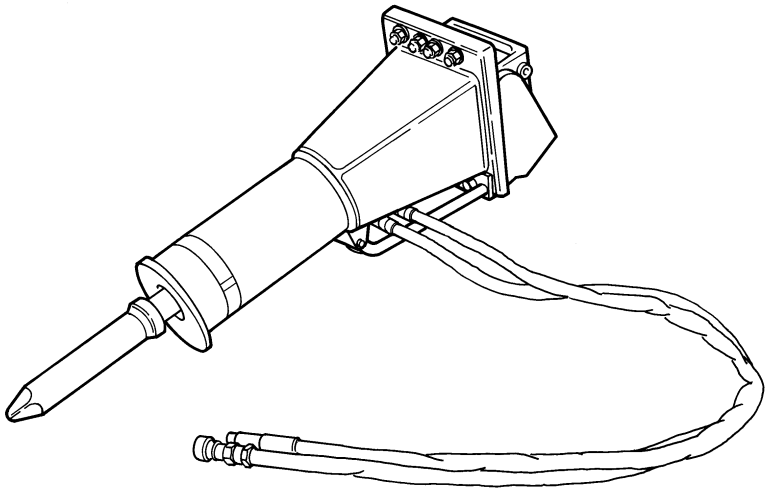
Hydraulic Breaker

Bobcat®

Service Manual

HB1380 S/N AC4500101 & Above
HB2380 S/N A5T600101 & Above



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HB 1380/ HB 2380 Hydraulic Breaker Service Manual

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SERIAL NUMBER LOCATIONS III

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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.


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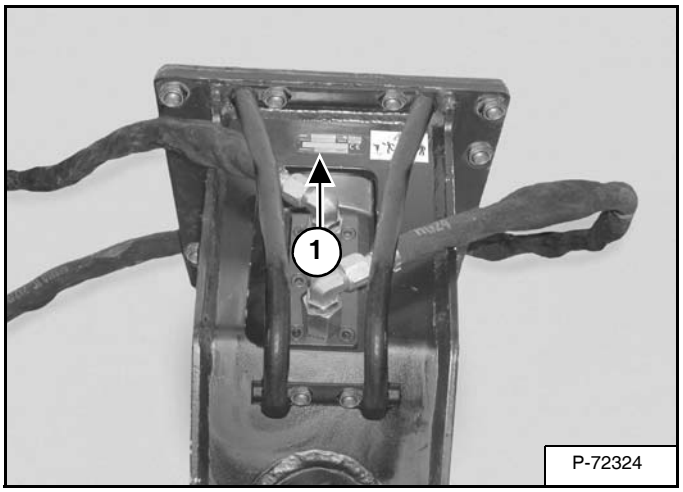
SERIAL NUMBER LOCATIONS

Hydraulic Breaker Serial Number

Always use the serial number of the breaker when requesting service information or when ordering parts. Early or later models (identification made by serial number) may use different parts, or it may be necessary to use a different procedure in doing a specific service operation.

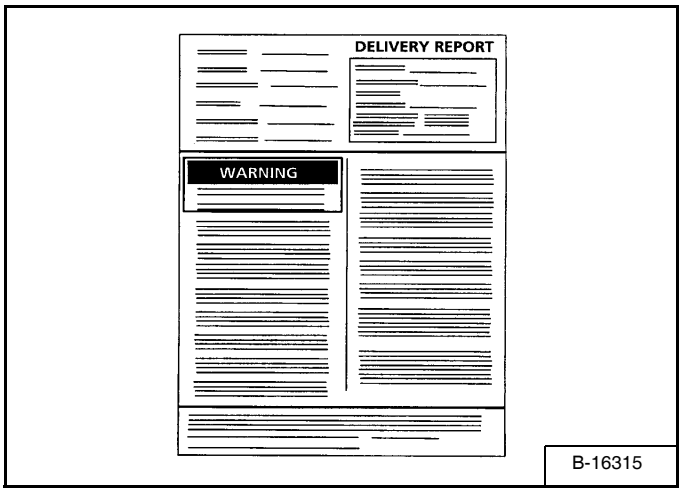
Figure 1



The breaker serial number plate (Item 1) **[Figure 1]**, is located on the frame.

DELIVERY REPORT

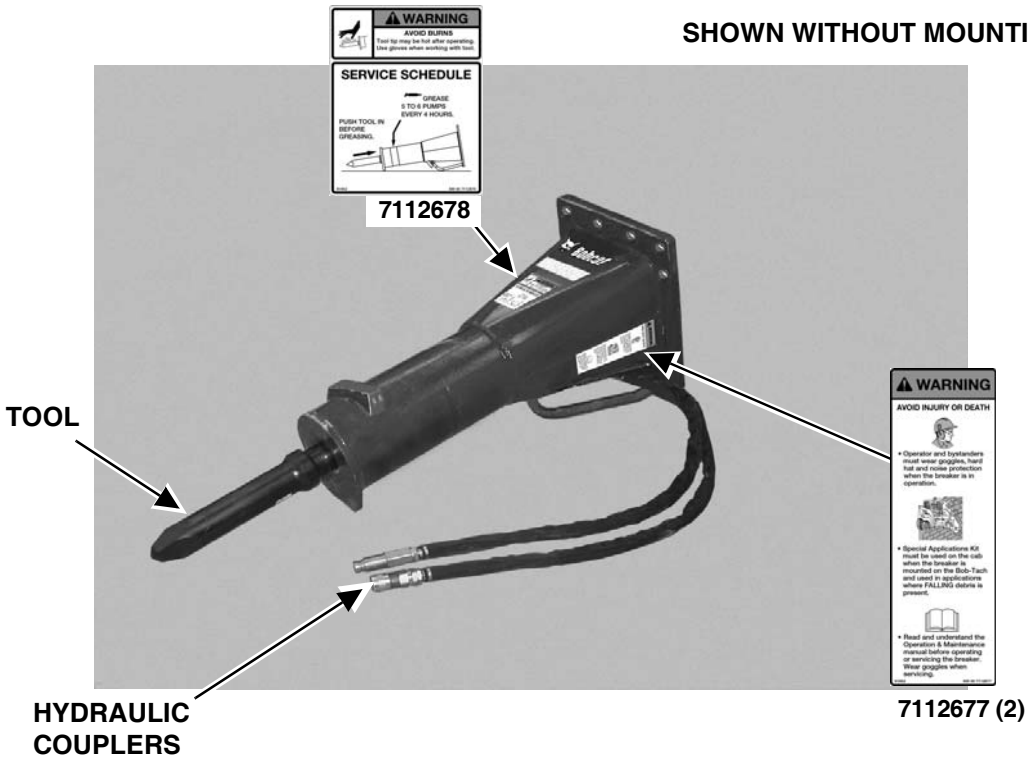
Figure 2



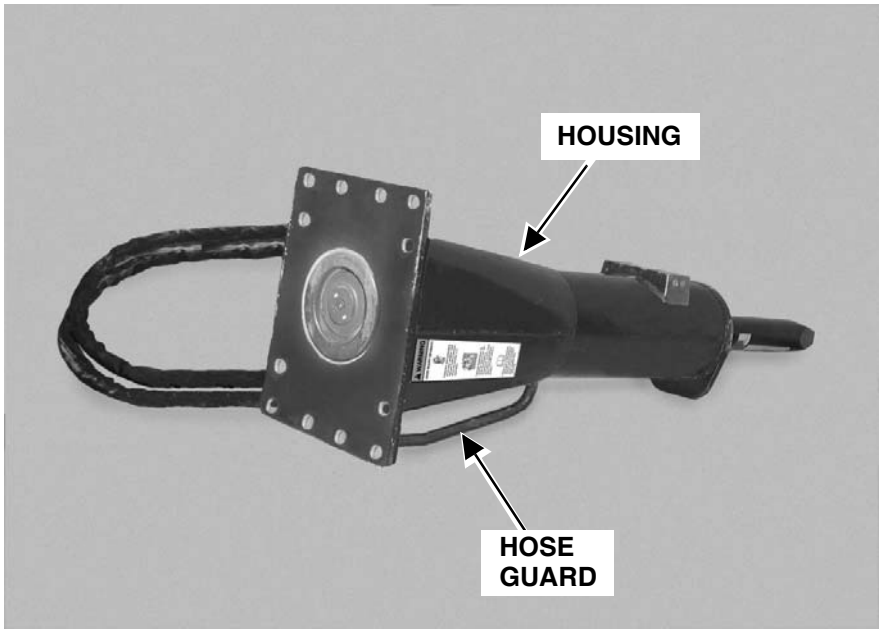
The Delivery Report must be filled out by the dealer and signed by the owner or operator when the Bobcat Hydraulic Breaker is delivered. An explanation of the form must be given to the owner. Make sure it is filled out completely **[Figure 2]**.

