TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS

TEST FACILITIES SET AN/TPM-24(V)3

(NSN 6625-00-133-7865)

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

HEADQUARTERS, DEPARTMENT OF THE ARMY

AUGUST 1971

WARNING

DANGEROUS VOLTAGE EXISTS IN EQUIPMENT WHICH WLL BE INTERCONNECTED BY THIS TEST FACILITIES SET
DON'T TAKE CHANCES!
EXTREMELY DANGEROUS VOLTAGE EXISTS IN THE FOLOWING UNIT:

Receiver -Transmitter, Radio RT-903/TPX-50	**1000 volts**

TECHNICAL MANUAL
No. 11-6625-2398-15-3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *10 August 1971*

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

TEST FACILITIES SET AN/TPM-24(V)3 (NSN 6625-00-133-7865)

REPORTING OF ERRORS

You can help improve this manual by calling attention to errors, recommending improvements, and stating your reasons for the recommendations.

Your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) should be mailed directly to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. A reply will be furnished directly to you.

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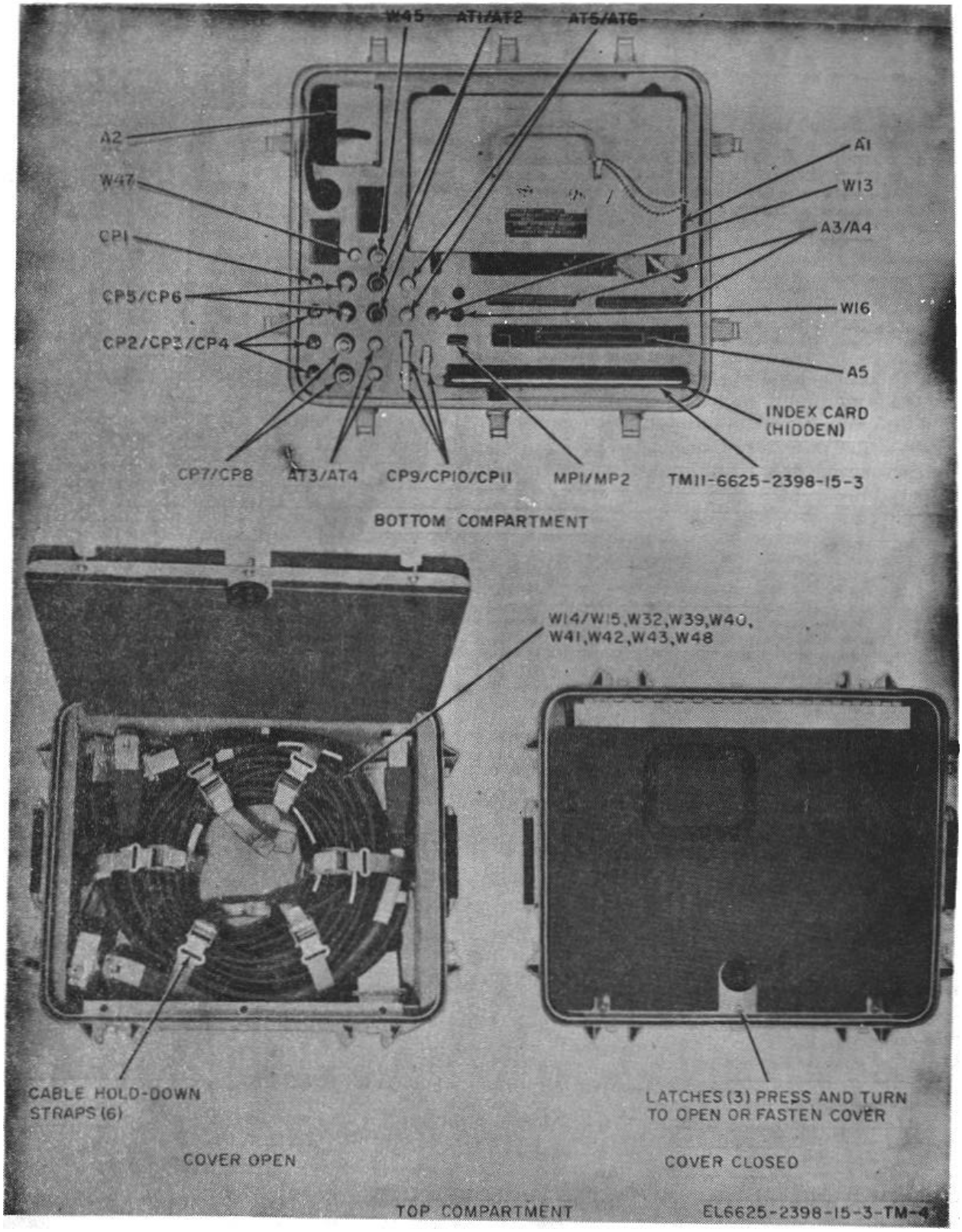


Figure 1-1. Test Facilities Set AN/TPM-24(V)3

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

This manual describes Test Facilities Set AN/TPX-24(V)3 (fig.1-1) and provides instructions for installation, use, and maintenance. It includes instructions for cleaning, inspection, troubleshooting, testing, calibration, repair and replacement. It also lists tools, materials, and test equipment required for maintenance. A functional analysis of the equipment is also covered.

1-2. Indexes of Publications

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

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

1-3. Forms and Records

a. Reports of Maintenance level and Unsatisfactory Equipment . Maintenance forms records and reports which are to be used by maintenance personnel at all maintenance level are listed in and prescribed by TM 38-750.

b. Report of packaging and Handling Deficiencies . Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 700-58/NAVSUPINST 4030.29/AFR 71-13/MCO P4030.29A, and DLAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33A/AFR 75-18/ MCO P4610.19B and DLAR 5400.15.

1-3.1. Destruction of Army Electronics Materiel

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

1-3.2. Reporting Equipment Improvement Recommendations (EIR)

EIR' s will be prepared using SF 368, Quality Deficiency Report. Instructions for preparing EIR's are provided in TM 38-750, the Army Maintenance Management System. EIR's should be mailed directly to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth. New Jersey 07703. A reply will be furnished directly to you.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

a. Test Facilities Set AN TPM -24(V) 3 is a portable set of special test accessories used to support the maintenance of Interrogator Set AN TPX -50 If contains cable assemblies a hybrid attenuator, a front panel test adapter and minor components (including connector adapters, dummy lads, extender boards and similar items) all housed in a transit case.

b. Five of the AN TPX -24(V) 3 cable assemblies provide intraconnection between the major assemblies of Interrogator Set Group OX-8/TPX-50 when Signal Processor CP-936/TPX , and Radio Receiver-Transmitter RT-903/TPX-50 are removed from Interrogator Set Group Cabinet CY-6442 TPX -50. Two other AN/TPM -24 (V)3 cable assemblies Two other AN/TPM-24(V)3 cable assemblies connect the OX-8/TPX-50 to external power and triggering sources. One AN/TPM-24(V)3 cable assembly and minor components provide termination for the rf sum and rf difference channels of Interrogator set

AN/TPX-50. When additional connections are made (using cables supplied with the AN/TPX-50) from the OX-8/TPX-50 to Interrogator Set Control C-7651/TPX-50 and Interrogator Computer KIR-1A(V-2)/TSEC, Interrogator Set AN/TPX50 may be energized in a hot mock-up configuration for maintenance purposes.

CAUTION

To avoid damage to the equipment under test DO NOT energize Interrogator Set AN/TPX-50 before placing a load on the rf sum and difference channels (jacks 1J9 and 1J10). To terminate for testing, connect cable W45 to 1J9 and adapter UG-201A/U (CP7/CP8) to 1J10. Terminate the cable and adapter with Electrical dummy loads DA-558/TPM-24(V) (terminations AT3/ AT4).

c. The hybrid attenuator, three associated AN/TPM-24(V)3 cable assemblies and minor components are used in conjunction with other test equipment in performing various rf measurements on the AN/TPX-50. Rf sum channel and rf difference channel parameters may be measured at reply and challenge frequencies.

d. The front panel test adapter connects to the TEST jack on the front panel of the RT-903/ TPX-50. It provides a convenient means of selecting and monitoring various signals of the RT-903/TPX-50 using external test equipment.

e. The remaining cable assemblies and minor components of the AN/TPM-24(V)3 are used in performing specific maintenance procedures on the AN/TPX-50. Maintenance procedures for the AN/TPX-50 are covered in the following technical manuals:

TM 11-5895-687-35-1	DS, GS and Depot Maintenance Manual-Interrogator Set AN/TPX-50
TM 11-5895-87-35-2	DS, GS and Depot Maintenance Manual Signal Processor CP-936/TPX-50
TM 11-5895-687-35-3	DS, GS and Depot Maintenance Manual Synchronize, Electrical SN-421/ TPX-50
TM 11-5895-87-35-4	DS, GS and Depot Maintenance Manual Receiver-Trans-mitter, Radio RT-903/TPX-50

1-5. Technical Characteristics

The technical characteristics of the components of the Hybrid Attenuator Assembly CN-1322/ TPM-24(V) are as follows:

a. Hybrid Junction.

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

b. Attenuator.

Impedance.	50 ohms, nominal
Frequency range	1000 - 1200MHz
Variable atten-uation	0 - 25dB, min.
Calibration accuracy at 1090 MHz	0 to 10dB range ±0.35dB max. 11 to 20dB range ±0.50dB max. 21 to 25dB range ± 0.60dB max.
Accuracy over the band	±2.5dB max. including insertion loss
Insertion loss	0.5dB, max.
VSWR	1.5dB, max.
Power rating	6 kilowatts peak, 10 watts average

1-6. Common Names

a. A list of nomenclature and common names assignments for Test Facilities Set AN/TPM24(V)3 is given below.

Common name	*Nomenclature*
Adapter CP1	Adapter,. Connector UG-1897/ TPM-24(V)
Adapter CP2/CP3/CP4	Adapter. Connector UG-1896/ TPM-24(V)
Adapter CP5/CP6	Adapter, Connector UG-1S/

Common name	*Nomenclature*
Adapter CP7/CP8	Adapter UG-201A/U
Adapter Tee CP9/CP10/ CP11	Adapter Connector UG- 274B/U
Attenuator AT1/AT2	Attenuator, fixed CN-1321/ TPM-24(V)
Cable W13	Cable Assembly, Radio Frequency CG-3608/TPM-24(V)
Cable W14/W15	Cable Assembly, Radio Frequency CG-409F/U (6 ft.)
Cable W16	Cable Assembly, Radio Frequency CG-3610/TPM-24(V)
Cable W21	Cable Assembly, Radio Frequency CG-3611/TPM-24(V)
Cable W32	Cable Assembly, Power, Electrical CX-12227/TPM-24(V)
Cable W39	Cable Assembly, Radio Frequency, Branched CGC 3616/TPM-24(V)
Cable W40	Cable Assembly, Special Purpose Electrical CX-12222/ TPM-24(V)
Cable W41	Cable Assembly, Special Purpose, Electrical CX-12223/ TPM-24(V)
Cable W42	Cable Assembly, Special Purpose, Electrical CX-12224/ TPM-24(V)
Cable W43	Cable Assembly, Special Purpose, Electrical CX-12225/ TPM-24(V)
Cable W45	Cable Assembly, Radio Frequency CG-3612/TPM-24(V)
Cable W47	Cable Assembly, Radio Frequency CG-3613/TPM-24(V)
Cable W48	Cable Assembly, Radio Frequency, Branched CG-3617/TPM-24(V)
Extender board A3/A4	Extender, Circuit Board MX-8560/TPM-24(V)
Extender board A5	Extender, Circuit Board MX-8563r/TPM-24(V)
Front panel test adapter	Adapter, Test MX-8565 TPM-24(V)
Hybrid attenuator	Hybrid Attenuator Assembly CN-1322/TPM-24(V)

a. Major Components.

Common name	*Nomenclature*
Index card	Card, Index
Printed-circuit board ex tractor MPI	Extractor, Circuit Board (8.5 in. wide)
Printed-circuit board ex tractor MP2	Extractor, Circuit Board (8.7 in. wide)
Termination AT3/AT4	Dummy Loads Electrical DA-558/TPM-24(V)
Termination AT3/AT6	Dummy Load, Electrical DA-559/TPM-24(V)
Test facilities set	Test Facilities Set AN/TPM-24(V)3
Transit case	Case, Test Facilities Set CY-6825/TPM-24(V)

b. A list of nomenclature and common name assignments for Interrogator Set AN/TPX-50 and cables supplied with Interrogator Set AN/ TPX-50 is given below.

Common name	*Nomenclature*
Cable W 1	Cable Assembly, Special Purpose, Electrical CX-10876/ U (7'8')
Cable W2* '	Cable Assembly, Special Purpose, Electrical, Branched CX-10878/TPX-60 (6')
Control box	Control, Interrogator Set C-7651/TPX-50
IFF Set	-Interrogator Set AN/TPX4-0
Interrogator group	-Interrogator Set Group OX-/1 TPX-50
Interrogator group case	Cabinet, Interrogator Set Group CY-6442/TPX-50
Processor	-Signal Processor CP-936FTPX-50
Receiver-transmitter	.Receiver-Transmitter, Radio RT-903/TPX-50
Synchronizer	Synchronizer, Electrical SN421/TPX-50

* Supplied with, but not part of, Interrogator Set AN/TPX-60.

1-7. Items Comprising Test Facilities Set AN/TPM-24(V)3

NOTE

This listing is based on original shipment of Contract DAAB05-69C-0415. Refer to paragraph 1-6 for nomenclature of items listed below.

Quantity	*Item*	*Dimensions (in) Height*	*Depth*	*Width*	*Weight (lb)*	*Figure No.*	*FSN*
1	Transit came MP4	17	18½	21¾	[a]74	1-2	6625-133-7798
1	Hybrid Attenuator	10½	9 3/8	13 3/8	12.5	1-3	5985-177-2939
1	Front panel test adapter[b]	4	3½	7¼	1.5	1-4	6625-176-5489
2	TM11-6625-2398-15-3						

[a] Weight of transit case packet for transportation.
[b] Cable dimensions not included.

b. Cable Assemblies.

Quantity	Item	Length (nom)	Figure No	FSN
1	Cable W13	5 in.	1-5	6626-177-4489
2	Cable W14/W15	6 ft.	1-6	5995-905-7194
1	Cable W16	6 in.	1-5	6625-177-4490
1	Cable W21	6 in.	1-5	6625-177-4492
1	Cable W32	20 ft.	1-5	6625-177-4495
1	Cable W39	6 ft.	1-5	6625-133-7794
1	Cable W40	6 ft.	1-5	6625-133-7805
1	Cable W41	6 ft.	1-5	6625-133-7851
1	Cable W42	6 ft.	1-5	6625-133-7797
1	Cable W43	6 ft.	1-5	6625-133-7796
1	Cable W45	6 in.	1-5	6625-177-4493
1	Cable W47	6 in.	1-5	6625-177-4494
1	Cable W48	6 ft.	1-5	6625-133-7793

c. Minor Components.

Quantity	Item	Figure No	FSN
1	Adapter CP1	1-6	5935-075-7008
3	Adapter CP2/CP3/CP4	1-6	5935-837-5280
2	Adapter CP5/CP6	1-6	5935-177-2761
2	Adapter CP7/CP8	1-6	5935-842-9614
3	Adapter CP9/CP10/CP11	1-6	5935-683-7892
2	Attenuator AT1/AT2	1-6	5985-128-0195
2	Termination AT3/AT4	1-6	5985-861-7856
2	Termination AT5/AT6	1-6	5950-970-1869
2	Extender board A3/A4	1-6	6625-133-7806
1	Extender board A5	1-6	6625-133-7774
1	Printed-circuit board extractor MP1	1-6	5120-450-6767
1	Printed-circuit board extractor MP2	1-6	5120-450-6766

1-8. Description of Major Components (fig. 1-2, 1-3, and 1-4)

a. Transit Case. The transit case (fig. 1-2) is a reusable protective case which houses the components of the test facilities set during transit or storage. Two handles are provided for lifting and moving the transit case. The transit case consists of a top section and a bottom .section (fig. 1-1); the top section comes apart from the bottom section when the spring-loaded latches holding the two sections together are released. The top section contains a compartment into which coiled cables are placed for storage. The bottom section contains a foam filler, with cutouts for storing the other components of the test facilities set. The index card locates the correct storage space for all components. Gasketing around the edge of the top section mates with the bottom section edge to provide a water tight-seal for the transit case when the spring-loaded latches are locked, and the pressure-relief valve is closed.

b. Hybrid Attenuator. The hybrid attenuator (fig. 1-3) consists of a -hybrid-junction and a variable attenuator 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 1090MHz when the ATTENUATOR dial is set at 0dB; also listed are ATTENUATOR insertion losses at 1030 and 1090MHz for ATTENUATOR dial settings of 0, 3, 6, 9, 13, 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 by making use of cables A1W3 (p/o hybrid attenuator) W14/W15, and W45 connected in a configuration determined by the test.

c. Front Panel Test Adapter. The front panel test adapter (fig. 1-4) consists of a selector switch and eight test jacks mounted in a small aluminum inclosure. A cable and plug, integral to the front panel test adapter, permit connecting this item to the front panel of the receiver transmitter of the iff set for monitoring and checking various signals of the receiver transmitter. Seven of the test jacks permit direct monitoring of receiver-transmitter signals using external test equipment. The receiver transmitter signal available at the eighth test jack is determined by the setting of the selector switch.

1-9. Description of Cable Assemblies (fig. 1-5)

a. Cable W13 is coaxial-type tuned-stub line (open circuit at one end) used as a stripline coupler termination when preselector tuning of the receiver-transmitter is performed.

b. Cables W14/W15 are two-ended coaxial cables used in conjunction with cable W45 to connect the hybrid attenuator to the iff set. Each cable is calibrated for insertion loss (in dB).

c. Cable W16 is a coaxial cable having alligator-type clips at one end and a BNC connector at the other end. It is used to facilitate self-test signal generator rf power measurements in the receiver-transmitter.

d. Cable W21 is a two-ended coaxial adapter cable assembly used for operating frequency tests and for oscillator/exciter output measurements. It is connected

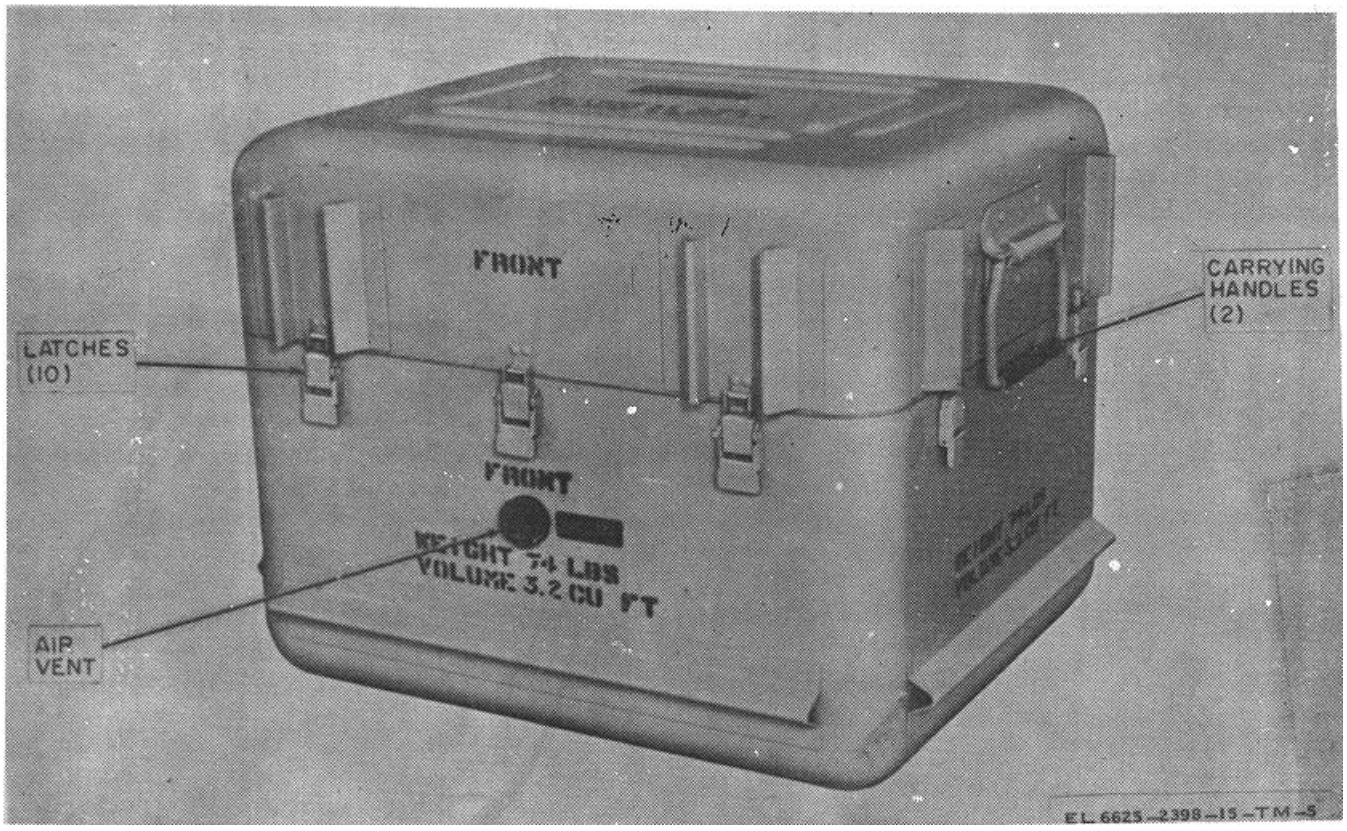


Figure 1-2. Case, Test Facilities Set CY-6825/TPM-24(v) 3

to 1A3A1A3A4 as shown in TM 11-5895-687-35-4 figure 18-5.

e. Cable W: 32 is a two-ended power cable having a multi-pin plug at one end for connection to the power input receptacle on the iff set interrogator group case; the other end of the cable has a polarized power plug to connect to an external source of power.

f. Cable W39 is a branched-type multiconductor cable assembly used in conjunction with cable W40 to extend the receiver-transmitter of the iff set from the interrogator group case. Cable W39 connects between lA3P1 of the receiver-transmitter and 1XA3P1 of the interrogator group case. Two break-out coaxial cables in the branched section of the cable assembly are connected together by means of adapter couplers. These two break-out cables are calibrated for insertion loss (in dB) and may be uncoupled for use with external test equipment.

g. Cable W40 is a two-ended multiconductor cable assembly used in conjunction with cable W39 to extend the receiver-transmitter of the iff set from the interrogator group case. Cable W40 connects between 1A3P2 of the receiver transmitter and 1XA3P2 of the interrogator group case.

h. Cable W41 is a two-ended multiconductor cable assembly used in conjunction with cable W42 to extend the synchronizer of the iff set from the interrogator group case. Cable W41 connects between 1A2P1 of the synchronizer and 1XA2Pl of the interrogator group case.

i. Cable W42 is a two-ended multiconductor cable assembly used in conjunction with cable W41 to extend the synchronizer of the iff set from the interrogator group case. Cable W42 connects between 1A2P2 of the synchronizer and 1XA2P2 of the interrogator group case.

j. Cable W43 is a two-ended multiconductor cable assembly used to extend the processor of the iff set from the interrogator group case. Cable W43 connects between 1A1P1 of the

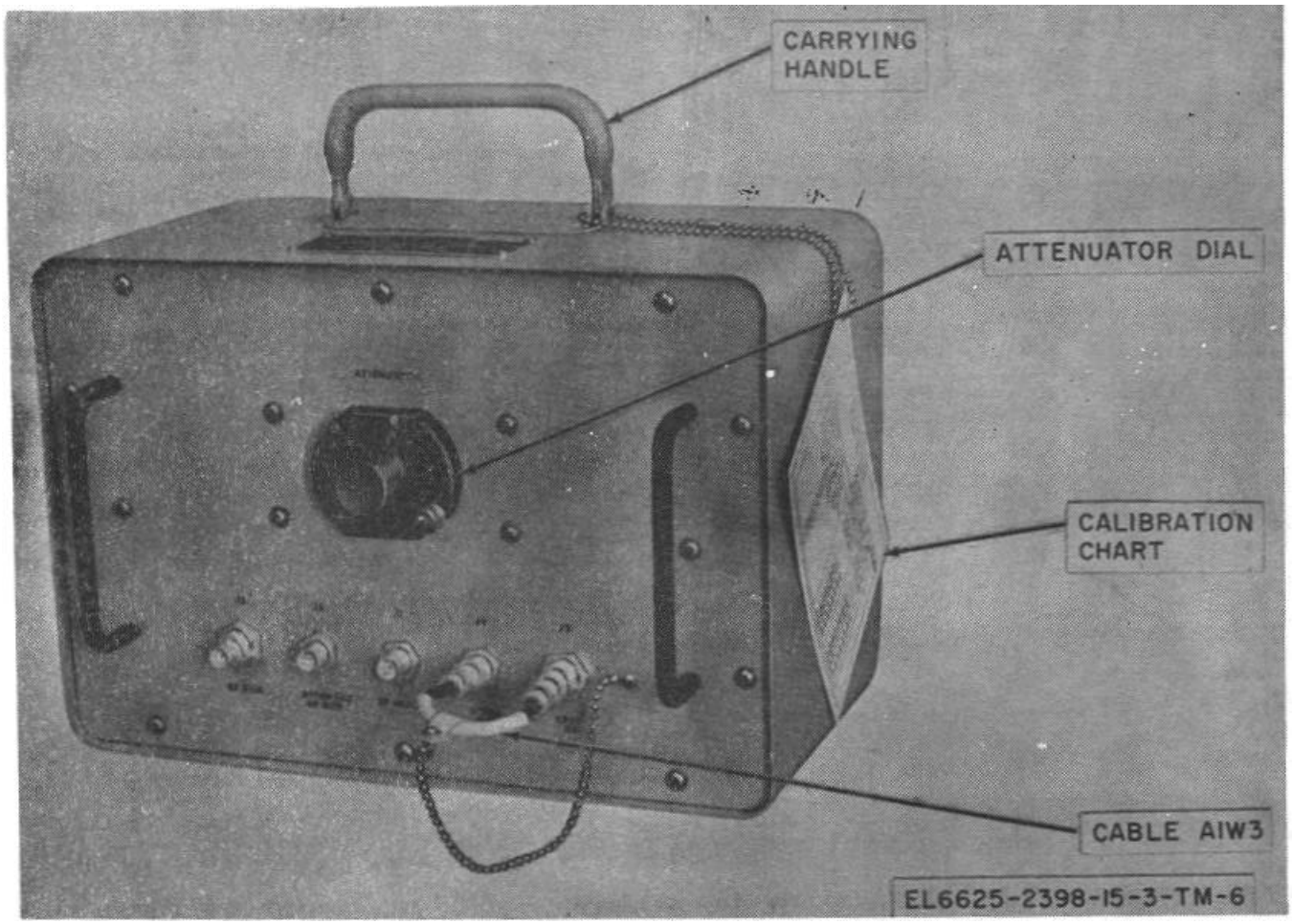


Figure 1-3. Hybrid Attenuator Assembly CN-1322/TPM-24(V).

processor and 1XA1P1 of the interrogator group case.

k. Cable W45 is a two-ended coaxial cable used to adapt polarized receptacle 1J9 on the interrogator group case to a BNC-type connection. It is used with cables W14/W15.

l Cable W47 is a two-ended coaxial cable used to adapt polarized receptacle 1J1 on the interrogator group case to a BNC-type connection. It is used in connecting a trigger input to the iff set.

m. Cable W48 is a branched cable assembly used to connect COMPUTER VIDEO receptacle 1J4 on the interrogator group case to external test equipment.

1-10. Description of Minor Components
(fig. 1-6)

a. Adapter CP1 is a BNC jack to OSM jack adapter used during maintenance of the iff set.

b. Adapters CP2/CP3/CP4 are BNC jack to OSM plug adapters used during maintenance of the iff set.

c. Adapters CP5/CP6 are BNC jack to Selectro plug adapters used during maintenance of the iff set.

d. Adapters CP7/CP8 are N-male to BNC female adapters used during maintenance of the iff set and for testing and/or calibration of components of the test facilities set.

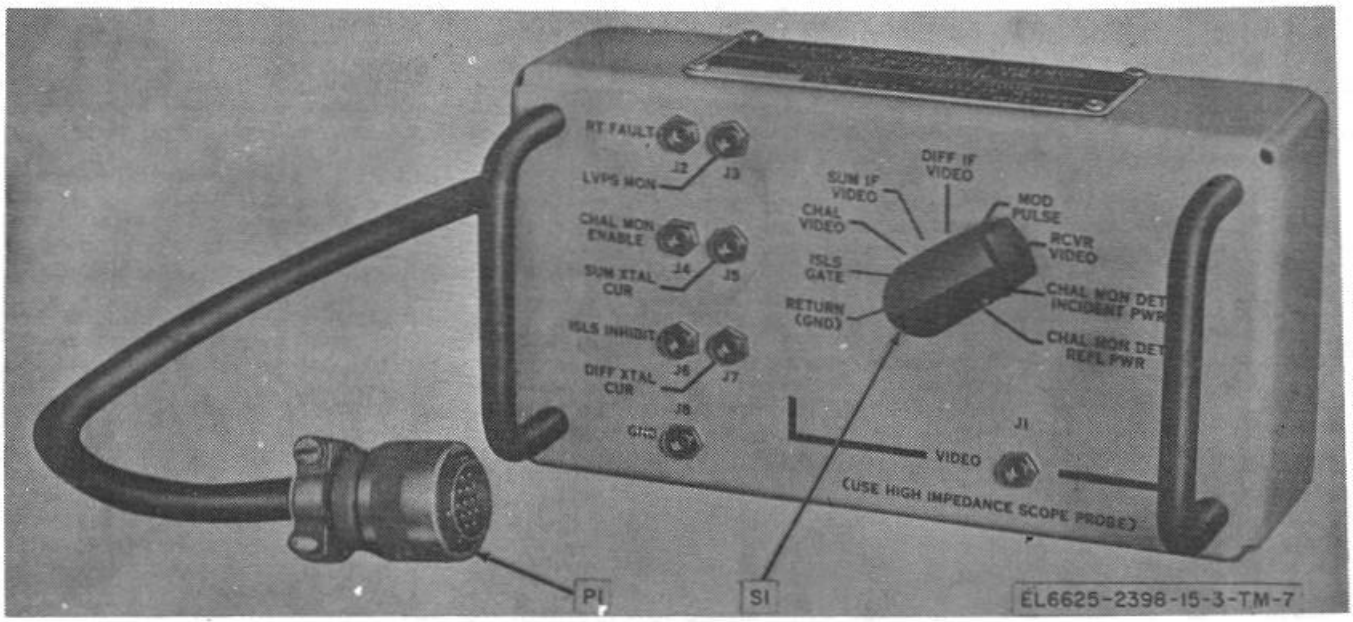


Figure 1-4. Adapter. Test MX-8565/ TPM-24(V).

e. Adapters CP9/CP10/CP11 are BNC-type T-connectors used during maintenance of the iff set.

f. Attenuators AT1/AT2 are fixed 6-dB, 50ohm, coaxial N-type attenuators used for testing and/or calibration of components of the test facilities set.

g. Extender boards A3/A4 are used to make accessible for maintenance all printed-circuit boards in the synchronizer and processor. and printed-circuit boards 1A3A1A1 and 1A3A2A1 in the receiver-transmitter.

h. Extender board A5 is used to make accessible for maintenance printed-circuit boards 1A3A3A2A3, 1A3A3A2A4, and 1A3A3A2A5 in the receiver-transmitter.

i. Printed-circuit board extractors MP1 and MP2 provide an efficient means of removing printed-circuit boards from the iff set assemblies.

j. Terminations AT3/AT4 are 50-ohm, 2 watt, coaxial BNC-type, dummy loads used as low power rf termination during maintenance of the iff set and for testing and/or calibration of the hybrid attenuator.

k. Terminations AT5/AT6 are 75-ohm, 1/2 watt, coaxial BNC-type, dummy loads used as video terminations during maintenance of the iff set.

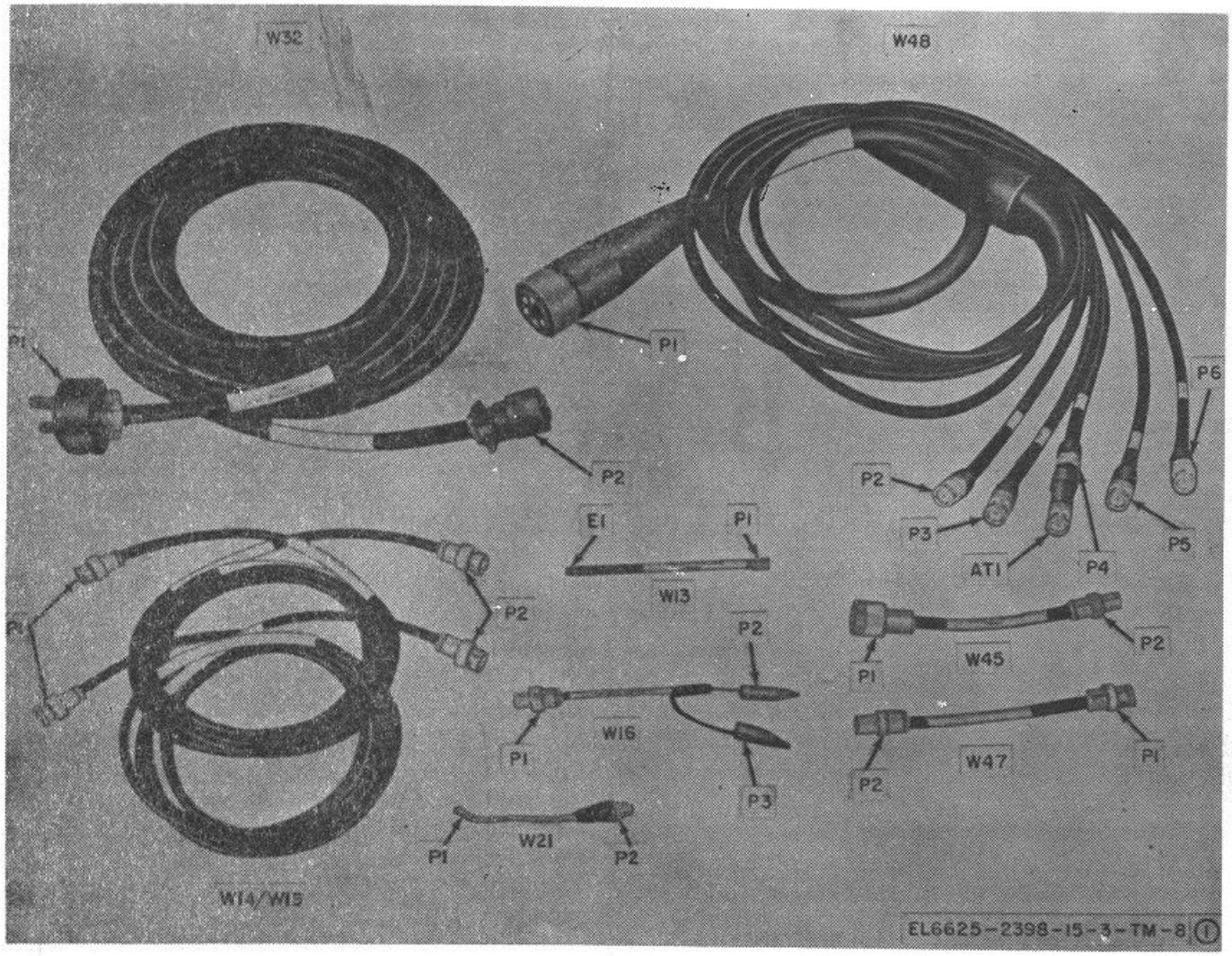


Figure 1-5(1) Test Facilities Set AN/TPM-24fV)t. cable assemblies (part 1 of 2).

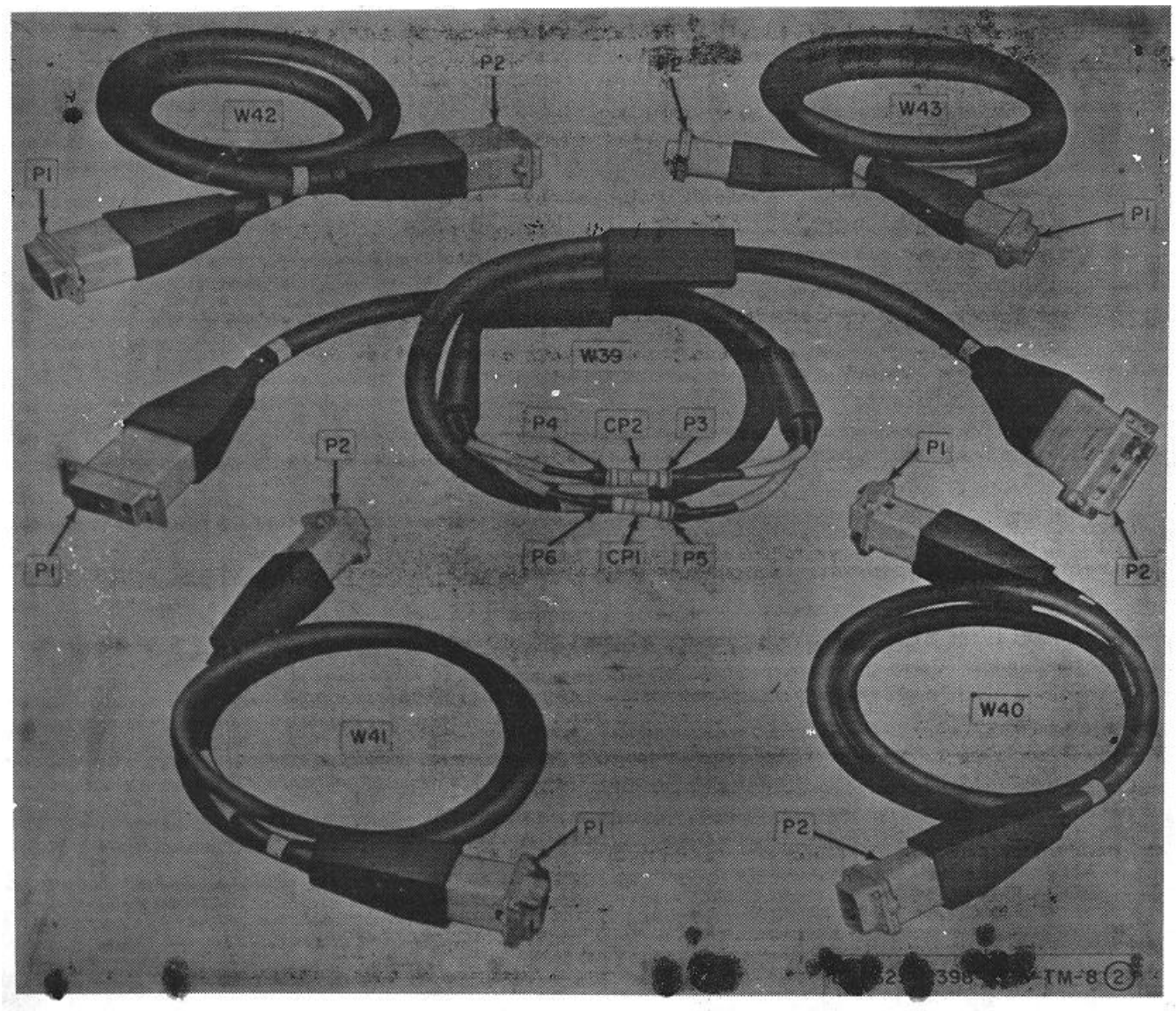


Figure 1-5 (2) Test Facilities Set AN/TPM-24(V)3, cable assemblies (part 2 of 2).

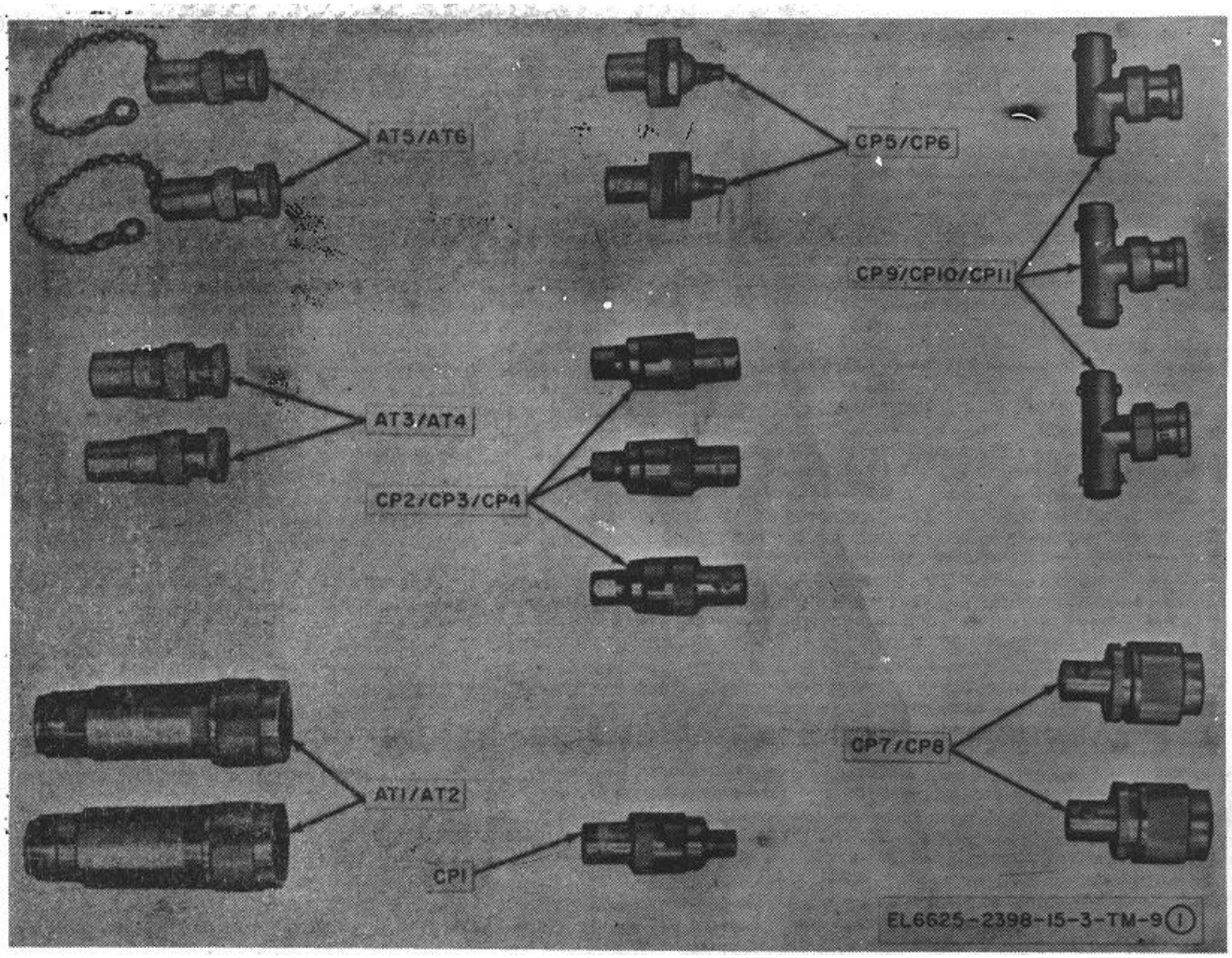


Figure 1-6(1) Test Facilities Set AN/TPM-24(V)3, minor components (part 1 of 2).

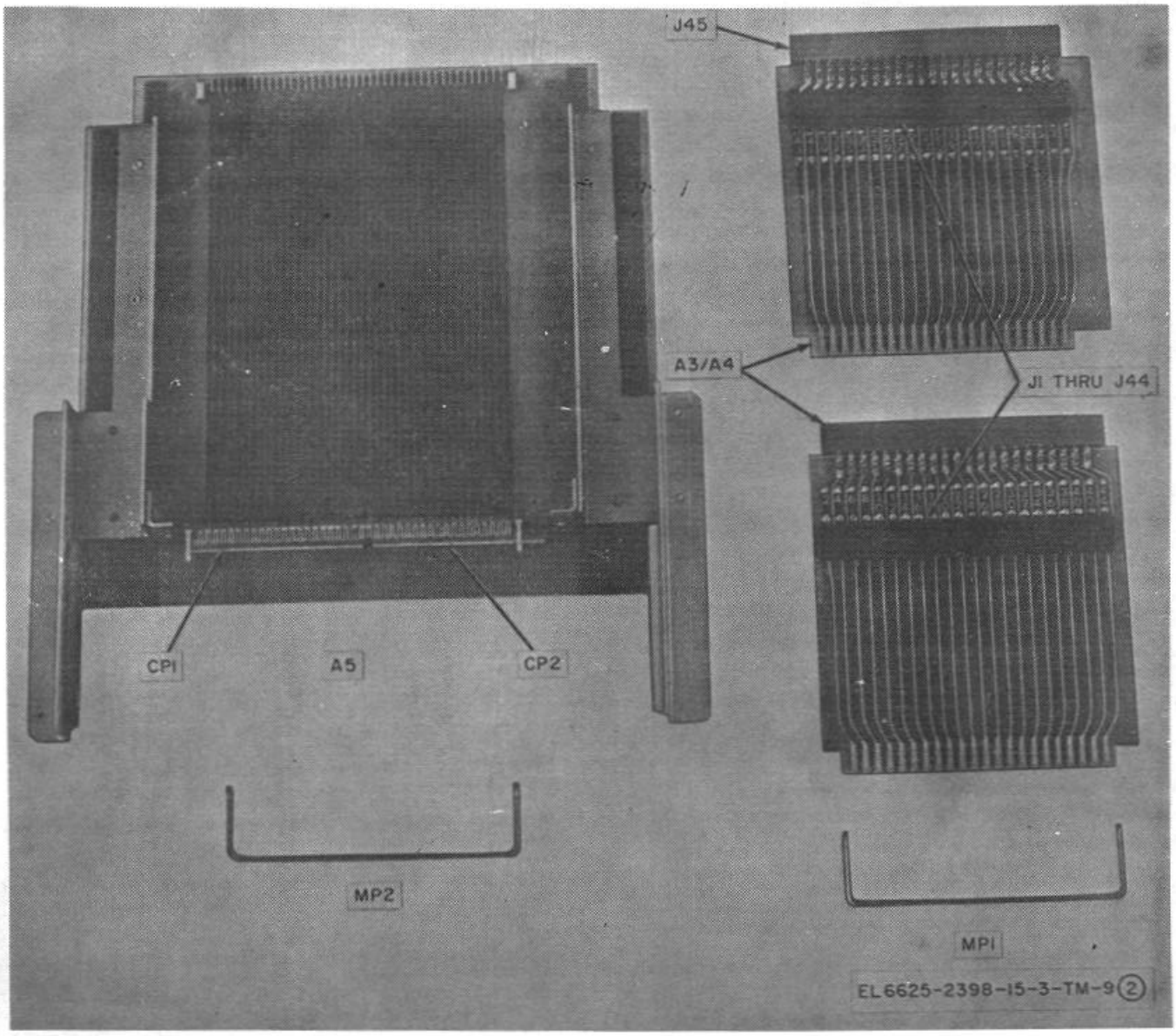


Figure 1-6 (2) Test Facilities Set AN/TPM-24(V)3, minor components (part 2 of 2).

CHAPTER 2
INSTALLATION

2-1. Unpacking

a. Packaging Data. When packed for shipment, the complete test facilities set is placed in a polyethylene wrap and packed in a single carton which is then sealed. Figure 2-1 illustrates the method employed in packing the test facilities set. The dimensions of the shipping container are 22 ¾ by 21 ½ by 20 ½A inches,. and its volume is 5.72 cubic feet. The test facilities set when packaged weighs approximately 85 pounds.

b. Removing Contents.

