

AVANT[®]

BI05/BI55/B230

Hydraulic breaker



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OPERATION

1. FOREWORD

1.1 IMPORTANT SAFETY INFORMATION

Basic safety precautions are outlined in the "Safety" section of this manual and in the description of operations where hazards exist. Warning labels have also been put on the machine to provide instructions and to identify specific hazards which if not observed could cause bodily injury or death to you or other persons. These warnings in the guide and on the machine labels are identified by the warning symbol.

To use the attachment correctly, you must also be a competent operator of the carrier machine. Do not use or install it if you can not use the carrier machine properly. The attachment is a powerful tool. If used without proper care, it can cause damage.

Do not rush when you are learning to use the product. Take your time and most importantly, take it safely. Do not guess. If there is anything you do not understand, ask your local dealer. He will be pleased to advise you.

Improper operation, lubrication or maintenance of this machine can be dangerous and could result in injury.

Do not operate this machine until you read and understand the instructions in this manual.

Do not perform any lubrication and maintenance on this machine until you read and understand the instructions in this manual.

1.2 WARRANTY

A complete warranty claim for a hydraulic breaker attachment includes at least the following information.

- Model and serial number
- Carrier model
- Working hours and service history
- Installation: Oil flow, operating pressure and return line pressure if known
- Application

Providing this information makes it easy to handle the warranty claim properly and swiftly.

INSTALLATION INSPECTION

An installation inspection must be carried out after the product has been installed on the carrier. In the installation inspection certain specifications (operating pressure, oil flow, etc.) are checked so that they are within given limits. See "Hammer specifications" on page 48.

1.4 SPARE PART ORDERS

When you need spare parts or some information concerning maintenance to your machinery, please contact your local dealer. Quick deliveries are ensured by exact orders.

Required information:

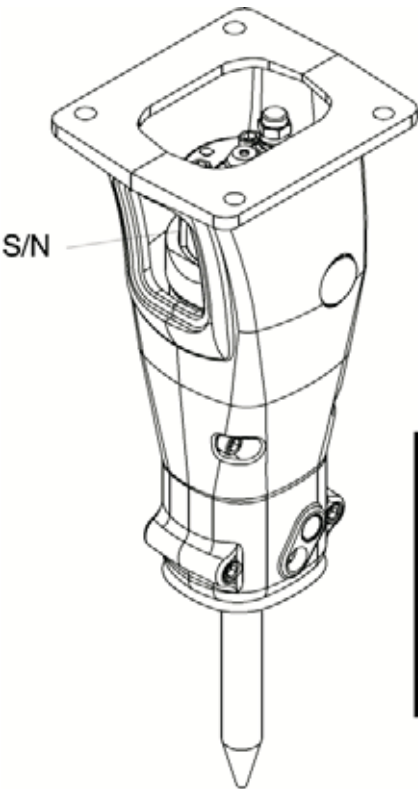
1. Name of customer, contact person
2. Order number (when available)
3. Delivery address
4. Mode of delivery (air mail, etc.)
5. Required delivery date
6. Invoicing address
7. Model and serial number of product
8. Name, number and required amount of spare parts

2. MACHINE NUMBERS

2.1 MODEL AND SERIAL NUMBER

The equipment serial number is stamped on the valve body. The model and serial number are also located on the CE marking. Check that the model corresponds to the one given on the cover of this manual.

It is important to make correct reference to the serial number of the attachment when making repairs or ordering spare parts. Identification of the serial number is the only proper means of maintaining and identifying parts for a specific product.



CE		AVANT®	
AVANT TECNO OY Ylötie 1, FIN-33470 Ylöjärvi, Finland			
MODEL			
SERIAL N°		WEIGHT	kg
MANUFACTURED DATE			
WF	l/min	WP	bar
MANUFACTURED by Sandvik Mining and Construction Oy, P.O.Box 165, FI-15101 Lahti, Finland			

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3. PRODUCT INTRODUCTION

3.1 OVERVIEW

The product is a hydraulically operated breaker. It can be used on all AVANT-carriers which meet the necessary hydraulic and mechanical installation requirements. The unit functions by repeatedly raising a steel piston and driving it down onto the head of a removable breaking tool.

No additional pressure accumulators are necessary since the integrated pressure accumulator absorbs hydraulic pressure peaks. The impact energy of the hammer is almost constant and independent of the carrier's hydraulic system.

3.2 REMOVAL FROM PACKAGE

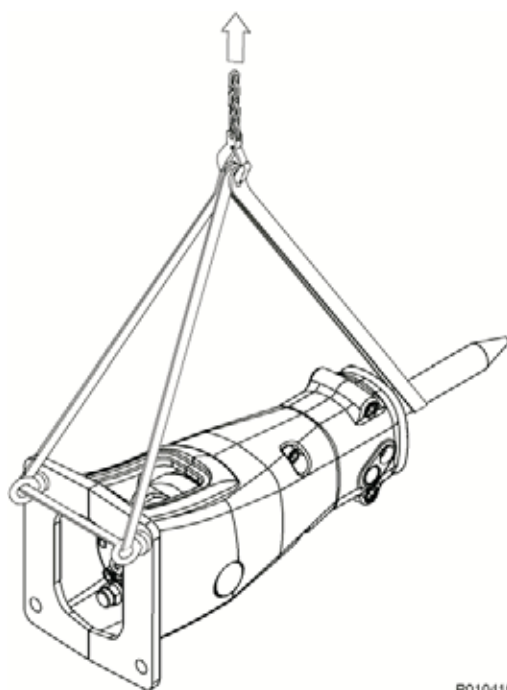
Remove all the steel belts from the package. Open the package and remove all plastics covering the product. Recycle all package materials (steel, plastic, wood) properly.

Check that the product is in good condition and that there is no visible damage. Check that all ordered parts and accessories have been enclosed with the product. Some options may be provided by your local dealer like installation kits; including hoses and mounting bracket.

3.3 LIFTING INSTRUCTIONS

Use a hoist when lifting components which weigh 23 kg or more, to avoid back injury. Make sure all chains, hooks, slings etc., are in good condition and are in the correct capacity. Be sure hooks are positioned correctly. Lifting eyes are not to be side loaded during a lifting operation. Do not use the hammer's tools for lifting.

Lifting devices must safely carry the working weight of the product. See “Hammer specifications” on page 48. Place chains or slings, as shown by the illustration, to lift the product.



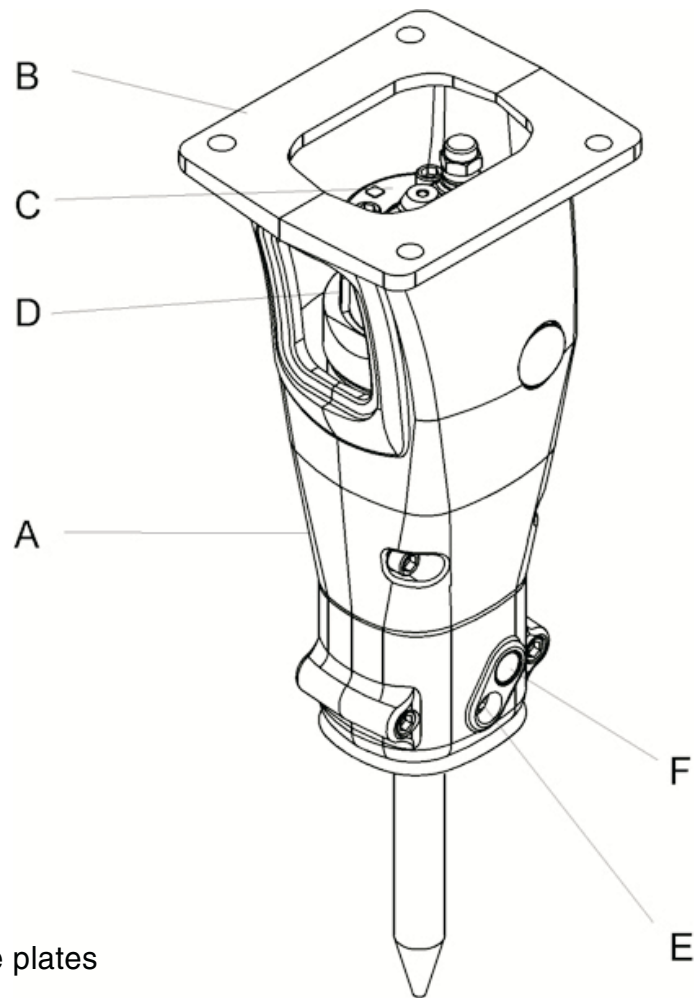
SAFETY INSTRUCTIONS FOR LIFTING

Below are some common safety instructions concerning lifting operations. In addition to this, the local, national standards for machines and lifting-tackles must always be strictly observed. Please note that the list below is not all inclusive, you must always ensure the procedure you choose is safe for you and others.