PARTS IDENTIFICATION AND MACHINE SIGNS (DECALS)

Breaker



P-72499



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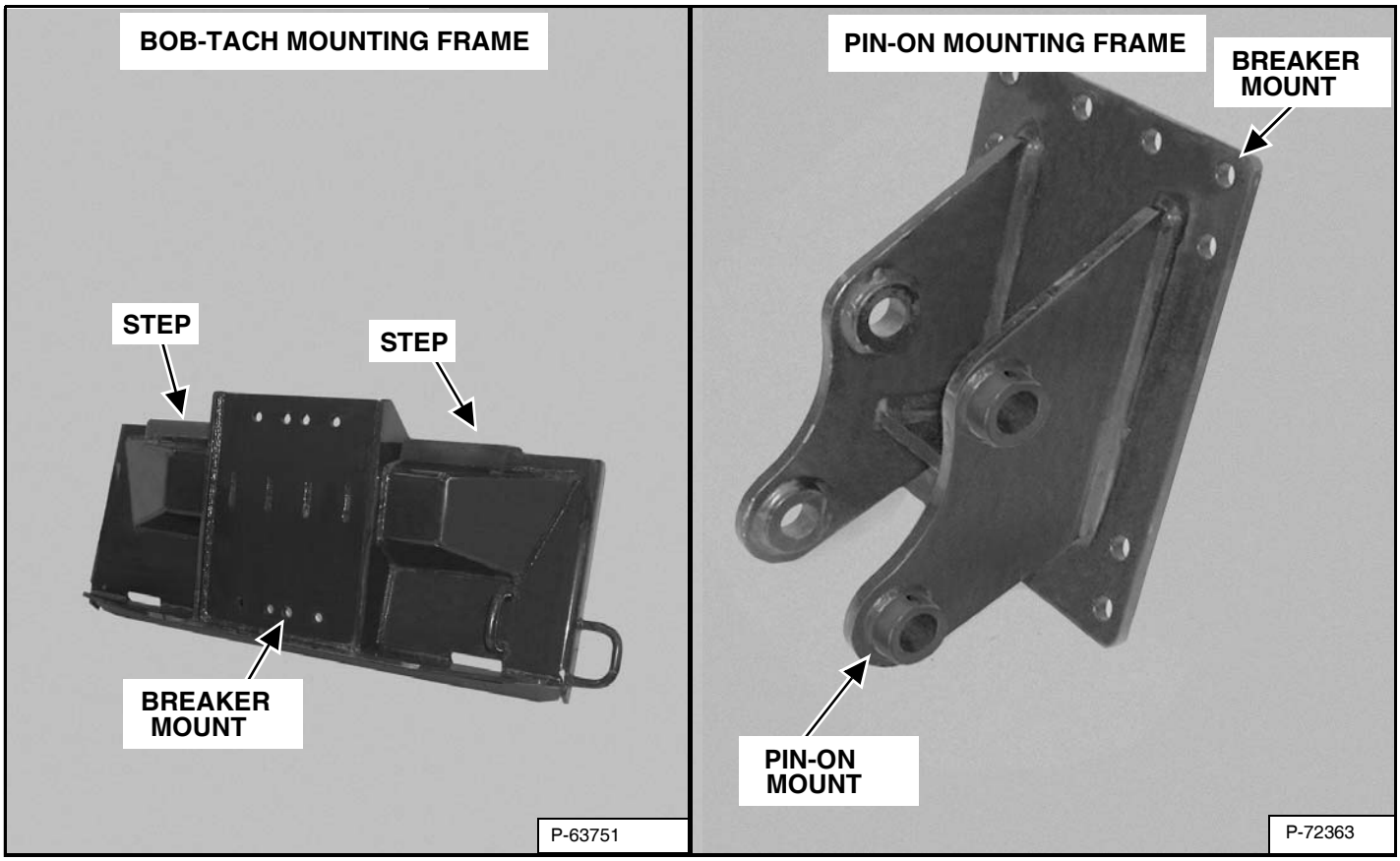
Mounting Frame Configurations

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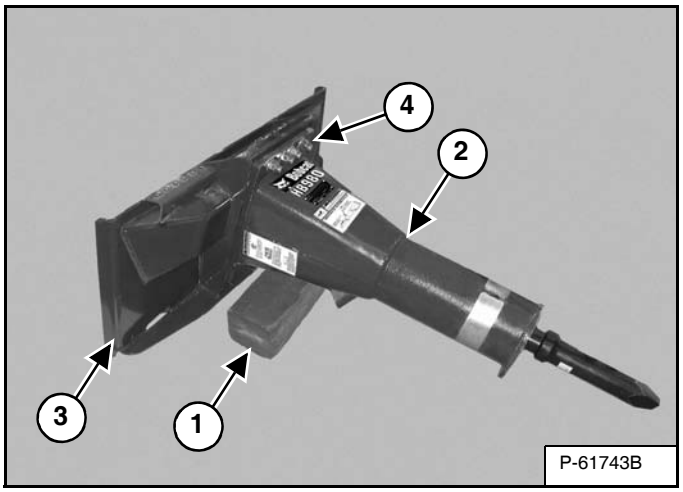
MOUNTING FRAME INSTALLATION

Installing The Bob-Tach Mounting Frame On The Breaker

Figure 10-10-1



Install a block of wood (Item 1) under the breaker (Item 2) **[Figure 10-10-1]**.

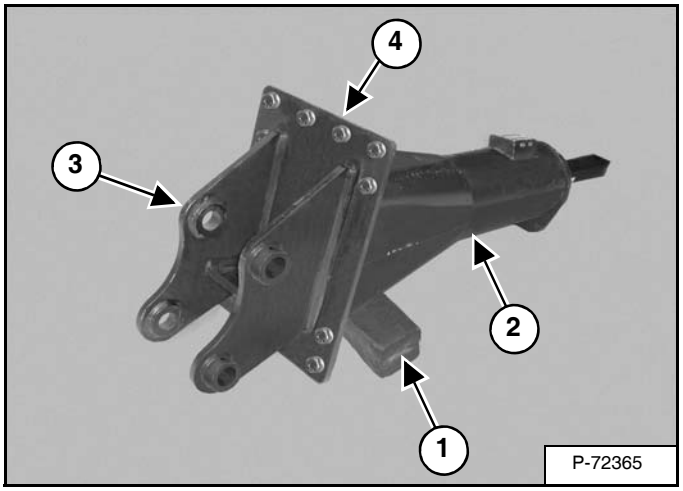
Install the Bob-Tach mounting frame (Item 3) on the breaker (Item 2) **[Figure 10-10-1]**.

Install the six bolts (Item 4) **[Figure 10-10-1]** washers and nuts. On the bottom side of the mount, only install the four corner bolts, washers and nuts at this time. The additional two bolts, washers and nuts will be installed with the hose guard.

Tighten the bolts and nuts in a criss cross pattern to 270 ft. lbs. (370 N•m) torque.

Installing The Pin-On Mounting Frame On The Breaker

Figure 10-10-2



Install a block of wood (Item 1) under the breaker (Item 2) **[Figure 10-10-2]**.

Install the Pin-On mounting frame (Item 3) on the breaker (Item 2) **[Figure 10-10-2]**.

Install the six bolts (Item 4) **[Figure 10-10-2]** washers and nuts. On the bottom side of the mount, only install the four corner bolts, washers and nuts at this time. The additional two bolts, washers and nuts will be installed with the hose guard.

Tighten the bolts and nuts in a criss cross pattern to 270 ft. lbs. (370 N•m) torque.

MOUNTING FRAME INSTALLATION (CONT'D)

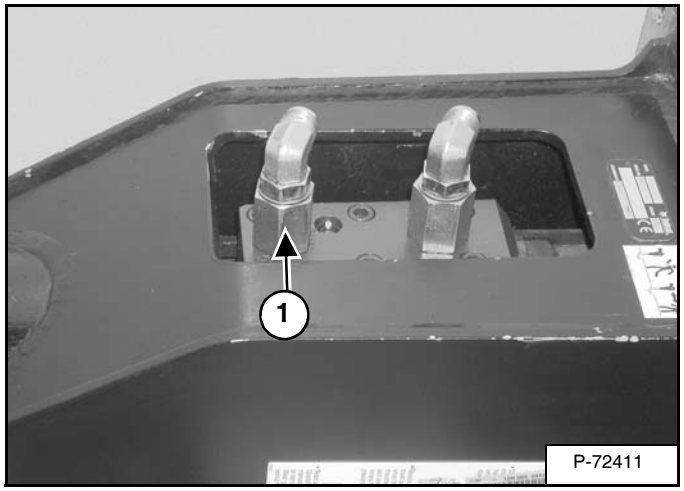
Hose Installation

For Model HB1380 and HB2380 When Used On A Loader

NOTE: The following photos show breaker model HB2380, the procedure is the same for the HB1380 breaker.

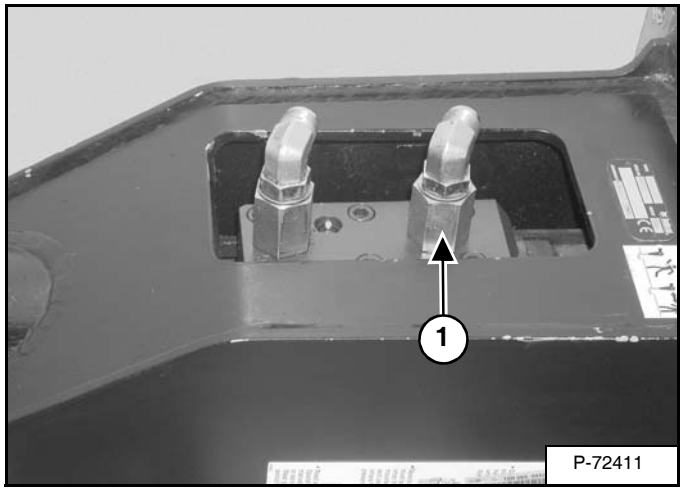
The breaker is supplied without the hoses installed on the breaker.

Figure 10-10-3



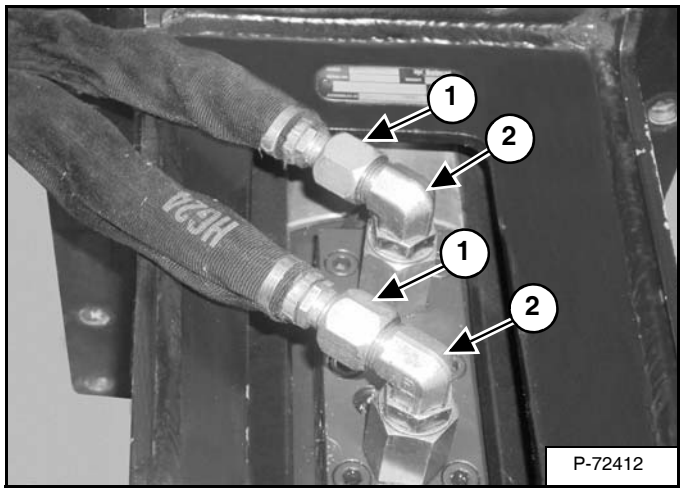
The port marked HP (Item 1) **[Figure 10-10-3]** will be connected to the breaker hose with the male quick coupler.

