CEBM015801

Shop Manual

930E-3SE

DUMP TRUCK

SERIAL NUMBERS **A30366 & UP**

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Table 3: Chassis Fault Codes (continued)					
VHMS Fault Code	VHMS Fault Description	Source	Sent via OrbComm	Snapshot Trigger	Model Notes
#A190	Auto Lube Pressure Warning	IM	X		All
#A193	High Hydraulic Tank Oil Temp	IM	X	X	730E, 830AC, 830E
#A194	High FL Brake Oil Temp	IM	X	X	930E
#A195	High FR Brake Oil Temp	IM	X	X	930E
#A196	High LR Brake Oil Temp	IM	X	X	930E
#A197	High RR Brake Oil Temp	IM	X	X	930E
#A198	Hoist Pressure 1 Sensor High	IM			All
#A199	Hoist Pressure 2 Sensor High	IM			830AC, 830E, 930E
#A200	Steering Pressure Sensor High	IM			All
#A201	Brake Pressure Sensor High	IM			All
#A202	Hoist Pressure 1 Sensor Low	IM			All
#A203	Hoist Pressure 2 Sensor Low	IM			830AC, 830E, 930E
#A204	Steering Pressure Sensor Low	IM			All
#A205	Brake Pressure Sensor Low	IM			All
#A206	Ambient Temperature Sensor High	IM			All
#A207	Ambient Temperature Sensor Low	IM			All
#A212	Bad Truck Speed Signel	IM			830AC
#A213	Park Brake Not Set When Expected	IM			830AC
#A214	Park Brake Not Released When Expected	IM			830AC
#A216	Brake Auto Apply Circuit Fault	IM			830AC
#A225	Motor Temperature High	IM/GE	X		730E, 830E
#A226	Motor Blower Off	IM/GE	X		730E, 830E
#A227	Diode Fault	IM/GE	X		730E, 830E
#A228	Electric Drive System Fault	IM/GE	X		730E, 830E
#A229	Ground Fault	IM/GE	X		730E, 830E
#A230	Park Brake Request While Moving	IM			
#A240	IM Key Switch Power Lost	IM			
#A250	Low Battery Voltage - Engine Off	IM			
#A257	Payload CAN/RPC Not Connected	IM			
#A260	Park Brake Failure - Application While Moving	IM			
#A350	Output Overload 1B	IM			All
#A351	Output Overload 1E	IM			830AC

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OIL AND NITROGEN SPECIFICATIONS CHARTS

HYDRAIR® II OIL SPECIFICATIONS			
Ambient Temperature Range	**Part No.**	**Approved Sources**	
-34.5°C & above (-30°F & above)	VJ3911 (need to add 6% of AK3761)	Mobil 424 Mobil D.T.E. 15 Texaco TDH Oil AMOCO ULTIMATE Motor Oil 5W-30	Sunfleet TH Universal Tractor Fluid Chevron Tractor Hydraulic Fluid Conoco Power Tran III Fluid Petro Canada Duratran Fluid Shell Canada Donax TDL
	AK4063	Suspension Oil (premixed with 6% Friction Modifier)	5 Gallon container
	AK4064		55 Gallon container
-48.5°C & above (-55°F & above)	VJ5925 (need to add 6% of AK3761)	Emery 2811, SG-CD, 5W-30 Mobil Delvac I, 5W-30	Petro Canada Super Arctic Motor Oil, 0W-30 Conoco High Performance Synthetic Motor Oil, 5W-30
	AK4065	Suspension Oil (premixed with 6% Friction Modifier)	5 Gallon container
	AK4066		55 Gallon container
NOTE: *VJ3911 and VJ5925 oils are not compatible and must not be mixed in a suspension. VJ3911 and VJ5925 oils are supplied in 5 gallon (19 Liter) cans.*			

FRICTION MODIFIER	FRICTION MODIFIER Mixing Instructions (94% Suspension Oil, 6% Friction Modifier)	
Part Number	**Suspension Oil**	**Amount of Friction Modifier to add**
AK3761 (5 Gallon container of 100% Friction Modifier)	1 gallon of suspension oil	add 7.7 oz.
	5 gallons of suspension oil	add 38.4 oz.
	55 gallons of suspension oil	add 3.3 gal.

