

PARTS & SERVICE NEWS

REF NO.	AA01228
DATE	October 31, 2001

SUBJECT: RELOCATING CENSE WIRING ON CUMMINS QSK45 & QSK 60 ENGINES AND KOMATSU SSA12V160 & SSDA16V160 ENGINES

PURPOSE: To inform the field of proper instructions for rewiring the 5 volt power supply for the coolant level sensor.

APPLICATION: Komatsu Electric Drive Dump Trucks:
 *830E: AFE32-A & Up, AFE50-A thru AJ, A30544 thru A30645;
 *930E: AFE48-A thru CW, A30019, A30026 thru A30251;
 Komatsu Mechanical Drive Dump Trucks:
 530M: A30001
 HD1500-5: A30039 thru A30047
 * **equipped with either Cummins QSK60 or Komatsu SSDA16V160 engines**

FAILURE CODE: DJ00KB

DESCRIPTION:

It has been discovered that trucks equipped with Cummins QSK 45 and QSK 60 engines and Komatsu SSA12V160 and SSDA12V160 engines may be susceptible to an unexpected engine shutdown. This occurrence may happen if the 5 volt power supply to the coolant level sensor is shorted to ground under certain engine operating conditions.

The 5 volt power is supplied to the coolant level sensor, as well as 6 pressure sensors, by the engine controller. Two of the pressure sensors, ambient air pressure and turbo boost, are used to calculate engine fuel requirements. When a short to ground occurs in the 5 volt power supply, the false sensor readings caused by the short result in a reduction in fuel and, consequently, engine shut down.

A modification has been developed to prevent this failure from occurring. The modification consists of rewiring the coolant level sensor to a different 5 volt power supply in the engine controller, and therefore, isolating it from critical fuel control sensors. After the modification has been completed, engine shut-down will not occur, even with a short circuit in the coolant level sensor wiring.

Refer to pages 2 and 3 for instructions for performing the modifications. Page 2 is applicable to the 830E and 930E dump trucks. Page 3 is applicable to the 530M and HD1500 dump trucks.

New harnesses have been manufactured to incorporate these new changes. If a new harness is required, the following numbers are to be used:

Truck Model	Old Harness Part Numbers	New Harness Part Numbers
930E	EH3006	EJ8329
830E	EG9620, EJ2874, EJ5748	EJ8326
HD1500	EH8412	EJ8656

