



Spartan Fire, LLC

Technical Service Bulletin TSB20-330-003

DATE: 11/25/2020

APPLIES TO: This service bulletin applies to 2009 through 2021 model year, Gladiator, MetroStar and MetroStar X model emergency response chassis cabs built between June 4, 2009 and October 13, 2020.

CONDITION: Fire pump fails to shift into pump mode

CORRECTION: Replace pump shift solenoid valve

LABOR ALLOCATION: 2 hours

CLASSIFICATION: T3

PARTS NEEDED:

<u>QTY</u>	<u>Part Number</u>	<u>Description</u>
1	S-2742-001	Kit-Pump Shift Solenoid, Hand Valve: Nylon

Kit # S-2742-001 Contains:

<u>QTY</u>	<u>Part Number</u>	<u>Description</u>
2	0918-MM5-012	ATC Valve w/Bayonet Conn
1	5034-MM5-001	Brkt-Air Solenoid Pump Shift
1	5035-MM5	Dia-Plumb Pump Shift, Hand Valve
2	08130125FH8Y	Bolt 1/2-13x1.25 Flg Gr8 Yel
2	0813FLN8Y	Nut,1/2-13 Toplock Flng Gr8 Yel
4	05180225H8Y	Bolt-5/16-18 x 2.25 In
8	05FWSAE8Y	Wshr 5/16" SAE Hardened
4	0518LN8Y	Nut-Lock 5/16-18 Yel
4	0716-MM5-B02	Fit Brss M 90D Elbow 4-4
1	0716-MM5-C02	Fit Brss M 45D Elbow 4-4
30ft	2517-MM5-003	Nylon Tube – 1/4" Green
2	12010973	Conn M W/P 2 Way SHD
4	12124582	Term M Pin W/P 14-16
4	12010293	Cable Seal 14-16AWG Weath
2	4135-GG5-001	Harn-Wabco ATC Valve Molded Connector
1	TSB20-330-003	Instruction Document
1	TSB20-330-004	Instruction Document

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<u>QTY</u>	<u>Part Number</u>	<u>Description</u>
1	S-2742-002	Kit-Pump Shift Solenoid, Hand Valve: Wire Braid

Kit # S-2742-002 Contains:

<u>QTY</u>	<u>Part Number</u>	<u>Description</u>
2	0918-MM5-012	ATC Valve w/Bayonet Conn
1	5034-MM5-001	Brkt-Air Solenoid Pump Shift
1	5035-MM5	Dia-Plumb Pump Shift, Hand Valve
2	08130125FH8Y	Bolt 1/2-13x1.25 Flg Gr8 Yel
2	0813FLN8Y	Nut,1/2-13 Toplock Flng Gr8 Yel
4	05180225H8Y	Bolt-5/16-18 x 2.25 In
8	05FWSAE8Y	Wshr 5/16" SAE Hardened
4	0518LN8Y	Nut-Lock 5/16-18 Yel
4	0716-MM5-BB03	Fit Brss M Elbow 4-4
1	0716-MM5-DD02	Fit Brss M Elbow 4-4
8	0722-MM5-L01	Fit Strt Reus Hse End 4-4
30ft	0724-MM5-G01	Hose 266 SAE J1402 -4 T/C 410 S/S
2	12010973	Conn M W/P 2 Way SHD
4	12124582	Term M Pin W/P 14-16
4	12010293	Cable Seal 14-16AWG Weath
2	4135-GG5-001	Harn-Wabco ATC Valve Molded Connector
1	TSB20-330-003	Instruction Document
1	TSB20-330-004	Instruction Document

<u>QTY</u>	<u>Part Number</u>	<u>Description</u>
1	S-2742-003	Kit-Pump Shift Solenoid: Electric – Nylon

Kit # S-2742-003 Contains:

