

## MODULAR SPLICING SYSTEM

### TOOLS AND MATERIAL

### DESCRIPTION

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#### 1. GENERAL

**1.01** This section covers the tools and materials used in the Modular Splicing System (MS<sup>2</sup>) method of joining copper conductors with 25-pair B Modular Connectors.

**1.02** Any combination of pulp, paper, or PIC insulated copper conductors 22- through 26-gauge may be joined with this method. It is not necessary to strip the insulation from the conductors. ***Do not join 19-gauge under any circumstances.***

**1.03** Section 632-205-235 covers the use of the Modular Splicing System in various types of

splices; straight splice, bridge splice, load splice, etc.

#### 2. PRECAUTIONS

**2.01** B Modular Connectors ***must not be exposed*** to solvents or solvent fumes such as B Cleaning Fluid, Acetone, etc. Such solvents can damage or destroy the connector parts. The connectors should be kept in their poly-bags until ready for use.

**2.02** ***Use only the 3M Company No. 4030 or 4031 Crimping Units to crimp B Modular Connectors.***

**2.03** B Modular Connectors, once crimped with a crimping unit, ***shall not be reused.*** Conductors shall not be removed from either a connector body or base and then reinserted into the same, or a new body or base, nor shall new conductors be placed in used connector bodies or bases.

#### 3. COMPONENTS DESCRIPTION

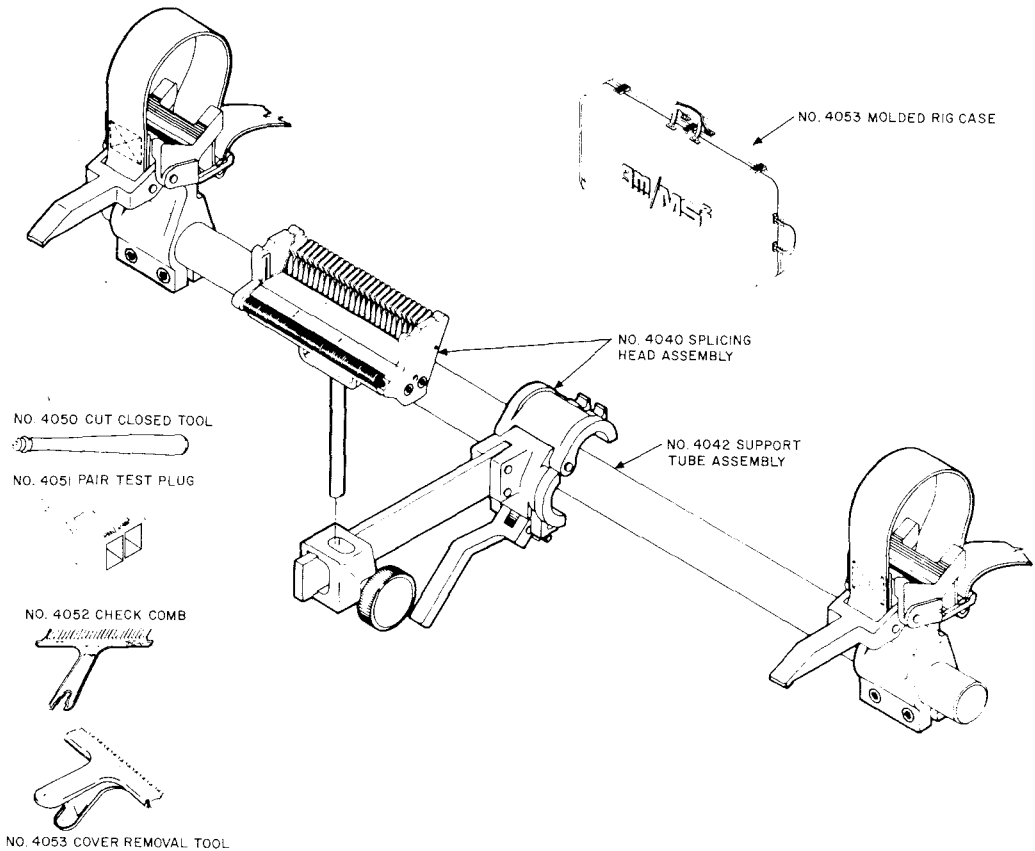
**3.01** The system consists of three major components; the B Modulator Connector, the splicing rig assembly, and the crimping unit. The detailed description of these components is covered in the following paragraphs.

**No. 4020 Basic Splicing Rig Assembly**

**3.02** The No. 4020 Basic Splicing Rig Assembly (Fig. 1) consists of the following:

- (1) No. 4040 Splicing Head Assembly—for positioning and securing the B Modular Connectors and conductors during wire joining operations. The head assembly includes one No. 4041 Splicing Head. Additional heads may be ordered for two-man operations.
- (2) No. 4042 Support Tube Assembly—for positioning and supporting splicing head.

- (3) No. 4052 Check Comb—for checking tip and ring conductor reverses in the B Modular Connector and for checking crimping operation.
- (4) No. 4050 Cut Closed Tool—for inserting working conductors into the B Modular Connector.
- (5) No. 4051 Pair Test Plug—for making electrical connection to a pair of conductors in crimped B Modular Connectors for test purposes.
- (6) No. 4053 Cover Removal Tool—for separating crimped B Modular Connectors.



**Fig. 1—No. 4020 Basic Splicing Rig**

- (7) No. 4043 Molded Rig Case—for storing and transporting system components (Fig. 2 and 3)

**Note:** A crimping unit is not included with the No. 4020 Basic Splicing Rig Assembly. Either the No. 4030 Air/Hydraulic Crimping Unit (3.11), or the No. 4031 Hand/Hydraulic Crimping Unit (3.12) must be ordered separately.

