HYDRAULIC HAMMER

OPERATORS MANUAL

H SERIES HAMMERS

H06X	H7X
H08X	H8XA
H1XA	H10XB
H2XA	H12X
H3XA	H16X
H4XE/4XL	H20X
H6XA	H30X

"Use Genuine NPK Parts"

7550 INDEPENDENCE DRIVE WALTON HILLS, OHIO 44146
PHONE: 440-232-7900 FAX: 440-232-6294

SAFETY

Safety notices in NPK Instruction Manuals follow ISO and ANSI standards for safety warnings:

DANGER DANGER (red) notices indicate an imminently hazardous situation which, if not avoided, **will result in death or serious injury**.

WARNING WARNING (orange) notices indicate a potentially hazardous situation which, if not avoided, **could result in death or serious injury.**

CAUTION CAUTION (yellow) notices indicate a potentially hazardous situation, which, if not avoided, **may result in minor or moderate injury.**

ATTENTION ATTENTION (blue) notices in NPK Instruction Manuals are an NPK standard to alert the reader to situations which, if not avoided, **could result in equipment damage.**

WARNING and BASIC OPERATING INSTRUCTIONS decals are included with each NPK hammer and installation kit. Decals must be installed in the cab, visible to the operator while operating the hammer.
STAY CLEAR, PRESSURE VESSEL, GAS PRESSURE and TOOL SHARPENING decals are installed on all NPK hammer models. Keep them clean and visible. NPK will provide decals free of charge as needed.

WARNING

1. Operator and Service personnel must read and understand the ***NPK INSTRUCTION MANUAL*** to prevent serious or fatal injury.
2. ***FLYING DEBRIS CAN CAUSE SERIOUS OR FATAL INJURY***.
   - Keep personnel and bystanders clear of hammer while in operation***.***
   - Do not operate HAMMER without an impact resistant guard between HAMMER and operator. NPK recommends LEXAN® or equivalent material, or steel mesh. Some carrier manufacturers offer demolition guards for their machine. Check with the carrier manufacturer for availability. If not available, please call NPK.

Warning Decal for Cab Installation

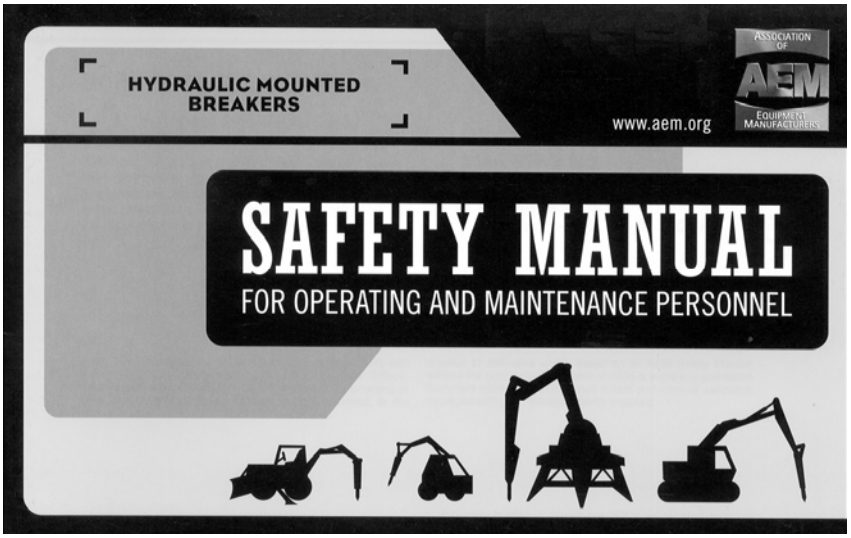
3. Do not hardface or sharpen the tool point with a cutting torch. Excessive heat from torching or welding can cause embrittlement, breakage, and flying pieces. Resharpen by milling or grinding only, using sufficient coolant.

SAFETY

⚠ CAUTION

4. Fully extend the tool while charging the HAMMER with nitrogen gas. Be sure that the retaining pin is installed. STAY CLEAR OF TOOL POINT WHILE CHARGING.
5. Do not disassemble a HAMMER before discharging the hammer gas pre-charge.
6. ***USE NITROGEN GAS ONLY!*** Store and handle nitrogen tanks per OSHA regulations.
7. Avoid high pressure fluids. Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or other lines.
8. Operate HAMMER from operator's seat only.
9. Match HAMMER size to carrier according to NPK recommendations. The carrier must be stable during hammer operation and during transport.
   See CARRIER MACHINE COMPATIBILITY section of the NPK instruction manual.
10. Do not make any alterations to the TOOL without authorization from NPK Engineering.
11. Use proper lifting equipment and tools when handling or servicing the HAMMER.
12. Wear ear protection and safety glasses when operating the hammer. Consult OSHA/MSHA regulations when applicable.
13. Beware of flying metal pieces when driving Boom Pins.
14. If modifications are to be made, ***do not alter the HAMMER without authorization from NPK Engineering!***
15. Use only genuine NPK replacement parts. NPK specifically disclaims any responsibility for any damage or injury that results from the use of any tool or parts not sold or approved by NPK.

For further safety information, consult the AEM Hydraulic Mounted Breakers Safety Manual, AEM form MB-140 (NPK P/N H050-9600), which is furnished with every NPK hammer. To request an additional copy, please contact NPK at 800-225-4379 or Internet at *www.npkce.com.*



CONTENTS

INTRODUCTION

NPK is a leading manufacturer of boom mounted HYDRAULIC HAMMERS, and has the most complete product line available anywhere. The success of NPK is due to our commitment to quality, dependability and long life. The HYDRAULIC HAMMER has many unique designed features and it is a company philosophy that the NPK HYDRAULIC HAMMER can be brought to "like new" condition long after competitive products are scrapped. You can feel confident that you have purchased the best value available.

This comprehensive manual contains instructions for operating and maintaining NPK HYDRAULIC HAMMERS. This manual includes helpful information for obtaining the full potential and efficiency from NPK HYDRAULIC HAMMERS. Please read this manual thoroughly to understand the NPK HAMMER and its operating principles before using it.

For additional information or help with any problem encountered, please contact your NPK authorized dealer.

Whenever repair or replacement of component parts is required, only NPK parts should be used. NPK is not responsible for failures resulting from substitution of parts not sold or approved by NPK.

CARRIER MACHINE COMPATIBILITY CHART

These carrier weight ranges are intended as a guideline only. Other factors, such as stick length, counterweights, undercarriage, etc., must be taken into consideration.

Mounting a HAMMER that is too heavy for the carrier machine can be dangerous and damage the machine. Mounting a HAMMER that is too small for the carrier machine can damage the HAMMER and void the Warranty.

Please consult NPK Engineering for specific detailed information.

CARRIER WEIGHT

NPK HAMMER MODEL	***RECOMMENDED RANGE***	
	lbs	***Kg***
H06X	2,400 - 3,500	1,090 - 1,590
H08X	3,300 - 5,500	1,500 - 2,500
H1XA	5,300 - 9,000	2,400 - 4,100
H2XA	6,600 - 11,600	3,000 - 5,300
H3XA	8,600 - 14,500	3,900 - 6,600
H4XE/H4XL	12,000 - 19,000	5,400 - 8,600
H6XA	16,000 - 25,000	7,300 - 11,400
H7X	19,000 - 30,000	8,600 - 13,600
H8XA	28,000 - 42,000	12,700 - 19,100
H10XB	35,000 - 50,000	15,900 - 22,700
H12X	45,000 - 65,000	20,500 - 29,500
H16X	55,000 - 85,000	25,000 - 38,600
H20X	65,000 - 95,000	29,600 - 43,000
H30X	99,000 - 150,000	45,000 - 68,000

HAMMER SPECIFICATIONS

HAMMER MODEL	IMPACT ENERGY		FREQUENCY	WORKING WEIGHT	TOOL	
					DIA	WORKING LENGTH
	CIMA/AEM Ft-Lb (J)	Ft-Lb Class	bpm	lbs (Kg)	in / mm	in / mm
H06X	89 (120)	150	450-700	185 (84)	1.6 (40.6)	11.5 (292)
H08X	111 (151)	200	450-750	220 (100)	1.8 (45.9)	12 (305)
H1XA	153 (208)	300	600-800	350 (159)	2.2 (55.9)	13 (330)
H2XA	240 (325)	500	450-800	450 (205)	2.6 (66.0)	14 (356)
H3XA	361 (489)	750	500-700	700 (318)	3.0 (76.2)	16 (406)
H4XE/H4XL	683 (926)	1000	600-750	1100 (500)	3.5 (88.9)	17 (432)
H6XA	N/A	1250	400-600	1600 (727)	3.8 (96.5)	18 (457)
H7X	1043 (1414)	1500	400-550	1880 (855)	4.2 (106.7)	18 (457)
H8XA	1454 (1972)	2000	400-550	2800 (1273)	4.6 (116.8)	20 (508)
H10XB	N/A	3000	400-500	3300 (1500)	5.0 (127.0)	22 (559)
H12X	N/A	4000	400-500	4400 (2000)	5.4 (137.1)	22 (559)
H16X	N/A	5000	350-450	5650 (2568)	5.7 (144.8)	24 (610)
H20X	N/A	6000	350-450	6600 (3000)	6.1 (154.9)	26 (660)
H30X	N/A	10000	300-350	11200 (5090)	6.9 (243.8)	31 (787)

CIMA/AEM impact energy rating is an industry standard developed by the CIMA/AEM (Construction Industry Manufacturers Association) Mounted Breaker Manufacturers Bureau. It provides a standardized method for measuring the actual impact energy delivered by the hammer tool to the material being broken.

HAMMER MODEL	OIL FLOW	HYDRAULIC OPERATING PRESSURE 1	CIRCUIT RELIEF MINIMUM	GAS CHARGE PRESSURE PSI (BAR) +0 –25 (+0 –1.7)	
	gpm (L/min)	psi (bar)	psi (bar)	COLD 2	HOT 3
H06X	2.5 - 4 (10 - 15)	1600 (110)	2100 (145)	370 (26)	430 (30)
H08X	4 - 7 (15 - 27)	1550 (107)	2050 (141)	370 (26)	430 (30)
H1XA	7 - 10 (27 - 38)	1700 (117)	2200 (152)	300 (21)	350 (24)
H2XA	8 - 15 (30 - 57)	1850 (128)	2350 (162)	320 (22)	375 (26)
H3XA	12 - 18 (45 - 68)	1700 (117)	2200 (152)	390 (27)	455 (31)
H4XE/H4XL	17 - 22 (64 - 83)	2200 (152)	2700 (186)	250 (17)	300 (21)
H6XA	22 - 33 (83 - 125)	2100 (145)	2600 (179)	340 (23)	400 (28)
H7X	24 - 37 (91 - 140)	2100 (145)	2600 (179)	320 (22)	375 (26)
H8XA	26 - 40 (98 - 151)	2250 (155)	2750 (190)	340 (23)	400 (28)
H10XB	42 - 52 (159 - 197)	2100 (145)	2600 (179)	340 (23)	400 (28)
H12X	45 - 55 (170 - 208)	2250 (155)	2750 (190)	290 (20)	340 (23)
H16X	46 - 62 (174 - 235)	2250 (155)	2750 (190)	290 (20)	340 (23)
H20X	54 - 70 (204 - 265)	2500 (172)	3000 (207)	340 (23)	400 (28)
H30X	66 - 80 (250 - 303)	2600 (179)	3100 (214)	450 (31)	525 (36)

HAMMER SPECIFICATIONS, CONTINUED

NOTES:

1. Hydraulic operating pressure given is with a circuit back pressure of 300 psi (21 bar) and with the gas charge set at the hot operating pressure.

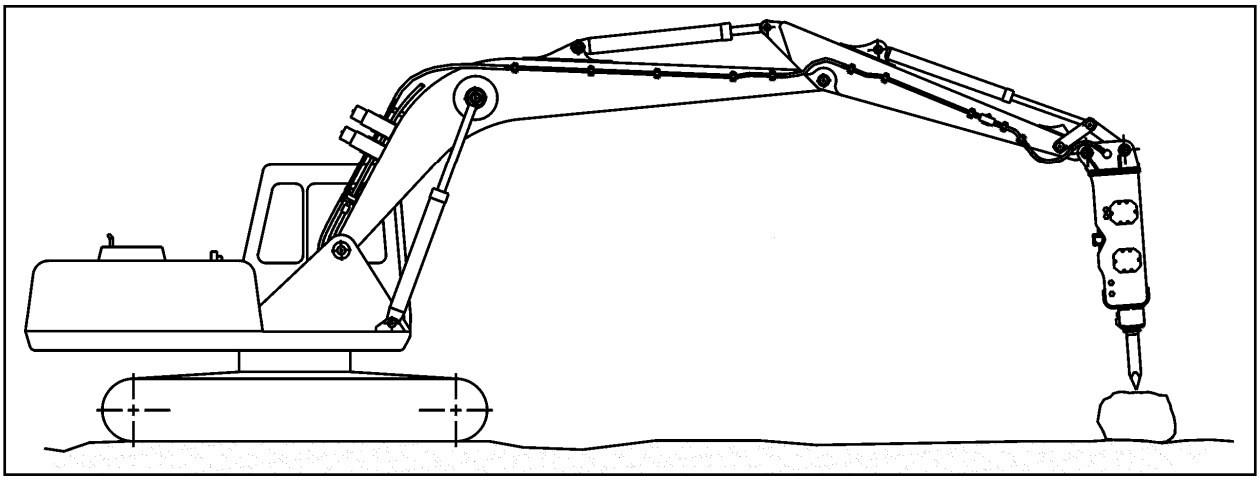
2. Cold gas charge is the initial set with the hammer at ambient temperature.

