fall if pulled too far out of the cabinet.

(2) Carefully slide the T-772/FSW-8 or T-773/FSW-8 (3) partly out of the CY-2940/FSW-8 (33).

(3) With the T-772/FSW-8 or T-773/FSW-8 (3) partly removed from the CY-2940/FSW-8 (33), carefully disconnect the clamp and vent tube connector and digital readout cable connector at the rear of the T-772/FSW-8 or T-773/ FSW-8 (fig. 4-109).

(4) Slide the T-772/FSW-8 or T-773/FSW-8 completely forward and remove it from the CY-2940/FSW-8 (33). Refer to paragraph 4-150 for instructions on disassembly of the barometric data transmitter drawer.

c. Clock and Digital Readout Panel. Remove the clock and digital readout panel (7) by removing the four panhead machine screws (4), lockwashers (5), and flat washers (6). In the OA-2054A/FSW-8, first remove the flathead machine screw (35) and then the lockwasher (36) from the clock and digital readout panel. Refer to paragraph 4-151 for instructions on disassembly of the clock and digital readout panel.

d. Windspeed and Direction Indicator Panel. Remove the windspeed and direction indicator panel (11) by removing the found panhead machine screws (8), lockwashers (9), and flat washers (10). Refer to paragraph 4-153 for instructions on disassembly of the windspeed and direction indicator panel.

e. Flight Data Board. Remove the flight data stripholder (12). Remove the flight data board assembly (14) by loosening the four captive screws (13). Refer to paragraph 4-155 for instructions on disassembly of the flight data board.

f. Storage Desk. Remove the storage desk assembly (17) by removing the four panhead machine screws (15) and lockwashers (16). Refer

Figure 4-107. Meteorological Display Consoles OA-2055/FSW-8 and OA-2055/FSW-8, exploded view.

1-Camloc fastener (wing type)
2-Camloc receptacle
3-Transm'tter, Barometric Data T-772 /FSW-8 or T-773/ FSW-8
4-Panhead machine screw (No. 1n-32)
5-Lockwasher (No. 10)
6-Flat washer (No. 10)
7-Clock and digital readout panel
8-Panhead machine screw (No. 10-32)
9-Lockwasher (No. 10)
10-Flat washer (No. 10)
11-Windspeed and direction indicator panel
12-Flight data stripholder
13-Captive screw
14-Flight data board assembly
15-Panhead machine screw (No. 8-32)
16-Lockwasher (No. 832)
17-Storage desk assembly
18-Panhead machine screw (No. 10-32)
19-Lockwasher (No. 10)
20-Flat washer (No. 10)
21-Desk lamp assembly
22-Panhead machine screw (No. 6-32)
23-Lockwasher (No. 6-32)
24-Upper rear plate
25-Lower rear plate
38-Panhead machine screw 10-32
26-Panhead machine screw (No. 6-32)
27-Hexagonal plain nut (No. 6-32)
28-Lockwasher (No. 6)
29-Doorlock assembly
30-Panhead machine screw (No. 6-32)
31-Lockwasher (No. 6)
32-Cabinet door
33-Cabinet, Electrical Equipment CY-2940/FSW-8
34-Circuit breaker and fuse assembly
35-Flathead machine screw 10-32
36-Lockwasher (No. 10)
37-Lockwasher (No. 10)

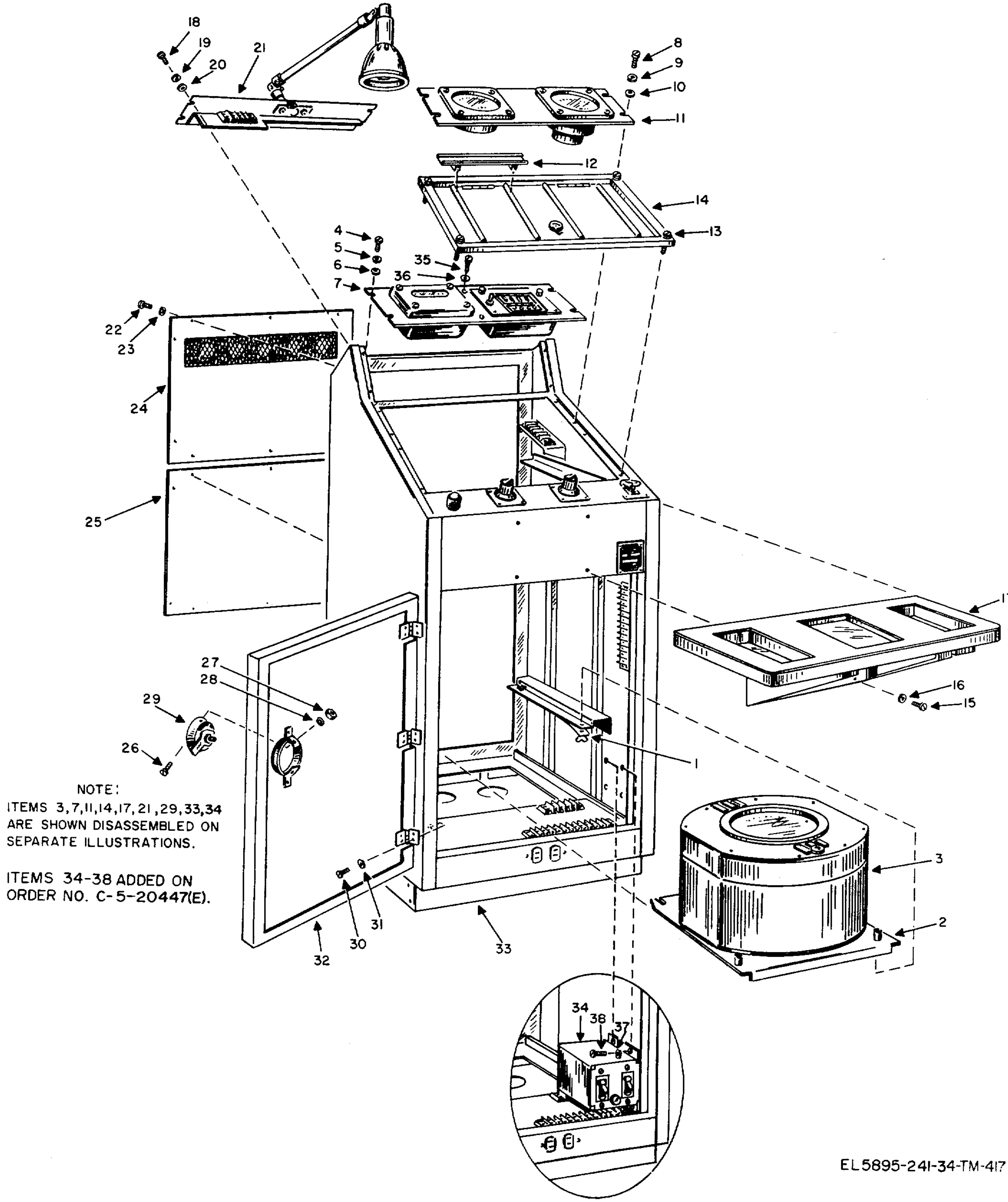


Figure 4-107. Meteorological Display Consoles OA-2055/FSW-8 and OA-2055A/FS W-8, exploded view-Continued

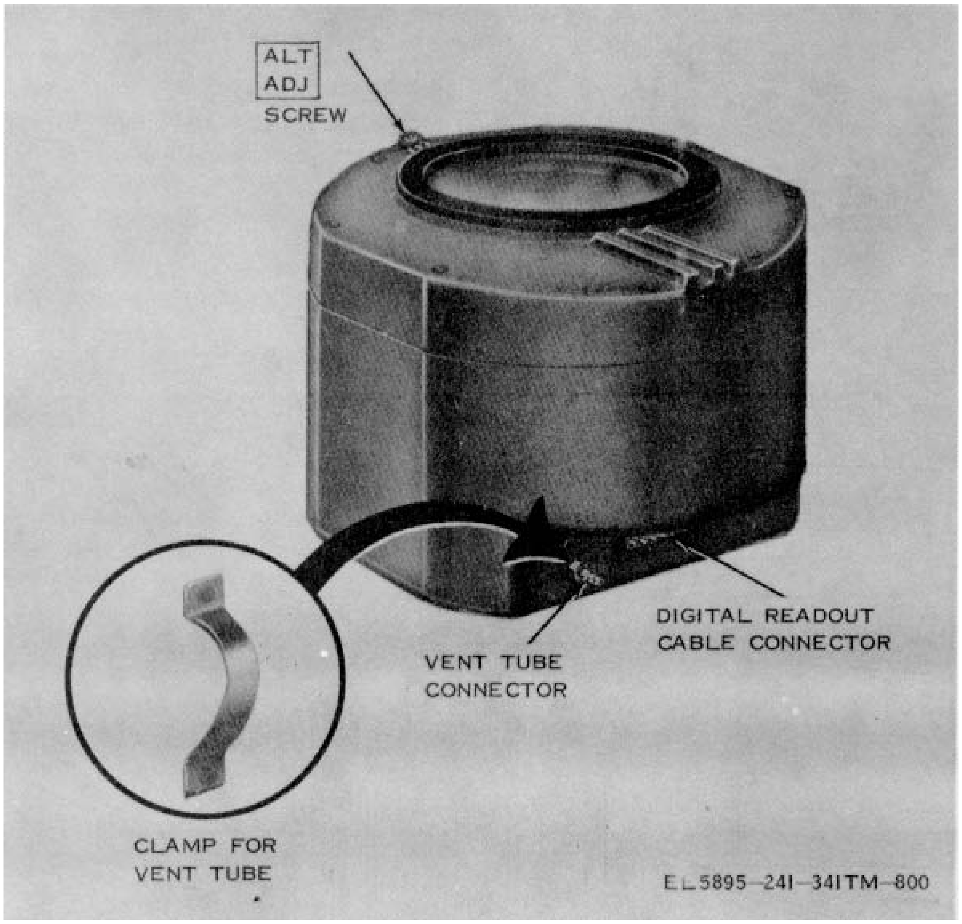


Figure 4-108. Transmitter, Barometric Data T-772/FSR -8 or T-773/FSW-8, side view.

to paragraph 4-156 for instructions on disassembly of the storage desk.

f.1. Circuit Breaker and Fuse Assembly. Remove the circuit breaker and fuse assembly (34) by removing the four panhead machine screws (38) and the lockwashers (37). Refer to paragraph 4-160 for instructions on disassembly of the circuit breaker and fuse assembly.

g. Desk Lamp Assembly. Remove the desk lamp assembly (21) by removing the four panhead machine screws (18), lockwashers (19), and flat washers (20). In the OA-2054/FSW-8, first remove the flathead screw (35) and the lockwasher (36) from the clock and digital readout panel. Refer to paragraph 4-157 for instruction on disassembly of the desk lamp assembly.

h. Rear Panels. Remove the upper rear plate (24) and lower rear plate (25) by removing the 20 panhead machine screws (22) and lockwashers (23).

i. Doorlock. Remove the doorlock assembly (29) from the cabinet door (32) by removing the hexagonal plain nut (27) and lockwasher (28).

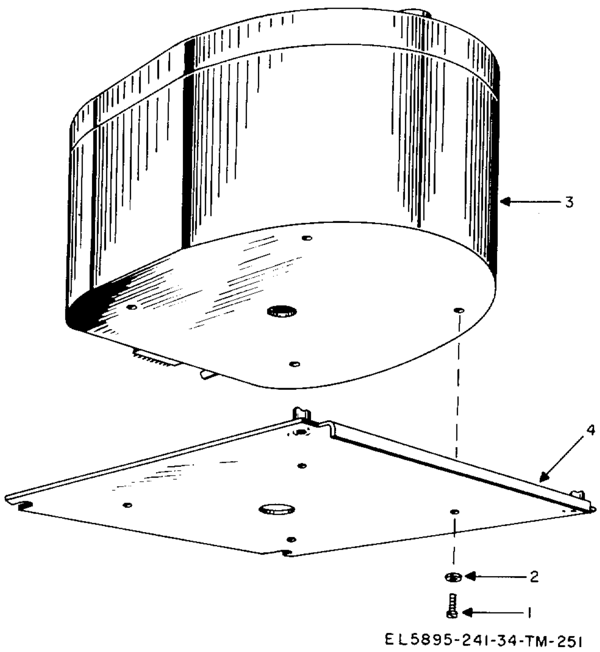
j. Front Access Door. Remove the six panhead machine screws (30) and lockwashers (31) from the three hinges of the cabinet door (32). Remove the cabinet door (32) from the CY-2940/FSW-8 (33).

4-150. Disassembly of Barometric Data Transmitter Drawer

(fig. 4-109)

After removing the barometric data transmitter drawer from the CY-2940/FSW-8 as described in paragraph 4-149, proceed as follows to disassemble the barometric data transmitter drawer.

a. Remove the mounting plate (4) from Transmitter, Barometric Data T-772/FSW-8 or T-



1—Panhead machine screw (No. 10–24)
2—Lockwasher (No. 10)
3—Transmitter, Barometric Data T–772/FSW–8
4—Mounting plate

Figure 4-109. Barometric data transmitter drawer (part of OA-2054/FSW-8), removal of mounting plate.

773/FSW-8 (3) by removing the four panhead machine screws (1) and lockwashers (2).

b. To reassemble the barometric data transmitter drawer, reverse the above procedure.

4-151. Disassembly of Clock and Digital Readout Panel
(fig. 4-110)

a. General. After removing the clock and digital readout panel from the equipment as described in paragraph 4-149, proceed as follows to remove the assemblies mounted on the clock and digital readout panel. Disassembly procedures of Indicator, Digital Display ID-854/FSW-8 are given in paragraph 4-152.

b. Removal of Assemblies.

(1) Remove the clock assembly mask (2) from the panel by loosening the four captive thumbscrews (1).

(2) To remove direct reading clock M101 (6) from the panel, remove the two panhead machine screws (3), lockwashers (4), and one spacer (5).

(3) To remove the clock motor (9), remove the two panhead machine screws (7) and flat washers (8) that attach the motor to the clock.

(4) Remove the pinion gear (11) from the clock motor (9) by loosening the two setscrews (10) which hold the gear on the shafts.

CAUTION

If the pinion gear binds on the shaft, back both setscrews almost completely out of their holes. Use a gear puller to remove the pinion gear from the shaft. A gear puller will prevent possible damage to the clock motor.

(5) Remove terminal board TB101 (16) and underlying terminal marker strip (17) from the digital readout panel (26) by unfastening the four flathead machine screws (12), hexagonal plain nuts (13), lockwashers (14), and flat washers (15).

(6) Separate digital readout indicator DS-101 (20) from the panel by removing the four panhead machine screws (18) and lockwashers (19).

(7) Unfasten the panel bracket (25) by removing the two flathead machine screws (21), flat washers (24), lockwashers (23), and hexagonal plain nuts (22).

4-152. Indicator, Digital Display ID-854/FSW-8
(fig. 4-112)

After removal of the ID-854/FSW-8 from the clock and digital readout panel (para 4-152), proceed as follows to disassemble the unit. For location of electrical parts, refer to figure 4-70.

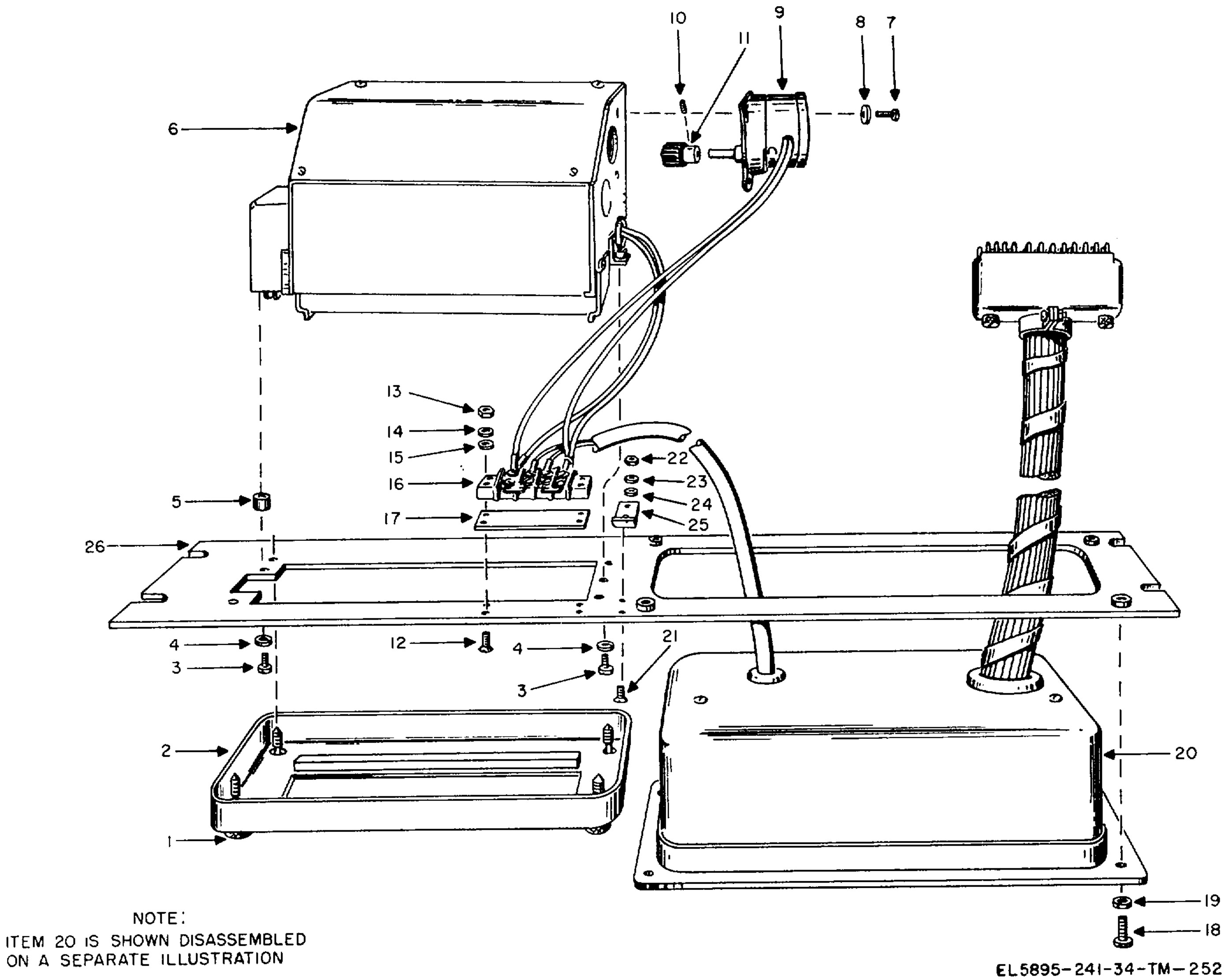
a. Remove the lampholder assembly (1) from the front plate (73) by pulling forward on the knob (12).

b. Remove incandescent lamp DS106 (2) by twisting it and pulling it out from the socket of lampholder XDS1O06 (9).

c. Separate the lampholder brackets (10 and 11) from the lampholder cover plate (15), by removing the four panhead machine screws (3), hexagonal plain nuts (4), and lockwashers (5).

d. Remove the two panhead machine screws (6), hexagonal plain nuts (7), and lockwashers (8) to separate lampholder XDS (9) from the two lampholder brackets (10 and 11).

e. Remove the knob (12) from the lampholder



1—Thumbscrew (part of clock assembly mask)
2—Clock assembly mask
3—Panhead machine screw (No. 8-32)
4—Lockwasher (No. 8)
5—Spacer
6—Direct reading clock M101
7—Panhead machine screw (part of clock motor)
8—Flat washer (part of clock motor)
9—Clock motor
10—Setscrew (part of pinion gear)
11—Pinion gear
12—Flathead screw (part of TB101)
13—Hexagonal plain nut (part of TB101)
14—Lockwasher (part of TB101)
15—Flat washer (part of TB101)
16—Terminal board TB101
17—Terminal marker strip
18—Panhead machine screw (No. 8-32)
19—Lockwasher (No. 8)
20—Digital readout indicator DS101
21—Flathead machine screw (No. 4-40)
22—Hexagonal plain nut (No. 4-40)
23—Lockwasher (No. 4)
24—Flat washer (No. 4)
25—Panel bracket
26—Digital readout panel

Figure 4-110. Clock and digital readout panel (part of OA-2054/FSW-8, removal of assemblies.

cover plate (15) by removing the hexagonal plain nut (13) and lockwasher (14).

f. Remove the two panhead machine screws (16) from the rear of dust cover (17) and pull the dust cover and rubber dust seal (76) clear of the front plate (73).

g. Remove the front cover plate (20), plastic window (21), and gasket (22) from the front panel assembly by removing the four panhead machine screws (18) and lockwashers (19).

h. Remove fuseholder XF101 (26) from the front plate (73) by removing the hexagonal plain nut (23) and lockwasher (24). When this is accomplished, the flat washer (25) will be freed.

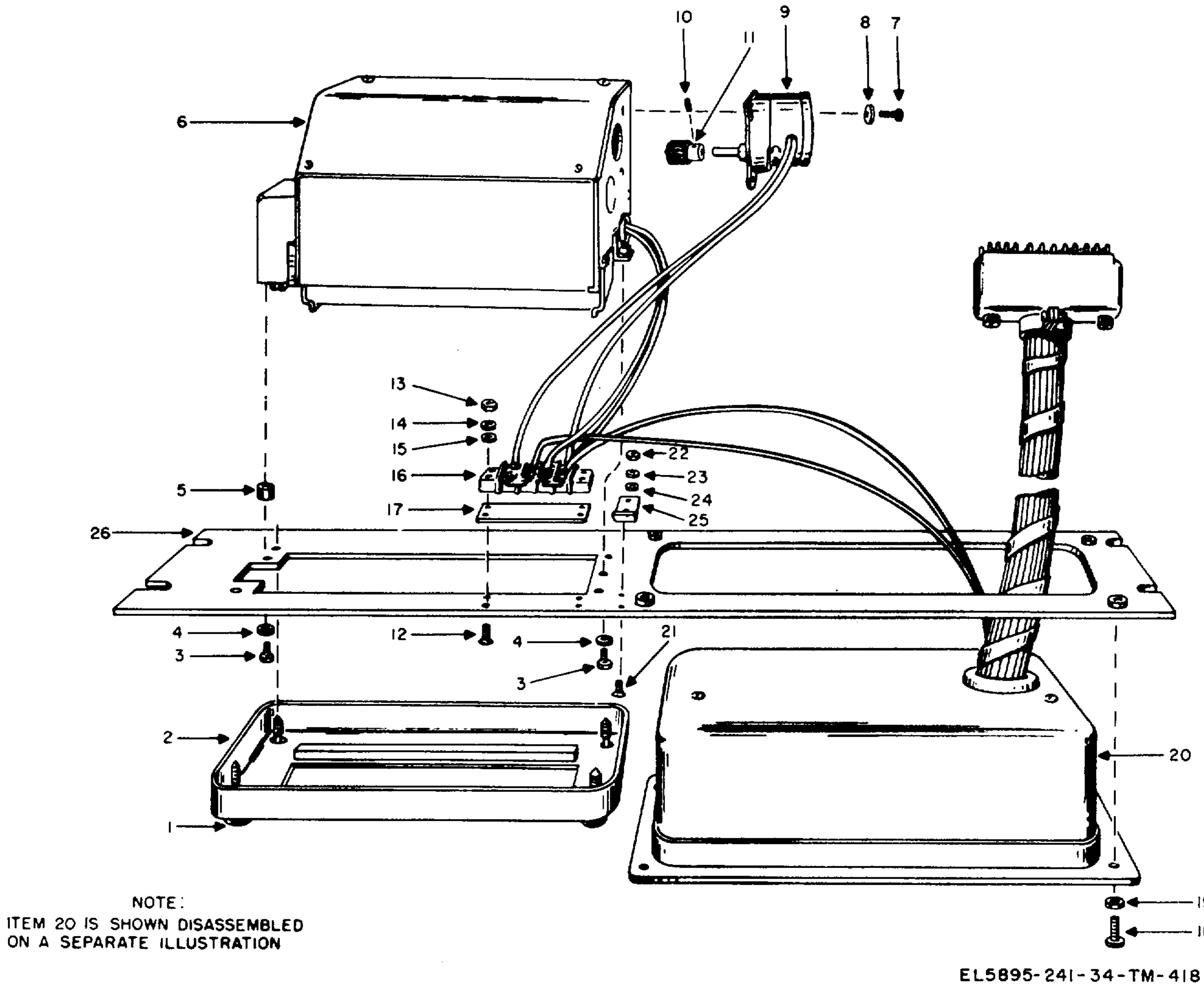


Figure 4-111. Clock and digital readout panel (part of OA-2054A/FSW-8), removal of assemblies.

After fuseholder XF101 has been removed from the front plate (73), remove the flat washer (25).

i. Remove the fuseholder cap (27) and 2 AMP fuse F101 (28) from fuseholder XF101 (26).

j. Loosen the four flathead machine screws (29), hexagonal plain nuts (30), and lockwashers (31) to remove the left and right drawer guides (32 and 33, respectively) from the front plate (73). Note that spring tabs are located at the bottom of each guide.

k. Loosen the setscrew (34) on the DIM control knob (35) enough to permit removal of the DIM control knob from the potentiometer shaft.

l. Remove the hexagonal plain nut (36) and lockwasher (37) and remove DIM control resistor R31 (38) from the front plate (73).

m. Loosen the knurled nut (39) at PUSH TO TEST OR RESET switch S1 (42). Remove the lockwasher (40) and hexagonal plain nut (41) from PUSH TO TEST OR RESET switch S1 (42) and remove the switch.

n. Remove lampholder XDS105 (47) from the front plate (73) by removing the lens cap (43) and the knurled nut (44).

o. Remove the lockwasher (45) and hexagonal plain nut (46) from lampholder XDS105 (47).

p. Remove the hexagonal plain nut (49) and lockwasher (50) from TEST KEY 7777-3333 switch S2 (52). Remove the hexagonal plain nut (51) and TEST KEY 7777-3333 switch S2 (52) from the front plate (73).

q. Loosen the two panhead machine screws (53) and flat washers (54) and remove terminal board E1 (55) from the right and left end brackets (59 and 60, respectively).

r. Remove the digital indicator assembly from the front plate (73) by removing the four flathead machine screws (56) which hold the right and left end brackets (59 and 60, respectively) to the front plate (73).

s. Carefully loosen the end bracket post (57) from the end bracket screw (58). The digital assembly is held together by tension. When the right and left end brackets (59 and 60) are released, the individual indicator assemblies (69, 70, 71, 72) and spacers (61 and 62) will separate.

t. Disassemble indicator assemblies DS1, DS2, DS3, and DS4 (69, 70, 71, and 72, respectively) by loosening the flathead machine screws (63). Loosen the retainer screw (65) after removing the screw cover (64). The outer housing (66), laminated ring core (67), and character card (68) will separate. Note that indicator assembly DS3 (71) contains only the digits 2, 3, and 7 on its character card. Keep the components of each digital indicator assembly separated. Also, prevent any nicking or damage to the components. The fit and balance of all components is extremely critical.

u. Remove rubber grommets (74 and 75) by forcing them out of their holes in the dust cover (17).

v. Slide the rubber dust seal (76) off the dust cover (17).

4-153. Indicator, Digital Display ID-854A/FSW-8

(fig. 4-113)

After removal of the ID-854A/FSW-8 from the clock and digital readout panel (para 4-151), disassemble the unit as follows. For location of electrical parts, refer to figure 4-7).

a. Remove the two panhead machine screws (1) from the rear of dust cover (2) and pull the dust cover and the rubber dust seal (45) clear of the front plate (43).

b. Remove fuseholder XF101 (6) from the front plate (43) by removing the hexagonal plain nut (3) and the lockwasher (4); the flat washer (5) will be freed. After fuseholder XF101 has been removed from the front plate (43), remove the flat washer (5).

c. Remove the fuseholder cap (7) and 2 AMP fuse F101 (8) from fuseholder XF101 (6).

d. Loosen the setscrew (9) on the DIM control knob (10) enough to permit removal of the DIM control knob from the potentiometer shaft.

e. Remove the hexagonal plain nut (11) and the lockwasher (12) and remove DIM control resistor R31 (13) from the front plate (43).

f. Loosen the knurled knob nut (14) at PUSH TO TEST OR RESET switch S1 (17). Remove the lockwasher (15) and the hexagonal plain nut (16) from PUSH TO TEST OR RESET switch S1 (17) and remove the switch.

g. Remove lampholder XDS105 (22) from the front plate (43) by removing the lens cap (18) and the knurled nut (19).

h. Remove the lockwasher (20) and the hexagonal plain nut (21) from lampholder XDS-105 (22).

i. Remove the hexagonal plain nut (24) and the lockwasher (25) from TEST KEY 7777-3333 switch S2 (27). Remove the hexagonal plain nut (26) and TEST KEY 7777-3333 switch S2 (27) from the front plate (43).

j. Remove the digital indicator assembly from the front plate (43) by removing the four flat-head machine screws (28) that hold the right and left end brackets (33 and 37, respectively) to the front plate (43).

k. Carefully loosen the four hexagonal plain nuts (30), the split lockwashers (31), and the flat washers (32) from the end bracket threaded rod (29). The digital assembly is held together by tension. When the right and left end brackets (33 and 37, respectively) are released, the individual indicator assemblies (38, 39, 40, and 41), the terminal board mounting bracket (36), the insulating board (35), and terminal board (E1) (34) will separate. Do not further disassemble the indicator assemblies.

l. Remove the two capscrews (42) to remove the two neon lamps, part of capscrew in each indicator assembly.

m. Remove the rubber grommet (44) by forcing it out of the hole in the dust cover (2).

n. Slide the rubber dust seals (45) off the dust cover (2).

4-154. Disassembly of Windspeed and Direction Indicator Panel
(fig. 4-114)

After removing the windspeed and direction indicator panel as described in paragraph 4-149d, proceed as follows to disassemble the panel. For location of electrical parts, refer to figures 4-67 and 4-68.

a. Remove the wind direction indicator assembly from the panel (30) by removing the four panhead machine screws (1), hexagonal plain nuts (2), and lockwashers (3).

b. Locate the setscrew (4) attaching the wind direction indicator bezel assembly (5) to the shaft of wind direction indicator synchro DS201 (11) through the slots on the side of the wind direction indicator housing (12). Use an Allenhead wrench to loosen the setscrew (4) on the indicator coupling (6).

c. Slide the wind direction indicator bezel assembly (5) forward and remove the four spacers (7) located behind this assembly.

d. Remove the synchro clamp-ring (10) by removing the three panhead machine screws (8) and lockwashers (9) and sliding the synchro clamp-ring over the terminals of wind direction indicator synchro DS201 (11).

e. Slide wind direction indicator synchro DS-201 (11) out of the wind direction indicator housing (12).

f. Remove windspeed indicator M201 (17) from the panel (30) by removing the four flathead machine screws (13), hexagonal plain nuts (14), lockwashers (15), and flat washers (16).

NOTE

In the OA-2054A/FSW-8, omit steps *g* and *h* below.

g. Remove fuseholder XF201 (20) from the panel (30) by removing the hexagonal plain nut (18) and lockwasher (19).

h. Remove 2 AMP fuse F201 (22) from fuseholder XF201 (20) by removing the fuseholder cap (21).

i. If resistor R201 (29) is present on terminal board TB201 (27), disconnect it.

j. Remove terminal board TB201 (27) and terminal marker strip (28) from the panel (30) by removing the four flathead machine screws (23), hexagonal plain nuts (24), lockwashers (25), and flat washers (26).

4-155. Disassembly of Flight Data Board
(fig. 4-115)

After removing the flight data board as described in paragraph 4-149e, proceed as follows to disassemble the unit:

a. Remove the four slide rods (3) from the flight data board (7) by removing the three panhead machine screws (1) and lockwashers (2) that secure each slide rod.

b. Remove the catch (6) from the flight data board (7) by removing the two panhead machine screws (4) and lockwashers (5).

4-156. Disassembly of Storage Desk
(fig. 4-116)

After removing the storage desk as described in paragraph 4-148f, perform the following steps to disassemble the unit:

NOTE

In the OA-2054A/FSW-8, the storage desk is in one piece.

a. Remove the desk top (3) from the frame assembly (13) by removing the 10 hexagonal plain nuts (1) and lockwashers (2).

b. Remove the two small storage pans (6) from the desk top (3) by removing the six hexagonal plain nuts (4) and lockwashers (5).

c. Remove the large storage pan (9) from the desk top (3) by removing the six hexagonal plain nuts (7) and lockwashers (8) that secure each pan.

d. Remove the support assembly (12) from the frame assembly (13) by removing the six panhead machine screws (10) and lockwashers (11).

4-157. Disassembly of Desk Lamp Assembly
(fig. 4-117)

After removing the desk lamp assembly as described in paragraph 4-149g, proceed as follows to disassemble the unit:

a. Twist and pull out incandescent lamp DS-401 (1) to remove it from the reflector.

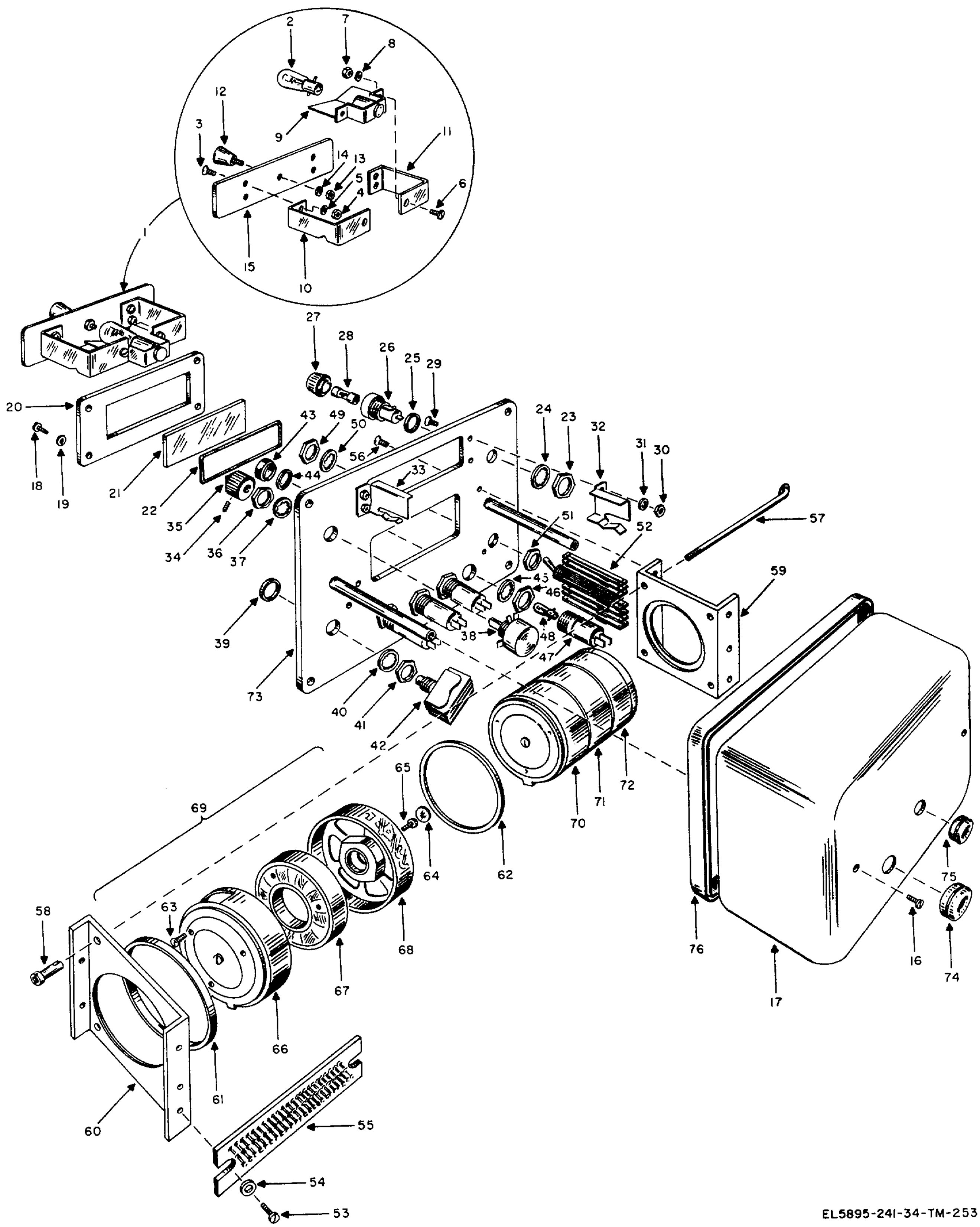


Figure 4-112. Indicator, Digital Display ID-54/FSW-8 (part of OA-2054/FSW-8), exploded view.

Figure 4-112. Indicator, Digital Display ID-854/FSW-8 (part of OA-2054/FSW-8), exploded view-Continued

1-Lampholder assembly
2-Incandescent lamp DS106
3-Panhead machine screw (No. 4-40)
4-Hexagonal plain nut (No. 4-40)
5-Lockwasher (No. 4)
6-Panhead machine screw (No. 6-32)
7-Hexagonal plain nut (No. 6-32)
8-Lockwasher (No. 6)
9-Lampholder XDS106
10-Lampholder bracket (left)
11-Lampholder bracket (right)
12-Knob
13-Hexagonal plain nut (No. 4-40)
14-Lockwasher (No. 4)
15-Lampholder cover plate
16-Panhead machine screw (No. 8-32)
17-Dust cover
18-Panhead machine screw (No. 8-32)
19-Lockwasher (No. 8)
20-Front cover plate
21-Plastic window
22-Gasket
23-Hexagonal plain nut (part of XF101)
24-Lockwasher (part of XF101)
25-Flat washer (part of XF101)
26-Fuseholder XF1O1
27-Fuseholder cap (part of XFO11)
28-2 AMP fuse F101
29-Flathead machine screw (No. 4-40)
30-Hexagonal plain nut (No. 4-40)
31-Lockwasher (No. 4)
32-Left drawer guide
33-Right drawer guide
34-Setscrew (part of DIM control knob)
35-DIM control knob
36-Hexagonal plain nut (part of R31)
37-Lockwasher (part of R31)
38-DIM control resistor R31
39-Knurled nut (part of S1)
40-Lockwasher (part of S1)
41-Hexagonal plain nut (part of S1)
42-PUSH TO TEST OR RESET switch S1
43-Lens cap (part of XDS105)
44-Knurled nut (part of XDS105)
45-Lockwasher (part of XDS105)
46-Hexagonal plain nut (part of XDS105)
47-Lampholder XDS105
48-Incandescent lamp DS105
49-Hexagonal plain nut (part of S2)
50-Lockwasher (part of S2)
51-Hexagonal plain nut (part of S2)
52-TEST KEY 7777-3333 switch S2
53-Panhead machine screw (No. 8-32)
54-Flat washer (No. 8)
55-Terminal board El
56-Flathead machine screw (No. 8-32)
57-End bracket post
58-End bracket screw
59-Right end bracket
60-Left end bracket
61-Large end spacer (part of DS1)
62-Spacer (part of DS1)
63-Flathead machine screw (part of DS1)
64-Screw cover (part of DS1)
65-Retainer screw (part of DS1)
66-Outer housing
67-Laminated ring core
68-Character card (part of DS1)
69-Indicator assembly DS1
70-Indicator assembly DS2
71-Indicator assembly DS3
72-Indicator assembly DS4
73-Front plate
74-Rubber grommet, 1/2 in. dia
75-Rubber grommet, 3/8 in. dia
76-Rubber dust seal

b. Loosen the hexagonal plain nut (2) from the setscrew (3)

c. Loosen the setscrew (3) on the collar (4) and slide the collar back. Remove the lamp arm (5) from the lamp mounting plate (9).

d. Remove the lamp mounting plate (9) by removing two flathead machine screws (6), hexagonal plain nuts (7), and lockwashers (8).

e. Remove terminal board TB405 (14) and marker strip (15) by removing four panhead machine screws (10), hexagonal plain nuts (11), lockwashers (12), and flat washers (13).

f. Separate the terminal bracket (19) from the desk lamp panel (20) by removing five flathead machine screws (16), hexagonal plain nuts (17), and lockwashers (18).

4-158. Removal of Power Control Panel Components
(fig. 4-118 and 4-119)

Proceed as follows to remove components from the power panel. For location of electrical parts, refer to figures 4-72 and 4-73.

a. Remove the circuit breaker pan (4) and the ac supply bexel (3) from the power panel (34) by removing the four panhead machine screws (1) and lockwashers (2).

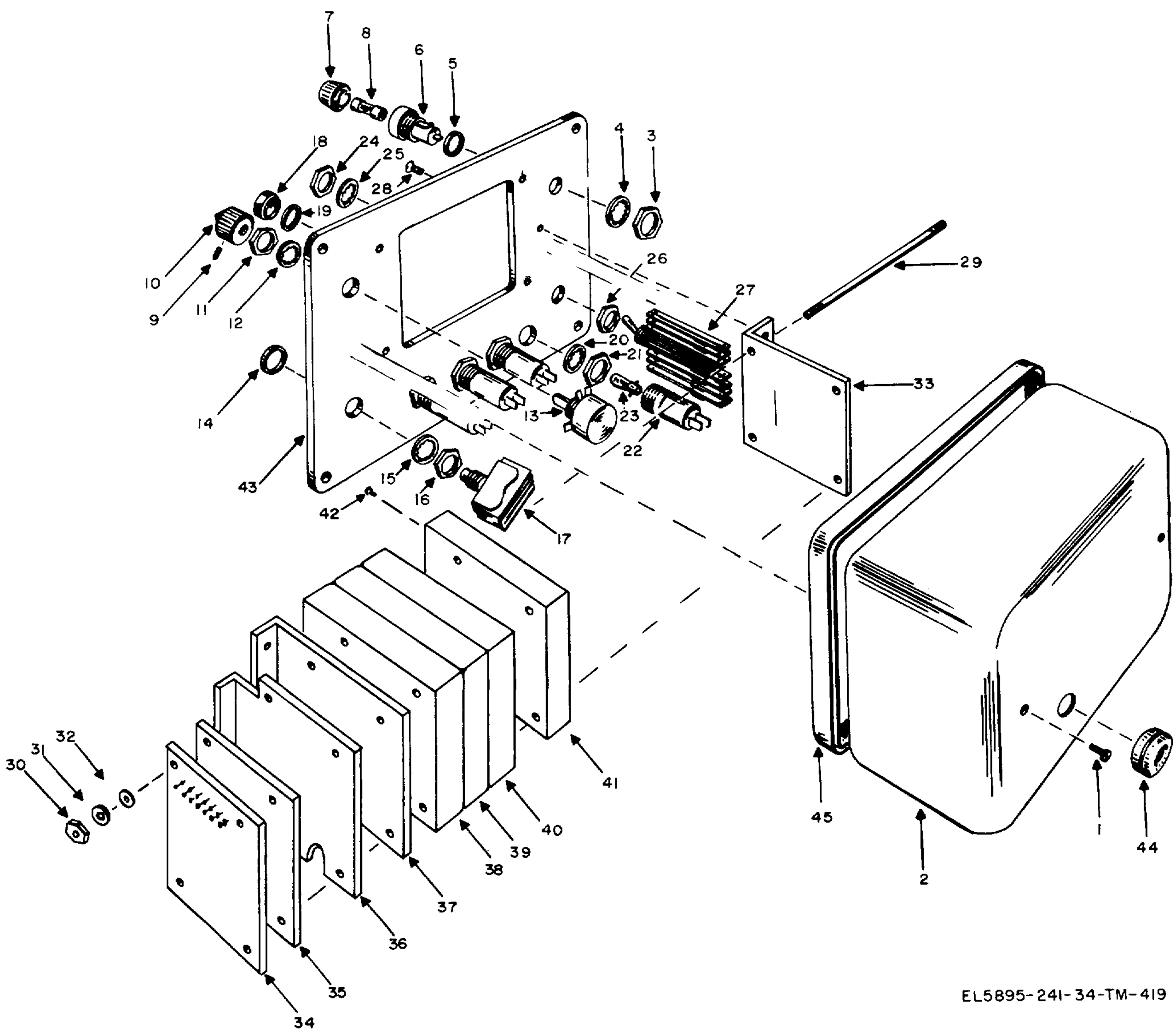
b. Remove CLOCK POWER circuit breaker CB401 (7) and MAIN POWER circuit breaker CB402 (8) from the circuit breaker pan (4) by removing the four panhead machine screws (5) and lockwashers (6).

c. Loosen the setscrew (9) and remove the control knob (10) from dimmer control resistor R401 (14).

d. Remove dimmer control resistor R401 (14) from the power panel (34) by removing the hexagonal plain nut (11) and the lockwasher (12). (The hexagonal plain nut (13) does not have to be removed to remove dimmer control resistor R401.)

e. Remove the LAMP dimmer control designation plate (17) by removing the four panhead machine screws (15) and lockwashers (16).

f. To remove desk clock dimmer R402 (fig. 4-119), follow the procedures as outlined in *c*, *d*,

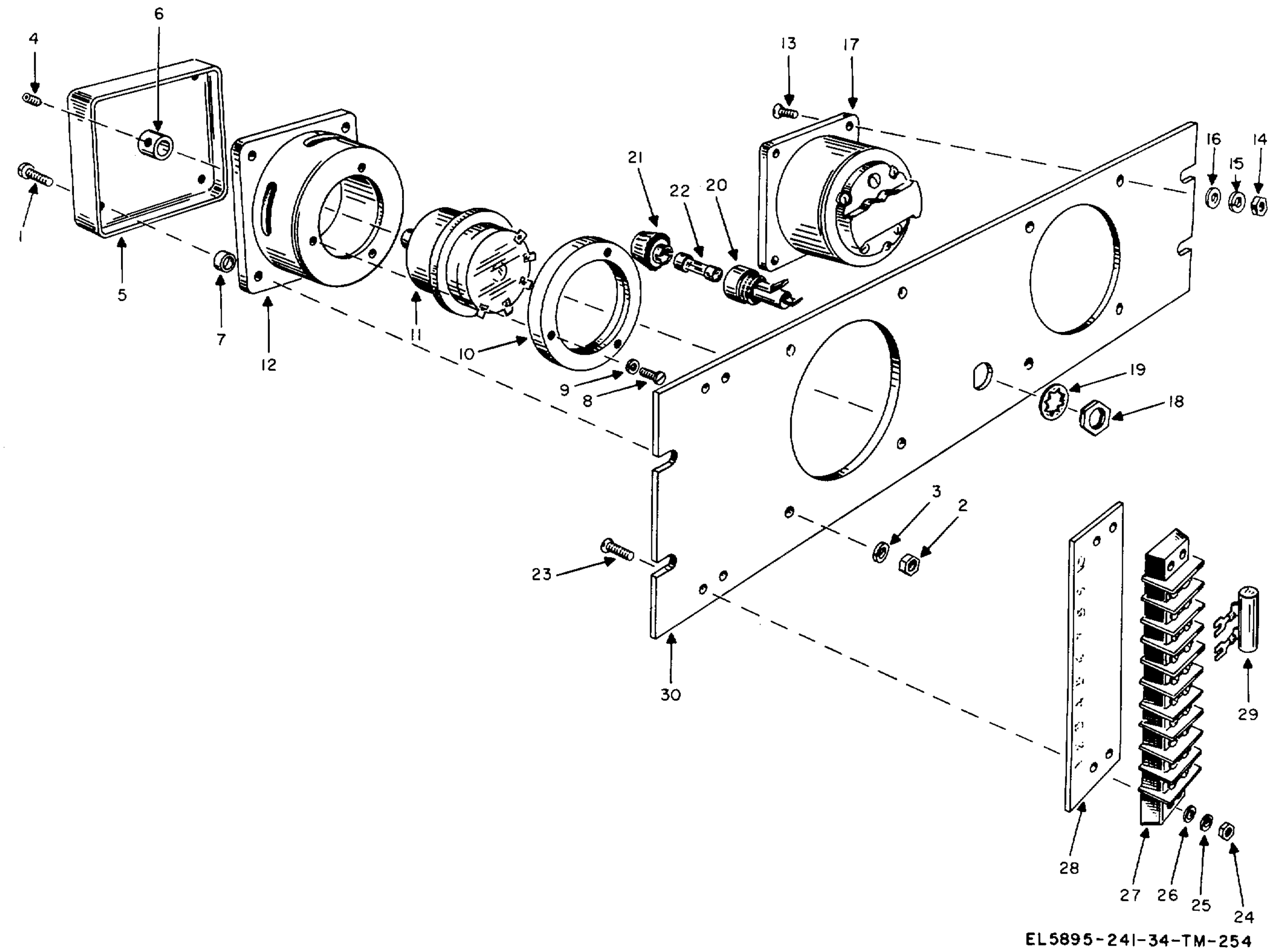


1—Panhead machine screw (No. 8–32)
2—Dust cover
3—Hexagonal plain nut (part of XF101)
4—Lockwasher (part of XF101)
5—Flat washer (part of XF101)
6—Fuseholder XF101
7—Fuseholder cap (part of XF101)
8—2 AMP fuse F101
9—Setscrew (part of DIM control knob)
10—DIM control knob
11—Hexagonal plain nut (part of R31)
12—Lockwasher (part of R31)
13—DIM control resistor R31
14—Knurled nut (part of S1)
15—Lockwasher (part of S1)
16—Hexagonal plain nut (part of S1)
17—PUSH TO TEST OR RESET switch S1
18—Lens cap (part of XDS105)
19—Knurled nut (part of XDS105)
20—Lockwasher (part of XDS105)
21—Hexagonal plain nut (part of XDS105)
22—Lampholder XDS105
23—Incandescent lamp DS105
24—Hexagonal plain nut (part of S2)
25—Lockwasher (part of S2)
26—Hexagonal plain nut (part of S2)
27—TEST KEY 7777–3333 switch S2
28—Flathead machine screw (No. 8–32)
29—End bracket threaded rod
30—Hexagonal plain nut (No. 8–32)
31—Split lockwasher (No. 8)
32—Flat washer (No. 8)
33—Right end bracket
34—Terminal board E1
35—Insulating board for E1
36—Terminal board mounting bracket
37—Left end bracket

Figure 4-113. Indicator, Digital Display ID-854A/FSW-8 (part of OA-2054A/FSW-8), exploded view.

Figure 4-113. Indicator, Digital Display ID-854A/FSW-8 (part of OA-2054A/FSW-8), exploded view-Continued

38-Indicator assembly DS1
39-Indicator assembly DS2
40-Indicator assembly DS3
41-Indicator assembly DS4
42-Capscrew (part of DS1) includes neon lamp DS712
43-Front plate
44-Rubber grommet, 1/2 in. dia.
45-Rubber dust seal



1—Panhead machine screw (No. 1/4–20)
2—Hexagonal plain nut (No. 1/4–20)
3—Lockwasher (No. 1/4)
4—Setscrew (part of synchro clamp-ring)
5—Wind direction indicator bezel assembly
6—Indicator coupling
7—Spacer
8—Panhead machine screw (No. 6–32)
9—Lockwasher (No. 6–32)
10—Synchro clamp-ring
11—Wind direction indicator synchro DS201
12—Wind direction indicator housing
13—Flathead machine screw (No. 1/4–20)
14—Hexagonal plain nut (No. 1/4–20)
15—Lockwasher (No. 1/4)
16—Flat washer (No. 1/4)
17—Windspeed indicator M201
18—Hexagonal plain nut (part of XF201)
19—Lockwasher (part of XF201)
20—Fuseholder XF201
21—Fuseholder cap (part of XF201)
22—2 AMP fuse F201
23—Flathead machine screw (No. 4–40)
24—Hexagonal plain nut (No. 4–40)
25—Lockwasher (No. 4)
26—Flat washer (No. 4)
27—Terminal board TB201
28—Terminal marker strip
29—Resistor R201

Figure 4-114. Windspeed and direction indicator panel (part of OA-2054/FSW-8), and OA-2054A/FSW-8, exploded view.

and *e* above. Legend item numbers for R402 and its associated hardware are the same as for R401.

g. Remove EMER. ALARM switch S401 (22) and the mechanical protector (20) from the power panel (34) by removing the hexagonal plain nut (18) and the lockwasher (19). (The hexagonal plain nut (21) does not have to be removed to remove EMER. ALARM switch S-401.)

h. Remove EMER. ALARM designation plate (25) from the power panel (34) by removing the two panhead machine screws (23) and lockwashers (24).

i. Remove lampholder XDS402 (27) from the power panel (34) by removing the hexagonal plain nut (26).

j. To remove MAIN POWER indicator lamp DS402 (30), lift the lens cap (29) and twist and lift out the lamp. (The knurled nut (28) does not have to be removed to remove the lamp.)

k. Remove the MAIN POWER designation plate (33) by removing the two panhead machine screws (31) and lockwashers (32).

4-159. Removal of Components From Cabinet, Electrical Equipment CY-2940/FSW-8
(fig. 4-120)

Proceed as follows to disassemble the CY-2940/FSW-8:

a. Remove the five flathead machine screws (1), hexagonal plain nuts (2), and lockwashers (3) to remove the terminal board bracket (4) from the CY-2940/FSW-8 (71).

b. Remove the four panhead machine screws (5), flat washers (6), hexagonal plain nuts (7), and lockwashers (8) to separate terminal board TB404 (9) and marker strip (10) from the terminal board bracket (4).

c. Remove the panhead machine screw (11), hexagonal plain nut (12), lockwasher (13), and flat washer (14) to detach the right cable clamp (15).

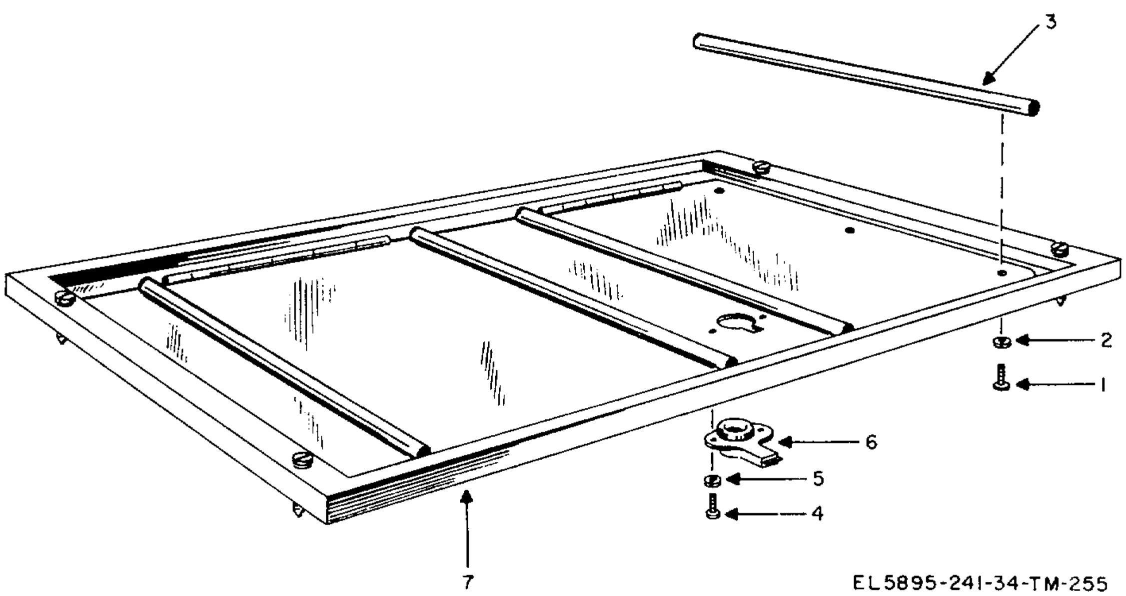
d. Remove the panhead machine screw (16), lockwashers (17), and flat washer (18) to detach the left cable clamp (19).

e. Remove the four panhead machine screws (20) and lockwashers (21) from the support bracket (22). Remove one shoulder bolt (23) from each support bracket (22) by removing the hexagonal plain nut (24) and lockwasher (25).

f. Remove the two panhead machine screws (26), hexagonal plain nuts (27), and lockwashers (28) to remove the convenience receptacle (29).

