CASE

PROFESSIONAL PARTNER

REPAIR MANUAL
SCHEMATIC SET
CRAWLER EXCAVATOR
CX290B

87637610 NA

Issued 03-2007

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CRAWLER EXCAVATOR
CX290B
SCHEMATIC SET
LEP 87637610A

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NOTE: CNH Company reserves the right to make changes in the specification and design of the machine without prior notice and without incurring any obligation to modify units previously sold.

The description of the models shown in this manual has been made in accordance with the technical specifications known as of the date of design of this document.

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WARNING: *This symbol is used in this manual to indicate important safety messages. Whenever you see this symbol, carefully read the message which follows. Your safety depends on it.*

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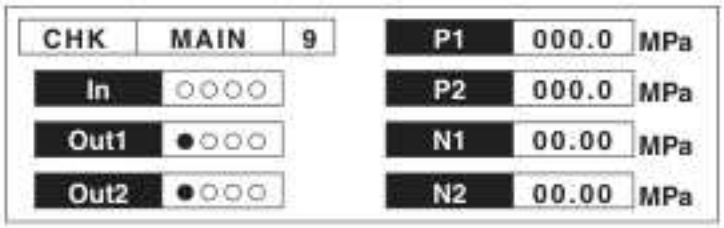
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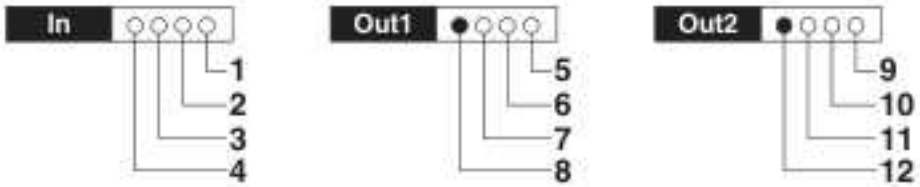
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9) Hydraulic circuits; Input/ouput and pressure



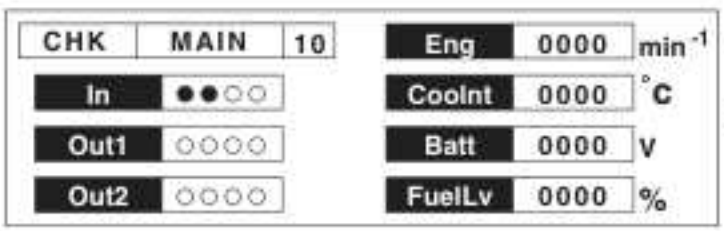
P1 : Pump1 Discharge pressure
P2 : Pump2 Discharge pressure
N1 : Pump1 Negative control pressure
N2 : Pump2 Negative control pressure

Hydraulic circuit input /output state (○ = OFF, ● = ON)



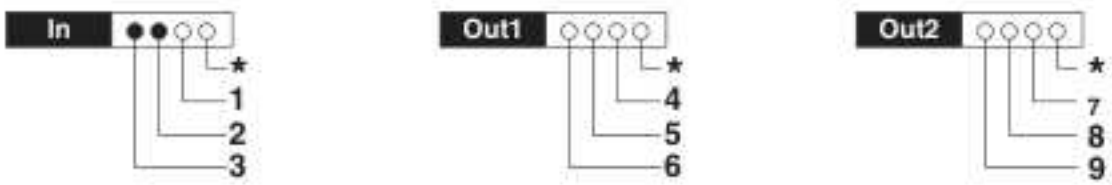
1	Pressure sensor; Arm in	7	Solenoid; Boost
2	Pressure sensor; Travel	8	Solenoid; Swing brake
3	Pressure sensor; Swing	9	Relay; Travel alarm
4	Pressure sensor; Upper	10	Solenoid; Fan reverse (large machine only)
5	Solenoid; Free swing / beacon	11	Solenoid; Option line switchover
6	Solenoid; Travel high-speed switchover	12	Solenoid; Power save

10)Electrical circuits; Input/ouput



Eng : Engine speed
CoolInt : Radiator coolant temperature
Batt : Battery voltage
FuelLv : Fuel sensor

Electrical circuit input /output state (○ = OFF, ● = ON)

