CASE

PROFESSIONAL PARTNER

REPAIR MANUAL
SCHEMATIC SET
CRAWLER EXCAVATOR
CX160B

87637607 NA

Issued 03-2007

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CRAWLER EXCAVATOR
CX160B
SCHEMATIC SET
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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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Main relief pressure adjustment

Engine speed	2200 min^{-1}
Work mode	SP mode
Lever operation	Arm-in relief
Oil temperature	45 to 55°C 113 to 131°F
Measuring port	P1 port
Measurement pressure	Boosted pressure: 36.3 MPa 363 bar 5265 Psi
	Standard: 34.3 MPa 343 bar 4975 Psi
Pressure per rotation of adjusting screw	Boost pressure: 40 MPa / rotation 400 bar / rotation 5802 Psi / rotation
	Standard: 40 MPa / rotation 400 bar / rotation 5802 Psi / rotation

1. Before adjusting, remove the pilot hose (10) for the boosted pressure signal connected to the main relief valve (7), then plug the hose side. The procedures for boosted pressure and standard pressure are different.
2. Boosted pressure

A Loosen the standard pressure lock nut (14) (27 mm) and tighten the adjusting screw (13) (27 mm, 1.06 in). Fasten with a spanner (27 mm, 1.06 in) so that the boosted pressure adjusting screw (12) does not turn.

B After tightening until the adjusting screw (13) stops turning, tighten the lock nut (14).

C Start the engine and run it at maximum rotation.

D Move the arm lever to the in side, set the relief state, and hold.

E Loosen the boosted pressure lock nut (11) (32 mm, 1.26 in) and adjust the set pressure with the adjusting screw (12) (27 mm, 1.06 in).

- When lower than the set pressure, tighten.
- When higher than the set pressure, first lower below the set pressure, then adjust on the tightening side.

F After adjustment, fasten the adjusting screw (12) with a spanner (27 mm, 1.06 in), then tighten the lock nut (11).

G After locking, check the boosted pressure side pressure. Repeat A) to F) until the set pressure is correctly adjusted.

3. Standard pressure

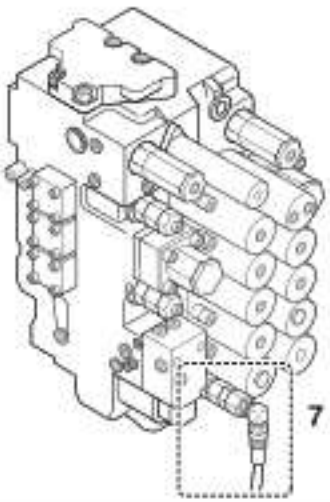
H Loosen the standard pressure lock nut (14) (27 mm, 1.06 in).

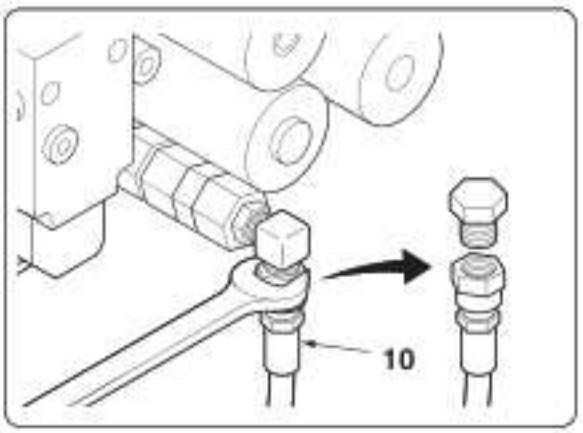
I Loosen the adjusting screw (13), lower below the set pressure, then adjust on the tightening side.

