

Product: EXCAVATOR

Model: 320B L EXCAVATOR 9WS

Configuration: 320B, 320B L, 320B LN, 320B N & 320B S Excavators 9WS00001-UP (MACHINE) POWERED BY 3116 Engine

## **Operation and Maintenance Manual 320B, 320B L, 320B LN, 322B L and 322B LN Excavators Supplement**

Media Number -SEBU7525-01

Publication Date -01/03/2001

Date Updated -09/10/2001

s00037320

## **Foreword**

SMCS - 6001-011; 6001; 6101; 6102; 6523

## **Literature Information**

This manual should be stored in the operator's compartment in the literature holder or seat back literature storage area.

This manual contains safety information, operation instructions, transportation information, lubrication information and maintenance information.

Some photographs or illustrations in this publication show details or attachments that can be different from your machine. Guards and covers might have been removed for illustrative purposes.

Continuing improvement and advancement of product design might have caused changes to your machine which are not included in this publication. Read, study and keep this manual with the machine.

Whenever a question arises regarding your machine, or this publication, please consult your Cat dealer for the latest available information.

## **Safety**

The safety section lists basic safety precautions. In addition, this section identifies the text and locations of warning signs and labels used on the machine.

Read and understand the basic precautions listed in the safety section before operating or performing lubrication, maintenance and repair on this machine.

## **Operation**

The operation section is a reference for the new operator and a refresher for the experienced operator. This section includes a discussion of gauges, switches, machine controls, attachment controls, transportation and towing information.

Photographs and illustrations guide the operator through correct procedures of checking, starting, operating and stopping the machine.

Operating techniques outlined in this publication are basic. Skill and techniques develop as the operator gains knowledge of the machine and its capabilities.

## Maintenance

The maintenance section is a guide to equipment care. The Maintenance Interval Schedule (MIS) lists the items to be maintained at a specific service interval. Items without specific intervals are listed under the "When Required" service interval. The Maintenance Interval Schedule lists the page number for the step-by-step instructions required to accomplish the scheduled maintenance. Use the Maintenance Interval Schedule as an index or "one safe source" for all maintenance procedures.

### Maintenance Intervals

Use the service hour meter to determine servicing intervals. Calendar intervals shown (daily, weekly, monthly, etc.) can be used instead of service hour meter intervals if they provide more convenient servicing schedules and approximate the indicated service hour meter reading. Recommended service should always be performed at the interval that occurs first.

Under extremely severe, dusty or wet operating conditions, more frequent lubrication than is specified in the maintenance intervals chart might be necessary.

Perform service on items at multiples of the original requirement. For example, at every 500 service hours or 3 months, also service those items listed under every 250 service hours or monthly and every 10 service hours or daily.

## California Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Battery posts, terminals and related accessories contain lead and lead compounds. **Wash hands after handling.**

## Certified Engine Maintenance

Proper maintenance and repair is essential to keep the engine and machine systems operating correctly. As the heavy duty off-road diesel engine owner, you are responsible for the performance of the required maintenance listed in the Owner Manual, Operation and Maintenance Manual, and Service Manual.

It is prohibited for any person engaged in the business of repairing, servicing, selling, leasing, or trading engines or machines to remove, alter, or render inoperative any emission related device or element of design installed on or in an engine or machine that is in compliance with the

regulations (40 CFR Part 89). Certain elements of the machine and engine such as the exhaust system, fuel system, electrical system, intake air system and cooling system may be emission related and should not be altered unless approved by Caterpillar.

## Machine Capacity

Additional attachments or modifications may exceed machine design capacity which can adversely affect performance characteristics. Included would be stability and system certifications such as brakes, steering, and rollover protective structures (ROPS). Contact your Cat dealer for further information.

