ISSUE DATE:	6-2-2021
SERVICE BULLETIN SUBJECT:	40 Foot Trunk Hatch Mount Retrofit
VINs or MODELS AFFECTED:	Service Specified Buses
COMPLETE BY:	Next Service Opportunity
SERVICE BULLETIN #:	SC-21-78
Labor Operation Code:	FC44Z

Labor Table

	Operation	Number of Technicians	Hours	Labor Time (T x H)
1	Step 1 – Step 14	1	1	1
2	Step 15 – Step 19	1	1.25	1.25
3	Step 20 – Step 38	1	1	1
4	Step 39 – Step 92	1	2	2
5	Step 93 – Step 104	1	0.75	0.75
		Total Labor Time		6

NOTE: Cure time is not considered reimbursable labor.

PROTERRA
Headquarters:
East Coast Manufacturing:
West Coast Manufacturing:

40 FOOT TRUNK HATCH MOUNT RETROFIT

Retrofit Description:

This procedure updates the trunk hatch to prevent or repair debonding of components.

Tools/Parts Required

Tools and Supplies Required:

- Ratchet
- Torx Socket Set
- Scissors
- Isopropyl Alcohol
- Shop Towels
- Calibrated Torque Wrench
- MA 530 Mixing Tips
- Paint Roller
- Latex Gloves
- Power Drill
- Metric Drill Bit Set
- 36-Grit Sanding Disks
- Cardboard
- Tongue Depressors
- Disposable Mixing/Scraping Tool
- Paint Mixing Sticks
- Standard and Metric Combination Wrench Sets
- Tape Measure
- Straight Edge
- Shop Towels
- Jack Stands to Support Trunk
- Putty Knife
- Super Glue

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

Kit Parts Required:

058133		RETROFIT KIT, 40' CAT/RR FOR INTACT TRUNK HARDWARE (Consisting of)	
	050674	VINYL ESTER PUTTY, COMPOSITE, BODY	4 FL OZ
	002139	RESIN, EPOXY, 4.35 GAL. JUG	16 FL OZ
	026785	DUCT TAPE, UL LISTED	6 IN
	050675	MEKP, COMPOSITE, BODY	2 FL OZ
	020990	PRIMER, COND., 0-RMD,PLE QT.IP120 PC 120	2 FL OZ
	023387	ISOPROPYL ALCOHOL - RUBBING IN GALLON	12 FL OZ
	050677	FIBERGLASS CLOTH, 3” X 18”	2 EA
	019493-007	SCREW, BUTTON FLANGE, TORX, M6-1.0x35x35	6 EA
	018575	LOCKNUT, HEX, M6-1.0, SST, DIN 6926-A2, NYLOCK	6 EA

Kit Parts Required: These parts may be ordered separately when a bus has debonded trunk hardware. Quantities needed will vary based on amount of debonded hardware.

048123		RETROFIT KIT, 40' CAT/RR DEBONDED TRUNK HARDWARE (Consisting of)	
	050674	VINYL ESTER PUTTY, COMPOSITE, BODY	X EA
	002139	RESIN, EPOXY, 4.35 GAL. JUG	X EA
	026785	DUCT TAPE, UL LISTED	X EA
	050675	MEKP, COMPOSITE, BODY	X EA
	018362	PLEXUS, MA-530	X EA
	042536	TOOL, SERVICE, MANUAL ADHESIVE GUN	X EA
	020990	PRIMER,COND.,0-RMD,PLE QT.IP120 PC 120	X EA
	023387	ISOPROPYL ALCOHOL - RUBBING IN GALLON	X EA
	050677	FIBERGLASS CLOTH, COMPOSITE, BODY	X EA
	019493-007	SCREW, BUTTON FLANGE, TORX, M6-1.0x35x35	X EA
	018575	LOCKNUT, HEX, M6-1.0, SST, DIN 6926-A2, NYLOCK	X EA
	018933	WSHR, DIN 9021, STL, HDN, ZPL, M6	X EA
	021156	PLATE, MOUNTING, STUD	X EA
	019082	BRACKET, BALL STUD, MOUNT SHOCK	X EA
	027288	BRACKET, SUPPORT, GAS SHOCK	X EA
	027289	BRACKET, SUPPORT, GAS SHOCK	X EA
	018307-003	SCREW,TAPPING,M5.5X19	X EA
	018576	LKNT, HEX FLANGE NYLON, SS, M8-1.25	X EA

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

Trunk Panel Removal:

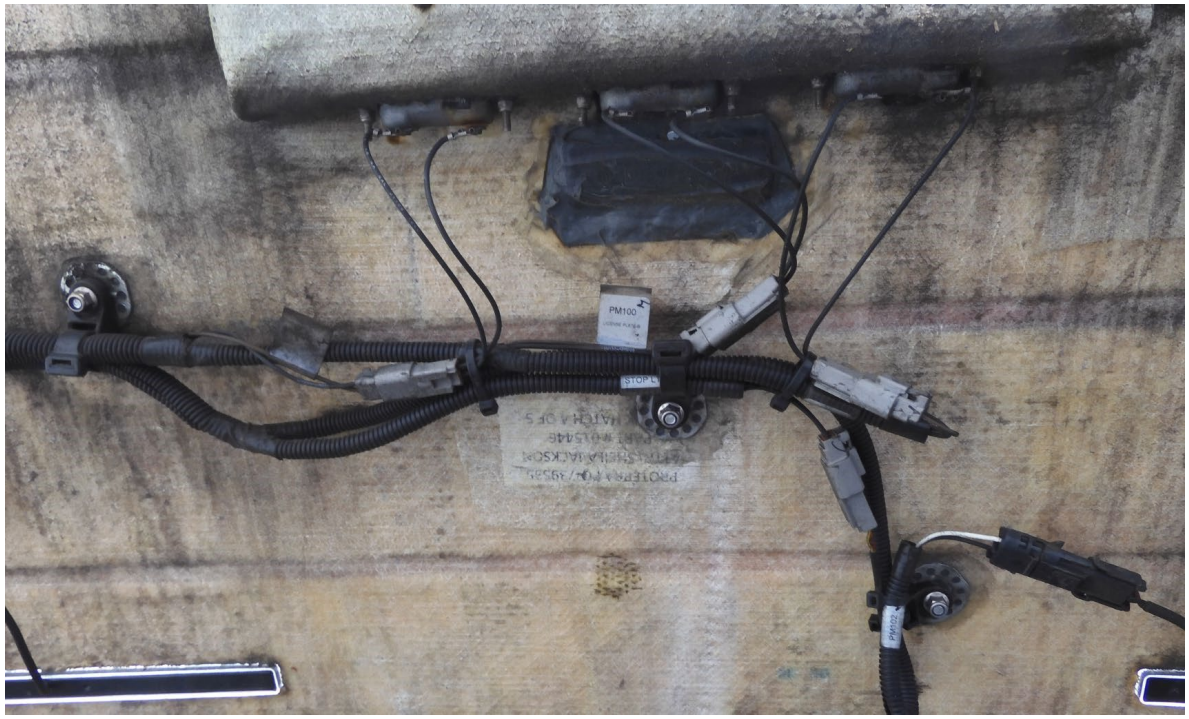
1. Complete the Proterra approved Lockout/Tagout procedure to make the bus safe for work.

2. This section of the procedure assumes that the trunk panel is still attached to the bus. If it is already detached proceed to the next section of the procedure.

