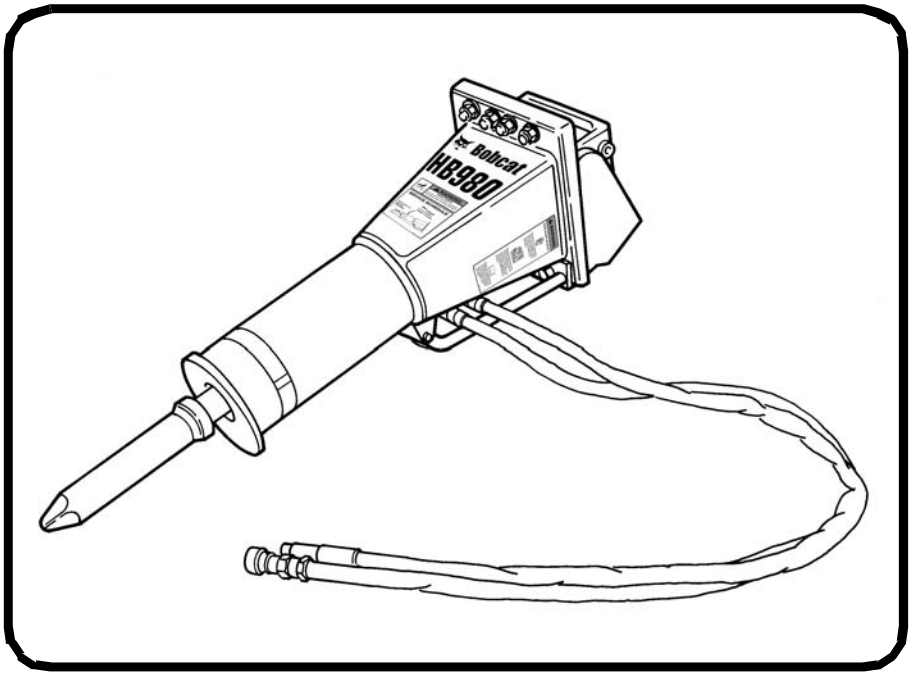
Bobcat®

Service Manual
HB Series Hydraulic Breaker

(Breaker HB280) S/N A5T500101 & Above
(Breaker HB380) S/N A01Q00101 & Above (Europe Only)
(Breaker HB580) S/N A00V00101 & Above (Europe Only)
(Breaker HB680) S/N A00W00101 & Above
(Breaker HB880) S/N A00X00101 & Above
(Breaker HB980) S/N A00Y00101 & Above
(Breaker HB1180) S/N A01R00101 & Above



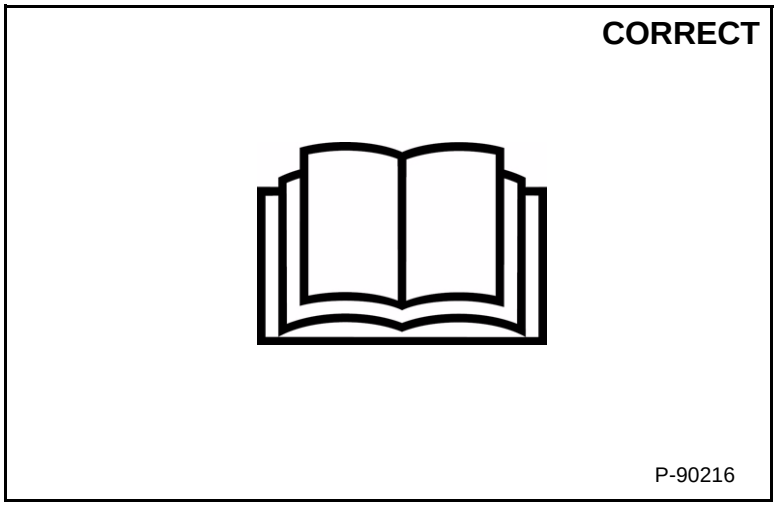
6904105 (11-09) Printed in U.S.A.

MAINTENANCE SAFETY

WARNING

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

Safety Alert Symbol: This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.



- **Never service attachments / implements without instructions. See Operation & Maintenance Manual and Attachment / Implement Service Manual.**
- **Cleaning and maintenance are required daily.**
- **Never service or adjust attachment / implement with the engine running unless instructed to do so in manual.**
- **Always lower the attachment / implement to the ground before lubricating or servicing.**
- **Avoid contact with leaking hydraulic fluid or diesel fuel under pressure. It can penetrate skin or eyes.**
- **Stop, cool and clean engine of flammable materials before checking fluids.**
- **Keep body, loose objects and clothing away from moving parts, electrical contacts, hot parts and exhaust.**
- **Safety glasses are needed for eye protection from electrical arcs, battery acid, compressed springs, fluids under pressure and flying debris or when tools are used. Use eye protection approved for type of welding.**

MSW30-0409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FOREWORD


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SERIAL NUMBER LOCATION

Attachment Serial Number

Always use the serial number of the hydraulic 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

EARLY MODELS

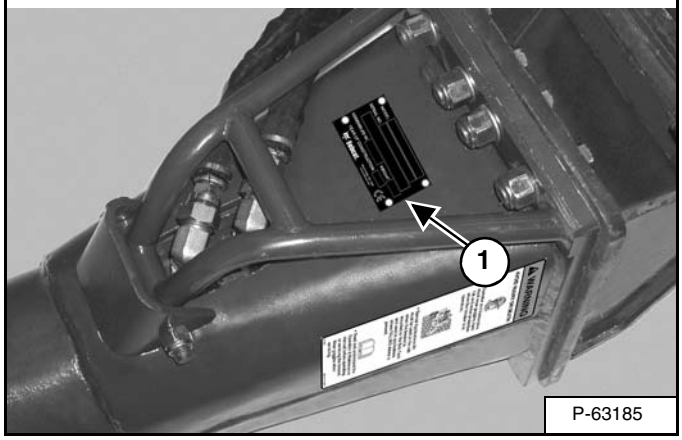


Figure 2

LATER MODELS

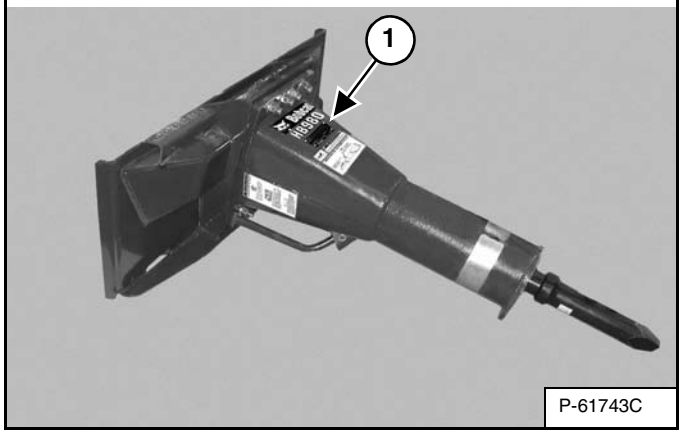
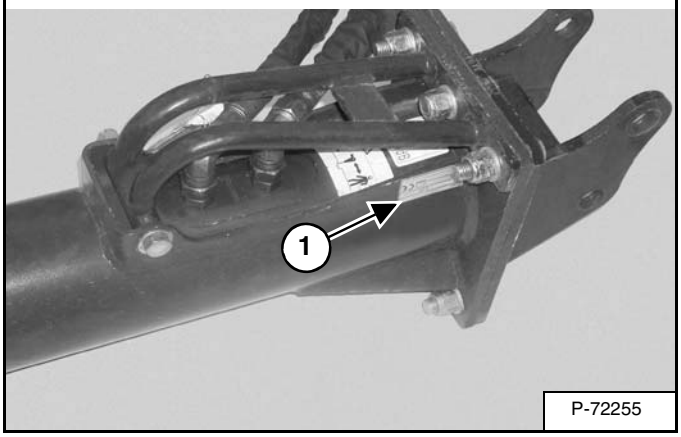


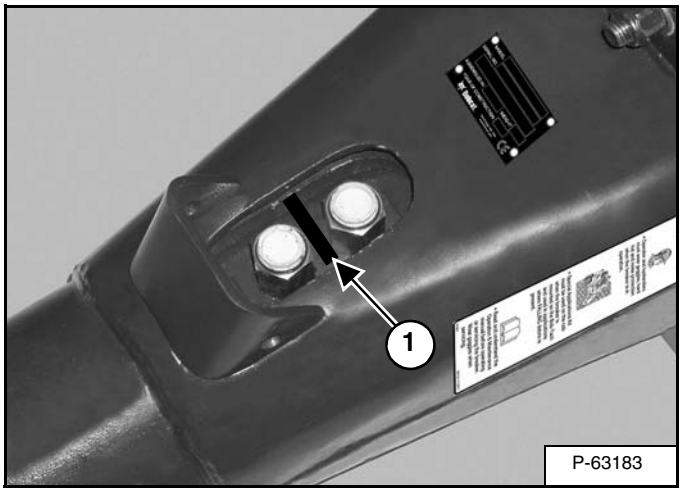
Figure 3

HB 280



The breaker serial number plate (Item 1) **[Figure 1]**, **[Figure 2]** or **[Figure 3]** is located on the frame.

