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Section 20-00 General

This chapter lists maintenance related information such as prescribed torque values, measurement techniques, and safety wiring. This chapter defines Wet Assembly. This chapter also describes standard practices for the electrical wiring, such as wire numbering and sizing, wire termination, splicing, and soldering.

Specific fastener torque values appearing in individual Liberty Maintenance Manual chapters and sections may supersede the general torque values given in this chapter.

For Propeller Installation consult individual manufacturer’s maintenance manuals for torque values.
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Section 20-10 Standard Practices Mechanical

This section details the information for the hardware used on the Liberty Aerospace, Inc. XL-2 airplane.

Section 10-01 Bolt Types

Bolts used in the Liberty XL-2 conform to AN (Air Force-Navy) specification. In general, cadmium plating protects against corrosion. See Figure 20-1 for details on bolt markings.

- Corrosion Resistant steel bolts are marked with a dash (—) on bolt head.
- Non-Corrosion Resistant (un-plated) steel bolts are marked with an (X) on the bolt head.

**Figure 20-1 Bolt Markings to Indicate Corrosion Resistance**

*WARNING*

**THE CADMIUM PLATING ON CORROSION-RESISTANT AIRCRAFT FASTENERS HAS TOXIC PROPERTIES AND, IF ABSORBED IN THE BODY, MAY LEAD TO SYMPTOMS OF HEAVY METAL POISONING. NEVER PLACE ANY CADMIUM-PLATED FASTENER OR COMPONENT IN YOUR MOUTH.**

Nuts used with these bolts are in accordance with AN3 through AN20 specifications. Some specialized lock nuts may conform to differing specifications.

Section 10-02 Torques

The permissible torque values for bolts and nuts are given below. To avoid crushing underlying composite layers remember locknut torque values are lower when fasteners are used in composite structures.
### Installation Torque for Bolt/Nut Combinations

<table>
<thead>
<tr>
<th>Nominal Fastener Diameter (inches)</th>
<th>Mid-Range Values (in-lbs)</th>
<th>Range (in-lbs) Min-Max (90 KSI in bolts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1640</td>
<td>17.5</td>
<td>15-20</td>
</tr>
<tr>
<td>0.1900</td>
<td>32.5</td>
<td>25-40</td>
</tr>
<tr>
<td>0.250</td>
<td>95</td>
<td>90-100</td>
</tr>
<tr>
<td>0.3125</td>
<td>202.5</td>
<td>180-225</td>
</tr>
<tr>
<td>0.3750</td>
<td>345</td>
<td>300-390</td>
</tr>
</tbody>
</table>

**Table 20-1 Torque Values for Bolt and Nut Combinations**

### Hex nuts-self locking (NAS1291XX)

<table>
<thead>
<tr>
<th>Nominal Fastener Diameter (inch)</th>
<th>Mid-Range Values (in-lbs)</th>
<th>Range (in-lbs) Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1875</td>
<td>30</td>
<td>25-35</td>
</tr>
<tr>
<td>0.250</td>
<td>70</td>
<td>60-80</td>
</tr>
<tr>
<td>0.3125</td>
<td>145</td>
<td>130-160</td>
</tr>
<tr>
<td>0.375</td>
<td>220</td>
<td>200-240</td>
</tr>
</tbody>
</table>

**Table 20-2 Torque Values for Self Locking Hex Nuts**

### Installation Torque for Bolt/Nut Combinations in Composite Structures

<table>
<thead>
<tr>
<th>Nominal Fastener Diameter (inch)</th>
<th>Mid-Range Values (in-lbs)</th>
<th>Range (in-lbs) Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1640</td>
<td>17.5</td>
<td>15-20</td>
</tr>
<tr>
<td>0.1900</td>
<td>32.5</td>
<td>25-40</td>
</tr>
<tr>
<td>0.250</td>
<td>95</td>
<td>90-100</td>
</tr>
<tr>
<td>0.3125</td>
<td>202.5</td>
<td>180-225</td>
</tr>
<tr>
<td>0.3750</td>
<td>345</td>
<td>300-390</td>
</tr>
</tbody>
</table>

