

**CB20**  
**CB40**  
**CB60**  
**CB61**  
**CB62**  
**CB70**  
**CB80**  
**CB140**  
**CB160**  
**CB200**  
**CB210**  
**CB230**  
**CB260**  
**CB300**  
**CB380**  
**CB400**  
**CB550**  
**CB800**

Hydraulic Breaker

# OPERATOR'S MANUAL

**Part number 73391961**

2<sup>nd</sup> edition English

December 2019

*Replaces part number 73391590*



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# 1 - GENERAL INFORMATION

## Foreword

This Breaker Operator's Manual is intended as a guide and/or instruction for correct use and maintenance of the breaker, shall be read through very carefully before installation and/or operation of the breaker, or any maintenance work to the breaker. Keep this manual in the carrier cabin so that it is always at hand. Repurchase it if it is lost.

The breaker operator's manual is written to apply for various markets. Therefore, we ask you to disregard the sections which are not applicable to your breakers and/or carriers.

Many hours are spent on design and production to make breakers that are as efficient and safe as possible. The accidents which occur in spite of this, are mostly caused by the human factor. A safety conscious person and well maintained breaker and carrier make a safe, efficient and profitable combination. Therefore, read the safety instructions and follow them.

We continually strive to improve our products and to make them more efficient through changes to their design. We retain the right to make these changes without committing ourselves to introducing these improvements on products which have already been delivered. We also retain the right to change data and equipment, as well as instructions for service and maintenance measures without prior notice.

Be sure you are thoroughly familiar with the positions and functions of all instruments and controls of the carrier, along with the instructions in the Operator's Manual before using the breaker or before service or maintenance is carried out.

## Note to the Owner

### Spare parts order

When you need parts or some information concerning maintenance of your breaker, contact your local authorized dealer.

Required information:



- Name of customer and contact person
- Order number (when available)
- Delivery address
- Mode of delivery (air mail, etc.)
- Required delivery date
- Invoicing address
- Model and serial number of breaker
- Name, number and required amount of spare parts

## Product identification

### Name plate

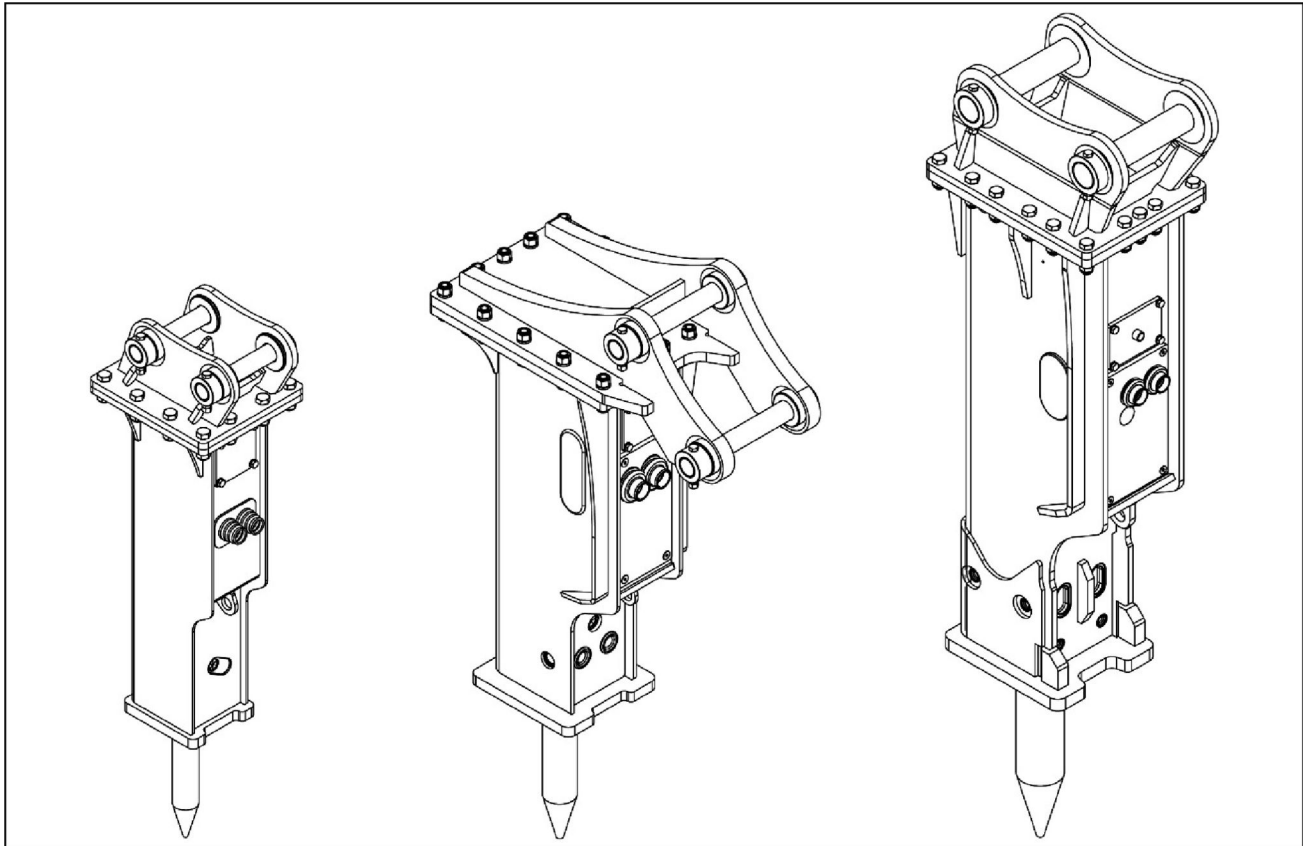
The breaker information including serial number and key technical data is available on the name plate as shown in the image, for your use to identify the product as well as its key specifications.

Make note of the serial number and quote it when ordering spare parts or consulting technical enquires to the authorized dealer.

 	
TYPE/MODEL	WEIGHT kg
SERIAL NUMBER	OIL FLOW (min+max) l/min
PART No	WORKING PRESSURE BAR/MPa
YEAR OF MANUFACTURE	Case New Holland Construction Equipment (India) Private Limited B1-207, 2nd Floor, BOOMERANG, Chandivli Farm Road, Near Chandivli Studio, Andheri (East), MUMBAI - 400072 (Maharashtra), INDIA

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## Product overview



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- The breaker is a hydraulically powered breaker. It can be used on any carrier with correct carrier weight, hydraulic flow and necessary mechanical installation requirements.
- Breaker works by repeatedly raising a steel piston and driving it down onto the head of a removable breaking tool.
- No additional pressure accumulators are necessary for the carrier since the integrated pressure accumulator absorbs hydraulic pressure peaks. The breaker impact energy is almost constant and independent of the carrier's hydraulic system.

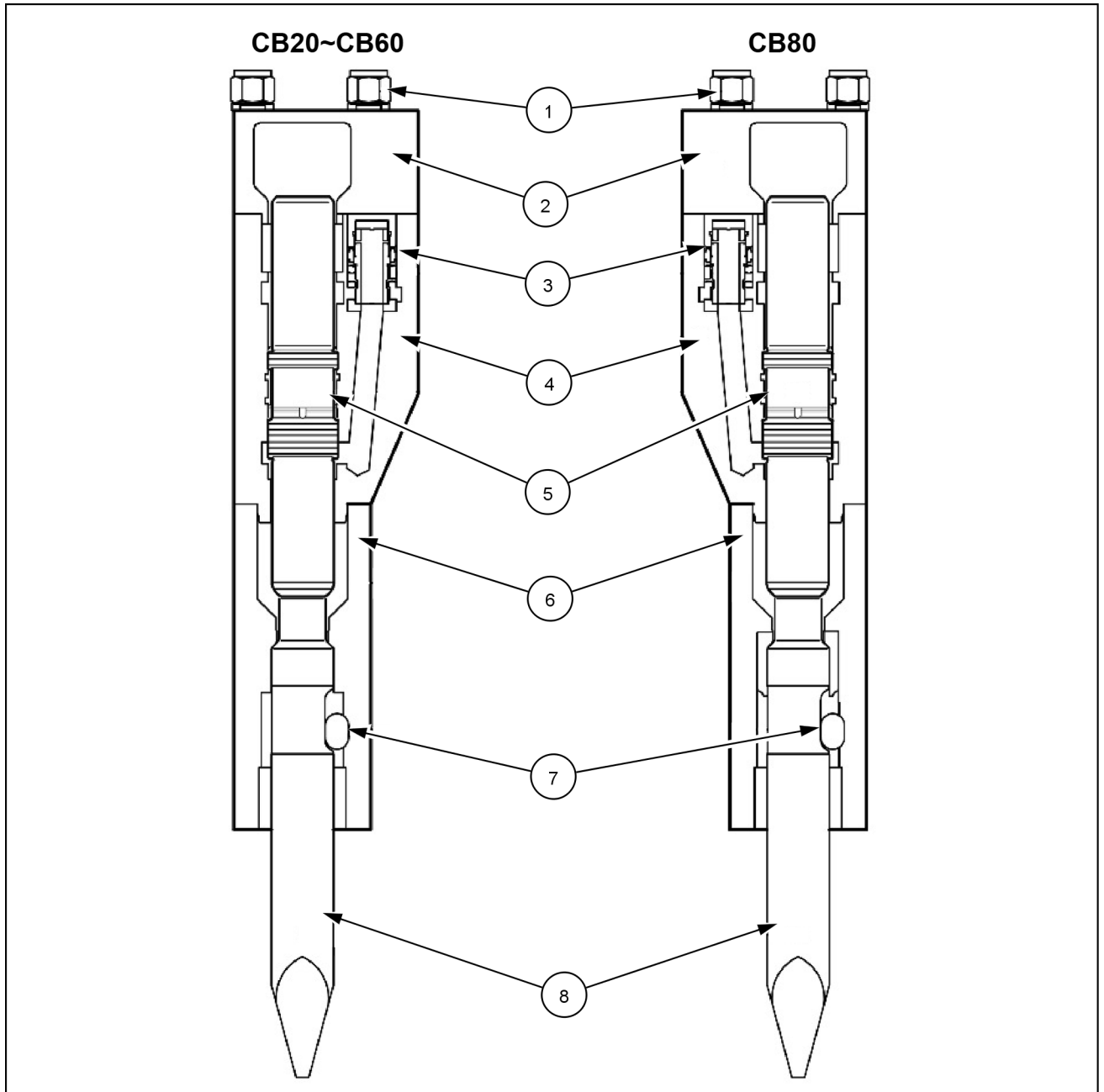
### Removal from packaging

- Remove all steel belts from the packaging. Open the packaging and remove all plastics covering the product. Scrap steel belts and plastics.
- Wooden frames and boxes as well as steel bolts and plastics can be recycled.
- Check if the breaker is in good condition and there is no visible damage.
- Check if all ordered parts and accessories have been enclosed with the breaker. Some options may be provided by your local dealer such as installation kits, hoses, breaker bracket, etc.

## Main structure of hydraulic breaker

Breaker consists of five main sections such as Cylinder, Piston, Control valve, Front head and Back head.

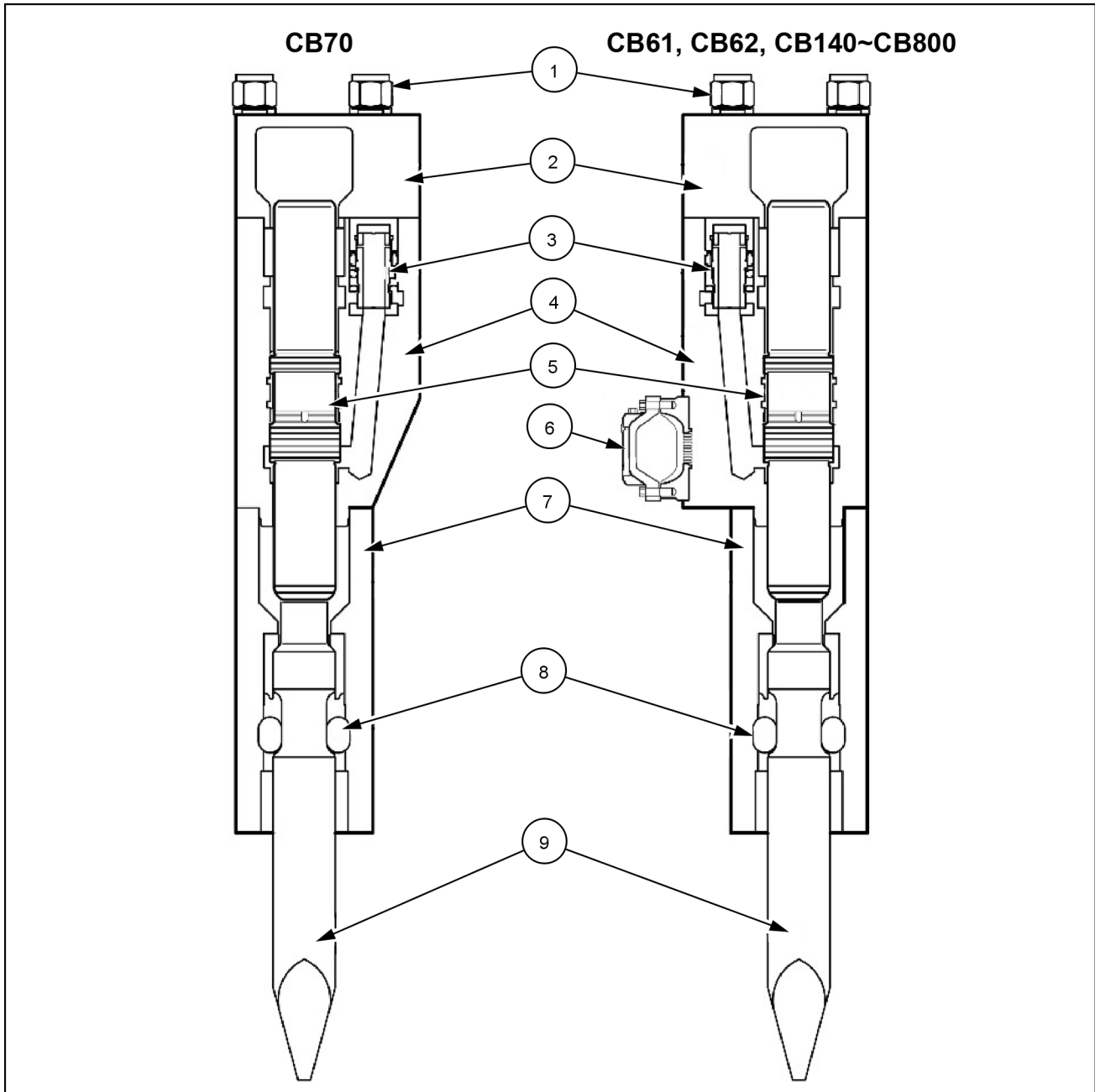
- Four through bolts are holding cylinder, back head and front head together.
- Cylinder contains piston, control valve and accumulator where Nitrogen gas is charged.
- Piston strikes the working tool by oil & gas pressures.
- Control valve located inside cylinder determines direction of piston movement.
- Tool pins are located inside front head, limiting tool stroke distance.
- Back head has a chamber where Nitrogen gas is charged.



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1.	Through bolt	5.	Piston
2.	Back head	6.	Front head
3.	Control valve	7.	Tool pin
4.	Cylinder	8.	Tool

1 - GENERAL INFORMATION



PTIL19GEN0004GA 3

1.	Through bolt	6.	Accumulator
2.	Back head	7.	Front head
3.	Control valve	8.	Tool pin
4.	Cylinder	9.	Tool
5.	Piston		

## 2 - SAFETY INFORMATION

### SAFETY INSTRUCTIONS

#### **⚠ CAUTION**

**Avoid injury!**  
**Follow ALL of the precautions listed below.**  
**Failure to comply could result in minor or moderate injury.**

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**NOTICE:** Read the following warning messages carefully which explain various hazards and how to avoid them.

#### **Introduction**

- All mechanical equipment can be hazardous if operated without due care or correct maintenance. Most accidents involving breaker operation and maintenance are caused by failing in observing basic safety rules or precautions.
- The accident can often be avoided by recognizing potentially hazardous situations before it occurs. Since it is impossible to anticipate every possible circumstance that might involve a potential hazard, the warnings in this Operator's Manual and on the breaker are not all inclusive.
- If any procedure, tool, working method or operating technique not specifically recommended by the manufacturer is used, you must make sure that it is safe for yourself and others, also ensure that the breaker will not be damaged or handled unsafe by your selected method of operation or maintenance procedures.
- Safety is not just a matter of responding to the warnings. When working with the breaker, always pay attention to what hazards there might be and how to avoid them. Do not work with the breaker until you are sure that you can control it. Do not start any job until you are sure that you and those around you will be safe.

#### **Operator's manual**

- Read and understand the Operator's Manual.
- The operator must be thoroughly familiar with how to operate and maintain the breaker and should undergo required training on the breaker.
- The operator must follow the rules and recommendations given in this Operator's Manual and the Carrier Operator's Manual, also pay attention to any statutory and national regulations or specific requirements or risks that apply to the work site.
- If anything is unclear or not understandable on the Operator's Manual or requires additional explanation, contact your authorized dealer.

#### **Care and alertness**

- When working with the breaker, always be careful and stay alert for hazard. The risks of serious or even fatal accident increase when you are intoxicated or under the influence of alcohol or drugs.

#### **Clothing**

- Suitable clothing for safe handling should be worn.
- Use a hard hat, safety glasses, protective shoes and gloves and an approved respirator (dust mask), also other protective items when required.

#### **Training**

- You and others can be injured or even killed if you perform unfamiliar operations without practicing them first. Practice away from the work site, in a clear area.
- Keep other persons away. Do not perform any new operations until you are sure you can do them safely.

#### **Communication**

- Bad communication can cause accidents. Keep people around you informed of what you will be doing.

- Work sites can be noisy. Do not rely only on spoken commands. If you intend to work with other persons, make sure they understand all hand signals you will be using.

### Work site

- Work site can be hazardous. Inspect the site before working on it.
- Check for potholes, weak ground, hidden rocks, etc. Check for utilities (electric cables, gas, water pipes, etc.). Mark positions of the underground utilities prior to breaking the ground.

### Banks and trenches

- Banked material and trenches can collapse. Do not work too close to banks and trenches where there is a danger of collapse.

### Safety barriers

- Unguarded breaker and carrier in public places can be dangerous. Place barriers around the breaker and carrier to keep people away.

### Flying chips of rock

- Protect yourself and your neighborhood against flying chips of rock. Do not operate the breaker if someone is too close.
- Operating the breaker from canopy can be dangerous to the operator. Operate the breaker only with a carrier where closed type cabin is mounted, only when its windows and its doors are in fully closed condition.
- Fitting a screen structure on the carrier cabin window is highly recommended. No screen can be led to damage to the cabin and its window and also injury or even fatal accident to the operator.

### Equipment limits

- Operating the breaker beyond its design limits can cause damage. Always operate the breaker within its specification, shown at the Specification Section of this Operator's Manual.
- Do not try to enhance the breaker performance with any modification not approved by the manufacturer or beyond the breaker specifications.

### Oil at high pressure

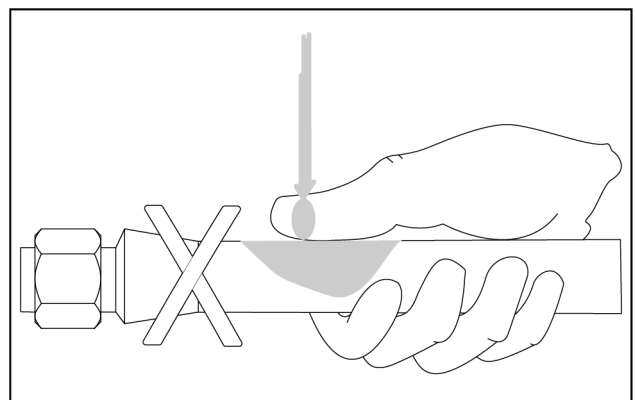
#### ▲ CAUTION

##### Escaping fluid!

Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.

Failure to comply could result in minor or moderate injury.

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- Hydraulic oil at system pressure can be dangerous. Before disconnecting or connecting hydraulic hoses, turn off the engine, operate the controls to release pressure trapped in the hoses and wait 10 minutes. While operating, keep persons away from the hydraulic hoses.



- Fine jets of hydraulic oil at high pressure can penetrate the skin. Do not use your fingers to check for hydraulic oil leaks. Do not put your face close to suspected leaks. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of hydraulic oil. If hydraulic oil has penetrated your skin, seek medical treatment immediately.
- There might be pressurized oil trapped inside the breaker even if it is disconnected from the carrier. Be aware of possible blank firing while greasing or removing/installing working tool.

### **Pressure accumulator**

- The breaker incorporates pressure accumulator. The accumulator is pressurized even after hydraulic pressure has been released from the breaker. Attempting to remove or dismantle the accumulator without first releasing the pressure can cause severe injury or death. Do not try to dismantle pressure accumulator, contact your authorized dealer.

### **Lifting equipment**

- You can be injured if you use faulty lifting equipment. Make sure that lifting equipment is in good condition. Make sure that lifting tackle complies with all local regulations and is suitable for the job. Make sure that lifting equipment is strong enough for the job and you know how to use it.
- Do not use the breaker or any of its parts for lifting other material. Contact your authorized dealer and find out how to do lifting work in proper way.
- Never leave the breaker in lifted condition, with any other lifted load and/or unattended.
- See **3-4**

### **Spare parts**

- Use only genuine spare parts including working tools of the breaker manufacturer.
- The use of non-genuine/counterfeit parts or tools may damage the breaker and will void warranty for the breaker.

### **Breaker and/or Carrier condition**

- Defective breaker and/or carrier can cause severe injuries to you and others. Do not operate the breaker which has defective or missing parts.
- Make sure the maintenance procedures in this manual are completed before using the breaker.

### **Repair and maintenance**

- Do not try to do any repair or maintenance work you do not understand.

### **Modification and welding**

- Non approved modifications can cause injury and/or damage. Consult with your authorized dealer before modifying the breaker. Do not attempt to weld the breaker. If in doubt, contact your authorized dealer. Note that welding of breaker tools will render them useless and void the warranty.

### **Metal splinters**

- You can be injured by flying splinters during maintenance and/or repair of the breaker.
- Always wear safety glasses.

## SAFETY PRECAUTIONS



The symbol above appears at various points in the manual together with a warning text. It means: Warning, be alert! Your safety is involved! It is the obligation of the operator to make sure that all warning decals are in place on the breaker and that they are readable. Accidents may otherwise occur.







**NOTICE:** *Do not operate the breaker and do not carry out any maintenance until you thoroughly study and understand the contents of this Breaker Operator's Manual.*

### Installation inspection

An installation inspection must be carried out after the breaker has been installed on the carrier. During the installation inspection certain specifications (port relief valve pressure, working pressure, oil flow, etc.) must be checked so that they are within given limits. Contact your authorized dealer.

## SAFETY DECALS

- Warning decals are on various places of the breaker.
- The operator should pay attention to the warning decals and ensure use, maintenance and service of the breaker to be carried out accordingly, see reference information below.
- The warning decals should be cleaned and legible.
- Any missing, illegible or damaged decals should be replaced by the operator.
- When any part where the decal is positioned is replaced the decal must also be replaced by the operator.

Sign	Image Content	Reference
	Head wearing ear protection	Must wear ear protection
	Operator's Manual Service Manual	Consult manual for proper use, maintenance and service procedures.
	Working breaker with diagonal slash	Keep away from breaking area while the breaker is working.
	Grease gun	Inject grease into grease nipple with grease gun periodically.
	Accumulator Back head	"HIGH PRESSURE" Discharge prior to disassembly
	High temperature	Keep away as the breaker is so "HOT"



## **3 - WORKING OPERATIONS**

### **GENERAL INFORMATION**

### **OPERATING GUIDELINE AND SAFETY**

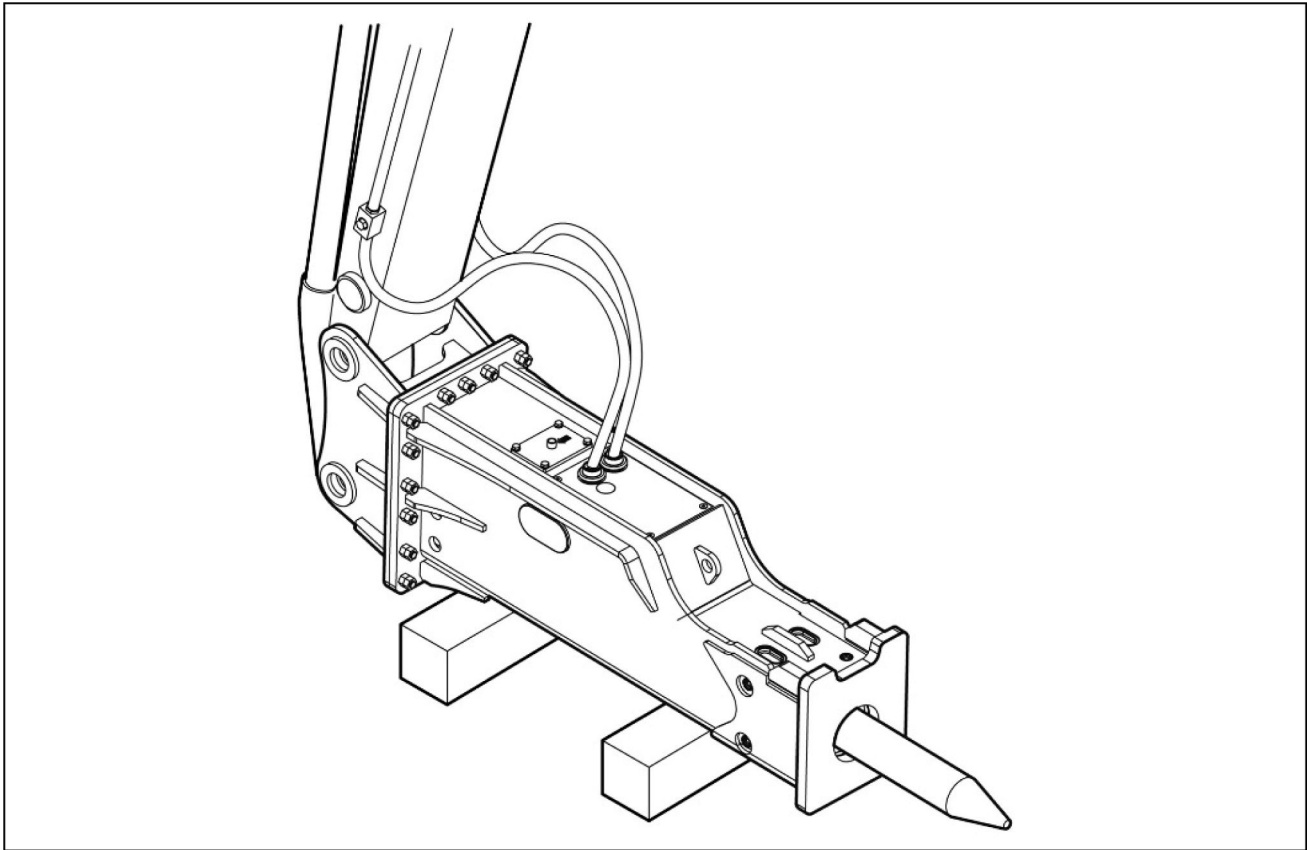
#### **Safety first**

- When leaving the carrier, lower the breaker to the ground and turn engine off.
- Never attach any cable or sling to the breaker to hoist a load. Extremely dangerous!
- Remove working tool prior to transporting the breaker.
- Keep all the people and equipment away from the breaker when operating. Rock chips flying from the breaker can cause serious injury and accident.
- A safety screen is recommended to protect the operator from flying chips of rock. Keep windows and doors closed before operating.
- Only carriers with closed cabin equipped should be used for breaker operation. Carriers with open canopy should not be used with breaker.
- Do not use the breaker to sweep rock borders and debris on the ground. It can cause damage to the breaker and excessive wearing of the housing.

#### **Inspection prior to operating the breaker**

- Check if the breaker is filled with a sufficient amount of hydraulic oil.
- Check if hydraulic oil is kept away from contamination.
- Check if all hoses and fasteners are securely fitted and tightened.
- Apply a sufficient amount of grease on the shank area of working tool.

### Assemble and disassemble the breaker to / from the carrier



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- When installing or removing the breaker, the assistant is required. The assistant must be instructed by the operator.
- All directions, signals etc. must be agreed on beforehand between the operator and the assistant.
- The breaker should only be installed to the carrier of sufficient load capacity. Too light carrier can become unstable and fall over.
- Do not touch any part of the breaker as well as the carrier when the carrier is moving such as boom, arm, etc.
- Check the port relief valve setting pressure of the carrier.
- Check if breaker pipe lines are correctly connected from the carrier to the breaker.
- Do not install any breaker pipe lines and hoses that are not approved. Contact your authorized dealer, if required.
- Never touch the breaker when operating. The breaker hydraulic oil can become very hot.
- Never use your fingers to check bore alignment.
- If the breaker is connected to a quick coupler (or attachment bracket), the operator must take special care to ensure that the quick coupler (or attachment bracket) does not sustain any damage and/or accident.

## Equipment limits

- Keep the people away from risk zone when operating the breaker. The operator is responsible to determine the risk zone. The operator must ensure the people to stay outside the risk zone.
- If the noise level exceeds **90 dB (A)**, all workers including the operator in the immediate area must wear ear protection.
- Stop breaking immediately if any one moves into the risk zone, which is much larger for breaker operation than excavator operation due to the risk of flying rock splinters.
- Only approved hydraulic oil should be used.
- Do not operate the breaker with carrier's hydraulic cylinders fully extended or fully retracted. Damage may occur to the carrier.
- When operating the breaker, make sure it does not interfere with the carrier or the hydraulic hoses.
- Do not push the breaker with too much or too little force.  
Too much: Carrier stabilizer leg feet or tracks are completely lifted from the ground.  
Too little: Tool does not stay firmly against the material to be broken and carrier starts to shake.
- Keep the tool perpendicular to the material at all times. If the material moves or its surface breaks, adjust the angle immediately.
- Do not let the tool move outwards from the breaker without resistance when it penetrates the material. Keep the carrier pushing force on the breaker steady and aligned with the tool while breaking.
- Do not continuously strike for more than **15 s**.
- Do not break a same spot of the material for more than **30 s**. If the material is not broken or the tool does not penetrate the material, stop breaking and change the position of breaking. Working too long in one spot will make debris and dust piled under the tool, causing working tool to be heated and debris and dust to dampen striking impact energy.
- When the material is fully broken, stop breaking immediately. Do not allow the breaker to blank-fire. Frequent idle strokes (blank fire) will damage the breaker.
- To use the breaker most efficiently, concentrate on small steps from the outer edge of the material and move towards the center of the material.
- When breaking hard or frozen ground, use benching method. Start with clearing a small area from the edge, then continue to break the material towards the open area.
- When breaking the material never do leverage with tool. The tool may crack.

## HANDLING THE ATTACHMENT

### Key points when using tools

**NOTICE:** Pay attention for your body not to be hit by the tool. Pay attention for your body not to be squeezed between the tool and other material.

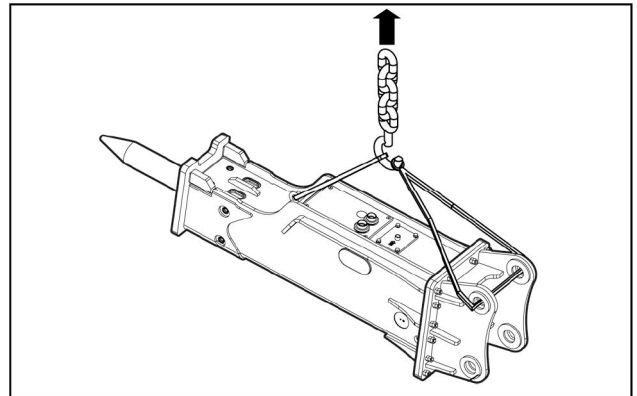
Follow below instructions. Lack of respect to these instructions will be led to crack or other failures of tools and holding bushes.

- Do not lift, twist or hit.
- Do not leave in the rain or other wet conditions.
- Do not leave the tool heated.
- Do not leave the tool un-greased.

### Lifting instructions

**NOTICE:** Ensure that no persons are near the breaker when it is lifted. If the breaker falls down there is a risk of personal injuries.

- Use a hoist when lifting breaker or component parts, to avoid back injury.
- Make sure all chains, hooks, slings, etc., are in good condition and of correct capacity. Be sure that hooks are positioned correctly.
- Lifting devices must safely carry working weight of the breaker, see **5-12**. Place chains or slings, as shown in the illustration, prior to lifting breaker.
- Always check balance of the breaker by lifting it gradually. If the breaker is well balanced, it may be lifted higher.



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### Lifting eyes and lifting eye bolts

**NOTICE:** Ensure that lifting eye bolts are fully tightened to the housing before using them for lifting. If any lifting eye bolt is not properly tightened it may break. If the breaker falls down there is a risk of personal injuries.

- Lifting eyes on the breaker housing are only intended for handling the breaker.
- The breaker or its parts must not be used for lifting other products.

**NOTE:** Always remove lifting eye bolts and replace them with blanking screws before operating the breaker.

- Follow the safety instructions for lifting the breaker, see **2-1**.



# CHOICE OF TOOLS

## Recommended application & breaker selection

- The breaker is designed to be used for breaking hard and soft rock, concrete, road surface or asphalt, hard or frozen ground.
- It is suitable for applications such as primary rock breaking, secondary rock breaking, hard and soft rock removal, trenching, benching, ground compacting, etc.

### Breaker selection

Description	CB20	CB40	CB60	CB61	CB62	CB70	CB80	CB140	CB160
Primary breaking									
Secondary breaking									
Hard rock removal								X	X
Soft material and rock removal	X	X	X	X	X	X	X	X	X
Demolition	X	X	X	X	X	X	X	X	X

### Breaker selection

Description	CB200	CB210	CB230	CB260	CB300	CB380	CB400	CB550	CB800
Primary breaking						X	X	X	X
Secondary breaking	X	X	X	X	X	X	X	X	
Hard rock removal	X	X	X	X	X	X	X	X	
Soft material and rock removal									
Demolition	X	X	X	X					

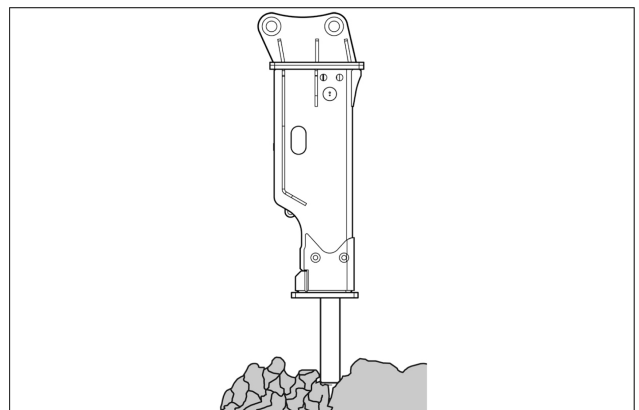
**NOTE:** Above breaker selection guideline was made upon global breaker use. It may not match with local specific requirement of your market. Therefore consult with your authorized dealer before selecting breaker.

## Principles of breaking

- To increase breaker working life, pay special attention to use correct working methods and to choose correct tool for the job.
- There are essentially two ways of breaking with a hydraulic breaker.

### Penetrative breaking (cutting)

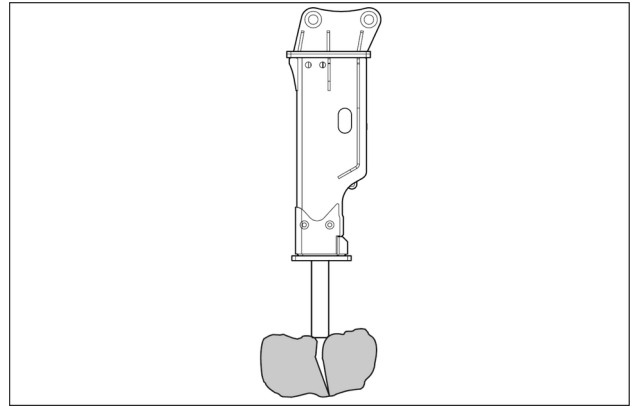
- In this form of breaking, a tool such as moil point or chisel is forced into the material. This method is very effective in soft, layered or plastic, low abrasive materials.



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### Impact breaking

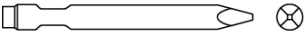
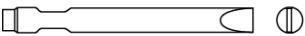
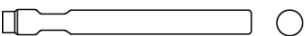
- With impact breaking, the material is broken by transferring very strong mechanical stress waves from the tool into the material.
- The best possible energy transfer between the tool and the object is achieved with blunt tool.
- Impact breaking is very effective in hard, brittle and very abrasive materials.
- The use of moil point or chisel in impact breaking hard material will cause too fast wearing on the sharp edge.




