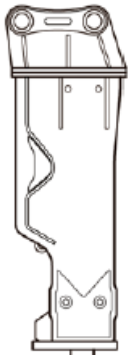


## PRINCIPLES OF BREAKING

To increase the hammer's working life, pay particular attention to correct working methods and how to choose the correct tool for the job. There are essentially two ways of breaking with a hydraulic hammer.



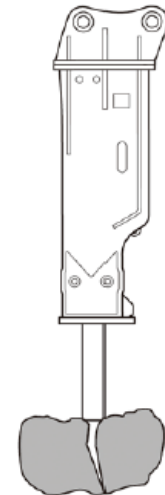
### Penetrative Breaking ( Cutting)

In this form of breaking a moil point, pyramid(four-sided moil) or chisel tool is forced inside the material. This method is most effective in soft, layered or plastic, low abrasive material. The high impact rate of the small hammers makes them ideal for penetrative breaking.



### 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 a blunt tool. Impact breaking is most effective in hard, brittle and very abrasive materials. The use of a chisel tool in hard material will cause the sharp edge to wear very quickly. The high impact energy of the big hammers makes them ideal for impact breaking.



## CHOOSING TOOLS

A selection of standard and special tools to suit each application are available. The correct type of tool must be selected to get the best possible working results and longest life time for the tool. Choosing the best tool type for an application may require some testing.

### **Chisel, Moil point and Pyramid (four-sided moil)**



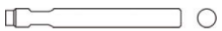
- For sedimentary (e.g. sandstone) and weak metamorphic rock into which the tool penetrates.
- Concrete.
- Trenching and benching.

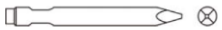

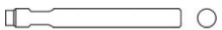
### **Blunt Tool**

- For igneous (e.g. granite) and tough metamorphic rock (e.g. gneiss) into which the tool doesn't penetrate.
- Concrete.
- Breaking boulders.

It is important to choose a tool, which is suitable for your hammer and for the application you are working on. The tool selection available depend on hammer model.

## TOOL SELECTION CHART

By Material		Asphalt	Concrete	Limestone	Sandstone	Granite	Basalt
 ⊗	Pyramid	●	●	●	●	●	●
 ⊕	Chisel	●	○	●	○	○	○
 ○	Blunt					●	●

By Job Application		Primary Breaking	Secondary Breaking	Hardrock Removal	Soft Material Removal	Demolition
 ⊗	Pyramid	●		●	●	●
 ⊕	Chisel	○		○	●	●
 ○	Blunt		●			○

- : Highly Recommended
- : Selectively Applicable

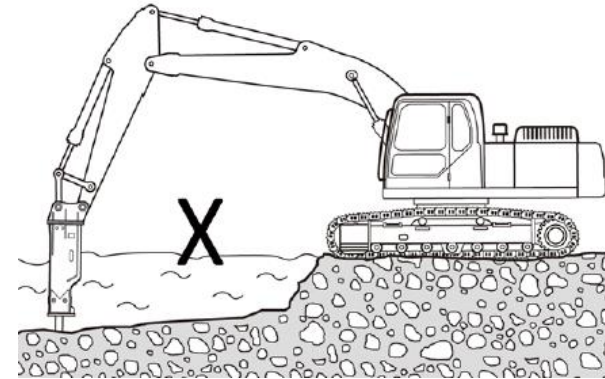


## DAILY OPERATION

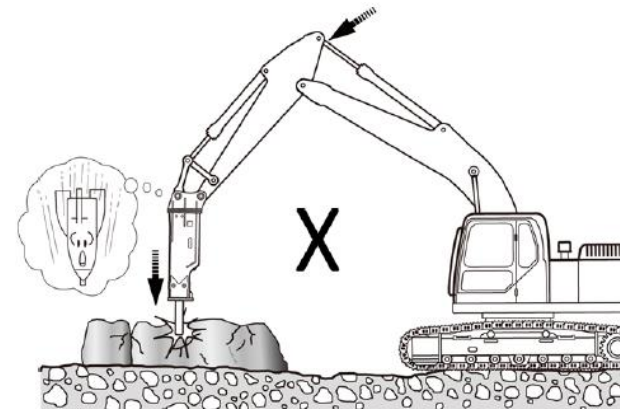


Protect yourself and your neighborhood against flying chips of rock. Do not operate the hammer or carrier if someone is too close to the hammer.

