CEBM017909

Shop Manual

930E-4

DUMP TRUCK

SERIAL NUMBERS **A30462 - A30600**

KOMATSU®

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Table 3: Chassis Fault Codes (continued)				
VHMS Fault Code	VHMS Fault Description	Source	Sent via OrbComm	Snapshot Trigger
#A127	IM Sensor +5V Low	IM	X	
#A128	IM Sensor +5V High	IM	X	
#A139	Low Fuel	IM		
#A145	Brake Cooling RPM Advance 1	IM		
#A146	Brake Cooling RPM Advance 2	IM		
#A152	Starter Failure	IM		
#A153	Low Battery Voltage - Engine Running	IM		
#A154	High Battery Charge Voltage	IM		
#A155	Low Battery Charge Voltage	IM		
#A158	Fuel Level Sensor High	IM		
#A159	Battery Voltage, 12-Volt, System Sensing Low	IM		
#A164	Battery Voltage, 12-Volt, System Sensing High	IM		
#A166	Hydraulic Oil Temp - LR Sensor Low	IM		
#A167	Hydraulic Oil Temp - RR Sensor Low	IM		
#A168	Hydraulic Oil Temp - LF Sensor Low	IM		
#A169	Hydraulic Oil Temp - RF Sensor Low	IM		
#A170	Hydraulic Oil Temp - LR Sensor High	IM		
#A171	Hydraulic Oil Temp - RR Sensor High	IM		
#A172	Hydraulic Oil Temp - LF Sensor High	IM		
#A173	Hydraulic Oil Temp - RF Sensor High	IM		
#A182	System Battery 12V High	IM		
#A183	System Battery 12V Low	IM		
#A184	J1939 Not Connected	IM		
#A190	Auto Lube Switch	IM	X	
#A194	High LF Brake Oil Temp	IM	X	X
#A195	High RF Brake Oil Temp	IM	X	X
#A196	High LR Brake Oil Temp	IM	X	X
#A197	High RR Brake Oil Temp	IM	X	X
#A198	Hoist Pressure 1 Sensor High	IM		
#A199	Hoist Pressure 2 Sensor High	IM		
#A200	Steering Pressure Sensor High	IM		
#A201	Brake Pressure Sensor High	IM		
#A202	Hoist Pressure 1 Sensor Low	IM		
#A203	Hoist Pressure 2 Sensor Low	IM		
#A204	Steering Pressure Sensor Low	IM		
#A205	Brake Pressure Sensor Low	IM		

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Rear Suspension Nitrogen Charging

⚠WARNING

Lifting equipment must be of sufficient capacity to lift the truck weight. Ensure that all personnel are clear of lift area before lifting is started. Clearances under the truck may be suddenly reduced.

⚠IMPORTANT⚠

Ensure that the automatic apply circuit has not applied the service brakes during truck maintenance. If the front brakes are applied during rear suspension charging, the axle cannot pivot for frame raising/lowering, and the rear suspension may be unable to move up or down.

1. If removed, install charging valve with new O-ring (9, Figure 4-3). Lubricate the O-ring with clean Hydrair® oil.
2. Tighten valve body (6) (large hex) to **23 N·m (17 ft lb)**. Swivel nut (4) (small hex) must be unseated by turning it counterclockwise three full turns.

⚠WARNING

Dry nitrogen is the only gas approved for use in Hydrair® II suspensions. Charging of these components with oxygen or other gases may result in an explosion which could cause fatalities, serious injuries and/or major property damage. Use only nitrogen gas meeting the specifications shown in the Specifications Chart at the end of this section.

3. Install the charging kit and a bottle of pure dry nitrogen. Refer to "Installation of Charging Kit" in this section.
4. Charge the suspensions with nitrogen gas to a height just high enough to install the nitrogen blocks, but not to exceed 269.2 mm (10.6 in.).

⚠WARNING

Be aware when relieving nitrogen gas that the truck may drop suddenly onto the charging blocks.

5. Slowly release gas until the suspensions match the pressure listed in the table below Figure 4-5.
6. Close inlet valve (4, Figure 4-1). Leave outlet valves (3) open for five minutes to allow the pressures in the suspensions to equalize.
7. Ensure that both of the suspension cylinders are extended the same distance ± 10 mm (0.39 in.). If the difference in the extension from side to side exceeds this amount, check the front suspensions for equal extension. Adjust the front suspensions as necessary.