<u>QTY</u>	<u>Part Number</u>	<u>Description</u>
2	0918-MM5-012	ATC Valve w/Bayonet Conn
1	5034-MM5-001	Brkt-Air Solenoid Pump Shift
1	5036-MM5	Dia-Plumb Pump Shift, Electric
2	08130125FH8Y	Bolt 1/2-13x1.25 Flg Gr8 Yel
2	0813FLN8Y	Nut,1/2-13 Toplock Flng Gr8 Yel
4	05180225H8Y	Bolt-5/16-18 x 2.25 In
8	05FWSAE8Y	Wshr 5/16" SAE Hardened
4	0518LN8Y	Nut-Lock 5/16-18 Yel
1	0716-MM5-A02	Conn Brss M 4-4

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4	0716-MM5-B02	Fit Brss M 90D Elbow 4-4
1	0716-MM5-C02	Fit Brss M 45D Elbow 4-4
1	0716-MM5-J05	Fit Brss Bushing 8-4
1	0716-MM5-R02	Fit Brss Street Tee -4
30ft	2517-MM5-003	Nylon Tube – 1/4" Green
2	12010973	Conn M W/P 2 Way SHD
4	12124582	Term M Pin W/P 14-16
4	12010293	Cable Seal 14-16AWG Weath
2	4135-GG5-001	Harn-Wabco ATC Valve Molded Connector
1	TSB20-330-003	Instruction Document
1	TSB20-330-004	Instruction Document

<u>QTY</u>	<u>Part Number</u>	<u>Description</u>
1	S-2742-004	Kit-Pump Shift Solenoid: Electric - Wire Braid

Kit # S-2742-004 Contains:

<u>QTY</u>	<u>Part Number</u>	<u>Description</u>
2	0918-MM5-012	ATC Valve w/Bayonet Conn
1	5034-MM5-001	Brkt-Air Solenoid Pump Shift
1	5036-MM5	Dia-Plumb Pump Shift, Electric
2	08130125FH8Y	Bolt 1/2-13x1.25 Flg Gr8 Yel
2	0813FLN8Y	Nut,1/2-13 Toplock Flng Gr8 Yel
4	05180225H8Y	Bolt-5/16-18 x 2.25 In
8	05FWSAE8Y	Wshr 5/16" SAE Hardened
4	0518LN8Y	Nut-Lock 5/16-18 Yel
4	0716-MM5-BB03	Fit Brss M Elbow 4-4
1	0716-MM5-DD02	Fit Brss M Elbow 4-4
1	0716-MM5-J05	Fit Brss Bushing 8-4
1	0716-MM5-R02	Fit Brss Street Tee -4
1	0716-MM5-Y03	Conn Brss M 4-4
8	0722-MM5-L01	Fit Strt Reus Hse End 4-4
30ft	0724-MM5-G01	Hose 266 SAE J1402 -4 T/C 410 S/S
2	12010973	Conn M W/P 2 Way SHD
4	12124582	Term M Pin W/P 14-16
4	12010293	Cable Seal 14-16AWG Weath
2	4135-GG5-001	Harn-Wabco ATC Valve Molded Connector
1	TSB20-330-003	Instruction Document

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GENERAL INSTRUCTIONS:

Thoroughly review entire service bulletin before starting work. If there are questions or concerns with steps defined in this service bulletin, contact Spartan Fire, LLC. Customer & Product Support Group.

All applicable industry safety standards must be followed when performing work identified in this procedure.

STEP-BY-STEP INSTRUCTIONS:

1. Identify the pump shift control type (air or electric) and the air supply line type (nylon or wire braid).
 - S-2742-001 is required for air pump shift control with nylon air supply lines.
 - S-2742-002 is required for air pump shift control with wire braid air supply lines.
 - S-2742-003 is required for electric pump shift control with nylon air supply lines.
 - S-2742-004 is required for electric pump shift control with wire braid air supply lines.
2. Properly support chassis to gain access to work underneath.
3. Locate air tanks and drain all air from tanks.
4. Locate pump shift control solenoid and mounting bracket. Refer to Figure 5.1.