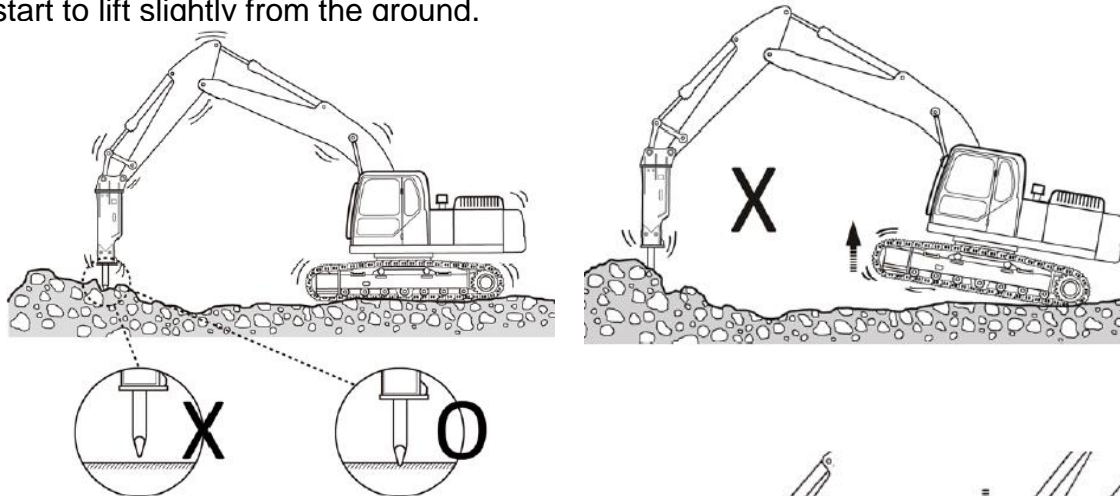
The hammer as a standard assembly, must not be used under water. If water fills the space where the piston strikes the tool, a strong pressure wave is generated and the hammer may be damaged.



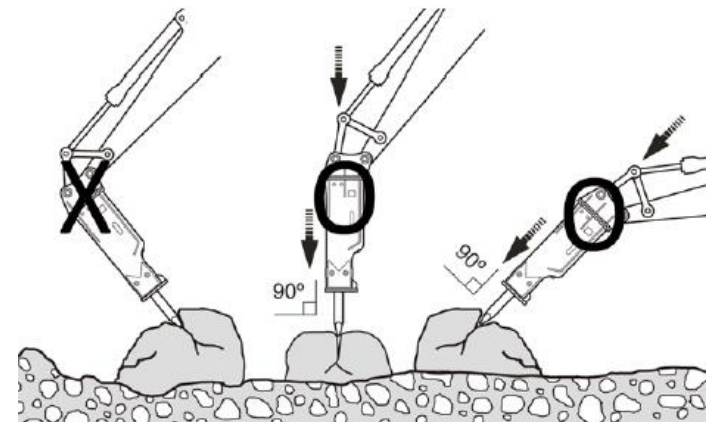
1. Prepare the carrier for normal excavation work. Move the carrier to the required position. Set the drive to neutral.
2. Set the engine speed to the recommended engine RPM for correct amount of oil supply.
3. Carefully operate the carrier controls to place the hammer and boom into the breaking position. Quick and careless boom movements could result in damage to the hammer.



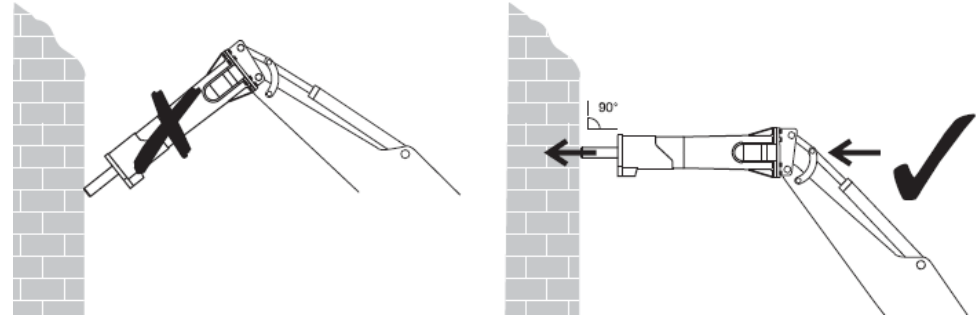
4. Use the excavator boom to press the hammer firmly against the object. Do not pry the hammer with the boom. Do not press too hard or too gently with the boom. The correct force is applied, when the tracks start to lift slightly from the ground.