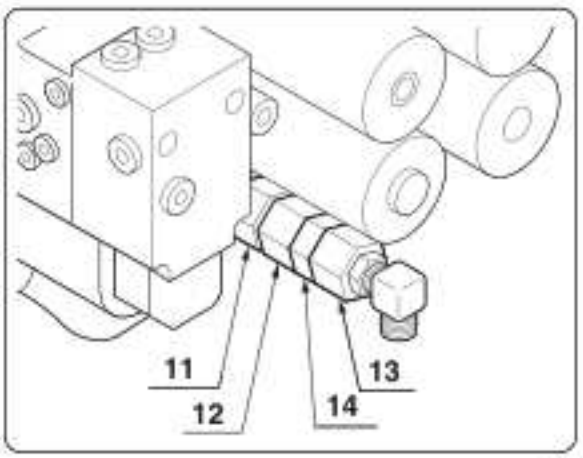
J After adjustment, tighten the lock nut (14) while fastening the adjusting screw (13) with a spanner.

K After locking, check the pressure. Repeat H), I), and J) until the set pressure is correctly adjusted.

L Stop the engine.





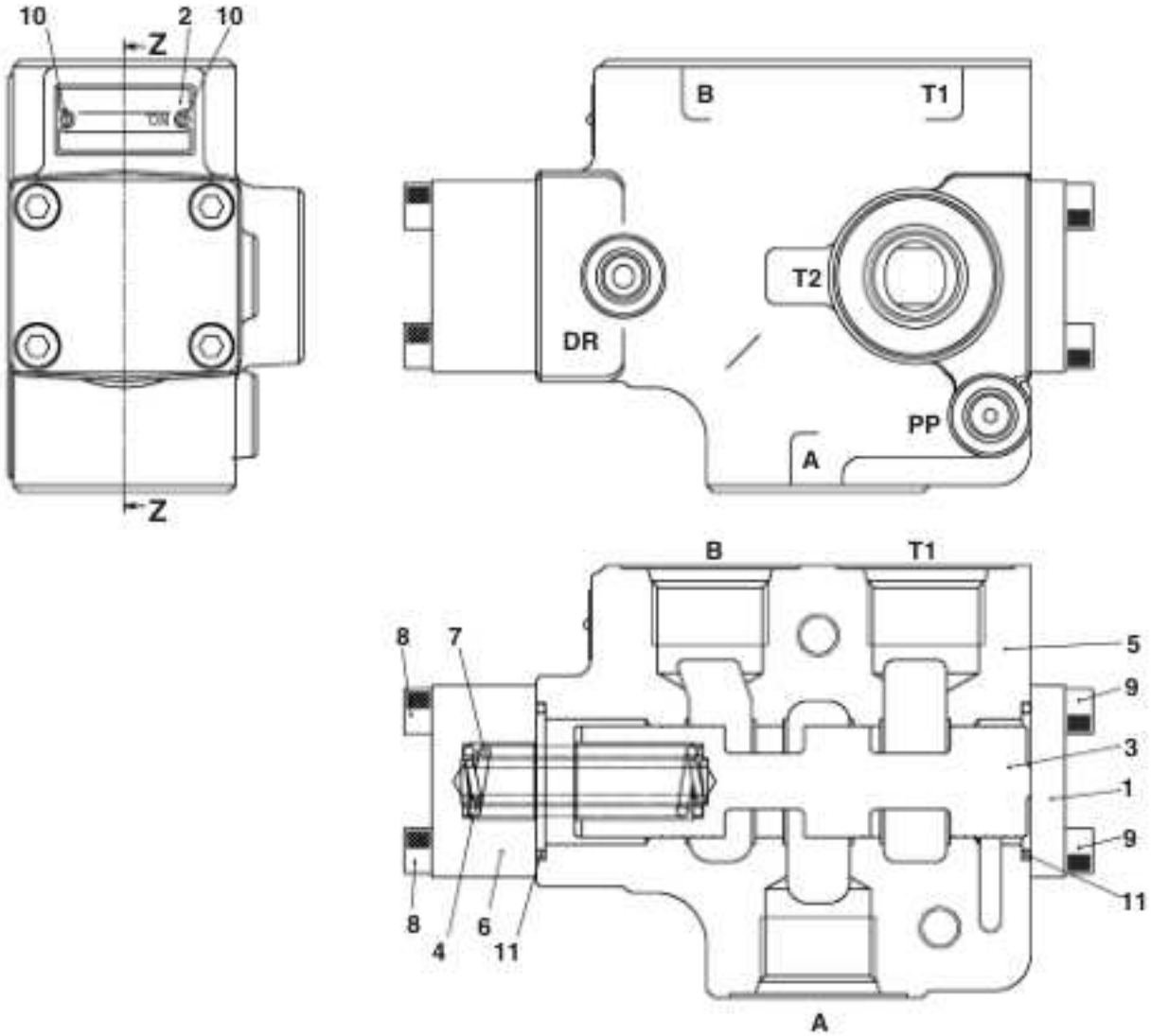


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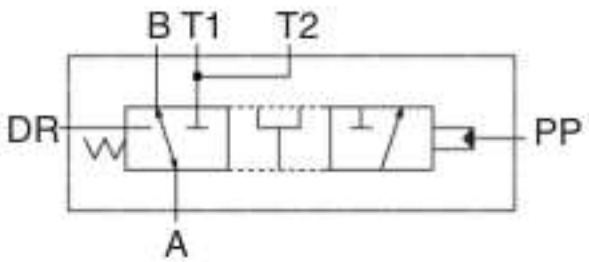
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6. Selector Valve (3-direction)

1) Structure



Z-Z section



circuit diagram

Circuit diagram

1	Cover	5	Body	9	Hexagon socket head bolt