(1) Cut the seal and fold back the carton cover.

(2) Remove the polyethylene wrapped transit case.

(3) Open the polyethylene wrap and remove the transit case.

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

2-2. Checking Unpacked Equipment

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

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 items list (app III). Report all discrepancies in accordance with TM 38-750. Shortage of a minor assembly or part 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 has been modified, the MWO number will appear on the front panel near the nomenclature plate. If modified, see that any operational instruction changes resulting from the modification have 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 sets 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 to be installed at any one time. In general, when bench testing of the IFF set or its major components is to he performed, sufficient space must be provided on or near the test bench to accommodate the transit case, the external test equipment, the iff set group case, any components of the IFF set removed from the group case, and all required interconnecting cabling.

b. Connections. As noted in paragraph *a* above, only those cables of the test facilities set required for a particular maintenance operation need to be connected at any one time. If extended and/or extensive use of the test facilities set is anticipated, however, 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 iff set and its major components, to obtain the proper connections for particular maintenance procedures.

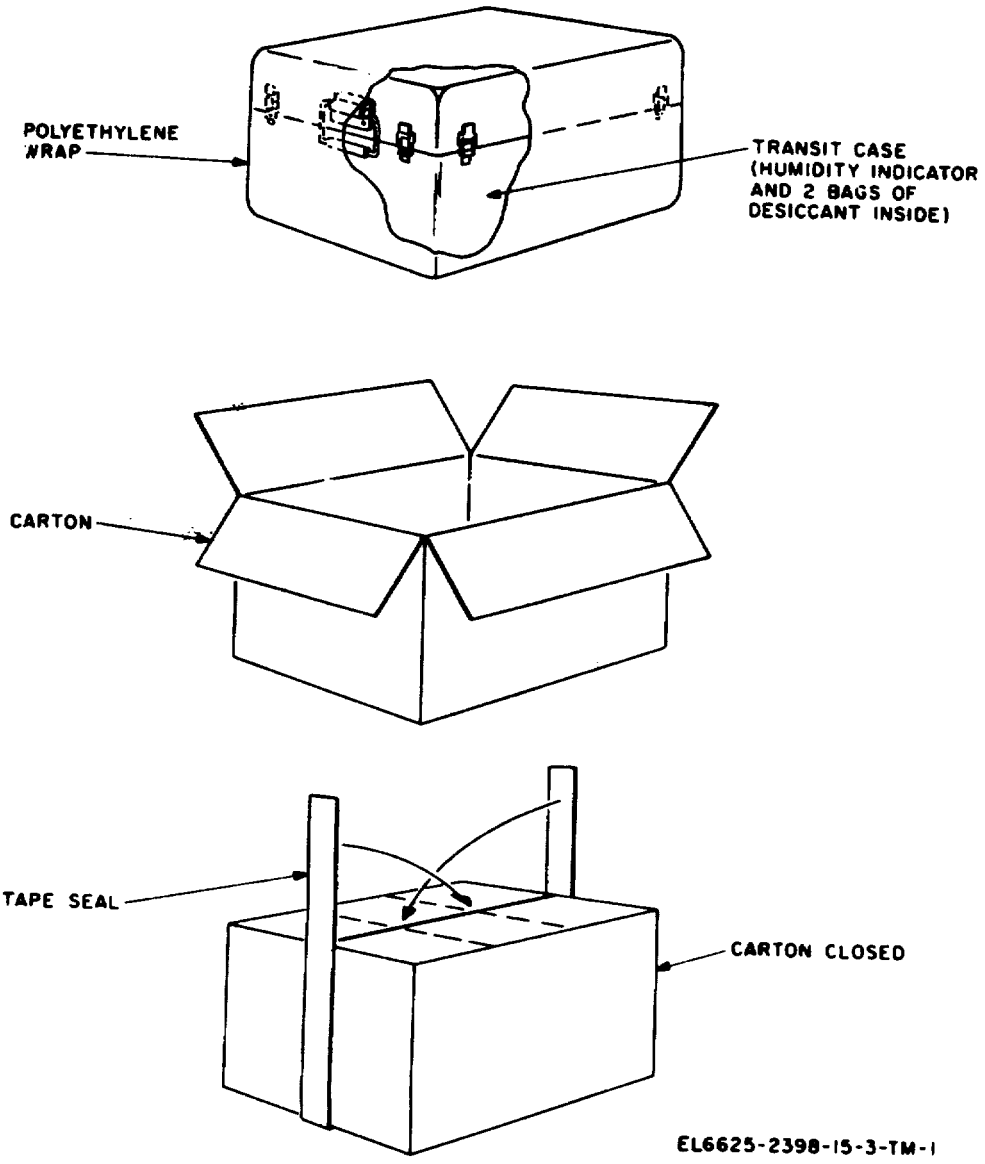


Figure 2-1. Packaging of Test Facilities Set AN/TPM-24(V)3.

Cable No.	*Required No.*	*Length (ft)*	*Connects*	
			From	*To*
W39	1	6	1XA3P1 of interrogator group ease	1A3P1 of receiver- trans-mitter
W40	1	6	1XA3P2 of interrogator group case	1A3P2 of receiver-trans-mitter
W41	1	6	1XA2P1 of interrogator group case	1A2P2 of synchronizer
W42	1	6	1XA2P2 of interrogator group case	1A2P2 of synchronizer
W43	1	6	1XA1P1 of interrogator group case	1A1P1 of processor

Cable No.	*Required No.*	*Length (ft)*	*Connects*	
			From	*To*
W47	1	1/2	1J1 of interrogator group case	Cable to external trigger source (not supplied)
W1[a]	1	7 2/3	1J5 of interrogator group case	W1 of control box
W32[b]	1	20	1J7 of interrogator group case	Dc power source

[a] Cable W1 is supplied with the iff set.

[b] Caution. To avoid damage to, the equipment under test, initially check that the polarity of the d-c on the power receptacle agrees with the, polarity shown for cable W:32 on figure 6-10. DO NOT plug in cable W32 if the polarity is incorrect.

CHAPTER 3
OPERATING INSTRUCTIONS

Section I. OPERATOR'S CONTROLS AND CONNECTORS

3-1. Hybrid Attenuator Al, Operating Control, Connectors and Cable
(fig. 3-1)

Control or cable connector	*Function*
ATTENUATOR control AT1(variable attenuator)	Provides continuously variable control of the attenuation between ATTEN OUT jack J4 and ATTEN 1N/RF DIFF jack J5 from 0 to 25dB
ATTEN IN RF DIFF jack J5	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 W3	Permits series connection of ATTENUATOR AT1 and the hybrid junction by interconnecting ATTEN OUT jack J4 and 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 from (approximately 6dB down) at both RF SUM jack J2 and CPLR IN jack J3. When used as an output connection, rf signals applied at either RF SUM jack J2 or CPLR IN jack J3 appear in attenuated from (approximately 6dB 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 (see above).
CPLR IN jack J3	Permits connection of external equipment or ATTENUATOR AT1 (via A1W3) to the hybrid junction. When used as an input connection, rf signals applied at this jack appear (less insertion losses) 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 (see above).

3-2. Front Panel Test Adapter A2, Operating Control and Connector
(fig. 3-2)

Control or cable connector	*Function*
Plug P1	Connects front panel test adapter to TEST connector 1A3J1 on the front panel of the receiver-transmitter.
VIDEO switch S1	Selects various signals of the receiver-transmitter for monitoring at VIDEO jack J1 as follows:

Position	*Signal*
RETURN (GND)	+28 vdc return (system ground)
ISLS GATE	Isls gate input
CHAL VIDEO	Challenge video input
SUM IF VIDEO	Detected sum channel re play video

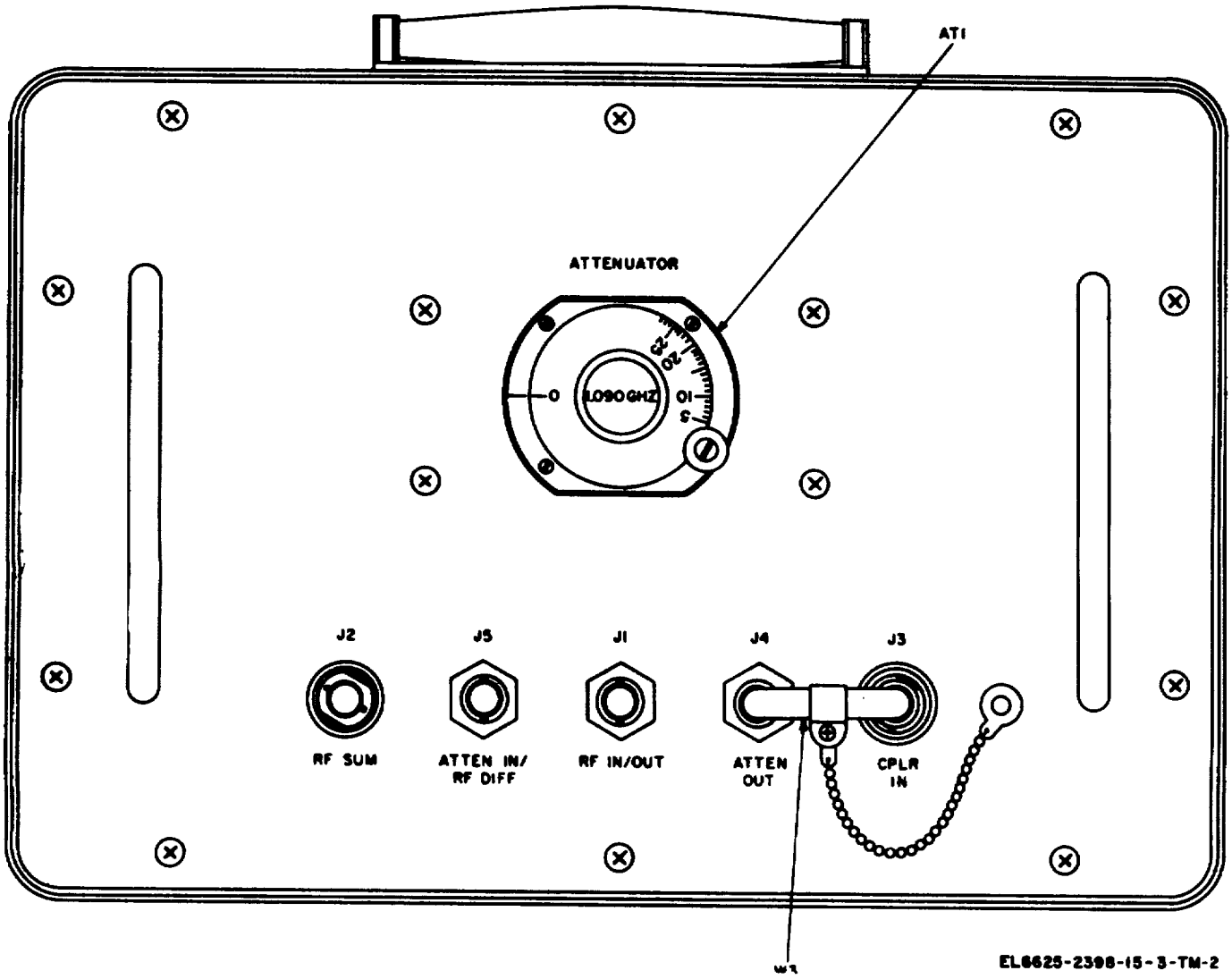


Figure 3-1. Hybrid attenuator A1, operating control, connectors and cable.

Control or connector	*Function*
DIFF IF VIDEO	Detected difference channel re-
MOD PULSE	Modulation pulses
RCVR VIDEO	Receiver video output
CHAL MON DET INCI DENT PWR	Detected incident (trnasmitted) power pulses
CHAL MON DET REFL PWR	Detected reflected power pulses
VIDEO jack J1	Permits monitoring of various receiver-transmitter signals as selected by VIDEO switch S1
RT VAULT jack J2	Permits monitoring of the fault enable output of the receiver-transmitter.
LVPS MON jack J3	Permits monitoring of the low voltage power supply monitor signal of the receiver-transmitter.

Control or connector	*Function*
CHAL MON ENABLE jack J4	Permits monitoring of the challenge monitor enable output of the receiver-transmitter.
SUM XTAL INHIBIT jack J6	Permits monitoring of the sum channel crystal (mixed diode) current signal of the receiver-transmitter.
ISLS INHIBIT jack 6	Permits monitoring of the isls inhibit pulse output of the receiver-transmitter.
DIFF XTAL CUR jack J7	Permits monitoring of the dif erence channel crystal (mixer diode) current signal of the receiver-transmitter.
GND jack J8	Provides the ground return for the signal being monitored.

Section II. OPERATION

3-3. Types of Operation

a. The test facilities set is used to interconnect components of the IFF set and to facilitate monitoring of signals and voltages when the iff set and/or its components are undergoing test bench maintenance. Depending on the availability of bench space and the expected maintenance workload at a particular maintenance activity, the test facilities set and associated required equipment may be installed and connected as a semi-permanent test station (para 2-3), or only those applicable components required for the particular maintenance task may be set up.

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. General instructions for operation of the test facilities set are contained in paragraphs 3-4 through 3-11.

IFF set component	*Technical manual*
Control box	TM 11-5895-687-35-1
Interrogator group case	TM 11-5895-687-35-1
Processor	TM 11-5895-687-35-2
Receiver-Transmitter	TM 11-5895-687-35-4
Synchronizer	TM 11-5895-687-35-3

3-4. Connection of Extender Cables

Regardless of the type of operation of the test facilities set (para 3-3), it is generally necessary to remove one or more of the iff set components from the interrogator group case to obtain access for maintenance. Cables W39, W40, W41, W42 and W43 are provided to extend the processor, synchronizer and receiver-transmitter from the interrogator group case. To connect the extender cables, first remove the component(s) from the interrogator group case as

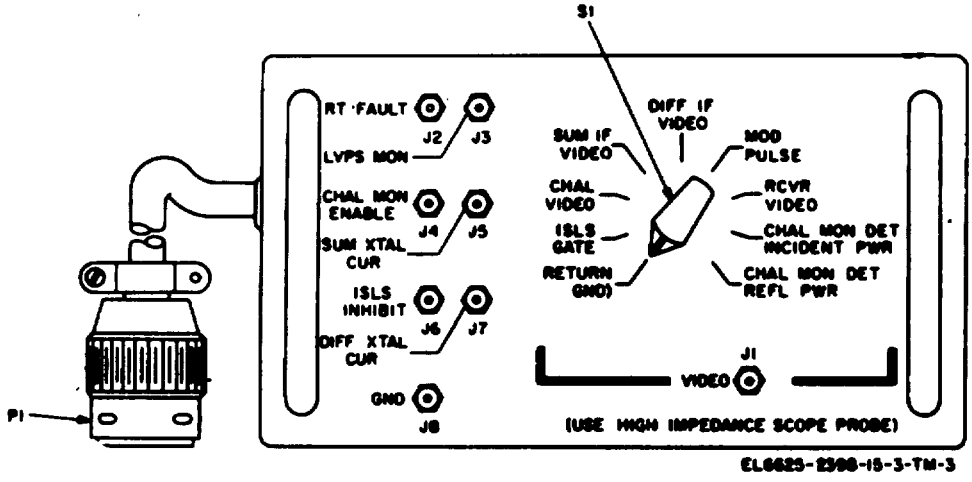


Figure 3-2. Front panel test adapter A2 operating control connectors.

described in a, below, and then make the appropriate connections using the information in b, below.

a. Component Removal

(1) Loosen the captive screws securing the component front panel to the interrogator group case.

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

(3) Depress the chassis slide locks and remove the component from the interrogator group case.

b. Cable Connections (fig. 3-3).

From					To	
Components	Connector	Connector	Cable	Connector	Connector	Component
Processor	1A1P1	P1	W43	P2	1XA1P1	Interrogator group case
Synchronizer	1A2P1	P1	W41	P2	1XA2P1	Interrogator group case
Synchronizer	1A2P2	P1	W42	P2	1XA2P2	Interrogator group case
Receiver-transmitter	1A3P1	P1	W39[3]	P2	1XA3P1	Interrogator group case
Receiver-transmitter	1A3P2	P1	W40	P2	1XA3P2	Interrogator group case

[a] Continuity of two of the conductors of cable W39 is provided through plug coupler-plug connections. When plug P3 is disconnected from coupler CP2 the rf isls pulse output of the receiver transmitter is available for monitoring at BNC plug P3. When plug P4 is disconnected from coupler CP2 the difference channel rf input to the receiver-transmitter is available for monitoring at BNC plug P4. When plug P5 is disconnected from coupler CP1, the rf challenge pulse output of the receiver-transmitter is available for monitoring at BNC plug P5, and when plug P6 is disconnected from coupler CP1, the sum channel rf input to the receiver-transmitter is available for monitoring at BNC plug P6.

3-5. Connection of Input Power and Adapter Cables

Cables W32 and W47 (fig. 3-3) are provided to connect input power and an input trigger to the interrogator group case. Connect P1 of cable W47 to PRETRIG connector 1J1 on the rear of the interrogator group case. Connect 1P2 of sable W47 via a 75-ohm video cable, such as CG-530B U (P O AN, UPM-98), to the trigger source.

CAUTION

To avoid damage to the equipment under test, initially check that the polarity of the dc on the power receptacle agrees with the polarity shown for cable W32 on figure 6-10. DO NOT plug in cable W: 32 if the polarity is incorrect.

Connect P1 of cable W32 to POWER connector 1J7 on the rear of the interrogator group case, and connect P2 of cable W32 to a source of 28 volts dc.

3-6. Use of Cable W13

Cable W13 is provided for use during preselector alignment of the receiver circuits of the receiver-transmitter. As part of this alignment, which is performed with the receiver-transmitter deenergized, a 1090MHz signal from external test equipment is applied to stripline coupler connector A1J1 of receiver 1A3A3A1, and various coupling probes and resonator tuning clips of the receiver assembly are adjusted for the proper response characteristics. (See TM 11-5895-687-35-4.) Stripline coupler connector A1J1, however, is directly coupled to stripline coupler connector A1J2, which must be terminated with cable W13 to simulate the characteristics of the cavity amplifiers of the transmitting circuits of the receiver-transmitter connected to this point during normal operation. Before performing preselector alignment, connect P1 of cable W13 to connector 1A3A3A1A1J2 of the receiver-transmitter.

3-7. Use of Cable W16

Cable W16 is provided for use during alignment of the self-test signal generator of the self-test circuits of the receiver-transmitter. As part of this alignment, the output power at terminal 4 of self-test signal generator board 1A3A3A1A2 is monitored using an external power meter, and various tuning coils and capacitors are adjusted for maximum power output. See TM 11-5895-687-35-4 for the detailed procedure of this' alignment.

3-8. Connection of Cable W48

Cable W48 (fig. 3-3) is provided to connect Test Set-Simulator, Transponder AN/APM-245 and

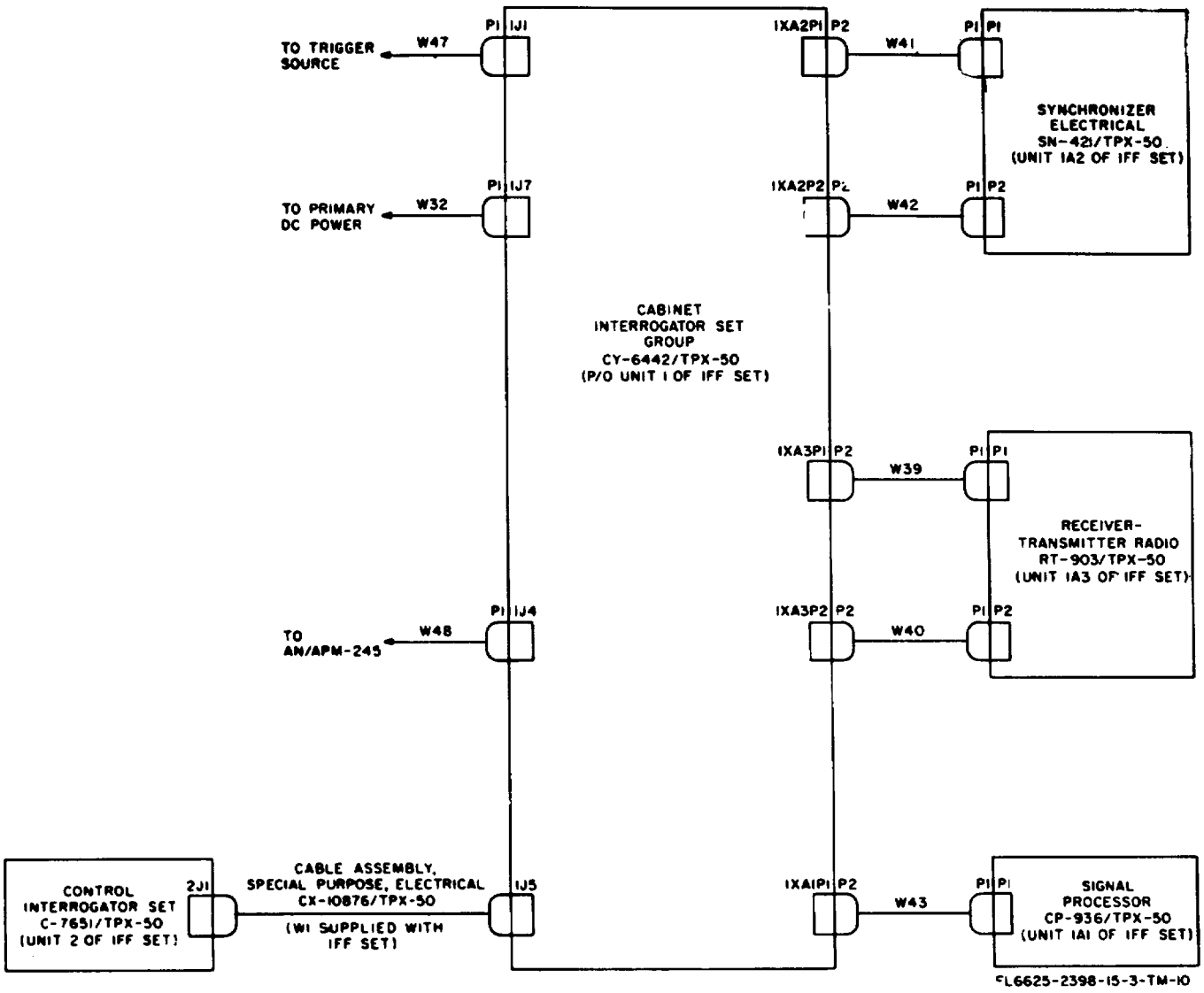


Figure 3-3. Connections of test cables to the IFF set.

other external test equipment to the interrogator group case. To establish initial test set-up connections using the AN/APM-245, connect P1 of cable W48 to COMPUTER VIDEO jack 1J4 on the rear of the interrogator group case. Connect P1, P4, and P5 of cable W48 to the EXTERNAL TRIGGER, TEST WORD, and DIS PARITY connectors respectively, on the AN/APM-245. Connectors P2 and P6 of cable W48 may be used for monitoring the mode 4 reply output of the iff set and applying a simulated mode 4 time decoded video signal input to the iff set, respectively, using external test equipment. Refer to TM 11-5895-687-35-3 for detailed connections of W48 and procedures for use of the AN/APM-245.

3-9. Operation of Front Panel Test Adapter

The front panel test adapter is provided to facilitate monitoring of various signals of the receiver-transmitter. Signals available at multipin TEST connector 1A3J1 of the receiver-transmitter are either routed directly to individually labeled test jacks on the front panel test adapter, or are routed through the VIDEO selector switch to the VIDEO jack. To operate the front panel test adapter, proceed as follows:

a. Connect P1 of the front panel test adapter cable to TEST connector 1A3J1 on the front

panel of the receiver-transmitter.

b. To monitor signals at the individually labeled test jacks, connect the appropriate external test equipment (e.g., multimeter, differential voltmeter etc.) to the test jack of interest and to GND test jack J8 on the front panel test adapter, and observe the reading on the external test equipment.

c. To monitor signals at the VIDEO jack, connect an oscilloscope to the VIDEO jack using a high impedance probe (Test Probe MX-2817/U or equivalent, refer to TM 11-6625-535-15), ground the probe to GND jack J8, select the signal of interest on the VIDEO switch, and observe the signal on the oscilloscope.

3-10. Operation of Hybrid Attenuator

The hybrid attenuator is provided to facilitate testing, troubleshooting and alignment/adjustment of the receiver-transmitter in the iff set. All of the specific uses of the hybrid attenuator with the receiver-transmitter are described in TM 11-5895-687-35-4. Operation of the hybrid attenuator as an attenuator (*a* below) and in typical receiver and transmitter test configurations (*b* below) are as follows:

a. Challenge Monitor Test. The attenuator portion of the hybrid attenuator is used to attenuate the power output of the transmitter in the iff set before it reaches the if strip line coupler (1A3A5) to determine if the challenge monitor indicator is operating within the prescribed limits. Refer to TM 11-5895-687-35-4 for the detailed procedure of this test.

b. Typical Hybrid Attenuator Receiver and Transmitter Test Configurations.

(1) The test connections between the iff set and the hybrid attenuator, shown in figure 3-4, are typical for most of the receiver and transmitter tests on the iff set. Consult the individual test procedure in the TM 11-5895-687-35-4 for possible deviations in the test connections and for prescribed settings of the ATTENUATOR control.

(2) Cable W45 and adapter CP7/CP8 enable connection of cables W14/W15 from the hybrid attenuator to the RF sum (J9) and RF difference (J10) channels, respectively.

CAUTION

To avoid damage to the equipment under test DO NOT energize Interrogator Set AN/TPX-50 before terminating jacks J9 and J10. If testing without the hybrid attenuator, terminate cable W45 and adapter CP7/CP8 with terminations AT3/AT4.

(3) The insertion losses marked on the tags attached to the hybrid attenuator and connecting coaxial cables (e.g., W14/W15 and/or W39) have to be taken into consideration when figuring the attenuation in dB for setting the ATTENUATOR control.

3-11. Typical Connection and Use of Minor Components

Certain of the minor components of the test facilities set are standard general-purpose adapters and terminations which are used in a large number of the test set-ups required in maintaining the complete iff set. Included in this category are adapter CP7/CP8 (N-male to BNC female adapter, type UG-201A/U), adapter CP9/CP10/CP11 (BNC tee, type UG-274B/U), termination AT3/AT4 (50-ohm dummy load, type DA-558), and termination AT5/AT6 (75-ohm dummy load, type DA-559). 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 extractor MP2 is used to remove any pc board in the processor or synchronizer assembly of the iff set or pc boards 1A3A1A1 and 1A3A2A1 of the receiver-transmitter assembly. Remove power from the iff set. Remove the chassis and release the retaining cover on the module. Insert the tines of MP2 into the holes at the top of the pc board and pull out the board.

(2) Printed circuit board extractor MP1 is used to remove pc boards 1A3A3A2A3, 1A3A3A2A4 or 1A3A3A2A4 of the receiver-transmitter assembly in the iff set. Remove these pc boards as described in (1) above.

(3) Extender boards A3/A4 provide maintenance accessibility for the pc boards removed by pc board extractor MP2, (1) above. Remove the pc board and insert the extender board in

the connector for the removed board with the even numbered side of the extender board oriented with the component sides of the pc boards in the balance of the assembly. Orient the component side of the removed pc board with the even numbered side of the extender board and insert the etched terminals in the connector of the extender board.

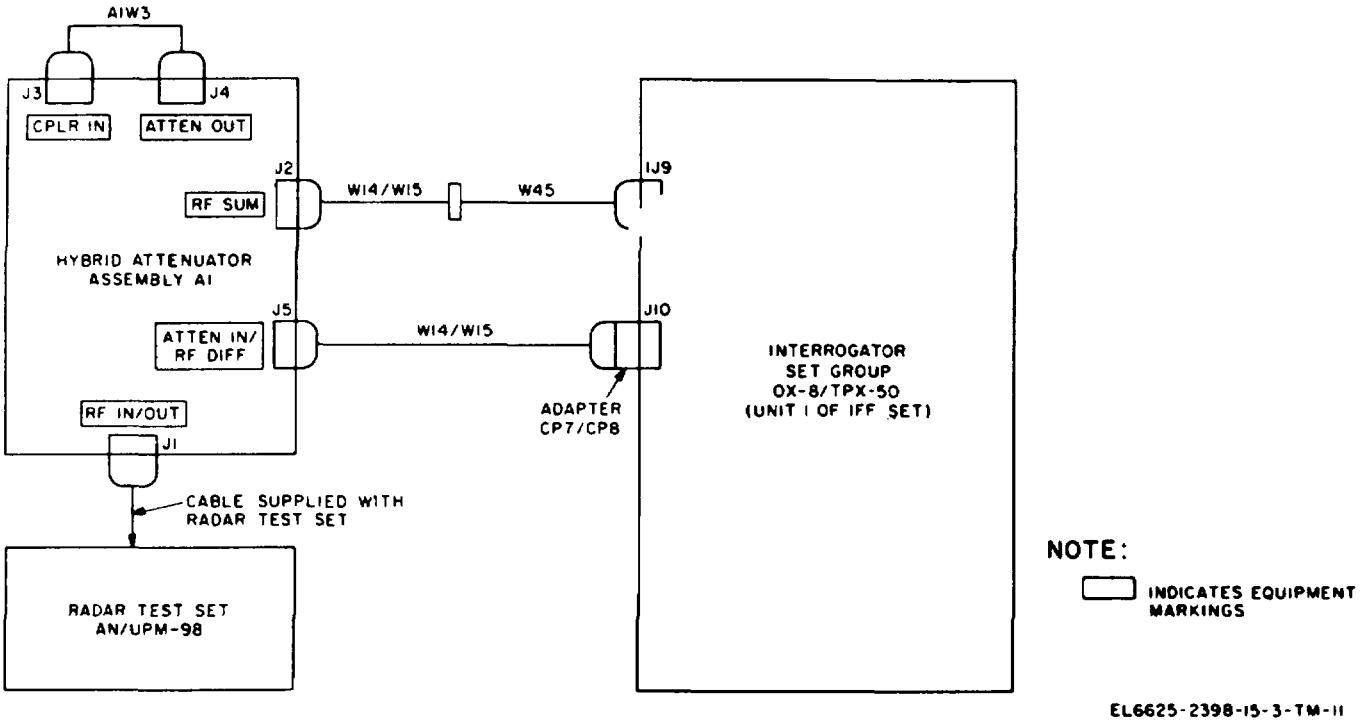


Figure 3-4. Typical hybrid attenuator receiver and transmitter test connections.

(4) Extender boards A3/A4 are provided with test points for each etched terminal of the pc board to facilitate checking any input or output of the pc board. The numbers (1 through 44) above the test point correspond to the. etched terminal number of the pc board.

(5) Extended board A5 provides maintenance accessibility for the pc boards removed by pc board extractor MP1, (2) above. Orient the male connector pins of extender board A5 (printed land side down) with the top of the receiver-transmitter assembly. Remove the pc board and insert the female pin connector end of the extender board in the connector for the removed board. Orient the component side of the removed pc board with the top of the receiver-transmitter assembly. Insert the sides of the pc board in the slots of A5 and engage the female connector pins of the pc board with the male connector pins of the extender board.

b. Adapters CPI and CP2/CP3/CP4. Adapter CP1 permits connection of an OSM type plug to a BNC type plug. Adapters CP2/CP: I/C1'4 permit connection of OSM type jacks to BNC type plugs. Typical connection of these adapters is given in the challenge monitor test I)provided in TM 11-5895-687-35-4.

c. Adapters CP5/CP6. Adapters CPS/(CP6 permit connection of selectro jacks to BNC type plugs. Typical connection of these adapters is given in the transmitter frequency measurement tests provided in TM 11-5895-687-35-4.

d. Attenuators AT1/A72. Attenuators AT1/ AT2 are general purpose 50-ohm 6dB attenuators. Together with other uses they can provide isolation during diplexer adjustment. Typical connection of these attenuators ,D provided in TM 11-5895-687-35-4.

CHAPTER 4
OPERATOR'S AND ORGANIZATIONAL MAINTENANCE

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, together with the references to the paragraphs covering the specific maintenance function. These duties do not require special tools or test equipment.

a. Weekly preventive checks and: services (para 4-5).

b. Quarterly preventive checks and services (para 4-6).

c. Cleaning (para 4-7).

d. Troubleshooting (para 4-9).

e. Repairs and adjustments (para 4-10).

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

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

a. Tools

Common name	*Equipment*	*Technical manual*
Tool kit	Electronic equipment Tool Kit TK-100G	_____

b. Materials.

Cleaning compound (FSN 7930-395-9542)

Inhibisol cleaning solvent

Cleaning cloth

Isopropyl alcohol

Camel-hair brush

Fine sandpaper

Light gray enamel paint (gloss)

Light gray enamel paint (semi-gloss)

Rubber tape

Friction tape

c. Test Equipment.

Common name	*Equipment*	*Technical manual*
Multimeter	Multimeter AN PSM-6B	TM 11-6625-475-10

4-3. Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to assure that the equipment is serviceable.

a. Systematic Care. The procedures given in paragraphs 4-5 through 4-8 cover routine 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 4-5 and 4-6) outline the functions to be performed at specific intervals. These checks and services are to maintain the equipment in a serviceable condition. To assist in maintaining serviceability, 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 contain repair or replacement procedures. If the defect cannot be remedied by performing the correct

tive actions indicated, higher category maintenance or repair is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

4-4. Preventive Maintenance Checks and Services Periods

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

a. Paragraph 4-5 specifies checks and services that must be accomplished weekly and under the conditions listed below:

(1) When the equipment is initially installed.

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

b. Paragraph 4-6 specifies checks and services that must be performed on a quarterly basis.

4-5. Weekly Preventive Maintenance Checks and Services Chart

Sequence No.	*Item*	*Procedure*	*References*
1	Completeness	Check all components of the test facilities set against the list of components supplied; give particular attention to small components.	para 1-7
2	Exterior surfaces	Clean the transit case exterior with a clean, lint-free cloth containing cleaning compound, Fed. Stock No. 7930-395-9542 (or equivalent), to remove accumulated oil film or dust. Then, dry all surfaces thoroughly with a clean lint-free cloth. Inspect all painted surfaces for spots, chips, cracks, and corrosion. Touch up or refinish the surface as required.	para 4-7 para 4-8
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 4-7.
4	Extender boards	*a.* Check for broken or bent pins and for cracks in the board. maintenance required. *b.* Replace all damaged extender boards, clean dirt from electrical contacts.	*a.* Higher category. *b.* para 4-7.
5	Cables	Check for cuts, kinks and breaks. Replace all defective cables.	para 4-1"(
6	Controls	Check controls on hybrid attenuator and front panel test adapter. Replace defective controls and knobs.	para 4-10(
7	Handles and latches	Inspect handles and latches on the transit case and handles of the hybrid attenuator.	Higher category maintenance required.
8	Operation	During operation. be alert to any unusual performance or condition.	

4-6. Quarterly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure,	Reference
1	Publications	See that all publications are complete, serviceable, and current.	DA PAM -310-4
2	Modifications	Check DA PAM :10-4 to determine if new applicable MWO's must be applied immediately. All NORMAL MWO's must be scheduled.	TM 38-750 and DA PAM 310-4
3	Cleanliness	See that equipment is clean.	para 4-7
4	Preservation	Check all surfaces for evidence of rust and corrosion. Remove rust and corrosion and paint bare spots	para 4-8
5	Components	Check components: 1. Cables for proper mating. 2. Smooth operation of ATTENUATOR dial on hybrid attenuator. 3. Extender boards for proper seating in iff set printed circuit (pc) board connectors. 4. Pc board extractors for proper mating in holes of pc board.	
6	Calibration	1. Check hybrid attenuator insertion losses. 2. Check hybrid attenuator VSWR. 3. Check insertion losses of cables W14/W15 and W39.	para 6-8 through 6-10 para 6-11 para 6-12

4-7. Cleaning

a. Transit Case. Inspect the exterior surfaces of the transit 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 plugs, jacks, and knobs.

b. Extender Boards. Periodically clean the extender board assemblies with inhibisol cleaning solvent or with a solution of 70 percent isopropyl alcohol and 30 percent distilled water. Using a brush, clean the printed-circuit contacts with Miller-Stephenson Freon TF Degreaser.

4-8. Touchup Painting Instructions

Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint (see below) on the bare metal to protect it from further corrosion. Refer to applicable cleaning and refinishing practices specified in TM 9-213 (Painting Instructions for Field Use). For touchup painting of the Transit Case, use Light Gray Enamel, Formula No. 11 per MIL-E-15090, Type II, Class I (Gloss); for touchup painting of the Hybrid Attenuator Assembly and Front Panel Test Adapter use Light Gray Enamel, Formula No. 11 per MILE-15090, Type II, Class 2 (Semi-gloss).

4-9. General Troubleshooting Information

Troubleshooting this equipment is based upon the operation of the test facilities set in a hot mock-up configuration to operate 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 front panel test adapter) higher category maintenance is required. Troubleshooting the cables, extender boards and the front panel test adapter of the test facilities set consists of continuity checks with a multimeter (para 4-11). The schematics, 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 maintenance for repair.

4-10. 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 cable is broken, refer defective cable to higher category maintenance for repair.

b. Replacement or Adjustment of Knobs.

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

(a) Set the knob to its extreme counterclockwise position.

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

(*c*) Place a new knob on the hybrid attenuator shaft, and line up the zero position on the new knob with the zero index of the stationary portion. Place a new knob on the switch shaft of the front panel test adapter, aline the marker of the knob with the first (counterclockwise) switch position.

(d) Tighten setscrews.

(2) *Adjustment*. To adjust 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 of the stationary portion.

(c) Tighten setscrews.

4-11. Continuity Check of Cables, Extender Boards, and Front Panel Test Adapter (fig. 4-1)

Use Multimeter AN/PSM-6B to perform the continuity checks. All tests are made with the following control settings on the multimeter:

FUNCTION	—	OHMS
RANGE	—	R X 1

Refer to the referenced schematic diagrams for component wiring.

a. Cable W13 (fig. 6-7). Connect one multimeter test lead to the center conductor of the plug on the cable, and the other test lead to the shell of the plug. The meter must indicate open circuit.

b. Cables W14/W15, W16, W21, W45, and W47 (fig. 6-8, 6-9, 6-16, and 6-17).

(1) Connect one multimeter test lead to the center conductor of either plug, and the other test lead to the shell of the same plug. The meter must indicate open circuit.

(2) Connect one multimeter test lead to the center conductor of one plug, and the other test lead to the center conductor of the plug on the other end of the cable. The meter must indicate zero ohms (continuity)

(3) Connect one multimeter test lead to the outer shell of one plug on the cable, and the other test lead to the outer shell on the other end of the cable. The meter must indicate zero ohms (continuity).

NOTE

One end of cable W16 has alligator clips. P2 is the center conductor connector, and P3 is the shell connector.

c. Cable W32 (fig. 6-10). Check continuity of the cable wires by progressively connecting the multimeter test leads to the active pins on the plugs at each end of the cable. The multimeter must indicate zero ohms (continuity) for both wires.

d. Cable W39 (fig. 6-11). Couplers W39 CP1 and W19 CP2 must be connected on cable W39.

(1) Check individual wire shielding by progressively connecting the multimeter test leads to each wire shield pin connection on the plugs at each end of the cable. The meter must indicate zero ohms (continuity) for each shield.

(2) Check for shorting of wires to shields by progressively connecting the multimeter test leads to the pin connectors for each wire and to its shield on a plug at one end of the cable. The meter must indicate open circuit.

(3) Check continuity of cable wires by progressively connecting the multimeter test leads to the active pins on the plugs at each end of the cable. The meter must indicate zero ohms (continuity) for each wire.

e. Cable W40, W41, W42, and W43. (fig. 6-12 through 6-15)

(1) Check that the cable shielding is bonded to the shell of the plugs, by connecting one multimeter test lead to the shell of one plug, and the other test lead to the shell of the other plug. The meter must indicate zero ohms (continuity).

(2) Repeat d(1).

(3) Repeat d(2).

(4) Repeat d(3).

f. Cable W48 (fig. 6-18). This cable consists of five individual coaxial cables terminated by a multipin connector on one end.

(1) Check coaxial shielding by progressively connecting the multimeter test leads to each of the shield pins on one end of the cable and to the shell of the appropriate coaxial connector on the other end. The meter must indicate zero ohms (continuity) for each shield.

(2) Check for shorting of coaxial cables by progressively connecting the multimeter test leads to the center conductor contacts of the multipin connector and the associated shield connectors for each cable. The meter must indicate open circuit for each test.

(3) Check continuity of the center coaxial conductors by progressively connecting the multimeter test leads from the center conductor terminals of the multipin connector and the center conductor of the associated plug at the other end of the cable. Pin E to AT1 will indicate approximately 91 ohms and the balance of cables must indicate zero ohms (continuity).

g. Extender Boards A3/A4. (fig. 6-21)

(1) Check for short circuits by connecting

the multimeter test leads to 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, connect the other test lead to the corresponding connector contacts at the opposite end of the board. The meter must read zero ohms (continuity) for each etched terminal.

(3) Check for short circuits by successively connecting the multimeter test leads to etched terminals back-to-back on opposite sides of the boards. The meter must indicate open circuit.

(4) Check continuity to test points on the board by connecting one multimeter test lead to the first contact of J45 and the test point (J1 or J2) immediately below. Advance test leads successively across the board to the last contact of J45 and the last test point (J43 or J44). Repeat for the opposite side of the board. The meter must indicate zero ohms (continuity) for each test point.

h. Extender Board A5. (fig. 6-22)

(1) Check for short circuits by connecting the multimeter test leads to the first two adjacent pins on one end of the board. Move the two multimeter test leads successively, by advancing each test lead one pin at a time, across the board. The meter must indicate open circuit for each test.

(2) Check board continuity by progressively connecting the multimeter test leads to the corresponding pins at each end of the board. The meter must read zero ohms (continuity) for each set of pins.

i. Front Panel Test Adapter. (fig. 6-20)

(1) Connect one multimeter test lead to VIDEO connector J1 on the front panel. Successively connect the other test lead to plug P1 contacts listed below. Rotate the VIDEO switch to the position corresponding to the plug contact below for each test. The meter must indicate zero ohms (continuity) for each switch position.

Plug P1 contacts	*VIDEO switch position*
R	RETURN (GND)
M	ISLS GATE
N	CHAL VIDEO
C	SUM IF VIDEO
D	DIFF IF VIDEO
P	MOD PULSE
F	RCVR VIDEO
J	CHAL MON DET INCIDENT PWR
K	CHAL MON DET REFL PWR

(2) Successively connect the multimeter test leads to the connectors and plug P1 contacts listed below. The meter must read zero ohms (continuity) for each test.

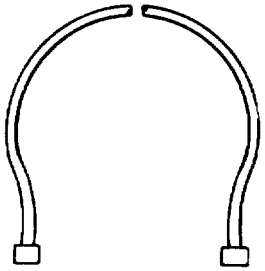
Connector	*Plug P1 contacts*
GND J8	R
RT FAULT J2	G
LVPS MON J3	E
CHAL MON ENABLE J4	H
SUM XTAL CUR J5	B
ISLS INHIBIT J6	L
DIFF XTAL CUR J7	A

(3)Connect the multimeter test leads to VIDEO J1 and GND J8 front panel connectors. Rotate the VIDEO switch successively to the positions listed below. The meter must indicate open circuit for each test position.

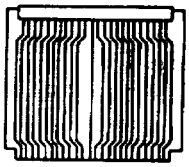
ISLS GATE	MOD PULSE
CHAL VIDEO	RCVR VIDEO
SUM IF VIDEO	CHAL MON DET INCIDENT PWR
DIFF IF VIDEO	CHAL MON DET REFL PWR

NOTE

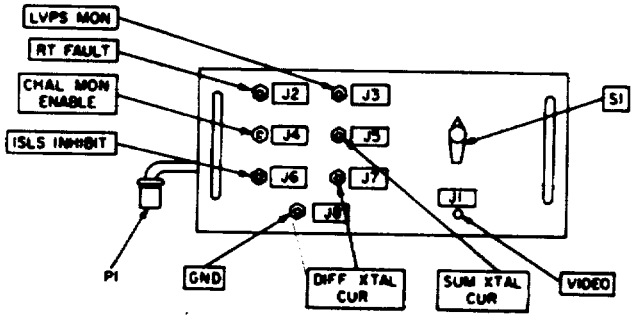
The meter will read zero ohms (continuity) with VIDEO switch in RETURN (GND) position.



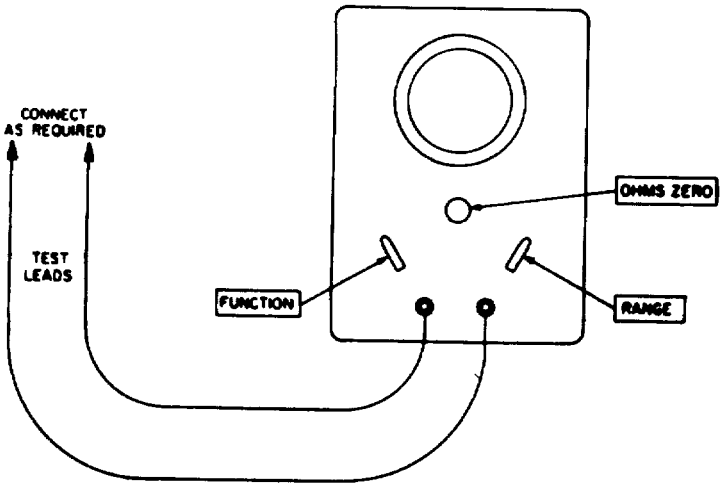
A. CABLE (TYPICAL)



B EXTENDER BOARD (TYPICAL)



C. FRONT PANEL TEST ADAPTER



NOTE: ▭ INDICATES EQUIPMENT MARKINGS

D. MULTIMETER

EL6625-2398-15-3-TM-12

Figure 4-1. Multimeter test connections.

CHAPTER 5
FUNCTIONING

5-1. General

The functioning of the hybrid attenuator (A1) and cable W13 is described in this chapter. The functioning of the balance of the components of the test facilities set is self evident.

5-2. Hybrid Attenuator
(fig. 6-19)

a. The hybrid attenuator basically consists of two subassemblies, hybrid coupler (HY1) and variable attenuator (AT1). The hybrid attenuator can he used as an entity to couple rf to or from the iff set and external test equipment, or AT1 can be used alone as a variable attenuator.

b. When the hybrid attenuator is used to coupler rf, external cable A1W3 connects attenuator AT1 to hybrid coupler HY1. This permits up to 25dB attenuation of difference channel rf, below the sum channel rf, when performing receiver testing of the iff set.

5-3. Attenuator AT1

Attenuator AT1 is a two-terminal, non-repairable, wide-band variable attenuator with a direct reading dial. The dial is calibrated from 0 to 25dBH in 1-dB steps. The ATTEN IN/RF IFF jack (J5) and the ATTEN OUT jack (J4), together with the associated coaxial cabling and connectors P3 and P2, respectively, make AT1 accessible at the front panels.

