



INSTRUCTION TO SERVICE

ITS: 59110

SECTION:	246 Air, Brake & Levelling System.
WRITTEN BY:	Michael Rooney
SUBJECT:	Retrofit updated Smart Rider PCUs (60' Bus).

ITS59110

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PROCEDURE:

1. Turn the main battery disconnect switch to the “OFF” position.
2. On XE40 & XE60 Electric Buses:
 - a. Disconnect, lockout and apply a lockout tag to the High Voltage Interlock Switch.
3. Chock the wheels and drain the air system.
4. If necessary, raise coach in accordance with the New Flyer Service Manual.

Front PCU Replacement.

5. Open the access panel on the bottom of the bus under the driver's area.
6. Locate the front Smart Rider PCU (Pneumatic Control Unit).

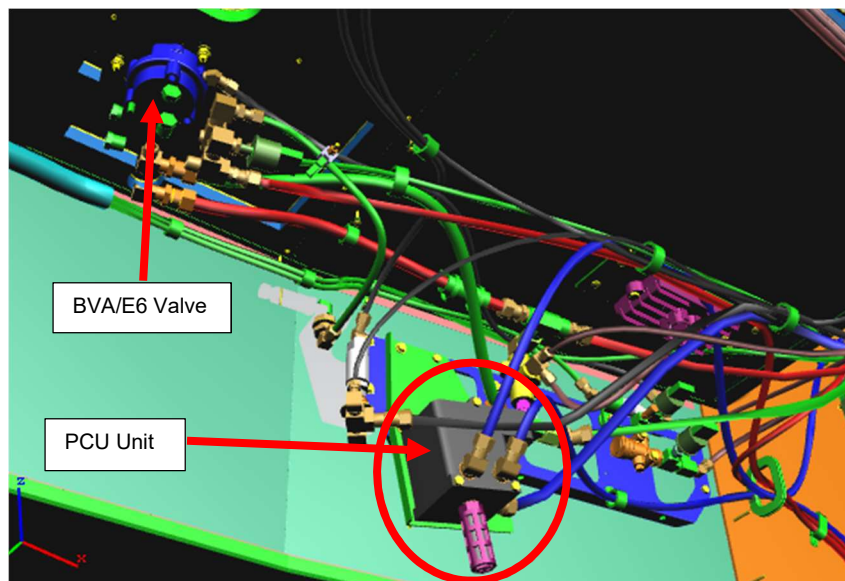


Figure 1: Front PCU Location.

7. Disconnect the two ½" Blue air lines and the 5/8" Blue air line attached to the PCU noting their locations for reassembly later.
8. Unlatch and disconnect the electrical connector on the right side of the PCU unit.
9. Loosen and then remove the three bolts and lock nuts that secure the PCU unit to the mounting bracket then remove the PCU from the vehicle. Set hardware aside for reuse later.

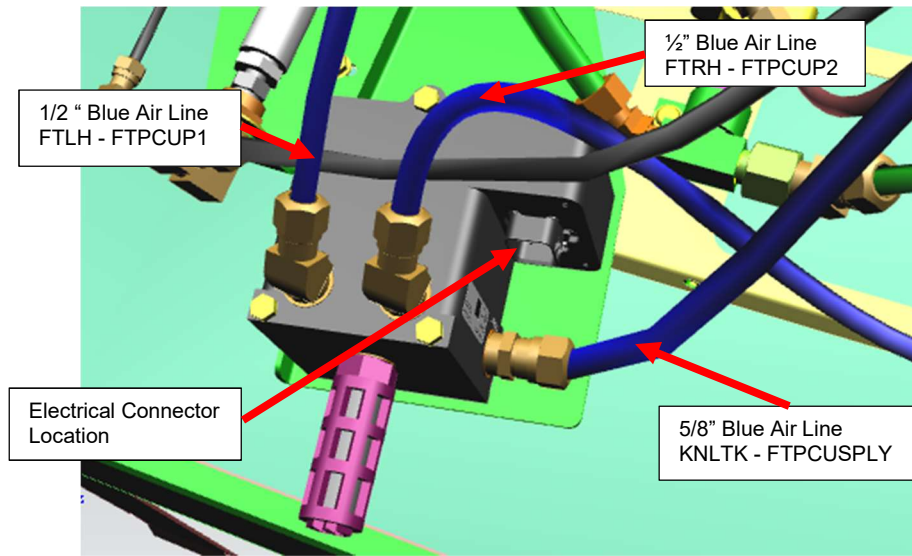


Figure 2: PCU Mounting Bolts, Air Lines & Electrical Connector.

