

CAGQ-66134

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N/S 900,524-IB

10-11-55

TYPE CAGQ-66134

ANTENNA ASSEMBLY

FOR GENERAL RADIO USE

ELECTRONICS OFFICE

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INSTRUCTION BOOK
for
TYPE CAGQ-66134
ANTENNA ASSEMBLY
FOR GENERAL RADIO USE

NAVSHIPS -900, 524-1B

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NEW YORK, N. Y.

U.S. NAVY DEPT.

BUREAU OF SHIPS

Contract NXsr-79983

Approved 12 December 1944

IMPORTANT NOTICE

To prevent excessive vibration it is necessary to check periodically the nuts H-121 and H-122 and the bolts holding the base bracket to the periscope frame. These must all be kept thoroughly tight.

SECURITY NOTICE

The information contained in restricted documents and the essential characteristics of restricted material will not be communicated to the public or to the press, but may be given to any person known to be in the service of the United States and to persons of undoubted loyalty and discretion who are cooperating in Government work.

RECORD OF CORRECTIONS MADE

[illegible]

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REPORT OF FAILURE

Report of failure of any part of this equipment, during its service life, shall be made to the Bureau of Ships in accordance with current instructions. The report shall cover all details of the failure and give the date of installation of the equipment. For procedure in reporting failures see Chapter 67 of the "Bureau of Ships Manual", or superseding instructions.

INSTALLATION RECORD

Contract Number - NXsr-79983 Contract Date-October 13, 1944.

Serial number of equipment.....

Date of acceptance by the Navy.....

Date of delivery to contract destination.....

Date of completion of installation.....

Date placed in service.....

REPLACEMENT MATERIAL

All requests or requisitions for replacement material should include complete descriptive data covering the part desired, in the following form:

1. Name of part desired.
2. Federal Stock number (if assigned).
3. Navy Type number (if assigned) (including prefix and suffix as applicable).
4. Commercial designation.
5. Model designation (including suffix) of equipment in which used.
6. Navy Type designation (including prefix and suffix where applicable) of major unit in which part is used.
7. Contract, purchase order, requisition, etc, under which the equipment was procured.
8. Circuit symbol designation of part.

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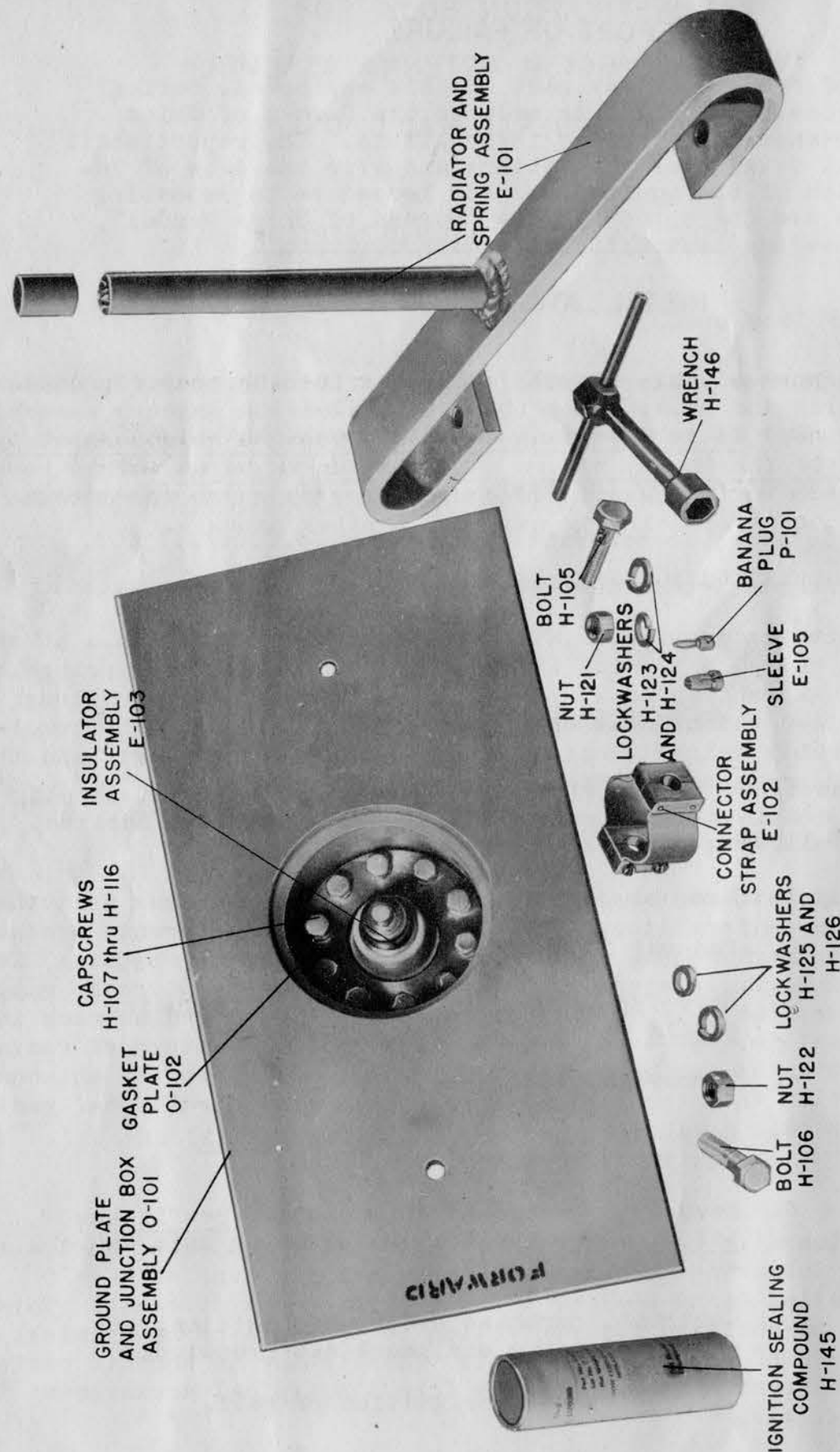


Fig. 1-1 Type CAGQ-66134 Antenna Assembly, Parts, and Accessories

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INSTRUCTION BOOK FOR
TYPE CAGQ-66134 ANTENNA ASSEMBLY
FOR GENERAL RADIO USE

SECTION I--GENERAL DESCRIPTION

1. SCOPE OF THIS BOOK.

The purpose of this manual is to describe the proper procedure for installing and maintaining the Type CAGQ-66134 Antenna Assembly on a submarine. It is important that this book be read completely and understood thoroughly before installation is begun. This book does not describe the associated equipment with which the antenna is used. Such information is covered in other manuals.

