

TECHNICAL MANUAL

**OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT,
AND GENERAL SUPPORT MAINTENANCE MANUAL
(INCLUDING DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST)**

FOR

**OPERATIONS CONTROL CENTRAL AN/TSQ-78
NSN 5895-00-937-8528**

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**HEADQUARTERS, DEPARTMENT OF THE ARMY
OCTOBER 1980**

WARNING

DEATH OR SERIOUS INJURY

may result from hazards in this equipment unless the proper safety measures are observed.

READ AND OBSERVE

the referenced warnings contained herein and in the technical manuals provided for the system components.

HIGH VOLTAGE

is used in the operation of this equipment. Be sure to learn the areas containing high voltage in each piece of equipment, and check to see that the equipment is properly grounded.

VENTILATION IS ESSENTIAL

Modified Electrical Equipment Shelter S-389/MSA-34 must be ventilated at all times when occupied to prevent asphyxiation.

DON'T TAKE CHANCES

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever used. **DO NOT USE NEAR AN OPEN FLAME.** Trichloroethane is not flammable, but exposure of the fumes to an open flame or hot metal forms highly toxic phosgene gas.

BE AWARE OF ANTENNA HAZARDS

Operator and maintenance personnel shall be familiar with the requirements of TB SIG 291 before attempting installation, operation, or maintenance of the antennas used with the equipment covered in this manual. Failure to follow requirements of TB SIG 291 could result in injury or DEATH.

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**OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT
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(INCLUDING DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST)**

**FOR
OPERATIONS CONTROL CENTRAL AN/TSQ-78
NSN 5895-00-9378528
Current as of 22 June 1979**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual, direct to: Commander US Army Electronics Materiel Readiness Activity, ATTN: SELEM-ME-E, Vint Hill Farms Station, Warrenton, Virginia 22186.

A reply will be furnished to you.

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*This manual supersedes TM 32-5895-216-14, 8 April 1977; TM 32-5895-216-15P, 25 February 1977; and TM 32-5895-216-ESC, 9 September 1977.

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SAFETY SUMMARY

The following are general safety precautions that are not related to any specific procedures and therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during many phases of operation and maintenance.

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must at all times observe all safety regulations. Do not replace components or make adjustments inside the equipment with the voltage supply turned on. To avoid casualties, always remove power and ground a circuit before touching it.

DO NOT SERVICE OR ADJUST ALONE

Under no circumstances should any person reach into or enter the enclosure for the purpose of servicing or adjusting the equipment except in the presence of someone who is capable of rendering aid.

RESUSCITATION

Personnel working with or near high voltages should be familiar with modern methods of resuscitation.

The following warnings and cautions appear in the text in this volume and are repeated here for emphasis.

WARNING

Be extremely careful when performing the troubleshooting procedures; dangerous voltages are present in the equipment. (Pages 4-5 and 5-3)

WARNING

Turn off all power to equipment and disconnect power cable plugs before removing powered equipment. Dangerous voltages are present in the equipment. (Page 5-5)

WARNING

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever used. DO NOT USE NEAR AN OPEN FLAME. Trichloroethane is not flammable, but exposure of the fumes to an open flame or hot metal forms highly toxic phosgene gas. (Page 5-6)

WARNING

Turn off all power to equipment and disconnect power cable plugs before disconnecting interconnecting cables. Dangerous voltages are present in the equipment. (Page 7-12)

CAUTION

To prevent possible equipment damage and electrical shock, check cable lay-out areas for moisture or watery areas. (Page 2-3)

CAUTION

Before applying power to the equipment racks, turn the power switches to all components to the OFF position to prevent possible equipment damage. (Page 3-1)

CAUTION

Do not touch metal exposed to the sun. Painful skin burns may result. (Page 3-6)

CAUTION

Solar reflection paint per MIL-E-46061 has been used to paint the exterior of some shelters. Before applying touchup paint on the exterior, check for a caution notice on the exterior door. If solar reflecting paint has been used, refer to TB43-0124 for application instructions. Do not use any other paint on shelter when solar reflection paint has been used. (Page 5-1)

CHAPTER 1 INTRODUCTION

Section I. GENERAL

1-1. SCOPE. This manual provides operator/crew, organizational, direct support, and general support instructions for the installation and maintenance of the Operations Control Central AN/TSQ-78 (figure 1-1). A depot repair parts and special tools list is also included.

1-2. MAINTENANCE FORMS AND RECORDS. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS).

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE. The AN/TSQ-78 shall be destroyed to prevent enemy use in accordance with instructions provided in TM 750-244-2, Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).

1-4. ADMINISTRATIVE STORAGE. Administrative storage shall be in accordance with instructions provided in TM 740-90-1, Administrative Storage of Equipment.

1-5. CALIBRATION. No calibration of the equipment in this group is required.

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR's). If your AN/TSQ-78 needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on a SF 368 (Quality Deficiency Report). Mail it to us at US Army Electronics Materiel Readiness Activity, ATTN: SELEM-ME-F, Vint Hill Farms Station, Warrenton, Virginia 22186. We'll send you a reply.

Section II. DESCRIPTION AND DATA

1-7. PURPOSE AND USE. Operations Control Central AN/TSQ-78 is a transportable communications center designed to monitor and control antenna switching and intercommunication for the various facilities in a communications complex such as the Operational Unit, Transportable System (OUTS). (Refer to TM 32-5811-021-14.) The AN/TSQ-78 controls two operational complex support systems, the antenna distribution system and the intercommunication system.

1-8. DESCRIPTION.

a. General. Descriptions of the shelter, equipment racks and cable assemblies are contained in paragraphs (1), (2), and (3) below, except that reference shall be made to applicable unit manuals for complete descriptive data.

(1) *Electrical Equipment Shelter S-389/MSA-34.* Operations Control Central AN/TSQ-78 consists of five equipment positions (figure 1-2) housed in a transportable Electrical Equipment Shelter S-389/MSA-34. The shelter can be moved from site-to-site and quickly placed in operation. The shelter has been modified to accommodate the electrical racks and equipment necessary for AN/TSQ-78 operations. Modifications include rack stabilizer brackets, chair tiedown sockets, and a signal station intercom pass thru.

A description of the basic S-389/MSA-34 shelter is contained in TM 32-5410-217-14&P. Three shelters mounted on the low bed section of a V-398/MSA-34 Semi-Trailer comprise a Mobile Operations and Electrical Facility AN/MSA-34. A power distribution box (generator) and three air conditioners are mounted on the gooseneck platform of the trailer. Seven of these AN/MSA-34 facilities are used to form the OUTS. For a complete description of the Mobile Operations and Electrical Facility AN/MSA-34, refer to TM 32-9999-200-24.

(2) *Electrical Equipment Rack MT-1579/G.* Four shock-mounted electrical racks are installed in the shelter to house the equipment of the AN/TSQ-78. Each is a standard 19-inch electrical equipment rack with the baseplate modified for shelter air ducts. The rack is complete with a standard power outlet strap and equipment.

(3) *Cable Assemblies.* The AN/TSQ-78 requires external supplies of heated or cooled air and 208-volt ac, 60-Hz, three-phase, four-wire, 3 kW power. Signal and power cable assemblies are supplied for signal and power connections between the rack-mounted equipment units, for connecting the AN/TSQ-78 to the

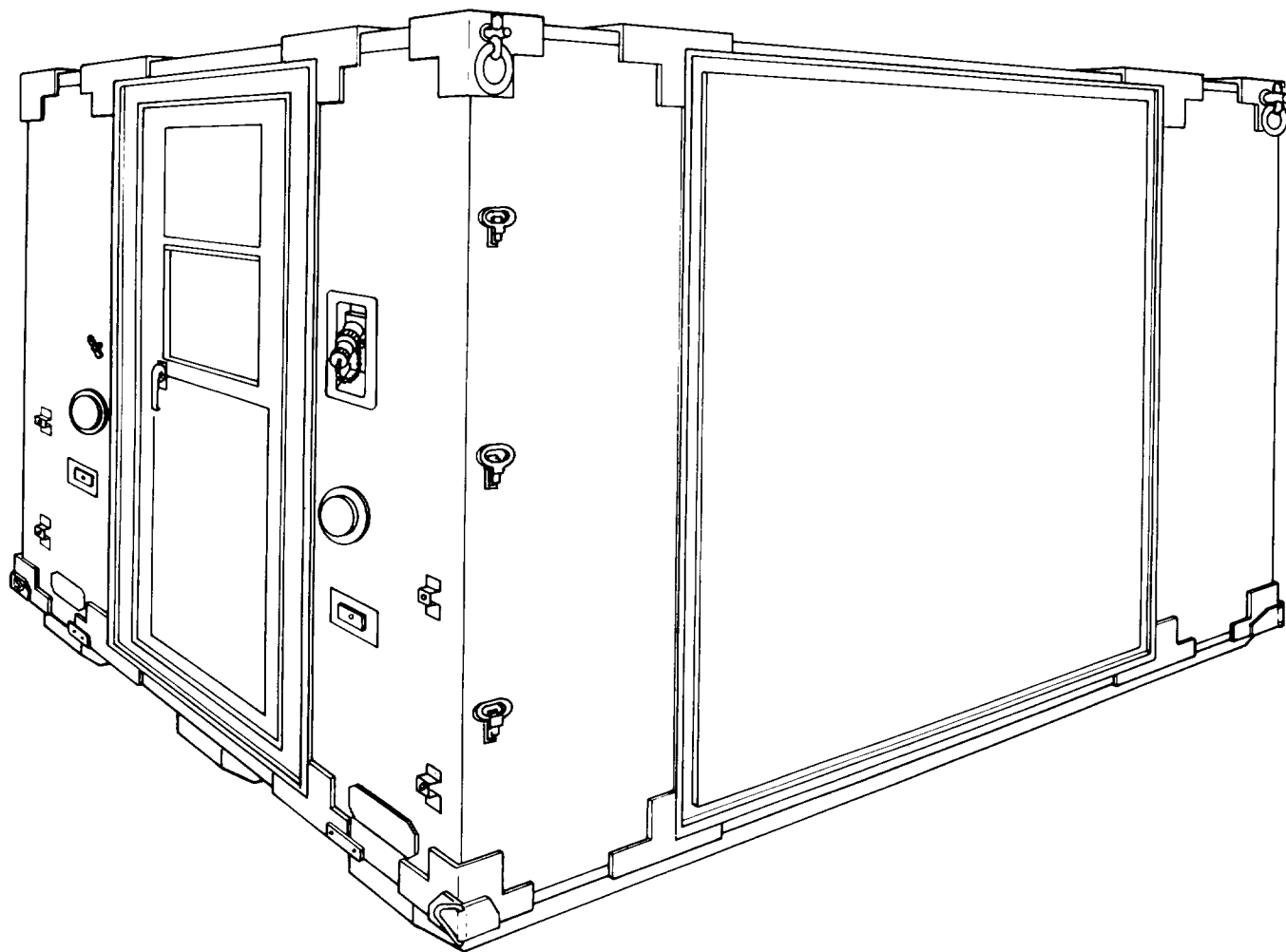


Figure 1-1. Operations Control Central AN/TSQ-78, Exterior View

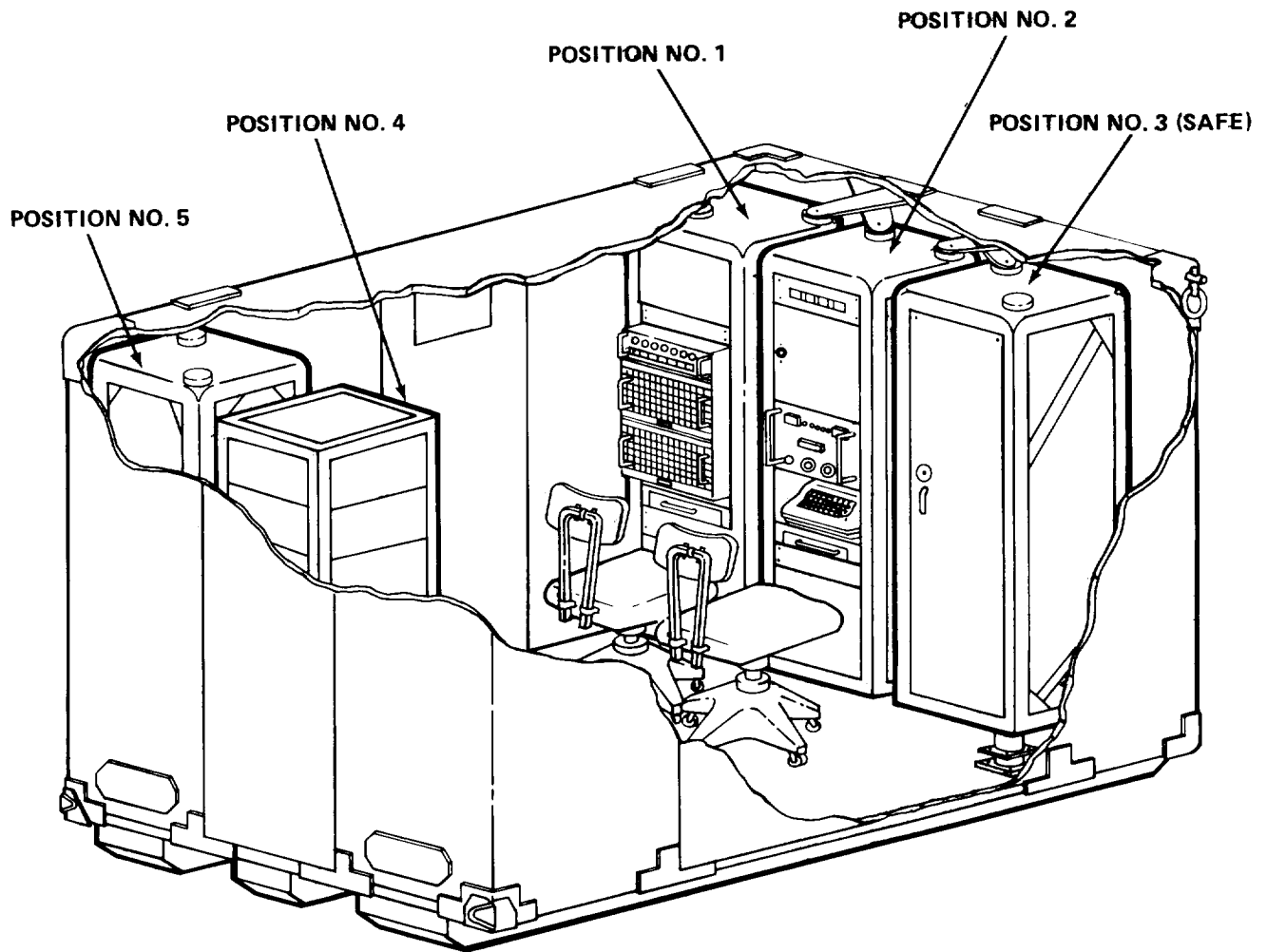


Figure 1-2. Operations Control Central AN/TSQ-78, Equipment Positions

AN/MSA-34 power distribution box, and for connecting the central to the other units of the OUTS. For additional information on the cable assemblies, refer to the applicable manuals listed in Appendix A.

b. Major Components. The major components in each of the five equipment positions (figure 1-3) are described below.

(1) *Position No. 1.* Position No. 1 contains one intercommunications switchboard, two communication control consoles, a shelf, and two storage cabinets. A rotary chair is provided for the operator.

(a) *Intercommunications Switchboard SB-2601/G.* The intercommunication switchboard (figure 1-4) enables the operator to select any of ten outstations connected to the switchboard and transfer parallel intercom and monitor control to Radio Intercept Control Switchboard SB-2602/G, located in the Radio Identification Central AN/TRX-1, another unit of the OUTS. Actual transfer to the control is indicated by illuminated switches on both the SB-2601/G and SB-2602/G. For a complete description of the AN/TRX-1, refer to TM 32-5895-218-14&P.

(b) *Communications Control Console, OA-7735/G.* Each of the two OA-7735/G consoles enables the operator to provide and control lines for intercommunication and signal monitoring of 18 outstations connected to the console and to provide four trunk lines for two-station to all-station conference calls. All calls, answers, monitoring and trunk-line activity are indicated by illumination of the activated switches.

(c) *Storage Cabinet, CY-6154/G.* The two CY-6154/G cabinets located in Position No. 1 are used to store interconnecting cables when not in use.

(d) *Typewriter and Writing Shelf FN-87/G.* A manual typewriter and writing shelf slides in and out of rack 1. The shelf is secured in the retracted position with two knurled captive fasteners. An attached writing shelf folds vertically for storage.

(2) *Position No. 2.* Position No. 2 contains a digital clock remote display, a radio receiver, a telephone set, a switching matrix control, a typewriter, and two storage cabinets. A rotary chair is provided for the operator.

(a) *Digital Clock, Remote Display, 6NR.* The clock displays the standard time established for the whole operational complex by the master clock located in another unit of the OUTS, the Radio Maintenance Central AN/TRM-18. The clock uses nixie tubes to display a 2400-hour scale of hours, minutes and seconds and is operative only when input is received from the master clock. For further information, refer to Chrono-Log Corporation Instruction Manual, Model 6NR, Remote Display.

(b) *Radio Receiver, R-390A/URR.* The R-390A/ URR radio receiver is a general purpose, super-heterodyne receiver with a frequency range of 1.5 to 32 MHz. It is used for receiving frequency-shift keyed (FSK) signals and for operation under mobile conditions. For additional information, refer to TM 11-5820-357-10.

(c) *Telephone Set TA-676/G.* The operator uses the TA-676/G to monitor up to four input lines for intercommunication with the OA-7735/G, SB-2601/G and through the OA-7735/G with the SB-2602/G.

(d) *Switching Matrix Control C-9291/GRQ-23.* The switching matrix control has a remote thumbwheel switch, Matrix Dual Control Unit RFC 1020-1, that enables the radio receiver operator to signal to the Switching Matrix Unit SA-1922/GRQ-23 for a selected antenna input.

(e) *Typewriter and Writing Shelf FN-87/G.* The typewriter is a standard typewriter with fan-fold paper feed for use by the operator to transcribe received signal information.

(f) *Storage Cabinet CY-6154/G.* The two CY-6154/G cabinets located in Position No. 2 are used to store interconnecting cables when not in use.

(3) *Position No. 3.* Position No. 3 is a Modified Safe CY-4842/G which contains three Card File Storage Drawers MX-7196/G, and three Document Storage Drawers MX-7197/G.

(4) *Position No. 4.* Position No. 4 contains Radio Frequency Switching Set AN/GRQ-23 (figure 1-5). For a complete description of the AN/GRQ-23, the antenna distribution system of the AN/TSQ-78, refer to TM 325895-753-14.

(5) *Position No. 5.* Position No. 5 contains four Storage Cabinets CY-6154/G, a Typewriter and Writing Shelf FN-87/G, and a pencil sharpener. A rotary chair is provided for the operator.

(6) *Position No. 6.* Position No. 6 is vacant.

1-9. SYSTEM APPLICATION.

a. General. Operations Control Central AN/TSQ-78 is primarily intended for use as part of the OUTS, a communications complex comprised of a group of AN/MSA-34 units which provide the central with the necessary mobility, power and environmental control. (The centrals and facilities that comprise an OUTS are listed in table 1-1.) In such an operational complex, the operations control central provides antenna distribution and intercommunication control to the other centrals. It also has additional functional capabilities: the digital clock connects to a master system to provide a reference constant; the switching matrix control used with the matrix switch unit provides for operator selection

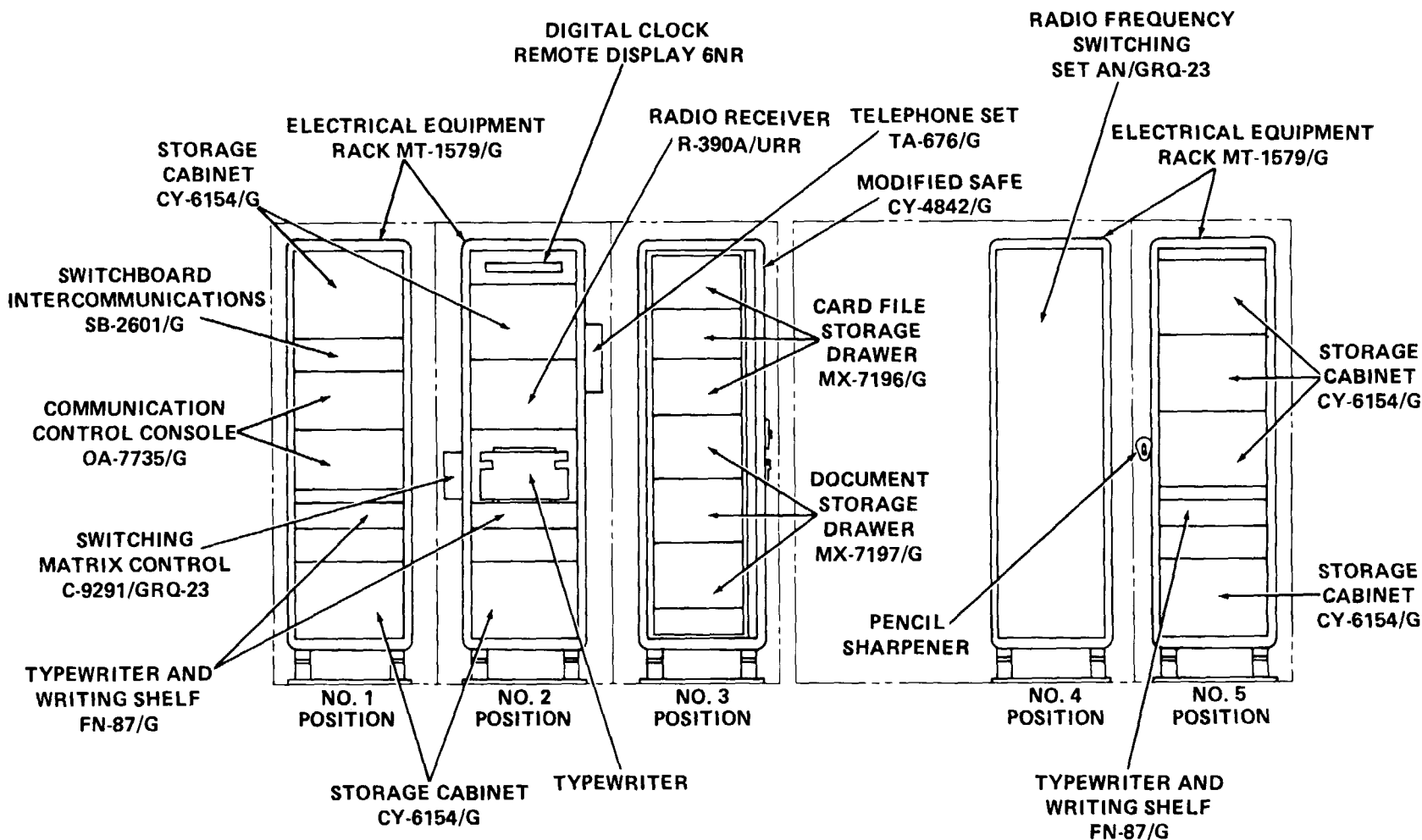


Figure 1-3. Operations Control Central AN/TSQ-78, Component Locations

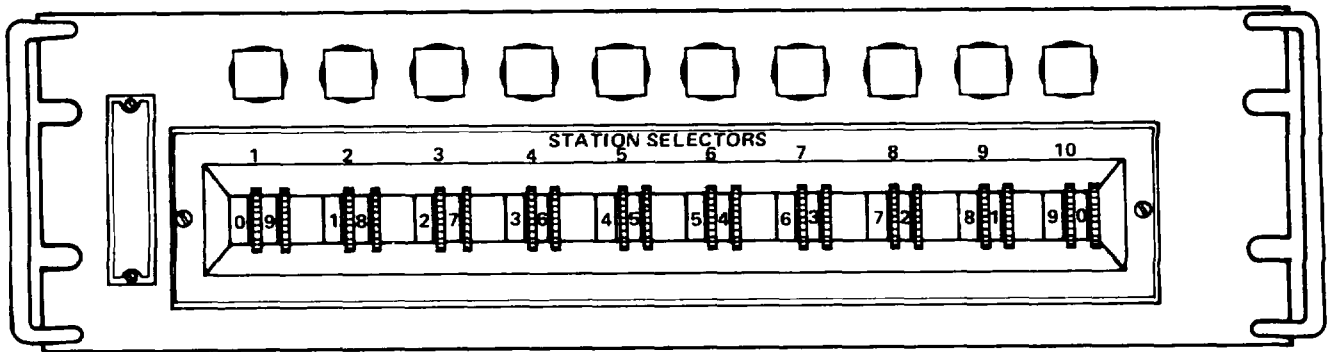


Figure 1-4. Intercommunications Switchboard SB-2601/G

of antenna inputs; and the intercommunications switchboard enables the console operator to select any 10 communication positions connected to his panel and transfer parallel intercommunication and control to another unit of the OUTF, the Radio Identification Central AN/TRX-1.

b. Additional Equipment Required. Equipment required for operation but not supplied as part of the central is listed in Appendix C. This additional equipment is normally provided as components of the Mobile Operations and Electrical Facility, AN/MSA-34; refer to TM 32-9999200-24.

1-10. TABULATED DATA. Refer to applicable manuals listed in Appendix A for detailed equipment unit technical characteristics. General coverage is given below:

Frequency range 1.5 to 32 MHz
 Power requirements 208 volts ac, 60 Hz,
 three-phase, four-wire, 3.0 kW

Antenna requirements

Balanced doublet, rhombic, or log periodic
 Unbalanced whip or straight-wire of random length

1-11. ITEMS COMPRISING AN OPERABLE OPERATIONS CONTROL CENTRAL AN/TSQ-78. Components comprising an operable AN/TSQ-78 are listed in table 1-2 and in the Basic Issue Items List (Appendix B).

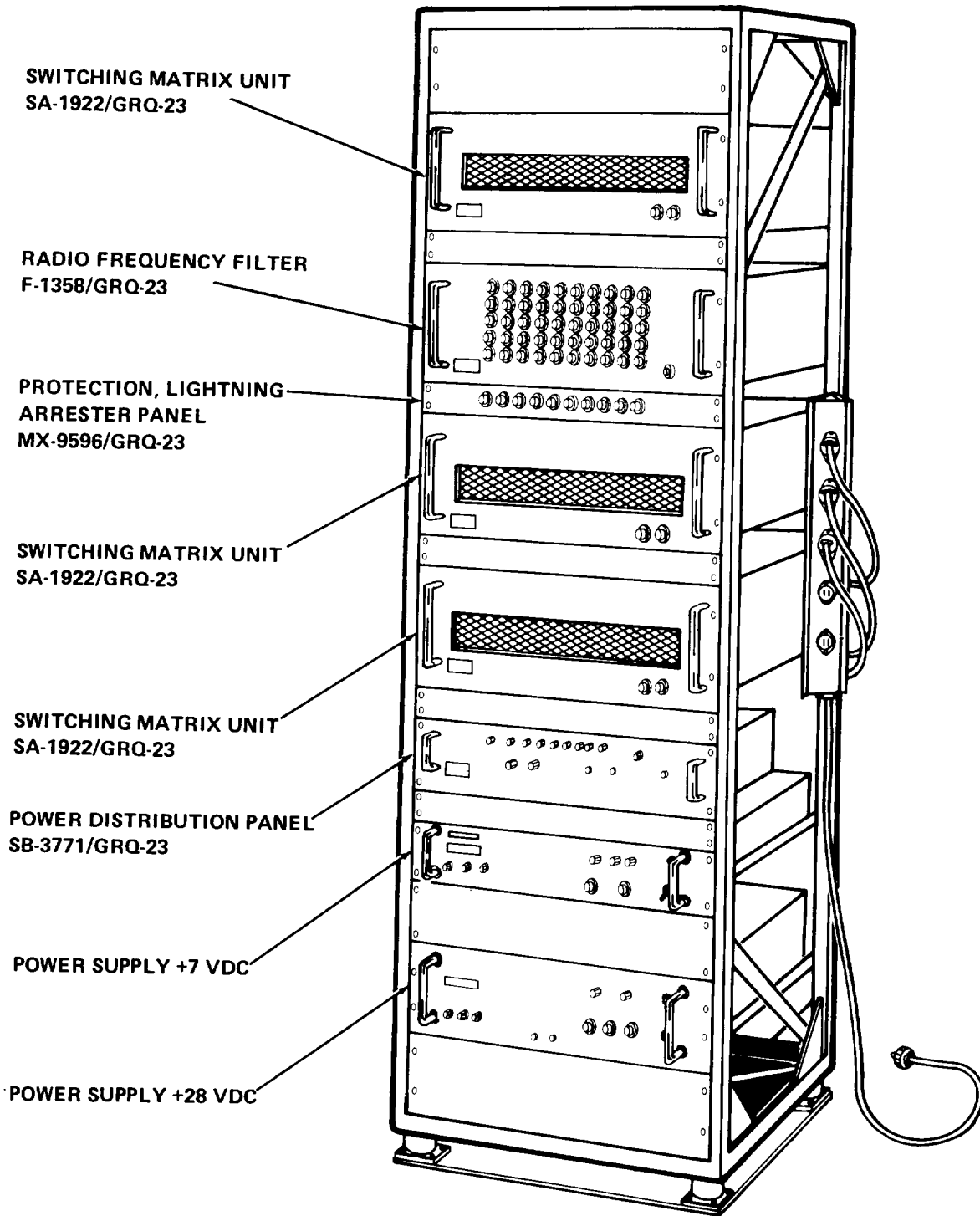


Figure 1-5. Radio Frequency Switching Set AN/GRQ-23

Table 1-1. Centrals and Facilities Comprising an Operational Unit, Transportable System (OUTS)*

Central or Facility	Quantity	Function
AN/USM-379 Repair Parts Storage Facility	1	Used to store spares and repair parts
AN/TRM-18 Radio Maintenance Central	2	Used for maintenance of radio receivers and associated equipment
AN/TRR-27 Radio Receiver Central	4	Used for reception of CW, AM, SSB and FSK transmissions
AN/TGM-2 Teletype Maintenance Central	1	Used for maintenance of teletype equipment
AN/TGR-2 Teletype Receiving Central	2	Used to receive and print FSK teletype transmissions
AN/TXR-3 Facsimile Receiving Central	1	Used to receive and print or record facsimile transmissions
AN/TSQ-79 Administrative Control Central	2	Used as an office facility for administration of the complex
AN/TGR-1 Teletype Receiving Central	1	Used to receive and print or record FSK or multiplexed teletype transmissions
AN/TYQ-5 Data Analysis Central	3	Used to analyze received signal data
AN/TSC-75A Communications Central	2	Used for U.S. Army communications
AN/TSQ-78 Operations Control Central	1	Used as an operational control center for the complex, including antenna switching and intercom facilities
AN/TRX-1 Radio Identification Central	1	Used for radio intercept and identification control

*Refer to FO-1.

Table 1-2. Items Comprising an Operable AN/TSQ- 78

NSN	Item	Qty	Height (in.)	Depth (in.)	Width (in.)	Weight (lb)
7125-00-990-9948	Storage, Cabinet CY-6154/G	8	12	12	19	6
6110-00-835-5025	Intercommunications Switchboard SB-2601/G	1				
5820-00-945-8541	Communication Control Console OA-7735/G	2				
5830-00-327-5066	Electrical Equipment Rack MT-1579/G	4	67	20¼	20¼	85
	Remote Display Digital Clock 6NR	1	3½	12	19	
5820-00-538-7555	Radio Receiver R-390A/URR	1	10½	18	19	
5805-00-945-8549	Telephone Set TA-676/G	1				
5895-00-213-3022	Switching Matrix Control C-9291/GRQ-23	1	8	4	3½	
	Typewriter	1				
	Modified Safe CY-4842/G	1				
7125-00-952-9285	Card File Storage Drawer MX-7196/G	3				
7125-00-952-9091	Document Storage Drawer MX-7197/G	3				
	RF Switching Set AN/GRQ-23	1				
7520-00-162-6178	Pencil Sharpener	1				
5830-00-327-5031	Typewriter and Writing Shelf FN-87/G	3	3½	20	19	
7110-00-273-8791	Rotary Chair	3				
6110-00-499-4135	Protection Lightning Arrester Panel, MX-9596/GRQ-32	1				
	Radio Frequency Filter F-1358/GRQ-23	1				
5895-00-208-0107	Switching Matrix Unit SA-1922/GRQ-23	3				
6515-00-660-0046	Oral Resuscitator	1				
	Electrical Equipment Shelter S-389/MSA-34	1	88	148	92	3600
	Cable Access Assembly	1				
6625-01-048-2187	Power Supply +7 volts dc	1				
6625-01-048-2186	Power Supply +28 volts dc	1				
6110-00-332-2600	Panel, Power Distribution SB-3771/GRQ-23	1				

CHAPTER 2

SERVICE UPON RECEIPT AND INSTALLATION

Section I. SYSTEMS PLANNING

2-1. GENERAL. The Operations Control Central AN/TSQ-78 is normally installed along with two other centrals in a Mobile Operations and Electrical Facility AN/MSA-34 as part of the Operational Unit,

Transportable System (OUTS). Refer to TM 32-9999-200-24 and TM 32-5811021-14 for systems planning for the AN/MSA-34 and the OUTS, respectively.

Section II. SITE AND SHELTER REQUIREMENTS

2-2. SITING. Site selection for AN/TSQ-78 installation is determined primarily by application. The selected area must be large enough to permit unhindered access to, and the proper placement and servicing of, the AN/TSQ-78 (or a multiple of centrals), and the associated equipment required to perform the mission. Be sure that all antennas are clear of any obstructions and as far as practical from possible. Sources of electrical interference (power lines, electric motors, etc.).

2-3. SHELTER REQUIREMENTS. The modified S-389/MSA-34 shelter that houses the AN/TSQ-78 may be installed on the ground. For ground installation a single unit requires a level area with natural drainage approximately 8 X 12 feet. Swampy or spongy areas and areas with close-in high ground should be avoided whenever possible. When the shelter is to be maintained by ground supply transport, vehicle accessibility must be considered. The natural conditions of the area should be used; for example, location near a strand of trees would protect the site from prevailing winds.

Section III. SERVICE UPON RECEIPT OF MATERIEL

2-4. UNPACKING. The AN/TSQ-78 is shipped fully assembled. Unpacking is limited to removing waterproof tape from doors, panels and electrical entrances to ready it for service and to opening the shelter to air it out.

2-5. CHECKING UNPACKED EQUIPMENT.

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on Standard Form 364 (Report of Discrepancy (ROD)).

b. Check the equipment against the component listing in this manual and the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions given in TM 38-750. The equipment should be placed in service even though a minor assembly or part that does not affect proper functioning is missing.

c. Check to see whether the equipment has been modified. (Equipment that has been modified will have the Modification Work Order (MWO) number on the front panel near the nomenclature plate.) Also check to see whether all currently applicable MWO's have been applied.

Section IV. INSTALLATION INSTRUCTIONS

2-6. TOOLS, TEST EQUIPMENT, AND MATERIALS REQUIRED FOR INSTALLATION. The components and cables that comprise the AN/TSQ-78 are installed when shipped, are secured in storage cabinets, or are specially fitted for mobility tiedown; therefore, no special tools for AN/TSQ-78 installation are required. For the tools required to install the shelter on the V-398/MSA-34 Semi-trailer, refer to TM 32-2330-001-24&P (Operations and Electrical Facility, Mobile AN/MSA-34).

2-7. INSTALLATION OF SHELTER. Refer to TM 32-5410-217-14&P for installation of the S-389/MSA-34 shelter. Refer to TM 32-5811-021-14 and TM 32-9999-200-24 for installation of the AN/MSA-34 Mobile Operations and Electrical Facility which includes the installation of auxiliary equipment.

2-8. RELEASE OF STOWED AND SECURED EQUIPMENT. When received, most of the equipment that comprises the AN/TSQ-78 is installed in the operating configuration. Many components are in a mobility tiedown or a secured configuration, and various miscellaneous components are stowed inside the shelter. Release of equipment from the mobility tiedown or stowage configuration is described as follows:

a. Chair. The chair tiedown, figure 2-1, consists of a spring-loaded tiedown assembly which mates with a key slot-shaped socket in the shelter floor. The chair-height

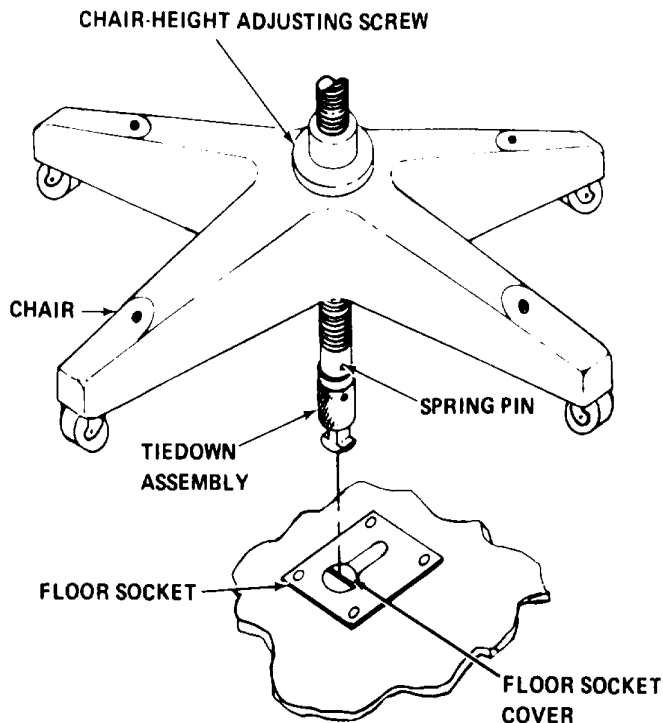


Figure 2-1. Chair Tiedown Assembly

adjustment screw has been turned to raise the seat adjusting stem to hold the chair in a stationary position. The chair may be released as follows:

- (1) Turn the chair-height adjusting screw down until the chair swivels freely.
- (2) Depress the floor socket cover, move the chair so that the tiedown assembly clears the slot in the floor socket and the chair can be raised so that the tiedown assembly can be removed from the socket.
- (3) Release the floor socket cover and it will return flush to the floor.
- (4) The released chair can now be adjusted to the desired height by turning the chair-height adjustment screw.

b. Typewriter and Writing Shelf: The typewriter and writing shelf are secured in the rack during mobility tiedown by captive screws in the panel face. In the operating position, they are secured by a spring-loaded, button operated linkage lock. Release the writing shelf as follows:

- (1) Loosen the large captive screw on each side of the panel face until the shelf is free to slide forward.
- (2) Depress the button on each slide and pull the shelf to maximum extension. Release the buttons and adjust the shelf in slightly to latch the linkage.

