Service Bulletin No. 344B

MODEL	TYPE	SECTION/GROUP	DATE
E / J Series Coaches	Field Change Program	3–Body	Nov. 29, 2010

SUBJECT: **DOGA WINDSHIELD WIPER MOTOR**

CONDITIONS:

THIS BULLETIN SUPERCEDES FIELD SERVICE BULLETIN 344 IN ITS ENTIRETY.

IF YOU HAVE NOT YET COMPLETED FCP 344, PERFORM STEPS 1. TO 60.

IF YOU HAVE ALREADY COMPLETED FCP 344, PERFORM STEPS 2. TO 4. AND STEPS 43. TO 52.

TO ENSURE PROPER WIPER MOTOR FUNCTION. SUPPLEMENTAL PARTS AND FIELD CHANGE PROGRAM CONDITIONS ARE OUTLINED IN THIS SERVICE BULLETIN.

Ref. NHTSA Recall No.: 10V–135

Ref. Transport Canada Recall No.: 10–097

Customer Complaint:

MCI has been informed that the potential may exist in which the DOGA windshield wiper motor may fail to operate properly while the wiper system is functioning. If this occurs, the windshield wipers may operate intermittently, operate at a single speed only, or stop operating completely. If the windshield wipers stop functioning, the driver's clear field of view may be reduced.

Cause:

The wiper controller that controls the intermittent mode of the wiper system may switch the wiper motor into its high speed mode when the wiper system is under heavy load, such as when operating in high wind, heavy rain, or dry windshield conditions. This switching occurs as a result of the thermal protection system that is integral to the design of the controller. This switching occurs at a much higher rate of occurrence than anticipated, and as a consequence is causing premature wear and tear to the motor.

In addition, the wiper system linkages that connect the drive motor to the wiper arms may be assembled incorrectly. The force required to move a wiper arm with incorrectly–assembled linkages is higher than anticipated, and causes a higher load input to the motor and premature damage to the motor.

Corrective Action:

MCI strongly encourages customers to install a new DOGA model 259 motor in place of the existing model 258 motor. The 259 motor has a higher load capacity than the current 258 motor, which is intended to provide an additional safety margin to the wiper system. In addition, the installation of a bypass harness on the controller will prevent the controller from switching the motor to high speed.

As a result, MCI advises that owners of E4500 and J4500 model coaches with unit numbers listed in the table below implement the steps in this procedure.

64342	64343	64455 to 65655		

Parts for Coaches That Have NOT Yet Completed FCP 344

Qty.	Old P/N	New P/N	Description
1	03-34-1122		Wiper Motor, Doga
1	03-34-1186		Wiper Motor, Doga
1		07-14-5570	Kit, Wiper Controller, Doga
			Kit Contents Are:
1		03-34-1193	Wiper Motor, Doga
1		07-08-3730	Bracket Assembly, Top, VIP Controller
1		07-08-3732	Bracket Assembly, Bottom, VIP Controller
1		07-12-3664	Harness, Adapter, Wiper Controller
1		07-12-3668	Adapter Harness, PDM1, BusBar
1		07-12-3669	Adapter Harness, Wiper 24V Power Source
3		7L-5-79	Relay, SPDT, 24V
2		19-1-583	Screw, #10–24 UNC x 1.25–Bottom Bracket Install
4		19-1-605	Screw, #10–24 x 0.50–Top Bracket and Relays Install
4		19-1-696	Screw, Tapping
1		19-1-758	Screw
2		19-2-7	Washer, Flat
10		19-11-258	Tyrap
2		19-11-259	Tyrap
1		21-7201-10	Trimlock
1		21-7112-15	Afterseal
4		19-11-1465	Heatshrink, 2 inch
2		19-11-1466	Solder Splice
1		21-8207-7	Solder
1		24135	Gauge, Tool
1	03-15-7738A		Verification Form, (Must be Returned to MCI, One Per Coach)

Retrofit Parts for Coaches That Have Already Completed FCP 344

Qty.	New P/N	Description
1	07-12-3668	Adapter Harness, PDM1, BusBar
1	07-12-3669	Adapter Harness, Wiper 24V Power Source
1	7L-5-79	Relay
1	19-1-758	Screw
4	19-11-1465	Heatshrink, 2 inch
2	19-11-1466	Solder Splice
5	19-11-258	Tyrap
1	21-8207-7	Solder
1	03-15-7738A	Verification Form, (Must be Returned to MCI, One Per Coach)

Service Procedure:

⚠ WARNING

Read this entire procedure before beginning work.

Use Safe Shop Practices At All Times.

NOTICE

The windshield wipers must be cycled and in the "parked position" prior to starting this retrofit.

The "parked position" of the windshield blades is 4.0 in. (+/– 0.5 in.) from the edge of the windshield center fencing.

1. Using the "Smart Stick" on the LH side of the steering column, cycle the wipers ensuring that they are in the "parked position." Using masking tape, mark the "parked position" of the wipers on the windshield.
2. For E/J model coaches prior to 65013, turn the main battery disconnect switch to the OFF position. For E/J model coaches effective with 65013, activate the disconnect feature of the main battery disconnect (MDS) system by pressing (for one second only) the momentary toggle switch on the MDS module to OFF. An audible click can be heard from the main solenoids in the MDS module. Position the rotary switch to the DOWN (OFF) position.
3. Chock both sides of the tires.
4. Open the engine door. Position the ENGINE RUN and ENGINE START switches on the engine compartment remote control box to the OFF position.

5. Locate the center under–dash kickpanel, housing the steering column (refer to Figure 1). Remove and retain the screws. Place kickpanel aside to be re–installed at a later step in this procedure.
6. Locate the RH under–dash kickpanel behind the accelerator and brake pedal (refer to Figure 1). Remove and retain the screws. Maneuver kickpanel past the entrance door air dump valve and pull forward to access the flex hose attached to the back of the gasper assembly. Remove the flex hose from the back of the gasper assembly. Place kickpanel aside to be re–installed at a later step in this procedure.
7. Locate the LH under–dash kickpanel to the left of the steering column. Remove and retain the screws. Remove and retain the park brake knob. Place kickpanel aside to be re–installed at a later step in this procedure.