MODIFICATION INSTRUCTIONS

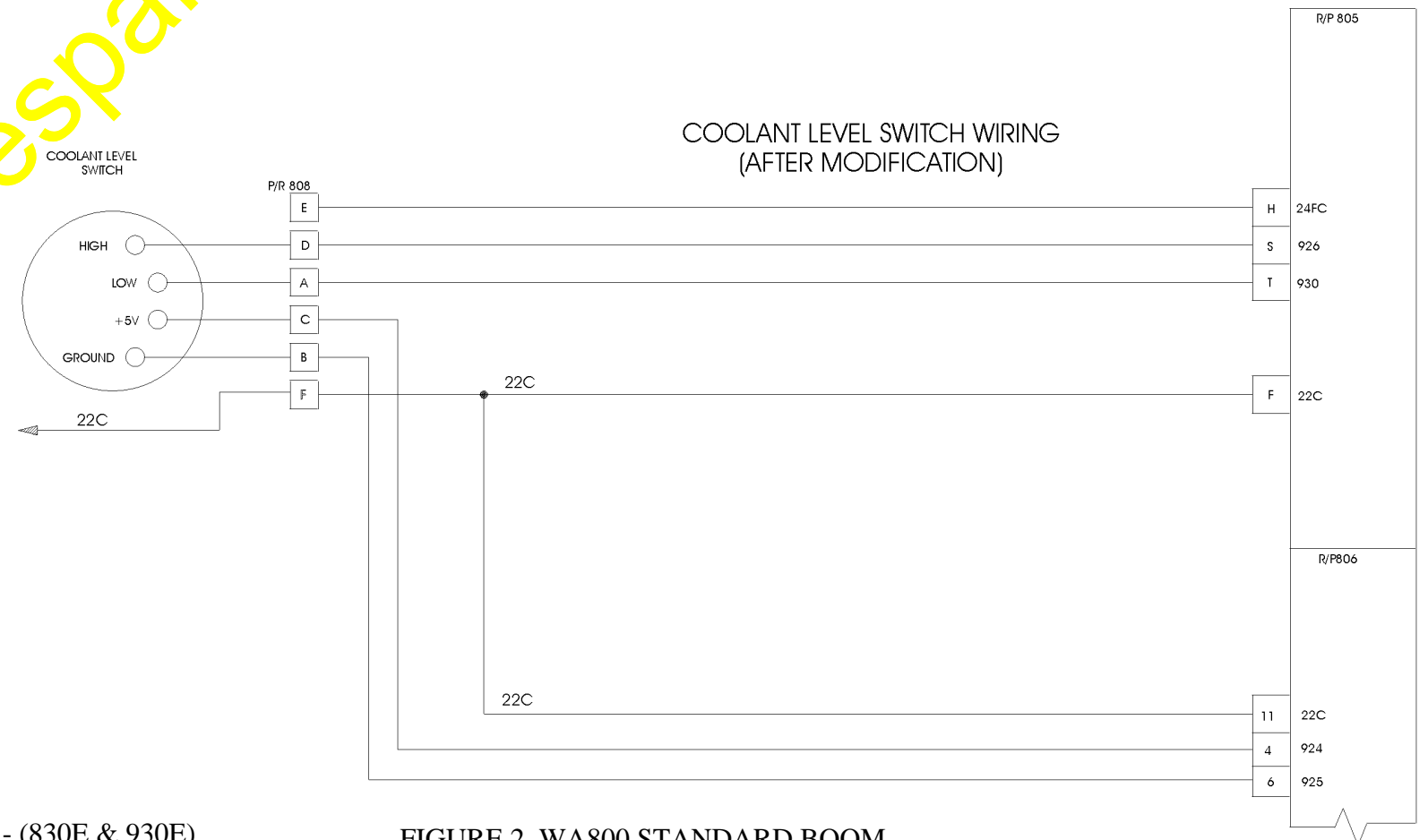
TO PREVENT UNWANTED ENGINE SHUTDOWNS FROM OCCURRING IF THE COOLANT LEVEL 5 V POWER WIRING SHORTS TO GROUND, THE POWER AND RETURN WIRES TO THE COOLANT LEVEL SWITCH MUST BE RELOCATED TO AN ISOLATED 5 V POWER SUPPLY.

THE 924 WIRE MUST BE RELOCATED FROM CONNECTOR R805-U TO CONNECTOR R806-4.

THE 925 WIRE MUST BE RELOCATED FROM CONNECTOR R805-V TO CONNECTOR R806-6.

PROCEDURE:

1. DISCONNECT CONNECTORS R805, R806 AND R808 FROM THE CUMMINS ENGINE ECU. (LEFT REAR OF ENGINE)
2. UNCLAMP THE HARNESS TO GET CLEAR ACCESS TO THE CONNECTORS AND THE HARNESS BODY.
3. CAREFULLY REMOVE THE BRAIDED LOOM FROM THE BRANCHES OF THE HARNESS THAT GO FROM THE MAIN HARNESS BODY TO THE R805 AND R806 CONNECTORS.
4. DISASSEMBLE THE CLAMP AND RUBBER BOOT FROM THE BACK OF THE CONNECTORS AND SLIDE THEM AWAY FROM THE BACK OF THE CONNECTORS TO HAVE ACCESS TO THE PLUGS AND WIRES
5. WITH THE REAR OF THE CONNECTOR R805 TOWARD YOU, SNAP THE EXTRACTION TOOL (P/N VE6051) OVER THE 924 WIRE. SLIDE THE TOOL ALONG THE WIRE INTO THE CONNECTOR UNTIL IT ENGAGES THE CONTACT TERMINAL AND RESISTANCE IS FELT. PULL THE WIRE WITH TERMINAL OUT OF THE CONNECTOR. REPEAT THIS PROCEDURE ON THE 925 WIRE.
6. ON CONNECTOR R806 REMOVE THE SEALING PLUGS (P/N PB5369) FROM POSITION 4 AND 6. INSERT THESE PLUGS INTO THE OPEN PINS U AND V OF CONNECTOR R805. RE-ASSEMBLE CONNECTOR R805.
7. INSERT WIRE 924 INTO CONNECTOR R806 POSITION 4. INSERT WIRE 925 INTO CONNECTOR R806 POSITION 6. RE-ASSEMBLE CONNECTOR R806.
8. USING ELECTRICAL TAPE, START APPROXIMATELY 75 mm. FROM THE BACK OF THE CONNECTOR, AND TAPE THE WIRES TOGETHER COVERING THE REMOVED BRAIDED LOOM AREA OF THE HARNESS.
9. REINSTALL THE HARNESS, START THE ENGINE, AND CHECK FOR ANY FAULT CODES ON THE CUMMINS SYSTEM.



