CASE

REPAIR MANUAL

Crawler Excavator

CX160

7-29031

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CX160 Crawler Excavators
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CX130 - CX160 EXCAVATOR HYDRAULIC / ELECTRIC SCHEMATIC

ITEM	DESCRIPTION	PRESSURE SETTING
A =	MAIN RELIEF (STANDARD)	34.3 MPa / 343 bar / 4977 psi
A =	MAIN RELIEF (BOOST)	36.3 MPa / 363 bar / 5267 psi
B =	BOOM RAISING PORT SECONDARY RELIEF	38.3 MPa / 383 bar / 5558 psi
B1/B2 =	RELIEF ON BOOM HSCV	38.3 MPa / 383 bar / 5558 psi
C =	BOOM LOWERING PORT SECONDARY RELIEF	38.3 MPa / 383 bar / 5558 psi
D =	DIPPER OUT PORT SECONDARY RELIEF	38.3 MPa / 383 bar / 5558 psi
D1 =	RELIEF ON DIPPER HSCV	38.3 MPa / 383 bar / 5558 psi
E =	DIPPER IN PORT SECONDARY RELIEF	38.3 MPa / 383 bar / 5558 psi
F =	BUCKET OPEN PORT SECONDARY RELIEF	38.3 MPa / 383 bar / 5558 psi
G =	BUCKET CLOSE PORT SECONDARY RELIEF	38.3 MPa / 383 bar / 5558 psi
H =	PILOT PRESSURE RELIEF	3.92 MPa / 39.2 bar / 568 psi
I =	RIGHT-HAND SWING PORT SECONDARY RELIEF	27.5 MPa / 279 bar / 4046 psi
J =	LEFT-HAND SWING PORT SECONDARY RELIEF	27.5 MPa / 279 bar / 4046 psi
K1/K2 =	TRAVEL REVERSE PORT SECONDARY RELIEF (150)	43 MPa / 430 bar / 6236 psi
K1/K2 =	TRAVEL REVERSE PORT SECONDARY RELIEF (150)	35.3 MPa / 353 bar / 5119 psi
L1/L2 =	TRAVEL FORWARD PORT SECONDARY RELIEF (150)	43 MPa / 430 bar / 6236 psi
L1/L2 =	TRAVEL FORWARD PORT SECONDARY RELIEF (150)	35.3 MPa / 353 bar / 5119 psi
N1/N2 =	NEGATIVE CONTROL RELIEF	2.55 MPa / 25.5 bar / 370 psi
OP =	SECONDARY RELIEF (Servo OPTION)	29.5 MPa / 295 bar / 3410 psi
R =	MAIN RELIEF (Servo OPTION)	29.6 MPa / 296 bar / 3949 psi
S1 =	ACCUMULATOR PRECHARGE	1.5 MPa / 15 bar / 212 psi

