CEBM025802

Shop Manual

860E-1KT

DUMP TRUCK

SERIAL NUMBERS A30036 - A30100

KOMATSU®

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Steering circuit components

Steering control unit

Steering control unit (1, Figure 10-3) is mounted inside the cab and is directly coupled to the lower end of the steering column.

Operation of the steering control unit is both manual and hydraulic in effect. This component incorporates a hydraulic control valve. Steering effort applied to the steering wheel by the operator actuates the valve, which in turn directs hydraulic oil through the flow amplifier valve to the steering cylinders to provide the operator with power steering.

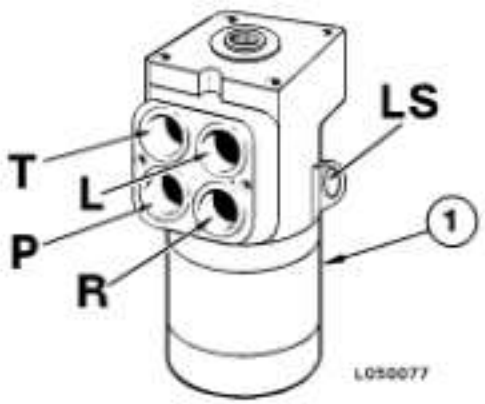


FIGURE 10-3. STEERING CONTROL UNIT

1. Steering Control Unit
"T": Tank Port
"L": Left Steer Port
"P": Pressure Supply Port
"R": Right Steer Port
"LS": Load Sense Port

High pressure filter

High pressure filter (9, Figure 10-1) filters oil for the steering and brake circuits.

If the filter element becomes restricted, a warning on the instrument panel is activated at 241 kPa (35 psi) differential. Oil will start to bypass the element when the pressure differential exceeds 345 kPa (50 psi).

Steering accumulators

Steering accumulators (3, Figure 10-1) are mounted on the left side of the truck. Each accumulator has a capacity of 62 liters (16.5 gallons), and each is precharged to 9 650 kPa (1,400 psi) with pure dry nitrogen.

Oil entering the accumulators compresses the nitrogen. The nitrogen pressure increases directly with steering circuit pressure. When steering circuit pressure reaches 21 029 kPa (3,050 psi), the unloader valve will unload the pump. The accumulators will contain a quantity of oil, under pressure and held by check valves in the bleeddown manifold, that will be available for steering the truck. When system pressure drops to 18 960 kPa (2,750 psi), the pump output will again increase to refill the accumulators and increase the steering system pressure. The accumulators also provide oil for a limited period of time to be used in case the steering/brake pump becomes inoperative.

A pressure switch located in the top of each accumulator monitors the precharge pressure when the key switch is turned ON before the engine is started. If the nitrogen pressure drops below 7 600 kPa (1,100 psi), a warning on the instrument panel is activated. A latching circuit prevents the warning from turning off when the engine is started and steering system pressure compresses the remaining nitrogen in the accumulator.

⚠WARNING

Do not operate the truck with a precharge pressure of less than 7600 kPa (1100 psi) in the accumulator. Low nitrogen pressure may not provide an adequate supply of steering system oil in some emergency conditions.

If the low precharge warning remains active, wait approximately three minutes after the steering accumulators are completely depressurized to check the accumulator precharge pressure and recharge the accumulator, if necessary.