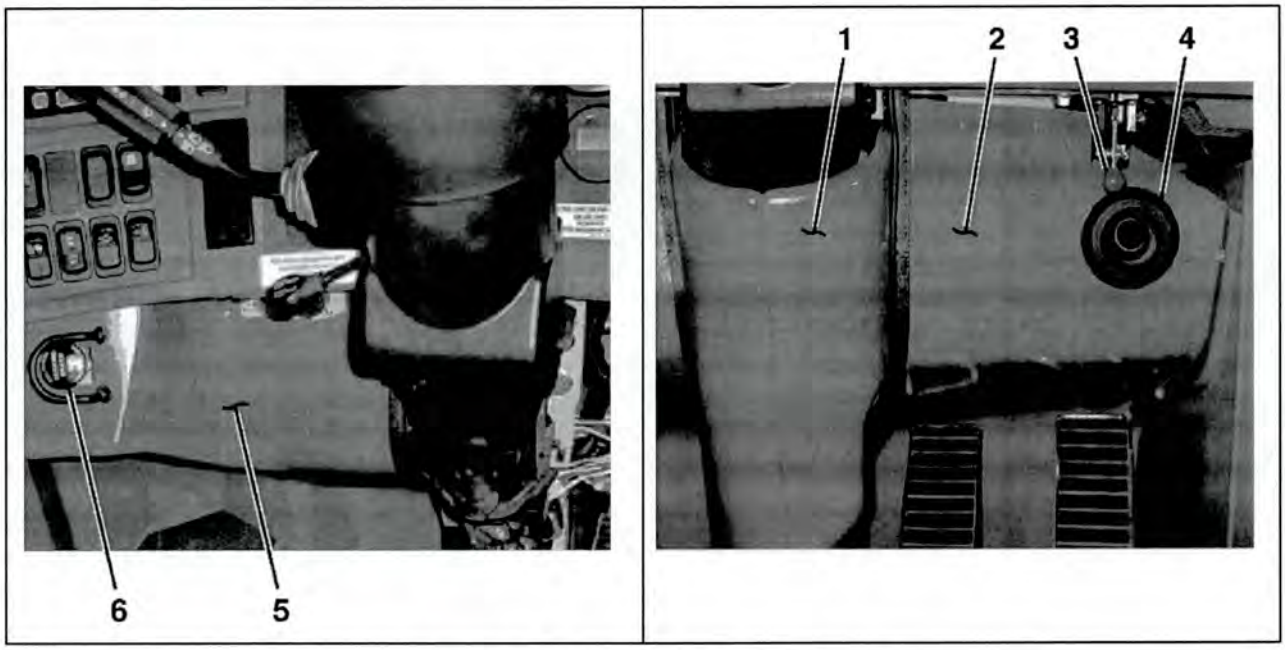


Figure 1. Under–Dash Kickpanel

ITEM	DESCRIPTION
1	Center under–dash kickpanel
2	RH under–dash kickpanel
3	Entrance door air dump valve
4	Gasper assembly
5	LH under–dash kickpanel
6	Park brake switch

8. Remove the fabric return air panel and the return air panel (refer to Figure 2).
9. Locate dash harness Plug X145 (J1R). Unplug Plug X145 (J1R) from the wiper controller (refer to Figure 2).
10. Connect the male adapter P145B of the wiper controller adapter harness, p/n 07-12-3664 to Plug X145 (J1R) of the dash harness.
11. Connect the female adapter P145A of the wiper controller adapter harness, p/n 07-12-3664 to the wiper controller. Secure to dash harness using tyrap, p/n 19–11–258.
12. Using the screw, p/n 19–1–696 and washer, p/n 19–2–7, install the relay base section of the wiper controller adapter harness. Install the two relays, p/n 7L–5–79, into the relay base.
13. Using the hardware removed in Step 8, secure the fabric return air panel and the return air panel. Proceed to the front of the coach.

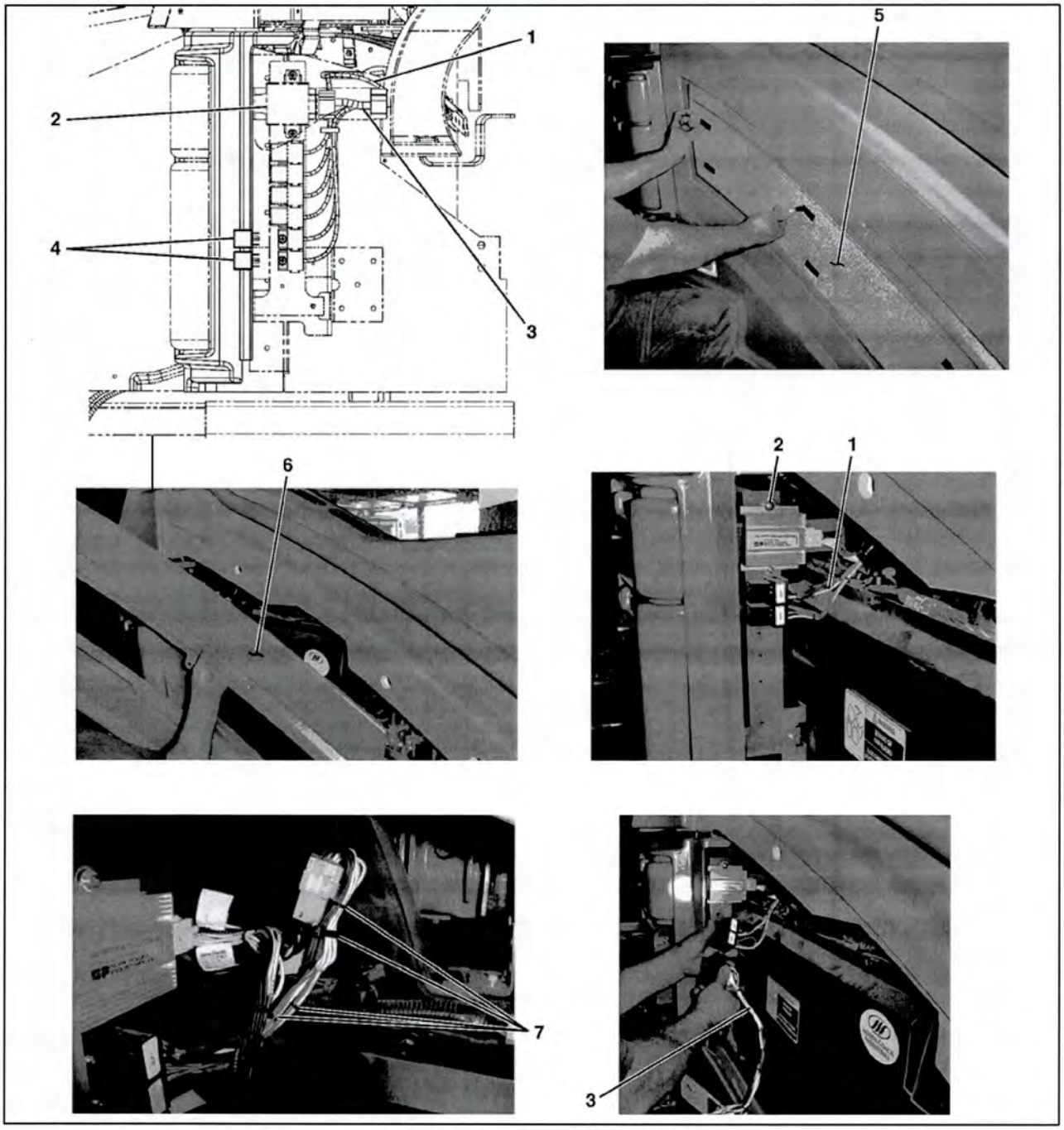


Figure 2. Relay Installation

ITEM	DESCRIPTION
1	Dash harness
2	Wiper controller
3	Wiper controller adapter harness
4	Relay, 24V
5	Fabric return air panel
6	Return air panel
7	Tyrap locations

CAUTION

Use caution when handling wiper arms to prevent damage to the wiper blades.

14. Carefully remove the washer fluid supply lines from the wiper arms.
15. Remove the wiper arms and place aside, to be re-installed at a later step in this procedure.

CAUTION

Use extreme caution when removing and installing the valance to prevent cracking or breakage.

16. Locate the valance directly below the windshields. Carefully remove and retain the lacing from the seal (refer to Figure 3). Remove the washer hose from the back of the valance (refer to Figure 4). Remove the valance from the coach and place aside, to be re-installed at a later step in this procedure. If equipped, remove the valance insulation and place aside.