2-9. CABLING AND CONNECTIONS. The AN/TSQ-78 is shipped with the rack-mounted equipment interunit cabling connections already made and with all power connections within the shelter interior also made. Refer to TM 32-5410-217-14&P and TM 32-9999-200-24.

a. Grounding. Ground the modified shelter as instructed in TM 32-5410-217-14&P and TM 32-9999-200-24.

b. External Power Connections. Connect the external electrical power to the AN/TSQ-78 by either of the two external, waterproof, male connectors provided at each end of the shelter. Either of the two connectors will accept 208-volt ac, 60 Hz, three-phase power.

c. External Antenna Distribution and Digital Clock Connections. After all the centrals in the operational complex are in position for operation, proceed as follows:

- (1) Remove the external antenna distribution and digital clock interconnecting cables from the storage cabinets.
- (2) Connect the cables to panel connectors of the cable access assembly, figure 2-2, of the AN/TSQ-78 and to the corresponding connectors of the cable access assemblies of the other centrals as shown in FO-1. The

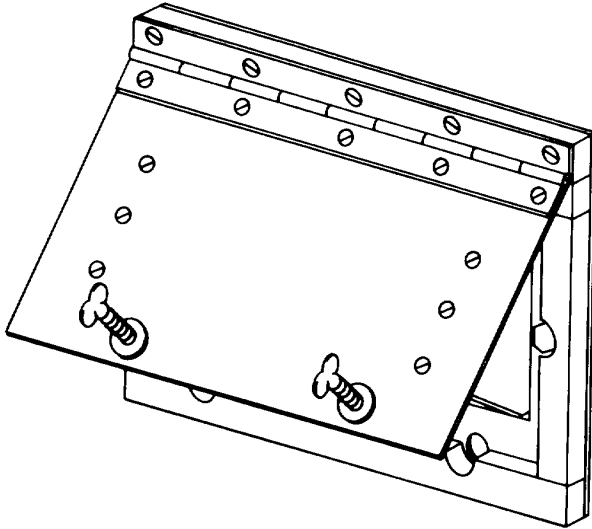


Figure 2-2. Cable Access Assembly

RF connectors on the panels of the cable access assemblies are identified by J numbers so that each cable and the connectors that it connects will have the same number. For example, J1 on the AN/TSQ-78 in shelter 18 will be connected by cable W01 to J1 on the AN/TRR-27 in shelter 15. RF connectors J61 through J70 are to be connected to the deployed antennas which are not a part of the AN/TSQ-78 but are required. The two larger unmarked connectors on the cable access assembly panel are to be connected to similar unmarked connectors on the cable access assembly panels of the AN/TRR-27 in shelter 15 and the AN/TRX-1 in shelter 21 by digital clock interconnecting cables W205 and W206, respectively.

d. *External Intercommunication Connections.* To connect the external intercommunication connections (figures 2-3 and 2-4) after all the centrals are in place, proceed as follows:

(1) Remove the eight 12-foot interconnecting cables marked W41 and the thirty 75-foot interconnecting cables marked W42 from the storage cabinets.

(2) Using six of the W41 cables, interconnect the Communications Control Console (CCC) OA-7735/G

to the Radio Intercept Control Switchboard (RICS) SB-2602/G located in the Radio Identification Central AN/TRX-1 as shown in figure 2-3 and listed in table 2-1. The cables run from the AN/TSQ-78 (shelter 18) through the walkway to the AN/TRX-1 (shelter 21).

Table 2-1. Intercommunication Cables from AN/TSQ-78 to AN/TRX-1

From AN/TSQ-78 (CCC)	Cable W41	To AN/TRX-1 (RICS)
SB-2601/G J1	No. 1	SB-2602/G J1
OA-7735/G No. 1 J21	No. 2	SB-2602/G J17
OA-7735/G No. 1 J22	No. 3	SB-2602/G J12
OA-7735/G No. 2 J18	No. 4	SB-2602/G J7
OA-7735/G No. 2 J21	No. 5	SB-2602/G J16
OA-7735/G No. 2 J22	No. 6	SB-2602/G J11

(3) Use the seventh W41 cable to interconnect the intercom equipment in the two AN/TRM-18 facilities (shelters 2 and 5), figure 2-3, through the cable access holes in the end of the shelters.

(4) Use the eighth W41 cable to similarly interconnect the intercom equipment in the AN/TRM-18 (shelter 2) to the intercom equipment in the AN/TGM-2 (shelter 4).

CAUTION

To prevent possible equipment damage and electrical shock, check cable lay-out areas for moisture or watery areas.

(5) Connect one end of each of the W42 cables to the bulkhead panel connectors J1 through J18 and 2J1 through 2J10, 2J15 and 2J17. Lay the cables over the roofs of the shelters and connect each of the other ends of the W42 cables through the pass thru's on the ends of the shelters to the intercommunication equipment in the shelters as shown in figure 2-3.

Section V. PRELIMINARY ADJUSTMENT OF EQUIPMENT

2-10. PRELIMINARY CHECKS AND SERVICES. To ensure that the equipment is ready for operation following installation of the equipment, check the cable connections (figure 2-2 and FO-1) and perform the

preliminary starting procedure (paragraph 3-4). Also perform the operator/crew preventive maintenance checks and services (paragraph 4-3).

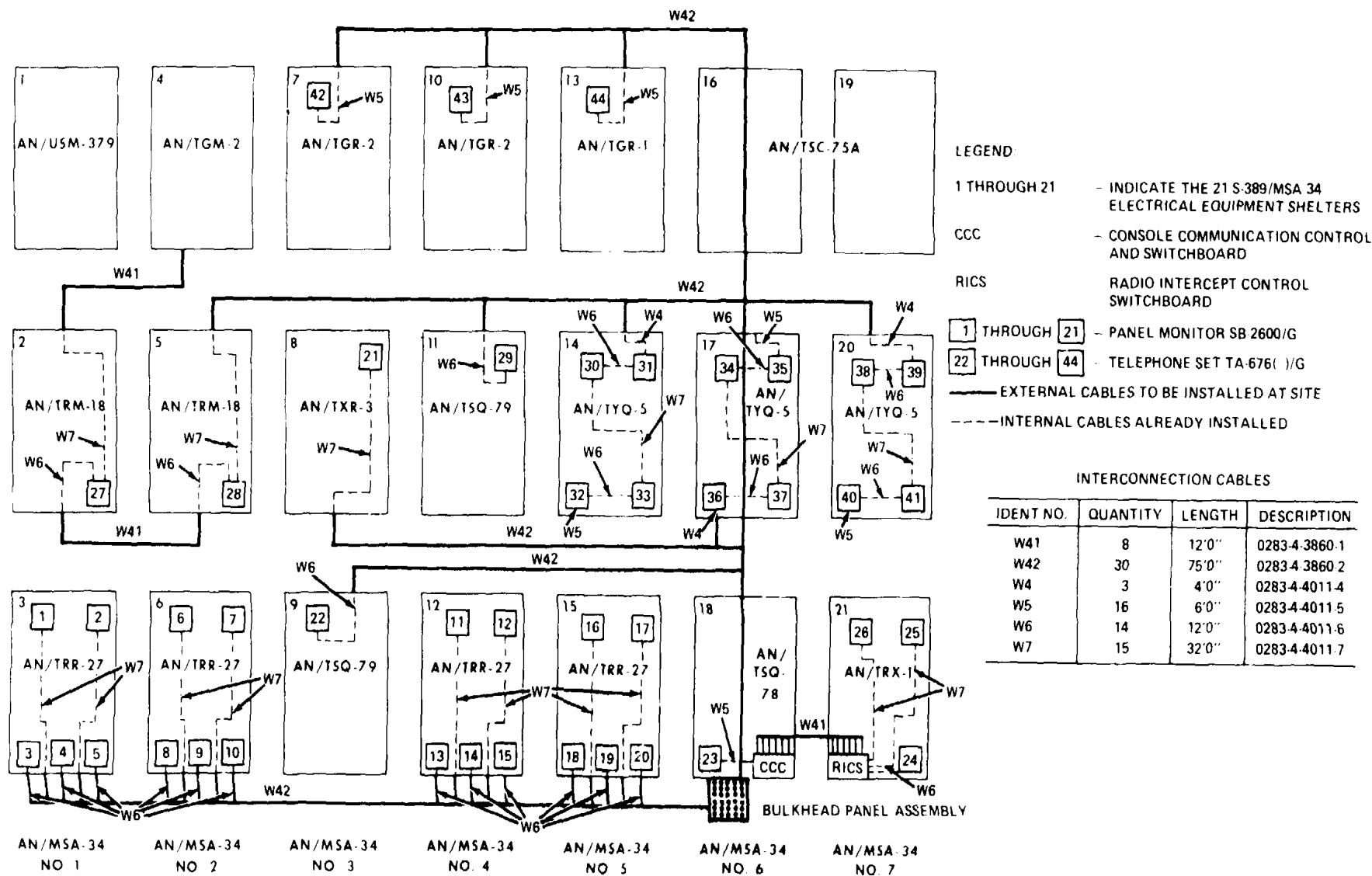


Figure 2-3. Intercommunication System

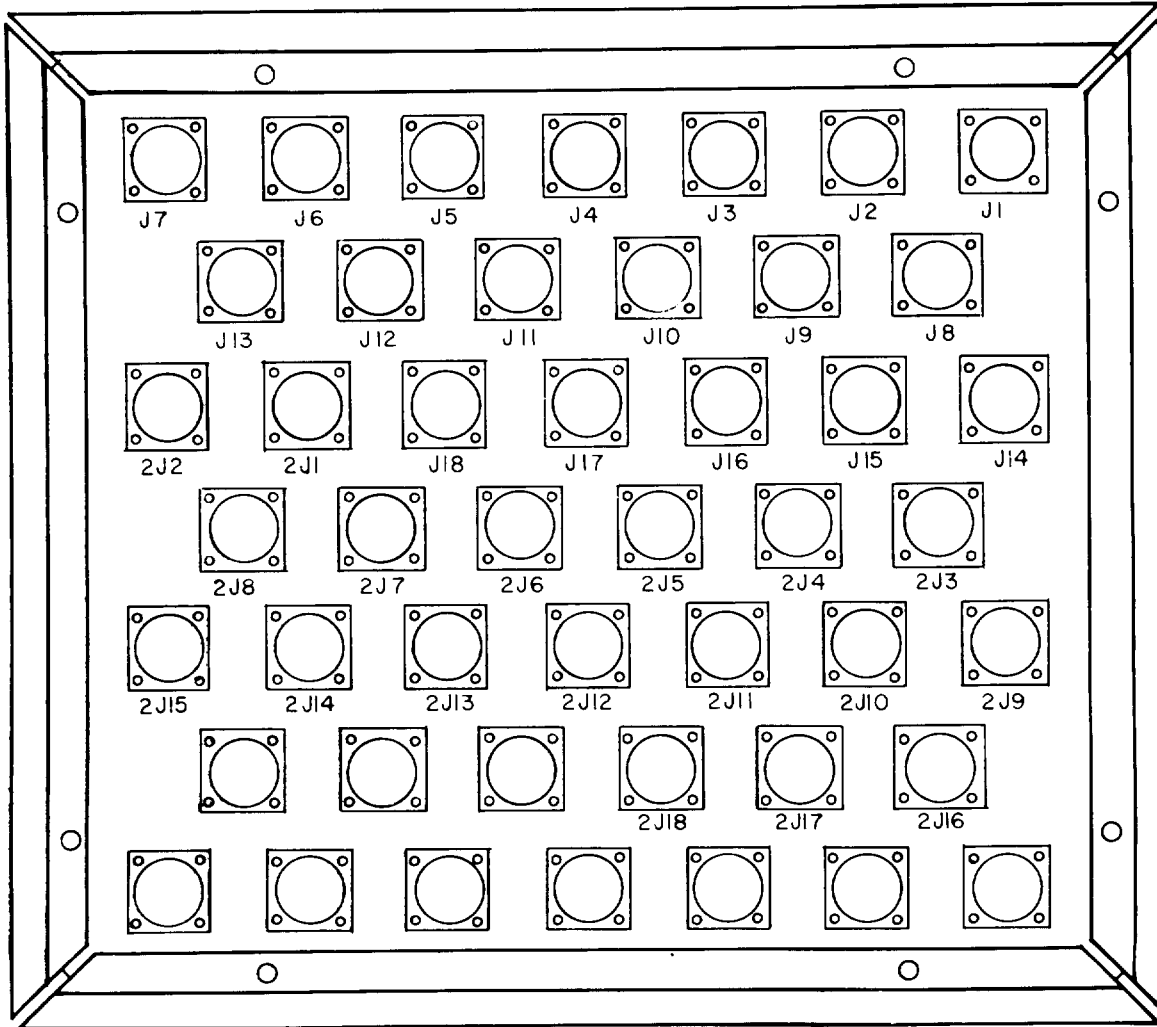


Figure 2-4. Intercommunication Bulkhead Panel Assembly

2-5/(2-6 blank)

Table 3-1. Radio Receiver R-390A/URR, Operator's Controls and Indicators* - Continued

Control or Indicator	Function
LOCAL GAIN control	Controls level of af signal to headset or speaker.
RF GAIN control	Controls gain of rf and if amplifiers.
KILOCYCLE CHANGE control	Tunes receiver to any frequency within a band and changes reading of last three digits on the frequency indicator.
MEGACYCLE CHANGE control	Selects any one of 32 tuning steps; change reading of first two digits of frequency indicator.
PHONES jack	Provides means of connecting a headset to the receiver.

*Refer to figure 3-1.

Table 3-2. Matrix Dual Control Unit RFC 1020-1, Operator's Controls and Indicators*

Control or Indicator	Function
ANTENNA SELECT - 10-position thumbwheel switch	Enables operator to select the antenna desired for each given receiver.

*Refer to figure 3-2.

Table 3-3. Components with Controls and Indicators

Component	Reference Manual
Shelter, Electronic Equipment S-389/MSA-34	TM 32-5410-217-14&P
Console, Communication Control OA-7735/G	TM 32-5895-227-24P
Switchboard, Intercommunications SB-2601/G	TM 32-5895-227-24P
Radio Frequency Switching Set AN/GRQ-23	TM 32-5895-753-14
Telephone Set TA-676/G	TM 32-5895-227-24P

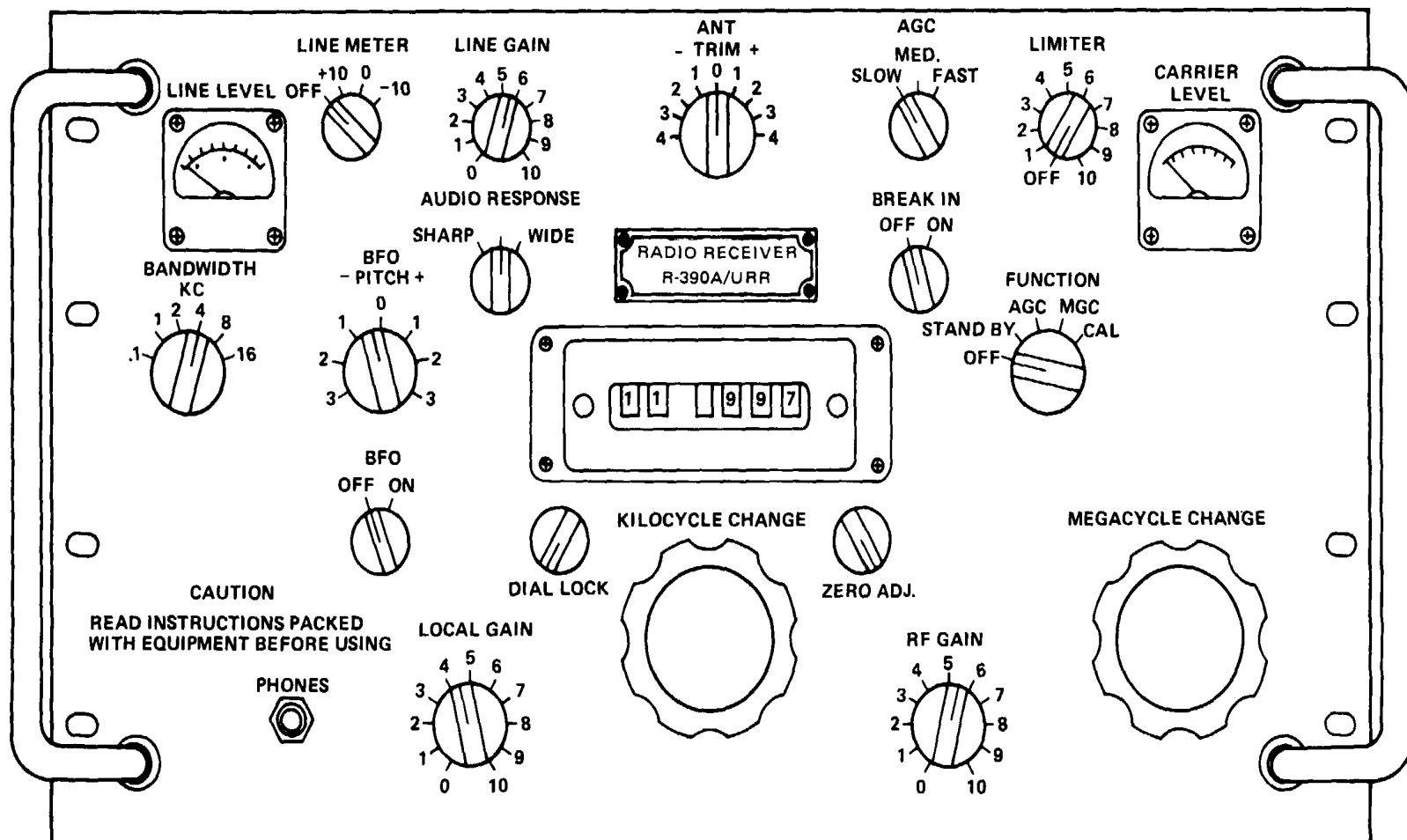


Figure 3-1. Radio Receiver R-390A/URR, Operator's Controls and Indicators

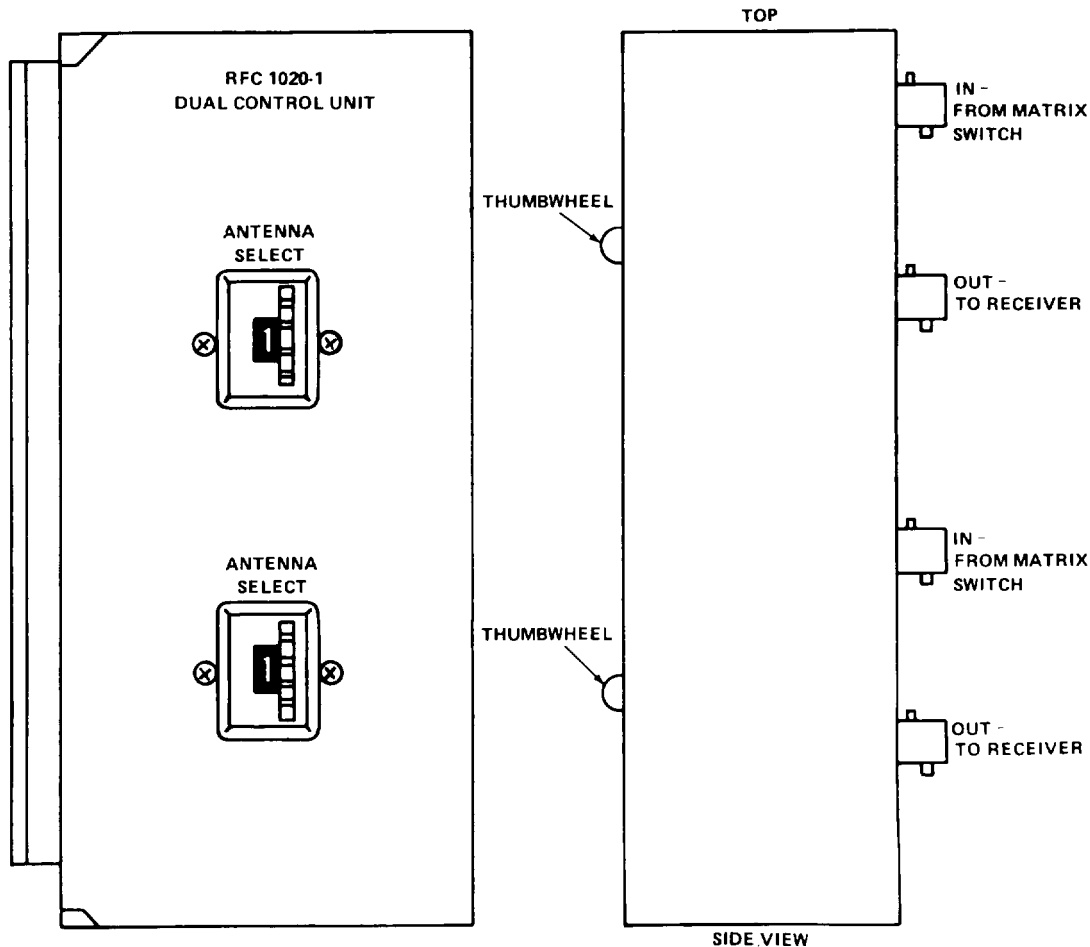


Figure 3-2. Matrix Dual Control Unit RFC 1020-1, Operator's Controls and Indicators

Section II. OPERATION UNDER USUAL CONDITIONS

3-3. GENERAL. Operations Control Central AN/TSQ-78 is primarily intended for use as part of an operational complex. Operating procedures for the AN/TSQ-78 are provided in paragraphs 3-4 through 3-6.

3-4. PRELIMINARY STARTING PROCEDURE. Before placing the AN/TSQ-78 in operation, perform the following:

- a. Check earth grounding terminals to ensure that all connections are tight.
- b. Ensure that all circuit breakers are in the OFF position before connecting the external power source.

3-5. OPERATING PROCEDURE.

- a. Refer to applicable technical manuals listed in Appendix A for connecting power source to shelter and for operating installed equipment.
- b. Switch main power circuit breaker to ON.

- c. Set light circuit breaker to ON.
- d. Turn shelter lights on.
- e. Ensure that all switches on installed equipment are placed in the OFF position.
- f. Switch convenience circuit breakers to ON.
- g. Operate the installed equipment as instructed by the applicable technical manuals listed in Appendix A.

3-6. SHUTDOWN PROCEDURE.

- a. Refer to the applicable technical manuals listed in Appendix A and shut down all installed equipment.
- b. Switch convenience circuit breakers to OFF.
- c. Turn shelter lights off.
- d. Set light circuit breaker to OFF.
- e. Switch main power circuit breaker to OFF.
- f. Refer to applicable technical manuals listed in Appendix A for disconnecting power source from the shelter and for storing equipment.

Section III. OPERATION UNDER UNUSUAL CONDITIONS

3-7. GENERAL. The Operations Control Central AN/TSQ-78 is fully insulated and weatherproofed for operation in hot, cold, or moderate climates. When equipped with external air conditioning, the shelter is capable of providing operating personnel and equipment complete protection in temperatures ranging from minus 300F to plus 1200F. However, under extreme weather conditions, certain precautions are necessary, as discussed in paragraphs 3-8, 3-9, and 3-10. Emergency procedures are discussed in paragraph 3-11.

3-8. OPERATION IN ARCTIC CLIMATES.

a. Extreme cold causes cable and wire insulation to become hard, brittle, and difficult to handle. Use care in handling equipment; avoid sharp bends and unnecessary loops in wires and cables.

b. Keep equipment as warm and dry as possible. Place a blanket or some other barrier as a curtain between equipment and the shelter entrance to reduce heat loss and cold drafts that could strike heated elements in the equipment. Moisture will condense on equipment exposed to cold air; dry equipment thoroughly.

3-9. OPERATION IN TROPICAL CLIMATES. Equipment located in warm, humid climates is subject to damage from moisture and fungi. Heat and high humidity can cause rapid deterioration of equipment. Rust, corrosion and fungi accumulation are major problems. Open doors only when necessary. Wipe all moisture and fungi from the equipment with a lint-free cloth.

3-10. OPERATION IN DESERT CLIMATES.

a. The chief hazards in hot, dry climates are sand, dust, dirt, and high temperatures. Precautions must be taken to prevent windblown sand, dust and dirt from entering the equipment parts and damaging connectors, receptacles, and binding posts. Open doors only when necessary and ensure that door and panel gaskets seal properly. Hang wet sacking over doors to cut down on entrance of dirt and sand when doors are opened.

CAUTION

Do not touch metal exposed to the sun. Painful skin burns may result.

b. Do not remove panel and chassis assemblies unless absolutely necessary; clean assemblies thoroughly before replacing them.

c. Make frequent preventive maintenance checks. Excessive dust, sand or dirt that comes in contact with oil and grease will result in damage to moving parts.

d. Clean and dust the shelter daily.

3-11. OPERATION UNDER EMERGENCY CONDITIONS.

a. *General.* Over-all operation of the operations control central under emergency conditions is determined by the using organization; refer to local directives for emergency operations.

b. *Components.* For the emergency operating procedures of the components of the operations control central with operating capabilities, refer to the applicable manuals listed in Appendix A.

Section IV. PREPARATION FOR MOVEMENT

3-12. GENERAL. The Operations Control Central AN/TSQ-78 is a completely portable facility and no special packaging or protection is required. To prepare the equipment comprising the AN/TSQ-78 for movement, refer to the appropriate manuals listed in Appendix A and for removing the external power source. Disconnect all external connections and secure all loose equipment with the mobility tiedowns provided (paragraph 3-13); secure all rack-mounted equipment.

3-13. MOBILITY TIEDOWN.

a. *Chair Tiedown.* To install the chair tiedown assembly (figure 2-1), proceed as follows:

(1) Turn chair height-adjusting screw on chair to lower the tiedown assembly to approximately 1/8 inch above the floor.

(2) Position the chair over the floor socket, aligning the tiedown assembly with the floor socket cover and key slot.

(3) Grasp the knurled sleeve on the tiedown assembly and push the assembly into the socket well, sliding it into the key slot until the floor socket cover snaps back up, locking the assembly in the socket.

(4) Tighten the chair against the floor by turning the chair height-adjusting screw to raise the seat.

b. Shelf Tiedown. To install the shelf tiedown, proceed as follows:

(1) Slide typewriter equipped with sliding tray to the center position on the tray and center the typewriter carriage to the rack opening.

(2) Depress button on center of shelf face; push shelf completely into rack.

(3) Insert and tighten captive screws at each side of the shelf-face into the rack.

3-14 FINAL CHECKS BEFORE MOVEMENT.

a. Ensure that all equipment is turned off and secured in accordance with the appropriate technical manuals.

b. Place all electrical switches and circuit breakers in the OFF position.

c. Remove external power source in accordance with appropriate technical manual.

d. Remove earth ground by disconnecting ground cable; pull ground rod from earth and place rod and cable in stowed position.

e. Install side and door panels, if removed during operation.

f. Install covers on air duct openings.

3-7/(3-8 blank)

CHAPTER 4

OPERATOR/CREW MAINTENANCE INSTRUCTIONS

Section I. TOOLS AND EQUIPMENT

4-1. GENERAL. Tools, test equipment, and accessories issued with or authorized for use by the operator for the Operations Control Central AN/TSQ-78 are listed in

Appendix D. For expendable supplies and materials, refer to Appendix F.

Section II. LUBRICATION INSTRUCTIONS

4-2. GENERAL. Lubrication instructions for the major components of the AN/TSQ-78 are provided in the appli-

cable manuals listed in Appendix A. Additional lubrication procedures are covered in paragraphs 5-3 through 5-5.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-3. GENERAL.

a. To ensure that the AN/TSQ-78 is always ready for operation, it must be inspected systematically so that defects can be discovered and corrected before they result in serious damage or failure. The necessary operator/crew preventive maintenance checks and services to be performed on the equipment covered in this manual are listed and described in table 4-1. Defects discovered during operation of the equipment components will be noted for future correction to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noted during operation which would damage the equipment. General instructions for PMCS are as follows:

(1) *Before You Operate.* Always keep in mind the CAUTION S and WARNINGS. Perform your before (B) PMCS.

(2) *While You Operate.* Always keep in mind the CAUTION S and WARNINGS. Perform your during (D) PMCS.

(3) *After You Operate.* Be sure to perform your after (A) PMCS.

(4) *If Your Equipment Fails to Operate.* Troubleshoot with proper equipment. Report any deficiencies using the proper forms. (Refer to TM 38-750.)

b. The operator/crew preventive maintenance checks and services are to be performed when the equipment is initially installed and when the equipment is reinstalled after removal for any reason. Also, these checks and services are to be performed at least once each week if the equipment is maintained in a standby condition.

c. Refer to the applicable manuals listed in Appendix A for all of the necessary preventive maintenance checks and services to be performed on the major equipment components covered by separate publications, including Electrical Equipment Shelter S-389/MSA-34.

Table 4-1. Operator/Crew Preventive Maintenance Checks and Services

NOTE

Within the designated interval, these checks are to be performed in the order listed.

B-Before
D-During

A-After
W-Weekly

M-Monthly
C-Combat Operability Check

Item No.	Interval					C	Item to be inspected	Procedures	Equipment will be reported Not Ready (Red) if:
	B	D	A	W	M				
1	•			•		•	AN/TSQ-78 - GENERAL	<p>Check that equipment is complete, undamaged, and free of dirt, grease, fungus, and mildew. See that all components are installed, mounted, or stored, as applicable, and that surfaces are not blistered, pitted or flaked. Check for rust or corrosion. Check light switches, circuit breakers, and receptacles for good condition and proper function. Be sure electrical ducts, air registers, and light fixtures are clean.</p> <p>Inspect shelter walls, ceilings and floor for holes, open seams, or signs of seepage or leaks. Inspect receptacles, switches and circuit breakers for shorts and proper operation. Check ceiling lights and starter for proper operation.</p>	Major component is missing; major damage to shelter or operating units is obvious.
2	•			•			RACK POSITIONS	<p>Check that all rack-mounted components are free of dirt, undamaged, and secured in place. Check that all lamp units are present and operational.</p>	

Table 4-1. Operator/Crew Preventive Maintenance Checks and Services - Continued

Item No.	Interval					C	Item to be inspected	Procedures	Equipment will be reported Not Ready (Red) if:
	B	D	A	W	M				
3	•			•			CABLES, CORDS, AND WIRES	<p>Check that all connections are tight; that the cables, cords, and wires are not cut, cracked, or kinked, and are properly secured at the rack assemblies.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Minor insulation cuts and abrasions may be repaired with electrical insulation tape.</p>	
4	•			•			EXTERIOR ANTENNA SIGNAL CONNECTORS	Check that all connections are tight; that cables are not cut, cracked or kinked, and are free of dirt, oil and grease.	
5	•			•			UNUSED COMPONENTS	Check that components not in use are properly stored.	
6	•			•			EQUIPMENT MOUNTINGS	Check that equipment mountings are not bent or broken; that all bolts, nuts, and screws are present and tight; and that retractable shelves, drawers, and storage cabinet doors function properly.	
7	•			•			TYPEWRITER	Check that typewriter functions properly and that there is an adequate supply of paper.	
8	•			•			DIGITAL CLOCK REMOTE DISPLAY	Check that clock is operational and in agreement with the master clock.	

Table 4-1. Operator/Crew Preventive Maintenance Checks and Services - Continued

Item No.	Interval					C	Item to be inspected	Procedures	Equipment will be reported Not Ready (Red) if:
	B	D	A	W	M				
9	•			•			CONDUIT ASSEMBLY	Check that all cover plates and hardware are present and intact.	One or more major items of equipment missing.
10	•			•			GROUND CONNECTION	Inspect ground connections for tightness and earth condition for conduction. Tighten connections and/or pour water around ground rod to improve conduction.	
11	•			•			CONDUIT INSTALLATION	Check all clamps that secure conduit to ceiling to be sure that they are tight. Ensure all box covers are installed properly.	
12	•			•			EQUIPMENT INVENTORY	Inventory all equipment for missing components.	
13	•			•			SPARE PARTS	Check general condition and storage method of all spare parts.	
14	•			•			CHAIR TIEDOWN	Check tiedown assembly for bent or broken parts. Replace if defective.	
15	•						PUBLICATIONS	Check to see that all publications are complete, serviceable, and correct (including all current publication changes).	

*Use this column as a source of item numbers for the "TM Number" column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, used to record the results of the PMCS.

Section IV. TROUBLESHOOTING

4-4. GENERAL. For troubleshooting of the major equipment components, refer to the applicable manuals listed in Appendix A. Troubleshooting, as covered in this manual, is accomplished with the major equipment components interconnected, and is primarily limited to sectionalization of trouble to the defective major component.

troubleshooting chart (table 4-2) and perform the corrective action indicated.

WARNING

Be extremely careful when performing the troubleshooting procedures; dangerous voltages are present in the equipment.

4-5. TROUBLESHOOTING PROCEDURES. When an abnormal indication is observed during the operational checks, look for a description of this symptom in the

Table 4-2. Operator/Crew Troubleshooting Chart

NOTE

Any trouble that is beyond the scope of operator/crew shall be referred to organizational maintenance.

Malfunction

Test or Inspection

Corrective Action

1. ALL POWERED EQUIPMENT INOPERATIVE

Step 1. Check to see if incoming power cable is disconnected.

If incoming power cable is disconnected, reconnect power cable.

Step 2. Check to see if shelter circuit breaker is open.

If shelter circuit breaker is open, reset circuit breaker.

Step 3. Check shelter internal wiring.

If shelter internal wiring is defective, refer to TM 32-5410-217-14&P.

2. SOME POWERED EQUIPMENT INOPERATIVE

Step 1. Check incoming power cable.

If incoming power cable is loose, tighten all connections. If incoming power cable is damaged, repair or replace it.

Step 2. Check circuit breakers.

If one or more circuit breakers are tripped, reset circuit breakers.

Table 4-2. Operator/Crew Troubleshooting Chart - Continued

Malfunction**Test or Inspection****Corrective Action****3. RADIO RECEIVER R-390A/URR INOPERATIVE**

Step 1. Check power cable.

If power cable is disconnected, reconnect power cable.

Step 2. Recheck radio receiver output at operator's position.

If there is still no output, refer to TM 11-5820-357-20. If radio receiver is defective, replace unit, and turn in defective unit to direct support for repair.

4. NO RF INPUT TO RADIO RECEIVER R-390A/URR

Step 1. Check antenna by switching to another antenna.

Repair or replace defective antenna.

Step 2. Check RF matrix switching system.

Check RF matrix switching control for correct antenna to receiver patch. Switch antenna patch cable. Check and tighten all RF cable connections. Repair or replace faulty cables and connectors.

Step 3. Check RF Matrix Switching Control C-9291/GRQ-23.

Repair or replace defective control.

5. ALL SHELTER LIGHTS INOPERATIVE

Step 1. Check to see if light circuit breaker is open.

If light circuit breaker is open, reset light circuit breaker.

Step 2. Check switch, wiring or blackout relay.

If switch, wiring or blackout relay is defective, replace defective item.

6. SINGLE SHELTER LAMP INOPERATIVE

Step 1. Check lamp.

If lamp is defective, replace it.

Step 2. Check starter.

If starter is defective, replace it.

Table 4-2. Operator/Crew Troubleshooting Chart - Continued

Malfunction

Test or Inspection

Corrective Action

6. SINGLE SHELTER LAMP INOPERATIVE - CONTINUED

Step 3. Check ballast or filter unit.

If ballast or filter unit is defective, replace defective item.

7. NO RF INPUT AT ANOTHER STATION WITHIN COMPLEX

Step 1. Check RF shelter-to-shelter cable.

If RF shelter-to-shelter cable is loose, tighten all connections. If RF shelter-to-shelter cable is damaged, repair or replace it.

Step 2. Check RF component at other station.

If RF component at other station is defective, report it to the using organization and refer to local directives.

8. NO INTERCOMMUNICATIONS

Step 1. Check power cable and connections.

If power cables are loose, tighten all connections. If power cable is damaged, repair or replace it.

Step 2. Check shelter-to-shelter cables and connections.

If shelter-to-shelter cables are loose, tighten all connections. If shelter-to-shelter cables are damaged, repair or replace as necessary.

Step 3. Check Communication Control Console OA-7735/G.

If communication control console is defective, replace it.

9. NO INTERCOMMUNICATION WITH ANOTHER STATION WITHIN COMPLEX

Step 1. Check shelter-to-shelter cable and connections.

If shelter-to-shelter cable is loose, tighten all connections. If shelter-to-shelter cable is damaged, repair or replace it.

Step 2. Check intercommunication components at other station.

If an intercommunication component at other station is defective, report it to the using organization and refer to local directives.

Table 4-2. Operator/Crew Troubleshooting Chart -- Continued

Malfunction

Test or Inspection

Corrective Action

10. DIGITAL CLOCK REMOTE DISPLAY INOPERATIVE

Step 1. Check interconnecting cables and connectors.

If an interconnecting cable is loose, tighten all connections. If an interconnecting cable is damaged, repair or replace it.

Step 2. Recheck digital clock remote display.

If the digital clock remote display is still inoperative, the unit is defective. Replace digital clock remote display and turn in defective unit to direct support for repairs.

11. CHAIR TIEDOWN INOPERATIVE

Step 1. Check floor tiedown socket for dirt.

Depress socket cover, lock open, and clean out dirt with pick or wire.

Step 2. Inspect tiedown pin on chair.

If pin is bent or broken, remove and replace.

Section V. MAINTENANCE OF OPERATIONS CONTROL CENTRAL AN/TSQ-78

4-6. GENERAL. The extent of maintenance to be performed by operator/crew personnel is limited by the

Maintenance Allocation Chart (Appendix D) to inspecting the various components/assemblies of the AN/TSQ-78.

CHAPTER 5

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. TOOLS AND EQUIPMENT

5-1. GENERAL. The tools and test equipment required and authorized for organizational maintenance are listed in the Maintenance Allocation Chart (MAC), Appendix

D. Repair parts, tools, test equipment and accessories are listed in Repair Parts and Special Tools List (RPSTL), Appendix E.

Section II. REPAINTING AND REFINISHING INSTRUCTIONS

5-2. TOUCHUP PAINTING.

CAUTION

Solar reflection paint per MIL-E-46061 has been used to paint the exterior of some shelters. Before applying touchup paint on the exterior, check for a caution notice on the exterior door. If solar reflecting paint has been used, refer to TB43-0124 for application instructions. Do not use any other paint on shelter when solar reflection paint has been used.

a. For painting instructions on the major equipment components, refer to the applicable manuals listed in Appendix A.

b. Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TB 43-0118, Field Instructions for Painting and Preserving Electronics Command Equipment. Also refer to SB 11-573, Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment. Care of painting equipment is provided in TM 43-0139, Painting Instructions for Field Use.

Section III. LUBRICATION INSTRUCTIONS

5-3. GENERAL. Refer to the applicable manuals listed in Appendix A for lubrication instructions on the major units covered by these manuals. Additional lubrication procedures are covered in paragraphs 5-4 and 5-5 below. These procedures shall be performed quarterly, except as noted. General Purpose Lubricating Oil (NSN 9150-00-231-6640) is required for these procedures.

5-4. ROTARY CHAIR. Apply a light film of General Purpose Lubricating Oil to the chair-height adjusting screw and in the chair tiedown assembly sliding collar (figure 2-1).

5-5. TYPEWRITER SHELF. Apply a light film of General Purpose Lubricating Oil at the slide rollers on the typewriter shelf.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

5-6. GENERAL. Organizational preventive maintenance checks and services are performed quarterly, except for initial lubrication (paragraphs 5-3 through 5-5). The checks and services are listed and described in table 5-1 and are to be performed concurrently with the operator/crew preventive maintenance checks and services (paragraph 4-3). Refer to the applicable

manuals listed in Appendix A for all of the necessary preventive maintenance checks and services to be performed on the major equipment components covered by separate publications. Record all deficiencies or shortcomings in accordance with the requirements of TM 38-750.

Table 5-1. Organizational Preventive Maintenance Checks and Services

Legend

W - Weekly
M - Monthly

Q - Quarterly
S - Semi-annually

A - Annually
B - Biennially

H - Hours
MI - Miles

Item No.	Interval								Item to be Inspected	Procedures	Equipment will be reported Not Ready (Red) if:
	W	M	Q	S	A	B	H	MI			
1									ALL EQUIPMENT	Check all equipment for proper operation. Clean interior of equipment racks with vacuum cleaner to remove accumulated dust and dirt. Replace and/or repair any defective or inoperative part.	One or more major items of equipment inoperative.
2									CABLES, CORDS AND WIRES	Tighten screws and clamps that secure wires to terminals. Repair insulation cuts and abrasions with electrical insulation tape. Dress all cables, cords and wires neatly. Repair or replace defective cables, cords, and wires.	
3									EQUIPMENT MOUNTINGS	Tighten all loose bolts, nuts, screws, and clamps that secure equipment, racks, frames, shelves, braces and mounting hardware. Replace any missing bolts, nuts and other attaching hardware.	
4									MODIFICATION WORK ORDERS (MWO'S)	Check if new applicable MWO's have been published. All URGENT MWO's must be applied immediately; all NORMAL MWO's must be scheduled.	

