CEBM025901

Shop Manual

960E-2

DUMP TRUCK

SERIAL NUMBERS **A30027 & UP**

KOMATSU®

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Fault Code A190: Auto lube control has detected an incomplete lube cycle

Operator Action	None
Fault Code	A190
Description	Auto lube control has detected an incomplete lube cycle.
Fault Conditions	Sets if lube cycle is terminated by timeout rather than pressure. Resets when a lube cycle is properly terminated by pressure rather than timeout.
Operator Alerting System Response	Operate Repair Lamp Display Fault Description: AUTO LUBE FAULT Display Fault Code: A190
Resulting Problem(s)	Insufficient lube may result and if left uncorrected could lead to equipment damage.
Related Information	A laptop running "IM Realtime Data Monitor" software may be required to resolve this fault.

Table

1. This fault's logic contains more than one parameter, each of which may have its own related fault code(s). This fault may be resolved by resolving the parameter(s) active fault code(s). Refer to the Troubleshooting Instructions for the active parameter fault(s).
2. If there are no active parameter fault codes, then based on the truck's setup while this fault is active, determine which of the parameters in the Table is not shown in its expected state on the IM Realtime Data Monitor program. Refer to the schematic to identify which item(s) may be causing the parameter(s) to be in the unexpected state. Troubleshoot these items.
3. If this fault is not currently active or if no parameters are currently in the unexpected state and the malfunction is still unresolved then, check each of the parameters in the Table for proper functionality. Troubleshoot all item(s) related to the parameter(s) which are found to be malfunctioning.

Parameter	Expected State and/or Related Fault(s)
Auto Lube Pressure Sw (IM 3Y)	0: Pressure switch has transferred at 2000 psi 1: Pressure switch at low pressure or solenoid circuit not on Fault(s): A304, A305, A361
Low Steering Pressure Sw (IM 2S)	0: steering pressure normal (required for lube cycle to proceed) 1: low steering pressure Fault(s): A279
Truck Speed [kph] (IM1gh)	0: truck is not moving Greater than 0 for 10 seconds: truck is moving
GE Batt+ Off (IM 3M)	0: GE Batt+ is not off 1: GE Batt+ is off and the truck is not moving and the engine is not running
Auto Lube Solenoid Sense (IM 3X)	0: solenoid is energized and grease is in progress 1: solenoid is not energized
Auto Lube Output (IM 1T)	Status - Open Load: Unexpected. Troubleshoot Status - Normal: Expected. No problem Status - Shorted to Ground: Unexpected except momentarily at termination of a lube cycle. If detected any other time, troubleshoot. Status - Overload: Unexpected. Troubleshoot 0: Turns off between lubrication cycles 1: Turns on during lubrication cycle Fault(s): A305, A361

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Fault Code A268: Secondary engine shutdown while cranking

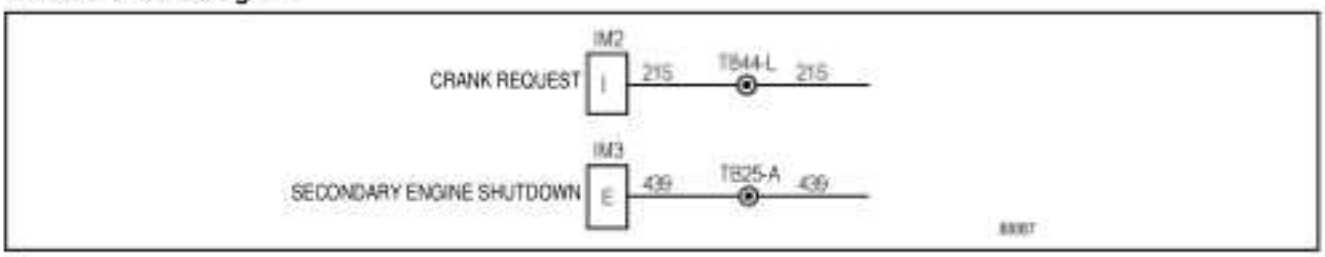
Operator Action	Do Not Shut Down
Fault Code	A268
Description	Secondary engine shutdown while cranking.
Fault Conditions	Sets if secondary engine shutdown switch is activated while attempting to crank engine. Resets if secondary engine shutdown switch is deactivated or cranking attempt is stopped.
Operator Alerting System Response	Sound Buzzer - single burst Display Operator Action: DO NOT SHUT DOWN Display Fault Description: CAN'T CRANK Display Fault Code: A268
Resulting Problem(s)	IM will not permit cranking if park brake is not set.
Related Information	A laptop running "IM Realtime Data Monitor" software may be required to resolve this fault.