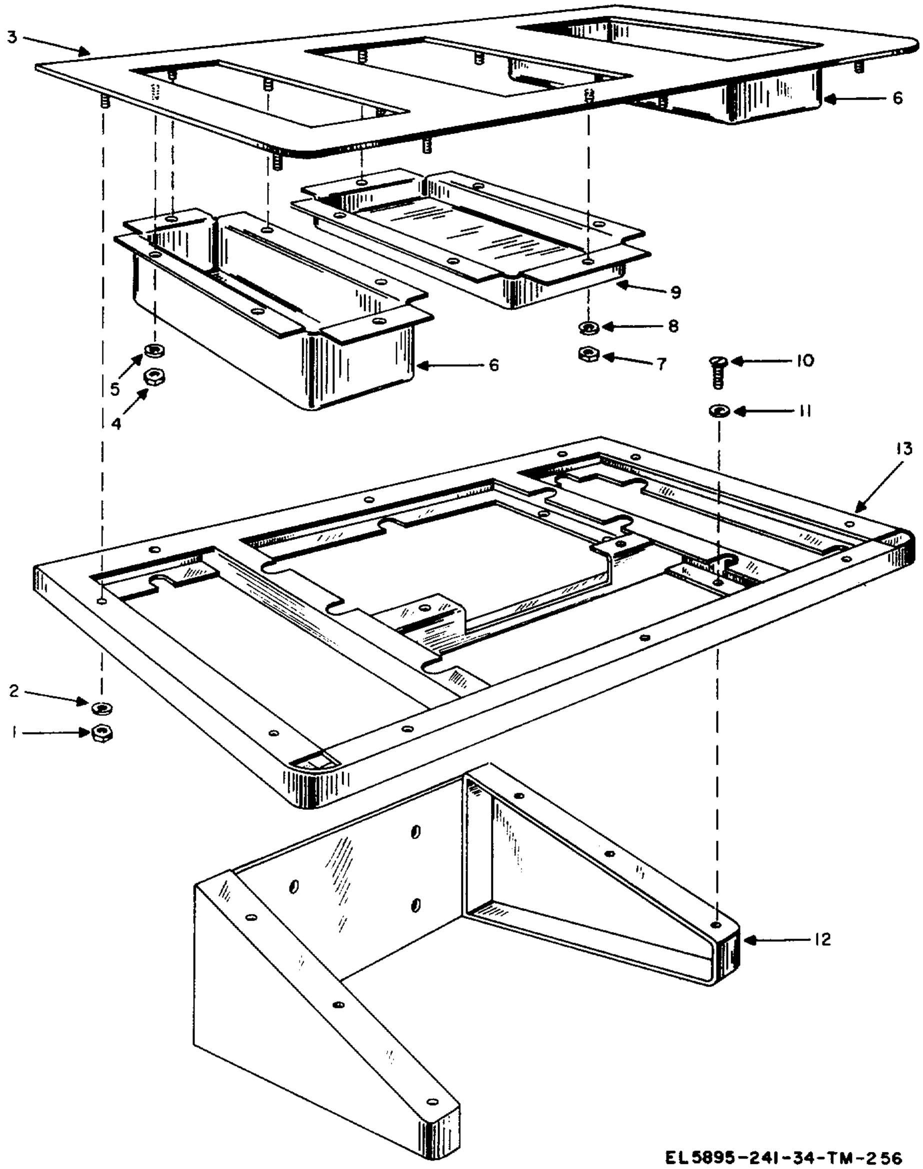
g. To remove the side-mounted terminal board pan (35), remove the five flathead machine screws (30), hexagonal plain nuts (31), and lockwashers (32), and then remove five panhead machine screws (33) and lockwashers (34).

h. Remove the four panhead machine screws (36), hexagonal plain nuts (37), lockwashers (38), and flat washers (39). Separate the mark-



1—Panhead machine screw (No. 6–32)
2—Lockwasher (No. 6)
3—Slide rod
4—Panhead machine screw (No. 8–32)
5—Lockwasher (No. 8)
6—Catch
7—Flight data board

Figure 4-115. Flight data board (part of OA-2054/FSW-8), exploded view.



1—Hexagonal plain nut (No. 8–32)
2—Lockwasher (No. 8)
3—Desk top
4—Hexagonal plain nut (No. 6–32)
5—Lockwasher (No. 6)
6—Small storage pan
7—Hexagonal plain nut (No. 6–32)
8—Lockwasher (No. 6)
9—Large storage pan
10—Panhead machine screw (No. 10–32)
11—Lockwasher (No. 10)
12—Support assembly
13—Frame assembly

Figure 4-116. Storage desk (part of OA-2054/FSW-8), exploded view.

er strip (40) and terminal board TB403 (41) from the sidemounted terminal board pan (35).

i. To remove the lower terminal board pan (47), remove the five flathead machine screws (42), hexagonal plain nuts (43), and lockwashers (44), and then remove the five panhead machine screws (45) and lockwashers (46).

j. Remove the four panhead machine screws (48), lockwashers (49), and flat washers (50) from terminal board TB401 (51). Separate terminal board TB401 (51) and marker strip (52) from the lower terminal board pan (47).

k. Remove the four panhead machine screws (53), lockwashers (54), and flat washers (55) from terminal board TB402 (56). Separate ter- minal board TB402 (56) and marker strip (57) from the lower terminal board pan (47).

l. Remove the panhead machine (grounding) screw (58) by removing the hexagonal plain nut (59), lockwashers (60), flat washer (61), lockwasher (62), a second hexagonal plain nut (63), and a second lockwasher (64) from the lower terminal board pan (47).

m. Detach the CY-2940/FSW-8 base assembly (67) by tilting the cabinet on its back and removing 12 panhead machine screws (65) and lockwashers (66).

n. To remove the identification plate (70), remove four panhead machine screws (68) and lockwashers (69).

4-160. Disassembly of Circuit Breaker and Fuse Assembly

(fig. 4-121)

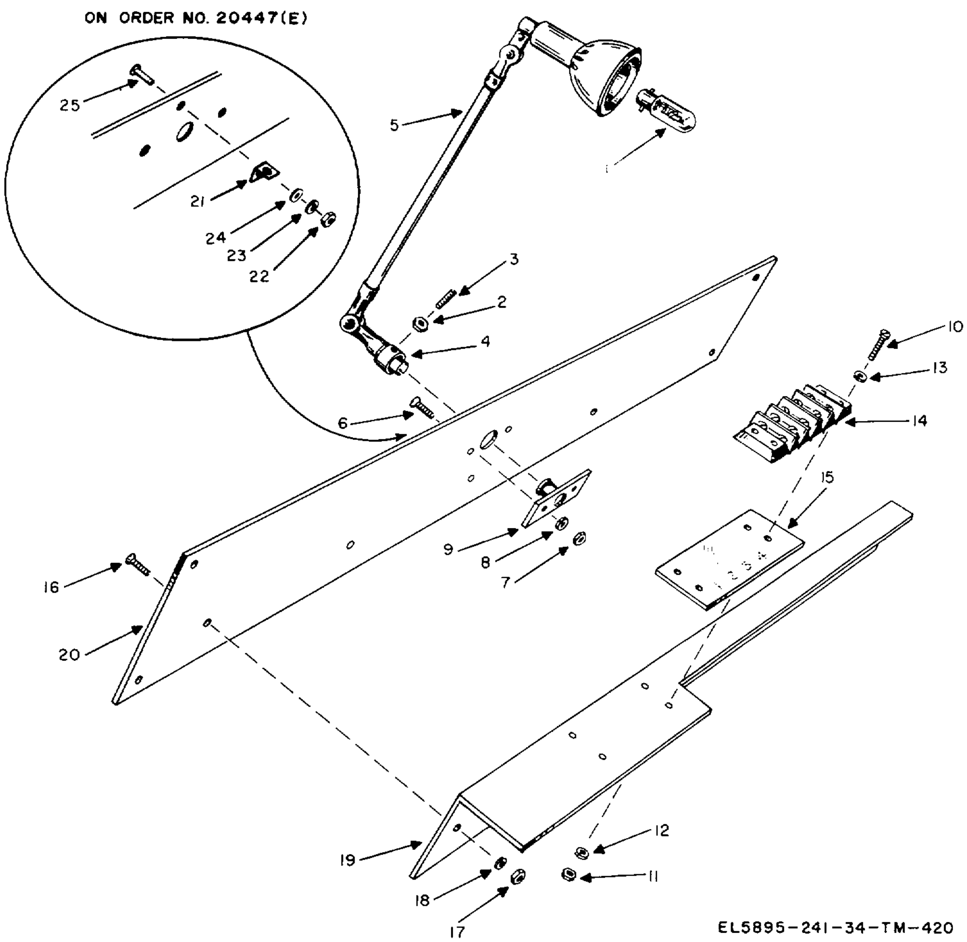
After removing the circuit breaker and fuse assembly as described in paragraph 4-119m, disassemble the unit as follows:

a. Remove the rear plate (4) from the housing (5) by removing the panhead machine screws (1) and the lockwashers (2).

b. Remove the circuit breaker (6) from the housing (5); remove the two panhead machine screws (11) and the lockwashers (3).

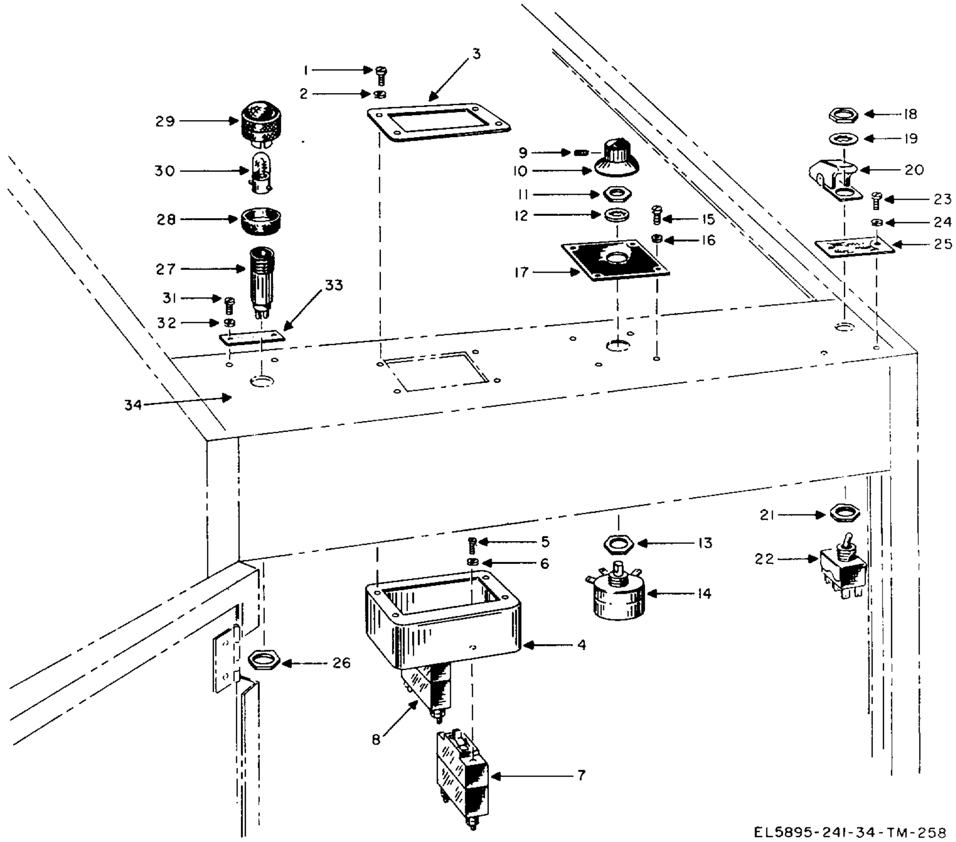
c. Remove each fuseholder (7) from the housing (5) by removing each hexagonal plain nut (8).

d. Remove the fuse (9) from each fuseholder (7) by removing the fuseholder cap (10).



1—Incandescent lamp DS401
2—Hexagonal plain nut (No. 6-32)
3—Setscrew (No. 6-32)
4—Collar
5—Lamp arm
6—Flathead machine screw (No. 10-32)
7—Hexagonal plain nut (No. 10-32)
8—Lockwasher (No. 10)
9—Lamp mounting plate
10—Panhead machine screw (No. 6-32)
11—Hexagonal plain nut (No. 6-32)
12—Lockwasher (No. 6)
13—Flat washer (No. 6)
14—Terminal board TB405
15—Marker strip
16—Flathead machine screw (No. 8-32)
17—Hexagonal plain nut (No. 8-32)
18—Lockwasher (No. 8)
19—Terminal bracket
20—Desk lamp panel
21—Angle bracket
22—Hexagonal plain nut (No. 8)
23—Lockwasher (No. 8)
24—Flat washer (No. 8)
25—Flathead machine screw (No. 8)

Figure 4-117. Desk lamp assembly (part of OA-2054/FSW-8 and OA-2054A/FSW-8), exploded view.



1—Panhead machine screw (No. 6–32)
2—Lockwasher (No. 6)
3—Ac supply bezel
4—Circuit breaker pan
5—Panhead machine screw (No. 6–32)
6—Lockwasher (No. 6)
7—CLOCK POWER circuit breaker CB401
8—MAIN POWER circuit breaker CB402
9—Setscrew (part of control knob)
10—Control knob
11—Hexagonal plain nut (part of R401)
12—Lockwasher (part of R401)
13—Hexagonal plain nut (part of R401)
14—Dimmer control resistor R401
15—Panhead machine screw (No. 2–56)
16—Lockwasher (No. 2)
17—LAMP dimmer control designation plate
18—Hexagonal plain nut (part of S401)
19—Lockwasher (part of S401)
20—Mechanical protector
21—Hexagonal plain nut (part of S401)
22—EMER. ALARM switch S401
23—Panhead machine screw (No. 2–56)
24—Lockwasher (No. 2)
25—EMER. ALARM designation plate
26—Hexagonal plain nut (part of XDS402)
27—Lampholder XDS402
28—Knurled nut (part of XDS402)
29—Lens cap (part of XDS402)
30—MAIN POWER indicator lamp DS402
31—Panhead machine screw (No. 2–56)
32—Lockwasher (No. 2)
33—MAIN POWER designation plate
34—Power panel

Figure 4-118. Power control panel (part of OA-2054/FSW-8), removal of components.

4-161. Disassembly of Cabinet, Electrical Equipment CY-2940/FSW-8 Base Assembly

(fig. 4-122)

After the base assembly has been removed from the CY-2940/FSW-8 (para 4-159), proceed as follows to disassemble the base assembly:

a. To remove the base plate (7), proceed as follows:

(1) Remove the two panhead machine screws (1) and lockwashers (2).

(2) Remove the five panhead machine screws (3) and lockwashers (4) to remove the front base channel (20).

(3) Remove the five panhead machine screws (5) and lockwashers (6) from each side of the base plate (7).

b. To remove the side base channel (13) from the front base channel (20) and rear base channel (21), proceed as follows:

(1) Remove the four panhead machine screws (8), lockwashers (9), and flat washers (10).

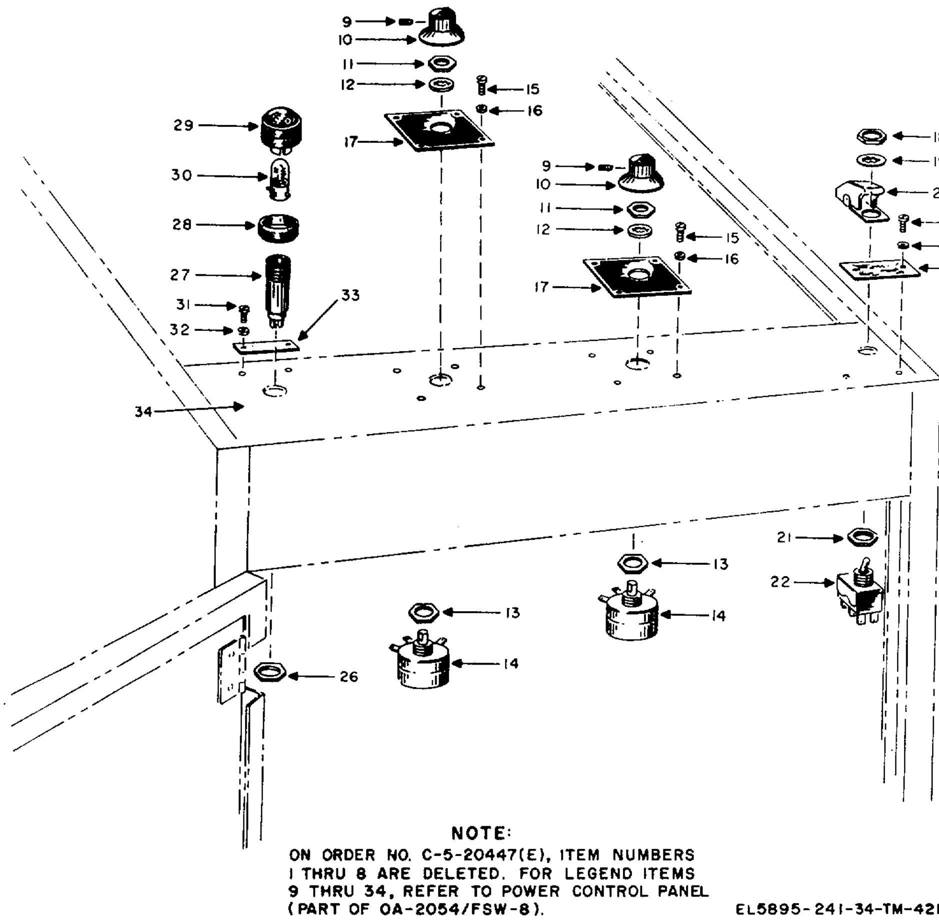
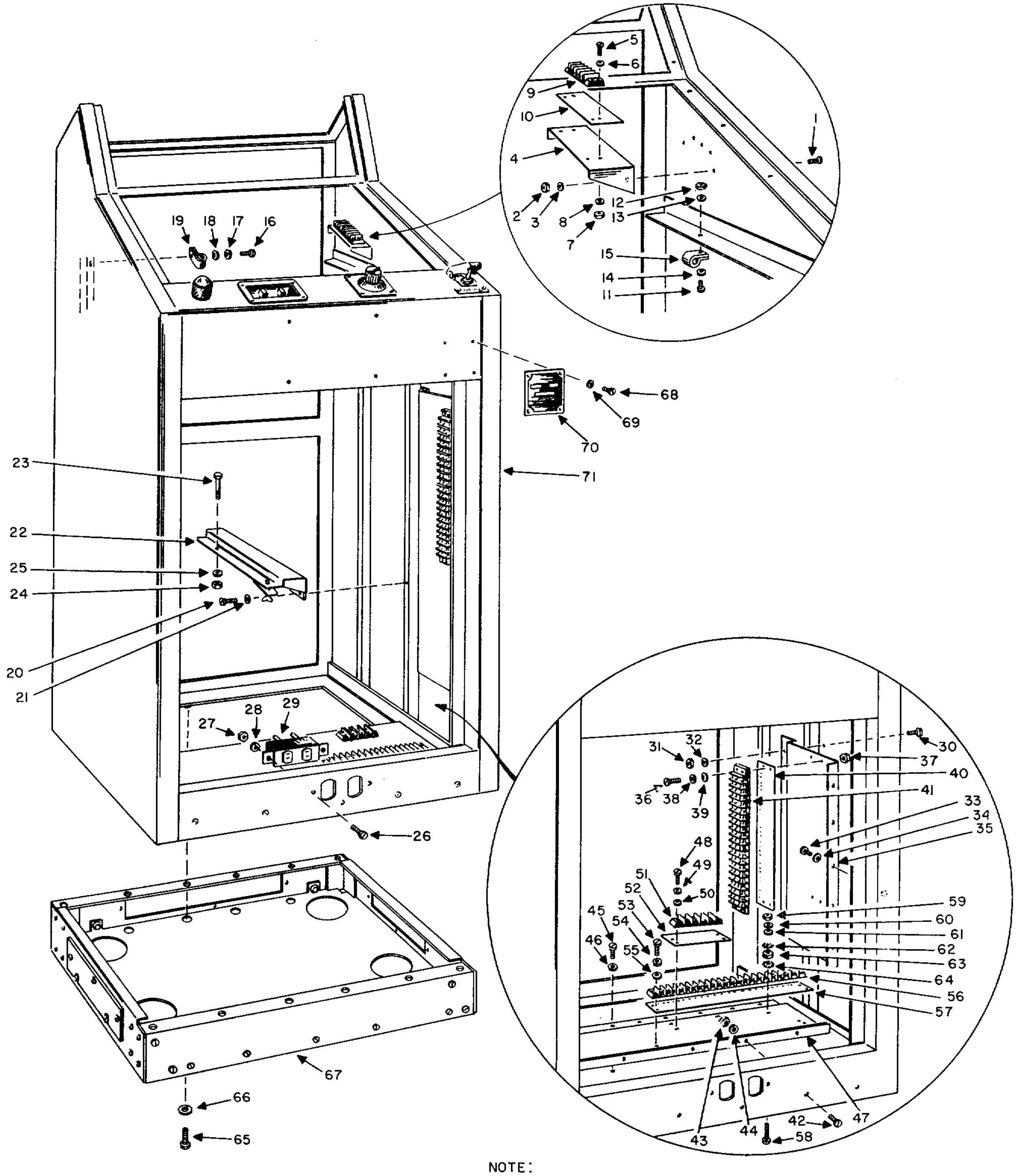


Figure 4-119. Power control panel (part of OA-2054A/FSW-8), removal of components..

Figure 4-120. Cabinet, Electrical Equipment CY-2940/FSW-8 (part of OA-2054/ FSW-8), removal of components.

1-Flathead machine screw (No. 6-82)
2-Hexagonal plain nut (No. 6-82)
3-Lockwasher (No. 6)
4-Terminal board bracket
6-Panhead machine screw (No. 6-82)
6-Flat washer (No. 6)
7-Hexagonal plain nut (No. 642)
8-Lockwasher (No. 6)
9-Terminal board TB404
10-Marker strip
11-Panhead machine screw (No. 6-32)
12-Hexagonal plain nut (No. 6-2)
13-Lockwasher (No. 6)
14-Flat washer (No. 6)
15-Right cable clamp (3/8 inch)
16-Panhead machine screw (No. -82)
17-Lockwasher (No. 6)
18-Flat washer (No. 6)
19-Left cable clamp (1/2 inch)
20-Panhead machine screw (No. 10-82)
21-Lockwasher (No. 10)
22-Support bracket
23-Shoulder bolt (1/4-20)
24-Hexagonal plain nut (1/4-20)

25-Lockwasher (1/4-inch)
26-Panhead machine screw (No. 6-82)
27-Hexagonal plain nut (No. 6-82)
28-Lockwasher (No. 6)
29-Convenience receptacle
30-Flathead machine screw (No. 6-32)
31-Hexagonal plain nut (No. 6-32)
32-Lockwasher (No. 6)
33-Panhead machine screw (No. 6-32)
34-Lockwasher (No. 6)
83-Side-mounted terminal board pan
36-Panhead machine screw (No. 4-40)
37-Hexagonal plain nut (No. 4-40)
38-Lockwasher (No. 4)
39-Flat washer (No. 4)
40-Marker strip
41-Terminal board TB403
42-Flathead machine screw (No. 6-32
43-Hexagonal plain nut (No. 6-32)
44-Lockwasher (No. 6)
45-Panhead machine screw (No. 6-32)
46-Lockwasher (No. 6)
47-Lower terminal board pan
48-Panhead machine screw (No. 4-40))
49-Lockwasher (No. 4)
50-Flat washer (No. 4)
51-Terminal board TB 1401
52-Marker strip
53-Panhead machine screw (No. 4-10)
54-Lockwasher (No. 4)
55-Flatwasher (No. 4)
56-Terminalboard TB402
57-Marker strip
58-Panhead machine rectacular (No. 10-32)
59-Hexagonal plain nut (No. 10-32)



60—Lockwasher (No. 10)
61—Flat washer (No. 10)
62—Lockwasher (No. 10)
63—Hexagonal plain nut (No. 10–32)
64—Lockwasher (No. 10)
65—Panhead machine screw (No. ¼–20)
66—Lockwasher (No. 1/4)
67—Cabinet, Electrical Equipment CY–2940/FSW–8 base assembly
68—Panhead machine screw (No. 2–56)
69—Lockwasher (No. 2)
70—Identification plate
71—Cabinet, Electrical Equipment CY–2940/FSW–8

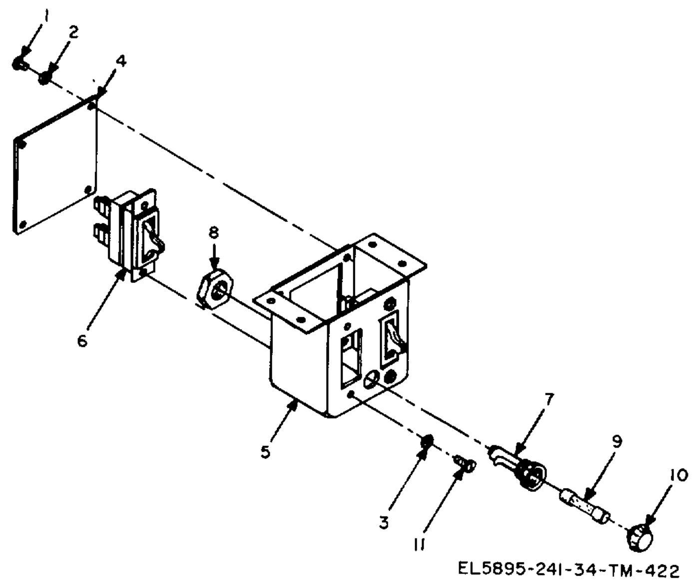
Figure 4-120. Cabinet, Electrical Equipment CY-2940/FSW-8 (part of OA-2054/FSW-8), removal of components--Continued

(2) Remove the two panhead machine screws (11) and lockwashers (12).

c. To remove the side cable access plate (16) from the side base channel (13), remove the four panhead machine screws (14) and lockwashers (15).

d. To remove the angle bracket (19) from the front base channel (20), remove the two panhead machine screws (17) and lockwashers (18).

e. To remove the rear cable access plate (24) from the rear base channel (21), remove the four panhead machine screws (22) and lockwashers (23).



1—Panhead machine screw (No. 6–32)
2—Lockwasher (No. 6)
3—Lockwasher No. 6
4—Rear plate
5—Housing
6—Circuit Breaker (CB402)
7—Fuseholder
8—Hexagonal plain nut (No. 6)
9—Fuse F401
10—Fuseholder cap
11—Panhead machine screw (No. 6–32)

Figure 4-121. Fuse and circuit breaker (part of OA-2054A/FSW-8) assembly, exploded view.

Section X. DISASSEMBLY OF FIELD STATUS INDICATOR SYSTEM

4-162. Disassembly of Indicator, Field Status ID-877/FSW-8 (fig. 4-123)

Proceed as follows to disassemble the ID-877/FSW-8. For location of electrical parts, refer to figure 4-74.

a. To separate the cover (7) from the chassis (35), release the six Camloc fasteners (1) from the Camloc receptacles (2).

b. To remove the VFR indicator plate (3), IFR indicator plate (4), CLOSED indicator plate (5), and frosted glass (6), slide them out of position either to the right or left.

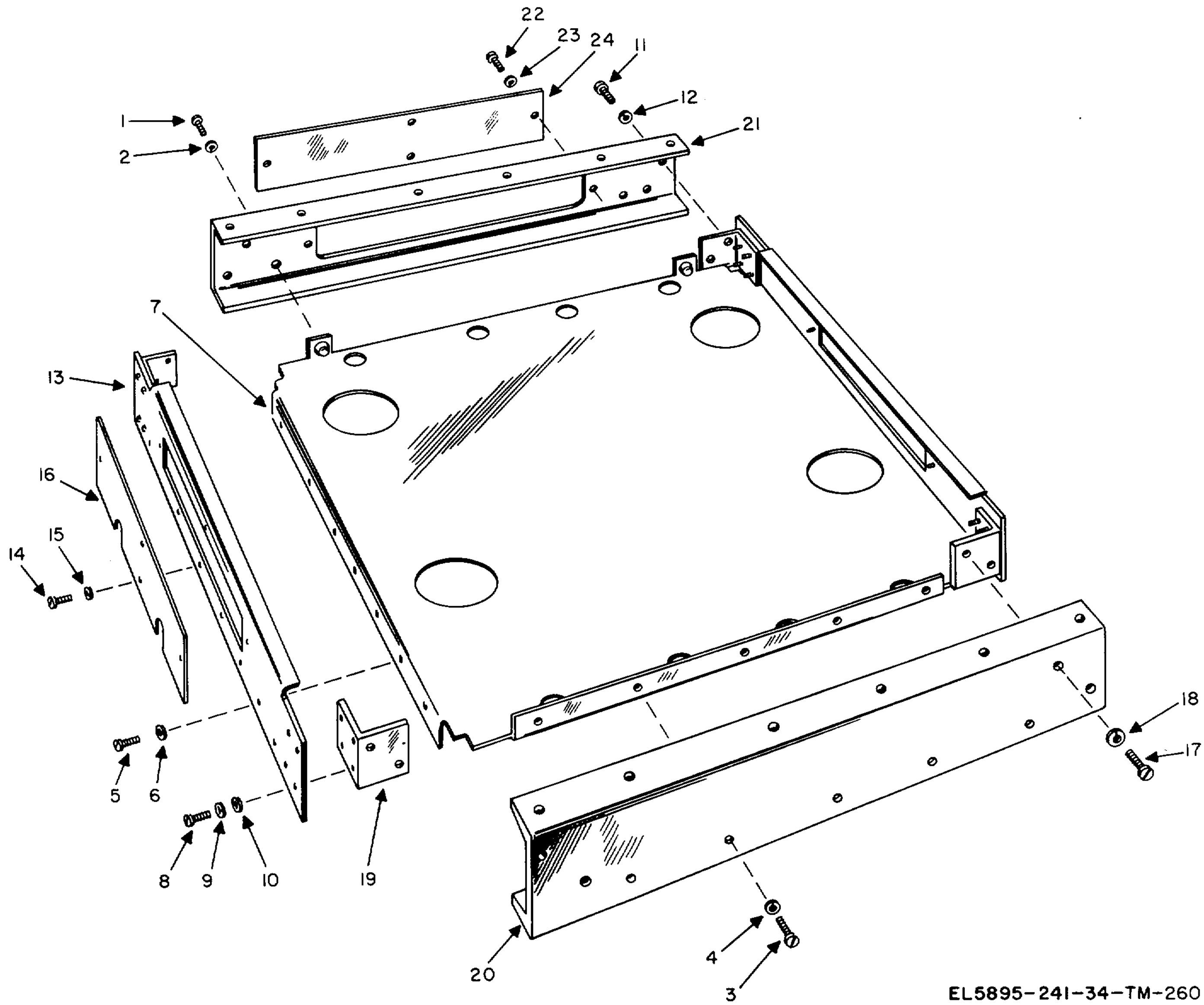
c. To remove incandescent lamp DS2101 (8), unscrew the lamp from lampholder XDS2103 (13) and remove it from the retaining clip (29).

d. To remove the mounting bracket (26), remove the 12 flathead machine screws (9).

e. To remove lampholder XDS2101 (13), remove the two panhead machine screws (10), lockwashers (11), and flat washers (12).

f. To remove terminal board TB2101 (18) and marker strip (19) from the terminal board mounting bracket (22), remove the four panhead machine screws (14), flat washers (15), hexagonal plain nuts (16), and lockwashers (17).

g. To remove the terminal board mounting bracket (22), remove the two panhead machine screws (20) and lockwashers (21).

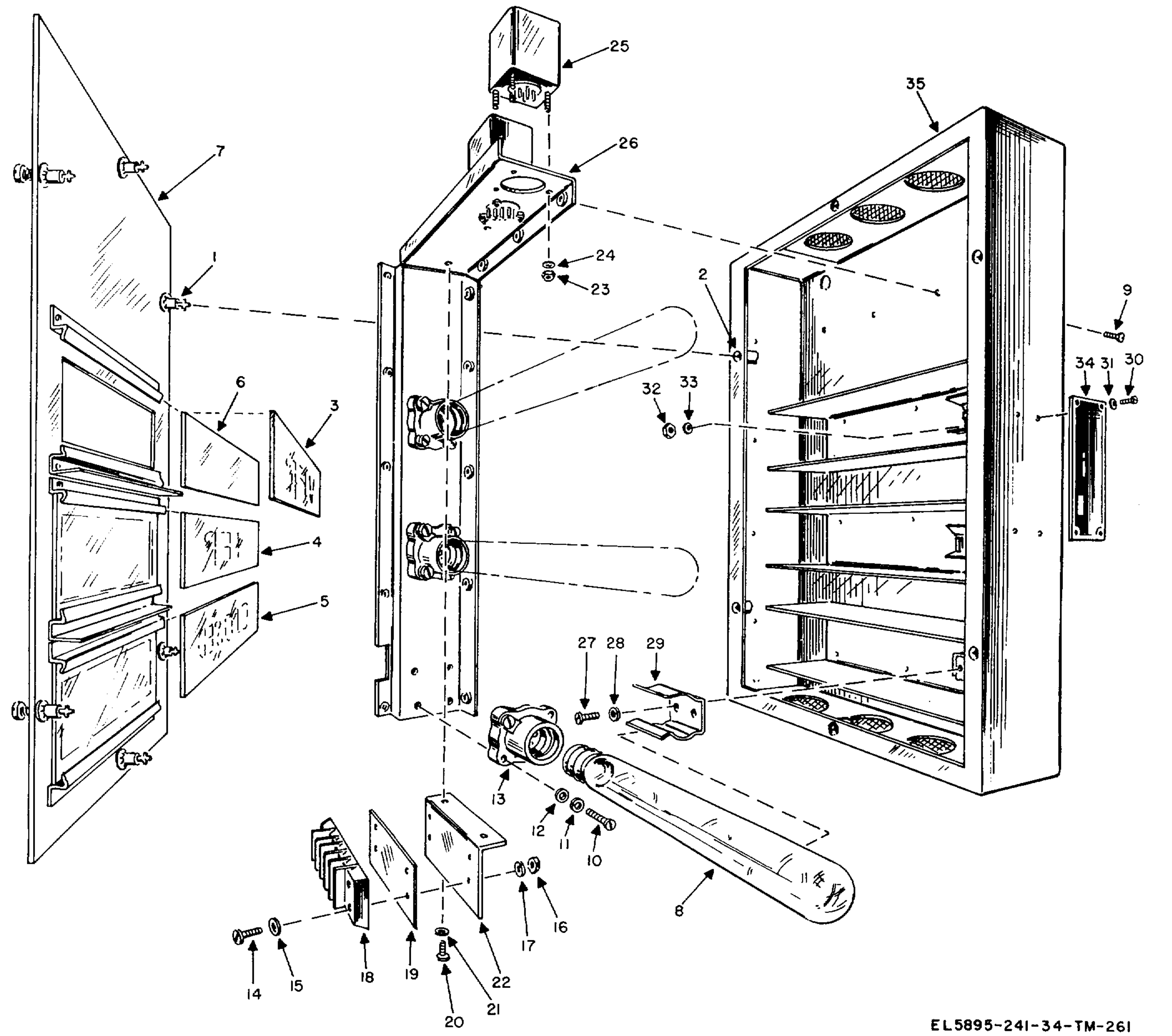


1—Panhead machine screw (No. 6–32)
2—Lockwasher (No. 4)
3—Panhead machine screw (No. 6–32)
4—Lockwasher (No. 6)
5—Panhead, machine screw (No. 6–32)
6—Lockwasher (No. 6)
7—Base plate
8—Panhead machine screw (1/4–20)
9—Lockwasher (1/4 inch)
10—Flat washer (1/4 inch
11—Panhead machine screw (1/4–20)
12—Lockwasher (1/4 inch)
13—Side base channel
14—Panhead machine screw (No. 6–32)
15—Lockwasher (No. 6)
16—Side cable access plate
17—Panhead machine screw (No. 1/4–20)
18—Lockwasher (No. 1/4)
19—Angle bracket
20—Front base channel
21—Rear base channel
22—Panhead machine screw (No. 6–32)
23—Lockwasher (No. 6)
24—Rear cable access plate

Figure 4-122. Cabinet, Electrical Equipment CY-2940/FSW-8 base assembly, exploded view.

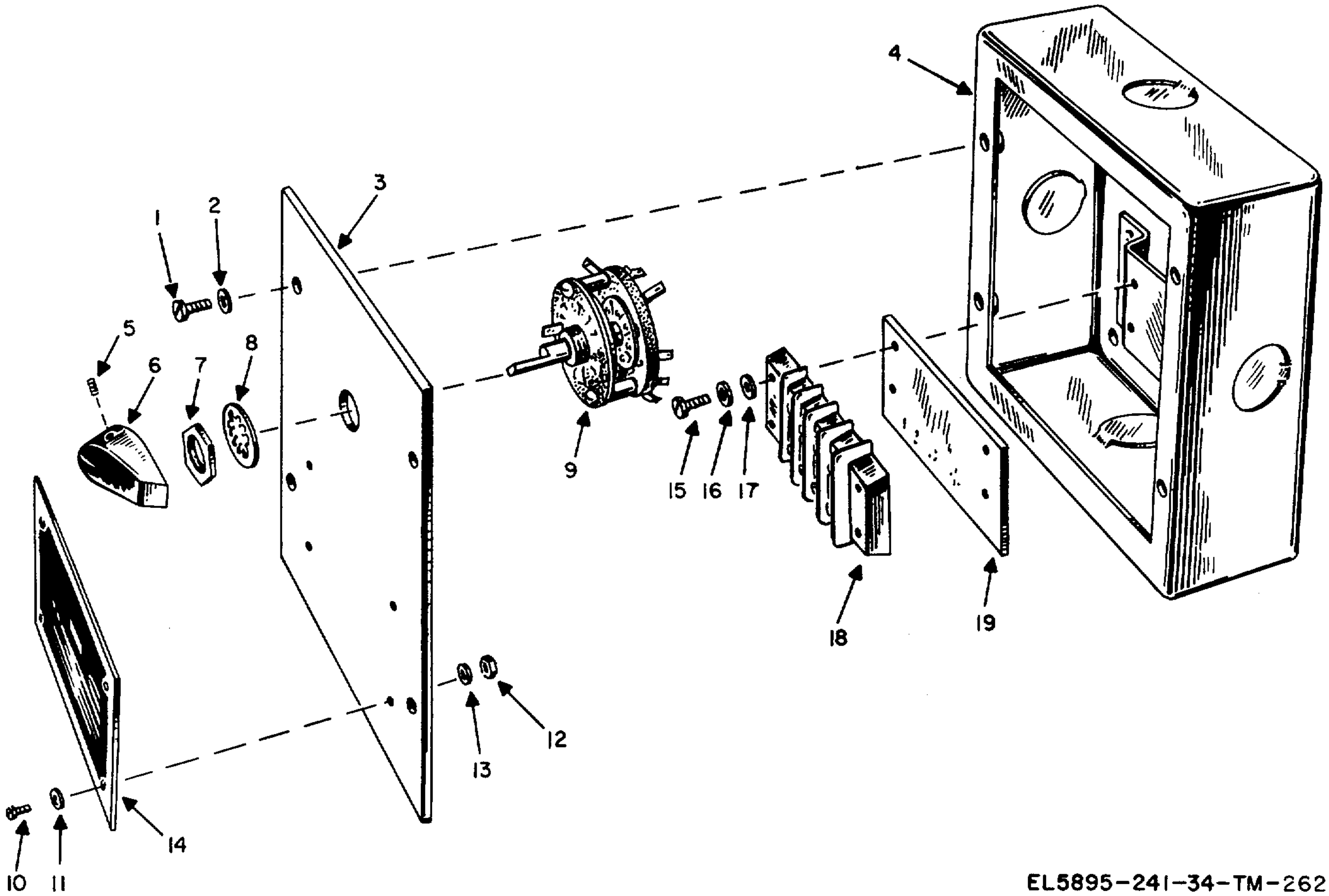
h. To remove field status indicator relay No. 1, K2101 (25), remove the three hexagonal plain nuts (23) and lockwashers (24).

i. To remove the retaining clip (29), remove the two panhead machine screws (27) and lockwashers (28).



1—Camloc fastener
2—Camloc receptacle
3—VFR indicator plate
4—IFR indicator plate
5—CLOSED indicator plate
6—Frosted glass
7—Cover
8—Incandescent lamp DS2101
9—Flathead machine screw (No. 4-40)
10—Panhead machine screw (No. 8-32)
11—Lockwasher (No. 8)
12—Flat washer (No. 8)
13—Lampholder XDS2101
14—Panhead machine screw (No. 6-32)
15—Flat washer (No. 6)
16—Hexagonal plain nut (No. 6-32)
17—Lockwasher (No. 6)
18—Terminal board TB2101
19—Marker strip
20—Panhead machine screw (No. 6-32)
21—Lockwasher (No. 6)
22—Terminal board mounting bracket
23—Hexagonal plain nut (No. 6-32)
24—Lockwasher (No. 6)
25—Field status indicator relay No. 1, K2101
26—Mounting bracket
27—Panhead machine screw (No. 4-40)
28—Lockwasher (No. 4)
29—Retaining clip
30—Panhead machine screw (No. 2-56)
31—Flat washer (No. 2)
32—Hexagonal plain nut (No. 2-56)
33—Lockwasher (No. 2)
34—Identification plate
35—Chassis

Figure 4-123. Indicator, Field Status ID-877/FSW-8, exploded view.



1—Panhead machine screw (No. 6-32)
2—Lockwasher (No. 6)
3—Cover
4—Chassis
5—Setscrew (part of knob)
6—Knob
7—Hexagonal plain nut (part of S2201)
8—Lockwasher (part of S2201)
9—VFR-IFR-CLOSED-OFF switch S2201
10—Panhead machine screw (No. 2-56)
11—Flat washer (No. 2)
12—Hexagonal plain nut (No. 2-56)
13—Lockwasher (No. 2)
14—Identification plate
15—Panhead machine screw (No. 6-32)
16—Lockwasher (No. 6)
17—Flat washer (No. 6)
18—Terminal board TB2201
19—Marker strip

Figure 4-124. Switch Box SA-751/FSW-8, exploded view.

j. To remove the identification plate (34), remove the four panhead machine screws (30), flat washers (31), hexagonal plain nuts (32), and lockwashers (33).

4-163. Disassembly of Switch Box SA-751 /FSW-8

(fig. 4-124)

Proceed as follows to disassemble the SA-751/FSW-8. For location of electrical parts, refer to figure 4-75.

a. To separate the cover (3) from the chassis (4), remove the four panhead machine screws (1) and lockwasher (2).

b. Proceed as follows to remove VFR-IFR-CLOSED-OFF switch S2201 (9):

(1) Loosen the two setscrews (5) and remove the knob (6).

(2) Remove VFR-IFR-CLOSED-OFF switch S2201 (9) by removing the hexagonal plain nut (7) and lockwasher(8).

c. To remove the identification plate (14), remove the four panhead machine screws (10), flat washers (11), hexagonal plain nuts (12), and lockwashers (13).

d. To remove terminal board TB2201 (18) and marker strip (19), remove the four panhead machine screws (15), lockwashers (16), and flat washers (17).

Section XI. REPAIRS

4-164. General

This section contains instructions for inspecting, cleaning, and testing the lever switches, and relays of the AN/FSW-8(V). Procedures for making electrical adjustments required after servicing or disassembly of the equipment are given in paragraphs 4-171 through 4-179.

4-165. Test Equipment, Tools, and Materials Required

The following test equipment, tools, and materials are required for cleaning the lever switches and testing the various relays in the AN/FSW- 9(v).

a. Test Equipment.

(1) Electronic Multimeter TS-505/U.
(2) Test Set I-181.
(3) Power Supply PP-2803/FSW-8.

b. Tools. Only the tools contained in Tool Kit, Supplementary, Radar and Radio Repair TK-88/U are required.

c. Materials.

WARNING

Trichloroethane is nonflammable but its fumes are highly toxic. DO NOT use near a flame; provide adequate ventilation.

(1) Trichloroethane.

(2) Cleaning cloth.

(3) Crocus cloth (extra fine grit).

(4) Heavy bond paper.

(5) Soft-bristle brush.

(6) Cheesecloth (FSN 8305-2673015).

4-166. Lever Switches

The TRANSMIT, RECEIVE, and TELEPHONE lever switches of the OA-2055/FSW-8 and OA-3014/FSW-8 do not require any adjustment. However, continual use over a long period of time causes contact wear, loss of spring tension, another conditions which can result in faulty circuit operation. Inspection of a lever switch may determine that it can be repaired by proper cleaning method para 4-167). The lever switches used in the AN/FSW-8(V) have several types of contact arrangements which may vary from the typical switch shown in figure 4-125. Refer to the schematic diagram of the particular switch and determine the contact arrangements (a below) and the type of spring and cam action (b below).

a. Lever switches are classified according to the contact arrangements they contain. These arrangements depend upon the number and type of contacts; whether contacts are normally open, closed, or switched; and the order in which the contacts open or close.

b. The lever switches in the schematic diagrams are shown in the OFF or normal position; that is, the position in which the spring places the contacts when the lever switch fs in the inoperative position. The contact springs are constructed so that the movement of the cam is continued for a short distance after the contacts meet when the switch is operated. This provides a wiping action that tends to make the contacts self-cleaning.

4-167. Cleaning of Lever Switches

a. General.

(1) Failure of a switch circuit may be caused by dirt, corrosion, or lint on the contacts or other parts of a lever switch.

(2) Clean the contacts of the lever switches by inserting a clean piece of bond paper between the contacts of the switch. Press the contacts together to apply a slight pressure between the paper and the contact to be cleaned. Withdraw the paper. Use a clean spot on the paper and repeat this operation several times until dirt is not longer deposited on the paper.

(3) Oxides form on the lever switch contacts as a byproduct of electrical contact or the corrosive action of air. The contacts should not be burnished unless definite pitting can be observed (b(1) below). Dark colored (not black) contacts seldom are in need of burnishing. The oxide can be broken down with approximately 1 volt and, with normal contact-to-contact wiping action, the resistance of the oxide is practically zero.

(4) Use an airhose or soft-bristle brush to remove any foreign materials from the remainder of the lever switch.

b. Contact Wear.

(1) Pitted or built-up contacts on a lever

switch do not indicate that the lever switch is defective.

NOTE

Do not replace a lever switch because of contact erosion unless the switch fails.

(2) Lever switches do not normally require replacement because of pitted or built-up contacts. Replace lever switches only when the contact is worn through to the base metal to which the contact is welded. In the case of twin contacts, one contact of each mating pair may be worn nearly to the base metal before the lever switch requires replacement. When necessary, recondition contacts, which are not excessively worn, by removing metallic buildups and cleaning pitted surfaces.

(3) Buildups and pits on lever switch contacts result from the action of electric current as the relay makes and breaks contact. Sharp pointed or excessive buildups may result in the mechanical locking of the contacts in a fixed position. Remove buildups with a burnisher and, if they cannot be removed, replace the lever switch.

c. Cleaning Non-pitted Contacts.

(1) Contacts that fail in service may normally be cleaned with a contact burnisher (only when definite pitting is observed) to remove any foreign material. Clean the blade of the burnisher before and after use by wiping it with a clean, dry cloth. When burnishing normally open contacts of a lever switch, place the blade of the burnisher flat between the contacts and press them together with an orangestick, or operate the lever switch by hand. At the same time, move the blade back and forth. Rubbing the burnisher blade between the contacts two or three times is usually sufficient. When burnishing normally closed contacts, the tension of the springs themselves usually furnishes sufficient pressure against the burnisher blade. On springs with heavy tension, lift one of the springs to decrease tension, or operate the lever switch by hand while inserting the burnisher blade.

(2) When unable to clear contact troubles by burnishing only, clean and flush the contacts with cleaning compound. Dip the flat end of a clean toothpick into the cleaning compound. Deposit the liquid on the contacts (held slightly separated) without rubbing. Dip the flat end of another toothpick into the cleaning compound and again deposit the liquid on the contacts without rubbing. This flushes away the dirt loosened by the first application. Keep the cleaning compound away from the lever switch insulators. Allow the liquid on the contacts to evaporate. When the contacts are thoroughly dry, burnish them as outlined in (1) above to insure that no deposit or residue from the solution, or any foreign matter, remains on the contacts. After burnishing, check to see that contact closure and contact separation are still met. Repeated burnishing tends to increase the contact separation and to reduce the contact closure. If necessary, replace the lever switch.

d. Cleaning Pitted Contacts.

(1) Burnish the contacts to be cleaned with the flat blade of the contact burnisher. Do not attempt to remove a pit from the contact, but burnish only enough to clean a flat, contact surface around the pit.

(2) Burnish the pit with a wire burnisher. Place the ball point of the burnisher in the pit. If the pit is small, rotate the barrel of the tool between the thumb and forefinger and, at the same time, apply a slight pressure on the tool against the contact. Repeat the operation with the burnisher held at various angles until the entire surface of the pit has been cleaned. After cleaning the pit, burnish again by using the flat blade of the burnisher. When burnishing is completed, check the contact closure and contact separation requirements.

4-168. Relay Terminal Arrangements

The relays used in Communication Control Set AN/FSW-8(V) are hermetically sealed and cannot be repaired or adjusted. Test arrangements (para 4-169) and procedures may be used to determine proper operation of a relay. Terminal arrangements and designations of relays used in the OA-2055/FSW-8 and OA-3014/FSW-8 are shown in figure 4-126. The method of numbering terminals for the various types of relays is described in a and b below.

a. On hermetically sealed relays, one series of numbers is used to designate both the contact and coil winding numbering. Viewed from the bottom (fig. 4-126), the contact and coil winding numbering begins from the red dot, located between the winding terminals, and continues clockwise. The terminal nearest to the right of the red dot is designated as terminal 1 of the relay. The numbering sequence continues clockwise to the last terminal, which will be located to the left of the red dot.

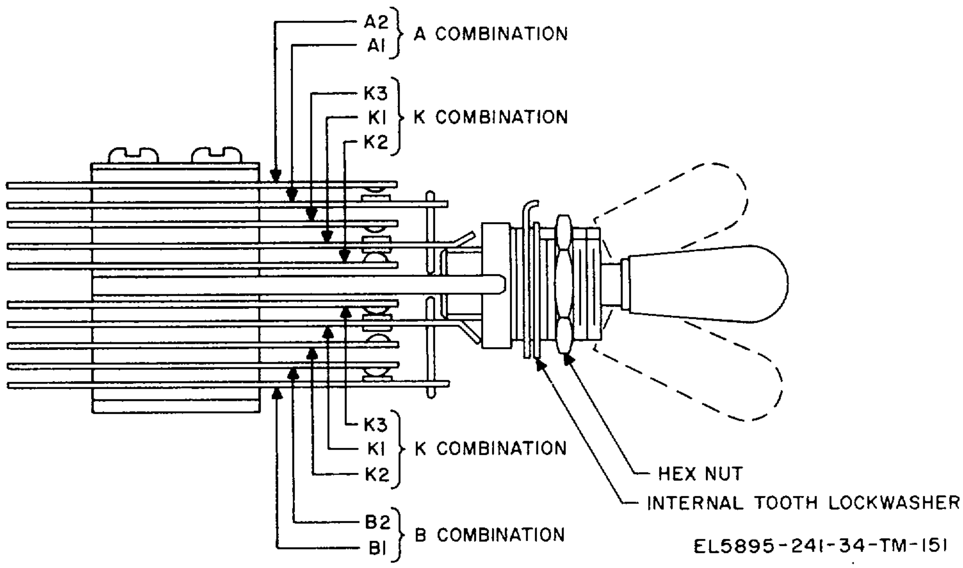


Figure 4-125. Lever switch contact arrangements.

b. Where more than one circle of terminals exists on the bottom of the relay (K502, and K711 through K720 (fig. 4-126), the numbering starts in the outer ring and continues clockwise from the space of the second ring.

4-169. Relay Test Requirements

a. General. Charts which give the test requirements for the relays used in the AN/FSW-8(V) are given in c through k below. Each chart contains information pertinent to relay testing procedures (b below) when using a current-flow test set (such as the I-181). Listed in (1) through

(7) below are the column headings of the charts and their use.

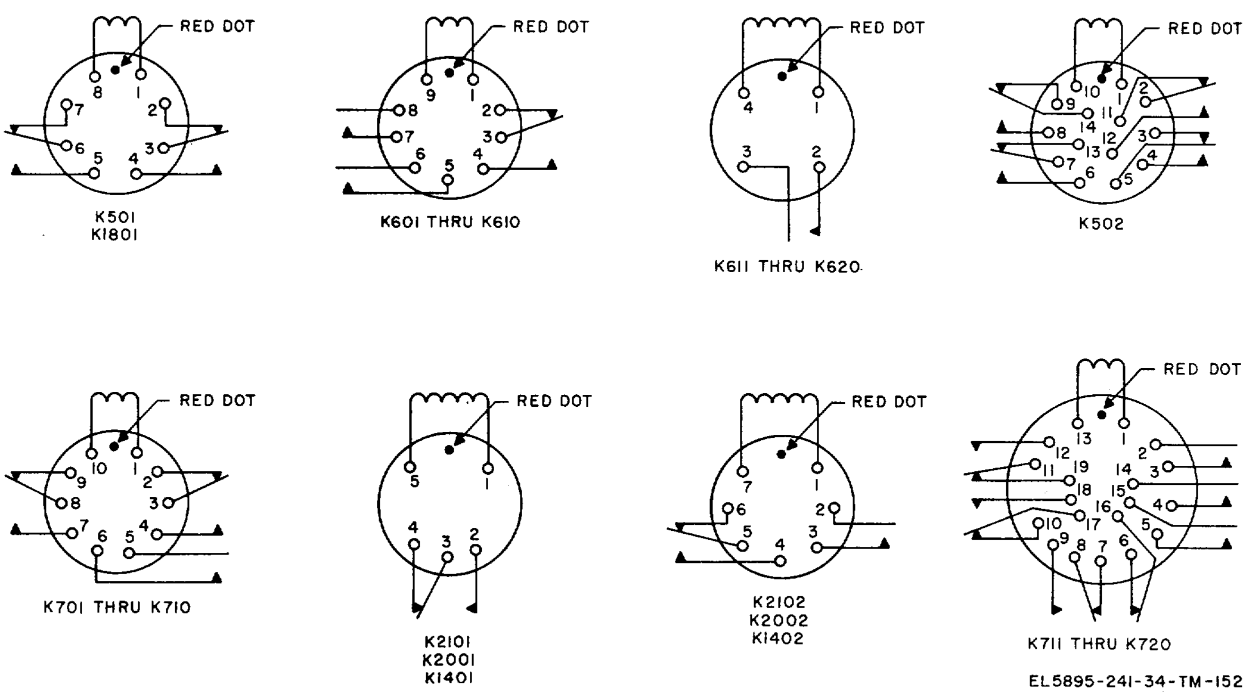


Figure 4-126. Relay terminal designations.

(1) Relay. This column designates the particular relay in the circuit.

(2) Test set preparation. This column indicates how the current-flow test set is to be arranged for the test. Note that the test set is arranged for battery-ground (B/G) for all relays of the AN/FSW-8(V).

(3) Test point. This column indicates to which terminals of the relay the test set lead is applied.

(4) Test winding. This column designates the winding through which current flows during test.

(5) Test for. Two designations are given in this column: O (operate) and NO (nonoperate). Each designation is accompanied by current values in the Test ma (milliampere) column ((6) below). When the indicated values of current for 0 is flowing through the relay during test, the relay must operate; when the indicated value of current for NO is flowing through the relay, the relay must not operate.

(6) Test ma. This column gives the current values applied to the relay at which the relay should operate or not operate. If the relay meets the current requirements given in this column, the relay is good. If the relay fails to meet these requirements, it should be replaced.

b. Test Procedure. Arrange the test set as specified in the Test set preparation column of the appropriate test requirements chart. Connect the test leads between the test set and the relay to be tested, as specified in the Test point column. Adjust the test set to provide the operate and nonoperate current values specified in the chart. Apply operate current to the relay; the relay should operate. Apply nonoperate current to the relay; the relay should not operate. If the relay fails to operate when operate current is applied, or operates when nonoperate current is applied, replace the relay.

c. Push-to-Talk Relay K501, Power Supply PP-2803/FSW-8 (fig. 4-34).

Relay	Test set preparation	Test point (fig. 4-126)	Test for	Test ma
K501	B/G	1-8	0	8.2
			NO	1.8

d. Intercom Relay K502, Power Supply PP-2803/FSW-8 (fig. 4-34).

Relay	Test set preparation	Test point (fig. 4-126)	Test for	Test ma
K502	B/G	1-10	0	8.5
			NO	3.3

e. Telephone Relay; Control, Telephone Signal C-3435/FSW-8 (fig. 4-31 and 4-32).