### Locknut torque values

<table>
<thead>
<tr>
<th>Nominal Fastener Diameter (inch)</th>
<th>Mid-Range Values (in-lbs)</th>
<th>Range (in-lbs) Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1562</td>
<td>20</td>
<td>15-25</td>
</tr>
<tr>
<td>0.1875</td>
<td>30</td>
<td>25-35</td>
</tr>
<tr>
<td>0.250</td>
<td>70</td>
<td>60-80</td>
</tr>
<tr>
<td>0.3125</td>
<td>145</td>
<td>130-160</td>
</tr>
<tr>
<td>0.375</td>
<td>220</td>
<td>200-240</td>
</tr>
</tbody>
</table>

**Table 20-3 Torque Value for Hardware in Composite Structures**
Section 10-03 Special Torques

For specific torque requirements relating to Propeller Installations, please refer to manufacturer’s maintenance manual

- Maintenance Manual for Sensenich W69EK7-63G Propeller
  Sensenich Wood Propeller Company Inc.
  Wood Propellers Installation Operation, & Maintenance
  Integral Flange Crankshafts WOOD-CF-REV-A.doc 5-20-04

- Maintenance Manual for MT175R127-2Ca Propeller
  Operation and Installation Manual
  E-112 (ATA 61-01-12)
  MT-Wood-Composite
  Fixed Pitch Propellers
  November 21, 2006

Section 10-04 Torque Measuring Details

**CAUTION**

Self-locking nuts of any type must be replaced if there is any indication of diminished frictional torque upon removal or reinstallation.

If using self-locking nuts, the torque required to overcome the locking feature (friction torque) must be determined by measuring indicated torque while nut is being tightened and adding the indicated torque to table torque values. Determine friction torque before it has seated against washer or other seating surface.

If using castellated nuts and split pins, torque to the lowest value of torque as shown in the tables. Continue to torque to nearest castellated slot for split pin. Do not exceed the highest value of torque as shown in the tables. Install a new split pin.

It is always preferable to tighten nut, rather than bolt, since rotation of bolt in the hole may damage the corrosion-resistant cadmium plating.

If tightening from bolt head side is unavoidable (e.g., the nut is inaccessible to a torque wrench), the turning torque of bolt in the hole must be determined, by measuring indicated torque before nut is placed on bolt. This torque must be added to both the torque value from tables above and torque value, if any, from any self-locking nut that is installed.

Section 10-05 Safety Wiring

**CAUTION**

Safety wire must never be reused; always discard wire immediately upon removal.
The purpose of safety wiring fasteners is to prevent fasteners from becoming loose during use. Thus, standard safety wiring patterns should be used to apply clockwise force to fasteners and secure them against inadvertent rotation in a counterclockwise direction. Safety wiring can be secured either from fasteners to adjacent aircraft structure or, if necessary, between adjacent fasteners such that counterclockwise rotation is mutually avoided.

**Figure 20-2 Main wheel caliper safety wire**

The purpose of safety wiring fasteners is to prevent fasteners from becoming loose during use. Thus, standard safety wiring patterns should be used to apply clockwise force to fasteners and secure them against inadvertent rotation in a counterclockwise direction. Safety wiring can be secured either from fasteners to adjacent aircraft structure or, if necessary, between adjacent fasteners such that counterclockwise rotation is mutually avoided.
SAFETY WIRE PROCEDURE

Safety wiring or lockwiring is the securing together of two or more parts with lockwire which shall be installed in such a manner that any tendency for a part to loosen will be counteracted by additional tightening of the wire.

1. If using castellated nuts, torque to the lowest value of torque as shown in the tables. Continue to torque to nearest castellated slot for split pin. Do not exceed the highest value of torque as shown in the tables.

2. Wire shall be pulled taut while being twisted and caution must be exercised during the twisting operation to keep the wire tight without over stressing. See Figure 20-10-03-1-1 and 20-10-03-1-2 for steps in applying lockwire.

3. Lockwire shall be new at each application.

4. Torque all items to be safety wired to the proper value. Applying torque above or below specified limits to obtain alignment of holes is not permitted.

5. Lockwire shall be installed in such a manner that the strand through the hole will have a tendency to pull in the tightening direction.

6. Insert half of the required length of wire through the first unit and bend around the head of the unit. Direction of wraps and twist of strands shall be such that the loop around the unit comes under the strand protruding from the hole so that the loop will stay down and will not tend to slip up and leave slack loop. Twist strands while taut until twisted part is just short of a hole in the next unit. Twisted portion should be within 1/8 inch from hole in either unit.