- Do not lift load over people. No one shall be under the hoisted load.
- Do not lift people and never ride the hoisted load.
- Keep people clear from lift area.
- Avoid side pull of the load. Make sure you take up the slack slowly. Start and stop carefully.
- Lift load a few centimeters and verify it before proceeding. Make sure the load is well balanced. Check for any loose items.
- Never leave the suspended load unattended. Maintain load control at all times.
- Never lift the load over the rated capacity (see product's operating weight from specification page).
- Inspect all lifting equipment before use. Do not use twisted or damaged lifting equipment. Protect lifting equipment from sharp corners.
- Obey all local safety instructions.

3.4 MAIN PARTS

The main parts of the hammer are shown below.



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- A. Side plates
- B. Mounting flange
- C. Accumulator
- D. Hammer mechanism
- E. Hose connections
- F. Grease nipples

4. SAFETY

4.1 GENERAL SAFETY

All mechanical equipment can be hazardous if operated without due care or correct maintenance. Most accidents involving machine operation and maintenance are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs.

Because it is impossible to anticipate every possible circumstance that might involve a potential hazard, the warnings in this guide and on the machine are not all inclusive. If a procedure, tool, working method or operating technique not specifically recommended by manufacturer is used, you must satisfy yourself that it is safe for you and others. You should also ensure that the product will not be damaged or made unsafe by the method of operation or maintenance procedures you choose.

Safety is not just a matter of responding to the warnings. All the time you are working with your attachment you must pay attention to what hazards there might be and how to avoid them. Do not work with the product until you are sure that you control it. Do not start any job until you are sure that you and those around you will be safe.



Warning! Read the following warning messages carefully. They tell you of different hazards and how to avoid them. If proper precautions are not taken you or others could be seriously injured.

4.2 SAFETY INSTRUCTIONS

MANUALS

Study this manual before installing, operating or maintaining the product. If there is anything you don't understand, ask your employer or your local dealer to explain it. Keep this manual clean and in good condition.

The related safety label on the hammer and the text on the label are shown here.



CARE AND ALERTNESS

All the time you are working with the product, take care and stay alert. Always be alert for hazards. The possibility of a serious or even fatal accident is increased when you are intoxicated.

CLOTHING

You can be injured if you do not wear proper clothing. Loose clothing can get caught in the machinery. Wear protective clothing to suit the job.

Examples are: a safety helmet, safety shoes, safety glasses, well-fitting overalls, ear-protectors and industrial gloves. Keep cuffs fastened. Do not wear a necktie or scarf. Keep long hair restrained.

PRACTICE

You and others can be killed or injured if you perform unfamiliar operations without practising them first. Practice away from the job site, in a clear area.

Keep other people away. Do not perform new operations until you are sure you can do them safely.

REGULATIONS AND LAWS

Obey all laws, work site and local regulations which affect you and your equipment.

COMMUNICATIONS

Bad communications can cause accidents. Keep people around you informed of what you will be doing. If you will be working with other people make sure they understand any hand signals you will be using.

Work sites can be noisy. Do not rely only on spoken commands.

WORK SITE

Work sites can be hazardous. Inspect the site before working on it.

Check for potholes, weak ground, hidden rocks etc. Check for utilities (electric cables, gas and water pipes etc.). Mark the positions of underground cables and pipes if you will be breaking the ground.

Poor visibility can cause accidents and damage. Make sure that visibility and lightning of the working area are adequate.

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 equipment in public places can be dangerous. Place barriers around the machine to keep people away.

AIRBORNE POLLUTANTS

The related safety label on the hammer and the text on the label are shown here. Airborne pollutants are microscopic particles, which will damage your health, when inhaled. Airborne pollutants on construction sites can be e.g. silica dust, oil fumes or diesel exhaust particles, visible or invisible. Especially in demolition sites, there may be other dangerous substances, such as e.g. asbestos or lead paints or other chemical substances.

The effect of airborne pollutants may be immediate if the substance is poisonous. The main danger with airborne pollutants comes from long term exposure, where particles are inhaled but not removed from the lungs. The disease is called e.g.

silicosis, asbestosis or other and will result in death or serious injury.

To protect yourself from airborne pollutants, always keep excavator doors and windows closed during operation. Excavators with pressurized cabins should be utilized in hammer operation. Proper maintenance of fresh air filters of the excavator is essential. Where pressurized cabins are not available, proper respirators must be utilized.



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Stop working, when bystanders are in the area of airborne pollutants and make sure they have proper respirators. Respirators are as important for bystanders as hard hats. Respirators for both operator and bystanders must be approved by the respirator manufacturer for the application in question. It is essential that the respirators protect from the tiny dust particles which cause silicosis and which may cause other serious lung diseases. You should not use the equipment until you are sure the respirators are working properly. This means the respirators must be checked to make sure that it is clean, that its filter has been changed, and to otherwise make sure the respirator will protect in the way it is meant to.

Always make sure dust has been cleaned off your boots and clothes when you leave your shift. The smallest particles of dust are the most harmful. They may be so fine that you can not see them. Remember, you **MUST** protect yourself and bystanders from the danger of breathing or inhaling dust. Always follow local laws and regulations for airborne pollutants in the working environment.

FLYING CHIPS OF ROCK

The safety label on the hammer is shown here:
Protect yourself and your neighbourhood against flying chips of rock. Do not operate the product or carrier if someone is too close.

The European standard EN 474-1 on safety of earth-moving machinery requires that adequate operator's protection, such as bullet proof glass, mesh guard or an equivalent protection is used.

Keep the cabin windows and doors closed during operation. Window bars are recommended to protect the windows from flying chips of rock.



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HIGH NOISE LEVEL

The safety label on the hammer is shown here:
A hammer in operation creates a high noise level. Always wear ear protection to prevent personal injury.



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EQUIPMENT LIMITS

Operating the product beyond its design limits can cause damage. It can also be dangerous. See “Hammer specifications” on page 48.

Do not try to enhance the product's performance by unapproved modifications.

HYDRAULIC FLUID

Fine jets of hydraulic fluid at high pressure can penetrate the skin. Do not use your fingers to check for hydraulic fluid 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 fluid. If hydraulic fluid penetrates your skin seek medical help immediately.

Hot hydraulic fluid can cause severe injuries.

HYDRAULIC HOSES AND FITTINGS

Ensure all hydraulic components will withstand maximum pressure and mechanical stresses caused by operation of the attachment. Consult your local dealer for instructions.

FIRE HAZARD

Most hydraulic fluids are flammable and might ignite when contacting hot surface. Avoid spilling hydraulic fluid to hot surfaces.

Working with the product on certain materials can cause sparks and hot splinters to get loose. These can ignite flammable materials around working area.

Ensure that adequate extinguisher is available.

HYDRAULIC PRESSURE

Hydraulic fluid at system pressure can injure you. Before disconnecting or connecting hydraulic hoses, stop the carrier engine, operate the controls to release pressure trapped in the hoses. During the operation, keep people away from the hydraulic hoses.

There might be pressurized oil trapped inside the product even if it is disconnected from the carrier. Be aware of possible blank firing while greasing or removing and installing hammer tools. See “Changing the tool” on page 37.

PRESSURE ACCUMULATORS

The safety label on or near the accumulator is shown here:

The hammer incorporates one or two pressure accumulators, depending on the model. The accumulators are pressurized even when there is no hydraulic pressure to the hammer. Attempting to dismantle the accumulators without first releasing the pressure can cause injury or death. Do not try to dismantle pressure accumulators, contact your local dealer first.



