

DART: Rear Bulkhead Seal



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Property and Top Bus Number: DART: 304500 – 40LFW, 306500 – 31LFW



Issue: Rear bulkhead seal

Reason / cause: Apply fire resistant calk and foam at bulkhead corners to improve resistant against moisture intrusion.

Solution: Inspect bulkhead and seal as required per this work instruction.

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Number of affected buses: 39001 – 39156 40' LFW
38001 – 38030 31' LFW

Estimate repair hours/bus: 10 hours (including removing and reinstalling IO modules, interior panels, etc.)

Necessary parts:

Panel, aluminum closeout, 31LFW,	NABI Part #: 932-7145-001A ,	2 / bus,
Panel, aluminum closeout, 31LFW,	NABI Part #: 932-7145-002A ,	2 / bus,
or		
Panel, aluminum closeout, 40LFW,	NABI Part #: 930-7145-001A ,	1 / bus,
Panel, aluminum closeout, 40LFW,	NABI Part #: 930-7145-001J ,	1 / bus,
Panel, aluminum closeout, 40LFW,	NABI Part #: 930-7145-002A ,	2 / bus,
RIVET, 1/4x5/8, .080-.375, SS,	NABI Part #: 5028830 ,	50 / bus,
SIKAFLEX, WHITE, 252 ADHESIVE,	NABI Part #: 5001484 ,	2 tubes / bus,
3M fire barrier,	NABI Part #: 75100-84856 ,	1 tube / 4 buses,
3M Fire Block Foam,	NABI Part #: NPN ,	1 can / 4 buses,
TAPE, REINFORCED FOIL, 2"x200',	NABI Part #: 600-8612-001 ,	1 roll / 15 buses,
TAPE, DBL SIDED, 3/4x108'/RL,	NABI Part #: 5009902 ,	1 roll / 15 buses,
Acetone,	NABI Part #: NPN ,	1 can/40 buses,
Masking tape, 2" wide,	NABI Part #: NPN ,	as required

Necessary tools: usual hand tools, cordless drill with PH bit, 1/8" and 3/16" drill bits plastic foil, cardboard, calk/seal applicator gun, utility knife, pry bar

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SAFETY PRECAUTIONS MUST BE FOLLOWED ACCORDING TO ACCEPTED INDUSTRY STANDARDS AND LOCAL/PROPERTY REQUIREMENTS.

1. Park the bus on a flat surface and apply the parking brake.
2. Turn off main battery disconnect switch(es).
3. Remove closeout grill from around the exhaust pipe.



4. Inside the bus, cover seats and floor with plastic foil and cardboards.
5. Remove grab rails in front of rear bulkhead.



