Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	4C-5598	High Temperature Anti-Seize	1

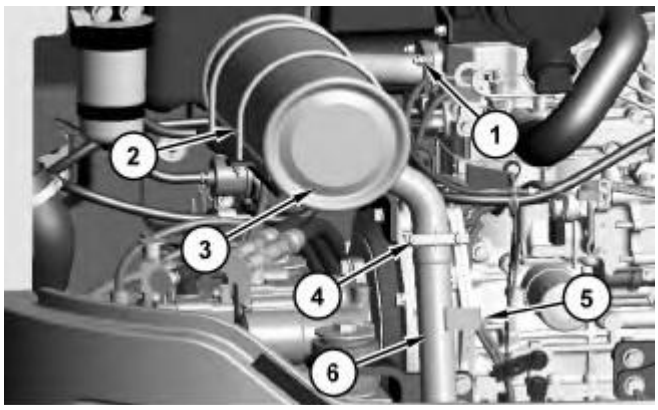


Illustration 2 g01174671

1. Position muffler assembly (3). If it is necessary, install exhaust pipe assembly (6) and tighten clamp (4) to a torque of 14 ± 2 N·m (124 ± 18 lb in).
2. Install bolt (5) .
3. Install clamps (2) and tighten clamps (2) to a torque of 7 ± 2 N·m (62 ± 18 lb in).
4. Apply Tooling (A) to bolts (1) and install bolts (1) .
5. Close the engine access door.

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Illustration 11 g01246611

"Delete" confirmation message

4. Click "OK". The equipment group is deleted.

Equipment Subgroups

In addition to creating groupings of equipment, you can use these equipment groups to create subgroups. Equipment subgroups are subsets of existing equipment groups that are given a name and description, and then saved. For example, a dealer could create an equipment group of all the equipment. The Dealer could then create a subgroup that contains all of the equipment from multiple locations.

Similar to equipment groups, equipment subgroups can be selected on the EquipmentManager search screens in order to save time entering search criteria into the search and advanced search fields. The procedures to create, modify, and delete an equipment subgroup are similar to those you performed when you created, modified, and deleted an equipment group

Create Equipment Subgroup

In order to create an equipment sub group, use the following procedure:

1. From either the "Equipment Groups" section of the "Administration" screen or the "View" drop-down menu, select "Create Equipment Sub Group". The "Create Equipment Subgroup" screen will be displayed.

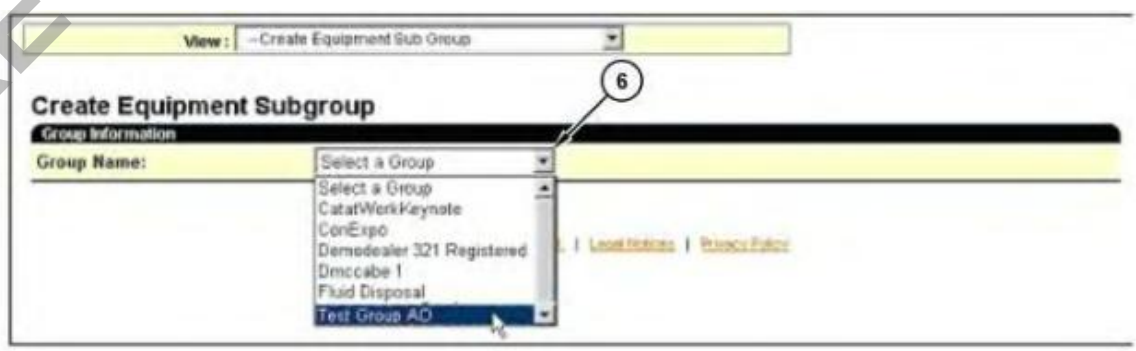


Illustration 12 g01730048

"Create Equipment Subgroup" screen

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5. Click the "Save" button. A confirmation window will appear.



Illustration 10 g01249903

Confirmation message for editing "Time Based Description"

6. Click "OK". The updated description appears in the list at the top of the screen.

Delete a Time Based Description

In order to delete a time based description, use the following procedure:

1. From the "Time Based Descriptions" screen, select the checkbox next to the description you wish to delete. Refer to Illustration 10.
2. Click the "Delete Location Descriptions" button. Refer to Illustration 10. A confirmation window will appear.



