

TM 11-2704

WAR DEPARTMENT TECHNICAL MANUAL

T7-528

INSTALLATION OF RADIO
AND INTERPHONE EQUIPMENT
IN MEDIUM TANK M4 SERIES

WAR DEPARTMENT

• 20 APRIL 1944

INSTALLATION OF RADIO
AND INTERPHONE EQUIPMENT
IN MEDIUM TANK M4 SERIES



WAR DEPARTMENT

20 APRIL 1944

*United States Government Printing Office
Washington : 1944*

WAR DEPARTMENT,
WASHINGTON 25, D. C., 20 April 1944.

TM 11-2704, Installation of Radio and Interphone Equipment in Medium Tank M4 Series, is published for the information and guidance of all concerned.

[A. G. 300.7 (14 Mar 44).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
*Major General,
The Adjutant General.*

DISTRIBUTION:

As prescribed in paragraph 9a, FM 21-6: Armies (10); Corps (10); Sv C (10); Depts (10); Def Comds (2); D (2); B (2); IC 6, 11, 17 (5).

IC: T/O & E 6-166, Hq Hq Btry Armd FA Bn.

IC 11: T/O & E 11-107, Sig Dep Co; 11-127, Sig Rep Co; 11-327, Sig Port Sv Co.

IC 17: T/O & E 17-14, Maint Co, Armd Regt; 17-26, Hq Hq Co Tk Bn; 17-27, Medium Tk Co, Armd Regt; 17-46S, Hq Hq Co Medium Tk Bn Sp; 17-47S, Medium Tk Co, Medium Tk Bn Sp.

For explanation of symbols see FM 21-6.

CONTENTS

SECTION I. GUIDE TO USE OF THIS MANUAL.

	<i>Paragraph</i>	<i>Page</i>
Purpose-----	1	1
Equipment-----	2	1
Symbol (&)-----	3	1
Holes and brackets-----	4	1
Before beginning installation-----	5	1
Immediately after installation-----	6	1
II. RADIO SET SCR-508-(&).		
Required parts-----	7	2
Assembly and installation-----	8	2
III. RADIO SET SCR-528-(&).		
Required parts-----	9	4
Assembly and installation-----	10	4
IV. RADIO SET SCR-538-(&).		
Required parts-----	11	6
Assembly and installation-----	12	6
V. INTERPHONE EQUIPMENT FOR RADIO SETS SCR-508-(&), SCR-528-(&), and SCR-538-(&).		
Required parts-----	13	8
Assembly and installation-----	14	8
APPENDIX. IGNITION NOISE SUPPRESSION IN MEDIUM TANK M4 SERIES -----	1-2	22

INSTRUCTION NOTICE

WHY—To prevent the enemy from using or salvaging this equipment for his benefit.

WHEN—When ordered by your commander.

- HOW**—
1. Smash—Use sledges, axes, handaxes, pickaxes, hammers, crowbars, or other heavy tools.
 2. Cut—Use axes, handaxes, or machetes.
 3. Burn—Use gasoline, kerosene, oil, flame throwers, or incendiary grenades.
 4. Explosives—Use firearms, grenades, or TNT.
 5. Disposal—Bury in slit trenches, fox holes, or other holes. Throw in streams. Scatter.

USE ANYTHING IMMEDIATELY AVAILABLE FOR DESTRUCTION OF THIS EQUIPMENT

- WHAT**—
1. Smash—All vacuum tubes, crystals, control dials, coupling coils, transformers, speakers in the receivers, external loudspeakers, microphones, headsets, dynamotors, and cable connectors.
 2. Cut—All connecting wires, cording, and cabling.
 3. Burn—All equipment, and all associated training, technical, and installation manuals.
 4. Burn or scatter—All remains, after destroying their usefulness.

DESTROY EVERYTHING

SAFETY NOTICE

This equipment uses high voltages which are dangerous to life. Observe all safety precautions. Make no adjustments inside the equipment with the power switch on. Do not operate the equipment with the shields removed. Do not connect power to any unit of the radio set until operating instructions have been read completely.

SECTION I

GUIDE TO USE OF THIS MANUAL

1. Purpose.

This manual provides methods and procedures, based upon actual field experience, for installation of radio and interphone equipment in Medium Tank M4 series. Items required to make a complete operating installation are listed for each radio set and interphone equipment.

2. Equipment.

Installations covered include the following radio sets:

SCR-508-(&) SCR-528-(&) SCR-538-(&)

3. Symbol (&).

The symbol (&), used throughout this manual, refers to all existing 24-volt models of radio sets and interphone equipment mentioned, and to all models of other items of equipment with which it appears.

4. Holes and Brackets.

Holes and brackets required for installations of the radio sets or interphone equipment normally are located prior to delivery of Medium Tank M4 series. Drilling instructions will be given in the pertinent section of this manual for any other necessary holes and brackets. Holes and brackets

in the vehicle or on any radio or interphone part should not be relocated unless absolutely necessary.

5. Before Beginning Installation.

Illustrations, installation methods, and any subsequent changes to this manual must be studied carefully before an installation is made.

CAUTION: Medium Tank M4 series has a 24-volt electrical system. Before installing any radio set or interphone equipment covered in this manual, be sure that it is designed for a 24-volt installation, and that 24-volt dynamotors have been supplied.

6. Immediately After Installation.

At the completion of the installation, a thorough operating check must be made to determine that the equipment has been properly installed and is in working order.

CAUTION: Do not operate any of the radio or interphone equipment until the instruction book or Technical Manual covering the specific radio set or interphone equipment has been studied carefully. Otherwise, damage to the equipment may result.

SECTION II
RADIO SET SCR-508-(&)

7. Required Parts.

Items necessary for installation of Radio Set SCR-508-(&) in Medium Tank M4 series are listed below.

Quantity	Stock No.	Item
1	2A262	Antenna A-62 (Phantom).
1 ^a	3E1307A-5.5	Cord CD-307-A, 65 ins. long, for Headset HS-30-(&).
1 ^a	3E1604	Cord CD-604, 6 ins. long, for Headset HS-30-(&).
1	2Z2651-423	Clamp MC-423, for securing Mast Sections MS-51 and MS-52.
1	2Z2651-424	Clamp MC-424, for securing Mast Sections MS-52 and MS-53.
1	6Z3147	Connector No. 61007 and Bondnut BL-50, Appleton Electric Co.
1	2Z3400-108	Cover BG-108, for Mast Base MP-48.
2 ^b	3H1636(&)	Dynamotor DM-36-(&), 24 volt, including attached spare parts.
1 ^b	3H1637(&)	Dynamotor DM-37-(&), 24 volt, including attached spare parts.
1	6L50-508V8	Hardware bag.
1 ^a	2B830(&)	Headset HS-30-(&).
1	2A2088-48	Mast Base MP-48, or Mast Base MP-48-A.
1	2A2351	Mast Section MS-51.
1	2A2352	Mast Section MS-52.
1	2A2353	Mast Section MS-53.
1 ^c	2B1617(&)	Microphone T-17-(&).
1	2Z6721-237(&)	Mounting FT-237-(&), including Cord CO-278 to car terminal box, necessary mounting bolts, locknuts, etc.
2	2C4403(&)	Radio Receiver BC-603-(&), including one set of tubes installed.
1	2C6494(&)	Radio Transmitter BC-604-(&), including one set of tubes installed and necessary crystals.
1	2Z8056(&)	Roll BG-56-A, for antenna mast sections.
5 ^d ft.	1B128	Wire, W-128.

^a Headset HS-18 may be substituted for Headset HS-30-(&) and Cord CD-604.
^b Dynamotor DM-36-(&) and Dynamotor DM-37-(&) may already be installed in Radio Receivers BC-603-(&) and Radio Transmitter BC-604-(&) respectively.
^c Microphone T-30-(&) and Cord CD-318 may be substituted for Microphone T-17-(&).
^d Not less than 8 feet nor more than 10 feet of coaxial cable may be substituted for Wire W-128. For preparation of coaxial cable see figures 10 and 11.

8. Assembly and Installation.

a. Components of the radio set should be installed as follows (refer to figs. 5, 6, and 8 for bracket details):

<i>Part and location</i>	<i>Method and materials</i>
Mounting FT-237-(&), including Cord CO-278, on bracket turret bulge.	Mount as shown in figure 1. Secure with hardware provided.
Mast Base MP-48, on mast base well, left rear of turret bulge (for Mast Base MP-48-A, see fig. 12).	For this installation, Wire W-128, <i>internal</i> , may be used. Cut the wire to proper length and strip one-half inch of insulation from one end.

Dynamotors DM-36-(&), in cabinets of Radio Receivers BC-603-(&).

Dynamotor DM-37-(&), in cabinet of Radio Transmitter BC-604-(&).

Radio Transmitter BC-604-(&), including necessary crystals, on Mounting FT-237-(&).
Radio Receivers BC-603-(&), on Mounting FT-237-(&).

Connector No. 61007 and Bondnut BL-50.

Cover BG-108.

Headset HS-30-(&).

Microphone T-17-(&).

Mast Sections MS-51, MS-52, and MS-53, on Mast Base MP-48.

Roll BG-56-A.

b. CORDING AND WIRING. Cord and wire Radio Set SCR-508-(&) as shown on figures 3 and 4. Leave sufficient slack in all cording and wiring at Mounting FT-237-(&) to permit free motion of the shock mountings. To prevent accidental shorts on the battery, complete *all* other connections *before* installing Cord CO-278 connecting Mounting FT-237-(&) and the battery terminal strip in the turret terminal box.

Clean and tin this end and solder tip, item 6B, to it as shown in figure 2. Loosen set screws 8 and 9. Remove assembly 7 and install wire inside mast base through hollow stem, item 1, inserting the metallic tip in the slot as far as possible. Tighten setscrews 8 and 9. Then refer to figure 2, remove items 2, 3, 4, and 5 from mast base, and install mast base through hole in mast base well, as follows: Place item 1 through hole in well, and item 2 over item 1. Tighten in place with item 3. Place item 4 over item 1 and tighten firmly with item 5. Now slip insulator 6C, rubber gasket 6D, and insulator 6E over wire W-128, and install inside hollow stem, item 1. Follow up with gasket, item 17, and retaining collar, item 18. Leave sufficient slack inside the stem to permit flexing of mast base.

If the dynamotors are not already installed, loosen screw lock in rear center of receiver cabinet, remove the chassis, and bolt the dynamotor unit on top rear of the chassis.

If the dynamotor is not already installed, loosen two screw locks on front panel of transmitter cabinet and pull out crystal case. Loosen four screw locks holding cover on top of transmitter and remove cover. Bolt dynamotor unit in left rear of transmitter chassis.

Mount as shown in figure 1. Secure with screw locks.

Mount as shown in figure 1. Secure with screw locks.

Install through knock-out hole in terminal box to secure Cord CO-278.

Place over Mast Base MP-48 when equipment is not in use.

Use Cords CD-604 and CD-307-A to connect headset to jack in Radio Receiver BC-603-(&).

Plug cord into microphone jack of Radio Transmitter BC-604-(&).

Screw mast sections together and secure with Clamps MC-423 and MC-424. Mount on mast base and secure Mast Section MS-53 as shown in figure 11. Carry mast sections in Roll BG-56 or BG-56-A when not in use.

Disposition left to discretion of using arms.

SECTION III

RADIO SET SCR-528-(&)

9. Required Parts.

Items necessary for installation of Radio Set SCR-528-(&) in Medium Tank M4 series are listed below.