2. GENERAL CONSTRUCTION OF ANTENNA.

The antenna consists of a vertical radiator welded to a strong metal strip called a "spring bridge," or "spring." This spring is bolted to a supporting metal plate, approximately 21 inches long by 10 inches wide, which forms the ground of the antenna. The complete antenna assembly weighs about 56 pounds. The various parts and the construction are shown in Figs. 1-1, 2-1 and 2-2.

3. LOCATION OF THE ANTENNA.

The radiation pattern of this antenna in the various azimuthal directions is uniform except for the effect of interference produced by projecting periscopes, masts or other nearby metal objects. To avoid such interference and also to obtain good general radio range, it is very desirable to install the antenna as high and as much in the clear as possible. If a uniform omni-directional pattern of radiation cannot be obtained, an effort should be made to locate the antenna in such a position that the closest approach to omni-directional radiation will be secured.

4. CABLING.

The antenna is connected to its associated equipment inside the hull of the submarine by means of a transmission line of RG-8/U (formerly called CASSF-50-1 or PT-5) flexible coaxial cable. This cable is to be enclosed for protection in pressure-proof seamless tubing outside of the pressure hull. This tubing is bent to conform to the arrangement of the superstructure. A typical arrangement is shown in Fig. 2-3.

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Note

Neither the coaxial antenna transmission line nor the steel tubing in which it is enclosed is supplied by the contractor. These should be obtained from the Radio Material Officer at the point of installation.

5. PARTS OF THE ANTENNA.

Figs. 1-1 thru 2-2 show the various parts which make up the CAGQ-66134 Antenna Assembly. The ground plate of the antenna is supplied welded to the junction box making up the assembly 0-101. The junction box contains the insulator assembly E-103 and various small parts. The bottom opening of the junction box fits over the top of the tubing enclosing the cable. The upper part of the insulator provides capacitive coupling thru the ceramic material between the inner conductor of the coaxial cable and the radiator of the antenna. The purpose of the connector-strap assembly E-102 is to provide a flexible electrical connection between the radiator and the insulator cap and to absorb vibration.

As shown in Fig. 2-3, the installation includes a shear valve. This is to be operated only if the steel tubing develops a leak, causing a flow of water to enter the submarine. This is an emergency valve which will cut off the coaxial cable permanently and close the hull against the external water pressure. This valve is to be operated only in an emergency because the use of the associated radio equipment will be lost until the cable is replaced. Armored cable, such as Type RG-10/U, should not be used because it may jam this valve.

SECTION II--INSTALLATION

1. GENERAL.

Individual installations of this antenna will vary in accordance with the size and arrangement of different submarines. But the basic structure of all submarines and the construction of the antenna assembly make the steps outlined herein typical of procedures to be followed in any particular installation.

2. ORDER OF PROCEDURE.

The following are the principal steps to be followed in making the installation of the antenna. They are listed in the order in which they are usually performed. Each step is described more fully in the following pages. The various parts referred to are shown in Figures 1-1, 2-1, and 2-2.

1. The antenna has to be unpacked carefully so that none of the parts gets damaged or lost.
2. The ground-plate and junction-box assembly is welded to a bracket, which will then be bolted to the periscope support frame.
3. The tubing protecting the coaxial cable is installed in accordance with the structure of the submarine. The tubing is then welded to the bottom of the junction box.
4. The shear valve is welded to the tubing and the hull. The entire tubing installation is then pressure-tested at 300 pounds to the square inch.
5. The cable-braid terminal and the banana plug are attached to the top end of the coaxial cable.
6. The bottom end of the cable is pulled down into the steel tubing by means of an electrician's snake. The cable-braid assembly will then be in place in the antenna junction box. Then the insulator, the connector straps, and the spring and radiator of the antenna are put in place.

