

PARTS & SERVICE NEWS

REF NO. AA01119A

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This Parts and Service News supercedes AA01119 dated June 6, 2001, which should be discarded.

SUBJECT: UPGRADE OF ECM CALIBRATION AND NEW CPL FOR QSK19 ENGINE

PURPOSE: To introduce new injectors for performance improvement.

APPLICATION: WA600-1LE Wheel Loader Serial Number A51001 thru A51100
WA600-3L Wheel Loader Serial Number A52001 thru A52185

FAILURE CODE: A705NG

DESCRIPTION:

The WA600-1LE and WA600-3L machines with QSK19 engines have experienced loss of power due to injector cup cavitation. The failure is noticed by excessive smoke and power loss. An improved injector has been introduced to eliminate the power loss and reduces emissions. This modification consists of replacing the injectors and the ECM calibration. Some machines with the older style ECM's will require ECM replacement. Many of the WA600-1LE machines will require engine wire harness replacement.

This upgrade is a Fix-As-Fail Field Campaign, Number 40040-01.

Work to be Performed

Verify the engine serial number and current CPL. From the information below, determine the level of hardware to be upgrade. Order parts through the normal process from the Parts Distribution Center. In addition to the hardware upgrade, a new ECM calibration code must be downloaded into the module. Before proceeding with the installation, verify that the new calibration is available on the latest Service ESDN CD ROM. Match Machine Make, Model, ECM # and Engine Rating under the new CPL. Also note the comment fields displaying the "ICI/TVS Calibration." The new CPL numbers are as follows:

<u>Current CPL</u>	<u>New CPL</u>	<u>Machine Models</u>
2225	2560	WA600-1LE/WA600-3L

WARNING: Installation of hardware components without the matching ECM Code can result in a decrease in engine performance and stability. The correct ECM Code must be installed in conjunction with the hardware upgrade.

If the new calibration is not available on the Service ESDN CD ROM, contact Komatsu Service Headquarters (847) 970-5743 (with ECM part number, engine serial number and security key number). Install the necessary hardware components (refer to the QSK19 T&R Manual, bulletin number 3666098 for procedures) and download the new calibration.

NOTE: Engrave the engine data plate to reflect the new CPL. DO NOT stamp data plate. Stamping may damage plate.

Installation of ICI/TVS also includes upgrading the fuel pump to the compact pump. The existing wiring harness supports the compact pump actuator and fuel pressure sensor. NOTE: Engines built before January 1, 1998, will need updated engine harnesses.

Harnesses and Brackets

The engine harness, OEM harness, ECM, and brackets have been changed as of January, 1998. They will continue to be used with the new injector and the compact fuel pump. Engines built before January, 1998 (WA600-1 S/N A51084 and lower) will need the following components:

- Engine Harness, Part Number 1310 945 H1
- OEM Interface Harness, Part Number 1310 946 H1
- ECM, Part Number 1310 944 H2

Removal and Installation Instructions

ALL PROCEDURES TAKEN FROM QSK19 T&R MANUAL, BULLETIN NO. 3666098-01.

- Replace all fuel filters.
- Replace the Rail and Timing Actuator screens and o-rings.

1. Remove Old Injectors

Refer to procedure 006-026-002.

Place all injectors separately in boxes and mark each box with the injector part number, hours on the part, location and customer's name. Ship the injectors to:

Komatsu America International Company
Warranty Administration, Material Review Section
Bldg 70
846 E. Park Avenue
Libertyville, IL 60048
Attn: Les Tripp

2. Install New Injectors

Refer to procedure 006-026-026.

NOTE: Orientation does not matter.

NOTE: Be careful with timing and fueling screens on installation. Make sure they are snapped closed.

NOTE: Be careful with the injector o-rings. Make sure they are not damaged or missing.

3. Set Overheads

Refer to procedure 003-006.

NOTE: Change in injector torque setting.

Torque value change: Injector must be torqued to 250 in-lb., backed off, and then torqued to 165 in-lb.

4. Remove Old Fuel Pumps

Ref to procedure 005-016-002.