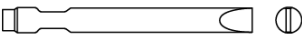
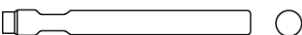
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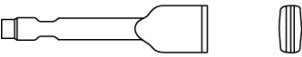
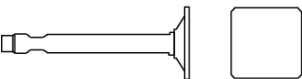

### Tool selection

- A range of standard and special tools is available to suit various application requirements.
- Selection of proper tool types will let you achieve an optimum mix of high productivity and tool longevity.
- Selection of optimum tool type for an application may require some testing. Available tool types vary from one breaker model to another.
- Contact your authorized dealer for more information prior to choosing tools.

Conventional tool		Application type				
		Primary breaking	Secondary breaking	Hard rock removal	Soft material & rock removal	Demolition
	Moil	•		•	•	•
	Chisel	○		○	•	•
	Blunt		•			○

3 - WORKING OPERATIONS

Conventional tool		Rock type					
		Asphalt	Concrete	Limestone	Sand-stone	Granite	Basalt
	Moil	•	•	•	•	•	•
	Chisel	•	○	•	○	○	○
	Blunt					•	•

Special tool (CB20 - CB80)		Application type		
		Asphalt removal	Compacting	Post driving
	Spade	•		
	Compacting		•	
	Elephant foot			•

**NOTE:** • Highly recommended; ○ Selectively applicable

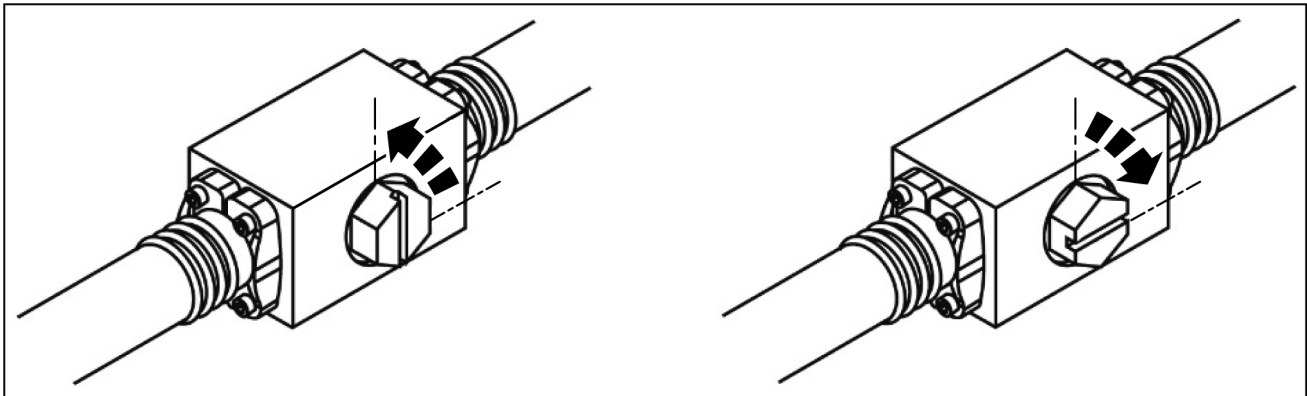
## INSTALLING THE ATTACHMENT

### Principle of installation

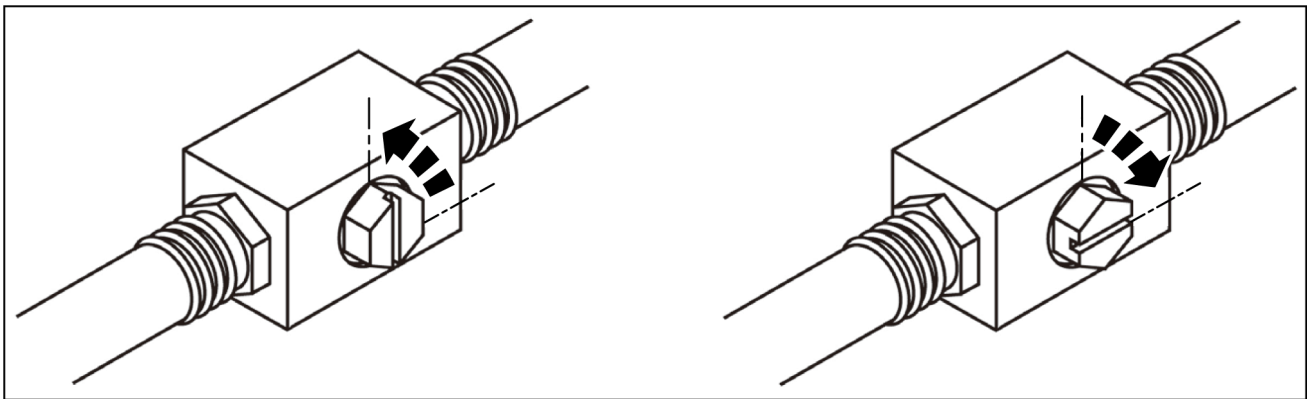
The breaker is installed on the carrier in a similar manner as installing a bucket or other attachments.

- The breaker is connected to the hydraulic system of the carrier through a breaker circuit.
- If the carrier is already equipped with such a circuit, only suitable hoses and fittings are required.
- If the carrier does not have a suitable circuit for running the breaker, the circuit must be ordered from a CNHi authorized dealer.
- This may require more complex installation, including new piping and additional valves such as directional valve and pressure relief valve.

### Breaker installation



PTIL19GEN0035EA 1



PTIL19GEN0036EA 2

### Stop valve opening and closing

- Fit the breaker and breaker bracket in the carrier.
- Remove seal from hoses and plugs from stop valves.
- Install hydraulic hoses from the breaker with carrier piping stop valve.
- Open carrier piping stop valve.

## USING THE ATTACHMENT

### Work mode selection

Breaker work mode (Power mode or Speed mode) is selectable at the models of CB80 and above.

### Mode recommendation

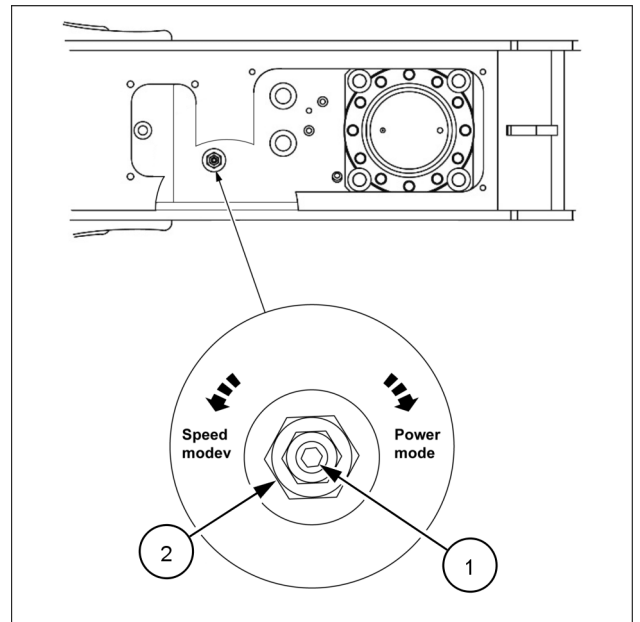
- Speed mode
  - Applications that require productivity from high speed breaking.
  - Soft material breaking such as light/medium duty limestone, soft duty granite, concrete structure, asphalt, etc.
- Power mode
  - Applications that require productivity from power breaking.
  - Hard material breaking such as heavy duty limestone/sand stone, granite, basalt, andesite, iron ore, etc.

Power mode or speed mode can be selected by following procedure.

- Remove MC Cover.
- Loosen adjuster valve nut until you can start to turn adjuster valve.
- Turn adjuster valve with 5mm L-wrench **(1)** (available in the tool box)
  - Power mode: turn to the right, clockwise to maximum (till fully tightened).
  - Speed mode: turn to the left, counter clockwise by 2 turns.

**NOTE:** Power mode is pre-set when the breaker comes off the factory.

- After setting, tighten adjuster valve nut **(2)** completely.



PTIL19GEN0012GB 1

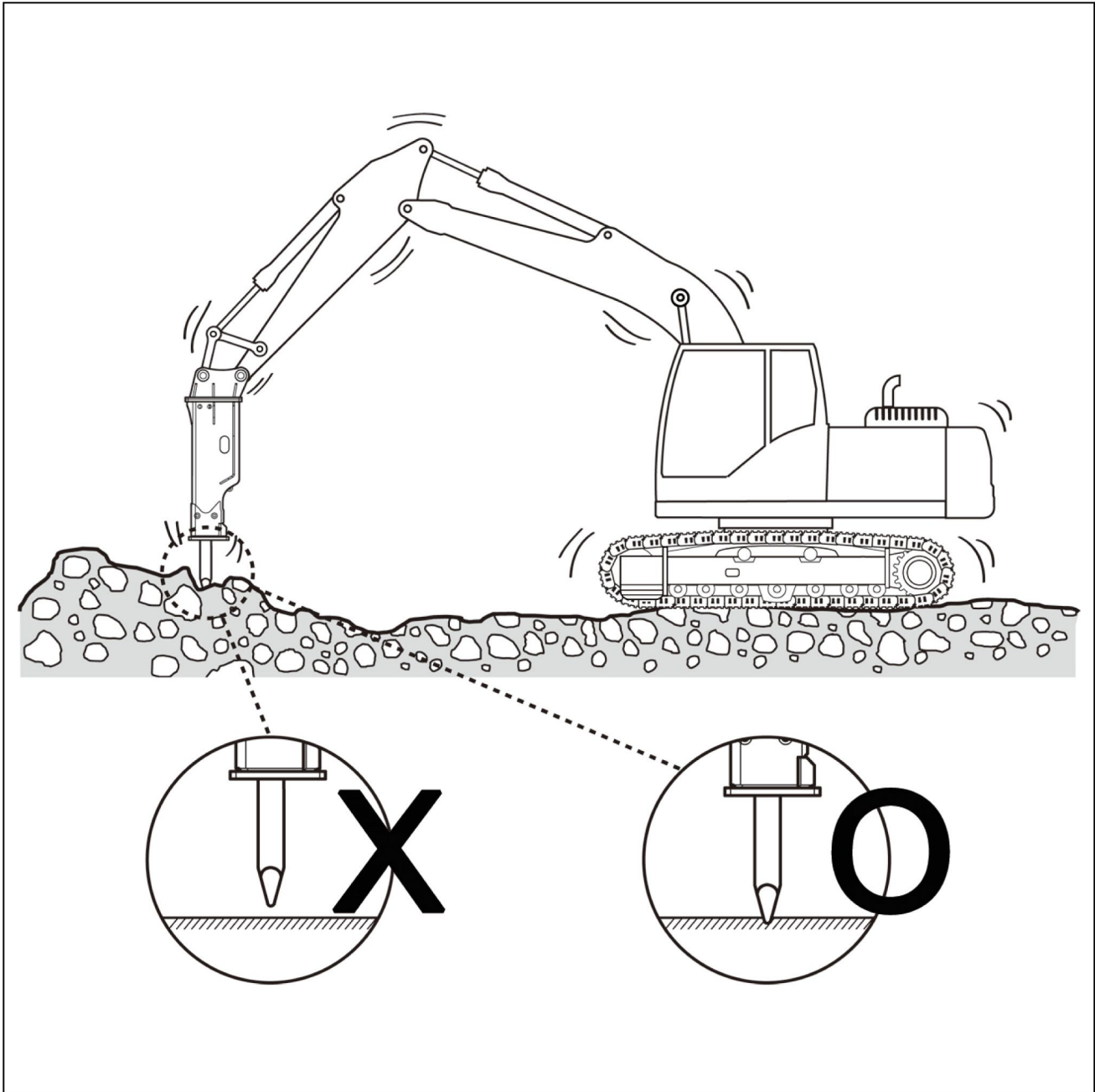
### Operating

When operating, the operator should pay attention to the following points. First of all, precautionary measures should be taken to rule out the risks of accident.

- Operate the breaker only from the cabin inside the carrier.
- Close the cabin front screen or splinter guard to avoid injury from flying rock splinters.
- Wear ear protection to prevent hearing ability impairment. Anyone in the immediate vicinity of breaker operations should also wear ear protection.
- Switch breaker off immediately if any one moves into the risk zone.

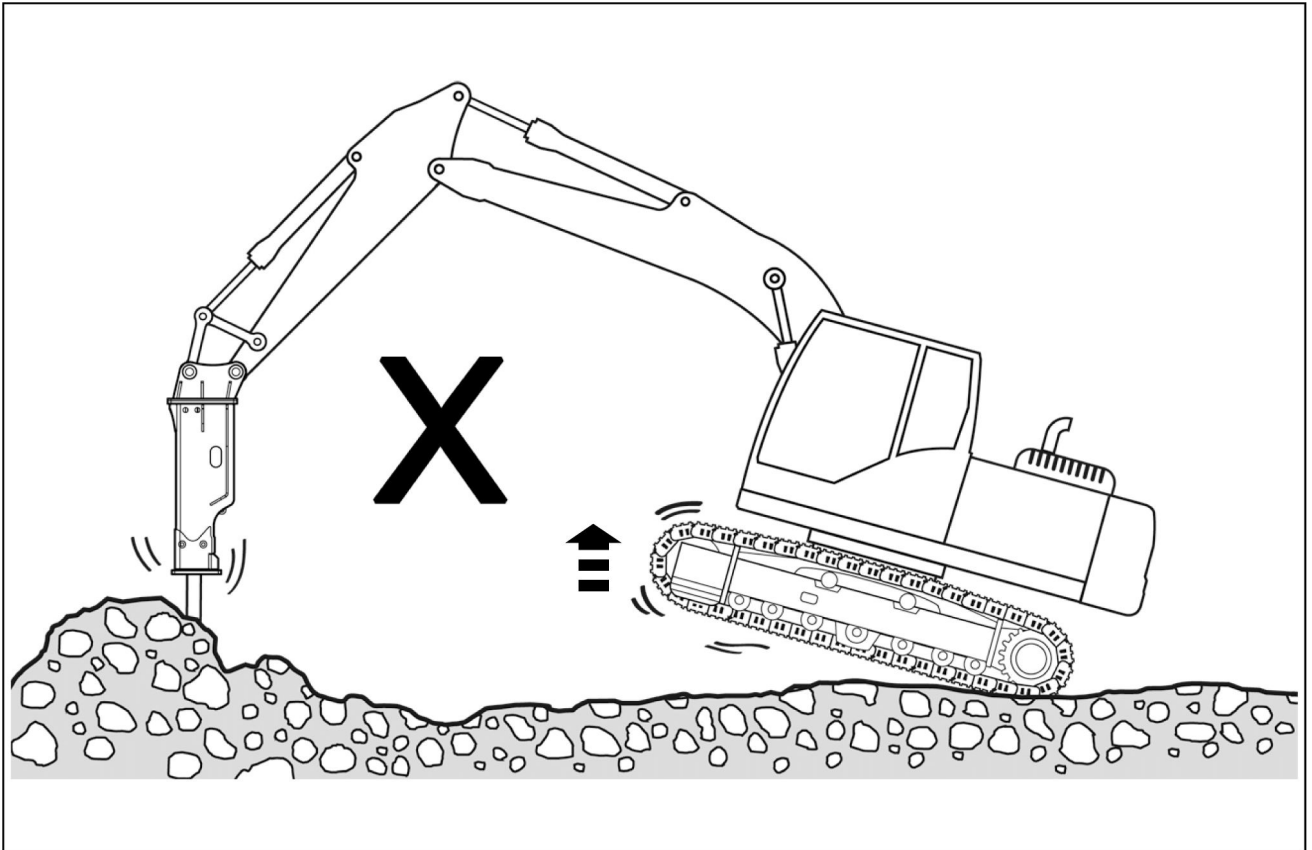
**Proper way of operation**

**Proper thrust**



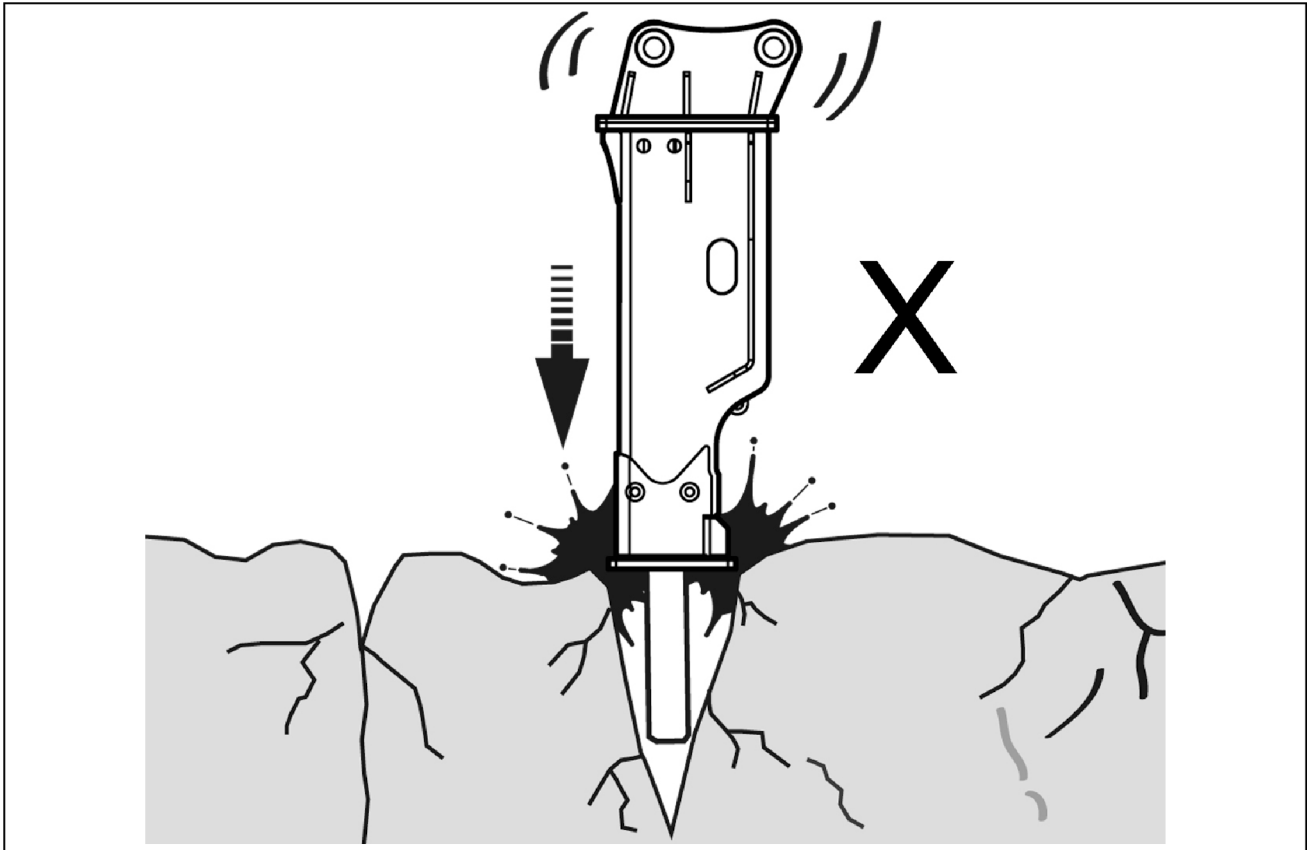
PTIL19GEN0014GA 2

- To break effectively, a proper thrust force has to be applied to the breaker.
- If a thrust is insufficient, breaker impact energy may not be sufficient enough for breaking material.
- Then the breaking force may be transferred to breaker body, arm and boom of the carrier, etc. and cause damage to those parts.



PTIL19GEN0015FA 3

- On the contrary, if a thrust is excessive or if breaking is performed with carrier's tracks completely lifted, the carrier may suddenly tilt toward the movement.
- When the material is broken, the breaker body may violently hit against material and cause damage on the breaker.

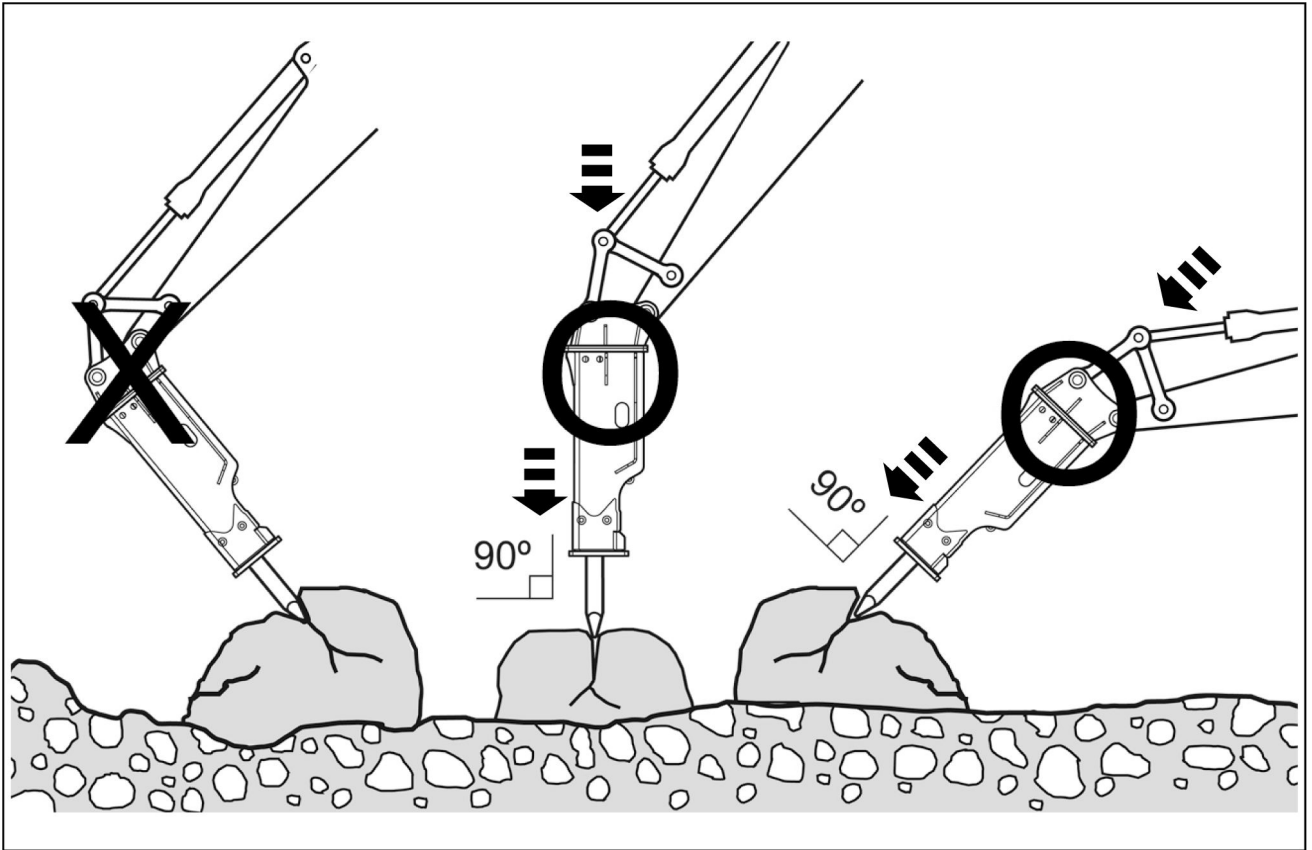


PTIL19GEN0016FA 4

- If breaker operation is carried out under such a condition, vibrations may also be transferred to the carrier.
- Therefore breaking in such a manner should be avoided for protection of the carrier as well.
- Therefore during breaking, always ensure to apply a proper level of thrust to the breaker. Do not break without properly applied thrust.



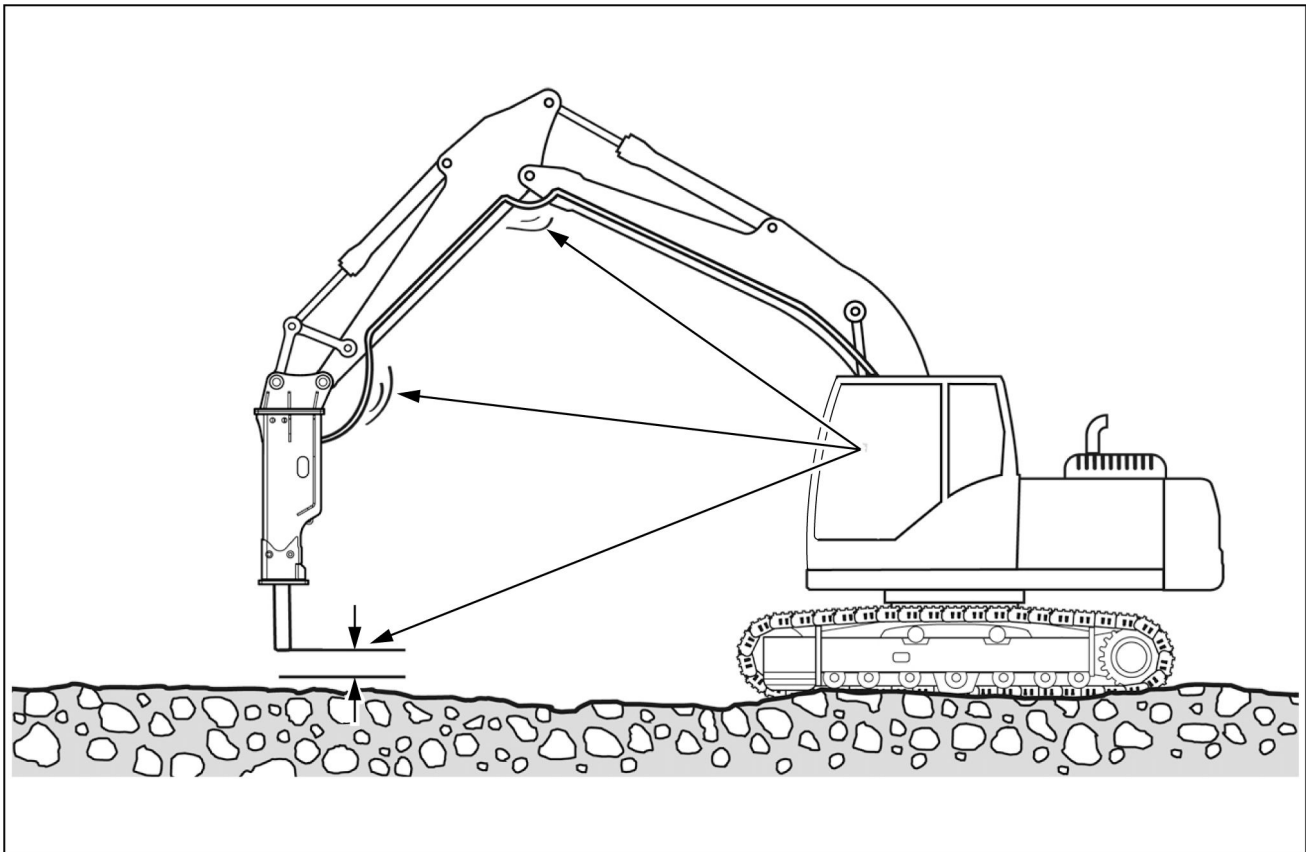
**Direction of thrust**



PTIL19GEN0017FA 5

- Apply thrust in a straight line with the tool. Place the tool on the material with a position as vertical as possible.
- If the breaker stands on the material with an oblique position, the tool may slip over the material and cause tool and/or piston crack or seizing.
- When breaking, select a point of the material where the breaker can be operated with the tool stably staying on the material.

### Stop breaker operation as soon as the hoses vibrate excessively



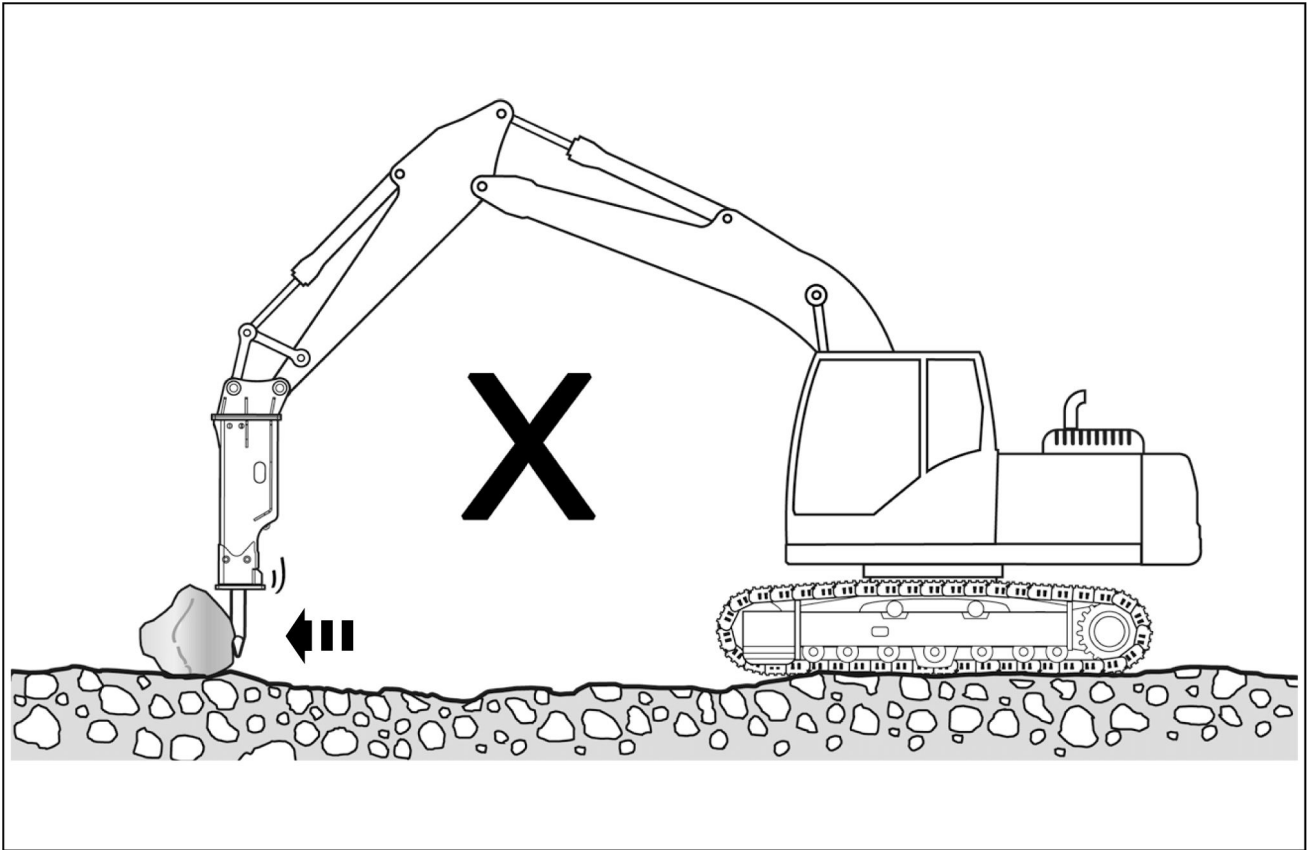
PTIL19GEN0018FA 6

- Check if high and low pressure hoses vibrate excessively.
- If that, accumulator may not be working properly.
- Contact your authorized dealer and get it repaired. Check hose fitting points.
- If oil leaks, retighten or if necessary replace them. Check if tool is moving up and down during operation as illustrated below.
- If not, tool may be seized. Disassemble front head and repair or if necessary replace defective parts.

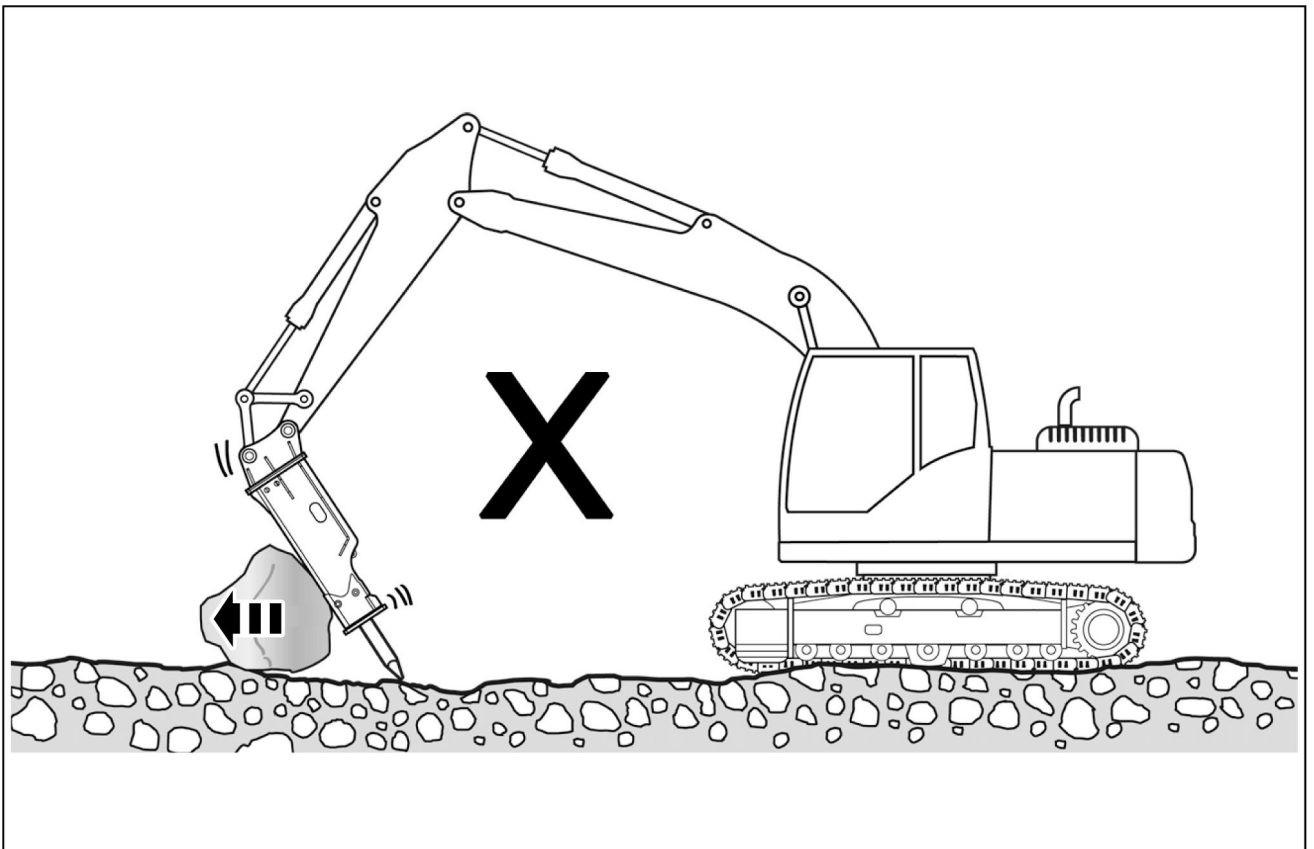
### Stop when the material is broken (avoid idle breaking to the utmost)

- As soon as material is broken, stop breaking and prevent idle breaking.
- If idle breaking continues, it can cause accumulator damage and bolt loosening or crack.
- It also can affect the carrier adversely.
- When a proper thrust is not applied or the tool is used like a lever during the operation, idle breaking will occur.
- In idle breaking, breaker striking generates abnormal sound like metal to metal hitting.