#### No. 4021 Splicing Rig Assembly

**3.03** The No. 4021 Splicing Rig Assembly contains a No. 4031 Hand/Hydraulic Crimping Unit in addition to all of the components in the No. 4020 Basic Splicing Rig Assembly (3.02).

#### B Modular Connector AT-8632

**3.04** The B Modular Connector (Fig. 4) consists of three separate components, as follows:

- (1) Connector Base
- (2) Connector Body
- (3) Connector Cover

**3.05** The connector body contains contacts which pierce the conductor insulation when the connector is crimped. The body and the base contain cutting blades which cut off the conductors during crimping. The connectors are provided with ports for electrical testing purposes.

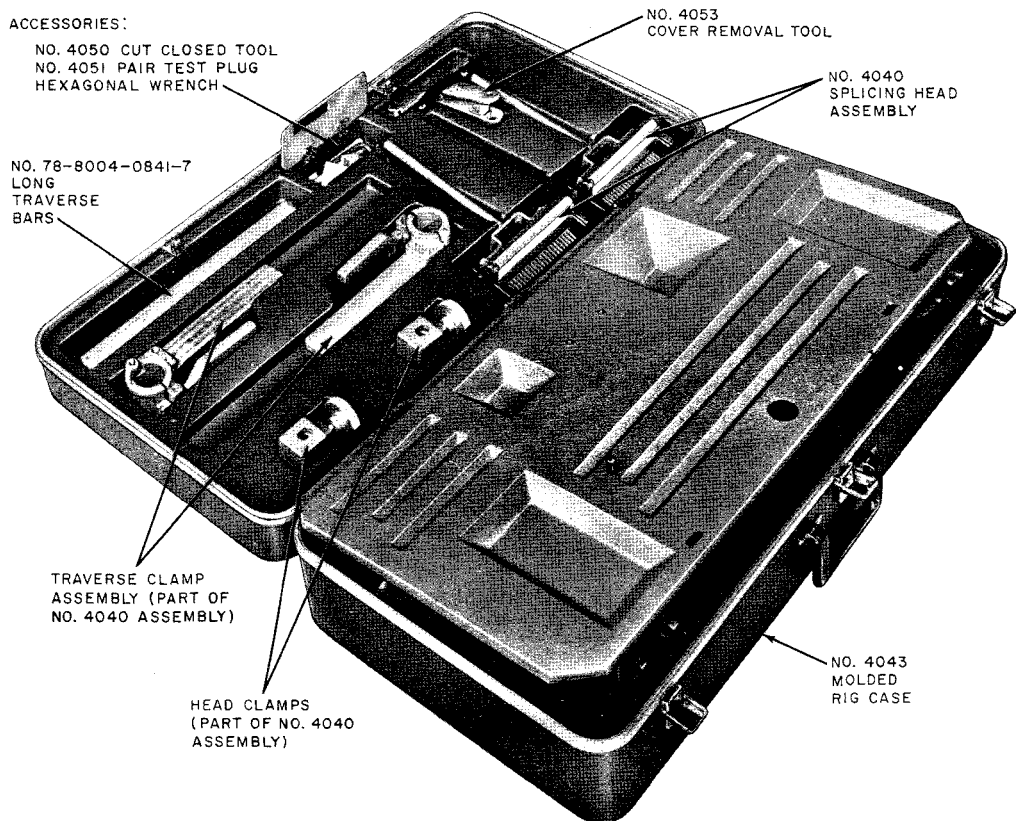


Fig. 2—No. 4030 Molded Rig Carrying Case—Top Compartment

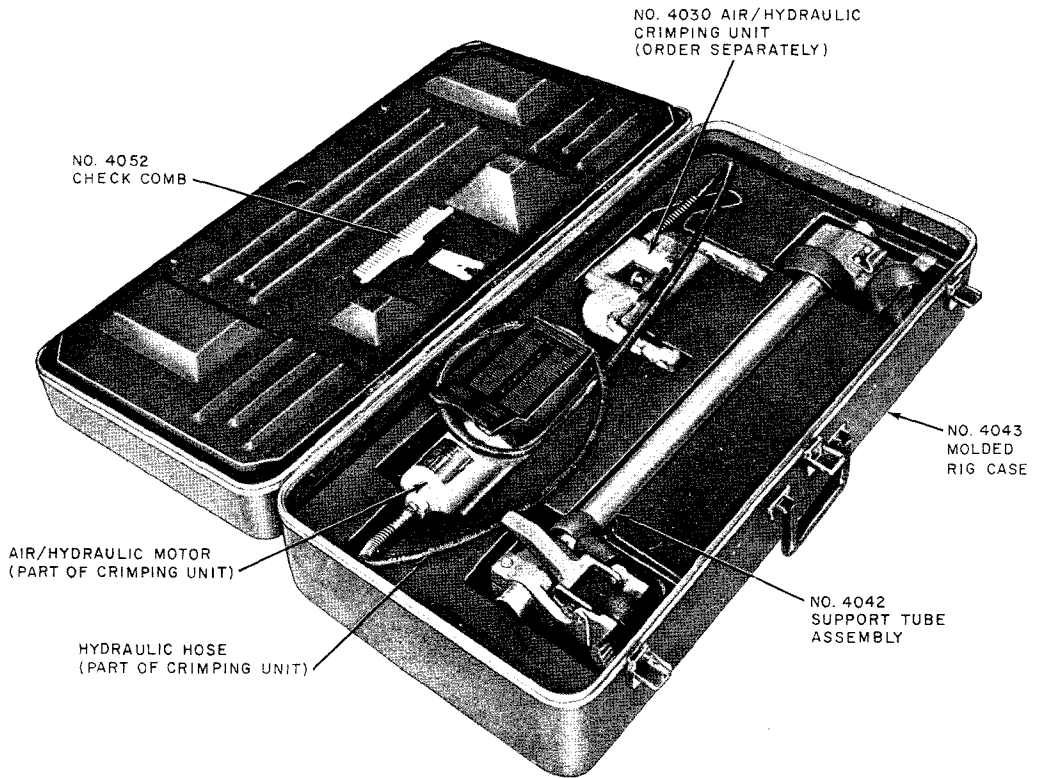


Fig. 3—No. 4030 Molded Rig Carrying Case—Bottom Compartment

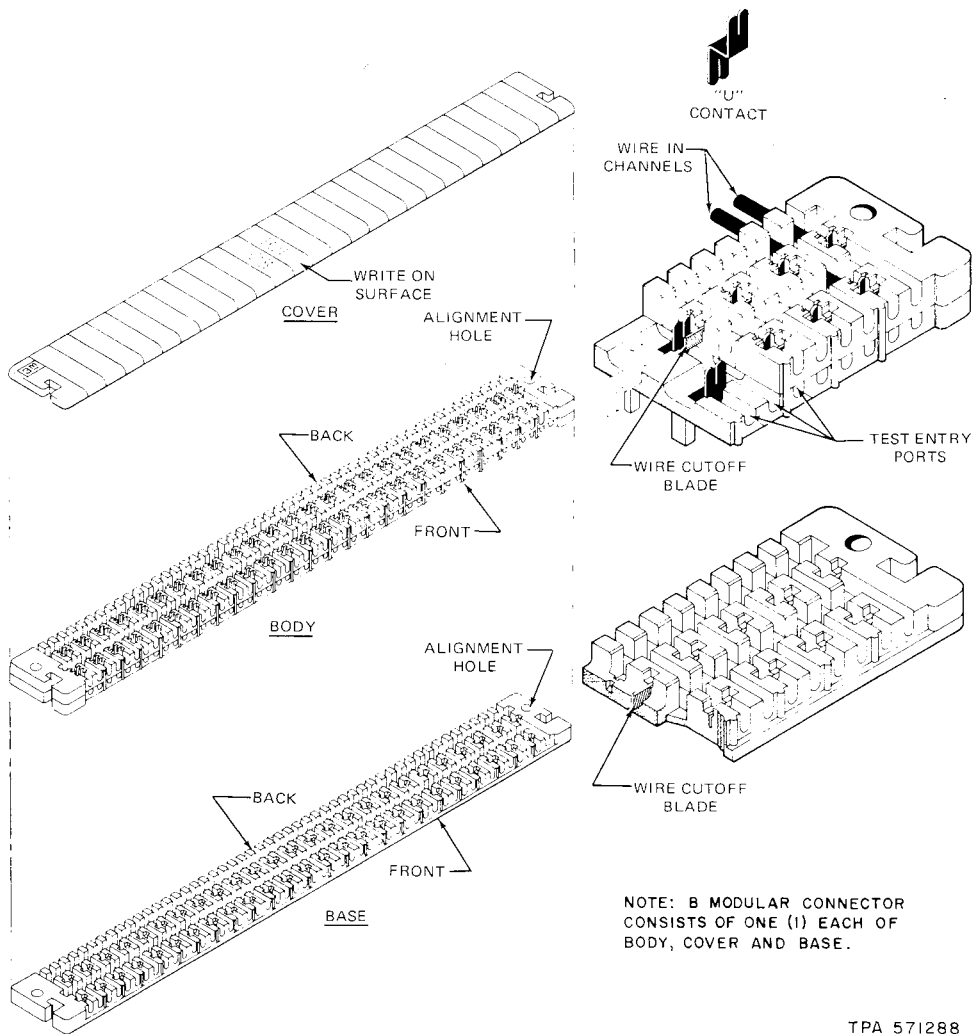


Fig. 4—B Modular Connector Components

TPA 571288