10. On the work bench, remove the air line fittings noting their installation locations and set them aside for reuse later.
11. Remove the muffler assembly and set it aside for reuse later.
12. Set the old PCU assembly aside for return to Supplier.
13. On a new PCU unit NF P/N 860463, Re-install the air line connectors removed from the old PCU unit.
 - a. Re-install the two 45 deg elbows in ports one and two using Loctite 567 thread sealant NF P/N 8110442 on the threads. Take care not to block the openings with thread sealant and leave the first two threads free of sealant. Install the fittings finger tight, then apply 1 – 1.5 turns past finger tight and align in the orientation seen in Figure 3.
 - b. Re-install the straight air line fitting using Loctite 567 thread sealant NF P/N 8110442 on the threads. Take care not to block the openings with thread sealant and leave the first two threads free of sealant. Install the fittings finger tight, then apply 2 turns past finger tight.
 - c. Re-install the muffler using Loctite 567 thread sealant NF P/N 8110442 on the threads. Take care not to block the openings with thread sealant and leave the first two threads free of sealant. Install the fittings finger tight, then apply 2 turns past finger tight.

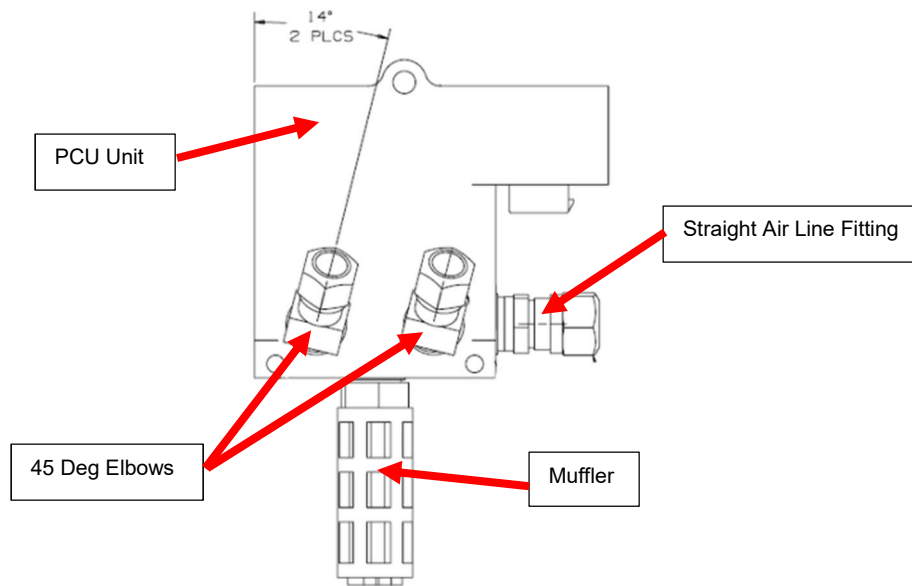


Figure 3: PCU Unit Assembly.

14. Re-install the PCU unit assembly in the bus using the original nuts and bolts.
15. Re-attach the ½" Blue air lines in their original locations (Figure #2). Screw the nut down finger tight and then apply 4 turns past finger tight.
16. Re-attach the 5/8" Blue air supply line. Screw the nut down finger tight and then apply 3 ½ turns past finger tight.
17. Re-attach the electrical connector to the PCU. Take care to ensure that the connector is fully seated and properly latched.
18. Close and secure the access door on the bottom of the bus.

Center PCU Replacement.

19. Locate the center PCU Smart Rider PCU (Pneumatic Control Unit) behind the curbside center axle next to the rearward curbside air spring.