NOTE: A low left front suspension will cause the right rear suspension to be high. A low right front suspension will cause the left rear suspension to be high.

8. Close outlet valves (3). Remove the charging kit components. Refer to "Removal of Charging Kit" in this section.
9. If the charging valve is being reused, tighten swivel nut (4, Figure 4-3) to **6 N·m (50 in lb)**.
10. If a new charging valve is being used, tighten the swivel nut to **15 N·m (11 ft lb)**, then loosen and retighten the swivel nut to **15 N·m (11 ft lb)**. Loosen the swivel nut again and retighten to **6 N·m (50 in lb)**. Install the valve cap finger-tight.
11. Install the protective guards over the charging valves. Install the rubber covers over the piston rods.

Any time the suspensions are recharged, the calibration of the Payload Meter system is affected. Refer to the Payload Meter III section and perform a "Clean Truck Tare". This will ensure accurate payload records.

The rear Hydrair® II suspensions are now ready for operation. Visually check piston extension with the truck both empty and loaded. Record the extension dimensions. Maximum downward travel is indicated by the dirt ring at the base of the piston. Operator comments on steering response and suspension rebound should also be noted.

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Assembly - Quill

NOTE: Use only new seals, bearings and O-rings during reassembly. Thoroughly lubricate all parts and seals with hydraulic oil to aid in assembly and to provide lubrication during initial operation.

Quill Installation

1. Check plugs (3, Figure 8-21) and the check balls (4) in the quill during any cylinder repair to ensure that the plugs are tight and the ball seats are not damaged. Refer to Installation of Check Balls and Plugs in Quill on the next page.
2. Secure cap assembly (1) in a sturdy fixture. Ensure that the threads in the cap and the threads on the quill are clean, dry and free of oil and solvent.
3. Spray the mating threads of both cap assembly (1) and quill assembly (2) with LOCQUIC® Primer T (Komatsu part number TL8753) or equivalent. Allow the primer to dry 3 to 5 minutes.
4. Apply Loctite® Sealant #277 (Komatsu part number VJ6863) or equivalent to the mating threads of both the cap assembly and quill assembly.
5. Install the quill. Use tightening tool SS1143 (Figure 8-20) to tighten the quill to **1 356 N·m (1,000 ft lb)**. Allow the parts to cure for two hours before exposing the threaded areas to oil.

NOTE: If LOCQUIC Primer T (TL8753) was not used, the cure time will require 24 hours instead of two hours.

6. Tack weld the quill in two places as shown in Figure 8-21.
7. Remove all slag and foreign material from the tack weld area before assembling the cylinder.

During future cylinder rebuilds, removal of the quill will not be necessary unless it has loosened or is damaged. Removal will require a break-loose force of at least **2 712 N·m (2,000 ft lb)** after the tack welds are ground off.