## Cat Product Identification Number

Effective First Quarter 2001 the Cat Product Identification Number (PIN) has changed from 8 to 17 characters. In an effort to provide uniform equipment identification, Caterpillar and other construction equipment manufacturers are moving to comply with the latest version of the product identification numbering standard. Non-road machine PINs are defined by ISO 10261. The new PIN format will apply to all Cat machines and generator sets. The PIN plates and frame marking will display the 17 character PIN. The new format will look like the following:



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Illustration 1

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Where:

1. Caterpillar's World Manufacturing Code (characters 1-3)
2. Machine Descriptor (characters 4-8)
3. Check Character (character 9)
4. Machine Indicator Section (MIS) or Product Sequence Number (characters 10-17). These were previously referred to as the Serial Number.

Machines and generator sets produced before First Quarter 2001 will maintain their 8 character PIN format.

Components such as engines, transmissions, axles, etc. and work tools will continue to use an 8 character Serial Number (S/N).

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# **Maintenance Interval Schedule**

## **SMCS - 7000**

All safety information, warnings, and instructions must be read and understood before you perform any operation or any maintenance procedure.

Before each consecutive interval is performed, all of the maintenance requirements from the previous interval must also be performed.

## **When Required**

### [Hydraulic System Filter Element \(Fine Filtration\) - Replace](#)

#### **Every 10 Service Hours or Daily for First 100 Hours**

[Boom and Stick Linkage - Lubricate](#)

[Bucket Linkage - Lubricate](#)

#### **Every 10 Service Hours or Daily for Machines Used in Severe Applications**

[Bucket Linkage - Lubricate](#)

#### **Every 50 Service Hours or Weekly After Initial 500 Hours**

[Hydraulic System Pressure Gauge \(Fine Filtration Filter\) - Inspect](#)

#### **Every 100 Service Hours or 2 Weeks**

[Bucket Linkage - Lubricate](#)

#### **Every 100 Service Hours or 2 Weeks for Machines Used in Severe Applications**

[Boom and Stick Linkage - Lubricate](#)

## **Every 1000 Service Hours or 6 Months**

[Boom and Stick Linkage - Lubricate](#)

[Hydraulic System Oil Filter \(If Equipped with Fine Filtration Filter\) - Replace](#)

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### Boom and Stick Linkage - Lubricate

SMCS - 6501-086; 6502-086

**Note:** Caterpillar recommends the use of 5% molybdenum grease for lubricating the boom, stick and bucket control linkage. Refer to Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations" for more information on molybdenum grease.

Apply lubricant through all fittings after operation under water.

Wipe all fittings before you apply lubricant.

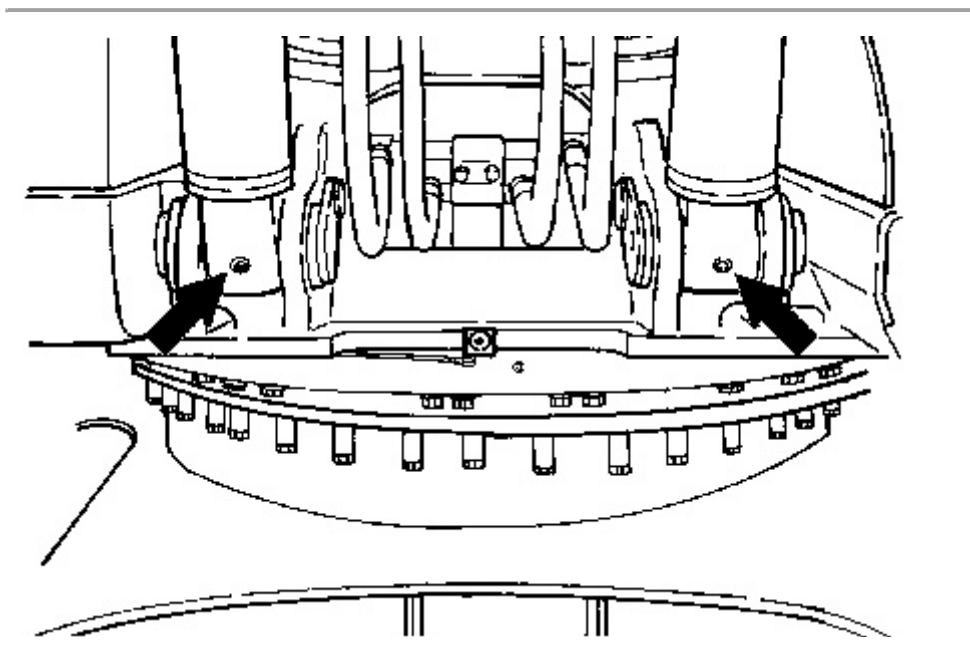


Illustration 1

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1. Apply lubricant through the fitting at the base of each boom cylinder.