2	Name plate	6	Cover	10	Rivet screw
3	Spool	7	Spring	11	O-ring
4	Spring	8	Hexagon socket head bolt		

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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

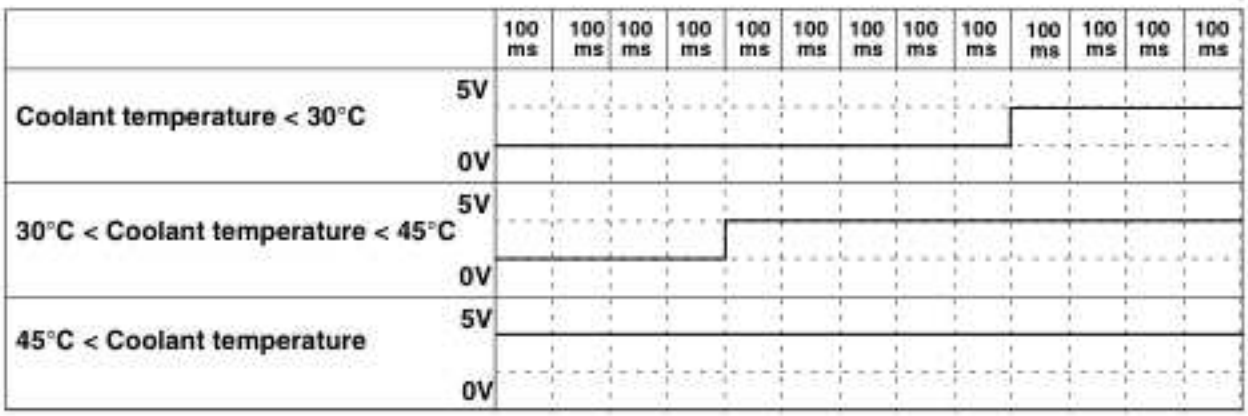
When the coolant temperature signal from vehicle is the less than 35°C signal, the air flow is set to 0. This continues until a coolant temperature signal of 30°C or higher is received. Once a coolant temperature signal of 30°C or higher is received and these conditions are no longer met, air flow 0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