**Never use to move the material**



PTIL19GEN0019FA 7

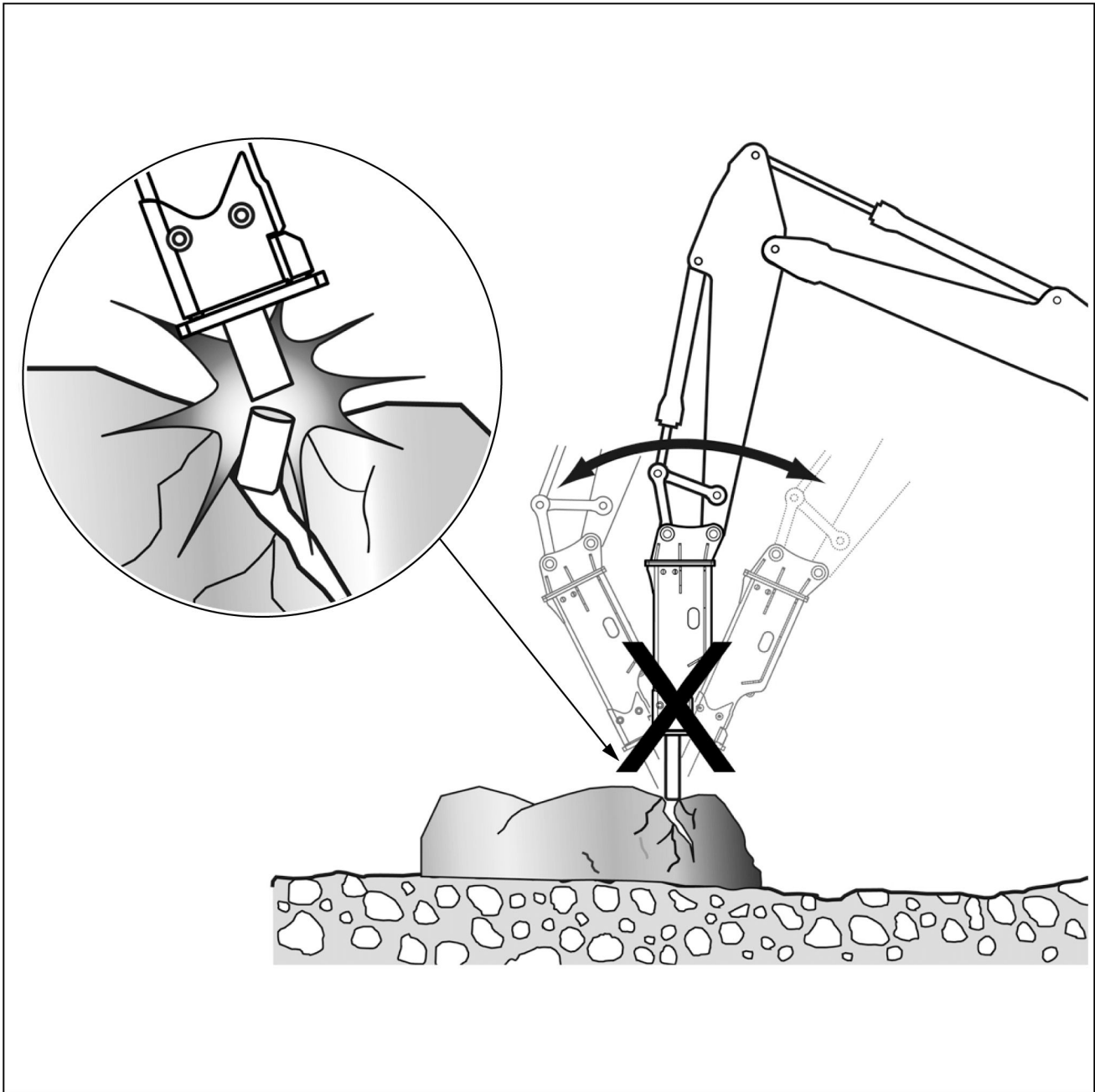


PTIL19GEN0020FA 8

- As shown on above images, do not roll or throw in and out any material with tool or housing.

- It can cause damage such as crack, deformation, abnormal wearing, etc. on bolt, housing and tool crack (or scuffed).
- It can also damage carrier boom & arm. Never move the material with breaker.
- Particularly never let the carrier travel with tool inside the material.

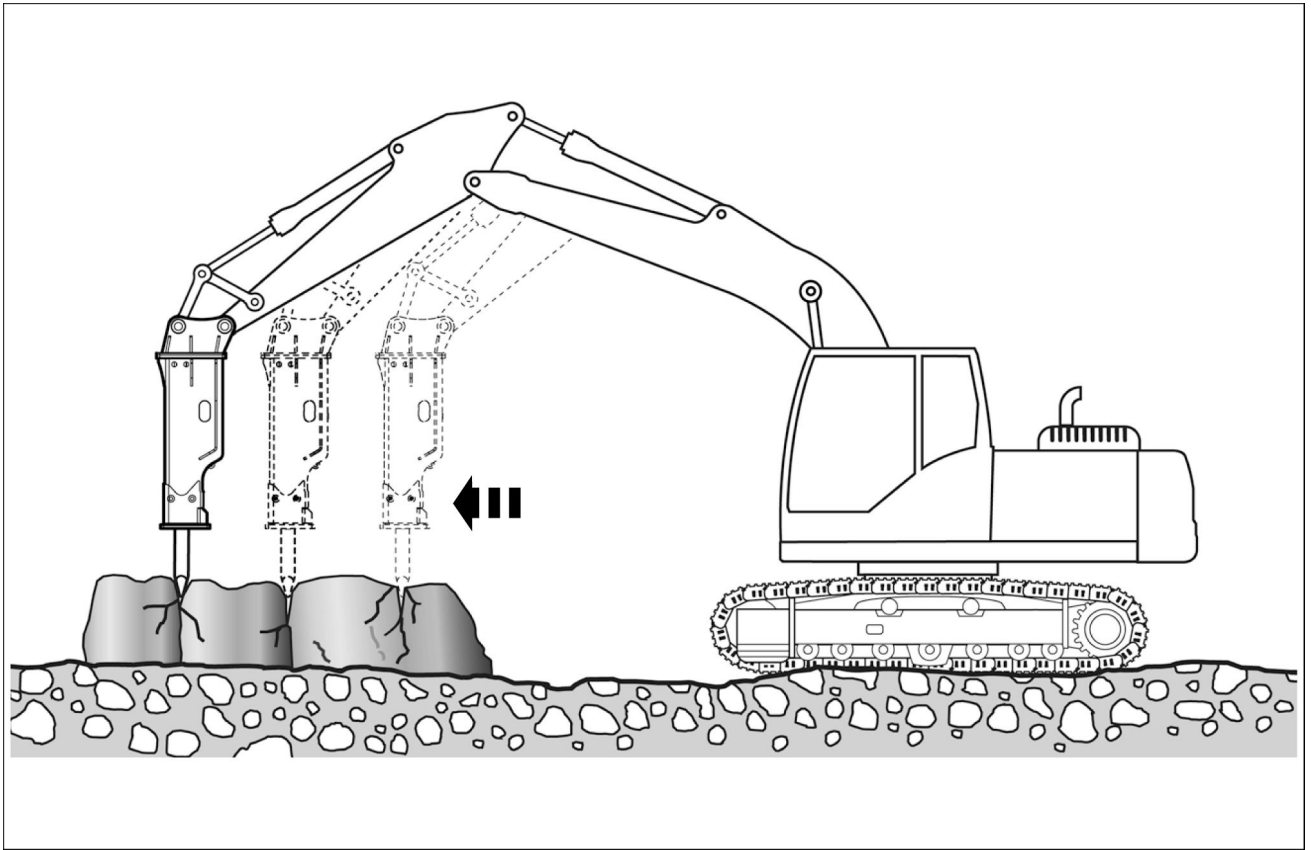
**Never lever with the breaker**



PTIL19GEN0021GA 9

Never attempt to use the breaker like a crowbar. It will cause tool crack.

**No breaking longer than 15 seconds continuously Never break a same spot for longer than 30 seconds**



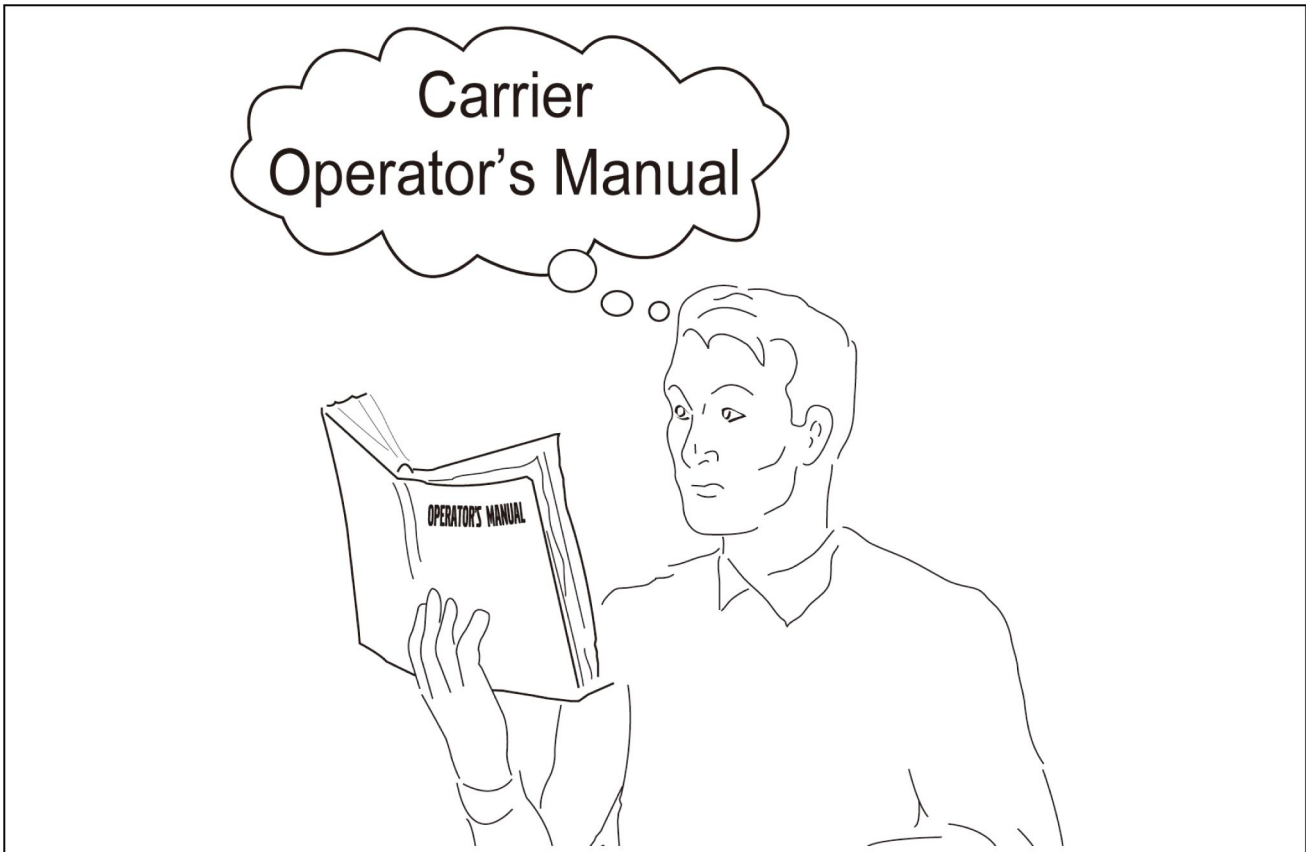
PTIL19GEN0022FA 10

- When rocks are hardened, each breaking requires a longer time. However do not break a same spot for longer than 30 seconds.
- Change the breaking spot. If not, oil temperature can increase, causing accumulator damage and excessive tool wearing.

### **Start at an edge in case of hard and large size rock**

Start of breaking at a crack or edge area will enable hard and large size rock to be easily broken. Advancing by small step is more effective than large step.

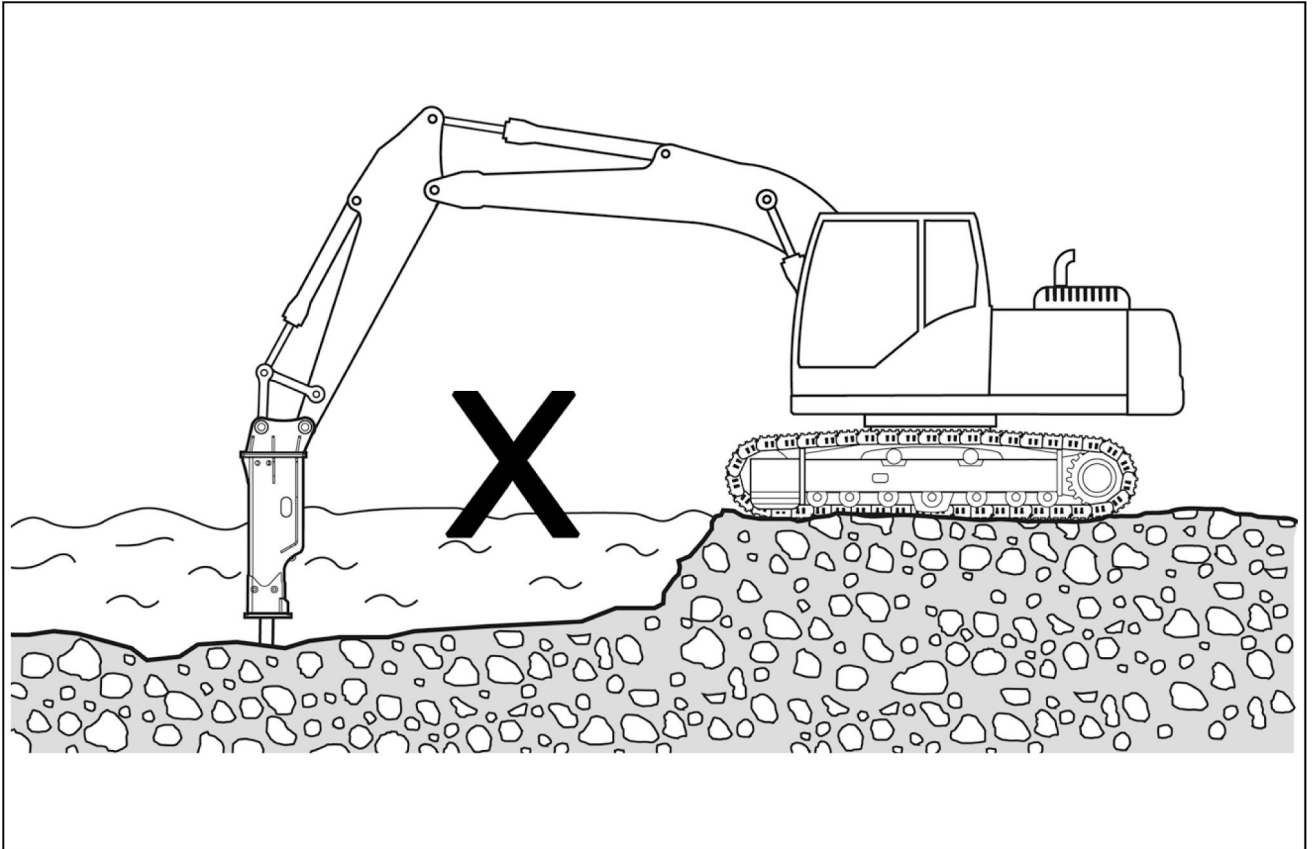
### Use of proper engine speed



PTIL19GEN0023FA 11

- Breaker works at the specified engine speed.
- Raising engine speed to the highest rpm levels does not increase breaking force but raises oil temperature that can cause breaker internal component failures.
- To run the breaker at proper engine speed, please refer to carrier Operator's Manual.

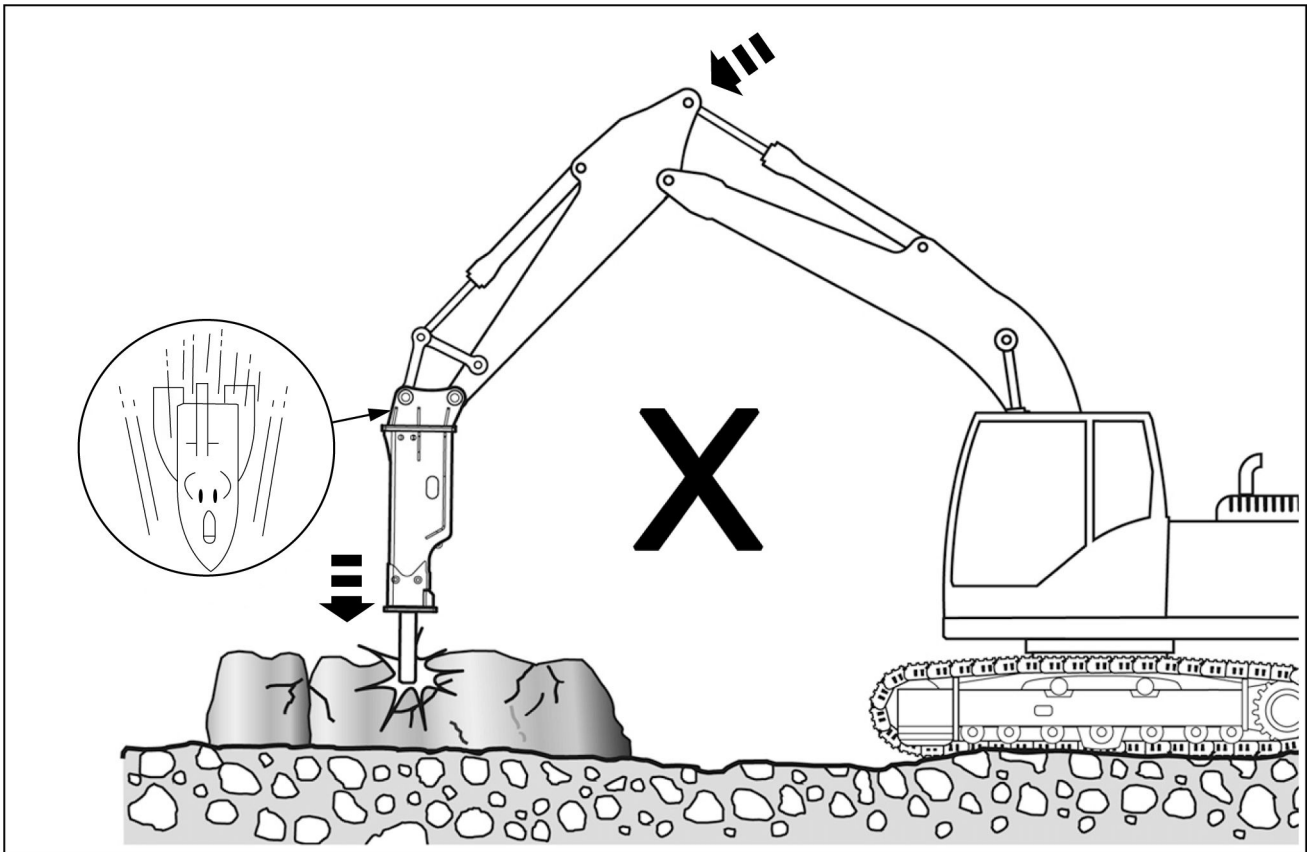
**Never use at underwater or muddy applications without prior conversion**



PTIL19GEN0024FA 12

- If water enter the percussion chamber, breaker blows may generate pressure waves that may cause irreparable damage to cylinder, piston and front head of the breaker.
- In addition lower percussion piston zone may get rust. Water could also get into carrier hydraulic system.
- In order to avoid damage to the breaker, contact your authorized dealer and use a kit dedicated for underwater application.

**Never use breaker like a sledge**

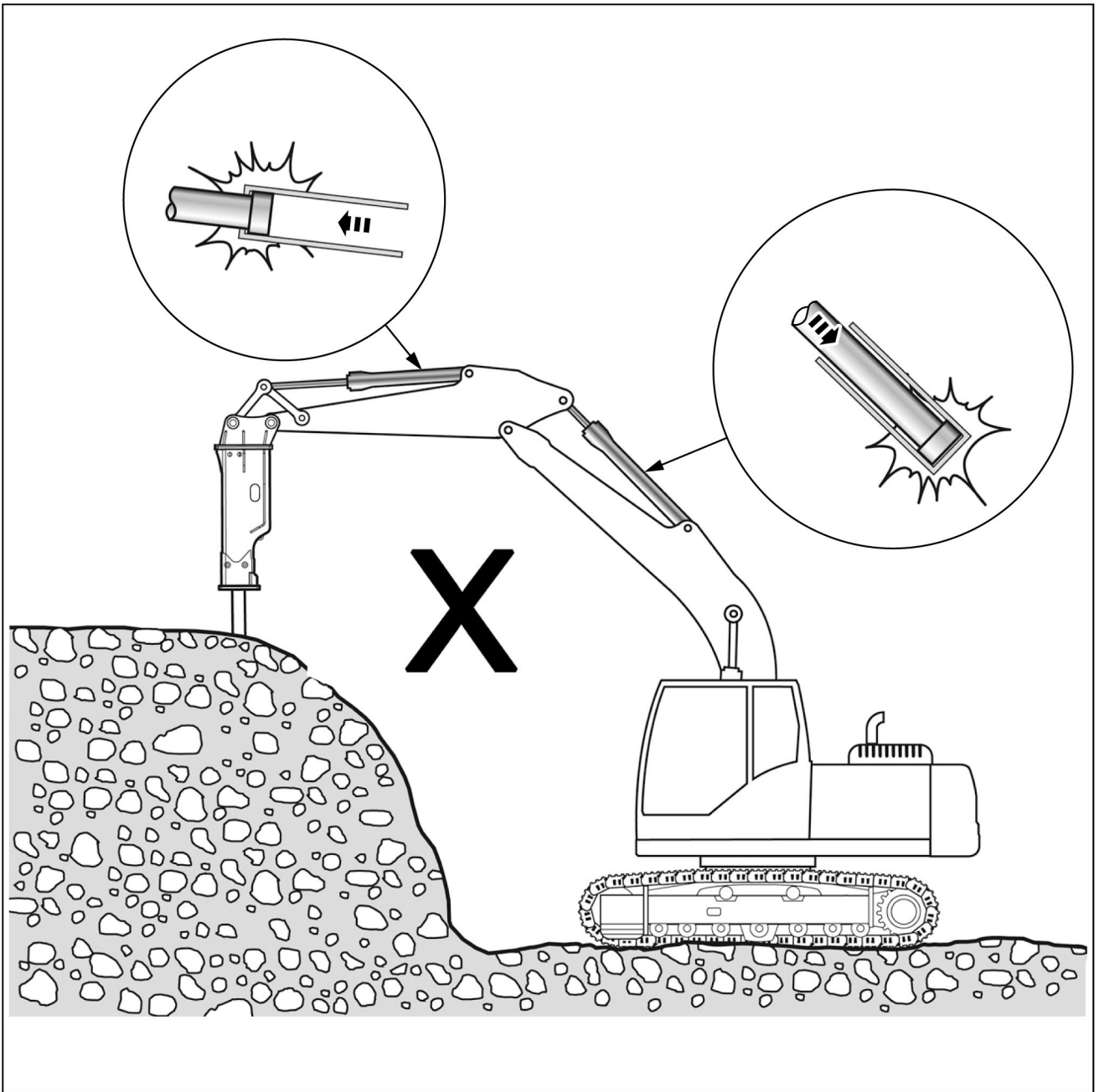


PTIL19GEN0025FA 13

- Before starting up, rest the breaker on the ground.
- Never attempt to use the breaker and the carrier boom like a sledge when breaking the material.
- It will damage parts of the carrier.



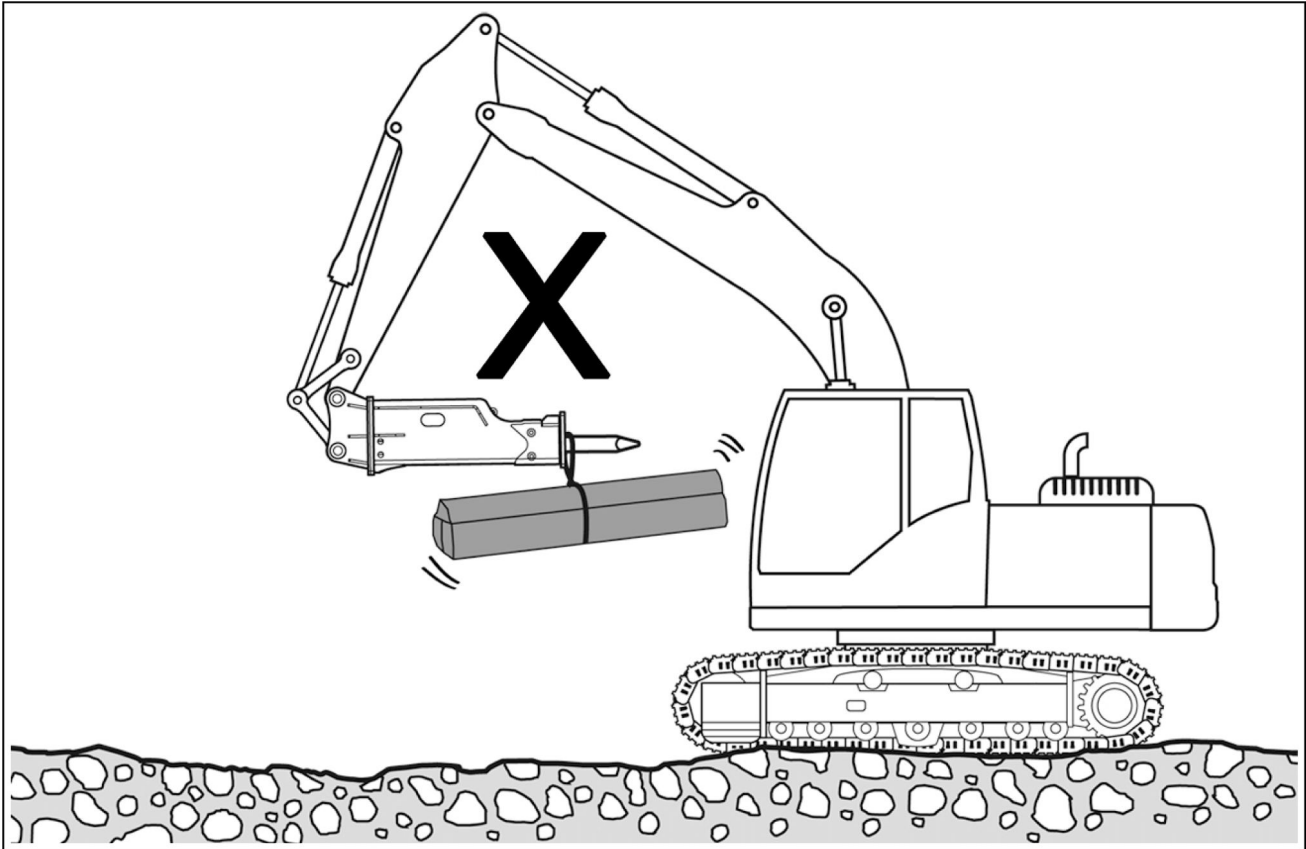
**Never break with the cylinders at fully extended position**



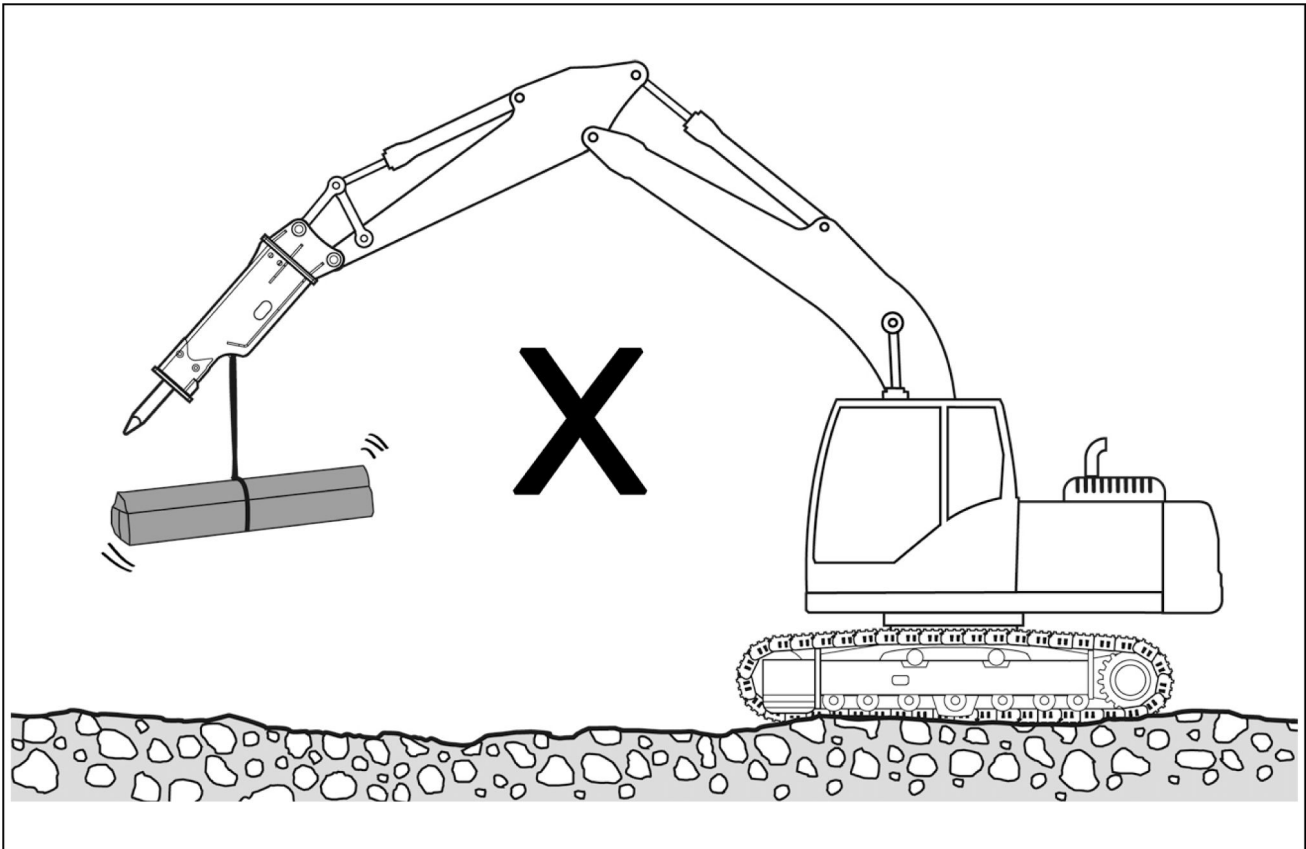
PTIL19GEN0026GA 14

- The carrier cylinders may be easily damaged when the breaker works with their fully stretched position to the end.

**Never use for transport or lifting purpose**



PTIL19GEN0027FA 15

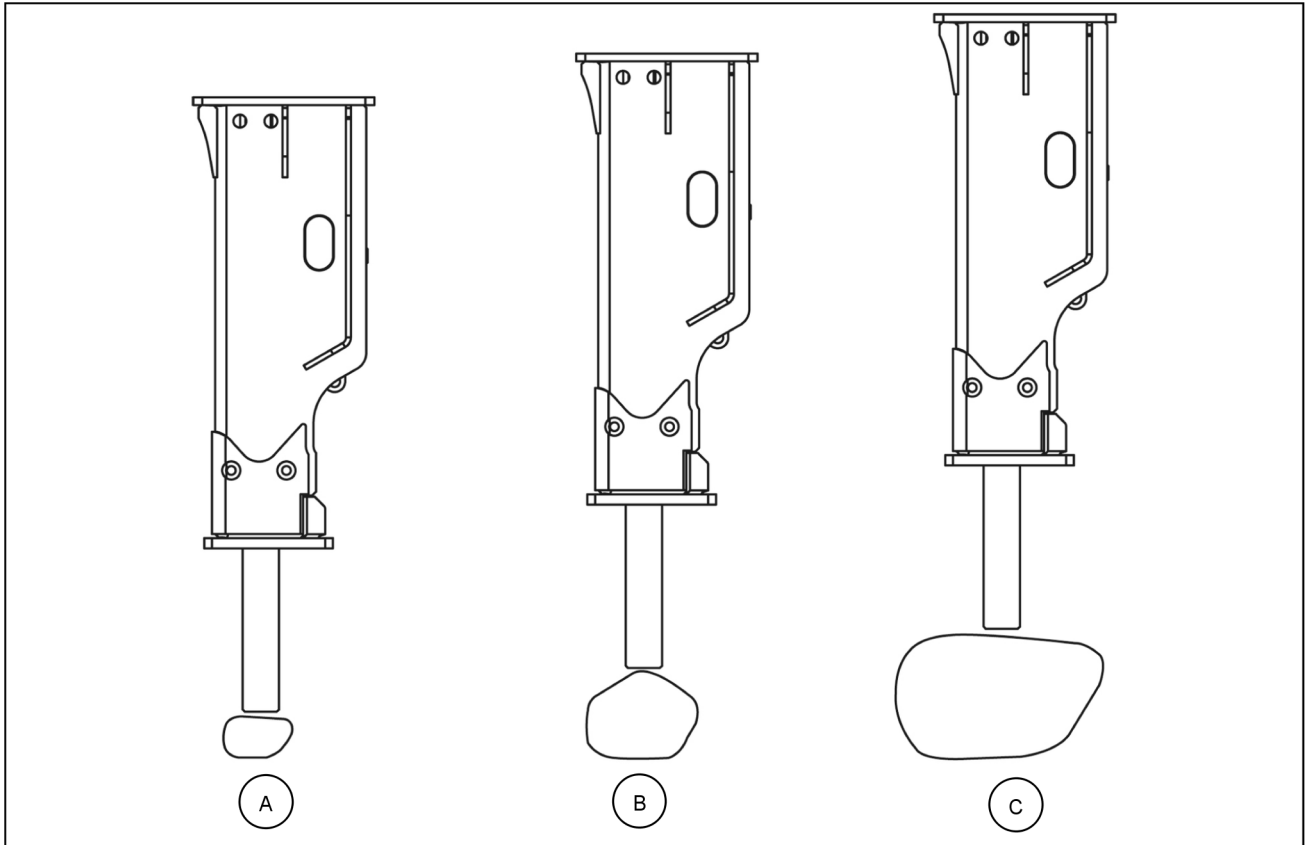


PTIL19GEN0028FA 16

- The breaker is not designed for lifting or transporting work.

- It can be easily damaged if used for lifting or transporting material purpose.
- Furthermore it is very dangerous, incurring serious accidents.

### How to operate breaker in secondary rock breaking applications

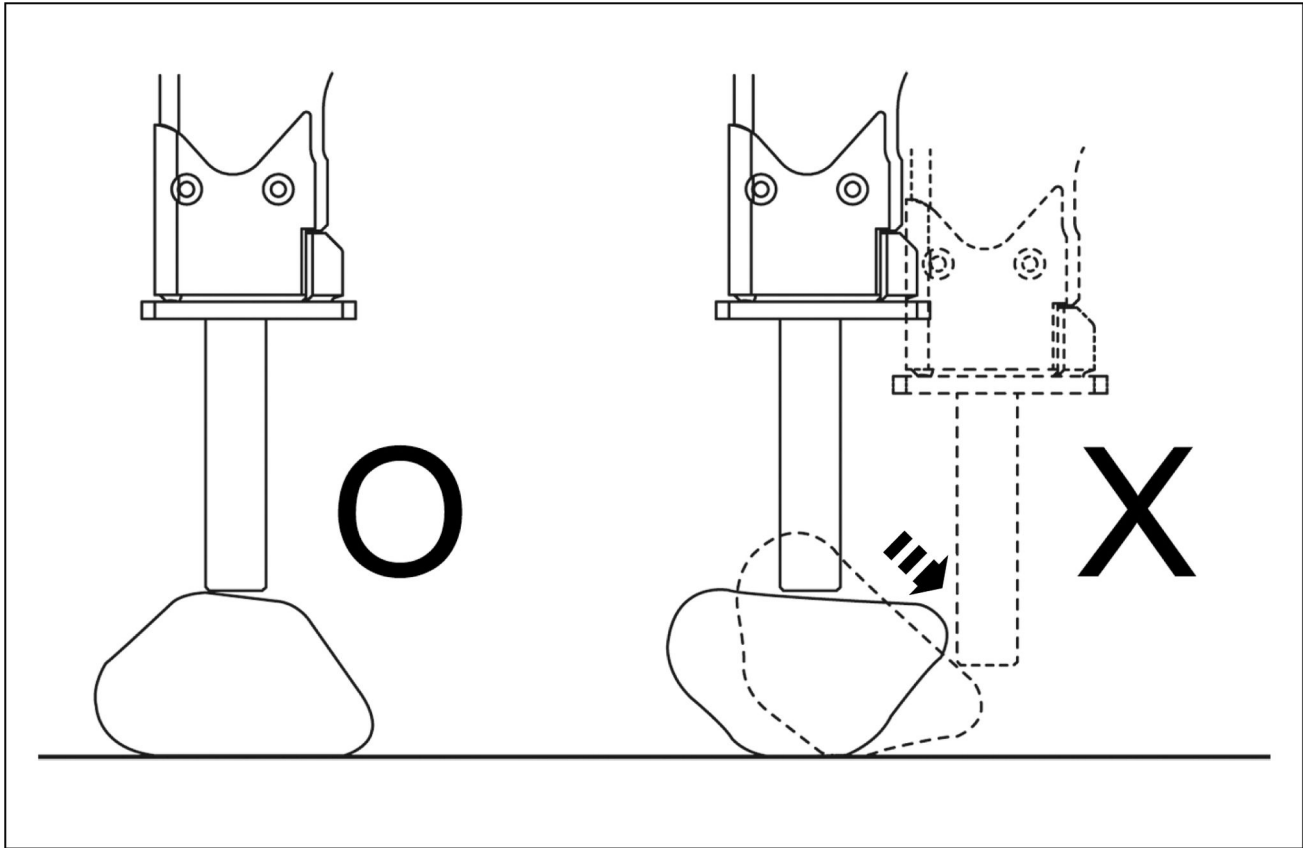


PTIL19GEN0029FA 17

- Tool pins can be easily cracked or damaged in secondary rock breaking quarry applications.
- Typical root cause is that tool hits tool pin repeatedly during the breaker operation.
- Follow below instruction for correct breaker operation.

