CEBM021404

Shop Manual

860E-1KT

DUMP TRUCK

SERIAL NUMBERS **A30001 - A30003**

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.

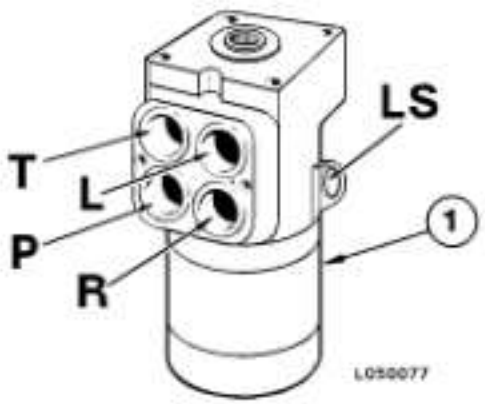


FIGURE 10-3. STEERING CONTROL UNIT

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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Troubleshooting Chart		
Symptom	**Possible Cause**	**Remedy**
No numbers on remote display.	No power to remote display.	Turn power OFF and back ON. The remote display should show revision number (i.e. 012), or check to see if **Processor LED** is ON.
No **Processor LED.**	No power to remote display or remote display is defective.	Remove back panel and measure voltage. Should be 18 to 30 DC volts coming into board. If there is power and no processor LED, the unit should be returned to the factory.
Processor LED blinks but no data displays.	No data being received or receive circuit in remote display is dead.	Check **Data Receive LED.** It should blink on each time the truck computer unit transmits to the remote display.
Data Receive LED never blinks.	No connection from PLM III to remote display.	Check connections to the PLM III unit to see if they are connected and transmitting data.
Remote display shows 888 all the time.	Option switches set to test position.	Turn OPTION SWITCHES 1 and 2 OFF.
First remote display works but second remote display does not work.	Cabling between displays is bad or output from first remote display is dead or input to second remote display is dead.	First, check cabling between the displays. See if power and signal is arriving at second display (see above). It could be the first remote display output or the second remote display input is not working. First, check the **Data Receive LED** on the second remote display. It may be necessary to swap the two remote displays to determine the problem.