3. Hot gas charge is checked after 1 to 2 hours of running and with a system oil temperature of 140° to 180°F (60° to 80°C). This is the preferred check.

4. Specifications subject to change without notice.

HYDRAULIC INSTALLATION

NPK INSTALLATION KITS are available for virtually all compatible backhoe loaders and excavators. Complete parts and instructions for the hydraulic installation of the NPK HYDRAULIC HAMMER including valving and/or controls, hoses and fittings, boom and stick tubing, and clamps are provided.



HAMMER KIT LINES

Typically, the pressure line is arranged on the left side of the boom and the return line on the right side. Flow to the hammer is controlled from an auxiliary valve on the excavator or from an NPK supplied valve. Hydraulic oil is routed back to the tank thru the excavator's oil cooler and filter.

HAMMER CONTROL VALVE

NPK uses two general types of control systems, depending upon the carrier model:

1. **CONTROL SYSTEM USING THE CARRIER AUXILIARY OR SPARE VALVE SECTION.**
   This type of installation utilizes an existing carrier valve. Any additional parts, such as a mechanical linkage, hydraulic pilot actuators, flow control valves, etc., are furnished in the NPK HYDRAULIC INSTALLATION KIT. Special hydraulic pressure control valves are not required. The NPK HYDRAULIC HAMMER operating pressure is self-regulating.

2. **CONTROL SYSTEM USING THE NPK MULTIVALVE.**
   For carriers not equipped with a suitable auxiliary or spare valve section, the NPK HYDRAULIC INSTALLATION KIT includes a solenoid operated, priority flow control valve to operate the NPK HYDRAULIC HAMMER. The NPK MULTIVALVE is specifically designed for the operation of boom mounted attachments.

PREVENTION OF CONTAMINATION IN THE HYDRAULIC SYSTEM

1. A hydraulic hammer is harder on oil than using a bucket, so the oil is apt to deteriorate and become contaminated sooner. Neglect of the oil system can not only damage the hydraulic hammer but also cause problems in the excavator which could result in damaged components. Care should be taken to check for contamination of the oil and to change it if it is found contaminated.

❖ When the hydraulic oil shows low viscosity and bubbles, this indicates that the oil is deteriorated. If the oil is dark brown and gives off an offensive odor, it is severely deteriorated. Change the oil immediately.

❖ When the oil is clouded, or the oil filter often becomes clogged, it indicates that the oil is contaminated. Change the oil.

❖ To change the contaminated hydraulic oil, drain the hydraulic system completely and clean components. Do not mix new oil with the old.

2. Do not allow any contamination to mix with the oil. Take special care in preventing contamination from entering the hydraulic system through the hose or tube connection when changing the hydraulic hammer with the bucket.

3. Low oil level will cause heat build-up, resulting in deterioration of the oil. Also, it may cause cavitation due to air mixing with the oil, leading to a damaged hydraulic hammer and carrier components. Keep the oil at the proper level at all times.

4. Do not use the hydraulic hammer at an operating temperature higher than 180°F (80°C). The proper operating oil temperature range is between 120°F (50°C) and 180°F (80°C). Since contaminated cooler fins causes reduced efficiency of the cooler, keep the cooler fins clean at all times.

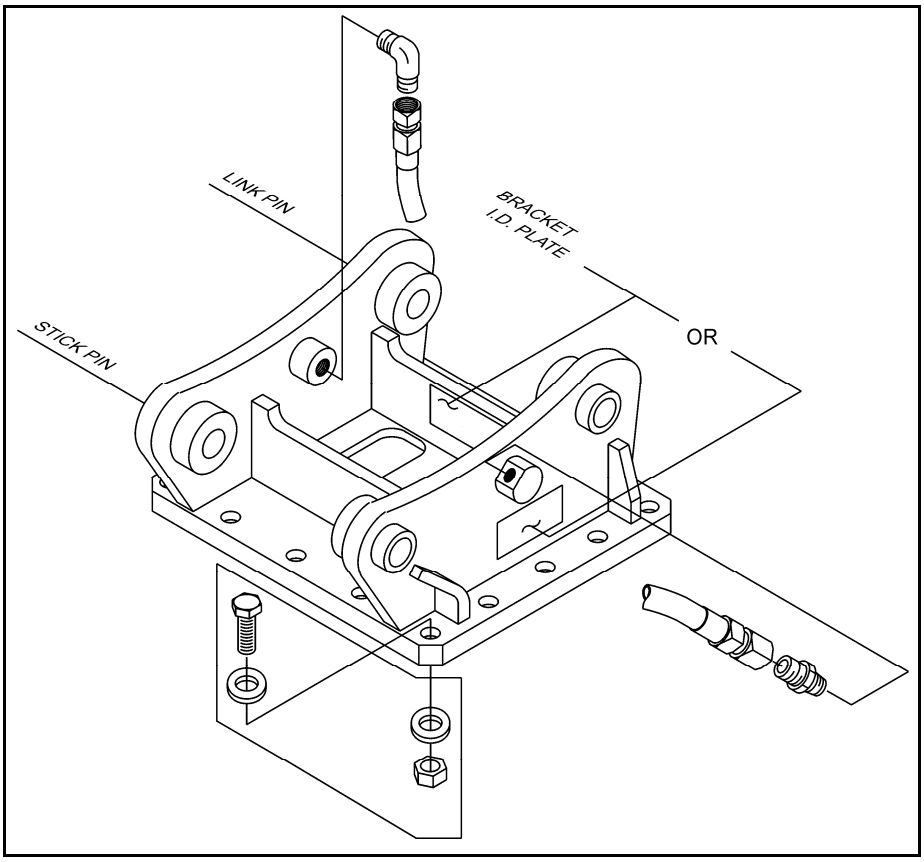
5. Water in the hydraulic oil will lead to damage of the hydraulic hammer. When out of service, the hydraulic hammer should be stored indoors. Drain off water and foreign matter from the hydraulic tank at specified intervals.

CHANGING THE FILTER ELEMENT AND HYDRAULIC OIL

Change the filter element and hydraulic oil at the intervals described in the operation manual of the excavator when using a hydraulic implement. Another method is to set up an oil sampling schedule and change accordingly.

MOUNTING INSTALLATION

NPK Mounting Installation Kits include the parts required to adapt the NPK HYDRAULIC HAMMER to the stick or arm of the carrier. NPK mounting kits include pins, bushings, and spacers when necessary and custom made brackets when required.



Top Bracket Bolts

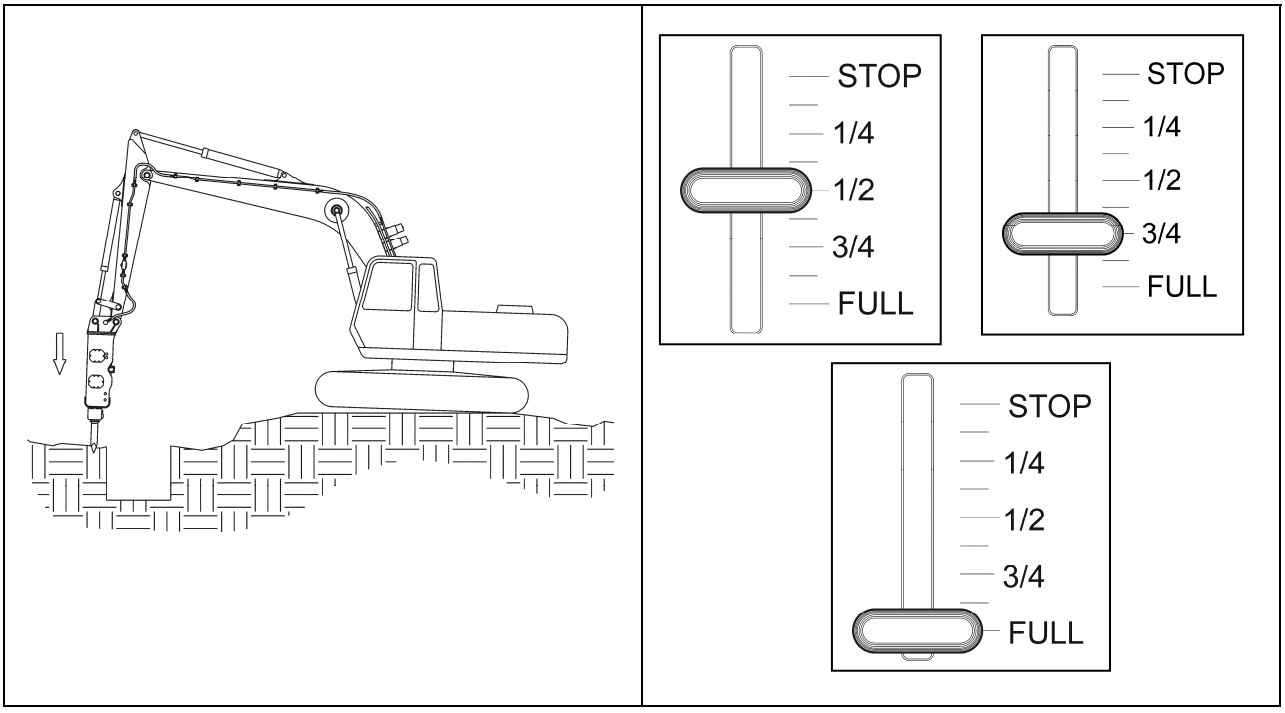
MODEL	***BOLT SIZE***	***FT/LB (Nm)***
H6XA	1 in.	750 (1,000)
H7X		
H8XA		
H10XB		
H12X	1-1/4 in.	1,500 (2,000)
H16X		
H20X		
H30X		

START UP PROCEDURES FOR NPK HAMMERS

ATTENTION

The following is the recommended ***START UP PROCEDURE*** for new, rebuilt, or hydraulic hammers that have been inactive for a long period of time.

Operate the hammer in a vertical position for approximately 10 minutes at one-half engine speed. Increase engine speed to three-quarters and continue operating at this speed for another 10 to 20 minutes. Increase to full engine speed. Maintain vertical position for the first hour of operation.



Failure to follow this start up procedure may lead to premature failures caused by lack of lubrication.

OPERATION

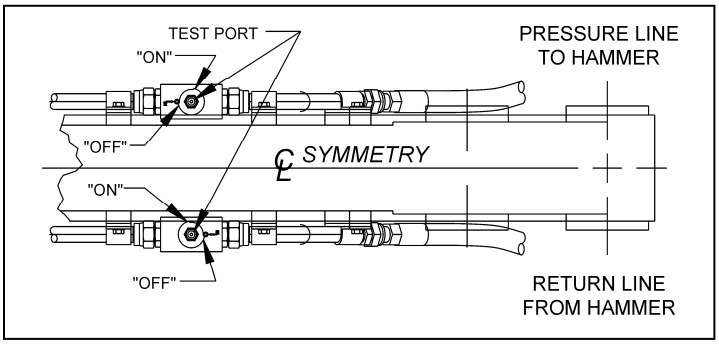
BEFORE STARTING THE HAMMER

1. CHECK THE NITROGEN GAS PRESSURE (NEW HAMMERS)

The nitrogen gas pre-charge is factory checked before shipment. However, it is recommended the pressure be checked before using the NPK HYDRAULIC HAMMER for the first time. For the inspection procedure, see CHECKING THE GAS PRESSURE, page 38.

2. SHUT-OFF VALVE

The NPK HYDRAULIC INSTALLATION uses two shut-off valves located on the dipper stick of the carrier. When using the NPK HYDRAULIC HAMMER be sure these valves are turned to the “ON” position.



Note: There is a pressure test port located in the shut off valve spool.

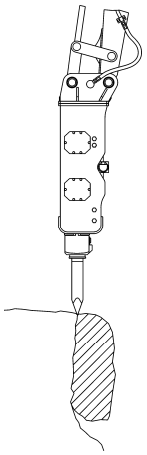
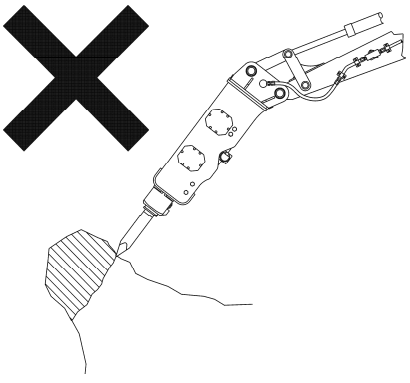
3. PRE-OPERATION INSPECTION AND WARM UP

Before operating the NPK HYDRAULIC HAMMER, be sure to perform the specified DAILY INSPECTION.