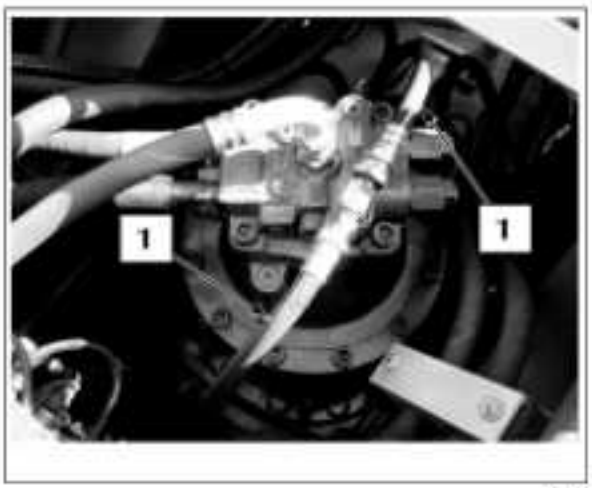


1	Switch; Anti-theft protection	6	Glow signal
2	Battery charge	7	Engine stop due to trouble
3	Switch; Key	8	Low idle restriction due to trouble
4	A/C coolant temprerature transmission	9	Restriction on milli-amp for horsepower control proportional valve due to trouble
5	Relay; Feed pump automatic stop		

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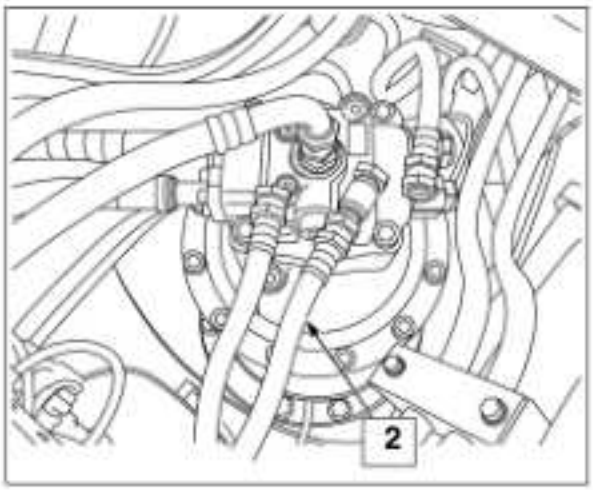
Swing motor drain volume measurement

1. Remove the two drain hoses (1) and put blind plugs in the hose side of each.



BIO3003-001

2. Install the extension hose (3) for measuring the drain volume on one side of the T nipple. Install the hose facing in a direction that makes measurement easy and install a blind plug on the other side.



BIO3003-002

3. Prepare a waste oil receiver (6) and measuring container (5) and set them as in the figure below.



RST-03-03-001J

4. In SP mode, relieve the swing operation and at the same time the motor starts, move the extension hose (3) to the measuring container (5).
(When the motor starts, start measurement with a stop watch.)
5. After 60 seconds, move the extension hose (3) to the waste oil receiver (6).
6. Measure the volume of oil in the measuring container (5) as the drain volume for 60 seconds.

- Measure at least three times each for left and right.

Left	Right

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4) Cold blast prevention control

The air flow is restricted according to the value of the coolant temperature and other parameters sent from the vehicle side. The air flow restriction has two levels - air flow 0 and air flow Lo. Whether or not to use the restriction is determined from the judgment results.

a) Conditions under which cold blast prevention control is used

1. Auto air flow

2. When set temperature - inside air sensor temperature > 11°C

3. When the coolant temperature signal from vehicle is the less than 35°C signal or the 35°C or higher but less than 45°C signal

Under the condition above, the inside air sensor temperature is the value immediately after the ignition key power is switched ON and AUTO and Test are according to the current switch states. Therefore, when the AUTO switch is pressed after the air flow has been set manually, if the coolant temperature is within the cold blast prevention range, the air flow is restricted. In the same way, even if the set temperature is changed, if the conditions are met, the air flow is restricted.