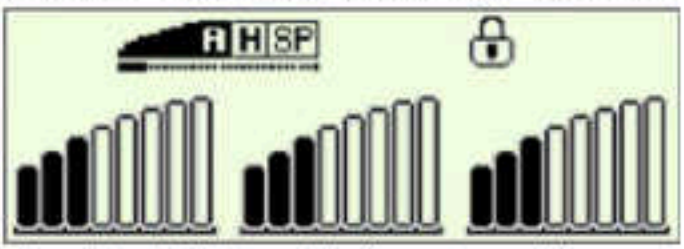


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B) Anti-theft function operation

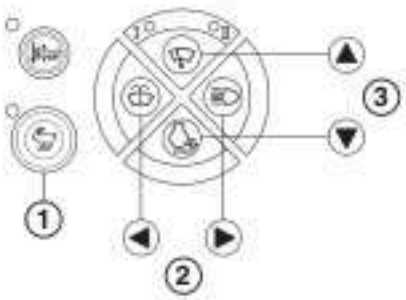
1) Enabling the anti-theft function

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.



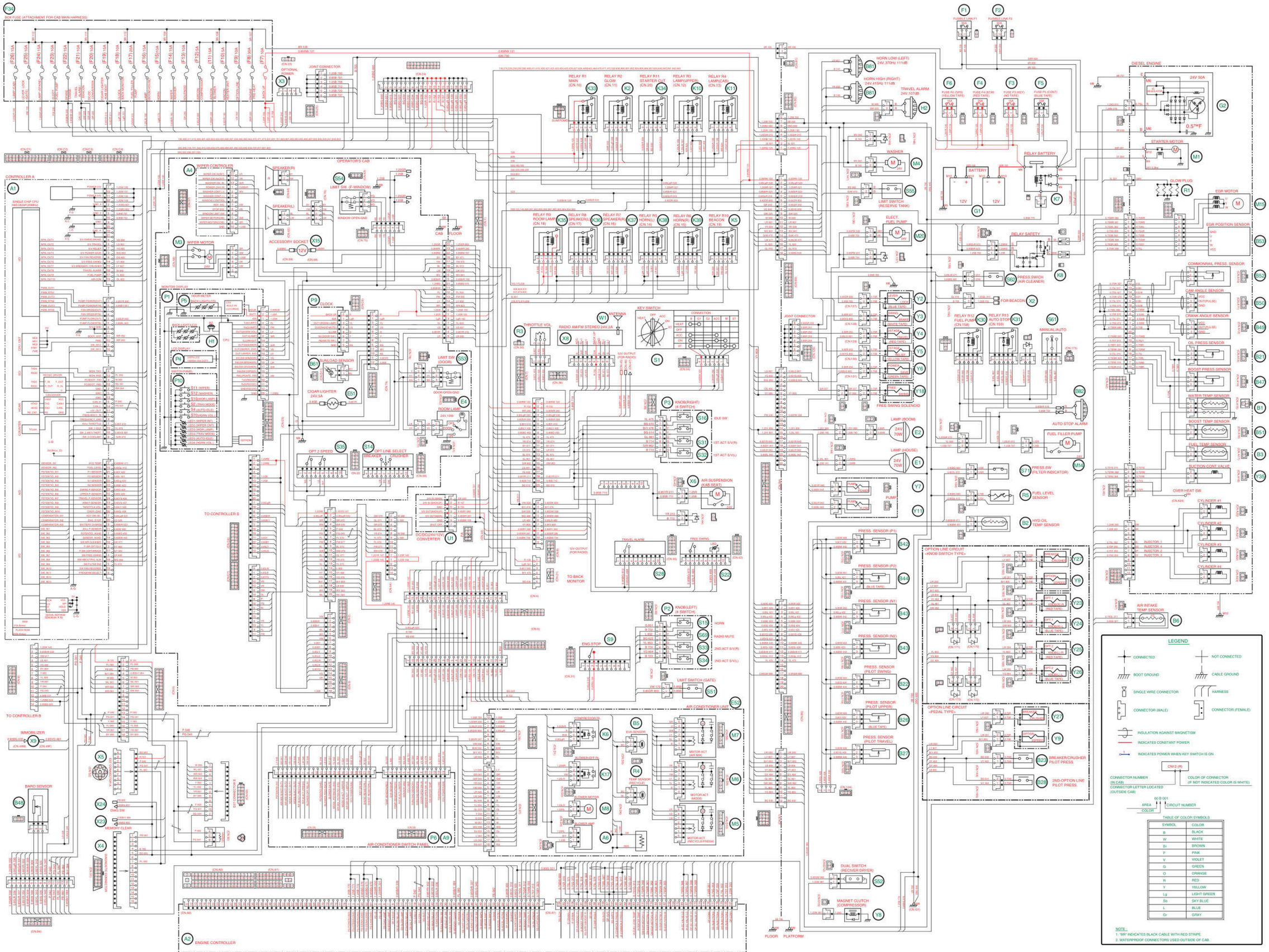


1	Enter	3	Numeric value increase / decrease
2	Cursor movement		

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
A8.	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
B28.	UPPER PILOT PRESSURE SENSOR
B37.	TRAVEL PILOT PRESSURE SENSOR
B28.	SECOND OPTION PILOT CIRCUIT 1 PRESSURE SWITCH
B42.	PUMP PRESSURE SENSOR (P1)
B43.	PRESSURE SENSOR (N/SA-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.	COMMON RAIL PRESSURE SENSOR
B53.	EXHAUST GAS RECIRCULATION VALVE POSITION SENSOR
B61.	SUNLOAD SENSOR
B81.	HORN
B82.	REFUEL PUMP STOP ALARM
E1.	WORKING LIGHT (UPPERSTRUCTURE)
E2.	WORKING LIGHT (ATTACHMENT)
E4.	CAB LIGHT
E51.	CIGARETTE LIGHTER
E52.	AIR CONDITIONER
F1.	FUSE 50A : MAIN FUSE FOR F8 TO F29
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 25A : 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 15A : 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 20A : 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 10A : LEVER LOCK (GATE)
F26.	FUSE 15A : LAMP (CAB)