Warm up the NPK HYDRAULIC HAMMER and the backhoe or excavator in accordance with the base machine instruction manual. This is especially important during cold weather operation.

DAILY START-UP OPERATION

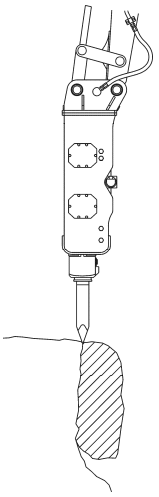
Operate the NPK HYDRAULIC HAMMER in the vertical position, at half engine throttle setting, for about 2-3 minutes. During this period, inspect the NPK HYDRAULIC HAMMER and INSTALLATION KIT for leaks or loose connections.

Do not operate on a slanted surface during the start-up operation.		

OPERATING TECHNIQUES AND PRECAUTIONS

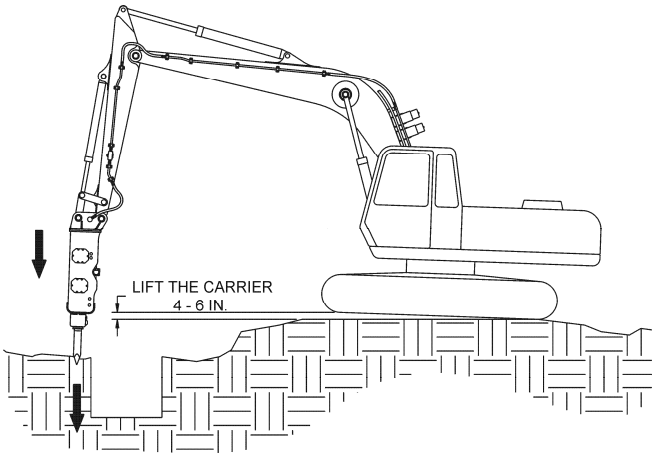
PRELOAD THE TOOL BEFORE STARTING

Press the tip of the demolition tool vertically against the object to be broken. Be sure the object is stable before activating the NPK HYDRAULIC HAMMER.



Raise the front of the machine slightly by applying downforce on the demolition tool. Press the control lever or the foot pedal to start the NPK HYDRAULIC HAMMER.

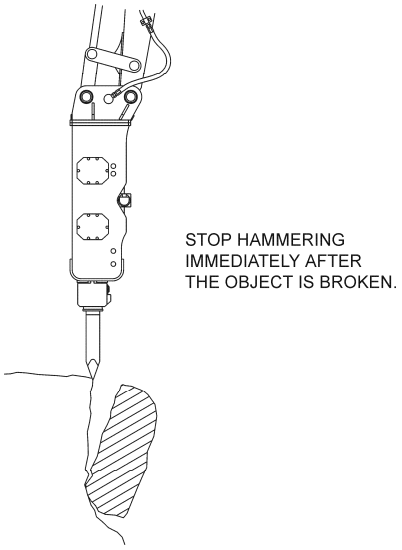
Applying excessive force to the hammer will raise the carrier too high and jolt the operator when the material breaks. Let the NPK HYDRAULIC HAMMER do the work.



AVOID BLANK HAMMERING

As soon as the material is broken, release the control lever or pedal to prevent unnecessary blank hammering.

Blank hammering is continued hammer operation after the material is broken. This will overheat the hydraulic system and cause undue wear.



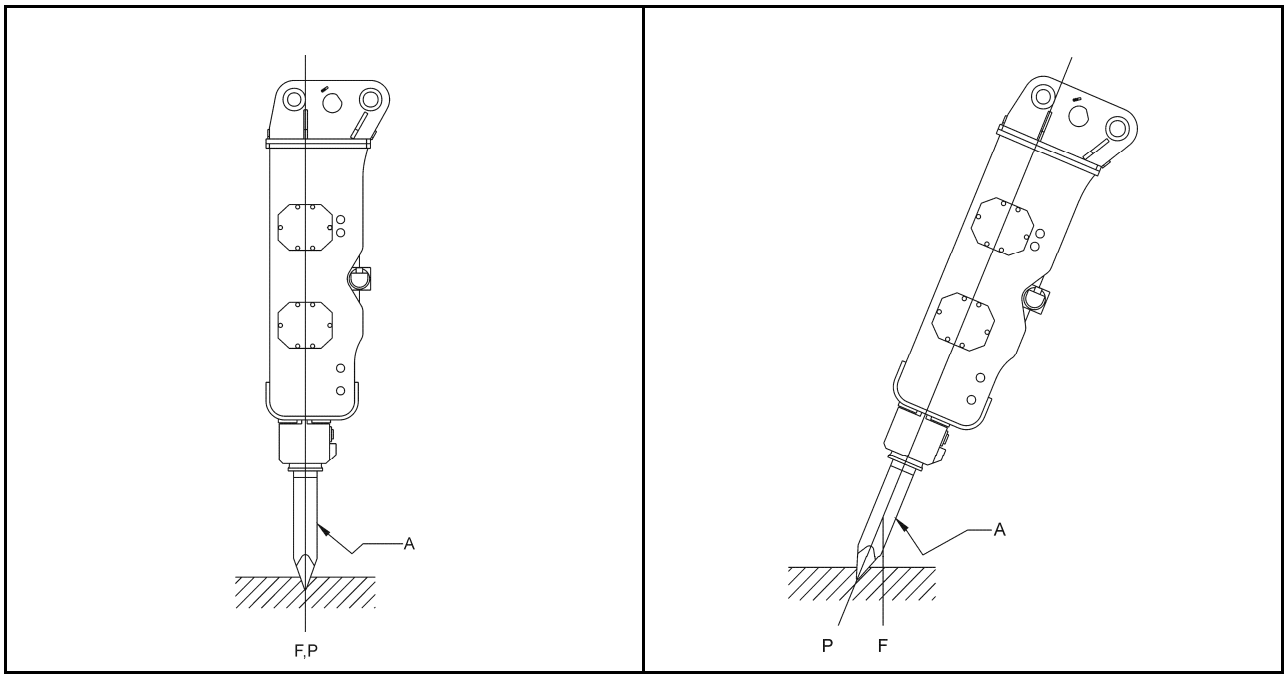
OPERATING TECHNIQUES AND PRECAUTIONS, CONTINUED

DO NOT SLANT HAMMER

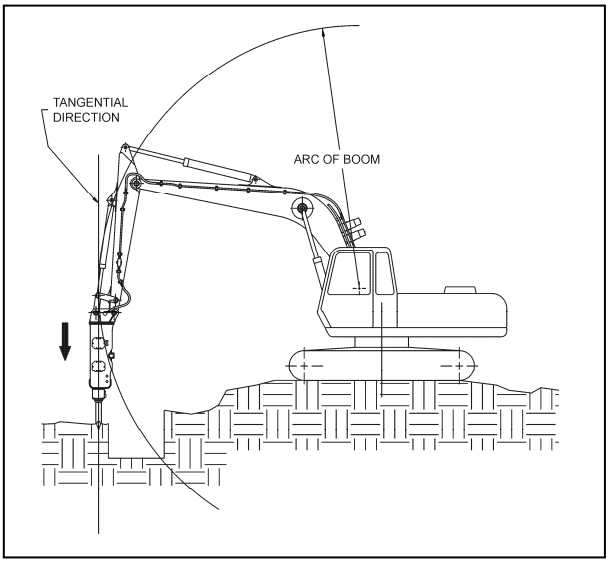
For the most efficient demolition, align the direction of force (F) from the boom with the penetration direction (P) of the tool. Failure to do this decreases the transfer of energy from the piston to the rock and increases the bending forces at the fulcrum of the tool. This unnecessary added stress leads to the following problems:

1. Premature bushing wear and/or tool breakage
2. Breakage of tie rods
3. Breakage of bracket bolts

When the tool binds from incorrect working angle, the sound of the hammer changes.



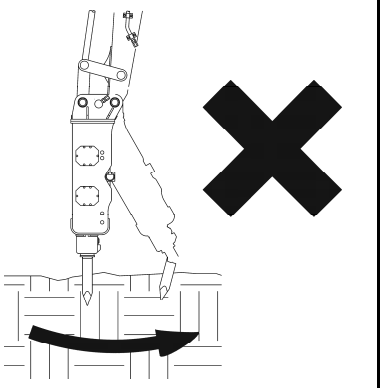
Keep the boom direction of force in the same direction the tool is penetrating. Use the boom cylinder to preload the hammer (apply downforce), and use the bucket and stick cylinders for alignment. Keep the tool tangent to the arc of the boom.

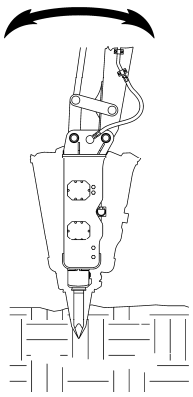


OPERATING TECHNIQUES AND PRECAUTIONS, CONTINUED

DO NOT USE THE DEMOLITION TOOL AS A PRY BAR

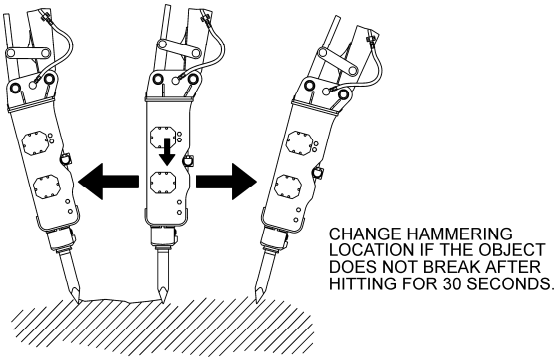
Excessive prying can cause premature bushing wear and tool or tie rod breakage. When hammering materials that allow the tool to penetrate before breaking, move the hammer slightly fore and aft to create a cone-shaped hole. The vented hole allows trapped dust and heat to escape, increases the tool penetration rate into the material, and prevents overheating the tool tip.





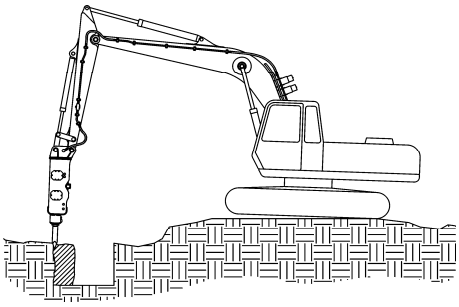
DO NOT HAMMER CONTINUOUSLY IN THE SAME POSITION FOR MORE THAN 30 SECONDS

If the tool cannot break or penetrate into the material after hammering in the same position for 30 seconds, change the working location. Hammering in the same position for a long time will reduce the working efficiency, increase the hydraulic oil temperature, and accelerate tool wear.



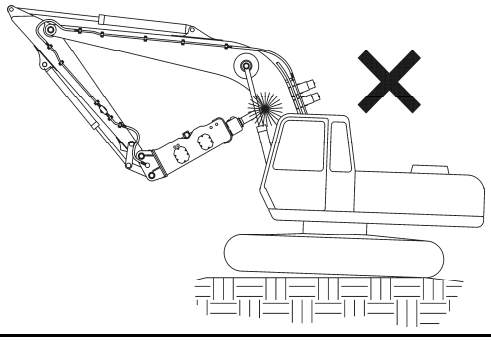
ALWAYS WORK BY BREAKING TO A FREE FACE

The material must have somewhere to break. Start at an edge.



DO NOT ALLOW THE DEMOLITION TOOL TO HIT THE BOOM

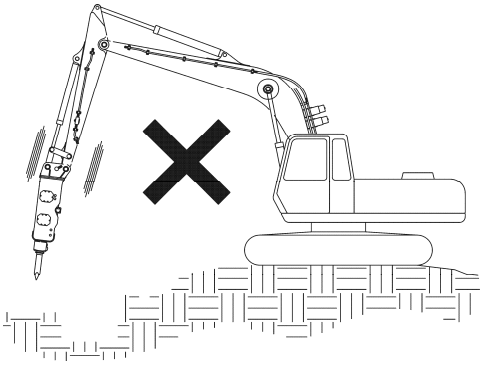
Use caution when tucking the hammer in tight to the boom for transportation.



OPERATING TECHNIQUES AND PRECAUTIONS, CONTINUED

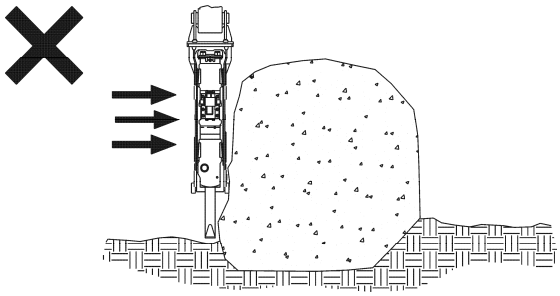
DO NOT DROP THE HAMMER RAPIDLY ON AN OBJECT

Remember, the hydraulic hammer is heavier than an empty bucket and will move faster than expected.