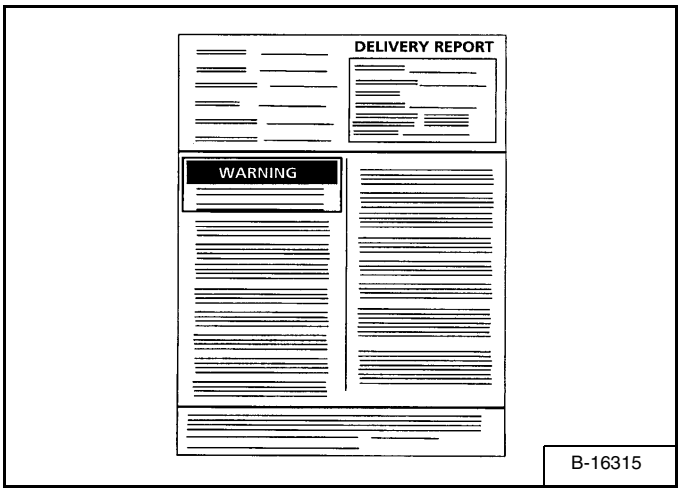
Figure 4



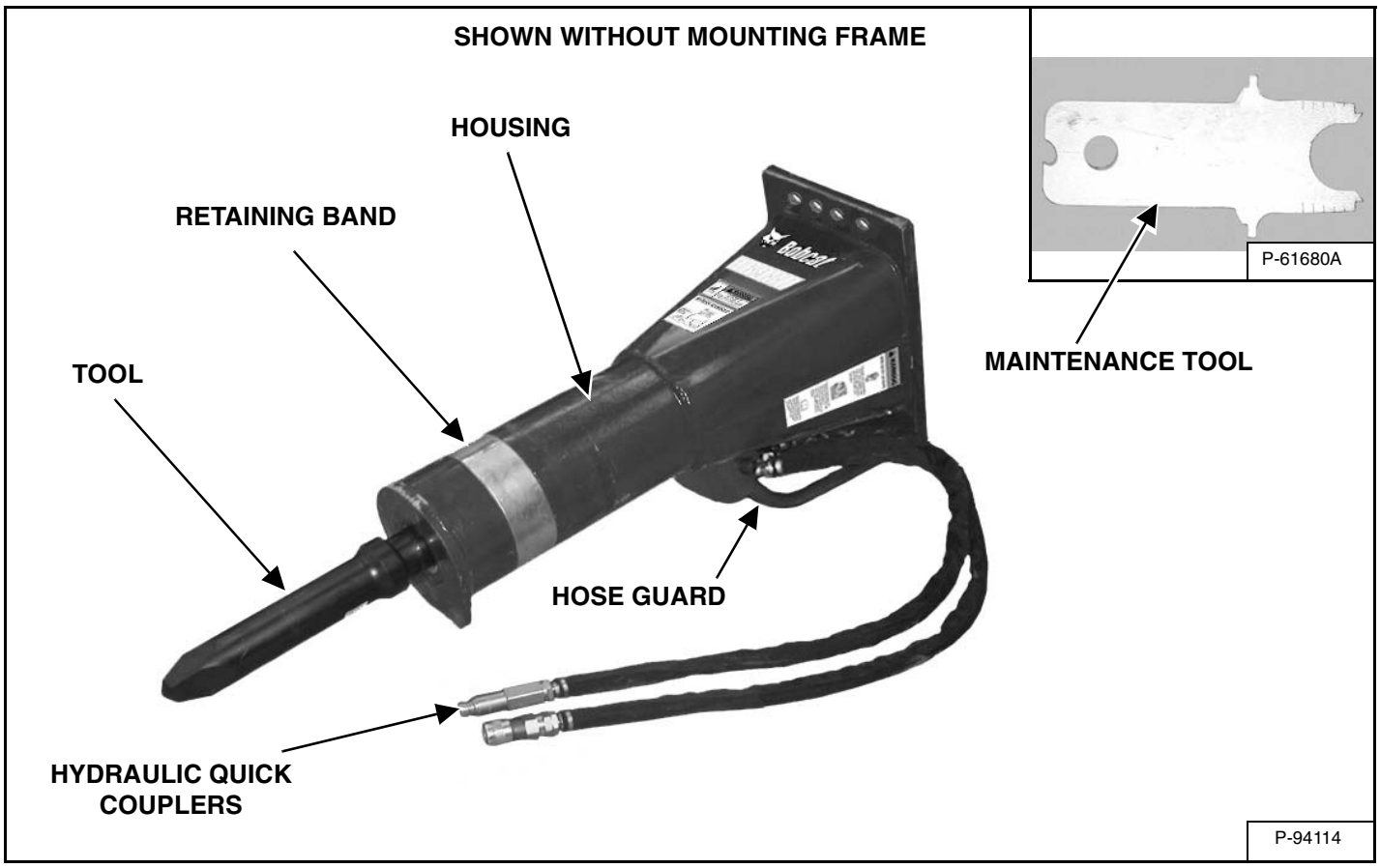
NOTE: The breaker serial number (Item 1) [Figure 4] is also etched into the face of the breaker power cell between the hydraulic ports.

DELIVERY REPORT

Figure 5

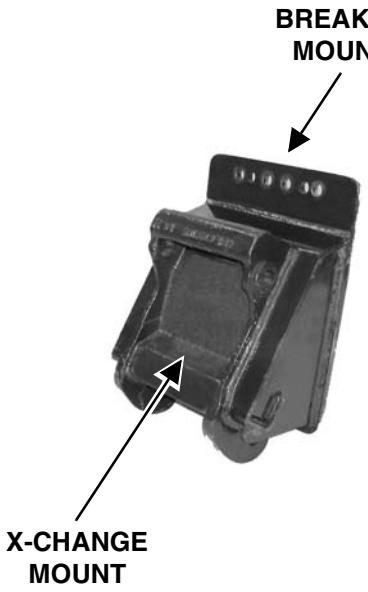


The delivery report must be filled out by the dealer and signed by the owner or operator when the Bobcat hydraulic breaker is delivered. An explanation of the form must be given to the owner. Make sure it is filled out completely **[Figure 5]**.


SHOWN WITHOUT MOUNTING FRAME
HOUSING
RETAINING BAND
TOOL
HOSE GUARD
HYDRAULIC QUICK COUPLERS
MAINTENANCE TOOL
P-61680A
P-94114

