



www.harscorail.com

RAIL

SERVICE BULLETIN

MAINTENANCE OF WAY EQUIPMENT

DATE: 10-12-2011 **BULLETIN NO:** 11-005A

TITLE: HYDRAULIC FLUID LEVEL SWITCHES REPLACEMENT

RATING:

<input checked="" type="checkbox"/> DIRECTIVE (Action Is Required)	<input type="checkbox"/> ALERT (Potential Problem)
<input type="checkbox"/> INFORMATION (Action Is Optional)	<input type="checkbox"/> PRODUCT IMPROVEMENT (Enhance Product)

PRODUCT SERIES / MODEL: W96 Series E3-43 / 44 / 45 Top Gun Spikers

SERIAL NO: W96E3-43: 257838 - 257839 - 257840 - 257841
W96E3-44: 257932 - 257933 - 257934 - 257935 - 257945 - 257946
W96E3-45: 257947 - 257948 - 257949 - 257950 - 257951 - 257952

SUMMARY: Coolant level switches (#408516) were installed in the hydraulic reservoir and used for both the low hydraulic fluid level alarm and shutdown systems. These switches will not work in hydraulic fluid and both must be replaced with hydraulic fluid level switches (#416078).

OPERATIONAL IMPACT: Replace both the low hydraulic fluid level alarm and shutdown switches in the hydraulic reservoir. New mounting adapters are also required to install the new switches in the hydraulic reservoir.

ACTION: Contact the Service Department at Harsco Rail to order two new hydraulic fluid level switches (#416078) and two new adapters (#416093). On W96E3-43 models only, also order wire cable (#F016189) and connector (#408517). Then follow the instructions in this Service Bulletin to replace both switches and adapters in the hydraulic reservoir.

CONTACT: If you have any questions or if we can be of any service, please contact:

Ken M Schreier
Fairmont, MN Facility
507.235.7339
kschreier@harsco.com

Harsco Rail Service Department
Columbia, SC Facility
803.822.7546

SAFETY INFORMATION

- **FOLLOW APPLICABLE RAILROAD LOCKOUT - TAGOUT PROCEDURE TO REMOVE MACHINE FROM ENERGY SOURCES. FAILURE TO COMPLY COULD RESULT IN SEVERE BODILY INJURY.**

