CEBM021304

Shop Manual

960E-1

DUMP TRUCK

SERIAL NUMBERS **A30003 - A30024**

KOMATSU®

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Capacitor discharge system

The control cabinets are equipped with two capacitor charge lights, one on the exterior of the cabinet and one in the interior. The capacitor charge lights, when off, indicate to service personnel that the drive system is safe to work on. Certain drive system failures, however, can result in a condition where one or more capacitors can remain in a charged state even though the capacitor charge lights are off.

Because a danger can still exist with the capacitor charge lights off, it is necessary to adhere to the following instructions before touching or servicing drive system components. Only authorized service personnel are allowed to service the drive system.

Refer to the shop manual for rules when servicing the drive system. Adhere to the proper procedures for disabling the drive system.

Necessary tools

- 2000 VDC meter (Figure 00-2)
  (Komatsu p/n PC3186)
  (Bierer RCDC 1000 or equivalent)



FIGURE 00-2. VOLT METER (PC3186)

- Personal Protective Equipment (PPE) for working with 2000 VDC meter
  (safety shoes, high voltage gloves, and safety glasses)
- Multimeter for ground resistance measurement
- Grounding stick pair (Figure 00-3)
  (Komatsu p/n PC3299)
  (HVR Advanced Power Components MAS-000039 Ground Stick Pair or equivalent)

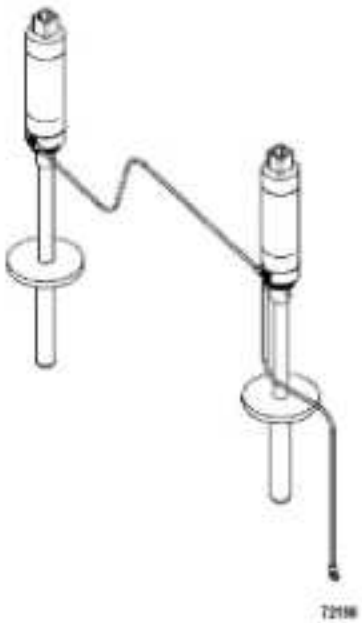


FIGURE 00-3. GROUNDING STICKS (PC3299)

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Fault Code A350: Overload on output 1B

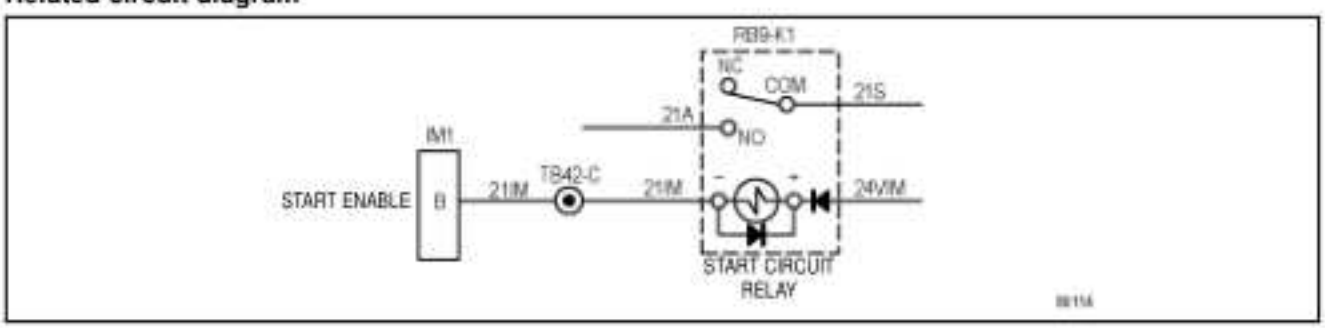
Operator Action	None
Fault Code	A350
Description	Overload on output 1B.
Fault Conditions	Sets if driver chip detects overcurrent or over temp on output 1B. Output is turned off when overload is detected. Resets at power down.
Operator Alerting System Response	Repair Lamp Display Fault Description: STRT ENABLE CKT FLT Display Fault Code: A350
Resulting Problem(s)	Starting circuit is disabled.
Related Information	A laptop running "IM Realtime Data Monitor" software may be required to resolve this fault.

