

SECTION 2

CHAPTER 6

SOLDERLESS TERMINATIONS AND SPLICES

INTRODUCTION

1. Electric wires are terminated with solderless terminal lugs to permit easy and efficient connection to and disconnection from terminal boards, busbars, and other electrical equipment. Solderless splices join electric wires to form permanent continuous runs.

2. This chapter describes recommended methods for terminating copper and aluminium wires, using solderless terminal lugs. It also describes recommended methods for permanently joining (splicing) wires, using solderless splices. (Termination of thermocouple wires is covered in Section 2, Chapter 16.)

REFERENCE SPECIFICATIONS

3. The following specifications are applicable to solderless terminations and splices:

MIL-DTL-22520	Crimping Tools, Wire Termination, General Specification For
MIL-S-81824	Splice, Electric, Permanent, Crimp Style, Copper, Insulated, Environment Resistant
MIL-T-81714	Terminal Junction System (TJS), Environment Resistant General Specification For
SAE AS70991	Terminals, Lug and Splice, Crimp Style, Aluminium, for Aluminium Aircraft Wire
SAE AS7928	Terminals, Lug: Splices, Conductor: Crimp Style, Copper, General Specification For

DESCRIPTION

4. Solderless terminal lugs and splices are plated copper or aluminium, and are pre-insulated or uninsulated, depending on the application. Terminal lugs and splices for high temperature applications are silver or nickel plated copper and are insulated with TFE (or a similar material).

NOTE

Use only copper terminations on copper wire and aluminium terminations on aluminium wire. Only environment resistant sealed splices shall

be used as permanent electrical wire splices on aircraft.

5. Terminal lugs are available in four styles: straight, 90 degree upright, angle, and flag, for use under different applications. Figure 6-1 shows typical terminal lugs and splices. Terminal lugs and splices are crimped to wires by means of hand or power crimping tools. Power tools may be portable or stationary (bench-mounted). Typical crimping tools are illustrated where they are mentioned in the procedures. Environmental sealed splices (MIL-S-81824) are the only permanent splices that should be used on aircraft. Potted non-environmental splices may be used as a temporary/emergency repair and shall be replaced as soon as practicable.

End Caps, Splices, Terminal Lugs and Crimp Tools

6. Only Class I end caps, splices, terminal lugs and crimping tools qualified to SAE AS 70991, SAE AS 7928, MIL-S-81824 or MIL-DTL-22520 are recommended for use on aircraft unless otherwise authorised by an appropriate engineering authority. Class I terminations are approved for the replacement of Class II terminations or non-qualified terminations fitted by the manufacturer or specified in the aircraft/equipment IPB.

7. Terminal Lugs, splices, end caps and tooling are classified as follows:

- a. Class I Terminal Lugs and Splices and End Caps – Lugs, splices and end caps that conform to all the requirements of the applicable specification when installed with the specified crimping tools.
- b. Class I Tools are those which meet all the requirements of the applicable specification.
- c. Class II Terminal Lugs, Splices and End Caps - lugs, splices and end caps that conform to the material and marking requirements of the specification and are replaceable by Class I terminals. They conform to the performance requirements of the specification when crimped with a tool having crimping dies and motion conforming to the terminal manufacturer's drawing.

- d. Class II tools, terminal lugs, end caps and splices should not to be used on aircraft.
- e. The types and styles of terminal lugs, splices and end caps are listed in Annex A, Table 6-A-1.

insulation is part of the terminal lug and extends beyond its barrel, so that it will cover a portion of the wire insulation; this makes the use of an insulation sleeve unnecessary. In addition, pre-insulated terminal lugs have an insulation support (a metal reinforcing sleeve) beneath the insulation for extra supporting strength on the wire insulation. Most pre-insulated terminals accommodate more than one size of wire. The insulation is colour coded and the range of wire sizes is marked on the tongue to identify the wire sizes that can be terminated with each of the terminal lug sizes.

TERMINATING SMALL COPPER WIRES WITH PRE-INSULATED TERMINAL LUGS

8. Small copper wires (sizes No. 26 thru No. 10) are terminated with solderless pre-insulated straight copper terminal lugs conforming to SAE AS 7928. (See Annex A, Table 6-A-1.) As shown in Figure 6-2, the

