CASE CONSTRUCTION

SERVICE MANUAL

CRAWLER EXCAVATOR

CX290B

87673891 B

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CRAWLER EXCAVATOR CX290B
SERVICE MANUAL

TABLE OF CONTENTS

DIVISION/SECTION		SECTION N°	REFERENCE N°
1	**GENERAL INFORMATION**		
	Safety, general information and standard torque data	1001	7-27691EN
	General specifications and special torque setting	1002	SC290B1002-0EN
2	**ENGINE**		
	Engine specifications	*	
	Disassembly and assembly of the engine	*	
3	**FUEL SYSTEM**		
	Fuel tank	3001	SM160B3001-0EN
	Fuel engine system	*	
4	**ELECTRICAL SYSTEM**		
	Electrical system, electrical and electronic troubleshooting	4001	SC210B4001-1EN
	Electrical equipment and electrical circuit diagrams	4020	SC210B4020-0EN
5	**UNDERCARRIAGE**		
	Removal and installation of tracks	5001	SM160B5001-0EN
	Sprocket	5004	SM160B5004-0EN
6	**DRIVE TRAIN**		
	Drive motor and final drive transmission removal and installation	6001	SM160B6001-0EN
	Travel reduction gear assembly and disassembly	6005	SM290B6005-0EN
7	**UNDERCARRIAGE HYDRAULICS**		
8	**UPPERSTRUCTURE HYDRAULICS**		
	Depressurising and decontaminating the hydraulic system, use of the vacuum pump and bleeding the components	8000	SM160B8000-0EN
	Specifications, troubleshooting, checks and hydraulic pressure settings	8001	SC290B8001-0EN
	Hydraulic reservoir removal and installation	8002	SM160B8002-0EN
	Main and pilot pumps, removal and installation	8003	SM210B8003-0EN
	Main hydraulic control valve, removal and installation	8004	SM210B8004-0EN
	Pilot blocs, removal and installation	8007	SM160B8007-0EN
	Main hydraulic pump, disassembly and assembly	8010	SM210B8010-0EN
	Hand control levers, disassembly and assembly	8013	SM160B8013-0EN
	Foot control levers, disassembly and assembly	8014	SM160B8014-0EN
	Caution valve, disassembly and assembly	8016	SM160B8016-0EN
	Hydraulic functions	8020	SC290B8020-0EN
	Travel hydraulic motor, disassembly and assembly	8021	SM290B8021-0EN
	Hydraulic Component Functions	8030	SC290B8030-0EN

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Section

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ELECTRICAL EQUIPEMENT
&
ELECTRIC CIRCUIT DIAGRAMS

CNH

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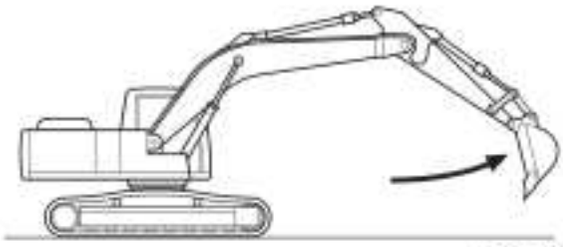
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Attachment pressure measurement

Example: Arm-out pressure measurement

Measure with the following operations.



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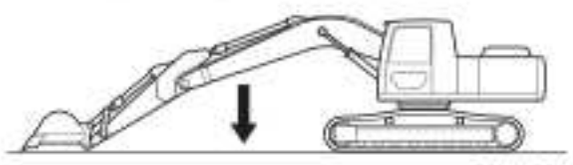
When the attachment operates, since the pressure boost operates automatically, you can check the set boosted pressure for about 8 seconds. After 8 seconds or more, you can check the standard set pressure.

Measure relieving each cylinder with the arm-out and in, the bucket open and closed, and the boom up.

Lever operation	Arm-out	Arm-in	Bucket open	Bucket close	Boom up	Boom down
Engine speed	1800 min^{-1}					
Work mode	SP mode					
Oil temperature	45 to 55°C 113 to 131°F					
1 Pump flow measuring port	P1	P1	P2	P2	P2	P2
2 Pumps flow measuring port	P2	P2	None	None	P1	P1
Boosted pressure	36.8 MPa 368 bar 5337 Psi	36.8 MPa 368 bar 5337 Psi	36.8 MPa 368 bar 5337 Psi	36.8 MPa 368 bar 5337 Psi	36.8 MPa 368 bar 5337 Psi	29.4 MPa 294 bar 4264 Psi
Standard pressure	34.3 MPa 343 bar 4975 Psi	34.3 MPa 343 bar 4975 Psi	34.3 MPa 343 bar 4975 Psi	34.3 MPa 343 bar 4975 Psi	34.3 MPa 343 bar 4975 Psi	29.4 MPa 294 bar 4264 Psi

Pressure measurement with boom down

For pressure measurement with the boom down, put the arm cylinder at its out stroke end, open the bucket, put the bucket tip on the ground, carry out the boom-down operation, and measure.