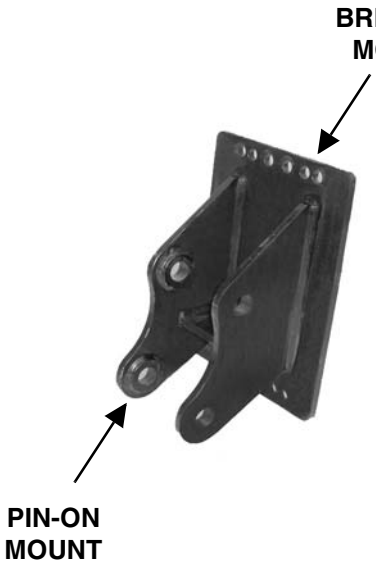
Mounting Frame Configurations

X-CHANGE MOUNTING FRAME



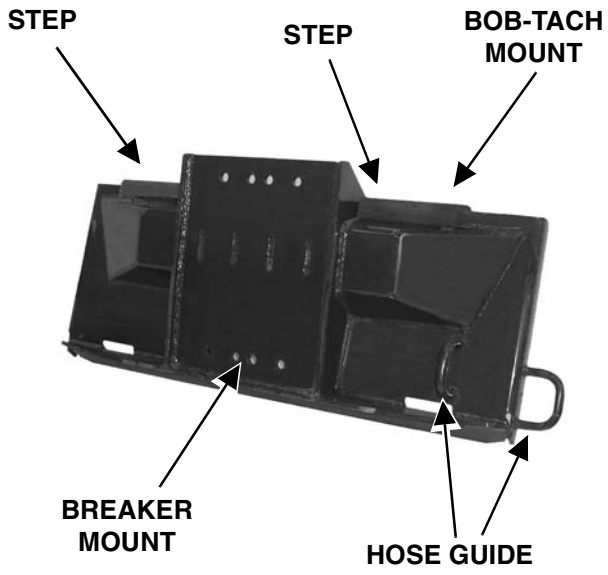
P-88735

PIN-ON MOUNTING FRAME



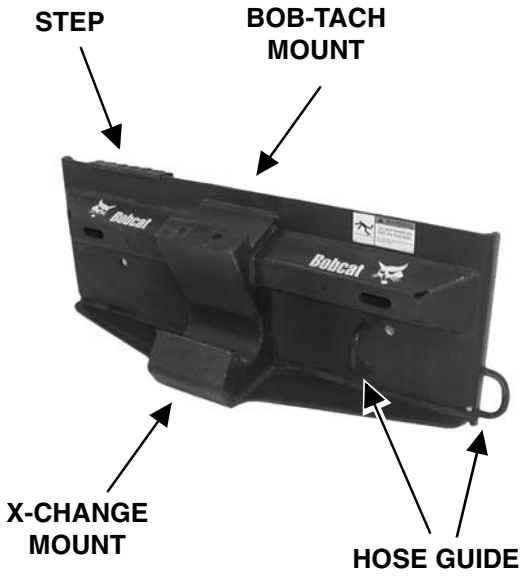
P-88736

BOB-TACH MOUNTING FRAME



P-88737

BOB-TACH / X-CHANGE MOUNTING FRAME



P-88738

SAFETY & MAINTENANCE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TROUBLESHOOTING

Chart

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 breaker is not working correctly, check the hydraulic system of the machine thoroughly before making any repairs on the breaker. 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 tube lines to check flow and pressure. (See the machine's 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 air chamber.	Damaged internal seals, replace seals (See Breaker Service Manual)
	Regulator ring damaged or installed backwards.	Replace regulator ring. (See Breaker Service Manual)
	Tool bushing is worn.	Replace bushing.
Breaker stops after three blows.	Regulator ring damaged.	Replace regulator ring. (See Breaker Service Manual)
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. (See the Breaker Service Manual)
	No breaking force and hoses jumping.	Check diaphragm for damage. (See the Breaker Service Manual)

Troubleshooting chart continued on next page.

TROUBLESHOOTING (CONT'D)

Chart (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 twenty minutes then stops. Breaker will restart after thirty 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. (See Breaker Service Manual)
Breaker lacks striking force.	Regulator ring damaged.	Replace regulator ring. (See Breaker Service Manual)
	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. (See Breaker Service Manual)
		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. (See Breaker Service Manual)
	Accumulator nitrogen pressure is low.	
Hydraulic oil on breaker tool.	Damaged piston seals.	Replace seals. (See Breaker Service Manual)
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.

Chart (Cont'd)

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

Figure 10-10-1

Pressure Measured		Possible Cause	Solution
PSI	bar		
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 **[Figure 10-10-1]**.

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. A service interval of every 12 months has been established for checking nitrogen charge.

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


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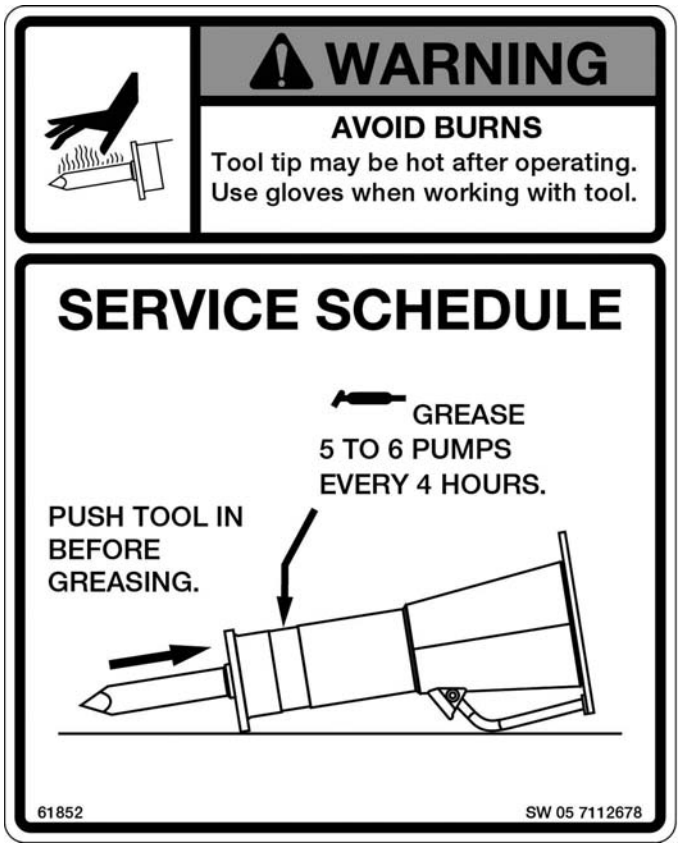
SERVICE SCHEDULE

Chart

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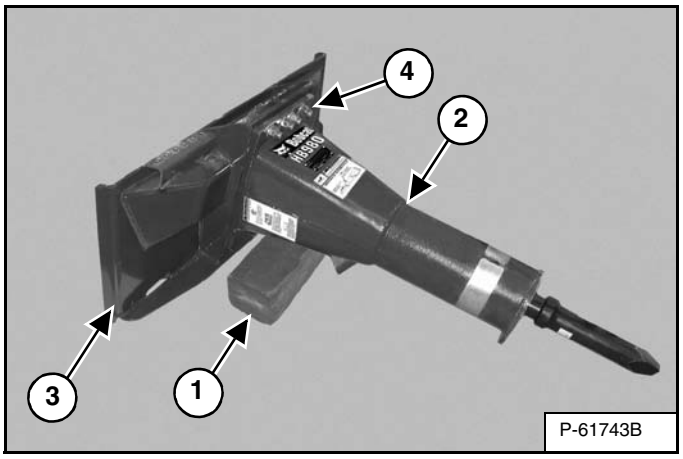
INITIAL SETUP

Assembly

Installing The Bob-Tach Mounting Frame On The Breaker

Figure 10-12-2



Install a block of wood (Item 1) under the breaker (Item 2) **[Figure 10-12-2]**.

Install the Bob-Tach mounting frame (Item 3) on the breaker (Item 2) **[Figure 10-12-2]**.

Install the eight bolts (Item 4) **[Figure 10-12-2]** washers and nuts.

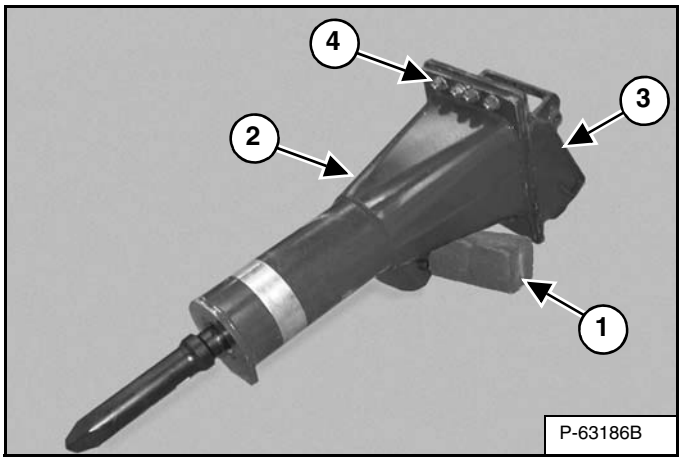
Install the hose guard.

NOTE: The bottom mounting bolts will be installed with hose guard.

Tighten the bolts and nuts in a crisscross pattern to 270 ft.-lb. (370 N•m) torque.

Installing The X-Change Mounting Frame On The Breaker

Figure 10-12-3



Install a block of wood (Item 1) under the breaker (Item 2) **[Figure 10-12-3]**.

Install the X-Change mounting frame (Item 3) on the breaker (Item 2) **[Figure 10-12-3]**.

Install the eight bolts (Item 4) **[Figure 10-12-3]** washers and nuts.