Quantity	Stock No.	Item
1	2A262	Antenna A-62 (Phantom).
1 ^a	3E1307A-5.5	Cord CD-307-A, 65 in. long, for Headset HS-30-(&).
1 ^a	3E1604	Cord CD-604, 6 in. long, for Headset HS-30-(&).
1	2Z2651-423	Clamp MC-423, for securing Mast Sections MS-51 and MS-52.
1	2Z2651-424	Clamp MC-424, for securing Mast Sections MS-52 and MS-53.
1	6Z3147	Connector No. 61007 and Bondnut BL-50, Appleton Electric Co.
1	2Z3400-108	Cover BG-108, for Mast Base MP-48.
1 ^b	3H1636(&)	Dynamotor DM-36-(&), 24 volt, including attached spare parts.
1 ^b	3H1637(&)	Dynamotor DM-37-(&), 24 volt, including attached spare parts.
1	6L60-528V8	Hardware bag.
1 ^a	2B830(&)	Headset HS-30-(&).
1	2A2088-48	Mast Base MP-48 or MP-48-A.
1	2A2351	Mast Section MS-51.
1	2A2352	Mast Section MS-52.
1	2A2353	Mast Section MS-53.
1 ^c	2B1617(&)	Microphone T-17-(&).
1	2Z6721-237(&)	Mounting FT-237-(&), including Cord CO-278 to car terminal box, necessary mounting bolts, locknuts, etc.
1	2C4403(&)	Radio Receiver BC-603-(&), including one set of tubes installed and necessary crystals.
1	2C6494(&)	Radio Transmitter BC-604-(8), including one set of tubes installed and necessary crystals.
1	2Z8056(&)	Roll BG-56-A, for antenna mast sections.
5 ^d ft.	1B128	Wire W-128.

^a Headset HS-18 may be substituted for Headset HS-30-(&) and Cord CD-604.

^b Dynamotors DM-36-(&) and DM-37-(&) may already be installed in Radio Receiver BC-603-(&) and Radio Transmitter BC-604-(&) respectively.

^c Microphone T-30-(&) and Cord CD-318 may be substituted for Microphone T-17-(&).

^d Not less than 8 feet nor more than 10 feet of coaxial cable may be substituted for Wire W-128. For preparation of coaxial cable see figures 10 and 11.

10. Assembly and Installation.

a. Components of the radio set should be installed as follows (refer to figs. 5, 6, and 8 for bracket details):

<i>Part and location</i>	<i>Method and materials</i>
Mounting FT-237-(&), including Cord CO-278, on bracket inside turret.	Mount as shown in figure 1. Secure mounting with hardware provided.
Mast Base MP-48, on mast base well, left rear of turret bulge. (for Mast Base MP-48-A, see fig. 12.)	For this installation, Wire W-128, <i>internal</i> , may be used. Cut the wire to proper length and strip one-half inch of insulation from one end.

Dynamotor DM-36-(&), in cabinet of Radio Receiver BC-603-(&).

Dynamotor DM-37-(&), in cabinet of Radio Transmitter BC-604-(&).

Radio Transmitter BC-604-(&), including necessary crystals, on Mounting FT-237-(&).

Radio Receiver BC-603-(&), on Mounting FT-237-(&).

Connector No. 61007 and Bondnut BL-50.

Cover BG-108.

Headset HS-30-(&).

Microphone T-17-(&).

Mast Sections MS-51, MS-52, MS-53, on Mast Base MP-48.

Roll BG-56-A.

Clean and tin this end and solder tip, item 6B, to it as shown in figure 2. Loosen setscrews 8 and 9. Remove assembly 7 and install wire inside mast base, through hollow stem, item 1, inserting the metallic tip in the slot as far as possible. Tighten setscrews 8 and 9. Then refer to figure 2, remove items 2, 3, 4, and 5 from mast base, and install mast base through hole in mast base well, as follows: Place item 1 through hole in well, and item 2 over item 1. Tighten in place with item 3. Place item 4 over item 1 and tighten firmly with item 5. Now slip insulator 6C, rubber gasket 6D, and insulator 6E over Wire W-128, and install inside hollow stem, item 1. Follow up with gasket item 17, and retaining collar, item 18. Leave sufficient slack inside the stem to permit flexing of the mast base.

If the dynamotor is not already installed, loosen screw lock in rear center of receiver cabinet, remove the chassis, and bolt dynamotor unit on top rear of receiver chassis.

If the dynamotor is not already installed, loosen two screw locks on front panel of transmitter cabinet and pull out crystal case. Loosen four screw locks holding cover on top of transmitter and remove cover. Bolt dynamotor unit in left rear of transmitter chassis.

Mount as shown in figure 1. Secure with screw locks.

Mount as shown in figure 1. Secure with screw locks.

Install through knock-out hole in turret terminal box to secure Cord CO-278.

Place over Mast Base MP-48 when equipment is not in use.

Use Cords CD-604 and CD-307-A to connect headset to jack in Radio Receiver BC-603-(&).

Plug cord into microphone jack of Radio Transmitter BC-604-(&).

Screw mast sections together and secure with Clamps MC-423 and MC-424. Mount on mast base and secure Mast Section MS-53 as shown in figure 11. Carry mast sections in Roll BG-56 or BG-56-A when not in use.

Disposition left to discretion of using arms.

b. CORDING AND WIRING. Cord and wire Radio Set SCR-528-(&) as shown on figures 3 and 4. Leave sufficient slack in all cording and wiring at Mounting FT-237-(&) to permit free motion of the shock mountings. To prevent accidental shorts on the battery, complete *all* other connections *before* installing Cord CO-278 connecting Mounting FT-237-(&) and the battery terminal strip in the turret terminal box.

SECTION IV

RADIO SET SCR-538-(&)

11. Required Parts.

Items necessary for installation of Radio Set SCR-538-(&) in Medium Tank M4 Series are listed below.

Quantity	Stock No.	Item
1	2A262	Antenna A-62 (Phantom).
1 ^a	3E1307A-5.5	Cord CD-307-A, 65 in. long, for Headset HS-30-(&).
1 ^a	3E1604	Cord CD-604-(&), 6 in. long, for Headset HS-30-(&).
1	2Z2651-423	Clamp MC-423 for securing Mast Sections MS-51 and MS-52.
1	2Z2651-424	Clamp MC-424 for securing Mast Sections MS-52 and MS-53.
1	6Z3147	Connector No. 61007 and Bondnut BL-50, Appleton Electric Co.
1	2Z3400-108	Cover BG-108, for Mast Base MP-48.
1 ^b	3H1636(&)	Dynamotor DM-36-(&), 24 volt, including attached spare parts.
1	6L50-538V8	Hardware bag.
1 ^a	2B830(&)	Headset HS-30-(&).
1	2A2088-48	Mast Base MP-48, or MP-48-A.
1	2A2351	Mast Section MS-51.
1	2A2352	Mast Section MS-52.
1	2A2353	Mast Section MS-53.
1	2Z6721-237(&)	Mounting FT-237-(&), including Cord CO-278 to car terminal box, necessary mounting bolts, locknuts, etc.
1	2C4403(&)	Radio Receiver BC-603-(&), including one set of tubes installed.
1	2Z8056(&)	Roll BG-56-A, for antenna mast sections.
5 ^c ft.	1B128	Wire W-128.

^a Headset HS-18 may be substituted for Headset HS-30-(&) and Cord CD-604.

^b Dynamotor DM-36-(&) may already be installed in Radio Receiver BC-603-(&).

^c Not less than 8 feet nor more than 10 feet of coaxial cable may be substituted for Wire W-128. For preparation of coaxial cable see figures 10 and 11.

12. Assembly and Installation.

a. Components of the radio set should be installed as follows (refer to figs. 5, 6, and 8 for bracket details):

<i>Part and location</i>	<i>Method and materials</i>
Mounting FT-237-(&), including Cord CO-278, on bracket inside turret.	Mount as shown in figure 1. Secure with screw locks.
Mast Base MP-48, on mast base well, left rear of turret bulge. (For Mast Base MP-48-A, see fig. 12.)	For this installation, Wire W-128, <i>internal</i> , may be used. Cut the wire to proper length and strip one-half inch of insulation from one end. Clean and tin this end and solder tip, item 6B, to it as shown in figure 2. Loosen set-screws 8 and 9. Remove assembly 7 and install wire inside mast base through hollow

Dynamotor DM-36-(&), in cabinet of Radio Receiver BC-603-(&).

Radio Receiver BC-603-(&), on Mounting FT-237-(&).
Connector No. 61007 and Bondnut BL-50.

Cover BG-108.

Headset HS-30-(&).

Mast Sections MS-51, MS-52, and MS-53, on Mast Base MP-48.

Roll BG-56-A.

b. CORDING AND WIRING. Cord and wire Radio Set SCR-538-(&) as shown on figures 3 and 4. Leave sufficient slack in all cording and wiring at Mounting FT-237-(&) to permit free motion of the shock mountings. To prevent accidental shorts of the battery, complete *all* other connections *before* installing Cord CO-278 connecting Mounting FT-237-(&) and the battery terminal strip in the turret terminal box.

stem, item 1, inserting the metallic tip in the slot as far as possible. Tighten setscrews 8 and 9. Then refer to figure 2, remove items 2, 3, 4, and 5 from the mast base, and install mast base through hole in mast base well, as follows: Place item 1 through hole in well, and item 2 over item 1. Tighten in place with item 3. Place item 4 over item 1 and tighten firmly with item 5. Now slip insulator 6C, rubber gasket 6D, and insulator 6E over Wire W-128, and install inside hollow stem, item 1. Follow up with gasket, item 17, and retaining collar, item 18. Leave sufficient slack inside the stem to permit flexing of the mast base.

If the dynamotor is not already installed, loosen screw lock in rear center of receiver cabinet, remove chassis, and bolt dynamotor unit on top rear of chassis.

Mount as shown in figure 1. Secure with screw locks.

Install through knock-out hole in turret terminal box to secure Cord CO-278.

Place over Mast Base MP-48 when equipment is not in use.

Use Cords CD-604 and CD-307-A to connect headset to jack in Radio Receiver BC-603-(&).

Screw mast sections together and secure with Clamps MC-423 and MC-424. Mount on mast base and secure as shown in figure 11. Carry mast sections in Roll BG-56 or BG-56-A when not in use.

Disposition left to discretion of using arms.

SECTION V

INTERPHONE EQUIPMENT ASSOCIATED WITH RADIO SETS SCR-508-(&), SCR-528-(&), AND SCR-538-(&)

13. Required Parts.

Items necessary for installation of Interphone Equipment in Medium Tank M4 series are listed below.

Quantity	Stock No.	Item
2.....	6Z3147.....	Connector No. 61007 and Bondnut BL-50, Appleton Electric Co., or equal.
5.....	2C1738(&).....	Control Box BC-606-(&), including screws, clamps, etc.
4 ^a	3E1307A-5.5.....	Cord CD-307-A, 65 in. long, for Headset HS-30-(&).
5 ^b	3E1318(&).....	Cord CD-318, control cord for Microphone T-30-(&).
4 ^a	3E1604.....	Cord CD-604, 6 in. long, for Headset HS-30-(&).
36 ^c ft.....	3E2213.....	Cordage CO-213, interconnecting cable.
1 ^d	3H1636(&).....	Dynamotor DM-36-(&).
4 ^a	2B830(&).....	Headset HS-30-(&).
1.....	6L50-508(528)(538)V8...	Hardware Bag containing: 11 clamps No. 7.
1 ^e	2C1617(&).....	Interphone Amplifier BC-605-(&).
5 ^b	2B1630(&).....	Microphone T-30-(&).