Table

1. This fault's logic contains more than one parameter, but no additional fault codes are available for them.
2. Since there are no active parameter fault codes, then based on the truck's setup while this fault is active, determine which of the parameters in the Table is not shown in its expected state on the IM Realtime Data Monitor program. Refer to the schematic to identify which item(s) may be causing the parameter(s) to be in the unexpected state. Troubleshoot these items.
3. If this fault is not currently active or if no parameters are currently in the unexpected state and the malfunction is still unresolved, then check each of the parameters in the Table for proper functionality. Troubleshoot all item(s) related to the parameter(s) which are found to be malfunctioning.

Parameter	Expected State and/or Related Fault(s)
Crank Request (IM 2j)	0: cranking not attempted 1: cranking is attempted
Secondary Engine Shutdown (IM 3E)	0: secondary engine shutdown is on 1: secondary engine shutdown is not on

Related circuit diagram



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Cleaning and inspection

1. Clean all parts thoroughly.
2. It is recommended that the separator discs and friction discs be replaced if the friction material on either side of either friction disc is worn to less than 1.5 mm (0.06 in.).
3. Check the piston and piston housing bore for scratches, nicks, pitting and other defects that may cause seal leakage. Slight defects may be repaired by polishing.
4. Inspect dowel pins (2, Figure 50-34). If the dowel pins are grooved from excessive wear or otherwise damaged, press the dowel pins out of parking brake housing (3).
5. Check the free height of compression springs (1) and test for height under load. Replace the springs if they are not within approximately 10% of specification.

Free Height: . . . . . 11.58 mm (0.456 in.)
Height @ 162 N (36.4 lb): . . . . . 8.89 mm (0.350 in.)

6. Inspect Belleville washers (7) for cracks and damage. Replace any springs that are damaged or significantly worn.
7. Measure the unsprung total height (cone height + material thickness) of Belleville washers (7). It must be greater than or equal to 21.16 mm (0.833 in.). Discard any Belleville washers that do not meet this specification.
8. A load deflection test must now be conducted to determine whether the Belleville washers will be reused or discarded. The equipment that is needed for this test are as follows:
   - Universal Testing Machine (UTM) - capacity minimum of 18 144 kgf (40,000 lbf) in compression
   - Machined flat plate
   - Height stand and depth indicator with minimum range of 25 mm (1 in.)

   a. Place the Belleville washer on a clean, flat and leveled testing machine bed.
   b. Put the machined flat plate on top of the Belleville washer. Make sure that the plate will not slip from the Belleville washer when force is applied.
   c. Adjust the height stand so that the depth indicator is at zero.
   d. Gradually apply force. Follow all necessary safety precautions for operating the UTM. The Belleville washer will start deflecting due to compression as shown in the example in Figure 50-33.
   e. Note the depth indicator as it moves from 10% to 100% compression of the cone height. Record the force that is required to deflect the Belleville washer in 10% increments up to 100% of the unsprung cone height as shown in Table 1.
   f. Repeat Steps c through e three times.

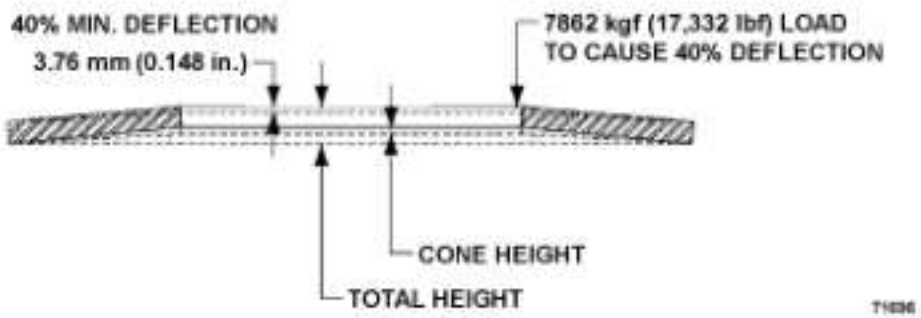


FIGURE 50-33. BELLEVILLE WASHER DEFLECTION

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2. Observe both capacitor charge lights (CCL1, CCL2). CCL1 is on the outside of the contactor box. CCL2 is on the switch panel inside the low voltage area. The lights will stay illuminated as long as the voltage on the DC link is greater than 50 VDC. Refer to Figure 00-6.