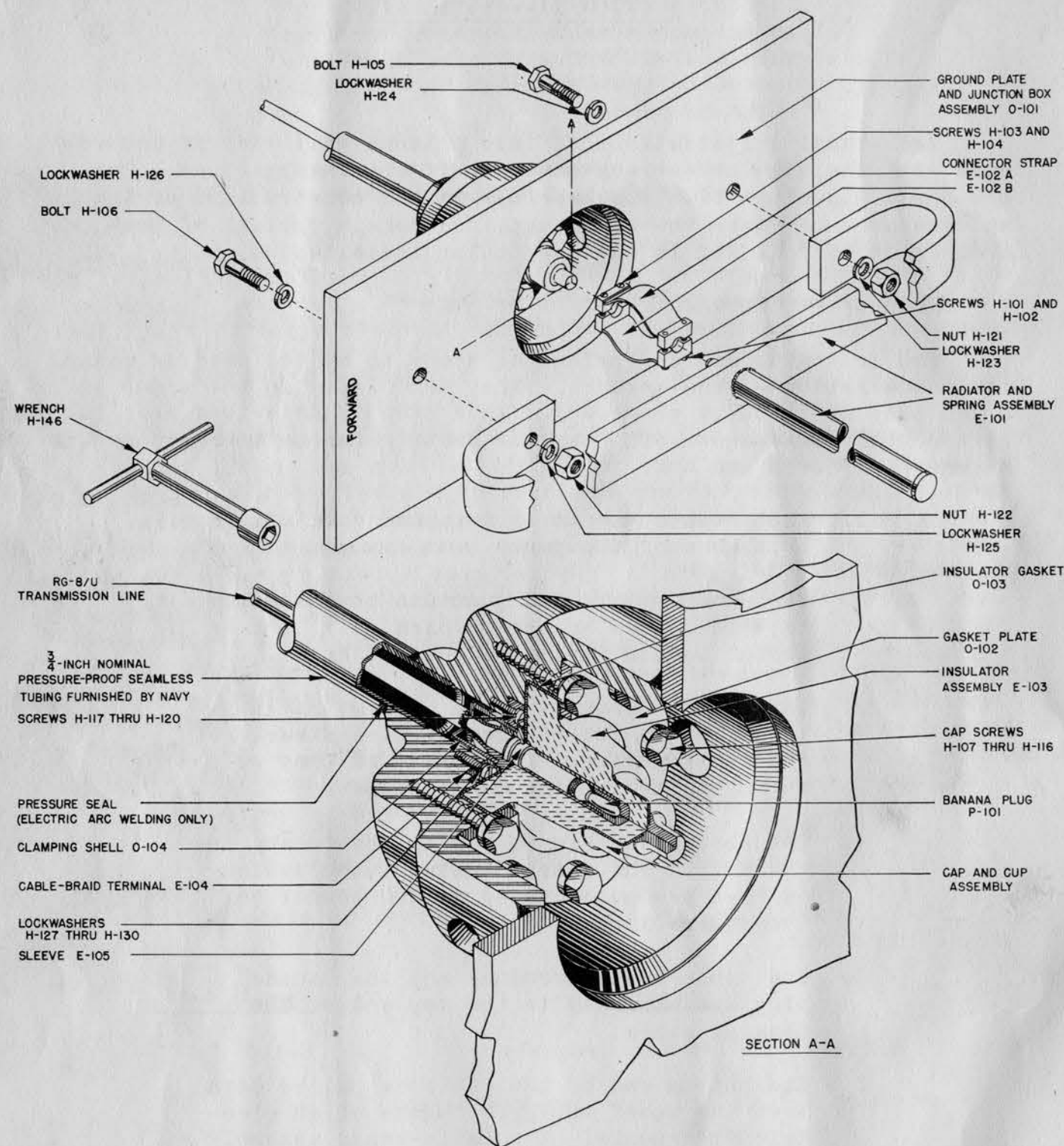


Fig. 2-1 Exploded and Sectional Views of Type CAGQ-66134 Antenna Assembly

7. The cable which passes thru the gate in the shear valve is run inside the hull and cut off with some slack adjacent to the equipment to which it is to be connected.

8. When the installation is completed, electrical tests are made to check the installation.

Some maintenance work will probably be required periodically and this instruction book should be preserved for use. The drawings and the data here will be of considerable value at that time.

3. UNPACKING THE ANTENNA.

The CAGQ-66134 antenna, as supplied by the contractor, is shipped in a wood packing case with the main components bolted down. The spare parts are enclosed in a steel container protected by moisture-and-vapor-proof wrapping. The small parts necessary for installing the antenna are contained in a package marked INSTALLATION PARTS. Special care should be taken not to lose any of these small parts while unpacking the equipment.

Caution

If possible, avoid opening the moisture-and-vapor-proof barrier of the spare-parts box until spare parts are needed for actual installation.

4. LIST OF MAJOR PARTS AND ACCESSORIES.

As shipped, the Type CAGQ-66134 antenna consists of the following items:

| Description | Symbol Nos. |
|--|-------------------------------------|
| Radiator and spring assembly | E-101 |
| Ground-plate and junction-box assembly | O-101 |
| 2 hex-head bolts, 2 hex nuts and 4 lockwashers | H-105 and H-106 H-121 thru H-126 |
| Insulator assembly with Neoprene gasket in place | E-103 O-103 |

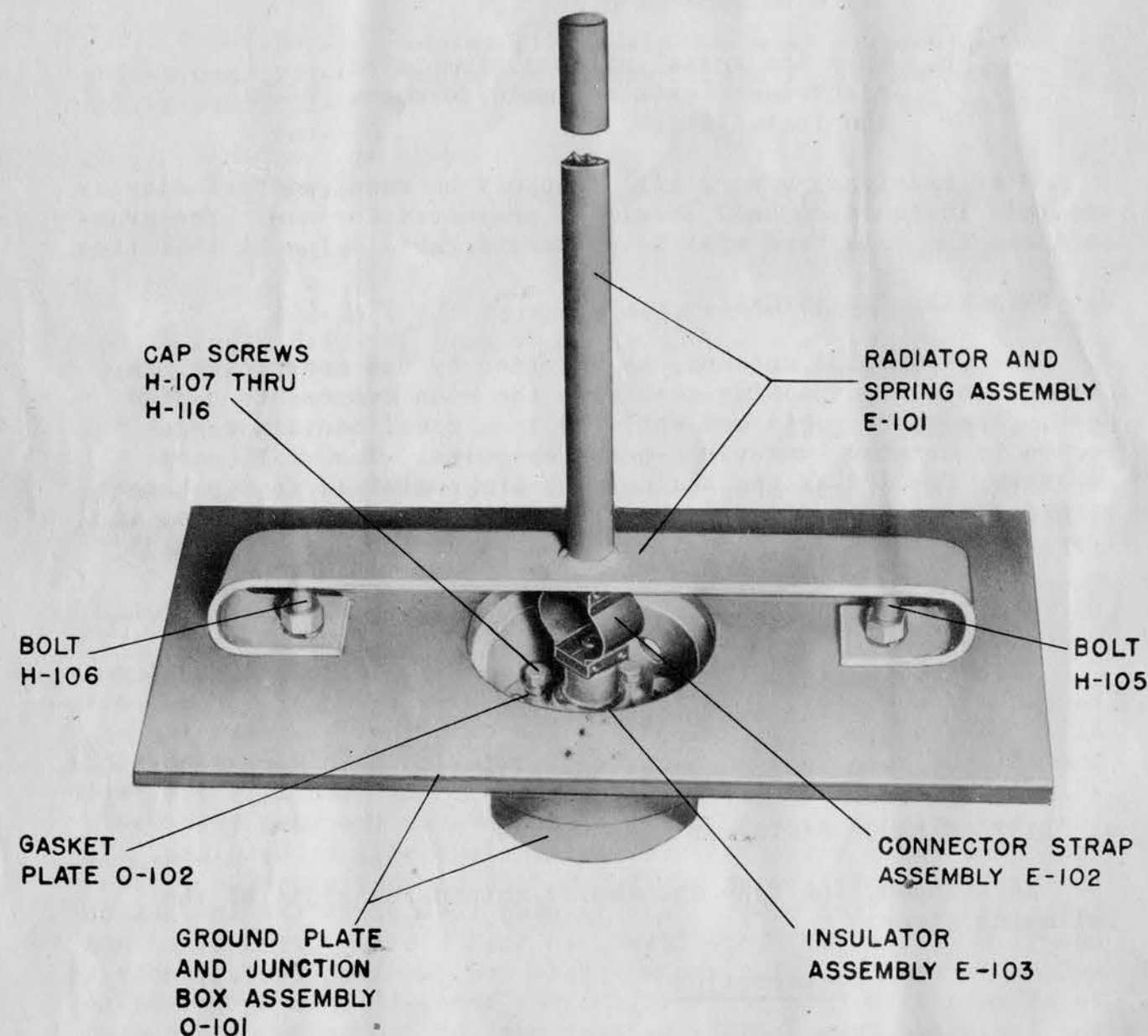


Fig. 2-2 View of Radiator and Spring Assembly in Place on Ground Plate

| Description | Symbol Nos. |
|---|--|
| Gasket plate with 10 cap screws and 10 lockwashers | O-102 H-107 thru H-116 H-131 thru H-140 |
| Cable-braid terminal with 4 fillister-head screws, 4 split washers and clamping shell | E-104 H-117 thru H-120 H-127 thru H-130 O-104 |
| Sleeve for cable-braid terminal | E-105 |
| Banana plug | P-101 |
| One connector strap assembly with 2 straps, 4 round-head screws and 4 lockwashers | E-102 H-101 thru H-104 H-141 thru H-144 |

5. EQUIPMENT SPARES.

The shipping entity includes a steel box containing the equipment spares. These are listed in the Parts List on pages 4-1 thru 4-3.