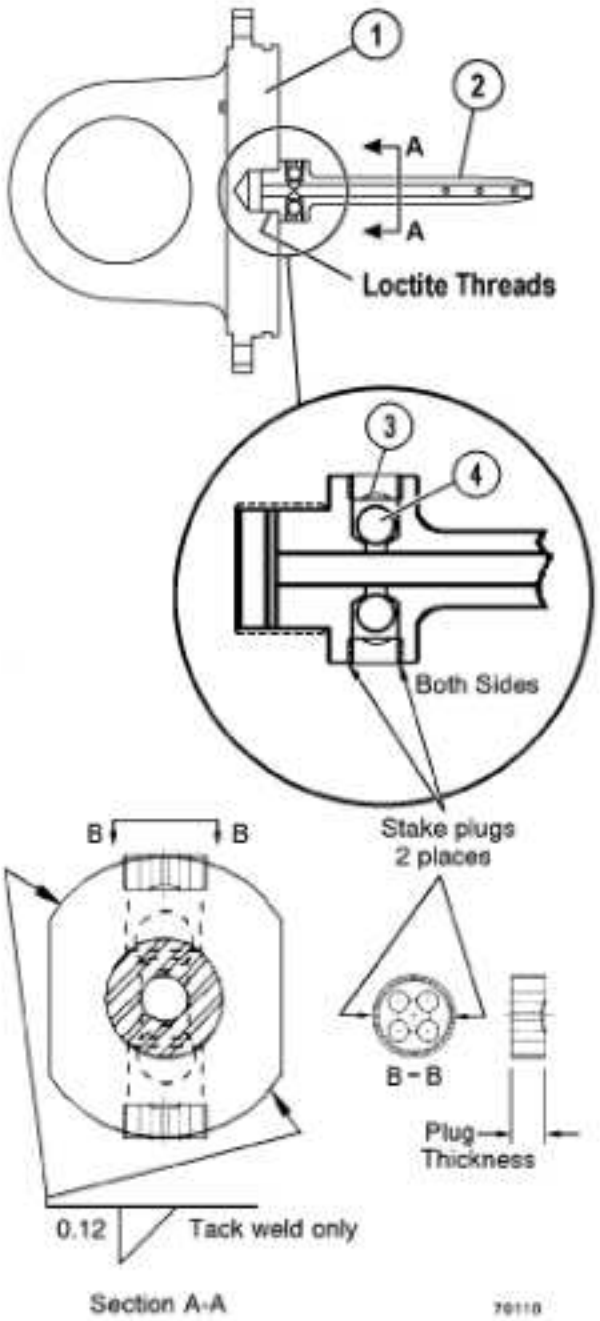


FIGURE 8-21. PLUG & CHECK BALL INSTALLATION

1. Cap Assembly
2. Quill Assembly
3. Plug
4. Check Ball

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5. Remove the rotor from the rotor shaft.

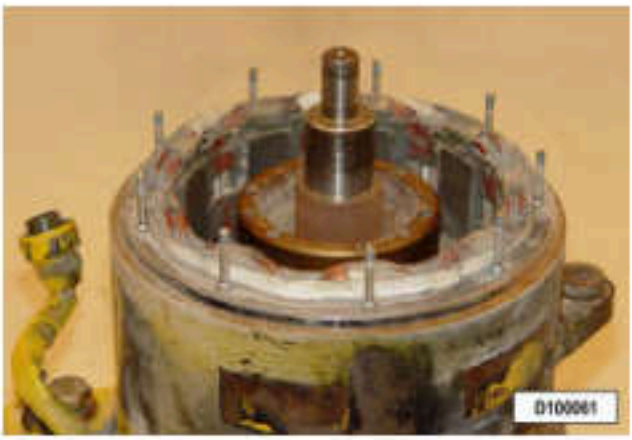


FIGURE 10-50.

Drive End Housing Removal

⚠ IMPORTANT ⚠

Ensure the single mark has been scribed between drive end housing (20) and shell (58). This mark will be used during the assembly process to correctly align the two parts.

1. Position the support stand so the large diameter hole is facing up.

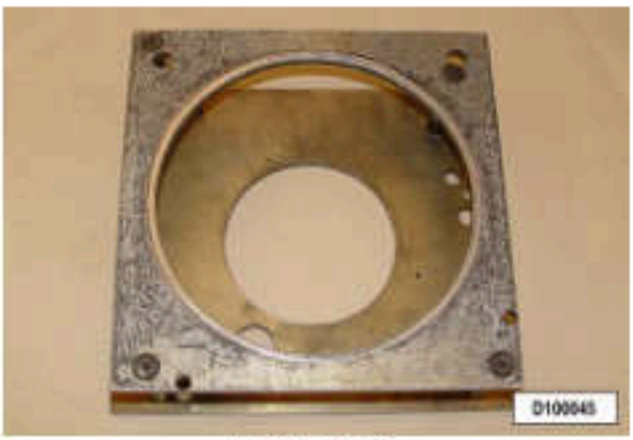


FIGURE 10-51.

2. Place the alternator in the support stand with the drive end facing up.



FIGURE 10-52.

3. Remove cover plate (7) by removing six Torx screws (6) using a number T20 Torx bit.

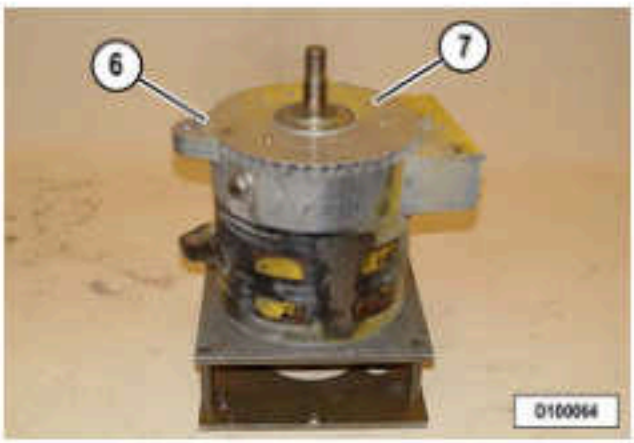


FIGURE 10-53.