NITROGEN GAS (N_2) SPECIFICATIONS		
	Property	**Value**
Nitrogen gas used in HYDRAIR® II Suspension Cylinders must meet or exceed CGA specification G-10.1 for Type 1, Grade F Nitrogen Gas	Nitrogen	99.9% Minimum
	Water	32 PPM Maximum
	Dew Point	-55°C (-68°F) Maximum
	Oxygen	0.1% Maximum

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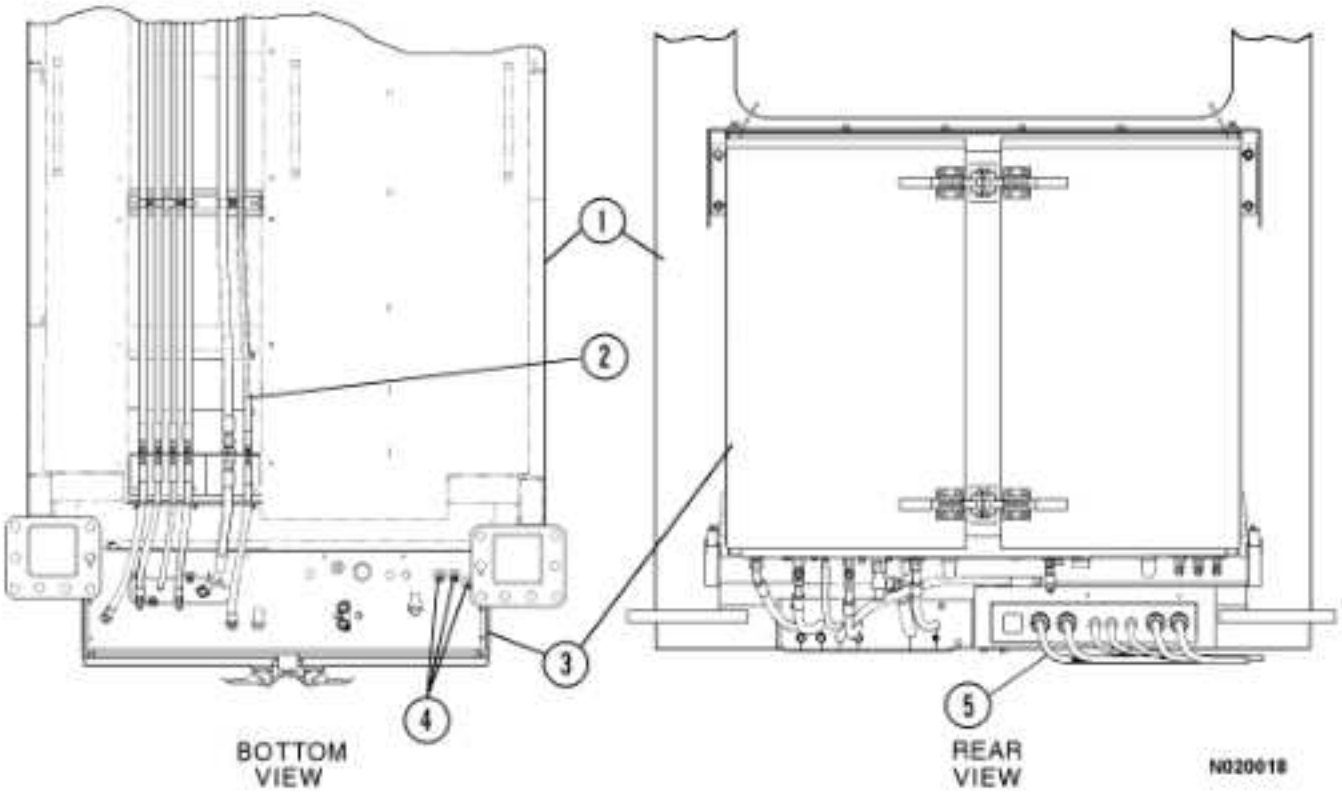