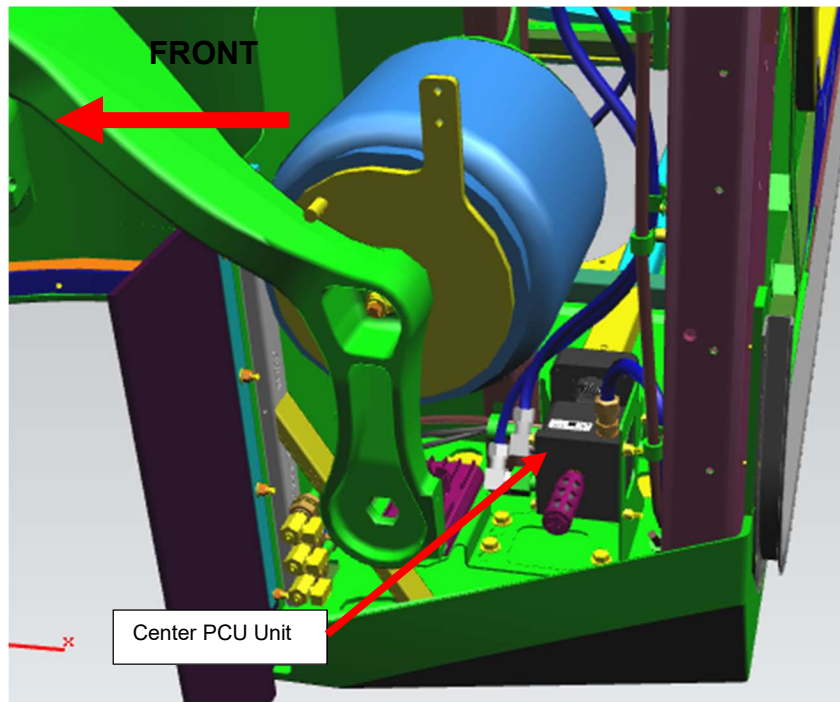


Figure 4: Center PCU Unit Location.

20. Disconnect the two ½" Blue air lines and the 5/8" Blue air line attached to the PCU noting their locations for reassembly later.
21. Unlatch and disconnect the electrical connector on the right side of the PCU unit.
22. Loosen and then remove the three bolts and lock nuts that secure the PCU unit to the mounting bracket then remove the PCU from the vehicle. Set hardware aside for reuse later.

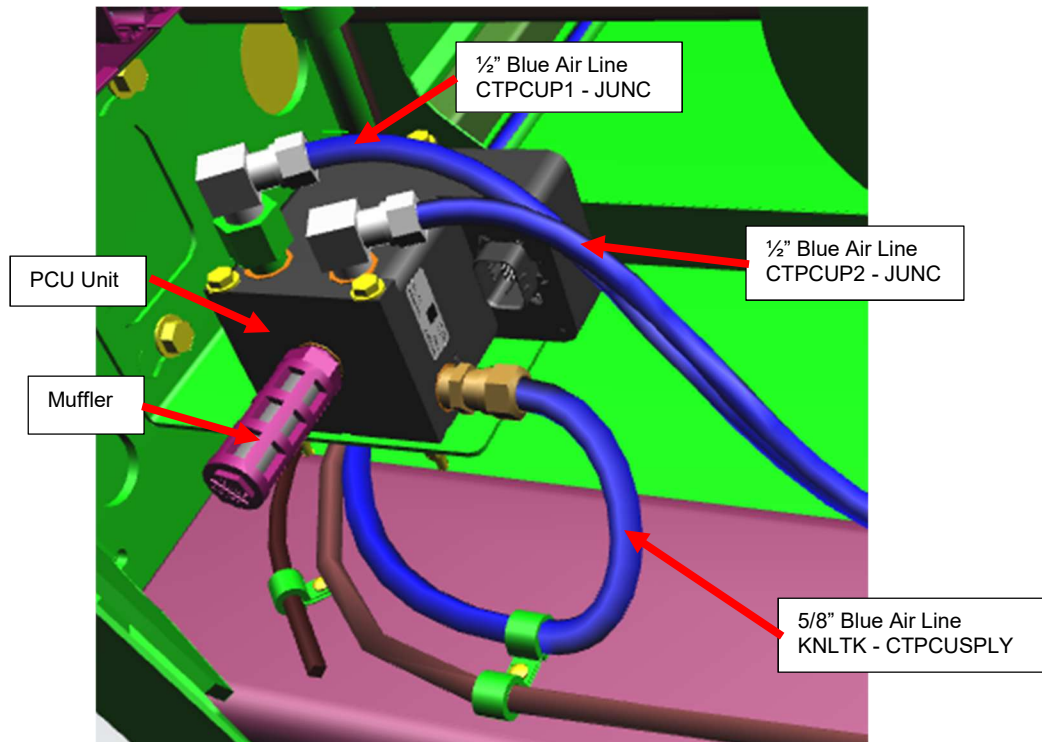


Figure 5: Rear PCU Mounting Bolts, Air Lines & Electrical Connector.