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Internal circuit diagram

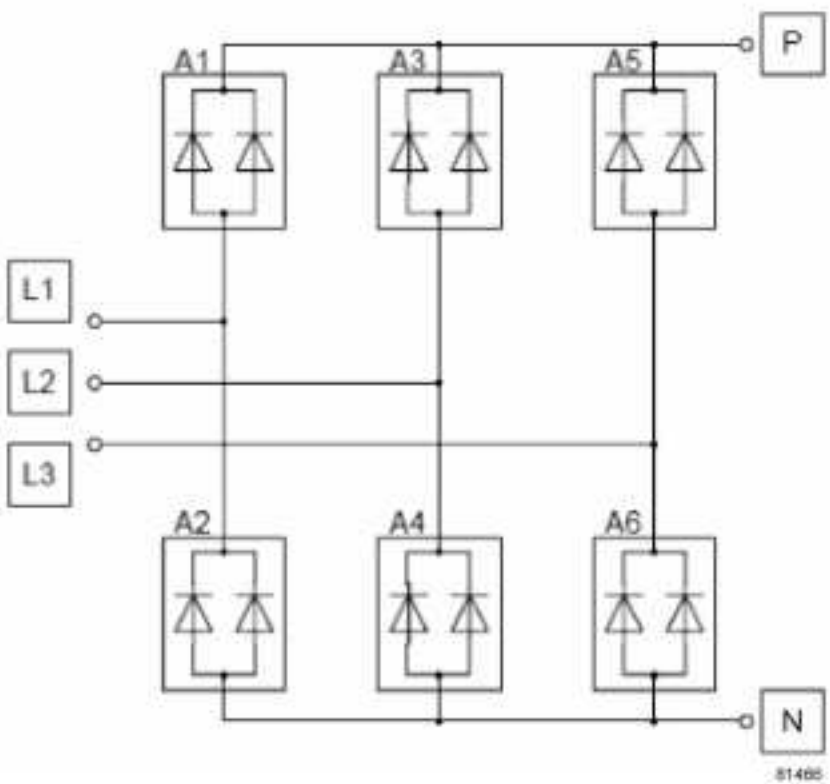


FIGURE 10-84. INTERNAL CIRCUIT DIAGRAM

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Fault Code A250: Battery voltage is low with the truck parked

Operator Action	Charge Batteries
Fault Code	A250
Description	Battery voltage is low with the truck parked.
Fault Conditions	Sets if battery voltage with the engine not running, truck not moving, crank state not sensed, and not in steering bleed is below 23 volts for 5 seconds. Engine not running is less than 300 rpm. Truck not moving is truck speed equal to zero or if truck speed is bad, park brake is set. Crank state sensed is battery less than 18 volts for 1 sec with engine less than 600 rpm. Park brake set is defined as closure of all four park brake set pressure switches and opening of all four park brake release pressure switches. Resets if voltage recovers to 25.5 volts.
Operator Alerting System Response	Sound Buzzer Flash IM Warning Indicator Display Operator Action: CHARGE BATTERIES Display Fault Description: BATTERY VOLTS LOW Display Fault Code: A250
Resulting Problem(s)	Voltage may continue to drop and cause improper operation of the many electrical controls on the truck.
Related Information	A laptop running "IM Realtime Data Monitor" software may be required to resolve this fault.

Table

1. The primary correction for this fault is to charge the batteries.
2. 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).
3. 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.
4. 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)
Battery Voltage, 24 Volt (IM 1A)	<23.0 volts: Too low to continue operation. >23.0 volts: OK to continue operation. <18 volts: cranking is sensed. Fault(s): A155
Engine Speed [RPM]	Less than 600 RPM: engine not being cranked Less than 300 RPM: engine is not running Greater than 300 RPM for 4 seconds: engine is running
Truck Speed [kph]	0: truck is not moving Greater than 0: truck is moving Fault(s): A233

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4. Loosen, but do not remove, nine capscrews (7) that secure each inlet box (8) to the motor mounting frame.