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TROUBLESHOOTING

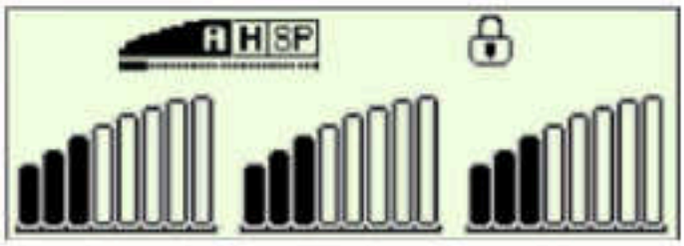
SYMPTOM	CAUSE	REMEDY
1.Hydraulic motor never starts		
Pressure never increases	Malfunction of built-in relief valve.	Repair or replace relief valve
Pressure increases	1.Parking brake is not released Clogging of restrictor	1.After inspection of clogging, repair or replace
	2.Parking brake is not released Spool is installed in wrong direction	2.Re-install the spool in correct direction
	3.Stuck friction or separating plate of parking brake portion	3.Replace friction and separating plate
	4.Stuck brake piston	4.Repair outer dia. of brake piston or replace It.
	5.Seizure of sliding piston	5.Check, repair or replace piston shoe, swash plate, cylinder block valve plate etc.
	6.Malfunction of spool: - Stick between spool and body - Clogging of restrictor	6.Repair or replace
2.Hydraulic motor rotates weakly		
Set pressure of overload valve is correct, but brake is released belatedly	Malfunction of spool: - Stick between spool and body	Repair or replace
Negative brake is released, but motor is hard to start	High oil viscosity.	Raise oil temperature or change the hydraulic oil
Negative brake is released, but motor starts weakly	1.Negative brake is not completely released. Clogging of choke of pressure release passage	1.Check clogging of choke
	2.Relief valve catches small particles	2.Wash relief valve, check or replace seat of it
	3.Seizure of sliding portion	3.Check, repair or replace sliding portion
3.Drive shaft never rotate up to the set value		
Rotation of drive shaft never reaches the set value	1.Shortage of oil coming in	1.Check oil flow or hydraulic circuit to motor.
	2.Large wear or flaw made on shoe, cylinder block or valve plate	2.Check, repair or replace the parts

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B) Anti-theft function operation

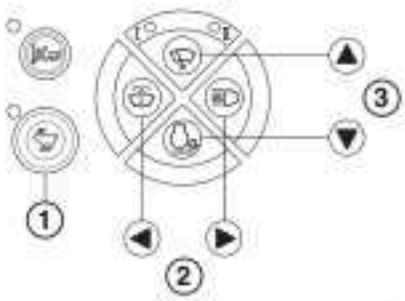
1) Enabling the anti-theft function

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.