5-4. Hybrid Coupler HY1

a. Hybrid coupler HY1 is a four-port, 3-dB coupler which evenly divides an input signal from external test equipment into isolated quadrature-phased outputs, for receiver testing of the iff set. Front panel RF IN/OUT jack (J1) provides the input to HY1 and the RF SUM (J2) and CPLR IN (J3) jacks provide the outputs for receiver testing.

b. The hybrid coupler input signals for iff set transmitter testing are applied via the RF SUM (J2) and CPLR IN (J3) jacks. The hybrid coupler then combines the sum and difference rf signals into one resultant rf output to external test equipment at the front panel RF. IN/OUT jack (J1).

c. The coupler is symmetrical, signals applied to any input port (e.g., HY1J1) will divide equally between the opposite pair of ports (HY1J2 and HY1J3) and the adjacent port (HY1J4) will be isolated. By the same principle, if equal amplitude quadrature-phased signals are applied to adjacent ports (e.g., HY1J2 and HY1J3) they will combine at one output port (HY1J1) and cancel at the other (HY1J4). Termination AT2 (to HY1J4) is a 50 ohm matched load and is provided to minimize reflected signal from port HY1J2.

d. The sum channel overall insertion loss of the hybrid coupler from the RF SUM jack (J2) to the RF IN/OUT jack (J1) is the sum of the losses of W1 (approximately 3.75dB), HY1 (3dB) and miscellaneous losses in J2, CP2, and the coaxial cable terminated by P1 and J1.

e. The difference channel overall insertion loss of the hybrid coupler from the CPLR IN jack (J3) to the RF IN/OUT jack (J1) is the sum of the losses of W2 (approximately 3.25 dB), HY1 (3dB) and miscellaneous losses in J3. CPL, and the coaxial cable terminated by P1 ;J1. These losses when added to the losses of W3 and the AT1 circuit (para 5-3, with the ATTENUATOR control set at 0) are equal to or slightly less than the overall insertion loss of the sum channel.

5-5. Cable W13
(fig. 6-7)

Cable W13 is a nonrepairable, coaxial-type, tuned-stub line (open circuit at one end). It is used as a strip line coupler termination for con

nector A1J2 during preselector alignment of the receiver circuits of the receiver-transmitter. It simulates the characteristics of the cavity amplifiers of the transmitting circuits of the receiver-transmitter connected to A1J2 during normal operation.

CHAPTER 6

GENERAL SUPPORT MAINTENANCE

Section I. GENERAL TROUBLESHOOTING INFORMATION

WARNING

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

6-1. General Instructions

Troubleshooting at 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 and calibration techniques.

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 consists of the components listed in paragraph 1-6. 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 with an iff set.

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 (para 6-5).

d. Procedures for isolating troubles in the hybrid attenuator assembly are given in paragraph 66.

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

(1) Insulation resistance measurements.

(2) Continuity checks.

6-3. Test Equipment Required

The following chart lists test equipment required for troubleshooting the test facilities set. The associated technical 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 which could be damaged.

Common name	*Test equipment*	*Technical manual*
Multimeter	Multimeter AN/PSM-6B	TM 11-6625-475-10
Megger	Ohmmeter ZM-21A/U	TM 11-2050
Signal generator	Signal Generator SG-.140/G	NAVSHIPS 93665
SWR indicator	Indicator, Standing Wave Ratio AN/ UPM-108A	TM 11-6625-335-12
Variable attenuator	Variable attenuator, Alfred Electronics Model E101	
Slotted line	Coaxial Slotted line IM-92, 11	TM 11-5109
Crystal detector	Crystal Detector. Hewlett-Packard Co. Model 42:3A	
Filter	Low-Pass Filter, Hewlett-Packard Co. Model :350C	
Printed wiring kit	Repair Kit. Printed Wiring Board, MK-772 U	
Tool Kit	Tool Kit. Electronic Equipment Tool Kit TK-100G	
50-ohm termination	Termination, 50-ohms, Microlab FXR TA-6MN	
Adapter	Adapter (type N male to type BNC females) ,UG-201A U	
Adapter	Adapter N female to type BNC female).UG-606 U	
Adapter	Adapter (type BNC female). to type BNC female). UG-914 U	

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 damaged to extender hoards, insulation or sleeving of cables, mating parts of connectors and couplings, operating controls of the hybrid attenuator assembly and front panel test adapter, and broken, corroded, and 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 cured by the replacement spare, then the component removed is malfunctioning and it should be checked further to isolate the malfunction.

b. Once the trouble has been isolated to the test facilities set component or if a spare is not available, continuity checks (para 4-11) and or insulation resistance measurements (para 6-7) on that component may be performed.

CAUTION

Always disconnect the test facilities set component from the IFF set test set-up. Transistors and integrated circuits are used in the iff set, and continuity measurements by a multimeter may damage or destroy the transistorized circuits.

6-6. Isolation of Trouble in Hybrid Attenuator

a. Calibration of the hybrid attenuator assembly every ninety 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 below provides a step-by-step procedure for troubleshooting. This procedure is based on the VSWR and insertion loss measurements.

Symptom	*Probable trouble*	*Correction*
1. Excessive RF sum channel insertion loss (para 1-8)	Improper connections	Check that connections to A1HY1J1, A1HY1J2 and the connections of A1W1 are secure. Tighten loose connections and replace defective connectars.
	Defective cable A1W1 or hybrid coupler A1HY1	Check difference channel insertion loss (para 6-9). If the sum channel and difference channel insertion losses are both excessive, check cable from A1J1 to A1HY1J1. If cable is not at fault, replace hybrid coupler A1HY1 and recalibrate insertion losses (para 6-8 and 6-9). If only the sum channel has an excessive loss, replace cable A1W1 and recalibrate (para 6-8).
2. Excessive RF difference channel insertion loss (para 6-9)	Improper connections	Check that all connections to A1J5 and A1J1 are made, and are secure. Tighten loose connections and replace defective connectors.
	Defective cables, attenuator, or hybrid coupler A1HY1	Check sum channel insertion loss (para 6-8). If sum channel and difference channel insertion losses are both excessive, check cable from A1J1l to A1HY1J1. If cable is not at fault, replace hybrid coupler A1HY1 and recalibrate insertion losses (para 6-8 and 6-9). If only the difference channel has an excessive loss, check cable A1W3, cable A1W2, attenuator A1AT1 and the cables from A1J4 and A1J5 to attenuator A1AT1. Replace defective parts and recalibrate (para 6-9 and 6-10).
3. Excessive VSWR (para 6-11)	Improper connections	Check all connections between the input showing excessive VSWR and the termination(s); tighten loose connections, replace defective connectors and recalibrate (para 6-8, 6-9 and 6-10).
	Defective parts	Check cables A1W1, A1W2, attenuator A1AT1, hybrid coupler A1HY1, cable A1W3 and the cables from A1J1, A1J4 and A1J5. Replace defective parts and recalibrate (para 6-8, 6-9 and 6-10,.

Section III. COMPONENT TESTING AND CALIBRATION

6-7. Insulation Resistance Tests on Cables
(fig. 6-1)

Use the megger to perform the insulation resistance tests. Refer to the referenced schematic diagrams for wiring of the cables.

WARNING

Test leads of Ohmmeter ZM-21A/U are at potentials up to 500 volts when the hand crank is being rotated. To avoid injury make all connections when the hand crank is not being rotated. DO NOT handle the test leads while the crank is rotating.

NOTE

To accomplish connection of the test leads from the LINE and GROUND megger terminals to the pin contacts of the cable connectors, proceed as follows, whenever applicable.

1. When possible, connect the two test leads to opposite ends of the cable to avoid shorting.

2. To connect a test lead to a male pin of a cable connector, adapt the alligator clip by connecting it to a female pin of the correct size.

3. To connect a test lead to a female pin of a cable connector, adapt the alligator clip by connecting it to a male pin (or solid wire) of the correct size.

a. Coaxial cables W13, W14/W15, W16, W21, W45, and W47. (fig. 6-7, 6-8, 6-9, 6-16, 6-17 and 6-23)

(1) Connect the LINE terminal of the megger to the center contact of a plug.

(2) Connect the GROUND terminal of the megger to the shell of a plug.

(3) Wrap an uninsulated wire around the outer covering of the cable, and connect the wire to the GUARD terminal of the megger.

(4) Rotate the hand crank of the megger at a speed of at least 160 revolutions per minute ..(rpm), and read the insulation resistance on the meter. A meter reading of 100 megohms or higher must be obtained.

b. Power Cable W32. (fig. 6-10)

(1) Connect the LINE and GROUND terminals of the megger to the pin contacts (of either plug) which are connected to the two wires of the cable.

(2) Repeat *a*(3) above.

(3) Repeat *a*(4) above.

c. Cable W39 (fig. 6-11). Couplers CP1 and CP2 must be connected on the cable.

(1) Connect the GROUND terminal of the megger to the outer shell of one of the coaxial connectors on a plug.

(2) Connect the LINE terminal of the megger to the corresponding contact connected to the inner conductor.

(3) Repeat step *a*(3).

(4) Repeat step *a*(4).

(5) Repeat steps (1), (2) and (4) for the balance of the coaxial connectors (7).

d. Cable W40. (fig. 6-12)

(1) Connect the GROUND terminal of the megger to plug contact pin 4.

(2) Successively (stop cranking between connections) connect the LINE terminal of the megger to plug contacts 6 and 9.

(3) Repeat step *a*(3).

(4) Repeat step *a*(4) for both tests.

(5) Connect the GROUND terminal of the megger to the outer shell of either plug on the cable.

(6) Repeat step (2) for the balance of the plug contacts (7) of the cable.

(7) Repeat step *a*(4) for the seven tests.

(8) Connect the LINE test lead of the megger successively between tests to each plug contact pin carrying a wire. In turn, connect the GROUND lead to each of the other plug contact pins carrying wires. Repeat step *a*(4) for each wire. Perform 36 separate tests until all wires have been tested with respect to each other.

e. Cable W41. (fig. 6-13)

(1) Connect the GROUND terminal of the megger to plug contact pin 22.

(2) Repeat step *d*(2) for plug contact pins 20 and 23.

(3) Repeat step *a*(3).

(4) Repeat step *a(*4) for both tests.

(5) Connect the GROUND terminal of the megger to the outer shell of either plug on the cable.

(6) Repeat step *d*(2) for the balance of the tests (4) of the cable.

(7) Repeat step *a*(4) for the four tests.

(8) Repeat step *d*(8). Perform 15 separate tests until all wires have been tested with respect to each other.

f. Cable W42. (fig. 6-14) (1) Connect the GROUND terminal of the megger to plug contact pin A11.

(2) Repeat step *d*(2) for plug contact pins A12, A13, and A14.

(3) Repeat step *a*(3).

(4) Repeat step *a*(4) for the three tests.

(5) Connect the GROUND terminal of the megger to plug contact pin A19.

(6) Repeat step *d*(2) for plug contact pins A15 through A18.

(7) Repeat step *a*(4) for the four tests.

(8) Connect the GROUND terminal of the megger to plug contact pin A23.

(9) Repeat step *d*(2) for plug contact pins A21 and A22.

(10) Repeat *a*(4) for both tests.

(11) Connect the GROUND terminal successively between tests to the respective outer coaxial terminal of contact pins B1, B3, B5, B7, B9, B11, C1, C3, C5, C7, C9, and C11.

(12) Concurrently with step *f*(11), connect the LINE terminal of the megger to the center contacts of the coaxial terminals.

(13) Repeat step *a*(4) for the twelve tests.

(14) Connect the GROUND terminal of the megger to the outer shell of either plug on the cable.

(15) Repeat step *d*(2) for plug contact pins Al through A10, A20, B2, B4, B6, B8, B10, C2, C4, C6, C8, and C10.

(16) Repeat step *a*(4) for the 21 tests.

(17) Repeat step *d*(8). Perform 210 separate tests until all wires have been tested with respect to each other.

g. Cable W43. (fig. 6-15)

(1) Connect the GROUND terminal of the megger to plug contact pin 2.

(2) Repeat step *d*(2) for plug contact pins 4 and 5.

(3) Repeat step *a*(3).

(4) Repeat step a(4) for both tests.

(5) Connect the GROUND terminal of the megger to plug contact pin 12.

(6) Repeat step *d*(2) for plug contact pins 6, 7, and 10.

(7) Repeat step *a*(4) for the three tests.

(8) Connect the GROUND terminal of the megger to plug contact pin 16.

(9) Repeat step *d*(2) for plug contact pins 14, 17, 19, and 21.

(10) Repeat step *a*(4) for the four tests.

(11) Connect the GROUND terminal of the megger to plug contact pin 1.

(12) Repeat step *d*(2) for plug contact pins 18 and 23.

(13) Repeat step *a*(4) for both tests.

(14) Connect the GROUND terminal of the megger to the outer shell of either plug on the cable.

(15) Repeat step *d*(2) for plug contact pins 3, 8, 9, 11, 13, and 22.

(16) Repeat step *a*(4) for the six tests.

(17) Repeat step *d*(8) for plug contact(t pins 3, 8, 9, 11, 13, 18, 22, and 23. Perform 28 separate tests until all wires have been tested with respect to each other.

h. Cable W48. (fig. 6-18)

(1) Connect the GROUND) terminal of the megger to the outer coaxial terminal of pin of plug P2.

(2) Connect the LINE terminal of the megger to the center coaxial terminal A of plug 1P1.

(3) Repeat step *a*(3).

(4) Repeat step *a*(4).

(5) Repeat steps (1), (2) and (4) for:

P3 to P1-C
AT1(P4) to P1-E
P5 to P1-F
P6 to P1-B

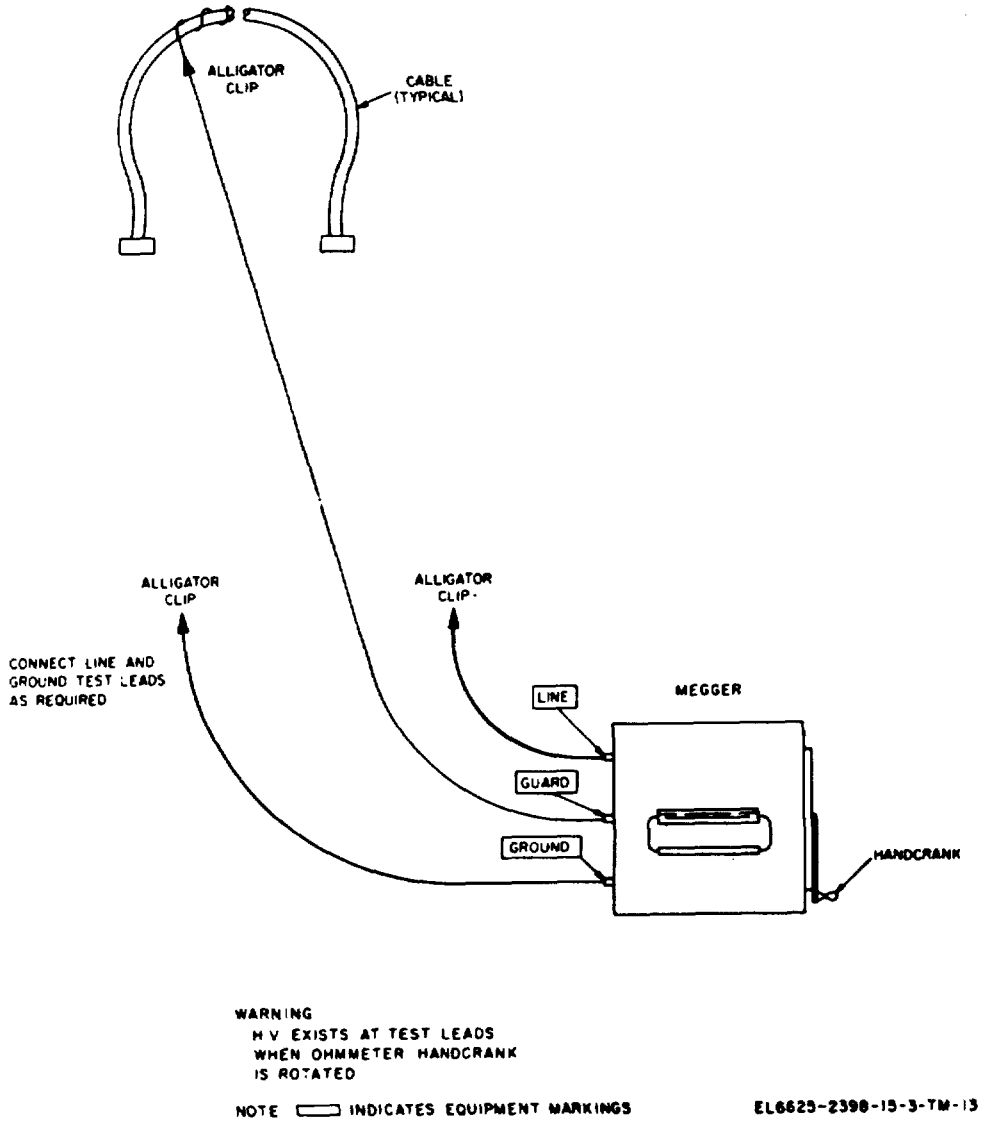


Figure 6-1. Cable megger test connections.

6-8. Hybrid Attenuator Sum Channel (RF IN/OUT to RF SUM Jacks Insertion Loss Calibration
(fig. 6-2)

a. Test Equipment and Materials. The following test equipment and materials are required:

Signal Generator SG-340/G

Variable Attenuator, Alfred Electronics Model E101

SWR Indicator AN/UPM-108A

Crystal Detector HP-423A

Adapter UG-201A/U

Adapter UG-606/U

Adapters CP7/CP8(2)

Fixed Attenuators AT1/AT2(2)

Termination AT3/AT4 50-ohm

Terminations (2),

Microlab/FXR TA-MN

Cables W14/W15(2).

b. Procedure. Connect the equipment as shown in solid lines (fig. 6-2) and proceed as follows:

(1) On the signal generator, set the MEGACYCLES dial to 1090 with the frequency control knob. Set the function switch to CW. and turn on the signal generator. Allow a minimum of 20 minutes warm-up period before proceeding.

(2) With the METER SCALE set to NORMAL, and INPUT SELECTOR set to XTAL 200-KΩ, turn on the SWR indicator and allow a minimum of 10 minutes warm-up period before proceeding.

(3) Turn on the signal generator and zero set the OUTPUT VOLTS meter.

(4) Turn on the signal generator, and adjust their OUTPUT LEVEL, control knob for an OUTPUT VOLTS meter indication at the SET LEVEL (+4DBM) mark, with the attenuator set to 0dB.

NOTE

Check that OUTPUT VOLTS meter indication is exactly on the SET LEVEL mark with the attenuator set to 0dB (outer scale). Readjust the OUTPUT LEVEL control knob if required.

(5) On the signal generator, set the function switch to 1000 ~ the MOD. UP-NORMAL -DOWN to NORMAL, and adjust the MOD. LEVEL, control for a reading of 50 on the PERCENT MODULATION meter. With the SWR indicator METER SCALE set to EXPAND, adjust the SWR indicator VERNIER GAIN control and RANGE switch for an exact meter reading (e.g., 5 on the EXPANDED DB meter scale). Record the meter reading.

(6) Disconnect the hybrid attenuator under test and connect the variable attenuator, as shown by the broken lines in figure 6-2.

(7) Adjust the variable attenuator ATTENUATOR DB control for the same SWR indicator meter reading recorded in step b(5). Insertion loss on the ATTENUATOR DB control of the variable attenuator must indicate 6.5± 1.5dB.

(8) Correct the hybrid attenuator calibration tag marking for 1090MHz, if incorrect.

NOTE

This insertion loss must be slightly more (at least 0.2dB) than the insertion loss measured between the RF IN/OUT and ATTEN IN/RF DIFF jacks (para 6-9).

(9) Reconnect the hybrid attenuator, solid lines figure 6-2.

(10) Reset the signal generator MEGACYCLES dial to 1030 and repeat steps (3) through (7) above.

(11) Correct the hybrid attenuator calibration tag marking for 1030MHz, if incorrect.

6-9. Hybrid Attenuator Difference Channel (RF IN/OUT to ATTEN IN/RF DIFF Jacks) Insertion Loss Calibration

(fig. 6-3)

a. Test Equipment and Materials. The following test equipment and materials are required:

Signal Generator SG-340/G

Variable Attenuator, Alfred Electronics Model E101

SWR Indicator AN/UPM-108A

Crystal Detector HP-423A

Adapter UG-201A/U

Adapter UG-606/U

Adapter CP7/CP8 (2)

Fixed Attenuators AT1/AT2 (2)

Termination AT3/AT4

50-ohm Terminations (2), Microlab/FXR TA6MN

Cables W14/W15 (2)

Cable A1W3.

b. Procedure. Connect the equipment as

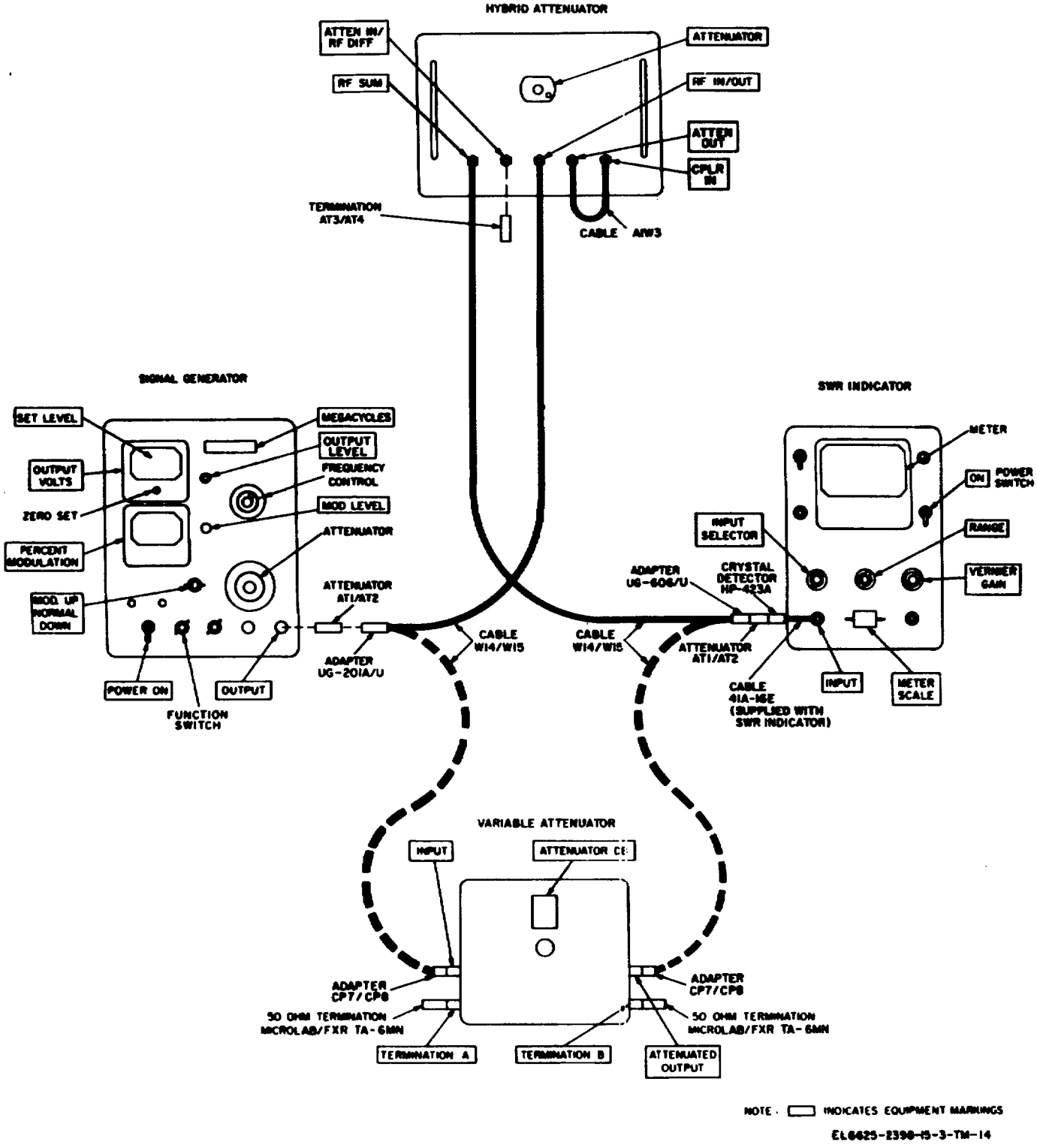


Figure 6-2. Hybrid attenuator sum channel (RF IN/OUT to RF SUM jacks) insertion loss, calibration conclusions.

shown in solid lines, (fig. 6-3) and proceed as follows:

(1) On the signal generator, set the MEGACYCLES dial to 1030 with the frequency control knob. Set the function switch to CW, and turn on the signal generator. Allow a minimum of 20 minutes warm-up period before proceeding.

(2) With the METER SCALE set to NORMAL and INPUT SELECTOR set to XTAL200KΩ, turn on the SWR indicator, and allow a minimum of 10 minutes warm-up period before proceeding.

(3) Turn off the signal generator and zero set the OUTPUT VOLTS meter.

(4) Turn on the signal generator, and adjust the OUTPUT LEVEL control knob for an OUTPUT VOLTS meter indication at the SET LEVEL (+4DBM) mark, with the attenuator set to 0dB.

NOTE

Check that OUTPUT VOLTS meter indication is exactly on the SET LEVEL mark with the attenuator set to 0dB (outer scale). Readjust the OUTPUT LEVEL control knob if required.

(5) On the signal generator, set the function switch to 1000 the MOD. UP-NORMAL DOWN switch to NORMAL and adjust the MOD. LEVEL control for a reading of 50 on the PERCENT MODULATION meter. Set the hybrid attenuator ATTENUATOR control to 0 (zero). Adjust the SWR indicator VERNIER GAIN control and the RANGE switch for an exact meter reading (e.g., .5 on the DB meter scale). Record the meter reading.

(6) Disconnect the hybrid attenuator under test and connect the variable attenuator, as shown by broken lines, figure 6-3.

(7) Adjust the variable attenuator ATTENUATOR DB control for the same SWR indicator meter reading recorded in step b(5). Insertion loss on ATTENUATOR DB control of the variable attenuator must indicate 6.51±1.5dB.

NOTE

This insertion loss must be slightly less (at least 0.2dB) than the insertion loss measured between the RF IN/OUT and RF SUM jacks (para 6-8).

(8) Correct the hybrid attenuator calibration tag marking, if incorrect.

(9) Successively increase the ATTENUATOR DB control, from the reading obtained in step (7), by 6, 9, and 12. Record the readings on the meter of the SWR indicator for the variable attenuator ATTENUATOR DB control settings of plus 6dB, plus 9dB, and plus 12dB.

(10) Reconnect the hybrid attenuator, solid lines figure 6-3.

(11) Adjust the hybrid attenuator ATTENUATOR control for the same SWR indicator meter readings recorded in step (12). Insertion losses must be within the following limits:

Variable attenuator setting	*Hybrid attenuator setting*
Increased 6dB	13 + 2.0, -1.3dB
Increased 9dB	16 +2.5, -1.3dB
Increased 12dB	19 +3.0, -1.5dB

(12) Reset the signal generator MEGACYCLES dial to 1090 and repeat steps (3) through (7).

(13) Correct the hybrid attenuator calibration tag marking for 1090MHz, if incorrect.

(14) Repeat step (9) using the reading obtained in step (13) for the variable attenuator.

(15) Reconnect the hybrid attenuator, solid lines figure 6-3.

(16) Adjust the hybrid attenuator ATTENUATOR control for the same SWR indicator meter readings recorded in step 14. Insertions losses must be within the following limits:

Variable attenuator setting	*Hybrid attenuator setting*
Increased 6dB	13 +2.0, -1.3dB
Increased 9dB	16 +2.5, -1.3dB
Increased 12dB	19 +2.5, -1.4dB

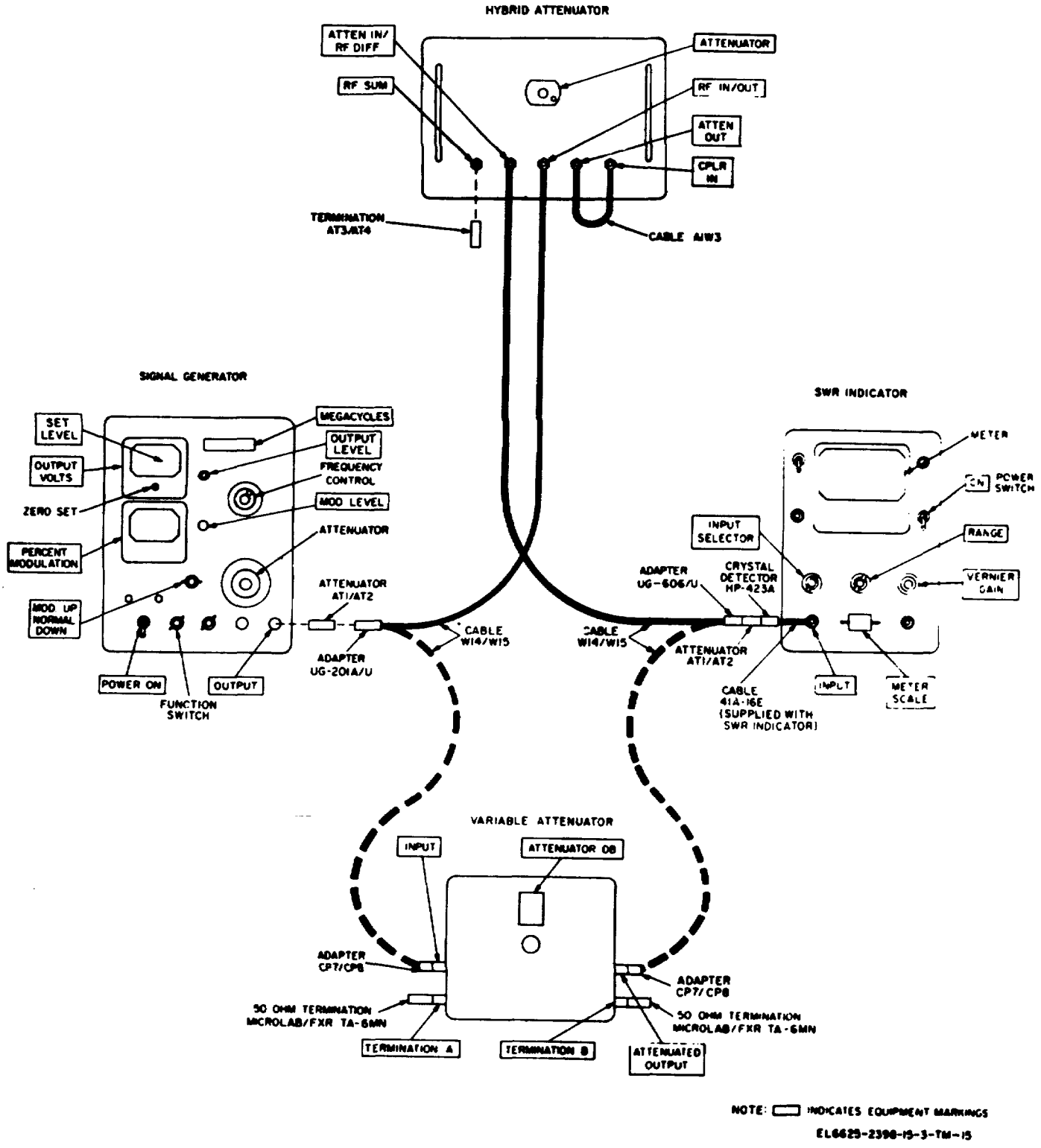


Figure 6-3. Hybrid attenuator difference channel (RF IN/OUT to ATTEN IN/RF DIFF jacks) insertion loss, calibration connections.

6-10. Hybrid Attenuator ATTENUATOR Dial Calibration

(fig. 6-4)

a. Test Equipment and Materials. The following test equipment and materials are required:

Signal Generator SG-340/G

Variable Attenuator, Alfred Electronics Model E101

SWR Indicator AN/UPM-108A

Crystal Detector HP-423A

Adapter UG-201)IA/U

Adapter UG-60()/U

Adapters CP7/CPS (2)

Fixed Attenuator AT1/AT2 (2)

50-ohm Terminations (2), Microlab/FXR TA-6MN

Cables W14/W15 (2)

Cable A1W3

b. Procedure. Connect the equipment as shown in solid lines (fig. 6-4), and proceed as follows:

(1) On the signal generator, set the MEGACYCLES; dial to 1090 with the frequency control knob. Set the function switch to CW, and turn on the signal generator. Allow a minimum of 20 minutes warm-up period before proceeding.

(2) With the METER SCALE set to NORMAL, and INPUT SELECTOR set to XTA200KΩ, turn on the SWR indicator and allow a minimum of 10 minutes warm-up period before proceeding.

(3) Turn off the signal generator and zero set the OUTPUT VOLTS meter.

(4) Turn on the signal generator, and adjust the OUTPUT LEVEL control knob for an OUTPUT VOLTS meter indication at the SET LEVEL (+4 DBM) mark, with the attenuator set to 0dB.

NOTE

Check that OUTPUT VOLTS meter indication is exactly on the SET LEVEL mark with the attenuator set to OdB (outer scale). Readjust the OUTPUT LEVEL control knob if required.

(5) On the signal generator, set the function switch to 1000~, the MOD. UP-NORMAL-DOWN switch to NORMAL and adjust the MOD. LEVEL control for a reading of 50 on the PERCENT MODULATION meter. Set the hybrid attenuator ATTENUATOR control to 0 (zero). Adjust the SWR indicator VERNIER GAIN control and the RANGE switch for an exact meter reading (e.g., .5 on the DB meter scale). Record the meter reading.

(6) Disconnect the hybrid attenuator under test and connect the variable attenuator, as shown by broken lines, figure 6-4.

(7) Adjust the variable attenuator ATTENUATOR DB control for the same SWR indicator meter reading recorded in step b(5). The ATTENUATOR DB control of the variable attenuator must indicate 0 +1.0, -0.0dB.

(8) Correct the hybrid attenuator calibration tag marking, if incorrect.

(9) Disconnect the variable attenuator and reconnect the hybrid attenuator, as shown by solid lines, figure 6-4.

(10) Record the readings on the meter of the standing wave ratio indicator for the hybrid attenuator ATTENUATOR control settings of 3.0, 6.0, 9.0, 12.0, 15.0, 20.0, and 25.0.

(11) Disconnect the hybrid attenuator and reconnect the variable attenuator, as shown by broken lines, figure 6-4.

(12) Adjust the variable attenuator ATTENUATOR DB control for the same SWR indicator meter readings recorded in step (10). Calibration of the hybrid attenuator must be within the following limits:

Hybrid attenuator settings	*Variable attenuator settings*
3.0	3±1.0dB
6.0	6±1.0dB
9.0	9±1.0dB

Hybrid attenuator settings	*Variable attenuator settings*
12.0	12±1.1ldB
15.0	15±1.1dB
20.0	20±1.1dB
25.0	25±1.2dB

(13) Correct the hybrid attenuator calibration tag markings for 1090MHz, if incorrect.

(14) Reset the signal generator MEGACYCLES dial to 1030 and repeat steps (3) through (11) above. The ATTENUATOR DB control of the variable attenuator must indicate 0 +3.0, -0.0dB.

(15) Repeat step (12) for the readings recorded in step (14), with the following limits:

Hybrid attenuator settings	*Variable attenuator settings*
3.0	3±3.0, -2.0dB
6.0	6±3.0, -2.0dB
9.0	9±3.0, -2.0dB
12.0	12±3.0, -2.0dB
15.0	15±3.0, -2.0dB
20.0	20±3.0, -2.0dB
25.0	25±3.0, -2.0dB

(16) Correct the hybrid attenuator calibration tag markings for 1(0O0MHz, if incorrect.

6-1 1. Hybrid Attenuator VSWR Measurements
(fig. 6-5)

a. Trust Equipment and Materials. The following test equipment and materials are required:

Signal Generator SG-340/G

Slotted Line IM-92/U

SWR Indicator AN/UPM-108A

Low Pass Filter HP-360C

Adapter UG-606/U

Fixed Attenuator AT1/AT2

Terminations AT3/AT4 (2)

Adapter CP7/CP8 (2)

Cables W14/W15 (2)

Cable A1W3.

b. Procedure.

(1) On the signal generator, set the MEGACYCLES dial to 1030 with the frequency control knob. Set the function switch to 1000 , the MOD. UP-NORMAL-DOWN to NORMAL, adjust the MOD. LEVEL control for a reading of 50 on the PERCENT MODULATION meter, and set the attenuator to 0dB (outer scale). Turn on the signal generator and allow a minimum of 20 minutes warm-up period before proceeding.

(2) With the METER SCALE set to NORMAL, and INPUT SELECTOR set to XTAL200KΩ, turn on the SWR indicator and allow a minimum of 10 minutes warm-up period before proceeding.

(3) Terminate and connect the hybrid attenuator as directed in A of figure 6-5 (RF IN/OUT jack VSWR).

(4) Insert the crystal in the rf detector of the slotted line and turn the probe depth control fully clockwise. Adjust the slotted line tuning knob for a maximum indication on the meter of the SWR indicator.

(5) Adjust the signal generator OUTPUT LEVEL control for a centered reading on the meter of the SWR indicator.

(6) Move the carriage of the slotted line, with the drive control, to obtain a peak (maximum) meter reading on the SWR indicator.

(7) Decrease the slotted line probe depth (turn control counterclockwise), while adjusting the VERNIER GAIN control and RANGE switch of the SWR indicator, to the minimum probe depth required to provide full scale deflection on the meter of the SWR indicator (consistent with a usable meter reading, free of noise and jitter).

(8) Readjust the drive control knob of the slotted line for the peak (maximum) reading on the standing wave ratio indicator meter. Adjust the VERNIER GAIN control and RANGE switch of the SWR indicator for a meter reading of exactly 1 on the SWR scale.

(9) Move the carriage of the slotted line, with the drive knob, to obtain a null (minimum) reading on the meter of the SWR indicator. Read the voltage standing wave ratio on the

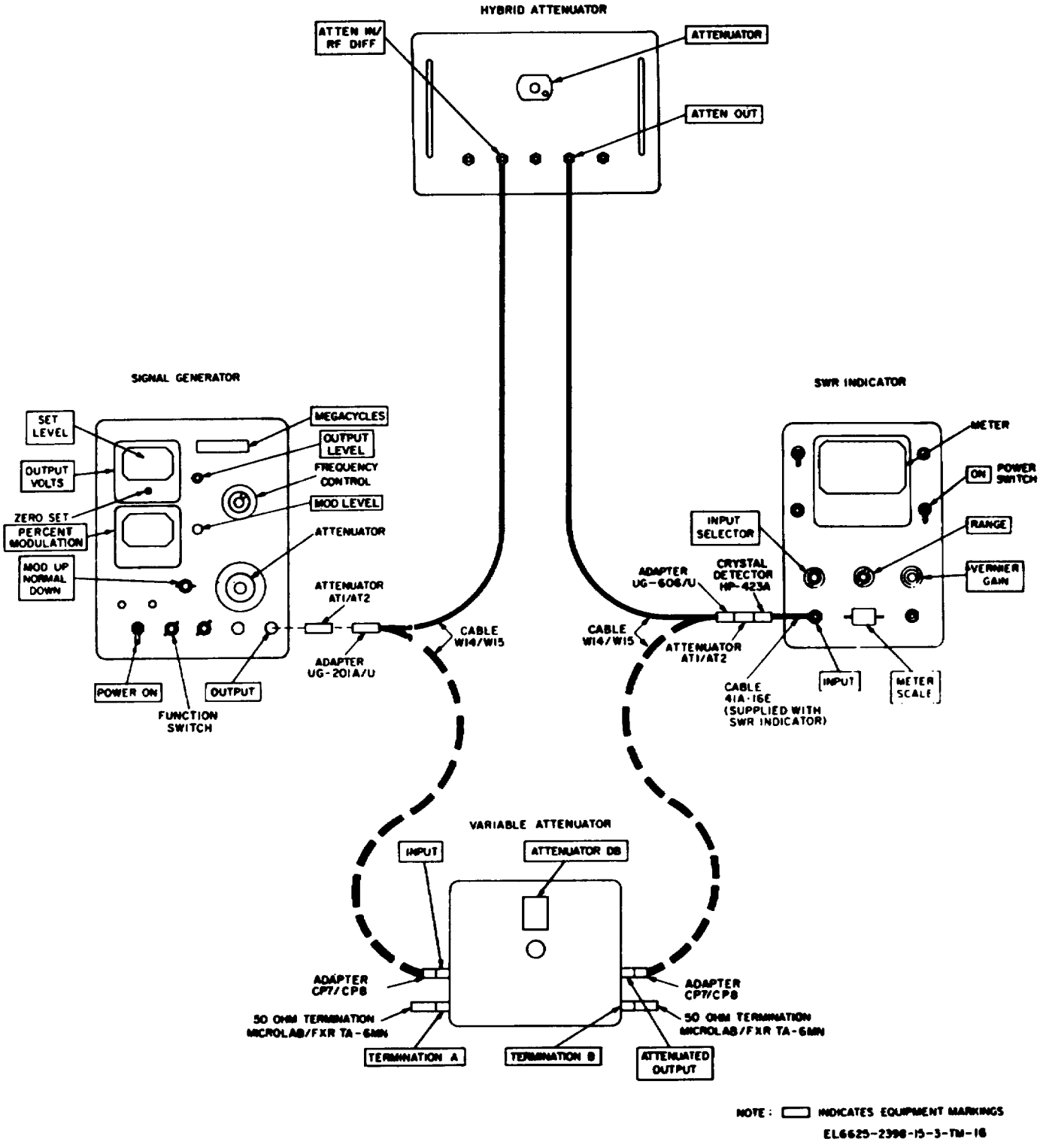


Figure 6-4. Hybrid attenuator ATTENUATOR dial, calibration connections.

SWR scale (top) of the SWR indicator meter. The meter must indicate less than 1.65 on the SWR scale.

(10) Terminate and connect the hybrid attenuator as directed in B of figure 6-5 (RF SUM jack VSWR).

(11) Repeat steps (4) through (9). SWR indicator meter must indicate less than 1.2 on the SWR scale.

(12) Terminate and connect the .hybrid attenuator as directed in C of figure 6-5 (CPLR IN jack VSWR).

(13) Repeat steps (4) through (9). SWR indicator meter must indicate less than 1.5 on the SWR scale.

(14) Terminate and connect the hybrid attenuator as directed in D of figure 6-5 (ATTEN OUT jack VSWR). Set ATTENUATOR control to 0 (zero).

(15) Repeat steps (4) through (9). SWR indicator meter must indicate less than 1.5 on the SWR scale.

(16) Terminate and connect the hybrid attenuator as directed in E of figure 6-5 (hybrid attenuator VSWR). Set ATTENUATOR control to 0 (zero).

(17) Repeat steps (4) through (9). Standing wave ratio indicator must indicate less than 1.6 on the SWR scale.

6-12. Calibration of Insertion loss for Cables W14/W11 and W39
(fig. 6-6)

a. Test Equipment and Materials. The following test equipment and materials are required:

Signal Generator SG-340/G

SWR Indicator AN/UPM-108A

Adapter UG-606/U

Adapter UG-914/U

Adapter CP7/CP8 (2)

Cable W14/W15 (1)

NOTE
Connect the test equipment as shown in solid lines of figure 6-6.

b. Procedure for Cables W14/ W15.

(1) On the signal generator, set the MEGACYCLES; dial to 1030 with the frequency control knob. Set the function switch to 1000~, the MOD. UP-NORMAL-DOWN to NORMAL, and the attenuator to 0dB (outer scale). Turn on the signal generator and allow a minimum of 20 minutes warm-up period before proceeding. Adjust the MOD LEVEL, control for a reading of 50 on the PERCENT MODULATION meter.

(2) With the METER SCALE set to EXPAND, and the INPUT SELECTOR set to XTAL-200KΩ, turn on the SWR indicator and allow a minimum of 10 minutes warm-up period before proceeding.

(3) Adjust the VERNIER GAIN control and the RANGE switch for a reading of 0 (zero) on the EXPANDED DB scale of the SWR indicator meter.

(4) Connect the unused W14/W15 cable as shown with broken lines in figure 6-6.

(5) Read insertion loss on the EXPANDED DB scale of the SWR indicator meter, reading must not exceed 2.5. Replace or repair (para 7-7) the cable if the insertion loss exceeds 2.5dB.

(6) Compare insertion loss with 1030MHz insertion loss marking on cable sleeve. Change the marking (by scraping off ink and remarking with India ink) if measured insertion loss exceeds +0.2dB of marked insertion loss.

(7) Reconnect the test equipment as shown with solid lines in figure 6-6 and set the MEGACYCLES dial of the signal generator to 1090MHz.

(8) Repeat steps (3) through (6) except compare insertion loss with sleeve marking for 1090MHz.

(9) Substitute the calibrated W14/W15 cable

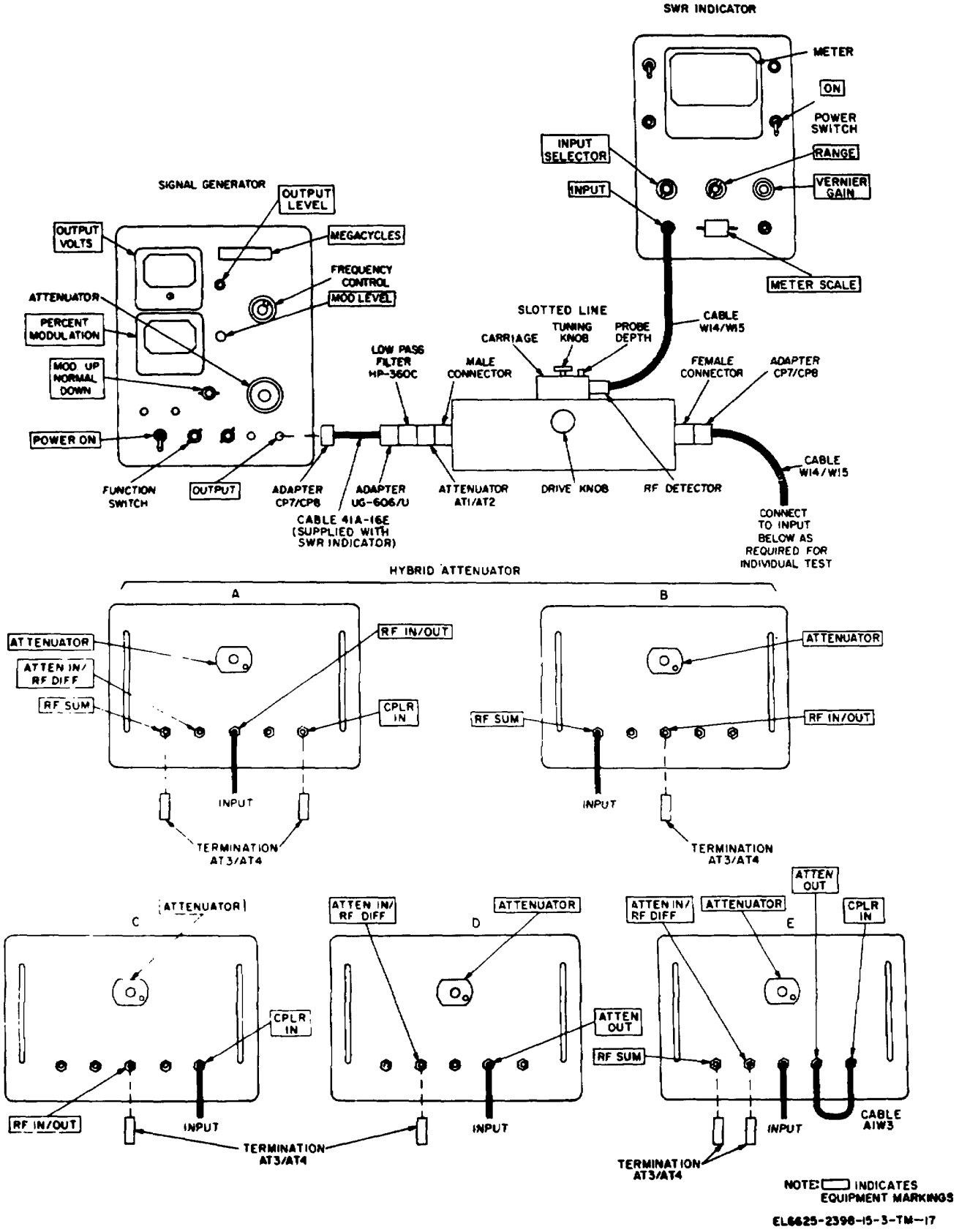


Figure 6-5. Hybrid attentuator VSWR, test connections

for the uncalibrated cable and connect the test equipment as shown with solid lines in figure 6-6.