⚠WARNING

Hazardous voltages may be present in this equipment even if the engine and capacitor charge lights are off.

Use measurement and protective equipment rated for 2000 VDC minimum to verify that no voltage is present before touching any terminal.

⚠WARNING

Verify functionality of the measurement equipment using site-approved procedures both before and after performing control group measurements.

Failure to observe these precautions may result in death or serious personal injury.

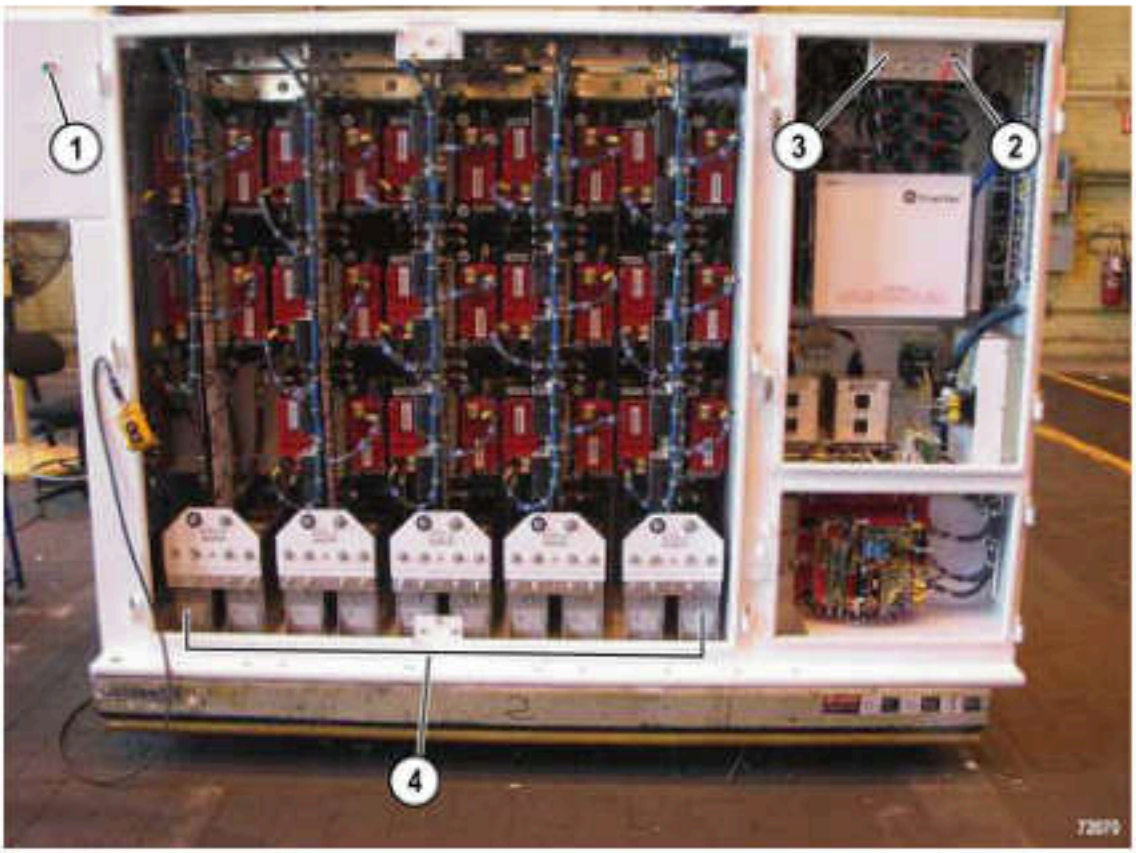


FIGURE 00-6. CAPACITOR CHARGE LIGHTS

1. Exterior Capacitor Charge Light (CCL2)
2. Interior Capacitor Charge Light (CCL1)
3. Information Display Panel
4. DC Link Capacitors

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4. Remove upper seat belt bolt (1, Figure 50-32) or (2) while holding the nut on the backside with a wrench.

NOTE: Both operator and passenger seats are shown in Figure 50-32.



FIGURE 50-32.

1. Bolt 2. Bolt

5. Remove rear cover (1, Figure 50-33) by pushing out the center of the four plastic rivets.



FIGURE 50-33.