Figure 3. Lacing Removal

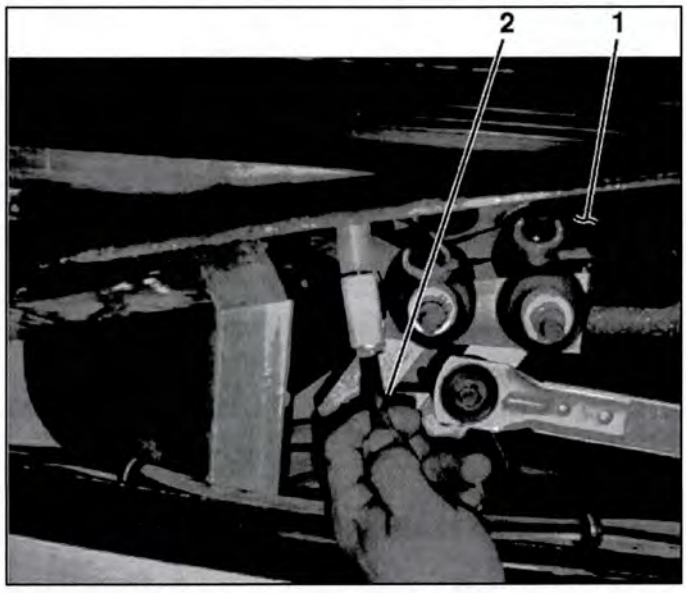


Figure 4. Valance and Washer Hose Removal

17. Locate the Doga windshield wiper motor on the RH (curbside) of the steering column bracket (refer to Figure 5).
18. Carefully disconnect the wiper motor harness.

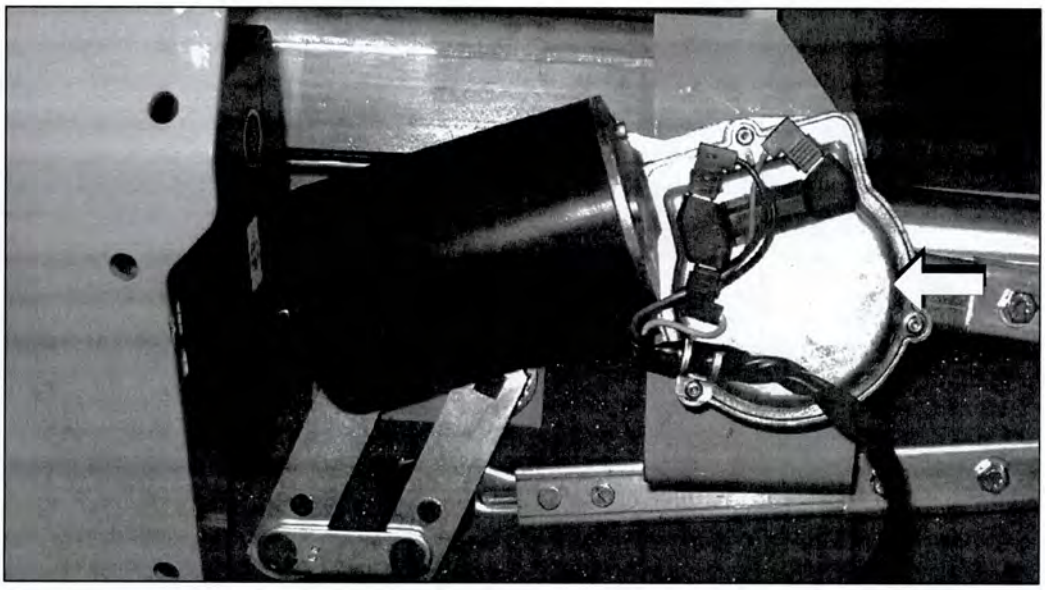


Figure 5. Windshield Wiper Motor

19. Locate the three wiper motor mounting bolts securing the wiper motor to the bracket (refer to Figure 6).
20. Loosen the wiper motor crank nut (refer to Figure 6).
21. Carefully push the linkage off the wiper motor shaft, Figure 6, ensuring no damage to the splines.
22. Using a 1/2" wrench or socket, remove and retain the three wiper motor mounting bolts (refer to Figure 6). Remove and discard the wiper motor.

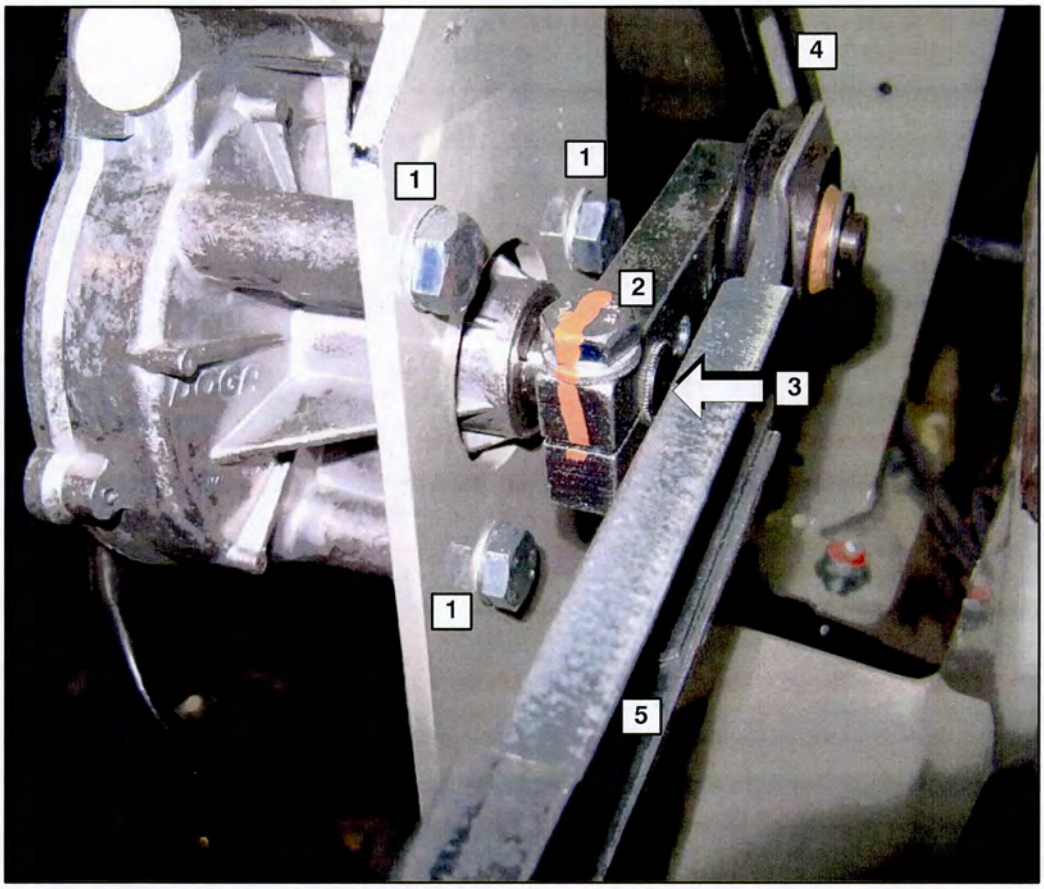


Figure 6. Rear View of Wiper Motor Installation

ITEM	DESCRIPTION
1	Wiper motor mounting bolts, Qty. 3
2	Wiper motor crank nut
3	Wiper motor shaft
4	Motor Linkage
5	Main wiper linkage

23. Locate the VIP controller mounted to the RH (curbside) of the steering column bracket beside the wiper motor (refer to Figure 7).

