

REFERENCE:	Nova Bus Manuals
SECTION:	01: Body
RS N°:	MQR 7621-913
EFFECTIVE IN PROD.:	N/A

APPLICATION DEADLINE: 2018AU29
CLAIM REFERENCE NUMBER: WB-4040

SUBJECT:	Front shell cracking
JUSTIFICATION:	Water infiltration and structural weakness

LEVEL	DESCRIPTION	DIRECT CHARGES		TIME
		LABOUR	MATERIAL	
1	Replace front shell	Nova Bus	Nova Bus	85h
2	–	–	–	–

MATERIAL

QTY	PART N°	REV.	DESCRIPTION	REPLACES PART N°
LEVEL 1				
–	–	–	–	–
LEVEL 2				
–	–	–	–	–

Materials will be available within 28 days once your order has been placed. To order, please contact Prevost Parts by phone at 1-800-771-6682, by fax at 1-888-668-2555 or by email at prevostparts.commandes@volvo.com. Specify document number, quantity of parts required and shipping address.

DISPOSAL OF PARTS

REMOVED PARTS ARE:	DISCARDED*	RETAINED	* Dispose of the unused parts and the defective parts in accordance with local environmental standards in effect.
	Yes	–	

REVISION HISTORY

REV.	DATE	CHANGE DESCRIPTION	WRITTEN BY
NR	2017JN29	Initial release	Marc Rougeau
R1	2017JL27	For L773, Road# 7900 removed & 7901 added.	Kumaraswamy K S
R2	2017SE08	Revised the client list	Kumaraswamy K S
R3	2019JN26	Revised the client list	Devanand B

APPROVED BY:

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Symbol	Meaning
Empty Field	No changes, the procedure applies
+	Contract added, the procedure applies
-	Contract removed, the procedure does not apply

	CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
			FROM	TO	FROM	TO	
	Chicago Transit Authority - CTA - Illinois	L773	7901	7901	L82J6D4500430	L82J6D4500430	1
+	Chicago Transit Authority - CTA - Illinois	L811	7902	7902	L82J6E4500509	L82J6E4500509	1
+	Chicago Transit Authority - CTA - Illinois	L811	7904	7904	L82J4E4500511	L82J4E4500511	1
	Chicago Transit Authority - CTA - Illinois	L811	7908	7909	L82J1E4500515	L82J3E4500516	2
+	Chicago Transit Authority - CTA - Illinois	L811	7910	7910	L82J5E4500517	L82J5E4500517	1
+	Chicago Transit Authority - CTA - Illinois	L811	7912	7912	L82J9E4500519	L82J9E4500519	1
	Chicago Transit Authority - CTA - Illinois	L811	7913	7913	L82J5E4500520	L82J5E4500520	1
+	Chicago Transit Authority - CTA - Illinois	L811	7914	7914	L82J7E4500521	L82J7E4500521	1
	Chicago Transit Authority - CTA - Illinois	L811	7915	7915	L82J9E4500522	L82J9E4500522	1
	Chicago Transit Authority - CTA - Illinois	L811	7917	7918	L82J2E4500524	L82J4E4500525	2
	Chicago Transit Authority - CTA - Illinois	L811	7920	7920	L82J8E4500527	L82J8E4500527	1
	Chicago Transit Authority - CTA - Illinois	L811	7925	7927	L82J1E4500532	L82J5E4500534	3
	Chicago Transit Authority - CTA - Illinois	L811	7930	7931	L82J0E4500537	L82J2E4500538	2
+	Chicago Transit Authority - CTA - Illinois	L811	7934	7935	L82J2E4500541	L82J4E4500542	2
	Chicago Transit Authority - CTA - Illinois	L811	7936	7942	L82J6E4500543	L82J7E4500549	7
+	Chicago Transit Authority - CTA - Illinois	L811	7943	7943	L82J3E4500550	L82J3E4500550	1
	Chicago Transit Authority - CTA - Illinois	L811	7944	7945	L82J5E4500551	L82J7E4500552	2
	Chicago Transit Authority - CTA - Illinois	L811	7947	7947	L82J0E4500554	L82J0E4500554	1
	Chicago Transit Authority - CTA - Illinois	L811	7949	7949	L82J4E4500556	L82J4E4500556	1
	Chicago Transit Authority - CTA - Illinois	L837	7950	7950	L82J6E4500655	L82J6E4500655	1
+	Chicago Transit Authority - CTA - Illinois	L837	7951	7951	L82J1E4500658	L82J1E4500658	1
	Chicago Transit Authority - CTA - Illinois	L837	7952	7953	L82J3E4500659	L82J3E4500662	2
	Chicago Transit Authority - CTA - Illinois	L837	7956	7959	L82J9E4500665	L82J4E4500668	4
	Chicago Transit Authority - CTA - Illinois	L837	7961	7964	L82J2E4500670	L82J8E4500673	4
	Chicago Transit Authority - CTA - Illinois	L837	7966	7973	L82J1E4500675	L82J9E4500682	8
	Chicago Transit Authority - CTA - Illinois	L837	7975	7975	L82J2E4500684	L82J2E4500684	1
+	Chicago Transit Authority - CTA - Illinois	L837	7977	7977	L82J6E4500686	L82J6E4500686	1
	Chicago Transit Authority - CTA - Illinois	L837	7978	7978	L82J8E4500687	L82J8E4500687	1
+	Chicago Transit Authority - CTA - Illinois	L837	7979	7979	L82JXE4500688	L82JXE4500688	1
	Chicago Transit Authority - CTA - Illinois	L837	7980	7983	L82J1E4500689	L82J1E4500692	4
	Chicago Transit Authority - CTA - Illinois	L837	7985	7986	L82J5E4500694	L82J7E4500695	2
	Chicago Transit Authority - CTA - Illinois	L837	7988	7992	L82J0E4500697	L82J9E4500701	5
	Chicago Transit Authority - CTA - Illinois	L837	7994	7995	L82J2E4500703	L82J4E4500704	2
	Chicago Transit Authority - CTA - Illinois	L837	7997	7997	L82J8E4500706	L82J8E4500706	1

**WARNING**

Follow your internal safety procedures.

PROCEDURE

- 1.1. Park the vehicle on an even surface with the transmission in neutral (N) and apply the parking brake. Set the master control switch to the STOP position (see Figure 1).

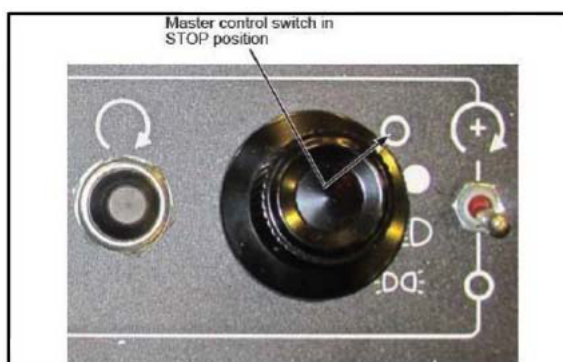


Figure 1 - Set the Master Control Switch to the STOP Position

- 1.2. Place the battery disconnect switch in the battery compartment in the OFF position and disconnect the negative cable from the battery terminal (see Figure 2).