Figure 10-10-4



The port marked BP (Item 1) **[Figure 10-10-4]** will be connected to the breaker hose with the female quick coupler.

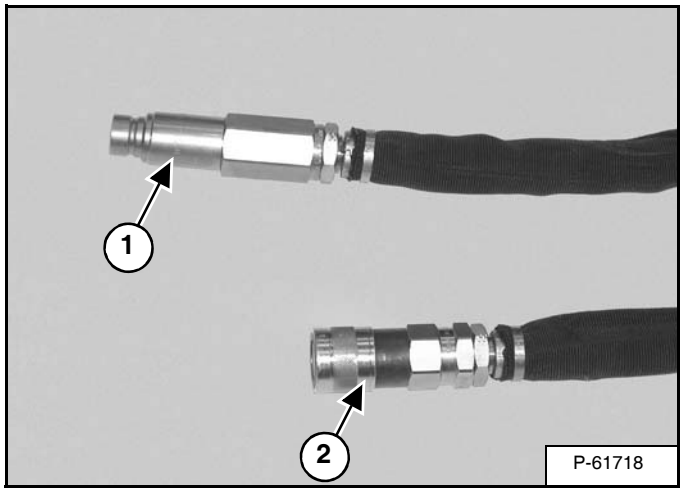
Figure 10-10-5



Install the two hoses (Item 1) on the 90° elbows (Item 2) **[Figure 10-10-5]**.

Tighten the hoses to 85 ft.-lb. (63 N•m) torque.

Figure 10-10-6



Install the male coupler (Item 1) **[Figure 10-10-6]** on the hose that connects to the *HP* port.

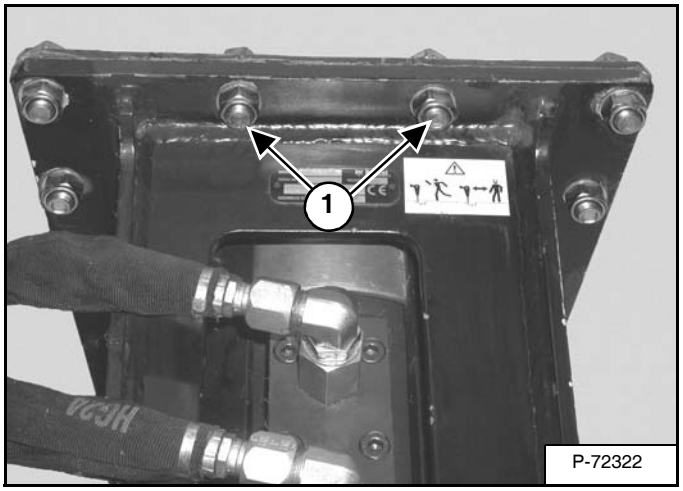
Install the female coupler (Item 2) **[Figure 10-10-6]** on the hose that connects to the *BP* port.

NOTE: For additional quick coupler information, (See Loader Quick Coupler Inspection on Page 10-60-3.)

Hose Installation (Cont'd)

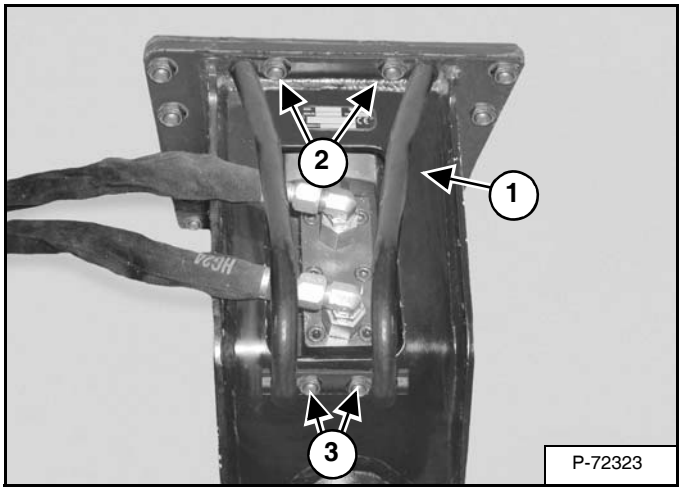
For Model HB1380 and HB2380 When Used On A Loader (Cont'd)

Figure 10-10-7



Remove the two bolts (Item 1) **[Figure 10-10-7]** washers and nuts.

Figure 10-10-8



Install the hose guard (Item 1) using the two bolts provided with the breaker, washers and nuts (Item 2) and the two bolts (Item 3) **[Figure 10-10-8]** provided with the hose guard.

Tighten the two bolts and nuts (Item 2) **[Figure 10-10-8]** to 270 ft.-lb. (370 N•m) torque.

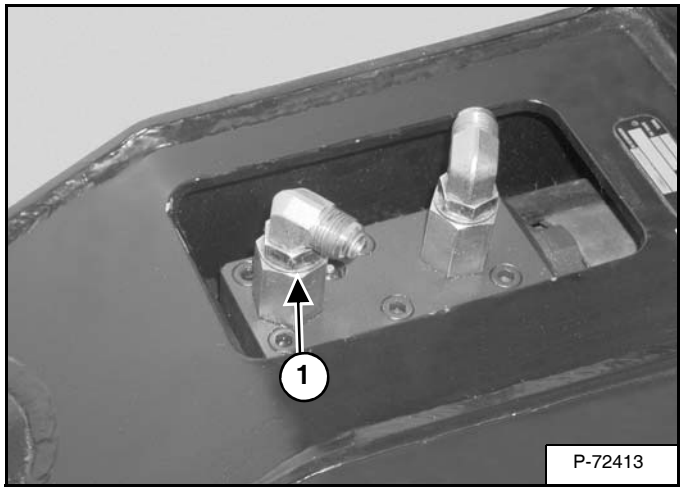
HOSE INSTALLATION (CONT'D)

For Model HB1380 and HB2380 When Used On Model 442 Excavator

NOTE: The following photos show breaker model HB2380, the procedure is the same for the HB1380 breaker.

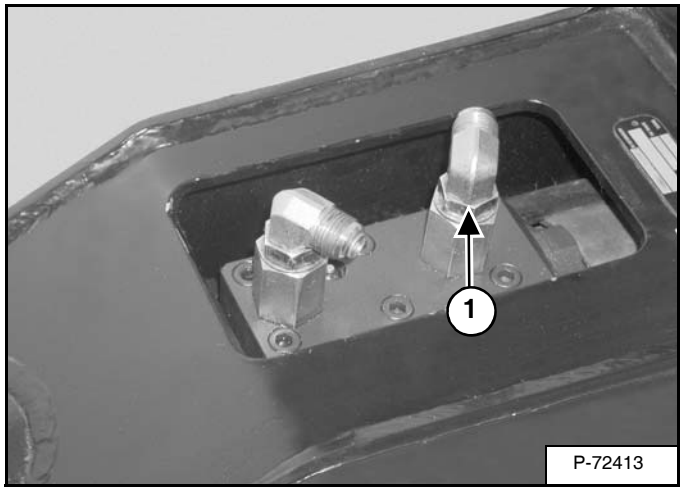
The breaker is supplied without the hoses installed on the breaker.

Figure 10-10-9



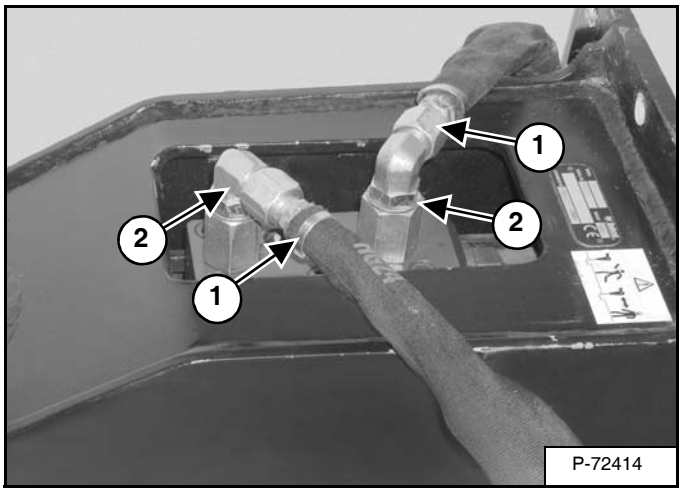
The port marked HP (Item 1) **[Figure 10-10-9]** will be connected to the breaker hose with the screw type quick coupler.

Figure 10-10-10



The port marked BP (Item 1) **[Figure 10-10-10]** will be connected to the breaker hose with the sleeve type quick coupler.

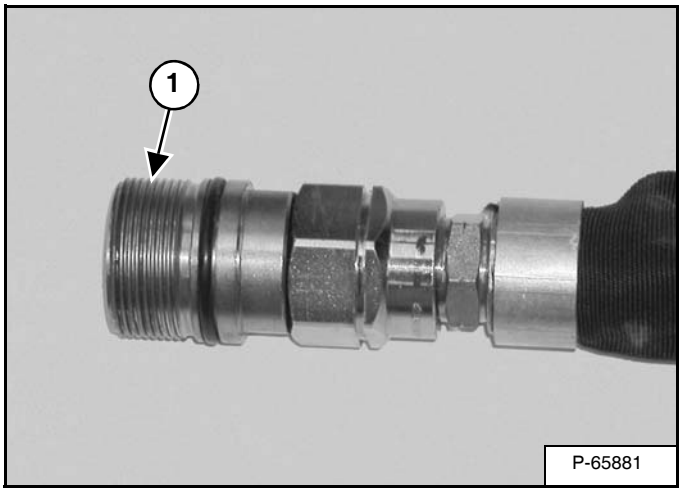
Figure 10-10-11



Install the two hoses (Item 1) on the 90° elbows (Item 2) **[Figure 10-10-11]**.