6. Screw 7. Cover Plate

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Failure of the Discharge System

If the capacitor charge lights remain illuminated, a failure of the normal (fast) capacitor discharge system (RP discharge path) has likely occurred. The slow discharge resistors that are hard wired across the DC link should then discharge the capacitors. The slow discharge resistors will discharge the DC link to less than 1 VDC in under 7.5 minutes. If after 7.5 minutes, the capacitor charge lights are still illuminated, it must be assumed that the automatic discharge system is not working and that high voltage is present in the high voltage area.

1. Open the high voltage area doors.
2. Use a suitable high voltage meter (rated for at least 2000 VDC) and suitable protective equipment that are included in 2000VDC meter kit (58B-06-00800) to measure the voltage across each of the DC link capacitors. Place one meter lead on the positive (+) capacitor terminal, and the other meter lead on the negative (-) capacitor terminal, and observe the voltage. See Figure 3-7 and Figure 3-8. If the voltage is less than 1.0 V the capacitor is sufficiently discharged. Repeat on all DC Link capacitors. If the voltage of any capacitor is above 1.0 V, manually discharge the capacitor as described in "Manual Discharge of Capacitors".



FIGURE 3-7. DC METER ON CAPACITOR



FIGURE 3-8. CAPACITOR TERMINAL POLARITY

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COMPONENT	SHEET
ACCELERATOR PEDAL	20
AID MODULE	11,12,13
AID SONALERT (CAB OVERHEAD)	11
ALTERNATOR AMB. TEMP.	9
BATTERY CHARGING ALT.	26
BATTERY CONTROL	9
BATTERY CRANKING	9
BATTERY SYSTEM	26
BRAKE SONALERT	11
CB-50A. 12V POWER	26
CB 11 - BACK-UP HORN & LTS (RB3)	10
CB 13 - CLEARANCE LIGHTS (RB1)	10,22
CB 14 - TURN SIGNAL FLASHER	10,22
CB 15 - TAIL LIGHTS (RB1)	10,22
CB 16 - RETARD LIGHTS (RB3)	10,19
CB 17 - MANUAL BACK-UP LTS (RB3)	10,19
CB 18 - STOP LIGHTS (RB3)	10,12
CB 19 - BACKUP LTS & HORN (RB3)	19
CB 20 - PARK BRAKE FAILURE (RB4)	10,27
CB 21 - SERV. LTS, HORN BTN. (RB4)	10,18
CB 22 - ENGINE CONTROL POWER (RB4)	10,27
CB 23 - HDLIGHTS LFT LO BEAM (RB5)	10,23
CB 24 - HDLIGHTS RT LO BEAM (RB5)	10,23
CB 25 - HDLIGHTS LFT HI BEAM (RB5)	10,23
CB 26 - HDLIGHTS RT HI BEAM (RB5)	10,23
CB 27 - HDLIGHTS & DASH LTS (RB5)	10,23
CB 60 -	33
CB 61 -	33
CB 62 -	33
CISP	29
CONVERTER 24/12V	10
DASH LIGHT RHEOSTAT	24
DBI - DIODES D5,D7,D10,D11	12
DBI - DIODES D21,D22,D23	11
DBI - P12 (20 OHM)	9
DBI - D8	27
DIAGNOSTIC #4 (ENGINE) OPER CAB	27
DID PANEL	9,29
DIODE, BLD- STEER. ACCUM BLEED ON	18
DIODE, D1- NO PROP/RET LIGHT	13
DIODE, D2- NO PROPULSION LIGHT	13
DIODE, D3- PROP. SYS CAUTION LT	13
DIODE, D14- HOIST LIMIT SOLENOID	15
DIODE, D34- LO HYD. TANK LEVEL LT	14
DIODE, D36- BODY UP LIGHT	12
DIODE, D37- CHECK ENGINE LIGHT	12
DIODE, D38- LINC LUBE	15
DIODE, DR2- BRAKE LOCK SOLENOID	11
DIODE, DR4- PARK BRAKE SOLENOID	12
DIODE, EWPD- ENGINE WARN. PULL UP	12
DIODE, HD- FORWARD HORN #1	18
DIODE, LLD1- LINC. LUBE	15
DIODE, LLD2- LINC LUBE LO PRESS LT	15
DIODE, SFD-1- STARTER FAILURE 1	13
DIODE, SFD-3- STARTER FAILURE 3	13
DIODE, SFD-4- STARTER FAILURE 4	13
DIODE, SFD-5- STARTER FAILURE 5	13
DIODE, SID-1- STARTER ISOLATION	26
DIODE, WRHD - WINDSHLD RELAY HI	31
DIODE, WRLD - WINDSHLD RELAY LO	31
DIODE, WSD - WIPER CONTROL	31
ENGINE ECU - FAN CLUTCH SIGNAL	17
ENGINE ECU - CUMMINS	7
ENGINE INTERFACE MODULE	7
FUSE - 400 AMP PRE LUBE PUMP	26
FUSE-FB1-1 15A, A/C HTR BLOW MTR	10,17
FUSE-FB1-2 10A, WINDSHLD WASH/WIPE	10
FUSE-FB1-3 5A, FUEL, TEMP GA. VOLTM	10,16
FUSE-FB1-4 10A, CAB KEY POWER	10,25
FUSE-FB1-5 10A, HOIST SOLENOID	10,15
FUSE-FB1-6 15A, TURN/CLEAR LIGHTS	10
FUSE-FB1-7 10A, ENGINE OPTIONS	10,16
FUSE-FB1-8 10A, AID & INDIC. LTS	10,11
FUSE-FB1-9 10A, ENG START FAIL.	10
FUSE-FB1-10 10A, ENG. SHUTTERS	10
FUSE-FB1-11 10A, DOME LIGHT SW.	10,15
FUSE-FB1-13 10A, GAUGE VOLTAGE	10,21
FUSE-FB1-17 15A, KEYSWITCH POWER	9,10,25
FUSE-FB1-18 5A, PLM III POWER	10
FUSE-FB1-19 5A, PLM III POWER	10
FUSE-FB1-20 15A,	10,25,28
FUSE-FB2-1 15A, SERVICE LIGHTS	10,23