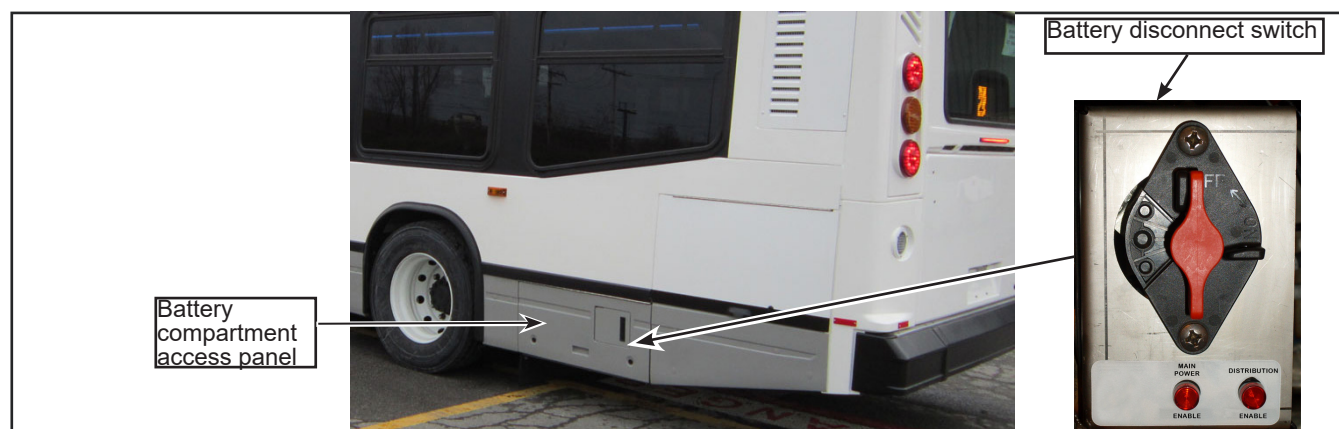


Figure 2 - Place the Battery Disconnect Switch in the Off Position and Disconnect the Battery

- 1.3. Remove the two screws that retain the bike rack and remove the bike rack (see Figure 1).



Figure 3 - Remove the Bike Rack

- 1.4. Remove the top corner bezel screws and remove the bezel. Remove the three turn signal screws and the turn signals. Remove the five headlight screws and the headlights (see Figure 4).



Figure 4 - Remove the Bezel, Turn Signals and Headlights

- 1.5. Unplug the wiper arm hoses, remove the caps, remove the nuts and remove the wiper arms (see Figure 5).



Figure 5 - Remove the Wiper Arms

- 1.6. Remove the four license plate screws and the license plate. Remove the two tow plugs (see Figure 6).

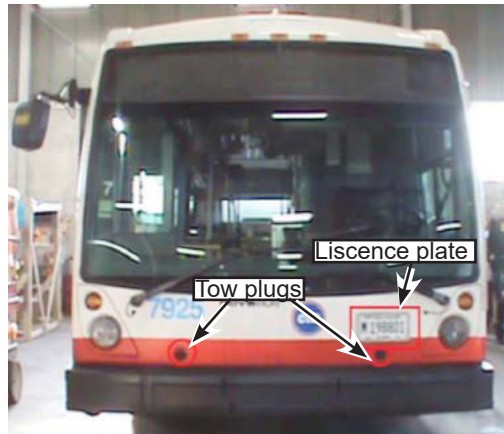


Figure 6 - Remove the License Plate and Tow Plugs

- 1.7. Remove the two reflectors, the seven marker lights and the three signal lights (see Figure 7).

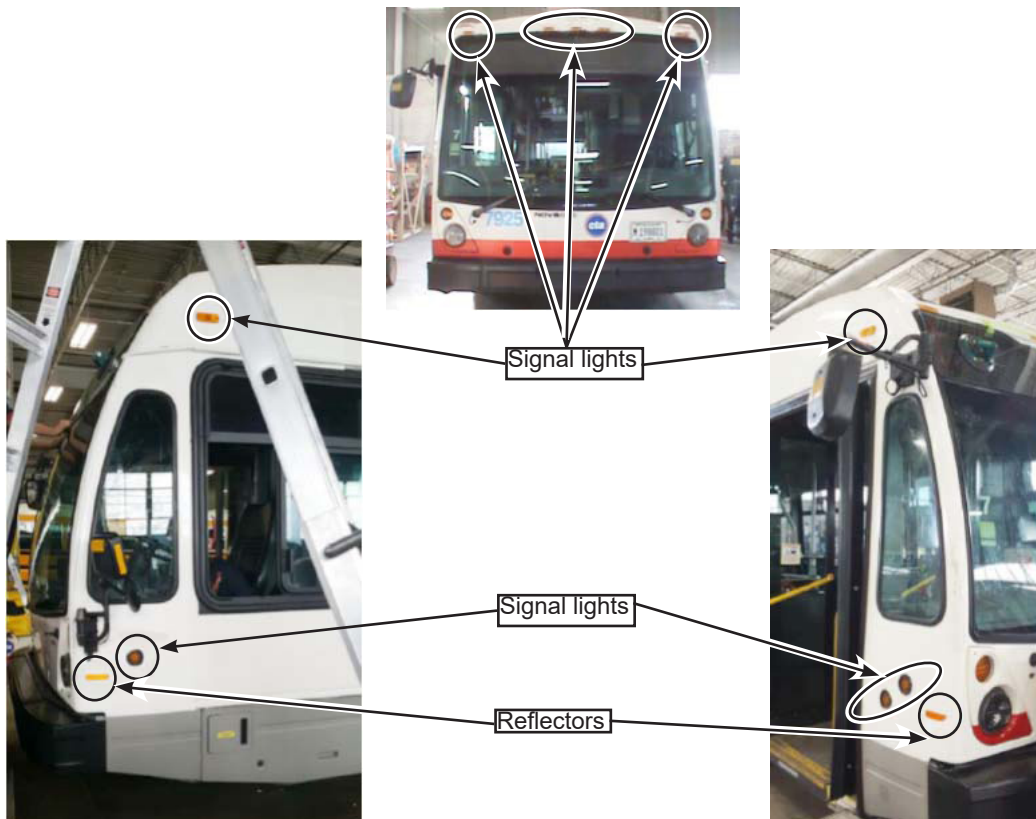


Figure 7 - Remove the Reflectors, Marker Lights and Signal Lights

- 1.8. Unplug the mirror connections, remove the bolts, remove the mirrors, cut the seal around the mirror brackets before removing the brackets and clean the remaining sealant on the brackets.



Figure 8 - Remove the Mirrors

- 1.9. Cut the seal around the camera module, remove the two screws, remove the camera cover, remove the bolts that hold the camera and clean the module (see Figure 9).