^a Headset HS-18 may be substituted for Headset HS-30-(&) and Cord CD-604.
^b In emergencies, Microphone T-17-(&) may be substituted for Microphone T-30-(&) and Cord CD-318.
^c Before cutting Cordage CO-213 and wiring a quantity of interphone equipment, make one check installation of the interphone equipment in Medium Tank M4. Any variation found in lengths of Cordage CO-213 shown on figure 4 connecting the various Interphone Control Boxes BC-606-(&) and Mounting FT-237-(&) may be readily corrected.
^d Dynamotor DM-36-(&) may already be installed in Interphone Amplifier BC-605-(&).
^e Interphone Amplifier BC-605-(&) is used to provide speech amplification in Radio Set SCR-538-(&). However, it is not required in Radio Sets SCR-508-(&) and SCR-528-(&) where amplification is provided by the speech amplifier section of Radio Transmitter BC-604-(&).

14. Assembly and Installation.

The interphone equipment supplied for Radio Sets SCR-508-(&), SCR-528-(&), and SCR-538-(&) is not completely wired for installation. To interconnect interphone Control Boxes BC-606-(&) as shown on figures 1, 3, and 4, cut Cordage CO-213 to lengths shown on figure 4. At the end of each length, strip back 3½ inches of outer rubber and 2 inches of shielding. One and one-half inches of shielding will thus be exposed. Slit exposed shielding on opposite sides of the cable and pull back both strips. Slit and pull back one side of the shielding covering the red and green wires. Strip one-half inch of insulation from the black (ground)

wire close to the end of the outer rubber cable covering. Neatly twist the three strips of shielding together, cut the twisted shielding to proper length, and connect and solder it to the exposed section of the black (ground) wire. Now insert the prepared cable through appropriate hole in Control Box BC-606-(&). Solder ends of wires to numbered studs and clamp the cable. Insert the prepared cable connecting to the radio set through hole on appropriate end of Mounting FT-237-(&) and wire and clamp to terminal board as described above. Follow the same procedure for preparing the cable for connecting Cordage CO-213 to hull terminal box and turret terminal box. Then install components of the interphone equipment as follows:

Part and location

Control Box BC-606-(&), for driver, on bracket, center front of hull.
Control Box BC-606-(&), for co-driver, on bracket, center front of hull.
Control Box BC-606-(&), for turret gunner, on wall in turret at right side of post.
Control Box BC-606-(&), for turret leader, in turret, on wall to left of radio.
Control Box BC-606-(&), for tank commander, on bracket, right side of turret, above gunner's interphone control box.
Connector No. 61007 and Bondnut BL-50.

Dynamotor DM-36-(&), in cabinet of Interphone Amplifier BC-605-(&).

Interphone Amplifier BC-605-(&), on Mounting FT-237-(&).
Headset HS-30-(&).

Microphone T-30-(&).

Cordage CO-213, for interconnecting interphone components.

Method and materials

Mount as shown in figure 1. Secure with hardware provided.
Mount as shown in figure 1. Secure with hardware provided.
Mount as shown in figure 1. Secure with hardware provided.
Mount as shown in figure 1. Secure with hardware provided.
Mount as shown in figure 1. Secure with hardware provided.

Install through knock-out hole in both the turret terminal box and hull terminal box to secure Cordage CO-213, as shown in figure 4.

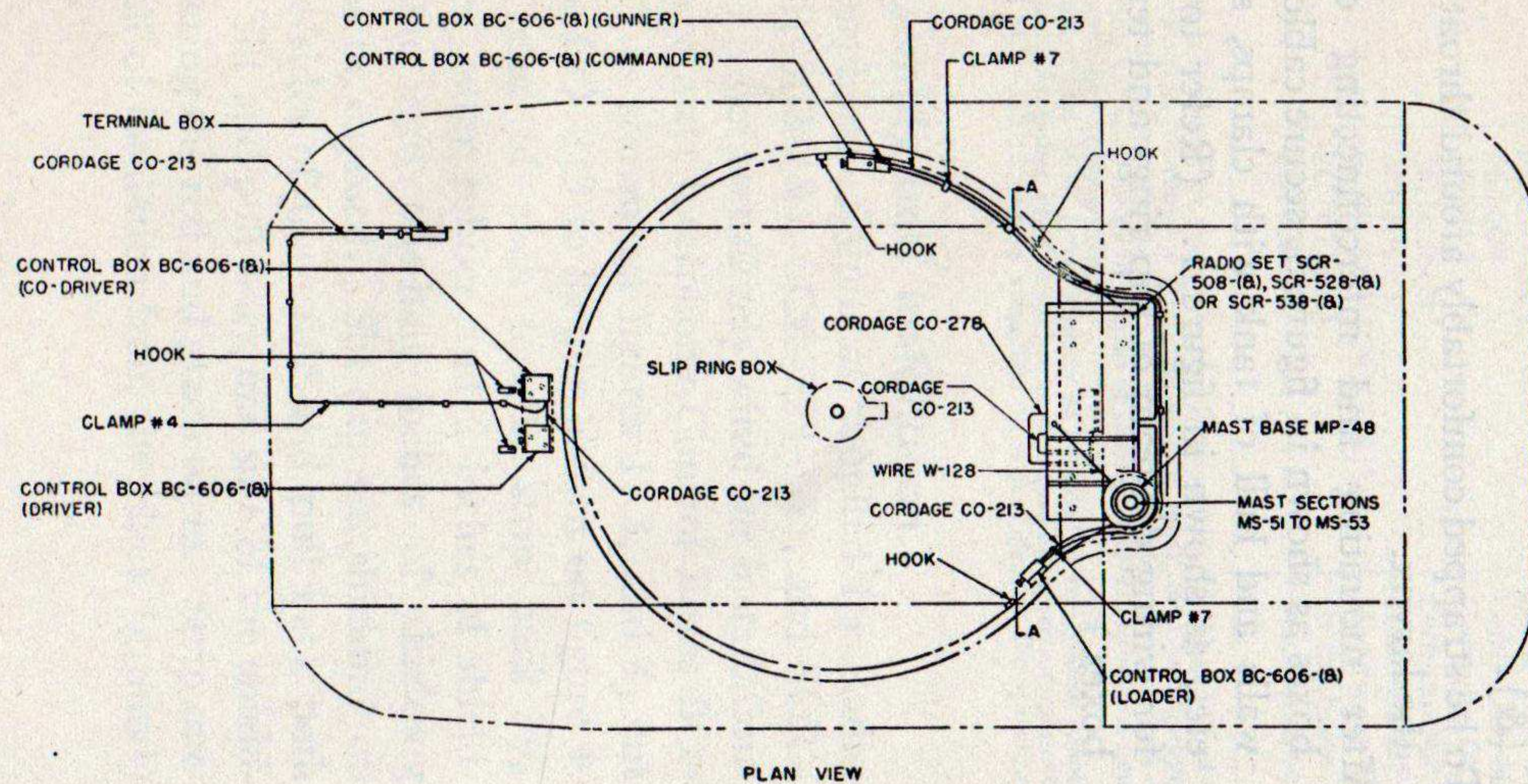
If the dynamotor is not already installed, loosen screw lock in rear center of cabinet and remove chassis. Bolt dynamotor unit on top rear of receiver chassis.

Mount as shown in figure 1. Secure with screw locks.

Use Cords CD-604 and CD-307-A to connect headsets to jacks of Control Boxes BC-606-(&).

To be strapped comfortably around throat above the larynx.

After mounting and interconnecting control boxes as shown in figure 3, secure cable along walls and hull of tank with clamps, screws, etc., as shown in figure 1. (Refer to fig. 7 for wiring diagram of slip rings and terminal boxes.)

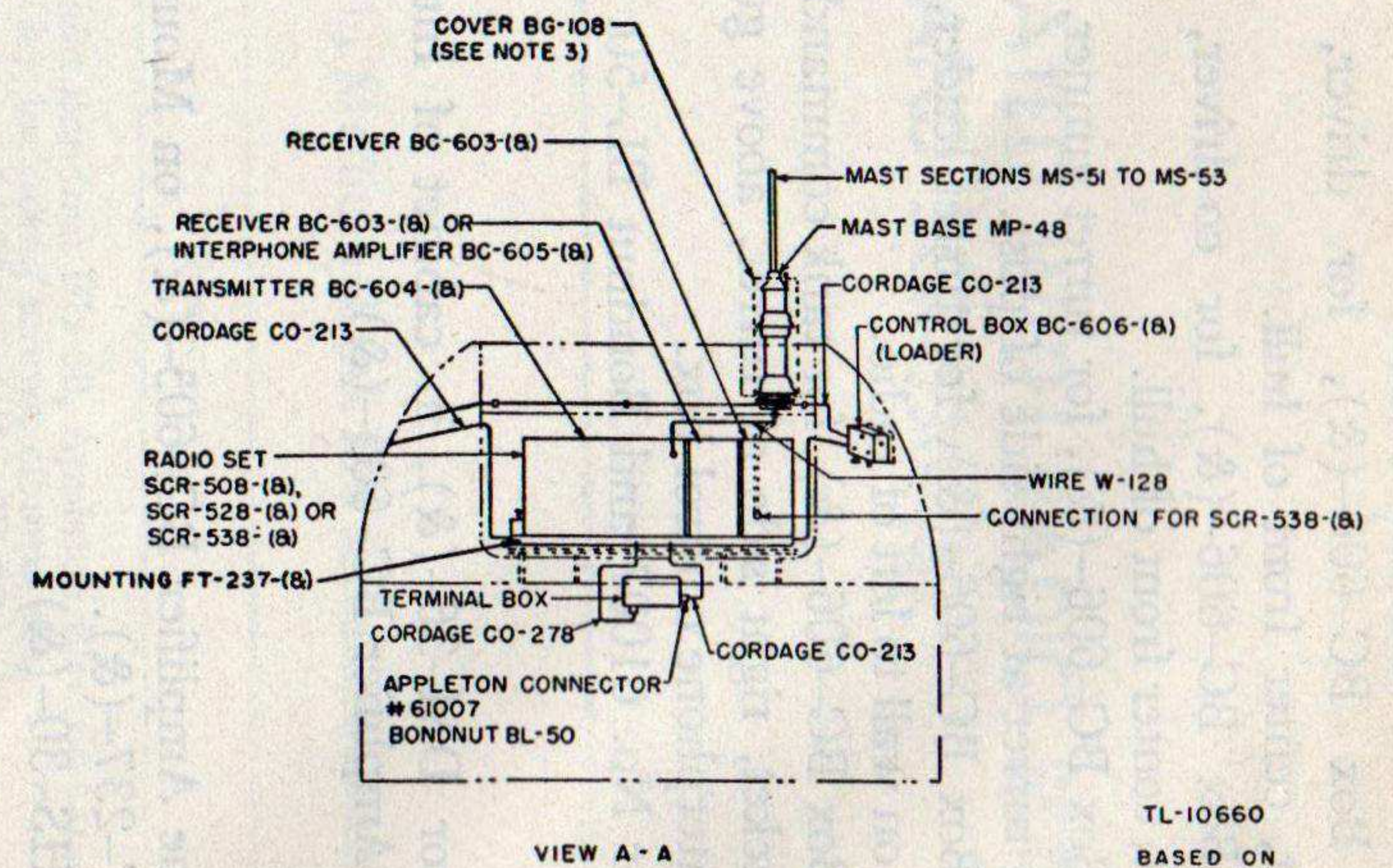
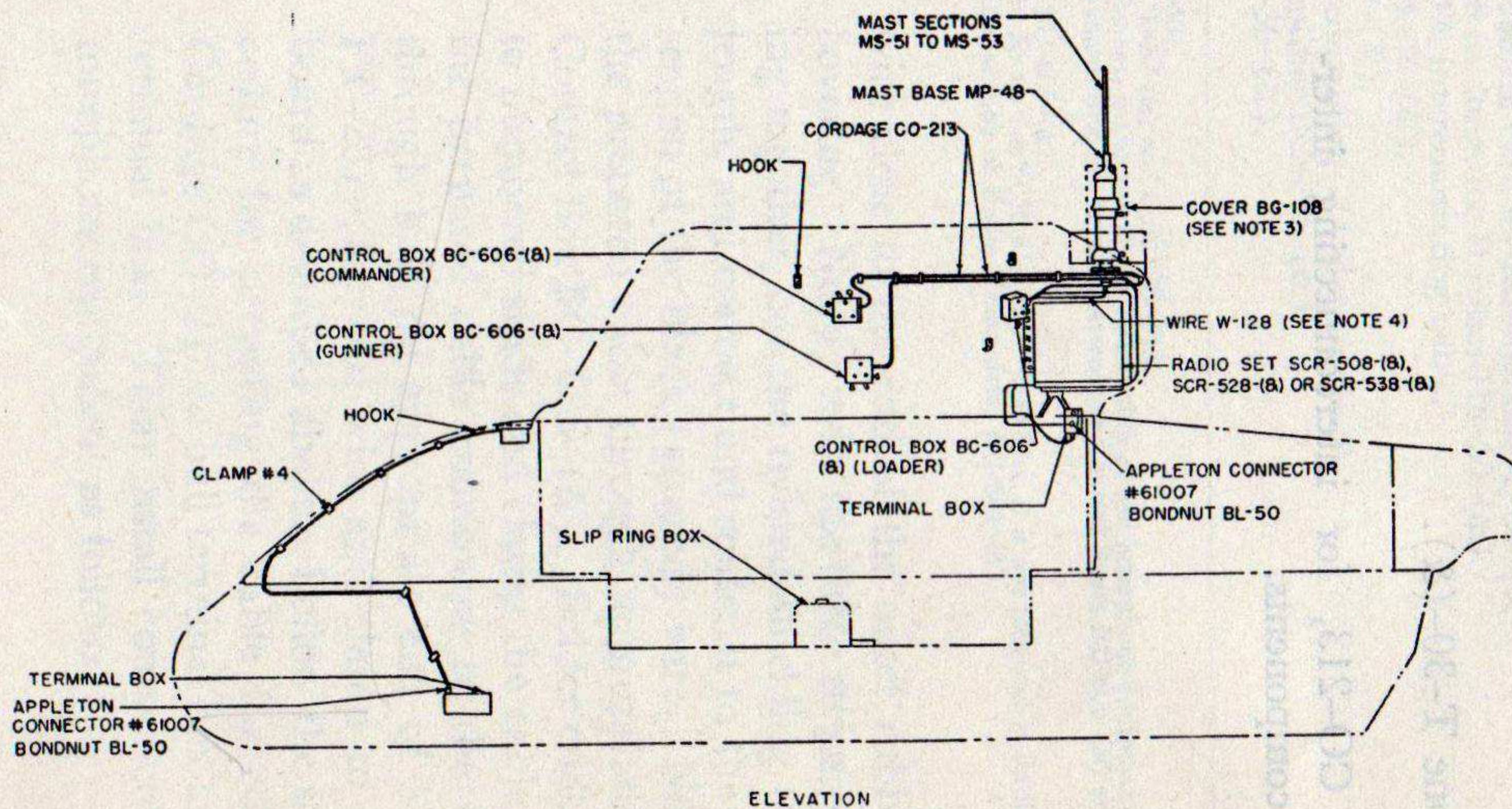