6. MOUNTING THE GROUND-PLATE AND JUNCTION-BOX ASSEMBLY O-101.

The ground plate (Fig. 2-2) is supplied welded to junction box, and space provisions for mounting must take care of the overall dimensions of this assembly. The fact that the radiator of the antenna when mounted must be as much in the clear as possible will determine the choice of location. It is specially desirable that the antenna have no metal structures on the same level so that good radio coverage in all directions will be obtained. In the typical installation of Fig. 2-3, a bracket constructed locally and supplied by the Navy is used to support the antenna on one side of the periscope frame, so that a clear field ahead and astern is secured. The ground-plate and junction-box assembly is to be welded to this bracket, and the bracket is to be bolted to the periscope frame. This bracket must of course be constructed to fit the ground-plate assembly O-101 and also the contour of the periscope frame.

It is absolutely necessary to have all holding bolts securely tightened to prevent destructive vibration in service. This applies to the bolts holding the base bracket to the periscope frame and also to the bolts holding the spring bridge to the ground plate.

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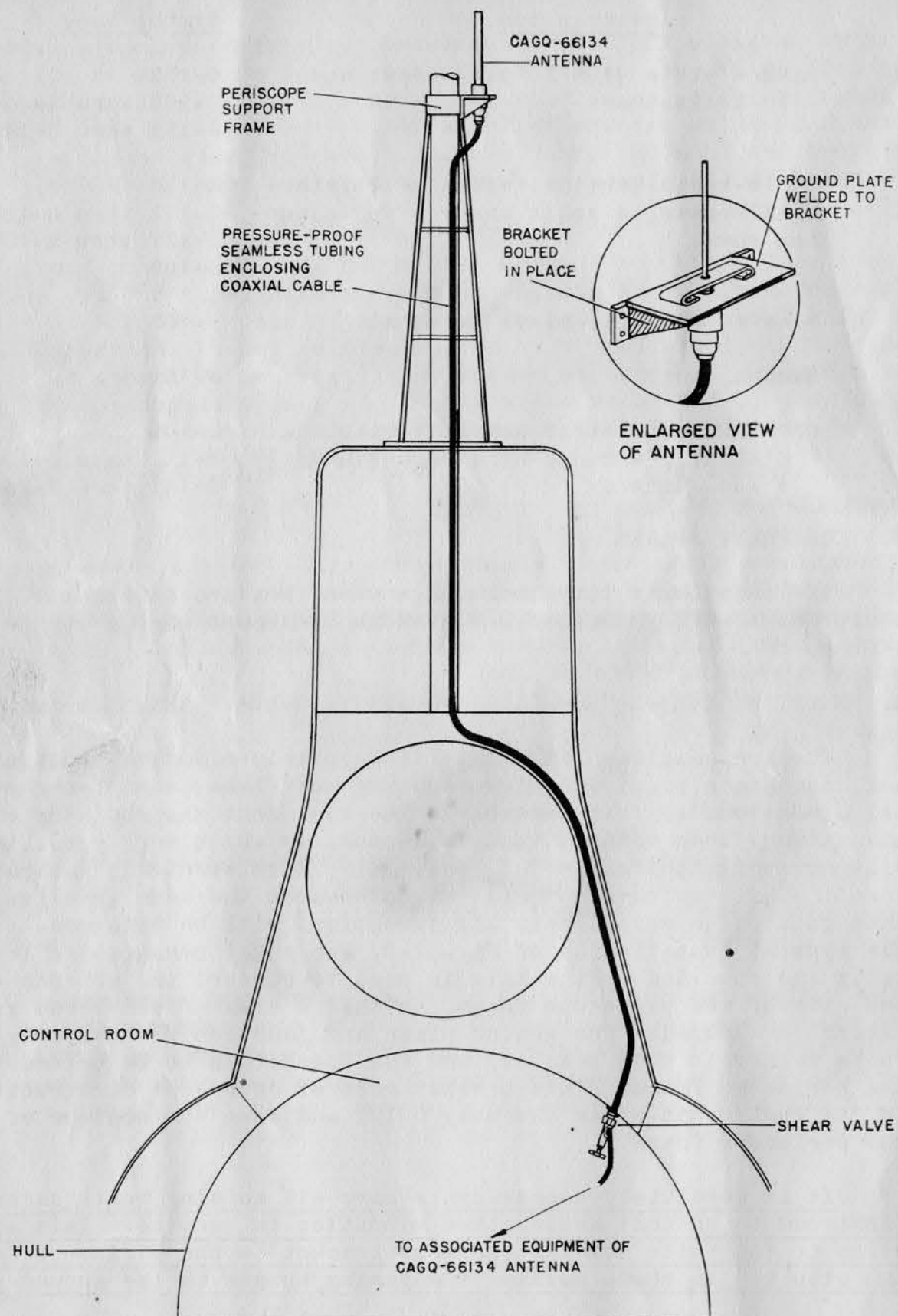


Fig. 2-3 Diagram of Typical Installation of Type CAGQ-66134 Antenna Assembly

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It is possible that another antenna, very similar in appearance to the CAGQ-66134 antenna may be mounted on the submarine on which this installation is to be made. In such a case it is desirable that the CAGQ-66134 antenna be installed on the opposite side of the shear structure from the other antenna. However, more definite instructions in this instance should be obtained from the Radio Material Officer.

Note that there are three holes, which are 120 degrees apart from one another, in the outside of the junction box. One of these holes faces the aft end of the ground plate. When the ground plate is installed, this hole should be toward the stern of the submarine in order to reduce the likelihood of damage to the insulator (E-103) when under water. As an additional aid on this, the word "FORWARD" is stamped on the forward end of the ground plate.

7. INSTALLATION OF THE CABLE TUBING.

The antenna connection is made by flexible coaxial cable inside a run of 3/4-inch pressure-proof seamless tubing. At the top end this tubing enters the junction box 0-101 and is to be welded to it so that the junction box is pressure-sealed. Only electric arc welding is to be used.

WARNING

All welding must be done before the cable is put in the tubing; also none of the electrical and mechanical parts that fit into the junction box at a later stage of the assembly are to be in place while the tubing is being welded to the junction box.

