TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE MANUAL

TEST FACILITIES SET AN/TPM-24(V)2 (NSN 6625-00-423-2133)

This copy is a reprint which includes current pages from Changes 1 and 2. The title was changed to read as shown above by Change 2.

HEADQUARTERS, DEPARTMENT OF THE ARMY

NOVEMBER 1972

WARNING

DANGEROUS VOLTAGE EXISTS IN THIS EQUIPMENT

AND IN EQUIPMENT WHICH WILL BE INTERCONNECTED

BY THIS TEST FACILITIES SET

DON'T TAKE CHANCES!

EXTREMELY DANGEROUS VOLTAGE

EXISTS IN THE FOLLOWING UNITS:

Receiver-Transmitter Group or -85 / TPX-46 (V) ..... 5000 vdc

Coder-Decoder Group Case CY-6409/TPX-46 (V) ..... 115 vac

Interconnecting Box J-3113 / TPM-24 (V) ..... 115 vac

TECHNICAL MANUAL
No. 11-6625-2398-15-2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *15 November 1972*

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT GENERAL SUPPORT AND DEPOT MAINTENANCE MANUAL TEST FACILITIES SET AN/TPM-24(V)2 (NSN 6625-00-423-2133)

REPORTING OF ERRORS

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 or DA Form 2028 directly to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. A reply will be furnished to you.

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

(fig. 1-1)

This manual describes Test Facilities Set AN/ T PM-24 (V) 2 and provides instructions for its installation, use, and maintenance. The manual includes instructions for cleaning, inspection, troubleshooting, testing, repair, and removal and replacement of components within the set. It also lists tools, materials, and test equipment required for maintenance. A functional description of the equipment is also provided. Repair parts and special tools lists are contained in appendix C.

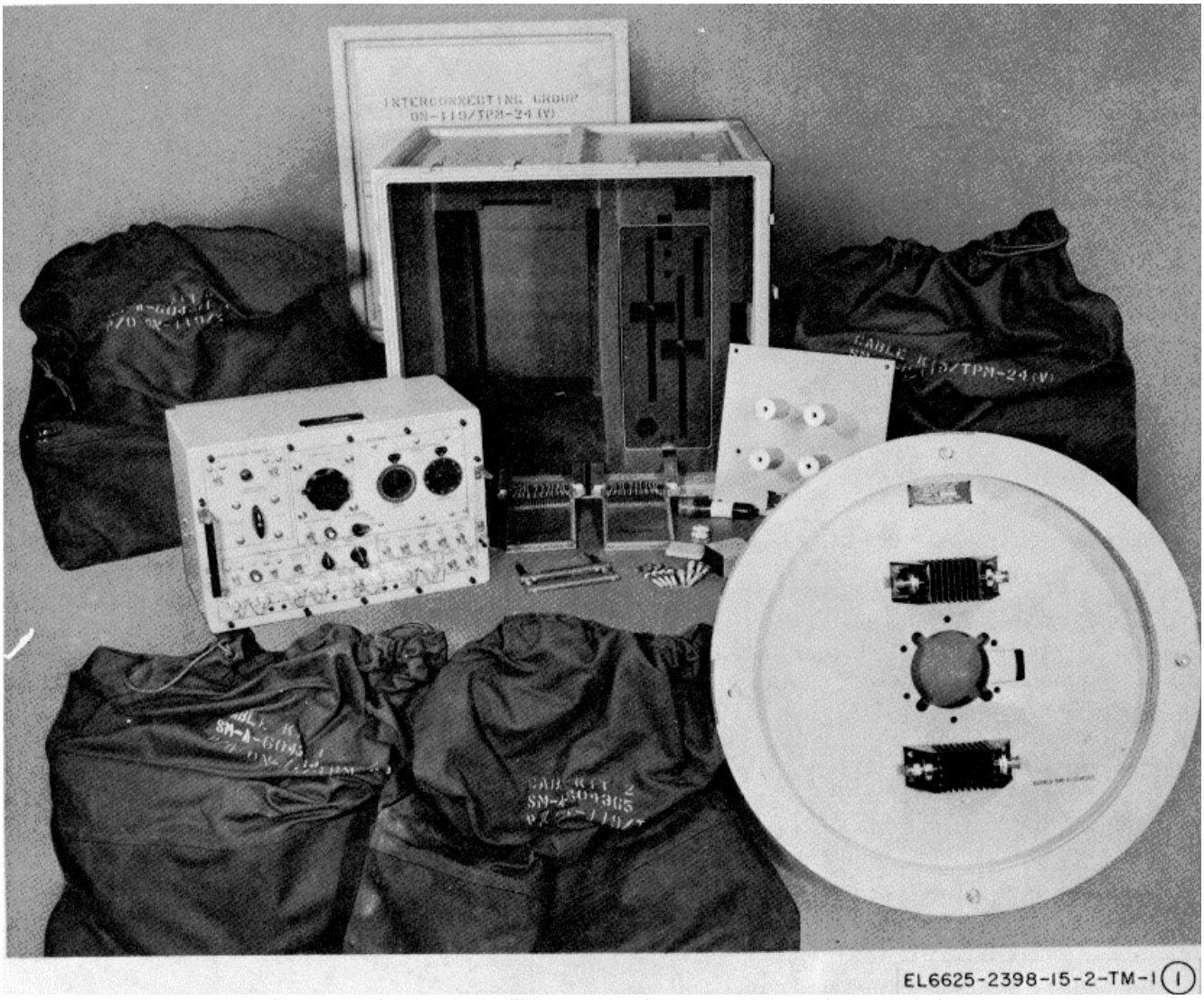


Figure 1-1 (1). Test facilities set AN/ TPM-24 (V) 2 (sheet 1 of 2).

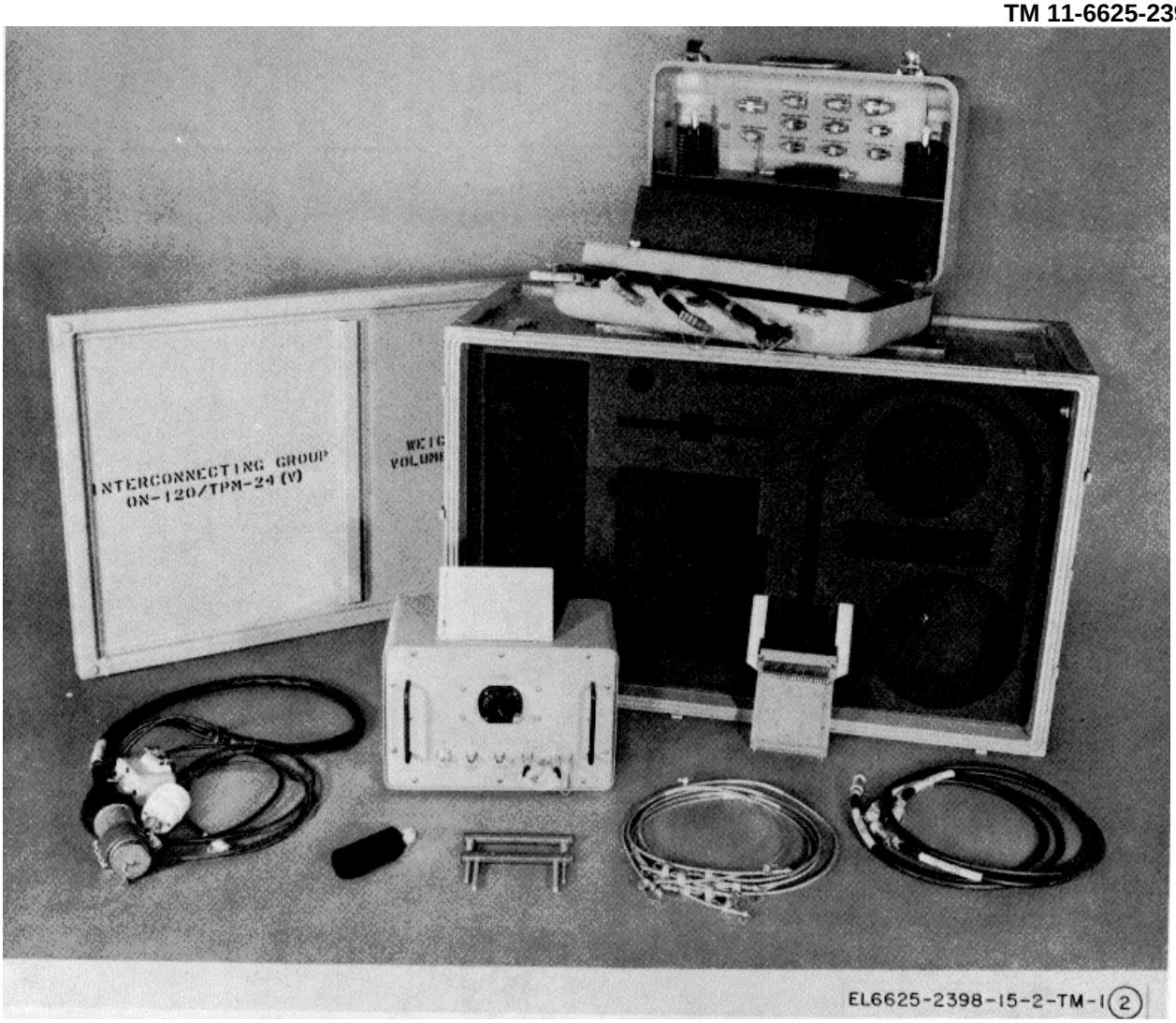


Figure 1-1 (2) . Test facilities set AN/TPM-24(V)2 (sheet 2 of 2).

1-2. Index of Equipment Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 3 10-4 to determine whether there are now editions, changes, or additional publications pertaining to this equipment. DA Pam 310-4 is a current index of technical manuals, technical bulletins, supply bulletins, and lubrication orders.

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

1-3. Maintenance Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750.

b. Report of Damaged or Improper Shipment. Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700-58.

c. Reporting of Equipment Manual Improvements. The direct reporting of errors, omissions, and recommendations for improving this manual by the individual user is authorized and encouraged. DA Form 2028 (Recommended Changes to Publications) will be used for reporting these improvements and forwarded direct to: Commander, US Army Electronics Command, ATTN: AMSEL-MA-SR, Fort Monmouth, N.J. 07703.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

a. Test Facilities Set AN/TPM-24(V)2 is a set of test accessories that is used to maintain Interrogator Set AN/TPX-46(V) (the IFF set). These accessories are contained in two separate groups which are designated as group 1 and group 2, respectively. Group 1 basically consists of an interface adapter unit, antenna pedestal mounting base, inertial antenna load, four cable kits, transit case and minor components (e.g., terminations, extender boards, etc.). Group 2 consists of a hybrid attenuator, accessory case, cable assemblies, transit case, and minor components.

b. Six cable assemblies are designed for extension of, and connection between major assemblies of Coder-Decoder Group OX-7(V)/TPX-46(V). These cables are used to extend and interconnect the units listed below from Coder-Decoder Group Case CY-6409/TPX-46 (V).

(1) Signal Processor CP-925/TPX-46(V).

(2) Electrical Synchronizer SN-420/TPX-46(V).

(3) Antenna Control C-8738/TPX-46 (V).

c. Nine additional cable assemblies are designed for extension of, and connections between major assemblies of Receiver-Transmitter Group OR-85/TPX-46(V). Also provided for terminations for the sum and difference channels of Receiver-Transmitter Group OR-85/TPX-46(V). The cable assemblies are used to extend and interconnect the subassemblies of Radio Receiver-Transmitter Case CY-7050/TPX-46(V) that are listed below.

(1) RF switch module.

(2) Receiver module.

(3) Transmitter module.

(4) Low voltage power supply.

d. Hybrid Attenuator Assembly CN-1322/A TPM-24 (V), associated cable assemblies, and minor components are used in performing various RF measurements on the IFF set. This includes RF sum channel and difference channel parameters which can be measured at IFF set reply and challenge frequencies.

e. Interconnecting Box J-3113/TPM-24(V) is used to monitor the IFF set video outputs, adjusted azimuth data, and to simulate the interface between the IFF set and the associated radar set. It also provides the means for selecting and applying primary power to the IFF set. When additional connections are made to the Antenna Pedestal AB-1076/TPX-46(V) and Interrogator Set Control C-7570/TPX-46(V), or C-7571, or C-7572, the IFF set can be energized in a test-bed configuration. Interconnecting Box J-3113/TPM-24(V) can be used to enable functions in the IFF set in addition to providing the interface connection from the Coder-Decoder Group OX-7(V)/TPX-46(V) to the Receiver-Transmitter Group OR-85/TPX-46 (V).

f. The remaining cable assemblies and minor components of the test facilities set are used in performing specific maintenance on the IFF set. The maintenance procedures for the IFF set are provided in the following technical manuals:

TM 11-5895-532-34-1 ..... DS and GS Maintenance Manual, Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4 and 6.

TM 11-5895-532-34-2 ..... DS and GS Maintenance Manual, Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4 and 6.
(Receiver-Transmitter Group OR-85/TPX-46 (V)).

TM 11-5895-532-34-3 ..... DS and GS Maintenance Manual, Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4 and 6.
(Signal Processor CP-925/TPX-46 (V)).

TM 11-5895-532-34-4 ..... DS and GS Maintenance Manual, Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4 and 6.
(Electrical Synchronizer (XN-420/TPX-46 (V)).

TM 11-5895-532-34-5 ..... DS and GS Maintenance Manual, Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4 and 6.
(Antenna Control C-8738/TPX-46 (V)).

DMWR 11-5895-532-50 ..... Depot Maintenance Work Requirements.
Manual Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4 and 6.

1-5. Technical Characteristics

a. Hybrid Attenuator Assembly CN-1322/TPM-24 (V).

(1) *Hybrid junction.* The following is a summary of the characteristics of the hybrid junction:

Impedance ..... 50 ohms, nominal
Frequency range..... 1000-1200 MHz
Nominal coupling ..... 3, +0.3, -0 db
Max. Deviation ..... ±0.25 dB
Max. VSWR 1.3: 1
Min. Isolation ..... 20 db between sum and difference.
Power rating..... 5 kilowatts peak, 50 watts average.

(2) *Attenuator.* The following is a summary of the characteristics of the attenuator:

Impedance ..... 50 ohms, nominal
Frequency range..... 1000-1200 MHz
Variable attenuation..... 0-25 db, min
Calibration accuracy at 1090 MHz (not including insertion loss). ..... 0-10 db ±0.35 db, 10-20 db ±0.50 db, 20-25 db ±0.60 db

Accuracy over the band..... ±2.5 db max., including insertion loss.
Insertion loss ..... 0.5 db, max.
VSWR..... 1.5: 1 max.
Power rating ..... 6 kilowatts peak, 10 watts average.

b. Interconnecting Box J-3113/TPM-24(V).

Input power..... 115 vac ±10%, 60 Hz ±5%
115 vac ±10%, 400 Hz ±5%
Azimuth speed control..... 0 to 25 rpm
Resolver output ..... 26 vac ±10%, 4 kHz ±5
Resolver electrical error ..... ±3 minutes of arc
Resolver null voltage ..... 20 mv total,
15 mv fundamental.
Synchro output ..... 90 vac ±10%
Synchro electrical error ..... ±6 minutes of arc
Synchro null voltage ..... 60.0 mv total,
30.0 mv fundamental.

1-6. Common Names

A list of nomenclature and common name assignment for the test facilities set is given below.

Common name	*Nomenclature*
Test facilities set	Test Facilities Set AN/TPM-24 (V) 2 Interconnecting Group ON-119/TPM-24 (V).
Group 1	
Transit case 1A1	Case Accessories CY-7308/TPM-24 (V).
Shorting plug 1A1AT1	Dummy Connector, Plug MX-9355/TPM-24 (V).
Dummy load 1A1AT2/1A1AT3	
Interface adapter unit 1A1A1	Interconnecting Box J-3113/TPM-24 (V).
PC board extractor 1A1A2	Extractor, Circuit Board.
Extender card 1A1A3/1A1A4	Extender Card, Electronic Test MX-9356/TPM-24 (V).
Cable kit 1A2	Kit, Cable.
Cable 1A2W1	Cable Assembly, Power, Electrical CX-12897/TPM-24 (V) (10 ft).
Cable 1A2W2	Cable Assembly, Power, Electrical CX-12898/TPM-24 (V) (10 ft).
Cable 1A2W3	Cable Assembly, Power, Electrical CX-12899/TPM-24 (V) (6 ft).
Cable 1A2W4/1A2W5	Cable Assembly, Radio Frequency CG-3750/TPM-24 (V) (2 ft).
Cable 1A2W6/1A2W7	Cable Assembly, Radio Frequency CG-3750/TPM-24 (V) (20 ft).
Cable 1A2W8	Cable Assembly, Special Purpose, Electrical CX-12905/TPM-24 (V) (6 ft).
Cable 1A2W9/1A2W10	Cable Assembly, Special Purpose, Electrical CX-12906/TPM-24 (V) (6 ft).
Cable 1A2W11	Cable Assembly, Special Purpose, Electrical CX-12907/TPM-24 (V) (3 ft).
Cable 1A2W12	Cable Assembly, Radio Frequency CG-3751/TPM-24 (V) (8 ft).
Cable kit 1A3	Kit, Cable.
Cable 1A3W1	Cable Assembly, Special Purpose, Electrical CX-12901/TPM-24 (V) (10 ft).
Cable 1A3W2	Cable Assembly, Special Purpose, Electrical CX-12908/TPM-24 (V) (6 ft).
Cable 1A3W3	Cable Assembly, Special Purpose, Electrical CX-12909/TPM-24 (V) (6 ft).
Cable 1A3W4	Cable Assembly, Special Purpose, Electrical CX-12910/TPM-24 (V) (6 ft).
Cable 1A3W5	Cable Assembly, Special Purpose, Electrical CX-12911/TPM-24 (V) (6 ft).
Cable kit 1A4	Kit, Cable.
Cable 1A4W1	Cable Assembly, Special Purpose, Electrical CX-12902/TPM-24 (V) (6 ft).
Cable 1A4W2	Cable Assembly, Radio Frequency CG-3749/TPM-24 (V) (6 ft).

Common name	*Nomenclature*
Cable 1A4W3	Cable Assembly, Special Purpose, Electrical CX-12903/TPM-24 (V) (6 ft).
Cable 1A4W4	Cable Assembly, Special Purpose, Electrical CX-12912/TPM-24 (V) (6 ft).
Cable 1A4W5	Cable Assembly, Special Purpose, Electrical CX-12913/TPM-24 (V) (6 ft).
Cable 1A4W6/1A4W7/1A4WS/1A4W9/ 1A4W10/1A4W11/1A4W12/1A4W13.	Cable Assembly, Radio Frequency CG-3752/TPM-24 (V) (6 ft).
Cable 1A4W14	Cable Assembly, Special Purpose, Electrical CX-12914/TPM-24 (V) (3 ft).
Cable 1A4W15	Cable Assembly, Special Purpose, Electrical CX-10773/U (2 ft).
Cable 1A4W16	Cable Assembly, Radio Frequency CG-3753/TPM-24 (V) (2 ft).
Cable kit 1A5	Kit, Cable.
Cable 1A5W1	Cable Assembly, Special Purpose, Electrical CX-12900/TPM-24 (V) (24 ft).

Common name	*Nomenclature*
Cable 1A5W2	Cable Assembly, Special Purpose, Electrical CX-12904/ TPM-24 (V) (24 ft).
Inertial antenna load 1A6	Inertial Antenna Load MX-9357/TPM-24 (V).
Antenna pedestal mount 1A7.	Mount, Antenna Pedestal MT-4532/TPM-24 (V).
Group 2	Interconnecting Group ON-120/TPM-24 (V).
Dummy load 2AT1	I)Dummy Load, Electrical DA-636/U
Hybrid attenuator 2A1	Hybrid Attenuator Assembly CN-1322A/TPM-24 (V).
Accessory case 2A2	Case, Accessory
Fixed mismatch 2A2AT1	Dummy Load, Electrical DA-634/ U
Fixed mismatch 2A2AT2	Dummy Load, Electrical DA-635/U
Fixed attenuator 2A2AT3	Attenuator, Fixed CN-1402/TPM-24 (V).
Dummy Loads 2A2AT4/ 2A2AT5	Dummy Load. Electrical DA-558/TMP-24(V).
Dummy Load 2A2AT6	Dummy Load, . DA-559/TP M -24 (V).
Adapter 2A2CP1 / 2A2CP2 / 2A2CP3/ 2A2CP4.	Adapter, Connector UG-1896/TPM-24 (V).
Adapters 2A2CP/ 2A2CP6	Adapter, Connector UG-1897/TPM-24 (V).
Adapter 2A2CP7	Adapter, Connector UG-1896/TPM-24 (V).
Adapter 2A2CP8	Adapter, Connector UG-1034/TPM-24 (V).
Cables 2A2W1 / 2A2W2/2A2W3	Cable Assembly, Special Purpose, Electrical CX-12916/TPM-24 (V) (2 ft).
Cable 2A2W4	Cable Assembly, Special Purpose, Electrical CX-12917/TPM-24 (V) (2 ft).
Ground straps 2A2W5/2A2W6	
PC board extractor 2A3	Extractor, Circuit Board
Extender card 2A4	Extender Card. Electronic Test MX-9354/TPM-24 (V).
Transit case 2MP1	Case Interconnecting Group CY-7306/TPM-24 (V).
Cable 2W1	Cable Assembly. Special Purpose, Electrical CX-12915/TPM-24 (V) (8 ft).
Cable 2W2/2W3/2W4/2W5/2W6	Cable Assembly, Radio Frequency CG-3754/TPM-24 (V) (3 ft).
Cable 2W7/ 2W8	Cable Assembly. Radio Frequency CG-3750/TPM-24 (V) (6 ft).

1-7. Components of Test Facilities Set AN /TPM-24 (V) 2

The following listing is based on original shipment of Contract DAAB05-72-C-4001. Refer to paragraph 1-6 for nomenclature of items listed below.

a. Major Components.

Quantity	Item	Height (in.)	Depth (in.)	Width (in.)	Unit weight (lb)	Figure No.
1	Transit case 1A1	25 ¼	27 1/8	24 5/8	40	1-2
1	Transit case 2MP1	17 5/8	24- 7/8	39	.....	1-3
1	Accessory case 2A2	6 ½	14	21	.....	1-4
1	Hybrid attenuator 2A	10	9 ½	13 ¼	12.5	1-7
4	Canvas bags 1A2 through 1A5	36	.....	30	.....	1-5
1	Interface adapter unit 1A1A1	11 ¾	17 5/8	17¾	.....	1-6
1	Antenna pedestal mount 1A7	3	12	12	.....	1-8
1	Inertial antenna load 1A6	30 (dia.)	2 ¼	.....	.....	1-9
2	TM 11-6625-2308-15-2					

b. Cable Assemblies, Group 1.

Quantity	Item	Length (nom. ft)	Figure No.
1	1A2W1	10	1-10
1	1A2W2	10	1-10
1	1A2W3	6	1-10
2	1A2W4/ 1A2W5	2	1-10
1	1A5W1	24	1-10
1	1A3W1	6	1-10
1	1A4W1	6	1-10
1	1A4W2	6	1-10
1	1A4W3	6	1-10
2	1A2W6/ 1A2W7	20	1-10
1	1A5W2	24	1-10
1	1A2W8	6	1-10
2	1A2W9)/ 1A2W10	6	1-10
1	1A2W11	3	1-10

Quantity	Item	Length (nom. ft)	Figure No.
1	1A2W12	8	1-10
1	1A3W2	6	1-10
1	1A2W3	6	1-10
1	1A3W4	6	1-10
1	1A3W4	6	1-10
1	1A3W5	6	1-10
1	1A4W4	6	1-10
1	1A4W5	6	1-10
8	1A4W6/1A4W7/1A4W8/ 1A4W9 1A4W10/ 1A4W11 / 1A4W12/ 1A413.	6	1-10
1	1A4W14	3	1-10
1	1A4W15	2	1-10
1	1A4W16	8	1-10

c. Cable Assemblies, Group 2.

1	2W1	8	1-10
5	2W2/2W3/2W4/2W5/2W6	3	1-10
3	2A2W1/2A2W2/ 2A2W3	2	1-10
1	2A2W4	2	1-10
2	2W7 / 2W8	6	1-10
2	2A2W5 / 2A2W6		1-10

d. Minor Components.

Quantity	Item	Figure No.
2	Adapter 2A2CP5 / 2A2CP6	1-11
4	Adapter 2A2CP1 / 2A2CP2 / 2A2CP3 / 2A2CP4	1-11
1	Adapter 2A2CP7	1-11
1	Adapter 2A2CP8	1-11
1	Termination 1AT1	1-11
2	Termination 1AT2 / 1AT3	1-11
1	Termination 2AT1	1-11
1	Termination 2A2AT1	1-11
1	Termination 2A2AT2	1-11
1	Termination 2A2AT3	1-11
2	Termination 2A2AT4/ 2A2AT5	1-11
1	Termination 2A2AT6	1-11
1	Printed circuit board extractor 2A3	1-11
1	Printed circuit board extractor 1A8	1-11
2	Extender board 1A9/ 1A10	1-11
1	Extender board 2A4	1-11

1-8. Description of Major Components

(fig. 1-2 through 1-10)

a. Transit Case 1A1. The transit case (fig. 1-2), is a reusable case which houses the interface adapter unit and various minor components during transit or storage. Four handles are provided for lifting and moving the transit case. The transit case comes equipped with a top cover which is held to the case by means of spring-loaded latches. The case contains a polyurethane filter with cutouts for storing the components. The cover also contains a foam filler with a cutout for the protruding interface adapter unit. Gasketing around the edge of the cover mates with the case edge to provide a watertight seal for the transit case when the spring-loaded latches are locked and the pressure relief valve is closed.

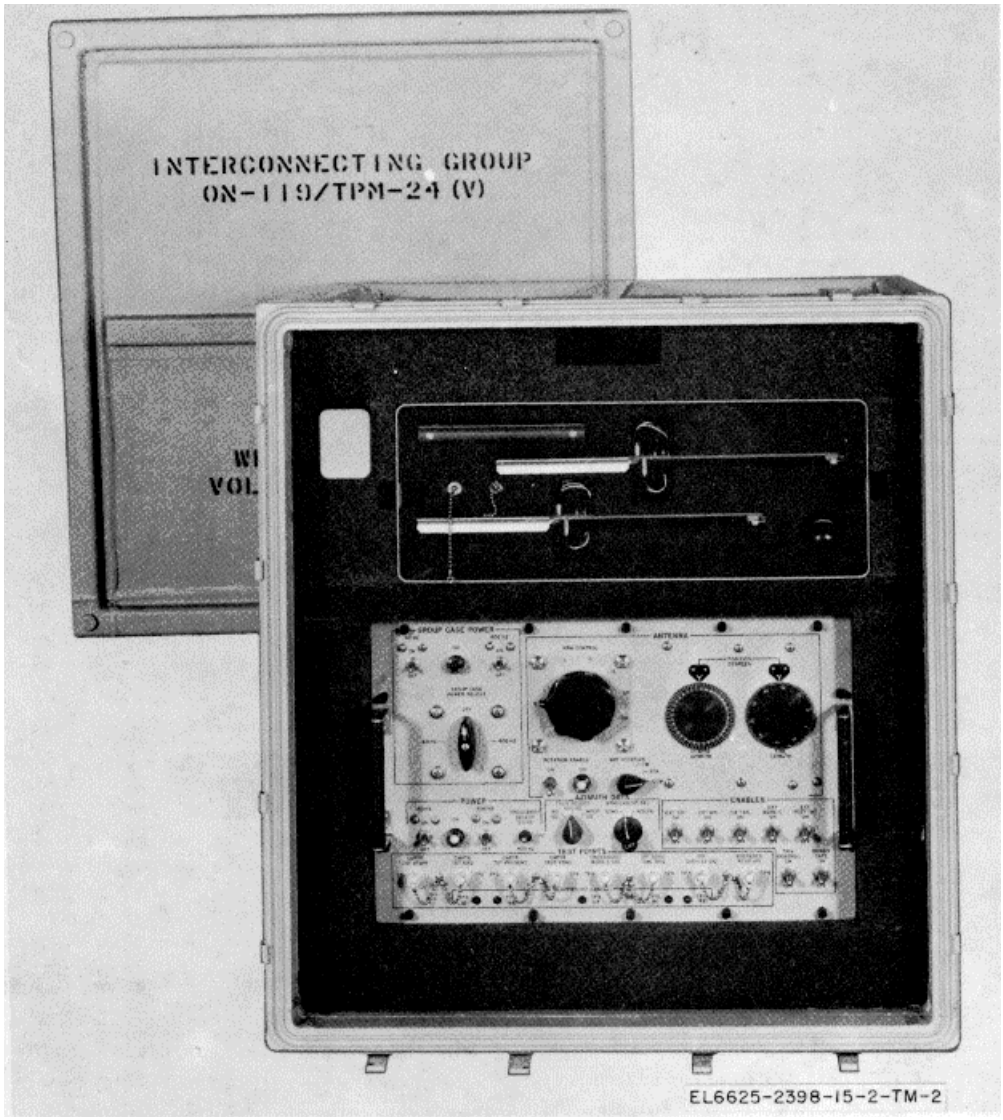


Figure 1-2. Transit case 1A1.

b. Transit Case 2MP1. This transit case (fig. 1-3), is a reusable protective case which houses the hybrid attenuator, accessory case, and various minor components during transit or storage. Four handles are provided for lifting and moving the transit case. The transit case consists of a top section and a bottom section, the top section is removable from the bottom section when the spring-loaded latches are released. The top section contains a foam filler and coiled cables are placed in it for storage. The bottom section also contains a foam filler with cutouts for storing the other group 2 components. Gasketing around the edge of the top section mates with the bottom section to provide a watertight seal.

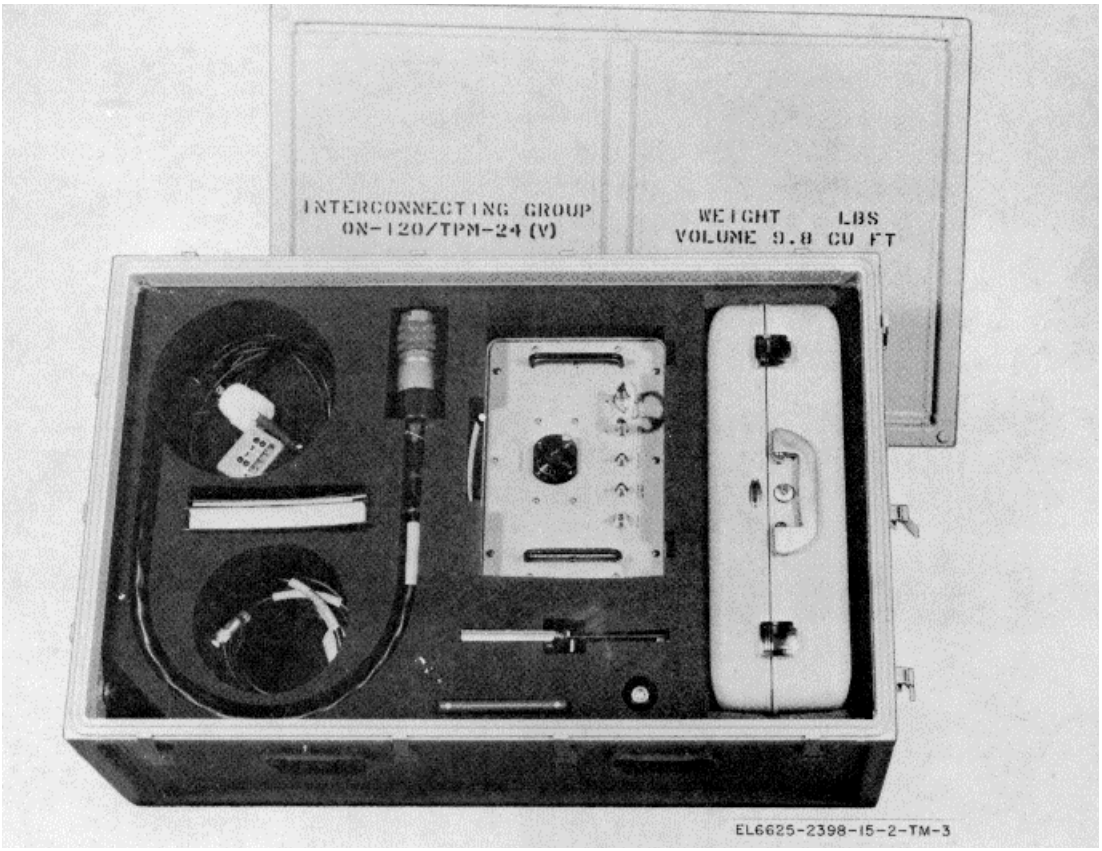


Figure 1-3. Transit case 2MP1.

c. Accessory Case 2A2. The accessory case (fig. 1-4), is a reusable protective case, which houses cables and minor components during transit or storage. The case is equipped with a hinged cover which is held closed by means of two latches. A folding handle is provided for lifting and carrying the accessory case. The cover contains a compartment for storing cables 2 feet or less in length. The bottom section contains compartments for storing various minor components which are held in place by means of spring clips.

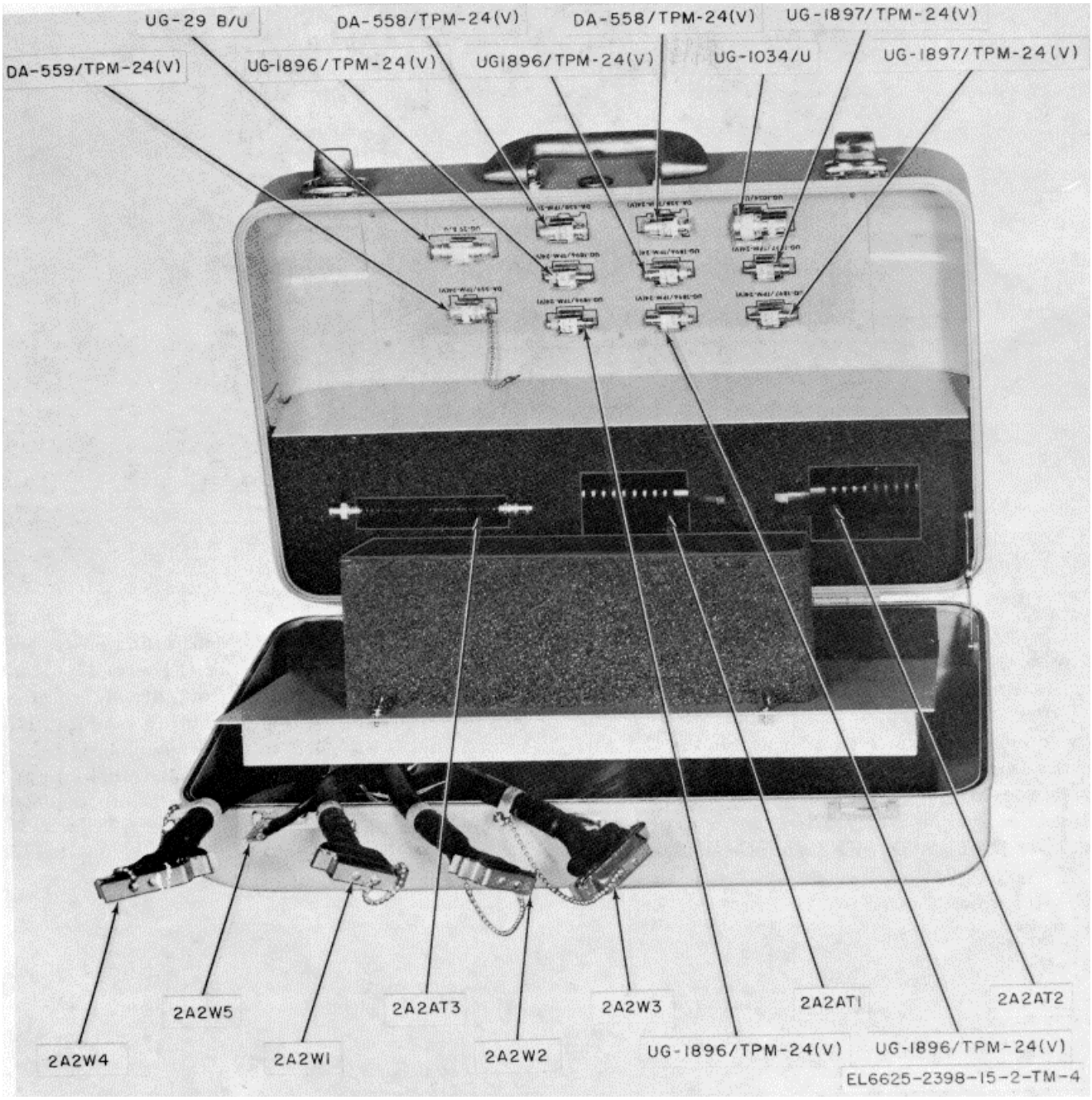


Figure 1-4. Accessory case 2A2.

d. Cable Kits 1A2 through 1A5. The cable kits are contained in canvas bags. The canvas bag (fig. 1-5) is fabricated from waterproof, heavyweight, duck-cotton for the storage and transit of cables. It is closed and opened at the top by means of drawstrings.

Figure 1-5. Canvas bag 1A2 thru 1A5.

e. Interface Adapter Unit 1A1A1. The interface adapter unit (fig. 1-6) contains eight RF connectors, and 13 multipin connectors mounted on the rear panel. These connectors provide for connecting the interface adapter unit to the IFF set. On the front panel, there are eight RF test jacks which provide for monitoring IFF signals using external test equipment. There are also five test jacks for monitoring IFF azimuth data. In addition, there are switches for controlling power and providing seven enables to the IFF set. The front panel also contains controls for antenna rotation and two dials which provide azimuth readout. The front panel is attached to the main chassis by 14 captive screws and the rear panel is held by 18 captive screws. Two carrying handles are provided on the front panel.

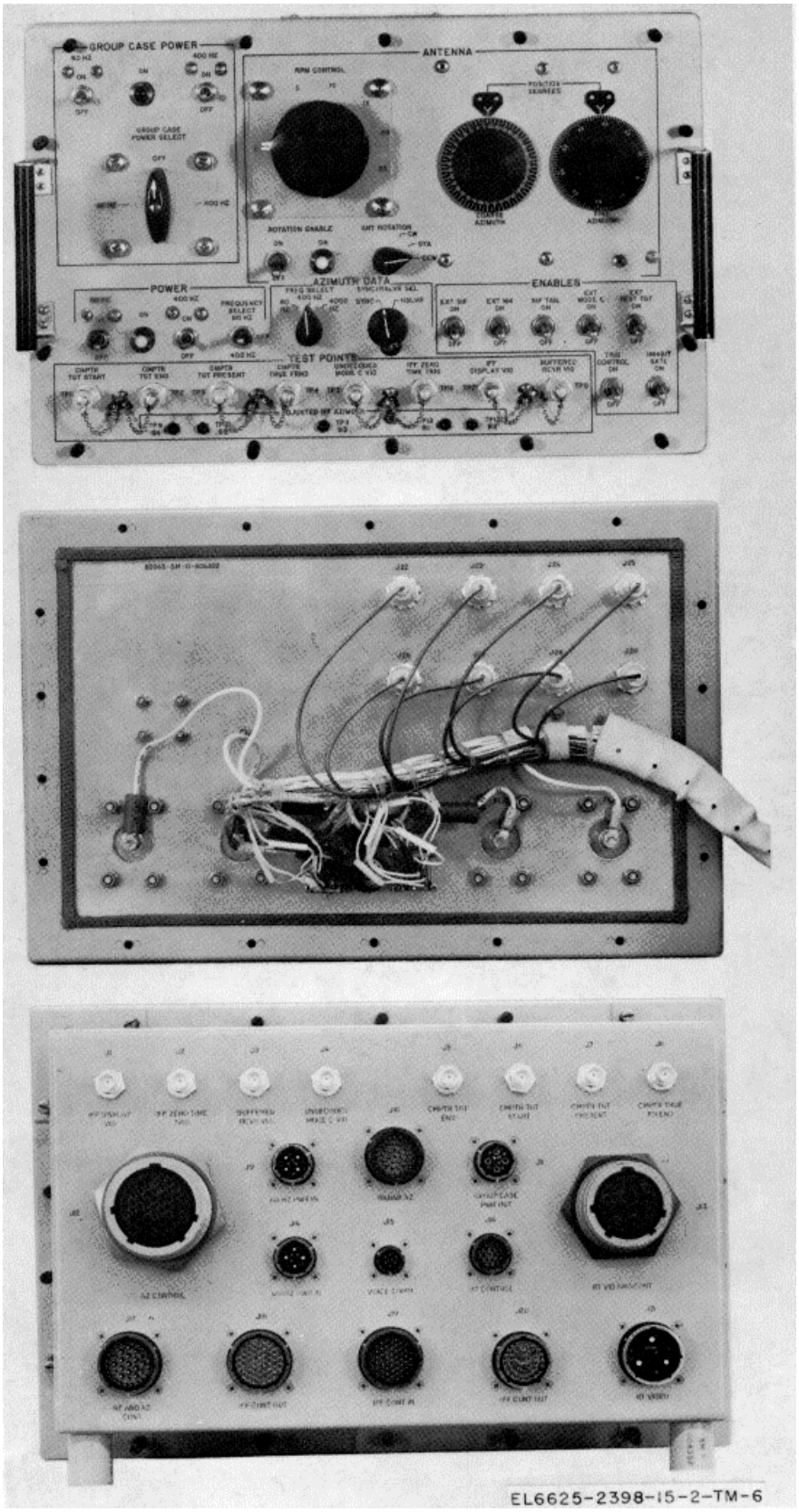


Figure 1-6. Interface adapter unit 1A1A1.

f. Hybrid attenuator 2A1. The hybrid attenuator (fig. 1-7) consists of a hybrid junction assembly and a variable attenuator assembly. These assemblies are combined in a single unit with a carrying handle on top of the case. A card, containing calibration data pertaining to the hybrid junction and attenuator insertion losses, is attached to the handle. The card lists the sum channel and difference channel insertion losses at both 1030 and 1090 MHz when the attenuator dial is set at 0 db; also listed are ATTENUATOR insertion losses at 1030 and 1090 MHz for ATTENUATOR dial settings of 0, 3, 6, 9, 12, 15, 20, and 25 db. Connectors on the front panel of the unit are used to couple the hybrid junction and/or the attenuator into a test setup using the test facilities set cables.

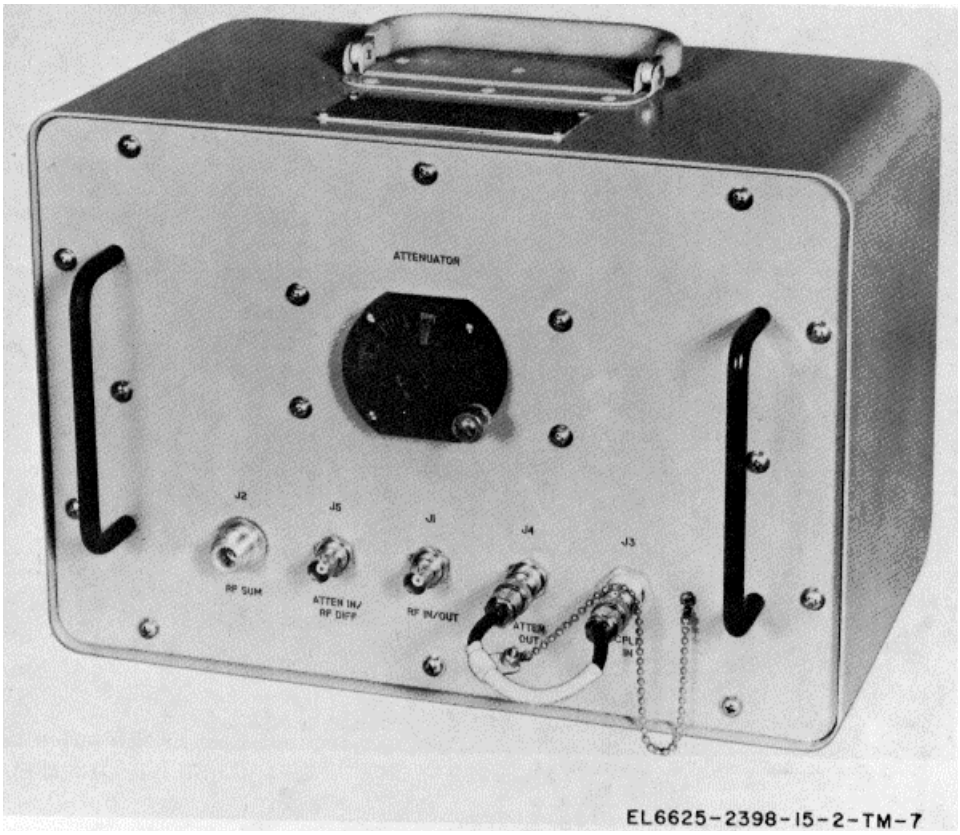


Figure 1-7. Hybrid attenuator 2A1.

g. Antenna Pedestal .Mount 1A7. The antenna pedestal mount (fig. 1-8) consists of a metal mounting block that supports the antenna pedestal while the IFF set is being tested.

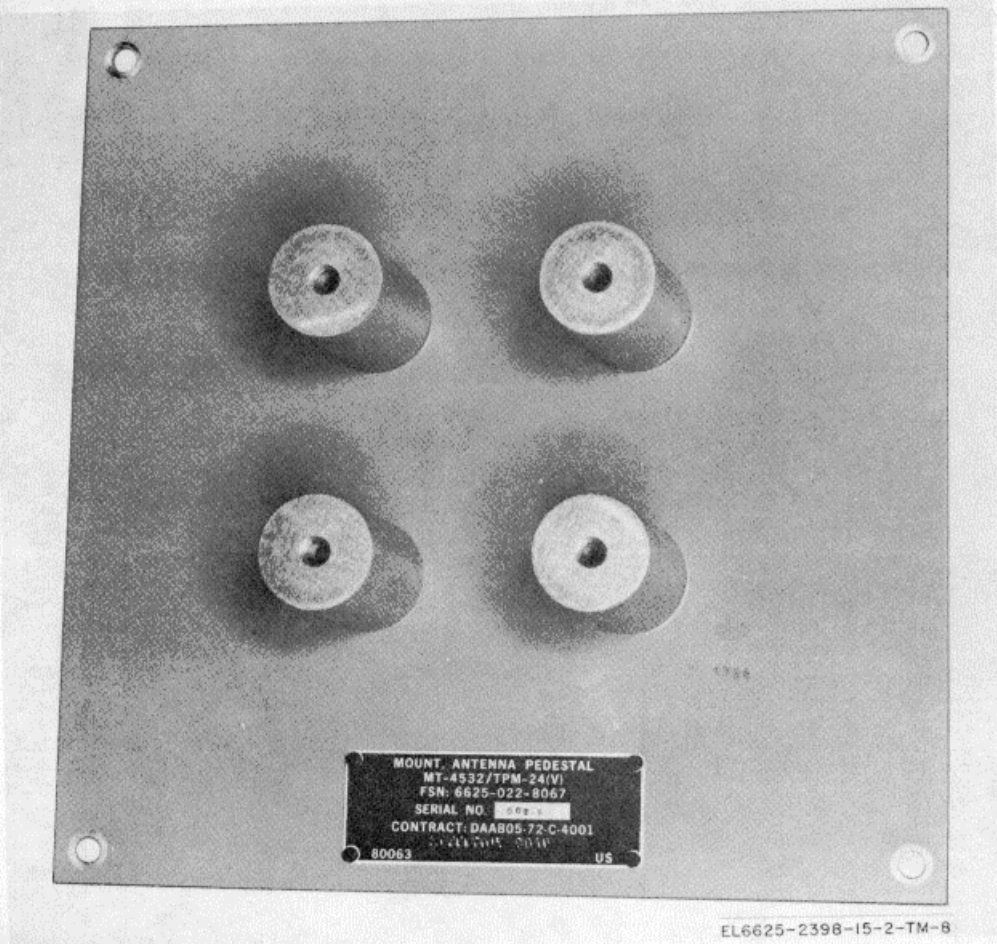


Figure 1-8. Antenna pedestal mount 1A7,

h. Inertial Antenna Load 1A6. The inertial antenna load (fig. 1-9) consists of a steel plate base assembly bolted to four steel discs with four bolts. The unit simulates the mechanical inertial load of the antenna assembly of the IFF set. Six holes are provided for mounting to the antenna pedestal of the IFF set. Two 50-ohm RF attenuators are bolted to the base assembly to provide a load for the RF sum and difference channels.

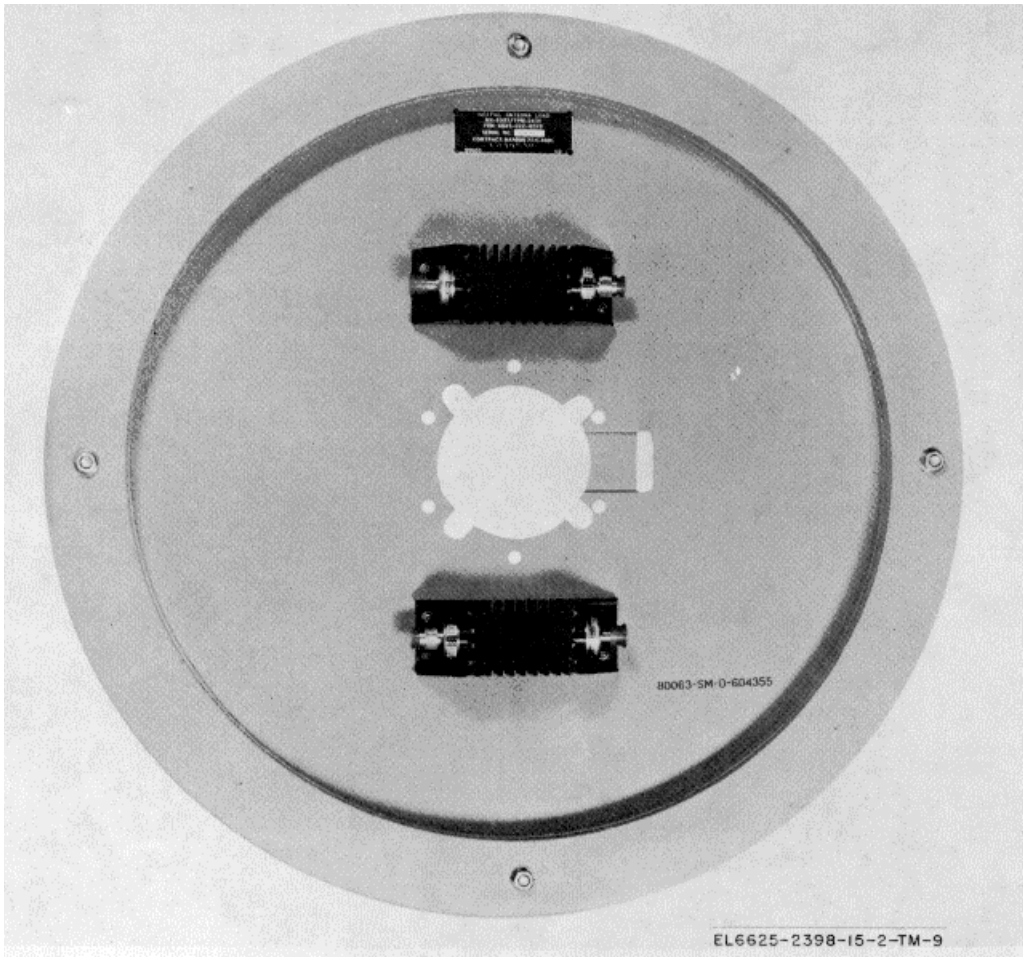


Figure 1-9. Inertial antenna load 1A6.

1-9. Description of Cable Assemblies

(fig. 1-10)

Three pairs of cables are used to extend the processor, synchronizer, and the antenna control chassis from the coder-decoder group case of the IFF set. Other cables provide for connecting the interface adapter unit to the coder-decoder group, and the receiver-transmitter. Two ground straps provide for grounding the card containing the RF switch module in the receiver-transmitter. Two power cables provide for connecting the interface adapter unit to 400-Hz and 60-Hz facilities power.

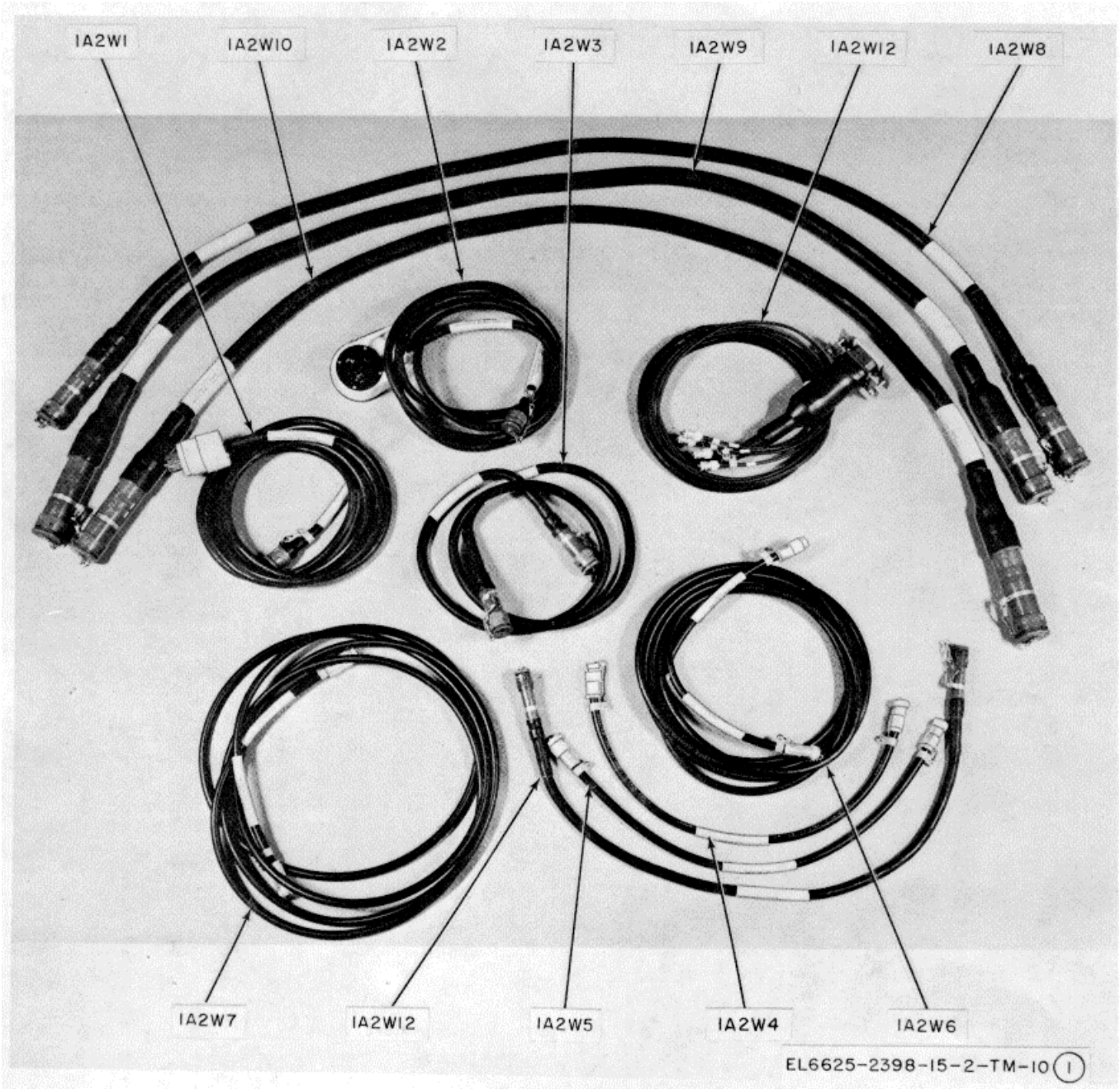


Figure 1-10 (1). Cable assemblies (sheet 1 of 5).