HARDWARE REQUIRED

- MOUNTING FT-237-(B):**
 8-5/16"-24 X 3/4" LONG HEX. HEAD MACH. SCREWS
 8-5/16"- LOCKWASHERS.
- CONTROL BOXES BC-606-(B):**
 12-#8-32 X 3/8" LONG ROUND HEAD MACH. SCREWS
 12-#8 LOCKWASHERS.
- HOOKS (5 REQ):**
 10-#8-32 X 3/8" LONG ROUND HEAD MACH. SCREWS
 10-#8 LOCKWASHERS.
- CLAMPS:**
CLAMP #4 (II REQ):
 11-#8-32 X 3/8" LONG ROUND HEAD MACH. SCREWS
 11-#8 LOCKWASHERS.
- CLAMP #7 (II REQ):**
 11-#8-32 X 3/8" LONG ROUND HEAD MACH. SCREWS
 11-#8 LOCKWASHERS.
- ALL SCREWS AND LOCKWASHERS SHALL BE STEEL, ELECTRO-GALVANIZED.

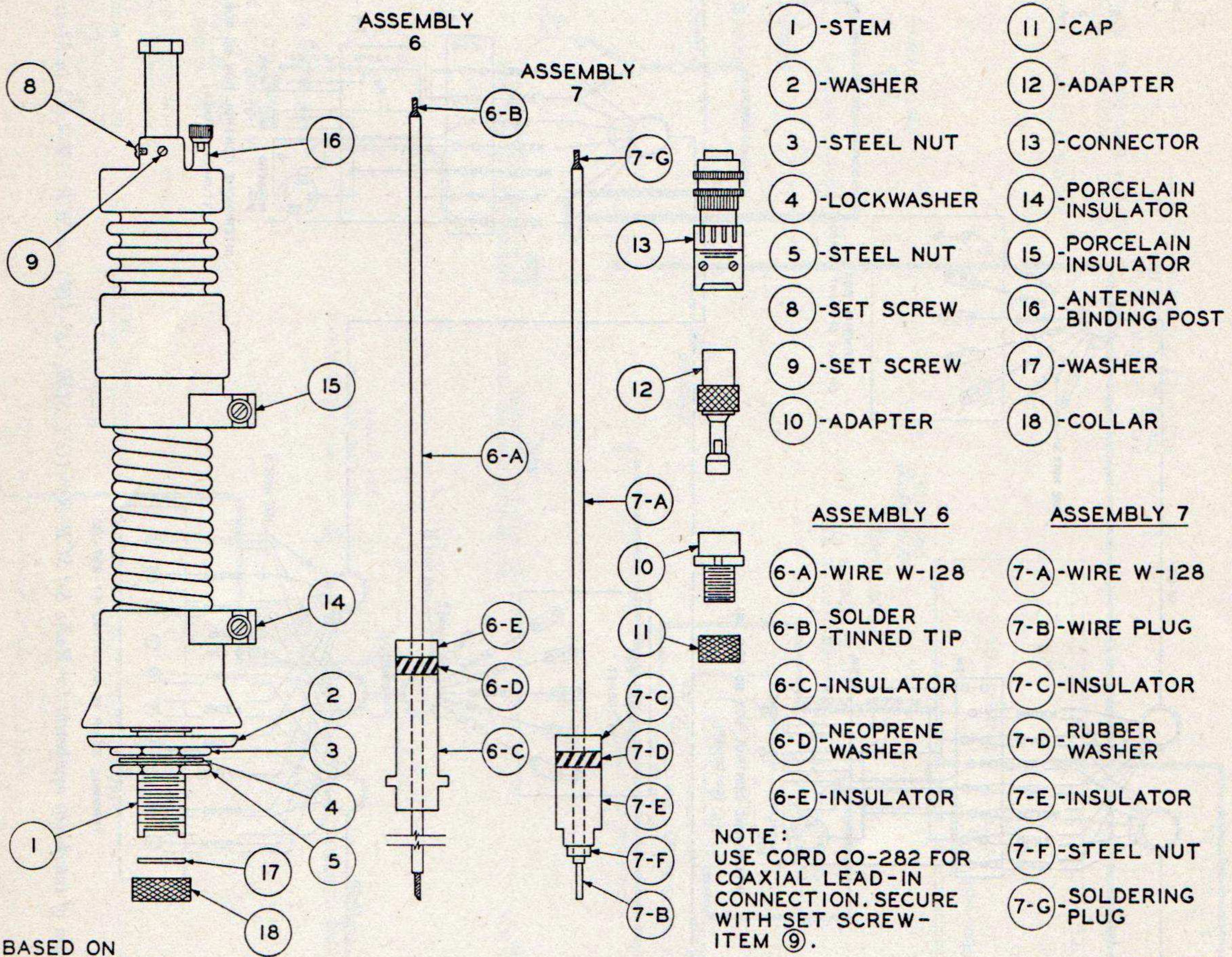
NOTES:

1. FOR WIRING DIAGRAM SEE FIG. 3.
2. FOR CORDING DIAGRAM SEE FIG. 4.
3. USE COVER BG-108 WHEN MAST SECTIONS ARE NOT INSTALLED.
4. AFTER CUT TO PROPER LENGTH, TIN ENDS, FOR CONNECTIONS.



TL-10660
 BASED ON
 SC-D-7024-F

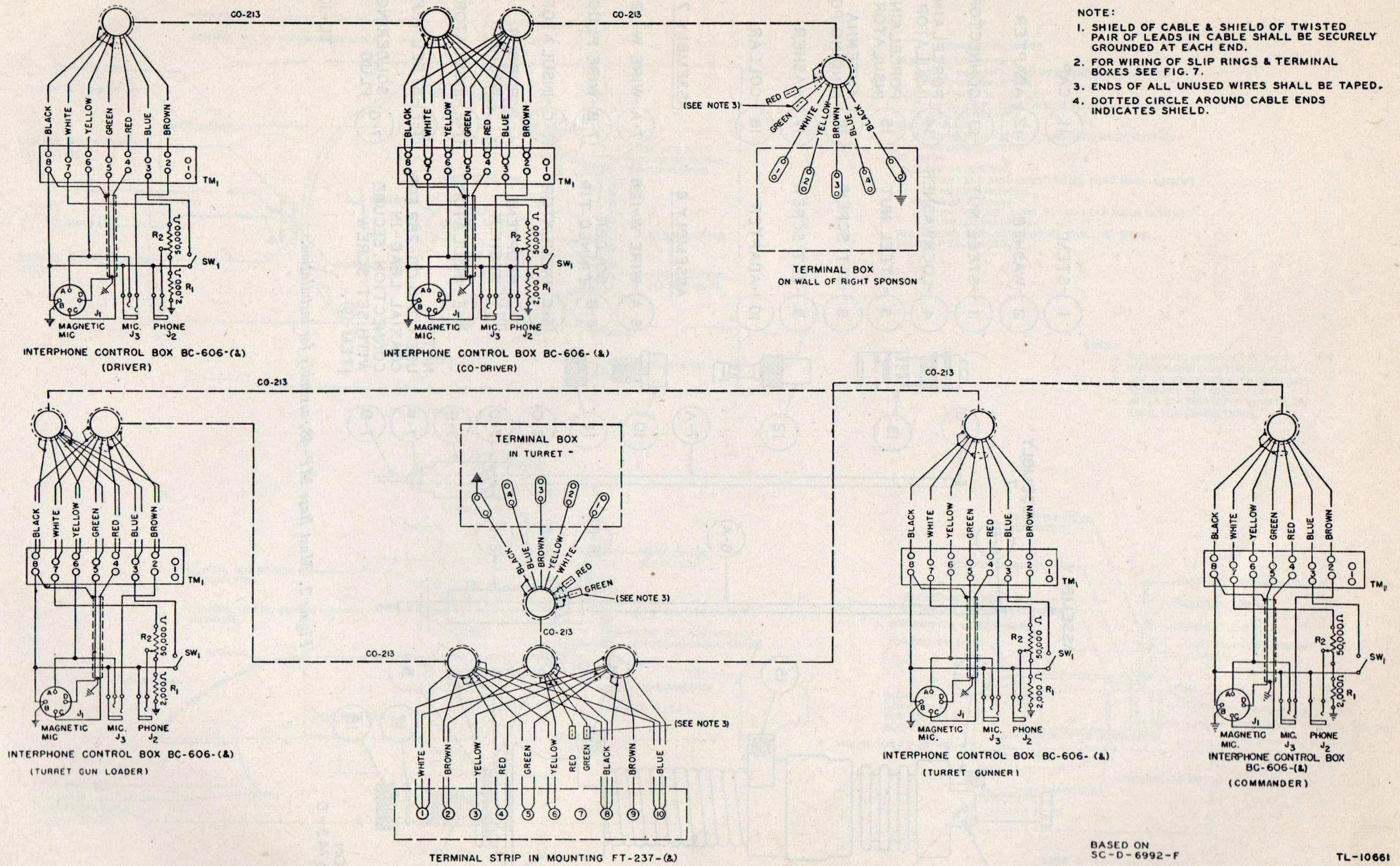
Figure 1. Installation of Radio Set SCR-508-(B), SCR-528-(B), or SCR-538-(B), and associated interphone equipment in Medium Tank M4 series.