The tubing installation will vary with different submarines. In most cases, the run will consist of two or more separate pieces of tubing, the ends of which are first reamed, then slightly countersunk, and then joined by means of unthreaded outside sleeves welded in place. These precautions prevent jamming of the cable and damage to it when it is inserted in the tubing later.

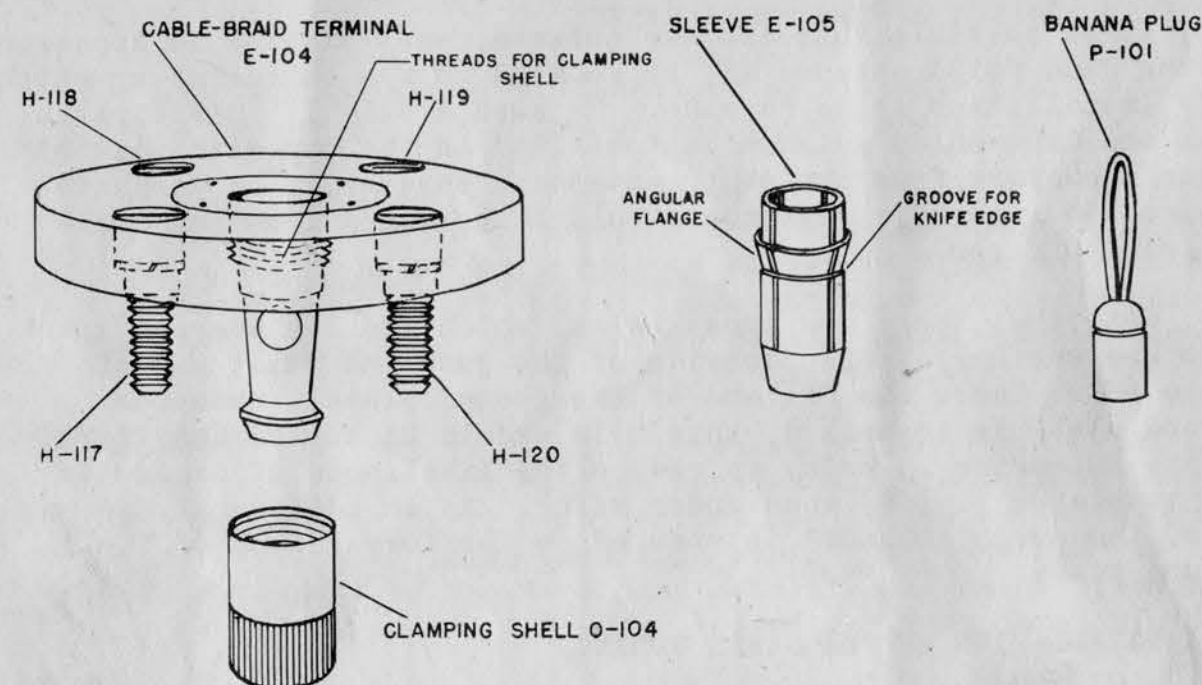


Fig. 2-4 Parts of Cable-Braid Terminal Assembly, Sleeve, and Banana Plug

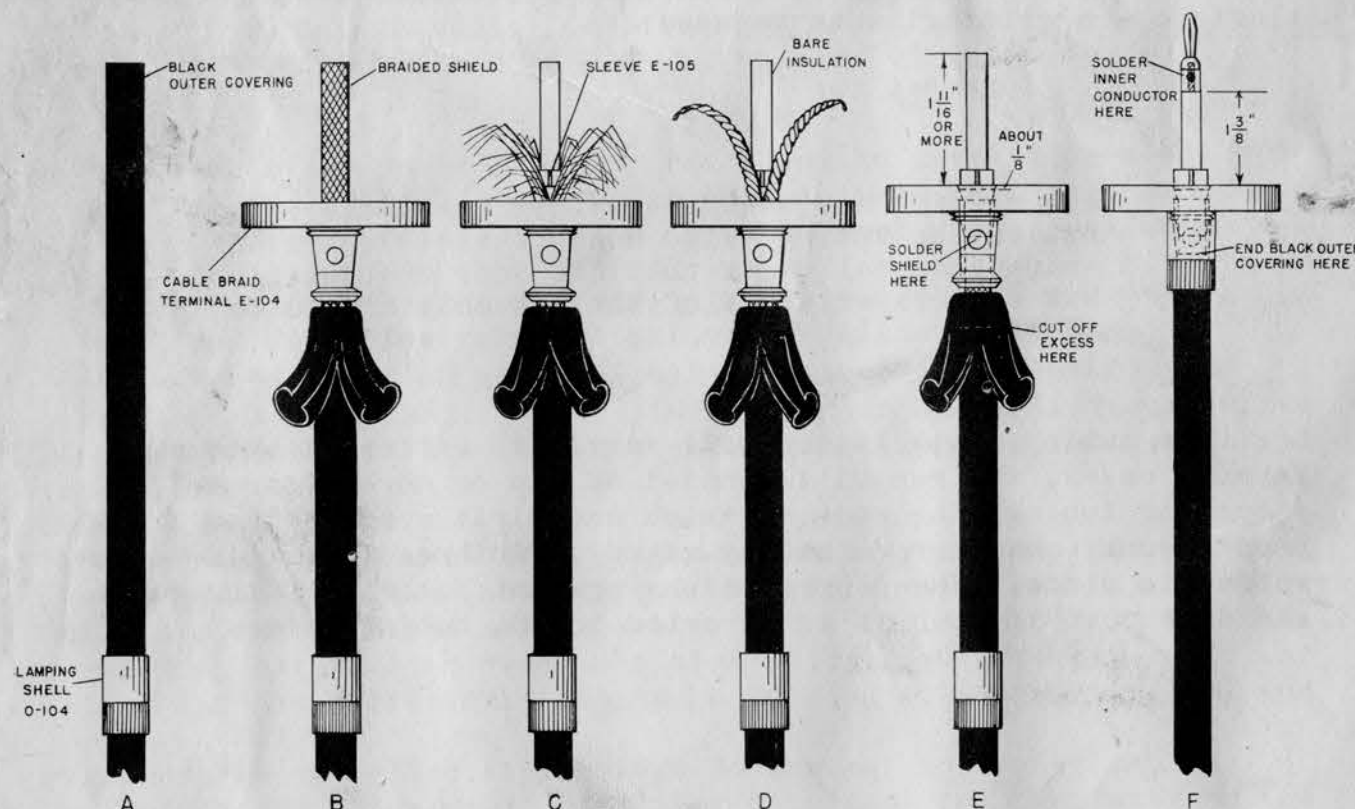


Fig. 2-5 Attachment of RG-8/U Cable to Cable-Braid Terminal and Banana Plug

8. INSTALLATION OF THE SHEAR VALVE.

The shear valve is to be installed in the hull of the submarine at the bottom end of the tubing run. The valve has a hull fitting with a recess to take the bottom end of the tubing. This hull fitting is to be welded to both the tubing and the hull. As cautioned above, only electric arc welding is to be used and the cable is not to be in the tubing during the welding. The shear valve should be at a point which can be conveniently reached in case water starts entering the hull in quantity due to damage in the tubing above.