COMPONENT	SHEET
FUSE-FB2-2 15A, DOME,FOG,LADDER LTS	10
FUSE-FB2-3 15A, HAZARD LIGHTS	10
FUSE-FB2-4 10A, INTERFACE MODULE	10,32
FUSE-FB2-5 10A, ORBCOM/VHMS POWER	10,29
FUSE-FB2-6 20A, M M HUB POWER	10,29
FUSE-FB2-7 10A, DISPLAY MODULE	10
FUSE-FB2-8 15A, HID HEADLIGHTS	10,16
FUSE-FB2-9 15A, OIL RESERVE PUMP	10
FUSE-FB2-10 15A, RESERVE CTRL MODULE	10
FUSE-FB2-11 20A, BLEEDDOWN PWR SUPPLY	10,18
FUSE-FB2-12 10A, ENG LOAD CNTRL PWR	10
FUSE-FB2-13 10A,	10,25,28
FUSE-FB2-17 20A, ENGINE ECM POWER	10
FUSE-FB2-18 20A, ENGINE ECM POWER	10
FUSE-FB2-19 20A, ENGINE ECM POWER	10
FUSE-FB2-20 20A, ENGINE ECM POWER	10
FUSE-FB3-1 15A, CAB DRIVE SYS. PWR	10,20
FUSE-FB3-2 10A, AUTO LUBE TIMER	10,15
FUSE-FB3-3 15A, GE PWR INTERFACE MOD	10,32
FUSE-FB3-4 20A, OP-CAB SEAT POWER	10,25
FUSE-FB3-13 10A, L. FRT WHEEL SPS	9,10
FUSE-FB3-14 10A, R. FRT WHEEL SPS	9,10
FUSE-FB3-17 10A, 12V POWER PLUGS	10,21
FUSE-FB3-18 20A, R.H. WINDOW	10,21
FUSE-FB3-19 20A, L.H. WINDOW	10,21
FUSE-FB4-1 10A, PARK BRAKE SOL.	10,32
FUSE-FB4-2 5A, PLM III	10
FUSE-FB4-3 5A, INTERFACE MODULE	10,32
FUSE-FB4-4 10A, VHMS KEYSWITCH PWR	10,29
FUSE-FB4-5 5A, M M HUB POWER	10,29
FUSE-FB4-6 5A, DISP MODULE	10
FUSE-FB4-7 15A, BLEEDDOWN POWER	10,18
FUSE-FB4-8 10A, LIGHTED SW POWER	10,16
FUSE-FB4-9 10A, DIRECT SEL. SW.	10,32
FUSE-FB4-17 5A, GAUGE VOLTAGE	10
FUSE-FB4-18 5A, PEDAL VOLTAGE	10
FUSE-FB4-19 5A, ENGINE INTERFACE	10
GAUGE, BRAKE HYD. TEMPERATURE	32
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INDICATOR, LOW RETARD LEVEL	14
INDICATOR, LOW STEERING PRESSURE	11
INDICATOR, MANUAL BACK UP	13
INDICATOR, PARK BRAKE	32
INDICATOR, PROPULSION SYS AT REST	14
INDICATOR, PROPULSION SYS CAUTION	13
INDICATOR, PROPULSION SYS NO PROPEL	13
INDICATOR, PROPUL. SYS NO PROP/RET	13
INDICATOR, PROPUL. SYS NOT READY	14
INDICATOR, PROPUL. SYS REDUCED PWR	14
INDICATOR, RETARD	12
INDICATOR, SERVICE BRAKE	12
INDICATOR, SELECTOR SWITCH	24
INDICATOR, VHMS SNAP-SHOT IN PROGRESS	24,29
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JUNCTION BLOCK 3A (JB3A)	20
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JUNCTION BLOCK 4B (JB4B)	21
JUNCTION BLOCK 4C (JB4C)	14
LEFT DECK PAYLOAD LIGHTS	28
LEFT SCOREBOARD	28
LIGHT, AIR RESTRICTION GAUGE	24
LIGHT, BATT. CHG. SYS. FAILURE	32
LIGHT, BODY UP	12
LIGHT, BRAKE HYD. TEMP. HIGH	32
LIGHT, BRAKE HYD. TEMP. GAUGE	24
LIGHT, CHECK ENGINE	12
LIGHT, DECK #1	18