Table

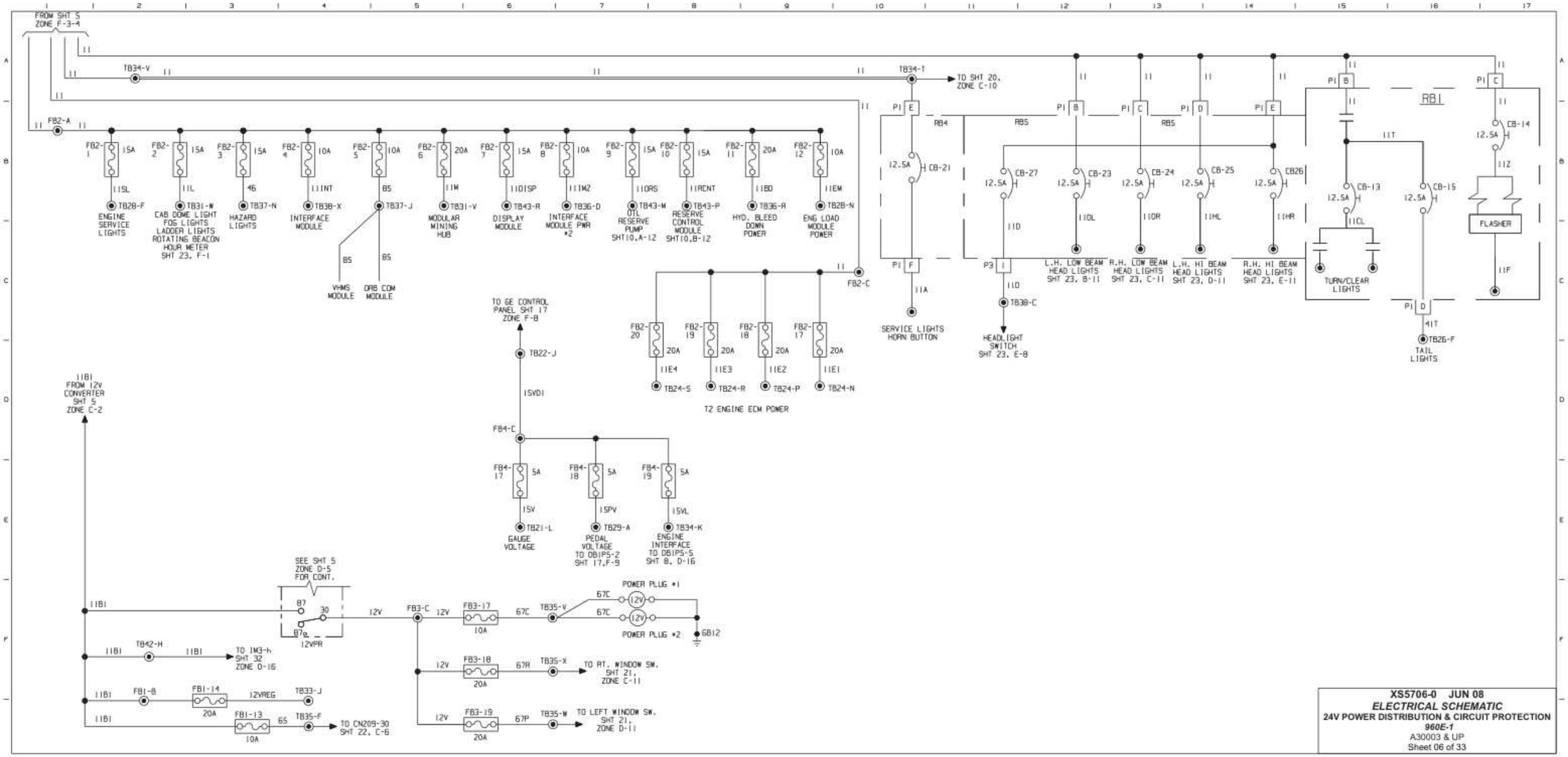
1. This fault's logic contains just one parameter, which may have additional fault code(s). This fault may be resolved by resolving the parameter(s) active fault code(s). Refer to the Troubleshooting Instructions for the active parameter fault(s).
2. If there are no active parameter fault codes, then 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)
Start Enable (IM 1B)	Status - Open Load: Unexpected. Troubleshoot Status - Normal: Expected. No problem. Status - Shorted to Ground: Unexpected. Troubleshoot. Status - Overload: Unexpected. Troubleshoot. 0: One of several interlocking situations exist to prevent cranking (excessive cranking history, selector switch in wrong position, engine red light, J1939 not ok, engine speed either not 0 to begin cranking or over 400 rpm while cranking). 1. No interlocking situations exist to prevent cranking. Fault(s): A252