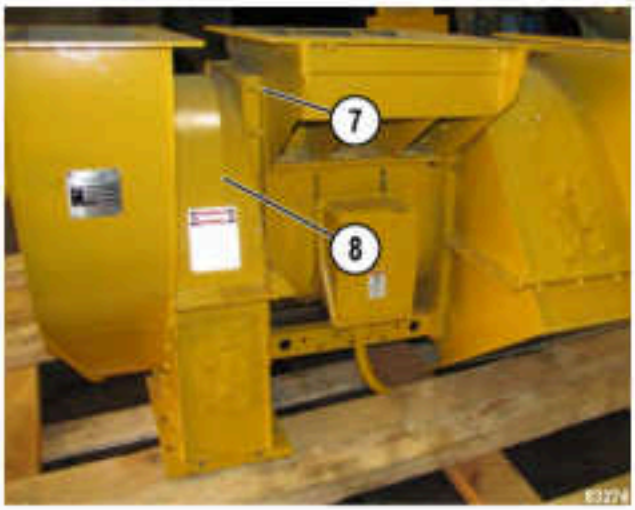


FIGURE 50-5. LOOSENING THE FAN HOUSING

7. Capscrew 8. Inlet Box

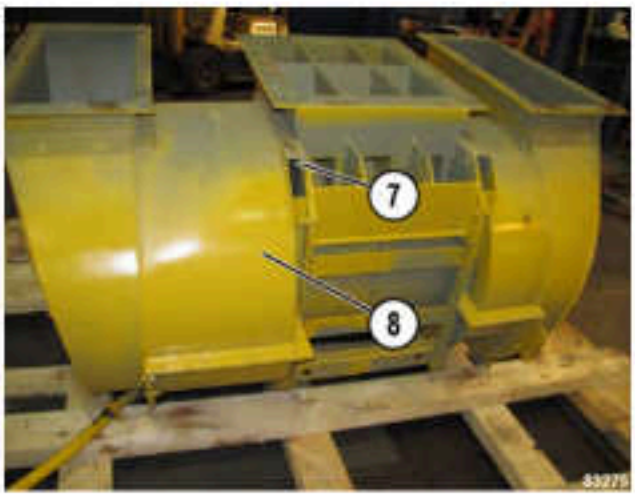


FIGURE 50-6. LOOSENING THE FAN HOUSING

7. Capscrew 8. Inlet Box

5. Remove any clamps (9) that are retaining the electrical harness to the inlet box.

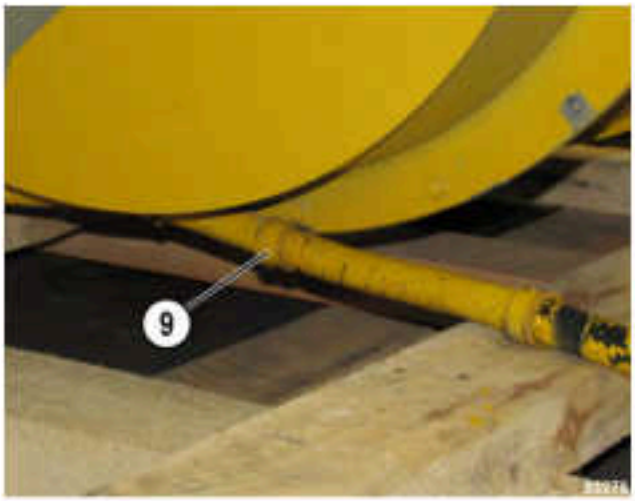


FIGURE 50-7. REMOVING HARNESS CLAMPS

9. Clamp

6. Attach a suitable lifting chain and hoist to lifting eyes (10). Lift the entire main blower assembly and remove the pallet.



FIGURE 50-8. LIFTING THE BLOWER ASSEMBLY

10. Lifting Eyes

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FIGURE 30-7. Orbcomm SATELLITE FOOTPRINT (ORBITRON VIEW)

