SERVICE BULLETIN

SUBJECT: Fuel Quantity Indicating System Out-Tank Harnesses – Backshell to Lightning Shield Assembly Upgrade / Replacement

MODEL: 767 Airplanes

I. PLANNING INFORMATION

A. Effectivity

This bulletin is applicable to out-tank Fuel Quantity Indicating System (FQIS) harnesses shown below:

CINCH PART NUMBER	BOEING PART NUMBER	APPLICATION KIT $^{P}/_{N}$
CN1156-121	S283T025-121	CN1156-KB1
CN1156-122	S283T025-122	CN1156-KB2
CN1156-123	S283T025-123	CN1156-KB2
CN1156-126	S283T025-126	CN1156-KB1
CN1156-127	S283T025-127	CN1156-KB2
CN1156-131	S283T025-131	CN1156-KB1
CN1156-132	S283T025-132	CN1156-KB2
CN1156-134	S283T025-134	CN1156-KB2
CN1156-135	S283T025-135	CN1156-KB2
CN1156-136	S283T025-136	CN1156-KB1
CN1156-137	S283T025-137	CN1156-KB2
CN1156-321	S283T025-321	CN1156-KB1
CN1156-323	S283T025-323	CN1156-KB2
CN1156-331	S283T025-331	CN1156-KB1
CN1156-334	S283T025-334	CN1156-KB2

B. Reason

Refer to Boeing Service Bulletin 767-28-0087 for reason.

This service bulletin provides the necessary instructions to install backshell assembly upgrade kits. Use one of these kits to change an FQIS wire harness as directed by Boeing Service Bulletin 767-28-0087.

C. Description

Disconnect the lightning shield backshell on the harness from the electrical plug connector and remove the pins from the connector. Slide the harness abrasion sleeving back and cut off the metal lightning shield approximately 1 foot behind the plug connector. Remove and discard the backshell and the attached piece of the lightning shield. Put the new connector assembly next to the existing harness and cut the shielding to the correct length. The shield of the new assembly should be approximately 4–5 inches longer than the cut length of the discarded shield. Slide the shrink sleeves over the contacts and onto the harness. Slide the new backshell assembly over the contacts until the overlap of the new shield and the existing harness shield is 4 inches minimum. Heat-shrink both solder sleeves into the correct position over the lightning shield. Install the wired contacts into the plug connector. Put the internal support sleeve into the backshell, align the backshell to the plug connector, and tighten the coupling nut. Install a yellow identification label at the opposite end of the changed harness. Do an electrical test of the harness.

D. Approval

This service bulletin has been reviewed by Boeing and the Federal Aviation Administration (FAA). The changes specified in this service bulletin comply with the Federal Aviation Regulations (FAR) Part 25 and are on record with the supplier as FAA approved for installation on Boeing Model 767 airplanes per Boeing SB 767-28-0087.

E. Manpower

Approximately five (5) man-hours are necessary to install this retrofit upgrade kit on each applicable harness.

This estimate is for direct labor only and does not include planning, set-up, access or other lost time.

NOTE: For each additional harness retrofit upgrade kit; add 5 man-hours to the above estimate.

F. Material – Cost and Availability

Operators who intend to install this retrofit upgrade kit may obtain the kit(s) shown in paragraph III. A. One (1) kit is required for each harness as shown below. Order kits from Boeing spares. Refer to Boeing Service Bulletin 767-28-0087 for ordering information.

Kit Number	Kit Description	Quantity Required Per Harness
CN1156-KB1	Upgraded Backshell Kit Main Tank Harness	1
CN1156-KB2	Upgraded Backshell Kit Aux & Densitometer Tank Harness	1

G. Tooling – Cost and Availability

Standard tooling for removal and installation of typical circular electrical connectors is required. The special tooling listed below is required to do this change.
Note: Equivalent alternatives can be used when available.

- MS24256A16 Contact Insertion Tool
- MS24256R16 Contact Removal Tool
- MS90456-8 Contact Removal Tool
- DMC #DAK118 or equivalent Contact Insertion Tool
- HT250-4 Contact Retention Test Tool ^{W}/ blue (size 16) pin contact tip
- Connector Strap Wrench capable of gripping from 1” to 2” diameter connectors and backshells
- Torque Meter/Wrench capable of mounting to strap wrench above and having a range up to 125 in-lbs.
- Variable Temperature Heat Gun with large reflector nozzle (325 – 400 F degree adjustable range)
- CN0951-206 Wire/Contact Assembly Tool (Optional use, supplied with kits manufactured after August 31, 2007) – Manufactured by Cinch

Contact and connector tooling are stock items. For cost and availability information, please contact:

Daniels Manufacturing Corporation
526 Thorpe Road
Orlando, FL 32809 USA
Phone: 407-855-6161 Fax: 407-855-6884

Heat Guns and reflectors are stock items. For cost and availability information, please contact:

STEINEL
9051 Lyndale Avenue South
Bloomington, Minnesota 55423 USA
Phone: (800) 852-4343 E-Mail: Sales@steinel.net

CN0951-206 is an optional use tool. For cost and availability of the tool applicable to kits manufactured before August 1, 2007, please contact:

Cinch Connectors, Inc.
1700 Finley Road
Lombard, IL 60148 USA
Phone: 630-706-6000 Fax: 630-705-6055

H. Weight and Balance

None

I. Electrical Load Data

Not affected

J. References

a. Boeing Service Bulletin 767-28-0087
b. Boeing Standard Wiring Practices Manual 20-00-10, 20-10-14 and 20-20-00

K. Other Publications Affected

None

II. ACCOMPLISHMENT INSTRUCTIONS

A. Preparation

"WARNING: Make sure to obey all of the recommended safety precautions for use of heat guns. Refer to Standard Wiring Practices Manual Chapter 20-00-10" and Boeing Service Bulletin 767-28-0087.

B. Harness Identification

Find the part number on the blue heat shrink sleeve, located approximately 8 inches from the rear spar connector. Make sure that you have the correct retrofit upgrade kit for the wire harness. Refer to Section I.

C. Kit Installation

Refer to Appendix A, "Cinch - Field Retrofit Procedure, 767 FQIS Spar Backshell" for the instructions to install the retrofit upgrade kit.

Note 1: The procedure given in Appendix A changes the wire harness on the airplane. As an alternative, you can change the wire harness on the bench.

Note 2: As an alternative to change of the wire harness, you can replace it with a new one. Refer to Boeing Service Bulletin 767-28-0087 for part numbers of the new wire harnesses.

D. Test

After installation of the retrofit upgrade kit, do an electrical bonding test of the shield-to-shield junction and a pin-to-pin continuity test as given in VSB CN1156-28-02 Appendix A, Section 4.16 and 4.26.

III. MATERIAL INFORMATION

A. Parts Required Per Harness

To get the kit(s) shown below, refer to paragraph I. F for Material, Price and Availability.

NOTE: One (1) retrofit upgrade backshell kit is required for each Fuel Quantity Indicating System harness to be upgraded.

CN1156-KB1 – Upgraded Backshell Kit, Main Tank

Nomenclature	Manufacturer	Qty
Backshell Assembly With Shielding Attached, (CN0951-200)	Cinch	1
Backshell Support Sleeve, (CN0951-202)	Cinch	1
Wire/Contact Assembly Tool, (CN0951-206) (Optional Supplied Part)	Cinch	1
Toggle Pliers (Modified #CL-50-PL), (Cinch CN0951-205)	Carr Lane	1
Solder Sleeves, D-105-00	Raychem	2
Black Shrink Sleeve (MIL-DTL-23053/18 -209-0) (2 Inches Long x 0.750" Diameter) (See note 1 below)	Raychem	2
Yellow Shrink Sleeve (MIL-DTL-23053/5 -107-4) (2 Inches Long x 0.375" Diameter) (See note 1 below)	Raychem	2
Yellow Shrink Sleeve (MIL-DTL-23053/5 -108-4) (1 Inch Long x 0.500" Diameter) (See note 1 below)	Raychem	2
Identification/ Rework Notification Sleeve Kit (CN0951-203)	Cinch	1
BMS 13-54, D31C,110/14, Red, Lacing Tape	Gudebrod	6 Ft
BMS 13-54, D31C,110/14, Green, Lacing Tape	Gudebrod	6 Ft

Note 1: The kit contains one extra of these shrink sleeves

The CN1156-KB1 "Main Tank" backshell retrofit upgrade kit contains all components required to complete the upgrade installation for harnesses with Cinch CN1156-2 type spar plug connectors. The kit contains more sleeving than necessary; discard the unused shrink sleeves and removed parts.

