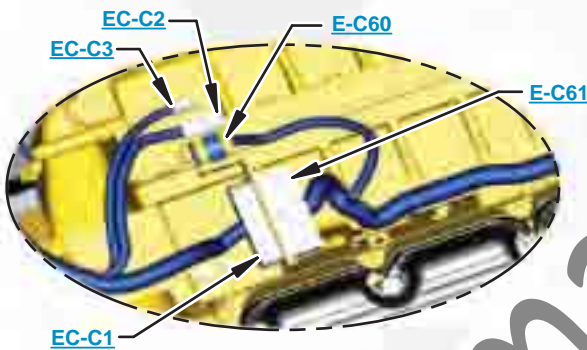




This document is best viewed at a screen resolution of 1024 X 768.

To set your screen resolution do the following:
RIGHT CLICK on the **DESKTOP**.
 Select **PROPERTIES**.
CLICK the **SETTINGS TAB**.
MOVE THE SLIDER under **SCREEN RESOLUTION** until it shows **1024 X 768**.
CLICK OK to apply the resolution.

The Bookmarks panel will allow you to quickly navigate to points of interest.



Click on any text that is BLUE and underlined. These are hyperlinks that can be used to navigate the schematic and machine views.

VIEW ALL CALLOUTS

When only one callout is showing on a machine view this button will make all of the callouts visible. This button is located in the top right corner of every machine view page.

HOTKEYS (Keyboard Shortcuts)		
	FUNCTION	KEYS
	Zoom In	"CTRL" / "+"
	Zoom Out	"CTRL" / "-"
	Fit to Page	"CTRL" / "0" (zero)
	Hand Tool	"SPACEBAR" (hold down)
	Find	"CTRL" / "F"