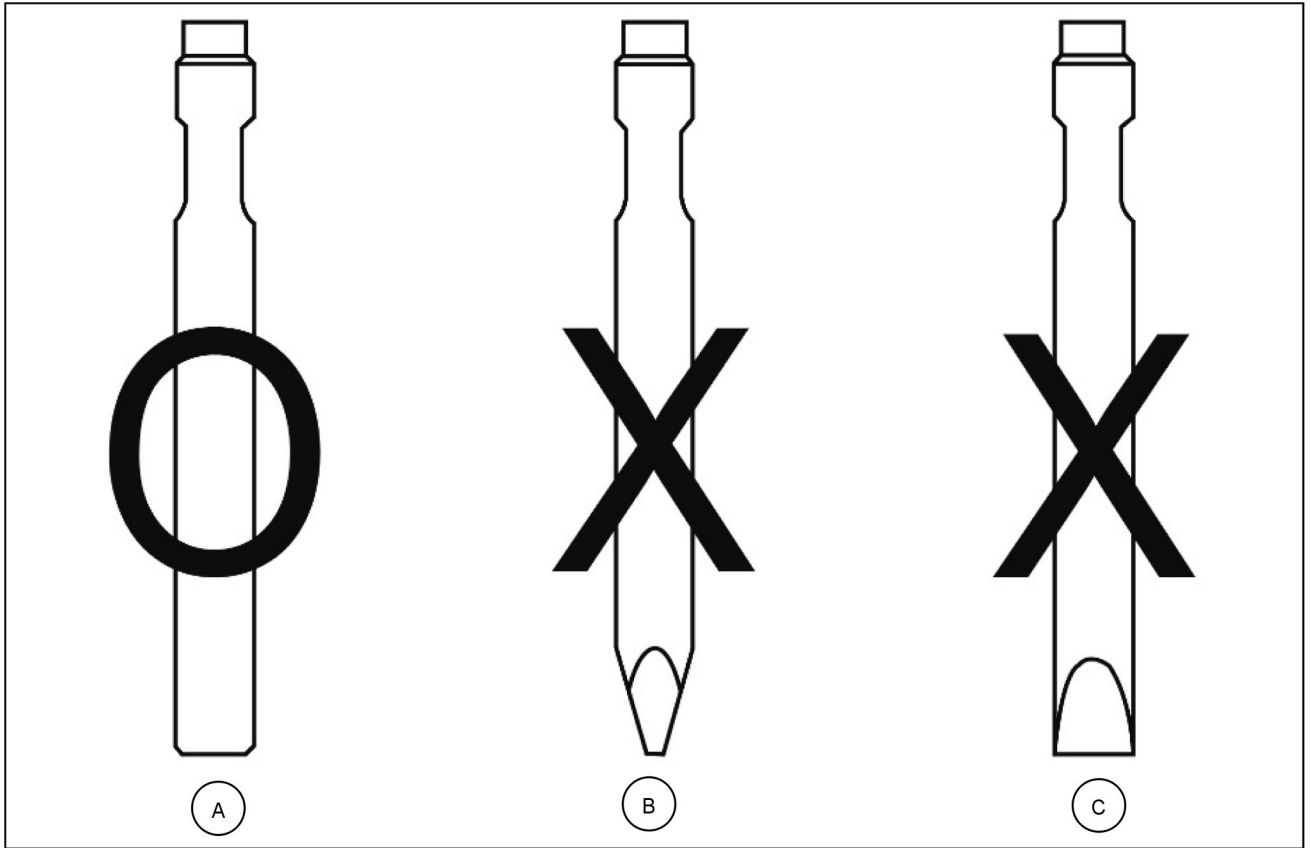
Regulate operating pedal or switch to limit number of blows per breaking. This is important!

- (A)** - Rock size **30 cm**, 1 blow
- (B)** - Rock size **50 cm**, 2 blows
- (C)** - Rock size **100 cm**, 3 - 5 blows



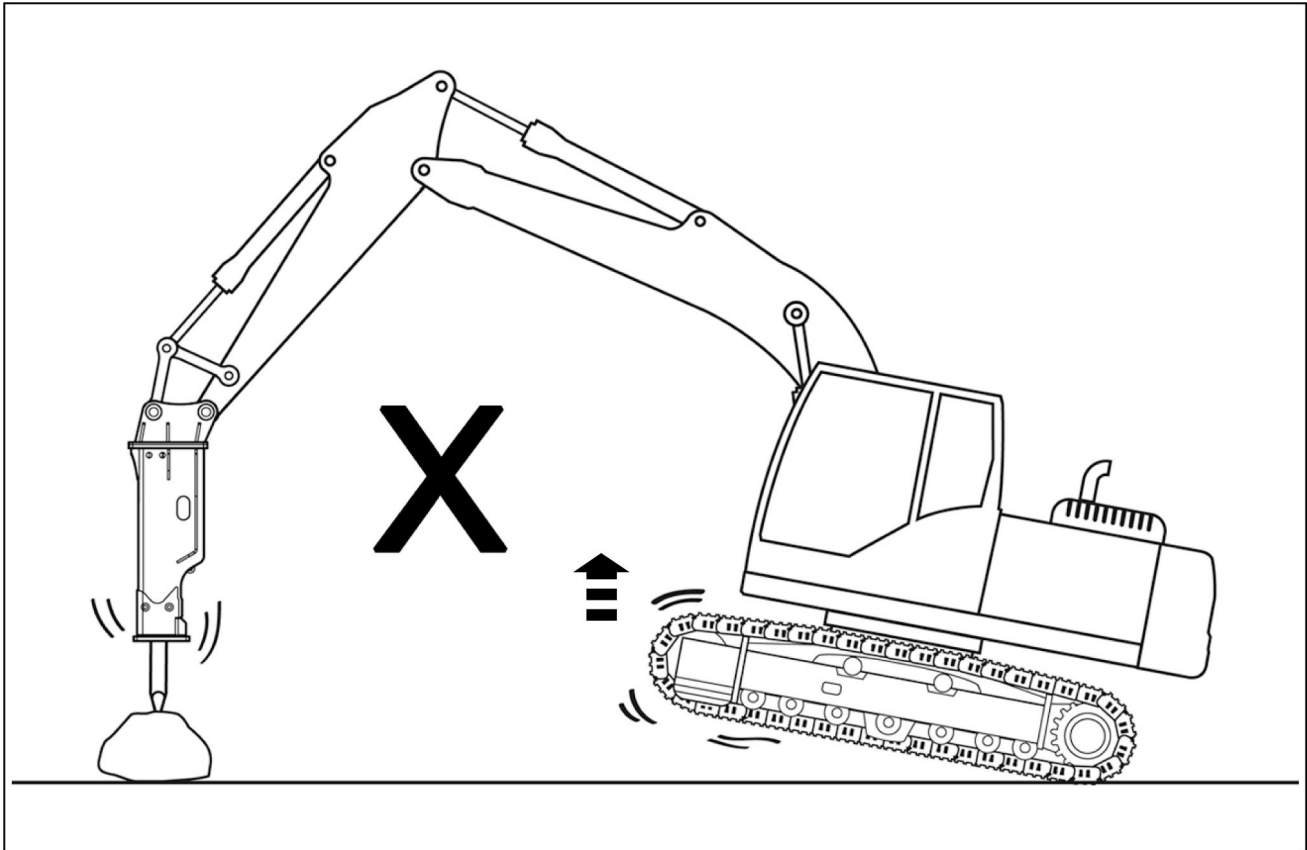
PTIL19GEN0030FA 18

- In case the rock is unstable or slippery, blank firing can occur (tool hits tool pin with high impact power when the breaker slips down off the rock).
- Ensure that you avoid blank firing by proper positioning of the breaker.



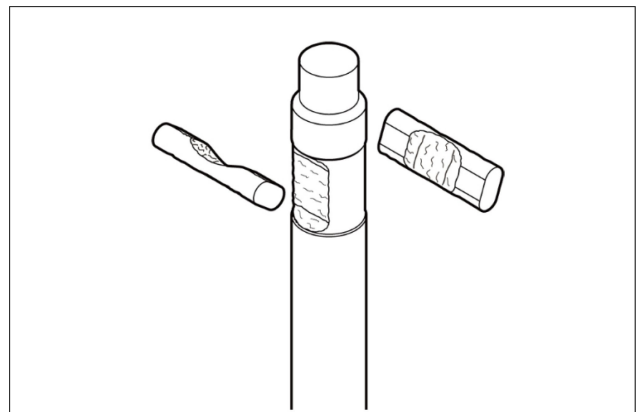
PTIL19GEN0031FA 19

- Use blunt (flat end point) tool.
- A - Blunt
- B - Moil
- C - Chisel



PTIL19GEN0032FA 20

- Do not lift up carrier tracks.
- Slow down breaker BPM (striking frequency) to **70%** of conventional application BPM.
- In case you follow the aforesaid instruction, you will achieve a longer tool pin life as the risks of tool pin crack and excessive wearing can be reduced drastically.
- It will also increase housing service life by slowing down housing bottom area wearing.

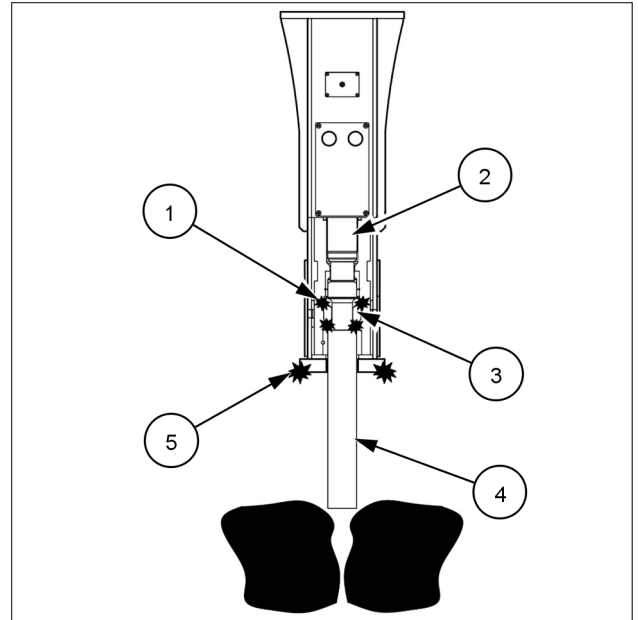


PTIL19GEN0033FA 21

**NOTICE:** Lack of respect to the aforesaid instructions can cause failure to tool pin and also consequential failure to front head at relatively early hours, which will not be supported by manufacturer's warranty.

However 5~10 blows per breaking may also be required when breaking large size rock boulders (larger than 1 m).

1.	Tool pin damage	4.	Tool
2.	Piston	5.	Housing damage
3.	Tool pin		



PTIL19GEN0034GA 22

### Breaker use in special applications

**NOTICE:** The breaker must not be used under water unless proper preparation kit is equipped with. If water enter the percussion chamber, strong pressure waves are generated and damaging the breaker. Operating breaker at the special applications must be carried out with a proper preparation kit and/or special wear parts under full responsibility of the operator, will not be supported by the warranty of breaker manufacturer.

If the breaker is to be used in the special applications such as,

1. tunnel application
2. foundry cleaning application
3. underwater application
4. extremely low or high temperature application
5. use of special hydraulic oils
6. other special conditions

It may require modifications, special operating techniques, increased maintenance and/or special wear items. You must contact your authorized dealer for proper instructions.

## **ANTI BLANK FIRING (AUTO-STOP)**

- Blank firing occurs when the operator keeps pressing breaker pedal switch even after breaking material is completely broken. Then 3~5 times of surplus hitting by accumulated oil flow is conveyed directly to through bolts, tool pin and other parts where damage can occur.
- Anti blank firing system was designed to stop breaker operation after only one extra blow if the material is fully broken, has proved its efficiency as well as durability and liability in actual operations at the job sites.
- However in case of secondary rock breaking application where the material sizes are small, the materials are broken by 1~2 blows and then the breaker fires blanks. Therefore operator has to be extremely careful and follow below instructions to prevent premature and unnecessary tool failure.
  - Use blunt tool
  - Operator must stop striking immediately after the material is broken.



## WORKING TEMPERATURE OF BREAKER

### Operating oil temperature

- Breaker operating oil temperature range is **40 – 80 °C (104 – 176 °F)**.
- If oil temperature is below the range, ensure that the carrier oil is warmed up to minimum of operating oil temperature range prior to any operations.
- Ensure that the oil will have to remain warm during operation.
- If oil temperature is above the range, ensure that the carrier is equipped with additional oil cooling system so that the temperature can stay within the range.

**NOTE:** *The temperature of the hydraulic oil must be monitored periodically. Ensure that the combination of oil grade and oil temperature will guarantee correct oil viscosity.*

### Working in high temperature conditions

- Hydraulic oil temperature must not exceed **80 °C** . Check the oil temperature in the oil tank constantly.
- If it is higher than **80 °C**, carrier oil cooling function must be enhanced enough to lower it under **80 °C**.
- Use hydraulic oils of sufficient viscosity only. In summer and tropical climates, hydraulic oil type **ISO VG-68 HV** is the minimum requirement. Refer **4-9**.

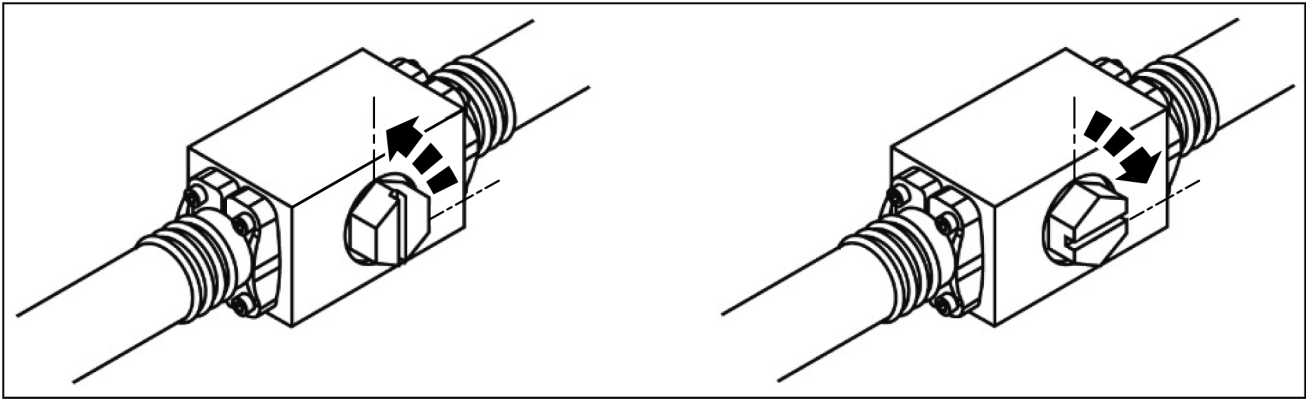
### Working in low temperature conditions

- Prior to breaker operation, increase oil temperature above **40 °C** by carrier engine warming up, boom/arm moving, swing, traveling, etc.

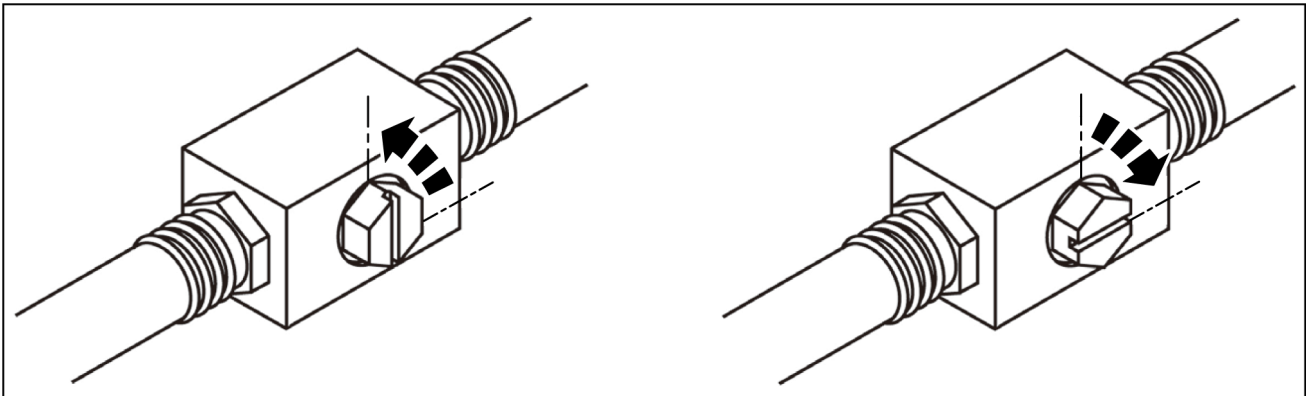
**NOTE:** *The breaker is not running to full capacity until the oil temperature has reached **60 °C** at least.*

**NOTICE:** *Under the cold climate condition like winter if the breaker operates with low oil temperature, seals as well as piston and diaphragm can be damaged.*

## REMOVING THE ATTACHMENT



PTIL19GEN0035EA 1



PTIL19GEN0036EA 2

### Stop valve opening and closing

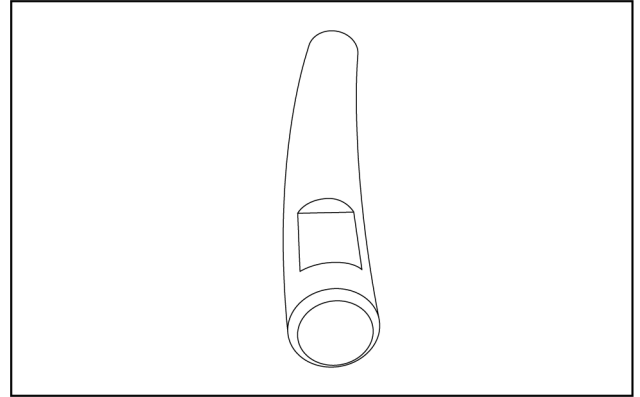
1. Close off carrier piping stop valve.
2. Remove hydraulic hoses from the breaker and carrier piping stop valve.
3. Seal hoses and stop valve with plugs.
4. Take the breaker & breaker bracket off the carrier.

## INCORRECT USE OF THE ATTACHMENT

### Cause of tool failure

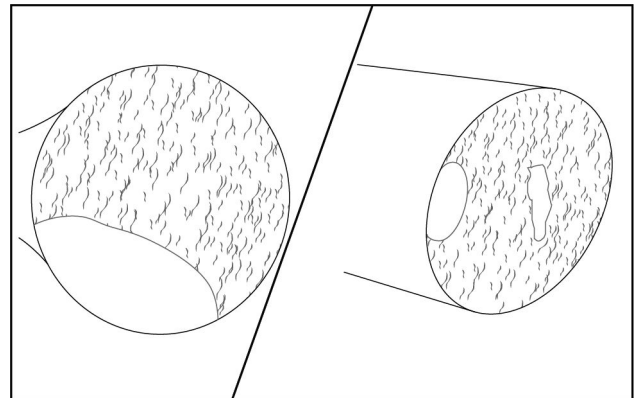
#### Bending by high pressure

- Accumulated side force from repeated tool leverage working, such as but not limited to incorrect breaker striking angle, pulling the material with breaker, etc.
- Excessive force delivered to the tool from repeated blank fires.



PTIL19GEN0120AA 1

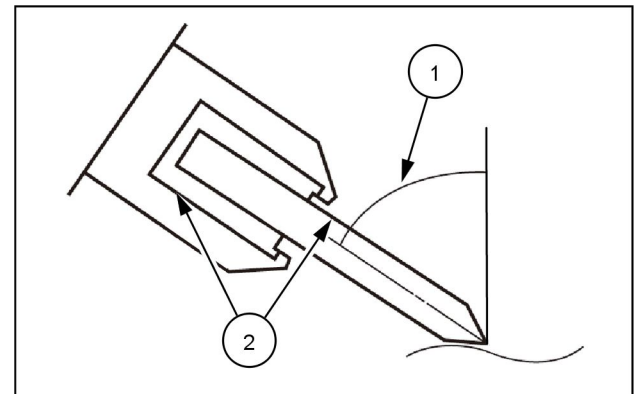
- Extremely cold condition at the job site.
- Tool overheating from abnormal friction caused by lack of lubrication or excessive bending force.
- Oblique striking angle caused by excessive lower bush wear beyond the limit.



PTIL19GEN0121AB 2

#### Bending by high pressure

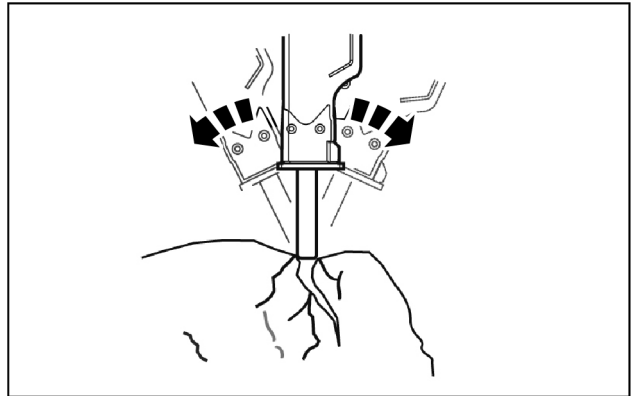
1. Bending the tool
2. High pressure and friction bending surface of tool shank



PTIL19GEN0122AA 3

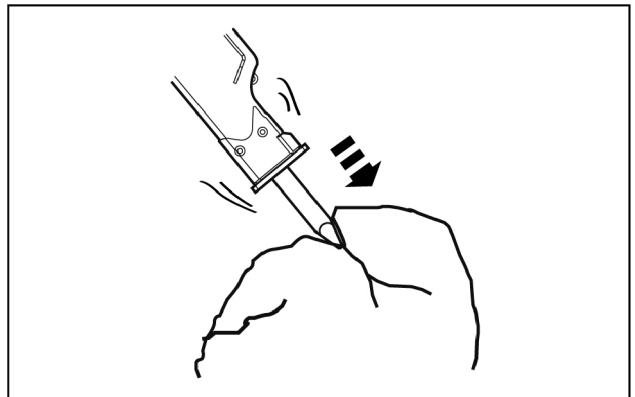
**Tool failure root cause example**

1. Leverage



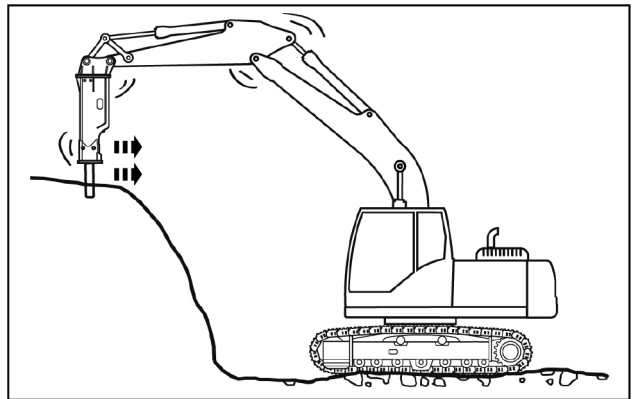
PTIL19GEN0066AA 4

2. Oblique striking angle



PTIL19GEN0068AA 5

3. Pulling the material with breaker



PTIL19GEN0101AA 6

## REPLACING A TOOL

### General Information

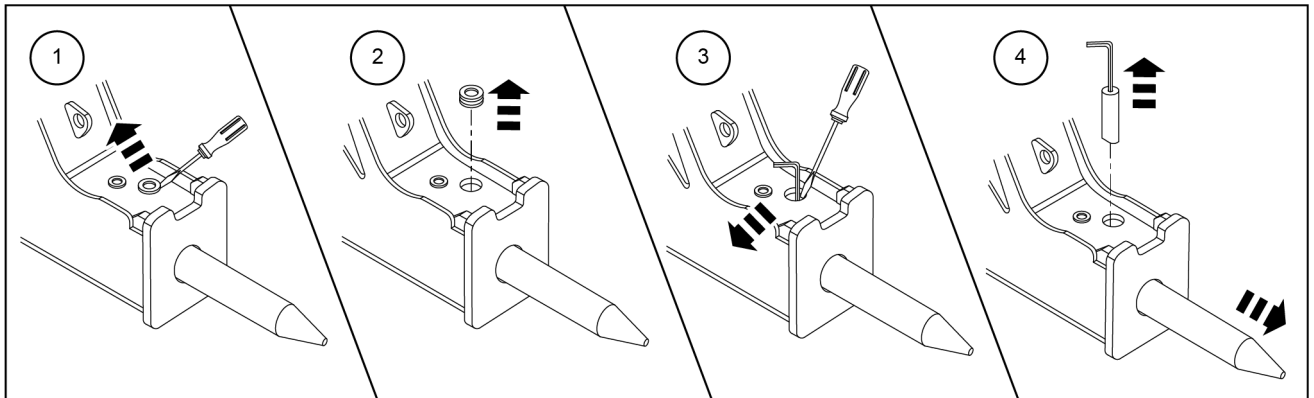
- Always wear protective glasses and helmet when fitting or removing the working tool.
- The tool shank must be well lubricated during operation. Periodic visual inspections during operation are highly recommended.
- Greasing interval varies by breaker model and working condition.
- See **3-8,3-30** correct tool fitting/removal and greasing.

### Tool replacement

**NOTICE:** For safety reason, the carrier must be switched off before tool replacement work starts. Always wear protective glasses and helmet when fitting or removing working tool as metal splinters may chip off while you are breaking tool pin into pieces for removal purpose. Never use your fingers to check alignment of tool grooves and tool pin holes.

**NOTICE:** Remove any residual pressure from the carrier before replacing the tool.

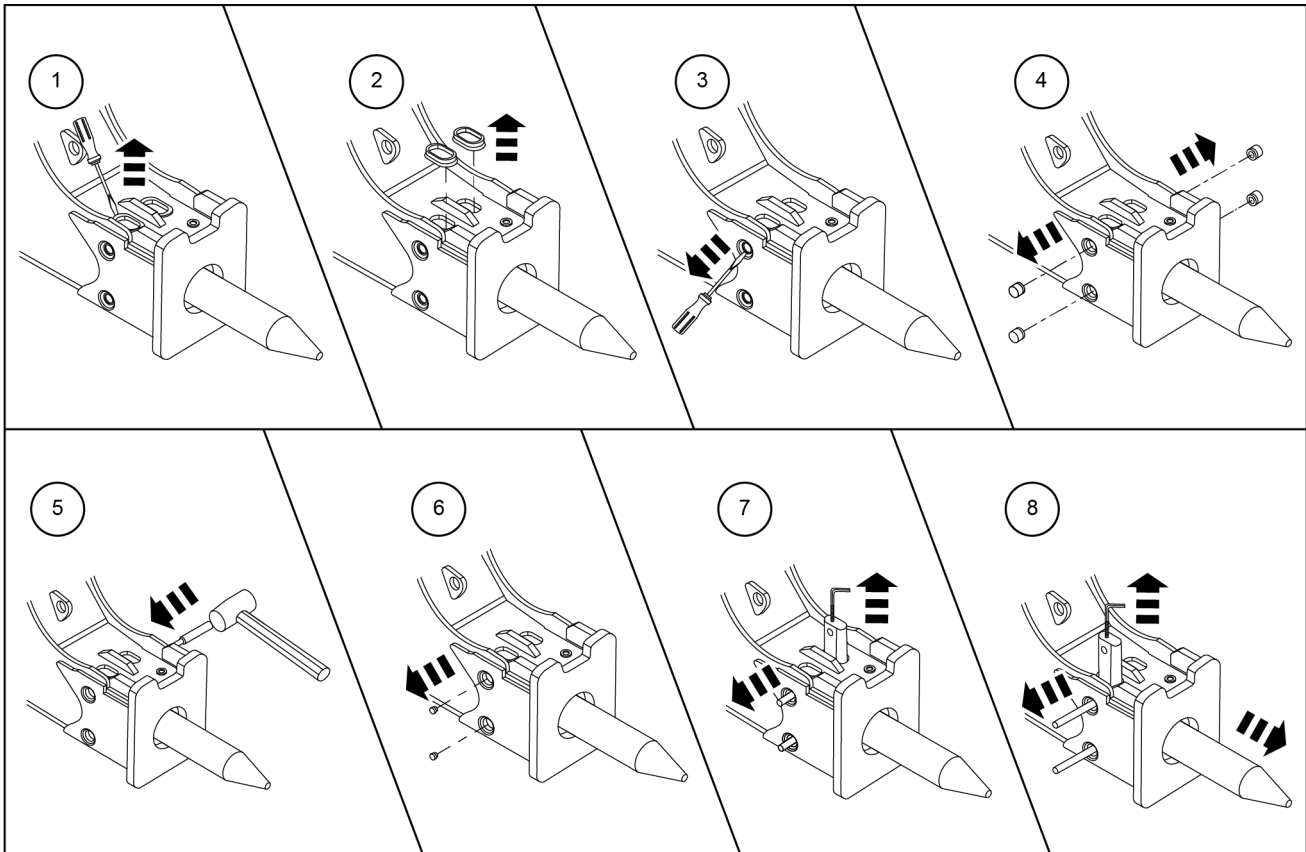
- Remove the tool from the breaker as illustrated below.
- Assembling the tool to the breaker can be done in reverse sequence order.



PTIL19GEN0087EA 1

**CB20, CB40, CB60, CB61, CB70, CB80**

### 3 - WORKING OPERATIONS

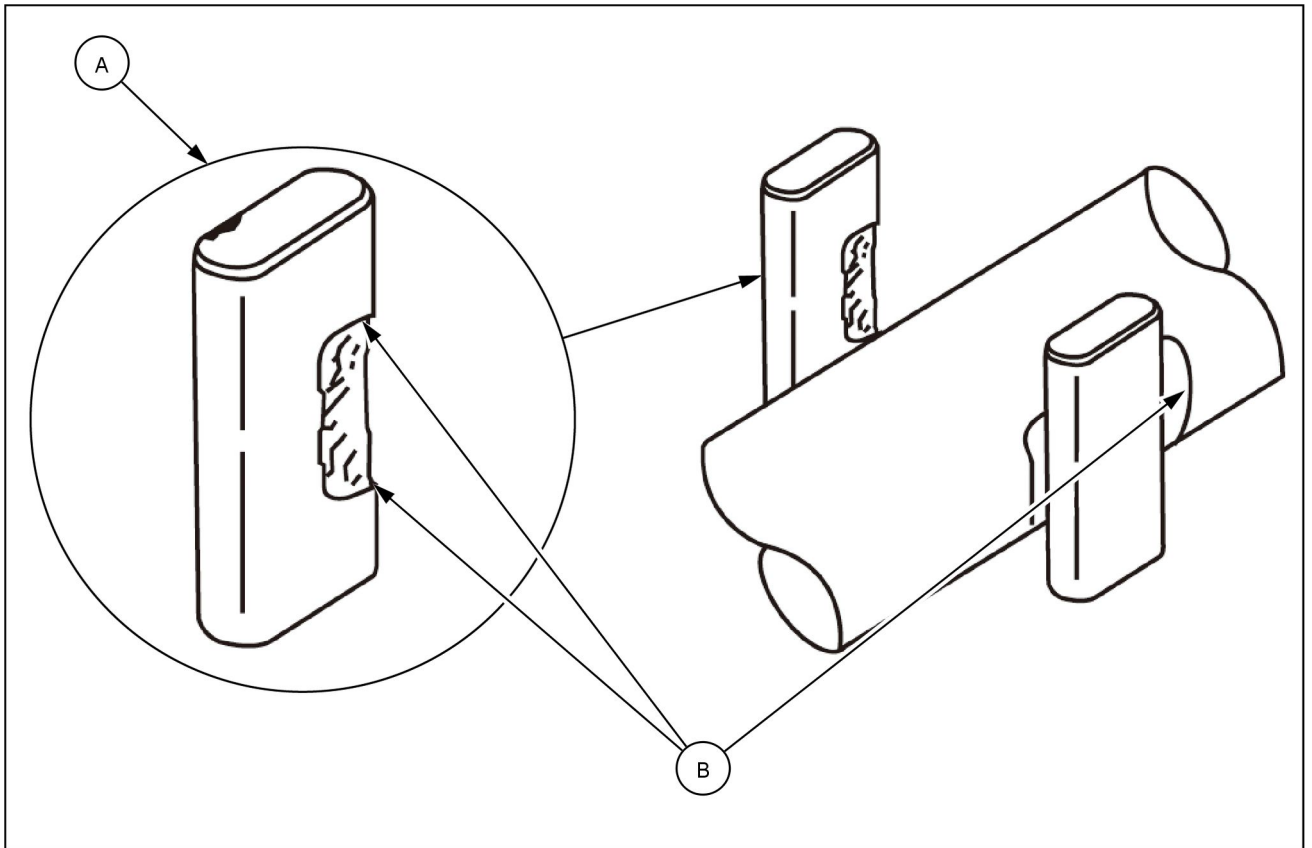


PTIL19GEN0091FA 2

#### CB62, CB140~CB800

**NOTE:** Before assembling brand new tool,

- Clean, if any, dirt on the area where tool and tool pins will be inserted.
- Apply grease on the areas where tool, tool pins and wear bushes are contacting each other.
- Remove, if any, burrs from tool grooves.

**Tool pin replacement or repair**

PTIL19GEN0100FA 3

- Every **50 h** and whenever replacing tool, tool pin condition shall be checked along with tool. Remove, if any, burrs and swelling of tool pins and tool grooves.
- If only one of tool pin faces is worn over the limit, turn both tool pins around so that they can contact the tool with unused faces.
- When one of the tool pins is replaced, the rest pin should be turned around so that its reverse face contacts the tool.

**(A)** - When changing tool pin direction, place pin with this surface on tool side.

**(B)** - Remove burrs and swelling with grinder or the like.

**NOTE:** When tool pin is excessively deformed, it is difficult to replace tool. Therefore change tool pin face every 100 to 150 operating hours whether tool pin has reached wear limit or not.

## MOVING THE ATTACHMENT

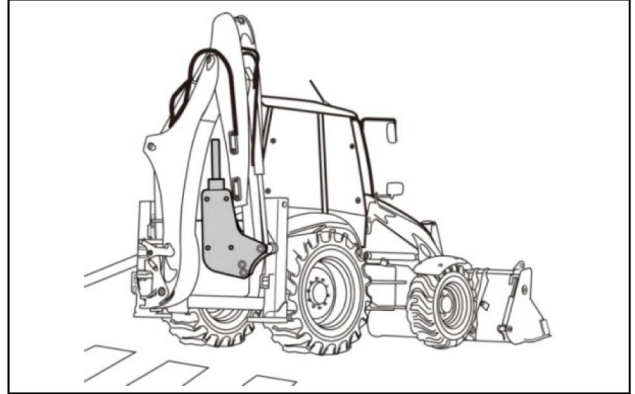
### Travelling position

Travelling positions are given below for various machine.

### Breaker position in Backhoe Loader

Ensure that the breaker is not too close to carrier backhoe boom/arm, when travelling with tracked loader backhoe (or backhoe loader).

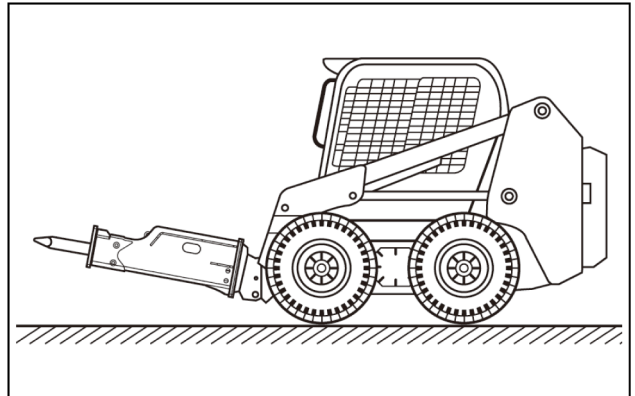
**NOTE:** Breaker positioning between boom and arm (illustrated on the right side image) is achieved, depending on carrier model & boom/arm specification.