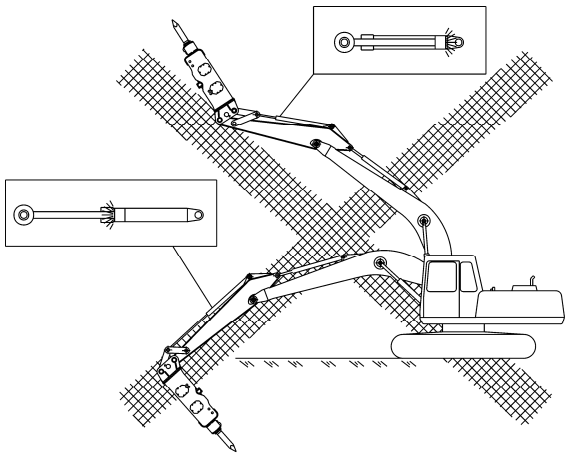
DO NOT USE THE HAMMER OR BRACKET TO MOVE LARGE OBJECTS

Do not use the hammer bracket for purposes other than for what is was intended.



AVOID OPERATING THE HAMMER WITH CYLINDERS AT THE END OF STROKE

Continuous operation with the boom cylinders fully closed or extended may damage the hydraulic cylinders.



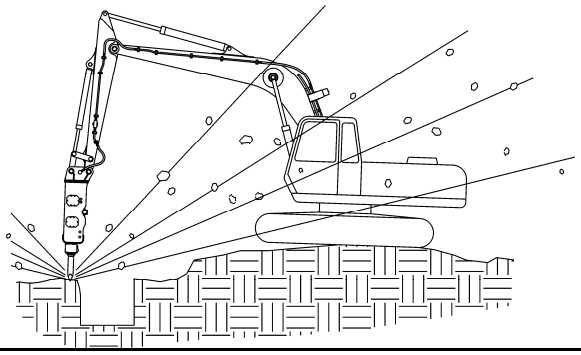
IMPROPER OPERATION

OPERATING TECHNIQUES AND PRECAUTIONS, CONTINUED

⚠ WARNING

BEWARE OF FLYING PROJECTILES FROM THE HAMMER POINT

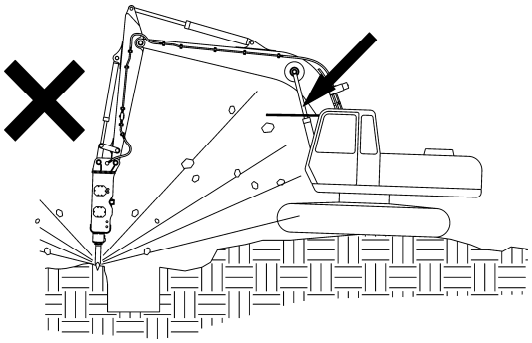
Do not use the hammer in such a way as to cause rock, etc. to be thrown towards the cab.



⚠ WARNING

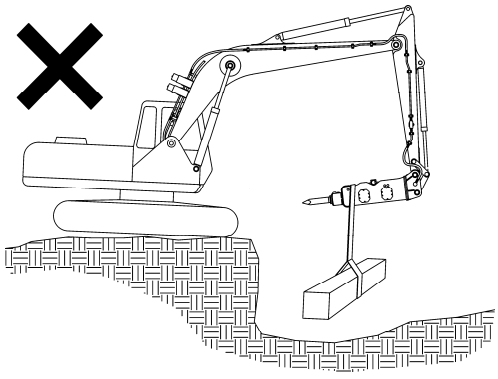
DO NOT OPERATE THE HAMMER WITHOUT THE CAB WINDOW OR SHIELD IN PLACE

Cab window or shield must be in place to protect the operator from rock thrown out from the tool point.



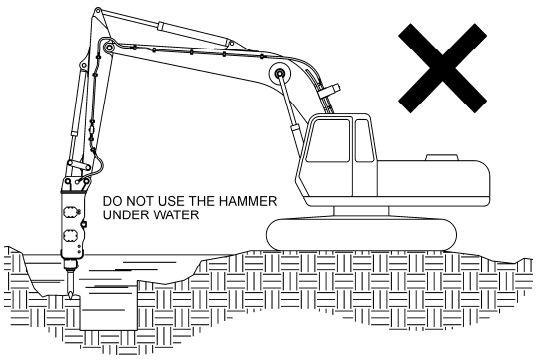
DO NOT USE THE HAMMER AS A HOIST

The hammer is not intended to lift an object. To do so, can be dangerous.

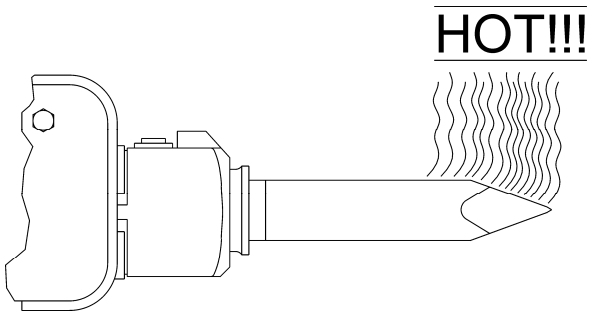
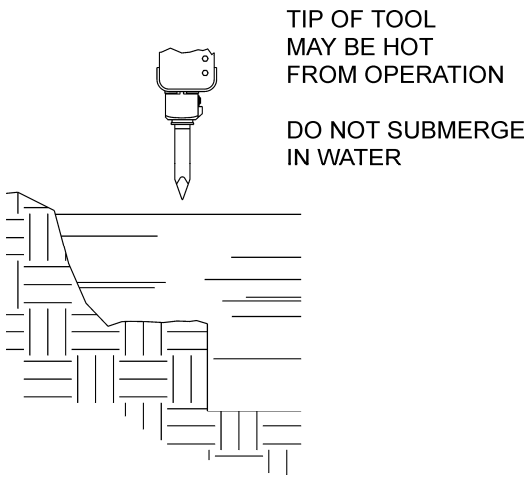


DO NOT OPERATE HAMMER UNDERWATER

Do not allow parts, other than the tool, to be submerged in water. Underwater operation will damage the hammer and allow water to enter the hydraulic system. The hammer can be modified for underwater operation - contact the NPK Dealer for more information.



OPERATING TECHNIQUES AND PRECAUTIONS, CONTINUED

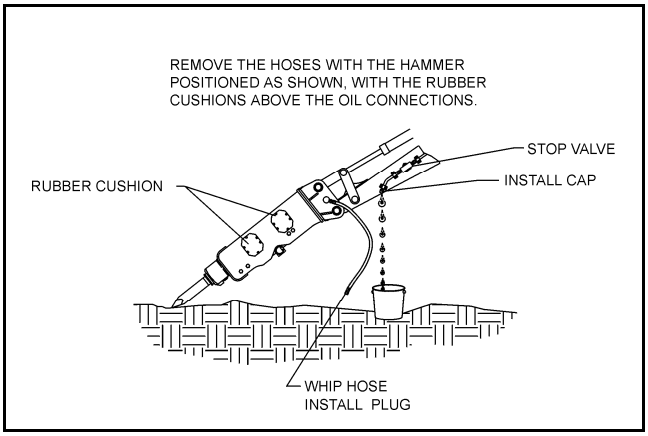
⚠ CAUTION ***DO NOT TOUCH TOOL AFTER USING!***	
DO NOT SUBMERGE A HOT TOOL IN WATER! This may cause the tip of the tool to become brittle and break prematurely.	

REMOVAL AND MOUNTING OF HYDRAULIC HAMMER

HAMMERS H8XA THROUGH H30X WITH RUBBER MOUNTS

REMOVAL FROM THE CARRIER

1. Close pressure and return line shut-off valves.
2. Disconnect hydraulic hoses before laying the hammer down. See illustration.
3. Cap the pressure and return line on the carrier and plug the hammer hoses.
4. Position the hammer horizontal on wood blocks and remove boom pins.

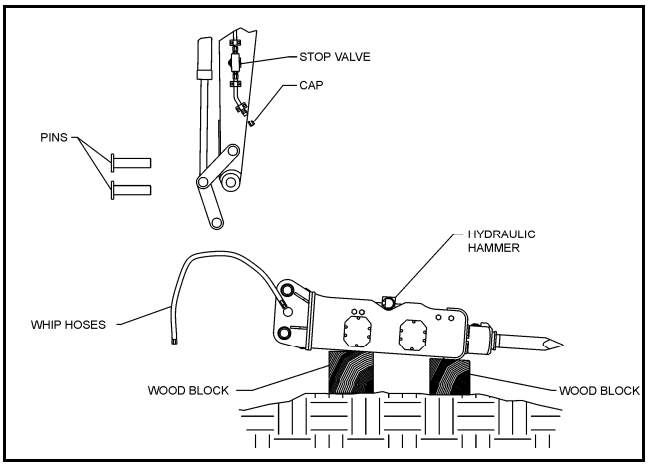


Important:

The hydraulic lines must be handled carefully and sealed to prevent contamination from entering the hammer or the carrier hydraulic system.

MOUNTING TO THE CARRIER

1. Place the hammer horizontal on wood blocks, as shown.
2. Align the boom pin holes. Install the stick pin before the cylinder link pin.
3. Connect hydraulic hoses. Pressure is on LEFT return is on RIGHT.
4. Open shut-off valves.



Important:

Avoid getting hydraulic oil on rubber mounts. Flush with water if necessary.

HYDRAULIC QUICK DISCONNECTS

NPK recommends against the use of non-NPK quick disconnects on hydraulic circuits operating NPK Products.

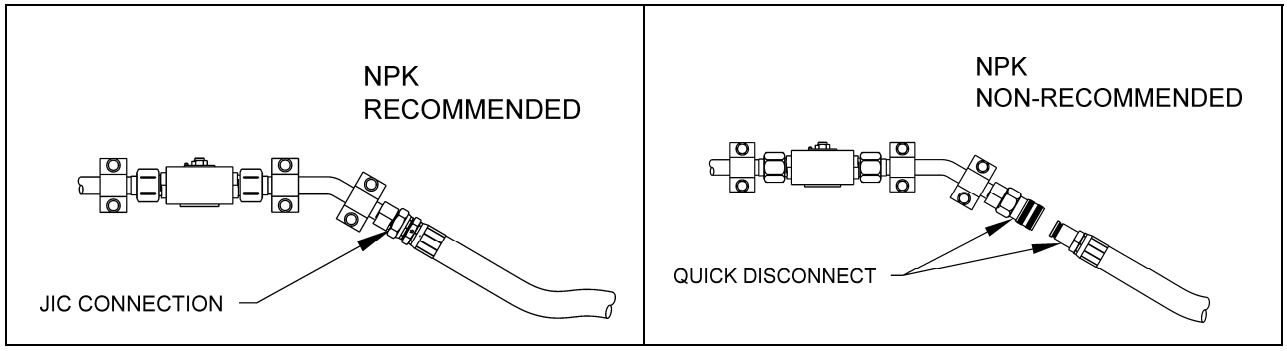
Hydraulic Hammers

1. The hydraulic pulsations caused by the hammer operating can cause internal pieces of non-NPK quick disconnect to disintegrate. These pieces would migrate into the hammer, causing damage.

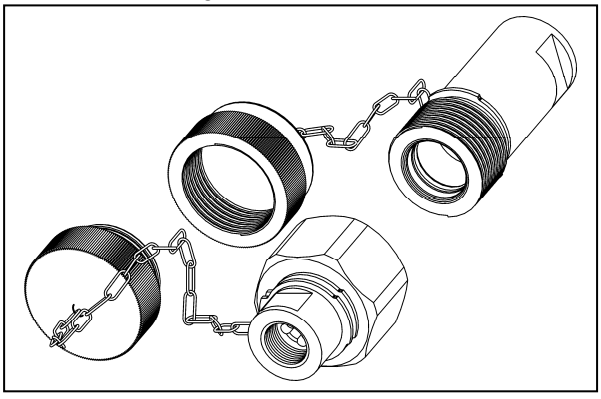
2. If quick disconnects are used when the hammer is removed from the excavator, the quick disconnects should be capped to keep them clean. If this is not done, contamination on the disconnect will be flushed into the hammer when reconnected. This, again, can cause damage.