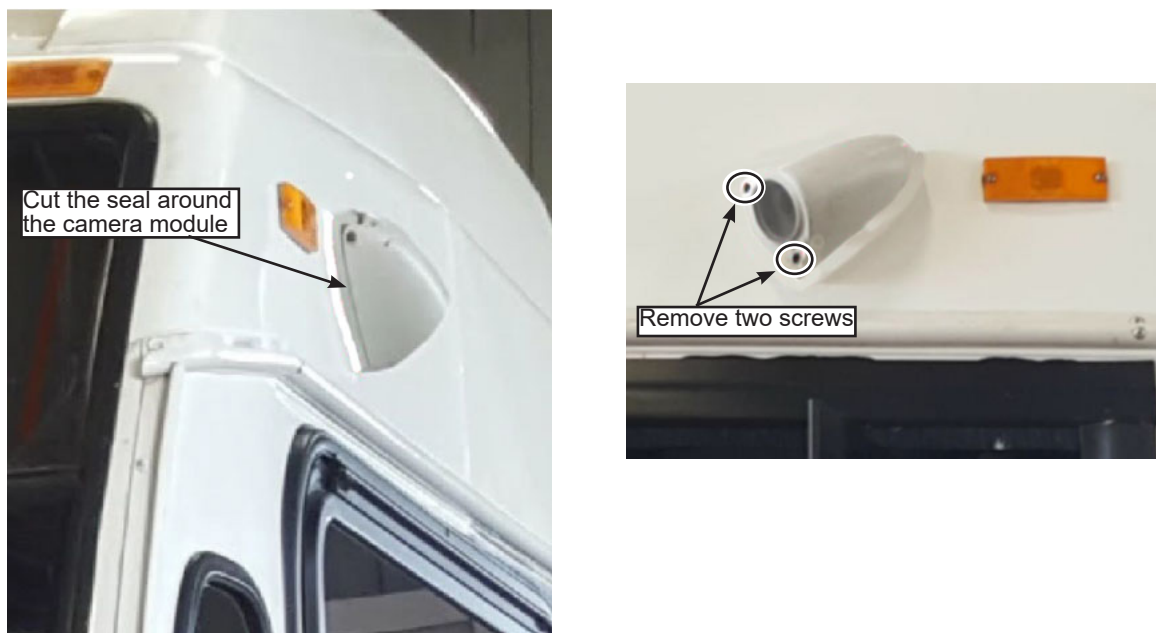


Figure 9 - Remove the Camera

- 1.10. Cut the top and bottom seals along the gutters. Drill through the rivets and remove the rivets, using a punch and hammer if necessary. Remove and clean the gutters (see Figure 10).



Figure 10 - Remove the Gutters



WARNING

In order to avoid injury, ensure that there is no air pressure in the pneumatic circuit.

- 1.11. Once the air pressure has been removed from the pneumatic circuit, disconnect the pneumatic hose from the driver's seat. Disconnect the electric connectors from the seat, remove the seat bolts and remove the seat (see Figure 11).

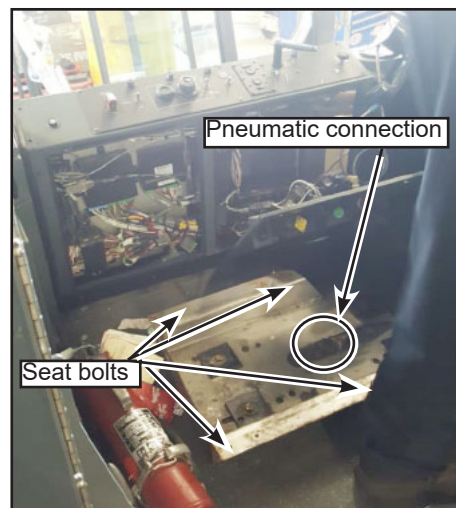


Figure 11 - Remove the Driver's Seat

- 1.12. Loosen the screws on the driver's control panel and tilt the panel away from the window (see Figure 12).

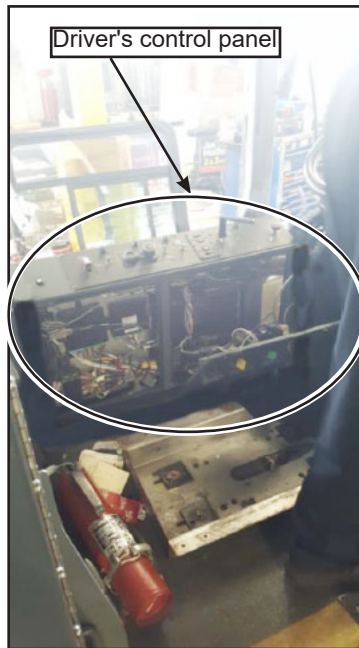


Figure 12 - Tilt the Driver's Control Panel

- 1.13. From the inside of the driver's side window, remove all window frame screws except the four corner window frame screws. Install the suction cups on the exterior of the window and hold firmly to keep the window from falling (two people required). Remove the four remaining window frame screws and use a plastic chisel to peel the sealant between the window frame and the window. Remove the window, clean the frame and remove the sealant (see Figure 13).



Figure 13 - Remove the Driver's side Window

- 1.14. Unlock the quarter window seals with a plastic chisel and window lubricant. Place suction cups on the exterior of the window and hold window firmly (two people required). Push gently at the top of the window from the inside of the bus and remove the window (see Figure 14).



Figure 14 - Remove the Quarter Windows

- 1.15. Unlock the destination sign window with a plastic chisel and window lubricant. Place suction cups on the exterior of the window and hold firmly while removing the window (2 people required). Clean the window (see Figure 15).



Figure 15 - Remove the Destination Sign Window

- 1.16. Place suction cups on the windshield and unlock the seal around the windshield with a plastic chisel and window lubricant. Remove the windshield (2-3 people required) and seal, clean the windshield (see Figure 16).



Figure 16 - Remove the Windshield

- 1.17. Remove the microphone, phone, phone stand bracket and the driver sun shade. Do not remove the VIN plates and decals (see Figure 17).