5. Install New Fuel Pump

Refer to procedure 005-016-026.

If the engine has no air compressor:

- Install spider on lovejoy drive coupling of accessory drive shaft.
- Install gasket on fuel pump mounting flange.
- Install fuel pump capscrews lockwashers and flatwashers.

Torque capscrews. [Torque Wrench: 30 - 35 ft-lbs.]

Use fuel supply hose part number 1315 952 H1 (from pump output to ECVA).

If the engine has an air compressor:

- Position air compressor in stand on workbench.
- Apply sealant on fittings and install cooling water inlet and outlet fittings and torque. [Torque Wrench: 35 - 45 ft-lbs.]
- Install correct air inlet connection, gasket, capscrews, lock washers and flatwashers. Torque capscrews. [Torque Wrench: 15 - 20 ft-lbs.]
- Install spider on lovejoy drive at end of air compressor shaft.
- Install gasket on fuel pump mounting flange.
- Install fuel pump capscrews, lockwashers and flatwashers.

Torque capscrews. [Torque Wrench: 30 - 35 ft-lbs.]

Use fuel supply hose part number 1315 953 H1 (from pump output to ECVA).

NOTE: The new Compact Pump is not as wide as the old PT-style pump, therefore a new fuel outlet hose needs to be installed. The fuel supply line between the filter head and the pump is part number 1307 801 H1.

6. Recalibrate ECM with the new ICI/TVS calibration using ESDN

Special Tools Required

3823580 or 3824830	Injector Puller/Installer
3824901	Feeler Gauges
3824783	Torque Wrench

Calibration

New fuel system and new electronic fault codes have been established. The new fault codes are:

- 118 - Fuel pump pressure sensor circuit failed high
- 119 - Fuel pump pressure sensor circuit failed low
- 316 - Fuel pump actuator circuit error
- 318 - Fuel pump fueling flow mismatched

NOTE: For additional details on fault codes descriptions, refer to the Wiring Diagram, Bulletin 3666133-03.

There are no calibrations for the old injector, part number 1310 668 H91, and the old P10 pump, part number 1315 949 H91. A new software calibration is required for a new injector with compact pump.

CAUTION: Both of the new fuel system components are not interchangeable with prior fuel system components. This is due to the design of the components and the software calibrations. The engine and OEM wiring harnesses installed before January, 1998, also are not compatible with the new parts.

NOTE: There may be four or five connectors in the wiring harnesses that are not used in the WA600-1LE machine.

Required Parts

Qty	Description	Part Number	Notes
2	Bolts for Cav Pump	1316 111 H1	7/16" dia. 2 1/4" long, 12 point head
1	Gasket, Cav Pump	6216-94-3210	All Machines
1	Flex Hose	1315 952 H1	With No Air Compressor - WA600-3
1	Flex Hose	1315 953 H1	With Air Compressor - WA600-1
1	Coupling, Cav Pump	1239 819 H1	All Machines
2	Fuel Filter		Per Machine Requirement
2	O-Ring	1307 101 H1	Rail & Timing Actuators
2	O-Ring	1307 915 H1	Rail & Timing Actuators
2	Screen	1307 916 H1	Rail & Timing Actuators
1	Air Horn Gasket	1310 039 H1	For the -1 Machine
1	Air Horn Gasket	1310 107 H1	For the -3 Machine
1	Fuel Line	1307 801 H1	From Filter to Pump
1	Harness	1310 945 H1	For S/N A51001 - A51084
1	Harness	1310 946 H1	For S/N A51001 - A51084
1	ECM	1310 944 H2	All Machines
6	Fuel Injector	1315 949 H91	All Machines
1	Fuel Pump	1315 950 H91	With Straight Inlet Fitting
1	Fuel Pump	1315 951 H91	WA600 Application - 90° Fitting

Replacement Parts

	<u>Part Number</u>
Injector Copper	6560-11-7310
Clamp	1310 602 H1
90° Fuel Fitting	1316 113 H91
O-Ring for 90° Fitting	1316 112 H1
Injector O-Rings:	