**3.06** By adding a second connector body, a three-wire connection can be made.

**3.07** The Half-Tap Base without cutting blades is available for bridging to through conductors. As an aid in distinguishing the Half-Tap Base from the connector base, each Half-Tap base is marked with a strip of green tape.

**3.08** B Modular Connectors (includes base, body, and cover) are furnished in boxes of 12. In addition, Connector Bodies, Connector Covers, Connector Bases, and Half-Tap Bases may be obtained separately, also in boxes of 12.

**3.09** *No. 4078 Sealing Tape*, a special nonconductive sealing tape, is available for sealing exposed conductor ends in the bridge-tap base. **Do not use B Sealing Tape. B Sealing Tape is electrically conductive and its use will cause shorts.**

**3.10** *No. 4079 Tagging Labels* are available for use in identifying pair counts during cable transfer operations.

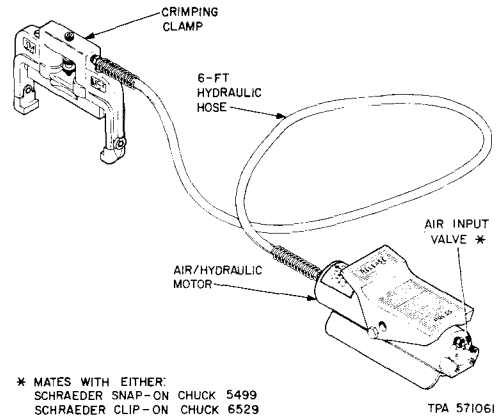
#### Crimping Units

**3.11** B Modular Connectors are crimped with a hydraulic clamp which mounts on the splicing head. The clamp is an integral part of the crimping unit. The clamp may be operated by either an air/hydraulic motor or a hand/hydraulic pump which connect to the clamp with a 6-foot hose equipped with fittings and spring guards at each end.