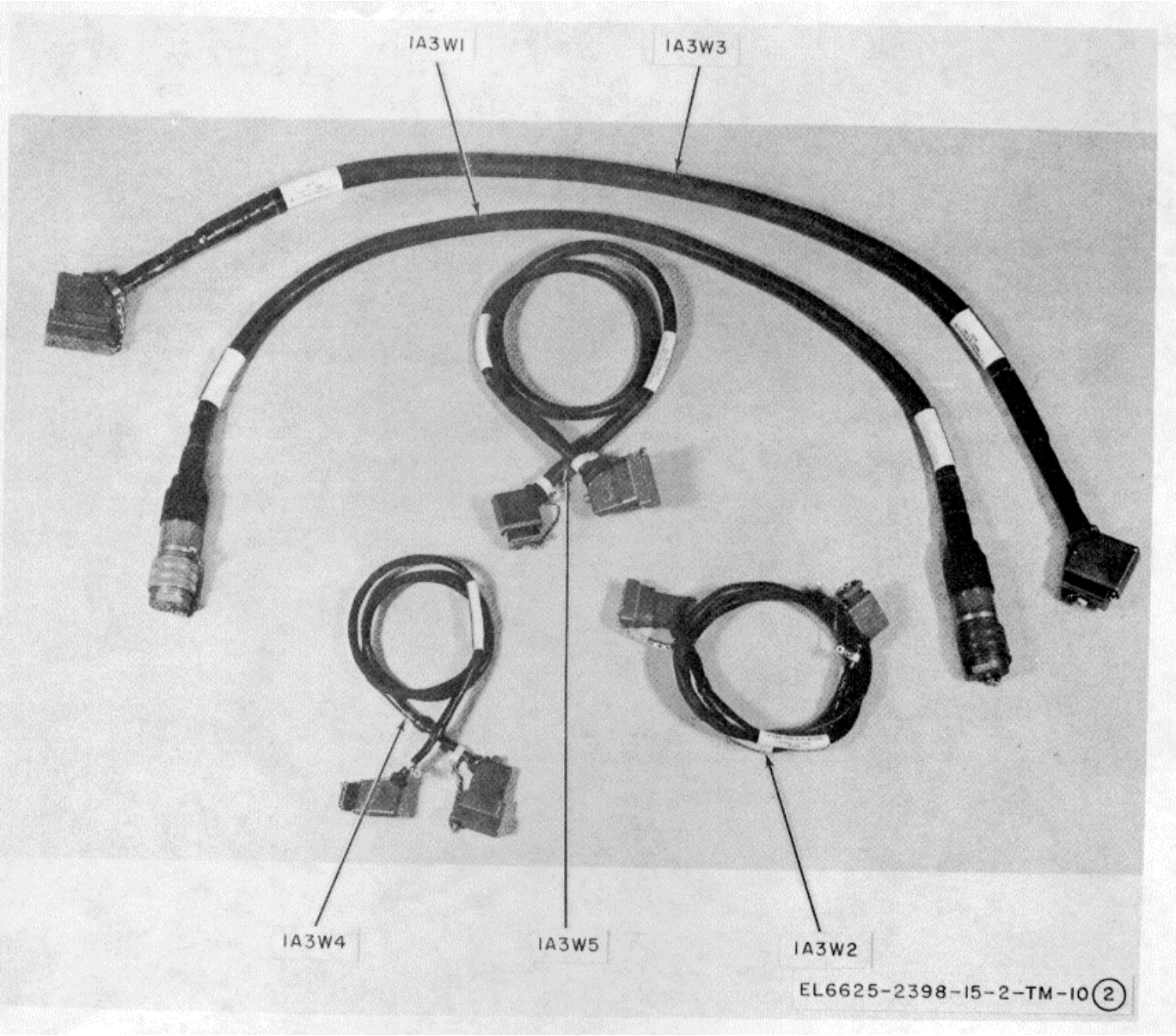


Figure 1-10 (2). Cable assemblies (sheet 2 of 5).

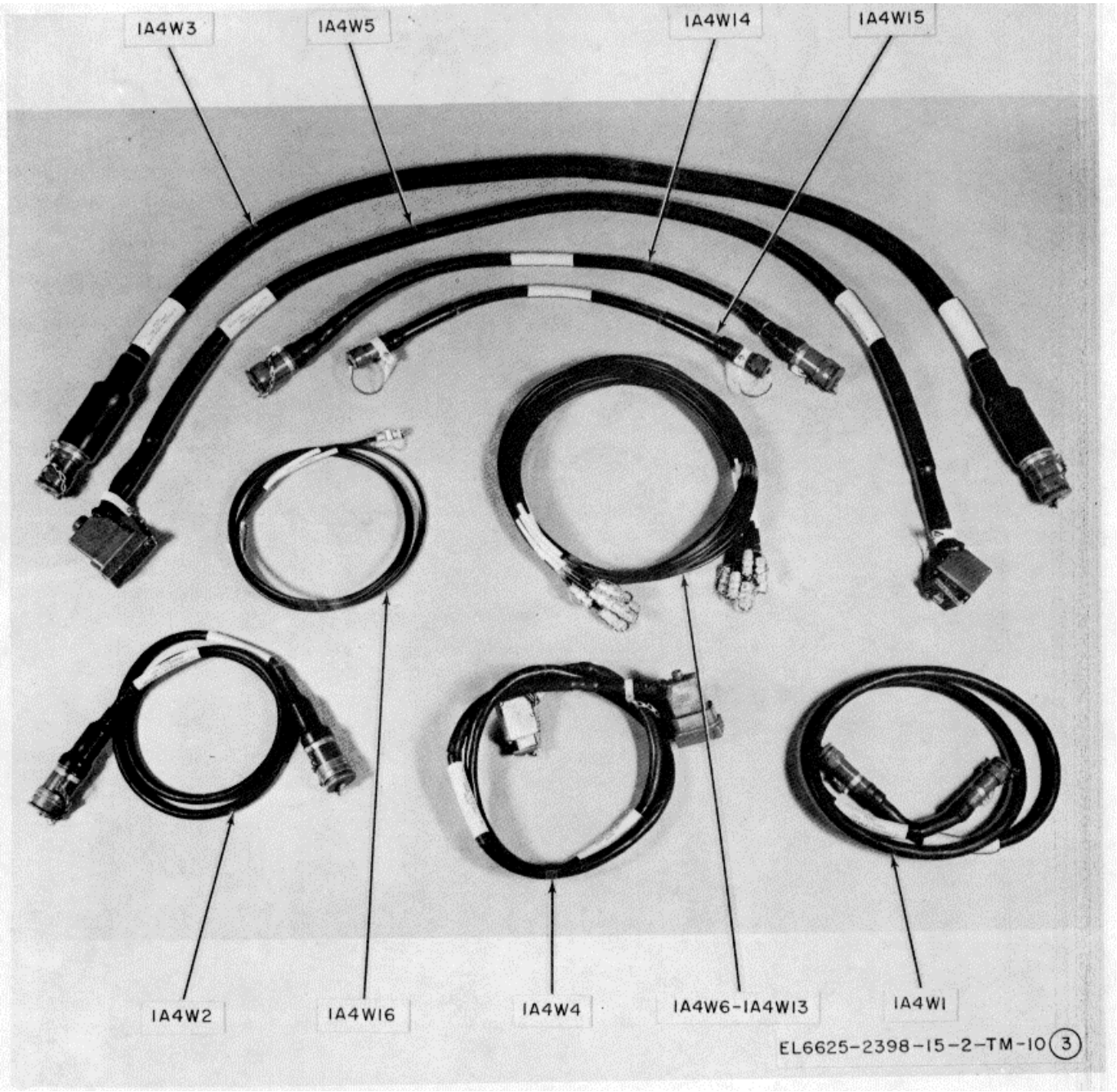


Figure 1-10 (3). Cable assemblies (sheet 3 of 5).

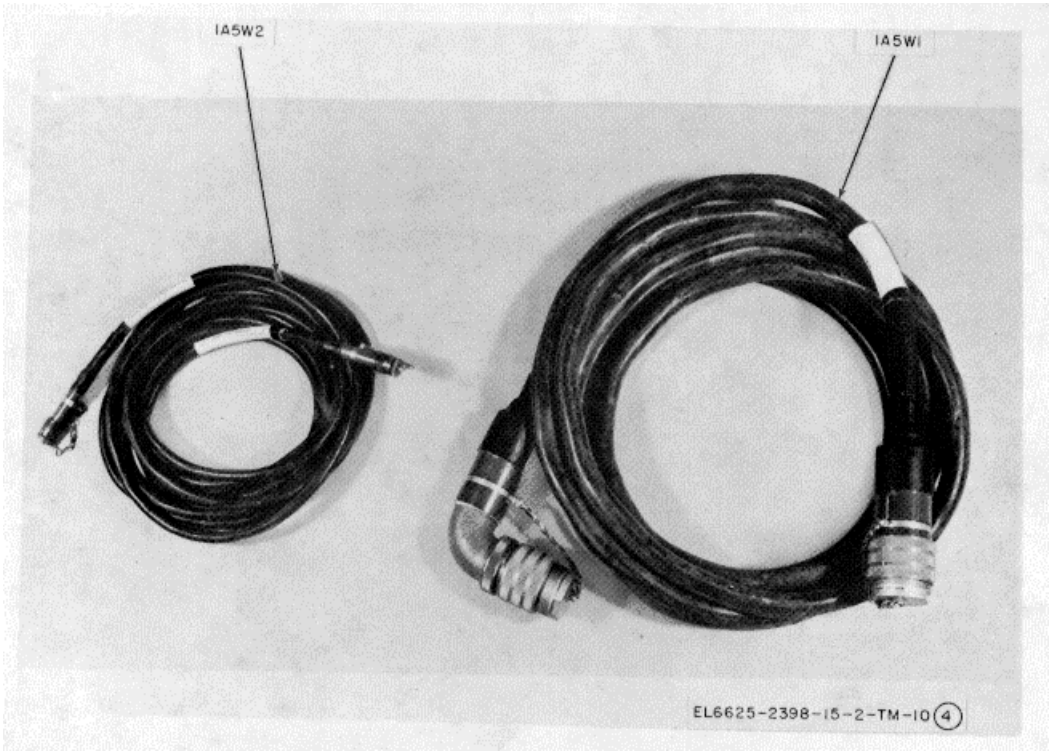


Figure 1-10 (4). Cable assemblies (sheet 4 of 5).

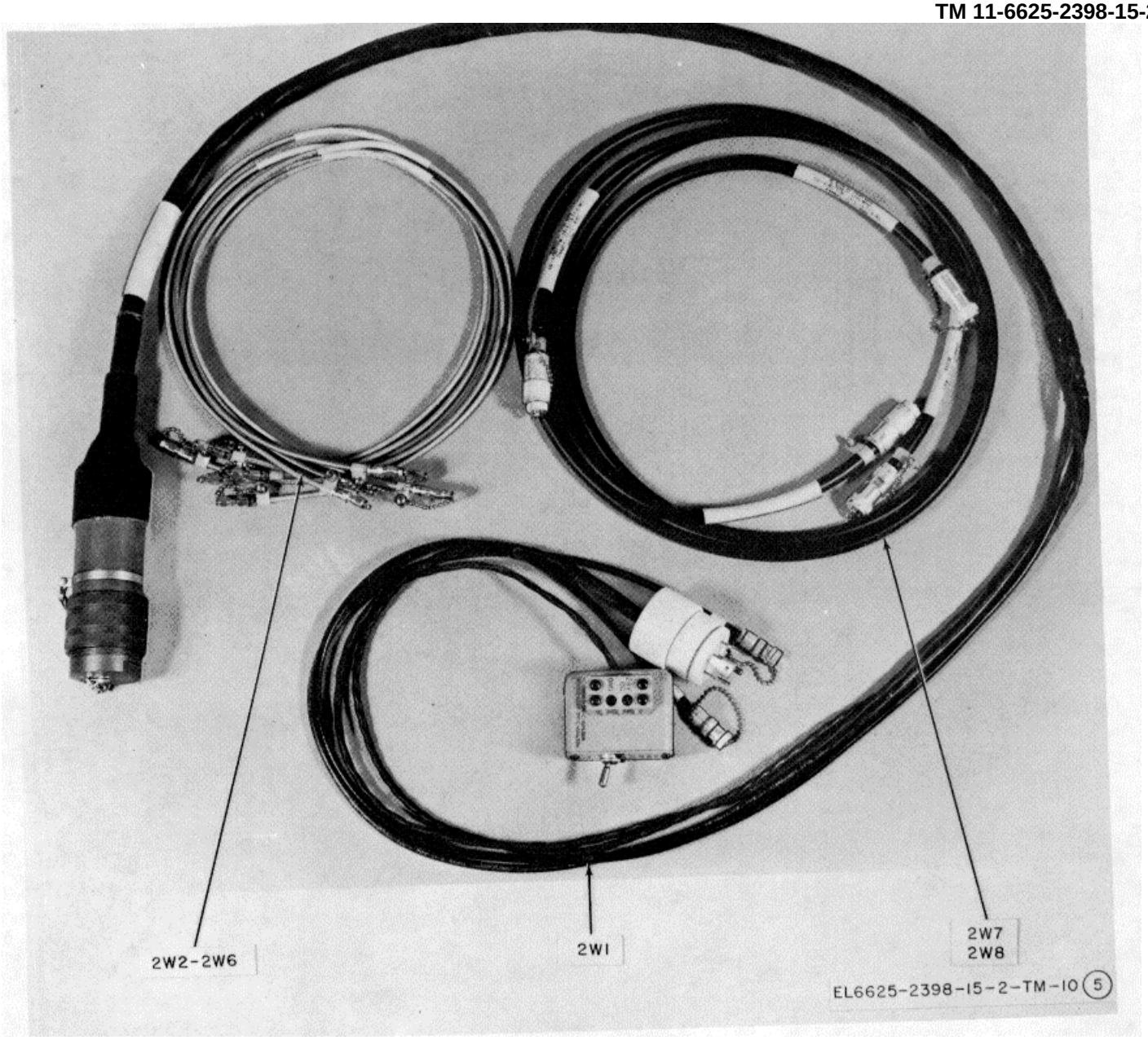


Figure 1-10 (5). Cable assemblies (sheet 5 of 5).

1-10. Description of Minor Components

fig. 1-11)

The test facilities set provides a number of RF connectors and adapters for test use. These are:

a. BNC-female to OSM-male
b. BNC-female to OSM-female
c. N-male to BNC-female
d. N-female to BNC-female

Other components include 5-db and 11-db fixed mismatch loads, a 75-ohm, 15-db attenuator assembly (for challenge video), and a shorting plug, Dummy loads for RF and video termination are 50-ohm, 2-watt, coaxial BNC-type, and 75-ohm, ½-watt, coaxial BNC-type, respectively. A 50-watt dummy load is also provided.

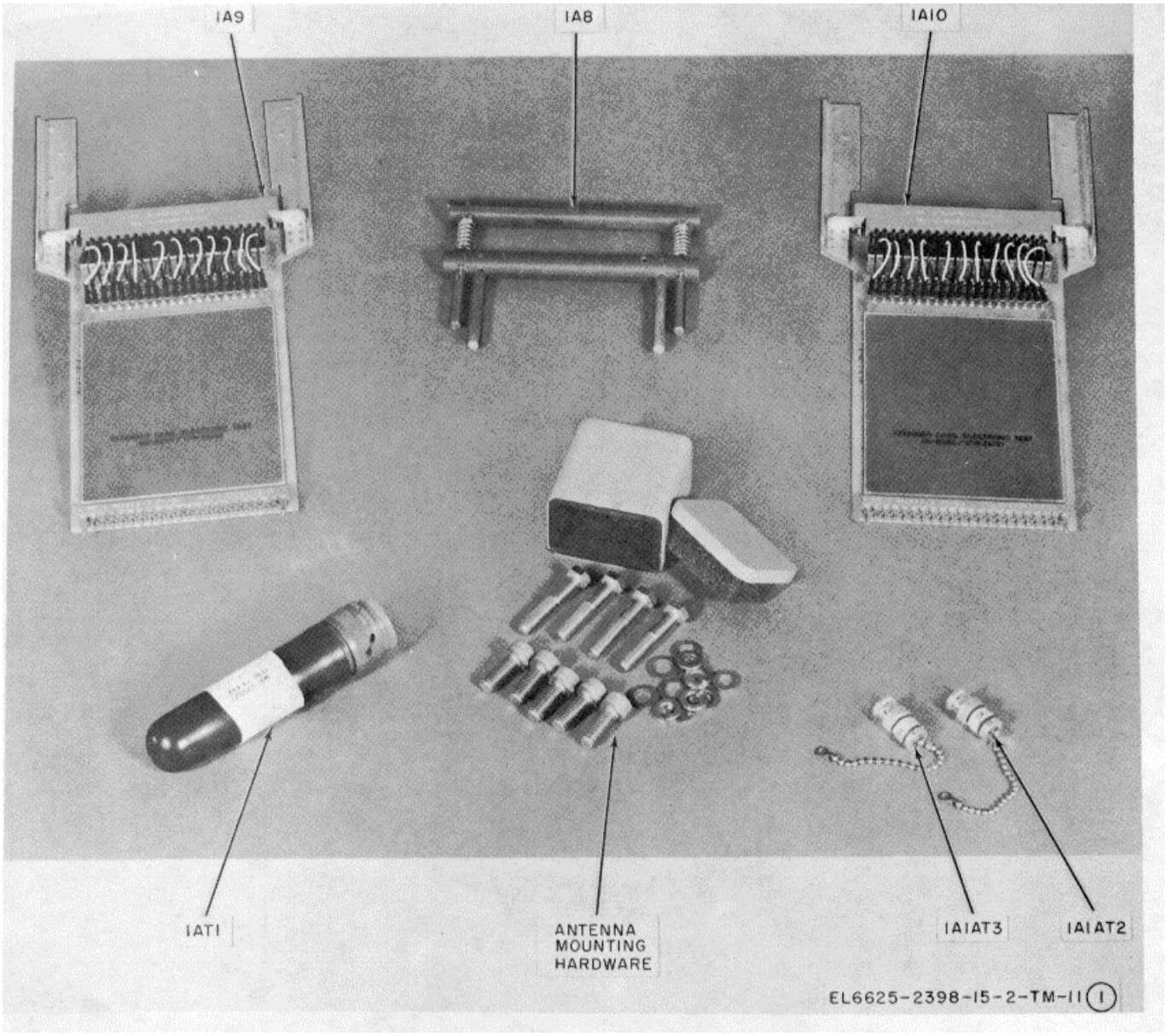


Figure 1-11(1). Minor components (sheet 1 of 2).

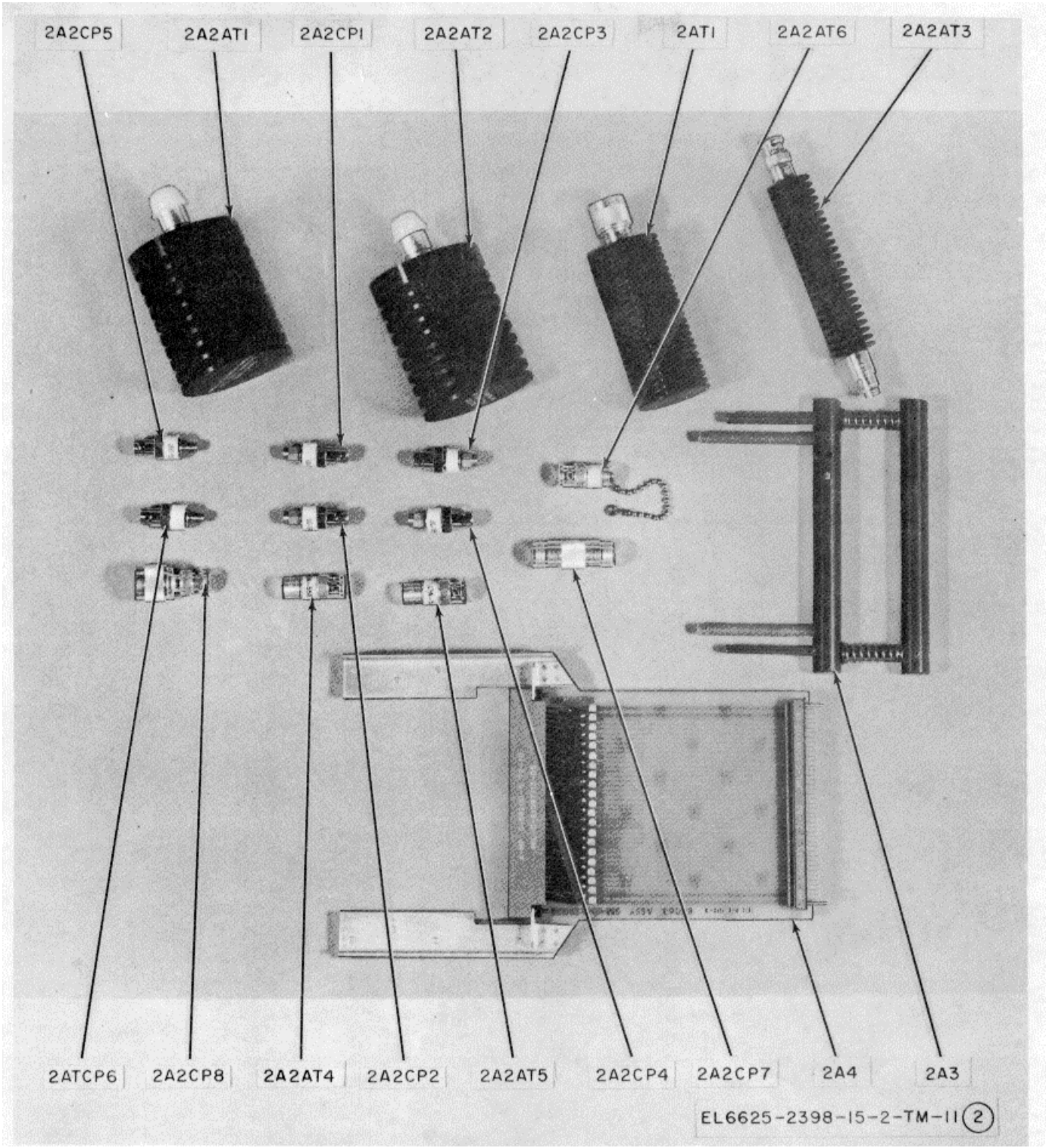


Figure 1-11 (2). Minor components (sheet 2 of 2).

CHAPTER 2

INSTALLATION

2-1. Unpacking

a. Packaging Data. Components of the Test Facilities Set AN/TPM-24 (V)2 are placed in polyethylene wrap and packaged in sealed wooden crates.. Figure 2-1 illustrates the packaging employed for the test facilities set. Group 1 components are packaged in canvas bags and wooden s. Group 2 components are packaged in a single wooden crate.

b. Removing Contents.

(1) Cut the straps and remove the top cover from each packing case.

(2) Remove polyethylene wrapped component cable kits, and carton from the wooden packing cases.

(3) Open the polyethylene wrap and remove the transit cases and the inertial antenna load.

(4) Open transit cases and inspect humidity indicator (should be blue). If the humidity indicator is pink, inspect components for moisture damage.

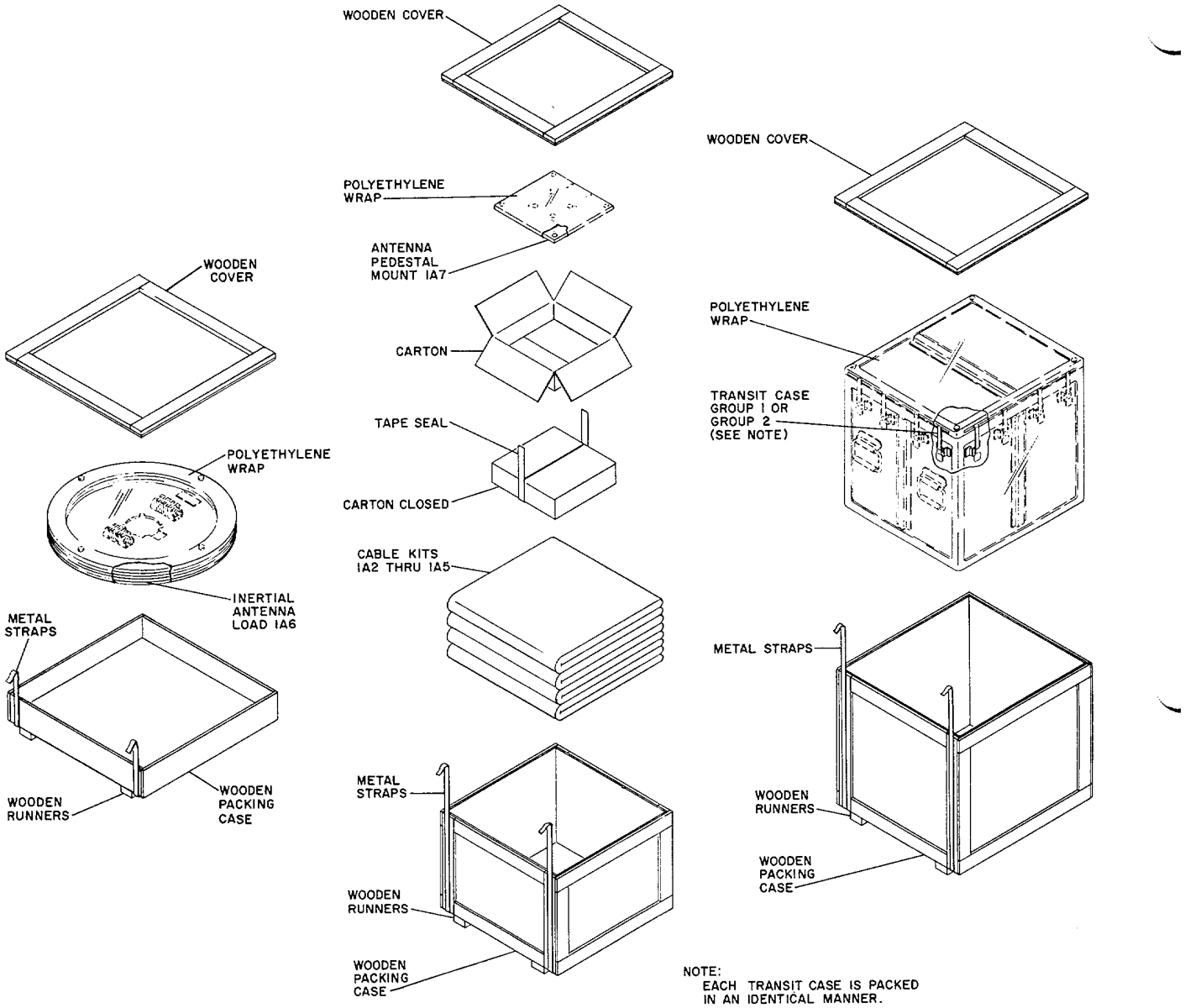


Figure 2-1. Packaging of test facilities set AN/TPM-24(V)2.

2-2. Checking Unpacked Equipment

a. Inspect the equipment for damaged incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6 (para 1-3 *b*).

b. See that the equipment is complete as listed on the packing slip. If a packing slip is not available, check the equipment against the basic issue item s list and repair parts and special tools list (app. C). Report all discrepancies in accordance with TM 38-750. Shortage of a minor assembly or parts that does not affect proper functioning of the equipment should not prevent use of the equipment.

c. If the equipment has been used or reconditioned, see whether it has been changed by a modification work order (MWO). If the equipment been modified, the MWO number will appear the front panel near the nomenclature plate. If modified, see that any operational instructional changes resulting from the modification has been entered in the equipment manual.

NOTE

Current MWO's applicable to the equipment are listed in DA Pam 310-7.

2-3. Installation and Connections

a. Installation. The test facilities set is used in conjunction with a fully operational IFF set and external test equipment in the test-bench maintenance of IFF set components returned from using organizations. Since the test facilities set primarily contains special purpose test accessories, only those components and cables of the test facilities set pertinent to the particular maintenance to be performed need be installed at any one time. In general, when bench testing of the IFF set or its major components is to be performed, sufficient space must be provided on or near the test bench to accommodate components of the test facilities set, the external test equipment, the IFF set group case, any components of the IFF set removed from the group case, and all required interconnecting cables. The antenna pedestal mount must be permanently mounted to rigid surface capable of supporting the IFF set antenna pedestal and the antenna inertial load. The antenna inertial load may be assembled by attaching the dummy loads and rings to the base assembly (fig. 1-9).

CAUTION

When cables 1A3W2 and 1A3W3 are connected to the IFF set, be careful of that the cable dust covers do not fall into units that are extended, or damage to the IFF set may result.

CAUTION

Before applying primary power to the interface adapter unit make certain round lug on rear of housing is connected to a suitable system ground.

b. Connections. As noted in a above, only those of the test facilities set required for a particular maintenance operation need be connected at any one time. If extended and/or extensive use of the test facilities set is anticipated, it may be desirable to set up a basic test station. When connections are made as indicated in the following chart, a basic test station for IFF set system testing results. This station may be expanded upon, using the information contained in chapter 3 and in the maintenance manuals for the set and its major components, to obtain the r connections for particular maintenance procedures figure 2-2 shows the test facilities set connected in a typical test-bed configuration the IFF set. The following chart lists cables test facilities set and their usage:

Quantity	Cable	Length (ft)	Connects	
			From--	To--
1	1A2W1	10	1A1A1J19 of interface adapter unit.	115 VAC, 60-Hz power.
1	1A2W2	10	1A1A1J14 of interface adapter unit.	115 VAC, 400-Hz power.
1	1A2W3	6	1A1A1J11 of interface adapter unit.	1A5J11 of coder-decoder.
1	1A2W4/1A2W5	2	3A2J1 of antenna pedestal.	Antenna RF load
1	1A2W4/1A2W5	2	3A2J2 of antenna pedestal.	Antenna RF load
1	1A2W6/1A2W7	20	3A2J2 of receiver-transmitter.	3A2J4 of antenna pedestal.
1	1A2W6/1A2W7	20	3A2J3 of receiver-transmitter.	3A2J3 of antenna pedestal.
1	1A2W8	6	1A1A1J10 of interface adapter unit.	1A5J14 of coder-decoder.
	1A2W9/1A2W10	6	1AlAIJ18 of interface adapter unit.	5J1 of control box or 6J2 of control panel.
1	1A2W9/1A2W10	6	1A1A1J19 of interface adapter unit.	1A5J13 of coder-decoder.
1	1A2W11	3	5J2 of control box	8J1 of alarm monitor
1	1A2W12	8	1A5XA4P1 of coder-decoder.	P2 of AN/APM-245
1	1A3W1	10	1A1A1J13 of interface adapter unit.	2J1 of receiver-transmitter.
1	1A3W2	6	1A5P2 of coder-decoder.	1A1J2 of synchronizer.
1	1A3W3	6	1A5P3 of coder-decoder.	1A1J3 of synchronizer
1	1A3W4	6	1A5P6 of coder-decoder.	1A3J1 of processor.
1	1A3W5	6	1A5P7 of coder-decoder.	1A4J2 of processor
1	1A4W1	6	1A1A1J16 of interface adapter unit.	1ASJ12 of coder-decoder.
1	1A4W2	6	1A1A1J21 of interface adapter unit.	1A5J10 of coder-decoder.
1	1A4W3	6	1A1A1J17 of interface adapter unit.	1A5J15 of coder-decoder.
1	1A4W4	6	1A5P4 of coder-decoder.	1A2J4 of antenna control.
	1A4W5		1A5P5 of coder-decoder.	1A2J3 of antenna control.
8	1A4W6 through 1A4W13	6	1A1A1J1 through 1A1A1J8 of interface adapter unit	1A5J2 through 1A5J9 of coder-decoder, respectively
1	1A4W14	3	1A1A1J20 of interface adapter unit	7J3 of control panel
1	1A4W15	2	3A2J6 of antenna pedestal.	3A2J1 of antenna pedestal.
1	1A4W16	8	IFF trigger generator	1A5J1 of coder-decoder.
1	1A5W1	24	1A1A1J12 of interface adapter unit.	3A2J5 of antenna pedestal.

Quantity	Cable	Length (ft)	Connects	
			From--	To--
1	1A5W2	24	1A1A1J15 of interface adapter unit.	3A2J7 of antenna pedestal.
1	2W1	8	Open.	2A1J1 of receiver-transmitter.
5	2W2-2W6	3	2A1A1 or -A2 or -A3 of receiver-transmitter.	Open (module extension).
2	2W7 and 2W8	6	3A2J1 or 3A2J2 of antenna pedestal.	2A1J2 or -J5 of hybrid attenuator.
			2A1A1P1, or 2A1A3P1 or 2A1A4P1 of receiver-transmitter	2A1XA1P1, or 2A1XA3P1, or 2A1XA4P1 of receive-transmitter.
1	2A2W4	2	2A1A2P1 of receiver-transmitter.	2A1XA2P1 of receiver-transmitter.
2	2A2W5 and 2A2W6.	1	Chassis ground.	2A1A3A2 of receiver-transmitter.

CHAPTER 3

OPERATING INSTRUCTIONS

Section I. OPERATOR'S CONTROLS, INDICATORS, AND CONNECTORS

3-1. Interface Adapter Unit 1A1A1 Operating Controls, Indicators, and Connectors (fig. 3-1)

The following listing provides a description of each control, indicator, and connector located on the front panel of interface adapter unit 1A1A1.

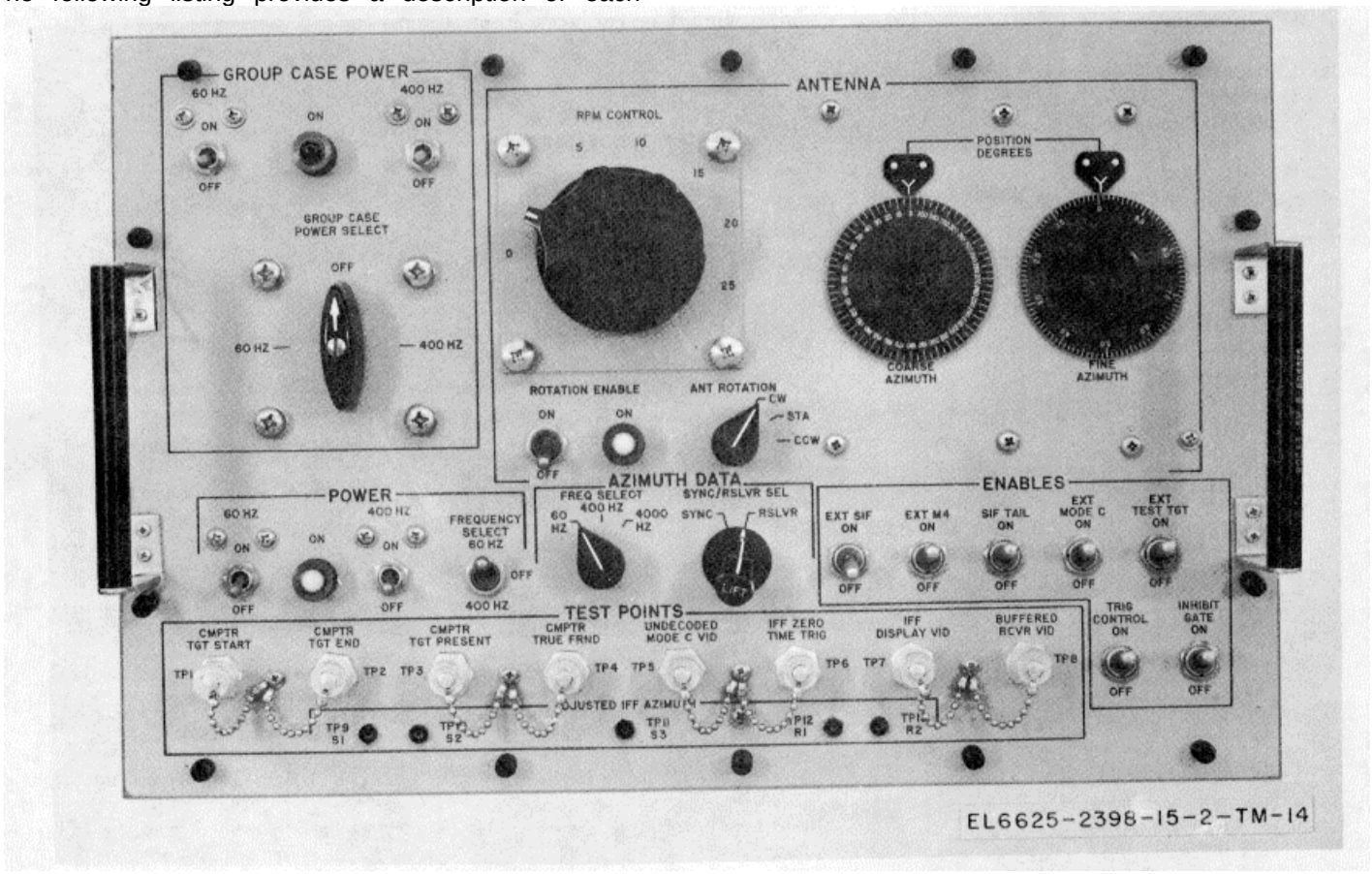


Figure 3-1. Interface adapter unit IAA 1, controls, indicators, and connectors.

Control, indicator or connector	*Function*
GROUP CASE POWER:	
60-HZ circuit breaker	When set to ON. 60-Hz power is available to the interface adapter unit, and the IFF set.
400-HZ circuit breaker	When set to ON, 400-Hz power is available to the interface adapter unit and the IFF set.
ON indicator Lamp	When lighted. indicates that 60-Hz or 400-Hz power is being provided to the IFF set.
GROUP CASE POWER SELECT switch.	Selects either 60-Hz or 400-Hz power for application to the IFF set. When set switch. to OFF, power is not supplied to the IFF set.

Control, indicator or connector	*Function*
POWER:	
60-HZ circuit breaker	When set to ON, applies 60-Hz power to the POWER FREQUENCY SELECT switch. GROUP CASE POWER: 60-HZ circuit breaker must be ON.
400-HZ circuit breaker	When set to ON, applies 400-Hz power to the POWER FREQUENCY SELECT switch. GROUP CASE POWER: 400-HZ circuit breaker must be ON.
FREQUENCY SELECT switch.	Controls the application of 60-Hz or 400-Hz power to the interface adapter unit circuits.
ON indicator lamp	When lighted. indicates power is applied to the interface adapter unit circuits.
ANTENNA:	
RPM CONTROL	Autotransformer that controls the speed of synchro motor 1A1A1 A13B3.
ROTATION ENABLE switch.	Momentary contact switch that couples an antenna positioning voltage from the IFF set to the antenna drive circuits of the IFF set.
ANT ROTATION switch	Provides antenna rotation voltage to the antenna drive circuits of the IFF set. When set to STA, antenna does not rotate.
ON indicator lamp	Indicates that power is being supplied to the antenna drive circuits of the IFF set.
POSITION DEGREES:	
COARSE AZIMUTH and FINE AZIMUTH dials.	Indicate angular position of synchro 1A1A1A 13B3, and resolver 1A1A1A13B1. The FINE AZIMUTH dial turns 36 times for one rotation of COARSE AZIMUTH dial.
AZIMUTH DATA:	
SYNC / RSLVR SEL switch.	Permits selection of either synchro 1A1A1A13B3 or resolver 1A1A1A13B1 azimuth data signals for application to the IFF set.
FREQ SELECT switch	Supplies 60-Hz or 400-Hz excitation to synchro 1A1A1A13B3, or 4000-Hz to resolver 1A1A1A13B1.
ENABLES:	
EXT SIF switch	When set to ON. provides a ground level to the IFF set to enable si f challenge operation.
EXT M4 switch	When set to ON, provides a ground level to the IFF set to enable mode 4 challenge operation.
SIF TAIL switch	When set to ON. provides a ground level to the IFF set to enable sif tail display circuits.
EXT MODE C switch	When set to ON, provides a ground level to the IFF set to enable mode C challenge operation.
EXT TEST TGT switch	When set to ON. provides a ground level to the IFF set which enables test target generation.
TRIG CONTROL switch	When set to ON. provides a ground level to the IFF set.
INHIBIT GATE switch	When set to ON. provides a ground level to the IFF set.
TEST POINTS:	
CMPTR TGT START jack TP1.	Permits monitoring of the computer target start signal supplied from the IFF set.
CMPTR TGT END jack TP2.	Permits monitoring of the computer target end signal supplied from the IFF set.
CMPTR TGT PRESENT jack TP3.	Permits monitoring of the computer target present signal supplied from the IFF set.
CMPTR TRUE FRND. jack TP4.	Permits monitoring of the computer true friend signal supplied from the IFF set.
UNDECODED MODE C VID. jack TP5.	Permits monitoring of the uncoded mode C video signal supplied from the IFF set.
IFF ZERO TIME TRIG. jack TP6.	Permits monitoring of the IFF zero time trigger signal supplied from the IFF set.
IFF DISPLAY VID jack TP7.	Permits monitoring of the IFF display video signal supplied from the IFF set.
BUFFERED RCVR VID jack TP8	Permits monitoring of the buffered receiver video supplied from the IFF set.
ADJUSTED) IFF AZIMUTH jacks TP9 through TP13.	Permits monitoring of the adjusted iff azimuth synchro signal supplied from the IFF set.

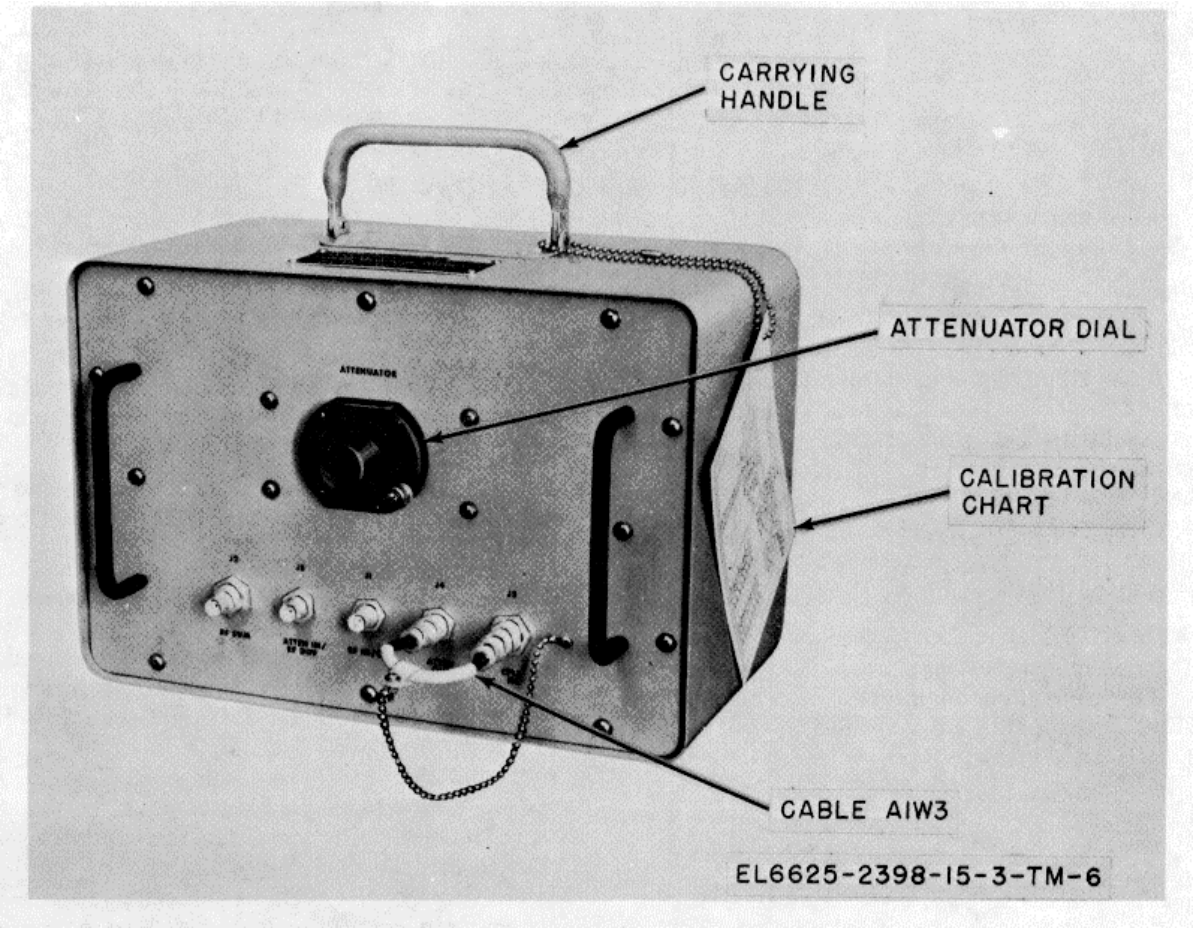


Figure 3-2. Hybrid attenuator 2A1, operating controls and indicators.

3-2. Hybrid Attenuator 2A1, Operating Control, Cable and Connectors
(fig. 3-2)

The following listing provides a description of the control, cable and connectors located on the front panel of hybrid attenuator 2A1.

Control, cable or connector	*Function*
ATTENUATOR control AT1 (variable attenuator).	Continuously variable control of the attenuation between ATTEN OUT jack J4 and ATTEN IN/RF DIFF jack J5 (from 0 to 25 db).
ATTEN IN/RF DIFF jack 15	Permits connection of external equipment to ATTENUATOR AT1.
ATTEN OUT jack J4	Permits connection of external equipment, or the hybrid junction of the hybrid attenuator to ATTENUATOR AT1.
Cable 2A1W3	Permits series connection of ATTENUATOR AT1 and the hybrid junction by connecting ATTEN OUT jack J4 to CPLR IN jack J3.
RF IN/OUT jack J1 .	Permits connection of external equipment to the hybrid junction. When used as an input connection. Rf signals applied at this jack are equally split and appear in attenuated form (approximately 3 db down) at both RF SUM jack J2 and CPLR IN jack J3. When used as an output connection, Rf signals applied at either the RF SUM jack J2 or CPLR IN jack J3 appear in attenuated form (approximately 3 db down) at this jack.
RF SUM jack J2	Permits connection of external equipment to the hybrid junction. When used as an input connection. Rf signals applied at this jack appear (less insertion loss of the cables and hybrid junction) at RF IN/OUT jack J1. May also be used as an output connection when RF signals are applied at RF IN/OUT jack J1

Control, cable or connector	*Function*
CPLR IN jack J3	Permits connection of external equipment or ATTENUATOR AT1 (via 2A1W3) to the hybrid junction. When used as an input connection, RF signals applied at this jack appear (less insertion loss) at RF IN/OUT jack J1. May also be used as an output connection when Rf signals are applied to RF IN/OUT jack J1.

Section II. OPERATION

3-3. Types of Operation

a. The test facilities set is used to interconnect components of the IFF set, to control primary power when the IFF set or its components are undergoing test bench maintenance, and to simulate external radar signals. In addition, the test facilities set provides for monitoring of signals and voltages supplied from the IFF set. The hybrid attenuator and associated equipment may be connected in a test setup for the receiver-transmitter group, or a test-bed installation can be set up to test the complete IFF set.

b. Specific instructions for connecting the IFF set and required test equipment and accessories, and for performing maintenance on the various IFF set components are contained in the technical manuals listed below

IFF set component	Technical manual
Interrogator	TM 11-5895-532-34-1 DMWR-5895-532-50
Receiver-Transmitter	TM 11-5895-532-34-2
Signal Processor	TM 11-5895-532-34-3
Electrical Synchronize--	TM 11-5895-532-34-4
Antenna Control	TM 11-5895-532-34-5

3-4. Extension of IFF Set Components for Maintenance

a. General. Regardless of the test configuration of the test facilities set, it is generally necessary to remove one or more of the IFF set components from their respective group cases to perform maintenance Cables 1A3W2 through 1A3W5 and 1A4W4 and 1A4W5, are provided to extend the synchronizer, processor, and antenna control unit from the coder-decoder group case. To connect the extender cables, first remove the component(s) from the coder-decoder group case as described in b below, and then make the appropriate connections using the information supplied in paragraph 2-3.

CAUTION

When cables 1A3W2 and 1A3W3 are connected to the IFF set, be careful that the cable dust covers do not fall into units that are extended, or damage to the IFF set may result.

b. IFF Set Component Removal.

(1) Loosen the captive screws securing the component front panel to the coder-decoder group case.

(2) Grasp the handles on the front panel of the component and slide the component from the group case until chassis slide locks engage.

(3) Depress the chassis slide locks and remove the component from the coder-decoder group case.

c. *Receiver-Transmitter (R/T) Extension for Maintenance.* Cables 2A2W1 through 2A2W4, and cables 2W2 through 2W6 are provided to extend the RF switch, receiver, transmitter, and LVPS modules from the R/T chassis of the IFF set. Remove the R/T chassis from its case by following the procedure described in b above. To connect the extender cables, remove the modules from the chassis by loosening the captive screws that secure the modules to the chassis, and disconnecting the RF cable connections. Make the appropriate connections as listed in paragraph 2-3.

3-5. Connection of Input Power and Test Facilities Cables

Cables 1A2W1 and 1A2W2 are provided to connect 60-Hz and 400-Hz input power to interface adapter unit 1A1A1. Cable 1A3W1 connects the interface adapter unit to the receiver-transmitter. Cables 1A5W1 and 1A5W2 are provided to connect the interface adapter unit to the antenna pedestal. Cables 1A2W6 and 1A2W7 connect the receiver-transmitter to the antenna pedestal. Cable 1A4W15 couples the motor drive from the interface adapter unit to the antenna pedestal. Cables 1A2W4 and 1A2W5 connect the antenna pedestal to the RF dummy loads. Cables 1A2W3, 1A2W8, 1A2W10, 1A4W1, 1A4W2, 1A4W3, and 1A4W6 through 1A4W13 connect the interface adapter unit to the coder-decoder group case. Cables 1A2W9 and 1A4W14 connect the interface adapter unit to the control panels of the IFF set. Cable 1A5W2 connects the control panel of the IFF set to the monitor alarm unit.

3-6. Connection of Cable 1A2W12

Cable 1A2W12 is provided to connect Test Set-Simulator Transponder AN/APM-245, and other external test equipment to connector XA4P1 of the IFF set. Refer to IFF set system manual, TM 11-5895-532-34-1, for detailed connection procedures.

3-7. Connection and Use of Cable 2W1

Cable 2W1 is provided to connect input power and external test equipment to the receiver-transmitter of the IFF set. Typical connections of cable 2W1 are given in TM 11-5895-532-34-2.

3-8. Operation of Interface Adapter Unit 1A1A1

The interface adapter unit simulates the interface between the IFF set and the associated radar equipment. It provides synchro and resolver azimuth information to the IFF set. Video signals from the IFF set are routed to individually labeled test jacks on the interface adapter unit for monitoring purposes. Various functions of the IFF set can be enabled by means of front panel toggle * switches. The mechanical and electrical loads, in conjunction with azimuth controls are uses for

testing the circuits within the antenna pedestal.
To operate the interface adapter unit proceed as follows

a. Connect the interface adapter unit to facility power.

b. Connect the interface adapter unit in the desired test configuration with cables of the test facilities set.

c. Set the GROUP CASE POWER 60-HZ and 400-HZ switches to ON.

d. Set the GROUP CASE POWER SELECT witch to the desired position.

e. Apply power to the interface adapter unit by setting POWER switches to ON and setting the FREQUENCY SELECT switch to the desired position.*f.* To monitor signals at the test jacks, connect appropriate external test equipment to the test jack of interest.

g. To test antenna pedestal circuitry, set the SYNC /RSLVR SEL switch to the appropriate position

CAUTION

To avoid damage to the equipment under test, DO NOT set SYNC/RSLVR SEL switch to SYNC position when the antenna pedestal is connected for resolver operation.

h. For resolver operation, set AZIMUTH DATA FREQ SELECT switch to 4000 HZ. For synchro operation, set AZIMUTH DATA FREQ SELECT switch to either the 60 HZ or 400-HZ position.

i. To simulate antenna rotation, set ANT ROTATION switch to CW or CCW. Hold ANT ROTATION switch ON, and set RPM CONTROL to desired antenna rotation speed..

j. Angular position of simulated antenna rotation is indicated by the POSITION DEGREES dials.

k. To enable various functions of the IFF set, set the appropriate ENABLE switch to ON.

3-9. Operation of Hybrid Attenuator 2A1

The hybrid attenuator is provided to facilitate testing, troubleshooting, and alignment / adjustment of the receiver-transmitter of the IFF set. All of the specific uses of the hybrid attenuator with the receiver-transmitter are described in TM 11-5895-532-34-2. Operation of the hybrid attenuator in typical receiver-transmitter test configurations is described below.

a. The test connections between the receiver-transmitter and the hybrid attenuator, are typical for most of the receiver-transmitter tests for the IFF set (fig. 2-2). Consult the individual test procedure in TM 11-5895-532-34-2 for possible deviations in the test connections and for prescribed settings of the ATTENUATOR control.

b. Cables 2W7 / 2W8 connect the RF sum (J2) and RF difference (J3), channels to the hybrid attenuator. Adapter 2A2CP8 enables connection of 2W7 / 2W8 to J5 on the hybrid attenuator.

CAUTION

To avoid damage to the equipment under test DO NOT energize the receiver-transmitter before terminating jacks J2 and J3.

c. The insertion losses marked on the tag attached to the hybrid attenuator, and marked on the connecting coaxial cables should be considered calculating the attenuation in db required for the ATTENUATOR control.

3-10. Typical Connection and Use of Minor Components

Certain of the minor components of the test facilities set are standard, general purpose adapters terminations. These components are used in a number of test setups required when performing maintenance on the IFF set. Included in this category are adapter 2A2CP7 (N-female to N-female adapter, type UG-29B / U), adapter 2A2CP8 (N-male to BNC-male adapter, type UG-1034/U), termination 1A1AT2/1A1AT3 (75-ohm dummy load, type DA-559), and termination 2A2AT4/2A1AT5 (50-ohm dummy load, type DA-558). General instructions for connecting the remaining minor components of the test facilities set are provided below.

a. Extender Boards and Printed Circuit Board Extractors.

(1) Printed circuit (PC) board extractors 1A1A2 and 2A3 are used to remove any PC board IFF set. To remove a card from either the receiver-transmitter or coder-decoder group case n the following procedures:

(a) Remove power from the IFF set.

(b) Remove the chassis from the IFF set and the retaining cover on the module.

(c) Insert the tines of 1A1A2/2A3 into the holes at the top of the PC board and pull out the board.

(2) Extender boards 1A1A3/1A1A4 and 2A4 provide maintenance accessibility to the PC boards used in the IFF set. The extender boards are provided with test points for each etched terminal PC board which allows any input or output PC board to be checked. Extender boards 1A1A3/1A1A4 have pin connected jumper wires from the etched wiring to the output connector for isolation and induction purposes.

b. Adapters 2A2CP1 through 2A2CP6.

Adapters 2A2CP1 through 2A2CP4 permit connection of OSM-male to BNC-female connectors. Adapters 2A2CP5 / 2A2CP6 permit connection of OSM-female connectors. Typical connection of these components are given in TM 11-5895-532-34-2.

c. Terminations 2AT1, 2A2AT1, 2A2AT2, and 2A2AT3. Termination 2A2AT3 is a 75-ohm load assembly for use in mode 4 challenge video testing. Terminations 2A2AT1 and 2A2AT2 provide fixed mismatches of 5 db and 11 db for VSWR measurements. Termination 2AT1 is a 50-ohm, 50-watt load which is used to terminate the transmitter channel not being tested. Typical connection of these terminations is provided in TM 11-5895-53234-2.

CHAPTER 4

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE

Section I. GENERAL

4-1. Scope of Maintenance

The maintenance duties assigned to the operator and/ or organizational maintenance mechanic of the test facilities set are listed below. These duties do not require special tools or test equipment.

a. Weekly preventive checks and services.
b. Quarterly preventive checks and services.
c. Cleaning.
d. Troubleshooting.
e. Repairs and adjustments.

4-2. Tools, Materials, and Test Equipment Required

A list of parts authorized for operator's and organizational maintenance is provided in appendix C. The tools, test equipment, and materials, required for operator's and organizational maintenance are listed below.

a. Tools and Test Equipment.