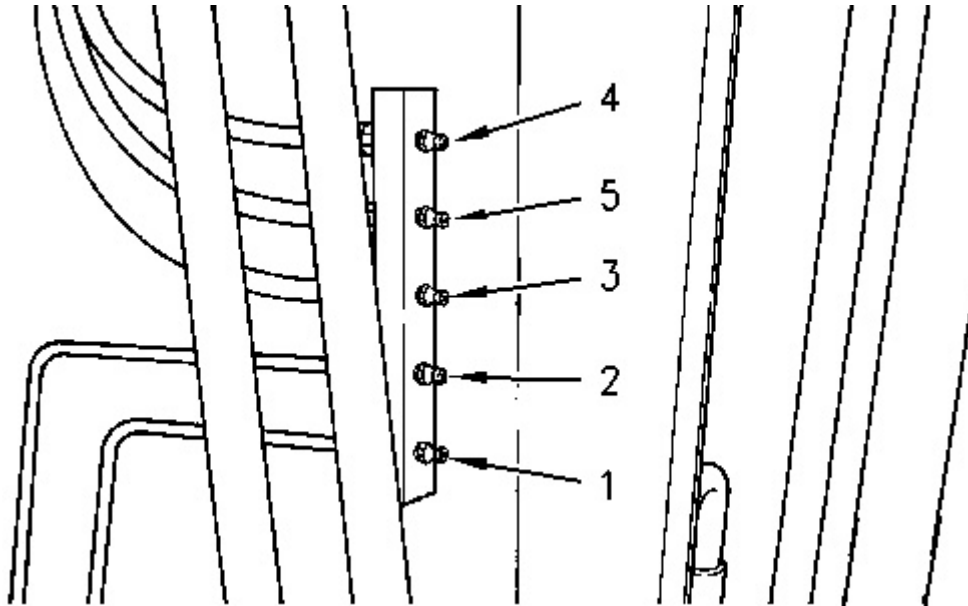
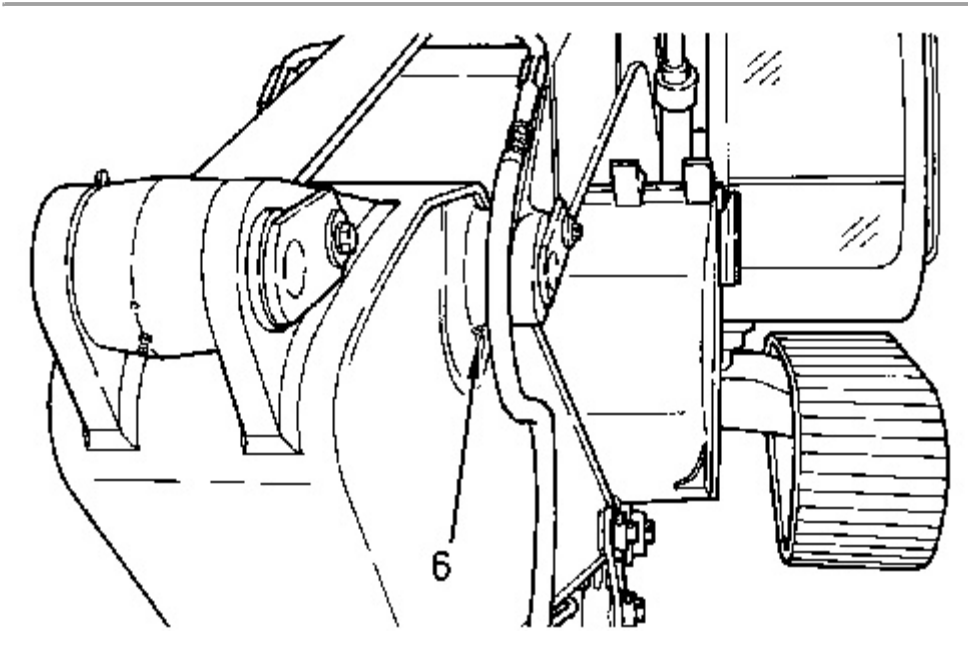