3. Open the rear Trunk Panel to access the wiring and attachment hardware on the Panel.

4. Use Jack Stands to support the open Panel for removal.

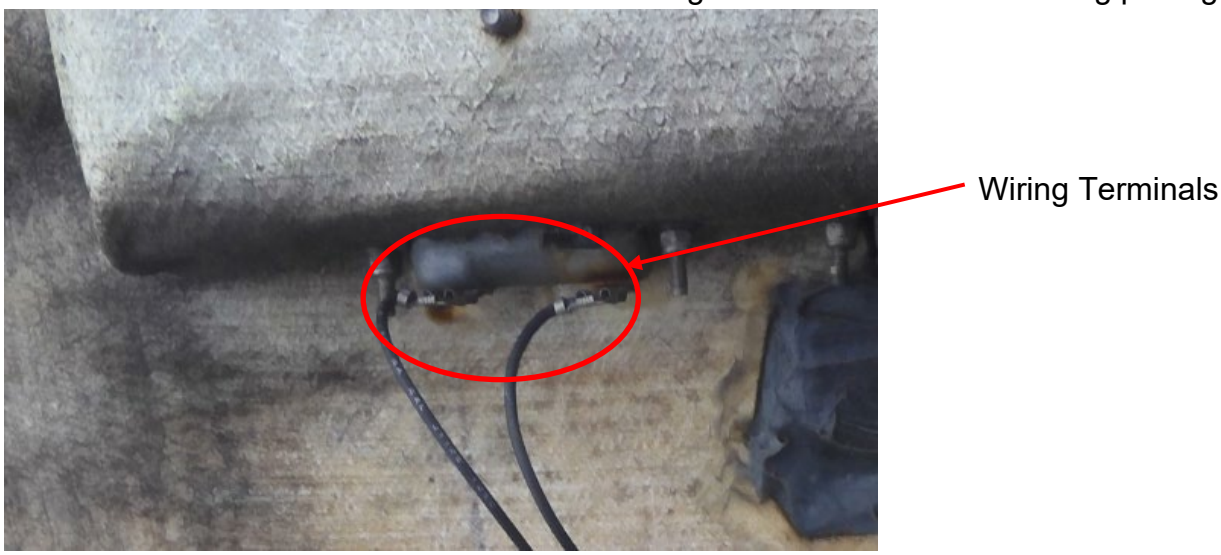
5. Using a 10mm Ratchet/Socket, remove the Locknuts that secure the wiring to the Trunk Panel shown in the following photograph. Disconnect the connectors shown as necessary to remove the Trunk Panel.
   Note: The photograph shows three Rotolocs. Five will typically need to be removed. Disconnect the connector to the Regen light if necessary.



6. Make notes or take photographs of the wiring as it is disconnected so that it may be correctly reconnected later.

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

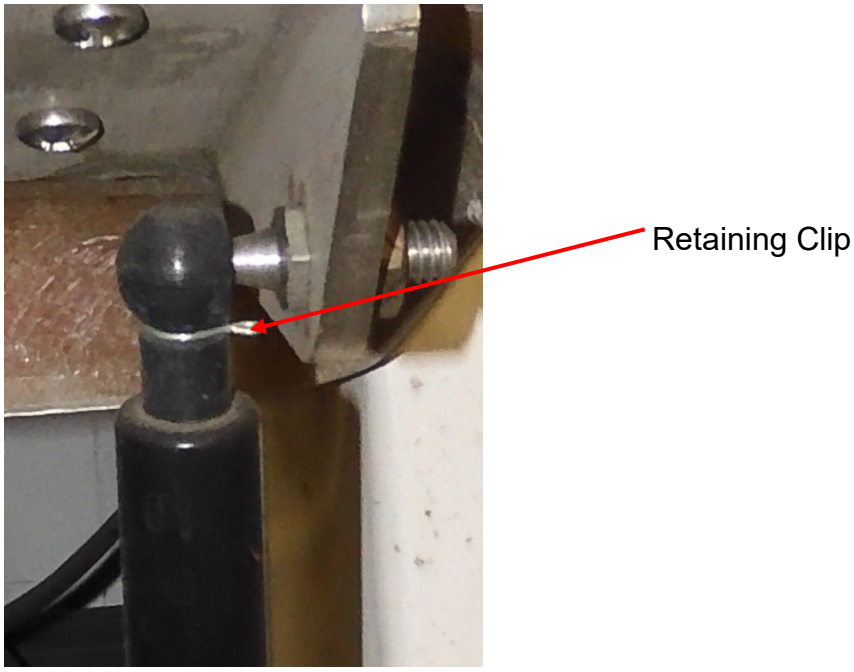
7. Disconnect the Terminals to the License Plate Lights as shown in the following photograph.



8. Using Side Cutting Pliers, cut any Cable Ties that attach the Trunk Panel wiring to the trunk.

9. Remove the wiring from the Trunk Panel.

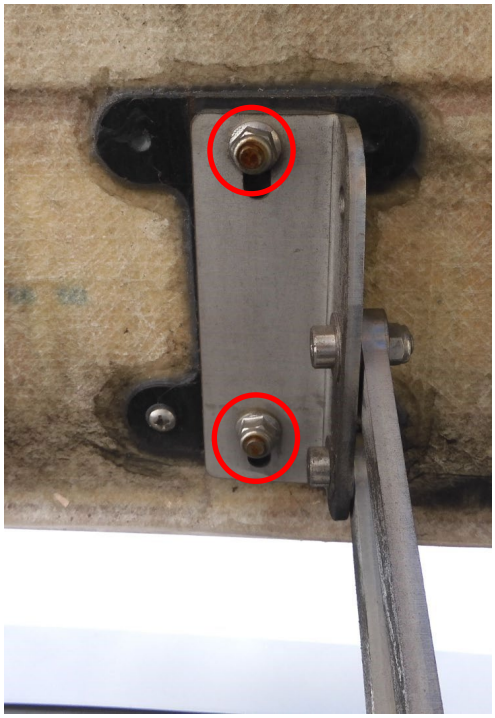
10. Remove both upper Strut Retaining Clips from the Gas Struts from their attachments on the Trunk Panel. Leave the Struts attached to the lower ball stud brackets and allow the Struts to rest against the rear bumper.



11. Using a Jack Stand or other approved Lifting Device, support the Trunk Panel.

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

12. Using a 13mm Ratchet/Socket, remove the Locknuts that secure both Hinges to the Hinge Brackets shown circled in red below.



13. Remove the Trunk Panel and safely support it for further work.

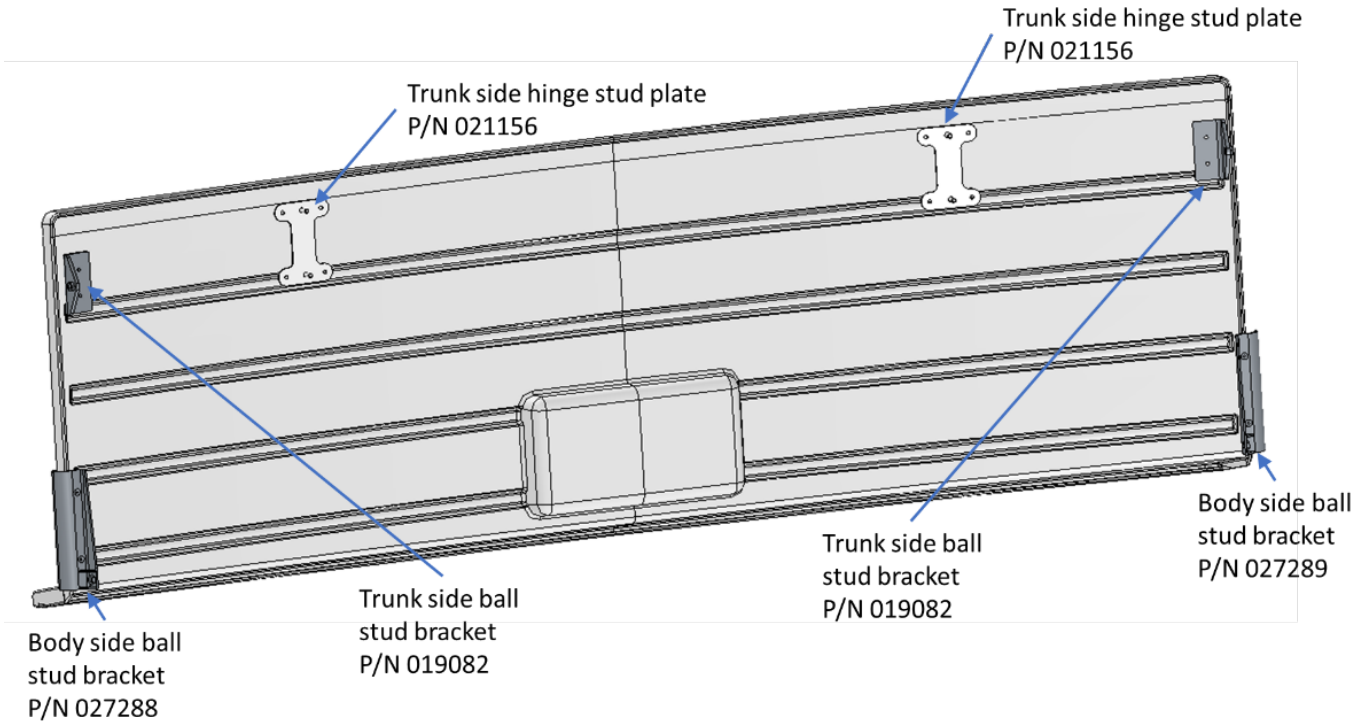
14. This completes the Trunk Panel Removal part of the procedure. Retain all the removed hardware for reinstallation.