FIGURE 2-2. CAB HYDRAULIC AND ELECTRICAL CONNECTIONS

1. Cab
2. Hydraulic System Hoses
3. Hydraulics Components Cabinet
4. Electrical Harnesses

4. Close heater shutoff valves located at the water pump inlet housing on the right side of the engine and at the water manifold. Disconnect heater hoses at each valve and drain coolant into a container.
5. Remove clamps and heater hoses from fittings underside of deck, below heater. Cap fittings and plug hoses.
6. Remove air cleaner restriction indicator hoses near front, inside corner under cab.

⚠ IMPORTANT ⚠

Federal regulations prohibit venting air conditioning system refrigerants into the atmosphere. An approved Recovery/Recycle Station must be used to remove the refrigerant from the air conditioning system.

7. Evacuate air conditioning system:
   a. Attach a recycle/recovery station at the air conditioning compressor service valves. (Refer to Section N, Operator Comfort for detailed instructions.)
   b. Evacuate air conditioning system refrigerant.
   c. Remove the air conditioner system hoses which are routed to the bottom of the cab from the receiver/drier and compressor. Cap hoses and fittings to prevent contamination.
8. Attach a lifting device to the lifting eyes provided on top of the cab.

⚠ WARNING

The cab assembly weighs approximately 5000 lbs. (2270 kg). Be sure lifting device is capable of lifting the load.

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Note: There is no lower end bearing in this new steering column assembly, therefore the male end of the shaft will have to be guided into the mating female part of the steering control unit (7).

6. Without removing capscrews (10) from the holes, move the steering control unit (7) into place and start each of the capscrews.
7. Tighten the four capscrews (10) to standard torque.
8. Check for proper steering wheel rotation without binding. Be certain wheel returns to neutral after rotating 1/4 turn left and right.
9. If disconnected, re-connect the hoses to the steering control unit.
10. Connect the steering column wire harness(es) to the harness(es) in the cab.
11. Install access and trim covers.

Steering Wheel Removal

1. Park the truck on a hard, level surface. Apply the parking brake and turn the key switch to OFF. Chock the wheels.
2. Turn off the battery disconnect switch to remove battery power from the horn circuit.
3. Use a pocket screwdriver to pry horn button (4, Figure 5-2) from steering wheel (1).
4. Disconnect horn wire (3) and set the horn button aside.
5. Remove nut (2).
6. Use a marker to make alignment marks on the steering wheel and the shaft.
7. Pull the steering wheel from the column. If the steering wheel will not slide off the shaft it may be necessary to install a puller into the tapped holes (5/16" - 24NF) in the steering wheel.

Steering Wheel Installation

1. Place steering wheel (1, Figure 5-2) into position on the steering column shaft while guiding horn wire (3) through the access hole in the steering wheel. Align the marks on the steering wheel and the shaft that were made during disassembly. Align the serrations and push the steering wheel onto the shaft.
2. Install nut (2). Tighten the nut to **81 ± 7 N·m (60 ± 5 ft lb)**.
3. Connect horn wire (3) to horn button (4).
4. Install the horn button onto the steering wheel. Turn on the battery disconnect switch and verify that the horn functions properly.



