

**SAFETY.CAT.COM™**

# **MAINTENANCE INTERVALS**

Operation and Maintenance  
Manual Excerpt

# Operation and Maintenance Manual

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## **H45/H45s, H50/H50s, 63/H63/H63s, 70/70s/H70/H70s, H90C/H90Cs and 100/H100/H100s Hydraulic Hammers**

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6CZ1-Up (H45/H45s)  
5MZ1-Up (H50/H50s)  
4GL1-121 (63)  
4GL122-Up (H63/H63s)  
4KL1-1029 (70/70s)  
4KL1030-Up (H70/H70s)  
6TZ1-Up (H90C/H90Cs)  
4ML1-158 (100)  
4ML159-Up (H100/H100s)

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# Maintenance Interval Schedule

**SMCS Code:** 6700-041; 7519

## Every 2 Service Hours or 4 Times Daily

Work Tool - Lubricate ..... 40

## Initial 50 Service Hours

Mounting Bracket Bolts - Tighten ..... 41

Side Plate Bolts - Tighten ..... 42

## Every 50 Service Hours or Weekly

Hydraulic Fittings - Inspect ..... 41

Tool - Inspect ..... 45

Tool - Remove and Install ..... 46

Tool Retaining Pins - Inspect/Replace ..... 47

Tool Bushing (Upper) - Inspect/Replace ..... 48

Tool Bushing (Lower) - Inspect/Replace ..... 48

## Every 1000 Service Hours or 1 Year

Work Tool - Inspect/Recondition ..... 40

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## Work Tool - Inspect/Recondition

**SMCS Code:** 6333-020; 6333-040; 6700-020;  
6700-040

All of the seals in the hammer must be replaced on a yearly schedule. At this time, the membrane for the accumulator must also be replaced. Inspect all of the wear parts. You must replace all of the damaged parts or the parts that are worn. You must make sure that the accumulator is charged to the correct pressure. Refer to the Service Manual, "Specifications, Disassembly and Assembly, and the Systems Operation, Testing and Adjusting" Sections for information on the hammer.

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## Work Tool - Lubricate

**SMCS Code:** 6700-086

### NOTICE

Failure to apply down pressure on the hammer tool during lubrication could result in piston seal failure. This seal failure will allow oil to leak from the hammer tool. To avoid seal damage, always apply down pressure on the hammer tool during lubrication.

**Note:** Before you install the hammer tool, the tool shank must be well lubricated.



Illustration 36

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1. Lubricate the hammer. There is one fitting on the H45, H45s, H50 and the H50s. There are two fittings on the 63, H63, H63s, 70, 70s, H70, H70s, H90C, H90Cs, 100, 100s, H100, and the H100s.

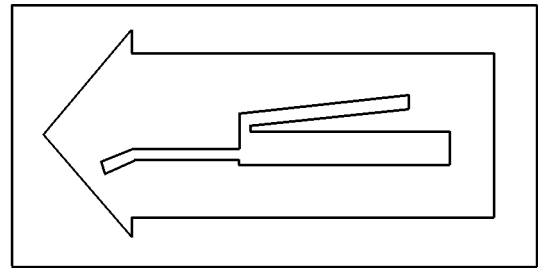


Illustration 37

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**Note:** The fittings have been marked with the decal that is shown in Illustration 37.

2. Apply 10 to 15 strokes from the grease gun to the tool bushings and the hammer tool. Caterpillar Impact Products Limited strongly recommends the use of **130-6951 Grease** for all applications on the hydraulic hammers. Refer to the Operation and Maintenance Manual, "Lubricating Grease" for more information.
3. If the hammer is equipped with an automatic lubrication system, check the hammer tool for a collar of grease. The collar of grease must be completely around the hammer tool. If the collar of grease is too large or the collar of grease is too small, refer to the Service Manual, "Testing and Adjusting" for information about setting the timer. Refer to the Operation and Maintenance Manual, "Automatic Lubrication" for more information on the automatic lubrication system.

Adjust the intervals and the amount of grease to the wear rate of hammer tool and to the working conditions.