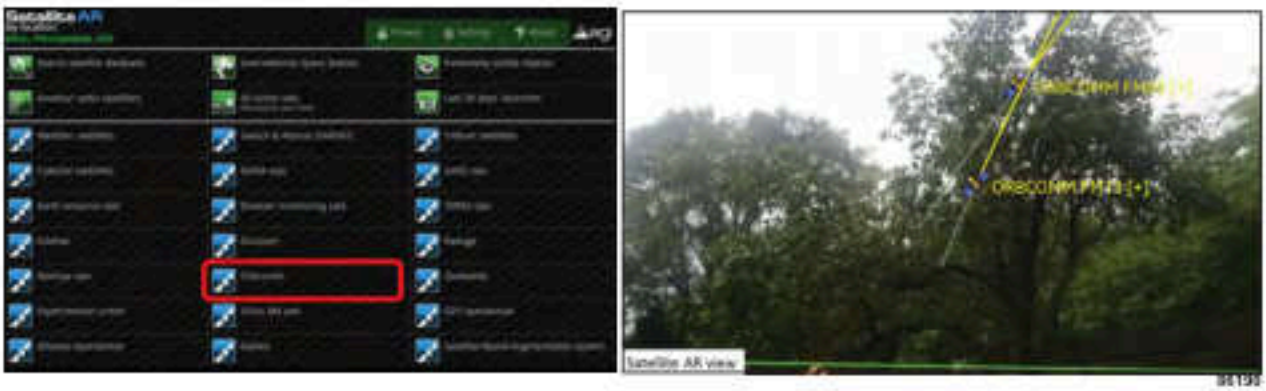
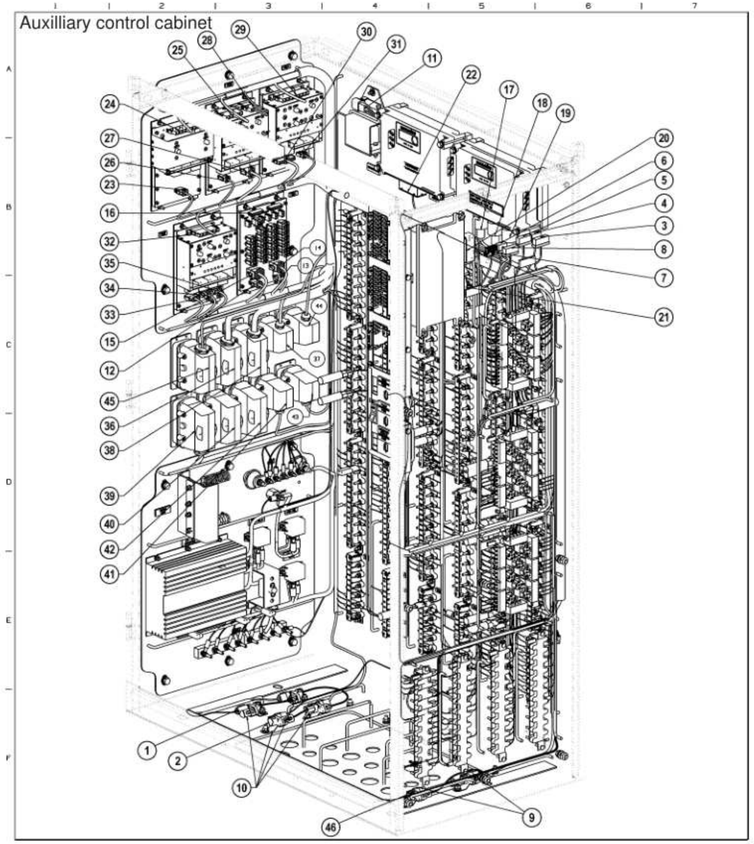