This valve must be operated only in an emergency because it permanently cuts the antenna cable. This cable must be unarmored so as not to jam in the valve if it is necessary to turn the handwheel and close the shear gate. Normally, the handwheel, which is painted a bright orange to emphasize its use in an emergency, is locked open by a clip attached to a chain.

CAUTION

This clip is not to be removed except in an emergency, because an unintended operation of the handwheel will close the shear gate, cut the cable, and render the antenna inoperative.

A pressure check of the tubing run and shear valve should now be made at 300 pounds to the square inch to see that they are pressure-tight before putting in the cable.

9. ATTACHMENT OF CABLE-BRAID TERMINAL AND BANANA PLUG TO CABLE.

Fig. 2-4 shows the cable-braid terminal E-104, the screws H-117 thru H-120, the clamping shell O-104, (making up the cable-braid terminal assembly), the sleeve E-105, and the banana plug P-101.

The cable-braid terminal consists of a wide flange staked and soldered, at its upper side, to a cylindrical part extending downward and fitted with holes for soldering the braid of the cable to it. The entire assembly fits into the lower part of the junction box (O-101), as can be seen by a careful examination of Fig. 2-1.

Before preparing the end of the coaxial cable for attachment to the terminal, the length of the tubing thru which the cable is to be threaded must be known and also the length of cable required inside the hull. An allowance of a few feet more should be made before cutting the bulk cable, so as to take care of possible shortage due to errors in assembly. The end of the cable at the

top of the run should be prepared before pulling the cable length down into the tubing.

The top end of the cable is to have its braid connected to the cable-braid terminal, and its central conductor connected to the banana plug P-101. The procedure is shown in Fig. 2-5 and consists of the following steps, which are lettered to correspond with the sketches in the figure:

(A) Slide the clamping shell 0-104, unthreaded end first, over the end of the cable and push it down about a foot from the end of the cable where it will be ready for use later. Also square off the end of the cable.

(B) Slit the black outer covering for a length of not more than 1 inch from the end, taking care not to cut the braided shield. The slit will be long enough to permit a grip on the outer covering so as to pull it down over itself for 3 to 3-1/8 inches from the original square end of the cable. If this is too difficult to do by hand, use a pair of pliers to grip the covering. The rolled-back part will now form at its top a shoulder on which the cable-braid terminal can rest when it is pushed down over the braided shield.

(C) Fan out the braided shield for 1-3/8 inches from the top end of the cable, exposing the high-frequency insulation. Do not fan out the braid for more than this length. Slide the sleeve E-105, tapered end first, over the high-frequency insulation and pull up the cable-braid terminal, so that the braid is clamped between these parts and only 5/16 inch of the sleeve projects above the top of the cable-braid terminal. The upper flat surface of the cable-braid terminal is then 1-3/4 to 2 inches from the end of the cable. Refer to sketch C in Fig. 2-5.

(D) Note that the sleeve E-105, as shown in Fig. 2-4, has an angular flange, the lower end of which forms a groove for the insertion of a knife edge. The fanned-out braid is to be cut around this groove, which serves as a guide just at the top surface of the cable-braid terminal. A neat way of removing most of the braid is to divide the fanned-out strands into two sections, each a compact bundle.

(E) Then cut away each bundle of wires at the knife-edge groove of the sleeve. If the job has been done properly, a slight downward pressure on the sleeve applied at the same time as a slight upward pressure on the cable-braid terminal will lock these two parts. The cut edge of the braid will be wedged inside the cable-braid terminal about 1/8 inch below its flange; the top of the angular flange of the sleeve will be just below the top of the central opening of the cable-braid terminal; and 1-11/16 inches or more of the high-frequency insulation will project beyond the top of the cable-braid terminal. If there is this much projecting high-frequency insulation and the parts appear to be properly assembled, proceed to solder the braided shield in the four holes of the cable-braid terminal (one of these holes is shown in the sketches): work quickly with a very hot iron weighing only 1/2 to 1 pound, so as not to overheat the high-frequency insulation, which softens at high temperatures.

(F) Measure 1-3/8 inches of the high-frequency insulation from the top of the cable-braid terminal, as shown in F of Fig. 2-5, and remove the remainder. Cut off the inner conductor as necessary to leave 1/4 inch of the bare conductor. The diameter of the inner conductor may be too large to go into the hole in the bottom of the banana plug. If so cut off one or more of the strands flush with the end of the high-frequency insulation. Wrap a little wet string around the base of the inner conductor to protect the high-frequency insulation from heat and then tin the inner conductor. Then insert it into the plug. Apply solder now thru the soldering hole in the side of the banana plug, working quickly with a very hot iron, thus soldering together the inner conductor and the plug. The black outer insulation previously pulled down should now be brought up again and part of it cut away so that it ends just under the solder holes in the cable-braid terminal. Screw up the clamping shell. This completes the attachment of the cable to the cable-braid terminal and to the banana plug.

10. PULLING IN THE CABLE RUN AND ASSEMBLING THE ANTENNA.

The next step is to run the cable thru the central hole in the junction box (0-101) into the seamless tubing which ends inside the hull of the submarine. Since the coaxial cable is not rigid enough to be pushed down thru the tubing, it is necessary to use a spring steel tape (commonly known as an electrician's snake), which is first pushed down thru the tubing from its top end. After the snake has been fed into the entire length of tubing, so that its bottom end is in the hull, secure the cable to the top end of the snake. The cable can then be pulled down into the tubing by pulling the snake out at the lower end. As the cable is fed into the tubing at the top, Dow-Corning No. 4 Ignition Sealing Compound (symbol H-145) should be applied by hand

continuously but lightly to the cable to act as a lubricant. Keep the remainder of this compound and turn it over to the radio maintenance man of the submarine crew, because this compound should be used periodically on the insulator E-103 of this antenna as a maintenance measure.