Common name	Equipment	Technical manual.
Toolkit	Tool kit. Electronic Equipment TK-100G.	SC 5180-91-CL-S21
Multimeter	Multimeter TS-352B / U.	TM 11-0625-366-15. TB 11-6625-36-35/1.

b. *Material Required for Maintenance*.

Material	*Federal stock number*	*Material*
Cleaning compound	FSN 7930-395-9542	Light gray enamel paint (gloss)
Inhibisol cleaning solvent		Light gray enamel paint (semigloss)
Cleaning cloth		Rubber tape
Isopropyl alcohol		Friction tape
Camels-hair brush		Miller-Stephenson freon TF degreaser
Fine sandpaper		

Section II. LUBRICATION

4-3. Lubrication Requirements

Lubrication is not required for any component of the test facilities set.

Section III. PREVENTIVE MAINTENANCE

4-4. General.

To insure that the test facilities set is always ready For operation, , it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. Defects discovered during operation of the unit will be noted for future correction as soon as the operation has ceased. Operation should be stopped immediately if a deficiency is noted which would damage the equipment. Record all deficiencies together with the corrective actions taken (para 1-3*a*).

a. Systematic Care. The procedures contained in this section cover routing systematic care and cleaning essential to proper upkeep and operation of the equipment.

b. Preventive Maintenance Checks and Services The preventive maintenance checks and services charts (para 4-6 and 4-7) outline the maintenance to be performed at specific time intervals. When accomplished, these maintenance procedures will insure

that the equipment is in serviceable condition. The charts indicate what to check, how to check, and what the normal conditions are. The References column lists the illustration, paragraph, or TM that contains repair or replacement procedures. If the defect cannot be remedied by performing the corrective actions indicated, higher category of maintenance is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

4-5. Preventive Maintenance Checks and Services Periods

Preventive maintenance checks and services for the test facilities set are required both weekly and quarterly.

a. Paragraph 4-6 specifies checks and services that must be accomplished weekly and under the conditions listed below.

(1) the equipment is initially installed.

(2) At least once each month if the equipment is not used periodically.

b. Paragraph 4-7 specifies checks and services that must be performed on a quarterly basis.

4-6. Weekly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
1	Completeness	Check all components for the test facilities set against the list of components supplied; give particular attention to small components	Para 1-7
2	Exterior surfaces	*a.* Clean the transit cases and accessory case exterior with a clean, lint free cloth containing cleaning compound, Federal stock No. 7930-395-9542 (or equivalent), to remove accumulated oil film or dust. Dry all surfaces thoroughly with a clean lint free cloth. Inspect all painted surfaces for spots, chips, cracks, and corrosion. *b.* Touch up or refinish the surface as required	*a.* Para 4-8 *b.* Para 4-9
	Exterior surfaces		
3	Connectors and adapters	*a.* Check for broken pins and replace connectors where necessary. *b.* Clean dirt from all contacts	*a.* Higher category maintenance required. *b.* Para 4-8
4	Extender boards	*a.* Check for broken or bent pins and for cracks in the board.. *b.* Replace all damaged extender boards, clean dirt from electrical contacts.	*a.* Higher category maintenance required. *b.* Para 4-8
5	Cables	Check for cuts, kinks, and breaks Replace all defective cables.	Para 4-11
6	Controls	Check controls on hybrid attenuator 2A1, and interface adapter unit 1A1A1. Replace defective controls and knobs	Para 4-11
7	Handles and latches	Inspect handles and latches on the transit cases, handles of the hybrid attenuator, handles on the interface adapter unit, and handle and latches of accessory case.	Higher category of maintenance required
8	Operation	During operation, be alert to any unusual performance or condition.	

4-7. Quarterly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
1	Publications	See that all publications are complete and current.	DA Pam 310-4
2	Modifications	Check DA Pam 310-7 to determine if new applicable MWO's have been published. All URGENT MWO's must be applied immediately. MAL MWO's must be scheduled.	TM 38-750 and DA Pam 310-7
3	Cleanliness	See that equipment is clean.	
4	Preservation	Check all surfaces for evidence of rust and corrosion Remove rust and corrosion and paint bare spots.	Para 4-8 Para 4-9
5	Components	Check components for— *a.* Cables for proper mating. *b.* Smooth operation of ATTENUATOR dial on hybrid attenuator 2A1.	

Sequence No.	Item	Procedure	References
6	Calibration	c. Extender boards for proper seating in IFF set printed circuit board connectors. d. Printed circuit board extractors for proper mating in time holes of printed circuit board. a. Check insertion loss of hybrid attenuator 2A1. b. Check VSWR of hybrid attenuator 2A1. c. Check insertion loss of cables 1A2W4 through 1A2W7 and 2W7 / 2W8	*a.* TB 11-6625-2398-35 *b.* TB 11-6625-2398-35 *c.* TB 11-6625-2398-35

4-8. Cleaning.

a. *Transit Cases 1A1/ 2MP1, and Accessory Case* 2A2. Inspect the exterior surfaces of the transit cases and accessory case. The exterior surfaces should be clean, free of dust, dirt and grease.

(1) Remove dust and loose dirt with a clean, lint free cloth.

WARNING

Cleaning compound is flammable and its fumes are toxic. Provide adequate ventilation. DO NOT use near a flame.

(2) Remove grease, and ground-in dirt from the components. Use a cloth dampened (not wet) with cleaning compound.

(3) Use a brush to remove dust or dirt from k plugs. jacks, and knobs.

b. Extender Cards 1A1A3/ 1A1A4. and 2A4. periodically clean the extender board assemblies with inhibisol cleaning solvent, or with a solution of a 70 percent isopropyl alcohol and 30 percent distilled water. Using a brush, clean the printed circuit board contact with Miller-Stephenson freon TF degreaser.

4-9. Touchup Painting Instructions

Remove rust and corrosion from metal surfaces S (which have been painted) by lightly sanding them with fine sandpaper. Brush two thin coats of paint a on the bare metal to protect it from further corrosion. Refer to applicable cleaning and refinishing practices specified in TB -746-10. For touchup painting of the transit cases and the accessory case use light gray enamel, formula no. 11 (per MIL-E4 15090), type II, class 1 (gloss). For touchup painting of the hybrid attenuator and the interface 1 adapter unit use light gray enamel, formula No. 11 (per MIL-E-15090), type II, class 2 (semigloss).

4-10. General Troubleshooting Information

Troubleshooting this equipment is based upon the operation of the test facilities set ill a test-bed configuration with the IFF set If. in troubleshooting the IFF set, certain components of the test facilities set are defective, or suspected of being defective (other than cables, extender boards or the interface adapter unit), higher category of maintenance is required. Troubleshooting the cables and extender boards of the test facilities set consists of continuity checks with a multimeter (par 4-12). The schematic diagrams in chapter 6 are to be used as a guide in determining the connections to check for continuity. Any cable found to be defective should be sent to higher category of maintenance for repair.

4-11. Operator's Repairs and Adjustments

a. *Minor Repair of Cables* Repair minor cuts in cable insulation by covering it first with rubber tape, and then with friction tape. If a cable is ,broken, ship defective cable to higher category of maintenance for repair.

b. Replacement and Calibration of Knobs.

(1) Replacement. To replace a defective knob, proceed as follows:

(a) Set the knob to its extreme counter clockwise position.

(b) Loosen setscrews on the defective knob and remove the knob from the shaft.

(c) Place a new knob on the shaft, and line up the zero position on the new knob with the zero index on the associated panel.

(d) Tighten setscrews.

(2) Calibration. To calibrate a knob on its shaft. proceed as follows: (a) Tighten the setscrews on the loose knob and turn it to its extreme counterclockwise stop.

(b) Loosen setscrews and line up the zero position of the knob with the zero index on the associated panel.

(c) Tighten setscrews.

4-12. Continuity Check of Cables and Extender Boards Use Multimeter TS-352B/U to perform the continuity checks. All tests are made with the controls of the multimeter set as follows:

FUNCTION ..... OHMS.
RANGE ..... RX 1.

a. Extender Boards 1A1A3/1A1A4 and 2A4. (figs. 6-30 and 6-31).

(1) Check for short circuits by connecting the multimeter test leads between the first two etched terminals on one side of the board. Move the two multimeter test leads successively. by advancing each test lead one terminal at a time, across the board

Repeat for the etched terminals on the opposite side of the board. The meter must indicate open circuit for each test.

(2) Check board continuity by progressively connecting one multimeter test lead to the etched terminals at one end of the board, while the other test lead is connected to the corresponding contact at the opposite end of the board. The meter must read zero ohms (continuity) for each etched terminal.

(3) Check continuity to board test points by connecting the multimeter test leads between the first connector contact, and the test point (1 or 2) immediately below. Advance test leads successively across the board to the last connector contact and the last test point (40 or 41). Repeat the above procedure for the opposite side of the board. The meter must indicate zero ohms (continuity) for each measurement.

b. Cables Shorts Check. To check a multiconductor cable for shorts between conductors, proceed as follows:

(1) Connect one ohmmeter lead to each cable conductor, while performing step (2) below.

(2) Connect the second ohmmeter lead to every other conductor in the cable (one conductor at a time).

(3) If the meter indicates zero, a short exists between the two conductors.

(4) If the meter indicates less than infinite, but more than zero, the two conductors contain a dc leakage path.

(5) If the meter indicates infinite, the two conductors are not shorted.

c. Cable Continuity Check. Check continuity of the cable wires by progressively connecting the multimeter test leads to the corresponding pins on the plugs at each end of the cable. The multimeter must indicate zero ohms (continuity).

4-13. Troubleshooting Cable Assembly 2W1A1

(fig. 6-26)

In addition to continuity checks, a test of assembly 2W1A1 is required. To test assembly 2W1A1, proceed as follows:

a. Apply 28 vdc and ground to the +28V and GND input terminals of the assembly.

b. Connect a multimeter between 2W1P1-F and -S (ground).

c. Set MODE 4 + TEST TARGET ENABLE switch 2W1A1S1 to OFF. Multimeter indicates +5 vdc.

d. Set MODE 4 +TEST TARGET ENABLE switch 2S1A1S to ON. Multimeter indicates zero volts.

4-14. Troubleshooting Interface Adapter Unit 1A1A1

(fig. 6-1)

a. *General.* The operational check (c below), provides a troubleshooting procedure for operator's and organizational maintenance activities to detect and isolate a trouble in the interface adapter unit. If the corrective measures outlined in the chart do not remedy the abnormal condition, higher category of maintenance is required.

b. *Procedures.* Procedures for the operational check are listed in c below by recommended sequence of performance. Also listed are normal indications to be observed, and corrective actions to be taken if the indications are not normal. Initially, all test facilities set switches are set to the OFF position. The RPM control is in the zero position, and the ANT ROTATION CONTROL is in the STA position. The AZIMUTH DATA switches are set to 60 HZ and SYNC, respectively.

NOTE

Before replacing any components listed in the corrective action column, make certain that the suspected component has malfunctioned and its associated wiring is not at fault.

c. Interface Adapter Unit 1A1A1, Operation Check.

Step No.	Procedure	Normal indication	Corrective action
1	Set GROUP CASE POWER 60-Hz circuit breaker to ON. and GROUP CASE POWER SELECT switch to 60-Hz.	60 Hz circuit breaker remains on. The GROUP CASE POWER indicator lamp lights.	Isolate and repair short circuit. *a.* Replace defective lamp 1A1A1DS1. *b.* Higher category of maintenance required.
2	Set POWER 60-Hz circuit breaker to ON and the FREQUENCY SELECT switch to 60 Hz.	The 60-Hz circuit breaker remains on. The POWER indicator lamp lights..	Isolate and repair short circuit. *a.* Replace defective lamp 1A1A1DS3. *b.* Higher category of maintenance required.
3	Set ANT ROTATION switch to CW and sequentially set RPM CONTROL knob to 5, 10, 15., 20, and 25 positions.	POSITION DEGREES dials rotate clockwise	*a.* COARSE AZIMUTH dial rotates at 5, 10, 15,. 20. and 25 RPM respectively. *b.* Higher category of maintenance required.

Step No.	Procedure	Normal indication	Corrective action
4	Return RPM control to 0. Set GROUP CASE POWER 60-Hz circuit breaker to OFF. 400-Hz circuit breaker to ON, and GROUP CASE POWER SELECT switch to 400 Hz.	400-Hz circuit breaker remains on. GROUP CASE POWER indicator lamp lights.	*a.* Check switch 1A1A1S1 and associated wiring. *b.* Check circuit breaker 1A1A1CB2 and associated wiring.
5	Set POWER 60-Hz circuit breaker to OFF. 400-Hz circuit breaker to ON. and FREQUENCY SELECT switch to 400 Hz.	The 400-Hz circuit breaker remains on. The POWER indicator lamp lights	Isolate and replace defective part: *a.* Circuit breaker 1A1A1A1CB4 or associated wiring. *b.* Interlock switch 1A1A1S15 or associated wiring. *c.* Switch 1A1A1S4 o associated wiring.
6	Set GROUP CASE POWER and POWER switches to OFF. Measure resistance between 1A1A1J10-H and ground. Set EXT SIF switch to-		
	a. ON	*a.* Meter indicates zero ohm.	*a.* Check switch 1A1A1S8 and associated wiring.
	b. OFF	*b.* Meter indicates open circuit .	*b.* Check switch 1A1A1S7 and associated wiring.
7	Measure resistance between 1A1A1J10-J and ground. Set EXT M4 switch to--		
	a. ON	*a.* Meter indicates zero ohm.	*a.* Check switch 1A1A1S8 and associated wiring.
	b. OFF	*b.* Meter indicates open circuit.	*b.* Check switch 1A1A1S8 and associated wiring.
8	Measure resistance between 1A1A1J10-D and ground. Set SIF TAIL. switch to--		
	a. ON	*a.* Meter indicates zero ohm .	*a.* Check switch 1A1A1S9 and associated wiring.
	b. OFF	*b.* Meter indicates open circuit.	*b.* Check switch 1A1A1S9 and associated wiring.
9	Measure resistance between 1A1A1J10-K and ground. Set EXT MODE C switch to--		
	a. ON	*a.* Meter indicates zero ohm.	a. Check switch 1A1A1S10 and associated wiring.
	b. OFF	*b.* Meter indicates open circuit.	b. Check switch 1A1A1S10 and associated wiring.
10	Measure resistance between 1A1A1J10-j and ground. Set EXT TEST TGT switch to--		
	a. ON	*a.* Meter indicates zero ohm.	a. Check switch 1A1A1S11 and associated wiring.
	b. OFF	*b.* Meter indicates open circuit.	b. Check switch 1A1A1S11 and associated wiring.
11	Measure resistance between 1A1A1J10-g and ground. Set TRIG CONTROL switch to--		
	a. ON	*a.* Meter indicates zero ohm.	a. Check switch 1A1A1S12 and associated wiring.
	b. OFF	*b.* Meter indicates open circuit.	b. Check switch 1A1A1S12 and associated wiring.
12	Measure resistance between 1A1A1J10-h and ground. Set INHIBIT GATE switch to--		
	a. ON	*a.* Meter indicates zero ohm	a. switch 1A1A1S13 and associated wiring.
	b. OFF	*b.* Meter indicates open circuit.	b. Switch 1A1A1S131 and associated wiring

Step No.	Procedure	Normal indication	Corrective action
13	Measure resistance between 1A1A1J12-D and J16-P. Set ROTATION ENABLE switch to--		
	a. ON	*a.* Meter indicates zero ohm.	*a.* Check switch 1A1A1S2 and associated wiring.
	b. OFF	*b.* Meter indicates open circuit.	*b.* Check switch 1A1A1S2 and associated wiring.
14	Measure resistance between 1A1A1J12-r and J16-R.. Set ROTATION ENABLE switch to--		
	a. ON	*a.* Meter indicates zero ohm.	*a.* Check switch 1A1A1S2 and associated wiring.
	b. OFF	*b.* Meter indicates open circuit.	*b.* Check switch 1A1A1S2 and associated wiring.

CHAPTER 5

FUNCTIONING

5-1. General

The operation of interface adapter unit 1A1A1, and of hybrid attenuator 2A1, are described in this chapter. The operation of the remaining components of group I and group 2 is self-evident.

5-2. Interface Adapter Unit 1A1A1

(fig. 6-1)

The interface adapter unit can be divided into five functional sections. These functional sections are as follows:

a. Group case power.
b. Power.
c. Antenna and azimuth data.
d. Test points.
e. Enable signals.

The above functions are described in paragraphs 5-3 through 5-7.

5-3. Group Case Power

(fig. 6-1)

The group case power circuit consists of 60-Hz circuit breaker 1A1A1CB1, 400-Hz circuit breaker 1A1A1CB2, indicator lamp 1A1A1DS1 and GROUP CASE POWER SELECT switch 1A1A1S1. Circuit breakers 1A1A1CB1 and 1A1A1CB2 provide either 60-Hz or 400-Hz primary ac power for operating the interface adapter unit and ultimately the IFF set. GROUP CASE POWER SELECT switch 1A1A1S1 is used to select either 60-Hz or 400-Hz primary ac power for use during IFF set maintenance, and for operating interface adapter unit 1A1A1. Indicator lamp 1A1A1DS1 lights to indicate that either 60-Hz or 400-Hz primary ac power has been selected by the setting of GROUP CASE POWER SELECT switch 1A1A1S1

5-4. Power

(fig. 6-1)

The power circuit consists of FREQUENCY SELECT switch 1A1A1S4, 60-Hz circuit breaker 1A1A1CB3, 400-Hz circuit breaker 1A1A1CB4, relay 1A1A1K1, and POWER indicator lamp 1A1A1DS3. Interface adapter unit primary power is supplied from the group case power circuit through interlock switches 1A1A1S14 or 1A1A1S15 to the 60-Hz or 400-Hz circuit breakers. When circuit breaker 1A1A1CB3 or 1A1A1CB4 is actuated, the primary ac power is applied to contacts of relay 1A1A1K1. Relay 1A1A1K1 is operated when FREQUENCY SELECT switch 1A1A1S4 is set to either 60 Hz or 400 Hz. FREQUENCY SELECT switch 1A1A1S4 and relay 1A1A1K1 provide the primary ac operating power to the active circuits within the interface adapter unit. When primary operating power is applied to interface adapter unit 1A1A1, POWER ON indicator lamp 1A1A1DS3 is lighted.

5-5. Antenna and Azimuth Data

(fig. 6-1)

a. General. The antenna and azimuth data circuits consist of an antenna rotation circuit and an azimuth data circuit. The antenna rotation circuit consists of RPM CONTROL transformer 1A1A1T1 (autotransformer), a dc power supply, dc motor 1A1A1A13B2, gear train 1A1A1A13, and coarse and fine reading dials 1A1A1A7 and 1A1A1A8. The azimuth data circuit consists of FREQ SELECT switch 1A1A1S5, SYNC/R SLVR SEL switch 1A1A1S6, ANT ROTATION switch 1A1A1S3, 4 kHz generator 1A1A1U1, synchro 1A1A1A13B3, and resolver 1A1A1A13B1.

b. Antenna Rotation. When POWER FREQUENCY SELECT switch 1A1A1S4 is set to either 60 Hz or 400 Hz, primary ac power is coupled to RPM CONTROL transformer 1A1A1T1 and through the contacts of energized relay 1A1A1K2 to AZIMUTH DATA SYNC / R SLVR SEL switch 1A1A1S5. RPM CONTROL transformer 1A1A1T1 output voltage is coupled to the primary of power supply transformer 1A1A1T3. The voltage input to transformer 1A1A1T3 is adjustable from 0 vac to 85 vac. The output from power transformer 1A1A1T3 varies from 0 to 40 vac as RPM CONTROL transformer 1A1A1T1 is varied. This variation causes the de output of the power supply to vary from 0 vdc to 30 vdc. The result of the varying de voltage is to drive de motor 1A1A1A13B2 at speeds that will simulate radar antenna rotation from 0 rpm to 25 rpm. Dc motor 1A1A1A13B2 drives COARSE AZIMUTH dial 1A1A1A8 and FINE AZIMUTH dial 1A1A1A7 via gear train 1A1A1A13. FINE AZIMUTH dial 1A1A1A7 rotates from 0 rpm to 900 rpm, and COARSE AZIMUTH dial 1A1A1A7 rotates from 0 rpm to 25 rpm. These

dials always rotate at a 36: 1 ratio. Gear train 1A1A1A13 is mechanically coupled to synchro 1A1A1A13B3 and resolver 1A1A1A13B1.

c. Azimuth Data. When FREQ SELECT switch 1A1A1S5 is set to either 60 Hz or 400 Hz, primary power is coupled from the contacts of relay 1A1A1K1 50 the rotor of synchro 1A1A1A3B3 and to rear panel jack 1A1A1J6. The output of synchro 1A1A1A13B3 will depend on the degree of displacement that gear train 1A1A1A13 has moved the rotor of synchro

1A1A1A13B3. The stator voltage of synchro

1A1A1A13B3 is applied to ANT ROTATION switch 1A1A1S3. The setting of this switch allows for clockwise, counterclockwise, or a stationary mode of operation of the IFF set antenna. Clockwise or counterclockwise operation is accomplished by switching stator S1 and S3 outputs. Stationary operation is accomplished when ANT ROTATION switch 1A1A1S3 is set to STA position. This provides an open circuit to the IFF set antenna drive circuit, and keeps the IFF set antenna stationary. As the RPM CONTROL transformer is varied, gear train 1A1A1A13 rotates the synchro rotor so that the resultant stator output voltage drives the antenna at any speed between 5 and 25 rpm. ANT ROTATION switch 1A1A1S3 couples the stator voltages to rear panel jack 1A1A1J10 via the SYNC/RSLVR SEL switch in the SYNC position. When the SYNC / RSLVR SEL switch is set to RSLVR and the FREQ SELECT switch is set to 4000 Hz, primary ac power is supplied to a 4 kHz generator 1A1A1U1 via transformer 1A1A1T2. The 4 kHz generator 1A1A1U1 is a nonrepairable assembly that accepts the primary ac power and provides a 4 kHz, 26 vrms output. This output is supplied to resolver 1A1A1A13B1 through contacts of FREQ SELECT switch 1A1A1S5. When the 4 kHz, 26 vrms is supplied to stator windings 1A1A 1A13B1-S1 and 1A1A1A13B1-S3, resolver 1A1A1A13B1 operates similarly to synchro 1A1A1A13B3. Resolver 1A1A1A13B1 stator voltage is also supplied at rear panel jack 1A1A1J10 as a reference voltage. Counterclockwise operation of the IFF set antenna is accomplished when ANT ROTATION switch 1A1A1S3 is positioned at CCW. This reverses resolver 1A1A1A13B1-R2 and -R4 rotor outputs. The output of resolver 1A1A1A13B1 is supplied at rear panel jack 1A1A1J10. Springloaded momentary ROTATION ENABLE switch 1A1A1S2, provides power for rotation of the IFF set antenna when interface adapter unit 1A1A1 is connected in a test-bed configuration. ROTATION ENABLE ON indicator lamp 1A1A1DS2 lights to indicate the IFF set antenna drive circuits are being actuated by ROTATION ENABLES switch 1A1A1S2.

5-6. Test Points

(fig. 6-1)

Monitoring of the IFF set video and adjusted IFF azimuth signals can be accomplished from test points on the front panel of interface adapter unit 1A1A1. The following is a listing of the test points and the signal available for monitoring:

IFF signal	*Interface adapter unit test point*
Computer target start	1A1A1TP1
Computer target end	1A1A1TP2
Computer target present	1A1A1TP3
Computer true friend	1A1A1TP4
Undecoded mode C video	1A1A1TP5
IFF zero time trigger	1A1A1TP6
IFF display video	1A1A1TP7
Buffered receiver video	1A1A1TP8
Adjusted IFF azimuth S1	1A1A1TP9
Adjusted IFF azimuth S2	1A1A1TP10
Adjusted IFF azimuth S3	1A1A1TP11
Adjusted IFF azimuth RI	1A1A1TP12
Adjusted IFF azimuth R2	1A1A1TP13

5-7. Enables

(fig. 6-1)

Front panel toggle switches on the interface adapter unit can be used to enable functions in the IFF set by providing grounds when interface adapter unit 1A1A1 is connected in a test-bed configuration. These functions and associated switches are listed below.

Function	Interface adapter unit switch
External sif on	EXT SIF switch 1A1A1S7
External mode 4 on	EXT M4 switch 1A1A1S8
SIF tail on	SIF TAIL switch 1A1A1S9
External mode C on	EXT MODE C switch 1A1A1S10
External test target on	EXT TEST TGT 1A1A1S11
Trigger control on.	TRIG CONTROL switch 1A1A1S12
Inhibit gate	INHIBIT GATE switch 1A1A1S13

5-8. Hybrid Attenuator 2A1

(fig. 6-2)

a. General. The hybrid attenuator contains two subassemblies, hybrid coupler 2A1HY1 and variable attenuator 2A1AT1. The hybrid attenuator can be used separately to couple RF to or from the IFF set and external test equipment, or it can be used alone as a variable attenuator. When the hybrid attenuator is used to couple RF, cable 2A1W3 connects attenuator 2A1AT1 to hybrid coupler 2A1HY1. This permits up to 25 db attenuation of the difference channel RF below the sum channel RF, when performing receiver testing of the IFF set.

b. Attenuator 2A1AT1. Attenuator 2A1AT1 is a two-terminal, nonrepairable, wideband variable attenuator with direct reading dial. The dial is calibrated

from 0 to 25 db in 1-db steps. The ATTEN IN / RF DIFF jack 2A1W6J5 and the ATTEN OUT jack 2A1W4J4, together with the associated coaxial cabling and connectors 2A1W6P3 and 2A1W4P2, respectively, make 2A1AT1 accessible at the front panel.

5-9. Hybrid Coupler 2A1HY1

a. Hybrid coupler 2A1HY1 is a four-port, 3-db coupler which evenly divides an input signal from external test equipment into isolated quadraturephased outputs, for receiver testing of the IFF set. Front panel RF IN/OUT jack 2A1W5J1 provides the input to 2A1HY1 and the RF SUM 2A1W1J2 and CPLR IN 2A1W2J3 jacks provide the outputs for receiver testing.

b. The hybrid coupler input signals, for IFF set transmitter testing, are applied via the RF SUM 2A2W1J2 and CPLR IN 1A1W2J3 jacks. The hybrid coupler then combines the sum and difference RF signals into one resultant RF output. This RF output is available to external test equipment connected to the front panel RF IN / OUT jack 2A1W5J1.

c. The coupler is symmetrical, that is, signals applied to any input port (e.g., 2A1HY1J1) will divide equally between the opposite pair of ports (2A1HY1J2 and 2A1HY1J3) and the adjacent port (2A1HY1J4) will be isolated. By the same principle, if equal amplitude quadrature-phased signals are applied to adjacent ports (e.g., 2A1HY1J2 and 2A1HY1J3), they will combine at one output port (2A1HY1J1) and cancel at the other (1A1HY1J4). Termination 2A1AT2 to 2A1HY1J4 is a 50-ohm matched load, and is provided to minimize reflected signal from port 2A1HY1J2.

d. The sum channel overall insertion loss of the hybrid coupler from the RF SUM jack 2A1J2, to the RF IN/OUT jack 2A1J1 is the sum of the losses of 2A1W1 (approximately 3.75 db), 2A1HY1 (3 db) and miscellaneous losses in 2A1J2, 2A1CP2, and the coaxial cable terminated by 2A1P1 and 2A1J1.

e. The difference channel overall insertion loss of the hybrid coupler from the CPLR IN jack 2A1J3 to the RF IN / OUT jack 2A1J1 is the sum of the losses of 2A1W2 (approximately 3.25 db), 2A1HY1 (3 db) and miscellaneous losses in 2A1J3, 2A1CP1, and the coaxial cable terminated by 2A1P1 and 2A1J1. These losses when added to the losses of 2A W 3 and the 2A1AT1 circuit (with the ATTENUATOR control set at 0) are equal to or slightly less than the overall insertion loss of the sum channel.

CHAPTER 6

GENERAL SUPPORT MAINTENANCE

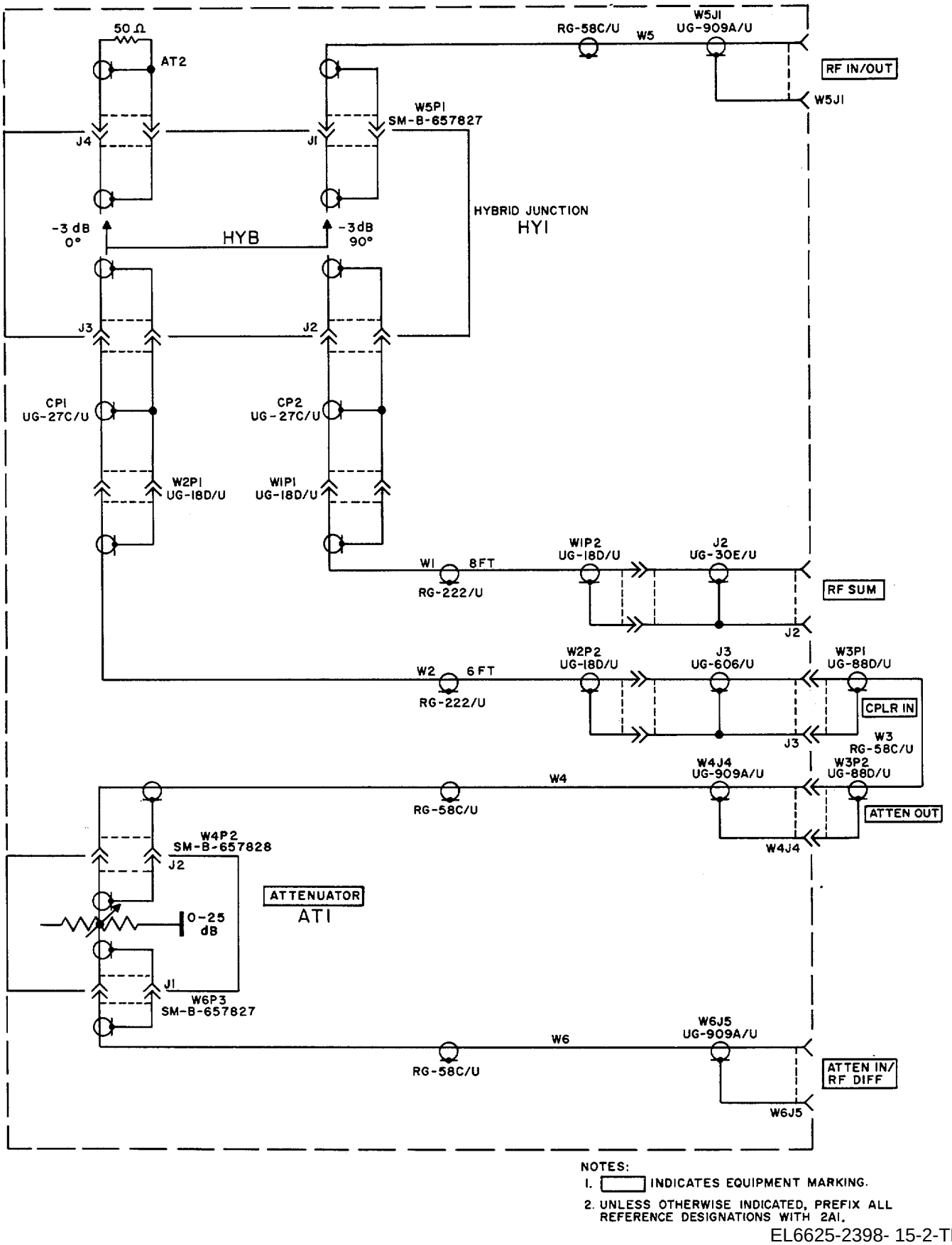
Section I. GENERAL TROUBLESHOOTING INFORMATION

CAUTION

When using this equipment in conjunction with the IFF set, beware of high voltages associated with some assemblies of the IFF set. Consult the applicable IFF set TM for further information on circuits that are dangerous.

6-1. General Instructions

Troubleshooting at the general support (GS) maintenance level includes all the techniques outlined for operator's and organizational maintenance, and any special or additional techniques required to isolate a defective part. Section II provides troubleshooting procedures to be used at the GS level. Section III provides component testing data. When performing troubleshooting procedures, refer to figure 6-1 for interface adapter unit 1A1A1 and to figure 6-2 for hybrid attenuator 2A1.



NOTES:
1. [ ] INDICATES EQUIPMENT MARKING.
2. UNLESS OTHERWISE INDICATED, PREFIX ALL REFERENCE DESIGNATIONS WITH 2A1.

EL6625-2398- 15-2-TM-17

Figure 6-2. Hybrid attenuator 2A1. schematic diagram.

6-2. Organization of Troubleshooting Procedures

a. General. The three steps in servicing the test facilities set are

(1) Sectionalization of the fault.
(2) Localization of the fault.
(3) Isolation of the fault.

b. Sectionalization. The test facilities set consist of the components listed in paragraph 1-7. The first step in tracing the trouble is to locate the component or components at fault by the following methods:

(1) Visual inspection. The purpose of visual inspection is to locate faults without testing or measuring.

(2) Operational. Except for the hybrid attenuator assembly, troubleshooting is based on the operational use of this equipment.

c. Localization. In the course of using this equipment to maintain the IFF set, the operational or maintenance tests called for in the IFF set manual may be used in determining the location of the fault in the test facilities set. Procedures for isolating troubles in the test facilities set are given in paragraphs 6-4 through 6-9.

d. Techniques. In performing the sectionalization, localization, and isolation procedures, the following techniques may be applied:

(1) Insulation resistance measurements.
(2) Continuity checks.

e. Connector Pin Extension. When measurements are to be made at connector pins (e.g. 1A1A1J10) it is necessary to extend the connector pins beyond the connector shell. To accomplish connector pin extension, obtain corresponding pins from spare parts and wrap the pins with electrical tape. Insert the plug ends of the insulated pins over the appropriate connector pins and connect required test equipment.

6-3. Test Equipment Required

The following is a listing of test equipment required for troubleshooting the test facilities set. The associated manuals are also listed.

CAUTION

Be certain that the components of test facilities set are disconnected from the IFF set before performing troubleshooting. The IFF set contains transistors and integrated circuits which could be damaged.

Multimeter ..... Multimeter TM 11-6625-1559-12
TS-352B/ U
Megger ..... Ohm meter
ZM-21A / U
Oscilloscope ..... Oscilloscope
AN / USM-281A

Section II. COMPONENT TROUBLESHOOTING

CAUTION

Do not attempt removal or replacement of parts before reading the instructions in chapter 7.

6-4. Visual Checks

Visually inspect the components of the test facilities set for evidence of physical damage to extender boards, insulation or sleeving of cables, mating parts of connectors and couplings, operating controls of interface adapter unit 1A1A1 and hybrid attenuator 2A1, and broken, corroded, or bent connector pins.

6-5. Localization of Trouble

a. In troubleshooting the IFF set in accordance with the technical manuals for that equipment, the procedures therein make use of the components of the test facilities set. If the same fault(s) appear for similar assemblies of the IFF set, using the same test setup in consecutive tests, a component of the test facilities set is probably at fault. When trouble is indicated in a component of the test facilities set, replace that component with a spare (if available) before making further tests. If the trouble is corrected by the replacement, then the component removed should be checked further to isolate the malfunction.

b. Once the trouble has been isolated to the test facilities set component and a spare is not available, continuity checks and / or insulation resistance measurements may be performed on that component.

CAUTION

Always disconnect the test facilities set component from the IFF set test setup before making continuity measurements. Transistors and integrated circuits are used in the IFF set, and continuity measurements by a multimeter may damage or destroy these circuits.

6-6. Isolation of Trouble in Group 1

a. General. Group I of the test facilities set provides four functions for testing the IFF set. These functions provide mounting for the antenna pedestal, simulation of the antenna, interface for he IFF set and associated radar, and interconnection

interconnection of the interface adapter unit into the test setup. Troubleshooting procedures for group 1 components are contained in *b* through *e* below.

b. Antenna Pedestal Mounting. Isolation of trouble to pedestal mount 1A7 is made by visual inspection and the corrective action to be taken is based upon the trouble observed.

c. Antenna Weight Simulation. Trouble shooting of inertial antenna load 1A6 is not required. Therefore isolation of trouble in this assembly is not required.

d. Interface of IFF Set. The interface adapter an unit provides four basic testing functions. It also provides monitoring capability of IFF set video signals, adjusted azimuth signals, and interconnections. The four basic functions are group case power, interface adapter unit power, azimuth data, and enables. The monitoring of video and adjusted azimuth signals is accomplished at 13 of front panel test points. When isolation of trouble in the IFF set has been functionally identified, a determination can be made if group 1 is defective by using the descriptions of group 1 functions below.

WARNING

When interface adapter unit 1A1A1 is connected to a primary power source and the GROUP CASE POWER controls are set to ON, interlock switches 1A1A1S14 and 1A1A1S15 do not interrupt the group case power circuit.

(1) *Group case power*. Interface adapter 1A1A1 provides a primary ac power output 115 vac at 60 Hz or 400 Hz (at 30 amps) for while testing the IFF set.

(2) *Power*. This function provides primary power of 115 vac at 60 Hz or 400 Hz for internal operation of interface adapter unit 1A1A1.

(3) *Azimuth data*. Simulated radar antenna rotation data is provided for testing the IFF set antenna circuits.

(4) *Enables*. This function provides ground enabling functions in the IFF set.

(5) *Monitoring*. Front panel test points are available for monitoring of the IFF set video and adjusted iff azimuth data.

(6) *Interconnections*. Interface of the IFF set into the test setup is accomplished by cables and rear panel connectors on interface adapter unit 1A1A1. The cables are provided in both group 1 and group 2, however, the larger number of cables is in group 1. Because the functional indication of trouble in any of these interconnections will appear as a symptom in either the IFF or radar set, conventional troubleshooting procedures cannot be accomplished.

NOTE

Before replacing any component listed in the corrective action column, make certain that the suspect component has malfunctioned and its associated wiring is not at fault.

e. General Support Troubleshooting Procedures, Interface Adapter Unit 1A1A1.

Symptoms	Probable trouble	Correction
1 Set GROUP CASE POWER 60-Hz circuit breaker to ON and GROUP CASE POWER SELECT switch to 60 Hz. GROUP CASE POWER ON lamp and 60-Hz circuit breaker do not remain on.	*a.* Defective transformer 1A1A1T4 b. Defective GROUP CASE POWER SELECT switch 1A1A1S1. *c.* Defective 60-Hz circuit breaker c. 1A1A1CB1.	*a.* Check transformer 1A1A1T4 and replace if defective. b. Check GROUP CASE POWER SELECT switch 1A1A1S1 and replace if defective. Check 60-Hz circuit breaker 1A1A1-CB1 and replace if defective.
2 Set GROUP CASE POWER 400-Hz circuit breaker to ON and GROUP CASE POWER SELECT switch to 400 Hz. GROUP CASE POWER ON lamp and 400-Hz circuit breaker do not remain on.	*a.* Same as step 1 above *b.* Same as step 1 above *c.* Defective 400-Hz circuit breaker 1A1A1CB2.	*a.* Same as step 1 above. *b.* Same as step 1 above. *c.* Check 400-Hz circuit breaker 1A1A1CB2 and replace if defective.

***CAUTION*: Before connecting test equipment, place all GROUP CASE POWER and POWER switches to their OFF positions. Insert insulated extender pins (para 6-2*e)* over connector pins which will be monitored. Connect test equipment and set the GROUP CASE POWER and POWER switches to the applicable positions.**

3 SYNC/RSLVR SEL switch: RSLVR AZIMUTH DATA-FREQ SELECT switch: 4000 026 vac at 4 kHz is not available between 1A1A1J10-R and -P when resolver 1A1A1A13B1 is operating.	*a.* Defective SYNC/RSLVR SEL switch 1A1A1S6. *b.* Defective ANT ROTATION switch 1A1A1S3.	*a.* Check SYNC/RSLVR/SEL switch 1A1A1S6 and replace if defective. *b.* Check ANT ROTATION switch 1A1A1S3 and replace if defective.

Symptoms	Probable trouble	Correction
3 --Continued	*c.* Defective resolver 1A1A1A13B1.	*c.* Check resolver 1A1A1A13B1 and replace if defective.
	d. Defective FREQ SELECT switch 1A1A1S5 and replace if defective.	*d.* Check FREQ SELECT switch 1A1A1S5.
	e. Defective 4 kHz generator 1A1A1U1.	*e.* Check 4 kHz generator 1A1A1U1 input (approx 74 Vac) and output (26 Vac) voltage. Replace 4 kHz generator if input voltage is correct and output voltage is abnormal.
	f. Defective transformer 1A1A1T2.	*f.* Check transformer 1A1A1T2 and replace if defective.
	g. Defective RPM CONTROL transformer 1A1A1T1	*g.* Check RPM CONTRO transformer 1A1A1T1 and replace if defective.
	h. Defective transformer 1A1A1T3.	*h.* Check transformer 1A1A1T3 and replace if defective.
	i. Defective dc power supply 1A1A1CR1.	*i* Check dc power supply 1A1A1CR1 and replace defective components.
	j. Defective dc motor 1A1A1A13B2.	*j.* Check dc motor 1A1A1A13B2 and replace if defective.
	k. Defective gear train 1A1A1A13.	*k.* Check gear train 1A1A1A13 and replace defective component.
	l. Defective FREQUENCY SELECT switch 1A1A1S4	*l.* Check FREQUENCY SELECT switch 1A1A1S4 and replace if defective.
	m. Defective circuit breaker 1A1A1CB3 or 1A1A1CB4 (depends on operating frequency of primary power).	*m.* Check applicable circuit breaker and replace if defective.
	n. Defective interlock switch 1A1A1S14 or 1A1A1Sl5 (depends on frequency of primary power.)	*n.* Check applicable interlock switch and replace if defective.
	o. Defective 60-Hz of 400-Hz circuit breaker 1A1A1CB1 or 1A1A1CB2	*o.* Check applicable circuit breaker and replace if defective.
	CAUTION: **Before connecting test equipment, place all GROUP CASE POWER and POWER switches to their OFF positions. Insert insulated extender pins (para 6-2*e*) over connector pins which will be monitored. Connect test equipment and set the GROUP CASE POWER and POWER switches to the applicable positions.**	
4 0-26 vac at 4 kHz is not available between 1A1A1J10-T and 8U when resolver 1A1A1A13B1 is operating.	Same as step 3 above	Same as step 3 above.
	CAUTION: **Before connecting test equipment, place all GROUP CASE POWER and POWER switches to their OFF positions. Insert insulated extender pins (para 6-2*e*) over connector pins which will be monitored. Connect test equipment and set the GROUP CASE POWER and POWER switches to the applicable positions.**	
5 0-26 vac is not available between 1A1A1J10 -W and -X when resolver 1A1A1A13B1 is operating.	Same as step 3 above, items a, d, and e.	Same as step 3 above, items a, d, and e.
	CAUTION**: Before connecting test equipment, place all GROUP CASE POWER and POWER switches to their OFF positions. Insert insulated extender pins (para 6-2*e*) over connector pins which will be monitored. Connect test equipment and set the GROUP CASE POWER and POWER switches to the applicable positions.**	

Symptoms	Probable trouble	Correction
6 0-20 vac is not available between 1A1A1J10-P and -T when 1A1A1A13B3 is operating.	*a.* Same as step 3 above, items a and b. *b.* Defective synchro 1A1A1A13B3. *c.* Same as step 3 above, item d. *d. D*efective relay 1A1A1K1 e. Same as step 3 above, items *g* through *o.*	*a.* Same as step 3 above, items a and *b.* Check synchro 1A1A1A13B3 and replace if defective. *c.* Same as step 3 above, item d. *d.* Check relay 1A1A1K1 and replace if defective. *e.* Same as step 3 above, items *g* through *o.*
***CAUTION*: Before connecting test equipment, place all GROUP CASE POWER and POWER switches to their OFF positions. Insert insulated extender pins (para 6-2*e*) over connector pins which will be monitored. Connect test equipment and set the GROUP CASE POWER and POWER switches to the applicable positions.**		
7 0-20 vat is not available between 1A1A1J10-T and -R when synchro 1A1A1A13B3 is operating.	Same as step 6 above, items *a* through *e.*	*e.* Same as step 6 above, items *a* through *e.*
***CAUTION*: Before connecting test equipment, place all GROUP CASE POWER and POWER switches to their OFF positions. Insert insulated extender pins (para 6-2*e*) over connector pins which will be monitored. Connect test equipment and set the GROUP CASE POWER and POWER switches to the applicable positions.**		
8 0-20 vac is not available between 1A1A1J10-P and -R when synchro 1A1AA13B3 is operating.	Same as step 6 above, items *a* through *e.*	Same as step 6 above, items *a* through *e.*
***CAUTION*: Before connecting test equipment, place all GROUP CASE POWER and POWER switches to their OFF positions. Insert insulated extender pins (para 6-2*e*) over connector pins which will be monitored. Connect test equipment and set the GROUP CASE POWER and POWER switches to the applicable positions.**		
9 AZIMUTH DATA-FREQ SELECT switch: 4000 SYN-C / RSLVR SEL switch: SYNC 115 vac ±1% is not present between 1A1A1J10-W and -X when synchro 1A1A1A13B3 is operating.	*a.* Defective SYNC/RSLVR SEL switch 1A1A1S6. *b.* Defective AZIMUTH DATA FREQ SELECT switch 1A1A1S5. *c.* Defective relay 1A1A1K2. *d.* Defective circuit breaker (s) 1A1A1CB1 through CB4. if defective.	*a.* Check SYNC/RSLVR SEL switch 1A1A1S6 and replace if defective. *b.* Check AZIMUTH DATA FREQ SELECT switch 1A1A1S5 and replace if defective. *c.* Check relay 1A1A1K2 and replace if defective. *d.* Check circuit breaker and replace
10 Zero ohms is not indicated when 1A1A1J12-D and -R are jumpered and a multimeter is connected between 1A1A1J16-P and -R. Hold ROTATION ENABLE switch 1A1A1S2 momentarily ON.	Defective ROTATION ENABLE switch 1A1A1S2	Check ROTATION ENABLE switch 1A1A1S2 and replace if' defective.
11 650 ohms ±10% cannot be measured between 1A1A1J16-P and -R when ROTATION ENABLE switch is released.	Defective transformer 1A1A1T5.	(Check transformer 1A1A1T5 and replace if defective.

6-7. Isolation of Trouble in Group 2

a. calibration of the hybrid attenuator assembly every 90 days will hold faulty operation to a minimum since the periodic check will establish its operational capability.

b. In the event the hybrid attenuator assembly fails to perform properly, the cause of the malfunction must be determined and remedied. The troubleshooting chart for the hybrid attenuator provides a step-by-step procedure for troubleshooting. This procedure is based on the VSWR and insertion loss measurements.

c. General Support Troubleshooting Procedure, Hybrid Attentuator 2A1.

Symptoms	Probable trouble	Correction
1. Excessive RF sum channel insertion loss.	*a.* Improper connections	*a.* Check that connections to 2A1HY1J1, 2A1HY1J2 and the connections of 2A1W1 are secure. Tighten loose connections or replace defective connectors.
	b. Defective cable 2A1W1 or hybrid coupler 2A1HY1.	*b.* Check difference channel insertion loss. If the sum channel and difference channel insertion losses are both excessive, check cable from 2A1W5J1 to 2A1HY1J1 (para. 4-12). If cable is not at fault, replace hybrid coupler 2A1HY1 and recalibrate (refer to TB 11-6625-2398-35). If only the sum channel has an excessive loss, replace cable 2A1W1 and recalibrate (refer to TB 11-6625-2398-35).
2. Excessive RF difference channel insertion loss.	*a.* Improper connections.	*a.* Check that all connections to 2A1W6J5 and 2A1J1 are made, and are secure. Tighten loose connections and replace defective connectors.
	b. Defective cables, attenuator, or hybrid coupler 2A1HY1.	*b.* Check sum channel insertion loss. If sum channel and difference channel insertion losses are both excessive, check cable from 2A1W5J1 to 2A1HY1J1 (para 4-12). If cable is not at fault, replace hybrid coupler 2A1HY1 and recalibrate (refer to TB 11-6625-2398-351. If only the difference channel has an excessive loss, check cable 2A1W3, cable 2A1W2 (para 4-12). attenuator 2A1AT1, and the cables from 2A1W4J4 and 2A1W6J5 to attenuator 2A1AT1. Replace defective parts and recalibrate (refer to TB 11-6625-2398-35).
3. Excessive VSWR.	*a.* Improper connections.	*a.* Check all connections between the input showing excessive VSWR and the termination(s). Tighten loose connections, replace defective connectors and recalibrate (refer to TB 11-6625-2398-35).
	b. Defective parts.	Check cables 2A1W1, 2A1W2, (para 4-12), attenuator 2A1ATI, hybrid coupler 2A1HY1, cable 2A1W3 and the cables from 2A1W5J1, 2A1W4J4 and 2A1W6J5 (para 4-12). Replace defective parts and recalibrate (refer to TB 11-6625-2398-35).

Section III. COMPONENT TESTING

6-8. Group 1 Component Testing

a. General. Testing of the group 1 components consists primarily of voltage and resistance measurements. Components in group 1, are tested on a functional basis. These functions are as follows:

(1) Group case power.
(2) Power.
(3) Antenna and azimuth data.
(4) Interconnection.

b. Group Case Power Circuit (fig. 6-1). The following test equipment is required to test group case power circuit components: Multimeter TS-352B / U, Oscilloscope AN / USM-218A.

CAUTION

Before connecting test equipment place all GROUP CASE POWER AND POWER switches to their OFF positions. Insert insulated extender pins (para 6-2 *e*) over connector pins which will be monitored.

(1) Connect interface adapter unit 1A1A1 to a 115 vac ±11.5 vac, 60-Hz power source.

(2) Set multimeter to 250 vac scale and connect to GROUP CASE POWER OUT jack-1A1A1J11-A and 1A1A1J11-B.

(3) Set GROUP CASE POWER 60-Hz circuit breaker 1A1A1CB1 to ON position.

(4) Set GROUP CASE POWER SELECT switch 1A1A1S1 to 60-Hz position.

(5) GROUP CASE POWER ON indicator 1A1A1DS1 should be lighted, and should indicate 115 vac 11.5 vac.

(6) Replace multimeter with oscilloscope and check for 60-Hz sinewave.

(7) Set GROUP CASE POWER 60 Hz circuit breaker 1A1A1CB1 to OFF position.

(8) Set GROUP CASE POWER SELECT switch 1A1A1S1 to 400-Hz position.

(9) Connect interface adapter unit to a 115 vac ±11.5 vac, 400-Hz power source.

(10) Set GROUP CASE POWER 400 Hz circuit breaker 1A1A1CB2 to ON position.

(11) Check for a 115 vac ±11.5 vac, 400-Hz sinewave on oscilloscope.

c. Power Circuit (fig. 6-1).

(1) Test equipment and materials. The following test equipment is required: Multimeter S-352B / U.

(2) Procedure. Connect interface adapter unit 1A1A1 to a 115 vac ± 11.5 vac, 60-Hz power source.

(a) Set controls on interface adapter unit 1A1A1 as follows:

Control	*Position*
AZIMUTH DATA FREQ SELECT	60 HZ
AZIMUTH DATA SYNC/RSLVR	SYNC
GROUP CASE POWER 60 Hz	ON
GROUP CASE POWER SELECT	60 HZ
POWER 60 Hz	ON
POWER FREQUENCY SELECT	60 HZ
ANT ROTATION	STA
RPM CONTROL	0

CAUTION

Before connecting test equipment place all GROUP CASE POWER AND POWER switches to their OFF positions. Insert insulated extender pins (para 6-2 *e*) over connector pins which will be monitored. Connect test equipment and set the GROUP CASE POWER and POWER switches to the applicable positions.

(b) Check that GROUP CASE POWER ON indicator 1A1A1DS1 is lighted.

(c) Check that POWER ON indicator lamp 1A1A1DS3 is lighted.

(d) Connect multimeter set to 250 vac scale, between 1A1A1J10 -W and -X.

(e) Check that multimeter indicates 115 vac ±11.5 vac.

(f) Set AZIMUTH DATA SYNC / RSLVR 1A1A1S5 to RSLVR position, set AZIMUTH DATA FREQ SELECT switch to 4000 Hz, and check that multimeter indicates 26 vrms.

(g) Set GROUP CASE POWER 60-Hz circuit breaker 1A1A1CB1 to OFF, and check 11 indicator lamps are off.

(h) Set GROUP CASE POWER SELECT 1A1A1S1 to 400 Hz.

(i) Set POWER 60-Hz circuit breaker 1A1A1CB3 to OFF.

(j) Set POWER 400-HZ circuit breaker 1A1A1CB4 to ON.

(k) Connect interface adapter unit 1A1A1 5 vac ±11.5 vac, 400-Hz power source.

(l) Set POWER FREQUENCY SELECT switch 1A1A1S4 to 400-Hz position.

(m) Set GROUP CASE POWER 400-Hz circuit breaker 1A1A1CB2 to ON.

(n) Check that multimeter indicates 26 vrms ±2.6 vrms.

(o) Repeat steps *(b)* and *(c)* above.

(p) Set AZIMUTH DATA SYNC/R SLVR switch 1A1A1S6 to SYNC position and set AZIMUTH DATA FREQ SELECT switch to 400 Hz.

(q) Repeat steps *(b), (c)*, and *(e)* above.

d. Antenna and Azimuth 60-Hz Data Circuit.

(1) *Test equipment and materials*. The following test equipment is required: Multimeter TS-352B / U.

(2) *Procedure.*

(a) Connect interface adapter unit 1A1A1 to a 115 vac ±11.5 vac, 60-Hz power source.

(b) Set controls on interface adapter unit 1A1A1 to positions listed below.

Control	*Position*
AZIMUTH DATA FREQ SELECT switch 1A1A1S5	4000 HZ
AZIMUTH DATA SYNC/RSLVR SEL switch 1A1A1S6	RSLVR
GROUP CASE POWER 60-Hz circuit breaker 1A1A1CB1	ON
GROUP CASE POWER SELECT switch 1A1A1S1	60 HZ
POWER 60-Hz circuit breaker 1A1A1CB3	ON
POWER FREQUENCY SELECT switch 1A1A1S4	60 HZ
ANT ROTATION switch 1A1A1S3	CW
RPM CONTROL transformer 1A1A1T1	5

CAUTION

Before connecting test equipment, place all GROUP CASE POWER and POWER switches to their OFF positions. Insert insulated extender pins (para 6-2 *e*) over connector pins which will be monitored. Connect test equipment and set the GROUP CASE POWER and POWER switches to the applicable positions.

(c) Connect multimeter, set to 250 vac scale, between 1A1A1J10-P and -R and check that multimeter swings from 0 vac to 90 vac ±10 vac. Check that POSITION DEGREES dials are rotating.

(d) Remove multimeter lead from 1A1A1J10-P and connect to 1A1A1J10-S, and check that multimeter swings from 0 vac to 90 ±10 vac. Check that POSITION DEGREES dials are rotating.

(e) Repeat steps *(c)* and *(d)* above for RPM CONTROL transformer 1A1A1T1 settings of 10, 15, 20 and 25.

(f) Set ANT ROTATION switch 1A1A1S3 to STA, and check that multimeter indication is less than 5 vac.

(g) Set ANT ROTATION switch to CCW.

(h) Repeat steps (c) through (e) above.

(i) Connect multimeter between 1A1A3J10 -W and -X and check for 115 vac ±11.5 vac.

(j) Set all interface adapter unit 1A1A1 power controls to OFF.

(k) Adjust multimeter to RX10 scale and connect between 1A1A1J16 -P and -R. Check that multimeter indicates 1000 ohms ±10%.

(l) Hold ROTATION ENABLE switch 1A1A1S2 in ON, and check that multimeter indication does not change.

(m) Remove multimeter lead from 1A1A1J16-R and connect to 1A1A1J12-D. Observe that multimeter indicates an open circuit.

(n) Hold ROTATION ENABLE switch 1A1A1S2 to ON position and check that multimeter indicates less than 1 ohm.