Illustration 11 g01249904

3. Click "OK". The description is deleted.

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If you wish to change the date of the next major repair on the planner, use the following procedure:

1. From the "Planner" window, click the "Pencil In Date" button. The "Pencil In Date" screen will be displayed.

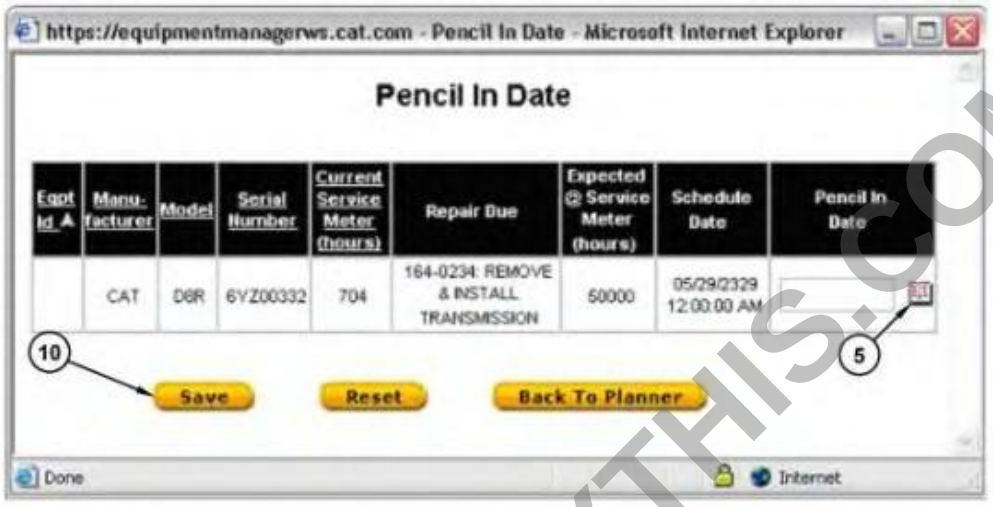


Illustration 6 g01738820

"Pencil In Date" screen for a major repair

(10) "Save" button

(5) Calendar icon

2. Click the calendar icon (5) next to the "Pencil In Date" field and select a date from the popup window.
3. Click the "Save" button (10) .

Note: Once you pencil in a major repair date, the system no longer dynamically adjusts that major repairs date. Once that major repair is complete, the subsequent major repairs revert back to dynamic scheduling.

Mark Repair Complete

Once you have completed a major repair, you need to mark the repair completed.

In order mark a major repair completed, use the following procedure:

1. From the "Major Repair" screen, select the check box next to the equipment with the repair you wish to mark completed. Refer to Illustration 7.
2. Click the "Mark Repair Complete" button. Refer to Illustration 7. The "Mark Repair Complete" screen appears.

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Illustration 7 g01699701

"User Permissions" screen

(8) "Enable" radio button

(9) "User Role" drop-down menu

8. Select the "enabled" radio button (8) next to "Status" in the "Account Information" section. Select the check box next to the permissions in order to apply the change.

9. In the "Permissions" section, select a user role for the user from the "User Role" drop-down menu (9) .

   Note: If you selected "Dealer Administrator" or "Customer Administrator", all of the check boxes next to the available permissions that can be granted to these two users will be selected because an administrator is automatically given all permissions. You will not be able to unselect particular permissions. If you selected "Dealer User" or "Customer User", the check boxes next to "Manage Group" and "Manage Assignments" will be selected and unavailable. The remaining check boxes will be available for selection.

10. Click the "Update Permissions" button. The "Do you want to proceed with the assignments?" dialog box will be displayed.

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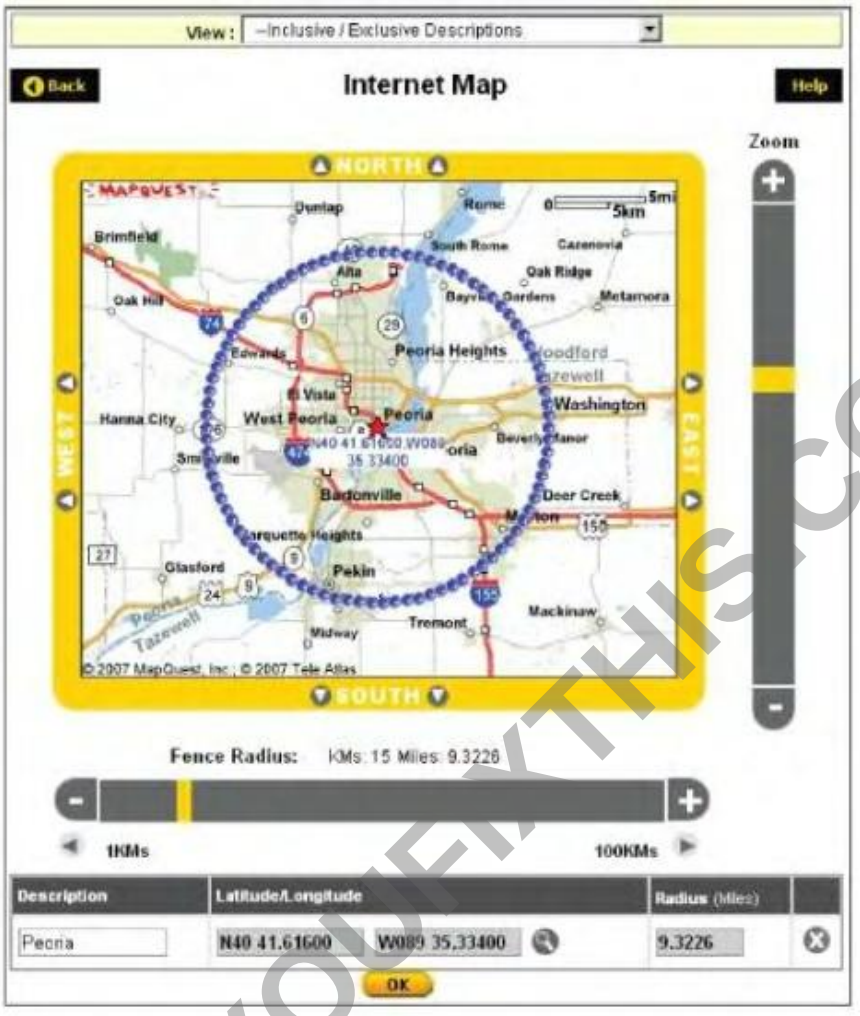