PTIL19GEN0040AA 1

### Breaker position in Skid steer loader

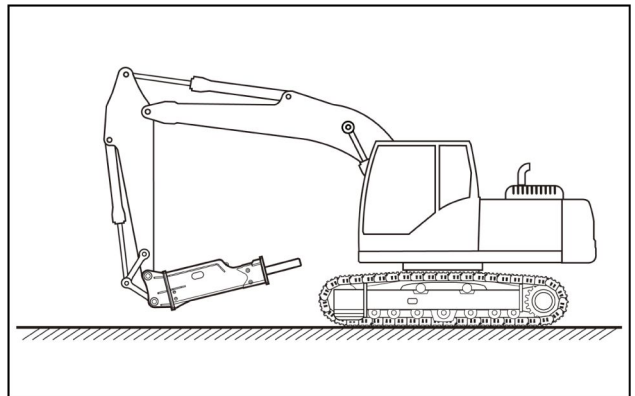
When travelling with skid steer loader, lower carrier boom and tilt the breaker fully backwards.



PTIL19GEN0041AA 2

### Breaker position in excavator

When travelling with excavator, ensure the breaker not to be too close to the cabin.



PTIL19GEN0042AA 3



## 4 - MAINTENANCE

### GENERAL INFORMATION

### GENERAL INSTRUCTION

- The breaker is a hydraulic product precisely made. Therefore all hydraulic components of the breaker require your handling of great care and cleanliness.
- Dirt is the worst enemy to all hydraulic parts of the breaker.
- Ensure that all hydraulic parts are clean and covered by clean lint-free cloth.
- Do not use any materials other than designed for cleaning hydraulic part purpose. Never use water or carbon tetrachloride.

**NOTE:** Hours are carrier hours while the breaker is mounted/used on/by the carrier, including installation, breaking operation, repositioning on the rocks, etc. whether breaker piston is striking or not.

## **SERVICE INTERVALS**

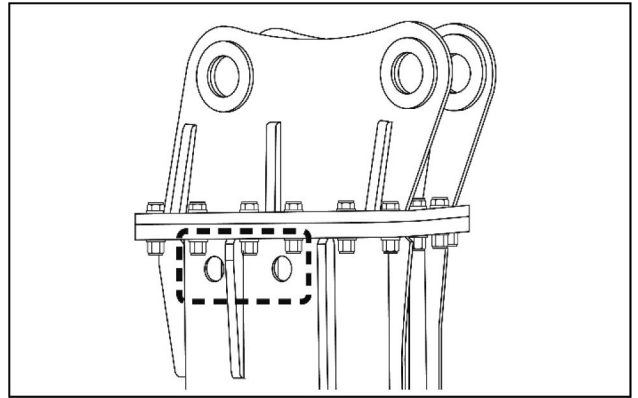
### **EVERY 2 HOURS**

1. Apply grease on tool, tool pins and bushes till grease is visible on the tool underneath housing.
2. Check breaker paste or grease residual volume in the cartridge if ALS is mounted.
3. Tighten loose fittings and connections if necessary.
4. Check if breaker impact is efficient enough and if breaker is striking at constant speed.

## EVERY 10 HOURS OR ONCE A WEEK

**NOTE:** Every 10 h or once a week, whichever comes first.

1. Remove tool and tool pins, then check their wearing shape and amount.
2. Replace or repair tool and tool pins upon wear limit and repair instruction, if necessary. See **3-33**.
3. Check if tool and lower bush are sufficiently greased. If not, apply grease more frequently.
4. Check through bolt & nut condition by hitting them with steel bar via Service Window holes on each side on the housing.



PTIL19GEN0043AA 1

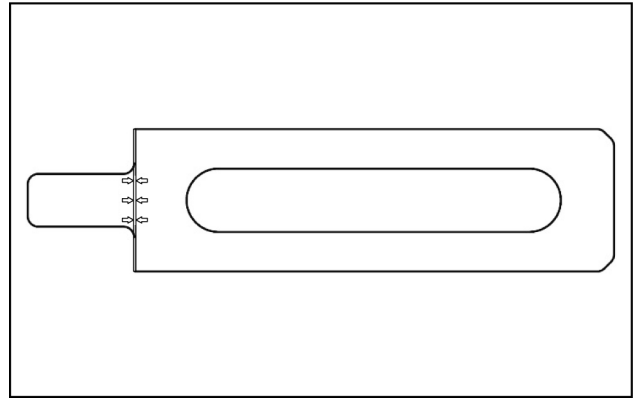
## EVERY 50 HOURS OR ONCE A MONTH

**NOTE:** Every 50 h or once a month, whichever comes first.

1. Check wearing amount of tool pin, tool shank and bushes.

**NOTE:** Upper bush must be replaced when it has reached wear limit or at every second replacement of lower bush, whichever comes first. Upper bush wearing can be measured with the jig, illustrated below. The jig is supplied with breaker as standard accessory.

2. Replace them if they have reached wear limit. See wear limit on **5-1**.
3. Check back head gas pressure and, if necessary, adjust the pressure to suit the specification.
4. Check hydraulic and grease hoses and replace them, if necessary.



PTIL19GEN0044AA 1

## **EVERY 500/600 HOURS**

1. Replace consumable and wear parts upon the maintenance interval.

## MAINTENANCE INTERVAL OF CONSUMABLES AND WEAR PARTS

1. Consumable parts should be replaced upon below maintenance interval.

### CB20 ~ CB160

Part	600 h or 6 months	1200 h or 12 months	1800 h or 18 months	2400 h or 24 months
Seals	X	X	X	X
Hydraulic hose*		X		X
Diaphragm	X	X	X	X
Accumulator body bolt			X	
O-ring of gas valve set			X	
Through bolt set			X	
Tool pin	Replace upon wear limit guide. See 5-1.			
Bottom damper				
Lower bush				
Stopper pin				
Shell pad				
Upper damper				
Upper bush				

**NOTE:** Hours or months on above table should be applicable, whichever comes first.

**NOTE:** \* Check hose condition and replace if necessary.

**NOTE:** Hours are carrier hours while the breaker is mounted/used on/by the carrier, including installation, breaking operation, repositioning on the rocks, etc. whether breaker piston is striking or not.

**CB210 ~ CB800**

Part	600 h or 6 months	1200 h or 12 months	1800 h or 18 months	2400 h or 24 months
Seals	X	X	X	X
Hydraulic hose*		X		X
Diaphragm	X	X	X	X
Accumulator body bolt			X	
O-ring of gas valve set			X	
Through bolt set			X	
Tool pin	Replace upon wear limit guide. See <b>5-1</b> .			
Bottom damper				
Lower bush				
Stopper pin				
Shell pad				
Upper damper				
Upper bush				

**NOTE:** Hours or months on above table should be applicable, whichever comes first.

**NOTE:** \* Check hose condition and replace if necessary.

**NOTE:** Hours are carrier hours while the breaker is mounted/used on/by the carrier, including installation, breaking operation, repositioning on the rocks, etc. whether breaker piston is striking or not.

2. The end users are highly recommended to keep fast moving spare parts in stock close to the breaker such as tool, tool pin, stopper pin, rubber plug/cover, through bolt and hoses.
3. The above maintenance interval should be respected by the end users and/or the operators. Lack of respect can void the warranty of breaker.

**NOTE:** Consumption of spare and wear parts varies upon the condition of breaker and/or carrier, operator's skill, work material, job site condition, etc.

Therefore, if necessary, the parts should be replaced more frequently than the interval stated on above table.

## **MAINTENANCE INTERVAL OF SPECIAL APPLICATION BEAKER**

1. Breaker maintenance requirements to the special application are much higher than the conventional applications.
2. Therefore breaker maintenance interval at the special applications including but not limited to underground, tunneling, foundry cleaning, underwater, extremely low or high temperature, etc. is much shorter than the conventional.
3. Consult with your authorized dealer.



## WASHING

### WASHING BREAKER

**NOTICE:** Ensure pressure and return line ports and hoses are firmly plugged before washing the breaker to prevent dirt coming into breaker component.

1. The dirt on the breaker can make disassembly and assembly difficult.
2. Highly recommended to remove the dirt before sending it to the workshop.

## LUBRICATION

### OIL & LUBRICATION

1. Breaker requires hydraulic oil and grease of proper viscosity upon ambient temperature.

Service brake		Grease		Breaker paste
High ambient temperature 0 – 50 °C	Low ambient temperature –10 – 30 °C	Manual greasing	Vibrating ALS	Hydraulic ALS
ISO VG 68 HV	ISO VG 46 HV	NLGi No. 2 (minimum 100 cst)	NLGi No. 2 (minimum 100 cst to maximum 250 cst)	NLGi No. 2 ( 350 cst)

**NOTE:** Lubricate all areas of working tool, tool pins and bushes where they are contacting each other. Incorrect viscosity grease may cause inefficiency or lack of lubrication.

### Problems from incorrect viscosity hydraulic oil

2. Oil too thick
  - Difficult to start up
  - Stiff operation
  - Slow breaker striking
  - Cavitation in the breaker
  - Sticky valves
3. Oil too thin
  - Lost of efficiency (internal leakage)
  - Damage to seals
  - Decrease of lubricating efficiency, excessive wearing of parts
  - Irregular and slow breaker striking
  - Cavitation in the breaker

## CORRECT MANUAL GREASING

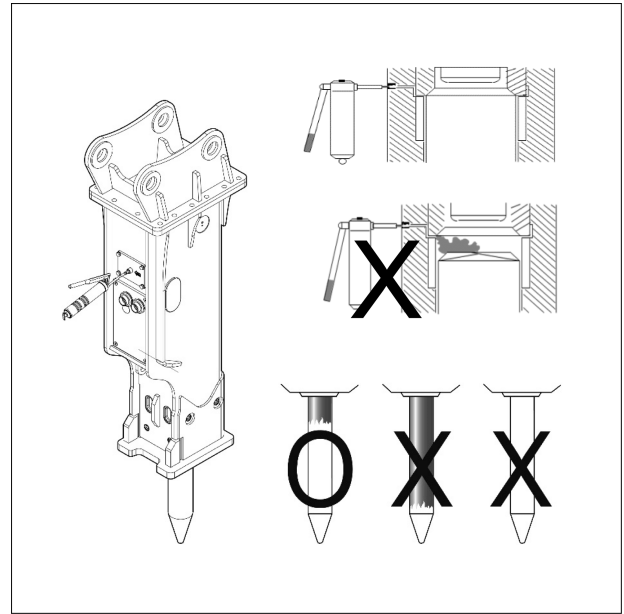
1. When greasing, ensure that the breaker stands upright and the tool is pushed to highest position.

**NOTICE:** While greasing, make sure that the tool is kept to the highest position inside housing, so that you can prevent grease piling at the percussion chamber between piston and tool.

If not, breaker may lose power and seal failure may occur, subsequently causing oil leakage.

**NOTICE:** Greasing must be done until the grease is clearly visible on the tool underneath housing as illustrated on the left.

2. Turn off the engine and wait for **10 min** so that breaker oil pressure can drop and the grease can penetrate downwards between tool and bushes.



PTIL19GEN0130GA 1

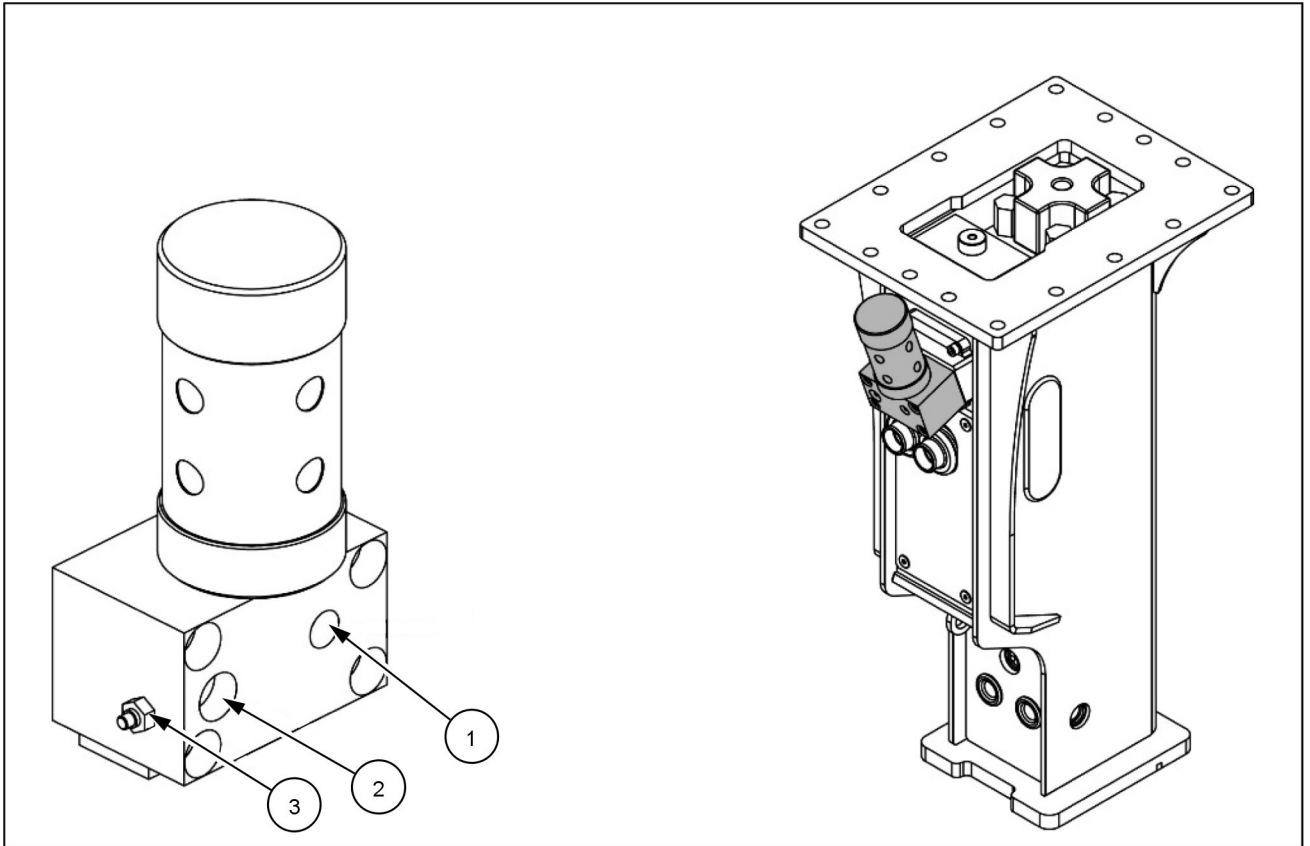
## AUTO LUBRICATION SYSTEM (ALS)

Auto lubrication system is available as an option upon request.

Contact your authorized dealer.

### Vibrating type ALS for CB62 & above

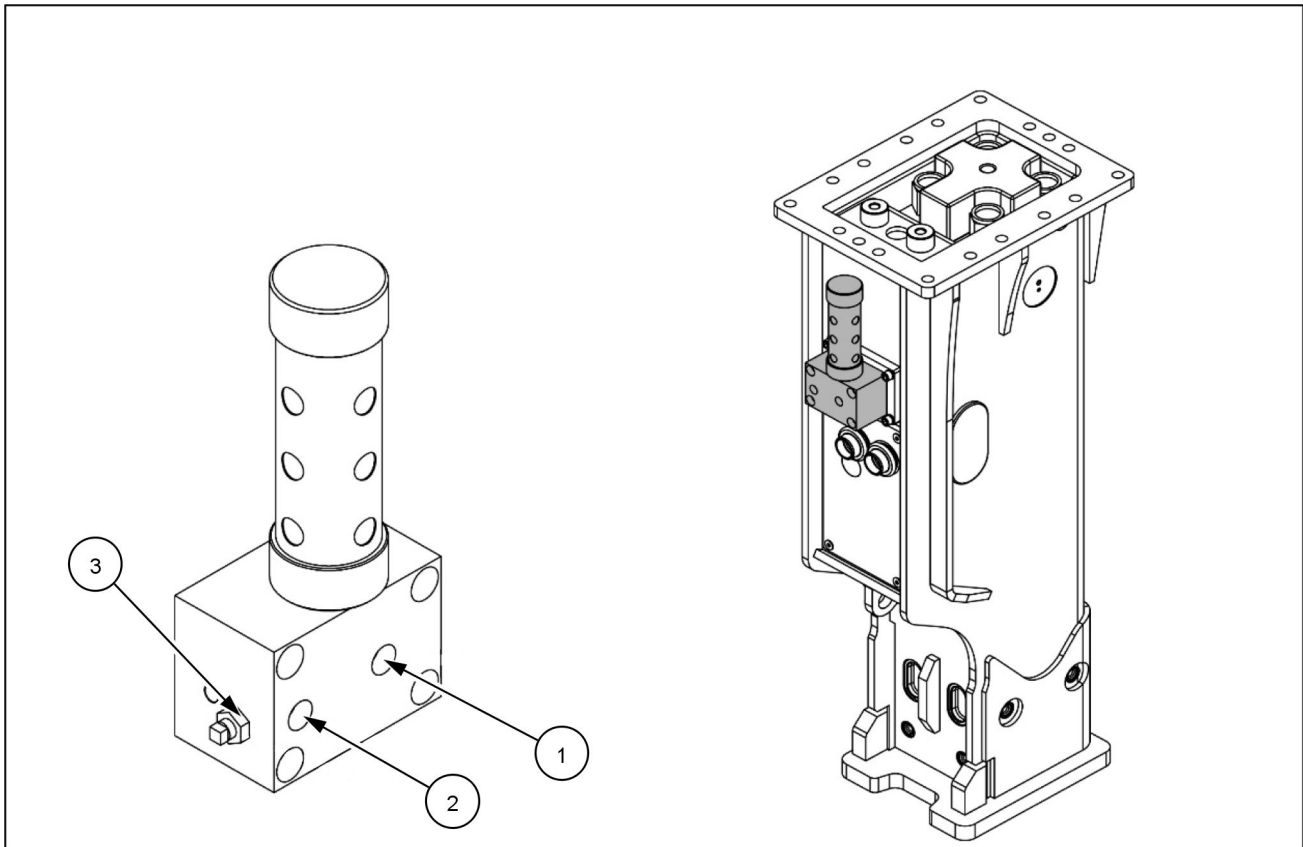
#### CB62, CB70, CB80



PTIL19GEN0046FA 1

1. Grease refill port	3. Grease output regulator
2. Manual greasing port	

## CB140 &amp; above

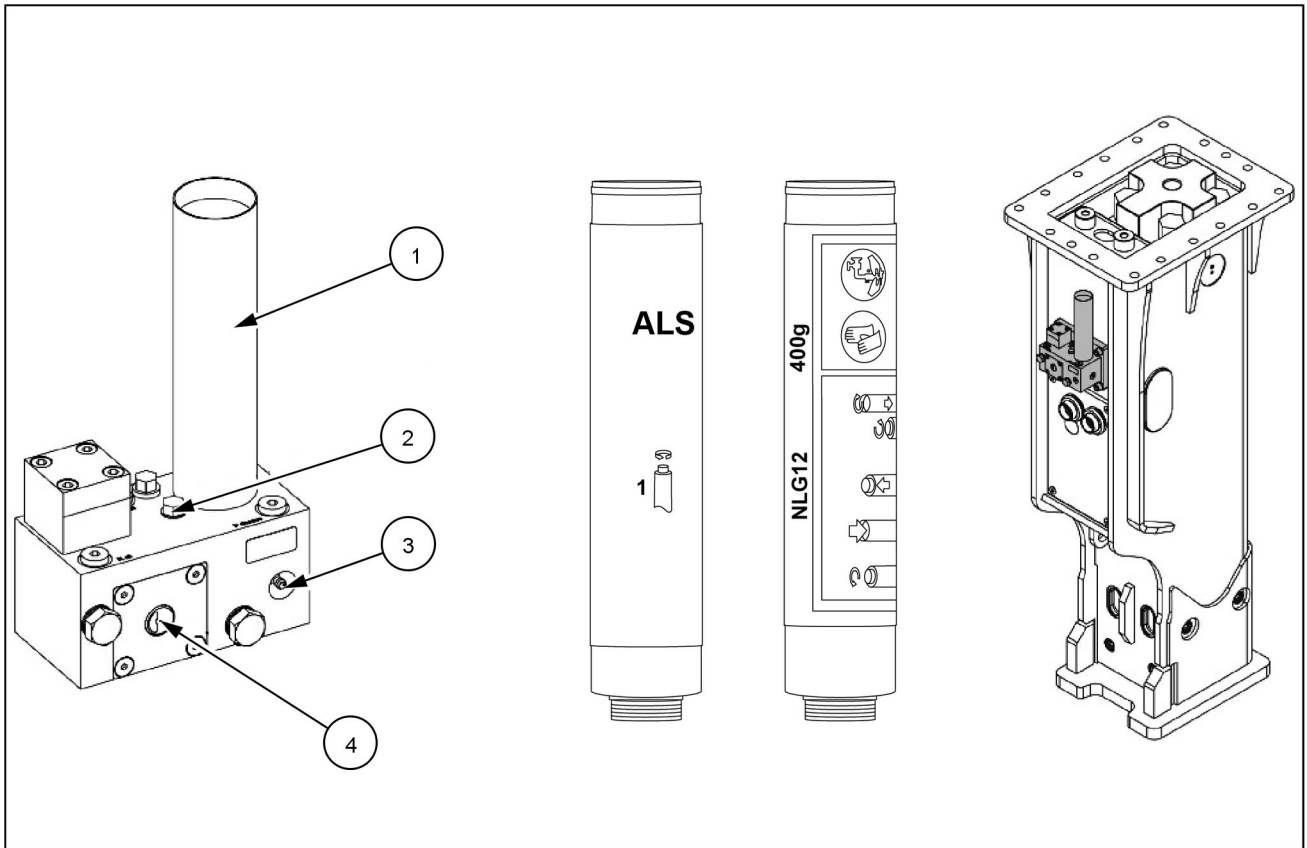


PTIL19GEN0047FA 2

1.	Grease refill port	3.	Grease output regulator
2.	Manual greasing port		

- ALS is operated by vibration of the breaker during operation. Grease output can vary on the breaker working condition.
- Grease output can be adjusted with regulator.
- In case greasing by vibrating ALS is not sufficient despite of setting regulator to maximum output, apply manual greasing until the breaker has been fully lubricated.

**Hydraulic motor type ALS for CB140 & above**



PTIL19GEN0048FA 3

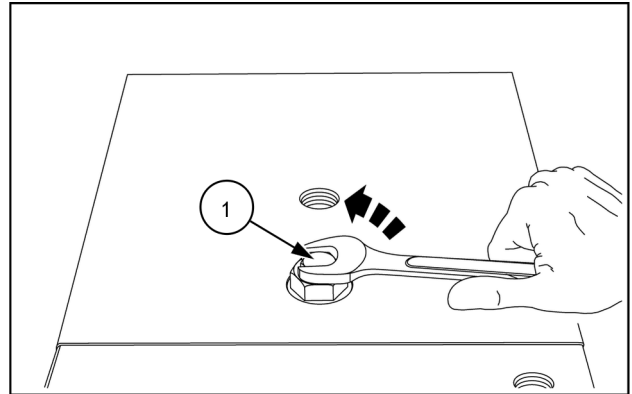
1.	Breaker paste cartridge	3.	Manual greasing port
2.	Breaker paste output regulator	4.	Visible indicator

- ALS is operated by oil pressure inside the breaker while the breaker is in operation.
- Only genuine cartridges should be used.
- If the operator uses non-genuine one, ALS will not perform as much as it has to and also may cause failure on ALS pump internal parts.
- If hydraulic hose or grease hose is connected incorrectly, breaker paste will not be discharged and oil leaks.
- Breaker paste output can be adjusted with regulator.
- In case greasing from ALS is not sufficient despite of setting regulator to maximum output, apply manual greasing until the breaker has been fully lubricated.
- Visible indicator (croissant shape in red) spins as long as ALS motor is working.
- If the visible indicator doesn't spin, apply manual greasing and contact your authorized dealer.

**NITROGEN GAS CHARGE FOR BACK HEAD & ACCUMULATOR**

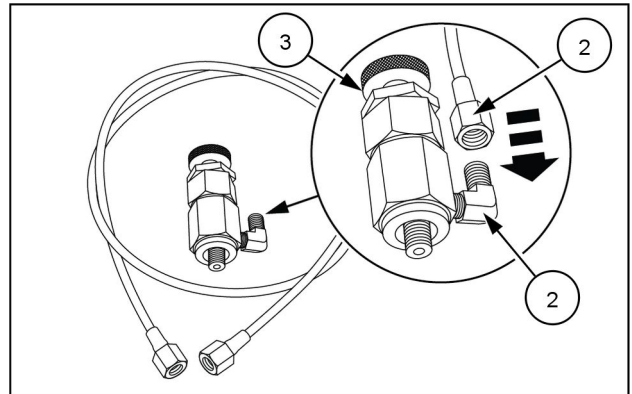
**BACK HEAD GAS CHARGING (CB20 ~ CB80)**

1. Open the valve cap (1).



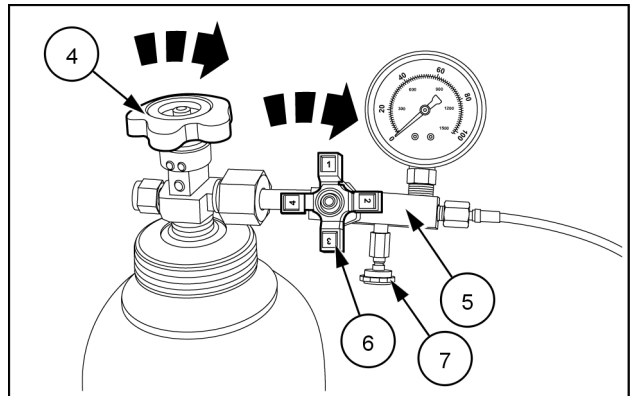
PTIL19GEN0049AA 1

2. Connect the hose (2) to the adapter (3).



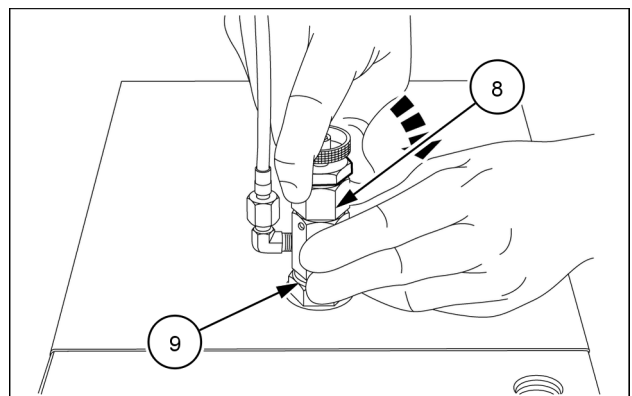
PTIL19GEN0129AA 2

3. Close the gas cylinder valve (4) and connect the gas charging kit (5).
4. Close the three way valve (6) and the drain cock (7).



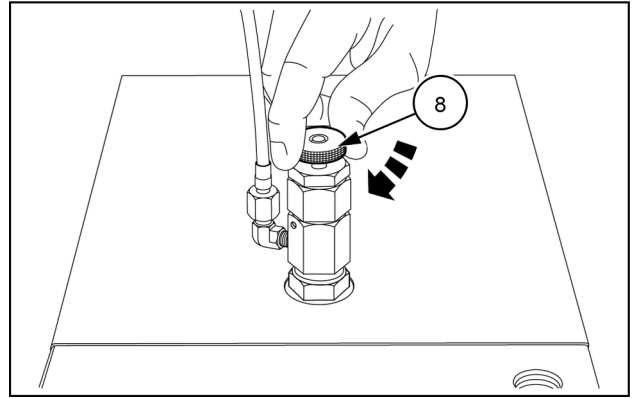
PTIL19GEN0050AA 3

5. Fit the adapter (8) on the inlet port (9) by tightening the middle section of the adapter.



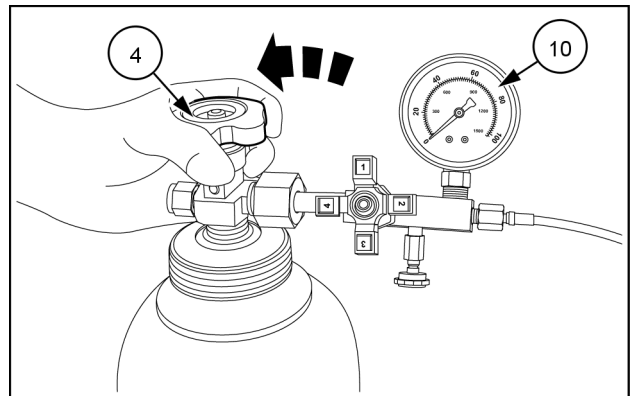
PTIL19GEN0051AA 4

6. Tighten the top section of the adapter (8).



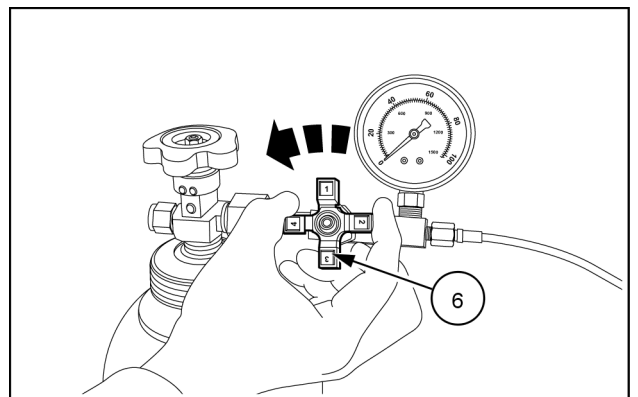
PTIL19GEN0052AA 5

7. Open the gas cylinder valve (4) slowly.  
 8. Quick gas cylinder valve (4) opening may cause damage to the gauge (10).



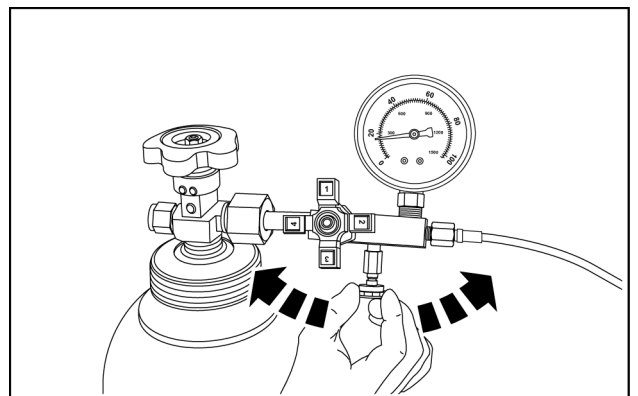
PTIL19GEN0053AA 6

9. Open the three-way valve slowly (6) and charge N2 gas up to 20 Kg/cm<sup>2</sup>.  
 10. close the three-way valve (6).



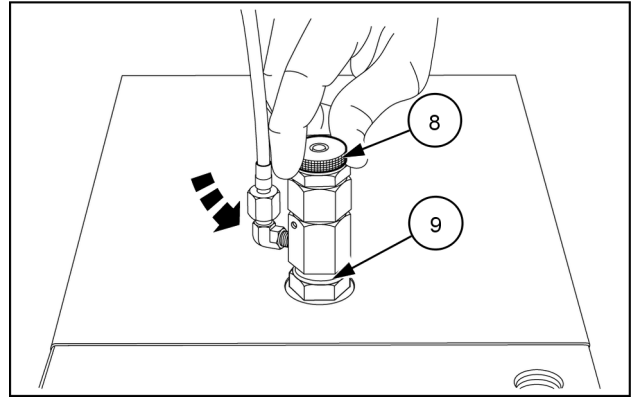
PTIL19GEN0054AA 7

11. Drain the gas to 16 – 18 Kg/cm<sup>2</sup> upon ambient temperature of job site.



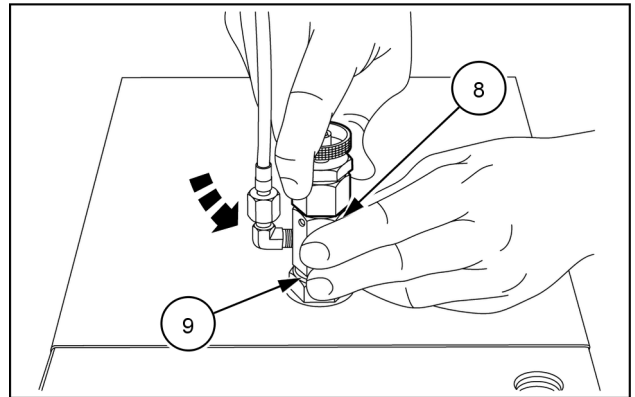
PTIL19GEN0055AA 8

12. Close the inlet port (9) by loosening top section of the adapter (8).



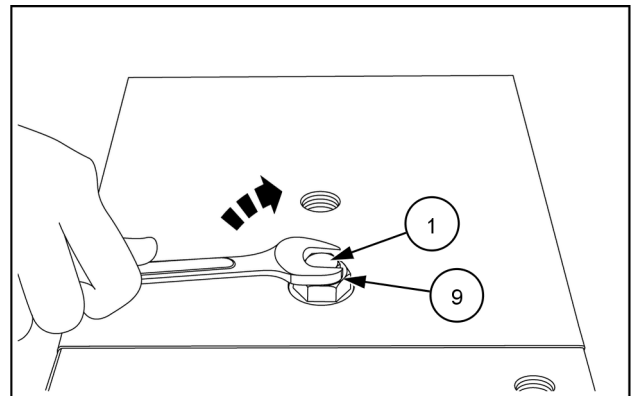
PTIL19GEN0056AA 9

13. Disassemble the adapter (8) from the inlet port (9) by loosening middle section of the adapter.



PTIL19GEN0057AA 10

14. Assemble the valve cap (1) to the inlet port (9).

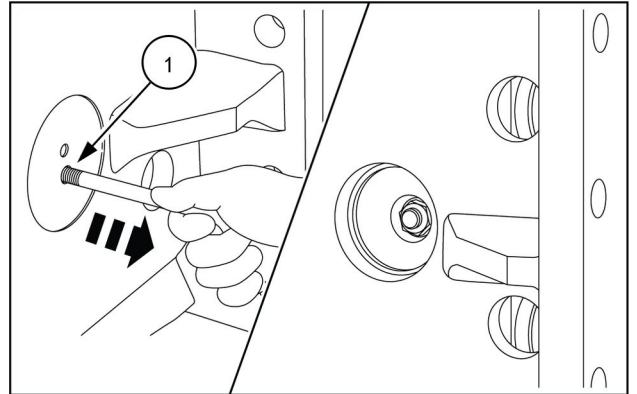


PTIL19GEN0058AA 11



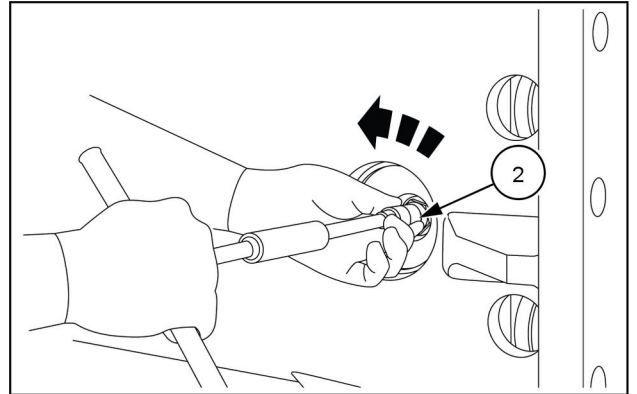
## BACK HEAD GAS CHARGING (CB140 ~ CB800)

1. Remove the rubber plug (1).



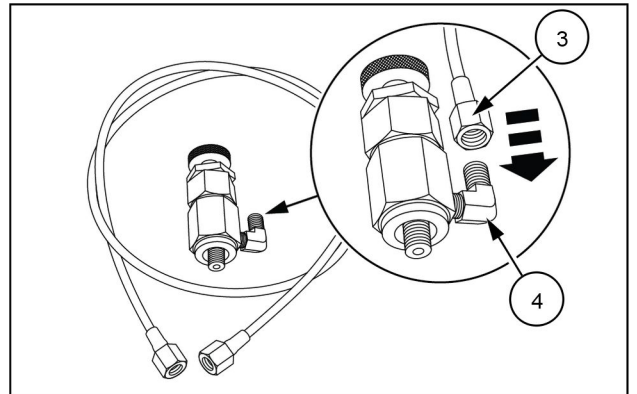
PTIL19GEN0059AA 1

2. Open the valve cap (2).



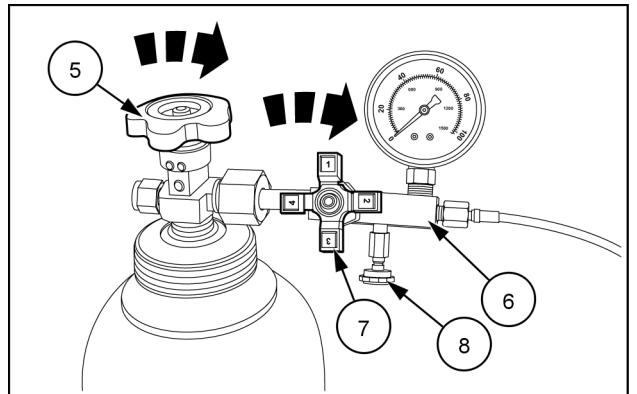
PTIL19GEN0060AA 2

3. Connect the hose (3) to the adapter (4).



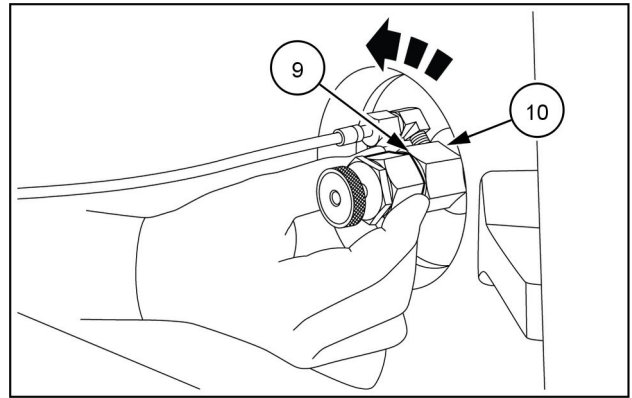
PTIL19GEN0129AA 3

4. Close the gas cylinder valve (5) and connect the gas charging kit (6).
5. Close the three-way valve (7) and the drain cock (8).