Tighten the hoses to 85 ft.-lb. (63 N•m) torque.

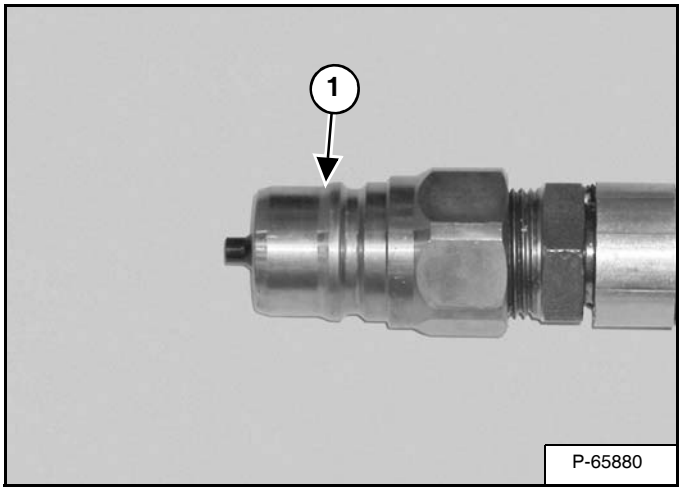
Figure 10-10-12



Install the screw type male coupler (Item 1) **[Figure 10-10-12]** on the hose that connects to the HP port.

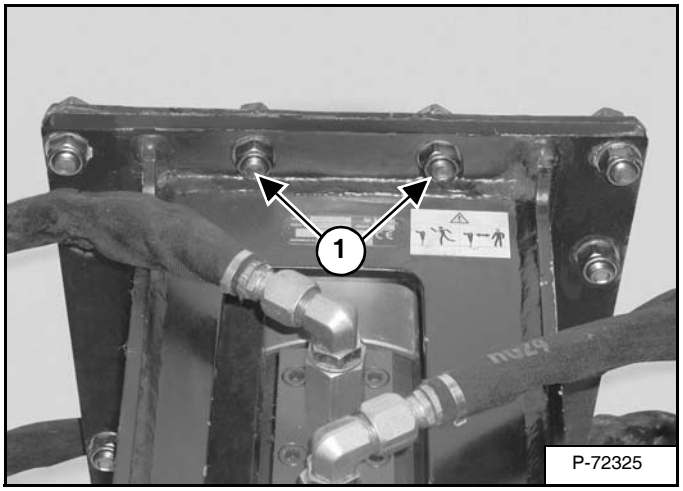
For Model HB1380 and HB2380 When Used On Model 442 Excavator (Cont'd)

Figure 10-10-13



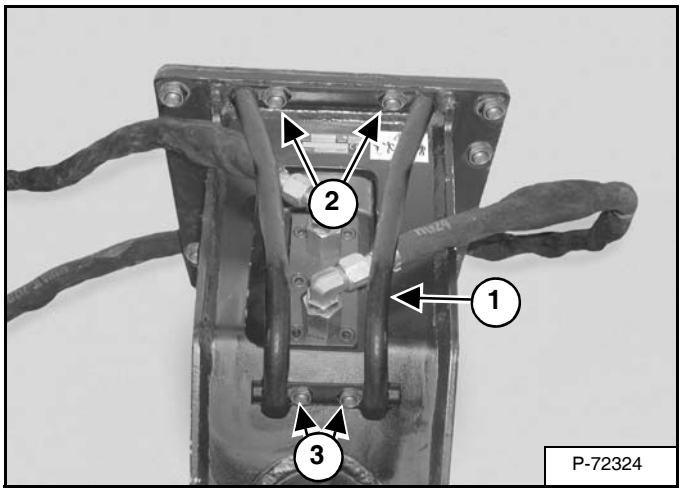
Install the sleeve type male coupler (Item 2) **[Figure 10-10-13]** on the hose that connects to the HB port.

Figure 10-10-14



Remove the two bolts (Item 1) **[Figure 10-10-14]** washers and nuts.

Figure 10-10-15



Install the hose guard (Item 1) using the two bolts provided with the breaker, washers and nuts (Item 2) and the two bolts (Item 3) **[Figure 10-10-15]** provided with the hose guard.

Tighten the two bolts and nuts (Item 2) **[Figure 10-10-15]** to 270 ft.-lb. (370 N•m) torque.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WARNING

AVOID INJURY OR DEATH

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

W-2003-0807

If the hydraulic breaker is not working correctly, check the hydraulic system of the machine thoroughly before making any repairs on the breaker. Hydraulic breaker problems can be affected by a hydraulic system that is not operating to specifications or such problems as a plugged fuel filter or hydraulic filter in the machine. Connect a flow meter to the machine to check the hydraulic pump output, relief valve setting and tubelines to check flow and pressure. (See the machine Service Manual for the correct procedure to connect the flow meter).

PROBLEM	CAUSE	CORRECTION
Breaker will not fire	Machine fluid reservoir is low	Add hydraulic fluid to the fluid reservoir
	Hydraulic hoses connected to wrong ports	Reverse hydraulic hoses
	Damaged hydraulic couplers	Replace hydraulic couplers
	Machine main relief valve set too low	Adjust main relief valve to correct setting
	No hydraulic flow to the breaker	Check the hydraulic flow to the breaker
	Machine hydraulic pump not working	Check flow of hydraulic pump Repair or replace as needed
	Oil in the distributor cover	Damaged internal seals, replace seals
	Regulator ring damaged or installed backwards	Replace regulator ring
	Tool bushing is worn	Replace bushing
Breaker stops after 3 blows	Regulator ring damaged	Replace regulator ring
Breaker runs very slowly or blow per minute reducing	Machine main relief valve set too low	Adjust main relief valve to correct setting
	Not enough hydraulic flow	Test hydraulics for correct flow and pressure
	Excessive heat build up	Check oil cooler for debris and air flow Check relief valve pressure
	Damaged hydraulic couplers	Replace hydraulic couplers
	Internal leakage	Check seals and O-rings in the breaker Check piston, sleeve and seal carrier for wear
	No breaking force and hoses jumping	Check diaphragm for damage

Troubleshooting chart continued on next page.

TROUBLESHOOTING (CONT'D)

PROBLEM	CAUSE	CORRECTION
Breaker fires erratically	Machine main relief valve set too low	Adjust main relief valve to correct setting
	Excessive back pressure	Check for plugged or bent return lines
	Low fluid level	Add fluid to the reservoir as needed
	Not enough hydraulic flow	Test hydraulics for correct flow and pressure
	Damaged hydraulic couplers	Replace hydraulic couplers
	Tool binding	Add grease to the tool shank fitting
Breaker runs for 20 minutes then stops. Breaker will restart after 30 minutes of idle time	Oil overheating	Clean machine radiator
		Adjust main relief valve to correct setting
		Add hydraulic fluid to the fluid reservoir
	Breaker distributor damage from overheating	Replace distributor
Breaker lacks striking force	Regulator ring damaged	Replace regulator ring
	Not enough hydraulic flow	Test hydraulics for correct flow and pressure
	Accumulator nitrogen pressure low	Check nitrogen pressure. If oil in accumulator chamber, replace diaphragm. If pressure low, recharge nitrogen.
		Make sure nitrogen fill plug is installed and torque to specifications
	Tool is broken inside bushing	Replace tool
Excessive heat build up	Blank firing	Refer to the hydraulic controls section for correct operating procedure
	Machine fluid reservoir is low	Add hydraulic fluid to the fluid reservoir
Hydraulic hoses between breaker and machine are pulsing more than normal	Nitrogen charge pressure is low	Check nitrogen pressure. If oil in accumulator chamber, replace diaphragm. If pressure low, recharge nitrogen.
	Accumulator nitrogen pressure is low	
Hydraulic oil on breaker tool	Damaged piston seals	Replace seals
Tool breakage	Firing without sufficient down force on the tool	Apply additional down force with the machine
	Using the tool as a pry bar	Only use perpendicular down force on the tool when breaking, do not pry with tool
	Grinding on the side face of the tool	Grinding on the side face of the tool may cause fatigue points or stress areas on the tool
	Tool corrosion	If the breaker or tool is unused for extended periods of time, retract tool and grease the outside of the tool
	Cold tool	If used in cold weather, keep tool in a warm area prior to usage

See the following troubleshooting chart also.

NITROGEN CHAMBER

Troubleshooting Chart

CHARGING INFORMATION	AFFECTED ON BREAKER
Accumulator charge is low	Reduced life of the diaphragm - possibly forcing the diaphragm into the schrader valve inflation hole
Accumulator charge is to high	Reduced diaphragm life possibly forcing the diaphragm into the grid holes

Pressure Measured		Possible	Solution
PSI	bar	Cause	
0 - 360	0 - 25	Diaphragm damaged or deflated	Replace diaphragm. Charge Nitrogen Chamber
360 - 580	25 - 40	OK	
Above 580	Above 40	Diaphragm damaged	Replace diaphragm

Charging Information

Correct nitrogen charge pressure is an important factor in the service life of the breaker diaphragm. When the charge is too low, the breaker will cycle faster than intended, reducing the life of the diaphragm. Low charge also causes the breaker to not hit as hard as designed, reducing performance. When the charge is too high, the breaker will cycle slower than intended and build excessive heat affecting the performance and service life of the breaker and carrier. The diaphragm life is also greatly reduced. A service interval of every 12 months has been established for checking nitrogen charge.