F34.	FUSE BOX
G1.	BATTERY
G2.	ALTERNATOR
H1.	AUDIBLE WARNING DEVICE
H2.	TRAVEL ALARM
K2.	RELAY-GLOW PLUG
K3.	RELAY-ROTARY LIGHT
K6.	RELAY-AIR CONDITIONER CONDENSER FAN
K7.	RELAY BATTERY
K8.	RELAY SAFETY
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K31.	REFUEL PUMP STOP RELAY
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K34.	RELAY STARTER CUT
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)
M8.	BLOWER MOTOR
M14.	FUEL FEED PUMP MOTOR
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S62.	AIR CLEANER SENSOR
S64.	COOLING HYDRAULIC MOTOR SWITCH
S69.	RADIO MUTE SWITCH
S70.	HORN VOLUME SWITCH
S71.	PRESS.SWITCH FILTER INDICATOR
U1.	DC-DC (24V-12V) CONVERTER
W1.	ANTENNA
X2.	ROTARY LIGHT CONNECTOR
X3.	OPTIONAL POWER CONNECTOR
X4.	ENGINE TEST POINT CONNECTOR
X5.	CONTROLLER TEST POINT CONNECTOR
X6.	CAB SEAT COMPRESSOR MOTOR CONNECTOR
X9.	RADIO CONNECTOR
X9.	ANTI-THEFT SYSTEM CONNECTOR
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X24.	CLEAR MEMORY 2
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Y4.	2 STAGE TRAVEL SOLENOID VALVE (RED BAND)
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Y8.	AIR CONDITIONER MAGNET CLUTCH
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ELECTRICAL SCHEMATIC - 87594014

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