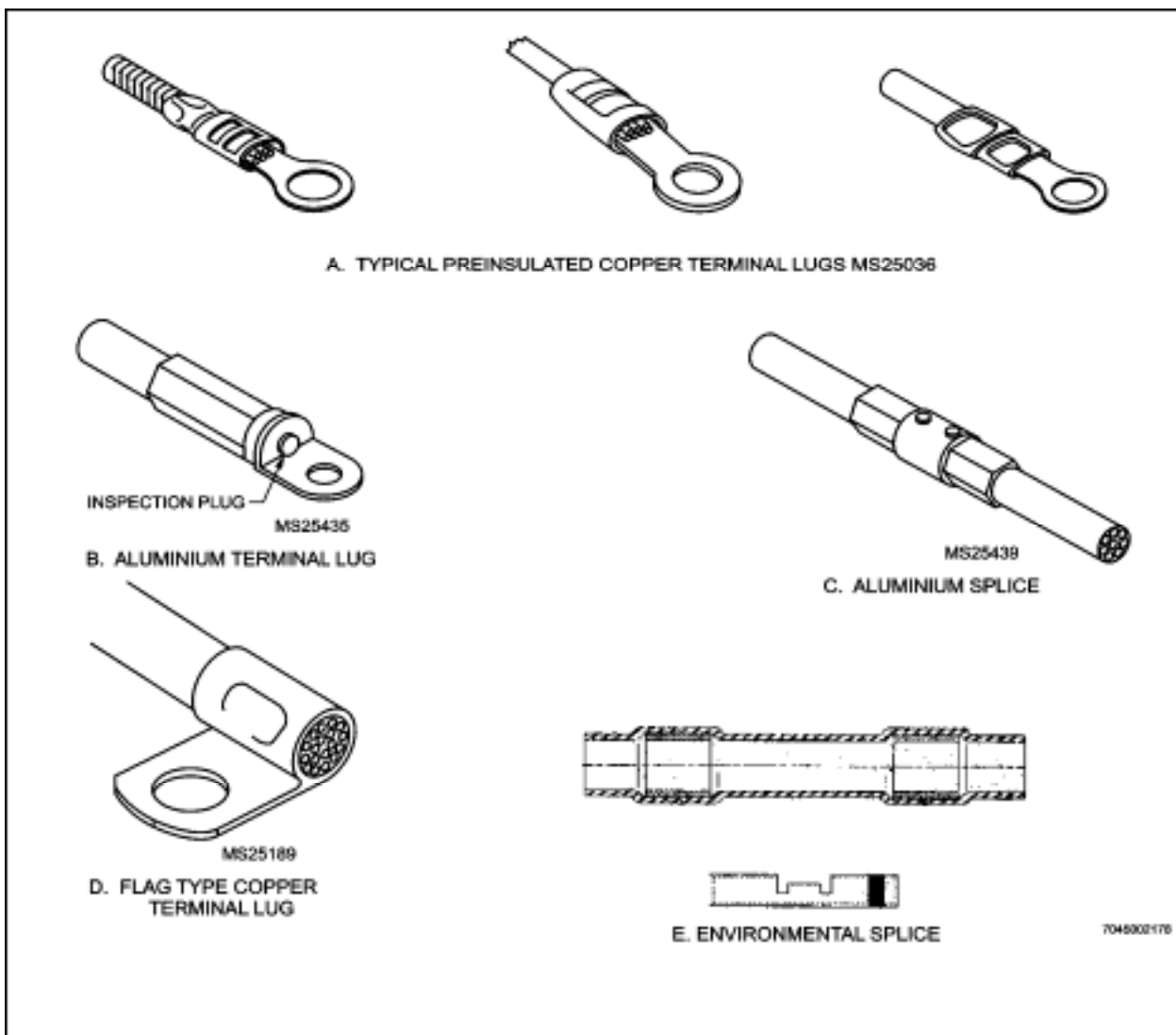


Figure 6-1 Solderless Terminal Lugs and Splices

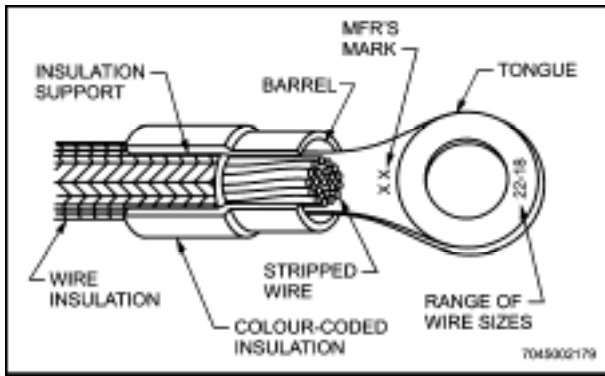


Figure 6-2 Preinsulated Terminal Lug – Cut-Away

Table 6-1 Colour Coding of Copper Terminal Lug Insulation

Colour of Terminal Lug Installation	To Be Used On Wire Size(s)
Yellow with Black Stripe	26
Yellow with Blue Stripe	24
Yellow	26 or 24
Red with Green Stripe	22
Red with Red Stripe	20
Red with White Stripe	18
Red	22, 20 or 18
Blue with Blue Stripe	16
Blue with Green Stripe	14
Blue	16 or 14
Yellow with Yellow Stripe	12
Yellow with Brown Stripe	10
Yellow	12 or 10

Table 6-2 Terminal Lugs and Tooling – High Temperature Wire

Gold Plated PIDG Ring Tongue Insulated Terminals Rated to 260°C (500°F)			
Terminal Part Number (AMP)	Stud Size	Wire Size	Tool Part Number (AMP)
1-332433-0	6	22-20	69692-1
332434	8	22-20	
1-332434-0	10	22-20	
332453	6	18-16	69693-1
332454	8	18-16	
1-332454-0	10	18-16	
Nickel Plated Ring Tongue Terminals Rated to 343°C (650°F) Uninsulated with Insulation Support			
323151	6	22-16	46673
323152	8	22-16	
323153	10	22-16	
Nickel Ring Tongue Terminals Rated to 649°C (1200°F) Uninsulated with Insulation Support			
321892	6	22-16	46673
321893	8	22-16	
321894	10	22-16	



USING TIN PLATED TERMINALS ON NICKEL PLATED WIRE MAY NOT ACHIEVE APPROPRIATE VOLTAGE DROP AND TENSILE STRENGTH REQUIREMENTS. REFER TO SAE AIR 1263.

High Temperature Terminal Lugs

9. Appropriately rated high temperature terminal lugs shall be used on high temperature wire where the termination is located in a high temperature area. Where wire termination is in a low temperature area, standard crimp terminals may be used. Table 6-2 provides details of tools and terminations that are considered suitable for use on high temperature wire.

Crimping Tools

10. Only tools qualified to MIL-DTL-22520 are to be used for crimping terminal lugs. These tools crimp the barrel to the conductor, and simultaneously form the insulation support to the wire insulation.



WITH SOME OF THE SMALLER GAUGE THIN WALL WIRES, INSULATION CAN BE INADVERTENTLY INSERTED AND CRIMPED IN THE TERMINAL BARREL.