HYDRAULIC FLUID LEVEL SWITCHES INSTALLATION - See Figure 1

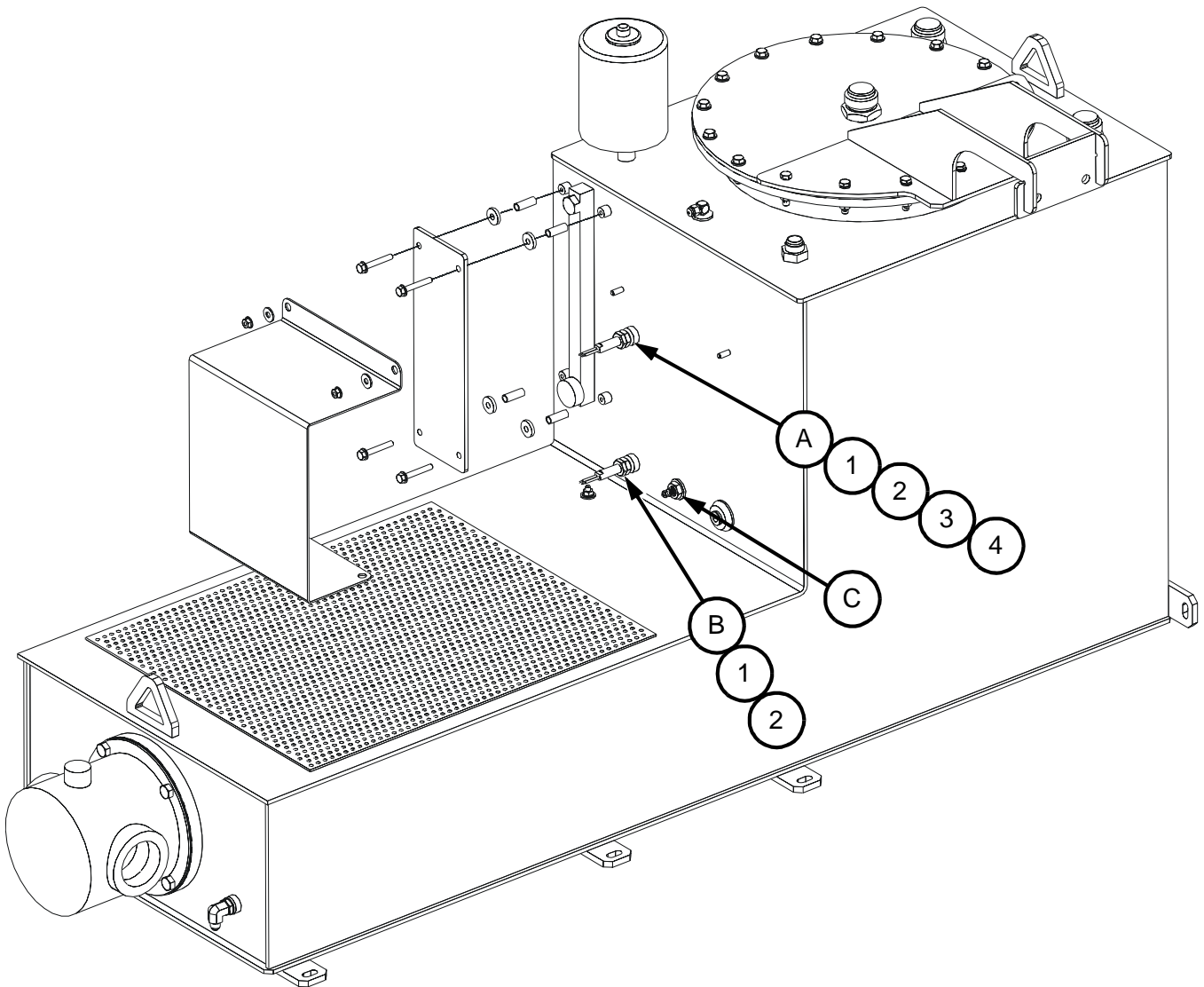
1. Locate the low hydraulic fluid level alarm switch (A), low hydraulic fluid level shutdown switch (B) and hydraulic fluid temperature sending unit (C) in the backside of hydraulic reservoir.
2. Drain the hydraulic reservoir of hydraulic fluid so the fluid level is below the low hydraulic fluid level shutdown switch (B) in the hydraulic reservoir.
 - a. Use leak proof containers when draining fluids. Before draining any fluids, check the capacity of the sump, reservoir, tank, etc. Make sure that the container the fluid is being drained into has enough capacity to hold the fluid being drained.
 - b. Place an appropriately sized drain pan, barrel, etc. under the fluid drain plug, cap, etc. Clean around the drain plug, cap, etc. and then remove it.
 - c. After draining the fluid, clean the fluid drain plug, cap, etc. and re-install.
 - d. Do not pour waste onto the ground, down a drain, or into any water source. Inquire on the proper way to recycle or dispose of waste according to applicable Federal, State and/or Local regulations.
3. W96E3-43 Models Only: Disconnect wire cable from shutdown switch (B). Cut wire cable from float switch (A) and from temperature sender (C). Then remove float switch (A), shutdown switch (B) and any adapters from the hydraulic reservoir ports (A - B).
4. W96E3-44 / 45 Models Only: Disconnect wiring harness from alarm switch (A) and from shutdown switch (B). Then remove alarm switch (A), shutdown switch (B) and any adapters from the hydraulic reservoir ports (A - B).
5. Install two new adapters (2) in the hydraulic reservoir ports (A - B).
6. Apply pipe sealant to pipe threads only and then install two new hydraulic fluid level switches (1) in hydraulic reservoir ports (A - B).
7. Fill the hydraulic reservoir with new clean DEXTRON® III fluid so the fluid level is at the proper operating level. **Important:** DO NOT MIX different types of fluids together.
8. All Models: Wiring modifications are necessary. Go to Wiring Modifications applicable to your model of machine.