**3.12** *No. 4030 Air/Hydraulic Crimping Unit* (Fig. 5) may be powered by either a nitrogen cylinder or an air compressor. Operating pressure is 75 to 100 psi. The air input fitting mates with either a Schrader No. 5499, or No. 6529 air chuck. Crimping is accomplished by a two-position (press-release) foot pedal mounted on the motor.

**3.13** *The No. 4031 Hand/Hydraulic Crimping Unit* (Fig. 6) provides an alternate method of operating the crimping clamp. The pump is operated by a lever. A manual valve on the side of the pump will release the crimping clamp.

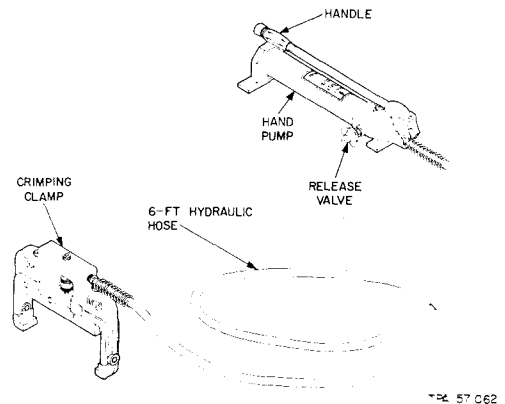
**3.14** Both the air/hydraulic and the hand/hydraulic crimpers are equipped with by-pass valves factory adjusted to operate at approximately 4400 psi.



\* MATES WITH EITHER:  
SCHRAEDER SNAP-ON CHUCK 5499  
SCHRAEDER CLIP-ON CHUCK 6529

TPA 571061

Fig. 5—No. 4030 Air/Hydraulic Crimping Unit



TPA 57 C62

Fig. 6—No. 4031 Hand/Hydraulic Crimping Unit

## 4. OPERATION

### Setting Up Splicing Rig

**4.01** The splicing rig must be set up in the following sequence:

- (1) Attach support tube assembly to cable.
- (2) Clamp traverse bar to support tube assembly.

- (3) Insert splicing head into head clamp on traverse bar.
- (4) Adjust splicing head. (632-205-235).

#### Support Tube Assembly

- 4.02 The support tube assembly as furnished is set up for a minimum of 30 inches between cable racks. It may be adjusted, however, by loosening the two set screws securing the cable clamps to the support tube.
- 4.03 The support tube assembly is mounted on the cable as follows:

- (1) With the buckle hooks toward the back, place the support tube under the cable and center it with the splice opening.
- (2) Place the strap over the cable, and adjust the buckle until it can be easily slipped over the buckle hook (Fig. 7).
- (3) With the latch in the up position, pull most of the slack from the strap.

**Caution:** *If the strap is too tight the cable will be deformed when the latch is closed.*

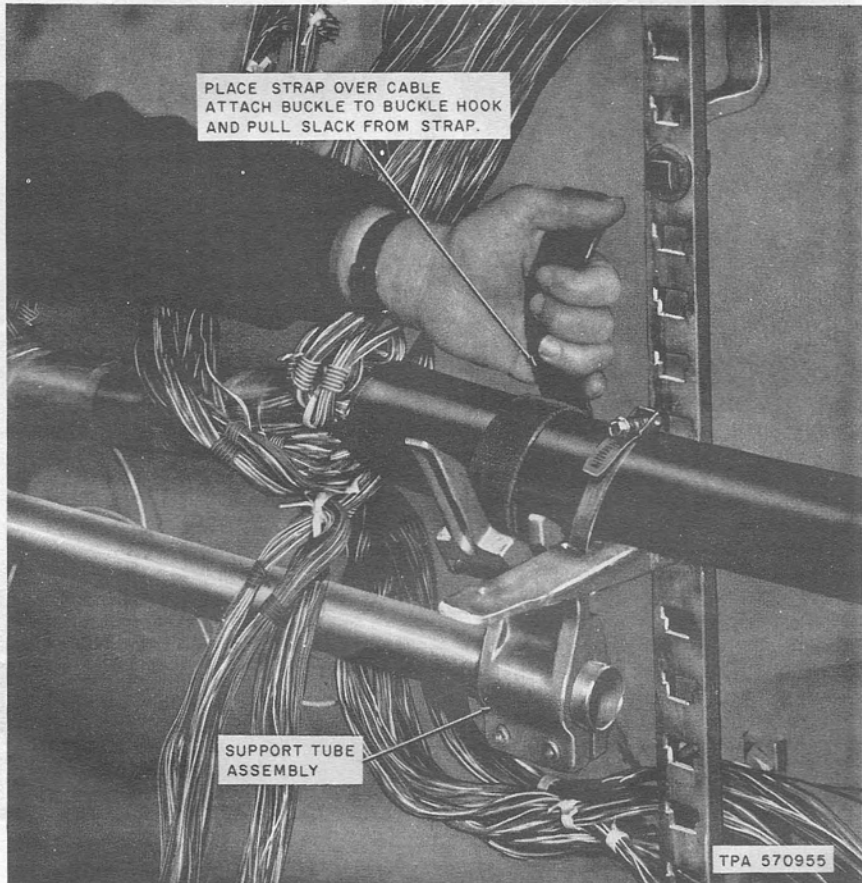


Fig. 7—Placing Support Tube Strap Around Cable

- (4) Push the latch down to lock and secure the support bar to the cable (Fig. 8).