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

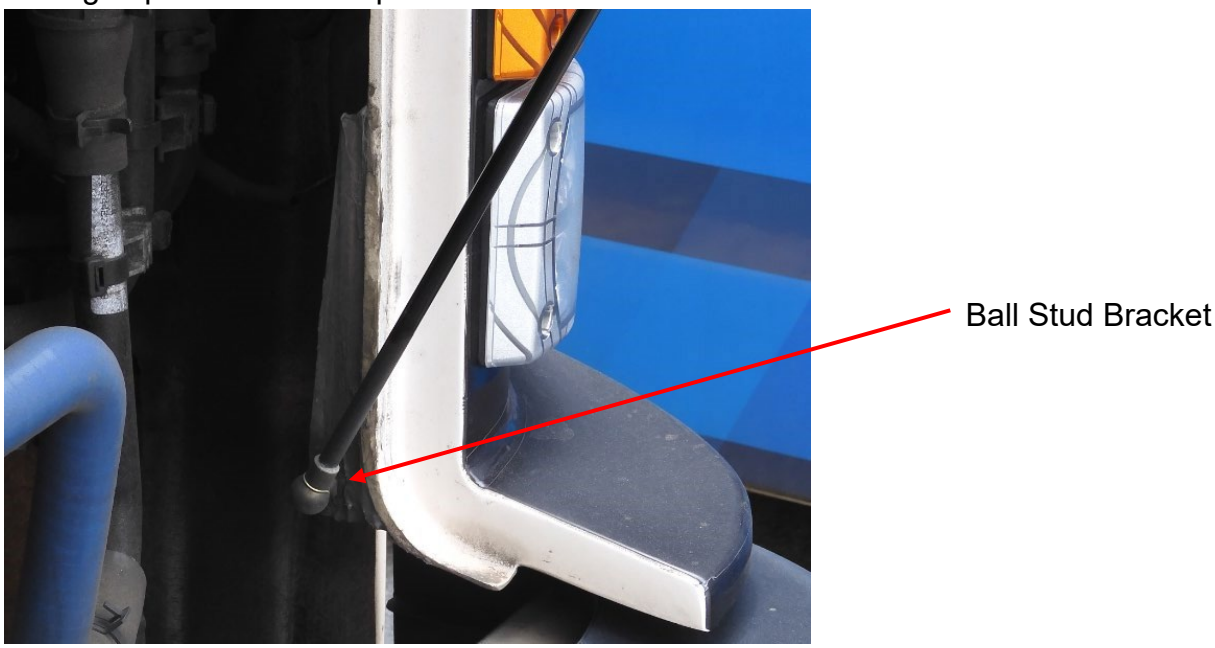
Inspect for Missing Components:

15. Place the Trunk Panel on a level working surface with the interior side facing upward.

16. Using the following illustration as a guide, inspect the Trunk Panel to verify that all the parts shown are included and securely bonded to the Trunk Panel. Any loose or partially de-bonded parts must be re-bonded. Missing or damaged parts must be replaced.



17. Verify that both Ball Stud Brackets are securely bonded to the aft wrap as shown in the following photograph. Any loose or partially de-bonded parts must be re-bonded. Missing or damaged parts must be replaced.



PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

18. Make a note of the parts that must be replaced. These must be ordered from Proterra Service if they were not included in the kit.

19. The inspection process is complete.

Re-bond Missing or Damaged Components:

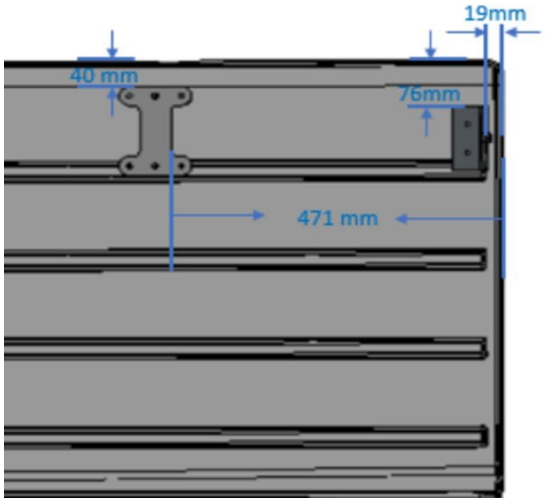
20. Gather any missing or damaged parts that must be replaced.

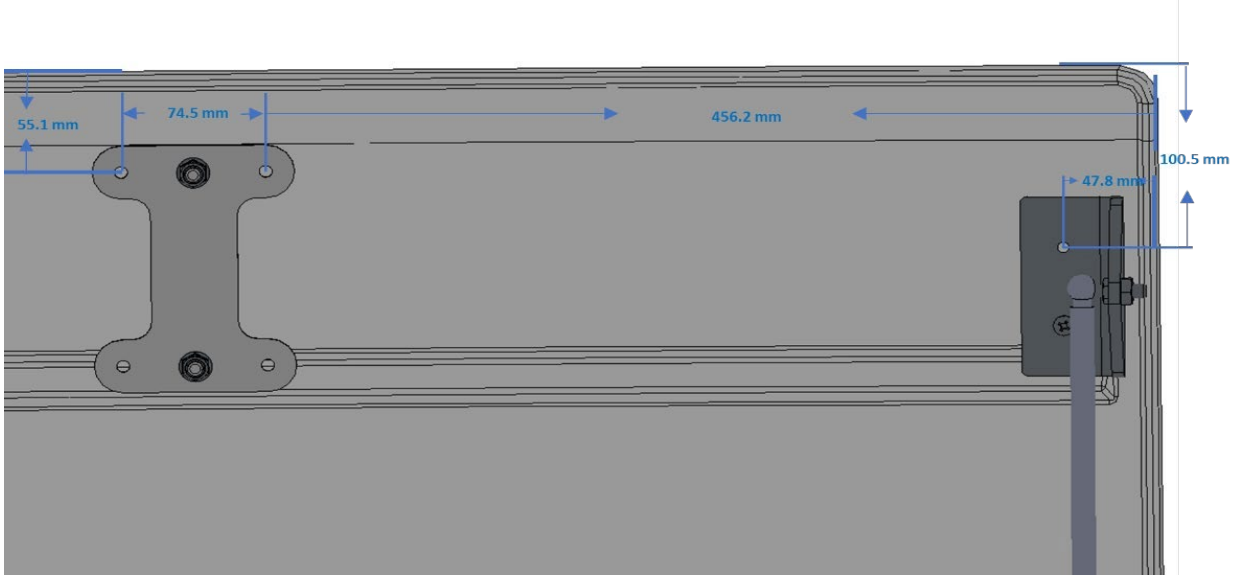
21. Using a Heat Gun and Scraper, remove any loose or damaged components from the Trunk Panel.

22. Inspect the Ball Stud Brackets attached to the AFT Wrap of the bus. Using a Heat Gun and Scraper, remove any Ball Stud Brackets that are loose or damaged.

23. Using a Heat Gun and Scraper, remove any excess Plexus from the areas where the missing or damaged components were previously installed.

24. Using the following illustrations as a guide, lay out any components to be replaced onto the Trunk Panel using the dimensions shown.





PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

25. Using a Permanent Marker, outline each component in the position where it will be installed.

26. Using Isopropyl Alcohol and Shop Towels, clean the areas inside the marked lines.

27. Using a Power Drill with a 36-Grit Sanding Disk, scuff the bonding surface of each component.

28. Using a Power Drill with a 36-Grit Sanding Disk, scuff the areas inside the marked lines where the components will be installed.