Check the charge pressure of the chamber every twelve months. When abnormal operation occurs, (low hitting force or running too fast) check the nitrogen chamber charge pressure.

Checking The Nitrogen Chamber Charge Pressure

Use the following procedure to check the nitrogen charge pressure.

NOTE: Hydraulic pressure in the breaker can affect checking the accumulator charge pressure. Before checking the charge pressure, relieve the hydraulic pressure in the machine. See the machine Operation And Maintenance Manual for the correct procedure for relieving pressure.

The breaker nitrogen charge pressure check valve is located under the breaker mounting frame. Remove the breaker mounting frame. (See Disassembly on Page 20-10-1.)

⚠ WARNING

AVOID INJURY OR DEATH

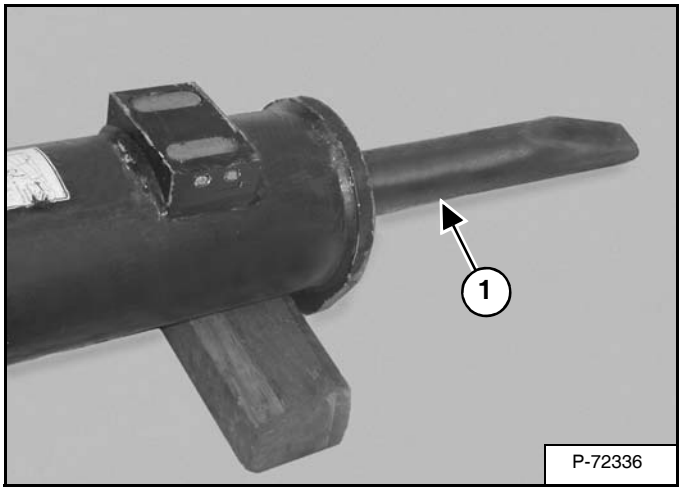
Wear safety glasses to prevent eye injury when any of the following conditions exist:

- **When fluids are under pressure.**
- **Flying debris or loose material is present.**
- **Engine is running.**
- **Tools are being used.**

W-2019-0907

Use the nitrogen accumulator charge pressure gauge MEL1523B to check the pressure.

Figure 10-30-1

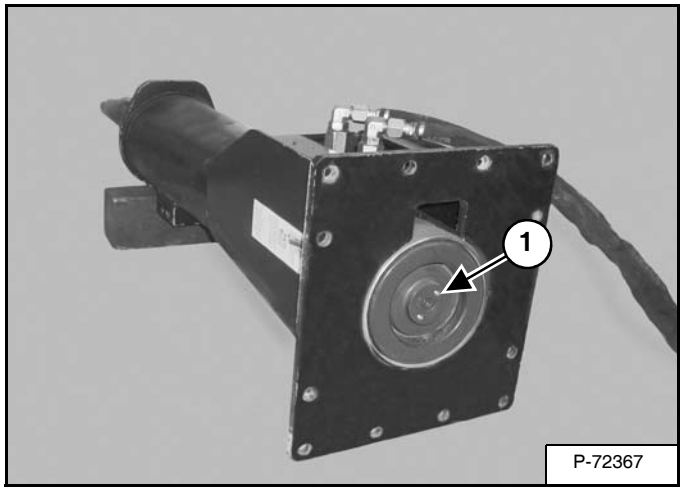


Block up the breaker so the tool (Item 1) **[Figure 10-30-1]** is not under pressure and is not in contact with the piston.

NITROGEN CHAMBER (CONT'D)

Checking The Nitrogen Chamber Charge Pressure (Cont'd)

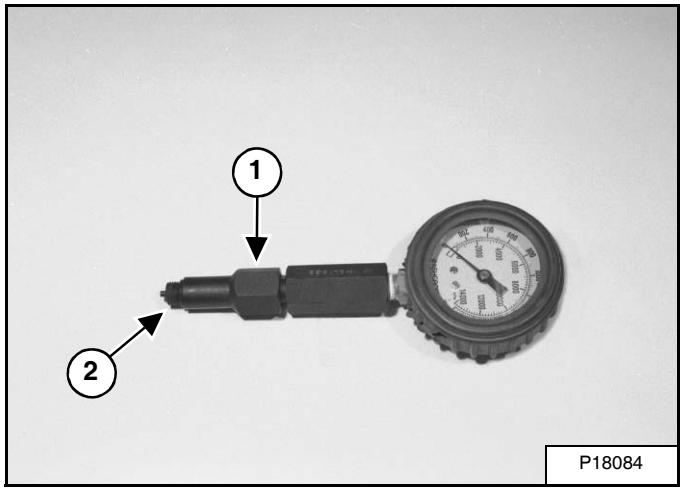
Figure 10-30-2



Remove the plug (Item 1) **[Figure 10-30-2]**.

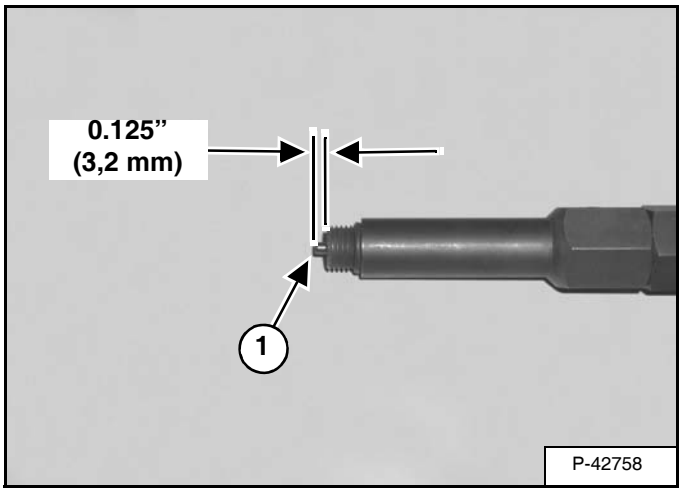
NOTE: If the plug (Item 1) [Figure 10-30-2] is tight, tap the end of the plug with a hammer before removing.

Figure 10-30-3



Install the correct adapter (Item 1) **[Figure 10-30-3]** on the gauge.

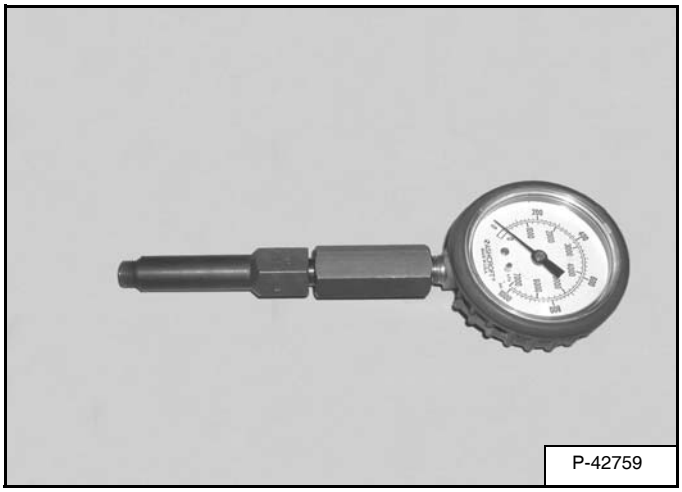
Figure 10-30-4



With the adapter (Item 1) **[Figure 10-30-3]** tightened on the gauge, measure the pin (Item 1) **[Figure 10-30-4]** protrusion.

Manually extend or retract the pin until the pin measures 0.125 in. (3,2 mm) from pin tip to adapter face.

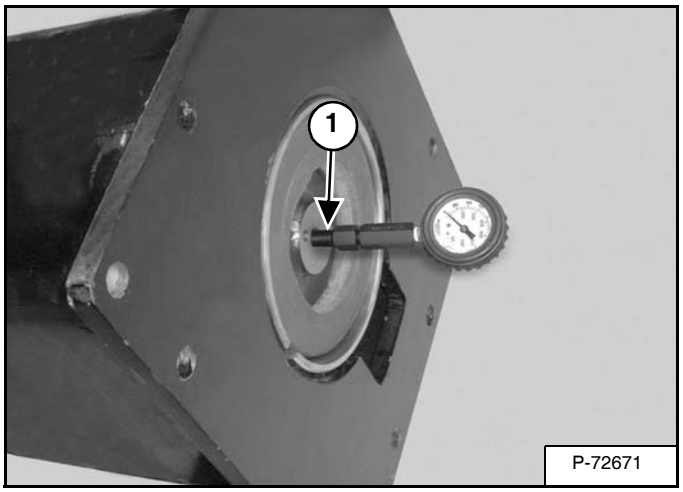
Figure 10-30-5



Loosen the adapter until the pin is flush with the end of the adapter as shown **[Figure 10-30-5]**.

Checking The Nitrogen Chamber Charge Pressure (Cont'd)

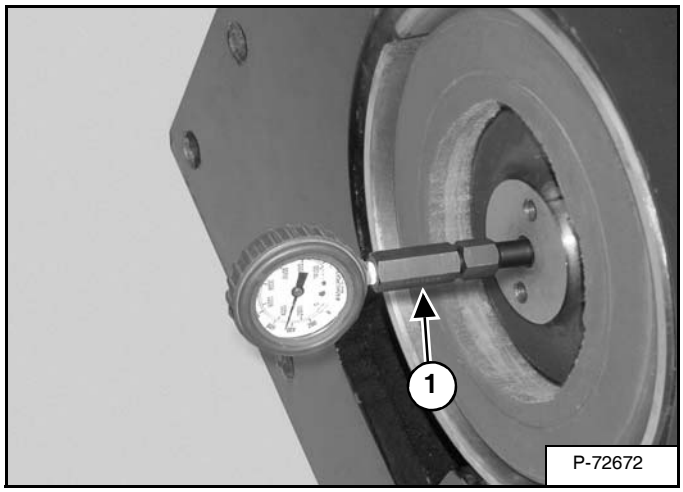
Figure 10-30-6



Install the gauge/adapter on the breaker **[Figure 10-30-6]**.