Illustration 2

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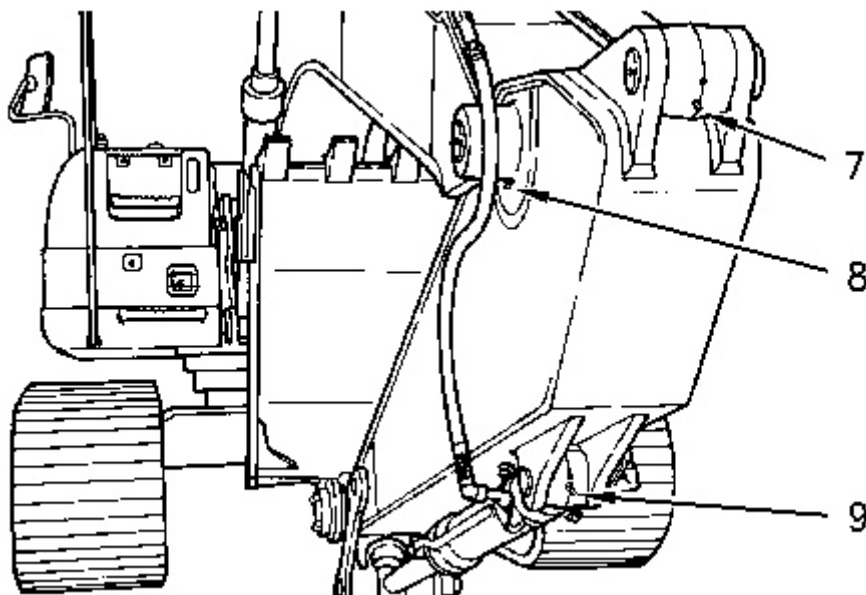
2. The fittings are at the base of the boom. The fittings can be serviced from the platform on top of the storage box. To lubricate the lower boom bearings, apply lubricant through fittings (1) and (2).
3. Apply lubricant through fittings (3) and (4) for the boom cylinder rod.
4. Apply lubricant through fitting (5) for the stick cylinder head.

**Note:** To ensure proper lubrication of the lower boom bearings and of the boom cylinder rod end bearings, lubricant should be applied through fittings (1), (2), (3), and (4). Apply lubricant first when the boom is raised and any attachment is suspended. Then apply lubricant when the boom is lowered and the attachment is rested on the ground with a slight downward pressure.





5. Apply lubricant through fitting (6). Fitting (6) is at the connection point of the boom and of the stick.



6. Apply lubricant through fitting (7) on the stick cylinder rod, fitting (8) at the connection point of the boom and of the stick, and fitting (9) at the bucket cylinder head end.
-

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### **Hydraulic System Oil Filter (If Equipped with Fine Filtration Filter) - Replace**

SMCS - 5068-510

Refer to Operation and Maintenance Manual, "Hydraulic System Oil Filter - Replace" for the procedure to change the hydraulic oil filters.

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# Hydraulic System Filter Element (Fine Filtration) - Replace - If Equipped