(o) Connect multimeter between 1A1A3J12 -D and -R, observe that multimeter indicates an open circuit.

(p) Repeat step *n* above.

e. Antenna and Azimuth 400-Hz Data Circuit.

(1) *Test equipment and materials.* The following test equipment is required: Multimeter TS-352B / U.

(2) *Procedure.*

(a) Connect interface adapter unit 1A1A1 to a 115 vac 11.5 vac, 400-Hz power source.

(b) Set controls on interface adapter unit 1A1A1 to positions listed below.

Control	***Position***
AZIMUTH DATA FREQ. SELECT switch 1A1A1S5.	400 HZ
AZIMUTH DATA SYNC/RSLVER SEL switch 1A1A1S6	SYNC
GR()UP CASE POWER 400-Hz circuit breaker 1A1A1CB2	ON
GROUP CASE POWER SELECT switch 1A1AS1	400 HZ
POWER 400-Hz circuit breaker 1A1A1CB4	ON
POWER FREQUENCY SELECT switch 1A1A1S4	400 HZ
ANT ROTATION switch 1A1A1S3	CW
RPM CONTROL transformer 1A1A1T1	5

CAUTION

Before connecting test equipment, place all that GROUP CASE POWER and POWER switches to their OFF positions. Insert insulated extender pins (para 6-2*e*) over connector pins which will be monitored. Connect test equipment and set the GROUP CASE POWER and POWER switches to the applicable positions.

(c) Connect multimeter, set to 250 vac scale between RADAR AZ jack 1AA1J10-P and -T and check that multimeter swings from 0 to 90 vac ± 10 vac. Check that POSITION DEGREES dials are rotating.

(d) Remove multimeter lead from 1A1A1J10-P and connect to 1A1A1J10-R and check that multimeter swings from 0 to 90 + 10 vac. Check that POSITION DEGREES dials are rotating.

(e) Remove multimeter leads and connect between 1A1A1J10 -R and -T and check that multimeter swings from 0 to 90 ±10 vac. Check POSITION DEGREES dials are rotating.

(f) Repeat steps (c)and (d) above for RPM TROL transformer 1A1A1T1 settings of 10, 15, 20 and 25 RPM.

(g) Set ANT ROTATION switch 1A1A1S3 to STA position and check that meter indication is less than 5 vac.

(h) Set ANT ROTATION switch to CCW position..

(i) Repeat steps (c) through (f) above.

(j) Connect multimeter to 1A1A1J10 -W and -X and check for 115 vac ±11.5 vac.

f. Antenna and Azimuth 4000-Hz Data Circuit.

(1) *Test equipment and material*. The following test equipment is required: Multimeter TS-352B / U.

(2) *Procedure*.

(a) Connect interface adapter unit 1A1A1 controls to a 15 vac ±11.5 vac, 60-Hz power source.

(b) Set interface adapter unit 1A1A1 controls to position below.

Control	*Position*
AZIMUTH DATA FREQ SELECT switch 1A1A1S5	4000 HZ
AZIMUTH DATA SYNC/RSLVR SEL switch 1A1A1S6	RSLVR
GROUP CASE POWER 60-HZ circuit breaker 1A1A1CB1	ON
GROUP CASE POWER select switch 1A1A1S1	60 HZ
POWER 60-HZ circuit breaker 1A1A1CB3	ON
POWER FREQUENCY SELECT switch 1A1A1S4	60 HZ
ANT ROTATION switch 1A1A1S3	CW
RPM CONTROL transformer 1A1A1T1	5

CAUTION

Before connecting test equipment, place all GROUP CASE POWER and POWER switches to their OFF positions. Insert insulated extender pins (para 6-2 *e*) over connector pins which will be monitored. Connect test equipment and set the GROUP CASE POWER and POWER switches to the applicable positions.

(c) Connect multimeter, set to 50 vac scale, between RADAR AZ jack 1A1A1J10 -P and -R and check that multimeter swings from ±1.5 to 26 vac ±2.6 vac. Check that POSITION DEGREES dials are rotating.

(d) Connect multimeter leads between 1A1A1J10 -T and -U and check that multimeter swings from 1.5 vac to 26 ±2.6 vac. Check that POSITION DEGREES dials are rotating.

(e) Repeat steps *(c)* and *(d)* above for RPM CONTROL transformer 1A1A1T1 settings of 10, 15, 20 and 25 RPM.

(f) Set ANT ROTATION switch 1A1A1S3 to STA position and check that multimeter indication is less than 5 vac.

(g) Set ANT ROTATION switch to CCW.

(h) Repeat steps (c) through (e) above.

(i) Connect multimeter to 1A1A1J10 -W and check for 26 vac ±2.6 vac.

(j) Set all interface adapter unit 1A1A1 controls to OFF.

g. Interconnections. Testing of the test facilities set interconnection requires continuity checks for cables and connectors and insulation resistance test for cables. When a cable or connector of the test facilities set is suspected as a source of trouble, perform standard continuity checks for cables using applicable cable schematic diagram (fig. 6-3 through 6-31), or the wire run list (app. A) for point-to-point wiring of the connectors. Insulation resistance tests on cables can also be performed using a megger. When performing insulation resistance tests, a meter reading of 100 megohms or larger must be obtained.

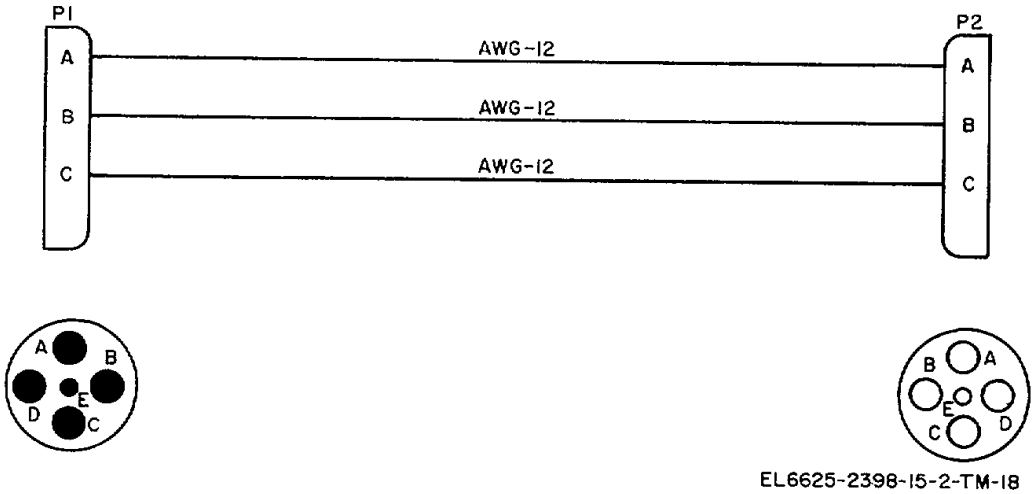


Figure 6-3. Table 1A2W1, schematic diagram.

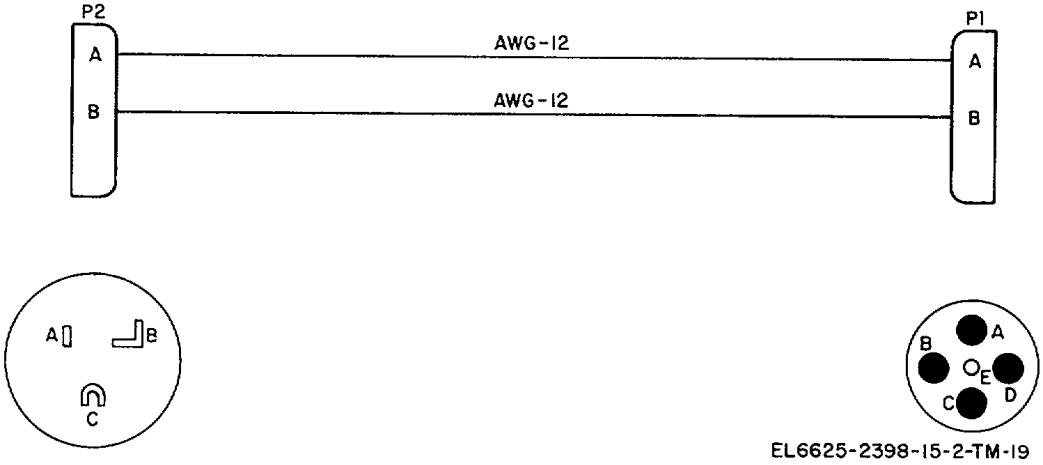


Figure 6-4. Table 1A2W2, schematic diagram.

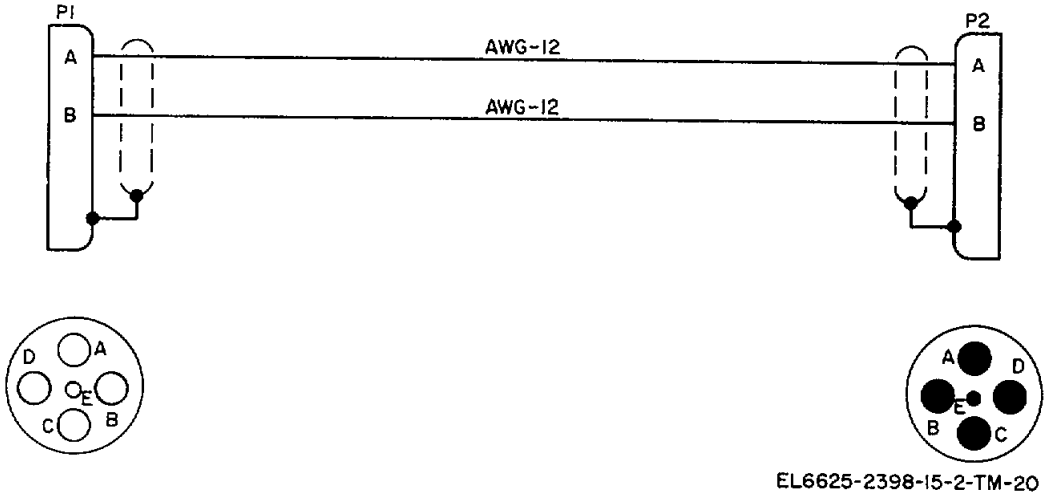


Figure 6-5. Table 1A2W3, schematic diagram.

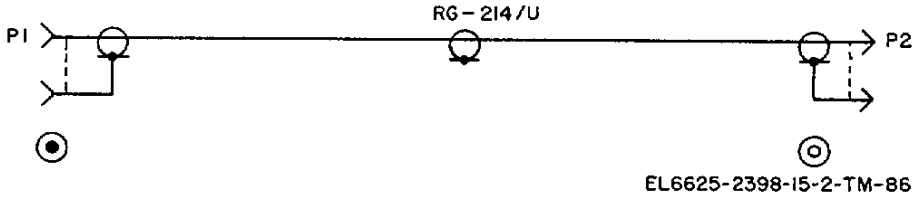


Figure 6-6. Cable 1A2W4-1A2W7 and 2W7 / 2W8, schematic diagram.

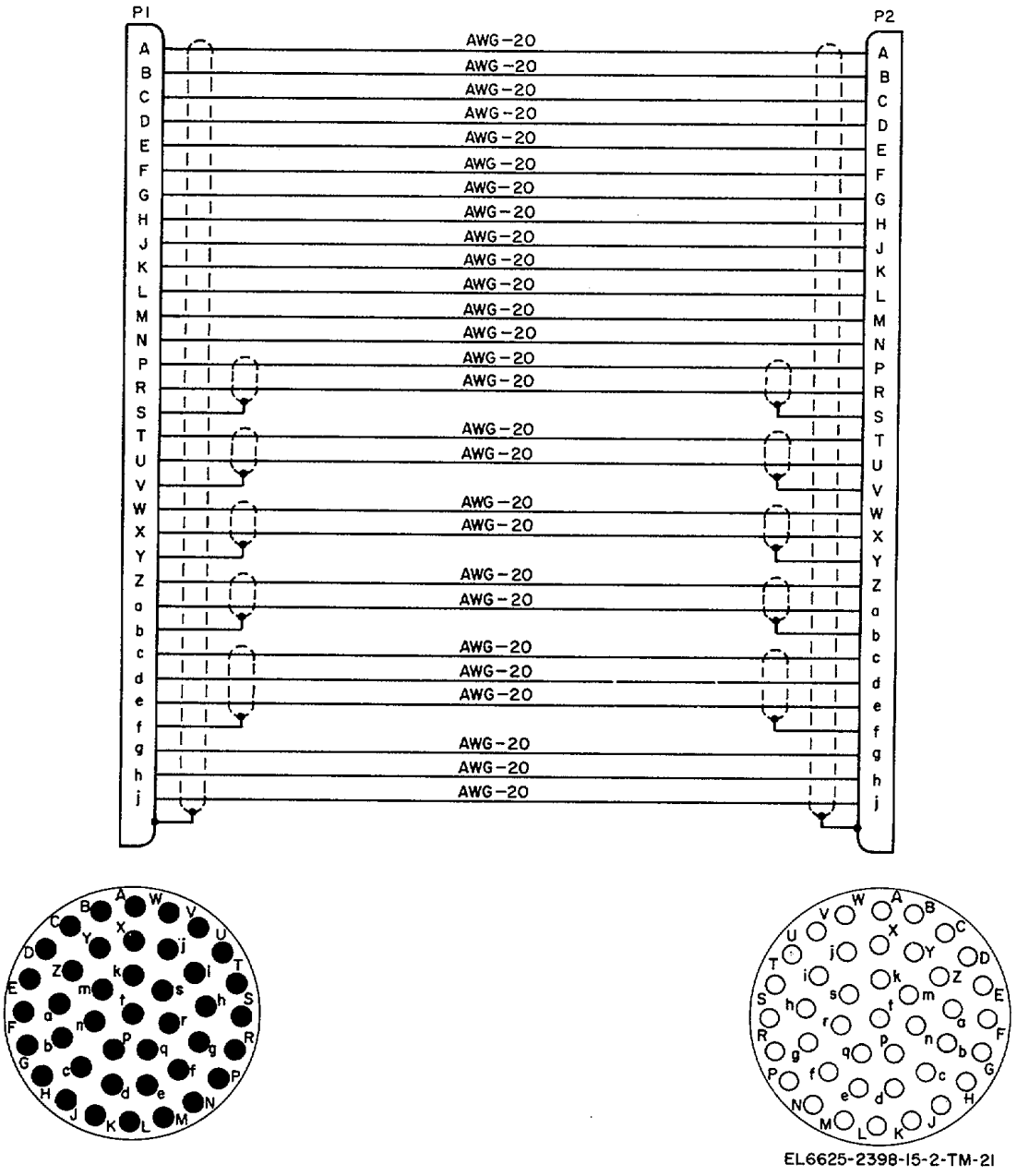


Figure 6-7. Cable 1A2W8, schematic diagram.

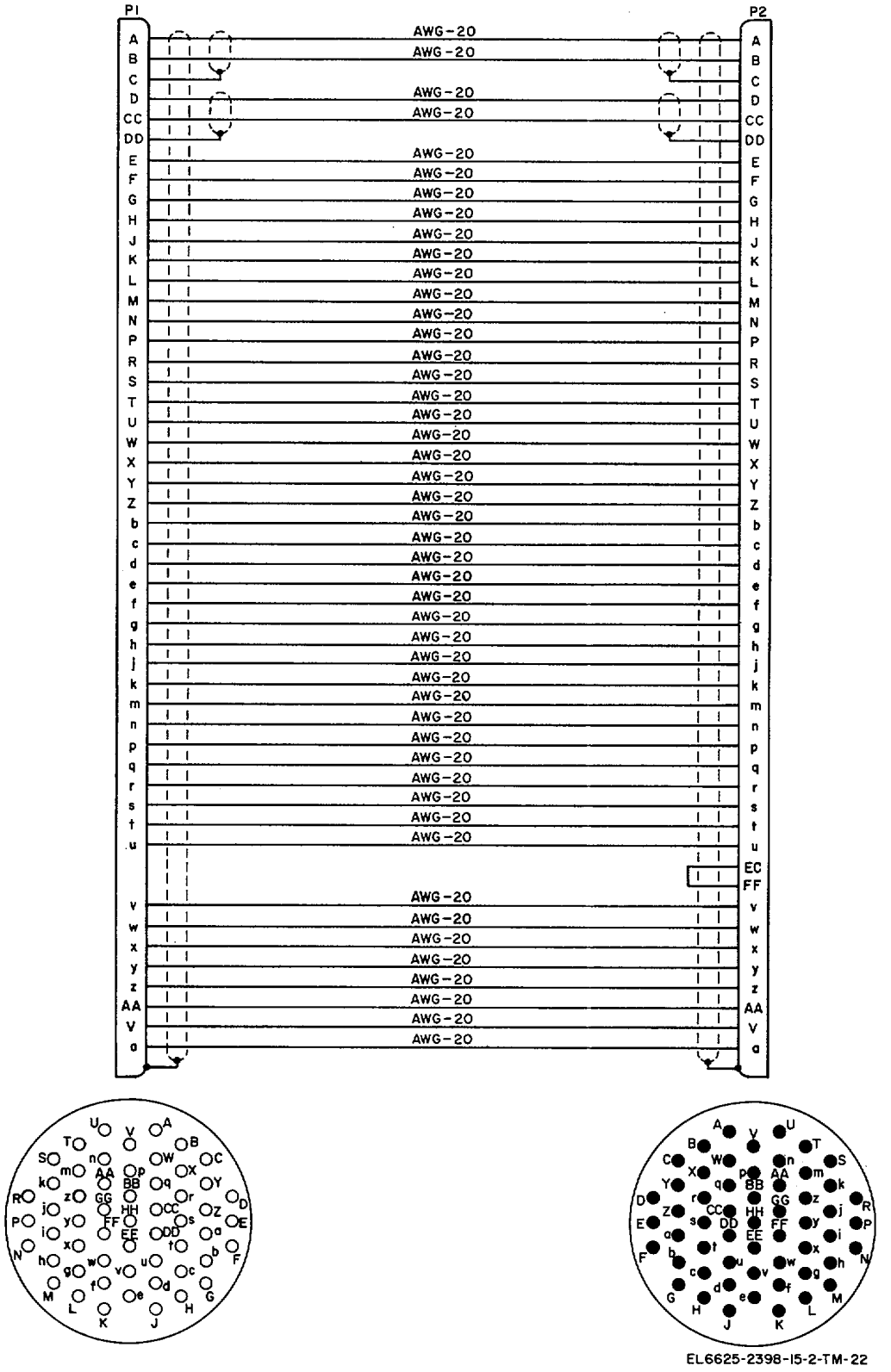


Figure 6-8. Cables 1A2W9 and 1A2W10, schematic diagram.

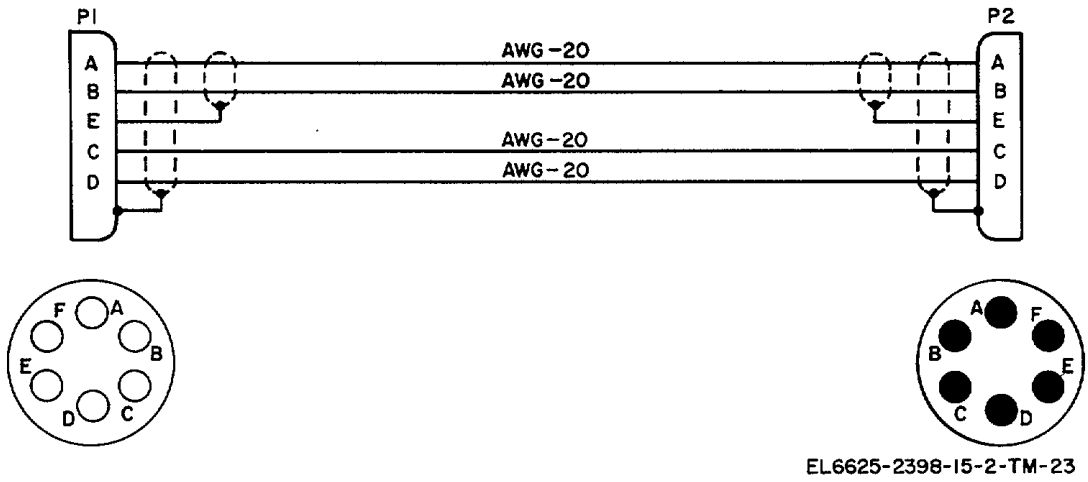


Figure 6-9. Cable 1A2W1, schematic diagram.

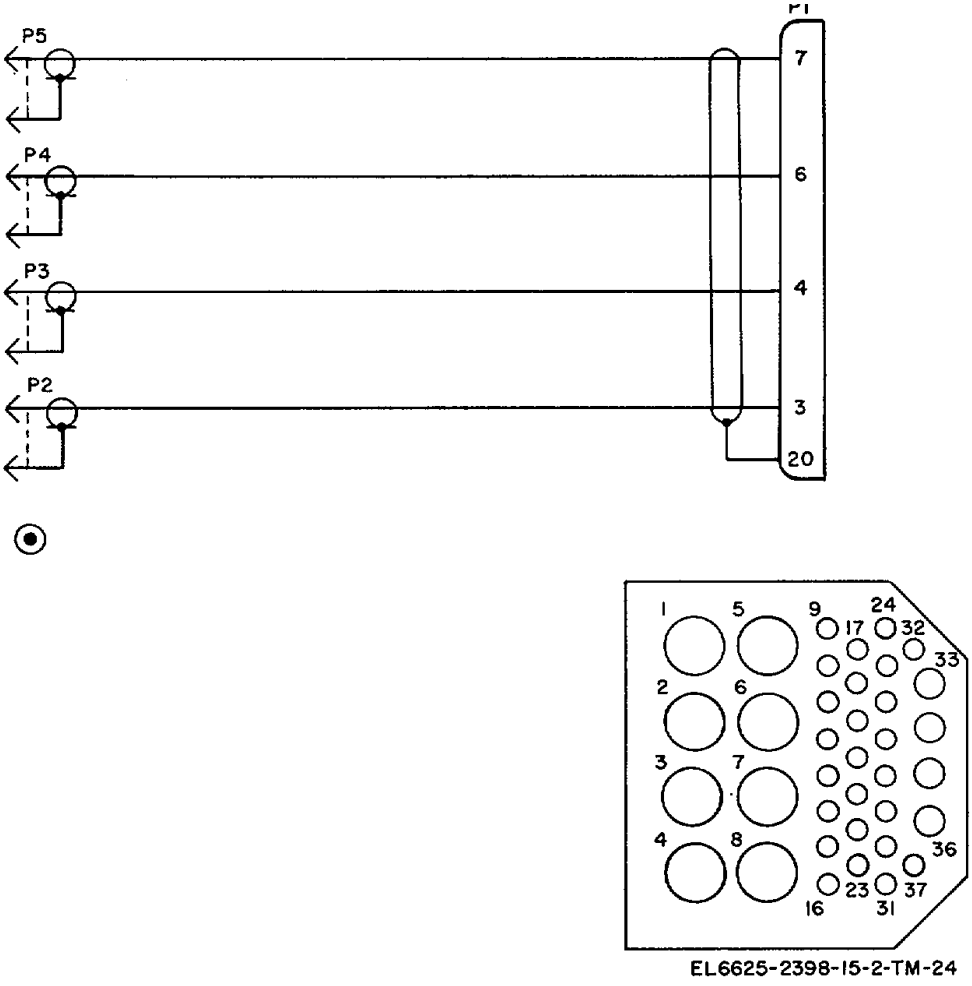


Figure 6-10. Cable 1A2W12, schematic diagram.

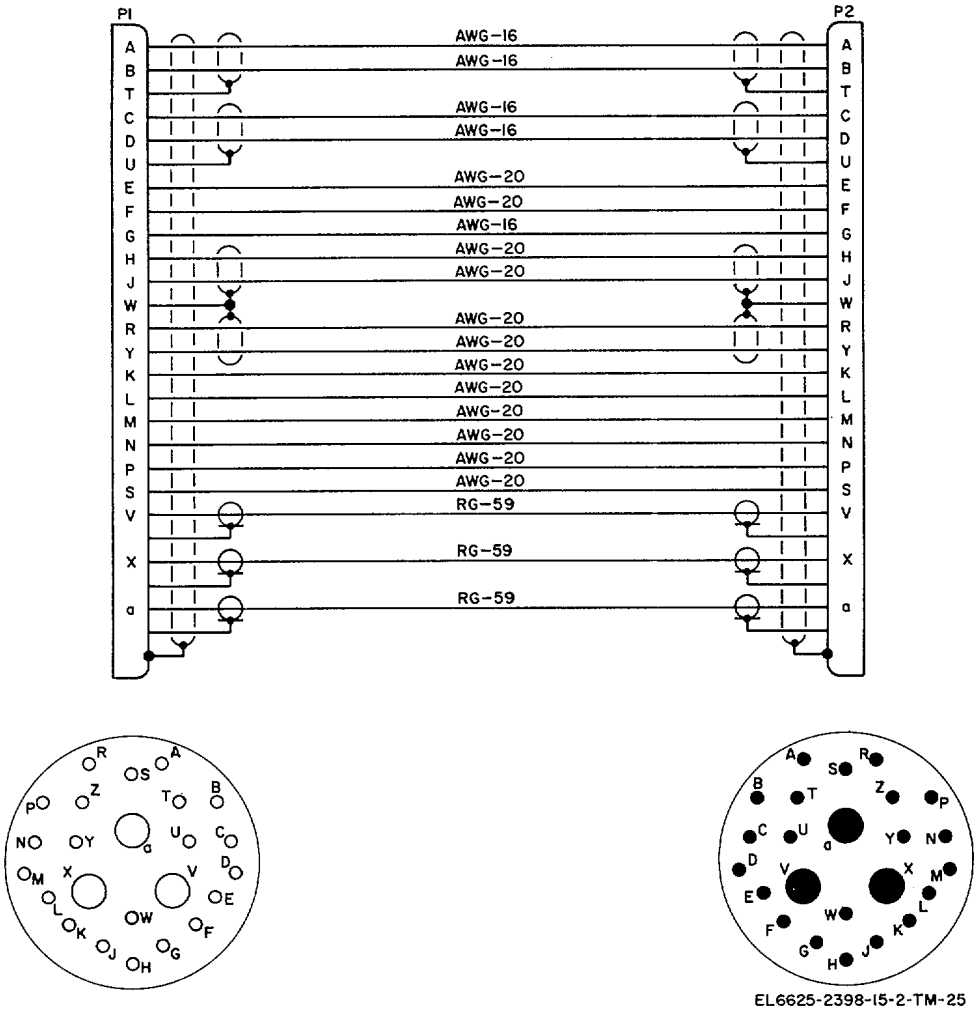


Figure 6-11. Cable 1A3W1, schematic diagram.

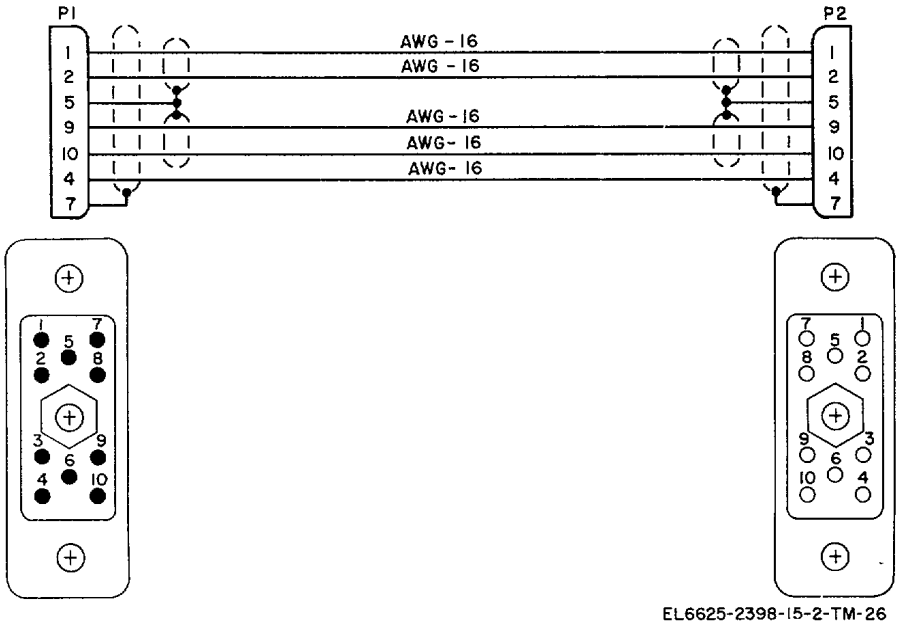


Figure 6-12. Cable 1A39W2, schematic diagram.

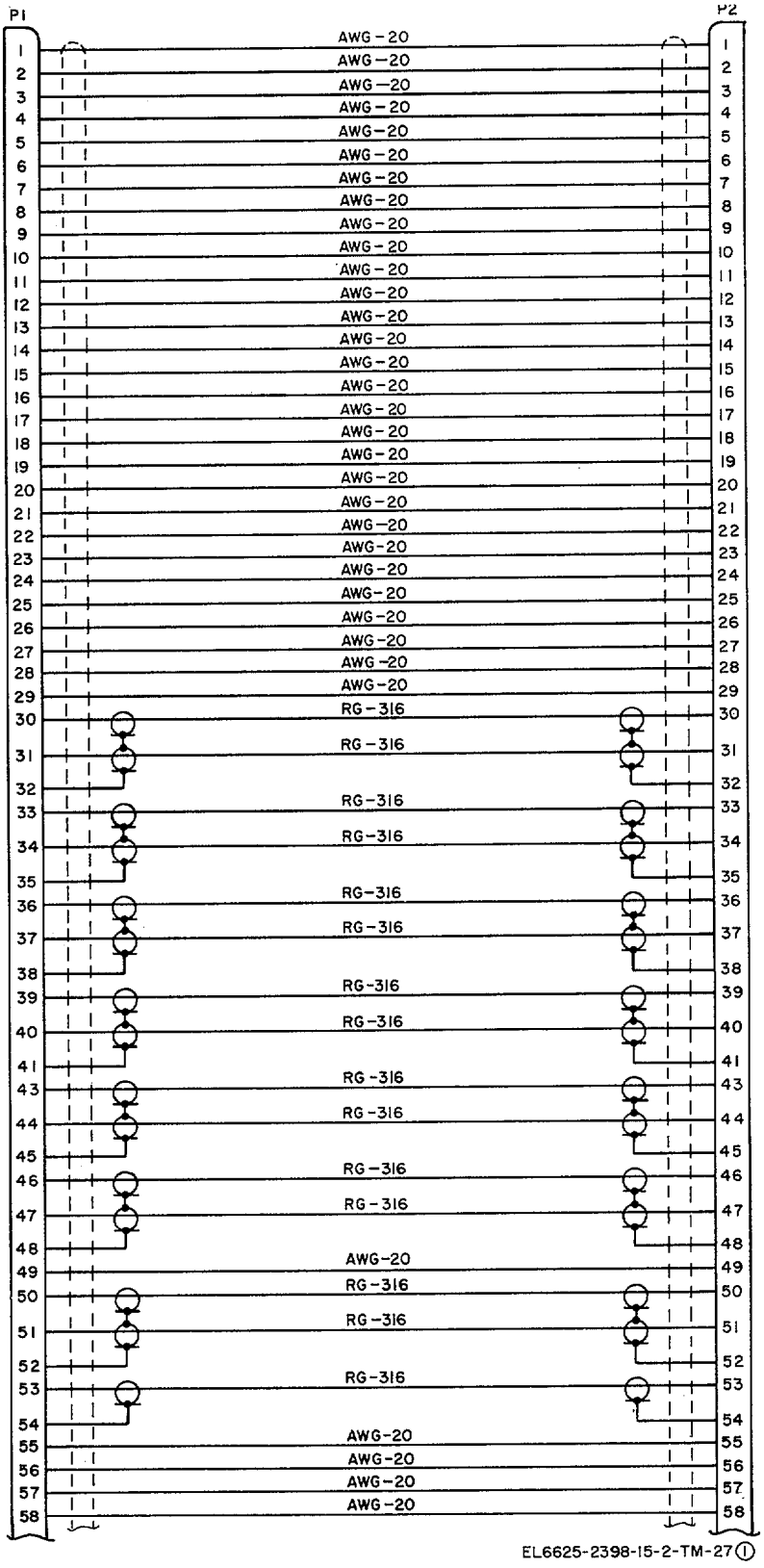


Figure 6-13 (1). Cable 1A3W3, schematic diagram (sheet 1 of 2).

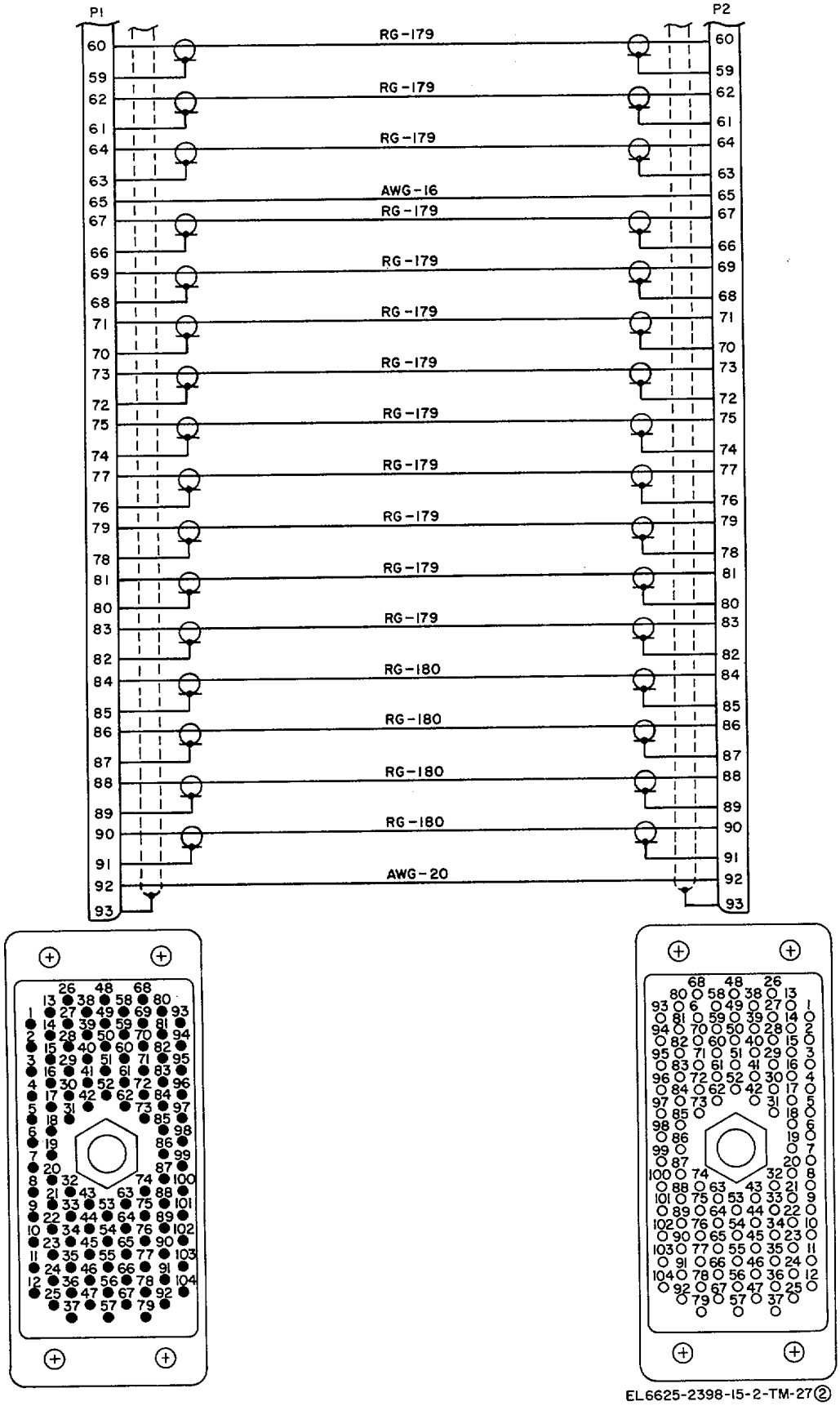


Figure 6-13 (2). Cable 1A3 W3, schematic diagram (sheet 2 of 2).

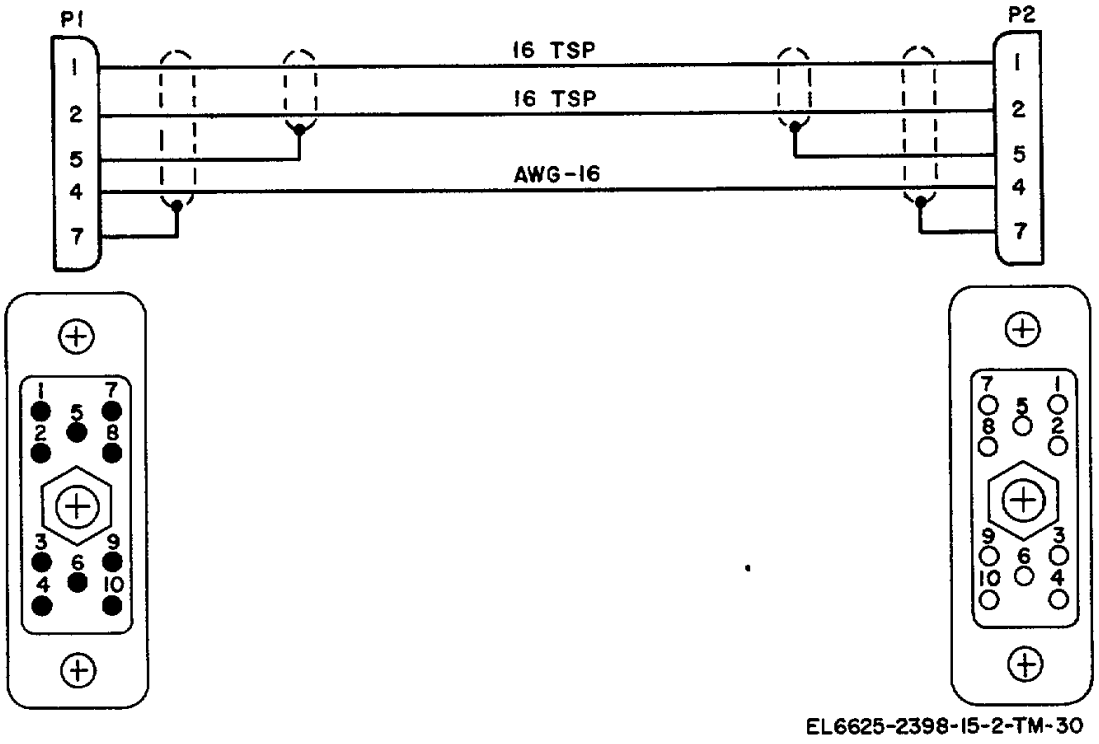


Figure 6-14. Cable 1A3W4, schematic diagram.

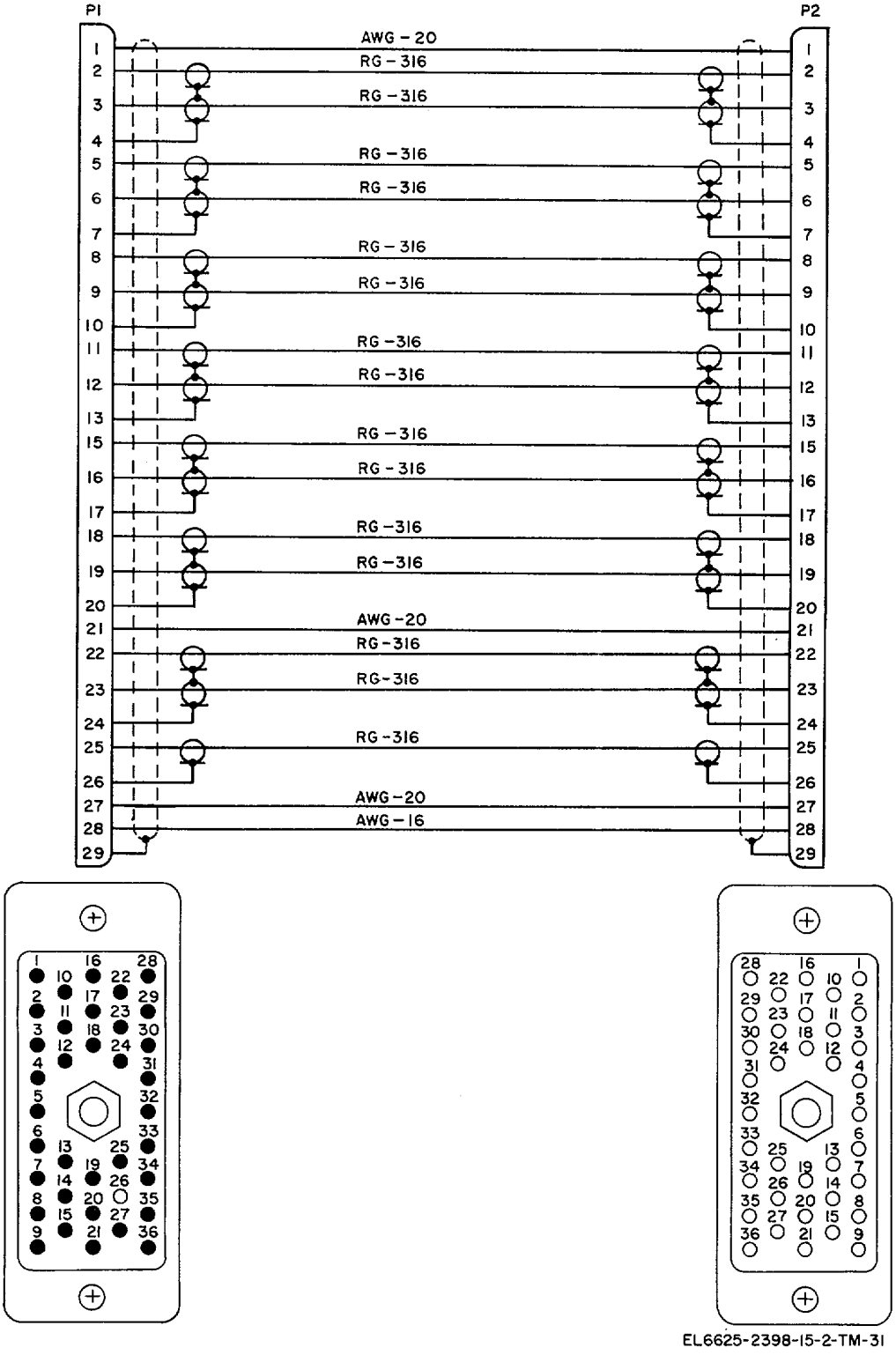


Figure 6-15. Cable 1A3W5, schematic diagram.

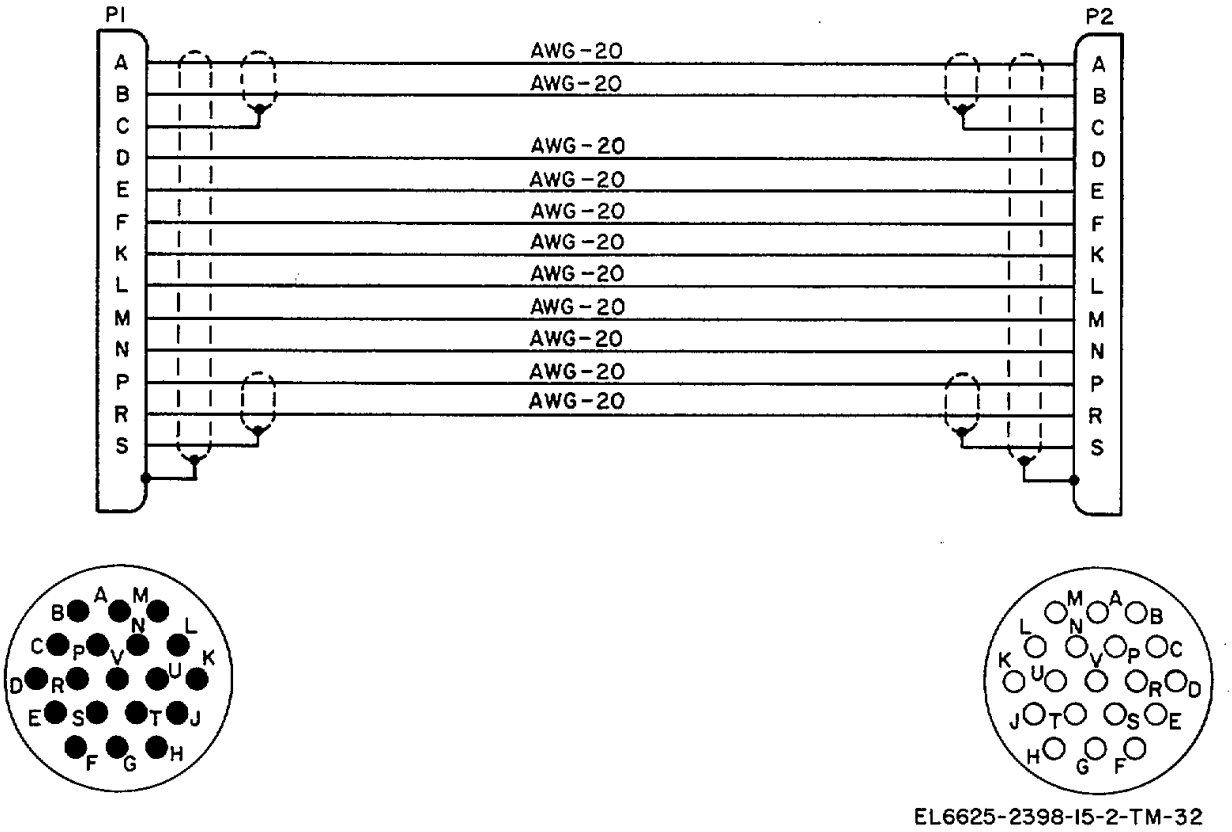


Figure 6-16. Cable 1A4W1, schematic diagram.

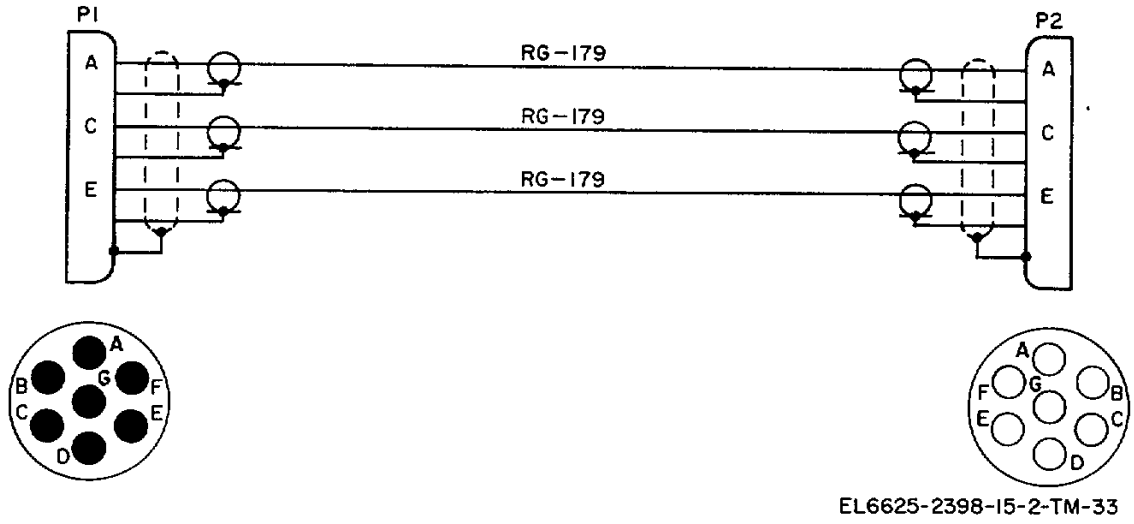


Figure 6-17. Cable 1A4W2, schematic diagram.

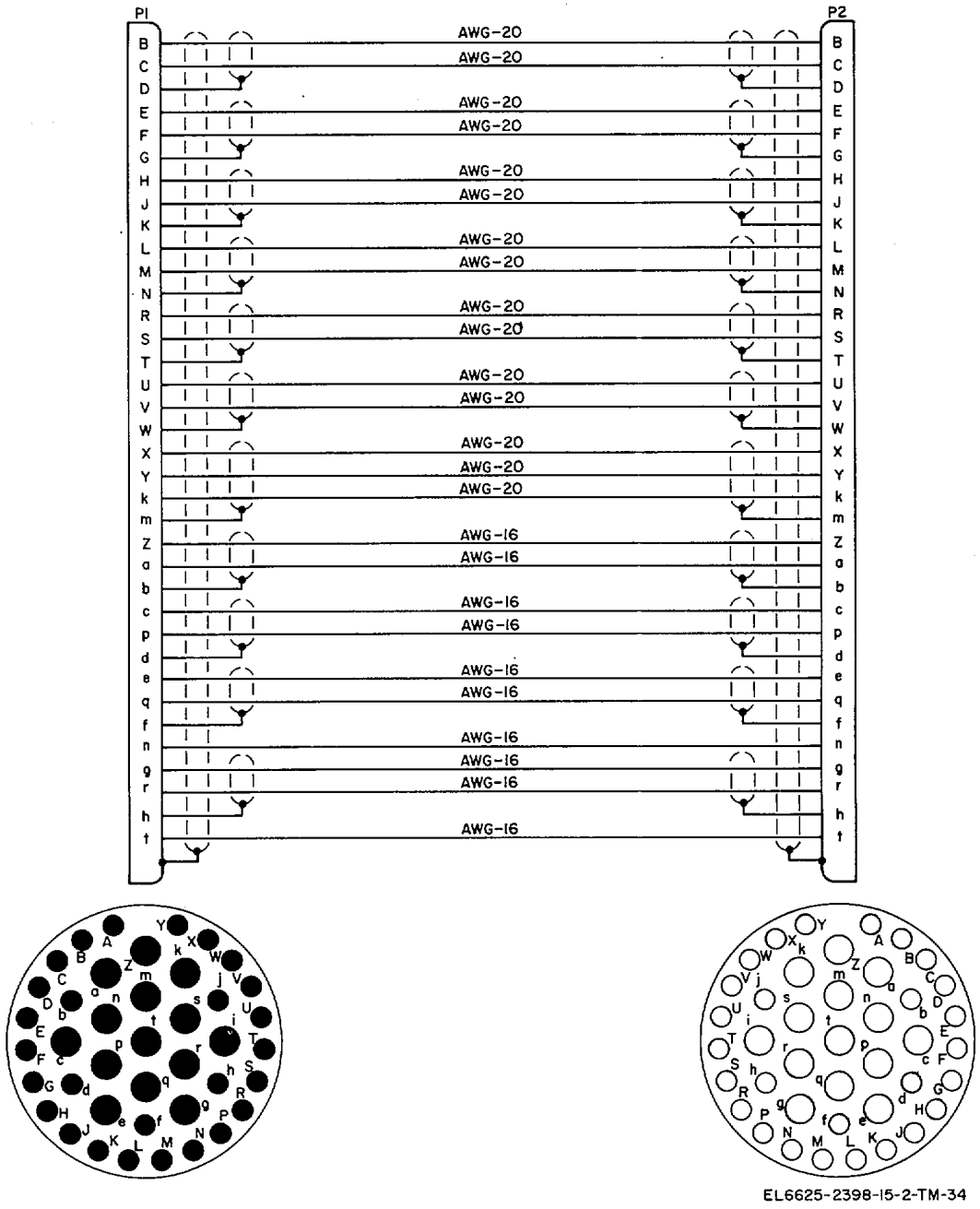


Figure 6-18. Cable 1A4W3, schematic diagram.

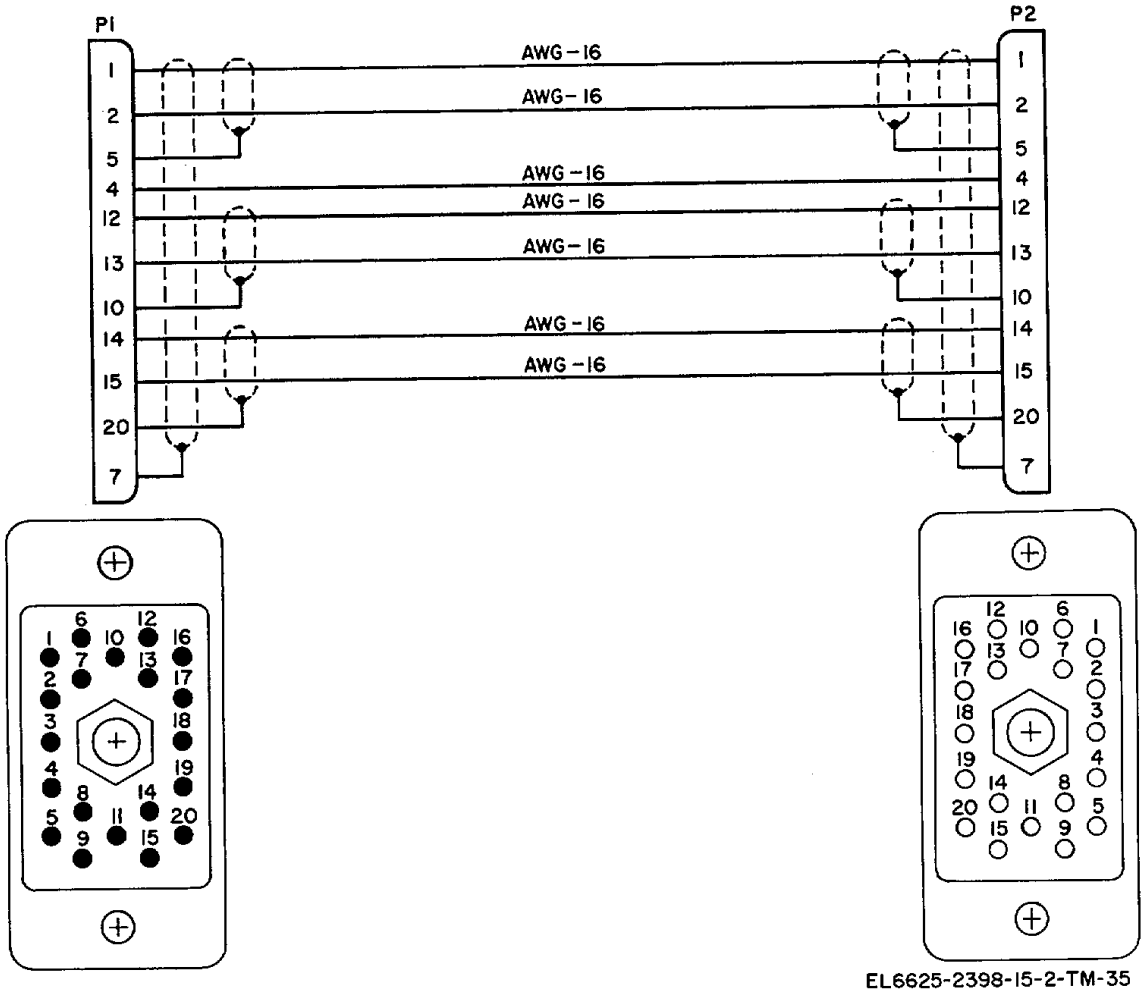


Figure 6-19. Cable 1A4W4, schematic diagram.