3. Most quick disconnects create a restriction in the circuit. NPK hammers are not back pressure sensitive, but restrictions cause unnecessary heating of the oil. Also, the pressure required to operate the hammer, plus the restriction of the disconnects may push an older, low pressure, excavator to the limit of its hydraulic system. This would interfere with proper hammer operation. ***However, the NPK approved quick disconnects are properly sized so that the hammer operation is not affected.***

APPROVED CONNECTION ***NON-APPROVED CONNECTION***

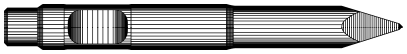
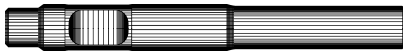
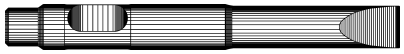
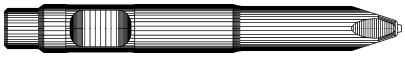


NPK APPROVED CONNECTION QUICK DISCONNECTS
CONTACT YOUR NPK DEALER FOR ADDITIONAL INFORMATION ABOUT NPK QUICK DISCONNECTS

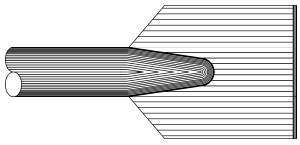
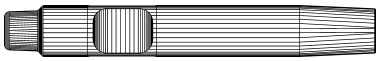
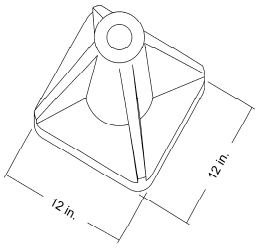
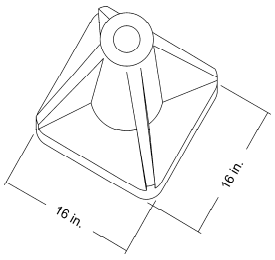
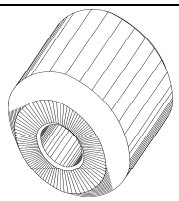


STANDARD AND ACCESSORY TOOLS

STANDARD TOOLS

DEMOLITION TOOL	*SHAPE*	*APPLICATIONS*
MOIL (P)		• Concrete breaking • Soft to medium strength rock • Highway construction • General demolition
BLUNT (E)		• Concrete slab • Bridge decking • Breaking oversize • Slag removal
TOOL CROSSCUT (FX)		• Controlled breakage of concrete • Layered or sedimentary rock • General demolition • Cutting casting gates
*CORE (PC)		• Very hard or abrasive material • Oversize • General demolition

ACCESSORY TOOLS

SPECIALTY TOOL	*SHAPE*	*APPLICATIONS*
*ASPHALT CUTTER for 2XA, 3XA, 4XE crosscut (SX) in line (SY)		• Edge of trenching • Frost cutting
*ADAPTER TOOLS for 1XA thru 4XE		• For attachments listed below
*TAMPER PLATE for 1XA and 2XA (use with adapter tool)		• Soil compaction • Driving sheeting
*TAMPER PLATE for 3XA and 4XE (use with adapter tool)		• Soil compaction • Driving sheeting
*POST and PIPE DRIVERS for 1XA thru 4XE (use with adapter tool)		• Driving guard rails • Driving fence posts

*Not available for all models.

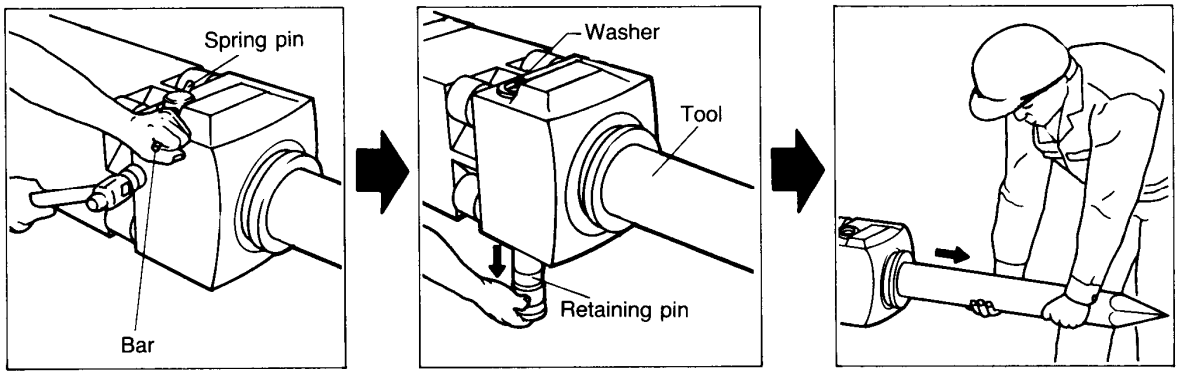
CHANGING THE TOOL

Removal (Hammers H06X THROUGH H7X)

1. If the HAMMER is mounted on the carrier machine, close the shut-off valves on the end of stick.
2. With the accessory bar and a hammer, remove the spring pin.
3. Remove the retaining pin.
4. Remove the tool.

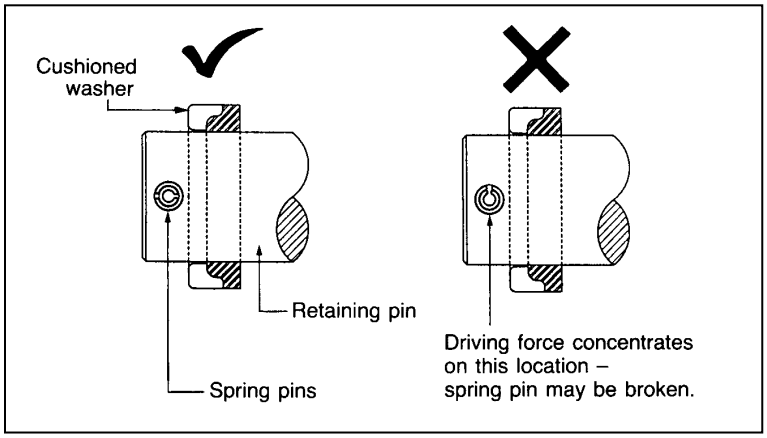
⚠ CAUTION

Tool may be ***HOT!***



Installation

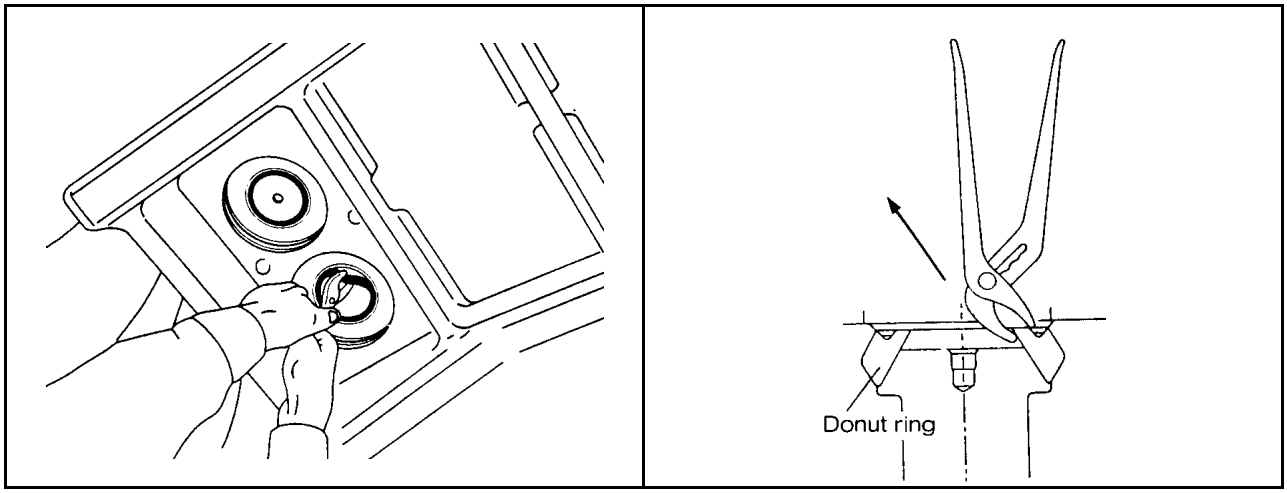
1. Prior to installation, apply a liberal coating of moly base, high temperature grease on the sliding surfaces of the tool and retaining pin.
2. Install the tool.
3. Insert the retaining pin.
4. Install the cushioned washer over the retaining pin. The rubber must be against the tool holder.
5. Drive in the spring pins as shown below.
6. Open the shut-off valves on the end of stick.



CHANGING THE TOOL, CONTINUED

Removal (Hammers H8XA THROUGH H30X)

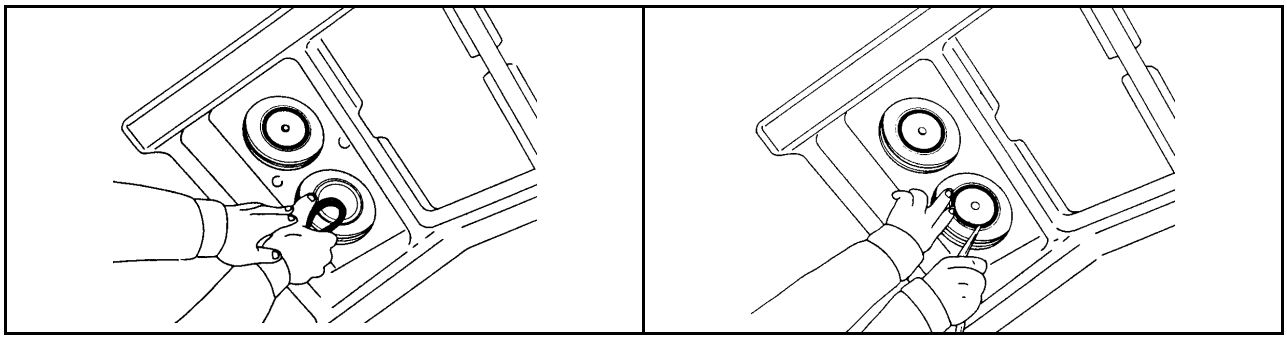
1. Remove the retaining ring by using pliers. It will easily come out if pulled at an angle of 30º with the center as shown in figure below.



2. Screw an M12 bolt or cap screw into the retainer pin.
3. Pull out retainer pin. If the retainer pin holds so tight it cannot be pulled out, hammer it out from the opposite side.

INSTALLATION

1. Clean the retainer pin housing hole and retaining ring holding groove.
2. Coat the surface of the chisel with heat resistant grease, then install the chisel.
3. Apply grease to the retaining ring housing groove.
4. Coat the retainer pin with heat resistant grease, then install it.
5. Install the retaining ring in the following procedure.
   a. While deforming the retaining ring as shown in figure below, partially force it into the groove.
   b. Using the handle of the pliers, press the rest of the ring into the groove little by little.

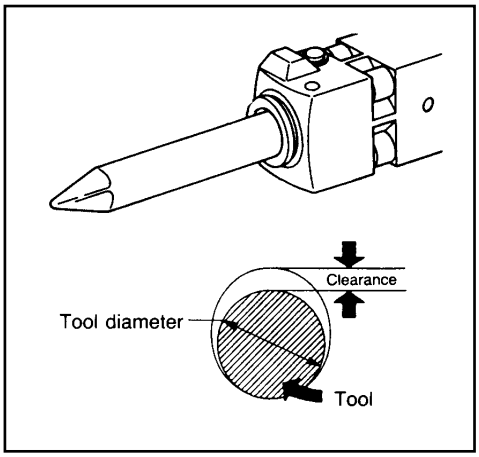


MAXIMUM TOOL TO TOOL BUSHING CLEARANCE

Replace the tool bushing, and/or tool, when the tool to bushing gap reaches the maximum clearance.

Measure the tool to bushing gap with the hammer horizontal, as illustrated below. If the clearance is at, or greater than the charted maximum clearance, then consult the NPK Hydraulic Hammer Service Manual to determine which component requires replacement.

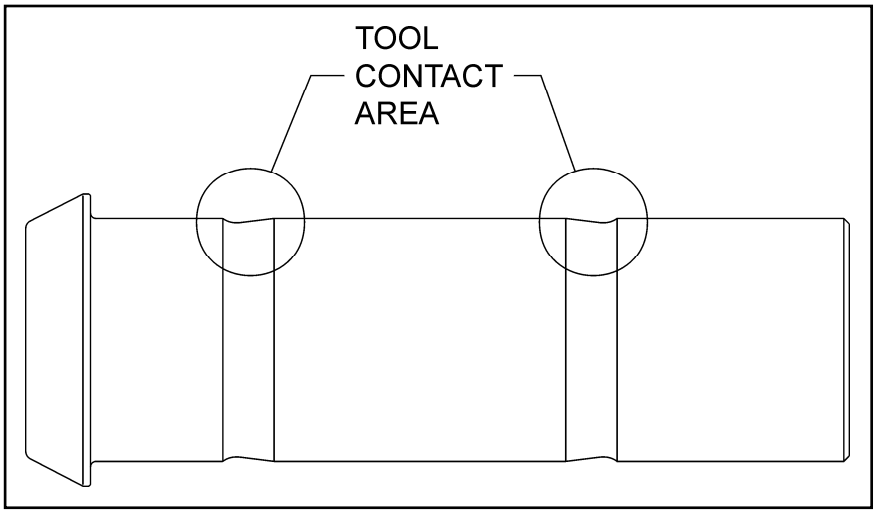
MODEL	*MAXIMUM CLEARANCE INCH (mm)*
H06X	3/16 (5)
H08X	3/16 (5)
H1XA	1/4 (6.5)
H2XA	1/4 (6.5)
H3XA	5/16 (8)
H4XE/H4XL	5/16 (8)
H6XA	5/16 (8)
H7X	11/32 (9)
H8XA	11/32 (9)
H10XB	3/8 (10)
H12X	3/8 (10)
H16X	1/2 (13)
H20X	1/2 (13)
H30X	19/32 (15)



OPERATING THE HAMMER WITH CLEARANCES EXCEEDING THE LIMIT MAY VOID THE HAMMER WARRANTY.