7. Insert uppermost strand through hole in second unit and follow instructions in the previous paragraph.

8. After lockwiring last unit, continue twisting wire to form a pigtail providing a minimum of four twists. This will ensure the pigtail stays secure. Cut off excess lockwire and bend pigtail toward the part and against bolt head flats. Do not allow the pigtail to extend above the bolt head.
Figure 20-3 Illustration of the Procedure to Use Lockwire

1. Lockwire holes parallel
2. Inserting wire
3. Bending wire around bolt
4. Twisting wire
5. Pulling wire

6. Bending wire around bolt
7. Twisting wire
8. Bending twisted wire
9. Cutting excess wire

Lockwire Patterns for Right Hand Threads
(Reverse the wire orientation for left hand threads)

Figure 20-4 Different Methods of Using Lockwire
Section 10-06  Cotter Pin/Split Pin

CAUTION

Never reuse cotter pins/split pins; always discard immediately upon removal.

**Figure 20-5 Split Pin**

Cotter pins/split pins are typically used to secure castellated (slotted) nuts against inadvertent rotation. The following procedure outlines the two methods of installing cotter/split pins.
COTTER PIN/ SPLIT PIN PROCEDURES

There are two methods to install a cotter or split pin. Both methods are shown here.

Method 1

1. Torque the castellated nut to the lowest value of torque as shown in the tables. Continue to torque to nearest castellated slot for split pin. Do not exceed the highest value of torque as shown in the tables. Install a new split pin.

2. Insert cotter pin/split pin through castellated nut with “eye” of cotter pin/split pin vertical to allow seating to maximum depth in slot of nut.

3. Using side or flush cutters cut off excess length of cotter pin/split pin.

4. Bend one leg of cotter pin/split pin down along side of nut. Check the end of bent leg stops short of bottom edge of nut.

5. Bend other leg of cotter pin/split pin back across top of nut and bolt; cut off excess length.

Method 2 (An Alternate Method)

1. Torque the castellated nut to the lowest value of torque as shown in the tables. Continue to torque to nearest castellated slot for split pin. Do not exceed the highest value of torque as shown in the tables. Install a new split pin.

2. Insert cotter pin/split pin as far as possible through castellated nut with “eye” of cotter pin/split pin horizontal.

3. Trim both legs of cotter pin/split pin to appropriate length to allow ends to be bent back and pushed into slots in castellated nut adjacent to slot occupied by body of cotter pin/split pin.
Section 10-07 Tab Washers

Discard tab washer immediately upon removal. Never re-use a tab washer.

Tab washers are used to prevent inadvertent fastener rotation by securing facets to fasteners to adjacent material or structure. A hole must be provided adjacent to the fastener location into which at least one tab of the tab washer can be bent. Remaining tab(s) can be bent up against the facets (flats) of the fastener. Use a light hammer and a soft (brass) drift to bend tabs. Check that tabs are not cracked during bending process.

![Figure 20-6 Tab Washer](image)

Section 10-08 Wet Assembly

Technical Data CA 1000 is a non-chromate corrosion inhibitive jointing compound PRC® aerospace sealant from PRC-DeSoto International, Inc.

“This material acts as an effective barrier against the common causes of corrosion on aluminum alloys or between dissimilar metals. The compound remains permanently mastic after prolonged exposure to aircraft fuels, both jet fuel and aviation gas. CA 1000 is a one part, epoxy capped, Permapol® polysulfide compound. The material is a thixotropic paste suitable for application by brush or spatula.”

<table>
<thead>
<tr>
<th>Material</th>
<th>Material Identification</th>
<th>Recommended Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA 1000</td>
<td>non-curing, non-chromate, corrosion inhibitive jointing compound</td>
<td>Bergdahl Assoc., Inc., Reno, NV</td>
</tr>
</tbody>
</table>

Table 20-4 Identification of the Compound CA1000
WET ASSEMBLY: (NON-PERMANENT FASTENER INSTALLATION)

1. Prepare surfaces, if required, by cleaning with solvent to remove dirt, greases and other possible contaminants.

2. Apply the compound to the surface(s) per manufacturer’s instructions. Install fasteners while the jointing compound is still tacky such that it will flow sufficiently under pressure.

3. Clean excess compound from the joint.

4. Non-curing corrosion inhibitive compounds used should allow for easy removal, with compound still tacky.
Section 20-20 Standard Practices Electrical

This section details the information for the electrical wiring used on the Liberty Aerospace, Inc. XL-2 airplane.