5. Place the tool against the object at a 90 degree angle. Avoid small irregularities on the object which will break easily and cause either idle strokes or an incorrect working angle.

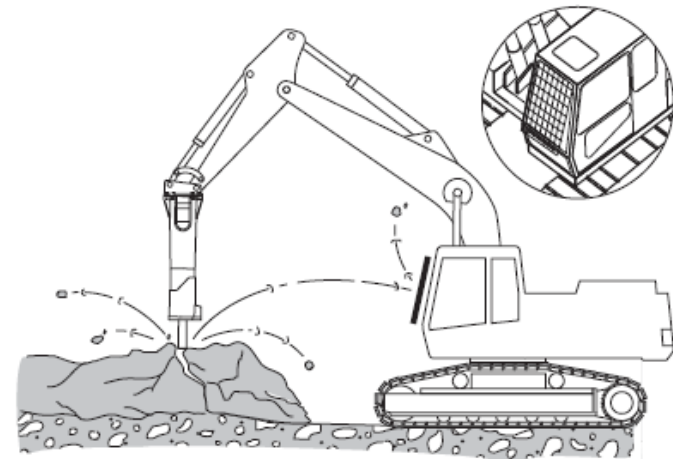


6. When demolishing vertical structures (e.g. brick walls), place the tool against the wall at a 90 degree angle



7. Start the hammer.

8. A safety screen is recommended to protect the operator from flying debris. Keep the cabin windows and doors closed during operation.

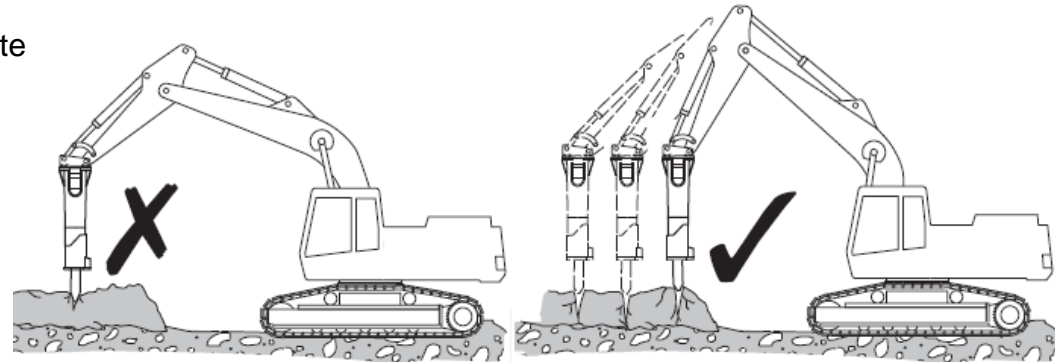
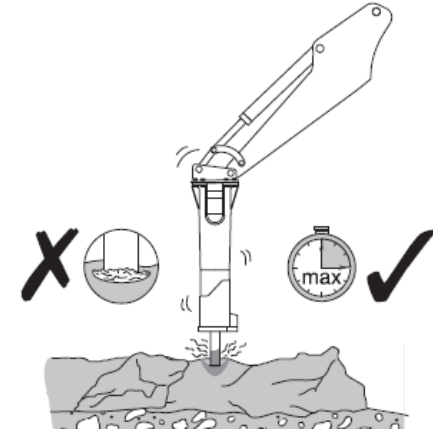


9. Note: Listen to the hammer's sound when you are using it. If the sound becomes weaker and the impact less efficient, the tool is misaligned with the material and/or there is not enough down force on the tool. Realign the tool and press the tool firmly against the material.

10. Do not strike in one spot for more than 15 seconds at a time. If the object does not break, or if the tool does not penetrate, stop the hammer and change the position of the tool. Working too long in one spot will create stone dust under the tool. Dust dampens the impact effect and produces heat.

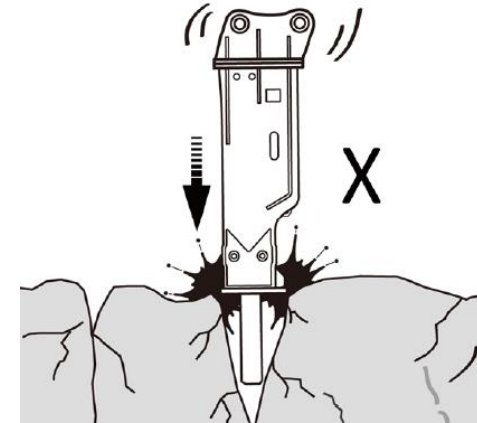
11. Do not let the tool move outwards from the hammer when it penetrates. Keep the down-pressure on the hammer while breaking.