ITEM	DESCRIPTION
1.	HYDRAULIC RESERVOIR
2.	BREATHER
4.	BY-PASS VALVE
5.	SCREEN FILTER
6.	RETURN FILTER
10.	MAIN HYDRAULIC PUMP
15.	MAIN CONTROL VALVE
16.	HYDRAULIC SWIVEL
21.	TRAVEL MOTOR
22.	SWING MOTOR
23.	TRAVEL MOTOR BRAKE
25.	RIGHT BOOM CYLINDER
26.	LEFT BOOM CYLINDER
27.	DIPPER CYLINDER
28.	BUCKET CYLINDER
29.	BOOM ANTI HOSE BURST VALVE
30.	DIPPER ANTI HOSE BURST VALVE
31.	DIPPER ANTI DRIFT VALVE
32.	BOOM ANTI DRIFT VALVE
41.	FILTER (ULTRA-CLEAN)
42.	OIL COOLER
43.	RETURN MANIFOLD
44.	OIL COOLER BY-PASS VALVE
45.	NON-RETURN CHECK VALVE
51.	ACCUMULATOR
52.	6 SOLENOID VALVE BANK
53.	BOOM & BUCKET CONTROL LEVER
54.	SWING & DIPPER CONTROL LEVER
55.	TRAVEL CONTROL PEDAL
56.	DIPPER CONTROL SHOCK ABSORBER
57.	BOOM & DIPPER CONTROL SHOCK ABSORBER
58.	PILOT AND RETURN SYSTEM MANIFOLD
59.	FILTER
60.	PILOT SYSTEM MANIFOLD
65.	CALIBRATED ORIFICE
71.	SECOND OPTION PEDAL
72.	CONTROL PEDAL (OPTIONAL)
73.	SECOND OPTION CONTROL VALVE
74.	SWING PRIORITY BLOCK
75.	FLOW RE-INJECTION BLOCK (OPTIONAL)
76.	3-WAY SELECTOR (OPTIONAL)
77.	SAFETY VALVE RETURN SYSTEM MANIFOLD (OPTIONAL)
78.	RETURN FILTER (OPTIONAL)
79.	CONTROL SHUTTLE BLOCK (OPTIONAL)
81.	SWING SHUTTLE BLOCK
82.	PILOT CIRCUIT FILTER
B3.	SHUT-OFF VALVE (OPTIONAL)
B5.	HAND/FOOT CONTROL PILOT FILTER
B6.	PILOT FILTER BY-PASS VALVE
106.	ANTI PENDULUM VALVE
107.	TWO STAGE TRAVEL VALVE
108.	STRAIGHT TRAVEL VALVE
B22.	SWING PILOT PRESSURE SWITCH
B23.	BREAKER / CRUSHER PILOT PRESSURE SWITCH
B24.	SECOND OPTION PILOT CIRCUIT 3 PRESSURE SWITCH
B25.	BREAKER PILOT PRESSURE SWITCH
B26.	UPPER PILOT PRESSURE SWITCH (YELLOW BAND)
B27.	TRAVEL PILOT PRESSURE SWITCH
B28.	SECOND OPTION PILOT CIRCUIT 1 PRESSURE SWITCH
B42.	PUMP PRESSURE SENSOR (P1)
B43.	PRESSURE SENSOR (MEGA-CONT)
B44.	PUMP PRESSURE SENSOR (P2) (YELLOW BAND)
M3.	WIPER MOTOR
Y1.	SWING PILOT SHUT-OFF SOLENOID VALVE (GREEN BAND)
Y2.	PILOT PRESSURE SOLENOID VALVE (BLUE BAND)
Y3.	SWING BRAKE SOLENOID VALVE (PINK BAND)
Y4.	2-STAGE TRAVEL SOLENOID VALVE (RED BAND)
Y5.	POWER-UP SOLENOID VALVE (YELLOW BAND)
Y6.	CUSHION CONTROL SOLENOID VALVE (LIGHT GREEN BAND)
Y7.	MAIN PUMP PROPORTIONAL SOLENOID
Y9.	CRUSHER/BREAKER OPTION TWO FLOW SOLENOID VALVE
Y18.	FREE SWING SOLENOID VALVE

LEGEND

- P1 PUMP
- P2 PUMP
- PILOT SYSTEM PUMP
- RETURN TO RESERVOIR
- LEAK-OFF RETURN
- SUPPLY CIRCUIT
- PILOT SYSTEM CIRCUIT
- COMPONENT BOUNDARY
- HOSE
- PIPING CONNECTION
- PIPING CROSS-OVER
- 41 COMPONENT ITEM NO.
- COMPONENT NUMBER
- CONNECTION ITEM NO.
- ★ OPTIONAL ITEM NO.