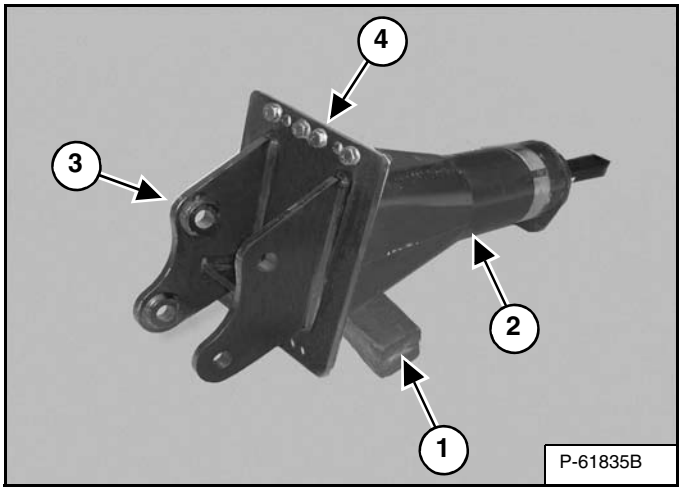
NOTE: The bottom mounting bolts will be installed with hose guard.

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

Assembly (Cont'd)

Installing The Pin-On Mounting Frame On The Breaker

Figure 10-12-4



Install a block of wood (Item 1) under the breaker (Item 2) **[Figure 10-12-4]**.

Install the Pin-On mounting frame (Item 3) on the breaker (Item 2) **[Figure 10-12-4]**.

Install the eight bolts (Item 4) **[Figure 10-12-4]** washers and nuts.

NOTE: The bottom mounting bolts will be installed with hose guard.

Tighten the bolts and nuts in a crisscross pattern to 270 ft.-lb. (370 N•m) torque.

Hose Installation

Use the following list for the correct hose installation for your model breaker and machine.

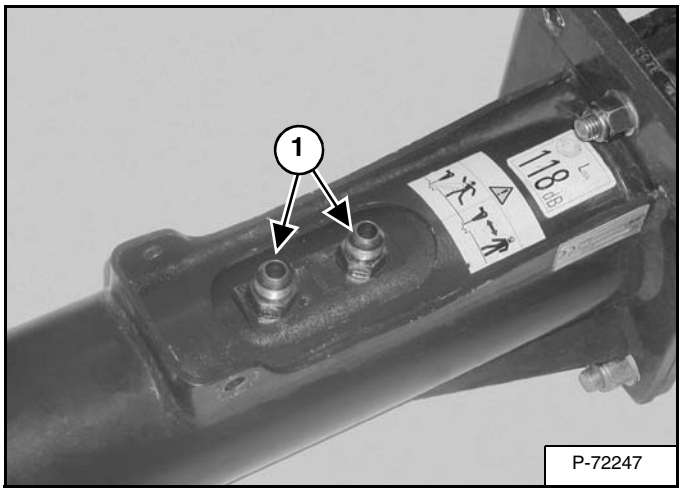
- HB280 (When Used On 316 & 418 Model Excavators) on Page 10-11-3.
- HB680, HB880 and HB980 (Earlier Model Breakers) on Page 10-11-5.
- HB880 and HB980 (Later Model Breakers) on Page 10-11-6.
- HB1180 (When Used On A300, S250, S300, S330, S630, S650, T250, T300, T320, T630 and T650 Model Loaders) on Page 10-11-7.
- HB1180 (When Used On 442 Model Excavator) on Page 10-11-9.
- HB880, HB980 & HB1180 (When Used On E60 Model Excavators) on Page 10-11-11.
- HB1180 (When Used On E80 Model Excavators) on Page 10-11-12.

Hose Installation (Cont'd)

HB280 (When Used On 316 & 418 Model Excavators)

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

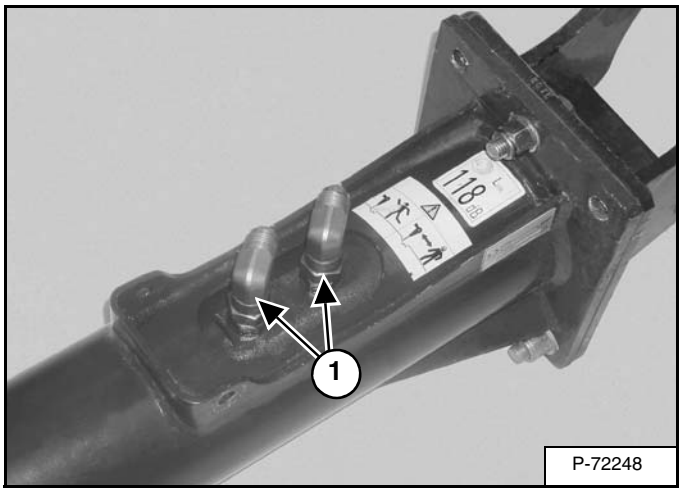
Figure 10-12-5



Install the fittings (Item 1) **[Figure 10-12-5]**.

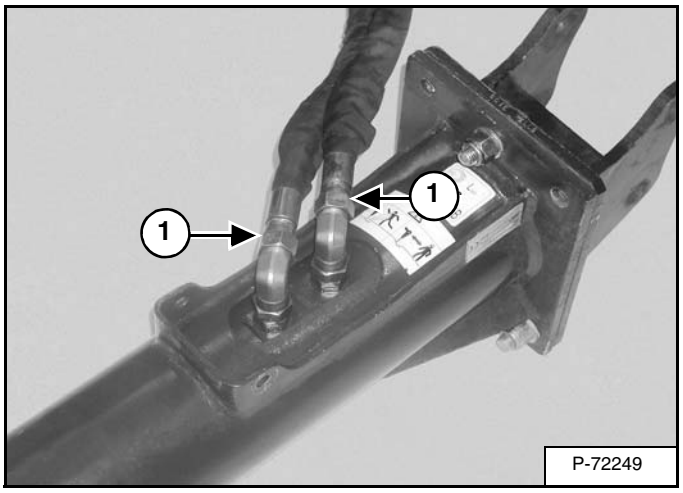
Tighten the fittings to 140 ft.-lb. (189 N•m) torque.

Figure 10-12-6



Install the two 90° elbows (Item 1) **[Figure 10-12-6]** in the ports.

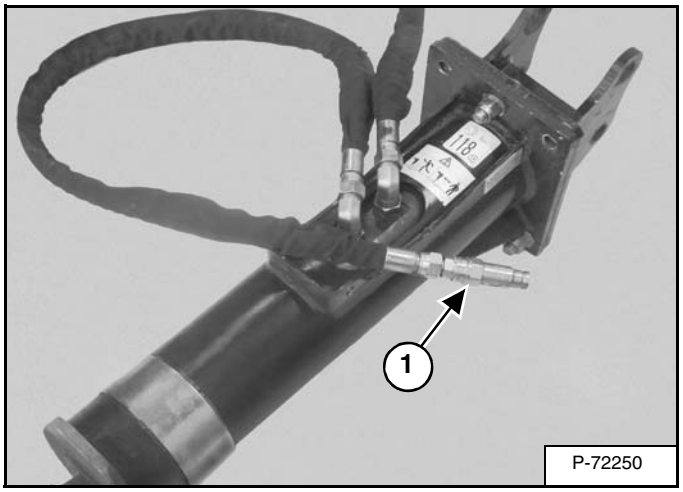
Figure 10-12-7



Install the two hoses (Item 1) **[Figure 10-12-7]** on the 90° elbows (Item 1) **[Figure 10-12-6]**.

Tighten the hoses to 84 ft.-lb. (63 N•m) torque.

Figure 10-12-8

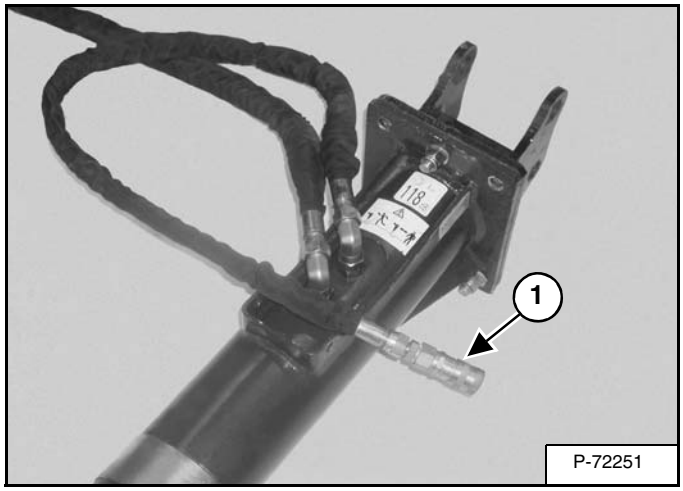


Install the male coupler (Item 1) **[Figure 10-12-8]** on the hose that connects to the BP port.

