BHI
HydroRam
Hydraulic Hammer

HK300S
Operation Manual
& Parts List

Best Hammer Industries

FOREWORD

We thank you very much for your purchasing of our BHI HydroRam Hydraulic hammer.

To obtain the best performance of your hammer under any working conditions, you need to do proper handling, regular inspection and maintenance. Otherwise the hammer may fail to display its full capacity or result in various troubles of the certain parts.

This Operation Manual and Parts List provide you with all the information you need to correctly use for maintenance. Please read carefully this publications prior to the installation and operation in order to prevent any possible mishandling of the hammer and minimize the down time of the equipment. Any inquiry related to the maintenance and service through your local dealer will be highly appreciated.

BHI dealers and service workshops are equipped with the necessary special tools and well-dimensioned parts stocks where only genuine parts are used for service and repairs. We guarantee that a faithful compliance of the instruction will contribute to the best operational conditions. Customers are, therefore, required to keep in mind that the manufacturer is not responsible for troubles caused by not following our instructions or not using the genuine parts.

BHI reserves the right to make changes of the product without prior notice and without assuming any responsibility to carry out the same change to products already sold or manufactured.

Note! The descriptions in this book do not apply to any particular specification. Both standard and optional equipment are covered, and each hammer is equipped and set in accordance with each specific order. Consequently, standard and optional equipment are not marked in the text of this book.

Best Hammer Industries
Technical Information

INDEX

Ⅰ. INTRODUCTION

BHI HydroRam Hydraulic Hammer, designed and built to provide durable operation under any working conditions, has been developed by BHI's excellent engineers with accumulated technology and experiences for many years.

This Manual contains safety, operation and routine maintenance instruction. It does not contain disassembly for service.

Do not operate the hammer unless the following safety instructions have been thoroughly read and understood. Read this Manual before installing, operating or maintaining the equipment.

Job applications are as below.

Construction sites:
Concrete demolition, general construction, rock breaking including trenching.

Mines & quarries:
Primary breaking and secondary breaking

Ⅱ. SAFETY PRECAUTION

Please familiarize yourself with the operating instructions and appropriate regulations before starting to work with the hydraulic hammer.

Safety notices in Operation Manual follow ISO and ANSI standard for safety warning.

⚠ DANGER

Notices indicate an imminently hazardous situation which, if not avoided, would result in death or serious injury.

⚠ WARNING

Notices indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

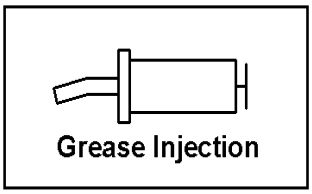
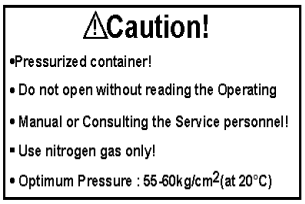
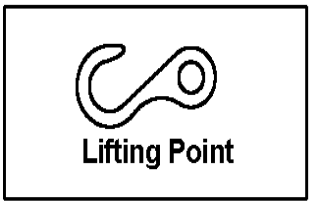
Notices indicate a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.

ATTENTION

Notices in BHI Operation Manuals are an BHI standard to alert the reader to situations which, if not avoided, could result in the equipment damage.

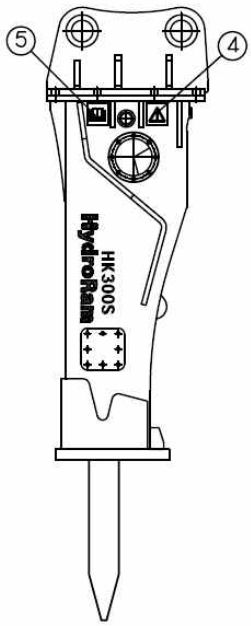
WARNING and BASIC OPERATION INSTRUCTIONS decals are included with each BHI hammer and operation kit. Decals must be installed on the hammer bracket.

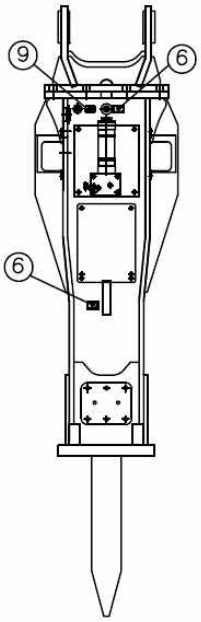
1. Safety Decals

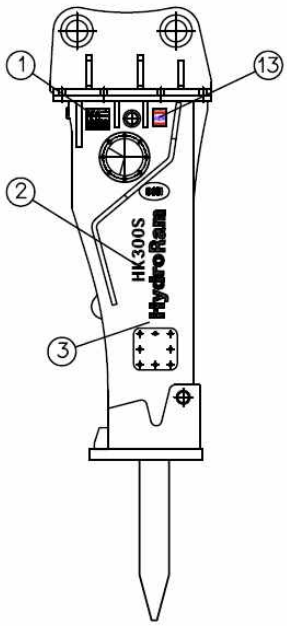
	Sticker	Description	Instruction
1		Head wearing, ear protection	Use hearing protection
2		Operation Manual Service Manual	Read the manual before use
3		Warn a danger nearby job sites.	Keep away the breaking area while the hammer works
4		Grease Injection	Inject grease
5		Caution	Gas Pressurized Container
6		Lifting	Holder Position

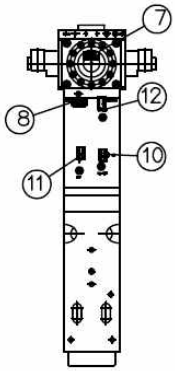
HK300S DECALS LIST

Item / Model		HK300S
0	DECAL KITS	DL695200
1	CE	DL301200
2	MODEL	DL301210
3	HYDRORAM	D7301220
4	WARNING	D1301230
5	READING	D1301240
6	LIFTING	D1301250
7	CAUTION– for Low P.	D4301260
8	CAUTION– for High P.	D9301260
9	GREASE INJECTION	D1301280
10	CYLINDER ADJUSTER	DK301290
11	ON–OFF VALVE	DK301300
12	ADJUSTER VALVE	DK301310
13	AEM MEMBER	DK000530










DETAIL①

HK300S
DETAIL②

HydroRam
DETAIL③


DETAIL④


DETAIL⑤

DETAIL⑥


DETAIL⑦


DETAIL⑧

DETAIL⑨


DETAIL⑩


DETAIL⑪

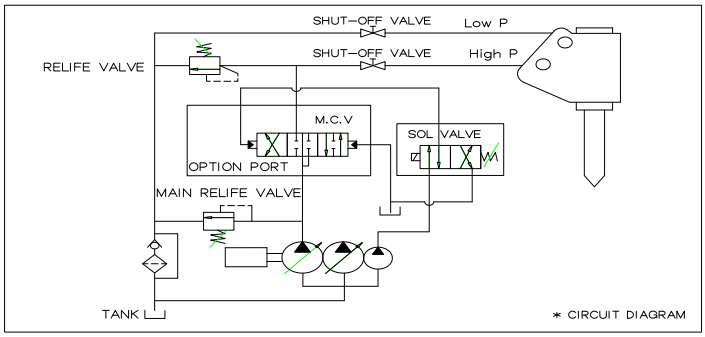

DETAIL⑫

DETAIL⑬

ATTENTION

2. Installation of Hammer

1) When installing the hydraulic hammer, an assistant who must be instructed by the carrier operator is required. All directions and signals, etc. must be understood and agreed on beforehand.
2) Only lifting equipment like crane should be used for transporting the hydraulic hammer.
3) The hydraulic hammer should be installed to the carrier with sufficient load capacity. If the carrier is too light, it may become unstable and fall over.
4) Keep linkage and pin holes clear when installing the hydraulic hammer. Do not touch any parts when the boom is moving. Never use your fingers to check the alignment of the linkage.
5) Collect any oil which leaks out and dispose of it correctly.
6) Operation of the hydraulic hammer requires the installation of hydraulic pipe lines for exclusive use of the hydraulic hammer.
7) The hydraulic system to the carrier must be checked by the authorized service engineer before first operation and after any modifications.



8) After installation of hydraulic pipe lines, check the pressure and oil capacity. Check the relief valve on the hydraulic system, which secures high pressurized accumulator. It must have been approved by the relevant authority. Make sure that the pressure of relief valve has been set correctly, i.e. to the maximum permissible operating pressure of the hydraulic hammer.

Model / Unit	Unit	HK300S
Relief Setting Pressure	Kg/cm^2 / [psi]	210 / [2985]

* The above Relief Setting Pressures are subject to change - efficiency of the pump.

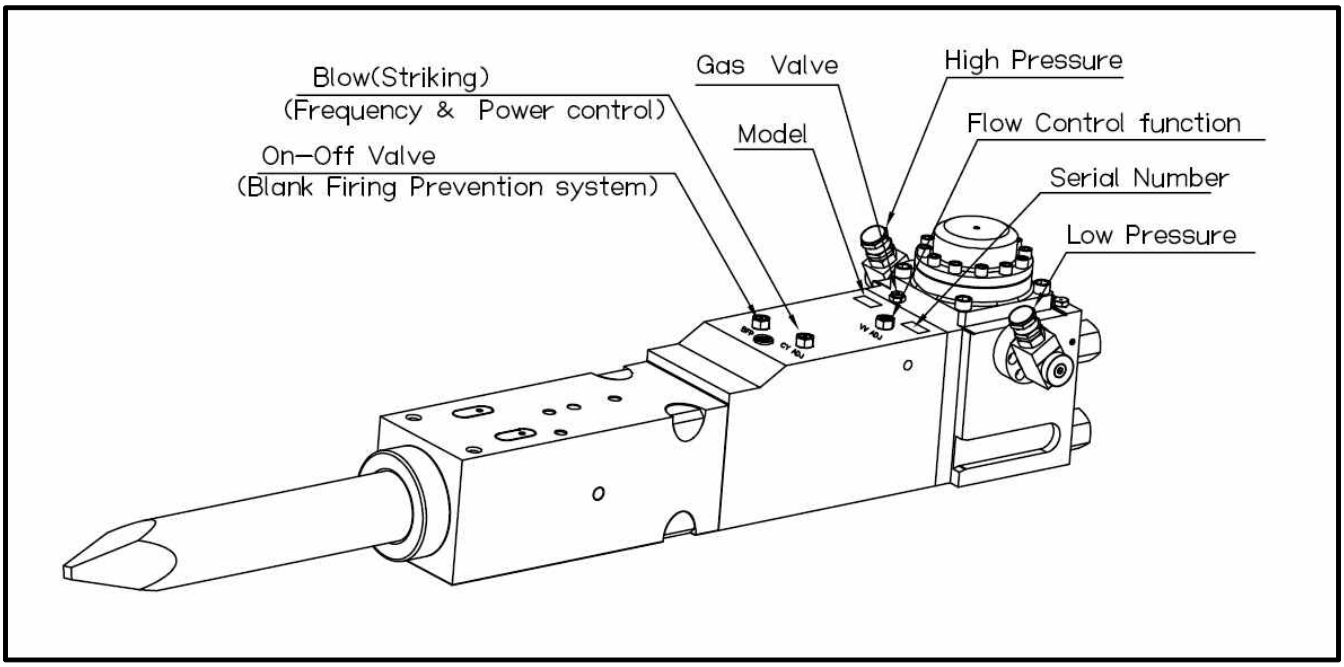
9) Check the connections of the hydraulic hammer and the hammer hoses.
10) The connecting threads must be undamaged and free of sand or similar foreign body.

⚠ DANGER

3. Before operation

1) Check the level and contamination of hydraulic oil in the hydraulic oil tank of the carrier. In case oil is not sufficient, please fill up the same oil and never mix up oils from different manufacturers. Also if it is contaminated, drain it and fill up with new one.
2) Make sure the shut-off valve is completely open.
3) Check for looseness of threads of hose, all kinds of bolts and nuts and re-tighten securely.
4) Grease the shank bore 5 - 6 times by the hand grease pump.
5) Warm up the engine of carrier for five and ten minutes before hammer operation, especially in winter to reach the oil temperature to 30℃~40℃(68°F ~ 104°F). Optimum oil temperature is 50℃~80℃(59°F ~ 176°F).

4. Serial number marking position and Hose connection (High & Low pressure)
Left: high pressure (in-let) line, Right: low pressure (out-let) line



ATTENTION

5. Tool Replacement

1) Always wear the protective glasses and helmet when fitting/removing the tool since metal chips may fly off when the retaining bar is hammered out.
2) Never use your fingers to check the alignment of the recession in the tool to the oblong holes for the locking bars.

⚠ WARNING

6. Hammer Operation

1) Close the front screen and splinter protection apparatus on the cab to prevent

possible injury from flying debris during the hammer operation.

2) In normal operation, the critical cases - the critical noise level of 90 dB(A) is reached or exceeded, the machine operator and any other workers in the noise area must wear personal noise protection gear.

3) The hydraulic hammer should be operated only from the driver's seat and should not be put into operation until both carrier and hammer are in the correct position.

4) Shut off the hydraulic hammer immediately if anyone moves in the danger area, which is much larger for hammer operation than for carrier operation due to the risk of flying debris.

5) When working with a hydraulic hammer, operation of the carrier is governed by carrier manufacturer's safety regulations.

6) The hydraulic hammer is only suitable for the applications described. Never pry with the tools.

7) Check the oil temperature constantly to ensure it does not exceed 80℃. If higher temperatures are measured in the tank, an oil cooler must be fitted.

8) Flying debris from the hammer, tool, rock or other material may cause serious or fatal injury to the operator, personal protection equipment must be used.