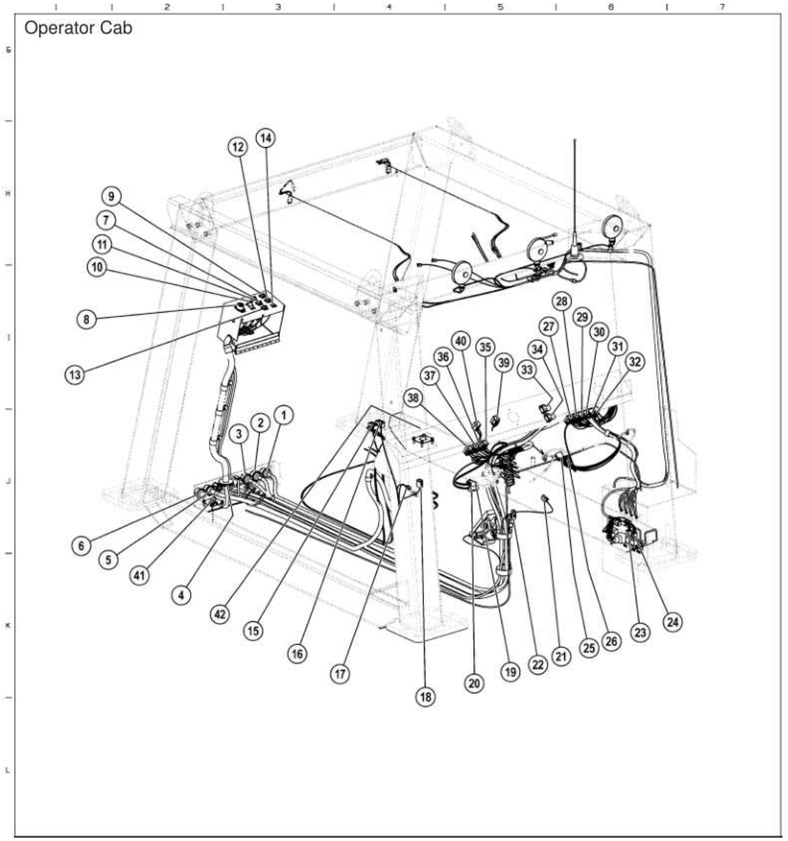
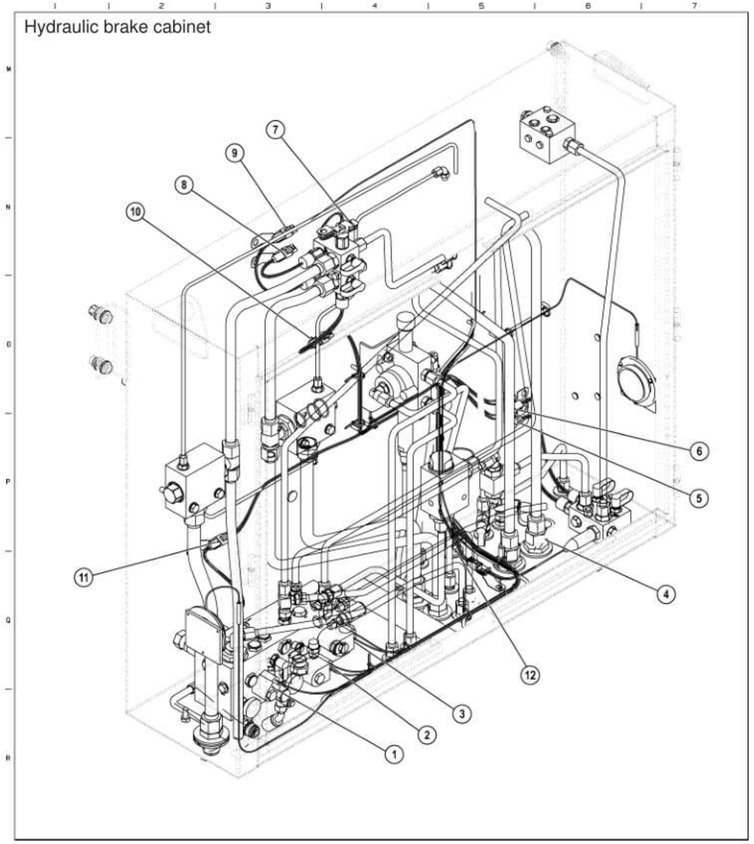