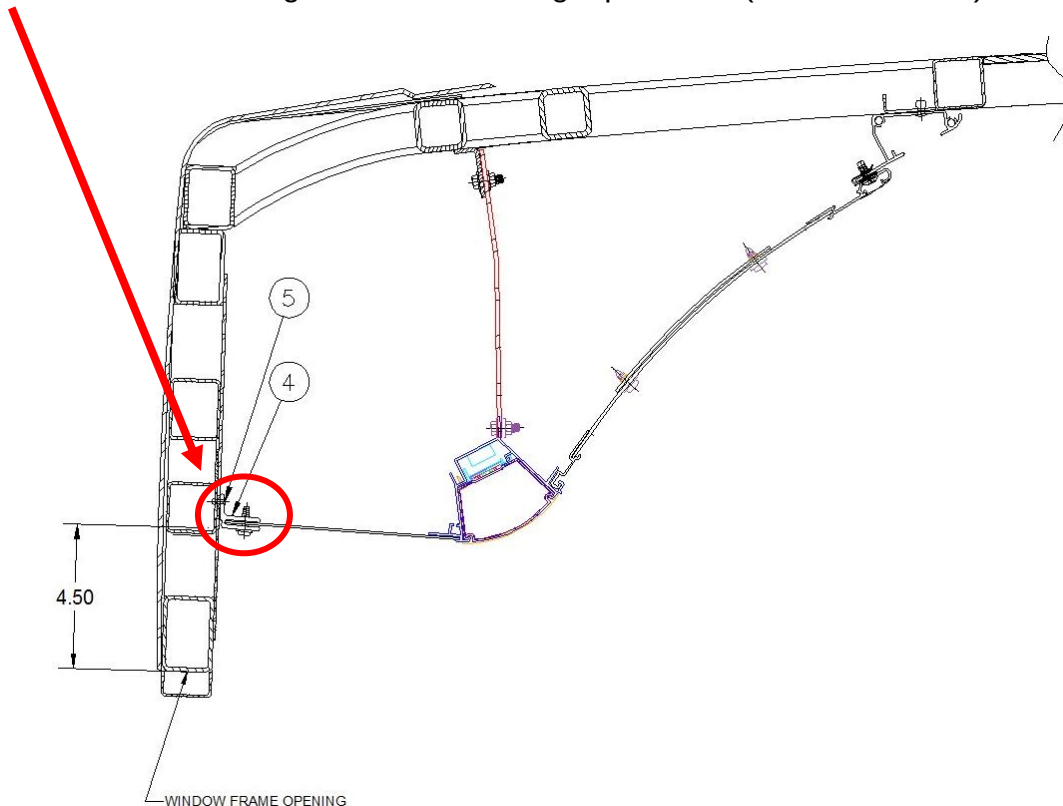
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6. Remove street side and curb side light panel sections in front of the rear bulkhead. See NABI Maintenance Manual section 7C-6 and 14F1-F9 for details.



7. Drill $\frac{1}{4}$ " size SS mounting rivets out of the light panel rail (on the side wall) and remove rail.



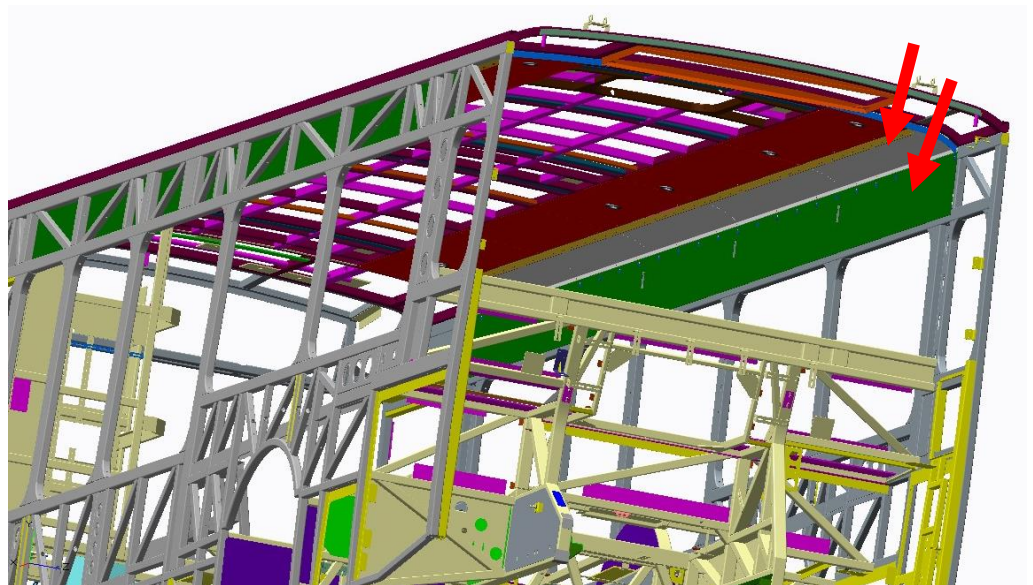
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8. Remove components (IO modules, speakers, etc.) installed to the inner aluminum panels.



9. Remove aluminum panels from the side and ceiling structures: drill aluminum rivets then cut Sikaflex adhesive by using knife. Tear panels off of the frame structure by using pry bars.