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CN1156-KB2 – Upgraded Backshell Kit, Aux & Densitometer Tank

Nomenclature	Manufacturer	Qty
Backshell Assembly With Shielding Attached, (CN0951-201)	Cinch	1
Backshell Support Sleeve, (CN0951-202)	Cinch	1
Wire/Contact Assembly Tool, (CN0951-206) (Optional Supplied Part)	Cinch	1
Toggle Pliers (Modified #CL-50-PL), (Cinch CN0951-205)	Carr Lane	1
Solder Sleeves, D-105-00	Raychem	2
Black Shrink Sleeve (MIL-DTL-23053/18 -209-0) (2 Inches Long x 0.750" Diameter) (See note 1 below)	Raychem	2
Yellow Shrink Sleeve (MIL-DTL-23053/5 -107-4) (2 Inches Long x 0.375" Diameter) (See note 1 below)	Raychem	2
Yellow Shrink Sleeve (MIL-DTL-23053/5 -108-4) (1 Inch Long x 0.500" Diameter) (See note 1 below)	Raychem	2
Identification/ Rework Notification Sleeve Kit, (CN0951-204)	Cinch	1
BMS 13-54, D31C,110/14, Red, Lacing Tape	Gudebrod	6 Ft
BMS 13-54, D31C,110/14, Green, Lacing Tape	Gudebrod	6 Ft

Note 1: The kit contains one extra of these shrink sleeves

The CN1156-KB2 "Aux & Densitometer Tank" backshell retrofit upgrade kit contains all components required to complete the upgrade installation for harnesses with Cinch CN1156-4 type spar plug connectors. The kit contains more sleeving than necessary; discard the unused shrink sleeves and removed parts.

APPENDIX A
FIELD RETROFIT PROCEDURE - 767 FQIS SPAR BACKSHELL

1 **WARNING: WHEN YOU USE A HEAT GUN, MAKE SURE THAT YOU OBEY THE RECOMMENDED SAFETY PRECAUTIONS. REFER TO BOEING STANDARD WIRING PRACTICES MANUAL (SWPM) 20-00-10.**

Note: When you install heat shrinkable sleeving, refer to Boeing SWPM 20-10-14, Installation of Shrinkable Sleeving

2 **EQUIPMENT & MATERIALS REQUIRED: Reference main CN1156-28-02 Service Bulletin, section I.G. for specific descriptions.**

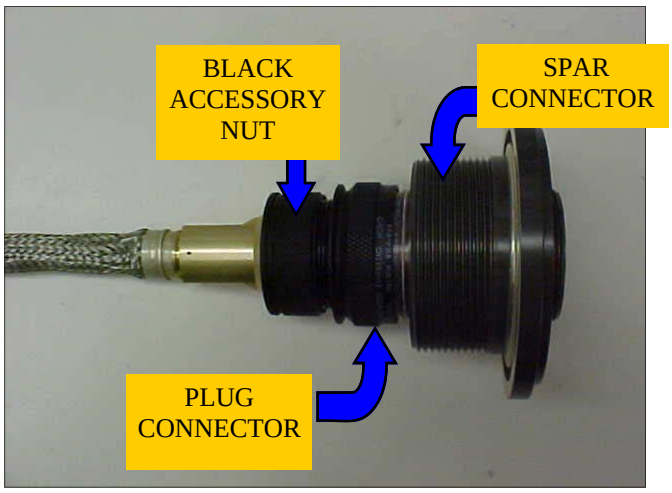
1. Diagonal Wire cutters - Small & Medium
2. Combination Slip - Joint Plier - 6 or 8 inch
3. Contact removal tools: MS24256R16 for size 16 and MS90456-8 for shielded, or equivalent
4. Backshell Retrofit Kit.
5. Variable Temperature Heat Gun with Large Reflector Nozzle: Steinel Model HL 2010 E with 39mm Reflector Nozzle (325-400 F degree adjustable range), or equivalent
6. Electrical Tape
7. Bonding Meter (Ref. SWPM 20-20-00)
8. Size 16 contact installation tool per MS24256A16.
9. Shielded contact installation tool (DMC DAK118 or equivalent)
10. Toggle Pliers (Modified CL-50-PL , Cinch Provided with kit)
11. Teflon Insulation Tape Per Mil-I-23594, Type I, Class 4
12. Daniels HT250-4 Contact Retention Test Tool w/ Blue Pin Contact Tip, or equivalent

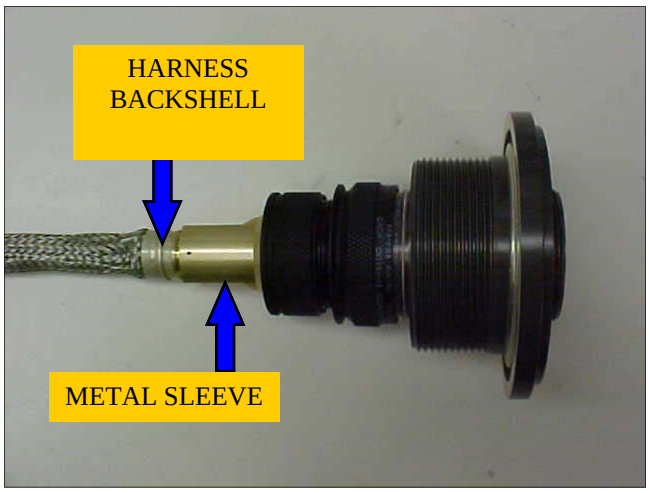
3 **SET-UP**

- **Whenever possible, attach and utilize the large heat reflector/concentrator nozzle on the heat gun. Use caution to direct the flow of heat to the harness and away from other objects.**

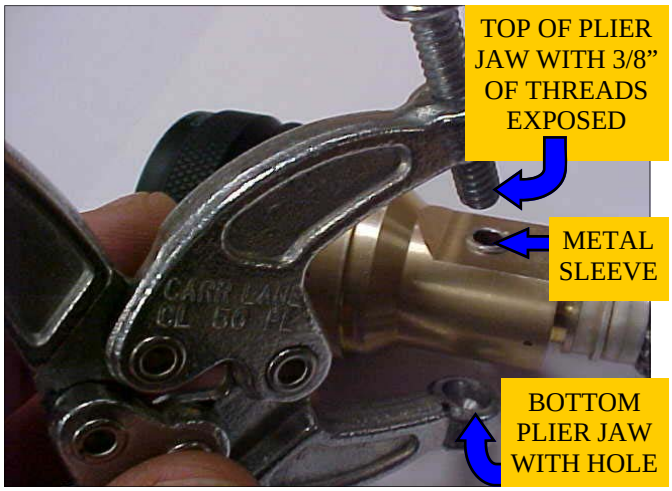
- **Adjust the heat gun to achieve an output air temperature between 325 F and 400 F. When instructed to heat shrink a component, uniformly apply heat to the entire surface for a minimum length of time such that the shrink sleeve visually appears tight and/or the contour & impression of the underlying component is visible on the exterior of the sleeve being shrunk down.**

