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3064 and 3066 Engines for Caterpillar Built Machines - SENR5546

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3064 and 3066 Engines for Caterpillar Built Machines - SENR5546

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3064 and 3066 Engines for Caterpillar Built Machines - SENR5553

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COOLING SYSTEM

Systems Operation

3064 and 3066 Engines for Caterpillar Built Machines - SENR5546

- Cooling System

Testing and Adjusting

3064 and 3066 Engines for Caterpillar Built Machines - SENR5546

- Cooling System - Check - Overheating
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3064 and 3066 Engines for Caterpillar Built Machines - SENR5553

- Engine Oil Cooler - Remove
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320C Excavator 3066 Engine Supplement - RENR9406

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3064 and 3066 Engines for Caterpillar Built Machines - SENR5545

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320C Excavator 3066 Engine Supplement - RENR9406

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3064 and 3066 Engines for Caterpillar Built Machines - SENR5545

- Water Pump

PUMP GP-WATER - Disassembly and Assembly

3064 and 3066 Engines for Caterpillar Built Machines - SENR5553

- Water Pump - Remove
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ELECTRICAL AND STARTING SYSTEM

Systems Operation

3064 and 3066 Engines for Caterpillar Built Machines - SENR5546

- Electrical System

312C, 315C, 318C, 319C, 320C, 321C, 322C, 325C, 330C and M325C Excavators and 325C MHPU and 330C MHPU Mobile Hydraulic Power Units Engine and Pump Control - V2 - RENR3814

- General Information (Electrical System)
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- Engine Speed Protection
- Swing Lock System
- Backup System
- Engine and Hydraulic Pump Controller
- Switches
- Sensors
- Senders
- Solenoid Valves
- Related Components

320C Excavator Hydraulic System - RENR3816

- Electronic Control System
- Solenoid Valve (Proportional Reducing) - Power Shift System

320C, 322C and 325C Excavators Tool Control System - RENR3823

- Implement Electronic Control Module (Tool)

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Previous Screen

Product: EXCAVATOR
Model: 320C EXCAVATOR GLA
Configuration: 320C, 320C L, 320C LN Excavators GLA00001-UP (MACHINE) POWERED BY 3066 Engine

Systems Operation
EquipmentManager Dealer Administrator Manual
Media Number -KENR6304-08 **Publication Date -01/05/2010** **Date Updated -18/05/2010**

i03319401

General Information

SMCS - 7600; 7606

Use of this Manual

EquipmentManager provides valuable information that allows remote monitoring of either a single machine or a fleet of machines. Customers can perform the following tasks if the customer can provide the location of the machine, Service Meter Unit (SMU), and information about the health of the machine:

- Manage the location and the basic usage of engines and machines.
- Schedule maintenance that is planned and schedule major repairs.
- Manage fault codes or diagnostic codes.
- Detect problems before problems cause a major component failure.
- Increase the availability and the productivity for the machines by avoiding unexpected downtime for repairs.
- Identify the need for training in order to improve the efficiency of the operator.

EquipmentManager is part of Dealer Web site and works with other applications such as PartStore and EquipmentManager. EquipmentManager enables customers to remotely manage fleets. The customer is alerted to only those machines that need immediate attention.

The "EquipmentManager Dealer Administrator Manual" includes the following information:

- Setting up Product Link Modules (PLM)
- Registering PLM
- Setting up and maintaining the accounts of the customer
- Customizing EquipmentManager for optimum use
- Managing EquipmentManager functions

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Product: EXCAVATOR
Model: 320C EXCAVATOR GLA
Configuration: 320C, 320C L, 320C LN Excavators GLA00001-UP (MACHINE) POWERED BY 3066 Engine

Testing and Adjusting
3064 and 3066 Engines for Caterpillar Built Machines
Media Number -SENR5546-15 **Publication Date -01/07/2013** **Date Updated -30/07/2013**

i02686950

Alternator - Test

SMCS - 1405-081

Table 1

Required Tools		
Part Number	**Part Name**	**Qty**
237-5130	Digital Multimeter	1
225-8266	Ammeter Tool Gp	1

1. Put the positive lead "+" of the multimeter on the "Bat" terminal of the alternator. Put the negative "-" lead on the ground terminal or on the frame of the alternator. Put the ammeter around the positive output wire of the alternator.