10. Remove insulation from between frame tubes.

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11. At the attic compartment, use compressed shop air to blow debris out from between the frame tubes and roof corner panel. ***Wear safety goggles and respirator!***



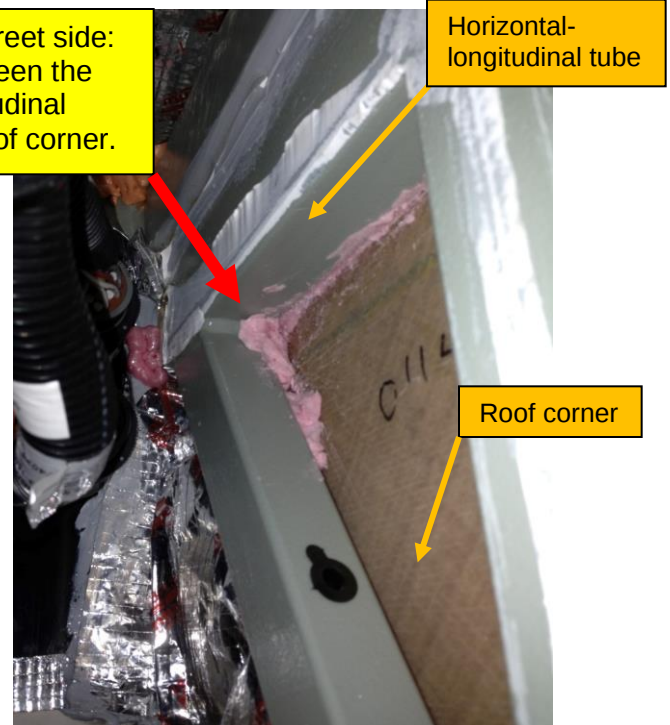
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12. **Note:** *The next steps are about applying expanding foam to four different areas. Ensure that all four areas are clean and accessible so they all can be sprayed within couple minutes by using the same can and nozzle. Only one nozzle is supplied per can and the goal is to use no more than one can and one nozzle per bus.*
13. Apply the required amount of 3M Fire Block Foam behind the frame tubes towards the bulkhead area to fill up the gap. The foam is expanding 200% so wait couple seconds before applying more foam.



Curb side and street side:
apply foam between the
horizontal-longitudinal
tubes and the roof corner.



Horizontal-
longitudinal tube

Roof corner

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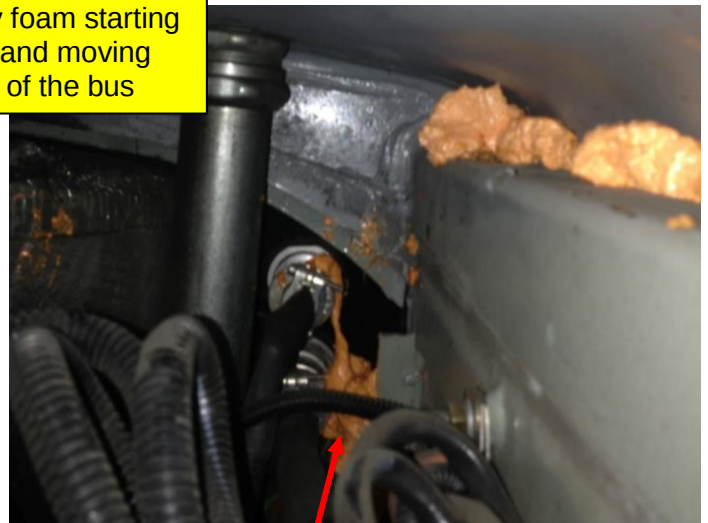
14. Spray 3M Fire Block Foam behind the frame tubes (both curb and street sides) at the attic compartment. Orient the nozzle toward the bulkhead and move toward the back of the bus while continuously spraying the foam. The goal is to fill up the gap between the side of the upper horizontal tube and the roof corner. Do not overspray the foam. The foam is expanding 200% so wait couple seconds before applying more foam.



Street side: apply foam through the exhaust opening



Curb side: apply foam starting at the bulkhead and moving toward the back of the bus



15. After foam cures trim off access foam. **Do not attempt to clean uncured foam!**

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16. On the street side remove insulation from the side wall that is right beside the muffler.
17. Remove harnesses.
18. Wipe structure and inner surface of the roof corner by rag soaked with acetone (location marked by red arrows below).
19. Apply 3M 2000+ fire barrier seal between the roof corner and the structure (marked by green arrows on the picture below).