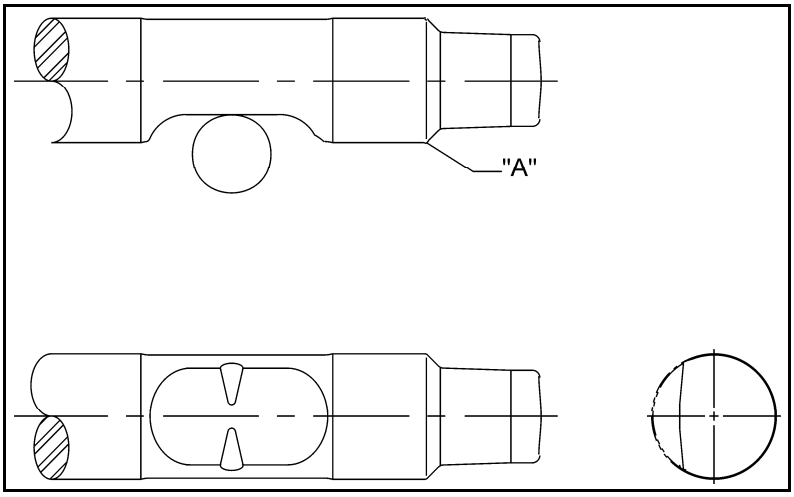
TOOL RETAINING PIN INSPECTION

1. Deformation may occur on the retaining pin in the tool contact area. If this area is mushroomed, the retaining pin may become difficult to remove. Dress with a grinder.

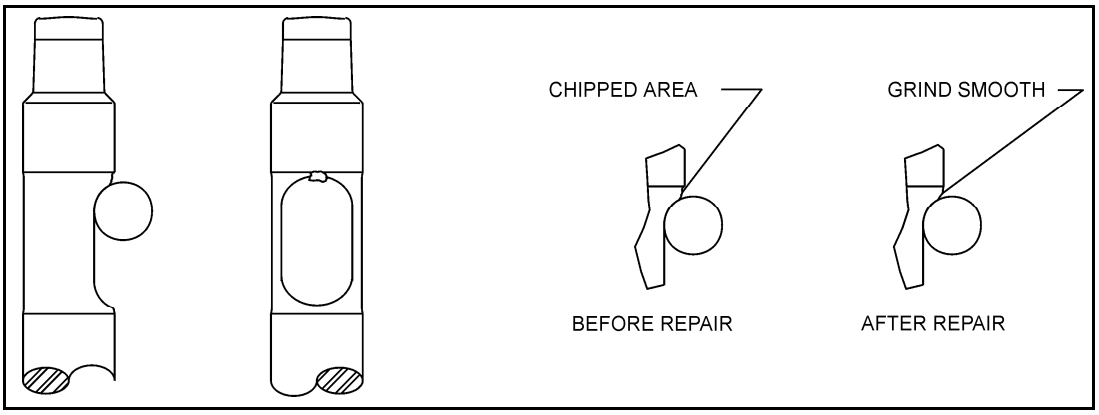


TOOL INSPECTION

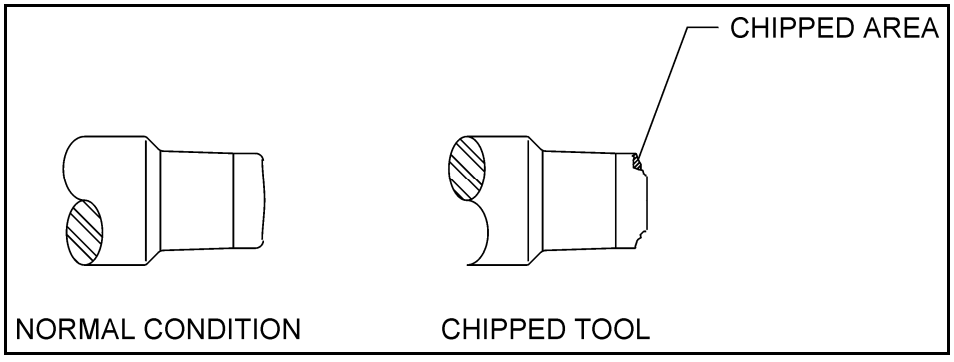
1. Deformation may occur on the tool in the retaining pin contact area or thrust surface (a). If these areas are mushroomed, the tool may become difficult to remove from the tool holder. Dress with a grinder.



2. Excessive blank hammering may cause chipping in the retaining pin contact area. If neglected, the chipping may reduce the life of the retaining pin. Dress with a grinder.



3. If chipping is found at the top of the tool, replace the tool. If neglected, the piston impact surface will be damaged.



LUBRICATION

CORRECT GREASE AND GREASE INTERVALS

Proper hammer maintenance requires a sufficient supply of the correct grease to the tool (chisel). The tool must be pressed against a hard surface until it stops up inside the hammer. This prevents grease from entering piston impact area and ensures proper distribution of grease between the tool and tool bushings.

GREASE INTERVALS

If the hammer is not connected to an Autolube system, the hammer must be greased at regular intervals to get the best life from the tool and tool bushings. There are two ways to determine grease intervals:

First, grease the hammer at the beginning of the job until grease comes out between the tool and the lower tool bushing. Run the hammer until the shank of the tool starts to look dry. This determines the time interval for the greasing of this particular hammer on this particular job. Typically, this is 1 to 4 hours. Also, note the amount of grease needed to re-grease the tool. This gives you the amount of grease and how often it must be applied. An example would be that a particular hammer, on a particular job, requires half a tube of grease every 3 hours. This would be the greasing schedule you would set up. If this hammer was moved to another job, another grease schedule may have to be determined.

Second, if you can't control the grease schedule, such as rental units, then have the operator grease the hammer once every hour of hammer operation. Again, grease the hammer until grease comes out between the tool and tool bushing. This is usually more often than required, but is far cheaper than replacing prematurely worn tools and tool bushings.

CORRECT GREASE

The type of grease used is very important. NPK recommends a lithium soap base EP (Extreme Pressure) NLGI #2 Grease, with Moly (Molybdenum Disulfide) or other surface protecting additives. A high drop point (500° F, 260° C) grease is desirable.

On the following page is a list of commonly available greases, by manufacturer and brand name that meet NPK's recommendations. NPK does not endorse any one brand as being superior to another. If you or your customers use a brand not listed, please call the NPK Service Department at 800-225-4379.

LUBRICATION, CONTINUED

CORRECT GREASE FOR HYDRAULIC HAMMERS, continued

MANUFACTURER	*BRAND NAME*
Amalie Oil Co.	LI-2M
Amoco	Rykotac EP Grease Amolith Grease 94601 Rykon Premium Grease EP (Grade 94108) Rykon Premium Moly Grease (Grade 94114) Amoco Molylith Grease 92006
Amsoil, Inc.	GHD
BP Oil, Inc.	Bearing Gard-2
Caterpillar	Multipurpose Molydbenum Grease (MPGM)
Cato Oil and Grease Company	Moly Lithflex CX AS
CITGO	Citgo Extra Range Grease
Conoco, Inc.	Super Lube M EP #2
Dryden Oil Company	Moly EP 2
Exxon	Ronex Extra Duty Moly NLGI 2
Fiske Brothers Refining Co. (Lubriplate)	MO-LITH No. 2
John Deere	TY6333/TY6341 Moly High Temp
Kendall	L-424
Mobil	Moly 372
Muscle Products Corporation (MPC)	PL-10 Powerlift Grease LP-10 Lithium EP Plus
NPK	***Universal Plus Lithium EP Grease*** ***Super Duty EP Grease (water resistant)*** ***Chisel Paste***
Pennzoil	Adhezolith EP 2 Grease
Phillips 66 Company	Philube MW
Shell	Retinax ® AM Grease 71119
	Retinax ® HD Grease
Standard Oil Company	Bearing Gard-2
Sun Refining & Marketing Company	Prestige Moly 2 EP
Texaco, U.S.A.	Molytex EP 2
Union Oil Company	Unoba Moly HD #2
Unocal	Unoba Moly HD #2

LUBRICATION, CONTINUED

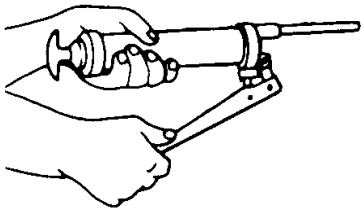
CORRECT GREASE FOR HYDRAULIC HAMMERS, continued

NPK HAMMER GREASE

NPK now offers hammer grease specially formulated to meet severe job requirements. The grease is available in three different temperature ranges - 350°, 500°, and 2000°. All are compatible with Autolube systems.

Universal Plus and *Super Duty* are lithium soap based products that resists washout and contain NPK-10 additive for surface protection in friction effected areas.

Chisel Paste is an aluminum complex soap base with 12% graphite and copper additives for extreme operating conditions.



350°	500°	2000°
NPK UNIVERSAL PLUS LITHIUM PLUS EP2 GREASE	NPK SUPER DUTY EP2 GREASE WATER RESISTANT	NPK CHISEL PASTE EP2 GREASE EXTREME TEMP WATER RESISTANT

UNIVERSAL PLUS 350 deg	***NPK PART NO.***
14 OZ. CARTRIDGE	G000-1010
120 LB. KEG	G000-1020
35 LB. PAIL	G000-1030
400 LB. DRUM	G000-1040

SUPER DUTY 500 deg	***NPK PART NO.***
14 OZ. CARTRIDGE	G000-1011
120 LB. KEG	G000-1021
35 LB. PAIL	G000-1031
400 LB. DRUM	G000-1041

CHISEL PASTE 2000 deg	***NPK PART NO.***
14 OZ. CARTRIDGE	G000-1050

TWENTY HOUR INSPECTION

1. WARRANTY REGISTRATION

Complete and send to NPK after initial 20 hour inspection.

2. TIE RODS AND FASTENERS

Inspect all fasteners and retighten as necessary. Inspect tie rod assemblies for cracked or missing lock plates and lock rings on hammers H-3XA and larger. If these parts are missing, consult NPK Service Department at 800-225-4379. See pages 33, 34, and 35 for torque values.

3. WELDS

Check for cracks, repair as necessary. ***Consult your authorized NPK Dealer or NPK Service Department for additional information.***

4. TOOL RETAINING PIN

Remove the retaining pin and inspect for peening caused by excessive blank hammering. If necessary, grind edges smooth as shown in TOOL RETAINING PIN INSPECTION, see page 25. The retaining pin must rotate freely.

5. DEMOLITION TOOL

Remove the demolition tool and inspect for peening caused by excessive blank hammering. If necessary, grind edges smooth as shown in TOOL INSPECTION, see page 26.

6. GAS CHARGE

Check and adjust, if required, see pages 36 through 40.

ROUTINE INSPECTION AND MAINTENANCE

1. VISUAL INSPECTION

Detect a potential problem early.

✓TIE RODS AND FASTENERS

Inspect all fasteners and retighten as necessary. Inspect tie rod assemblies for cracked or missing lock plates and lock rings on hammers H-3XA and larger. If these parts are missing, consult NPK Service Department at 800-225-4379. See pages 33, 34, and 35 for torque values.

✓WELDS

Check for cracks, repair as necessary.

✓HOSES AND TUBING

Check for oil leaks, loose clamps and hose abrasion.

✓RUBBER MOUNTS

Inspect for damage.

✓HYDRAULIC OIL

MAINTAIN A CLEAN HYDRAULIC SYSTEM

If non-petroleum oil is used, contact NPK Service Department for compatibility.
Keep hoses clean and capped when dismounting or storing hammer.
Change oil and filters as recommended by carrier manufacturer.

2. DEMOLITION TOOL LUBRICATION

Important:

It is imperative that grease is maintained in the tool bushing contact area at all times. This may require hourly greasing depending on job conditions.

Important:

The hammer must be in a vertical position with downforce applied to push the tool all the way in. This prevents grease from entering piston impact area.

USE A GOOD QUALITY, HIGH TEMPERATURE EP#2 GREASE CONTAINING ANTI-WEAR ADDITIVES.

If machine is equipped with an AUTOLUBE System, check grease reservoir daily.

3. TOOL and TOOL BUSHING WEAR

Check the tool and tool bushings for damage, wear or deformation on a regular weekly basis. Replace the tool and/or bushings when wear exceeds the maximum clearance limit. See MAXIMUM TOOL TO TOOL BUSHING CLEARANCE, see page 24.

⚠ WARNING

Do not hardface or sharpen the tool point with a cutting torch. Excessive heat from torching or welding causes embrittlement, breakage, and flying pieces. Resharpen only with a lathe or milling machine using sufficient cooling.

Please consult your authorized NPK Dealer or NPK Service Department for additional information.

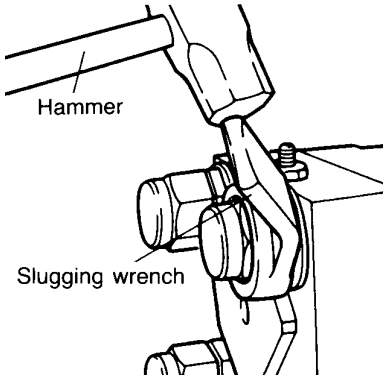
- **DO NOT SUBMERGE HAMMER UNDERWATER**
  Unless modified for underwater operation.