(10) Repeat steps (7) and (8) for the uncalibrated W14/W15 cable.

(11) Reconnect the test equipment as shown with solid lines in figure 6-6 and set the MEGA- CYCLES dial of the signal generator to 1030MHz.

(12) Repeat steps (3) through (6) above.

c. Procedure for Cable W39 (fig. 6-11).

(1) Remove and retain couplers CP1 and CP2. Remove the retaining clips on one end of the cable by loosening six screws on the shell (four cornered on the mating side and two centered on the back of the shell). Slip out the clips. Bend cable W39 into a circle and insert male connector P1 into female connector P2.

(2) Repeat steps (1) through (8) of b above, substituting plugs P3 and P4 of W39 (sleeve markings P1/A-P2/A) as the cable to be tested in step b(4). Insertion loss of cable at both frequencies must not exceed 2.0dB.

(3) Repeat steps (3) through (8) of b above, substituting plugs P5 and P6 of W39 (sleeve markings P1/A-P2/A) as the cable to be tested in step b(4). Insertion loss of cable at both frequencies must not exceed 2.0dB.

(4) Remove cable W39 from the test set-up, disengage plugs P2 and P1, replace the two retaining clips and tighten the six loosened screws. Replace couplers CP1 and CP2 between plugs P3/P4 and P5/P6, respectively.

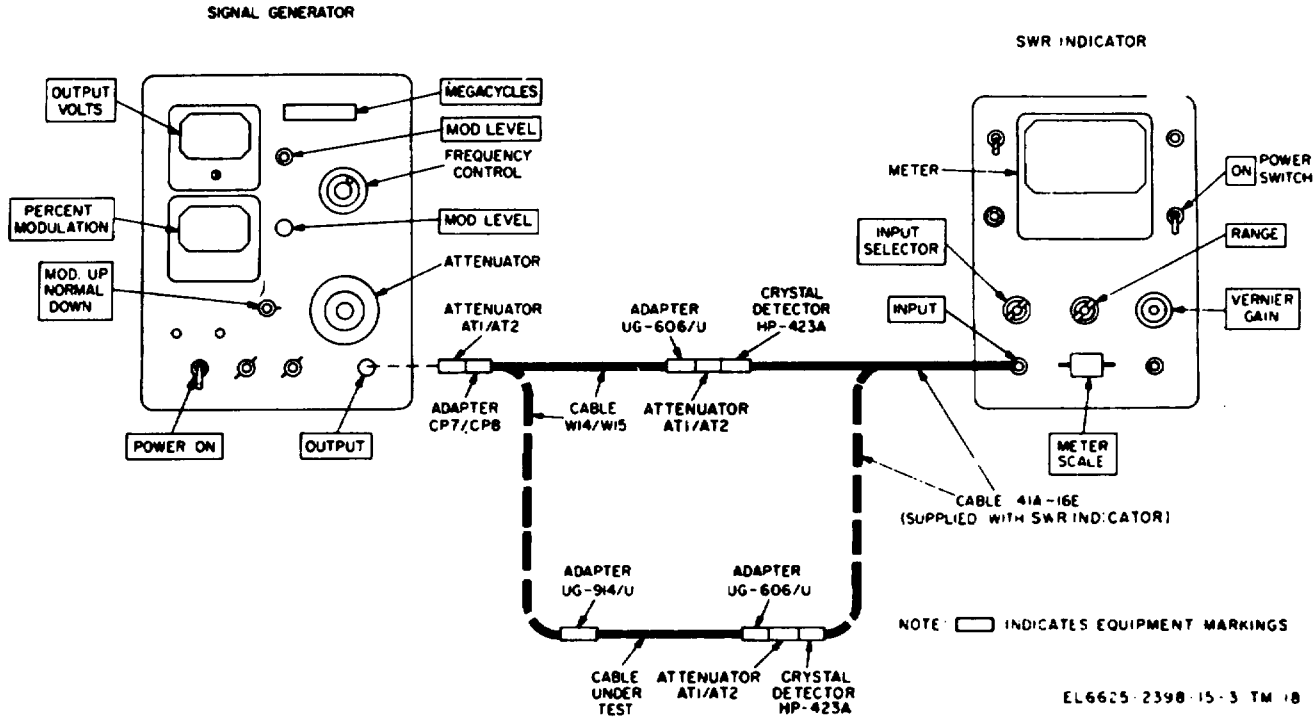


Figure 6-6. RF cable insertion losses, calibration connections.

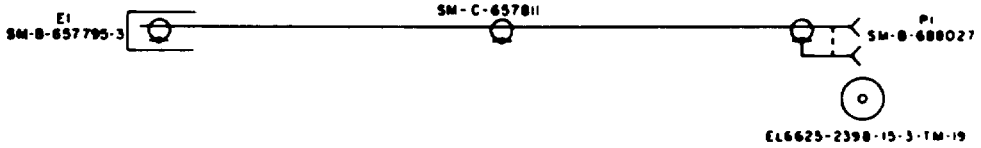


Figure 6-7. Cable W13, schematic diagram.

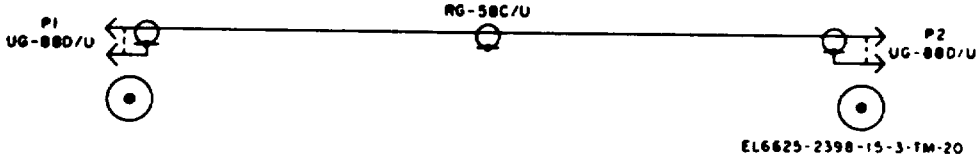


Figure 6-8. Cable W14/W15, schematic diagram.

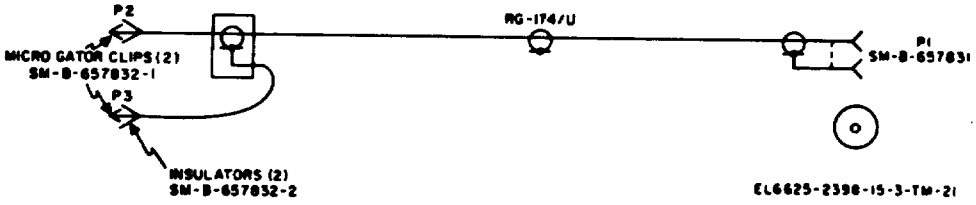


Figure 6-9. Cable W16, schematic diagram.

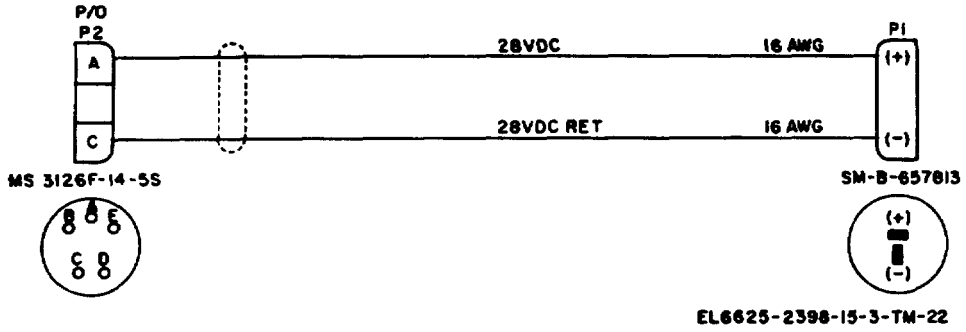


Figure 6-10. Cable W32, schematic diagram.

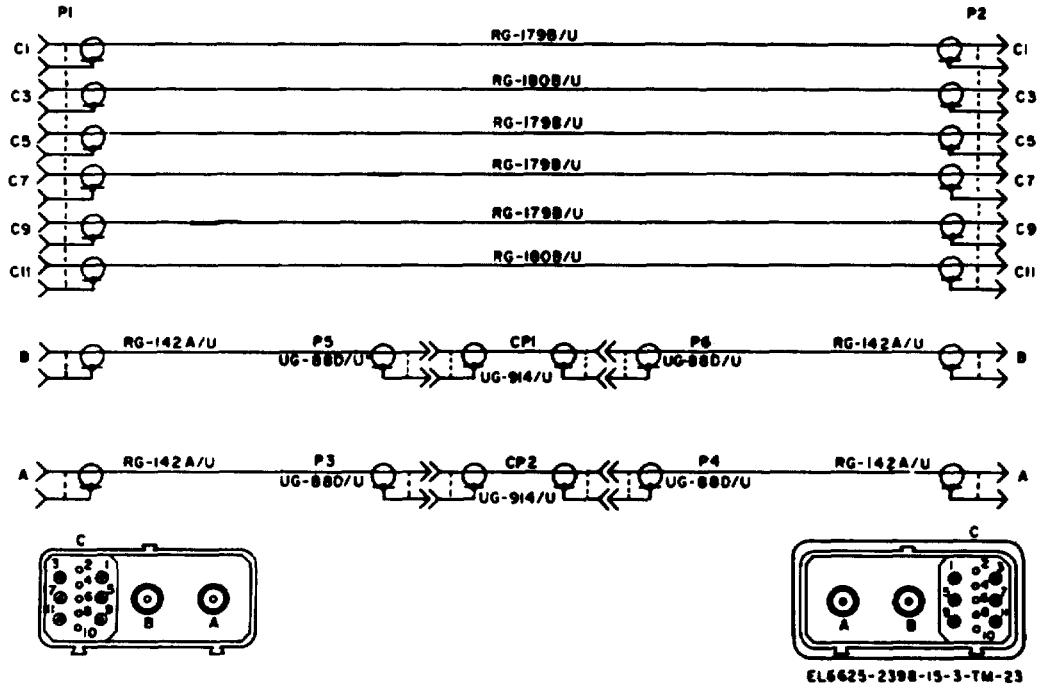


Figure 6-11. Cable W39, schematic diagram.

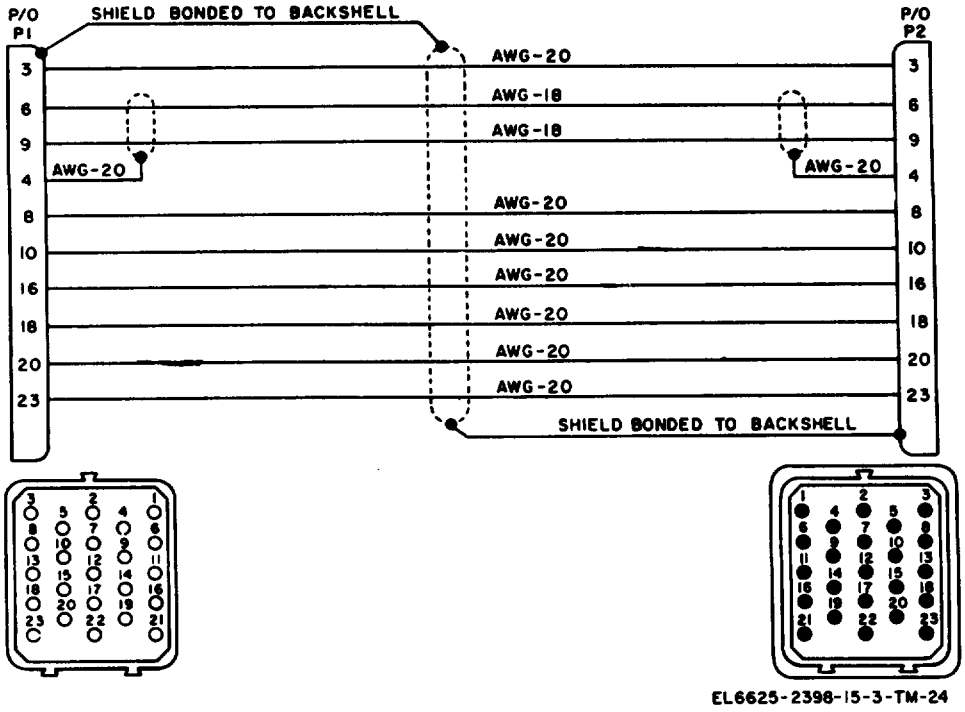


Figure 6-12. Cable W40, schematic diagram.

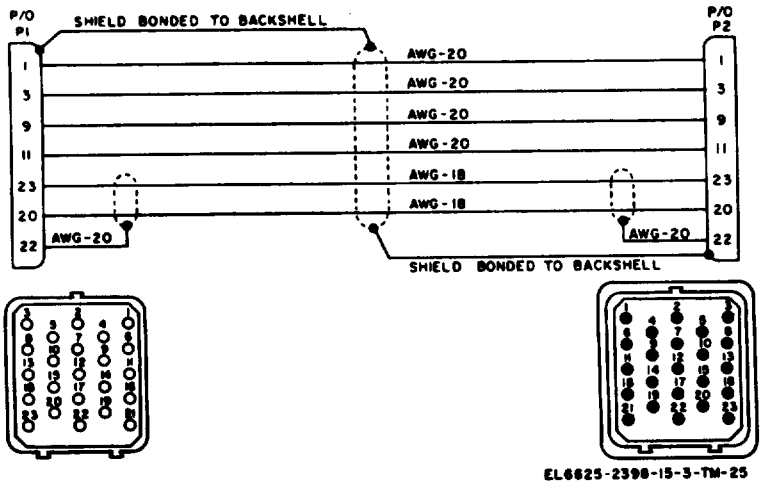


Figure 6-13. Cable W41, schematic diagram.

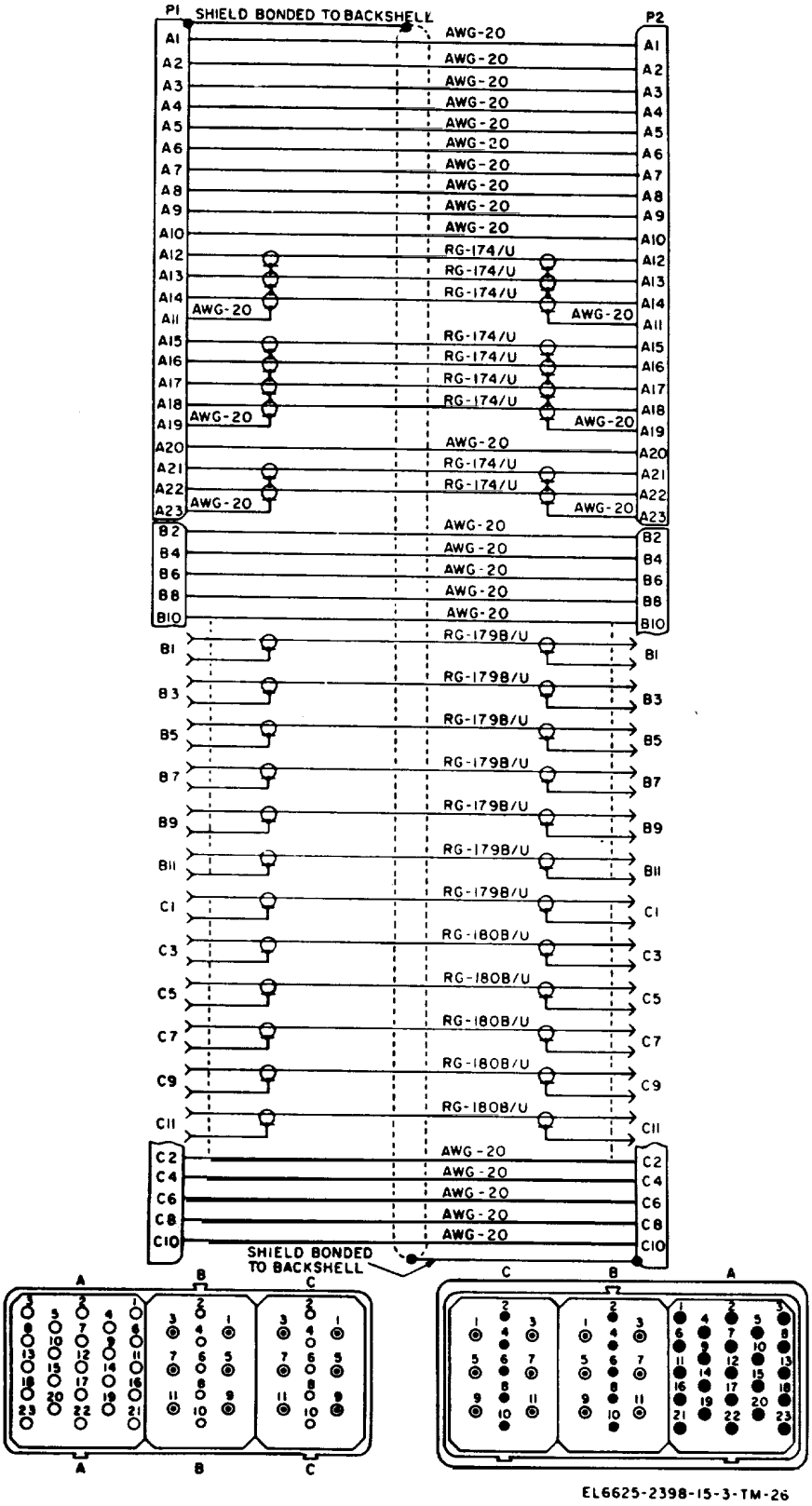


Figure 6-14. Cable W42, schematic diagram.

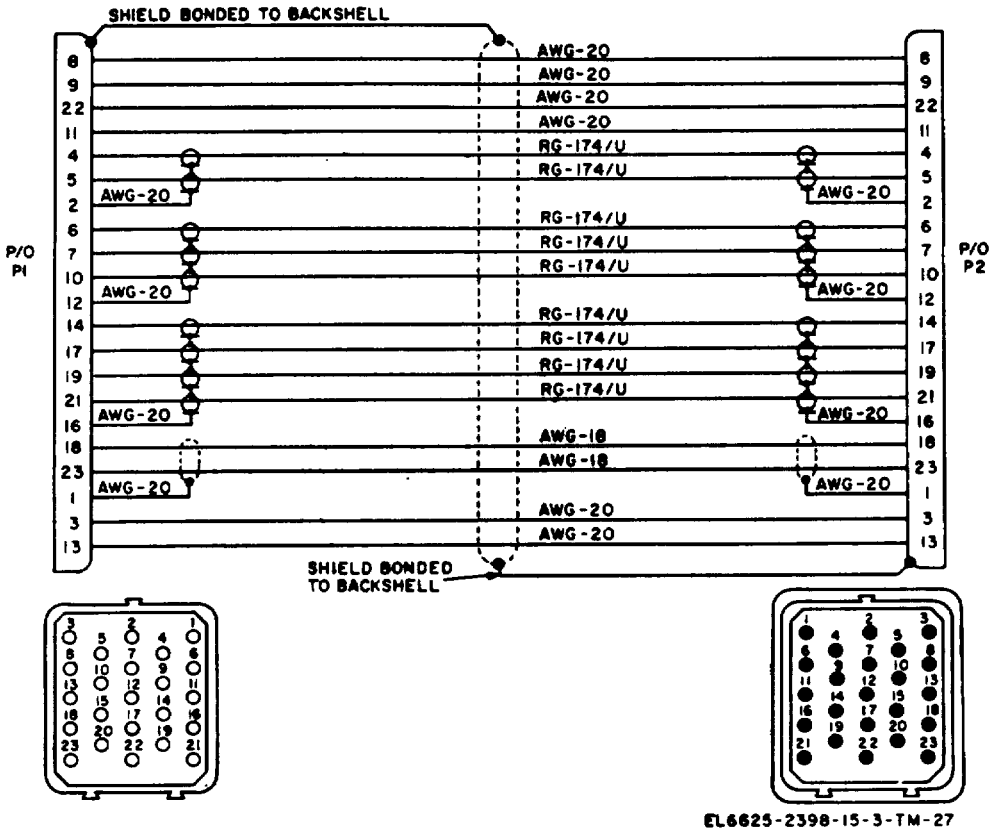


Figure 6-15. Cable W43, schematic diagram.

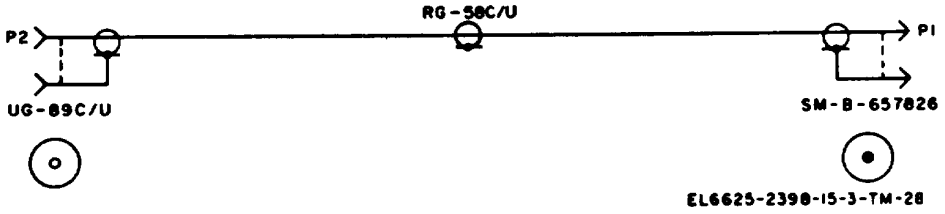


Figure 6-16. Cable W45, schematic diagram.

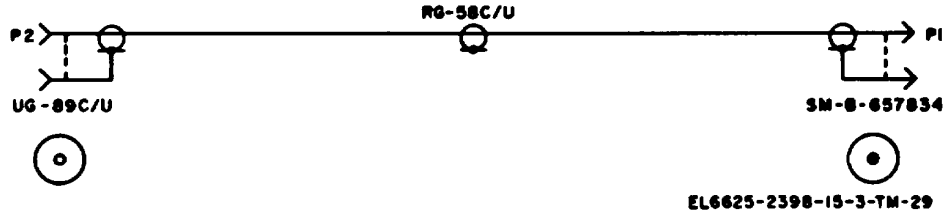


Figure 6-17. Cable W47, schematic diagram.

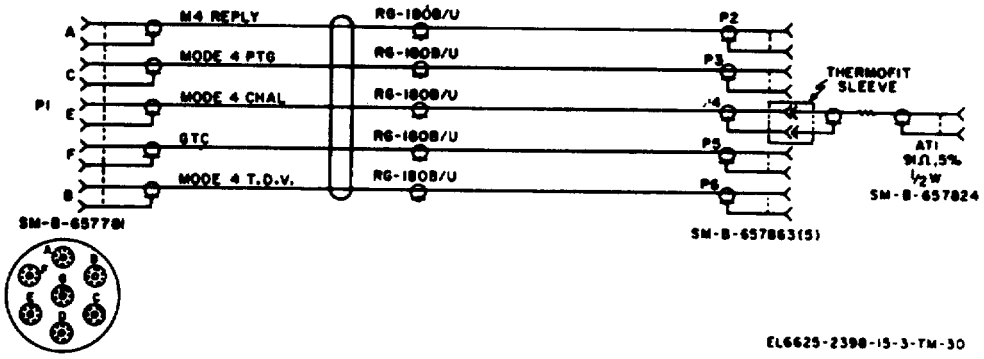


Figure 6-18. Cable W48, schematic diagram.

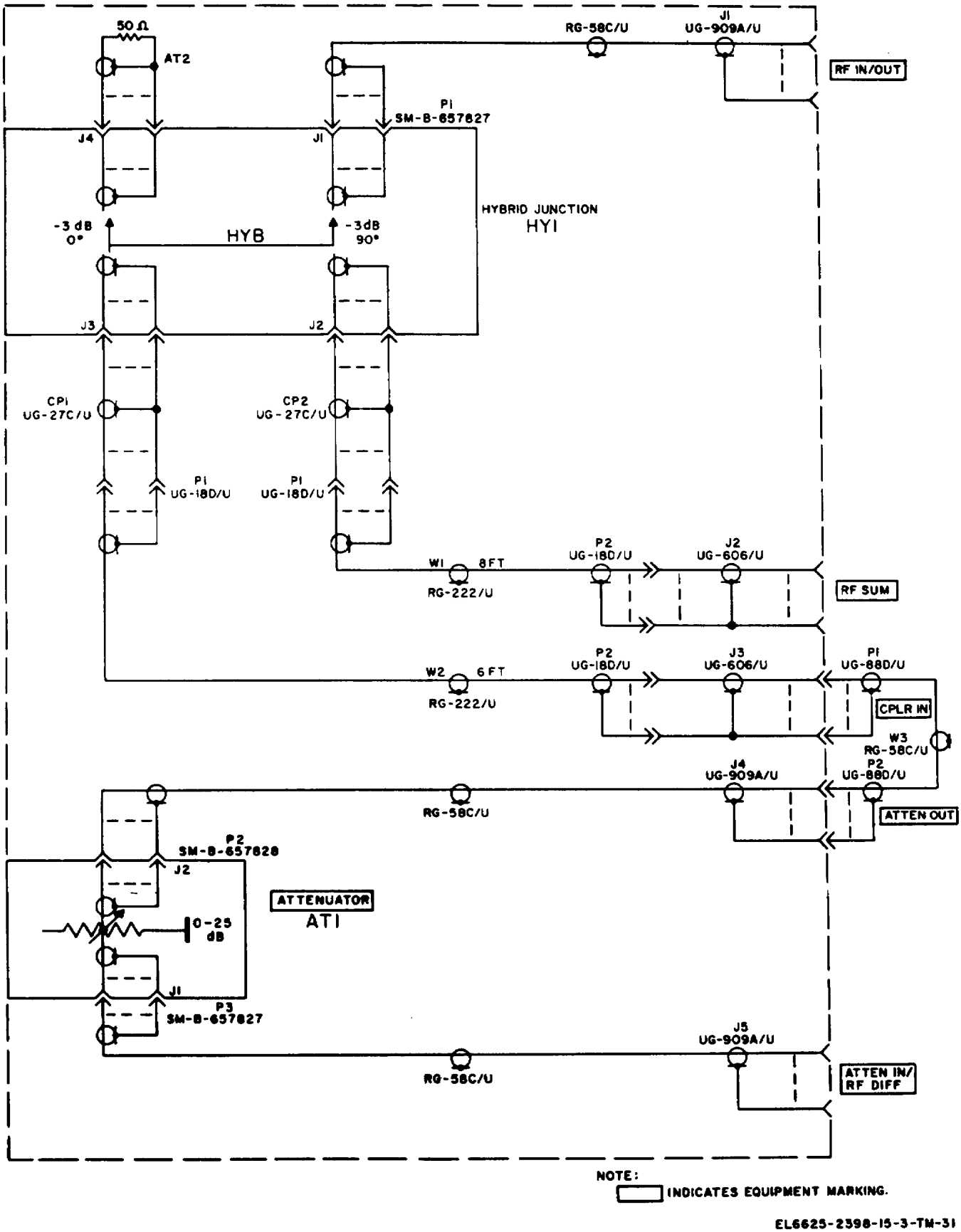
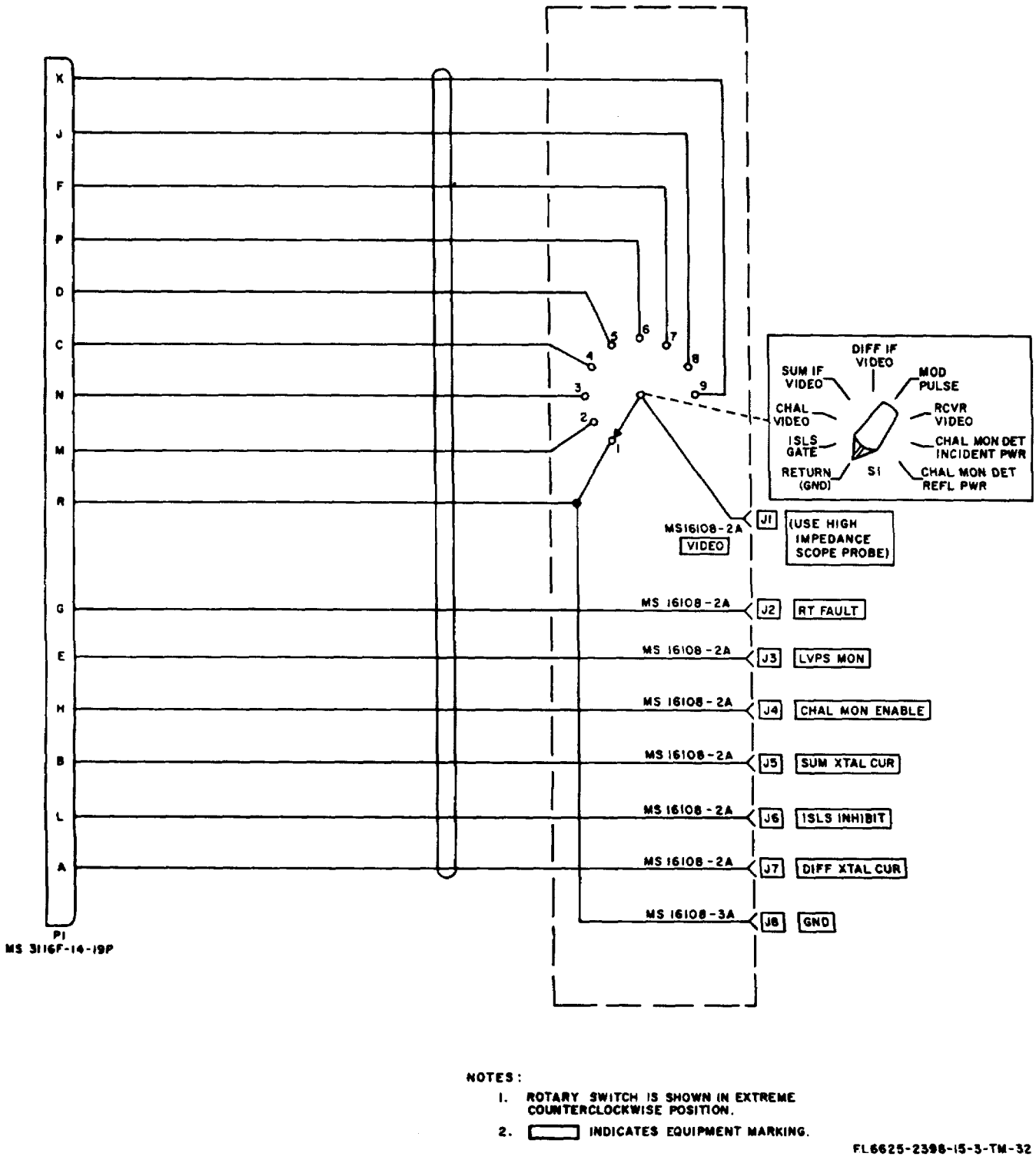


Figure 6-19. Hybrid Attenuator Assembly CN-1322/TPM-24(V), schematic diagram.

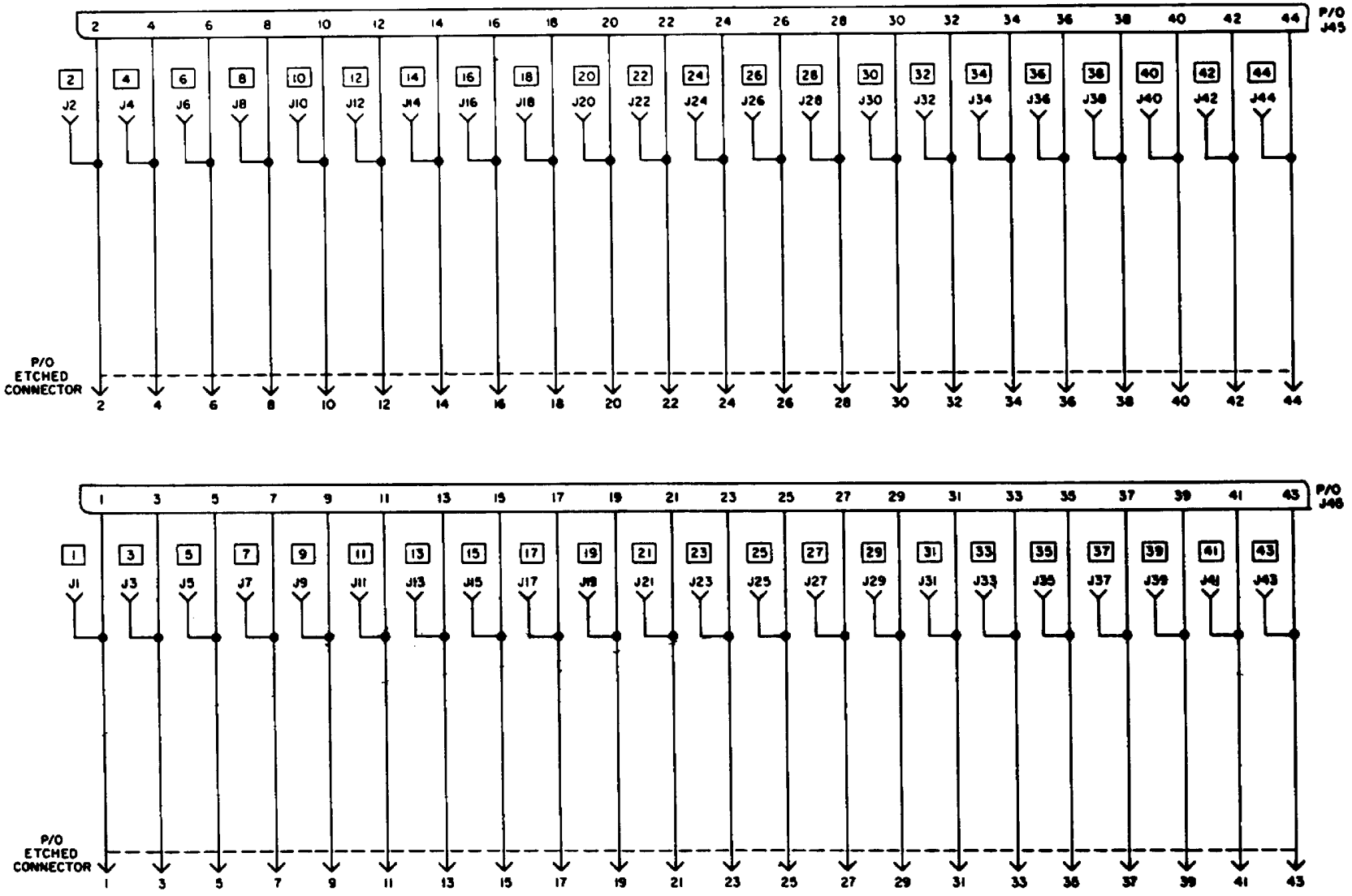


NOTES:

1. ROTARY SWITCH IS SHOWN IN EXTREME COUNTERCLOCKWISE POSITION.
2. ▭ INDICATES EQUIPMENT MARKING.

FL6625-2398-15-3-TM-32

Figure 6-20. Adapter, Test MX-8565/TPM-24(V), schematic diagram.



NOTES:

1. CONNECTORS J1 THROUGH J44 ARE TEST POINTS FOR MONITORING SIGNALS/VOLTAGES.
2. ▭ INDICATES EQUIPMENT MARKINGS.
3. EVEN NUMBERED TERMINALS AND TEST POINTS ARE LOCATED ON ONE SIDE OF THE BOARD, ODD NUMBERED ARE LOCATED ON THE OPPOSITE SIDE.
4. J45 IS A 44 PIN RECEPTACLE.

EL6625-2398-15-3-TM-33

Figure 6-21. Extender board A3/A4, schematic diagram.

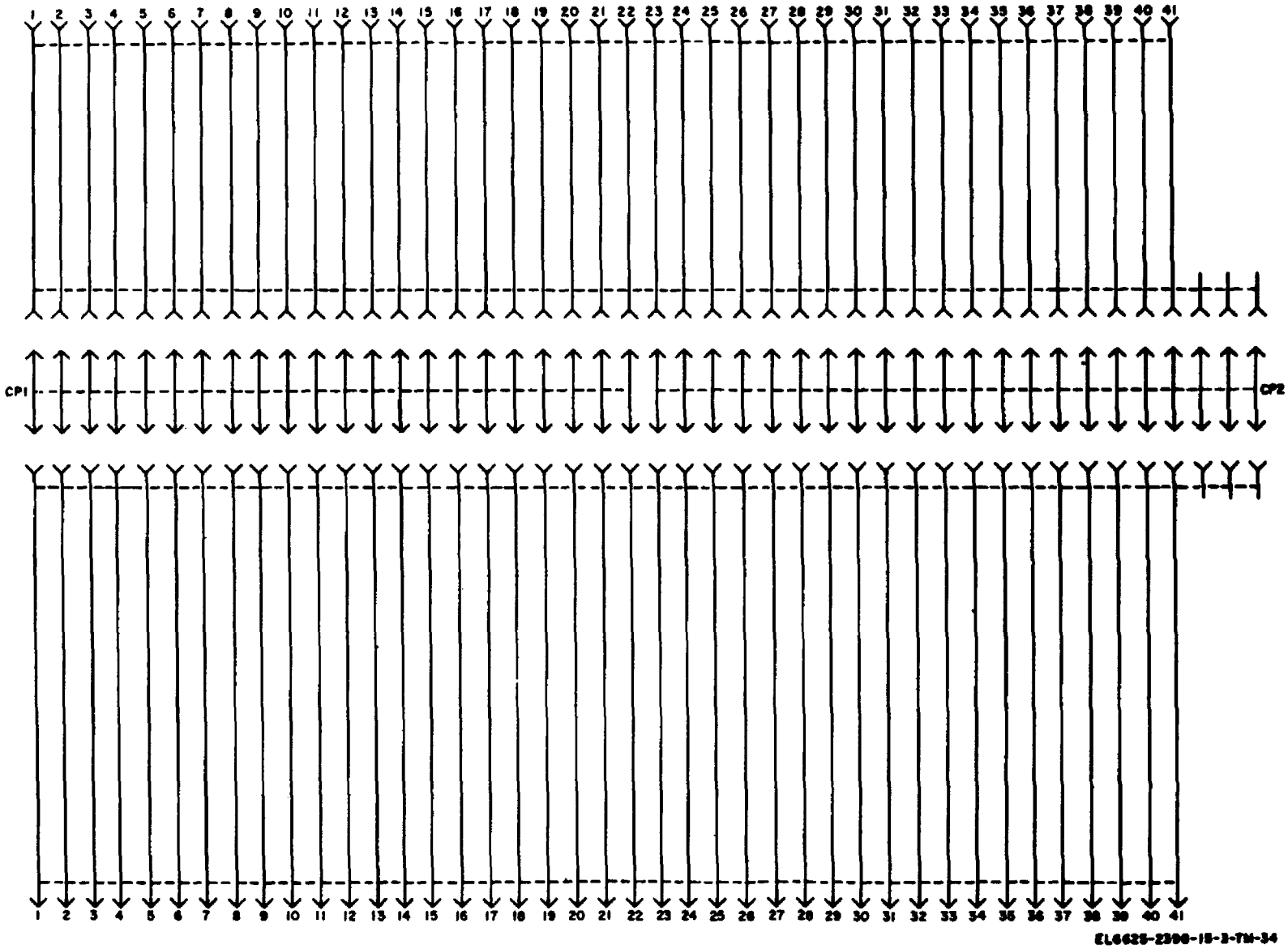


Figure 6-22. Extender board A5, schematic diagram.

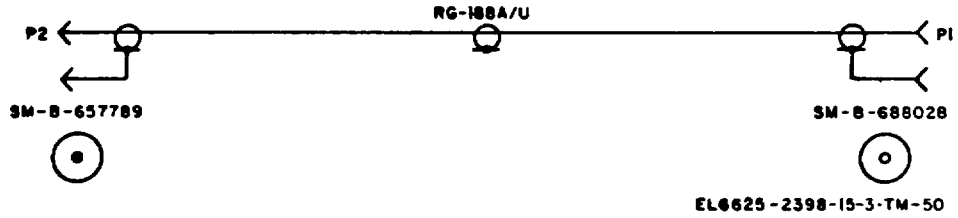


Figure 6-23. Cable W21, schematic diagram.

CHAPTER 7

REPAIRS

7-1. General Parts Replacement Techniques

All components of the test facilities set that are repairable can be easily replaced without special procedures. Parts located in the hybrid attenuator assembly (fig. 7-1) are accessible when the chassis of the hybrid attenuator assembly is removed from its case. Parts of the R-T front panel test adapter are accessible when the bottom cover is removed.

7-2. Nonrepairable Components

The following components of the test facilities set are nonrepairable.

a. Cables. Cables W13, W39 (except plugs P3 through P6), W40, W41, W42, W43 and W48 (except plugs P2 through P6).

b. Adapters. Terminations, and Attenuators.

(1) Adapters: CP1 through CP11

(2) Terminations: AT3 through AT6

(3) Attenuators: AT1/AT2, and W48 AT1

c. Couplers. W39CP1 and W39CP2.

7-3. Tools and Kits Required

Common name	*Tools or kit*	*Technical manual*
Tool Kit	Tool kit, Electronic Equipment TK-100/G	TM 11-5180
Printed wiring repair kit	Repair kit, Printed Wiring Board MK-772/U	TM 11-599

7-4. Repairable Components

The following components are repairable:

a. Hybrid Attenuator Assembly A1.

b. Front Panel Test Adapter A2.

c. Extender Boards A3, A4, and A5.

d. Cables W14/W15, W16, W21, W32, W39 (plugs P3 through P6), W45, W47, and W48 (plugs P2 through P6).

e. Printed Circuit Board Extractors MP1 and MP2.

7-5. Repair of Printed Circuit Board Extractors

If printed circuit board extractors MP1 or MP2 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 the printed-circuit board.

7-6. Extender Board Repair

If the printed-circuit wiring on the board extenders breaks, solder a short length of copper wire across the break. Use just enough heat to assure a well soldered bond, being careful not to burn the board base material.

7-7. Repair of Cable Assemblies

a. General.

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

(2) Cable assemblies under one 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 and/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

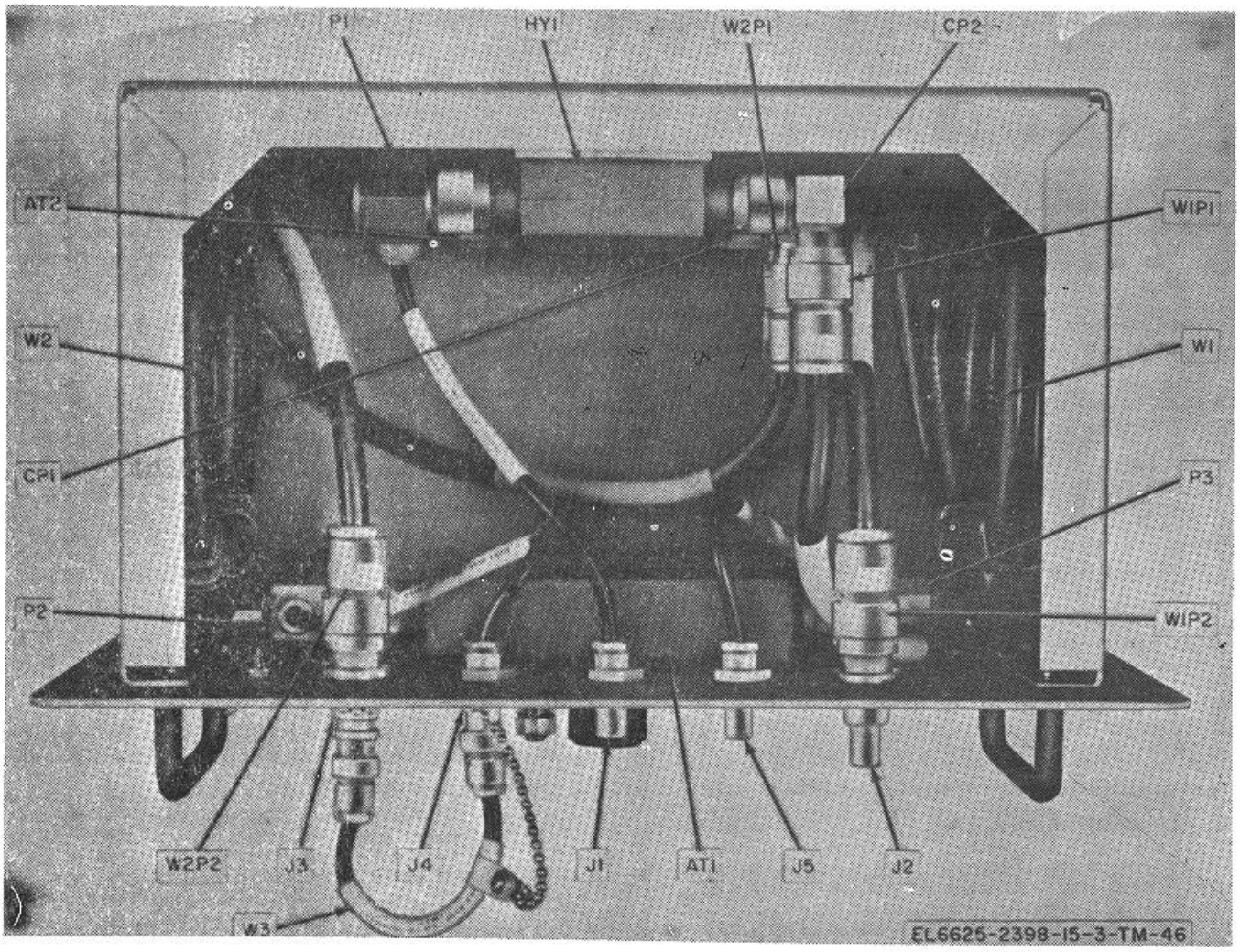


Figure 7-1. Part locations, hybrid attenuator A1.

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 one foot in length or longer.

(*a*) If a connector is damaged, replace the connector.

(*b*) If less than one-tenth of the cable is destroyed, repair the damaged cable assembly, replacing damaged connector(s).

(*c*) If more than one-tenth of the cable is 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, reverse the procedure that is used to attach it.

(5) To remove a damaged connector, cut the cable as closely as possible to the connector.

b. Cables W14/W15. If the cable is damaged beyond repair, use a new six foot length of RG58C/U to rebuild the cable assembly. If the repaired cable will be more than five feet long, it may be repaired. Salvage connectors whenever possible.

NOTE

A W14/W15 cable assembly that has been shortened must not be connected to the hybrid attenuator RF SUM jack J2 during any of the tests. Write this on a tag, and attach the tag to the shortened W14/W15 cable.

Replace a connector as follows:

(1) Remove any damaged connector by cutting the cable as closely as possible to the damaged connector.

(2) Slip the clamp nut, washer, and gasket over the cable (A fig. 7-5). Trim the jacket (dimension (D), A fig. 7-2).

(3) Comb out the braid smoothly and taper over the dielectric. Slide the braid clamp over the braid and push it against the cable jacket (B fig. 7-5).

(4) Bend the braid back over 'the braid clamp and trim the excess braid. Make sure that the braid does not extend beyond the braid clamp shoulder (C fig. 7-5).

(5) Cut the cable dielectric (dimension (A), A fig. 7-2), being careful not to nick the inner conductor. Tin the inner conductor (D fig. 7-5). Avoid melting or swelling the dielectric.

(6) Solder the contact to the inner conductor, making sure that the outer surfaces of the contact are free of solder. Avoid using excessive heat. The contact should be flush against the cable dielectric (E fig. 7-5).

(7) Insert the cable and parts into the connector body. Care should be taken to insure that the knife edge of the braid clamp is properly seated in the V-groove gasket (F fig. 7-5). Tighten the clamp nut securely.

(8) Calibrate the repaired cable (para 6-12).

c. Cable W16. If connector P1 or the conductors of the cable are damaged the entire assembly must be rebuilt. Use a new 6 inch length of RG-174/U. Salvage connector P1 and the alligator clips, if they are undamaged. A damaged alligator clip can be replaced without rebuilding the entire cable assembly.

(1) To attach connector P1 to the cable proceed as follows:

(*a*) Slide clamp nut and braid clamp over cable (A, fig. 7-3). Trim the jacket (dimension (D), A, fig. 7-2).

(*b*) Cut the braid without damaging the dielectric (dimension (C), A, fig. 7-2). Cut the dielectric, being careful not to nick the inner conductor (dimension (A), A, fig. 7-2). Tin the inner conductor (B, fig. 7-3).

(*c*) Flare braid without combing. Insert wedge between braid and dielectric. Push the braid clamp over wedge to hold it in place (C fig. 7-3).

(*d*) Solder contact to center conductor (E, fig. 7-3), making sure outside surfaces are free of solder. Avoid use of excessive heat.