* Use this column as a source of item numbers for the "TM Number" column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, used to record the results of the PMCS.

Section V. TROUBLESHOOTING

5-7. GENERAL. For troubleshooting of the major equipment components, refer to the applicable manuals listed in Appendix A. Troubleshooting, as covered in this manual, is accomplished with the major equipment components interconnected, and is primarily limited to sectionalization of trouble to the defective major component.

description of this symptom in the troubleshooting chart, table 4-2. If the troubleshooting guides and corrective actions listed in table 4-2 do not correct the malfunction, refer to table 5-2 and perform the corrective action indicated.

5-8. TROUBLESHOOTING PROCEDURES. Organizational troubleshooting is accomplished in conjunction with operator/crew troubleshooting procedures, paragraph 4-4. When an abnormal indication or malfunction is observed during the operational checks, look for a

WARNING

Be extremely careful when performing the troubleshooting procedures; dangerous voltages are present in the equipment.

Table 5-2. Organizational Troubleshooting Chart

NOTE

Any trouble that is beyond the scope of organizational maintenance shall be referred to direct support and general support maintenance.

Malfunction

Test or Inspection

Corrective Action

1. NO POWER AVAILABLE INSIDE SHELTER WHEN POWER CONNECTED

Step 1. Check power cable.

If power cable is defective, repair or replace it.

Step 2. Check power receptacle.

If power receptacle is defective, replace it.

Step 3. Check main circuit breaker.

If main circuit breaker is defective, replace it.

Step 4. Check wiring from power entrance to circuit breaker.

If wiring is defective, repair or replace it as necessary.

2. FLUORESCENT CEILING LIGHTS DO NOT LIGHT WHEN SWITCHES ARE TURNED ON

Step 1. Check fluorescent lamp.

If fluorescent lamp is defective, replace it.

Table 5-2. Organizational Troubleshooting Chart - Continued

Malfunction**Test or Inspection****Corrective Action****2. FLUORESCENT CEILING LIGHTS DO NOT LIGHT WHEN SWITCHES ARE TURNED ON - CONTINUED**

Step 2. Check starter.

If starter is defective, replace it.

Step 3. Check circuit breaker.

If circuit breaker is defective, replace it.

Step 4. Check fluorescent switch.

If fluorescent switch is defective, replace it.

Step 5. Check wiring.

If wiring is defective, repair or replace it as necessary.

3. BLACKOUT LIGHTS FAIL TO ILLUMINATE WHEN DOOR IS OPENED -

Step 1. Check interlock switch.

If interlock switch is defective, replace it.

Step 2. Check wiring.

If wiring is defective, repair or replace it as necessary.

4. CEILING LIGHTS DO NOT GO OFF WHEN DOOR IS OPEN AND BLACKOUT SWITCH IS ON

Step 1. Check interlock switch.

If interlock switch is defective, replace it.

Step 2. Check blackout switch.

If blackout switch is defective, replace it.

Step 3. Check wiring.

If wiring is defective, repair or replace it as necessary.

Table 5-2. Organizational Troubleshooting Chart - Continued

Malfunction

Test or Inspection

Corrective Action

5. NO POWER AT RECEPTACLES

Step 1. Check circuit breaker.

If circuit breaker is defective, replace it.

Step 2. Check wiring.

If wiring is defective, repair or replace it as necessary.

Section VI. MAINTENANCE OF OPERATIONS CONTROL CENTRAL AN/TSQ-78

5-9. REPAIRS AND REPLACEMENT. Refer to the equipment manuals listed in Appendix A for repair procedures for rack-mounted equipment. Instructions for the removal and replacement of rack-mounted equipment in the AN/TSQ-78 are provided.

WARNING

Turn off all power to equipment and disconnect power cable plugs before removing powered equipment. Dangerous voltages are present in the equipment.

a. *Rack-mounted Equipment.*

NOTE

The AN/TSQ-78 is comprised of a number of rack-mounted items. The following instructions apply to each of the rack-mounted equipment.

(1) *Removal.*

(a) Disconnect power cable plug from rack receptacle.

(b) Remove mounting screws and washers from front panel.

(c) Pull equipment out of rack far enough to reach rear cable connections.

(d) Disconnect cables and tag any unidentified cables.

(e) Pull equipment out of rack.

(2) *Replacement.*

(a) Position and slide equipment into rack far enough to connect cables.

(b) Reconnect cables to the connectors.

(c) Push equipment into rack.

(d) Secure equipment in rack by installing mounting screws and washers on the front panel.

(e) Reconnect power cable plug to rack receptacle.

b. *Document and Card File Storage Drawers.*

(1) *Removal.*

(a) Slide drawer out of cabinet until it hits stops.

(b) Lift front of drawer up over stops and remove drawer from cabinet.

(c) Remove four assembly hardware sets securing one half of the slide assembly to one wall of the cabinet.

(d) Remove one half of the slide assembly.

(e) Remove four assembly hardware sets securing the second half of the slide assembly to the other wall of the cabinet.

(f) Remove the second half of the slide assembly.

(2) *Replacement.*

(a) Secure one half of the slide assembly to one wall of the cabinet using four assembly hardware sets.

(b) Secure the second half of the slide assembly to the other wall of the cabinet using four assembly hardware sets.

(c) Align slide halves mounted on cabinet walls with slides and rollers of drawer.

(d) Insert drawer slides and rollers over stops of slides mounted in cabinet.

(e) Slide drawer into cabinet.

5-10. CLEANING.

WARNING

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever used. DO NOT USE NEAR AN OPEN FLAME. Trichloroethane is not flammable, but exposure of the fumes to an open flame or hot metal forms highly toxic phosgene gas.

a. Shelter. Use a dry, clean, lint-free cloth or brush to remove dust or dirt. If necessary, moisten the cloth or brush with cleaning compound (trichloroethane) to remove grease, oil, dirt, and dust. After cleaning, wipe dry with a clean cloth. Dry compressed air, not to exceed 60 psi (pounds per square inch), may be used to remove dirt and dust from inaccessible places.

b. Equipment. Use a clean cloth to remove dust, dirt, moisture and grease from the exterior of cases, racks, mounts, transmission lines, and equipment front panel controls. If necessary, moisten the cloth with trichloroethane. After cleaning, wipe with a dry, clean cloth.

CHAPTER 6

FUNCTIONING OF EQUIPMENT

6-1. GENERAL. Operations Control Central AN/TSQ-78 controls two operational complex support systems; the Antenna Distribution System and the Intercommunication System. A functional explanation of the AN/TSQ-78 showing the relationship of these support systems to the end item is provided in paragraph 6-2 and illustrated in figure 6-1. For a comprehensive description of the Antenna Distribution System, refer to TM 32-5895-753-14.

6-2. FUNCTIONAL EXPLANATION.

a. *Antenna Distribution System.* The AN/TSQ-78 is capable of receiving signals from up to 10 external antennas on RF coaxial cables. The Antenna Distribution System passes the 10 antenna signals through a surge voltage and lightning-arrester panel, filters, amplifiers, power dividers, isolation circuits and switches which will switch any of the processed antenna inputs to any one of the 60 radio receivers located in the 21 units of the Operational Unit, Transportable System (OUTS) as selected by the receiver operator. The receiver operator makes the antenna input selection by means of the thumbwheel switch on the Control

Switching Matrix C-9291/GRQ-23, located near the receiver.

b. *Intercommunication System.* The AN/TSQ-78 has two communication control consoles (OA-7735/G), a switchboard (SB-2601/G) and a telephone set (TA-676/G) that permits the trick chief to control intercommunication in the operational complex (OUTS) by providing the following:

(1) Routine intercommunication lines between the AN/TSQ-78 and other centrals in the complex.

(2) Four trunk lines for two-way communication of two or more centrals and conference calls.

(3) Twenty-one monitor channels for use by the trick chief to monitor the number one receiver at each position equipped with a monitor panel.

(4) The switchboard -enables the console operator to select any 10 communication positions connected to his panel and transfer parallel intercommunication and control to the Radio Identification Central AN/TRX-1. For additional information on the AN/TRX-1, refer to TM 32-5895-218-14&P.

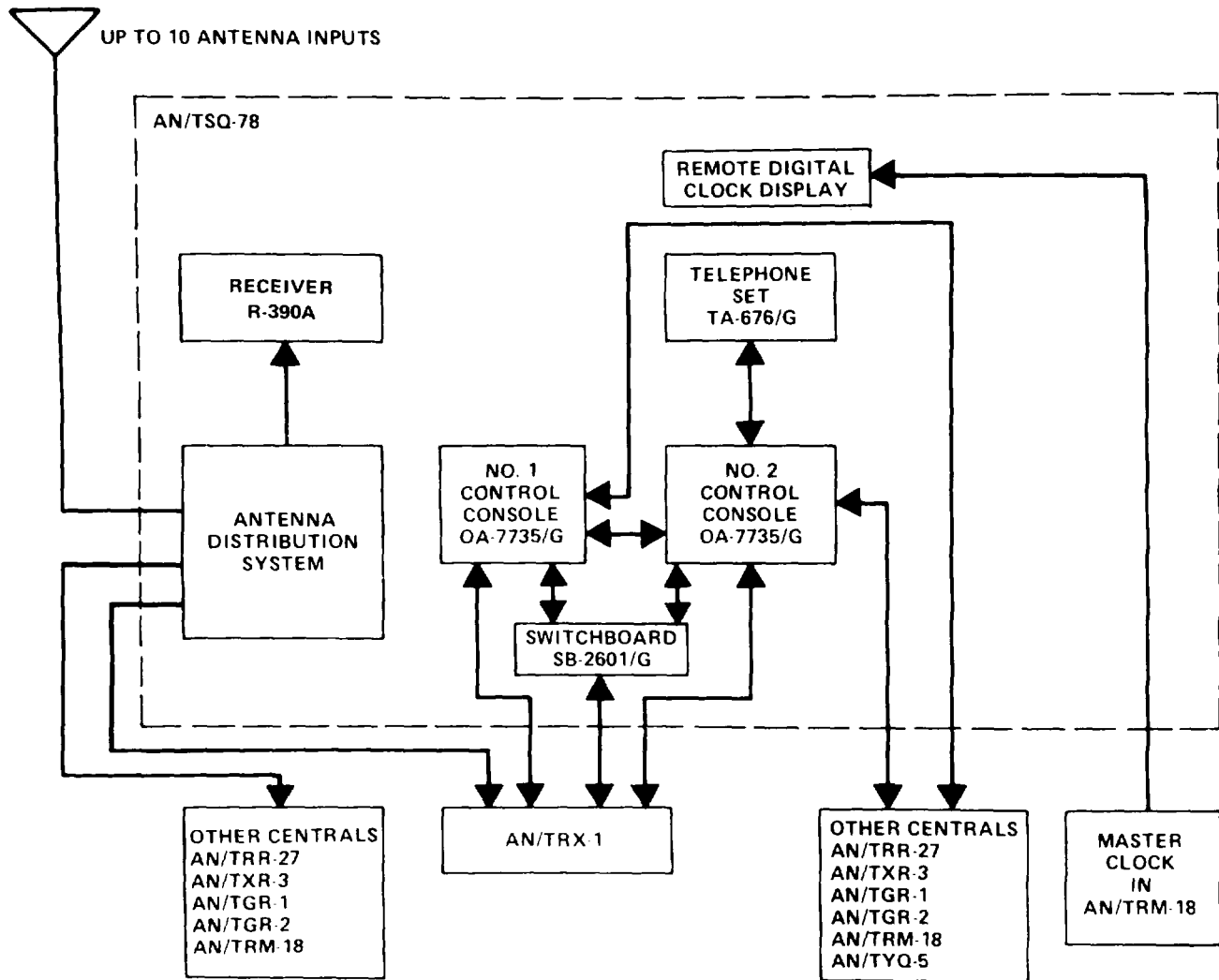


Figure 6-1. Operations Control Central AN/TSQ-78, Simplified Block Diagram

CHAPTER 7

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. GENERAL

7-1. SCOPE. Direct support and general support maintenance instructions for the Operations Control Central AN/TSQ-78 consist of the maintenance functions authorized in the Maintenance Allocation Chart (MAC),

Appendix D. For coverage of the maintenance functions to be performed on the major equipment components, refer to the applicable manuals listed in Appendix A.

Section II. TOOLS AND EQUIPMENT

7-2. TOOLS, TEST EQUIPMENT, AND MATERIALS REQUIRED. For tools, test equipment, and materials required to perform maintenance allocated to direct support and general support maintenance, refer to the Maintenance Allocation Chart (MAC), Appendix D, and to

the Repair Parts and Special Tools List (RPSTL), Appendix E. Also refer to the major equipment component manuals listed in Appendix A and the list of expendable supplies and materials in Appendix F.

Section III. TROUBLESHOOTING

7-3. GENERAL. For troubleshooting of the major equipment components at the direct support and general

support maintenance level, refer to the applicable manual listed in Appendix A.

Section IV. MAINTENANCE OF OPERATIONS CONTROL CENTRAL AN/TSQ-78

7-4. CABLES AND CONNECTORS. The AN/TSQ-78 is shipped with the rack-mounted equipment interunit cabling connections and all power connections within the shelter interior already made. In order to maintain the AN/TSQ-78 in operational condition, inspect the equipment for broken and frayed cables and for loose connectors and receptacles. Repair and replacement procedures are provided in paragraph 7-5.

a. Check the condition of the ground cable to be sure that it is securely connected to the shelter ground lug.

b. Check the condition of the power cable for the rack-mounted equipment to be sure that it is securely connected.

c. Check the condition of the intercommunications cable to be sure it is securely attached to the equipment of the AN/TSQ-78.

d. Refer to tables 2-1, 7-1, and 7-2 and figures 2-3, 7-1 through 7-6, and FO-1 and FO-2 for identification of interconnecting cable assemblies and connectors.

Table 7-1. AN/TSQ- 78 Internal Interconnecting Cables

Cable Access Assembly to SA-1922/GRQ-23			From Cable Access Panel Connector	To Switching Set Radio Frequency AN/GRQ-23	Quantity
Ref. Designation	Length	Drawing No			
W01M	8'0"	0283-4-4845-1	J1	1A1J1	1
W02M	8'0"	0283-4-4845-1	J2	1A1J2	1
W03M	8'0"	0283-4-4845-1	J3	1A1J3	1
W04M	10'0"	0283-4-4845-3	J4	1A4J1	1
W05M	10'0"	0283-4-4845-3	J5	1A4J2	1
W06M	10'0"	0283-4-4845-3	J6	1A4J3	1
W07M	11'0"	0283-4-4845-4	J7	1A5J1	1
W08M	11'0"	0283-4-4845-4	J8	1A5J2	1
W09M	11'0"	0283-4-4845-4	J9	1A5J3	1
W10M	11'0"	0283-4-4845-4	J10	1A5J4	1
W11M	8'0"	0284-4-4845-1	J11	1A1J4	1
W12M	8'0"	0283-4-4845-1	J12	1A1J5	1
W13M	8'0"	0283-4-4845-1	J13	1A1J6	1
W14M	10'0"	0283-4-4845-3	J14	1A4J4	1
W15M	10'0"	0283-4-4845-3	J15	1A4J5	1
W16M	10'0"	0283-4-4845-3	J16	1A4J6	1
W17M	11'0"	0283-4-4845-4	J17	1A5J5	1
W18M	11'0"	0283-4-4845-4	J18	1A5J6	1
W19M	11'0"	0283-4-4845-4	J19	1A5J7	1
W20M	11'0"	0283-4-4845-4	J20	1A5J8	1
W21M	8'0"	0283-4-4845-1	J21	1A1J7	1
W22M	8'0"	0283-4-4845-1	J22	1A1J8	1
W23M	8'0"	0283-4-4845-1	J23	1A1J9	1
W24M	10'0"	0283-4-4845-3	J24	1A4J7	1
W25M	10'0"	0283-4-4845-3	J25	1A4J8	1
W26M	10'0"	0283-4-4845-3	J26	1A4J9	1
W27M	11'0"	0283-4-4845-4	J27	1A5J9	1
W28M	11'0"	0283-4-4845-4	J28	1A5J10	1
W29M	11'0"	0283-4-4845-4	J29	1A5J11	1
W30M	11'0"	0283-4-4845-4	J30	1A5J12	1
W31M	8'0"	0283-4-4845-1	J31	1A1J10	1
W32M	8'0"	0283-4-4845-1	J32	1A1J11	1
W33M	8'0"	0283-4-4845-1	J33	1A1J12	1
W34M	10'0"	0283-4-4845-3	J34	1A4J10	1
W35M	10'0"	0283-4-4845-3	J35	1A4J11	1
W36M	10'0"	0283-4-4845-3	J36	1A4J12	1
W37M	11'0"	0283-4-4845-4	J37	1A5J13	1
W38M	11'0"	0283-4-4845-4	J38	1A5J14	1
W39M	11'0"	0283-4-4845-4	J39	1A5J15	1
W40M	11'0"	0283-4-4845-4	J40	1A5J16	1
W41M	8'0"	0283-4-4845-1	J41	1A1J13	1
W42M	10'0"	0283-4-4845-3	J42	1A4J13	1
W43M	11'0"	0283-4-4845-4	J43	1A5J17	1
W44M	11'0"	0283-4-4845-4	J44	1A5J18	1
W45M	11'0"	0283-4-4845-4	J45	1A5J19	1

Table 7-1. AN/TSQ- 78 Internal Interconnecting Cables - Continued

Cable Access Assembly to SA-1922/GRQ-23			From Cable Access Panel Connector	To Switching Set Radio Frequency AN/GRQ-23	Quantity
Ref. Designation	Length	Drawing No			
W46M	8'0"	0283-4-4845-1	J46	1A1J14	1
W47M	10'0"	0283-4-4845-3	J47	1A4J14	1
W48M	11'0"	0283-4-4845-4	J48	1A5J20	1
W49M	8'0"	0383-4-4845-1	J49	1A1J15	1
W50M	10'0"	0283-4-4845-3	J50	1A4J15	1
W51M	10'0"	0283-4-4845-3	J51	1A4J16	1
W52M	8'0"	0283-4-4845-1	J52	1A1J16	1
W53M	8'0"	0283-4-4845-1	J53	1A1J17	1
W54M	10'0"	0283-4-4845-3	J54	1A4J17	1
W55M	10'0"	0283-4-4845-3	J55	1A4J18	1
W56M	8'0"	0283-4-4845-1	J56	1A1J18	1
W57M	10'0"	0283-4-4845-3	J57	1A4J19	1
W58M	8'0"	0283-4-4845-1	J58	1A1J19	1
W59M	10'0"	0283-4-4845-3	J59	1A4J20	1
C-9291/GRQ-23 TO SA-1922/GRQ-23			From C-9291/ GRQ-23	To SA-1922/GRQ-23	Quantity
W60MC	25'0"	028344845-11		1A1J20	1
Cable Access Panel to MX-9596/GRQ-23			From Cable Access Panel	To MX-9596/ GRQ-23	Quantity
W61M	8'6"	0283-4-4845-2	J61	1A3J1	1
W62M	8'6"	0283-4-4845-2	J62	1A3J2	1
W63M	8'6"	0283-4-4845-2	J63	1A3J3	1
W64M	8'6"	0283-4-4845-2	J64	1A3J4	1
W65M	8'6"	0283-4-4845-2	J65	1A3J5	1
W66M	8'6"	0283-4-4845-2	J66	1A3J6	1
W67M	8'6"	0283-4-4845-2	J67	1A3J7	1
W68M	8'6"	0283-4-4845-2	J68	1A3J8	1
W69M	8'6"	0283-4-4845-2	J69	1A3J9	1
W70M	8'6"	0283-4-4845-2	J70	1A3J10	1

Table 7-1. AN/TSQ-78 Internal Interconnecting Cables - Continued

C-9291/GRQ-23 to R-390A			From C-9291/ GRQ-23	To R-390A	Quantity
W60R	5'6"	0283-4-4847-3		J103	1
Intercom Cables					
W5	6'0"	0283-4-4011-5		See Figure 7-1	31
W8	4'0"	0283-4-4011-8		See Figure 7-1	1
W9	12'0"	0283-4-4011-9		See Figure 7-1	1
W10	4'0"	0283-4-4011-10		See Figure 7-1	1
W15	12'0"	0283-4-4011-15		See Figure 7-1	8
W16	3'0"	0283-4-4011-16		See Figure 7-1	6
Remote Display Clock Cables	32'0"	0283-4-4831-7			2

Table 7-2. AN/TSQ-78 Intercommunication Cabling Chart

From CCC #1	To 1COM Panel	From CCC #2	To 1COM Panel
J1	J1	J1	2J1
J2	J2	J2	2J2
J3	J3	J3	2J3
J4	J4	J4	2J4
J5	J5	J5	2J5
J6	J6	J6	2J6
J7	J7	J7	2J7
J8	J8	J8	2J8
J9	J9	J9	2J9
J10	J10	J10	2J10
J11	J11	J15	2J15
J12	J12	J17	1J17
J13	J13	J16	Telephone-1COM
J14	J14	J18	RICS-J7*
J15	J15	J20	CCC #1-J20
J16	J16	J21	RICS-J16*
J17	J17	J22	RICS-J11*
J18	J18	J23	SWBD-J5
J20	CCC #2-J20	J24	SWBD-J6
J21	RICS-J17*	J25	SWBD-J7
J22	RICS-J12*	J26	CCC #1-J26
J23	SWBD-J2	SWBD-J 1	RICS-J1 *
J24	SWBD-J3		
J25	SWBD-J4		
J26	CCC #2-J26		

* Connected to RICS SB-2602/G Switchboard in AN/TXR-1 Radio Identification Central.

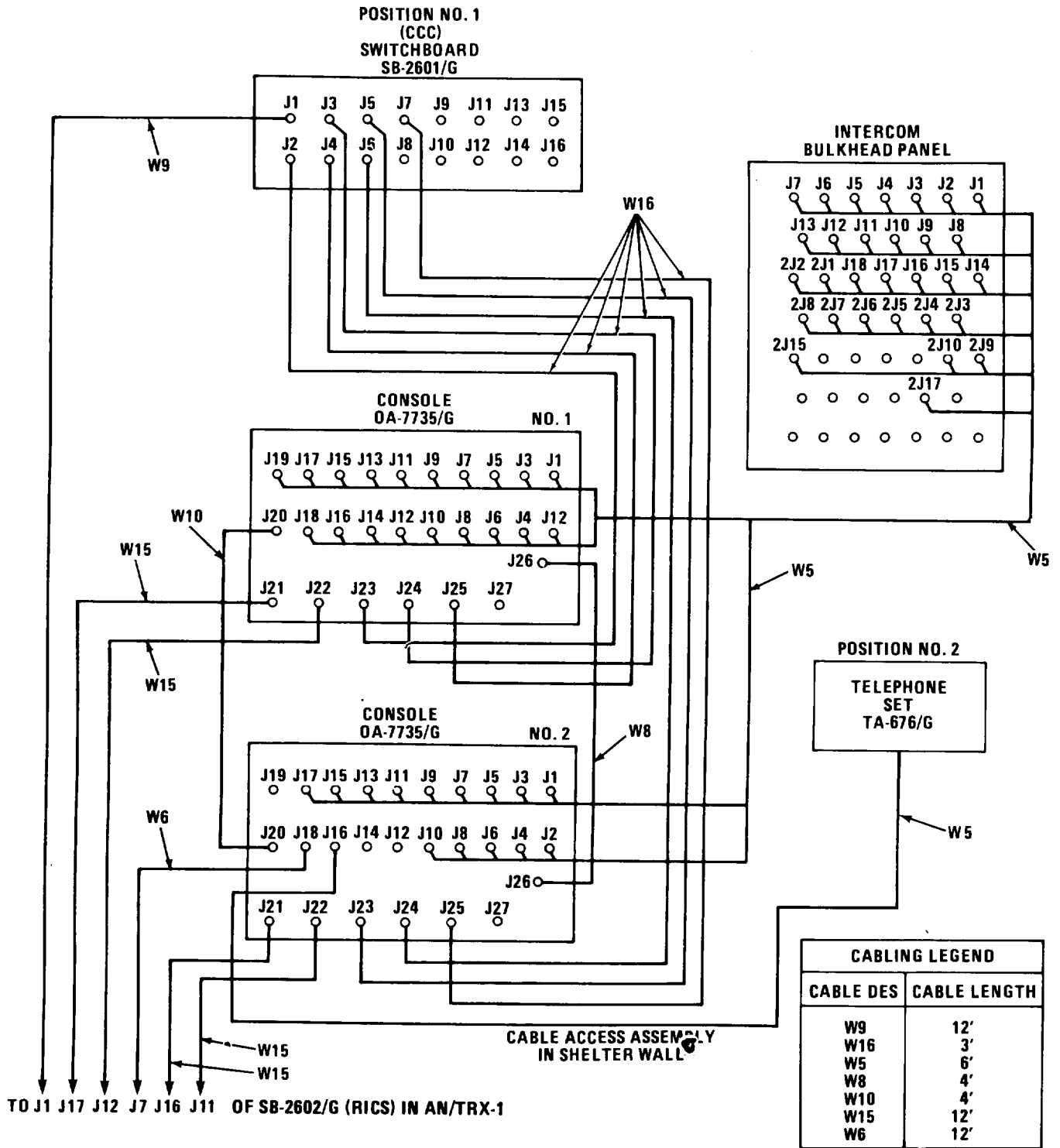


Figure 7-1. Intercommunication Cabling Diagram

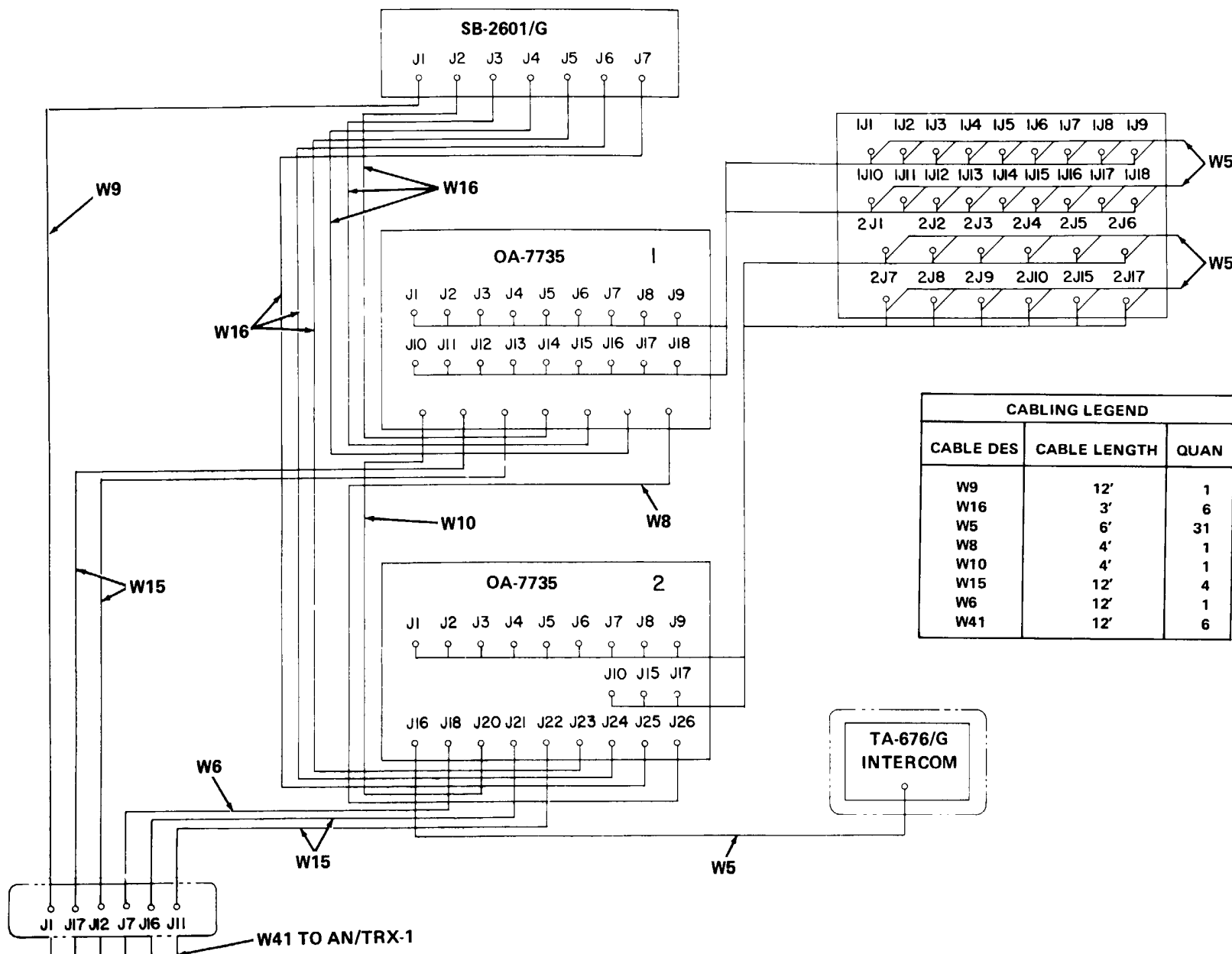


Figure 7-2. Internal Shelter Intercommunication Connection Diagram

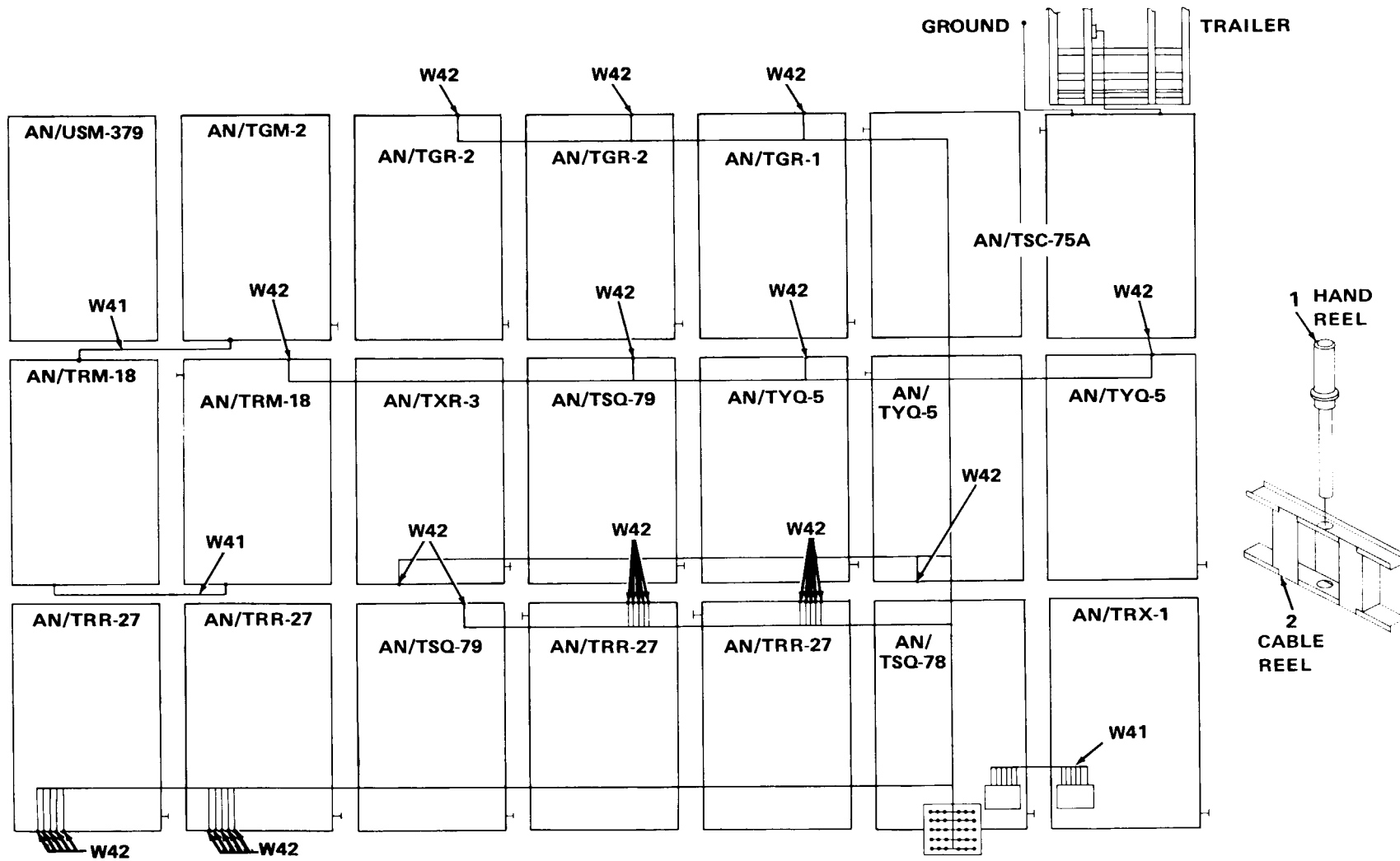


Figure 7-3. External Intercommunication Cabling System

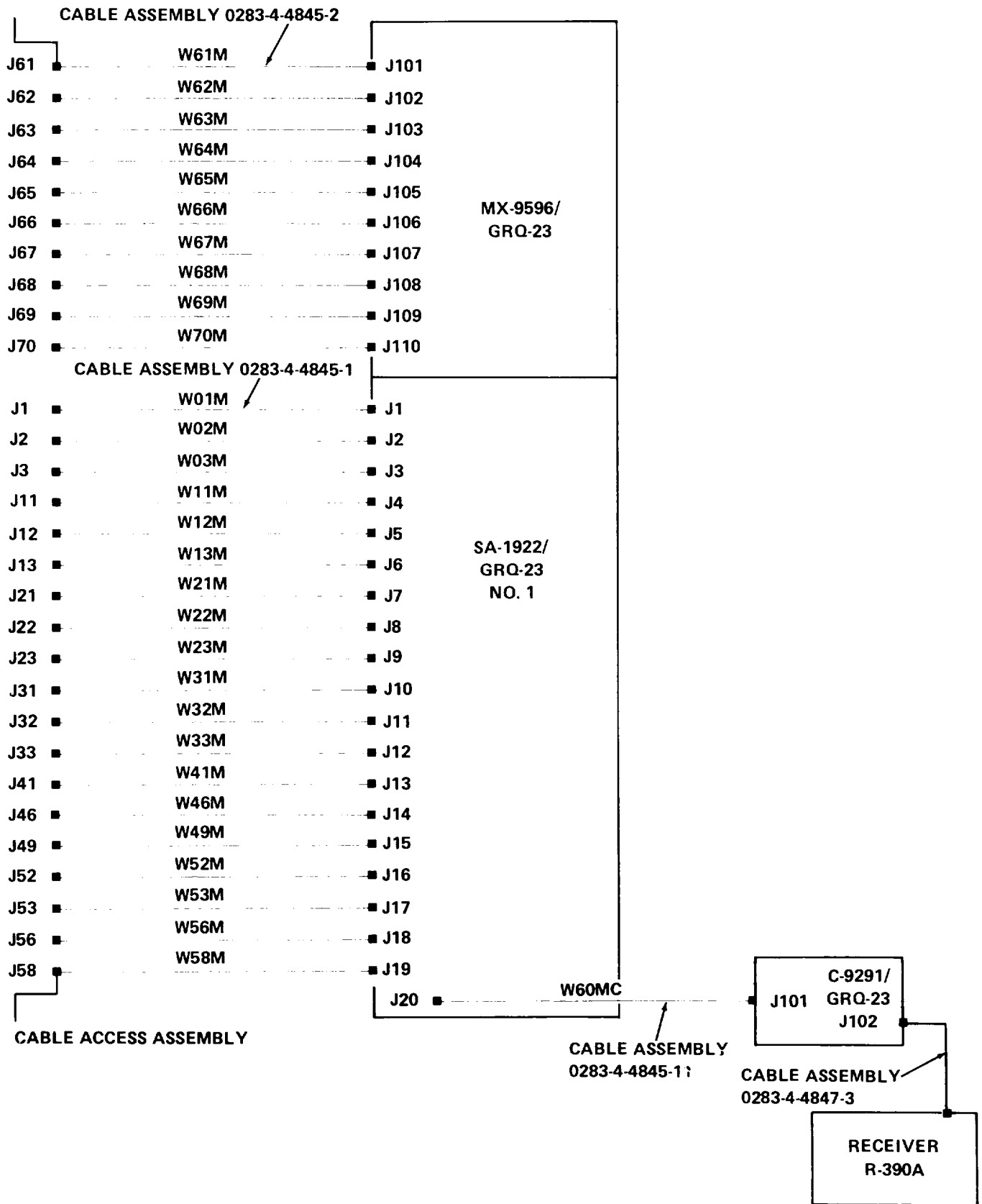


Figure 7-4. Internal Antenna RF Matrix System Cabling (Sheet 1 of 2)

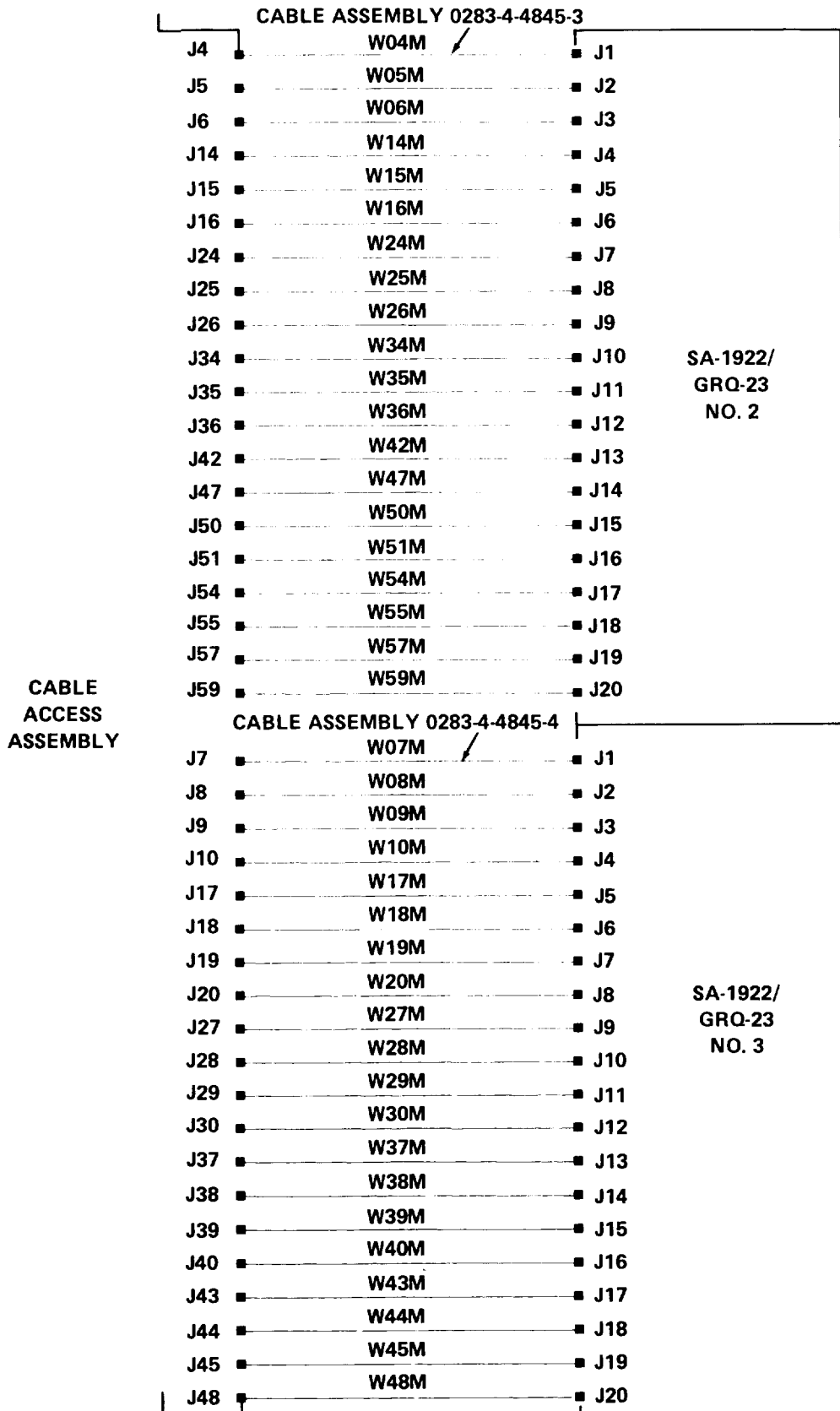


Figure 7-4. Internal Antenna RF Matrix System Cabling (Sheet 2 of 2)