FIGURE 5-2. STEERING WHEEL RETAINER NUT

1. Steering Wheel
2. Nut
3. Horn Wire
4. Horn Button

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COMPONENT	SHEET
ACCELERATOR PEDAL	20
AID MODULE	11,12,13,14
AID SONALERT (CAB OVERHEAD)	11
ALTERNATOR AMB. TEMP.	09
ANTENNA, RADIO	21
BATTERY CHARGING ALT.	26
BATTERY CONTROL	09
BATTERY CRANKING	09
BATTERY ISOLATION DIODES	26
BATTERY SYSTEM	26
BRAKE SONALERT	14
CB-50A, 12V POWER	10,26
CB-70A, 24/12V CONVERTER	10,26
CB 11 - BACK-UP HORN & LTS (RB3)	10
CB 13 - CLEARANCE LIGHTS (RB1)	22
CB 14 - TURN SIGNAL FLASHER	22
CB 15 - TAIL LIGHTS (RB1)	22
CB 16 - RETARD LIGHTS (RB3)	10,19
CB 17 - MANUAL BACK-UP LTS (RB3)	19
CB 18 - STOP LIGHTS (RB3)	10,12
CB 19 - BACKUP LTS & HORN (RB3)	19
CB 20 - ENGINE CONTROL PWR.(RB4)	10,26,27
CB 21 - SERV, LTS, HRN, SOL. (RB4)	10
CB 22 - ENGINE RUN RELAY	10,27
CB 23 - HDLGHTS LFT LO BEAM (RB5)	10,23
CB 24 - HDLGHTS RT LO BEAM (RB5)	10,23
CB 25 - HDLGHTS LFT HI BEAM (RB5)	10,23
CB 26 - HDLGHTS RT HI BEAM (RB5)	10,23
CB 27 - HDLGHTS & DASH LTS (RB5)	10,23
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CONVERTER 24/12V	10,26
DASH LIGHT RHEOSTAT	24
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DBI - DIODES D21,D22,D23	11
DBI - PI2 (20 OHM)	09
DBI - D8	27
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DBI- 47K RESISTOR	27
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DIODE, D2- NO PROPULSION LIGHT	13
DIODE, D3- PROP. SYS CAUTION LT	13
DIODE, D4- BRAKE HYD TEMP HI LT	14
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DIODE, D11- LINC LUBE LO PRESS LT	15
DIODE, D12- SPARE L5 LIGHT	13
DIODE, D14- HOIST LIMIT SOLENOID	15
DIODE, D15- STEER. ACCUM BLEED DN	18
DIODE, D25- FORWARD HORN #1	18
DIODE, D27- BRAKE LOCK SWITCH	18
DIODE, D31- PROP. SYS TEMP CAUT LT	13
DIODE, D32- PROP. SYS CAUTION LT	13
DIODE, D33- HI HYD. OIL TEMP LT	14
DIODE, D34- LO HYD. TANK LEVEL LT	14
DIODE, D35- LOW FUEL LIGHT	14
DIODE, D36- BODY UP LIGHT	12
DIODE, D37- CHECK ENGINE LIGHT	12
DIODE, D38- LINC LUBE	15
DIODE, D40- STARTER FAILURE LIGHT	13
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DIODE, DR3- PARK BRAKE SOLENOID	26
DIODE, DR4- PARK BRAKE SOLENOID	26
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FUSE-FBI-5 10A, HOIST SOLENOID	10,15
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FUSE-FBI-7 10A, ENGINE OPTIONS	10,16
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FUSE-FBI-9 10A, ENG START FAIL.	10
FUSE-FBI-10 10A, ENG.SHUTTERS	10
FUSE-FBI-11 10A, DOME LIGHT SW.	10
FUSE-FBI-13 5A, GAUGE VOLTAGE	10
FUSE-FBI-14 5A, PEDAL VOLTAGE	10
FUSE-FBI-15 5A, ENGINE INTERFACE	10
FUSE-FBI-23 15A, CAB DRIVE SYS. PWR	10,20
FUSE-FBI-24 10A, AUTO LUBE TIMER	10,15
FUSE-FB2-1 15A, DOME,FOG,LADDER LTS	10
FUSE-FB2-2 15A, SERVICE LIGHTS	10,23
FUSE-FB2-13 10A, L. FRT WHEEL SPS	10
FUSE-FB2-14 10A, R. FRT WHEEL SPS	10
FUSE-FB2-17 10A, 12V POWER PLUGS	10,21
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INDICATOR, LINK VOLTAGE	14
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LIGHT, AIR RESTRICTION GAUGE	24
LIGHT, BODY UP	12
LIGHT, BRAKE HYD. TEMP. HIGH	14
LIGHT, BRAKE HYD. TEMP. GAUGE	24
LIGHT, CHECK ENGINE	12
LIGHT, ENGINE STOP SWITCH	24
LIGHT, OVERRIDE SWITCH	24
LIGHT, RETARD SPEED CONTROL SWITCH	24
LIGHT, DASH #1	24
LIGHT, DASH #2	24