20. Reinstall insulation into the frame structure beside the muffler.

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21. Inspect bulkhead area at the street side inside of the bus as pictures show below. If seal is compromised then follow instructions written below.



22. Degrease bulkhead around the area that needs to be sealed by using rag soaked with acetone.

23. Apply 3M Fire Barrier 2000+ seal to the cleaned area. Follow instruction written on the cartridge.



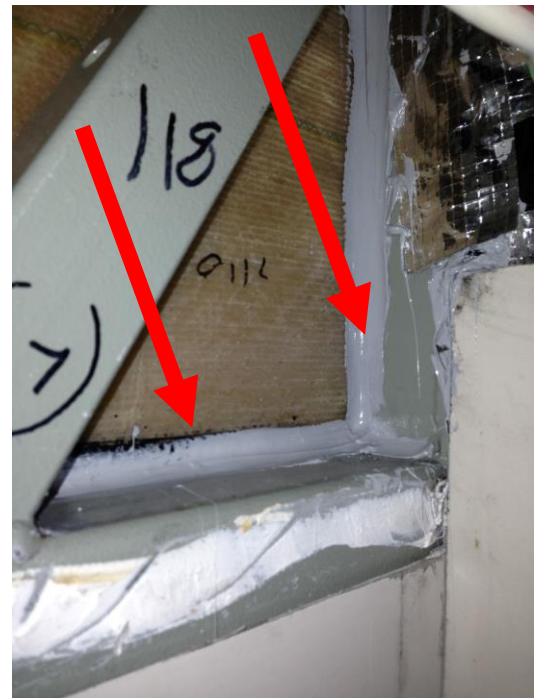
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24. Inspect bulkhead area at the curb side inside the bus as picture shows below. If seal is compromised then follow instructions written below.



25. If required, disconnect the three electrical connectors at the bulkhead to gain better access to the bulkhead area that needs to be sealed.
26. Clean bulkhead around the area that needs to be sealed by using rag soaked with acetone.
27. Apply 3M Fire Barrier 2000+ seal to the cleaned area. Follow instruction written on the cartridge.



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28. Apply foil tape around AC duct as required.



29. Reconnect twist-lock electrical connectors.

30. Water test the sealed area according to the followings:

- Ensure that the battery cables are disconnected.
- Spray water to the repaired area from the attic compartment. Direct the water to the top corner of the street side and curb side of the bus where the harnesses going through the bulkhead.



- Spray water through the side access doors then from the back of the bus along the AC unit.
- Spray water at least 5 minutes.

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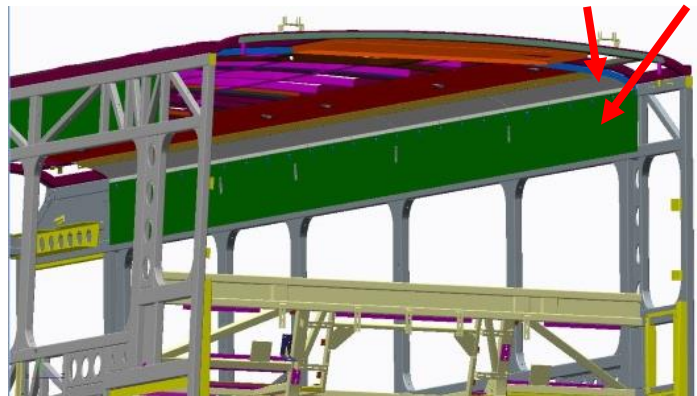
- Inspect bus inside for water leaks.
- If water was present inside the bus then clean area and seal as required.
- Water test bus again after sealer (calk or foam) cured.

Reinstall removed components:

31. Remove remaining Sikaflex adhesive from structure by using scrapers and utility knife.
32. Clean and prep structure and new aluminum closeout panels per NABI standards.
33. Reinstall insulation between the frame tubes.