BASED ON
SC-A-6743-D

Figure 2. Mast Base MP-48, assembly for installation.

TL-10014



BASED ON
SC-D-6992-F

TL-10661

Figure 3. Wiring diagram of interphone equipment for Radio Set SCR-508-(&), SCR-528-(&), or SCR-538-(&) in Medium Tank M4 series.

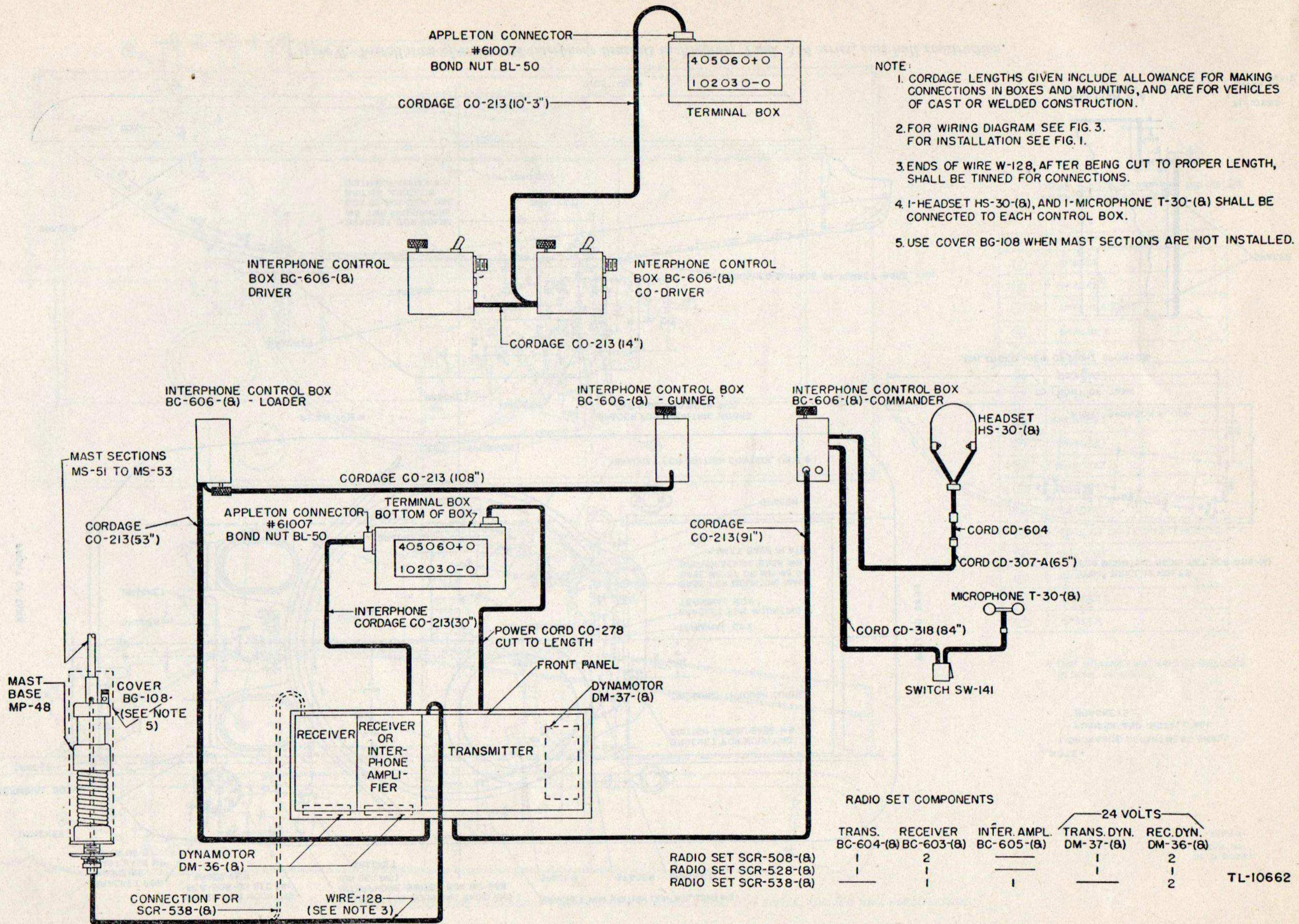


Figure 4. Cording diagram of Radio Set SCR-508-(8), SCR-528-(8), or SCR-538-(8) and interphone equipment in Medium Tank M4 series.

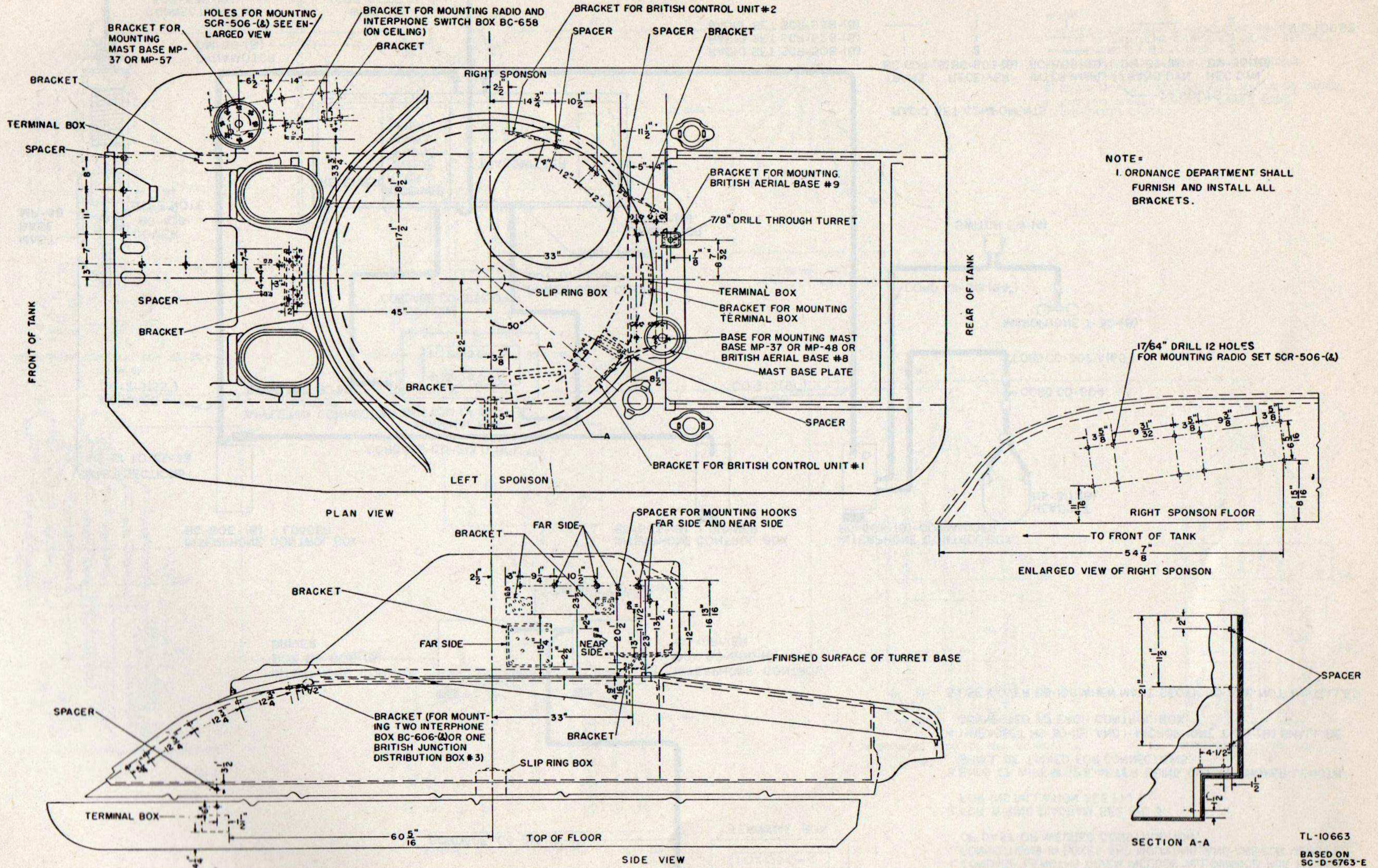
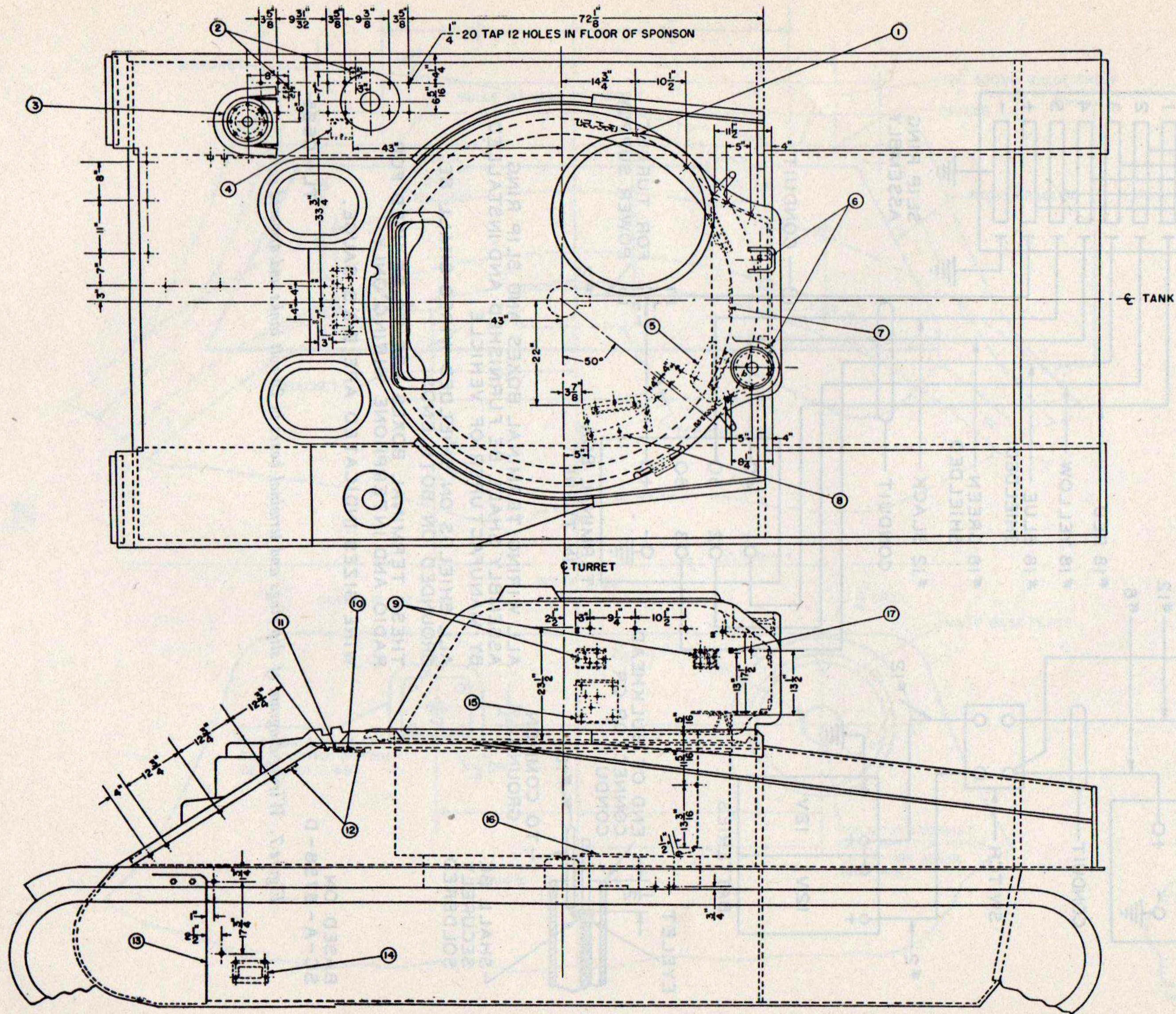


Figure 5. Installation of radio and interphone brackets in Medium Tank M4 series, cast hull construction.