Section 20-01 Wiring Standards

Wiring used in the Wiring Diagrams for non-shielded wires are per MIL-W-22759. All non-shielded wires are 22 AWG unless otherwise noted. Wiring used in the Wiring Diagrams for shielded wires are per MIL-W-27500.

Section 20-02 Wire Numbering

Each wire in the XL-2 airplane has a unique number. The number defines what circuit or system the wire belongs to, the route for the wire, the route subsection, the gauge of the wire, and if the wire is a travelling ground.

Table 20-5 gives the system description for the subsystem designation on the wire number. The route subsection designation for the route from source to termination.

<table>
<thead>
<tr>
<th>Sub System Designation</th>
<th>System Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Antenna</td>
</tr>
<tr>
<td>AP</td>
<td>Autopilot</td>
</tr>
<tr>
<td>C</td>
<td>Clock and Facility socket</td>
</tr>
<tr>
<td>E</td>
<td>Fuel System</td>
</tr>
<tr>
<td>EGND</td>
<td>Earth Ground – ground to aircraft frame</td>
</tr>
<tr>
<td>F</td>
<td>FADEC</td>
</tr>
<tr>
<td>G</td>
<td>Gyro Instrumentation</td>
</tr>
<tr>
<td>H</td>
<td>Pitot Heat, Hour Meter, Outside Air Temperature</td>
</tr>
<tr>
<td>IGNU</td>
<td>Instrumentation Ground – ground path isolated from Earth Ground</td>
</tr>
<tr>
<td>JPR</td>
<td>Jumper Wire</td>
</tr>
<tr>
<td>Sub System Designation</td>
<td>System Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>L</td>
<td>Lighting</td>
</tr>
<tr>
<td>P</td>
<td>Power Distribution</td>
</tr>
<tr>
<td>R</td>
<td>Avionics General</td>
</tr>
<tr>
<td>RD</td>
<td>Avionics Display Systems (glass cockpit)</td>
</tr>
<tr>
<td>RG</td>
<td>Avionics Garmin</td>
</tr>
<tr>
<td>RU</td>
<td>Avionics UPS Aviation Technologies</td>
</tr>
<tr>
<td>SP</td>
<td>Splice</td>
</tr>
<tr>
<td>ST</td>
<td>Solder Sleeve</td>
</tr>
<tr>
<td>T</td>
<td>Trim Flaps</td>
</tr>
<tr>
<td>V</td>
<td>VM1000FX</td>
</tr>
<tr>
<td>W</td>
<td>Annunciation, Stall Warning</td>
</tr>
</tbody>
</table>

Table 20-5 Subsystem Prefix Designation for Wire Numbers

Section 20-03 Wire Color Code Designation

Table 20-6 defines the abbreviations used in the schematics for various wire colors. If a wire has multiple colors, the different colors are separated by a forward slash (/) between each color. The base color is first, followed by the second significant color then the third significant color and so on.

For example, a wire that has a blue base color, then red then green, would have the designation BLU/RED/GRN.

<table>
<thead>
<tr>
<th>Color Code</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLK</td>
<td>Black</td>
</tr>
<tr>
<td>BRN</td>
<td>Brown or Tan</td>
</tr>
<tr>
<td>RED</td>
<td>Red</td>
</tr>
<tr>
<td>ORG</td>
<td>Orange</td>
</tr>
<tr>
<td>YEL</td>
<td>Yellow</td>
</tr>
<tr>
<td>GRN</td>
<td>Green</td>
</tr>
<tr>
<td>BLU</td>
<td>Blue or Azure</td>
</tr>
<tr>
<td>VIO</td>
<td>Violet or Purple</td>
</tr>
<tr>
<td>SLT</td>
<td>Grey or Slate</td>
</tr>
<tr>
<td>WHT</td>
<td>White</td>
</tr>
<tr>
<td>SLD</td>
<td>Shield</td>
</tr>
<tr>
<td>TIP</td>
<td>Center conductor of a Coax Cable</td>
</tr>
</tbody>
</table>

Table 20-6 Wire Color Code Abbreviations

Section 20-04 Splicing

Splicing is permitted on wiring as long as it does not affect the reliability and the electromechanical characteristics of the wiring. Keep splicing of electrical wire to a minimum. Avoid splicing of electrical wire entirely in locations subject to extreme vibrations.
There should not be more than one splice in any one wire segment between any two connectors or other disconnect points, except; when attaching to the spare pigtail lead of a potted connector, to splice multiple wires to a single wire, to adjust wire size to fit connector contact crimp barrel size, and to make an approved repair.