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COMPONENT	SHEET
12V DC POWER STUD	65
24V DC POWER STUD	64,65
ACCELERATOR PEDAL	59
AIR SEAT	64
ANTENNA, RADIO	52
BATTERY CHARGING ALT.	65
BATTERY DISCONNECT	65
BATTERY SYSTEM	65
BUZZER, OVERHEAD (SONA)	69
CB 11 - BACK-UP HORN & LTS (RB3)	48
CB 13 - CLEARANCE LIGHTS (RB1)	49,61
CB 14 - TURN SIGNAL FLASHER	49,61
CB 15 - TAIL LIGHTS (RB1)	49,61
CB 16 - RETARD LIGHTS (RB3)	49,58
CB 17 - MANUAL BACK-UP LTS (RB3)	49,58
CB 18 - STOP LIGHTS (RB3)	49,51
CB 19 - BACKUP LTS & HORN (RB3)	58
CB 20 - ENGINE CONTROL PWR.(RB4)	49,66
CB 21 - SERV. LTS, HRN. SOL. (RB4)	49,57
CB 22 - ENGINE RUN RELAY	49,66
CB 23 - HDLIGHTS LFT LO BEAM (RB5)	49,62
CB 24 - HDLIGHTS RT LO BEAM (RB5)	49,62
CB 25 - HDLIGHTS LFT HI BEAM (RB5)	49,62
CB 26 - HDLIGHTS RT HI BEAM (RB5)	49,62
CB 27 - HDLIGHTS & DASH LTS (RB5)	49,62
CIGAR LIGHTER	60
CONVERTER 24/12V	52
CUMMINS ENGINE	68,74
DBL - DIODES D5,D6,D7,D10,D11	51
DBL - DIODE D15	57
DBL - D14 HOIST LIMIT SOLENOID	54
DIAGNOSTIC #3 (QUANTUM) OPER CAB	66
DIAGNOSTIC #6 (OPERATORS CAB)	73
DIANOSTIC - (VHMS AUX CAB)	73
DIODE, 12VPRD-12 VOLT POWER RELAY	60
DIODE, CPRD- CONTROL POWER RELAY	64
DIODE, D2- BLOCKING	51
DIODE, D3- HOIST LIMIT SOLENOID	54
DIODE, D4- BLOCKING	51
DIODE, D5DL- LFT TURN SIG. IND. LT.	61
DIODE, D5DR- RT TURN SIG. IND. LT.	61
DIODE, D6- COMBO TURN SIGNAL SW.	61
DIODE, D13- BLOCKING	50
DIODE, D14- BLOCKING	50
DIODE, D15- BRAKE LOCK SOLENOID	50
DIODE, D16- TRUCKING MOVING	50
DIODE, D17- TRUCK MOVING	50
DIODE, D21- ENG. RUN OIL PRESS SW	54
DIODE, D23- BLOCKING	52
DIODE, D24- BLOCKING	69
DIODE, D25- BLOCKING	69
DIODE, D26- BLOCKING	69
DIODE, D27- BLOCKING	59
DIODE, D28- BLOCKING	59
DIODE, D29- BLOCKING	59
DIODE, D30- BLOCKING	83
DIODE, D42- TURN SIG RIGHT FLASHER	61
DIODE, D43- TURN SIG LFT FLASHER	61
DIODE, D44- BRAKE LOCK BLOCKING	50
DIODE, DR1- PARK BRAKE SOLENOID	69
DIODE, DR2- BRAKE LOCK SOLENOID	50
DIODE, DR3- AUTO APPLY SOLENOID	69
DIODE, DR4- SERV BRAKE PRESS SW.	51
DIODE, HD- HORN	57
DIODE, KSPRD- KEY SW. POWER RELAY	64
DIODE, RRD1- RADIO RELAY	52
DIODE, SID-1- STARTER ISOLATION	65
DIODE, SRD- STARTER RELAY	65
DIODE, WRHD- WIPER RELAY HI SPEED	60
DIODE, WRLD- WIPER RELAY LO SPEED	60
DIODE, WSD- WINDSHIELD WIPER DELAY	60
DIODE, ZD1- CRUISE CONTROL POWER	59
ELECTRONIC DISPLAY PANEL EDP (DASH)	55,74

COMPONENT	SHEET
ENGINE ECU - FAN CLUTCH SIGNAL	56
ENGINE INTERFACE MODULE	68,70,71,72
FLASHER -	40,61
FUSE - 400 AMP PRE LUBE PUMP	65
FUSE - FB1 5A, INLINE BATTERY	65
FUSE-FB1-1 15A, A/C HTR BLOW MTR	49,56
FUSE-FB1-2 10A, WINDSHLD WASH/WIPE	49
FUSE-FB1-3 5A, FUEL, TEMP GA VOLT M	49
FUSE-FB1-4 10A, CAB KEY POWER	49,64
FUSE-FB1-5 10A, HOIST SOLENOID	49,54
FUSE-FB1-6 15A, TURN/CLEAR LIGHTS	49,61
FUSE-FB1-7 10A, ENGINE OPTIONS	49,63
FUSE-FB1-8 10A, AID & INDIC. LTS	49,50
FUSE-FB1-9 10A, ENG. START FAILURE	49
FUSE-FB1-10 10A, ENGINE SHUTTERS	49
FUSE-FB1-11 10A, DOME LT SW.	49,54
FUSE-FB1-12 10A, OPERATOR SEAT	49
FUSE-FB1-13 15A, CAB DR SYS PWR	49,67
FUSE-FB1-14 10A, RB7-K8	49,54
FUSE-FB1-17 10A, BRAKE CIRCUITS	49
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FUSE-FB1-19 5A, INTERFACE MODULE	49,71
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FUSE-FB1-21 5A, POWER PROT. ASSY	49,68
FUSE-FB1-22 5A, DASH SWITCH LEDS	49
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FUSE-FB2-8 15A, OIL RES. PUMP (OPT)	49
FUSE-FB2-9 15A, RESERVE CNTRL MOD	49
FUSE-FB2-10 15A, HID LIGHTS	49,63
FUSE-FB2-17 15A, KEY SWITCH POWER	49,64
FUSE-FB2-18 5A, RB8K4	49,67
FUSE-FB2-19 5A, PAYLD MTR CNTRL PWR	49,67
FUSE-FB3-1 20A, CIGAR LIGHTER	60
FUSE-FB3-3 20A, RT. WINDOW SW.	60
FUSE-FB3-5 20A, LFT WINDOW SW.	60
FUSE-FB3-13 10A, POWER	52
GDIC- OPERATOR DISPLAY	68
GSP1- ENGINE	68
GSP2- DRIVE SYSTEM	68
HEATER A/C SYSTEM	56
HID HEADLIGHTS	63
HORN BUTTON	57
HORN FORWARD #1	57
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INTERFACE MODULE	74
INCLINOMETER	67
JUNCTION BLOCK GA (JBGA)	59
JUNCTION BLOCK GD (JBGD)	64
LEFT SCOREBOARD	67