Tighten the adapter (Item 1) **[Figure 10-30-6]** on the breaker.

Figure 10-30-7



Slowly turn the gauge valve body (Item 1) **[Figure 10-30-7]** clockwise until the gauge shows a reading. If the pressure is low, recharge the breaker using kit number 6568037.

See charging the nitrogen chamber for recharging information. (See Charging The Nitrogen Chamber on Page 10-30-5.)

Discharging The Nitrogen Chamber

⚠ WARNING

AVOID INJURY OR DEATH

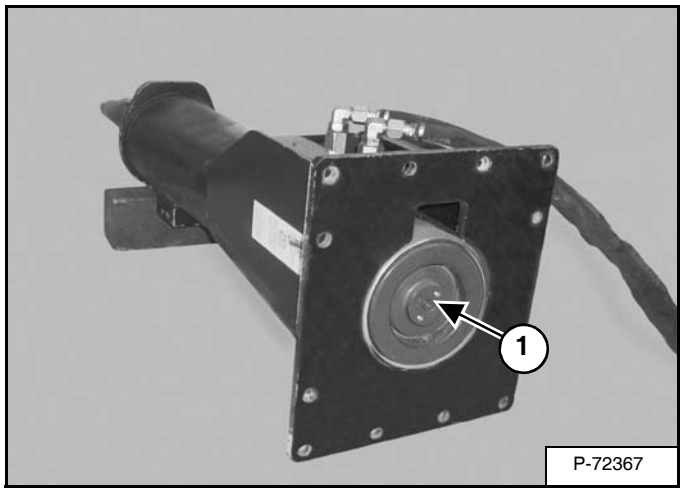
Wear safety glasses to prevent eye injury when any of the following conditions exist:

- **When fluids are under pressure.**
- **Flying debris or loose material is present.**
- **Engine is running.**
- **Tools are being used.**

W-2019-0907

The breaker nitrogen charge pressure check valve is located under the breaker mounting frame. Remove the breaker mounting frame. (See Disassembly on Page 20-10-1.)

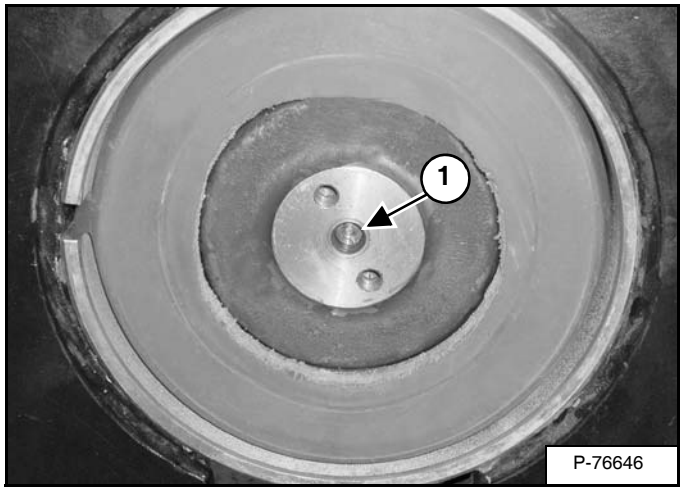
Figure 10-30-8



Remove the plug (Item 1) **[Figure 10-30-8]** from the charge valve.

NOTE: If the plug (Item 1) [Figure 10-30-8] is tight, tap the end of the plug with a hammer before removing.

Figure 10-30-9



Using a small shaft, push the valve (Item 1) **[Figure 10-30-9]** inward to release the gas pressure.

NOTE: If oil is detected in the nitrogen, the diaphragm is damaged and must be replaced. (See your Bobcat dealer for additional information.)

Install the plug in the charge valve.

Tighten the plug to 27 ft.-lb. (37 N•m) torque.

NOTE: When in doubt of nitrogen charge pressure or when recharging a hot breaker, release the nitrogen pressure completely and recharge the nitrogen chamber.

Charging The Nitrogen Chamber

⚠ WARNING

AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- **When fluids are under pressure.**
- **Flying debris or loose material is present.**
- **Engine is running.**
- **Tools are being used.**

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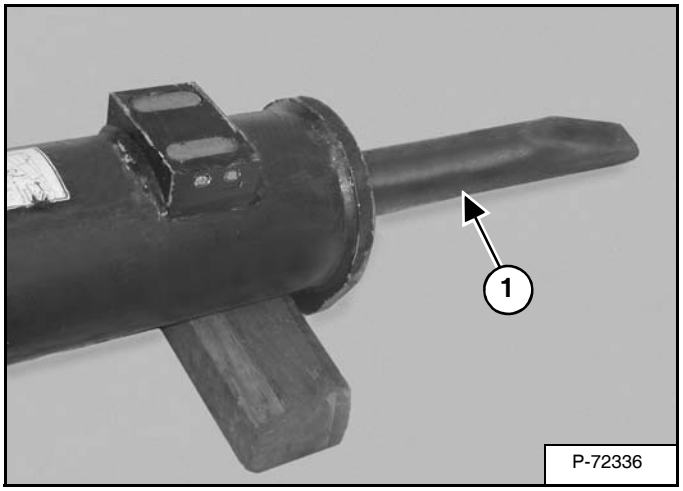
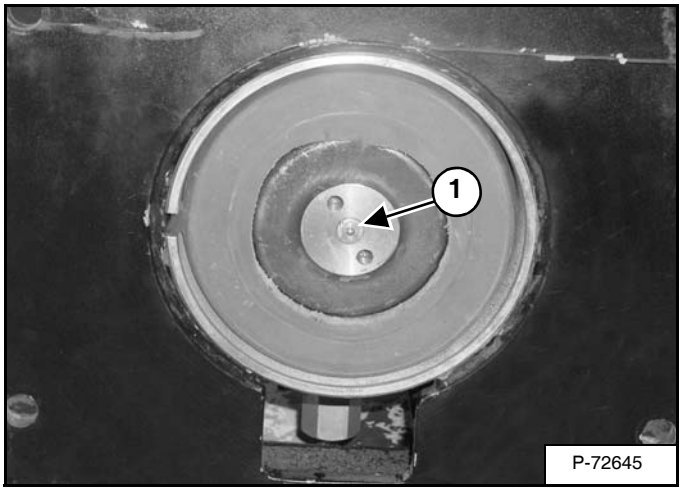
NOTE: When in doubt of nitrogen charge pressure or when recharging a hot breaker, release the nitrogen pressure completely and recharge the nitrogen chamber.

Figure 10-30-10



Block up the breaker so the tool bit (Item 1) **[Figure 10-30-10]** is not under pressure and is not in contact with the nitrogen chamber.

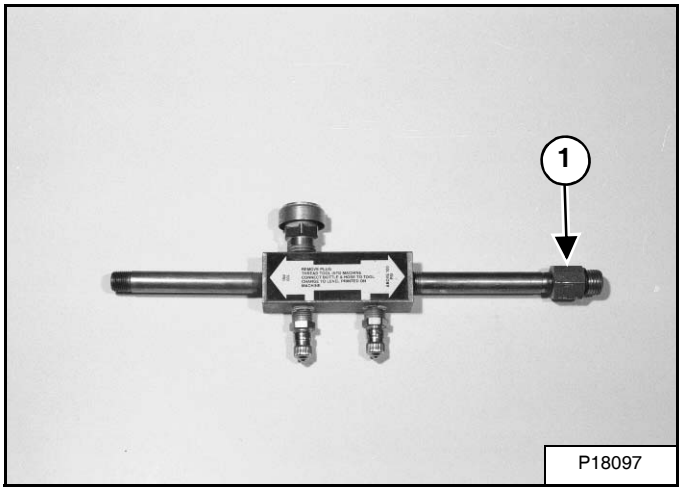
Figure 10-30-11



NOTE: If the plug (Item 1) [Figure 10-30-11] is tight, tap the end of the plug with a hammer before removing.

Remove the plug (Item 1) **[Figure 10-30-11]**.

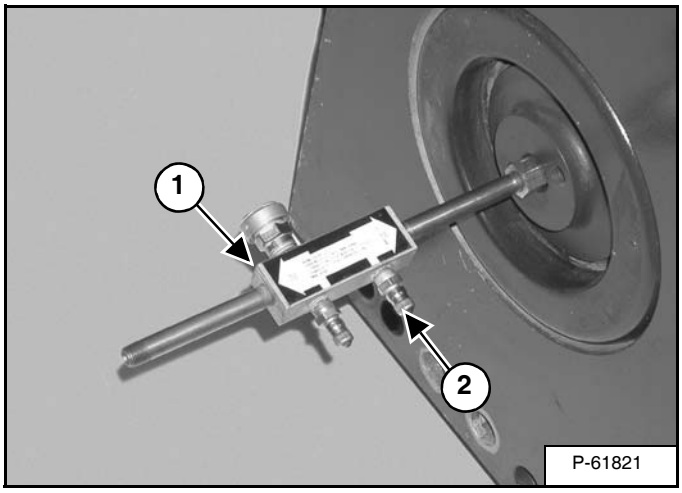
Figure 10-30-12



Install the adapter (Item 1) **[Figure 10-30-12]** on the "Above 100 PSI" side of the charging tool.