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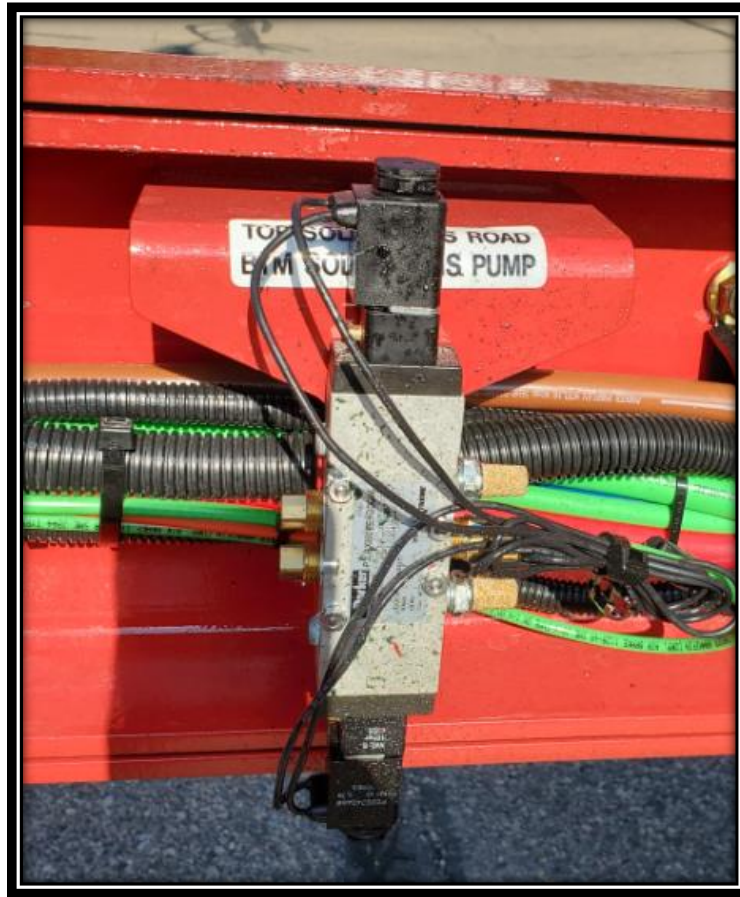


FIG 5.1

5. Disconnect the air lines and the electrical harnesses from the solenoid.
6. Remove the mounting bracket and solenoid from the chassis.
7. For air pump shift control (nylon or wire braid) continue to step 8. For electric pump shift control (nylon or wire braid) skip to step 22.

8. Air Pump Shift Control Instructions (Nylon and Wire Braid)

9. Assemble the solenoid valve assemblies by using solenoid part number 0918-MM5-012 (Item 2). Install 90° degree elbows in the supply and delivery ports of the solenoid valve.

Refer to Fig 6.1.

- a. For nylon air lines, use fitting 0716-MM5-B02 (*Item 3 in left assembly*).
- b. For wire braid air lines, use fitting 0716-MM5-BB0 (*Item 3 in right assembly*).

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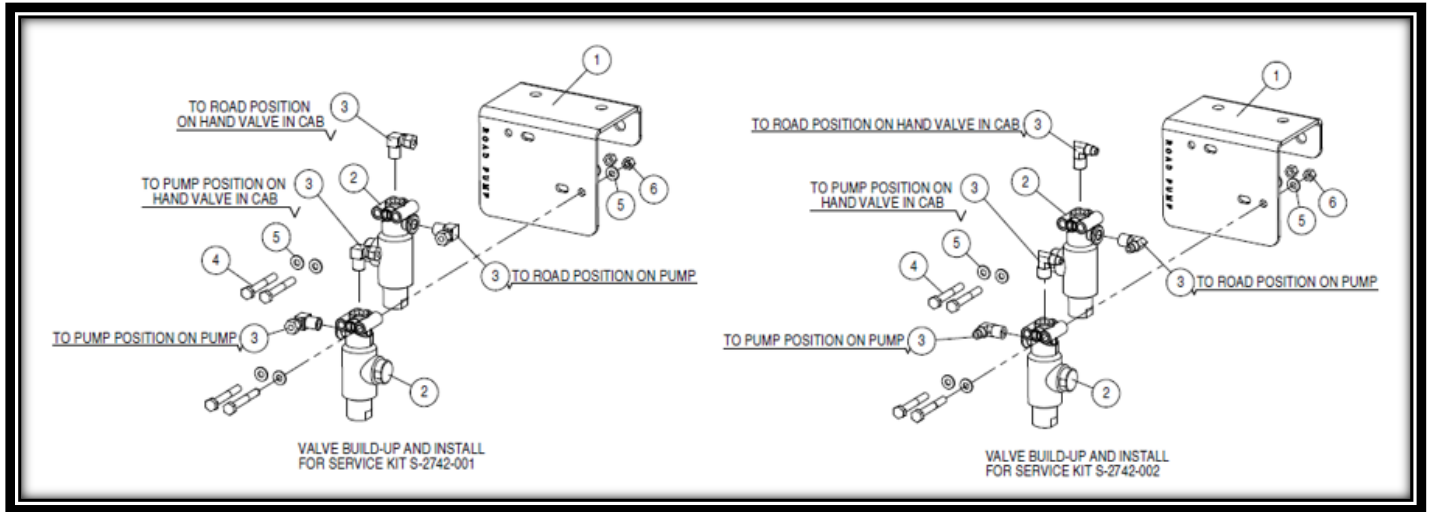