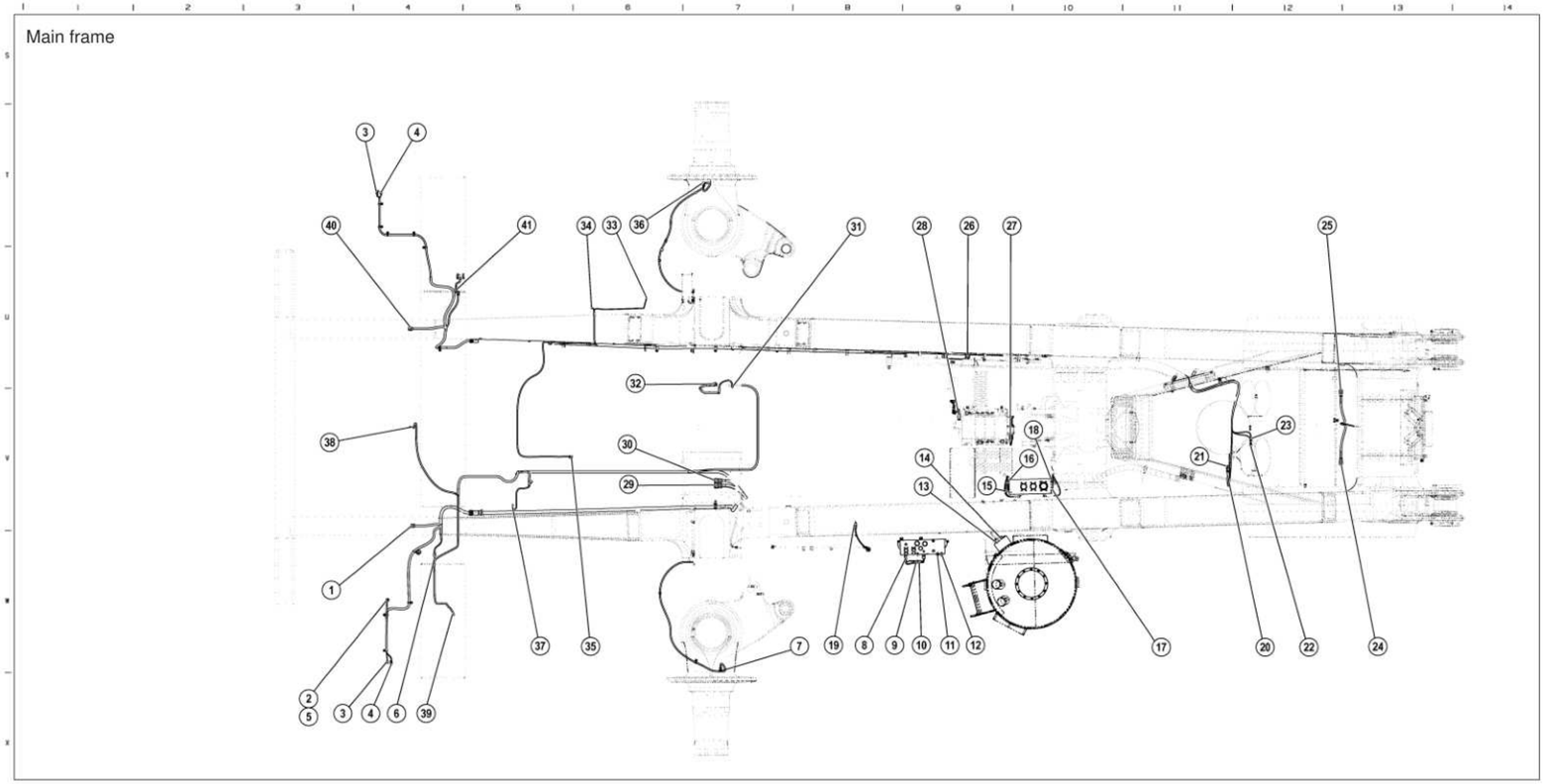
FIGURE 30-8. SATELLITE AR HOME SCREEN AND AUGMENTED CAMERA VIEW

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Connector No.	Number of pins	Description	Location	Item No.
AAT	2	Ambient air temperature sensor connector	W8	19
ABA		Auto brake apply solenoid connector	R4	1
BLS		Brake lock solenoid connector	R5	3
BPS		Brake pressure sensor connector	Q7	4
CAN1A	3	CAN 1939 - network	F3	10
CN008	5	Wiper relay - high speed	K7	24
CN009	5	Wiper relay - low speed	K6	23
CN01	31	Cab interface - operator controls	J3	1
CN02	31	Cab interface - cab dash	J3	2
CN021	12	Steering column connector	K6	25
CN022	4	Speed control module	K6	26
CN03	31	Cab interface - cab dash	J3	3
CN04	23	Cab interface - cab overhead	K3	4
CN05	3	CAN link connector - dash	K5	22
CN06	18	Cab interface - cab center console	K1	5
CN07	31	Cab interface - cab diagnostic center	J1	6
CN08	8	Shifter connector	K4	18
CN13	3	Retard pedal connector	K5	21
CN14	4	Heater module connector	K5	20
CN16	6	Wiper motor connector	K5	19
CN1XA	24	Drive system interface connector - 1XA	D2	36
CN1XB	10	Drive system interface connector - 1XB	C3	37
CN1XC	10	Drive system interface connector - 1XC	D2	38
CN1XD	46	Drive system interface connector - 1XD	D2	39
CN1XE	46	Drive system interface connector - 1XE	D2	40
CN1XF	10	Drive system interface connector - 1XF	E2	41
CN1XG	46	Drive system interface connector - 1XG	D2	42
CN1XH	10	Drive system interface connector - 1XH	D3	43
CN1XK	10	Drive system interface connector - 1XK	C3	44
CN1XM	46	Drive system interface connector - 1XM	C2	45
CN20	10	Display mode - 1 switch connector	I5	27
CN21	10	Display mode - 2 switch connector	I6	28
CN22	10	Fog light switch connector	I6	29