Charging The Nitrogen Chamber (Cont'd)

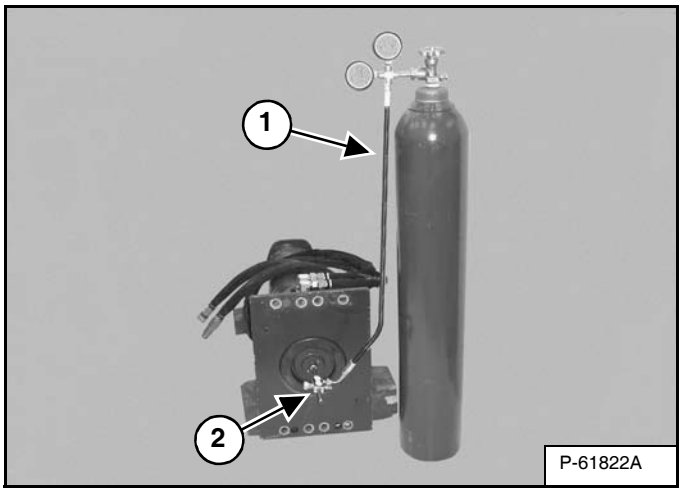
Figure 10-30-13



Install the charging tool (Item 1) **[Figure 10-30-13]** on the breaker.

Remove the cap (Item 2) **[Figure 10-30-13]** from the charging tool.

Figure 10-30-14



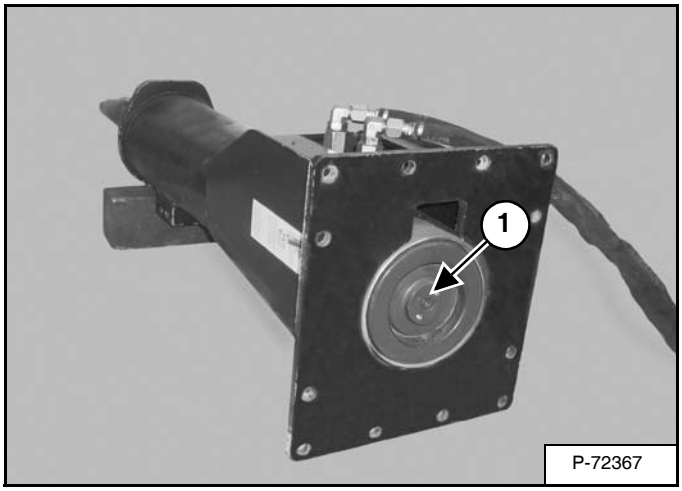
Connect the nitrogen hose (Item 1) to the charging tool (Item 2) **[Figure 10-30-14]**.

Using the regulator valve on the nitrogen tank, slowly fill the chamber to 464 PSI (32 bar).

Close the valve on the nitrogen tank.

Disconnect the hose and charging tool.

Figure 10-30-15



NOTE: Inspect the O-Ring on the plug Item 1) [Figure 10-30-15] for damage. Replace if necessary.

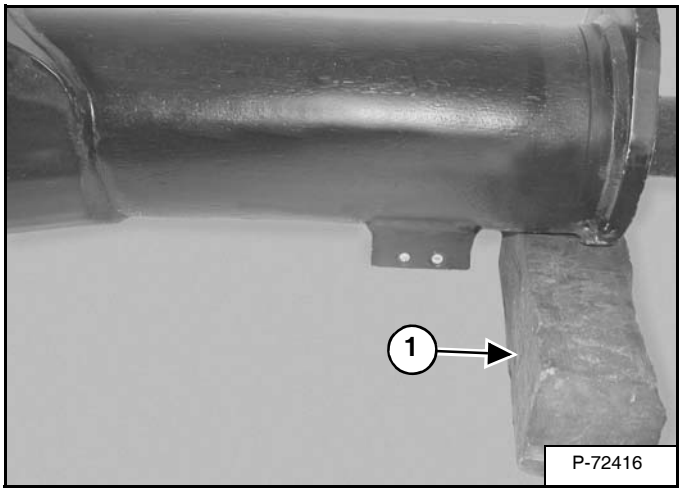
Install and tighten the plug (Item 1) **[Figure 10-30-15]**.

Tighten the plug to 27 ft.-lb. (37 N•m) torque.

TOOL (HB2380)

Removal

Figure 10-40-1



Raise and block (Item 1) **[Figure 10-40-1]** the front of the breaker.

Place a piece of cardboard or a shop towel under the breaker for the tool retaining pins to land on. This will keep the pins from being contaminated if it falls on the ground.

⚠ WARNING

AVOID BURN INJURY

Breaker tool can be hot after use. Let breaker tool cool or use gloves when handling tool.

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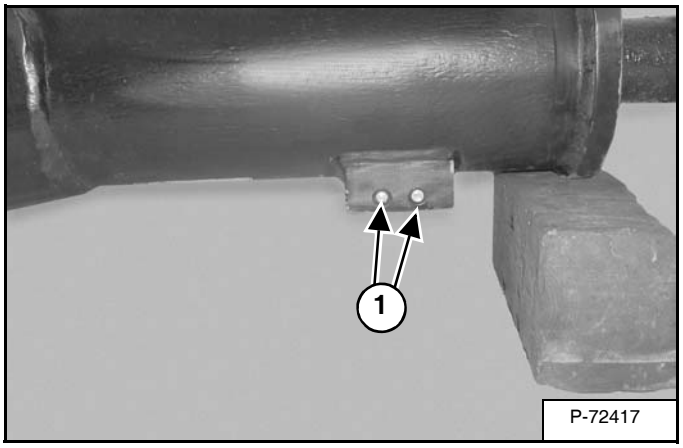
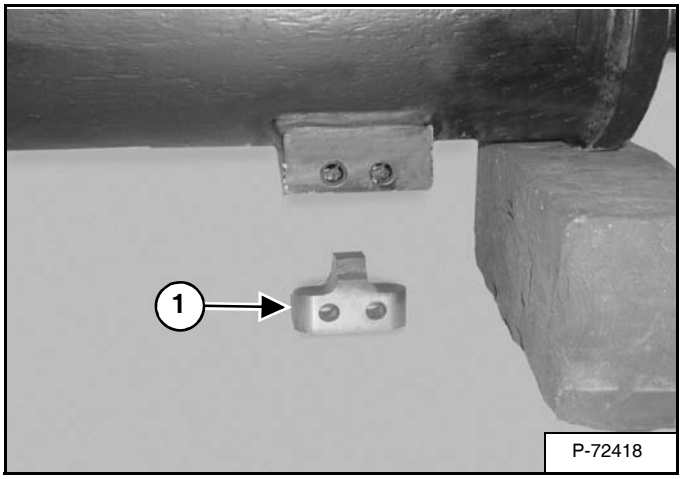
Figure 10-40-2



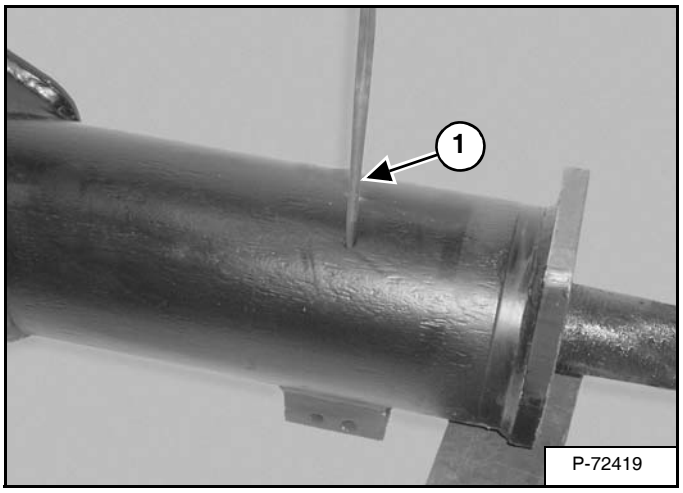
Remove the two retaining pins (Item 1) **[Figure 10-40-2]**.

Figure 10-40-3



Remove the retainer block (Item 1) **[Figure 10-40-3]**. (Both sides)

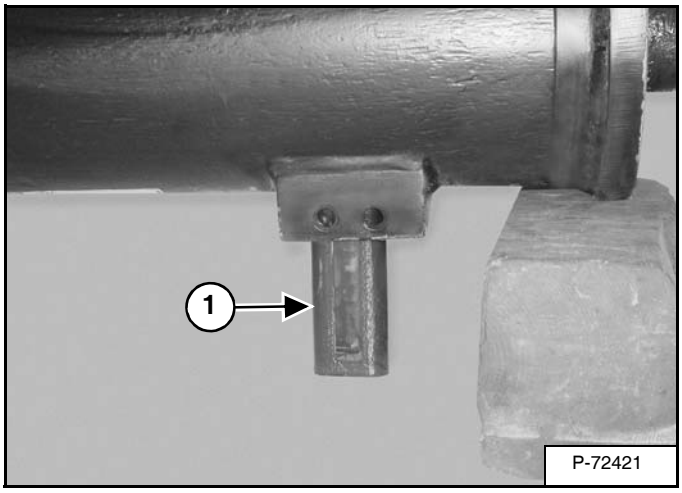
Figure 10-40-4



Using a punch (Item 1) **[Figure 10-40-4]** push the retaining pins from the housing.