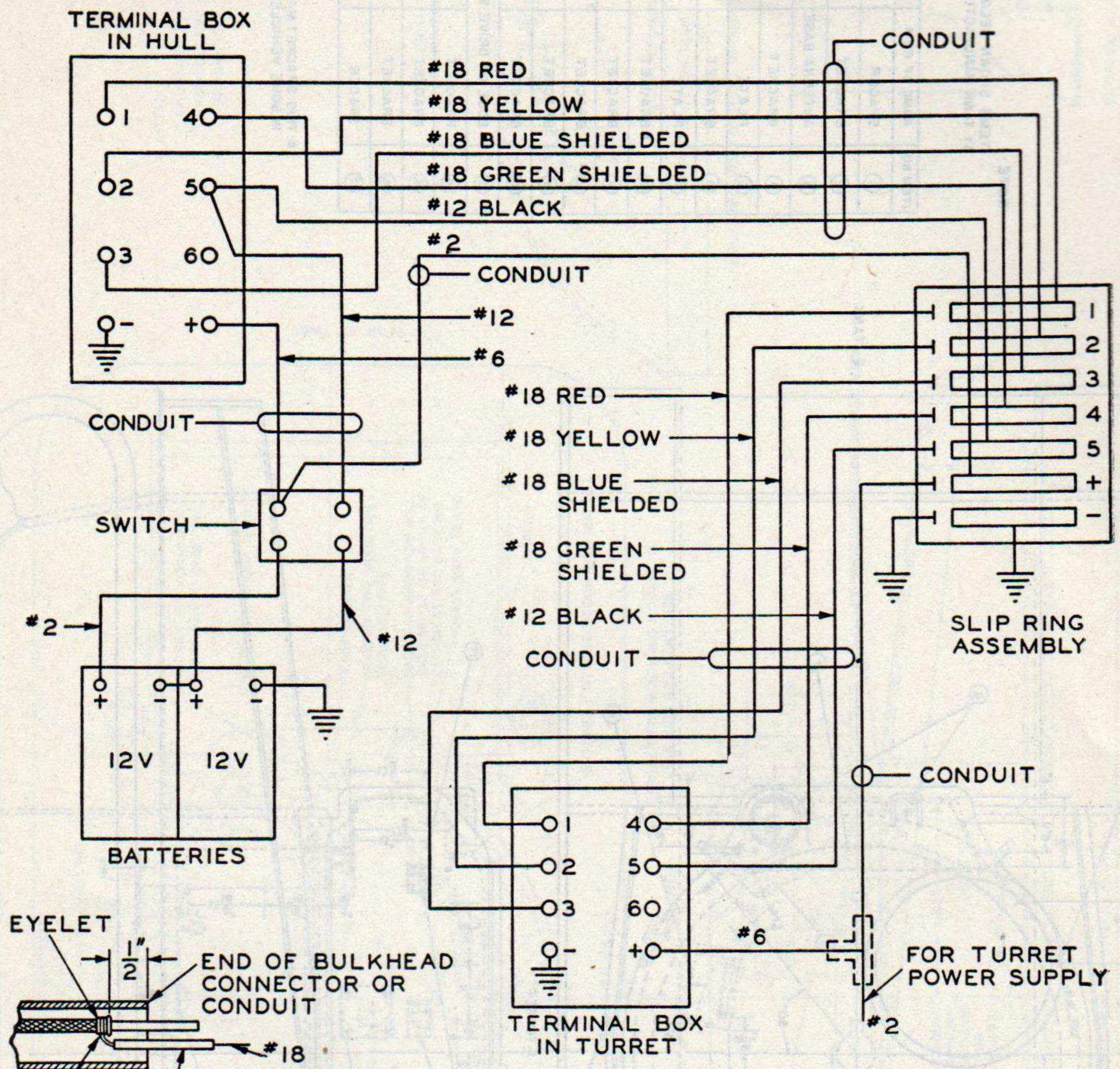
NOTE:
ITEMS SHOWN BELOW ARE INSTALLED
BY TANK MANUFACTURER.

ITEM NO.	NAME OF ITEM	NO. INSTALLED
①	SPACER	1
②	BRACKET	1
③	ANTENNA BASE	1
④	BRACKET	1
⑤	PLATE	1
⑥	BRACKET	1
⑦	PLATE	1
⑧	*BRACKET	1
⑨	BRACKET	2
⑩	BRACKET	1
⑪	BRACKET	1
⑫	BRACKET	1
⑬	EDGE OF DRIVE SHAFT HOUSING	
⑭	BRACKET	1
⑮	BRACKET	1
⑯	BRACKET	1
⑰	SPACER	1

* THIS BRACKET MAY NOT BE INCLUDED
IN SOME VEHICLES.

TL-10664
BASED ON
SC-D-8423-1

Figure 6. Installation of radio and interphone brackets in Medium Tank M4 series, welded hull construction.



ALL WIRING, TERMINAL BOXES AND SLIP RING ASSEMBLY SHALL BE FURNISHED AND INSTALLED BY MANUFACTURER OF VEHICLE.

ALL SHIELDS ON SHIELDED WIRES SHALL BE GROUNDED ON BOTH ENDS.

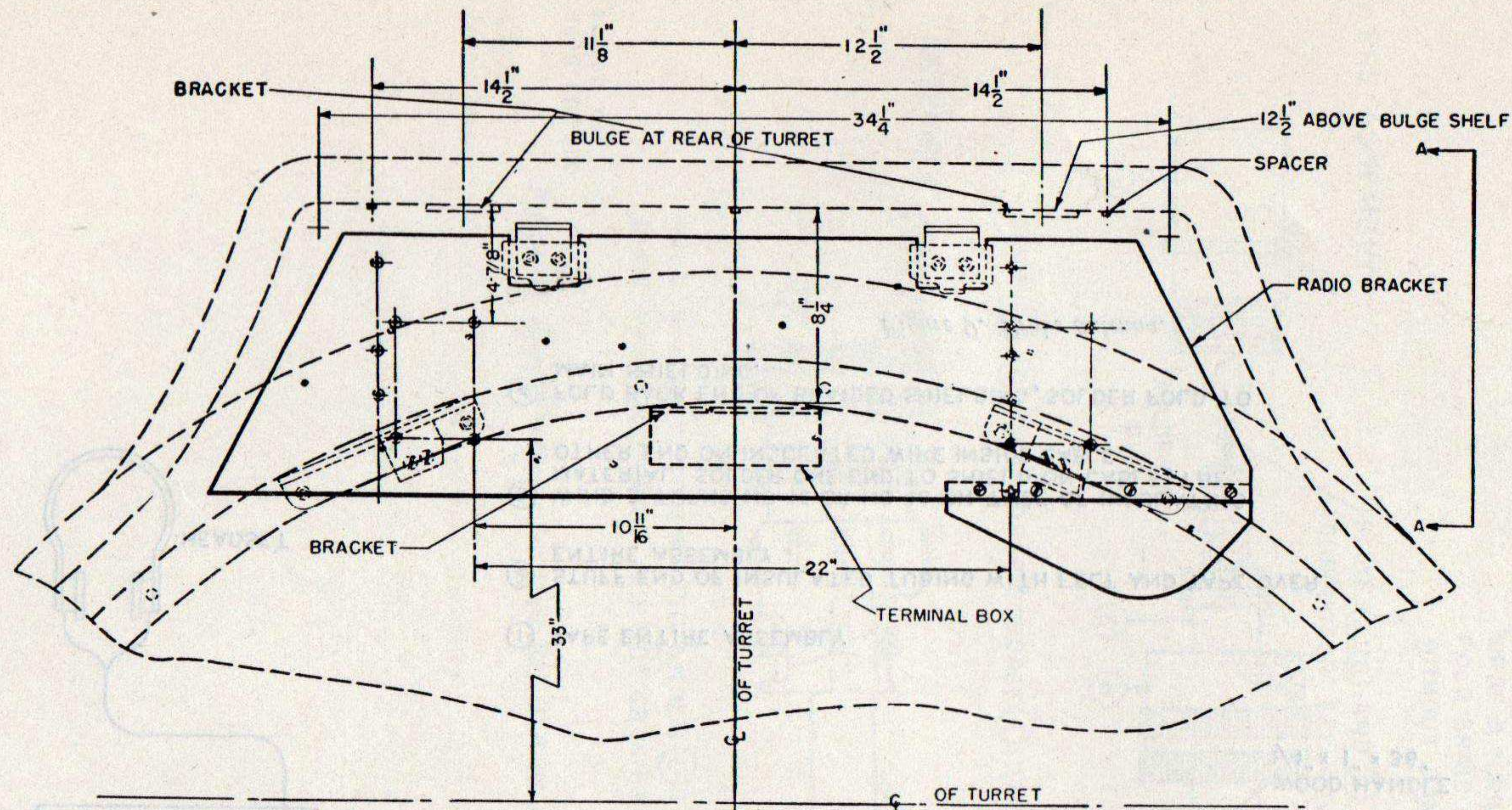
THESE TERMINAL BOXES ARE TO BE USED FOR RADIO AND INTERPHONE WIRING ONLY.

WIRE SIZES INDICATED ARE B & S GAUGE.