LIFTING EQUIPMENT

You can be injured if you use faulty lifting equipment. Make sure that lifting equipment is in good condition. Make sure that the lifting tackle complies with all local regulations and is suitable for the job. Make sure that the lifting equipment is strong enough for the job and you know how to use it.

Do not use this product or any of its parts for lifting. See "Lifting instructions" on page 7. Contact your carrier dealer to find out how to lift with your carrier.

SPARE PARTS

Use only genuine spare parts. Use only genuine tools with hydraulic hammers. The use of other spare part or hammer tool brands may damage the product.

EQUIPMENT CONDITION

Defective equipment can injure you or others. Do not operate equipment which is defective or has missing parts.

Make sure the maintenance procedures in this manual are completed before using the product.

REPAIRS AND MAINTENANCE

Do not try to do repairs or any other maintenance work you do not understand.

METAL SPLINTERS

You can be injured by flying splinters when driving metal pins in and out. Use soft-faced hammer or drifts to remove and fit metal pins, such as pivot pins. Always wear safety glasses.

LABELS ON THE PRODUCT

Safety labels communicate the following four things:

- The severity level of the risk (i.e. signal word "DANGER" or "WARN-ING").
- The nature of the hazard (i.e. the type of hazard: high pressure, dust, etc.).
- The consequence of interaction with the hazard.
- How to avoid the hazard.

You must ALWAYS follow the instructions of the safety messages and symbols of the product safety labels and the instructions set forth in the manuals to avoid death or severe injury!

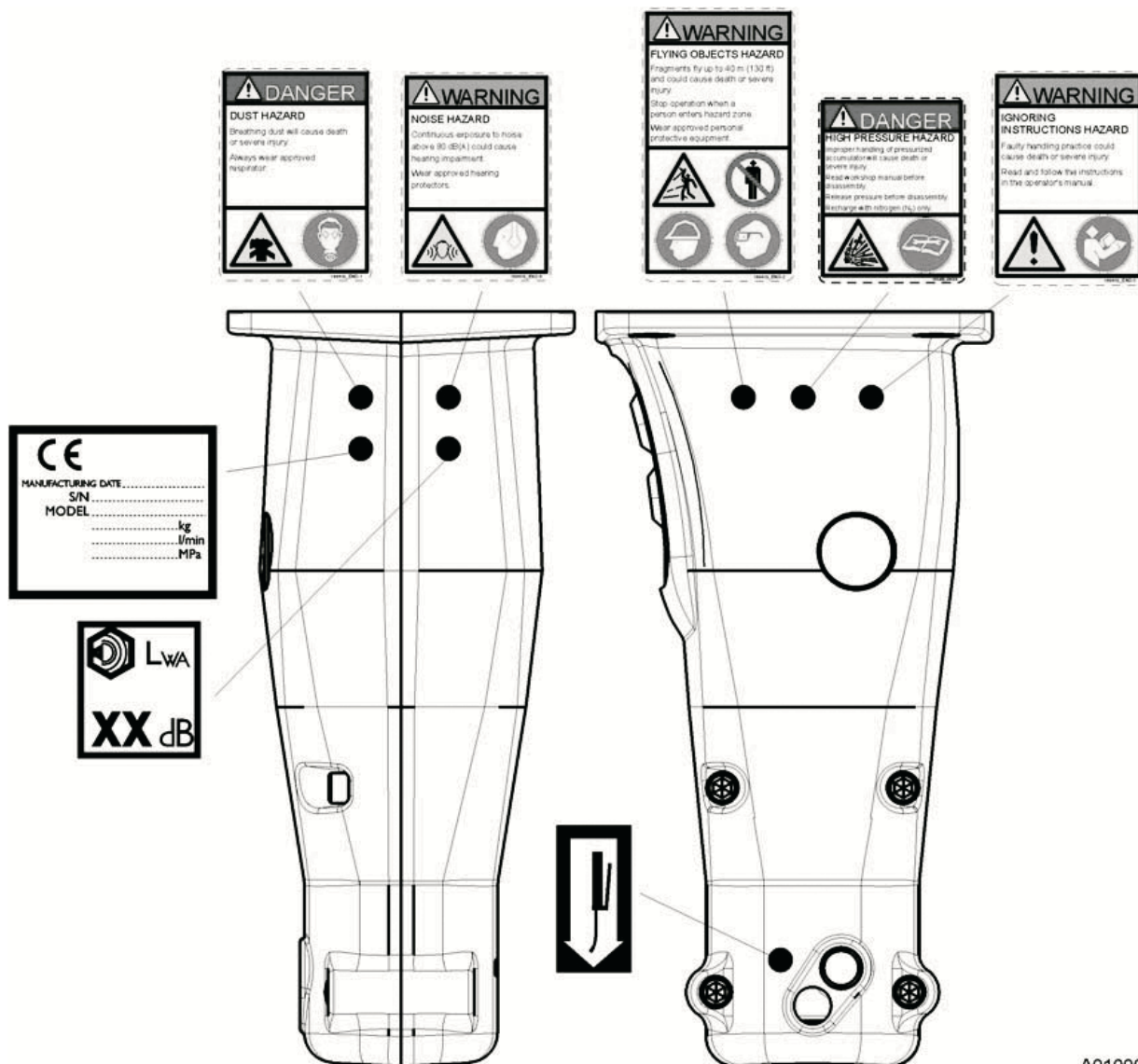
Keep the safety labels clean and visible at all times. Check the condition of safety labels daily. Safety labels and instructions which have disappeared, been damaged, painted over, come loose or do not meet the legibility requirements for safe viewing distance, must be replaced before operating the product.

If a safety label is attached to a part that is replaced, install a new safety label on the replacement part. If this manual is available in your language, then the safety labels should be available in the same language.

There are several specific safety labels on this hammer. Please become familiarized with all safety labels. The location of the safety labels is shown in the illustration below.

When you clean the safety labels, use a cloth, water and soap. Do not use solvent, gasoline or other harsh chemicals to clean the safety labels.

Solvents, gasoline or harsh chemicals could loosen the adhesive that secures the safety labels. Loose adhesive will allow the safety label to fall.



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5. OPERATION

5.1 OPERATING INSTRUCTIONS

RECOMMENDED USE

The hammer is designed to be used in breaking concrete, road surface or asphalt, hard or frozen ground. It is also suitable for light trenching and benching applications or in ground compacting. It can be also used in breaking small and soft boulders. Your local dealer will gladly give you more information.

OPERATING CONDITIONS

Hydraulic oil

In general the hydraulic oil originally intended for the carrier can be used with this product. See "Requirements for hydraulic oil" on page 30.

Operating temperature

The operating temperature is -20 °C to 80 °C. If the temperature is lower than -20 °C, the hammer and tool have to be preheated before any operations can begin, in order to avoid breaking the accumulator's membrane and the tool. During operation they will remain warm.

Note: The temperature of the hydraulic oil must be monitored. Ensure that oil grade and monitored oil temperature together guarantee correct oil viscosity. See "Oil specifications" on page 31.

Noise dampening

Operating the hammer near residential areas or other noise sensitive areas can cause noise pollution. In order to avoid unnecessary noise, please follow these basic rules:

1. When operating with the hammer, keep the tool at 90 degree angle to the material and the feed force in-line with the tool.
2. Replace or fix all parts that are worn out, damaged or loosened. This not only saves your hammer but it also decreases the noise level.

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.

Impact breaking

With impact breaking, the material is broken by transferring very strong mechanical stress waves from the tool into the material. Impact breaking is most effective in hard, brittle and very abrasive materials. The high impact energy of the big hammers makes them ideal for impact breaking. The best possible energy transfer between the tool and the object is achieved with a blunt tool. The use of a chisel tool in hard material will cause the sharp edge to wear very quickly.

Penetrative breaking (or cutting)

In this form of breaking a moil point 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.

CHOOSING TOOLS***Chisel and moil point***

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

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. See “Tool specifications” on page 50.

5.2 DAILY OPERATION



Warning! Protect yourself and your neighbourhood 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.



Warning! To avoid falling objects, do not use Product to lift other products. See “Lifting instructions” on page 7.