Hose Installation (Cont'd)

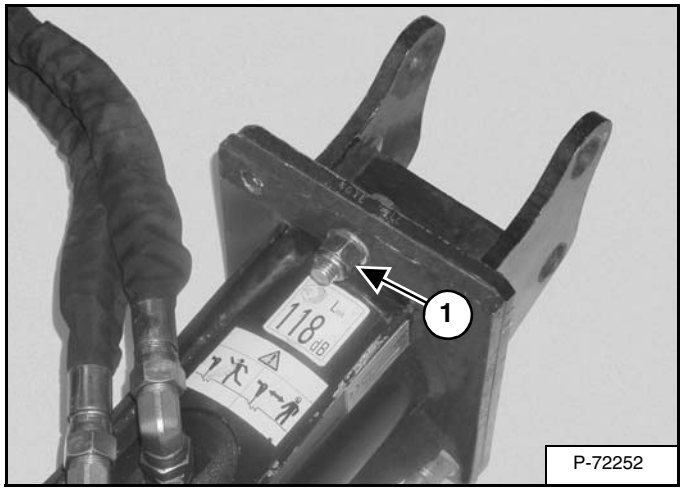
HB280 (When Used On 316 & 418 Model Excavators) (Cont'd)

Figure 10-12-9



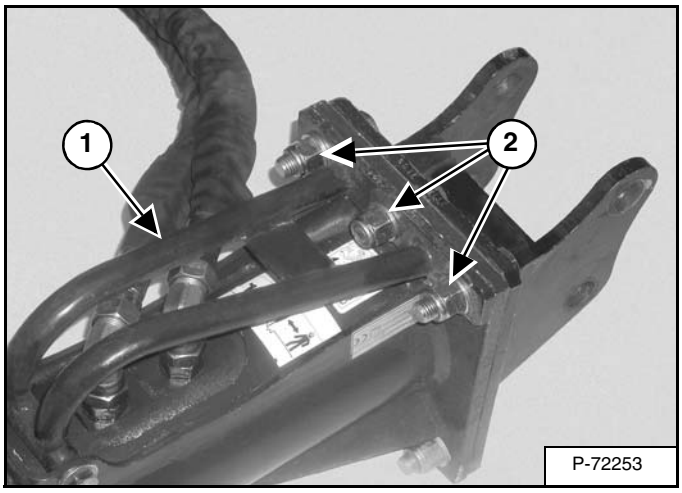
Install the female coupler (Item 1) **[Figure 10-12-9]** on the hose that connects to the BP port.

Figure 10-12-10



Remove the bolt (Item 1) **[Figure 10-12-10]** washer and nut.

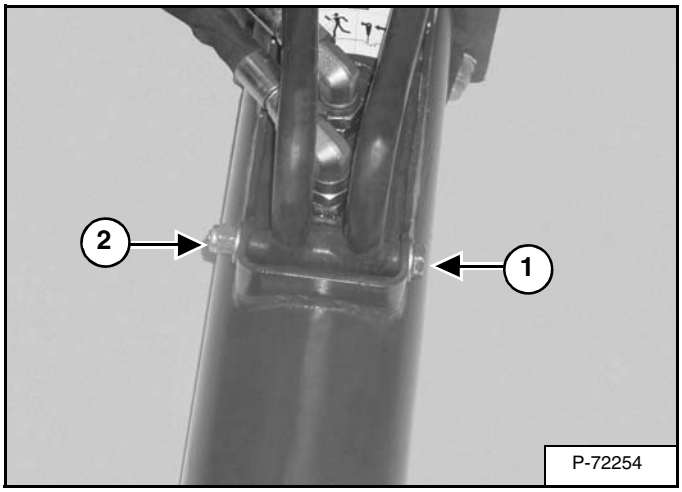
Figure 10-12-11



Install the hose guard (Item 1) using the three bolts, washers and nuts (Item 2) **[Figure 10-12-11]** provided with the breaker.

Tighten the three nuts to 270 ft.-lb. (370 N•m) torque.

Figure 10-12-12



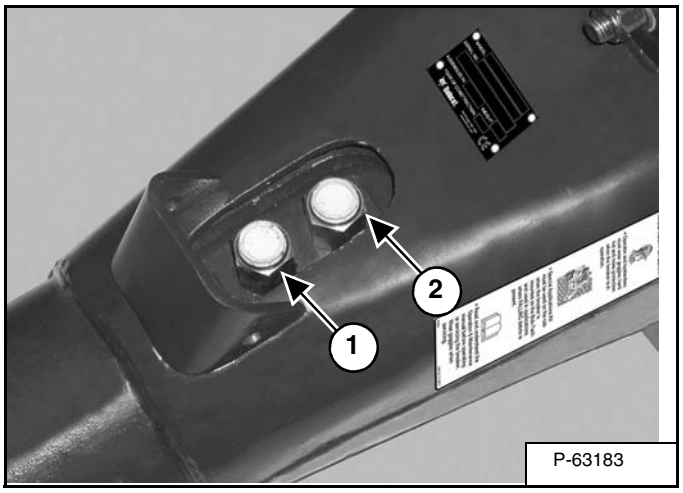
The bolt (Item 1) and nut (Item 2) **[Figure 10-12-12]** need only to be lightly tightened.

Hose Installation (Cont'd)

HB680, HB880 and HB980 (Earlier Model Breakers)

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

Figure 10-12-13

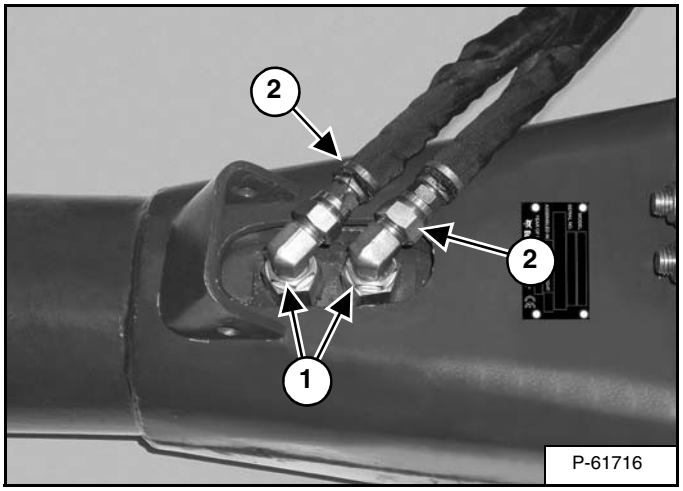


The port marked *HP* (Item 1) **[Figure 10-12-13]** will be connected to the breaker hose with the male coupler.

The port marked *BP* (Item 2) **[Figure 10-12-13]** will be connected to the breaker hose with the female coupler.

Tighten the fittings to 140 ft.-lb. (189 N•m) torque.

Figure 10-12-14

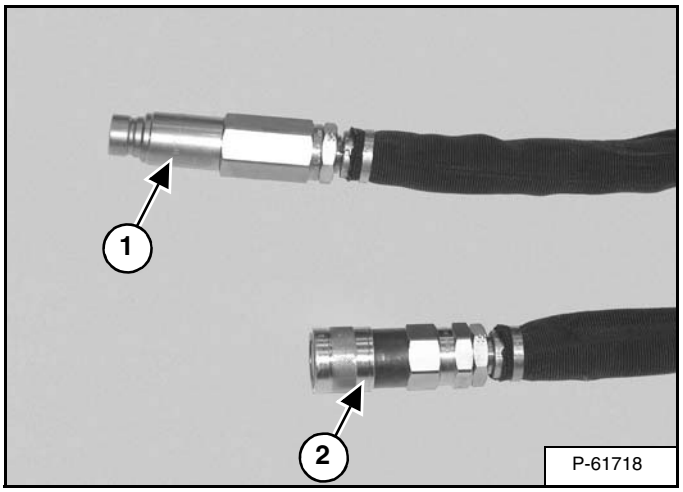


Install the two 90° elbows (Item 1) **[Figure 10-12-14]** in the ports.

Install the two hoses (Item 2) on the 90° elbows (Item 1) **[Figure 10-12-14]**.

Tighten the hoses to 84 ft.-lb. (63 N•m) torque.