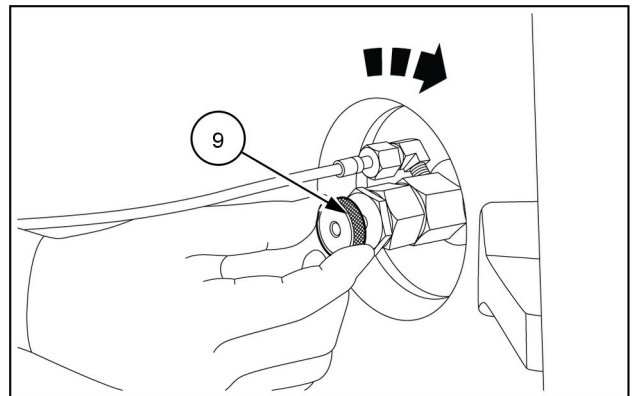
PTIL19GEN0050AA 4

6. Fit the adapter (9) on the inlet port (10) by tightening middle section of the adapter.



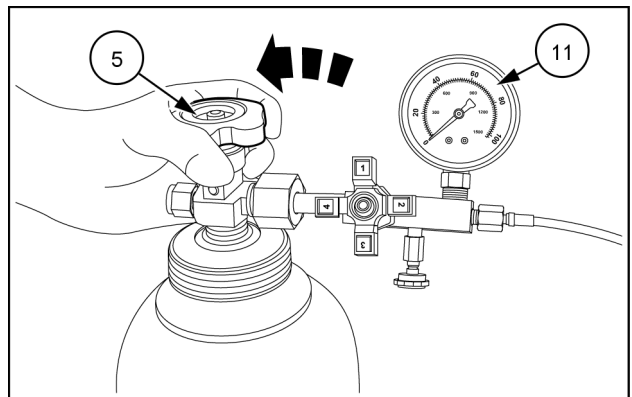
PTIL19GEN0064AA 5

7. Tighten the top section of the adapter (9).



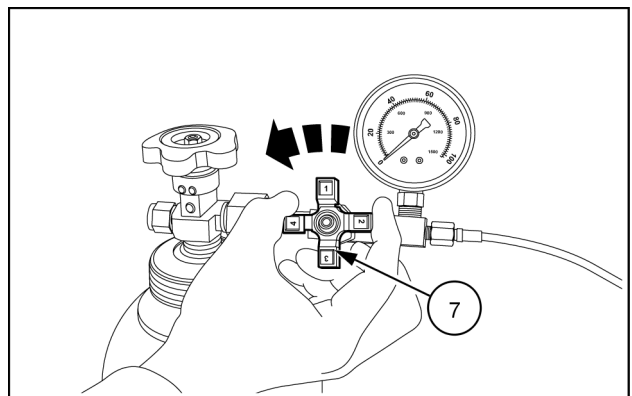
PTIL19GEN0062AA 6

8. Open the gas cylinder valve (5) slowly.
9. Quick gas cylinder valve (5) opening may cause damage on the gauge (11).



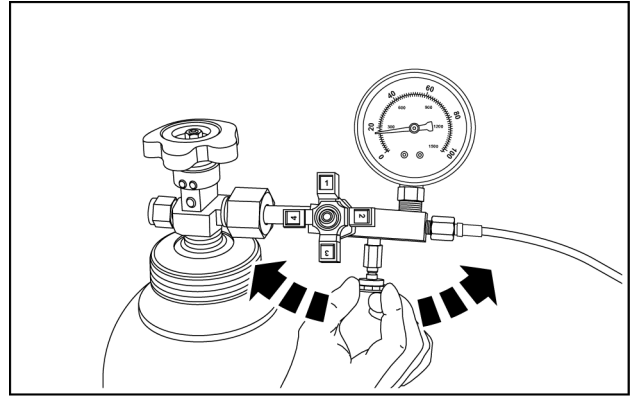
PTIL19GEN0053AA 7

10. Open the three-way valve (7) slowly and charge N2 gas up to 20 Kg/cm<sup>2</sup>.
11. Close the three way valve (7).



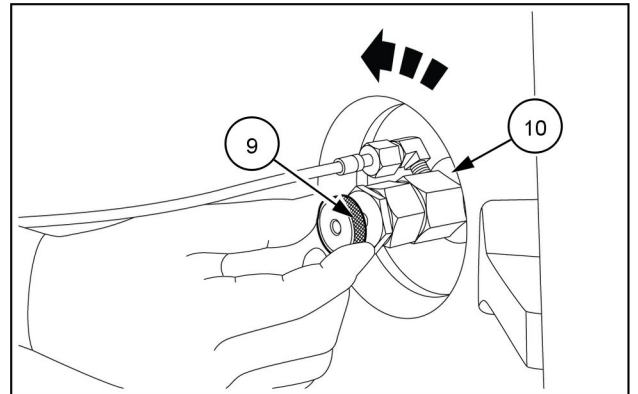
PTIL19GEN0054AA 8

12. Drain the gas properly for each model upon ambient temperature of job site.



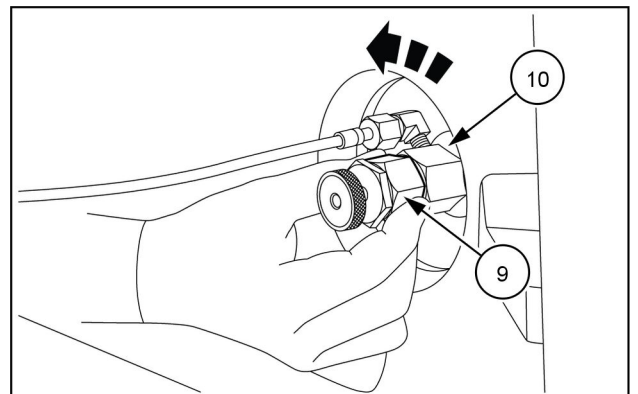
PTIL19GEN0055AA 9

13. Close the inlet port (10) by loosening top section of the adapter (9).



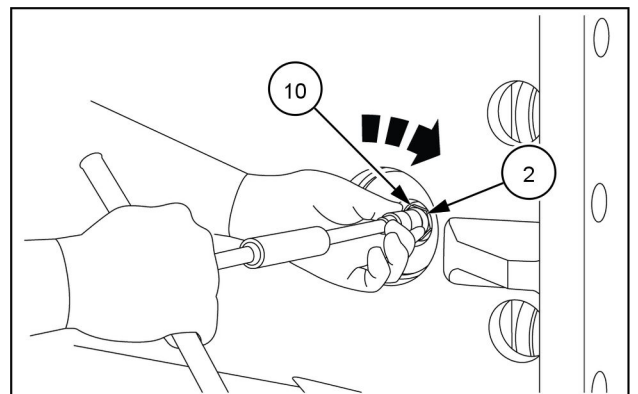
PTIL19GEN0063AA 10

14. Disassemble the adapter (9) from the inlet port (10) by loosening middle section of the adapter.



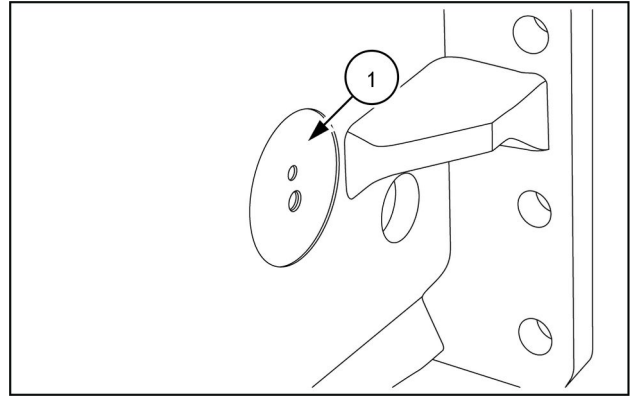
PTIL19GEN0064AA 11

15. Assemble the valve cap (2) to the inlet port (10).



PTIL19GEN0065AA 12

16. Assemble the rubber plug **(1)**.



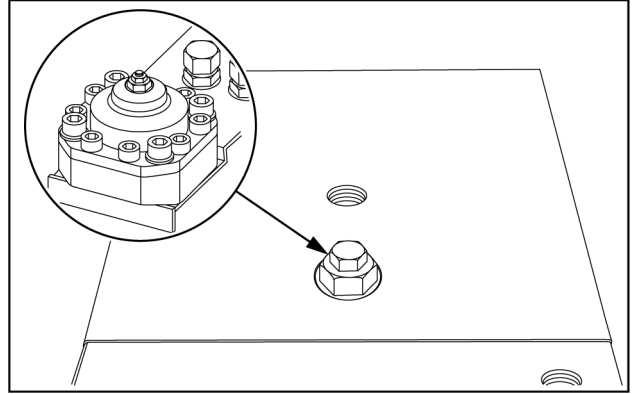
PTIL19GEN0067AA 13

## ACCUMULATOR GAS CHARGING (CB61, CB62)

**NOTE:** Carry out gas charging only after the breaker has been sufficiently cooled down. Ensure that the breaker is lying on the floor and work tool shall not be pushed into power cell.

**NOTE:** When storing gas bottle, ensure the bottle is not exposed to the sun and its valve is always closed.

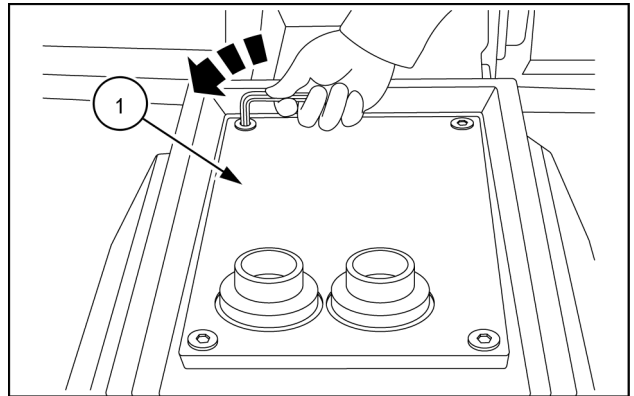
1. Accumulator gas charging valve is same as back head gas charging valve.
2. Charging accumulator gas can be done in the same way as illustrated earlier for back head.



PTIL19GEN0069AA 1

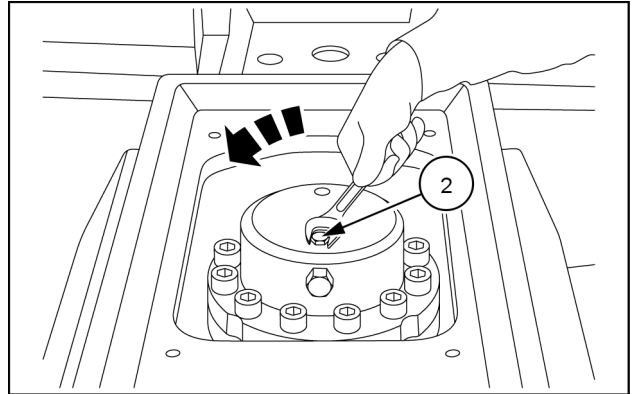
## ACCUMULATOR GAS CHARGING (CB140, CB800)

1. Remove the MC cover (1).



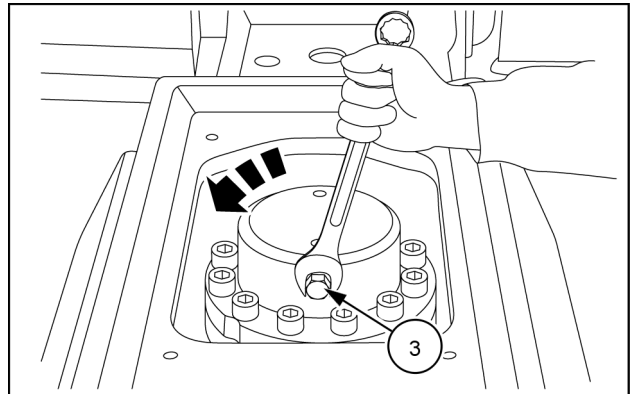
PTIL19GEN0070AA 1

2. Remove the valve cap (2).



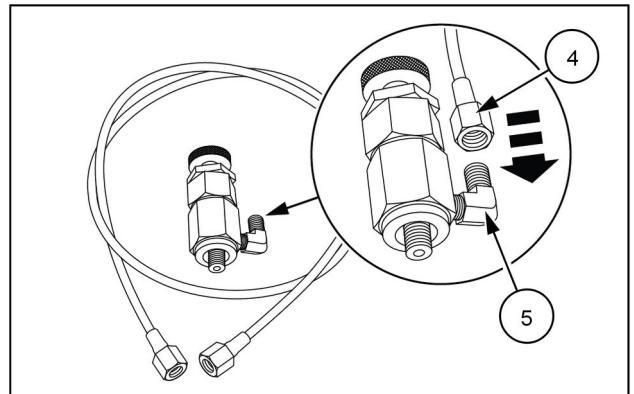
PTIL19GEN0071AA 2

3. Remove the needle valve cap (3).



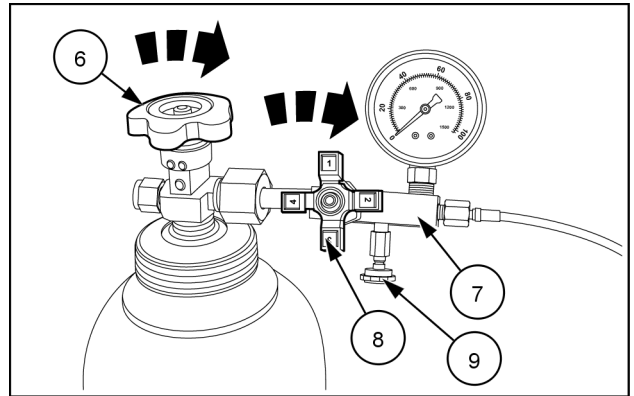
PTIL19GEN0072AA 3

4. Connect the hose (4) to the adapter (5).



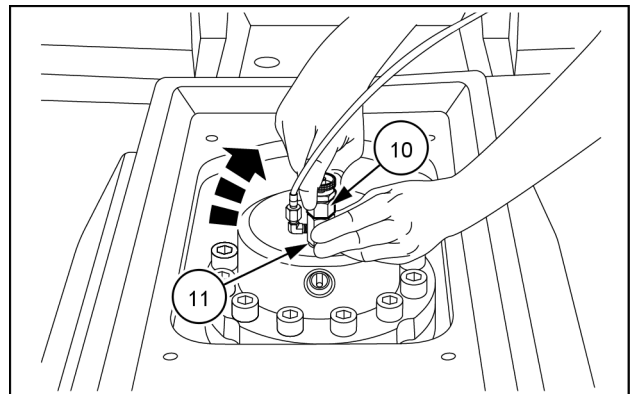
PTIL19GEN0129AA 4

5. Close the gas cylinder valve **(6)** and connect the gas charging kit **(7)**.
6. Close the three-way valve **(8)** and the drain cock **(9)**.



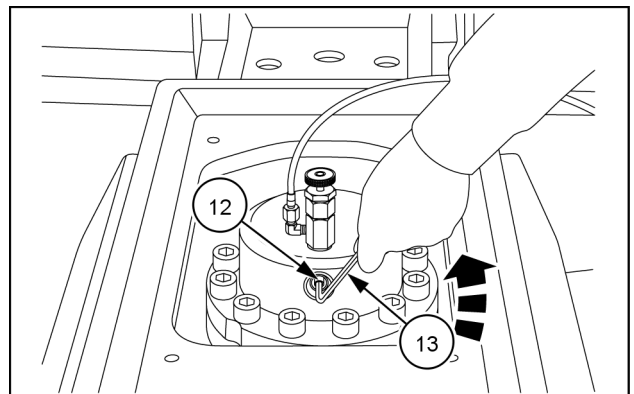
PTIL19GEN0050AA 5

7. Connect the adapter **(10)** to the inlet port **(11)**.



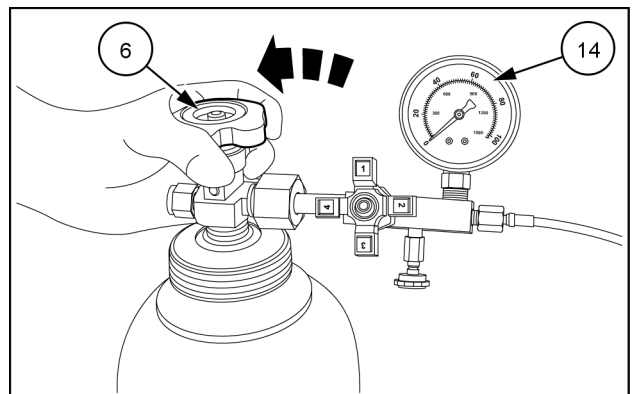
PTIL19GEN0073AA 6

8. Open the needle valve **(12)** with **5 mm L-wrench (13)**.



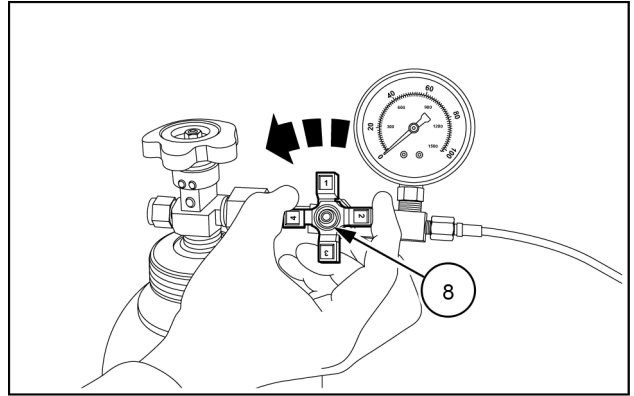
PTIL19GEN0074AA 7

9. Open the gas cylinder valve **(6)** slowly.
10. Quick gas cylinder valve **(6)** opening may cause damage on the gauge **(14)**.



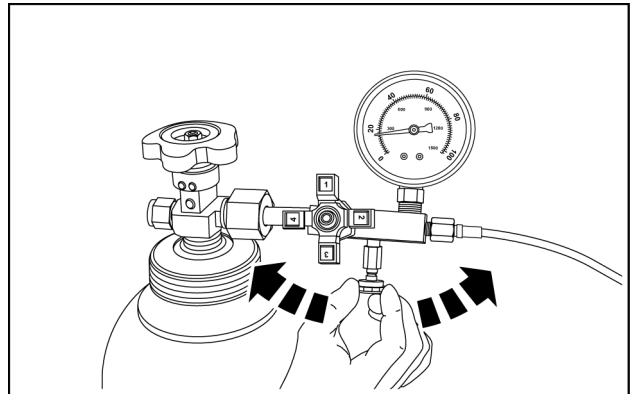
PTIL19GEN0053AA 8

11. Open the three-way valve (8) slowly and charge N2 gas up to **65 Kg/cm<sup>2</sup>**.
12. Close the three way valve (8).



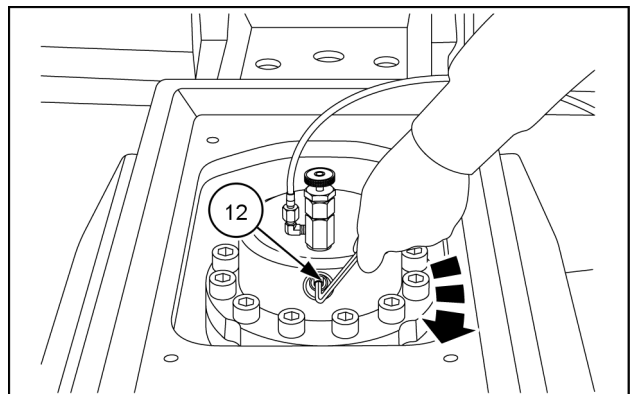
PTIL19GEN0054AA 9

13. Drain the gas to **55 – 60 Kg/cm<sup>2</sup>** upon ambient temperature of job site.



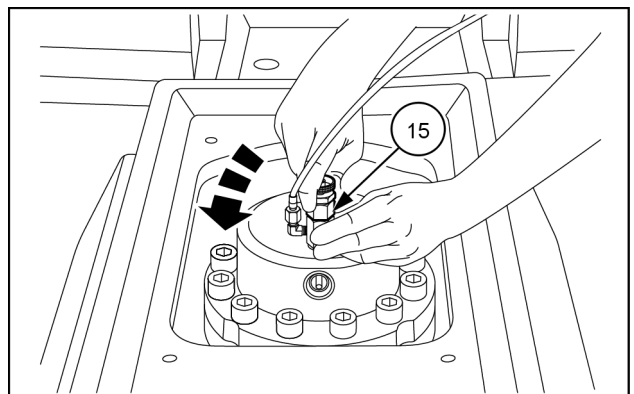
PTIL19GEN0055AA 10

14. Close the needle valve (12).



PTIL19GEN0075AA 11

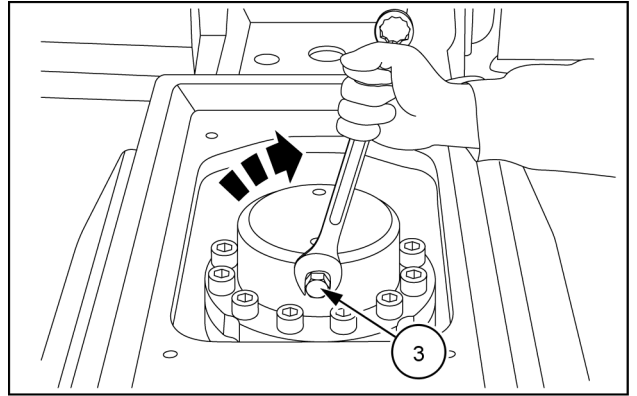
15. Remove the gas charging adapter (15).



PTIL19GEN0076AA 12

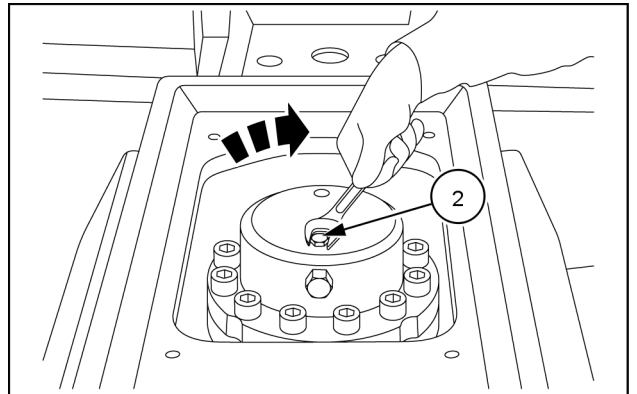


16. Assemble the needle valve cap (3).



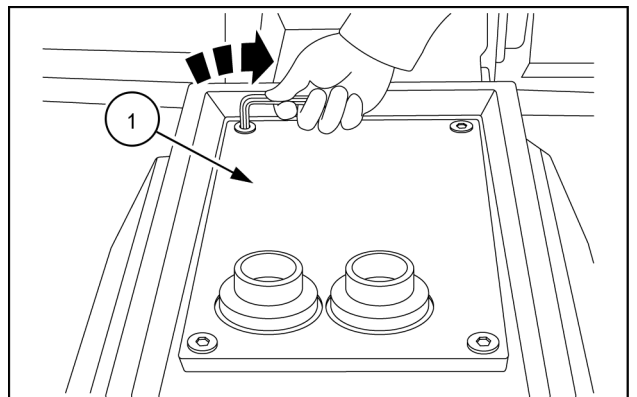
PTIL19GEN0077AA 13

17. Assemble the valve cap (2).



PTIL19GEN0078AA 14

18. Assemble the MC cover (1).

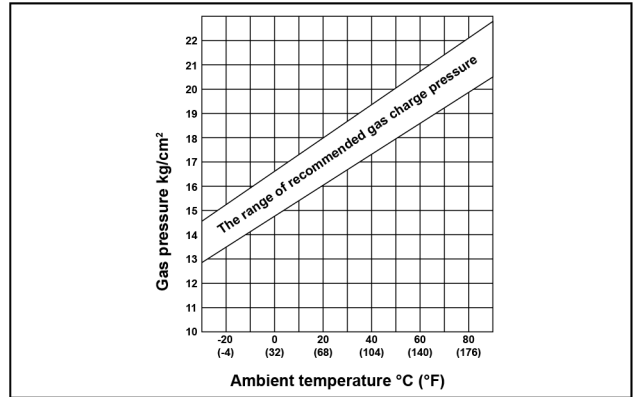


PTIL19GEN0079AA 15

# CONVERSION TABLE FOR BACK HEAD AND ACCUMULATOR GAS PRESSURE

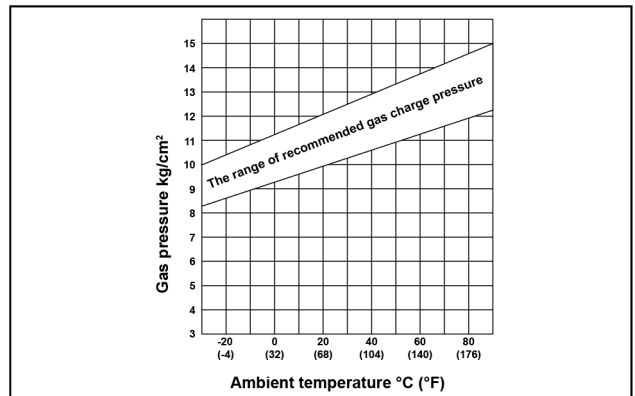
## Conversion table for back head gas pressure

CB62



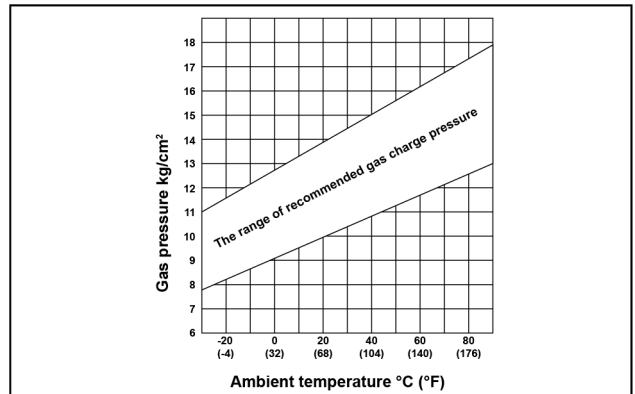
PTIL19GEN0080AB 1

CB61, CB70



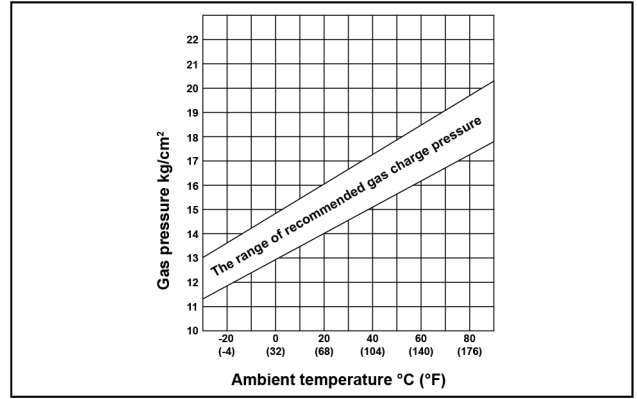
PTIL19GEN0081AB 2

CB20, CB60, CB80, CB140



PTIL19GEN0082AB 3

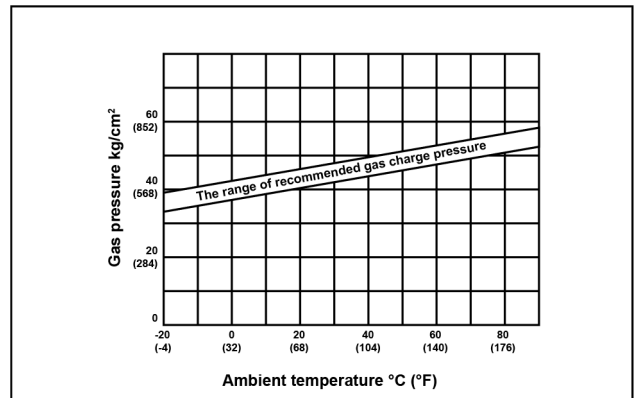
CB40, CB160~CB800



PTIL19GEN0083AB 4

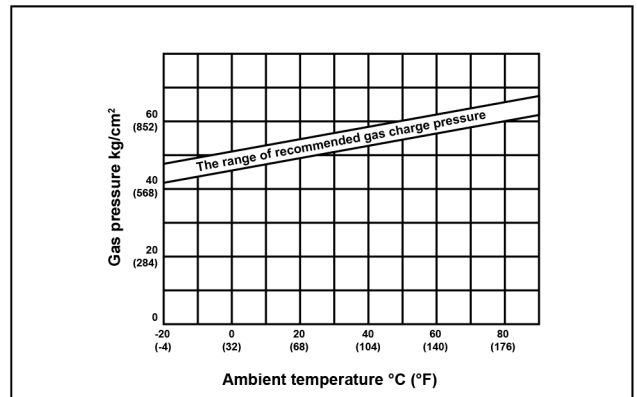
**Conversion table for accumulator gas pressure**

CB61, CB62

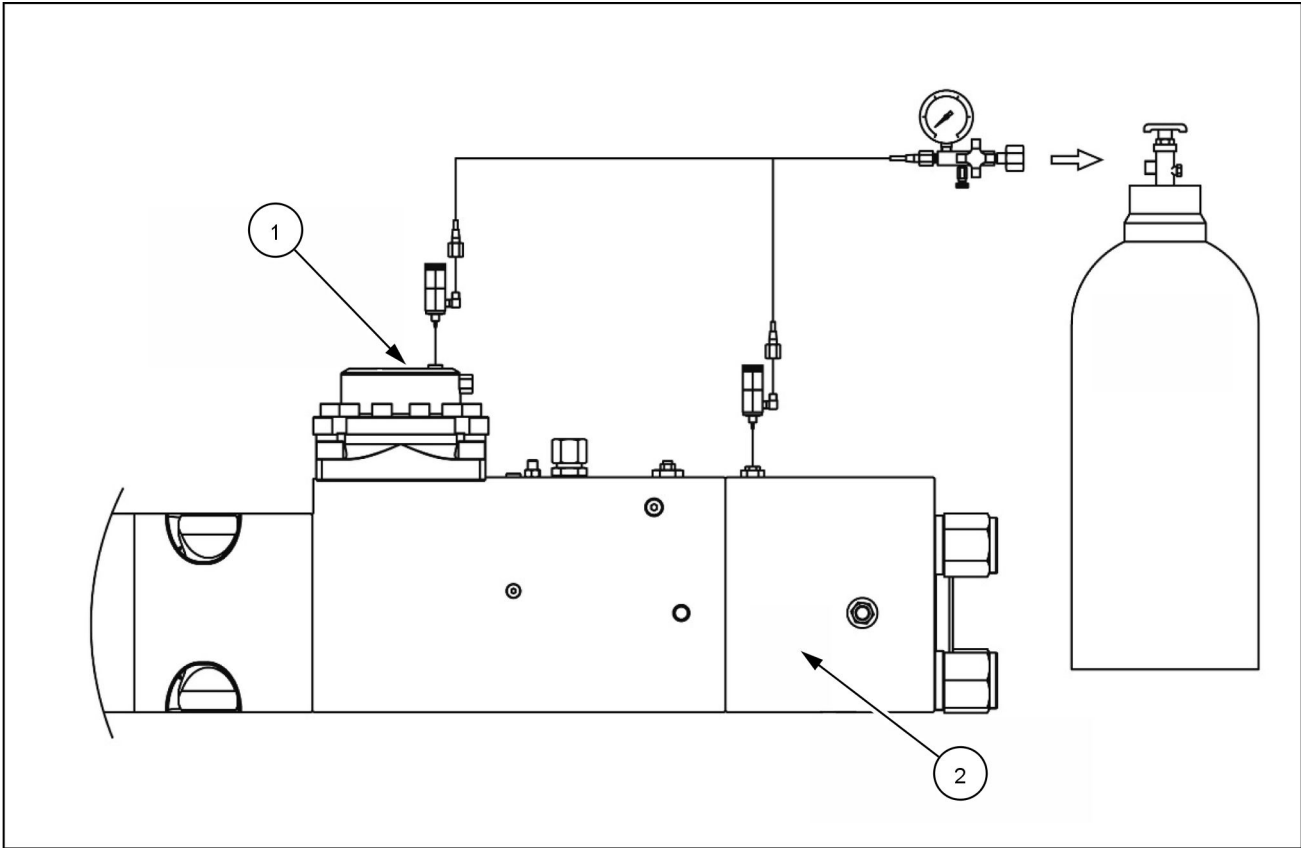


PTIL19GEN0084AB 5

CB140~CB800



PTIL19GEN0085AB 6



PTIL19GEN0086FA 7

1. Accumulator

2. Back head

## STORAGE

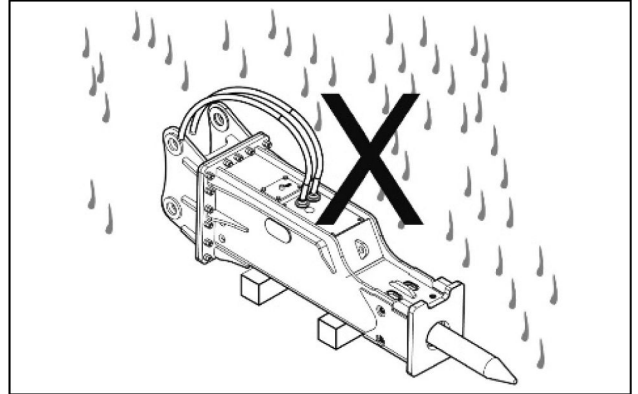
### PREPARATION FOR STORAGE

#### Long term storage

Ensure breaker hose sealing with plug. Apply grease on the tool sufficiently.

Keep the breaker covered with appropriate material like plastic or vinyl packing, tied with band, stored indoor as much as possible.

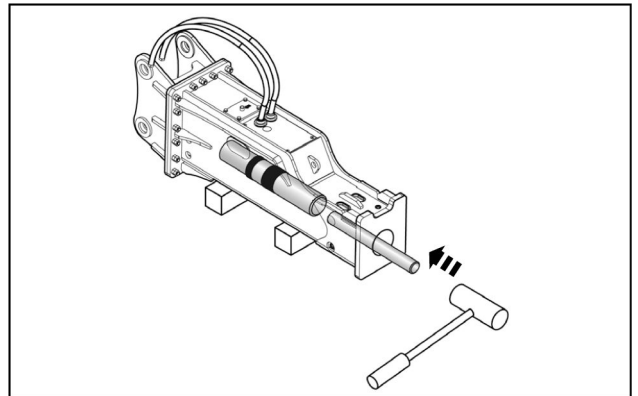
Leaving the breaker in the rain or under the wet climate conditions can be led to rust on the breaker parts.



PTIL19GEN0037AA 1

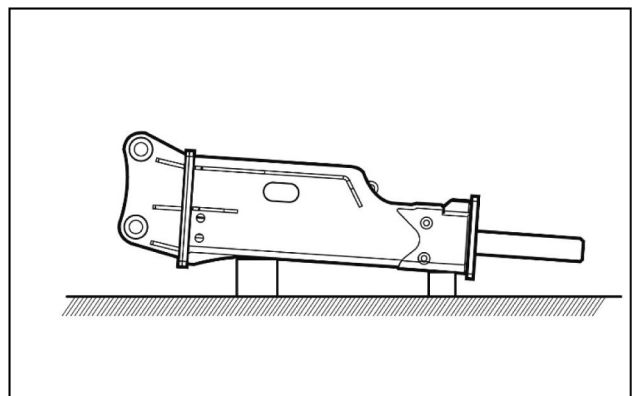
In case of long term storage, prevent breaker corrosion referring to following instructions.