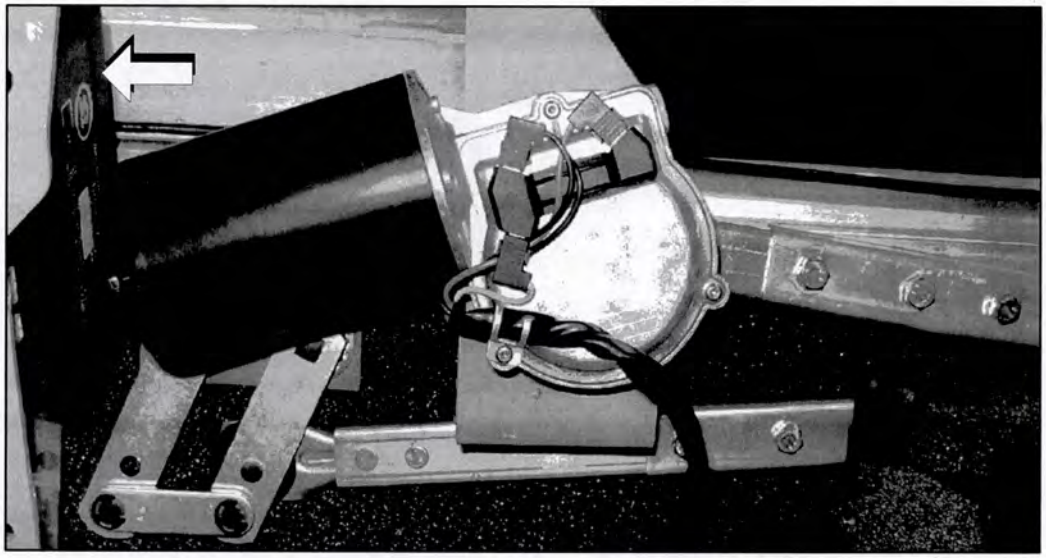


Figure 7. VIP Controller Location

24. Disconnect the harnesses from the VIP controller. Remove and discard the mounting hardware from the VIP controller. Place VIP controller aside, to be re–installed at a later step in this procedure.

NOTICE

If your J4500 coach is prior to unit 64918 proceed to Step 26.

If your E4500 coach is prior to unit 65455 proceed to Step 26.

25. Disconnect the steer angle sensor (SAS) connector (refer to Figure 12).
26. Grab the dash foam hood assembly on both ends. Lift straight up to remove (refer to Figure 8). Place aside to be re–installed at a later step in this procedure.

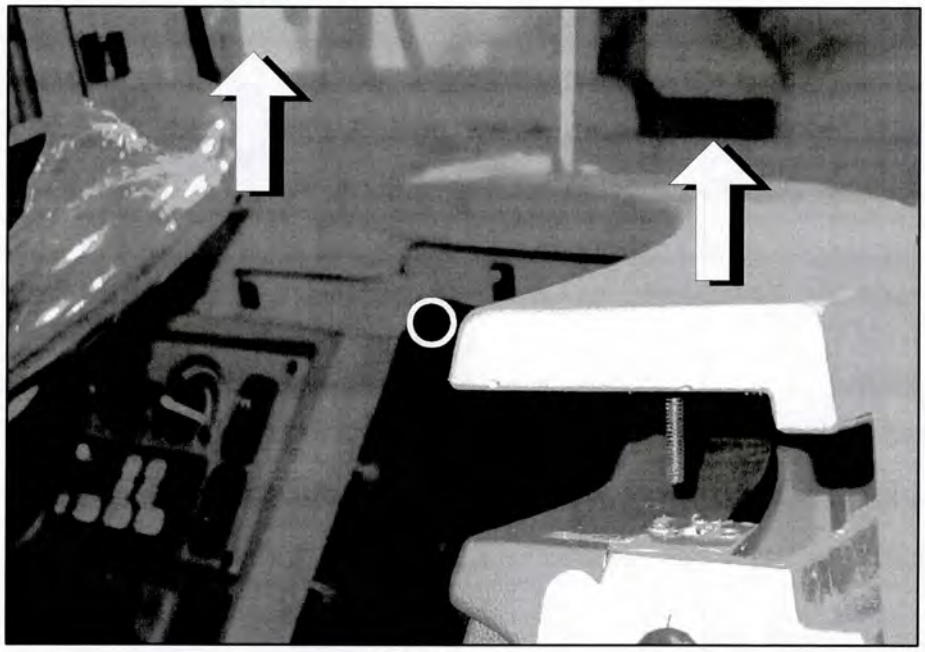


Figure 8.

27. Remove and retain the screws from the LH and RH top corners of the instrument panel (refer to Figure 8). Grab the instrument panel and lift straight up to remove from the slot. Carefully lean to rest the instrument panel against the steering column.

28. Route the disconnected harnesses to the LH (roadside) of the steering column bracket by routing up through the curbside provision hole on top of the dash over to the roadside provision hole (refer to Figure 9).

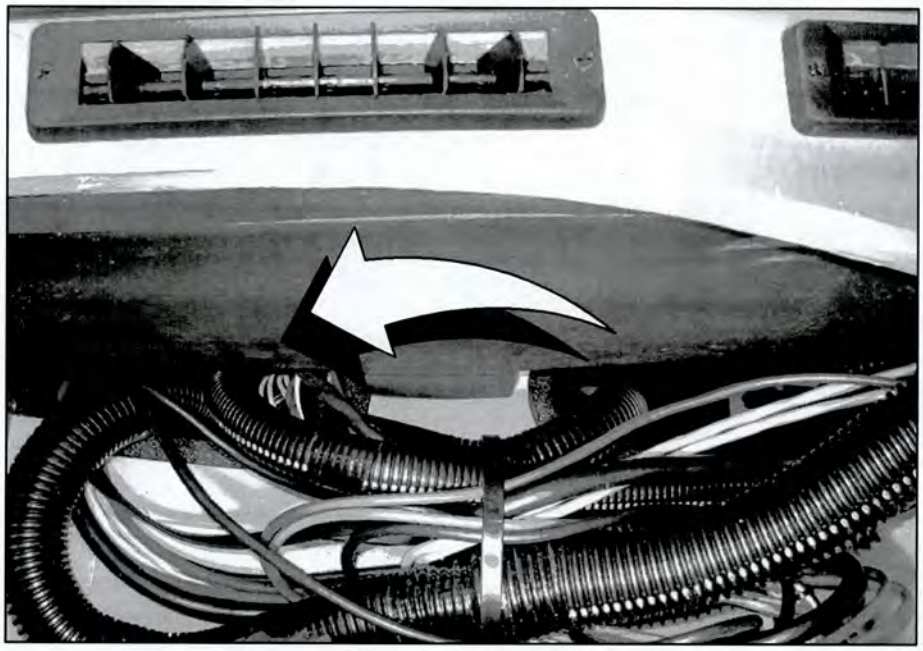


Figure 9. Top view of dash, looking down

29. Orient the instrument panel in the slot and carefully press down to install. Using the existing screws, secure the instrument panel to the dash. Align and push straight down on both ends, to re-install the dash foam hood assembly (refer to Figure 8).

NOTICE

Visually inspect the steering column bracket above the pocket gateway for two upper holes (refer to Figure 10). If there are no upper holes you will need to use the VIP controller with the bracket assemblies attached as a template for drilling two 0.147 inch holes prior to performing Step 30.

30. Remove and discard the existing screws that mount the pocket gateway to the steering column bracket. Using screws, p/n 19-1-583, and the existing pocket gateway mounting holes, mount the bottom bracket, p/n 07-08-3732, on top of the pocket gateway onto the LH (roadside) of the steering column bracket (refer to Figure 12).
31. Install the VIP controller as shown in Figures 11 and 12. Re-connect the wiper motor harness. Re-connect the harnesses to the VIP controller, and , if applicable, the steer angle sensor (SAS) connector.