**Splicing Head Assembly**

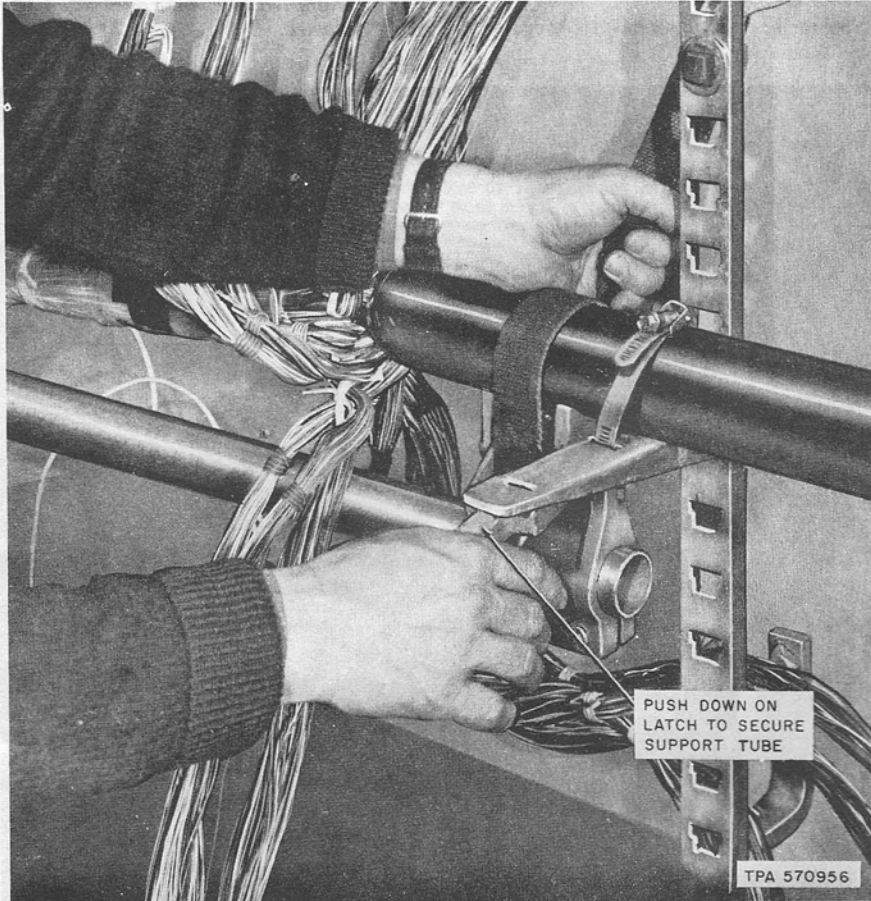
**4.04** The splicing head assembly is set up as follows:

- (1) Place the support tube assembly as covered in 4.03.

- (2) Attach the traverse clamp assembly to the support tube. Secure the clamp by squeezing the latch upward (Fig. 9).

- (3) Slide the head clamp onto the traverse bar (Fig. 10). The knurled tightening knob should be on the right.

- (4) Insert the head support pedestal into the head clamp and tighten knob (Fig. 11).