2. Turn off all electrical accessories. Turn off the fuel to the engine. Crank the engine for 30 seconds. Wait for two minutes in order to cool the starting motor. If the electrical system appears to operate correctly, crank the engine again for 30 seconds.

   Note: Cranking the engine for 30 seconds partially discharges the batteries in order to do a charging test. If the battery has a low charge, do not perform this step. Jump start the engine or charge the battery before the engine is started.

3. Start the engine and run the engine at full throttle.

4. Check the output current of the alternator. The initial charging current should be equal to the minimum full load current or greater than the minimum full load current. Refer to Specifications, "Alternator and Regulator" for the correct minimum full load current.

Table 2

Fault Conditions And Possible Causes			
Current At Start-up	The Voltage Is Below Specifications After 10 Minutes.	The Voltage Is Within Specifications After 10 Minutes.	The Voltage Is Above Specifications After 10 Minutes.

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ENGINE ARRANGEMENT

Systems Operation

3064 and 3066 Engines for Caterpillar Built Machines - SENR5546

- General Information

Testing and Adjusting

3064 and 3066 Engines for Caterpillar Built Machines - SENR5546

- Troubleshooting
- Engine Speed - Check

320C Excavator Hydraulic System - RENR3895

- Engine Performance - Test - Engine Speed

Specifications / Disassembly and Assembly

ENGINE AR - Specifications

3064 and 3066 Engines for Caterpillar Built Machines - SENR5545

- Engine Design
- Engine Design

ENGINE AR - Disassembly and Assembly

320C Excavator 3066 Engine Supplement - RENR9406

- Hydraulic System Pressure - Release
- Engine - Remove
- Engine - Install

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FRAME AND BODY

Systems Operation

320C Excavator Hydraulic System - RENR3816

- Swing Hydraulic System

Testing and Adjusting

320C Excavator Hydraulic System - RENR3895

- Swing Bearing Movement - Measure

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COUNTERWEIGHT GP - Disassembly and Assembly

320C Excavator Machine Systems - RENR3826

- Counterweight - Remove and Install

DRIVE GP-SWING - Disassembly and Assembly

320C Excavator Machine Systems - RENR3826

- Swing Drive - Remove
- Swing Drive - Disassemble
- Swing Drive - Assemble
- Swing Drive - Install

FRAME GP - Specifications

320C Excavator Machine System Specifications - RENR3815

- Upper Frame
- Upper Frame

FRAME GP - Disassembly and Assembly

320C Excavator Machine Systems - RENR3826

- Undercarriage Frame - Remove
- Undercarriage Frame - Install

GEAR & BEARING GP - Specifications

320C Excavator Machine System Specifications - RENR3815

- Swing Gear and Bearing

GEAR & BEARING GP - Disassembly and Assembly

320C Excavator Machine Systems - RENR3826

- Swing Gear and Bearing - Remove
- Swing Gear and Bearing - Install

GUARD GP - Disassembly and Assembly

320C Excavator Machine Systems - RENR3826

- Travel Motor Guard - Remove and Install

HOOD GP - Disassembly and Assembly

320C Excavator 3066 Engine Supplement - RENR9406

- Hood - Remove and Install

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FUEL SYSTEM

Systems Operation

3064 and 3066 Engines for Caterpillar Built Machines - SENR5546

- Fuel System

312C, 315C, 318C, 319C, 320C, 321C, 322C, 325C, 330C and M325C Excavators and 325C MHPU and 330C MHPU Mobile Hydraulic Power Units Engine and Pump Control - V2 - RENR3814

- Governor Actuator Control

ZEXEL FUEL SYSTEM - SENR6572

- Systems Operations

Testing and Adjusting

3064 and 3066 Engines for Caterpillar Built Machines - SENR5546

- Fuel System - Inspect
- Air in Fuel - Test
- Fuel Injection Nozzle - Test
- Fuel Injection Timing - Check
- Fuel Quality - Test
- Fuel System - Prime
- Fuel System Pressure - Test
- Governor - Adjust - In-line Fuel Pump
- Low Idle RPM - Adjust
- High Idle RPM - Adjust