FIG 6.1

10. Refer to FIG 6.2, Inspect to assure crimp barrels are straight to wire. If barrels are removed, ensure wire stranding is twisted and straight to wire insulation. Ensure all conductor areas are kept clean and free of contamination.

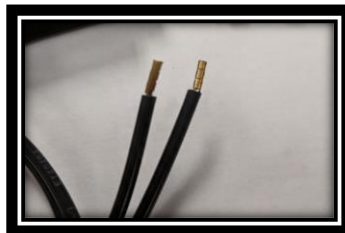


FIG 6.2

11. Insert 12010293 cable seal on to all wires during the crimping of 12124582 terminal pin on all wires. Inspect to ensure terminal is straight and not bent. Ensure the wire's conductors are crimped to the conductor grip of the terminal while the cable seal is crimped along with the wire's insulation grip. Refer to FIG. 7.1.

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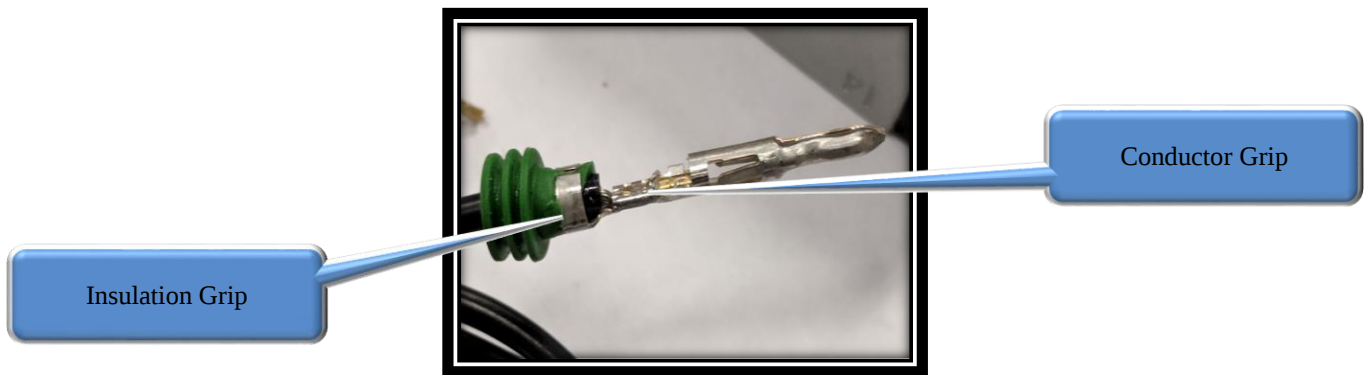


FIG 7.1

12. Insert terminals from 4135-GG5-001 into a 12010973 connector. Refer to FIG 7.2.

13. Refer to FIG 7.2, ensure terminals are fully seated and locked into the connector and are straight. Close secondary locking back shell and do a slight pull test to ensure wires remain in terminal and connector.



FIG 7.2

14. Attach the solenoids to the bracket using 05180225H8Y (Item 4), 05FWSAE8Y (Item 5) and 0518LN8Y (Item 6). Torque bolts to 21 lb-ft. Refer to Fig 6.1.