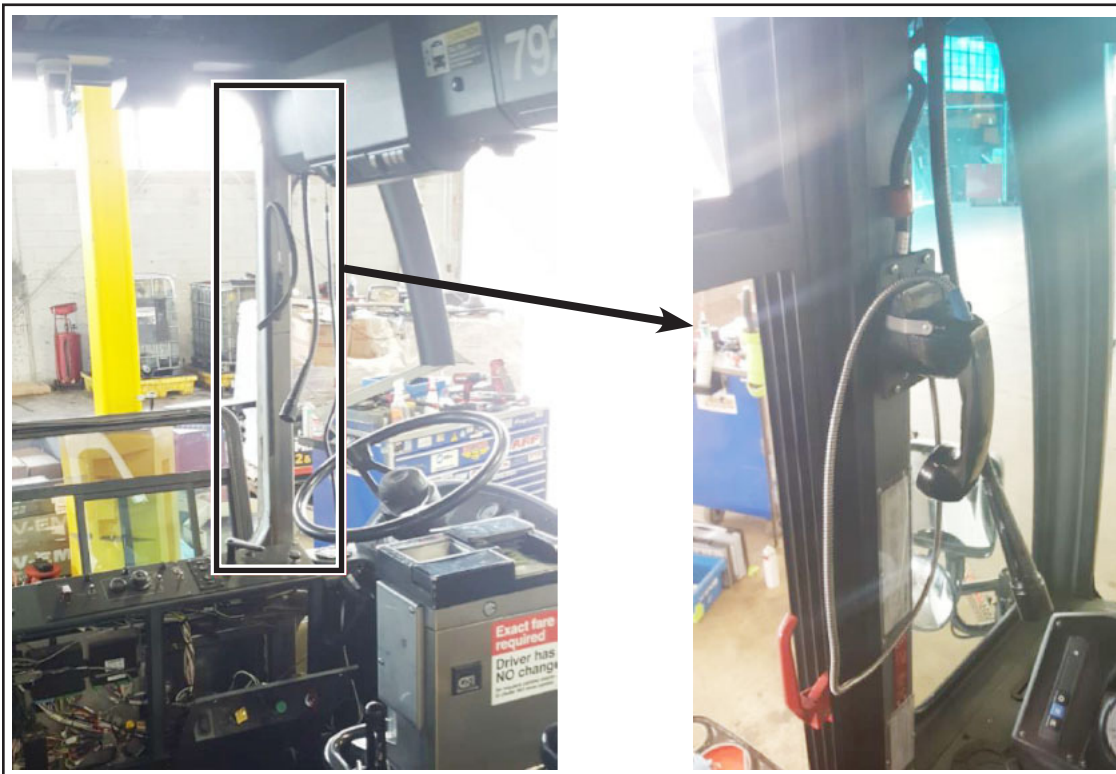


Figure 17 - Remove the Phone and Sun Shade

- 1.18. Remove the screws on the front right door post capping (see Figure 18).



Figure 18 - Remove the Door Post Capping

- 1.19. Remove the two dashboard screws on the street side and the two screws on the curb side and remove the dash (see Figure 19).

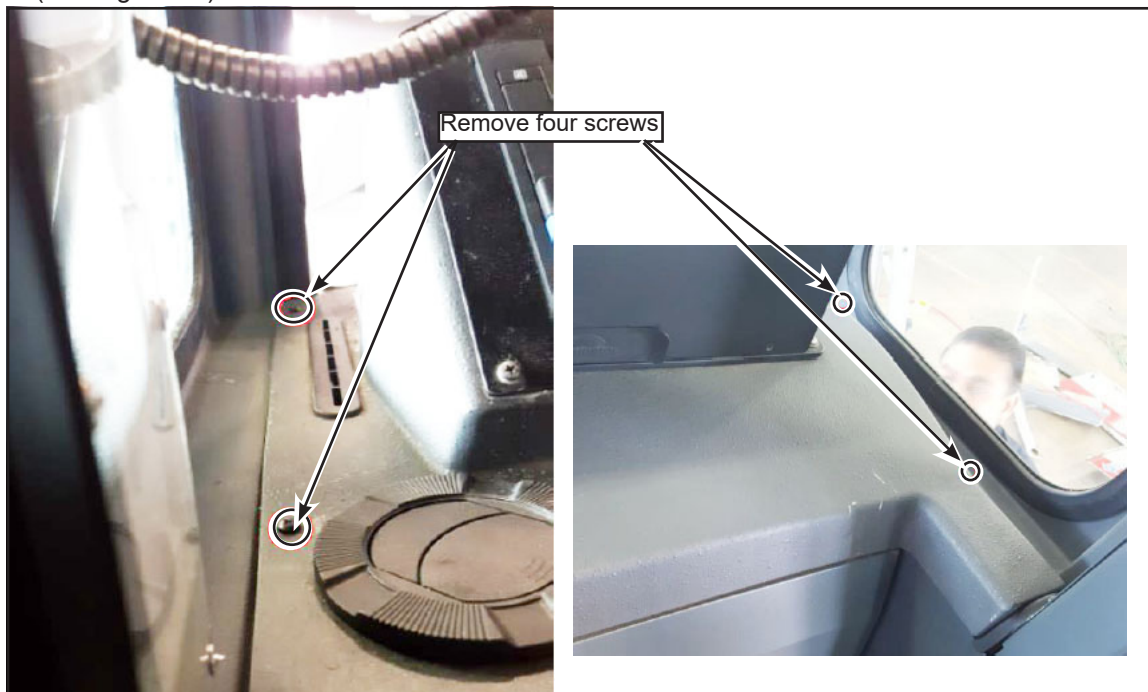


Figure 19 - Remove the Dash and Screws

- 1.20. On the front end fiberglass canopy, drill through the rivets, using a punch and hammer if necessary to remove the rivets. Cut the seal between the canopy and the roof, lifting the canopy with nylon blocks to facilitate cutting the seal, and use a scissor lift to remove the canopy (3-4 people required). Use a scraper to clean the roof and canopy (see Figure 20).