COMPONENT	SHEET
LIGHT, DECK #2	18
LIGHT, DIAGONAL LADDER #1	18
LIGHT, DIAGONAL LADDER #2	18
LIGHT, DIGITAL SPEEDOMOTER	24
LIGHT, DIGITAL TACH	24
LIGHT, DOME I-S	10,15
LIGHT, DYNAMIC RETARD (OPTIONAL)	19
LIGHT, ENGINE START FAILURE	32
LIGHT, ENGINE STOP	12
LIGHT, ENGINE STOP SWITCH	24
LIGHT, FUEL GAUGE	24
LIGHT, HI BEAM INDICATING	23,31
LIGHT, HYDRAULIC CABINET LEFT	18
LIGHT, HYDRAULIC CABINET RIGHT	18
LIGHT, IM WARNING	32
LIGHT, LEFT DECK BACK UP	19
LIGHT, LEFT ENGINE SERVICE #1	18
LIGHT, LEFT ENGINE SERVICE #2	18
LIGHT, LEFT FOG	23
LIGHT, LEFT FRONT TURN/CLEARANCE	22
LIGHT, LFT HAND HI-MTD LO BM HDLT	23
LIGHT, LFT HAND HI-MTD HI BM HDLT	23
LIGHT, LEFT HIGH BEAM	23
LIGHT, LEFT LOW BEAM HEADLIGHT	23
LIGHT, LEFT REAR BACK UP	19
LIGHT, LEFT REAR RETARD	19
LIGHT, LEFT REAR TURN/CLEARANCE	22
LIGHT, LEFT TAIL/STOP	12
LIGHT, LEFT TURN INDICATING	22
LIGHT, LINCOLN LUBE LOW PRESSURE	15
LIGHT, OIL PRESSURE GAUGE	24
LIGHT, OVERRIDE SWITCH	24
LIGHT, RETARD SPEED CONTROL SWITCH	24
LIGHT, RETARD SPEED CONTROL	13
LIGHT, RIGHT DECK BACK UP	19
LIGHT, RIGHT ENGINE SERVICE #1	18
LIGHT, RIGHT ENGINE SERVICE #2	18
LIGHT, RIGHT FOG	23
LIGHT, RIGHT FRONT TURN/CLEAR	22
LIGHT, RGT HAND HI-MTD LO BM HDLT	23
LIGHT, RGT HAND HI-MTD HI BM HDLT	23
LIGHT, RIGHT HIGH BEAM	23
LIGHT, RIGHT LOW BEAM HEADLIGHT	23
LIGHT, RIGHT REAR BACK UP	19
LIGHT, RIGHT REAR RETARD	19
LIGHT, RIGHT REAR TURN/CLEARANCE	22
LIGHT, RIGHT TAIL/STOP	12
LIGHT, RIGHT TURN INDICATING	22
LIGHT, SERVICE BRAKE (CAB ROOF)	12
LIGHT, STARTER FAILURE	13
LIGHT, WATER TEMPERATURE GAUGE	24
LIGHT, 5 MIN. IDLE TIMER INDICAT.	25
MODULAR MINING COMMUNICATION PORT	9,29
MODULAR MINING HUB	29
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MOTOR RIGHT WINDOW	21
ORBCOM MODULE	29
PAYLOAD METER 3 CONTROL MODULE	10,28,29
PROPULSION ALTERNATOR	16
POWER PLUGS, 12V	21
PUMP, PRE-LUBE HI FLOW	26
RADIO	21
RB1 K1 RELAY (LEFT TURN SIGNAL)	22
RB1 K2 RELAY (RIGHT TURN SIGNAL)	22
RB1 K3 RELAY (CLEARANCE LIGHT)	22
RB1 K4 RELAY (FLASHER)	22
RB3 K1 RELAY (MANUAL BACKUP LTS)	19
RB3 K2 RELAY (STOP LIGHT)	12
RB3 K3 RELAY (RETARD LIGHT)	19
RB4 K1 RELAY (PARK BRAKE STATUS)	27
RB4 K2 RELAY (CRANK INTERLOCK)	26
RB4 K3 RELAY (HORN)	18
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RB5 K2 RELAY (RIGHT LOW BEAM HDLT)	23
RB5 K3 RELAY (LFT HI BEAM HDLT)	23
RB5 K4 RELAY (RIGHT HI BEAM HDLT)	23
RB6 K1 RELAY (BACK UP HORN)	19
RB6 K2 RELAY (ENGINE INTERLOCK)	27
RB6 K3 RELAY (START RELAY)	26
RB6 K5 RELAY (ETHER START)	7
RB6 K6 RELAY (5 MIN. TIMER)	25
RB6 K7 RELAY (5 MIN. TIMER)	25
RB6 K8 RELAY (5 MIN. TIMER)	25
RB7 K1 RELAY (STARTER #2 RELAY)	13