29. Using Super Glue, install four Bond Gap Washers (018933) near the corners of each component to be installed.

30. Using Isopropyl Alcohol and Shop Towels, clean the bonding surface of each component to be installed.

31. Using a Plexus Gun with a clean tip, apply adhesive to the bonding surface of one of the components to be installed.

32. Place the component into its intended location which was marked earlier.

33. Using a Tongue Depressor, remove any excess Plexus.

34. Secure the component for curing to the bus with Duct Tape.

35. Repeat the process until each component has been bonded and secured with Duct Tape to the Trunk Panel.

36. Allow 90 minutes for the Plexus adhesive to cure.

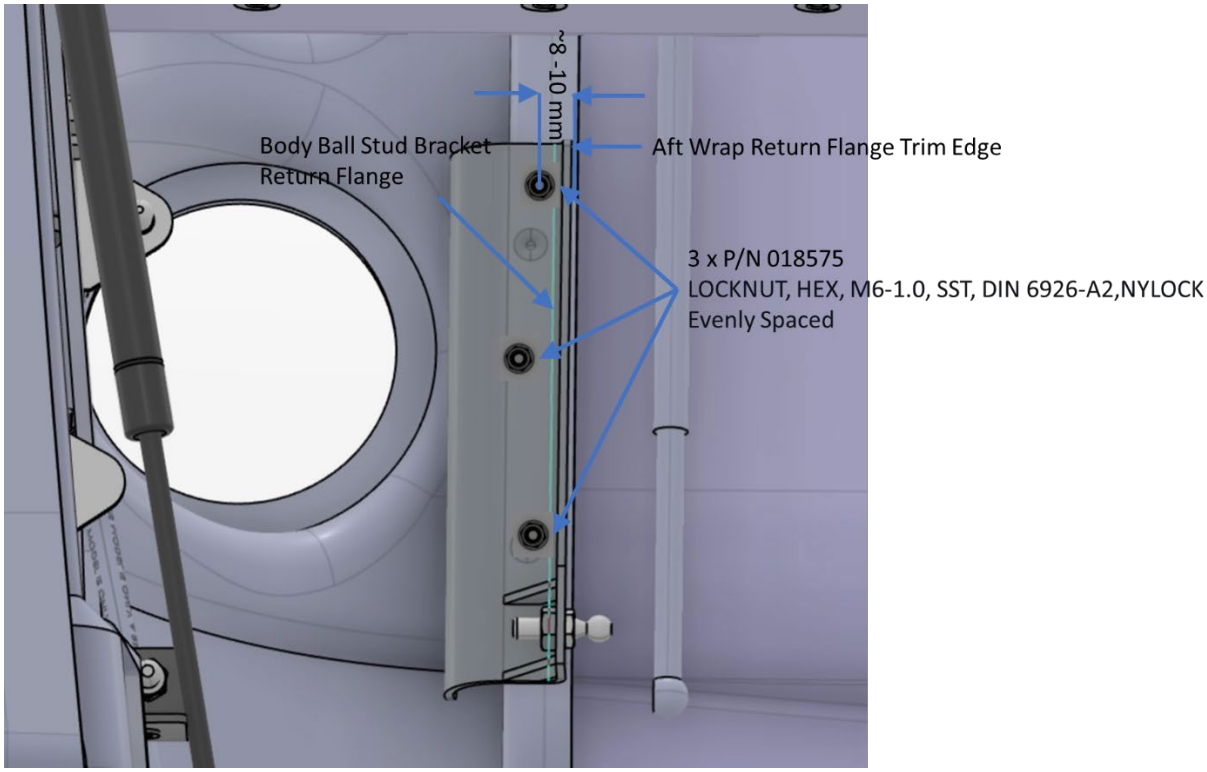
37. The process is complete if no Ball Stud Brackets are to be replaced.

38. Using a Heat Gun and Scraper, remove any Ball Stud Bracket that is damaged or de-bonded.

39. Using a Heat Gun and Scraper, remove any excess adhesive from the Ball Stud Bracket areas that need are to be re-bonded.

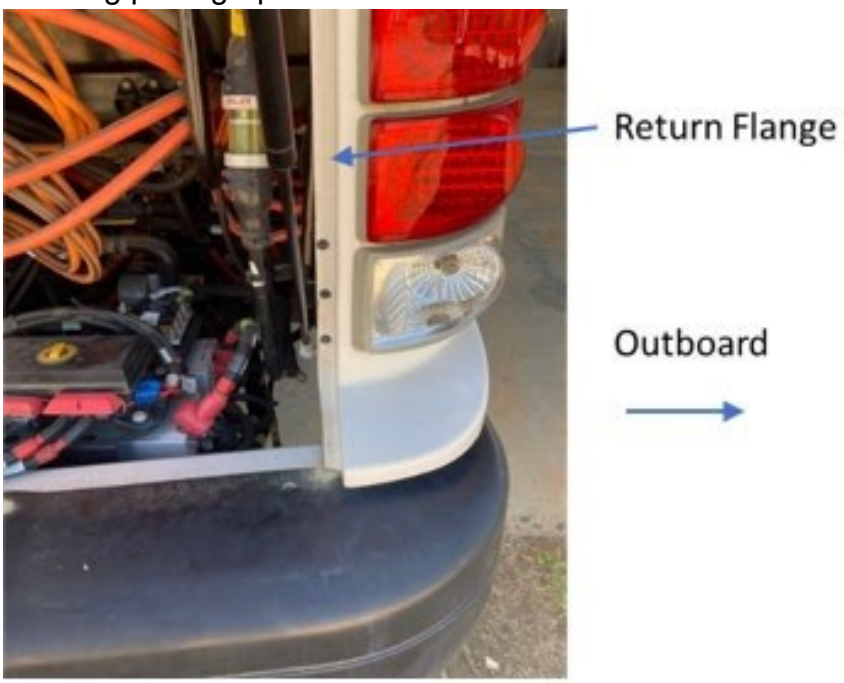
PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

40. Using the following illustration as a guide, place the Ball Stud Bracket in position against the Aft Wrap for mounting.



41. Using a Permanent Marker, outline the Ball Stud Bracket in the position shown above. Also mark the three mounting holes in the Bracket for drilling onto the bus.

42. Using a Power Drill with a 7mm Drill Bit, position the Bit in the center of one of the hole locations. Angle the Bit slightly outboard and drill through the Return Flange as shown in the following photograph.



PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

43. Test the drilled hole to see if the Screw (019493) will fit through the hole and allow the Locknut (018575) to start on the Screw by hand.

44. If this is not successful, re-drill the hole with the Drill pointed more outboard. Do not damage the Return Flange.

45. Repeat the process until all three Screws (019493) and Locknuts (018575) can be started by hand.

46. Using a Calibrated Torque Wrench with a T-25 Torx Socket and a 10mm Combination Wrench, torque the Screw (019493) to 34 inch pounds.