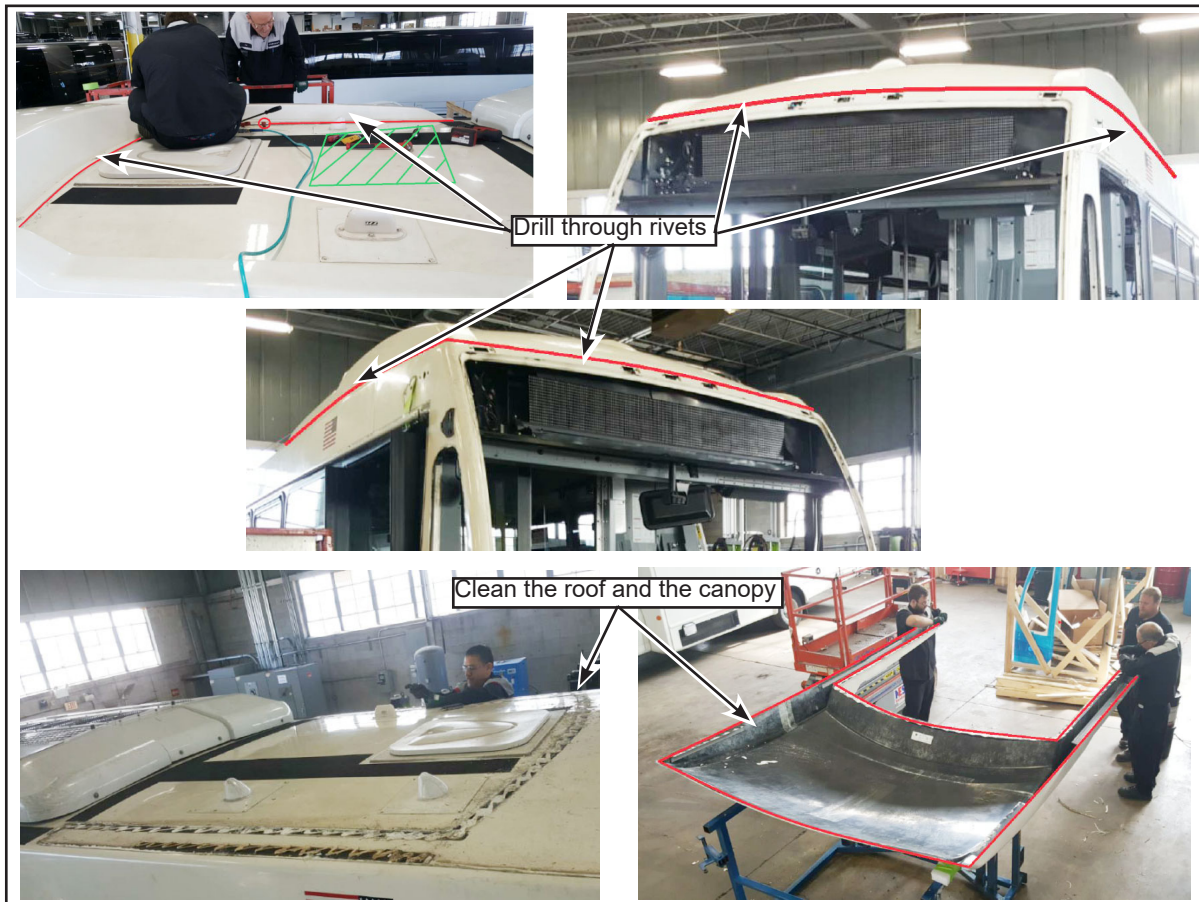


Figure 20 - Remove the Canopy

- 1.21. Remove the vertical door seal and cut it at the intersection of the horizontal seal. Remove the horizontal seal from its location. Cut the front shell in such a way that will allow easy access for cutting both sides of the Sika seal. Keep the driver's side pillar as it will be used as a reference template when transferring the VIN plates and decals onto the new pillar (see Figure 21).



Figure 21 - Remove the Front Shell

- 1.22. Cut the tie wraps on the destination sign cables and disconnect the cables. Remove the speaker over the driver's seat. Place foam protection on the dashboard, remove the destination sign screws and lower the destination sign (3-4 people required) onto the dash board, (see Figure 22).

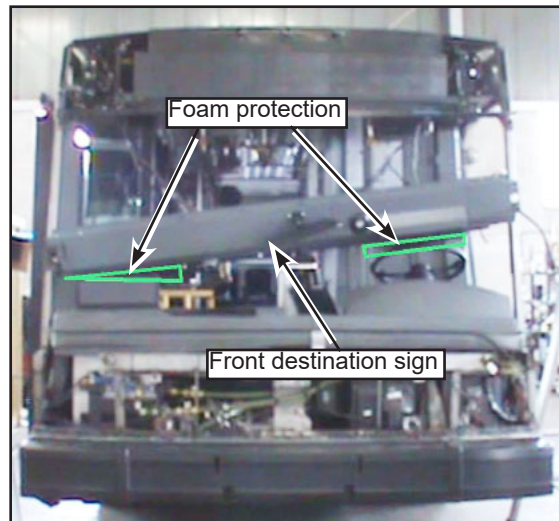


Figure 22 - Remove the Front Destination Sign

- 1.23. Clean the bus structure by removing all remnants of sika and ensuring all surfaces are flat.
- 1.24. New front shell preparation:
- 1.24.1. Use the template to make the wiper holes (see Figure 23).
 - 1.24.2. Use the template to make the windshield washer nozzle holes (see Figure 23).
 - 1.24.3. Use the template to make the license plate holes (see Figure 23).
 - 1.24.4. Use the template to make the side door camera holes (see Figure 23)

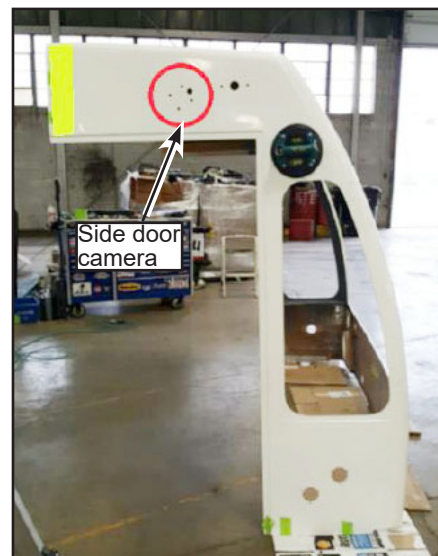
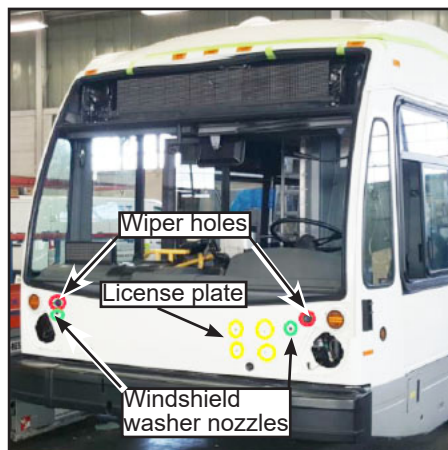


Figure 23 - Front Shell Preparation

- 1.25. Do a dry fit to confirm that the front shell fits well (3-4 people required). Use masking tape and a marker to indicate the proper positioning and alignment for final installation (see Figure 24).



Figure 24 - Front Shell Dry Fit

- 1.26. Clean the inner surfaces of the front shell and the bus structure with Sika Aktivator in the area where Sika adhesive will be used. Wait 10 minutes (see Figure 25).

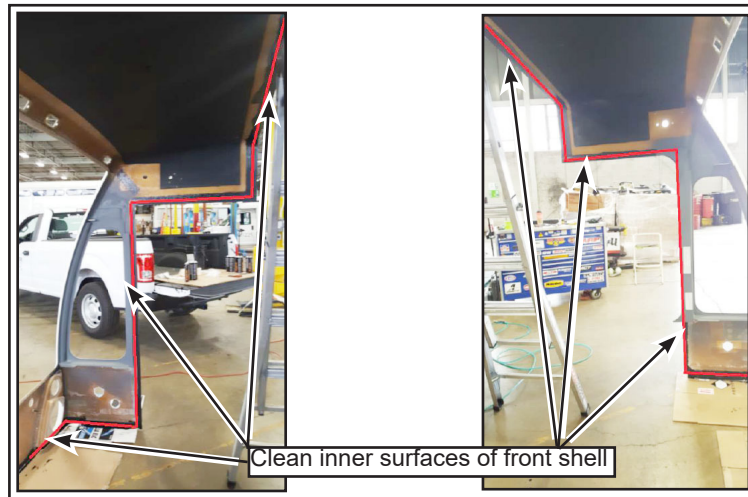


Figure 25 - Front Shell Cleaning

- 1.27. Paint the inner surfaces of the front shell and the bus structure with black Sika Primer to ensure a good bond with the Sika (see Figure 26).

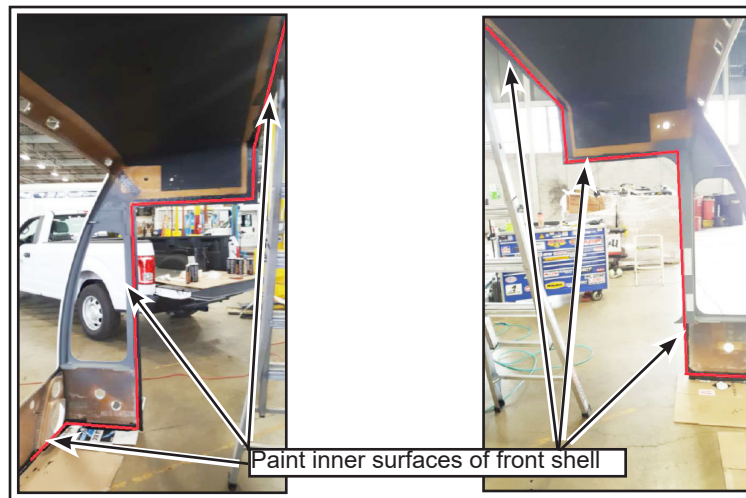


Figure 26 - Front Shell Priming

- 1.28. Use masking tape to protect the gelcoat along the Sika joints to prevent the Sika from spreading (see Figure 27).