9) When operating the hammer, ear, eye and breast protection appliance must be used at all time.

10) Do not operate the hammer in the underwater and mud without proper equipment.

11) Stop the engine before attempting to make any repairs, adjustment or servicing to either the carrier or the hammer.

12) Do not operate the carrier if you are under the influence of drugs or alcohol.

13) Remove hammer from carrier before the transport.

14) Before leaving the carrier, always lower the boom and insure the carrier is stable.

15) Never leave the carrier with the engine running.

⚠ WARNING Danger of Explosion

. N_2 gas cylinder should be used for charging gas into the accumulator and head cap.

. Release all pressure prior to servicing or disassembly.

. Do not open without reading the Manual or consulting the authorized service man! Unauthorized repair work on the accumulator is forbidden. Defective accumulators must be replaced.

. All accumulators are subjected to recurring tests by experts, at the latest after 5 years.

⚠ CAUTION

All hydraulic oil brands used in the carrier units are suitable for operating. The use of other hydraulic fluids is only permissible after consulting with our service station. In summer and in regions with high temperatures, it is recommended that oils with a viscosity of category H-LP 36 or higher be used. At temperature lower than -20℃(4°F), the hydraulic

hammer should not be put into operation.

ATTENTION

Apply grease at least once a day. Grease the tool bit at least every 2 or 3 hours more often if the tool becomes dry or material is extremely dusty or abrasive, using hand grease pump. Pump 5 - 10 times. When changing tool, clean and grease the shank bore. Insufficient greasing may cause abnormal wear of the tool holder bushing and tool, and tool breakage.

⚠ WARNING

Injury or death can result from improper operation or maintenance.
Please read and understand this Operation Manual!!!

ATTENTION

Preserve the environment !!!

When dispose of the waste Hydraulic Hammers, obey all local, state of federal regulation for the industrial waste.

Ⅲ. WARRANTY

Warranty period is six(6) month. Below parts are wear parts. These parts are not covered by the warranty.

Wear parts : Diaphragm, backup ring, buffer ring, o-ring, round bushing, stop pin, spring pin, tool holder bushing, retainer pin, tool and seal kit sets.

The warranty condition could be changed by individual contract, but it should be confirmed in writing by BHI in advance.

ATTENTION

1. The followings are not covered by warranty.

. Normal wear and tear of the hammer and any part thereof
. Failure, damage or defective condition due to:
- overloading, negligence or improper installation, use or operation which are is not accordance with BHI's published instructions or its authorized distributors.
- improper repair, alteration or adjustment made to Hydraulic hammer or its parts.
- use of unauthorized parts, fluids or tools.
- corrosion or failure to protect from adverse environmental conditions.
- faulty or improper condition of the carrier on which the hydraulic hammer was installed.

ATTENTION

2. After installation of the Hydraulic Hammer

After installing the Hydraulic Hammer, make sure if it is installed correctly and a copy Delivery Record with all signature should be mailed back to BHI.

When it is not and hammer is broken down, we are going to charge for the needed parts.

ATTENTION

3. During under warranty

In case during under warranty you have problem with your hammer, the claim application under warranty form should be filled out and mailed to BHI.

Website : www.bhice.com

Best Hammer Industries

5-91, Daepoong-ri, Daeso-myun, Eumsung-kun
Choongbook-do, Korea
Tel: (82-43) 532 - 1370~1, Fax:(82-43)532-1372
E MAIL: qa@bhice.com

DELIVERY RECORD

To: _____

Owner: _____ Address: _____

Distributor: _____ Address: _____

Service Shop: _____ Address: _____

Model of Hammer: _____Serial No.: _____ Delivery Date: _____

Model of Carrier: _____

A. Checked on the following items: Symbol for inspection
Normal :V, Clean :C, Adjust :A, Disassembly :D, Refill gas :G
Lubricate :L, Repair :M, Replace :R, Tighten :T, Not remedied :X

1. Hammer body: ☐ Accumulator gas pressure ☐ Operating pressure
☐ Head cap gas pressure ☐ Operating sound
☐ tool Holder lubrication ☐ Oil leakage
☐ Rubber plugs

2. Bracket Frame: ☐ Bolt looseness ☐ Pins lubrication

3. Piping: ☐ Tightening of fittings ☐ Fully opened shut-off valve
☐ Oil leakage ☐ Relief valve set pressure

4. Controls: ☐ Adjustment of control cable ☐ Pins lubrication
☐ Engine throttle lever position ☐ Caution at operation sticker

5. Carrier pump: ☐ Characteristics ☐ Performance

6. Hydraulic oil: ☐ Quantity of oil ☐ Deterioration
☐ Contamination

7. Standard tools: ☐ Quantity

8. Manuals: ☐ Operation manual & Parts list

B. Instructed proper operation and maintenance procedures.
The owner's signature below acknowledges that the hammer above mentioned was delivered to him in a satisfactory condition and he has received proper instruction about the operation and maintenance.

Purchaser signature: _____Date: _____
Distributor: _____Serviceman: _____

Best Hammer Industries

5-91, Daepoong-ri, Daeso-myun, Eumsung-kun
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E MAIL: qa@bhice.com

Website : www.bhice.com

CLAIM APPLICATION UNDER WARRANTY

1. Model & Serial No.:
2. Date of Installation :

1) Manufacturer & Model			
2) Oil supply(gpm)		3) Working Pressure	
4) Return Pressure		5) Relief setting	

3. Carrier:

To insure efficient operation, it is essential that complete and proper hydraulic adjustments have been verified at the time of the installation. Refer to your operation manual for the methods of performing these tests and record the readings that you find on this card. Failure to supply this information or to use BHI parts and tools may result in forfeiture of warranty coverage.

IV. TECHNICAL DATA

Dealer name: Address:		Customer's name and address:		
Completed by:		Completed by:		
Dealer		Customer ---------- ---------- Customer's Signature Date		
---------- ---------- Dealer's Signature Date		Date of repair: Parts used for repair:		
			Part No.	Part Name	Q'ty
		1			
Details of Failure:		2			
		3			

1. Standard Specifications

		HK300S
Recommended Carrier	Tons	28-35
	US Tons	61,729-77,162
Impact Energy Class	ft.lbs	9,000
Impact Frequency	bpm	L:200~350 H:260~420
Working Weight	kg [lbs]	3,000 [6,600]
Oil Flow	lpm [gpm]	180-260 [47.6-68.7]
Operating Pressure	bar [psi]	160-180 [2,320-6,610]
Tool Diameter	mm [inch]	155 [6.1]
Overall Length	mm [inch]	3,289 [129.4]
Hose Diameter	inch	1¼
85dB(A) Radius	m	27~34

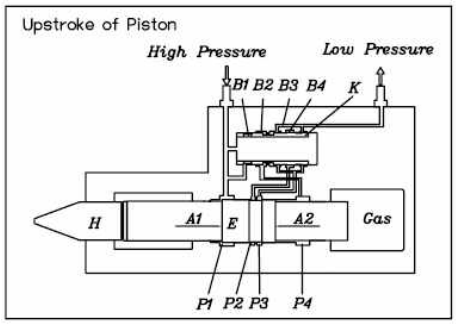
* Specifications may be changed without prior notice.
* Operating Weight : Working Weight (Including Tool and Mounting bracket).
* When you want to install on the incorrect carrier which is beyond our recommended range, you must consult it with an authorizied technical staff. If not, the hammer may have major problems.

2. Principles of Operation

The relation between the area(A2) affecting the pressure from the upper chamber of the piston and the area(A1) affecting the pressure from the lower chamber of the piston is A2>A1 and high pressure applies to A1. When A2 changes from high to low pressure or vice versa, piston (E) reciprocates. Inside of head cap is charged with the high pressure N2 gas and gas energy stored in the upstroke of the piston (E) effectively acts on the piston (E) during the impact.

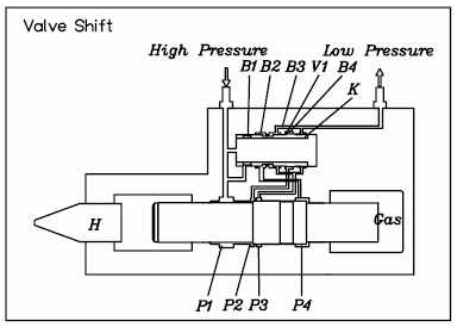
1) Upstroke of Piston

As high pressure always applies to A1 and A2 changes to low pressure, the force affects the Piston(E) upward until it reaches to Cylinder Converting Port(P2). While Piston(E) moves upward, it is compressing the gas contained in the head cap chamber. As high pressure applies to Valve High Pressure Port(B1,B2) and Valve Converting Port(B4) converts to low pressure, Valve(K) remains in the down position.



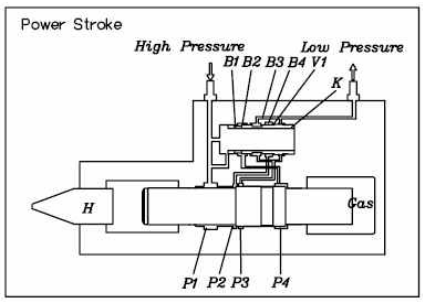
2) Valve Shift

When the area (A1) of the lower chamber of the Piston(E) reaches to the chamber of the Cylinder Converting Port(P2), the chamber of the Cylinder Converting Port becomes and remains high pressure. Cylinder Converting Port(P2) communicates with Valve Converting Port(B4) and delivers the high pressure oil. When the area(V1) of the Valve Converting Port(B4) applies to high pressure, Valve(K) moves upward and shifts. Then Valve High Pressure Port(B2) communicates with Upper Port(P4) of the Piston and oil being pressurized is admitted to Upper Chamber of the Piston.



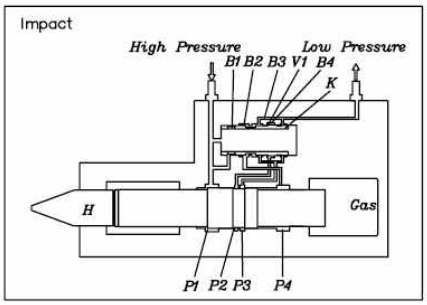
3) Power Stroke

The difference of the area A1<A2 makes the Piston(E) move downward until Cylinder P2 Port communicates with P3 Port. When the Piston(E) comes down, its descending speed is accelerated by the pressure of gas in the Upper Chamber of the Piston.



4) Impact

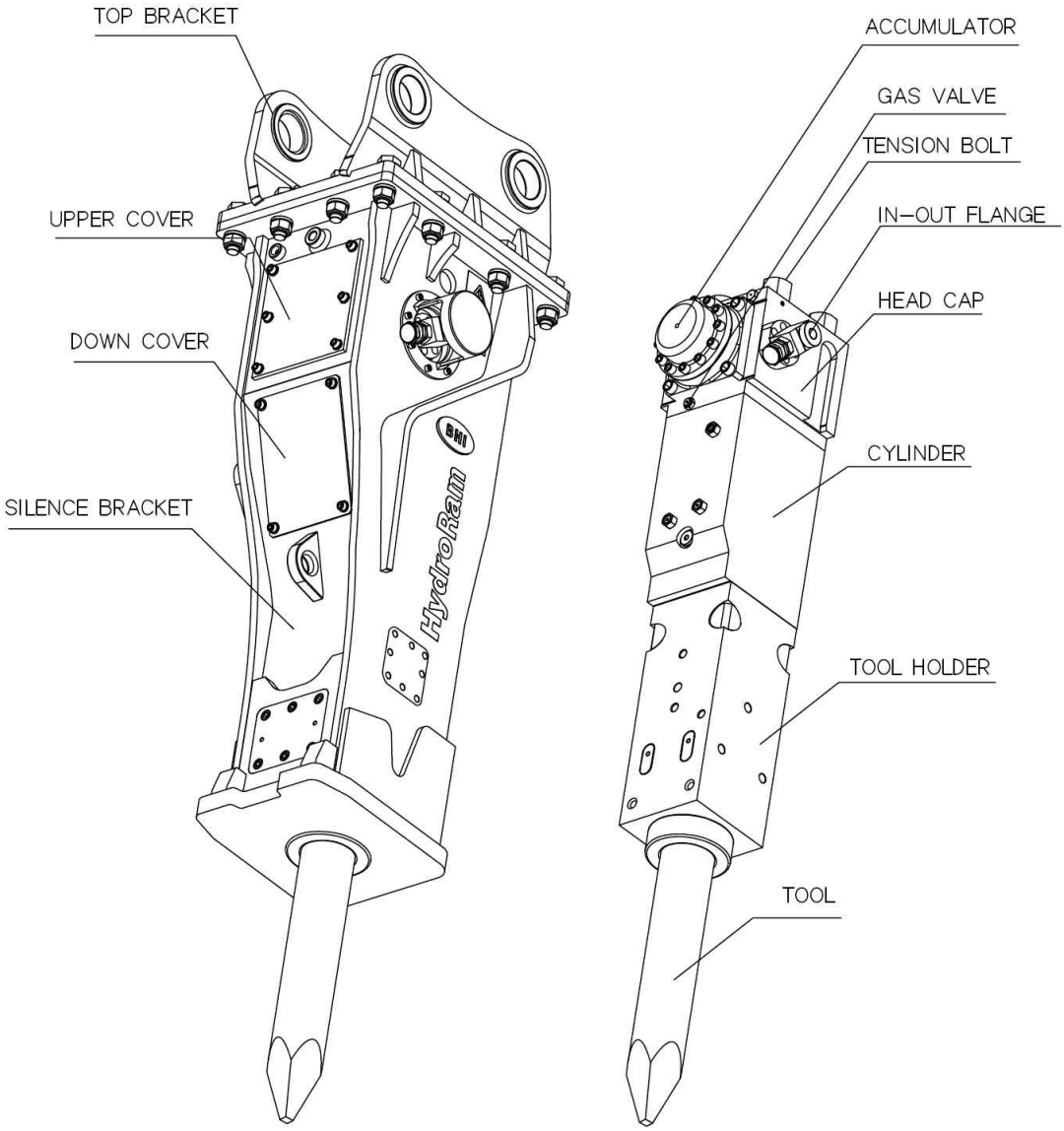
Kinetic energy obtained by the Piston during the power stroke is transmitted to the tool(H) and then impact energy required to break is transmitted to the rock. After that, Piston starts to move upward again.