47. Repeat the process to replace the Ball Stud Bracket on the other side of the bus if needed.

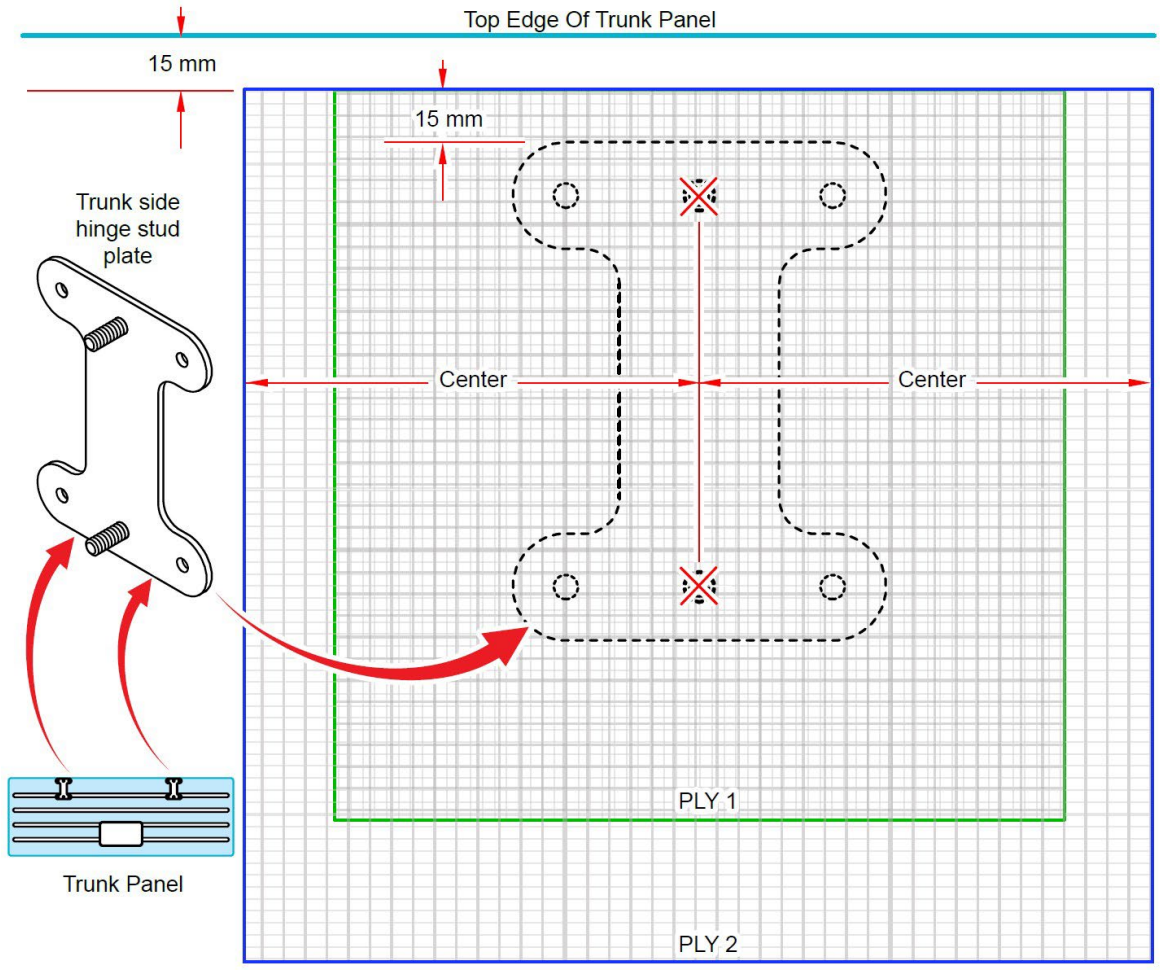
48. The re-bond part of the process is complete.

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

Wet Layup Process:

49. Place the Trunk Panel on a level working surface with gel coat surface facing down.

50. This process will begin by cutting pieces of Biaxial Fiberglass (050677) to reinforce the Hinge Stud Plates (021156) as shown in the following illustration.



51. Using Scissors and a Tape Measure, cut a piece of Biaxial Fiberglass (050677) measuring 205mm x 205mm,

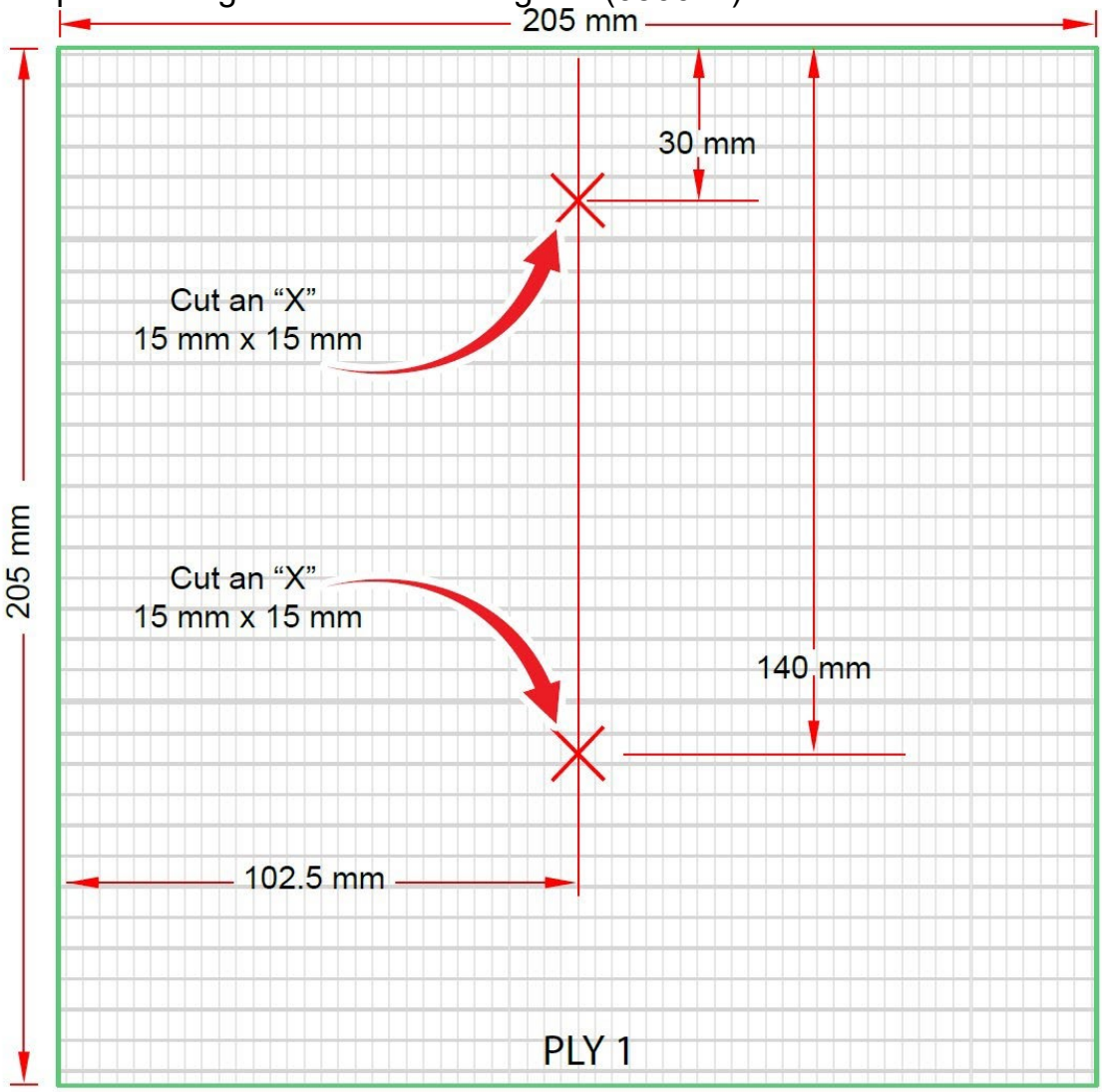
52. Place the cut piece of Biaxial Fiberglass (050677) over the top of one of the Hinge Stud Plates (021156). The Fiberglass sheet should be placed so that it overlaps evenly horizontally on the Stud Plate.

53. The Biaxial Fiberglass (050677) should only overlap 15mm on the top of the Stud Plate (021156).

54. With the Biaxial Fiberglass (050677) placed as previously described, use a Permanent Marker to mark the positions of the Studs on the Stud Plate (021156) onto the Biaxial Fiberglass.

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

55. Using Scissors or an Approved Safety Knife, cut a “X” on the marked areas so that the Studs can pass through the Biaxial Fiberglass (050677) sheet.



56. Place the Biaxial Fiberglass (050677) sheet on the Hinge Stud Plates (021156) as shown in the first illustration in this section.