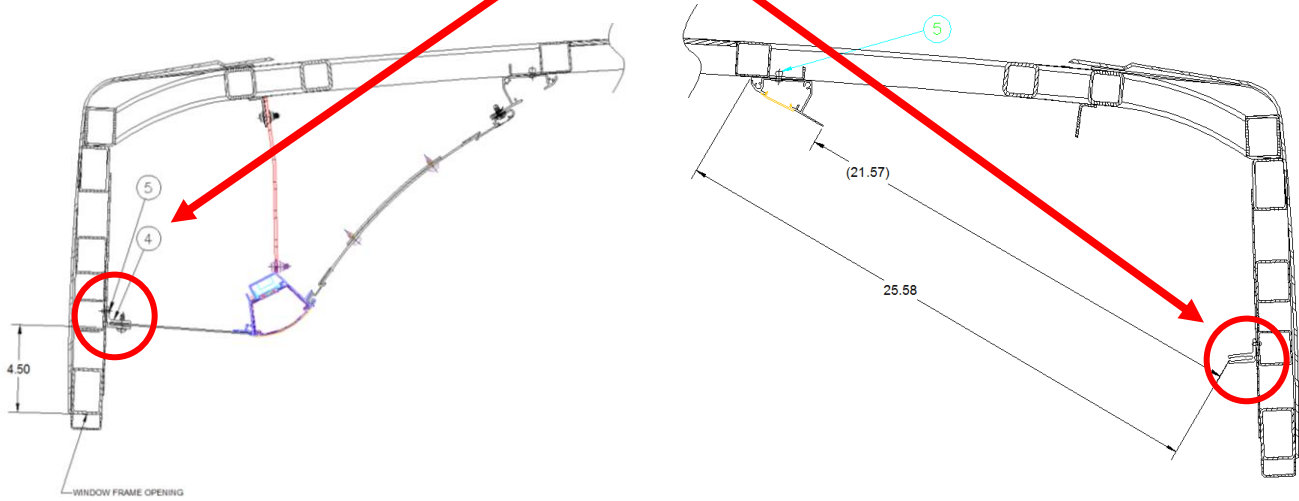
34. Install new aluminum closeout panels with Sikaflex 252 adhesive. Do not install rivets.
 - Place four ¾"x1" double sided tape pieces at the corner of the panel.
 - Apply a continuous bead of Sikaflex 252 adhesive around the perimeter of the panel.
 - Push panel against the structure. The double sided tape will keep the panel in place while the Sikaflex 252 adhesive cures.



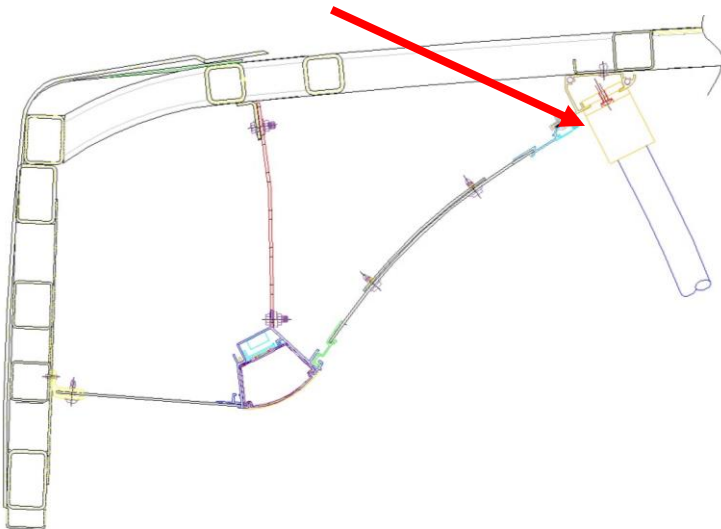
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35. After adhesive cured, install previously removed components (IO modules, speakers, etc.) to the aluminum closeout panels.
36. Reinstall ceiling panels.
37. Reinstall removed light panel mounting rails (item #4 below) with 1/4x5/8 SS rivets (P/N 5028830).



38. Reinstall grab rails.



39. Outside, at the top of the bus, reinstall exhaust closeout grill.
40. Record bus number, mileage, date of completing and the name of the technician(s) who completed the work.