While cold blast prevention control is being executed, the display corresponds to the restricted air flow.

b) Air flow 0 control

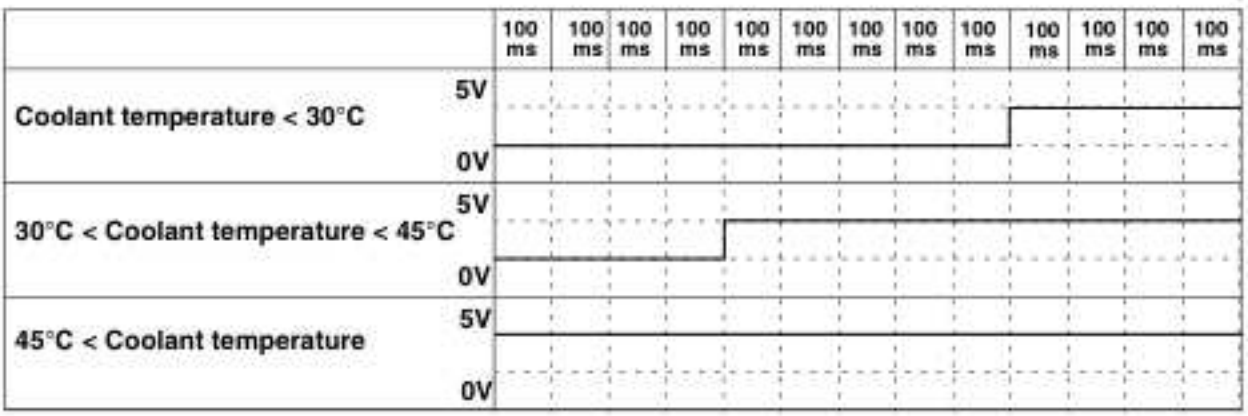
When the coolant temperature signal from vehicle is the less than 35°C signal, the air flow is set to 0. This continues until a coolant temperature signal of 30°C or higher is received. Once a coolant temperature signal of 30°C or higher is received and these conditions are no longer met, air flow 0 is ended.

c) Air flow Lo control

When the coolant temperature signal from vehicle is the 35°C or higher but less than 45°C signal, the air flow is set to Lo. This continues until a coolant temperature signal of 45°C or higher is received. Also, the same as for (**b**), this shift is irreversible. Once a coolant temperature signal of 45°C or higher is received, control is normal.

Coolant temperature signal sent from the vehicle (one cycle)

* Finalized by the same waveform for three cycles. However, for the first combustion after the ignition switch is switched ON, judged with the latest one cycle.
* The default state for the coolant temperature signal when the ignition is switched ON is 45°C or higher.

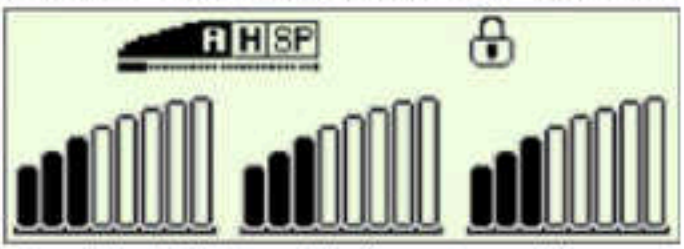


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B) Anti-theft function operation

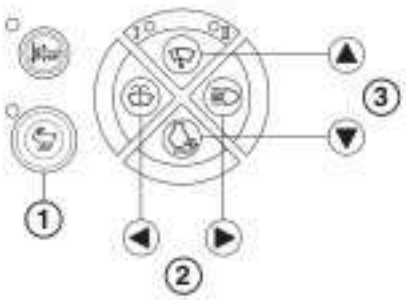
1) Enabling the anti-theft function

1. If the key is switched twice in a row ON => OFF => ON => OFF with the engine stopped, the anti-theft function is switched ON.
   (All the key switching operations must be done within 2 seconds)
2. When the anti-theft comes ON, the monitor buzzes and the "key" icon is displayed.
   (Once the anti-theft is switched ON, this icon is displayed while the power is OFF)



3. The next time the key is switched ON, the anti-theft operates and the password input screen is displayed.
   Input the password made up of 4 digits 0 to 9.
   Input by using the monitor switches below.
   If an incorrect number is input, "ERROR" is displayed and the buzzer buzzes.
   The key must be switched OFF, then ON again before the password can be re-input.