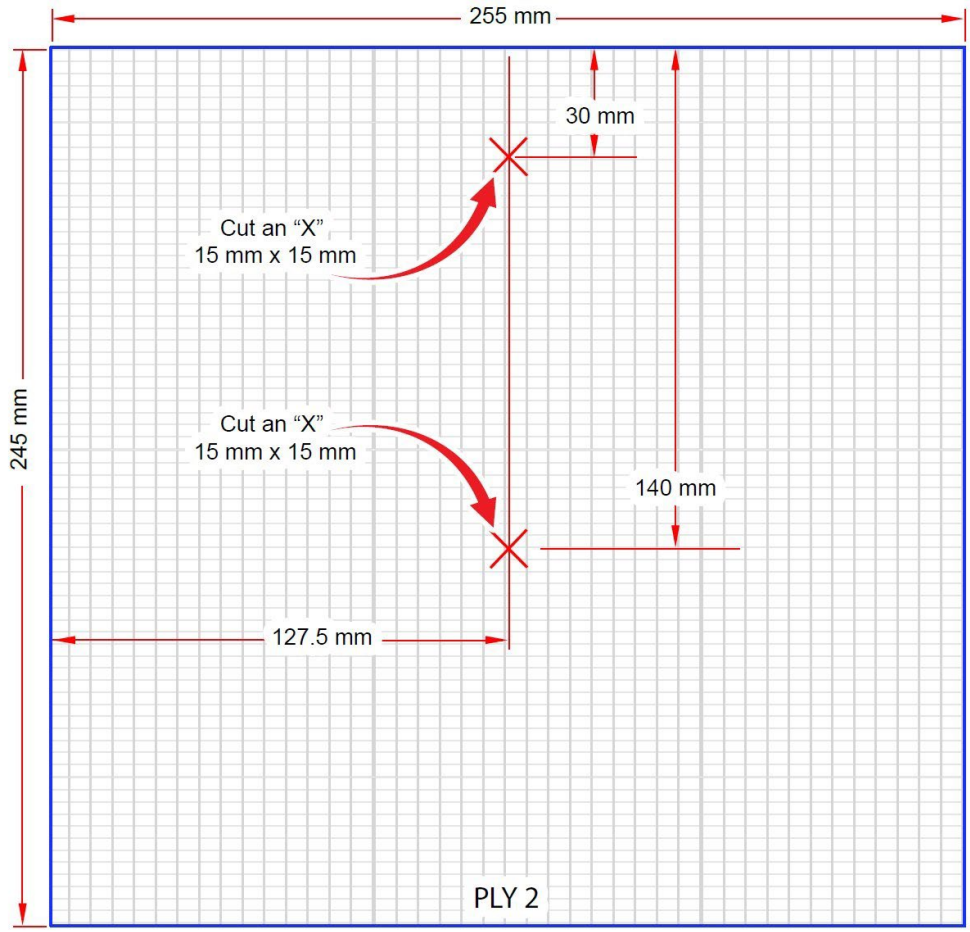
57. Using Scissors and a Tape Measure, cut a piece of Biaxial Fiberglass (050677) measuring 255mm x 245mm.

58. Place the cut piece of Biaxial Fiberglass (050677) over the top of one of the Hinge Stud Plates (021156). The Fiberglass sheet should be placed so that it overlaps evenly horizontally on the Stud Plate.

59. The Biaxial Fiberglass (050677) should only overlap 15mm on the top of the Stud Plate (021156).

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

60. With the Biaxial Fiberglass (050677) placed as previously described, use a Permanent Marker to mark the positions of the Studs on the Stud Plate (021156) onto the Biaxial Fiberglass.



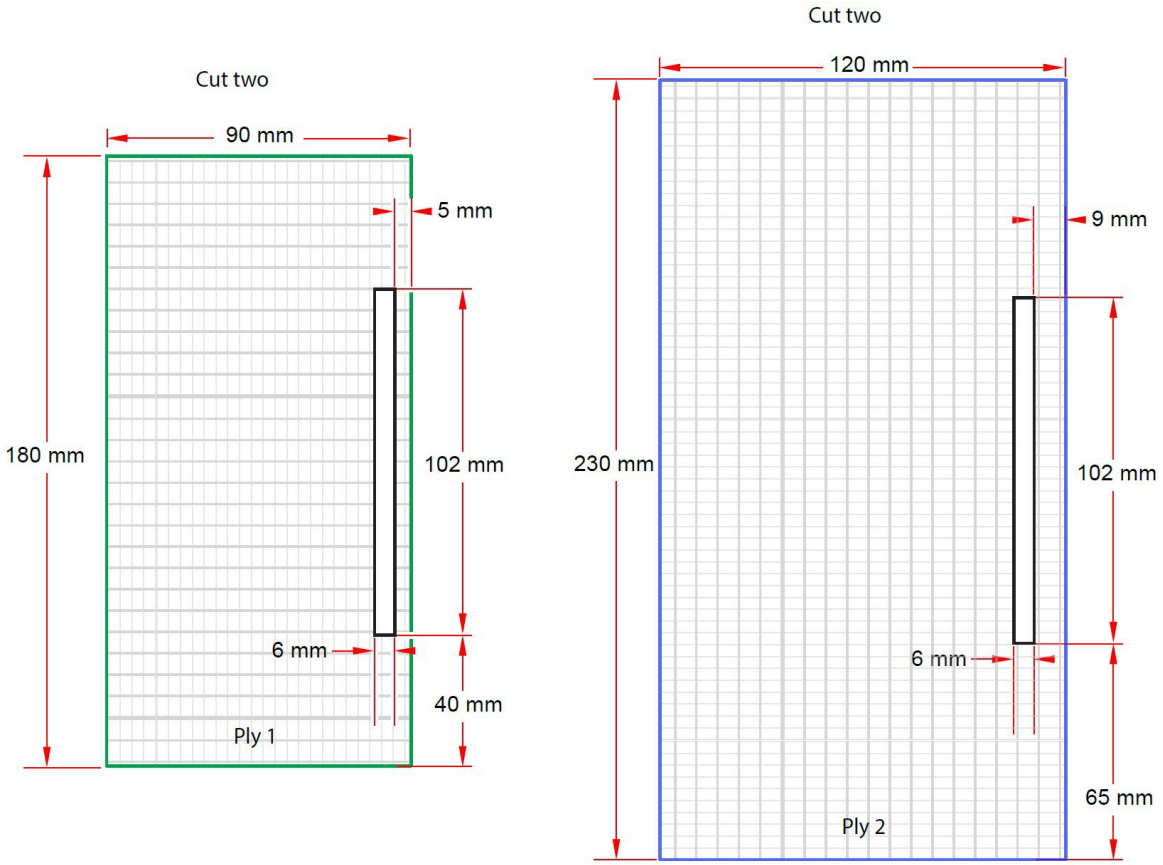
61. Using Scissors or an Approved Safety Knife, cut a "X" on the marked areas so that the Studs can pass through the Biaxial Fiberglass (050677) sheet.

62. Place the Biaxial Fiberglass (050677) sheet on the Hinge Stud Plates (021156) as shown in the first illustration in this section.

63. Repeat the entire process to cut Biaxial Fiberglass Sheets (050677) for the other Stud Plate and place them over the Stud Plate.

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

64. This process will begin by cutting pieces of Biaxial Fiberglass (050677) to reinforce the Ball Stud Brackets (019082) as shown in the following illustration.

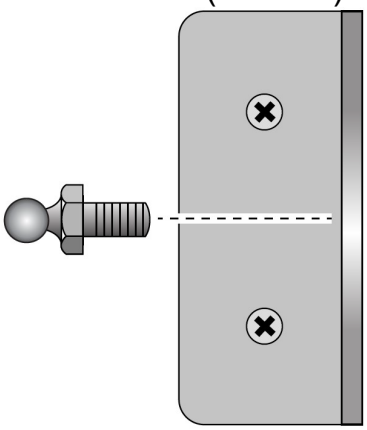


65. Using Scissors and a Tape Measure, cut two pieces of Biaxial Fiberglass (050677) to the dimensions shown in the previous illustration.