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ITEM	DESCRIPTION
A1.	COMPUTER
A4.	WIPER CONTROLLER
A5.	THROTTLE MOTOR DRIVER
A6.	BLOWER AMP
B1.	COOLANT TEMPERATURE SENSOR
B2.	HYDRAULIC OIL TEMPERATURE SENSOR
B21.	ENGINE OIL PRESSURE SWITCH
B22.	SWING PILOT PRESSURE SWITCH
B23.	BREAKER/CRUSHER PILOT PRESSURE SWITCH
B25.	BREAKER PILOT PRESSURE SWITCH
B26.	UPPER PILOT PRESSURE SWITCH (YELLOW BAND)
B27.	TRAVEL PILOT PRESSURE SWITCH
B30.	BLADE PILOT PRESSURE SWITCH
B31.	BLADE PILOT PRESSURE SWITCH
B4.	ETHER SOLENOID VALVE THERMO SWITCH
B41.	ENGINE RPM SENSOR
B42.	PUMP PRESSURE SENSOR (P1).
B43.	PRESSURE SENSOR (MEGA-CONT)
B44.	PUMP PRESSURE SENSOR (P2) (YELLOW BAND)
B5.	EVA SENSOR
B61.	SUNLOAD SENSOR
B81.	HORN
E1.	WORKING LIGHT (UPPERSTRUCTURE)
E2.	WORKING LIGHT (ATTACHMENT)
E4.	CAB LIGHT
ES1.	CIGARETTE LIGHTER
ES2.	AIR CONDITIONER
ES3.	HEATER
F1.	FUSE 10A: OPTION LINE CONNECTOR
F10.	FUSE 10A: BREAKER AND CRUSHER OPTION / SECOND OPTION / THUMB OPTION
F11.	FUSE 10A: BACK-UP
F12.	FUSE 10A: KEY SWITCH
F13.	FUSE 10A: HEATER / AIR CONDITIONER
F14.	FUSE 5A: AIR CONDITIONER COMPRESSOR
F15.	FUSE 15A: WORKING LIGHT
F16.	FUSE 15A: OPTIONAL POWER CONNECTOR
F17.	FUSE 10A: DC-DC (24V-12V) CONVERTER
F18.	FUSE 10A: WIPER AND WASHER
F19.	FUSE 10A: HORN
F2.	FUSE 20A: COMPUTER CONTROL INSTRUMENT PANEL AND DIAGNOSTIC TEST SOCKET
F26.	FUSE 10A: CIGARETTE LIGHTER
F21.	FUSE BOX
F22.	FUSE 20A: MAIN FUSE FOR F1, F11 AND F12 CIRCUITS
F23.	FUSE 60A: MAIN FUSE FOR F3 TO F10 AND F13 TO F25 CIRCUITS
F24.	FUSE 20A: MAIN FUSE FOR F2 CIRCUIT
F3.	FUSE 20A: COMPUTER POWER / THROTTLE MOTOR DRIVER
F4.	FUSE 10A: HYDRAULIC FUNCTION CANCELLATION LEVER SWITCH
F5.	FUSE 15A: OPTIONAL POWER CONNECTOR
F6.	FUSE 20A: OPTION LINE CONNECTOR
F7.	FUSE 20A: FUEL FILLER PUMP
F8.	FUSE 10A: CAB SEAT AIR SUS
F9.	FUSE 10A: CONDENSOR FAN RELAY
G1.	BATTERY
G2.	ALTERNATOR
H1.	AUDIBLE WARNING DEVICE
H2.	TRAVEL ALARM
K1.	RELAY-ENGINE EMERGENCY STOP
K10.	RELAY-THUMB
K13.	RELAY-STARTER
K14.	RELAY-FUEL SHUTOFF
K16.	RELAY-ETHER START
K17.	BLOWER OFF RELAY
K3.	RELAY-HORN
K4.	RELAY-WORKING LIGHT
K7.	RELAY BATTERY
M1.	STARTER MOTOR
M3.	WIPER MOTOR
M4.	WASHER MOTOR
M5.	MOTOR-ACT (AIR-CHG)
M6.	AIR VENT DIRECTION CONTROL MOTOR
M7.	MOTOR-ACT (AIR-MIX)
M9.	BLOWER MOTOR
M10.	THROTTLE MOTOR
P1.	INSTRUMENT PANEL
P2.	SWITCH PANEL (LEFT-HAND)
P3.	SWITCH PANEL (RIGHT-HAND)
P4.	MONITOR DISPLAY
P5.	HOURMETER
P6.	AIR CONDITIONER CONTROL PANEL
P8.	HEATER CONTROL PANEL
R3.	THROTTLE VOLUME
R4.	THERMISTOR
R5.	FUEL SENSOR
S1.	KEY SWITCH
S10.	WORKING LIGHT SWITCH
S11.	WIPER SWITCH
S12.	WASHER SWITCH
S13.	OVERLOAD SWITCH
S14.	BREAKER / CRUSHER SWITCH
S15.	HORN SWITCH
S16.	ONE TOUCH IDLE
S2.	TRAVEL MODE SWITCH
S21.	ONE TOUCH POWER UP/MULTIPURPOSE (R)
S22.	FREE SWING SWITCH
S23.	ETHER START SWITCH
S24.	OPTION LINE SWITCH (MULTI PURPOSE/ THUMB)
S25.	ONE TOUCH MULTIPURPOSE (L)
S3.	WORK MODE SWITCH
S4.	AUTO MODE SWITCH (NOT USED)
S5.	CUSHION CONTROL 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 LSW
S7.	AUDIBLE ALARM CUT OUT SWITCH
S8.	SWING BRAKE SWITCH
S9.	ENGINE EMERGENCY STOP SWITCH
U1.	DC-DC (24V-12V) CONVERTER
W1.	ANTENNA
X1.	FUEL FILLER PUMP CONNECTOR
X3.	OPTIONAL POWER CONNECTOR
X4.	ENGINE TEST POINT CONNECTOR
X5.	CONTROLLER TEST POINT CONNECTOR
X8.	RADIO CONNECTOR
X9.	ANTI-THEFT SYSTEM CONNECTOR
Y1.	SWING PILOT SHUT-OFF SOLENOID VALVE (GREEN BAND)
Y16.	MULTI-PURPOSE SOLENOID VALVE (R) (OPTIONAL)
Y17.	MULTI-PURPOSE SOLENOID VALVE (L) (OPTIONAL)
Y18.	FREE SWING SOLENOID VALVE
Y19.	ETHER SOLENOID VALVE
Y2.	PILOT PRESSURE SOLENOID VALVE (BLUE BAND)
Y20.	FUEL SHUT-OFF SOLENOID VALVE
Y3.	SWING BRAKE SOLENOID VALVE (PINK BAND)
Y4.	2 STAGE TRAVEL SOLENOID VALVE (RED BAND)
Y5.	POWER-UP SOLENOID VALVE (YELLOW BAND)
Y6.	CUSHION CONTROL SOLENOID VALVE (LIGHT GREEN BAND)
Y7.	MAIN PUMP PROPORTIONAL SOLENOID
Y8.	AIR CONDITIONNER MAGNET CLUTCH
Y9.	CRUSHER/BREAKER OPTION TWO FLOW SOLENOID VALVE