COMPONENT	SHEET
LIGHT, AIR RESTRICTION GAUGE	63
LIGHT, CAB DOME	62
LIGHT, DECK #1	57
LIGHT, DECK #2	57
LIGHT, DIAGONAL LADDER #1	57
LIGHT, DIAGONAL LADDER #2	57
LIGHT, DOME 1,2,3,4 & 5	49,54
LIGHT, DYNAMIC RETARD	58
LIGHT, ENGINE MAINTENENCE	66
LIGHT, ENGINE SERVICE #1	57
LIGHT, ENGINE SERVICE #2	57
LIGHT, HYDRAULIC CABINET RIGHT	57
LIGHT, HYDRAULIC CABINET LEFT	57
LIGHT, LEFT DECK BACK UP	58
LIGHT, LEFT DECK PAYLOAD	67
LIGHT, LEFT FOG	62
LIGHT, LEFT FRONT TURN/CLEARANCE	61
LIGHT, LFT HAND HI-MTD LO BM HDLT	62
LIGHT, LFT HAND HI-MTD HI BM HDLT	62
LIGHT, LEFT HIGH BEAM	62
LIGHT, LEFT LOW BEAM HEADLIGHT	62
LIGHT, LEFT PLATFORM	57
LIGHT, LEFT REAR BACK UP	58
LIGHT, LEFT REAR RETARD	58
LIGHT, LEFT TAIL/STOP	51
LIGHT, REAR TURN/CLEARANCE	61
LIGHT, RIGHT DECK BACK UP	58
LIGHT, RIGHT DECK PAYLOAD	67
LIGHT, RIGHT FOG	62
LIGHT, RIGHT FRONT TURN/CLEAR	61
LIGHT, RGT HAND HI-MTD LO BM HDLT	62
LIGHT, RGT HAND HI-MTD HI BM HDLT	62
LIGHT, RIGHT HIGH BEAM	62
LIGHT, RIGHT LOW BEAM HEADLIGHT	62
LIGHT, RIGHT PLATFORM	57
LIGHT, RIGHT REAR BACK UP	58
LIGHT, RIGHT REAR RETARD	58
LIGHT, RIGHT REAR TURN/CLEARANCE	61
LIGHT, RIGHT TAIL/STOP	51
LIGHT, SERVICE BRAKE (CAB ROOF)	51