312C, 315C, 318C, 319C, 320C, 321C, 322C, 325C, 330C and M325C Excavators and 325C MHPU and 330C MHPU Mobile Hydraulic Power Units Engine and Pump Control - V2 - RENR3814

- Check of Governor Actuator - Troubleshoot - CID 91 - 315C, 318C, 319C, 320C, 321C, And 322C
- Check of Feedback Signal From Governor Actuator - Troubleshoot - CID 587
- Governor Actuator Sweep - Test
- Governor Actuator - Replace
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320C, 322C and 325C Excavators Tool Control System - RENR3823

- Governor Actuator - Calibrate

ZEXEL FUEL SYSTEM - SENR6572

- Testing and Adjusting

Specifications / Disassembly and Assembly

FUEL SYSTEM - Disassembly and Assembly

ZEXEL FUEL SYSTEM - SENR6572

- Governor

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HYDRAULIC SYSTEM

Systems Operation

320C Excavator Hydraulic System - RENR3816

- General Information
- Main Hydraulic System
- Pilot Hydraulic System
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- Hydraulic Filter (Pilot)
- Relief Valve (Pilot)
- Accumulator (Pilot)
- Solenoid Valve (Hydraulic Lockout)
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- Solenoid Valve (Proportional Reducing) - Power Shift System
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- Pump Control (Main Hydraulic) - Main Pump Regulator
- Main Control Valve
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- Relief Valve (Line)
- Check Valve (Load)
- Boom Hydraulic System
- SmartBoom Hydraulic System
- Boom Drift Reduction Valve
- Control Valve (Boom Lowering)
- Stick Hydraulic System
- Stick Drift Reduction Valve
- Bucket Hydraulic System
- Cylinders (Boom, Stick and Bucket)
- Swing Hydraulic System
- Swing Motor
- Pilot Valve (Swing Parking Brake)
- Relief Valve (Swing)

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IMPLEMENTS

Systems Operation

320C Excavator Hydraulic System - RENR3816

- SmartBoom Hydraulic System

Specifications / Disassembly and Assembly

BOOM GP - Specifications

320C Excavator Machine System Specifications - RENR3815

- Boom
- Boom
- Boom - Fore Boom
- Boom - Stub Boom
- Boom

BOOM GP - Disassembly and Assembly

320C Excavator Machine Systems - RENR3826

- Boom - Remove
- Boom Bearings and Seals - Remove and Install
- Boom - Install

LINKAGE GP - Specifications

320C Excavator Machine System Specifications - RENR3815

- Bucket Linkage - C-Family
- Bucket Linkage - B-Family
- Bucket Linkage

LINKAGE GP - Disassembly and Assembly

320C Excavator Machine Systems - RENR3826

- Bucket Linkage - Remove
- Bucket Linkage Bearings and Seals - Remove
- Bucket Linkage Bearings and Seals - Install
- Bucket Linkage - Install

STICK GP - Specifications

320C Excavator Machine System Specifications - RENR3815

- Stick
- Stick
- Stick
- Stick
- Stick
- Stick

STICK GP - Disassembly and Assembly

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LUBRICATION SYSTEM

Systems Operation

3064 and 3066 Engines for Caterpillar Built Machines - SENR5546

- Lubrication System

Testing and Adjusting

3064 and 3066 Engines for Caterpillar Built Machines - SENR5546

- Engine Crankcase Pressure (Blowby) - Test
- Engine Oil Pressure - Test
- Engine Oil Pump - Inspect
- Excessive Engine Oil Consumption - Inspect
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3064 and 3066 Engines for Caterpillar Built Machines - SENR5553

- Crankcase Breather - Remove and Install

FILTER GP-ENGINE OIL - Specifications

3064 and 3066 Engines for Caterpillar Built Machines - SENR5545

- Engine Oil Bypass Valve

FILTER GP-ENGINE OIL - Disassembly and Assembly

3064 and 3066 Engines for Caterpillar Built Machines - SENR5553

- Engine Oil Filter Base - Remove
- Engine Oil Filter Base - Install

320C Excavator 3066 Engine Supplement - RENR9406

- Engine Oil Filter and Oil Filter Base - Remove
- Engine Oil Filter Base - Disassemble
- Engine Oil Filter Base - Assemble
- Engine Oil Filter and Oil Filter Base - Install