HYDRAULIC FLUID LEVEL SWITCHES INSTALLATION

Parts List - All Models

ITEM	PART NO	DESCRIPTION	QTY
1	416078	Hydraulic Fluid Level Switch	2
2	419093	Adapter - 3/4"-16 M SAE O-Ring x 3/8" F NPT	2
3	408517	Connector - W96E3-43 Models Only	1
4	F016189	Wire Cable (4 Conductor #16 AWG) - W96E3-43 Models Only . . . 240"	

**FIGURE 1
HYDRAULIC RESERVOIR**



HYDRAULIC FLUID LEVEL SWITCHES INSTALLATION**Wiring Modifications - W96E3-43 Models Only - See Figure 1**

1. Route new wire cable (4) from Engine Junction Box to new alarm switch (1) and existing temperature sender (C) in hydraulic reservoir.
2. In Engine Junction Box, disconnect all wires of existing wire cable S1210 and remove cable. Connect new wire cable (4) wires as follows:
 - a. Connect black wire of cable to TB9-8. Label wire #1210.
 - b. Connect white wire of cable to TB9-7. Label wire #412.
 - c. Connect green wire of cable to any unused terminal of TB9-22 thru 25. Label wire #000.
 - d. Connect red wire of cable to TB9-9. Label wire #2258.
3. At hydraulic reservoir, add new connector (3) to end of new wire cable (4) as follows:
 - a. Connect black wire of cable to connector terminal D blue wire lead. Label wire #1210.
 - b. Connect white wire of cable to connector terminal C red wire lead. Label wire #412.
 - c. Connect green wire of cable to connector terminal B black wire lead. Label wire #000.
 - d. Connector terminal A green wire lead is not used.
 - e. Install new connector to new alarm switch (1) in hydraulic reservoir port (A)
 - f. Connect red wire of cable to existing temperature sender (C) in hydraulic reservoir. Label wire #2258.
 - g. Remove any exposed copper from wires and tape with electrical tape.
4. Reconnect existing wire cable to new shutdown switch (1) in hydraulic reservoir port (B).
5. In Main Control Box, remove black wire from TB1-37 that is in CTRL-CPU cable. There are two black wires on TB1-37, so you will need to trace the wires to determine correct cable.
 - a. Remove any exposed copper from wire and tape with electrical tape.
 - b. Remove any wire # label.
6. In Main Control Box, remove black/white wire #1212 from TB1-33.
 - a. Remove any exposed copper from wire and tape with electrical tape.
 - b. Remove wire # label.

HYDRAULIC FLUID LEVEL SWITCHES INSTALLATION**Wiring Modifications - W96E3-43 Models Only - See Figure 1**

7. In Main Control Box, locate white wire #1212 that connects pin 14 of relay K1210 to TB1-33.
 - a. Remove wire #1212 from TB1-33.
 - b. Change wire label #1212 to #412.
 - c. Re-connect wire #412 to any unused terminal of TB1-30 or 31.

8. In Main Control Box, remove wire #000 from relay K1210 pin 13.
 - a. There will be two white wires on relay K1210 pin 13. One wire will come from K1310 pin 13 and the other wire goes to K1170 pin 13.
 - b. Connect wire #000 from K1310 pin 13 to K1170 pin 13.
 - c. Label a white 16 AWG wire (not supplied) as wire #1210. Connect wire #1210 from K1210 pin 13 to TB1-37.