COMPONENT	SHEET
LIGHT, DASH #3	24
LIGHT, DECK #1	18
LIGHT, DECK #2	18
LIGHT, DIAGONAL LADDER #1	18
LIGHT, DIAGONAL LADDER #2	18
LIGHT, DIGITAL SPEEDOMOTER	24
LIGHT, DIGITAL TACH	24
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LIGHT, LEFT FRONT TURN/CLEARANCE	22
LIGHT, LFT HAND HI-MTD LO BM HOLT	23
LIGHT, LFT HAND HI-MTD HI BM HOLT	23
LIGHT, LEFT HIGH BEAM	23
LIGHT, LEFT LOW BEAM HEADLIGHT	23
LIGHT, LEFT PLATFORM	18
LIGHT, LEFT REAR BACK UP	19
LIGHT, LEFT REAR RETARD	19
LIGHT, LEFT REAR TURN/CLEARANCE	22
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LIGHT, LEFT TURN INDICATING	22
LIGHT, LINCOLN LUBE LOW PRESSURE	15
LIGHT, OIL PRESSURE GAUGE	24
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LIGHT, RETARD SPEED CONTROL	13
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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 HOLT	23
LIGHT, RGT HAND HI-MTD HI BM HOLT	23
LIGHT, RIGHT HIGH BEAM	23
LIGHT, RIGHT LOW BEAM HEADLIGHT	23
LIGHT, RIGHT PLATFORM	18
LIGHT, RIGHT REAR BACK UP	19
LIGHT, RIGHT REAR RETARD	19
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RB1 K3 RELAY (CLEARANCE LIGHT)	22
RB1 K4 RELAY (FLASHER)	22
RB2 K1 RELAY (PK BRAKE PRESS SW)	27
RB3 K1 RELAY (MANUAL BACKUP LTS)	19
RB3 K2 RELAY (STOP LIGHT)	12
RB3 K3 RELAY (RETARD LIGHT)	19
RB4 K2 RELAY CRANK (INTERLOCK)	26
RB4 K3 RELAY (HORN)	18
RB4 K4 RELAY (BODY UP)	12
RB5 K1 RELAY (LEFT LOW BEAM HOLT)	23
RB5 K2 RELAY (RIGHT LOW BEAM HOLT)	23
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RB6 K1 RELAY (BACK UP HORN)	19
RB6 K2 RELAY (ENGINE INTERLOCK)	27
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COMPONENT	SHEET
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RB7 K2 RELAY (AUTO ETHER START)	7
RB7 K3 RELAY (LINC LUBE TIMER)	15
RB7 K4 RELAY (LINC LUBE TIMER)	15
RB7 K5 RELAY (LINC LUBE SOLENOID)	15
RB7 K6 RELAY (STARTER FAIL. REL #2)	13
RB7 K7 RELAY (STARTER FAIL. REL #1)	13
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RD2- RESISTOR/DIODE MODULE	12
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RELAY, 12V POWER	10,21
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RELAY 2 (PLM3 AMBER LIGHTS)	28
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RELAY BOARD 3	11
RELAY BOARD 4	11
RELAY BOARD 5	11
RELAY, BRAKE WARNING	11
RELAY, CONTROL POWER	10
RELAY, ENGINE START	26
RELAY, GENERATOR FIELD	10
RELAY, KEYSWITCH POWER	10,25
RELAY, KONTROL POWER	08,10
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COMPONENT	SHEET
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SWITCH, BRAKE DIFF PRESS (L/R REAR)	11
SWITCH, BRAKE FRT (L/R) DIFF PRESS	11
SWITCH, BRAKE PRESSURE	11
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SWITCH, COOLANT LEVEL	27
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