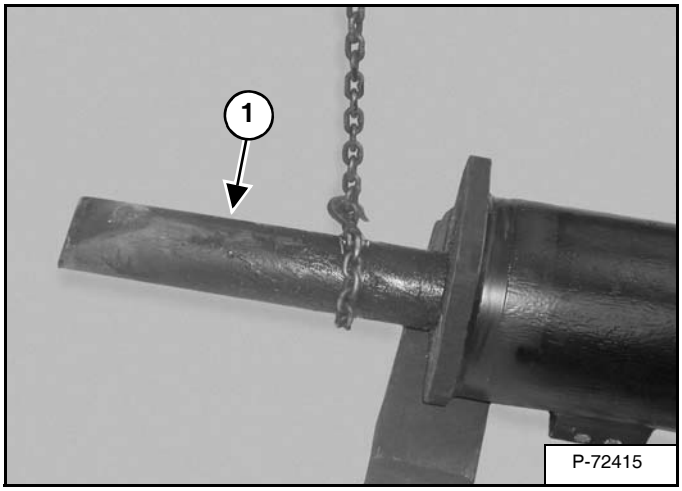
Removal (Cont'd)

Figure 10-40-5



Remove the tool retaining pins (Item 1) **[Figure 10-40-5]**. (Both sides)

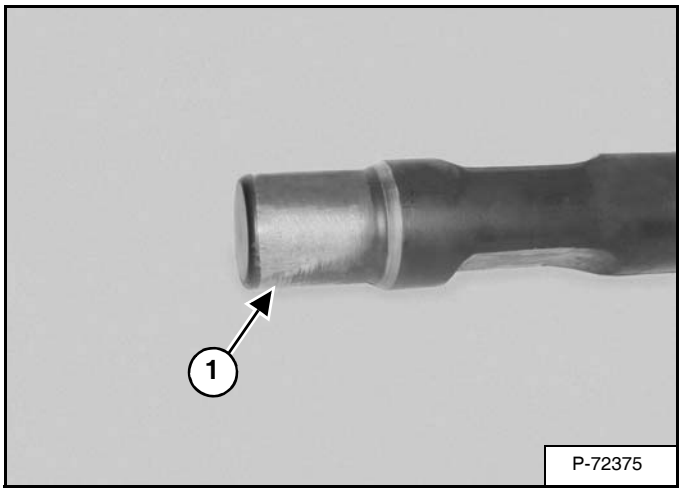
Figure 10-40-6



Using a lift device, remove the tool (Item 1) **[Figure 10-40-6]**.

Installation

Figure 10-40-7

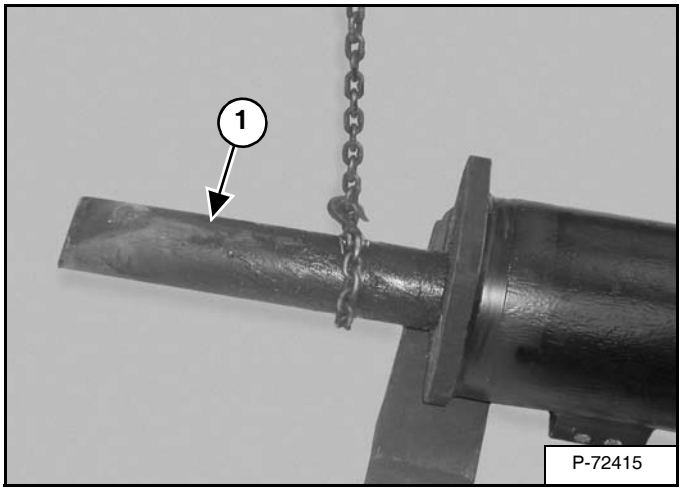


Apply grease to the top section of the tool **[Figure 10-40-7]**.

NOTE: Keep tool retaining components and tool bushings free of dirt and debris.

NOTE: Use a good quality lithium based grease. Lower quality grease may melt when hot and reduce the life of the tool and bushing.

Figure 10-40-8

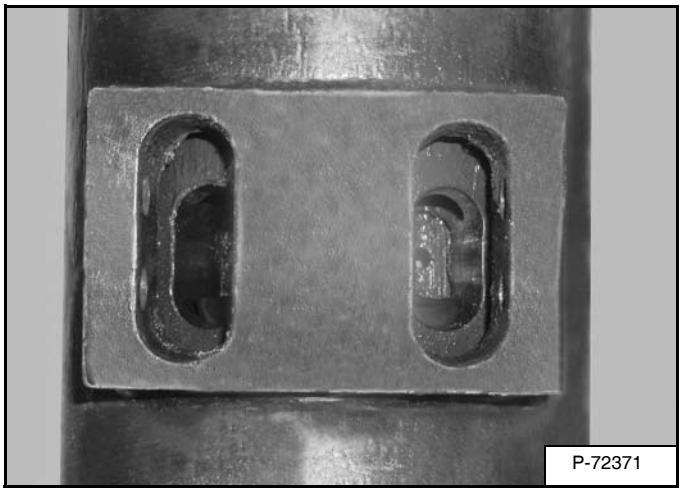


Install the tool (Item 1) **[Figure 10-40-8]** in the breaker.

TOOL HB2380 (CONT'D)

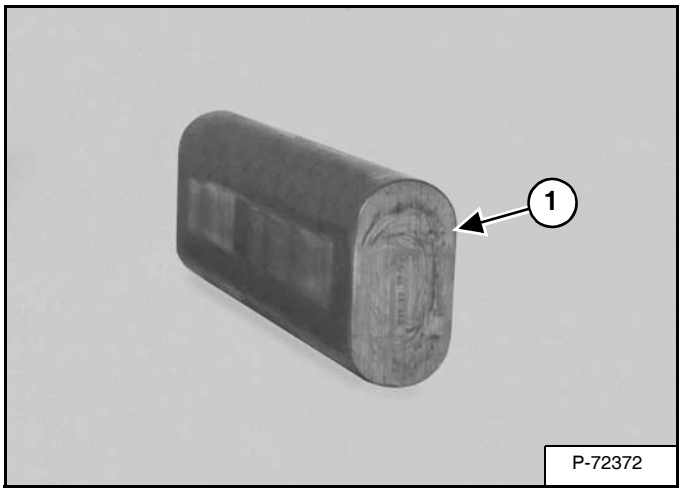
Installation (Cont'd)

Figure 10-40-9



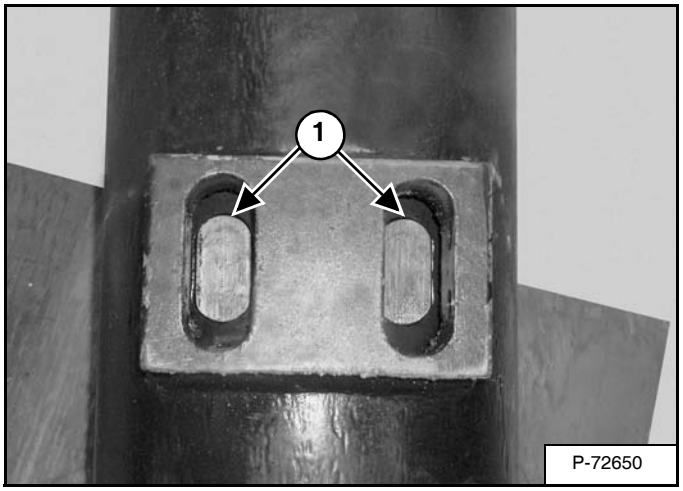
Align the notches in the tool with the holes in the housing (Item 1) **[Figure 10-40-9]**.

Figure 10-40-10



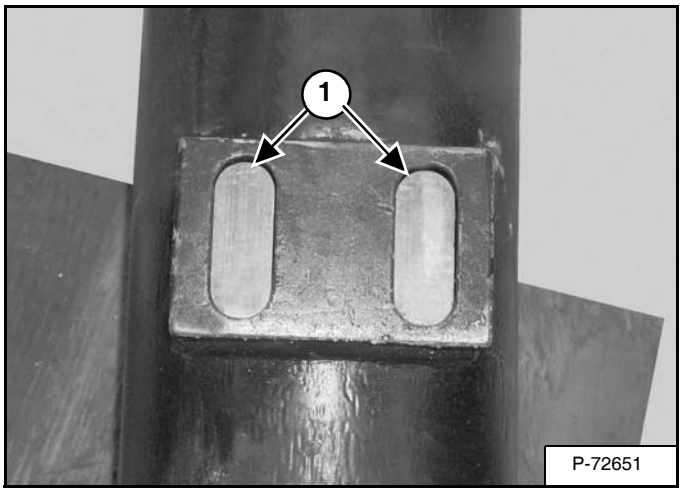
Inspect the tool retaining pins (Item 1) **[Figure 10-40-10]** for wear or damage before installation. To check retaining pin thickness (See Weekly Inspection on Page 10-60-4.)

Figure 10-40-11



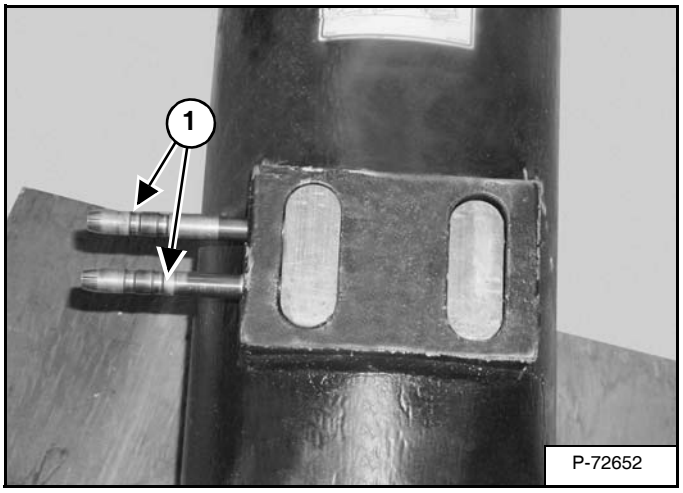
Install the tool retaining pins (Item 1) **[Figure 10-40-11]**.

Figure 10-40-12



Install the tool retaining blocks (Item 1) **[Figure 10-40-12]**.

Figure 10-40-13



Install the retaining pins (Item 1) **[Figure 10-40-13]**.