12. To use the hammer most efficiently when breaking big boulders, concentrate on small steps from the outer edge towards the middle.

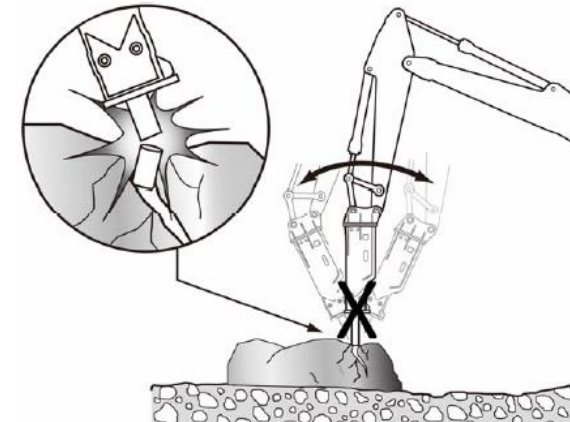


13. When breaking hard or frozen ground, use the benching method. Start with clearing a small area from the edge. Then continue by breaking material towards the open area.

14. Stop the hammer quickly. Do not allow the hammer to fall down and make idle strokes when an object breaks. Frequent idle strokes have a deteriorating effect on the hammer. If the hammer falls through, the housing wears out more quickly.



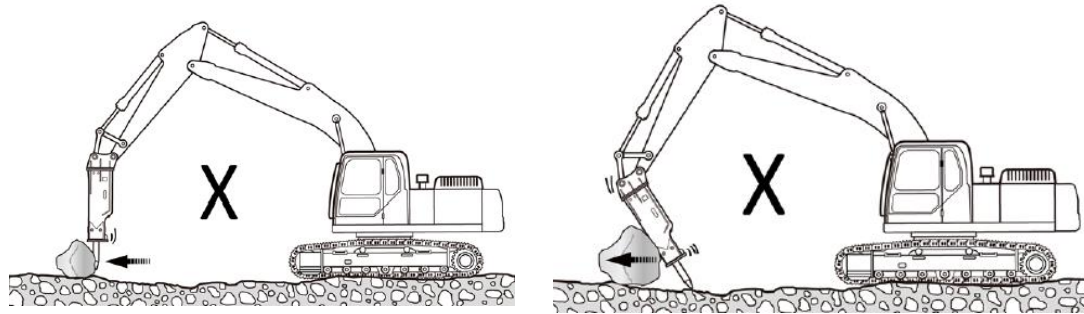
15. When breaking concrete, hard or frozen ground, never strike and pry with the tool at the same time. The tool may break. Bending may be caused by stones inside hard or frozen ground. Be careful and stop striking if you find sudden resistance under the tool.



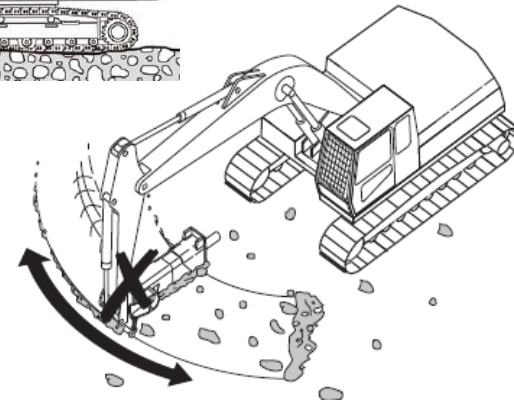
16. Keep the tool at a 90 degree angle at all times. If the object moves or its surface breaks, correct the angle immediately. Keep the feed force and tool aligned.



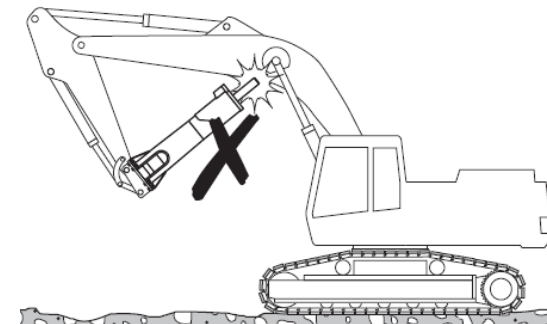
17. Do not use the hammer tools to move rocks. The stone claws are designed for this purposes.