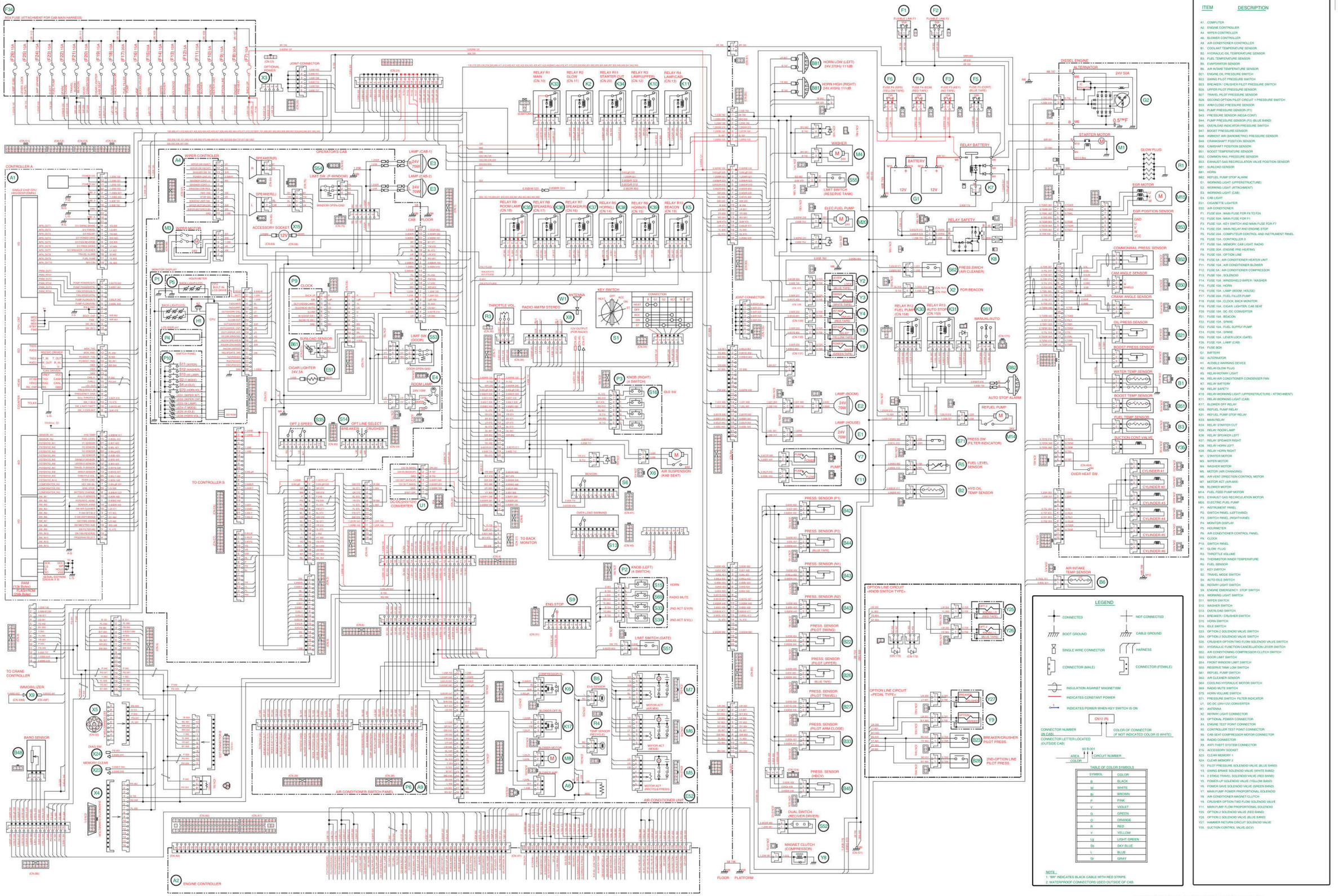


1	Enter	3	Numeric value increase / decrease
2	Cursor movement		

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
B26.	UPPER PILOT PRESSURE SENSOR
B27.	TRAVEL PILOT PRESSURE SENSOR
B28.	SECOND OPTION PILOT CIRCUIT 1 PRESSURE SWITCH
B33.	ARM CLOSE PRESSURE SENSOR
B42.	PUMP PRESSURE SENSOR (P1)
B43.	PRESSURE SENSOR (NEGA-CONT)
B44.	PUMP PRESSURE SENSOR (P2) (BLUE BAND)
B45.	OVERLOAD INDICATOR PRESSURE SWITCH
B47.	BOOST PRESSURE SENSOR
B48.	AMBIENT AIR (BAROMETRIC) PRESSURE SENSOR
B49.	CRANKSHAFT POSITION SENSOR
B58.	CAMSHAFT POSITION SENSOR
B61.	BOOST TEMPERATURE SENSOR
B92.	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)
E3.	WORKING LIGHT (CAB)
E4.	CAB LIGHT
E51.	CIGARETTE LIGHTER
E2.	AIR CONDITIONER
F1.	FUSE 60A - MAIN FUSE FOR F5 TO F24
F2.	FUSE 50A - MAIN FUSE FOR F1
F3.	FUSE 15A - KEY SWITCH AND MAIN FUSE FOR F7
F4.	FUSE 25A - MAIN RELAY AND ENGINE STOP
F5.	FUSE 20A - COMPUTER CONTROL AND INSTRUMENT PANEL
F6.	FUSE 15A - CONTROLLER S
F7.	FUSE 10A - MIDMORY, CAB LIGHT, RADIO
F8.	FUSE 30A - ENGINE PRE-HEATING
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 15A - DC /DC CONVERTER
F21.	FUSE 10A - BEACON
F22.	FUSE 15A - SPARE
F23.	FUSE 10A - FUEL SUPPLY PUMP
F24.	FUSE 10A - SPARE
F25.	FUSE 10A - LEVER LOCK (GATE)
F26.	FUSE 15A - LAMP (CAB)
F34.	FUSE BOX
G1.	BATTERY
G2.	ALTERNATOR
H1.	AUDIBLE WARNING DEVICE
K2.	RELAY-GLOW PLUG
K5.	RELAY-ROTARY LIGHT
K6.	RELAY-AIR CONDITIONER CONDENSER FAN
K7.	RELAY BATTERY
K8.	RELAY SAFETY
K10.	RELAY-WORKING LIGHT (UPPERSTRUCTURE / ATTACHMENT)
K11.	RELAY-WORKING LIGHT (CAB)
K17.	BLOWER OFF RELAY
K29.	REFUEL PUMP RELAY
K31.	REFUEL PUMP STOP RELAY
K33.	MAIN RELAY
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 ACT (AIR-MIX)
M8.	BLOWER MOTOR
M14.	FUEL FEED PUMP MOTOR
M15.	EXHAUST GAS RECIRCULATION MOTOR
M25.	ELECTRIC FUEL PUMP
P1.	INSTRUMENT PANEL