Lack of grease or improper grease will cause the following problems:

- Abnormal wear of the tool bushing and the hammer tool
- Broken hammer tool

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## Hydraulic Fittings - Inspect

SMCS Code: 5057-040-X6

### WARNING

Personal injury or death can result from improperly checking for a leak.

Always use a board or cardboard when checking for a leak. Escaping air or fluid under pressure, even a pin-hole size leak, can penetrate body tissue causing serious injury, and possible death.

If fluid is injected into your skin, it must be treated immediately by a doctor familiar with this type of injury.

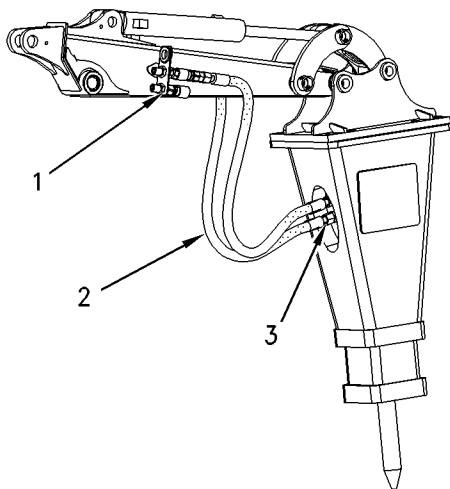


Illustration 38

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Typical example of hydraulic fittings

1. Check the hydraulic fittings (1) and (3) for damage or leaks.
2. Check the connector lines (2) for damage or for wear.
3. Check the supply hoses for damage or wear.
4. Check all of the clamps on the boom and all of the clamps on the stick of the host machine.

5. You must repair any damaged parts or worn parts before you operate the hammer. You must replace any damaged parts or worn parts before you operate the hammer. You must repair any leaks before you operate the hammer.

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## Mounting Bracket Bolts - Tighten

SMCS Code: 7079-527-BK; 7079-527-BC

Check the bolts for the mounting bracket. If necessary, tighten the bolts to the proper torque value. Refer to the following tables for the proper torque value.

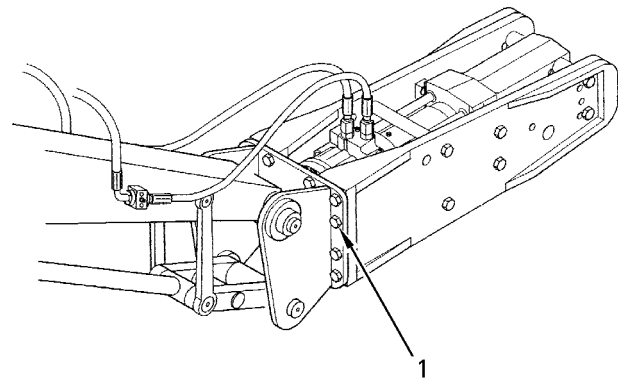


Illustration 39

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The typical example that is shown is for the following machines:

- Excavator
- Backhoe loader

Table 12

Sales Model	Bolt (1)	Bolt Torque
H45, H45s, H50, H50s, 70s, H70s, H90Cs, 100, 100s	8T-4141 or 8T-4187	530 ± 70 N·m (391 ± 52 lb ft)
63, H63, H63s, 70, H70, H90C	7X-2554	270 ± 40 N·m (199 ± 30 lb ft)
H100, H100s	7X-2454	900 ± 100 N·m (663 ± 74 lb ft)

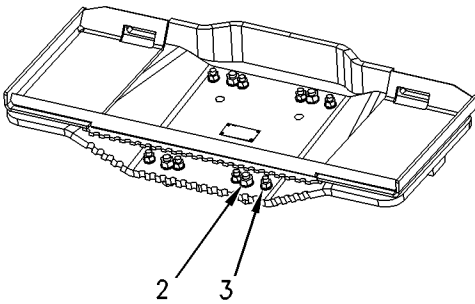


Illustration 40 g00680645

Mounting bracket for skid steer loaders  
 (2) Bolts to mount H45, H45s, H50, and H50s  
 (3) Bolts to mount H63, and H63s

Table 13

Sales Model	Bolt (2)	Bolt (3)	Bolt Torque
H45, H45s, H50, H50s	8T-4141		530 ± 70 N·m (391 ± 52 lb ft)
63, H63, H63s		7X-2554	270 ± 40 N·m (199 ± 30 lb ft)

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## Side Plate Bolts - Tighten

**SMCS Code:** 6333-079-BC

Inspect the bolts for the side plates for the proper torque. If necessary, tighten the bolts to the proper torque. Refer to the following illustrations and the following tables for the proper torque value.