1. Set the engine speed to the recommended engine RPM for correct amount of oil supply.
2. 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.

3. Use the 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 tires start to lift slightly from the ground.



4. Place the tool against the object at a 90 degree angle (see picture 1.). Avoid small irregularities on the object which will break easily and cause either idle strokes or an incorrect working angle.



5. When demolishing vertical structures (e.g. brick walls), place the tool against the wall at a 90 degree angle.(see picture 2.)
6. Start the hammer.

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



9. 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. (see picture 3.)

10. Do not let the tool move outwards from the hammer when it penetrates. Keep the down-pressure on the hammer while breaking.
11. To use the hammer most efficiently when breaking, concentrate on small steps from the outer edge towards the middle.



12. 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.

13. 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.

14. When breaking concrete, hard or frozen ground, never strike and pry with the tool at the same time (see picture 4.). 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.



15. 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.



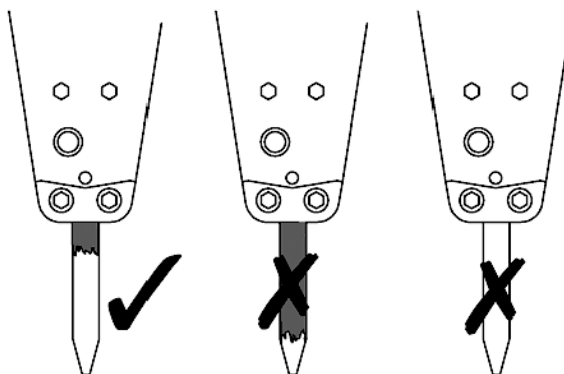
16. Do not use the hammer to sweep the ground of debris. This may damage the hammer and the housing will wear out more quickly.

17. Do not use the hammer or hammer tools for lifting.
(see picture 8)



18. 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.

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5.3 MOUNTING AND DISMOUNTING THE HAMMER



Stage 1:

- Lift up the two locking pins on both sides of the attachment coupling plate and turn them backward so that they remain in the up position
- Make sure that the pins remain in the up position, otherwise you cannot couple the attachment properly!



Stage 2:

- Turn the attachment coupling plate with the tilt movement so that the upper edge of the plate leans forward.
- Drive the loader into the attachment



Stage 3:

- Lift the boom a little so that the attachment lifts off of the ground
- Pull the boom control lever to the left so that the lower edge of the attachment coupling plate turns into the attachment



Stage 4:

- Pull the boom control lever more to the left so that attachment coupling plate turns more and the brackets on the boom push the pins down in the holes of the attachment.
- **CAUTION! Make sure that the pins lock properly down in the holes of the attachment.**



Coupling the multi connector

Align the pins of the attachment connector with corresponding holes of the loader connector. Connecting is not possible if the multi connector for some reason is mounted in a wrong way on the attachment hoses. Connect and lock the multiconnector by turning the lever towards the loader. The lever should move easily all the way to locking position. If the lever doesn't move easily, check alignment and position of the attachment and loader side connectors and clean the connectors. Stop the engine and release pressure in auxiliary hydraulics line by moving the auxiliary hydraulics control lever in both directions a couple of times.



Warning! The hammer must be secured from rolling over when disconnecting from the carrier.

Warning! Hydraulic pressure inside hammer must always be released before opening hose connections!

Warning! Hot hydraulic fluid can cause severe injuries!

5.4 MOVEMENT

The transportation and parking positions are shown below. When moving with the hammer, ensure that the hammer is not too close to the ground. Also make sure that you see the tip of the tool at all times.



1. Parking



2. Transporting

5.5 SPECIAL CONDITIONS OF USE

If hammer is to be used in conditions that differ from normal breaking or demolition work conditions, such as:

- Hammer tunnelling
- Foundry cleaning
- Underwater operations
- Operations in extremely low or high temperatures
- Use of special hydraulic fluids
- Other special conditions

Special conditions of use may require modifications to the attachment, special operating techniques, increased maintenance or special wear items. If you are planning to use the hammer under a special condition of use, please consult your local dealer for instructions.

5.6 STORAGE

LONG TERM STORAGE

Observe the following points when the hammer is stored. In this way the vital parts of the attachment are protected from rust and the machine is ready to be used whenever necessary.

1. The storage area must be dry.
2. The tool must be removed from the hammers.
3. The lower end of the piston, tool and tool bushings must be well protected with grease.
4. Connections must be sealed with clean plugs to prevent oil leakage and dirt from getting into couplings.
5. The product must be stored in the vertical position.
6. Make sure the product can not fall.

LUBRICATION

1. HAMMER TOOL GREASING

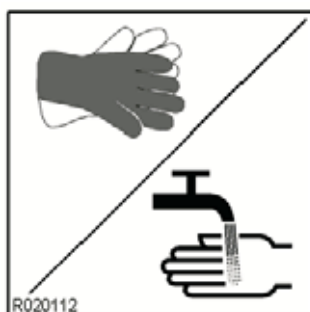
1.1 RECOMMENDED GREASES

For tool lubrication use a grease that meets the following criteria:

- No dropping point or very high, over 250 °C (480 °F).
- Maximum service temperature at least 150 °C (300 °F).
- Minimum working temperature below lowest ambient temperature.
- Additives: molybdenum disulfide (MoS₂), graphite or equivalent.
- Penetration 0 ... 2 (NLGI).
- No reaction with hydraulic oils.
- Water resistant.
- Good adhesion with steel.



Wear gloves when handling the grease containers. If you get grease onto your skin, wash it away with water.



1.2 MANUAL GREASING

GREASING INTERVAL

1. Tool shank must be well lubricated before installing tool.
2. 3-5 strokes from grease gun to tool bushings and tool at regular intervals.
3. Adapt interval and amount of grease to wear rate of tool and working conditions. This can be anything between two hours and daily, depending on material to be broken. See "Recommended greases" on page 28.

Insufficient greasing or improper grease may cause:

- Abnormal wear of tool bushing and tool
- Tool breakage

CORRECT GREASING

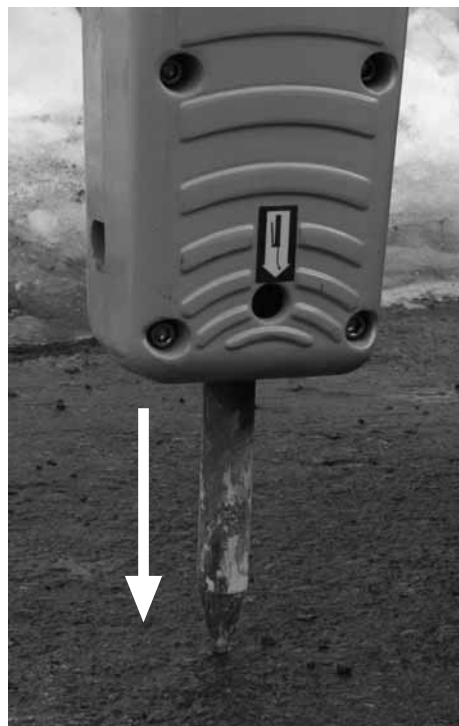
1. Position the hammer standing upright resting on the tool on firm surface.
2. Stop carrier engine and wait 10 minutes for oil pressure to drop inside hammer.
3. Apply tool grease from grease gun to greasing points marked with the following sticker.



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Note: The hammer must stand upright resting on the tool to ensure that the grease will penetrate downwards between the tool and the bushing.

Do not fill the space between the piston and the tool with grease. A lower piston seal failure can result and the hammer will subsequently leak oil.



2. CARRIER HYDRAULIC OIL

2.1 REQUIREMENTS FOR HYDRAULIC OIL

GENERAL REQUIREMENTS

In general the hydraulic oil originally intended for the carrier can be used with this product. However, since working with the product heats the oil more than the usual excavation work, the temperature of the oil must be monitored.

If the temperature of the hydraulic oil exceeds 80 °C, an auxiliary oil cooler is needed. The oil viscosity must be between 20-1000 cSt while the attachment is being used.

When the product is used continuously, the temperature of the hydraulic oil normalizes at a certain level depending on conditions and on the carrier. The temperature in the tank must not exceed the maximum allowed.