Illustration 2 g01397249

3. In the "Description" box, type a description for the new fence.
4. Define the center of a geographic fence by using one of the following methods:
   - In the "Latitude/Longitude" boxes, type the desired values.
   - Click a point on the map. In order to help establish the desired location, you can use the zoom in button and zoom out button to the right of the map. You can also use the "North", "South", "East", and "West" buttons on the borders of the map.
   - Select the icon of a magnifying glass. This enables you to enter a street address, city, state, and/or zip code.

   Note: The options for entering a street address, city, state, and/or zip code are only available in North America.
5. Configure the radius of the fence by dragging the "Fence Radius" slider to the appropriate location.

   Note: The fence radius values will display in whole kilometers. If your units of measure preference is miles, the fence will be configured in kilometers, converted to miles, and then displayed in miles.
6. Click "OK". The "Inclusive/Exclusive Descriptions" screen displays the new values in the "Add New Description" section.
7. Click "Add Location". A confirmation message will appear.

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Illustration 12 g01393310

"Mark Planned Maintenance (PM) Completed" screen

3. If the PM was missed, select the check box in the "Not Performed" column.
4. Enter the SMU of the equipment at the time the PM was performed in the "@ Service Meter" text field.
5. Click the icon of a calendar next to the "Date" field and select a date from the popup window.
6. Enter notes in the "Notes/Comments" text field.

   Note: "Notes/Comments" entered at the time a PM is marked as completed, append to the checklists for the next "PM Due". If the last "PM Due" is marked missed, the offset will revert to the defined fixed schedule.

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	conjunction with the Registration E-Mail Address Username defines the e-mail address that should receive confirmation of the machines registration status	as a complete email address. (yourname@youremail.com)	after the @ symbol. (If your email address was yourname@youremail.com, the domain would be "youremail.com")
Report Start Time	The Report Start Time parameter sets the time used as the initial report time for calculating when subsequent reports are sent. The Report Start Time parameter is also used as the basis for calculating "Next Scheduled" events and diagnostic messages. Additional Information Standard reports for Product Link are sent at time-based intervals. Position reports are sent every 6 hours. A service meter report is sent every 24 hours. The messages will arrive as close as possible to the scheduled time. The messages may not arrive exactly on the scheduled time as the transmissions are automatically optimized for maximum efficiency of the Product Link system.	Enter the correct local time value for the reporting start time. Consideration should be given to the time selected for the start time. For an example, if a machine normally operates between 7AM and 4PM, you would want to set the start time to a value somewhere between 7AM and 4PM, preferably, shortly after 7AM.	A "Get PC Date/Time" button is supplied for an easy entry of the current date and time.
Operating Hours Report Configuration Status	The Operating Hours Report Configuration Status parameter defines whether	To send the standard message once per day, select the "On" value. In order to not send a standard message once per day, select the"Off" value.	

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i04905817

Electronic Control Module (ECM) - Replace

SMCS - 7610-510

Before Product Link is replaced, ensure that replacement is absolutely necessary. Product Link is seldom the cause of a fault. Always check that power is available to Product Link. Battery voltage is required between contacts 1 and 2 of the machine harness connector for Product Link. Continue ONLY if all other attempts to isolate the problem have failed. Always consult your dealership's Technical Communicator for possible consultation with Caterpillar. This consultation may greatly reduce the time that is required for a repair.

1. Turn the disconnect switch and the key start switch to the OFF position. Disconnect the machine harness from Product Link.
2. Remove Product Link.
3. Ensure that the replacement Product Link kit is the correct part number.
4. Install the replacement Product Link system according to the Special Instructions that are included in the installation kits.
5. Flash the software to the new module in order to ensure that the latest version of the software is on the system.

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Expected Result:

The ECM (VIMS Main Module) is present.

Results:

- **OK -** The ECM (VIMS Main Module) is present. Proceed to Test Step 2.
- **NOT OK -** The ECM (VIMS Main Module) is not present in the screen for Cat ET.