Hand Tool Description

11. All approved hand crimping tools have a self-locking ratchet, which prevents the tool from opening until crimp is complete. This mechanism must never be disassembled since it ensures proper crimping closure. The M22520/5 and M22520/10 tools are the approved tools to be used in crimping sizes 26 through 10, end caps, splices and terminal lugs. The M22520/5-01 and M22520/10-01 crimp tools have removable dies for crimping 26 through 10 terminal (wire barrel) sizes see Figure 6-3.

Hand Tool Inspection

12. Dies and other working parts of crimping tools used for electrical terminations become worn in service and this can result in unsatisfactory terminations. An effective means to ensure a serviceable termination is to monitor the condition of the tool by regular testing. The standard tools are checked by means of a GO/NOGO gauge for assurance of quality crimps. For good crimping results, gauging should be carried out prior to each series of crimping operations. Replace or repair hand tools, which are out of tolerance. The details contained in Table 6-3 are provided for in-service inspection gauging of M22520/5-01 and M22520/10-01 tools and dies. Prior to performing the gauging test, ensure that both the crimping tool jaws and the shafts of the gauge are clean and free of damage.

Millivolt Drop and Tensile Strength Test

13. When gauging tools are unavailable, testing can be accomplished by carrying out a millivolt drop and tensile strength test on a completed crimp (Refer to Annex D).

NOTE

Gauging is done with the tool in the fully closed position.

Table 6-3 Gauging Tools

Die Part Number	Die Cavity Size	Gauge Part Number
M22520/5-100	12 – 10	M22520/3-9
M22520/5-100	26 – 14	M22520/3-10
M22520/5-101	26 – 20	M22520/3-11
M22520/5-102	16 – 12	M22520/3-12
M22520/5-103	20 – 16	M22520/3-13
M22520/5-103	26 – 20	M22520/3-14
M22520/10-100	12 – 10	M22520/3-9
M22520/10-101	26 – 14	M22520/3-10
M22520/10-102	26 – 20	M22520/3-11
M22520/10-103	16 – 12	M22520/3-12
M22520/10-104	20 – 16	M22520/3-13
M22520/10-104	26 – 20	M22520/3-14

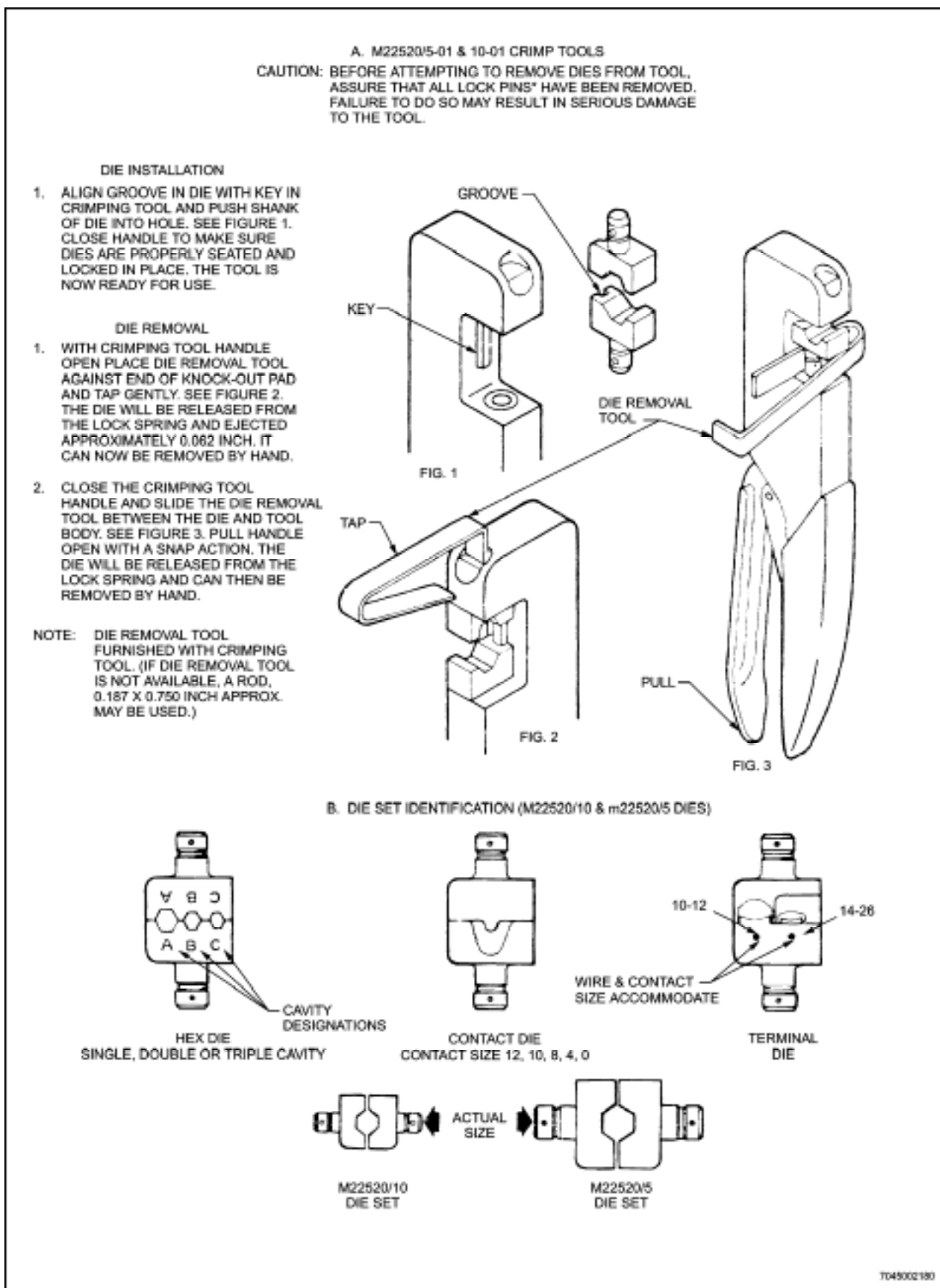


Figure 6-3 Crimp Tools and Dies (Sheet 1 of 2)