CN23	10	Backup light switch connector	I6	30
CN24	10	Ladder light switch connector	I6	31
CN240		Brake cabinet wiring connector	Q5	12
CN246	3	Inclinometer connecter - 246	A5	11
CN250	2	Shifter current limit resistor	K3	17
CN252	10	Headlight switch connector	I6	32
CN32	10	Speed control switch connector	I5	35
CN33	10	Traction control switch connector	I4	36
CN34	10	Grid dry control switch connector	I4	37
CN35	10	HI vold DC power switch connector	I4	38
CN36	10	Hazard light switch connector	I5	40
CN39	10	Brake lock switch connector	I5	39
CN501	4	Left wheel speed sensor connector	W8	7
CN502	8	Left frame / hood light connector	W3	1
CN503	5	Left engine service lights connector	X4	6
CN504	5	Right engine service lights connector	T5	41
CN507	4	Right wheel speed connector	T8	36
CN511	5	Auto lube pump connector	X3	2
CN512	3	Auto lube level connector	X3	5
CN515	8	Right frame / hood lights connector	T3	40
CN535	3	Ladder light switch connector	X3, T4	3
CN536	3	Engine shutdown switch connector	X4, T4	4
CN58	10	Right door window motor	K2	41
CN59	10	Left door window motor	K2	42
CN707	2	Left front brake temperature sensor connector	V9	15
CN708	2	Right front brake temperature sensor connector	V10	16
CN709	2	Left rear brake temperature sensor connector	W11	17
CN71	10	Right window switch	K3	15
CN710	2	Right rear brake temperature sensor connector	V10	18
CN711	2	Hydraulic tank temperature sensor connector	V9	14
CN712	3	Hydraulic tank level sensor connector	V9	13
CN72	10	Left window switch	K3	16
CN721	10	Left rear speed sensor connector	W13	24
CN722	10	Right rear speed sensor connector	T12	25
CN730	6	Fuel tank connector	T9	26
CN801	16	Engine sub module connector	V6	29
CN802	3	Engine coolant level switch connector	V3	38