Related circuit diagram



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XS5706-0 JUN 08
ELECTRICAL SCHEMATIC
24V POWER DISTRIBUTION & CIRCUIT PROTECTION
960E-1
A30003 & UP
Sheet 06 of 33

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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.

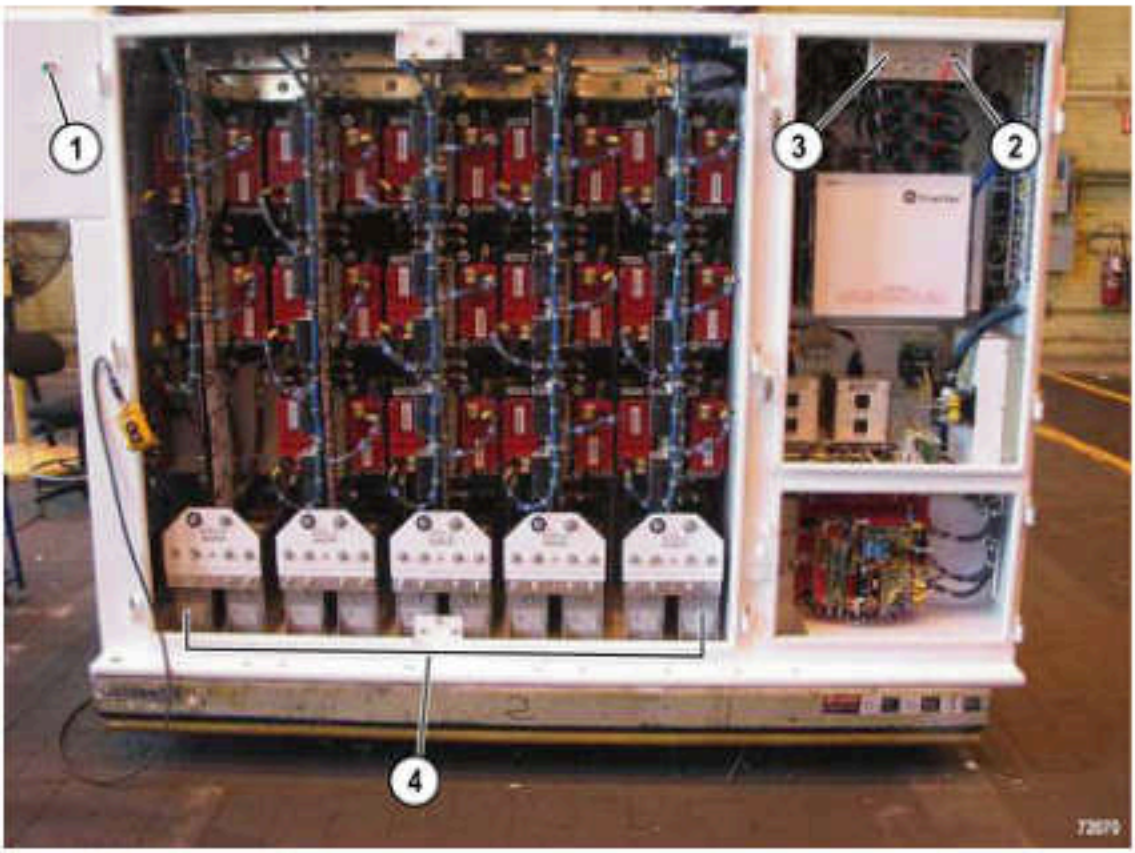


FIGURE 00-6. CAPACITOR CHARGE LIGHTS

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).

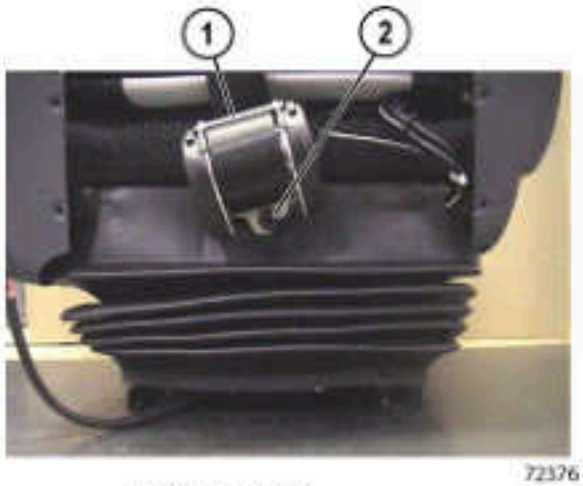


FIGURE 50-34.

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.

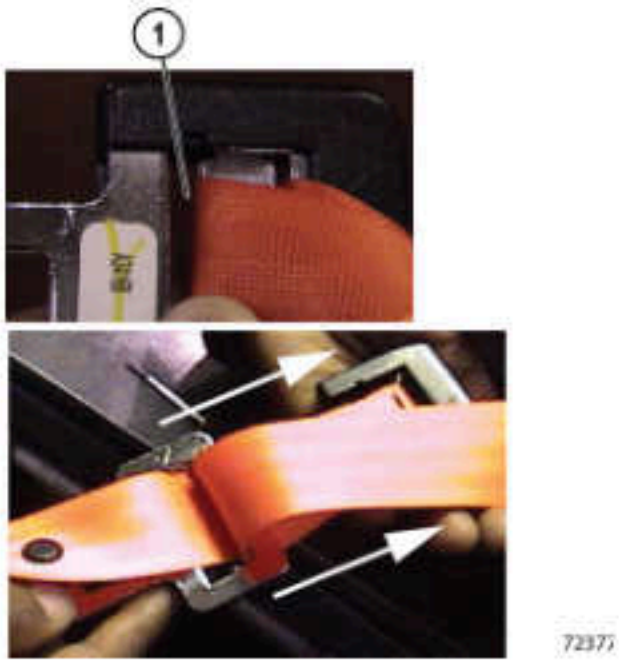


FIGURE 50-35.