Relay	Test set preparation	Test point (fig.4-126)	Test for	Test ma
K601 thru K610	B/G	1-9	0	3.5
			NO	2.6
K611 thru K620	B/G	1/4	0	7.8
			NO	1.0

f. Lockout Relays; Control, Transmitter C-3446/FSW-8 (fig. 4-24 and 4-25).

Relay	Test set preparation	Test point (fig.4-126)	Test for	Test ma
K701 thru K710	B/G	1-10	0	8.5
			NO	2.4

g. Transmit Relays; Control, Transmitter C-3446/FSW-8 (fig. 4-24 and 4-25).

Relay	Test set preparation	Test point (fig.4-126)	Test for	Test ma
K711 thru K720	B/G	1-13	0	5.9
NO	3.9			

h. Field Status Indicator Relays, OA-2055/FSW-8 (fig. 4-28).

Relay	Test set preparation	Test point (fig.4-126)	Test for	Test ma
K1401	B/G	1-5	0	7.9
			NO	1.5
K1402	B/G	1-7	0	7.5
			NO	1.8

i. Push-to-Talk Relay, Control-Monitor C-3434/FSW-8 (fig. 4-49).

Relay	Test set preparation	Test point (fig.4-126)	Test for	Test ma
K1801	B/G	1-7	0	8.2
			NO	1.8

j. Field Status Indicator Relays, OA-3014/FS 8 (fig. 4-51).

Relay	Test set preparation	Test point (fig.4-126)	Test for	Test ma
K2001	B/G	1-5	0	7.9
			NO	1.5
K2002	B/G	1-7	0	7.5
			NO	1.8

k. Field Status Indicator Relays, ID-877/FSW-8 (fig. 4-74).

Relay	Test set preparation	Test point (fig.4-126)	Test for	Test ma
K2101	B/G	1-5	0	7.9
			NO	1.5
K2102	B/G	1-7	0	7.5
			NO	1.8

Section XII. ADJUSTMENTS

4-170. General

This section contains procedures for making electrical adjustments to the components of the AN/ FSW-8(V) after the equipment has been disassembled for repair or replacement of parts and the equipment has been repaired. Refer to the appropriate troubleshooting section if trouble is encountered when performing an adjustment procedure.

4-171. Console, Communication Control OA-2055/FSW-8

a. General. When Amplifier Assembly AM2827/FSM-8 has been repaired, the amplifier circuits will require readjustment. For access to components when the adjustments are made, remove the top drawer from the OA-2055/FSW-8 as described in paragraph 4-120d. Instructions for removing the AM-2827/FSW-8 from the top drawer are given in paragraph 4-122b. For access to test points and components on interior mounting terminal boards TB802 and TB803, release the two upper mounting screws on terminal board TB801 and swing the board away from the chassis. For each amplifier adjustment, perform only the adjustments required by that particular amplifier. Perform each adjustment in sequence. Do not vary the sequence.

b. Preadjustment Procedures. Before making the adjustments required, perform the preadjustment procedures outlined in (1) through (6) below.

(1) Connect the test equipment and materials to the AM-2827/FSW-8 as shown in figure 4-16; except for the ME-30/U, which is used at various test points described in subsequent paragraphs.

(2) Adjust the TS-402/U to insert 40-db attenuation.

(3) Adjust the TS-382/U for 1,000-cps out-put.

(4) Operate test switches S2, S3, and S4 to the off position.

(5) Operate test resistors R1 and R4 to their midrange position.

(6) Turn on the power to all the test equipment, except the TS-382/U.

4-172. Headset Amplifier Adjustment

Adjust the headset amplifier as follows:

a. Operate the HEADSET GAIN control (resistor R902 (fig. 4-18))) to approximately threequarters its maximum clockwise position.

b. Operate the OUTPUT LEVEL control (resistor R888 (fig. 4-19)) to its midrange position.

c. Apply power to the TS-382/U.

d. Adjust the ME-30/U range selector switch to .03.

e. Connect the ME-30/U across test point TP-810 on terminal board TB804 and ground (fig. 4-22).

f. Adjust the output level of the TS-382/U to obtain an indication .02 volt as indicated on the ME-30/U.

g. Disconnect the ME-30/U from test point TP810.

h. Adjust the ME-30/U range selector switch to 3.

i. Connect the ME-30/U as shown in figure 4-16, and operate test switch S1 to position No. 1.

j. Arrange the TS-505/U as a voltmeter.

k. Adjust the TS-505/U range switch to 25, and the function switch to -DC.

l. Connect the TS-505/U dc probe to the wiper arm (center terminal) of the COMP. ADJ control (resistor R894 (fig. 4-18)). Connect the COMMON probe of the TS-505/U to the AM2827/FSW-8 ground.

m. Adjust COMP. ADJ resistor R894 to obtain an indication of -14 volts as indicated on the TS-505/U.

n. Note the db level observed on the ME-30/U.

o. Adjust the TS-402/U to reduce the attenuation to 10 db.

p. Note the db level observed on the ME-30/U.
The db level observed on the ME-30/U should not increase more than 4 db from the level noted in n above.

q. If the db level observed on the ME-30/U (p above) varies more than 4 db from the level observed in n above, a slight readjustment of the HEADSET gain control (resistor R902) is required.

r. Repeat the procedure given in a and m through p above until there is less than a 4-db variation in the output level (as indicated on the ME-30/U) when the input level is increased by 30 db.

4-173. Loudspeaker Amplifier No. 1 Adjustment

Adjust loudspeaker amplifier No. 1 as follows:

a. Operate test switch S3 to the on position.

b. Arrange the TS-505/U as a voltmeter.

c. Adjust the TS-505/U range switch to 2.5, and the function switch to - DC.

d. Connect the TS-505/U dc probe to test point TP803 on terminal board TB801 (fig. 4-20). Connect the COMMON probe of the TS-505/U to the MA-2827/FSW-8 ground.

e. Adjust the BIAS ADJ control (resistor R824 (fig. 4-19)) to obtain an indication of -2.3 volts as indicated on the TS-505/U.

f. Disconnect the TS-505/U from test point TP803.

g. Operate the SPKR. NO. 1 GAIN control (resistor R899 (fig. 4-19)) to approximately three-quarters its maximum clockwise position.

h. Apply power to the TS-382/U.

i. Adjust the ME-30/U range selector switch to .03.

j. Connect the ME-30/U to test point TP801 on terminal board TB801 (fig. 4-19).

k. Adjust the output level of the TS-382/U to obtain an indication of .02 volt as indicated on the ME-30/U.

l. Disconnect the ME-30/U from test point TP-801.

m. Adjust the ME-30/U range selector switch to 3.

n. Connect the ME-30/U as shown in figure 22, and operate test switch S1 to position No. 2.

o. Arrange the TS-505/U as a voltmeter.

p. Adjust the TS-505/U range switch to 25, and the function switch to - DC.

q. Connect the TS-505/U dc probe to the wiper arm (center terminal) of the COMP. ADJ control (resistor R816 (fig. 4-18). Connect the COMMON probe of the TS-505/U to the AM2827/FSW-8 ground.

r. Adjust the COMP. ADJ control to obtain an indication of - 14 volts on the TS-505/U.

s. Note the db level observed on the ME-30/U.

t. Adjust the TS-402/U to reduce the attenuation to 10 db.

u. Note the db level observed on the ME-30/U. The db level observed on the ME-30/U should not increase more than 4 db from the level noted in s above.

v. If the db level observed on the ME-30/U (u above) varies more than 4 db from the level observed in s above, a slight readjustment of the SPKR. NO. 1 GAIN control is required.

w. Repeat the procedure given in g and r through u above until there is less than a 4-db variation in the output level (as indicated on the ME-30/U) when the input level is increased by 30 db.

4-174. Loudspeaker Amplifier No. 2 Adjustment

Adjust loudspeaker No. 2 as follows:

a. Operate test switch S4 to the on position.

b. Arrange the TS-505/U as a voltmeter.

c. Adjust the TS-505/U range switch to 2.5, and the function switch to - DC.

d. Connect the TS-505/U dc probe to test point TP806 on terminal board TB802 (fig. 4-21). Connect the COMMON probe of the TS-505/U to the AM-2827/FSW-8 ground.

e. Adjust the BIAS ADJ control (resistor R849 (fig. 4-18)) to obtain an indication of -2.3 volts on the TS-505/U.

f. Disconnect the TS-505/U from test point TP806.

g. Operate the SPKR. NO. 2 GAIN control (resistor R901 (fig. 4-18)) to approximately three quarters its maximum clockwise position.

h. Apply power to the TS-382/U.

i. Adjust the ME-30/U range selector switch to .03.

j. Connect the ME-30/U to test point TP804 on terminal board TB802 (fig. 4-21).

k. Adjust the output level of the TS-382/U to obtain an indication of .02 volt as indicated on the ME-30/U.

l. Disconnect the ME-30/U from test point TP804.

m. Adjust the ME-30/U range selector switch to 3.

n. Connect the ME-30/U as shown in figure 4-16 and operate test switch S1 to position No. 2.

o. Arrange the TS-505/U as a voltmeter.

p. Adjust the TS-505/U range switch to 25, and the function switch to - DC.

q. Connect the TS-505/U dc probe to the wiper arm (center terminal) of the COMP. ADJ control (resistor R842 (fig. 4-19)). Connect the COMMON probe of the TS-505/U to the AM2827/FSW-8 ground.

r. Adjust the COMP. ADJ. control to obtain an indication of -14 volts on the TS-505/U.

s. Note the db level observed on the ME-30/U.

t. Adjust the TS-402/U to reduce the attenuation to 10 db.

u. Note the db level observed on the ME-30/U.
The db level observed on the ME-30/U should not increase more than 4 db from the level noted in s above.

v. If the db level observed on the ME-30/U in ut above varies more than 4 db from the level observed in s above, a slight readjustment of the SPKR. NO. 2 GAIN control is required.

w. Repeat the procedure given in g and r through u above until there is less than a 4-db variation in the output level (as indicated on the ME-30/U) when the input level is increased by 30 db.

4-175. Microphone Amplifier Adjustment

Adjust the microphone amplifier as follows:

a. Arrange the TS-505/U as a voltmeter.

b. Adjust the TS-505/U range switch to 2.5, and the function switch to - DC.

c. Connect the TS-505/U dc probe to test point TP809 on terminal board TB803 (fig. 4-23). Connect the COMMON probe of the TS-505/U to the AM-2827/FSW-8 ground.

d. Adjust the BIAS ADJ control (resistor R874 (fig. 4-19)) to obtain an indication of -2.3 volts on the TS-5056/U.

e. Disconnect the TS-505/U from test point TP809.

f. Operate the MIKE LINE LEVEL control (resistor R862 (fig. 4-19)) to approximately three-quarters its maximum clockwise position.

g. Apply power to the TS-382/U.

h. Adjust the ME-30/U range selector switch to .03.

i. Connect the ME-30/U to test point TP807 on terminal board.TB803 (fig. 4-23).

j. Adjust the output level of the TS-382/U to obtain an indication of .02 volt as indicated on the ME-30/U.

k. Disconnect the ME-30/U from test point TP807.

l. Adjust the ME-30/U range selector switch to 3.

m. Connect the ME-30/U as shown in figure 4-16, and operate test switch S1 to position No. 2.

n. Arrange the TS-505/U as a voltmeter.

o. Adjust the TS-505/U range switch to 25, and the function switch to - DC.

p. Connect the TS-505/U dc probe to the wiper arm (center terminal) of the COMP. ADJ control (resistor R868 (fig. 4-18)). Connect the COMMON probe of the TS-505/U to the AM2827/FSW-8 ground.

q. Adjust the COMP. ADJ control to obtain and indication of -14 volts on the TS-505/U.

r. Note the db level observed on the ME-30/U.

s. Adjust the TS-402/U to reduce the attenuation to 10 db.

t. Note the db level observed on the ME-30/U.
The db level observed on the ME-30/U should not increase more than 4 db from the level noted in r above.

u. If the db level observed on the ME-30/U in t above varies more than 4 db from the level observed in r above, a slight readjustment of the COMP. ADJ control is required.

v. Repeat the procedure given in r through u above until there is less than a 4-db variation in the output level (as indicated on the ME-30/U) when the input level is increased by 30 db.

4-176. Communication Station, Remote Control OA-3014/FSW-8

a. General. When Amplifier Assembly AM2817/FSW-8 has been repaired, the amplifier circuits will require readjustment. For access to components of the AM-2817/FSW-8 when adjustments are made, remove the power supply drawer from the equipment as described in paragraph 4-141*h*. Instructions for

for removing the AM-2817/FSW-8 from the power supply drawer are given in paragraph 4-146. For each amplifier adjustment, perform only the adjustment required by that particular amplifier. Perform each adjustment in sequence. Do not vary the sequence.

b. *Preadjustment Procedures.* Before making the adjustments required, perform the following preadjustment procedures.

(1) Connect the test equipment and materials to the AM-2817/FSW-8 as shown in figure 4-51; except for the TS-505/U and ME-30/U, which are used at various test points described in subsequent paragraphs.

(2) Adjust the TS-402/U to insert 40-db attenuation.

(3) Adjust the TS-382/U for 1,000-cps out-put.

(4) Operate test resistor R1 to its midrange position.

(5) Turn on the power to all test equipment, except the TS382/U.

4-177. Loudspeaker Amplifier Adjustment

Adjust the loudspeaker amplifier as follows:

a. Arrange the TS-505/U as a voltmeter.

b. Adjust the TS-505/U range switch to 2.5, and the function switch to -DC.

c. Connect the TS-505/U dc probe to test point TP2403 on terminal board TB2401 (fig. 4-54). Connect the COMMON probe of the TS-505/U to the AM-2817/FSW-8 ground.

d. Adjust the SPEAKER BIAS control (resistor R2449 (fig. 4-53)) to obtain an indication of -2.3 volts on the TS-505/U.

e. Disconnect the TS-505/U from test point TP2403.

f. Operate the SPEAKER GAIN control to approximately three-quarters its maximum clockwise position.

g. Apply power to the TS-382/U.

h. Adjust the ME-30/U range selector switch to .03.

i. Connect the ME-30/U to test point TP2401 on terminal board TB2401 (fig. 4-54).

j. Adjust the output level of the TS-382/U to obtain an indication of .02 volt on the ME-30/U.

k. Disconnect the ME-30/U from test point TP2401.

l. Adjust the ME-30/U range selector switch to 3.

m. Connect the ME-30/U as shown in figure 4-51.

n. Arrange the TS-505/U as a voltmeter.

o. Adjust the TS-505/U range switch to 25, and the function switch to - DC.

p. Connect the TS-505/U dc probe to the wiper arm (center terminal) of the SPEAKER COMP control (resistor R2416 (fig. 4-53)). Connect the COMMON probe of the TS-505/U to the AM2817/FSW-8 ground.

q. Adjust the SPEAKER COMP control to obtain an indication of -14 volts on the TS-505/U.

r. Note the db level observed on the ME-30/U.

s. Adjust the TS-402/U to reduce the attenuation to 10 db.

t. Note the db level observed on the ME-30/U. The db level observed on the ME-30/U should not increase more than 4 db from the level noted in r above.

u. If the db level observed on the ME-30/U in t above varies more than 4 db from the level observed in r above, a slight readjustment of the SPEAKER GAIN control is required.

v. Repeat the procedure given in f and g through t above until there is less than a 4-db variation in the output level (as indicated on the ME-30/U) when the input level is increased by 30 db.

4-178. Microphone Amplifier Adjustment

Adjust the microphone amplifier as follows:

a. Apply power to the TS382/U.

b. Adjust the ME-30/U range selector switch to .03.

c. Connect the ME-30/U to test point TP2404 on terminal board TB2402 (fig. 4-55).

d. Adjust the output level of the TS-382/U to obtain an indication of .02 volt on the ME-30/U.

e. Disconnect the ME-30O/U from test point TP2404.

f. Adjust the ME-30/U range selector switch to 3.

g. Connect the ME-30/U across test resistor R6 (fig. 4-51).

h. Arrange the TS-505/U as a voltmeter.

i. Adjust the TS-505/U range switch to 25, and the function switch to - DC.

j. Connect the TS-505/U dc probe to the wiper arm (center terminal) of the MIKE COMP control (resistor R2443 (fig. 4-53)). Connect the COMMON probe of the TS-505/U to the AM2817/FSW-8 ground.

k. Adjust the MIKE COMP control to obtain an indication of - 14 volts on the TS-505/U.

l. Note the db level observed on the ME-30/U.

m. Adjust the TS-402/U to reduce the attenuation to 10 db.

n. Note the db level observed on the ME-30/U. The db level observed on the ME-30/U should not increase more than 4 db from the level noted in 1 above.

o. If the db level observed on the ME-30/U in n above varies more than 4 db from the level observed in l above, a slight readjustment of the MIKE COMP control is required.

p. Readjust the MIKE COMP control and repeat the procedure given in l through o above until there is less than a 4-db variation in the output level (as indicated on the ME-30/U) when the input level is increased by 30 db.

4-179. Miscellaneous Adjustments

The following adjustments are required after disassembly or repair of the AN/FSW-8(V). Adjustment of telephone buzzer DS1311 (a below) is required when the TA-406/FSW-8 has been repaired or replaced in either the OA-2055/FSW8 or the OA-3014/FSW-8. Adjustment of the CARBON and MAGNETIC microphone controls (b below) in the OA-2055/FSW-8 is required after replacement of the controls, or after performance of the transmitting circuits test indicates improper operation of output level meter Ml101.

a. Buzzer DS1311 Adjustment. Proceed as follows to adjust buzzer DS1311 (fig. 4-30) in the TA-406/FSW-8.

(1) Remove the TA-406/FSW-8 from the OA-2055/FSW-8 (para 4-121h) or from the OA-3014/FSW-8 (para 4-140f). Do not disconnect connector P1301 from connector J1301.

(2) Release the three Camloc fasteners that secure the access panel, and remove the panel as shown in figure 4-30.

(3) Operate the MAIN POWER circuit breaker to ON.

(4) Operate any one of the TELEPHONE switches to RING.

(5) Locate the adjustment screw on the side of buzzer DS1311.

(6) Loosen the locking nut on the adjustment screw.

(7) Turn the adjustment screw clockwise to increase the volume of buzzer DS1311; counter-clockwise to decrease the volume.

(8) When adjustment is completed, operate the MAIN POWER circuit breaker and TELEPHONE switch to OFF.

(9) Replace the access panel and secure it to the TA-406/FSW-8 with the Camloc fasteners.

(10) Reinstall the TA-406/FSW-8 in the equipment cabinet.

b. CARBON and MAGNETIC Control Adjustment. Proceed as follows to adjust CARBON and MAGNETIC controls (resistors R1102 and R1104 (fig. 4-26)) on the miscellaneous control panel of the OA-2055/FSW-8.

(1) Operate the MAIN POWER circuit breaker to ON.

(2) Operate and hold the push-to-talk switch of either Headset-Microphone H195/FSW-8 or Microphone, Magnetic M-110/U.

(3) Operate MIKE switch S1102 to MAGNETIC.

(4) Speak into the M-11O/U. Note the dbm level observed on meter Ml101.

(5) Adjust MAGNETIC control R1104 until the peak indication observed on the Ml101 is approximately 6 dbm.

(6) Operate MIKE switch S1102 to CARBON.

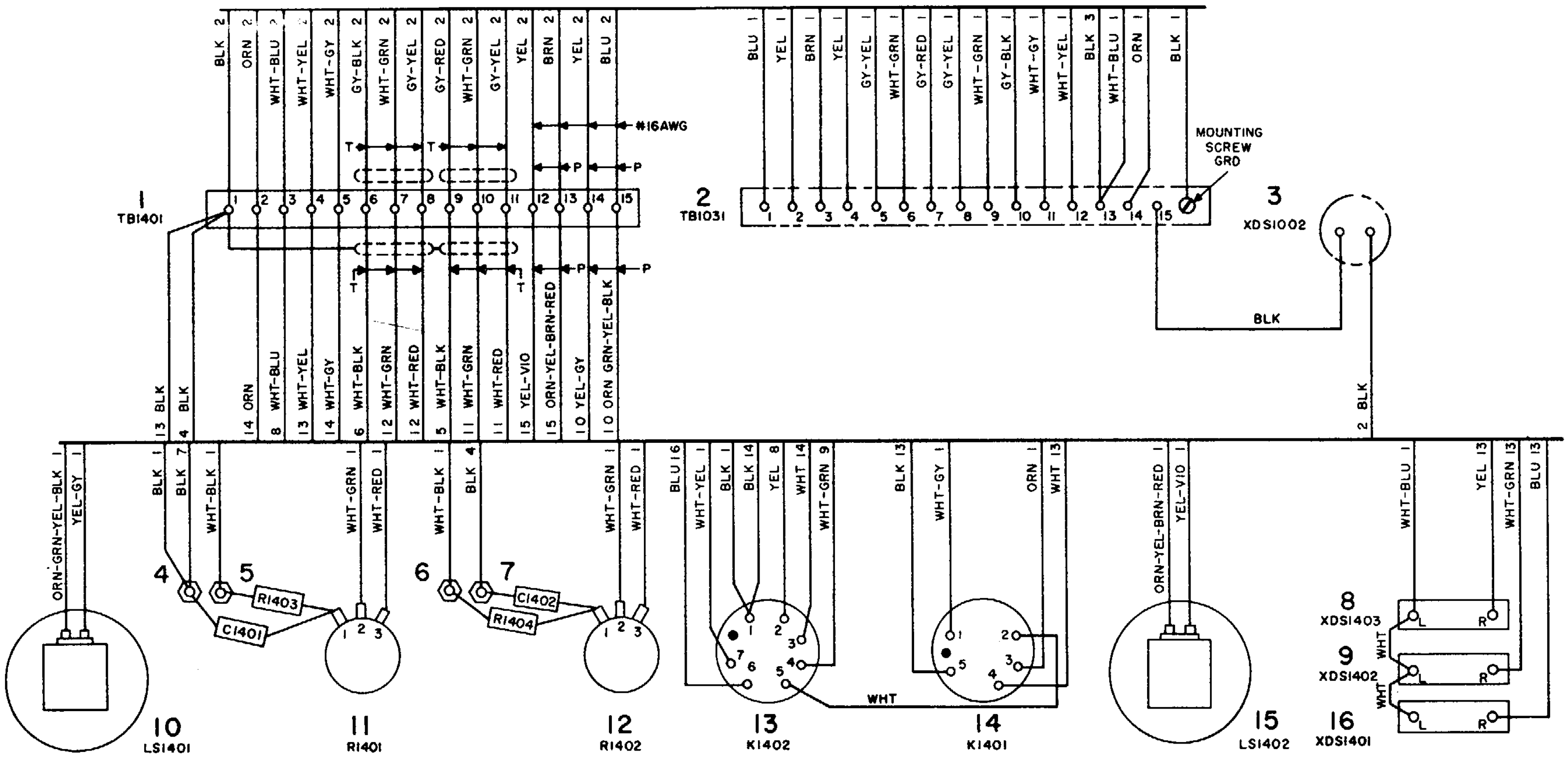
(7) Speak into the transmitting element of the H-195/FSW-8. Note the dbm level observed on meter Ml101.

(8) Adjust CARBON control R1102 until the peak indication observed on the Ml101 is approximately + 6 dbm.

(9) Operate MIKE switch S1102 alternately to MAGNETIC and CARBON, speak into the appropriate microphone. If the peak indication observed on M1101

are not equal for either position of the MIKE switch, a slight readjustment of either the CARBON or MAGNETIC control is required.

(10) Release the push-to-talk switch of either the M-110/U or H-195/FSW-8.

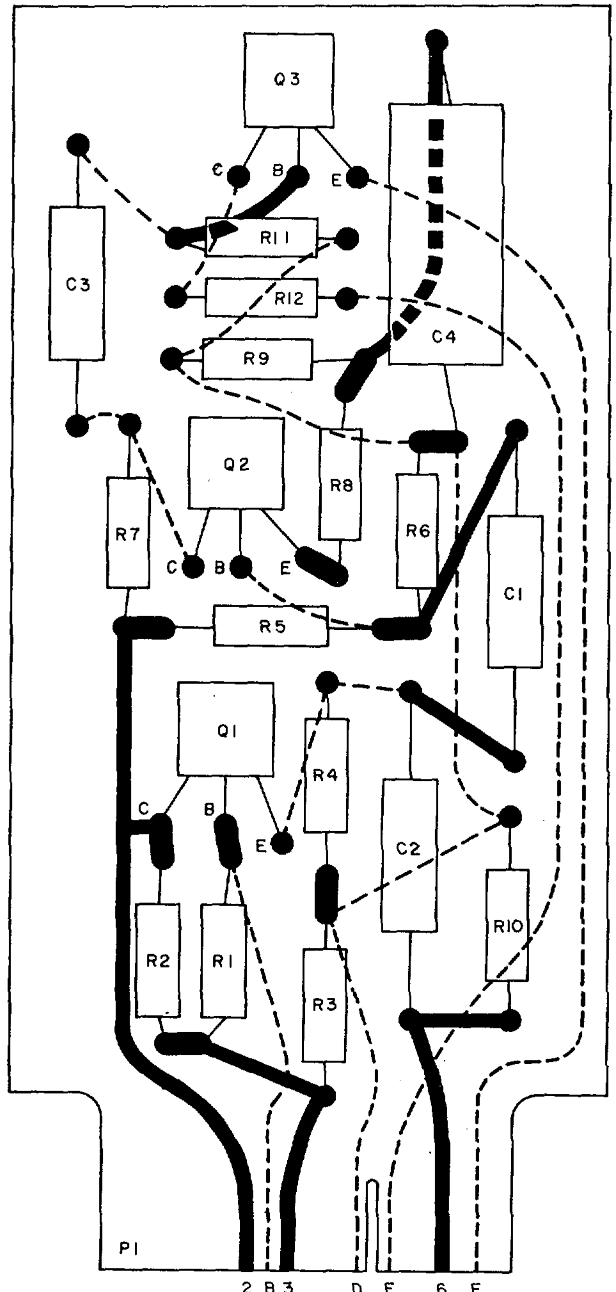


NOTES:

1. THE SMALL NUMBER ON EACH WIRE (ADJACENT TO THE COMMON BASE LINE) CORRESPONDS TO THE LARGE NUMBER ADJACENT TO THE STATION TO WHICH THE WIRE RUNS.
2. ALL WIRING SHOWN AS VIEWED FROM WIRING SIDE.
3. WIRES NOT OTHERWISE SPECIFIED ARE 22 GAGE.
4. P DENOTES PAIR.
5. T DENOTES THREE-WIRE CONNECTIONS.
6. (⊂⊃) DENOTES SHIELDED CONNECTION.

EL5895-241-34-TM-322

Figure 4-127. Console, Communication Control OA-2055/FSW-8, Loud speaker and indicator panel, wiring diagram.

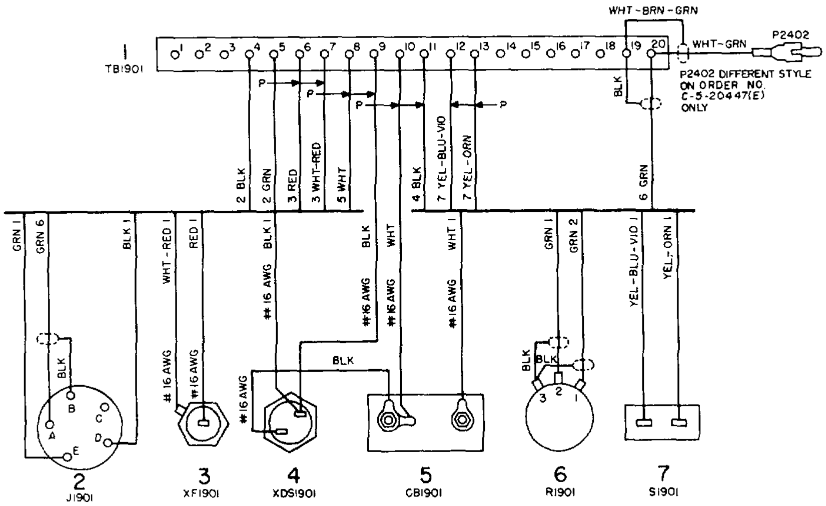


NOTES:

1. ADD 1600 TO EACH REFERENCE SYMBOL DESIGNATION.
2. CIRCUIT VIEWED FROM SIDE ON WHICH PARTS ARE MOUNTED.
3. ——— PARTS AND PIGTAILS ON FRONT OF BOARD.
4. ▬▬ WIRING ON FRONT OF BOARD
5. ■ ■ ■ WIRING ON FRONT OF BOARD BUT UNDER A PART.
6. — — — WIRING ON BACK OF BOARD.
7. P1 AND PIN DESIGNATIONS ARE FOR REFERENCE ONLY.

EL5895-241-34-TM-324

Figure 4-128. Receiver-preamplifier A1601, wiring diagram.

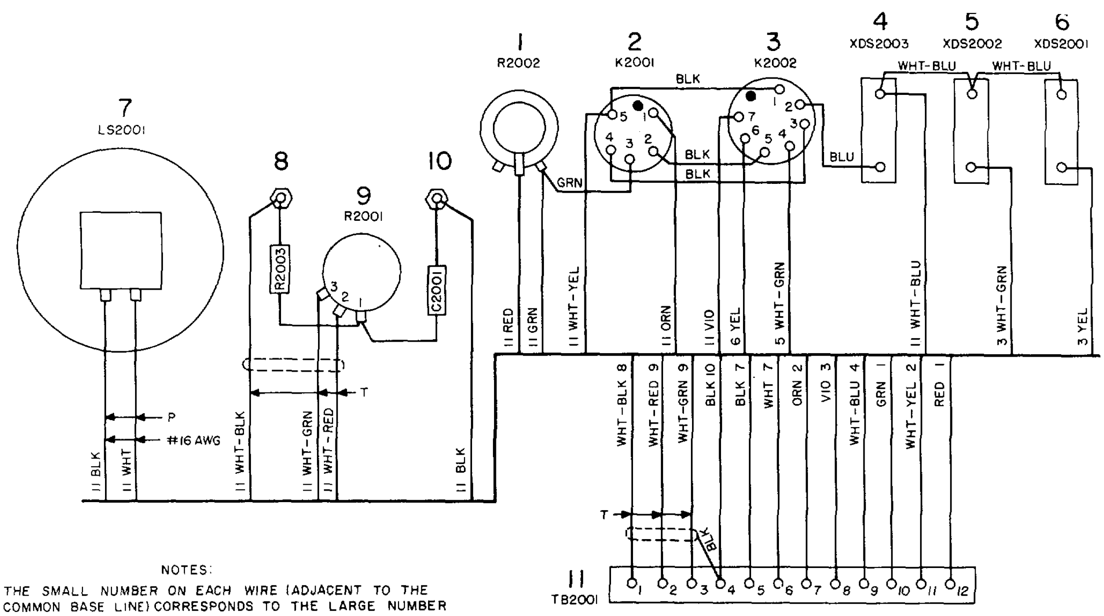


NOTES:

1. THE SMALL NUMBER ON EACH WIRE (ADJACENT TO THE COMMON BASE LINE) CORRESPONDS TO THE LARGE NUMBER ADJACENT TO THE STATION TO WHICH THE WIRE RUNS.
2. ALL WIRING SHOWN AS VIEWED FROM WIRING SIDE.
3. WIRES NOT OTHERWISE SPECIFIED ARE 22 GAGE.
4. P DENOTES PAIR.
5. (- - -) DENOTES SHIELDED CONNECTION.

EL5895-241-34-TM-423

Figure 4-129. Communications Station, Remote Control OA-3014/FSW-8, miscellaneous control panel, wiring diagram.

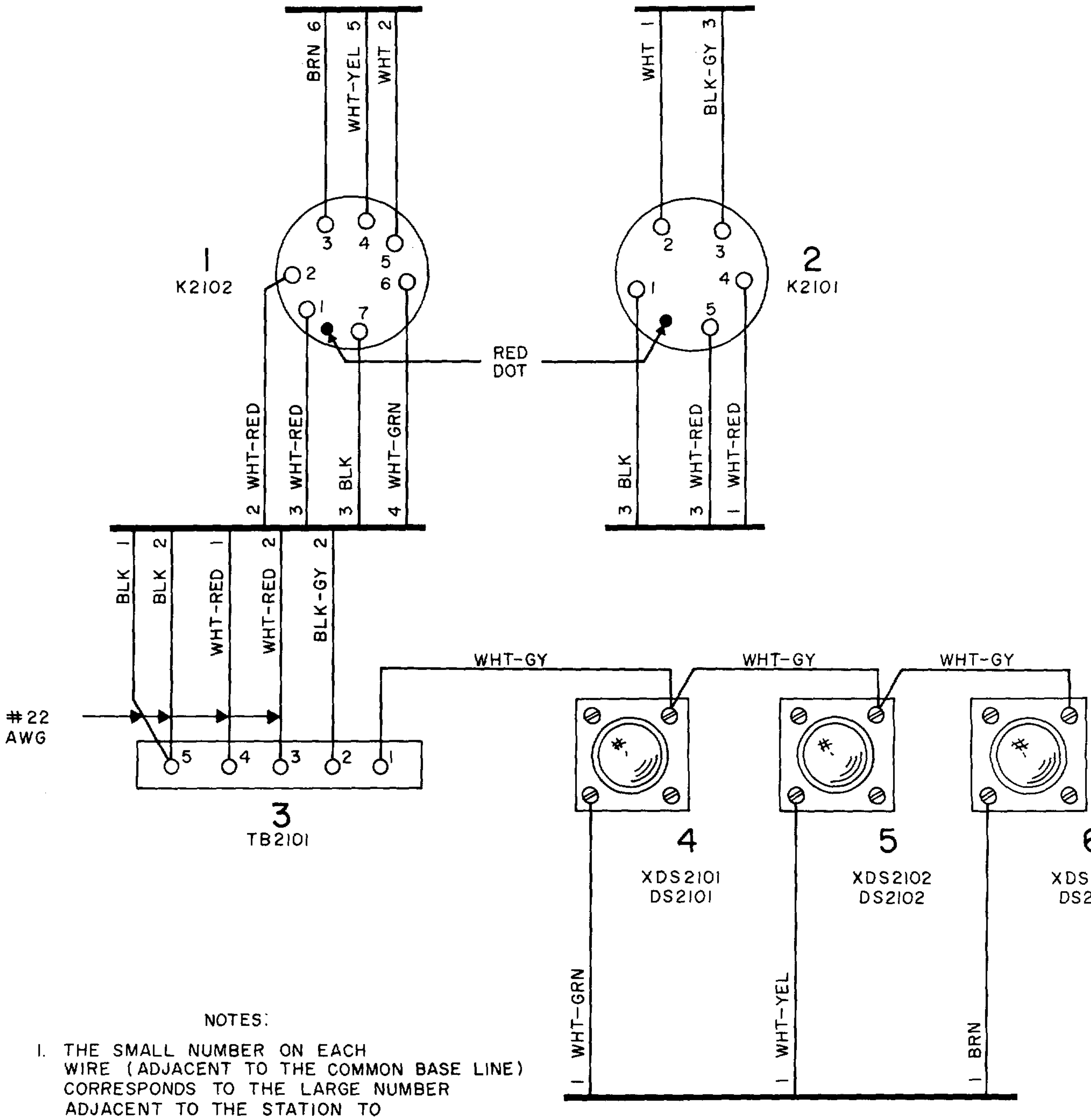


NOTES:

1. THE SMALL NUMBER ON EACH WIRE (ADJACENT TO THE COMMON BASE LINE) CORRESPONDS TO THE LARGE NUMBER ADJACENT TO THE STATION TO WHICH THE WIRE RUNS.
2. ALL WIRING AS VIEWED FROM THE WIRING SIDE.
3. (- -) INDICATES SHIELDED WIRE.
4. P DENOTES PAIR.
5. T DENOTES THREE-WIRE CONNECTIONS.

EL5895-241-34-TM-328

Figure 4-130. Communications Station, Remote Control OA-3014/FSW-8, loudspeaker and indicator panel, wiring diagram.

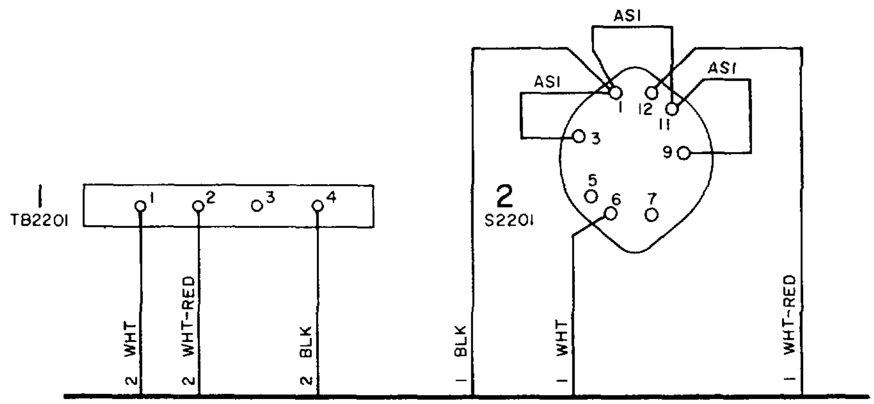


NOTES:

1. THE SMALL NUMBER ON EACH WIRE (ADJACENT TO THE COMMON BASE LINE) CORRESPONDS TO THE LARGE NUMBER ADJACENT TO THE STATION TO WHICH THE WIRE RUNS.
2. WIRES NOT OTHERWISE SPECIFIED ARE 16 GAGE.
3. ALL WIRING SHOWN AS VIEWED FROM WIRING SIDE.

EL5895-241-34-TM-332

Figure 4-131. Indicator, Field Status ID-877/FSW-8, wiring diagram.



NOTES:

1. THE SMALL NUMBER ON EACH WIRE (ADJACENT TO THE COMMON BASE LINE) CORRESPONDS TO THE LARGE NUMBER ADJACENT TO THE STATION TO WHICH THE WIRE RUNS.
2. WIRES NOT OTHERWISE SPECIFIED ARE 22 GAGE.
3. ASI DENOTES 22 GAGE TINNED COPPER WIRE WITH INSULATED SLEEVING.
4. ALL WIRING SHOWN AS VIEWED FROM WIRING SIDE.

EL5895-241-34-TM-333

Figure 4-132. Switch Box SA-751/FSW-8, wiring diagram.

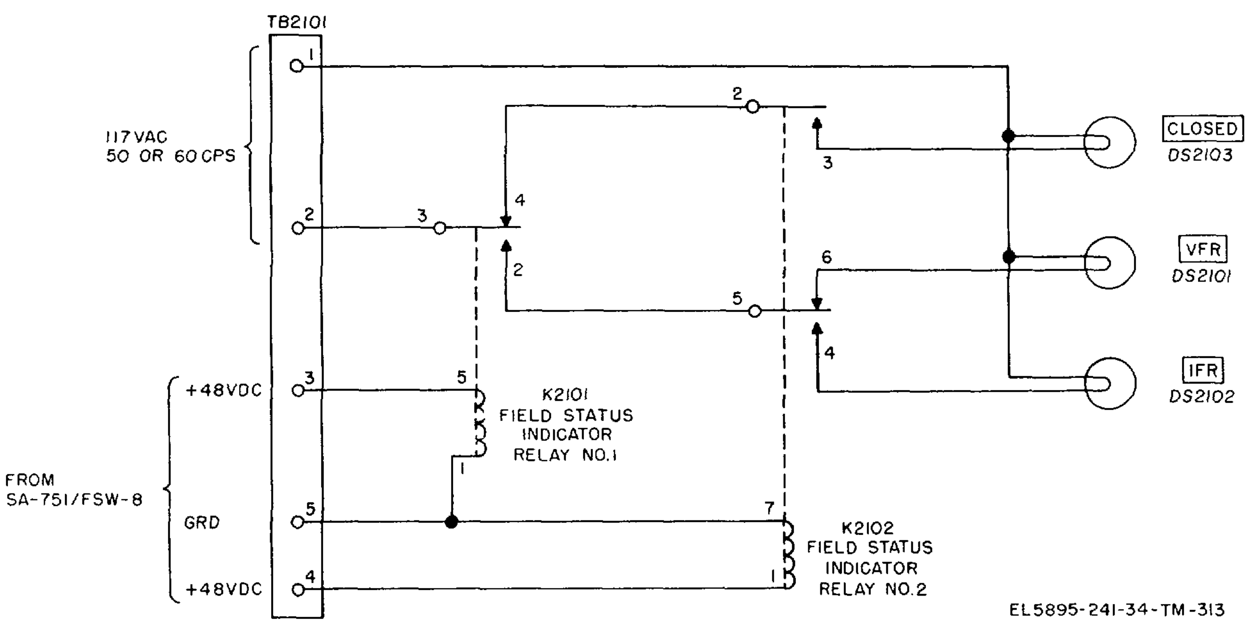


Figure 4-133. Indicator, Field Status ID-877/FSW-8, schematic diagram

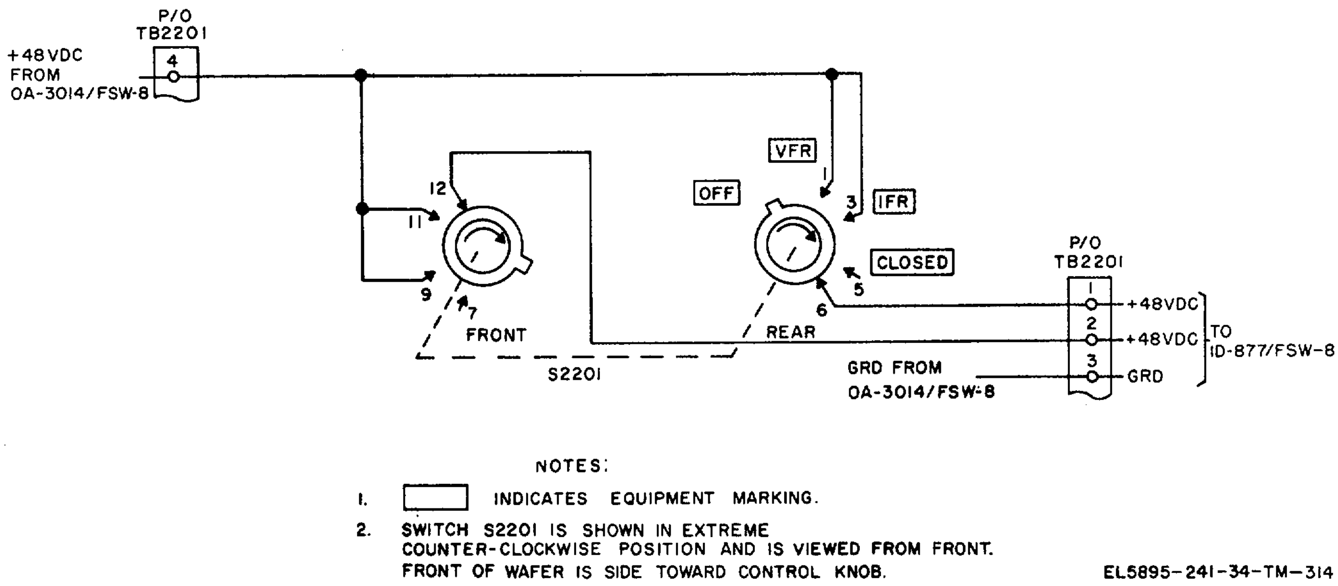


Figure 4-134. Switch Box SA-751/FSW-8, schematic diagram.

CHAPTER 5

GENERAL SUPPORT MAINTENANCE

Section I. TROUBLESHOOTING

5-1. General Instructions

a. General support maintenance of the AN/FWS-8(V) consists of the troubleshooting and replacement of Indicator, Digital Display ID-854/FSW-8 and Transmitter, Barometric Data T-772/FWS-8 and includes all the techniques outlined for organizational maintenance (TM 11-5895-242-12), direct support maintenance, and any special or additional techniques required to isolate malfunctions to a defective stage, assembly, or component part.

b. Sectionalization procedures normally performed at the lower levels of maintenance sectionalize malfunctions to a defective ID-854/FSW-8 or T-772/FSW-8. Localization of a trouble to a circuit or stage is based on the operational tests performed at direct support maintenance.

c. When the trouble has been localized to a particular circuit or stage, isolate the trouble to the defective part by using the procedures outlined for the particular assembly or unit of the AN/FSW-8(V). Use the schematic diagrams (fig. FO-12) through FO-15) and the wiring diagrams (fig. FO-17 through FO-31) to trace troubles from one unit to another and/or within a section of a particular assembly or unit.

5-2. Transmitter, Barometric Data T-772/FSW-8

Procedures are given in a through f below to adjust the T772/FSW-8 after operational tests indicate that the unit is defective and it has been replaced. After the T772/FSW-8 has been uncaged (TM 11-5895-241-12), it must be adjusted for airfield elevation requirements.

CAUTION

Do not attempt to adjust the T-722/FSW-8 if the particular airfield elevation is not within the range of the unit.

a. Remove all flight data stripholders from the flight data board.

b. Lift the ring in the center of the flight data board to open the top of the CY-2940/FSW-8 cabinet.

c. Turn the ALT ADJ adjusting screw (fig. 4-108 and 5-1) clockwise to increase elevation, or counterclockwise to decrease the T-772/FSW-8 elevation to that of the particular airfield.

NOTE

The numerals on the elevation range scale (located in the center of the altimeter meter dial) are equal to 100 feet of elevation with respect to sea level.

d. Allow one-half hour for the pressure within the T772/FSW-8 to equalize with that of the maintenance shop.

e. Carefully check the reading on the T-722/FSW-8 altimeter dial with a standard barometer.

f. The standard barometer reading and that of the altimeter meter should be identical within 0.02 inch of mercury, corrected to the airfield elevation.

5-3. Barometric Data and Digital Readout Circuit Test

Procedures are given below to test the operation of Indicator, Digital Display ID-854/FSW-8 in conjunction with Transmitter, Barometric Data T-772/FSW-8. Refer to the functional test connection diagram for the OA2054/FSW-8 (fig. FO-10).

a. *Test Procedure*. Perform the following steps to test the operation of the digital readout test circuits of the ID854/FSW-8. If a failure is indicated, refer to the information given in b below for localizing the trouble.

CAUTION

Do not depress the PUSH TO TEST OR RESET switch for less than 2 seconds or more than 10 seconds.

(1) Depress the PUSH TO TEST OR RE-

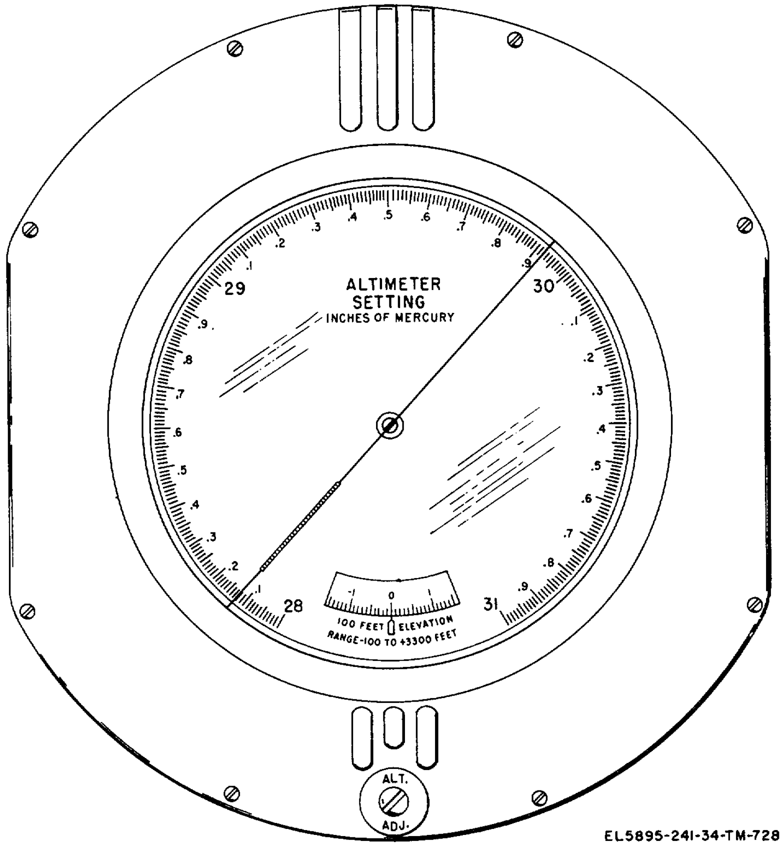


Figure 5-1. Transmitter, Barometric Data T-772/FSW-8 altimeter dial, top view.

SET switch and observe the reading displayed on the digital readout drums. The reading should correspond to the atmospheric pressure reading indicated on the T-772/FSW-8. The T772/FSW8 is easily observed by lifting the flight data board by the ring provided (fig. 4-66).

(2) Test lamps DS102 through DS105 (fig. 4-66) below each digital readout drum should illuminate with equal brilliance. The lamps should extinguish when the PUSH TO TEST OR RESET switch is released. The atmospheric pressure reading should remain on the digital readout drums.

(3) Operate the TEST KEY to 7777. The digital readout drums should rotate to indicate 77.77, and the four test lamps should illuminate with equal brilliance. Release the TEST KEY. The 77.77 reading should remain; the test lamps should extinguish.

(4) Operate the TEST KEY. to the 3333. The digital readout drums should rotate to indicate 33.33, and the four test lamps should illuminate with equal brilliance. Release the TEST KEY. The 33.33 reading should remain; the test lamps should extinguish.

(5) Depress the PUSH TO TEST OR RESET SWITCH and then release it. The digital readout drums should rotate to indicate the atmospheric pressure displayed on the T772/FSW-8 indicator ((1) above).

b. *Digital* Readout Circuit Troubleshooting Chart. The following chart will serve as an aid in isolating troubles within the ID-854/FSW-8.

Symptom	Probable Trouble	Correction
The atmospheric pressure reading on the digital readout drums do not correspond to the reading indicated on the altimeter dial.	a. External vent tube damaged b. T-772/FSW-8 defective (fig.4-66). c. T-772/FSW-8 harness cabling defective. d. Ac line power circuit open ------- e. Digital readout drums defective - f. Wiring from terminal board El to the digital readout drums open (fig. FO-15)	a. Check the condition of the External vent tube and replace if necessary. b. Adjust the T-772/FSW-8 (para 5-2). Replace, if necessary. c. With the AN/URM-105 arranged as an ohmmeter, check continuity of wiring between connectors J1 and P1 (fig. 4-74). d. With the AN/URM-105, check continuity of wiring between terminals 2 and 3 of terminal board TB101. Check 2 AMP fuse F101 and replace if defective (fig. FO-8). e. Remove the ID-854/FSW-8 from the CY-2940/FSW-8 (para 4-150) and check the general condition of the digital readout drums. Replace if defective (para 4-152t and fig. 4-32). f. With the AN/URM-105, check continuity of wiring between terminal board El and the digital readout drums.
The atmospheric pressure reading on the digital readout drums does not correspond to reading on the T-772/FSW-8.	a. Faulty connection from ID-854/FSW-8 to T-772/FSW-8. b. Ac power circuit is defective (fig.FO-8). c. T-772/FSW-8 defective ----------	a. Check connection of P1 (fig. 4-70) to J1 on the T-772/FSW-8. b. Check wiring to El from terminals 2 and 3 of TB101. Check 2 AMP fuse F101. Replace if defective. c. Replace T-772/FSW-8.
Digital readout drums do not display test numerals, or display numerals for only one position of the TEST KEY.	TEST KEY switch S2 is defective -	Check TEST KEY switch S2. Replace if defective (para 4-152i and fig. 4-112).
One digital readout drum does not rotate, and corresponding test lamp does not illuminate with same bril lance as other lamps.	a. Readout drum is defective b. TEST KEY switch S2 is defective c. Open circuit between TEST KEY switch and corresponding readout drum. d. Test lamp is defective (fig. FO-15).	a. Check readout drum. Replace if defective (para 4-152t and fig. - 4-112). b. Check TEST KEY switch S2. Replace if defective (para 4-152p and fig. 4-112). c. Check continuity of internal wiring. d. Check test lamp (DS102-DS105) for corresponsing drum. Replace if defective (para 4-152t and fig. 4-112).
The digital readout drums do not reset when the PUSH TO TEST OR RESET switch is operated	a. PUSH TO TEST OR RESET switch S1 is defective b. Wiring to PUSH TO TEST OR RESET switch is defective c. T-772/FSW-8 defective --------	a. Check PUSH TO TEST OR RESET switch S1. Replace if defective (para 4-152m and fig. 4-112). b. Check wiring to PUSH TO TEST OR RESET switch S1 (fig. FO-15). c. Replace the T-772/FSW-8.
Test lamp for one digital readout drum illuminates with more or less brilliance than other lamps	Circuit in corresponding digital readout drum defective (fig FO-15)	Check the continuity of internal wiring. Replace digital readout drum (para 4-152t and fig. 4-112).
Readout drums do not respond to any test procedure.	T-772/FSW-8 is defective	Replace the T-772/FSW-8.

Section II. GENERAL SUPPORT TESTING PROCEDURES

5-4. General

a. Testing procedures are prepared for use by general support maintenance shops and Signal Service Organizations responsible for general support maintenance of electronic equipment to determine the acceptability of repaired electronic equipment. These procedures set forth specific requirements that repaired electronic equipment must meet before it is returned to the using organization. The testing procedures may also be used as guide to test equipment repaired at direct support level if the proper tools and test equipment are available. Summaries of the performance standards are given in paragraphs 5-13, 4-20, and 5-25.

b. Comply with the instructions preceding each chart before proceeding to the chart. Perform each test in sequence. Do not vary the sequence. For each step, perform all the actions required in the Control settings column. Perform each specific test procedure and verify it against its performance standard.

5-5. Test Equipment, Tools, and Materials

All test equipment, tools, materials, and other equipment required to perform the testing procedures are listed in the following charts and are authorized under Maintenance Allocation Chart, or they are repair part items of the subject equipment authorized for stockage at general support level. The specified test equipment or suitable equivalents should be employed to determine compliance with the requirements of this section.

a. Test Equipment.

Nomenclature	Federal stock No.	Technical manual
Attenuator TS-402/U.	6625-525-6523	TM 11-2044
Audio Oscillator TS-382/U.	6625-192-5094	TM 11-6625-261-12
Electric Test Set TS-914/U.	--------------	TM 11-6625-303-12
Electronic Multimeter TS-505/U.	6625-243-0562	TM 11-5511
Output Meter TS-585/U.	6625-244-0501	TM 11-5017
Spectrum Analyzer TS-723/U.	6625-392-6988	TM 11-5097

b. Materials.

Material	Quantity
Aluminum 8 in. dia by 0.062 in. thick -----	1
Flat washer No. 6 --------------------	6
Hexagonal plain nut No. 6-32NC2 --------	3
Lockwasher No. 6 ----------------------	3
Panhead machine screw No. 6-32NC2 by 3/8 in. long ----------------------	3
Resistor, 16-ohms, 2 watt ----------------	2
Resistor, 243-ohm, 2-watt ----------------	1
Resistor, 499-ohm, 2-watt ----------------	1
Resistor, 600-ohm, 2-watt --------------	2
Resistor, 4,500-ohm, 2-watt --------------	1
Resistor, 5,000-ohm, 2-watt --------------	1
Steel 1/2 in. wide by 0.062 in. thick --------	1
Single-pole, double-throw toggle switch ----	1

c. *Tools*. The tools required are contained in Tool Kit, Radar and Radio Repairman TK-87/U and Tool Kit, Supplementary, Radar and Radio Repair TK-88/U.

d. *Other Equipment*.

Equipment	Federal stock No.	Technical manual
Power Supply PP-2803/FSW-8.	5895-752-2557	TM 11-5895-241-12
Telephone Set TA-312/PT.	5805-543-0012	TM 11-5805-201-12

Section III. CONSOLE, COMMUNICATION CONTROL OA-2055/FSW-8, GENERAL SUPPORT TESTING PROCEDURES

5-6. General

General support testing procedures of the OA-2055/FSW-8 consist of inspection of its physical condition (para 5-7) and testing the operation of its major circuit functions (para 5-8 through 5-12). A summary of the performance standards is given in paragraph 5-13.