The hammer must not be started if the ambient temperature is below freezing and the oil is very thick. The machine must be moved to bring the oil temperature above 0 °C before hammering can start (viscosity 1000 cSt or 131 °E).

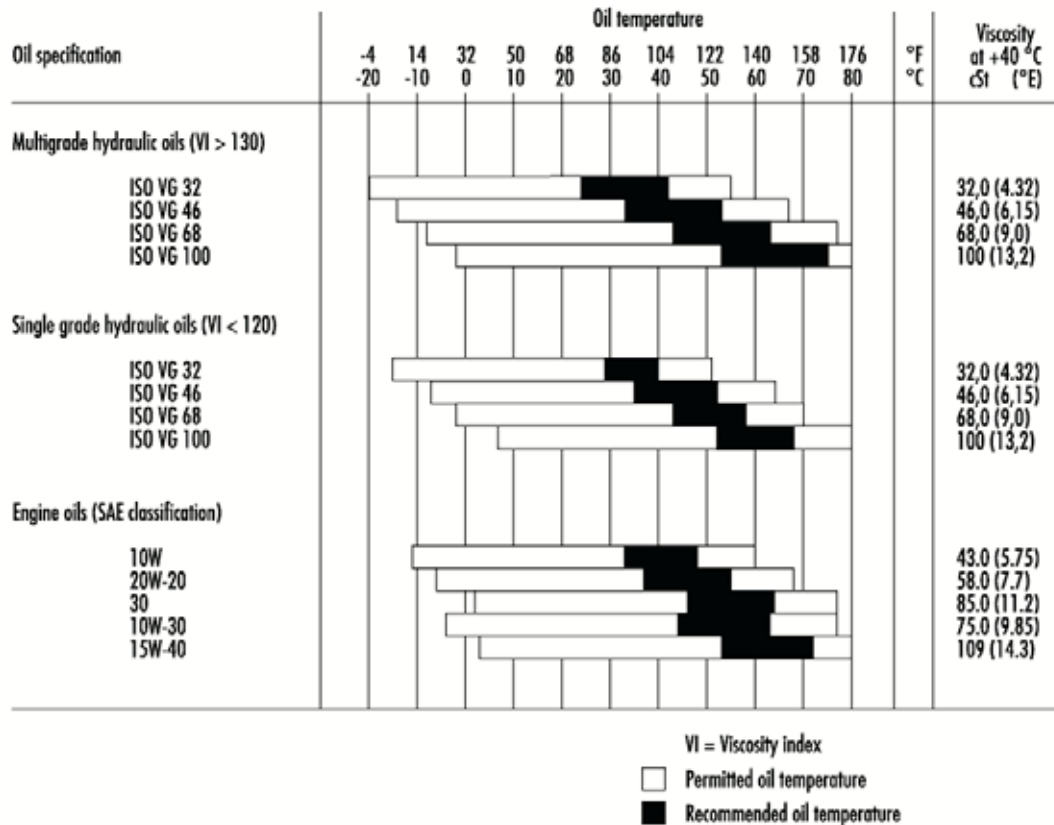
AVANT Recommends:

Shell tellus TX46 in normal conditions.

Shell tellus TX68 when ambient temperature exceeds 35 °C.

OIL SPECIFICATIONS

Table below shows hydraulic oils recommended for hammer use. The most suitable oil is selected in such a way that the temperature of the hydraulic oil in continuous use is in the ideal area on the chart and the hydraulic system is used to best advantage.



R020004

Problems due to incorrect hydraulic oil viscosity in the hammer:

Oil too thick

- Difficult start up
- Stiff operation
- Hammer strikes slowly
- Danger of cavitation in pumps and in the hydraulic hammer
- Sticky valves
- Filter bypass opens, impurities in the oil are not removed

Oil too thin

- Efficiency losses (internal leaks)
- Damage to gaskets and seals, leaks
- Accelerated wearing of parts, because of decreased lubrication efficiency
- Hammer strikes irregularly and slowly
- Danger of cavitation in pumps and in the hydraulic hammer

Note: We strongly recommend the use of different hydraulic oils in the summer and in the winter if there is an average temperature difference of more than 35 °C. The correct hydraulic oil viscosity is thus ensured.

2.2 OIL COOLER

Make sure that the AVANT carrier is equipped with an oil cooler before installing the hammer.

NOTE: Oil cooler cell must be kept clean from dust, small particles etc. Check the oil cooler cell regularly, and clean it with running water if necessary.

MAINTENANCE

1. ROUTINE MAINTENANCE

1.1 OVERVIEW

This product is a precision made hydraulic machine. Therefore great care and cleanliness should be taken when handling any of the hydraulic components. Dirt is the worst enemy in hydraulic systems.

Handle the parts carefully and remember to cover any cleaned and dried parts with clean lint-free cloth. Do not use anything other than purpose designed materials for cleaning hydraulic parts. Never use water, paint thinners or carbon tetrachloride.

Components, gaskets and seals in the hydraulic system should be oiled with clean hydraulic oil before assembly.

1.2 INSPECTION AND MAINTENANCE BY THE OPERATOR

Note: The time intervals given refer to the carrier hours while the attachment is installed.

EVERY TWO HOURS

- Grease the tool shank and the tool bushings. See "Manual greasing" on page 37. For more information, see "Safety data sheet" in Dealer manual.
- Observe hydraulic oil temperature, all lines and connections as well as impact efficiency and evenness of operation.
- Tighten loose connections.

EVERY 10 HOURS OR AT LEAST ONCE A WEEK

- Remove the tool retaining pin and the tool and check their condition. Grind the burrs away if necessary. See "Changing the tool" on page 37.
- Check that the tool has received sufficient grease. Grease more frequently, if necessary.
- Check that the mounting screws on the side plates are tightened. Re-place the screw if it is lost or damaged.

EVERY 50 HOURS OR AT LEAST ONCE A MONTH

- Check the tool shank and tool bushings for wear. See "Changing the tool" on page 37. See "Tool bushing" on page 39.
- Check the hydraulic hoses. Replace if necessary. Do not let dirt get into the hammer or hoses.

1.3 INSPECTION AND MAINTENANCE BY THE DEALER

Note: The time intervals given refer to the carrier hours while the attachment is installed.

INITIAL 50-HOUR INSPECTION

It is recommended to have the first inspection done by your local dealer after 50 to 100 operating hours. Contact your local dealer for more information about the initial 50-hour inspection.

EVERY 1000 HOURS OR ONCE A YEAR

This service is recommended to be done by your local dealer after 1000 operating hours or at least once a year. Neglecting the annual service can cause severe damage to the hammer.

Your local dealer will reseal the hammer, replace the accumulator membranes and replace safety decals as needed. Contact your local dealer for more information about annual servicing.

During this maintenance you should do the following tasks.

- Check all hydraulic connections.
- Check that the hydraulic hoses do not rub against anything in any boom position.
- Replace and inspect the hydraulic oil filters of the carrier.

1.4 MAINTENANCE INTERVALS IN SPECIAL APPLICATIONS

The service interval is considerably shorter in special applications. See "Special conditions of use" on page 35. In special applications, please consult your local dealer for the correct service intervals.

1.5 OTHER MAINTENANCE PROCEDURES

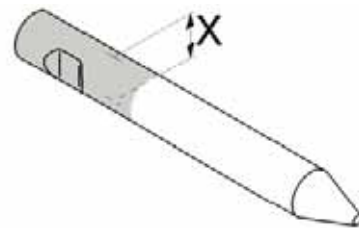
WASHING THE ATTACHMENT

When working with attachment and removing it from the carrier, dirt (mud, rock powder etc.) can become attached to it. Wash the outside of the product with a steam washer before sending it to the workshop. Dirt can cause difficulties in disassembly and assembly otherwise.

CAUTION! Plug the pressure and return line before washing the product or else dirt can enter into it and this may cause damage to the components.