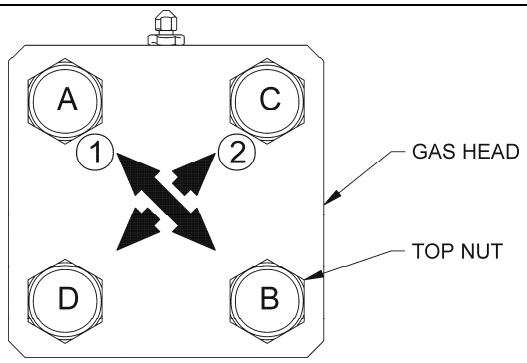
REPLACEMENT OF TIE RODS

A loose tie rod is susceptible to stretching or breakage. The top nuts are designed with a locking plate to prevent the nut from loosening during operation. However, during initial operation, the mating surfaces become seated, and may result in lost tension and loosening of the tie rods, even though the top nut has not turned.

TIE ROD REPLACEMENT PROCEDURE:
If a failed tie rod is replaced immediately, only the failed tie rod needs to be replaced. If the hammer has been operated with a failed tie rod, all four tie rods should be replaced. The following procedure is for the replacement of a single tie rod.

1. Remove all SNAP RINGS (or COTTER PINS) and LOCK PLATES (or RUBBER SPACERS).
2. Remove tie rod / tie bolt to be replaced.
3. Loosen tie rod diagonal from the tie rod being replaced.
4. Apply Lube on the bottom threads of the new TIE ROD and assemble into hammer and thread into the BOTTOM NUT.
5. Apply Lube to the top thread of the TIE ROD and on the WASHER faces. Place the WASHER over the top of the TIE ROD. On some models a pilot diameter fits into the head. ***Note:*** On models using tie bolts with welded on top nuts, place washer on tie rod before installing tie rod into hammer. Apply Lube onto washer surfaces. Thread tie bolt into bottom nut.





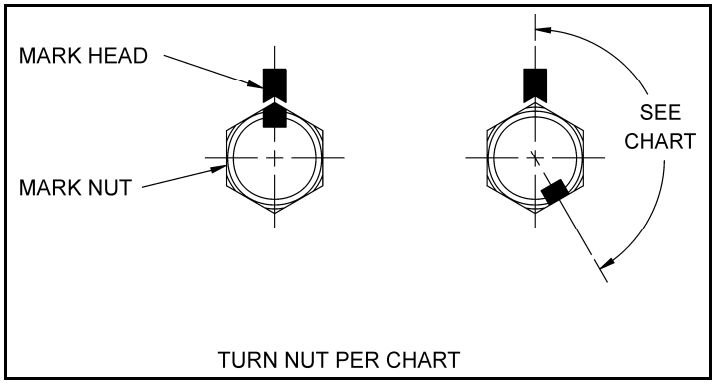
TIE ROD TIGHTENING SEQUENCE

6. Using a TORQUE WRENCH, tighten the TOP NUT on the newly installed TIE ROD / TIE BOLT to 200 ft lbs. Move diagonally to the other previously loosened TIE ROD / TIE BOLT and torque to 200 ft lbs.
7. Mark the TOP NUT and HEAD as shown. Refer to TORQUE CHART - turn of nut method, see page 33.
8. Move to the TOP NUTS, not loosened originally, and repeat steps 2 thru 10.
9. Repeat the same procedure for the third and fourth TOP NUTS, using the tightening sequence shown above, see page 33.
10. Install the LOCK PLATES. Apply silicone to underside of lock plate.
11. Install the SNAP RINGS (or new COTTER PINS).
12. Check the GAS PRE-CHARGE, see page 38.

TIE ROD TORQUE CHART

SEE PAGE 32 FOR DETAILS.

1. Tighten all nuts until sections are drawn up tight.
2. Loosen one nut at a time.
3. Tighten that nut to 200 ft/lbs (270 Nm).
4. Follow the turn-of-nut chart listed below.
5. Follow the same steps on the rest of the nuts.



TURN-OF-NUT METHOD

MODEL	*FINAL TURN-OF-NUT ANGLE*	*SOCKET SIZE in (mm)*
H06X	2 Flats (120°)	1 1/6 (27)
H08X	3 Flats (180°)	1 1/6 (27)
H1XA	2 1/2 Flats (150°)	1 1/4 (32)
H2XA	2 1/2 Flats (150°)	1 7/16 (36)
H3XA	2 1/2 Flats (150°)	1 5/8 (41)
H4XE/H4XL	3 Flats (180°)	2 (50)
H6XA	3 Flats (180°)	2 1/2 (63)
H7X	3 Flats (180°)	2 1/2 (63)
H8XA	3 Flats (180°)	3 (77)
H10XB	3 Flats (180°)	3 (77)
H12X	3 Flats (180°)	3 3/8 (85)
H16X	3 Flats (180°)	3 5/8 (90)
H20X	3 Flats (180°)	3 5/8 (90)
H30X	3 Flats (180°)	4 (100)

*If you have any additional questions call NPK Service Department at 1-800-225-4379.

TORQUE VALUES FOR HAMMER FASTENERS

High strength thread adhesive should be used on the valve assembly bolts and the gas charge valve. All other bolts should be lubed.

MODEL	***VALVE CASE***		***VALVE TOP AND BOTTOM CAP***		***SWIVEL ADAPTOR***	
	BOLT DIA	*TORQUE FT/LB (Nm)*	*BOLT DIA*	*TORQUE FT/LB (Nm)*	*BOLT DIA*	*TORQUE FT/LB (Nm)*
H06X	M12	85 (115)	M10	50 (68)	-	-
H08X	M12	85 (115)	M10	50 (68)	-	-
H1XA	M12	85 (115)	M10	50 (68)	-	-
H2XA	M12	85 (115)	M12	85 (115)	-	-
H3XA	M18	290 (394)	M16	220 (300)	M8	26 (35)
H4XE/H4XL	M18	290 (394)	M12	85 (115)	M8	26 (35)
H6XA	M20	425 (578)	M18	290 (394)	M12	85 (115)
H7X	M24	600 (810)	M20	425 (578)	M12	85 (115)
H8XA	M20	425 (578)	M16	220 (300)	M12	85 (115)
H8XA	M20	425 (578)	M18	290 (394)	M12	85 (115)
H10XB	M20	425 (578)	M18	290 (394)	M12	85 (115)
H10XB	M20	425 (578)	M20	425 (578)	M12	85 (115)
H12X	M27	925 (1260)	M20	425 (578)	M12	85 (115)
H16X	M27	925 (1260)	M20	425 (578)	M12	85 (115)
H16X	M27	925 (1260)	M24	600 (815)	M14	145 (200)
H20X	M27	925 (1260)	M20	425 (578)	M12	85 (115)
H20X	M27	925 (1260)	M24	600 (815)	M14	145 (200)
H30X	M27	925 (1260)	M20	425 (578)	M12	85 (115)
H30X	M27	925 (1260)	M24	600 (815)	M14	145 (200)

NOTE: Some hammers list several torques for valve cap or swivel adaptor bolts. Measure bolt directly, or call the NPK Service Department with the hammer serial number.

TORQUE VALUES FOR HAMMER BRACKET FASTENERS

TORQUES OF ALL BOLTS SHOWN ARE WITH THREADS BEING LUBRICATED.

MODEL	***HAMMER BRACKET***		***RUBBER MOUNTS***		***TOP ADAPTOR BRACKET***	
	BOLT DIA	*TORQUE FT/LB (Nm)*	*BOLT DIA*	*TORQUE FT/LB (Nm)*	*BOLT DIA*	*TORQUE FT/LB (Nm)*
H06X	1 in.	750 (1020)	-	-	-	-
H08X	1 in.	750 (1020)	-	-	-	-
H1XA	1 in.	750 (1020)	-	-	-	-
H2XA	1 in.	750 (1020)	-	-	-	-
H3XA	1-1/4 in.	1500 (2030)	-	-	-	-
H4XE/H4XL	1-1/2 in.	2000 (2700)	-	-	-	-
H6XA	1-1/4 in.	1500 (2030)	-	-	1 in.	750 (1020)
H7X	1-1/4 in.	1500 (2030)	-	-	1 in.	750 (1020)
H8XA	1-1/4 in.	1500 (2030)	M16	155 (210)	1 in.	750 (1020)
H10XB	1-1/4 in.	1500 (2030)	M16	155 (210)	1 in.	750 (1020)
H12X	1-1/2 in.	2000 (2700)	M20	300 (405)	1-1/4 in.	1500 (2030)
H16X	1-1/2 in.	2000 (2700)	M20	300 (405)	1-1/4 in.	1500 (2030)
H20X	1-1/2 in.	2000 (2700)	M20	300 (405)	1-1/4 in.	1500 (2030)
H30X	1-1/2 in.	2000 (2700)	M24	530 (720)	1-1/4 in.	1500 (2030)
	1-3/4 in.	2500 (3400)	-	-	-	-

NITROGEN GAS PRESSURE

The nitrogen gas pressure must be measured with no preload on the tool. Remove the tool; or position the hammer with the tool fully extended against the tool retaining pin. The hammer must not be resting vertical on the tool. The gas pressure in the hammer will vary according to the gas temperature.

PREFERRED METHOD

The preferred method to measure or charge the nitrogen gas pressure is with the hydraulic system temperature stabilized at maximum operating temperature.

ALTERNATE METHOD

The nitrogen gas pressure can be measured or charged at ambient temperature (cold), before operating the hammer. It is recommended the pressure be verified at operating temperature.

IMPORTANT

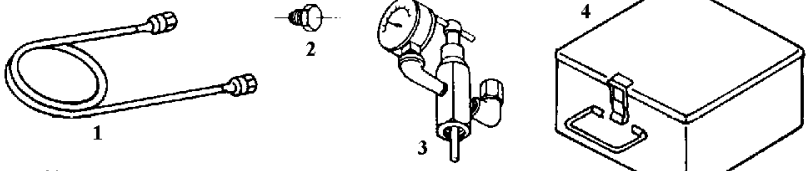
Exceeding the gas pre-charge specifications can result in damaging hammer components. The NPK WARRANTY does not cover failures resulting from exceeding the specified nitrogen gas pressure.

MODEL	AT AMBIENT TEMPERATURE (before operating) PSI (plus 0, minus 25)	AT OPERATING TEMPERATURE (maximum gas pressure) PSI (plus 0, minus 25)
H06X	370 (26)	430 (30)
H08X	370 (26)	430 (30)
H1XA	300 (21)	350 (24)
H2XA	320 (22)	375 (26)
H3XA	390 (27)	455 (31)
H4XE/H4XL	250 (17)	300 (21)
H6XA	340 (23)	400 (28)
H7X	320 (22)	375 (26)
H8XA	340 (23)	400 (28)
H10XB	340 (23)	400 (28)
H12X	290 (20)	340 (23)
H16X	290 (20)	340 (23)
H20X	340 (23)	400 (28)
H30X	450 (31)	525 (36)

GAS CHARGING KIT

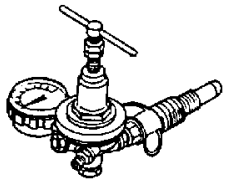
ALL NPK HYDRAULIC HAMMERS are furnished with the following gas charging kit. In addition, a nitrogen tank and pressure regulator valve (not furnished with the hammer) are required. These can be obtained from your local welding supply house. A regulator valve is available from NPK.

Gas Charge Kit
Part No. 7300588



1 Hose (Part No. 20118010)
2 Plug (Part No. 30102050)
3 Charge adapter (Part No. 30604040)
4 Charging kit box (Part No. 35001030)

OPTIONAL REGULATOR VALVE
NPK PART NUMBER 21101050

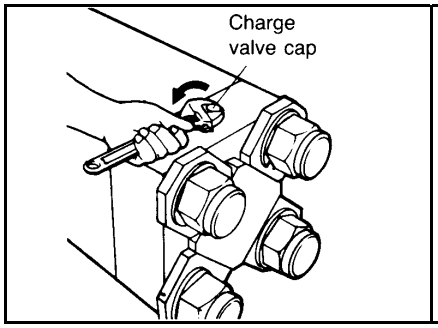


CHECKING THE GAS PRESSURE

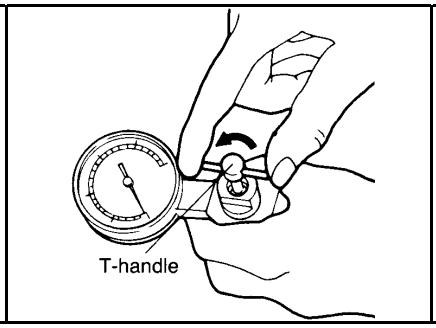
Inspect the nitrogen gas pressure every 100 hours.