B1 : Valve High Pressure Port
B2 : Valve High Pressure Chamber
B3 : Valve Low Pressure Port
B4 : Valve Converting Port
V1 : Valve Converting Area
Gas : N2 gas Chamber
K : Valve

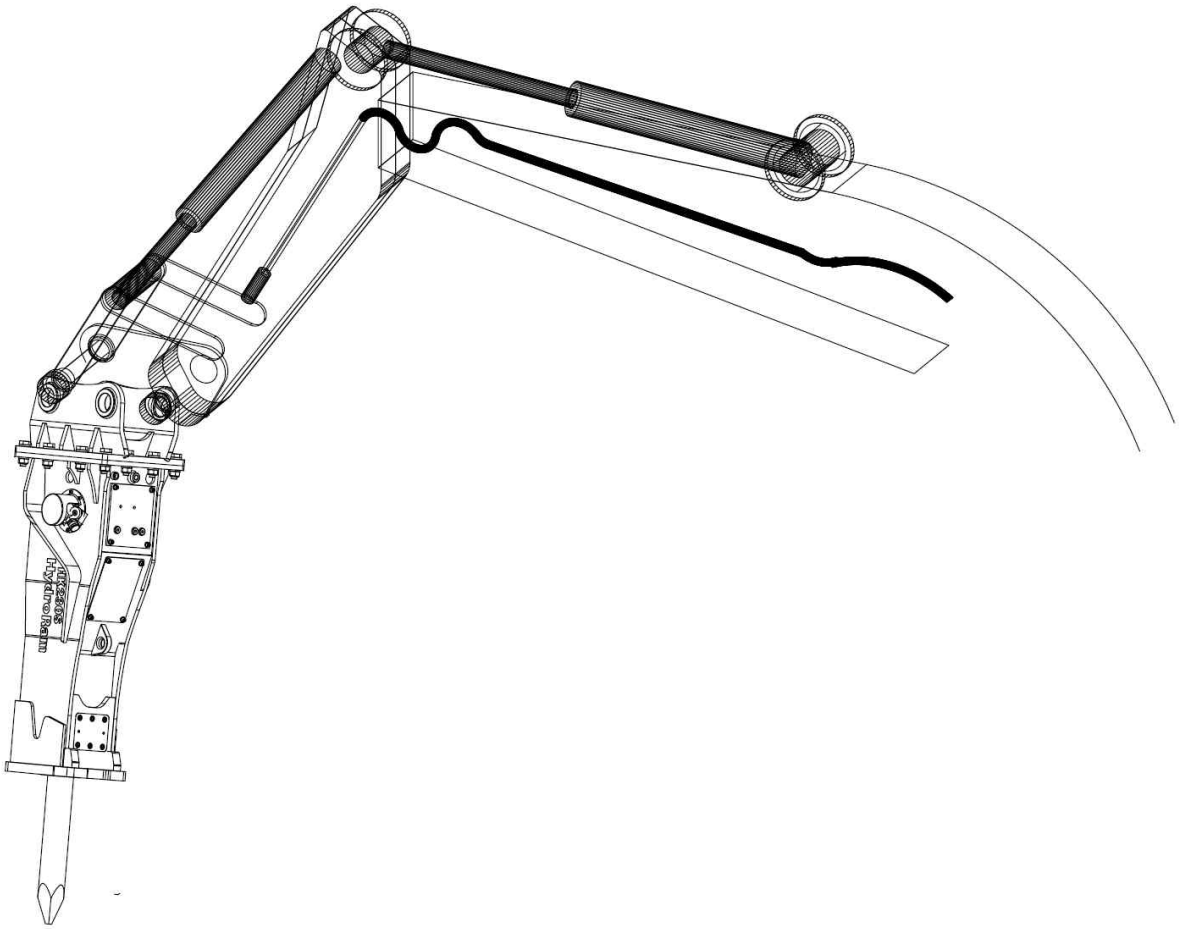
P1: Cylinder High Pressure Port
P2: Cylinder Converting Port
P3: Cylinder Low Pressure Port
P4: Upper Port of the Piston
H: Tool
E: Piston

3. External Dimension - Power cell and Silence Bracket



4. Construction - Excavator & Hammer Bracket

. Top mounted and silence mounted bracket on excavator
must connect with hydraulic pipe lines.



5. Torque Chart

[Units: kg.m / N.m] / lb-ft]

Item	Torque	Item	Torque
Tension Bolt	350kg.m / 3432N.m / 2531 lb-ft	Accumulator Assembly Bolt	100kg.m / 980N.m / 723 lb-ft
Accumulator Cover Bolt	60kg.m / 588N.m / 433 lb-ft	Mounting Bolt	230m / 2255N.m / 1663 lb-ft

6. Valves function

1. Cylinder Adjuster Valve

The cylinder adjuster valve controls the length of the stroke and the power output of the piston. Our Premium series hammers have two stages – by 1.2 times of the speed of the breaker, the energy output is cut in 80%. When we deliver the Premium series hammers to our customers in the overseas countries, we turn the Cylinder adjuster two (2) full turns counter-clockwise to set the breaker at its fastest speed.

2. Adjuster Valve

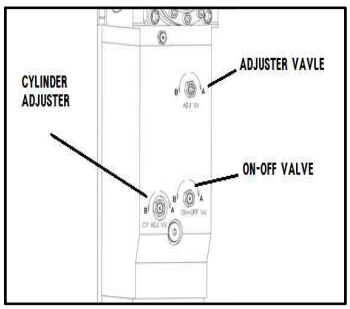
In case you do not get the required speed, we recommend you to turn the adjuster valve counterclockwise 1/4 turn per trial to get the required speed. Please note that turning will cause the change of the pressure inside the power cell. Accordingly turn it slightly.

If the speed is faster than required, you have to turn the adjuster valve clockwise 1/4 turn slightly to reduce the speed.

Note: Adjuster Valve should be adjusted less than 3 turns due to the change of working pressure.

3. Adjustment of the Valves

There are three valves in the cylinder as shown below;



1) Blow Speed Control (Adjuster Valve)
- Initial (standard) turns: 2 turns
In case faster speed is needed,
B direction => turn it counterclockwise (Working Pressure: Down)
In case of slower speed is needed,
A direction => turn it clockwise (Working Pressure: Up)

2) Blow (Striking) Frequency & Power control (Cylinder Adjuster Valve)
- Initial (standard) turns: 2 turns
In case of slower speed is needed,
A direction => turn it clockwise (Working Pressure: Up)

⚠ CAUTION DO NOT TURN THE CYLINDER ADJUSTER VALVE MORE THAN TWO(2) FULL TURNS FROM ITS SEATED POSITION OR IT MAY BLOW OUT OF THE HAMMER CAUSING INJURY OR DEATH TO ANYONE IN THE VICINITY!

4. Blank Firing Prevention system (On-Off Valve)

(1) Initial (standard) turn: 0 Turn

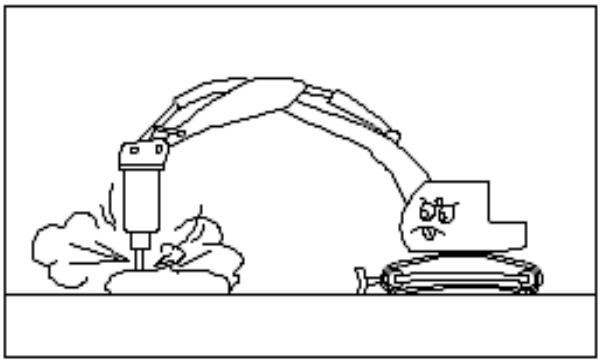
(2) In case of Blank Firing Prevention system:
B direction => Max. 2 turn it counterclockwise

Note: We recommend you to use this system only for the special work. It is performed well when the working tool is completely pushed into the materials to be broken.

V. OPERATION AND HANDLING OF HYDRAULIC HAMMER

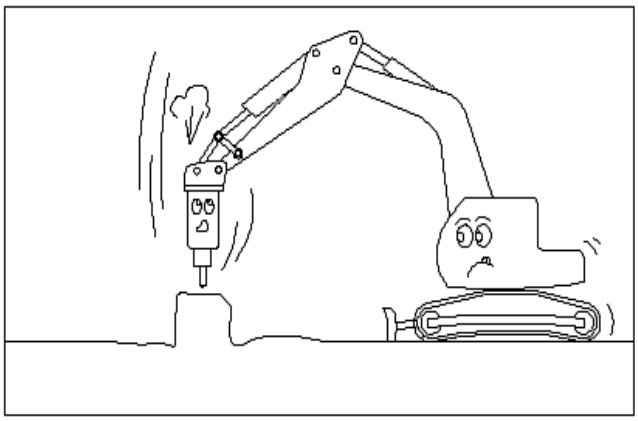
1. Hammer

ATTENTION



1) Proper Positioning

The hammer must be positioned perpendicular to the material. It is especially important to follow this rule when using the hydraulic hammer so that it can correctly test the hardness of the material. If it is improperly aligned, it could respond as though it was working in light material and remain in a high frequency, low impact mode. When it is properly aligned, it selects best frequency impact combination for maximum performance with that material at that particular time. When installing a new Hammer, it is recommended that the Hammer is run in vertical position at about 250~300 blow per minute for one hour. Also after 10 minutes working start is recommended. During that time avoid Hammering in inclined condition. If the frequency is fast, the impact is low. If the frequency is slow, the impact is high.



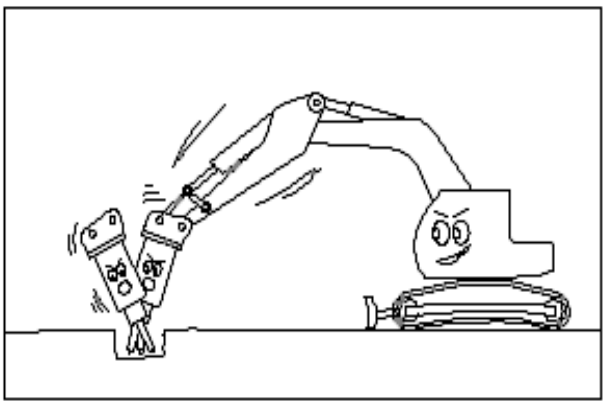
2) Applied Pressure

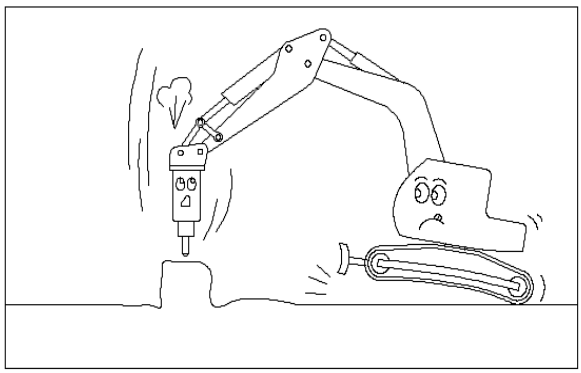
All hammers must have sufficient pressure against the tool to allow the transmission of energy, or the shock wave to flow through the tool to the material being broken. As the tool moves through the material, applied pressure is continuously adjusted by using a combination of the boom, dipper and attachment controls so that the hammer follows the tool.

⚠ CAUTION

Applied Pressure Must be Correct

If applied pressure is insufficient, the tool will dance around on the material rather than sending energy into the rock. When this happens, impact created by the piston is not transmitted to the rock as a shock wave but is absorbed by the hammer and excavator causing abnormal structural fatigue.



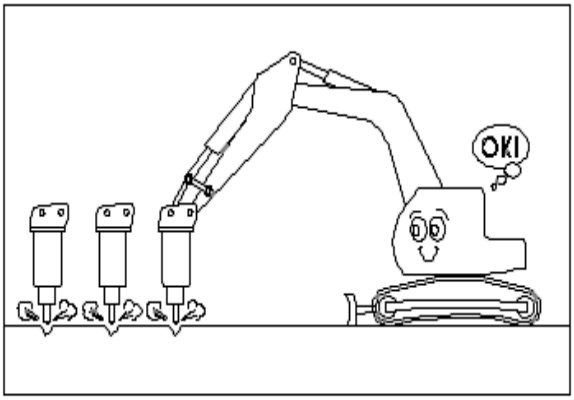


Applied pressure should not lift the carrier high off the ground. As the hammer breaks through the material, the excavator will drop suddenly and harmful shock loads will be transmitted to the tool, power cell and excavator. If the hammer is too heavy for the carrier, the resulting damage will be worse. So it is important to proper size of the hammer to the carrier.