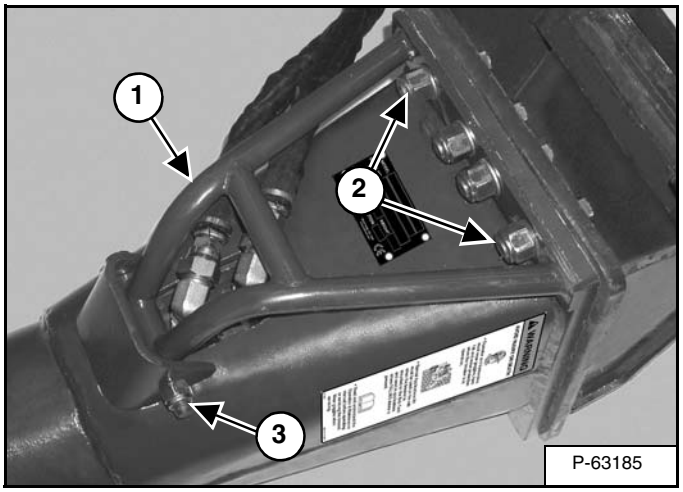
Figure 10-12-15



Install the male coupler (Item 1) **[Figure 10-12-15]** on the hose that connects to the *HP* port.

Install the female coupler (Item 2) **[Figure 10-12-15]** on the hose that connects to the *BP* port.

Figure 10-12-16



Install the bracket (Item 1), the three bolts (Item 2 & 3) **[Figure 10-12-16]**, washers and nuts.

Tighten the two bolts and nuts (Item 2) **[Figure 10-12-16]** to 270 ft.-lb. (370 N•m) torque.

The bolt and nut (Item 3) **[Figure 10-12-16]** need only to be lightly tightened.

Hose Installation (Cont'd)

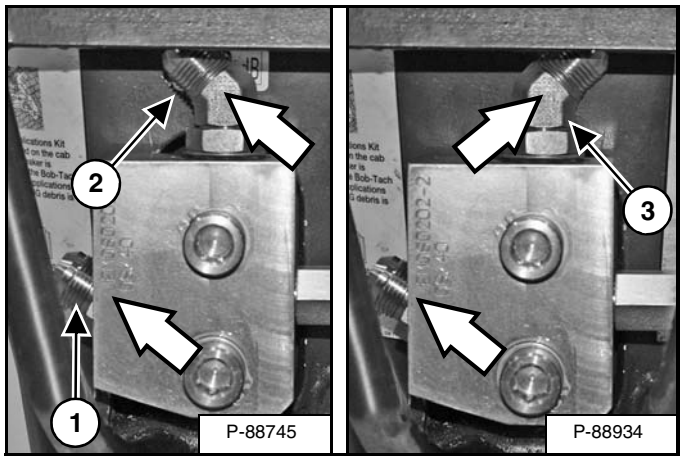
HB880 and HB980 (Later Model Breakers)

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

NOTE: When using the HB880 or HB980 breakers on S630, S650, T630 and T650 model loaders, the breaker must be equipped with a diverter valve kit. See your Bobcat dealer for available kits.

Install the hose guard. (See Figure 10-12-16 on Page 10-11-5.)

Figure 10-12-17



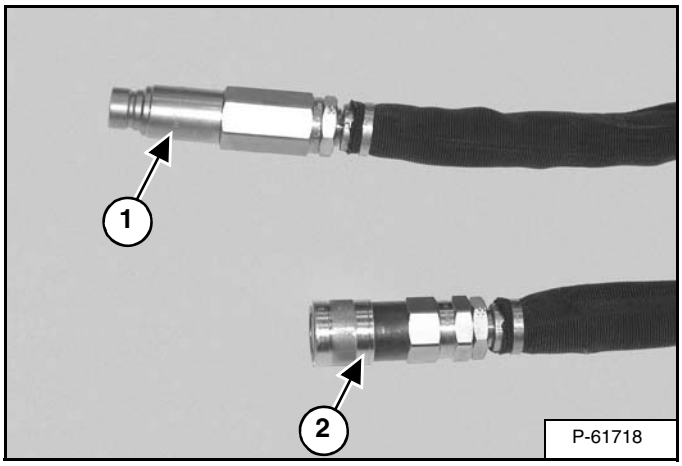
Install the straight fitting (Item 1) **[Figure 10-12-17]** (if required).

Install the 45° fitting (Item 2) **[Figure 10-12-17]** (if required).

NOTE: If operating the breaker on an E60 excavator, the 45° fitting (Item 3) [Figure 10-12-17] is installed facing the opposite direction of the straight fitting.

Tighten the fittings to 84 ft.-lb. (114 N•m) torque.

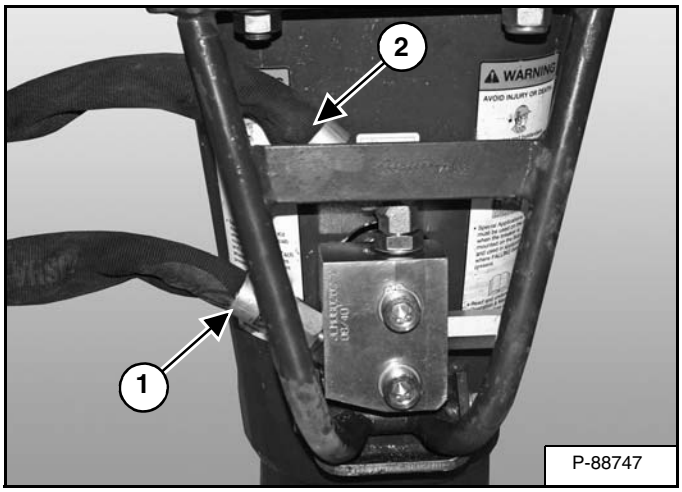
Figure 10-12-18



Install the male coupler (Item 1) **[Figure 10-12-18]** on the hose.

Install the female coupler (Item 2) **[Figure 10-12-18]** on the hose.

Figure 10-12-19



Install the male quick coupler hose (Item 1) **[Figure 10-12-19]** on the straight fitting.

Install the female quick coupler hose (Item 2) **[Figure 10-12-19]** on the 45° fitting.

Tighten the hoses to 84 ft.-lb. (114 N•m) torque.

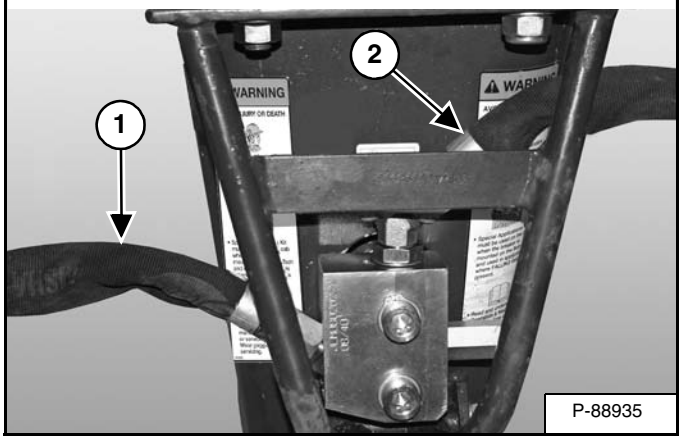
INITIAL SETUP (CONT'D)

Hose Installation (Cont'd)

HB880 and HB980 (Later Model Breakers) (Cont'd)

Figure 10-12-20

E80 Excavator Hose Installation



Install the male quick coupler hose (Item 1) **[Figure 10-12-20]** on the straight fitting.

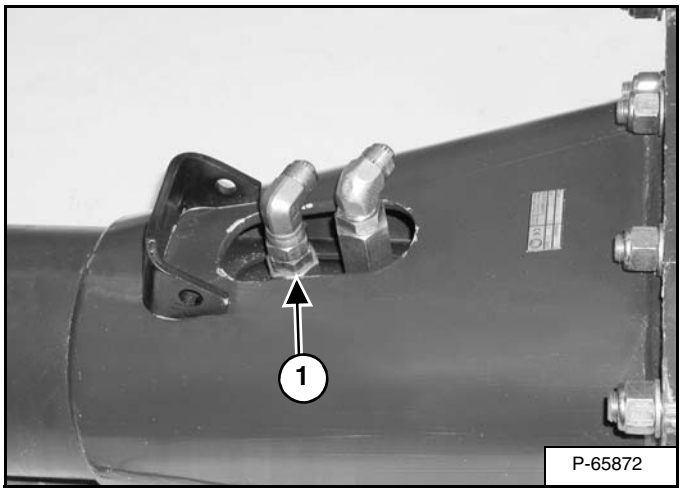
Install the female quick coupler hose (Item 2) **[Figure 10-12-20]** on the 45° fitting.