1. Tabs

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COMPONENT	SHEET
ACCELERATOR PEDAL	17
BATTERY CHARGING ALT.	12
BATTERY BOX	4
CB 11 - BACK UP HORN & LTS (RB3)	5
CB 13 - CLEARANCE LIGHTS	6,24
CB 14 - TURN SIGNAL FLASHER	6,24
CB 15 - TAIL LIGHTS	6,24
CB 16 - RETARD LIGHTS (RB3)	5,19
CB 17 - MANUAL BACK-UP LTS (RB3)	5,19
CB 18 - STOP LIGHTS	5
CB 19 - BACKUP LTS & HORN (RB3)	19
CB 20 - PARK BRAKE FAILURE RELAY	5,8
CB 21 - SERVICE LIGHTS, HORN	6,20
CB 22 - ENGINE CONTROL POWER	5,8
CB 23 - HDLGHTS LEFT LOW BEAM (RB5)	6,23
CB 24 - HDLGHTS RIGHT LOW BEAM (RB5)	6,23
CB 25 - HDLGHTS LEFT HI BEAM (RB5)	6,23
CB 26 - HDLGHTS RIGHT HI BEAM (RB5)	6,23
CB 27 - HDLGHTS & DASH LIGHTS (RB5)	6,23
CB 60 - 24V TO 12V CONVERTER	5
CONVERTER 24/12V	5
CRKB1 - CRANK BATTERIES	4
CRKB2 - CRANK BATTERIES	4
CRKB3 - CRANK BATTERIES	4
CRKB4 - CRANK BATTERIES	4
DASH LIGHT RHEOSTAT	23
DATA STORE SWITCH	16,28
DB1 - DIODES D5,D6,D7,D10,D11	8
DB1 - DIODES D21,D22,D23	15
DB1 - D8	8
DB1 - D14	15
DB1 - 2.0K RESISTOR (R4)	8
DB1 - 2.0K RESISTOR (R8)	8
DB1 - 27K RESISTOR	17
DID PANEL	27
DIODE BOARD *1	8,9,26
DIODE, D1- STEER. ACCUM. BLEEDN SOL.	15
DIODE, D2- ENGINE START	12
DIODE, D11- BODY UP	16
DIODE, D13- BRAKE LOCK SW.	14
DIODE, D27- BRAKE LOCK SWITCH	14
DIODE, D42- TURN SIGNAL FLASHER	24
DIODE, D43- TURN SIGNAL FLASHER	24
DIODE, D50L- LEFT TURN INDICATOR	24
DIODE, D50R- RIGHT TURN INDICTOR	24
DIODE, D51- BLOCKING	10
DIODE, D52- ENGINE WARN. PULL-UP	8
DIODE, D53- ENGINE WARN. PULL-UP	8
DIODE, D54- BLOCKING	14
DIODE, D55- BLOCKING	14
DIODE, D56- BLOCKING	14
DIODE, D57- BLOCKING	14
DIODE, D58- KEY SWITCH START	12
DIODE, D61- ENGINE OIL PRESSURE	14
DIODE, D62- ENG. RUN OIL PRESS SW	13
DIODE, D69- FORWARD DIRECT SEL SW	13
DIODE, D70- REVERSES DIRECT SEL SW	13
DIODE, D71- NEUTRAL DIRECT SEL SW	13
DIODE, D74- ENGINE START	12
DIODE, D80- KEY SWITCH POWER	11
DIODE, D81- KEY SWITCH POWER	11
DIODE, D82- SONALERT	29
DIODE, D83- SONALERT	29
DIODE, D84- PROPEL SYS NOT READY	16
DIODE, D85- PROPEL SYS NOT READY	16