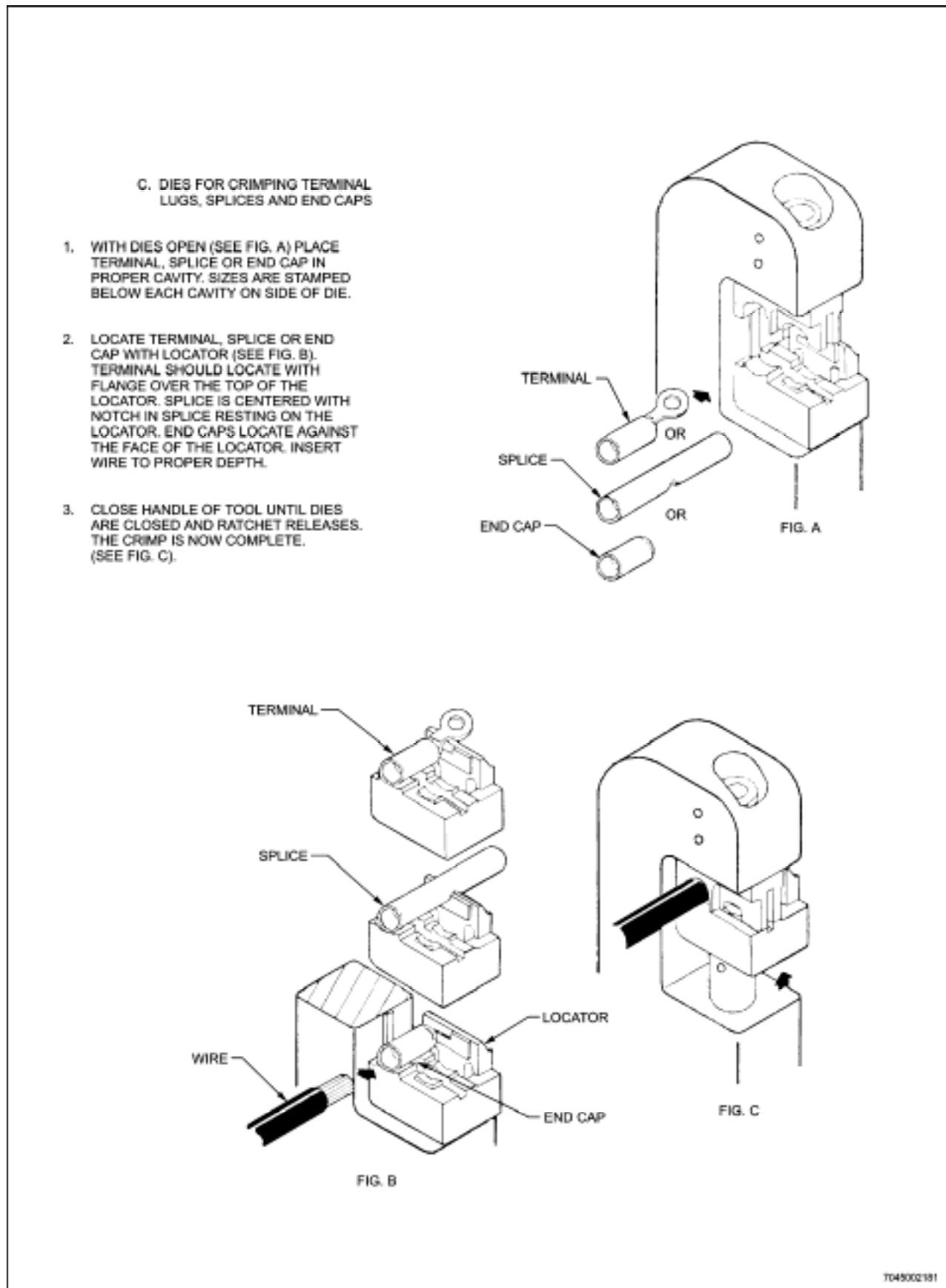


Figure 6-3 Crimp Tools and Dies (Sheet 2 of 2)

Crimping Procedure for M22520/5 and M22520/10 Hand Tools

14. Hand crimp pre-insulated copper terminal lugs in the No. 26 - No. 10 wire size range with M22520/5 or M22520/10 hand tools as follows:

- a. Strip wire insulation using one of the recommended stripping procedures detailed in Section 2, Chapter 3. (Stripping lengths are provided in Table 6-4).
- b. Check tool for correct adjustment in accordance with paragraph 12. Tools out of adjustment must be returned to the manufacturer for repair.
- c. Insert terminal lug, tongue first, into wire side of hand tool barrel crimping jaws, until terminal lug barrel butts flush against tool stop on the locator. (See Figure 6-3 for correct insertion method).
- d. Squeeze tool handles slowly until tool jaws hold terminal lug barrel firmly in place, but without denting it.
- e. Insert stripped wire into terminal lug barrel until wire insulation butts flush against near end of wire barrel. (See Figure 6-2 or Figure 6-4.)
- f. Squeeze tool handles until ratchet releases.
- g. Remove completed assembly and examine it for proper crimp in accordance with paragraph 36.



WITH SOME OF THE SMALLER GAUGE THIN WALL WIRES, INSULATION CAN BE INADVERTENTLY INSERTED AND CRIMPED IN THE TERMINAL WIRE BARREL.