5-7. Console, Communication Control OA-2055/FSW-8, Physical Tests and Inspection

a. Test Conditions. Console, Communication Control OA-2055/FSW-8 may be inspected as a complete unit (steps 1 through 16), or its individual components may be inspected separately: Cabinet, Electrical Equipment CY-3020/FSW-8 (step 1); the desk lamp assembly (step 2); the loudspeaker and indicator panel (step 3); Terminal, Telephone TA-406/FSW-8 (step 4); the miscellaneous control panel (step 5); Microphone, Magnetic M-110/U (step 6); Control-Monitor C-3445/FSW-8 (step 7); the telephone storage well (step 8); Handset H-194/FSW-8 (step 9); Headset-Microphone H-195/FSW-8 (step 10); the writing desk (step 11); Amplifier Assembly AM2827/FSW-8 (step 12); Control, Transmitter C-3446/FSW-8 (step 13); Power Supply PP-2803/FSW-8 (step 14); Control, Telephone Signal C-3435/FSW-8 (step 15); and Switch, Foot SA-754/FSW-8 (step 16). If the OA-2055/FSW-8 is to be inspected as a complete unit, open the front access door and remove the upper and lower panels (para 4-120d and e).

b. *Procedure.*

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
1	N/A ------------------	N/A ---------.----------------	a. Inspect all mechanical assemblies for loose or missing screws, bolts, or nuts.	a. Screws, bolts, and nuts are tight; none missing.
			b. Inspect all convenience receptacles, plugs, and sockets.	b No evidence of deformity or damage.
			c. Extend all equipment cables to their maximum lengths, and check for wear and breaks.	c. All cables are free from breaks and frayed insulation.
			d. Examine all harness wiring for wear and breaks.	d. All harness wires are free from breaks and frayed insulation.
			e. Rotate the MAIN POWER lamp mechanical dimmer and the LAMP brightness control through their limits of travel cracked or broken.	e. The controls rotate freely without binding or excessive looseness; the control knob is not damaged, the lenses are not
			f. Inspect EMER.ALARM switch S1001 and MAIN POWER circuit breaker CB1001 for normal operation	f.The EMER.ALARM switch and MAIN POWER circuit breaker operate properly; the circuit breaker handle is not damaged.
			g. Inspect EMER.ALARM switch S1001 mechanical protector for normal operation	g.The mechanical protector operates properly and shows no evidence of deformity or damage.
			h. Inspect the top drawer assembly for corrosion, dirt, or damage.	h. The top drawer assembly is clean and free from corrosion; it slides easily in and out of its position in Cabinet, Electrical Equipment CY-3020/FSW-8.
			i. Inspect the bottom drawer assembly for corrosion, dirt, or damage	i. The bottom drawer assembly is clean and free from corrosion, it slides easily in and out of its position in Cabinet. Electrical Equipment CY-3020/FSW-8.

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
			j. Inspect Cabinet, Electrical Equipment CY-3020/FSW-8 and its components for damage, missing parts, condition of finish and panel lettering **NOTE** **Touchup painting is recommended in place of refinishing whenever practicable. Screwheads, binding posts, receptacles, and plated fastener parts should not be painted or polished with abrasives.**	j. No damage or missing parts evident; external surfaces do not show bare metal. Panel lettering is legible. Refer to the applicable cleaning and re-finishing practices specified in TB 746-10.
2	N/A- - -- --------------	N/A -.-----------------------	a. Inspect the desk lamp assembly for corrosion, dirt, or damage. b. Raise, lower, and rotate the desk lamp arm assembly. c. Inspect incandescent lamp DS1002 for corrosion, dirt, or damage.	a. The desk lamp assembly is clean and free from corrosion; the inside of the reflector is bright. b. The desk lamp arm assembly moves without binding or excessive looseness. c.- Incandescent lamp DS1002 is clean and free from corrosion.
3	N/A --------------------.	N/A -------------------	a. Rotate VOLUME CONTROL 1 and 2 controls through their limits of travel. Return the controls to their midrange position b. Inspect the loudspeaker and indicator panel for corrosion, dirt, or damage.	a. Controls rotate freely without binding or excessive looseness and show no evidence of deformity or damage. b. The loudspeaker and indicator panel are clean and free from corrosion; the lettering on the field status indicator is legible and the glass is not cracked or broken. The speaker cones are not damaged.
4	N/A ----------------------	N/A ----------------------------.	a. Inspect the RING-OFF-TALK switches for normal operation. b. Inspect Terminal, Telephone TA-406/FSW-8 for corrosion, dirt, or damage	a. The switches operate freely to both the RING and TALK position; spring return from the RING position is normal; the switch handles are not damaged. b. The TA-406/FSW-8 is clean and free from corrosion; lenses are not cracked or broken.
5	N/A -----------.----------	N/A ----------------------------	a. Inspect MAGNETIC-CARBON switch S1102 and LOCAL-	a. The switches operate properly without binding; the switch

			REMOTE switch Sl101 for normal operation. b. Inspect intercom switch S1103 for normal operation. c. Rotate the MAGNETIC-CARBON and HEADSET VOLUME controls through their limits of travel. **NOTE** **Be sure to return the controls to their original setting.** d. Inspect the HEADSET and MIKE CARBON receptacles for corrosion, dirt, or damage. e. Inspect the miscellaneous control panel for corrosion, dirt, or damage.	handles are not damaged. b. The switch operates freely from the OFF to the INTERCOM position; spring return from the INTERCOM position is normal. c. The controls rotate freely without binding or excessive looseness; the HEADSET VOLUME control knob is not damaged. d. The receptacles are clean and free from corrosion and are not bent or damaged. e. The miscellaneous control panel is clean and free from corrosion; the DBM meter glass is not cracked or broken.
6	N/A ------------------.	N/A --------------------------...	a. Inspect Microphone, Magnetic M-110/U for corrosion, dirt, or damage. b. Inspect the M-110/U push-to-talk switch for dirt or corrosion.	a. The M-110/U is clean and free from corrosion. The cord is free from breaks and frayed insulation; the connector is not bent or damaged. b. The push-to-talk switch operates freely; spring return to the off position is normal. The switch is free from dirt or corrosion.
7	N/A -----------------------	N/A --------------------------	a. Inspect the SPEAKER-OFF-HEADSET switches and REMOTE-OFF-OPERATE switches for normal operation. b. Inspect Control-Mointor C3445/FSW-8 for corrosion, dirt, or damage.	a. The switches operate freely. The switch handles are not damaged. b. The C-3445/FSW-8 is clean and free from corrosion; lenses are not cracked or broken.
8	N/A-------------------	N/A -----------------------	Inspect the telephone storage well for corrosion, dirt, or damage.	The telephone storage well is clean and free from corrosion. The HEADSET access door opens and closes properly.
9	N/A	N/A	a. Inspect Handset H-194/FSW-8 for a. corrosion, dirt, or other evidence of damage.	The receiver and transmitter caps I are clean and free from dirt. a. The handset cord is free from breaks and frayed insulation; the connector is not bent or damaged.

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
			b. Inspect the H-194/FSW-8 push-to-talk switch for dirt or corrosion.	b. The push-to-talk switch operates freely; spring return to the off position is normal. The switch is free from dirt or corrosion.
10	N/A	N/A -	a. Inspect Headset-Microphone H-195/FSW-8 for corrosion, dirt, or damage. b. Inspect the H-195/FSW-8 push-to-talk switch for corrosion, dirt, or damage.	a. The receiver and transmitter caps are clean and free from dirt. The headband is adjustable and is not bent or broken; the transmitter boom is stationary and is not bent or broken. The cord is free from breaks and frayed insulation; the connector is not bent or damaged. b. The push-to-talk switch operates freely and locks in the talk position. The switch is free from dirt and corrosion.
11	N/A	N/A - -	Inspect the writing desk for corrosion, dirt or damage.	The writing desk is clean and free from corrosion; the writing surface is free from dents, cracks, or other evidence of damage and deformity.
12	N/A	N/A	a. Rotate the BIAS ADJ, OUTPUT LEVEL, COMP ADJ,SPKR GAIN, HEAT'SET LINE LEVEL, and MIKE GAIN controls through their limits of travel. **NOTE** **Be sure to return the controls to their original setting.** b. Inspect Amplifier Assembly AM-2827/FSW-8 for corrosion, dirt, or damage.	a. The controls rotate freely without binding or excessive looseness. The control knobs are not damaged. b. The AM-2827/FSW-8 is clean and free from corrosion.
13	N/A-	N/A	a. Inspect the SPEAKER No. 1 and SPEAKER No. 2 switches for normal operation. b. Inspect Control, Transmitter C-3446/FSW-8 for corrosion, dirt, or damage.	a. The switches operate freely without binding. b. The C-3446/FSW-8 is clean and free from corrosion.
14	N/A	N/A	a. Rotate the -7.5V ADJ and -15V ADJ controls through their limits of travel.	a. The controls rotate freely without binding or excessive looseness.

			NOTE **Be sure to return the controls to their original setting.** b. Inspect Power Supply PP-2803/ FSW-8 for corrosion, dirt, or damage.	b. The PP-2803/FSW-8 is clean and free from corrosion.
15	N/A --------- ---------	N/A .--.-.------- ------	Inspect Control, Telephone Signal C-3435/FSW-8 for corrosion, dirt, or damage.	TheC-3435/FSW-8 is clean and free from corrosion.
16	N/A- --------------	N/A ---- ------- -------------	a. Inspect Switch Foot SA-754/FSW-8 for corrosion, dirt, or damage. b. Inspect SA-754/FSW-8 for normal operation.	a. The SA-754/FSW-8 is clean and free from corrosion. b. The switch operates freely; spring return to the off position is normal.

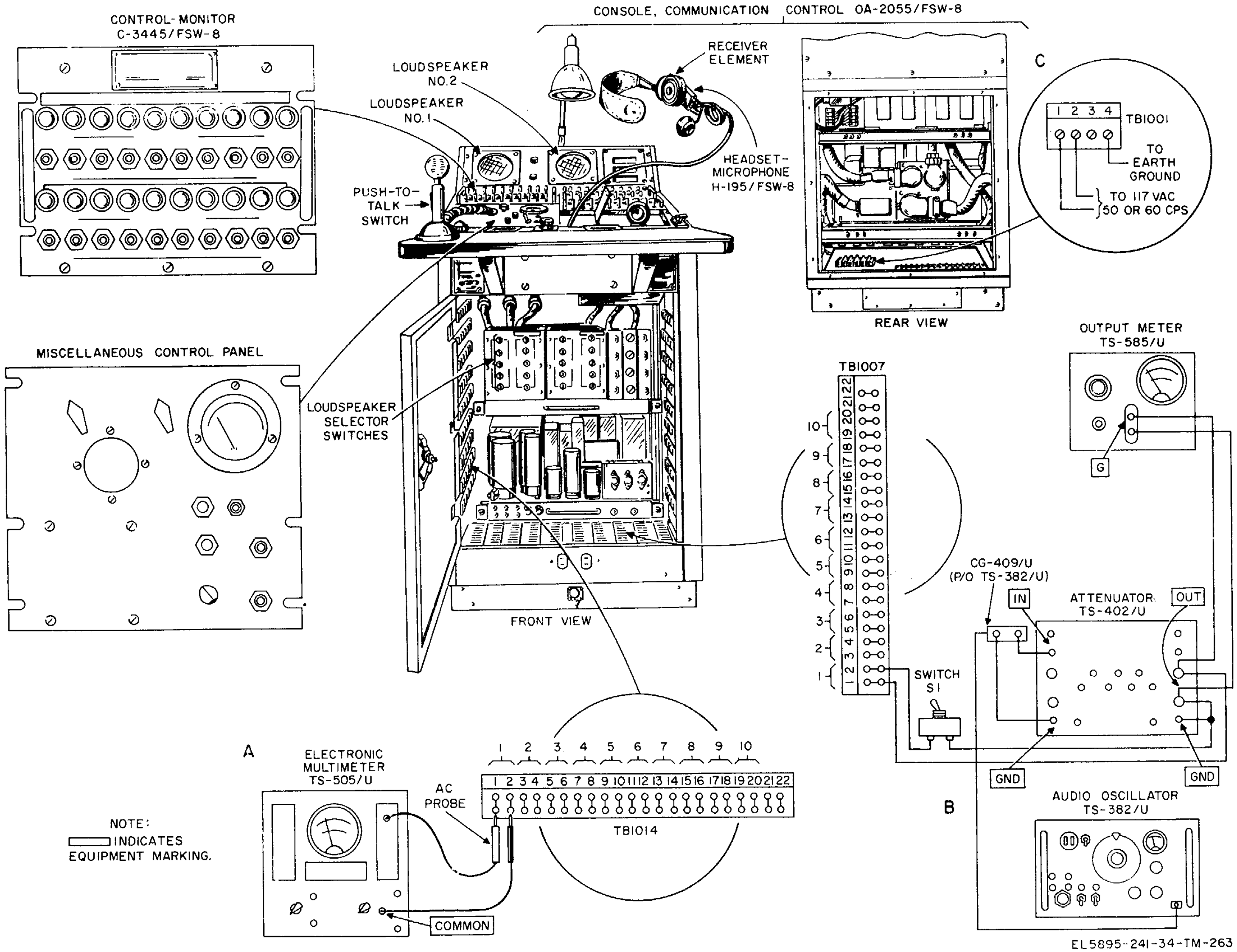


Figure 5-2. Console, Communication Control OA-2055/FSW-8, receiver control circuits, test hookup diagram.

5-8. Receiver Control Circuits Test

a. Test Equipment and Materials Required.

(1) Electronic Multimeter TS-505/U.
(2) Output Meter TS-585/U.
(3) Attenuator TS-402/U.
(4) Audio Oscillator TS-382/U.
(5) Test switch S1.

b. Test Connections and Conditions.

(1) Operate MAIN POWER circuit breaker CB1001 to OFF, and make the following preliminary control settings:
(a) Operate the RECEIVE switch for each receiver channel (on the C-3445/FSW-8) to OFF.
(b) Operate the TRANSMIT switch for each transmitter channel (on the C-3445/FSW-8) to OPERATE.
(c) Operate LOCAL-REMOTE switch Sl101 (on the miscellaneous control panel) to LOCAL.
(d) Rotate the HEADSET volume control (on the miscellaneous control panel) to the midrange position.
(e) Rotate the VOLUME CONTROL 1 and VOLUME CONTROL 2 switches (on the loudspeaker and indicator panel) to the mid-range position.
(2) Connect the equipment as shown in A, B, and C, figure 5-2.
(3) Operate MAIN POWER circuit breaker CB1001 to ON.

c. Initial Test Equipment Calibration. Turn on all test equipment and proceed as follows:

(1) Allow the TS-505/U to warm up for at least 3 minutes.
(2) Operate the TS-505/U FUNCTION switch to AC and the RANGE switch to 2V.
(3) Adjust the TS-505/U indicator pointer to zero by connecting the ac probe to the COMMON terminal and rotating the ZERO ADJ. control.
(4) Operate the meter multiplier switch on the TS-585/U to -10 DECIBELS. Operate the impedance control to 60x10.
(5) Allow the TS-382/U to warm up for at least 5 minutes, and proceed as follows:
(a) Operate the tuning control to 100.
(b) Operate the RANGE switch to X10.
(c) Operate the AMPL control on the TS-382/U and the switches on the TS-402/U to obtain an indication of -10 dbm on the TS-585/U.

d. Procedure.

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	N/A	N/A - ------	a. Operate test switch S1 to the on a. position ------------ b. Operate RECEIVE switch S1501 to SPEAKER	RECEIVE supervisory indicator lamp DS1501 illuminates. b. RECEIVE supervisory indicator lamp DS1501 remains illuminated.

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
			c. Operate RECEIVE switch S1501 to HEADSET ----------------	c. RECEIVE supervisory indicator lamp DS1501 remains illuminated.
			d. Operate RECEIVE switch S1501 to OFF ------------------	d. RECEIVE supervisory indicator lamp DS1501 remains illuminated.
			e. Note the indication on the TS-505/U	e. The TS-505/U should indicate 0.157 VRMS minimum.
2	N/A	N/A ----------------------	a. Operate loudspeaker selector switch S701 to SPEAKER No. 1. b. Operate RECEIVE switch S1501 to SPEAKER position c. Rotate VOLUME CONTROL 1 clockwise d. Rotate VOLUME CONTROL 1 counterclockwise	a. None. b. A clear, sharp tone should be heard from loudspeaker No.1. c. The intensity of the tone noted in b. above should increase.
3	N/A --------------------	N/A ---------- -------------	a. Operate loudspeaker selector switch S701 to SPEAKER No 2 position. b. Rotate VOLUME CONTROL 2 clockwise - ------------- c. Rotate VOLUME CONTROL 2 counterclockwise	a. A clear sharp tone should be heard from loudspeaker No. 2. b. The intensity of the tone noted in a above should increase. c. The intensity of the tone noted in a above should increase.
4	N/A	N/A -----------	a. Operate RECEIVE switch S1501 to HEADSET ------------ b. Rotate HEADSET volume control clockwise ----------------- c. Rotate HEADSET volume control counterclockwise	a A clear, sharp tone should be heard from the receiver element of Headset-Microphone H-195/FSW4. b. The intensity of the tone noted in a above should increase. c. The intensity of the tone noted in a above should decrease.
5	N/A--------	N/A	a. Depress and hold the Microphone, Magnetic M-110/U push-to-talk switch. b. Operate RECEIVE switch S1501 to SPEAKER guished. c. Operate RECEIVE switch S1501 to HEADSET .---------- d. Operate RECEIVE switch S1501 to OFF	a. RECEIVE supervisory indicator lamp DS1501 should extinguish. b. RECEIVE supervisory indicator lamp DS1501 remains extin- c. RECEIVE supervisory indicator lamp DS1501 remains extinguished. d. RECEIVE supervisory indicator lamp DS1501 remains extinguished.

			e. Note the indication on the TS-505/ U ----------------- f. Release Microphone, Magnetic M-110/U push-to-talk switch.	e. The TS-505/U should indicate 0 volt. f. RECEIVE supervisory indicator lamp DS1501 illuminates.
6	N/A ----------------------	N/A ----------	a. Disconnect the TS-402/U from terminals 1 and 2 of terminal board TB1007 and reconnect it to terminals 3 and 4. b. Repeat the procedures outlined in steps 1 through 5 above, using the receiver components of radio channel No.2.	a. None. b. Same indications as outlined in steps 1 through 5 above, except that RECEIVE supervisory indicator lamp DS1502 is involved.
7	N/A - ----------------	N/A ------------	a. Disconnect the TS-402/U from terminals 3 and 4 of terminal board TB1007 and reconnect it to terminals 5 and 6. b.- Repeat the procedures outlined in steps 1 through 5 above, using the receiver components of radio channel No.3.	a. None. b. Same indications as outlined in steps 1 through 5 above except that RECEIVE supervisory indicator lamp DS1503 is involved.
8	N/A .------------------	N/A --------------	a. Disconnect the TS-402/U from terminals 5 and 6 of terminal board TB1007 and reconnect it to terminals 7 and 8. b. Repeat the procedures outlined in steps 1 through 5 above, using the receiver components of radio channel No.9.	a. None. b. Same indications as outlined in steps 1 through 5 above except that RECEIVE supervisory indicator lamp DS1504 is involved.
9	N/A-------------------	N/A----------------------	a. Disconnect the TS-402/U from terminals 7 and 8 of terminal board TB1007 and reconnect it to terminals 9 and 10. b. Repeat the procedures outlined in steps 1 through 5 above, using the components of radio channel No.5.	a. None. b. Same indications as outlined in steps 1 through 5 above except that RECEIVE supervisory indicator lamp DS1505 is involved.
10	N/A .-------------------	N/A ----------------------	a. Disconnect the TS-402/U from terminals 9 and 10 of terminal board TB1007 and reconnect it to terminals 11 and 12.1 b. Repeat the procedures outlined in steps 1 through 5 above, using the receiver components of radio channel No.6.	a. None. b. Same indications as outlined in steps 1 through 5 above except that RECEIVE supervisory indicator lamp DS1506 is involved.

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
11	N/A ----------------------	N/A	a. Disconnect the TS-402/U from terminals 11 and 12 of terminal board TB1007 and reconnect it to terminals 13 and 14. b. Repeat the procedures outlined in steps 1 through 5 above, using the receiver components of radio channel No. 7	a. None. , b. Same indications as outlined in steps 1 through 5 above except that RECEIVE supervisory in-dicator lamp DS1507 is involved.
12	N/A ----------------------	N/A ----------------------------	a. Disconnect the TS-402/U from terminals 13 and 14 of terminal board TB1007 and reconnect it to terminals 15 and 16. b. Repeat the procedures outlined in 1 through 5 above, using the receiver components of radio channel No. 8	a. None. b. Same indications as outlined in steps 1 through 5 above, except that RECEIVE supervisory indicator lamp DS1508 is involved.
13	N/A -----------------------	N/A ----------------------------	a. Disconnect the TS-402/U from terminals 15 and 16 of terminal board TB1007 and reconnect it to terminals 17 and 18. b. Repeat the procedures outlined in steps 1 through 5 above, using the receiver components of radio channel No. 9	a. None. b. Same indications as outlined in steps 1 through 5 above, except that RECEIVE supervisory indicator lamp DS1509 is in-volved.
14	N/A -----------------------	N/A -----------------------	a. Disconnect the TS-402/U from terminals 17 and 18 of terminal board TB1007 and reconnect it to terminals 19 and 20. b. Repeat the procedures outlined in steps 1 through 5 above, using the receiver components of radio channel No. 10	a. None. b. Same indications as outlined in steps 1 through 5 above, except that RECEIVE supervisory in-dicator lamp DS1510 is in-volved.

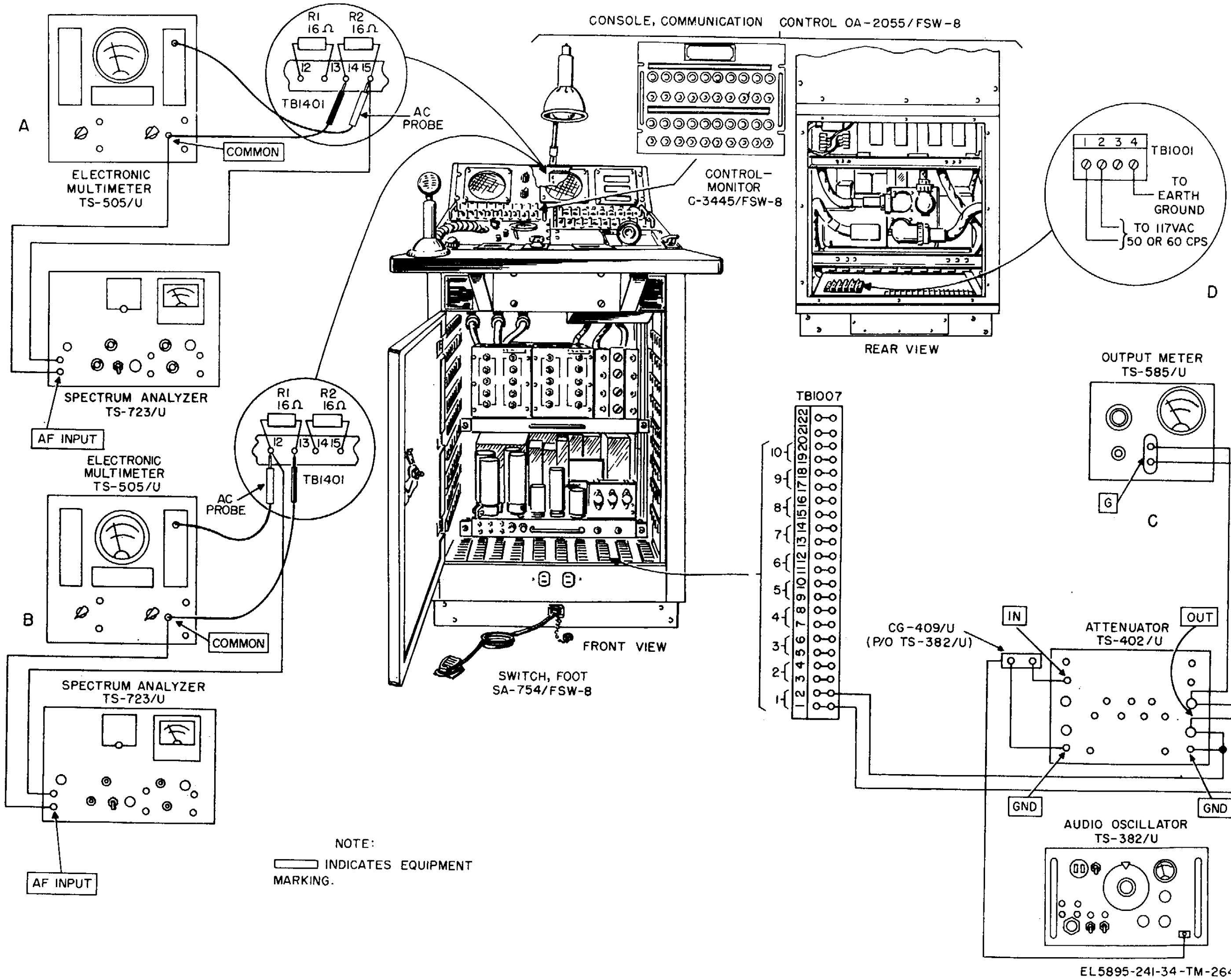


Figure 5-3. Console, Communication Control OA-2055/FSW-8, loudspeaker isolation, test hookup diagram.

5-9. Loudspeaker Isolation Test

a. Test Equipment and Materials Required.
(1) Electronic Multimeter TS-505/U.
(2) Output Meter TS-585/U.
(3) Attenuator TS-402/U.
(4) Audio Oscillator TS-382/U.
(5) Spectrum Analyzer TS-723/U.
(6) Resistor, 16-ohm (2 required).

b. Test Connections and Conditions.
(1) Operate MAIN POWER circuit breaker CB1001 to OFF, and make the following preliminary control settings:
(a) Operate the RECEIVE switch for each receiver channel to OFF.
(b) Operate the TRANSMIT switch for each transmitter channel to OPERATE.
(c) Operate LOCAL-REMOTE switch S1101 to LOCAL.
(d) Rotate the HEADSET volume control to the midrange position.
(e) Rotate the VOLUME CONTROL 1 and VOLUME CONTROL 2 for the equipment loudspeakers to their maximum clockwise position.
(f) Operate loudspeaker selector switch S701 to the SPEAKER No. 1 position.
(2) Connect the equipment as shown in A, C, and D, figure 5-3.
(3) Turn on the power to all test equipment and operate MAIN POWER circuit breaker on the OA-2055/FSW-8 to ON.

c. Initial Test Equipment Calibration. Proceed as follows to calibrate the test equipment:
(1) Allow the TS-505/U to warm up for at least 3 minutes.
(2) Operate the TS-505/U FUNCTION switch to AC; operate the RANGE switch to 10OV.
(3) Adjust the TS-505/U indicator pointer to zero by connecting the ac probe to the COMMON terminal and rotating the ZERO ADJ control.
(4) Operate the TS-585/U meter multiplier switch to -10 DECIBELS. Operate the impedance control to 60x10.
(5) Allow the TS382/U to warm up for at least 5 minutes, and proceed as follows:
(a) Operate the tuning control to 100.
(b) Operate the RANGE switch to X10.
(c) Operate the AMPL control on the TS382/U and the switches on the TS-402/U to obtain an indication of -10 dbm on the TS-585/U.
(6) Calibrate the TS-723/U as follows:
(a) Operate the AF-RF selector switch to AF.
(b) Operate the meter range switch to 100 %.
(c) Operate the function switch to SET LEVEL.
(d) Slowly rotate the signal INPUT control clockwise until the decibels meter pointer reads full-scale deflection.
(e) Operate the frequency RANGE switch to X10.
(f) Rotate the function switch to DISTORTION.
(g) Adjust the coarse FREQUENCY tuning control knob until the decibels meter pointer drops sharply.

(h) Adjust the fine **FREQUENCY** tuning control knob for maximum dip of the decibels meter pointer.

(i) Adjust the **BALANCE** control for minimum decibels meter reading.

d. *Procedure.*

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	N/A ----------------------	N/A ----------------------------	Operate RECEIVE switch S1501 to SPEAKER	The TS-505/U should indicate +4 volts minimum.
2	N/A ----------------------	Adjust VOLUME CONTROL 1 to obtain a reading of +4 volts on the TS-505/U	a. Operate loudspeaker selector switch S701 to LOUDSPEAKER No. 2.	a. None.
			b. Depress and then release the SA-754/FSW-8 ----------------	b. The TS-505/U should indicate 0 volt.
			c. Operate loudspeaker selector switch S701 to LOUDSPEAKER No. 1.	c. The TS-505/U should indicate +4 volts.
			d. Note the percentage of distortion as indicated on the TS-723/U.	d. The TS-723/U should indicate less than 10 percent.
3	N/A ---------------------	N/A --------------------------	a. Rotate the TS-382/U tuning control from 50 to 500 and observe the TS-505/U.	a. The TS-505/U should indicate less than a 3-dbm variation.
			b. Return the TS-382/U tuning control to 100 ----------------	b. None.
4	N/A ----------------------	N/A -------------------------	a. Connect equipment as shown in B, figure 5-3.	a. None.
			b. Operate loudspeaker selector switch S701 to LOUDSPEAKER No. 2.	b. The TS-505/U should indicate +4 volts minimum.
5	N/A ----------------------	Adjust VOLUME CONTROL 1 to obtain a reading of +4 volts on the TS-505/U	a. Operate loudspeaker selector switch S701 to LOUDSPEAKER No. 1.	a. None.
			b. Depress and then release the SA-754/FSW-8 ---------------	b. The TS-505/U should indicate 0 volt.
			c. Operate loudspeaker selector switch S701 to LOUDSPEAKER No. 2.	c. The TS-505/U should indicate +4 volts.
			d. Note the percentage of distortion as indicated on the TS-723/U.	d. The TS-723/U should indicate less than 10 percent.
6			a. Rotate the TS-382/U tuning control from 50 to 500 and observe the TS-505/U.	a. The TS-505/U should indicate less than a 3-dbm variation.
			b. Return the TS-382/U tuning control to 100	b. None.

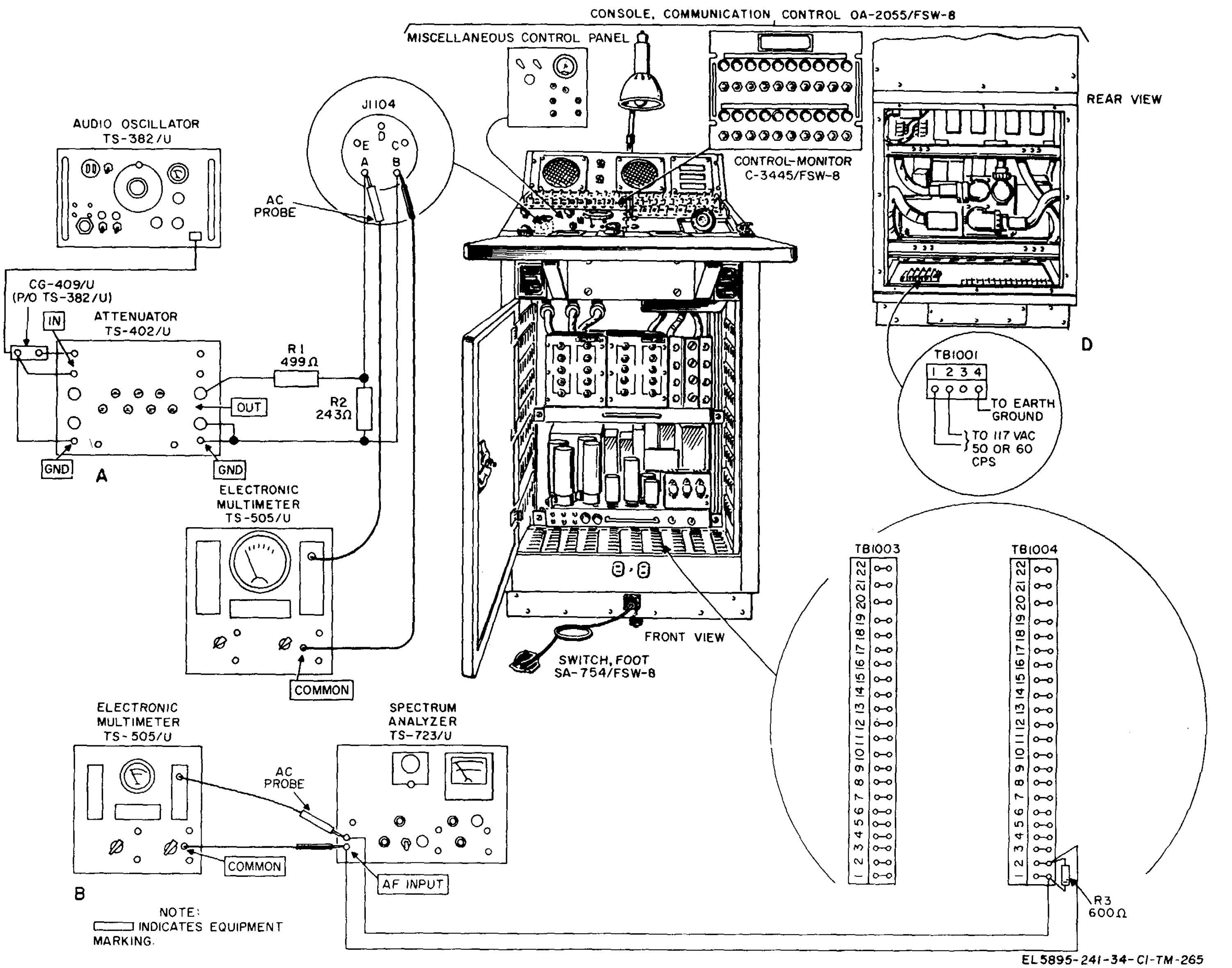


Figure 5-4. Console, Communication Control OA-20555/FSW-8, transmitter control amplifier, test hookup diagram

5-10. Transmitter Control and Amplifier Test

a. Test Equipment and Materials Required.
(1) Electronic Multimeter TS-505/U (2 required).
(2) Attenuator TS-402/U.
(3) Audio Oscillator TS-383/U.
(4) Spectrum Analyzer TS-723/U.
(5) Resistor, 499-ohm, 2-watt (R1).
(6) Resistor, 243-ohm, 2-watt (R2).
(7) Resistor, 600-ohm, 2-watt (R3).

b. Test Connections and Conditions.

(1) Connect the equipment as shown in A, B, C, and D, figure 5-4.
(2) Turn on the power to all test equipment, operate MAIN POWER circuit breaker CB1001 to ON, and make the following preliminary control settings:
(a) Operate MIKE selector switch S1102 to MAGNETIC.
(b) Operate the MAGNETIC VOLUME CONTROL maximum clockwise.
(c) Operate the TRANSMIT switch for each transmitter channel to OFF.
(d) Operate the RECEIVE switch for each receiver channel to OFF.
(e) Operate LOCAL-REMOTE switch S1101 to LOCAL.
(f) Depress and lock the SA-754/FSW-8.

c. Initial Test Equipment Calibration. Proceed as follows to calibrate the test equipment:

(1) Allow the TS-505/U to warm up for at least 3 minutes.
(2) Operate the TS-505/U FUNCTION switch to AC; operate the RANGE switch to 10V.
(3) Adjust the TS-505/U indicator pointer to zero by connecting the ac probe to the COMMON terminal and rotating the ZERO ADJ control.
(4) Operate the TS-585/U meter multiplier switch to -10 DECIBELS. Operate the impedance control to 60x10.
(5) Allow the TS-382/U to warm up for at least 5 minutes, and proceed as follows:
(a) Operate the tuning control to 100.
(b) Operate the RANGE switch to X10.
(c) Operate the TS-402/U DB loss rotary switches to 0-db loss.
(d) Adjust the TS-382/U AMPL control and switches on the TS-402/U so as to obtain a reading of 0.9 volt on the TS-505/U.
(e) Operate the TS-402/U DB Loss rotary switches to insert a 60-db loss. -
(6) Calibrate the TS-723/U as follows:
(a) Operate the AF-RF selector switch to AF.
(b) Operate the meter range switch to 100%.
(c) Operate the function switch to SET LEVEL.
(d) Slowly rotate the signal INPUT control clockwise until the decibels meter pointer reads full-scale deflection.
(e) Operate the frequency RANGE switch to X10.
(f) Rotate the function switch to DISTORTION.

(g) Adjust the coarse FREQUENCY control knob until the decibels meter pointer drops sharply.
(h) Adjust the fine FREQUENCY control knob for maximum dip of the decibels meter pointer.
(i) Adjust the BALANCE control for minimum decibels meter reading.

d. Procedure.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
1	N/A	N/A	Operate TRANSMIT switch S1511 to OPERATE...	The TS-505/U (B, fig. 54.) should read 1.5 volts minimum, and TRANSMIT supervisory indicator lamp DS1511 should illuminate.
2	N/A	N/A	a. Rotate the MAGNETIC VOLUME control counterclockwise b. Rotate the MAGNETIC VOLUME CONTROL clockwise c. Rotate the MAGNETIC VOLUME CONTROL until the TS-505/U (B, fig, fig. 5-4) reads 1.5 volts. d. Observe the OA-2055/FSW-8 dbm meter indicate 6+ 0.5 dbm. e. Note the percentage of distortion indicated on the TS-723/U	a. The TS-505/U (B, fig. 5-4.) should indicate a decrease. b. The TS-505/U (B, fig/5-4) should indicate an increase. c. None. d. The OA-2055/FSW-8 dbm meter should e. The TS-723/U (B, fig. 5-4) should indicate less than 10 percent distortion.
3	N/A	N/A	a. Rotate the TS-382/U tuning control from 50 to 500 b. Operate the tuning control of the TS-382/U to 100	a. The TS-505/U (B, fig. 5-4) should indicate less than a 3-dbm variation. b. The TS-505/U (B, of fig. 5-4) should indicate 1.5 volts minimum.

d. Procedure (cont')

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
4 indicate indicate	N/A	N/A	a. Operate the TRANSMIT witch for all transmit channels to OPERATE b. Repeat (a.) above, measure resistance at TB1005 terminals I and II. c. Operate the TRANSMIT switch for at channels to OFF d. Repeat (c) above, measure resistance at TB 1005 terminals 1 and 11.	a. The TS-505/U (B, fig. 5-4) should 0.9 volt minimum. b. TS-505/U indicates zero ohms. c. The TS-505/U (B, fig. 5-4) should 0 volt. d. TS-505/U indicates infinite resistance.
5 U	N/A	N/A	a. Disconnect the leads of the test equipment from terminals 1 and 2 of terminal boards TB1003 and TB1004, and reconnect to terminals 3 and 4. b. Operate TRANSMIT switch S1512 to OPERATE	a. None. b. TRANSMIT supervisory indicator lamp DS1512 should illuminate, the TS-505/U (B, fig. 5-4) should indicate 1.5 volts minimum.

			c. Operate TRANSMIT switch S1512 to OFF	c. TRANSMIT supervisory indicator lamp DS1512 will extinguish, the TS-505/U (B fig. 5-4) should indicate 0 volt.
6	N/A	N/A	a. Disconnect the leads of the test equipment from terminals 3 and 4 of terminal boards TB1003 and TB1004, and reconnect to terminals 5 and 6.	a. None.
			b. Operate TRANSMIT switch S1513 to OPERATE	b. TRANSMIT supervisory indicator lamp DS1513 should illuminate, the TS-505/U (B, fig. 5-4) should indicate 1.5 volts minimum, and
			c. Operate TRANSMIT switch S1513 to OFF	c. TRANSMIT lamp DS1513 should extinguish and the TS-505/U (B fig. 5-4) should indicate 0 volt.
7	N/A	N/A	a. Disconnect the leads of the test equipment from terminals 5 and 6 of terminal boards TB1003 and TB1004, and reconnect to terminals 7 and 8.	a. None.
			b. Operate TRANSMIT switch S1514 to OPERATE	b. TRANSMIT supervisory indicator lamp DS1514 should illuminate, the TS-505/U (B, fig. 5-4) should indicate 1.5 volts minimum.
			c. Operate TRANSMIT switch S1614 to OFF position	c. TRANSMIT supervisory indicator lamp DS1514 should extinguish, and the TS-505/U (B fig. 5-4) should indicate 0 volt.
8	N/A	N/A	a. Disconnect the leads of the test equipment from terminals 7 and 8 of terminal boards TB1003 and TB1004, and reconnect to terminals 9 and 10.	a. None.
			b. Operate TRANSMIT switch S1515 to OPERATE	b. TRANSMIT supervisory indicator lamp DS1515 should illuminate, the TS-505/U (B, fig. 5-4) should indicate 1.5 volts mini-

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
			c. Operate TRANSMIT switch S1515 to OFF	mum c. TRANSMIT supervisory indicator, lamp DS1515 should extinguish and the TS-505/U (B fig. 5-4) should indicate 0 volt.
9	N/A	N/A	a. Disconnect the leads of the test equipment from terminals 9 and 10 of terminal boards TB1003 and TB1004, and reconnect to terminals 11 and 12. b. Operate TRANSMIT switch S1516 to OPERATE c. Operate TRANSMIT switch S1516 to OFF	a. None. b. TRANSMIT supervisory indicator lamp DS1516 should illuminate, and the TS-505/U (B, fig. 5-4) should indicate 1.5 volts minimum, c. TRANSMIT supervisory indicator lamp DS1516 should extinguish and the TS-505/U (B, fig. 5-4) should indicate 0 volt.
10	N/A	N/A	Disconnect the leads of the test and 12 of terminal boards TB-1003 and TB1004, and reconnect to terminals 13 and 14. b. Operate TRANSMIT switch S1517 to OPERATE c. Operate TRANSMIT switch S1517 to OFF	a. None b. TRANSMIT supervisory indicator lamp DS1517 should illuminate, the TS-505/U (B, fig. 5-4) should indicate 1.5 volts minimum, C. TRANSMIT supervisory indicator lamp DS1517 should extinguish, and the T'S-505/U (B fig. 5-4) should indicate 0 volt.
11	N/A	N/A	a. Disconnect the leads of the test equipment from terminals 13 and 14 of terminal boards TB-1003 and TB1004, and reconnect to terminals 15 and 16.	a. None.

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
			b. Operate TRANSMIT switch S1518 to OPERATE c. Operate TRANSMIT switch S1518 to OFF	b. TRANSMIT supervisory indicator lamp DS1518 should illuminate, the TS-505/U (B, fig. 5-4) should indicate 1.5 volts minimum c. TRANSMIT supervisory indicator lamp DS1518 should extinguish, and the TS-505/U (B ,fig. 5-4) should indicate 0 volt.
12	N/A	N/A	a. Disconnect the leads of the test equipment from terminals 15 and 16 of terminal boards TB-1003 and TB1004 and reconnect to terminals 17 and 18. b. Operate TRANSMIT switch S1519 to OPERATE c. Operate TRANSMIT switch S1519 to OFF	a. None. b. TRANSMIT supervisory indicator lamp DS1519 should illuminate, the TS-505/U (B, fig. 5-4) should indicate 1.5 volts minimum, c. TRANSMIT supervisory indicator lamp DS1519 should extinguish, and the TS-505/ U(Bo fig. 5-4) should indicate 0 volt.
13	N/A	N/A	a. Disconnect the leads of the test equipment from terminals 17 and 18 of terminal boards TB-1003 and TB1004, and reconnect to terminals 19 and 20. b. Operate TRANSMIT switch S1520 to OPERATE c. Operate TRANSMIT switch S1520 to OFF	a. None. b. TRANSMIT supervisory indicator lamp DS1520 should illuminate, the TS-605/U B, fig. 5-4) should indicate 1.5 volts minimum, c. TRANSMIT supervisory indicator lamp DS1520 should extinguish, and the TS-505/U (BP fig. 5-4) should indicate 0 volt.

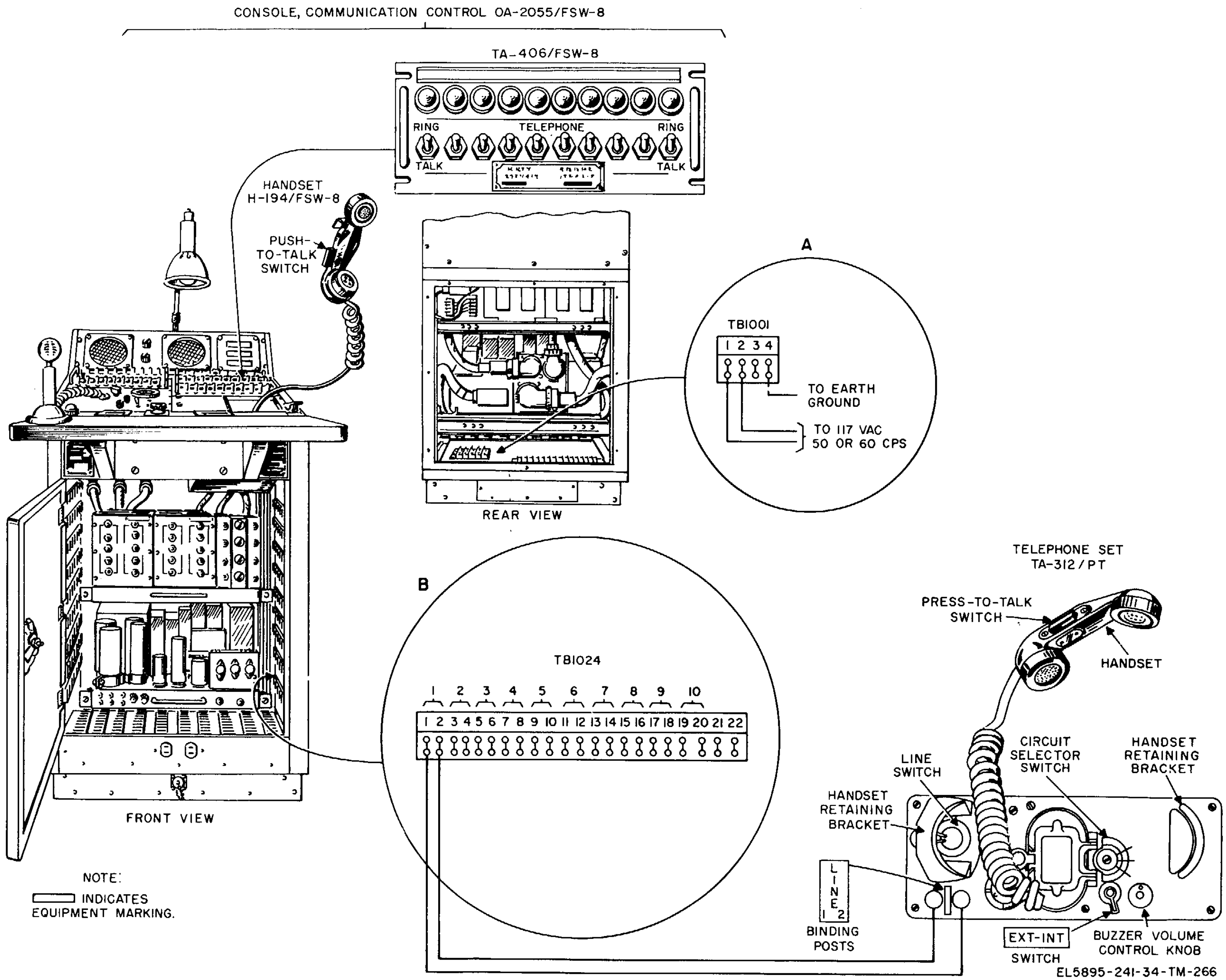


Figure 5-5. Console, Communication Control OA-2055/FSW-8, telephone controls, test hookup diagram.

5-11. Telephone Control Circuits Test

a. Test Equipment and Materials Required.
(1) Telephone Set TA-312/PT.
(2) Battery BA-30 (2).
b. Test Connections and Conditions.
(1) Install Batteries BA-30 in the TA-312/PT.
(2) Place the TA-312/PT handset in the handset retaining brackets so that the TA-312/PT line switch is depressed.
(3) Connect the equipment as shown in A and B, figure 5-5.
(4) Operate TELEPHONE switch S1301 through S1310 on the TA-406/FSW-8 to OFF.
(5) Operate the TA-312/PT INT-EXT switch to INT.
(6) Operate the TA312/PT circuit selector switch to LB, and operate the buzzer volume control to LOUD.

c. Procedure.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
1	N/A	N/A	With the TA-312/PT handset in the retaining brackets, turn the TA-312/PT hand generator crank rapidly (approximately 150 to 200 rpm) 10 times	TELEPHONE supervisory indicator lamp DS1301 should illuminate and remain illuminated after turning of the hand generator crank ceases. Buzzer DS1311 should be audible only when the TA-312/PT hand generator crank is turned.
2	N/A	N/A	a. Operate TELEPHONE switch S1301 to TALK b. With the TA-312/PT handset in the retaining brackets, turn the TA-312/PT hand generator crank rapidly (approximately150 to 200 rpm)- 10 times	a. TELEPHONE supervisory indicator lamp DS1301 should extinguish. b. TELEPHONE supervisory indicator lamp DS1301 should light and buzzer DS1311 should be audible only when the TA-312/PT hand generator is turned.
3	N/A	N/A	Operate TELEPHONE switch S1301 to RING for a few seconds, and then release TELEPHONE switch S1301.	The TA-312/PT buzzer should be audible only while TELEPHONE switch S1301 is at RING.
4	N/A	N/A	a. Remove the TA-312/PT handset from the retaining brackets. b. Depress the TA-312/PT press-to- talk switch . Speak into the TA 312/PT transmitter c. Depress the H-194/FSW-8 push- to-talk switch. Speak into the H-194/FSW-8 transmitter.	a. None. b. Speech should be heard in the receiver element of the H-194/ FSW-8 handset. c. Speech should be heard in the receiver element of the TA-312/I PT handset.

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
			d. Release the H-194/FSW- push-to-talk switch. Speak into the H-194/FSW transmitter e. Operate TELEPHONE switch S1301 to OFF and replace the TA-312/PT handset in its re-taining brackets.	d. No speech from the H-194/FSW-8 should be heard from the receiver element of the TA-312/PT handset. e. None.
5	N/A	N/A	a. Disconnect the TA-312/PT from terminals 1 and 2 of terminal board TB1024 and reconnect it to terminals 3 and 4. b. Repeat the procedures outlined in steps 1 through 4 above, using	a. None. b. TELEPHONE supervisory indicator lamp DS1302 should illuminate or extinguish (same TELEPHONE switch S1302 indications as outlined in steps 1 through 4 above).
6	N/A	N/A	a. Disconnect the TA-312/PT from terminals 3 and 4 of terminal board TB1024 and reconnect it to terminals 5 and 6. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1303	a. None. b. TELEPHONE supervisory indicator lamp DS1303 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).
7	N/A	N/A	a. Disconnect the TA-312/PT from terminals 5 and 6 of terminal board TB1024 and reconnect it to terminals 7 and 8. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1304.	a. None. b. TELEPHONE supervisory indicator lamp DS1304 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).
8	N/A	N/A	a. Disconnect the TA-312/PT from terminals 7 and 8 of terminal board TB1024 and reconnect it to terminals 9 and 10. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1305	a. None. b. TELEPHONE supervisory indicator lamp DS1305 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).

9	N/A	N/A	a. Disconnect the TA-312/PT from terminals 9 and 10 of terminal board TB1024 and reconnect it to terminals 11 and 12. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1306	a. None. b. TELEPHONE supervisory indicator lamp DS1306 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).
10	N/A	N/A	a. Disconnect the TA-312/PT from terminals 11 and 12 of terminal board TB1024 and reconnect it to terminals 13 and 14. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1307	a. None. b. TELEPHONE supervisory indicator lamp DS1307 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).
11	N/A	N/A	a. Disconnect the TA-312/PT from terminals 13 and 14 of terminal board TB1024 and reconnect it to terminals 15 and 16. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1308	a. None. b. TELEPHONE supervisory indicator lamp DS1308 should illuminate or extinguish(same indications as outlined in steps 1 through 4 above).
12	N/A	N/A	a. Disconnect the TA-312/PT from terminals 15 and 16 of terminal board TB1024 and reconnect it to terminals 17 and 18. b. Repeat the procedures outlined in steps I through 4 above ,using TELEPHONE switch S1309.	a. None. b. TELEPHONE supervisory indicator lamp DS1309 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).
13	N/A	N/A	a. Disconnect the TA-312/PT from terminals 17 and 18 of terminal board TB1024 and reconnect it to terminals 19 and 20. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1310	a. None. b. TELEPHONE supervisory indicator lamp DS1310 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).

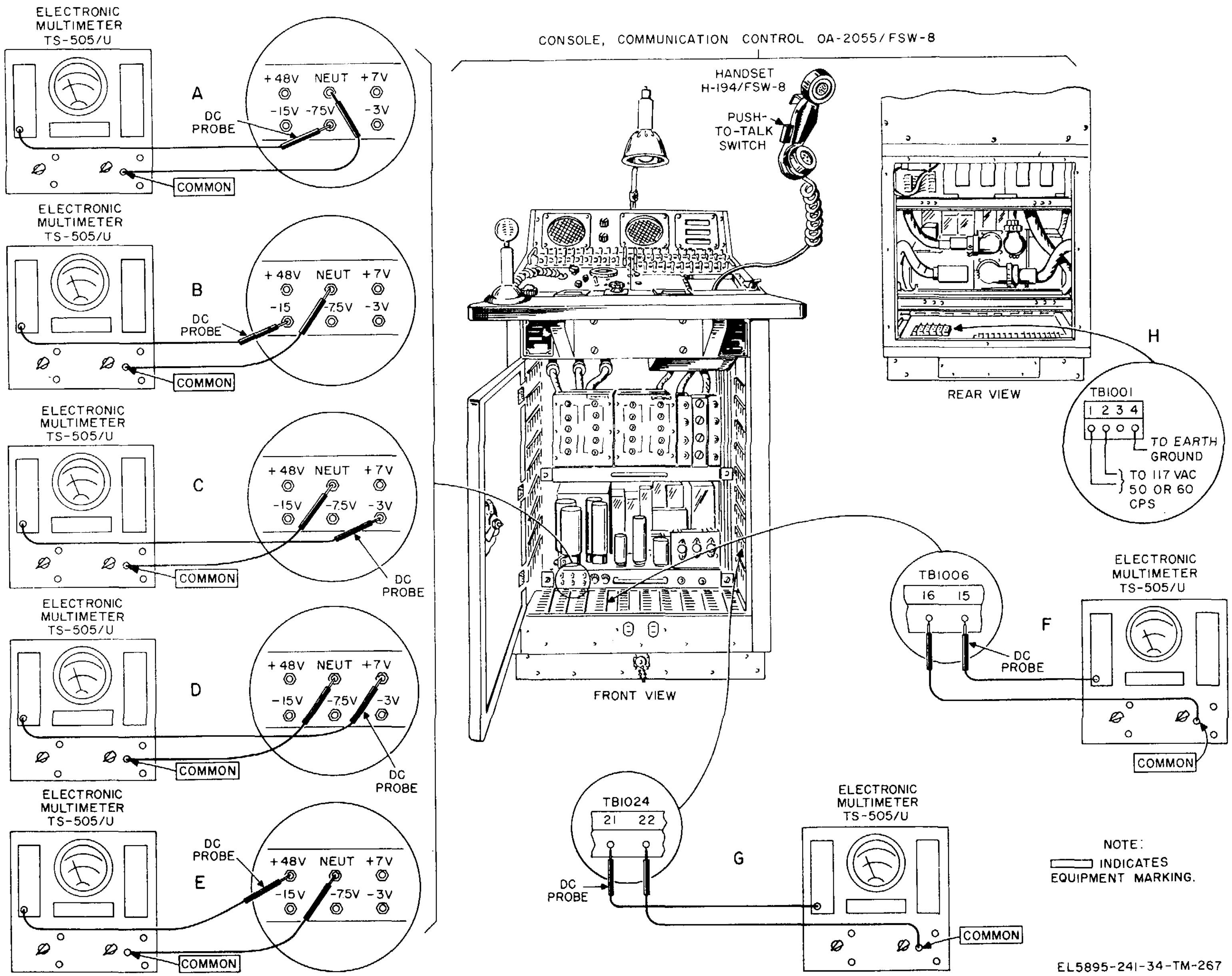


Figure 5-6. Power Supply PP-2803/FSW-8, test hookup diagram.

5-12. Power Supply PP-2803/FSW-8 Test

a. Test Equipment and Materials Required. Electronic Multimeter TS-505/U.

b. Test Connections and Conditions. The procedure for performing the power supply tests, when Power Supply PP-2803/FSW-8 is installed in Console, Communication Control OA-2055/FSW-8, is given below. Connect the OA-2055/FSW-8 to a 117-volt ac power source as shown in H, figure 5-6.

c. Initial Test Equipment Calibration.