COMPONENT	SHEET
DIODE, DR1- PARK BRAKE SOLENOID	13
DIODE, DR2- BRAKE LOCK SOLENOID	14
DIODE, DR3- AUTO BRAKE SOLENOID	13
DIODE, DR4- SERV. BRAAKE PRESS. SW.	13
DIODE, DTS- COMBO SWITCH TUER SIG.	23
DIODE, HL- HOIST LIMIT	15
DIODE, HSD- FORWARD HORN *1	20
DIODE, PRD1- 40A. COMBINE POWER	5
DIODE, PDR2- 40A. COMBINE POWER	5
DIODE, RDI- RADIO RELAY	22
DIODE, SCHOTTKY START ISOL. (SID-1)	4,12
DIODE, WAHD- WIPER RELAY HI DELAY	21
DIODE, WALD- WIPER RELAY LO DELAY	21
DIODE, WSD- WINDSHIELD WASHER	21
DISCONNECT, 24V. SYSTEM	4
DISCONNECT, 24V. STARTER	4
DISPLAY MODE CONTROL SW.*1	18
DISPLAY MODE CONTROL SW.*2	18
ELECTRONIC DASH PANEL	18
ENGINE, ECU CUMMINS	10,26
ENGINE QSK 60	25
FLASHER	6,24
FUSE - 300 AMP PRE LUBE PUMP	12
FUSE-FB1-1 15A, A/C, HEATER	5
FUSE-FB1-2 10A, WINSH WASHER & WIPERS	5
FUSE-FB1-3 5A, FUEL GAUGE, TEMP GAUGE	5
FUSE-FB1-4 10A, CAB KEY POWER	5
FUSE-FB1-5 10A, HOIST LIMIT SWITCH	5
FUSE-FB1-6 15A, TURN/CLEARANCE LIGHTS	5
FUSE-FB1-7 10A, ENGINE OPTIONS	5
FUSE-FB1-8 10A, AIO MODULE & IND LTS	5
FUSE-FB1-9 10A, ENGINE START FAILURE	5
FUSE-FB1-10 10A, ENGINE SHUTTERS	5
FUSE-FB1-11 10A, AUX CAB DOME LIGHTS	5
FUSE-FB1-13 10A, ENTERTAINMENT RADIO	22
FUSE-FB1-14 20A, COMMUNICATION RADIO	6
FUSE-FB1-17 15A, TIMED ENG. SHUTDOWN	11
FUSE-FB1-18 5A, PAYLOAD III MODULE	5,33
FUSE-FB1-19 5A, PAYLOAD III MODULE	5,33
FUSE-FB2-1 15A, ENGINE SERVICE LTS	6
FUSE-FB2-2 15A, FOG, LAD, ROT BEA LTS	6
FUSE-FB2-3 15A, HAZARD LIGHTS	6
FUSE-FB2-4 10A, INTERFACE MODULE	6
FUSE-FB2-5 10A, VHMS & ORBCOM MODULES	6
FUSE-FB2-6 20A, MODULAR MINING HUB	6
FUSE-FB2-7 15A, DISPLAY MODULE	6
FUSE-FB2-8 10A, INTERFACE MODULE PWR 2	6
FUSE-FB2-9 15A, OIL RESERVE PUMP	6
FUSE-FB2-10 15A, RESERVE CONTROL MOD.	6
FUSE-FB2-11 20A, HYD BLEEDN POWER	6
FUSE-FB2-12 10A, ENG. LOAD MOD PWR	6
FUSE-FB2-13 10A, KEY SWITCH	11
FUSE-FB2-17 20A, ENGINE ECM POWER	6
FUSE-FB2-18 20A, ENGINE ECM POWER	6
FUSE-FB2-19 20A, ENGINE ECM POWER	6
FUSE-FB2-20 20A, ENGINE ECM POWER	6
FUSE-FB3-1 15A, CAB DRIVE SYS POWER	5
FUSE-FB3-2 10A, AUTO LUBE POWER	5
FUSE-FB3-3 15A, GE PWR INTERFACE MOD	5
FUSE-FB3-4 20A, OP-CAB SEAT POWER	5
FUSE-FB3-17 10A, 12V. POWER PLUGS	6
FUSE-FB3-18 20A, R.H. WINDOW SW.	6
FUSE-FB3-19 20A, L.H. WINDOW SW.	6