Table 6-4 Wire Stripping Lengths for Small Copper Terminal Lugs

Wire Size	Stripping Length (mm)
26 and 24	4.0
22 and 20	4.7
18, 16 and 14	6.4
12 and 10	7.0

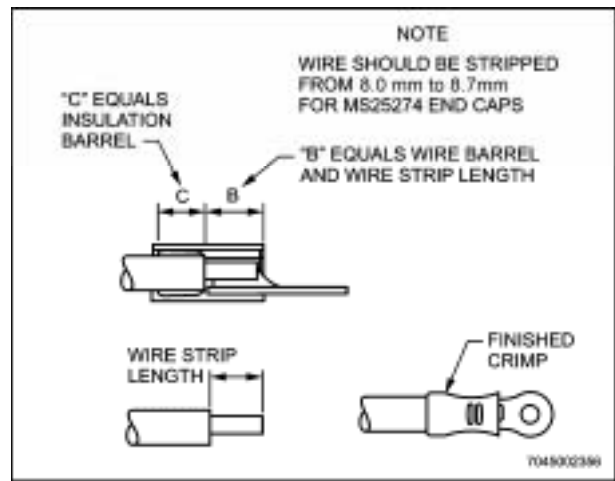


Figure 6-4 Proper Insertion of Stripped Wire in Insulated Terminal Lug for Crimping

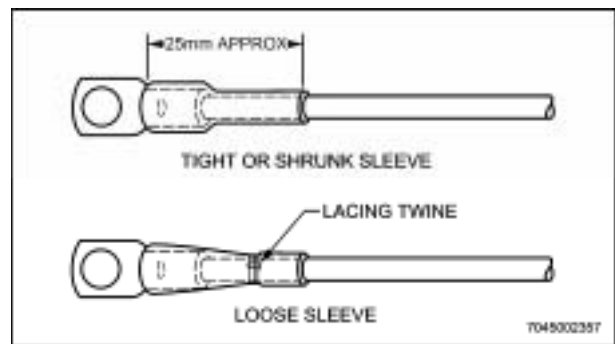


Figure 6-5 Insulating Sleeves

TERMINATING LARGE COPPER WIRES

15. Copper terminal lugs of two styles (straight and flag) are used to terminate copper wires sizes No. 8 through No. 4/0. The style to be used depends on existing space conditions. These terminal lugs are available uninsulated in both types and pre-insulated in the straight type. Straight pre-insulated terminal lugs conform to SAE AS 7928 (see Annex A, Table 6-A-1). As shown in Figure 6-2, pre-insulated terminal lugs have the insulation extending beyond the wire barrel, so that it will cover a portion of the wire insulation. This makes the use of a separate insulating sleeve unnecessary. Straight uninsulated terminal lugs conform to SAE AS 7928 and MS20659. Flag uninsulated terminal lugs conform to SAE AS 7928 and MS25189.

Insulating Sleeves

16. Uninsulated straight flag terminal lugs are insulated (after assembly to wire) with heat shrinkable tubing (see Section 2, Chapter 4) or with lengths of transparent tubing. These methods of insulation provide electrical and mechanical protection at the connection. When the size of sleeving used is such that it will fit tightly over the terminal lug, the sleeving need not be

tied; otherwise, it is to be tied with lacing cord. (See Figure 6-5.)

Crimping Tools for Sizes 8 through 4/0 Terminals

17. Manual and/or power crimping tools are available for crimping M7928/4 and MS25036 insulated terminals, MS20659 uninsulated terminals and MS25189 flag type terminals. The tools are the MS25441-5 hydraulic pedal pump and the MS25441-4 electric hydraulic pump used with the MS25441-1 hydraulic head and the MS25441-3 hose (or an adaption - without the control cable), and the proper dies.

MS25441 Tool Adjustment

18. The MS25441 tools can be checked for proper adjustment. For good crimping results, this must be done before each series of crimping operations. When tool is adjustable, proper correction must be made; otherwise, the tool must be returned to manufacturer for repair. Gauge the dies of the MS25441 tool in the closed position with the appropriate GO/NO GO gauges listed in Table 6-5.

Millivolt Drop and Tensile Strength Test

19. When gauging tools are unavailable, testing can be accomplished by carrying out a millivolt drop and tensile strength test on a completed crimp (Refer to Annex D).

Table 6-5 Dies and Gauges for Power Tool MS25441

Terminal Lug Size	Die Part Number (For Head MS25441-1)	MS Gauge Part Number
Insulated Terminals		
8	MS23002-8	MS23003-8
6	MS23002-6	MS23003-6
4	MS23002-4	MS23003-4
2	MS23002-2	MS23003-2
1	MS23002-1	MS23003-1
1/0	MS23002-01	MS23003-01
2/0	MS23002-02	MS23003-02
3/0	MS23002-03	MS23003-03
4/0	MS23002-04	MS23003-04
Uninsulated Terminals		
8	MS90485- 8	MS90486-8
6	MS90485-6	MS90486-6
4	MS90485-4	MS90486-4
2	MS90485-2	MS90486-2
1	MS90485-1	MS90486-1
1/0	MS90485-01	MS90486-01
2/0	MS90485-02	MS90486-02
3/0	MS90485-03	MS90486-03
4/0	MS90485-04	MS90486-04
Aluminium Terminals		
8	MS25442-8A	MS25472- 1
6	MS25442-6A	MS25472-2
4	MS25442-4A	MS25472-3
2	MS25442-4A	MS25472-4
1	MS25442-1A	MS25472-5
1/0	MS25442-01A	MS25472-6
2/0	MS25442-02A	MS25472-7
3/0	MS25442-03A	MS25472-8
4/0	MS25442-04A	MS25472-9