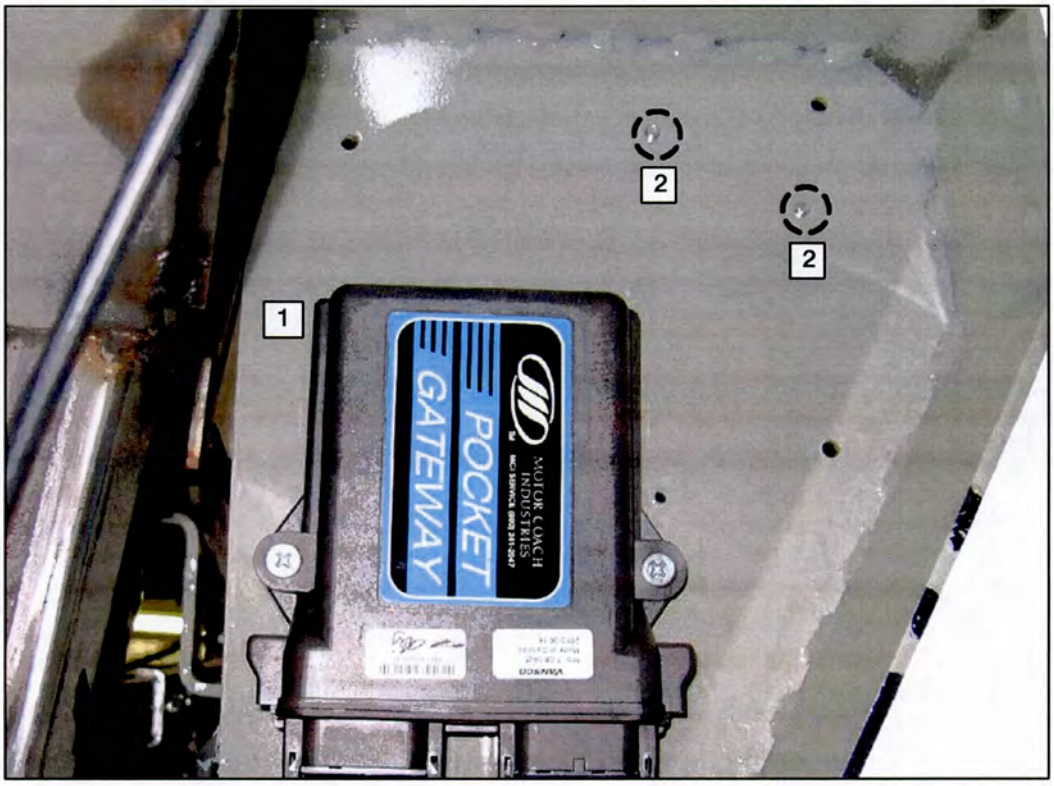


Figure 10. Pocket Gateway

ITEM	DESCRIPTION
1	Pocket Gateway
2	Two upper holes for VIP bracket

Figure 11. Reference photo of VIP controller.

32. Cut to length and install trimlock, p/n 21-7201-10, on bracket edge as shown in Figure 12.

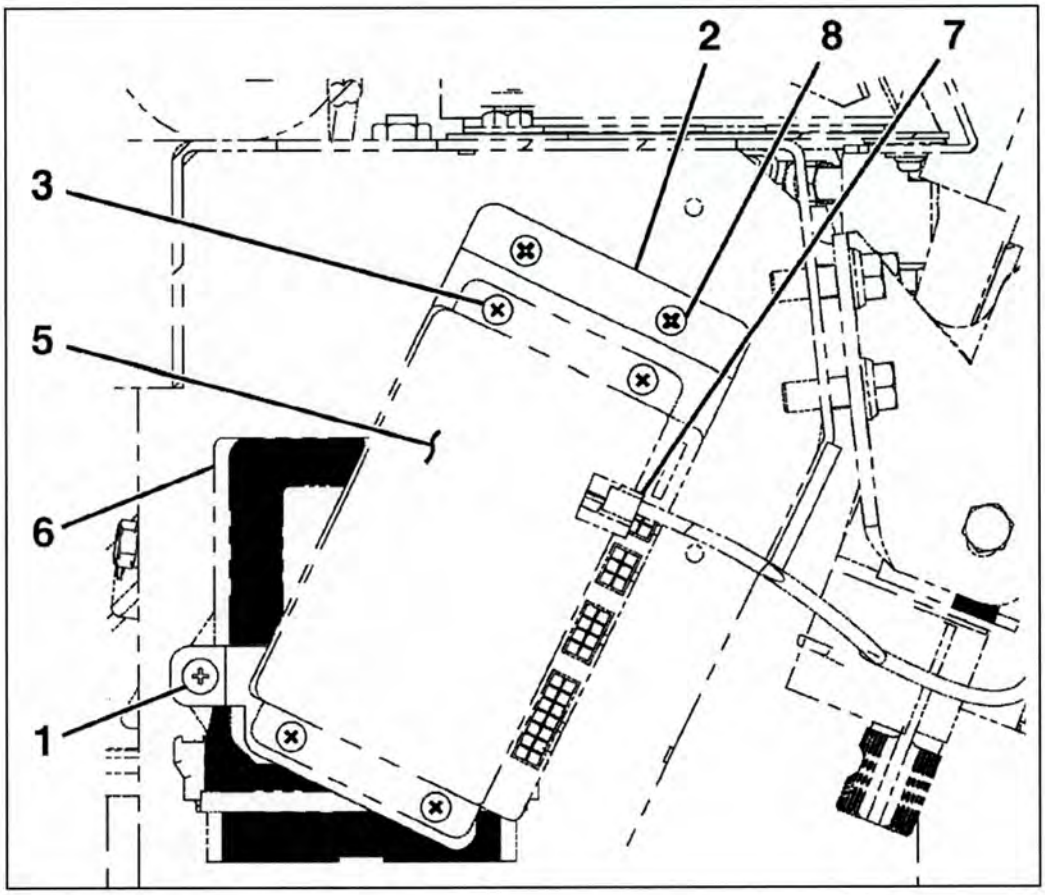
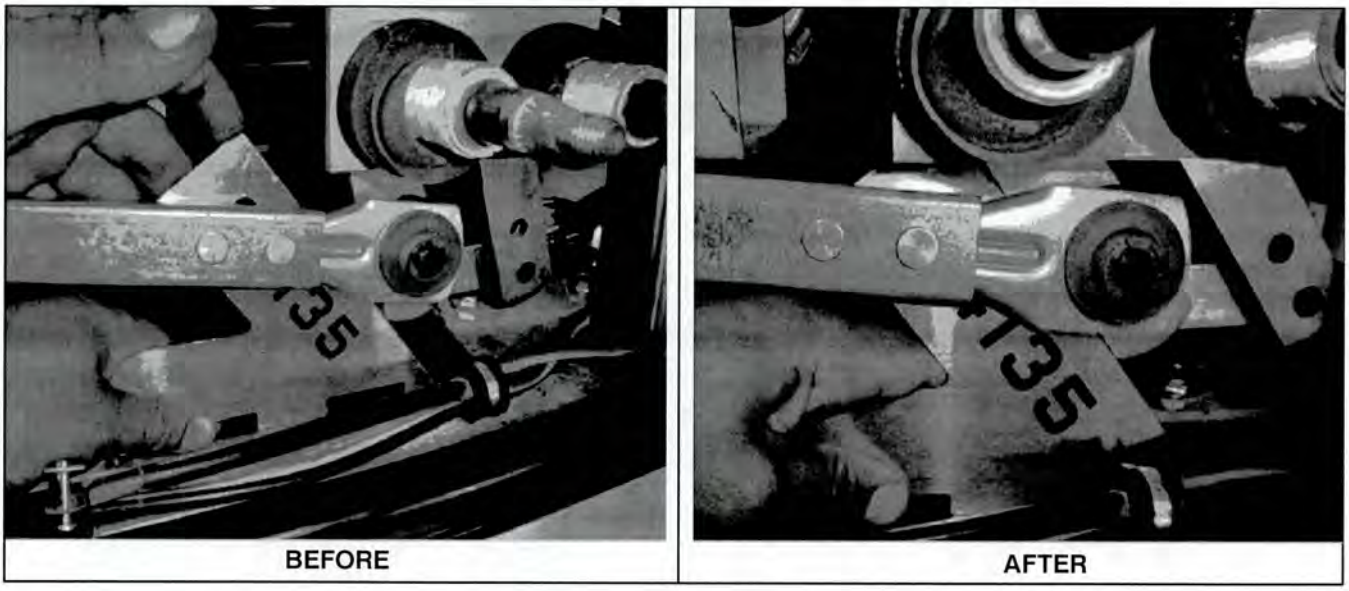


Figure 12.