P2.	SWITCH PANEL (LEFT-HAND)
P3.	SWITCH PANEL (RIGHT-HAND)
P4.	MONITOR (DISPLAY)
P5.	HOURMETER
P6.	AIR CONDITIONER CONTROL PANEL
P9.	CLOCK
P10.	SWITCH PANEL
R1.	GLOW PLUG
R5.	THROTTLE VOLUME
R4.	THERMISTOR INNER TEMPERATURE
R5.	FUEL SENSOR
S1.	KEY SWITCH
S2.	TRAVEL MODE SWITCH
S4.	AUTO IDLE SWITCH
S5.	ROTARY LIGHT SWITCH
S6.	ENGINE EMERGENCY - STOP SWITCH
S10.	WORKING LIGHT SWITCH
S11.	WIPER SWITCH
S12.	WASHER SWITCH
S13.	OVERLOAD SWITCH
S14.	BREAKER / CRUSHER SWITCH
S15.	HORN SWITCH
S16.	IDLE SWITCH
S23.	OPTION 2 SOLENOID VALVE SWITCH
S3A.	OPTION 2 SOLENOID VALVE SWITCH
S35.	CRUSHER OPTION TWO FLOW SOLENOID VALVE SWITCH
S51.	HYDRAULIC FUNCTION CANCELLATION LEVER SWITCH
S52.	AIR CONDITIONING COMPRESSOR CLUTCH SWITCH
S53.	DOOR LIMIT SWITCH
S54.	FRONT WINDOW LIMIT SWITCH
S55.	RESERVE TANK LOW SWITCH
S61.	REFUEL PUMP SWITCH
S62.	AIR CLEANER SENSOR
S64.	COOLING HYDRAULIC MOTOR SWITCH
S68.	RADIO MUTE SWITCH
S78.	HORN VOLUME SWITCH
S71.	PRESSURE SWITCH FILTER INDICATOR
U1.	DC-DC (24V-12V) CONVERTER
W1.	ANTENNA
X2.	W/PARK LIGHT CONNECTOR
X3.	OPTIONAL POWER CONNECTOR
X4.	ENGINE TEST POINT CONNECTOR
X5.	CONTROLLER TEST POINT CONNECTOR
X6.	CAB-SEAT COMPRESSOR MOTOR CONNECTOR
X8.	RADIO CONNECTOR
X9.	ANTI-THEFT SYSTEM CONNECTOR
X15.	ACCESSORY SOCKET
X23.	CLEAR MIDMORY 1
X24.	CLEAR MEMORY 2
Y2.	PILOT PRESSURE SOLENOID VALVE (BLUE BAND)
Y3.	SWING BRAKE SOLENOID VALVE (WHITE BAND)
Y4.	2 STAGE TRAVEL SOLENOID VALVE (RED BAND)
Y5.	POWER-UP SOLENOID VALVE (YELLOW BAND)
Y6.	POWER SAVE SOLENOID VALVE (GREEN BAND)
Y7.	MAIN PUMP POWER PROPORTIONAL SOLENOID
Y8.	AIR CONDITIONER MAGNET CLUTCH
Y9.	CRUSHER OPTION TWO FLOW SOLENOID VALVE
Y11.	MAIN PUMP FLOW PROPORTIONAL SOLENOID
Y25.	OPTION 2 SOLENOID VALVE (RED BAND)
Y28.	OPTION 2 SOLENOID VALVE (BLUE BAND)
Y27.	HAMMER RETURN CIRCUIT SOLENOID VALVE
Y35.	SUCTION CONTROL VALVE (SCV)

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