15. Install the bracket and solenoids on the chassis using 08130125FH8Y and 0813FLN8Y in the original mounting location of the bracket. Torque bolts to 93 lb-ft.

16. Locate the primary air tank. Identify the pressure protection valve with the air lines that route to the pump shift hand valve in the cab and the solenoid supply port. Remove the branch tee and

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fittings from the end of the pressure protection valve and replace it with 45° elbow fitting. Refer to Fig 8.1.

- a. For nylon air lines use fitting 0716-MM5-C02 (Item 1).
- b. For wire braid air lines use fitting 0716-MM5-DD02 (Item 1).

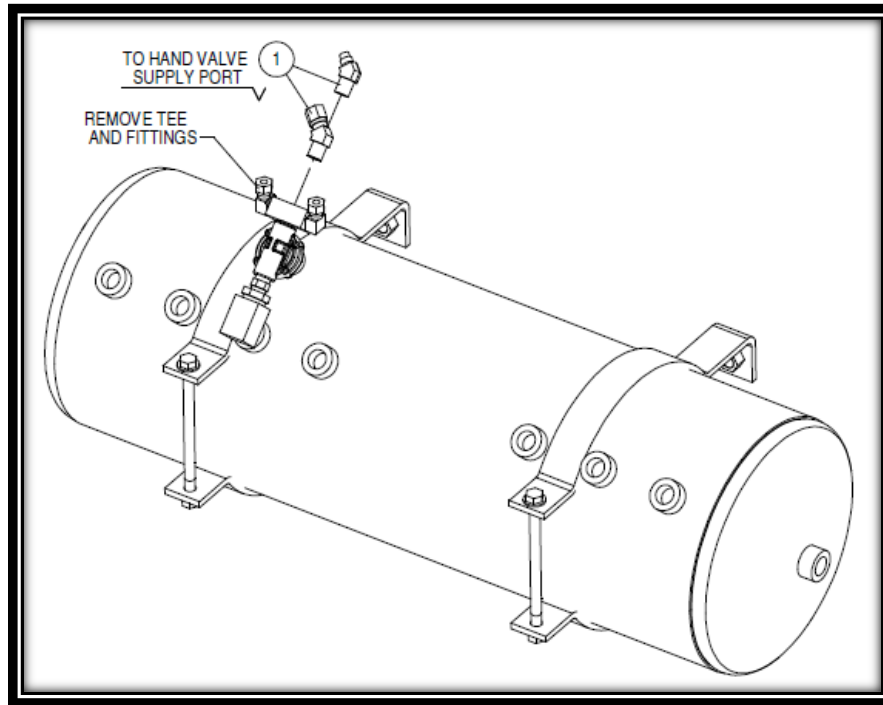


FIG 8.1

17. Install the air line to the pump shift control from the cab into the installed 45° elbow fitting.
18. Install the air lines from the pump shift control to the solenoids.
19. Install the air lines from the solenoids to the pump.
20. Check installed air lines per plumbing diagram 5035-MM5. Fill air system and check for air leaks. Tie wrap all loose air lines and cables to existing cable runs.
21. Check pump operation to ensure Road and Pump Modes.
22. **Electric Pump Shift Control Instructions (nylon and wire braid)**

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23. Assemble the solenoid valve assemblies by using solenoid part number 0918-MM5-012 (Item 2). Install 90° degree elbows in the delivery ports of the solenoid valve. Install street tee 0716-MM5-R02 (Item 5) into supply port of the one solenoid. Install a 90° elbow into the top port of the street tee and a straight fitting into to other port of the street tee. Install a 90° elbow into the supply port of the other solenoid.

Refer to Fig 9.1.

- For nylon air lines use fitting 0716-MM5-B02 (Item 4) and 0716-MM-A02 (Item 3), referenced in the left assembly.
- For wire braid air lines use fitting 0716-MM5-BB03 (Item 4) and 0716-MM5-Y03 (Item 3) referenced in the right assembly.

