

GH60 Hydraulic Hammer

Removal and Installation Instructions

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Instructions for Removing and Installing the GH60 Hydraulic Hammer

1.0 Objective

Certain repairs to the GH60 Hydraulic Hammer should only be performed by a qualified Geoprobe® technician. When such repairs are necessary, the hammer must be removed from the machine and shipped to Geoprobe Systems®. This document identifies the procedures used to remove and install a GH60 hammer on a Geoprobe brand direct push machine.

2.0 Required Equipment

Combination wrenches: 5/8-inch, 3/4-inch, 11/16-inch, 1-inch, 1-1/16-inch, and 1-1/4-inch
Allen wrenches: 5/32-inch and 7/32-inch
Breaker bar, 1/2-inch drive
Ratchet, 1/2-inch drive
Extension, 1/2-inch drive, 6-inch length
Sockets, 1/2-inch drive: 5/8-inch, 3/4-inch, and 1-1/8-inch
Torque wrench, 400 ft.lb. (542 Nm) capacity
Steel hammer
Steel punch
Hex bit, 5/8-inch (fits in 5/8-inch socket to remove socket head cap screws), Geoprobe PN 11581
Mounting studs (4), Geoprobe PN 15360
SAE #6 plugs (2), Geoprobe PN 5421
SAE #6 caps (2), Geoprobe PN 5415
SAE #10 caps (2), Geoprobe PN 5413
SAE #10 plugs (2), Geoprobe PN 5419
Threadlocker, removable (Blue LOCTITE® 243), Geoprobe PN 15818
Anti-seize lubricant, copper based, Geoprobe PN 12186

3.0 Removing the GH60 Hammer

Note: An exchange hammer can be obtained from Geoprobe Systems to limit unit downtime.

1. Fold the probe derrick into the vertical position and lower the foot onto the ground (hammer remains lowered).
2. Shut off the power unit engine. Cycle the control levers back-and-forth to relieve pressure in the hydraulic lines.
3. If the unit is equipped with an augerhead attachment, swing the auger out away from the hammer (Fig.1). Because the auger must be removed in order to access the hammer, you may completely remove both the pivot bolt and locking bolt at this time. Loosen the bolts with a 1/2-inch drive breaker bar and 1-1/8-inch socket.



Figure 1. Augerhead rotated to access hammer.

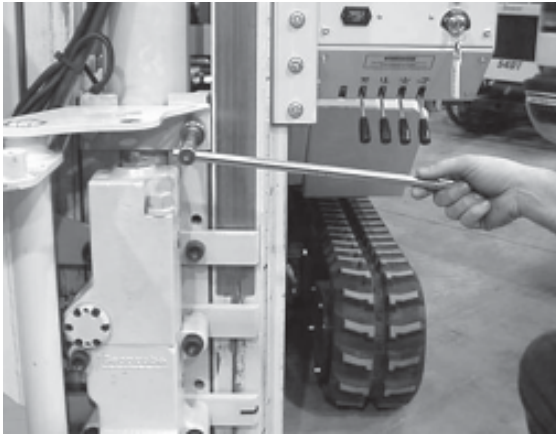


Figure 2. Remove top auger bracket.

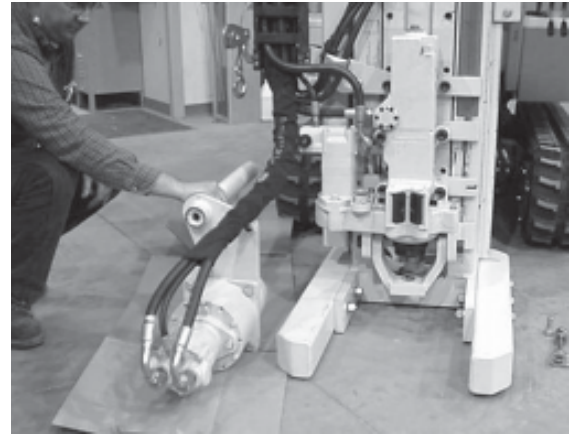


Figure 3. Place augerhead next to probe foot.

4. Remove the top auger bracket (2 bolts) using the breaker bar and a 1-1/8-inch socket as shown in Figure 2. Note that the auger will remain positioned on the lower pivot point once the top bracket is removed.
5. Using two people to avoid injury, carefully lift the augerhead off of the lower pivot tube and lay it next to the probe foot (Fig. 3). Take care not to damage the hydraulic hoses still connected to the augerhead.
6. Disconnect the two hydraulic hoses from the hammer (Fig. 4) and install an SAE #10 plug or cap on each fitting (Fig. 5). Note location of hoses to ensure proper routing during reinstallation.
7. Disconnect the two hydraulic hoses from the hammer motor. Seal all fittings with SAE #6 plugs and caps. Once again note the location of each hose for reinstallation.
8. Remove the two 5/16 x 3/8 inch set screws above each rod grip pull stud using a 5/32-inch Allen wrench as shown in Figure 6.
9. Turn each rod grip pull stud with a 1/2-inch drive ratchet (Fig. 7) until the studs can be pulled from the hammer by hand. Note that the studs are not threaded. Turning the studs simply loosens any dirt or corrosion that may cause them to stick within the hammer.