23. On the work bench, remove the air line fittings noting their installation locations and set them aside for reuse later.
24. Remove the muffler assembly and set it aside for reuse later.
25. Set the old PCU assembly aside for return to Supplier.
26. On a new PCU unit NF P/N 860463, Re-install the air line connectors removed from the old PCU unit.
 - a. Re-install the two 90 deg elbows in ports one and two using Loctite 567 thread sealant NF P/N 8110442 on the threads. Take care not to block the openings with thread sealant and leave the first two threads free of sealant. Install the fittings finger tight, then apply 1 – 1.5 turns past finger tight and align in the orientation seen in Figure 6.
 - b. Re-install the straight air line fitting using Loctite 567 thread sealant NF P/N 8110442 on the threads. Take care not to block the openings with thread sealant and leave the first two threads free of sealant. Install the fittings finger tight, then apply 2 turns past finger tight.
 - c. Re-install the muffler using Loctite 567 thread sealant NF P/N 8110442 on the threads. Take care not to block the openings with thread sealant and leave the first two threads free of sealant. Install the fittings finger tight, then apply 2 turns past finger tight.

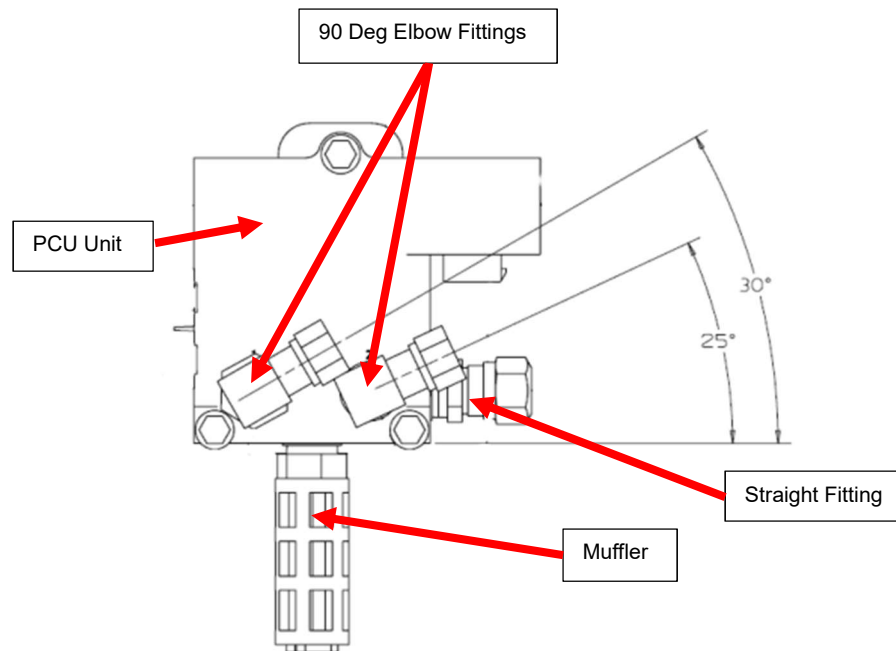


Figure 6: PCU Unit Assembly.

27. Re-install the PCU unit assembly in the bus using the original nuts and bolts.
28. Re-attach the ½" Blue air lines in their original locations (Figure #5). Screw the nut down finger tight and then apply 4 turns past finger tight.
29. Re-attach the 5/8" Blue air supply line. Screw the nut down finger tight and then apply 3 ½ turns past finger tight.
30. Re-attach the electrical connector to the PCU. Take care to ensure that the connector is fully seated and properly latched.

Rear PCU Replacement.

31. Locate the rear PCU Smart Rider PCU (Pneumatic Control Unit) on the mounting plate containing the air brake valves ahead of the rear suspension.