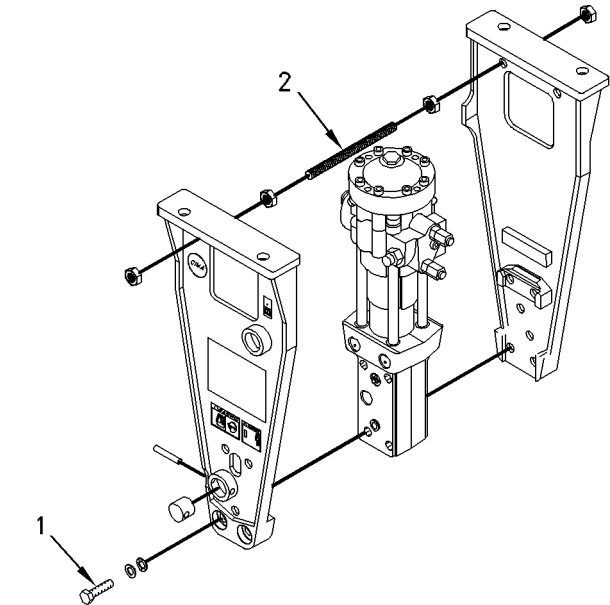


Illustration 41 g00677890  
 Example of a non-silenced hammer

Table 14

Torque Values for the bolts on Non-Silenced Hammers		
Sales Model	Bolt (1)	Torque
H45	8T-4193	240 ± 40 N·m (177 ± 30 lb ft)
H50	8T-4141	340 ± 60 N·m (251 ± 44 lb ft)
63, H63	7X-2575	580 ± 100 N·m (428 ± 74 lb ft)
70, H70	7X-2577	580 ± 100 N·m (428 ± 74 lb ft)
H90C	7X-2581	1150 ± 200 N·m (848 ± 148 lb ft)
100, H100	7X-2583	1150 ± 200 N·m (848 ± 148 lb ft)

(2) Tighten the nuts for the threaded rod to a torque value of 100 ± 20 N·m (74 ± 15 lb ft). Use this torque value for all side plates that are equipped with a threaded rod. Use the threaded rod to help with the alignment of the side plates and the mounting bracket.

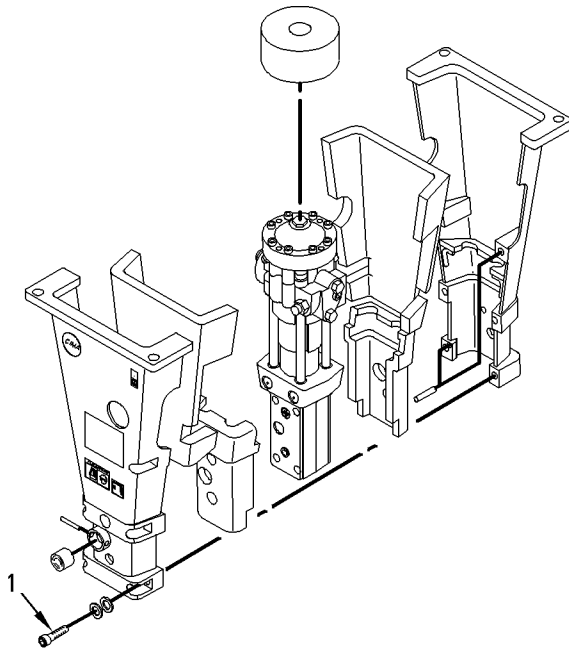


Illustration 42

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Example of a silenced housing

Table 15

Torque Values for Silenced Hammers		
Sales Model	Bolt (1)	Torque
H45s, H50s	8T-1447	175 ± 30 N·m (129 ± 22 lb ft)
H63s, 70s, H70s	9X-2404	340 ± 60 N·m (251 ± 44 lb ft)
H90Cs, H100s	7Y-5215	580 ± 100 N·m (428 ± 74 lb ft)