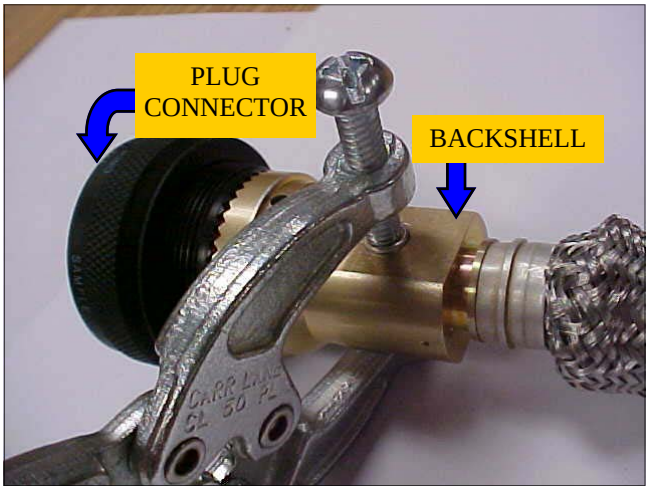
- **Reference Tyco Electronics/Raychem Solder Sleeve Installation Procedure RCPS-100-70 as needed for section 4.15.**



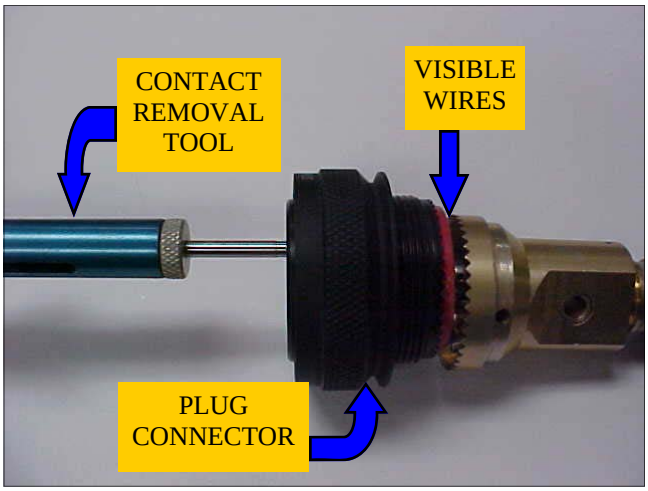


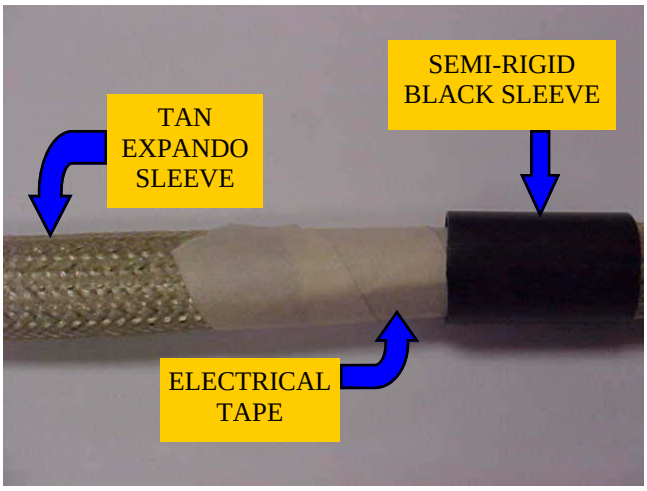
4.0 Cut and remove the lock wire located between the black accessory nut on the CN1156-2 or CN1156-4 plug connector and the backshell. Then loosen (counterclockwise) the black accessory nut that holds the backshell to the plug connector. Then remove the black accessory nut and slide it down the harness.





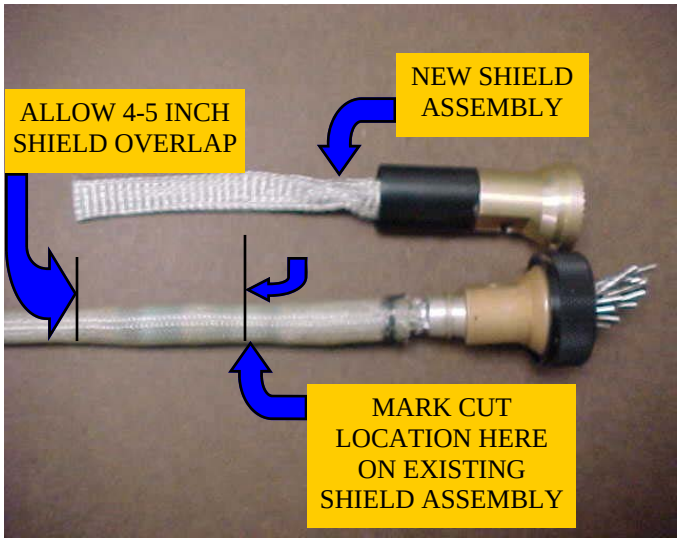
4.1 From the ground strap mounting surface on the backshell, use the toggle pliers provided with the kit to push out the metal sleeve that extends through both sides of the backshell flats. This sleeve has a small press fit on one side of the backshell flat; so the metal sleeve can be **pushed out from one side only**. You will need to try each side to find which flat side on the backshell allows you to remove the sleeve. Make sure that 3/8" to 1/2" of threads are exposed on the tool. Align the screw in the top of the tool with the top of the metal sleeve. Align the hole on the bottom of the pliers with the bottom of the metal sleeve. Squeeze the handles of the tool until they lock or clamp together. Release the handles and pull them apart. The metal sleeve should slide out easily, if not, use a standard combination slip - joint pliers to grip the exposed end of the metal sleeve and pull the sleeve out.





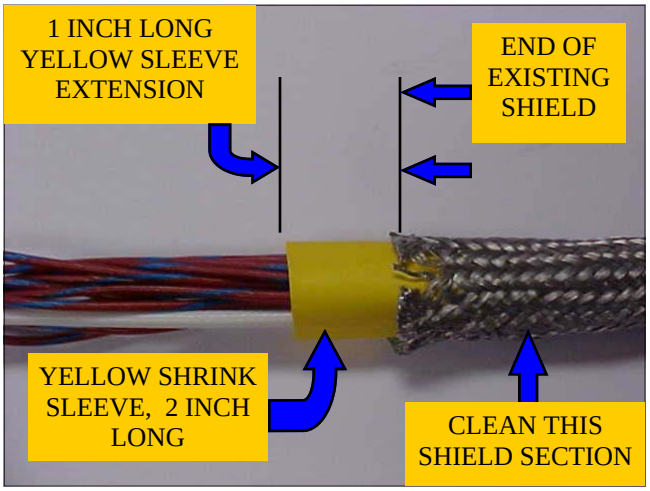
4.2 Pull the backshell a small distance away from the plug connector to expose the wires. Remove each of the contacts from the plug connector with standard contact removal tools. Use MS24256R16 for size 16 contacts and MS90456-8 for the shielded contact. Do not remove any of the un-terminated contacts that have a visible blue seal plug installed. After you remove the contacts, set the plug connector aside for later use during step 4.10.

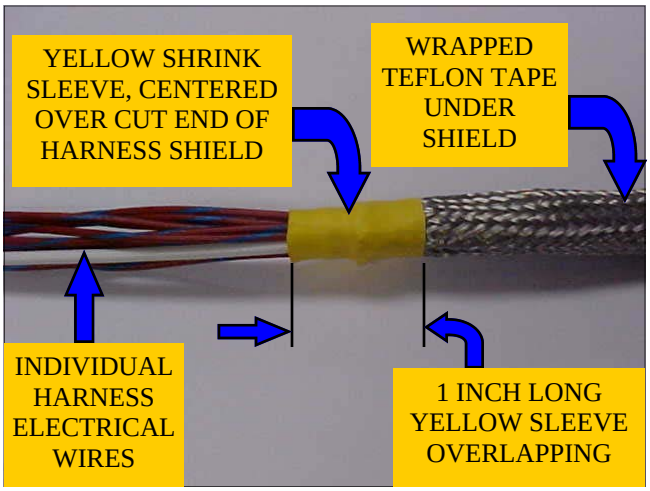
4.3 Locate the blue identification sleeve or sleeves near the backshell. Slide these blue sleeves 18-24 inches in-board, over the tan-colored Expando sleeve. Remove the red or green lacing tape as required. Wind 2-3 turns of electrical tape around the tan-colored Expando sleeving, immediately behind the semi-rigid black sleeving located near the backshell, this helps prevent the Expando sleeving from unraveling. Now, carefully cut and remove the semi-rigid black sleeve which extends out from the backshell. **Use Caution to prevent unraveling or damage to the "Expando" sleeving.** Slide the Expando sleeving back approximately 24 inches. Temporarily attach the Expando sleeving in place.