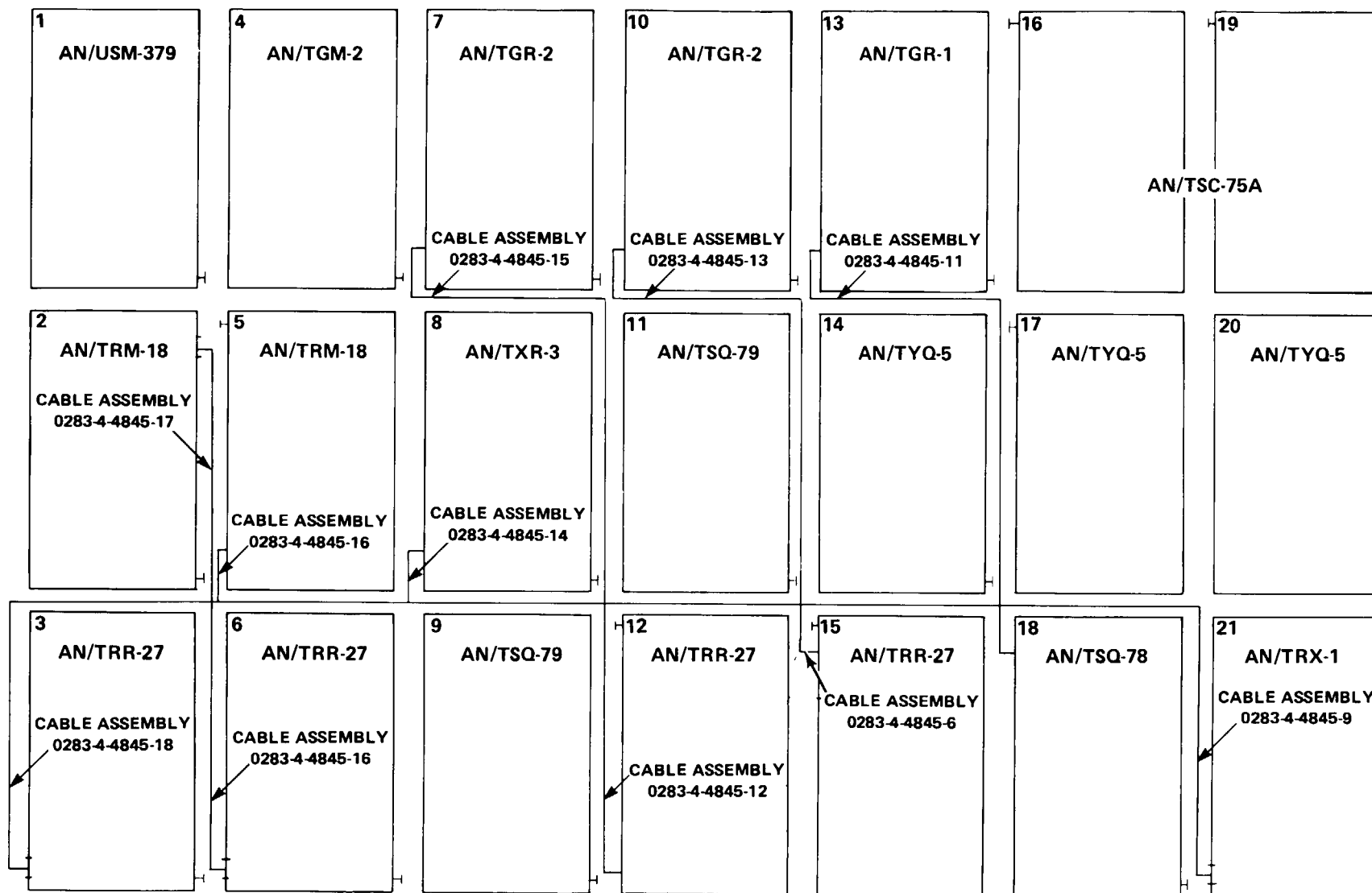


Figure 7-5. External Matrix System Cabling

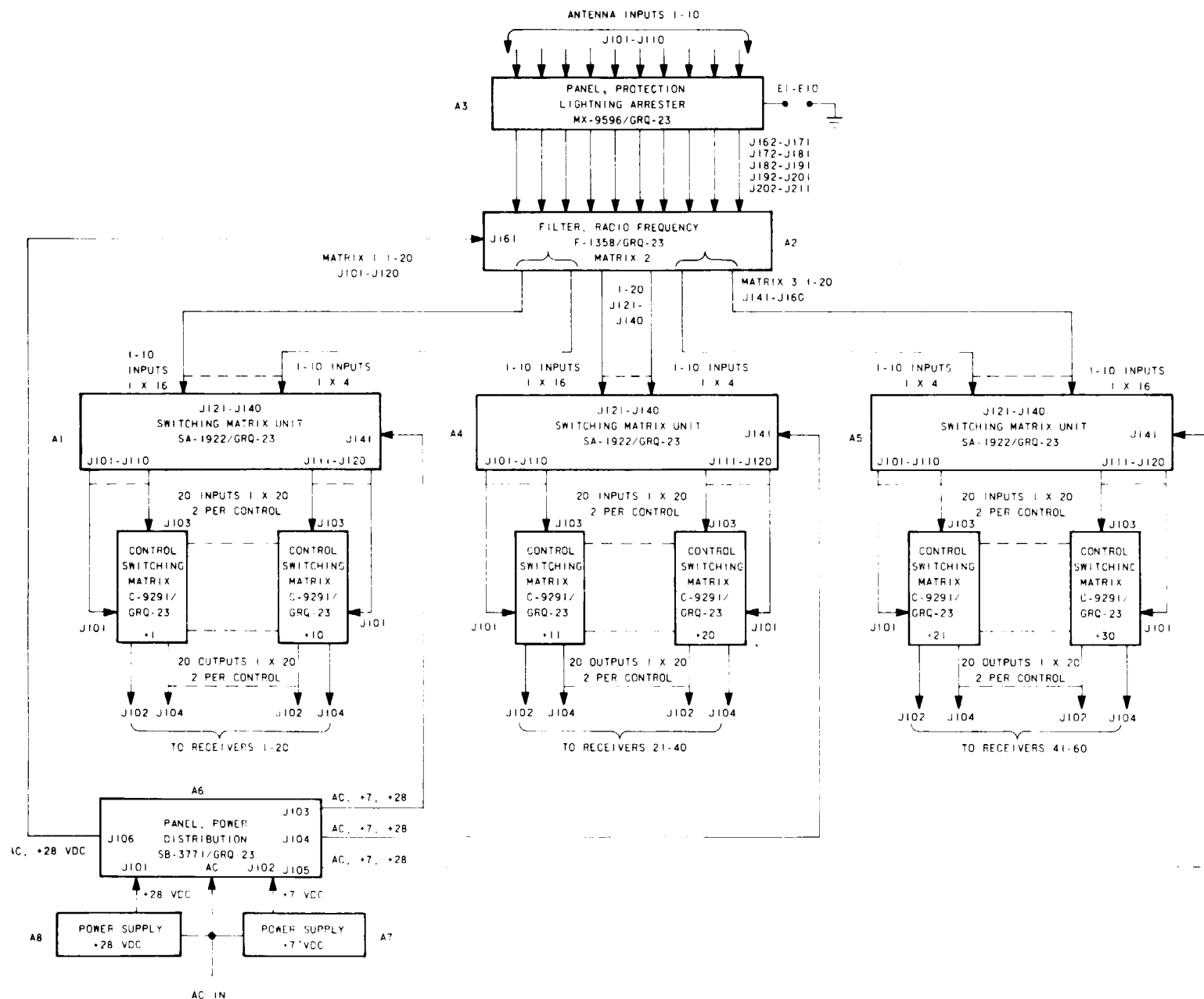


Figure 7-6. Antenna Distribution System Block Diagram

7-5. REPAIRS AND REPLACEMENTS.

a. Cable Connectors. Whenever possible, replace cable connectors without removing cables in accordance with the following procedures. If it is necessary to replace the cables, refer to paragraphs (a) and (b) below.

(1) *Intercommunication Cables and Clock Cable Connectors.*

(a) *Removal.*

- 1 Loosen screws on cable clamp.
- 2 Unscrew connector, exposing soldered wires in cups.
- 3 Apply soldering iron to each cup until connections pull free.
- 4 Remove old plug.

(b) *Replacement.*

- 1 Dress or cut back wire ends and tin ends for assembly.
- 2 Solder wires to new connector.
- 3 Screw connector together.
- 4 Tighten screws on cable clamp.

(2) *Antenna Distribution Cable Connectors.* To replace the cable connectors on the antenna distribution cables, cut off the military UG-series connectors and replace with a new connector as shown in figures 7-7 through 7-9.

b. Cables Assemblies. Cable assemblies used in the AN/TSQ-78 are removed and replaced as follows:

WARNING

Turn off all power to equipment and disconnect power cable plugs before disconnecting interconnecting

cables. Dangerous voltages are present in the equipment.

(1) *Removal.*

(a) Remove power cord plug from rack power receptacle to disconnect the power to the equipment.

(b) Disconnect the connector at each end of the cable assembly. (When necessary, use the procedures in paragraph 5-9 to remove or pull any interfering equipment far enough out of the rack to reach rear cable connections.)

(c) Remove cable assembly; remove any tape, lacing cord, or cable ties that interfere.

(2) *Replacement.*

(a) Insert the cable assembly in the space available for the cable and connect to the connector at each end.

(b) Secure and support the cable with cable ties, lacing cord, or tape.

(c) Replace the equipment that interfered with cable removal and replacement in accordance with the procedures in paragraph 5-9.

(d) Insert the power cord plug in the rack power receptacle to connect the power to the equipment.

c. Rotary Chair Components. Replace the tiedown assembly and spring pin (figure 2-1) as follows:

(1) Turn chair over.

(2) Remove tiedown assembly by knocking out spring pin that holds tiedown assembly to stem of chair. Use standard 3/16-inch drive pin punch and hammer.

(3) Pull old tiedown assembly away from stem of chair.

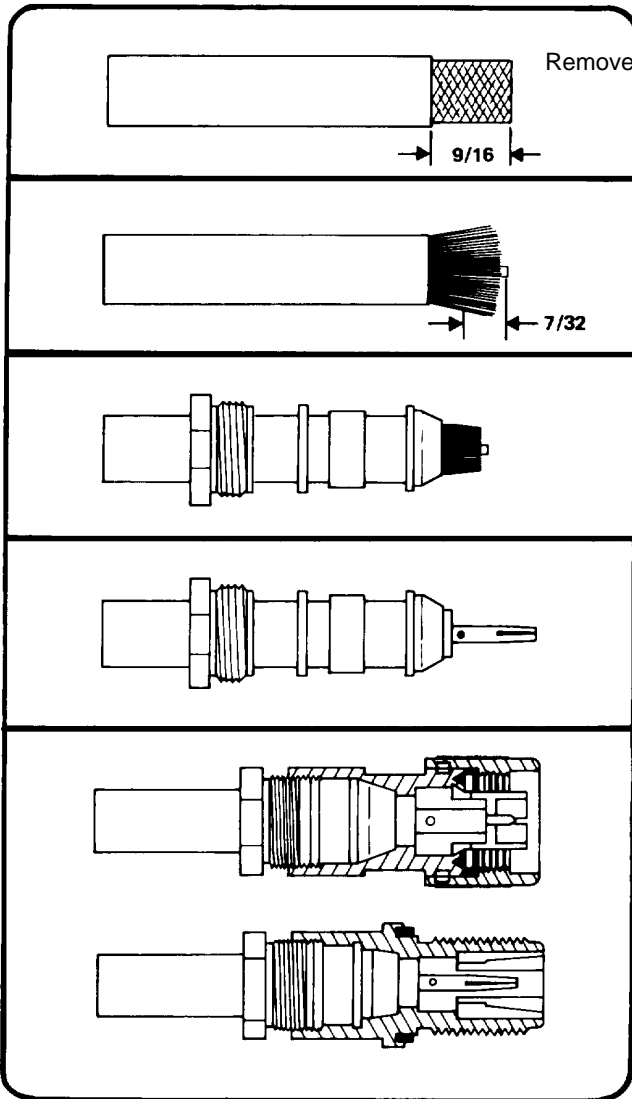
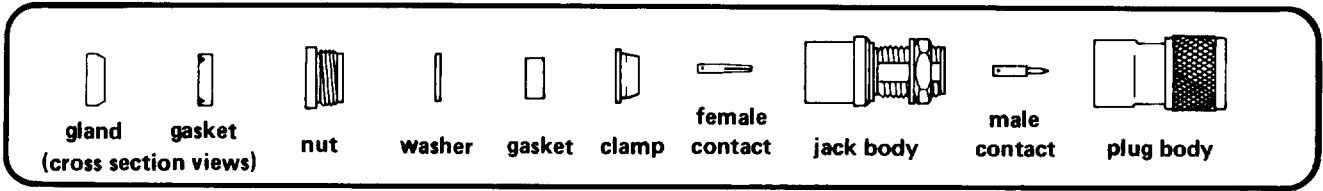
(4) Install new tiedown assembly on stem of chair.

(5) Align hole in tiedown assembly with hole in stem.

(6) Install new spring pin by driving it in place with hammer.

Section V. DIRECT SUPPORT AND GENERAL SUPPORT TESTING PROCEDURES

7-6. GENERAL. Refer to the equipment manuals listed in Appendix A for unit testing procedures.



Remove 9/16" of vinyl jacket. When using double shielded cable, remove 5/8".

9/16

Comb out copper braid as shown. Cut off dielectric 7/32" from end. Tin center conductor.

7/32

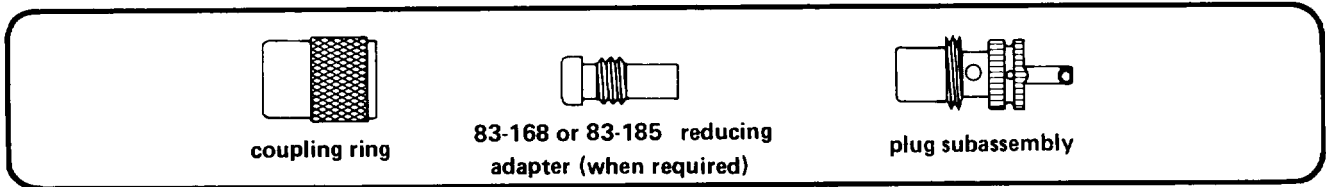
Taper braid as shown. Slide nut, washer and gasket over vinyl jacket. Slide clamp over braid with internal shoulder or clamp flush against end of vinyl jacket. When assembling connectors with gland, be sure knife edge is toward end of cable and groove in gasket is toward the gland.

Smooth braid back over clamp and trim. Soft solder contact to center conductor. Avoid use of excessive heat and solder. See that end of dielectric is dean. Contact must be flush against dielectric. Outside of contact must be free of solder.

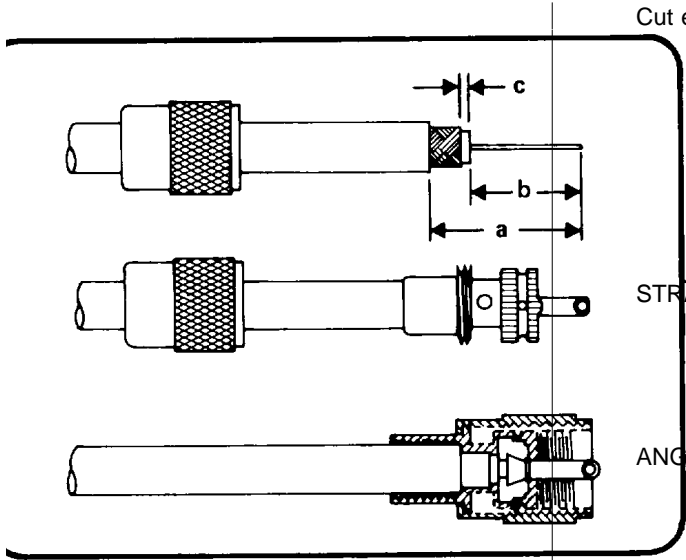
Slide body into place carefully so that contact enters hole in insulator. Face of dielectric must be flush against insulator. Slide completed assembly into body by pushing nut. When nut is in place, tighten with wrenches. In connectors with gland, knife edge should cut gasket in half by tightening sufficiently.

NOTE: For armored cable slide cap over armor first. Push armor and cap back out of way and proceed with assembly as directed above using armor clamp in place of standard clamp nut. When assembly is complete straighten bulge in armor and trim so it can be clamped between nut and cap.

Figure 7-7. N-type Connectors



plugs 83-1SP, 83-1SP-1002, 83-21SP, 83-59, 83-67, 83-822



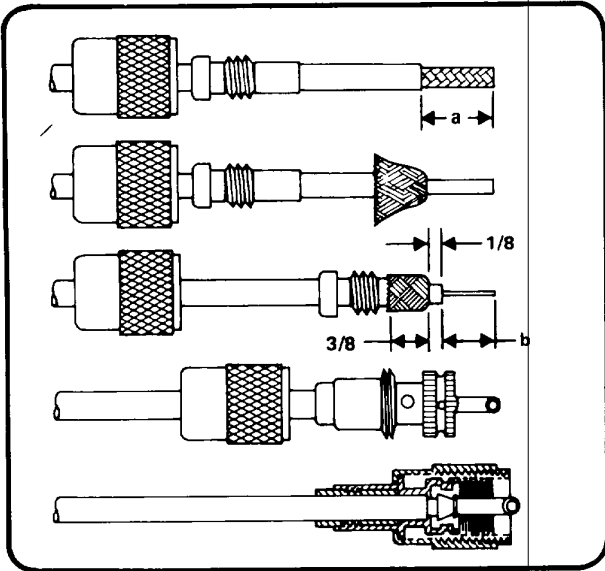
Cut end of cable even and strip jacket, braid, and dielectric to dimensions shown in table. Tin exposed center conductor and braid.

STRIPPING DIMS. (+1/64)	a	b	c
83-1SP, 83-1SP-1002	1-1/4	5/8	1/16
83-21SP	1	11/16	1/8
83-59, 83-67	27/32	1/4	9/64
83-822	1-1/8	5/8	1/16

STRAIGHT PLUGS. Slide coupling ring on cable. Screw the plug subassembly on cable. Solder assembly to braid through solder holes, making a good bond between braid and shell. Solder conductor to contact. Do not use excessive heat. For final assembly, screw coupling ring on plug subassembly.

ANGLE PLUGS. Screw plug body assembly on cable. Solder assembly to braid as above. Solder conductor to contact through hole in back of connector. Screw cap into place.

plugs 83-1SP, 83-1SP-1002, 83-59, 83-67, 83-822, 83-750 using adapter 83-168 or 83-185



Cut end of cable even. Remove vinyl jacket to dimension a in table below. Slide coupling ring and adapter on cable.

STRIPPING DIMS. (+1/64)	a	b
83-1SP, 83-1SP-1002, 83-822, 83-750	3/4	5/8
83-59, 83-67	1/2	5/16

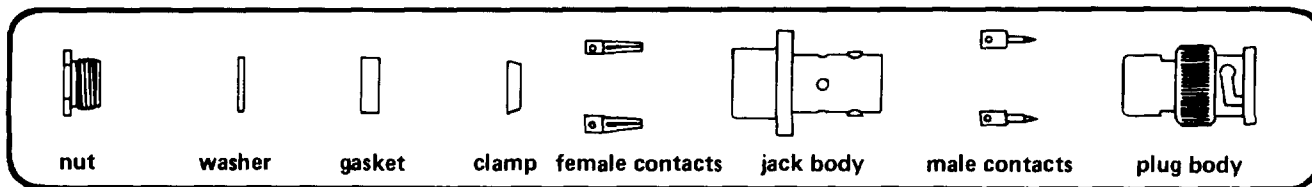
Fan braid slightly and fold back as shown.

Position adapter flush with cable jacket. Press braid down over body of adapter and trim to 3/8". Bare conductor to dimension b. Tin exposed center conductor.

Screw plug subassembly on adapter. Solder braid to shell through solder holes. Use enough heat to create bond of braid to shell. Solder conductor to contact.

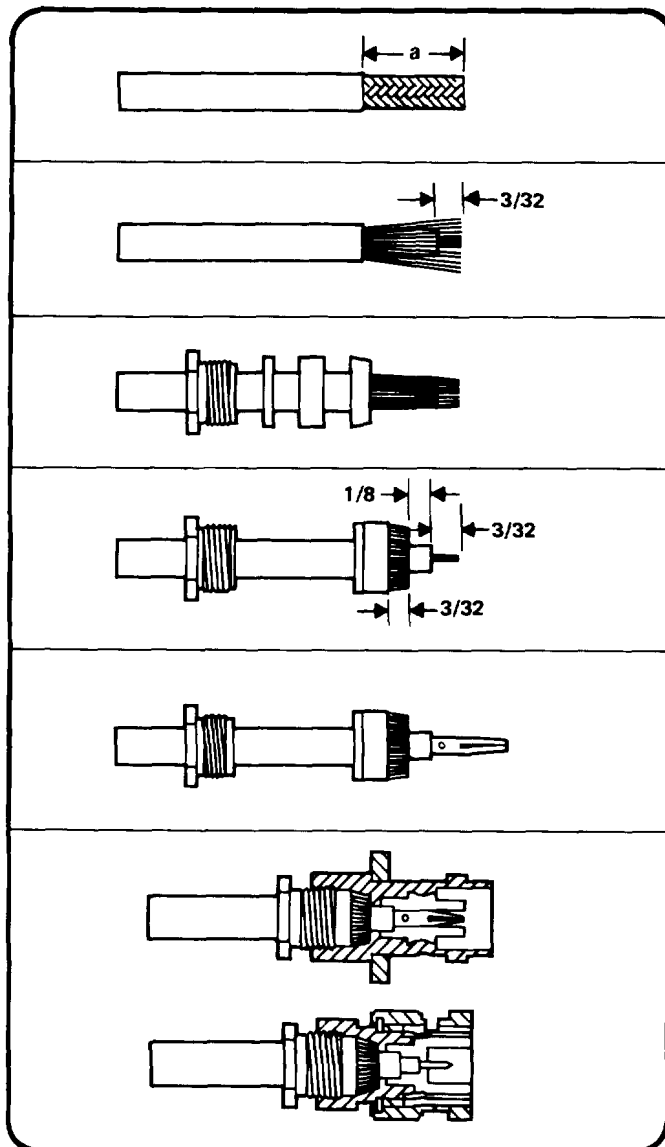
For final assembly, screw coupling ring on plug subassembly.

Figure 7-8. UHF-type Connectors



Cut jacket to correct dimension:

RG-/U cable	dimension a
55, 71, 142	5/16
58, 140, 141	9/32
59, 62, 210	19/64



Fray shield and strip inner dielectric 3/32". Tin center conductor.

Taper braid and slide nut, washer, gasket and clamp over braid. Clamp is inserted so that its inner shoulder fits squarely against end of cable jacket.

With clamp in place, comb out braid, fold back smooth as shown and trim 3/32" from end.

Slip contact in place, butt against dielectric and solder. Remove excess solder from outside of contact. Be sure cable dielectric is not heated excessively and swollen so as to prevent dielectric from entering into connector body.

Push assembly into body as far as it will go. Slide nut into body and screw in place with wrench until tight. For this operation, hold cable and shell rigid and rotate nut.

Figure 7-9. BNC-type Connectors

CHAPTER 8

MATERIEL USED IN CONJUNCTION WITH MAJOR ITEM

8-1. GENERAL. The materiel used in conjunction with the Operations Control Central AN/TSQ-78 is determined by the specifications for a communications complex such as the Operational Unit, Transportable System (OUTS) of which the AN/TSQ-78 is a part.

For a complete description of auxiliary equipment used with the OUTS and the Mobile Facility AN/MSA-34, refer to TM 32-5811-021-14 and TM 32-9999-200-24, respectively.

8-1/(8-2 blank)

APPENDIX A

REFERENCES

<u>Reference</u>	<u>Title</u>
TM 11-5820-357-10	Operator's Manual: Radio Receiver R-390A/URR
TM 11-5820-357-20	Organizational Maintenance Manual: Radio Receiver R-390A/URR
TM 11-5820-357-35	Field and Depot Maintenance Manual: Radio Receiver R-390A/URR
TM 11-5830-225-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools): Rack, Electrical Equipment MT-1579/G (FSN 5830-327-5066)
TM 32-2330-001-24&P	Operator, Organizational, Direct Support, General Support, and Depot Maintenance Manual (Including Depot Repair Parts and Special Tools List) for V-398/MSA-34 Semitrailer Low Bed
TM 32-5410-217-14&P	Operator's, Organizational, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List): Shelter, Electrical Equipment S-389/MSA-34
TM 32-5811-021-14	Operator's, Organizational, Direct Support and General Support Maintenance Manual for Operational Unit, Transportable System
TM 32-5895-218-14&P	Operator's, Organizational, Direct Support and General Support Maintenance Manual for Radio Identification Central AN/TRX-1
TM 32-5895-227-24P	Operator, Organizational, Direct Support and General Support Maintenance Repair Parts List (Including Depot Maintenance) Communication Central AN/MSQ-71
TM 32-5895-753-14	Operator's, Organizational, Direct Support and General Support Maintenance Manual: Manual Switching Set, Radio Frequency AN/GRQ-23
TM 32-9999-200-24	Operator's, Organizational, Direct Support, General Support, and Depot Maintenance Manual (Including Repair Parts List) for Operations and Electrical Facility, Mobile AN/MSA-34
TM 38-750	The Army Maintenance Management System (TAMMS)
TM 43-0139	Painting Instructions for Field Use
TM 740-90-1	Administrative Storage of Equipment
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command)
AR 700-42	Classification, Reclassification, Maintenance, Issuance and Reporting of Maintenance Training Aircraft
CTA 50-970	Expendable Items (Except Medical, Class V, Repair Parts and Heraldic Items)
DA FORM 2404	Equipment Inspection and Maintenance Worksheet

<u>Reference</u>	<u>Title</u>
Standard Form 364	Report of Discrepancy (ROD)
SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment
SB 708-41/42	Federal Supply Code for Manufacturers, United States and Canada. Name to Code and Code to Name (GSA FSS H4-1/H4-2)
SF 368	Quality Deficiency Report
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters
TB 43-0124	Maintenance and Repair Procedures for S-141/G, S-144/G, S-250/G, S-280/G and S-318/G Type Shelters
TB SIG 291	Safety Measures to be Observed When Installing and Using Whip Antennas, Field-Type Masts, Towers and Antennas and Metal Poles that Are Used With Communications, Radar, and Direction Finder Equipment
Chrono-log Corp. Instruction Manual 2583 W. Chester Pike Broomel, Penn. 19008	Model 6NR Remote Display

APPENDIX B

COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

B1 SCOPE. This appendix lists integral components of and Basic Issue Items (BII) for the Operations Control Central AN/TSQ-78 to help you inventory items required for safe and efficient operation.

B-2 GENERAL. This Components of End Item List is divided into the following sections:

a. Section II. Integral Components of the End Item. These items, when assembled, comprise the AN/TSQ-78 and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

b. Section III. Basic Issue Items (BII). These are the minimum essential items required to place the AN/TSQ-78 in operation, to operate it, and to perform emergency repairs. Although shipped separately packed they must accompany the AN/TSQ-78 during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement BII, based on TOE/MTOE authorization of the end item.

B3 EXPLANATION OF COLUMNS.

a. Illustration. This column is divided as follows:

(1) *Figure Number.* Indicates the figure number of the illustration on which the item is shown.

(2) *Item Number.* The number used to identify item called out in the illustration.

b. National Stock Number. Indicates the National Stock Number assigned to the item and which will be used for requisitioning.

c. Part Number. Indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

d. Description. Indicates the Federal item name and, if required, a minimum description to identify the item.

e. Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

f. Usable on Code. "USABLE ON" codes are included to help you identify which component items are used on the different models. Identification of the codes used in these lists are: none.

g. Quantity Required (Qty Req'd). This column lists the quantity of each item required for a complete major item.

h. Quantity. This column is left blank for use during an inventory. Under the Rcv'd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major item at a later date such as for shipment to another site.

Section II. INTEGRAL COMPONENTS OF END ITEM

(1) Illustration		(2) National Stock Number	(3) Part No.	(4) Description	(5) Location	(6) Usable On Code	(7) Qty Reqd	(8) Quantity			
(a) Figure No.	(b) Item No.							Rev'd	Date	Date	Date
E-1	1		S389/MSA-34	ELECTRICAL EQUIPMENT SHELTER S-389/MSA-34 (15942)			1				
E-1	53	6110-00-835-5025	SB-2601/G	INTERCOMMUNICATIONS SWITCHBOARD SB-2601/G (80058)			1				
E-1	49	5820-00-045-8541	OA-7735/G	COMMUNICATION CONTROL CONSOLE OA-7735/G (80058)			2				
E-1	2	5830-00-327-5066	MT-1579/G	ELECTRICAL EQUIPMENT RACK MT-1 579/G (15942)			4				
E-1	30		6NR	REMOTE DISPLAY DIGITAL CLOCK 6NR (11963)			1				
E-1	31	7125-00-990-9948	CY-6154/G	STORAGE CABINET CY-6154/G (80058)			8				
E-1	42	5820-40-538-7555	R-390A/URR	RADIO RECEIVER R-390A/URR (80058)			1				
E-1	52	5805-00-945-8549	TA-676/G	TELEPHONE SET TA-676/G (80058)			1				
1-3		5895-00213-3022	C-9291/ GRQ-23	SWITCHING MATRIX CONTROL C-9291/GRQ-23 (80058)			1				
1-3				RF SWITCHING SET AN/GRQ-23			1				
E-1	47	5830-00-327-5031	FN-87/G	TYPEWRITER AND WRITING SHELF FN-87/G (80058)			3				
E-1	68	6110-00-499-4135	MX-9596/ GRQ-23	PROTECTION LIGHTNING ARRESTER PANEL MX-9596/ GRQ-23 (80058)			1				
E-1	72		F-1358/ GRQ-23	RADIO FREQUENCY FILTER F-1358/GRQ-23 (80058)			1				
E-1	67	5895-00-208-0107	SA-1922/ GRQ-23	SWITCHING MATRIX UNIT SA-1922/GRQ-23 (80058)			3				
E-1	70		0099-14123-1	CABLE ACCESS ASSEMBLY (15942)			1				
E-1	66	6110-00-332-2600	SB-3771/ GRQ-23	PANEL, POWER DISTRIBUTION SB-3771/ GRQ-23 (80058)			1				
E-1	20		028343300-1	SAFE (MODIFIED) CY-4842/G (15942)			1				
E-1	64	6625-01-048-2187	LSR28-30- OVNM	POWER SUPPLY (52542)			1				
E-1	65	6625-01-048-2186	L3R6-40- OVNM	POWER SUPPLY (52542)			1				
E-1	43		028343005-1	TYPEWRITER (15942)			1				
E-1	11		02834-3004-1	CHAIR TIEDOWN ASSEMBLY (15942)			3				
E-1	46		RFC 1021-1	MATRIX DUAL CONTROL UNIT RFC 1021-1 (23929)			1				

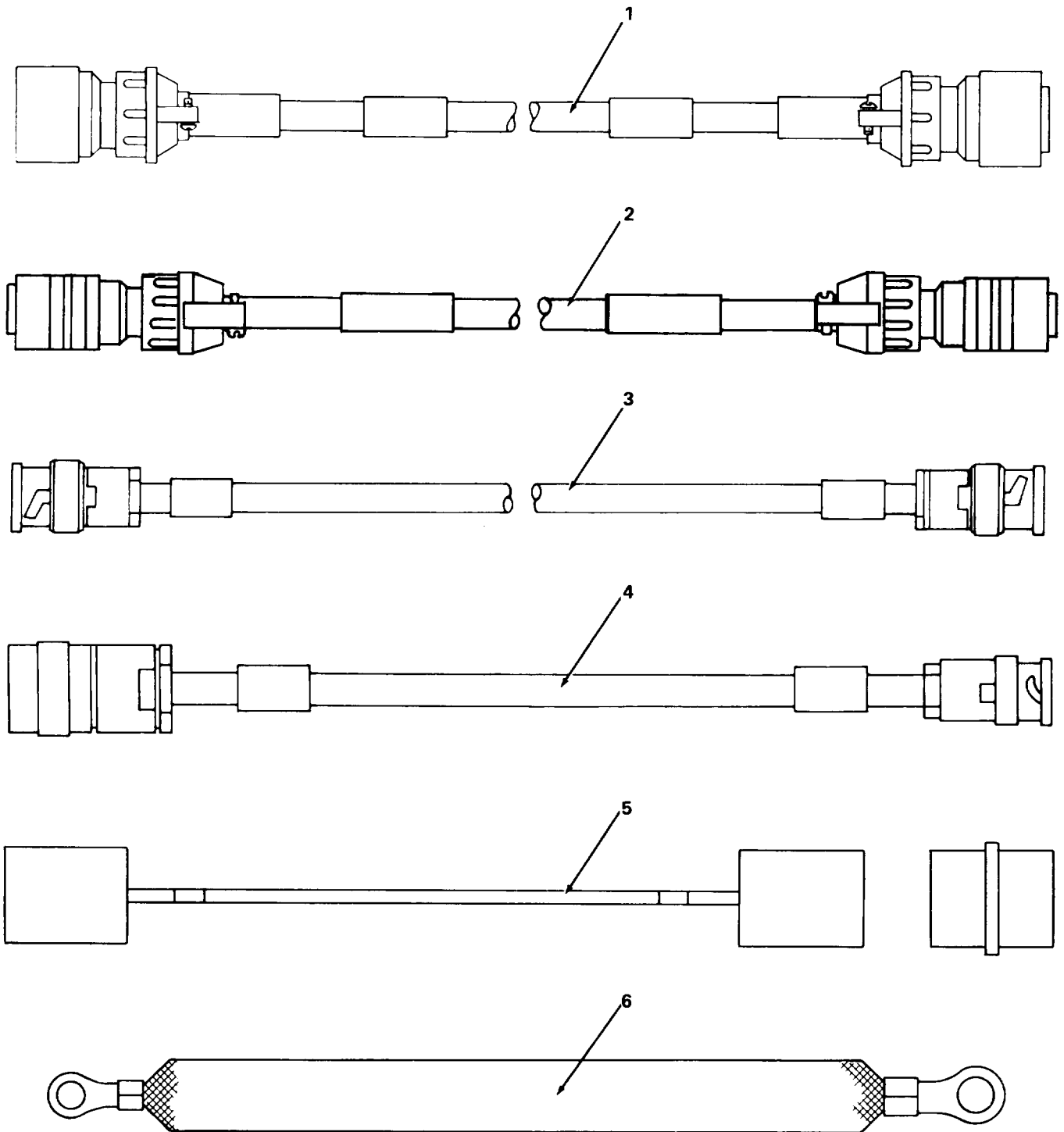


Figure B-1. Basic Issue Items

Section III. INTEGRAL COMPONENTS OF END ITEM

(1) Illustration		(2) National Stock Number	(3) Part No.	(4) Description	(5) Location	(6) Usable On Code	(7) Qty Reqd	(8) Quantity			
(a) Figure No.	(b) Item No.							Rev'd	Date	Date	Date
B-1	1		0283-4-3860-1	CABLE ASSEMBLY W41 (15942)			8				
B-1	1		0283-4-3860-2	CABLE ASSEMBLY W42 (15942)			30				
			0283-4-4011-4	CABLE ASSEMBLY W4 (15942)			3				
B-1	1		0283-4-4011-5	CABLE ASSEMBLY W5 (15942)			31				
B-1	1		0283-4-4011-6	CABLE ASSEMBLY W6 (15942)			1				
B-1	1		0283-4-4011-7	CABLE ASSEMBLY W7 (15942)			15				
B-1	2		0283-4-4011-8	CABLE ASSEMBLY W8 (15942)			1				
B-1	1		0283-4-4011-9	CABLE ASSEMBLY W9 (15942)			1				
B-1	1		0283-44011-10	CABLE ASSEMBLY W10 (15942)			1				
B-1	1		0283-4-4011-15	CABLE ASSEMBLY W15 (15942)			8				
B-1	1		0283-4-4011-16	CABLE ASSEMBLY W16 (15942)			6				
B-1	3		0283-4-4845-1	CABLE MATRIX (15942)			19				
B-1	3		0283-44845-2	CABLE MATRIX (15942)			10				
B-1	3		0283-4-4845-3	CABLE MATRIX (15942)			8				
B-1	3		0283-4-4845-4	CABLE MATRIX (15942)			10				
B-1	3		0283-4-845-11	CABLE MATRIX (15942)			1				
B-1	4		02834-4847-3	CABLE ASSEMBLY, MATRIX RECEIVER LINK (15942)			1				
B-1	5		0283-44831-7	CLOCK CABLE ASSEMBLY (15942)							
B-1	6	5995-01-012-6993	0283-4-2002-1	STABILIZER GROUND STRAP (15942)			4				
E-16	1	7110-00-273-891	AAC00293	ROTARY CHAIR (81348)			3				
E-1	61	7520-00-162-6178	1031	PENCIL SHARPENER 1031 (08287)			1				
E-1	62	6515-00-660-0046		ORAL RESUSCITATOR			1				

APPENDIX D

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

D-1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the special tools and test equipment required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

D-2. MAINTENANCE FUNCTIONS.

a. *Inspect.* To determine the serviceability of an item by comparing its physical, mechanical and/or electrical characteristics with established standards through examination.

b. *Test.* To verify serviceability and detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. *Service.* Operations required periodically to keep an item in proper operating condition; i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. *Adjust.* To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. *Align.* To adjust specified variable elements of an item to bring about optimum or desired performance.

f. *Calibrate.* To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. *Install.* The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. *Replace.* The act of substituting a serviceable like type part, subassembly, or module for an unserviceable counterpart.

i. *Repair.* The application of maintenance services or other maintenance actions to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), and item, or system.

j. *Overhaul.* That maintenance effort (services/actions) necessary to restore an item to a completely serviceable/ operational condition as prescribed by maintenance standards; i.e., Depot Maintenance Work Requirement in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. *Rebuild.* Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipments/components.

D-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. *Column 1, Group Number.* Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. *Column 2, Component/Assembly.* Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. *Column 3, Maintenance Function.* Column 3 lists the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see para. D-2.)

d. *Column 4, Maintenance Level.* Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform the maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate "work time"

figures will be shown for each level. The number of man-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

- COperator or crew
- O.....Organizational maintenance
- FDirect support maintenance
- HGeneral support maintenance
- DDepot maintenance

e. Column 5, Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, Test, Measurement, and Diagnostic Equipment (TMDE), and support equipment required to perform the designated function.

f. Column 6, Remarks. This column shall, when applicable, contain a letter code, in alphabetical order, which shall be keyed to the remarks contained in Section IV.

D-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III

a. Column 1, Reference Code. The tool and TMDE reference code correlates with a code used in the MAC, Section II, column 5.

b. Column 2, Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National/NA TO Stock Number. The National Stock Number (NSN) of the tool or TMDE.

e. Column 5, Tool Part Number. The manufacturer's part number.