Connector No.	Number of pins	Description	Location	Item No.
CN803	2	Engine temperature sensor connector	W5	37
CN807	5	Pre-lube relay connector	U6	32
CN808	9	Engine ECM - sub module connector	V6	30
CN810	2	Pre-lube pressure switch connector	T8	31
CN812	4	A/C receiver drier switch connector	X4	39
CN825	3	CAN 1939 - CAB	F4	46
CN826	4	Fuel pre-filter engine harness	W6	35
CN850	3	CAN RPC - VHMS	F2	1
CNP1	8	Dash panel - 1 connector	I5	33
CNP2	8	Dash panel - 2 connector	I6	34
DB1P1	3	Diode board 1 connector - P1	C2	12
DB1P2	6	Diode board 1 connector - P2	C3	13
DB1P3	12	Diode board 1 connector - P3	B3	14
DB1P4	15	Diode board 1 connector - P4	C2	15
DB1P5	6	Diode board 1 connector - P5	B3	16
DIAG 1	9	Diagnostic plug - 1 - drive system	H1	7
DIAG 2	6	Diagnostic plug - 2 - quantum	I1	8
DIAG 3	9	Diagnostic plug - 3 - drive system	H1	9
DIAG 4	3	Diagnostic plug - 4 - cense	I1	10
DIAG 5	9	Diagnostic plug - 5 - interface module	H1	11
DIAG 6	9	Diagnostic plug - 6 - VHMS	H3	12
DIAG 7	9	Diagnostic plug - 7 - payload	I1	13
DIAG 8	9	Diagnostic plug - 8 - dispatch	H3	14
EM3	41	Interface module connector 3	A6	19
FPF-LP	2	Fuel pre-filter low pressure connector	T6	33
FPF-WIF	2	Fuel pre-filter water in fuel connector	T6	34
HLS	2	Hoist limit solenoid connector	W9	11
HPS1	2	Hoist pressure sensor - 1	T9	28
HPS2	2	Hoist pressure sensor - 2	T9	27
IM1	41	Interface module connector 1	A5	17
IM2	41	Interface module connector 2	A6	18
LBPS		Low brake pressure switch connector	Q1	11
LFPB-REL		Left front park brake - release pressure switch connector	N2	10
LFPB-SET		Left front park brake - set pressure switch connector	N3	9
LRPB-R	3	Left rear park brake release pressure switch connector	V12	23
LRPB-S	3	Left rear park brake set pressure switch connector	W12	22
LSPSW	3	Low steering pressure switch connector	W9	10
ORBCOMMCNA	14	Orb com connector CN-A	B7	20
ORBCOMMCNB	10	Orb com connector CN-B	C7	21
P04	3	CAN RPC - CAB	F2	2
PBS		Park brake solenoid connector	R4	2
PLMCN264	10	Payload meter connector 264	A5	22
RB1P1	6	Relay board 1 connector - P1	B2	23
RB1P3	10	Relay board 1 connector - P3	A2	24
RB3P1	5	Relay board 3 connector - P1	A2	25
RB3P2	2	Relay board 3 connector - P2	B2	26
RB3P4	9	Relay board 3 connector - P4	A2	27
RB3P5	2	Relay board 3 connector - P4	A2	28
RB4P1	8	Relay board 4 connector - P1	A3	29
RB4P3	8	Relay board 4 connector - P3	A4	30
RB4P4	2	Relay board 4 connector - P4	A4	31
RB5P1	6	Relay board 5 connector - P1	B2	32
RB5P3	4	Relay board 5 connector - P3	C2	33
RB5P4	6	Relay board 5 connector - P4	C2	34
RB5P5	6	Relay board 5 connector - P5	B2	35
RFPB-REL		Right front park brake - release pressure switch connector	M3	7
RFPB-SET		Right front park brake - set pressure switch connector	N2	8
RRPB-R	3	Right rear park brake release pressure switch connector	V11	21
RRPB-S	3	Right rear park brake set pressure switch connector	W12	20
SBDP5		Service brake degrade pressure switch connector	P7	5
SBDPSW	3	Steering bleed down pressure switch connector	W8	8
SBDS	2	Steering bleed down solenoid connector	W8	9
SBPS		Service brake pressure switch connector	P7	6
SPS	2	Steering pressure sensor connector	W9	12
VHMSCN1	20	VHMS connecter - CN1	B7	3
VHMSCN2A	18	VHMS connector - CN2A	B7	4
VHMSCN2B	12	VHMS connector - CN2B	B7	5
VHMSCN3A	18	VHMS connector - CN3A	B7	6
VHMSCN3B	12	VHMS connector - CN3B	C7	7
VHMSCN4A	14	VHMS connector - CN4A	B7	8
VHMSCN4B	10	VHMS connector - CN4B	F6	9

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CONNECTOR TABLE & ARRANGMENT
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