Go very slowly at the last, as the cable length is pulled down into place. The reason for special care at this time is that the cable-braid terminal must be pulled down into position in the junction box of the antenna and yet not leave the cable connection to the cable-braid terminal subject to a severe permanent tension. Toward the last pull down the cable only an inch at a time, and then only a fraction of an inch at a time. As soon as the cable-braid terminal will seat properly in the junction box, stop pulling.

Then rotate the cable-braid terminal slightly in either direction to bring the four holes for the screws H-117 thru H-120 into alignment with the corresponding holes in the counter-boring of the junction box. Screw down the four screws part way, in succession, so that the cable-braid terminal lies flat. Then tighten the screws, completing this part of the assembly.

At this stage of the job it is well to check with an ohmmeter for cable continuity. In any suitable way put a short on the lower end of the cable in the hull. Apply the probes of the ohmmeter to the banana plug and the cable-braid terminal, whereupon the reading should indicate very low resistance. If an open circuit or high resistance is indicated, the fault should be identified and corrected before proceeding with the installation. Then remove the short at the bottom and check for high resistance between the banana plug and the cable-braid terminal.

The next step is to apply Dow-Corning No. 4 Ignition Sealing Compound lightly over the 1-3/8 inch of high-frequency insulation of the coaxial cable projecting up into the junction box. Be careful to avoid getting any appreciable quantity of the compound on the banana plug because it would affect the electrical capacitance of the insulator, which is very critical. Then apply the sealing compound to the insulator gasket 0-103, to insure a waterproof seal. The insulator E-103 is supplied with the insulator gasket 0-103 already in place around the bottom end. Then lower the insulator over the banana plug till gasket 0-103 rests on the flat top of the cable-braid terminal E-104.

Lower the circular gasket plate 0-102 (chamfered side first, to prevent cutting the insulator gasket 0-103) over the insulator, till plate 0-102 rests on gasket 0-103. The ten holes for the cap screws H-107 thru H-116 in the gasket plate should be aligned with the corresponding holes in the well of the junction box. Insert the cap screws in these holes. In tightening the screws, make sure that the gasket plate lies flat, by successively screwing down radially opposite pairs of screws first part way and then tightening them. Use the special T-wrench H-146, which is provided for this operation.

The connector-strap assembly E-102 is shown in Figures 1-1 and 2-1, and consists of two straps which are identical in construction. When assembled, the hole in the base of this unit fits around the cap which comes attached to the top of the insulator. The hole at the top of the connector-strap assembly fits around the stud of the radiator E-101, which extends below the spring bridge.

Each connector strap has two holes in each end for screws H-101 thru H-104, which hold the two straps together. If the connector strap assembly is taken apart, note that the holes in one end are untapped clearance holes and that the holes in the other end are tapped to match the threads of the screws. The two connector straps can be assembled by the screws only when the holes which are not tapped are mated to those which are.

However, it is possible to make this installation without disassembling the connector straps. This can be done provided that the radiator and spring-bridge assembly is not bolted to the ground plate before the connector straps are installed. In this case, merely loosen the screws on the connector straps. Then slip the hole in either end of the connector-strap assembly over the projecting insulator cap. The other end of the connector-strap assembly must be attached to the stud of the radiator coming down through the spring bridge. Place the spring bridge properly, insert the bolts H-105 and H-106, and tighten them very securely. It is absolutely necessary to set up the nuts of these bolts very tightly to prevent a disabling degree of vibration in service. These bolts, and also those holding the base bracket to the periscope frame, must be periodically checked and kept tightly screwed up. After tightening the nuts of H-105 and H-106, complete the antenna assembly by tightening the smaller screws H-101, H-102, H-103, and H-104 at the top and bottom of E-102, the connector-strap assembly.

CAUTION

The ends of the bolts H-105 and H-106 must not touch the spring bridge, because such contact would make the antenna electrically defective. If for any reason bolts other than those supplied with the equipment are used at this point in the installation, be sure they are not long enough to touch the under side of the spring bridge.

Note

Do not scrape the areas around the bolt holes since they are already free of paint and will make good electrical contact. The exposed metal area is zinc Schori processed (pearl gray in color). If this finish is removed, the steel will be exposed and rust will form, resulting in a high-resistance connection, which is to be avoided.

11. RUNNING THE CABLE INSIDE THE HULL

The next step is to attach the antenna cable inside the hull where it runs from the shear valve to the location of the equipment associated with the antenna. Bear in mind that this cable is not armored, and therefore special care must be taken to avoid damage from cutting by any of the devices where it is attached to the hull or passes thru bulkheads. Aside from this point, the work is conventional, and usual practice can be followed.

12. CONNECTION OF CABLE TO ASSOCIATED EQUIPMENT.

Inasmuch as this manual is concerned only with equipment supplied by the antenna contractor, the method of attaching plugs to cable and of making connection to the associated equipment does not fall within its scope. Such information should be obtained from the Radio Material Officer.

13. FINAL TEST OF THE INSTALLATION.

The following simple electrical tests should be made with an ohmmeter on the completely assembled CAGQ-66134 antenna installation:

(a) With the probes on the braid and central terminal at the bottom end of the cable run, the ohmmeter should indicate high resistance. If continuity is indicated, there is a short on the cable run, which will have to be corrected. If the short circuit is the result of damage to the cable, the complete cable run must be replaced.

(b) With the probes on the braid of the cable at the bottom and any point at ground in the submarine, the ohmmeter should indicate very low resistance. If this is not the case the outer conductor of the coaxial cable is defective. The correction of this fault will require either a new cable or a new attachment of the cable to the cable-braid terminal E-104.

SECTION III--MAINTENANCE

1. USE OF WATER-SHEDDING COMPOUND.

When the installation is completed, and periodically afterwards, the exposed surface of the insulator E-103 should be treated with the Dow-Corning No. 4 Ignition Sealing Compound, symbol H-145. Cover the entire exposed area of the insulator with a very light coating. This compound gives the insulator a water-shedding property like a duck's back. In this way, when the submarine rises to the surface from below, there is no covering of salt water over the insulator, and therefore the radio equipment can be used immediately with full efficiency.

2. KEEPING NUTS TIGHT TO PREVENT VIBRATION.

The most important maintenance duty is to keep thoroughly tight the nuts H-121 and H-122 which hold the spring bridge to the ground plate and whatever nuts are used to hold the base bracket to the periscope frame. When running submerged there is a tendency, if these are not thoroughly tight, for vibration to start. This loosens the nuts more, the vibration then increases, and the condition gets worse until the antenna works completely loose or breaks from the excessive vibration.

It is therefore necessary to check these nuts periodically and set them up as tight as possible without danger of stripping the threads.

If unusual vibration which might be due to this antenna is noticed at any time, check these nuts at the very earliest opportunity.