(1) Allow the TS-505/U to warm up for at least 3 minutes.

(2) Adjust the TS505/U indicator pointer to zero by connecting the dc probe to the COMMON terminal and rotating the ZERO ADJ control.

(3) Operate the TS-505/U RANGE switch to 2V.

d. Procedure.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
1	TS-505/U FUNCTION switch: --DC. RANGE switch: 10V	N/A	a. Connect the equipment as shown in A, figure 5-6. b. Observe the indication on the TS-505/U	a. None. b. The TS-505/U should indicate -7.5 volts.
2	TS-505/U RANGE switch: 20V	N/A	a. Connect the equipment as shown in B, figure 5-6. b. Observe the indication on the TS-505/U	a. None. b. The TS-505/U should indicate -15 volts.
3	TS-505/U RANGE switch: 4V	N/A Depress and then release the H-195/FSW-8 push-to-talk switch	a. Connect the equipment as shown in C, figure 5-6. b. Observe the indication on the TS-505/U	a. None. b. The TS-505/U should indicate between -3 and -4 volts when the push-to-talk switch is depressed.
4	TS-505/U FUNCTION switch: +DC. RANGE switch: 10V	N/A	a. Connect the equipment as shown in D, figure 5-6. b. Observe the indication on the TS-505/U	a. None. b. The TS-505/U should indicate - between +6 and +10 volts.
5	TS-505/U RANGE switch: 100V	Operate the TRANSMIT switch for one transmit channel to OPERATE and then to OFF.	a. Connect the equipment as shown in E, figure 5-6. b. Observe the indication on the TS-505/U	a. None. b. The TS-505/U should indicate between +40 and +46 volts, when the TRANSMIT switch is in operated.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
6	TS-505/U RANGE switch: 1OOV.	N/A	a. Connect the equipment as shown in F, figure 5-6. b. Observe the indication on the TS-505/U	a. None. b. The TS-505/U should indicate i n between +38 and +46 volts.
7	TS-55/U RANGE switch: 200V.	Operate the TELEPHONE switch for one telephone channel to RING and then release.	a. Connect the equipment as shown in G, figure 5-6. b. Observe the indication on the TS-505/U	a. None. b. The TS-505/U should indicate between +95 and +110 volts, when the TELEPHONE switch is operated.

5-13. Test Data

Personnel may fine it convenient to arrange the OA-2055/FSW-8 test data in a manner similar to that shown below. In the Performance standard column, record the actual indications obtained during the various tests performed. These data may be used as a check against the performance standards the next time the tests are performed.

CONSOLE COMMUNICATION CONTROL OA-2055/FSW-8

	Performance standard
1. RECEIVER CONTROL CIRCUITS TEST	
a. RECEIVE supervisory indicator lamp operation (audio signal of -10 dbm on the corresponding line).	a. Supervisory indicator lamp illuminates (each radio receiver channel).
b. Monitor output (each radio channel)	b. +1.55 volts minimum.
c. VOLUME CONTROL 1 and VOLUME CONTROL 2 loudspeaker controls	c. Audio level of the associated loudspeaker varies with rotation of the control.
d. HEADSET volume control	d. Audio level of the H-195/FSW-8 varies with rotation of the control.
e. Muting (when the corresponding transmitter circuit is energized)	e. RECEIVE supervisory indicator lamp extinguishers (each radio receiver channel).
f. Receiver channel overall gain (line input to amplifier output).	f. 50 db.
2. LOUDSPEAKER ISOLATION TEST	
a. Loudspeaker No. 1 amplifier gain ,	a. 30 dbm minimum.
b. Loudspeaker No. 1 amplifier distortion	b. Less than 10-percent distortion at the 1-watt level.
c. Loudspeaker No. 1 amplifier frequency response	c. Flat within 3 db over frequency range from 400 to 5,000 cps.
d. Loudspeaker No. 2 amplifier gain	d. 30 dbm minimum.
e. Loudspeaker No. 2 amplifier distortion	e. Less than 10-percent distortion at the 1-watt level.
f. Loudspeaker No. 2 amplifier frequency response	f. Flat within 3 db over frequency range from 400 to 5,000 cps.
3. TRANSMITTER CONTROL AND AMPLIFIER TEST	
a. Microphone amplifier gain (approximately 1.55 volts rms).	a. 6 db above 1 milliwatt.
b. MAGNETIC VOLUME control	b. Audio level of the microphone varies with rotation of the control.
c. DBM meter accuracy	c. 6 dbm.
d. Distortion	d. Less than 10-percent distortion at the 1-watt level,
e. Frequency response	e. Flat within 3 db.
f. Overall gain (microphone to each transmitter audio line).	f. 50 db.
4. TELEPHONE CONTROL CIRCUITS TEST	
a. Ring and hold circuit (ringing current applied to the line input)	a. TELEPHONE supervisory indicator lamp illuminates (each channel) and, remains illuminated as long as the associated key remains in the OFF position. Buzzer audible only while ringing current is applied.
b. TALK position operation (each channel)	b. TELEPHONE supervisory indicator lamp extinguishes (each channel).
c. Ring output signal (each channel)	c. Test telephone rings.
d. Voice input circuit (each channel)	d. Input speech audible.
e. Voice output circuit (each channel)	e. Output speech audible.
5. POWER SUPPLY VOLTAGE TEST	
a. -7.5-volt supply	a. -7.5 volts.
B. --15-volt supply	b. -15 volts.
c. -3-volt supply	c. Between -3 and -4 volts.
d. +7-volt supply	d. Between +6 and +10 volts.
e. +48-volt supply	e. Between +40 and +46 volts.
f. +48-volt supply	f. Between +38 and +46 volts.
g. +100-volt supply	g. Between +90 and +100 volts.

Section IV. COMMUNICATIONS STATION, REMOTE CONTROL OA-3014/FSW-8, GENERAL SUPPORT TESTING PROCEDURES

5-14. General

General support testing procedures of the OA-3014/FSW-8 consist of inspection of its physical condition (para 5-15) and testing the operation of its major circuit functions (para 5-16 through 5-19). A summary of the performance standards is given in paragraph 5-20.

5-15. Communication Station, Remote Control OA-3014/FSW-8, Physical Tests and Inspection

a. Conditions. Communications Station, Remote Control OA-3014/FSW-8 may be inspected as a complete unit (steps 1 through 10), or its individual components may be inspected separately: Cabinet, Electrical Equipment CY-3019/FSW-8 (step 1); the loudspeaker and indicator panel (step 2); the miscellaneous control panel (step 3); Microphone, Magnetic M-110/U (step 4); Handset H-194/FSW-8 (Step 5); Control-Monitor C3434/FSW-8 (step 6); Terminal, Telephone TA-406/FSW-8 (step 7); Power Supply PP-2795/FSW-8 (step 8); Amplifier Assembly AM-3877/FSW-8 (step 9); and Control, Telephone Signal C-3435/FSW-8 (step 10). If the OA-3014/FSF-8 is to be inspected as a complete unit, remove the back panel.

b. Procedure.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
1	N/A	N/A	a. Inspect all mechanical assemblies for loose or missing screws, bolts, or nuts.	a. Screws, bolts, and nuts are tight; none missing.
			b. Inspect all connectors, convenience receptacles, and plugs	b. No evidence of looseness, damage, or deformity.
			c. Extend all equipment cables to their maximum lengths and check for wear and breaks.	c. All cables are free from breaks and frayed insulation.
			d. Examine all harness wiring for wear and breaks	d. All harness wires are free from breaks and frayed insulation.
			e. Inspect the power supply drawer for corrosion, dirt, or damage	e. The power supply drawer is clean and free from corrosion; it slides easily in and out of its position in Cabinet, Electrical **Equipment CY3019/FSW-8.**
			f. Inspect the desk lamp assembly and incandescent lamp for corrosion, dirt, or damage	f. The desk lamp assembly and incandescent lamp are clean and free from corrosion; the inside of the reflector is bright.
			g. Raise, lower, and rotate the desk lamp arm assembly	g. The desk lamp arm assembly moves without binding or excessive looseness.
			h. Inspect Cabinet, Electrical Equipment CY-3019/FSW-8 and its components for damage, missing parts, condition of finish, and panel lettering **NOTE** Touchup painting is recommended in place of refinishing, whenever practicable, Screwheads, binding posts, receptacles, and plated fastener parts should not be painted or polished with abrasives.	h. No damage or missing parts evident, and external surfaces do not show bare metal. Panel lettering is legible. Refer to the applicable cleaning and re- finishing practices specified in TB 746-10.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
2	N/A	N/A	a. Rotate the VOLUME control and the LAMP control through their limits of travel b. Inspect the loudspeaker and indicator panel for corrosion, dirt, or damage	a. The controls rotate freely with- I out binding or excessive looseness. The control knobs are not damaged. b. The loudspeaker and indicator panel is clean and free from corrosion; the lettering on the A field status indicator is legible, and the glass is not cracked or broken. The speaker cones are not damaged.
3	N/A	N/A	a. Inspect MAIN POWER circuit breaker CB1901 for normal operation. b. Inspect the EMER ALARM mechanical protector for normal operation c. Rotate the MIKE VOLUME control through its limit of travel d. Inspect the MIKE receptacle for corrosion, dirt, or damage e. Inspect the miscellaneous control panel for corrosion, dirt, or damage.	a. The MAIN POWER circuit breaker operates freely; the handle is not damaged. The MAIN POWER lens is not cracked or broken. b. The mechanical protector operates properly without binding and shows no evidence of damage or deformity. c. The control rotates freely without binding or excessive looseness. d. The MIKE receptacle is clean and free from corrosion; it is not bent or damaged. e. The miscellaneous control panel is clean and free from corrosion.
4	N/A	N/A	a. Inspect Microphone, Magnetic M-110/U for corrosion, dirt, or damage. b. Inspect the M-110/U push-to-talk switch for dirt or corrosion	a. The M-110/U is clean and free from corrosion. The cord is free from breaks and frayed insulation; the connector is not bent or damaged. b. The push-to-talk switch operates freely; spring return to the off position is normal. It is free from dirt and corrosion.
5	N/A	N/A	a. Inspect Handset H-194/FSW-8 for corrosion, dirt, or damage	a. The receiver and transmitter caps are clean and free from dirt. The cord is free from breaks and frayed insulation; the connector is not bent or damaged.

			b. Inspect the H-194/FSW-8 push-to-talk switch for dirt or corrosion.	b. The push-to-talk switch operates freely; spring return to off position is normal. It is free from dirt and corrosion.
6	N/A	N/A	a. Inspect the SPEAKER-OFF and OPERATE-OFF switches for normal operation. b. Inspect Control-Monitor C-3434/FSW-8 for corrosion, dirt, or damage.	a. The switches operate freely and the switch handles are not dam- aged. b. The C-3434/FSW-8 is clean and free from corrosion; lenses are not cracked or broken.
7	N/A	N/A	a. Inspect the RING-OFF-TALK switches for normal operation. b. Inspect Terminal, Telephone TA-406 /FSW-8 for corrosion, dirt, or damage.	a. The switches operate freely to both the RING and TALK position; spring return from the RING position is normal; the switch handles are not damaged. b. The TA-406/FSW-8 is clean and free from corrosion; lenses are not cracked or broken.
8	N/A	N/A	a. Rotate the -7.5V ADJ and -15V ADJ controls through their limit of travel. **NOTE** Be sure to return the controls to their original settings. b. Inspect Power Supply PP-2795/FSW-8 for corro0sion, dirt, or damage.	a. The controls rotate freely without binding or excessive looseness. b. The PP-2795/FSW-8 is clean and free from corrosion.
9	N/A	N/A	a. Rotate the MIKE COMP, SPEAKER GAIN, SPEAKER COMP, and SPEAKER BIAS controls through their limits of travel. **NOTE** Be sure to return the controls to their original settings. b. Inspect Amplifier Assembly AM-2817 /FSW-8 for corrosion, dirt, or damage.	a. The controls rotate freely without binding or excessive looseness. b. The AM-2817/FSW-8 is clean and free from corrosion.
10	N/A		Inspect Control, Telephone Signal C-3435/FSW-8 for corrosion, dirt, or damage.	The C-3435/FSW-8 is clean and 3 free from corrosion.

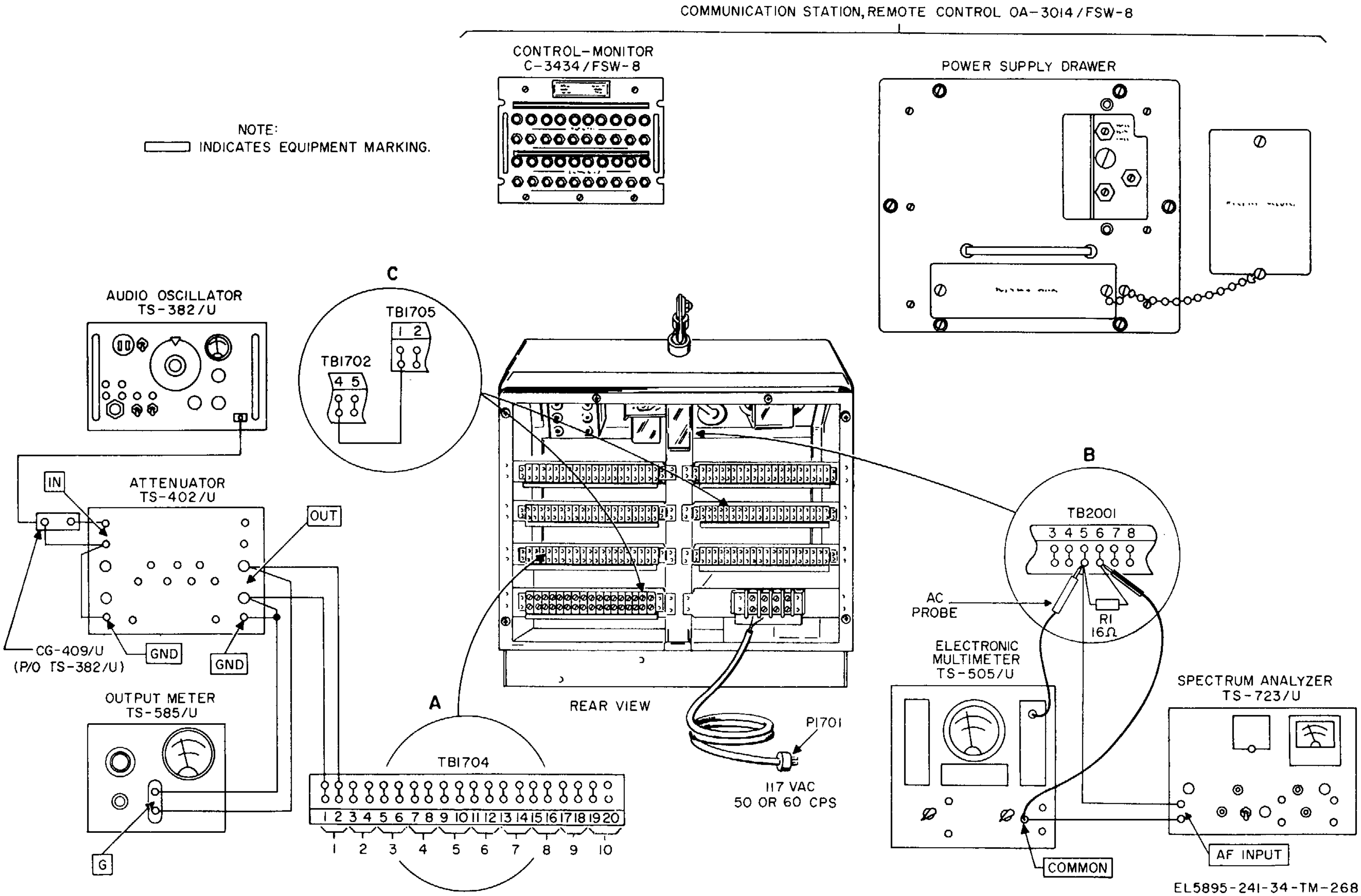


Figure 5-7. Communication Station, Remote Control OA-3014/FSW-8, receiver control circuit test hookup diagram.

5-16. Receiver Control Circuits Test

a. Test Equipment and Materials Required.
(1) Electronic Multimeter TS-505/U.
(2) Output Meter TS-585/U.
(3) Attenuator TS402/U.
(4) Audio Oscillator TS382/U.
(5) Spectrum Analyzer TS-723/U.
b. Test Connections and Conditions.
(1) Operate MAIN POWER circuit breaker CB1901 to OFF, and make the following preliminary control settings:
(a) Operate the RECEIVE switch for each receiver channel to OFF.
(b) Operate the TRANSMIT switch for each transmitter channel to OPERATE.
(c) Operate the VOLUME CONTROL for the equipment loudspeaker to the midrange position.
(2) Connect the equipment as shown in A, B, and C, figure 5-7.
c. Initial Test Equipment Calibration. Turn on all test equipment and proceed as follows:
(1) Allow the TS-505/U to warm up for at least 3 minutes
(2) Operate the TS-505/U FUNCTION switch to AC; operate the RANGE switch to. 4V.
(3) Adjust the TS-505/U indicator pointer to zero by connecting the ac probe to the COMMON terminal and rotating the ZERO adj control.
(4) Operate the meter multiplier switch on the TS-585/U to - 10 DECIBELS. Operate the impedance control to 60x10.
(5) Allow the TS-382/U to warm up for at least 5 minutes, and proceed as follows:
(a) Operate the tuning control to 100.
(b) Operate the RANGE switch to X10.
(c) Operate the AMPL control on the TS-382/U switches on the TS-402/U so as to indicate -10 dbm on the TS-585/U.
(6) Calibrate the TS-723/U as follows:
(a) Operate the AF-RF selector switch to AF.
(b) Operate the meter range switch to 100%
(c) Operate the function switch to SET LEVEL.
(d) Slowly rotate the signal INPUT control clockwise until the decibels meter pointer reads full-scale deflection.
(e) Operate the frequency RANGE switch to X10.
(f) Rotate the function switch to DISTORTION.
(a) Adjust the coarse FREQUENCY control knob until the decibels meter pointer drops sharply.
(h) Adjust the fine FREQUENCY control knob for maximum dip of the decibels meter pointer.
(i) Adjust the BALANCE control for minimum decibels meter reading.

d. Procedure

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	N/A	N/A	a. Operate MAIN POWER circuit breaker CB1901 to ON. b. Operate RECEIVE switch S1801 to SPEAKER c. Operate RECEIVE switch S1801 to OFF	a. RECEIVE supervisory indicator lamp DS1801 should illuminate. b. RECEIVE supervisory indicator lamp DS1801 remains illuminated. c. RECEIVE supervisory indicator lamp DS1801 remains illuminated.
2	N/A	N/A	a. Operate RECEIVE switch S1801 to SPEAKER b. Operate VOLUME CONTROL clockwise c. Operate VOLUME CONTROL counterclockwise	a. A clear, sharp tone should be heard from the loudspeaker. b. The intensity of the tone noted in a above should increase. c. The intensity of the tone noted in a above should decrease.
3	N/A	N/A	a. Operate TRANSMIT switch S1811 to operate. b. Operate RECEIVE switch S1801 to SPEAKER c. Operate RECEIVE switch S1801 to OFF d. Operate transmit switch to OFF.	a. RECEIVE supervisory indicator lamp DS1801 should extinguish. b. RECEIVE supervisory indicator lamp DS1801 remains extinguished. c. RECEIVE supervisory indicator lamp DS1801 remains extinguished. d. RECEIVE supervisory indicator lamp DS1801 illuminates.
4	N/A	N/A	a. Disconnect the TS-402/U from terminals 1 and 2 of terminal board TB1704. b. Operate RECEIVE switch S1801 to SPEAKER c. Operate RECEIVE switch S1801 to OFF d. Reconnect TS-402/U	a. RECEIVE supervisory indicator lamp DS1801 should extinguish. b. RECEIVE supervisory indicator lamp DS1801 remains extinguished. c. RECEIVE supervisory indicator lamp DS1801 remains extinguished. d. None
5	N/A	N/A	a. Rotate the VOLUME CONTROL maximum clockwise. b. Operate RECEIVE switch S1801 to SPEAKER c. Note the percentage of distortion indicated on the TS-723/U.	a. None. b. The TS-505/U should indicate +4 volts minimum. c. The TS-723/U should indicate less than 10 percent.

6	N/A	N/A	a. Rotate the TS382/U tuning control from 50 to 500 and observe the TS-505/U.	a. The TS-505/U should indicate less than a 3-dbm variation.
			b. Return the TS-382/U tuning control to 100 c. Operate MAIN POWER circuit breaker CB1901 to OFF.	b. None. c. None.
7	N/A	N/A	a. Connect the TA-402/U to terminals 3 and 4 of terminal board TB1704. b. Repeat the procedures outlined in steps 1 through 6 above, using the components of radio channel No. 2.	a. None. b. Same indications as outlined in steps 1 through 5 above.
8	N/A	N/A	a. Connect the TA-402/U to terminals 5 and 6 of terminal board TB1704. b. Repeat the procedures outlined steps 1 through 6 above, using the components of radio channel No. 3.	a. None. b. Same indications as outlined in steps 1 through 6 above.
9	N/A	N/A	a. Connect the TA-402/U to terminals 7 and 8 of terminal board TB1704. b. Repeat the procedures outlined in steps 1 through 6 above, using the components of radio channel No. 4.	a. None. b. Same indications as outlined in steps 1 through 6 above.
10	N/A	N/A	a. Connect the TA-402/U to terminals 9 and 10 of terminal board TB1704. b. Repeat the procedures outlined in steps 1 through 6 above, using the components of radio channel No. 5.	a. None. b. Same indications as outlined in steps 1 through 6 above.
11	N/A	N/A	a. Connect the TA-402/U to terminals 11 and 12 of terminal board TB1704. b. Repeat the procedures outlined in steps 1 through 6 above, using the components of radio channel No. 6.	a. None. b. Same indications as outlined in steps 1 through 6 above.
12	N/A	N/A	a. Connect the TA-402/U to terminals 13 and 14 of terminal board TB1704.	a. None.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
			b. Repeat the procedures outlined in steps 1 through 6 above, using the components of radio channel No. 7.	b. Same indications as outlined in steps 1 through 6 above. co
13	N/A	N/A	a. Connect the TA-402/U to terminal 15 and 16 of terminal board TB1704.	a. None.
			b. Repeat the procedures outlined in steps 1 through 6 above, using the components of radio channel No. 8.	b. Same indications as outlined in steps 1 through 6 above.
14	N/A	N/A	a. Connect the TA-402/U to terminal 17 and 18 of terminal board TB 1704.	a. None.
			b. Repeat the procedures outlined in steps 1 through 6 above, using the components of radio channel No. 9.	b. Same indications as outlined in steps 1 through 6 above.
15	N/A	N/A	a. Connect the TA-402/U to terminal 19 and 20 of terminal board TB1704.	a. None
			b. Repeat the procedures outlined in steps 1 through 6 above, using the components of radio channel No. 10.	b. Same indications as outlined in steps 1 through 6 above.

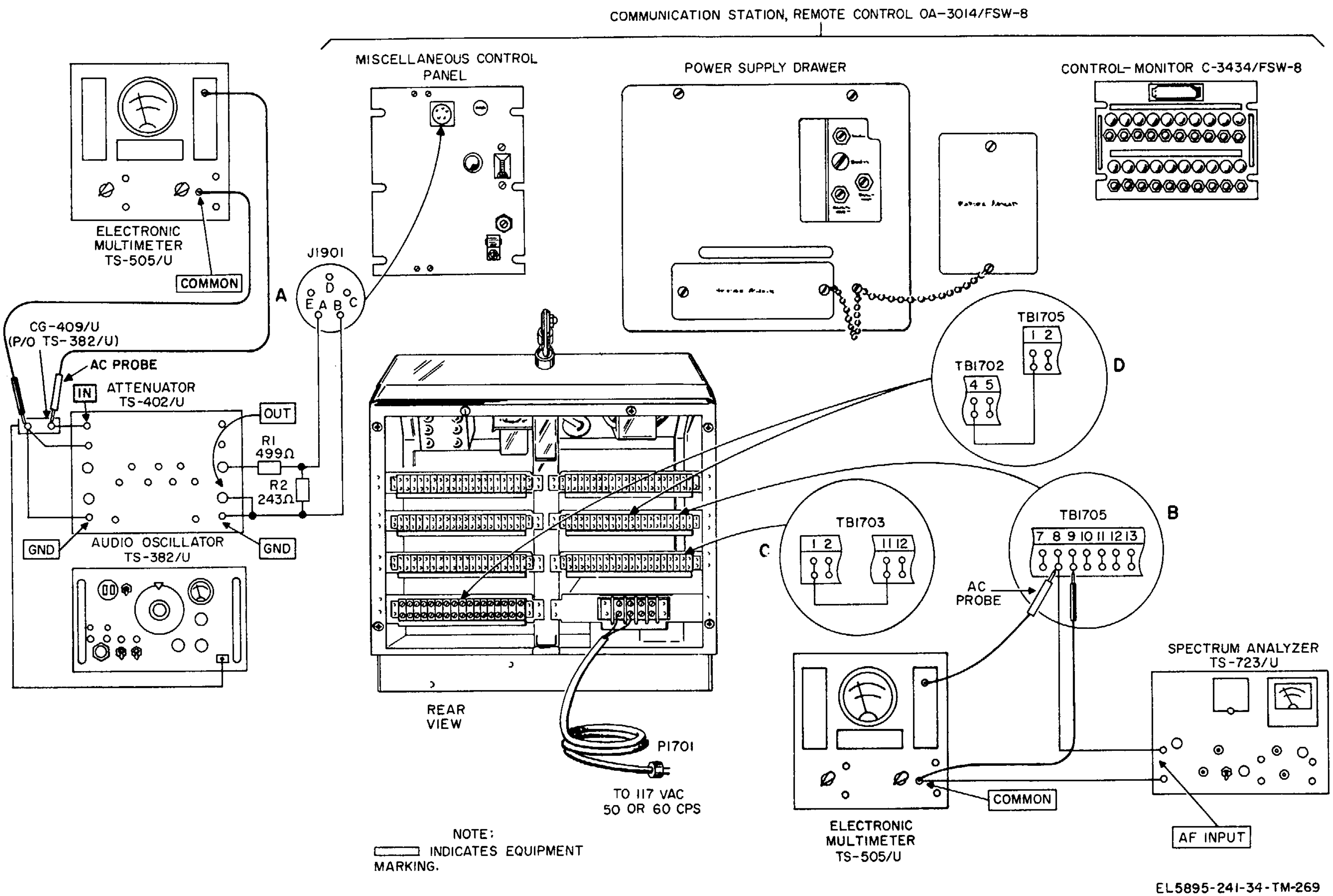


Figure 5-8. Communications Station, Remote Control OA-014/FSW-8, transmitter control amplifier, test hookup diagram.

5-17. Transmitter Control and Amplifier Test

a. Test Equipment and Materials Required.

(1) Electronic Multimeter TS-505/U (2 required).
(2) Attenuator TS-402/U.
(3) Audio Oscillator TS-82/U.
(4) Spectrum Analyzer TS-723/U.
(5) Resistor, 243-ohm (R2).
(6) Resistor, 499-ohm (R]).

b. Test Connections and Conditions.

(1) Connect the equipment as shown in A, B, C, and D, figure 5-8.
(2) Turn on the power to all test equipment, operate MAIN POWER circuit breaker CB1901 to ON, and make the following preliminary control settings:
- (a) Operate the RECEIVE switch for each receiver channel to OFF.
- (b) Operate the TRANSMIT switch for each transmitter channel to OFF.
- (c) Operate the MIKE VOLUME CONTROL maximum clockwise.
- (d) Operate the VOLUME CONTROL for the equipment loudspeaker maximum clockwise.

c. Initial Test Equipment Calib7ration. Proceed as follows to calibrate the test equipment:

(1) Allow the TS-505/U to warm up for at least three minutes.
(2) Operate the TS-505/U FUNCTION switch to the AC position; operate the RANGE switch to the 10V position.
(3) Adjust the TS-505/U indicator pointer to zero by connecting the ac probe to the COMMON terminal and rotating the ZERO ADJ control.
(4) Allow the TS382/U to warm up for at least 5 minutes, and proceed with the following operations:
- (a) Operate the tuning control to 100.
- (b) Operate the RANGE switch to X10.
- (c) Operate the TS-402/U DB LOSS rotary switches to O-db loss.
- (d) Adjust the TS-382/U AMPL control and TS-402/U switches so as to obtain a reading of 0.9 volt on the TS-505/U (connected to terminals A and B of connector J1901).
- (e) Operate the TS-402/U DB loss rotary switches m provide a 60-db loss.

(5) Calibrate the TS-723/U as follows:
- (a) Operate the AF-RF selector switch to AF.
- (b) Operate the meter range switch to 100%.
- (c) Operate the function switch to SET LEVEL.
- (d) Slowly rotate the signal INPUT control clockwise until the meter pointer reads full-scale deflection.
- (e) Operate the frequency RANGE switch to X10.
- (f) Rotate the function switch to DISTORTION.
- (g) Adjust the coarse FREQUENCY control knob until the decibels meter pointer drops sharply.
- (h) Adjust the fine FREQUENCY control knob for row maximum dip of the decibels meter pointer.
- (i) Adjust the BALANCE control for minimum decibels meter reading.

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	N/A	N/A	a. Operate TRANSMIT switch S1811 to OPERATE. b. Rotate the MIKE VOLUME control counterclockwise. c. Rotate the MIKE VOLUME control clockwise. d. Rotate the MIKE VOLUME control until the TS-505/U connected to terminals 8 and 9 of terminal board TB1705 reads 0.3 volts. e. Note the percentage of distortion indicated on the TS-723/U.	a. The TS-505/U connected to terminals 8 and 9 of terminal board TB1705 should read 0.3 volts minimum. b. The TS-505/U connected to terminals 8 and 9 of terminal board TB1705 should indicate a decrease. c. The TS-505/U connected to terminals 8 and 9 of terminal board TB1705 should indicate an increase. d. The TS-505/U connected to terminals 8 and 9 of terminal board TB1705 should indicate 0.3 volts. e. The TS-723 should indicate less than 10-percent distortion.
2	N/A	N/A	a. Rotate the TS-382 tuning control from 50 to 500 b. Return the tuning control of the TS-382/U to 100	a. The TS-505/U connected to terminals 8 and 9 of terminal board TB1705 should indicate less than a 3-dbm variation. b. The TS-505/U connected to terminals 8 and 9 of terminal board TB1705 should indicate 0.3 volts minimum.
3	N/A	N/A	a. Operate the TS-402/U to insert a 40-db loss. b. Operate the TS-402/U to insert a 60-db loss. c. Operate the TRANSMIT switch for all transmitter channels to OPERATE. d. Operate the TRANSMIT switch for all transmitter channels to OFF.	a. The TS-505/U connected to terminals 8 and 9 of terminal board TB1705 should indicate 0.3 volts. b. The TS-505/U connected to terminals 8 and 9 of terminal board TB1705 should indicate 0.2 volt minimum. c. The TS-505/U connected to terminals 8 and 9 of terminal board TB1705 should indicate 0.2 volt minimum. d. The TS-505/U connected to terminals 8 and 9 of terminal board TB1705 should indicate 0 volt.

4	N/A		a. Operate TRANSMIT switch S1811 to OPERATE b. Operate TRANSMIT switch S1811 to OFF	a. TRANSMIT supervisory indicator lamp DS1811 should illuminate. b. TRANSMIT supervisory indicator lamp Da.8X1 should extinguish.
5	N/A	Relocate strap (fig. 5-8c) from terminals 1 and 11 to terminals 2 and 12 of TB 1703.	a. Operate TRANSMIT switch S1812 to OPERATE b. Operate TRANSMIT switch S1812 to OFF	a. TRANSMIT supervisory indicator lamp DS1812 should illuminate. b. TRANSMIT supervisory indicator lamp DSIs82 should extinguish.
6	N/A	Relocate strap (fig. 5-8c) from terminals 2 and 12 to terminals 3 and 13 of TB 1703	a. Operate TRANSMIT switch S1b13 to OPERATE b. Operate TRANSMIT switch S1813 to OFF .	a. TRANSMIT supervisory indicator lamp DS1 13 should illuminate. b. TRANSMIT supervisory indicator lamp DS1813 should extinguish.
7	N/A	Relocate strap (fig. 5-8c) from terminals 3 and 13 to terminals 4 and 14 of TB 1703	a. Operate TRANSMIT switch S1814 to OPERATE b. Operate TRANSMIT switch S1814 to OFF	a. TRANSMIT supervisory indicator | lamp DS1l14 should illuminate. b. TRANSMIT supervisory indicator lamp DS1814 should extinguish.
8	N/A	Relocate strap (fig. 5-8c) from terminals 4 and 14 to terminals 5 and 15 of TB 1703	a. Operate TRANSMIT switch S1815 to OPERATE b. Operate TRANSMIT switch S1815 to OFF	a. TRANSMIT supervisory indicator lamp DS1815 should illuminate. b. TRANSMIT supervisory indicator lamp DS1815 should extinguish.
9	N/A	Relocate strap (fig. 5-8c) from terminals 5 and 15 to terminals 6 and 16 of TB 1703	a. Operate TRANSMIT switch S1816 to OPERATE b. Operate TRANSMIT switch S1816 to OFF	a. TRANSMIT supervisory indicator lamp DSI816 should illuminate. b. TRANSMIT supervisory indicator lamp DS1816 should extinguish.
10	N/A	Relocate strap (fig. 5-8c) from terminals 6 and 16 to terminals 7 and 17 of TB 1703	a. Operate TRANSMIT switch S1817 to OPERATE b. Operate TRANSMIT switch S1817 to OFF	a. TRANSMIT supervisory indicator lamp DS1817 should illuminate. b. TRANSMIT supervisory indicator lamp DS1817 should extinguish.
11	N/A	Relocate strap (fig. 5-8c) from terminals 7 and 17 to terminals 8 and 18 of TB 1703	a. Operate TRANSMIT switch S1818 to OPERATE b. Operate TRANSMIT switch S1818 to OFF	a. TRANSMIT supervisory indicator lamp DS118 should illuminate. b. TRANSMIT supervisory indicator lamp DS1818 should extinguish.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
12	N/A	Relocate strap (fig. 5-8c) from terminals 8f and 18 to terminals 9 and 19 of TB 1703.	a. Operate TRANSMIT switch S1819 to OPERATE b. Operate TRANSMIT switch S1819 to OFF	a. TRANSMIT supervisory indicator lamp DS1819 should illuminate. b. TRANSMIT supervisory indicator lamp DSI19 should extinguish.
13	N/A	Relocate strap (fig. 5-8c) from terminals 9 and 19 to terminals 10 and 29 of TB 1703.	a. Operate TRANSMIT switch S1820 to OPERATE b. Operate TRANSMIT switch S1820 to OFF	a. TRANSMIT supervisory indicator lamp DSIB20 should illuminate. b. TRANSMIT supervisory indicator lamp DS1820 should extinguish.

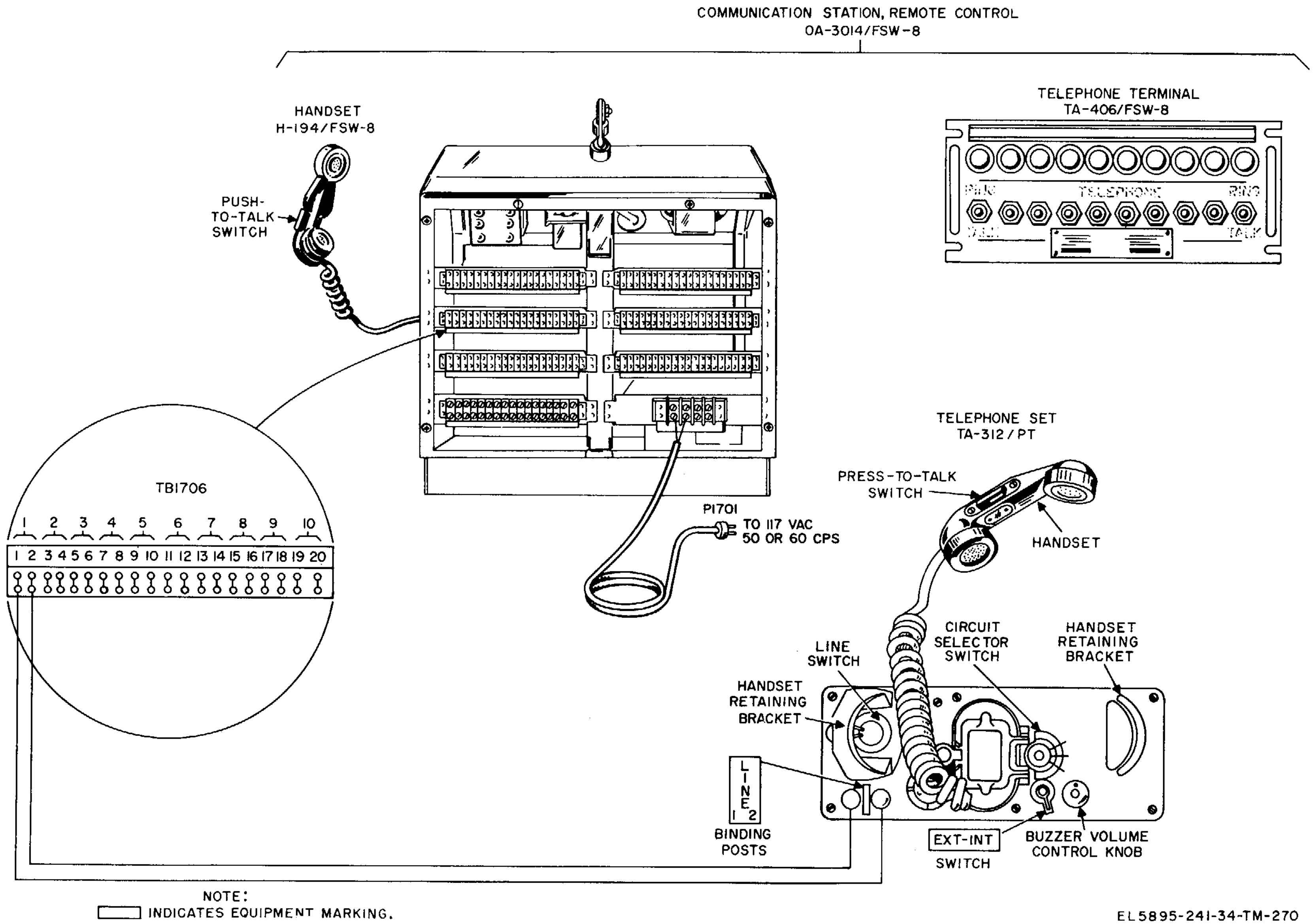


Figure 5-9. Communications Station, Remote Control OA-3014/FSW-8 telephone controls, test hookup diagram.

5-18. Telephone Control Circuits Test

a. Test Equipment and Materials Required.

(1) Telephone Set TA312/PT.
(2) Battery BA30 (2).

b. Test Connections and Conditions.

(1) Install Batteries BA-30 in the TA312/PT.
(2) Place the TA-312/PT handset in the handset retaining brackets so that the TA312/PT line switch is depressed.
(3) Connect the equipment as shown in figure 5-9.
(4) Connect TELEPHONE switch S1301 through S1310 on the TA-406/FSW-8 to OFF.
(5) Operate the TA-312/PT INT-EXT switch to INT.
(6) Operate the TA312/PT circuit selector switch to LB, and operate the buzzer volume control to LOUD.

c. Procedure.

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	N/A	N/A	With the TA-312/PT handset in the retaining brackets, turn the TA-312/PT hand generator crank rapidly (approximately 150 to 200 rpm) 10 times.	TELEPHONE supervisory indicator lamp DS1301 should illuminate and remain illuminated after turning of hand generator crank ceases. Buzzer DS1311 should be audible only when the TA-312/PT hand generator crank is turned.
2	N/A	N/A	a. Operate TELEPHONE switch S1301 to TALK ---------. b. With the TA-312/PT handset in the retaining brackets, turn the TA-312/PT hand generator crank rapidly (approximately 150 to 200 rpm) 10 times.	a. TELEPHONE supervisory indicator lamp DS1301 should extinguish. b. TELEPHONE supervisory indicator lamp DS1301 should remain extinguished. Buzzer DS1311 should be audible only when the TA-312/PT hand generator is turned.
3	N/A	N/A	Operate TELEPHONE switch S1301 to RING for a few seconds, and then release TELEPHONE switch S1301.	The TA-312/PT buzzer should be audible only while TELEPHONE switch S1301 is at RING. |
4	N/A	N/A	a. Remove the TA-312/PT handset from the retaining brackets. n b. Depress the TA-312/PT press-to-talk switch. Speak into the TA-312/PT transmitter.	a. None. b. Speech should be heard in the receiver element of the H-194/ 94 FSW-8 handset. L

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
			c. Depress the H-194/FSW-8 push-to-talk switch. Speak into the H-194/FSW-8 transmitter. d. Release the H-194/FSW-8 push-to-talk switch. Speak into the H-194/FSW-8 transmitter. e. Operate TELEPHONE switch S1301 to OFF, and replace the TA-312/PT handset in its retaining brackets.	c. Speech should be heard from the receiver element of the TA-312/PT handset. d. No speech should be heard from the receiver element of the TA-312/PT handset. e. None.
5	N/A	N/A	a. Disconnect the TA-312/PT from terminals 1 and 2 of terminal board TB1706 and reconnect it to terminals 3 and 4. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1302.	a. None. b. TELEPHONE supervisory indicator lamp DS1302 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).
6	N/A	N/A	a. Disconnect the TA-312/PT from terminals 3 and 4 of terminal board TB1706 and reconnect it to terminals 5 and 6. b. Repeat the procedures outlined in steps 1 through 4 above using TELEPHONE switch S1303.	a. None. b. TELEPHONE supervisory indicator lamp DS1303 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).
7	N/A	N/A	a. Disconnect the TA-312/PT from terminals 5 and 6 of terminal board TB1706 and reconnect it to terminals 7 and 8. b. Repeat the procedures outlined in steps 1 through 4 above using TELEPHONE switch S1304.	a. None. b. TELEPHONE supervisory indicator lamp DS1304 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).
8	N/A	N/A	a. Disconnect the TA-312/PT from terminals 7 and 8 of terminal board TB1706 and reconnect it to terminals 9 and 10. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1305.	a. None. b. TELEPHONE supervisory indicator lamp DS1305 should illuminate or extinguish (same indica-

				tions as outlined in steps 1 through 4 above).
9	N/A.---------------------...............	N/A-----------------------...............	a. Disconnect the TA-312/PT from terminals 9 and 10 of terminal board TB1706 and reconnect it to terminals 11 and 12. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1306.	a. None. b. TELEPHONE supervisory indicator lamp DS1306 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).
10	N/A-------------------	N/A------------------------	a. Disconnect the TA-312/PT from terminals 11 and 12 of terminal board TB1706 and reconnect it to terminals 13 and 14. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1307.	a. None. b. TELEPHONE supervisory indicator lamp DS1307 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).
11	N/A-------------------	N/A-----------------------	a. Disconnect the TA312/PT from terminals 13 and 14 of terminal board TB1706 and reconnect it to terminals 15 and 16. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1308.	a. None. b. TELEPHONE supervisory indicator lamp DS1308 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).
12	N/A---------------------...............	N/A---------------------------	a. Disconnect the TA312/PT from terminals 15 and 16 of terminal board TB1706 and reconnect it to terminals 17 and 18. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1309.	a. None. b. TELEPHONE supervisory indicator lamp DS1309 should illuminate or extinguish (same indications as outlined in steps 1 through 4 above).
13	N/A-------------------	N/A-----------------------...............	a. Disconnect the TA-312/PT from terminals 17 and 18 of terminal board TB1706 and reconnect it to terminals 19 and 20. b. Repeat the procedures outlined in steps 1 through 4 above, using TELEPHONE switch S1310.	a. None. b. TELEPHONE supervisory indicator lamp DS1310 should I illuminate or extinguish (same indications as outlined in steps 1 through 4 above).

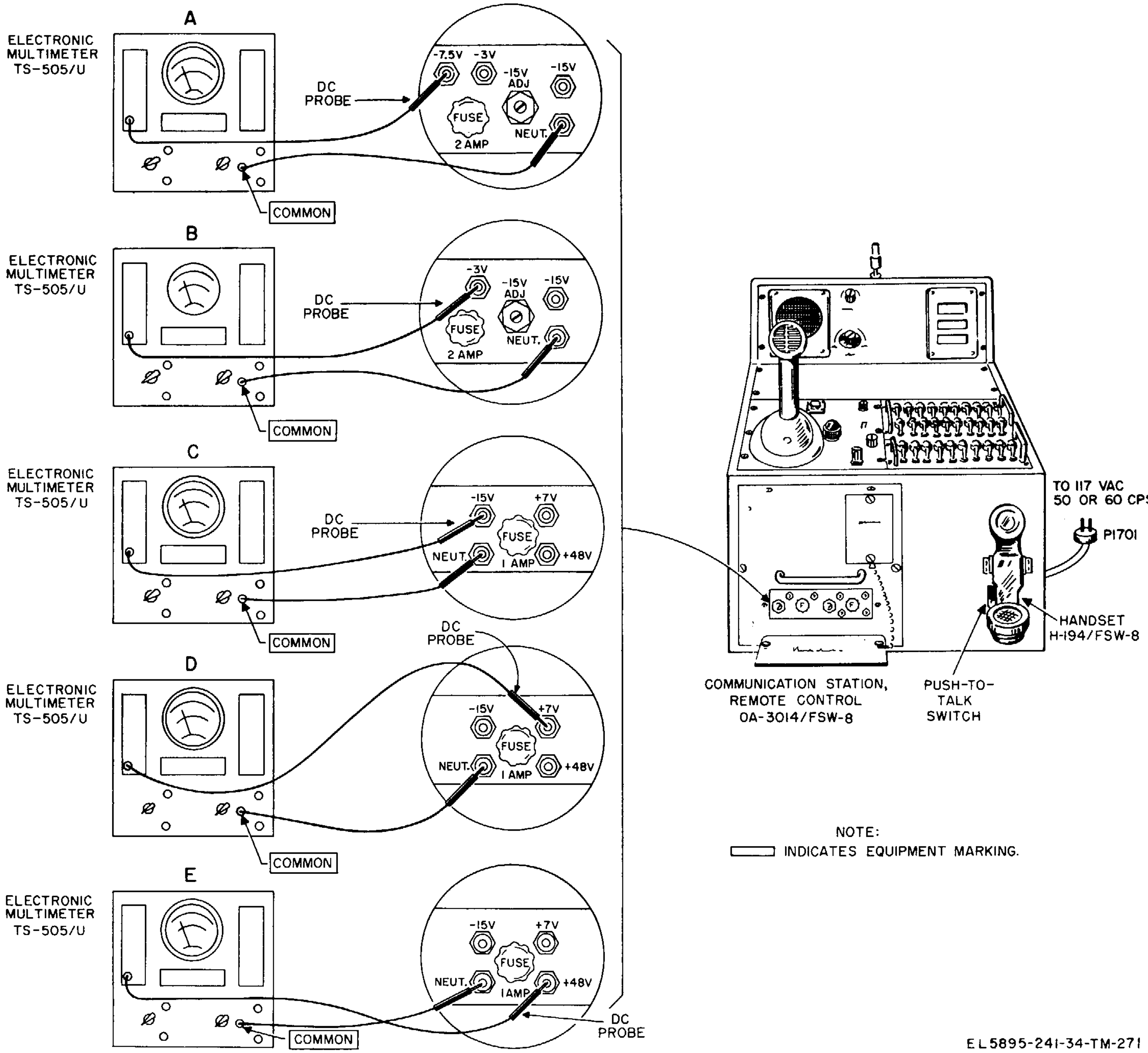


Figure 5-10. Power Supply PP-2795/FSW-8, test hookup diagram.

5-19. Power Supply PP-2795/FSW-8 Test

a. Test Equipment and Materials Required. Electronic Multimeter TS-505/U.

b. Test Connections and Conditions. Connect the OA3014/FSW-8 to a source of 117-volt ac power.

c. Initial Test Equipment Calibration.

(1) Allow the TS-505/U to warm up for at least 3 minutes.
(2) Adjust the TS-505/U indicator pointer to zero by connecting the dc probe to the COMMON terminal and rotating the ZERO ADJ control.
(3) Rotate the TS-505/U RANGE switch to 2V.

d. Procedure. The procedures for performing the power supply tests, when Power Supply PP-2795/FSW-8 is installed in the Communications Station, Remote

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	TS-505/U FUNCTION switch: -DC. RANGE switch: 10V.	N/A	a. Connect the equipment as shown in A, figure 5-10. b. Observe the indication on the TS-505/U ---------------------	a. None. b. The TS-505/U should indicate --7.5 volts.
2	TS-505/U RANGE switch: 4V.	N/A	a. Connect the equipment as shown in B, figure 5-10. b. Observe the indication on the TS-505/U---------------------	a. None. b. The TS-605/U should indicate between -3 and -4.5 volts.
3	TS-505/U RANGE switch: 20V.	N/A	a. Connect the equipment as shown in C, figure 5-10. b. Observe the indication on the TS-505/U ---------------------	a. None. b. The TS-505/U should indicate --15 volts.
4	TS-505/U FUNCTION switch: +DC. RANGE switch: 10V.	N/A	a. Connect the equipment as shown in D, figure 5-10. b. Observe the indication on the TS-505/U ---------------------	a. None. b. The TS-605/U should indicate between +6.5 and +7.5 volts.
5	TS-505/U RANGE switch: 100V.	N/A	a. Connect the equipment as shown in E, figure 5-10. b. Observe the indication on the TS-505/U---------------------	a. None. b. The TS-505/U should indicate between +6 and +56 volts.

5-20. Test Data

Personnel may find it convenient to arrange the OA-3014/FSW-8 test data in a manner similar to that shown below. In the Performance standard column, record the actual indication obtained during the various tests performed. These data may be used as a check against the performance standards the next time the tests are performed.

COMMUNICATIONS STATION, REMOTE CONTROL OA3014/FSW-8

	Performance standard
1. RECEIVER CONTROL CIRCUITS TEST	
a. RECEIVE supervisory indicator lamp operation (audio signal of --10 dbm on the corresponding line).	a. Supervisory indicator lamp illuminates (each radio receiver channel).
b. VOLUME control--	b. Audio level varies with the rotation of the control.
c. Muting (when corresponding transmitter circuit is energized).	c. RECEIVE supervisory indicator lamp extinguishes (each radio receiver channel).
d. Loudspeaker amplifier gain-----------------------------	d. 30 dbm minimum.
e. Loudspeaker amplifier distortion----------------------	e. Less than 10-percent distortion at the 1-watt level.
f. Loudspeaker amplifier frequency response -------	f. Flat within 3 db over frequency range from 400 to 5,000 cps.
2. TRANSMITTER CONTROL CIRCUITS TEST	
a. Microphone amplifier gain --------------------	a. 6 db minimum above 1 milliwatt.
b. MIKE VOLUME control	b. Audio level varies with rotation of the control.
c. Distortion---	c. Less than 10-percent distortion at the 1-watt level.
d. Frequency response----------------------------	d. Flat within 3 db.
e. TRANSMIT control switch (transmitter channel keyed by local control).	e. TRANSMIT supervisory indicator lamp illuminates (each radio transmitter channel).
3. TELEPHONE CONTROL CIRCUITS TEST	
a. Ring input and hold circuit (ringing current applied to the line input).	a. TELEPHONE supervisory indicator lamp illuminates (each channel) and remains illuminated as long as the associated key remains in the OFF position. Buzzer audible only while ringing current is applied.
b. TALK position operation (each telephone channel).	b. TELEPHONE supervisory indicator lamp extinguishes (each channel).
c. Ring output signal (each telephone channel)--------	c. Test telephone rings.
d. Voice input circuit (each telephone channel)---------	d. Input speech audible.
e. Voice output circuit (each telephone channel)-------	e. Output speech audible.
4. POWER SUPPLY PP-2795/FSW-8 TEST	
a. -7.5-volt supply---	a. -7.6 volts.
b. -3-volt supply---	b. Between -3 and -4.5 volts.
c. -15-volt supply---	c. -15 volts.
d. +7-volt supply--	d. Between +6.5 and +7.5 volts.
e. +48-volt supply--	e. Between +40 and +46 volts.

Section V. METEOROLOGICAL DISPLAY CONSOLE OA-2054/FSW-8, GENERAL SUPPORT TESTING PROCEDURES

5-21. General

General support testing procedures of the OA2054/FSW-8 consist of inspection of its physical condition and testing the operation of its major circuit functions (para 5-24, 5-25, and 5-26). A summary of the performance standards is given in paragraph 5-27).

5-22. Fabrication of Synchro Test Fixture

To perform the wind direction indicator test (para 5-25), it is necessary to fabricate a test fixture. Use the materials illustrated in figure 5-11 and listed in paragraph 5-5b to construct the test fixture.

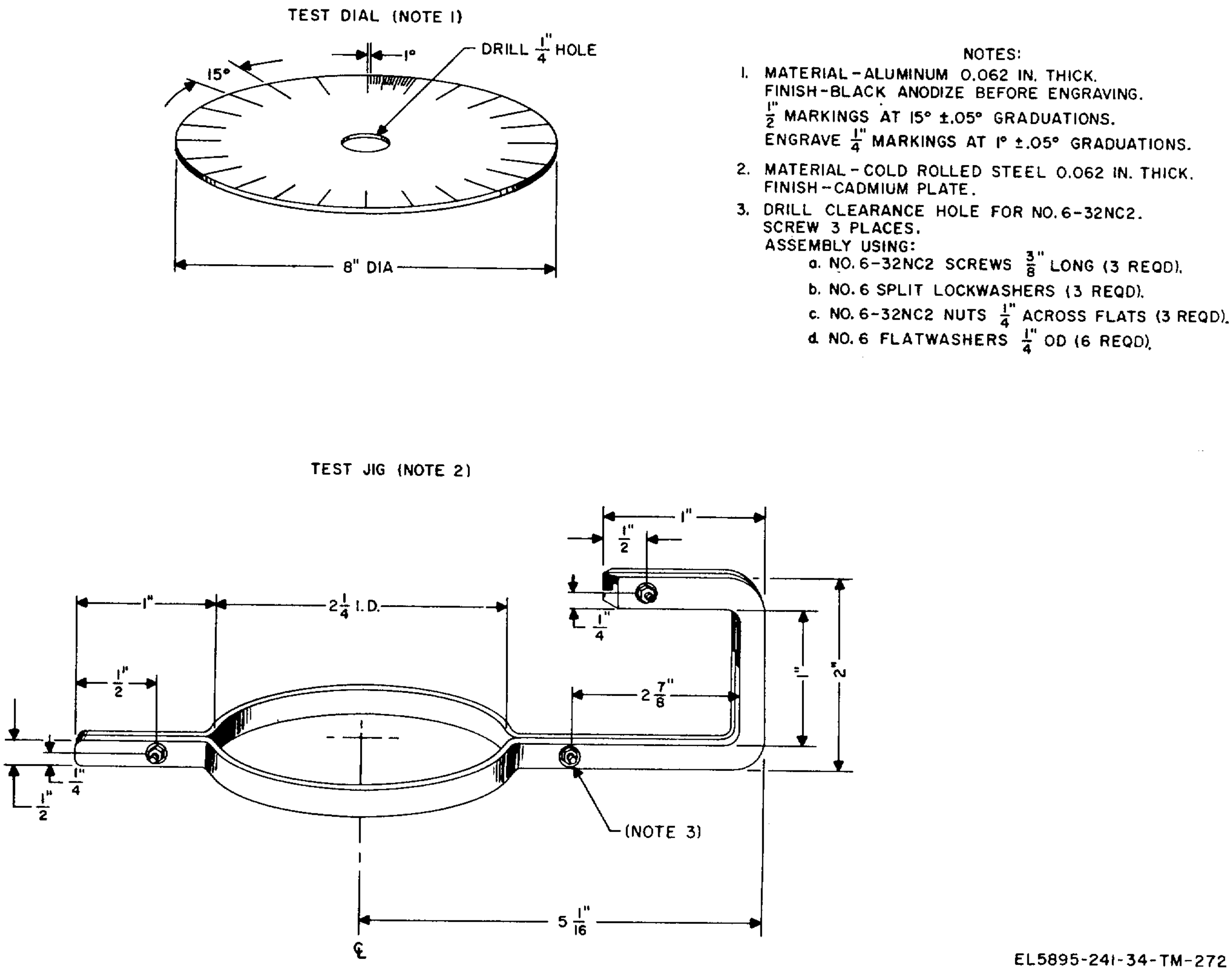


Figure 5-11. Synchro test fixture diagram.