66. Using Scissors, cut the 6mm slots shown in the previous illustration. Be careful not to fray the Fiberglass.

67. Repeat the process to cut two additional sheets for the other Ball Stud Brackets (019082).

68. Using a 13mm Combination Wrench, remove both Ball Studs from the Ball Stud Brackets (019082).

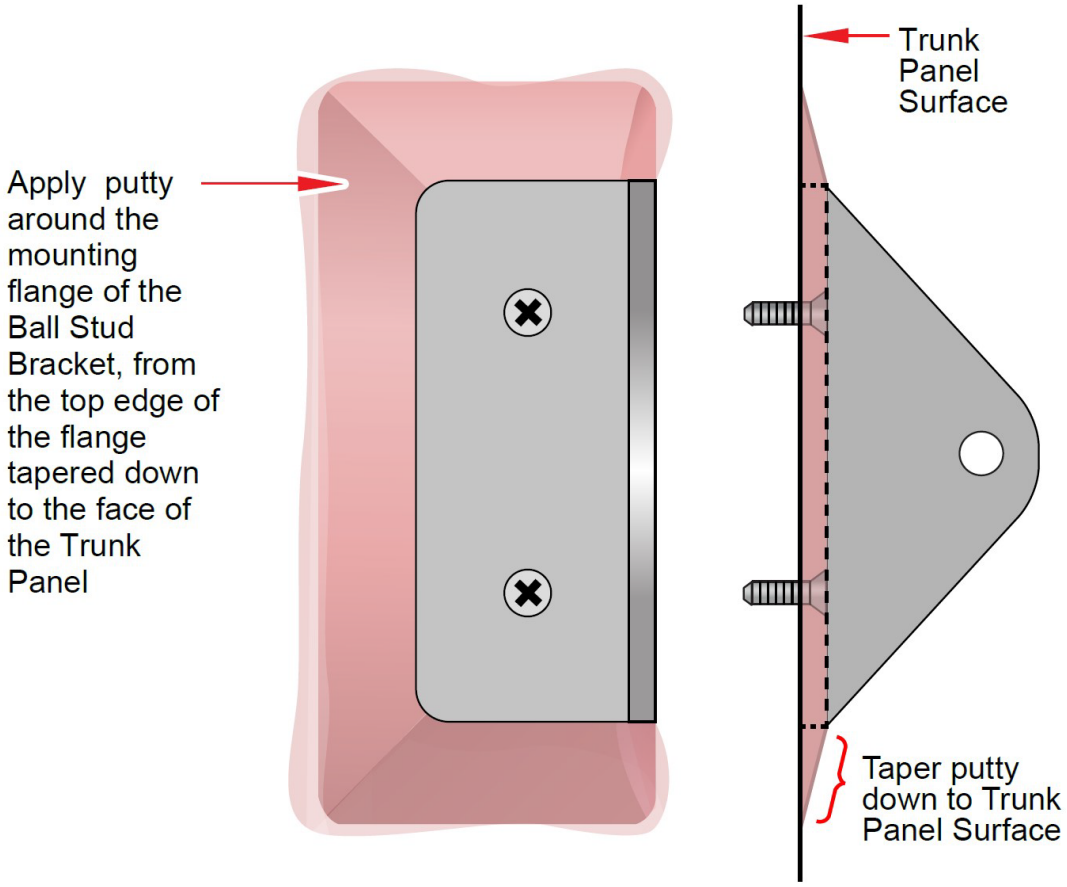


PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

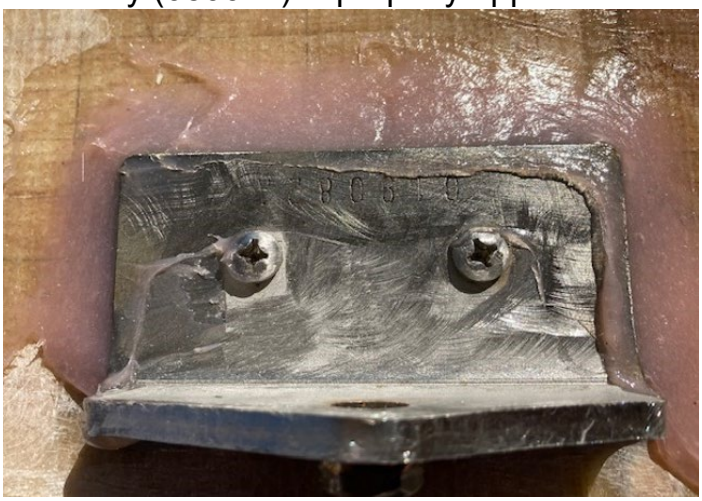
69. Using a flat piece of Cardboard as a mixing surface, mix a three inch diameter ball of VE Putty (050674) with ten cubic centimeters of MEKP (050675).

70. Using a Disposable Mixing Tool, mix the VE Putty (050674) and MEKP (050675) until the color is consistent.

71. Using Disposable Mixing Tool, apply the VE Putty (050674) around each Ball Stud Bracket (019082) as shown in the following illustration. Spread the VE Putty to create the smooth taper shown.



72. The Ball Stud Brackets (019082) should appear as shown in the following photograph after the VE Putty (050674) is properly applied.



PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

73. Using a Plastic Container and a Disposable Mixing Tool, combine 16 Fluid Ounces of Resin (002139) with 10 to 15 Cubic Centimeters of MEKP (050675).

74. Mix the combination thoroughly with a Disposable Mixing Tool.

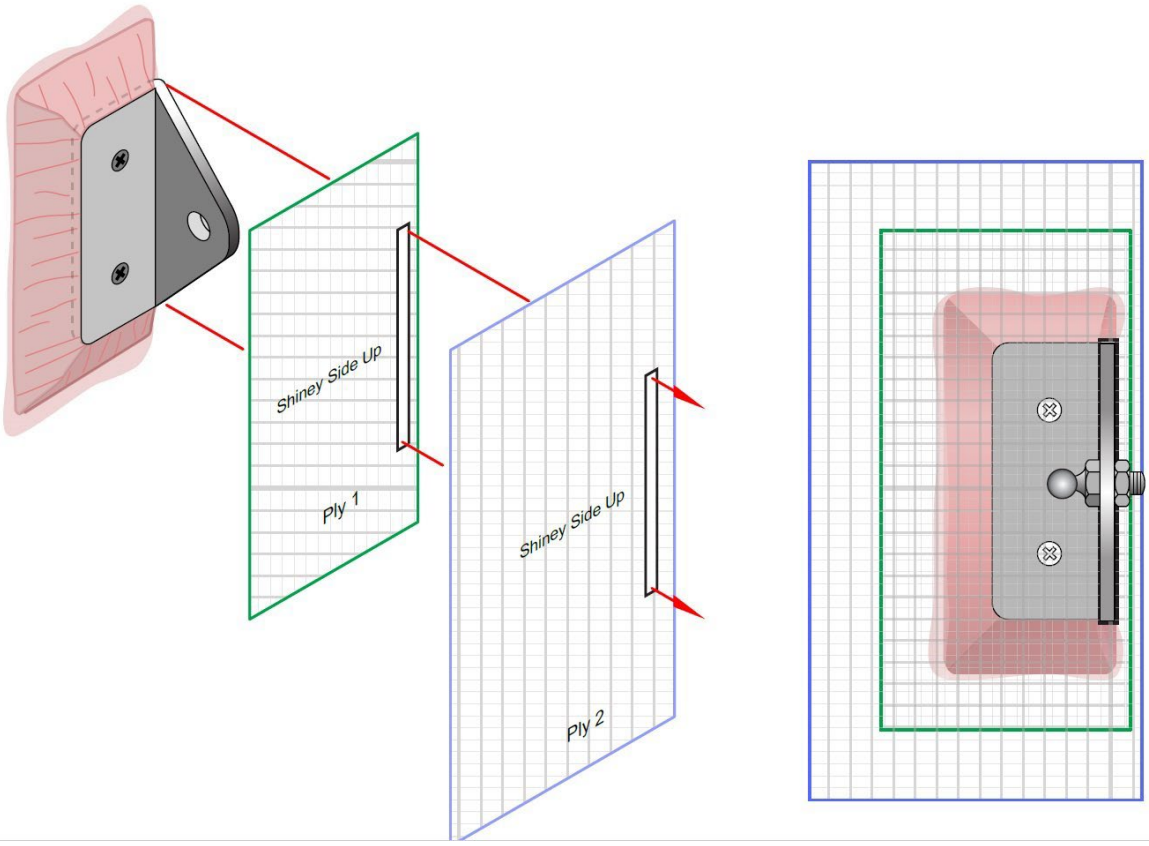
75. Place the four cut sheets of Biaxial Fiberglass (050677) that were cut for the Ball Stud Brackets (019082) onto a flat sheet of Cardboard.

76. Using a Paint Brush, apply the mixture to one of the smaller cut sheets.

77. Using a Paint Brush, saturate the sheet.

78. When the sheet is saturated, flip it over and saturate the other side.

79. When the sheet is saturated, place it over one of the Ball Stud Brackets (019082) as shown by Ply 1 in the following illustration.



80. Using a Gloved Hand or a Paint Roller, smooth out any wrinkles and air bubbles.

81. Repeat the process to wet out and apply the remaining three sheets to the Ball Stud Brackets (019082). Smooth each sheet with a Gloved Hand or Paint Roller.