Figure 27 - Protect GelCoat with Masking Tape

- 1.29. Apply white Sika on the area that will meet the front shell and apply black Sika on the metal structure above the front bumper (see Figure 28).

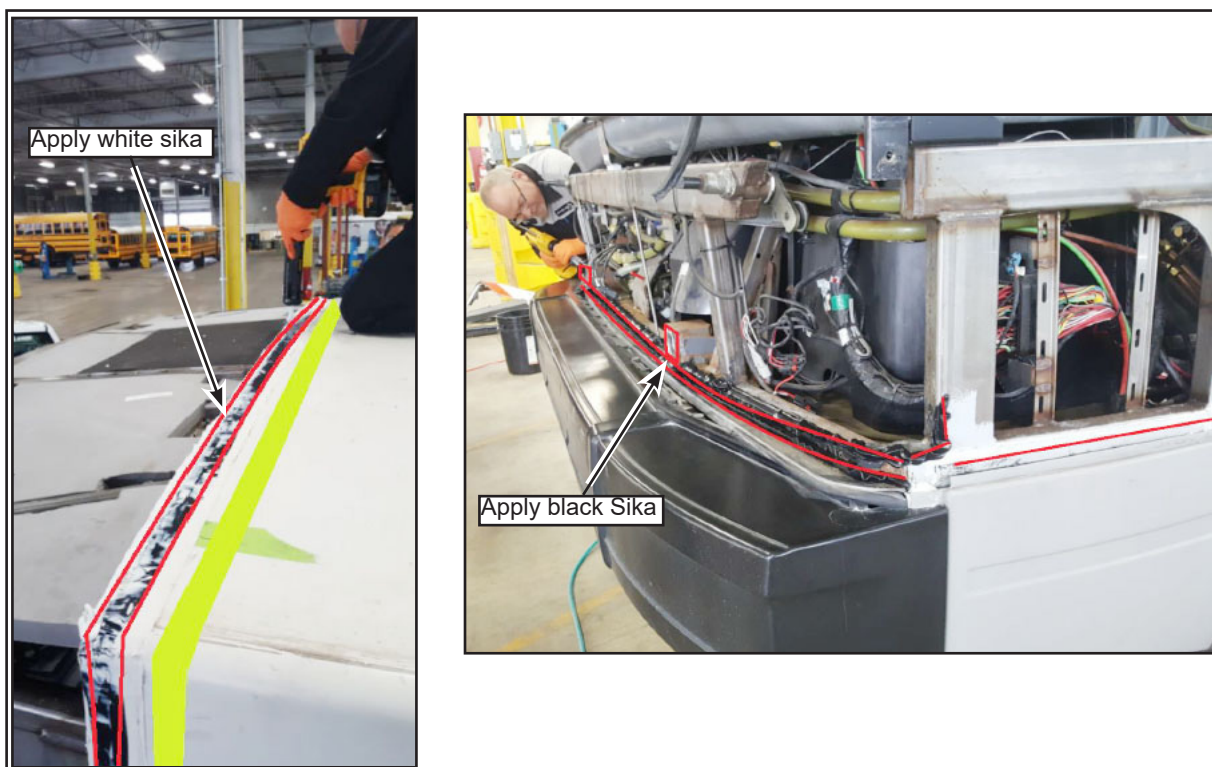


Figure 28 - Apply White and Black Sika

- 1.30. Install the front shell (3-4 people required), install the tow plugs to help hold the shell in place, ensure all alignment marks are in position and clamp the shell in place. Wipe excess Sika, do not let the sika spread on the gelcoat (see Figure 29).



Figure 29 - Install the Front Shell

- 1.31. Apply white Sika between the front shell and the bus structure on both the left and right sides. Use nylon blocks to pull the shell away from the structure while Sika is applied, align the reference marks and clamp the shell (see Figure 30).

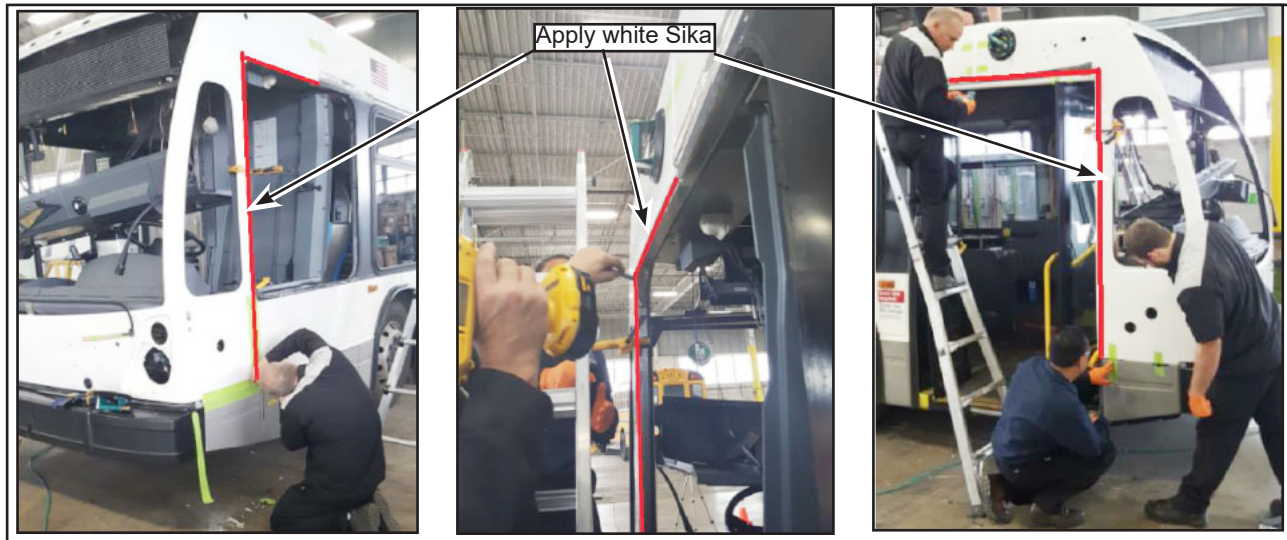


Figure 30 - Apply Sika Between the Front Shell and the Bus Structure

- 1.32. Using masking tape to avoid spreading Sika on the gelcoat, apply black Sika on the joint above the front bumper and apply white Sika on all other joints. Use finishing tools to obtain a clean finish (see Figure 31).