COMPONENT	SHEET
FUSE-FB4-1 10A, BRAKE CIRCUITS	5
FUSE-FB4-2 5A, PLM III	5,33
FUSE-FB4-3 5A, INTERFACE MODULE	5
FUSE-FB4-4 10A, VHMS MODULE	5
FUSE-FB4-5 5A, MODULAR MINING HUB	5
FUSE-FB4-6 5A, DISP MODULE	5
FUSE-FB4-7 15A, HYD BLEEDN PWR	5
FUSE-FB4-8 10A, SWITCH LED POWER	5
FUSE-FB4-9 1A, SEL SW. POWER	5
FUSE-FB4-17 5A, GAUGE VOLTAGE	6
FUSE-FB4-18 5A, PEDAL VOLTAGE	6
FUSE-FB4-19 5A, ENGINE INTERFACE	6
FUSE-FH1 1A, LEFT REAR WHL SPD SENSOR	17
FUSE-FH2 1A, RIGHT REAR WHL SPD SENSOR	17
FUSE-FH3 1A, LEFT FRT WHL SPD SENSOR	17
FUSE-FH4 1A, RIGHT FRT WHL SPD SENSOR	17
G.E.CONTROL PANEL	5,9,12,16, 17,26,29,33
G.E.POWER SUPPLY	5
HORN BUTTON	20
HORN FORWARD *1	20
HOT START HEATERS	9
HOT START THERMOSTATS	9
HYDRAULIC CAB SERVICE LIGHT *1	20
HYDRAULIC CAB SERVICE LIGHT *2	20
IM BUS	31
INCLINOMETER	33
JUNCTION BLOCK 3A (JB3A)	16,28
JUNCTION BLOCK 4A (JB4A)	19,20
JUNCTION BLOCK 4B (JB4B)	22
JUNCTION BLOCK 4C (JB4C)	14,21
JUNCTION BLOCK 4D (JB4D)	13
JUNCTION BLOCK 4E (JB4E)	13
JUNCTION BLOCK 4H (JB4H)	13
JUNCTION BLOCK 4I (JB4I)	25
JUNCTION BLOCK 6A (JB6A)	21,22
JUNCTION BLOCK 6B (JB6B)	21
JUNCTION BLOCK 6G (JB6G)	13
LEFT DECK JUNCTION BOX	33
LEFT DECK PAYLOAD LIGHTS	33
LIGHT, CAB DOME	23
LIGHT, DOME *1, 2, 3, 4 & 5	5
LIGHT, DYNAMIC RETARD	19
LIGHT, LEFT DECK BACK UP	19
LIGHT, LEFT DIAGONAL LADDER	19
LIGHT, LEFT ENGINE SERVICE *1	19
LIGHT, LEFT ENGINE SERVICE *2	19
LIGHT, LEFT FRONT TURN/CLEARANCE	24
LIGHT, LEFT HAND HI-MTD LO BEAM HDLT	23
LIGHT, LEFT HAND HI-MTD HI BEAM HDLT	23
LIGHT, LEFT HIGH BEAM HEADLIGHT	23
LIGHT, LEFT LOW BEAM HEADLIGHT	23
LIGHT, LEFT REAR BACK UP	19
LIGHT, LEFT FOG	23
LIGHT, LEFT REAR FOG	23
LIGHT, LEFT REAR RETARD	19
LIGHT, LEFT TURN/CLEARANCE	24
LIGHT, LEFT TAIL/STOP	13
LIGHT, RIGHT DECK BACK UP	19
LIGHT, RIGHT DIAGONAL LADDER	19
LIGHT, RIGHT ENGINE SERVICE *1	19
LIGHT, RIGHT ENGINE SERVICE *2	19
LIGHT, RIGHT FRONT TURN/CLEARANCE	24
LIGHT, RIGHT HAND HI-MTD LOW BEAM HDLT	23
LIGHT, RIGHT HAND HI-MTD HI BEAM HDLT	23
LIGHT, RIGHT HIGH BEAM HEADLIGHT	23
LIGHT, RIGHT LOW BEAM HEADLIGHT	23
LIGHT, RIGHT REAR BACK UP	19
LIGHT, RIGHT FOG	23
LIGHT, RIGHT REAR FOG	23
LIGHT, RIGHT REAR RETARD	19
LIGHT, RIGHT TURN/CLEARANCE	24
LIGHT, RIGHT TAIL/STOP	13
LIGHT, SERVICE BRAKE (CAB ROOF)	13