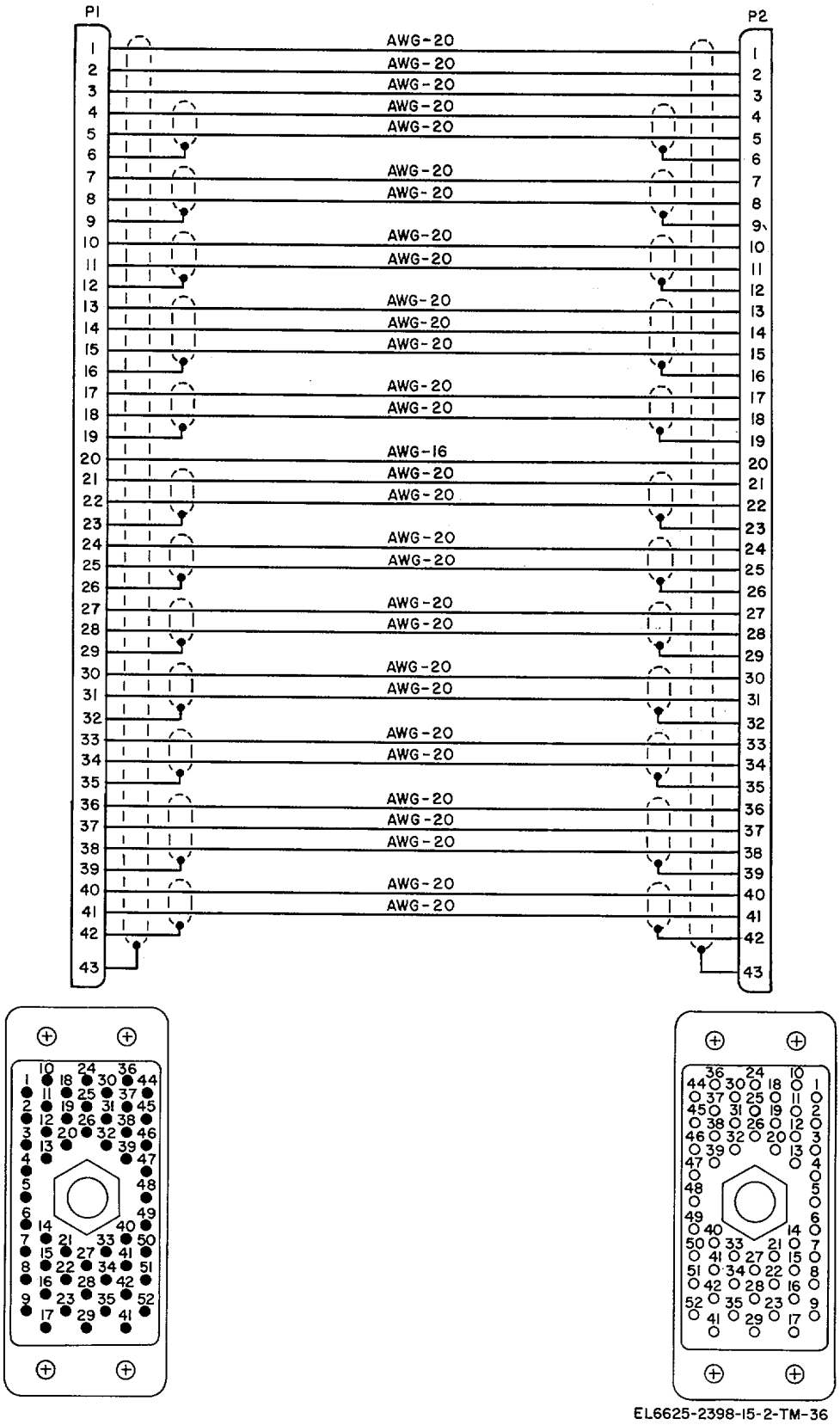


Figure 6-20. Cable 1A4W5, schematic diagram.

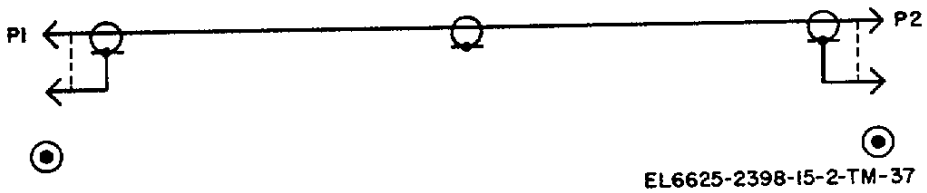


Figure 6-21. Cable 1A4W6 through 1A4W13, and 1A4W16, schematic diagram.

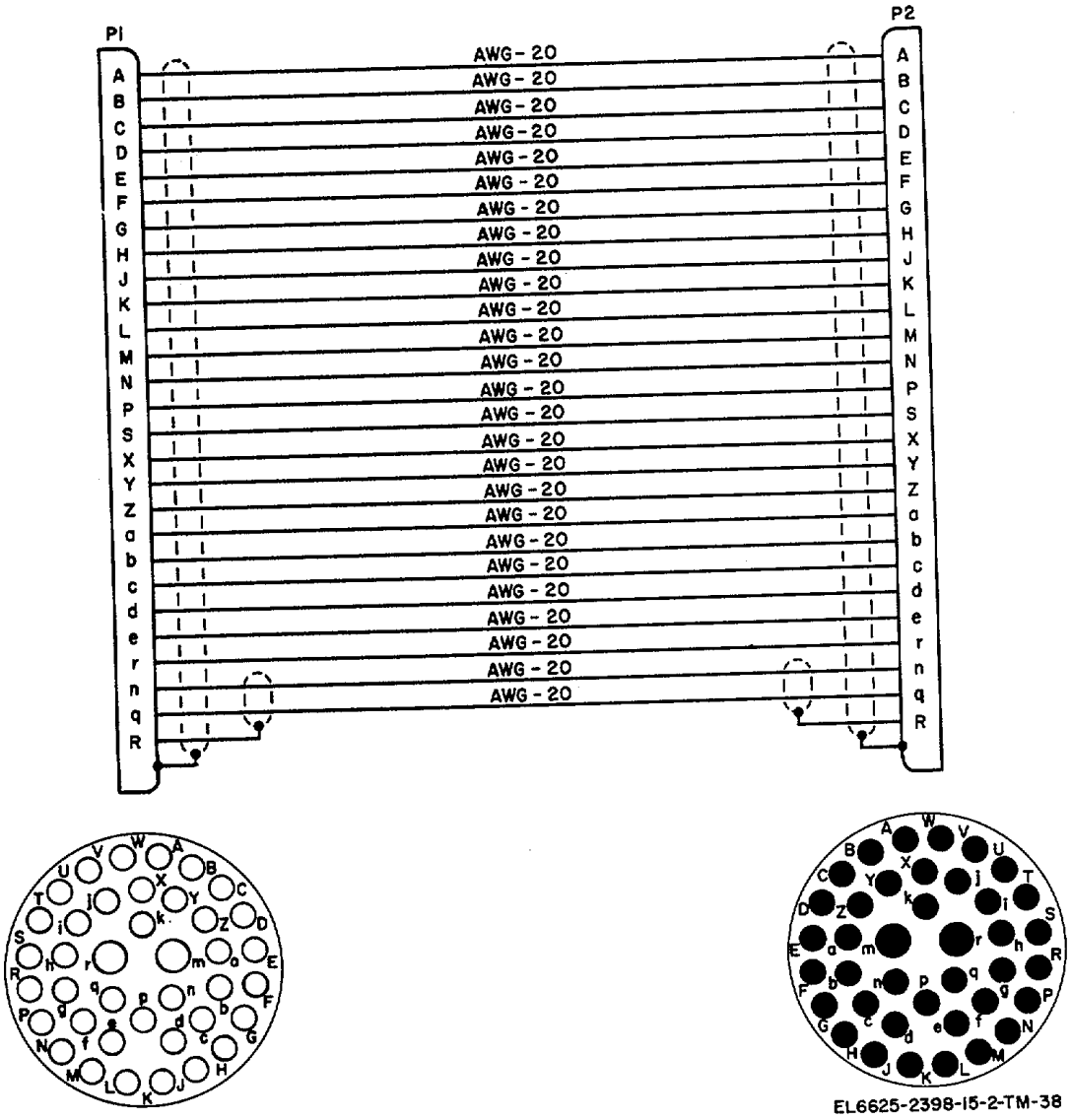


Figure 6-22. Cable 1A4W14, schematic diagram.

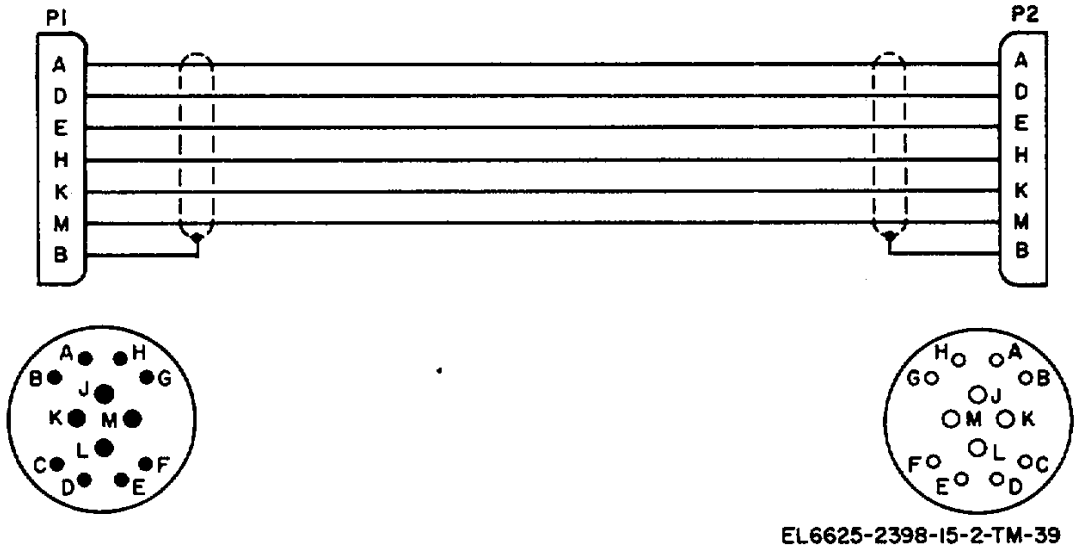


Figure 6-23. Cable 1A4W15, schematic diagram.

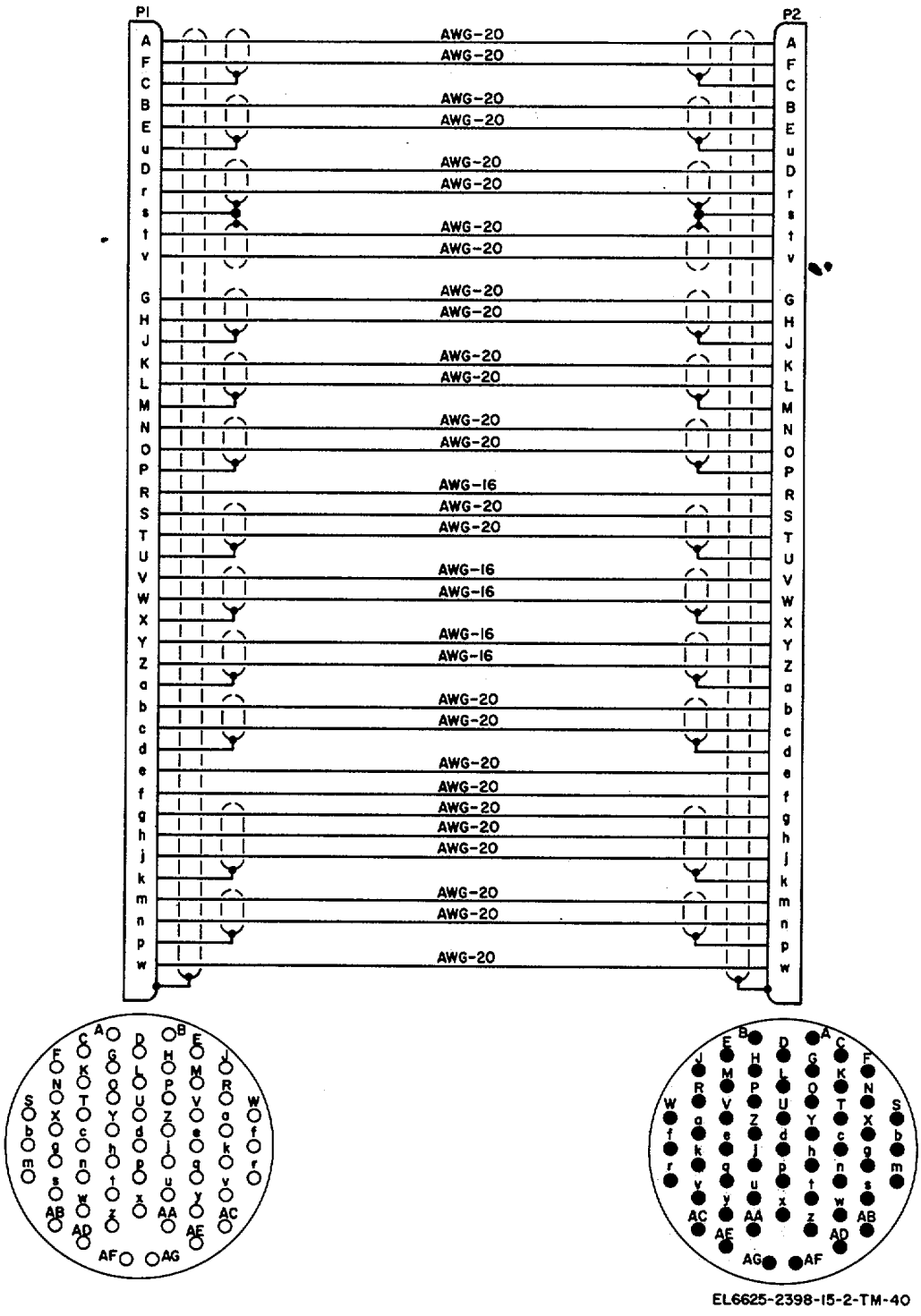


Figure 6-24. Cable 1A5W1, schematic diagram.

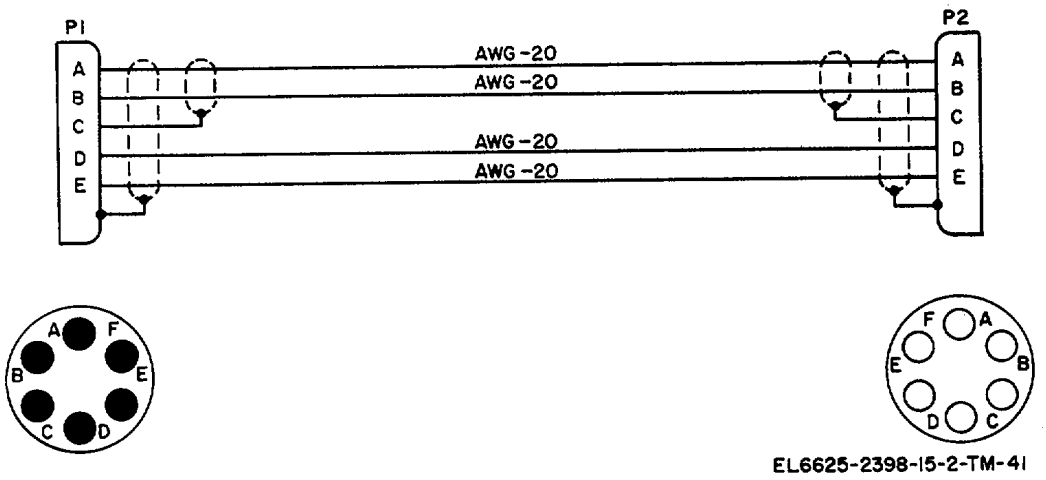


Figure 6-25. Cable 1A5W2, schematic diagram.

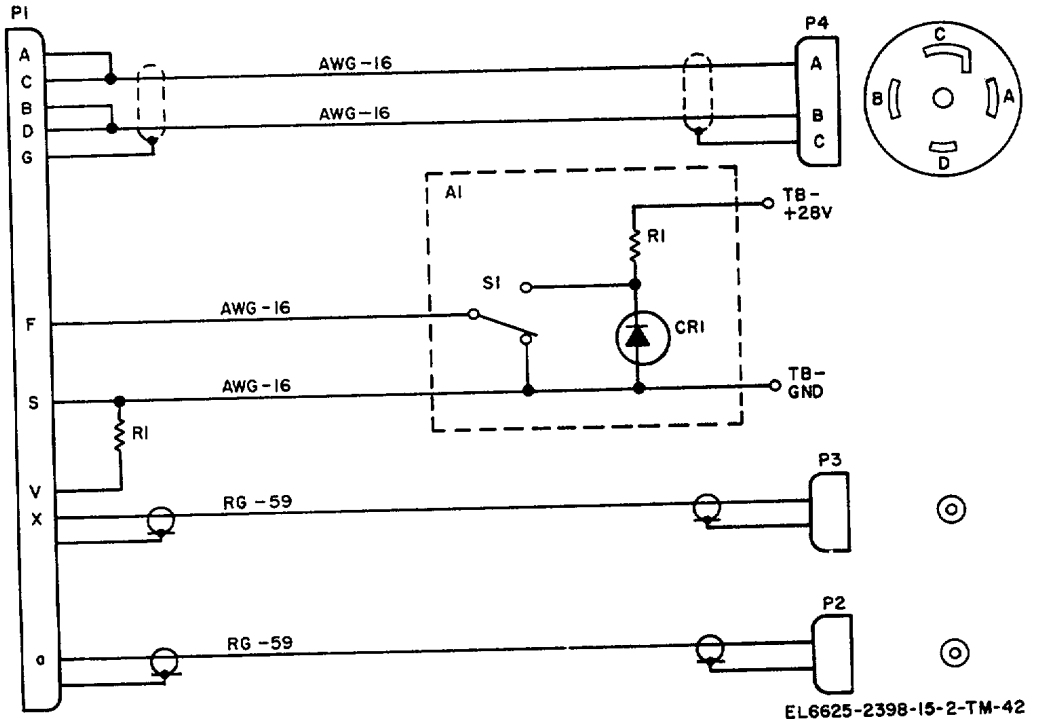


Figure 6-26. Cable 2W1, schematic diagram

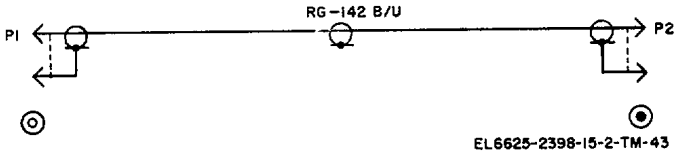


Figure 6-27. Cable 2W2 through 2W6, schematic diagram.

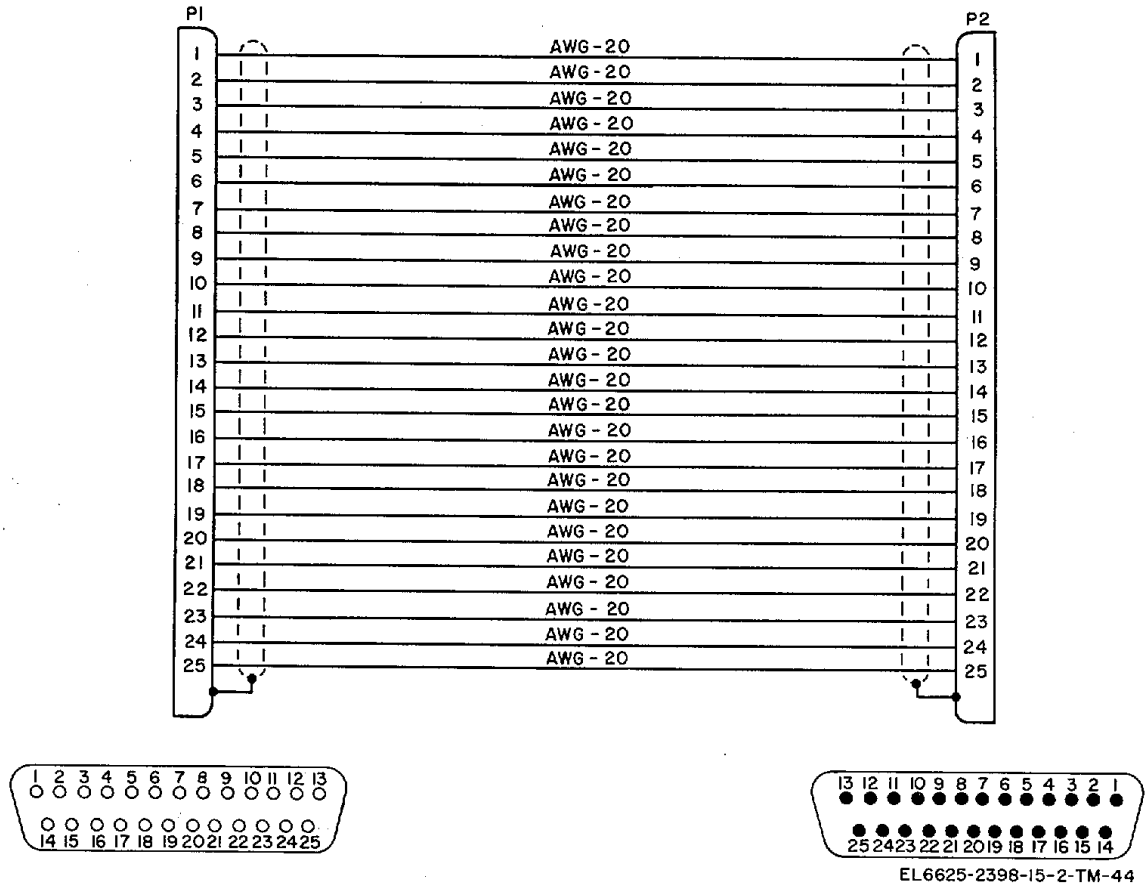


Figure 6-28. Cable 2A2W1, 2A2W2, and 2A2W3, schematic diagram.

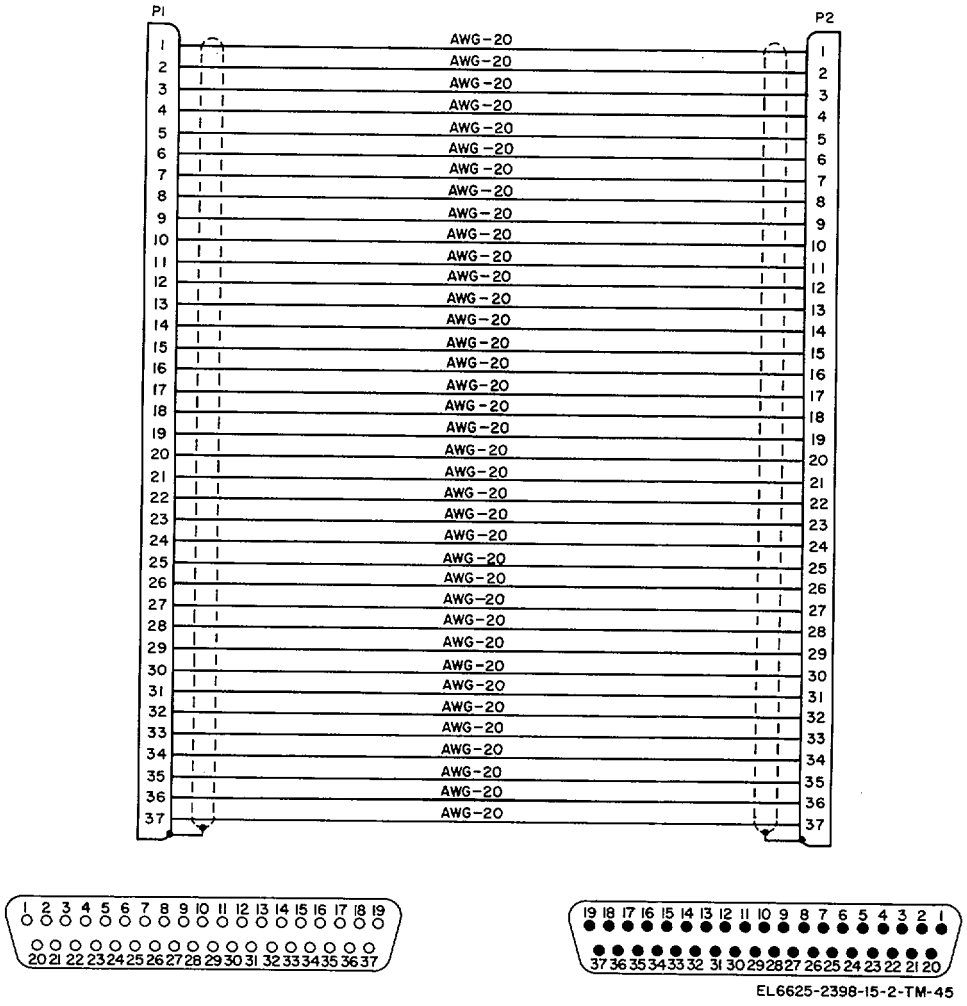


Figure 6-29. Cable 2A2W4, schematic diagram.

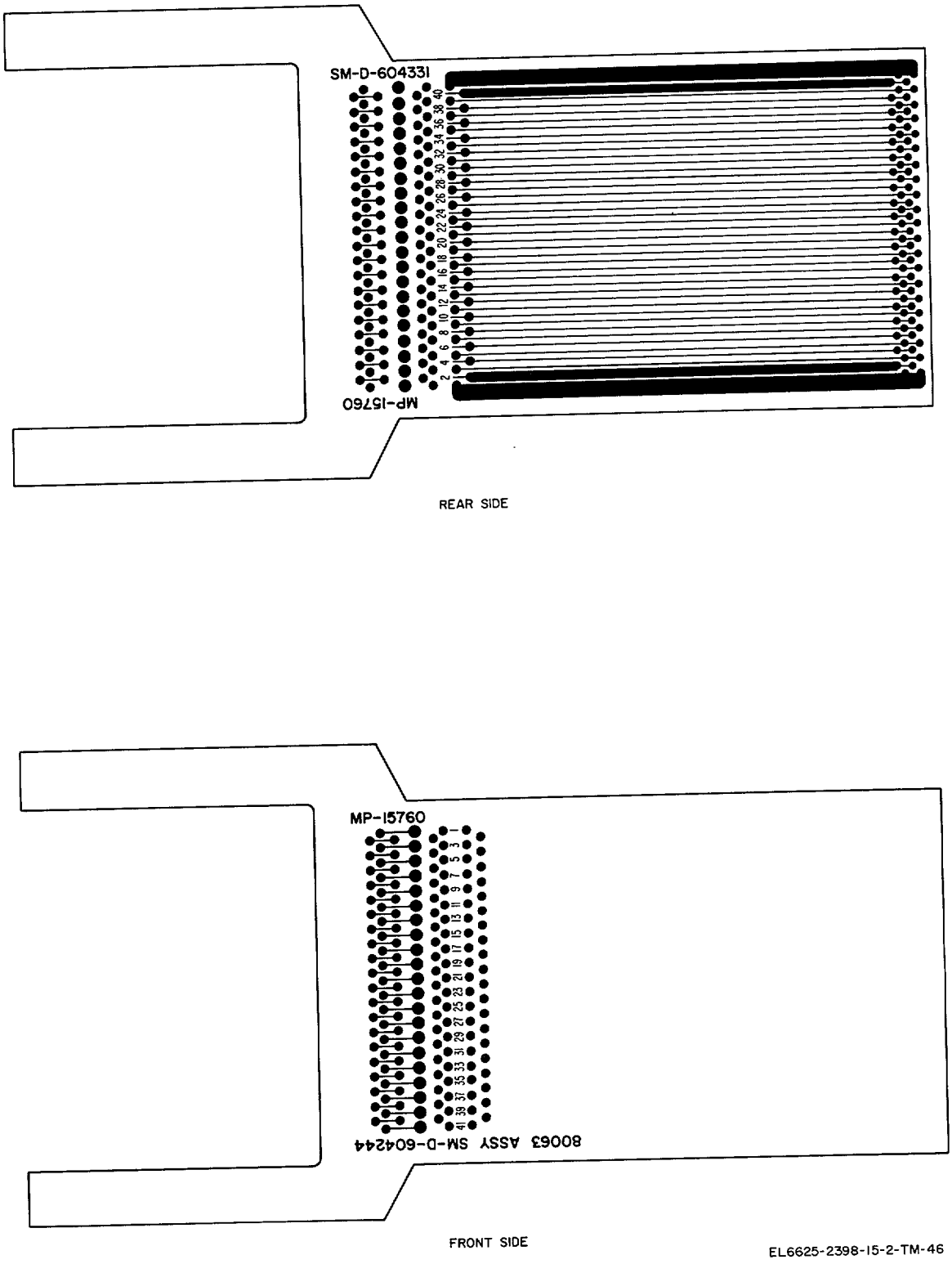


Figure 6-30. Extender card 1A1A3 / 1A1A4, schematic diagram.

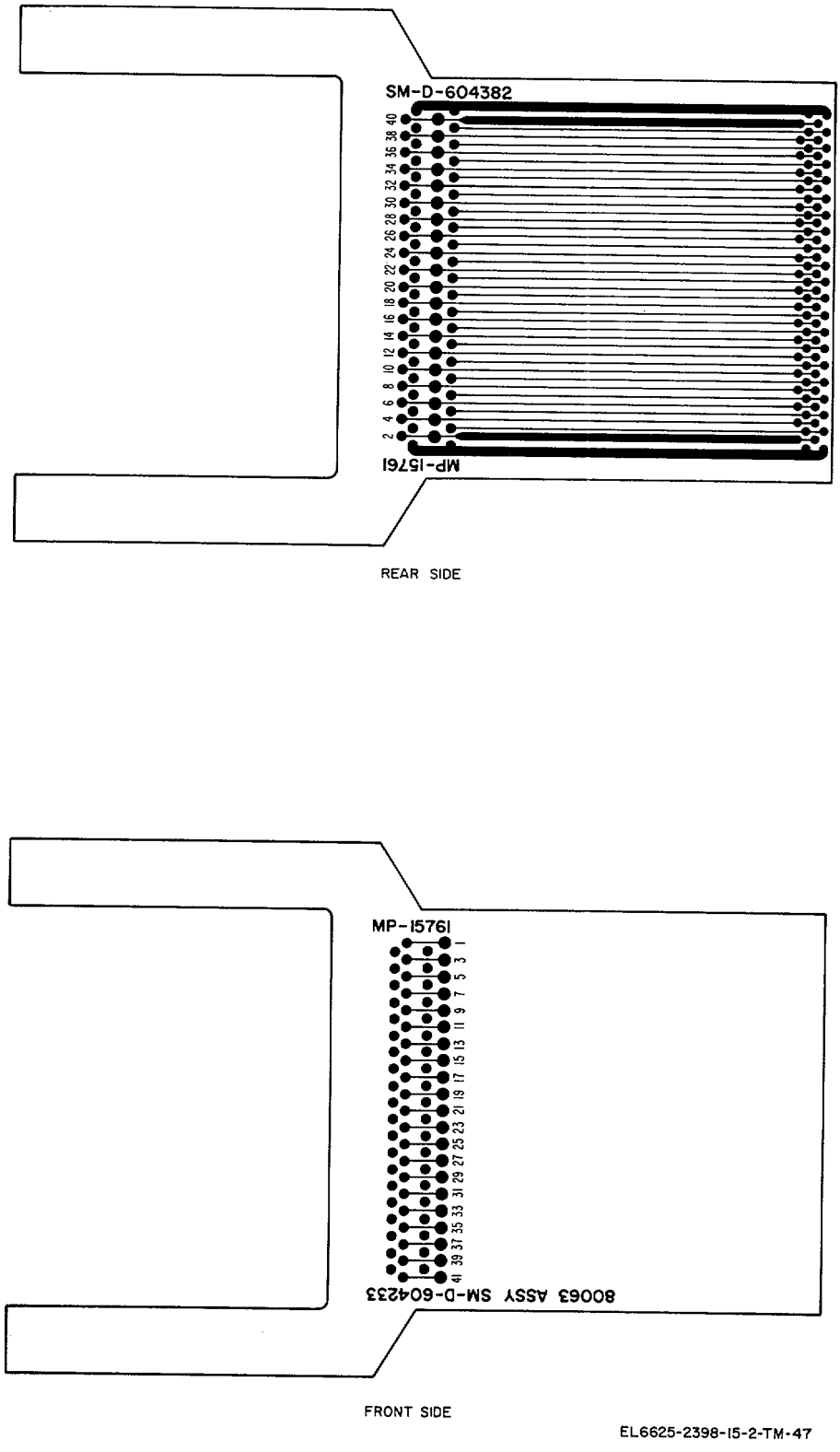


Figure 6-31. Extender card 2A4, schematic diagram.

6-9. Group 2 Component Testing

a. General. Testing of group 2 components requires calibration of hybrid attenuator 2A1 and testing of cable 2W1. Calibrate hybrid attenuator 2A1 as directed in TB11-6625-2398-35.

b. Cable 2W1. Cable 2W1 is fabricated with assembly 2W1A1 for IFF set mode 4, and test target enable testing. Assembly 2W1A1 consists of toggle switch 2W1A1S1, resistor 2W1A1R1 and Zener diode 2W1A1CR1. When assembly 2W1A1 is connected to 28 vdc and switch 2W1A1S1 is set to OFF, this assembly can be tested by measuring for 5 vdc between 2W1P1-F and 2W1P1-S. The remaining cables of 2W1 can be tested by making continuity tests.

CHAPTER 7

REPAIR

7-1. General Parts Replacement Techniques

All components of the test facilities set that are repairable can be easily replaced. Parts located in hybrid attenuator assembly 2A1 (fig. C-43), are accessible when the chassis is removed from its case. Parts of interface adapter unit 1A1A1A1 (fig. C-27 and C-28), are accessible when the front panel is removed from the case assembly.

Repair parts, special tools, test, and support equipment are listed in appendix C. Refer to appendix C for all illustrations required for disassembly and reassembly procedures.

Figure 7-1. DELETED

Figure 7-2. DELETED.

7-2. Nonrepairable Components

The following components of the test facilities set are nonrepairable;

a. Adapters-2A3CP1 through 2A2CP8.

b. Terminations and attenuators-1A1AT1 through 1A1AT3, 1A6AT1/1A6AT2, 2AT1, and 2A2AT1 through 2A2AT6

7-3. Tools and Kits Required

Tools and kits required to repair components and assemblies of the test facilities set are listed below:

Tool or kit	*Technical manual*
Tool kit, Electronic Equipment TK-100/G.	SC 5180-91-CL-S21
Repair kit, Printed Wiring Board MK-772/U.	SC 5999-91-CL-S01
Heat Gun HG-501	

7-4. Repairable Components

The following components are repairable:

a. Hybrid attenuator assembly 2A1.

b. Interface adapter unit 1A1A1.

c. Extender cards 1A1A3/1A1A4, and 2A4.

d. Cables 1A2W1-1A2W12, 1A3W1-1A3W5, 1A4W1-1A4W16, 1A5W1, 1A5W2, 2W1-2W8, and 2A2W1-2A2W6.

e. PC board extractors 1A1A2 and 2A3.

7-5. Repair of Printed Circuit Board Extractor

If printed circuit board extractors 1A1A2 or 2A3 become bent or misaligned, bend back into proper shape with a pair of pliers. After bending, check that the width of the extractor is correct for proper insertion into the puller holes of a printed circuit board.

7-6. Extender Card 1A1A3/1A1A4 and 2A4,

Repair (figs. 6-30 and 6-31) If the printed wiring on the extender cards breaks, solder a short length of copper wire across the break. Use just enough heat to assure a well soldered band, being careful not to burn the board base material.

7-7. Removal and Replacement of Parts of Interface Adapter Unit 1A1A1

To gain access to the majority of components of the interface adapter unit, it is necessary to remove the front panel as specified in a below.

To gain access to the internal parts of connectors 1A1A1J1 through 1A1A1J21, it is necessary to remove the filter box 1A1A1A3 as specified in b below.

a. Removal and Replacement of Front Panel 1A1A1A1.

CAUTION

Exercise extreme care when removing front panel 1A1A1A1 to avoid damage to connected cables.

(1) To remove the front panel, loosen the 14 captive screws and swing the panel out from the case assembly. Be careful not to damage connected cables.

(2) To replace the front panel, place the panel into proper position on the case assembly. Secure the panel with 14 captive screws removed in (1) above.

b. Removal and Replacement of Filter Box 1A1A1A3.

CAUTION

Exercise extreme care when removing filter box 1A1A3 to avoid damage to connected cables.

(1) To remove the filter box, loosen the 18 captive screws and swing the filter box out from the case assembly. Be careful not to damage the connected cables.

(2) To replace the filter box, place the filter box into proper position on the case assembly. Secure the filter box with 18 captive screws removed in (1) above.

c. Removal and Replacement of Gear Train Assembly 1A1A1AS. To gain access to the gear train assembly first remove front panel A1A1A1 as specified in a above.

(1) To remove the gear train assembly from the front panel, proceed as follows:

(*a*) Disconnect and tag wiring to terminal boards TB1, TB2, and TB3.

(*b*) Remove the POSITION DEGREES dials (A7 and A8) by loosening the setscrews (A7H1 and ASH1) that hold the dials to the shafts (MP31 and MP32).

(*c*) Remove the six Phillips head screws (H95) which secure the gear train assembly to the front panel. Remove the gear train assembly.

(2) To replace the gear train assembly proceed as follows:

(*a*) Line up the gear train assembly mounting posts and keying pins with the six holes in the front panel. Insert the coarse and fine dial shafts (MP31 and MP32) into the respective holes. Secure with six Phillips head screws (H95).

(*b*) Connect wiring to terminal boards

TB1, TB2, and TB3. Position synchro 1A1A1A13B3 to electrical zero position.

(*c*) Mount the coarse and fine dials (A7 and A8) aligning the zero degree marking on the dial with the zero index on the front panel.

d. Removal and Replacement of Synchro 1A1A1A13B3. To gain access to the synchro, remove gear train assembly 1A1A1A13 as specified in c above.

(1) To remove the synchro, proceed as follows:

(*a*) Disconnect and tag the wiring to terminal board TB3.

(*b*) Loosen the three screws of the three synchro clamps (H10), and rotate the clamps so that the flat sides face the synchro.

(*c*) Lift the synchro to disengage the synchro shaft and the flexible coupling (MP19).

(2) Replace the synchro as follows:

(*a*) Place the synchro in position on its mounting plate (A2MP1) and engage the flexible coupling (MP19).

(*b*) Gently tighten the three clamps (H10) to engage the synchro, permitting movement of synchro housing.

(*c*) Connect the synchro wires to terminal board TB3.

(*d*) With the front panel dials set to zero degrees, rotate the synchro housing to set the synchro to electrical zero.

(*e*) Tighten the three synchro clamps (H10) which secure the synchro to its mounting base.

e. Removal and Replacement of Resolver 1A1A1A1S3B. To gain access to the resolver remove gear train assembly as specified in c above.

(1) To remove the resolver, proceed as follows:

(*a*) Disconnect and tag the wiring to terminal board 1A1A1A13TB1.

(*b*) Loosen the three resolver clamps (H9) so that the flat sides face the resolver.

(c) Lift resolver to disengage the resolver shaft from the flexible coupling (MP18).

(2) To replace the resolver, proceed as follows:

(a) Place the resolver in position on its mounting plate and engage the flexible coupling (MP18).

(*b*) Gently tighten the three clamps (H9) to engage the resolver, permitting movement of resolver housing.

(*c*) Connect the resolver wires to terminal board TB1.

(*d*) With the front panel dials set to zero degrees, rotate the resolver housing to set the resolver to electrical zero.

(*e*) Tighten the three resolver clamps (H9) to firmly secure the resolver.

f. Removal and Replacement of Dc Motor 1A1A1A13B2. To gain access to the dc motor remove gear assembly as specified in c above.

(1) To remove the dc motor, proceed as follows:

(*a*) Disconnect and tag the motor wires connected to terminal board TB2.

(*b*) Remove the four screws (H6) that secure the motor to its mounting plate.

(*c*) Lift motor B2 to disengage the motor shaft from the flexible coupling (MP20).

(2) To replace the motor, proceed as follows:

(*a*) Properly position the motor on its mounting plate (A2MP1) and engage motor shaft to flexible coupling (MP20).

(*b)* Secure the motor to its mounting plate (A2MP1) with four screws (H6).

(*c)* Connect motor wires to terminal board TB2.

g. Removal and Replacement of Gear Assembly 1A1A1A13.

(1) To disassemble the gear assembly proceed as follows:

(*a*) Remove two collars (MP16 and MP17) on gear shafts (MP30 and MP32) protruding through mounting plate A2MP1), by loosening setscrews (Hi).

(*b)* Remove the mounting plates from the gear train housing by removing four securing screws (H7).

(*c)* Remove five collars (MP11-MP15) from the five gear shafts (MP28-MP32) in the gear train housing.

(*d)* Withdraw the seven gear assemblies.

(2) To reassemble the gear train assembly, proceed as follows:

(*a*) Slide shaft (MP31) and attached gear (MP26), spacer (MP40), bearing (MP8) into opening provided in housing (A1).

(*b*) Install bearing (MP5), spacer (MP37), and collar (MP15) on shaft. Tighten collar setscrews to allow 0.010-inch axial play in shaft.

(*c*) Slide shaft (MP30) and attached gears (MP24 and M25) into opening provided in housing (A1).

(*d*) Install bearing (MP4), spacer (MP36) and collar (MP14) and temporarily tighten collar setscrews.

(*e*) Slide shaft (MP29) and attached gear (MP22), spacer (MP38), and bearing (MP6) into opening provided in housing (A1).

(*f*) Install bearing (MP1), spacer (MP33), and collar (MP11) on shaft. Tighten collar setscrews to allow 0.010-inch axial play in shaft.

(*g*) Slide shaft (MP28) and attached

gear (MP21), spacer (MP39), and bearing (MP7) into opening provided in housing (A1).

(*h*) Install bearing (MP3), spacer (MP 35), and collar (MP13) on shaft. Tighten collar setscrews to 0.010-inch axial play in shaft.

(*i*) Slide shaft (MP32) and attached gears

MP23 and MP27) into opening provided in housing (A1).

(*j*) Install bearing (MP2), spacer (MP-34), and collar (MP12) and temporarily tighten set screws in collar.

(*k*) Position plate (A2) onto housing (A1) with the appropriate shafts protruding through the openings provided for them in housing (A2). Secure housing (A2) with four screws (H7), and washers (H8).

(*l*) Install bearing (MP9), spacer (MP41), and collar (MP16) on shaft (MP32). Temporarily tighten collar set screws.

(*m*) Install bearing (MP10), spacer (MP42), and collar (MP17) on shaft (MP30). Temporarily tighten collar set screws.

(*n*) Loosen collars (MP14 and MP17) and compress the springs in gear (MP24) by 2 teeth. Position the center of gear (MP24) to coincide with the center of gear (MP26). Tighten collar set screws to allow 0.010 inch axial play in shaft (MP30).

(*o*) Loosen collars (MP12 and MP16) and compress the springs in gear (MP23) by two teeth. Position the center of gear (MP23) to coincide with the center of gear (MP25). Tighten collar set screws to allow .010 inch axial play in shaft (MP32).

(*p*) Loosen collar (MP11) and disengage shaft (MP29) with attached gear (MP22) from gear (MP27). Compress the springs in gear (MP22) by two teeth. Position the center of gear (MP22) to coincide with the center of gear (MP23). Tighten collar set screws to allow 0.010 inch axial play in shaft (MP29).

(*q*) Loosen collar (MP13) and disengage shaft (MP28) and attached gear (MP21) from gear (MP27). Compress the springs in gear (MP21) by 2 teeth. Position the center of gear (MP21) to coincide with the center of gear (MP27). Tighten collar setscrews to allow 0.010inch axial play in shaft (MP28).

(*r*) If necessary, carefully readjust shafts (MP28, MP29, MP30, and MP32) so that the following conditions simultaneously exist:

1. The centers of all gears with springs in compression coincide with the centers of all gears with which they mesh.

2. The axial play in each shaft is no greater than 0.010-inch.

(*s*) Tighten setscrews of coupling (MP18) onto shaft of resolver B1.

(*t*) Tighten setscrews of coupling (MP19) onto shaft of synchro B3.

(*u*) Tighten setscrews of coupling (MP20) onto shaft of motor B2.

(*v*) Position motor B2 through plate (A2) so that shaft (MP31) enters coupling secure motor to plate with four screws (H6). Tighten setscrews on coupling (MP20).

(*w*) Position resolver B1 through plate (A2) so that shaft (MP29) enters coupling (MP18). Secure resolver to plate with three clamps (H9). Tighten setscrews on coupling (MP18).

(*x*) Position synchro B3 through plate (A2) so that shaft (MP28) enters coupling (MP19). Secure synchro to plate with three clamps (H10). Tighten setscrews on coupling (MP19).

7-8. Cable Repair Instructions

a. Introduction. A11 cables contained in the test facilities set are repairable. Before performing cable repair procedures, maintenance personnel should consider the following factors

(1) A damaged cable connector should not be repaired, it should be replaced.

(2) Cable assemblies under 1 foot in length.

(*a*) If a connector is damaged, replace the cable assembly with a spare. If no spare is available, rebuild the cable assembly using a new length of cable and new or salvaged connectors. If a new length of cable is not available, replace the damaged connector.

(*b*) If the cable conductors are damaged replace the cable assembly with a spare. If no spare is available, rebuild the cable assembly using a new length of cable and new or salvaged connectors. If a new length of cable is not available, salvage as much of the damaged cable assembly as possible, and replace one connector.

(3) Cable assemblies over 1 foot in length.

(*a*) Deleted.

(*b*) If less than 6 inches of cable are destroyed, repair the damaged cable assembly, replacing the damaged connectors.

(*c*) If more than 6 inches of cable are destroyed, replace the cable assembly with a spare. If no spare is available, rebuild the assembly, using a new length of cable and new or salvaged connectors. If a new length of cable is not available, salvage as much of the damaged cable assembly as possible, and replace one connector.

(4) To salvage a connector, perform the attaching procedure in reverse order.

(5) To remove a damaged connector from a cable assembly, cut the cable as closely as possible to the connector. The procedures contained in b through ab below provide step-by-step instructions for fabricating each cable assembly contained in the test facilities set. When repairing cables, perform only the procedural steps required to accomplish the desired repair.

b. Cable 1A2W1.

(1) Cut a section of cable (CP 5221) 10 feet in length.

(2) Strip 1 3/4 inch of outside jacket from end of cable which will connect to P2 (fig. 7-3, dimension A).

(3) Place tag marker over outside of cable.

(4) Cut two pieces of heat shrink sleeving 1 3/4 and 2 1/4 inches in length, respectively.

(5) Place the two pieces of sleeving over the cable in the following sequence:

(*a*) 2 1/4-inch sleeving.

(*b*) 1 3/4-inch sleeving.

(6) Strip 5/8 inch of insulation from the end of each wire which will be connected to P2 (fig. 7-3, dimension B).

(7) Attach wires to terminals of connector P2 (fig. 6-3).

(8) Slide sleeving to edge of outside jacket of the cable.

(9) Using heat gun, sequentially shrink 1 3/4 and then 2 1/4-inch pieces of sleeving.

(10) Attach cover plate to connector P2.

(11) Using heat gun, shrink the tag marker.

(12) Strip 1 1/4 inch of outside jacket from end of cable which will connect to P1 (fig. 7-3, dimension A).

(13) Place boot over outside of cable.

(14) Strip 1/4 inch of insulation from the end of each wire which will be connected to P1 (fig. 7-3, dimension B).

(15) Obtain new connector and slide connector pressure nut and pressure ring onto cable.

(16) Using crimping tool, crimp pins onto exposed wire ends.

(17) Insert pins into connector P1 (fig. 6-3) and fill open pin apertures with spare pins.

(18) Assemble pressure nut and ring onto connector P1.

(19) Clean end of cable and apply thermofit adhesive to area to be covered by boot.

(20) Using heat gun, shrink boot.

(21) Remove excess adhesive from boot.

(22) Attach the dust cover to the cable with the cable clamp (fig. 7-4).

(23) Using heat gun, shrink the tag marker.

c. Cable 1A2W2.

(1) Cut a section of cable (CP 5221) 10 feet in length.

(2) Strip 2 1/2 inches of outside jacket from end of cable which will connect to P2 (fig. 7-3, dimension A).

(3) Place tag marker over outside of cable.

(4) Cut three pieces of heat shrink sleeving 2 1/4, 2 3/4, and 3 1/4 inches in length, respectively.

(5) Place the three pieces of sleeving over the cable in the following sequence:

(*a*) 3 1/4-inch sleeving.

(*b*) 2 3/4-inch sleeving.

(*c*) 2 1/4-inch sleeving.

(6) Strip 5/8 inch of insulation from the end of each wire which will be connected to P2 (fig. 7-3, dimension B).

(7) Attach wires to connector terminals (fig. 6-4).

(8) Slide sleeving to the edge of the outside jacket of the cable.

(9) Using heat gun, sequentially shrink 2 1/4-, 2 3/4-, and 3 1/4-sleeving.

(10) Attach cover plate to connector P2 (fig. 7-5).

(11) Using heat gun, shrink tag marker.

(12) Strip 1 1/4 inch of outside jacket from end of cable which will connect to P1 (fig. 7-3, dimension A).

(13) Place boot over outside of cable.

(14) Strip 1/4 inch of insulation from the end of each wire which will be connected to P1 (fig. 7-3, dimension B).

(15) Obtain new connector and slide connector pressure nut and pressure ring, onto cable.

(16) Using crimping tool, crimp pins onto exposed wire ends.

(17) Insert pins into connector P1 (fig. 6-4) and fill open pin apertures with spare pins.

(18) Assemble pressure nut and ring onto connector P1.

(19) Clean end of cable and apply thermofit adhesive to area to be covered by boot.

(20) Using heat gun, shrink the boot.

(21) Remove excess adhesive from boot.

(22) Attach dust cover to cable with the cable clamp (fig. 7-4).

(23) Using heat gun, shrink the tag marker.

d. Cable 1A2W3. The following procedure is applicable to the replacement of connector P1 and P2:

(1) Cut a section of cable (CP 5222), 71 3/4 inches in length.

(2) Strip 2 1/2 inches of outside jacket from end of cable (fig. 7-6, dimension A).

(3) Trim 1 3/4 inch of braid from end of cable leaving 3/4 inch of braid exposed (fig. 7-6, dimension B).

(4) Make a 1 1/4-inch cut (slit) in cable jacket (fig. 7-6, dimension C).

(5) Place tag marker and 4 1/4-inch piece of heat shrink sleeving over outside of cable jacket.

(6) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-6, dimension D).

(7) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(8) Place pressure nut and pressure ring over cable braid (fig. 7-7).

(9) Place reducing ring and backshell over cable braid and screw pressure nut onto backshell.

(10) Obtain new connector and discard pressure nut and ring supplied. If salvaged connector is used, the pressure nut and ring were previously discarded.

(11) Insert pins into connector (fig. 6-5), and fill open apertures with spare pins.

(12) Disconnect pressure nut from backshell and screw backshell onto pinned connector (fig. 7-7) and tighten.

(13) Slide reducing ring into backshell and fan out braid so that braid sits between the reducing ring and the pressure ring.

(14) Slide pressure ring into backshell and pull out braid from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(15) Slide pressure nut onto backshell and tighten.

(16) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by heat shrink sleeving.

(17) Using heat gun, shrink sleeving and tag marker.

(18) Remove excess adhesive.

(19) Attach dust cover to link chain attachment on backshell (fig. 7-7).

e. Cable 1A2W4 1A2W7, 2W7/2W8. The following procedure is applicable to the replacement of connectors P1 and P2 (fig. 6-6): (1) Cut an applicable length of RG-214/U cable as specified below.

Cable reference designation	*Length (inches)*
1A2W4/1A2W5	24
1A2W/1A2W7	18
2W/2W8	2

(2) Strip 11/ 32 inch of outside jacket from both ends of cable (fig. 7-8, dimension A).

(3) Place tag marker over outside of cable jacket.

(4) Strip 7/32 inch of insulation from both ends of the cable (fig. 7-8 dimension B).

(5) Obtain new connector or salvage connector from defective cable assembly. Disassemble the connector (fig. 7-9, view A).

(6) Slip clamp nut, washer, and gasket over cable (fig. 7-9, view B).

(7) Comb out braid smoothly and taper over dielectric. Slide braid clamp over braid and push back against cable jacket (fig. 7-9, view C).

(8) Bend braid back over clamp and trim excess braid. Make sure braid does not extend past shoulder of braid clamp (fig. 7-9, view D).

(9) Tin cable end, inner conductor (fig. 7-9, view E).

(10) Solder contact to center conductor making sure outside surfaces are free of solder.
Avoid use of excessive heat. Contact should be flush against cable dielectric (fig. 7-9, view F).

(11) Insert cable and parts into connector body. Care should be taken to insure that knife edge of braid clamp is properly seated in "V" groove gasket. Tighten clamp nut securely to complete assembly (fig. 7-9, view G).

(12) Using heat gun, shrink tag marker.

(13) Attach dust cover to cable, with cable clamp.

(14) Calibrate cable in accordance with procedures contained in TB 11-6625-2398-35.

f. Cable 1A2W8. The following procedure is applicable to the replacement of connectors P1 and P2:

(1) Cut a section of cable (CP 5229), 71 1/4 inches in length.

(2) Strip 6 inches of outside jacket from end of cable (fig. 7-10, dimension A).

(3) Trim 5 1/4 inches of braid from end of cable leaving 3/4 inch of braid exposed (fig. 7-10, dimension B).

(4) Make a 2-inch cut (slit) in cable jacket (fig. 7-10,. dimension G).

(5) Place tag marker, a 7 1/4-inch piece of heat shrink sleeving, and boot over outside of cable jacket.

(6) Strip 2 1/2 inches from jacket of twisted shielded pair (fig. 7-10, dimension C).

(7) Trim 2 3/16 inches from braid of twisted shielded pair (fig. 7-10, dimension F).

(8) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(9) Place an appropriate length of insulation over ferrule and ground wire.

(10) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(11) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(12) Place pressure nut and pressure ring over cable braid (fig. 7-7).

(13) Place reducing ring and backshell over cable braid and screw pressure nut onto backshell.

{14) Obtain new connector and discard pressure nut and ring supplied. If salvaged connector is used, the pressure nut and ring were previously discarded.

(15) Insert pins into connector (fig. 6-7), and fill open pin apertures with spare pins.

(16) Disconnect pressure nut from backshell and screw backshell onto pinned connector (fig. 7-7) and tighten.

(17) Slide reducing ring onto backshell and fan out braid so that braid sits between the reducing ring and the pressure ring.

(18) Slide pressure ring into backshell and pull out braid from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(19) Slide pressure nut onto backshell and tighten.

(20) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by heat shrink sleeving.

(21) Slide sleeving over backshell, then shrink sleeving with heat gun.

(22) Remove excess adhesive from sleeving.

(23) Slide boot over backshell and shrink.

(24) Using heat gun, shrink on tag markers.

(25) Attach dust cover to link chain attachment on backshell (fig. 7-7).

g. Cable 1A2W9/1A2W10. The following procedure is applicable to the replacement of connectors P1 and P2:

(1) Cut a section of cable (CP 5230), 71 5/8 inches in length.

(2) Strip 5 3/4 inches of outside jacket from end of cable (fig. 7-10, dimension A).

(3) Trim 4 3/4 inches of braid from end of cable leaving 1 inch of braid exposed (fig. 7-10, dimension B).

(4) Make a 1 3/4-inch (slit) in cable jacket (fig.7-10, dimension G).

(5) Place tag marker and boot over outside of cable jacket.

(6) Strip 3 inches from jacket of twisted shielded pair (fig. 7-10, dimension C).

(7) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(8) Place an appropriate length of insulation over ferrule and ground wire.

(9) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(10) Place pressure nut, pressure ring, and reducing ring over cable braid (fig. 7-7).

(11) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(12) Place backshell over cable braid and screw pressure nut onto backshell.

(13) Obtain new connector and discard pressure nut and ring supplied. If salvaged connector is used, the pressure nut and ring were previously discarded.

(14) Insert pins into connector (fig. 6-8Y, and fill open pin apertures with spare pins.

(15) Disconnect pressure nut from backshell and screw backshell onto pinned connector (fig. 7-7).

(16) Slide reducing ring into backshell and fan out braid so that braid sets between the reducing ring and the pressure ring.

(17) Slide pressure ring into backshell and pull out braid from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(18) Slide pressure nut onto backshell and tighten.

(19) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by cable boot.

(20) Using heat gun, shrink boot and tag marker.

(21) Remove excess adhesive from boot.