3) Secondary Breakage of Boulders

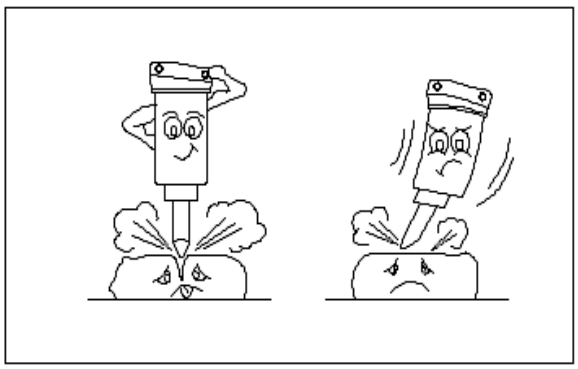
ATTENTION

" Short Bursts = Better Production = Long Tool Life "



When breaking large rocks, do not attempt to break them from the center. It is more efficient if breaking is done from the edge. Take small bits and do not work on one spot for more than 30 seconds. This method will increase your productivity and cause less wear and tear on your equipment.

4) Surface Rock Demolition

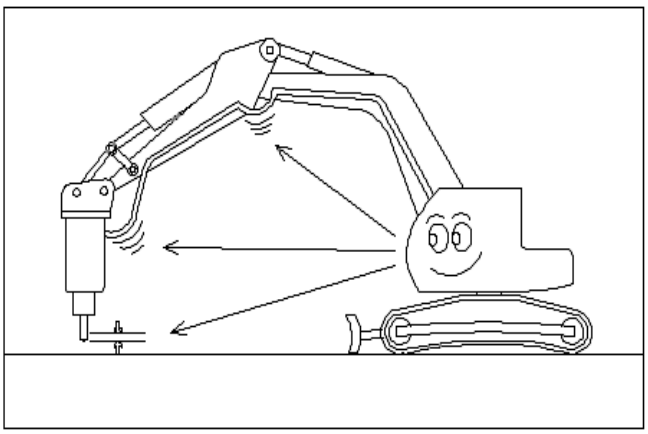


Do not try to break too much at one time. It is wiser to start from the edge and work towards the center.

⚠ CAUTION

Stop Immediately When

.The Hydraulic Hoses Jerk Violently.



Abnormal surging means the nitrogen accumulator is empty. Stop the hammer immediately and repair the accumulator.

.The Tool Does Not Drop.

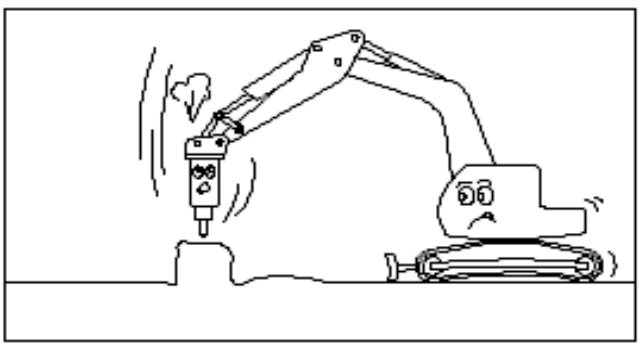
If the visible length of the tool does not change, it usually means the tool has seized in the bushing. Remove the tool and check the bushing. If obvious signs of seizing are present, remove the marks from the tool and bushing or replace as necessary. Then clean and lubricate the shank for installation of the tool.

. Tension Bolt is Loose Or Broken.

Tighten it properly or replace it. You can tell if it is broken or loose by tapping on the bolt and listening for a distinctive high pitched sound.

ATTENTION

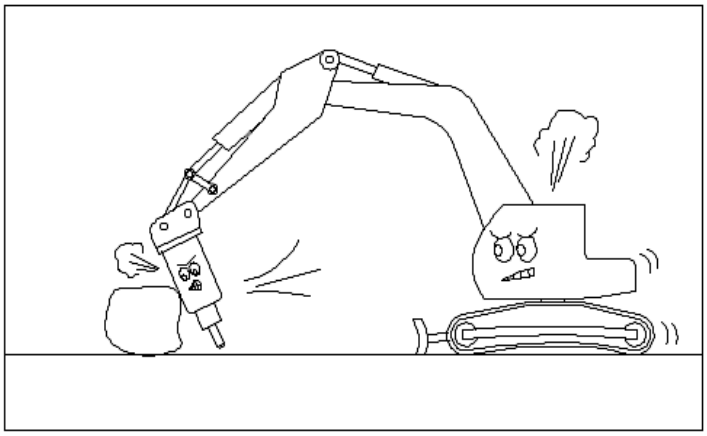
2. Rules to Remember



1) Avoid Blank Hammering At All Times.

If this happens, the piston will strike the tool shank with full impact, forcing the tool against the retainers and causing premature wear and failure to the tool, tool retainers, piston, chuck housing, tension bolts and the hammer itself. And since there is no material to absorb the energy, the shock waves will bounce back up the tool, meeting other waves coming down the tool in violent collisions. These collisions create a disorganized mass of energy, causing extensive wear and tear to the tool and other hammer components.

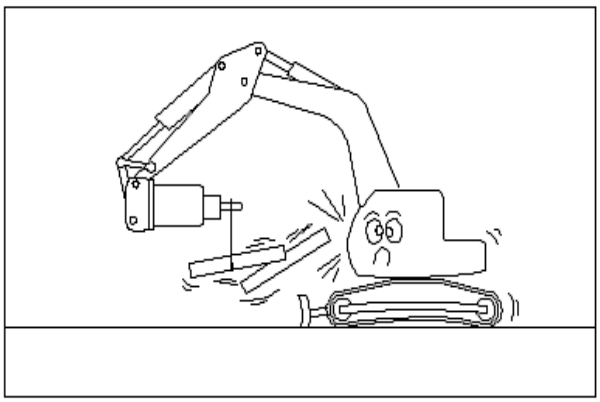
2) Never Use A Hammer For Activities For Which It Was Not Designed.



Insure your hammer features this capacity are normally fitted with a rock hook or some type of protective structure around the chuck housing.

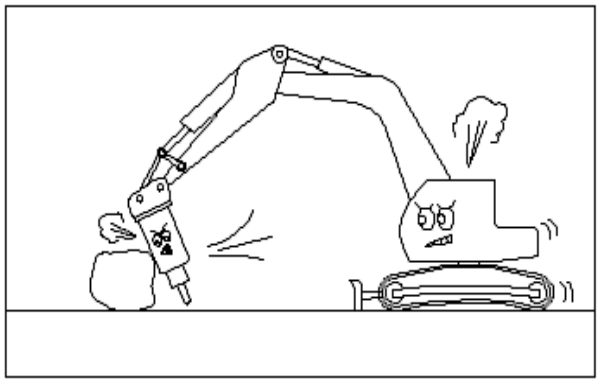
3) Do not use the tool or hammer space as a lifting device.

Not only this is dangerous, but also it can cause damage to the hammer, tool and bushings.



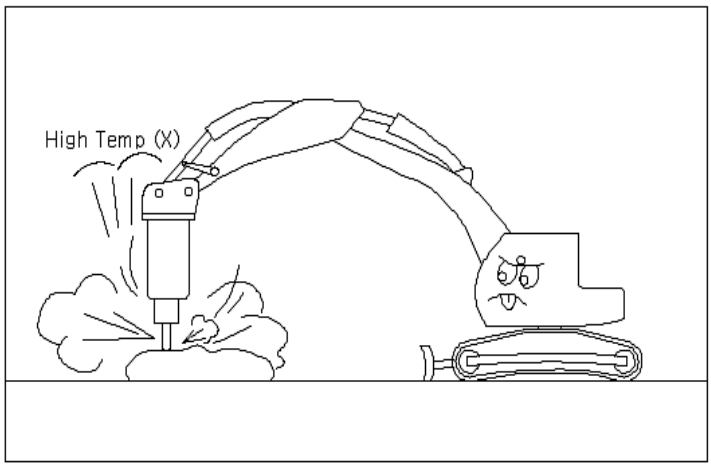
4) Do Not Pry Under Any Circumstances.

Prying is the most common cause of tool breakage. It also causes damage to other hammer components as well as reducing productivity. Prying inhibits of the shock wave through the tool and creates heat buildup in the bushing area.



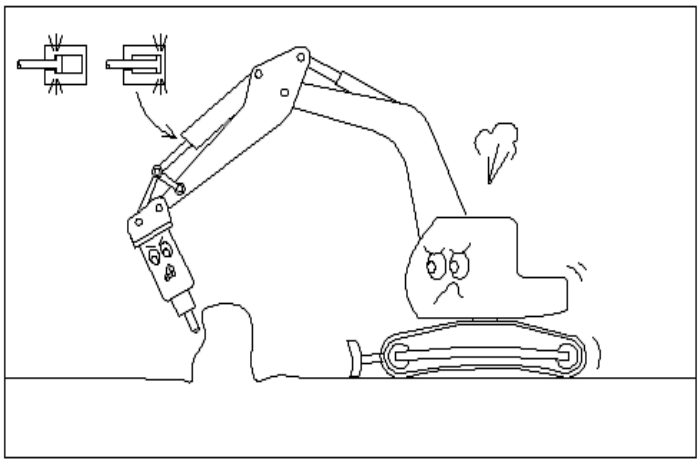
5) In Cold Weather, Always Warm Your Equipment Up Properly Before Operating

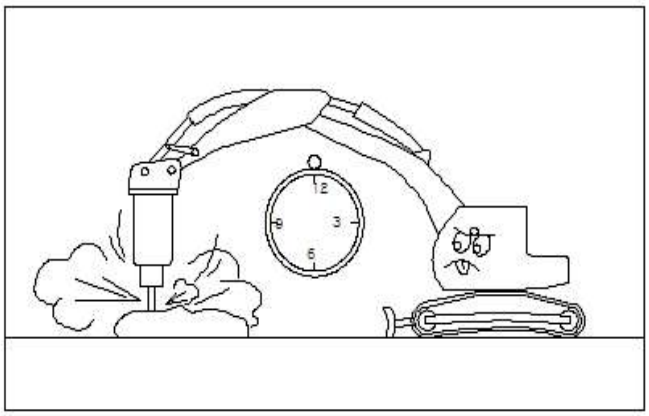
After the carrier is warmed up, suspend the hammer in the air (with the tool extended) to activate the automatic stop. Activate the control to circulate the oil and warm the hammer. Warm the tool bit by operating at slow speeds for five to ten minutes. During extremely low temperatures, store the tool inside.



6) Do Not Allow Cylinders To Reach The End Of Their Stroke

They will not endure the hammer vibrations in this position.



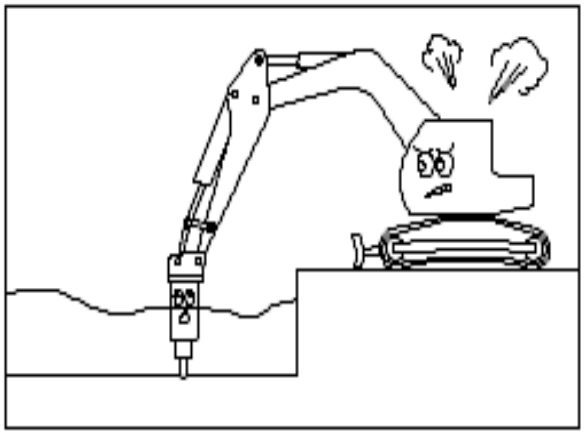


7) Never Let The Hammer Strike On The Same Spot More Than 30 Seconds.

Even 30 seconds can be too long for large Hammers. Working in one spot too long causes heat buildup in the tool, resulting in loss of tool strength and wear resistance.

8) Moves The Tool to New Positions Often.

A power can build up under the tool and dampen the shock wave travelling through the tool and into the material. Move the tool often to avoid this effect.



9) Do not immerse the hammer into water or mud.

When components except tool are immersed in water and mud, piston and other components may be rusted and become damaged at an early stage.

⚠ WARNING

*** For under water operation, please contact us.(option)**

10) Do not touch the tool and hammer body.

During hydraulic hammer operation, it can reach high temperatures.

⚠ WARNING

11) Do not open Accumulator bolt

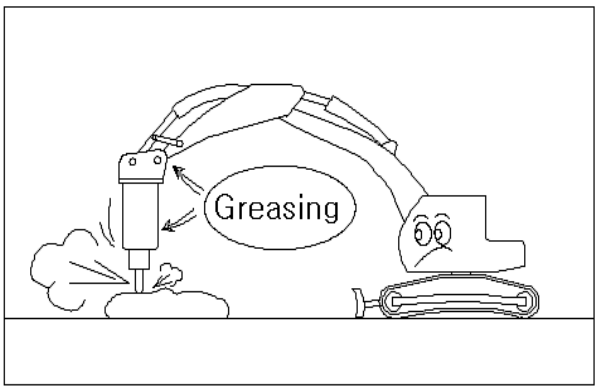
Accumulator is a high pressurized N2 gas container.

ATTENTION

3. Operator's routine maintenance

1) Lubrication

Grease the tool and bushings every two to four hours of operation, more than often in dusty or severe conditions, with five to ten pumps of good quality, high temperature grease.

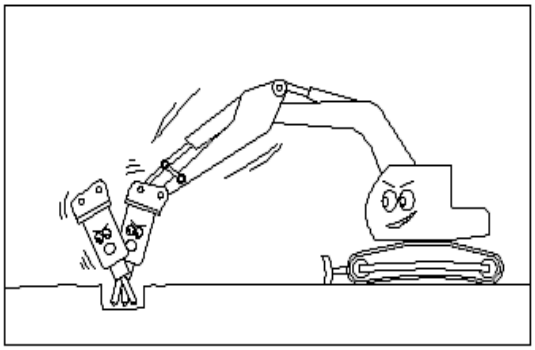


ATTENTION

2) Inspection Points:

(1) Visual Inspection.

Check welds for possible cracks on the bracket cap, rear, tool and boom.



(2) Check for loose nuts and bolts.