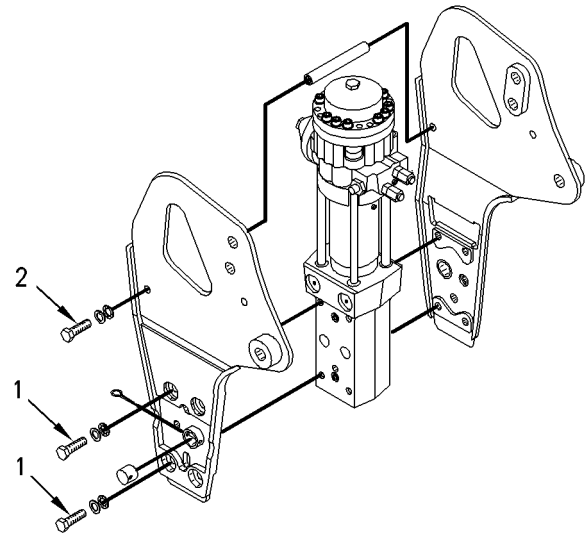


Illustration 43

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Example of a H70 Pin-On hammer

Table 16

Torque Values for Pin-On Side Plates			
Sales Model	Bolt (1)	Bolt (2)	Torque
70, H70	7X-2576		580 ± 100 N·m (428 ± 74 lb ft)
70, H70		7X-2575	580 ± 100 N·m (428 ± 74 lb ft)

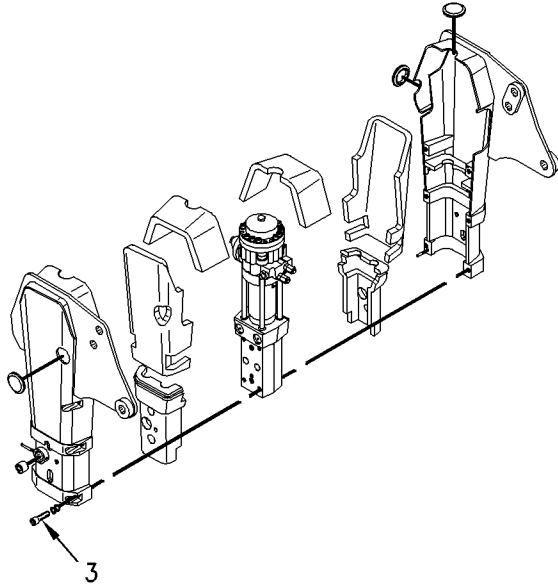


Illustration 44  
 Example of H70s Pin-On hammer

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Table 17

Torque Values for Pin-On Side Plates		
Sales Model	Bolt (3)	Torque
70s, H70s	9X-2404	340 ± 60 N·m (251 ± 44 lb ft)

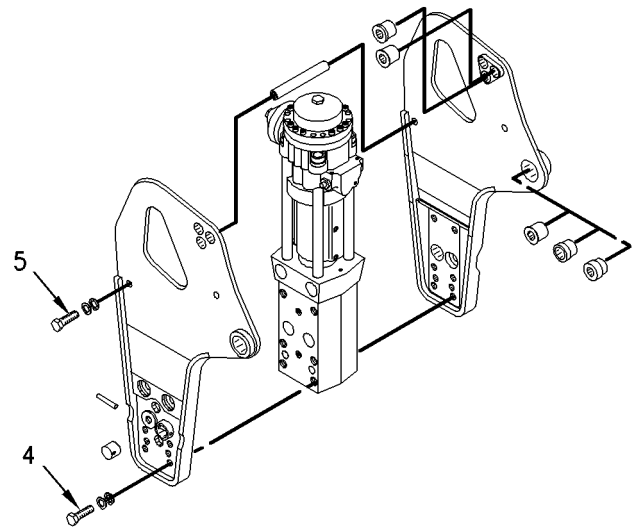


Illustration 45  
 Example of a H90C Pin-On hammer

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Table 18

Torque Values for Pin-On Side Plates			
Sales Model	Bolt (4)	Bolt (5)	Torque
H90C	7X-2580		1150 ± 200 N·m (848 ± 148 lb ft)
H90C		7X-2575	580 ± 100 N·m (428 ± 74 lb ft)