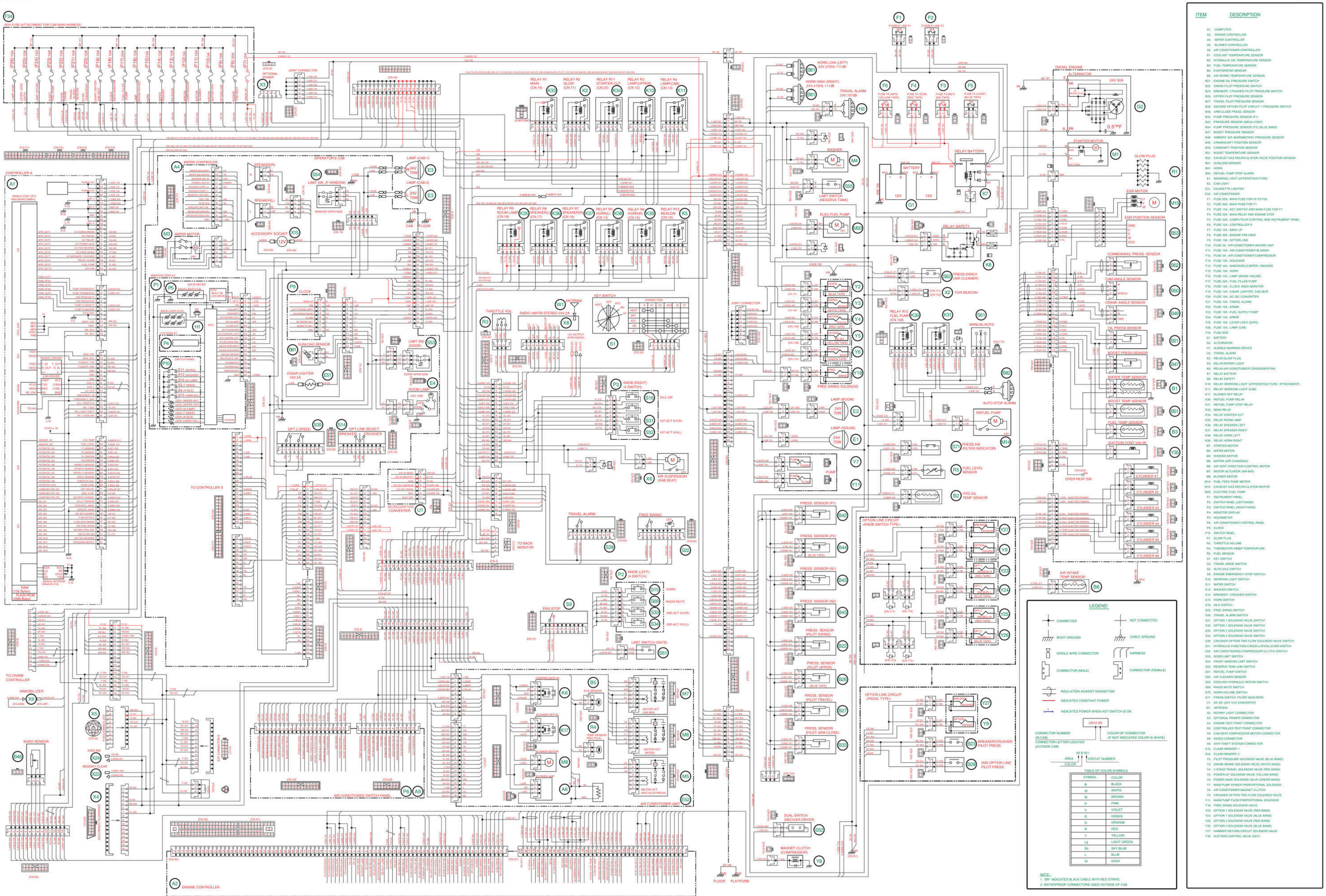


1	Enter	3	Numeric value increase / decrease
2	Cursor movement		

2) Disabling the anti-theft function

1. If the engine is stopped by switching OFF the key, the anti-theft function does not operate.
2. To disable the anti-theft function, disconnect the anti-theft knob terminals VG (purple/green) and BG (black/green). The registered password is canceled.