COMPONENT	SHEET
MODEM, ORBCOM	73
MODULAR MINING HUB CONTROLLER	67,68
MOTOR LEFT WINDOW	60
MOTOR RIGHT WINDOW	60
PANEL LIGHT DIMMER	55
PAYLOAD METER 3 CONTROL MODULE	67
PAYLOAD METER CONTROL SW.	67
PLM3- PAYLOAD METER 3	74
POWER PLUG 1, 12V	60
POWER PROTECTION ASSY	68
PUMP, PRE-LUBE HI VOLUME	65
RADIO	52,60
RB1 K1 RELAY (LEFT TURN SIGNAL)	61
RB1 K2 RELAY (RIGHT TURN SIGNAL)	61
RB1 K3 RELAY (CLEARANCE LIGHT)	61
RB1 K4 RELAY (FLASHER)	61
RB3 K1 RELAY ((MANUAL BACKUP LTS)	58
RB3 K2 RELAY (STOP LIGHT)	51
RB3 K3 RELAY (RETARD LIGHT)	58
RB4 K1 RELAY (ENG. CONTROL POWER)	66
RB4 K3 RELAY (HORN)	57
RB4 K4 RELAY (BODY UP)	51
RB5 K1 RELAY LEFT LOW BEAM HDLT)	62
RB5 K2 RELAY (RIGHT LOW BEAM HDLT)	62
RB5 K3 RELAY (LEFT HI BEAM HDLT)	62
RB5 K4 RELAY (RIGHT HI BEAM HDLT)	62
RB6 K1 RELAY (BACK UP HORN)	57,58
RB6 K2 RELAY (ENGINE INTERLOCK)	66
RB6 K3 RELAY (PROPEL INHIBIT)	66
RB6 K4 RELAY (PARK BRAKE RELEASE)	69
RB6 K5 RELAY (IGNITION ON)	64
RB6 K6 RELAY (5 MIN TIMER)	64
RB6 K7 RELAY (STARTER LOCKOUT)	65
RB6 K8 RELAY (PARK BRAKE CONTROL)	69
RB7 K1 RELAY (STEERING BLEED)	69
RB7 K2 RELAY (TRUCK MOVING)	50
RB7 K3 RELAY (BRAKE LOCK HOLD)	50
RB7 K4 RELAY (ENGINE RUN)	50
RB7 K5 RELAY (LINC LUBE SOLENOID)	54
RB7 K6 RELAY (HID HEADLIGHTS)	63
RB7 K7 RELAY (PARK BRAKE SW. REL 2)	50
RB7 K8 RELAY (LINC LUBE TIMER)	54
RB8 K1 RELAY (FULL LOAD RELAY)	67
RB8 K2 RELAY (70% LOAD RELAY)	67
RB8 K3 RELAY (PARK BRAKE RELAY 3)	69
RB8 K4 RELAY (PAYLOAD POWER RELAY)	67
RB8 K6 RELAY (LFT/RT DK PLM RED LTS	67
RB8 K7 RELAY (LFT/RT DK PLM AMB LTS	67
RB8 K8 RELAY (LFT/RT DK PLM GRN LTS	67
RELAY, 12V POWER	49,70
RELAY BOARD #1	49,61,70
RELAY BOARD #3	49,51,58,70
RELAY BOARD #4	49,51,57,66,70
RELAY BOARD #5	49,62,70
RELAY BOARD #8	67
RELAY, CONTROL POWER	49,64
RELAY, KEYSWITCH POWER	49,64
RELAY, RADIO	52
RELAY, START (SR)	65
RELAY, WIPER (LOW)	60
RELAY, WIPER (HI)	60

XS3376-1 JAN 06
ELECTRIC SCHEMATIC
COMPONENT LOCATOR SHEET
860E-1K / 860E-1KT
A30003
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4. Loosen, but do not remove, nine capscrews (7) that secure each inlet box (8) to the motor mounting frame.