D-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV

a. Reference Code. The code recorded in Section II, column 6.

b. Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
00	OPERATIONS CONTROL CENTRAL AN/TSQ-78	Inspect Service Install Repair Overhaul Rebuild	0.3 0.3	0.5 2.0 2.0			80 120	1 2,3	
01	SHELTER S-389/MSA-34 (MODIFIED)	Inspect Service Install Repair Rebuild	0.3 0.3	0.5 1.5	1.5		40	1,2	A
02	ELECTRICAL EQUIPMENT RACK ASSEMBLY (POSITION 1)								
0201	ELECTRICAL EQUIPMENT RACK	Inspect Service Replace Repair	0.2 0.3	1.0 0.8	1.2			1,2,3	B
0202	SWITCHBOARD INTERCOMMUNICATIONS SB-2601/G	Inspect Test Replace Repair	0.2	0.2 1.0	1.0			3	C
0203	COMMUNICATIONS CONTROL CONSOLE OA-7735/G	Inspect Test Replace Repair	0.2	0.2 1.0	1.0			3	C
020301	CONSOLE EXTENSION ASSEMBLY	Inspect Replace Repair	0.2	0.5 0.5				2	
0204	TYPEWRITER AND WRITING SHELF FN-87/G	Inspect Replace Repair	0.2	1.0	1.0			1 2 2	
03	ELECTRICAL EQUIPMENT RACK ASSEMBLY (POSITION 2)								
0301	ELECTRICAL EQUIPMENT RACK	Inspect Service Replace Repair	0.2 0.3	1.0 0.8	1.2			1,2,3	B
0302	DIGITAL CLOCK REMOTE DISPLAY 6NR	Inspect Test Replace Repair	0.1	0.3 0.5	1.0			2 1,3	

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
030201	NIXIE CHASSIS ASSEMBLY	Inspect Test Replace Repair	0.1	0.1 0.5	1.0			2 1,3	
030202	CLOCK CABLE ASSEMBLY	Inspect Replace	0.1		0.2				
0303	INTERCOMMUNICATION BULKHEAD ASSEMBLY	Inspect Replace Repair	0.2	0.7	0.6				
0304	TELEPHONE SET TA-676/G	Inspect Test Replace Repair	0.2	0.2 0.4	0.5			3 2 2	B
0305	RADIO RECEIVER R-390A/URR	Inspect Test Replace Repair	0.3	0.4 1.0	2.0			3	D
0306	SWITCHING MATRIX CONTROL C-9291/GRQ-23	Inspect Test Replace Repair	0.2	0.1 0.5	1.0				E
0307	TYPEWRITER	Inspect Test Replace Repair	0.3	0.4 1.0	2.0			1	
0308	TYPEWRITER AND WRITING SHELF FN-87/G	Inspect Replace Repair	0.2	1.0	1.0			2	
04	SAFE (MODIFIED) (POSITION 3)	Inspect	0.2						
05	ELECTRICAL EQUIPMENT RACK ASSEMBLY (POSITION 4)								
0501	ELECTRICAL EQUIPMENT RACK	Inspect Service Replace Repair	0.2 0.3	1.0 0.8	1.2			1,2,3	B
0502	RADIO FREQUENCY SWITCHING SET AN/GRQ-23	Inspect Test Replace Repair	0.2	0.1 0.5	1.0				E
050201	SWITCHING MATRIX UNIT SA-1922/GRQ-23	Inspect Test Replace Repair	0.2	0.2 0.3	2.0				E

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
050202	RADIO FREQUENCY FILTER F-1358/GRQ-23	Inspect Test Install Replace Repair	0.3	1.7 0.5 0.5	3.6				E
050203	PROTECTION LIGHTNING ARRESTER PANEL MX-9596/GRQ-23	Inspect Install Replace	0.2	0.3 0.3					E
050204	SWITCHING MATRIX UNIT SA-1922/GRQ-23	Inspect Test Replace Repair	0.2	0.2 0.3	2.0				E
050205	SWITCHING MATRIX UNIT SA-1922/GRQ-23	Inspect Test Replace Repair	0.2	0.2 0.3	2.0				
050206	POWER DISTRIBUTION PANEL SB-3771/GRQ-23	Inspect Test Replace Repair	0.2	0.3 0.3	1.2				E
050207	POWER SUPPLY +7 VDC	Inspect Test Replace Repair	0.4	1.5 0.5	6.0				E
050208	POWER SUPPLY +28 VDC	Inspect Test Replace Repair	0.4	1.5 0.5	6.0				E
06	ELECTRICAL EQUIPMENT RACK ASSEMBLY(POSITION 5)								
0601	ELECTRICAL EQUIPMENT RACK	Inspect Service Replace Repair	0.2 0.3	1.0 0.8	1.2			1,2,3	B
0602	TYPEWRITER AND WRITING SHELF FN-87/G	Inspect Replace Repair	0.2	1.0	1.0			1 2 2	
07	ELECTRICAL CONNECTION ASSEMBLY								

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
0701	CABLE ACCESS ASSEMBLY	Inspect Test Replace Repair	0.1 0.1	1.0 0.6				2	
0702	FEED THRU PANEL ASSEMBLY	Inspect Test Replace Repair	0.1 0.1	1.0 0.6				2	
08	CHAIR ASSEMBLY WITH TIEDOWN	Inspect Replace Repair	0.1		0.1 0.5			2	
0801	FLOOR SOCKET ASSEMBLY	Inspect Replace Repair	0.1		0.3	0.3		2	
09	GROUP, INTERCONNECTING CABLES	Inspect Repair	0.2	0.3	1.5			2,4	F
0901	CABLE ASSEMBLY W41 0283-4-3860-1	Inspect Test Replace Repair	0.1	0.2	0.3 0.5				
0902	CABLE ASSEMBLY W42 0283-4-3860-2) (SAME AS GROUP 0901)								
0903	CABLE ASSEMBLY W4 0283-4-4011-4 (SAME AS GROUP 0901)								
0904	CABLE ASSEMBLY W5 0283-4-4011-5 (SAME AS GROUP 0901)								
0905	CABLE ASSEMBLY W6 0283-4-4011-6 (SAME AS GROUP 0901)								
0906	CABLE ASSEMBLY W7 0283-4-4011-7 (SAME AS GROUP 0901)								
0907	CABLE ASSEMBLY W8 0283-4-4011-8 (SAME AS GROUP 0901)								
0908	CABLE ASSEMBLY W9 0283-4-4011-9 (SAME AS GROUP 0901)								

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
0909	CABLE ASSEMBLY W10 0283-4-4011-10 (SAME AS GROUP 0901)								
0910	CABLE ASSEMBLY W15 0283-4-4011-15 (SAME AS GROUP 0901)								
0911	CABLE ASSEMBLY W16 0283-4-4011-16 (SAME AS GROUP 0901)								
0912	CABLE, MATRIX 0283-4-4845-1 (SAME AS GROUP 0901)								
0913	CABLE, MATRIX 0283-4-4845-2 (SAME AS GROUP 0901)								
0914	CABLE, MATRIX 0283-4-4845-3 (SAME AS GROUP 0901)								
0915	CABLE, MATRIX 0283-4-4845-4 (SAME AS GROUP 0901)								
0916	CABLE, MATRIX 0283-4-4845-11 (SAME AS GROUP 0901)								
0917	CABLE ASSEMBLY, MATRIX RECEIVER LINK 0283-4-4847-3 (SAME AS GROUP 0901)								
10	STABILIZER GROUND STRAP	Inspect Replace	0.1	0.2				2	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Reference Code	(2) Maintenance level	(3) Nomenclature	(4) National/Nato Stock Number	(5) Tool Number
1	O, F	TOOL KIT, ELECTRONIC EQUIPMENT TK-100	5180-00-605-0079	TK-100
2	O, F	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-00-610-8177	TK-105/G
3	O, F	MULTIMETER AN/USM-223	6625-00-999-7465	AN/USM-223
4	O, F	MULTIMETER AN/URM-105C	6625-00-999-6282	AN/URM-105C

Section IV. REMARKS

Reference code	Remarks
A	Refer to TM 32-5410-217-14&P for maintenance functions.
B	Refer to TM 11-5830-225-24P.
C	Refer to TM 32-5895-227-24P.
D	Refer to TM 11-5820-357-35 for maintenance functions.
E	Refer to TM 32-5895-753-14 for maintenance functions.
F	<p>Repair of system at the organizational level of maintenance is limited to replacement of fuses, lamps or major components.</p> <p style="text-align: right;">D-9/(D-10 blank)</p>

APPENDIX E

REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

E-1 SCOPE. This appendix lists spares and repair parts; special tools; special Test, Measurement, and Diagnostic Equipment (TMDE), and other special support equipment required for performance of organizational, direct support, and general support maintenance of the AN/TSQ-78. It authorizes the requisitioning and issue of spare and repair parts as indicated by the source and maintenance codes.

E-2 GENERAL. This Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in numeric sequence, with the parts in each group listed in figure and item number sequence.

b. Section III. Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized for the performance of maintenance.

c. Section IV. National Stock Number and Part Number Index. A list, in National Item Identification Number (NIIN) sequence, of all National Stock Numbers (NSN) appearing in the listings, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance. This index is followed by a cross-reference list of reference designators to figure and item numbers.

E-3 EXPLANATION OF COLUMNS.

a. Illustration. This column is divided as follows:

(1) *Figure Number.* Indicates the figure number of the illustration on which the item is shown.

(2) *Item Number.* The number used to identify item called out in the illustration.

b. Source, Maintenance, and Recoverability (SMR) Codes.

(1) *Source Code.* Source codes indicate the manner of acquiring support items for maintenance, repair, or overhaul of end items. Source codes are

entered in the first and second positions of the uniform SMR code format as follows:

<u>Code</u>	<u>Definition</u>
PA -	Item procured and stocked for anticipated or known usage.
XA -	Item is not procured or stocked because the requirements for the item will result in the replacement of the next higher assembly.
XB -	Item is not procured or stocked. If not available through salvage, requisition.
XC -	Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.

NOTE: Cannibalization or salvage may be used as a source of supply for any items coded above except those coded XA and aircraft support items as restricted by AR 700-42.

(2) *Maintenance Code.* Maintenance codes are assigned to indicate the levels of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the uniform SMR code format as follows:

(a) The maintenance code entered in the third position will indicate the lowest maintenance level authorized to remove, replace, and use the support item. The maintenance code entered in the third position will indicate one of the following levels of maintenance:

<u>Code</u>	<u>Application/Explanation</u>
F -	Support item is removed, replaced, used at the direct support level.
	(b) The maintenance code entered in the fourth position indicates whether the item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair; i.e., all authorized maintenance functions. This position will

contain one of the following maintenance codes:

<u>Code</u>	<u>Application/Explanation</u>
F -	The lowest maintenance level capable of complete repair of the support item is the direct support level.
H -	The lowest maintenance level capable of complete repair of the support item is the general support level.
Z -	Nonreparable. No repair is authorized.

(3) *Recoverability Code.* Recoverability codes are assigned to support items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the uniform SMR code format as follows:

<u>Recoverability Code</u>	<u>Definition</u>
Z -	Nonreparable item. When unserviceable, condemn and dispose at the level indicated in position 3.
F -	Reparable item. When uneconomically repairable, condemn and dispose at the direct support level.
H -	Reparable item. When uneconomically repairable, condemn and dispose at the general support level.
D -	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal not authorized below depot level.

c. National Stock Number (NSN). Indicates the NSN assigned to the item and which will be used for requisitioning.

d. Part Number. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE: When a stock numbered item is requisitioned, the item received may have a different part number than the part being replaced.

e. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5-digit numeric code listed in SB 708-42 which is used to identify the manufacturer, distributor, or Government agency, etc.

f. Description. Indicates the Federal item name and, if required, a minimum description to identify the item.

g. Unit of Measure (U/M). Indicates the standard of the basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr, etc.). When the U/M differs from the unit of issue, the lowest unit of issue that will satisfy the required U/M will be requisitioned.

h. Quantity Incorporated in Unit. Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that no specific quantity is applicable (e.g., shims, spacers, etc.).

E-4 SPECIAL INFORMATION. Usable on codes are shown in the description column. Uncoded items are applicable to all models. Identification of the usable codes used in this publication are: none.

E-5 HOW TO LOCATE REPAIR PARTS.

a. When National Stock Number or Part Number is unknown:

(1) *First.* Using the table of contents, determine the functional group or subgroup within which the item belongs. This is necessary since illustrations are prepared for functional groups or subgroups, and listings are divided into the same groups.

(2) *Second.* Find the illustration covering the functional group or subgroup to which the item belongs.

(3) *Third.* Identify the item on the illustration and note the illustration figure and item number of the item.

(4) *Fourth.* Using the Repair Parts Listing, find the figure and item number notes on the illustration.

b. When National Stock Number or Part Number is known:

(1) *First.* Using the Index of National Stock Numbers and Part Numbers, find the pertinent NSN or part number. This index is in NIIN sequence, followed by a list of part numbers in alphanumeric sequence, cross-referenced to the illustration figure number and item number.

(2) *Second.* After finding the figure and item number, locate the figure and item number in the repair parts list.

E-6 ABBREVIATIONS. Not applicable.

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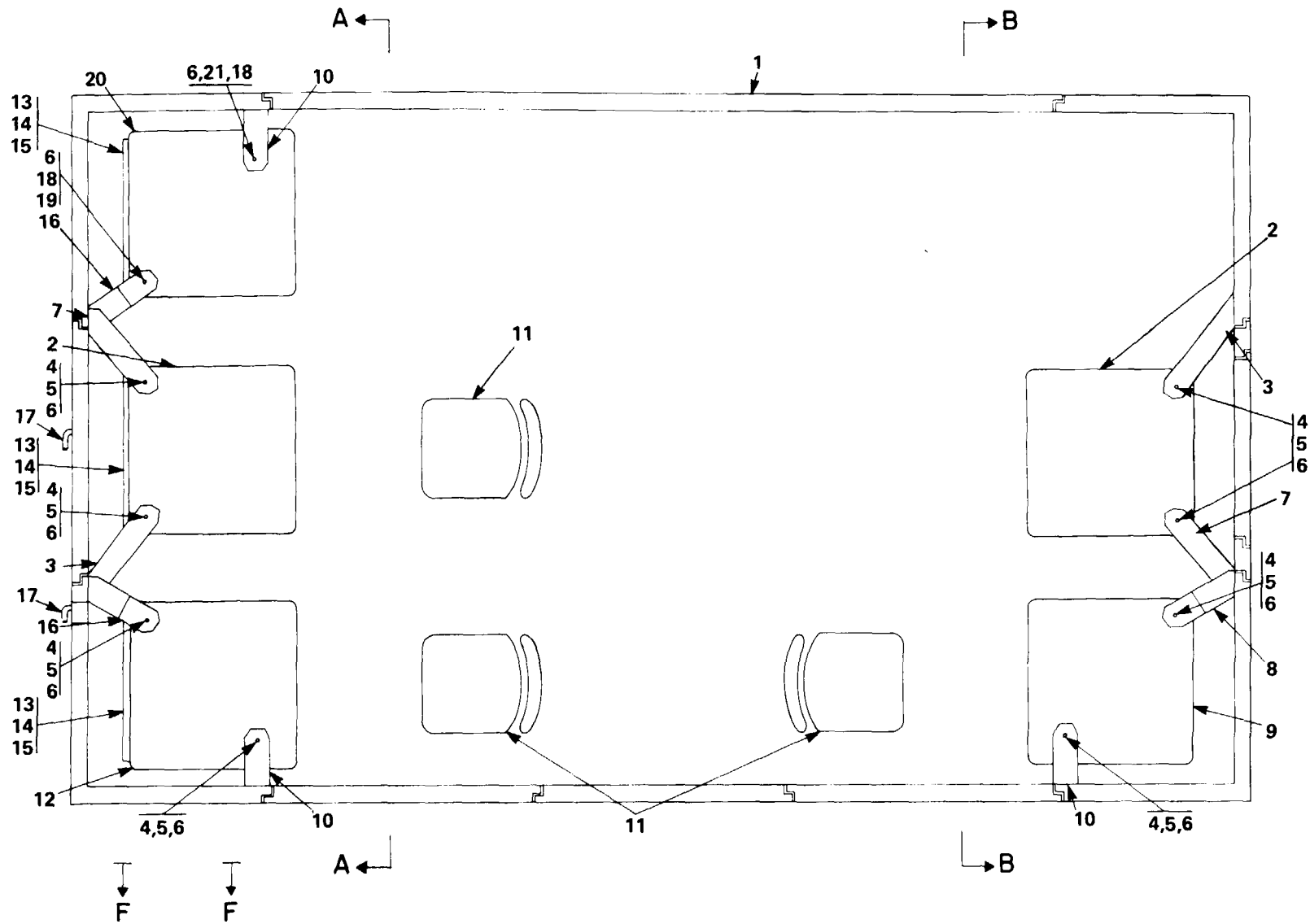


Figure E-1. Operations Control Central AN/TSQ-78 (Sheet 1 of 3)

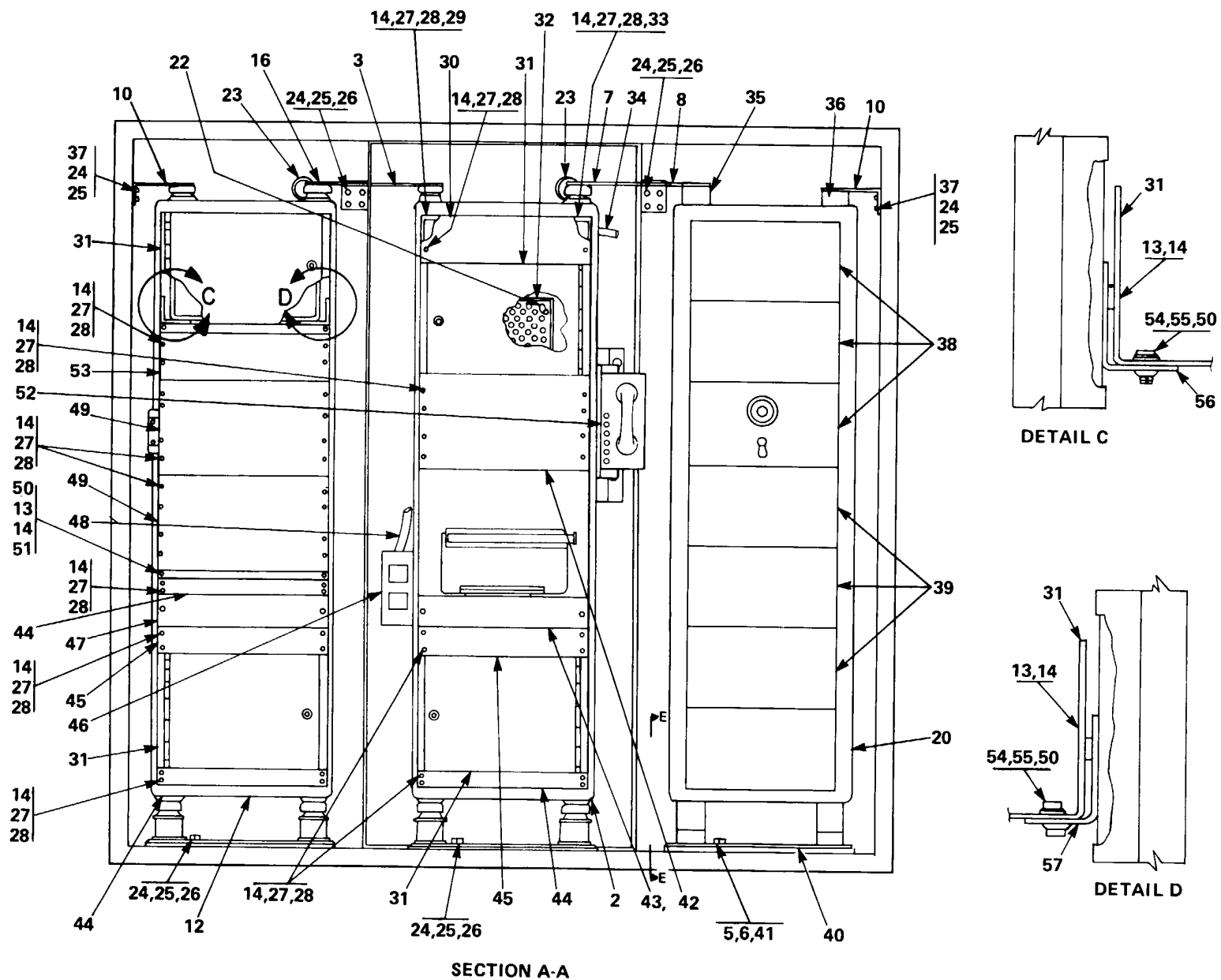


Figure E-1. Operations Control Central AN/TSQ-78 (Sheet 2 of 3)

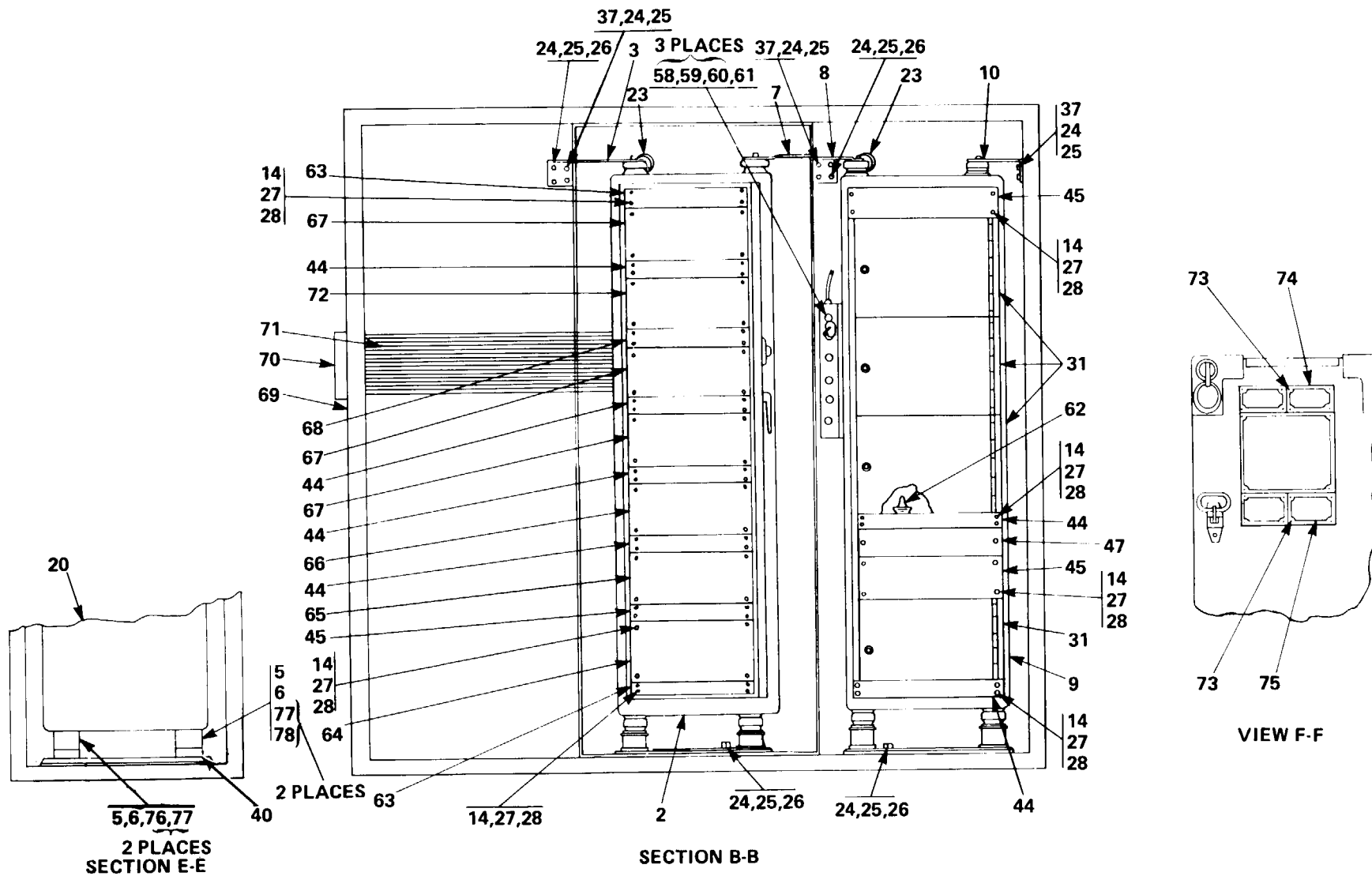


Figure E-1. Operations Control Central AN/TSQ 78 (Sheet 3 of 3)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 00 OPERATIONS CONTROL CENTRAL AN/TSQ-78 (15942)		
E-1	1	XBFFD		0283-4-4001-4	15942	MODIFIED SHELTER	EA	1
E-1	2	XBFFF		0283-4-4002-16	15942	RACK ASSEMBLY, ELECTRICAL EQUIPMENT	EA	2
E-1	3	XBFZZ		0283-4-3001-1	15942	STABILIZER BRACKET	EA	2
E-1	4	PAFZZ	5305-00-717-5467	MS35307-362	96906	SCREW, CAP, HEXAGON	EA	8
E-1	5	PAFZZ	5310-00-984-7042	MS35338-141	96906	WASHER, LOCK	EA	20
E-1	6	PAFZZ	5310-00-773-7618	MS15795-814	96906	WASHER, FLAT	EA	22
E-1	7	XBFZZ		0283-4-3001-2	15942	STABILIZER BRACKET	EA	2
E-1	8	XBFZZ		0283-4-3000-2	15942	STABILIZER BRACKET	EA	2
E-1	9	XBFZZ		0283-4-4002-18	15942	RACK ASSEMBLY, ELECTRICAL EQUIPMENT	EA	1
E-1	10	XBFZZ		0283-4-3002-1	15942	STABILIZER BRACKET	EA	3
E-1	11	XBFZZ		0283-4-3004-1	15942	CHAIR ASSEMBLY WITH TIEDOWN	EA	3
E-1	12	XBFFF		0283-4-4002-17	15942	RACK ASSEMBLY, ELECTRICAL EQUIPMENT	EA	1
E-1	13	PAFZZ	5305-00-059-3661	MS51958-65	96906	SCREW, MACHINE	EA	62
E-1	14	PAFZZ	5835-00-466-8508	566-1-2998-2	15942	SPRING NUT ASSEMBLY	EA	166
E-1	15	XBFZZ		0283-4-2037-1	15942	CABLE LACING BAR	EA	3
E-1	16	XBFZZ		0283-4-3000-1	15942	STABILIZER BRACKET	EA	1
E-1	17	XC		0283-4-4860-1	15942	EXTERNAL INTERCOMMUNICATION CABLING SYSTEM	EA	2
E-1	18	PAFZZ	5310-00-801-5761	F52NE-066	72962	NUT, SELF-LOCKING, HEX	EA	2
E-1	19	PAFZZ	5305-00-822-5853	MS35307-368	96906	SCREW, CAP, HEXAGON	EA	1
E-1	20	XBFFF		0283-4-3300-1	15942	SAFE MODIFIED	EA	1
E-1	21	PAFZZ	5305-00-543-4406	MS35307-370	96906	SCREW, CAP, HEXAGON	EA	1
E-1	22	XC		0283-4-4302-1	15942	INTER SHELTER INTERCOM CONNECTION DIAGRAM	EA	1
E-1	23	XBFZZ	5995-01-012-6993	0283-4-2002-1	15942	GROUND, STRAP, STABILIZER	EA	4

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
E-1	24	PAFZZ	5310-00-933-8121	MS35338-139	96906	WASHER, LOCK	EA	32
E-1	25	PAFZZ	5310-00-582-5677	MS15795-810	96906	WASHER, FLAT	EA	32
E-1	26	PAFZZ	5305-00-207-8253	MS35307-308	96906	SCREW, CAP, HEXAGON	EA	20
E-1	27	PAFZZ	5305-00-071-1324	MS51960-67	96906	SCREW, MACHINE	EA	124
E-1	28	PAFZZ	5310-00-905-1493	MS27129-12	96906	WASHER, FINISHING	EA	124
E-1	29	XBFZZ		0283-4-3837-1	15942	RETAINER, REAR LH	EA	1
E-1	30	PAFHH		6NR	11963	CLOCK, REMOTE DISPLAY 6NR	EA	1
E-1	31	XBFFF	7125-00-990-9948	CY-6154/G	80058	STORAGE CABINET	EA	8
E-1	32	XBFFF		0283-4-4304-1	15942	INTERCOMMUNICATION BULKHEAD PANEL ASSEMBLY	EA	1
E-1	33	XBFZZ		0283-4-3837-2	15942	RETAINER, REAR RH	EA	1
E-1	34			0283-4-4831-7	15942	CABLE ASSEMBLY, CLOCK	EA	1
E-1	35	XBFZZ		0283-4-2300-3	15942	SPACER	EA	1
E-1	36	XBFZZ		0283-4-2300-2	15942	SPACER	EA	1
E-1	37	PAFZZ	5305-00-021-3620	MS35307-307	96906	SCREW, CAP, HEXAGON	EA	20
E-1	38	XBFFF	7125-00-952-9285	MX7196M	80058	STORAGE DRAWER	EA	3
E-1	39	XBFFF	7125-00-952-9091	MX7197M	80058	STORAGE DRAWER	EA	3
E-1	40	XBFFF		0283-4-3301-1	15942	ALTERED MOUNTING PLATE	EA	1
E-1	41	PAFZZ	5305-00-978-9388	MS16997-69	96906	SCREW, CAP, SOCKET	EA	1
E-1	42	PAFZZ	5820-00-538-7555	R-390/UUR	80058	RECEIVER, RADIO	EA	1
E-1	43	XBFFF		0283-4-3005-1	15942	TYPEWRITER AND TRAY ASSEMBLY	EA	1
E-1	44	XBFZZ		0283-4-2001-1	15942	BLANK PANEL	EA	10
E-1	45	XBFZZ		0283-4-2001-2	15942	BLANK PANEL	EA	3
E-1	46	XBFFF	5895-00-213-3022	C-9291/GRQ-23	80058	CONTROL, SWITCHING MATRIX	EA	1
E-1	47	XBFZZ	5830-00-327-5031	FN-87/G	80058	SHELF	EA	2
E-1	48	XBFFF		0283-4-4847-3	15942	CABLE ASSEMBLY	EA	1

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-1	49	PAFFF	5820-00-945-8541	0A-7735/G	80058	CONSOLE, COMMUNICATION	EA	2
E-1	50	PAFZZ	5310-00-550-5054	MS15795-809	96906	WASHER, FLAT	EA	36
E-1	51	XBFFF		0283-4-4301-1	15942	CONSOLE EXTENSION ASSEMBLY	EA	1
E-1	52	PAFFF	5805-00-945-8549	TA-676/G	80058	TELEPHONE SET	EA	1
E-1	53	PAFFF	6110-00-835-5025	SB-2601/G	80058	SWITCHBOARD	EA	1
E-1	54	PAFZZ	5305-00-059-3657	MS51958-61	96906	SCREW, MACHINE	EA	2
E-1	55	PAFZZ	5310-00-933-8120	MS35338-138	96906	WASHER, LOCK	EA	2
E-1	56	XBFZZ		0283-4-3630-1	15942	BRACKET	EA	1
E-1	57	XBFZZ		0283-4-3630-2	15942	BRACKET	EA	1
E-1	58	PAFZZ	5305-00-054-6670	MS51957-45	96906	SCREW, MACHINE	EA	3
E-1	59	PAFZZ	5310-00-619-1148	MS15795-808	96906	WASHER, FLAT	EA	3
E-1	60	PAFZZ	5310-00-811-3494	MS21044N08	96906	NUT, SELF-LOCKING, HEX	EA	3
E-1	61	PAFZZ	7520-00-162-6178	1031	08287	PENCIL SHARPENER	EA	1
E-1	62	PAFZZ	6515-00-660-0046			ORAL RESUSCITATOR	EA	1
E-1	63			0283-4-2001-3	15942	BLANK PANEL	EA	2
E-1	64	PAFFH	6625-01-048-2187	L5R28-30-0VNM	52542	POWER SUPPLY	EA	1
E-1	65	PAFFH	6625-01-048-2186	L3R6-40-0VNM	52542	POWER SUPPLY	EA	1
E-1	66	PAFFH	6110-00-332-2600	SB-3771/GRQ-23	80058	PANEL, POWER DISTRIBUTION EA I		
E-1	67	XBFZZ	5895-00-208-0107	SA-1922/GRQ-23	80058	SWITCHING MATRIX UNIT	EA	3
E-1	68		6110-00-499-4135	MX-9596/GRQ-23	80058	PANEL, PROTECTION LIGHTNING ARRESTER	EA	1
E-1	69	XC				EXTERNAL MATRIX SYSTEM CABLING	EA	1
E-1	70			0099-1-4123-1	15942	CABLE ACCESS ASSEMBLY	EA	1
E-1	71					INTERNAL MATRIX SYSTEM CABLING	EA	1

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
E-1	72	PAFZZ		F-1358/GRQ-23	23929	FILTER, RADIO FREQUENCY	EA	1
E-1	73	XA	5320-00-904-4136	M24243/1-B403	81349	RIVET, BLIND	EA	8
E-1	74	XBFZZ		0283-1-3999-7	15942	PLATE, IDENTIFICATION	EA	1
E-1	75			0283-4-3025-5	15942	PLATE, IDENTIFICATION	EA	1
E-1	76	PAFZZ	5305-00-682-7751	MS35307-375	96906	SCREW CAP, HEXAGON	EA	2
E-1	77	XFFZZ		0283-4-2300-1	15942	SPACER	EA	4
E-1	78	PAFZZ	5305-00-021-5511	FFS85-2	70318	SCREW, CAP, HEXAGON	EA	2

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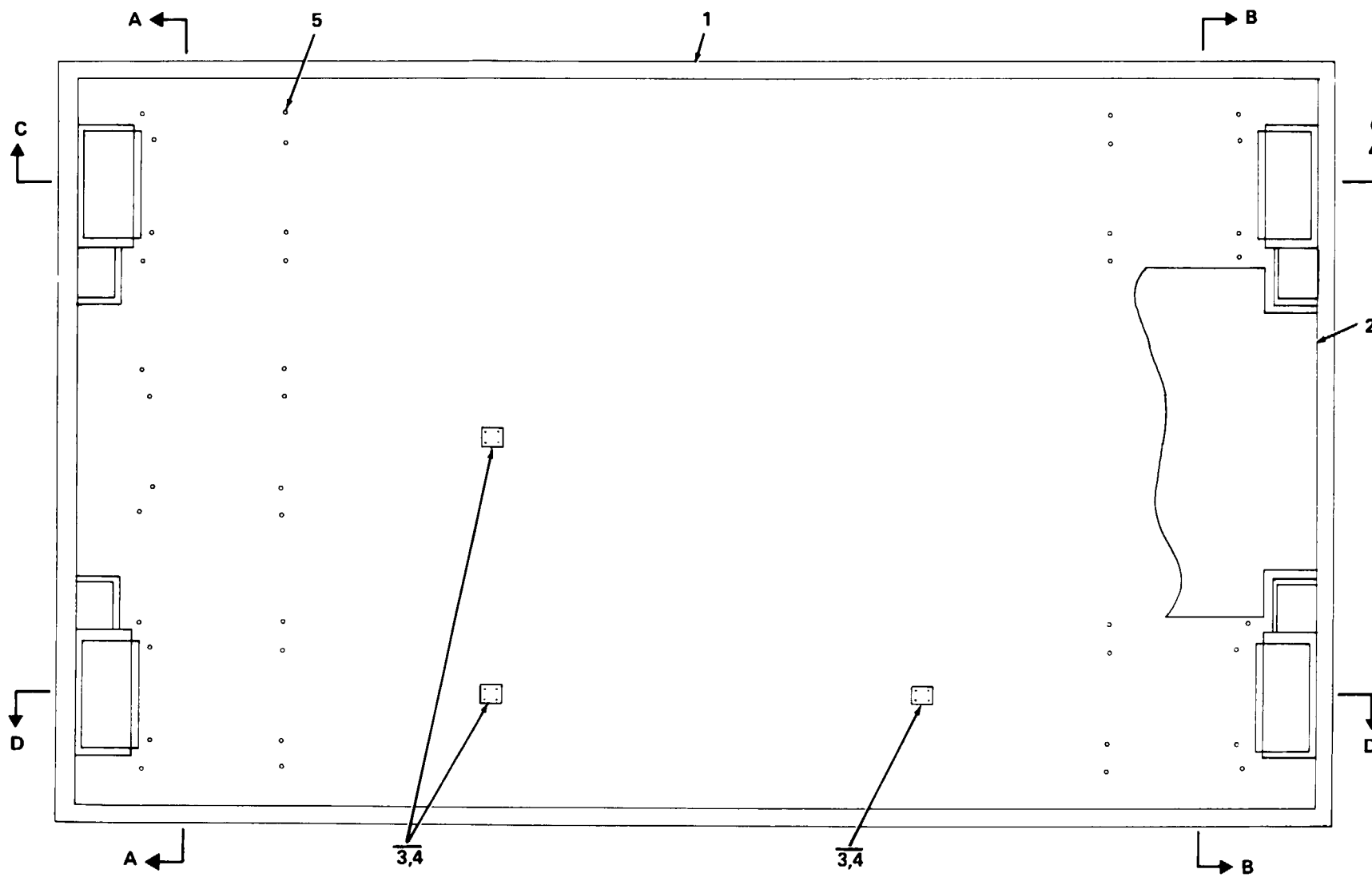
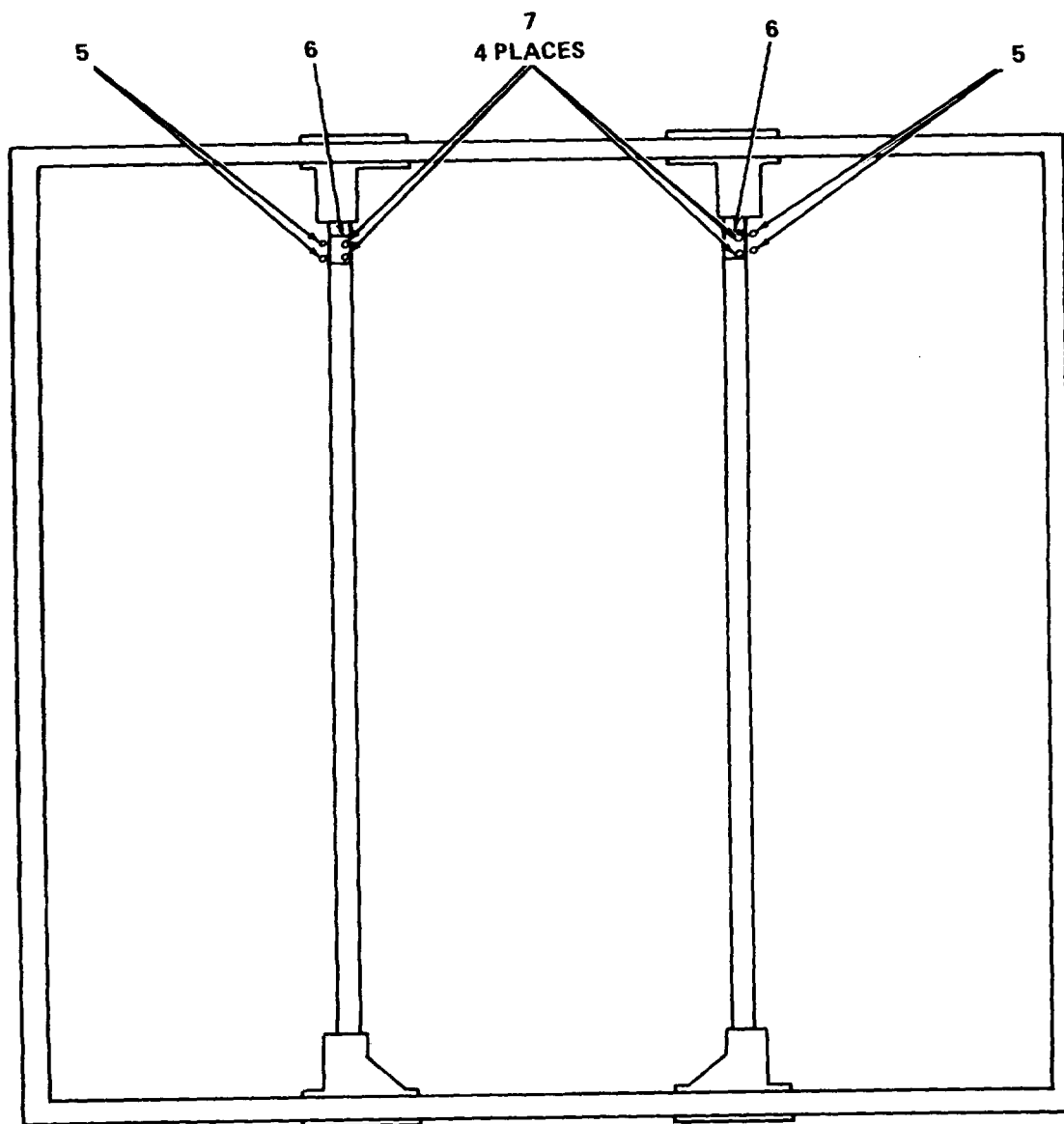
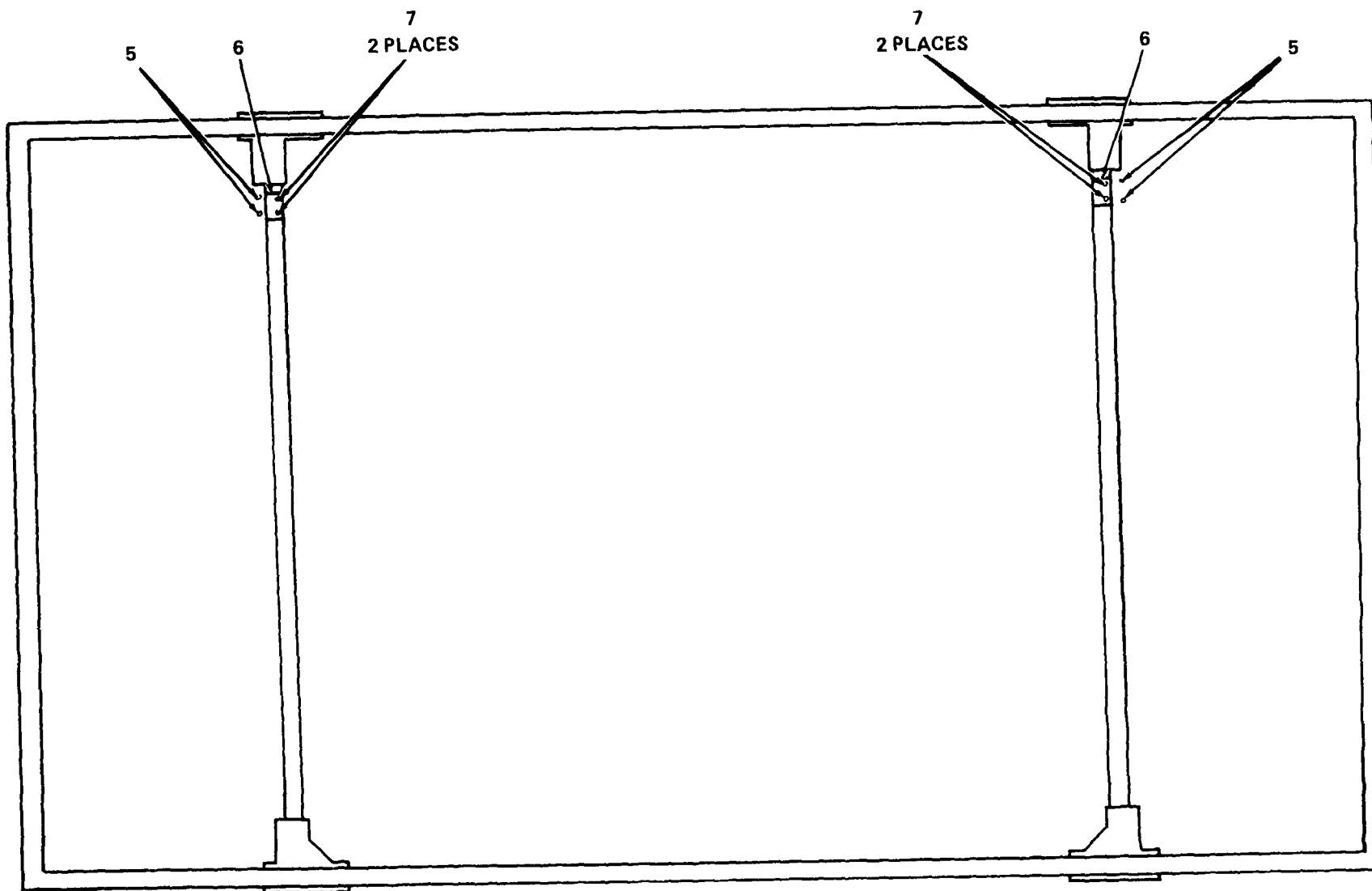