82. Place the four cut sheets of Biaxial Fiberglass (050677) that were cut for the Hinge Stud Plates (021156) onto a flat sheet of Cardboard.

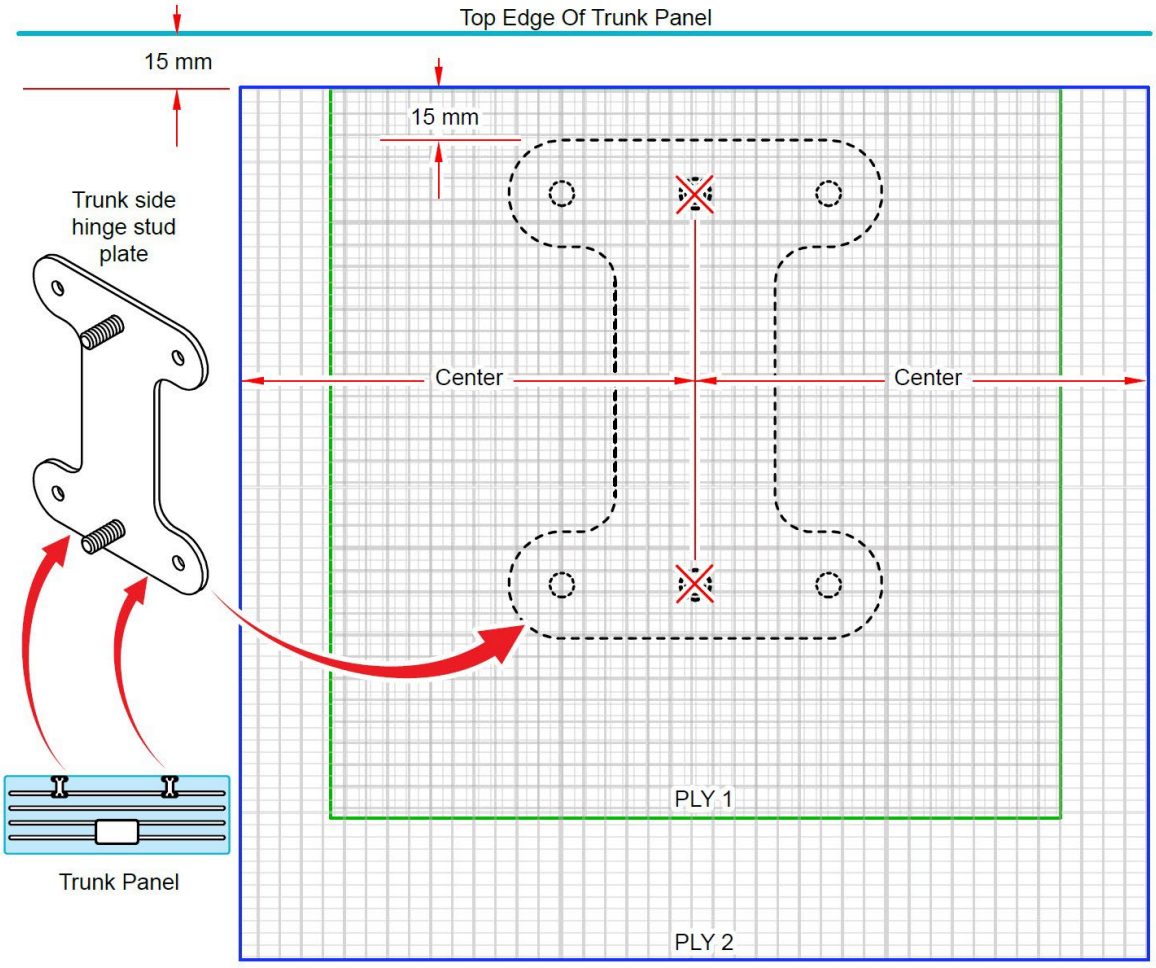
PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

83. Add additional Resin (002139) and MEKP (050675) as needed to have enough mixture to wet out the sheets that were cut for the Hinge Stud Plates (021156). Add about 7 to 8 cubic centimeters per each 8 ounces of Resin.

84. Using Duct Tape, cover the Studs on the Hinge Stud Plates (021156) to prevent corrosion from the Resin.

85. Beginning with one of the smaller sheets, saturate it with the mixture until both sides are saturated.

86. Apply the sheet to one of the Hinge Stud Plates (021156) as shown in the following illustration.



87. Repeat the process to wet out and apply the remaining sheets to both Hinge Stud Plates (021156). Smooth each sheet with a Gloved Hand or Paint Roller as it is applied.

88. The Smooth each sheet with a Gloved Hand or Paint Roller

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

89. The Hinge Stud Plates (021156) should appear as shown in the following photograph.

90. Allow the Resin to cure until it is dry to the touch. The time will vary depending on heat and humidity.

91. Remove the Duct Tape from the studs.

92. The Wet Layup Process is complete.

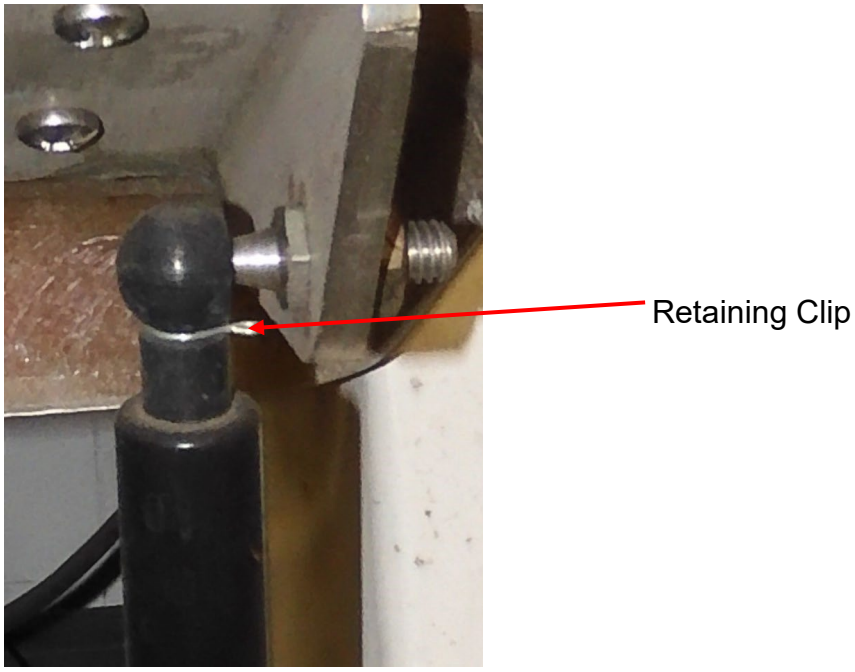
Trunk Panel Replacement:

93. Using a Jack Stand or other approved Lifting Device, support the Trunk Panel and position it so that it can be reattached to the bus.

94. Using a 13mm Ratchet/Socket, replace the Locknuts that secure both Hinges to the Hinge Brackets shown circled in red below.

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

95. Reinstall the Gas Struts and secure them with their Retaining Clips.



96. Reconnect the wiring using the notes or photographs that were made when the wiring was disconnected.

97. Using a 10mm Ratchet/Socket, secure the wiring to the Rotolocs in the same manner that it was originally installed.

98. Close and latch the Trunk Panel.

99. Observe the gaps between the aft wrap and the Trunk Panel. They should be even as shown in the following photograph. Adjust the Trunk Panel as necessary to even the gaps around the Panel.

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789

100. Once the gaps are even, the Hinge Stud Plates (021156) locknuts may be torqued.

101. Using a Calibrated Torque Wrench with a 13mm Socket, **torque the Locknuts to 14 foot pounds.**

102. Using Orange Torque stripe paint, mark the properly torqued fasteners.

103. Remove the Lockout/Tagout device and power on the bus.

104. Return the bus to service after ensuring that all the rear trunk lights are functional.

PROTERRA
Headquarters: 1815 Rollins Road, Burlingame, CA 94010
East Coast Manufacturing: 1 Whitlee Court, Greenville, SC 29607
West Coast Manufacturing: 383 Cheryl Lane, City of Industry, CA 91789