1. Cover

6. Remove seat belt retractor bolt (2, Figure 50-34). Discard bolt and seat belt (1).

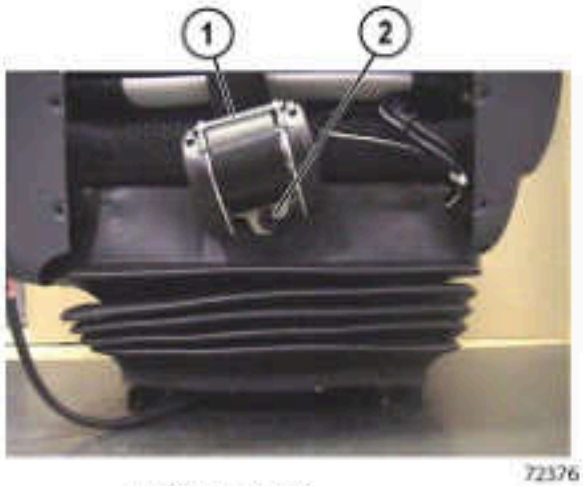


FIGURE 50-34.

1. Seat Belt 2. Bolt

7. Separate the plastic cover from the tongue of the seat belt by unlatching two inside tabs (1, Figure 50-35). The plastic cover will then slide off.

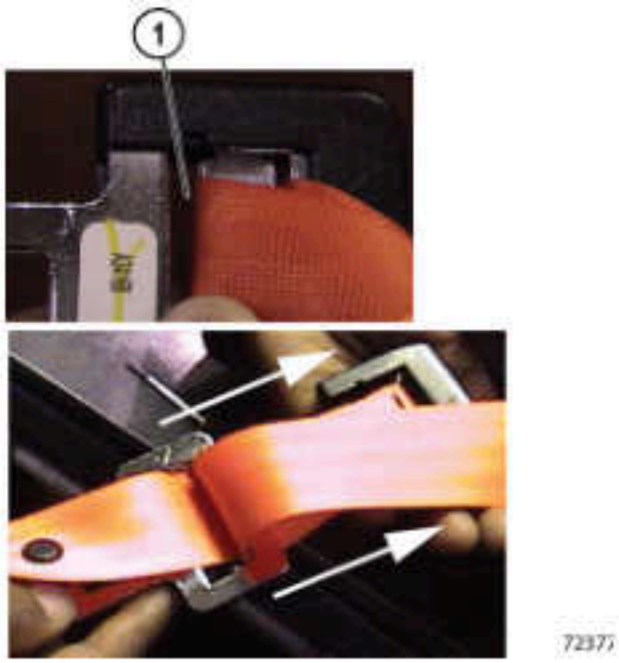


FIGURE 50-35.

1. Tabs

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WIRE TABLE

NAME	DEVICE FROM	CONN FROM	DEVICE TO	CONN TO
+24VDC-000	-	P228	-	SEAT-1
+24VDC-001	-	J228-2	-	SEAT-2
-15VD-000	GE INTERFACE	P302	TB22	TB22-L4
-15VD-001B	-	J01	DID PANEL	DID
-15VD-003	-	P01	TB22	TB22-L2
0-000	BATT2	BATT2-	BATT GND BUS	BATTGND7
0-001	BATT4	BATT4-	BATT GND BUS	BATTGND6
0-002	ORBCOMM CONT	CNA	TB30	TB30-Y4
0-003	ORBCOMM CONT	CNA	TB30	TB30-Y4
0-004	HTR-A	HTR-A	SP038	-
0-005	HTR-B	HTR-B	SP038	-
0-006	SP038	-	-	CON1
0-007	HOTST TB	HOTST_TB-D2	-	CON2
0-008	-	RECP	HOTST TB	HOTST_TB-D4
0-009	HTR RH	OIL HEATER1	SP026	-
0-010	HTR LH	OIL HEATER2	SP026	-
0-011	SP023	-	SP026	-
0-012	THERMOSTAT	STAT2	SP023	-
0-013	VHMS CONT	CN1	TB30	TB30-Y2
0-014	VHMS CONT	CN1	TB30	TB30-Y2
0-015	VHMS CONT	CN1	TB30	TB30-X2
0-016	VHMS CONT	CN1	TB30	TB30-X2
0-017	SP023	-	HOTST TB	HOTST_TB-E2
0-018	RB7	RB7K3-	RB7	RB7K7-

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ELECTRICAL SCHEMATIC

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