**Fig. 8—Latching Support Bar**



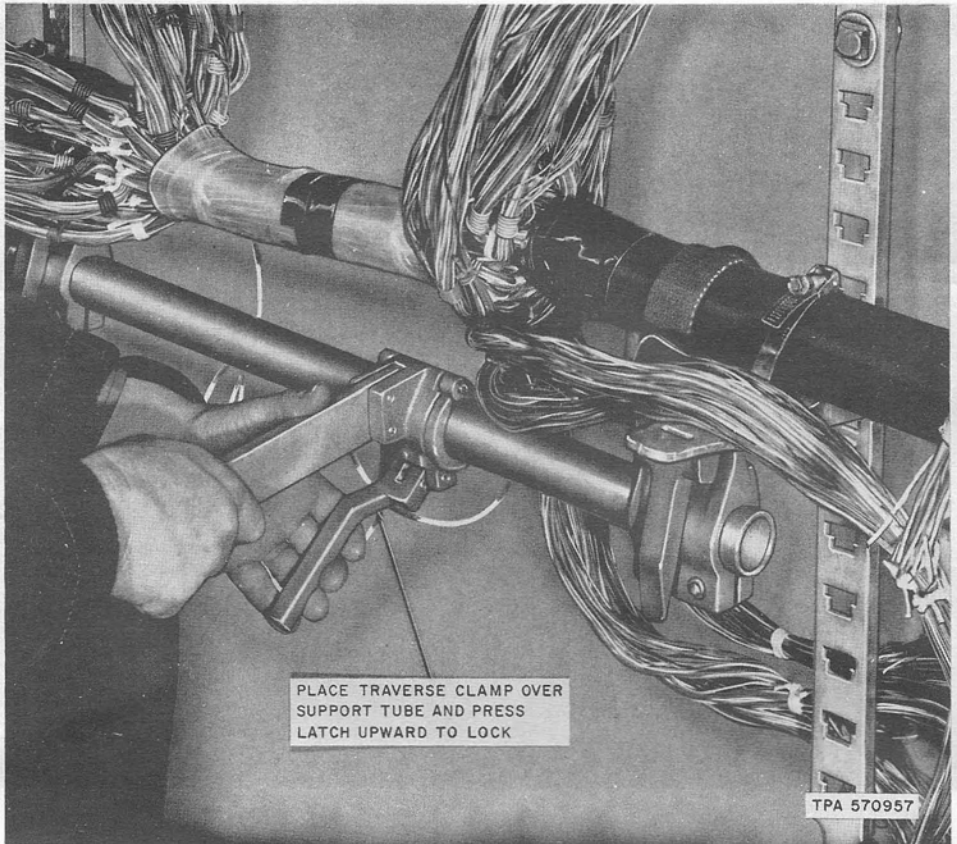


Fig. 9—Attaching Traverse Clamp

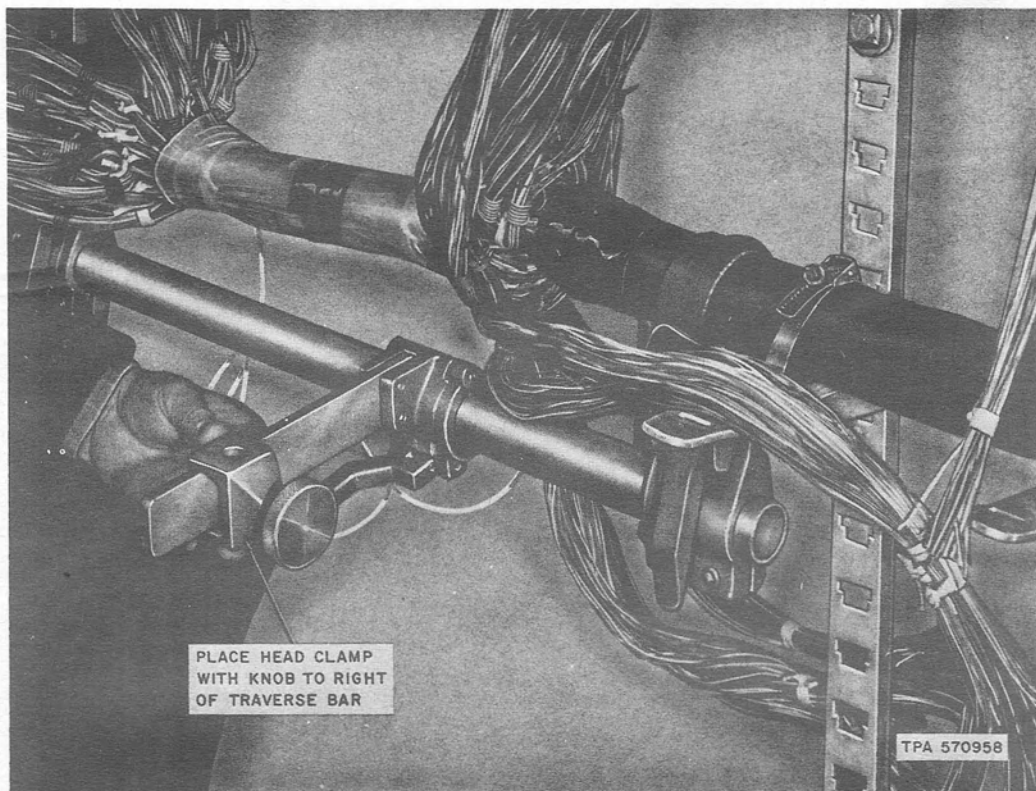


Fig. 10—Placing Head Clamp

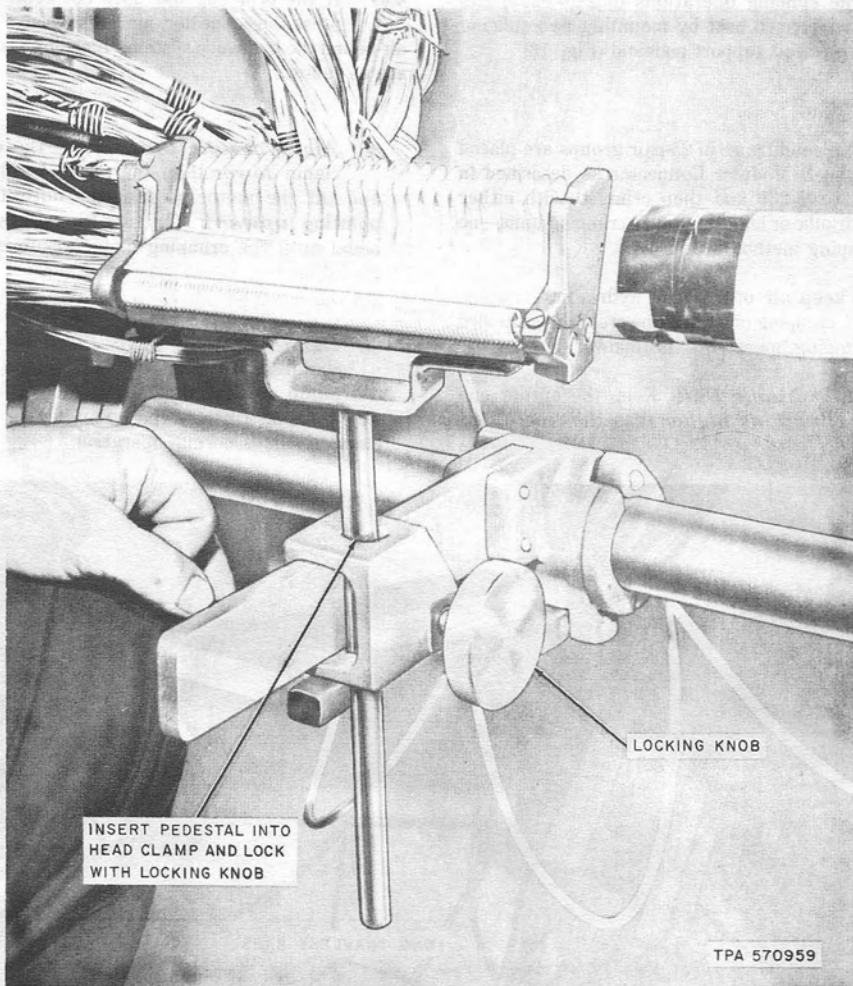


Fig. 11—Placing Splicing Head

4.05 For two-man splicing operations two No. 4040 Splicing Head Assemblies are mounted on the support tube (Fig. 12).

4.06 Some splicing operations (632-205-235) can be performed best by mounting two splicing heads on one head support pedestal (Fig. 13).

#### Wire Joining

4.07 Cable conductors in 25-pair groups are placed in the B Modular Connector as described in Section 632-205-235 and then crimped with either the air/hydraulic or hand/hydraulic crimping units—no other crimping method is approved.

4.08 To keep air out of the hydraulic systems, both crimping units must be properly positioned during crimping operations, as follows:

(a) *Air/hydraulic Unit* Keep the output end **level with or higher** than the rear of the unit.

(b) *Hand/hydraulic Unit*: Keep the output end **level with or lower** than the rear of the unit.

4.09 If the crimping bar does not come down to press the connector, air bubbles have probably air-bound the hydraulic system. Bleeding instructions are as follows:

(a) *Air/hydraulic Unit*: Place the crimping clamp **lower** than the air/hydraulic motor and tilt the motor so that the output hose is pointing **upward**. Operate the press/release pedal until the crimping clamp resumes normal operation.

(b) *Hand/hydraulic Unit*: Place the crimping clamp **lower** than the hand pump and tilt the pump so that the output hose is pointing **downward**. Operate the pump handle until the clamp resumes normal operation.