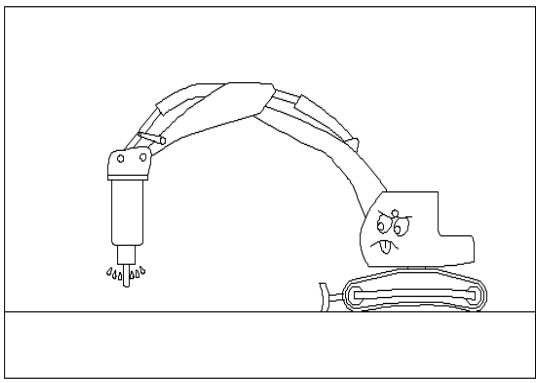
(1) In the bracket cap
(2) In the charging valve
(3) In the accumulator
(4) In the side plates
(5) In the tool holder pin

(3) The tool retainer pins

When replacing tool retainer pins always replace them in sets and rotate then equally.

(4) Excessive oil leakage down the tool

This is an indication of worn or damaged seals that need to be replaced.



⚠ CAUTION

4. Periodic Maintenance (Every 100 hours)

1) Remove the tool and all grease from the tool holder bushing

Do not use a pressure washer, steam, or solvents as they damage the seals. Check for chips or cracks inside the housing and on the bushing surfaces. Cracks and chips could indicate that:

(1) Lubrication is insufficient
(2) Grease type is not appropriate
(3) Blank hammering and side loading is occurring and hammer is being operated improperly.

2) Check wear on tool pin

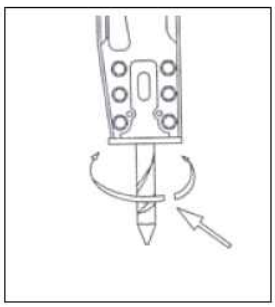
Examine the shoulders and side surface. If they are worn or deformed, rotate or replace as required.

3) Check wear on tool holder bushing

Replace tool, tool holder Bushing or both where the combined wear exceeds 5mm. Some Bushings are grooved to provide even grease distribution. Replace the Bushings when the grooves are worn through. Excess tool holder Bushing wear causes tool misalignment to the piston, causing premature hammer failure.

4) Replace damaged or worn parts

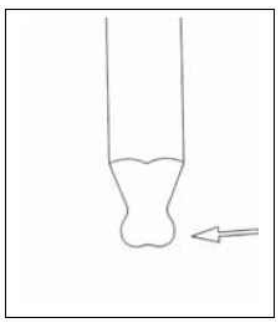
Then wipe all components clean, including the lubrication port. Hand grease the tool shank and inside the chuck bushings before placing it back into the hammer.



5. Factors of Tool Life

1) The type of work (Twisting action)

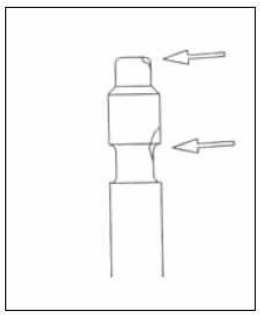
Breaking reinforced concrete, for instance, is more detrimental to tool than concrete without rebar. Twisting action caused by the flat edge of the tool against the tool and retainers.



2) The type of rock

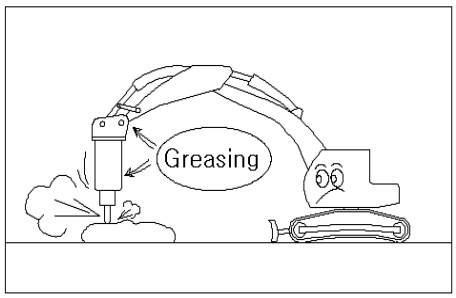
A particularly abrasive rock will wear the tool out faster than less abrasive material. Certain types of rock turn to powder which cushions the impact. This could cause the tool to overheat and mushroom.

3) Blank hammering will chip tool on the top and in the retainer area. These chops accelerate wear and tear on the tool, retainer pins, round Bushing, and the piston.



4) Proper lubrication at all times.

Lack of lubrication will increase the temperature in the bushings and tool shank which ultimately causes deterioration of these components.



ATTENTION

◈ COMMON TOOL ABUSE

. Side loading
. Improper warm-up
. Untrained operator
. Heat build-up from working in one spot.
. Rapid cooling by submersing in water.
. Excessive wear on bushings and retainers
. Machine movement
. Blank hammering
. Prying
. Drilling
. Tool deflection

ATTENTION

◈ Replacement of Tool: When a tool bit is worn out, it is liable to slip. Then, sharpen the tip. But when grinding the tip many times to sharpen the edge, the hardened surface layer would cut off and it makes the rod to be worn out rapidly. When the difference gap between tool holder and tool holder bushing is over 6 mm, then replace tool holder together with the tool.

◈ REPLACEMENT OF TOOL

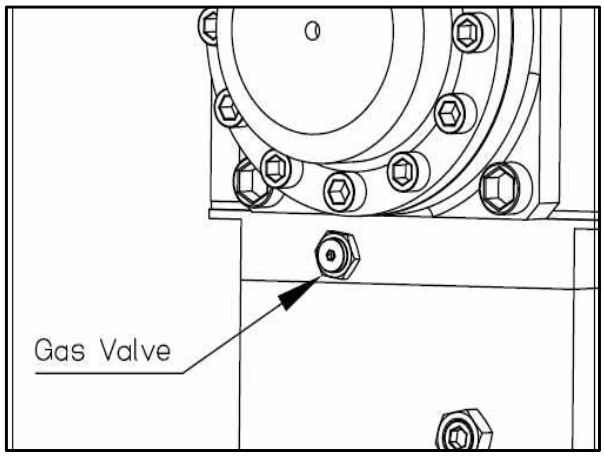
. Put the steel bar into the hole of stop pin and hit the stop pin on the opposite side by hammer.
. Use the steel bar and hit the retainer pin on the opposite side by hammer.
. Push out both of the retainer pins by hammering and pick out tool. The tool is heavy, so careful attention is required.
. Reverse disassembly procedures to install a replacement of the tool.

⚠ WARNING

6. N_2 gas Pressure Maintenance

1) Inspection of N_2Gas Pressure Inside Head Cap (same as the Accumulator)

(1) Remove the cap from the gas valve.



(2) Turn the handle of gas charging adapter counterclockwise until it stops.

(3) Connect the gas charging adapter with gas valve.

(4) Fix the cap of gas charging adapter after turning it clockwise.

(5) Turn the handle, so that gas pressure inside head cap is indicated on the pressure gauge.

ATTENTION

. Gas pressure changes according to the position of the tool. Lay down the hammer and let the tool extend fully.

. If it is not optimum gas pressure, it should be set according to the chart as below.

⚠ DANGER

◈ Head cap & Accumulator Optimum Nitrogen Gas Pressure [kg/㎠(psi), at20℃(68°F)]

2) Removal of gas charging adapter

(1) Turn the handle of gas charging adapter counter clockwise until it stops.

(2) Unscrew the cap and release the gas inside the gas charging adapter.

(3) Remove the gas charging adapter from the gas valve and fit the cap of gas valve.

3) How to set the gas pressure

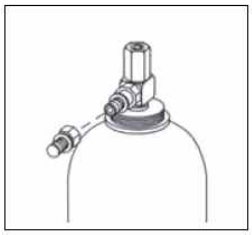
(1) If you loosen the cap slowly after taking the above procedures, the gas pressure will become lower. Tighten the cap at the optimum pressure.

(2) Next procedures are same as removal procedures of gas charging adapter.

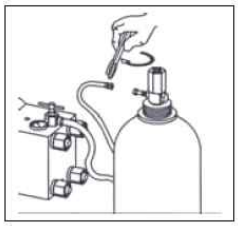
4) Filling N_2Gas

Take the following procedures after of Inspection of N_2gas pressure inside head cap mentioned above.

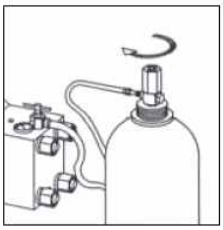
(1) Connect the charging hose to N_2gas cylinder.



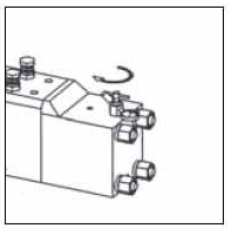
(2) Remove the cap of the gas charging adapter and connect to charging hose. Turn the handle clockwise to tighten.



(3) Open the main valve of gas charging cylinder counterclockwise to reach the pressure gauge to optimum pressure. Close the cap clockwise to stop the gas filling.



(4) Turn the handle of gas charging adapter clockwise and stop when the pressure gauge indicator moves.



(5) Open the main valve of gas charging cylinder slowly counterclockwise again to refill the gas up to optimum gas pressure, reading the gauge indicator.

(6) When the optimum gas pressure is obtained, close the main valve of gas charging cylinder by screwing clockwise. Also turn the handle of gas charging adapter counterclockwise not to leak out. Remove the gas charging adapter finally.

5) Inspection of accumulator

If there is a big tremor on the hose of high pressure line, it means that accumulator does not work. Stop the operation and inspect the accumulator.

⚠ CAUTION

◈ Pressurized container! Do not open without reading the Operation Manual or consulting the authorized service personnel!

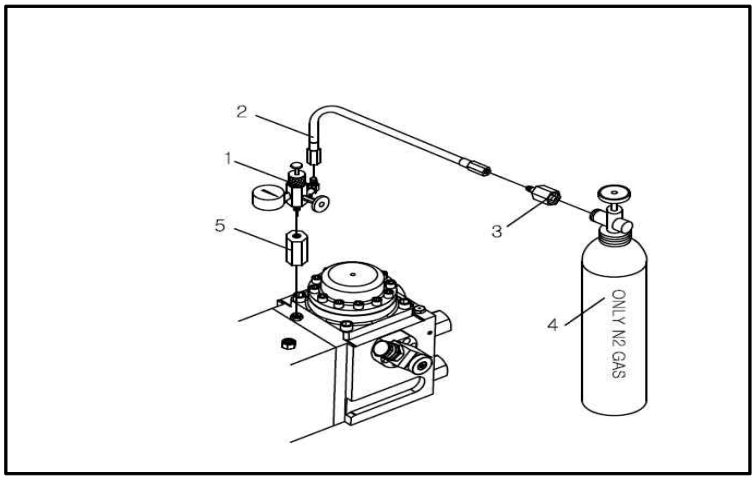
ATTENTION

7. Nitrogen Gas Charging Pressures Table

⚠ CAUTION Depend upon AMBIENT Temperature

1) N_2 Gas Charging Kit Parts List

No.	Part No.	Part Name	Q'ty
0	DA698000	N_2 GAS CHARGING KIT	1
1	13105900	N_2 GAS 3-WAY VALVE ASSEMBLY	1
2	16802000	N_2 HOSE	1
3	13105910	N_2 COUPLING KIT	1
4	13105920	N_2 GAS CYLINDER	1
5	DF300520	EXTENSION STICK (OPTION)	1



2) Head Cap Part (Low Pressure)

Model / Temp		HK300S	
°C	°F	PSI	kg/cm^2 (≒bar)
20	68	242 ~ 256	17.5±0.5

3) Accumulator Part (High Pressure)

Model / Temp		HK300S	
°C	°F	PSI	kg/cm^2(≒bar)
20	68	782~852	55.0~60.0

ATTENTION

8. Maintenance of oil filter

Contaminated oil results in malfunctions of the hammer as well as carrier and cause damage to parts. Pay special attention to oil contamination.

Contaminated oil should be changed without delay. When changing oil, thoroughly wash oil tank, cylinder and pipes. Cleaning or replacing oil filter also requires check for oil contamination. Replacement of filter: first 50hours and every 100 hours thereafter. Replacement of hydraulic oil: every 500 hours.

An oil filter must be fitted in the return line of the hydraulic system with a mesh of no greater then 50 micrometers and a magnetic separator.

⚠ CAUTION

Preserve the environment from the ravages of pollution : When dispose of the waste Hydraulic Hammers, obey all local, state of federal regulation for the industrial waste.

9. Hydraulic oil & grease

1) Hydraulic oil

The following working materials are required to operate the hydraulic hammer.

⚠ CAUTION

Only approved hydraulic oils should be used. All hydraulic oils recommended by the excavator manufactured are suitable for hammer operation. Use of other hydraulic fluids is subject to approval.

Minimum viscosity	32 cSt
Optimum viscosity	46-68 cSt

Check the oil temperature constantly to ensure it does not exceed 80℃(176°F). If higher temperatures are measured in the tank, an oil cooler must be fitted.

2) Grease : NLGI No.2

Shell Alvania EP2
Lithan EP2
Mobilplex 48

⚠ CAUTION

When using oil at a extremely cold or hot weather, it must be selected according to the application. Contact us or the service shop.

ATTENTION

10. Maintenance Checking Schedule

Item		Inspection
1	During the shift	.Lubricate the working steel 2 to 5 times per shift (depending on the conditions) .Check the Bolts - bracket pin part - bracket set bolt part - power cell tension bolt part
2	Daily	.Tighten screw connections .Hydraulic hose & piping leaks .Pipe clamps still fit correctly .Check bracket cracks .Check spring pin & rubber plug
3	Weekly	.Tighten screw connections .Adapter & fitting for wear .Check spring pin & rubber plug .Check impact surface of working steel for chips .Check tool for crack
4	Every 2 weeks	.Check pressure accumulator & head cap .Working steel for wear .Check Tool Holder Bushing for wear .Check Tool Holder Round Bushing for wear .Check Bracket for wear .Tighten screw - Bracket: Pin part - Power cell: Tension Bolt, Hose Adapter part - Bracket : Set Bolt, Mounting Bolt part
5	Every month	.Tighten screw - Tension Bolt - Swivel Cover Bolt .Check wear & damage of Retainer Pin .Check wear & damage of Bracket .Overplus wear point .Hydraulic Fluid, Nitrogen Gas leakage
6	Every 6months	.Change Seal in every 6 months .Change Pads in Silent Housing in every 6 months

ATTENTION

VI. TROUBLE SHOOTING

Dismantle the hammer after releasing the gas from head cap. If the tension bolt is broken, all 4 bolts are to be checked for tight fitting. In case of the extension bolt of accumulator, all 4 bolts are to be checked, too.