Schematic

320C Excavator Electrical System

MAB1-UP
PAB1-UP
GAC1-UP
FBC1-UP
EAG1-UP
GNG1-UP
SBN1-UP
HKT1-UP
RAW1-UP

SchematicCat.com

COMPONENT LOCATION



Component	Schematic Location	Machine Location	Component	Schematic Location	Machine Location
Actuator-Engine Gov.	A-12	1	Solenoid- Flow Limit (ATCH)	B-8	45
Alarm-Action	D-1	2	Solenoid-1way/2way Control (ATCH)	A-4	46
Alarm-Travel (ATCH)	A-5	3	Solenoid-A/C Clutch	B-12	47
Alternator	C-12	4	Solenoid-Fine Swing (ATCH)	D-11	48
Battery	I-12	5	Solenoid-Hammer (ATCH)	H-12	49
Battery (ATCH)	I-12	6	Solenoid-Hydraulic Lock	D-12	50
Block	G-8	7	Solenoid-Power Shift Control	A-7	51
Breaker-Alternator	G-10	8	Solenoid-Quick Coupler (ATCH)	A-7	52
Control-Engine/Pump	F-9	9	Solenoid-Relief 1 (ATCH)	A-4	53
Control-Valve (ATCH)	D-9	10	Solenoid-Relief 2 (ATCH)	A-5	46
Control-Wiper	D-2	11	Solenoid-Relief Check 1 (ATCH)	A-4	54
Converter- 12V 7A	I-6	12	Solenoid-Relief Check 2 (ATCH)	A-5	55
Converter- Radio	D-5	13	Solenoid-Stem 1 Cont. (A) (ATCH)	A-8	56
Diode- Chassis Lamp Relay	I-11	14	Solenoid-Stem 1 Cont. (B) (ATCH)	A-8	56
Diode- Heater Control	H-7	15	Solenoid-Stem 2 Cont. (A) (ATCH)	A-8	56
Diode- Main Relay	I-8	16	Solenoid-Stem 2 Cont. (B) (ATCH)	A-8	56
Diode- Refueling Power Relay	A-2	17	Solenoid-Stem 3 Cont. (A) (ATCH)	A-9	57
Diode- Start Relay	H-7	18	Solenoid-Stem 3 Cont. (B) (ATCH)	A-9	57
Engine Speed Pickup	A-10	19	Solenoid-Swing Brake	D-12	50
Fuse Base	H-10	14	Solenoid-Thumb Close (ATCH)	A-9	56
Heater-Air	A-10	20	Solenoid-Thumb Open (ATCH)	A-9	56
Ind. Unit	G-1	21	Solenoid-Travel Speed	E-12	50
Joystick 1 (ATCH)	I-2	22	Solenoid-Travel Straight	D-12	58
Joystick 2 (ATCH)	G-1	21	Switch- Air Cleaner	I-11	59
Meter-Service	D-1	23	Switch- Lower Wiper (ATCH)	D-3	21
Monitor	F-1	24	Switch- Secondary Shutdown	G-3	60
Motor- Lower Wiper (ATCH)	I-1	25	Switch-Aux. Hydraulic Pressure (ATCH)	H-1	61
Motor-Lower Washer (ATCH)	I-12	26	Switch-Backup EPR Valve	G-2	62
Motor- Starter	B-12	27	Switch- Backup Gov.	G-2	62
Motor-Washer	I-12	26	Switch-Coolant Level	I-12	63
Motor-Wiper	E-1	28	Switch-Disconnect	G-11	64
Panel-A/C Switch	D-3	25	Switch-Engine Oil	A-12	65
Panel-Heater Switch	D-3	29	Switch-Engine Oil Level	A-12	66
Panel-Switch	D-2	30	Switch-Fine Swing Control (ATCH)	D-4	67
Pump-Refueling (ATCH)	A-3	31	Switch-Hammer Foot (ATCH)	I-3	68
Relay- Main	I-7	14	Switch-Hammer Pressue (ATCH)	H-12	49
Relay-Boom Lamp	I-11	32	Switch-Hammer Pressure (ATCH)	H-1	61
Relay-Cab Lamp	H-11	32	Switch-Hammer Pressure (ATCH)	A-9	56
Relay-Chassis Lamp	I-11	32	Switch-Horn	I-2	69
Relay-Heater	I-8	15	Switch-Hydraulic Oil Filter	A-6	70
Relay-Horn	H-11	33	Switch-Hydraulic Oil Level	A-6	71
Relay-Hydraulic Lock Solenoid	H-11	33	Switch-Joystick Pressure	I-3	72
Relay-Neutral Start	G-11	33	Switch-Key	G-1	21
Relay-Refueling Power (ATCH)	A-2	17	Switch-Lower Washer (ATCH)	D-3	21
Relay-Refueling Start (ATCH)	A-3	34	Switch-Medium Line Pressure (ATCH)	I-1	61
Relay-Refueling Stop (ATCH)	A-2	34	Switch-Neutral Start Limit	I-2	73
Relay-Start	G-7	18	Switch-One Touch Low Idle	H-1	21
Relay-Start Control	I-10	35	Switch-Quick Coupler (ATCH)	E-1	74
Relay-Thumb Close (ATCH)	I-8	18	Switch-Refueling (ATCH)	A-5	75
Relay-Thumb Open (ATCH)	I-9	18	Switch-Refueling Start (ATCH)	A-3	76
Relay-Timer	I-10	35	Switch-Refueling Stop (ATCH)	A-3	76
Resistor-Backup	I-7	16	Switch-Seat Heater (ATCH)	D-3	21
Seat w/Seat Heater (ATCH)	H-1	36	Switch-Straight Travel Pressure (ATCH)	H-1	77
Sender-Coolant Temperature	C-12	37	Switch-Throttle Position	G-1	21
Sender-Fuel Level	A-6	38	Switch-Travel Left Pressure	I-1	25
Sender-Hydraulic Oil Temperature	A-6	39	Switch-Travel Right Pressure	I-1	78
Sensor-A/C Photo	F-1	40	Switch-Under Window Limit (ATCH)	E-1	79
Sensor-AIH Coolant Temperature	C-12	37	Switch-Window Limit	F-1	80
Sensor-Pump Discharge Pressure 1	A-7	41	Unit-A/C	F-5	81
Sensor-Pump Discharge Pressure 2	A-7	42	Unit-Heater (ATCH)	F-5	81
Sensor-Squeeze Pressure (ATCH)	A-4	43	Unit-Heater Control	I-7	16
Sensor-Water Separator Level (ATCH)	I-12	44			