5-23. Meteorological Display Console OA-2054/FSW-8, Physical Tests and Inspection

a. Conditions. Meteorological Display Console OA-2054/FSW-8 may be inspected as a complete unit (steps 1 through 5) or its individual components may be inspected separately: Cabinet, Electrical Equipment CY-2940/FSW-8 (step 1); the clock and digital readout panel (step 2); the windspeed and direction panel (step 3); the flight status board (step 4); the storage desk (step 5); Transmitter, Barometric Data T-772/FSW-8 (or T-773/FSW-8) (step 6); and the desk lamp assembly (step 7). Step 1 is a general inspection of the equipment. If the OA-2054/FSW-8 is to be inspected as a complete unit, open the front access door and lift the flight status board assembly as may be required during the inspection procedures.

b. Procedure.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
1	N/A----------------	N/A----------------------.............................	a. Inspect all controls and mechanical assemblies for loose or missing screws, bolts, or nuts.	a. Screws, bolts, and nuts are tight; none missing.
			b. Inspect all connectors, sockets, and receptacles.	b. No evidence of damage or deformity.
			c. Extend all equipment cables to their maximum lengths and check for wear and breaks.	c. All cables are free from breaks and frayed insulation.
			d. Examine all harness wiring for wear and breaks.	d. All harness wires are free from breaks and frayed insulation.
			e. Rotate the MAIN POWER lamp mechanical dimmer and the LAMP brightness control through their limits of travel.	e. Controls rotate freely without binding or excessive looseness. The control knob is not damaged; the lens is not cracked or broken.
			f. Inspect the MAIN POWER and CLOCK POWER circuit breakers and EMER. ALARM switch for normal operation.	f. The MAIN POWER and CLOCK PO'VVER circuit breakers and EMER. ALARM switch operate properly. The circuit breaker handles are not damaged.
			g. Inspect the EMER. ALARM mechanical protector for normal operation.	g. The mechanical protector operates properly; the mechanical protector is not damaged.
			h. Inspect Cabinet, Electrical Equipment CY-2940/FSW-8 and its components for damage, missing parts, condition of finish, and panel lettering. **NOTE** Touchup painting is recommended in place of refinishIng whenever practicable. Screwheads, binding posts, receptacles, and plated	h. No damage or missing parts evident. External surfaces do not show bare metal. Panel lettering is legible. Refer to the applicable cleaning and refinishing practices specified in TB 746-10.

			fastener parts should not be painted or polished with abrasives.	
2	N/A	Controls may be in any position...........	a. Rotate the DIM control through its limit of travel. b. Depress the PUSH-TO-TEST OR RESET switch. c. Inspect the TEST KEY switch for normal operation. d. Inspect the digital readout panel for corrosion, dirt, or damage.	a. Control rotates freely without binding or excessive looseness. b. The switch operates freely; spring return to the off position is normal. c. The switch operates freely to both the 7777 and the 3333 position; spring return is normal. d. The digital readout panel is clean and free from corrosion; the glass is not cracked or broken.
3	N/A----------------------	N/A ----------------------------	Inspect the windspeed and direction panel for corrosion, dirt, or damage.	The windspeed and direction panel is clean and free from corrosion; the glass is not cracked or broken.
4	N/A------------------------	N/A----------------------------	Open the flight status board and inspect for corrosion, dirt, or damage.	The flight status board opens and closes properly; the lift ring operates freely without binding.
5	N/A---------------------	N/A----------------------------	Inspect the storage desk for corrosion, dirt, or damage.	The storage desk is clean and free from corrosion; the writing surface is free from dents, cracks, or other damage.
6	N/A------------------------	Controls may be in any position-------- ..	a. Inspect the TRANSMITTER, Barometric Data T-772/ FSW-8 vent tube for obstruction. b. Inspect the T-772/FSW-8 for corrosion, dirt, damage, or cracked glass.	a. No obstruction, damage, or deformity is evident. b. The T-772/FSW-8 is clean and free from corrosion; the glass is not cracked or broken.

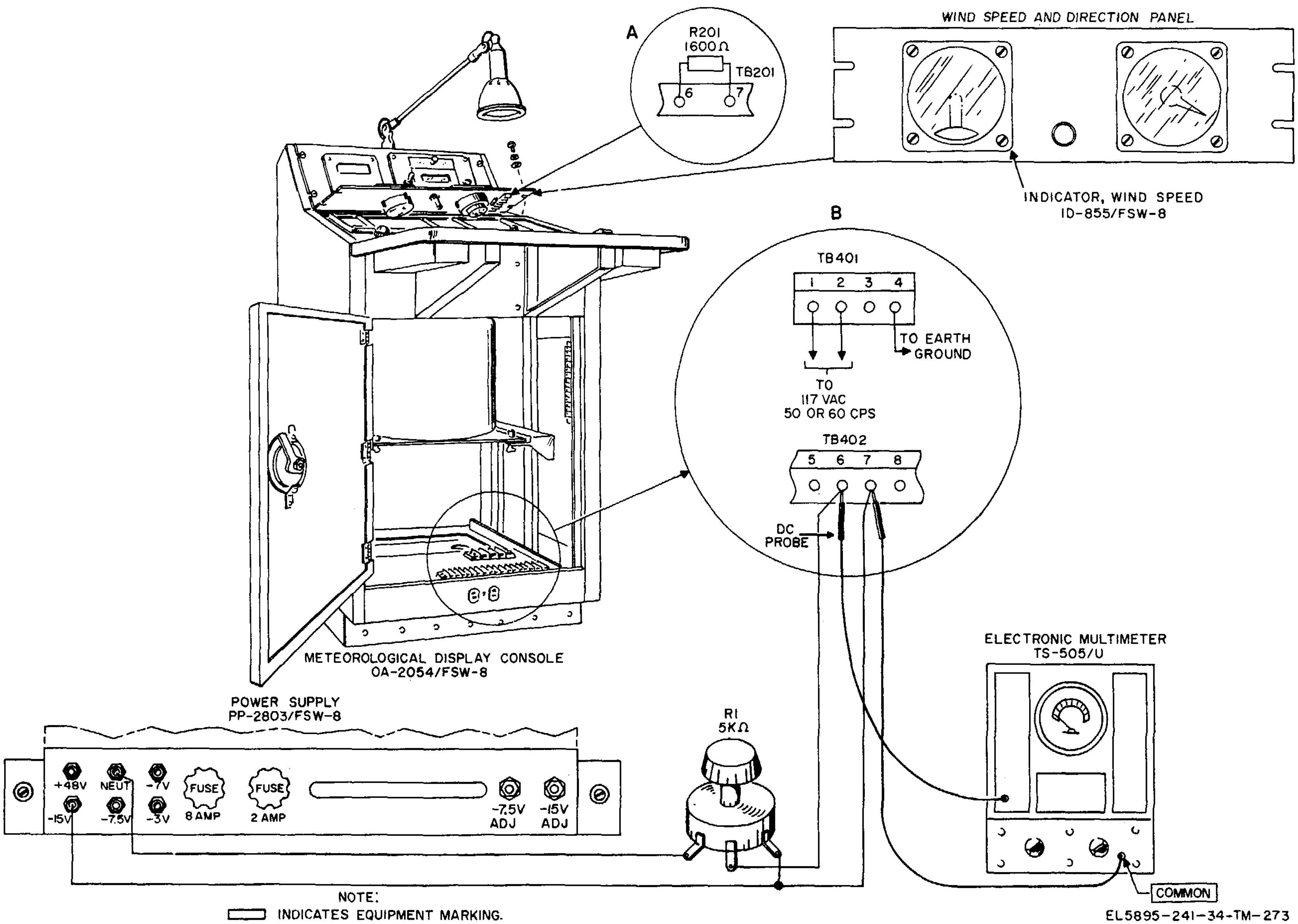


Figure 5-12. Meteorological Display Console OA-205/FSW-8 windspeed indicator, test hookup diagrams

5-24. Windspeed Indicator Accuracy Test

a. Test Equipment and Materials.

(1) Electronic Multimeter TS-505/U.
(2) Power Supply PP-2803/FSW-8.
(3) Variable resistor (R1), 5,000-ohm, 2watt.

b. Test Connections and Conditions.

(1) Label, and then disconnect, the incoming wires at the line side of terminals 6 and 7 of terminal board TB402.
(2) Connect the equipment as shown in A and B, figure 5-12.
(3) Replace resistor R201, if removed during installation.

c. Initial Test Equipment Calibration.

(1) Adjust the TS-505/U indicator pointer to zero by connecting the dc probe to the COMMON terminal and rotating the ZERO ADJ control.
(2) Operate the TS505/U RANGE switch to 2V.

d. Procedure.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
1	TS-505/U FUNCTION switch: +DC. RANGE switch: 20V.	N/A	Adjust the 5,000-ohm variable resistor until the TS-505/U reads below 4 volts.	The TS-505/U indicates less than 4 volts.
2	TS-505/U RANGE switch: 4V. reads +0.61 volt +0.01.	N/A	Adjust the 5,000-ohm variable resistor until the TS-505/U	The windspeed indicator should indicate 5 knots +0.5.
3	Same as above.	N/A	Adjust the 5,000-ohm variable resistor until the TS-505/U reads +1.22 volt +0.01.	The windspeed indicator should in-dicate 10 knots _+0.5.
4	Same as above.	N/A	Adjust the 5,000-ohm variable resistor until the TS-505/U reads +2.43 volts +0.01.	The windspeed indicator should in-dicate 20 knots +0.5.
5	TS-505/U RANGE switch: 10V.	N/A	Adjust the 5,000-ohm variable resistor until the TS-505/U reads +4.86 volts -0.02.	The windspeed indicator should in-dicate 40 knots -+0.8.
6	Same as above.	N/A	Adjust the 5,000-ohm variable resistor until the TS-505/U reads +7.30 volts +0.03.	The windspeed indicator should indicate 60 knots :1.2.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
7	Same as above.	N/A	Adjust the 5,000-ohm variable resistor until the TS-505/U reads +9.73 volts ±0.04.	The windspeed indicator should indicate 80 knots ±1.6.
8	TS-505/U RANGE switch: 20V.	N/A	Adjust the 5,000-ohm variable resistor until the TS-505/U reads +12.16 volts ±0.05.	The windspeed indicator should read . 100 knots ±2.0.
9	Same as above.	N/A	Adjust the 5,000-ohm variable resistor until the TS-505/U reads +14.60 volts ±0.05.	The windspeed indicator should read 120 knots ±2.4.

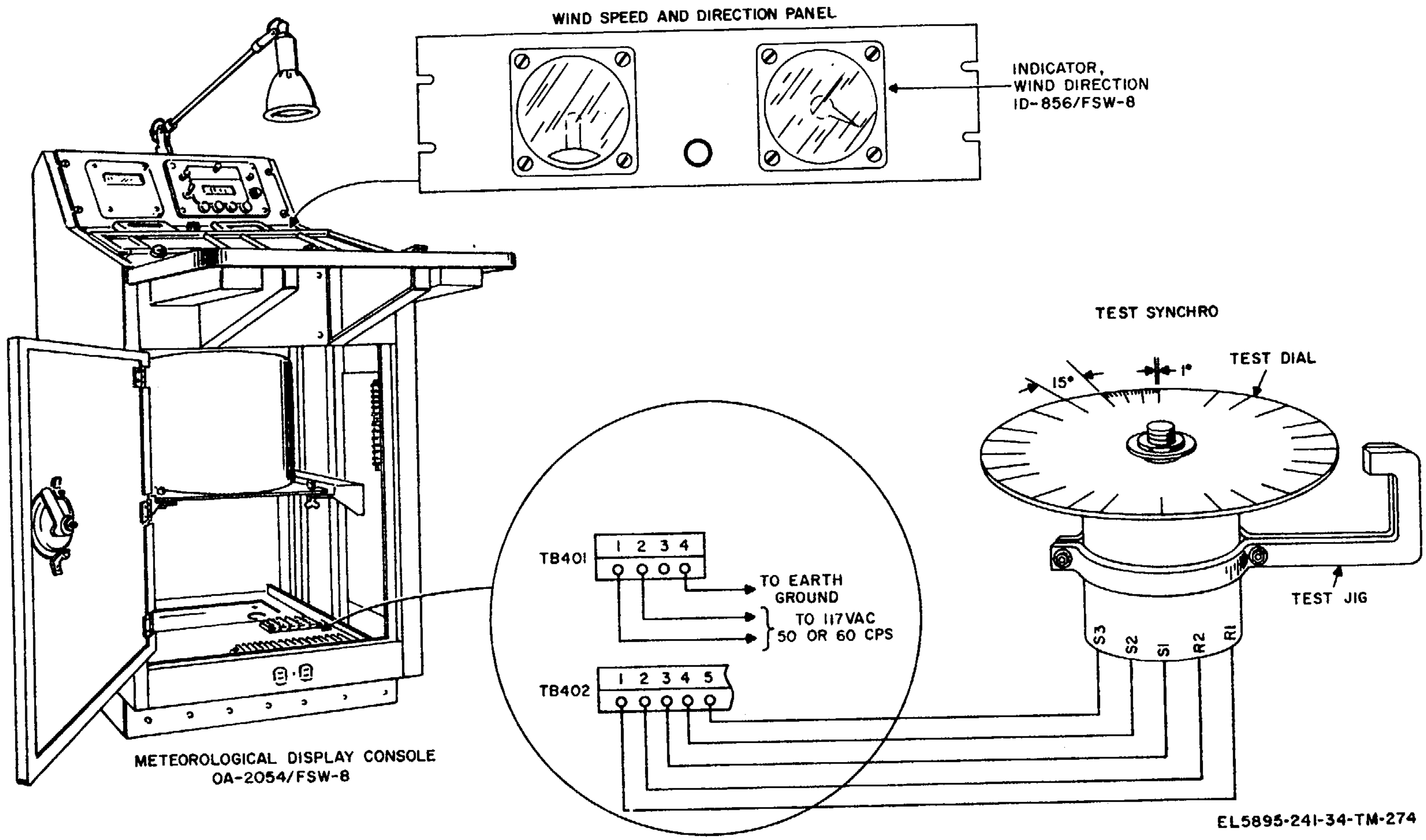


Figure 5-13. Meteorological Display Console OA-2054/FSW-8 wind direction indicator, test hookup diagram

5-25. Wind Direction Indicator Test

a. Test Equipment and Materials Required.

(1) Synchro test fixture
(2) Synchro test dial
(3) Test synchro

b. Test Connections and Conditions

(1) Label, and then disconnect, the incoming wires at the line side of terminals 1, 2, 3, 4, and 5 of the terminal board TB402
(2) Connect the stator and rotor leads of the test synchro to terminal board TB402
(3) Attach the test dial to the rotor shaft of the test synchro.
(4) Clamp the test synchro in the test fixture.
(5) Tighten the clamp bolts until the test synchro is held friction-tight in the jig.
(6) Connect the OA-2054/FSW-8 to the proper ac power source.

c. Initial Test Equipment Calibration

(1) Rotate the test dial until one of the 15° graduation markers is aligned with the pointer on the test jig. Hold the dial in this position.
(2) While holding the dial on the test synchro, rotate the test synchro housing until the windspeed indicator points due north.
(3) Tighten the clamp bolts until the test synchro is held securely in the test jig.

d. Procedures.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
			a. Rotate the test dial clockwise; stop at each 15’ graduation. b. Rotate the test dial counter-clockwise; stop at each 15° graduation.	The wind direction indicator synchro should follow within 3° at each 15° graduation. The wind direction indicator synchro should follow within 3° at each 15' graduation.

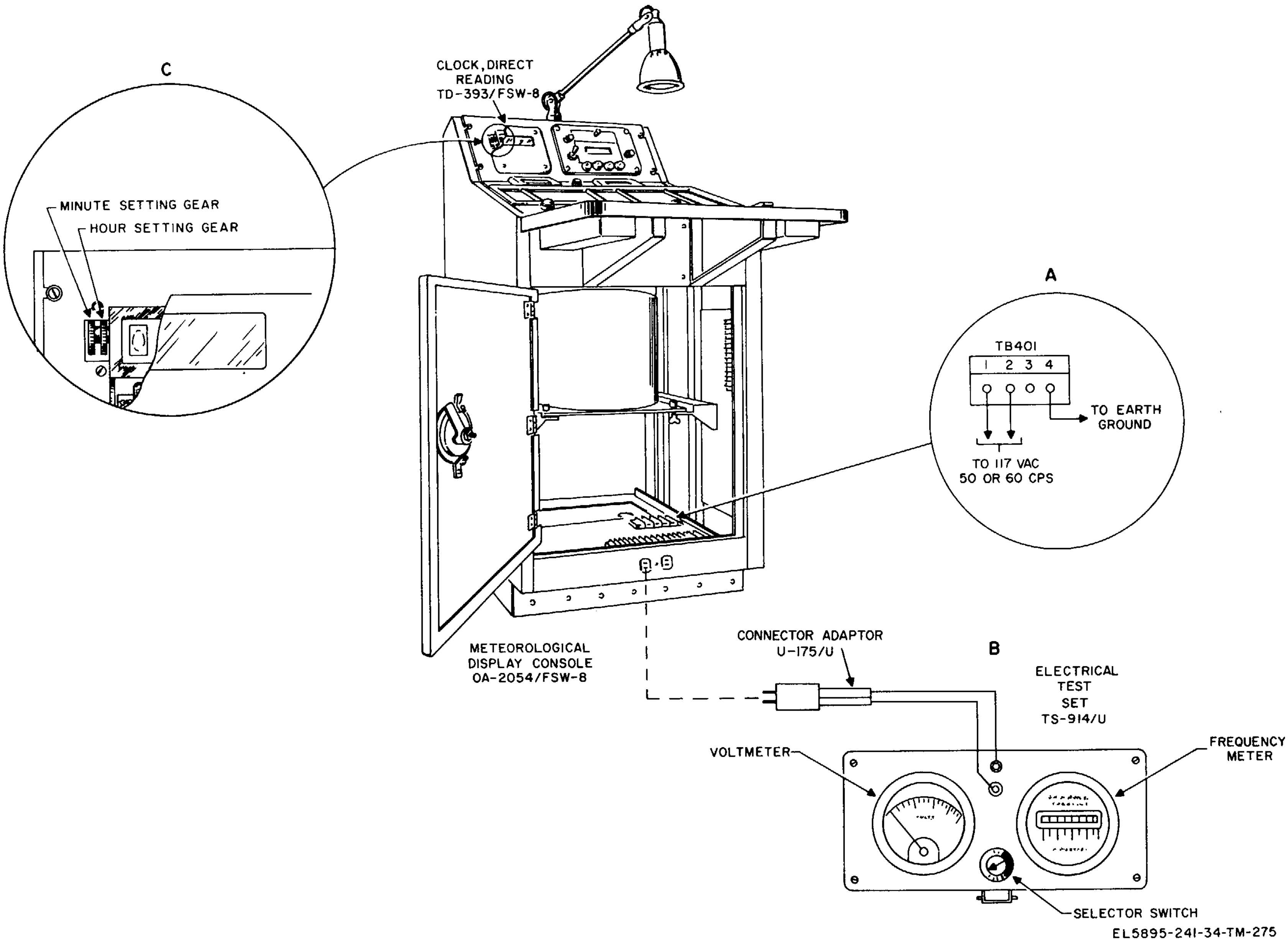


Figure 5-14. Meteorological Display Console OA-2054/FSW-8 Clock, Direct Reading TD-39/FSW-8 test hookup diagram.

5-26. Clock Test

a. Test Equipment and Materials Required.

(1) Electric Test Set TS-914/U.

(2) Standard clock.

b. Test Connections and Conditions.

(1) Operate the MAIN and CLOCK POWER circuit breakers to OFF.

(2) Connect the test equipment as shown in A and B, figure 5-14.

(3) Operate the selector switch on the TS-914/U to 150.

(4) Operate the MAIN POWER circuit breaker to ON.

(5) If the TS-914/U frequency meter indicates 60 cps; install a 60-cps clock motor. If the TS-914/U frequency motor does not indicate 60-cps, install a 50-cps clock motor (TM 11-5895-241-12).

c. Initial Test Equipment Calibration. Proceed as follows to synchronize Clock, Direct Reading TD393/FSW-8 to the standard clock.

CAUTION

Do not reset the clock with clock power applied or when the clock is cycling.

(1) Remove the clock assembly mask (para 4-151b).

(2) Note the time on the standard clock.

(3) Rotate the hour setting gear (fig. 5-14) toward the top of the TD303/FSW-8 until the appropriate setting is obtained.

CAUTION

Do not rotate the clock setting gears toward the bottom of the TD393/FSW-8. Damage will result to the TD393/FSW-8.

(4) Rotate the minute setting gear toward the top of the TD393/FSW-8 until 1 minute before the synchronized time is indicated on the minute and 10-minute drums.

(5) Turn the CLOCK POWER circuit breaker to ON and allow the TD-393/FSW-8 to run until the synchronization time is indicated on the drums.

(6) At the instant the seconds drum registers 00, operate the CLOCK POWER circuit breaker to OFF.

(7) At the instant the standard clock indicates the synchronization time, operate the CLOCK POWER circuit breaker to ON.

(8) Replace the clock assembly mask.

d. Procedure.

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
1	N/A-------------------------	N/A----------------------------	Record the time of synchronization----	The TD-393/FSW8 and the standard clock are synchronized.-
2	N/A-----------------------	N/A-------------------------------....................	a. Permit the TD-393/FSW-8 to run for a period of 24 hours. b. Record the time indicated on the standard clock and on the TD-393/FSW-8.	a. None. b. The TD-393/FSW-8 and the standard clock are synchro-nized.

5-27. Test Data

Personnel may find it convenient to arrange the OA-2054/FSW-8 test data in a manner similar to that shown below. In the Performance standard column record the actual indications obtained during the various tests performed. These data may be used as a check against the performance standards the next time the tests are performed.

METEOROLOGICAL DISPLAY CONSOLE OA-2054/FSW-8

1. WINDSPEED INDICATOR TEST	*Performance standard*
a. 0.61 vdc + 0.01----------------------------	a. 5 knots +0.05 indicated.
b. 1.22 vdc + 0.01----------------------------	b. 10 knots +0.5 indicated.
c. 2.43 vdc + 0.01----------------------------	c. 20 knots +0.5 indicated.
d. 4.86 vdc ±0.02-----------------------------	d. 40 knots +0.8 indicated.
e. T.30 vdc +0.03-----------------------------	e. 60 knots +1.2 indicated.
f. 9.73 vdc ±0.04-----------------------------	f. 80 knots +1.6 indicated.
g. 12.16 vdc ± 0.05---------------------------	g. 100 knots +2 indicated.
h. 14.6 vdc -0.05------------------------------	h. 120 knots +2.4 indicated.
2. WIND DIRECTION INDICATOR TEST	
a. Clockwise indicator accuracy-----------	a. 3 minimum.
b. Counterclockwise indicator accuracy-	b. 3 minimum.
3. CLOCK TEST	
Synchronization test---------------------------	Standard clock and TD-393/FSW-8 synchronized.

Section VI. FINAL TESTING

5-28. General

Final testing procedures for the various units of the AN/FSW-8(V) are the same as the general support testing procedures described in paragraphs 5-6 through 5-27

5-29. Maintenance Procedures

Restore the appearance, performance, and life expectancy of the various units of the AN/FSW8(V) to a standard comparable to that of new equipment by performing the following procedures:

a. Disassemble all units of the AN/FSW-8(V) as required.

b. Inspect all component parts of the AN/ FSW-8(V).

c. Repair or replace any worn or unserviceable part with a part that conforms to the original manufacturing specifications and tolerances.

d. Reassemble the various units of the AN/ FSW-8 (V).

e. Perform the general support testing procedures (para 5-6 through 5-27).

APPENDIX A

REFERENCES

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	U.S. Army Equipment Index of Modification Work Orders.
TB .746-10	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 11-471	Manual Telephone Central Office Installation.
TM 11-1214	Instruction Book for Oscilloscope OS-8A/U.
TM 11-2044	Attenuators, TS-402/U and TS-402A/U.
TM 11-2057A	Test Set TS-27B/TSM.
TM 11-2262-1	Outside Plant Construction and Maintenance: Planning and Organization.
TM 11-2262-2	Outside Plant Construction and Maitnenance: Pole Line Construction and Maintenance.
TM 11-5017/ TO 33A1-7-23-1	Output Meters TS-585A/U, TS-585B/U, TS585C/U, TS-585D/U.
TM 11-5097/ TO 33A1-5-64-1	Spectrum Analyzers TS-723A/U, TS-723B/U, TS-723C/U, and TS-723 D/U.
TM 11-5511/ TO-33A1-12-55-1	Electronic Multimeter TS-505/U.
TM 11-5805-201-12/ TO 31W1-2PT-291	Operator and Organizational Maintenance Manual Including Repair Parts and Special Tool Lists: Telephone Set TA-312/PT.
TM 11-5895-241-12	Operator's and Organizationl Maintenance Manual: Communications Control Set AN/FSW-8(V).
TM 11-5895-241-20P	Organizational Maintenance Repair Parts and Special Tool Lists: Communication Control Set AN/FSW-8(V).
TM 11-5895-241 35P	DS, GS, and Depot Maintenance Manual Including Repair Parts and Special Tool Lists: Communication Control Set AN/FSW-8(V).
TM 11-6625-200-15	Operator's, Organizational, DS, GS, and Depot Maintenance Manual: Multimeters ME-26A/U, ME-26B/U, ME-26C/U, and ME-26D/U.
TM 11-6625-202-10/ TO 33A1-12-24-1	Operator's Manual: Test Sets 1-181, I-181A, and I-181B, and Relay Test Set TS-1775/U.
TM 11-6625-203-12	Operator and Organizational Maintenance: Multimeter AN/URM-105, Including Multimeter ME-77/U.
TM 11-6625-261-12	Operator's and Organizational Maintenance Manual: Audio Oscillators TS-382A/U, TS-382B/U, TS-382D/U, TS-382E/U, and TS-382F/U.
TM 11-6625-303-12	Operator and Organizational Maintenance Manual: Electrical Power Test Sets AN/UPM-93A, AN/UPM-93B, AN/UPM-93C, and AN/UPM-100.
TM 11-6625-320-12	Operator and Organizational Maintenance Manual: Voltmeter, Meter ME-30A/U and Voltmeters, Electronic ME-30B/U, ME-30C/U, and ME-30E/U.
TM-11-6660-200-10	Operator's Manual: Wind Measuring Set AN/GMQ-11.
TM 38750	The Army Maintenance Management System (TAMMS).

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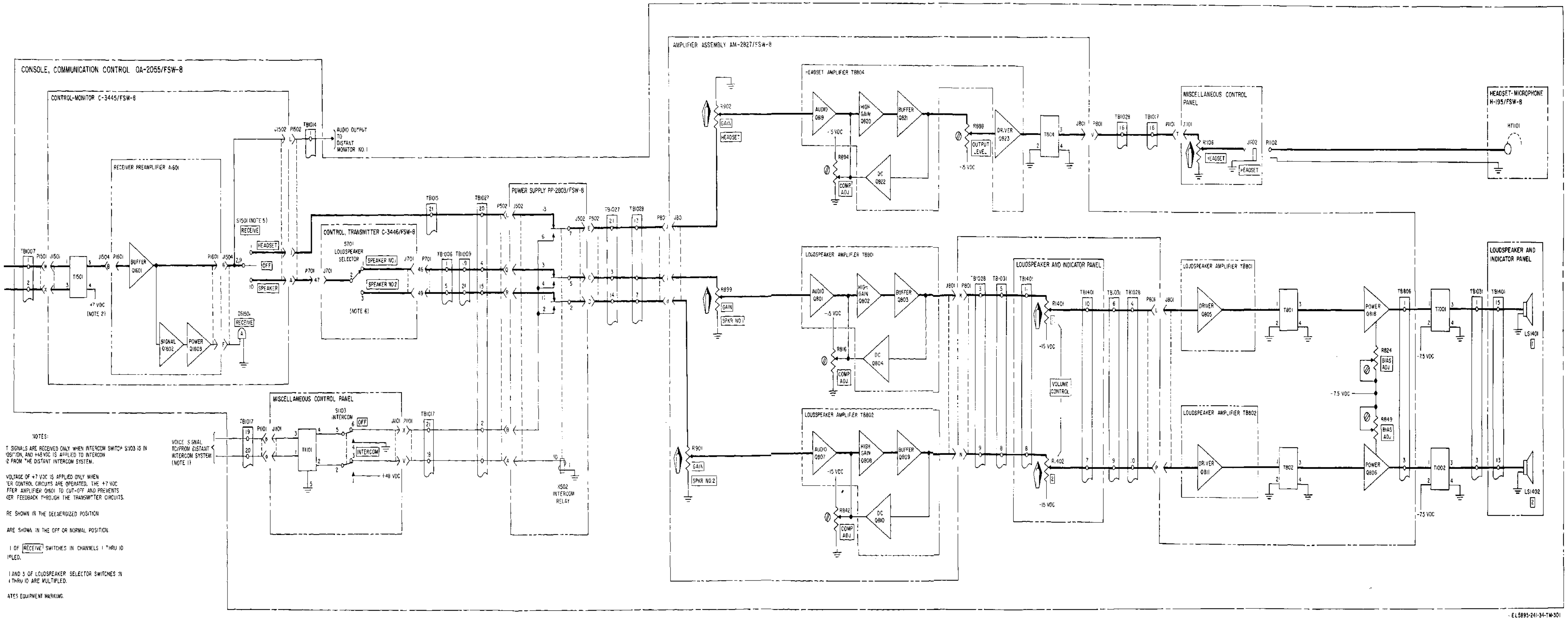


Figure FO-1. Console, Communication Control OA-2055/FSW-8, receiving function, signal flow diagram.

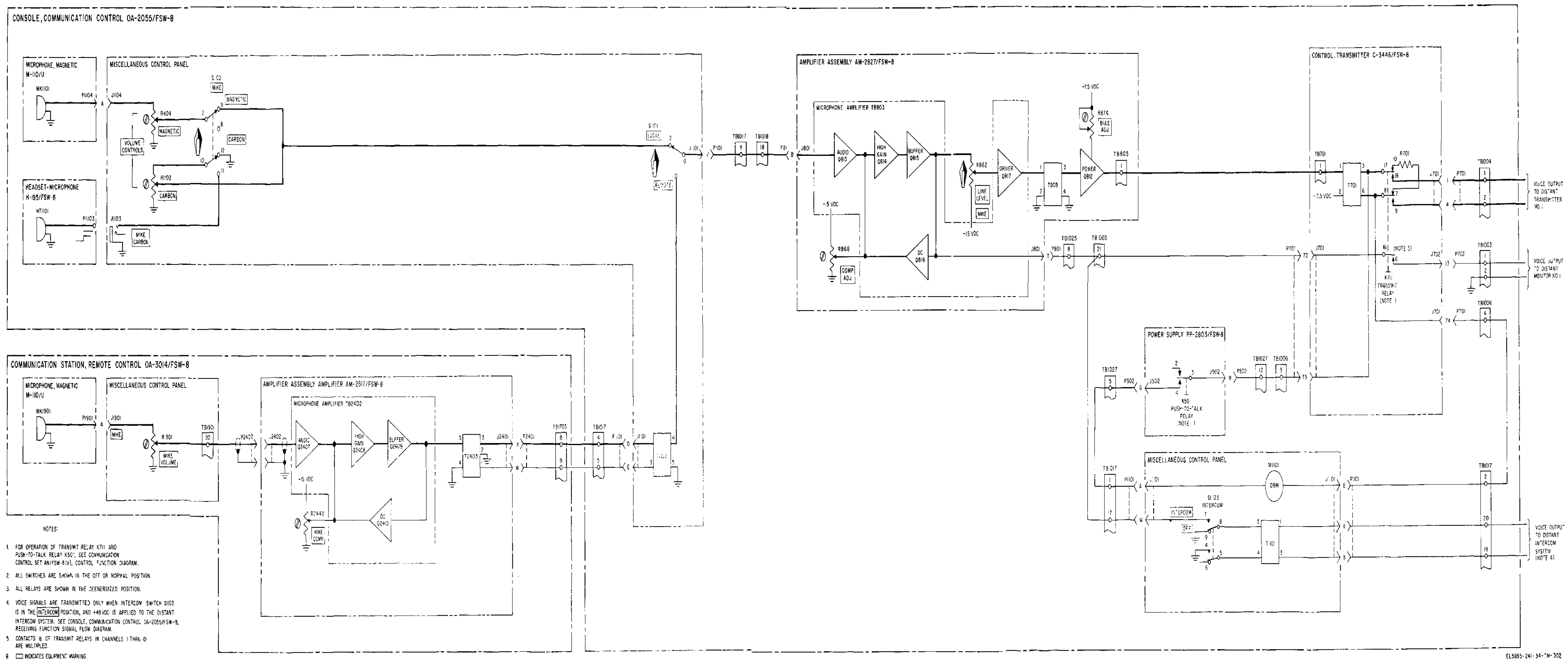


Figure FO-2. Console, Communication Control OA-2055/FSW-8, transmitting function, signal flow diagram.

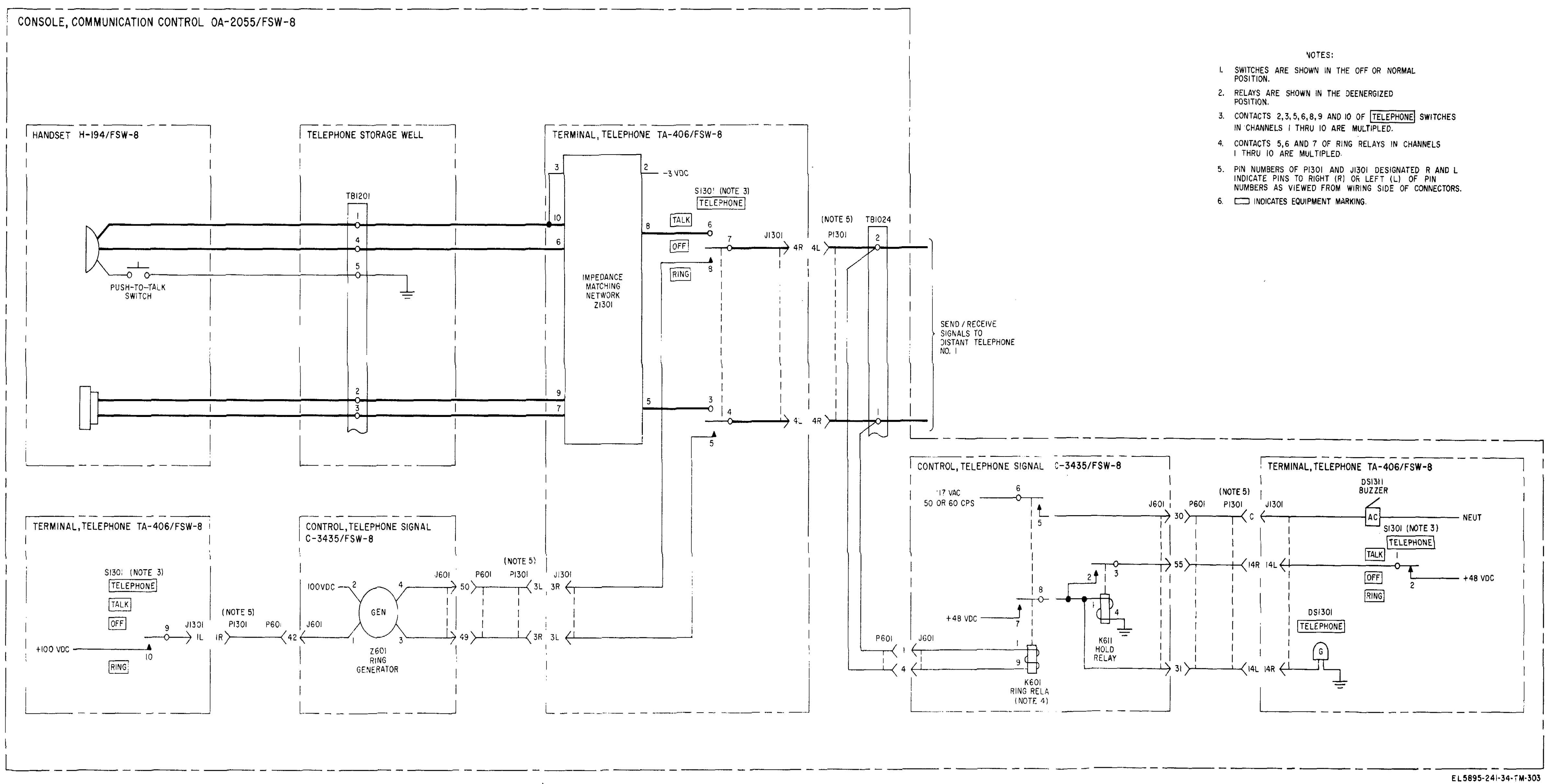


Figure FO-3. Console, Communication Control OA-2055/FSW-8, telephone function, signal flow diagram.

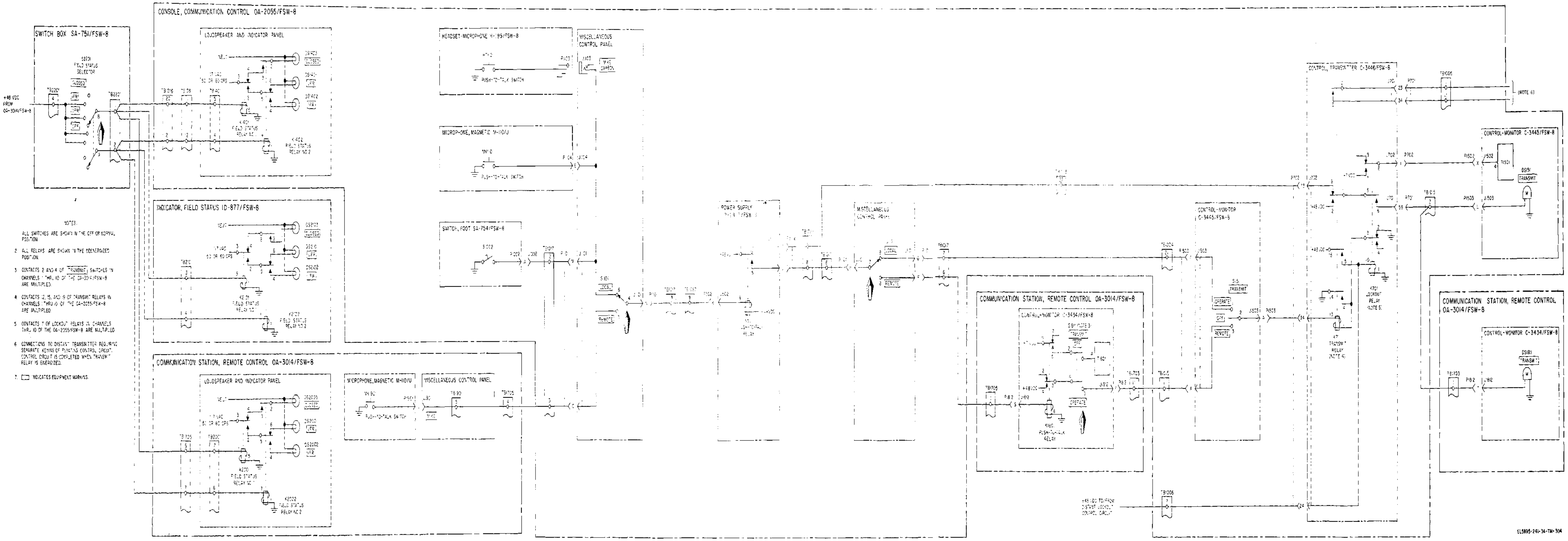


Figure FO-4. Communication Control Set AN/FSW-8(V), control function diagram

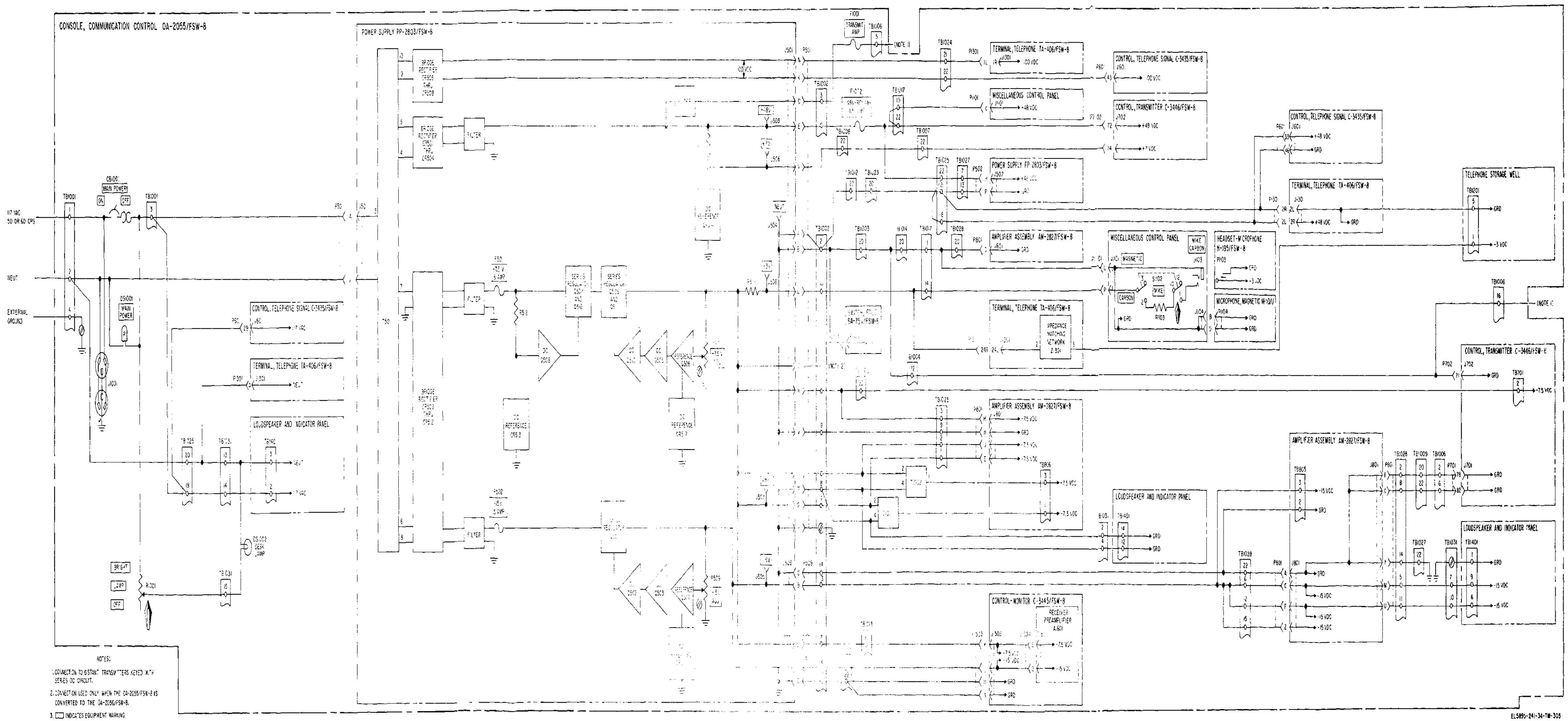


Figure FO-5. Console, Communication Control OA-2055/FSW-8, power distribution diagram.

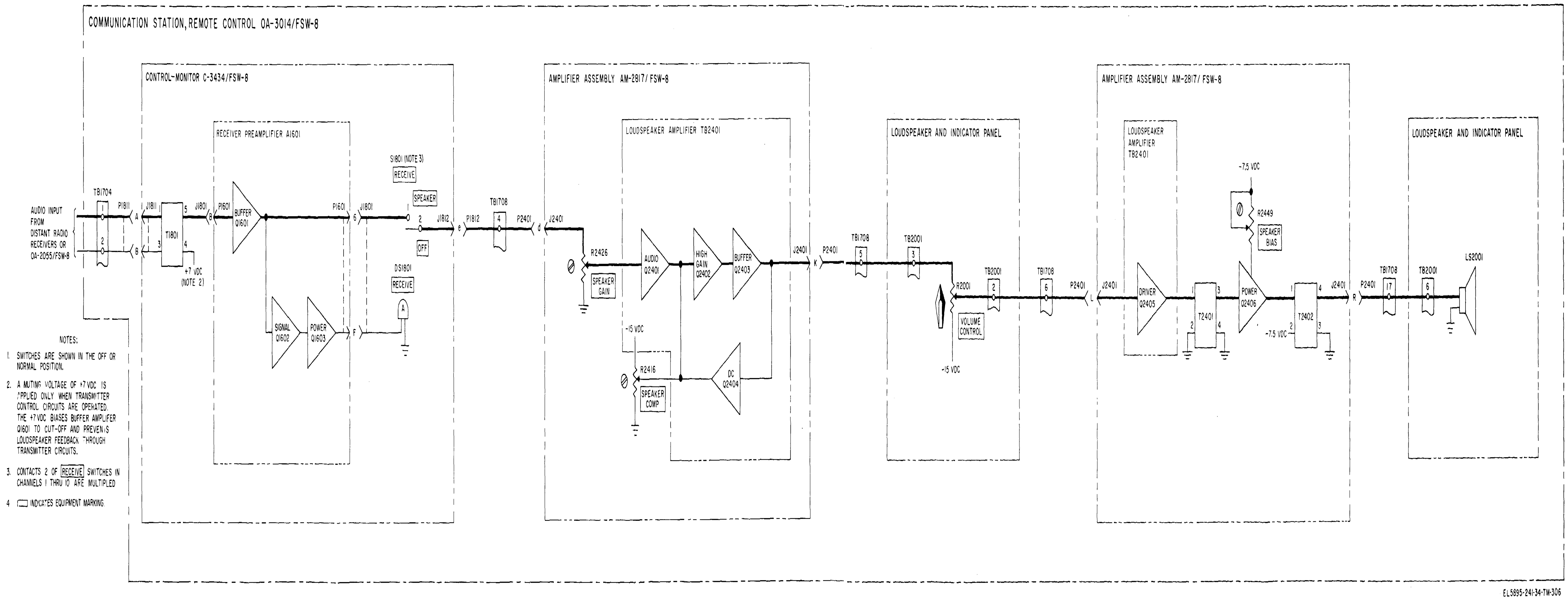


Figure FO-6. Communications Station, Remote Control OA-3014/FSW-8, receiving function, signal flow diagram.

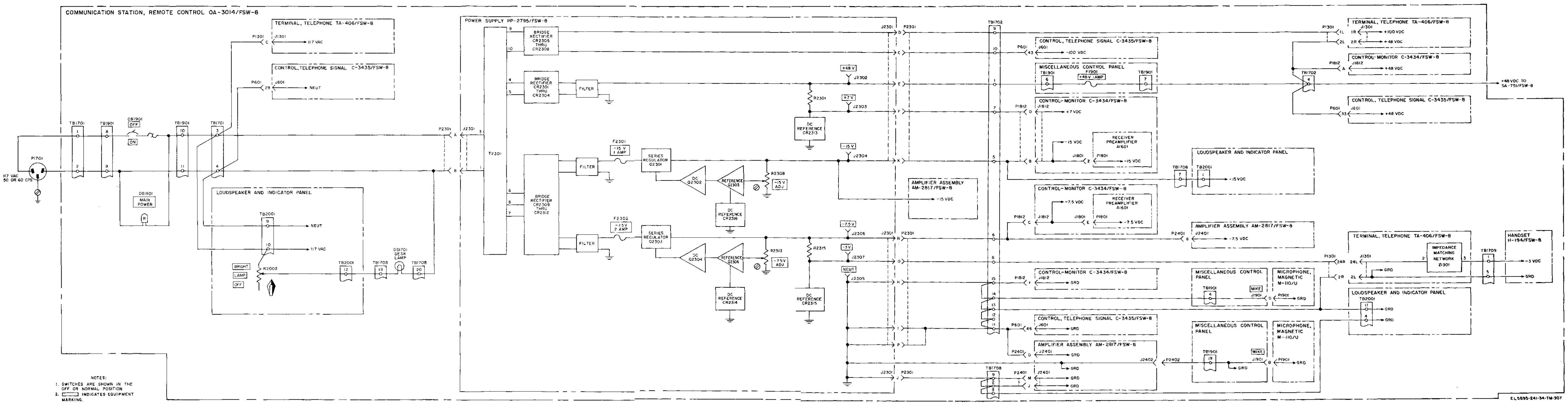


Figure FO-7. Communications Station. Remote Control OA-3014/FSW-8, power distribution diagram

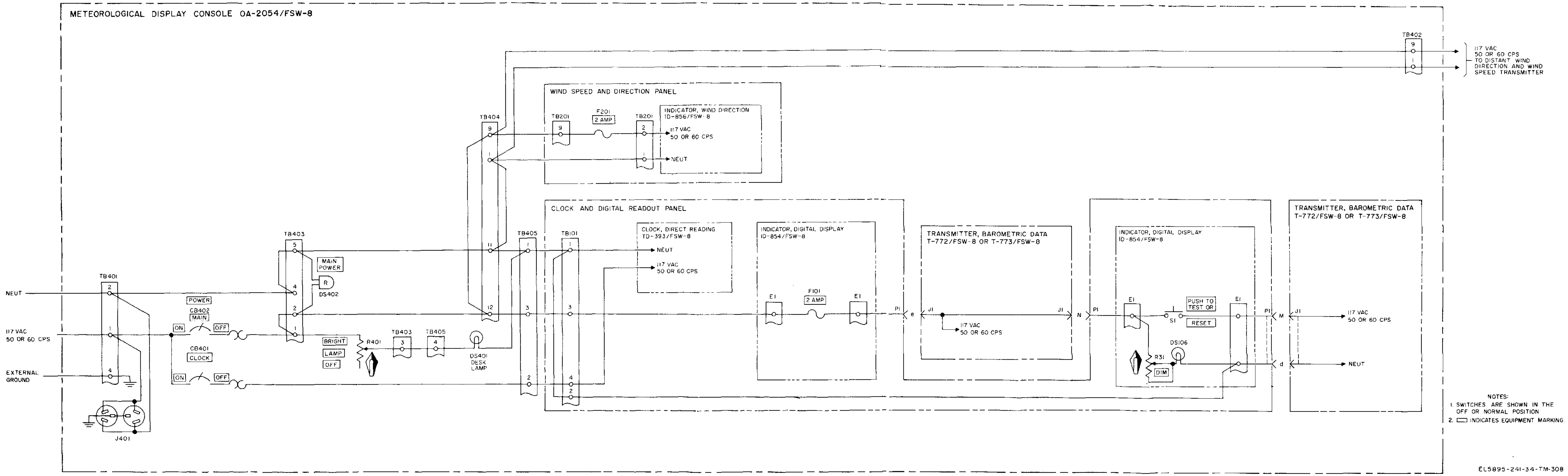


Figure FO-8. Meterological Display Console OA-2054/FSW-8, power distribution diagram

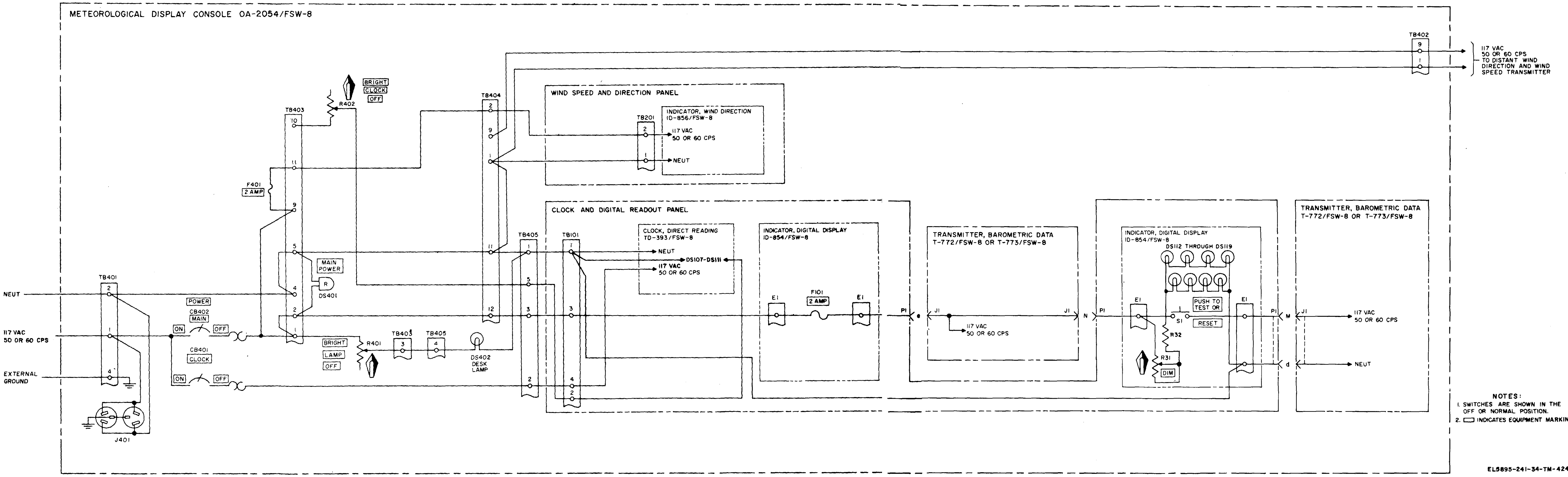


Figure FO-9. Meterological Display Console OA-2051A/FSW-8, power distribution diagram

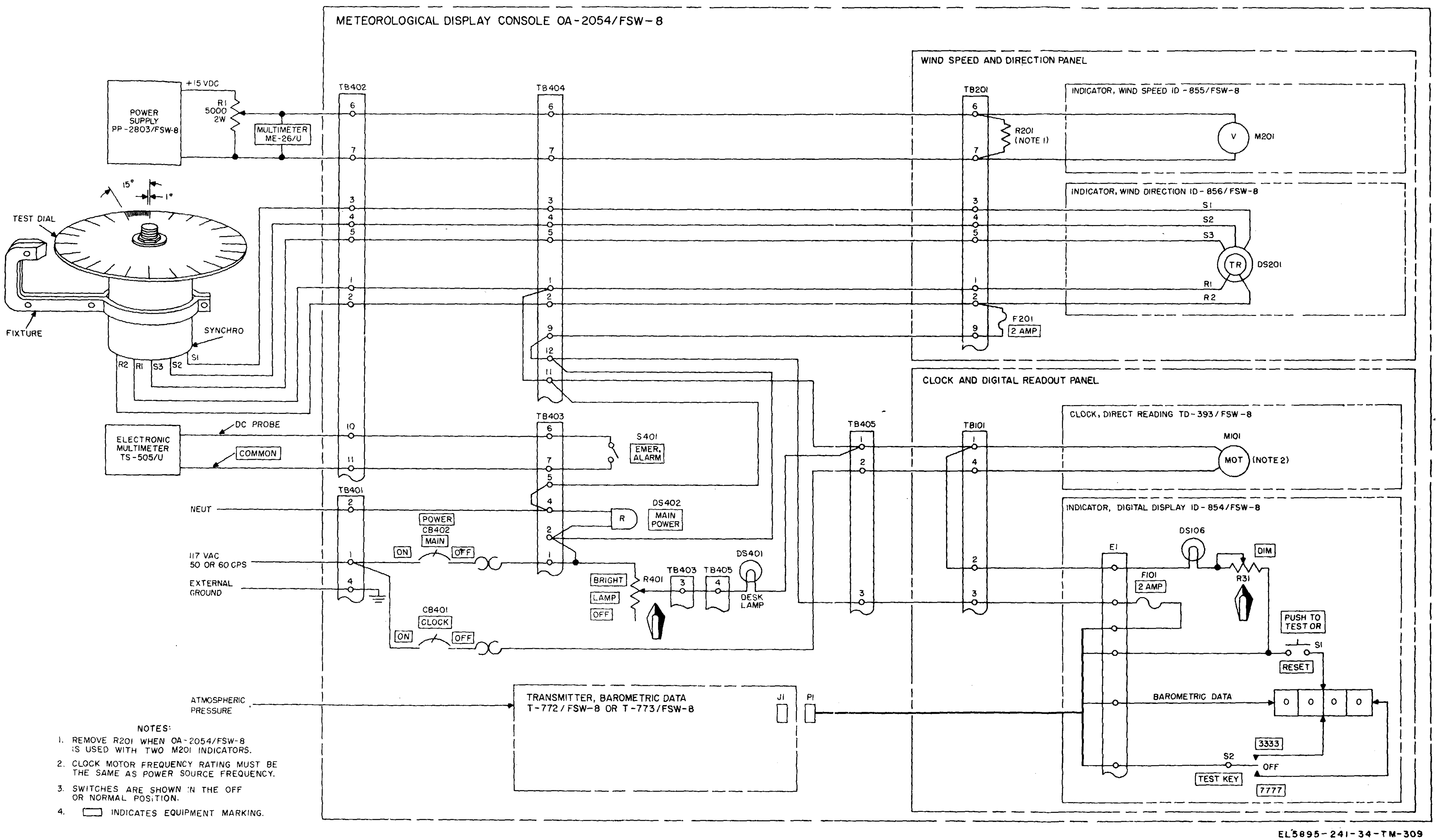
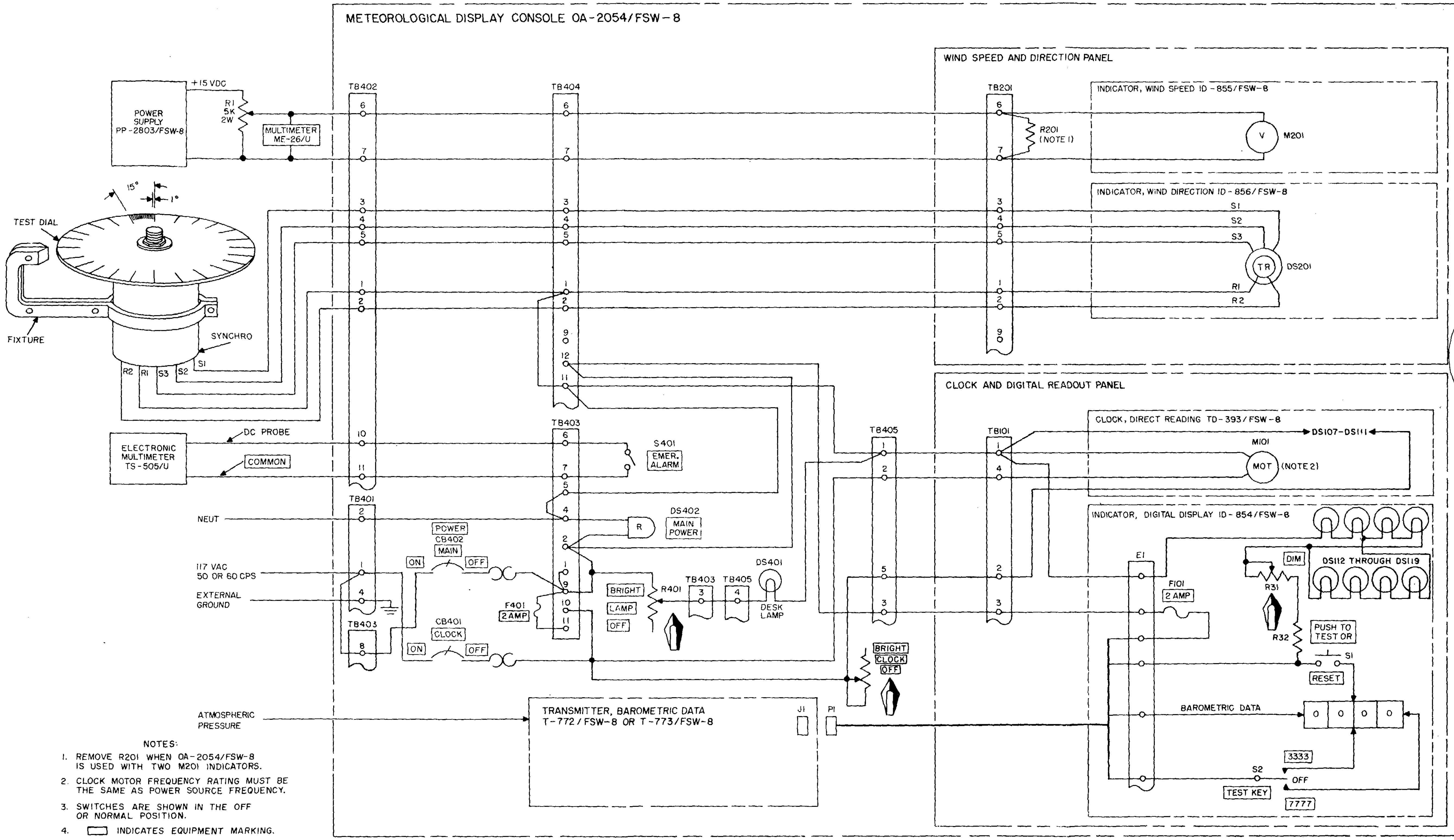


Figure FO-10. Meterological Display Console OAS-2054/FSW-8, functional test connection diagram.