  Repair: Verify that the wiring for the PL522 or 523 has been installed correctly. Check the wiring with a multimeter. If the ECM (VIMS Main Module) is not available, refer to Systems Operation, Troubleshooting, Testing and Adjusting, "Electronic Service Tool Does Not Communicate with ECM".

  STOP

Test Step 2. VERIFY THAT THE PL522 or 523 MODULE IS CONFIGURED PROPERLY.

A. Go to the "Information" pull-down menu.

B. Select "Synchronize Service Meter Hours".

C. If PL522 or 523 is not the master ECM, verify that the "VIMS Main Module SMH" matches the SMH of the master ECM. If PL522 or 523 is the master ECM, verify that the PL522 or 523 SMH matches the machine service meter units.

Expected Result:

The hours are within 1%.

Results:

- **OK -** The hours are within 1%. The hours are synchronized. The PL522 or 523 is operating correctly.**STOP**
- **NOT OK -** The hours are not within 1%. In a PL522 or 523 system using sync-clock where PL522 or 523 is not the master ECM, the PL522 or 523 module will automatically sync to the master ECM hours if the difference is not greater than 50 hours. If the difference is greater than 50 hours, a diagnostic will be generated in ET that indicates that a manual sync is required. In that instance, sync the hours (Service/Synchronize Service Meter Hours). Proceed to Test Step 3 unless the master ECM hours are incorrect. If PL522 or 523 is not the master ECM, and the hours for the master ECM are not correct, troubleshoot on machine side. Do not replace the PL522 or 523 module. STOP.

Test Step 3. VERIFY THAT THE PL522 or 523 MODULE MONITORS THE "MACHINE RUN STATUS" PROPERLY.

A. Go to "Status Parameters" for Cat ET.

B. Verify that the "Alternator Running Input" displays "Engine Off".

C. Start the machine.

D. Verify that the "Alternator Running Input" changes to "Engine Running".

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Troubleshooting
Product Link 121S/300
Media Number -RENR7911-10 Publication Date -01/06/2013 Date Updated -27/06/2013

i04907026

Event Code List

SMCS - 7569

Event codes alert the operator or the technician that an abnormal operating condition exists in one of the machine systems.

When an Electronic Control Module (ECM) activates an event code, the operator or the technician will be alerted by the Messenger. Most active events will be logged by the ECM. Some events are active only. Active only events are not logged. The events that are active and the events that are logged can be viewed with the following equipment:

- Messenger
- Caterpillar Electronic Technician (Cat ET)

Warning Levels

The ECM will assign a warning level to an active event code. Event codes are one of three levels. The level is according to the severity of the abnormal condition. Each warning level requires a specific response from the operator. The warning levels and the required operator response are listed below.

Warning Level 1

Warning level 1 alerts the operator that a machine system requires attention. The operator should check that the involved system condition or the operator should perform maintenance on the involved system at the earliest possible time.

Warning Level 2

Warning level 2 requires changing the operation of the machine or performing a maintenance procedure. Failure to correct a problem that caused this warning may result in damage to the components involved in the system.

Warning Level 2S

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i02373448

Swing Drive - Install

SMCS - 5459-012

Installation Procedure

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Caterpillar Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: Cleanliness is an important factor. Before the assembly procedure, the exterior of the component should be thoroughly cleaned. This will help to prevent dirt from entering the internal mechanism.

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Swing Right (2) - Move the control lever to this position in order to swing the upper structure to the right.



Stick In (3) - Move the control lever to this position in order to move the stick inward.



Swing Left (4) - Move the control lever to this position in order to swing the upper structure to the left.



Boom Lower (5) - Move the control lever to this position in order to lower the boom.



Bucket Dump (6) - Move the control lever to this position in order to dump the bucket.



Boom Raise (7) - Move the control lever to this position in order to raise the boom.

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Illustration 1 g00816299

(A) Preliminary run 10 m (32.8 ft)

(B) Travel distance 20 m (65.6 ft)

1. Travel distance must be at least 30 m (98.4 ft) long. Travel test ground must be hard and as level as possible.
2. Draw a 30 m (98.4 ft) straight line on travel test ground as a reference line.
3. Start the engine.
4. Place the engine speed dial in the HIGH IDLE position.
5. Increase the hydraulic oil temperature to 55° ± 5°C (131° ± 9°F).
6. The bucket should be empty.
7. Position the machine so that one track is parallel with the reference line. Position the machine for the travel test. Refer to Illustration 1.
8. Place the travel speed control switch on the HIGH position.
9. Move the machine by operating both travel levers at the same time.
10. The first 10 m (32.8 ft) are for a preliminary run. Measure the travel time that is required to travel the remaining 20 m (65.6 ft). Measure the time that is required in each direction.
11. Measure the travel deviation from the reference line.
12. Place the travel speed control switch on the LOW position and repeat Steps 9 through 11.

Table 2

Travel Time		
Travel Speed		**Specification**
HIGH	Forward	17.5 ± 2.5 sec
	Reverse	
LOW	Forward	26.0 ± 1.5 sec
	Reverse	

Note: The following table represents the travel deviation (distance) from the reference line.