3. REPLACEMENT OF DAMAGED PARTS.

A list of parts and spares is given in Section IV. Whenever trouble is encountered the cause may be evident. If not examine the antenna closely for any indication of the cause, study this book, and make any ohmmeter tests which appear to be needed. In difficult cases try first to isolate the trouble as in the cable run or the antenna itself. If in the antenna, disassemble it and replace any part that appears suspicious, using the available spares.

All parts except E-101, E-102, and O-101 are interchangeable with corresponding parts of CAGQ-66-AFU and CAGQ-66-AFU-1 antennas. If one of these antennas is installed on the submarine, its spares can therefore be used as an additional source of parts in an emergency except for the three parts which are different.

SECTION IV--LIST OF PARTS AND SPARES BY SYMBOL DESIGNATION
TYPE CAGQ-66134 ANTENNA ASSEMBLY FOR GENERAL RADIO USE

| Quan. | Symbol Desig. | Function | Description | Hazeltine Drawing No. | Spare Parts Equip. Tender Stock | | |
|-------|------------------|--|---|--------------------------|------------------------------------|-----|---|
| 1 | E-101 | Radiate waves | Radiator and Spring Bridge Assembly; consists of steel rod (HEC Type A-3295) welded to spring bridge (HEC Type FP-1083) | A-3297 | 1 | 1 | 2 |
| 1 | E-102 | Flexible electrical connection | Connector-Strap Assembly; consists of beryllium copper straps with clamp blocks brazed one to each end; one clamp block threaded for two 1/4-28 screws, the other clamp block drilled with two unthreaded clearance holes for these screws. | A-3502 | 2 | 6 | 12 (Figures are number of complete assemblies) |
| 1 | E-103 | Main insulator | Insulator Assembly; extruded ceramic body with a metal cap and an internal electrical contact. | A-2704 | 3 | 10* | 20* |
| 1 | E-104 | Terminate braid of cable | Cable-braid Terminal; consists of connector disk with 4 holes for 8-32 fillister-head screws; and a tubular attachment with holes for soldering braid of RG-8/U cable. | A-2593 | 1 | 3* | 6* |
| 1 | E-105 | Used with E-104 to secure braid of cable | Sleeve; brass, silver-plated. | SM-1791 | 1 | 7* | 14* |

*In addition, there is included in tender and stock spares one assembly, Hazeltine Drawing No. A-3415, consisting of a ground-plate and junction-box assembly O-101 with the various parts in place which are indicated by asterisks.

RESTRICTED

| Quan. | Symbol Desig. | Function | Description | Hazeltine Drawing No. | Spare Parts | | |
|-------|------------------------|-----------------------------------|--|--------------------------|-------------|--------|-------|
| | | | | | Equip. | Tender | Stock |
| 4 | H-101 thru H-104 | Used on E-102 | Screw; brass, 1-1/2" long, 1/4-28. | SFB258Z48 | 8 | 24 | 48 |
| 2 | H-105 and H-106 | Connects E-101 to O-101 | Bolt; hex head, steel, 2" long, 1/2-13 | SC-779 | 4 | 4 | 8 |
| 10 | H-107 thru H-116 | Used on O-102 | Cap screw; steel, 1-1/2" long, 3/8-24. | SC-778 | 10 | 50* | 100* |
| 4 | H-117 thru H-120 | Used on E-104 | Screw; fillister head, stainless steel, 1/2" long, 8-32. | SFC82-16 | 4 | 12* | 24* |
| 2 | H-121 and H-122 | Used on H-105 and H-106 | Nut; hex, steel, 1/2-13. | NT-539 | 4 | 4 | 8 |
| 4 | H-123 thru H-126 | Used on H-105 and H-106 | Lockwasher; split, steel, large, 1/2" screw size. | LSLS50Z | 8 | 8 | 16 |
| 4 | H-127 thru H-130 | Used on H-117 thru H-120 | Lockwasher; split, steel, small, #8 screw size. | LSSS8Z | 4 | 12* | 24* |
| 10 | H-131 thru H-140 | Used on H-107 thru H-116 | Lockwasher; split, steel, large, 3/8" screw size. | LSLS37Z | 10 | 50* | 100* |
| 4 | H-141 thru H-144 | Used on H-101 thru H-104 | Lockwasher; split, bronze, small, for 1/4-28 screw size. | LSSP25Z | 8 | 24 | 48 |

RESTRICTED

*In addition, there is included in tender and stock spares one assembly, Hazeltine Drawing No. A-3415, consisting of a ground-plate and junction-box assembly O-101 with the various parts in place which are indicated by asterisks.

RESTRICTED

| Quan. | Symbol Desig. | Function | Description | Hazeltine Drawing No. | Spare Parts | | |
|-------|------------------|--|---|--------------------------------|-------------|--------|-------|
| | | | | | Equip. | Tender | Stock |
| 1 | H-145 | Water-shedding agent and lub- ricant | Sealing Compound, Dow-Corn- ing No. 4 Ignition, 4-oz. cartridge. | PE-1001 | 1 | 6 | 12 |
| 1 | H-146 | Tighten cap screws | "T" wrench 9/16-inch, to fit hex-head of cap screw. | WR-1010 | 1 | 2 | 4 |
| 1 | O-101 | Base assembly | Ground Plate and Junction Box Assembly; consisting of ground plate (HEC Type PM-1442), approx. 21" long with two holes for mounting spring bridge; welded to junction box (HEC Type SM-1795), with ten holes for mounting insulator gas- ket plate O-102 and 4 holes, for mounting cable braid terminal E-104. | A-3416 | - | 1* | 2* |
| 1 | O-102 | To secure insulator | Gasket Plate, steel disk drilled for 10 cap screws, H-107 thru H-116, and cen- ter hole to fit over insula- tor E-103. | PM-1306 | 1 | 5* | 10* |
| 1 | O-103 | Resist water pres- sure | Gasket, Insulator; Neoprene. | GA-1025 | 4 | 10* | 20* |
| 1 | O-104 | Secure cover- ing of cable | Clamping Shell; brass with 5/8-18 internal thread at one end. | SM-1789 | 1 | 3* | 6* |
| 1 | P-101 | Terminate transmission line | Banana Plug; (special) | PL-1044 N17C-78525- 2876 | 1 | 7* | 14* |
| 2 | - | Describe in- stallation and maintenance. | Instruction Book | IB-258-A | 0 | 4 | 8 |

RESTRICTED

*In addition, there is included in tender and stock spares one assembly, Hazeltine Drawing No. A-3415, consisting of a ground-plate and junction-box assembly O-101 with the various parts in place which are indicated by asterisks.