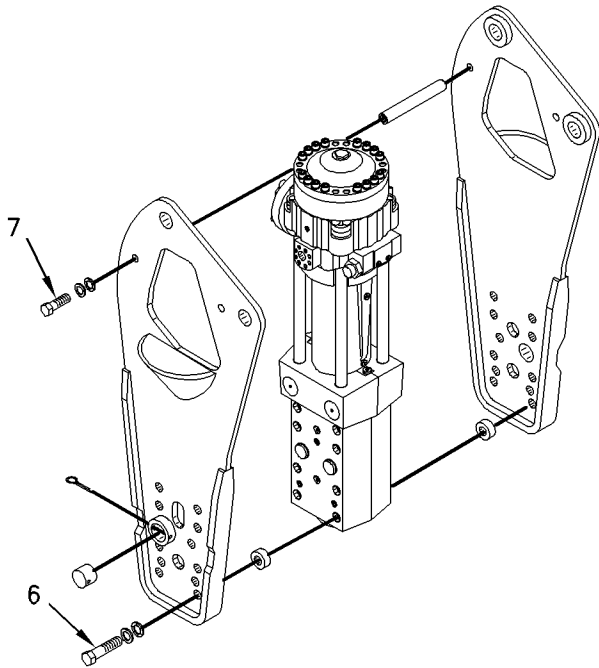


Illustration 46 g00678007  
Example of a H100 Pin-On hammer

Table 19

Torque Values for Pin-On Side Plates			
Sales Model	Bolt (6)	Bolt (7)	Torque
H100	7X-2583		1150 ± 200 N·m (848 ± 148 lb ft)
H100		7X-2576	580 ± 100 N·m (428 ± 74 lb ft)

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## Tool - Inspect

**SMCS Code:** 6826-040

**Note:** You must use caution when you touch the hammer tool. The hammer tool can be extremely hot after the hammer tool has been in operation.

1. Remove the tool from the hammer. Refer to the Operation and Maintenance Manual, "Tool - Remove and Install".

2. If necessary, grind the burrs off the hammer tool. Make sure that you remove the burrs from the notch for the retaining pin. Remove the burrs from the retaining pin.

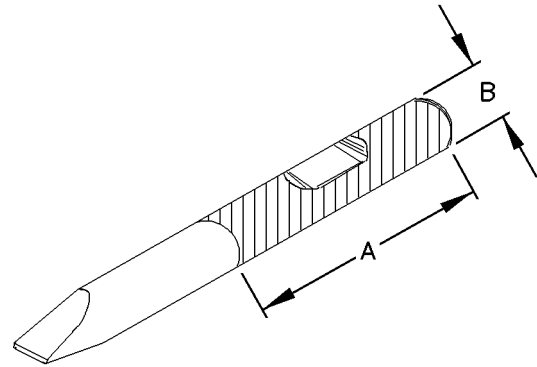


Illustration 47 g00678194

3. Check the hammer tool for wear. When you measure the wear of the tool, you must measure the part of the tool (A) that is in the tool bushings.
4. Measure the dimension (B).
5. Refer to the Table 20 for the dimension of a new tool. Refer to the Table 20 for the minimum diameter of a tool.

Table 20

Wear Limits for Hammer Tools		
Sales Model	Diameter of New Tool	Minimum Diameter of Tool
H45, H45s	45.0 mm (1.77 inch)	43.0 mm (1.69 inch)
H50, H50s	50.0 mm (1.99 inch)	48.0 mm (1.89 inch)
H63, H63s	63.0 mm (2.48 inch)	61.0 mm (2.40 inch)
H70, H70s	70.0 mm (2.76 inch)	68.0 mm (2.68 inch)
H90C, H90Cs	84.0 mm (3.31 inch)	82.0 mm (3.23 inch)
H100, H100s	95.0 mm (3.74 inch)	93.0 mm (3.66 inch)

6. You must replace the tool if dimension (B) is smaller than the minimum diameter of the tool for your hammer.

**Note:** Do not weld on a hammer tool. Welding on the hammer tool causes cracks in the hammer tool. The cracks will cause the hammer tool to fail.

