Service Manual

Articulated Dump Truck - 722

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Wire Numbers and Functions

Wires 000-199

These numbers are reserved for ignition feeds, heater start circuits and start circuits. These can be further categorised by:

- Wires **000 - 099** are allocated to unfused ignition feeds.
- Wires **100 - 199** are allocated to fused ignition feeds.

Note: *Feeds via ignition relays are classed as ignition feeds.*

Wires 200-399

These numbers are reserved for battery feeds, They can be further categorised by:

- Wires **200 - 299** are allocated to unfused battery feeds.
- Wires **300 - 399** are allocated to fused battery feeds.

Wires 400-599

These numbers are reserved for instruments, i.e. alternators to tachos, temperature switches to warning lights, etc. and signal wires used in electronic systems.

Wires 600-799

These numbers are used for earth wires. When the number is printed onto a wire **A** it is prefixed by the Earth symbol **B**. ⇨ *Fig 44. (C-46).* This symbol is printed onto the wire, it may however be omitted from harness drawings.

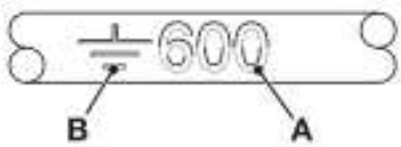


Fig 44.

Where a load is switched negative, the wire number from the load to the switch shall be different to that of the wire from the switch to the earth.

Wires 800-999

These numbers are reserved for switched supplies to electrical loads, i.e. to lights, etc.

Wires In Splices

The main input wire is allocated with a wire number and a suitable description, i.e. Wire **640** earth splice to earth. The additional wires in the splice are allocated the same wire number and a postfix, i.e. **640A**, **640B**, etc. ⇨ *Fig 45. (C-46).*

Note: *The letters I, O, Q and S are not used.*

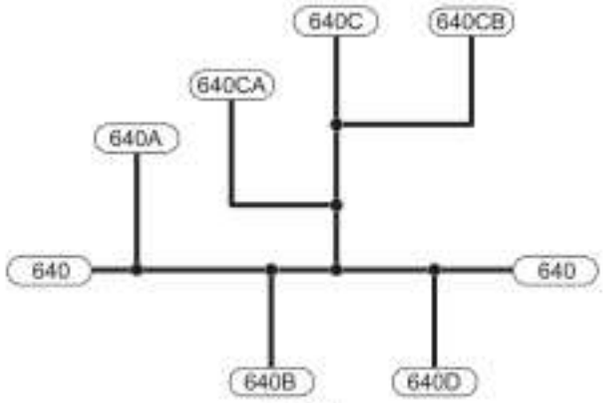


Fig 45.

General Points

1 Wires continue to have the same number even after passing through a connector block to another harness.

2 If all the numbers in a category have been allocated, then the category is re-used with an additional prefix '1', i.e. 1832.