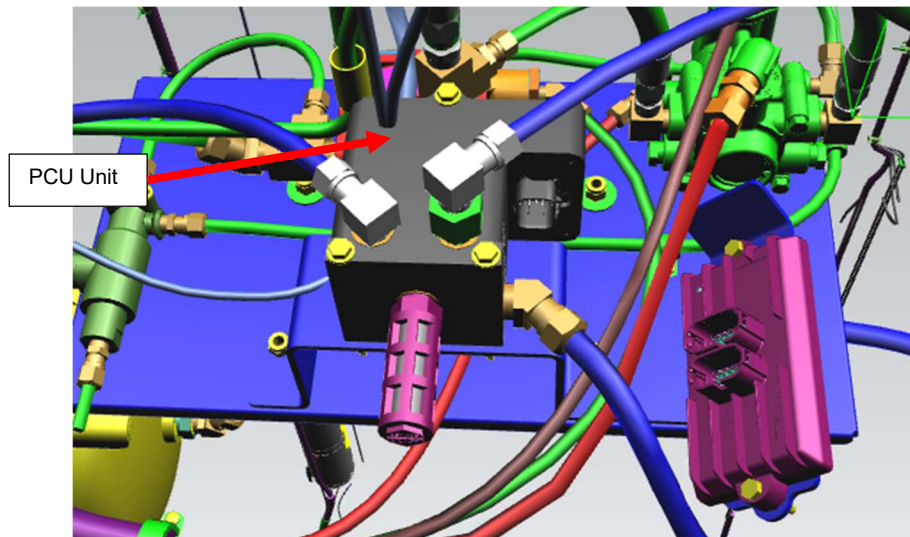


Figure 7: Rear PCU Unit Location.

32. Disconnect the two ½" Blue air lines and the 5/8" Blue air line attached to the PCU noting their locations for reassembly later.
33. Unlatch and disconnect the electrical connector on the right side of the PCU unit.
34. Loosen and then remove the three bolts and lock nuts that secure the PCU unit to the mounting bracket then remove the PCU from the vehicle. Set hardware aside for reuse later.

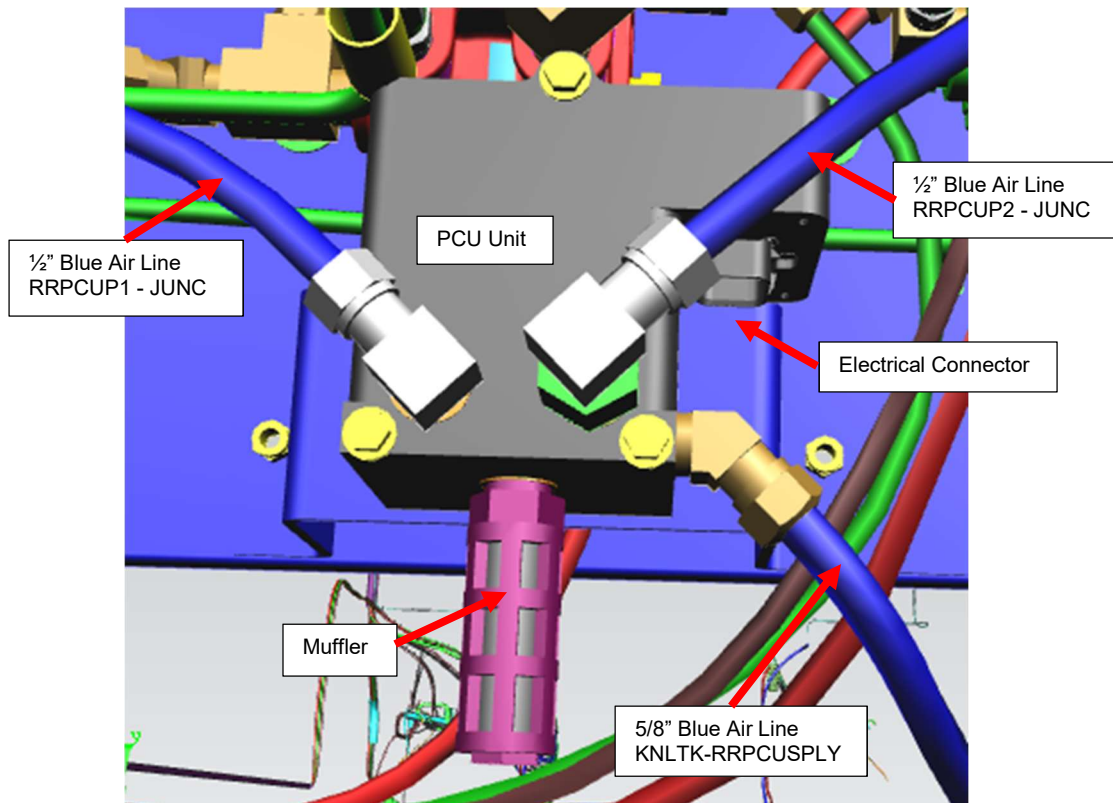


Figure 8: Rear PCU Mounting Bolts, Air Lines & Electrical Connector.