SMCS - 5068-510

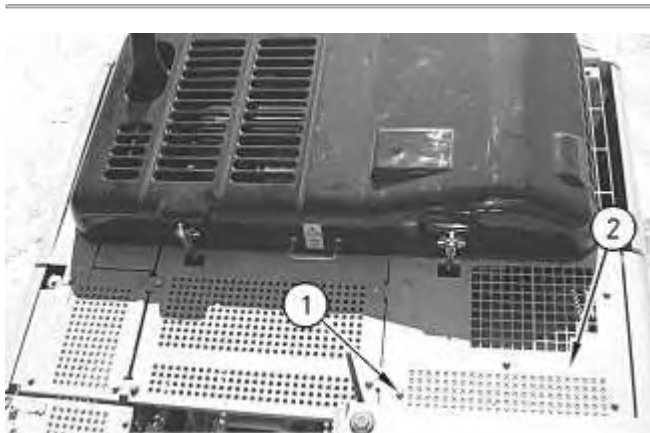


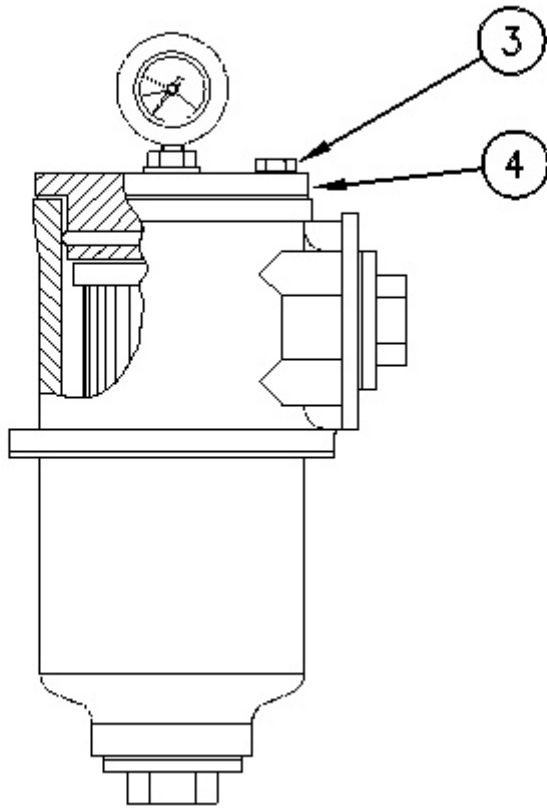
Illustration 1

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(1) Bolts

(2) Cover

1. Remove seven bolts (1) and cover (2) from the machine.
-



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Illustration 2

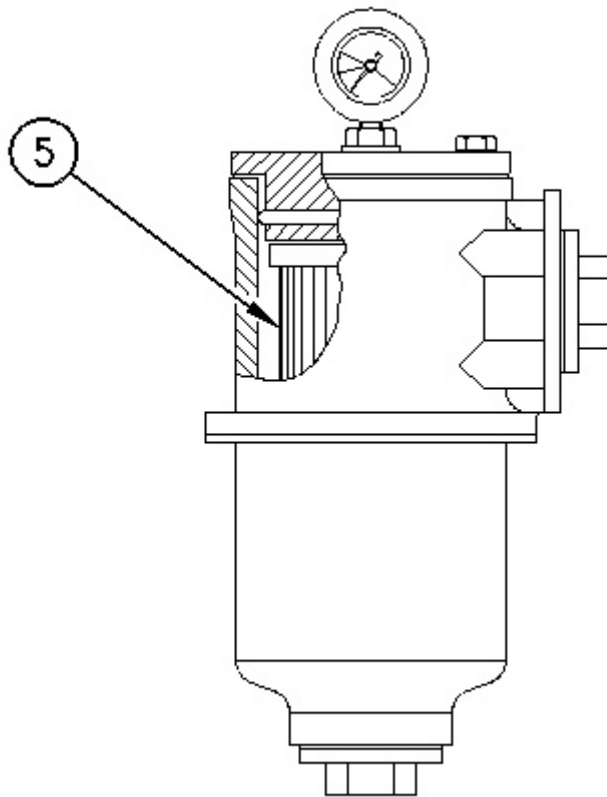
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(3) Bolts

(4) Cover

2. Remove four bolts (3) and cover (4) from the Fine Filtration filter.

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Illustration 3

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(5) Filter element

3. Remove filter element (5) from the filter assembly.
  4. Install a new filter element.
  5. Place cover (4) in place and secure four bolts (3) .
  6. Place cover (2) in place and secure seven bolts (1) .
-