Table 3

Travel Deviation		
Travel Speed		**Specification**
HIGH	Forward	

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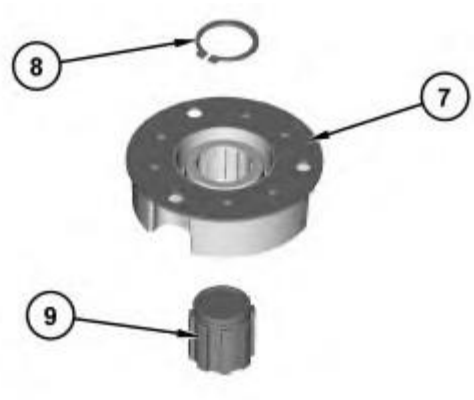


Illustration 4 g01184004

1. Install coupler (9) to pump drive coupling (7). Use Tooling (A) in order to install retaining ring (8) to coupler (9) .

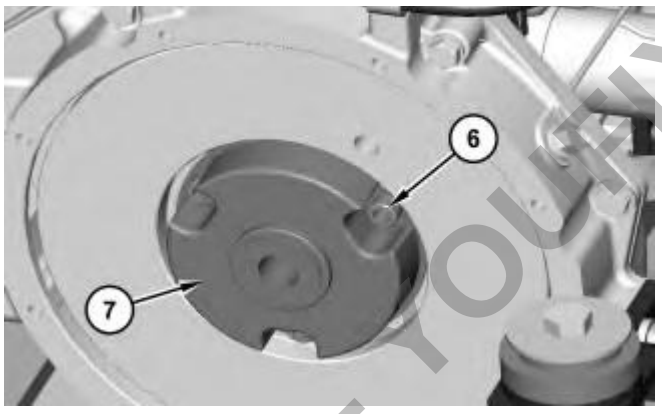


Illustration 5 g01183996

2. Position pump drive coupling (7) and install bolts (6) .

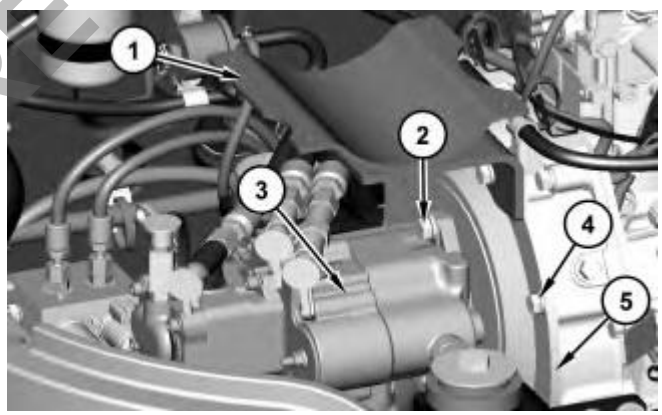


Illustration 6 g01183954

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9. Remove pistons (10), retaining plate (11), and bearing (12) .

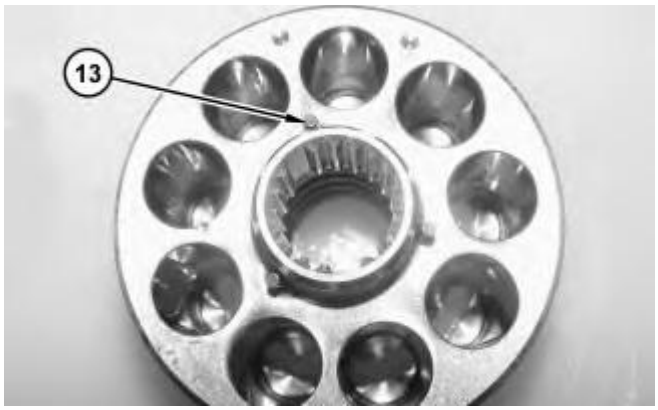


Illustration 8 g01176394

10. Remove pins (13) .

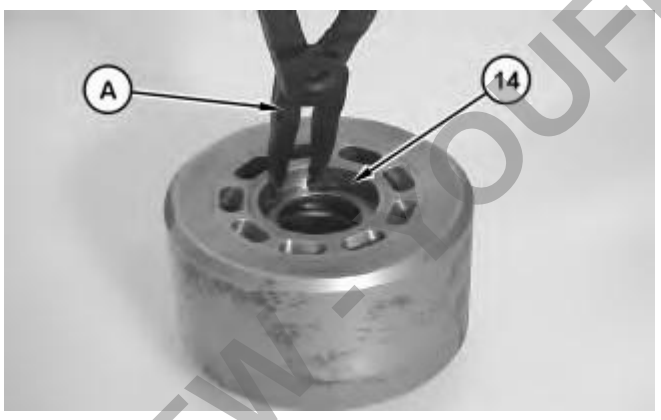


Illustration 9 g01176391

WARNING

Personal injury can result from being struck by parts propelled by a released spring force.