(*e*) Insert cable and parts into connector body. Rotate cable slightly to make sure braid clamp is seated properly (F, fig. 7-3). Tighten clamp nut securely to complete assembly.

(2) To fabricate the alligator clip assembly proceed as follows:

(*a*) On the other end of the cable, strip 2 3/8 inches of outer jacket (dimension (D), A, fig. 7-2).

(*b*) From the end of the cable, remove 2 inches of braided outer conductor.

(*c*) From the end of the cable, remove 3/8 inch of dielectric (dimension (A), A, fig. 7-2).

(*d*) From a 3-inch length of wire, remove .25 inch of insulation from one end and 3/8 inch from the other end (A, fig. 7-4).

(*e*) Place the 0.25 inch side against the braid (B fig. 7-4).

(*f*) Slip the ferrule over the braid and the 0.25 inch side of the wire, so that the ferrule bottoms against the cable jacket and the wire insulation (C, fig. 7-4).

(*g*) Using a crimping tool, crimp the ferrule to the conductors.

(*h*) Solder alligator clips to the end of the 3-inch wire, and the end of the cable (D, fig. 7-4).

(*i*) Push an insulator over each alligator clip (D, fig. 7-4).

d. Cable W21. If any part of the cable assembly is damaged, the entire assembly must be rebuilt. Use a new six inch length of RG188A/U, and new or salvaged connectors.

(1) To attach connector P2, proceed as follows:

(*a*) Slide boot and outer ferrule over cable (A, fig. 7-7).

(*b*) Trim the cable jacket (dimension (D), A fig. 7-2).

(*c*) Cut the braid without damaging the dielectric (dimension (C), A, fig. 7-2). Cut the dielectric, being careful not to nick the inner conductor (dimension (A), A, fig. 7-2). Tin the center conductor. Avoid excessive heat while tinning to prevent swelling of cable dielectric.

(*d*) Install ferrule clamp nut assembly over cable so that the ferrule portion slides under braid and the insulator butts flush against cable dielectric. Slide outer ferrule over braid and up against nut. Crimp outer ferrule using crimping tool. Keep the cable dielectric bottomed against insulator (B fig. 7-7).

(*e*) Solder cable center conductor to contact.

(*f*) Screw connector body onto ferrule clamp nut assembly and tighten (C, fig. 7-7).

(*g*) Push boot forward to complete assembly (D, fig. 7-7).

(2) To attach connector P1, proceed as follows:

(*a*) Slide clamp nut over jacket of cable (A, fig. 7-8) and cut off jacket and braid from the end of the cable (dimension (A), B, fig. 7-2).

(*b*) Cut the dielectric, being careful not to nick the center conductor (dimension (B), B, fig. 7-2).

(*c*) Tin the center conductor (B fig. 7-8).

(*d*) Slit the jacket at two places, 180 degrees apart and 1/8 inch long (B, fig. 7-8).

(*e*) Insert the contact and insulator-ferrule assembly between the braid and cable insulation (C, fig. 7-8) making sure the center conductor enters the hole in the contact.

(*f*) Solder contact to center conductor.

(*g*) Insert the cable assembly into the body assembly, and lock the cable assembly by screwing the clamp nut to the body assembly (D, fig. 7-8).

e. Cable W32. A damaged cable assembly can be repaired if there is sufficient length of undamaged cable remaining to reach the power connections. Otherwise rebuild the assembly using a twenty foot length of CO-02MGF2/160335 cable. Salvage connector P1 if it is undamaged. Connector P2 cannot be salvaged.

(1) A damaged connector P1 will be replaced as follows:

(*a*) Remove the damaged connector.

(*b*) Trim the jacket (dimension (A), C, fig. 7-2).

(*c*) Remove insulation (dimension (B), C, fig. 7-2).

(*d*) Remove plug body from the new connector.

(*e*) Loosen binding screws.

(*f*) Push cable through cord grips and wrap wires around binding screws. See figure 6-10 for proper connections.

(*g*) Tighten the binding screws.

(*h*) Re-connect the plug body and tighten the screws on the cord grip.

(2) A damaged connector P2 will be replaced as follows:

(*a*) Remove the damaged connector.

(*b*) Trim the jacket (dimension (A), C, fig. 7-2).

(*c*) Remove insulation (dimension (B), C, fig. 7-2).

(*d*) Unscrew the connector strain relief from a new connector, and slide it over the cable end.

(*e*) Remove the grommet from the connector body and slide it over the wires.

(*f*) Crimp the cable wires to the connector contacts. See figure 6-10 for proper connections.

(*g*) Push the grommet forward into the connector body.

(*h*) Push the strain relief forward and tighten it.

f. Cable W39. Plugs P1 and P2 on this cable are nonrepairable. If either of these plugs are damaged, a new cable assembly must be obtained. If connectors P3 through P6 are damaged, replace the connector if sufficient RG-142A/U cable remains on the assembly to permit connection of P3/P4 and P5/P6 by couplers CP1 and CP2. Replace connectors P3 through P6 by repeating steps *b*(1) through *b*(8).

g. Cable W45. If any part of the cable assembly is damaged, the entire assembly must be rebuilt. Use a new six inch length of RG-58C/U, and new or salvaged connectors.

(1) Attach connector P2 to the new cable by repeating steps *b*(2) through *b*(7).

(2) To attach connector P1 to the new cable proceed as follows:

(*a*) Slide clamp nut and braid clamp over cable (A fig. 7-9). Trim the jacket (dimension (I)), A, fig. 7-2).

(*b*) Cut the braid without damaging the dielectric (dimension (C), A, fig. 7-2). Cut the dielectric, being careful not to nick the inner conductor (dimension (A), A, fig. 7-2). Tin the inner conductor (B, fig. 7-3).

(*c*) Flare braid without combing. Insert wedge between braid and dielectric. Push the braid clamp over wedge to hold it in place (C, fig. 7-3).

(*d*) Slip reducer bushing over dielectric and insulator bushing over conductor (D, fig. 7-3).

(*e*) Solder contact to center conductor (E, fig. 7-3), making sure outside surfaces are free of solder. Avoid use of excessive heat.

(*f*) Insert cable and parts into connector body. Rotate cable slightly to make sure braid clamp is seated properly (F, fig. 7-3). Tighten clamp nut securely to complete assembly.

h. Cable W47. If any part of the cable assembly is damaged, the entire assembly must be rebuilt. Use a new six inch length of RG-58C/U, and new or salvaged connectors.

(1) Attach connector P2 to the new cable by repeating steps *b*(2) through *b*(7).

(2) To attach connector P1 to the new cable proceed as follows:

(*a*) Slide clamp nut and braid clamp over cable (A fig. 7-3). Trim the jacket (dimension (D), A, fig. 7-2).

(*b*) Cut the braid without damaging the dielectric (dimension (C), A, fig. 7-2). Cut the dielectric, being careful not to nick the inner conductor (dimension (A), A, fig. 7-2). Tin the inner conductor (B, fig. 7-3).

(*c*) Flare braid without combing. Insert wedge between braid and dielectric. Push braid clamp over wedge to hold it in place (C, fig. 7-3).

(*d*) Slip reducer bushing over dielectric and insulator bushing over conductor (D, fig. 7-3).

(*e*) Solder contact to center conductor (E, fig. 7-3), making sure outside surfaces are free of solder. Avoid use of excessive heat.

(*f*) Insert cable and parts into connector body. Rotate cable slightly to make sure braid clamp is seated properly (F, fig. 7-3). Tighten clamp nut securely to complete assembly.

i. Cable W48. This cable is not repairable if connector P1, or one or more of the five coaxial cables is damaged, so as not to permit connection in the test set-up. If connectors P2 through P6 are damaged, the cable can be repaired. A damaged connector can be replaced as follows:

(1) Slip nut assembly over cable (A, fig. 7-6).

(2) Cut off 1/4 inch of jacket and braid from the end of the cable (dimension (A), B, fig. 7-2).

(3) Cut off dielectric (dimension (B), fig. 7-2) from jacket and braid. Do not nick the inner conductor.

(4) Tin the inner conductor (B, fig. 7-6).

(5) Cut 3 slits 1/8 inch long and 120 degrees apart in outer jacket only (C, fig. 7-6) without disturbing braid. Raise outer jacket and braid away from dielectric in order to facilitate the entry of contact-wedge assembly. Straighten inner conductor if necessary.

(6) Slide contact-wedge assembly under braid and jacket (D, fig. 7-6). Push back as far as possible, making sure that inner conductor is visible through side hole of contact. Solder contact to inner conductor through side hole and make sure outside surfaces are free of solder. Avoid use of excessive heat.

(7) Insert cable and contact-wedge assembly into body assembly. Tighten nut securely to complete assembly.

j. Cable A1W1 (fig. 7-1). If the cable is damaged beyond repair, use a new eight foot length of RG-222/U and new or salvaged connectors, to rebuild the cable assembly. If the damaged cable can still be used, repair the longer end of the cable.

NOTE

It is necessary that the insertion losses of the difference channel be at least 0.2dB less than the insertion losses of the sum channel, at a 0dB setting of the variable attenuator. After repairing a damaged cable or replacing a connector, check to see that the 0.2dB difference still exists. If it does not, fabricate a new cable.

(1) A damaged connector will be replaced as follows:

(*a*) Repeat steps *b*(1) through *b*(4).

(*b*) Cut the cable dielectric (dimension (A), A, fig. 7-2), being careful not to nick the inner conductor.

(*c*) Clean the center conductor of the cable with muriatic acid.

(*d*) Tin the center conductor. Use type SN60WS solder.

(*e*) Wash the center conductor in ammonia.

(*f*) Rinse the center conductor in isopropyl alcohol.

(*g*) Solder the contact to the inner conductor, making sure that the outer surfaces of the contact are free of solder. Use type SN60WS solder. Avoid using excessive heat. The contact should be flush against the cable dielectric (E, fig. 7-5).

(*h*) Insert. the cable and parts into the connector body. Care should be taken to insure that the knife edge of the braid clamp is properly seated in the V-groove gasket (F, fig. 7-5). Tighten the clamp nut securely.

(2) After the cable assembly is completed, calibrate the hybrid attenuator (para 6-10) and measure the hybrid attenuator VSWR (para 6-11).

k. Cable A1W2 (fig. 7-1). If the cable assembly is damaged beyond repair, use a new six foot length of RG-222/U and new or salvaged connectors to rebuild the cable assembly. If the damaged cable can still be used, repair the longer end of the cable.

(1) Replace a damaged connector as follows:

(a) Repeat steps *b*(1) through *b*(4).

(b) Repeat steps *i*(1)(*b*) through *i*(1)(*h*).

(2) After the cable assembly is completed, calibrate the hybrid attenuator (para 6-10) and

measure the hybrid attenuator VSWR (para 6-11).

l. Cable A1W3. If any part of the cable assembly is damaged, the entire assembly must be rebuilt. Use a new six inch length of RG-58C/U, and new or salvaged connectors.

(1) Attach connectors P1 and P2 to the new cable by repeating steps *b*(2) through *b*(7).

(2) Calibrate the hybrid attenuator (para 6-10) and measure the hybrid attenuator VSWR (para 6-11).

m. Cable to A1J1 (fig. 7-1). If any part of the cable assembly is damaged, the entire assembly must be rebuilt. Use a new eight inch length of RG-58C/U, and new or salvaged connectors.

(1) To attach connector A1J1, repeat steps *b*(2) through *b*(7).

(2) To attach connector A1P1, proceed as follows:

(*a*) Slip nut assembly over cable (A, fig. 7-6).

(*b*) Cut off 1/2 inch of jacket and braid from the end of the cable (dimension (A), B, fig. 7-2). Do not damage the cable dielectric.

(*c*) Cut off dielectric (dimension (B), B, fig. 7-2) from jacket and braid. Do not nick the inner conductor.

(*d*) Tin the inner conductor (B, fig. 7-6).

(*e*) Cut 3 slits 1/8 inch long and 120 degrees apart in outer jacket only (C, fig. 7-6) without disturbing braid. Raise outer jacket and braid away from dielectric in order to facilitate the entry of contact-wedge assembly. Straighten inner conductor if necessary.

(*f*) Slide contact-wedge assembly under braid and jacket (D, fig. 7-6). Push back as far as possible, making sure that inner conductor is visible through side hole of contact. Solder contact to inner conductor through side hole and make sure outside surfaces are free of solder. Avoid used of excessive heat.

(*g*) Insert cable and contact-wedge assembly into body assembly. Tighten nut securely to complete assembly.

(3) Calibrate hybrid attenuator (para 6-10) and measure the hybrid attenuator VSWR (para 6-11).

n. Cable to A1J4 (fig. 7-1). If any part of the cable assembly is damaged, the entire assembly must be rebuilt. Use a new eight inch length of RG-58C/U and new or salvaged connectors.

(1) To attach connectors A1J4, repeat steps *b*(2) through *b*(7).

(2) The procedure for attaching A1P2 is as follows:

(*a*) Repeat steps *b*(2) through *b*(5).

(*b*) Insert cable into angle body. Make sure that inner conductor is nested into slot of contact, and knife edge of braid clamp is properly seated in V-groove gasket. Tighten clamp nut securely.

(*c*) Solder inner conductor to contact through opening in body.

(*d*) Place cover in position and screw into place to complete assembly.

(3) Calibrate the hybrid attenuator (para 6-10) and measure the hybrid attenuator VSWR (para 6-11).

o. Cable to A1J5 (fig. 7-1). If any part of the cable assembly is damaged, the entire assembly must be rebuilt. Use a new eight inch length of RG-58C/U and new or salvaged connectors.

(1) To attach connector A1J5, repeat steps *b*(2) through *b*(7).

(2) To attach connector A1P3 to the cable, repeat steps 1(2)(*a*) through 1(2)(*g*).

(3) Calibrate the hybrid attenuator (para 6-10) and measure the hybrid attenuator VSWR (para 6-11).

p. Cable to A2P1. If the conductors of the cable are damaged beyond repair, rebuild the cable assembly with SM-657812-24-9 wire. See figure 6-20 for proper connections. Salvage

connector A2P1 whenever possible. The procedure for replacing a damaged connector A2P1 is as follows:

(1) Remove the damaged connector by cutting the cable as closely as possible to the damaged connector.

(2) Remove approximately 1 inch of tubing.

(3) Remove 0.38 inch of insulation from each wire.

(4) Tin each conductor end.

(5) Unscrew strain relief from a new connector and slide it back over the cable.

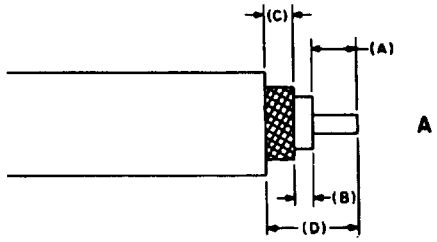
(6) Insert boot into tubing.

(7) Push grommet over wires.

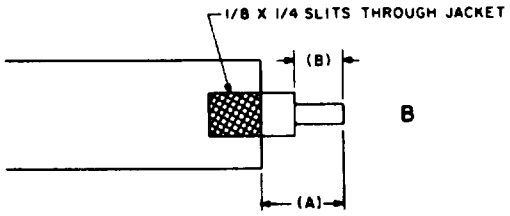
(8) Solder each wire to the proper connector contact. See figure 6-20 for proper connections.

(9) Push grommet forward into body of connector.

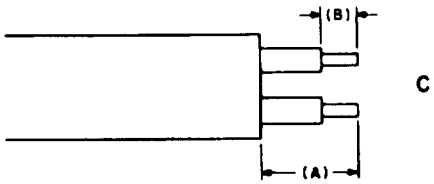
(10) Push the strain relief forward and tighten.



CABLE	CONNECTOR	TYPE	(A)	(B)	(C)	(D)
W14/W15	P1 AND P2	UG-88D/U	7/64	7/64	1/16	9/32
W16	P1	SM-B-657831	3/32	9/32	11/64	35/64
W16	ALLIGATOR CLIPS	SM-B-657832	3/8	1-5/8	3/8	2-3/8
W21	P2	SM-B-657789	1/4	17/64	9/32	51/64
W39	P3 THRU P6	UG-88D/U	7/64	7/64	1/16	9/32
W45	P1	SM-B-657826	3/32	9/32	11/64	35/64
W45	P2	UG-89C/U	7/64	7/64	1/16	9/32
W47	P1	SM-C-657834	3/32	9/32	11/64	35/64
W47	P2	UG-89C/U	7/64	7/64	1/16	9/32
A1W1	P1 AND P2	UG-18D/U	5/32	3/64	5/64	9/32
A1W2	P1 AND P2	UG-18D/U	5/32	3/64	5/64	9/32
A1W3	P1 AND P2	UG-88D/U	7/64	7/64	1/16	9/32
CABLE TO A1J4	A1J4	UG-909A/U	7/64	7/64	1/16	9/32
CABLE TO A1J4	P2	SM-B-657828	1/4	1/4	1/16	9/16
CABLES TO A1J1 & A1J5	A1J1, A1J5	UG-909A/U	7/64	7/64	1/16	9/32



CABLE	CONNECTOR	TYPE	(A)	(B)
CABLE TO A1J1 & A1J5	P1 AND P3	SM-B-657827	1/2	5/32
W21	P1	SM-B-688028	1/4	3/32
W48	P2 THRU P6	SM-C-657863	1/4	7/32



CABLE	CONNECTOR	TYPE	(A)	(B)
W32	P1	SM-B-657813	3/4	3/8
W32	P2	MS3126F-14-5S	3/4	3/16

EL6625-2398-15-3-TM-42

Figure 7-2. Cable stripping details.

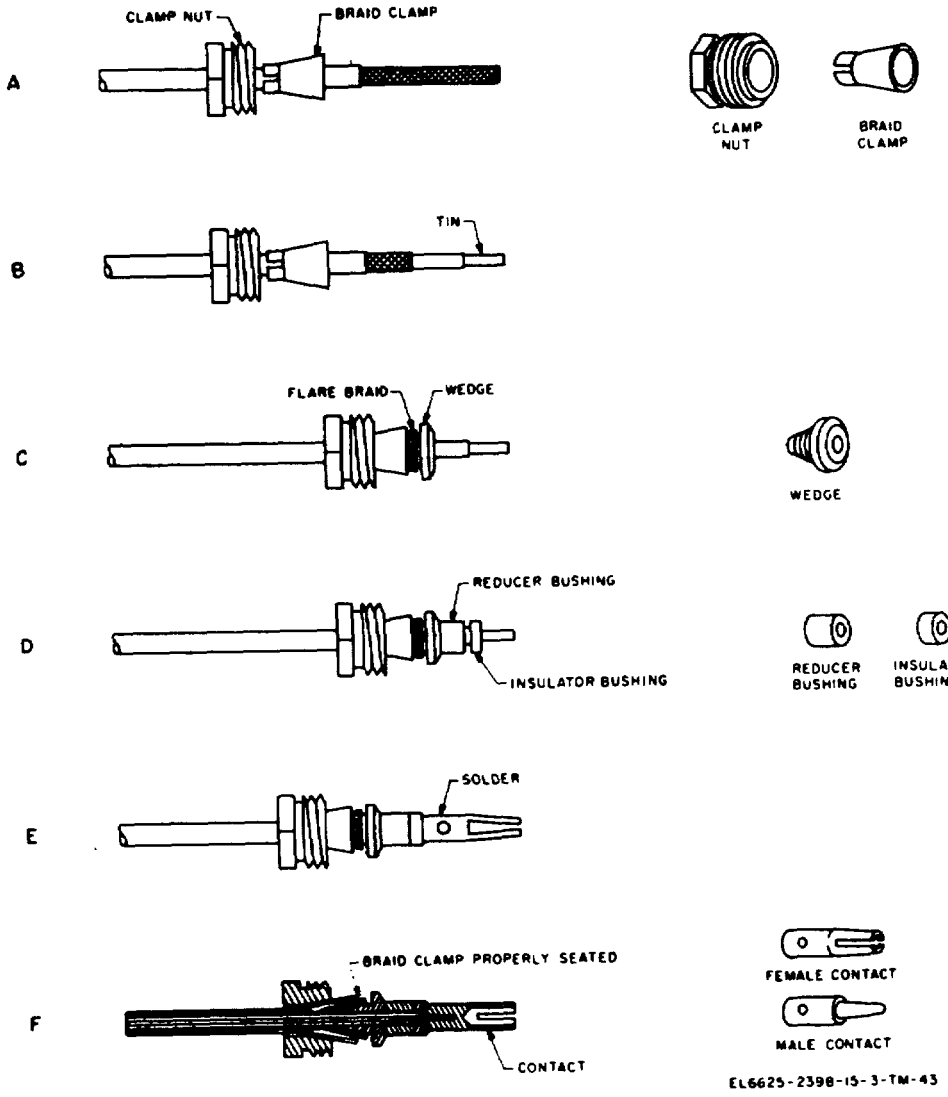


Figure 7-3. Assembly of connectors on cables W16, W45 and W47, and portions of hybrid attenuator cables.

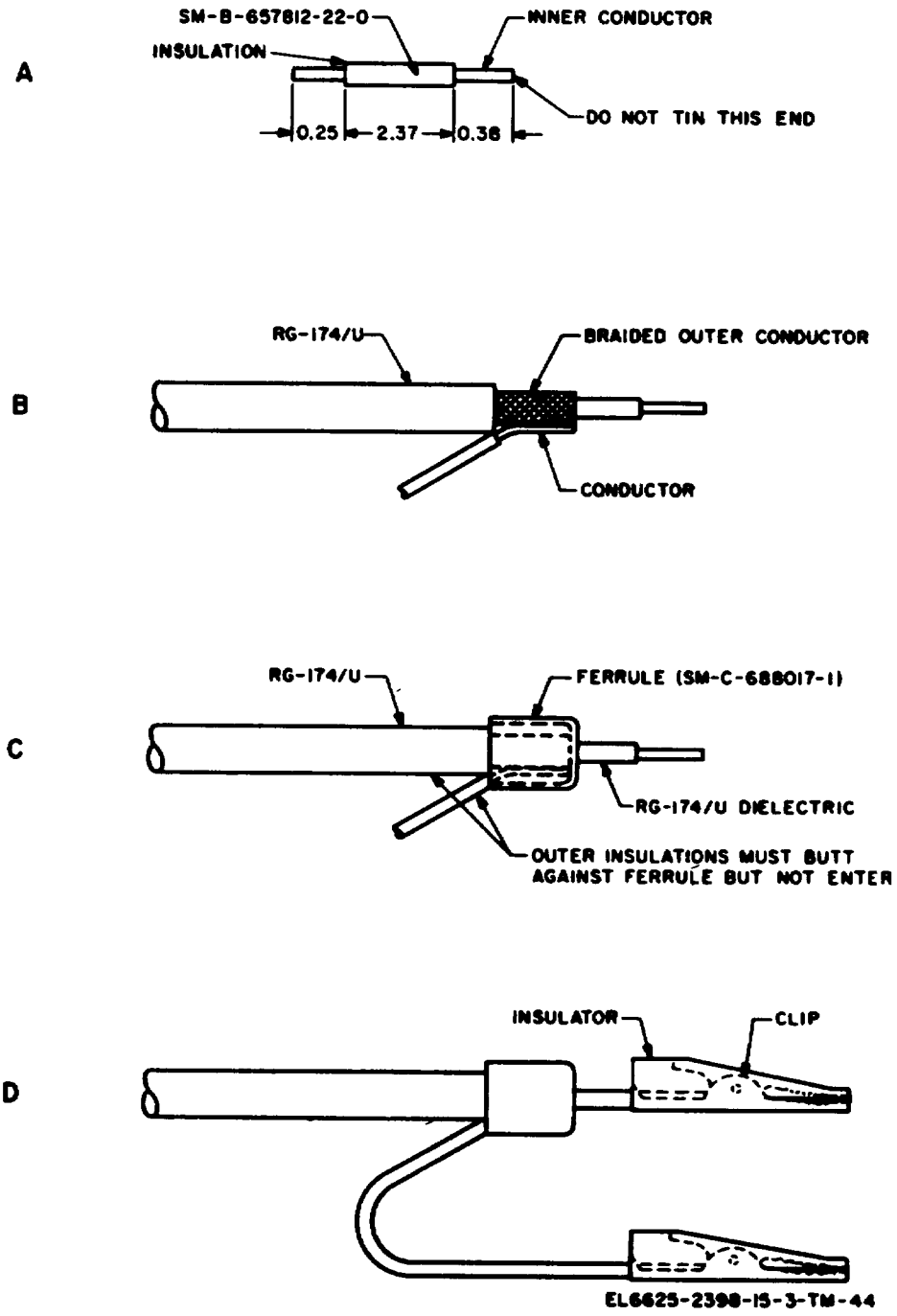


Figure 7-4. Assembly of alligator clips on cable W16.

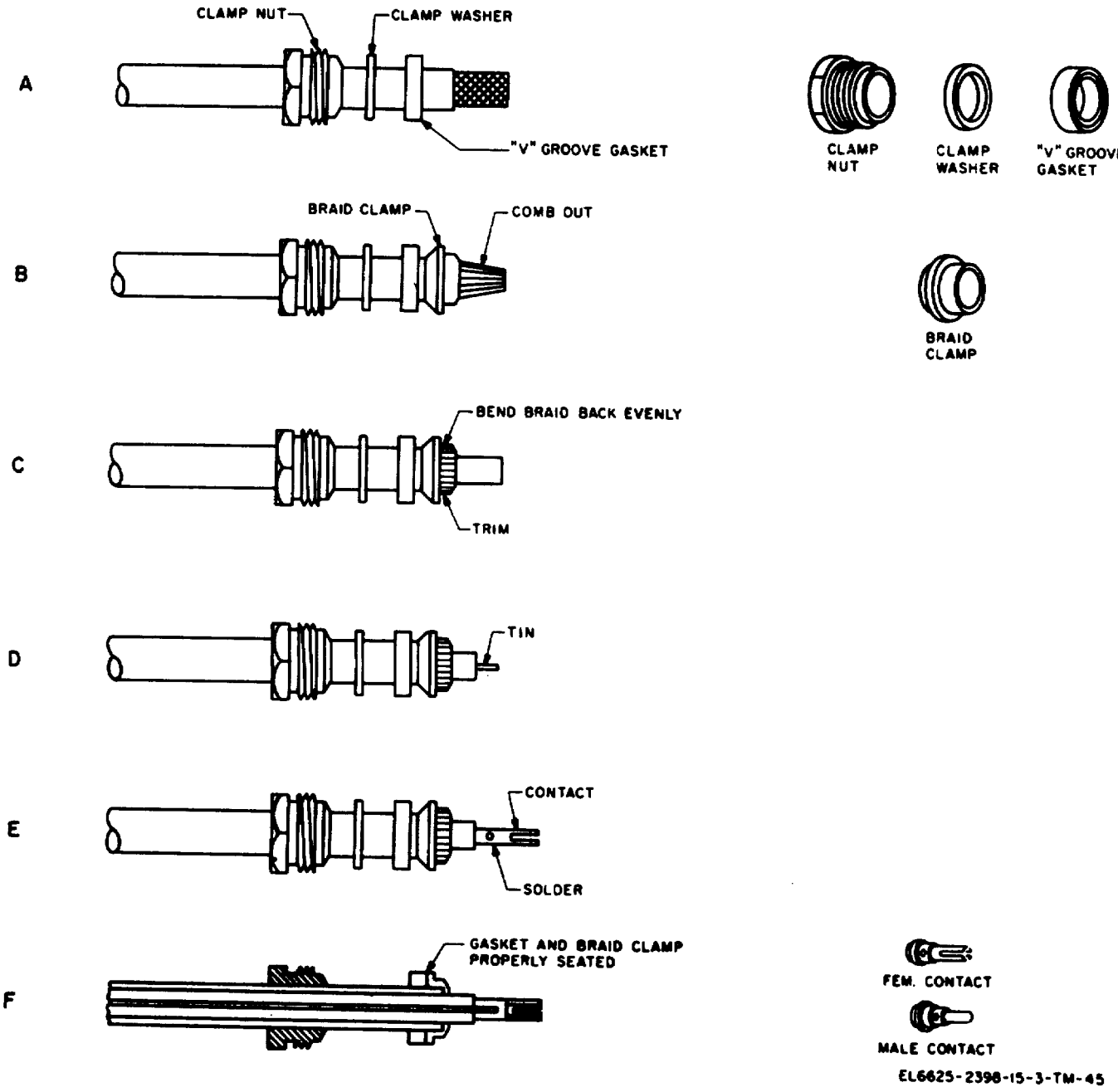


Figure 7-5. Assembly of connectors on cables W14/W15, W39, W45, W47, and hybrid attenuator cables.

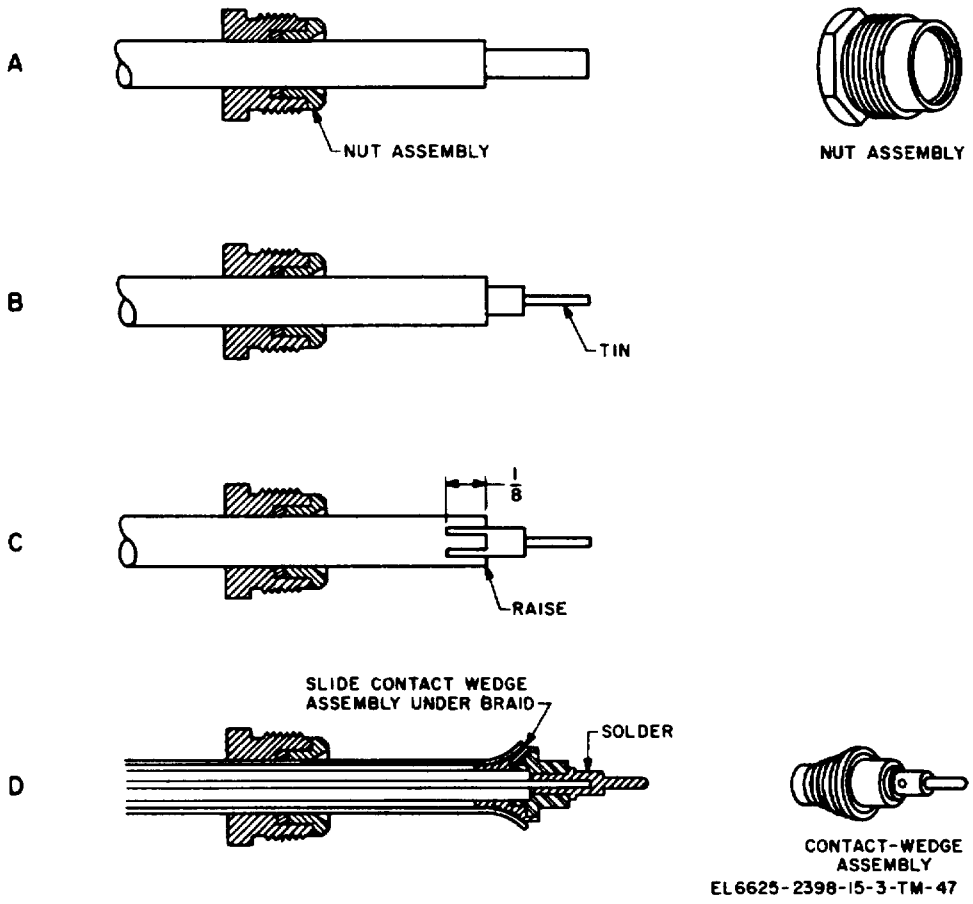


Figure 7-6. Assembly of connectors on cable W48 and portions of hybrid attenuator cables.

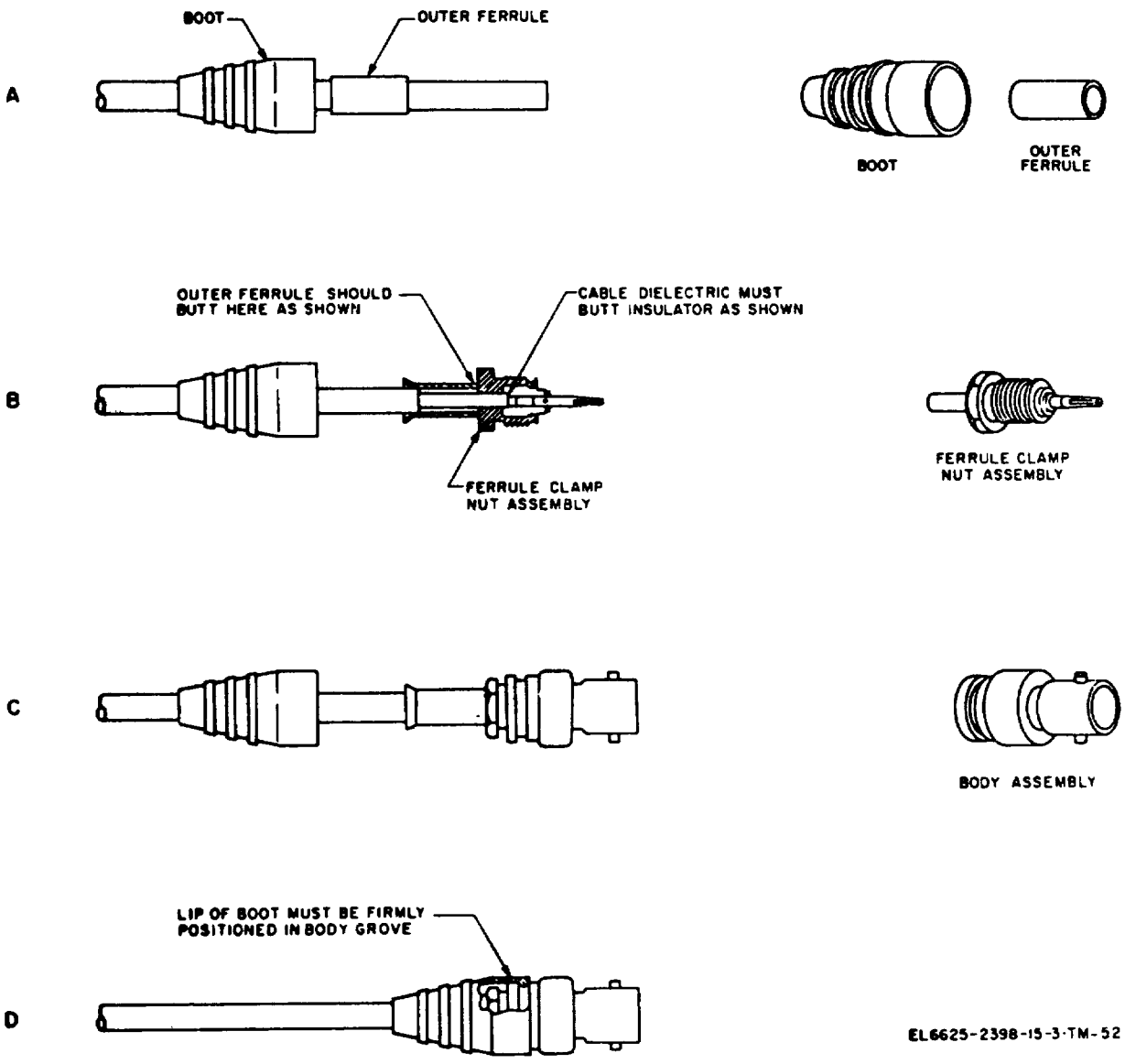


Figure 7-7. Assembly of connector W21P2.

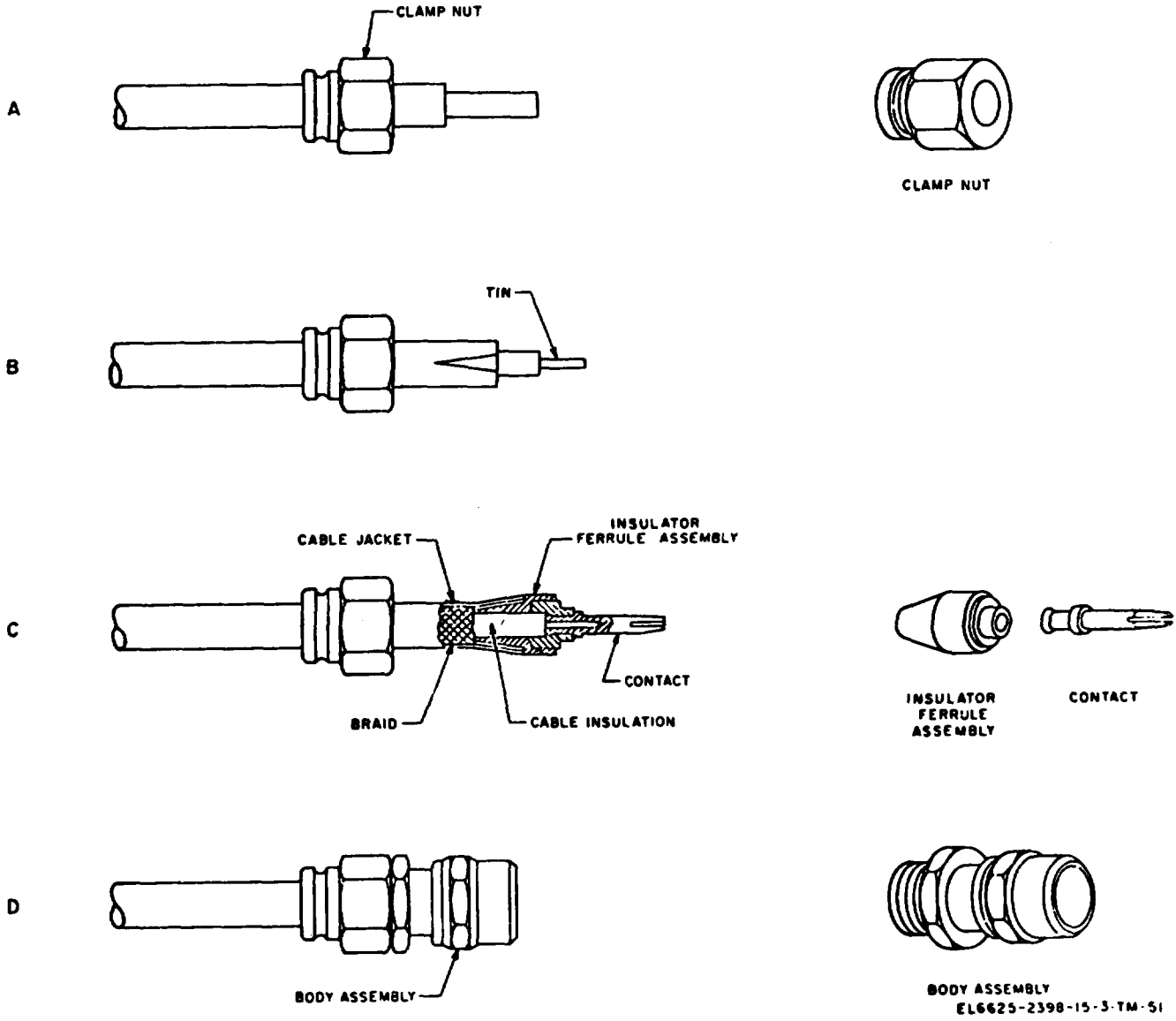


Figure 7-8. Assembly of connector W21P1.

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 if the proper tools and test equipments are available. A summary of the performance standards is given in paragraph 8-11.

b. Comply with the instructions -preceding each chart before proceeding to 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 Material

All test equipment required to perform the testing procedures given in this chapter are listed in the following charts and is authorized under TA-11-17, Signal Field Maintenance Shops, and TA-11-100(11-17), Allowances of Signal Corps Expendable Supplies for Signal Maintenance Shop, Continental United States.

a. Test Equipment.

Nomenclature	*Federal stock no.*	*Technical manual*
Signal Generator SG-340/G	6625-553-7326	NAVSHIPS 9365
Multimeter AN/PSM-6B	6625-957-4374	TM 11-6625-475-10
Ohmmeter ZM-21A/U	6625-246-5880	TM 11-2050
Standing Wave Ratio Indicator AN/ UPM-108A	6625-682-4494	TM 11-6625-335-12
Coaxial Slotted line IM-92/U	6625-356-0314	TM 11-5109
Low Paz Filter Hewlett-Packard Co. Model 350C	5915-503-0533	_____
Crystal Detector Hewlett-Packard Co. Model 423A	4940-871-8505	_____
Variable Attenuator, Alfred Electronics Model E101	_____	_____
Adapter (type N male to type BNC female) UG-201A/U	5935-201-3090	_____
Adapter (type N female to typ BNC female) UG-606/U	_____	_____
50 ohm Termination, Microlab/ FXR TA-6MN	_____	_____
Adapter (type BNC female to BNC female) UG-914/U	_____	_____

b. Materials. The materials below required for the general support testing procedures are supplied with the test facilities set.

Materials	*Reference designation*	*Federal stock no.*
Fixed Attenuators	AT1/AT2	_____
Terminations	AT3/AT4	_____
Cables	W14/W15	_____
Cable	A1W3	_____
Adapters	CP7/CP8	5935-201-3090

8-3. Modification Work Orders

The performance standards listed in the tests (para 8-4 through 8-10) are based on having no modification work orders performed on the test facilities set.

8-4. Continuity Tests on Cables, Extender Boards and Front Panel Test Adapter

a. Test Equipment and Materials. Multimeter AN/PSM-6B.

b. Test Connections and Conditions. Connect the equipment shown in figure 8-1 in accordance with the directions in the steps of the procedure below.

c. Procedure.

Step No.	*Test equipment control settings*	*Equipment under test control settings*	*Test procedure*	*Performance standard*
1	*AN/PSM-6B* Function: OHMS Range: R X 1	None	Plug test leads into multimeter and short circuit free ends of test leads. Adjust OHMS ZERO until meter pointer reads zero on the OHMS scale.	None
2	Remove short circuit on test leads of AN/PSM-6B and leave controls in positions given in step 1.		*a*. Connect one multimeter test lead to the center conductor of one plug on Cable W14/W15. Connect the other test lead to the center conductor of the plug on the other end of the cable.	a. Meter must indicate zero ohms (continuity)
			b. Connect one multimeter test lead to the outer shell of one plug on cable W14/W51. Connect the other test lead to the outer for each test shell of the plug on the other end of the cable.	*b*. Meter must indicate zero ohms (continuity)
			c. Perform steps a and b for the other W14/W15 cable and cable W16, W21, W16, W21, W45 and W47.	*c*. Meter must indicate zero ohms (continuity) for each test on each cable.
			Note. **One end of cable W16 has alligator clips, P2 is the center conductor termination and P3 is the shell shield termination.**	
3	Leave controls and test leads in position indicated in step 2.		*a*. Check shielding, bonded to the shell of the plugs, by connecting one multimeter teat lead to the hell of one plug and the other test lead to the shell of the other plug.	*a*. Meter must indicate zero ohms (continuity). See notes 2 and 4 above for cables W32, W39 and W48.
			b. Check individual wire shielding by progressively connecting the multimeter test lead to each wire shield pin connection on the plugs at each end of the cable.	*b.* Meter must indicate zero ohms (continuity) for each shield. See notes 2, 3, and 5 above for cables W32, W39 and W48.
			c. Check continuity of cable wires by progressively connecting the multimeter test leads to the wire connecting pins on the plugs at each end of cable.	*c*. Multimeter must indicate zero ohms (continuity) for each wire. See notes 3 and 5 above for cables W3 and W48.

Note.

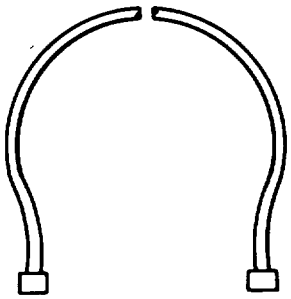
1. Consult the schematic diagrams for cables W32, W39 through W43 and W48 (fig. 6-10, 6-11 through 6-15 and 6-18, respectively) to perform step 3. The schematic diagrams identify the lead terminations and shields (if any) in each cable. Perform test procedures a, b, and c below (as required) for continuity checks of cables W2, W39 through W43 and48.

2. Cable W32 is unshielded and does not have shielded leads. Therefore, test procedures a and b below are not to be performed for this cable.

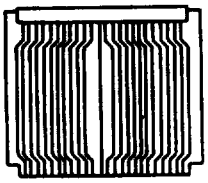
3. Cable W39 is supplied with couplers W39CP1 and W39CP2. Both couplers must be connected on cable W39 when performing test procedures b and c below.

4. Cables W39 and W48 are unshielded. Therefore, test procedure a below is not to be performed on these cables.

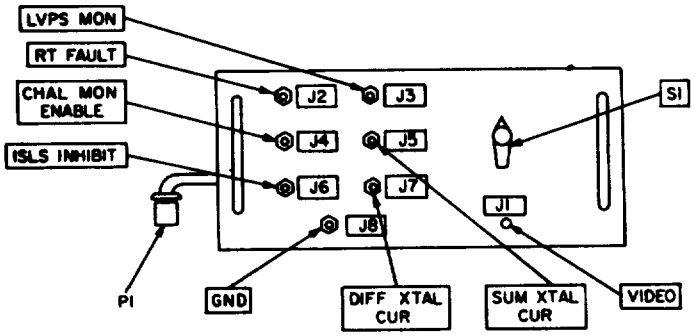
5. Cable W48 is supplied with five separate coaxial plugs and one attenuator on one end of the cable. Perform test procedure b for each separate coaxial plug. Cable pin E will provide an approximate meter reading of 91 ohms when performing test procedure c below, instead of zero ohms.



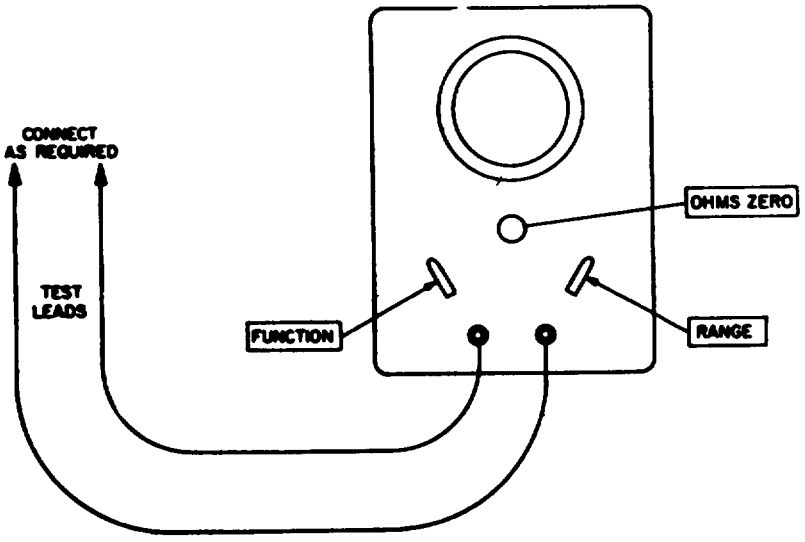
A. CABLE (TYPICAL)



B. EXTENDER BOARD (TYPICAL)



C. FRONT PANEL TEST ADAPTER MX-8565/TPM-24(V)



NOTE: ▭ INDICATES EQUIPMENT MARKINGS

D. MULTIMETER AN/PSM-6B

EL6625-2398-15-3-TM-35

Figure 8-1. Cables, front panel test adapter and extender boards, continuity test conditions.