PROCEDURE

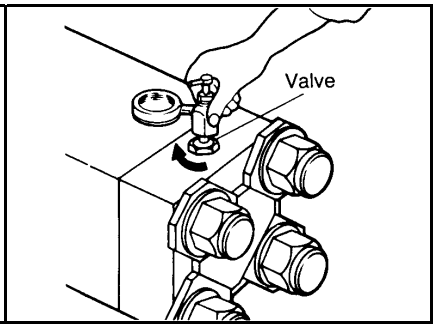
1. The gas pre-charge is measured with no preload on the tool. Remove the tool or position the hammer with the tool fully extended. THE HAMMER MUST NOT BE RESTING ON THE POINT.



2. Remove the charge valve cap.

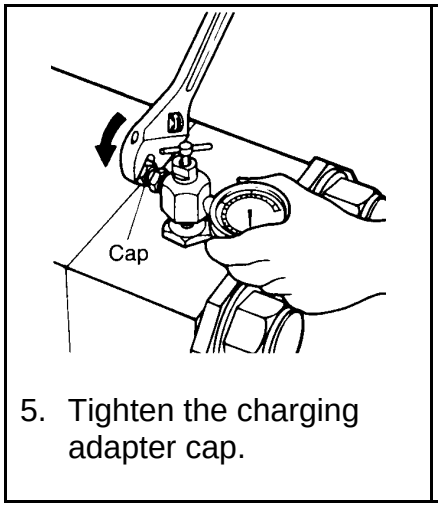


3. Turn the NPK charging adapter T-handle counterclockwise until it stops.

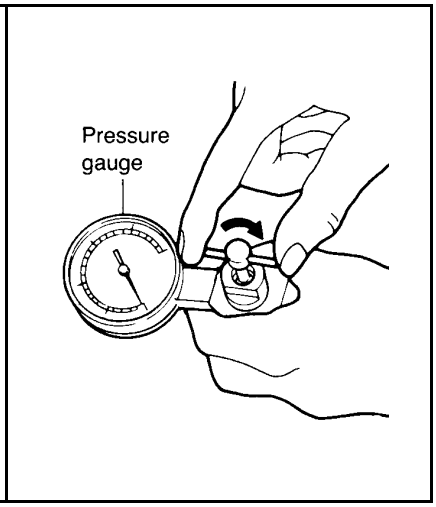


4. Install the NPK charging adapter on the hammer charge valve.

⚠ CAUTION ***Remove the valve cap only, not the charge valve assembly!***



5. Tighten the charging adapter cap.



6. Turn the T-handle clockwise. As the T-handle is screwed in, a resistance is encountered. By turning the T-handle further, the nitrogen gas pressure will be indicated on the pressure gauge. Stop turning the T-handle when the gauge reads pressure. Do not overtighten.

7. Compare the gauge pressure with the NITROGEN GAS PRESSURE CHART, see page 36. If the gas pressure is 25 psi (2 bar) or more below specification, proceed to NITROGEN GAS CHARGING PROCEDURE. If the pressure is correct go to the next step.
8. Turn the T-handle counterclockwise until it stops as in step 3.
9. Slowly loosen the charge adapter cap to relieve the nitrogen gas pressure trapped in the charge valve.
10. Remove the charge adapter from the hammer charge valve.
11. Replace the charge valve cap on the charge valve.

GAS CHARGING THE HAMMER

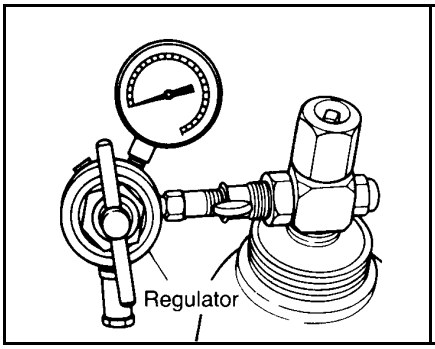
PROCEDURE

1. Carry out steps 1 thru 4 of CHECKING THE GAS PRESSURE, see page 38.

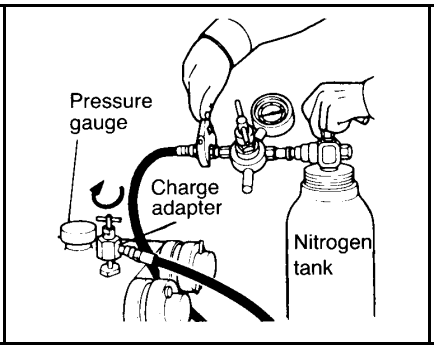
2. Remove the cap from the charge adapter.

⚠ CAUTION

Remove the valve cap only, not the charge valve assembly!

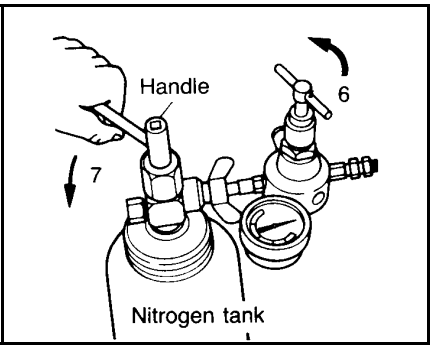


3. Install a pressure regulator on a tank of nitrogen gas.



4. Connect a hose from the pressure regulator on the nitrogen tank to the charge adapter.

5. Turn the T-handle on the charge adapter clockwise.



6. Turn the handle on the tank regulator counterclockwise to full closed.

7. Open the valve on the nitrogen tank by turning the handle counterclockwise.

8. Slowly adjust the regulator on the nitrogen tank to the correct pressure by turning clockwise. See NITROGEN GAS PRESSURE, page 36.

9. Charge nitrogen gas until the pressure gauge on the charge adapter is at the correct setting, then turn the T-handle counterclockwise all the way out.

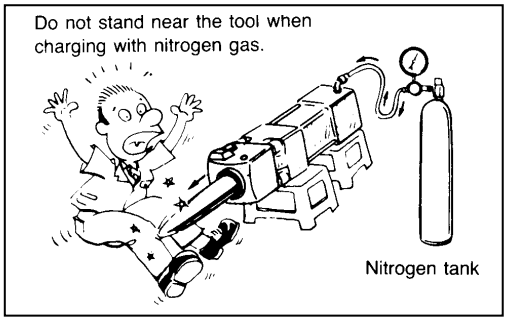
10. Close the nitrogen tank valve and then remove the hose from the charge adapter.

⚠ CAUTION

Nitrogen gas may be trapped in the hose. Loosen fittings slowly to release pressure.

11. Remove the charge adapter from the hammer charge valve.

12. Replace the charge valve cap.

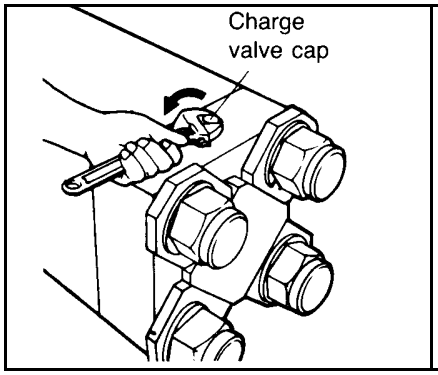


⚠ WARNING

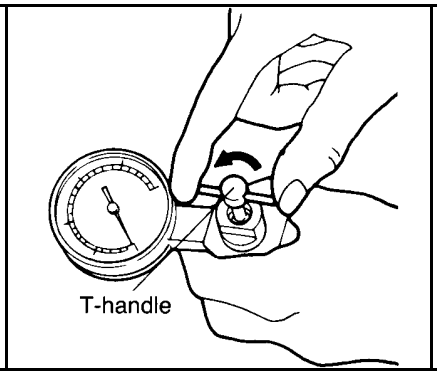
- **STAY CLEAR OF THE TOOL WHILE CHARGING THE HAMMER WITH GAS. The tool may be impacted by the piston and forced out abruptly.**
- **USE NITROGEN GAS ONLY.**

DISCHARGING THE GAS PRESSURE

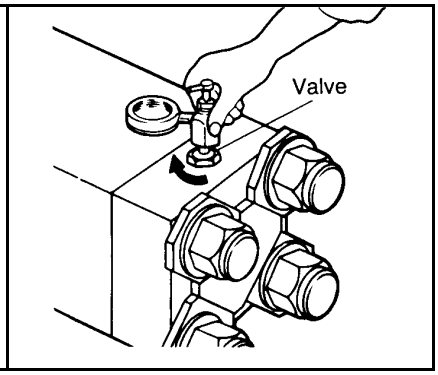
PROCEDURE



1. Remove the charge valve cap.

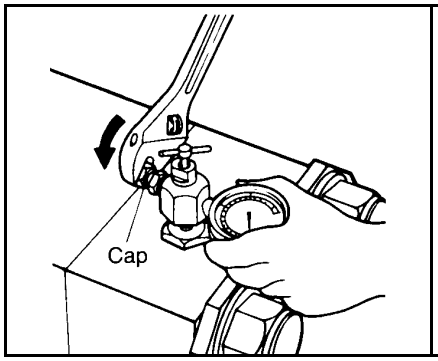


2. Turn the NPK charging adapter T-handle counterclockwise until it stops.

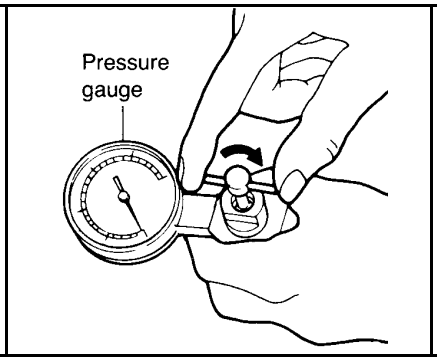


3. Install the NPK charging adapter on the hammer charge valve.

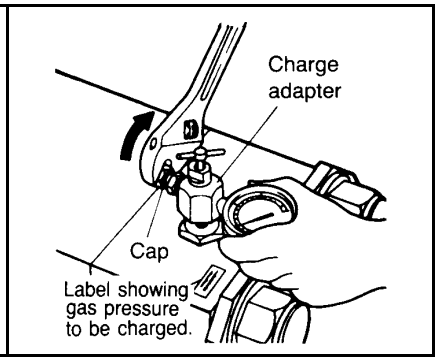
⚠ CAUTION **Remove the valve cap only, not the charge valve assembly!**



4. Tighten the charging adapter cap.



5. Turn the T-handle clockwise. As the T-handle is screwed in, a resistance is encountered. By turning the T-handle further, the nitrogen gas pressure will be indicated on the pressure gauge. Stop turning the T-handle when the gauge reads pressure. Do not over tighten.

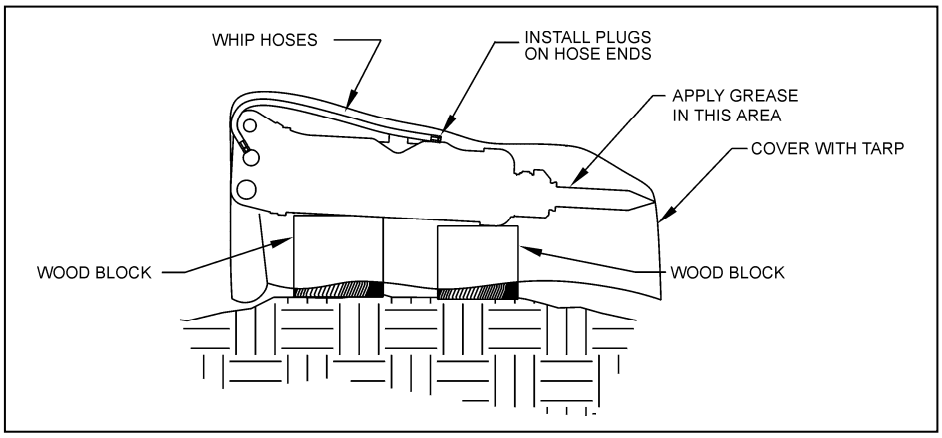


6. Loosen the charge adapter cap VERY SLOWLY. The gas pressure will gradually decrease to zero; then REMOVE THE CAP.

7. Remove the charge adapter from the hammer and reinstall charge valve cap.

STORAGE OF HYDRAULIC HAMMER

For short term storage between jobs, place the hammer horizontal on wood blocks. Be sure the tool is liberally greased and the hydraulic hoses are capped. Cover with a waterproof tarp.



If the NPK HYDRAULIC HAMMER is not to be used for a long period of time (months), it is recommended the gas pressure be discharged. The tool should be removed, and the piston pushed all the way in. Be sure the hydraulic hoses are plugged and grease the exposed end of the piston. Grease and reinstall the tool. Cover with a waterproof tarp.

NOTES

NPK HYDRAULIC HAMMER MODEL NUMBER _____
SERIAL NUMBER _____

NPK INSTALLATION KIT NUMBER _____

BACKHOE OR EXCAVATOR MANUFACTURER _____
MODEL NUMBER _____ SERIES _____
SERIAL NUMBER _____

DATE OF INSTALLATION _____

DATE OF 20 HOUR INSPECTION _____ WARRANTY REGISTRATION SENT ❑

NPK 7550 INDEPENDENCE DRIVE WALTON HILLS, OHIO 44146
PHONE: 440-232-7900 FAX: 440-232-6294