9. After all wiring modifications are made, go to Checking Switch Functions.

HYDRAULIC FLUID LEVEL SWITCHES INSTALLATION**Wiring Modifications - W96E3-44 / 45 Models Only - See Figure 1**

1. Reconnect existing wire cable to alarm switch (1) and shutdown switch (1) in hydraulic reservoir ports (A - B).
2. In Main Control Box, remove black wire from TB1-37 that is in CTRL-CPU cable. There are two black wires on TB1-37, so you will need to trace the wires to determine correct cable.
 - a. Remove any exposed copper from wire and tape with electrical tape.
 - b. Remove any wire # label.
3. In Main Control Box, remove black/white wire #1212 from TB1-33.
 - a. Remove any exposed copper from wire and tape with electrical tape.
 - b. Remove wire # label.
4. In Main Control Box, locate white wire #1212 that connects pin 14 of relay K1210 to TB1-33.
 - a. Remove wire #1212 from TB1-33.
 - b. Change wire label #1212 to #412.
 - c. Re-connect wire #412 to any unused terminal of TB1-30 or 31.
14. In Main Control Box, remove wire #000 from relay K1210 pin 13.
 - a. There will be two white wires on relay K1210 pin 13. One wire will come from K1310 pin 13 and the other wire goes to K1170 pin 13.
 - b. Connect wire #000 from K1310 pin 13 to K1170 pin 13.
 - c. Label a white 16 AWG wire (not supplied) as wire #1210. Connect wire #1210 from K1210 pin 13 to TB1-37.
15. In Engine Control Box, remove wire from pin 13 of K1530.
 - a. Verify wire from pin 2 of Engine Control Module (GND) is connected directly to pin 9 of relay K1530.
 - b. Move wire from pin 14 on relay K1530 to pin 13.
 - c. Connect a wire from pin 1 of the Engine Control Module (24 VDC) to pin 14 on relay K1530.
16. After all wiring modifications are made, go to Checking Switch Functions.

HYDRAULIC FLUID LEVEL SWITCHES INSTALLATION**Checking Switch Functions - All Models - See Figure 1**

1. Fill a cup (or small container) with hydraulic fluid and have a separate new hydraulic fluid level switch (#416078) available that is not installed.
2. Check function of low hydraulic fluid level alarm by:
 - a. Turn on master disconnect switch. Then turn ignition key to ON or ACC.
 - b. Disconnect the wire cable from the upper alarm switch (1) in the hydraulic reservoir port (A) and reconnect it to the loose switch that is not installed.
 - c. Place the loose switch in the cup of hydraulic fluid. The low hydraulic warning indicator and alarm will both be off.
 - d. Pull the loose switch out of the cup of hydraulic fluid. The low hydraulic warning indicator will illuminate and the alarm will sound.
 - e. Silence the alarm using the alarm silence switch.
 - f. Disconnect the wire cable from the loose switch that is not installed and reconnect it to the upper alarm switch in the hydraulic reservoir port (A).
3. Check the function of the low hydraulic fluid level engine shutdown by:
 - a. Disconnect the wire cable from the lower shutdown switch (1) in the hydraulic reservoir port (B) and reconnect it to the loose switch that is not installed.
 - b. Place the loose switch in the cup of hydraulic fluid.
 - c. Start the engine. The engine should remain operating without any engine shutdown alarms.
 - d. Pull the loose switch out of the cup of hydraulic fluid. The engine will shut down.
 - e. Disconnect the wire cable from the loose switch that is not installed and reconnect it to the lower shutdown switch in the hydraulic reservoir port (B).
4. The switches must function as described. Please call if you have any questions or if you experience any problems with the wiring modifications.

© 2011 HARSCO RAIL, HARSCO CORPORATION

415 North Main Street
Fairmont, MN
56031-1837
Tel: (507) 235-3361
Fax: (507) 235-7370

2401 Edmund Road, Box 20
Cayce-West Columbia, SC
29171-0020
Tel: (803) 822-9160
Fax: (803) 822-7471

200 South Jackson Road
Ludington, MI
49431
Tel: (231) 843-3431
Fax: (231) 843-1644