<u>Color</u>	<u>Part Number</u>	<u>Location</u>
Black	1307 967 H2	Upper Timing
White	1307 965 H2	Lower Timing
Green	1238 696 H2	Upper Rail
Black	1307 966 H2	Lower Rail

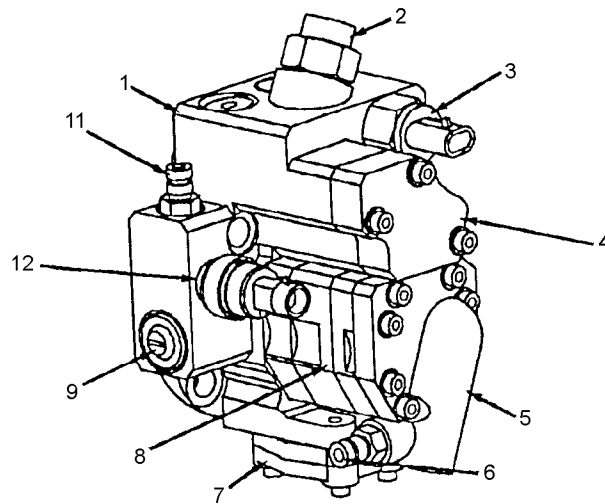
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Wire connections for the new compact fuel pump.



Final installation of new components are shown above.

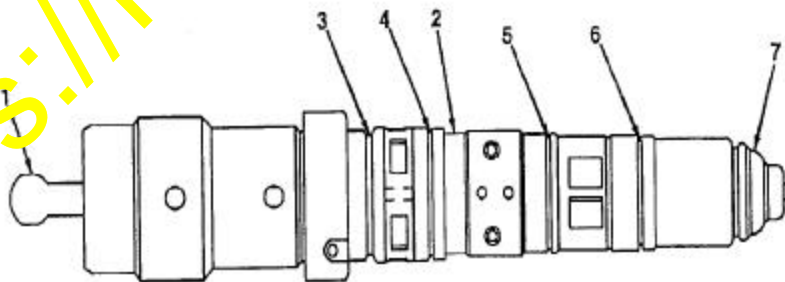
Table 1, Compact Fuel Pump

VEPS0011

1315 950 H91 Pump, Fuel

1315 951 H91 Pump, Fuel

- | | |
|---|--|
| 1. Fuel Pump Support | 7. Pulsation Damper |
| 2. Outlet Fitting/Check Valve | 8. Three-Piece Gear Pump |
| 3. Actuator | 9. Filter Screen |
| 4. Bypass Regulator (Inside) | 10. Pressure Sensor |
| 5. Inlet Fitting Suction Head | 11. Output Pressure Compuchek® Fitting |
| 6. Inlet Restriction Compuchek® Fitting | |

Table 2, New Injector

VEPS0012

1315 949 H91 Injector

- | | |
|------------------------|----------------------|
| 1. Plunger Link | 5. Upper Rail O-Ring |
| 2. Spill Ring | 6. Lower Rail O-Ring |
| 3. Upper Timing O-Ring | 7. Copper Seal |
| 4. Lower Timing O-Ring | |

Injector Copper Seal

The new design of the new injector copper seal has a split in each of the tangs and is not interchangeable with the older injector copper seals.

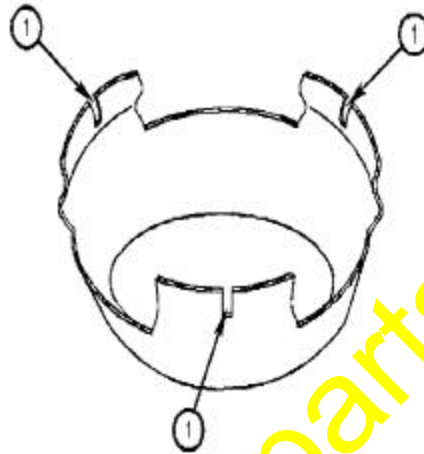


Fig. 1. New Injector Copper Seal, Split Tang (1)



Fig. 2. Older Injector Copper Seal, No Split in Tang

VEPS0013