7. Inspect the hammer tool for cracks. If there are cracks in the hammer tool, you must replace the hammer tool.

7. If necessary, use a suitable lifting device to remove the tool. Refer to the Table 21 for the weight of the tool. Remove the hammer tool (2).

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## Tool - Remove and Install

**SMCS Code:** 6826-010

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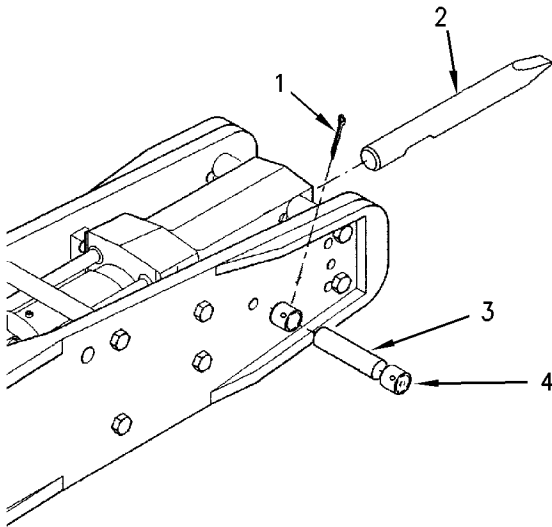


Illustration 48

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**Note:** Use caution when you remove the hammer tool. The tool can be very hot after the tool has been in operation.

1. Position the hammer on level ground.
2. Put the host machine's transmission in neutral. The parking brake should be engaged.
3. Stop the engine.
4. Remove the split pin or cotter pins (1). There can be one split pin or cotter pin on each side of the hammer. The following hydraulic hammers use one pin: H45, H45s, 63, H63, and H63s. All of the other hydraulic hammers use two pins.
5. Remove the buffer or the buffers (4).
6. Remove the retaining pin or retaining pins for the tool (3).

Table 21

Weights of Small Hammer Tools						
	H45 H45s	H50 H50s	63 H63 H63s	70 70s H70 H70s	H90C H90Cs	100 H100 H100s
<b>Blunt Tool</b>						43 kg (95 lb)
<b>Chisel Tool</b>	5 kg (11 lb)	8 kg (18 lb)	15 kg (33 lb)	20 kg (44 lb)	324 kg (75 lb)	46 kg (101 lb)
<b>Long Chisel</b>			18 kg (40 lb)	23 kg (51 lb)	37 kg (81 lb)	55 kg (121 lb)
<b>Moil Tool</b>	5 kg (11 lb)	7 kg (15 lb)	15 kg (33 lb)	20 kg (44 lb)	33 kg (73 lb)	44 kg (97 lb)
<b>Long Moil Tool</b>			18 kg (40 lb)	23 kg (51 lb)	37 kg (81 lb)	53 kg (117 lb)
<b>Parallel Spade Tool</b>	5 kg (11 lb)	7 kg (15 lb)	13 kg (29 lb)	19 kg (42 lb)	34 kg (75 lb)	39 kg (85 lb)
<b>Transverse Spade Tool</b>	5 kg (11 lb)	7 kg (15 lb)	13 kg (29 lb)	19 kg (42 lb)	34 kg (75 lb)	39 kg (85 lb)
<b>Compacting Plate</b>	21 kg (46 lb)	23 kg (51 lb)	30 kg (66 lb)	54 kg (119 lb)		

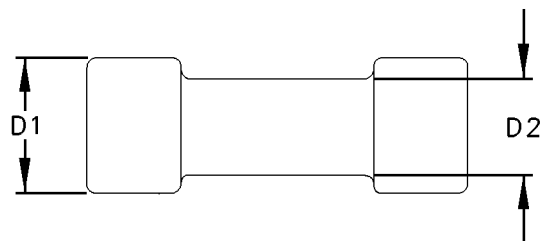
8. After you remove the tool, inspect the lower tool bushing for wear. Refer to the Operation and Maintenance Manual, "Tool Bushing (Lower) - Inspect/Replace" for information on inspecting the bushing.
9. After you remove the tool, inspect the upper tool bushing for wear. Refer to the Operation and Maintenance Manual, "Tool Bushing (Upper) - Inspect/Replace" for information on inspecting the bushing for the following hydraulic hammers: 90, H90C, and H90Cs.
10. After you have removed the tool, inspect the hammer tool for wear. Refer to the Operation and Maintenance Manual, "Tool - Inspect" for information on inspecting the hammer tool.
11. After you have removed the tool, inspect the seal in the lower tool bushing for wear. You must replace the seal if the seal is worn or if the seal is damaged.