2. REMOVAL OF TOOL

WEAR LIMITS AND LUBRICANTS FOR TOOL REMOVAL



R030009

Item	Wear limit		
Model	B105	B155	B230
Tool diameter (worn out)	38 mm	46 mm	54 mm

Item	Lubricant
Tool and tool retaining pins	Tool grease

REMOVAL OF TOOL

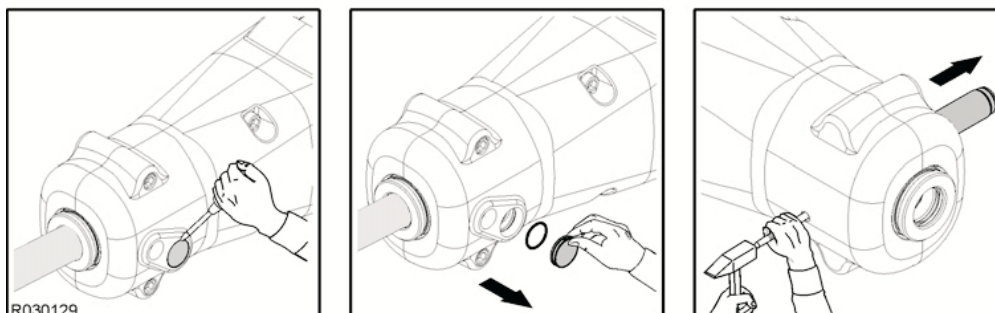


Warning! The hydraulic pressure inside the hammer must always be released before removing the tool. After operating the hammer, wait 10 minutes for oil pressure to drop inside hammer.

Warning! Hot tool can cause severe injuries.

1. Set the hammer on level ground.
2. Make sure the carrier's transmission is in neutral and the parking brake is engaged.
3. Stop the carrier engine.
4. Remove retaining ring.
5. Remove tool retaining pin.

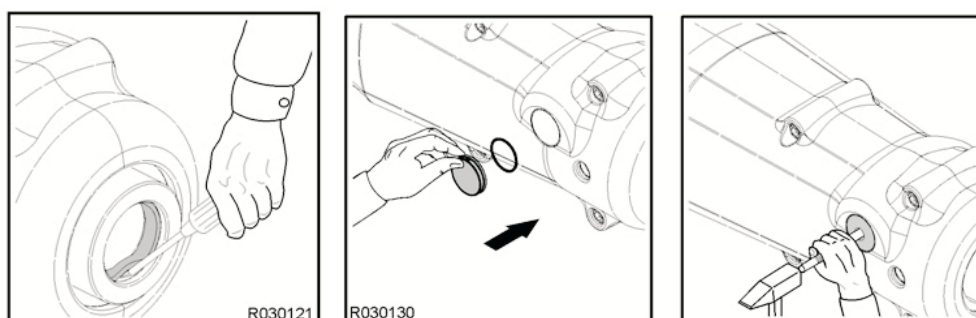
6. Remove tool. Use lifting device if necessary. See “Tool specifications” on page 50. Notice that tool bushing and tool are locked with same tool retaining pin. Prevent tool bushing from dropping on ground when removing the tool.



Note: If hammer is still on carrier, it may be easier to stick the tool in the ground and lift the hammer off the tool. Make sure that the tool can not fall.

INSTALLATION OF TOOL

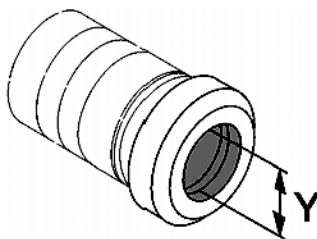
1. Clean all parts carefully.
2. Measure the tool diameter (X) from the area marked on the illustration. Replace tool if necessary.
3. Measure the tool retaining pin diameter. Replace it if necessary.
4. Check lower tool bushing for wear. See “Lower tool bushing” on page 39.
5. Check tool seal. Replace if necessary.



6. Clean and coat tool and retaining pin with grease.
7. Install tool and align the groove of the tool with the pin bore.
8. Install retaining pin and O-ring.
9. Grease plug and install it.

3. LOWER TOOL BUSHING

WEAR LIMITS AND LUBRICANTS FOR LOWER TOOL BUSHING



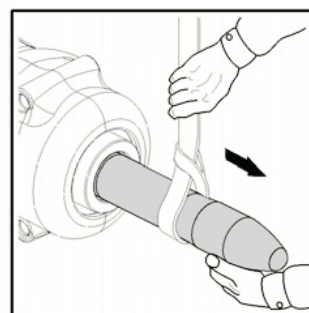
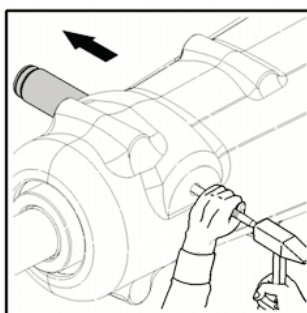
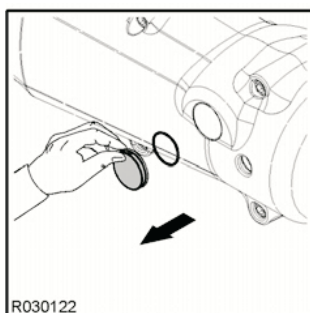
R030101

Item	Wear limit		
Model	B105	B155	B230
Tool bushing inner diameter (worn out)	43 mm	51 mm	59 mm

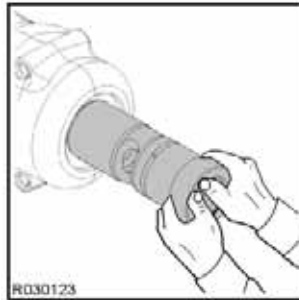
Item	Lubricant
Contact surfaces of front head	Thread grease

REMOVAL OF LOWER TOOL BUSHING

1. Remove tool. Notice that tool bushing and tool are locked with same tool retaining pin. Prevent tool bushing from dropping on ground when removing the tool.



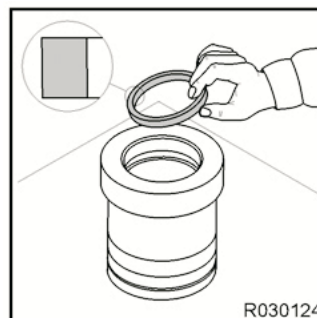
2. Remove lower tool bushing.



3. Remove seal from lower tool bushing.

INSTALLATION OF LOWER TOOL BUSHING

1. Clean all parts carefully.
2. Measure the bushing inner diameter (marked Y). Replace bushing if necessary. See "Tool bushing" on page 39.
3. Install seal.



4. Lubricate the contact surfaces of the front head.
5. Install the lower tool bushing. Align the holes in the lower tool bushing with the holes in the front head.
6. Install the tool.

4. TROUBLESHOOTING

4.1 THE HAMMER DOES NOT START

PRESSURE OR RETURN LINES CLOSED

Check the operation of multi connector in hammer line.

PRESSURE AND RETURN HOSES INSTALLED BACKWARDS

The hammer must be serviced in an authorized Avant service shop.

PISTON IS IN ITS LOWER HYDRAULIC BRAKE

Keep the hammer control valve open and force the tool against an object. The tool head will push the piston out of its brake area. See “Daily operation” on page 19.

GREASE BETWEEN PISTON AND TOOL CONTACT AREA

Remove the tool and wipe excessive grease off. See “Manual greasing” on page 28.

AUXILIARY HYDRAULICS CONTROL VALVE DOES NOT OPEN

When operating the auxiliary hydraulics control valve, check that the pressure line pulsates (this indicates the auxiliary hydraulics control valve is opening). If the valve does not operate, check the operating means: mechanical connections or electrical control.

RELIEF VALVE IN HYDRAULIC CIRCUIT OPENS AT A LOW PRESSURE. HAMMER OPERATING PRESSURE IS NOT REACHED

Check the installation. Check the relief valve operation on the carrier. Adjust the relief valve in carrier hydraulic circuit according to carriers specification. Measure the high pressure in the hammer inlet line.

EXCESSIVE BACK PRESSURE IN RETURN LINE

Check the installation.

LEAKAGE FROM PRESSURE TO RETURN IN HYDRAULIC CIRCUIT

Check the installation. Check the pump and the other hydraulic components on the carrier.

FAILURE IN HAMMER VALVE OPERATION

The hammer must be serviced in an authorized Avant service shop.

PISTON FAILURE

The hammer must be serviced in an authorized Avant service shop.