ITEM	DESCRIPTION
1	Bottom bracket assembly
2	Top bracket assembly
3	Screw, p/n 19--1--605
4	Trimlock
5	VIP controller
6	Pocket Gateway
7	Steer angle sensor harness connector
8	Screw, tapping, p/n 19--1--696

33. Install the new wiper motor, p/n 03--34--1193, using the three wiper motor mounting bolts removed in Step 22. Secure the wiper motor to the bracket. Torque the motor mounting bolts to 15 to 18 ft.--lb.
34. Cycle the coach power to ON.
35. Cycle the "Smart Stick"rotary position between low speed and OFF to ensure that the motor is in the "Park Position".

36. For E/J model coaches prior to 65013, turn the main battery disconnect switch to the OFF position. For E/J model coaches effective with 65013, activate the disconnect feature of the main battery disconnect (MDS) system by pressing (for one second only) the momentary toggle switch on the MDS module to OFF. An audible click can be heard from the main solenoids in the MDS module. Position the rotary switch to the DOWN (OFF) position.
37. Align the wiper motor linkage with the main wiper linkage and mount it on the motor shaft. Torque the wiper motor crank nut to 16 to 20 ft–lb. Apply torque seal from the face of the capscrew to the face of the wiper motor crank.
38. Positioned in front of the coach, locate the main wiper linkages (refer to Figure 13).
39. Verify that the arm swing angle from the wiper arm pivot is 35 degrees on both sides vertical by utilizing a gauge. With gauge tool 24135 ensure the angle measured from the frame member is 55 (+/–1.0) degrees (refer to Figure 13). Repeat on opposite side of coach.



BEFORE AFTER

Figure 13. Wiper Arms Before and After Linkage Adjustment

NOTICE

If the angle measured from the frame member is not 55 (+/– 1.0) degrees on both the curbside and roadside wiper arms as shown in Figure 13, proceed to Step 40.

If the angle measured from the frame member is 55 (+/– 1.0) degrees on both the curbside and roadside wiper arms as shown in Figure 13, proceed to Step 41.

40. Locate the wiper arm linkage sliding channel. Loosen the bolts on the sliding channel and adjust the linkage to achieve the 55 degree angle. Tighten bolts. Using the gauge, ensure the linkage is 55 degrees. Torque bolts to 16–18 ft–lb.

NOTICE

Do not stretch the lacing.

To prevent water intrusion, ensure there are no gaps in the lacing.

41. Lubricate the channel in which the lacing sits.
42. Re–install the valance. Using a lacing tool, insert the lacing in the seal (fencing) groove (refer to Figure 3). Apply afterseal, p/n 21-7112-15, between the valance and lacing at both ends.

43. In the driver's area, locate the t–handle front service compartment door release on the lower, LH console switch panel. Lift the t–handle to open the compartment door. Exit the coach and open the front service compartment door.
44. Using screw, p/n 19-1-758, and the existing hole on the compartment wall, install the relay base attached to adapter harness, p/n 07-12-3669 (refer to Figure 14). Insert the relay, p/n 7L-5-79, on the relay base.

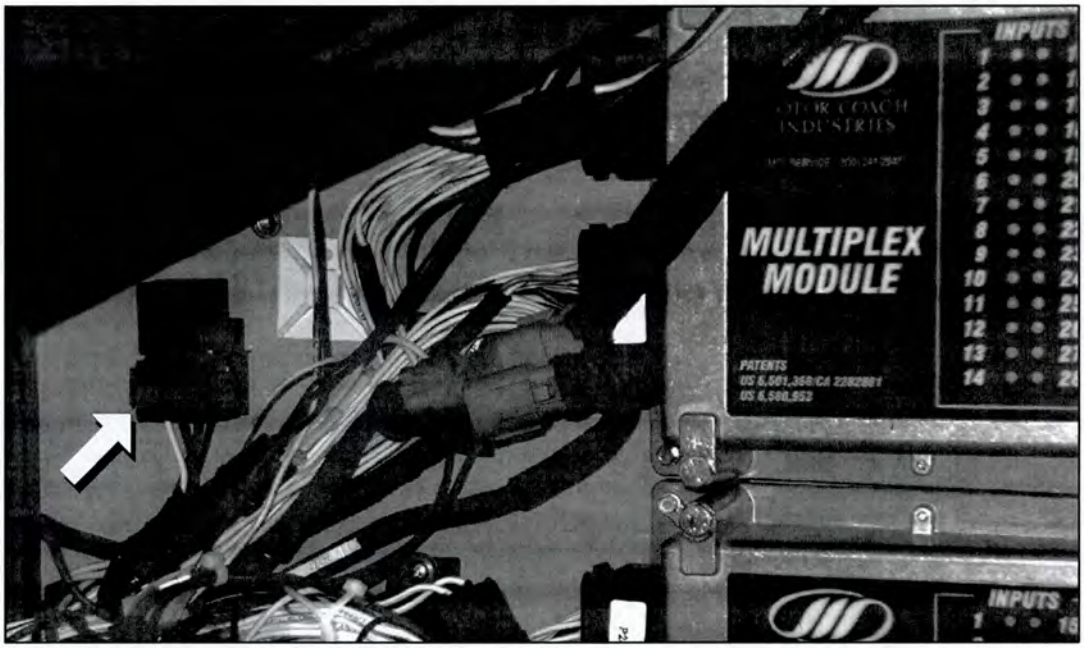


Figure 14. Front junction box compartment.

45. Locate PDM1 on the drag link compartment wall (refer to Figure 15). Carefully unplug the connector and plug it into connector PDM1A of the PDM1 Adapter Harness, p/n 07-12-3668. Connect Plug PDM1B of the adapter harness into the power plug of the PDM1.

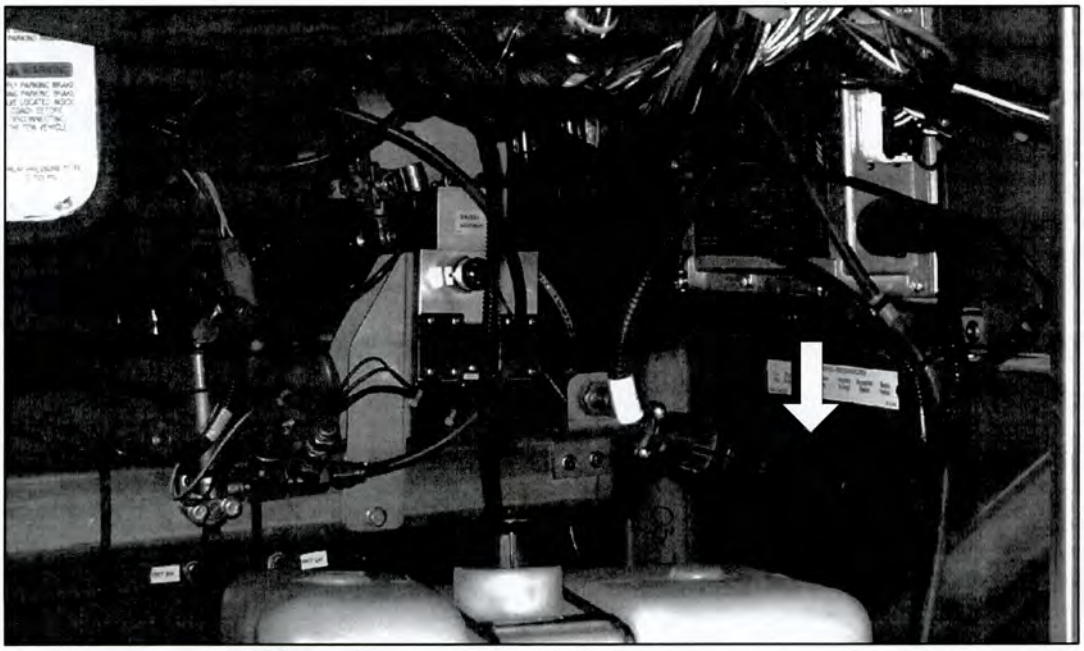


Figure 15. Drag link compartment.