4.4 Put the new backshell, with its attached lightning shield, next to the wires and contacts of the existing backshell/shield assembly. Make a mark on the existing shield to keep five more inches of shield overlap when the retrofit assembly is installed.
Caution: If the remaining lightning shield on the existing harness shows signs of corrosion, the entire wire harness should be replaced.

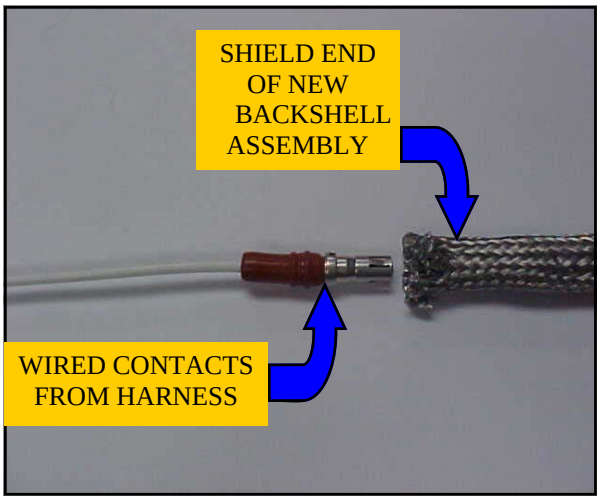
4.5 Balloon the existing shield as shown and carefully cut the shield at the mark, and around the marked location. Make sure that you do not nick or cut the wires below the shield. Once the shield is fully cut, push the backshell up towards the cut shield. Access the wires below and pull each of the wired contacts backwards through the backshell and shield assembly. Remove the shielded (largest) contact last. Pull the old backshell assembly off the wires. Discard the removed backshell/shield assembly.





4.6 "WARNING: Make sure to obey all of the recommended safety precautions for use of heat guns. Refer to SWPM Chapter 20-00-10."
Find one of the 2 inch long, smaller diameter, yellow shrink sleeves in the backshell upgrade kit (one of the two sleeves are extra). Install it over the contacts and harness signal wires. Install this sleeve below the shield, from a point 1 inch outboard of the shield cut location and extending inboard (see photos above). Heat shrink this sleeve in place. Temporarily slide the shield inboard approximately 8 inches to expose the wires below.

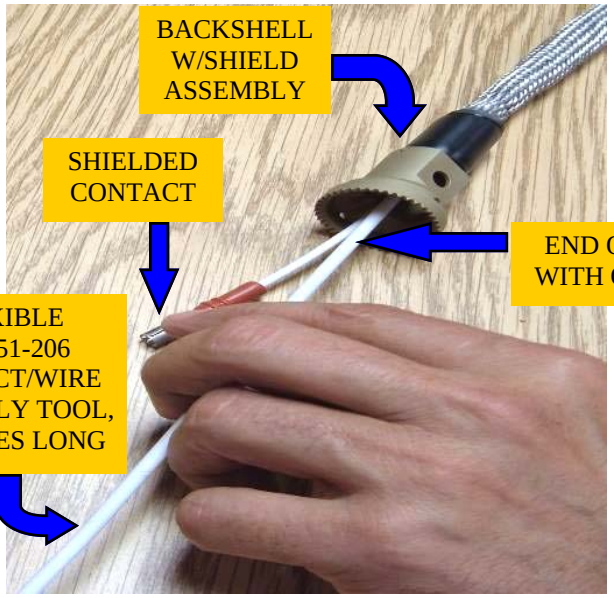
4.7 Wind Teflon tape around the wire bundle. Start at the edge of the yellow sleeve and go 4-6 inches inboard. Make sure that you have a 50% minimum overlap of the tape. Pull the cut end of the shield tight over the Teflon tape. IMPORTANT: Thoroughly clean and dry the first 5-6 inches of the existing harness shield. Use a cloth and Isopropyl Alcohol. Make sure that the first 5-6 inches of the shield is dry and has no unwanted material.
Get one, 1 inch long yellow shrink sleeve from the backshell kit (one of the two sleeves is extra) and slide it over the connector contacts. Make sure the center of the sleeve is as close as possible over the end of the new cut shield (see above). Heat shrink this yellow sleeve in place per Boeing SWPM, chapter 20-10-14.

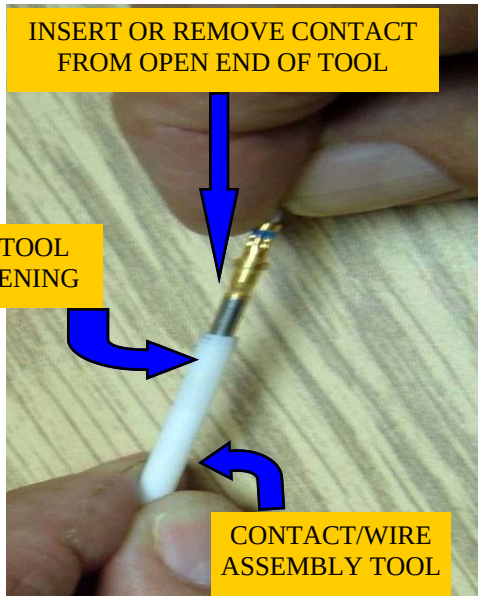


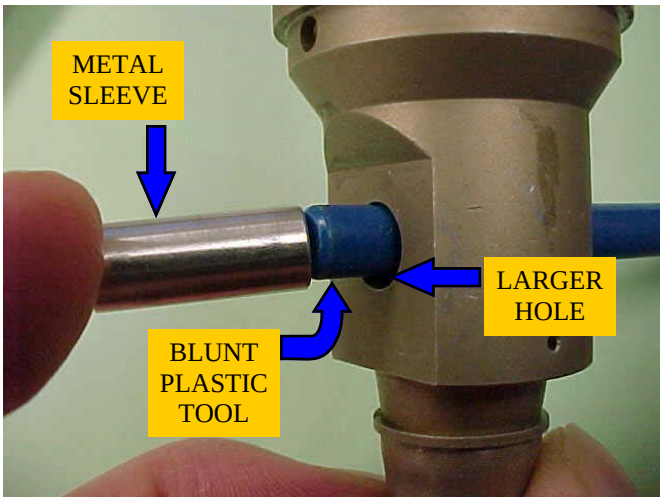
4.8 Find the package of blue part number identification sleeves and one 2 inch long black shrink sleeve in the retrofit kit (one of the black sleeves is extra). **From the package, find the <u>one</u> blue shrink sleeve that has the same part number identification as the existing harness being repaired (the remaining blue sleeves are extra).** Slide this **one** blue ID sleeve and the black shrink sleeve over the contacts, signal wires, the end of the shield, and the tan colored Expando sleeve. Slide these sleeves inboard for use during step 4.17, 4.18 and 4.19.

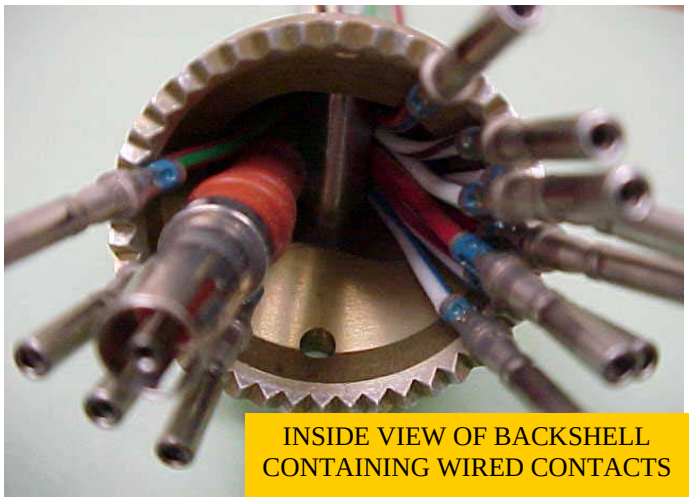
4.9 Get the new backshell/shield assembly from the retrofit kit. Insert the harness contacts and signal wires through the new backshell/shield assembly. Begin at the end of the shielding, push the backshell towards the cut end. Insert the larger shielded contact with wire first, followed by the remaining contacts (Opposite of the removal process).