Make sure to wear all necessary protective equipment.

Follow the recommended procedure and use all recommended tooling to release the spring force.

11. Use a suitable press and Tooling (A) in order to remove retaining ring (14) .

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15. Install cover (6) and bolts (7) .

16. Install plug (8), O-ring seals (5), and coupling (4) onto cover (6) .

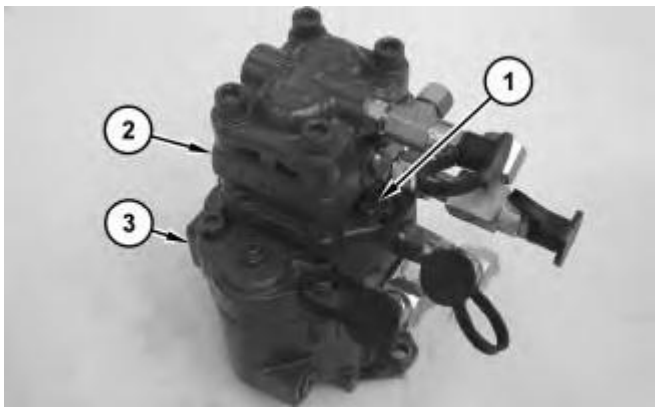


Illustration 14 g01171910

17. Install gear pump (2) onto piston pump (3) and install bolts (1) .

End By: Install main hydraulic pump and gear pump. Refer to Disassembly and Assembly, "Main Hydraulic Pump and Gear Pump (Pilot) - Install".

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Pilot Valve (Joystick) - Assemble

SMCS - 5059-016

Assembly Procedure

Note: Cleanliness is an important factor. Before assembly, all parts should be thoroughly cleaned in cleaning fluid. Allow the parts to air dry. Wiping cloths or rags should not be used to dry parts. Lint may be deposited on the parts which may cause later trouble. Inspect all parts. If any parts are worn or damaged, use new parts for replacement.

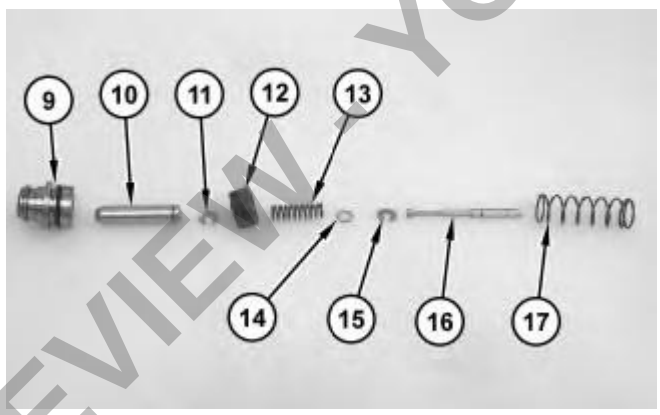


Illustration 1 g01171868

WARNING

Personal injury can result from being struck by parts propelled by a released spring force.

Make sure to wear all necessary protective equipment.

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	Wheel Tractor-Scraper	
SEHS9734	All Products	"Retrofitting Caterpillar R-12 Air Conditioning Systems to R134a Refrigerant"
SMHS7059	D7G, D8K, D9H	"Installation of 9P4752, 9P4753, and 9P4754 Air Conditioner Arrangements"
Specifications, Systems Operation, Testing and Adjusting, Disassembly and Assembly		
SENR3334	All Products	"Air Conditioning and Heating R-12 All Caterpillar Machines"
SENR5664	All Products	"Air Conditioning and Heating R-134a for All Caterpillar Products"
Service Magazine		
SEPD0306	Challenger	"Improvements to Challenger Agricultural Tractors Air Conditioning Available"
SEPD0353	Wheel Loader Soil Compactor Landfill Compactor	"New Heating Ventilation and Air Conditioning (HVAC) Electronic Control Troubleshooting Procedure Available"
SEPD0418	D5M, D6M Track-Type Tractor	"New, Air Conditioner Tubes Increase Service Life of Condenser Coil"
SEPD0473	All Products	"Air Conditioner Service Tips"
SEPD0559	All Products	"Material for Sound Suppression in the Cab is Available"
SEPD0559	All Products	"Part Numbers for Electric Motors that are Used in HVAC Have Changed"
SEPD0653	Off-Highway Truck	"New Components Improve the Air Conditioning System on Certain Off-Highway Truck/Tractor"
SEPD0665	Combine Excavator Track Feller Buncher Integrated Toolcarrier Paving Compactor Road Reclaimer	"Checking the Motor Rotation after Replacing the Blower Motor Can Increase Service Life"
SEPD0723	Off-Highway Truck Wheel Loader	"The Fan Drive Groups Have Changed"
SEPD0730	Off-Highway Truck	"New Mounting Brackets for the Air Conditioner Compressor are Now Available"

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WARNING

Personal injury can result from hot coolant. Any contact with hot coolant or with steam can cause severe burns. Allow cooling system components to cool before the cooling system is drained.