46. In the drag link compartment, locate Plug 32 (refer to Figure 16). Locate and remove wire 1285E on Plug 32 / Cavity location 8. Using wire cutters, cut off the terminal from wire 1285E. Using heatshrink, p/n 19-11-1465, seal the end of the wire and tie it back using a tyrap, 19-11-258.
47. Insert wire PDM1 – 24VC into Plug 32 / Cavity location 8.

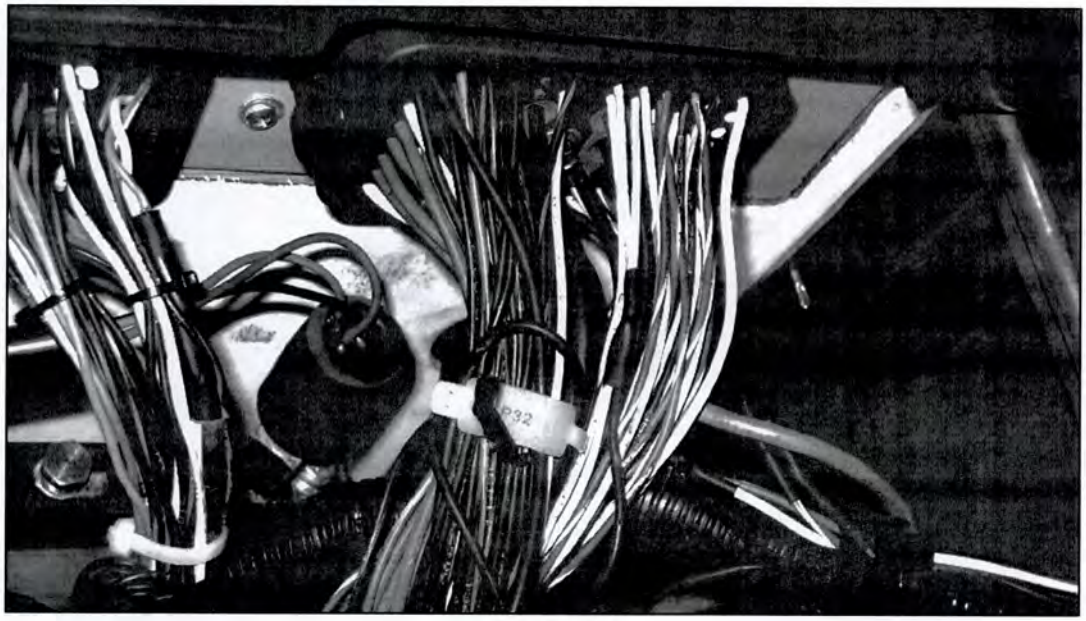


Figure 16.

48. In the front junction box compartment, locate and remove wires 1285F and 1285G from Plug 32 / Cavity locations 7 and 8. Using wire cutters, cut off the terminal from wires 1285F and 1285G.
49. Using wire strippers, expose 0.50 inch of the harness end of each wire.
50. Slide the heatshrink, p/n 19-11-1465, and solder splice, p/n 19-11-1466 over wires 1285F and 1285G. Align the exposed wire ends of 1285F and 1285G on circuit 1285C of Adapter Harness, Wiper 24V Power Source, p/n 07-12-3669. Crimp to secure. Carefully solder the three (3) wires together using electrical solder, p/n 21-8207-7. Cover the solder joint with the heatshrink.
51. Insert wire 1285A of Adapter Harness, Wiper 24V Power Source into the upper, front junction box compartment end of Plug 32 / Cavity location 8. Insert wire 1244A of Adapter Harness, Wiper 24V Power Source into the upper, front junction box compartment end of Plug 32 / Cavity location 7.

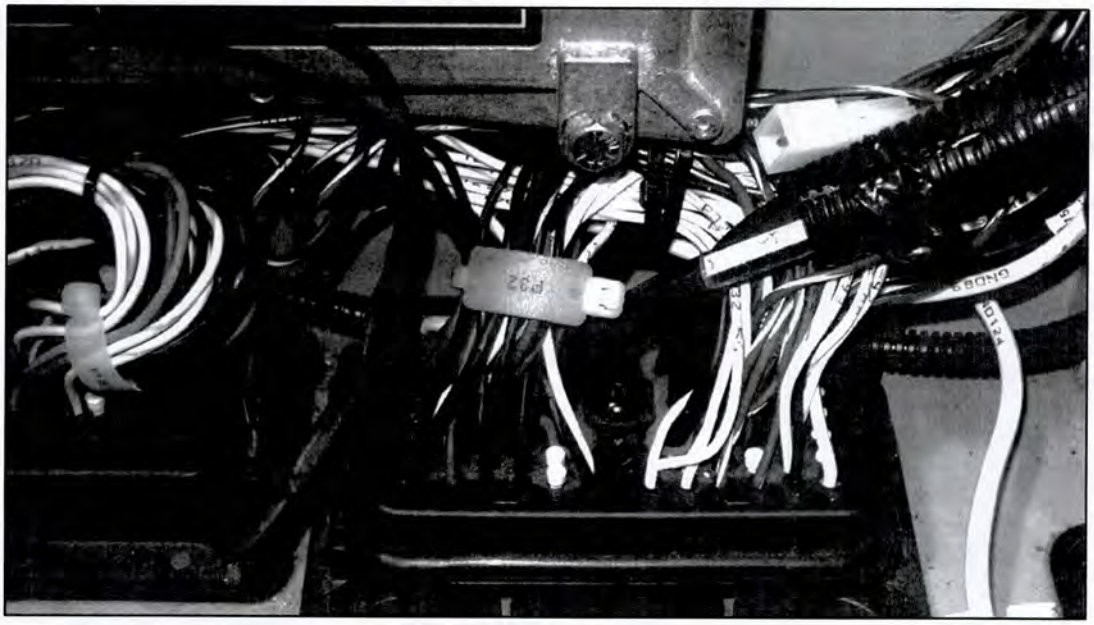


Figure 17.