4.10 Use of the "optional" CN0951-206 wire/contact assembly tool makes insertion through the shield easier. Insert either end of the tool through the front of the backshell until it exits the cut end. Grasp one of the smaller contacts and insert the end of the contact into the end of the tool, approximately 0.5 inch. Grasp the tool at the backshell end and pull the contact with wire through the backshell. Firmly grasp the back of the contact and pull the tool off the contact. Reinsert the tool through the backshell and repeat the process for all remaining contacts.

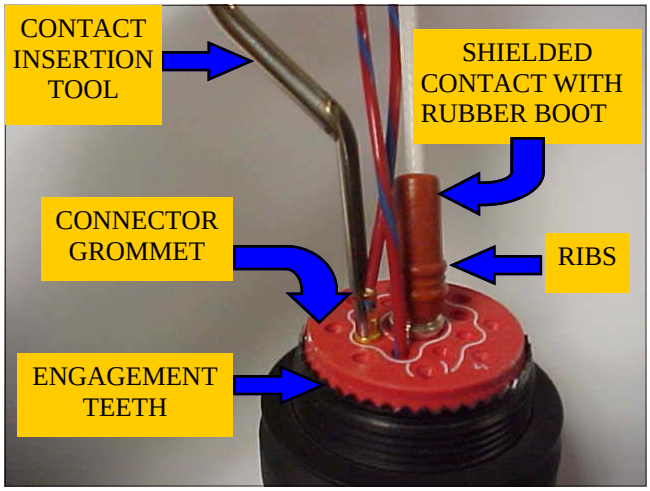


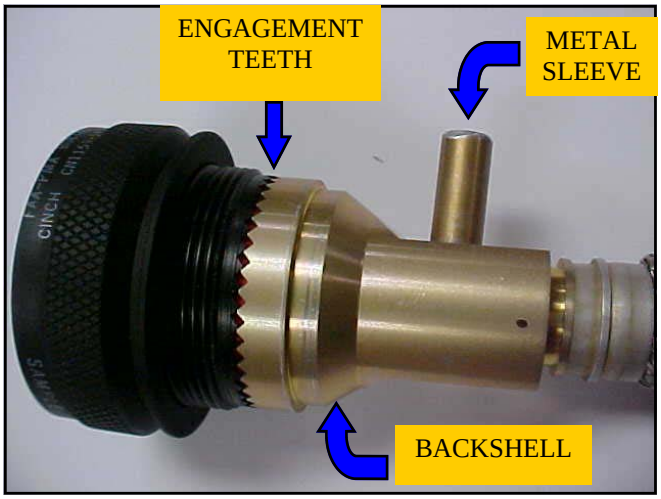




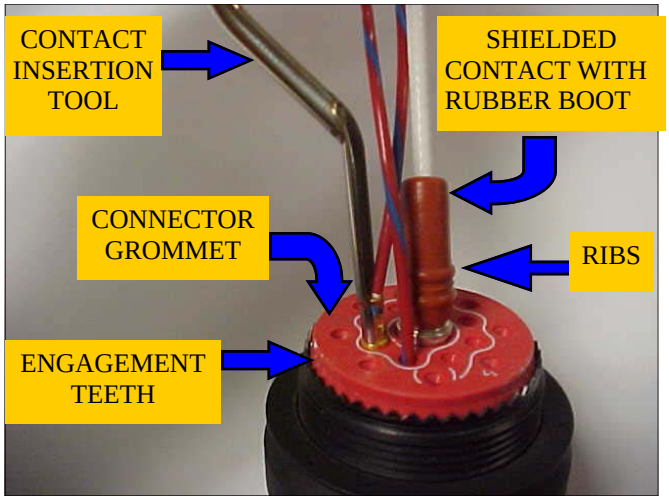


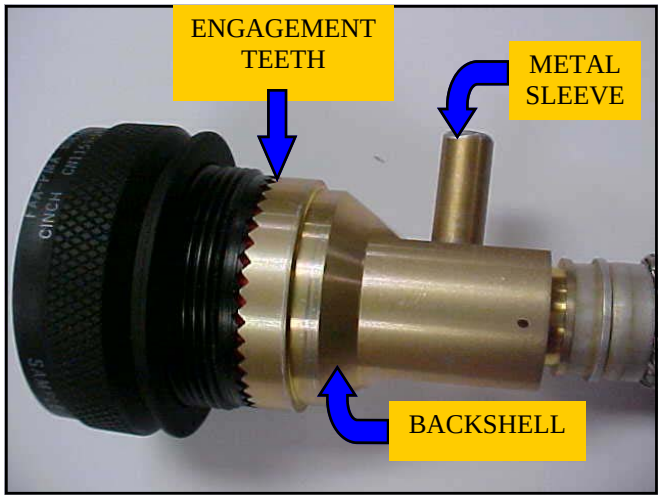
4.11 Get the new metal sleeve from the backshell kit and try to put it through the outer surface on each flat side of the backshell. Note that the metal sleeve will go through one hole only, because the other hole is smaller. Carefully separate the wires that go through the backshell and move them to each side. Put a **blunt plastic tool** through the smaller hole of the backshell and go out the larger hole while you separate the wires to each side. Hold the new metal sleeve and put it on the top of the plastic tool. Push down on the metal sleeve while you push the plastic tool out of the backshell, and put the new metal sleeve in the backshell. Make sure you do not pinch the signal wires. Push the metal sleeve into the opposite side of the backshell hole as tightly as possible by hand. Temporarily attach it in position with electrical tape. You can also use the toggle plier to permanently hold the metal sleeve in the correct position.