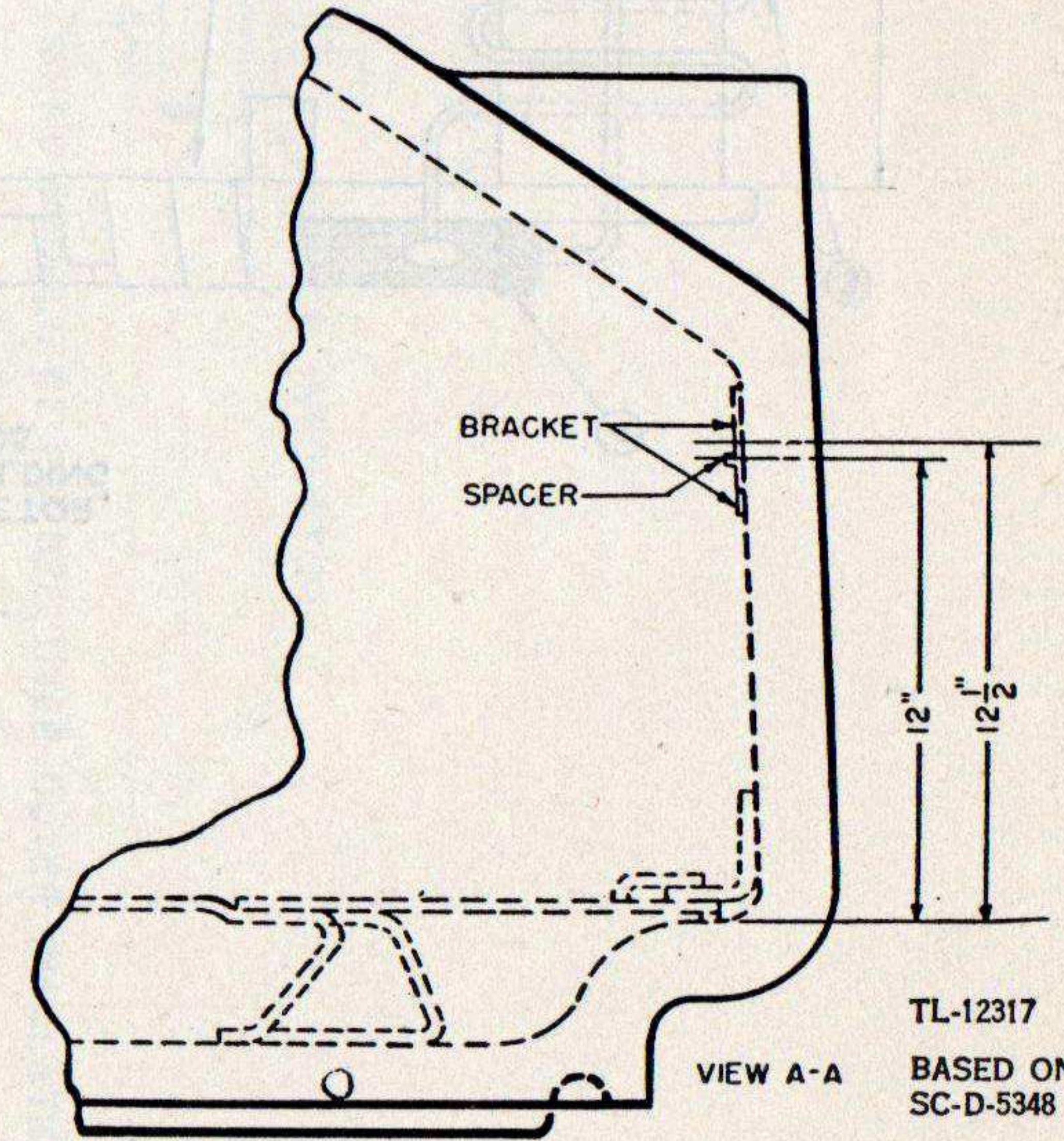
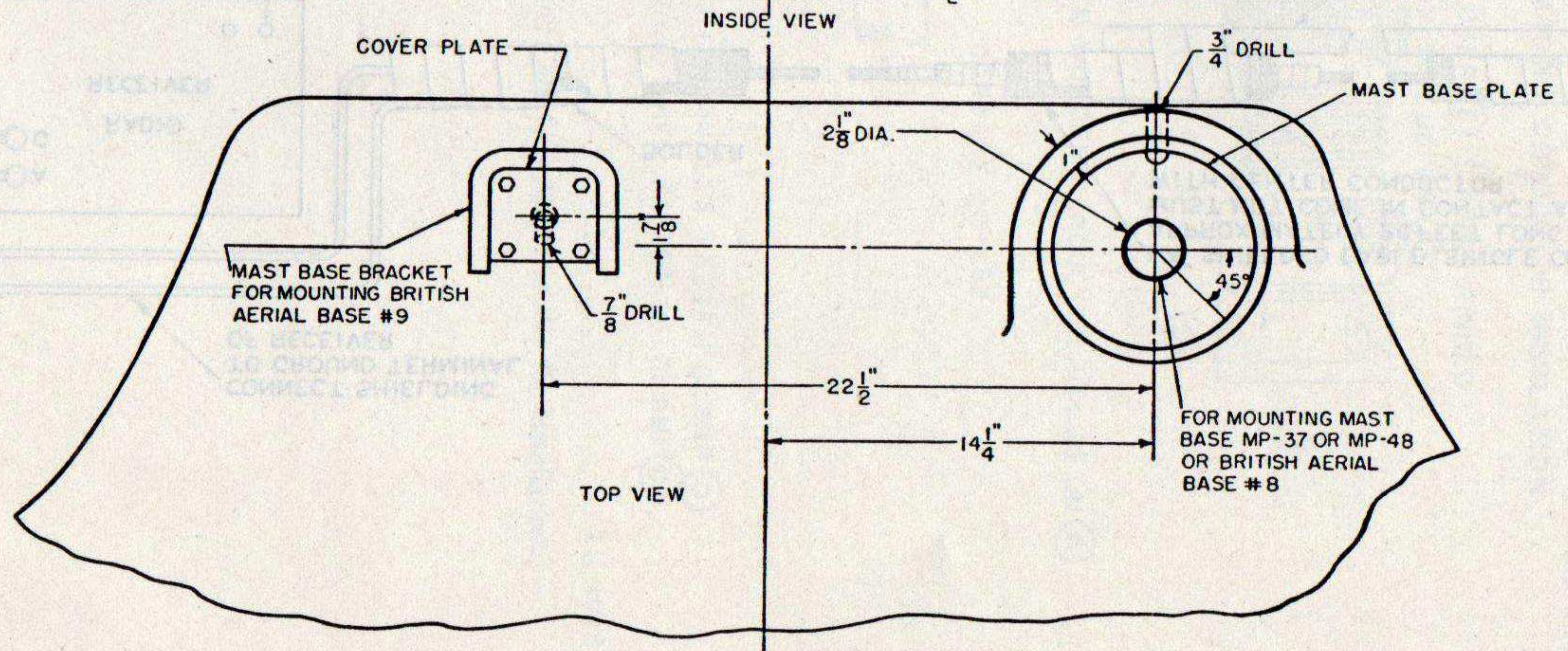
BASED ON
SC-A-6758-D

TL-10665

Figure 7. Wiring diagram of slip rings and terminal boxes in 24-volt tanks and armored cars.



NOTE:
BRACKETS SHALL BE PAINTED TO
CONFORM TO COLOR OF SURROUND-
ING AREA OF TANK AFTER BEING
INSTALLED.



TL-12317
BASED ON
SC-D-5348

Figure 8. Installation and details of radio brackets in turret of Medium Tank M4 series.

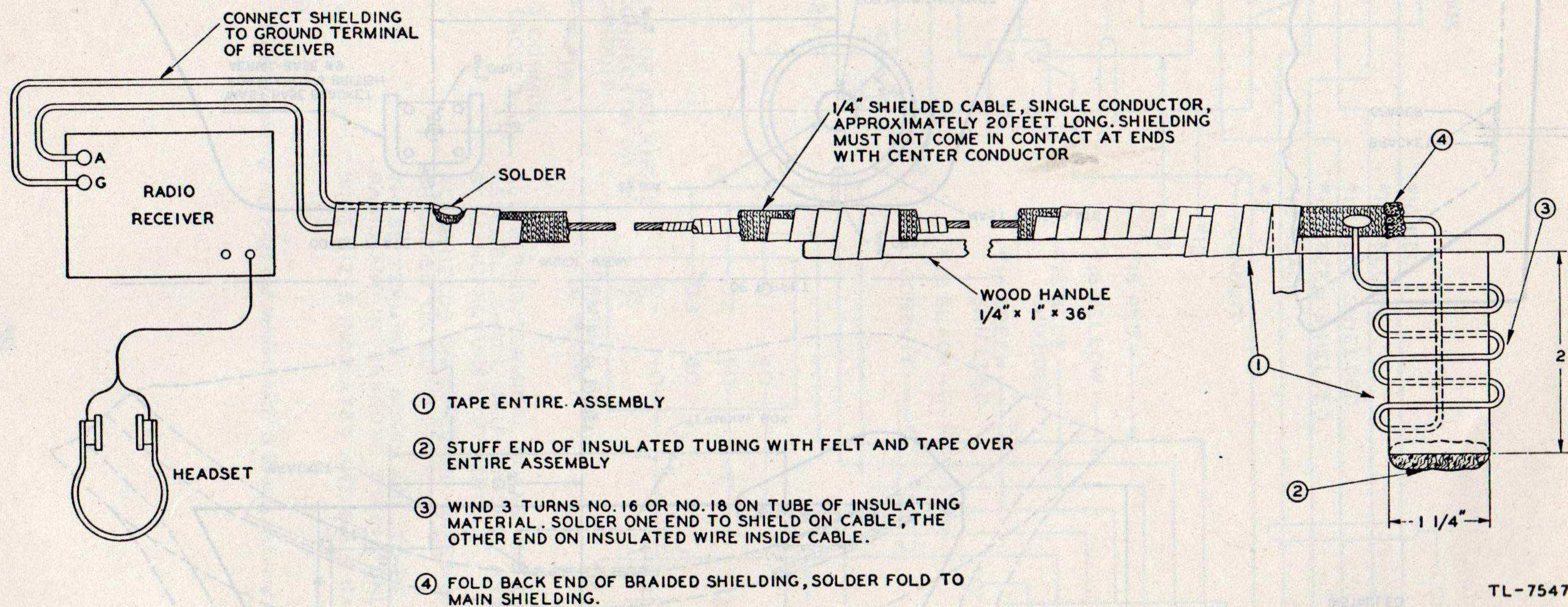
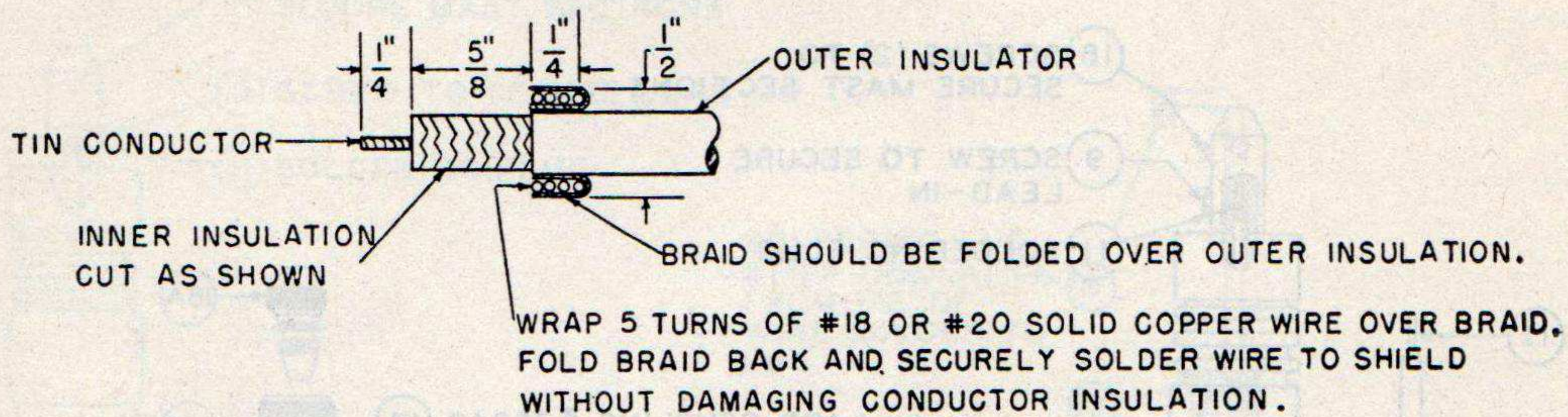