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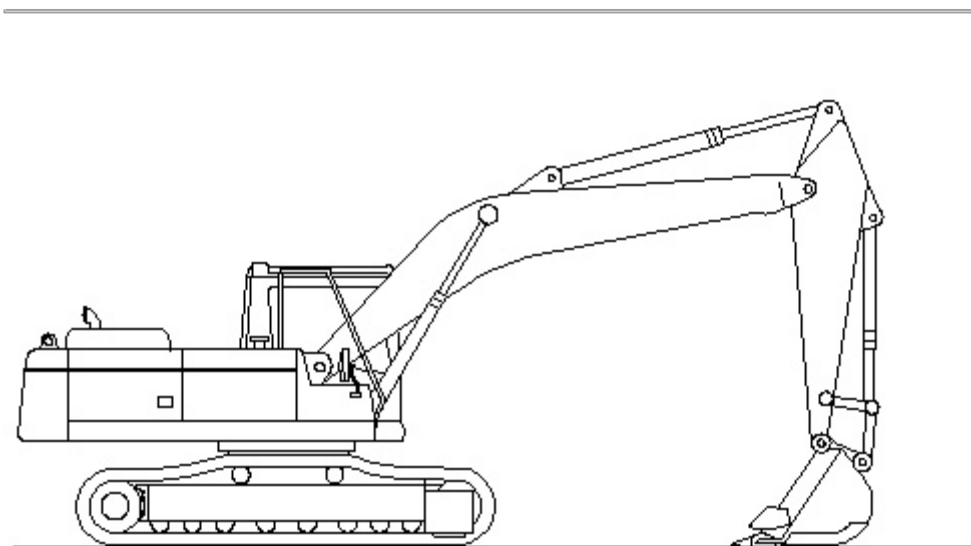
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### Hydraulic System Pressure Gauge (Fine Filtration Filter) - Inspect - If Equipped

SMCS - 7475-040

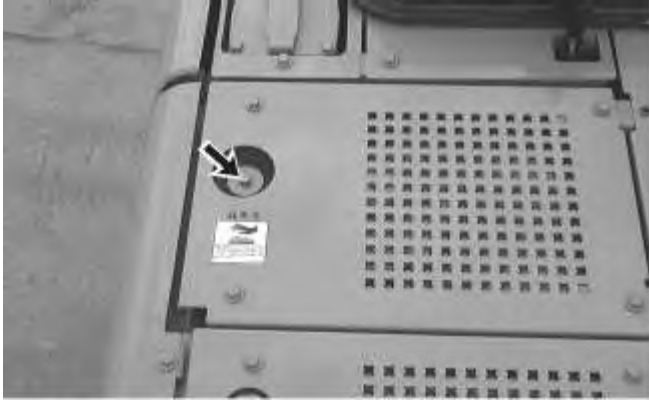


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Illustration 1

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1. Place the machine in the servicing position, as shown.
  2. Move the hydraulic activation control lever to the LOCKED position. Stop the engine.
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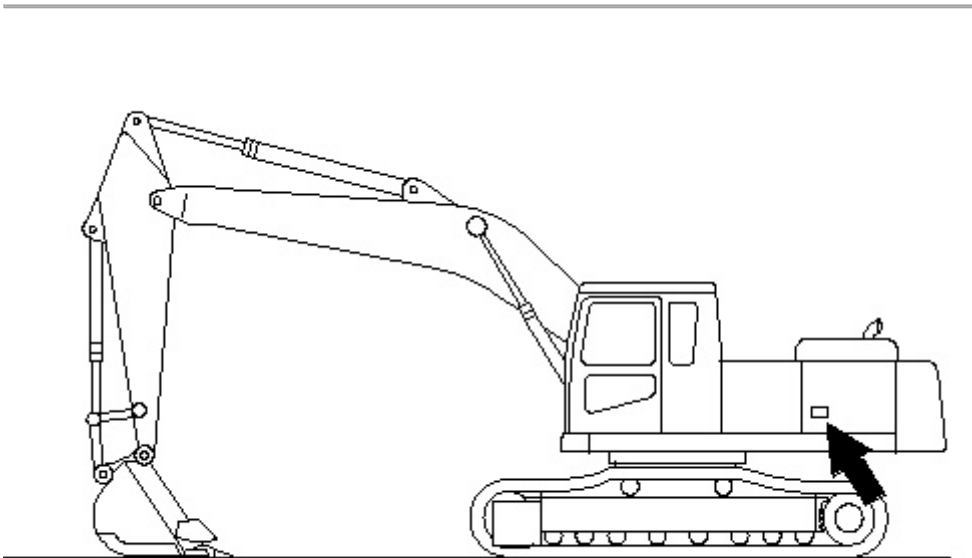