System Contamination and Flush Procedure

NOTICE

Debris in the air conditioning refrigerant circuit can cause the compressor to fail. Use the following procedure for cleaning and flushing the system.

This procedure provides a method and instructions to remove contamination from the air conditioning system refrigeration circuit and individual components. A primary instance where a system flush is necessary is any time a refrigerant compressor has had an internal failure, usually indicated by a locked or seized condition. The air conditioning system refrigeration circuit and components must be cleaned and flushed to remove any particles of metal or other foreign material. Failure to properly flush the air conditioning circuit will damage or shorten the operating life of the replacement compressor.

A general flow chart of the flush procedure is shown in Illustration 2. The detailed procedure is shown in Step 1 through Step 19 below.

1. Identify the refrigerant and then recover the refrigerant. Refer to the Service Manual, SENR5664, "Refrigerant Recovery" section.
2. Remove the compressor. Refer to the Service Manual , SERN5664, "Refrigerant Compressor - Remove and Install" section.
3. Remove the receiver-dryer or the in-line dryer. Refer to the Service Manual, SENR5664, "Receiver-Dryer - Remove and Install" section in Disassembly and Assembly. For in-line dryers, refer to the Service Manual, SENR5664, "In-Line Refrigerant Dryer - Remove and Install" section in Disassembly and Assembly.
4. Remove the accumulator. Refer to the Service Manual, SENR5664, "Air Conditioner Accumulator - Remove and Install" section in Disassembly and Assembly.
5. Remove the expansion valve or the orifice tube. Refer to the Service Manual, SENR5664, "Expansion Valve - (Air Conditioner) Remove and Install" section in disassembly and assembly. Refer to the Service Manual, SENR5664, "Orifice Tube (Air Conditioner) - Remove and Install" section in Disassembly and Assembly.

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15. Turn on the remote 12/24 volt power supply.

16. Obtain a third wire. Short pin (2) of rotational actuator (5) to ground. Next, short pin (2) of rotational actuator (5) to the battery. The actuator should move fully to the clockwise position. Next, the actuator should move completely to a counterclockwise position. The movement of the actuator is dependent on the voltage that is going to pin (2) of rotational actuator (5) .

    Note: When the actuator and signal pin (2) is in an open circuit condition, it is normal for the actuator to default travel to an end of travel position. This condition is similar if pin (2) for the control signal is shorted to ground. This condition is normal operation for the type of actuator. Refer to **279-0850** Actuator .

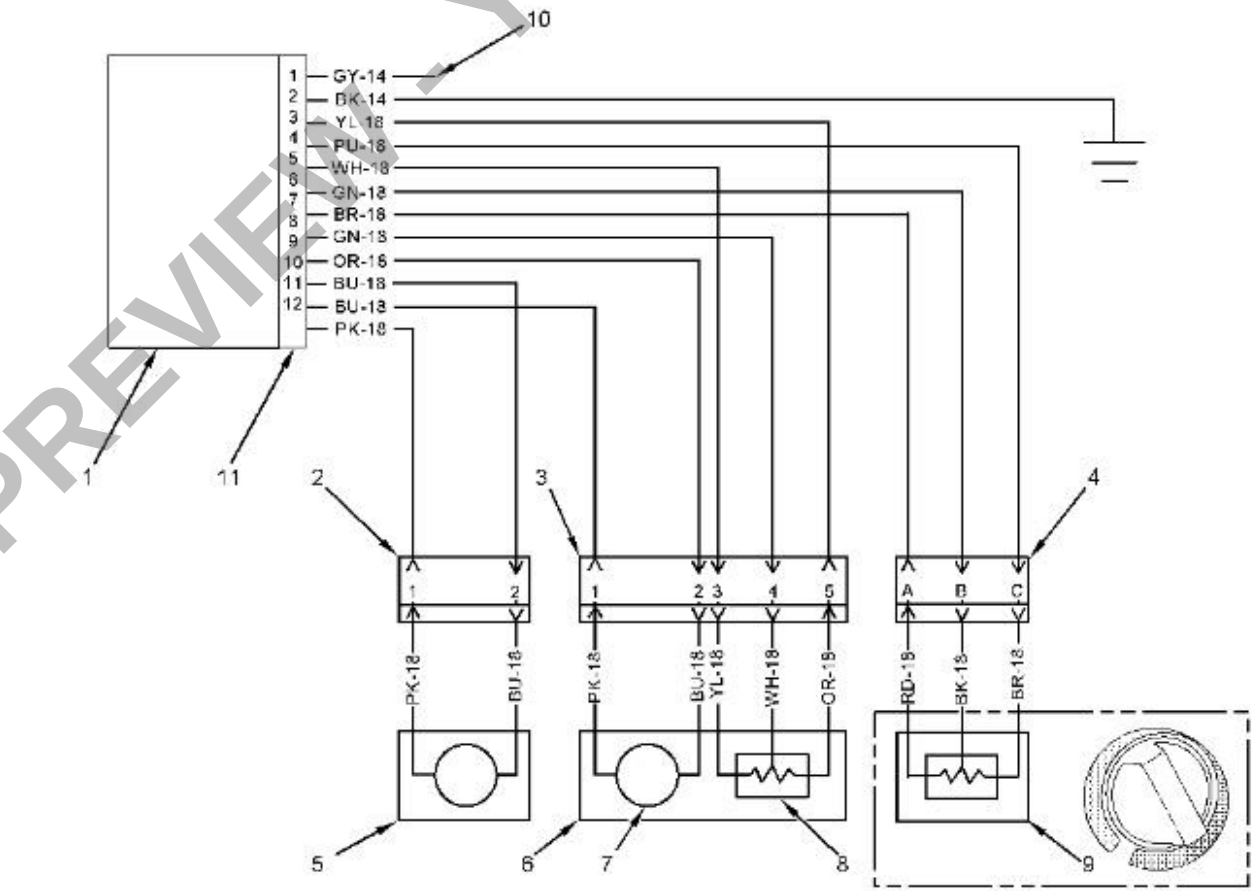
17. Disconnect all of the test equipment and reconnect Deutsch connector (4) .