MODIFICATION INSTRUCTIONS

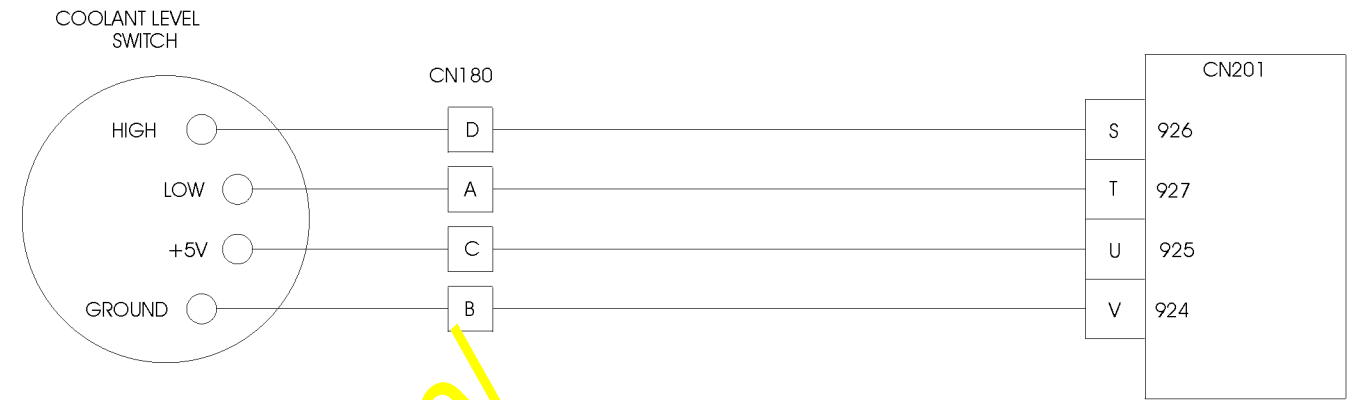
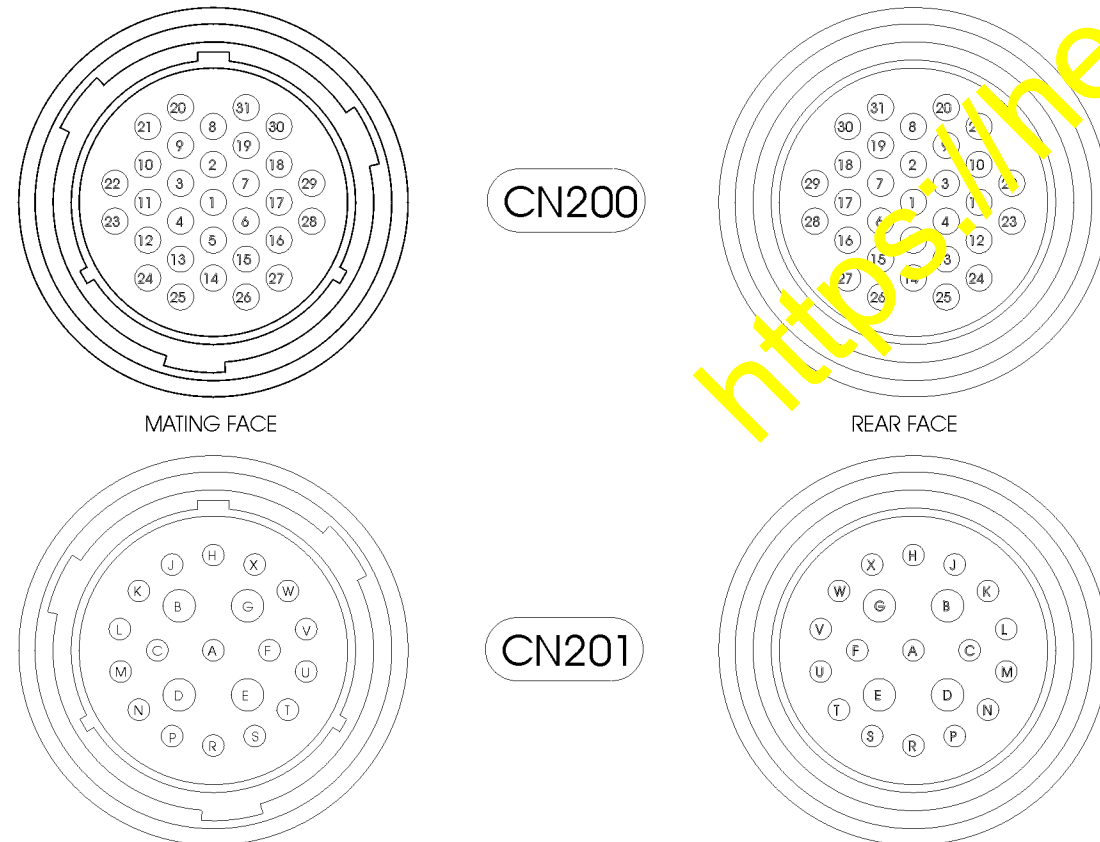
TO PREVENT UNWANTED ENGINE SHUTDOWNS FROM OCCURRING IF THE COOLANT LEVEL 5 V POWER WIRING SHORTS TO THE POWER AND RETURN WIRES TO THE COOLANT LEVEL SWITCH MUST BE RELOCATED TO AN ISOLATED 5 V POWER SUPPLY GROUND,