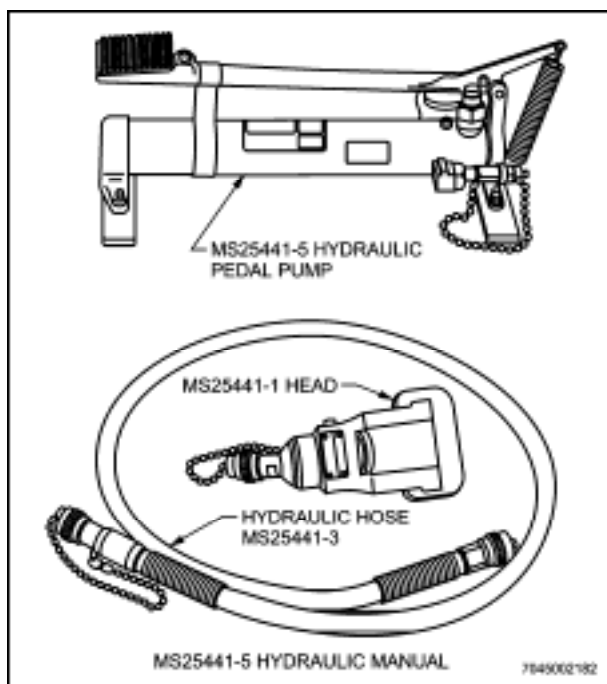


Figure 6-6 Power Crimping Tools – Large Copper Terminal Lugs

CRIMPING PROCEDURE FOR MS25441 TOOLS

20. Crimp large Military Standard copper terminals as follows:

- a. Select proper die for terminal and wire size from Table 6-5 and install die in tool.

WARNING

ALWAYS DISCONNECT POWER TOOL FROM ITS PRESSURE SOURCE BEFORE INSTALLING OR REMOVING DIES.

NOTE

Do not use any crimping tool beyond its rated capacity.

- b. Strip wire insulation, using recommended practices described in Section 2, Chapter 3. Stripping lengths for copper wire shall be conductor barrel length plus 1.6mm.
- c. Insert stripped wire into terminal barrel until wire insulation butts flush against end of barrel.
- d. Insert wire and terminal lug assembly into die.

- e. Actuate the crimp tool. Press button on handle for electrically operated tool. Do not release the button until the dies open automatically. Actuate handle for manual hydraulically operated tool.
- f. Remove the crimped assembly, and examine it for proper crimp, in accordance with paragraph 36.

TERMINATING ALUMINIUM WIRE

21. Aluminium wire is used in aircraft because of its weight advantage over copper. Aluminium, however, has the disadvantage of being softer than copper. Further, bending aluminium wire will cause “work hardening” of the metal that makes it more brittle. This will result in failure or breakage of strands much sooner than in copper wire. Aluminium also forms a high resistance oxide film immediately upon exposure to air. To compensate for these disadvantages it is important to follow carefully the recommended installation procedures.

CAUTION

DO NOT USE ANY ALUMINIUM WIRE WHICH HAS NICKED OR BROKEN STRANDS. DAMAGED STRANDS WILL FAIL IN SERVICE.

Aluminium Terminal Lugs

22. Only aluminium terminal lugs conforming to SAE AS 70991 are used to terminate aluminium wires. See Figure 6-1 for typical connections. Aluminium terminal lugs are available in four types; straight (MS25435), 90 degrees upright (MS25436), left angle (MS25437), and right angle (MS25438). The barrels of aluminium terminal lugs are filled with a petroleum-base abrasive compound. This compound, by a grinding process during the crimping operation, removes the oxide film from the aluminium. The compound also prevents oxide from reforming in the completed connection. All aluminium terminals have an inspection hole to allow checking the depth of wire insertion (see Figure 6-1). This inspection hole is sealed with a removable plastic plug, which also serves to retain the oxide-inhibiting compound. Each aluminium terminal lug is marked with the letters “AL” indicating it is for use with aluminium wire, and also with the wire size it will accommodate.



DO NOT REMOVE THE INSPECTION PLUG UNTIL THE CRIMP HAS BEEN COMPLETED AND THE WIRE INSERTION IS TO BE INSPECTED. REPLACE PLUG AFTER INSPECTION.

Insulating Sleeves

23. Aluminium terminal lugs are not pre-insulated; therefore, it is necessary to insulate them, after assembly, with lengths of transparent flexible tubing or heatshrink sleeves. The sleeve provides mechanical and electrical protection at the connection. (See Figure 6-5).

Crimping Tools

24. Use the MS25441 tool to install MS aluminium terminal lugs. See paragraph 18 for tool adjustment.

Crimping Procedure for Aluminium Terminal Lugs

25. Crimp MS aluminium terminal lugs as follows:

- a. Using MS25441 tool, select proper die for wire size. Die is stamped with the wire size on both upper and lower faces and with the letters AL. Install die in tool head.



USE CARE WHEN STRIPPING WIRE INSULATION. DO NOT NICK OR DAMAGE ALUMINIUM WIRE STRANDS.

- b. Strip wire insulation carefully, using recommended stripping practices for aluminium wire described in Section 2, Chapter 3. Stripping lengths are listed in Table 6-6.
- c. Install insulating sleeve over wire insulation, well back from crimping area.
- d. Inspect to see that inner barrel is well coated with compound.



DO NOT REMOVE THE INSPECTION PLUG AS THIS KEEPS THE COMPOUND IN THE BARREL. WHEN THE WIRE IS INSERTED TO THE FULL DEPTH OF THE BARREL, THE COMPOUND IS FORCED BETWEEN

AND AROUND THE CONDUCTOR STRANDS.

- e. Insert wire into terminal barrel.
- f. Wipe off any excess compound squeezed out of terminal lug barrel with a clean soft cloth.
- g. Insert assembly into the die and position as shown in Figure 6-7.
- h. Actuate the crimp tool. On electrically operated tool, press the button on the control handle. Do not release the button until the dies open automatically. Actuate handle for manual hydraulically operated tool.

NOTE

Wire sizes No. 8 thru No. 2/0 require only one crimp. Wire sizes No. 3/0 and No. 4/0 require two crimps. Locate the second crimp centrally on the portion of the barrel remaining after the first crimp. See Figure 6-8.