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Illustration 2

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3. Slowly loosen the filler plug in order to relieve any pressure.
4. Tighten the filler plug after the pressure is relieved.
5. Place the joysticks in the HOLD position.
6. Start the engine. Turn the engine speed dial to the high idle position "10". **DO NOT MOVE ANY IMPLEMENTS.**

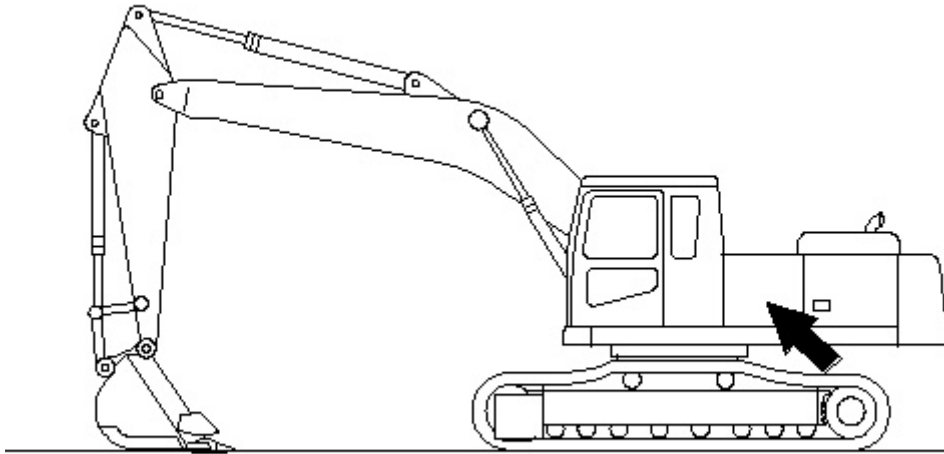


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Illustration 3

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7. Open the rear access door on the left side of the machine.
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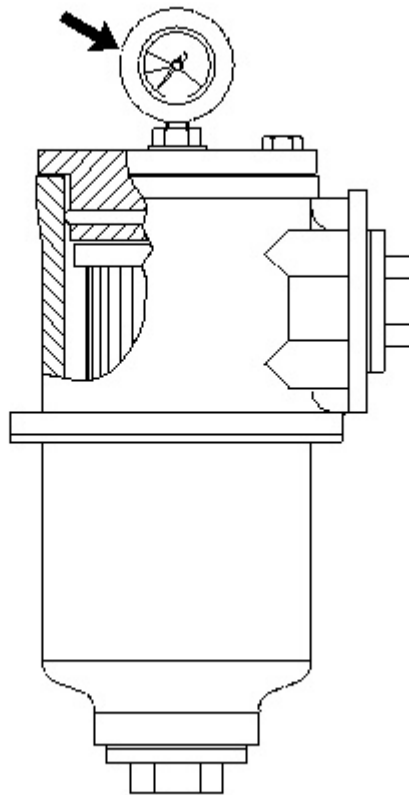


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Illustration 4

g00101365

8. Open the front access door on the left side of the machine.
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Illustration 5

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The Fine Filtration filter is located behind the front access door on the left side of the machine.



9. Read the value of the pressure gauge that is on top of the Fine Filtration filter.

- a. If the pressure reading is below " $1 \pm 0.2$  bars", the pressure gauge should be inspected for damage.
- b. If the pressure reading is between " $1 \pm 0.2$  bars" and " $3 \pm 0.2$  bars", the filter element is clean.
- c. If the pressure is " $3 \pm 0.2$  bars" or more, the filter element needs to be replaced.

**Note:** Refer to Operation and Maintenance Manual, "Hydraulic System Filter Element (Fine Filtration) - Replace" for the correct procedure.

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