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
			Note. **Consult the schematic diagrams for printed circuit extender boards A3/A4 (fig. 6-21) and A5 (fig. 6-22) to perform step 4. Perform the procedures *a*, *b*, *c*, and *d* below for boards A3/A4 and test procedures *a* and *b* below for board A5.**	
4	Leave controls and test leads in positions indicated in step 2.		*a*. Check for short circuit by connecting multimeter test leads to first two adjacent pins or etched terminals at one end of the aboard. Move the two multimeter test leads successively, by advancing each test had one pin at a time, across the board. Repeat above for the etched terminals on the opposite side of the A3/A4 boards.	*a*. Meter must indicate open circuit.
			b. Check board continuity by connecting one multimeter test lead to the pin or etched terminal at one end of the board and the corresponding pin (A5) or connector contact (A3/A4) at the opposite end of the board.	*b*. Meter must read zero ohms (continuity) for each pin or etched terminal.
			c. Check for short circuits by connecting multimeter test leads to etched terminals directly adjacent on opposite sides of the A3/A4 boards.	*c*. Meter must indicate open circuit.
			d. Check continuity to test points on A3/A4 boards by connecting one multimeter test lead to the first contact of J45 and the test point (J1 or J2) immediately below. Advance test leads successively across the board to last contact of J45 and the last test point (J43 or J44). Repeat above for the opposite side of the board.	*d*. Meter must indicate zero ohms (continuity) for each test point.
5	Leave controls and test leads in positions indicated in step 2.	Adapter Test MX-8565, TPM-24(V). VIDEO switch to positions indicated In test procedure.	a. Connect one multimeter test lead to VIDEO jack J1 on front panel. Successively connect the other test lead to plug Pi contacts listed below. Rotate the VIDEO switch to the position corresponding to the plug contact below for each test. *Test lead to:* — *VIDEO switch position* P1-R — RETURN (GND) P1-M — ISLS GATE P1-N — CHAL VIDEO P1-C — SUM IF VIDEO P1-D — DIFF IF VIDEO P1-P — MOD PULSE P1-F — RCVR VIDEO P1-J — CHAL MON DET INCIDENT PWR P1-K — CHAL MON DET REFL PWR	a. Meter must indicate zero ohms (continuity) for each switch position.
		b. VIDEO switch in any position.	*b*. Connect multimeter test leads to GND jack J8 on front panel and other lead to contact R of plug P1.	*b*. Meter must read zero ohms (continuity).
		c. Same as *b* above.	*c*. Successively connect the multimeter test leads to the jacks and plug P1 contacts as follows: *Test* lead *to:* — *VIDEO switch position* RT FAULT J2 — P1-G LVPS MON J3 — P1-E	*c*. Meter must read zero ohms (continuity) for each test.

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure		Performance standard
			Test lead to:	*VIDEO switch position*	
			CHAL MON ENABLE J4	P1-H	
			SUM XTAL CUR J5	P1-B	
			ISLS INHIBIT J6	P1-L	
			DIFF XTAL CUR RT FAULT J2	P1-G	
			LVPS MON J3	P1-E	
			CHAL MON ENABLE J4		
			SUM XTAL CUR J5	P1-B	
			J7	P1-A	
		d. Video switch to positions indicated in test procedure.	*d*. Successively connect one multimeter test lead to the active pins on plug P1 (figure 6-20). Successively connect the other multimeter lead to J1 (rotating VIDEO switch S1 through all nine positions) and J2 through J8 for each active pin.		*d*. Meter must indicate an open circuit for each test, except for the switch positions and jacks requiring continuity to plug P1 in *a*, *b* and *c* above.

8-5. Insulation Resistance Tests on Cables

a. Test Equipment and Materials. Ohmmeter ZM-21A/U.

b. Test Connections Conditions. Connect the equipment as shown in figure 8-2 in accordance with the directions in the steps of the procedure below. To accomplish connection of the test leads from the LINE and GROUND terminals of Ohmmeter ZM-21A/U to the pin contacts of the cable connectors, proceed as follows whenever applicable:

(1) When possible, connect the two test leads to opposite ends of the cables to avoid shorting.

(2) To connect a test lead to a male pin of a cable connector, adapt the alligator clip by connecting it to a female pin of the correct size.

(3) To connect a test lead to a female pin of a cable connector, adapt the alligator clip by connecting it to a male pin of the correct size, or to a solid wire of the correct size.

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
1	ZM-21A/U	None	**Warning:** **Test leads of Ohmmeter ZM-21A/U are at potentials up to 500 volts when the ohmmeter hand crank is being rotated. To avoid injury make all connections when the hand crank is not being rotated. DO NOT handle the test leads while the crank is rotating.** Check insulation resistance of coaxial cables W13, W14/W15(2), W16. W21, W45 and W47 as follows: *a*. Connect the LINE terminal of the ohmmeter to the center contact of one plug. *b*. Connect the GROUND terminal of the ohmmeter to the shell of a plug. *c*. Wrap an uninsulated wire around the outer covering of the cable and connect the wire to the GUARD terminal of the ohmmeter. *d*. Rotate the hand crank of the ohmmeter at 160 (minimum) revolutions per minute (rpm) and read the insulation resistance on the meter.	Meter reading of 100 megohms or higher must be obtained.
2	Observe **Warning** in step 1 above.		Check insulation resistance of power cable W32 (fig. 6-10) as follows: *a*. Connect the LINE and GROUND	

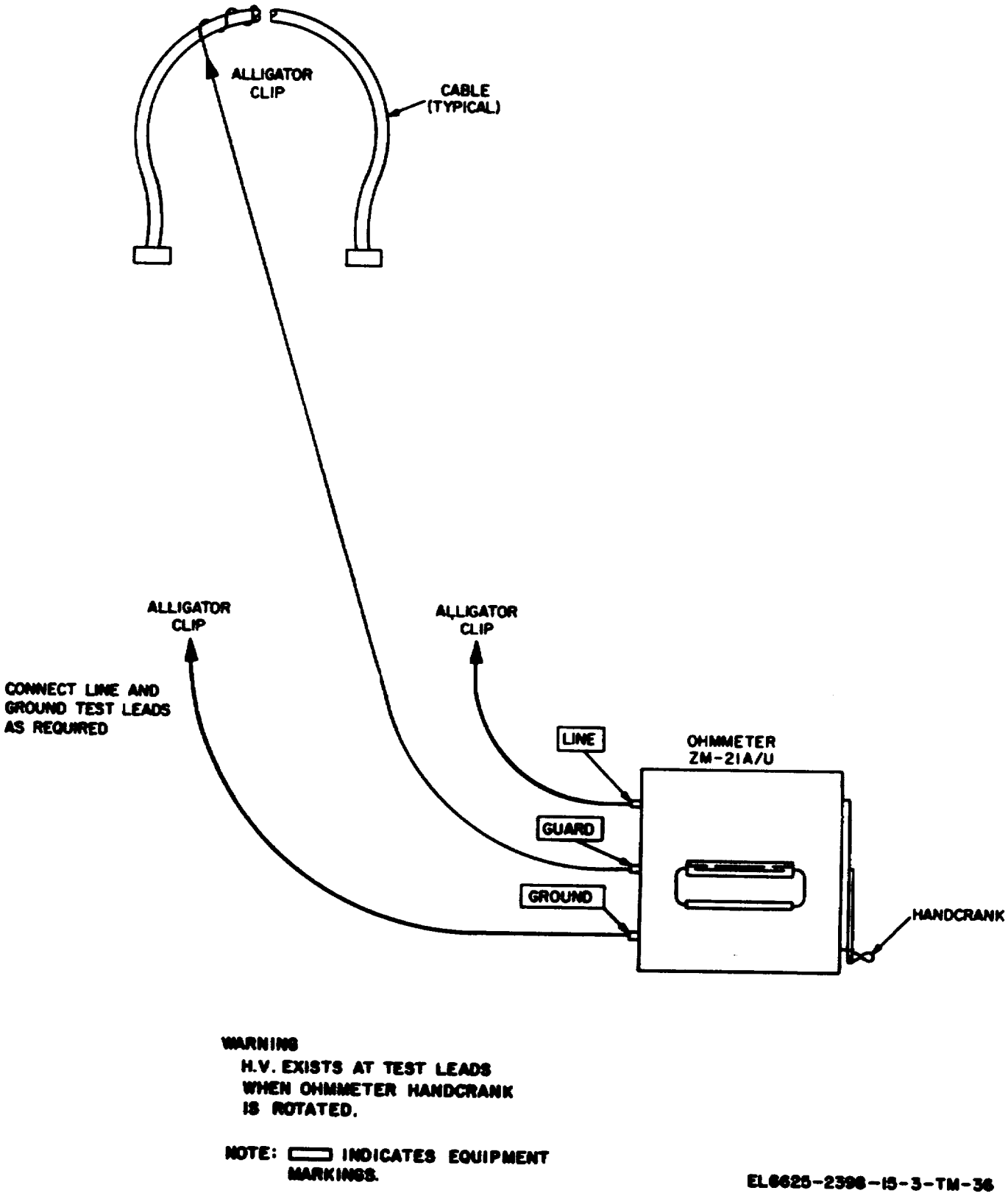


Figure 8-2. Cable insulation resistance, test conditions.

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
			terminals of the ohmmeter to contacts of the plugs, which are connected to the two wires of the cable.	
			b. Repeat *c* and *d* of step 1.	Meter reading of 100 megohms or higher must be obtained.
3	Observe **Warning** in step 1 above.		Check insulation resistance on cable W39 (fig. 6,11) as follows:	
			Note. Couplers W39CP1 and W39CP2 must be connected in cable W39.	
			a. Connect the GROUND terminal of the ohmmeter to the outer shell of one of the coaxial connectors on a plug.	
			b. Repeat *c* of step 1.	
			c. Successively (stopping hand cranking while connecting test lead between each test) connect the LINE terminal to each plug contact (total 8) connected to wires.	
			d. Repeat *d* of step 1 for the eight tests.	Meter reading of 100 megohms or higher must be obtained on each test.
4	Observe **Warning** in step 1 above.		Check insulation resistance on cable W40 (fig. 6-12) as follows:	
			a. Connect the GROUND terminal of the ohmmeter to plug contact pin 4.	
			b. Repeat *c* of step 1.	
			c. Repeat c of step 3 for plug contacts 6 and 9.	
			d. Repeat *d* of step 1 for both tests.	Meter reading of 100 megohms or higher must be obtained for both tests.
			e. Connect the GROUND terminal of the ohmmeter to the outer shell of either plug on the cable.	
			f. Repeat *c* of step 3 for the balance of the plug contacts (7) of the cable.	
			g. Repeat *d* of step 1 for the seven tests.	Meter reading of 100 megohms or higher must be obtained for each test.
			h. Connect the LINE terminal of the ohmmeter successively (stopping hand cranking while connecting test lead between each tests to each plug contact pin carrying a wire.	
			i. Concurrently with step *h* connect the GROUND terminal to each of the other plug contact pins connected to wires, repeating *d* of step 1 for each wire. Perform 36 separate tests until all wires have been tested with respect to each other.	Meter reading of 100 megohms or higher must be obtained for each test.
5	Observe **Warning** in step 1 above.		Check insulation resistance of cable W41 (fig. 6-13) as follows:	
			a. Connect the GROUND terminal	

Step No.	*Test equipment control settings*	*Equipment under test control settings*	*Test procedure*	*Performance standard*
			of the ohmmeter to plug contact pin 22. *b*. Repeat *c* of step 1. *c*. Repeat *c* of step 3 for plug contact pins 20 and 23.	
			d. Repeat *d* of step 1 for both tests.	Meter reading of 100 megohms or higher must be obtained for both tests.
			e. Connect the GROUND terminal of the ohmmeter to the outer shell of either plug on the cable. *f*. Repeat *c* of step 3 for the balance of the tests (4) of the cable.	
			g. Repeat *d* of step 1 for the four tests.	Meter reading of 100 megohms or higher must be obtained for each test.
			h. Repeat *h* and *i* of step 4 for the six plug contact pins (15 tests) connected to wires.	Meter reading of 100 megohms or higher must be obtained for each test.
6	Observe **Warning** in step 1 above.		Check insulation resistance of cable W42 (fig. 6-14) as follows: *a*. Connect the GROUND terminal of the ohmmeter to plug contact pin A11. *b*. Repeat *c* of test procedure for step 1. *c*. Repeat *c* of step 3 for plug contact pins A12, A13, and A14.	
			d. Repeat *d* of step 1 for the three tests.	Meter reading of 100 megohms or higher must be obtained on each test.
			e. Connect the GROUND terminal of the ohmmeter to plug contact pin A19. *f*. Repeat *c* of step 3 for plug contact pins A15 through A18.	
			g. Repeat *d* of step 1 for the four tests. .	Meter reading of 100 megohms or higher must be obtained for each test.
			h. Connect the GROUND terminal of the ohmmeter to plug contact pin A23. *i.* Repeat *c* of step 3 for plug contact pins A21 and A22.	
			j. Repeat *d* of step 1 for both tests.	Meter reading of 100 megohms or higher must be obtained for both tests.
			k. Connect the GROUND terminal successively between tests to the respective outer coaxial terminal of contact pins B1, B3, B5. B7, B9, B11, C1, C3, C5, C7, C9 and C11. *l.* Concurrently with step *k* connect the LINE terminal of the ohmmeter to the center contacts of the coaxial terminals.	
			m. Repeat *d* of step 1 for the 12 tests.	Meter reading of 100 megohms or higher

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
				must be obtained on each test.
			n. Connect the GROUND terminal of the ohmmeter to the outer shell of either plug on the cable. *o*. Repeat *c* of step 3 for plug contact pins A1 through A10, A20, B2, B4, B6, B8, B10, C2, C4, C6, C8 and C10.	
			p. Repeat *d* of step 1 for the 21 tests.	Meter reading of 100 megohms or higher must be obtained for each test.
			q. Repeat *h* and *i* of step 4 for plug contact pins A1 through A10, A20, B2, B4, B6, B8, B10, C2, C4, C6, C8 and C10 (210 tests).	Meter reading of 100 megohms or higher must be obtained for each test.
7	Observe **Warning** in step 1 above.		Check insulation resistance of cable W43 (fig. 6-15) as follows: *a*. Connect the GROUND terminal of the ohmmeter to plug contact pin 2. *b*. Repeat *c* of step 1. *c*. Repeat *c* of step 3 for plug contact pins 4 and 5.	
			d. Repeat *d* of step I for both tests.	Meter reading of 100 megohms or higher must be obtained on both tests.
			e. Connect the GROUND terminal of the ohmmeter to plug contact pin 12. *f*. Repeat *c* of step 8; for plug contact pins 6, 7 and 10.	
			g. Repeat *d* of step 1 for the three tests.	Meter reading of 100 megohms or higher must be obtained for each test.
			h. Connect the GROUND terminal of the ohmmeter to plug contact pin 16. *i*. Repeat *c* of step 3 for plug contact pins 14, 17, 19 and 21.	
			j. Repeat *d* of step 1 for the four tests.	Meter reading of 100 megohms or higher must be obtained for each test.
			k. Connect the GROUND terminal of the ohmmeter to plug contact pin 1. *l*. Repeat *c* of step 3 for plug contact pins 18 and 23.	
			m. Repeat *d* of step 1 for both tests.	Meter reading of 100 megohms or higher must be obtained on both tests.
			n. Connect the GROUND terminal of the ohmmeter to the outer shell of either plug on the cable. *o*. Repeat *c* of step 3 for plug contact pins 3, 8, 9, 11, 13 and 22.	
			p. Repeat *d* of step 1 for the six tests.	

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
			q. Repeat *h* and *i* of step 4 for plug contact pins 3, 8, 9, 11, 13, 18, 22 and 23 (28 tests).	Meter reading of 100 megohms or higher must be obtained on each test.
8	Observe **Warning** in step 1 above.		Check insulation resistance of cable W48 (fig. 6-18) as follows: *a*. Connect the ohmmeter GROUND terminal to the outer terminal of plug P2. *b*. Connect the LINE terminal of the ohmmeter to the center coaxial terminal of A on plug P1. *c*. Repeat *c* of step 1. *d*. Repeat *d* of step 1.	Meter reading of 100 megohms or higher must be obtained.
			e. Repeat *a*, *b* and *d* for P3 to P1-C AT1(P4) to P1-E P5 to P1-F P6 to P1-B	Meter reading of 100 megohms or higher must be obtained on each test.

8-6. Hybrid Attenuator Insertion Loss Measurement between RF IN/OUT and RF SUM Connectors

a. Test Equipment and Materials.

(1) Signal Generator SG-340/G.

(2) Variable Attenuator, Alfred Electronics Model E101.

(3) Standing Wave Radio Indicator AN/UPM-108A.

(4) Crystal Detector HP-423A.

(5) Adapter UG-201A/U.

(6) Adapters CP7/CP8 (2).

(7) Fixed Attenuator AT1/AT2(2).

(8) Termination AT3/AT4(1).

(9) 50-ohm Terminations (2), Microlab/FXR TA-6MN.

(10) Cables W14/W15 (2).

(11) Adapter UG-606/U.

b. Test Connections and Conditions. Initially connect the equipment as shown in solid lines, figure 8-3. Disconnect the hybrid attenuator and connect the variable attenuator (connections shown in broken lines) as directed in the procedure below.

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
1	*a*. SG-340/G POWER: ON Function switch: CW MEGACYCLES: 1090 *b*. AN/UPM-108A Power: ON METER SCALE: NORMAL INPUT SELECTOR: XTAL-200 K Ω *c*. SG-340/G	None	*a*. Set the MEGACYCLES dial to 1090 with the frequency control knob. Turn on the signal generator and allow a minimum of 20 minutes warm-up period before proceeding. *b*. Turn on the standing wave ratio indicator and allow a minimum of 10 minute warm-up period before proceeding. *c*. Turn off the signal generator and	

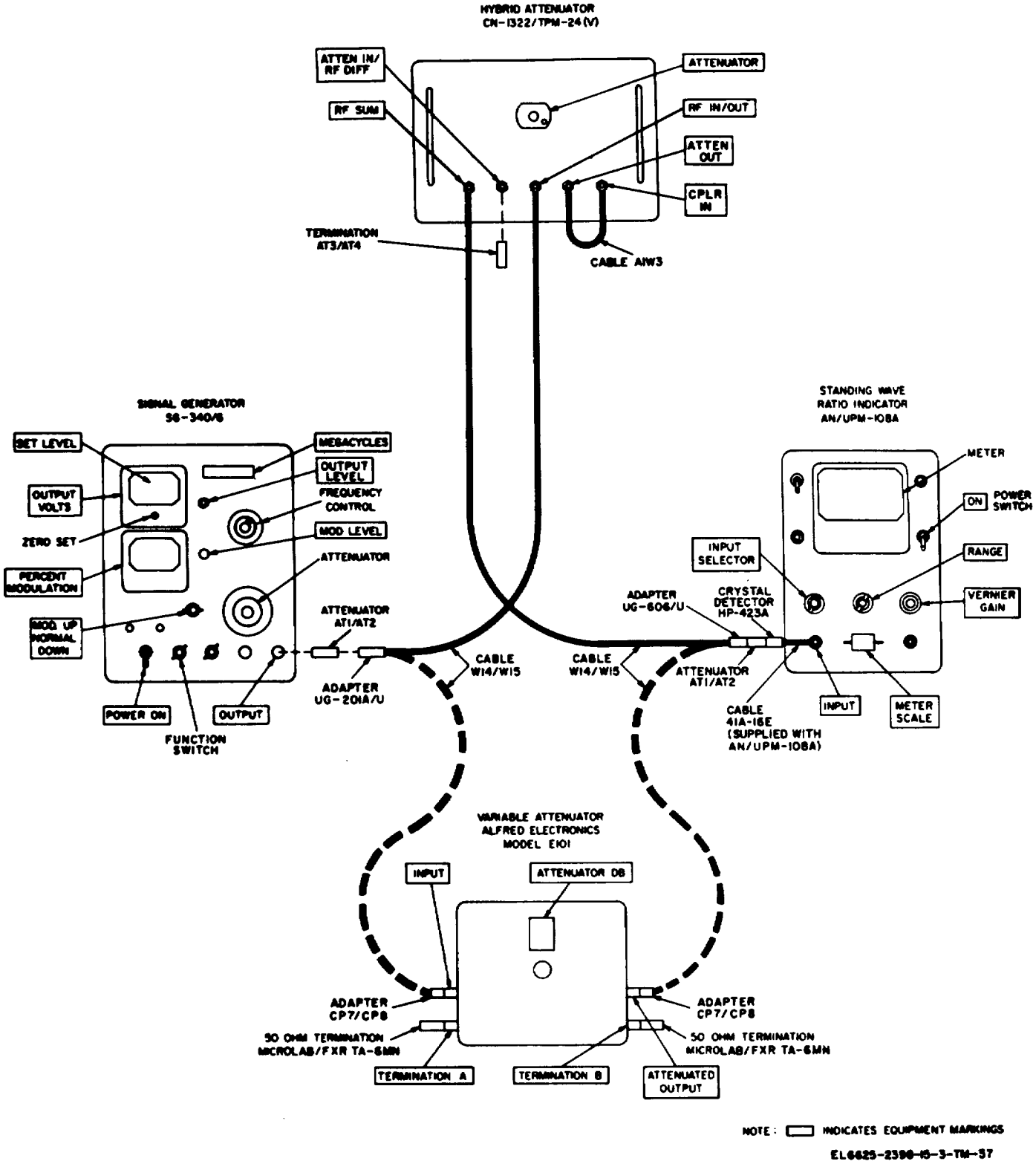


Figure 8-3. Hybrid attenuator sum channel (between RF IN/OUT and RF SUM connectors) insertion loss, test connections.

Step No.	Test equipment control setting	Equipment under test control settings	Test procedure	Performance standard
	POWER: OFF (down) OUTPUT VOLTS: zero set		zero set the OUTPUT VOLTS meter.	
	d. SG-340/G POWER: ON Attenuator: 0db OUTPUT VOLTS: SET LEVEL		*d.* Turn on the signal generator and adjust the OUTPUT LEVEL control knob for an OUTPUT VOLTS meter indication at the SET LEVEL (+4DBM) mark. **Note**: Check that OUTPUT VOLTS meter indication .is exactly on the SET LEVEL mark with the attenuator set to 0dB (outer scale). Readjust the OUTPUT LEVEL control knob if required.	
2	*SG-340/G* Function Switch: 1000 ~ PERCENT MODULATION: 50 MOD. UP NORMAL DOWN: NORMAL *AN UPM-108A* METER SCALE: EXPAND RANGE As required for meter reading	None	Adjust the MOD. LEVEL control for a reading of 50 on the PERCENT MODULATION meter. Adjust the standing wave ratio indicator VERNIER GAIN control and RANGE switch for an exact meter reading (e.g. .5 on the EXPANDED DB meter scale). Record the meter reading.	
3	Controls remain as at end of step 2.		*a.* Disconnect the hybrid attenuator under test and connect the variable attenuator, as shown by broken lines, figure 8-3. *b.* Adjust the variable attenuator ATTENUATOR DB control for the same standing wave indicator meter reading recorded in step 2 above.	Insertion loss on the ATTENUATOR DB control of the variable attenuator must indicate 6.5±1.5. **Note.** Correct the hybrid attenuator calibration tag marking for 1090MHz, if incorrect.
4	*SG-340/G* MEGACYCLES: 1030 Balance of controls remain as at end of step 2.	None	*a.* Reconnect the hybrid attenuator, solid lines figure 18-3. *b*. Reset the signal generator MEGACYCLES dial to 1030 with the frequency control knob and repeat steps 2 and 3.	Insertion loss on the ATTENUATOR DB control Of the variable attenuator must indicate. 6.5±1.5. **Note.** Correct the hybrid attenuator calibration tag marking for 1030MHz. if incorrect.

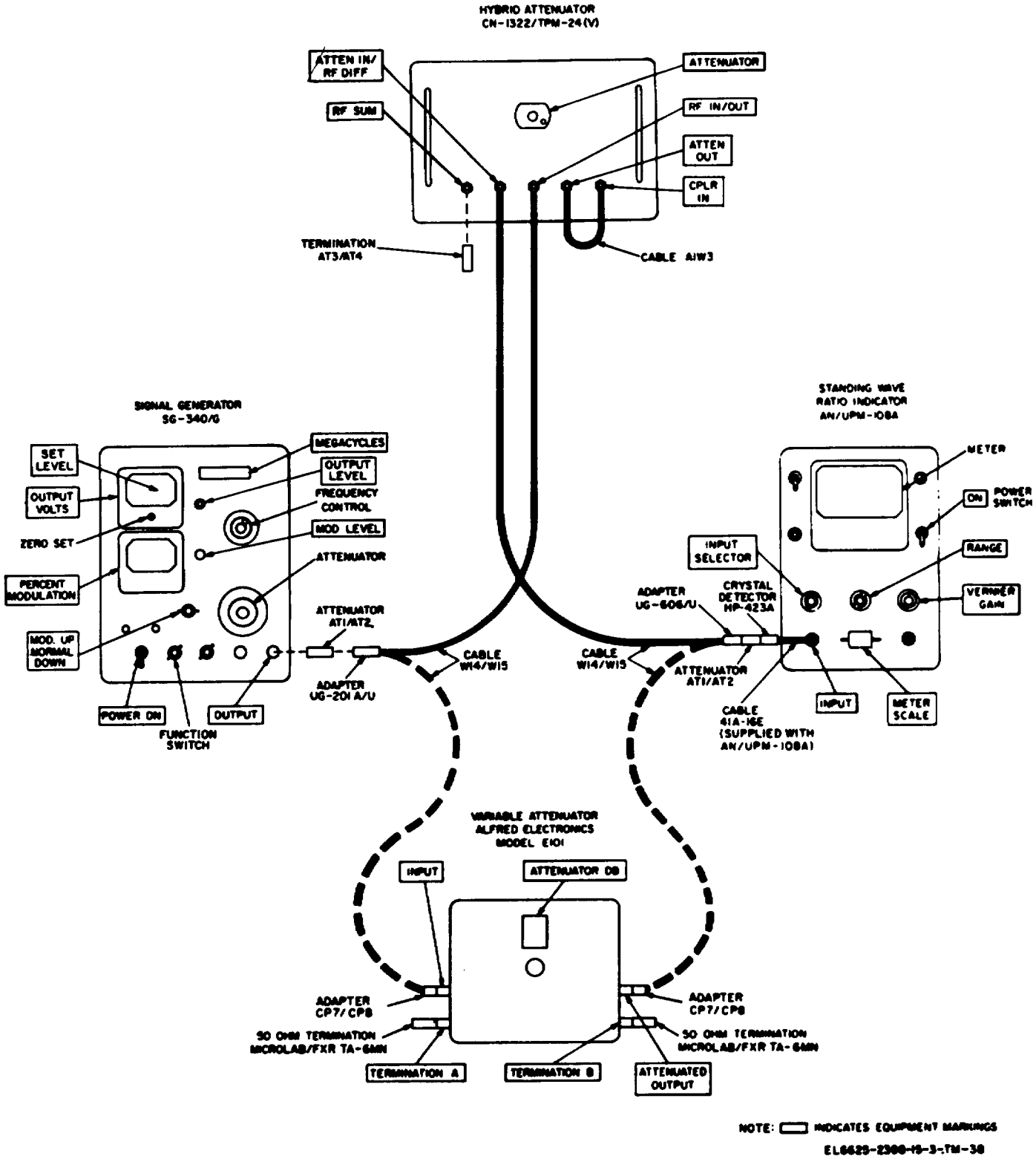


Figure 8-4. Hybrid Attenuator difference channel (between RF IN/OUT and ATTEN IN/RF DIFF connectors) insertion loss, test connections.

8-7. Hybrid Attenuator Insertion Loss Measurement between RF IN/OUT and ATTEN IN/RF DIFF Connectors

a. Test Equipment and Materials.

(1) Signal Generator SG-340/G.

(2) Variable Attenuator, Alfred Electronics Model E101.

(3) Standing Wave Ratio Indicator AN/UPM-108A.

(4) Crystal Detector HP-423A.

(5) Adapter UG-201A/U.

(6) Adapters CP7/CP8 (2).

(7) Fixed Attenuators AT1/AT2(2).

(8) Termination AT3/AT4(1).

(9) 50-ohm Terminations (2), Microlab/FXR TA-6MN.

(10) Cables W14/W15(2).

(11) Cable A1W3.

(12) Adapter UG-606/U.

b. Test Connections and Conditions. Initially connect the equipment as shown in solid lines, figure 8-4. Disconnect the hybrid attenuator and connect the variable attenuator (connections shown in broken lines) as-directed in the procedure below.

Step No.	*Test equipment control setting*	*Equipment under test control settings*	*Test procedure*	*Performance standard*
1	*a*. SG-340/G POWER: ON Function Switch: CW MEGACYCLE: 1030	None	*a.* Set the MEGACYCLES dial to 1030 with the frequency control knob. Turn on the signal generator and allow a minimum of 20 minutes warm-up period before proceeding.	
	b. *AN/UPM-108A* Power ON METER SCALE: NORMAL INPUT SELECTOR: XTAL-200 K 1		*b.* Turn on the standing wave ratio indicator and allow a minimum of 10 minutes warm-up period before proceeding.	
	c. SG-340/G POWER: OFF (down) OUTPUT VOLTS: zero set		*c.* Turn off the signal generator and zero set the OUTPUT VOLTS meter.	
	d. SG-340/G POWER: ON Attenuator 0dB OUTPUT VOLTS: SET LEVEL		*d.* Turn on the signal generator and adjust the OUTPUT LEVEL. con-trol knob for an OUTPUT VOLTS meter indication at the SET LEVEL. (+4DBM), mark. **Note.** Check that OUTPUT VOLTS meter indication is exactly on the SET LEVEL mark. with the attenuator set to 0dB 4 (outer scale) Readjust the OUTPUT LEVEL control knob if required.	
2	*SG-340/G* Function Switch: 1000 ~ PERCENT MODULATION: 50 ATTENUATOR: 0 (zero)	ATTENUATOR: 0 (zero)	Adjust the MOD LEVEL control for a reading of 50 on the PERCENT MODULATION meter. Adjust the standing wave ratio indicator VERNIER GAIN control and RANGE switch exactly on the SET LEVEL mark, with the attenuator set to 0dB (outer sale). Readjust the OUTPUT LEVEL control knob if required.	
2	*SG-340/G* Function, Switch: 1000 ~	ATTENUATOR: 0 (zero)	Adjust the MOD LEVEL control for a reading of 50 on the PERCENT MODULATION meter. Adjust the	

Step No.	*Test equipment control setting*	*Equipment under test control settings*	*Test procedure*	*Performance standard*
	PERCENT MODULATION: 50 ATTENUATOR: 0 (zero)		standing wave ratio indicator VERNIER GAIN control and RANGE switch.	
			b. Adjust the variable ATTENUATOR DB control for the standing wave ratio indicator reading recorded in step 2 above.	Insertion loss on ATTENUATOR DB controls of the variable attenuator must indicate. 6.5±1.5 and be slightly less (approximately 0.2dB) than the loss measured at 1030MHz between the RF IN/OUT and RF SUM connectors (para 8-6). **Note.** Correct the hybrid attenuator calibration tag marking for 1030MHz, if incorrect.
4	*Alfred Electronics Model E101* Successively increase the ATTENUATOR DB control (from the reading obtained in b of step 3) by 6, 9 and 12.	ATTENUATOR: As directed in test procedure.	*a.* Record the reading on the meter of the standing wave ratio indicator for the variable attenuator ATTENUATOR DB increased control settings of 6dB, 9dB and 12dB. *b.* Disconnect the variable attenuator as shown by solid lines, figure 8-4. c. Adjust the hybrid attenuator ATTENUATOR control for the same standing wave ratio indicator meter readings recorded in a above.	Insertion losses must be within the following limits: *Variable Attenuator Control Settings* / *Hybrid Attenuator Control Settings* Increased 6dB 13 +2.0, -1.3dB Increased 9dB 16 +2.5, -1.3dB Increased 12dB 19 +3.0, -1.5dB
5	*SG-340/G* MEGACYCLES: 1090 Balance of controls remain as at end of step 2.	ATTENUATOR: 0 (zero)	*a.* Reconnect the hybrid attenuator, solid lines figure 8-4. *b.* Reset the signal generator MEGACYCLES dial to 1090 with the frequency control knob and repeat steps 2 and 3.	Insertion loss on the ATTENUATOR DB control of the variable attenuator must indicate 6.5 ± 1.5 and be slightly less (approximately 0.2dB) than the loss measured at 1090MHz between the RF IN/OUT and RF SUM connectors (para 8-6).

Step No.	Test equipment control setting	Equipment under test control settings	Test procedure	Performance standard
6	*Alfred Electronics Model E101* Successively increase the ATTENUATOR DB control (from the reading obtained in b of step 5), by 6, 9 and 12.	ATTENUATOR: As directed in test procedure.	Repeat step 5.	**Note**. Correct the hybrid attenuator calibration tog marking for 1090MHz. if incorrect. Insertion losses must be within the following limits: *Hybrid Attenuator Control* / *Variable Attenuator Control* Increased 6dB 13 +2.0, -1.3dB Increased 9dB 16 +2.5, -1.3dB Increased 12dB 19 +2.5, -1.4dB

8-8. Hybrid Attenuator Calibration Tests

a. Test Equipment and Materials.

(1) Signal Generator SG-340/G.

(2) Variable Attenuator, Alfred Electronics Model E101.

(3) Standing Wave Ratio Indicator AN/UPM-108A.

(4) Crystal Detector HP-423A.

(5) Adapter UG-201A/U.

(6) Adapters CP7/CP8(2).

(7) Fixed Attenuators AT1/AT2(2).

(8) 50-ohm Terminations (2), Microlab/FXR TA-6Mn.

(9) Cables W14/W15(2).

(10) Cable A1W3.

(11) Adapter UG-606/U.

b. Test Connections and Conditions. Initially connect the equipment as shown in solid lines, figure 8-5. Disconnect the hybrid attenuator and connect the variable attenuator (connections shown in broken lines) as directed in the procedure below.

Step No.	Test equipment control setting	Equipment under test control settings	Test procedure	Performance standard
1	*a. SG-3-40/G* POWER: (N Function Switch: CW MEGACYCLES: 1090 *b. AN UPM-108A* POWER: ON METER SCALE: NORMAL INPUT SELECTOR: XTAL-200 KΩ *c. SG-340/G* POWER: OFF (down) OUTPUT VOLTS: zero set *d. SG-340/G* POWER: ON Attenuator: 0dB	None	*a.* Set the MEGACYCLES dial to 1090 with the frequency control knob. Turn on the signal generator and allow a minimum of 20 minutes warm-up period before proceeding. *b*. Turn on the standing wave ratio indicator and allow a minimum of 10 minutes warm-up period before proceeding. *c.* Turn off the signal generator and zero set the OUTPUT VOLTS meter. *d.* Turn on the signal generator and adjust the OUTPUT LEVEL control knob for an OUTPUT VOLTS	

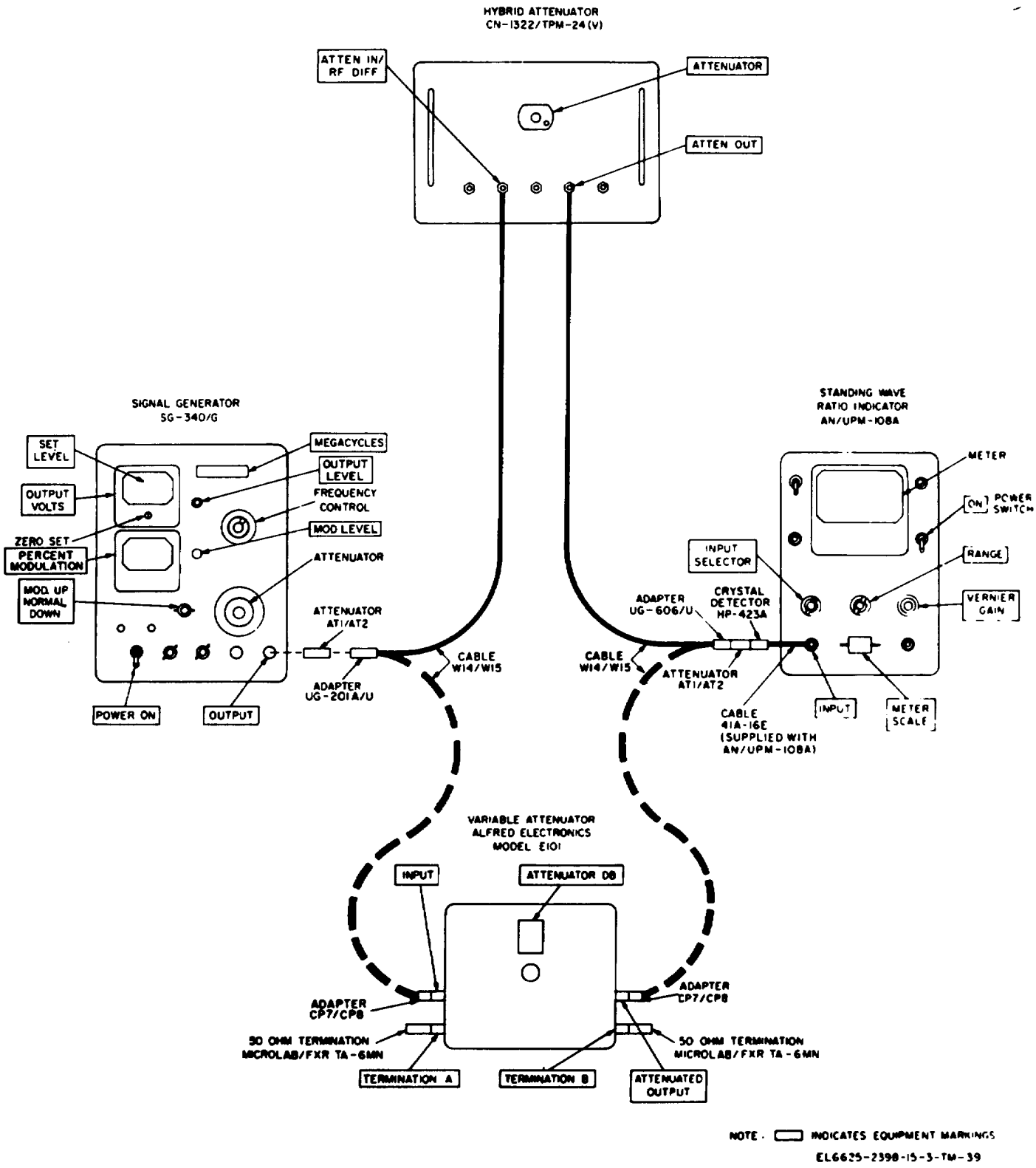


Figure 8-5. Hybrid attenuator calibration, test connections.

Step No.	Test equipment control setting	Equipment under test control settings	Test procedure	Performance standard
	OUTPUT VOLTS: SET LEVEL		meter indication at the SET LEVEL (+4DBM) mark. **Note**. Check that OUTPUT VOLTS meter indication is exactly on the SET LEVEL mark with the attenuator set to OdB (outer scale). Readjust the OUTPUT LEVEL control knob if required.	
2	*SG-340/G* Function Switch: 1000 ~ MOD. UP-NORMAL-DOWN: NORMAL PERCENT MODULATION: 50 *AN/UPM-108A* RANGE: As required for meter reading.	ATTENUATOR: 0 (zero)	Adjust the MOD. LEVEL control for a reading of 50 on the PERCENT MODULATION meter. Adjust the standing wave indicator VERNIER GAIN control and RANGE switch for an exact meter reading (e.g., .5 on the DB meter scale). Record the meter reading.	
3	Controls remain as at end of step 2.		*a.* Disconnect the hybrid attenuator under test and connect the variable attenuator, as shown by broken lines, figure 8-5.	
			b. Adjust the variable attenuator ATTENUATOR DB control for the same standing wave ratio indicator meter reading recorded in step 2 above.	ATTENUATOR IBH control of the variable attenuator must indicate 0 +1.0. -0.0dB.
4	*Alfred Electronics Model E101* As directed in the test procedure.	ATTENUATOR: Successively to 3, 6, 9, 12, 15, 20 and 25.	*a.* Disconnect the variable attenuator and reconnect the hybrid attenuator, as shown by solid lines, figure 8-5.	
			b. Record the readings on the meter of the standing wave ratio indicator for the hybrid attenuator ATTENUATOR control settings of 3, 6, 9, 12, 15, 20 and 25.	
			c. Disconnect the hybrid attenuator and reconnect the variable attenuator, as shown by broken lines, figure 8-5.	
			d. Adjust the variable attenuator, ATTENUATOR DB control for the same standing wave ratio indicator meter readings recorded in b above.	Calibration of the hybrid attenuator must be within the following limits: *Hybrid Attenuator Control Settings* / *Variable Attenuator Control Settings* 3dB — 3 + 1.0 6dB — 6 + 1.0 9dB — 9 + 1.0 12dB — 12 + 1.0 15dB — 15 + 1.1 20dB — 20 + 1.1 2.5dB — 25 + 1.2 **Note**. Correct the hybrid attenuator calibration tag marking for 1090MHz, if incorrect.
5	*SG-340/G* MEGACYCLES:	*a.* ATTENUATOR: 0 (zero)	*a.* Repeat steps 2 and 3.	a. ATTENUATOR dB control of the

Step No.	*Test equipment control setting*	*Equipment under test control settings*	*Test procedure*	*Performance standard*
	1030 Balance of controls as at end of step 2.			variable attenuator must indicate 0 +3.0, -0.0dB.
		b. ATTENUATOR: Successively to 3, 6, 9, 12, 15, 20 and 25.	*b*. Repeat step 4.	*b.* Calibration of the hybrid attenuator must be within the following limits: *Hybrid Attenuator Control Settings* / *Variable Attenuator Control Settings* 3dB 3+3.0, -2.0dB 6dB 6+3.0, -2.0dB 9dB 9+3.0, -2.0dB 12dB 12 +3.0, -2.0dB 15dB 15 +3.0, -2.0dB 20dB 20 +3.0, -2.0dB 25dB 25 +3.0, -2.0dB **Note**. Correct the hybrid attenuator calibration tag marking for 1030MHz, if incorrect.

8-9. Hybrid Attenuator VSWR Measurements

a. Test Equipment and Materials.

(1) Signal Generator SG-340/G.
(2) Coaxial Slotted Line IM-92/U.
(3) Standing Wave Ratio Indicator AN/UPM-108A.
(4) Low Pass Filter HP-360C.
(5) Fixed Attenuator AT1/AT2(1).
(6) Terminations AT3/AT4(2).
(7) Adapter CP7/CP8(2).
(8) Cables W14/W15(2).
(9) Cable A1W3.
(10) Adapter UG-606/U.

b. Test Connections and Conditions. The five hybrid attenuator test configurations in figure 8-6 are connected to the test equipment in accordance with the directions supplied in the procedure below.

Step No.	*Test equipment control setting*	*Equipment under test control settings*	*Test procedure*	*Performance standard*
1	*a. SG-340/G* POWER ON Function Switch: 1000 MEGACYCLES: 1030 MOD UP NORMAL DOWN: NORMAL Attenuator 0dB (outer scale) PERCENT MODULATION: 50 *b. AN-UPM-108A* POWER: ON RANGE: 0 (zero) METER SCALE: NORMAL INPUT SELECTOR: XTAL-200 K Ω	None	*a. Set the MEGACYCLES dial to* 10.30 with the frequency control knob. Turn on the signal generator and allow a minimum of 20 minutes warm-up period before proceeding. Adjust the MOD LEVEL control for a reading of 50 on the PERCENT MODULATION meter. *b.* Turn on the standing wave ratio indicator and allow a minimum of 10 minutes warm-up period before proceeding.	

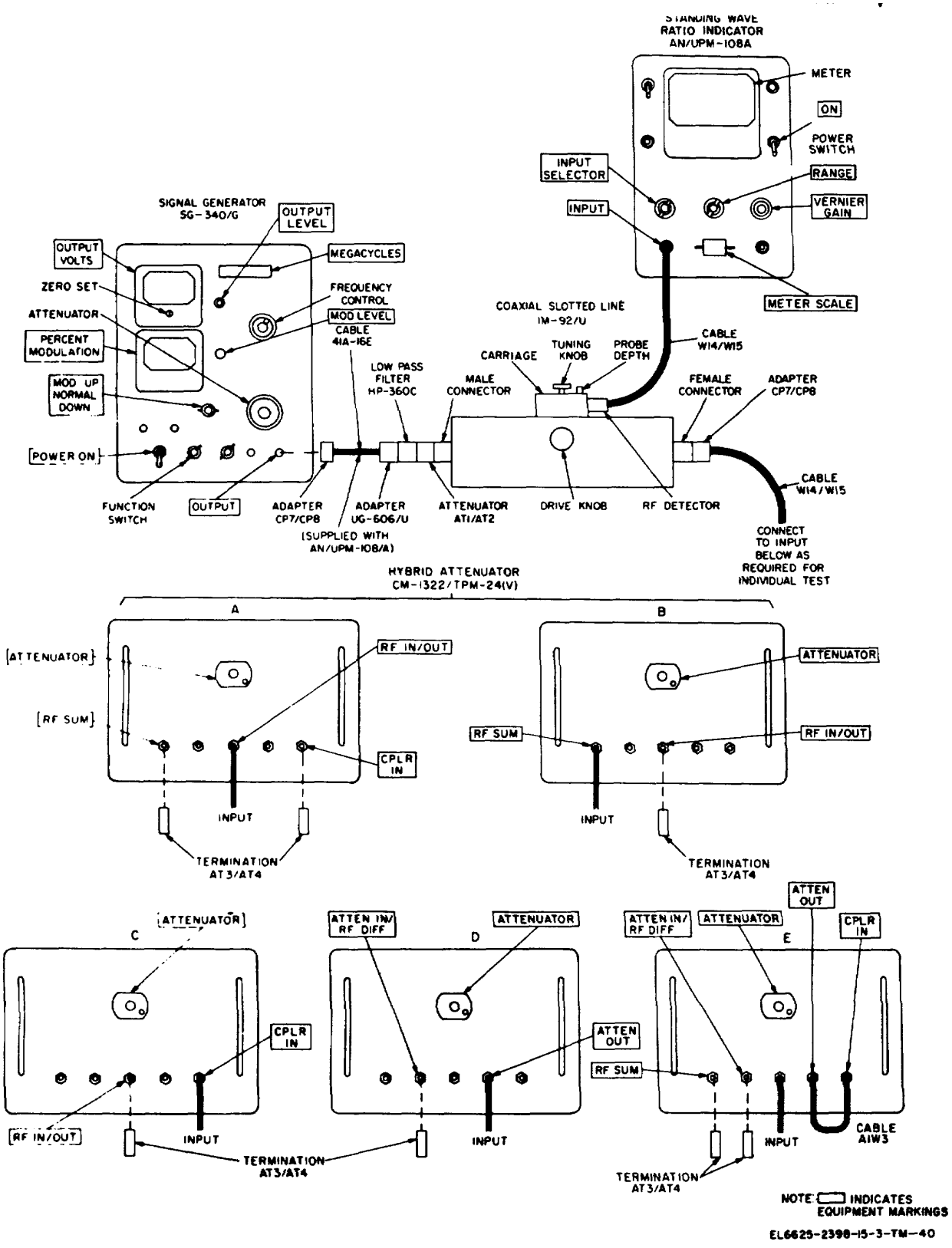


Figure 8-6. Hybrid Attenuator VSWR, test connections.