Figure E-2. Shelter S-389/MSA-34 (Modified) (Sheet 1 of 3)



SECTIONS A-A AND B-B

Figure E-2. Shelter S-389/MSA-34 (Modified) (Sheet 2 of 3)



SECTIONS C-C AND D-D

Figure E-2. Shelter S-389/MSA-34 (Modified) (Sheet 3 of 3)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
E-2	1	XA		02834-1000	15942	GROUP: 01 SHELTER S-389/ MSA-34 (MODIFIED) (15942) SHELTER, ELECTRICAL EQUIPMENT	EA	1
E-2	2	XBFZZ		02834-3024-3	15942	FLOOR MAT	EA	1
E-2	3	PAFZZ	5320-00-956-7355	M24243&6A604H	81349	RIVET, BLIND	EA	12
E-2	4	XBFFF		02834-2003	15942	FLOOR SOCKET ASSEMBLY	EA	3
E-2	5	PAFZZ	5310-00-827-8976	S25B200	03481	NUT, PLAIN, BLIND, RIVNUT	EA	56
E-2	6	XBFZZ	5305-00-434-9074	02834-2004	15942	SPACER, PLATE	EA	8
E-2	7	PAFZZ	5310-00-576-2508	S25B140	25472	NUT. PLAIN. BLIND. RIVNUT	EA	16

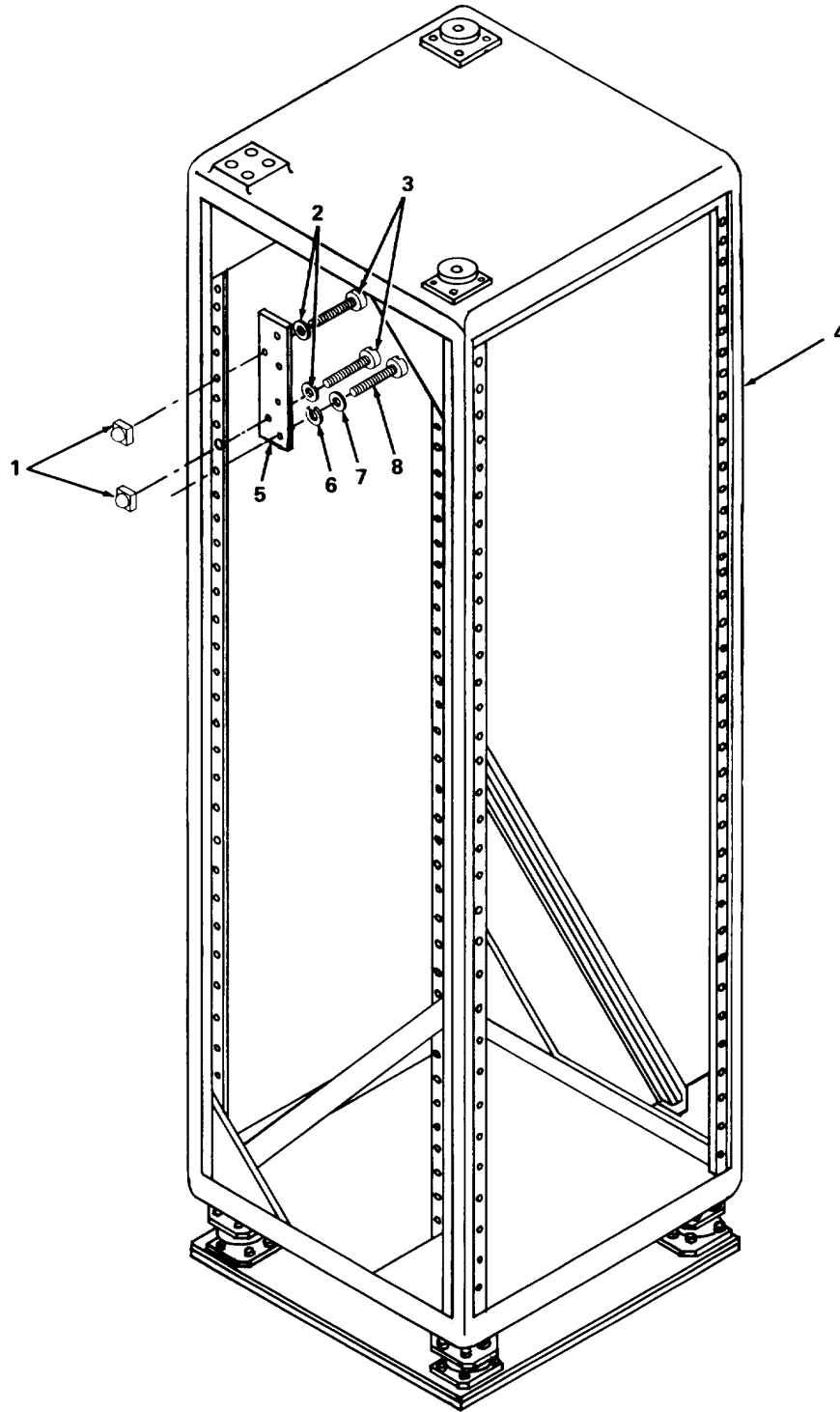


Figure E-3. Electrical Equipment Rack Assembly (Position 1) (0283-4-4002-17)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 02 ELECTRICAL EQUIPMENT RACK ASSEMBLY (POSITION 1) 0283-4-4002-17 (15942)		
E-3	1	PAFZZ	5310-00-445-4729	F22NG1-02	72962	NUT, SPECIAL	EA	2
E-3	2	PAFZZ	5310-00-550-5054	MS15795-809	96906	WASHER, FLAT	EA	2
E-3	3	PAFZZ	5305-00-059-3661	MS51958-65	96906	SCREW. MACHINE	EA	2
E-3	4	XBFFF		02834-4002-17	15942	ELECTRICAL EQUIPMENT RACK ASSEMBLY	EA	1
E-3	5	XBFZZ		0283-4-2013-1	15942	GROUND BUSS BAR	EA	1
E-3	6	PAFZZ	5310-00929-6395	MS35338-136	96906	WASHER, LOCK	EA	4
E-3	7	PAFZZ	5310-00-880-5978	MS15795-807	96906	WASHER. FLAT	EA	4
E-3	8	PAFZZ	5305-00-054-6654	MS51957-30	96906	SCREW, MACHINE	EA	4

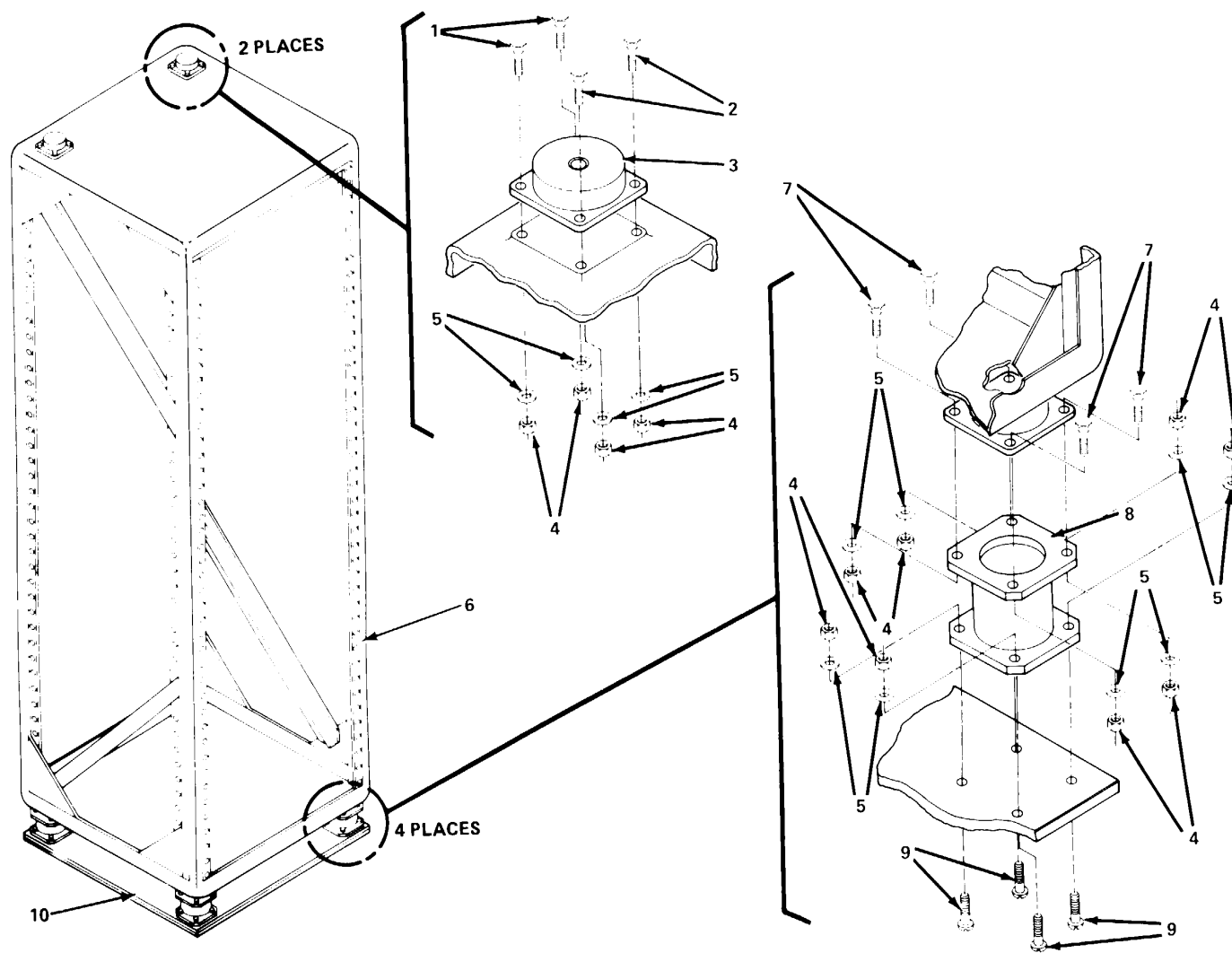


Figure E-4. Electrical Equipment Rack (0283-4-3020-1)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 0201 ELECTRICAL EQUIPMENT RACK 0283-4-3020-1 (15942)		
E-4	1	PAFZZ	5305-00-616-6370	MS35307-313	96906	SCREW, CAP, HEXAGON	EA	4
E-4	2	PAFZZ	5305-00-576-5807	MS35307-311	96906	SCREW, CAP, HEXAGON	EA	4
E-4	3	XBFZZ	5340-00-597-6190	S2090T6	81860	MOUNT, RESILIENT	EA	2
E-4	4	PAFZZ	531000-034-2945	F42NE040	72962	NUT, SELF-LOCKING, HEX	EA	40
E-4	5	PAFZZ	5310-00-582-5677	MS15795-810	96906	WASHER, FLAT	EA	40
E-4	6			02834-3020-1	15942	ELECTRICAL EQUIPMENT RACK ASSEMBLY	EA	1
E-4	7	PAFZZ	5305-00-021-3620	MS35307-307	96906	SCREW, CAP, HEXAGON	EA	16
E-4	8	XBFZZ	5895-00-475-9170	0283-4-2039	15942	STANDOFF ASSEMBLY	EA	4
E-4	9	PAFZZ	5305-00-719-5007	MS51959-83	9h906	SCREW, MACHINE	EA	16
E-4	10	XBFZZ		02834-3023-1	15942	BASE	EA	1

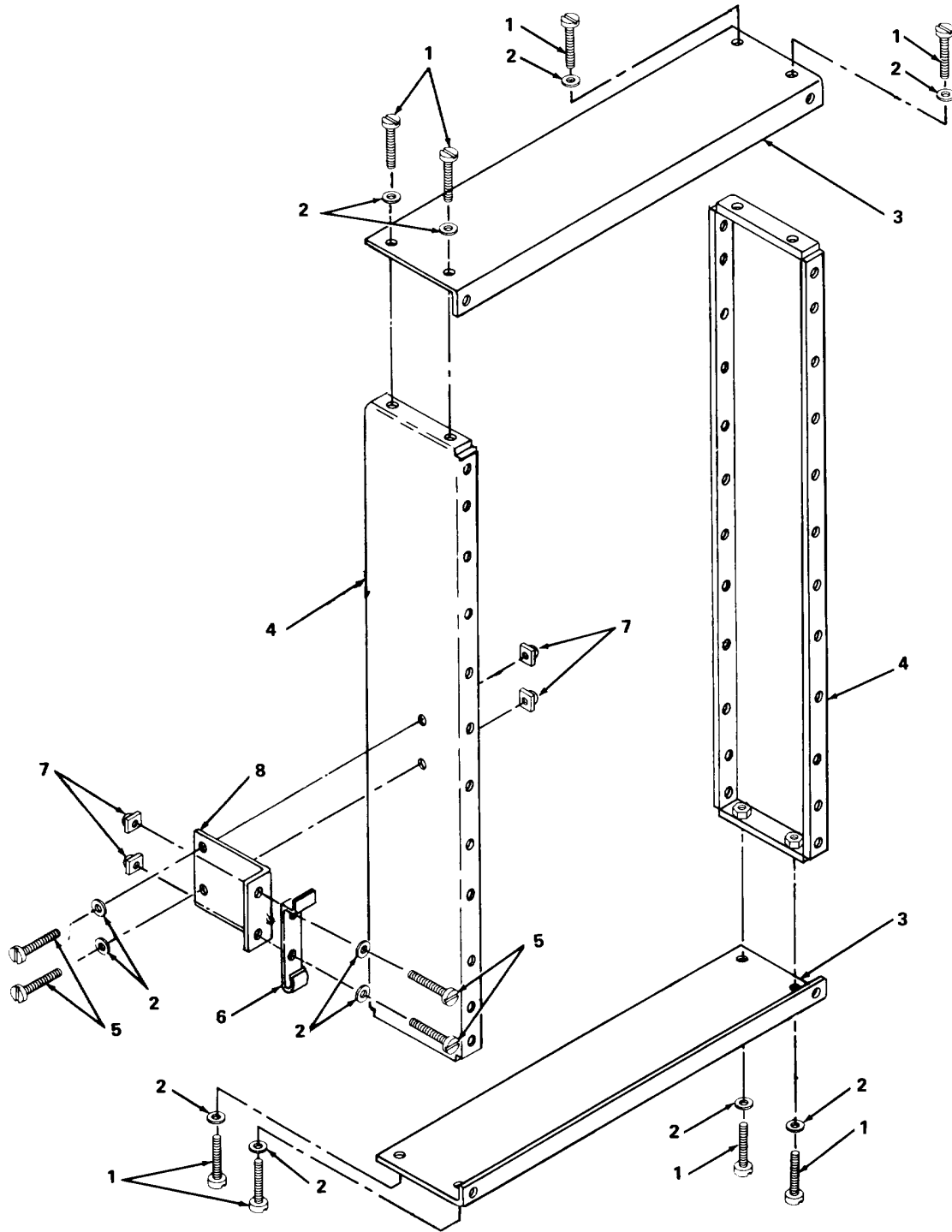


Figure E-5. Console Extension Assembly

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 020301 CONSOLE EXTENSION ASSEMBLY 0283-4-4301-1 (15942)		
E-5	1	PAFZZ	5305-00-059-3661	MS51958-65	96906	SCREW, MACHINE	EA	8
E-5	2	PAFZZ	5310-00-550-5054	MS15795-809	96906	WASHER, FLAT	EA	12
E-5	3	XBFZZ		028343302-1	15942	TOP AND BOTTOM EXTENSION	EA	2
E-5	4	XBFZZ		02834-4303-1	15942	SIDE EXTENSION ASSEMBLY	EA	2
E-5	5	PAFZZ	5305-00-059-3659	MS51958-63	96906	SCREW, MACHINE	EA	4
E-5	6	XBFZZ		02834-2015-1	15942	HEADSET CLIP	EA	1
E-5	7	PAFZZ	5310-00-877-5797	MS21044N3	96906	NUT, SELF-LOCKING, HEXAGON	EA	4
E-5	8	XBFZZ		02834-2016-1	15942	HEADSET CLIP, BRACKET	EA	1

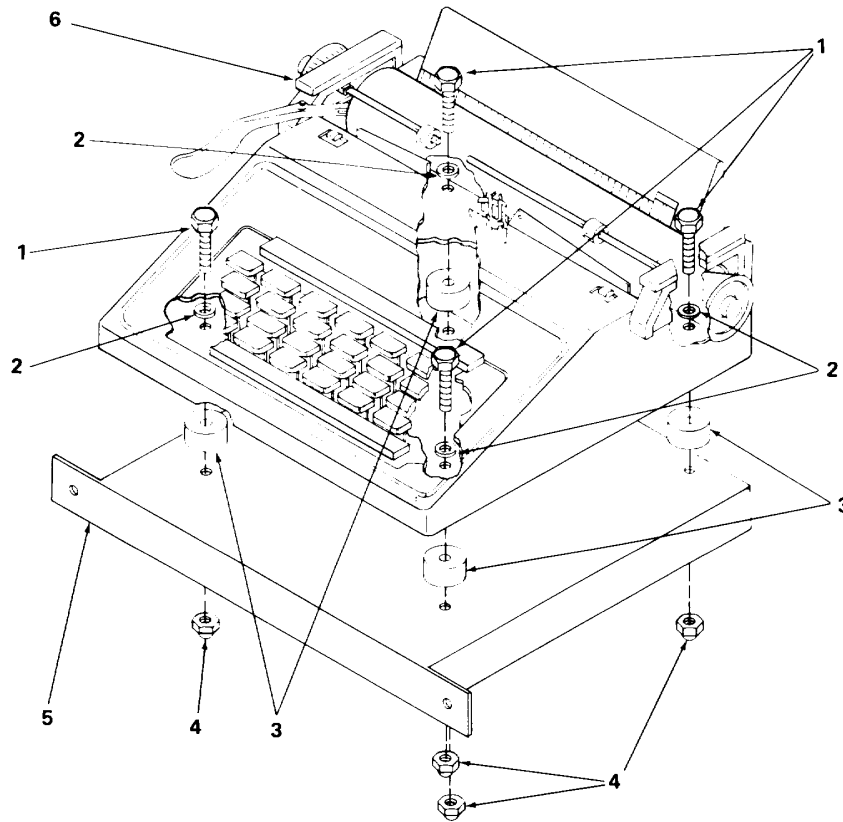


Figure E-6. Typewriter and Writing Shelf

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
(a) FIG NO.	(b) ITEM NO.							
E-6	1	PAFZZ	5305-00-207-2297	MS35307-312	96906	GROUP: 0204, 0308, 0602 TYPE- WRITER AND WRITING SHELF FN-87/G (80058) SCREW, CAP, HEXAGON	EA	4
E-6	2	PAFZZ	5310-00-582-5677	MS15795-810	96906	WASHER. FLAT	EA	4
E-6	3	XBFZZ		02834-0'22-1	15942	STANDOFF	EA	4
E-6	4	PAFZZ	5310-00-834-2945	F42NE040	72962	NUT, SELF-LOCKING. HEXAGON	EA	4
E-6	5	XBFFF	5830-00-327-5031	FN-87/G	80058	TYPEWRITER AND WRITING SHELF	EA	1
E-6	6	PAFFF	7430-01-056-3420	440	52223	TYPEWRITER	EA	1

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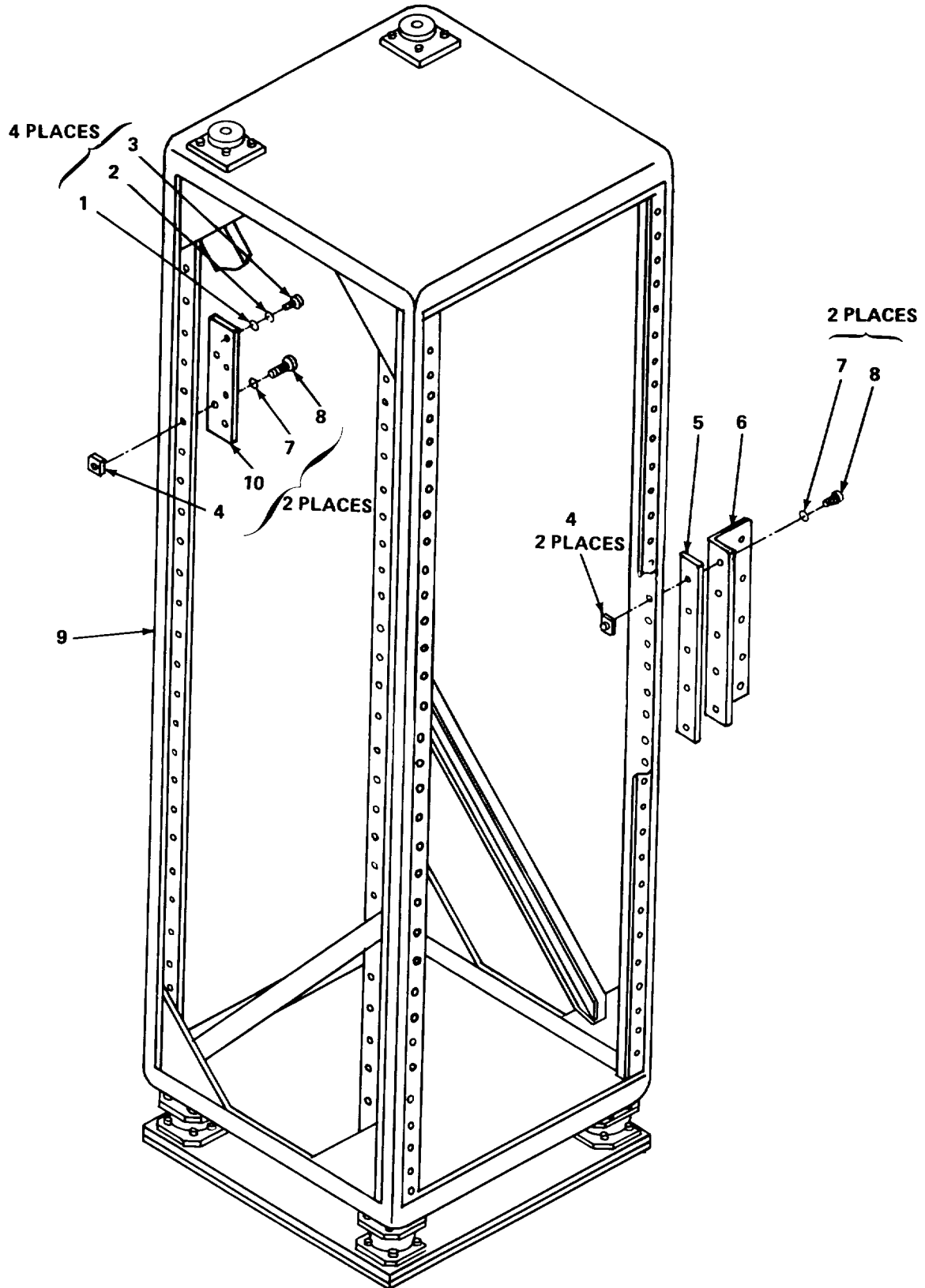


Figure E-7. Electrical Equipment Rack Assembly (Position 2 and 5) (0283-4-4002-16)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 03, 06 ELECTRICAL EQUIPMENT RACK ASSEMBLY (POSITION 2 AND 5) 0283-4-4002-16 (15942)		
E-7	1	PAFZZ	5310-00-880-5978	FFW92	81348	WASHER,FLAT	EA	4
E-7	2	PAFZZ	5310-00-929-3956	M35338-36	96906	WASHER LOCK	EA	4
E-7	3	PAFZZ	5305-00-054-6654	MS51957-30	96906	SCREW,MACHINE	EA	4
E-7	4	PAFZZ	5310-00-445-4729	F22NG 1-02	72962	NUT, SPECIAL	EA	4
E-7	5	XBFZZ		02834-4007-1	15942	SHIM	EA	1
E-7	6	XBFZZ		0283-4-3008-1	15942	PHONE MOUNTING BRACKET	EA	1
E-7	7	PAFZZ	5310-00-550-5054	MS15795-809	96906	WASHER, FLAT	EA	4
E-7	8	PAFZZ	5305-00-549-3661	MS51958-65	96906	SCREW,MACHINE	EA	4
E-7	9	XBFFF		0283-4-4002-16	15942	ELECTRICAL EQUIPMENT RACK ASSEMBLY	EA	1
E-7	10	XBFZZ		02834-2013-1	15942	GROUND BUSS BAR	EA	1

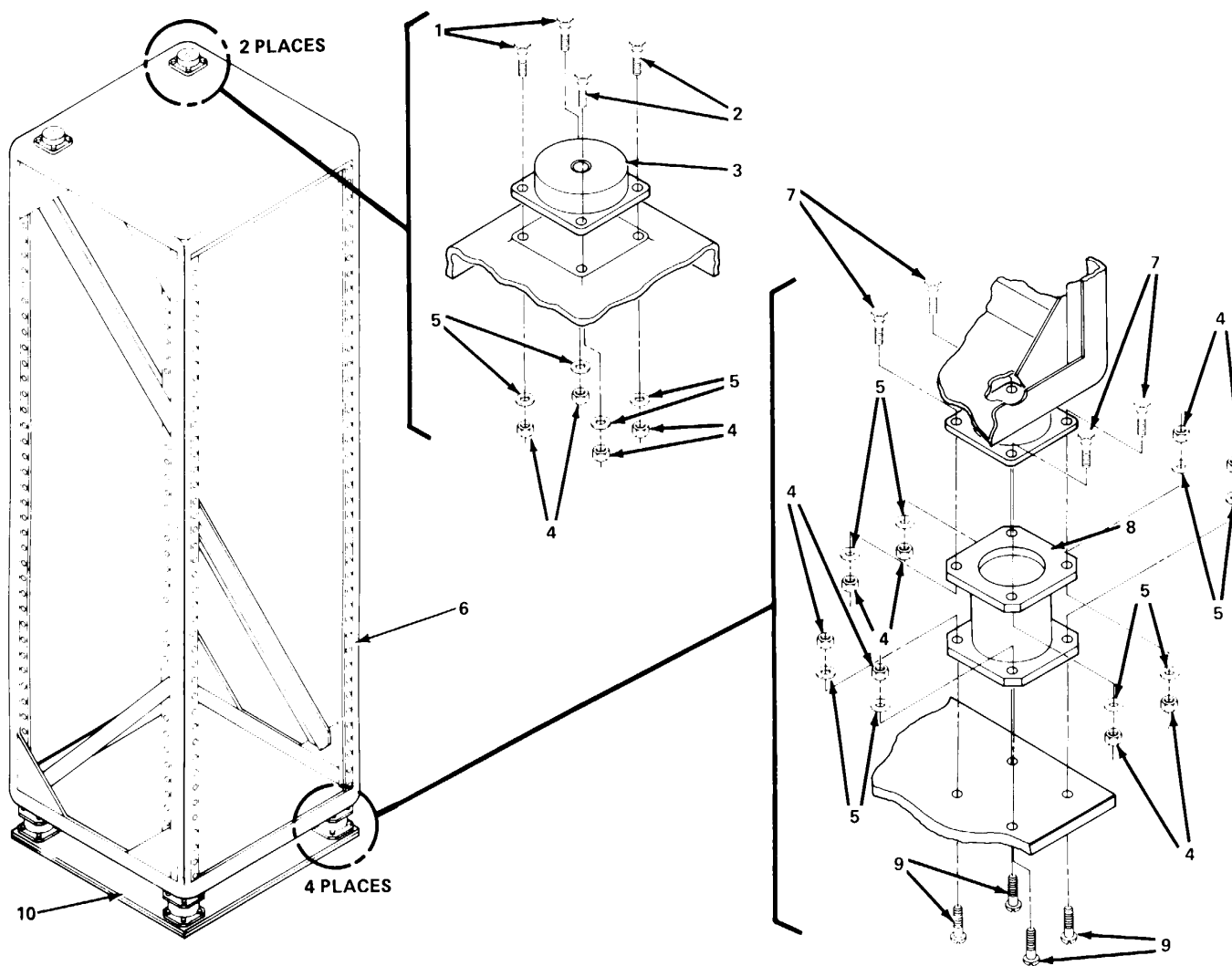


Figure E-8. Electrical Equipment Rack (0283-4-3020-3)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 0301, 0601 ELECTRICAL EQUIPMENT RACK 0283-4-3020-3 (15942)		
E-8	1	PAFZZ	5305-00-616-6370	MS35307-313	96906	SCREW, CAP. HEXAGON	EA	4
E-8	2	PAFZZ	5305-00-576-5807	MS35307-311	96906	SCREW, CAP, HEXAGON	EA	4
E-8	3	XBFZZ	5340-00-597-6190	S2090T6	81860	MOUNT, RESILIENT	EA	2
E-8	4	PAFZZ	5310-00-834-2945	F42NE040	7'292	NUT, SELF-LOCKING, HEXAGON	EA	40
E-8	5	PAFZZ	5310-00-582-5677	MS15795-810	96906	WASHER, FLAT	EA	40
E-8	6	XBFZZ		0283.4-3020-3	15942	ELECTRICAL EQUIPMENT RACK ASSEMBLY	EA	1
E-8	-7	PAFZZ	5305-00-021-3620	MS35307-307	96906	SCREW, CAP, HEXAGON	EA	16
E-8	8	XBFZZ	5895-00-475-9170	02834-'039	15)04	STANDOFF ASSEMBLY	EA	4
E-8	9	PAFZZ	5305-00-719-5007	MS51959-83	90906	SCREW, MACHINE	EA	16
E-8	10	XBFZZ		02834-3023-2	15942	BASE	EA	1

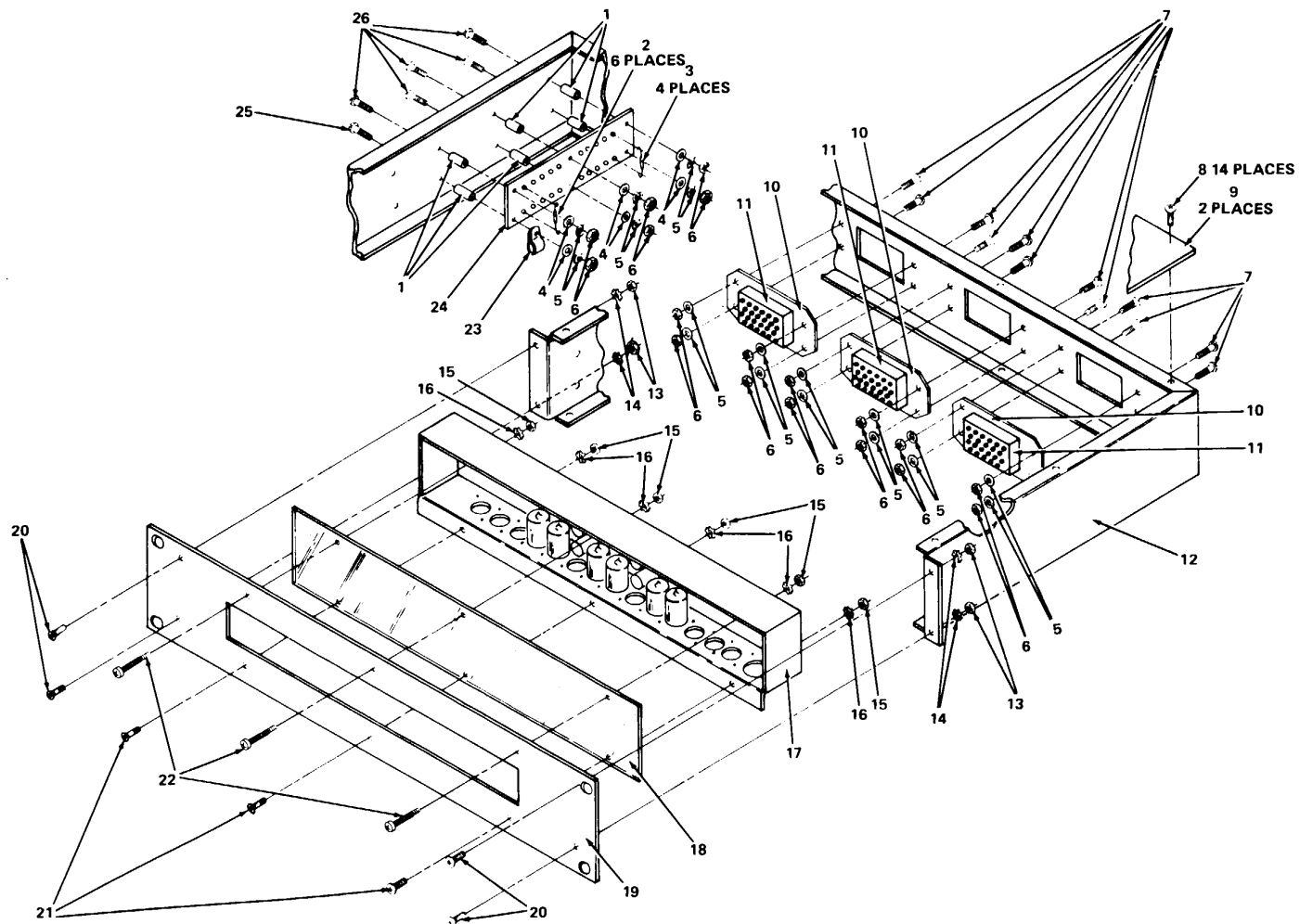


Figure E-9. Digital Clock Remote Display 6NR

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 0302 DIGITAL CLOCK REMOTE DISPLAY 6NR (11963)		
E-9	1	PAFZZ	5365-00-080-8091	2130	83330	SPACER, SLEEVE	EA	6
E-9	2	PAFZZ	5905-00-141-1187	RCR20G203JS	81349	RESISTOR, FIXED COMPOSITION	EA	6
E-9	3	PAFZZ	5905-00-114-5441	RCR20G563JS	81349	RESISTOR, FIXED COMPOSITION	EA	4
E-9	4	PAFZZ	5310-00-722-5998	MS15795-805	96906	WASHER, FLAT	EA	6
E-9	5	PAFZZ	5310-00-616-3554	MS35335-29	96906	WASHER., LOCK	EA	18
E-9	6	PAFZZ	5310-00-934-9739	MS35649-242	96906	NUT, PLAIN, HEXAGON	EA	18
E-9	7	PAFZZ	5305-00-889-2999	MS35206-217	96906	SCREW, MACHINE	EA	12
E-9	8	PAFZZ	5305-00-9844983	MS35206-226	96906	SCREW, MACHINE	EA	14
E-9	9	XBFZZ		2505	11963	COVER	EA	2
E-9	10	PAFZZ	5935-00-472-0696	3-202413-3	00779	CONNECTOR BODY, RECEPTACLE	EA	3
E-9	11	PAFZZ	5999-00468-3084	66399-3	00779	CONTACT, ELECTRICAL	EA	156
E-9	12	XBFZZ		3664-3667-1	11963	FRAME	EA	1
E-9	13	PAFZZ	5310-00-934-9757	MS35649-282	96906	NUT, PLAIN, HEXAGON	EA	4
E-9	14	PAFZZ	5310-00-596-7693	AN936B8	88044	WASHER, LOCK	EA	4
E-9	15	PAFZZ	5310-00-934-9747	MS35649-262	96906	NUT, PLAIN, HEXAGON	EA	6
E-9	16	PAFZZ	5310-00-209-0788	MS35335-30	96906	WASHER, LOCK	EA	6
E-9	17	XBFFF		116B001 1-2	11963	NIXIE CHASSIS ASSEMBLY	EA	1
E-9	18	XBFZZ		116B0001	11963	LENS	EA	1
E-9	19	XBFZZ		3692	11963	PANELFRONT	EA	1
E-9	20	PAFZZ	5305-00-958-5473	MS35190-251	96906	SCREW, MACHINE	EA	4
E-9	21	PAFZZ	5305-00-958-5453	MS35190-236	96906	SCREW, MACHINE	EA	3
E-9	22	PAFZZ	5305-00088-8358	MS35190-246	96906	SCREW, MACHINE	EA	3
E-9	23	PAFZZ	5340-00-584-6133	836	83330	CLAMP, LOOP	EA	1
E-9	24	XBFZZ		15232	91833	TERMINAL BOARD	EA	1
E-9	25	PAFZZ	5305-00-984-4976	MS35206-219	96906	SCREW, MACHINE	EA	1
E-9	26	PAFZZ	5305-00-983-6730	MS35206-218	96906	SCREW, MACHINE	EA	5