LINES GP-ENGINE OIL - Specifications

3064 and 3066 Engines for Caterpillar Built Machines - SENR5545

- Engine Oil Relief Valve

LINES GP-ENGINE OIL - Disassembly and Assembly

3064 and 3066 Engines for Caterpillar Built Machines - SENR5553

- Engine Oil Relief Valve - Remove and Install

PUMP GP-ENGINE OIL - Specifications

3064 and 3066 Engines for Caterpillar Built Machines - SENR5545

- Engine Oil Relief Valve
- Engine Oil Pump

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MACHINE ARRANGEMENT

Systems Operation

All Products Air Conditioning and Heating R134a for All Caterpillar Machines - SENR5664

- Service Intervals

Testing and Adjusting

All Products Air Conditioning and Heating R134a for All Caterpillar Machines - SENR5664

- Heating and Air Conditioning Service Publications

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OPERATOR STATION

Systems Operation

312C, 315C, 318C, 319C, 320C, 321C, 322C, 325C, 330C and M325C Excavators and 325C MHPU and 330C MHPU Mobile Hydraulic Power Units Engine and Pump Control - V2 - RENR3814

- Monitoring System
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312C, 315C, 318C, 319C, 320C, 322C, 325C and 330C Excavators Air Conditioning and Heating - RENR3763

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- Refrigerant Condenser
- Refrigerant Receiver-Dryer
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320C Excavator Hydraulic System - RENR3816

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320C, 322C and 325C Excavators Tool Control System - RENR3823

- Monitor Overview

All Products Air Conditioning and Heating R134a for All Caterpillar Machines - SENR5664

- General Information
- Identifying the Refrigerant
- Identifying the Air Conditioning System

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320C Excavator Hydraulic System - RENR3816

- Final Drive

Testing and Adjusting

320C Excavator Hydraulic System - RENR3895

- Travel on Level Ground - Test - Optional Test
- Travel on Level Ground - Test

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320C Excavator Machine Systems - RENR3826

- Duo-Cone Conventional Seals - Install

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320C Excavator Machine Systems - RENR3826

- Duo-Cone Conventional Seals - Install
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- Final Drive - Install

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320C Excavator Machine System Specifications - RENR3815

- Fasteners - Travel Motor

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320C Excavator Machine Systems - RENR3826

- Sprocket - Remove and Install

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320C Excavator Machine System Specifications - RENR3815

- Track Shoe Bolts

TRACK GP - Disassembly and Assembly

320C Excavator Machine Systems - RENR3826

- Track Roller - Remove
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- 320C Excavator Hydraulic System - Attachment - Medium Pressure (Interactive) 224-3215-02
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- 320C and 322C Excavator Hydraulic System - Attachment - Stick Lowering Contol Valve (Interactive) 177-2751-01
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- Fluid Power and Electrical Graphic Symbols

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- Cab Pressurization and Filtration System

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312C, 315C, 318C, 319C, 320C, 322C, 325C and 330C Excavators Air Conditioning and Heating - RENR3763

- Required Tools
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All Products Air Conditioning and Heating R134a for All Caterpillar Machines - SENR5664

- Manifold Gauge Set (Refrigerant) - Install
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- Heating and Air Conditioning Service Publications

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All Products Air Conditioning and Heating R134a for All Caterpillar Machines - SENR5664

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3064 and 3066 Engines for Caterpillar Built Machines - SENR5545

- Fuel Filter and Water Separator
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320C Excavator Machine System Specifications - RENR3815

- Hydraulic Tank and Filter
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FILTERS - Disassembly and Assembly

320C Excavator 3066 Engine Supplement - RENR9406

- Fuel Filter (Primary) and Fuel Filter Base - Remove and Install
- Water Separator - Remove and Install
- Air Cleaner - Remove and Install

LUBRICANTS & FLUIDS - Disassembly and Assembly

320C Excavator 3066 Engine Supplement - RENR9406

- Engine Oil Filter and Oil Filter Base - Remove
- Engine Oil Filter and Oil Filter Base - Install

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UNDERCARRIAGE

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All Products Air Conditioning and Heating R134a for All Caterpillar Machines - SENR5664