52. Connect ring terminal of wire 12441 onto Ground stud in the front junction box (refer to Figure 18).

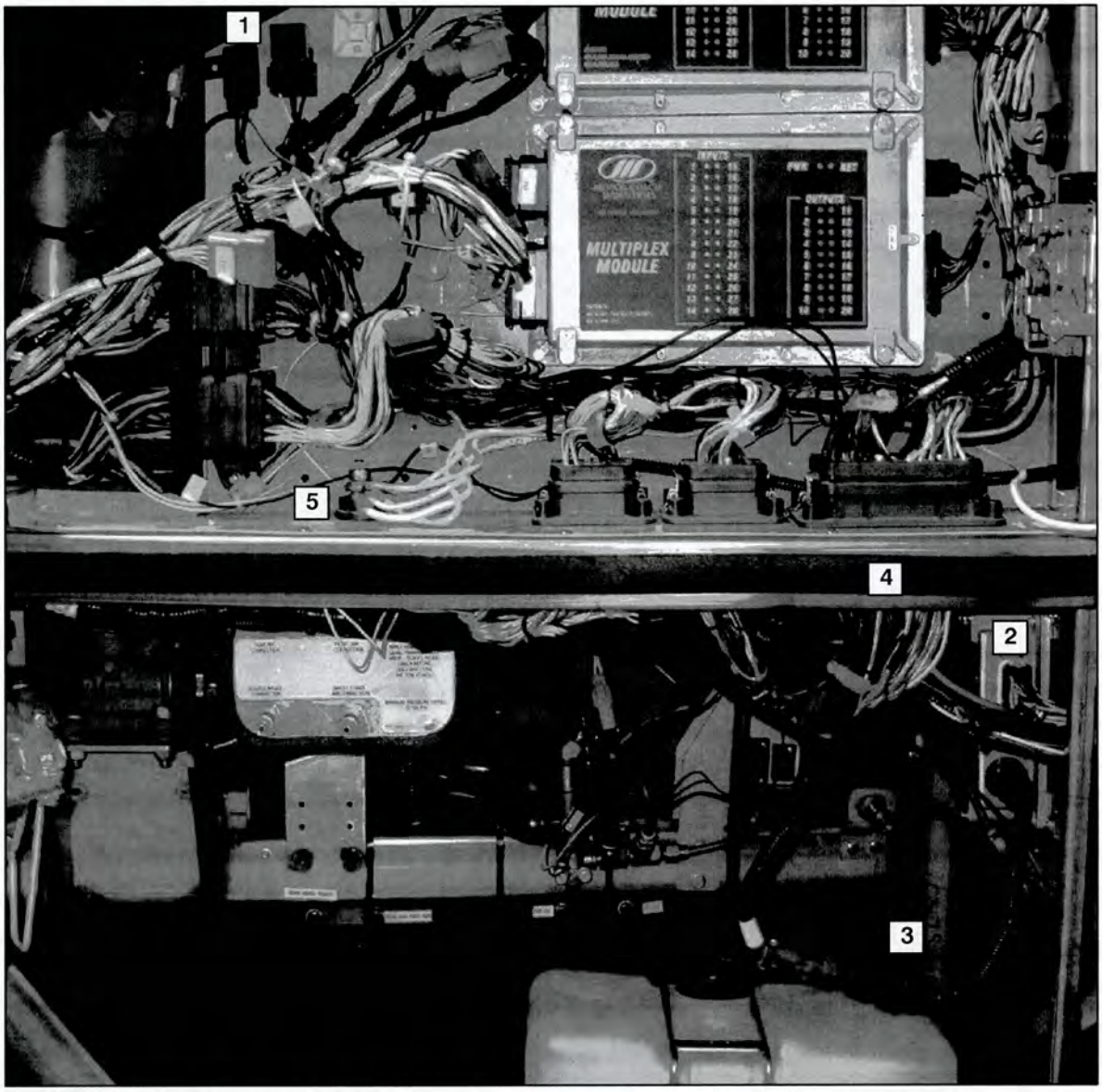


Figure 18. Front junction box and drag link compartments.

ITEM	DESCRIPTION
1	Adapter harness relay base and relay
2	PDM1
3	PDM1 Adapter Harness, p/n 07-12-3668
4	Plug 32 (Plug connections in both front junction box and drag link compartment)
5	Front junction box Ground stud

CAUTION

Use caution when handling wiper arms to prevent damage to the wiper blades.

53. Re–install the wiper arms.
54. Re–connect the washer fluid supply lines to the wiper arms.
55. Position the ENGINE RUN and ENGINE START switches on the engine compartment remote control box to the ON position. Close the engine door.
56. Test the wiper system by operating the wiper system in low, intermittent, and high speed modes for several cycles of the wiper. Ensure the wiper stops in the "parked position"when the "Smart Stick" rotary position is at OFF. Adjust as necessary.
57. Before installing the RH under–dash kickpanel cut 1/2 inch from the straight part of the gasper assembly (refer to Figure 14).

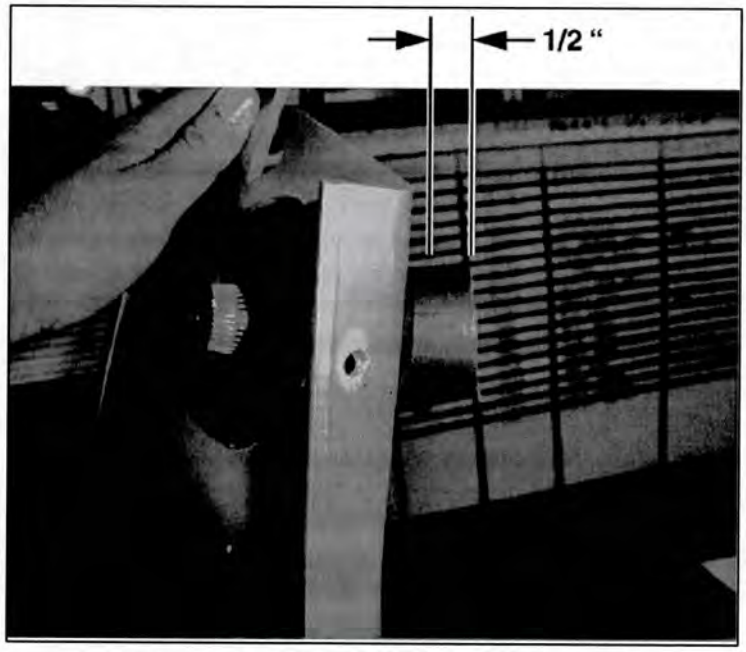


Figure 19. RH Under–Dash Kickpanel

58. Orient the RH under–dash kickpanel, Figure 1, item #2, behind the accelerator and brake pedal. Attach the flex hose to the back of the gasper assembly, Figure 1, item #4. Apply tape to secure flex hose to the back of the gasper assembly. Using the screws removed in Step 6, secure the RH under–dash kickpanel.
59. Using the screws removed in Step 5, secure the center under–dash kickpanel, Figure 1, item #1.
60. Using the screws removed in Step 7, secure the brake valve and the LH under–dash kickpanel, Figure 1, item #5.

Procedure complete.

Mail or fax the completed warranty claim form and the MCI Field Change Program Verification Form to MCI's warranty department, or photocopy and mail it to:

MCI Fleet Support
Attn.: Warranty Department
7001 Universal Coach Drive
Louisville, KY 40258
Fax Number 1-800–360–8886

to receive credit for the hours used to complete this task. Contact the MCI Fleet Support Technical Center at 1-800-241-2947 for any further information.

Record the new wiper motor serial number and batch number and submit with paperwork to be returned to MCI.

Field Change Program Conditions:

The parts required for this change will be supplied without charge.

A labor allowance of 6.6 hours will be granted for performing Steps 1. to 60. in this bulletin on E4500 and J4500 model coaches.

A labor allowance of 0.6 hours will be granted for performing Steps 43. to 52. in this bulletin on E4500 and J4500 model coaches.

This labor allowance will be credited to your MCI Fleet Support Parts Account on receipt of the attached "MCI Field Change Program Verification Form" and a "Warranty Claim Form" as detailed in your Owner Warranty manual to MCI's Warranty department. A "MCI Field Change Program Verification Form" needs to be submitted for each VIN affected. Photocopy the attached "MCI Field Change Program Verification Form" as required for the number of affected coaches in your fleet.

Motor Coach apologizes for any inconvenience resulting from this campaign, but urges you to implement this change as soon as possible.

Sincerely,

Motor Coach Industries
U.S. and Canadian Service Departments.