Step No.	Test equipment control setting	Equipment under test control settings	Test procedure	Performance standard
2	*IM-92/U* as directed in procedure. *AN/UPM-108A* VERNIER GAIN: as directed in procedure. *SG-340/G* OUTPUT LEVEL: as directed in procedure.	None	*a.* Terminate and connect the hybrid attenuator as directed in A of figure 8-6. *b.* Insert the crystal in the rf detector of the coaxial slotted line and and turn the probe depth control fully clockwise. Adjust the coaxial slotted line tuning knob for a maximum indication on the meter of the standing wave ratio indicator. *c.* Adjust the signal generator OUTPUT LEVEL control for a centered reading on the meter of the standing wave ratio indicator. *d.* Move the carriage of the coaxial slotted line, with the drive control to obtain a peak (maximum) meter reading on the standing wave ratio indicator.	
e.	*AN/UPM-108A* RANGE: As required for meter reading.		*e.* Decrease the probe depth (turn control counterclockwise), while adjusting the VERNIER GAIN control and RANGE switch of the standing wave ratio indicator, to the minimum probe depth required to provide full scale deflection on the meter of the standing wave ratio indicator (consistent with a usable meter reading, free of noise and jitter). *f.* Readjust the drive control knob of the coaxial slotted line for the peak (maximum) reading on the standing wave ratio indicator meter. Adjust the VERNIER GAIN control of the standing wave ratio indicator for a meter reading of exactly 1 on the SWR scale. *g.* Move the carriage of the coaxial slotted line, with the drive knob, to obtain a null (minimum) reading on the meter of the standing wave ratio on the SWR scale (top) of the standing wave ratio indicator.	Standing wave ratio indicator must indicate less than 1.65 on the SWR scale.
3	Controls as at end of step 1. *IM-92/U* As directed in step 2. *AN/UPM-108A* VERNIER GAIN and RANGE: As directed in step 2. *SG-340/G* *OUTPUT LEVEL:* As directed in step 2.	None	*a.* Terminate and connect the hybrid attenuator as directed in B of figure 8-6. *b.* Repeat b through g of step 2.	Standing wave ratio indicator must indicate less than 1.2 on the SWR scale.
4	Controls as at end of step 1. *IM-92/U* As directed in step 2. *AN/UPM-108A* VERNIER GAIN and RANGE: As directed in step 2.	None	*a.* Terminate and connect the hybrid attenuator as directed in C of figure 8-6. *b.* Repeat b through g of step 2.	Standing wave ratio indicator must indicate less than 1.5 on the SWR scale.

Step No.	Test equipment control setting	Equipment under test control settings	Test procedure	Performance standard
	SG-40/G OUTPUT LEVEL: As directed in step 2.			
5	Controls as at end of step 1. *IM-92/U* As directed in step 2. *AN/UPM-108A* VERNIER GAIN and RANGE: As directed in step 2. *SG-340/G* OUTPUT LEVEL: As directed in step 2.	ATTENUATOR: 0 (zero)	*a.* Terminate and connect the hybrid attenuator as directed in D of figure 8-6. *b.* Repeat *b* through *g* of step 2.	Standing wave ratio indicator must indicate less than 1.5 on the SWR scale.
6	Controls as at end of step 1. *IM-92/U* As directed in step 2. *AN/UPM-108A* VERNIER GAIN and RANGE: As directed in step 2. *SG-340/G* OUTPUT LEVEL: As directed in step 2.	ATTENUATOR: 0 (zero)	*a.* Terminate and connect the hybrid connector as directed in E of figure 8-6. *b.* Repeat *b* through *g* of step 2.	Standing wave ratio indicator must indicate less than 1.6 on the SWR scale.

8-10. Insertion loss measurements for Cables W14/W15 and W39

a. Test Equipment and Materials.

(1) Signal Generator SG-340/G.

(2) Crystal Detector HP-423A.

(3) Standing Wave Ratio Indicator AN/UPM-108A.

(4) Adapter UG-606/U.

(5) Adapter UG-915/U.

(6) Adapter CP7/CP8(2).

(7) Attenuators AT1/AT2(2).

(8) Cable W14/W15(1).

b. Test Connections and Conditions. Connect the test equipment as shown with solid lines in figure 8-7. Additional instructions for connecting the cable under test and preparation of cable W39 are provided in the procedure below.

Step No.	Test equipment control setting	Equipment under test control settings	Test procedure	Performance standard
1	*a. SG-340/G* POWER: ON Function switch: 1000 ~ MEGACYCLES: 1030 MOD UP-NORMAL-DOWN: NORMAL Attenuator: 0dB (outer scale) PERCENT MODULATION: 50 *b. AN/UPM-108A* POWER: ON METER SCALE: EXPAND	None	*a.* Set the MEGACYCLES dial to 1030 with the frequency control knob. Turn on the signal generator and allow a minimum of 20 minutes warm-up period before proceeding. Adjust the MOD LEVEL control for a reading of 50 on the PERCENT MODULATION meter. *b.* Turn on the standing wave ratio indicator and allow a minimum of 10 minutes warm-up period before proceeding.	

Figure 8-7. Cable insertion losses, test connections.

Step No.	*Test equipment control setting*	*Equipment under test control settings*	*Test procedure*	*Performance standard*
	INPUT SELECTOR: XTAL-200 K Ω			
2	*AN/UPM-108A* VERNIER GAIN and RANGE: As directed in the procedure.		*a.* Adjust the VERNIER GAIN control and RANGE switch for a 0 indication on the EXPANDED DB scale of the meter on the standing wave ratio indicator. *b.* Connect the unused W14/W15 cable as shown with broken lines in figure 8-7. *c.* Read insertion loss of cable on EXPANDED DB scale of standing wave ratio indicator meter. Compare with insertion loss marked for 1030 MHz on cable sleeve. If marking is incorrect by more than ±0.2dB, change the marking by scraping off ink and remarking with India ink.	Cable insertion loss must not exceed 2.5dB.
3	*SG-340/G* MEGACYCLES: 1090		*a*. Connect the test equipment as shown with solid lines in figure 8-7. *b.* Repeat step 2 for the same W14/W15 cable, except compare loss with sleeve marking for 1090 MHz.	Cable insertion loss must not exceed 2.5dB.
4	Controls remain as at end of step 3.		Repeat step 3 for the second W14/W15 cable.	Cable insertion loss must not exceed 2.5dB.

Step No.	Test equipment control setting	Equipment under test control settings	Test procedure	Performance standard
5	*SG-340/G* MEGACYCLES: 1030		Repeat step 2 for the second W14/ W15 cable.	Cable insertion loss must not exceed 2.5dB.
6	Controls as at end of step 1. *SG-340/G* MEGACYCLES: As directed by procedure		*a.* Refer to schematic diagram of cable W39 (figure 6-12). Remove and retain couplers CP1 and CP2. Remove the retaining clips on one end of the cable by loosening six screws on the shell (four centered on the mating side and two centered on the back of the shell), slip out the two clips. Bend the cable into a circle and insert the male connector P1 into the female connector P2. Connect plugs P3 and P4 as the cable to be tested (fig. 8-7). *b.* Repeat steps 2 and 3 (sleeve marking P1/A-P2/A), *c.* Repeat steps 2 and 3, using plugs P5 and P6 of cable W39 (sleeve markings P1/B-P2/B) as the cable to be tested. *d.* Remove cable W39 from the test set-up, disconnect P1 from P2, replace the two retaining clips and tighten the six loosened screws. Replace couplers CPI) and CP2 between plugs P3/P4 and P5/P6 respectively.	*b.* Insertion loss of cable at both frequencies must not exceed 2.0dB. *c.* Insertion loss of' cable at both frequencies must not exceed 2.0dB.

8-11. Test Data Summary

a. Continuity Checks. Continuity checks on cables, extender boards and the front panel test adapter must be as indicated in paragraph 8-4.

b. Insulation Resistance. Insulation resistance tests on cables must indicate a minimum of 100 megohms.

c. Insertion Losses:

Hybrid Attenuator RF IN/OUT to RF SUM-6.5 ± 1.5dB.

Hybrid Attenuator ATTEN IN/RF DIFF to RF IN/OUT-6.5 ± 1.5dB with the hybrid attenuator set for minimum attenuation.

Cables W14/W15-2.5dB maximum.

Two RF leads of cable W39-2.0dB maximum.

d. Hybrid Attenuator Calibrations.

Control	Attenuation	
	1030MHz	1090 MHz
0.0	0 +3.0, -0.0dB	0 +1.0, -0.0dB
3.0	3 +:3.0, -2.0dB	3 ± 1.0dB
6.0	6 + 3.0, -2.0dB	6 ± 1.0dB
9.0	9 + 3.0, -2.0dB	9 ± 1.0dB
12	12 + 3.0, -2.0dB	12 ± 1.1dB
15	15 + 3.0, -2.0dB	15 ± 1.1dB
20	20 + 3.0, -2.0dB	20 ± 1.1dB
25	25 + 3.0, -2.0dB	25 ± 1.2dB

e. VSWR of Hybrid Attenuator Connectors.

RF IN/OUT	- less than 1.65:1
RF SUM	- less than 1.2:1
CPLR IN	- less than 1.5:1
ATTEN OUT	- less than 1.5:1

f. VSWR of Hybrid Attenuator. Overall VSWR of the hybrid attenuator must be less than 1.6:1.

CHAPTER 9

DEPOT OVERHAUL STANDARDS

9-1. Applicability of Depot Overhaul Standards

Test Facilities Set AN/TPM-24 (V) 3 must be tested thoroughly after rebuild or repair to ensure that it meets adequate performance standards for return to stock and reissue. Use the test described in this chapter and in the applicable technical 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 this 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	*Publication*
DS, GS, and Depot Maintenance Manual Interrogator Set AN/ TPX-50	TM 11-5895-687-35-1
DS, GS, and Depot Maintenance Manual Signal, Processor CP-39g/ TPX-50	TM 11-5895-687-35-2
DS, GS, and Depot Maintenance Manual Synchronizer, Electrical 8N-421/TPX-50	TM 11-5895-687-35-3
DS, GS, and Depot Maintenance Manual Receiver-Transmitter, Radio RT-903/TPX-5o	TM 11-5896-687-35-4

c. Modification Work Orders. 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 of known accuracy, will be employed in determining 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	*Qty. rqd.*	*Applicable literate*
Ohmmeter ZM-21/U	1	TM 11-2050
Coaxial Slotted Line IM-92/U	1	TM 11-5109
Indicator, Standing Wave	1	TM 11-6625-335-12
Ratio AN/UPM-108	1	TM 11-6625-335-12
Multimeters AN/PSM-6. AN/ PSM-6A, and AN/PSM-6B	1	TM 11-6625-475-0
Signal Generator SG-:40 (A)/G (Model 612A UHF Signal Generator)	1	
Variable Attenuator Alfred Electronics Model E101	1	
Crystal Detector HP-423A	1	
Low Pass Filter HP-360C	1	
Adapter (type N male to type BNC female) UG-606./U	2	
Adapter (type N male to type BNC female) UG-201A/U	2	
Adapter (type BNC female to BNC female) UG-914/U	2	
50 ohm termination. Micro-lab/FXR TA-6MN	2	

9-4. General Test Requirements

Always allow at least 30 minutes for the equipment under test and the test equipment to reach stabilized temperatures. The test equipment and the materials required to perform the following test are listed in paragraph 8-2.

9-5. Continuity Checks

Check the continuity of all cables, extender boards, and front panel adapter.

9-6. Insulation Resistance

Connect the test equipment as shown in figure 8-2. Measure the insulation resistance of all cables (the resistance between the conductor and the insulation material). A minimum reading of 100 megohms is required.

9-7. Insertion losses

a. On the hybrid attenuator measure the insertion loss between RF IN/OUT and RF SUM connectors and the loss between the RF IN/OUT and ATTEN IN/RF DIFF connectors. The insertion losses should be 6.541.5 dB.

NOTE

The hybrid attenuator control should be set for minimum attenuation. Refer to figures 8-3 and 8-4 for test connections.

b. The four RF leads of cable W1 should have a loss of 1.5 dB maximum. Refer to fig. 6-7.

c. The two RF leads of cable W3 should have a loss of 1.5 dB maximum. Refer to fig. 6-9.

d. The loss of cables W14 and W15 should have a loss of 2.0 dB maximum. Refer to fig. 6-15.

9-8. Hybrid Attenuator

a. Connect the hybrid attenuator as shown in figure 8-5. The chart below gives the hybrid attenuator ATTENUATOR dial setting (fig. 1-3) and the minimum and maximum insertion loss in dB's at 1030 MHz and 1090 MHz.

Dial setting	*Attenuation in dB's*	
	1030 MHz	*1090 MHz*
3.0	1-6	2-4
6.0	4-9	5-7
9.0	7-12	8-10
12	10-15	10.9-13.1
15	13-18	13.9-16.1
20	18-23	18.9-21.1
25	23-28	23.8-26.2

b. Check the actual dB value obtain in test a above against the value listed on the calibration chart chained to the handle of the hybrid attenuator (fig. 1-3). Make corrections on the chart as necessary.

9-9. VSWR of Hybrid Attenuator Connectors

a. Connect the equipment as shown in figure 8-6.

b. The chart below lists the hybrid connectors and gives the vswr that is acceptable.

Connector	*VSWR*
RF IN/OUT	less than 1.65 to 1
RF SUM	less than 1.2 to 1
CPLR IN	less than 1.5 to 1
ATTEN OUT	less than 1.5 to 1

c. The overall vswr of the hybrid attenuator must be less than 1.6 to 1.

CHAPTER 10
SHIPMENT AND LIMITED STORAGE, AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

10-1. Disassembly of Test Set-Up

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. Cables stored in the cover should be coiled neatly and placed such that the connectors will not bind the cable wire when the cable compartment hold-down cover is closed. After the cables are placed in position, tighten the tie-down straps, making certain that all of the connectors are held firmly. Close the cable hold-down cover, depress and turn the three fasteners to hold the cover in place. Complete stowage by placing the rest of components in the slots 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 (fig. 2-1) will also be helpful.

a. Material Requirements. The following materials are required for packaging the test facilities set. For stock numbers of the materials, consult SB 38-100, Preservation, Packaging and Packing Materials, Supplies, and Equipment Used in the Army. Material dimensions are in inches.

NOTE

For short-haul travel or domestic shipment the transit case may be shipped without repacking. For overseas shipment or long-haul travel, the transit case should be repackaged.

Material	*Size (in.)*	*Quantity*
Polyethylene wrap	36 X 84	1
Humidity indicator	per MS-20003	1
Desiccant	per MIL-D-3464	2
Carton (350# DW)	22-3/4X21-1/2X20-1/4	1
Sealing tape	3 X 43	2

b. Packaging. After the components of the test facilities set have been placed in its transit case, perform the following:

(1) Place two desiccant bags and one spot humidity indicator inside the case. Close the transit case.

(2) Secure the warning label to the top of the transit case.

(3) Open the vent valve on the front of case.

(4) Wrap the transit case in polyethylene wrap.

(5) Place the transit case, wrapped in polyethylene, in the carton (fig. 2-1). Seal the carton.

(6) Mark the carton in accordance with MIL-STD-129.

c. Shipment. There are no special requirements for

for shipment of the test facilities set once it has been packaged. The test facilities set when packaged weighs approximately 85 pounds.

Section II. DEMOLITION OF MATERIAL TO PREVENT ENEMY USE

10-3. Authority for Demolition

The demolition procedures given in paragraph 9-4 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 get away from the transit case after the grenade is placed.

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
REFERENCES

Following is a list of applicable references available to the operator, organizational and GS maintenance of Test Facilities Set AN/TPM-24(V)3.

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9) Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	U.S. Army Equipment Index of Modification Work Orders.
TM 11-6625-2398-15-1	Repair Parts and Special Tools List for Test Facilities Set AN/TPM-24(V)3. (To be published).
TM 11-5895-687-35-1	DS, GS and Depot Maintenance Manual, Interrogator Set AN/TPX-50.
TM 11-5895-687-35-2	DS, GS and Depot Maintenance Manual, Signal Processor CP-396-/TPX-50.
TM 11-5895-687-35-3	DS, GS and Depot Maintenance Manual, Synchronizer, Electrical SN-421/TPX-50.
TM 11-5895-687-35-4	DS, GS, and Depot Maintenance Manual, Receiver-Transmitter, Radio RT-903/TPX-50.
TM 11-6625-335-12	Operator's and Organizational Maintenance Manual Indicator, Standing Wave Ratio AN/UPM-108.
TM 11-6625-475-10	Operator's Manual Multimeters AN/PSM-6, AN/PSM-6A and AN/PSM-6B.
TM 11-2050	Test Set 1-48-B and Ohmmeter ZM-21A/U.
TM 11-5109	Coaxial Slotted Line IM-92/U.

APPENDIX C
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

C-1. General

This appendix provides a summary of the maintenance operations for AN/TPM-24(V)3. 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.

C-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 equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, 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.

C-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 "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform 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 "work time" figures will be shown for each category. The number of task-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time-in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C - Operator/Crew
O - 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.

C-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.

C5. 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.

SECTION II MAINTENANCE ALLOCATION CHART
FOR
TEST FACILITIES SET AN/TPM-24(V)3

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
00	Test Facilities Set, AN/TPM-21(V)3	Inspect	0.2						A
		Test	03						B
		Test				0.5		2-9,11,12,	G
		Service				0.2		1	C
		Calibrate				0.5		4-9,11,12	H
		Replace		0.3					F
		Repair		0.3				1,2	D
		Repair				1.0		1,10	E
		Overhaul					4.0	1-12	E
		Rebuild					10.0	1-12	E
01	Adapter, Test MX-8565/TPM-24(V)	Inspect	0.2						A
		Test		0.3				2	D
		Service	0.2						C
		Replace		0.2					
		Repair				1.0		1	E
02	Cable Assembly, Radio Frequency Branched	Inspect	0.2						A
	CG-3616/TPM-24(V) (W39)	Test		0.3				2	D
		Test				0.5		2,3,4	G
		Calibrate				0.3		2-4,7,9, 12	
		Replace		0.2					
		Repair				0.5		1	I
03	Cable Assembly, Power, Electrical, CX-12227/TPM-24(V) (W32)								K
04	Cable Assembly, Radio Frequency, Branched CG 3617/TPM-24(V) (W48)								K
05	Cable Assembly, Special Purpose, Electrical CX-12223/TPM-24(V) (W41)								K
06	Cable Assembly, Radio Frequency CX-3611/TPM-24V) (W21)								K
07	Cable Assembly, Special Purpose, Electrical CX-12222/TPM-24(V) (W40)								K
08	Cable Assembly, Radio Frequency CG-3610/TPM-24(V) (W16)								K
09	Cable Assembly, Radio Frequency CG-3608/TPM-24(V) (W13)								K
10	Cable Assembly, Radio Frequency SMD-687981 (W14, W15)								K
11	Cable Assembly, Radio Frequency CG-3613/TPM-24(V) (W47)								K
12	Cable Assembly, Radio Frequency CG-3612/TPM-24(V) (W45)								K
13	Cable Assembly, Special Purpose, Electrical CX-12225/TPM-24(V) (W43)								K
14	Cable Assembly, Special Purpose, Electrical CX-12224/TPM-24 (V) (W42)								K
15	Case, Test Facilities Set CY-6825/TPM-24(V)3	Inspect	0.1						A
		Service		0.2				1	C
		Replace		0.1					
		Repair				0.5			
16	Extender, Circuit Board	Inspect	0.2						A
	MX-8563/TPM-24(V) (A5)	Test		0.3				2	D
		Replace		0.2					
		Repair				1.0			E
17	Extender, Circuit Board	Inspect	0.2						A
	MX-8560/TPM-24(V) (A3, A4)	Test		0.3				2	D
		Replace		0.2					
		Repair			1.0				E

SECTION II MAINTENANCE ALLOCATION CHART
FOR
TEST FACILITIES SET AN/TPM-24(V)3

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
18	Hybrid Attenuator Assembly CN-1322/TPM-24(V)	Inspect	0.2						A
		Test				0.3		2-9,11,12	G
		Service	0.2						C
		Calibrate				0.3		4-9,11,12	H
		Replace		0.2					
		Replace				1.0		1	E

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENT
FOR
TEST FACILITIES SET AN/TPM-24(V)3

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O, H, D	Tool Kit, Electronic Equipment TK-100/G	5180-00-605-0079	
2	O, H, D	Multimeter AN/FSM-6B	6625-00-957-4374	
3	H, D	Ohmmeter ZM-21A/U	6625-00-643-1030	
4	H, D	Signal Generator SG-340A/G	6625-00-542-1292	
5	H, D	Low-Pass Band Pass Filter HP 360C	5915-00-503-0533	
6	H, D	Attenuator, Precision Step, Alfred Model E101	6625-00-061-0230	
7	H, D	Indicator, Standing Wave Ratio IM-175B/U*	6625-00-682-3480	
8	H, D	Crystal Detector, HP 423A	4940-00-871-8508	
9	H, D	Slotted Line, IM-92/U	6625-00-356-0314	
10	H, D	Repair Kit, Printed Wiring Board, MK-772/U	5999-00-757-7042	
11	H, D	Termination, 50 Oh , Micro Lab/FKR TA-6MN (2 required)	6625-00-137-5900	
12	H, D	Adapters, UG-201A/U	5935-00-259-0205	

* Replaces the AN/UPM-108A in all maintenance procedures in TM 11-6625-2398-15-3.

SECTION IV. REMARKS

Reference Code	Remarks
A	Visual
B	Operational
C	Preventive Maintenance
D	Continuity check of cables, extender boards, and Front panel Test Adapter
E	Shop Facilities
F	End item and cable assembles
G	General trouble shooting, VSWR
H	Hybrid Attenuator Sum Channel, Difference Channel, Attenuator Dial, Calibration of Insertion
I	Non Repairable, except for Replacement of Standard Connectors
J	Calibration of Insertion Loss
K	Maintenance function, Category, tools and equipment, Same as group number 02.
L	Maintenance Function, Category, tools and Equipment, Same as group number 1801.

APPENDIX D
ORGANIZATIONAL, DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

D-1. Scope

This appendix lists repair parts and special tools required for the performance of organizational, direct support, general support, -and depot maintenance of the AN/TPM-24(V)3.

D-2. General

This repair parts and special tools list is divided into the following sections:

a. Repair Parts for Organizational Maintenance-Section II. A list of repair parts authorized for the performance of maintenance at the organizational level.

b. Special Tools, Test and Support Equipment for Organizational Maintenance. Not applicable.

c. Repair Parts for Direct Support, General Support, and Depot Maintenance-Section III. A list of repair parts authorized for the performance of maintenance at the direct support, general support, and depot level.

d. Special Tools, Test and Support Equipment for Direct Support, General Support, and Depot Maintenance - Section IV. A list of special tools, test and support equipment authorized for the performance of maintenance at the direct support, general support, and depot level.

e. Index-Federal Stock Number Cross-Reference to Figure and Item Number or Reference Designation Section V. A list of Federal stock numbers in ascending numerical sequence, followed by a list of reference numbers appearing in ascending alphanumeric sequence, cross-referenced to the illustration figure number and reference designation.

f. Index-Reference Designation Cross-Reference to Page Number-Section VI. A list of reference designations cross-referenced to page numbers.

D-3. Explanation of Columns

a. The following provides an explanation of columns found in the tabular listings.

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

Code	*Explanation*
PA-	Item procured and stocked for anticipated or known usage.
PB-	Item procured and stocked for insurance purposes because essentiality dictates that a minimum quantity be available in the supply systems.
PC-	Item procured and stocked and which otherwise could be code PA except that it is deteriorative in nature.
PD-	Support item, excluding support equipment, procured for initial issue or outfitting and stocked only for subsequent or additional initial issues or outfittings. Not subject to automatic replenishment.
PE-	Support equipment procured and stocked for initial issue or outfitting to specified maintenance repair activities.
PF-	Support equipment which will not be stocked but which will be centrally procured on demand.
PG-	Item procured and stocked to provide for sustained support for the life of the equipment. It is applied to an item peculiar to the equipment which because of probable discontinuance or shutdown of production facilities would prove uneconomical to reproduce at a later time.
KD-	An item of depot overhaul/repair kit and not purchased separately. Depot kit defined as a kit that provided items required at the time of overhaul or repair.
KF-	An item of a maintenance kit and not purchased separately. Maintenance kit defined as a kit that provides an item that can be replaced at organization or direct support or general support levels of maintenance.

Code *Explanation*

KB-Item included in both a depot overhaul/repair kit and a maintenance kit.
MO--Item to be manufactured or fabricated at organization level.
MF-Item to be manufactured or fabricated at direct support maintenance level.
MH-Item to be manufactured or fabricated at general support maintenance level.
MD-Item to be manufactured or fabricated at depot maintenance level.
AO-Item to be assembled at organizational level.
AF-Item to be assembled at direct support maintenance level.
AH-Item to be assembled at general support maintenance level.
AD-Item to be assembled at depot maintenance level.
XA-Item is not procured or stocked because the requirements for the item will result in the replacement of the next higher assembly.
XB-Item is not procured or stocked. If not available through salvage, requisition.
XC-Installation drawing, diagram instruction sheet, field service drawing, that is identified by manufacturers' part number.
XD-Support items can be requisitioned with justification.

NOTE

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

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

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

Code *Application/Explanation*

O-Support item is removed, replaced, used at organizational level of maintenance.

Code *Application/Explanation*

NOTE

A code "C" may be used in this position to denote crew or operator maintenance performed within organizational maintenance.

F-Support item is removed, replaced, used at the Direct Support maintenance level.
H-Support item is removed, replaced, used at the General Support maintenance.
D-Support items that are removed, replaced, used at depot only.

(b) Repair (fourth position). The maintenance code entered in the fourth position indicates whether the item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair (i.e., all authorized maintenance functions). When a maintenance code is not used a dash (-) sign is entered. For multiservice equipment/systems, or when a code is entered, this position will contain one of the following maintenance codes as assigned by the service(s) that require the code:

Code *Application/Explanation*

O-The lowest maintenance level capable of complete repair of the support item is the organizational level.
F-The lowest maintenance level capable of complete repair of the support item is direct support.
H-The lowest maintenance level capable of complete repair of the support item is general support.
D-The lowest maintenance level capable of complete repair of the support item is the depot level.
L--Repair restricted to designated Specialized Repair Activity.
Z-Nonrepairable. No repair is authorized.
B-No repair is authorized. The item may be reconditioned by adjusting, lubricating, etc., at the user level. No parts or special tools are procured for the maintenance of this item.

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

Code *Explanation*

Z-Nonrepairable item. When unserviceable, condemn and dispose at the level indicated in the first digit of the maintenance code.

Code *Explanation*

O--Repairable item. When uneconomically repairable, condemn and dispose at organizational level.

F-Repairable item. When uneconomically repairable, condemn and dispose at the Direct Support Level.

H-Repairable item. When uneconomically repairable, condemn and dispose at the General Support Level.

D-Repairable item. When beyond lower level repair capability, return to depot. Condemnation and disposal not authorized below depot level.

L-Repairable item. Repair condemnation and disposal not authorized below/Specialized Repair Activity level.

A-Item requires special handling or condemnation procedures because of specific reasons (i.e., precious metal content, high dollar value, critical material or hazardous material).

b. Federal Stock Number. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Description. Indicates the Federal item name and any additional description of the item required. A part number or other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parentheses.

d. Unit of Measure (U/M). A two-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based; e.g., ft, ea, pr, etc.

e. Quantity Incorporated in Unit. Indicates the quantity of the item used in the AN/TPM-24(V)3. Subsequent appearances of the same item in the same assembly are indicated by the letters "REF".

f. Allowances (15-Day Organizational Maintenance, SO-Day DS/GS Maintenance, 1 Year Per Equipment Contingency, and Depot Maintenance). Items authorized for requisition as required are identified by an asterisk in the allowance columns.

g. Illustrations.

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

(2) *Item number or reference designation*. Indicates the reference designation used to identify the item in the illustration.

D-4. Location of Repair Parts

a. This appendix contains two cross reference indexes (sec V and sec VI) to be used to locate a repair part when either the Federal stock number, reference number (manufacturer's part number), or reference designation is known. The first column in each index is prepared in numerical or alphanumeric sequence is ascending order. Where a Federal stock number is not listed, refer to the reference number (manufacturer's part numbers) immediately following the Federal stock number.

b. When the Federal stock number or reference number is known, follow the procedures given in (1) and (2) below.

(1) Refer to the index of Federal stock numbers and reference numbers (see V) and locate the Federal stock number or reference number. The Federal stock number or reference number is cross-referenced to the applicable figure and reference designation.

(2) When the reference designation is determined, refer to the reference designation index (see VI). The reference designations are listed in alpha-numeric ascending order and are cross-referenced to the page number on which they appear in the repair parts list (sec II or III). Refer to the page number noted in the index and locate the reference designation in the repair parts list (col. 7b, Repair Parts for organizational Maintenance or col. 10b, Repair Parts for Direct Support, General Support and Depot Maintenance).

c. When the reference designation is known, follow the procedures given in b(2) above.

d. When neither the Federal stock number, reference number, nor reference designation is known, identify the part in the illustration and follow directions given in c above or scrutinize column 3 of the repair parts lists (see II and sec III).

D-5. Federal Supply Code for Manufacturers

The last line on the Description column indicates the applicable Federal Supply Code for Manufacturer (FSCM) in parentheses. The FSCM is used as an element in item identification to designate manufacturer or distributor or Government agency, etc., and is identified in SB 70842.

(Next printed page is D-5)

SECTION II REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW				(7) ILLUSTRATIONS	
					(a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(a) FIG NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
	6625-133-7865	TEST FACILITIES SET AN/TPM-24(V)3 (This item is nonexpendable)							1-1	
PAOZZ	5935-862-9614	ADAPTER, CONNECTOR: UG201AU (81350)	EA	2	*	*	*	*	1-6(1)	CF7
PAOZZ	5935-842-9614	ADAPTER, CONNECTOR: UG201AU (81350)	EA	REF	*	*	*	*	1-6(1)	CP8
PAOZZ	5935-683-7892	ADAPTER, CONNECTOR: UG274BU (80058)	EA	3	*	*	*	*	1-6(1)	CP9
PAOZZ	5935-683-7892	ADAPTER, CONNECTOR: UG274BU (80058)	EA	REF	*	*	*	*	1-6(1)	CP10
PAOZZ	5935-683-7892	ADAPTER, CONNECTOR: UG274BU (80058)	EA	REF	*	*	*	*	1-6(1)	CP11
PAOZZ	5935-177-2761	ADAPTER, CONNECTOR: UG-1898/TPM -24(V)	EA	2	*	*	*	*	1-6(1)	CP5
PAOZZ	5935-177-2761	ADAPTER, CONNECTOR: UG-1898/TPM -24(V)	EA	REF	*	*	*	*	1-6(1)	CP6
PAOZZ	5935-837-5280	ADAPTER, CONNECTOR: UG-1896/TPM -2 (V)	EA	3	*	*	*	*	1-6(1)	CP2
PAOZZ	5315-837-5280	ADAPTER, CONNECTOR: UG-1896/TPM -24(V)	EA	REF	*	*	*	*	1-6(1)	CP3
PAOZZ	5935-837-5280	ADAPTER, CONNECTOR: UG-1896/TPM -24(V)	EA	REF	*	*	*	*	1-6(1)	CP4
PAOZZ	5935 075-7008	ADAPTER, CONNECTOR: UG-1897/TPM -24(V)	EA	1	*	*	*	*	1-6(1)	CP1
PAOZZ	5985-128-0195	ATTENUATOR, FIXED CN-1321/TPM -24(V)	EA	2	*	*	*	*	1-6(1)	AT1
PAOZZ	5985-128-0195	ATTENUATOR, FIXED CN-1321/TPM -24(V)	EA	REF	*	*	*	*	1-6(1)	AT2
PAOZZ	6623-177-4489	CABLE ASSEMBLY, RADIO FREQUENCY: CG-3608/TPM -24(V)	EA	1	*	*	*	*	1-5(1)	W13
PAOHH	5995-905-7194	CABLE ASSEMBLY, RADIO FREQUENCY: SMD657879 (80249)	EA	2	*	*	*	*	1-5(1)	W14
PAOHH	5995-9t5-7194	CABLE ASSEMBLY, RADIO FREQUENCY: SMD657879 (80249)	EA	REF	*	*	*	*	1-5(1)	W15
PAOHH	66253-17-4490	CABLE ASSEMBLY, RADIO FREQUENCY: CG-3610/TPM -24(V)	EA	1	*	*	*	*	1-5(1)	W16
PAOHH	6625-177-4495	CABLE ASSEMBLY, POWER, ELECTRICAL: CX-12227/TPM -24(V)	EA	1	*	*	*	*	1-5(1)	W32
PAOHD	6625-133-7794	CABLE ASSEMBLY, RF, BRANCHED: CG-3616/TPM -24(V)	EA	1	*	*	*	*	1-5(2)	W39
PAOZZ	6625-133-7805	CABLE ASSEMBLY, SP, ELECTRICAL: CX-12222/TPM -24(V)	EA	1	*	*	*	*	1-5(2)	W40
PAOZZ	6625-133-7851	CABLE ASSEMBLY, SP, ELECTRICAL: CX-12223/TPM -24(V)	EA	1	*	*	*	*	1-5(2)	W41
PAOZZ	6625-133-7797	CABLE ASSEMBLY, SP, ELECTRICAL: CX-12224/TPM -24(V)	EA	1	*	*	*	*	1-5(2)	W42
PAOZZ	6625-133-7796	CABLE ASSEMBLY, SP, ELECTRICAL: CX-12225/TPM -24(V)	EA	1	*	*	*	*	1-5(2)	W43
PAOHH	6625-177-4493	CABLE ASSEMBLY, RADIO FREQUENCY: CG-3612/TPM -24(V)	EA	1	*	*	*	*	1-5(1)	W45
PAOHH	6625-177-4494	CABLE ASSEMBLY, RADIO FREQUENCY: CG-3613/TPM -24(V)	EA	1	*	*	*	*	1-5(1)	W47
PAOHD	6625-133-7793	CABLE ASSEMBLY, RF, BRANCHED: CG-3617/TPM -24(V)	EA	1	*	*	*	*	1-5(1)	W48
PAOHH	6625-177-4492	CABLE ASSEMBLY, RF: CG-3611/TPM-24 (V)	EA	1	*	*	*	*	1-5(1)	W21

SECTION II REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW				(7) ILLUSTRATIONS	
					(a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(a) FIG NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
PAOZZ	5985-861-7854	DUMMY LOAD, ELECTRICAL: DA-558/TPM-24(V)	EA	2	*	*	*	*	1-6(1)	AT3
PAOZZ	5985-861-7854	DUMMY LOAD, ELECTRICAL: DA-558/TPM-24(V)	EA	REF	*	*	*	*	1-6(1)	AT4
PAOZZ	5950-970-1869	DUMMY LOAD, ELECTRICAL: DA-559/TPM-24(V)	EA	2	*	*	*	*	1-6(1)	AT5
PAOZZ	5950-970-1869	DUMMY LOAD, ELECTRICAL: DA-559/TPM-24(V)	EA	REF	*	*	*	*	1-6(1)	AT6
PAOZZ	6625-133-7774	EXTENDER, CIRCUIT BOARD: MX-8563/TPM-24(V)	EA	1	*	*	*	*	1-6(1)	A5
PAOHH	6625-133-7806	EXTENDER, CIRCUIT BOARD: MX-8560/TPM-24(V)	EA	2	*	*	*	*	1-6(1)	A3
PAOHH	6625-133-7806	EXTENDER, CIRCUIT BOARD: MX-8560/TPM-24(V)	EA	REF	*	*	*	*	1-6(1)	A4
PAOZZ	5120-450-6767	PULLER, PRINTED WIRING BOARD: SMB687971-1 (80249)	EA	1	*	*	*	*	1-6(1)	MP1
PAOZZ	5120-450-6766	PULLER, PRINTED WIRING BOARD: SMB687971-2 (80249)	EA	1	*	*	*	*	1-6(1)	MP2

SECTION III REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE INDEX NO	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF NUMBER & MFR CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUS-TRATION (a) FIG. NO	(b) ITEM NO
	6625-133-7865	TEST FACILITIES SET AN/TPM-24(v)3 (This item is nonexpendable)											1-1	
PAOZZ	5935-682-9614	ADAPTER, CONNECTOR: UG201AU (81350)	EA	2	*	*	*	*	*	*	*	*	1-6(1)	CP7
PAOZZ	5935-842-9614	ADAPTER, CONNECTOR: UG201AU (81350)	EA	REF	*	*	*	*	*	*	*	*	1-6(1)	CP8
PAOZZ	5935-683-7892	ADAPTER, CONNECTOR: UG274BU (80058)	EA	3	*	*	*	*	*	*	*	*	1-6(1)	CP9
PAOZZ	5935-683-7892	ADAPTER, CONNECTOR: UG274BU (80058)	EA	REF	*	*	*	*	*	*	*	*	1-6(1)	CP10
PAOZZ	5935-683-7892	ADAPTER, CONNECTOR: UG274BU (80058)	EA	REF	*	*	*	*	*	*	*	*	1-6(1)	CP11
PAOZZ	5935-177-2761	ADAPTER, CONNECTOR: UG-1898/TPM-24(V)	EA	2	*	*	*	*	*	*	*	*	1-6(1)	CP5
PAOZZ	5935-177-2761	ADAPTER, CONNECTOR: UG-1898/TPM-24(V)	EA	REF	*	*	*	*	*	*	*	*	1-6(1)	CP6
PAOZZ	5935-837-5280	ADAPTER, CONNECTOR: UG-1896/TPM-24(V)	EA	3	*	*	*	*	*	*	*	*	1-6(1)	CP2
PAOZZ	5935-837-5280	ADAPTER, CONNECTOR: UG-1896/TPM-24(V)	EA	REF	*	*	*	*	*	*	*	*	1-6(1)	CP3
PAOZZ	5935-837-5280	ADAPTER, CONNECTOR: UG-1896/TPM-24(V)	EA	REF	*	*	*	*	*	*	*	*	1-6(1)	CP4
PAOZZ	5935-075-7008	ADAPTER, CONNECTOR: UG-1897/TPM-24(V)	EA	1	*	*	*	*	*	*	*	*	1-6(1)	CP1
PDOHD	5935-075-7008	ADAPTER, TEST: MX-8565/TPM-24(V)	EA	1	*	*	*	*	*	*	*	*	1-4	A2
PAMZZ	5340-664-6881	BUMPER, RUBBER: 711 (70485)	EA	4				*	*	*	*	*		A2MP10
XANZZ		CHASSIS, ELECTRICAL EQUIPMENT: SMD687965 (80249)	EA	1										A2MP1
XANZZ		CHASSIS, ELECTRICAL EQUIPMENT: SMD687965 (80249)	EA	1										A2MP2
XANZZ		CHASSIS, ELECTRICAL EQUIPMENT: SMD687965-1 (80249)	EA	1										A2MP3
PANZZ	5325-806-5916	EYLET, METALLIC: 493 (01881)	EA	1				*	*	*	*	*		A2H1
PANZZ	5310-864-5798	NUT, SELF-LOCKING, CLINCE: 711 (70485)	EA	1				*	*	*	*	*		A2H2
PANZZ	5310-819-9188	NUT, SELF-LOCKING: LKS032-2 (46384)	EA	6				*	*	*	*	*		A2H3
PANZZ	5340-997-2964	CLAMP, LOOP: MS21322-36 (96906)	EA	1				*	*	*	*	*		A2MP4
PANZZ	5305-050-9227	SCREW, MACHINE: MS51957-61 (96906)	EA	1				*	*	*	*	*		A2B4
PANZZ	5935-779-8294	CONNECTOR PLUG, ELECTRICAL MS116P14-19P (96906)	EA	1				*	*	*	*	*	1-4	A2P1
XDNZZ		COVER, REAR: SMD687966 (80249)	EA	1										A2MP5
PANZZ	5305-054-6652	SCREW, MACHINE: MS51957-28 (96906)	EA	6				*	*	*	*	*		A2H5
PANZZ	5340-761-1258	HANDLE, ROW: MS39087-6 (96906)	EA	2				*	*	*	*	*		A2MP6
PANZZ	5305-050-9229	SCREW, MACHINE: MS51957-63 (96906)	EA	4				*	*	*	*	*		A2H6
PANZZ	5310-933-8120	WASHER, LOCK: MS35338-138 (96906)	EA	4				*	*	*	*	*		A2H7

SECTION III REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE INDEX NO	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF. NUMBER & MFR CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUS-TRATION (a) FIG. NO.	(b) ITEM NO.
XDHZZ		INSULATION, SLEEVING, ELECTRICAL: RT510 (08795)	EA	1										A2MP7
PAHZZ	5935-578-3489	JACK, TIP: M516108-2A (96906)	EA	7				*	*	*	*	*	3-2	A2J1
PAHZZ	5935-578-3489	JACK, TIP: MS16108-2A (96906)	EA	REF				*	*	*	*	*	3-2	A2J2
PAHZZ	5935-578-3489	JACK, TIP: MS16108-2A (96906)	EA	REF				*	*	*	*	*	3-2	A2J3
PAHZZ	5935-578-3489	JACK, TIP: MS16108-2A (96906)	EA	REF				*	*	*	*	*	3-2	A2J4
PAHZZ	5935-578-3489	JACK, TIP: MS16108-2A (96906)	EA	REF				*	*	*	*	*	3-2	A2J5
PAHZZ	5935-578-3489	JACK, TIP: MS16108-2A (96906)	EA	REF				*	*	*	*	*	3-2	A2J6
PAHZZ	5935-578-3489	JACK, TIP: MS16108-2A (96906)	EA	REF				*	*	*	*	*	3-2	A2J7
PAHZZ	5935-577-236	JACK, TIP: MS16108-3A (96906)	EA	1				*	*	*	*	*	3-2	A2J8
PAFZZ	5355-842-1111	KNOB: MS91528-1A2B (96906)	EA	1				*	*	*	*	*		A2MP8
MDHZZ		PI.ATE, IDENTIFICATION: SMD657819-5 (80249)	EA	1										A2MP9
PAHZZ	5310-914-9748	NUT, PLAIN, HEXACON: MS35649-244 (96906)	EA	4				*	*	*	*	*		A2H8
PAHZZ	5305-054-5648	SCREW, MACHINE: MS1957-14 (96906)	EA	4				*	*	*	*	*		A2H9
PAHZZ	5310-933-8118	WASHER LOCK: MS35338-135 (96906)	EA	4				*	*	*	*	*		A2H10
PAHZZ	5930-177-2778	SWITCH, ROTARY: SMC657830 (80249)	EA	1				*	*	*	*	*	3-2	A2S1
PAHZZ		WIRE, ELECTRICAL: SMB657812-20-9 (80249)	FT	1				*	*	*	*	*		A2W1
PAOZZ	5985-128-0195	ATTENUATOR, FIXED CN-1321/TPM-24(V)	EA	2				*	*	*	*	*	1-6(1)	AT1
PAOZZ	5985-128-0195	ATTENUATOR, FIXED CN-1321/TPM-24(V)	EA	REF	*	*	*	*	*	*	*	*	1-6(1)	AT2
PAOZZ	6625-177-4489	CABLE ASSEMBLY, RADIO FREQUENCY: CC-3608/TPM-24(V)	EA	1	*	*	*	*	*	*	*	*	1-5(1)	W13
PAOZZ	5995-905-7194	CABLE ASSEMBLY, RADIO FREQUENCY: SMD657879 (80249)	EA	2	*	*	*	*	*	*	*	*	1-5(1)	W14
PAOZZ	5995-905-7194	CABLE ASSEMBLY, RADIO FREQUENCY: SMD657879 (80249)	EA	REF	*	*	*	*	*	*	*	*	1-5(1)	W15
PAHZZ	6145-542-6092	CABLE, RADIO FREQUENCY: RG5BCU (81349)	FT	6				*	*	*	*	*		W14W1
PAHZZ	5935-835-0508	CONNECTOR, PLUG, ELECTRICAL: RG88GU (80058)	EA	4				*	*	*	*	*	1-5(1)	W14P1
PAHZZ	5935-835-0508	CONNECTOR, PLUG, ELECTRICAL: RG88GU (80058)	EA	REF				*	*	*	*	*	1-5(1)	W14P2
PAHZZ	5935-835-0508	CONNECTOR, PLUG, ELECTRICAL: RG88GU (80058)	EA	REF				*	*	*	*	*	1-5(1)	W15P1
PAHZZ	5935-835-0508	CONNECTOR, PLUG, ELECTRICAL: RG88GU (80058)	EA	REF				*	*	*	*	*	1-5(1)	W15P1
MDHZZ		SLEEVE, MARKER, CABLE: SMC657859-12 (80249)	EA	2										W14MP1
PAOHH	6625-177-4490	CABLE ASSEMBLY, RADIO FREQUENCY: CG-3610/TPM-24(V)	EA	1	*	*	*	*	*	*	*	*	1-5(1)	W16

SECTION III REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE INDEX NO	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF. NUMBER & MFR CODE USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUS-TRATION (a) FIG. NO.	(b) ITEM NO.
PAHZZ	6145-606-8237	CABLE, RADIO FREQUENCY: RG174U (81349)	FT	5				*	*	*	*	*		W16W1
PAHZZ	5940-857-4914	CLIP, ELECTRICAL: 34 (76545)	EA	2				*	*	*	*	*	1-5(1)	W16E1
PAKZZ	5940-857-4914	CLIP, ELECTRICAL: 34 (76545)	EA	REF				*	*	*	*	*	1-5(1)	W16E2
PAHZZ	5935-086-4683	CONNECTOR, PLUG, ELECTRICAL 025B3600 (94375)	EA	1				*	*	*	*	*	1-5(1)	W16P1
PAHZZ	5940-993-5216	FERRULE, RF CABLE, GROUNDING: 2-323930-2 (00779)	EA	1				*	*	*	*	*		W16E2
PAHZZ	5970-815-1295	INSULATION, SLEEVING, ELECTRICAL: RNF100-1-4 BLACK (08795)	FT	1				*	*	*	*	*		W16MP3
PAHZZ	5975-763-4442	INSULATOR, CLIP: 36 (76545)	EA	2				*	*	*	*	*		W16MP1
MDHZZ		SLEEVE, MARKER, CABLE: SMC657859-5 (80249)	EA	1										W16MP2
PAHZZ		WIRE, ELECTRICAL: SMB657812-22-0 (80249)	EA	1				*	*	*	*	*		W16W2
PAOHH	6625-177-4492	CABLE ASSEMBLY, RADIO FREQUENCY: CG-3611/TPM-24(V)	EA	1	*	*	*	*	*	*	*	*	1-5(1)	W21
PAHZZ		CABLE, RADIO FREQUENCY: RG188AU (81349)	FT	1				*	*	*	*	*		W21W1
PAHZZ	5935-833-0991	CONNECTOR, PLUG, ELECTRICAL: 31-371 (02660)	EA	1				*	*	*	*	*	1-5(1)	W21P2
PAHZZ	5935-916-3780	CONNECTOR, PLUG, ELECTRICAL: T5002-188 (22238)	EA	1				*	*	*	*	*	1-5(1)	W21P1
PAOHH	6625-177-4495	CABLE ASSEMBLY, POWER, ELECTRICAL: CX-122227/TPM-24 (V)	EA	1	*	*	*	*	*	*	*	*	1-5(1)	W32
PAHZZ		CABLE, POWER, ELECTRICAL: CO-02MGF2-16-033 (81349)	FT	20				*	*	*	*	*		W32W1
PAHZZ	5935-761-3885	CONNECTOR, PLUG, ELECTRICAL: MS3126F14-55 (96906)	EA	1				*	*	*	*	*	1-5(1)	W32P2
PAHZZ		CONNECTOR, PLUG, ELECTRICAL: 9758 (83315)	EA	1				*	*	*	*	*	1-5(1)	W32P1
MDHZZ		SLEEVE, MARKER, CABLE: SMC657859-13 (80249)	EA	2										W32MP1
PAOHD	6625-133-7794	CABLE ASSEMBLY, RF, BRANCHED: CG-3616/TPM-24(V)	EA	1	*	*	*	*	*	*	*	*	1-5(2)	W39
PAHZZ	5935-280-1454	ADAPTER, CONNECTOR: UG914U (80058)	EA	2				*	*	*	*	*	1-5(2)	W39CP1
PAHZZ	5935-280-1454	ADAPTER, CONNECTOR: UG914U (80058)	EA	REF				*	*	*	*	*	1-5(2)	W39CP2
XAHZZ		CABLE, RADIO FREQUENCY: RG142AU (81349)	EA	1										W39W1
XAHZZ		CABLE, RADIO FREQUENCY: RG179AU (81349)	EA	1										W39W2
XAHZZ		CABLE, RADIO FREQUENCY: RG179AU (81349)	EA	1										W39W3
PAHZZ	5340-168-7223	CLIP, SPRING TENSION: SM657809 (80249)	EA	2				*	*	*	*	*		W39MP1
PAHZZ	5340-168-7223	CLIP, SPRING TENSION: SM657810-1 (80249)	EA	1				*	*	*	*	*		W39MP2
PAHZZ	5340-168-7223	CLIP, SPRING TENSION: SM657810-2 (80249)	EA	1				*	*	*	*	*		W39MP14
PAHZZ	5935-835-0508	CONNECTOR, PLUG, ELECTRICAL: UC88GU (80058)	EA	4				*	*	*	*	*	1-5(2)	W39P3