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ITEM	DESCRIPTION
A1.	COMPUTER
A2.	ENGINE CONTROLLER
A4.	WIPER CONTROLLER
A6.	BLOWER CONTROLLER
A9.	AIR CONDITIONER CONTROLLER
B1.	COOLANT TEMPERATURE SENSOR
B2.	HYDRAULIC OIL TEMPERATURE SENSOR
B3.	FUEL TEMPERATURE SENSOR
B5.	EVAPORATOR SENSOR
B6.	AIR INTAKE TEMPERATURE SENSOR
B21.	ENGINE OIL PRESSURE SWITCH
B22.	SWING PILOT PRESSURE SWITCH
B23.	BREAKER / CRUSHER PILOT PRESSURE SWITCH
B26.	UPPER PILOT PRESSURE SENSOR
B27.	TRAVEL PILOT PRESSURE SENSOR
B28.	SECOND OPTION PILOT CIRCUIT 1 PRESSURE SWITCH
B33.	ARM CLOSE PRESS. SENSOR
B42.	PUMP PRESSURE SENSOR (P1)
B43.	PRESSURE SENSOR (NEGA-CONT)
B44.	PUMP PRESSURE SENSOR (P2) (BLUE BAND)
B47.	BOOST PRESSURE SENSOR
B48.	AMBIENT AIR (BAROMETRIC) PRESSURE SENSOR
B49.	CRANKSHAFT POSITION SENSOR
B50.	CAMSHAFT POSITION SENSOR
B51.	BOOST TEMPERATURE SENSOR
B52.	EXHAUST GAS RECIRCULATION VALVE POSITION SENSOR
B61.	SUNLOAD SENSOR
B81.	HORN
B82.	REFUEL PUMP STOP ALARM
E1.	WORKING LIGHT (UPPERSTRUCTURE)
E2.	CAB LIGHT
E51.	CIGARETTE LIGHTER
E52.	AIR CONDITIONER
F1.	FUSE 60A : MAIN FUSE FOR F5 TO F26
F2.	FUSE 50A : MAIN FUSE FOR F1
F3.	FUSE 15A : KEY SWITCH AND MAIN FUSE FOR F7
F4.	FUSE 20A : MAIN RELAY AND ENGINE STOP
F5.	FUSE 20A : COMPUTER (CONTROL AND INSTRUMENT PANEL
F6.	FUSE 15A : CONTROLLER S
F7.	FUSE 10A : BACK UP
F8.	FUSE 30A : ENGINE PRE-HEAT
F9.	FUSE 10A : OPTION LINE
F10.	FUSE 5A : AIR CONDITIONER HEATER UNIT
F11.	FUSE 10A : AIR CONDITIONER BLOWER
F12.	FUSE 5A : AIR CONDITIONER COMPRESSOR
F13.	FUSE 10A : SOLENOID
F14.	FUSE 15A : WINDSHIELD WIPER / WASHER
F15.	FUSE 10A : HORN
F16.	FUSE 15A : LAMP (BOOM, HOUSE)
F17.	FUSE 25A : FUEL FILLER PUMP
F18.	FUSE 10A : CLOCK, BACK MONITOR
F19.	FUSE 15A : CIGAR, LIGHTER, CAB SEAT
F20.	FUSE 10A : DC /DC CONVERTER
F21.	FUSE 10A : TRAVEL ALARM
F22.	FUSE 15A : SPARE
F23.	FUSE 10A : FUEL SUPPLY PUMP
F24.	FUSE 15A : SPARE
F25.	FUSE 15A : LEVER LOCK (GATE)
F26.	FUSE 15A : LAMP (CAB)
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G2.	ALTERNATOR
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K4.	RELAY AIR CONDITIONER CONDENSER FAN
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K35.	RELAY ROOM LAMP
K36.	RELAY SPEAKER LEFT
K37.	RELAY SPEAKER RIGHT
K38.	RELAY HORN LEFT
K39.	RELAY HORN RIGHT
M1.	STARTER MOTOR
M3.	WIPER MOTOR
M4.	WASHER MOTOR
M5.	MOTOR (AIR CHANGING)
M6.	AIR VENT DIRECTION CONTROL MOTOR
M7.	MOTOR ACTUATOR (AIR MIX)
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X3.	OPTIONAL POWER CONNECTOR
X4.	ENGINE TEST POINT CONNECTOR
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