Type 2 - Electronic Heat Control Circuit for Water Valve and Blend Door HVAC System using External Control Assembly

Electronic heat controls that have a blend door actuator and an electronic water valve are classified as a type 2 electronic heat control.

Table 6

Required Tools		
Part Number	**Description**	**Quantity**
146-4080	Digital Multimeter (RS-232)	1



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304C CR Refrigerant Capacities

304C CR

FPK1-UP ... 0.6 kg (1.3 lb)

304D CR Refrigerant Capacities

304D CR

TYK1-UP ... 0.7 kg (1.54 lb)

304E CR Refrigerant Capacities

304E CR

TTN1-UP ... 0.7 kg (1.54 lb)

305C CR Refrigerant Capacities

305C CR

HWJ1-UP ... 0.6 kg (1.3 lb)

305D CR Refrigerant Capacities

305D CR

XER1-UP ... 0.8 kg (1.76 lb)

305E CR Refrigerant Capacities

305E CR

XFA1-UP ... 0.8 kg (1.76 lb)

305.5D CR Refrigerant Capacities

305.5D CR

FLZ1-UP ... 0.8 kg (1.76 lb)

305.5E CR Refrigerant Capacities

305.5E CR

FKY1-UP ... 0.8 kg (1.76 lb)

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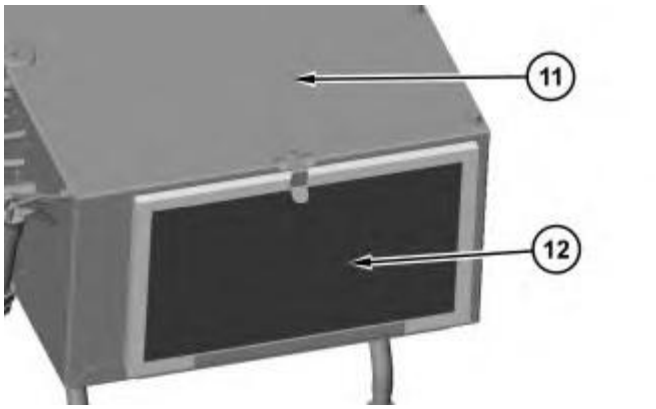


Illustration 7 g01179358

9. Remove cover (11) and filter (12) .

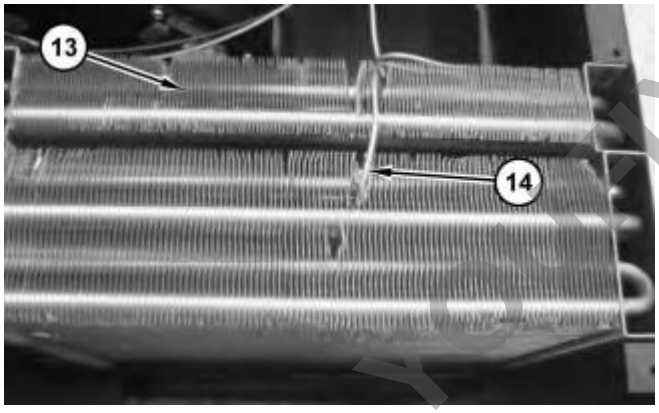


Illustration 8 g01179421

10. Reposition capillary tube (14) and remove heater core (13) .

Installation Procedure

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Caterpillar Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

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4. Torque all fasteners to full torque by using a cross pattern. Large flanges may require additional passes.

5. Apply at least one final full torque to all fasteners in a clockwise direction until all torque is uniform. Large flanges may require additional passes.

Note: Final torque may be a turn.

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