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Engine Error Codes

Error Code	Description	Effect when fault code is active
E019	Engine Coolant Temperature High - Warning (146)	Power derate and possible engine shutdown if engine protection shutdown feature is enabled. Engine will not respond to changes in Frequency.
E020	Accelerator Pedal Position Sensor Circuit - low frequency (147)	Engine will not respond to changes in Frequency Throttle. Engine will go to low idle.
E021	Accelerator Pedal Position Sensor Circuit - high frequency (148)	Engine will not respond to changes in Frequency Throttle. Engine will go to low idle.
E022	Engine Coolant Temperature High - Critical (151)	Speed derate and possible engine shutdown if engine protection shutdown feature is enabled.
E023	Intake Manifold Temperature Sensor # 1 Circuit - shorted high (153)	Default value used for intake manifold temperature. No engine protection for intake manifold temperature.
E024	Intake Manifold Temperature Sensor # 1 Circuit - shorted low (154)	Default value used for intake manifold temperature. No engine protection for intake manifold temperature.
E025	Intake Manifold Temperature # 1 High - Critical (155)	Speed derate and possible engine shutdown if engine protection shutdown feature is enabled.
E026	Engine Control Module Identification Input State Error (184)	Engines will default to idle speed.
E037	Engine Speed High - Critical (234)	Fuel to injectors disabled until engine speed falls below the overspeed limit.
E038	Engine Coolant Level Low - Critical (235)	Power derate and possible engine shutdown if engine shutdown feature is enabled.
E040	Vehicle Speed Sensor Circuit - data incorrect (241)	Engine speed limited to "Max. Engine Speed without VSS". Cruise control, gear-down protection and the road speed governor will not work. Trip information data that is based on mileage will be incorrect.
E041	Vehicle Speed Sensor Circuit -tampering has been detected (242)	Engine speed limited to "Max. Engine Speed without VSS". Cruise control, gear-down protection and the road speed governor will not work. Trip information data that is based on mileage will be incorrect.
E042	Engine Brake Driver # 1 Circuit -shorted low (243)	Exhaust brake will not work.
E043	Fan Clutch Circuit - shorted low (245)	Electronic control module (ECM) cannot control the engine cooling fan. Fan will remain on or off.
E045	Fuel Shutoff Valve Circuit - shorted high (255)	
E046	Fuel Temperature High - Warning (261)	Power derate.
E048	Fuel Temperature Sensor Circuit -	Default value used for fuel temperature. Possible low power.
E058	Fuel Priming Pump Control Circuit - shorted high/low (278)	Possible low power, engine may die, run rough or be difficult to start.
E062	Engine Speed/Position Sensor # 1 (Crankshaft) Supply Voltage Circuit - shorted high (283)	ECM will use the VP44 fuel pump speed (ISB,QSB) or the engine position signal (ISC,QSC, ISL, QS9) as a backup. Possible white smoke and power loss.

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Calculated Shim Thickness - 1.5 mm

Plus Displacement Figure - 0.2 mm

Required Shim Thickness - 1.7 mm

9 Install differential bearing **8** into bearing cage **9**.

10 Lift the intermediate differential assembly **11** from the housing **20** and press the differential assembly into the bearing **8** (previously installed in bearing cage **9**).

11 Install the shaft seal **4** into the cover **6**.

12 Determine dimension **C**, from the flange **9** to the bearing **8**, e.g 5.0 mm.

13 Determine dimension**D**, from housing **6** face to the bearing contact face in the housing, e.g. 6.15 mm.



Fig 36.

Example

Dimension **D** (Step 13) - 6.15 mm

Minus

Dimension **C** (Step 12) - 5.0 mm

= 1.15 mm

14 Cover the mating faces of the bearing cage **9** with sealing compound, install the determined shim **7** into the cover **6** and install onto the bearing cage **9**.

15 Install the pre-assembled differential assembly complete with the predetermined shim **10** (located on the mating face of the bearing cage) into the differential housing and secure with hexagonal screws **5**.

16 Install input flange **2** and secure with slotted nut **1**. Torque tighten nut **1** to 550 Nm.

17 Remove the differential lock adjusting screw from the housing. Refit the adjusting screw after applying sealant to the threads.

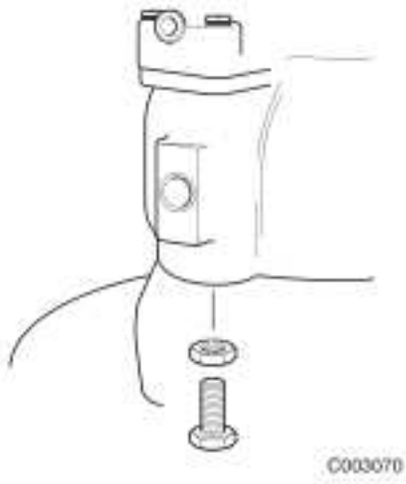


Fig 37.

18 Activate the differential lock by applying regulated compressed air pressure (pressure should be no greater than 30 psi) to the operating port on the cover **30**, whilst at the same time screwing in the adjusting screw until face contact is obtained. From this point screw IN the adjusting screw a further 1/3 of a turn and lock in position with the lock nut.