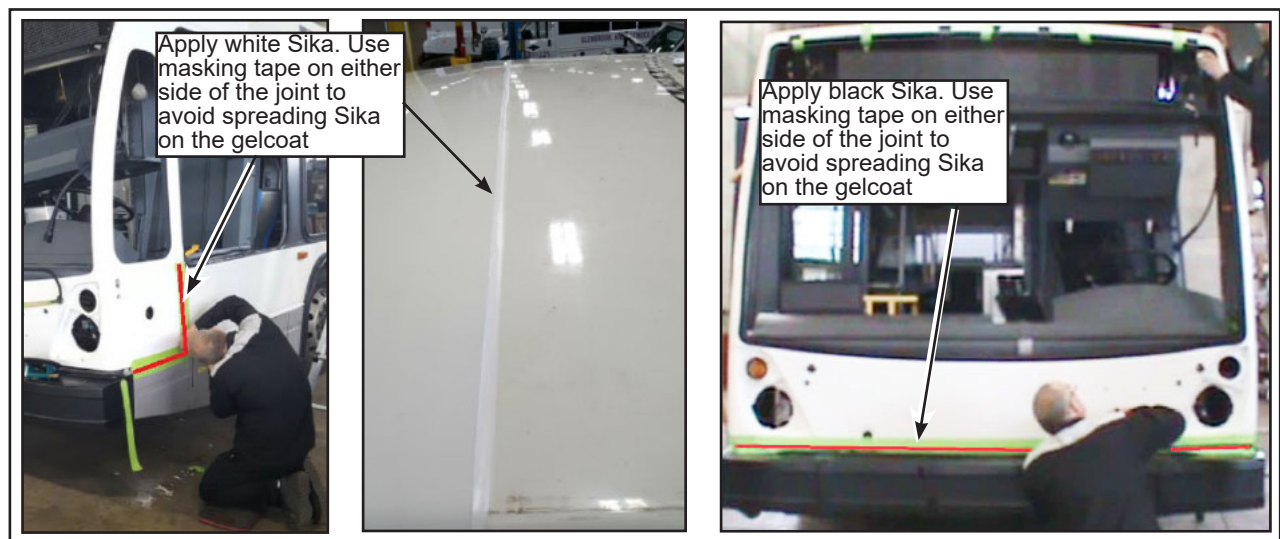


Figure 31 - Apply Masking Tape Prior to Applying Sika to Joints

- 1.33. Install masking tape around the outer edge of the canopy to avoid spreading sika on the gelcoat. Verify that the roof and canopy have been cleaned of all Sika, that all surfaces are flat and that they have been cleaned with aktivator. Wait 10 minutes prior to applying Sika on the roof and install the canopy on the roof (2-3 people required). Apply Sika in every rivet hole, install the rivets with a rivet gun and install masking tape on the roof in preparation for the Sika joint. Apply white Sika all the way around the canopy, making sure to cover all the rivet heads with Sika to prevent water infiltration (see Figure 32).



Figure 32 - Canopy Installation

- 1.34. Install the speaker over the driver's seat. Connect and tie wrap the cables. Avoid pinching the cables.
- 1.35. Install the dashboard and the 4 dashboard screws (see Figure 33).

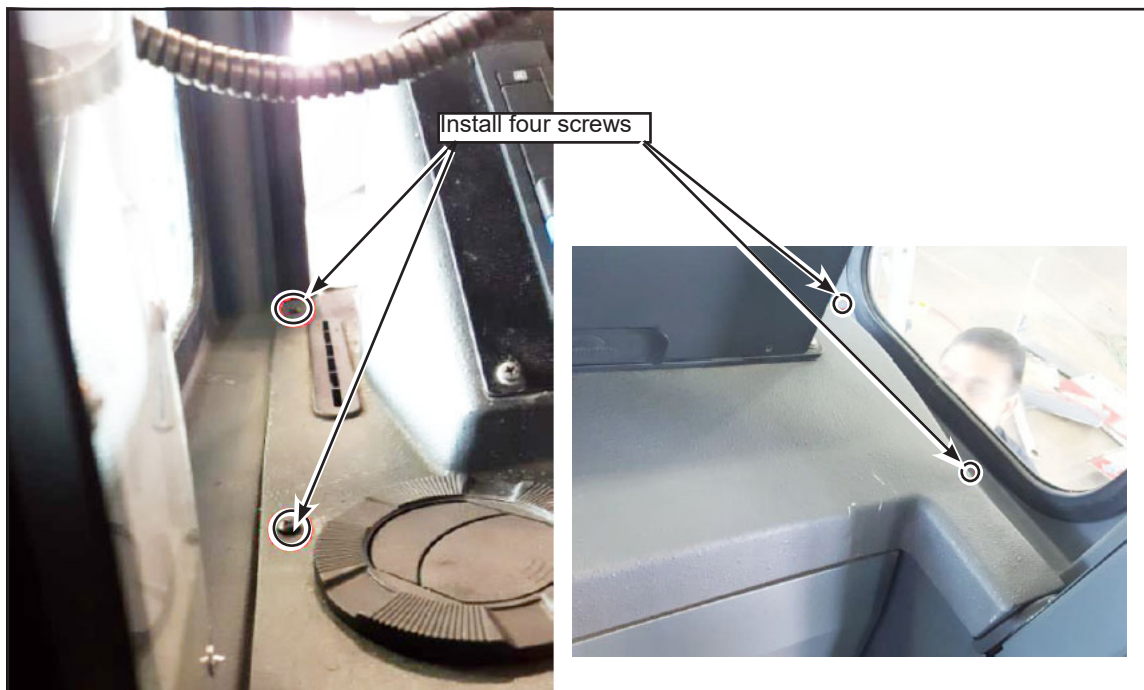


Figure 33 - Dashboard Installation

- 1.36. Install the windshield seal on the front shell. Using window lubricant and a plastic chisel, install the windshield with suction cups (2-3 people required). Begin with the curb side by inserting the windshield into the seal groove approximately 3 inches from the lower corner. Place the opposite corner of the windshield into the seal groove and guide it into the seal, working the plastic chisel all the way around the windshield (see Figure 34).



Figure 34 - Install Windshield

- 1.37. Install the destination sign window with suction cups (2-3 people required). Begin 3 inches from the lower curb side corner by inserting the window into the seal groove. Place the opposite corner of the window into the seal groove and guide it into the seal, working with the plastic chisel and window lubricant all the way around the window. Use the seal locking tool to install the locking seal around the windshield and destination sign window (see Figure 35).



Figure 35 - Install Destination Sign Window

- 1.38. Install quarter windows with suction cups. Using a plastic chisel and window lubricant, insert the glass into the seal groove beginning at the top (see Figure 36).



Figure 36 - Install Quarter Windows

- 1.39. Apply black butyl sealant around the window opening. Install the driver's side window using suction cups (2 people required), install the window frame and tighten the screws from inside the bus (see Figure 37).



Figure 37 - Install Driver's Window

- 1.40. Install the driver's control panel with its screws (see Figure 38).

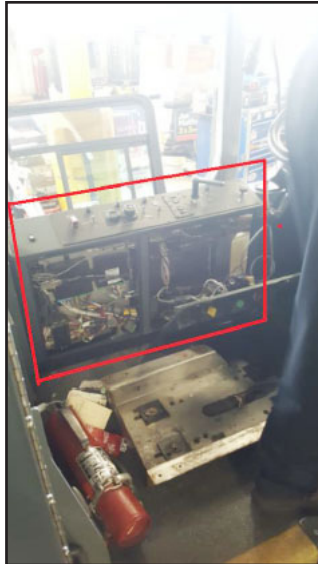


Figure 38 - Install the Driver's Control Panel

- 1.41. Install the front right door post capping with all its screws (see Figure 39).