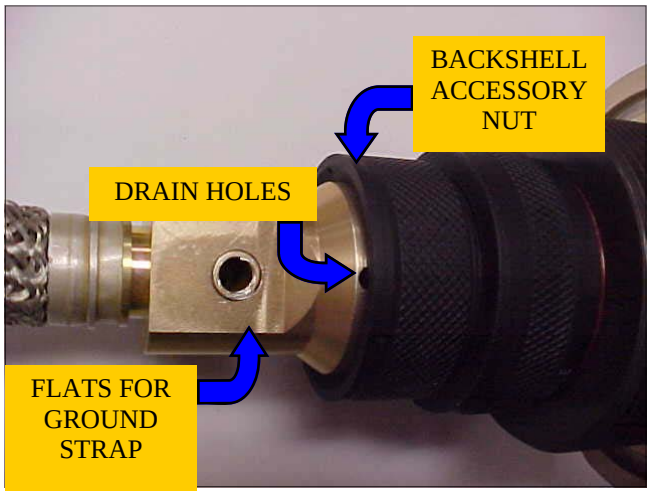


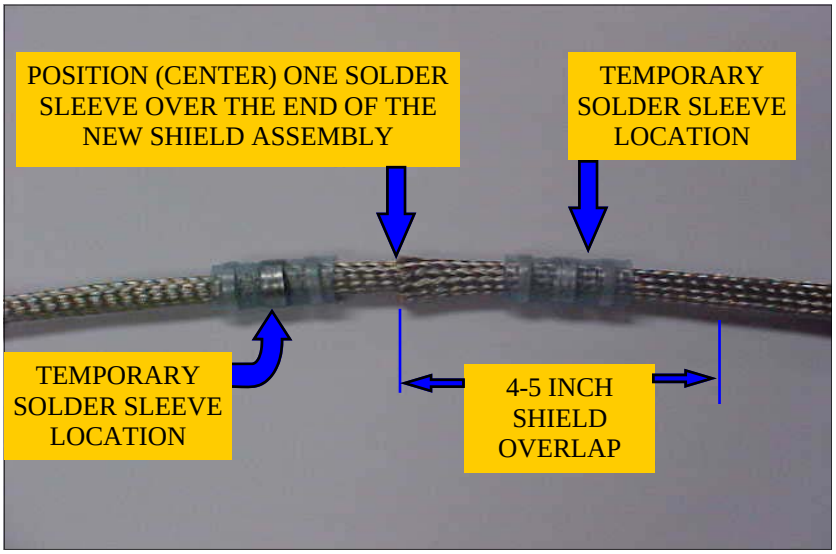
4.12 Get the plug connector from step 4.2. Insert all of the contacts into the connector. Use Table 1, 2 or 3 as applicable for contact assignments. After you insert the shielded contact, hold the rubber boot and slide it forward until the two ribs on the boot go into the connector grommet. Apply a small amount of isopropyl alcohol to the boot to help it move. Make sure that all contacts are correctly locked in place. Use the HT250-4 contact retention tool with a blue pin contact tip to do a test of each of the size 16 contacts. Lightly pull the shielded wire to make sure that the contact is correctly locked in place.





4.13 Slide the backshell and the black backshell accessory nut forward. Turn the backshell 1/2 turn maximum to align the mounting strap flats at the 12 and 6 O'clock position compared to the master key of the plug connector. This makes sure that the backshell drain holes are also positioned at the 12 & 6 O'clock position. Align the engagement teeth of the backshell to the rear teeth of the plug connector. Connect the backshell to the rear of the plug connector. Turn the black accessory nut clockwise on the rear threads of the plug connector, 1 1/2-2 turns only, until the teeth engage.

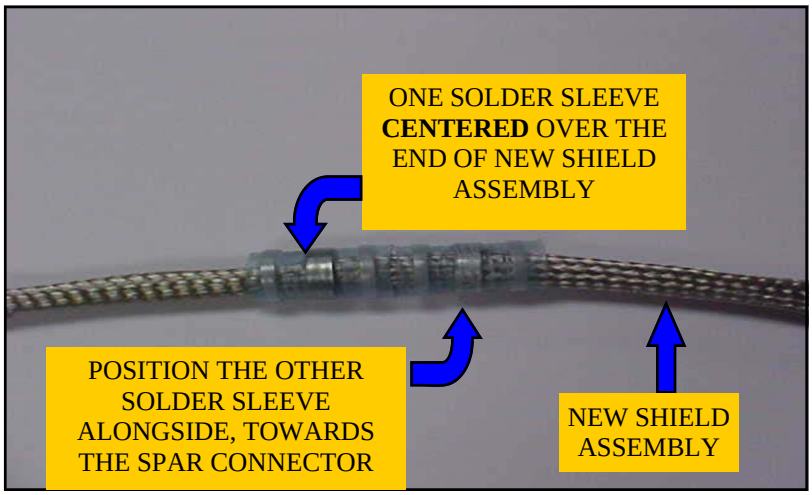




IMPORTANT: Fully clean and dry the first 5-6 inches of the existing harness shield. Use a cloth and Isopropyl Alcohol. Make sure that the first 5-6 inches of the shield is dry and has no unwanted material. This will make sure that there is a good electrical connection.

4.14 The new backshell/shield assembly has two large solder sleeves located around the shield. Put the two solder sleeves in the correct position on the 4 - 5 inch shield overlap section of the new harness as shown below. Make sure that the center of one of the solder sleeves is around the end of the new backshell/shield assembly, and that the other solder sleeve is next to it, on the side of the new backshell and spar connector.

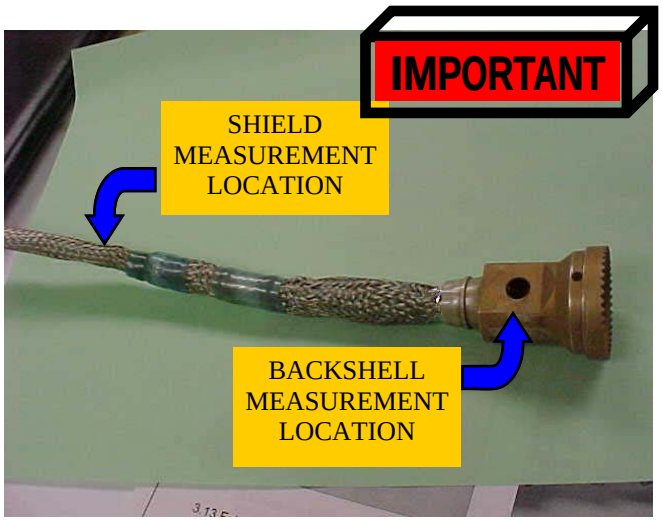
NOTE: Make sure the shield wire strands lie flat & smooth.

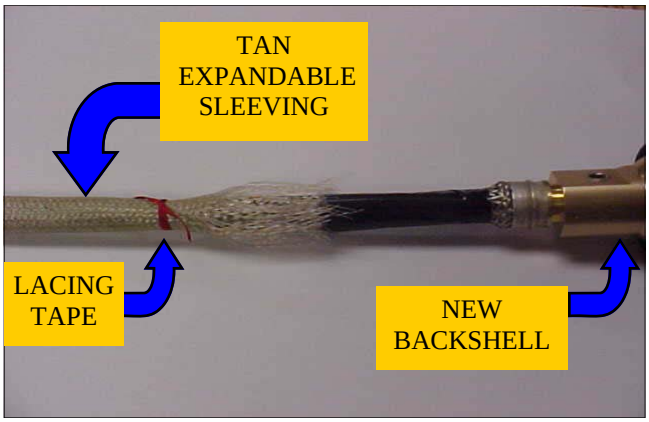


"Make sure to obey all of the recommended safety precautions for use of heat guns. Refer to SWPM Chapter 20-00-10." The heating tool and assembly become hot during the Solder Sleeve installation.

4.15 Use adequate ventilation during installation. Apply heat separately around each of the solder sleeves, heat the centered solder sleeve first, moving the heat gun as required to avoid heat damage to adjacent components. Apply heat until the solder preform melts, evenly flows and wets between the new shield and the existing harness shield. Inspect the solder to make sure that the solder flow between the shields appears to be smooth and wet, and that the meltable inserts on each end have melted and evenly flowed.

Examine the sleeve for damage. Make sure that there are no cracks, punctures, splits, holes or tears in the sleeve. Wait 5 minutes before next step.