(22) Attach dust cover to link chain attachment on backshell (fig. 7-7).

h. Cable 1A2W11. The following procedure is applicable to the replacement of connectors P 1 and P2.

(1) Cut a section of cable (CP 5236A) 35 1/8 inches in length.

(2) Strip 2 7/8 inches of outside jacket from end of cable (fig. 7-10, dimension A).

(3) Trim 2 3/8 inches of braid from end of cable leaving ½ inch of braid exposed (fig. 7-10, dimension B). Brush out braid.

(4) Make a 1/4-inch cut (slit) in cable jacket (fig. 7-10, dimension G).

(5) Place tag marker and a 3-inch piece of heat shrink sleeving over outside of cable jacket.

(6) Strip 1½ inch from jacket of twisted shielded pair (fig. 7-10, dimension C).

(7) Trim 1 3/16 inch from braid of twisted shielded pair (fig. 7-10, dimension F).

(8) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(9) Place an appropriate length of insulation over ferrule and ground wire.

(10) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(11) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(12) Place pressure nut and pressure ring over cable braid (fig. 7-7).

(13) Place reducing ring and backshell over cable braid and screw pressure nut onto backshell.

(14) Obtain new connector and discard pressure nut and ring supplied. If salvaged connector is used, the pressure nut and ring were previously discarded.

(15) Insert pins into connector (fig. 6-9), and fill open pin apertures with spare pins.

(16) Disconnect pressure nut from backshell and screw backshell onto pinned connector (fig. 7-7) and tighten.

(17) Slide reducing ring into backshell and fan out braid so that braid sets between the reducing ring and the pressure ring.

(18) Slide pressure ring into backshell and pull out braid from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(19) Slide pressure nut onto backshell and tighten.

(20) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by heat shrink sleeving.

(21) Using heat gun, shrink sleeving and tag marker.

(22) Remove excess adhesive from sleeving.

(23) Attach dust cover to link chain attachment on backshell (fig. 7-7).

i. Cable 1A2W12. The following procedure is to be performed when a new cable assembly is to be fabricated. To replace plug P1 perform steps (1) through 23) below. To replace plugs P2 through P5 perform steps (24 through 46) below.

(1) Cut a section of cable (CP 5240), 96 inches in length.

(2) Place tag marker, boot, one 6-inch piece of heat shrink sleeving and two 5 1/4-inch long pieces of heat shrink sleeving over outside of cable jacket.

(3) Strip 3 inches of outside cable jacket from end of cable which will connect to P1 (fig. 7-10, dimension A).

(4) Trim 21/8 inches of braid from end of cable leaving 7/8 inch of braid exposed (fig. 7-10, dimension B).

(5) Strip 1 5/32 inch from jacket of coaxial cable (fig. 7-10, dimension C).

(6) Trim 1/4 inch of braid from coaxial cable leaving 7/32 inch of braid exposed (fig. 7-10, dimension D).

(7) Cut a 3 1/2-inch length of 22AWG black wire and strip 1/2 inch and 3/8 inch of insulation from the wire ends. Hairpin the end of the black wire which has 1/2 inch of insulation removed.

(8) Slide inner ground ring over cable wires and under cable braid.

(9) Slide outer ground ring over cable wires and braid so that outer ground ring is centered over inner ground ring.

(10) Insert hairpinned end of wire (refer to step (7) above) between outside ground ring and cable braid.

(11) Using crimping tool, crimp outer ground ring, black wire, and inner ground ring.

(12) Strip 13 / 64 inch of insulation from each wire which will be connected to P1 (fig. 7-10, dimension E).

(13) Using crimping tool, crimp pins supplied with connector P1 onto exposed wire ends.

(14) Insert pinned wires into connector (fig. 6-10) and fill open pin apertures with spare pins except for coaxial cable receptacles.

(15) Attach plate to rear of connector using hardware supplied, then attach dust cover bracket to rear plate.

(16) Slide 5 1/4-inch piece of heat shrink sleeving to the end of the cable, then shrink the sleeving.

(17) Slide the second 5 1/4-inch piece of sleeving to the end of the cable, then shrink the sleeving.

(18) Apply adhesive (R.T.V. 728 or equivalent), under end of sleeving. Slide the 6 1/4 inch piece of sleeving to the end of the cable, then shrink the sleeving.

(19) Clean end of cable covered by heat shrink sleeving.

(20) Apply thermofit to area to be covered by boot.

(21) Slide boot up to the bracket and shrink the boot.

(22) Remove excess adhesive from boot.

(23) Attach the dust cover to the connector.

(24) Strip 48 inches of outside jacket and cable braid from end of cable which will connect to P2 through P5 (fig. 7-12, dimension A).

(25) Strip 19/32 inch of jacket from coaxial cable (fig. 7-12, dimension B).

(26) Trim 11/32 inch of braid from coaxial cable leaving ¼ inch of braid exposed (fig. 7-12, dimension C).

(27) Strip 1/8 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(28) Slide four-fingered boot over cable so that one coaxial cable fits in each finger of the boot.

(29) Cut a piece of heat shrink sleeving 47 ¼ inches in length.

(30) Slide the sleeving over the appropriate coaxial cable and under the applicable finger of the boot.

(31) Position the appropriate tag marker on the sleeving approximately 7 inches from the end of the coaxial cable.

(32) Disassemble new or salvaged connector (fig. 7-13).

(33) Slide outer ferrule over end of cable (fig. 7-14, view A).

(34) Flare the cable braid slightly, do not comb out braid (fig. 7-14, view B). (35 Place contact on end of cable so that it butts against cable insulation, and crimp contact.

(36) Install cable assembly into body so that

inner ferrule portion slides under braid. Push cable assembly forward until contact snaps into place in insulator. Slide outer ferrule over braid and up against connector body (fig. 7-14, view C).

(37) Crimp outer ferrule.

(38) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) under heat shrink sleeving.

(39) Using heat gun, shrink sleeving until sleeving is approximately 5 inches from connector.

(40) Position tag marker over section of sleeving which was shrunk.

(41) Using heat gun, shrink remainder of sleeving down to the level of the boot.

(42) Shrink tag marker.

(43) Apply thermofit adhesive under boot.

(44) Using heat gun, shrink the boot.

(45) Remove excess adhesive from boot, and sleeving.

(46) Attach link chain attachment and dust cover to cable using cable clamp.

j. Cable 1A3W1. The following procedure is applicable to the replacement of connectors P1 and P2.

(1) Cut a section of cable (CP5224A) 71 1/2 inches in length.

(2) Strip 6 inches of outside jacket from end of cable (fig. 7-15, dimension A).

(3) Trim 5 inches of braid from end of cable leaving 1 inch of braid exposed (fig. 7-15, dimension B).

(4) Make a 2 1/2-inch cut (slit) in cable jacket (fig. 7-15, dimension C).

(5) Place tag marker, boot and a 4 3/4-inch piece of heat shrink sleeving over outside of cable jacket.

(6) Trim twisted pair and other wires 1/2 inch shorter than coaxial cable (fig. 7-15, dimensions A and D).

(7) Strip 2 1/2 inches from jacket of twisted shielded pair (fig. 7-15, dimension E).

(8) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(9) Place an appropriate length of insulation over ferrule and ground wire.

(10) Except for the coaxial cables strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-15, dimension F).

(11) Strip 19 /64 inch of outside jacket from the end of the coaxial cable (fig. 7-15, dimension G). Trim back 15 / 16 inch of braid so that 13/64 inch of braid is exposed.

(12) Pin the coaxial cable by performing the following steps:

(*a*) Place the large ferrule over the braided outer conductor and butt up against the outside jacket of the cable (fig. 7-16, view A).

(*b*) Slide the nut up to the large ferrule, and slide the tapered ferrule (tapered end toward large ferrule) through the nut and under the cable shield (fig. 7-16, view B). These three pieces should be crimped firmly in place.

(*c*) the ferrule over the dielectric down to the tapered ferrule (fig. 7-16, view C). Cut the dielectric flush with the top of the ferrule.

(*d*) the small round insulator over the inner conductor until it is flush with the end of the ferrule (fig. 7-16, view D).

(*e*) Solder the pin to the center conductor, making sure that the shoulder of the pin is butting against the small round insulator (fig. 7-16, dimension E).

(*f*) the tapered insulator (tapered end forward over the pin, fig. 7-16, dimension F).

(*g*) Screw on the outer shell.

(13) Place pressure nut and pressure ring over cable braid (fig. 7-7).

(14) Place reducing ring and backshell over cable braid and screw pressure nut onto backshell.

(15) Obtain new connector and discard pressure nut and ring supplied. If salvaged connector is used, the pressure nut and ring were previously discarded.

(16) Using crimping tool, crimp pins supplied with connector onto exposed ends of the remaining wires in the cable assembly.

(17) Screw coaxial cable pins into the connector (fig. 6-11).

(18) Insert remaining cable pins into connector, and fill open pin apertures with spare pins.

(19) Disconnect pressure nut from backshell and screw backshell onto pinned connector (fig. 7-7).

(20) Slide reducing ring into backshell and fan out braid so that braid sets between the reducing ring and the pressure ring.

(21) Slide pressure ring into backshell and pull out braid from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(22) Slide pressure nut onto backshell and tighten.

(23) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by sleeving.

(24) Using heat gun, shrink sleeving, then remove any excess adhesive.

(25) Coat sleeving and backshell with R.T.V. 728 adhesive and slide boot over sleeving and backshell.

(26) Using heat gun, shrink boot.

(27) Remove any excess R.T.V. from boot.

(28) Using heat gun, shrink tag markers.

(29) Attach dust cover to link chain attachment (fig. 7-7).

k. Cable 1A3W2. The following procedure is applicable to the replacement of connectors P1 and P2.

(1) Cut a section of cable (CP 5232A), 72 inches in length.

(2) Strip 6 inches of outside jacket from end of cable (fig. 7-10, dimension A).

(3) Trim 5 19/64 inches of braid from end of cable leaving 45/64 inch of braid exposed (fig. 7-10, dimension B).

(4) Place tag marker and one 7-inch piece of heat shrink sleeving over outside of cable jacket.

(5) Slide inner ground ring over cable wires and under cable braid.

(6) Slide outer ground ring over cable wires and braid so that outer ground ring is centered over inner ground ring.

(7) Cut a 6-inch length of 22AWG black wire and strip ½ inch of insulation from one end.

(8) Hairpin the black wire and insert between outer ground ring and cable braid.

(9) Using crimping tool, crimp outer ground ring, black wire and inner ground ring.

(10) Strip 4 1/2 inches from jacket of twisted shielded pair (fig. 7-10, dimension C).

(11) Trim 4 3/16 inches from braid of twisted shielded pair (fig. 7-10, dimension F).

(12) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(13) Place an appropriate length of insulation over ferrule and ground wire.

(14) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(15) Disassemble either new or salvaged connector/backshell assembly (fig. 7-17).

(16) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(17) Place a 4-inch piece of heat shrink sleeving over pinned wire and butt against outer ground ring. Shrink the sleeving.

NOTE

Before pinning connector P1, make certain the connector cover is attached.

(18) Insert pins into connector (fig. 6-12) and fill open pin apertures with spare pins.

(19) Assemble connector / backshell assembly to cable (fig. 7-17), making certain connector is properly oriented.

(20) Coat strain relief and cable end with thermofit adhesive then slide 7-inch piece of heat shrink sleeving over coated area.

(21) Using heat gun, shrink sleeving.

(22) Remove excess adhesive from strain relief and sleeving.

(23) Attach dust cover to cable using cable clamp.

l. Cable 1A3W3. The following procedure is applicable to the replacement of connectors P1 and P2.

(1) Cut a section of cable (CP 5233A), 71 1/4 inches in length.

(2) Strip 10 inches of outside jacket from end of cable (fig.7-10, dimension A).

(3) Trim 9 19/64 inches of braid from end of cable leaving 45/64 inch of braid exposed (fig. 7-10, dimension B).

(4) Place tag marker and one 12 1/2-inch piece of heat shrink sleeving over outside of cable jacket.

(5) Slide inner ground ring over cable wires and under cable braid.

(6) Slide outer ground ring over cable wires and braid so that outer ground ring is centered over inner ground ring.

(7) Cut a 10-inch length of 22AWG black wire and strip 1/2 inch of insulation from one end.

(8) Hairpin the black wire and insert between outer ground ring and cable braid.

(9) Using crimping tool, crimp outer ground ring, black wire, and inner ground ring.

(10) Cut back 4 1/2 inches (fig. 7-10, dimension C) from shield-to-shield connected coaxial cables (fig. 6-12, e.g. P1-30, P1-31, and P1-32) and 5 1/2 inches (fig. 7-10, dimension C) from remaining coaxial cables (fig. 6-12. e.g. P1-90, P1-91, and P1-92).

(11) Assemble and attach solder sleeves to shield-to-shield connected coaxial cables (fig. 7-18).

(12) Assemble solder sleeves to coaxial cables which typically connect to P1-90 and -91 as shown in figure 7-18.

(13) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(14) Disassemble either new or salvaged connector/backshell assembly (fig. 7-17).

(15) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(16) Place the 12 1/2-inch piece of heat shrink sleeving over cable bundle so that it partially extends into area which will be covered by backshell.

NOTE

When placing heat shrink sleeving on the P1 end of cable, make sure that connector cover is attached.

(17) Using heat gun, shrink the sleeving.

(18) Insert pins into connector (fig. 6-13) and fill open pin apertures with spare pins.

(19) Assemble connector/backshell assembly to cable (fig. 7-17), making certain connector is properly oriented.

(20) Using heat gun, shrink the tag marker.

(21) Attach dust cover to link chain attachment.

m. Cable A3W4. The following procedure is applicable to the replacement of connectors P1 and P2.

(1) Cut a section of cable (CP 5235A) 72 inches in length.

(2) Strip 6 inches of outside jacket from end of cable (fig. 7-10, dimension A).

(3) Trim 5 1/8 inches of braid from end of cable leaving 7/8 inch of braid exposed (fig. 7-10, dimension B).

(4) Place tag marker and one 7-inch piece of heat shrink sleeving over outside of cable jacket.

(5) Slide inner ground ring over cable wires and under cable braid.

(6) Slide outer ground ring over cable wires and braid so that outer ground ring is centered over inner ground ring.

(7) Cut a 6-inch length of 22AWG black wire and strip ½ inch of insulation from one end.

(8) Hairpin the black wire and insert between outer ground ring and cable braid.

(9) Using crimping tool, crimp outer ground ring, black wire, and inner ground ring.

(10) Strip 4 1/2 inches from jacket of twisted shielded pair (fig. 7-10, dimension C).

(11) Trim 4 3/16 inches from braid of twisted shielded pair (fig. 7-10, dimension F).

(12) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(13) Place an appropriate length of insulation over ferrule and ground wire.

(14) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(15) Disassemble either new or salvaged connector/backshell assembly (fig. 7-17).

(16) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(17) Place a 4-inch piece of heat shrink sleeving over pinned wires and butt against outer ground ring and shrink.

NOTE

Before pinning connector P1, make certain the connector cover is attached.

(18) Insert pins into connector (fig. 6-14) and fill open pin apertures with spare pins.

(19) Assemble connector / backshell assembly to cable (fig. 7-17), making certain connector is properly oriented.

(20) Coat strain relief and cable end with thermofit adhesive and slide 7-inch piece of heat shrink sleeving over coated area.

(21) Using heat gun, shrink sleeving.

(22) Remove excess adhesive from strain relief and sleeving.

(23) Attach dust cover to cable, using cable clamp.

n. Cable 1A3W5. The following procedure is applicable to the replacement of connectors P1 and P2.

(1) Cut a section of cable (CP5263A) 71 1/4 inches in length.

(2) Strip cable in accordance with dimensions shown in figure 7-19.

(3) Place the tag marker and one 8 3/4-inch piece of heat shrink sleeving, three 5/4-inch pieces of sleeving and one 6 1/2-inch piece of sleeving over outside of cable jacket.

(4) Slide inner ground-ring over cable wires and under cable braid.

(5) Slide outer ground ring over cable wires and braid so that outer ground ring is centered over inner ground ring.

(6) Cut a 9-inch length of 22 AWG black wire and strip ½ inch of insulation from one end.

(7) Hairpin the black wire and insert between outer around ring and cable braid.

(8) Using crimping tool, crimp outer ground ring, black wire, and inner ground ring.

(9) Install solder sleeves for double and single shield coaxial cables as shown in figure 7-20.

(10) Disassemble either new or salvaged connector/ backshell assembly (fig. 7-17).

(11) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(12) Slide the 6 1/2-inch piece of heat shrink sleeving past the outer ground ring and shrink the sleeving.

(13) Sequentially slide the three pieces of 5 ¼ inch sleeving past the outer ground ring then shrink the sleeving.

NOTE

Before pinning connector P1, make certain the connector cover is attached.

(14) Insert pins into connector (fig. 6-15) and fill open pin apertures with spare pins.

(15) Assemble connector / backshell assembly to cable (fig. 7-17).

(16) Coat strain relief and cable end with thermofit adhesive and slide 8 3/4-inch piece of heat shrink sleeving over coated area.

(17) Using heat gun, shrink sleeving.

(18) Remove excess adhesive from strain relief and sleeving.

(19) Shrink the tag marker.

(20) Attach dust cover to cable using cable clamp.

o. Cable 1A4W1. The following procedure is applicable to the replacement of connector P1 and P2.

(1) Cut a section of cable (CP5225) 71 1/2 inches in length.

(2) Strip 2 7/8 inches of outside jacket from end of cable (fig. 7-10, dimension A).

(3) Trim 2 1/4 inches of braid from end of cable leaving 5/8 inch of braid exposed (fig. 7-10, dimension B).

(4) Make a 1 3/4-inch cut (slit) in cable jacket (fig. 7-10, dimension G).

(5) Place tag marker and a 3 1/4-inch piece of sleeving over outside of cable jacket.

(6) Strip 1 1/2 inch from jacket of twisted shielded pair (fig. 7-10, dimension C).

(7) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(8) Place an appropriate length of insulation over ferrule and ground wire.

(9) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(10) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(11) Place pressure nut and pressure ring over cable braid (fig. 7-7).

(12) Place reducing ring and backshell over cable braid and screw pressure nut onto backshell.

(13) Obtain new connector and discard pressure nut and ring supplied. If salvaged connector is used, the pressure nut and ring were previously discarded.

(14) Insert pins into connector (fig. 6-16), and fill open pin apertures with spare pins.

(15) Disconnect pressure nut from backshell and screw backshell onto pinned connector (fig. 7-7) and tighten.

(16) Slide reducing ring into backshell and fan out braid so that braid sets between the reducing ring and the pressure ring.

(17) Slide pressure ring into backshell and pull out braid from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(18) Slide pressure nut onto backshell and tighten.

(19) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by cable sleeving.

(20) Using heat gun, shrink sleeving and tag marker.

(21) Remove excess adhesive.

(22) Attach dust cover to link chain attachment on backshell (fig. 7-7).

p. Cable 1A4W2. The following procedure is applicable to the replacement of connectors P1 and P2.

(1) Cut a section of cable (CP 5226) 713/4 inches in length.

(2) Strip 2 7/8 inches of outside jacket from end of cable (fig. 7-21, dimension A).

(3) Trim 2 1/8 inches of braid from end of cable leaving 3/4 inch of braid exposed (fig. 21 dimension B).

(4) Make a 1 1/2-inch cut (slit) in cable jacket (fig. 7-21, dimension C).

(5) Place tag marker, boot and a 4 1/4inch piece of heat shrink sleeving over outside of cable jacket.

(6) Strip 3 3/4 inch from jacket of coaxial cable (fig. 7-21, dimension D).

(7) Strip ½ inch of braid and insulation from the end of each wire in the assembly (fig. 7-21, dimension E).

(8) Pin the coaxial cable by performing the following steps:

(*a*) Place the large ferrule over the braided outer conductor and butt up against the outside jacket of the cable (fig. 7-16, dimension A).

(*b*) Slide the nut up to the large ferrule, and slide the tapered ferrule (tapered end toward large ferrule) through the nut and under the cable shield (fig. 7-16, dimension B). These three pieces should be crimped firmly in place.

(*c*) the ferrule over the dielectric down to the tapered ferrule (fig. 7-16, dimension C). Cut the dielectric flush with the top of the ferrule.

(*d*) the small round insulator over the inner conductor until it is flush with the end of the ferrule (fig. 7-16, dimension D).

(*e*) Solder the pin to the center conductor, making sure that the shoulder of the pin is butting against the small round insulator (fig. 7-16, dimension E).

(*f*) the tapered insulator (tapered end forward over the pin (fig. 7-16, dimension F).

(*g*) Screw on the outer shell.

(9) Place pressure nut and pressure ring over cable braid (fig. 7-7).

(10) Place reducing ring and backshell over cable braid and screw on pressure nut onto backshell.

(11) Obtain new connector and discard pressure nut and ring supplied. If salvaged connector is used the pressure nut and ring were previously discarded.

(12) Insert pins into connector (fig. 6-17), and fill open pin apertures with spare pins.

(13) Disconnect pressure nut from backshell and screw backshell onto pinned connector (fig. 7-7) and tighten.

(14) Slide reducing ring into backshell and fan out braid so that braid sets between the reducing ring and the pressure ring.

(15) Slide pressure ring into backshell and pull out braid from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(16) Slide pressure nut onto backshell and tighten.

(17) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by heat shrink sleeving (fig. 7-22).

(18) Using heat gun, shrink sleeving.

(19) Remove excess adhesive.

(20) Apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by boot.

(21) Using heat gun, shrink boot and remove excess adhesive.

(22) Using heat gun, shrink the tag marker.

(23) Attach dust cover to link chain attachment on backshell (fig. 7-7).

q. Cable 1A4W3. The following procedure is applicable to the replacement of connectors P1 and P2:

(1) Cut a section of cable (CP5227) 71 1/2 inches in length.

(2) Strip 5 3/4 inches of outside jacket from end of cable (fig. 7-10, dimension A).

(3) Trim 4 3/4 inches of braid from end of cable leaving 1 inch of braid exposed (fig. 7-10, dimension B).

(4) Place tag marker and boot over outside of cable jacket.

(5) Strip back jackets from twisted shielded pair and twisted shielded triple between 2 1/2 and 3 1/2 inches in length. Jackets should be stripped so that no two adjacent pairs are the same length (fig. 7-23).

(6) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(7) Place an appropriate length of insulation over ferrule and ground wire.

(8) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(9) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(10) Place pressure nut and pressure ring over cable braid (fig. 7-7).

(11) Place reducing ring and backshell over cable braid and screw on pressure nut onto backshell.

(12) Obtain new connector and discard pressure nut and ring supplied. If salvaged connector is used, the pressure nut and ring were previously discarded.

(13) Insert pins into connector (fig. 6-18), and fill open pin apertures with spare pins.

(14) Disconnect pressure nut from backshell and screw backshell onto pinned connector (fig. 7-7) and tighten.

(15) Slide reducing ring into backshell and fan out braid so that braid sits between the reducing ring and the pressure ring.

(16) Slide pressure ring into backshell and pull out braid from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(17) Slide pressure nut onto backshell and tighten.

(18) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by cable boot.

(19) Using heat gun, shrink boot and tag marker.

(20) Remove excess adhesive from boot.

(21) Attach dust cover to link chain attachment on backshell (fig. 7-7).

r. Cable 1A4W4.

(1) Cut a section of cable (CP 5237A) 71 1/4 inches in length.

(2) Strip 6-inches of outside jacket from end of cable (fig. 7-10, dimension A).

(3) Trim 5 19/64 inches of braid from end of cable leaving 45/64 inch of braid exposed (fig. 710, dimension B).

(4) Sequentially place tag marker and the following lengths of heat shrink sleeving over the outside of the cable jacket:

(*a*) One 12-inch piece of sleeving.

(*b*) One 6-inch piece of sleeving.

(5) Slide inner ground ring over cable wires and under cable braid.

(6) Slide outer ground ring over cable wires and braid so that outer ground ring is centered over inner ground ring.

(7) Cut a 6-inch length of 22AWG black wire and strip 1/2 inch of insulation from one end.

(8) Hairpin the black wire and insert between outer ground ring and cable braid.

(9) Using crimping tool, crimp outer ground ring, black wire, and inner ground ring.

(10) Strip 3 1/2 inches from jacket of twisted shielded pair (fig. 7-10, dimension C).

(11) Trim 3 3/16 inches from braid of twisted shielded pair (fig. 7-10, dimension F).

(12) Using crimping tool, crimp on ferrule and ground wire (fig. 7-7).

(13) Place an appropriate length of insulation over ferrule and ground wire.

(14) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(15) Disassemble either new or salvaged connector/backshell assembly (fig. 7-17).

(16) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(17) Place a 4-inch piece of heat shrink sleeving over pinned wires and butt against outer ground ring. Using heat gun, shrink the sleeving.

NOTE

Before pinning connector P1, make certain the connector cover is attached.

(18) Insert pins into connector (fig. 6-19), and fill open pin apertures with spare pins.

(19) Assemble connector and backshell assembly to cable (fig. 7-17). Make certain connector is properly oriented.

(20) Slide 6-inch piece of heat shrink sleeving up to strain relief. Using heat gun, shrink the sleeving.

(21) Coat strain relief and cable end with thermofit adhesive and slide 12-inch piece of heat shrink sleeving over coated area.

(22) Using heat gun, shrink sleeving.

(23) Remove excess adhesive from strain relief and sleeving.

(24) Attach dust cover to cable using cable clamp.

s. Cable 1A4W5.

(1) Cut a section of cable (CP5238A) 71 1/4 inches in length.

(2) Strip 8 inches of outside jacket from end of cable (fig. 7-10, dimension A).

(3) Trim 7 19/64 inches of braid from end of cable leaving 45/64 inch of braid exposed (fig. 7-10, dimension B).

(4) Place tag marker and one 12-inch piece of heat shrink sleeving, and one 10 1/2-inch piece of sleeving over outside of cable jacket.

(5) Slide inner ground ring over cable wires and under cable.

(6) Slide outer ground ring over cable wires and braid so that outer ground ring is centered over inner ground ring.

(7) Cut a 10-inch length of 22AWG black wire and strip 1/2 inch of insulation from one end.

(8) Hairpin the black wire and insert between outer ground ring and cable braid.

(9) Using crimping tool, crimp outer ground ring, black wire, and inner ground ring.

(10) Strip 3 1/2 to 4 1/2 inches from jackets of twisted shielded conductors so that no adjacent pair are the same length (fig. 7-10, dimension C).

(11) Trim braid of twisted shielded conductors so that 5/16 inch of braid is exposed (fig. 7-10, dimension D).

(12) Using crimping tool, crimp on ferrules and ground wires (fig. 7-11).

(13) Place an appropriate length of insulation over ferrules and ground wires.

(14) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(15) Disassemble either new or salvaged connector/backshell assembly (fig. 7-11).

(16) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(17) Place a 5 3/4-inch piece of heat shrink sleeving over pinned wires and butt against outer ground ring. Using heat gun, shrink the sleeving.

NOTE

Before pinning connector P1, make certain the connector cover is attached.

(18) Insert pins into connector (fig. 6-20) and fill open pin apertures with spare pins.

(19) Assemble connector/backshell assembly to cable (fig. 7-17).

(20) Slide 10 1/2-inch piece of heat shrink sleeving up to strain relief and shrink sleeving.

(21) Coat strain relief and cable end with thermofit adhesive and slide 12-inch piece of heat shrink sleeving over coated area.

(22) Using heat gun, shrink sleeving.

(23) Remove excess adhesive from strain relief and sleeving.

(24) Attach dust cover to cable using cable clamp.

(25) Using heat gun, shrink tag marker.

t. Cable 1A4W6-1A4W13 and 1A4W16. The following procedure is applicable to the replacement of connectors P1 and P2.

(1) Cut a section of cable (7524D3311) 96 inches in length for 1A4W16 or 72 inches in length for 1A4W6 through 1A4W13.

(2) Strip 9/32 inch of outside jacket from both ends of the cable (fig. 7-8, dimension A).

(3) Place tag marker and dust covers over outside of cable jacket.

(4) Strip 7/64 inch of insulation from both ends of the cable (fig. 7-8, dimension B).

(5) Obtain new connector or salvage connector from defective cable assembly. Disassemble the connector (fig. 7-9, view A).

(6) Slip clamp nut, washer, and gasket over cable (fig. 7-9, view B).

(7) Comb out braid smoothly and taper over dielectric. Slide braid clamp over braid and push back against cable jacket (fig. 7-9, view C).

(8) Bend braid back over clamp. Trim excess braid. Make sure braid does not extend past shoulder of braid clamp (fig. 7-9, view D).

(9) Tin inner conductor (fig. 7-9, view E).

(10) Solder contact to center conductor making sure outside surfaces of contact are free of solder. Avoid use of excessive heat. Contact should be flush against cable dielectric (fig. 7-9, view F).

(11) Insert cable and parts into connector body. Care should be taken to insure that knife edge of braid clamp is properly seated in "V" groove gasket. Tighten clamp nut securely to complete assembly (fig. 7-9, view G).

(12) Using heat gun, shrink tag marker.

(13) Attach dust cover to connector.

u. Cable 1A4W14. The following procedure is applicable to the replacement of connectors P1 and P2.

(1) Cut a section of cable (CP 5245) 35 1/4 inches in length.

(2) Strip 3 inches of outside jacket from end of cable (fig. 7-10, dimension A).

(3) Trim 2 inches of braid from end of cable leaving 1 inch of braid exposed (fig. 7-10, dimension B).

(4) Make a 1 1/4-inch cut (slit) in cable jacket (fig. 7-10, dimension G).

(5) Place tag marker, boot, and 3 3/4-inch piece of heat shrink sleeving over outside of cable jacket.

(6) Strip 2 inches from jacket of twisted shielded pair (fig. 7-10, dimension C).

(7) Trim 1 11/16 inch from braid of twisted shielded pair (fig. 7-10, dimension F).

(8) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(9) Place an appropriate length of insulation over ferrule and ground wire.

(10) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(11) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(12) Place pressure nut and pressure ring over cable braid (fig. 7-7).

(13) Place reducing ring and backshell over cable braid and screw pressure nut onto backshell.

(14) Obtain new connector and discard pressure nut and ring supplied. If salvaged connector is used, the pressure nut and ring were previously discarded.

(15) Insert pins into connector (fig. 6-22) and fill open pin apertures with spare pins.

(16) Disconnect pressure nut from backshell and screw backshell onto pinned connector (fig. 7-7) and tighten.

(17) Slide reducing ring into backshell and fan out braid so that braid sits between the reducing ring and the pressure ring.

(18) Slide pressure ring into backshell and pull out braid from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(19) Slide pressure nut onto backshell and tighten.

(20) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by heat shrink sleeving (fig. 7-22).

(21) Using heat gun, shrink sleeving.

(22) Remove excess adhesive from sleeving.

(23) Apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by boot.

(24) Using heat gun, shrink the boot and remove excess adhesive.

(25) Attach dust cover to link chain attachment on backshell (fig. 7-7).

(26) Using heat gun, shrink tag marker.

v. Cable 1A4W15.

(1) Cut a section of cable (TD-31) 24 inches in length.

(2) Strip 2 inches of outside jacket from end of cable (fig. 7-6, dimension A).

(3) Trim 1 1/2 inch of braid from end of cable leaving 1/2 inch of braid exposed (fig. 7-6, dimension B).

(4) Place tag marker, heat shrink sleeving, and boot over outside of cable jacket.

(5) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(6) Place an appropriate length of insulation over ferrule and ground wire.

(7) Strip 1/4 inch of insulation from the end of each wire in the assembly (fig. 7-6, dimension D).

(8) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(9) Place pressure nut and pressure ring over cable (fig. 7-7).

(10) Place reducing ring and backshell over cable.

(11) Obtain new connector and discard pressure nut and ring supplied. If salvaged connector is used, the pressure nut and ring were previously discarded.

(12) Insert pins into connector (fig. 6-23), and fill open pin apertures with spare pins.

(13) Screw backshell onto pinned connector (fig. 7-7) and tighten.

(14) Slide reducing ring into backshell and fan out braid so that braid sits between the reducing ring and the pressure ring.

(15) Slide pressure ring into backshell and pull out from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(16) Slide pressure nut onto backshell and tighten.

(17) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by heat shrink sleeving.

(18) Using heat gun, shrink sleeving and remove excess adhesive.

(19) Apply adhesive to area which will be covered by boot.

(20) Using heat gun, shrink the boot and remove excess adhesive.

(21) Attach dust cover to cable, using cable clamp (fig. 7-7).

w. Cable 1A5W1.

(1) Cut a section of cable (CP 5223A) 288 inches in length.

(2) Strip 9 1/4 inches of outside jacket from end of cable which will connect to P2 (fig. 7-10, dimension A).

(3) Trim 8 1/4 inches of braid from end of cable leaving 1 inch of braid exposed (fig. 7-10, dimension B).

(4) Make a 2 1/2-inch cut (slit) in cable jacket (fig. 7-10, dimension G).

(5) Place tag marker, a 6 1/4-inch piece of heat shrink sleeving, and boot over outside of cable jacket.

(6) Place pressure nut, pressure ring and reducing ring supplied with the backshell over cable (fig. 7-24).

(7) Strip 2 1/2 to 3 1/2 inches from jackets of twisted shielded conductors so that no adjacent pair are the same length (fig. 7-10, dimension C).

(8) Strip single conductor cable as shown in figure 7-10.

(9) Trim braid of twisted shielded conductor leaving 5/16 inch of braid exposed (fig. 7-10, dimension D).

(10) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(11) Place an appropriate length of insulation over ferrule and ground wire.

(12) Strip 1/4 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(13) Place backshell and adapter on cable assembly.

(14) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(15) Insert pins into connector P2 (fig. 6-24) and fill open pin apertures with spare pins.

(16) Attach adapter to pinned connector (fig. 7-24) and tighten.

17) Apply sealant to adapter threads and fasten backshell to adapter.

(18) Slide reducing ring into backshell.

(19) Slide pressure ring into backshell and fan out braid so that braid sits between the reducing ring and the pressure ring.

(20) Slide pressure ring into backshell and pull out braid from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(21) Slide pressure nut onto backshell and tighten.

(22) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by heat shrink sleeving.

(23) Slide sleeving up over pressure nut. Using heat gun, shrink the sleeving.

(24) Remove excess adhesive from sleeving.

(25) Using heat gun, sequentially shrink the boot and tag marker.

(26) Attach dust cover to link chain attachment on backshell (fig. 7-24).

(27) Perform step (1) above, then strip 5 inches of outside cable jacket from end of cable which will connect to P1 (fig. 7-10, dimension A).

(28) Trim 4 inches of braid from end of cable leaving 1 inch of braid exposed (fig. 7-10, dimension B).

(29) Perform steps (4) through (11), (13), (14), and (18) through (25) above for connector P1 (fig. 7-24).

(30) Place backshell on cable assembly then perform steps (13) and (14) above.

(31) Slide backshell to connector and tighten then perform steps (17) through (25) above.

x. Cable 1A5W2. The following procedure is applicable to the replacement of connectors P1 and P2.

(1) Cut a section of cable (CX-12904) 120 inches in length.

(2) Strip 2 7/8 inches of outside jacket from end of cable (fig. 7-10, dimension A).

(3) Trim 2 3/8 inches of braid from end of cable leaving 1/2 inch of braid exposed (fig. 7-10, dimension B).

(4) Make a 1%/4-inch cut (slit) in cable jacket (fig. 7-10, dimension G).

(5) place tag marker and one piece of 3/4-inch heat shrinking over outside of cable jacket.

(6) Strip 1½ inch from jacket of twisted shielded pair (fig. 7-10, dimension C).

(7) Strip 1 3/16 inch from braid of twisted shielded pair (fig. 7-10, dimension F).

(8) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(9) Place an appropriate length of insulation over ferrule and ground wire.

(10) Strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-10, dimension E).

(11) Using crimping tool, crimp pins supplied with connector onto exposed wire ends.

(12) Place backshell pressure nut and pressure ring over cable braid (fig. 7-7).

(13) Place reducing ring and backshell over cable braid and screw backshell onto pressure nut.

(14) Obtain new connector and discard pressure nut and ring supplied. If salvaged connector is used, the pressure nut and ring were previously discarded.

(15) Insert crimped pins into connector (fig. 7-25), and fill open pin apertures with spare pins.

(16) Disconnect pressure nut from backshell and screw backshell onto pinned connector (fig. 7-7) and tighten.

(17) Slide reducing ring into backshell and fan out braid so that braid sits between the reducing ring and the pressure ring.

(18) Slide pressure ring into backshell and pull out braid from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(19) Slide pressure nut onto backshell and tighten.

(20) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to areas which will be covered by cable boot and tag marker.

(21) Using heat gun, shrink book and tag marker.

(22) Remove excessive adhesive.

(23) Attach dust cover to link chain attachment on backshell.

y. Cable 2W1.

(1) Cut a section of cable (CP 5246) 96 inches in length.

(2) Strip 6 inches of outside jacket from end of cable which will connect to P1 (fig. 7-25, dimension A).

(3) Place tag marker, boot, and a 4-inch piece of sleeving over outside of cable jacket.

(4) Trim 5 1/4 inches of braid from end of cable leaving 3/4 inch of braid exposed (fig. 7-25, dimension B).

(5) Make a 2-inch cut (slit) in cable jacket (fig. 7-25, dimension G).

(6) Place salvaged pressure nut, pressure ring, and reducing ring over exposed cable braid.

(7) Cut all wires ½ inch shorter than coaxial cable (fig. 7-25, dimensions J and J).

(8) Strip 1 3/8 inch from jacket of twisted shielded pair (fig. 7-25, dimension C).

(9) Trim 1 inch from braid of twisted shielded pair (fig. 7-25, dimension F).

(10) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(11) Place an appropriate length of insulation over ferrule and ground wire.

(12) Strip 1/4 inch of insulation from the end of the black wire and white wire which comprise the twisted shielded pair (fig. 7-25, dimension E).

(13) Insert black wire and white wire into respective splices and crimp (fig. 7-27).

(14) Cut and strip four lengths of 22AWG jumper wire (fig. 7-27).

(15) Insert two jumper wires into open ends of each splice and crimp.

(16) Strip 1/4 inch of insulation from wires which will be connected to resistor R and P 1-S. and wire which will be connected to P1-F (fig. 7-25, dimension K and fig. 6-26).

(17) Insert wire end from S1-3 into splice No. 1 and crimp (fig. 7-26).

(18) Cut and strip a length of coaxial cable and 22AWG jumper as shown in figure 7-26.

(19) Obtain a 75-ohm, ¼-watt, 5 resistor, sleeve both leads and insert into open end of splice No. I which is crimped to wire from S1-3 (fig. 726).

(20) Insert end of one jumper wire into open end of splice with lead from resistor (step 19); crimp splice No. 1.

(21) Insert other end of resistor into splice No. 2 and crimp.

(22) Insert jumper coaxial wire (step 18) into open end of splice No. 2 and crimp.

(23) Strip 19/64 inch from jacket of coaxial cables which will connect to P1-X and P -a (fig. 7-25, dimension L).

(24) Trim 15/16 inch of braid from coaxial cables leaving 13/64 inch of braid exposed (fig. 7-25, dimension M).

(25) Strip 1/4 inch of insulation from end of wires (fig. 7-25, dimension N).

(26) Attach coaxial pins to wires which will connect to P1-V, P1-X and P1-a by performing the following:

(*a*) Place the large ferrule over the braided outer conductor and butt up against the outside jacket of the cable (fig. 7-16, view A).

(*b*) Slide the nut up to the large ferrule, and slide the tapered ferrule (tapered end toward large ferrule) through the nut and under the cable shield (fig. 7-16, view B). These three pieces should be crimped firmly in place.

(*c*) Place the ferrule over the dielectric down to the tapered ferrule (fig. 7-16, view C). Cut the dielectric flush with the top of the ferrule.

(d) the small round insulator over the inner conductor until it is flush with the end of the ferrule (fig. 7-16, view D).

(e) Solder the pin to the center conductor, making sure that the shoulder of the pin is butting against the small round insulator (fig. 7-16, view E).

(f) Place the tapered insulator (tapered end forward over the pin (fig. 7-16, view F).

(g) Screw on the outer shell.

(27) Using crimping tool, crimp pins supplied with connector onto exposed wire ends of the remaining wires which connect to P1.

(28) Place backshell over cable braid and screw pressure nut onto backshell (fig. 7-7).

(29) Insert pins into connector (fig. 6-26), and fill open pin apertures with spare pins.

(30) Disconnect pressure nut from backshell and screw backshell onto pinned connector (fig. 77) and tighten.

(31) Slide reducing ring into backshell and fan out braid so that braid sits between the reducing ring and the pressure ring.

(32) Slide pressure ring into backshell and pull out braid from V-connection formed by pressure ring seated in reducing ring. Trim excess braid protruding from V-connection.

(33) Slide pressure nut onto backshell and tighten.

(34) Clean end of cable and apply adhesive (R.T.V. 728 or equivalent) to area which will be covered by sleeving and cable boot.

(35) Using heat gun, shrink sleeving, boot and tag marker.

(36) Remove excess adhesive from boot and sleeving.

(37) Attach dust cover to link chain attachment on backshell (fig. 7-7).

(38) Strip 48 inches of outside jacket from end of cable which will connect to P2, P3, P4 and S1.

(39) Trim braid 28 inches from end of cable (fig. 7-28, dimension A).

(40) Place cables in fingers of boot as shown in figure for 2W1 (app. C).

(41) Strip 2 inches from jacket of twisted shielded pair (fig. 7-28, dimension B).

(42) Trim 1 11/16 inch of braid from twisted shielded pair leaving 5/16 inch of braid exposed (fig. 7-28, dimension C).

(43) Strip 5/8 inch of insulation from twisted shielded pair (fig. 7-28, dimension D).

(44) Trim 1/4 inch from jacket of wires which will connect to S1-3 and S1-2 (fig. 7-28, dimension E).

(45) Strip 5/16 inch of jacket from coaxial cables which will connect to P2 and P3 (fig. 7-28, dimension F).

(46) Trim braid back leaving 13/64 inch of braid exposed (fig. 7-28, dimension G).

(47) Strip 7 / 64 inch of insulation from end of wires that connect to P2 and P3 (fig. 7-25, dimension H).

(48) Place tag markers and link chain attachments over jacket.

(49) Attach coaxial plugs P2 and P3 to cables by performing the following procedure:

(*a*) Obtain new plugs and disassemble in accordance with figure 7-29.

(*b*) nut, washer, and gasket over cable and cut jacket to dimension shown (fig. 7-30, view A).

(*c*) out braid and fold out. Cut cable dielectric to dimension shown. Tin center conductor (fig. 7-30, view B).

(*d*) Pull braid wires forward and taper toward center conductor. Place clamp over braid and push back against cable jacket (fig. 7-30, view C).

(*e*) Fold back braid wires as shown and form over clamp (fig. 7-30, view D). Solder contact to center conductor.

(*f*) Insert cable and parts into connector body. Make sure sharp edge of clamp seats properly in gasket. Tighten nut (fig. 7-30, view E).

(50) Using heat gun, shrink P2 and P3 tag marker.

(51) Cut two sections of heat shrink sleeving 48 inches in length.

(52) Place sleeving over cable in finger of boot which will be connected to S1.

(53) Using heat gun, sequentially shrink each piece of sleeving.

(54) Insert cable through aperture in rear of switchbox and clamp to inside wall of switchbox.

(55) Connect cable ends to switch terminals (fig. 6-26) and close switchbox.

(56) Cut a section of heat shrink sleeving 46 inches in length.

(57) Place sleeving over cable which will connect to P4.

(58) Using heat gun, shrink sleeving.

(59) Using crimping tool, crimp on ferrule and ground wire (fig. 7-11).

(60) Place an appropriate length of insulation over ferrule and ground wire.

(61) Obtain new P4 connector or using salvaged connector, remove rubber bushing and place on cable with shoulder of bushing facing the connector.

(62) Attach wires to connector terminals (fig. 6-26).

(63) Slide bushing into rear of connector and fasten connector to cable.

(64) Apply thermofit adhesive under fingers and cable end of boot.

(65) Using heat gun, shrink the finger of the boot.

(66) Remove excess adhesive from the fingers of the boot.

z. Cables 2 W2 2 W6. The following procedure is applicable to the replacement of connectors P1 and P2.

(1) Cut a section of cable (RG-142B/U), 35 3/4 inches in length.

(2) Place tag marker over outside of cable jacket.

(3) Obtain new connector or salvage connector from defective cable assembly. Disassemble the connector (fig. 7-31, view A).

(4) Place nut and gasket over cable (fig. 7-31, view B).

(5) Strip 17 /64 inch of outside jacket from end of cable (fig. 7-8, dimension A).

(6) Trim 1/8 inch of braid from end of cable; and strip 1/8 inch of insulation from end of wire (fig. 7-8, dimension B)

(7) Comb out braid and fold out (fig. 7-31, view C).

(8) Pull braid wires forward and taper toward center conductor. Place braid clamp over braid and push back against cable jacket. Fold back braid wires, trim as necessary so that wires do not touch shoulder of clamp (fig. 7-31, view D).

(9) Solder center contact to cable. Center contact must sit squarely against dielectric. Avoid excessive heat which may distort dielectric (fig. 751, view E).

(10) Thread connector assembly onto prepared cable assembly (fig. 7-31, view F).

(11) Using heat gun, shrink tag marker.

(12) Attach dust covers to cable using cable clamps.

(13) Calibrate cable in accordance with procedures contained in TB 11-6625-2398-35.

aa. Cable 2A2WI1/2A2W2/2A2W3. The following procedure is applicable to the replacement of connectors P1 and P2.

(1) Cut a section of cable (CP 5246) 24 inches in length.

(2) Strip 2 1/2 inches of outside jacket from end of cable (fig. 7-6, dimension A).

(3) Trim 2 inches of braid from end of cable leaving 1/2 inch of braid exposed (fig. 7-6, dimension B).

(4) Place the following items over outside of cable jacket in the sequence listed:

(*a*) Tag marker.

(*b*) Boot.

(*c*) A 3-inch piece of heat shrink sleeving.

(*d*) A 2 1/4-inch piece of heat shrink sleeving.

(*e*) Two 1 1/2-inch pieces of heat shrink sleeving.

(5) Slide inner ground ring over cable wires and under cable braid.

(6) Slide outer ground ring over cable wires and braid so that outer ground ring is centered over inner ground ring.

(7) Cut a 2-inch length of 22AWG black wire and strip 1/2 inch of insulation from one end.

(8) Hairpin the black wire and insert between outer ground ring and cable braid.

(9) Using crimping tool, crimp outer ground ring, black wire, and inner ground ring.

(10) Strip 3/17 inch of insulation from the end of each wire in the assembly (fig. 7-6, dimension D).

(11) Cover inside edge of backshell with electrical tape (fig. 7-32).

(12) Solder other end of ground wire connected in step (8) above to backshell.

(13) Slide backshell onto cable assembly.

(14) Using crimping tool, pin wire ends and insert pinned wires into connector (fig. 6-28).

(15) Assemble backshell to connector using nuts, screws, and lockwashers supplied.

(16) Slide one piece of 1 1/2-inch sleeving past ground ring and butt up against ground ring (fig. 7-33).

(17) Using heat gun, shrink the sleeving.

(18) Sequentially repeat steps (16) and (17) above for second piece of 1 1/2-inch sleeving, the 2 1/2-inch sleeving, and 3-inch sleeving.

NOTE

Before shrinking last piece of sleeving apply R.T.V. under rear section

(19) Clean end of cable and apply thermofit adhesive to area which will be covered by cable boot.

(20) Using heat gun, shrink boot and tag marker.

(21) Remove excess adhesive from boot and sleeving.

(22) Attach dust cover to cable, with cable clamp.

ab. Cable 2A2W4. The following procedure is applicable to the replacement of connectors P1 and P2:

(1) Cut a section of cable (CP 5242A), 24 inches in length.

(2) Strip 2/2 inches of outside jacket from end of cable (fig. 7-6, dimension A).

(3) Trim 2 inches of braid from end of cable leaving /2 inch of braid exposed (fig. 7-6, dimension B).

(4) Place the following items over outside of cable jacket in the sequence listed:

(*a*) Tag marker.

(*b*) Boot.

(*c*) One 2 3/4-inch piece of heat shrink sleeving.

(*d*) One 2 1/4-inch piece of heat shrink sleeving.

(*e*) One 1 1/4-inch piece of heat shrink sleeving.

(5) Slide inner ground ring over cable wires and under cable braid.

(6) Slide outer ground ring over cable wires and braid so that outer ground ring is centered over inner ground ring.

(7) Cut a 2-inch length of 22AWG blackwire and strip 1/2 inch of insulation from one end.

(8) Hairpin the black wire and insert between outer ground ring and cable braid.

(9) Using crimping tool, crimp outer ground ring, black wire and inner ground ring.

(10) Except for black wire, strip 3/16 inch of insulation from the end of each wire in the assembly (fig. 7-6, dimension D).

(11) Cover inside edge of backshell with electrical tape (fig. 7-32).

(12) Solder other end of ground wire connected in step (8) above to backshell.

(13) Slide backshell onto cable assembly.

(14) Using crimping tool, pin wire ends and insert pinned wires into connector (fig. 6-30).

(15) Assemble backshell to connector using nuts, screws, and lockwashers supplied.

(16) Slide 1 ¼-inch sleeving past ground ring and butt up against ground ring (fig. 7-33).

(17) Using heat gun, shrink the sleeving.

(18) Sequentially repeat steps (16) and (17) above for the 2 1/4-inch sleeving, then 2 3/4-inch sleeving. Align these pieces with front edge of first piece. Apply R.T.V. adhesive under last piece of sleeving prior to shrinking.

(19) Clean end of cable and apply thermofit adhesive to area which will be covered by cable boot.

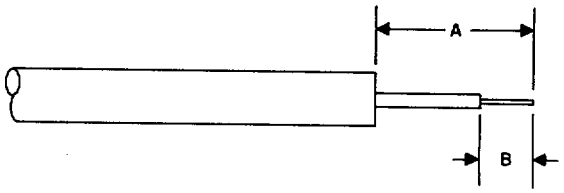
(20) Using heat gun, shrink boot and tag marker.

(21) Remove excess adhesive from boot and sleeving.

(22) Attach dust cover to cable, with cable clamp.

NOTE

Align the 2 1/4-and 2 3/4-inch piece of sleeving with the front edge of the 1 1/4-inch piece of sleeving. Before shrinking the 2 3/4 inch piece of sleeving, coat rear area of sleeving with R.T.V. adhesive.



CABLE	PLUG	DIMENSION (INCHES)	
		A	B
1A2W1	P2	1 3/4	5/8
1A2W1	P1	1 1/4	1/4
1A2W2	P2	2 1/2	5/8
1A2W2	P1	1 1/4	1/4

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Figure 7-3. Stripping detail, cable IA2 WI/ W2.

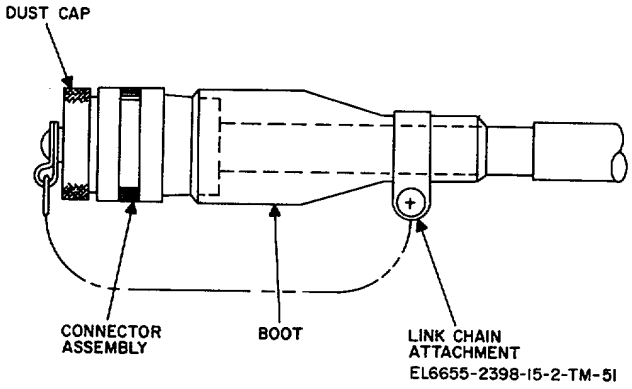


Figure 7-4. Typical cable/connector arrangement.

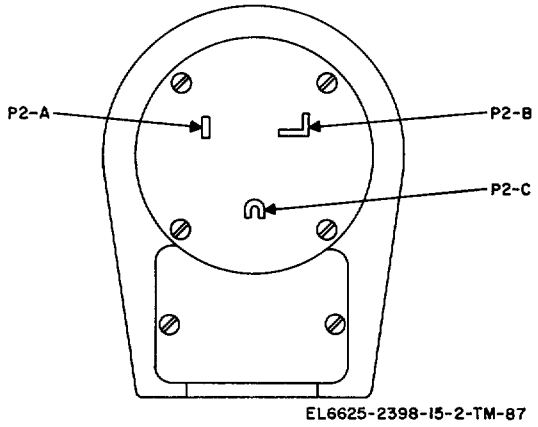


Figure 7-5. Plug arrangement for 1A2W2-P2.

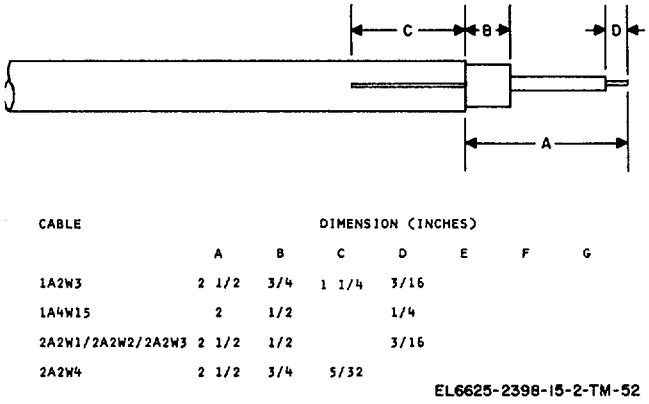


Figure 7-6. Typical cable stripping detail.

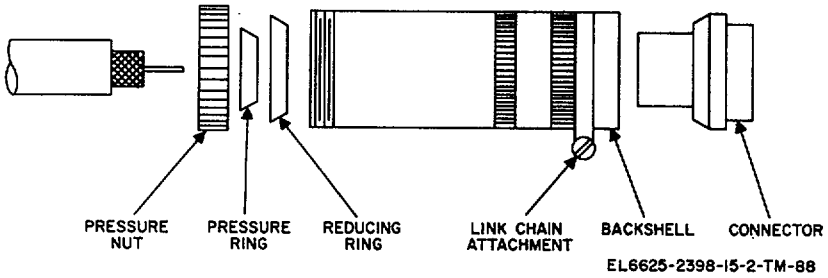
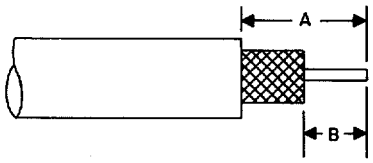


Figure 7-7. Typical connector/backshell assembly. exploded view.



CABLES	DIMENSION (INCHES)	
	A	B
1AW4-W7	11/32	7/32
2W7 AND 2W8	11/32	7/32
2W2 - 2W6	17/64	1/8
1A4W6-1A4W13	9/32	7/64

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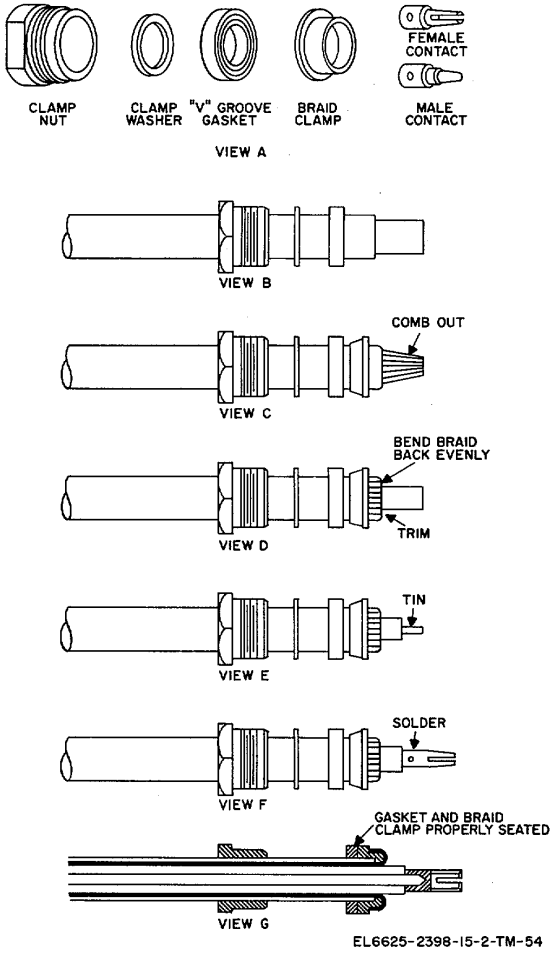
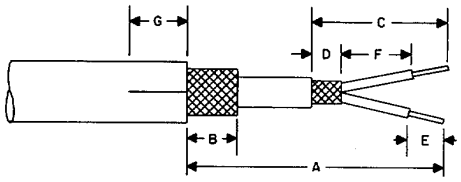
Figure 7-8. Typical cable stripping detail.