COMPONENT	SHEET
MODULAR MINING COMM PORT	27,33
MODULE, CUMMINS ECM	30
MODULE, HEAT & A/C	25
MODULE, INTERFACE	29,30,31,32
MODULE, ORBCOM	27
MODULE, VHMS	27,30
MODULE, WINDSHLD WIPER DEL. TIMER	21
MODULE, WINDSHLD WASH/WIPE DEL. TIMER	21
MOTOR, LEFT WINDOW	21
MOTOR, RIGHT WINDOW	21
OPERATOR CAB DIAGNOSTIC CENTER	28
PAYLOAD METER	30,33
POWER PLUGS, 12V	6
PROPULSION ALTERNATOR	17
PUMP, OIL RESERVE CIRC.	10
PUMP, PRE-LUBE HI VOLUME	12
QSK ECM	7,8
RB1 K1 RELAY (LEFT TURN SIGNAL)	24
RB1 K2 RELAY (RIGHT TURN SIGNAL)	24
RB1 K3 RELAY (CLEARANCE LIGHT)	24
RB1 K4 RELAY (FLASHER)	24
RB3 K1 RELAY (MANUAL BACK UP LTS)	19
RB3 K2 RELAY (STOP LIGHT)	13
RB3 K3 RELAY (RETARD LIGHT)	19
RB4 K1 RELAY (PK BRAKE STATUS)	8
RB4 K3 RELAY (HORN)	20
RB4 K4 RELAY (BODY UP)	16
RB5 K1 RELAY (LEFT LOW BEAM HEADLT)	23
RB5 K2 RELAY (RIGHT LOW BEAM HDLT)	23
RB5 K3 RELAY (LFT HI BEAM HDLT)	23
RB5 K4 RELAY (RIGHT HI BEAM HEADLT)	23
RB6 K1 RELAY (BAXK UP HORN)	19
RB6 K2 RELAY (ENGINE INTERLOCK)	8
RB6 K4 RELAY (STEER ACCUM BLDN SOL)	15
RB6 K5 RELAY (ETHER START CONTROL)	10
RB6 K6 RELAY (AUTO LUBE)	11
RB7 K1 RELAY (FORWARD, REVERSE)	14
RB7 K2 RELAY (ENG RUN OIL PRESS SW)	14
RB7 K3 RELAY (BRAKE LOCK SW)	14
RB7 K4 RELAY (BRAKE LOCK SW)	14
RB7 K5 RELAY (SONALERT)	29
RB7 K7 RELAY (PARK BRAKE SOL)	14
RB8 K1 RELAY (TCI 100%)	33
RB8 K2 RELAY (TCI 70%)	33
RB8 K3 RELAY (SHUTTER CONTROL)	10
RB8 K4 RELAY (PLM LIGHTS)	33
RB8 K5 RELAY (SHUTTER CONTROL)	10
RB8 K6 RELAY (RED LIGHT)	33
RB8 K7 RELAY (AMBER LIGHT)	33
RB8 K8 RELAY (GREEN LIGHT)	33
RB9 K1 RELAY (IN START CKT)	12
RB9 K2 RELAY (BRAKE CONTROL)	13
RB9 K4 RELAY (BRAKE CONTROL)	13
RB9 K5 RELAY (KEY SW START INTERLOCK)	10
REAR JUNCTION BOX	33
RELAY BOARD *1	6,22,24
RELAY BOARD *3	5,13,19,22
RELAY BOARD *4	5,6,8,20,22
RELAY BOARD *5	6,22
RELAY, CONTROL POWER	5
RELAY, ENGINE START	12
RELAY, ENGINE START *1	12
RELAY, ENGINE START *2	12
RELAY, GROUND LEVEL POWER	11
RELAY, KEYSWITCH POWER	5,11
RELAY, PRELUBE (MPRR)	12
RELAY, RADIO	22
RELAY, TIMED ENG SHUTDOWN	11
RELAY, WINDSHLD WIPER LOW	21
RELAY, WINDSHLD WIPER HIGH	21
RELAY, 12V. POWER	5,6

COMPONENT	SHEET
RESISTOR, (R3,R4,R5,R18)	7
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