- i. Check visually to see that the correct wire size is imprinted on the barrel.
- j. Remove the inspection plug and check visually or with the aid of a probe to see that wire is fully inserted. Replace the plug after inspection.
- k. Slide insulating sleeve over the terminal lug barrel and secure in accordance with paragraph 16 and Figure 6-5.

Table 6-6 Stripping Lengths for Aluminium Wire

Wire Size	MS25435, MS25436, MS25437, MS25438
8	17.5
6	20.6
4	21.5
2	26.0
1	26.0
1/0	25.0
2/0	31.0
3/0	32.5
4/0	36.5

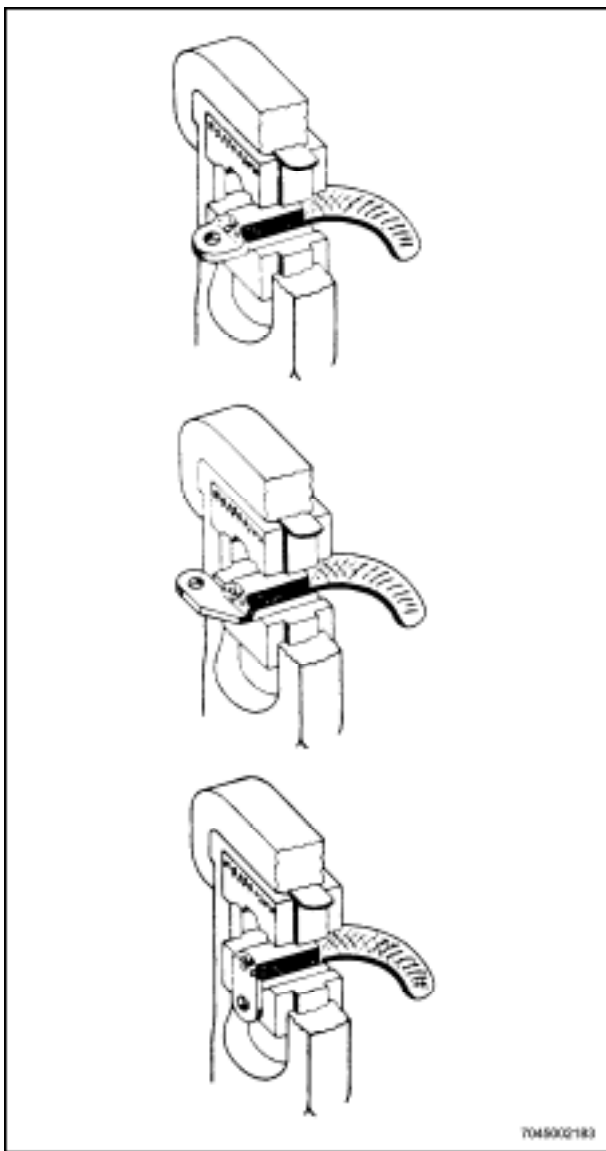


Figure 6-7 Positioning Aluminium Terminal Lugs in Die Nests

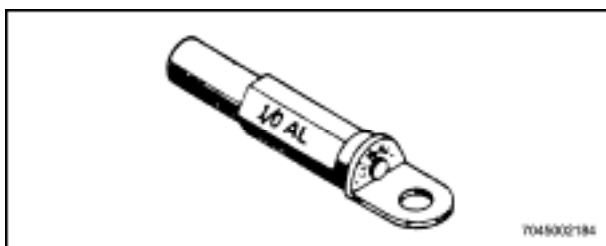


Figure 6-8 Single Crimp on Aluminium Terminal Lugs

SPLICING SMALL COPPER WIRES

26. Environmental permanent splices conforming to MIL-S-81824 are used to join small copper wire sizes No. 26 through No. 10. Typical splices are shown in Figure 6-1. The splice insulation extends over the wire insulation. Each splice size can be used for more than one wire size. Splices are colour coded in the same

manner as insulated copper terminal lugs; refer to paragraph 8 and Table 6-1 for details.

27. Permanent wire splices may be used to assemble sub-assemblies, to incorporate changes or to facilitate repairs. The use of permanent splices shall be subject to the following restrictions:

- a. There shall not be more than one splice in any one wire segment between any two connectors or other disconnect points, except as allowed by sub-para e, g and h below.
- b. Installation of splices in bundles shall not increase the size of the bundle so as to prevent the bundle from fitting in its designated space or cause congestion that will adversely affect maintenance.
- c. Splices shall not be used to salvage scrap lengths of wire.
- d. Splices shall not be used within 30cm of a termination device, except for sub-para e, below.
- e. Splices may be used within 30cm of a termination device when attaching to the pigtail spare lead of a potted termination device, or to splice multiple wires to a single wire, or to adjust the wire sizes so that they are compatible with the contact crimp barrel sizes.
- f. The application of splices shall be under design control and shall be authorised by engineering drawings.
- g. Splices may be used to repair manufactured harnesses or installed wiring when approved by an appropriate engineering authority.
- h. Splices shall not be used on firing or control circuits associated with ordnance or explosive sub-systems.
- i. Splices shall not be used on fire resistant wire.

28. When practicality conflicts with the intent of these restrictions refer to local engineering authority.

Crimping Tools

29. The M22520/5 and M22520/10 crimp tools with appropriate dies are the approved tools for crimping sizes 26 through 10 splices.