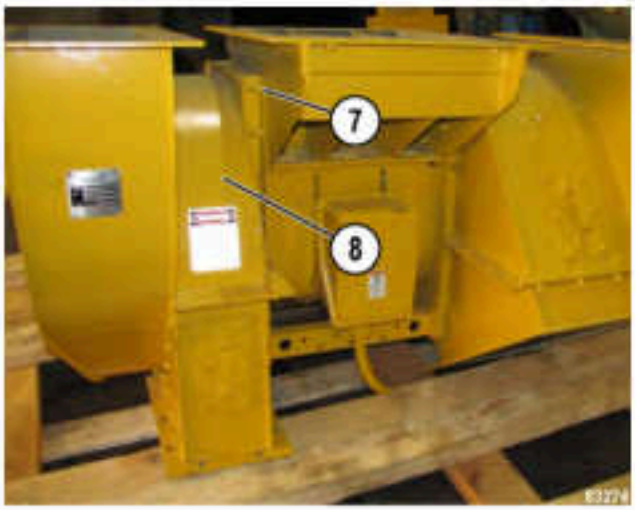


FIGURE 50-5. LOOSENING THE FAN HOUSING

7. Capscrew 8. Inlet Box

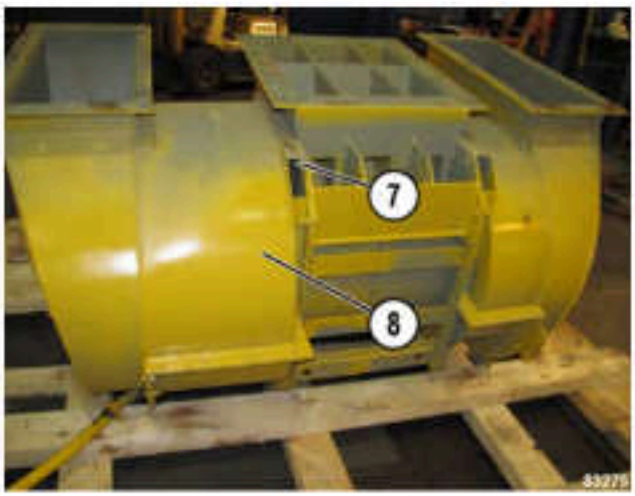


FIGURE 50-6. LOOSENING THE FAN HOUSING

7. Capscrew 8. Inlet Box

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

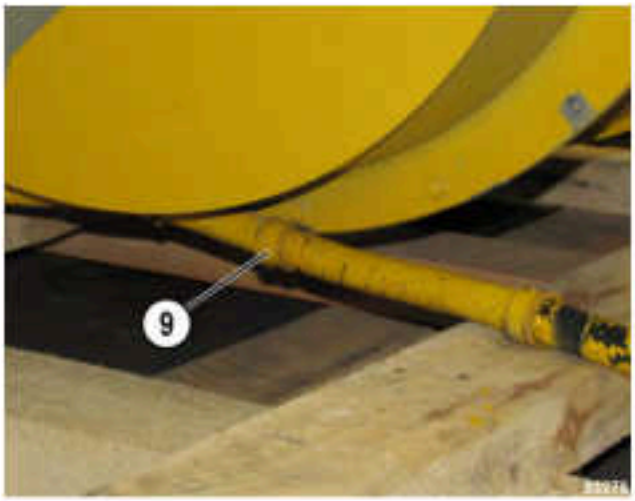


FIGURE 50-7. REMOVING HARNESS CLAMPS

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)