NOTES:

1. REMOVE R201 WHEN OA-2054/FSW-8 IS USED WITH TWO M201 INDICATORS.
2. CLOCK MOTOR FREQUENCY RATING MUST BE THE SAME AS POWER SOURCE FREQUENCY.
3. SWITCHES ARE SHOWN IN THE OFF OR NORMAL POSITION.
4. ▭ INDICATES EQUIPMENT MARKING.

EL5895-241-34-TM-425

Figure FO-11. Meterological Display Console OA-2054A/FSW-8, functional test connection diagram

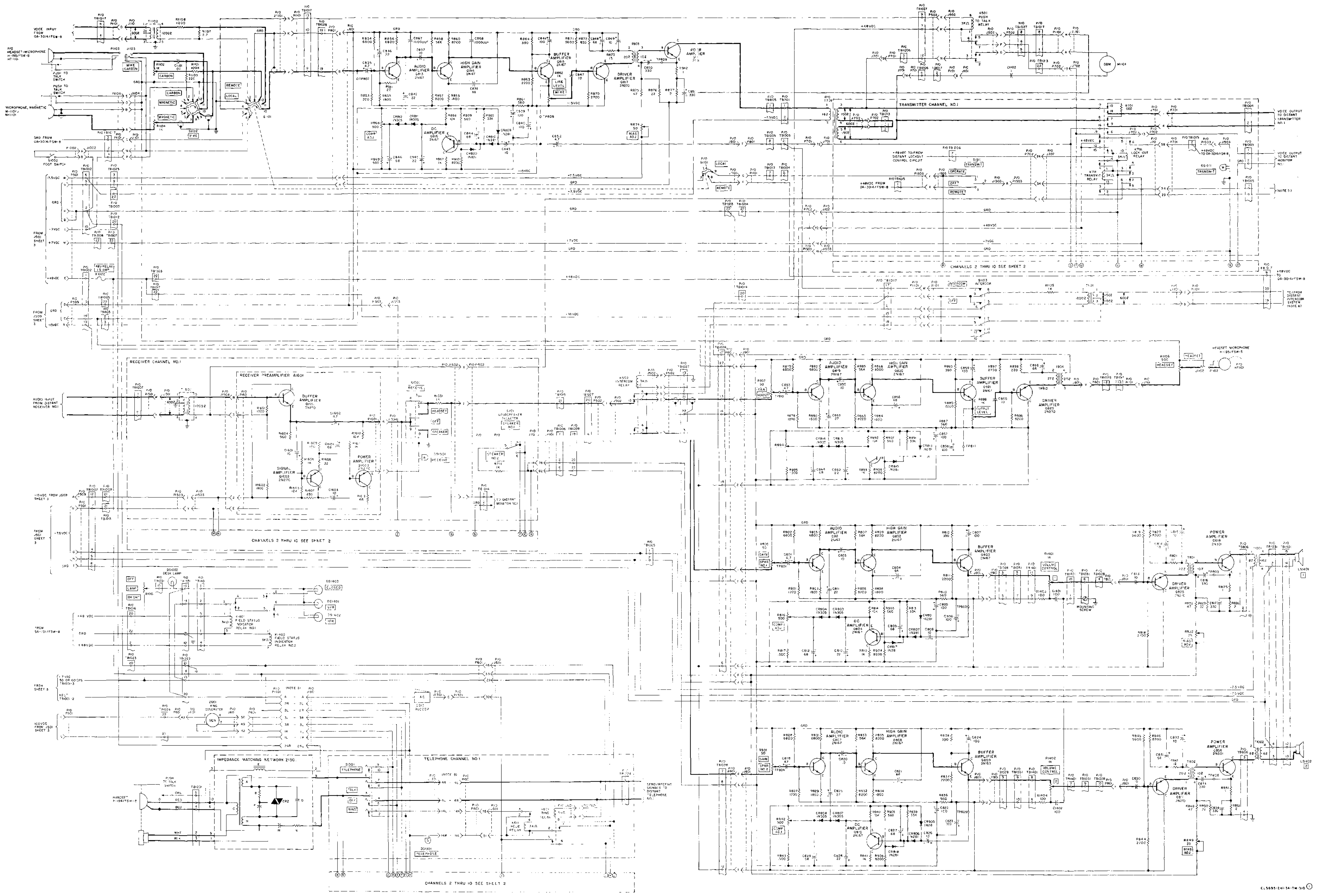


Figure FO-12(1). Console, Communication Control OA-2055/FSW-8, schematic diagram (part 1 of 3).

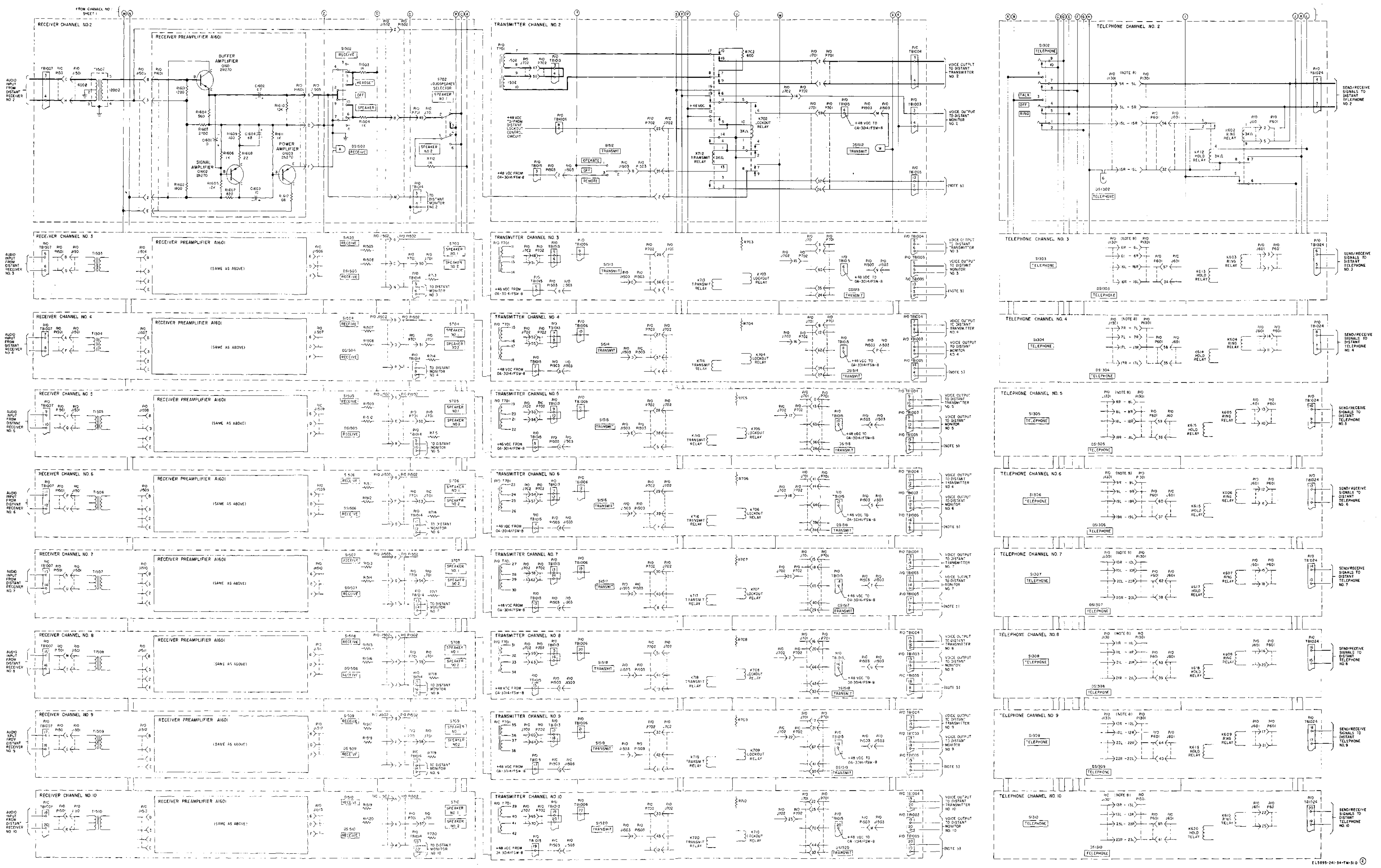


Figure FO-12(2). Console, Communication Control OA-2055/FSW-8, schematic diagram (part 2 of 3)

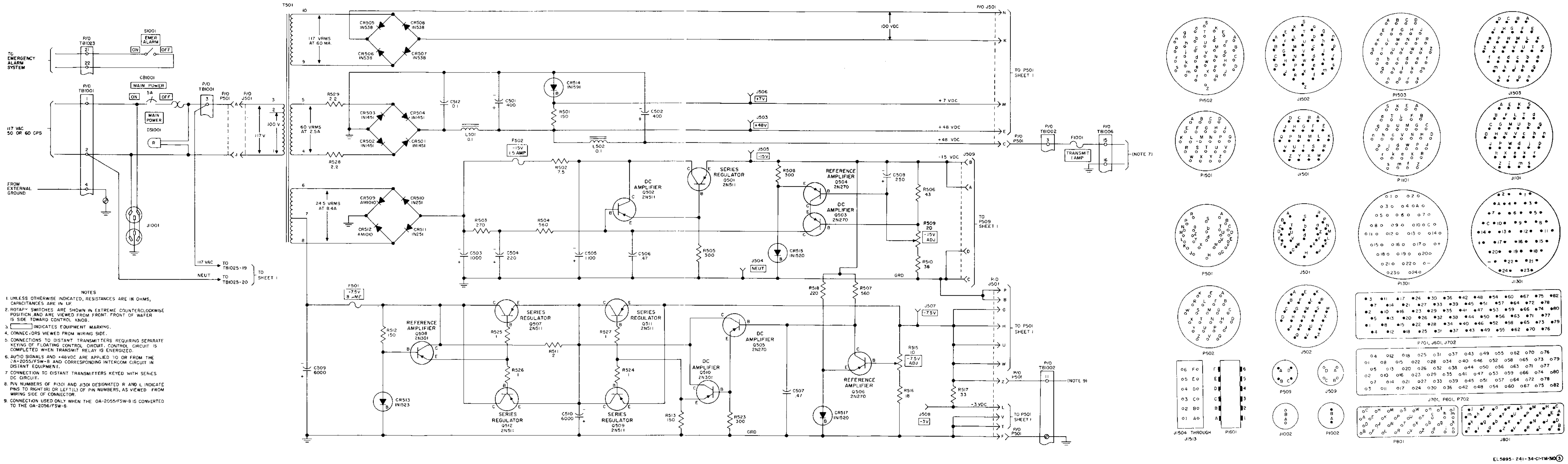


Figure FO-12(3). Console, Console, Communication Control OA-2055/FSW-8, schematic diagram (part 3 of 3).

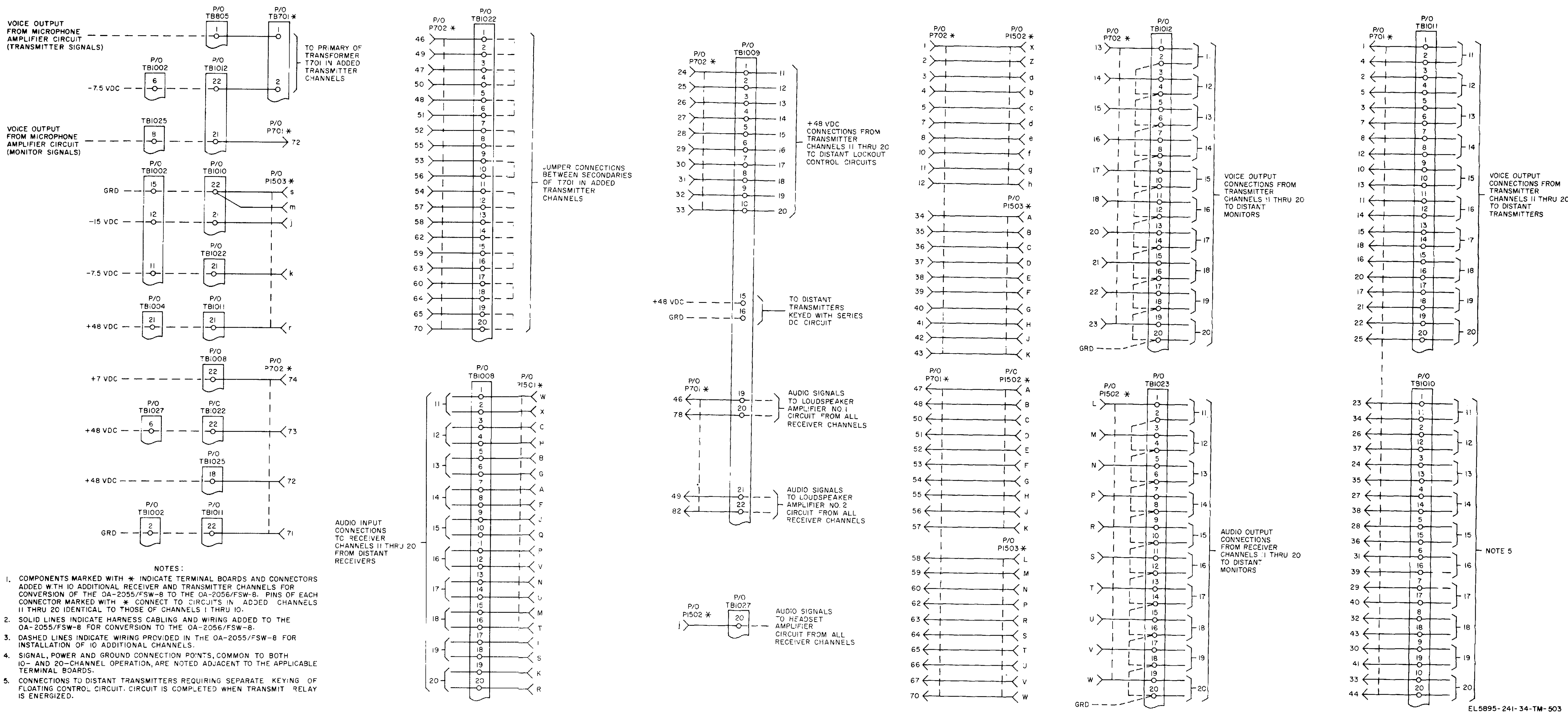


Figure FO-13. Harness cabling for conversion of Console, Communication Control OA-2055/FSW-8 to Console, Communication Control, OA-2056/FSW-8, schematic diagram.

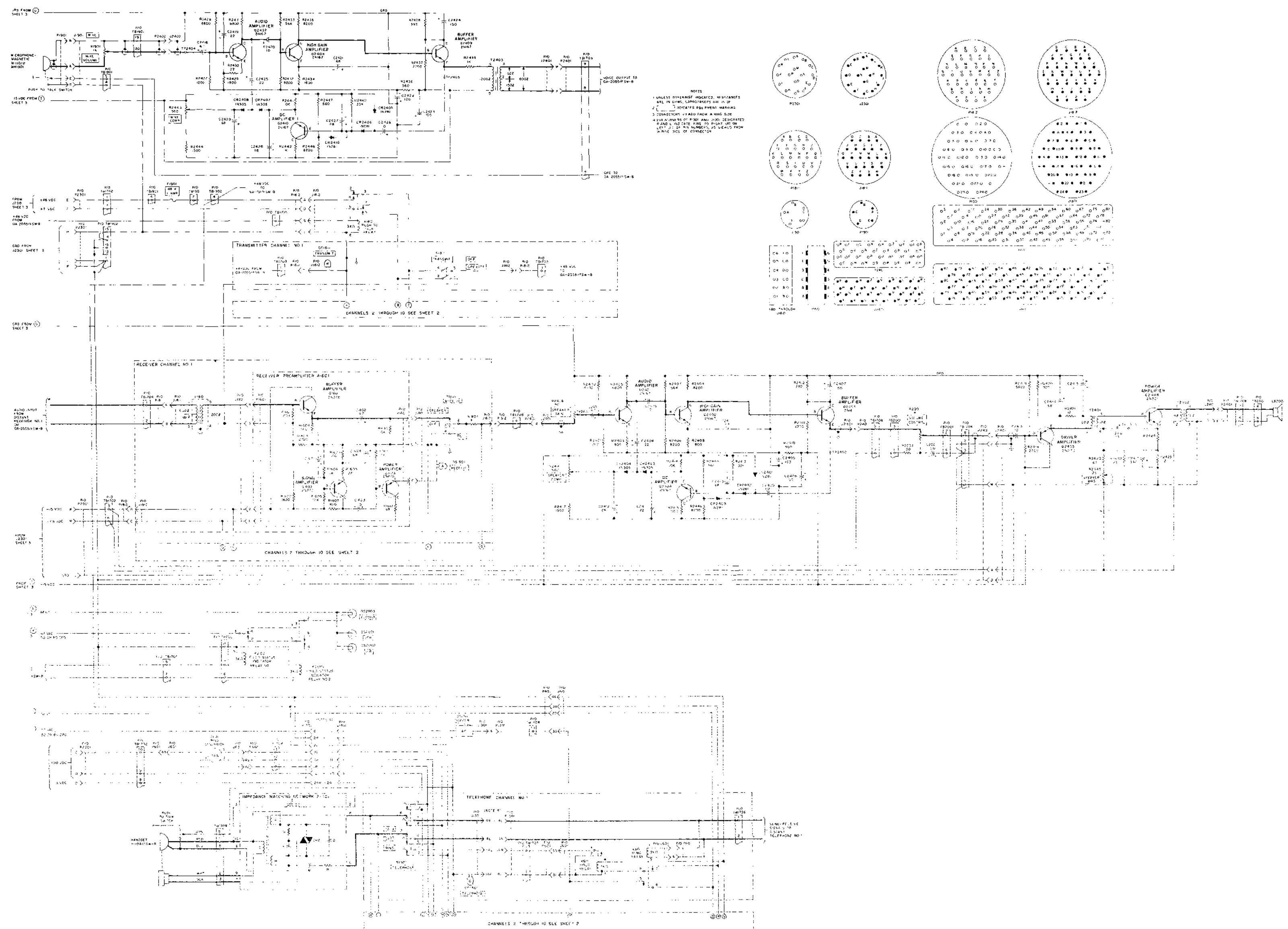


Figure FO-14(1). Communications Station, Remote Control OA-3014/FSW-8, schematic diagram (part 1 of 3).

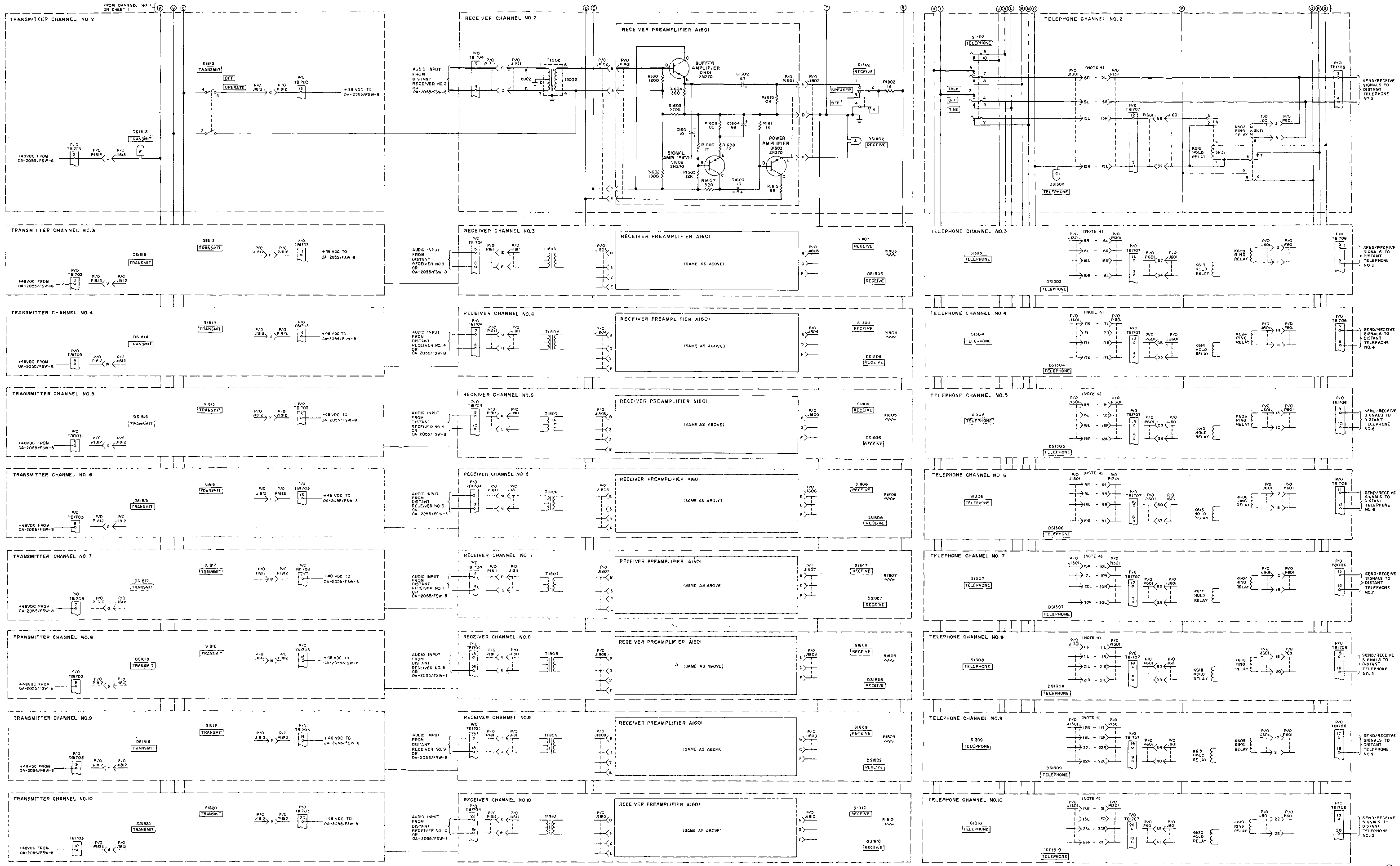


Figure FO-14(2). Communications Station, Remote Control OA-3014/FSW-8, schematic diagram (part 2 of 3).

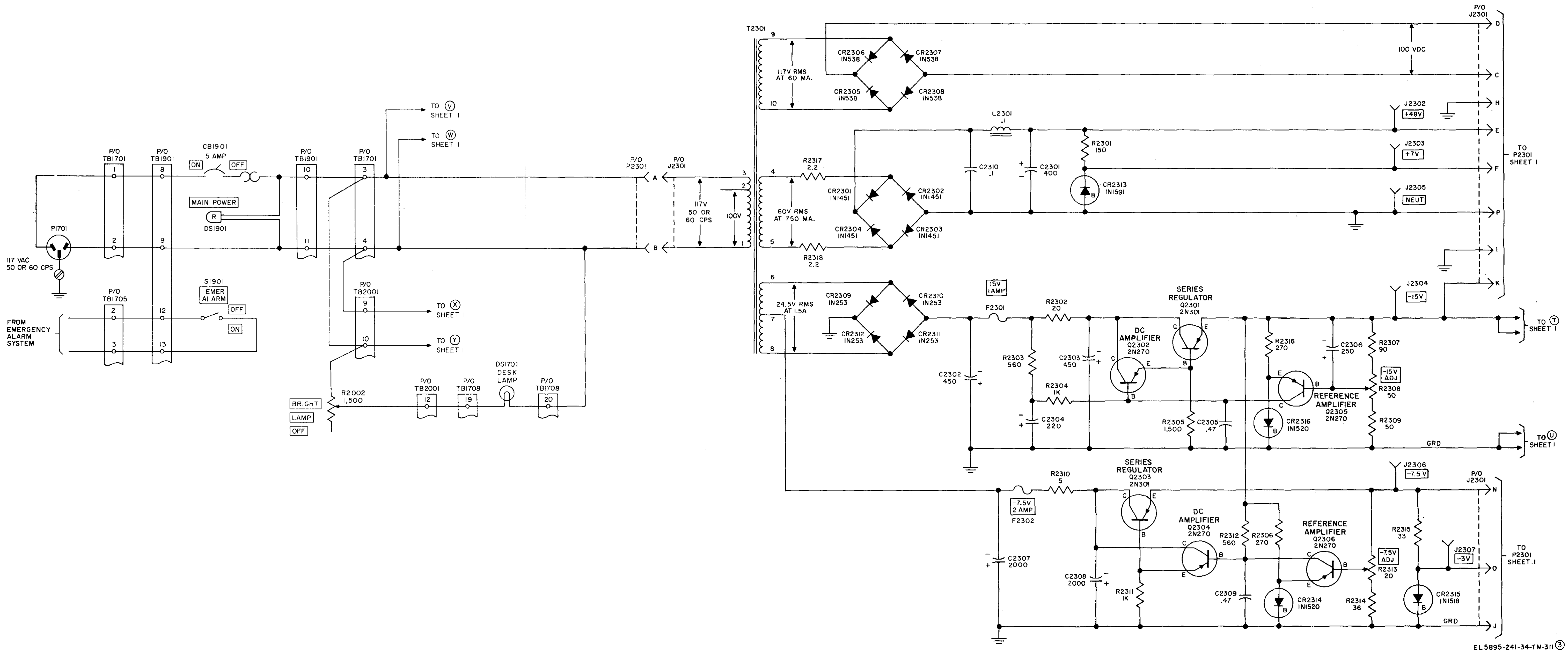


Figure FO-14(3). Communications Station, Remote Control OA-3014/FSW-8, schematic diagram (part 3 of 3).

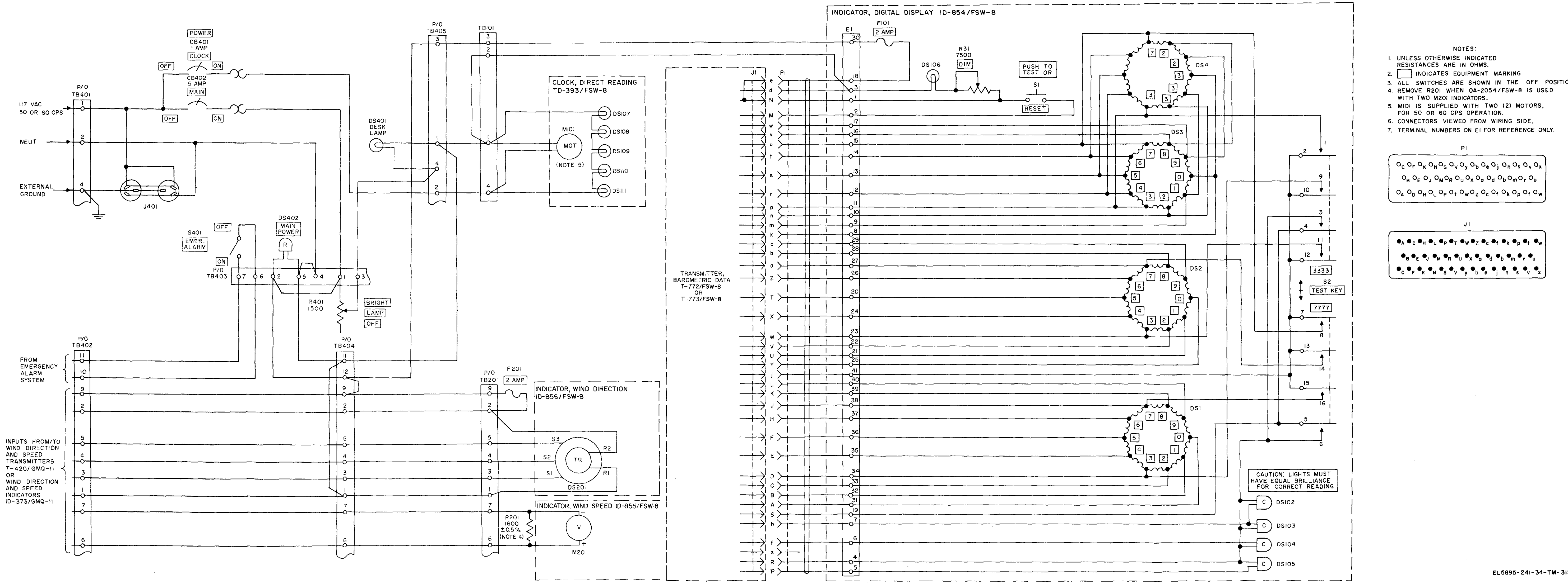


Figure FO-15. Meteorological Display Console OA-2054/FSW-8, schematic diagram.

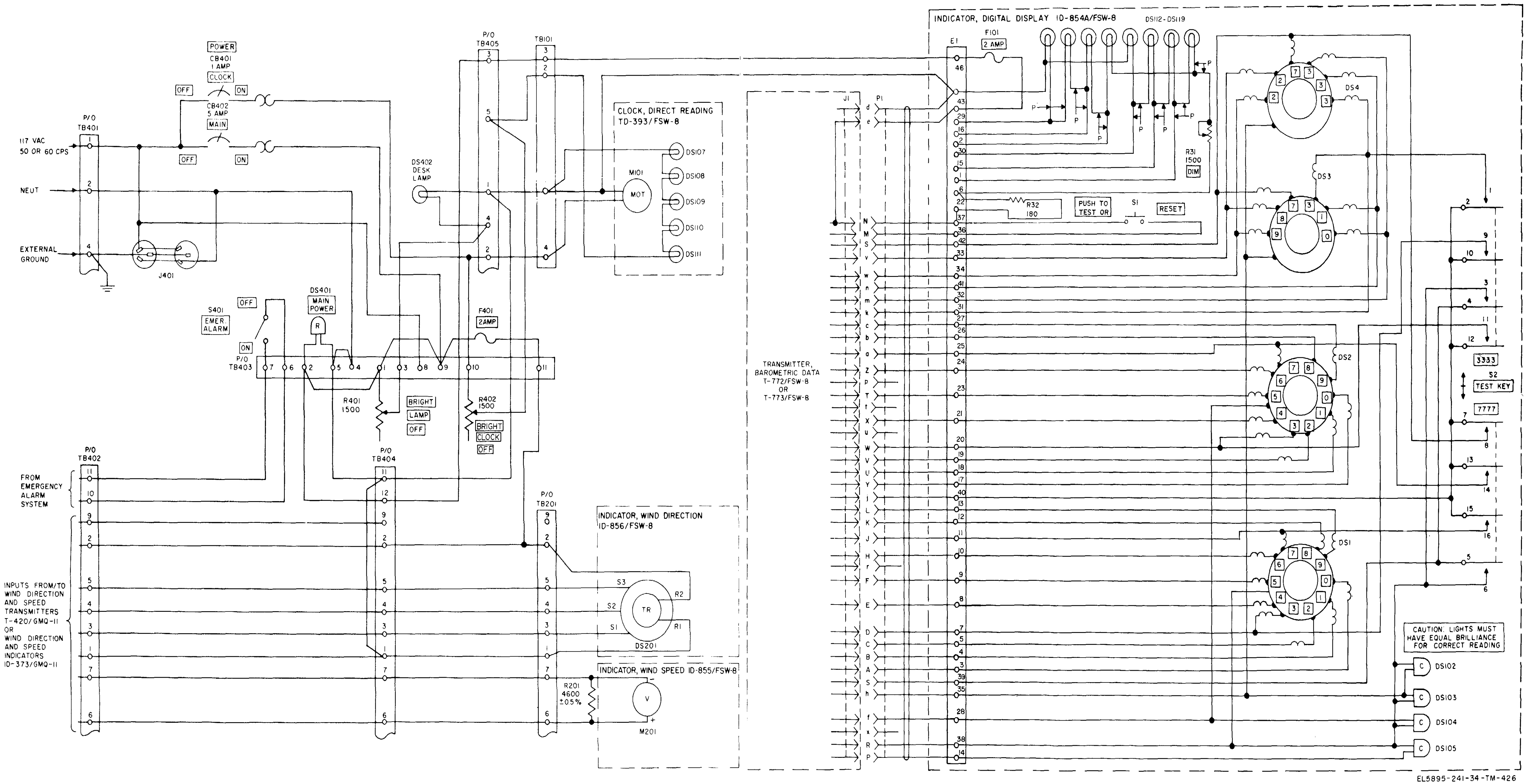


Figure FO-16. Meterological Display Console OA-2054A/FSW-8, schematic diagram.

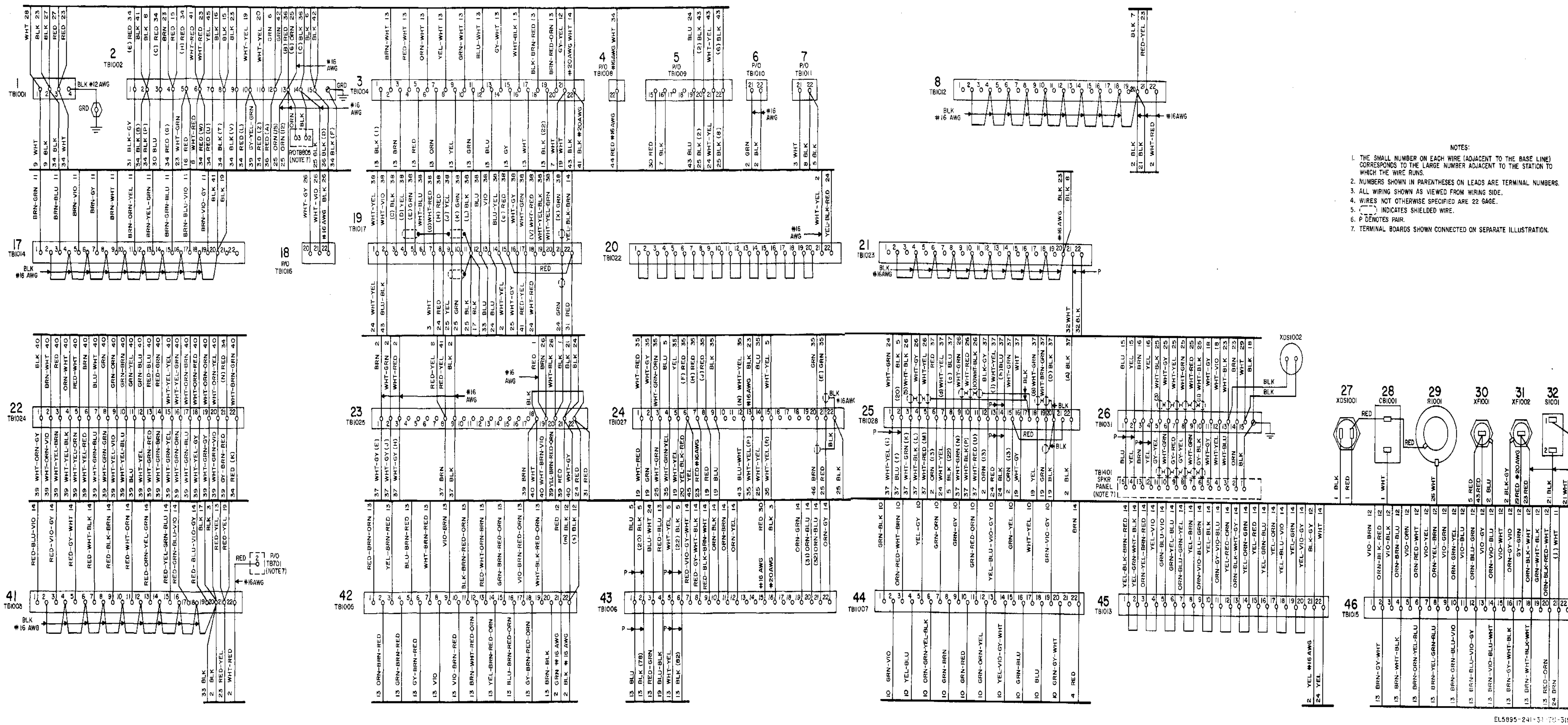


Figure FO-17 (1). Cabinet, Electrical Equipment CY-3020/FSW-8, wiring diagram (part 1 of 2).

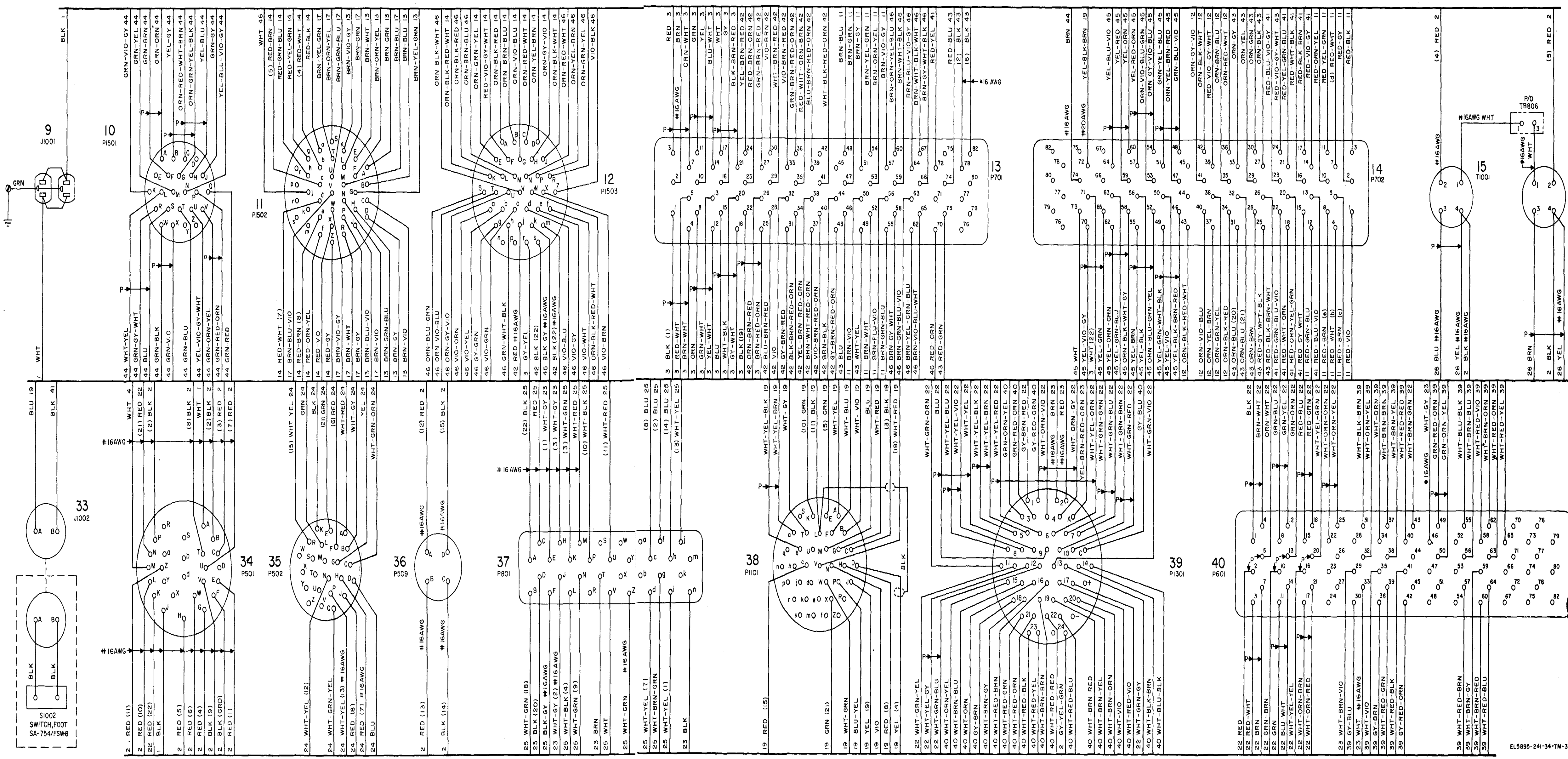
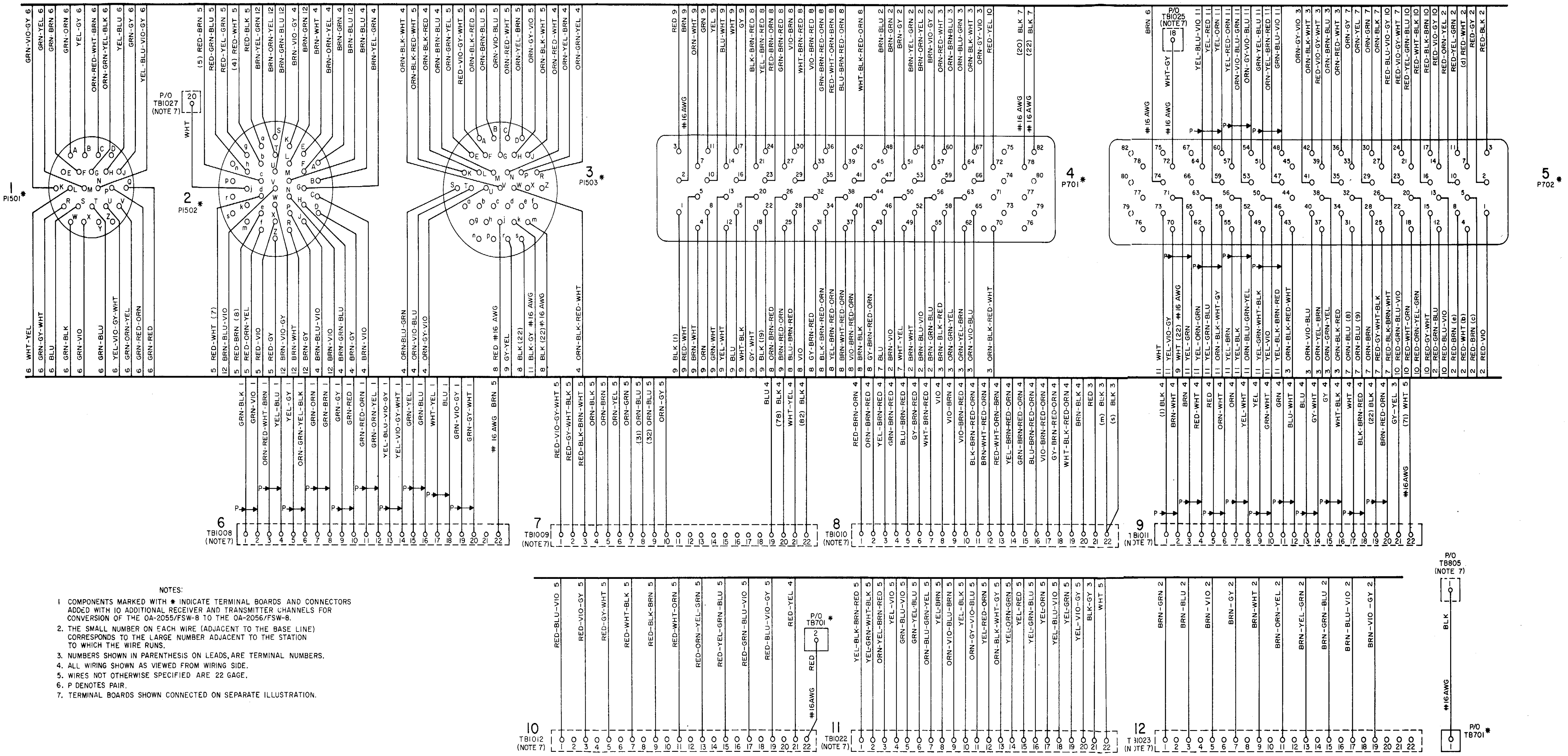


Figure FO-17(2). Cabinet, Electrical Equipment CY-3020/FSW-8, wiring diagram (part 2 of 2).



NOTES:

1. COMPONENTS MARKED WITH * INDICATE TERMINAL BOARDS AND CONNECTORS ADDED WITH 10 ADDITIONAL RECEIVER AND TRANSMITTER CHANNELS FOR CONVERSION OF THE OA-2055/FSW-8 TO THE OA-2056/FSW-8.
2. THE SMALL NUMBER ON EACH WIRE (ADJACENT TO THE BASE LINE) CORRESPONDS TO THE LARGE NUMBER ADJACENT TO THE STATION TO WHICH THE WIRE RUNS.
3. NUMBERS SHOWN IN PARENTHESIS ON LEADS, ARE TERMINAL NUMBERS.
4. ALL WIRING SHOWN AS VIEWED FROM WIRING SIDE.
5. WIRES NOT OTHERWISE SPECIFIED ARE 22 GAGE.
6. P DENOTES PAIR.
7. TERMINAL BOARDS SHOWN CONNECTED ON SEPARATE ILLUSTRATION.

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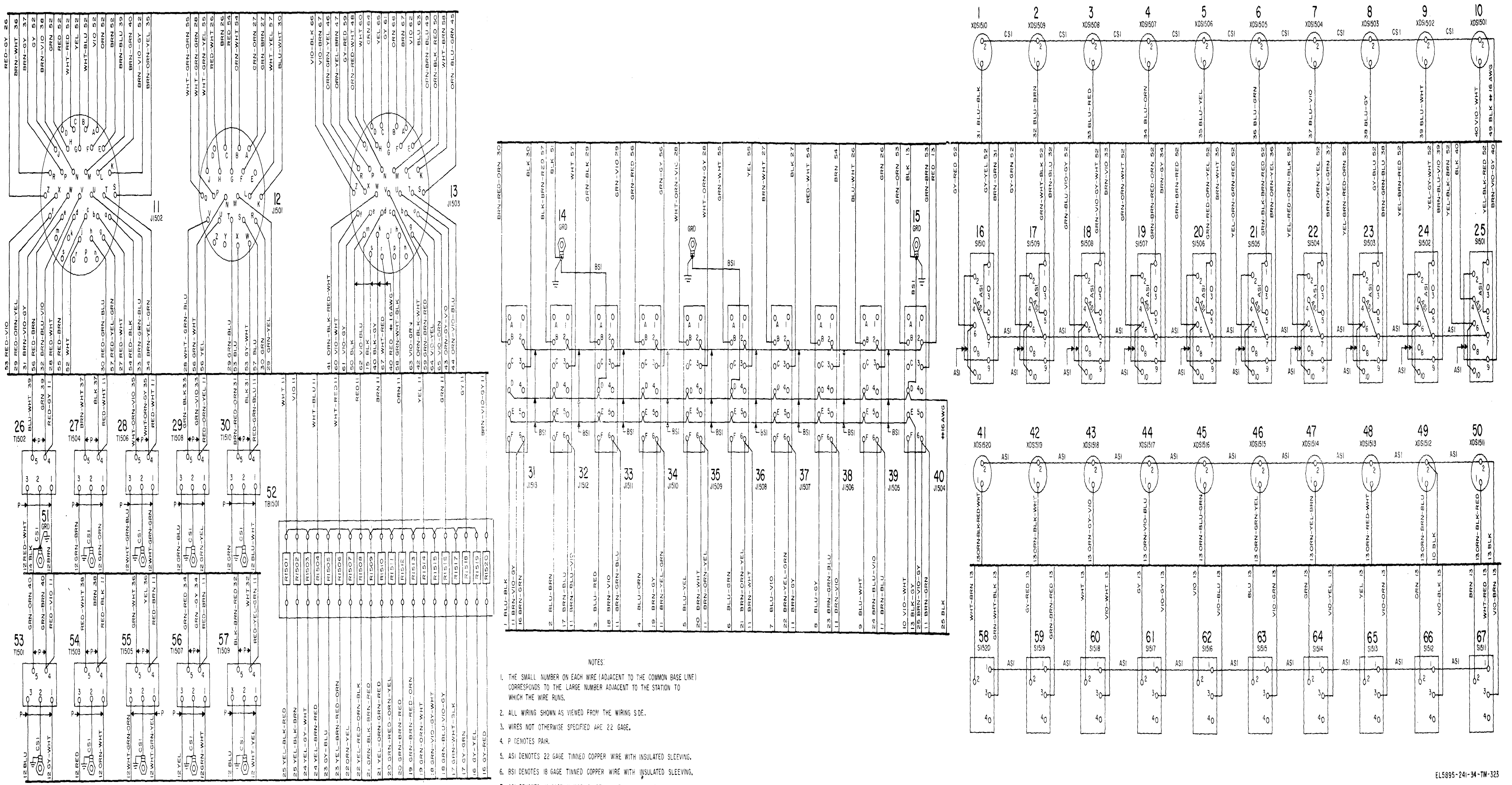
Figure FO-18. Harness cabling for conversion of console, Communication Control OA-2055/FSW-8 to console, Communication Control OA-2056/FSW-8, wiring diagram.



NOTES:

1. THE SMALL NUMBER ON EACH WIRE (ADJACENT TO THE COMMON BASE LINE) CORRESPONDS TO THE LARGE NUMBER ADJACENT TO THE STATION TO WHICH THE WIRE RUNS.
2. ALL WIRING SHOWN AS VIEWED FROM THE WIRING SIDE.
3. WIRES NOT OTHERWISE SPECIFIED ARE 22 GAGE.
4. P DENOTES PAIR.
5. ASI DENOTES 22 GAGE TINNED COPPER WIRE WITH INSULATED SLEEVING.
6. BSI DENOTES 18 GAGE TINNED COPPER WIRE WITH INSULATED SLEEVING.
7. CSI DENOTES 16 GAGE TINNED COPPER WIRE WITH INSULATED SLEEVING.

Figure FO-19. Control-Monitor C-345/FSW-8, wiring diagram.

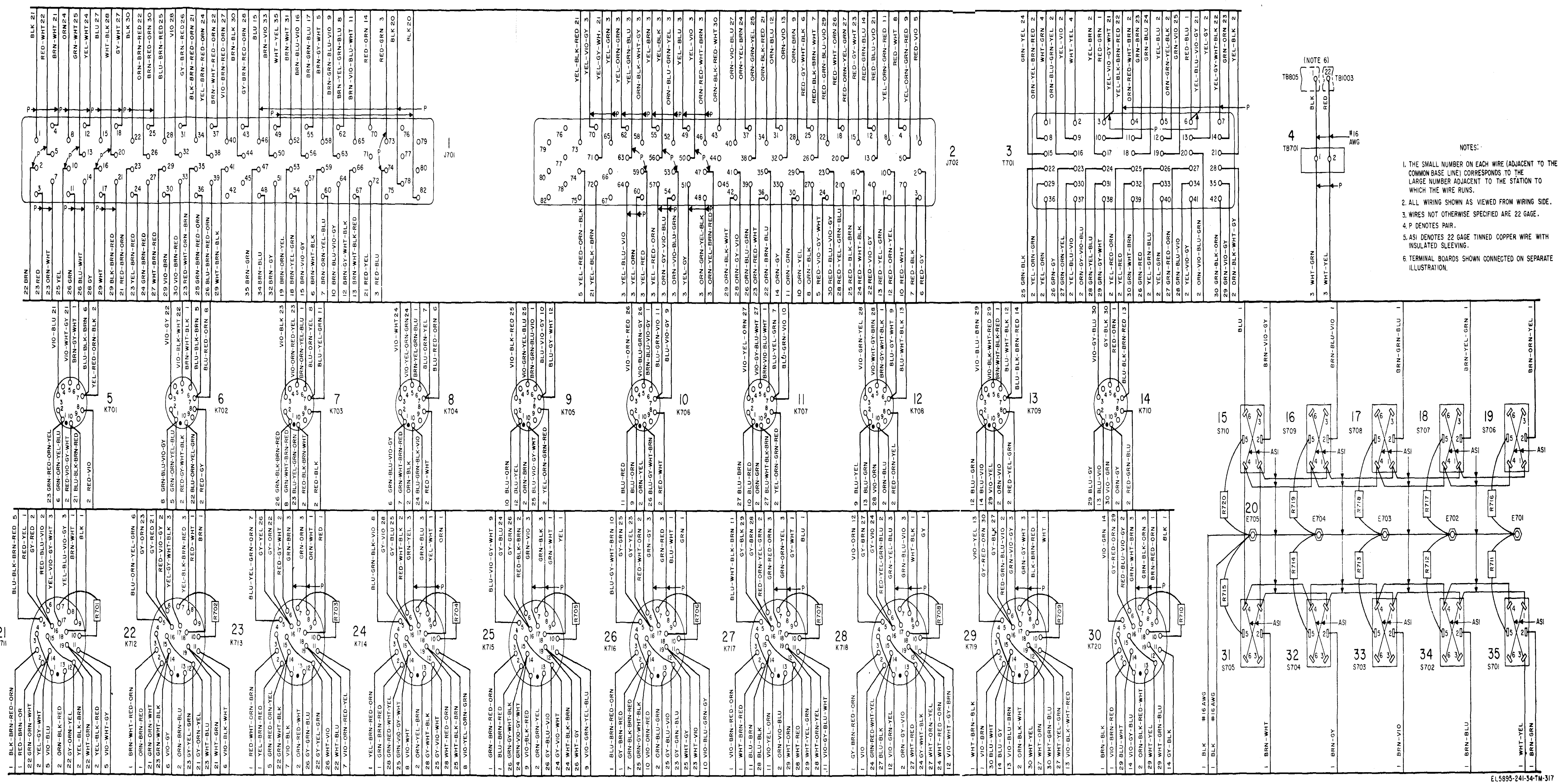


Figure FO-20. Control, Transmitter C-3446/FSW-8, wiring diagram.