SPLICING PROCEDURE FOR M81824 ENVIRONMENTAL SPLICES

30. Splice in accordance with the following:

- a. Check the M22520/5 or /10 crimp tool for wear in accordance with paragraph 12. If the tool is worn out of tolerance, it must be replaced.
- b. Identify the correct size splice
- c. Identify the correct size die that will accommodate the wire(s) to be crimped and install in M22520/5 or /10 crimp tool.
- d. Strip 0.79mm to 0.86mm of insulation from wires, following one of the procedures in Section 2, Chapter 3.
- e. Position the crimp barrel in the die of the M22520/5 or /10 crimp tool, so that one end of the crimp barrel butts against the crimp locator. Lock in place by partially closing the handles without denting the crimp barrel.
- f. Insert the wire fully into the crimp barrel, and crimp by closing the handles until the ratchet releases.
- g. Before completing the splice, slide the sealing sleeve, which will be shrunk later, back over one of the wires.
- h. Reverse the position of the crimp barrel in the crimp tool die. The attached wire will extend through the slot in the crimp locator.
- i. Lock the crimp barrel in place by partially closing the handles. Insert the other wire(s) and crimp as before.

WARNING

USE ONLY HOT AIR GUN M83521/5-01 OR EQUIVALENT ON FUELLED AIRCRAFT.

WARNING

USE OF NITROGEN WITH HOT AIR GUN M83521/5-01 IN AN ENCLOSED AREA CAN BE HAZARDOUS. ENSURE AREA IS WELL VENTILATED.

- j. Slide the sealing sleeve over the crimp barrel, centre it and heat with hot air to shrink the sleeve. Heat the middle first to lock the sleeve in place, then heat the ends until the sealing rings melt and ooze out around the wire. To ensure a good seal; allow to cool before handling.

CAUTION

FIRE RESISTANT WIRE SHALL NOT BE SPLICED. WHEN FIRE RESISTANT WIRE IS DAMAGED OR DETERIORATED REPLACE THE ENTIRE LENGTH OF WIRE FROM ONE PERMANENT TERMINATION TO THE NEXT.

CAUTION

USING TIN PLATED SPLICES ON NICKEL PLATED WIRE MAY NOT ACHIEVE APPROPRIATE VOLTAGE DROP AND TENSILE STRENGTH REQUIREMENTS. REFER TO SAE AIR 1263.

SPLICING HIGH TEMPERATURE WIRES

31. Splices for high temperature applications are available in the same wire size ranges as terminal lugs. The tools and crimping procedures are the same for splices as for terminal lugs. Crimp splice at both ends. Appropriately rated high temperature splices shall be used on high temperature wire where the splice is located in a high temperature area. Where wire splice is in a low temperature area, standard splices may be used. See Table 6-7 for details of splices suitable for use on high temperature wire.

Table 6-7 Splices and Tooling – High Temperature Wire

Nickel Plated Splices Rated to 343°C (650°F) Uninsulated with Insulation Support		
Splice Pt No	AWG	Tool Pt No.
322823	22-16	46673
322825	16-14	46988
Nickel Splices Rated to 649°C (1200°F) Uninsulated with Insulation Support		
322325	22-16	46673
322346	16-14	46988

Table 6-8 Circular Mil Area (CMA) of Wires and Splices

Wire AWG	Circular Mils (Nominal)	Splice Part Number	Circular Mils (Nominal)
26	304	M81824/1-1	2025
24	475	M81824/1-2	3969
22	754	M81824/1-3	9025
20	1216		
18	1900		
16	2426		
14	3831		
12	5874		

SPLICING ALUMINIUM WIRES

32. Splice large aluminium wires sizes No. 8 through No. 4/0 with splice MS25439. Use the MS25441 power tool with the correct dies from MS25442. Follow the same procedure as for aluminium terminal lugs outlined in paragraph 25, positioning the splice in the tool as shown in Figure 6-7. Crimp splice at both ends.

NOTE

The sealing properties of environmental splices may be compromised when multi-splicing.

MULTI-SPLICING

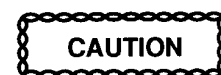
33. Multi-splicing is the crimping together of three or more wires in a single splice. This is a special application and may be used only when called for on the applicable engineering drawing or otherwise authorised by an appropriate authority. Where more than one wire is to be crimped into one end of a splice the technician must ensure that the combined size (circular mil area) of the conductors is compatible with the selected splice. Additionally, the wires must fit into the splice insulation support without altering their insulation. Refer to Table 6-8 for circular mil area (CMA) of common wires and splices.

ENVIRONMENT RESISTANT WIRE DISCONNECT SPLICES

34. When splices are used for inline connections of two or more wires, where disconnection is required, disconnect splices complying to SAE AS81714/11 and SAE AS81714/12 are approved for use. Sealing plugs complying with MS27488 shall be installed in unused grommet holes. Annex C contains details of SAE AS81714/11 and SAE AS81714/12 environment proof, disconnect, wire splices and associated tooling.

SPLICING TO REDUCE WIRE SIZE

35. Splices may be used to reduce wire sizes. This is a special application and may be used only when called for on the applicable engineering drawing or otherwise authorised by an appropriate authority.



DO NOT USE ANY CONNECTION WHICH IS FOUND DEFECTIVE AS A RESULT OF THE VISUAL INSPECTION. CUT OFF DEFECTIVE CONNECTION AND REMAKE USING A NEW TERMINAL LUG OR SPLICE.

INSPECTION OF CRIMPED CONNECTIONS

36. Examine the crimped connection carefully for the following:

- a. Crimp indent centred on terminal lug barrel or splice barrels
- b. Crimp indent in line with barrel.
- c. Terminal lug or splice barrel not cracked.
- d. Terminal lug or splice insulation not cracked.
- e. Insulation support on lugs crimped.
- f. Spliced wires are butted against the stop.
- g. Splices for correct environmental sealing.
- h. Splices for evidence of overheating.

TERMINAL JUNCTION SYSTEMS

37. See Section 2, Chapter 4, Electrical Wiring Installation, for terminal junction systems.

Annexes:

- A. Terminations and Tooling
- B. Stud Size and Corresponding Terminal Lug Dimension Reference Chart
- C. Disconnect Splices and Tooling
- D. Crimp Tool Testing