. Hammer does not start

	Cause	Required action
1	Pressure and return lines have been mixed up	Connect them correctly
2	Shut-off valve or return lines are close	Open shut-off valve
3	Gas pressure in head cap too high.	Readjust nitrogen gas pressure
4	Damaged screw couplings are blocking pressure or return lines	Replace with new one
5	Defective electric system for hammer operation.	Call authorized service man
6	Defective magnet of valve switch	Replace magnet
7	Operating pressure too low	Inspect the engine speed of carrier and readjust the operating pressure.
8	Lack of hydraulic oil	Fill hydraulic oil

.High frequency and low blow power

	Cause	Required action
1	No gas in head cap: Defective ring of the upper seal	Replace seal ring
2	O-ring is damaged	Replace o-ring

.Working temperature is high.

	Cause	Required action
1	Oil is not sufficient	Refill hydraulic oil
2	Oil flow of the carrier to the hammer is excessive	Reduce the speed of the engine. Adjust the oil pump
3	Oil temperature is high, but hammer is not connected to oil cooler	Connect to oil cooler
4	Defective relief valve	Replace with new relief cartridge

.Low blow frequency

	Cause	Required action
1	Oil flow insufficient	Adjust the speed of engine
2	Couplings of hydraulic pipe lines are loose	Tighten.
3	Shut-off Valve is partially close.	Open it fully
4	Pressure in head cap is low	Charge the gas and adjust the pressure.
5	tool shank is seizing or tool dose not work smoothly	Check the surface of the Tool and Round Bushing. If the tool is seizing, repair with grinder
6	Oil temperature exceeds 80°C(186°F)	Check and refill the hydraulic oil
7	Flow resistance of oil filter and oil cooler are high	Wash or replace oil filter and cooler
8	Inner diameter of return line is small	Replace return line more than 25mm of inner diameter
9	Return pressure is high	Check the pressure
10	Return line connects to control valve.	Return line must be connected directly to the oil tank or filter
11	Defective diaphragm of accumulator. Lots of tremor of the hose can make damage at the entrance of hammer!	Replace the diaphragm
12	Hydraulic oil pressure is low	Check the pressure and if it is red, replace with new pressure relief cartridge.

.Oil leakage

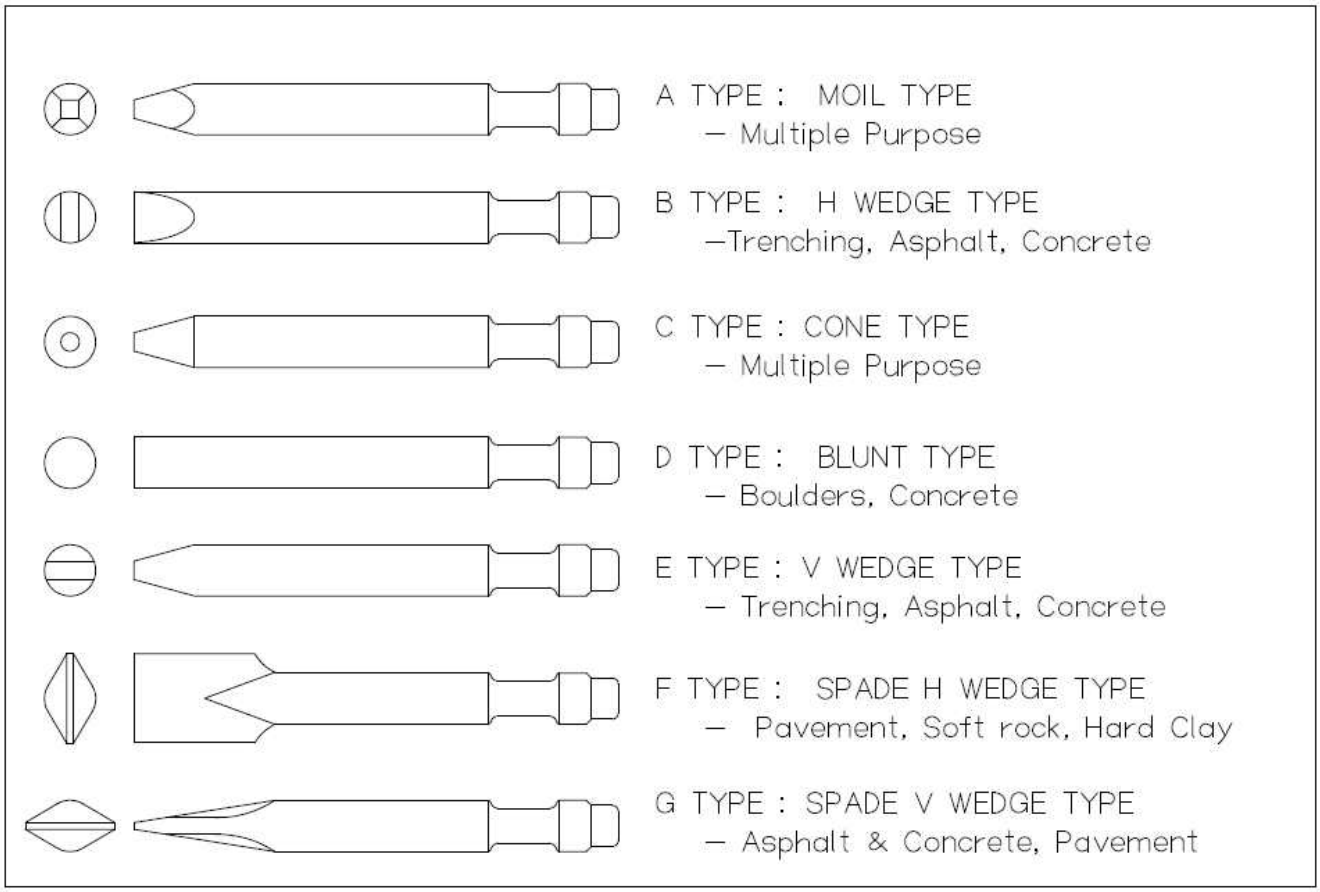
	Cause	Required action
1	Shut-off valve is not open completely	Open shut-off valve
2	Defective couplings of hydraulic pipe lines	Replace couplings defected
3	Poor main pump performance	Call authorized service man

.Reduced blow power and frequency

	Cause	Required action
1	Loose screw connection. Defective O-Ring	Tighten screw connection. Replace with new one
2	Loose extension bolt of accumulator	Replace O-ring and Back-up ring. Tighten extension bolt
3	Dust seal is worn	Replace seal and grease the tool every 2 or 3 hours during operation

Ⅶ. ACCESSORY PARTS LIST

1. Tool type and part list

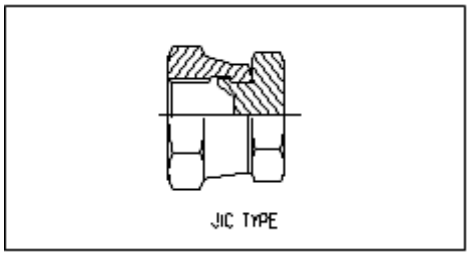


*** Tool Part Pode List**

Type	A	B	C	D	E	F	G
	MOIL	H-WEDGE	CONE	BLUNT	V-WEDGE	SPADE-H	SPADE-V
HK300S	DC000050	DC000080	DC000060	DC000090	DC000070	-	-

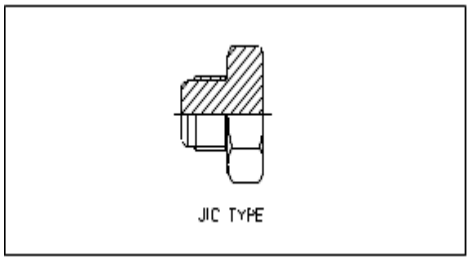
2. Union cap parts list

HOSE SIZE	UNION CAP
	JIC TYPE
1¼	13007050



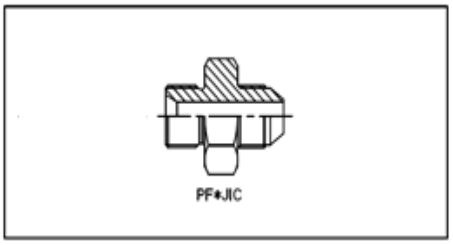
3. Hose plug parts list

HOSE SIZE	PLUG, HOSE
	JIC TYPE
1¼	13008430



4. O-ring adapter parts list

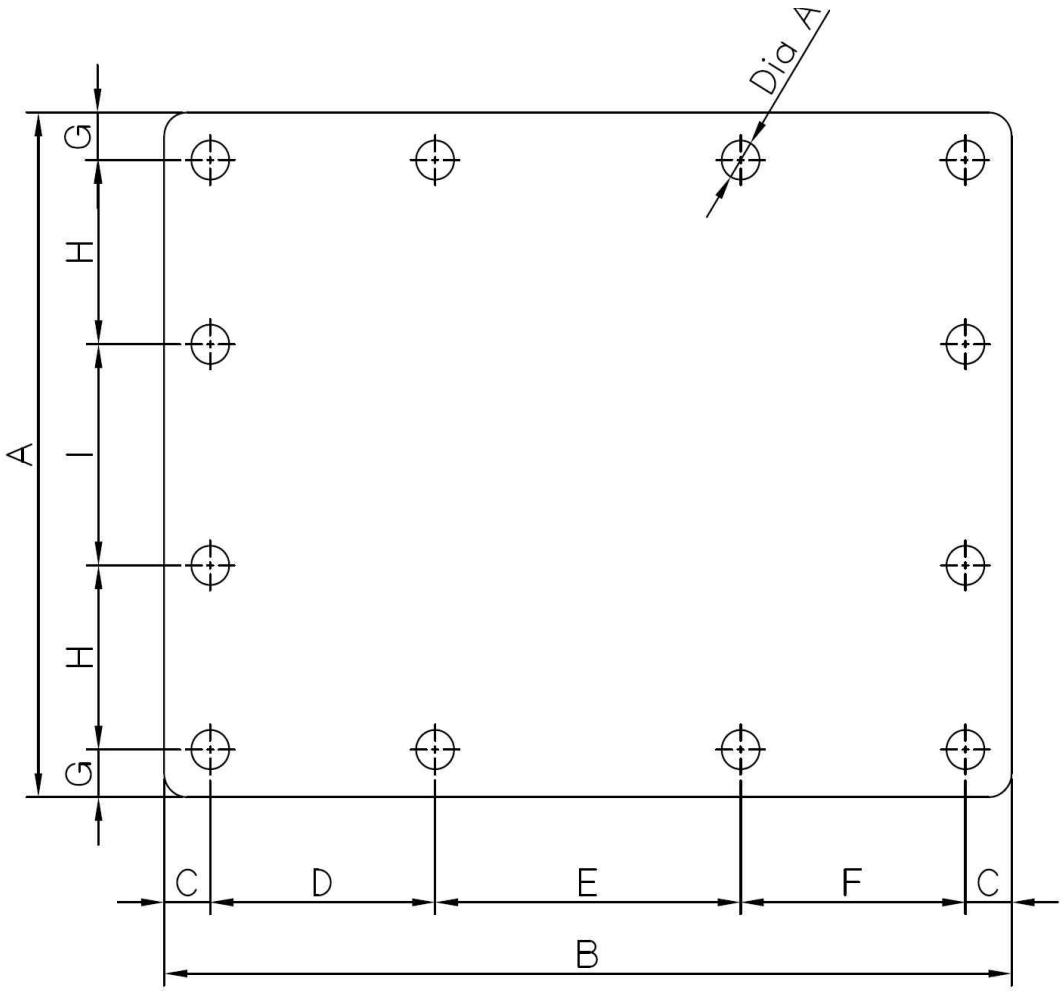
HOSE SIZE	O-RING ADAPTER
	PF*JIC
1¼	13009380



5. Base cover plate dimension

[unit : mm]

MODEL	A	B	C	D	E	F	G	H	I	DIA
HK300S	704	810	40	235	260	235	40	200	220	39



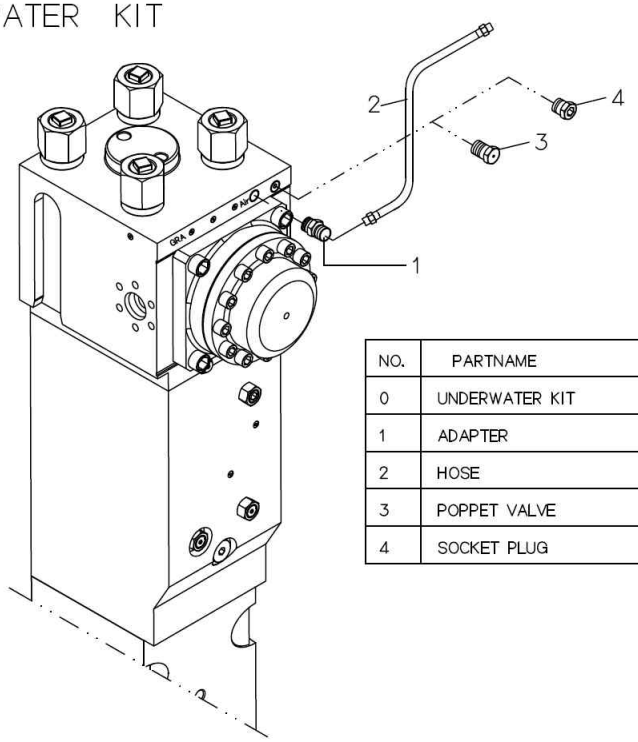
ATTENTION

Ⅷ. UNDERWATER KIT(OPTION)

The hydraulic hammer should never be left in or underwater with the compressed air supply switched off. Without the compressed air supply, the cylinder will fill up with water, and it will then result in serious damage.