EL6625-2398-15-2-TM-54

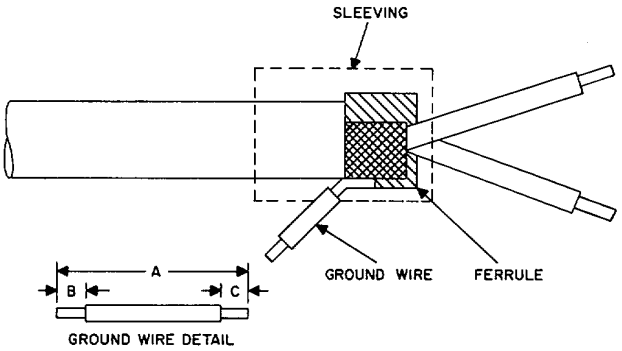
Figure 7-9. Typical connector assembly for 1A2W4 through 1A2W7, 2W7and 2W8.



CABLE	DIMENSION (INCHES)						
	A	B	C	D	E	F	G
1A2W8	6	-3/4	2 1/2	3/4	3/16	2 3/16	2
1A2W9/ 1A2W10	5 3/4	1	3		3/16	3/16	1 3/4
1A2W11	2 7/8	1/2	1 1/2		3/16	1 3/16	1 1/4
1A2W12-P1	3	7/8	15/32		13/64		
1A3W2	6	45/64	4 1/2	5/16	3/16	4 3/16	
1A3W3	10	45/64	5 1/2 & 4 1/2	1/4	3/16		
1A3W4	6	7/8	4 1/2	5/16	3/16	4 3/16	
1A4W1	2 7/8	5/8	1 1/2		3/16		1 3/4
1A4W3	5 3/4	1			3/16		
A4W4	6	45/64	3 1/2	5/16	5/16	3 3/16	
A4W5	8	45/64	3 1/2 & 4 1/2	5/16	3/16		
A4W14	3	1	2		3/16	1 11/16	1 1/4
A5W2	2 7/8	1/2	1 1/2		3/16	1 3/16	1 1/4
A5W1-P1	9 1/4	1	3 1/2 & 4 1/2	5/16	1/4		2 1/2
A5W1-P2	5	1	3 1/2 & 4 1/2	5/16	1/4		2 1/2

EL6625-2398-15-2-TM-55

Figure 7-10. Typical cable stripping detail.



CABLE GROUNDWIRE	DIMENSION (INCHES) A	B	C
1A2W8-W10	5	3/8	3/16
1A2W11	3	7/32	3/16
1A3W1	5	7/32	3/16
1A3W2	5	3/8	3/16
1A3W3 (P2-5,P1-5)	5	3/8	3/16
1A3W3 (P2-7,P1-7)	6	1/2	3/16
1A4W1	3 1/2	7/32	3/16
1A4W3	5	3/8	3/16
1A4W4			
*1A4W5	6	3/8	3/16
**1A4W5	10	3/16	1/2
1A4W14	5	3/8	3/16
1A4W15	2 1/4	1/2	1/4
1A5W1	5	3/8	1/4
1A5W2	3	3/8	3/16
2W1P4	4	3/8	3/8
2W1P1-G	4	9/32	3/8
2W1P4	4	3/8	3/8

*TWISTED SHIELDED CONDUCTORS
**CABLE SHIELD

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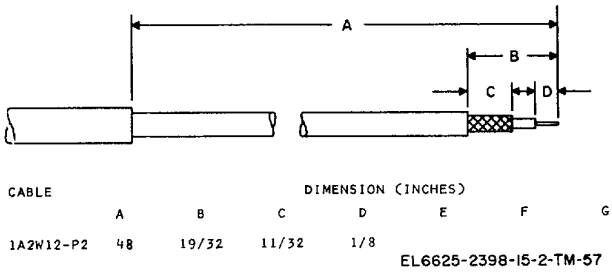
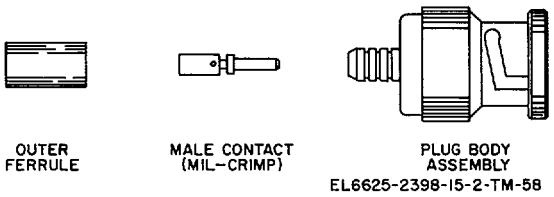
Figure 7-11. Typical ferrule and ground wire configuration.



CABLE	DIMENSION (INCHES) A	B	C	D	E	F	G
1A2W12-P2	48	19/32	11/32	1/8			

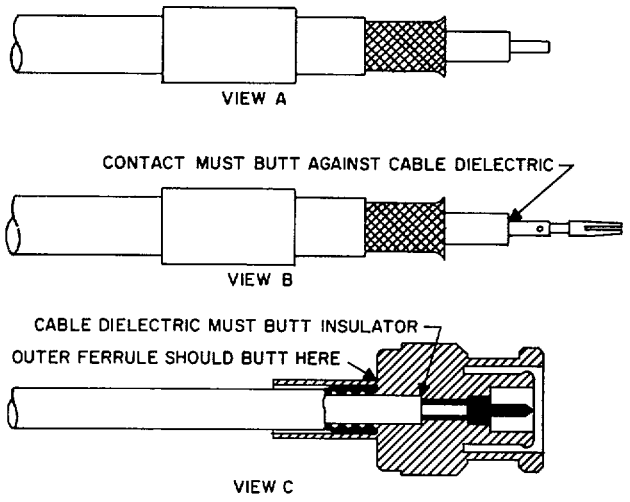
EL6625-2398-15-2-TM-57

Figure 7-12. Cable stripping detail for 1A2W12-P2.



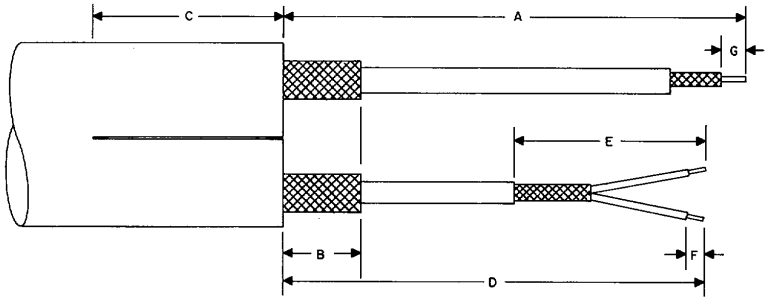
EL6625-2398-15-2-TM-58

Figure 7-13. Connector exploded view for cable 1A2W12.



EL6625-2398-15-2-TM-59

Figure 7-14. Connector assembly for cable 1A2W12.



CABLE	DIMENSION (INCHES) A	B	C	D	E	F	G
1A3W1	6	1	2 1/2	5 1/2	2 1/2	3/16	19/64

EL6625-2398-15-2-TM-60

Figure 7-15. Stripping detail. cable 143W1.

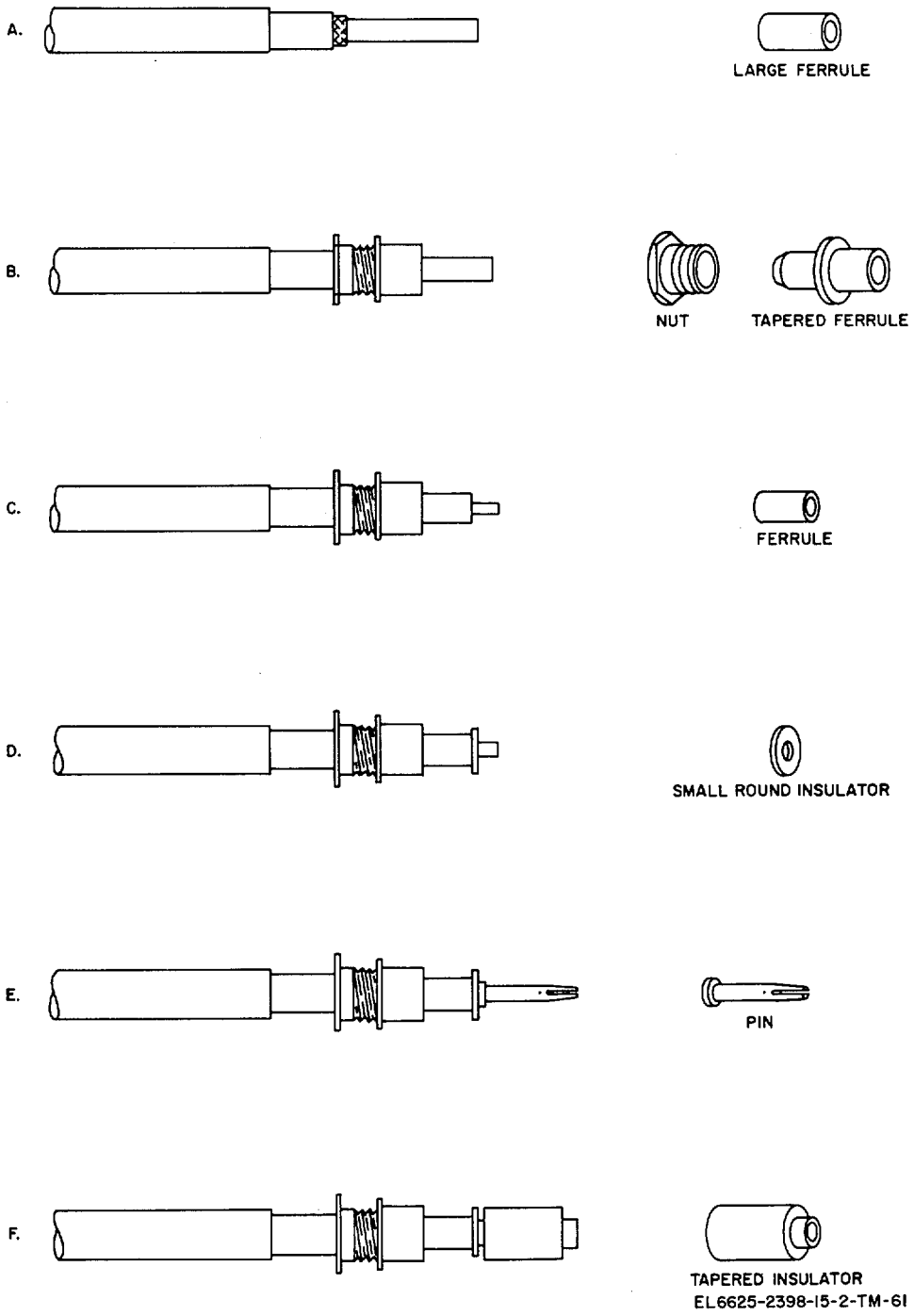


Figure 7-16. Typical connector assembly, exploded view.

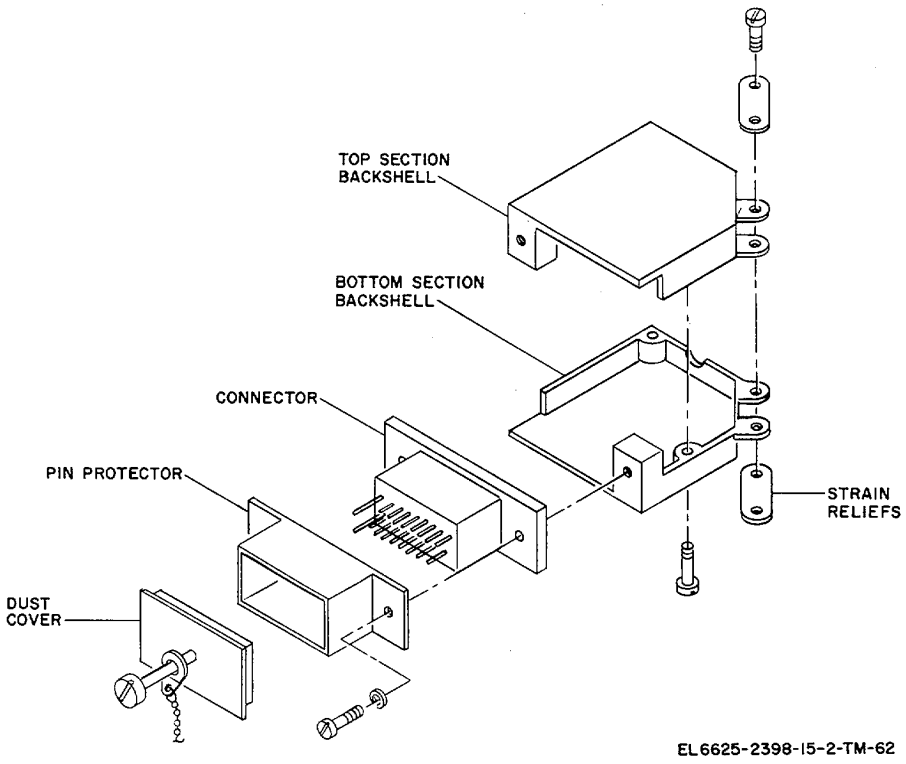


Figure 7-17. Typical connector, exploded view.

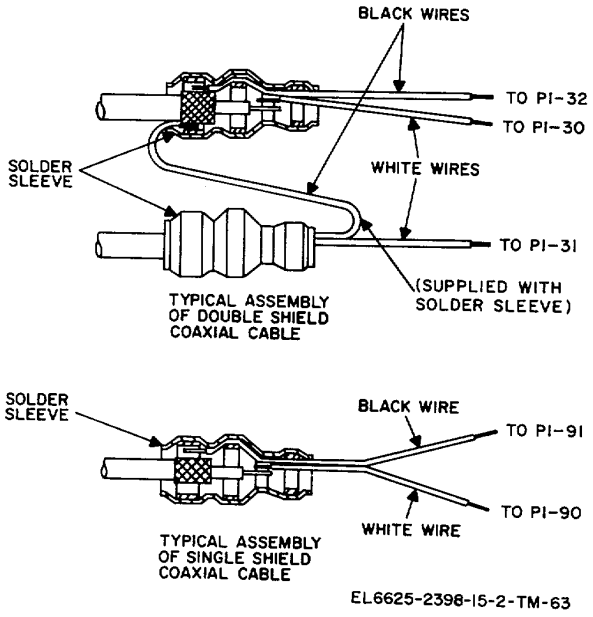


Figure 7-18. Solder sleeve connection for cable 1A3W3.

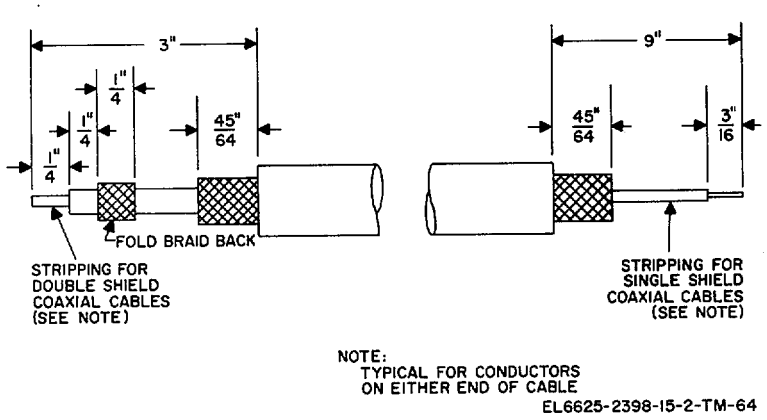
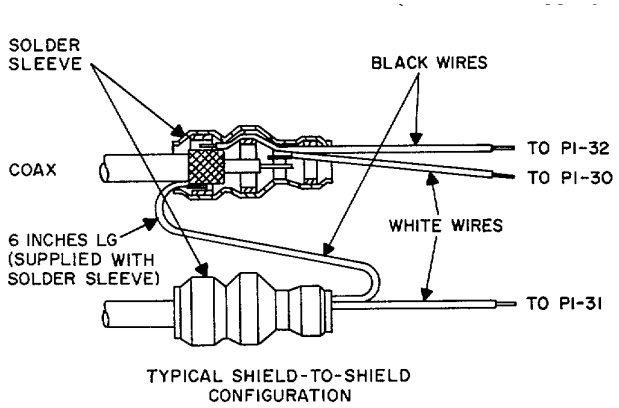


Figure 7-19. Stripping detail for cable 1A3W5.



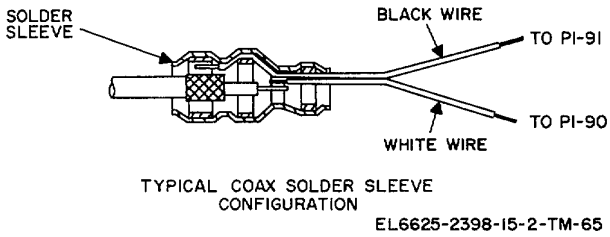


Figure 7-20. Typical solder sleeve connections for cable 1A31W5.

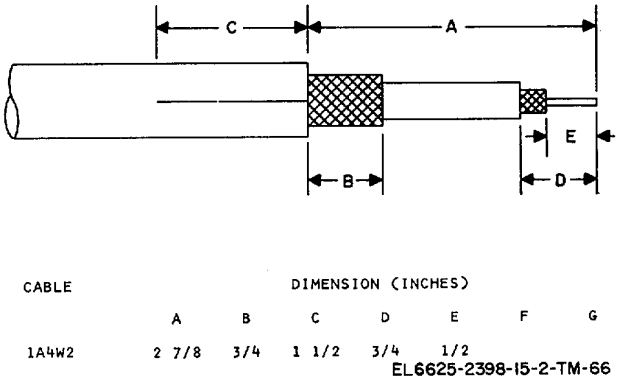


Figure 7-21. Stripping detail for cable 1A4W2.

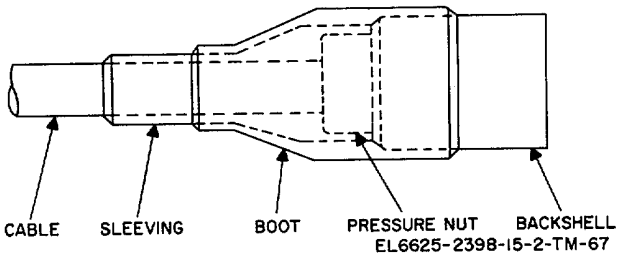


Figure 7-22. Typical connector assembly sleeving.

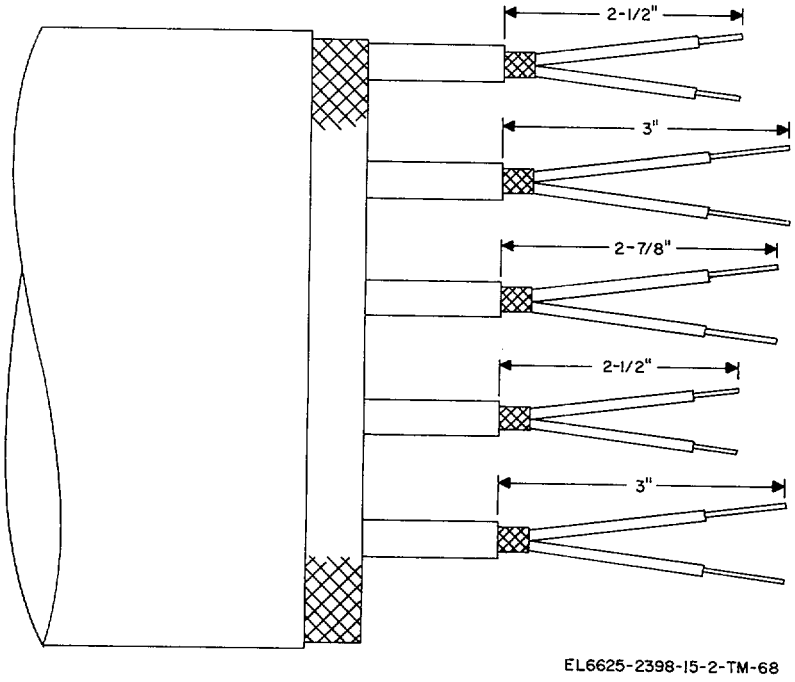


Figure 7-23. Alternate length conductor stripping detail.

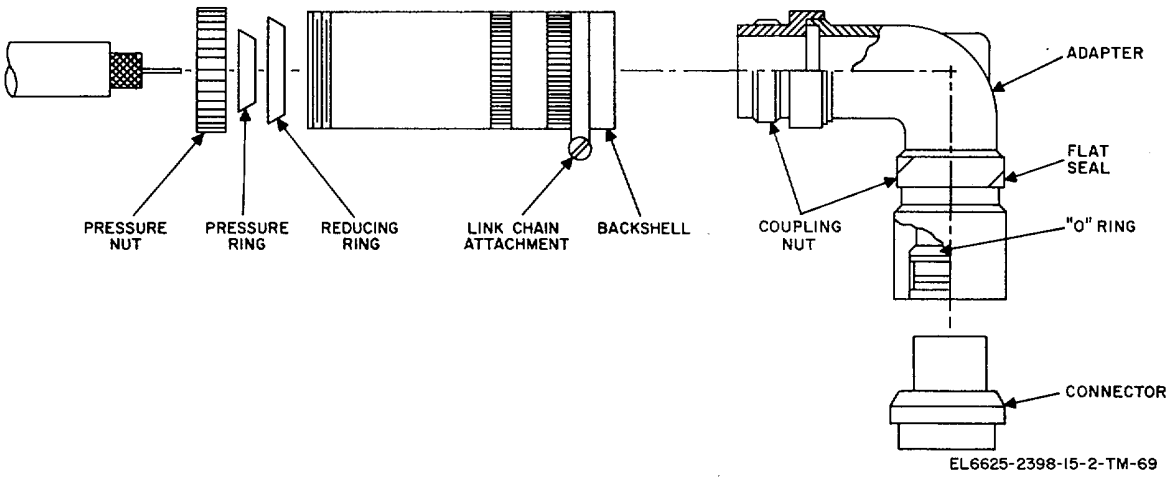
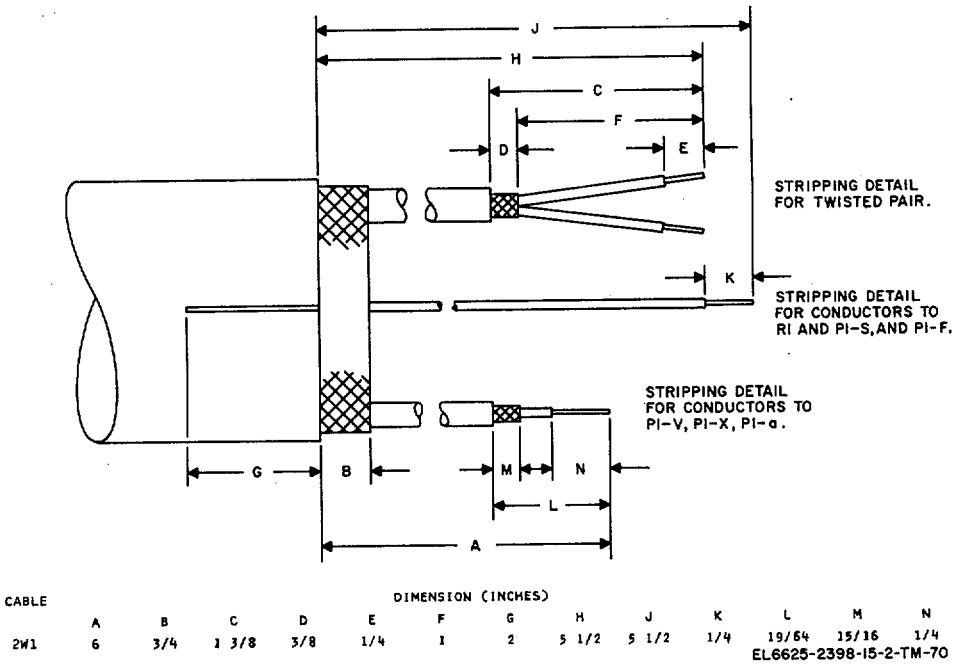


Figure 7-24. Connector assembly for cable 1ASW1.



CABLE	DIMENSION (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
2W1	6	3/4	1 3/8	3/8	1/4	1	2	5 1/2	5 1/2	1/4	19/64	15/16	1/4

Figure 7-25. Stripping detail for cable 2W1-P1.

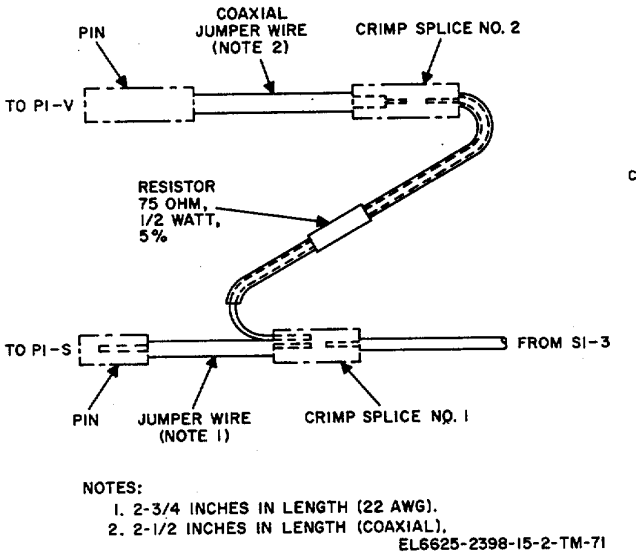


Figure 7-27. Crimp splice connections for cable 2W1.

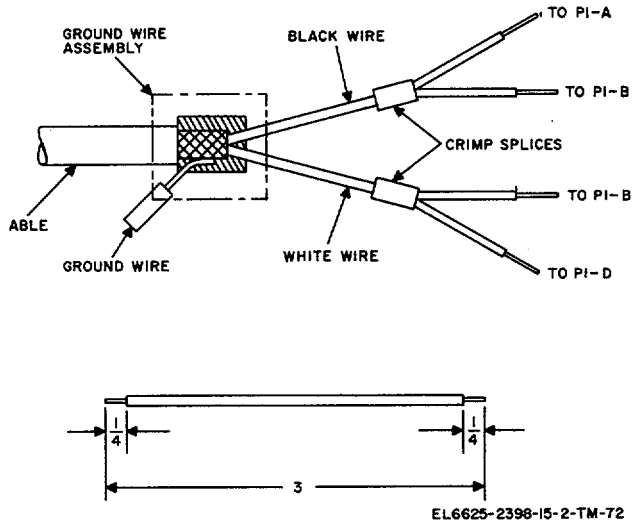
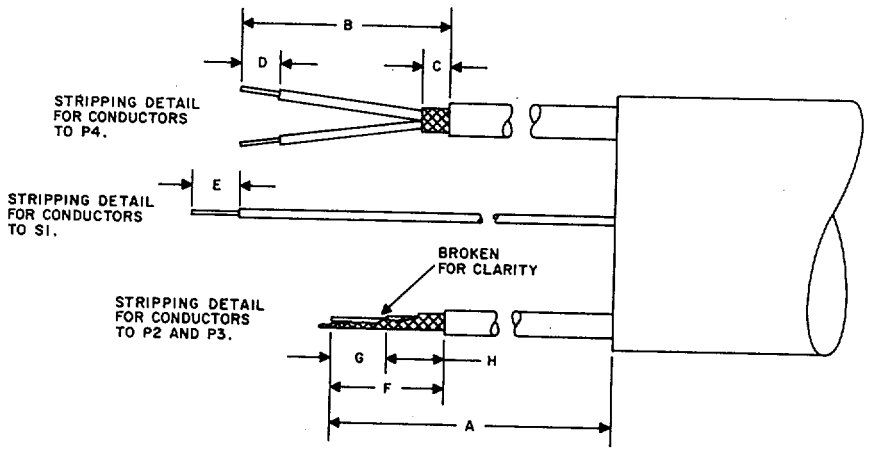


Figure 7-26. Component connection for cable 2W1.



CABLE	DIMENSION (INCHES)						
	A	B	C	D	E	F	G
2W1	48	2	5/16	5/8	1/4	5/16	13/64

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Figure 7-28. Stripping detail for cable 2W1.

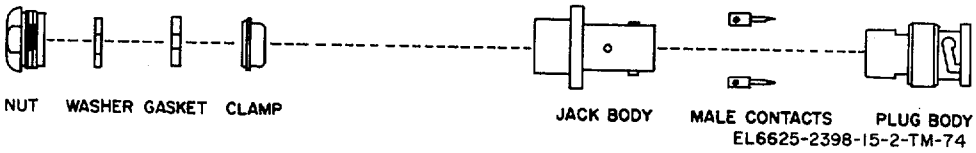

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Figure 7-29. Typical connector assembly, exploded view.

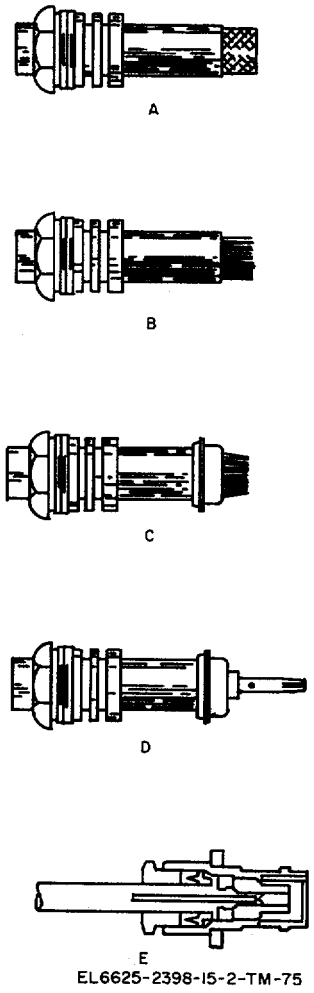

Figure 7-30. Connector assembly for cable 2W1.

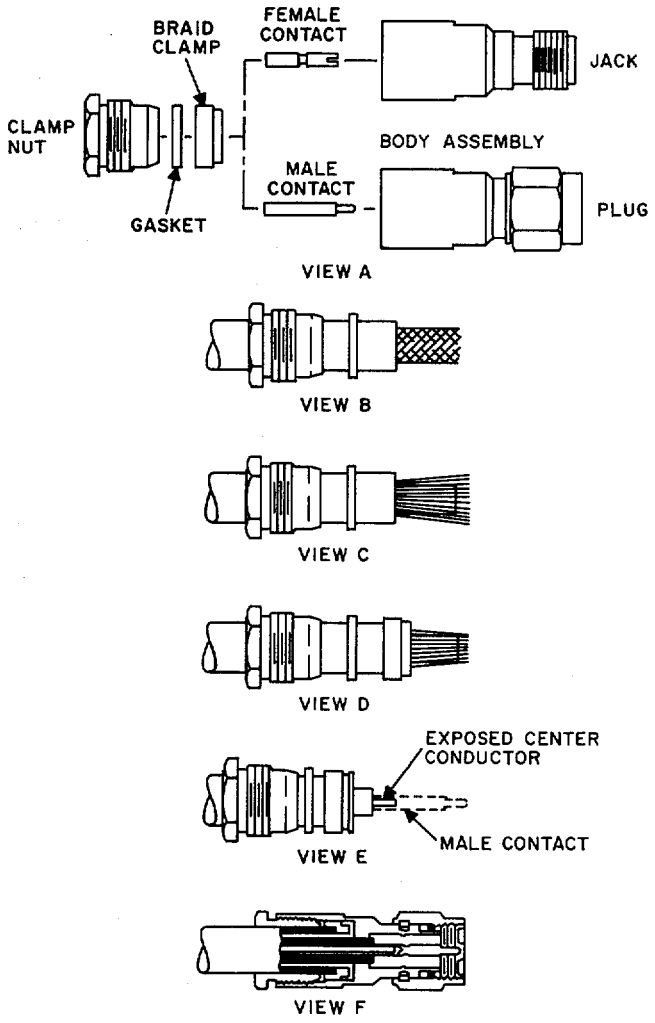

Figure 7-31. Typical connector assembly.

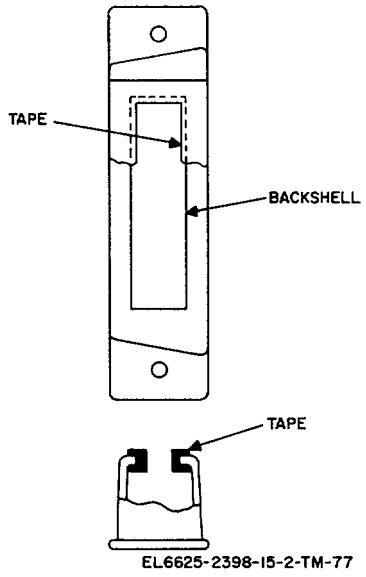

Figure 7-32. Backshell taping for cable 2A2W1/2A2W2/2A2W3.

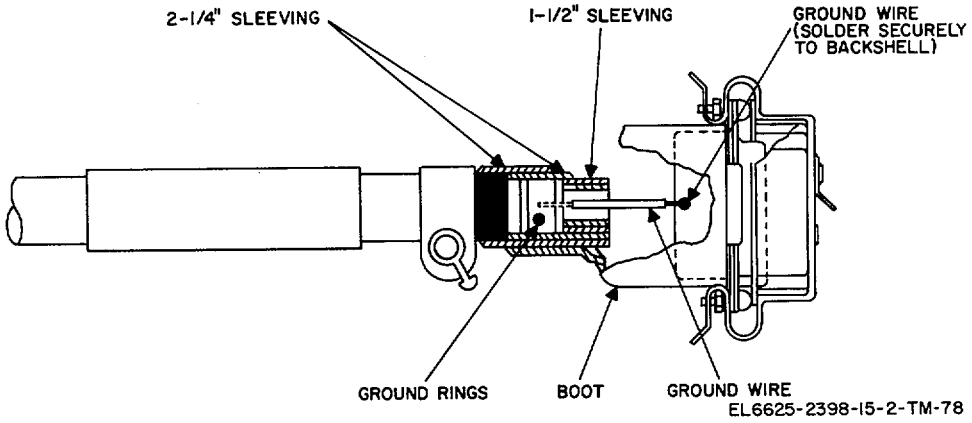

Figure 7-33. Connector assembly for cable 2A2W 1/ 2A2 W2 / 2A2W3.

CHAPTER 8

GENERAL SUPPORT TESTING PROCEDURES

8-1. General

a. Testing procedures are prepared for use by Signal field maintenance shops and Signal service organizations responsible for general support maintenance of signal equipment to determine the acceptability of repaired equipment. These procedures set forth specific requirements that repaired equipment must meet before it is returned to the using organization. These procedures may also be used as a guide for testing equipment that has been repaired.

b. Comply with the instructions preceding each chart before performing procedures contained in the chart. Perform each step in sequence. Do not vary the sequence. For each step, perform all the actions required in the *Test equipment control settings and Equipment under test control settings* columns; then perform each specific test procedure and verify it against its performance standard.

8-2. Test Equipment and Materials

All test equipment required to perform the testing procedures given in this chapter and in TB 11-6625-2398-35, Calibration Procedures for Test Facilities Set AN/TPM-24(V)1, (V)2, and (V) 3, are listed in a and b below.

a. Test Equipment.

Nomenclature	*Federal stock No.*	*Technical manual*
Multimeter TS-352B/U	6625-242-5023	TM 11-6625-366-15
Signal generator AN/URM-64	6625-570-5721	TM 11-6625-299-15
Attenuator, fixed, 6 db CN-1321/TPM-24 (V)	5985-128-0195	
Attenuator, precision step, Alfred E101	6625-061-0230	
Crystal detector, Hewlett-Packard 423A	5961-779-2002	
Indicator, standing wave ratio, IM-175/U	6625-892-5670	TM 11-6625-545-15
50 Ω BNC termination, Microlab TA-5MB	5895-861-7856	
Adapter, UG-201 A/U	5935-201-3090	
50 Ω N termination, Microlab TA-6MN.		
Slotted line IM-92/U	6625-692-6558	TM 11-5109
Oscilloscope AN/USM-281A	6625-228-2201	TM 11-6625-1703-15
Adapter UG-57B/U	5935-539-0851	
Adapter UG-349B/U	5935-732-1919	
Adapter UG-1034A/U	5935-204-5098	
Adapter UG-29B/U	5935-643-9875	
Tool Kit TK-100	5180-605-0079	SB 11-604

b. Materials. The materials below, required for general support testing procedures, are supplied with the test facilities set.

Materials	*Reference designation*	*Federal stock No.*
Adapter UG1896/TPM-24 (V)	2A2CP1/2A2CP2	5935-837-5280
Adapter UG-1897/TPM-24 (V)	2A2CP5/2A2CP6	5935-675-7008
Adapter UG-29B/U	2A2CP7	5935-643-9875
Adapter 1034A/U	2A2CP8	5935-204-5098

8-3. Modification Work Order

The performance standards listed in the tests (para 8-4 through 8-8) are based on having no modification work orders performed on the test facilities set.

8-4. Short Circuit Cable Check

To check a multiconductor cable for shorts between conductors, proceed as follows:

a. Connect one ohmmeter lead to each cable

conductor, one at a time, while performing the following step for each connection.

b. Connect the second ohmmeter lead to every other conductor in the cable (one conductor at a time).

c. If the meter indicates zero, short exists between the two conductors being measured.

d. If the meter indicates less than infinite but more than zero, the two conductors have a dc leakage path between them.

e. If the meter indicates infinite, the two conductors are not shorted.

8-5. Continuity Cable Check

When checking for continuity, the ohmmeter leads may not be long enough to be connected to both ends of the cable. The following procedure is given as a convenient method of determining the condition of a cable:

a. Connect a resistor of known value, 50,000 ohms or more, between one end of the suspected cable conductor and ground.

b. Connect the ohmmeter leads between the conductor and ground at the other end of the cable.

c. If the meter indicates approximately 50,000 ohms, the conductor has continuity.

d. If the meter indicates infinite resistance, the conductor is open.

e. If the meter indicates zero resistance, the conductor is shorted to ground.

f. If the meter indicates much less than 50,000 ohms, but not necessarily zero, the conductor has a dc leakage path to ground.

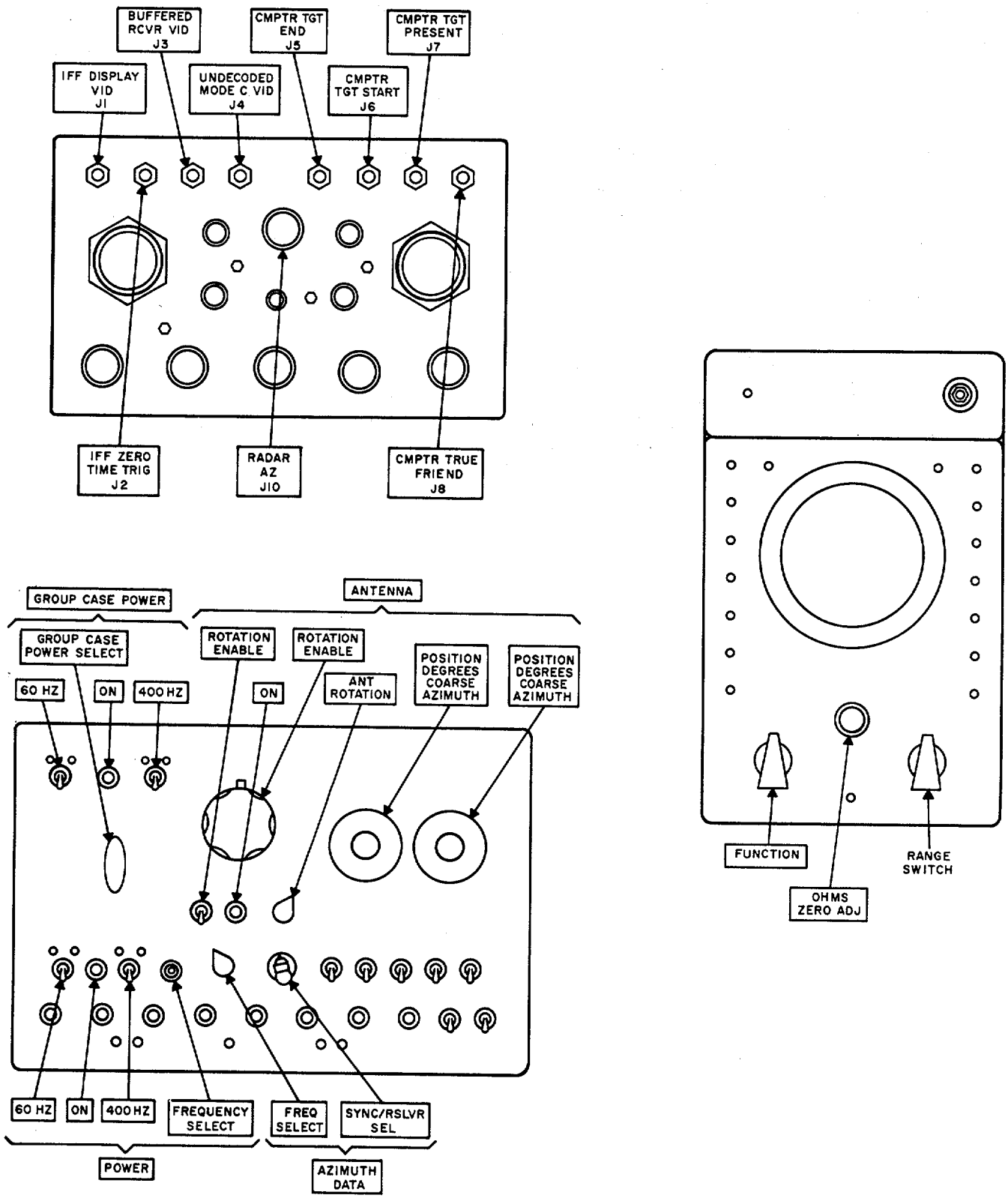

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Figure 8-1. Interface adapter unit 1A1A1, test setup diagram.

8-6. Interface Adapter Unit 1A1A1, Performance Standards

a. Test Equipment and Materials. The interface adapter unit can be tested using a multimeter TS352B/U and an oscilloscope AN/USM-281A.

b. Test Connections and Conditions. Connect the equipment shown in figure 8-1 as described in c below. Set controls on interface adapter unit 1 A 1 A 1 as follows:

Control	*Position*
GROUP CASE POWER SELECT	OFF
GROUP CASE 60 HZ	OFF
GROUP CASE 400 HZ	OFF
POWER FREQUENCY SELECT	OFF
POWER 60 HZ	()OFF
POWER 400 HZ	OFF

Energize test equipment and allow a 30-minute warup period.

c. Interface Adapter Unit 1A1A1, Performance Standard Chart.

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
1	TS-352/U FUNCTION: AC VOLTS	Preliminary control settings (para 8-6b)	*a.* Plug multimeter red test lead into 1000 OHMS PER VOLT AC/DC 25.OV jack. *b.* Plug multimeter black test lead into OHMS-DC±AC jack. *c.* Connect multimeter to 1A1A1J11-A AND 1A1A1F11-B/ *d.* Set GROUP CASE POWER 60-Hz circuit breaker to ON position. *e.* Set GROUP CASE POWER SELECT switch to 60 Hz.	Multimeter indicates 115 vrm ± 11.5 vrms and GROUP CASE POWER ON indicator lamp lights.
2	.....	.....	*a.* Set GROUP CASE POWER 400-Hz circuit breaker to ON. *b.* Set GROUP CASE POWER SELECT switch to 400 Hz.	Multimeter indicates 115 vrms, ±11.5 vrms and GROUP CASE POWER ON indicator lamp lights.
3	GROUP CASE POWER SELECT OFF	.....	Insert extender pins (para 6-2e) over 1A1A1J10-P and R.	
4	.....	.....	Connect multimeter to 1A1A1J10-P and -R. Set ANTENNA RPM control to 5.	
5	.....	GROUP CASE POWER SELECT: 60 HZ. POWER 60 Hz: ON; POWER 400 Hz: ON. POWER FREQUENCY SELECT: 60 Hz, AZIMUTH DATA FREQ SELECT: 60 Hz. AZIMUTH DATA SYNC/RSLVR SEL: SYNC. ANTENNA ANT ROTATION: CW.	.....	POSITION DEGREES COARSE AZIMUTH AND FINE AZIMUTH dials rotate. COARSE AZIMUTH dial completes 5 rotations in 60 seconds ±24 seconds. Multimeter indication varies smoothly from 0 to 10 vrms minimum, to 90 vrms ±9-vrms maximum.
6	.....	.....	Set ANTENNA RPM control to 10.	POSITION DEGREES COARSE AZIMUTH and FINE AZIMUTH dials rotate. COARSE AZIMUTH dial completes 10 rotations in 60 seconds ±24 seconds.

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
7	.....	.....	Set ANTENNA RPM CONTROL to 15.	POSITION DEGREES COARSE AZIMUTH and FINE AZIMUTH dials rotate. COARSE AZIMUTH dial completes 15 rotations within 60 seconds ±24 seconds.
8	.....	.....	Set ANTENNA RPM CONTROL to 20.	POSITION DEGREES COARSE AZIMUTH and FINE AZIMUTH dials rotate. COARSE AZIMUTH dial completes 20 rotations within 60 seconds ±24 seconds.
9	.....	.....	Set ANTENNA RPM CONTROL to 15.	POSITION DEGREES COARSE AZIMUTH and FINE AZIMUTH dials rotate. COARSE AZIMUTH dial completes 25 rotations within 60 seconds ±24 seconds.
10	.....	Set POWER 60 Hz switch to OFF. Set ANTENNA RPM control to 5.	*a.* Insert extender pins (para 6-2*e*) over 1A1A1J10-P and -T. *b.* Connect multimeter to 1A1A1J10-P and -T.	
11	.....	Set POWER 60 Hz switch to ON.	.....	Multimeter indication varies smoothly from 0 to 10 vrms minimum, to 90 vrms ±9 vrms maximum.
12	.....	Set POWER 60 Hz switch to OFF. Set	*a.* Insert extender pins (para 6-2*e*) over 1A1A1J10-T and -R. *b.* Connect multimeter to 1A1A1J10-T and -R.	
13	.....	Set POWER 60 Hz switch to ON.	.....	Same as step 11.
14	.....	Set ANT ROTATION Switch to CCW.	*a.* Repeat steps 5 and 6..... *a.* *b.* Repeat steps 10 and 11.	Repeat steps 5 and 6. *b.* Repeat steps 10 and 11
15		Set POWER FREQUENCY SELECT switch to 400 Hz set AZIMUTH DATA FREQ SELECT switch to 400 Hz. Set GROUP CASE POWER SELECT switch to 400.	*c.* Repeat steps 12 and 13.	*c.* Repeat steps 12 and 13.

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
16	.....	Set POWER 400 HzRepeat step 12. switch to OFF.		
17	.....	Set POWER 400-Hz switch to ON>		Same as step 13.
18	.....	Set POWER 400-Hz switch to OFF.	a. Insert extender pins (para 6-2*e*) over 1A1A1J10-P and -R. b. Connect an oscilloscope to 1A1A1J10-P and -R.	
19	.....	.....	a. Set AZIMUTH DATA SYNC /RSLVER SEL switch to RSLVR and AZIMUTH DATA FREQ SELECT switch to 4000 HZ. b. Set POWER 400-Hz switch to ON.	Oscilloscope indication varies smoothly from 0 to 28 v-p-p minimum, to 73 v-p-p ±23 v-p-p maximum, at 4 kHz. b. None.
20	.....	Set Power 400-Hz switch to OFF.	a. Insert extender pins (para 6-2*e*) over 1A1A1J10-T and -U. b. Connect oscilloscope to 1A1A1J10-T and -U.	None.
21	.....	Set POWER 400-Hz switch to ON.	.....	Same as step 19 above.
22	.....	Set GROUP CASE POWER 60-Hz and 400-Hz switches to OFF. Set GROUP CASE POWER SELECT switch to OFF. Set POWER 60-Hz and 400-Hz switches to OFF.		
23	TS-352 B/U FUNC-TION: OHMS RANGE switch: RX10.	EXT SIF: OFF. EXT M4: OFF SIF TAIL: OFF. EXT MODE C: OFF. EXT TEST TGT: OFF. TRIG CONTROL: OFF. INHIBIT GATE OFF.	a. Plug multimeter black test lead into OHMS DC±AC jack. b. Plug multimeter red test lead into OHMS jack.	
24	.....	.....	a. Connect multimeter to 1A1A1J10-C and -H. b. Set EXT SIF switch to ON>	a. Infinity. b. Less than 1 ohm.
25	.....	.....	a. Connect multimeter to 1A1A1J10-C and -J. b. Set EXT M4 switch to ON.	a. Infinity. b. Less than 1 ohm.

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
26	.....	.....	*a.* Connect multimeter to 1A1A1J10-C and -D.	*a.* Infinity.
			b. Set SIF TAIL switch to ON>	*b.* Less than 1 ohm.
27	.....	.....	*a.* Connect multimeter to 1A1A1J10-C and -K.	*a.* Infinity.
			b. Set EXT MODE C switch to ON.	*b.* Less than 1 ohm.
28	.....	.....	*a.* Connect multimeter to 1A1A1J10-C and -j.	*a.* Infinity.
			b. Set EXT TEST TGT switch to ON.	*b.* Less than 1 ohm.
29	.....	.....	*a.* Connect multimeter to 1A1A1J10-C and g.	*a.* Infinity.
			b. Set TRIG CONTROL switch to ON.	*b.* Less than 1 ohm.
30	.....	.....	*a.* Connect multimeter to 1A1A1J10-C and -H.	*a.* Infinity.
			b. Set INHIBIT GATE switch to ON.	*b.* Less than 1 ohm.
31	TS-352B/U FUNC-TION: OHMS RANGE Switch: RXI.	.....	*a.* Plug multimeter black test lead into OHMS DC±AC jack.	
			b. Plug multimeter red test lead into OHMS jack.	
32	.....	.....	*a.* Connect multimeter to CMPTR TGT START test point TP1 and 1A1A1J6.	*a.* Less than 1 ohm.
			b. Connect multimeter to CMPTR TGT END test point TP2 and 1A1A1J5.	*b.* Less than 1 ohm.
			c. Connect multimeter to CMPTR TGT PRESENT test point TP3 1A1A1J7/	*c.* Less than 1 ohm.
			d. Connect multimeter to CMPTR TRUE FRND test point TP4 and 1A1A1J8.	*d.* Less than 1 ohm.
			e. Connect multimeter to UN-DECODED MODE VID test point TP5 and 1A1A1J4.	*e.* Less than 1 ohm.
			f. Connect multimeter to IFF ZERO TIME TRIG test point TP6 and 1A1A1J2.	*f.* Less than 1 ohm.
			g. Connect Multimeter to IFF DISPLAY VID test point TP7 and 1A1A1J1.	*g.* Less than 1 ohm.
			h. Connect multimeter to BUF-FERED RCVR VID test point TP8 and 1A1A1A1J3.	*h.* Less than 1 ohm.

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
33	----------	----------	*a.* Connect multimeter to S1 test point TP9 and 1A1A1J10-c. *b.* Connect multimeter to S2 test point TP10 and 1A1A1J10-d. *c.* Connect multimeter to S3 test point TP11 and 1A1A1J10-e. *d.* Connect multimeter to R1 test point TP12 and 1A1A1J10-Z. *e.* Connect multimeter to R2 test point TP13 and 1A1A1J10-a.	*a.* Less than 1 ohm. *b.* Less than 1 ohm. *o.* Less than 1 ohm. *d.* Less than 1 ohm. *e.* Less than 1 ohm.
34	----------	----------	*a.* Connect multimeter to CMPTR TGT START test point TP1 and ground. *b.* Connect multimeter to CMPTR TGT END test point TP2 and ground. *c.* Connect multimeter to CMPTR TGT PRESENT test point TP3 and ground. *d.* Connect multimeter to CMPTR TRUE FRND test point TP4 and ground. *e.* Connect multimeter to UNDECODED MODE C VID test point TP5 and ground. *f.* Connect multimeter IFF ZERO TIME TRIG test point TP6 and ground. *g.* Connect multimeter to IFF DISPLAY VID test point TP7 and ground. *h.* Connect multimeter to BUFFERED RCVR VID test point TP8 and ground. *i.* Connect multimeter to S1 test point TP9 and ground *j.* Connect multimeter to S2 test point TP10O and ground. *k.* Connect multimeter to S3 test point TP11 and ground. *I.* Connect multimeter to R1 test point TP12 and ground. *m.* Connect multimeter to R2 test point TP13 and ground.	*a.* Infinity. *b.* Infinity. *c.* Infinity. *d.* Infinity. *e.* Infinity. *f.* Infinity. *g.* Infinity. *h.* Infinity. *i.* Infinity. *j.* Infinity. *k.* Infinity. *1.* Infinity. *m.* Infinity.

8-7. Hybrid Attenuator 2A1, Performance Standards

Performance standards for the hybrid attenuator are achieved when the hybrid attenuator can comply with its calibration standards. Hybrid attenuator calibration standards are contained in TB 11-6625-2398-35.

8-8. Feedthrough Connectors Performance Standards

Interface adapter unit 1A1A1 has feedthrough connectors located on filter box 1A1A1A3. These feedthrough connectors do not lend themselves to conventional performance standard testing. The simplest method of determining whether a connector has been repaired correctly, is to perform continuity checks. Using the table below, check for continuity between the mating pins.