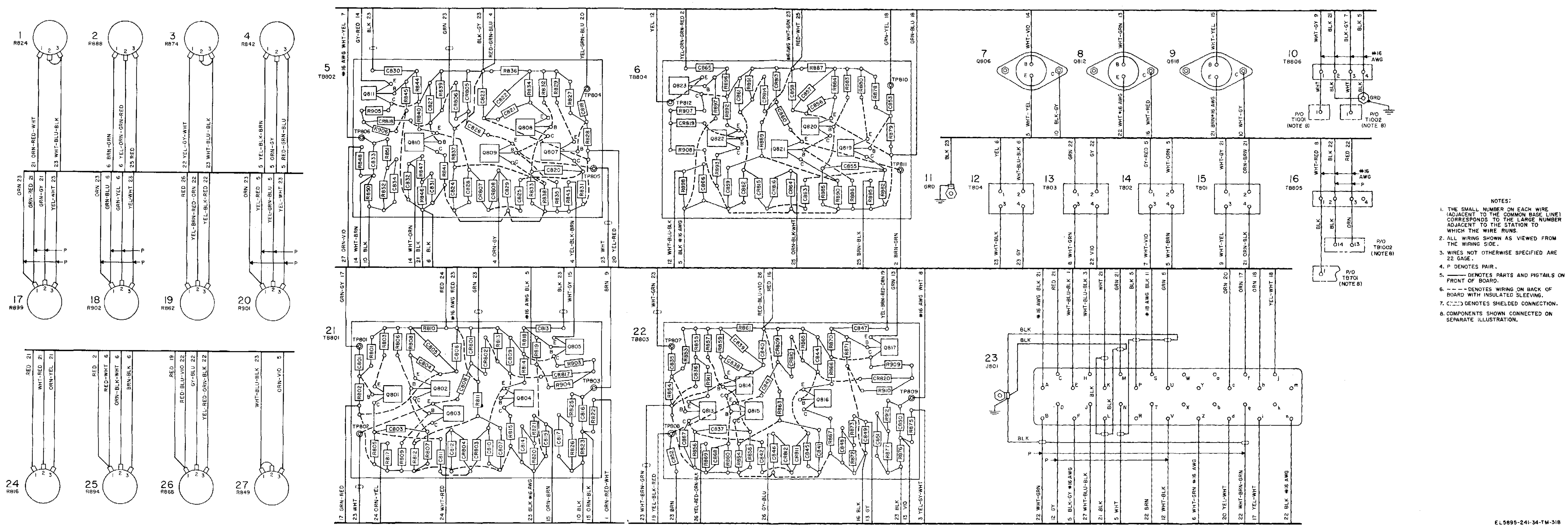
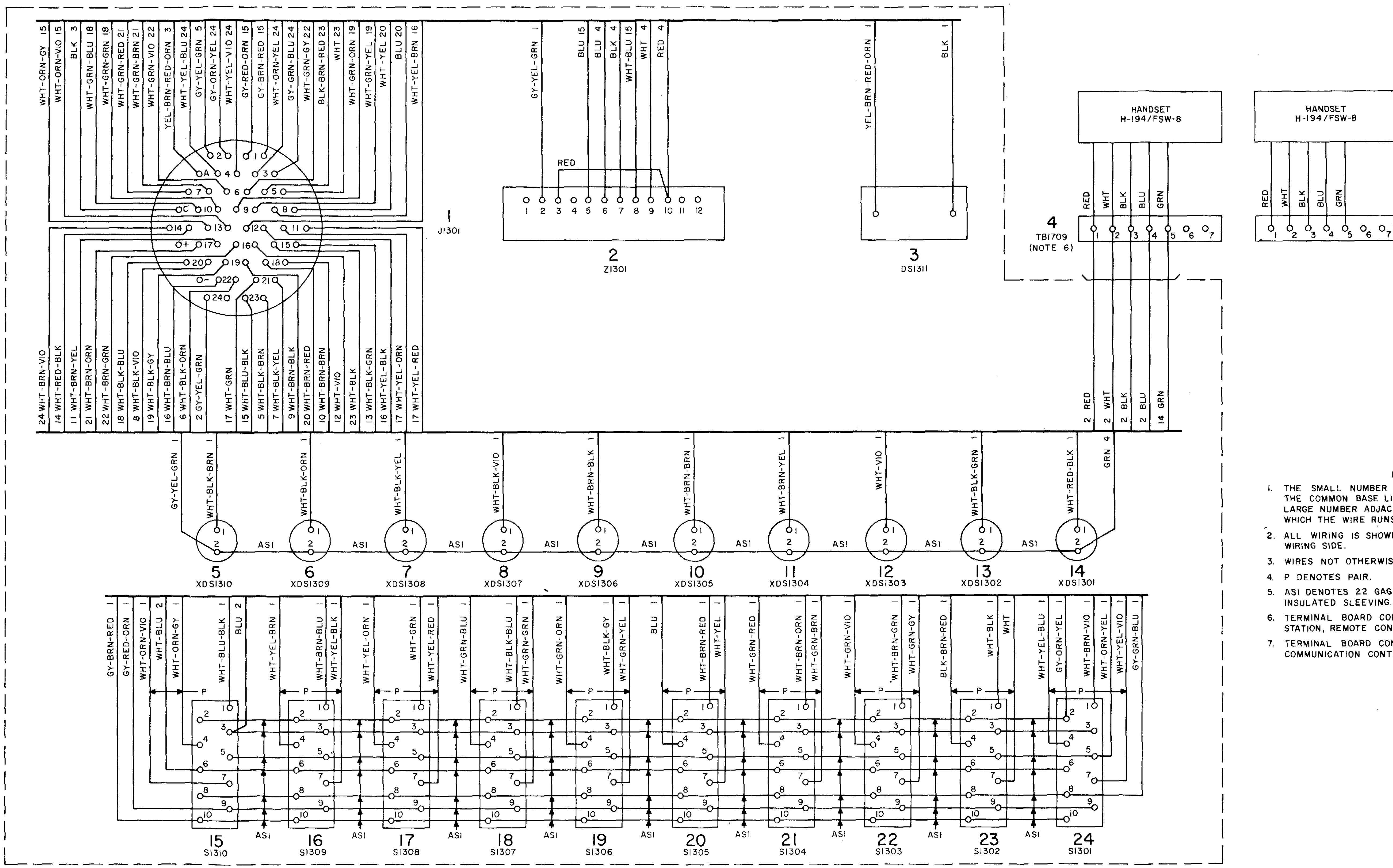


Figure FO-21. Amplifier Assembly AM-2827/FSW-8, wiring diagram.



NOTES:

1. THE SMALL NUMBER ON EACH WIRE (ADJACENT TO THE COMMON BASE LINE) CORRESPONDS TO THE LARGE NUMBER ADJACENT TO THE STATION TO WHICH THE WIRE RUNS.
2. ALL WIRING IS SHOWN AS VIEWED FROM THE WIRING SIDE.
3. WIRES NOT OTHERWISE SPECIFIED ARE 22 GAGE.
4. P DENOTES PAIR.
5. ASI DENOTES 22 GAGE TINNED COPPER WIRE WITH INSULATED SLEEVING.
6. TERMINAL BOARD CONNECTIONS FOR COMMUNICATION STATION, REMOTE CONTROL OA-3014/FSW-8.
7. TERMINAL BOARD CONNECTIONS FOR CONSOLE, COMMUNICATION CONTROL OA-2055/FSW-8.

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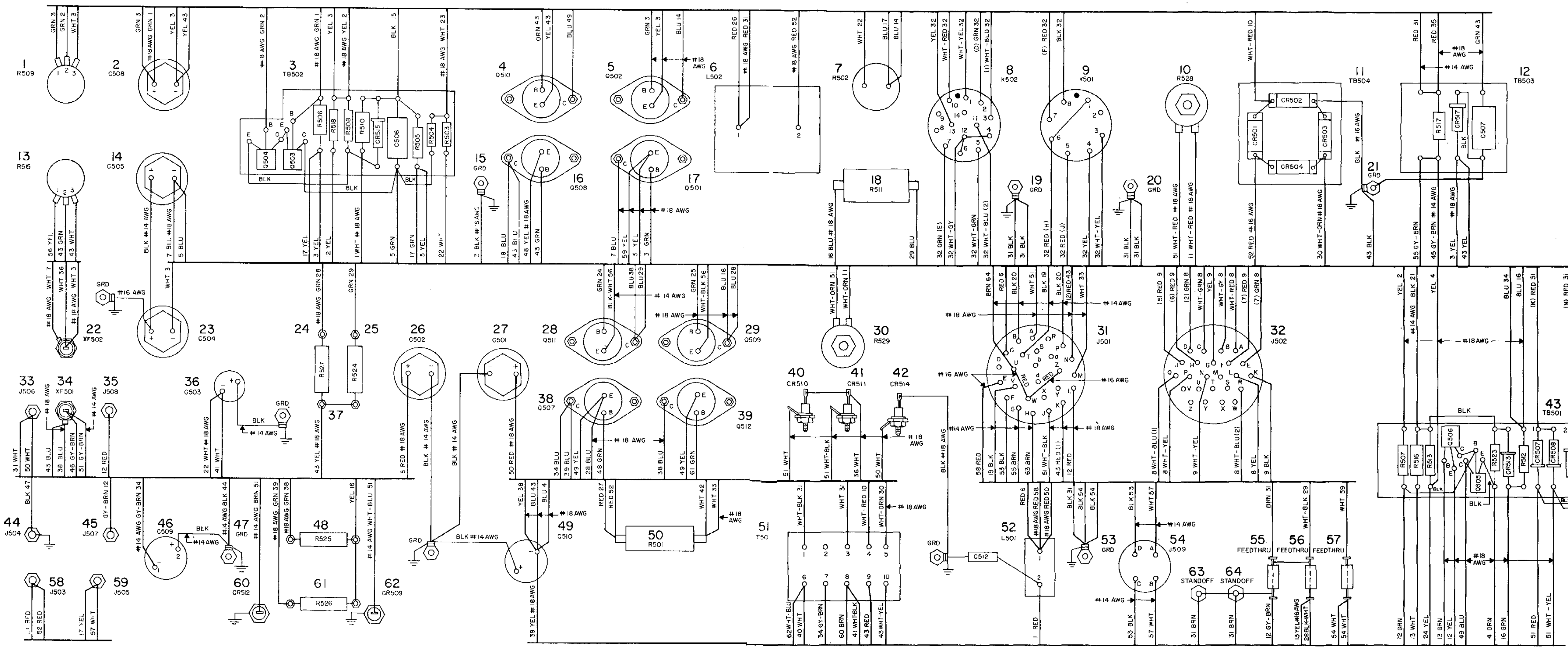
Figure FO-22. Terminal, Telephone TA-406/FSW-8 and telephone storage well, wiring diagram.

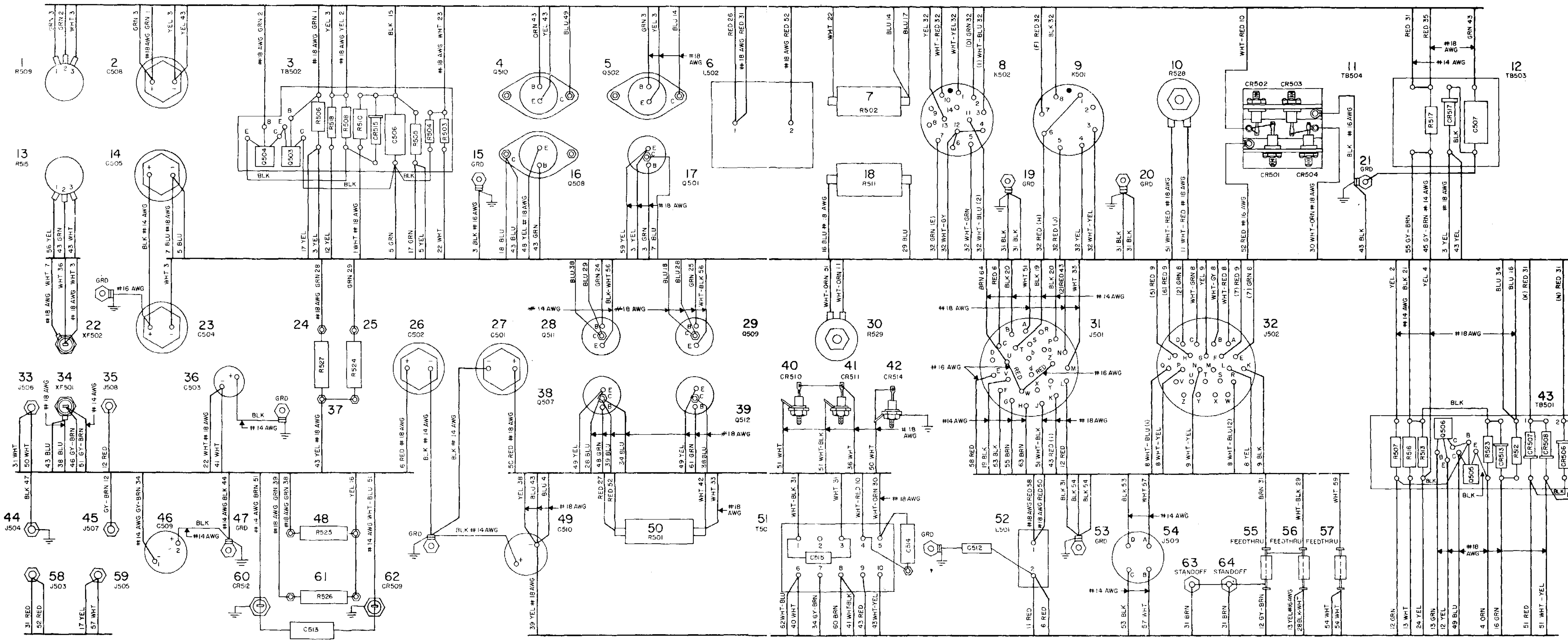


NOTES:

1. THE SMALL NUMBER ON EACH WIRE (ADJACENT TO THE COMMON BASE LINE) CORRESPONDS TO THE LARGE NUMBER ADJACENT TO THE STATION TO WHICH THE WIRE RUNS.
2. NUMBERS SHOWN IN PARENTHESES ON LEADS, ARE TERMINAL NUMBERS.
3. ALL WIRING SHOWN AS VIEWED FROM THE WIRING SIDE.
4. WIRES NOT OTHERWISE SPECIFIED ARE 22 GAGE.

EL5895-241-34-TM-315

Figure FO-23. Power Supply PP-2803/FSW-8, wiring diagram.

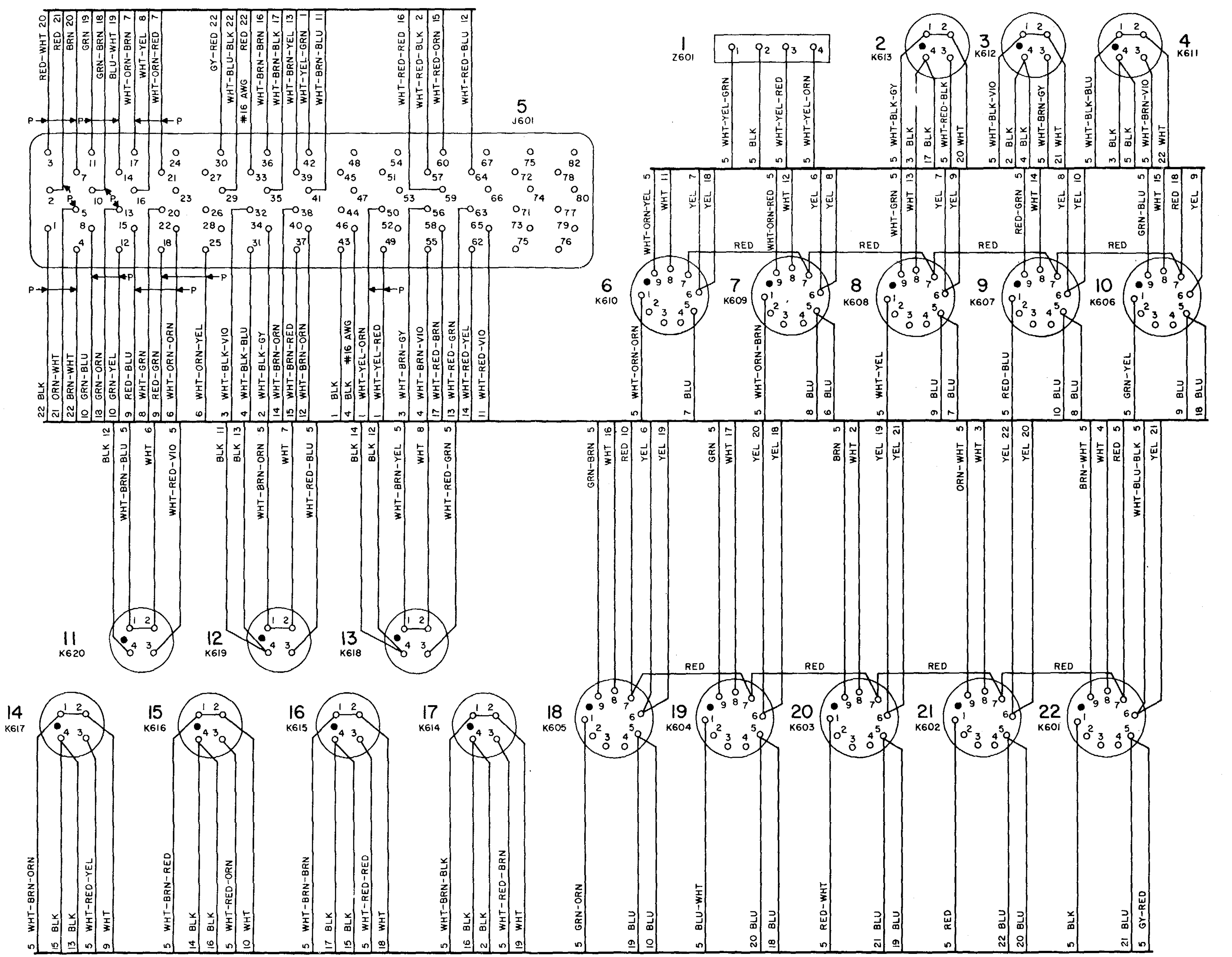


NOTES:

1. THE SMALL NUMBER ON EACH WIRE (ADJACENT TO THE COMMON BASE LINE) CORRESPONDS TO THE LARGE NUMBER ADJACENT TO THE STATION TO WHICH THE WIRE RUNS.
2. NUMBERS SHOWN IN PARENTHESES ON LEADS, ARE TERMINAL NUMBERS.
3. ALL WIRING SHOWN AS VIEWED FROM THE WIRING SIDE.
4. WIRES NOT OTHERWISE SPECIFIED ARE 22 GAGE.

EL5895-241-34-TM-427

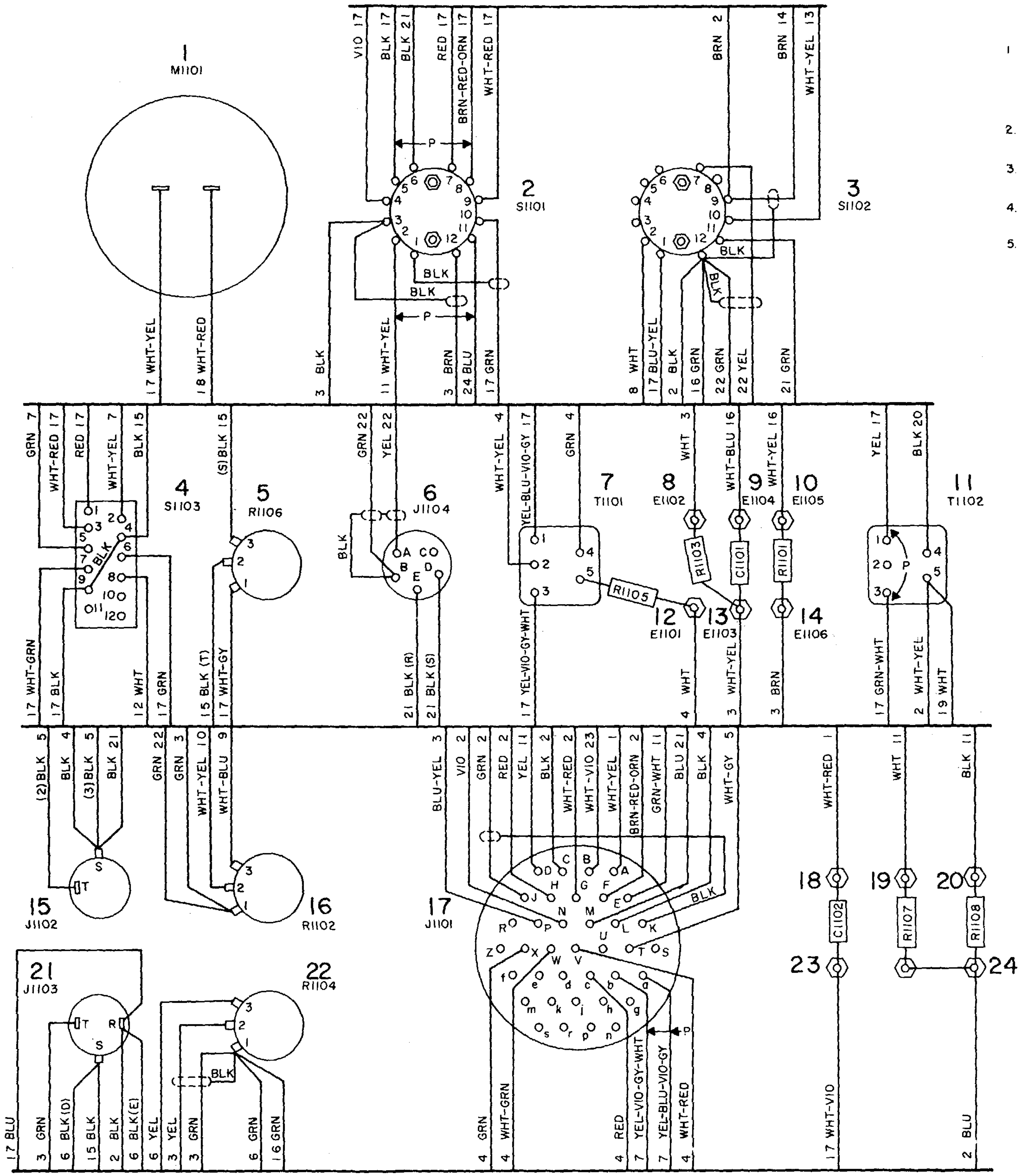
Figure FO-24. Power Supply PP-2803A/FSW-8, wiring diagram.



NOTES:
1. THE SMALL NUMBER ON EACH WIRE (ADJACENT TO THE COMMON BASE LINE) CORRESPONDS TO THE LARGE NUMBER ADJACENT TO THE STATION TO WHICH THE WIRE RUNS.
2. ALL WIRING SHOWN AS VIEWED FROM WIRING SIDE.
3. WIRES NOT OTHERWISE SPECIFIED ARE 22 GAGE.
4. P DENOTES PAIR.

EL5895-241-34-TM-316

Figure FO-25. Control, Telephone Signal C-3435/FSW-8, wiring diagram.



NOTES:

1. THE SMALL NUMBER ON EACH WIRE (ADJACENT TO THE COMMON BASE LINE) CORRESPONDS TO THE LARGE NUMBER ADJACENT TO THE STATION TO WHICH THE WIRE RUNS.
2. NUMBERS SHOWN IN PARENTHESES ON LEADS ARE TERMINAL NUMBERS
3. ALL WIRING SHOWN AS VIEWED FROM WIRING SIDE.
4. WIRES NOT OTHERWISE SPECIFIED ARE 22 GAGE.
5. P DENOTES PAIR.

EL5895-241-34-TM-320

Figure FO-26. Console, Communication Control OA-2055/FSW-8, miscellaneous control panel, wiring diagram.

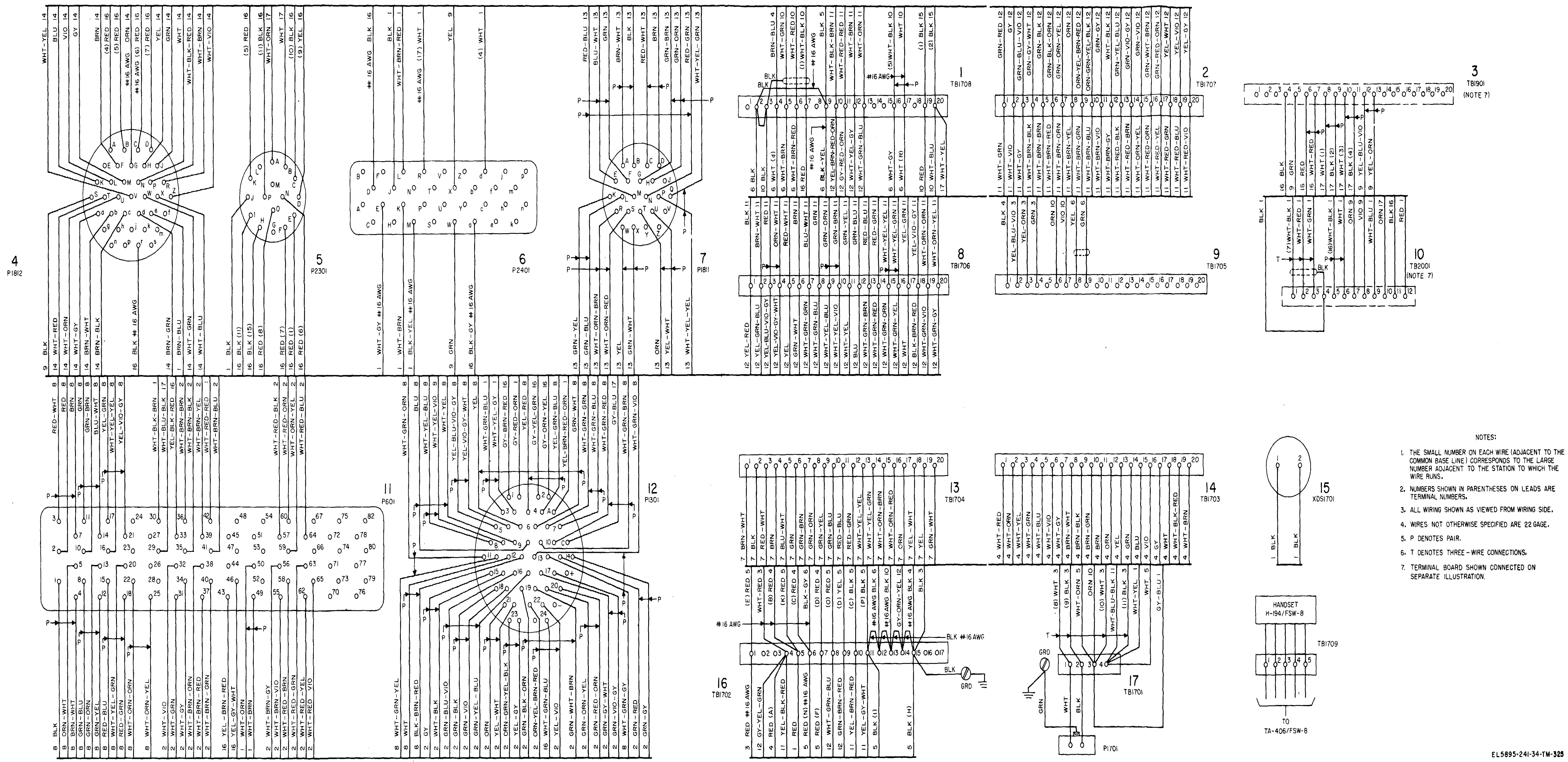


Figure FO-27. Cabinet, Electrical Equipment CY-3019/FSW-8, wiring diagram.

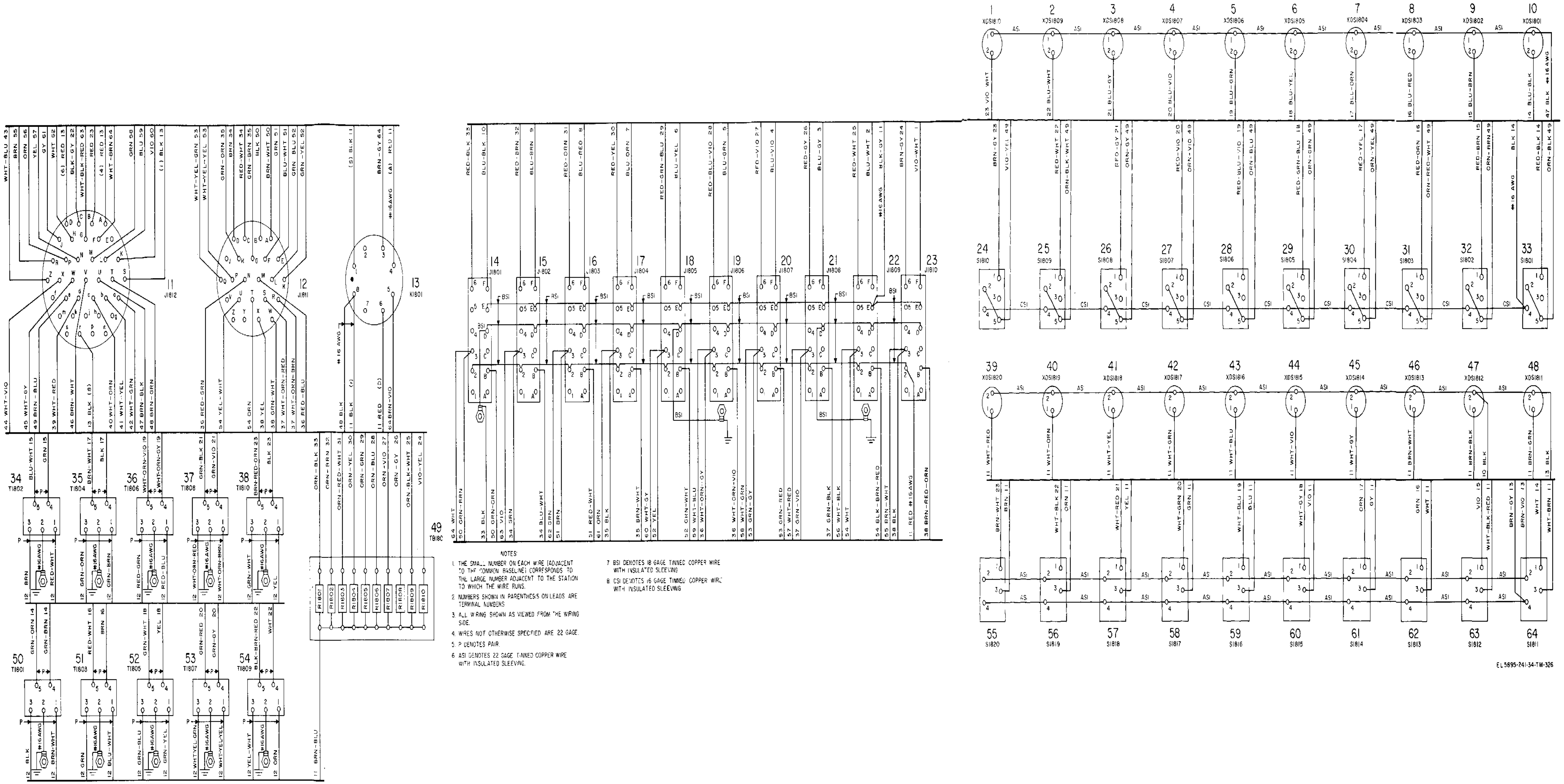


Figure FO-28. Control-Moniter C-3434/FSW-8, wiring diagram.

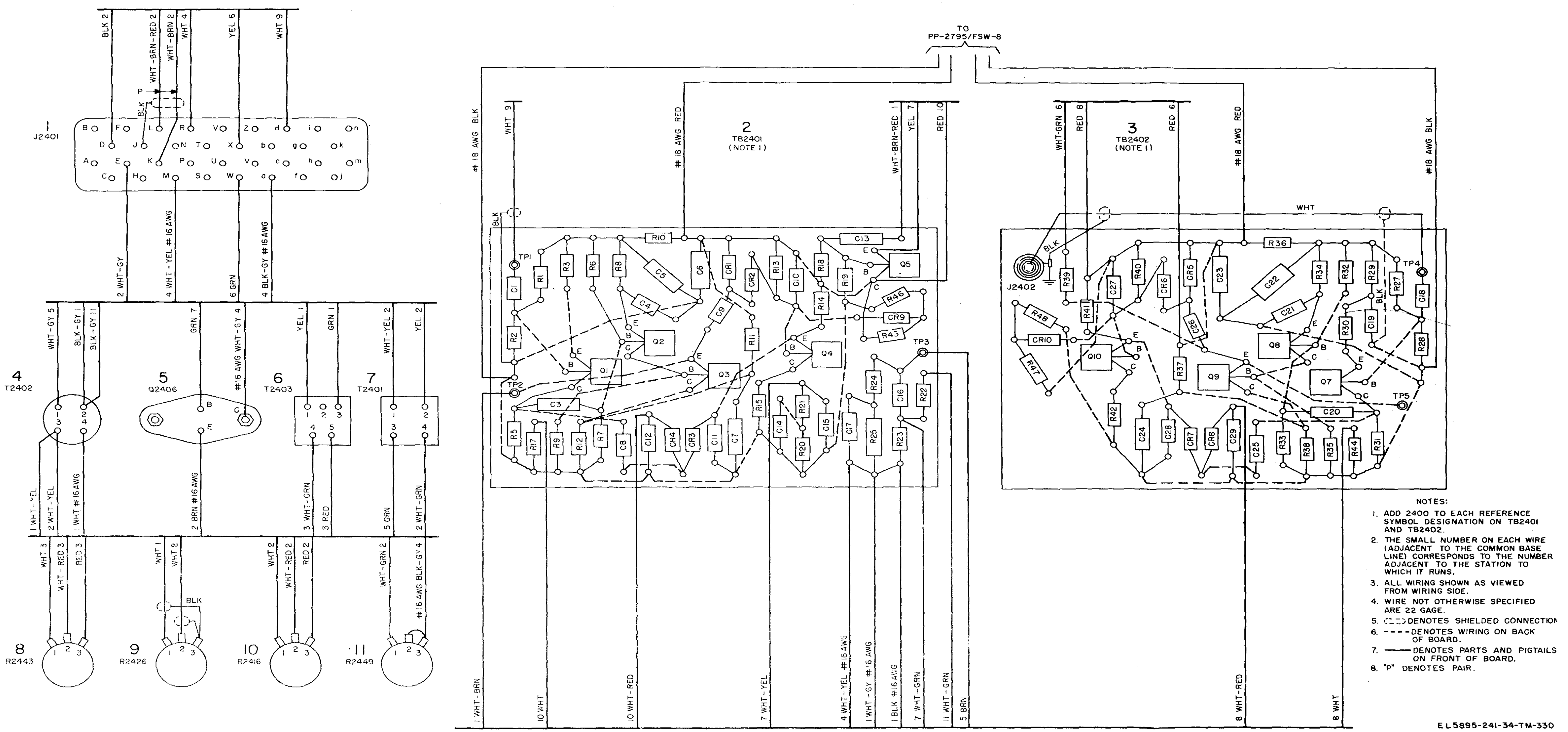


Figure FO-29. Amplifier Assembly AM-2817/FSW-8, wiring diagram.

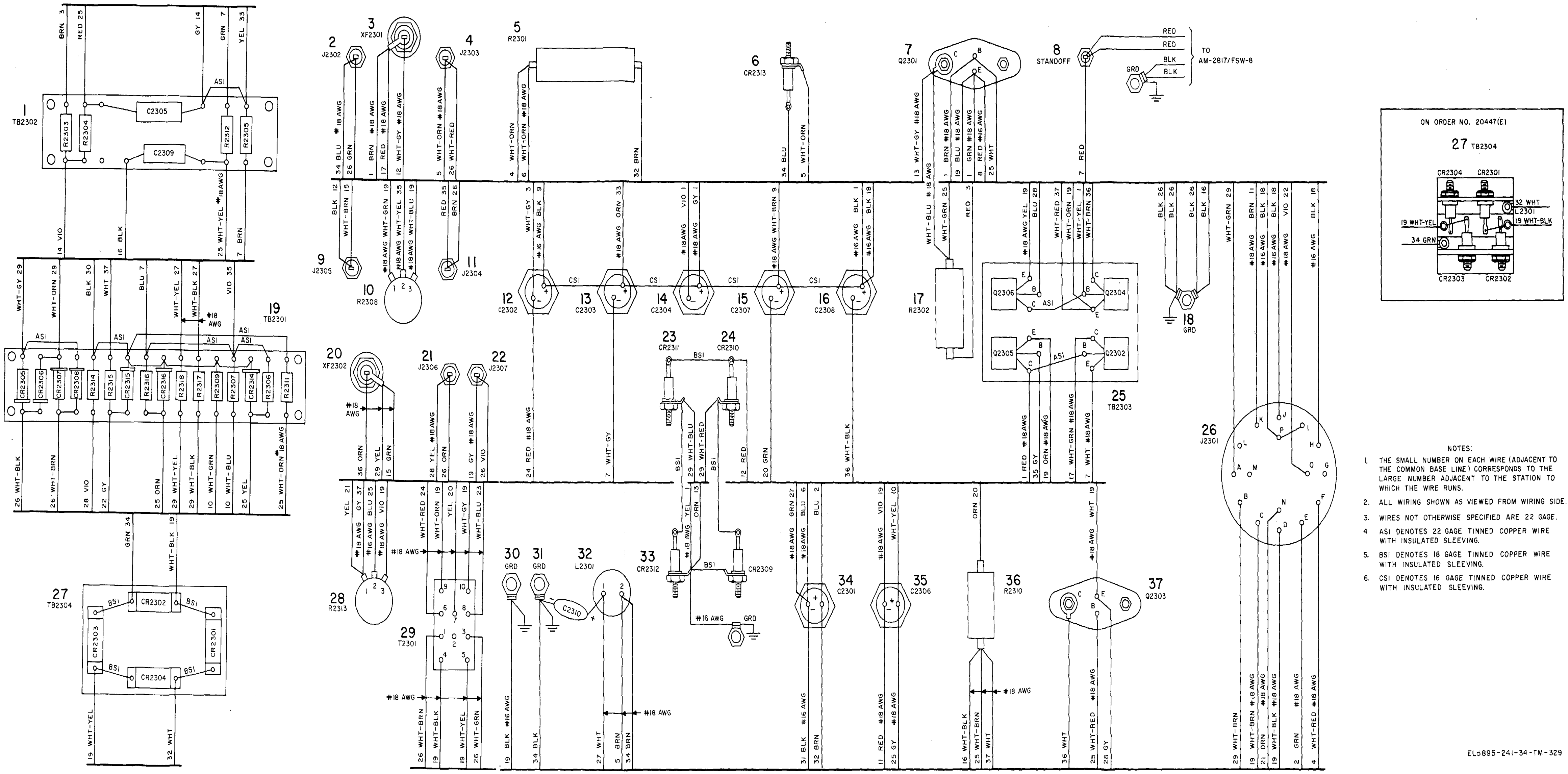


Figure FO-30. Power Supply PP-2795/FSW-8, wiring diagram.

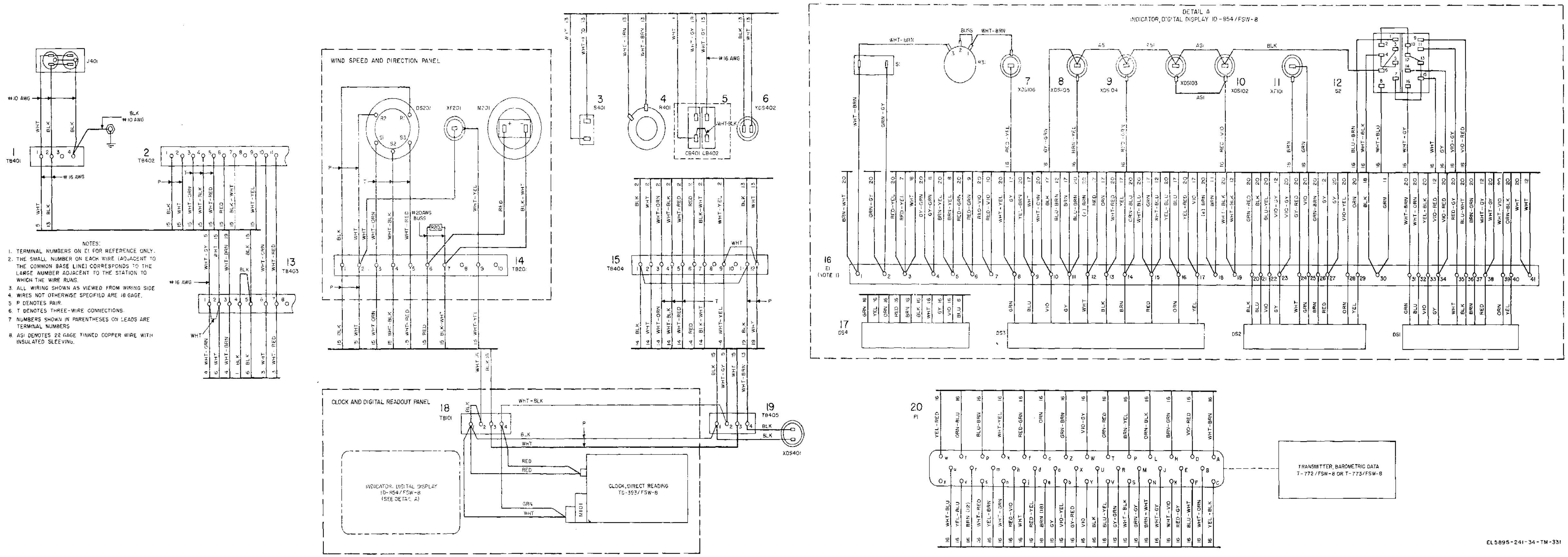


Figure FO-31. Meterological Display Console OA-2054/FSW-8 wiring diagram.

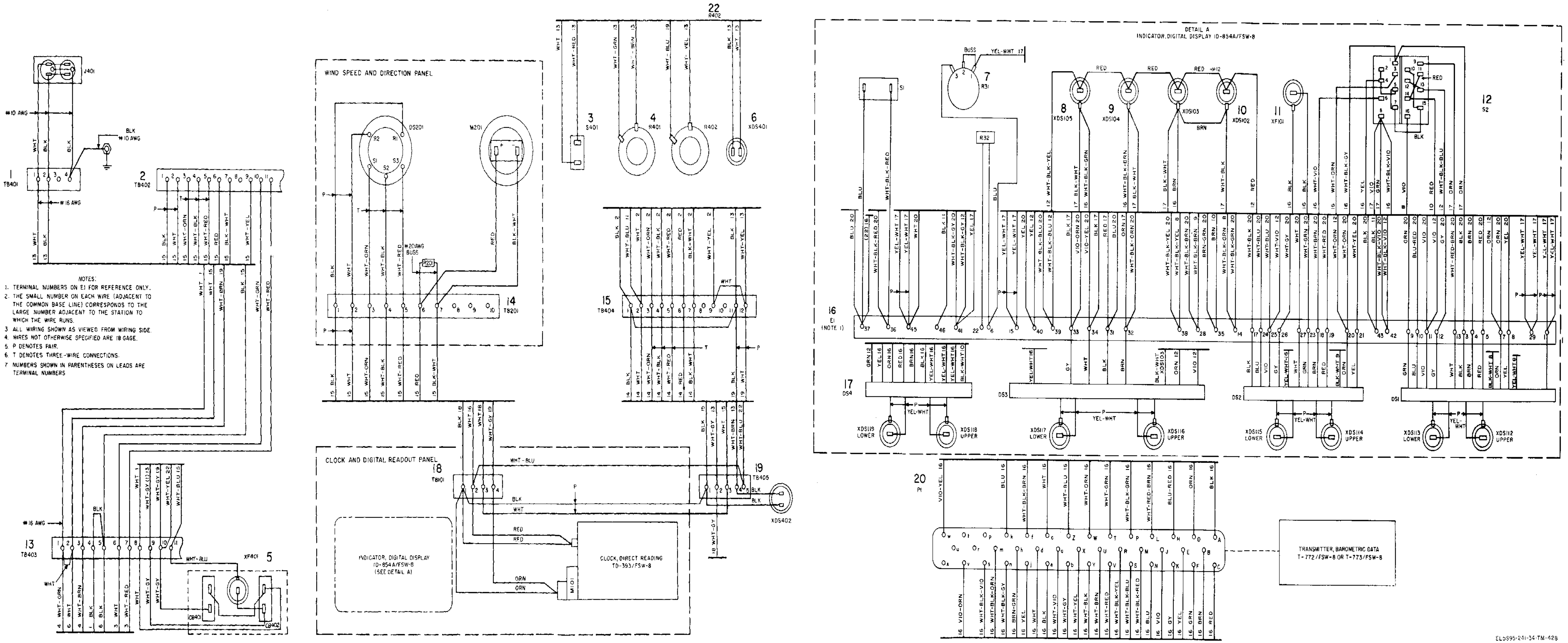
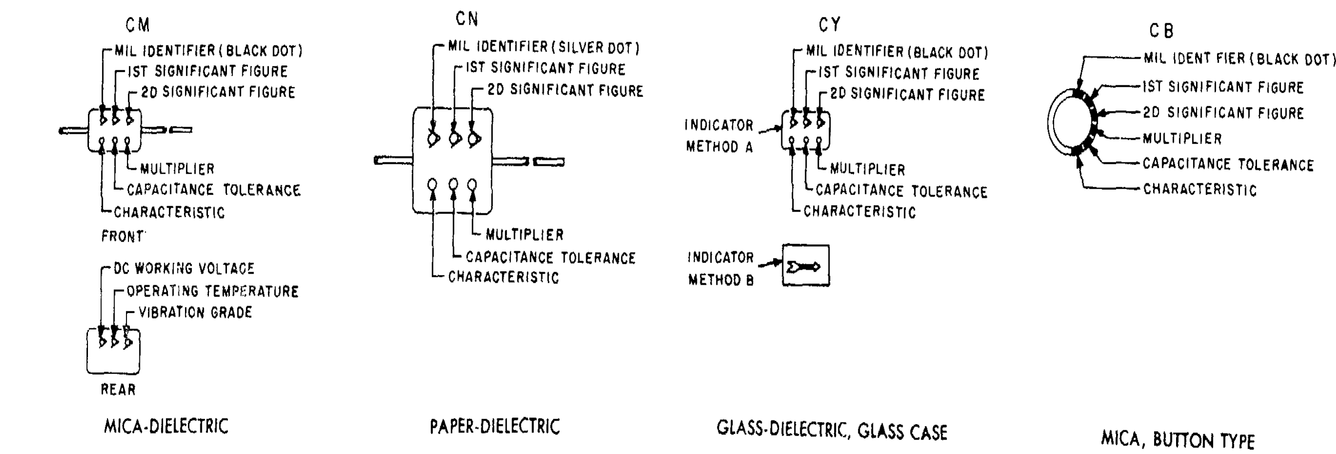


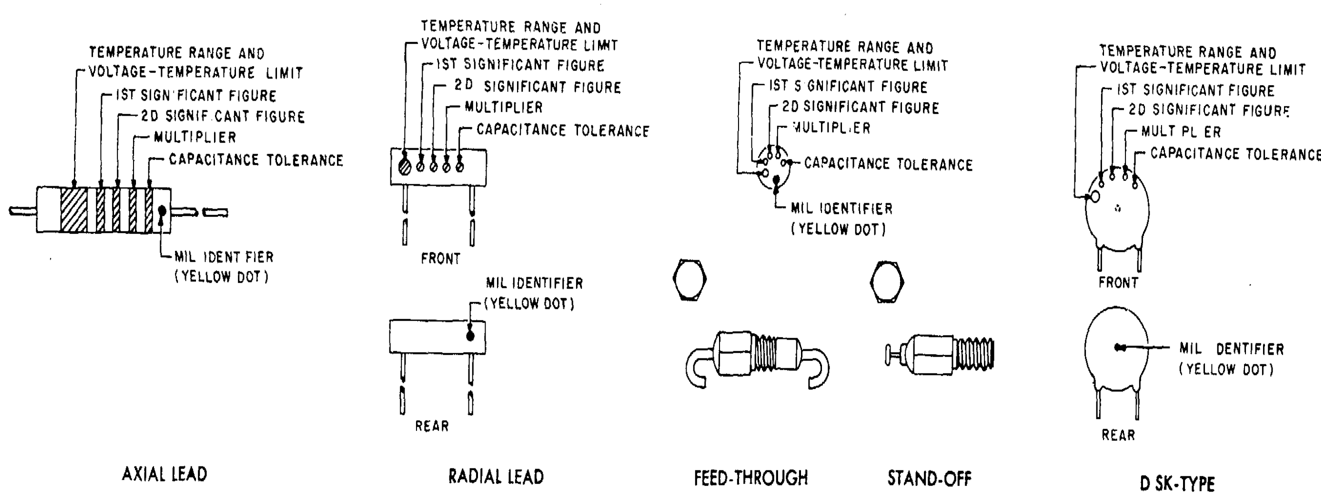
Figure FO-32. Meterological Display Console OA-2054A/FSW-8 wiring diagram.

COLOR CODE MARKING FOR MILITARY STANDARD CAPACITORS

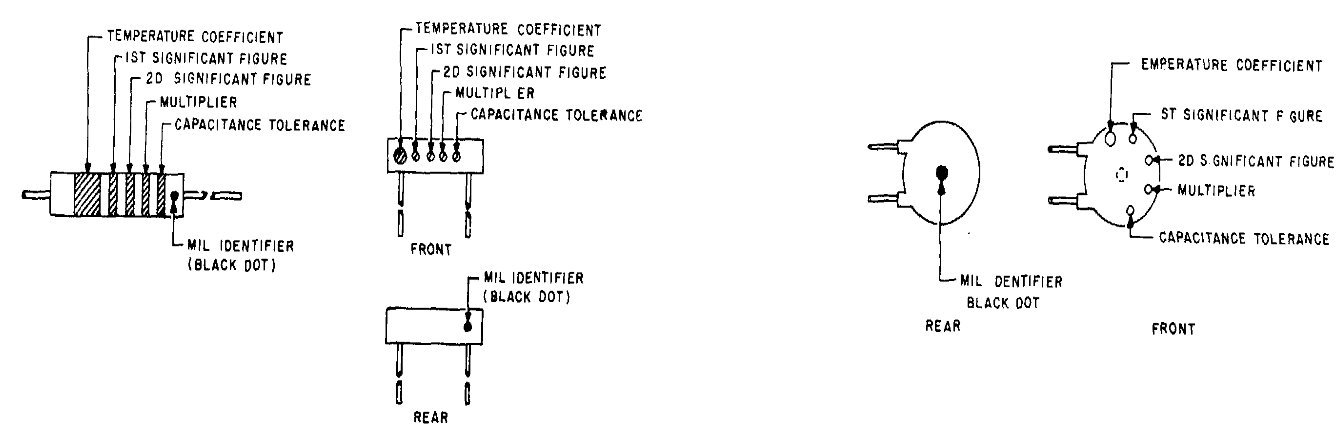
GROUP I Capacitors, Fixed, Various-Dielectrics, Styles CM, CN, CY, and CB



GROUP II Capacitors, Fixed Ceramic-Dielectric (General Purpose) Style CK



GROUP III Capacitors, Fixed, Ceramic-Dieletric (Temperature Compensating) Style CC



COLOR CODE TABLES

TABLE – For use with Group I, Styles CM, CN, CY and CB

COLOR	MIL ID	1st SIG FIG	2nd SIG FIG	MULTIPLIER[1]	CAPACITANCE TOLERANCE				CHARACTERISTIC[2]				DC WORKING VOLTAGE	OPERATING TEMP. RANGE	VIBRATION GRADE
					CM	CN	CY	CB	CM	CN	CY	CB	CM	CM	CM
BLACK	CM, CY CB	0	0	1			± 20%	± 20%		A				−55° to +70°C	10–55 cps
BROWN		1	1	10					B	E		B			
RED		2	2	100	± 2%		± 2%	± 2%	C		C			−55° to +85°C	
ORANGE		3	3	1,000		± 30%			D			D	300		
YELLOW		4	4	10,000					E					−55° to +125°C	10–2 000 cps
GREEN		5	5		± 5%				F				500		
BLUE		6	6											−55° to +150°C	
PURPLE (VIOLET)		7	7												
GREY		8	8												
WHITE		9	9												
GOLD				0.1			± 5%	± 5%							
SILVER	CN				± 10%	± 10%	± 0%	± 10%							

TABLE II – For use with Group II, General Purpose, Style CK

COLOR	TEMP. RANGE AND VOLTAGE – TEMP. LIMITS[3]	1st SIG FIG	2nd SIG FIG	MULT PLIER[1]	CAPACITANCE TOLERANCE	MIL ID
BLACK		0	0	1	± 20%	
BROWN	AW	1	1	10	± 10%	
RED	AX	2	2	100		
ORANGE	BX	3	3	1,000		
YELLOW	AV	4	4	10 000		CK
GREEN	CZ	5	5			
BLUE	BV	6	6			
PURPLE (V OLET		7	7			
GREY		8	8			
WHITE		9	9			
GOLD						
SILVER						

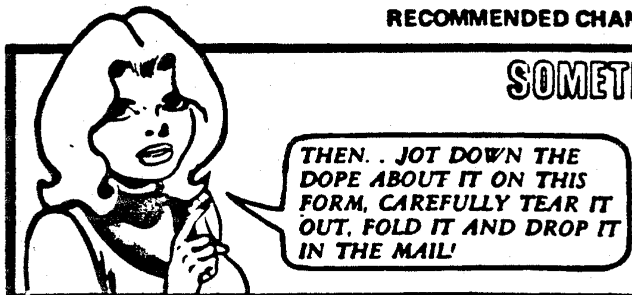
TABLE III – For use with Group III, Temperature Compensating, Style CC

COLOR	TEMPERATURE COEFFICIENT[4]	1st SIG FIG	2nd SIG FIG	MULT PLIER[1]	CAPACITANCE TOLERANCE		M'L ID
					Capacitances over 10uuf	Capacitances 10uuf or less	
BLACK	0	0	0	1		± 2.0uuf	CC
BROWN	−30	1	1	10	± 1%		
RED	−80	2	2	100	± 2%	± 0.25uuf	
ORANGE	−150	3	3	1,000			
YE LOW	−220	4	4				
GREEN	−330	5	5		± 5%	± 0.5uuf	
BLUE	−470	6	6				
PURPLE (VIOLET)	−750	7	7				
GREY		8	8	0.01			
WHI E		9	9	0.1	± 10%		
GOLD	+100					± 1.0uuf	
SILVER							

1. The mu tiplier is he number by which the two significant (SIG) figures are multiplied to obtain the capac tance in uuf
2. Letters indicate the Characteristics designated in applicable specifications: MIL–C–5, MIL–C–91, MIL–C–11272 and MIL–C–10950 respectively.
3. Letters indicate the temperature range and voltage-temperature limits designated in MIL–C–11015.
4. Temperature coefficient in parts per million per degree centigrade.

Figure FO-33. MIL-STD resistor and capacitor color codes markings

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



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