Tighten the hoses to 84 ft.-lb. (114 N•m) torque.

HB1180 (When Used On A300, S250, S300, S330, S630, S650, T250, T300, T320, T630 and T650 Model Loaders)

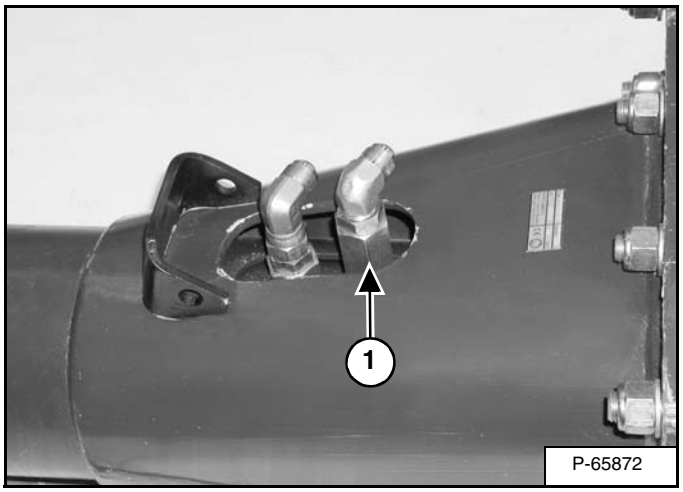
The breaker is supplied without the hoses installed on the breaker.

Figure 10-12-21



The port marked HP (Item 1) **[Figure 10-12-21]** will be connected to the breaker hose with the male coupler.

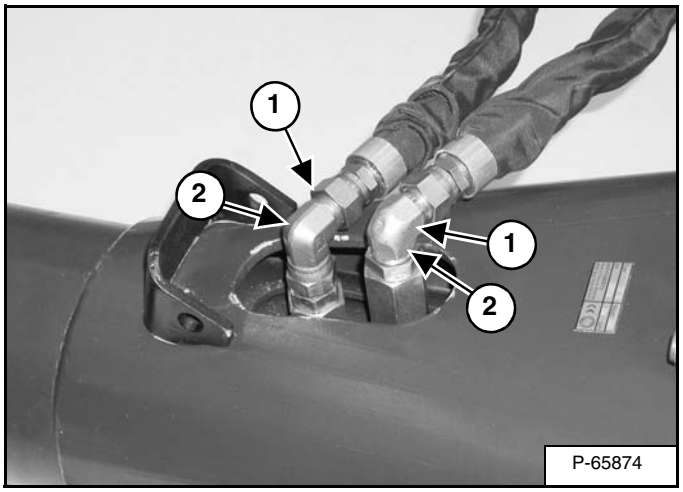
Figure 10-12-22



The port marked BP (Item 1) **[Figure 10-12-22]** will be connected to the breaker hose with the female coupler.

Install the two 90° elbows (Item 1) **[Figure 10-12-21]** and **[Figure 10-12-22]** in the ports.

Figure 10-12-23



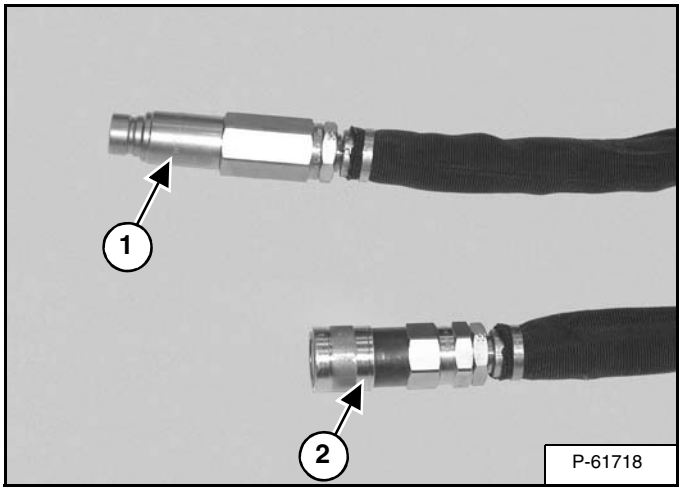
Install the two hoses (Item 1) on the 90° elbows (Item 2) **[Figure 10-12-23]**.

Installation: Tighten the hoses to 84 ft.-lb. (63 N•m) torque.

Hose Installation (Cont'd)

HB1180 (When Used On A300, S250, S300, S330, S630, S650, T250, T300, T320, T630 and T650 Model Loaders) (Cont'd)

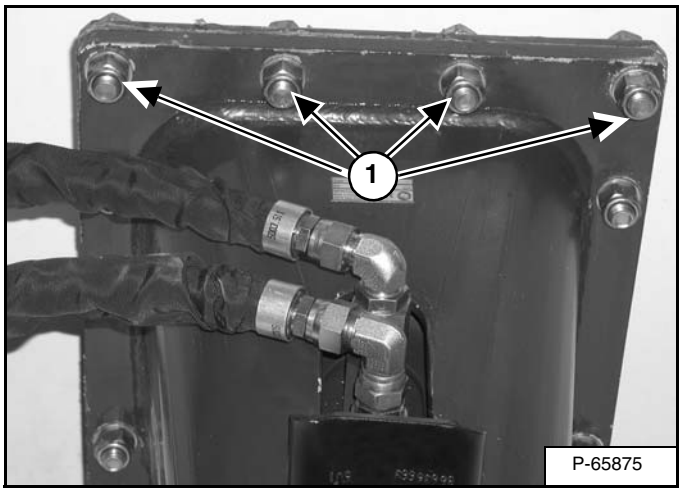
Figure 10-12-24



Install the male coupler (Item 1) **[Figure 10-12-24]** on the hose that connects to the *HP* port.

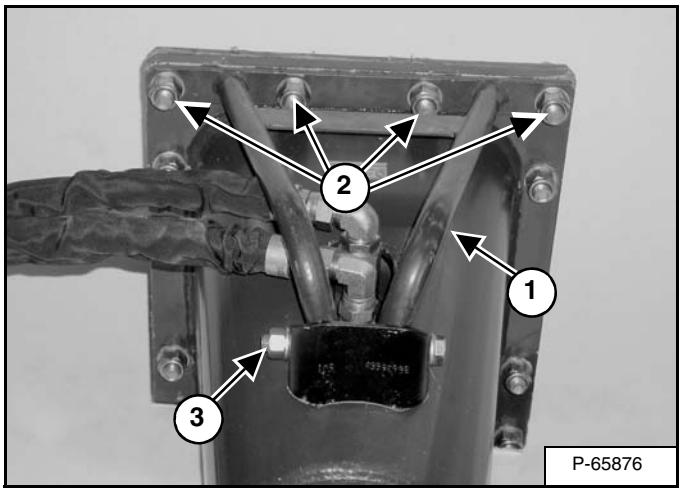
Install the female coupler (Item 2) **[Figure 10-12-24]** on the hose that connects to the *BP* port.

Figure 10-12-25



Remove the four bolts (Item 1) **[Figure 10-12-25]** washers and nuts.

Figure 10-12-26



Install the hose guard (Item 1) using the four bolts, washers and nuts (Item 2) **[Figure 10-12-26]** provided with the breaker.

Tighten the four bolts and nuts (Item 2) **[Figure 10-12-26]** to 270 ft.-lb. (370 N•m) torque.

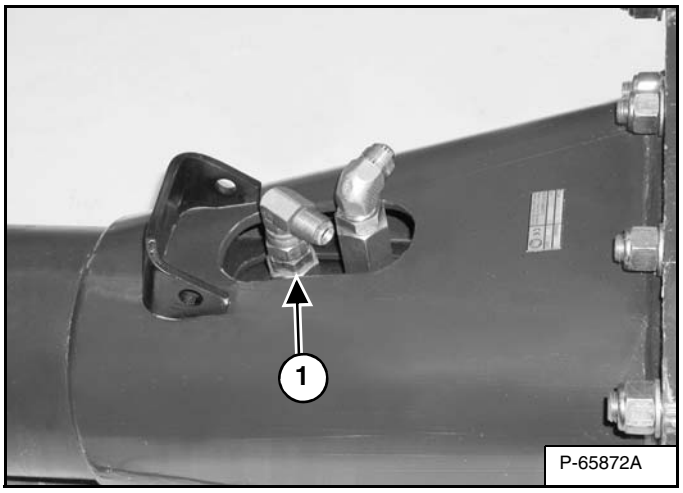
The bolt and nut (Item 3) **[Figure 10-12-26]** need only to be lightly tightened.