From-	*To-*
1A1A1J10-A	1A1A1J12-A
1A1A1J10-A	1A1A1J13-H
1A1A1J10-A	1A1A1J15-A
1A1A1J10-A	1A1A1J16-A
1A1A1J10-B	1A1A1J12-F
1A1A1J10-B	1A1A1J13-J
1A1A1J10-B	1A1A1J15-B
1A1A1J10-B	1A1A1J16-B
1A1A1J10-D	1A1A1J18-V
1A1A1J10-D	1A1A1J19-V
1A1A1J10-E	1A1A1J18-U
1A1A1J10-E	1A1A1J19-U
1A1A1J10-F	1A1A1J20-/D
1A1A1J10-F	1A1A1J18-T
1A1A1J10-F	1A1A1J19-T
1A1A1J10-G	1A1A1J20-/E
1A1A1J10-G	1A1A1J18-S
1A1A1J10-G	1A1A1J119-S
1A1A1J10-H	1A1A1J18-R
1A1A1J10-H	1A1A1J19-R
1A1A1J10-J	1A1A1J20-/C
1A1A1J10-J	1A1A1J18-P
1A1A1J10-J	1A1A1J18-P
1A1A1J10-J	1A1A1J19-P
1A1A1J10-K	1A1A1J18-/A
1A1A1J10-K	1A1A1J19-A
1A1A1J16-K	1A1A1J13-K
1A1A1J19-/W	1A1A1J18-/W
1A1A1J16-L	1A1A1J13-L
1A1A1J20-/B	1A1A1J18-/X
1A1A1J20-/B	1A1A1J19-/X
1A1A1J16-M	1A1A1J13-M
1A1A1J19-/Y	1A1A1J18-/Y
1A1A1J16-N	1A1A1J13-P
1A1A1J19-/Z	1A1A1J18-Z
1A1A1J20-A	1A1A1J18-/P
1A1A1J20-A	1A1A1J19-/P
1A1A1J20-B	1A1A1J18-/N
1A1A1J20-B	1A1A1J19-/N
1A1A1J20-C	1A1A1J11/M
1A1A1J20-C	1A1A1J19-/M
1A1A1J20-D	1A1A1J18-/K
1A1A1J20-D	1A1A1J19-/K
1A1A1J20-E	1A1A1J18-/J
1A1A1J20-E	1A1A1J19-/J
1A1A1J20-F	1A1A1J18-/H
1A1A1J20-F	1A1A1J19-/H
1A1A1J20-G	1A1A1J18-/G
1A1A1J20-G	1A1A1J19-/G
1A1A1J20-H	1A1A1J18-/F
1A1A1J20-H	1A1A1J19-/F
1A1A1J20-J	1A1A1J18-/E
1A1A1J20-J	1A1A1J19-/E
1A1A1J20-K	1A1A1J18-/D
1A1A1J20-K	1A1A1J19-/D
1A1A1J20-L	1A1A1J18-/C
1A1A1J20-L	1A1A1J19-/C
1A1A1J20-M	1A1A1J18-/B
1A1A1J20-M	1A1A1J19-/B
1A1A1J20-N	1A1A1J18-/U
1A1A1J20-N	1A1A1J19-/U
1A1A1J20-P	1A1A1J18-N
1A1A1J20-P	1A1A1J19-N
1A1A1J20-X	1A1A1J18-W
1A1A1J20-X	1A1A1J19-W
1A1A1J20-Y	1A1A1J18-Z
1A1A1J20-Y	1A1A1J19-Z
1A1A1J20-Z	1A1A1J18-Y
1A1A1J20-Z	1A1A1J19-Y
1A1A1J20-/A	1A1A1J18-X
1A1A1J20-/A	1A1A1J19-X
1A1A1J20-R	1A1A1J18-C
1A1A1J20-R	1A1A1J19-C
1A1A1J20-/N	1A1A1J18-A
1A1A1J20-/N	1A1A1J19-A
1A1A1J20-Q	1A1A1J18-B
1A1A1J20-Q	1A1A1J19-B
1A1A1J10-/J	1A1A1J18-/S
1A1A1J10-/J	1A1A1J19-/S
1A1A1J9-C	1A1A1J10-C
1A1A1J9-C	1A1A1J10-/B
1A1A1J9-C	1A1A1J10-/F
1A1A1J9-C	1A1A1J11-C
1A1A1J9-C	1A1A1J12-C
1A1A1J9-C	1A1A1J12-R
1A1A1J9-C	1A1A1J13-G
1A1A1J9-C	1A1A1J13-W
1A1A1J9-C	1A1A1J14-C
1A1A1J9-C	1A1A1J15-E
1A1A1J9-C	1A1A1J16-C
1A1A1J9-C	1A1A1J20-/R
1A1A1J9-C	1A1A1J18-E
1A1A1J9-C	1A1A1J18-F
1A1A1J9-C	1A1A1J19-E
1A1A1J9-C	1A1A1J19-F
1A1A1J9-C	1A1A1J17-/N
1A1A1J9-C	1A1A1J17-/T
1A1A1J12-G	1A1A1J17-E
1A1AJ12-H	1A1A1J17-F
1A1A1J12-J	1A1A1J17-G
1A1A1J12-K	1A1A1J17-H
1A1A1J12-L	1A1A1J17-J
1A1A1J12-M	1A1A1J17-K
1A1A1J12-N	1A1A1J17-R
1A1A1J12-O	1A1A1J17-S

From-	*To-*	*From-*	*To-*
1A1A1J12-P	1A1A1J17-T	1A1A1J12-U	1A1A1J17-Z
1A1A1J12-S	1A1A1J17-V	1A1A1J12-V	1A1A1J17-W
1A1A1J12-T	1A1A1J17-U	1A1A1J12-W	1A1A1J17-/A

From-	*To-*
1A1A1J12-X	1A1A1J17-/B
1A1A1J12-Y	1A1A1J17-/C
1A1A1J12-Z	1A1A1J17-/P
1A1A1J12-/A	1A1A1J17-/D
1A1A1J12-/B	1A1A1J17-L
1A1A1J12-/C	1A1A1J17-M
1A1A1J12-/D	1A1A1J17-N
1A1A1J12-/G	1A1A1J17-X
1A1A1J12-/H	1A1A1J17-Y
1A1A1J12-/J	1A1A1J17-/K
1A1A1J12-/K	1A1A1J17-/M
1A1A1J12-/M	1A1A1J17-B
1A1A1J12-/N	1A1A1J17-C
1A1A1J12-/P	1A1A1J17-D
1A1A1J12-/E	1A1A1J16-D
1A1A1J12-/F	1A1A1J16-E
1A1A1J13-F	1A1A1J16-F
1A1A1J13-V	1A1A1J21-C
1A1A1J13-X	1A1A1J21-E
1A1A1J13-/A	1A1A1J21-A

From--	*To-*
1A1A1J18-D	1A1A1J19-D
1A1A1J18-CC	1A1A1J19-CC
1A1A1J18-DD	1A1A1J19-DD
1A1A1J18-G	1A1A1J19-G
1A1A1J18-H	1A1A1J19-H
1A1A1J18-J	1A1A1J19-J
1A1A1J18-K	1A1A1J19-K
1A1A1J18-L	1A1A1J19-L
1A1A1J18-M	1A1A1J19-M
1A1A1J18-/Q	1A1A1J19-/Q
1A1A1J18-/R	1A1A1J19-/R
1A1A1J18-/T	1A1A1J19-/T
1A1A1J18-/V	1A1A1J19-/V
1A1A1J18-AA	1A1A1J19-AA
1A1A1J13-T	1A1A1J17-/F
1A1A1J13-A	1A1A1J17-/E
1A1A1J13-B	1A1A1J17-/Q
1A1A1J13-U	1A1A1J17-/H
1A1A1J13-C	1A1A1J17-/ G
1A1A1J13-D	1A1A1J17-/R

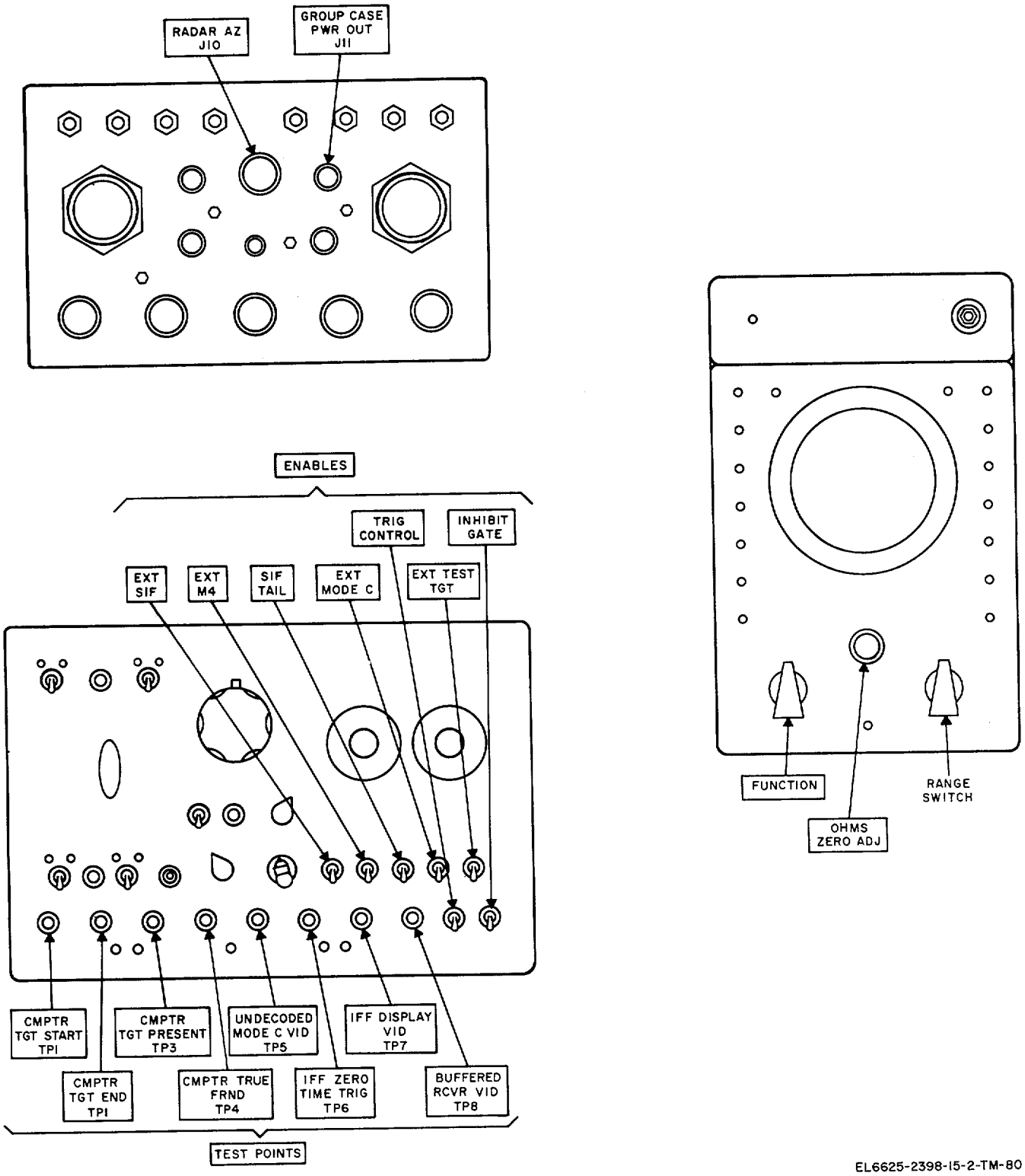

Figure 8-2. Interface adapter unit 1A A1, test points and enables, test setup diagram.

CHAPTER 9

DEPOT OVERHAUL STANDARDS

9-1. Applicability of Depot Overhaul Standards

Test Facilities Set AN / TPM-24(V)2 must be tested thoroughly after rebuild or repair to insure that it meets adequate performance standards for return to stock and reissue. Perform the tests described in this chapter and in the applicable manuals referenced in paragraph 9-2. It is mandatory that equipment to be reissued, or returned to stock for reissue, meet all of these performance standards.

9-2. Applicable References

a. Repair Standards. Applicable procedures of the depot performing these standards, and its general standards for repaired equipment, form a part of the requirements for testing this equipment.

b. Technical Publications. The following technical manuals are applicable to this equipment:

Equipment and subject	
Direct and General Support Maintenance Manual, Interrogator Set AN / T PX-46 (V) 1, 2, 3, 4, and 6.	TM 11-5895-532-34-1
Operator and Organizational Maintenance Manual, Interrogator Set AN / TPX-46 (V) 1, 2, 3, 4, and 6.	TM 11-5895-532-12
Direct and General Support Maintenance Manual, Interrogator Set AN / T PX-46 (V) 1, 2, 3, 4, and 6. Receiver-Transmitter Group OR-85 / TPX-46 (V).	TM 11-5805-532-34-2
Direct and General Support Maintenance Manual, Interrogator Set AN/ T PX-46 (V) 1, 2, 3, 4, and 6. Signal Processor CP-925 / TPX-46 (V).	TM 11-5895-532-34-3
Direct and General Support Maintenance Manual, Interrogator Set AN / TP X-46 (V) 1, 2, 3, 4, and 6. Synchronizer, Electrical SN-420 / TPX-46 (V).	TM 11-5895-532-34-4
Direct and General Support Maintenance Manual, Interrogator Set AN / T PX-46 (V) 1, 2, 3, 4, and 6. Antenna-Radome AS-2167/TPX-46 (V), Antenna-Radome AS-2740/TPX-46 (V), Control, Antenna C-8738/TPX-46 (V), Pedestal, Antenna AB-1076/TPX-46 (V).	TM 11-5895-532-34-5
Depot Maintenance Work Requirements Manual Interrogator Set AN /TPX-46V VI 1.2,3,4, and 6.	DMWR 11-5895-532-50

c. Modification Work Order. Perform all applicable modification work orders (MWO's) pertaining to this equipment before making test specified. DA Pam 310-7 lists all available MWO's.

9-3. Test Facilities Required

The following equipments or suitable equivalents will be used to determine compliance with the requirements of this specific standard, and will be capable of conforming to their respective repair standard or depot overhaul standard:

Test equipment	*Quantity required*	*Applicable literature*
Multimeter TS-352B / U	1	TM 11-6625-366-15
Signal Generator, AN/URM-64	1	TM 11-6625-299-15
Attentator, Fixed. 6 db. CN-1321 /TPM-24 (VI	1	
Attentator, Precision Step. Alfred E101	1	
Crystal Detector, Hewlett-Packard 423A	1	TM 11-6625-545-15
Indicator, Standing Wave Ratio, IM-175/4	1	TM 11-6625-545-15
50 BNC Termination. Microlab TA-5MB	2	
Adapter UG-201 A/U	1	
50 N Termination. Microlab TA-6MN.	2	TM 11-5109
Slotted Line, IM-92 /U	1	TM 11-6625-1703-15
Oscilloscope, AN / USM-281A	1	
Adapter, UG-491A/U	1	
Adapter, UGS7A / U	2	
Adapter, UG-349A / U	2	
Adapter, UG-1034/U	1	
Adapter, UG-29B/U	1	
Tool Kit, TK-100	1	SB 11-604

9-4. General Test Requirements
Always allow at least 30 minutes for the equipment under test, and the test equipment, to reach stabilized temperature.

9-5. Continuity Checks
Check the continuity of all cables, jacks, extender boards, and test points.

9-6. Insulation Resistance
Measure the insulation resistance of all cables (the resistance between the conductor and insulation material). A minimum reading of 100 megohm is required.

9-7. Interface Adapter unit 1A1A1, Standards
The tests outlined in paragraph 8-6 should be performed after the interface adapter unit has been repaired.

9-8. Hybrid Attenuator 2A1, Standards
The tests contained in the calibration procedure technical bulletin should be performed after a component of the hybrid attenuator has been repaired (refer to TB-11-6625-2398-35).

CHAPTER 10

SHIPMENT, LIMITED STORAGE, AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

10-1. Disassembly of Test Setup

Prepare the test facilities set for shipment or limited storage as follows:

a. Remove all power from the associated IFF set.

b. Remove all cables and items connected to the IFF set.

c. Gather all other items (not in use at time of disassembly). Check all items against the list of components for the test facilities set (para 1-7), to insure completeness.

d. Store the components in the transit case and applicable canvas bags. Cables stored in the transit case should be coiled neatly and placed such that the connectors will not bind the cable wire when the cable compartment holddown cover is closed. After the cables are placed in position, tighten the tiedown straps, making certain that all of the connectors are held firmly. Close the cable holddown cover, depress and turn the three fasteners to hold the cover in place. Complete stowage by placing the rest of components into cartons and bags allocated for them.

10-2. Repackaging for Shipment and Limited Storage

The exact procedure for repacking depends on the material available and the conditions under which the equipment is to be shipped or stored. Adapt the outline below as required. The information concerning the original packaging (figs. 2-1 and 2-2) will also be helpful.

a. Material Requirements. The following materials are required for packaging the test failities set. For stock numbers of the materials, consult SB 38-100.

NOTE

For short-haul travel or domestic shipment the transit case may be shipped without repacking. For oversea shipment or long-haul travel, the transit case should be repackaged.

Material	Size (in.)	Quantity
Polyethylene wrap		
Humidity indicator	Per MS-20003	
Desiccant	Per MIL-D-3464	
Carton (350 No. DW)		
Sealing tape		

b. Packaging. After the components of the test facilities set have been placed into their allocated containers, perform the following:

(1) Place two desiccant bags and one spot humidity indicator inside of each case. Close the transit cases.

(2) Secure the warning label to the top of the transit cases.

(3) Open the vent valve on the front of the cases.

(4) Wrap the transit cases in polyethylene wrap.

(5) Place the transit cases, wrapped in polyethylend, in the carton. Seal the carton.

(6) Mark the carton in accordance with MILSTD-129.

c. Shipment. There are no special requirements for shipment of the test facilities set once it has been packaged. The test facilities set when packaged weighs approximately 659 pounds.

Section II. DEMOLITION OF MATERIAL TO PREVENT ENEMY USE

10-3. Authority for Demolition

The demolition procedures given in paragraph 10-4 will be used to prevent the enemy from using or salvaging this equipment. Demolition of the equipment will be accomplished only upon the order of the commander.

10-4. Methods of Destruction

The tactical situation and time available will determine the method to be used when destruction of equipment is ordered. In most cases, it is preferable to completely demolish some portions of

the equipment rather than partially destroy all the equipment components.

a. Smash. Use sledges, axes, hammers, and any other heavy tool available to smash the interior of the transit case, connectors, hybrid attenuator assembly, and printed circuit boards.

b. Cut. Use axes, handaxes, machetes, and similar tools to cut the cables. Cut all cables in a number of places.

WARNING

Be extremely careful with explosives and incendiary devices. Use these items only when the need is urgent.

c. Burn. Burn the technical manuals first. Pour gasoline on the cut cables and smashed printed circuit boards and burn them.

d. Explode. Use explosives to complete demolition or to cause maximum damage, before burning, when time does not permit complete demolition by other means. Powder charges, fragmentation grenades, or incendiary grenades may be used. Incendiary grenades usually are more effective if destruction of small parts and wiring is desired. For quick destruction, place as much equipment as possible in the transit case, place an incendiary grenade in the unit, quickly close the cover, and evacuate the area.

e. Dispose. Bury or scatter destroyed components or throw them into nearby waterways. This is particularly important if a number of components have not been completely destroyed.

APPENDIX A

WIRE RUN LIST

a. Interface Adapter Unit, Front Panel Harness Wiring

Note: See also page A-4.

From			To	From			To	From			To	From			To	From			To
CB1				FL3				P				S10				S58			
	1	FL	1		B2	S6B	11		14	J	36		1	FL4	A4		3	U1	4
	3	FL	2		B3	J	41		15	J	35						4	TB1	5
	5	S1	3		B4	J	42		16	J	34	S11					9	U1	5
					C1	J	38						1	FL4	B1		10	TB1	6
C82					C2	J	39	R1				S12				S6A			
	1	FL	5		C3	J	40		1	R3	1		1	FL3	C4			S3A	4
	3	FL	6		C4	S12	1		1	TB3	1						2	S3B	10
	5	S1	2						2	R2	1						3	FL3	A1
				FL4								S13					5	S3B	4
CB3					A1	S13	1	R2					1	FL4	A1		6	S3C	4
	LI1	S14A	NO		A2	S7	1		1	R1	2						7	FL3	A3
	LI2	S14E	NO		A3	S8	1		1	TB3	2	S14A					9	S3A	10
	L01	S4	1		A4	S10	1		2	R3	2		NC	CB3	LI1		10	S3C	10
	L02	S4	4		B1	S11	1		2	TB3	3		COM	S1	3		11	FL3	A2
					B2	S9	1												
CB4					B3	S2	1	R3				S14B				S6B			
	LI1	S15A	NO		B4	S2	4		1	R1	1		NO	CB3	LI2		2	S3C	4
	L12	AI4E	NO		C1	S2	2		2	R2	2		COM	S1	6		3	FL3	A4
	L01	E	1		C2	S2	5										5	TB3	5
	L02	L1	4					S1				S15A					6	TB1	6
				FL					1	T4	1		N0	CB4	LI1		7	FL3	B1
CR1					1	CB1	1		1	E	1		C0M	S1	2		9	TB3	4
	AC1	T3	3		2	CB1	3		2	CB2	5						10	TB1	5
	AC2	T3	4		5	CB2	1		2	S15A	C0M	S15B					11	FL3	B2
	NEG	E	4		6	CB2	3		3	S14A	C0M		N0	CB4	LI2				
	POS	L1	1						3	CB1	5		CCP	S1	5				
				J					4	T4	2					S6C			
C1					30	P	12		4	E	2	S3A					2	T1	4
	NEG	E	4		31	P	11		5	S15B	C0M		1	TB3	1		3	T2	1
	POS	TB2	1		32	P	10		6	S14B	C0M		3	TB3	3		6	T1	2
	POS	L1	2		33	P	9						4	S6A	1		7	T2	2
					34	P	16	S2					7	TB3	3				
E					35	P	15		1	FL4	B3		9	TB3	1	TB1			
	1	S1	1		36	P	14		2	T5	1		10	S6A	9		1	S3B	7
	2	S1	4		37	P	13		2	FL4	C1						1	S3B	9
	3	TB2	2		38	FL3	C1		4	FL4	B4	S3B					2	S3C	1
	3	E	4		39	FL3	C2		5	T5	2		1	TB3	2		2	S3D	3
	4	E	3		40	FL3	C3		5	FL4	C2		3	TB3	2		3	S3C	7
					41	FL3	B3						4	S6A	5		3	S3C	9
EW					42	FL3	B4	S4					7	TB1	1		4	S3C	3
	108	XJ	30						1	CB4	L01		9	TB1	1		4	S3D	1
	108	XP	12	K1					1	K1	C2		10	S6A	2		5	S5B	4
	110	XJ	31		A1	S5A	1		2	K1	X2						5	S6B	10
	110	XP	11		A2	S4	3		2	T1	4	S3C					6	S5B	10
	112	XJ	32		B1	S5A	7		3	CB3	L01		1	TB1	2		6	S6B	6
	112	XP	10		B2	S4	6		3	K1	A2		3	TB1	4				
	114	XJ	33		C1	S5A	2		4	CB4	L02		4	S6A	6	TB2			
	114	XP	9		C2	S4	1		4	K1	D2		7	TB1	3		1	C2	P0S
	116	XJ	34		D1	S5A	8		5	T3	2		9	TB1	3		2	E	3
	116	XP	16		D2	S4	4		5	K1	X1		10	S6A	10				
	118	XJ	35		X1	S4	5		5	T1	2					TB3			
	118	XP	15		X2	S4	2		6	CB3	L02	S3D					1	S3A	9
	120	XJ	36						6	K1	B2		1	TB1	4		1	S3A	1
	120	XP	14	L1									3	TB1	2		1	R1	1
	122	XJ	37		1	CR1	P0S	S7					4	S6B	2		2	R2	1
	122	XP	13		2	C1	P0S		1	FL4	A2						2	S3B	1
												S5A					2	S3B	3
FL1				P				S8					1	K1	A1		3	S3A	3
	A1	S6A	3		9	J	33		1	FL4	A3		2	K1	C1		3	S3A	7
	A2	S6A	11		10	J	32						4	TB3	4		3	R2	2
	A3	S6A	7		11	J	31	S9					7	K1	B1		4	S5A	4
	A4	S6B	3		12	J	30		1	FL4	B2		8	K1	D1		4	S6B	9
	B1	S6B	7		13	J	37						10	TB3	5		5	S5A	10

APPENDIX A

WIRE RUN LIST

a. Interface Adapter Unit, Front Panel Harness Wiring (Continued)

From		To	From		To	From	To	From	To	From	To
TS3			XJ								
5	S6B	5	37	EW	122						
T1			XP								
2	S4	5S	9	EW	114						
2	S6C	6	10	EW	112						
3	T3	1	11	EW	110						
4	S4	2	12	EW	108						
4	XCS3	POS	13	EW	122						
4	S6C	2	14	EW	120						
5	XCS3	NEG	15	EW	118						
			16	EW	116						
T2											
1	S6C	3	E								
2	S6C	7	4	CR1	NEG						
3	U1	3	4	C1	NEG						
4	U1	2									
5	U1	1									
T3											
1	T1	3									
2	S4	5									
3	CR1	AC1									
4	CR1	AC2									
T4											
1	S1	1									
2	S1	4									
3	XDS1	KEG									
4	XDS1	POS									
T5											
1	S2	2									
2	S2	5									
3	XDS2	POS									
4	XDS2	NEG									
U1											
1	T2	5									
2	T2	4									
3	T2	3									
4	S5B	3									
5	S5B	9									
XDS1											
NEG	T4	3									
PCS	T4	4									
XDS2											
NEG	TS	4									
POS	TS5	3									
XDS3											
NEG	T1	5									
POS	T1	4									
XJ											
30	EW	108									
31	EW	110									
32	EW	112									
33	EW	114									
34	EW	116									
35	EW	118									
36	EW	120									

APPENDIX A

WIRE RUN LIST

b. Interface Adapter Unit, Filter Box Harness Wiring

Note: See also page A-4 and A-6..

From	To	From	To	From	To	From	To	From	To
E		FL		TB4					
5 EW	26	2 J9	B	3 FL4	B2				
5 EW	23	5 J14	A	7 FL4	A2				
5 EW	20	6 J14	B	8 FL4	A3				
5 EW	48			9 FL4	A4				
5 EW	38	J							
6 E	5	1 P	7	TB6					
		2 P	6	15 FL4	B1				
EW		3 P	8						
1 XJ	1	4 P	5	XJ					
1 XP	7	5 P	2	1 EW	1				
3 XJ	2	6 P	1	2 EW	3				
3 XP	6	7 P	3	3 EW	5				
5 XJ	3	8 P	4	4 EW	7				
5 XP	8			5 EW	9				
7 XJ	4	J9		6 EW	11				
7 XP	5	A FL	1	7 EW	13				
9 XJ	5	B FL	2	8 EW	15				
9 XP	2			XP					
11 XJ	6	J10		1 EW	11				
11 XP	1	P FL3	A1	2 EW	9				
13 XJ	7	R FL3	A2	3 EW	13				
13 XP	3	S EW	20	4 EW	15				
15 XJ	8	T FL3	A3	S EW	7				
15 XP	4	U FL3	A4	6 EW	3				
20 J1O	S	V EW	23	7 EW	1				
20 E	5	W FL3	B1	8 EW	5				
23 J10	V	X FL3	B2						
23 E	5	Y EW	26	E					
26 E	5	Z FL3	B3	1 J11	A				
26 J10	Y	/A FL3	B4	2 J11	B				
38 J12	/S	/C FL3	C1	5 E	6				
38 E	5	/D FL3	C2						
48 E	5	/E FL3	C3						
48 J16	S	/G FL3	C4						
		/H FL3	A1						
FL3									
A1 J10	P	J11							
A2 J10	R	A E	1						
A3 J10	T	B E	2						
A4 J10	U								
B1 J10	W	J12							
B2 J10	X	D FL4	B3						
B3 J10	Z	/R FL4	B4						
B4 J10	/A	/S EW	38						
C1 J10	/C								
C2 J10	/D	J14							
C3 J10	/E	A FL	5						
C4 J10	/G	B FL	6						
FL4		J16							
A1 J1C	/H	P FL4	C1						
A2 TB4	7	R FL4	C2						
A3 TB4	8	S EW	48						
A4 TB4	9								
B1 TB6	15	P							
B2 TB4	3	1 J	6						
B3 J12	D	2 J	5						
B4 J12	/R	3 J	7						
C1 J16	P	4 J	8						
C2 J16	R	S J	4						
		6 J	2						
FL		7 J	1						
1 J9	A	8 J	3						

APPENDIX A

WIRE RUN LIST

c. Interface Adapter Unit, Front Panel Wiring

Note: See also page A-4.

From	To	From	To	From	To	From	To	From	To
CB1									
2	S1 3								
4	S1 6								
CB2									
2	S1 2								
4	S1 5								
E									
3	S13 2								
S1									
2	CB2 2								
3	CB1 2								
5	CB2 4								
6	CB1 4								
S7									
2	S8 2								
S8									
2	S7 2								
2	S9 2								
S9									
2	S8 2								
2	S10 2								
S10									
2	S9 2								
2	S11 2								
S11									
2	S10 2								
2	S12 2								
S12									
2	S11 2								
2	S13 2								
S13									
2	S12 2								
2	E 3								

APPENDIX A

WIRE RUN LIST

d. Interface Adapter Unit, Filter Box Wiring

From			To	From			To	From			To	From			To	From			To
E				J12				J17				J18				J19			
	7	T7B4	4		/A	J17	/C		K	J12	M		/N	TB5	6		/Z	J18	/Z
					/B	J17	L		L	J12	/B		/N	TB5	5		AA	J18	AA
EW					/C	J17	M		M	J12	/C		/P	TB5	4		CC	J18	CC
	107	TB6	14		/C	J17	N		N	J12	/D		/Q	J19	/Q		DD	J18	DD
	107	J20	R		/E	J16	D		R	J12	N		/R	J19	/R				
	110	TB6	14		/F	J16	E		S	J12	C		/S	TB6	15	J20			
	110	J18	C		/G	J17	X		T	J12	P		/T	J19	/T		A	TB5	4
	113	J19	C		/H	J17	Y		U	J12	T		/U	TB6	6		8	TB5	5
	113	TB6	14		/J	J17	/K		V	J12	S		/V	J19	/V		C	TE5	6
	150	XJ21	C		/K	J17	/M		W	J12	U		/W	J19	/W		D	TB5	7
	150	XJ13	V		/M	J11	B		X	J12	/G		/X	TB5	I		E	TB5	8
	152	XJ21	E		/N	J17	C		Y	J12	/H		/Y	J19	/Y		F	TB5	9
	152	XJ13	X		/P	J17	C		Z	J12	V	/	/Z	J19	/Z		G	TB5	10
	154	XJ21	/A						/A	J12	W		AA	J19	AA		H	TB6	1
	154	XJ13	/A	J13					/B	J12	X		CC	J19	CC		J	TB6	2
	168	J17	/F		A	J17	/E		/C	J12	Y		DD	J19	DD		K	TB6	3
	168	J13	T		B	J17	/C		/D	J12	/A						L	TB6	4
	171	J13	U		C	117	/G		/E	J13	A	J19					N	TB6	5
	171	J17	/H		D	J17	/R		/F	EW	168		A	TB6	12		N	TB6	6
					F	J16	F		/G	J13	C		B	TB6	13		P	TB6	7
J9					G	E	6		/H	EW	171		C	EW	113		R	EW	107
	C	E	8		H	TB4	1		/K	J12	/J		D	J18	D		X	TB6	8
					J	TB4	2		/M	J12	/K		E	E	7		Y	TB6	9
J10					K	J16	K		/N	E	9		F	E	7		Z	TB6	10
	A	TB4	1		L	J16	L		/P	J12	Z		G	J18	G		/A	TB6	11
	B	TB4	2		N	J16	M		/Q	J13	B		H	J18	H		/B	TB5	1
	C	E	7		P	J16	N		/R	J13	D		J	J18	C		/C	TB4	8
	D	TB4	3		T	EW	168		/T	E	9		K	J18	K		/D	TB4	5
	E	TB4	4		U	EW	171						L	J18	L		/E	TB4	6
	F	TB4	5		V	J21	C	J18					M	J18	M		/N	TB6	12
	G	TB4	6		U	E	6		A	TB6	12		N	TB6	7		/Q	TB6	13
	H	TB4	7		X	J21	E		8	TB6	13		P	TB4	8		/R	E	6
	J	TB4	8		/A	J21	A		C	EW	110		R	TB4	7				
	K	TB4	9						D	J19	D		S	TB4	6	J21			
	/B	E	7	J14					E	E	9		T	TB4	5		A	J13	/A
	/F	E	7		C	E	8		F	E	9		U	TB4	4		C	J13	V
	/J	TB6	15						G	J19	G		V	TB4	3		E	J13	X
				J15					H	J19	H		W	TB6	8				
J11					A	TB4	1		J	J19	J		X	TB6	11	TB4			
	C	E	8		B	TB4	2		K	J19	K		Y	TB6	10		1	J16	A
					E	E	7		L	J19	L		Z	7B6	9		1	J13	H
J12									N	J19	N		/A	TB4	9		1	J15	A
	A	TB4	1	J16					N	TB6	7		/B	1B6	5		1	J12	A
	C	E	9		A	TB4	1		P	TB4	8		/C	TB6	4		1	J10	A
	F	7B4	2		B	TB4	2		R	TB4	7		/D	TB6	3		2	J10	B
	G	J17	E		C	E	7		S	TB4	6		/E	TB6	2		2	J12	F
	H	J17	F		D	J12	/E		T	TB4	5		/F	1B6	1		2	J16	B
	J	J17	G		E	J12	/F		U	TB4	4		/G	T85	10		2	J13	J
	K	J17	H		F	J13	F		V	TB4	3		/H	TB5	9		2	J15	B
	L	J17	J		K	J13	K		W	TB6	8		/J	TB5	8		3	J18	V
	M	J17	K		L	J13	L		X	TB6	11		/K	TB5	7		3	J19	V
	N	J17	R		M	J13	M		Y	TB6	10		/M	1B5	6		3	J10	D
	0	J17	S		N	J13	P		Z	TB6	9		/N	TB5	5		4	J10	E
	P	J17	T						/A	TB4	9		/P	TB5	4		4	E	7
	R	E	9	J17					/8	TB6	5		/Q	J18	/Q		4	J18	U
	S	J17	V		B	J12	/M		/C	TB6	4		/R	J18	/R		4	J19	U
	T	J17	U		C	J12	/N		/D	TB6	3		/S	TB6	15		5	J19	T
	U	J17	W		D	J12	/P		/E	TB6	2		/T	J18	/T		5	J18	T
	V	J17	Z		E	J12	G		/F	TB6	1		/U	TB6	6		5	J20	/D
	W	J17	/A		F	J12	H		/G	TB5	10		/V	J18	/V		5	J10	F
	X	J17	/ B		G	J12	J		/H	TB5	9	I/	/W	J18	/W		6	J10	G
	Y	J17	/C		H	J12	K		/J	TB5	8		/X	TB5	1		6	J19	S
	Z	J17	/P		J	J12	L		/K	TB5	7		/Y	J18	/Y		6	J20	/E

APPENDIX A

WIRE RUN LIST

d. Interface Adapter Unit, Front Panel Harness Wiring (Continued)

From		To	From		To	From	To	From	To	From	To
TB4			T86								
6	J18	S	9	J18	Z						
7	J10	H	9	J19	Z						
7	J18	R	9	J20	Y						
7	J19	R	10	J20	Z						
8	J10	J	10	J1B	Y						
8	J20	/C	10	J19	Y						
8	J19	P	11	J19	X						
8	J18	P	11	J18	X						
9	J10	K	11	J20	/A						
9	J18	/A	12	J19	A						
9	J19	/A	12	J20	/N						
			12	J18	A						
TB5			13	J18	B						
1	J19	/X	13	J19	B						
1	J20	/B	13	J20	/C						
1	J18	/X	14	EW	113						
4	J20	A	14	EW	107						
4	J18	/P	14	EW	110						
4	J19	/P	15	J19	/S						
5	J20	B	15	J10	/J						
5	J18	/N	15	J18	/S						
5	J19	/N									
6	J20	C	XJ13								
6	J18	/P	V	EW	150						
6	J19	/M	X	EW	152						
7	J19	/K	/A	EW	154						
7	J18	/K									
7	J20	D	XJ21								
8	J20	E	A	EW	154						
8	J19	/J	C	EW	150						
8	J18	/J	E	EW	152						
9	J18	/H									
9	J19	/H	E								
9	J20	F	6	J20	/R						
10	J19	/G	6	J13	W						
10	J18	/G	6	J13	G						
10	J20	G	7	J16	C						
			7	J10	C						
T86			7	J15	E						
1	J20	H	7	J10	/F						
1	J18	/F	7	J10	/B						
1	J19	/F	7	J19	E						
2	J18	/E	7	J19	F						
2	J20	J	8	J9	C						
2	J19	/E	8	J14	C						
3	J20	K	8	J11	C						
3	JI8	/D	9	J17	/T						
3	J19	/D	9	J17	/N						
4	J20	L	9	J12	R						
4	J18	/C	9	J12	C						
4	J19	/C	9	J18	F						
5	J20	M	9	J18	E						
5	J19	/B									
5	J18	/B									
6	J18	/U									
6	J20	N									
6	J19	/U									
7	J18	N									
7	J19	N									
7	J20	P									
8	J20	X									
8	J19	W									
B	J18	W									

APPENDIX A

WIRE RUN LIST

e. Interface Adapter Unit, Gear Train Wiring

From		To	From	To	From	To	From	To	From	To
B1										
	R1	TB1 1								
	R2	TB1 4								
	R3	TB1 3								
	R4	TB1 2								
	S1	TB1 5								
	S3	TB1 6								
B2										
	BLK	TB2 2								
	RED	TB2 1								
B3										
	R1	TB3 4								
	R2	TB3 5								
	S1	1B3 1								
	S2	TB3 2								
	S3	TB3 3								
TB1										
	1	B1 R1								
	2	B1 R4								
	3	B1 R3								
	4	B1 R2								
	5	B1 S1								
	6	B1 S3								
TB2										
	1	B2 RED								
	2	B2 BLK								
TB3										
	1	B3 S1								
	2	B3 S2								
	3	B3 S3								
	4	B3 R1								
	5	B3 R2								

APPENDIX B

REFERENCES

Following is a list of applicable references available for operator, organizational, GS and depot maintenance of Test Facilities Set AN /TPM-24(V)2:

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	Index of Modification Work Orders.
TM 11-5895-532-34-1	Direct and General Support Maintenance Manual: Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4, and 6.
TM 11-5895-532-12	Operator and Organizational Maintenance Manual: Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4, and 6.
TM 11-5895-532-34-2	Direct and General Support Maintenance Manual: Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4, and 6. Receiver-Transmitter Group OR-85 / TPX-46 (V).
TM 11-5895-532-34-3	Direct and General Support Maintenance Manual: Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4, and 6. Signal Processor CP-925/ TPX-46 (V).
TM 11-5895-532-34-4	Direct and General Support Maintenance Manual: Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4, and 6. Synchronizer, Electrical SN-420/TPX-46 (V).
TM 11-5895-532-34-5	Direct and General Support Maintenance Manual: Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4, and 6. Antenna-Radome AS-2167/ TPX-46 (V), Antenna-Radome AS-2740 / TPX-46 (V), Control, Antenna C-8738/TPX46 (V), Pedestal, Antenna AB-1076/ TPX-46 (V).
DMWR 11-5895-532-50	Depot Maintenance Work Requirements Manual: Interrogator Set AN/TPX-46 (V) 1, 2, 3, 4, and 6.
TM 11-6625-366-15	Organizational, DS, GS, and depot maintenance manual: Multimeter TS-352B/U. Change 1.
TM 11-6625-299-15	Operator, organizational, field and depot maintenance manual: Signal generators AN / URM-64 and AN / URM-64A.
TM 11-6625-545-15	Operator, organizational DS, GS, and depot maintenance manual: Indicator, standing waves rates IM-175 / U and IM-175B / U.
SB 11-604	Replacement of Toolkits, Radar and Radio Repairman TK87 / U and TK-88 / U With Toolkits, Electronic Equipment TK-105 / G and TK-100 / G.

APPENDIX C

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

-1. General

'This appendix provides a summary of the maintenance operations for AN/TPM-24(V)2. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

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 to 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 the 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 equipments 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, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

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

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) 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.

-3. Column Entries

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 noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "worktime" 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 that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "worktime" figures will be shown for each category. The number of task-hours specified by the "worktime" 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 maintenance allocation chart. Subcolumns of column 4 are as follows:

C - Operator/Crew
0 - Organizational
F - Direct Support
H - General Support
D - Depot

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

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

-4. Tool and Test Equipment Requirements (sec III)

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

-5. Remarks (sec IV)

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

(Next printed page is C-3.)

SECTION II MAINTENANCE ALLOCATION CHART
FOR
TEST FACILITIES SET AN/TPM-24(V)2

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINT. FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
00	TEST FACILITIES SET AN/TPM-24(V)2	Inspect	0.2						A
		Test		0.3				1	B
		Test				0.5		1-16	C
		Calibrate				0.5		2,3,5,6, 10,12	D
		Replace		0.3				17	N
		Repair		0.3				17	E
		Repair				0.5		18-20	F
		Overhaul					4.0		F
		Rebuild					20.0		F
01	INTERCONNECTING GROUP ON-119/TPM-24(V)(1)								L
0101	CABLE KIT NO. 1 (1A2)								L
010101	CABLE ASSEMBLY, POWER ELECTRICAL, CX-12897/TPf-24(V) (1A2W1)								L
010102	CABLE ASSEMBLY, POWER, ELECTRICAL CX-1 2898/TPM-224(V)(1A2W2)								L
0101 03	CABLE ASSEMBLY, POWER, ELECTRICAL CX-1 2899/TPM-24(V)(1A2W3)								L
010104	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12905/TPM-24(V)(1A2W8)								L
010105	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12906/TPM-24(V)(lA2W9, 1A2W1 O)								L
010106	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12907/TPM-24(V) (1A2Wll)								L
010107	CABLE ASSEMBLY, RADIO FREQUENCY CG-3750/TPM-24(V) 2 FT (lA2W4, lA2WS)								L
010108	CABLE ASSEMBLY, RADIO FREQUENCY CG-3750/TPM-24(V) 15 FT (1A2W6, 1A2W7)								L
010109	CABLE ASSEMBLY, RADIO FREQUENCY, BRANCHED CG-3751/TPM-24(V) (1A2W12)								L
0102	CABLE KIT NO. 2 (1A3)								L
010201	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12901/TPM-24(V) (1A3Wl)								L
010202	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12908/TPM-24(V) (1A3W2)								L
010203	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12909/TPM-24(V) (lA3W3)								L
01 0204	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12910/TPM-24(V) (1A3W4)								L
010205	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12911/TPH-24(V) (lA3W5)								L
0103	CABLE KIT NO. 3 (lA4)								L
010301	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12902/TpM-24(V) (lA4W1)								L
010302	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12903/TPM-24(V) (1A4W3)								L
010303	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12912/TPM-24(V) (1A4W4)								L
010304	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12913/TPM-24(V) (lA4W5)								L
010305	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12914/TPM-24(V) (lA4W14)								L

SECTION II MAINTENANCE ALLOCATION CHART
FOR
TEST FACILITIES SET AN/TPM-24(V)2

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINT. FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
010306	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-10773/U (1A4W15)								L
010307	CABLE ASSEMBLY, RADIO FREQUENCY CG-3749/TPH-24(V) (1A4W2)								L
010308	CABLE ASSEMBLY, RADIO FREQUENCY CG-3752/TPM-24(V) (1A4W6, 1A4W7, 1A4W8, 1A4W9, 1A4W10, 1A4W11, 1A4W12, 1A4W13)								L
010309	CABLE ASSEMBLY, RADIO FREQUENCY CG-3753/TPM-24(V) (1A4W16)								L
0104	CABLE KIT NO. 4 (1A5)								
010401	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-1 2900/TPM-24(V) (1AW1)								L
O10402	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12904/TPM-24(V) (1A5W2)								L
0105	CABLE ACCESSORIES CY-7308/TPM-24(V) (1A1)	Inspect	0.1						A
		Service		0.2					M
		Replace		0.1				17	E
		Repair		0.3				17	
		Repair				0.5		20	
010501	BOX, INTERCONNECTING J-3113/TPM-24(V) (1A1A1)	Inspect		0.1					A
		Test			0.2				G
		Test				0.2			G
		Install	0.1						
		Replace		0.1					
		Repair				0.5		17	F
01050101	GEAR TRAIN ASSEMBLY (1A1AIA13)	Inspect	0.1						A
		Test				0.2			G
		Calibrate				0.4		17	E
		Install				0.3		17	D
		Replace				0.3		17	D
		Repair					0.5	17	H
010502	EXTENDER CARD, ELECTRONIC TEST	Inspect	0.1						A
	MX-9356/TPM-24(V) (1A1A3, 1A1A4)	Test		0.1					G
		Install	0.1						
		Replace		0.1				17	F
		Repair				0.5		17	F
0106	INERTIAL ANTENNA LOAD	Inspect	0.1						A
	MX-9357/TPM-24(V) (1A6)	Install	0.1						
		Replace		0.1					
		Repair		0.2				17	F
02	INTERCONNECTING GROUP ON-120/TPM-24(v)(2)	Inspect	0.2						A
		Test		0.3				1	B
		Test				1.0		1-16	C
		Calibrate				1.0		1-16	I
		Install	0.2						
		Replace		0.2					F
		Repair				1.0		17-20	F
0201	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL BRANCHED CX-12915/TFM-24(V) (21)								L
020101	SWITCH BOX ASSEMBLY (2WA1)								L
0202	CABLE ASSEMBLY, RADIO FREQUENCY CG-3754/TPM-24(V) (2W2, 2W3, 2W4, 2W5, 2W6)								L
0203	CABLE ASSEMBLY RADIO FREQUENCY CG-3750/TPM-24(V) (2W7, 2W8)								L
0204	CASE, ACCESSORIES CY-7307/TPM-24(V) (2A2)	Inspect	0.1						A
		Service		0.2					M
		Replace		0.1				17	
		Repair		0.3				17	F
		Repair				0.5		20	

SECTION II MAINTENANCE ALLOCATION CHART
FOR
TEST FACILITIES SET AN/TPM-24(T)2

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
020401	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12916/TPM-24(V) (2A2W1, 2A2W2, 2A2W3)								L
020402	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-12917/TPM-24(V) (2A2W4)								L
0205	EXTENDER CARD, ELECTRONIC TEST MX-9354/TPM-24(V) (2A4)	Inspect	0.1						A
		Test		0.2				1	B
		Install	0.1						
		Replace		0.2					
		Repair				0.5		17	F
0206	HYBRID ATIENUATOR ASSEMBLY CN-1322A/TPM-24(V) (2A1)	Inspect	0.2						A
		Test				1.0		2-16	I
		Install	0.2						
		Replace		0.2					
		Repair				2.0		1-20	F
		Replace				1.0			
020601	CABLE ASSEMBLY, RADIO FREQUENCY (2A1W5, 2A1W6)								L
020602	CABLE ASSEMBLY, RADIO FREQUENCY (2A1W1)								L
020603	CABLE ASSEMBLY, RADIO FREQUENCY (2A1W2)								L
020604	CABLE ASSEMBLY, RADIO FREQUENCY (2A1W4)								L
020605	CABLE ASSEMBLY, RADIO FREQUENCY (2A1W3)								L

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
TEST FACILITIES SET AN/TPM-24(V)2

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	0, H, D	MULTIMETER, TS-352B/U	6625-00-553 -0142	
2	H, D	SIGNAL GENERATOR, AN/URM-64	6625-00-283-9621	
3	H, D	ATTENUATOR, FIXED, 6 dB CN-1321/TPM-24(V)	5985-00-128-0195	
4	H, D	ATTENUATOR, PRECISION STEP, ALFRED E101	6625-00-061-0230	
5	H, D	CRYSTAL DETECTOR, HEWLETT PACKARD 423A	5961-00-779-2002	
6	H, D	INDICATOR, STANDING WAVE RATIO, IM-175/U	6625-00-892-5670	
7	N, D	50 OHM BNC TERMINATION, MICROLAB TA-5MB (QTY 2)	5985-00-861-7856	
8	H, D	ADAPTER, UG-201A/U (QTY 2)	5935-00-259-0205	
9	H, D	50 OHM N TERMINATION, MICROLAB TA-6MN (QTY 2)	6625-00-137-5900	
10	H, D	SLOTTED LINE, IM-92/U	6625-00-356-0314	
11	H, D	OSCILLOSCOPE, AN/USM-281C	6615-00-106-9622	
12	H, D	ADAPTER, UG-491A/U	5935-00-681-5013	
13	H, D	ADAPTER, UG-57B/U (QTY 2)	5535-00-539-0851	
14	H, D	ADAPTER, UG-349B/U (QTY 2)	5935-00-732-1919	
15	H, D	ADAPTER, UG-29B/U	5935-00-643-9875	
16	H, D	ADAPTER, UG-1034/U (QTY 2)	5935-00-204-5098	
17	0, H, D	TOOL KIT, ELECTRONIC EQUIPMENT, TK-100/G	5180-00-605-0079	
18	H, D	HEAT GUN HG-501 WITH ADAPTER AND BAFFLE	4940-00-561-1002	
19	H, D	REPAIR KIT MD-772/G	5999-00-757-7042	
20	H, D	TOOL KIT, ELECTRONIC EQUIPMENT, TK-105/G	5180-00-610-8177	

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	VISUAL
B	CONTINUITY CHECKS
C	GENERAL TROUBLESHOOTING
D	RF CABLE
E	KNOBS AND LAMPS, ETC.
F	SHOP SUPPORT
G	FUNCTIONAL TEST
H	GEARS, BEARINGS
I	VSWR, INSERTION LOSS
J	CONNECTOR REPLACEMENT
K	RESISTANCE CHECK
L	MAINTAINED SAME AS NEXT HIGHER ASSEMBLY/END ITEM
M	PREVENTIVE MAINTENANCE
N	CABLE ASSEMBLIES

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NG: None.

USAR: None.

For explanation of abbreviations used, see AR 310-5.0.

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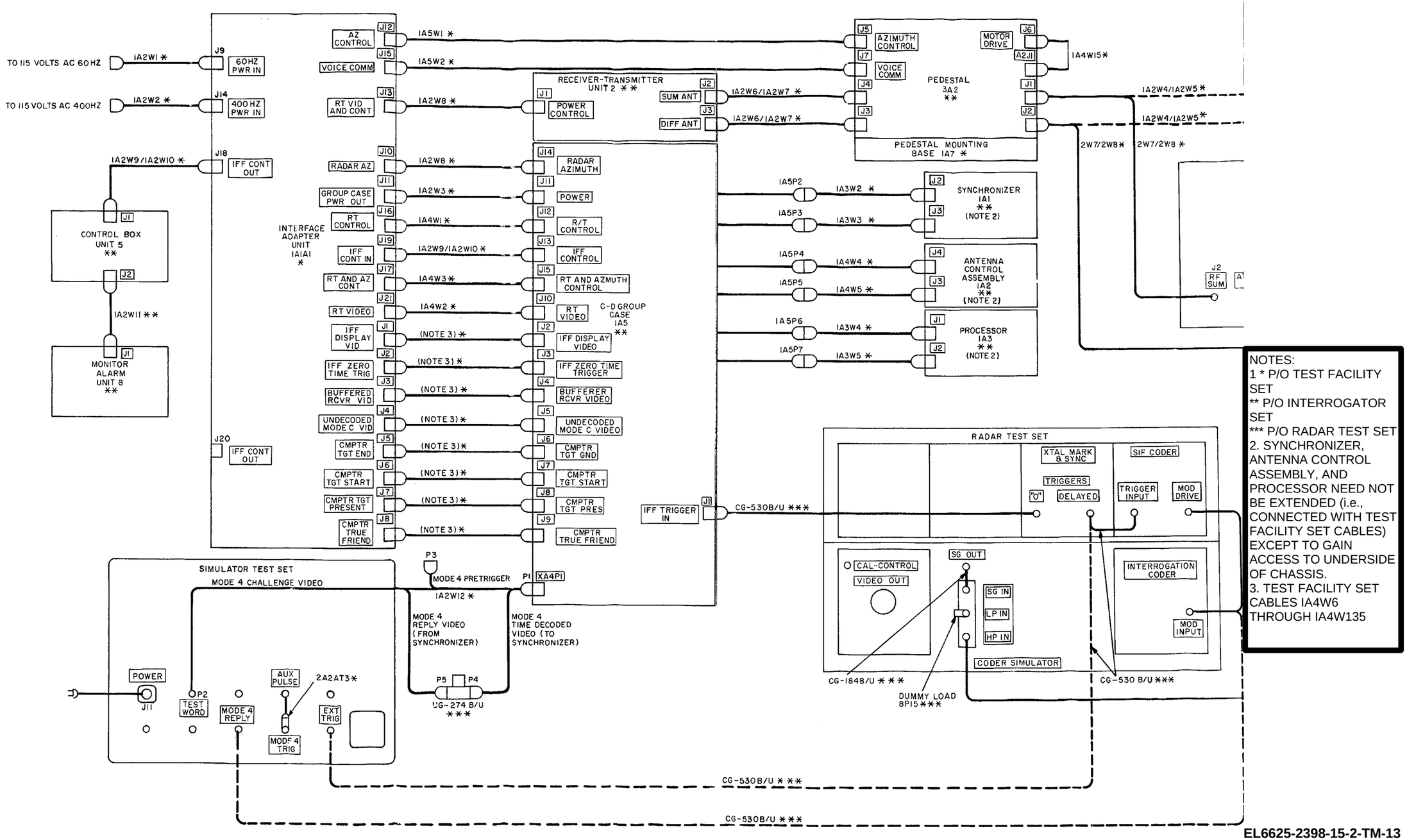

NOTES:
1 * P/O TEST FACILITY SET
** P/O INTERROGATOR SET
*** P/O RADAR TEST SET
2. SYNCHRONIZER, ANTENNA CONTROL ASSEMBLY, AND PROCESSOR NEED NOT BE EXTENDED (i.e., CONNECTED WITH TEST FACILITY SET CABLES) EXCEPT TO GAIN ACCESS TO UNDERSIDE OF CHASSIS.
3. TEST FACILITY SET CABLES IA4W6 THROUGH IA4W135

EL6625-2398-15-2-TM-13

Figure 2-2. Typical test connections for test-bed configuration.

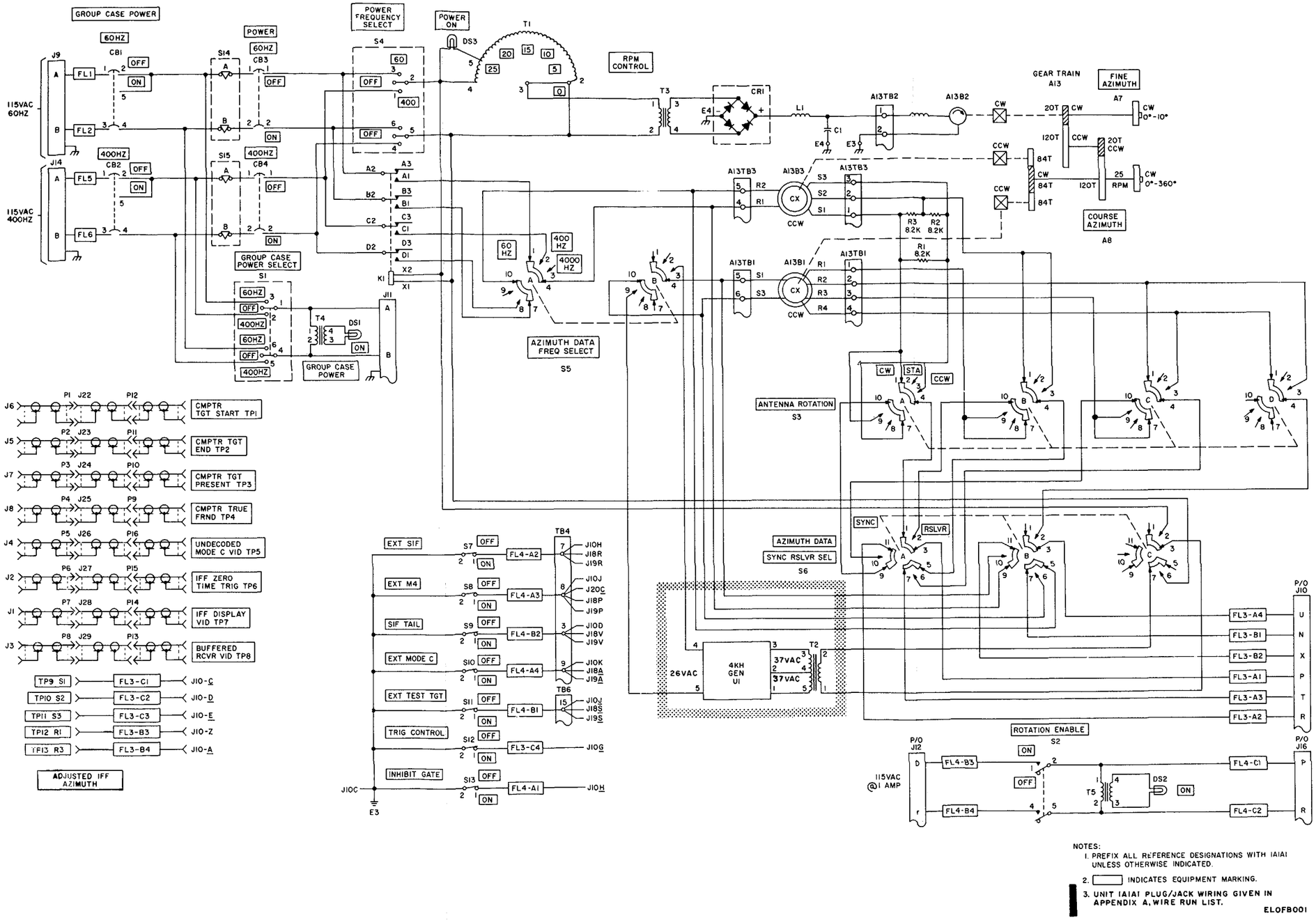

Figure 6-1. Interface adapter unit 1a1a1, schematic diagram

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