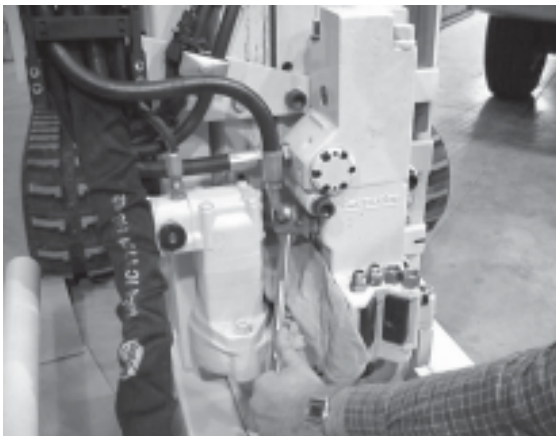


Figure 4. Remove hydraulic hoses from hammer.

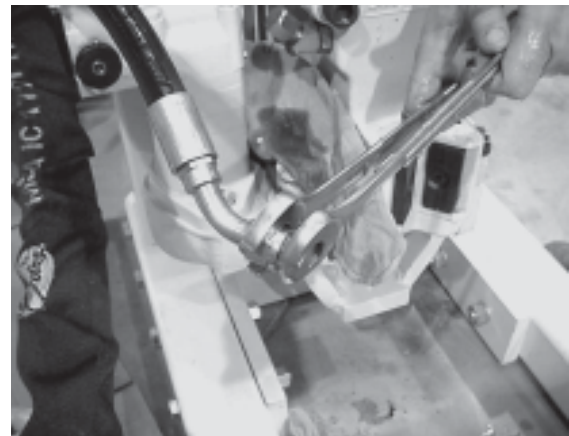


Figure 5. Cap and plug hydraulic hoses.

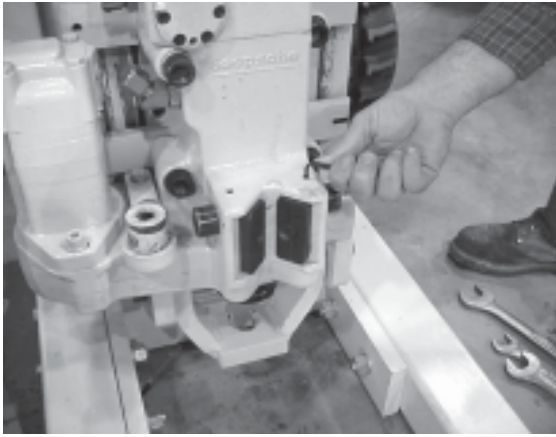


Figure 6. Unthread and remove set screws.

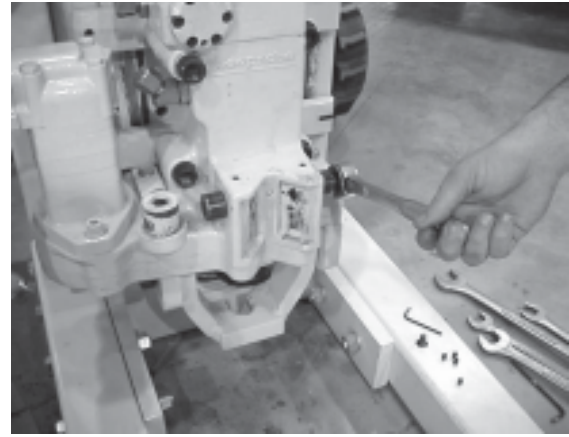


Figure 7. Loosen studs with 1/2-inch drive ratchet.

10. It may be necessary to remove the rod grip jaw pads (Fig. 8) and drive the studs out of the GH60 with a steel hammer and punch (Fig. 9).
11. Remove the four hex head bolts that attach the hammer to the hammer latch using a 1/2-inch drive ratchet, 6-inch extension, and 3/4-inch socket (Fig. 10).
12. You are now ready to begin removing the four socket head cap screws that connect the hammer to the probe derrick. Remove one cap screw (Fig. 11) and thread a mounting stud in its place (Fig. 12) before removing the next cap screw. The studs will hold the mounting brackets in place once all cap screws are removed. Utilize the 5/8-inch hex bit (P/N 11581) with a 1/2-inch drive breaker bar (or ratchet) to unthread the cap screws.