SECTION III REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE INDEX NO	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF. NUMBER & MFR CODE USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUS-TRATION (a) FIG. NO.	(b) ITEM NO.
PAHZZ	5935-835-0508	CONNECTOR, PLUG ELECTRICAL: UG88GU (80058)	EA	REF				*	*	*	*	*	1-5(2)	W39P4
PAHZZ	5935-835-0508	CONNECTOR, PLUG ELECTRICAL: UG88GU (80058)	EA	REF				*	*	*	*	*	1-5(2)	W39P5
PAHZZ	5935-835-0508	CONNECTOR, PLUG ELECTRICAL: UG88GU (80058)	EA	REF				*	*	*	*	*	1-5(2)	W39P6
XAHZZ		CONNECTOR, PLUG ELECTRICAL: 23007-1 (91737)	EA	2										W39K1
XAHZZ		CONNECTOR, PLUG ELECTRICAL: 69171-2 (21912)	EA	2										W39K2
XAHZZ		CONTACT, ELECTRICAL 201145-2	EA	2										W39E3
XAHZZ		CONTACT, ELECTRICAL 201146-2	EA	2										W39E4
XAHZZ		CONTACT, ELECTRICAL 201144-1	EA	2										W39E5
XAHZZ		CONTACT, ELECTRICAL 201143-1	EA	2										W39E6
XAHZZ		FERRULE, RF CABLE, GROUNDING: 328664 (00779)	EA	4										W38E7
XAHZZ		FERRULE, RF CABLE, GROUNDING: 328666 (00779)	EA	8										W38E8
XAHZZ		INSERT, ELECTRICAL CONNECTION: SMB657800 (80249)	EA	1										W39MP3
XAHZZ		INSERT, ELECTRICAL: SMB657801 (80249)	EA	1										W39MP4
XAHZZ		INSERT, ELECTRICAL: 202648-2 (00779)	EA	1										W39MP5
XAHZZ		INSERT, ELECTRICAL CONNECTION: 202649-2 (00779)	EA	1										W39MP6
XAHZZ		INSULATION, SLEEVING, ELECTRICAL: RMF100-1-2 (08795)	EA	1										W39MP7
XAHZZ		SHELL, ELECTRICAL CONNECTOR: 202287-1 (00779)	EA	1										W39MP8
XAHZZ		SHELL, ELECTRICAL CONNECTOR: 202295-1 (00779)	EA	1										W39MP9
XAHZZ		SHELL, ELECTRICAL CONNECTOR: 1-202301-1 (00779)	EA	2										W39MP10
XAHZZ		SCREW, MACHINE: MS35338-135 (96906)	EA	8										W39W1
XAHZZ		WASHER, LOCK: MS35338-135 (96906)	EA	8										W39W2
XAHZZ		SLEEVE, MARKER, CABLE: SMC657859-22 (80249)	EA	2										W39MP11
XAHZZ		SLEEVE, MARKER, CABLE: SMC657859-22 (80249)	EA	REF										W39MP12
XAHZZ		SPRING, RETAINING: 201142-2 (00779)	EA	12										W39MP13
PAOZZ	6625-133-7805	CABLE ASSEMBLY, SF, ELECTRICAL CX-12222/TPM-24(V)	EA	1	*	*	*	*	*	*	*	*	1-5(2)	W40
PAOZZ	5340-168-7223	CLIP, SPRING TENSION: SMB657809 (80249)	EA	2				*	*	*	*	*		W40P1
PAOZZ	5340-168-7218	CLIP, SPRING TENSION: SMB657810-2 (80249)	EA	2				*	*	*	*	*		W40P2
PAOZZ	6625-133-7851	CABLE ASSEMBLY, SP, ELECTRICAL:	EA	1	*	*	*	*	*	*	*	*	1-5(2)	W41

SECTION III REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE INDEX NO	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF. NUMBER & MFR CODE USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUS-TRATION (a) FIG. NO.	(b) ITEM NO.
PAHZZ	5340-168-7223	CLIP, SPRING TENSION: SMB657809 (80249)	EA	2				*	*	*	*	*		W41MP1
PAHZZ	5340-168-7218	CLIP, SPRING TENSION: SMB657810-2 (80249)	EA	2				*	*	*	*	*		W41MP2
PAOZZ	6625-133-7797	CABLE ASSEMBLY, SP, ELECTRICAL: CX-12224/TPM-24(V)	EA	1	*	*	*	*	*	*	*	*	1-5(2)	W42
PAHZZ	5340-168-7239	CLIP, SPRING TENSION: SMB657809 (80249)	EA	2				*	*	*	*	*		W42MP1
PAHZZ	5340-168-7239	CLIP, SPRING TENSION: SMB657810-1 (80249)	EA	2				*	*	*	*	*		W42MP2
PAOZZ	6625-133-7796	CABLE ASSEMBLY, SP, ELECTRICAL: CX-122225/TPM-24(V)	EA	1	*	*	*	*	*	*	*	*	1-5(2)	W43
PAHZZ	5340-168-7223	CLIP, SPRING TENSION: SMB657809 (80249)	EA	2				*	*	*	*	*		W43MP1
PAHZZ	5340-168-7239	CLIP, SPRING TENSION: SMB657810-1 (80249)	EA	2				*	*	*	*	*		W43MP2
PAOZZ	6625-177-4493	CABLE ASSEMBLY, RADIO FREQUENCY: CG-3612/TMP-24(V)	EA	1	*	*	*	*	*	*	*	*	1-5(1)	W45
PAHZZ	6145-542-6092	CABLE, RADIO FREQUENCY: RG58CU (81349)	FT	1				*	*	*	*	*		W45W1
PAHZZ	5935-577-2281	CONNECTOR, PLUG, ELECTRICAL: UG89CU (80058)	EA	1				*	*	*	*	*	1-5(1)	W45P2
PAHZZ	5935-177-2799	CONNECTOR, PLUG, ELECTRICAL: 101N1802 (94375)	EA	1				*	*	*	*	*	1-5(1)	W45P1
MDHZZ		SLEEVE, MARKER, CABLE: SMC657859-3 (80249)	EA	1										W45MP1
PAOZZ	6625-177-4494	CABLE ASSEMBLY, RADIO FREQUENCY: CG-3613/TPM-24(V)	EA	1	*	*	*	*	*	*	*	*	1-5(1)	W47
PAHZZ	6145-542-6092	CABLE, RADIO FREQUENCY: RG58CU (81349)	FT	1				*	*	*	*	*		W47W1
PAHZZ	5935-577-2281	CONNECTOR, PLUG, ELECTRICAL: UG89CU (80058)	EA	1				*	*	*	*	*	1-5(1)	W47P2
PAHZZ	5935-177-2794	CONNECTOR, PLUG, ELECTRICAL: 101B1802 (94375)	EA	1				*	*	*	*	*	1-5(1)	W47P1
MDHZZ		SLEEVE, MARKER, CABLE: SMC657859-4 (80249)	EA	1										W47MP1
PAOZZ	6625-177-4494	CABLE ASSEMBLY, RF: BRANCHED: CG-3617/TPM-24(V)	EA	1	*	*	*	*	*	*	*	*	1-5(1)	W48
PAHZZ		CABLE, RADIO FREQUENCY: RG180BU (81349)	FT	30				*	*	*	*	*		W48W1
PAHZZ		CONNECTOR, PLUG, ELECTRICAL: SMB657781 (80249)	EA	1									1-5(1)	W48P1
PAHZZ	5935-198-4182	CONNECTOR, PLUG, ELECTRICAL: 847-B1800W (94375)	EA	5				*	*	*	*	*	1-5(1)	W48P2
PAHZZ	5935-198-4182	CONNECTOR, PLUG, ELECTRICAL: 847-B1800W (94375)	EA	REF				*	*	*	*	*	1-5(1)	W48P3
PAHZZ	5935-198-4182	CONNECTOR, PLUG, ELECTRICAL: 847-B1800W (94375)	EA	REF				*	*	*	*	*	1-5(1)	W48P4
PAHZZ	5935-198-4182	CONNECTOR, PLUG, ELECTRICAL: 847-B1800W (94375)	EA	REF				*	*	*	*	*	1-5(1)	W48P5
PAHZZ	5935-198-4182	CONNECTOR, PLUG, ELECTRICAL: 847-B1800W (94375)	EA	REF				*	*	*	*	*	1-5(1)	W48P6
XAHZZ		CONTACT, ELECTRICAL: 21-33012-24 (77820)	EA	6										W48E1
PAHZZ	5970-914-3118	INSULATION, SLEEVING, ELECTRICAL:	EA	1				*	*	*	*	*		W48MP1

SECTION III REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE INDEX NO	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF. NUMBER & MFR CODE USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUS-TRATION (a) FIG. NO.	(b) ITEM NO.
PAHZZ	5970-812-2967	IDSULATION, SLEEVING, ELECTRICAL: RNF100-1-2 (08795)	EA	1				*	*	*	*	*		W48MP3
PAHZZ	5985-232-3071	RESISTOR, FIXED, COMPOSITION: HRA91-50-91OHMS (05627)	EA	1				*	*	*	*	*		W48R1
XAHZZ		SLEEVE, MARKER, CABLE: SMC657859-27 (80249)	EA	1										W48MP2
PDODD	6625-133-7798	CASE, TEST FACILITIES SET: CY6825/TPM-24(V)3	EA	1	*	*	*	*	*	*	*	*	1-2	MP4
XAHDD		CASE, TEST FACILITIES SET D8762 ALTERED (98376)	EA	1										MP4MP1
PAHZZ	5340-992-8139	CATCH, CLAMPING: ZSP2-204 (98376)	EA	10				*	*	*	*	*		MP4MP3
XAHZZ		GUARD RAIL: ZSP1-158 (98376)	EA	4										MP4MP4
XDHZZ		HANDLE, BOW: ZSP3-377 (98376)	EA	2										MP4MP2
XDDZZ		HINGE, CONTINUOUS: ZSP8-806 (98376)	EA	1										MP4MP6
PAHZZ	6625-993-0879	LATCH, PUSH BUTTON: ZSP2-2004 (98376)	EA	3				*	*	*	*	*		MP4MP7
XDHZZ		STRAP ASSEMBLY: FDK1152 (98313)	EA	6										MP4MP5
PAHZZ	4820-898-3003	VALVE, SAFETY RELIEF: ZSP6-037-4 (98376)	EA	1				*	*	*	*	*		MP4MP1
PAOZZ	5985-861-7856	DUMMY LOAD, ELECTRICAL: DA-558/TPM-24(V)	EA	2	*	*	*	*	*	*	*	*	1-6(1)	AT3
PAOZZ	5985-861-7856	DUMMY LOAD, ELECTRICAL: DA-558/TPM-24(V)	EA	REF	*	*	*	*	*	*	*	*	1-6(1)	AT4
PAOZZ	5950-970-1869	DUMMY LOAD, ELECTRICAL: DA-559/TPM-24(V)	EA	2	*	*	*	*	*	*	*	*	1-6(1)	AT5
PAOZZ	5950-970-1869	DUMMY LOAD, ELECTRICAL: DA-559/TPM-24(V)	EA	REF	*	*	*	*	*	*	*	*	1-6(1)	AT6
PAOZZ	6625-133-7774	EXTENDER, CIRCUIT BOARD: MX-8563/TPM-24(V)	EA	1	*	*	*	*	*	*	*	*	1-6(2)	A5
PAHHH	6625-133-7606	EXTENDER, CIRCUIT BOARD: MX-8560/TPM-24(V)	EA	2				*	*	*	*	*	1-6(2)	A3
PAHHH	6625-133-7606	EXTENDER, CIRCUIT BOARD: MX-8560/TPM-24(V)	EA	REF				*	*	*	*	*	1-6(2)	A4
PAHZZ	5935-878-6410	CONNECTOR, RECEPTACLE, ELEC: 60013PCGD22 (95213)	EA	1				*	*	*	*	*	1-6(2)	A3J45
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	44				*	*	*	*	*	1-6(2)	A3J1
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J2
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J3
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J4
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J5
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J6
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J6
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J6

SECTION III REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE INDEX NO	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF. NUMBER & MFR CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUS-TRATION (a) FIG. NO.	(b) ITEM NO.
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J9
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J10
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J11
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J12
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J13
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J14
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J15
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J16
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J17
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J18
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J19
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J20
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J21
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J22
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J23
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J24
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J25
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J26
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J27
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J28
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J29
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J30
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J31
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J32
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J33
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J34
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J35
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J36

SECTION III REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE INDEX NO	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF. NUMBER & MFR CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUS-TRATION (a) FIG. NO.	(b) ITEM NO.
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J37
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J38
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J39
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J40
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J41
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J42
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J43
PAHZZ	5935-131-9693	JACK, TIP: M39024-11-03 (96906)	EA	REF				*	*	*	*	*	1-6(2)	A3J44
XAHZZ		PRINTED WIRING BOARD: SMD687958 (80249)	EA	1										A3TB1
PDOHD	5985-177-2939	HYBRID ATTENUATOR ASSEMBLY: CM-1322/TPM-24P	EA	1	*	*	*	*	*	*	*	*	1-3	A1
PAHZZ	5305-054-6670	SCREW, MACHINE: MS51957-45 (96906)	EA	10				*	*	*	*	*		A1M1
PAHZZ	5310-685-3744	WASHER, FLAT: AN960C8 (88044)	EA	10				*	*	*	*	*		A1M2
PAHZZ	5935-904-4050	ADAPTER, CONNECTOR: MS90156-270 (96906)	EA	2				*	*	*	*	*	7-1	A1CP1
PAHZZ	5935-904-4050	ADAPTER, CONNECTOR: MS90156-270 (96906)	EA	REF				*	*	*	*	*	7-1	A1CP2
PAHZZ	5935-295-6295	ADAPTER, CONNECTOR: UG606U (80058)	EA	2				*	*	*	*	*		A1CP3
PAHZZ	5935-295-6295	ADAPTER, CONNECTOR: UG606U (80058)	EA	REF				*	*	*	*	*		A1CP4
PAHZZ	6625-042-8084	ATTENUATOR, VARIABLE: AU46A1NC1 (12457)	EA	1				*	*	*	*	*	3-1	A1AT1
PAHZZ	5305-054-6652	SCREW, MACHINE: MS51957-28 (96906)	EA	4				*	*	*	*	*		A1M3
PAHZZ	5310-531-9514	WASHER, FLAT: AN960C6 (88044)	EA	4				*	*	*	*	*		A1M4
PAHZZ	5310-929-6395	WASHER, FLAT: MS35338-136 (96906)	EA	4				*	*	*	*	*		A1M5
XAHZZ		BRACKET, HYBRID JUNCTION: SMC688016 (80249)	EA	1										A1MP1
XAHZZ		BRACKET, HYBRID JUNCTION: SMC688016 (80249)	EA	1										A1MP2
PAHZZ	5310-819-9188	NUT, SELF-LOCKING, CLINCH: LKS632-2 (46384)	EA	4										A1M6
PAHZZ	5305-054-6652	SCREW, MACHINE: MS51957-28 (96906)	EA	4										A1M7
PAHZZ		CLAMP, LOOP: MP4M (09922)	EA	1										A1MP3
PAHZZ	5310-934-9748	NUT, PLAIN, HEXAGON MS35649-244 (96906)	EA	1										A1M8
PAHZZ	5305-054-5651	SCREW, MACHINE: MS51957-17 (96906)	EA	1										A1M9
PAHZZ		WASHER, FLAT: AM960C4 (88044)	EA	1										A1M10

SECTION III REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE INDEX NO	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF. NUMBER & MFR CODE USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUS-TRATION (a) FIG. NO.	(b) ITEM NO.
PAHZZ	5310-933-8118	WASHER, LOCK: MS35338-135 (96906)	EA	1				*	*	*	*	*		A1M11
MHHHH		CABLE ASSEMBLY, RADIO FREQUENCY: SMC688010 (80249)	EA	2										A1W4,A1W5
PAHZZ	6145-542-6092	CABLE, RADIO FREQUENCY: RG58CU (81349)	FT	1				*	*	*	*	*		A1W4P1
PAHZZ	5935-850-8876	CONNECTOR, PLUG, ELECTRICAL: UG909AU (81349)	EA	1				*	*	*	*	*		A1W4P2
PAHZZ	5935-760-1767	CONNECTOR, PLUG, ELECTRICAL: 101N2800 (94375)	EA	1				*	*	*	*	*		A1W4P2
XAHZZ		SLEEVE, MARKER, CABLE: SMC657859-8 (80249)	EA	1										A1W4MP1
MHHHH		CABLE ASSEMBLY, RADIO FREQUENCY: SMC688011-1 (80249)	EA	1									7-1	A1W1
PAHZZ	6145-660-8716	CABLE, RADIO FREQUENCY: MC222U (81349)	FT	8				*	*	*	*	*		A1W1P1
PAHZZ	5935-932-2791	CONNECTOR, PLUG, ELECTRICAL: UG18DU	EA	2				*	*	*	*	*	7-1	A1W1P1
PAHZZ	5935-932-2791	CONNECTOR, PLUG, ELECTRICAL: UG18DU	EA	REF				*	*	*	*	*	7-1	A1W1P2
XAHZZ		SLEEVE, MARKER, CABLE: SMC657859-9 (80249)	EA	1										A1W1MP1
MHHHH		CABLE ASSEMBLY, RADIO FREQUENCY: SMC688011-2 (80249)	EA	1									7-1	A1W2
PAHZZ	6145-660-8716	CABLE, RADIO FREQUENCY: MC222U (81349)	FT	1				*	*	*	*	*		A1W2W1
PAHZZ	5935-932-2791	CONNECTOR, PLUG, ELECTRICAL: UG18DU	EA	2				*	*	*	*	*	7-1	A1W2P1
PAHZZ	5935-932-2791	CONNECTOR, PLUG, ELECTRICAL: UG18DU	EA	REF				*	*	*	*	*	7-1	A1W2P2
XAHZZ		SLEEVE, MARKER, CABLE: SMC657859-9 (80249)	EA	1										A1W2MP1
MHHHH		CABLE ASSEMBLY, RADIO FREQUENCY: SMC688013 (80249)	EA	1										A1W6
PAHZZ	6145-542-6092	CABLE, RADIO FREQUENCY: MC58CU (81349)	FT	1				*	*	*	*	*		A1W6W1
PAHZZ	5935-850-8876	CONNECTOR, PLUG, ELECTRICAL: UG909AU	EA	1				*	*	*	*	*		A1W6P1
PAHZZ	5935-932-2791	CONNECTOR, PLUG, ELECTRICAL: 101M4800A	EA	REF				*	*	*	*	*		A1W6P2
XAHZZ		SLEEVE, MARKER, CABLE: SMC657859-11 (80249)	EA	1										A1W6MP1
MHHHH		CABLE ASSEMBLY, RADIO FREQUENCY: SMC688015 (80249)	EA	1									1-3	A1W3
PAHZZ	6145-542-6092	CABLE, RADIO FREQUENCY: MC58CU (81349)	FT	1				*	*	*	*	*	6-19	A1W3W1
PAHZZ	5935-835-0508	CONNECTOR, PLUG, ELECTRICAL: UG88CU (80058)	EA	2				*	*	*	*	*	6-19	A1W3P1
PAHZZ	5935-835-0508	CONNECTOR, PLUG, ELECTRICAL: UG88CU (80058)	EA	REF				*	*	*	*	*	6-19	A1W3P2
XAHZZ		SLEEVE, MARKER, CABLE: SMC657859-7 (80249)	EA	1										A1W3MP1
XAHZZ		CASE, ELECTRICAL EQUIPMENT: Z147-212888472 (19178)	EA	1										A1MP5
PAHZZ	5340-489-6384	BUMPER, RUBBER ZSP7-703 (19178)	EA	4				*	*	*	*	*		A1MP6

SECTION III REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE INDEX NO	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF NUMBER & MFR CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUS-TRATION (a) FIG. NO	(b) ITEM NO
PAHZZ	5340-775-5978	HANDLE, BAIL: ZSP3-304 (19178)	EA	1				*	*	*	*	*		A1MP7
PAHZZ	4010-U49-7347	CHAIN, BEAD: NAS1201C6A168 (80205)	EA	1				*	*	*	*	*	1-3	A1MP8
PAHZZ	5310-934-9748	NUT, PLAIN, HEXAGON: MS35649-244 (96906)	EA	1				*	*	*	*	*		A1H12
PAHZZ	5305-054-5651	SCREW, MACHINE: MS51957-17 (96906)	EA	1				*	*	*	*	*		A1H13
PAHZZ	5310-933-8118	WASHER, LOCK: MS35338-135 (96906)	EA	1				*	*	*	*	*		A1H14
XAHZZ		CHASSIS, ELECTRICAL EQUIPMENT: SMD687991 (80249)	EA	1										A1MP9
PAHZZ	5310-819-9188	NUT, SELF-LOCKING, CLINCH: LK632-2 (46384)	EA	7				*	*	*	*	*		A1H15
XAHZZ		COVER, HYBRID ATTENUATOR ASSY: SMC687969 (80249)	EA	1										A1MP10
PAHZZ	5305-054-6652	SCREW, MACHINE: MS51957-28 (96906)	EA	7				*	*	*	*	*		A1H16
PAHZZ	5985-893-1773	DUMMY LOAD, ELECTRICAL: 370NM (96906)	EA	1				*	*	*	*	*	7-1	A1J4
PAHZZ	5340-840-0954	HANDL.E, BOW: MS39087-4 (96906)	EA	2				*	*	*	*	*		A1MP11
PAHZZ	5305-059-3660	SCREW, MACHINE: MS51958-64 (96906)	EA	4				*	*	*	*	*		A1H17
PAHZZ	5310-933-8120	WASHER, LOCK: MS35338-138 (96906)	EA	4				*	*	*	*	*		A1H18
PAHZZ	5985-856-3283	HYBRID JUNCTION,.RF: 3032 (99899)	EA	1				*	*	*	*	*	7-1	A1HY1
PAKZZ	5305-054-6670	SCREW, MACHINE: MS51957-45 (96906)	EA	4				*	*	*	*	*		A1H19
PAHZZ	5310-933-8119	WASHER, LOCK: MS35338-137 (96906)	EA	4				*	*	*	*	*		A1H20
XANZZ		PANEL, FRONT: SMD687968 (80249)		1										A1MP12
PAHZZ	510-914-9759	NUT, PLAIN, HEXAGON: MS35649-284 (96906)	EA	2				*	*	*	*	*		A1H21
PAHZZ	5305-054-6670	SCREW, MACHINE: MS51957-45 (96906)	EA	2				*	*	*	*	*		A1H22
PAHZZ	5310-685-3744	WASHER, FLAT: AN96008 (88044)	EA	2				*	*	*	*	*		A1H23
PAHZZ	5310-933-8119	WASHER , LOCK: MS35338-137 (96906)	EA	2				*	*	*	*	*		A1H24
XDHZZ		PLATE, CABLE REEL: SMC687970 (80249)	EA	1										A1MP13
PAHZZ	5310-819-9188	NUT, SELF-LOCKING, CLINCH: LK632-2 (46384)	EA	4				*	*	*	*	*		A1H25
XDHZZ		PLATE, CABLE REEL: SMC687970-1 (80249)	EA	1										A1MP14
PAHZZ	5310-924-6652	SCREW, MACHINE: MS51957-28 (96906)	EA	8			*	*	*	*	*	*		A1H26
MDHZZ		PLATE, IDENTIFICATION: SMD657839-2 (50249)	EA	1										A1MP15
PAHZZ	5310-934-9748	NUT, PLAIN, HEXAGON: MS35649-244 (96906)	EA	4				*	*	*	*	*		A1H27
PAHZZ	5310-934-9749	SCREW, MACHINE: MS51957-15 (96906)	EA	4				*	*	*	*	*		A1H28

SECTION III REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE INDEX NO	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF. NUMBER & MFR CODE USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUS-TRATION (a) FIG. NO.	(b) ITEM NO.
PAHZZ	5310-933-8118	WASHER, LOCK: MS35338-135 (96906)	EA	4				*	*	*	*	*		A1H29
MDHZZ		PLATE, INSTRUCTION: SMC657856 (80249)	EA	1										A1MP4
PAHZZ		STRAP, RETAINING: TA514D-12 (84971)	EA	4				*	*	*	*	*		A1MP16
PAHZZ	5310-934-9761	NUT, PLAIN, HEXAGON: MS35649-264 (96906)	EA	8				*	*	*	*	*		A1H30
PAHZZ	5305-958-2918	SCREW, MACHINE: MS24693C26 (96906)	EA	8				*	*	*	*	*		A1H31
PAHZZ	5310-929-6395	WASHER, LOCK: MS35338-136 (96906)	EA	8				*	*	*	*	*		A1H32
PAHZZ		STRAP, RETAINING: TA514D16-12 (84971)	AA	4				*	*	*	*	*		A1MP17
PAHZZ	5310-934-9761	NUT, PLAIN, HEXAGON: MS31649-264 (96906)	EA	8				*	*	*	*	*		A1H33
PAHZZ	5305-958-2918	SCREW, MACHINE: MS24693C26 (96906)	EA	8				*	*	*	*	*		A1H34
PAHZZ	5310-929-6395	WASHER, LOCK: MS35338-136 (96906)	EA	8				*	*	*	*	*		A1H35
MDHZZ		PLATE, IDENTIFICATION: SMD657839-3 (80249)	EA	1										M3P
PAOZZ		PULLER, PRINTED WIRING BOARD: SMB687971-1 (80249)	EA	1	*	*	*	*	*	*	*	*	1-6(2)	MP1
PAOZZ		PULLER, PRINTED WIRING BOARD: SHB687911-2 (80249)	EA	1	*	*	*	*	*	*	*	*	1-6(2)	MP2

SECTION IV REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1)	(2)	(3)	(4)	(5)	(6)			(7)			(8)	(9)	(10)	
SMR CODE INDEX NO	FEDERAL STOCK NUMBER	DESCRIPTION REF. NUMBER & MFR CODE USABLE ON CODE	UNIT OF MEAS	QTY INC IN UNIT	30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	1-YR ALW PER EQUIP CNTGY	DEPOT MAINT ALW PER 100 EQUIP	ILLUS-TRATION (a) FIG. NO.	(b) ITEM NO.
PAHZZ	6625-137-5900	DUMMY LOAD, ELECTRICAL TA6MN (00929)	EA					2	2	2		2	8-3	
PAHZZ	6625-061-0230	ATTENUATOR, VARIABLE K101 (03782)	EA					1	1	1		1	8-3	

SECTION V INDEX-FEDERAL STOCK NUMBER AND REFERENCE NUMBER CROSS REFERENCE TO FIGURE AND, ITEM NUMBER OR REFERENCE DESIGNATION

FEDERAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER OR REF, DESIGNATION
4020-849-7347	1-3	A1MP8
4820-898-3003		MP4MP1
5305-050-9229		A2H6
5305-050-9227		A2H4
5305-054-5648		A2H9
5305-054-5649		A1H28
5305-054-5651		A1H9
5305-054-5651		A1H13
5305-054-6652		A1H3
5305-054-6652		A1H77
5305-054-6652		A1H16
5305-054-6652		A1H26
5305-054-6652		A2H5
5305-054-6670		A1H1
5305-054-6670		A1H19
5305-054-6670		A1H22
5305-059-3660		A1H17
5305-958-2918		A1H31
5305-958-2918		A1H34
5310-531-9514		A1H4
5310-685-3744		A1H2
5310-685-3744		A1H23
5310-819-9188		A2H6
5310-819-9188		A1H15
5310-819-9188		A1H25
5310-819-9188		A2H3
5310-864-5798		A2H2
5310-929-6395		A1H5
5310-929-6395		A1H32
5310-929-6395		A1H35
5310-933-8118		A1H11
5310-933-8118		A1H14
5310-933-8118		A1H29
5310-933-8118		A2H10
5310-933-8119		A1H20
5310-933-8119		A1H24
5310-933-8120		A1H8
5310-933-8120		A2H7
5310-934-9748		A1H8
5310-934-9748		A1H12
5310-934-9748		A1H27
5310-934-9748		A2H8
5310-934-9759		A1H21
5310-934-9761		A1H30
5310-934-9761		A1H33
5325-806-5916		A2H1
5340-168-7218		W39MP14
5340-168-7218		W40P2
5340-168-7218		W41MP2
5340-168-7223		W39MP1
5340-168-7223		W40MP1
5340-168-7223		W41MP1
5340-168-7223		W42MP1
5340-168-7223		W43MP1
5340-168-7239		W39MP2
5340-168-7239		W42MP2
5340-168-7239		W43MP2
5340-489-6384		A1MP6
5340-664-6881		A2MP10
5340-761-1258		A2MP6
5340-840-0954		A1MP11
5340-775-5978		A1MP7
5340-992-8139		MP4MP3
5340-997-2964		A2MP4
5355-842-3111		A2MP8
5930-177-2778		A281
5935-086-4683	1-5(1)	W16
5935-131-9693	1-5(1)	A3J1
5935-131-9693	1-5(1)	A3J2
5935-131-9693	1-6(2)	A3J3
5935-131-9693	1-6(2)	A3J4
5935-131-9693	1-6(2)	A3J5
5935-131-9693	1-6(2)	A3J6
5935-131-9693	1-6(2)	A3J7
5935-131-9693	1-6(2)	A3J8
5935-131-9693	1-6(2)	A3J9
5935-131-9693	1-6(2)	A3J10
5935-131-9693	1-6(2)	A3J11
5935-131-9693	1-6(2)	A3J13
5935-131-9693	1-6(2)	A3J14
5935-131-9693	1-6(2)	A3J15
5935-131-9693	1-6(2)	A3J16
5935-131-9693	1-6(2)	A3J17
5935-131-9693	1-6(2)	A3J18
5935-131-9693	1-6(2)	A3J19
5935-131-9693	1-6(2)	A3J20
5935-131-9693	1-6(2)	A3J21
5935-131-9693	1-6(2)	A3J22
5935-131-9693	1-6(2)	A3J23
5935-131-9693	1-6(2)	A3J24
5935-131-9693	1-6(2)	A3J24
5935-131-9693	1-6(2)	A3J25
5935-131-9693	1-6(2)	A3J26
5935-131-9693	1-6(2)	A3J27
5935-131-9693	1-6(2)	A3J28
5935-131-9693	1-6(2)	A3J29
5935-131-9693	1-6(2)	A3J30
5935-131-9693	1-6(2)	A3J31
5935-131-9693	1-6(2)	A3J31
5935-131-9693	1-6(2)	A3J33
5935-131-9693	1-6(2)	A3J34
5935-131-9693	1-6(2)	A3J35
5935-131-9693	1-6(2)	A3J36
5935-131-9693	1-6(2)	A3J37
5935-131-9693	1-6(2)	A3J38
5935-131-9693	1-6(2)	A3J39
5935-131-9693	1-6(2)	A3J40
5935-131-9693	1-6(2)	A3J41
5935-131-9693	1-6(2)	A3J42
5935-131-9693	1-6(2)	A3J43
5935-131-9693	1-6(2)	A3J44
5935-177-2761		
5935-177-2794	1-5(1)	W47P1
5935-177-2799	1-5(1)	W45P1
5935-198-4182	1-5(1)	W48P2
5935-198-4182	1-5(1)	W48P3
5935-198-4182	1-5(1)	W48P4
5935-198-4182	1-5(1)	W48P5
5935-198-4182	1-5(1)	W48P6
5935-233-3987		A1W6P2
5935-280-1454	1-5(2)	W39C1
5935-280-1454	1-5(1)	W39CP2
5935-295-6295		A1CP3
5935-295-6295		A1CP4
5935-577-2281	1-5(1)	W45P2
5935-577-2281	1-5(1)	W47P2
5935-577-2336	3-2	A2J8
5935-578-3489	3-2	A2J1
5935-578-3489	3-2	A2J2
5935-578-3489	3-2	A2J3
5935-578-3489	3-2	A2J4
5935-578-3489	3-2	A2J5
5935-578-3489	3-2	A2J6
5935-578-3489	3-2	A2J6
5935-578-3489	3-2	A2J7
5935-683-7892	1-6(1)	CP9
5935-683-7892	1-6(1)	CP10
5935-683-7892	1-6(1)	CP11

SECTION V INDEX-FEDERAL STOCK NUMBER AND REFERENCE NUMBER CROSS REFERENCE TO FIGURE AND, ITEM NUMBER OR REFERENCE DESIGNATION (CONTINUED)

FEDERAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER OR REF, DESIGNATION
5935-760-1767		A1W4P2
5935-761-3885	1-5(1)	W32P2
5935-779-8294	1-4	A2P1
5935-833-0991	1-5(1)	W21P2
5935-835-0508	1-5(1)	W14P1
5935-835-0508	1-5(1)	W14P2
5935-835-0508	1-5(1)	W15P1
5935-835-0508	1-5(1)	W15P2
5935-835-0508		W39P3
5935-835-0508	1-5(2)	W39P4
5935-835-0508	1-5(2)	W39P5
5935-835-0508	1-5(2)	W39P6
5935-835-0508	6-19	A1W3Pl
5935-835-0508	6-19	A1W3P2
5935-842-9614	1-6(1)	CP7
5935-842-9614	1-6(1)	CP8
5935-850-8876		A1W4P1
5935-850-8876		A1W6P1
5935-904-4050	7-1	A1CPl
5935-904-4050	7-1	A1CP2
5935-916-3780	1-5(1)	W21P1
5935-932-2791	7-1	A1W1P1
5935-932-2791	7-1	A1W1P2
5935-932-2791	7-1	A1W2P1
5935-932-2791	7-1	AW21P2
5940-857-4914	1-5(1)	W16E1
5940-857-4914	1-5(1)	W16E2
5935-878-6410	1-6(2)	A3J45
5940-993-5216		W16E2
5950-970-1869	1-6(1)	AT5
5950-970-1869	1-6(1)	AT6
5970-812-2967		W48MP3
5970-815-1295		W16MP3
5970-914-3118		W48MP1
5975-763-4442		W16MP1
5985-128-0195	1-6(1)	AT1
5985-128-0195	1-6(1)	AT2
5985-177-2939	1-3	A1
5985-232-3071		W48R1
5985-856-3283	7-1	A1HY1
5985-861-7856	1-6(1)	AT3
5985-861-7856	1-6(1)	AT4
5985-893-1773	7-1	A1J4
5995-905-7194	1-5(1)	W14
5995-905-7194	1-5(1)	W15
6145-542-6092		W14W1
6145-542-6092		W45W1
6145-542-6092		W47W1
6145-542-6092	6-19	A1W3W1
6145-542-6092		A1W4W1
6145-542-6092		A1W6W1
6145-606-8237		W16W1
6145-660-8716		A1W1W1
6145-660-8716		A1W2W1
6625-042-8084	3-1	A1AT1
6625-133-7774	1-6(1)	A5S
6625-133-7793	1-5(1)	W48
6625-133-7794	1-5(2)	W39
6625-133-7796	1-5(2)	W43
6625-133-7797		W42
6625-133-7798	1-2	MP4
6625-133-7806	1-6(2)	A3
6625-133-7806	1-6(2)	A4
6625-133-7851	1-5(2)	W41
6625-133-7865		
6625-177-4489	1-5(1)	W13
6625-177-4490	1-5(1)	W16
6625-177-4492	1-5(1)	W21
6625-177-4493	1-5(1)	W45
6625-177-4494	1-5(1)	W47
6625-177-4495	1-5(1)	W32
6625-993-0879		MP4MP7

REFERENCE NO.	MFG. CODE	FIG. NO.	REF. DESIG. OR ITEM NO.
AN960C4	88044		A1H10
AN960C6	88044		A1H4
AN960C8	88044		A1H2
AN960C8	88044		A1H23
AU46A1NC1	12457	3-1,	A1AT1
CG-3608/TPM-24(V)		1-5(1)	W13
CG-3610/TPM-24		1-5(1)	W16
CG-3611/TPM-24(V)		1-5(1)	W21
CG-3612/TPM-24(V)		1-5(1)	W45
CG-3613/TPM-24(V)		1-5(1)	W47
CG-3616/TPM-24(V)		1-5(2)	W39
CG-3617/TPM-24(V)		1-5(1)	W48
CN-1321/TPM-24(V)		1-6(1)	AT1
CN-1321/TPM-24(V)		1-6(1)	AT2
CN-1322/TPM-24(V)		1 3	A1
CO-02CGF2-16-033	81349		W32W1
CX-12222/TPM-24(V)		1-5(1)	W40
CX-12223/TPM-24(V)		1-5(1)	W41
CX-12224/TPM-24(V)			W42
CX-12225/TPM-24(V)		1-5(1)	W43
CX-12227/TPM-24(V)		1-5(1)	W32
CY-6825/TPM-24(V)3		1-2	MP4
DA-558/TPM-24(V)		1-6(1)	AT3
DA-558/TPM-24(V)		1-6(1)	AT4
DA-559/TPM-24(V)		1-6(1)	AT5
DA-559/TPM-24(V)		1-6(1)	AT6
D8762ALTERED	98376		MP4MP8
FDK1152	98313		MP4MP5
HYRA91-50-910HMS	05627		W48R1
HP4N	09922		A1MP3
LKS032-2	46S032-2		A2H2
LKS632-2	46384		A2H3
LKS632-2	46384		A1H6
LKS632-2	46384		A1H15
LKS632-2	46384		A1H25
MS16108-2A	96906	3-2	A2J1
MS16108-2A	96906	3-2	A2J2
MS16108-2A	96906	3-2	A2J3
MS16108-2A	96906	3-2	A2J4
MS16108-2A	96906	3-2	A2J5
MS16108-2A	96906	3-2	A2J6
MS16108-2A	96906	3-2	A2J7
MS16108-3A	96906	3-2	A2J8
MS21322-36	96906		A2MP4
MD24693C26	96906		A1H31
MS24693C26	96906		A1H34
MS3116F14-19P	96906	1-4	A2P1
MS3126F14-5S	96906	1-5(1)	W32P2
MS35338-135	96906		W39H2
MS35338-135	96906		A1H11
MS35338-135	96906		A1H14
MS35338-135	96906		A1H29
MS35338-135	96906		A2H10
MS35338-136	96906		A1H5
MS35338-136	96906		A1H32
MS35338-136	96906		A1H35
MS35338-137	96906		A1H20
MS35338-137	96906		A1H24
MS35338-138	96906		A1H8
MS35338-138	96906		A2H7
MS35649-244	96906		A1H8
MS35649-244	96906		A1H12

SECTION v INDEX-FEDERAL STOCK NUMBER AND REFERENCE NUMBER CROSS REFERENCE TO FIGURE AND, ITEM NUMBER OR REFERENCE DESIGNATION (CONTINUED)

REFERENCE NO.	MFG. CODE	FIG. NO.	REF. DESIG. OR ITEM NO.
MS35649-244	96906		A1H27
MS35649-244	96906		A2H8
MS35649-264	96906		A1H30
MS35649-264	96906		A1H33
MS35649-284	96906		A1H21
MS39024-11-03	96906	1-6(2)	A3J1
MS39024-11-03	96906	1-6(2)	A3J2
MS39024-11-03	96906	1-6(2)	A3J3
MS39024-11-03	96906	1-6(2)	A3J4
MS39024-11-13	96906	1-6(2)	A3J5
MS39024-11-13	96906	1-6(2)	A3J6
MS39024-11-03	96906	1-6(2)	A3J7
MS39024-11-03	96906	1-6(2)	A3J8
MS39024-11-03	96906	1-6(2)	A3J9
MS39024-11-03	96906	1-6(2)	A3J10
MS39024-11-03	96906	1-6(2)	A3J11
MS39024-11-03	96906	1-6(2)	A3J12
MS39024-11-03	96906	1-6(2)	A3J13
MS39024-11-03	96906	1-6(2)	A3J14
MS39024-11-03	96906	1-6(2)	A3J15
MS39024-11-13	96906	1-6(2)	A3J16
MS39024-11-03	96906	1-6(2)	A3J17
MS39024-11-03	96906	1-6(2)	A3J18
MS39024-11-03	96906	1-6(2)	A3J19
MS39024-11-03	96906	1-6(2)	A3J20
MS39024-11-03	96906	1-6(2)	A3J21
MS39024-11-03	96906	1-6(2)	A3J22
MS39024-11-03	96906	1-6(2)	AaJ23
MS39024-11-03	96906	1-6(2)	A3J24
MS39024-11-03	96906	1-6(2)	A3J25
MS39024-11-03	96906	1-6(2)	A3J26
MS39024-11-03	96906	1-6(2)	A3J27
MS39024-11-03	96906	1-6(2)	A3J28
MS39024-11-03	96906	1-6(2)	A3J29
MS39024-11-03	96906	1-6(2)	A3J30
MS39024-11-03	96906	1-6(2)	A3J31
MS39024-11-03	96906	1-6(2)	A3J32
MS39024-11-03	9b906	1-6(2)	A3J33
MS39024-11-03	96906	1-6(2)	A3J34
MS39024-11-03	96906	1-6(2)	A3J35
MS39024-11-03	96906	1-6(2)	A3J36
MS39024-11-03	96906	1-6(2)	A3J37
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MS39024-11-03	96906	1-6(2)	A3J40
MS39024-11-03	96906	1-6(2)	A3J41
MS39024-11-03	96906	1-6(2)	A3J42
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MS39087-4	96906		A1MP11
MS39087-6	96906		A2MP6
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MS51957-15	96906		W39H1
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MS51957-17	96906		A1H9
MS51957-17	96906		A1H23
MS51957-28	96906		A1H3
MS51957-28	96906		A1H7
MS51957-28	96906		A1H16
MS51957-28	96906		A1H26
MS51957-28	96906		A2H5
MS51957-45	96906		A1H1
MS51957-45	96906		A1H19
MS51957-45	96906		A1H22
MS51957-61	96906		A2H4
MS51957-63	96906		A2H6
MS51958-64	96906		A1H17
MS90156-270	96906	7-1	A1CP1
MS90156-270	96906	7-1	A1CP2
MS91528-1A2B	96906		A2MP8
MX-8560/TPM 24(V)		1-6(2)	A3
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NAS1201C6A168	80205	1-3	A1MP8
RG142AU	81349		W39W1
RG174U	81349		W16W1
RG179BU	81349		W39W2
RG180BU	81349		W39W3
RG180BU	81349		W48W1
RG188AU	81349		W21W1
RG222U	81349		A1W2W1
RG222U	81349		A1W2W1
RG58CU	81349		W14W1
RG58CU	81349		W45W1
RC58CU	81349		W47W1
RG58CU	81349	6-19	A1W3W1
RG58CU	81349		A1W4W1
RC58CU	81349		A1W6W1
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RNF100-1-4BLACK	08795		W16MP3
RNF100-3-4BLACK	08795		W48MP1
RT510	08795		A2H7
RT510	08795		A2MP7
SMB657781	80249	1-5(1)	W48P1
SKB657800	80249		W39MP3
5SN8657801	80249		W39MP4
SKB657809	80249		W39MP1
SMB657809	80249		W40MP1
SMB657809	80249		W41MP1
SMB657809	80249		W42MP1
SMB657809	80249		W43MP1
SMB657810-1	80249		W39MP2
SMB657810-1	80249		W42MP2
SMB657810-1	80249		W43MP2
SMB657810-2	80249		W39MP14
SMB657810-2	80249		W40P2
SMB657810-2	80249		W41MP2
SMB657812-20-9	80249		A2W1
SMB657812-22-0	80249		W16W2
SMB687964	80249		A2MP1
SMB687966	80249		A2MP5
SMB687971-1	80249	1-6(2)	MP1
SMB687971-2	80249	1-6(2)	MP2
SMC657830	80249	3-2	A2S1
SMC657856	80249		A1MP4
SMC657859-10	80249		A1W2MP1
SMC657859-11	80249		A1W6MP1
SMC657859-12	80249		W14WP1
SMC657859-13	80249		W32MP1
SMC657859-22	80249		W39MP11
SMC657859-22	80249		W39MP12
SMC657859-27	80249		W48MP2
SMC657859-3	80249		W45MP1
SMC657859-4	80249		W47MP1
SMC657859-5	80249		W16MP2
SMC657839-7	80249		A1W3MP1
SMC657859-8	80249		A1W4MP1
SMC657859-9	80249		A1W1MP1
SMC687969	80249		A1MP10
SMC687970	80249		A1MP13
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SMD657839-2	80249		A115
SMD657839-3	80249		MP3
SMD657839-5	80249		A2MP9
SMD657879	80249	1-5(1)	W14
SMD657879	80249	1-5(1)	W15
SMD657958	80249		A3TB1
SMD687965	80249		A2MP2
SMD687965-1	80249		A2MP3
SMD687968	80249		A1MP12
SMD687991	80249		A1MP9
TA514D12-12	84971		A1MP16
TA514D16-12	84971		A1MP17
T5002-188	22238	1-5(1)	W21P1
UG18DU	80058	7-1	A1W1P1
UG18DU	80058	7-1	A1W1P2
UG18DU	80058	701	A1W2P1
UG18DU	80058	7-1	A1W2P2
U201/AU	81350	1-6(1)	CP7
UG201AU	81350	1-6(1)	CP8
UG274BU	80058	1-6(1)	CP9
UG274BU	80058	1-6(1)	CP10
UG-274BU	80058	1-6(1)	CP11
UG606U	80058		A1CP3
UG606U	80058		A1CP4
UG88GU	80058	1-5(1)	W14P1
UG88GU	80058	1-5(1)	W14P2
UG88GU	80058	1-5(1)	W15P1
UG88GU	80058	1-5(1)	W15P2
UG88GU	80058		W39P3
UG88GU	80058	1-5(2)	W39P4
UG88GU	80058	1-5(2)	W39P5
UG88GU	80058	1-5(2)	W39P6
UG88GU	80058	6-19	W1W3P1
UG88GU	80058	6-19	W1W3P2
UG89CU	80058	1-5(1)	W45P2
UG89CU	80058	1-5(1)	W47P2
UG909AU	81349		A1W4P1
UG909AU	81349		A1W6P1
UG914U	80058	1-5(2)	W39C1
UG914U	80058	1-5(2)	W39C2
ZSP1-158	98376		MP4MP4
ZSP2-2004	98376		MP4MP7
ZSP2-204	98376		MP4MP7
ZSP3-304	19178		A1MP7
ZSP3-377	98376		MP4MP2
ZSP6-073-4	98376		MP4MP2
ZSP7-703	17178		A1MP6
ZSP8-806	98376		MP4MP6
Z147-212BM8472	19178		A1MP5
025B3600	94375	1-5(1)	W16
101B1802	94375	1-5(1)	W47P1
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101N4800A	94375		A1W6P2
1-202301-1	00779		W39MP10
201142-2	00779		W39MP10
201143-1	00779		W39E6
201144-1	00779		W39E5
201145-2	00779		W39E3
201146-2	00779		W39E4
202287-1	00779		W39E3
202648-2	00779		W39MP8
202649-2	00779		W39MP5
202795-1	00779		W39MP9
21-33012-24	77820		W48E1
23007-1	91737		W39E1
21-323930-2	00779		W16E2
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328664	00779		W39E7
328666	00779		W39E8
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34	76545	1-5(1)	W16E2
36	76543		W16MP1
37	99899		
493	01881		A2H1
60013PCGD22	95238	1-6(2)	A3J45
69171-2	21912		W39E2
711	70485		A2MP10
847-B1800W	94375	1-5(1)	W48P2
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By Order of the Secretary of the Army:

W, C, WESTMORELAND,
General, United States Army,
Chief of Staff.

Official:

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Major General, United States Army,
The Adjutant General.

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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