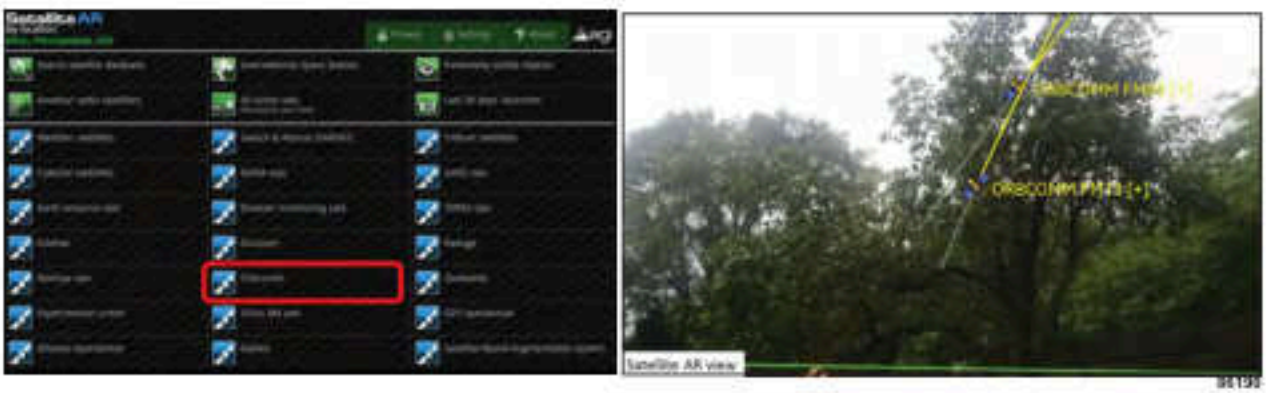
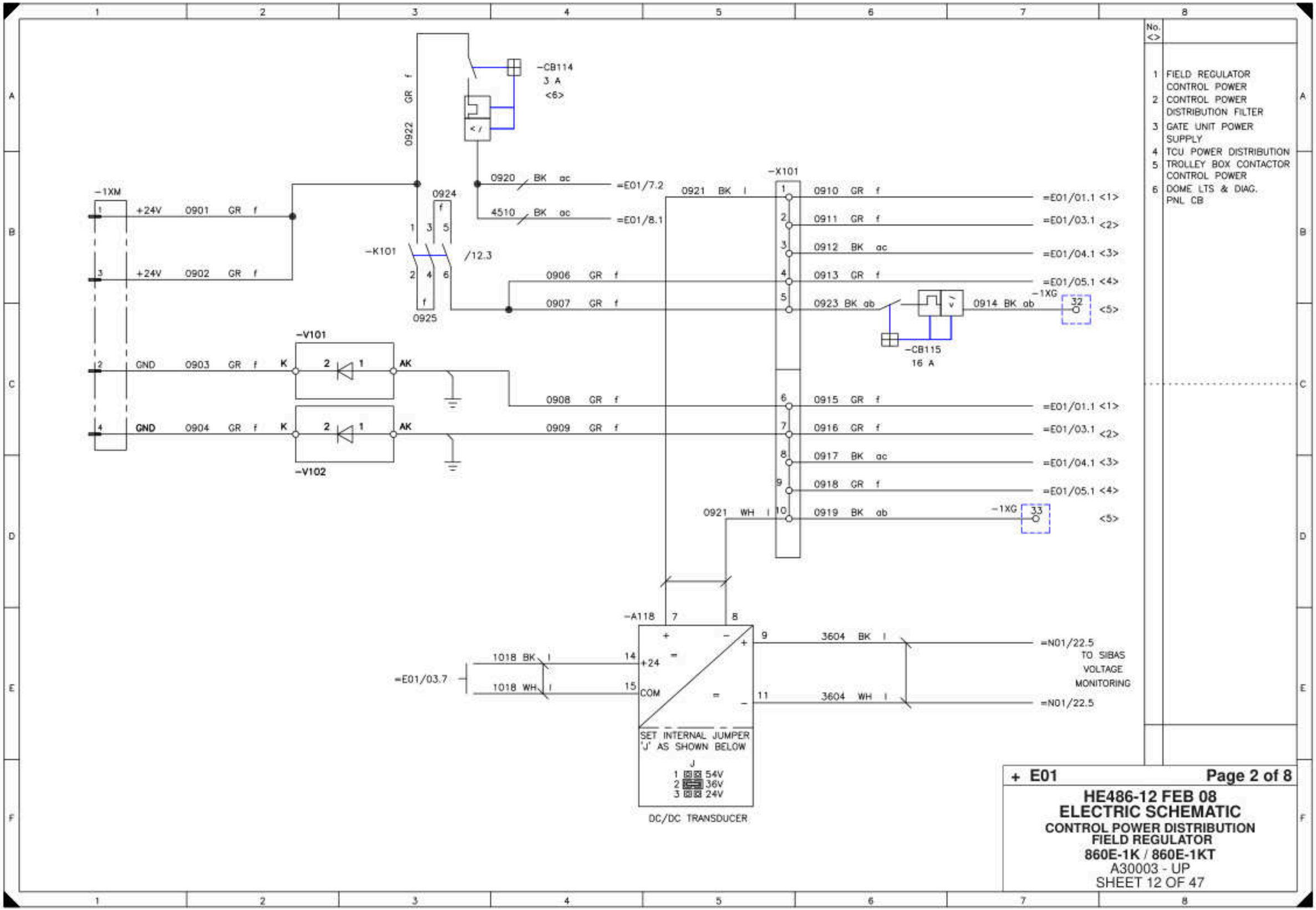


FIGURE 30-8. SATELLITE AR HOME SCREEN AND AUGMENTED CAMERA VIEW

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