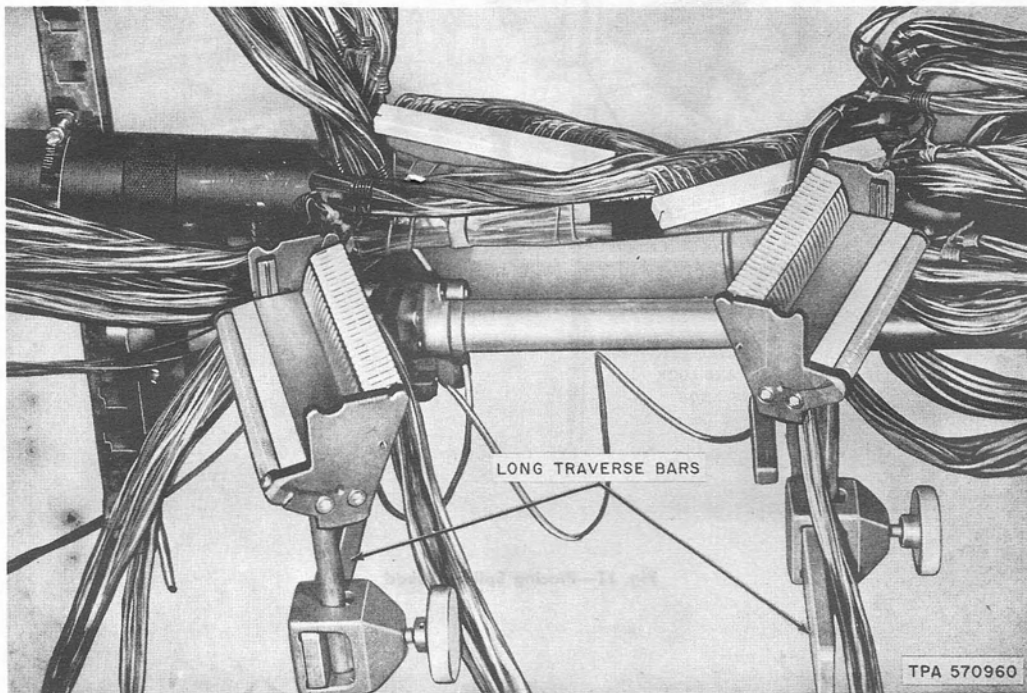


Fig. 12—Set-up for Two-man Splicing

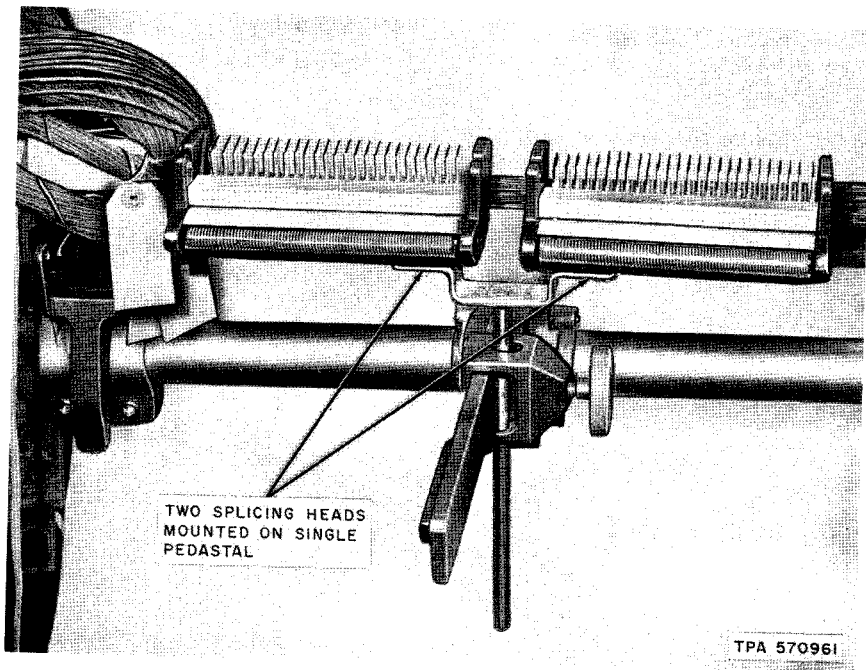


Fig. 13—Two No. 4041 Splicing Heads on Single Head Support Pedestal

## 5. CARE AND MAINTENANCE

5.01 Other than observing reasonable care in handling the splicing rig components, no maintenance is required. Ordering information for replacement of worn or damaged components is covered in Parts 6 and 7 of this section.

5.02 When not in use the splicing rig components should be stored in the No. 4043 Molded Rig Case.

## 6. REPLACEMENT PARTS

6.01 Replacement parts may be obtained as whole assemblies or individual piece parts of the assemblies as covered in the subsequent paragraphs.

### No. 4040 Splicing Head Assembly

6.02 The No. 4040 Splicing Head Assembly (Fig. 14) consists of a 4041 Splicing Head, Head Support Pedestal, Head Clamp, Traverse Bar, and Traverse Clamp.

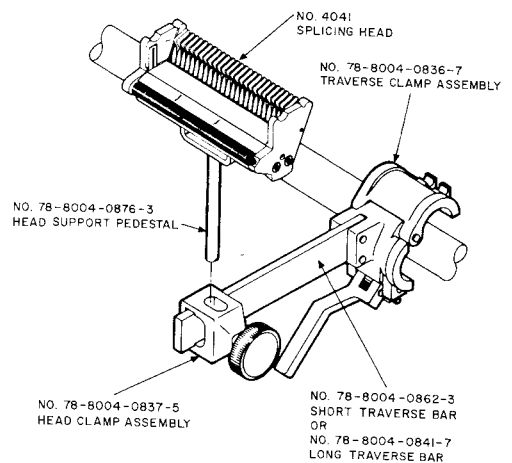


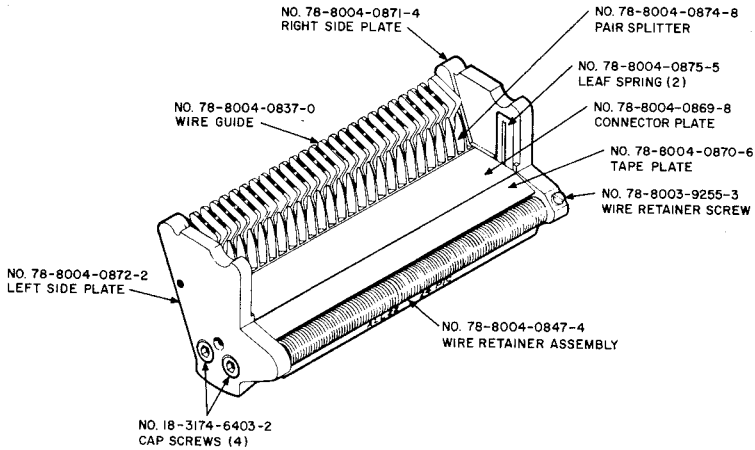
Fig. 14—No. 4040 Splicing Head Assembly Parts

**No. 4041 Splicing Head**

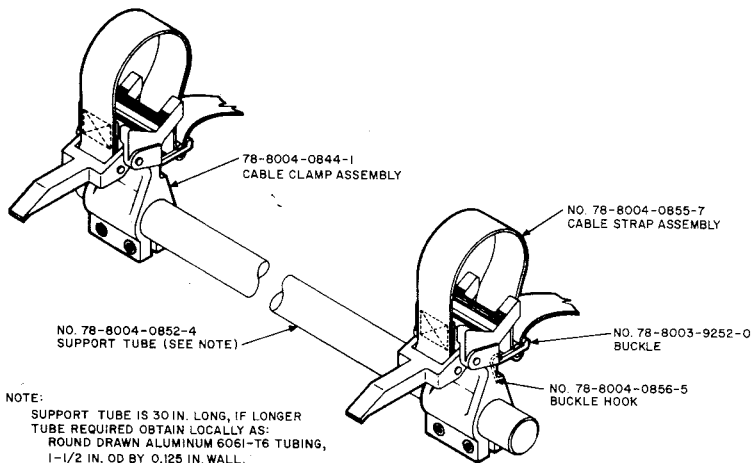
**6.03** The No. 4041 Splicing Head and its replacement parts are shown in Fig. 15.

**6.04** The No. 4042 Support Tube assembly and its replacement parts are shown in Fig. 16.

**6.05** In addition all of the assemblies, tools, and material described in Part 3 may be ordered as covered in Part 7.



**Fig. 15—No. 4041 Splicing Head Parts**



**Fig. 16—4042 Support Tube Assembly Parts**

**7. ORDERING INFORMATION**

**7.01** Orders for assemblies, parts, and materials should contain the quantity, part no., name of the item, as shown in the following examples:

Rig, Splicing, No. 4020

Connector, Modular, B, box of 12

Unit, Crimping, Air/Hydraulic, No. 4030

Splitter, Pair, No. 78-8004-0874-8, for No. 4041 Splicing Head