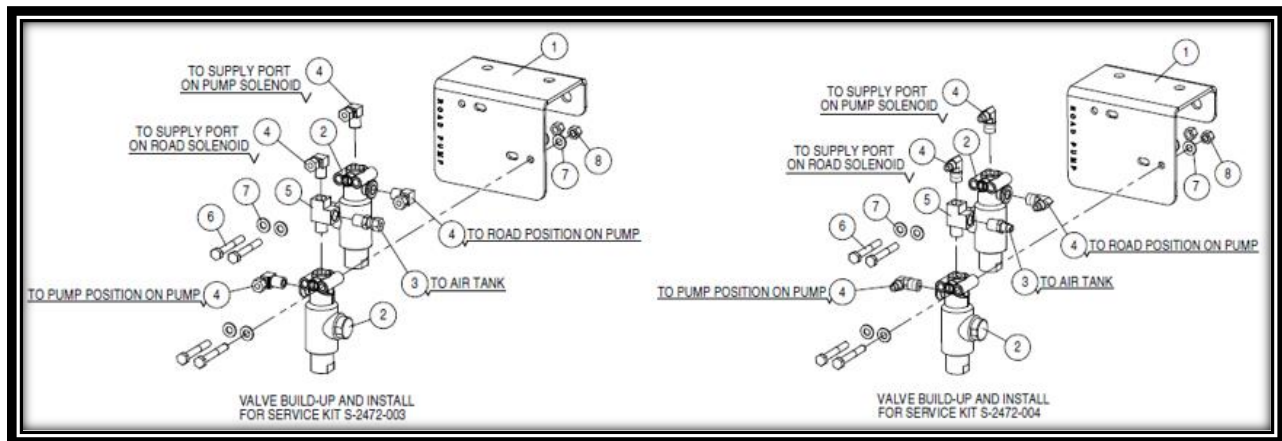


FIG 9.1

24. Refer to FIG 9.2, Inspect to assure crimp barrels are straight to wire. If barrels are removed ensure wire stranding is twisted and straight to wire insulation. Ensure all conductor areas are kept clean and free of contamination.

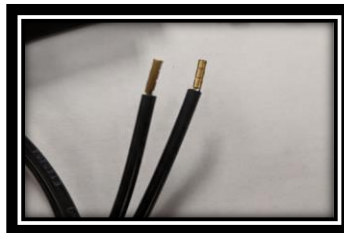


FIG 9.2

25. Insert 12010293 cable seal on to all wires during the crimping of 12124582 terminal pin on all wires. Inspect to ensure terminal is straight and not bent. Ensure the wire's conductors are crimped to the conductor grip of the terminal while the cable seal is crimped along with the wire's insulation grip. Refer to FIG. 10.1

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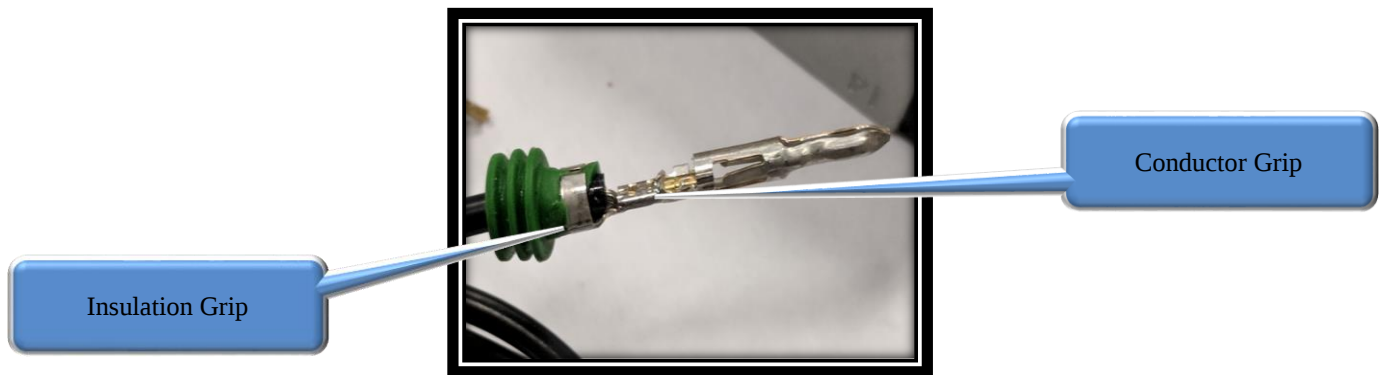


FIG 10.1

26. Insert terminals from 4135-GG5-001 into a 12010973 connector. Refer to FIG 10.2.

27. Refer to FIG 10.2, ensure terminals are fully seated and locked into the connector and are straight. Close secondary locking back shell and do a slight pull test to ensure wires remain in terminal and connector.