- The storage area must be dry.
- The storage area temperature must not be lower than **-20.0 °C (-4.0 °F)**.
- Remove tool and tool pins from the breaker.
- Discharge nitrogen gas completely from back head.
- Push piston up to maximum position, using steel bar and hammer as illustrated below.
- Apply grease on tool shank (or grooves), tool pins and bush inner surface.
- Reassemble tool and tool pins to the breaker.
- Prevent oil leakage and contamination by keeping all hoses, ports and holes sealed with clean plugs.
- Keep the breaker covered with appropriate material like plastic or vinyl packing, tied with band, stored indoor as much as possible.
- Store the breaker in horizontal position.



PTIL19GEN0038AA 2

**NOTE:** If piston has not been pushed to maximum position, piston bottom area will be exposed to the air and have a high probability to be rust. In case the breaker is stored in a vertical position, piston will gradually drop down by gravity and be exposed to the risk of corrosion.



PTIL19GEN0039AA 3

### REMOVAL FROM STORAGE

In case of the breaker has been stored for more than 2 years, seals must be replaced with brand new ones prior to start of breaker operation.

**NOTE:** No replacement of seals will void warranty of the breaker manufacturer.

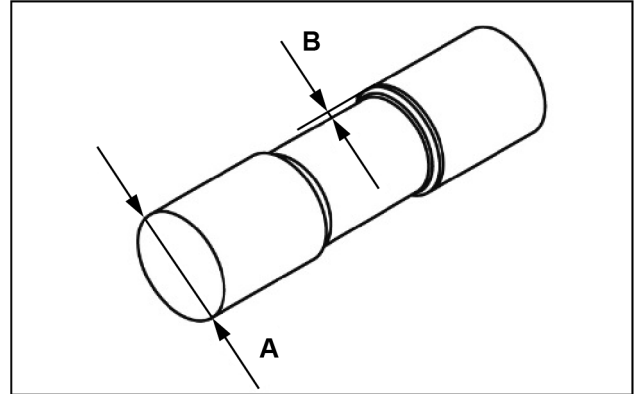


# 5 - SPECIFICATIONS

## WEAR LIMITS

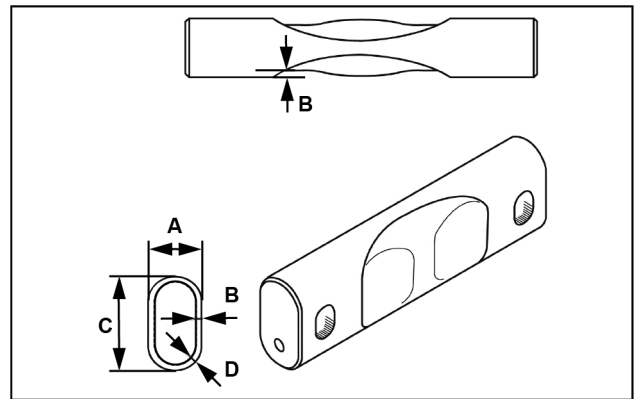
### Tool pin

CB20 - CB61, CB80



PTIL19GEN0102AA 1

CB62, CB70, CB140 - CB800



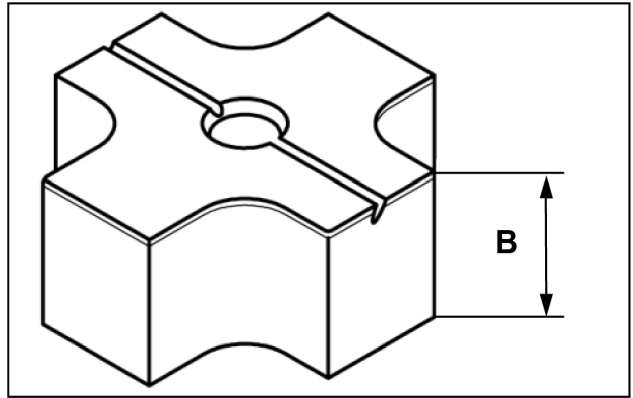
PTIL19GEN0103AA 2

Model	Standard valve (A)	Wear limit (B)	Standard valve (C)	Wear limit (D)
CB20	25.00 mm (0.98 in)	2.00 mm (0.08 in)	-	-
CB40	30.00 mm (1.18 in)	2.00 mm (0.08 in)	-	-
CB60, CB61	36.00 mm (1.42 in)	2.00 mm (0.08 in)	-	-
CB62, CB70	25.00 mm (0.98 in)	2.00 mm (0.08 in)	42.00 mm (1.65 in)	2.00 mm (0.08 in)
CB80	37.50 mm (1.48 in)	2.00 mm (0.08 in)	-	-
CB140	35.00 mm (1.38 in)	3.00 mm (0.12 in)	70.00 mm (2.76 in)	3.00 mm (0.12 in)
CB160	40.00 mm (1.57 in)	3.00 mm (0.12 in)	70.00 mm (2.76 in)	3.00 mm (0.12 in)
CB200	40.00 mm (1.57 in)	3.00 mm (0.12 in)	70.00 mm (2.76 in)	3.00 mm (0.12 in)
CB210	40.00 mm (1.57 in)	3.00 mm (0.12 in)	90.00 mm (3.54 in)	3.00 mm (0.12 in)
CB230	45.00 mm (1.77 in)	3.00 mm (0.12 in)	100.00 mm (3.94 in)	4.00 mm (0.16 in)
CB260	50.00 mm (1.97 in)	3.00 mm (0.12 in)	95.00 mm (3.74 in)	3.00 mm (0.12 in)
CB300	50.00 mm (1.97 in)	3.00 mm (0.12 in)	112.00 mm (4.41 in)	4.00 mm (0.16 in)
CB380	52.00 mm (2.05 in)	3.00 mm (0.12 in)	115.00 mm (4.53 in)	4.00 mm (0.16 in)
CB400	50.00 mm (1.97 in)	3.00 mm (0.12 in)	125.00 mm (4.92 in)	4.00 mm (0.16 in)
CB550	50.00 mm (1.97 in)	3.00 mm (0.12 in)	134.00 mm (5.28 in)	4.00 mm (0.16 in)
CB800	65.00 mm (2.56 in)	5.00 mm (0.20 in)	160.00 mm (6.30 in)	5.00 mm (0.20 in)

**NOTE:** Tool pin wearing beyond the limit may cause failure of tool as well as tool pin.

**Upper damper**

Model	Standard valve	Wear limit (B)
CB20 - CB61	54.00 mm (2.13 in)	52.00 mm (2.05 in)
CB62 - CB80	78.00 mm (3.07 in)	75.00 mm (2.95 in)
CB140	100.00 mm (3.94 in)	96.00 mm (3.78 in)
CB160 - CB210	110.00 mm (4.33 in)	106.00 mm (4.17 in)
CB230 - CB550	125.00 mm (4.92 in)	121.00 mm (4.76 in)
CB800	147.00 mm (5.79 in)	142.00 mm (5.59 in)

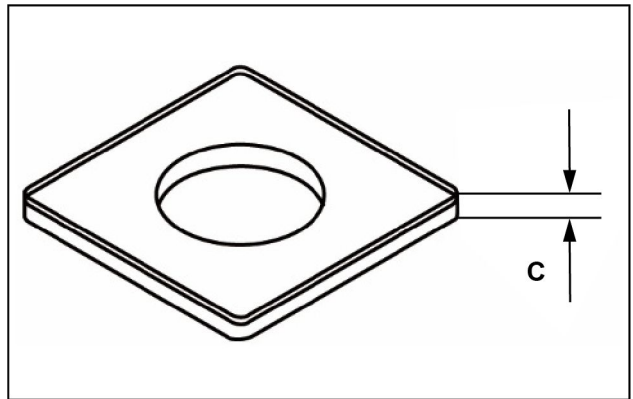


PTIL19GEN0104AA 3

**NOTE:** Upper damper wearing beyond the limit may cause shaking of power cell and various parts failure of power cell and housing.

**Bottom damper**

Model	Standard valve	Wear limit (C)
CB20 - CB61	20.00 mm (0.79 in)	18.00 mm (0.71 in)
CB230 - CB550	25.00 mm (0.98 in)	22.00 mm (0.87 in)
CB800	35.00 mm (1.38 in)	31.00 mm (1.22 in)



PTIL19GEN0105AA 4

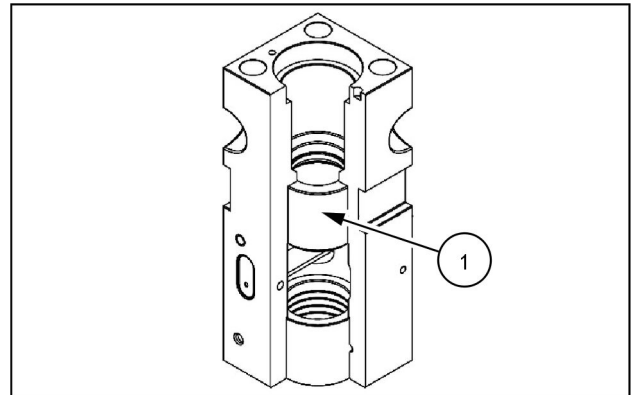
**NOTE:** Upper damper wearing beyond the limit may cause shaking of power cell and various parts failure of power cell and housing.

**NOTE:** The upper bush is assembled inside front head block (CB62, CB70 & above).

**NOTE:** The upper bush is built in front head as part of front head block (CB20, CB40, CB60, CB61).

**NOTE:** Upper bush (1) wearing may affect breaker performance decrease and cause piston and tool failure. Therefore the operator should check upper bush wearing amount by periodical monitoring and replace upper bush or front head in case wearing amount has reached the limit. See wear limit table below.

**Upper bush**



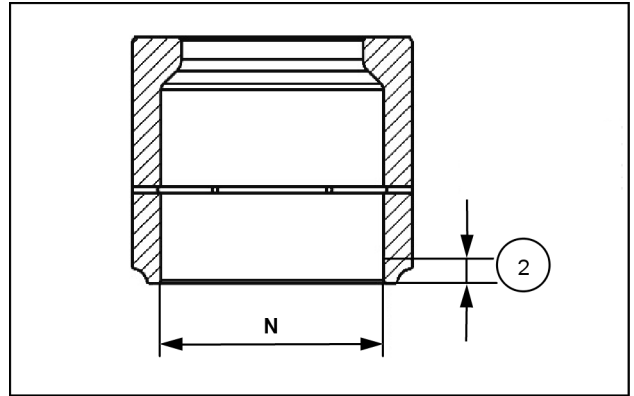
PTIL19GEN0106AA 5



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Measure at **10 mm** from the end of upper bush (2).

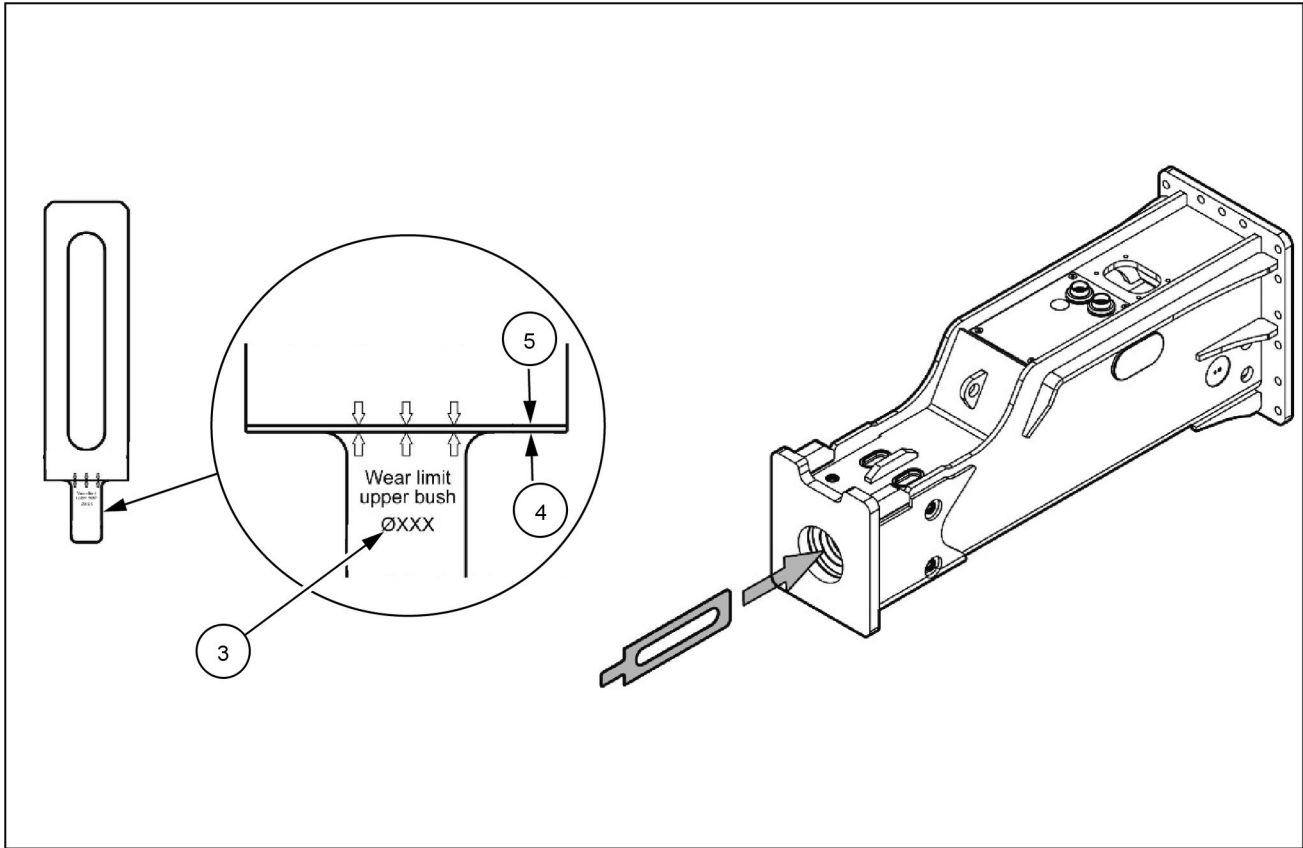
Model	Standard valve (N)	Wear limit
CB20	45.00 mm (1.77 in)	50.00 mm (1.97 in)
CB40	57.00 mm (2.24 in)	62.00 mm (2.44 in)
CB60, CB61	70.00 mm (2.76 in)	75.00 mm (2.95 in)
CB62, CB70	75.00 mm (2.95 in)	80.00 mm (3.15 in)
CB80	80.00 mm (3.15 in)	86.00 mm (3.39 in)
CB140	105.00 mm (4.13 in)	111.00 mm (4.37 in)
CB160	115.00 mm (4.53 in)	121.00 mm (4.76 in)
CB200	125.00 mm (4.92 in)	131.00 mm (5.16 in)
CB210, CB230	135.00 mm (5.31 in)	142.00 mm (5.59 in)
CB260	145.00 mm (5.71 in)	153.00 mm (6.02 in)
CB300	150.00 mm (5.91 in)	158.00 mm (6.22 in)
CB380	155.00 mm (6.10 in)	164.00 mm (6.46 in)
CB400	165.00 mm (6.50 in)	174.00 mm (6.85 in)
CB550	175.00 mm (6.89 in)	184.00 mm (7.24 in)
CB800	200.00 mm (7.87 in)	209.00 mm (8.23 in)



PTIL19GEN0107AA 6

**NOTE:** For CB62 & above, the jig to measure upper bush wearing is supplied with breaker as standard accessories. As illustrated below, put the jig into the hole of breaker housing, then replace upper bush if bottom of lower bush touches the Limit Line of jig.

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PTIL19GEN0108FA 7

3.	Jig reference	5.	Limit line
4.	End line		

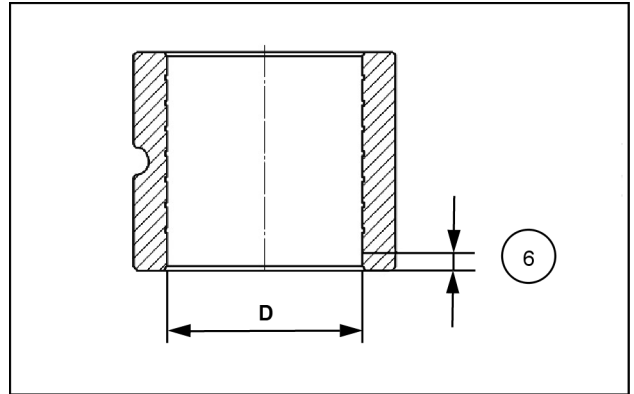
Jig reference	Model
Ø75	CB20
Ø75	CB70
Ø80	CB80
Ø105	CB140
Ø115	CB160
Ø125	CB200
Ø135	CB210, CB230
Ø145	CB260
Ø150	CB300
Ø155	CB380
Ø165	CB400
Ø175	CB550
Ø200	CB800

**NOTE:** In case the jig has been lost, ensure that you purchase new one from an authorized dealer, upon below upper bush jig reference table.

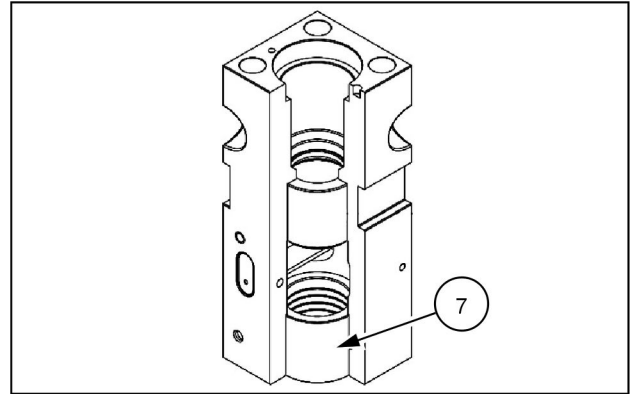
**Lower bush**

- Measure at **10 mm** from the end of lower bush (6).
- Lower bush (7).

Model	Standard valve (D)	Wear limit
CB20	45.00 mm (1.77 in)	48.00 mm (1.89 in)
CB40	57.00 mm (2.24 in)	60.00 mm (2.36 in)
CB60, CB61	70.00 mm (2.76 in)	73.00 mm (2.87 in)
CB62, CB70	75.00 mm (2.95 in)	78.00 mm (3.07 in)
CB80	80.00 mm (3.15 in)	84.00 mm (3.31 in)
CB140	105.00 mm (4.13 in)	109.00 mm (4.29 in)
CB160	115.00 mm (4.53 in)	119.00 mm (4.69 in)
CB200	125.00 mm (4.92 in)	129.0 mm (5.1 in)
CB210, CB230	135.00 mm (5.31 in)	140.00 mm (5.51 in)
CB260	145.00 mm (5.71 in)	151.00 mm (5.94 in)
CB300	150.00 mm (5.91 in)	156.00 mm (6.14 in)
CB380	155.00 mm (6.10 in)	162.00 mm (6.38 in)
CB400	165.00 mm (6.50 in)	172.00 mm (6.77 in)
CB550	175.00 mm (6.89 in)	182.00 mm (7.17 in)
CB800	200.00 mm (7.87 in)	207.00 mm (8.15 in)



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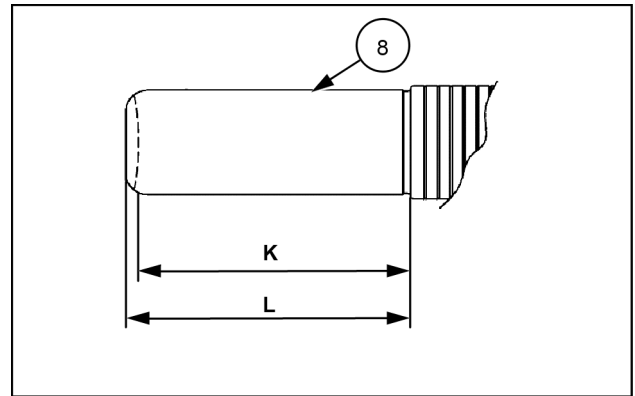
PTIL19GEN0106AA 9

**NOTE:** Upper damper wearing beyond the limit may cause shaking of power cell and various parts failure of power cell and housing.

**Piston**

Piston bottom (8).

Model	Standard valve (L)	Wear limit (K)
CB20	150.00 mm (5.91 in)	149.00 mm (5.87 in)
CB40	168.00 mm (6.61 in)	167.00 mm (6.57 in)
CB60, CB61	177.00 mm (6.97 in)	176.00 mm (6.93 in)
CB62, CB70	210.00 mm (8.27 in)	209.00 mm (8.23 in)
CB80	218.00 mm (8.58 in)	217.00 mm (8.54 in)
CB140	273.00 mm (10.75 in)	272.00 mm (10.71 in)
CB160	290.00 mm (11.42 in)	288.00 mm (11.34 in)
CB200	291.00 mm (11.46 in)	289.00 mm (11.38 in)
CB210	305.00 mm (12.01 in)	303.00 mm (11.93 in)
CB230	311.00 mm (12.24 in)	309.00 mm (12.17 in)
CB260	336.00 mm (13.23 in)	334.00 mm (13.15 in)
CB300	353.00 mm (13.90 in)	351.00 mm (13.82 in)
CB380	363.00 mm (14.29 in)	361.00 mm (14.21 in)
CB400	412.00 mm (16.22 in)	410.00 mm (16.14 in)
CB550	455.00 mm (17.91 in)	453.00 mm (17.83 in)
CB800	462.00 mm (18.19 in)	460.00 mm (18.11 in)

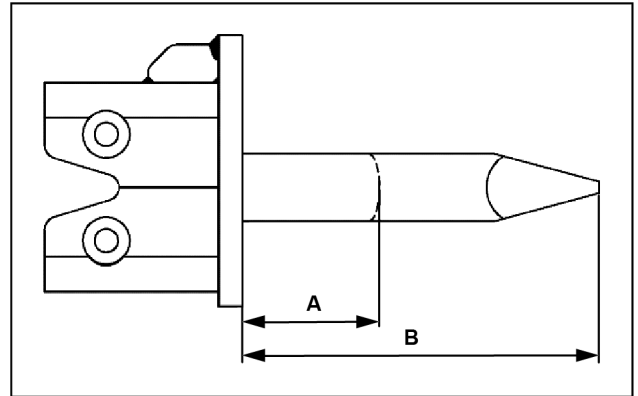


PTIL19GEN0110AA 10

**NOTE:** Piston wearing is highly sensitive to breaker performance. Any piston that has reached wear limit may cause malfunction of breaker, shall be replaced with brand new piston.

**Tool**

Model	Standard valve (B)	Wear limit (A)
CB20	258.00 mm (10.16 in)	200.00 mm (7.87 in)
CB40	331.00 mm (13.03 in)	
CB60, CB61	359.00 mm (14.13 in)	250.00 mm (9.84 in)
CB62, CB70	368.00 mm (14.49 in)	
CB80	454.00 mm (17.87 in)	
CB140	532.00 mm (20.94 in)	
CB160	561.00 mm (22.09 in)	
CB200	630.00 mm (24.80 in)	350.00 mm (13.78 in)
CB210	645.00 mm (25.39 in)	
CB230	674.00 mm (26.54 in)	400.00 mm (15.75 in)
CB260	657.00 mm (25.87 in)	450.00 mm (17.72 in)
CB300	643.00 mm (25.31 in)	
CB380	675.00 mm (26.57 in)	500.00 mm (19.69 in)
CB400	744.00 mm (29.29 in)	
CB550	781.00 mm (30.75 in)	550.00 mm (21.65 in)
CB800	835.00 mm (32.87 in)	

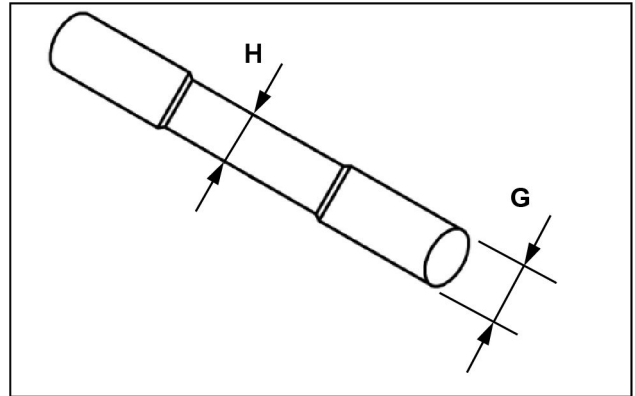


PTIL19GEN0111AA 11

**NOTE:** Use of tool beyond wear limit will led to shortening life time of housing and also dust/debris entering into breaker percussion chamber ultimately causing contamination failure.

**Stopper pin**

Model	Standard valve (G)	Wear limit (H)
CB20 - CB61	10.00 mm (0.39 in)	8.00 mm (0.31 in)
CB62, CB70	15.00 mm (0.59 in)	13.00 mm (0.51 in)
CB80	10.00 mm (0.39 in)	8.00 mm (0.31 in)
CB140 - CB260	17.50 mm (0.69 in)	15.50 mm (0.61 in)
CB300, CB380	21.50 mm (0.85 in)	19.50 mm (0.77 in)
CB400 - CB800	27.50 mm (1.08 in)	25.50 mm (1.00 in)



PTIL19GEN0112AA 12

**NOTE:** Stopper pin wearing over the limit may cause tool pin, tool and/or bush failures as well as stopper pin failure.

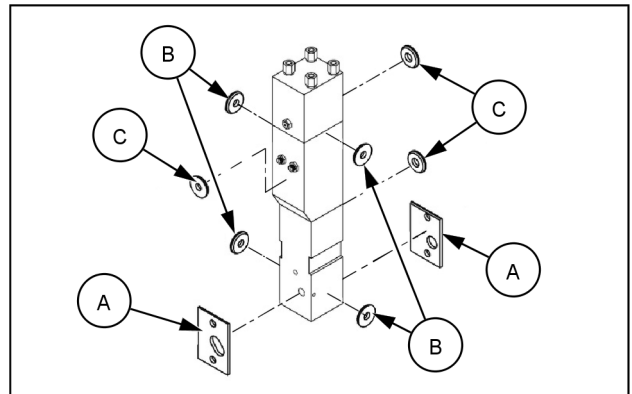
**NOTE:** When breaker striking force has been delivered to stopper pin over and over, it can be bent or deformed. Heavily bent or deformed stopper pin may not be removed from tool pin and bush, which will cause a significant amount of repair time and resource spending. Check stopper pin condition periodically and replace it with brand new before too late.

**Shell pad**

**CB20 - CB80**

Model	Standard valve (A)	Wear limits	Standard valve (B)	Wear limits	Standard valve (C)	Wear limits
CB20, CB40	12.00 mm (0.47 in)	10.50 mm (0.41 in)	12.00 mm (0.47 in)	10.50 mm (0.41 in)	12.00 mm (0.47 in)	10.50 mm (0.41 in)
CB60 - CB80	15.00 mm (0.59 in)	13.50 mm (0.53 in)	15.00 mm (0.59 in)	13.50 mm (0.53 in)	15.00 mm (0.59 in)	13.50 mm (0.53 in)

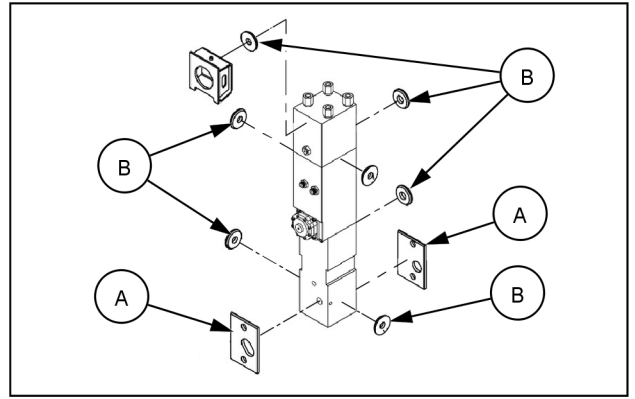
CB20, CB40



PTIL19GEN0113AA 13

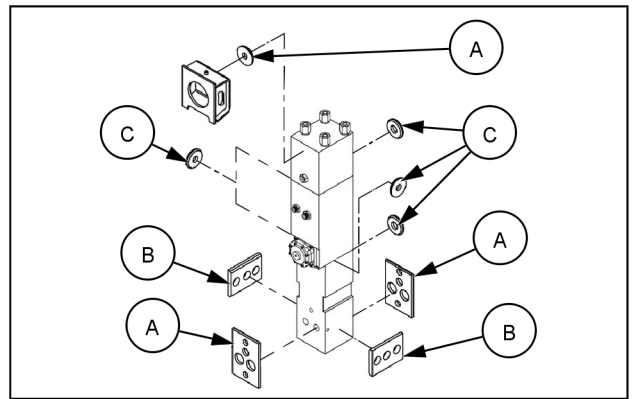
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CB60, CB61



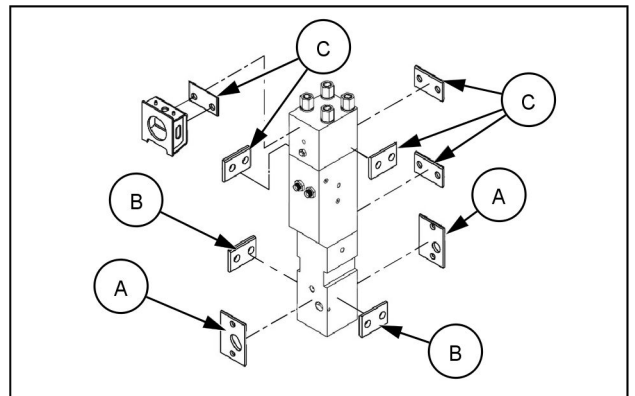
PTIL19GEN0114AA 14

CB62, CB70



PTIL19GEN0115AA 15

CB80

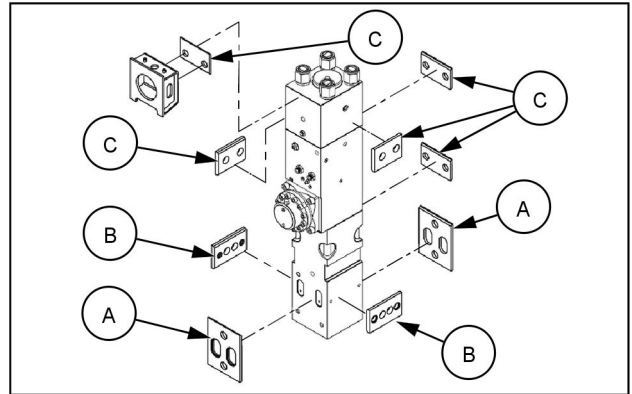


PTIL19GEN0116AA 16

**CB140 - CB800**

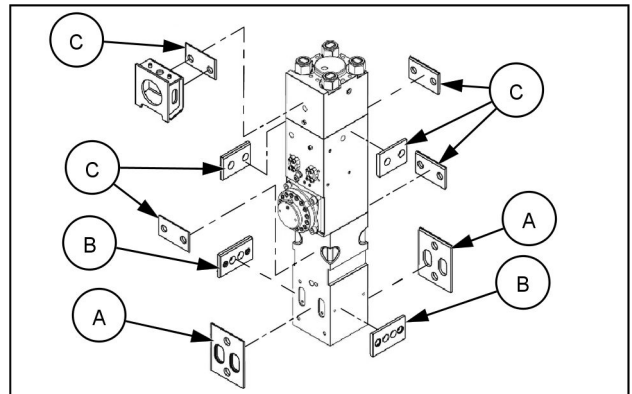
Model	Standard valve (A)	Wear limits	Standard valve (B)	Wear limits	Standard valve (C)	Wear limits
CB140 - CB800	15.00 mm (0.59 in)	13.50 mm (0.53 in)	15.00 mm (0.59 in)	13.50 mm (0.53 in)	15.00 mm (0.59 in)	13.50 mm (0.53 in)

CB140 - CB400



PTIL19GEN0117AA 17

CB550, CB800



PTIL19GEN0118AA 18

**NOTE:** Shell pad wearing beyond the limit may cause shaking of power cell and various parts failure of power cell and housing.

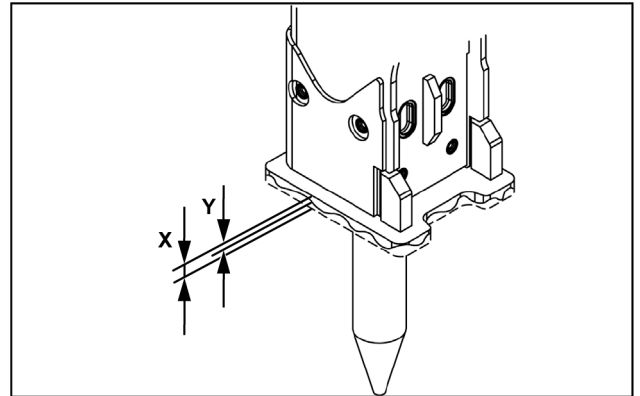
**NOTE:** Also operating breaker with any missing shell pad may cause shaking of power cell and various parts failure of power cell and housing.



### Housing bottom plate

Model	Standard valve (X)	Wear limit (Y)
CB20 - CB140	25.00 mm (0.98 in)	15.00 mm (0.59 in)
CB160 - CB260	40.00 mm (1.57 in)	20.00 mm (0.79 in)
CB300, CB380	50.00 mm (1.97 in)	25.00 mm (0.98 in)
CB400	60.00 mm (2.36 in)	30.00 mm (1.18 in)
CB550, CB800	80.00 mm (3.15 in)	40.00 mm (1.57 in)

**NOTE:** Bottom plate wearing over the limit may incur failure or shorter service life of housing, bottom damper and/or lower bush, shall be reinforced before too late.



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# SPECIFICATIONS

## Excavator

Description		CB20	CB40	CB60	CB80	CB140
Operating weight*		138 kg	192 kg	303 kg	499 kg	1018 kg
		304 lb	423 lb	668 lb	1100 lb	2244 lb
Overall length		1196 mm	1410 mm	1593 mm	1897 mm	2295 mm
		47.09 in	55.51 in	62.72 in	74.69 in	90.35 in
Tool diameter		45 mm	57 mm	70 mm	80 mm	105 mm
		1.57 in	2.24 in	2.76 in	3.15 in	4.13 in
2nd relief setting pressure**		175 Kg/cm <sup>2</sup>	175 Kg/cm <sup>2</sup>	175 Kg/cm <sup>2</sup>	175 Kg/cm <sup>2</sup>	210 Kg/cm <sup>2</sup>
		2500 psi	2500 psi	2500 psi	2500 psi	3000 psi
Operating pressure		90 – 120 Kg/cm <sup>2</sup>	90 – 120 Kg/cm <sup>2</sup>	110 – 165 Kg/cm <sup>2</sup>	140 – 170 Kg/cm <sup>2</sup>	140 – 190 Kg/cm <sup>2</sup>
		1280 – 1700 psi	1280 – 1700 psi	1565 – 2350 psi	1990 – 2420 psi	1990 – 2700 psi
Oil flow		13 – 30 L/min	20 – 60 L/min	29 – 60 L/min	38 – 85 L/min	68 – 119 L/min
		3.43 – 7.92 US gpm	5.28 – 15.85 US gpm	7.66 – 15.85 US gpm	10.03 – 22.45 US gpm	17.96 – 31.43 US gpm
Blow rate	Power mode	550 – 1000 bps	600 – 1500 bps	380 – 1000 bps	400 – 800 bps	350 – 550 bps
	Speed mode				600 – 1100 bps	600 – 900 bps
Back head gas pressure		10 – 14 Kg/cm <sup>2</sup>	14 – 16 Kg/cm <sup>2</sup>	10 – 14 Kg/cm <sup>2</sup>	10 – 14 Kg/cm <sup>2</sup>	10 – 14 Kg/cm <sup>2</sup>
		142 – 199 psi	199 – 228 psi	142 – 199 psi	142 – 199 psi	142 – 199 psi
Accumulator gas pressure		-	-	-	-	55 – 60 Kg/cm <sup>2</sup>
		-	-	-	-	782 – 853 psi
Suitable carrier		0.8 – 2.5 t	1.5 – 4.0 t	3 – 6.5 t	4.5 – 8.0 t	10 – 15 t
		1760 – 5500 lb	330 – 8800 lb	6600 – 14300 lb	9900 – 17600 lb	22000 – 33000 lb

**NOTE:** Above specifications are subject to change without prior notice.

**NOTE:** \* Operating weight includes power cell, housing, tool, breaker bracket, pins and hydraulic hoses only. Operating weight can vary by breaker bracket type.