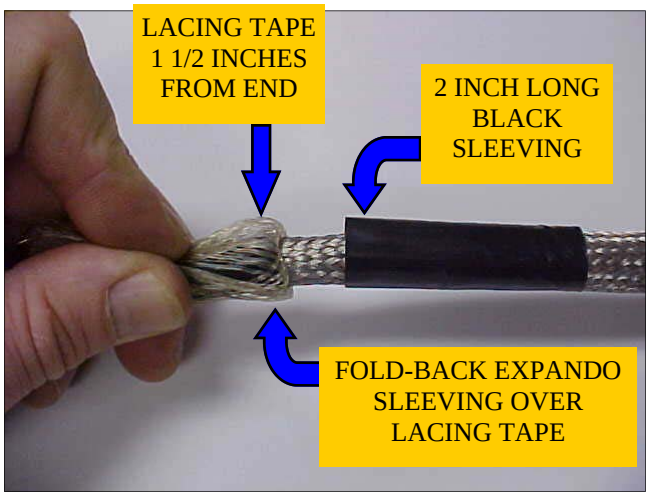




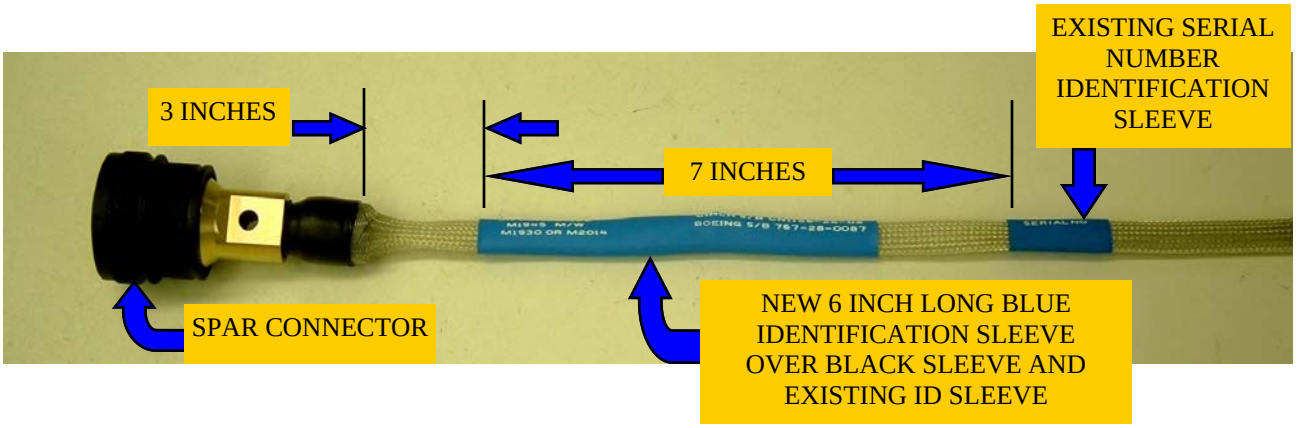
4.16 ** WARNING ** Use Only Airline Approved Test Equipment & Procedures in Areas Subject To Combustion, Fire And Explosions.

Use the Bonding Meter to measure the resistance between the new backshell surface and a **clean** location on the original shield surface near the new solder junction. Make sure that the resistance is 2.50 Milliohms or less. If the resistance is greater than 2.50 Milliohms, the solder joint should be reworked until it meets the requirement.

4.17 Slide the existing tan colored Expando sleeving forward to the new backshell until it is tight. Find the lacing tape of the same color as on the existing harness in the kit. Cut a piece of this lacing tape and attach it 1 ½ inches from the end of the tan Expando sleeve, immediately behind the black sleeve. Slide the black shrink sleeve from step 4.8 forward to the rear of the new backshell.

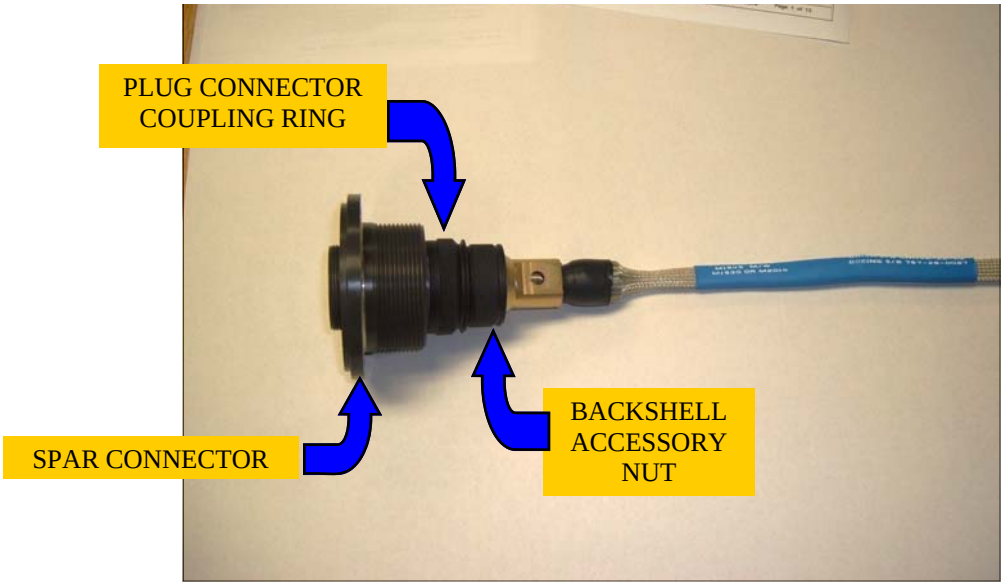


4.18 Fold back the 1 ½ inch long end section of the tan Expando sleeving over the lacing tape. Slide the 2 inch long black sleeve over the section that is folded back to fully cover the area, then heat shrink the black sleeve into position.

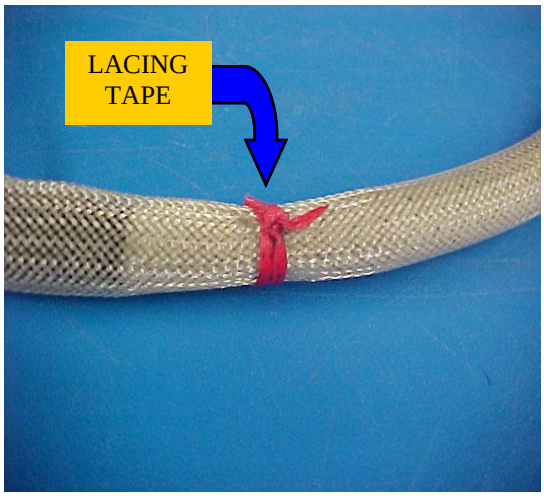


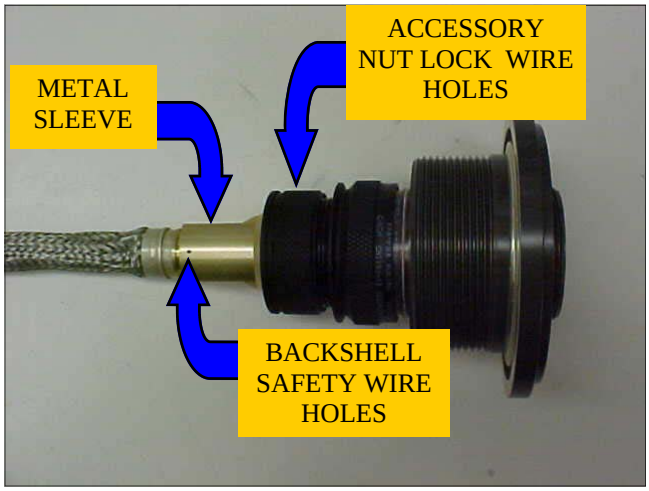
4.19 If the existing blue identification and serial number sleeve are covered, slide them in the direction of the spar connector until you can read them clearly. Put the existing identification sleeve (approximately 2 1/2 inches long) next to the black sleeve.

4.20 Pull the new 6 inch long blue identification sleeve, which you previously installed, over the black sleeve from step 4.18 and the existing part number identification sleeve. If necessary, move the serial number identification sleeve to make sure that it does not go under the part number sleeve. Put the new blue identification sleeve approximately 3 inches behind the backshell, and heat shrink it as shown above.



4.21 Hold the CN1156-2 or –4 plug connector and backshell assembly. Tighten the backshell accessory nut onto the plug connector Make sure the accessory engagement teeth of the plug connector and of the backshell properly engage. Check proper accessory teeth engagement by attempting to rotate the new backshell. Torque the CN1156-2 backshell accessory nut to the plug connector to between 100-110 inch-pounds. Torque the CN1156-4 backshell accessory nut to the plug connector to between 50-60 inch-pounds.