5. Install the buffer or buffers (4).
6. Install the split pin or the split pins (1).

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## Tool Retaining Pins - Inspect/Replace

**SMCS Code:** 6826-040; 6826-510



### Installation of Tool

1. Clean the hammer tool (2) and lubricate the hammer tool (2) with grease. Coat the sides of the tool with grease. Do not place any grease on the top of the tool.
2. Clean the pins (3). Clean the buffers (4). Lubricate the pins (3) with grease.
3. Install the hammer tool (2) and align the grooves of the tool with the pin bores.
4. Install the retaining pin or retaining pins (3).

Illustration 49

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1. Remove the pin from the hammer.
2. Inspect the pin for wear or for cracks.
3. Measure the amount of wear. Compare Dimension (D1) to Dimension (D2). The difference between Dimension (D1) and Dimension (D2) must be less than 1.0 mm (0.04 inch). If the difference is greater than 1.0 mm (0.04 inch), you must replace the pin.

4. If the pin is cracked, you must replace the pin.

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## Tool Bushing (Upper) - Inspect/Replace (H90C/H90Cs and H100/H100s Only)

**SMCS Code:** 6826-040-GY; 6826-528

1. Remove the hammer tool. Inspect the hammer tool. Refer to Operation and Maintenance Manual, "Tool (Hammer) - Inspect".
2. Remove the lower tool bushing. Inspect the lower tool bushing. Refer to Operation and Maintenance Manual, "Tool Bushing (Lower) - Inspect/Replace".
3. Remove the upper tool bushing.
4. Inspect the upper tool bushing for excessive wear. Inspect the upper tool bushing for damage.

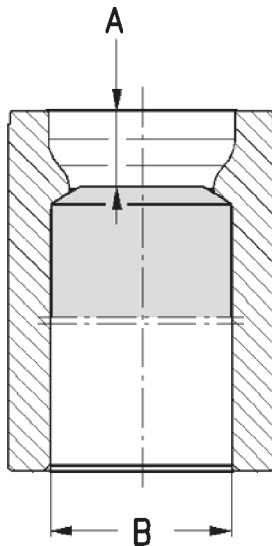


Illustration 50

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5. Measure Dimension (A). Dimension (A) is from the top of the tool to the top of the tool bushing. You must use a Caterpillar hammer tool for the measurement. Measure Dimension (B). Refer to Table 22 for the acceptable dimensions.

Table 22

Specifications for Upper Tool Bushing for H90C, H90Cs, 100, 100s, H100, and H100s		
Sales Model	Minimum Distance (A)	Maximum Diameter (B)
H90C, H90Cs	28 mm (1.10 inch)	86 mm (3.4 inch)
100, 100s, H100, H100s	38 mm (1.50 inch)	97 mm (3.8 inch)

6. If the upper tool bushing has any damage, you must replace the bushing. If the upper tool bushing has any cracks, you must replace the bushing. If the upper tool bushing does not meet the dimensions in Table 22, you must replace the bushing.
7. Coat all of the outer surfaces of the upper tool bushing with **5P-3931** Anti-Seize Compound. Install the upper tool bushing into the head.
8. Coat all of the outer surfaces of the lower tool bushing with **5P-3931** Anti-Seize Compound. Install the lower tool bushing into the head.
9. Coat the sides of the hammer tool that contact the tool bushings with grease. Install the hammer tool into the tool bushings.

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## Tool Bushing (Lower) - Inspect/Replace

**SMCS Code:** 6826-040-GY; 6826-528

1. Remove the tool. Refer to Operation and Maintenance Manual, "Tool - Remove and Install" for information on the procedure to remove the tool from your hammer.
2. Clean the inside of the bushing. Inspect the inside bore of the bushing for wear.