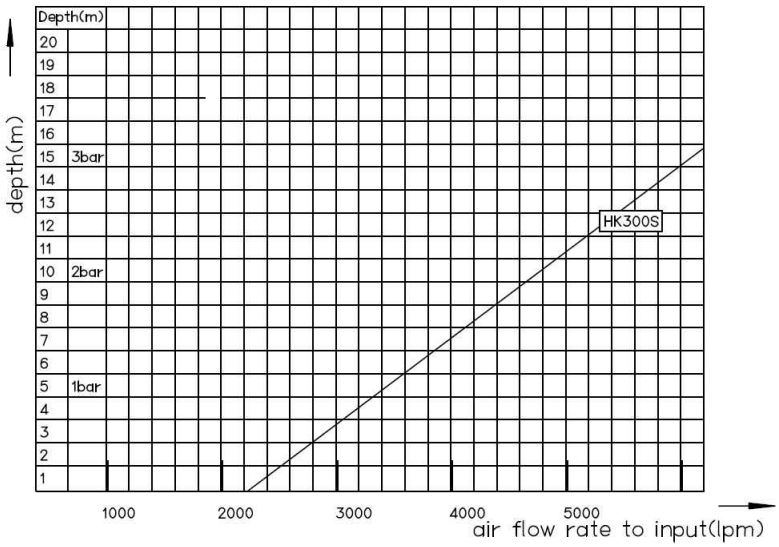
*** For under water operation, please contact to us.(option)**

for UNDERWATER KIT

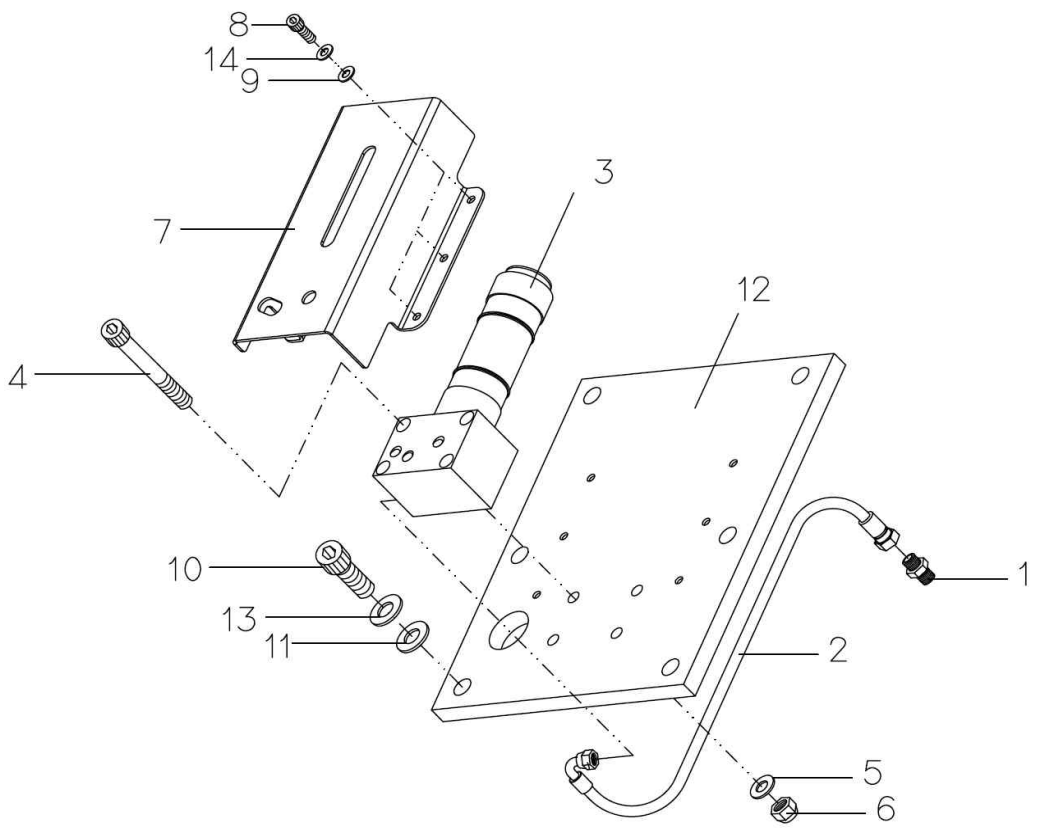


NO.	PARTNAME	Q'TY	REMARKS
0	UNDERWATER KIT	1	
1	ADAPTER	1	PT1/2"*PF1/2
2	HOSE	1	1/2"
3	POPPET VALVE	1	REMOVE
4	SOCKET PLUG	1	ADD. ASSEMBLY

Supply appropriate air flow rate in accordance with the hammer model and operating depth.



IX. AUTO LUBE KIT(OPTION)

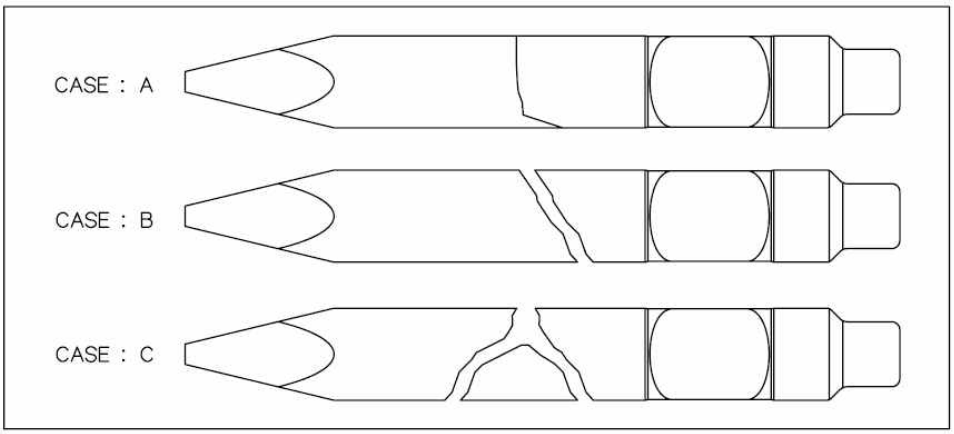


No.	Part Name	Q'ty
0	AUTO LUBE UNITS KIT	1
1	ADAPTER	1
2	HOSE	1
3	GREASING UNITS	1
4	HEX SOCKET BOLT	4
5	FLAT WASHER	4
6	NYLON NUT	4
7	PROTECTION COVER	1
8	HEX SOCKET BOLT	6
9	FLAT WASHER	6
10	HEX SOCKET HEAD BOLT	6
11	FLAT WASHER	6
12	UPPER COVER	1
13	SPRING WASHER	6
14	SPRING WASHER	6

X. WEAR PARTS AND JUDGEMENT - Tool

Tool is a wear parts and can also have various problems.

1) When damage occurs in the part where tool meets with Piston, the degree of abrasion on tool Holder Bushing and Round Bushing must be checked.
   In case Piston and tool are not genuine parts, damage can occur by the different hardness caused by different heating treatment(process).
   Free replacement will be made when choice goods are used in standard condition.
2) Tool will be replaced with no charge in case damage occurs in aperture of Retainer Pin.
3) Free replacement can not be made when damage occurs below Retainer Pin, which is below Tool Holder Bushing, since it is considered user's fault such as prying.
4) The manufacturing number of tool must be checked in order to make a claim.
5) The manufacturing number is on the side of aperture for Retainer Pin.
6) When problem occurs, the damaged area as well as the manufacturing number must be photographed and the damaged part must be collected and kept for evidence .



7) Claim can not be made in case of excessive abrasion of Tool.

- Vertical cuts
- Horizontal cuts
- Breakage of hitting parts
- Flatness of hitting parts

(1) Charged Repair

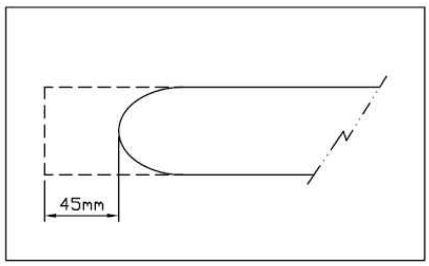
Damage caused by using non genuine Piston or tool

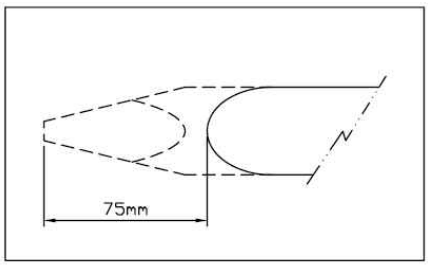
Horizontal cuts below the joint with Retainer Pin

Wear around the End Taper

Damage occurring after using Flat type Tool more than 45mm of wear

Damage occurring after using Moil. H-Wedge, V-Wedge Type more than 75mm of wear





In case Tool is pushed in by continuous hitting on hard rocks

Damage to upper part of Tool by excessive abrasion of Tool Holder Bushing

(2) Free Repair

Breakage or flatness of upper hitting part of tool in normal usage condition

Damage to joint of Retainer Pin

Vertical cuts in Tool

ATTENTION

(3) SEAL KIT : Oil Leaks, Tears, Cuts, Abrasion (Scratches), Hardening or Inverting of Seal Kit

Charged Repair

Oil leaks due to excessive use of Seals without replacement

Hardening of Seals due to excessive rise of oil temperature (over 80℃)

Discoloration of Seals to dark brown

Scratches on Seals due to inflow of particles

Damage caused by not carrying on warming ups in the beginning of operating Hammer