Figure 39 - Install the Front Right Door Post Capping

- 1.42. Use a heat gun to remove the plates and decals from the old front shell. Do not overheat; use only to warm and soften the adhesive to ease removal. Install the phone, microphone and sun shade (see Figure 40).

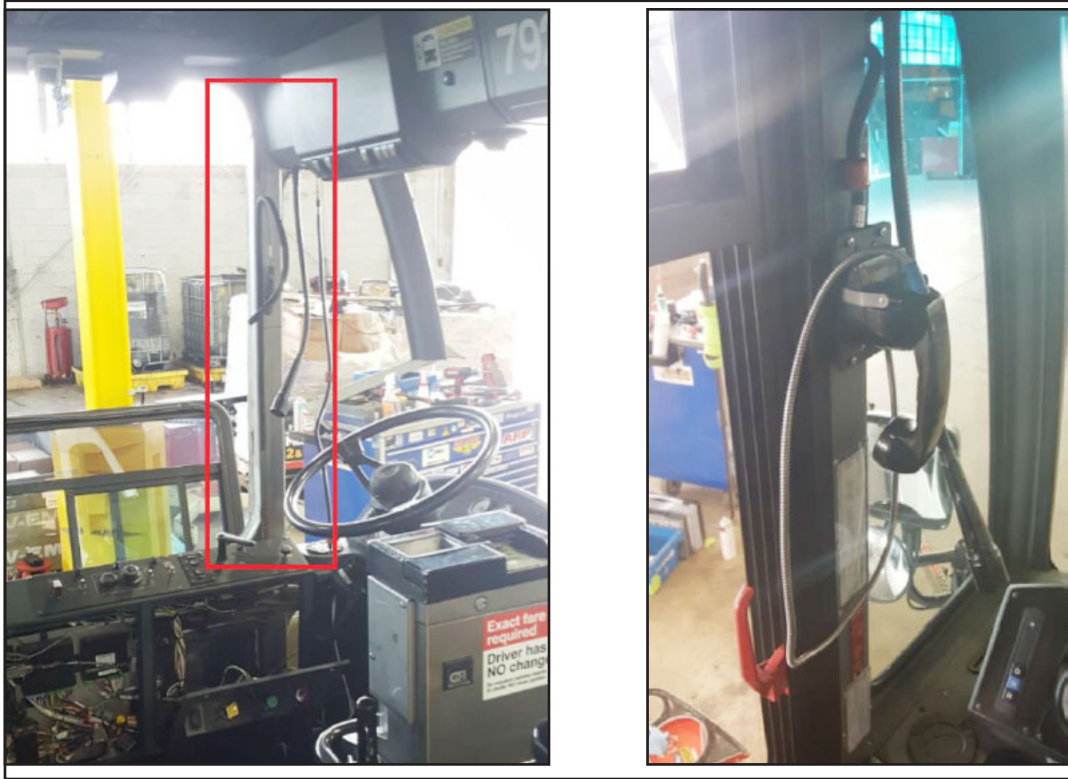


Figure 40 - Install the Plates, Decals, Phone, Microphone and Sun Shade

- 1.43. Install the driver's seat on its base, screw in the bolts and connect the pneumatic hose and the electric cables (see Figure 41).



Figure 41 - Install the Driver's Seat

- 1.44. Install the side door camera. To install the driver's side camera, drill holes from inside the bus prior to installing. Install masking tape around the cameras and apply a white Sika joint to prevent water infiltration (see Figure 42).

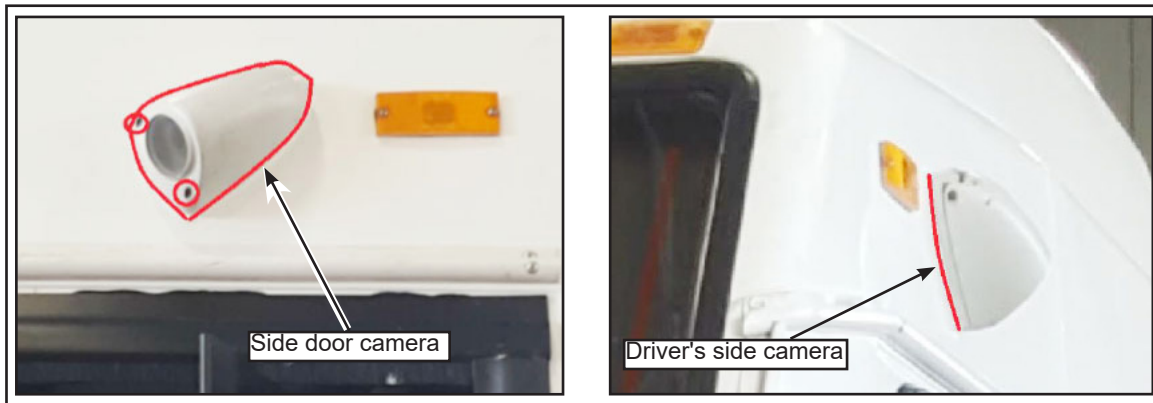


Figure 42 - Install the Cameras

- 1.45. Use the gutters as a template to drill holes in the front shell prior to rivet installation (2 people recommended). Apply white Sika in every hole and behind each gutter. Install the gutters with rivets and cover each rivet with Sika to prevent water infiltration. Install masking tape and apply white Sika joint along the gutters (see Figure 43).



Figure 43 - Install the Gutters

- 1.46. Install the side mirror brackets. For the side door mirror bracket, install masking tape and apply a black Sika joint around the bracket. Install the mirrors and connect the wires (see Figure 44).



Figure 44 - Install the Mirrors

- 1.47. Install the red decal on the front of the bus, using the old front shell as reference (see Figure 45).



Figure 45 - Install the Red Decal

- 1.48. Install the door seal, apply black Sika behind the existing top seal and clamp the seal with a piece of wood in order to apply uniform pressure. Apply black Sika behind the vertical seal and clamp with a piece of wood to apply uniform pressure. Seal the joint between the horizontal and vertical seals with black Sika (see Figure 46).



Figure 46 - Install Door Seals

- 1.49. Install reflectors, marker lights and signal lights (see Figure 47).



Figure 47 - Install Reflectors, Marker Lights and Signal Lights

- 1.50. Install wiper arms while maintaining proper alignment, connect wiper hoses and install cover caps (see Figure 48).



Figure 48 - Install the Windshield Wipers

- 1.51. Install the license plate and the tow plugs (see Figure 49).



Figure 49 - Install the License Plate and Tow Plugs

- 1.52. Install turn signals and headlights. Apply black Sika around the light housings to prevent water infiltration and install the light bezels (see Figure 50).



Figure 50 - Install the Turn Signals and Headlights

- 1.53. Install the bicycle rack (see Figure 51).



Figure 51 - Install the Bicycle Rack

- 1.54. Place the battery disconnect switch in the battery compartment in the ON position and connect the negative cable from the battery terminal.
- 1.55. Return the bus to service. ❖