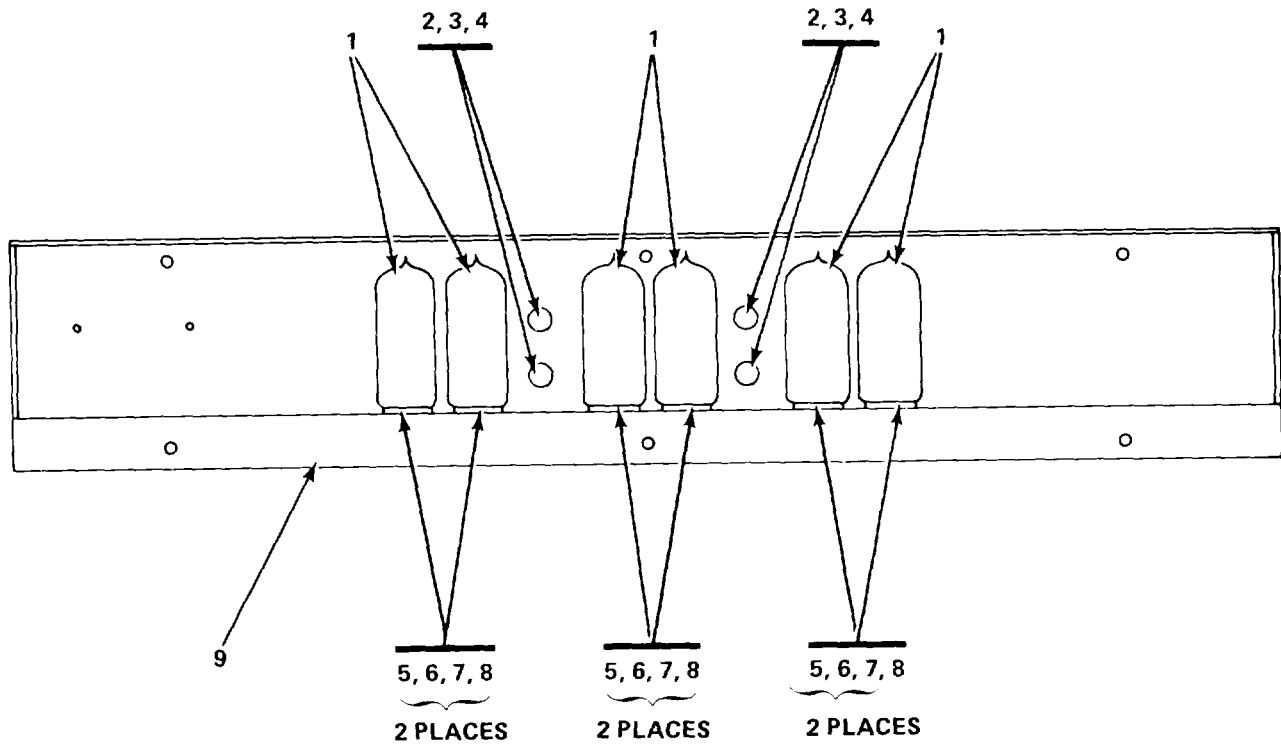


Figure E-10. Nixie Chassis Assembly

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-10	1	PAFZZ	5960-00-106-1408	NL840	83781	GROUP: 030201 NIXIE CHASSIS ASSEMBLY (11963) ELECTRON TUBE	EA	6
E-10	2	XBFZZ	6210-00-169-1468	2212LC	91802	CONNECTOR, LAMP	EA	4
E-10	3	XBFZZ	6250-00-916-2729	2212MC	91802	CLIP, LAMPHOLDER	EA	4
E-10	4	PAFZZ	6240-00-936-8589	221A2-2H	91802	LAMP, CARTRIDGE	EA	4
E-10	5	PAFZZ	5305-00-954-3938	MS35206-207	96906	SCREW, MACHINE	EA	12
E-10	6	PAFZZ	5310-00-543-4652	MS35333-69	96906	WASHER, LOCK	EA	12
E-10	7	PAFZZ	5310-00-934-9738	MS35649-222	96906	NUT, PLAIN, HEXAGON	EA	12
E-10	8	XBFZZ		116B002	11963	SOCKET	EA	6
E-10	9	XBFZZ		3653	11963	NIXIE CHASSIS	EA	1

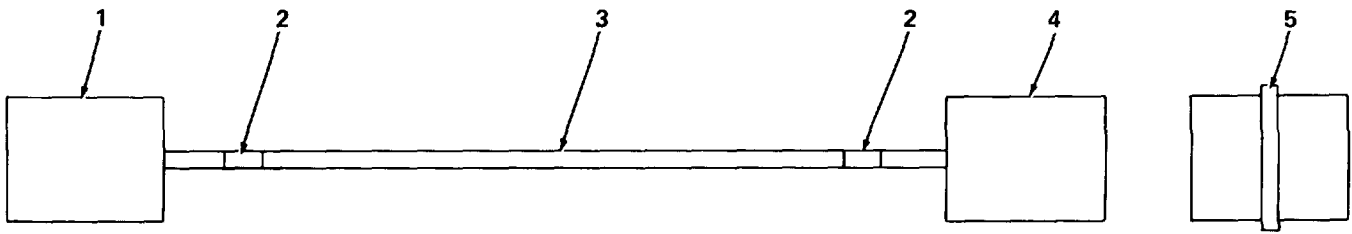


Figure E-11. Clock Cable Assembly

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
E-11	1	PAFZZ		XMRA75P1A406	98922	GROUP: 030202 CLOCK CABLE ASSEMBLY 0283-4-4831-7 (15942) CONNECTOR	EA	1
E-11	2			MILI23053/2CL1		INSULATION SLEEVING	EA	2
E-11	3	PAFZZ	6145-00-078-5751	8750	70903	CABLE, SPECIAL PURPOSE	FT	V
E-11	4	PAFZZ	5935-00-807-0280	PT06E22-55S/SR	77820	CONNECTOR	EA	1
E-11	5	PAFZZ	5935-00-177-2083	B520001234	88818	ADAPTER, CONNECTOR	EA	1

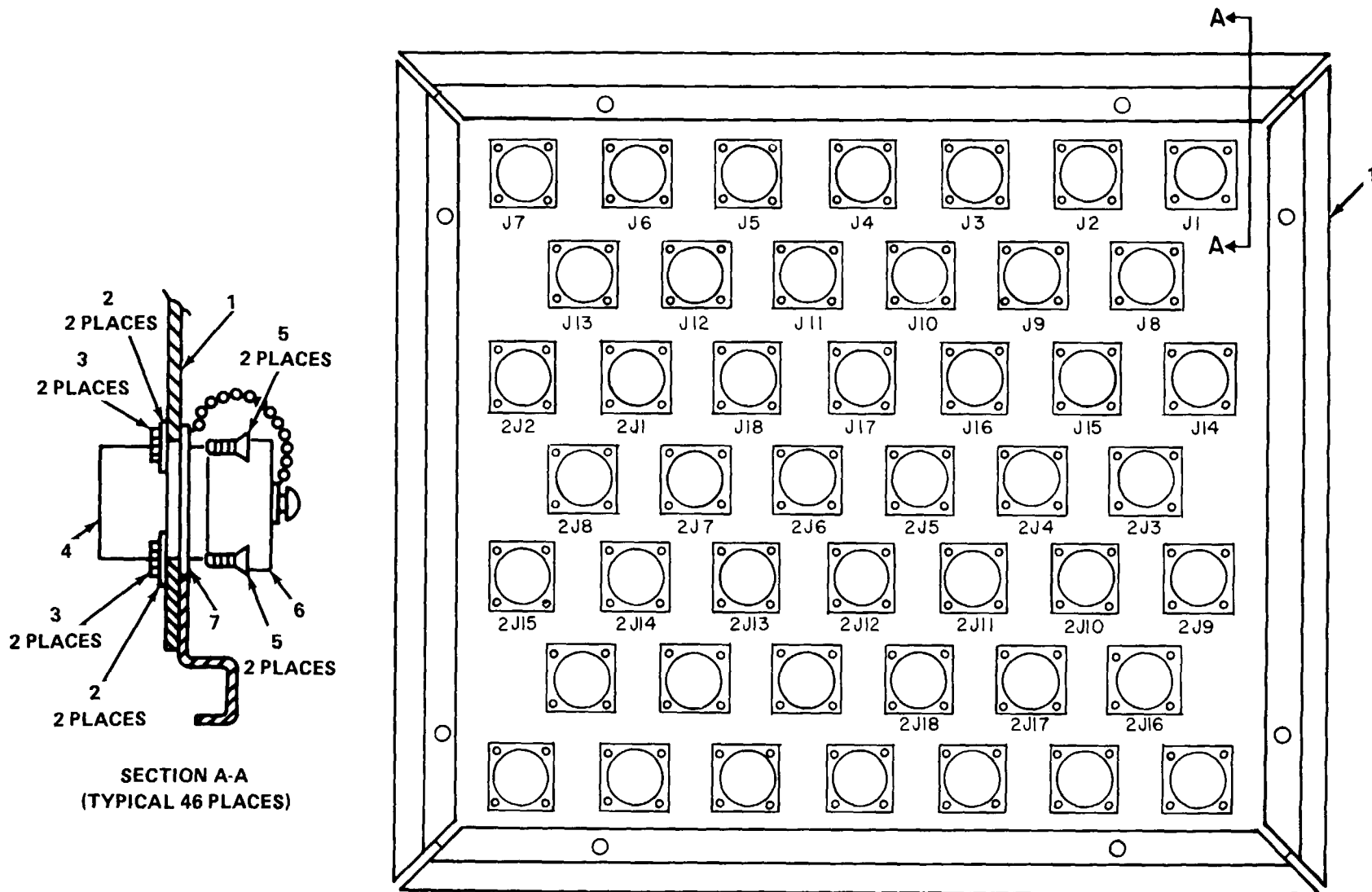


Figure E-12. Intercommunication Bulkhead Panel Assembly

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 0303 INTERCOMMUNI- CATION BULKHEAD PANEL ASSEMBLY 0283-4-4304-1 (15942)		
E-12	1	XBFZZ		0283-4-4304-2	15942	FEED THRU PANEL	EA	1
E-12	2	PAFZZ	5310-00-722-5998	MS15795-805	96906	WASHER, FLAT	EA	184
E-12	3	PAFZZ	5310-00-488-0551	MS21044N04	96906	NUT, SELF-LOCKING, HEXAGON	EA	184
E-12	4	PAFZZ	5935-00-439-0272	MS3119E14-15	96906	ADAPTER, CONNECTOR	EA	46
E-12	5	PAFZZ	5305-00-054-5651	MS51957-17	96906	SCREW, MACHINE	EA	184
E-12	6	XBFZZ	5999-00-702-9230	10-101960-14-3	77820	CAP, ELECTRICAL	EA	46
E-12	7	PAFZZ	5330-00-585-1591	10-101949-14	77820	GASKET	EA	46

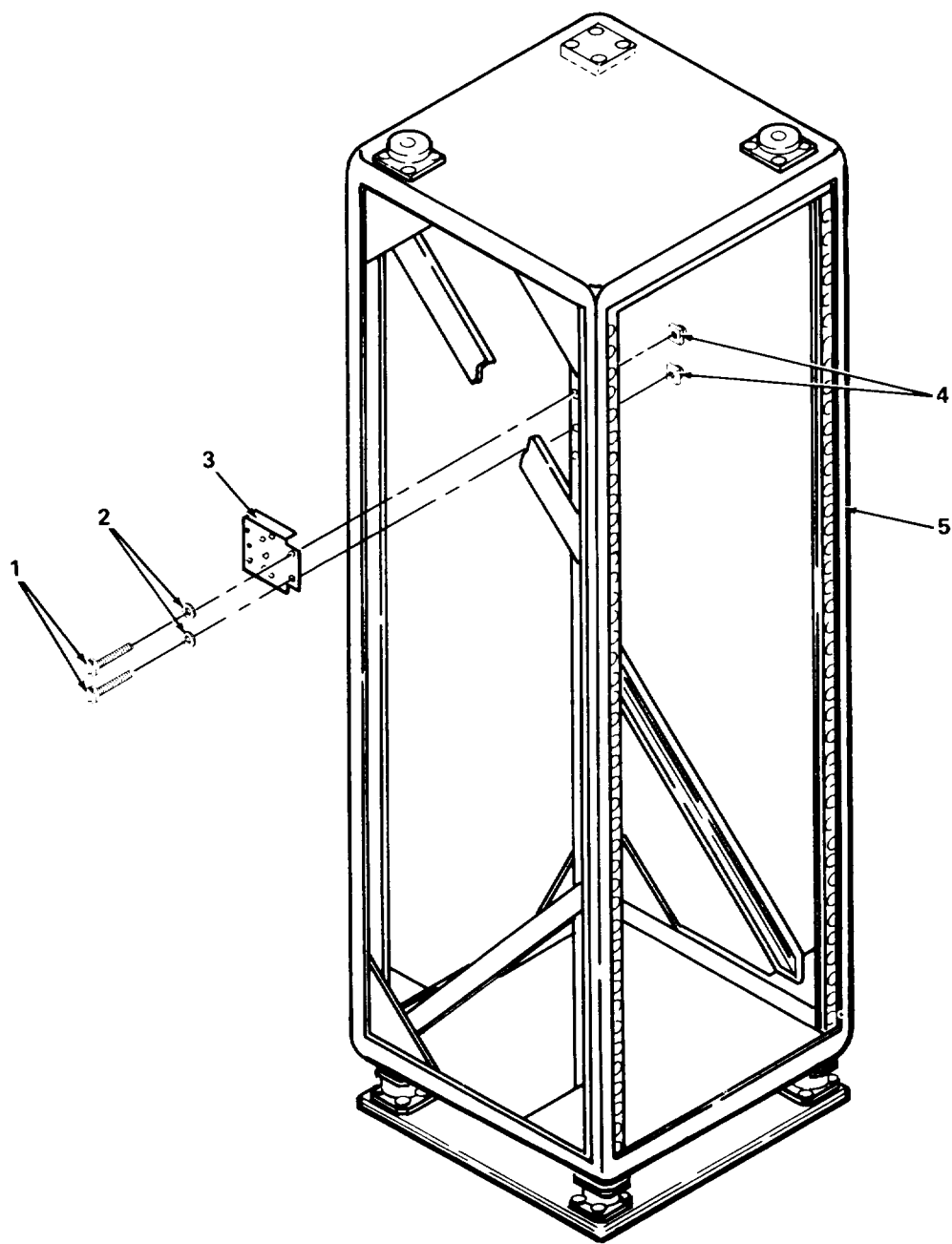


Figure E-13. Electrical Equipment Rack Assembly (Position 4) (0283-44002-18)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 05 ELECTRICAL EQUIPMENT RACK ASSEMBLY (POSITION 4) 0283-4-4002-18 (15942)		
E-13	1	PAFZZ	5305-00-059-3661	MS51958-65	96906	SCREW, MACHINE	EA	2
E-13	2	PAFZZ	5310-00-550-5054	MS15795-809	96906	WASHER, FLAT	EA	2
E-13	3	XBFZZ		0283-4-3015-1	15942	BRACKET, PENCIL SHARPENER	EA	1
E-13	4	PAFZZ	5310-00-445-4729	F22NG1-02	72962	NUT, SPECIAL	EA	2
E-13	5	XBFFF		0283-4-4002-18	15942	ELECTRICAL EQUIPMENT RACK ASSEMBLY	EA	1

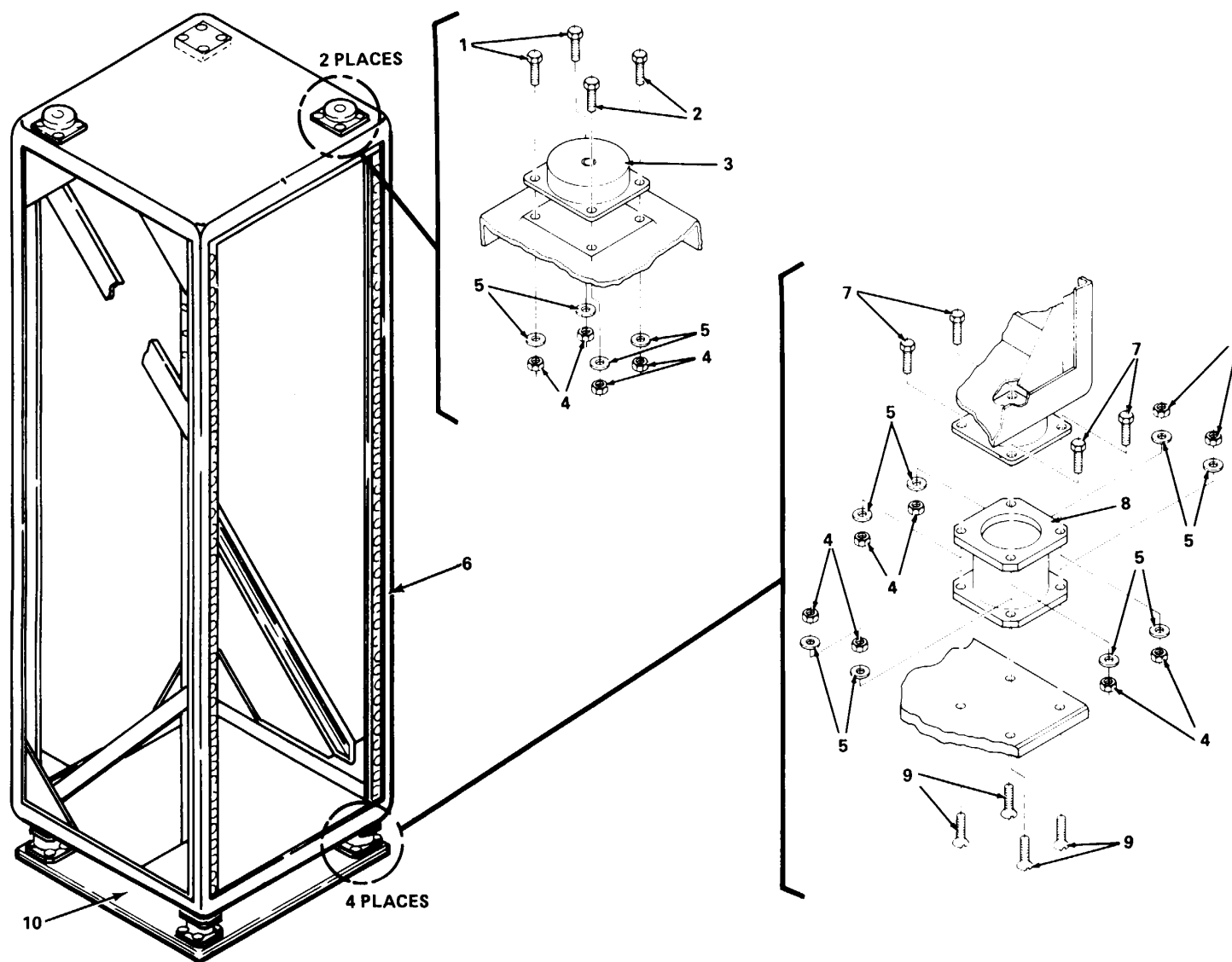
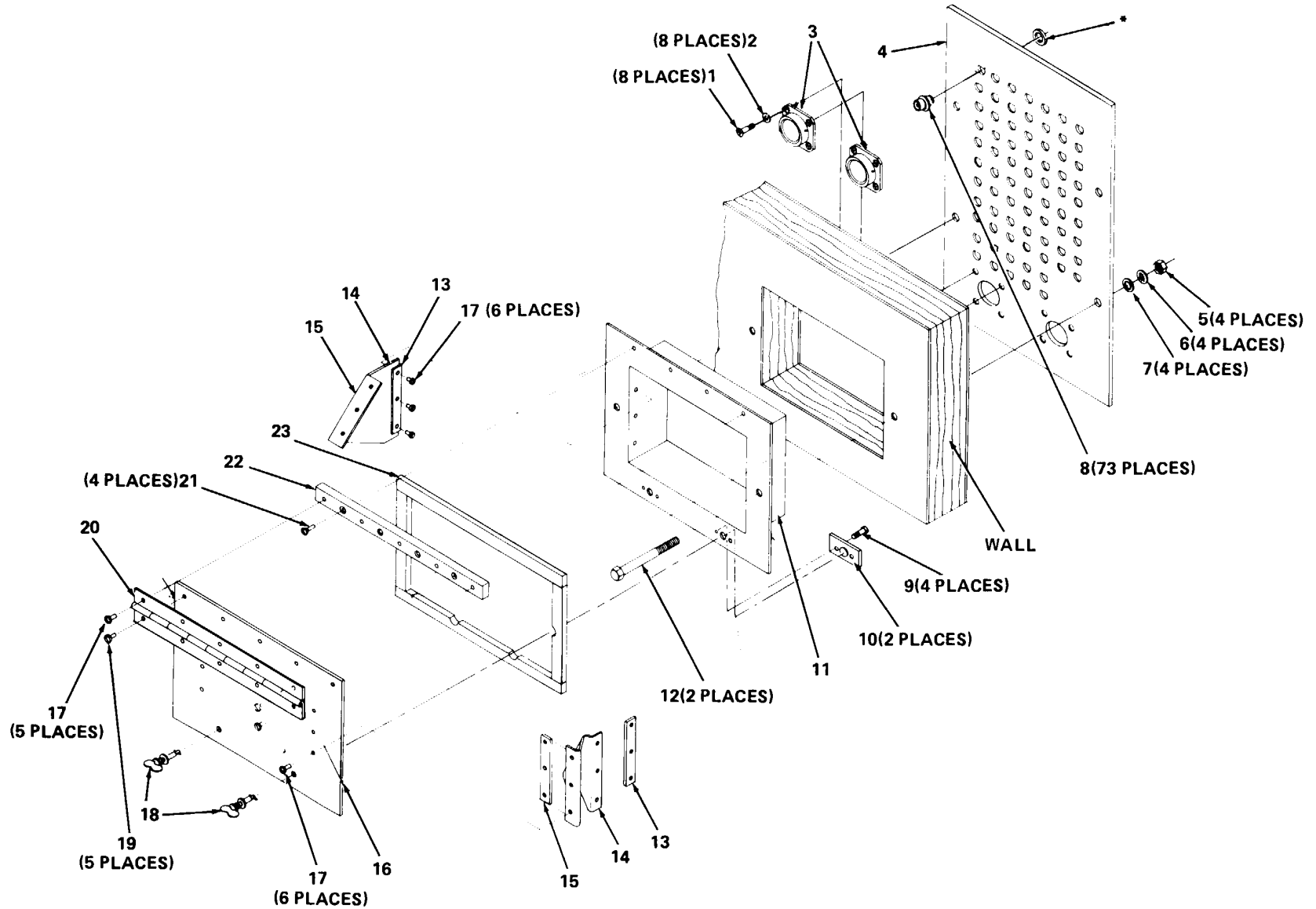


Figure E-14. Electrical Equipment Rack (0283-4-3020-2)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 0501 ELECTRICAL EQUIPMENT RACK 0283-4-3020-2 (15942)		
E-14	1	PAFZZ	5305-00-616-6370	MS35307-313	96906	SCREW, CAP, HEXAGON	EA	4
E-14	2	PAFZZ	5305-00-576-5807	MS35307-311	96906	SCREW, CAP, HEXAGON	EA	4
E-14	3	XBFZZ	5340-00-597-6190	S2090T6	81860	MOUNT, RESILIENT	EA	2
E-14	4	PAFZZ	5310-00-834-2945	F42NE040	72962	NUT, SELF-LOCKING. HEX	EA	40
E-14	5	PAFZZ	5310-00-582-5677	MS15795-810	96906	WASHER, FLAT	EA	40
E-14	6			0283-4-3020-2	15942	ELECTRICAL EQUIPMENT RACK ASSEMBLY	EA	1
E-14	7	PAFZZ	5305-00021-3620	MS35307-307	96906	SCREW, CAP, HEXAGON	EA	16
E-14	8	XBFZZ	5895-00475-9170	0283-4-2039	15942	STANDOFF ASSEMBLY	EA	4
E-14	9	PAFZZ	5305-00-719-5007	MS51959-83	96906	SCREW, MACHINE	EA	16
E-14	10	XBFZZ		0283-4-3023-1	15942	BASE	EA	1



*NPN - COMPONENT OF CONNECTOR, ITEM 8

Figure E-15. Cable Access Assembly

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 0701 CABLE ACCESS ASSEMBLY 0099-1-4123-1 (15942)		
E-15	1	PAFZZ	5305-00-889-3116	MS35206-213	96906	SCREW, MACHINE	EA	8
E-15	2	PAFZZ	5310-00-193-7577	MS35333-36	96906	WASHER, LOCK	EA	8
E-15	3	PAFZZ	5935-00-177-2083	PTB-22-55PS(001)	77820	ADAPTER, CONNECTOR	EA	2
E-15	4	XBFZZ		0099-1-4124	15942	PANEL NO. 1	EA	1
E-15	5	PAFZZ	5310-00-056-3395	MS35649-2382	96906	NUT, PLAIN, HEX	EA	4
E-15	6	PAFZZ	5310-00-595-7237	MS3533342	96906	WASHER, LOCK	EA	4
E-15	7	PAFZZ	5310-00-087-7493	MS27183-13	96906	WASHER, FLAT	EA	4
E-15	8	PAFZZ		MS35177-1	96906	CONNECTOR, RF	EA	73
E-15	9	PAFZZ	5320-00-602-6974	MS20470DD3-5	96906	RIVET	EA	4
E-15	10	PAFZZ	5325-00-003-1800	5R2-1	71286	RECEPTACLE, TURNLOCK	EA	2
E-15	11	XBFZZ		0099-14125	15942	FRAME NO. 1	EA	1
E-15	12	PAFZZ	5305-00-269-3220	MS90725-70	96906	SCREW, CAP, HEXAGON	EA	2
E-15	13	XBFZZ		0099-1-3199-2	15942	RETAINER. STRIP, SKIRT	EA	2
E-15	14	XBFZZ		0099-1-3194	15942	SKIRT NO. 1	EA	2
E-15	15	XBFZZ		0099-1-3199-1	15942	RETAINER, STRIP, SKIRT	EA	2
E-15	16	XBFZZ		0099-1-3189	15942	COVER NO. 1	EA	1
E-15	17	PAFZZ	5305-00-889-3002	MS35206-242	96906	SCREW, MACHINE	EA	17
E-15	18	PAFZZ	5325-00-571-0020	102324-21	00752	STUD ASSEMBLY, TURNLOCK	EA	2
E-15	19	PAFZZ	5305-00-984-6226	MS35206-240	96906	SCREW, MACHINE	EA	5
E-15	20	XBFZZ		0099-1-3200-2	15942	HINGE	EA	1
E-15	21	PAFZZ	5305-01-036-1469	MS24693-50	96906	SCREW, MACHINE	EA	4
E-15	22	XBFZZ		0099-1-3197-1	15942	SPACER, BLOCK	EA	1
E-15	23	PAFZZ	9320-00-232-2438		81349	RUBBER, NEOPRENE	FT	V

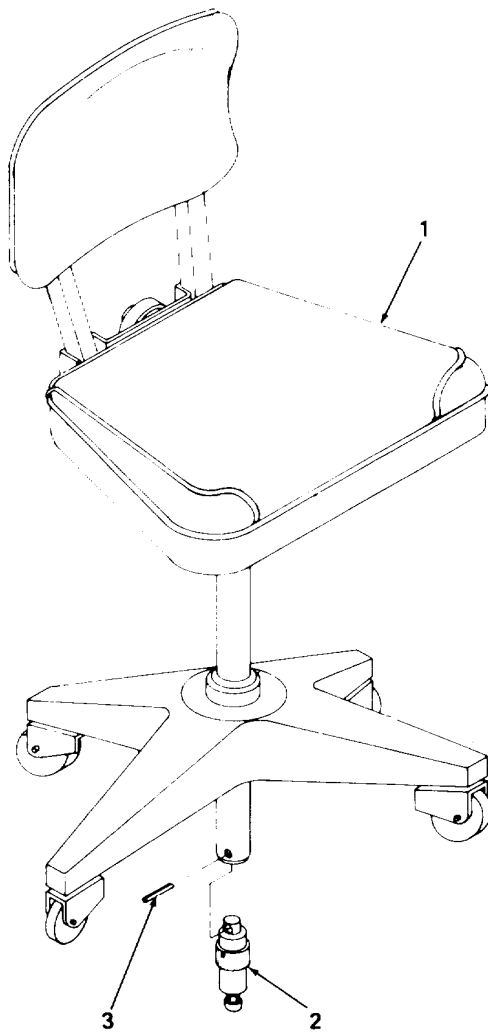


Figure E-16. Chair Assembly with Tiedown

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-16			7110-00-273-8791	AAC00293	81348	GROUP: 08 CHAIR ASSEMBLY WITH TIEDOWN 0283-4-3004-1 (15942)		
E-16	2	XBFZZ		0283-4-2021-1	15942	TIEDOWN ASSEMBLY, CHAIR	EA	1
E-16	3	PAFZZ	5315-00-619-3155	NAS561C6-15	80205	PIN, SPRING	EA	1

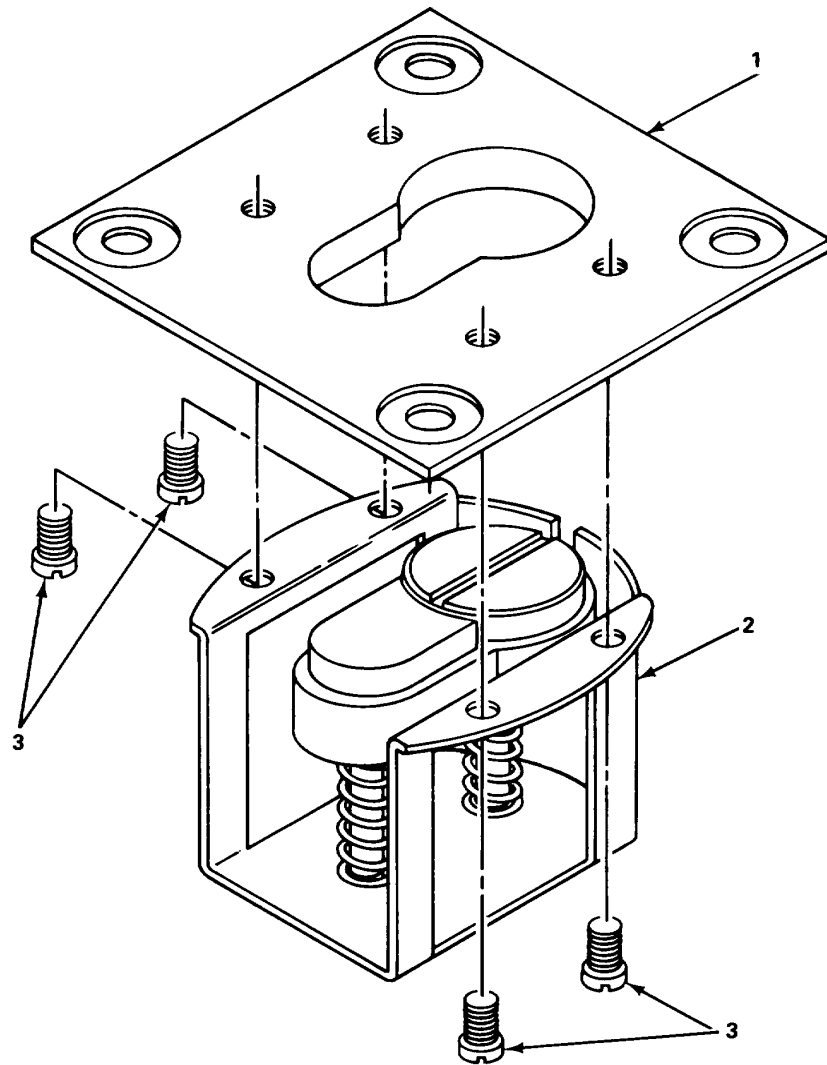


Figure E-17. Floor Socket Assembly

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-17	1	XBFZZ		0283-4-2025	15942	GROUP: 0801 FLOOR SOCKET ASSEMBLY 0283-4-2003 (15942) FLOOR PLATE, CHAIR TIEDOWN	EA	1
E-17	2	XBFZZ	5895-01-008-6091	SP2189	96603	FLOOR FITTING	EA	1
E-17	3	PAFZZ	5305-00-054-5647	MS51957-13	96906	SCREW, MACHINE	EA	4

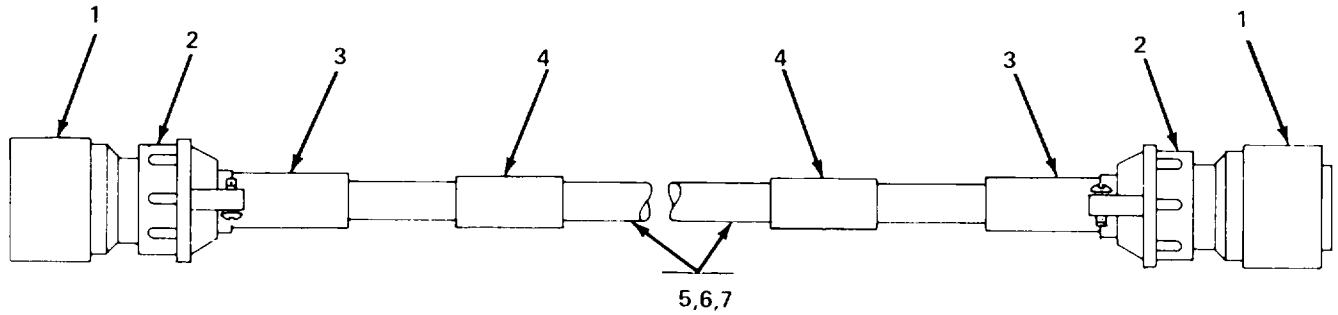


Figure E-18. Intercom System Cable Assemblies W41 and W42 (0283-4-3860-1 and 0283-4-3860-2)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 0901, 0902 CABLE ASSEMBLIES W41 AND W42 0283-4-3860-1 AND 0283-4-3860-2 (15942)		
E-18	1	PAFZZ	5935-00-899-0554	PT06A14-151P	77780	CONNETOR, PLUG, ELICTRCIAL	EA	2
E-18	2	PAFZZ	5935-00-280-1937	MS3057-8B	96906	LAMP CABLE: ELECTRICAL	EA	2
E-18	3	PAFZZ	5365-00-271-7354	AN3420-8A	88044	BUSHING, RUBBER	EA	2
E-18	4	XBFZZ		0283-4-2207	15942	IDENTIFICATION TAG	EA	2
E-18	5	XBFZZ		MWC20(10)SJ	81349	CABLE	FT	V
E-18	6	PAFZZ	6145-00-643-0652	1856-1 TYPE B	81349	WIRE	FT	V
E-18	7	XBFZZ		PIF-130 CLA-GRB	81349	TUBING	FT	V

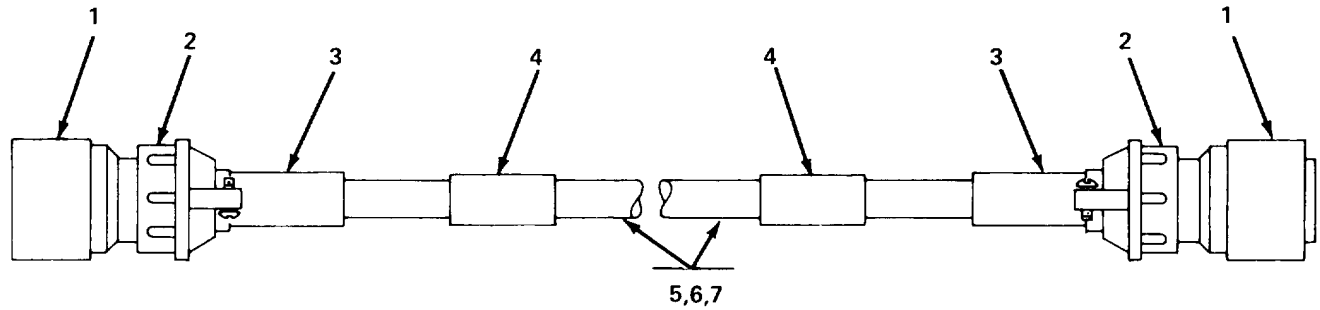


Figure E-19. Intercom System Cable Assemblies W4, W5, W6, W7, W9, and W10 (0283-4-4011-4, -5, -6, -7, -9 and -10)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 0903, 0904, 0905, 0906, 0908, 0909, CABLE ASSEMBLIES W4., W5, W6, W7, W9, AND W10 0283-4-4011-4 -5, -6, -7, -9, AND -10 (15942)		
E-19	1	PAFZZ	5935-00-899-0554	PT06A14-15P	77820	CONNECTOR, PLUG, ELECTRICAL	EA	2
E-19	2	PAFZZ	5935-00-280-1937	MS3057-8B	96906	LAMP, CABLE, ELECTRICAL	EA	2
E-19	3	PAFZZ	5365-00-271-7354	AN3420-8A	880844	BLUSHING, RUBBER	EA	2
E-19	4	XBFZZ		1703-1-1184	15942	IDENTIFICATION TAG,	EA	2
E-19	5	XBFZZ		MWC20(10)SJ	81349	CABLE	FT	V
E-19	6	PAFZZ	6145-00-643-0652	1856-1 TYPE B	81349	WIRE	FT	V
E-19	7	XBFZZ		PIF-130 CLA-GRB	81349	TUBING	FT	V