- Cab Pressurization and Filtration System

Testing and Adjusting

312C, 315C, 318C, 319C, 320C, 322C, 325C and 330C Excavators Air Conditioning and Heating - RENR3763

- Required Tools
- Manifold Gauge Set (Refrigerant) - Install
- Manifold Gauge Set (Refrigerant) - Remove

All Products Air Conditioning and Heating R134a for All Caterpillar Machines - SENR5664

- Manifold Gauge Set (Refrigerant) - Install
- Manifold Gauge Set (Refrigerant) - Remove
- Heating and Air Conditioning Service Publications

Troubleshooting

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3064 and 3066 Engines for Caterpillar Built Machines - SENR5545

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- Fuel Filter and Water Separator

320C Excavator Machine System Specifications - RENR3815

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- Oil Filter (Return)
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FILTERS - Disassembly and Assembly

320C Excavator 3066 Engine Supplement - RENR9406

- Fuel Filter (Primary) and Fuel Filter Base - Remove and Install
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LUBRICANTS & FLUIDS - Disassembly and Assembly

320C Excavator 3066 Engine Supplement - RENR9406

- Engine Oil Filter and Oil Filter Base - Remove
- Engine Oil Filter and Oil Filter Base - Install

SHIPPING GP - Disassembly and Assembly

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WORK TOOL ARRANGEMENT

Systems Operation

320C Excavator Hydraulic System - RENR3816

- Medium Pressure Hydraulic System

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WORK TOOLS

Specifications / Disassembly and Assembly

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- Bucket Adjuster

BUCKET GP - Disassembly and Assembly
320C Excavator Machine Systems - RENR3826

- Bucket - Remove
- Bucket - Install

COUPLER GP-QUICK - Specifications
320C Excavator Machine System Specifications - RENR3815

- Quick Coupler (Hydraulic)
- Quick Coupler (Mechanical)
- Quick Coupler (Spindle)

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Product: EXCAVATOR
Model: 320C EXCAVATOR GLA
Configuration: 320C, 320C L, 320C LN Excavators GLA00001-UP (MACHINE) POWERED BY 3066 Engine

Systems Operation
3064 and 3066 Engines for Caterpillar Built Machines
Media Number -SENR5546-15 **Publication Date -01/07/2013** **Date Updated -30/07/2013**