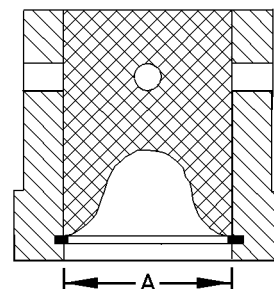


Illustration 51

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3. You must replace the bushing if the bushing has too much wear. Refer to Table 23 for the dimensions.

Table 23

Tool Bushing (Lower) Wear Limits	
Sales Model	Maximum Dimension (A)
H45, H45s	47 mm (1.8 inch)
H50, H50s	52 mm (2.0 inch)
63, H63, H63s	65 mm (2.5 inch)
70, 70s, H70, H70s	72 mm (2.8 inch)
H90C, H90Cs	86 mm (3.4 inch)
100, 100s, H100, H100s	97 mm (3.8 inch)

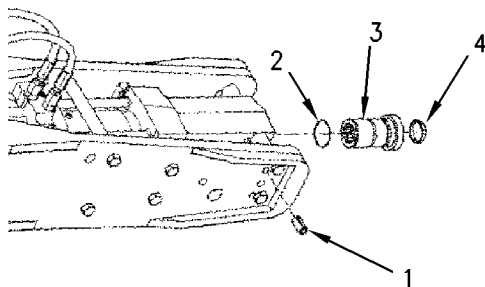


Illustration 52

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In order to remove the bushing, you must perform the following steps:

1. Remove the split pins (1). There are two split pins. There is one pin on each side of the bushing.
2. Slide the bushing (3) from the head.
3. Inspect the seal (4) and inspect the O-ring (2). Replace the seal if the seal is damaged. Replace the O-ring if the O-ring is damaged.
4. If the lower tool bushing has been removed from the front head, you must perform the following steps before you install the lower tool bushing.

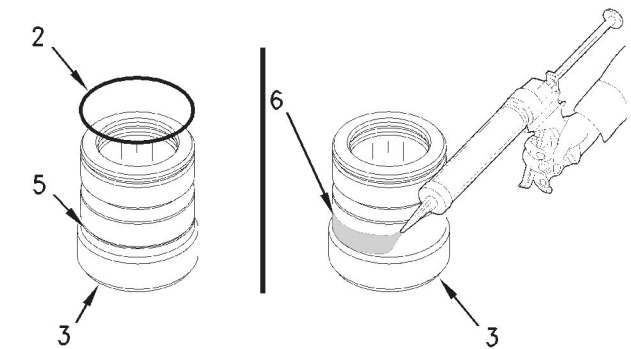


Illustration 53

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**Note:** Do not apply 5N-5561 Silicone Lubricant to the bore of the front head.

- a. Refer to Illustration 53. If you have previous lower tool (3), remove O-ring seal (2) from groove (5). Do not replace the O-ring seal. Silicone sealant will replace O-ring seal (2).
- b. Apply a thin layer of 5N-5561 Silicone Lubricant (6) on the outer surface of lower tool bushing (3). Refer to Illustration 53 for applying the silicone sealant.

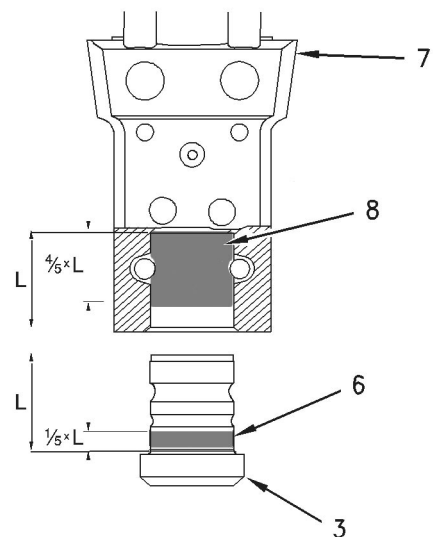


Illustration 54

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- c. Apply grease (8) to the bore of front head (7). Grease will prevent corrosion and seizures. The removal of the lower tool bushing will be made easier by applying grease. Refer to Illustration 54.
- d. Install the lower tool bushing before the sealant hardens. Install the split pins.