COMPONENT	SHEET
RB7 K2 RELAY (STARTER FAIL. #1)	13
RB7 K3 RELAY (STARTER FAIL. #2)	13
RB7 K4 RELAY (STARTER #1 RELAY)	13
RB7 K5 RELAY (LINC LUBE SOLENOID)	15
RB7 K6 RELAY (HID LIGHTS)	16
RB7 K7 RELAY (BLEEDDOWN PWR SUPPLY)	18
RB7 K8 RELAY (LINC LUBE TIMER)	15
RB8 K1 RELAY (TCI-70X)	28
RB8 K2 RELAY (TCI-100X)	28
RB8 K3 RELAY (SHUTTER CONTROL)	7
RB8 K4 RELAY (PLM3 LIGHTS)	28
RB8 K5 RELAY (AC SCHUTTER CONTROL)	7
RB8 K6 RELAY (PLM3 RED LIGHTS)	28
RB8 K7 RELAY (PLM3 AMBER LIGHTS)	28
RB8 K8 RELAY (PLM3 GREEN LIGHTS)	28
RB9 K4 RELAY (PARK BRAKE OFF)	32
RB9 K5 RELAY (STARTER FAILURE REL. #3)	13
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RB9 K8 RELAY (STARTER FAILURE REL. #4)	13
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