Splices in bundles must be staggered so as to minimize any increase in the size of the bundle, preventing the bundle from fitting into its designated space, or cause congestion that will adversely affect maintenance.

**Figure 20-8 Staggered Splices in Wire Bundle**
Splices should not be used within 12 inches of a termination device, except 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.

**Section 20-05 Crimp Splices**
Crimp splices normally come in two parts, a wire crimp sleeve, see Figure 20-9, and a sealing sleeve. The sealing sleeve can have either two integral one-hole seals, one integral one-hole seal and one integral multiple-hole seal, or with one integral multiple-hole seal and a separate multiple-hole seal, see Figure 20-10.

**Figure 20-9 Wire Crimps**

**Figure 20-10 Sealing Sleeves**

**Section 20-06 Splicing Procedures**
This section contains general splicing procedures for one-wire-to-one-wire or two-wire stub splicing, multiple-to-one wire or multiple-wire stub splicing, multiple-wire-to-multiple-wire splice. After the splicing procedures is the procedure to inspect the splice for compliance with Liberty Aerospace, Inc. specifications.
ONE-WIRE TO ONE-WIRE IN-LINE SPLICES, OR TWO-WIRE STUB SPLICES

Perform the following procedure to make a one-wire-to-one-wire or two-wire stub splice:

1. Strip the wires to be spliced. If any conductor is to be folded back (to increase the effective cross-sectional area), strip the wire to twice the specified strip length.

2. The strip length for a particular crimp splice equals the length of the crimp barrel plus 1/32–1/16 inch (0.8–1.6 mm) as shown in Figure 20-11.

   **NOTE**

   For most AWG 12 and smaller crimp splices, the correct strip length is 5/16–11/32 inch (7.9–8.7 mm).

3. If required to fold any conductors back, fold the appropriate conductor(s) as shown in Figure 20-12.

4. If making an in-line splice, slide the sealing sleeve onto either wire. For stub splices, the sealing sleeve will be installed later.

5. Crimp the wires in the crimp splice as shown in Figure 20-14. The gap between the end of the wire insulation and the crimp splice must be 1/32–1/16 inch (0.8–1.6 mm).
6. Center the sealing sleeve over the splice area as shown in Figure 20-15.

7. Heat sleeve from one end toward the other. For stub splices, start heating the splice at the end from which the wires exit.

8. Continue heating until the seals melt and flow along the wire insulation. For stub splices, heat until one seal melts and closes the end.

9. Allow the assembly to cool undisturbed.

**Figure 20-14 Insulation Gap**

**Figure 20-15 Center Sealing Sleeve**
MULTIPLE-TO-ONE IN-LINE SPLICES AND MULTIPLE-WIRE STUB SPlice

Perform the following procedure to make a multiple-to-one-wire or multiple-wire stub splice.

1. Strip the wires to be spliced. If any conductor is to be folded back (to increase the effective cross-sectional area), strip the wire to twice the specified strip length.

2. The strip length for a particular crimp splice equals the length of the crimp barrel plus 1/32–1/16 inch (0.8–1.6 mm) as shown in Figure 20-16.

   **NOTE**

   For most AWG 12 and smaller crimp splices, the correct strip length is 5/16–11/32 inch (7.9–8.7 mm).

3. If required to fold any conductors back, fold the appropriate conductor(s) as shown in Figure 20-17.

4. Insert one of the multiple wires through each hole of the multiple-hole seal, and slide the sealing sleeve back over the multiple wires as shown in Figure 20-18.

5. Crimp the wires in the crimp splice as shown in Figure 20-19.
6. Make sure that the multiple wires do not become crossed between the multiple-hole seal and the crimp splice.

7. Center the sealing sleeve over the splice area as shown in Figure 20-20.

8. Heat the multiple-wire end first, until the multiple-wire seal melts and flows around and along the wire insulation.

9. Move the heat toward the single-wire or open end, shrinking the sleeve along the way.

10. Heat the second end until the seal melts and flows along the wire insulation or closes the open end.

11. Allow the assembly to cool undisturbed.

**Figure 20-19 Multiple Wire Crimp Splice**

- Make sure that the multiple wires do not become crossed between the multiple-hole seal and the crimp splice.