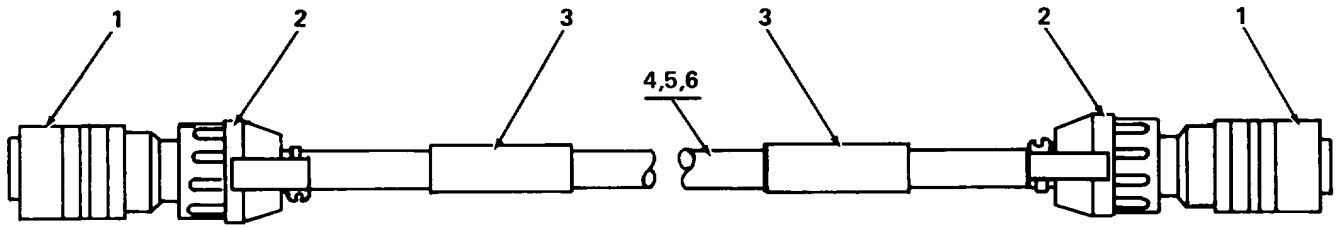


Figure E-20. Cable Assembly W8 (0283-4-4011-8)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
E-20	1	PAFZZ	5935-00-755-3803	MS3116E8-4P	96906	GROUP: 0907 CABLE ASSEMBLY W8 0283-4-4011-8 (15942)	EA	2
E-20	2	PAFZZ	5935-00-806-5600	MS3057-3B	96906	CONNECTOR, PLUG, ELECTRICAL	EA	2
E-20	3	XBFZZ		1703-1-1184	15942	ADAPTER, CABLE, CLAMP	EA	2
E-20	4	XBFZZ		MWC20(10)SJ	81349	IDENTIFICATION TAG	EA	2
E-20	5	PAFZZ	6145-00-643-0652	1856-1 TYPE B	81349	CABLE	FT	V
E-20	6	XBFZZ		PIF-130 CLA-GRB	81349	WIRIE	FT	V
						TUBING	FT	V

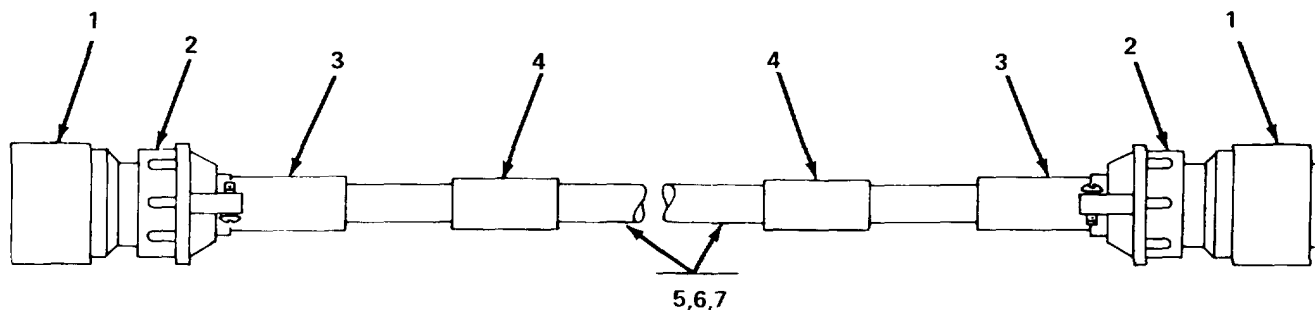


Figure E-21. Cable Assemblies W15 and W16 (0283-4-4011-15 and 0283-4-4011-16)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-21	1	PAFZZ	5935-00-704-5916	PT06A24-61P	77820	GROUP: 0910, 0911 CABLE ASEMBLIES W15 AND W16 0283-4-4011-15 AND 0283-4-4011-16 (15942) CONNECTOR, PLUG, ELECTRICAL	EA	2
E-21	2	PAFZZ	5935-00-280-1935	MS3057-16B	96906	CLAMP, CABLE, ELECTRICAL	EA	2
E-21	3	PAFZZ	5365-00-598-5379	AN3420-16A	88044	BUSHING, RUBBER	EA	2
E-21	4	XBFZZ		1703-1-1184	15942	IDENTIFICATION TAG	EA	2
E-21	5	XBFZZ		MWC20(10)SJ	81349	CABLE	FT	V
E-21	6	PAFZZ	6145-00-643-0652	1856-1 TYPE B	81349	WIRE	FT	V
E-21	7	XBFZZ		PIF-130 CLA-GRB	81349	TUBING	FT	V

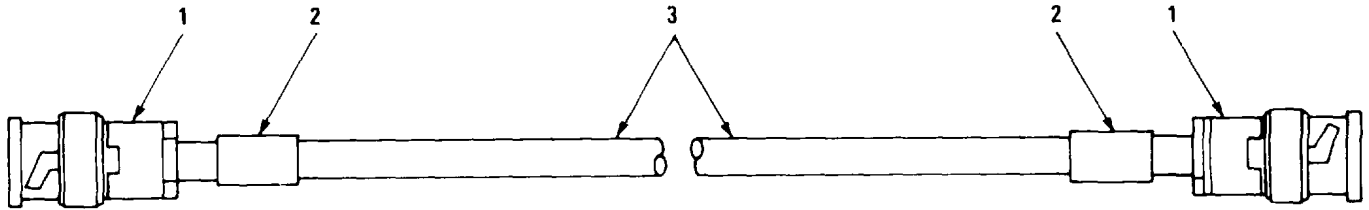


Figure E-22. Matrix Cable Assemblies (0283-4-4845-1 through 0283-4-4845-18)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-22	1	PAFZZ	5935-00-173-5895	UG260/U	80058	GROUP: 0912, 0913, 0914, 0915, 0916 CABLE ASSEMBLIES 0283-4-4845-1, -2, -3, -4, AND -11 (15942) CONNECTOR, PLUG, ELECTRICAL	EA	2
E-22	2	XBFZZ	5970-00-408-0410	MILI23053/2	81349	INSULATION SLEEVING	EA	2
E-22	3	XBFZZ		RG-59/U	80058	CABLE, COAXIAL	FT	V

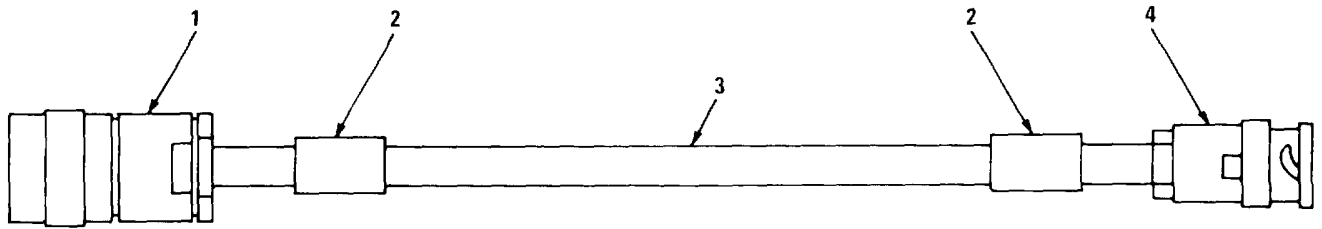


Figure E-23. Cable Assembly, Matrix Receiver Link (0283-4-4847-3)

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
E-23	1	PAFZZ	5935-00-849-8278	UG-260/U	80058	GROUP: 0917 CABLE ASSEMBLY MATRIX RECEIVER 0283-4-4847-3 (15942) CONNECTOR, PLUG, ELECTRICAL	EA	1
E-23	2	XBFZZ	5970-00-408-0410	MILI23053/2	81349	INSULATION, SLEEVING	EA	2
E-23	3	XBFZZ		RG-59/U	80058	CABLE, COAXIAL	FT	V
E-23	4	PAFZZ	5935-00-201-6463	UG-627A/(U	80058	CONNECTOR, PLUG, ELECTRICAL	EA	1

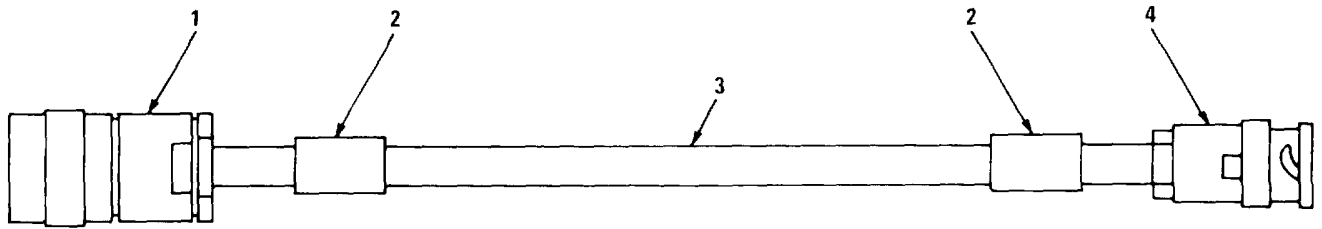


Figure E-24. Stabilizer Ground Strap

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
E-24	1	PAFZZ	5940-00-114-1314	MS20659-129	96906	GROUP: 10 STABILIZER GROUND STRAP 0283-4-2002-1 (15942)	EA	1
E-24	2		5330-00-514-4990	86511	92878	COPPER SHIELDING	FT	AR
E-24	3	PAFZZ	5940-00-115-2674	MS20659-108	96906	TERMINAL LUG	EA	1

Section III. REPAIR PARTS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
(NOT APPLICABLE)								

SECTION IV. NATIONAL STOCK NUMBER AND PART NUMBER INDEX

NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER	NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
5325-00-003-1800	E-15	10	5365-00-271-7354	E-19	3
5305-00-021-3620	E-1	37	7110-00-273-8791	E-16	1
5305-00-021-3620	E-4	7	5935-00-280-1935	E-21	2
5305-00-021-3620	E-8	7	5935-00-280-1937	E-18	2
5305-00-021-3620	E-14	7	5935-00-280-1937	E-19	2
5305-00-021-5511	E-1	78	5830-00-327-5031	E-1	47
5305-00-054-5647	E-17	3	5830-00-327-5031	E-6	5
5305-00-054-5651	E-12	5	6110-00-332-2600	E-1	66
5305-00-054-6654	E-3	8	5970-00-408-0410	E-22	2
5305-00-054-6654	E-7	3	5970-00-408-0410	E-23	2
5305-00-054-6670	E-1	58	5365-00-434-9074	E-2	6
5310-00-056-3395	E-15	5	5935-00-439-0272	E-12	4
5305-00-059-3657	E-1	54	5310-00-445-4729	E-3	1
5305-00-059-3659	E-5	5	5310-00-445-4729	E-7	4
5305-00-059-3661	E-1	13	5310-00-445-4729	E-13	4
5305-00-059-3661	E-3	3	5835-00-466-8508	E-1	14
5305-00-059-3661	E-5	1	5999-00-468-3084	E-9	11
5305-00-059-3661	E-7	8	5935-00-472-0696	E-9	10
5305-00-059-3661	E-13	1	5895-00-475-9170	E-4	8
5305-00-071-1324	E-1	27	5895-00-475-9170	E-8	8
6145-00-078-5751	E-11	3	5895-00-475-9170	E-14	8
5365-00-080-8091	E-9	1	6110-00-499-4135	E-1	68
5310-00-087-7493	E-15	7	5330-00-514-4990	E-24	2
5310-00-088-0551	E-12	3	5820-00-538-7555	E-1	42
5305-00-088-8358	E-9	22	5305-00-543-4406	E-1	21
5960-00-106-1408	E-10	1	5310-00-543-4652	E-10	6
5940-00-114-1314	E-24	1	5310-00-550-5054	E-1	50
5905-00-114-5441	E-9	3	5310-00-550-5054	E-3	2
5940-00-115-2674	E-24	3	5310-00-550-5054	E-5	2
5905-00-141-1187	E-9	2	5310-00-550-5054	E-7	7
7520-00-162-6178	E-1	61	5310-00-550-5054	E-13	2
6210-00-169-1468	E-10	2	5325-00-571-0020	E-15	18
5935-00-173-5895	E-22	1	5310-00-576-2508	E-2	7
5935-00-177-2083	E-11	5	5305-00-576-5807	E-4	2
5935-00-177-2083	E-15	3	5305-00-576-5807	E-8	2
5310-00-193-7577	E-15	2	5305-00-576-5807	E-14	2
5935-00-201-6463	E-23	4	5310-00-582-5677	E-1	25
5305-00-207-2297	E-6	1	5310-00-582-5677	E-4	5
5305-00-207-8253	E-1	26	5310-00-582-5677	E-6	2
5895-00-208-0107	E-1	67	5310-00-582-5677	E-8	5
5310-00-209-0788	E-9	16	5310-00-582-5677	E-14	5
5895-00-213-3022	E-1	46	5340-00-584-6133	E-9	23
9320-00-232-2438	E-5	23	5330-00-585-1591	E-12	7
5305-00-269-3220	E-15	12	5310-00-595-7237	E-15	6
5365-00-271-7354	E-18	3	5310-00-596-7693	E-9	14

SECTION IV. NATIONAL STOCK NUMBER AND PART NUMBER INDEX

NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER	NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
5340-00-597-6190	E-4	3	5310-00-880-5978	E-3	7
5340-00-597-6190	E-8	3	5310-00-880-5978	E-7	1
5340-00-597-6190	E-14	3	5305-00-889-2999	E-9	7
5365-00-598-5379	E-21	3	5305-00-889-3002	E-15	17
5320-00-602-6974	E-15	9	5305-00-889-3116	E-15	1
5310-00-616-3554	E-9	5	5935-00-889-0554	E-18	1
5305-00-616-6370	E4	1	5935-00-889-0554	E-19	1
5305-00-616-6370	E-8	1	5320-00-904-4136	E-1	73
5305-00-616-6370	E-14	1	5310-00-905-1493	E-1	28
5310-00-619-1148	E-1	59	6250-00-916-2729	E-10	3
5315-00-619-3155	E-16	3	5310-00-929-6395	E-3	6
6145-00-643-0652	E-18	6	5310-00-929-6395	E-7	2
6145-00-643-0652	E-19	6	5310-00-933-8120	E-1	55
6145-00-643-0652	E-20	5	5310-00-933-8121	E-1	24
6145-00-643-0652	E-21	6	5310-00-934-9738	E-10	7
6515-00-660-0046	E-1	62	5310-00-934-9739	E-9	6
5305-00-682-7751	E-1	76	5310-00-934-9747	E-9	15
5999-00-702-9230	E-12	6	5310-00-934-9757	E-9	13
5935-00-704-5916	E-21	1	6240-00-936-8589	E-10	4
5305-00-717-5467	E-1	4	5820-00-945-8541	E-1	49
5305-00-719-5007	E-4	9	5805-00-945-8549	E-1	52
5305-00-719-5007	E-8	9	7125-00-952-9091	E-1	39
5305-00-719-5007	E-14	9	7125-00-952-9285	E-1	38
5310-00-722-5998	E-9	4	5305-00-954-3938	E-10	5
5310-00-722-5998	E-12	2	5320-00-956-7355	E-2	3
5935-00-755-3803	E-20	1	5305-00-958-5453	E-9	21
5310-00-773-7618	E-1	6	5305-00-958-5473	E-9	20
5310-00-801-5761	E-1	18	5305-00-978-9388	E-1	41
5935-00-806-5600	E-20	2	5305-00-983-6730	E-9	26
5935-00-807-0280	E-1	4	5305-00-984-4976	E-9	25
5310-00-811-3494	E-1	60	5305-00-984-4983	E-9	8
5305-00-822-5853	E-1	19	5305-00-984-6226	E-15	19
5310-00-827-8976	E-2	5	5310-00-984-7042	E-1	5
5310-00-834-2945	E-4	4	7125-00-990-9948	E-1	31
5310-00-834-2945	E-6	4	5895-01-008-6091	E-17	2
5310-00-834-2945	E-8	4	5995-01-012-6993	E-1	23
5310-00-834-2945	E-14	4	5305-01-036-1469	E-15	21
6110-00-835-5025	E-1	53	6625-01-048-2186	E-1	65
5935-00-849-8278	E-23	1	6625-01-048-2187	E-1	64
5310-00-877-5797	E-5	7	7430-01-056-3420	E-6	6

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PART NUMBER	FSCM	FIG. NO.	ITEM NO.	PART NUMBER	FSCM	FIG. NO.	ITEM NO.
		E-1	62	MS15795-814	96906	E-1	6
		E-1	69	MS16997-69	96906	E-1	41
		E-1	71	MS20470DD3-5	96906	E-15	9
	81349	E-15	23	MS20659-108	96906	E-24	3
AAC00293	81348	E-16	1	MS20659-129	96906	E-24	1
AN3420-16A	88044	E-21	3	MS21044N04	96906	E-12	3
AN3420-8A	88044	E-18	3	MS21044N08	96906	E-1	60
AN3420-8A	88044	E-19	3	MS21044N3	96906	E-5	7
AN936B8	88044	E-9	14	MS24693-50	96906	E-15	21
B520001234	88818	E-11	5	MS27129-12	96906	E-1	28
C-9291/GRQ-23	80058	E-1	46	MS27183-13	96906	E-15	7
CLA-GRB PIF-130	81349	E-18	7	MS3057-16B	96906	E-21	2
CY-6154/G	80058	E-1	31	MS3057-3B	96906	E-20	2
F-1358/GRQ-23	23929	E-1	72	MS3057-8B	96906	E-18	2
FFS85-2	70318	E-1	78	MS3057-8B	96906	E-19	2
FFW92	81348	E-7	1	MS3116E8-4P	96906	E-20	1
FN-87/G	80058	E-1	47	MS3119E14-15	96906	E-12	4
FN-87/G	80058	E-6	5	MS35177-1	96906	E-15	8
F22NG1-02	72962	E-3	1	MS35190-236	96906	E-9	21
F22NG1-02	72962	E-7	4	MS35190-246	96906	E-9	22
F22NG1-02	72962	E-13	4	MS35190-251	96906	E-9	20
F42NE040	72962	E-4	4	MS35206-207	96906	E-10	5
F42NE040	72962	E-6	4	MS35206-213	96906	E-15	1
F42NE040	72962	E-8	4	MS35206-217	96906	E-9	7
F42NE040	72962	E-14	4	MS35206-218	96906	E-9	26
F52NE-066	72962	E-1	18	MS35206-219	96906	E-9	25
L3R6-40-OVNM	52542	E-1	65	MS35206-226	96906	E-9	8
L5R28-30-OVNM	52542	E-1	64	MS35206-240	96906	E-15	19
MIL123053/2	81349	E-22	2	MS35206-242	96906	E-15	17
MIL123053/2	81349	E-23	2	MS35307-307	96906	E-1	37
MIL123053/2 CLI		E-11	2	MS35307-307	96906	E-4	7
MS15795-805	96906	E-9	4	MS35307-307	96906	E-8	7
MS15795-805	96906	E-12	2	MS35307-307	96906	E-14	7
MS15795-807	96906	E-3	7	MS35307-308	96906	E-1	26
MS15795-808	96906	E-1	59	MS35307-311	96906	E-4	2
MS15795-809	96906	E-1	50	MS35307-311	96906	E-8	2
MS15795-809	96906	E-3	2	MS35307-311	96906	E-14	2
MS15795-809	96906	E-5	2	MS35307-312	96906	E-6	1
MS15795-809	96906	E-7	7	MS35307-313	96906	E-4	1
MS15795-809	96906	E-13	2	MS35307-313	96906	E-8	1
MS15795-810	96906	E-1	25	MS35307-313	96906	E-14	1
MS15795-810	96906	E-4	5	MS35307-362	96906	E-1	4
MS15795-810	96906	E-6	2	MS35307-368	96906	E-1	19
MS15795-810	96906	E-8	5	MS35307-370	96906	E-1	21
MS15795-810	96906	E-14	5	MS35307-375	96906	E-1	76

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MS35333-36	96906	E-15	2	PIF-130,CLA-GRB	81349	E-20	6
MS35333-42	96906	E-15	6	PIF-130,CLA-GRB	81349	E-21	7
MS35333-69	96906	E-10	6	PTB-22-55PS(001)	77820	E-15	3
MS35335-29	96906	E-9	5	PT06A14-15P	77820	E-18	1
MS35335-30	96906	E-9	16	PT06A14-15P	77820	E-19	1
MS35338-136	96906	E-3	6	PT06A24-61P	77820	E-21	1
MS35338-136	96906	E-7	2	PT06E22-55SS/SR	77820	E-11	4
MS35338-138	96906	E-1	55	R-390/UUR	80058	E-1	42
MS35338-139	96906	E-1	24	RCR20G203JS	81349	E-9	2
MS35338-141	96906	E-1	5	RCR20G563JS	81349	E-9	3
MS35649-222	96906	E-10	7	RG-59/U	80058	E-22	3
MS35649-2382	96906	E-15	5	RG-59/U	80058	E-23	3
MS35649-242	96906	E-9	6	SA-1922/GRQ-23	80058	E-1	67
MS35649-262	96906	E-9	15	SB-2601/G	80058	E-1	53
MS35649-282	96906	E-9	13	SB-3771/GRQ-23	80058	E-1	66
MS51957-13	96906	E-17	3	SP2189	96603	E-17	2
MS51957-17	96906	E-12	5	S2090T6	81860	E-4	3
MS51957-30	96906	E-3	8	S2090T6	81860	E-8	3
MS51957-30	96906	E-7	3	S2090T6	81860	E-14	3
MS51957-45	96906	E-1	58	S25B140	25472	E-2	7
MS51958-61	96906	E-1	54	S25B200	03481	E-2	5
MS51958-63	96906	E-5	5	TA-676/G	80058	E-1	52
MS51958-65	96906	E-1	13	UG-260/U	80058	E-22	1
MS51958-65	96906	E-3	3	UG-260/U	80058	E-23	1
MS51958-65	96906	E-5	1	UG-627A/U	80058	E-23	4
MS51958-65	96906	E-7	8	XMRA75P1A406	98922	E-11	1
MS51958-65	96906	E-13	1	0099-1-3189	15942	E-15	16
MS51959-83	96906	E-4	9	0099-1-3194	15942	E-15	14
MS51959-83	96906	E-8	9	0099-1-3197-1	15942	E-15	22
MS51959-83	96906	E-14	9	0099-1-3199-1	15942	E-15	15
MS51960-67	96906	E-1	27	0099-1-3199-2	15942	E-15	13
MS90725-70	96906	E-15	12	0099-1-3200-2	15942	E-15	20
MWC20(10)SJ	81349	E-18	5	0099-1-4123-1	15942	E-1	70
MWC20(10)SJ	81349	E-19	5	0099-1-4124	15942	E-15	4
MWC20(10)SJ	81349	E-20	4	0099-1-4125	15942	E-15	11
MWC20(10)SJ	81349	E-21	5	0283-1-3999-7	15942	E-1	74
MX-9596/GRQ-23	80058	E-1	68	0283-4-1000	15942	E-2	1
MX7196M	80058	E-1	38	0283-4-2001-1	15942	E-1	44
MX7197M	80058	E-1	39	0283-4-2001-2	15942	E-1	45
M24243&6A604H	81349	E-2	3	0283-4-2001-3	15942	E-1	63
M24243/1-B403	81349	E-1	73	0283-4-2002-1	15942	E-1	23
NAS561C6-15	80205	E-16	3	0283-4-2003	15942	E-2	4
NL840	83781	E-10	1	0283-4-2004	15942	E-2	6
OA-7735/G	80058	E-1	49	0283-4-2007-1	15942	E-7	5
PIF-130, CLA-GRB	81349	E-19	7	0283-4-2013-1	15942	E-3	5

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0283-4-2015-1	15942	E-5	6	0283-4-4002-18	15942	E-13	5
0283-4-2016-1	15942	E-5	8	0283-4-4301-1	15942	E-1	51
0283-4-2021-1	15942	E-16	2	0283-4-4302-1	15942	E-1	22
0283-4-2022-1	15942	E-6	3	0283-4-4303-1	15942	E-5	4
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0283-4-2037-1	15942	E-1	15	0283-4-4304-2	15942	E-12	1
0283-4-2039	15942	E-4	8	0283-4-4831-7	15942	E-1	34
0283-4-2039	15942	E-8	8	0283-4-4847-3	15942	E-1	48
0283-4-2039	15942	E-14	8	0283-4-4860-1	15942	E-1	17
0283-4-2207	15942	E-18	4	10-101949-14	77820	E-12	7
0283-4-2300-1	15942	E-1	77	10-101960-14-3	77820	E-12	6
0283-4-2300-2	15942	E-1	36	102324-21	00752	E-15	18
0283-4-2300-3	15942	E-1	35	1031	08287	E-1	61
0283-4-3000-1	15942	E-1	16	116B0001	11963	E-9	18
0283-4-3000-2	15942	E-1	8	116B0011-2	11963	E-9	17
0283-4-3001-1	15942	E-1	3	116B002	11963	E-10	8
0283-4-3001-2	15942	E-1	7	15232	91833	E-9	24
0283-4-3002-1	15942	E-1	10	1703-1-1184	15942	E-19	4
0283-4-3004-1	15942	E-1	11	1703-1-1184	15942	E-20	3
0283-4-3005-1	15942	E-1	43	1703-1-1184	15942	E-21	4
0283-4-3008-1	15942	E-7	6	1856-1 TYPE B	81349	E-18	6
0283-4-3015-1	15942	E-13	3	1856-1 TYPE B	81349	E-19	6
0283-4-3020-1	15942	E-4	6	1856-1 TYPE B	81349	E-20	5
0283-4-3020-2	15942	E-14	6	1856-1 TYPE B	81349	E-21	6
0283-4-3020-3	15942	E-8	6	2130	83330	E-9	1
0283-4-3023-1	15942	E-4	10	2212LC	91802	E-10	2
0283-4-3023-1	15942	E-14	10	2212MC	91802	E-10	3
0283-4-3023-2	15942	E-8	10	2221A2-2H	91802	E-10	4
0283-4-3024-3	15942	E-2	2	2505	11963	E-9	9
0283-4-3025-5	15942	E-1	75	3-202413-3	00779	E-9	10
0283-4-3300-1	15942	E-1	20	3653	11963	E-10	9
0283-4-3301-1	15942	E-1	40	3664-3667-1	11963	E-9	12
0283-4-3302-1	15942	E-5	3	3692	11963	E-9	19
0283-4-3630-1	15942	E-1	56	440	52223	E-6	6
0283-4-3630-2	15942	E-1	57	5R2-1	71286	E-15	10
0283-4-3837-1	15942	E-1	29	566-1-2998-2	15942	E-1	14
0283-4-3837-2	15942	E-1	33	6NR	11963	E-1	30
0283-4-40014	15942	E-1	1	66399-3	00779	E-9	11
0283-4-4002-16	15942	E-1	2	836	83330	E-9	23
0283-4-4002-16	15942	E-7	9	86511	92878	E-24	2
0283-4-4002-17	15942	E-1	12	8750	70903	E-11	3
0283-4-4002-17	15942	E-3	4				

APPENDIX F

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

F-1 SCOPE. This appendix lists expendable supplies and materials you will need to operate and maintain the AN/TSQ-78. These items are authorized to you by CTA 50-970, Expendable Items (except Medical, Class V, Repair Parts, and Heraldic Items).

F-2 EXPLANATION OF COLUMNS.

a. Column 1, Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, Appendix F").

b. Column 2, Level. This column identifies the lowest level of maintenance that requires the listed item.

- C.....Operator/Crew
- O..... Organizational maintenance
- F..... Direct support maintenance
- H.....General support maintenance

D..... Depot maintenance

c. Column 3, National Stock Number (NSN). This is the NSN assigned to the item; use it to request or requisition the item.

d. Column 4, Description. Indicates the Federal Item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses. if applicable.

e. Column 5, Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the U/M differs from the unit of issue, requisition the lowest unit that will satisfy your requirements.

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	O		BRUSH, PAINT, FLAT, SIZE AS APPLICABLE	EA
2	C	8305-00-222-2423	CLOTH, COTTON (CHEESE CLOTH), 20-YARD BOLT	YD
3	C		ELECTRICAL INSULATION TAPE	
4	O	9150-00-231-6640	OIL, LUBRICATING, GENERAL PURPOSE	
5	O	5350-00-235-0124	PAPER, ABRASIVE, FLINT, CLOSED COATING. EXTRA FINE GRADE	Sheet
6	O		TRICHLOROETHANE (CLEANING COMPOUND)	
		6810-00-664-0273 6810-00-292-9625	1-PINT CAN 1-QUART CAN	

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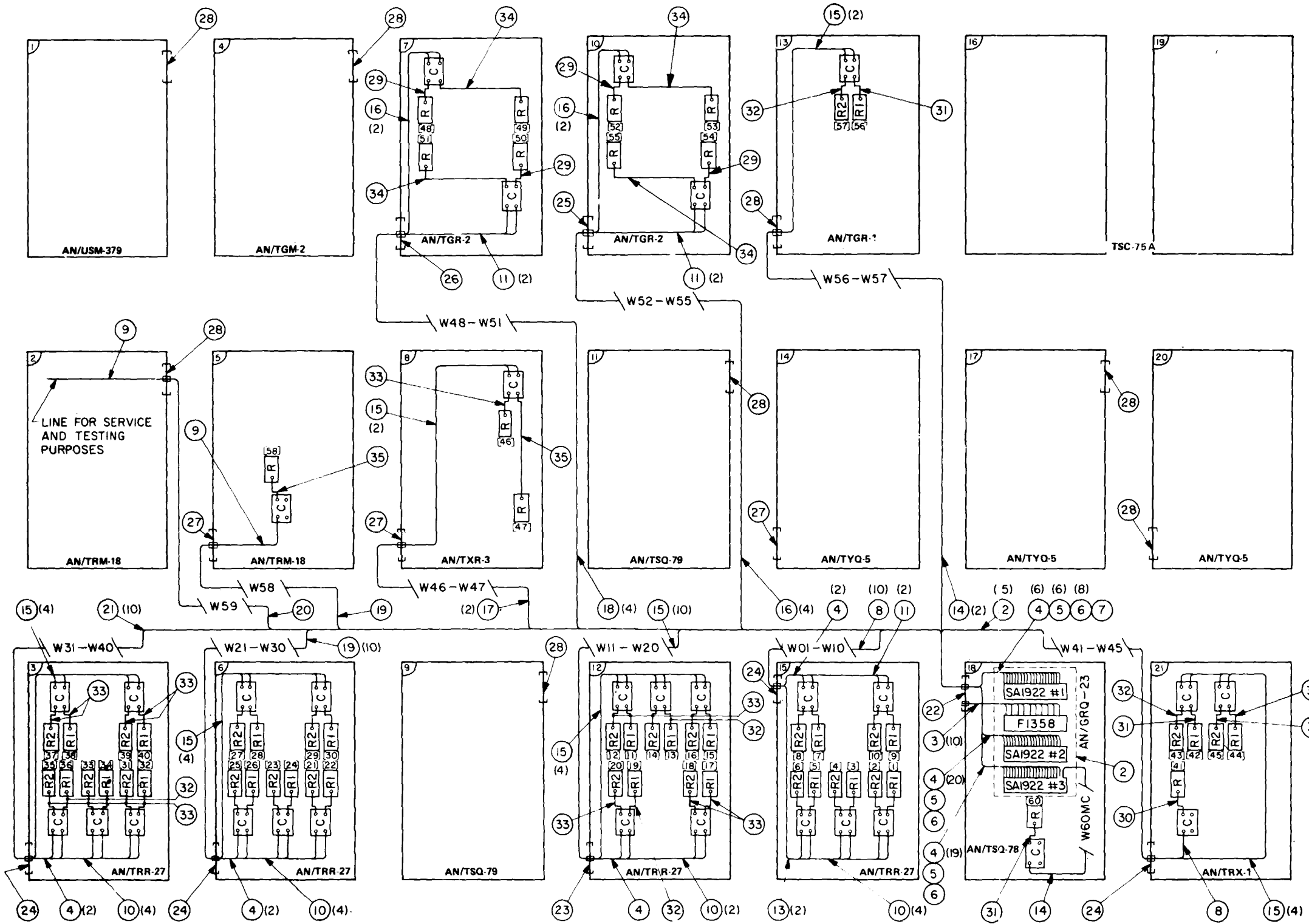
None

By Order of the Secretary of the Army:

E.C. MEYER
General, United States Army
Chief of Staff

Official:

J.C. PENNINGTON
Major General, United States Army
The Adjutant General

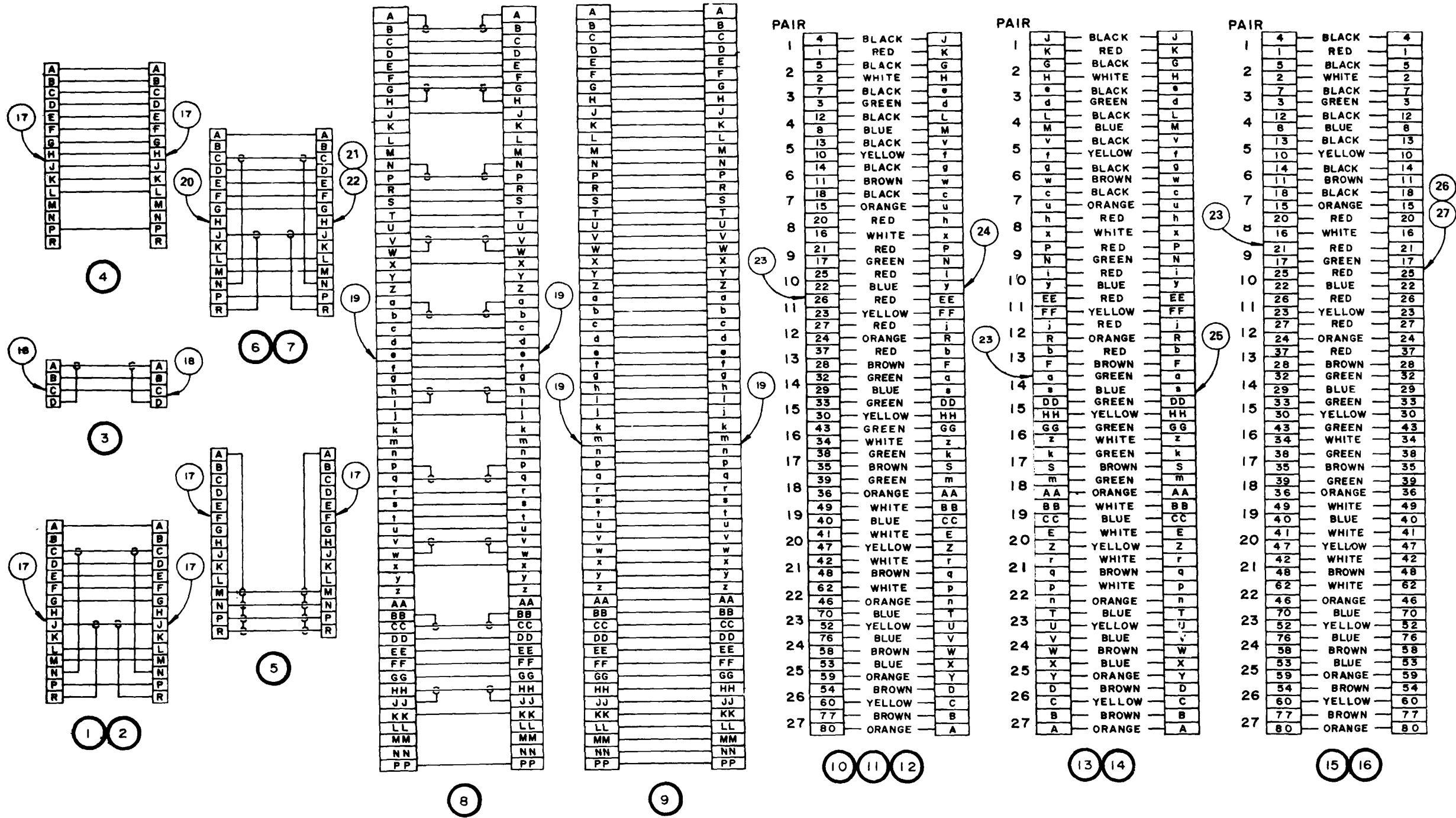


LEGEND:

- C CONTROL, SWITCHING MATRIX C-9291/GRQ-23
- R RECEIVER, RADIO R-390A/URR R2 = TOP, R1 = BOTTOM
- WXXR CABLE FROM CONTROL TO RCVR
- WXXC CABLE FROM ACCESS PANEL TO CONTROL
- WXX CABLE FROM MASTER ACCESS PANEL TO ACCESS PANEL
- WXXM CABLE FROM CONTROL TO MASTER ACCESS PANEL
- WXXMC CABLE FROM AN/GRQ-23 TO CONTROL
- (X) QTY REQUIRED
- X SHELTER NO.
- XX CABLE NO. (REF)

ITEM	PART NO. OR IDENTIFYING NO.	DESCRIPTION
1	0283-1-4840	RF MATRIX SYS CABLING AND ASSY
2	AN/GRQ-23	RF SWITCHING SET
3	0283-4-4845-2	CABLE, MATRIX INTERCONN
4	0283-4-4845-1	CABLE, MATRIX INTERCONN
5	0283-4-4845-3	CABLE, MATRIX, INTERCONN
6	0283-4-4845-4	CABLE, MATRIX, INTERCONN
7	0099-1-2061	BRACKET, MATRIX CABLE
8	0283-4-4845-6	CABLE, MATRIX INTERCONN
9	0283-4-4845-5	CABLE, MATRIX INTERCONN
10	0283-4-4845-7	CABLE, MATRIX INTERCONN
11	0283-4-4845-8	CABLE, MATRIX INTERCONN
12	0283-4-4845-9	CABLE, MATRIX INTERCONN
13	0283-4-4845-10	CABLE, MATRIX INTERCONN
14	0283-4-4845-11	CABLE, MATRIX INTERCONN
15	0283-4-4845-12	CABLE, MATRIX INTERCONN
16	0283-4-4845-13	CABLE, MATRIX INTERCONN
17	0283-4-4845-14	CABLE, MATRIX INTERCONN
18	0283-4-4845-15	CABLE, MATRIX INTERCONN
19	0283-4-4845-16	CABLE, MATRIX INTERCONN
20	0283-4-4845-17	CABLE, MATRIX INTERCONN
21	0283-4-4845-18	CABLE, MATRIX INTERCONN
22	0099-1-4123-1	CABLE ACCESS ASSEMBLY
23	0099-1-4123-2	CABLE ACCESS ASSEMBLY
24	0099-1-4123-3	CABLE ACCESS ASSEMBLY
25	0099-1-4123-4	CABLE ACCESS ASSEMBLY
26	0099-1-4123-5	CABLE ACCESS ASSEMBLY
27	0099-1-4123-6	CABLE ACCESS ASSEMBLY
28	0099-1-4123-7	CABLE ACCESS ASSEMBLY
29	0283-4-4847-1	CABLE ASSY, MATRIX RCVR LINK
30	0283-4-4847-2	CABLE ASSY, MATRIX RCVR LINK
31	0283-4-4847-3	CABLE ASSY, MATRIX RCVR LINK
32	0283-4-4847-4	CABLE ASSY, MATRIX RCVR LINK
33	0283-4-4847-5	CABLE ASSY, MATRIX RCVR LINK
34	0283-4-4847-6	CABLE ASSY, MATRIX RCVR LINK
35	0283-4-4847-7	CABLE ASSY, MATRIX RCVR LINK

Figure FO-1. Antenna Distribution System in 21-Shelter Complex



REF NO.	DESIGNATION	DESCRIPTION
1	W 5	CABLE ASSY
2	W 6	CABLE ASSY
3	W 8	CABLE ASSY
4	W 9	CABLE ASSY
5	W 10	CABLE ASSY
6	W 41	CABLE ASSY
7	W 42	CABLE ASSY
8	W 15	CABLE ASSY
9	W 16	CABLE ASSY
10	W 211	CABLE ASSY
11	W 212	CABLE ASSY
12	W 213	CABLE ASSY
13	W 214	CABLE ASSY
14	W 215	CABLE ASSY
15	W 216	CABLE ASSY
16	W 217	CABLE ASSY
17	PT06A14-15P	CONNECTOR
18	PT06A8-4P	CONNECTOR
19	PT06A24-61P	CONNECTOR
20	PT06A14-15S	CONNECTOR
21	PT01A14-15S	CONNECTOR
22	PT06A14-15S	CONNECTOR
23	XMRA75P1A406	CONNECTOR
24	PT01E22-55S(SR)	CONNECTOR
25	PT06E22-55P(SR)	CONNECTOR
26	PT06E22-55S(SR)	CONNECTOR
27	5935-00-177-2083	ADAPTER

Figure FO-2. Clock and Intercom Cable Wiring Diagram

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