LEGEND

- CONNECTED
- NOT CONNECTED
- BOOT GROUND
- CABLE GROUND
- SINGLE WIRE CONNECTOR
- HARNESS
- CONNECTOR (MALE)
- CONNECTOR (FEMALE)
- INSULATION AGAINST MAGNETISM
- INDICATES CONSTANT POWER
- INDICATES POWER WHEN KEY SWITCH IS ON

CN12 (P6)

CONNECTOR NUMBER (IN CAB) — COLOR OF CONNECTOR (IF NOT INDICATED COLOR IS WHITE)

CONNECTOR LETTER LOCATED (OUTSIDE CAB)

60 B 001 — AREA COLOR — CIRCUIT NUMBER

TABLE OF COLOR SYMBOLS

SYMBOL	COLOR
B	BLACK
W	WHITE
Br	BROWN
P	PINK
V	VIOLET
G	GREEN
O	ORANGE
R	RED
Y	YELLOW
Lg	LIGHT GREEN
Sb	SKY BLUE
L	BLUE
Gr	GRAY

NOTE...
1. "BR" INDICATES BLACK CABLE WITH RED STRIPE.
2. WATERPROOF CONNECTORS USED OUTSIDE OF CAB.

CX 130 - CX 160 EXCAVATOR ELECTRICAL SCHEMATIC

Part Number 7-28511

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