CONNECTOR LOCATION



Connector Number	Schematic Location	Machine Location
CONN 1	D-12	82
CONN 2 ET CONN	I-11	35
CONN 4	G-9	8
CONN 5	G-8	8
CONN 6	G-8	18
CONN 7	G-8	18
CONN 8	G-7	18
CONN 9	G-7	18
CONN 10	E-7	9
CONN 11	C-6	56
CONN 12	D-6	83
CONN 13	I-6	84
CONN 14	G-5	72
CONN 15	F-5	85
CONN 16	F-4	85
CONN 17	F-4	85
CONN 18	F-3	85
CONN 19	H-3	60
CONN 20	H-3	86
CONN 21	B-3	87
CONN 22	B-3	87
CONN 23	A-3	88
CONN 24	A-3	88
CONN 25	C-2	89
CONN 26	C-2	90
CONN 27	E-2	91
CONN 28	F-2	92
CONN 29	H-2	86
CONN 3	G-9	8
CONN 30	H-2	86
CONN 31	H-2	86
CONN 32	I-2	84
CONN 33	I-2	84
CONN 34	I-2	84
CONN 35	G-1	93
CONN 36	A-5	94

Component Identifiers (CID) ¹ Module Identifier (MID) ² Engine/Pump Controller (MID No. 069)	
CID	Component
0091	Throttle Position Signal
0096	Fuel Level Sender
0110	Engine Coolant Temperature Sensor
0167	Alternator
0168	Voltage of the Power Supply (Keyswitch)
0190	Speed Sensor
0248	CAT Data Link
0286	Signal for Engine Oil Pressure Decrease
0374	Swing Brake Solenoid Valve
0376	Travel Alarm
0581	Proportional Reducing Valve for the Power Shift Pressure
0586	Engine Speed Dial
0587	Feedback Sensor for the Governor Actuator
0590	Engine Control
0598	Travel Speed Solenoid
0600	Hydraulic Oil Temperature Sender
1161	Pump Delivery Pressure Sensor (Drive)
1162	Pump Delivery Pressure Sensor 2 (Idle)
1525	Straight Travel Solenoid
2002	Action Alarm
Valve Control (MID No. 6A)	
CID	Component
0145	12V DC Power Supply
1522	Check Valve Solenoid 2
1523	Check Valve Solenoid 2
1593	Auxiliary Stem 1 Extend Solenoid Valve
1594	Auxiliary Stem 2 Extend Solenoid Valve
1595	Auxiliary Stem 3 Extend Solenoid Valve
1596	Auxiliary Stem 1 Retract Solenoid Valve
1597	Auxiliary Stem 2 Retract Solenoid Valve
1598	Auxiliary Stem 3 Retract Solenoid Valve
1609	Clench Pressure Sensor
1615	1way/2way Flow Solenoid Valve
1657	Left Joystick Slide Control
1658	Right Joystick Slide Control
1665	Relief 1 Solenoid Valve
1666	Relief 2 Solenoid Valve

¹ The CID is a diagnostic code that indicates which component is faulty.

² The MID is a diagnostic code that indicates which electronic control module diagnosed the fault.