4.2 THE HAMMER OPERATES IRREGULARLY BUT THE BLOW HAS FULL POWER

RELIEF VALVE IN HYDRAULIC CIRCUIT OPENS AT A LOW PRESSURE. HAMMER OPERATING PRESSURE IS NOT REACHED

Check the installation. Check the relief valve operation on the carrier. Adjust the relief valve in carriers hydraulic circuit according to carriers specification. Measure the high pressure in the hammer inlet line.

FAILURE IN HAMMER VALVE OPERATION

The hammer must be serviced in an authorized Avant service shop.

4.3 THE HAMMER OPERATES IRREGULARLY AND BLOW HAS NO POWER

THE WORKING METHOD IS NOT CORRECT

Refer to the correct working methods. See “Daily operation” on page 19.

RELIEF VALVE IN HYDRAULIC CIRCUIT OPENS AT A LOW PRESSURE. HAMMER OPERATING PRESSURE IS NOT REACHED

Check the installation. Check the relief valve operation on the carrier. Adjust the relief valve in carriers hydraulic circuit according to carriers specification. Measure the high pressure in the hammer inlet line.

PRESSURE ADJUSTING VALVE SETTING IS INCORRECT

The hammer must be serviced in an authorized Avant service shop.

PRESSURE LOSS IN PRESSURE ACCUMULATOR

The hammer must be serviced in an authorized Avant service shop.

FAILURE IN HAMMER VALVE OPERATION

The hammer must be serviced in an authorized Avant service shop.

4.4 IMPACT RATE SLOWS DOWN

OIL HAS OVERHEATED (OVER +80 °C/+176 °F)

Check for a fault in the oil cooling system or an internal leak in the hammer. Check the hydraulic circuit of the carrier. Check the relief valve operation in the carrier. Make sure that the carrier is equipped with an oil cooler.

HYDRAULIC OIL VISCOSITY TOO LOW

Check hydraulic oil. See “Requirements for hydraulic oil” on page 30.

EXCESSIVE BACK PRESSURE IN RETURN LINE

Check the installation.

RELIEF VALVE IN HYDRAULIC CIRCUIT OPENS AT A LOW PRESSURE. HAMMER OPERATING PRESSURE IS NOT REACHED

Check the installation. Check the relief valve operation on the carrier. Adjust the relief valve in carriers hydraulic circuit according to carriers specification. Measure the high pressure in the hammer inlet line. Contact your local dealer for more information.

LEAKAGE FROM PRESSURE TO RETURN IN AVANT'S HYDRAULIC CIRCUIT

Check the installation. Check the pump and the other hydraulic components.

PRESSURE LOSS IN PRESSURE ACCUMULATOR

The hammer must be serviced in an authorized Avant service shop.

FAILURE IN HAMMER VALVE OPERATION

The hammer must be serviced in an authorized Avant service shop.

4.5 THE HAMMER DOES NOT STOP OR HAS RUN-ON

FAILURE IN HAMMER CONTROL VALVE OPERATION

Check the hammer control valve in the carrier.

4.6 OIL OVERHEATS

APPLICATION NOT CORRECT FOR HAMMER

Refer to recommended use and to correct working methods. See “Daily operation” on page 19.

COOLING CAPACITY OF THE FACTORY OIL COOLER IS TOO SMALL

Make sure that you have the maximum available cooling capacity fitted on the carrier.

RELIEF VALVE IN HYDRAULIC CIRCUIT OPENS AT A LOW PRESSURE. HAMMER OPERATING PRESSURE IS NOT REACHED

Check the installation. Check the relief valve operation on the carrier. Adjust the relief valve in carriers hydraulic circuit according to carriers specification. Measure the high pressure in the hammer inlet line. Contact your local dealer for more information.

HYDRAULIC OIL VISCOSITY TOO LOW

Check hydraulic oil. See “Requirements for hydraulic oil” on page 30.

LEAKAGE FROM PRESSURE TO RETURN IN AVANT’S HYDRAULIC CIRCUIT

Check the installation. Check the pump and the other hydraulic components on the carrier.

INTERNAL OIL LEAK IN THE HAMMER

The hammer must be serviced in an authorized Avant service shop.

EXCESSIVE BACK PRESSURE IN RETURN LINE

Check the installation.

4.7 RECURRENT TOOL FAILURE

APPLICATION NOT CORRECT FOR HAMMER

Refer to recommended use and to correct working methods. See “Operating instructions” on page 18.

ROUGH OPERATING PRACTICES

Refer to recommended use and to correct working methods. See “Daily operation” on page 19.

TOOL DOES NOT GET ENOUGH LUBRICANT

Refer to recommended use and to correct working methods.

TOO LONG TOOL

Use shortest tool possible. Refer to recommended use and to correct working methods.

RAPID WEAR OF TOOL

Refer to recommended use and to correct working methods. See “Daily operation” on page 19. There is a wider selection of tools available for different applications. Consult with your local dealer for more information.

4.8 FURTHER ASSISTANCE

FURTHER ASSISTANCE

If further assistance is required, please prepare to answer the following questions before calling your dealer.

- Breaker model and serial number
- Breaker working hours and service history
- AVANT carrier model
- Installation: Oil flow, operating pressure and return line pressure if known
- Application
- Has the product operated normally before

SPECIFICATIONS

1. HAMMER SPECIFICATIONS

Item	B105	B155	B230
Minimum working weight ¹	110 kg	150 kg	230 kg
Hammer weight	88 kg	124 kg	190 kg
Impact rate ²	600...3200 bpm	800...3000 bpm	700...2600 bpm
Operating pressure ³	95...150 bar	90...150 bar	100...170 bar
Pressure relief, min ⁴	150...200 bar	150...200 bar	150...220 bar
Pressure relief, max	220 bar	220 bar	220 bar
Pressure in LP-circuit	38...40 bar	38...40 bar	36...38 bar
Oil flow range	15...35 l/min	25...55 l/min	40...70 l/min
Back pressure, max	20 bar	20 bar	20 bar
Input power	8.8 kW	13.8 kW	19.8 kW
Tool diameter	40 mm	48 mm	56 mm
Pressure line connection (IN)	BSPP-internal 1/2"	BSPP-internal 1/2"	BSPP-internal 3/4"
Return line connection (OUT)	BSPP-internal 1/2"	BSPP-internal 1/2"	BSPP-internal 3/4"
Pressure line size (minimum inner diameter)	12 mm	12 mm	16 mm
Return line size (minimum inner diameter)	12 mm	12 mm	16 mm
Optimum oil temperature	40...60 °C	40...60 °C	40...60 °C
Allowed oil temperature range	-20...80 °C	-20...80 °C	-20...80 °C
Optimum oil viscosity at operating temperature	30...60 cSt	30...60 cSt	30...60 cSt
Allowed oil viscosity range	20...1000 cSt	20...1000 cSt	20...1000 cSt
Mini excavator weight, optimum range ⁵	1.4...2.1 t	1.9...3.1 t	3.1...4.6 t
Mini excavator weight, allowed range ⁶	1.2...2.5 t	1.6...3.6 t	2.7...5.2 t
Skid steer, robot weight, optimum range ⁷	0.9...1.4 t	1.3...2.1 t	2.1...3.1 t
Skid steer, robot weight, allowed range ⁸	0.8...1.7 t	1.1...2.4 t	1.8...3.5 t
Noise level, measured sound power level, LWA ⁹	115 dB	114 dB	115 dB
Noise level, guaranteed sound power level, LWA ¹⁰	119 dB	118 dB	119 dB