**NOTE:** \*\* Guide for carrier port relief valve pressure setting.

Description		CB160	CB200	CB210	CB230	CB260
Operating weight*		1253 kg	1468 kg	1613 kg	1873 kg	2087 kg
		2762 lb	3236 lb	3556 lb	4129 lb	4601 lb
Overall length		2453 mm	2600 mm	2723 mm	2793 mm	2964 mm
		96.57 in	102.36 in	107.20 in	109.93 in	116.69 in
Tool diameter		115 mm	125 mm	135 mm	135 mm	145 mm
		4.53 in	4.92 in	5.31 in	5.31 in	5.71 in
2nd relief setting pressure**		210 Kg/cm <sup>2</sup>	210 Kg/cm <sup>2</sup>	210 Kg/cm <sup>2</sup>	210 Kg/cm <sup>2</sup>	210 Kg/cm <sup>2</sup>
		3000 psi	3000 psi	3000 psi	3000 psi	3000 psi
Operating pressure		140 – 190 Kg/cm <sup>2</sup>	150 – 190 Kg/cm <sup>2</sup>	160 – 190 Kg/cm <sup>2</sup>	160 – 190 Kg/cm <sup>2</sup>	160 – 190 Kg/cm <sup>2</sup>
		1990 – 2700 psi	2130 – 2700 psi	2275 – 2700 psi	2275 – 2700 psi	2275 – 2700 psi
Oil flow		85 – 127 L/min	85 – 131 L/min	102 – 132 L/min	119 – 161 L/min	127 – 178 L/min
		22.45 – 33.54 US gpm	22.45 – 34.60 US gpm	27 – 34.87 US gpm	31.43 – 42.53 US gpm	33.54 – 47.02 US gpm
Blow rate	Power mode	320 – 550 bps	320 – 500 bps	320 – 480 bps	340 – 450 bps	270 – 400 bps
	Speed mode	400 – 700 bps	400 – 650 bps	400 – 600 bps	420 – 550 bps	330 – 500 bps
Back head gas pressure		14 – 16 Kg/cm <sup>2</sup>	14 – 16 Kg/cm <sup>2</sup>	14 – 16 Kg/cm <sup>2</sup>	14 – 16 Kg/cm <sup>2</sup>	14 – 16 Kg/cm <sup>2</sup>
		199 – 228 psi	199 – 228 psi	199 – 228 psi	199 – 228 psi	199 – 228 psi

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Description	CB160	CB200	CB210	CB230	CB260
Accumulator gas pressure	55 – 60 Kg/cm <sup>2</sup>	55 – 60 Kg/cm <sup>2</sup>	55 – 60 Kg/cm <sup>2</sup>	55 – 60 Kg/cm <sup>2</sup>	55 – 60 Kg/cm <sup>2</sup>
	782 – 853 psi	782 – 853 psi	782 – 853 psi	782 – 853 psi	782 – 853 psi
Suitable carrier	12 – 18 t	16 – 22 t	18 – 24 t	20 – 26 t	24 – 30 t
	26500 – 39700 lb	35200 – 48500 lb	39700 – 52900 lb	44100 – 57300 lb	52900 – 66100 lb

**NOTE:** Above specifications are subject to change without prior notice.

**NOTE:** \* Operating weight includes power cell, housing, tool, breaker bracket, pins and hydraulic hoses only. Operating weight can vary by breaker bracket type.

**NOTE:** \*\* Guide for carrier port relief valve pressure setting.

Description	CB300	CB380	CB400	CB550	CB800	
Operating weight*	2564 kg	2828 kg	3330 kg	4174 kg	5936 kg	
	5653 lb	6235 lb	7341 lb	9202 lb	13087 lb	
Overall length	3044 mm	3174 mm	3322 mm	3610 mm	3981 mm	
	119.84 in	124.96 in	132.36 in	142.13 in	156.73 in	
Tool diameter	150 mm	155 mm	165 mm	175 mm	200 mm	
	5.91 in	6.10 in	6.50 in	6.89 in	7.87 in	
2nd relief setting pressure**	210 Kg/cm <sup>2</sup>	230 Kg/cm <sup>2</sup>	230 Kg/cm <sup>2</sup>	210 Kg/cm <sup>2</sup>	250 Kg/cm <sup>2</sup>	
	3000 psi	3300 psi	3300 psi	3000 psi	3570 psi	
Operating pressure	160 – 190 Kg/cm <sup>2</sup>	160 – 190 Kg/cm <sup>2</sup>	150 – 190 Kg/cm <sup>2</sup>	150 – 190 Kg/cm <sup>2</sup>	170 – 210 Kg/cm <sup>2</sup>	
	2275 – 2700 psi	2275 – 2700 psi	2130 – 2700 psi	2130 – 2700 psi	2420 – 3000 psi	
Oil flow	153 – 204 L/min	170 – 221 L/min	187 – 238 L/min	204 – 272 L/min	238 – 323 L/min	
	40.41 – 53.89 US gpm	44.90 – 58.38 US gpm	49.40 – 62.88 US gpm	53.89 – 71.85 US gpm	62.87 – 85.32 US gpm	
Blow rate	Power mode	250 – 380 bps	230 – 400 bps	230 – 345 bps	230 – 330 bps	220 – 300 bps
	Speed mode	300 – 450 bps	270 – 470 bps	270 – 410 bps	270 – 500 bps	290 – 400 bps
Back head gas pressure	14 – 16 Kg/cm <sup>2</sup>	14 – 16 Kg/cm <sup>2</sup>	10 – 14 Kg/cm <sup>2</sup>	14 – 16 Kg/cm <sup>2</sup>	14 – 16 Kg/cm <sup>2</sup>	
	199 – 228 psi	199 – 228 psi	142 – 199 psi	199 – 228 psi	199 – 228 psi	
Accumulator gas pressure	55 – 60 Kg/cm <sup>2</sup>	55 – 60 Kg/cm <sup>2</sup>	55 – 60 Kg/cm <sup>2</sup>	55 – 60 Kg/cm <sup>2</sup>	55 – 60 Kg/cm <sup>2</sup>	
	782 – 853 psi	782 – 853 psi	782 – 853 psi	782 – 853 psi	782 – 853 psi	
Suitable carrier	25 – 36 t	28 – 42 t	40 – 60 t	40 – 60 t	58 – 100 t	
	55100 – 79400 lb	61700 – 92600 lb	88200 – 132300 lb	88200 – 132300 lb	127867 – 220462 lb	

**NOTE:** Above specifications are subject to change without prior notice.

**NOTE:** \* Operating weight includes power cell, housing, tool, breaker bracket, pins and hydraulic hoses only. Operating weight can vary by breaker bracket type.

**NOTE:** \*\* Guide for carrier port relief valve pressure setting.

**Skid steer loader**

Description		CB40	CB60	CB70	CB80
Operating weight*		270 kg	357 kg	430 kg	542 kg
		595 lb	787 lb	948 lb	1195 lb
Overall length		1483 mm	1604 mm	1671 mm	1875 mm
		58.39 in	63.15 in	65.79 in	73.82 in
Tool diameter		57 mm	70 mm	75 mm	80 mm
		2.24 in	2.76 in	2.95 in	3.15 in
2nd relief setting pressure**		230 Kg/cm <sup>2</sup>	230 Kg/cm <sup>2</sup>	230 Kg/cm <sup>2</sup>	230 Kg/cm <sup>2</sup>
		3300 psi	3300 psi	3300 psi	3300 psi
Operating pressure		100 – 190 Kg/cm <sup>2</sup>	110 – 190 Kg/cm <sup>2</sup>	120 – 190 Kg/cm <sup>2</sup>	140 – 190 Kg/cm <sup>2</sup>
		1420 – 2700 psi	1560 – 2700 psi	1700 – 2700 psi	1990 – 2700 psi
Oil flow		23 – 70 L/min	35 – 70 L/min	40 – 80 L/min	45 – 90 L/min
		6.07 – 18.49 US gpm	9.24 – 18.49 US gpm	10.56 – 21.13 US gpm	11.88 – 23.77 US gpm
Blow rate	Power mode	600 – 1500 bps	380 – 1000 bps	380 – 900 bps	400 – 800 bps
	Speed mode				600 – 1100 bps
Back head gas pressure		10 – 12 Kg/cm <sup>2</sup>	10 – 12 Kg/cm <sup>2</sup>	10 – 12 Kg/cm <sup>2</sup>	10 – 14 Kg/cm <sup>2</sup>
		142 – 170 psi	142 – 170 psi	142 – 170 psi	142 – 199 psi
Accumulator gas pressure		-	-	-	-
Suitable carrier		1.5 – 4 t	3 – 6.5 t	4.5 – 8 t	4.5 – 8 t
		3300 – 8800 lb	6600 – 14300 lb	9900 – 17600 lb	9900 – 17600 lb

**NOTE:** Above specifications are subject to change without prior notice.

**NOTE:** \* Operating weight includes power cell, housing, tool, breaker bracket, pins and hydraulic hoses only. Operating weight can vary by breaker bracket type.

**NOTE:** \*\* Guide for carrier port relief valve pressure setting.

**TLB**

Description		CB61	CB62
Operating weight*		366 kg	441 kg
		807 lb	972 lb
Overall length		1552 mm	1648 mm
		61.10 in	64.88 in
Tool diameter		70 mm	75 mm
		2.76 in	2.95 in
2nd relief setting pressure**		175 Kg/cm <sup>2</sup>	175 Kg/cm <sup>2</sup>
		2500 psi	2500 psi
Operating pressure		110 – 165 Kg/cm <sup>2</sup>	120 – 165 Kg/cm <sup>2</sup>
		1565 – 2350 psi	1700 – 2350 psi
Oil flow		29 – 60 L/min	34 – 68 L/min
		7.66 – 15.8 US gpm	8.98 – 17.96 US gpm
Blow rate	Power mode	380 – 1000 bps	380 – 900 bps
	Speed mode		
Back head gas pressure		10 – 14 Kg/cm <sup>2</sup>	16 – 182 Kg/cm <sup>2</sup>
		142 – 199 psi	228 – 256 psi
Accumulator gas pressure		40 – 50 Kg/cm <sup>2</sup>	40 – 50 Kg/cm <sup>2</sup>
		569 – 711 psi	569 – 711 psi
Suitable carrier		3 – 6.5 t	4.5 – 8 t
		6600 – 8800 lb	9900 – 17600 lb

**NOTE:** Above specifications are subject to change without prior notice.

**NOTE:** \* Operating weight includes power cell, housing, tool, breaker bracket, pins and hydraulic hoses only. Operating weight can vary by breaker bracket type.

**NOTE:** \*\* Guide for carrier port relief valve pressure setting.

## TABLE OF APPLICATIONS

### A. Excavator

	CB20	CB40	CB60	CB80	CB140	CB160	CB200 CB210 CB230	CB260	CB300	CB380 CB400	CB550	CB800
CX17C	X											
CX18C	X											
CX26C		X										
CX30C		X										
CX33C		X										
CX37C		X										
CX57C			X									
CX60C			X									
CX75, CX80				X								
CX130, CX145C					X							
CX160, CX180						X						
CX210, CX220, CX235C							X					
CX240, CX250, CX260								X				
CX300,									X			
CX350, CX370, CX380										X		
CX470, CX490											X	
CX470ME, CX500											X	
CX700												X
CX800												X

5 - SPECIFICATIONS

B. Skid steer loader

1.

Tier 3

	<b>CB40</b>	<b>CB60</b>	<b>CB70</b>	<b>CB80</b>
SR130	X			
SR150	X	X		
SR175	X	X		
SV185	X	X		
SR200		X	X	
SR220		X	X	
SV250		X	X	
SR250		X	X	
SV300		X	X	
TR270		X	X	
TR320		X	X	
TV380		X	X	

2. Tier 4

	<b>CB40</b>	<b>CB60</b>	<b>CB70</b>	<b>CB80</b>
SR130	X			
SR160	X	X		
SR175	X	X		
SV185	X	X		
SR210		X	X	X
SR240		X	X	X
SV280		X	X	X
SR250		X	X	X
SR270		X	X	X
SV300		X	X	X
SV340		X	X	X
TR270		X	X	X
TR310		X	X	X
TR340		X	X	X
TV380		X	X	X
TV450		X	X	X

C. TLB

1. Pithampur

	<b>CB61</b>	<b>CB62</b>
570T	X	X
570ST	X	X
B80B	X	X
770	X	X
770EX	X	X
770EX MAG.	X	X
851EX	X	X

2. Lecce

	<b>CB61</b>	<b>CB62</b>
580T S'TYLED	X	X
B90B S'TYLED	X	X
580ST S'TYLED	X	X
B100B S'TYLED	X	X
590ST S'TYLED	X	X
B110B S'TYLED	X	X
695ST S'TYLED	X	X
B115B S'TYLED	X	X
580T CASE DNA	X	X
580ST CASE DNA	X	X
590ST CASE DNA	X	X
695ST CASE DNA	X	X

3. Burlington

	<b>CB61</b>	<b>CB62</b>
580N	X	X
580SN	X	X
590SN	X	X



## 6 - ACCESSORIES

### UNDERWATER KIT

#### Introduction

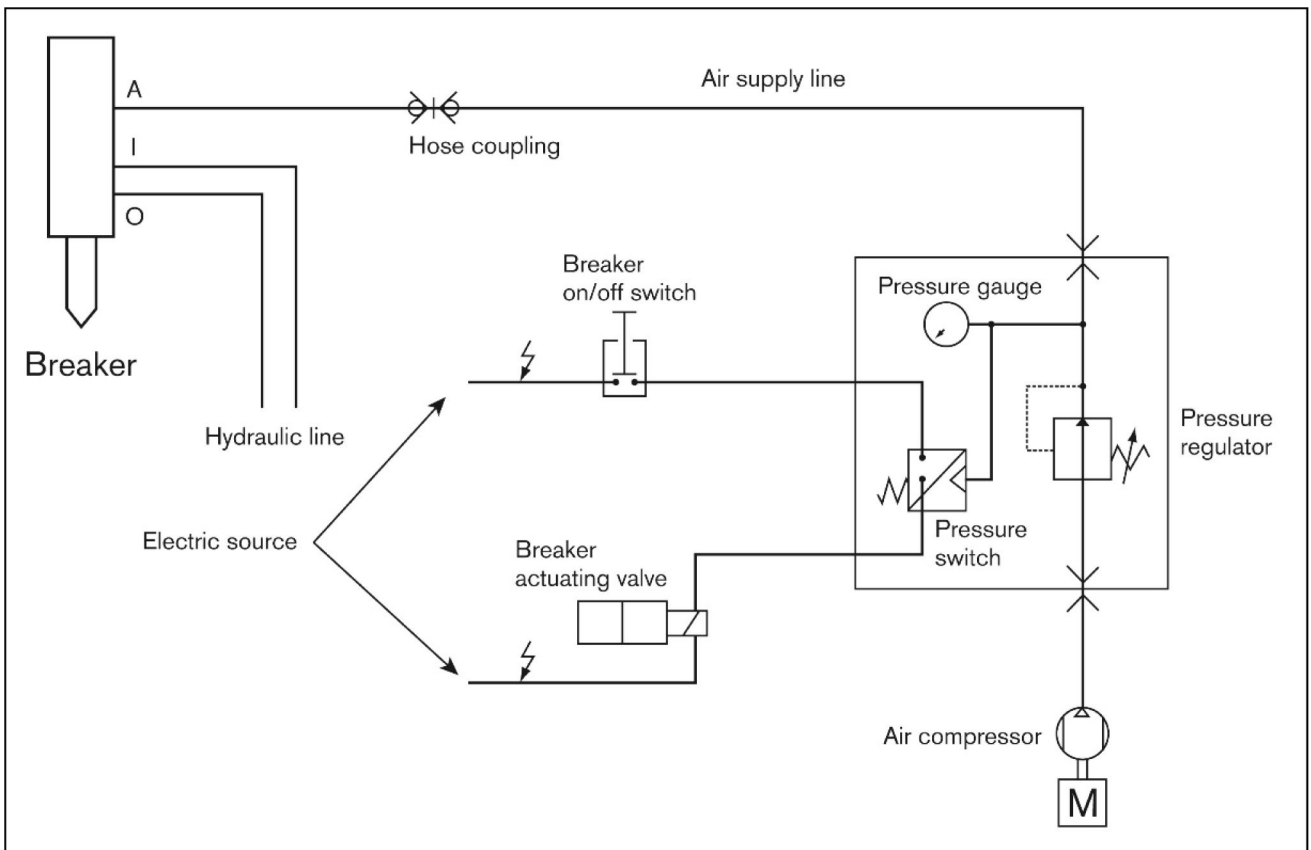
- This is about requirements of the underwater application breaker.
- It is very important for you to read and understand the instruction before the breaker is put into underwater application.
- Keep the instructions provided herewith with you all the time.
- When the breaker is operated at underwater application without any proper underwater kit, water comes into percussion chamber and cylinder, cause serious damage to seals, cylinder, piston and control valve such as corrosion, scratch and crack as well as a significantly shortened life time of tool, tool pins, upper bush, lower bush, etc.
- Therefore a proper underwater kit should be installed on the breaker and working whenever the breaker works at under water application.

**NOTE:** The breaker manufacturer do not supply any underwater kit. All information related with underwater kit technical information, installation, capacity, setting pressure, operation, maintenance, part list, etc. of this Service Manual is only to help the operator understand risks and requirements of underwater application breaker, shall not be interpreted as breaker manufacturer's responsibility to warrant underwater kit as well as underwater breaker.

**NOTE:** Underwater application breaker is not supported by breaker manufacturer's warranty. Breaker operation at underwater application shall be carried out at full responsibility of the operator.

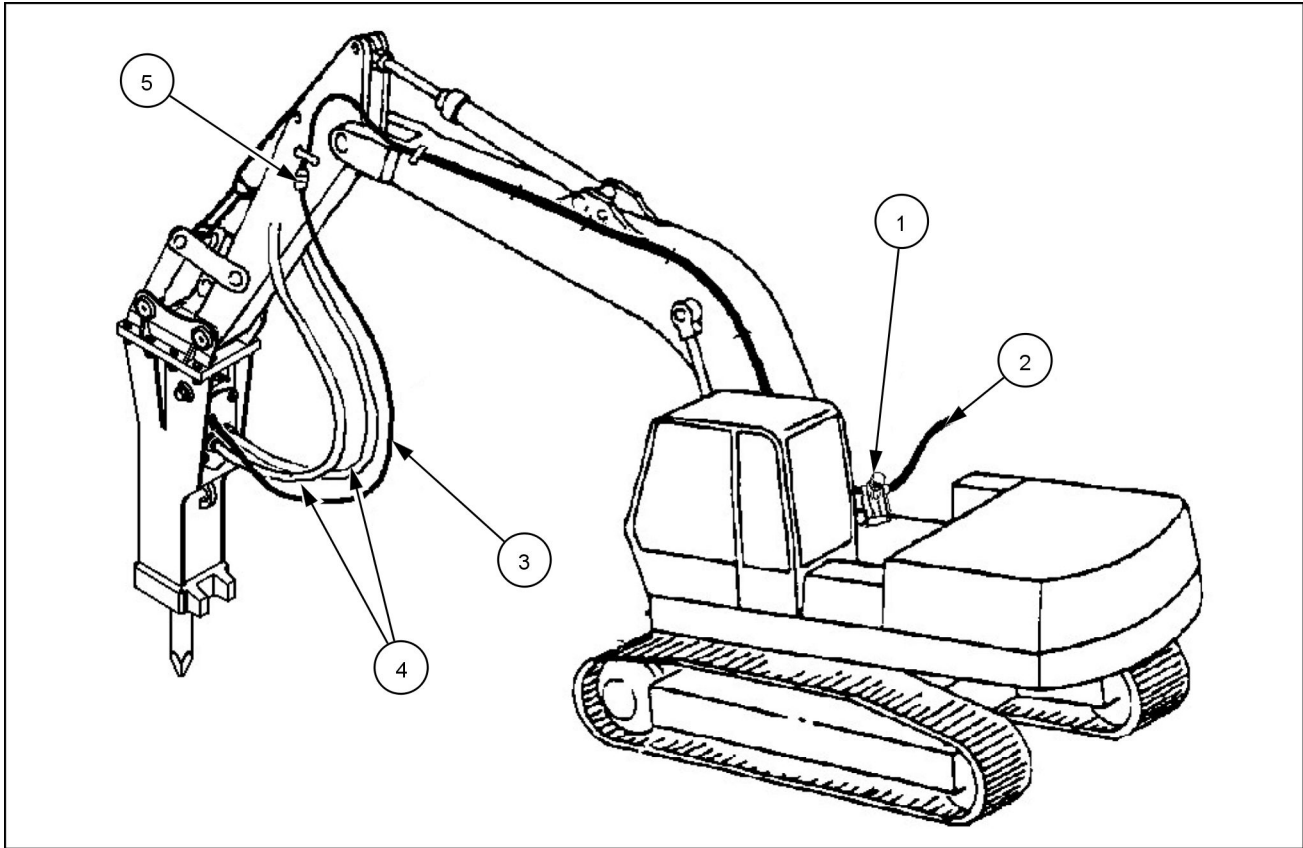
#### Structure of underwater kit

Normally underwater kit consists of air compressor, air supply line, pressure regulator, pressure switch, electric cable, coupling, adaptor, fasteners, etc.



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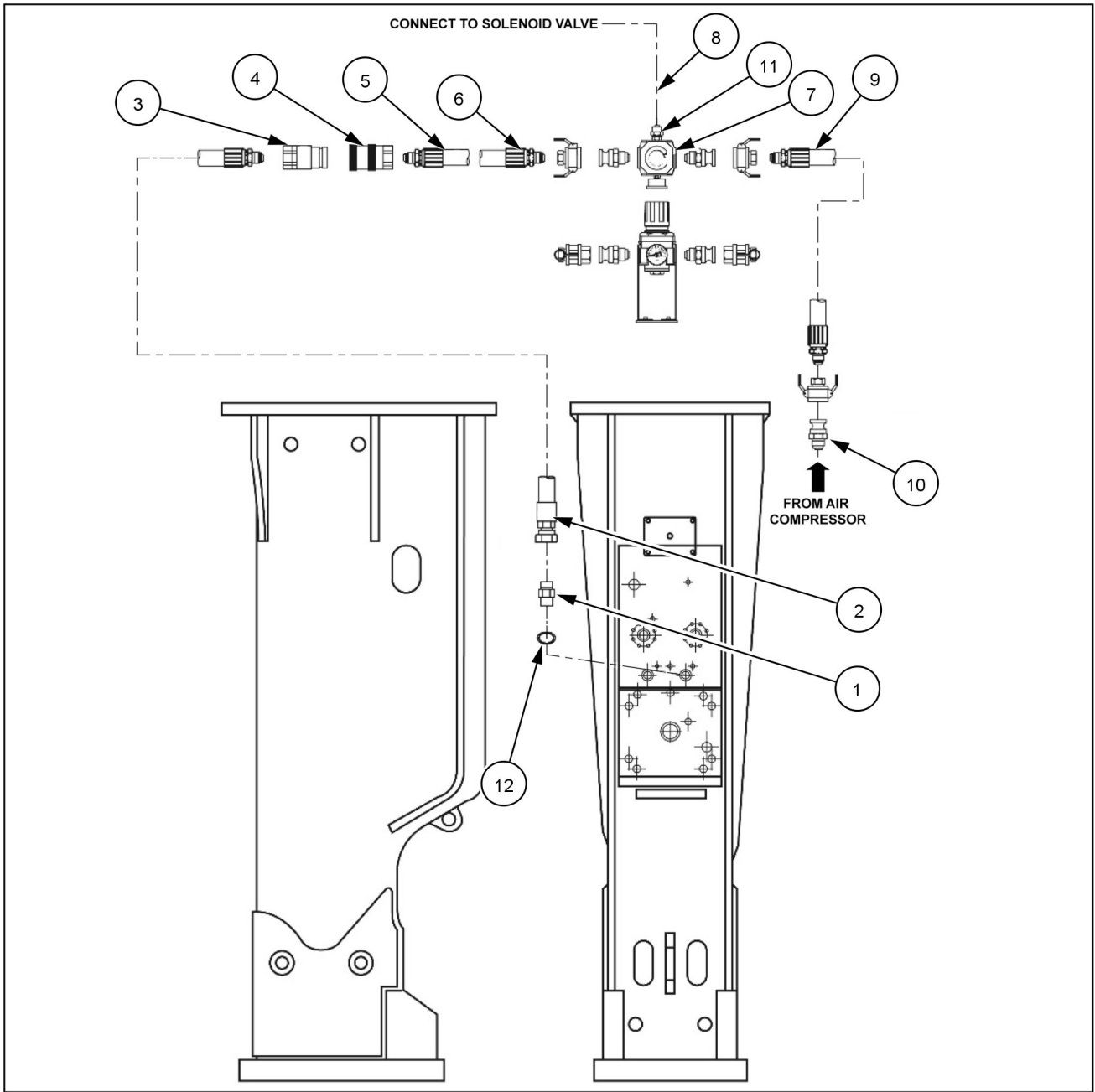
## 6 - ACCESSORIES



PTIL19GEN0124FB 2

1.	Pressure regulator	4.	hydraulic line
2.	Connect to air compressor	5.	Hose coupler
3.	Air supply line		

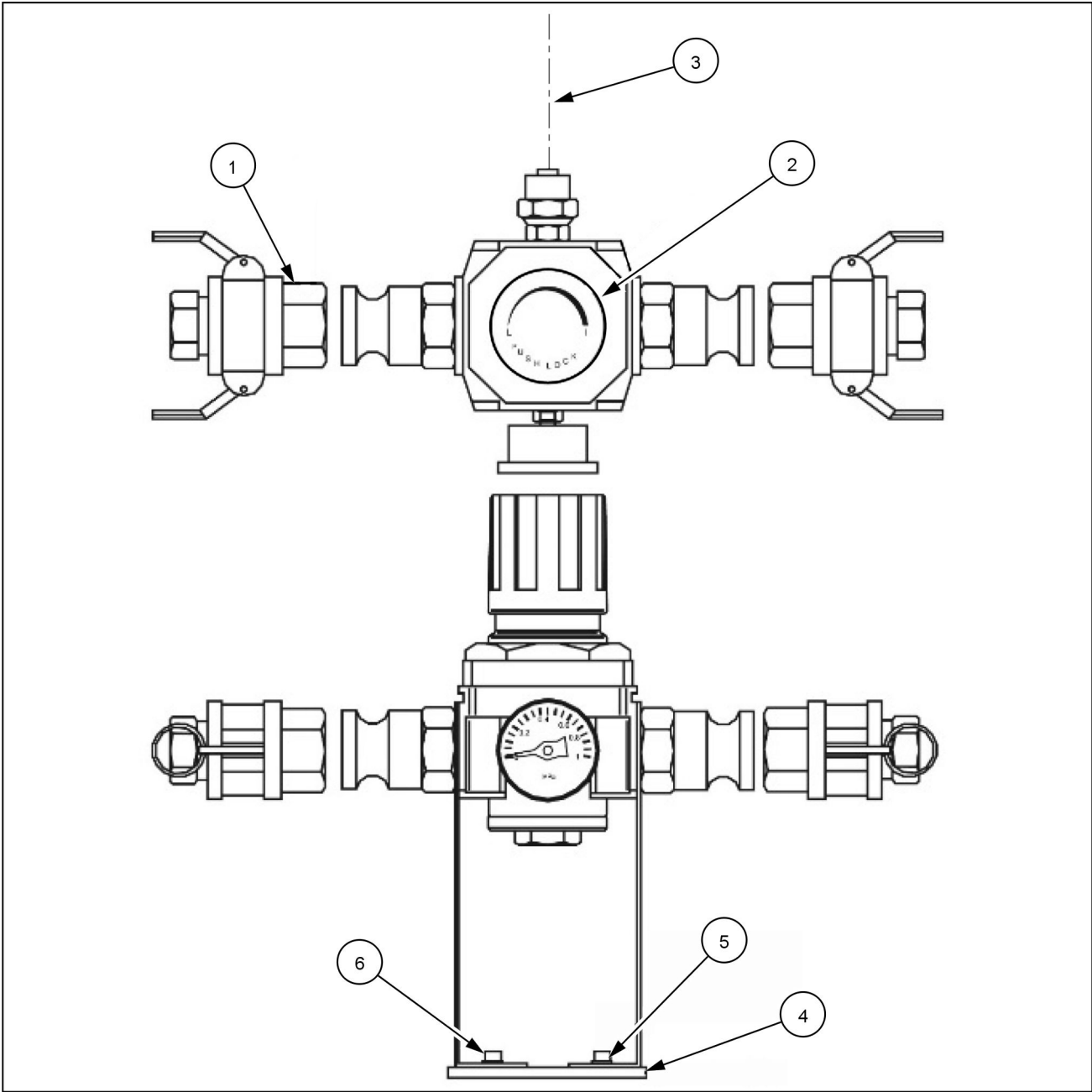
Typical underwater kit parts of CB210 class



PTIL19GEN0125GB 3

Item	Part name	Quantity	Remarks
1	Adaptor	1	PF1/2" O-RING×PF1/2"5#
2	Hose	1	PT1/2"(MALE)×PF1/2"5#(FEMALE)× 25000L×2S
3	Quick Coupler Plug	1	1/2", 6605-12
4	Quick Coupler Socket	1	1/2", 6603-12
5	Hose	1	PT1/2"(BOTH MALE)×2S×12m
6	Female Thread Coupler	3	1/2" CAM-LOCK
7	Regulator Assembly	1	1/2" AC4004GS(Air filter + Regulator + Lubricator + P/Switch)
8	Electric Cable	1	1.5mm <sup>2</sup> -10m
9	Hose	1	PT1/2"(BOTH MALE)×2S×20m
10	Male Thread Coupler	3	1/2" CAM-LOCK
11	Pressure Switch	1	9000401
12	O-ring	1	1B P18

**Pressure regulator**



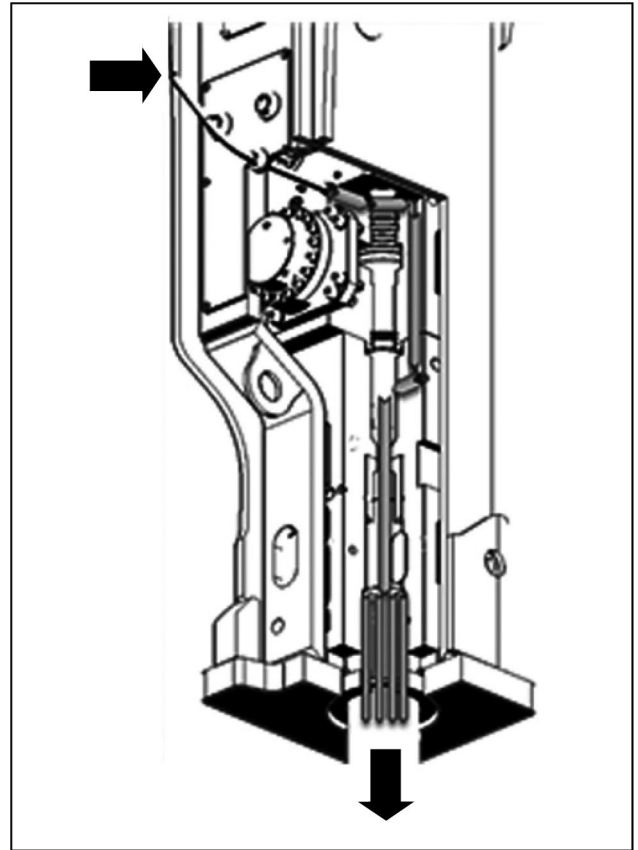
PTIL19GEN0126GB 4

Item	Part Name	Quantity	Remarks
1.	Coupler socket	3	
2.	Pressure regulator assembly	1	
3.	Electric cable	1	<b>1.5 mm - 10 m</b>
4.	Plate	1	
5.	Socket bolt	2	M10×1.5×14L
6.	Washer	2	M10

**Technical requirements**

- Air supply channel is built in the breaker cylinder and front head blocks as standard for the range CB140 & above range.
- Air supply hose can be fitted to the air inlet port of cylinder. Insert air supply hose through rubber cover and fit it on the air inlet port.
- Air inlet port size
  - CB140 - CB300 : PF1/2 inch
  - CB380 - CB800 : PF3/4 inch

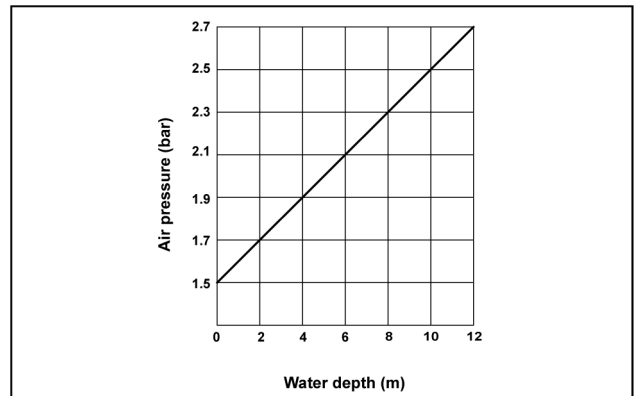
**NOTE:** The hoses twisted or folded will not Allow a proper air supply to the breaker.



PTIL19GEN0127BA 5

Models		CB140	CB160 - CB260	CB300	CB380	CB400 - CB800
Air hose size (inner diameter)		12.7 mm (0.5 in)			19.05 mm (0.75 in)	
Regulated air pressure		0 – 5.5 bar (max 9 bar)				
Switching pressure		1.5 bar (Activating pressure switch)				
Air compressor capacity	Minimum air pressure	5 bar				
	Air delivery	90 m <sup>3</sup> /hr	162 m <sup>3</sup> /hr	180 m <sup>3</sup> /hr	180 m <sup>3</sup> /hr	198 m <sup>3</sup> /hr
	Rated output	12.5 kW (17 Hp)	22 kW (30 Hp)	25 kW (34 Hp)	25 kW (34 Hp)	27 kW (37 Hp)

- Air pressure =(Water depth / 10 m) + 1.5 bar.
- Water pressure gets **1 bar** at every **10 m** water depth. You may calculate air pressure from the formulated value on the above.
- You may also get an idea of proper air pressure level from the chart on the right.



PTIL19GEN0128AA 6

**Requirements of underwater application breaker maintenance**

As soon as underwater breaker operating is finished, remove water that remains in percussion chamber

- Operate the breaker at the ground over 10 times with air supply from the compressor.
- Keep supplying compressed air to the breaker for minimum **10 min.**
- Apply hydraulic oil or anti-rust oil inside percussion chamber with air supply line.
- Apply grease inside percussion chamber, repaint the breaker if necessary.

Following is what you may refer to for maintain underwater application breaker.

Every <b>30 min.</b>	<ul style="list-style-type: none"> <li>• Grease tool, tool pins, bushes</li> <li>• Check if tool moves up and down with no difficulty.</li> <li>• Check function range of air pressure switch.</li> <li>• Check air hoses and their fitting condition.</li> </ul>
Daily ( <b>8 h</b> )	<ul style="list-style-type: none"> <li>• Remove tool pin and tool condition, remove burrs if any.</li> <li>• Check if tool was greased sufficiently, grease more frequently if needed.</li> <li>• Check if the breaker is rust or abnormally worn out, particularly piston face and percussion chamber.</li> </ul>
When the job is over	<ul style="list-style-type: none"> <li>• Completely disassemble breaker and carry out overhauling including but not limited to seals.</li> <li>• Check if any breaker parts were damaged or rust, replace if any.</li> <li>• Check if all underwater kit parts are in good condition and work properly.</li> </ul>

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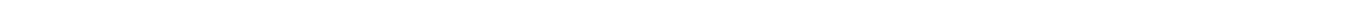
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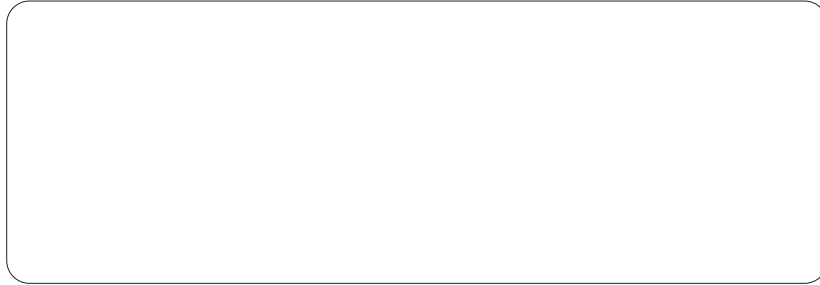
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Dealer's stamp



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