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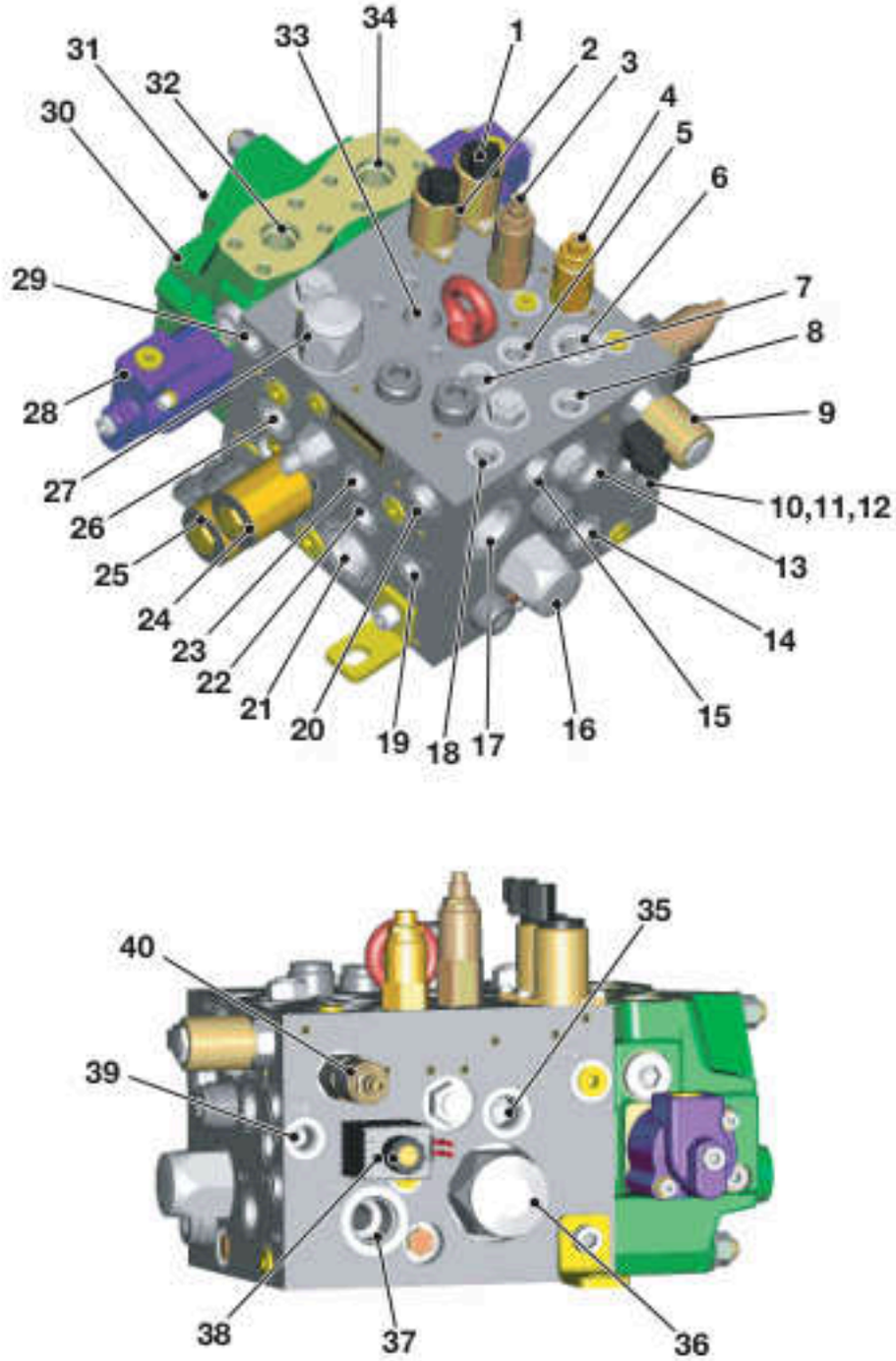


Fig 5. Component Identification

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