1. Includes average mounting bracket and standard tool

2. Actual impact frequency depends on oil flow, oil viscosity, temperature, and material to be broken

3. Actual pressure depends on oil flow, oil viscosity, temperature, material to be broken and back pressure

4. Minimum setting = actual operating pressure + 50 bar (730 psi)

5. Check carrier's lifting capacity from carrier manufacturer

6. Check carrier's lifting capacity from carrier manufacturer

7. Check carrier's lifting capacity from carrier manufacturer

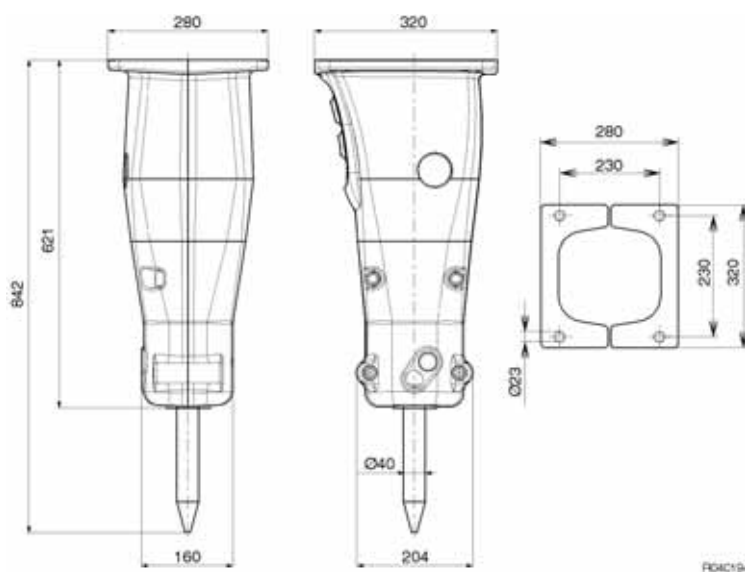
8. Check carrier's lifting capacity from carrier manufacturer

9. According to European Union DIRECTIVE 2000/14/EC

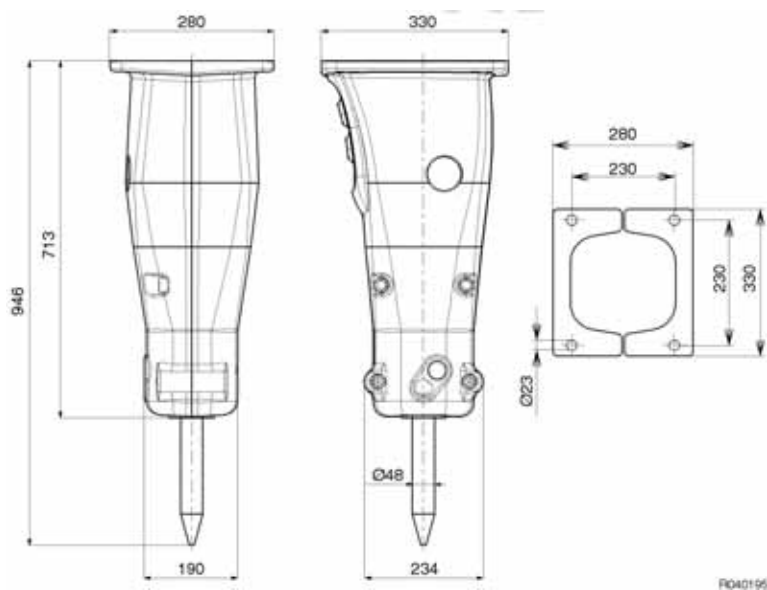
10. According to European Union DIRECTIVE 2000/14/EC

1.2 MAIN DIMENSIONS

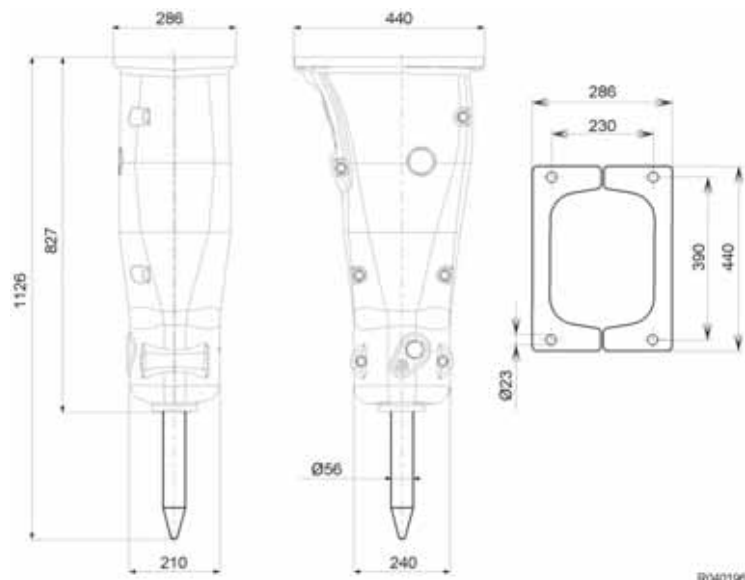
AVANT B105



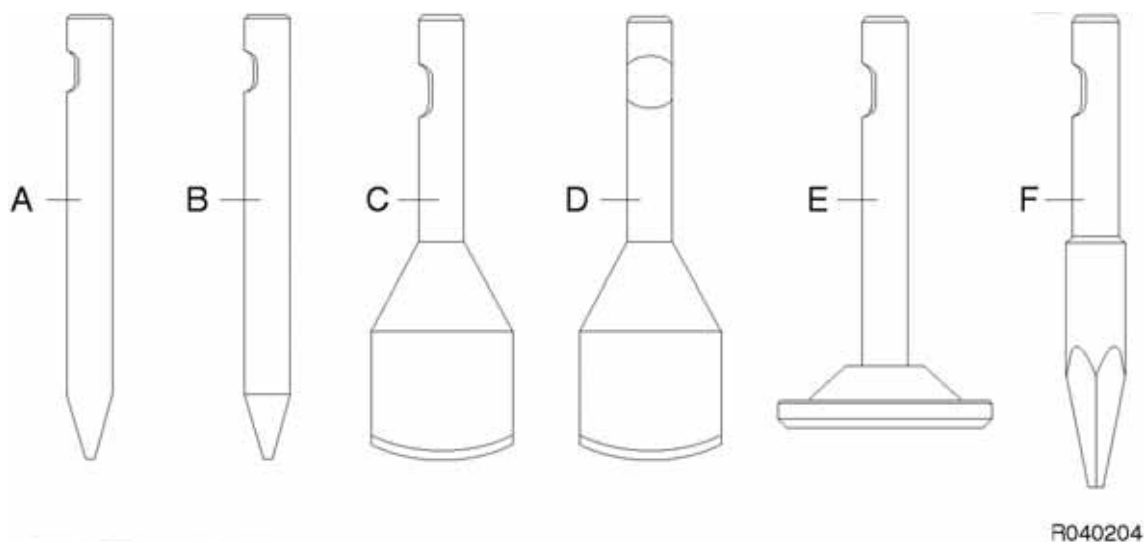
AVANT B155



AVANT B230



2. TOOL SPECIFICATIONS



Tool for B105	Part no.	Length	Weight	Diameter/ Width
Chisel (A)	66016	380 mm	3,4 kg	40 mm
Moil point (B)	66017	380 mm	3,5 kg	40 mm
Spade, parallel to boom(C)	66018	380 mm	3,5 kg	100 mm
Spade, transverse to boom(D)	66019	380 mm	3,5 kg	100 mm
Compacting plate (E)	66020	387 mm	8,5 kg	160 mm
Pyramid (F)	66028	380 mm	3,7 kg	40/53 mm

Tool for B155	Part no.	Length	Weight	Diameter/ Width
Chisel (A)	66021	450 mm	5,9 kg	48 mm
Moil point (B)	66022	450 mm	5,8 kg	48 mm
Spade, parallel to boom(C)	66023	450 mm	5,9 kg	115 mm
Spade, transverse to boom(D)	66024	450 mm	5,9 kg	115 mm
Compacting plate (E)	66025	407 mm	9,9 kg	160 mm
Pyramid (F)	66029	480 mm	6,7 kg	48/65 mm

Tool for B230	Part no.	Length	Weight	Diameter/ Width
Chisel (A)	65947	520 mm	9,3 kg	56 mm
Moil point (B)	66948	520 mm	9,1 kg	56 mm
Spade, parallel to boom(C)	65949	560 mm	9,7 kg	115 mm
Spade, transverse to boom(D)	65950	560 mm	9,7 kg	115 mm
Compacting plate (E)	65951	430 mm	23 kg	250 mm
Pyramid (F)	66030	520 mm	9,6 kg	56/72 mm



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