FIG 10.2

28. Attach the solenoids to the bracket using 05180225H8Y (Item 6), 05FWSAE8Y (Item 7) and 0518LN8Y (Item 8). Torque bolts to 21 lb-ft. Refer to Fig 9.1.

29. Install the bracket and solenoids on the chassis using 08130125FH8Y and 0813FLN8Y in the original mounting location of the bracket. Torque bolts to 93 lb-ft.

30. Locate the air tank supplying air pressure to the pump shift solenoid. The solenoid may be supplied from the primary air tank or an auxiliary air tank. Proceed to Step 31 if the pump shift

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solenoid is supplied from the primary air tank. Proceed to Step 32 if the pump shift solenoid is supplied from an auxiliary air tank.

31. If the pump shift solenoid is supplied from the primary tank install an airline from the air tank to the straight fitting on the supply port of the new solenoid. Run an air line between the supply port fittings. Refer to Fig 9.1.

32. If the pump shift solenoid is supplied from an auxiliary air tank, remove the fitting, check valve and nipple fittings from the air tank. Install 0716-MM5-J05 bushing (Item 2) into the elbow on the air tank. Install a 45° elbow fitting into the bushing. Refer to FIG 11.1. Install an air line from the air tank to the straight fitting on the supply port of the new solenoid. Run an air line between the supply port fittings.

Refer to Fig 9.1.

- a. For nylon air lines use fitting 0716-MM5-C02 (Item 1)
- b. For wire braid air lines use fitting 0716-MM5-DD02 (Item 1)

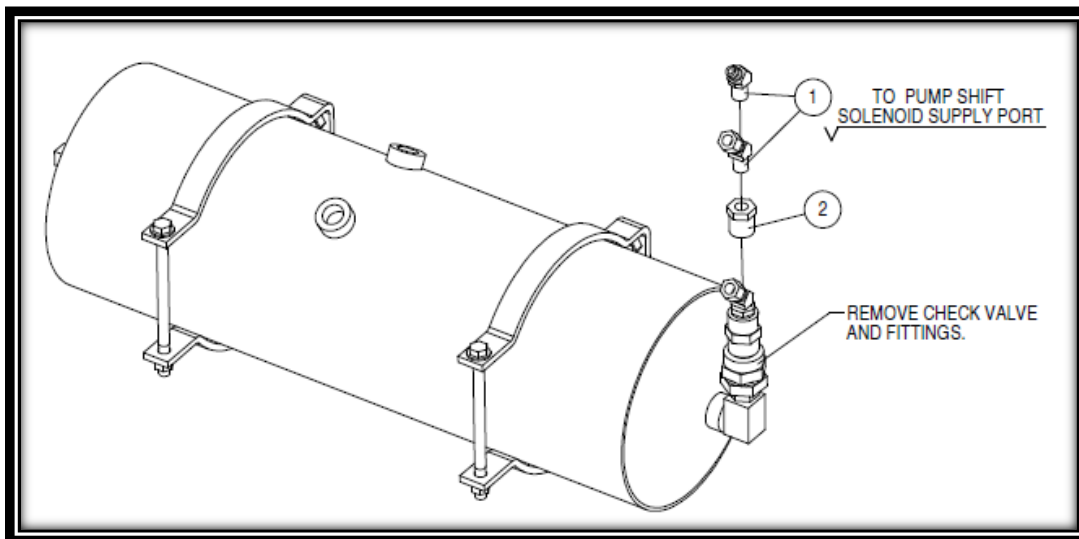


FIG 11.1

33. Install the air lines from the solenoids to the pump.

34. Check installed air lines per plumbing diagram 5036-MM5. Fill air system and check for air leaks. Tie wrap all loose air lines and cables to existing cable runs.

35. Check pump operation to ensure Road and Pump Modes operate correctly.

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