18. Do not use the hammer to sweep the ground of debris. This may damage the hammer and the housing will wear out more quickly

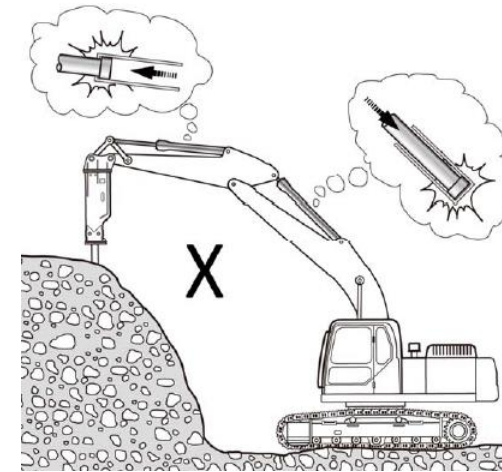
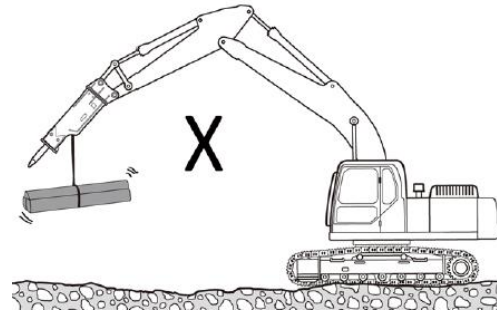
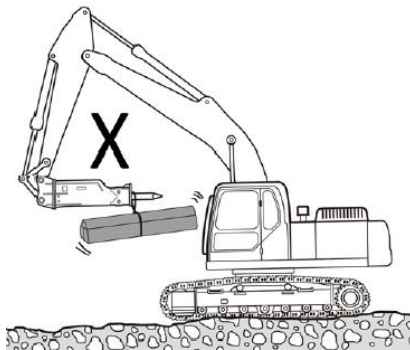


19. When operating the hammer, make sure that it does not make contact with the carrier boom or hydraulic lines.

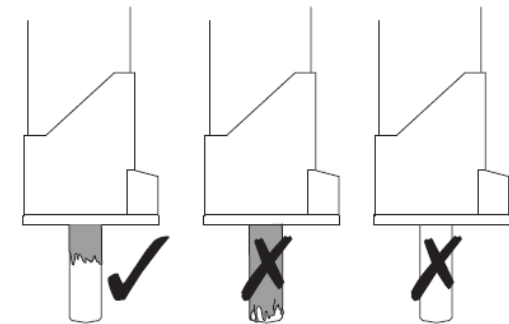



20. Do not operate the hammer with the carrier's boom, stick or bucket cylinders at the end of their stroke (either fully extended or fully retracted). Damage to the carrier may result.

21. Do not use the hammer or hammer tools for lifting. Lifting eye on the hammer are for storage and maintenance purposes only.



22. The tool shank must be well greased during operation. Regular visual inspections during operation are recommended. An unlubricated tool shank requires more frequent greasing intervals. A tool shank covered with excessive grease requires less frequent greasing intervals.  
 → Check Doc# 6922-031 for Hammer Greasing Tips



480-037	Operation Manual			
MODEL : AB Series Hammer	S# : N/A	2018-4-17	REV A	

## COLD WEATHER STARTING



In demolition, quarry and other hammer uses, it is important to warm up the excavator, hammer and tool before going to work in cold weather. Remind your operator that the hammer tool steel loses up to 80% of its ability to resist shock at -4 °F ( = -20 °C ). Also, cold weather will effect the lift of the accumulator's membrane.

1. Warm the hydraulic oil in the excavator by running it through all of the circuits first. Cycle each boom function by extending and retracting each cylinder to its full stroke. Repeat this procedure until the carrier's oil temperature reaches to 30 °F ( = 0 °C ).
2. Warm the tool up by taking a torch to the outside of the tool, in an up and down motion all around the tool until the outside of the tool is slightly warm to the touch. Be real careful as you do not want the tool to exceed body temperature. You just want to remove the chill from the tool.
3. Then start breaking rock by operating the breaker in short, three-seconds bursts. Continue operating with short bursts until the carrier and hammer are at the operating temperature. When you start to break rock, break the smaller pieces first and gradually work up to hard and larger boulders.
4. Do the above procedure in the morning or when the tool has sat for any length of time.