THE 925 WIRE MUST BE RELOCATED FROM CONNECTOR CN201-U TO CONNECTOR CN200-4.

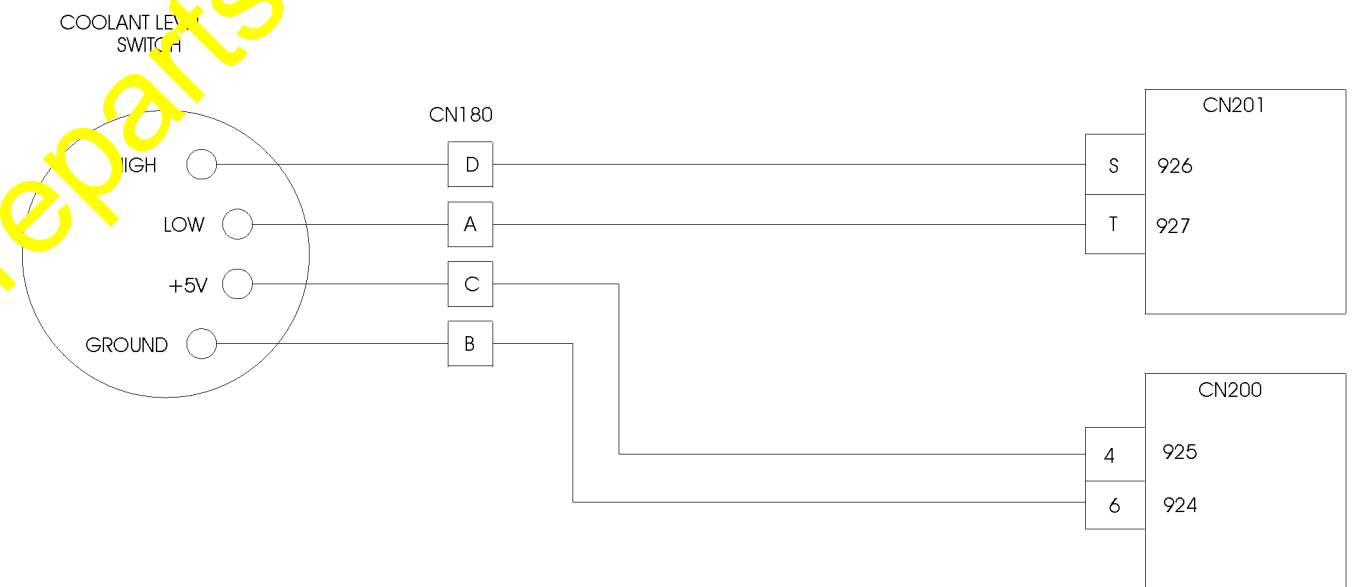
THE 924 WIRE MUST BE RELOCATED FROM CONNECTOR CN201-V TO CONNECTOR CN200-6.