Figure 8. Remove rod grip jaw pads.

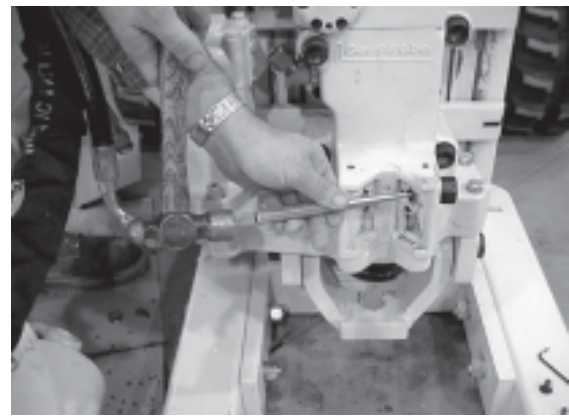


Figure 9. Drive studs out of hammer.

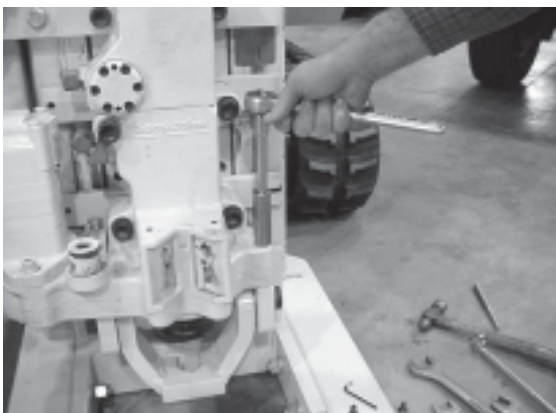


Figure 10. Remove bolts connecting hammer to latch.

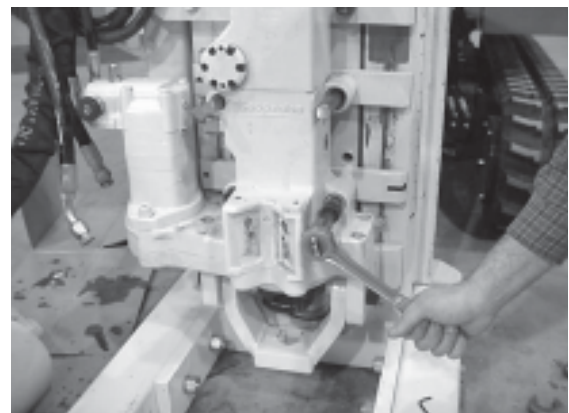


Figure 11. Remove socket head cap screw.

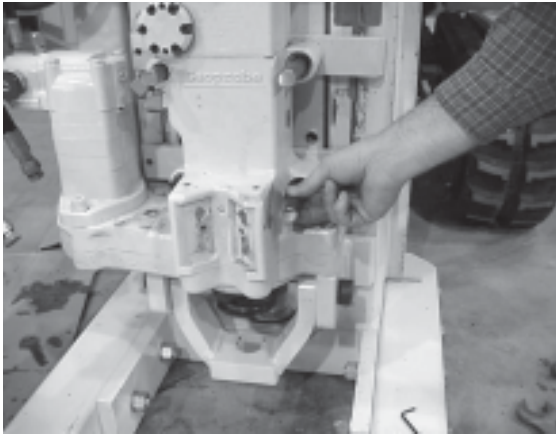


Figure 12. Mounting studs replace each cap screw.



Figure 13. Slide hammer forward to remove.

13. Two of the socket head cap screws just removed from the hammer will now be used to slide the hammer off of the mounting studs. Insert a cap screw backwards into each hole on the rod grip pull block. Using the cap screws as handles (Fig. 13), carefully slide the hammer off of the mounting studs and place it on the ground. Note that the hammer is heavy. Always utilize two people when removing the hammer.

GH60 Hammer is now removed from the unit.

4.0 Installing the GH60 Hammer.

Early GH60 Hammers were flat on the back surface (Fig. 14). This configuration requires a spacer on each of the four mounting cap screws to provide adequate distance between the lower hammer housing and the probe derrick. Later GH60 Hammers have bosses cast into the middle hammer housing (Fig. 15) and do not require additional spacers. If the back surface of your hammer is flat, ensure that a spacer is placed over each mounting studs as shown in Figure 16 before installing the hammer.

1. Using two people, carefully slide the hammer back onto the mounting studs (P/N 15360).
2. Remove one of the mounting studs taking care not to drop the spacer (if present). Thread a socket head cap screw into the hole just vacated by the stud. Repeat this process for the three remaining mounting studs. Do not completely tighten the four cap screws at this time.