Failure Mode Identifiers (FMI) ¹	
FMI No.	Failure Description
0	Data valid but above normal operational range.
1	Data valid but below normal operational range.
2	Data erratic, intermittent, or incorrect.
3	Voltage above normal or shorted high.
4	Voltage below normal or shorted low.
5	Current below normal or open circuit.
6	Current above normal or grounded circuit.
7	Mechanical system not responding properly.
8	Abnormal frequency, pulse width, or period.
9	Abnormal update.
10	Abnormal rate of change.
11	Failure mode not identifiable.
12	Bad device or component.
13	Out of calibration.
14	Parameter failures.
15	Parameter failures.
16	Parameter not available.
17	Module not responding.
18	Sensor supply fault.
19	Condition not met.
20	Parameter failures.

¹The FMI is a diagnostic code that indicates what type of failure has occurred.

Event Codes Engine/Pump Control	
Event Code	Condition
17	Coolant Overheat
43	Battery Voltage Too Low
50	Battery Voltage Too High
59	Low Coolant Level
95	Fuel Filter is Clogged
100	Engine Oil Pressure is Low
119	Fuel Level is Low
171	Engine Oil Level is Low
179	Abnormal Battery Charge
232	Water Separator Draining Demand
235	Hydraulic Oil Level is Low
236	Hydraulic Oil Filter is Clogged
237	Overload Warning
272	Air Filter is Clogged
600	Hydraulic Oil Overheat
862	Special Filter is Clogged
863	Automatic Greasing Failure

Resistor, Sender and Solenoid Specifications		
Part No.	Component Description	Resistance (Ohms) ¹
102-8016	Resistor: Backup	47 ± 2
111-9916	Solenoid: Power Shift Control Stem 1 (A) Stem 1 (B) Stem 2 (A) Stem 2 (B) Stem 3 (A) Stem 3 (B)	11.7 ± 1.2
112-0090	Solenoid: Relief 1 Relief 2	19.5 ± 2
121-1491	Solenoid: Hydraulic Lock Swing Brake Travel Speed Travel Straight Thumb Close (ATCH) Thumb Open (ATCH)	32.0 ± 3.2
152-8346	Solenoid: Quick Coupler (ATCH)	32.6 ± 1.6
163-6700	Sender: Fuel Level	Empty: 83.5 ± 1.5 Midpoint: 33.8 ± 2.0 Full: 8.0 +1.0 or -0.5
171-0188	Solenoid: Flow Limit	11.5 ± 0.5
41-5394	Sender: Hydraulic Oil Temperature	20824-25451 @ 0°C (32°F) 6134-7496 @ 25°C (77°F) 3989-4875 @ 35°C (95°F) 2224-2718 @ 50°C (122°F) 973-1189 @ 75° (167°F) 475-522 @ 100°C (212°F) 221-269 @ 125°C (257°F)

¹ At room temperature unless otherwise noted.

Related Electrical Service Manuals		
Title		Form Number
Alternator:	212-8561	SENR2143
Electric Starting Motor:	125-2988	REG00843
Engine/Pump Control:		REN3814
Tool/Valve Control:		REN3823

Off Machine Switch Specification

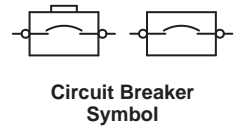
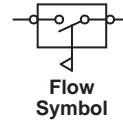
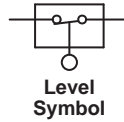
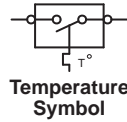
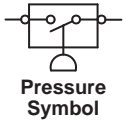
Part No.	Function	Actuate	Deactuate	Contact Position
154-0498	Air Cleaner	635 ± 58 mm H ₂ O		Normally Open
167-3466	Travel Left Pressure Travel Right Pressure Medium Line Pressure (ATCH) Hammer Pressure (ATCH) Aux. Hydraulic Pressure (ATCH) Straight Travel Pressure (ATCH) Joystick Pressure	490 ± 49 kPa (71.07 ± 7.11 psi)	290 kPa MIN (42.06 psi)	Normally Open

HARNESS and WIRE

Electrical Schematic Symbols



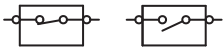
Symbols



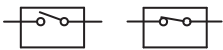
Symbols and Definitions



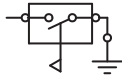
Fuse: A component in an electrical circuit that will open the circuit if too much current flows through it.