i01563814

Air Inlet and Exhaust System

SMCS - 1050

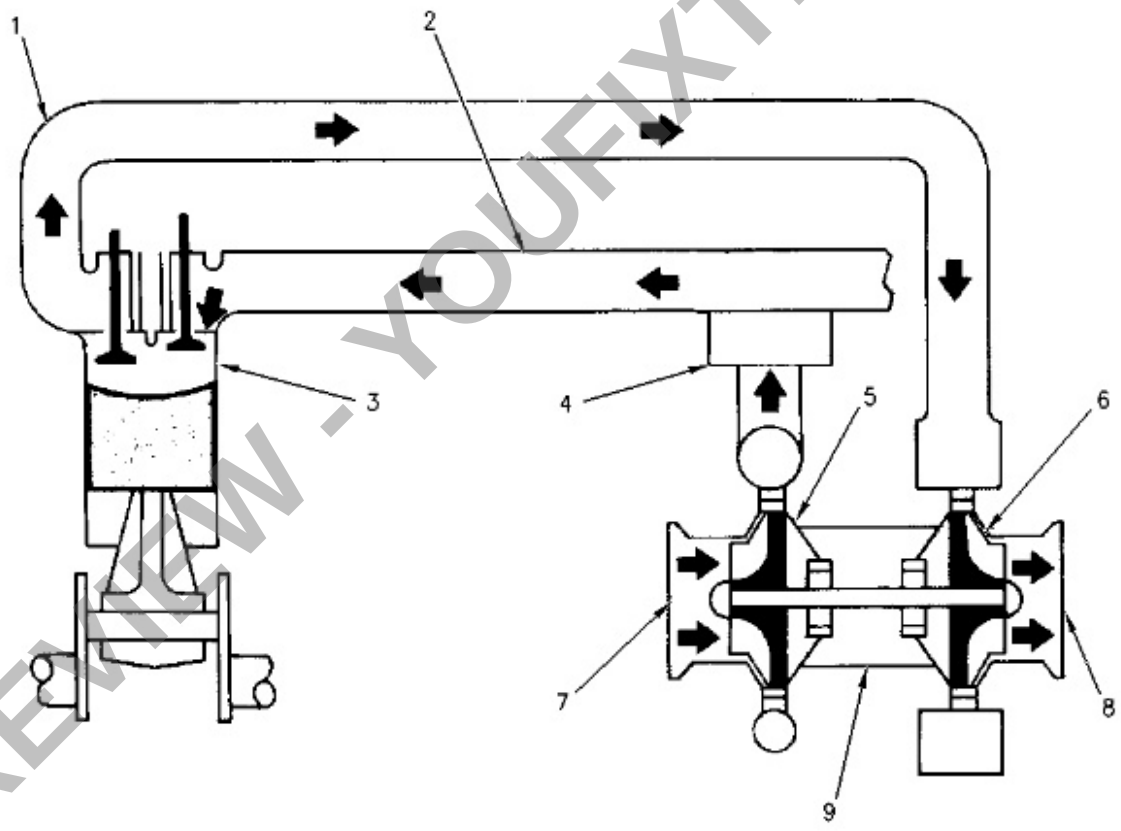

Illustration 1 g00549374

Air Inlet and Exhaust System Schematic

(1) Exhaust manifold

(2) Inlet manifold

(3) Engine cylinder

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Product: EXCAVATOR
Model: 320C EXCAVATOR GLA
Configuration: 320C, 320C L, 320C LN Excavators GLA00001-UP (MACHINE) POWERED BY 3066 Engine

Testing and Adjusting
Product Link 121S/300
Media Number -RENR7911-10 **Publication Date -01/06/2013** **Date Updated -27/06/2013**

i04907011

Electronic Control Module (ECM) - Flash Program

SMCS - 7610-591

Perform the following procedure in order to flash program Product Link. Product Link is flashed in order to upgrade the software. Flash programming of Product Link must also be done if Product Link has been replaced. The Caterpillar Electronic Technician (Cat ET) contains the program WinFlash®. WinFlash is used in order to load software into Product Link.

Refer to Systems Operation, Troubleshooting, Testing and Adjusting, "Configuration" in order to configure the following products:

- PL121SR
- PL300

Note: Two communications adapters are available in order to flash program the electronic control modules. The **7X-1700** Communications Adapter can be used, or the **171-4400** Communication Adapter II can be used.

PL321SR - The **171-4400** Caterpillar Communications Adapter II hardware is connected between the service connector for the machine and the PC serial port or the PC parallel port. The Cat ET "Communications Interface Device" is configured for "Caterpillar Communications Adapter II (RP1210)".

PL121SR - The **245-7310** Serial Service cable is to be used only for the configuration of the PL121SR radio system.

Note: Only the **171-4400** Caterpillar Communications Adapter II is to be used for the PL321SR (PL121SR plus PL300) system configurations.

Note: DO NOT USE the **171-4400** Caterpillar Communications Adapter II for the PL121SR system.

Note: DO NOT USE the **245-7310** Serial Service cable for the PL321SR system.

PL121SR System

Flash Program the PL121SR Radio Module

The following steps explain the flash procedure for the PL121SR. **RADIO ONLY** system

1. **Procedure to connect a laptop computer to the machine**

    a. Connect the **245-7310** Serial Service cable between the laptop computer and the serial service connector on the wiring harness of the machine.

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Troubleshooting
320C, 322C and 325C Excavators Tool Control System
Media Number -RENR3823-15 **Publication Date -01/02/2013** **Date Updated -25/02/2013**

i02581769

MID 06A - CID 1596 - FMI 05

SMCS - 5479-038-QY

Conditions Which Generate This Code:

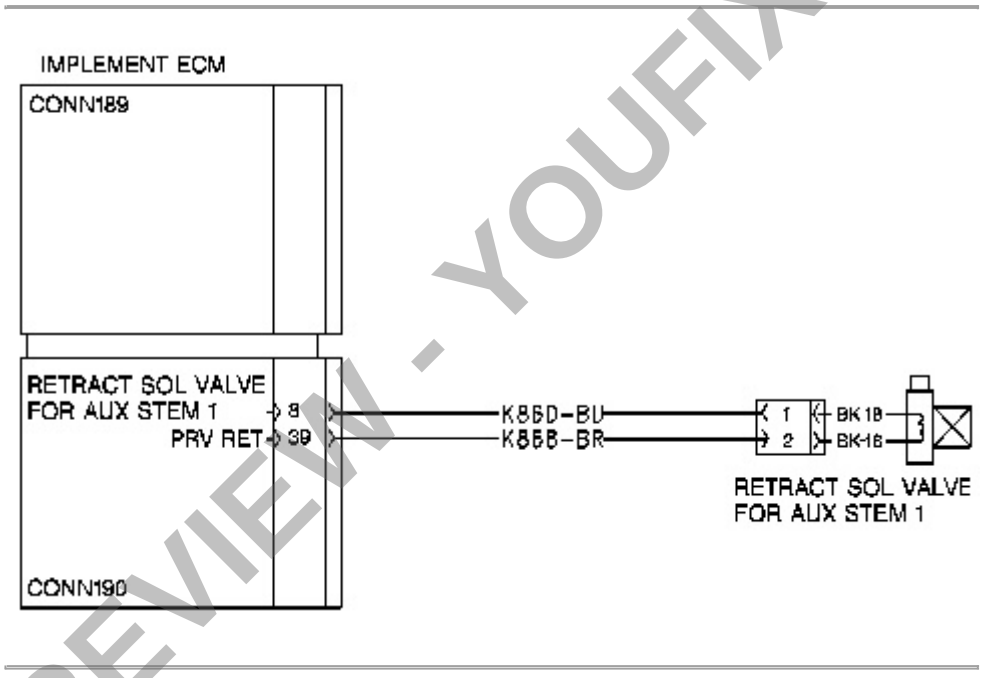

Illustration 1 g00797188

Schematic of the Retract Solenoid Valve for Auxiliary Stem 1

This diagnostic code is associated with the retract solenoid valve for auxiliary stem 1. This diagnostic code is recorded when the implement ECM reads the current of the solenoid as being below normal. There is an open circuit.

The possible causes of this diagnostic code are listed:

- The signal circuit of the solenoid is open.

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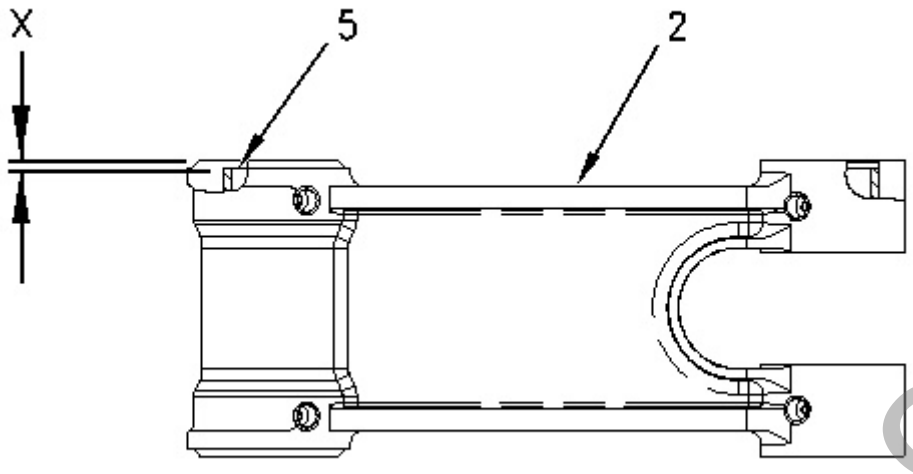

Illustration 1 g00698602

2. Lower the temperature of sleeve bearings (5) that will be installed in the closed end of power link (2) to -40 °C (-40 °F).

3. Use Tooling (A) to install sleeve bearings (5) in the closed end of power link (2). Install the sleeve bearings until Dimension (X) is achieved.

4. Use the following table to determine the correct Dimension (X).

Table 2

Table for Dimension (X)	
Bucket Family	**Dimension (X)**
B-Family	7.5 ± 0.8 mm (0.30 ± 0.03 inch)
C-Family	5.0 ± 0.3 mm (0.20 ± 0.01 inch)

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