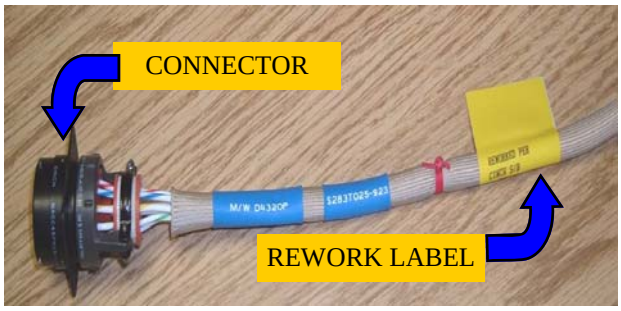


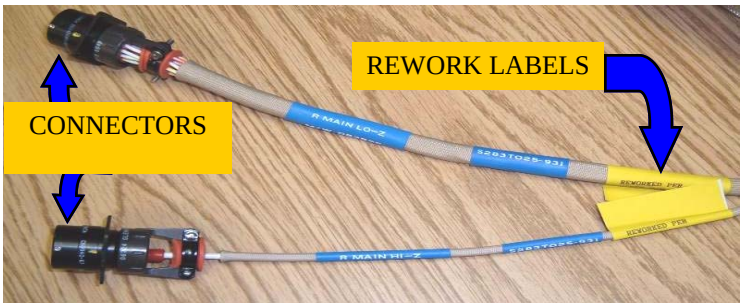
4.22 Attach the lacing tape supplied with the kit to the first 4 feet of harness, as necessary to replace the removed lacing tape. Attach lacing tape behind the blue identification sleeve, and then at intervals of 12 inches. Use red or green tape as applicable to agree with the existing tape.

4.23 Attach the safety wire/cable between the backshell accessory nut and one of the two wire holes near the rear of the backshell. Pull the safety wire/cable until it is tight.

4.24 Carefully remove the tape that holds the metal sleeve in position from around the flat parts of the backshell. Make sure that you do not push out the metal sleeve.

4.25 Access the inboard connector or connectors at the opposite end of the upgraded harness. From the SB kit, locate the yellow adhesive rework identification label (Approximately 2 inches wide x 3 inches long). Remove the backing from the label and securely install it around (wrap so that adhesive ends touch together) the harness within 12 inches of the connector as shown below.





4.26 ** WARNING ** Use Only Airline Approved Test Equipment & Procedures in Areas Subject To Combustion, Fire And Explosions.
Do a continuity test of each wire in the harness. Refer to Table 1, 2, or 3 as applicable for pin assignments.

TABLE 1

WIRING TABLE – MAIN TANKS, SPAR PLUG CONNECTOR TERMINATION

THIS TABLE IS APPLICABLE TO THE FOLLOWING PART NUMBERS:

BOEING P/N: S283T025-121	**CINCH P/N: CN1156-121**
BOEING P/N: S283T025-126	**CINCH P/N: CN1156-126**
BOEING P/N: S283T025-131	**CINCH P/N: CN1156-131**
BOEING P/N: S283T025-136	**CINCH P/N: CN1156-136**
BOEING P/N: S283T025-321	**CINCH P/N: CN1156-321**
BOEING P/N: S283T025-331	**CINCH P/N: CN1156-331**

SPAR CONNECTOR CONTACT LOCATION	HARNESS WIRE * IDENTIFICATION COLOR	HI-Z CONNECTOR CONTACT LOCATION	LO-Z CONNECTOR CONTACT LOCATION
1	WHITE (SHIELDED)	1	-
2	N/A	-	-
3	WHITE	-	1
4	RED/GREEN	-	2
5	RED/YELLOW	-	3
6	RED/VIOLET	-	4
7	RED/BLUE	-	5
8	WHITE/BROWN	-	6
9	WHITE/BLACK	-	7
10	WHITE ORANGE	-	8
11	WHITE/RED	-	9
12	WHITE/GREEN	-	10
13	WHITE/YELLOW	-	11
14	WHITE/BLUE	-	12
15	WHITE/BLUE/YELLOW	-	13
16	WHITE/VIOLET	-	14
17	RED/BLACK	-	15

- The first wire color indicates the base insulation color. The second and third colors indicate color stripes on the base color.

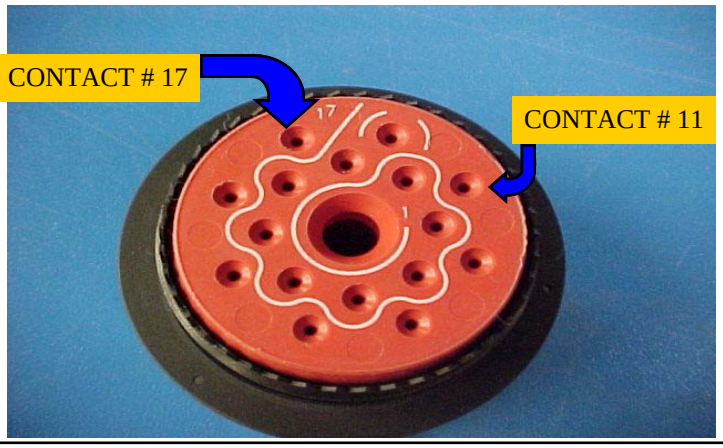


TABLE 2

WIRING TABLE – DENSITOMETER-TANKS, SPAR PLUG CONNECTOR TERMINATION

THIS TABLE IS APPLICABLE TO THE FOLLOWING PART NUMBERS:

BOEING P/N: S283T025-122 CINCH P/N: CN1156-122
BOEING P/N: S283T025-132 CINCH P/N: CN1156-132
BOEING P/N: S283T025-135 CINCH P/N: CN1156-135

SPAR CONNECTOR CONTACT LOCATION	HARNESS WIRE * IDENTIFICATION COLOR	FQIS CONNECTOR CONTACT LOCATION
1	WHITE (SHIELDED)	1
2	BLUE	2
3	RED	3
4	N/A	-
5	N/A	-
6	RED/YELLOW	4
7	RED/GREEN	5
8	RED/BLUE	6
9	RED/VIOLET	7

- The first wire color indicates the base insulation color. The second color indicates color stripes on the base color.

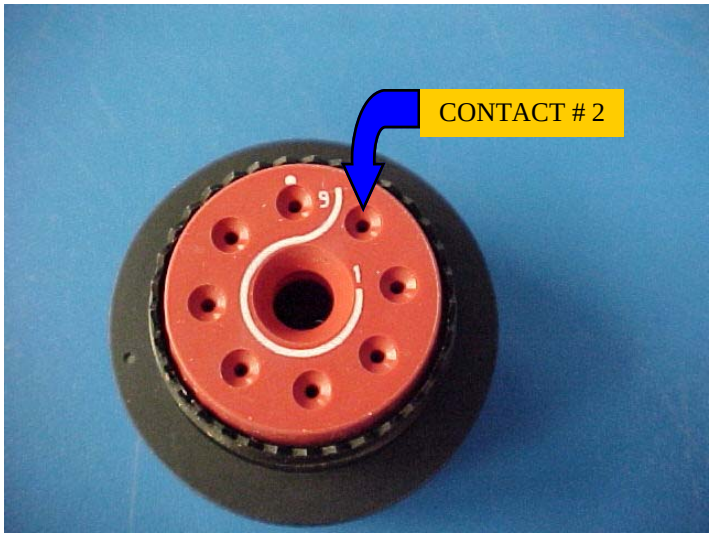


TABLE 3

WIRING TABLE – AUXILLIARY TANKS, SPAR PLUG CONNECTOR TERMINATION

THIS TABLE IS APPLICABLE TO THE FOLLOWING PART NUMBERS:

BOEING P/N: S283T025-123 CINCH P/N: CN1156-123
BOEING P/N: S283T025-127 CINCH P/N: CN1156-127
BOEING P/N: S283T025-134 CINCH P/N: CN1156-134
BOEING P/N: S283T025-137 CINCH P/N: CN1156-137
BOEING P/N: S283T025-323 CINCH P/N: CN1156-323
BOEING P/N: S283T025-334 CINCH P/N: CN1156-334

SPAR CONNECTOR CONTACT LOCATION	HARNESS WIRE * IDENTIFICATION COLOR	FQIS CONNECTOR CONTACT LOCATION
1	WHITE (SHIELDED)	1
2	N/A	-
3	WHITE/RED	3
4	WHITE/BLUE	4
5	WHITE/YELLOW	5
6	WHITE/GREEN	6
7	WHITE/BLACK	7
8	N/A	-
9	N/A	-

- The first wire color indicates the base insulation color. The second color indicates color stripes on the base color.