PROCEDURE:

1. DISCONNECT CONNECTORS CN200, CN201, AND CN203 FROM THE CUMMINS ENGINE ECU. (LEFT REAR OF ENGINE)
2. UNCLAMP THE HARNESS TO GET CLEAR ACCESS TO THE CONNECTORS AND THE HARNESS BODY.
3. CAREFULLY REMOVE THE BRAIDED LOOM FROM THE BRANCHES OF THE HARNESS THAT GO FROM THE MAIN HARNESS BODY TO THE CN200 AND CN201 CONNECTORS.
4. DISASSEMBLE THE CLAMP AND RUBBER BOOT FROM THE BACK OF THE CONNECTORS AND SLIDE THEM AWAY FROM THE BACK OF THE CONNECTORS TO HAVE ACCESS TO THE PLUGS AND WIRES
5. WITH THE REAR OF THE CONNECTOR CN201 TOWARD YOU, SNAP THE EXTRACTION TOOL (P/N VE6051) OVER THE 924 WIRE. SLIDE THE TOOL ALONG THE WIRE INTO THE CONNECTOR UNTIL IT ENGAGES THE CONTACT TERMINAL AND RESISTANCE IS FELT. PULL THE WIRE WITH TERMINAL OUT OF THE CONNECTOR. REPEAT THIS PROCEDURE ON THE 925 WIRE.
6. ON CONNECTOR CN200 REMOVE THE SEALING PLUGS (P/N PB5369) FROM POSITION 4 AND 6. INSERT THESE PLUGS INTO THE OPEN PINS U AND V OF CONNECTOR CN201. RE-ASSEMBLE CONNECTOR CN201.
7. INSERT WIRE 925 INTO THE JIFFY SPLICE (P/N 1259564H1). INSERT THE JUMPER WIRE (P/N CH4145) INTO THE JIFFY SPLICE AND INTO THE CONNECTOR CN200 POSITION 4.
8. INSERT WIRE 924 INTO THE JIFFY SPLICE (P/N 1259564H1). INSERT THE JUMPER WIRE (P/N CH4146) INTO THE JIFFY SPLICE AND INTO THE CONNECTOR CN200 POSITION 6.
9. RE-ASSEMBLE CONNECTOR CN200.
10. USING ELECTRICAL TAPE, START APPROXIMATELY 75 mm. FROM THE BACK OF THE CONNECTOR, AND TAPE THE WIRES TOGETHER COVERING THE REMOVED BRAIDED LOOM AREA OF THE HARNESS.
11. REINSTALL THE HARNESS, START THE ENGINE, AND CHECK FOR ANY FAULT CODES ON THE CUMMINS SYSTEM.



COOLANT LEVEL SWITCH WIRING (BEFORE MODIFICATION)



COOLANT LEVEL SWITCH WIRING (AFTER MODIFICATION)