**Figure 20-20 Center Sealing Sleeve**

- Center the sealing sleeve over the splice area as shown in Figure 20-20.

- Heat the multiple-wire end first, until the multiple-wire seal melts and flows around and along the wire insulation.

- Move the heat toward the single-wire or open end, shrinking the sleeve along the way.

- Heat the second end until the seal melts and flows along the wire insulation or closes the open end.

- Allow the assembly to cool undisturbed.
MULTIPLE-WIRE TO MULTIPLE-WIRE IN-LINE SPLICES

Perform the following procedure to make a multiple-to-one-wire or multiple-wire stub splice.

1. Strip the wires to be spliced. If any conductor is to be folded back (to increase the effective cross-sectional area), strip the wire to twice the specified strip length.

2. The strip length for a particular crimp splice equals the length of the crimp barrel plus 1/32–1/16 inch (0.8–1.6 mm) as shown in Figure 20-21.

   ![Figure 20-21 Insulation Strip Length](image)

   For most AWG 12 and smaller crimp splices, the correct strip length is 5/16–11/32 inch (7.9–8.7 mm).

3. If required to fold any conductors back, fold the appropriate conductor(s) as shown in Figure 20-22.

   ![Figure 20-22 Fold Back](image)

4. Insert the multiple wires coming from one direction through the integral seal and sleeve, one wire per hole, as shown in Figure 20-23.

   ![Figure 20-23 Multiple Wires](image)

5. Insert the multiple wires coming from the other direction through the separate seal, one wire per hole, as shown in Figure 20-24.
6. Crimp the wires in the crimp splice as shown below.

7. Make sure that the multiple wires do not become crossed between either one of the multiple-hole seals and the crimp splice.

8. Push the separate multiple-hole seal up against the crimp splice.

9. Position the sealing sleeve over the splice and over the separate multiple-hole seal so that the separate seal is fully seated within the end of the sealing sleeve as shown in Figure 20-26.

10. Squeeze the wires together to hold the separate seal against the splice while moving the sealing sleeve into position.

11. Heat the end with the separate seal first, until the seal melts and flows around and along the wire insulation.

12. Move the heat toward the end with the integral seal, shrinking the sleeve along the way.

13. Heat the end with the integral seal until the seal melts and flows along the wire insulation.

14. Allow the assembly to cool undisturbed.

---

**Figure 20-24 Multiple Hole Seal**

6. Crimp the wires in the crimp splice as shown below.

7. Make sure that the multiple wires do not become crossed between either one of the multiple-hole seals and the crimp splice.

**Figure 20-25 Crimp Splice Multiple Wires**

8. Push the separate multiple-hole seal up against the crimp splice.

9. Position the sealing sleeve over the splice and over the separate multiple-hole seal so that the separate seal is fully seated within the end of the sealing sleeve as shown in Figure 20-26.

10. Squeeze the wires together to hold the separate seal against the splice while moving the sealing sleeve into position.

**Figure 20-26 Center Sealing Sleeve**

11. Heat the end with the separate seal first, until the seal melts and flows around and along the wire insulation.

12. Move the heat toward the end with the integral seal, shrinking the sleeve along the way.

13. Heat the end with the integral seal until the seal melts and flows along the wire insulation.

14. Allow the assembly to cool undisturbed.
INSPECTION OF THE SPLICE

Perform this procedure to inspect the splice after completing the splice. The following set of figures illustrate acceptable and unacceptable splices.

1. The sealing sleeve must be centered over the splice area so that the melted seal overlaps the wire insulation by at least 1 1/2 times the diameter of the wire insulation.
2. The wire insulation must end at a point 1/32–1/16 inch (0.8–1.6 mm) from the crimp splice.
3. The sealing sleeve must be completely shrunk onto the splice area and wire insulation.
4. If sealing a single wire, seal must have flowed along the wire insulation.
5. If sealing multiple wires, melted sealing material must be visible between the wires where they exit from the sealing sleeve. Look between the wires to make sure that the center portion of the seal has melted.
6. The free end of a stub splice must be completely sealed.
7. The sealing sleeve must not be so discolored it prevents visual inspection of the splice (overheated condition).

NOTE

Sealant can be re-flowed, if necessary, by applying additional heat with the heating tool

8. Inspection for Damage
9. The sealing sleeve must not be cut or split.
10. The wire insulation must not show signs of mechanical damage or overheating, such as cuts, tears, melting, or charring.