35. On the work bench, remove the air line fittings noting their installation locations and set them aside for reuse later.
36. Remove the muffler assembly and set it aside for reuse later.
37. Set the old PCU assembly aside for return to Supplier.
38. On a new PCU unit NF P/N 860463, Re-install the air line connectors removed from the old PCU unit.
 - a. Re-install the two 90 deg elbows in ports one and two using Loctite 567 thread sealant NF P/N 8110442 on the threads. Take care not to block the openings with thread sealant and leave the first two threads free of sealant. Install the fittings finger tight, then apply 1 – 1.5 turns past finger tight and align in the orientation seen in Figure 9.
 - b. Re-install the 45 deg elbow air line fitting using Loctite 567 thread sealant NF P/N 8110442 on the threads. Take care not to block the openings with thread sealant and leave the first two threads free of sealant. Install the fittings finger tight, then apply 2 turns past finger tight.
 - c. Re-install the muffler using Loctite 567 thread sealant NF P/N 8110442 on the threads. Take care not to block the openings with thread sealant and leave the first two threads free of sealant. Install the fittings finger tight, then apply 2 turns past finger tight.

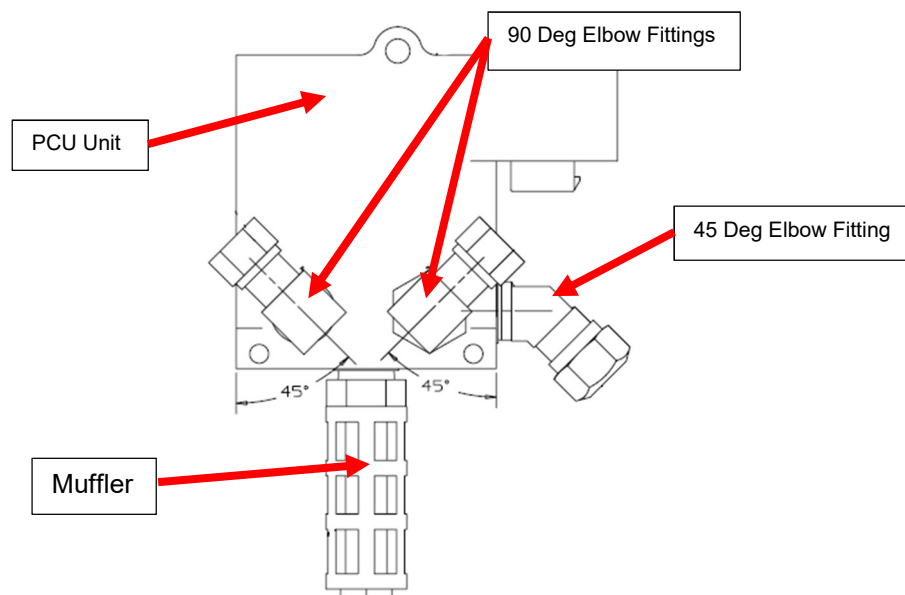


Figure 9: PCU Unit Assembly.

39. Re-install the PCU unit assembly in the bus using the original nuts and bolts.
40. Re-attach the ½" Blue air lines in their original locations (Figure #8). Screw the nut down finger tight and then apply 4 turns past finger tight.



41. Re-attach the 5/8" Blue air supply line. Screw the nut down finger tight and then apply 3 ½ turns past finger tight.
42. Re-attach the electrical connector to the PCU. Take care to ensure that the connector is fully seated and properly latched.
43. Lower coach in accordance with the New Flyer Service Manual.
44. On XE40 & XE60 Electric Buses:
 - a. Remove the lock, lockout tag and switch the High Voltage Interlock Switch on.
45. Turn the main battery disconnect switch to the "ON" position.
46. Start the bus and allow the air system to charge.
47. Check the Smart Rider functions such as kneeling to ensure that the system is functioning correctly. Repair as necessary.
48. Remove all tools and debris and return the bus to service condition.



LABOUR ESTIMATE

	Operation	People	Hours	Labor Time
1	Remove and replace front, center & rear suspension PCUs	1	2.5	2.5

PARTS REQUIRED

Item	Part Number	Description	Qty. per Coach	Units	Notes
1	860463	VALVE – PNEUMATIC SUSPEN	3	EA	
2	8110442	LOCTITE 567 THREAD SEALANT	0.01	EA	

SPECIAL TOOLS REQUIRED

Item	Part Number	Description	Qty. per Coach	Units	Notes
1		No Special Tools Required			