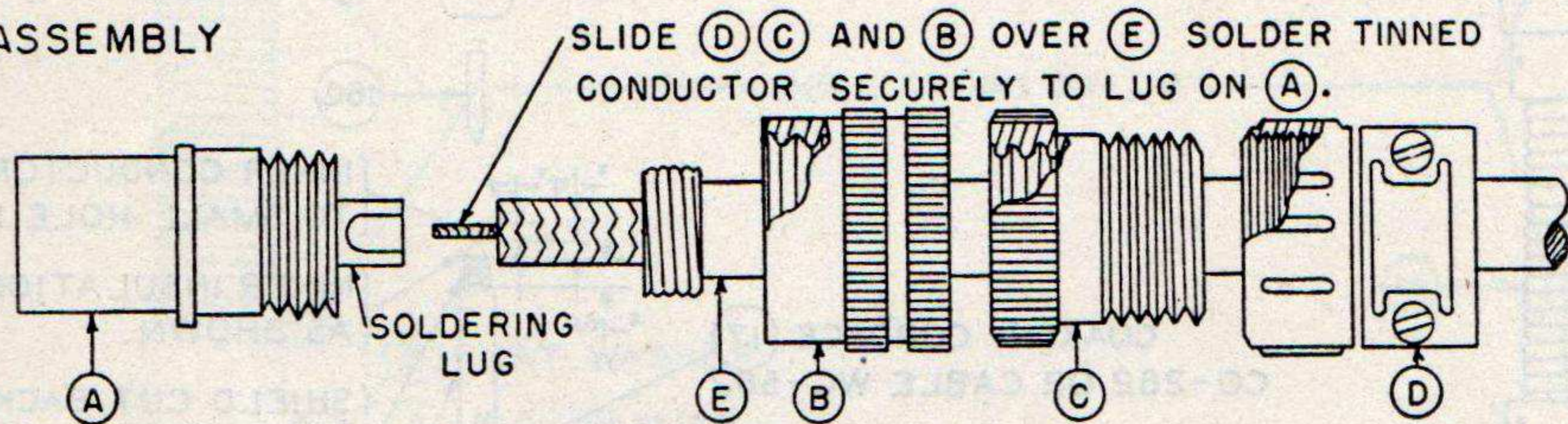
Figure 9. Probe antenna.

TL-7547

PREPARATION OF CORDAGE

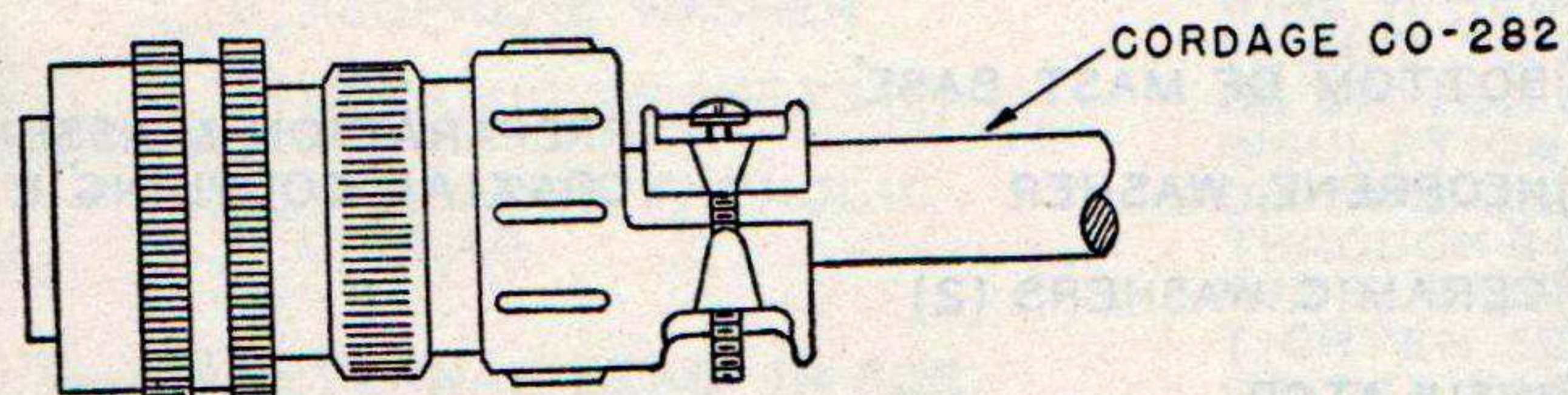


PRE-ASSEMBLY



SLIDE (D), (C) AND (B) OVER CORDAGE (E), THEN SOLDER CONDUCTOR TO LUG ON (A).

ASSEMBLY

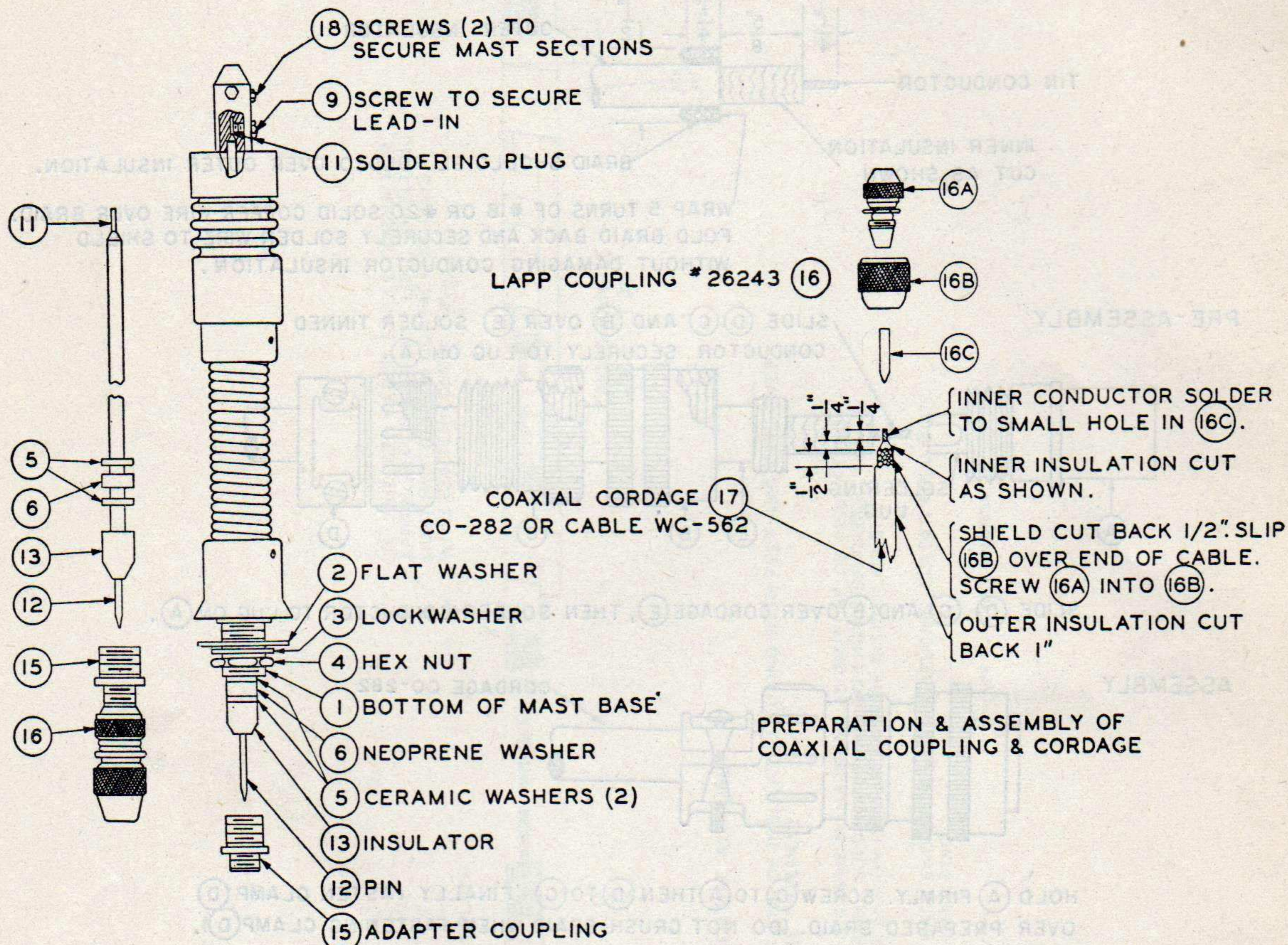


HOLD (A) FIRMLY. SCREW (C) TO (A) THEN (D) TO (C) FINALLY FASTEN CLAMP (D) OVER PREPARED BRAID. (DO NOT CRUSH BRAID WHEN FASTENING CLAMP (D)).

BASED ON
SC-A-7075-A

TL-10133

Figure 10. Coaxial connector for Mast Base MP-48 and Cord CO-282, assembly for installations.



PREPARATION & ASSEMBLY OF COAXIAL COUPLING & CORDAGE

CORD CD-689 FOR COAXIAL LEAD-IN CONNECTION. SECURE PLUG (11) WITH SCREW (9). SCREW (15) INTO BOTTOM OF MAST BASE TO SECURE ASSEMBLY.

BASED ON SC-A-7165-A

TL-10132

Figure 11. Mast Base MP-48-A, assembly with coaxial lead-in.

APPENDIX

IGNITION NOISE SUPPRESSION IN MEDIUM TANK M4 SERIES

1. General.

Excessive ignition or other electrical noises may interfere with the operation of radio equipment in Medium Tank M4 series. The Technical Manual issued with the tank will be helpful in locating the source of noise since it describes the suppression systems used. Instructions for operating radio and interphone equipment used in Medium Tank M4 series should also be studied.

2. Procedure.

Locate and suppress ignition noise as follows:

- a. Start the tank motor and turn on the radio

Interference

Popping sound; corresponds to ignition firing; accelerates when engine is raced, stops when engine is turned off.

Intermittent, clicking sound; lingers for several seconds when ignition is turned off.

Whining sound; varies with speed of engine; ceases only when generator stops rotating.

Sparking, or continuous crackling noise.

d. Interference from other electrical parts and circuits of the vehicle, such as panel gauges, heater fans, and, in vehicles with turrets, traversing motors and gyrostabilizers, can usually be identified by turning off the gauges, fans, or other suspected mechanisms, individually.

e. If the source of interference cannot be found by any of the preceding methods, connect a probe antenna (fig. 9) to the antenna terminal of the radio set. Move the loop of the probe antenna slowly over the various parts of the vehicle's electrical system. Keep the loop close to, but not in contact with, the part being examined. Interference-producing parts should be heard in the receiver.

receiver. Put the receiver sensitivity control at *maximum*. Then, listening to the receiver output with a handset, tune the receiver *slowly* over the entire range of frequencies to be used for communication.

b. When the frequency (or frequencies) with greatest noise level is found, turn off the vehicle engine. If interference persists, the source is outside the ignition system. If noise stops, the trouble is in the ignition system.

c. Start the engine again. Adjust the receiver sensitivity control until engine noises can be distinguished most easily from static, etc. Interference may then be identified as follows:

Usual source

Ignition system.

Generator regulator.

Generator.

Brushes and commutator of generator.

f. Interference can generally be eliminated by cleaning, tightening, or replacing noise-producing parts. All suppressor and shielding components and all connections and grounding bonds should be examined, tightened, and the surfaces under them cleaned. This will assure good electrical contact between wires and terminals, and metal casings and the frame of the vehicles. (Insulated but ungrounded metal parts absorb and reradiate electrical noises.)

g. If interference persists, suppressor components should be checked by substituting new ones. If a replacement is not available, disconnect the suspected component, and test capacitors, resistors, and chokes within it, for opens, shorts, or other faults.

THE END!