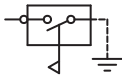
Switch (Normally Open): A switch that will close at a specified point (temp, press, etc.). The circle indicates that the component has screw terminals and a wire can be disconnected from it.



Switch (Normally Closed): A switch that will open at a specified point (temp, press, etc.). No circle indicates that the wire cannot be disconnected from the component.



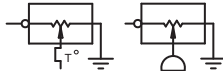
Ground (Wired): This indicates that the component is connected to a grounded wire. The grounded wire is fastened to the machine.



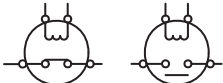
Ground (Case): This indicates that the component does not have a wire connected to ground. It is grounded by being fastened to the machine.



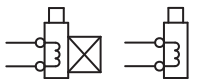
Reed Switch: A switch whose contacts are controlled by a magnet. A magnet closes the contacts of a normally open reed switch; it opens the contacts of a normally closed reed switch.



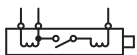
Sender: A component that is used with a temperature or pressure gauge. The sender measures the temperature or pressure. Its resistance changes to give an indication to the gauge of the temperature or pressure.



Relay (Magnetic Switch): A relay is an electrical component that is activated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close the switch part of the relay.



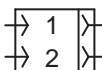
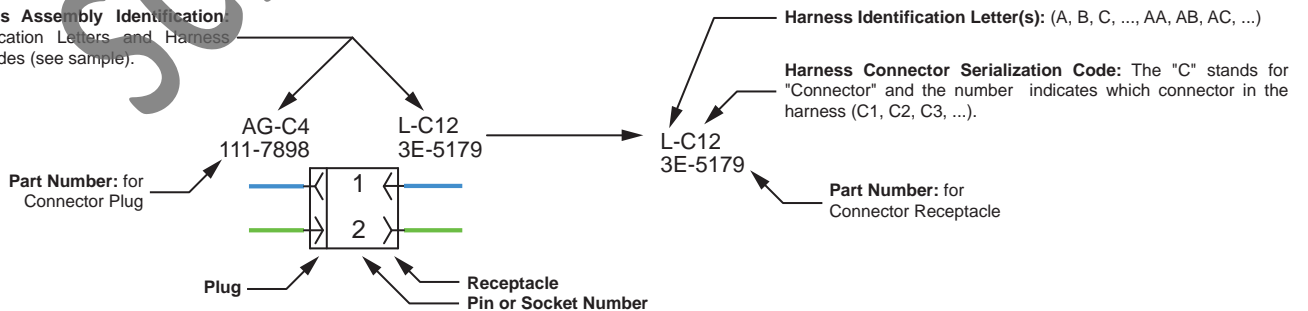
Solenoid: A solenoid is an electrical component that is activated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close a valve or move a piece of metal that can do work.



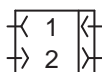
Magnetic Latch Solenoid: A magnetic latch solenoid is an electrical component that is activated by electricity and held latched by a permanent magnet. It has two coils (latch and unlatch) that make electromagnet when current flows through them. It also has an internal switch that places the latch coil circuit open at the time the coil latches.

Harness and Wire Symbols

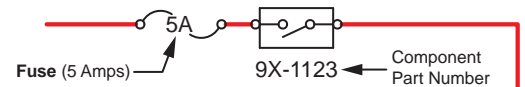
Wire, Cable, or Harness Assembly Identification: Includes Harness Identification Letters and Harness Connector Serialization Codes (see sample).



Deutsch connector: Typical representation of a Deutsch connector. The plug contains all sockets and the receptacle contains all pins.



Sure-Seal connector: Typical representation of a Sure-Seal connector. The plug and receptacle contain both pins and sockets.



Harness identification code: This example indicates wire group 325, wire 135 in harness "AG".

Wire Gauge

Wire Color

MACHINE HARNESS CONNECTOR AND COMPONENT LOCATIONS