Hose Installation (Cont'd)

HB1180 (When Used On 442 Model Excavator)

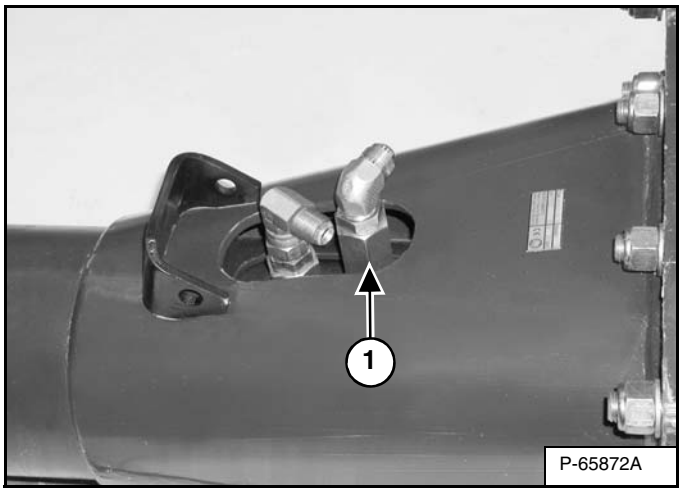
The breaker is supplied without the hoses installed on the breaker.

Figure 10-12-27



The port marked HP (Item 1) **[Figure 10-12-27]** will be connected to the breaker hose with the screw type quick coupler.

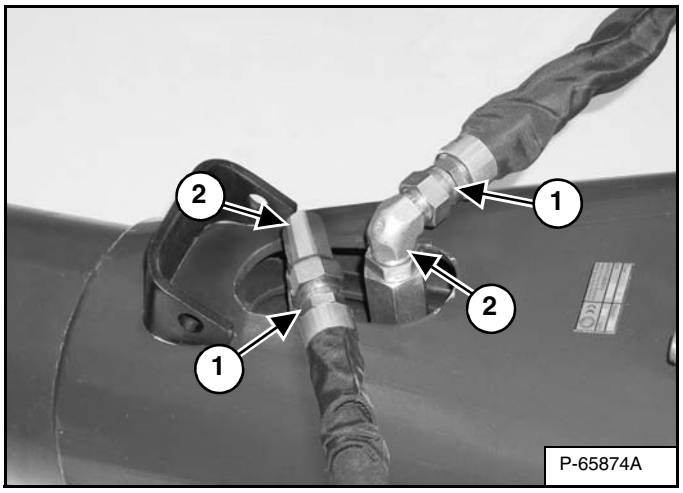
Figure 10-12-28



The port marked BP (Item 1) **[Figure 10-12-28]** will be connected to the breaker hose with the sleeve type quick coupler.

Install the two 90° elbows (Item 1) **[Figure 10-12-27]** and **[Figure 10-12-28]** in the ports.

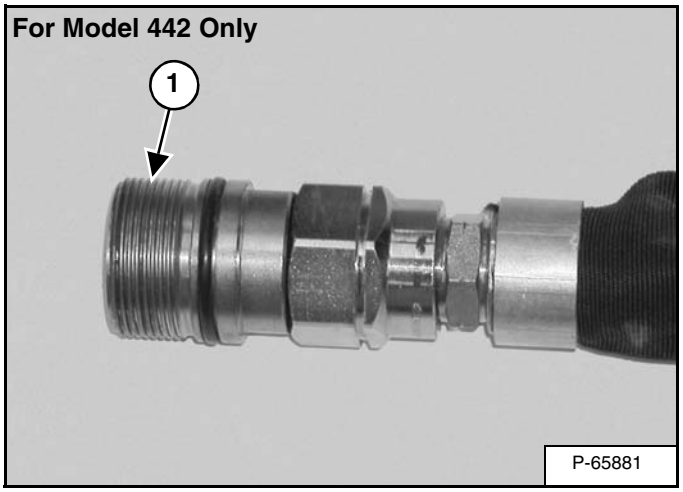
Figure 10-12-29



Install the two hoses (Item 1) on the 90° elbows (Item 2) **[Figure 10-12-29]**.

Tighten the hoses to 84 ft.-lb. (63 N•m) torque.

Figure 10-12-30

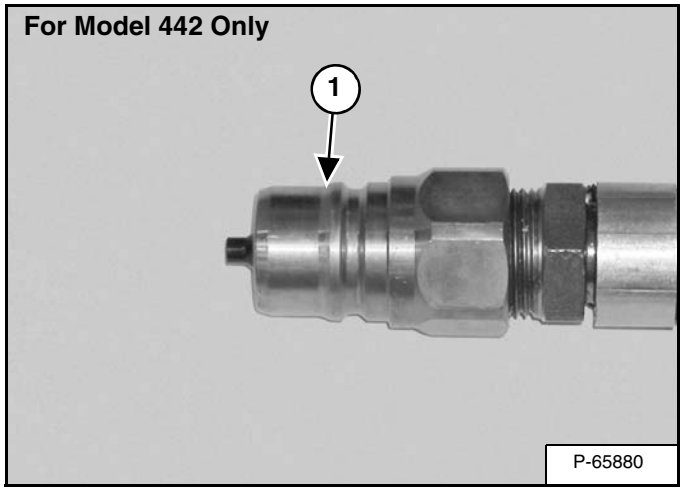


Install the screw type male coupler (Item 1) **[Figure 10-12-30]** on the hose that connects to the HP port.

Hose Installation (Cont'd)

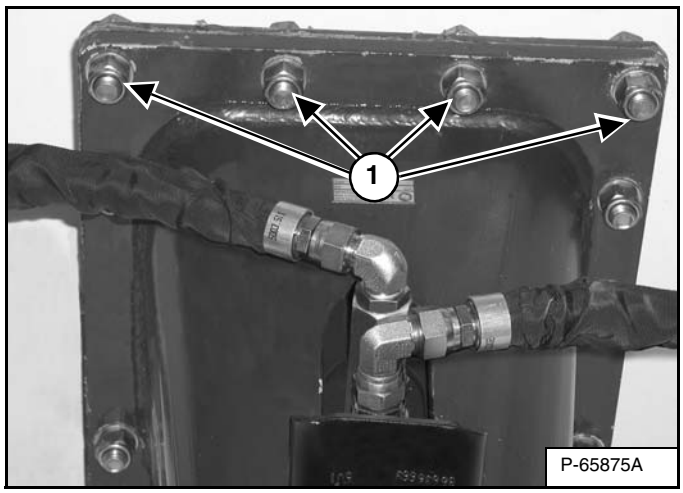
HB1180 (When Used On 442 Model Excavator) (Cont'd)

Figure 10-12-31



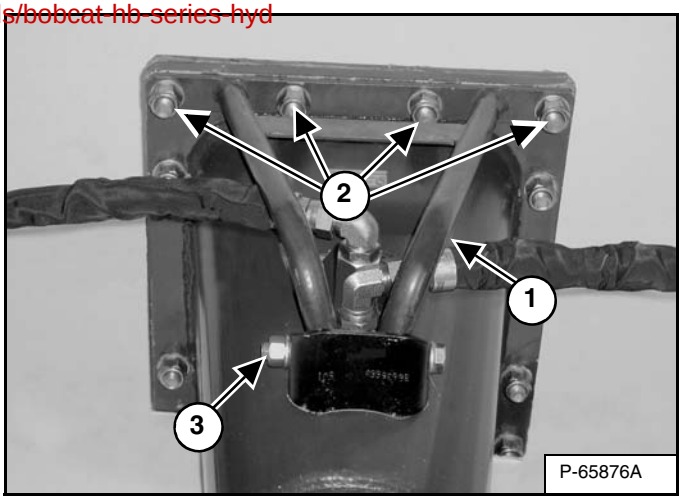
Install the sleeve type male coupler (Item 1) **[Figure 10-12-31]** on the hose that connects to the HB port.

Figure 10-12-32



Remove the four bolts (Item 1) **[Figure 10-12-32]** washers and nuts.

Figure 10-12-33



Install the hose guard (Item 1) using the four bolts, washers and nuts (Item 2) **[Figure 10-12-33]** provided with the breaker.

Tighten the four bolts and nuts (Item 2) **[Figure 10-12-33]** to 270 ft.-lb. (370 N•m) torque.

The bolt and nut (Item 3) **[Figure 10-12-33]** need only to be lightly tightened.