Inverted Seals

Free Repair

Oil leaks or Gas leaks when Piston and Cylinder are normal

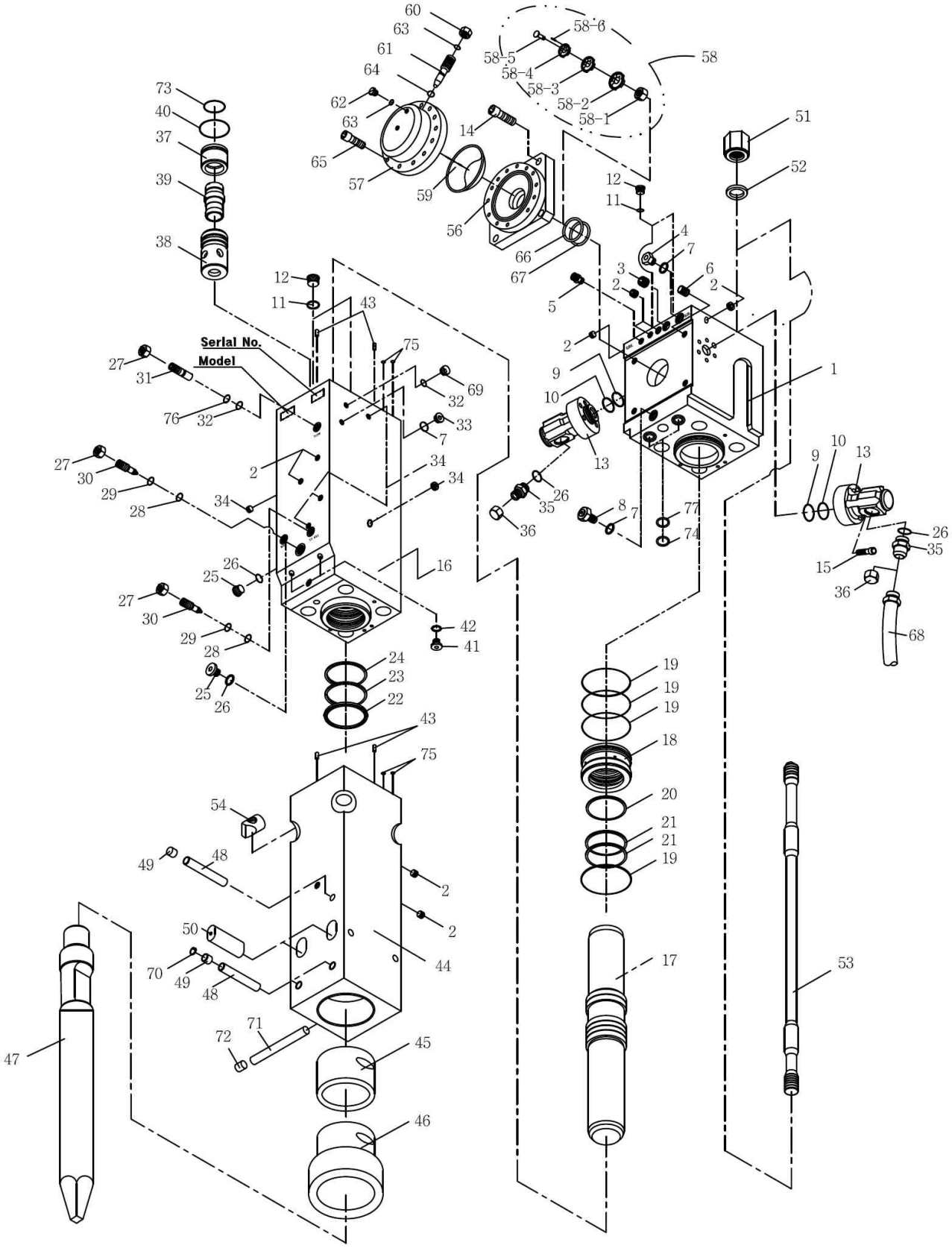
BHI
HydroRam
Hydraulic Hammer

HK300S
Parts List

Best Hammer Industries

■ HK300S POWER CELL PARTS LIST

HK300S POWER CELL



■ HK300S POWER CELL PARTS LIST

No.	Part No.	Part Name	Q'ty	No.	Part No.	Part Name	Q'ty
0	DL000190	POWER CELL ASSEMBLY	1	30	DL000230	CYLINDER ADJUSTER	2
1	DL000210	HEAD CAP	1	31	DF000590	ADJUSTER VALVE	1
2	13006030	PT SOCKET PLUG	9	32	22402060	O-RING	2
3	13006020	PT SOCKET PLUG	1	33	DA000400	PF SOCKET PLUG	1
4	DK000080	POPPET VALVE	1	34	13006010	PT SOCKET PLUG	3
5	13009210	ADAPTER	1	35	13009380	O-RING ADAPTER	2
6	13102810	HELI COIL SPRING	4	36	13007050	UNION CAP	2
7	22402070	O-RING	3	37	DC000220	MAIN VALVE CAP	1
8	D7000200	GAS VALVE ASSEMBLY	1	38	DC000230	MAIN VALVE CASE	1
9	22401370	O-RING	2	39	DC000240	MAIN VALVE	1
10	22406730	BACK UP RING	2	40	22401440	O-RING	1
11	22402210	O-RING	2	41	DH000380	PF SOCKET PLUG	2
12	DF000050	M36 SOCKET PLUG	2	42	22402000	O-RING	2
13	DK000400	IN-OUT FLANGE	2	43	D9000050	PIN	4
14	20213620	HEX SOCKET HEAD BOLT	4	44	DL000030	TOOL HOLDEER	1
15	20211760	HEX SOCKET HEAD BOLT	12	45	DC000180	ROUND BUSHING	1
16	DL000200	CYLINDER	1	45-1	DC001210	ROUND BUSHING (Oversized (+0.08~+0.1mm))	-
17	DL000220	PISTON	1	46	DL000110	TOOL HOLDER BUSHING	1
18	DL000040	CYLINDER BUSHING	1	46-1	DL000310	TOOL HOLDER BUSHING (Oversized (+0.08~+0.1mm))	-
19	22401660	O-RING	4	47	DC000050	TOOL(MOIL)	1
20	22200230	GAS SEAL	1	47-1	DC000080	TOOL(H WEDGE)	-
21	22300260	STEP SEAL	2	47-2	DC000090	TOOL(BLUNT)	-
22	22002730	DUST SEAL	1	47-3	DC000060	TOOL(CONE)	-
23	22003980	U PACKING	1	47-4	DC000070	TOOL(V WEDGE)	-
24	22000250	BUFFER SEAL	1	48	DC000420	STOP PIN	3
25	13100370	PF SOCKET PLUG	2	49	13007340	RUBBER PLUG	3
26	22402260	O-RING	4	50	DL000060	RETAINER PIN	2
27	12002410	HEX HEAD NUT	3	51	DL000070	TOP NUT	4
28	22402020	O-RING	2	52	DL000080	TOP NUT WASHER	4
29	22405610	BACK UP RING	2	53	DL000100	TENSION BOLT	4

■ HK300S POWER CELL PARTS LIST

No.	Part No.	Part Name	Q'ty	No.	Part No.	Part Name	Q'ty
54	DL000090	BOTTOM NUT	4	-	DL691110	CYLINDER SET	1
55	DE000300	ACCUMULATOR ASSEMBLY	1	-	DL691200	TOOL HOLDER SET	1
56	DE000310	ACCUMULATOR BODY	1	-	DL691400	TENSION BOLT SET	1
57	DE000330	ACCUMULATOR COVER	1	-	DC691300	MAIN VALVE SET	1
58	DE692300	ACC. ORIFICE SET	1		DE000300	ACCUMULATOR ASSEMBLY	1
58-1	DA000440	LOCK NUT	1	-	DJ698000	N2 GAS CHARGING KIT	1
58-2	DE000350	ORIFICE(A)	1	MEMO			
58-3	DF000690	ORIFICE(B)	1				
58-4	DF000700	ORIFICE(C)	1				
58-5	DF000710	ORIFICE(D)	1				
58-6	DE000360	HOLDER PIN	1				
59	DE000320	DIAPHRAGM	1				
60	DC000320	O-RING PLUG	1				
61	DC000330	CHARGING VALVE	1				
62	DA000510	O-RING CAP	1				
63	22402040	O-RING	2				
64	22401930	O-RING	1				
65	20215040	HEX SOCKET BOLT	12				
66	22402540	O-RING	1				
67	22409600	BACK UP RING	1				
68	16804740	SPRING HOSE	2				
69	D4000280	M18 SOCKET PLUG	1				
70	13003160	SNAP RING	2				
71	DC000450	STOP PIN	1				
72	13007320	RUBBER PLUG	1				
73	22401410	O-RING	1				
74	22409410	BACK UP RING	2				
75	22402110	O-RING	4				
76	22405650	BACK UP RING	2				
77	22402350	O-RING	2				
-	-	-	-				
-	DL691010	HEAD CAP SET	1				

■ HK300S SPARE SEAL KIT PARTS LIST

No.	Part No.	Part Name	Q'ty
0	DL691550	SPARE SEAL KIT	1
1	22402070	O-RING	3
2	22401370	O-RING	2
3	22406730	BACK UP RING	2
4	22402210	O-RING	2
5	22401660	O-RING	4
6	22200230	GAS SEAL	1
7	22300260	STEP SEAL	2
8	22002730	DUST SEAL	1
9	22003980	U PACKING	1
10	22000250	BUFFER SEAL	1
11	22402260	O-RING	4
12	22402020	O-RING	2
13	22405610	BACK UP RING	2
14	22402060	O-RING	2
15	22401440	O-RING	1
16	22402000	O-RING	2
17	22402040	O-RING	2
18	22401930	O-RING	1
19	22402540	O-RING	1
20	22409600	BACK UP RING	1
21	22401410	O-RING	1
22	22409410	BACK UP RING	2
23	22402110	O-RING	4
24	22405650	BACK UP RING	2
25	22402350	O-RING	2

MEMO

MEMO

■ HK300S TOOL KIT PARTS LIST

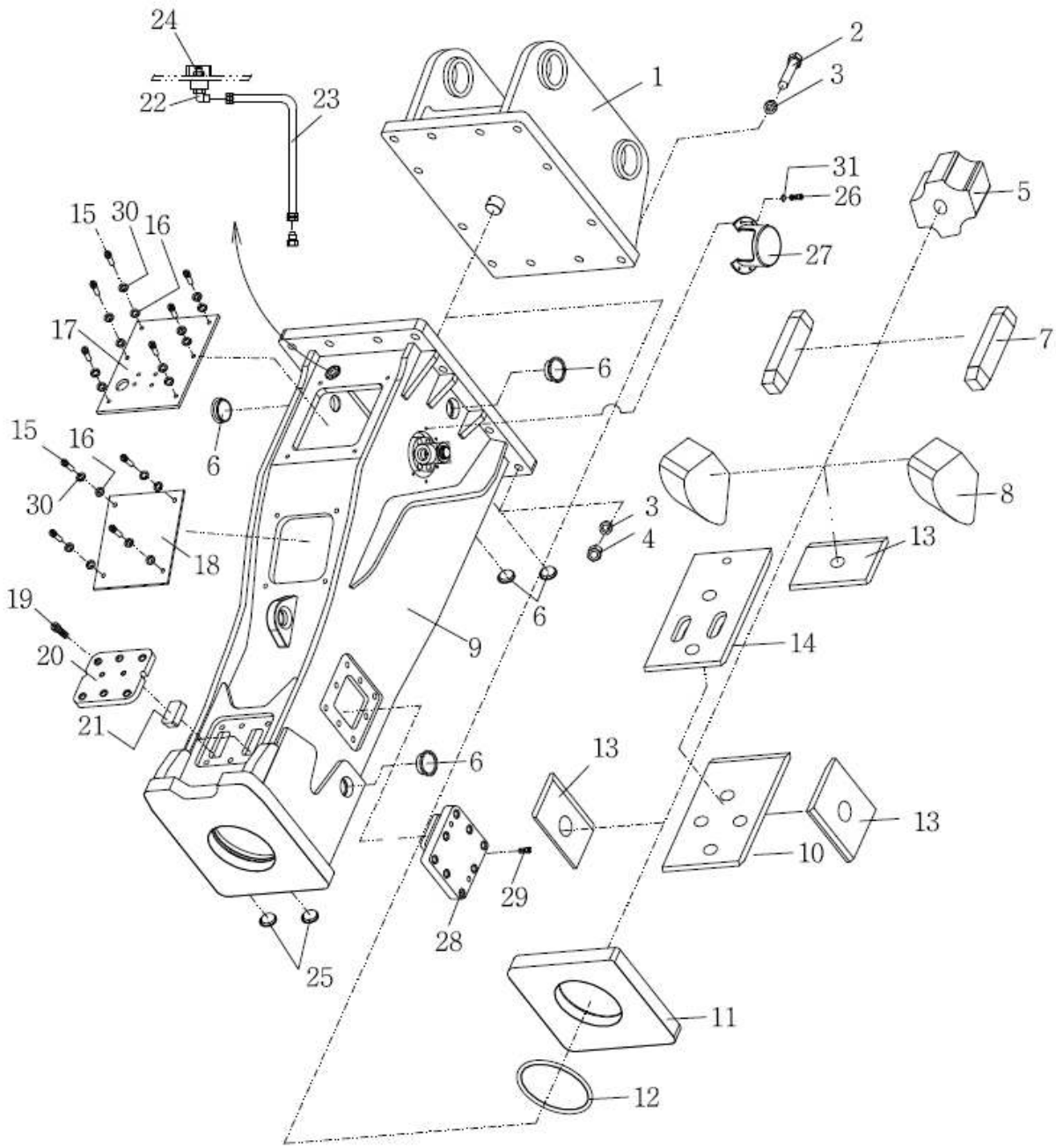
No.	Part No.	Part Name	Q'ty	Remarks
0	DL691800	TOOL KITS	1	HK300S
1	16502990	TOOL BOX	1	No. 1
2	16500260	COMBI SPANNER	1	14mm
3	16500370	SINGLE SPANNER	1	32mm
4	16502580	SINGLE SPANNER	1	50mm
5	16502100	DOUBLE SPANNER	1	27X30mm
6	16501140	L WRENCH	1	5mm
7	16501160	L WRENCH	1	8mm
8	16501170	L WRENCH	1	10mm
9	16501190	L WRENCH	1	14mm
10	16501200	L WRENCH	1	17mm
11	16501210	L WRENCH	1	19mm
12	16503090	HAND RETAINER PIN	1	M12
13	16500770	HAMMER RING WRENCH	1	75mm
14	16500720	HAMMER RING WRENCH	1	55mm

■ HK300S N2 GAS CHARGING KIT PARTS LIST

No.	Part No.	Part Name	Q'ty	MEMO No. 5 : DF300520 - OPTION
0	DA698000	N_2 GAS CHARGING KIT	1	
1	13105900	N_2 GAS 3-WAY VALVE ASSEMBLY	1	
2	16802000	N_2 HOSE	1	
3	13105910	N_2 COUPLING KIT	1	
4	13105920	N_2 GAS CYLINDER	1	
5	DF300520	EXTENSION STICK	1	

■ HK300S BRACKET PARTS LIST

HK300S BRACKET



■ HK300S BRACKET PARTS LIST

■HK300S BRACKET				■HK300S BRACKET			
No.	Part No.	Part Name	Q'ty	No.	Part No.	Part Name	Q'ty
0	DL301000	PREMIUM BRACKET ASSEMBLY	1	28	DL301030	SIDE DAMPER	2
1	DL301040	TOP BRACKET	1	29	20212070	HEX SOCKET HEAD BOLT	16
2	20009790	HEX HEAD BOLT	12	30	13001080	SPRING WASHER	10
3	13000150	FLAT WASHER	24	31	13000060	FLAT WASHER	10
4	12006460	NYLON NUT	12	-	DL695200	DECAL KIT	1
5	DL300140	UPPER CUSHION	1	MEMO			
6	D9300070	RUBBER CAP-S	6				
7	DK300110	SIDE PAD	2				
8	DL300120	SIDE CUSHION	2				
9	DL301020	PREMIUM BRACKET	1				
10	DL300080	BACK WEAR PLATE	1				
11	DL300090	DOWN CUSHION	1				
12	DL300130	DUST PROTECTION SEAL	1				
13	DL300100	DOWN WEAR PLATE	3				
14	DL300070	FRONT WEAR PLATE	1				
15	20211760	HEX SOCKET HEAD BOLT	10				
16	13000080	FLAT WASHER	10				
17	DL300250	UPPER COVER	1				
18	DL300030	DOWN COVER	1				
19	20212470	HEX SOCKET HEAD BOLT	6				
20	DL300040	RETAINER PIN COVER	1				
21	DL300060	RETAINER PIN CUSHION	2				
22	13009200	ELBOW ADAPTER	1				
23	DK300140	HOSE	1				
24	13007810	GREASE NIPPLE	1				
25	DK300160	RUBBER PLUG	2				
26	20211050	HEX SOCKET BOLT	10				
27	DK300170	IN-OUT FLANGE COVER	2				