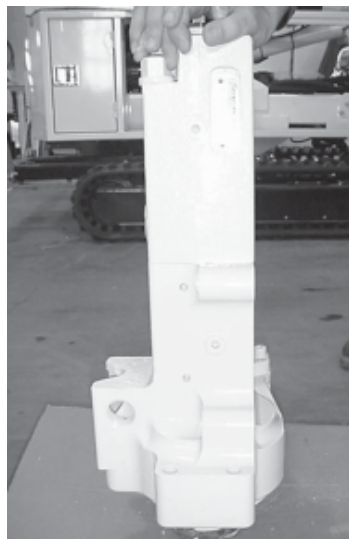


Figure 14. Hammer without bosses (requires spacers).

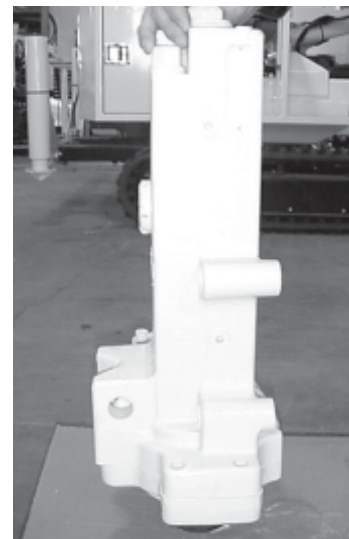


Figure 15. Hammer cast with bosses.



Figure 16. Install brackets before spacers.

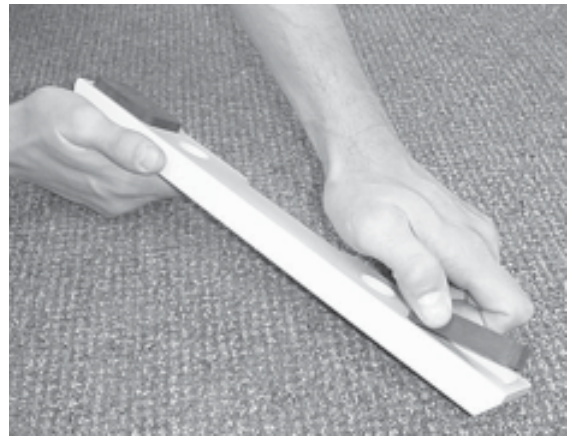


Figure 17. Slide pads (shown in left hand) are removable and should be checked for proper alignment before tightening cap screws during hammer installation.

Ensure that the slide pads (Fig. 17) are still situated correctly in both brackets. There are two removable pads on each bracket that may shift during hammer installation. Also check the spacers on the top two socket head cap screws to ensure that they do not contact the upper hammer housing (Fig. 18) as this will bind the hammer piston when the cap screws are fully tightened.

3. Install the four hex head bolts and lockwashers that attach the hammer to the hammer latch. Remember to include the augerhead lower mounting bracket if applicable. Do not completely tighten the bolts at this time.
4. Tighten the four socket head cap screws (installed in Step 2) to 400 ft.lb. (542 Nm).
5. Tighten the four hex head bolts (installed in Step 3) to 75 ft.lb. (102 Nm).
6. Replace the rod grip jaw pads if they were removed earlier. Apply removable threadlocker (Blue LOCTITE® 243) to both cap screws before installation.
7. Lightly coat each rod grip pull stud with multipurpose grease and install in the holes of the hammer pull block. Apply anti-seize lubricant to two 5/16 x 3/8 inch set screws, install one set screw above each stud, and fully tighten both set screws. Now thread a second set screw (without anti-seize) down tight onto the first set screw.



Figure 18. Rear view of hammer showing upper socket head cap screw as taken from side opposite control panel. Pencil shows junction between upper and middle hammer housings. Spacer must not contact upper housing (above pencil).

8. Reconnect the hydraulic hoses to the hammer and hammer motor. Refer back to Figure 4 to determine proper routing of hoses.

Note that the two larger (# 10) hoses attach to the hammer. First connect the hose with the straight fitting. Then route the hose with the 45° fitting in front of the first hose and connect it to the hammer as shown in Figure 4. Now attach the smaller (# 6) hose with the straight fitting to the top of the hammer motor (Fig. 4). The remaining hose (90° fitting) connects to the back of the hammer motor.

9. Using two people, lift the augerhead assembly back in place on the lower mounting bracket.
10. Attach the top auger bracket to the probe derrick with the two bolts and lockwashers. Apply threadlocker before assembly.
11. Swing the augerhead assembly into the storage position. Install the long pivot bolt and short anchor bolt without applying the removable threadlocker.

GH60 Hammer is now ready for operation.



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