

Operating instructions

Hydraulic breaker

HB 2200/2200 DP - HB 7000/7000 DP



Operating instructions for hydraulic breaker

HB 2200 / HB 2200 DustProtector

HB 3000 / HB 3000 DustProtector

HB 4200 / HB 4200 DustProtector

HB 5800 / HB 5800 DustProtector

HB 7000 / HB 7000 DustProtector

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Table of contents

1	Foreword	6
2	Accident prevention regulations	7
3	CE markings EC machinery directive 98/37/EC	10
3.1	CE sticker product groups A	10
3.2	CE sticker product groups B	10
3.3	Sticker for guaranteed sound level power	11
4	General information	11
4.1	Applications	11
4.2	Scope of supply	11
5	Main components	12
6	Installation	13
6.1	Media/consumables	13
6.1.1	Mineral hydraulic oil	13
6.1.2	Non-mineral hydraulic oil	13
6.1.3	Grease	13
6.1.4	Gas	14
6.2	Attaching the adapter to the hydraulic breaker	14
6.3	Mounting the hydraulic breaker on the excavator-mechanical aspects	15
6.4	Mounting the hydraulic breaker on the excavator-hydraulic aspects	16
6.5	Switching the hydraulic breaker on/off from the carrier	18
6.6	Dismounting the hydraulic breaker from the excavator for short or lengthy periods of non-use	18
6.6.1	Dismounting from excavator	18
6.6.2	Short period of non-use	18
6.6.3	Lengthy period of non-use	19
7	Fitting/removing the working tool	19
7.1	Selecting the right working tool	19
7.2	Fitting the tool (After breaker delivery to the site)	20
7.2.1	Additional requirements for hydraulic breakers with DustProtector:	20
7.3	Removing the tool	21
8	Operating the hydraulic breaker	22
8.1	Starting up the hydraulic breaker	22
8.2	Advance	22
8.3	Angle of attack	23
8.4	Breaker rocking	23
8.5	Never drive the working tool into the ground	23
8.6	Never lever with the breaker	23
8.7	Never use as a sledgehammer	24
8.8	Never use for transport purposes	24
8.9	Using the hydraulic breaker in or under water	24
8.10	Hydraulic breaker used in tunnelling	25
8.11	Working in high outside temperatures	25
8.12	Working in low outside temperatures	25
8.13	Operating the breaker with the cylinders fully extended or retracted	25
8.14	AutoControl - the combined valve system (all models of the HB series)	26
8.14.1	AutoControl for normal operations	26
8.14.2	AutoControl for special requirements	26
8.15	StartSelect - AutoStart/AutoStop (all models of the HB series)	26
8.15.1	Changing StartSelect modes	27
8.16	Pressure shut-off valve HB 5800 and HB 7000	27
9	Maintenance work to be performed by the excavator driver	28
9.1	Automatic lubrication using of the hydraulic breaker of the HB series	28
9.1.1	Automatic lubrication using ContiLube® II	28
9.1.2	Changing the lubricant cartridge	28

9.1.3	Operating the ContiLube® II	28
9.2	Manual lubrication without or upon failure of ContiLube® II	29
9.2.1	Filling device for the chisel paste	29
9.3	Care and maintenance timetable	30
9.4	Check	31
9.4.1	Checking the working tool for wear	31
9.4.2	Checking the wear bushes	31
9.4.3	Checking the buffer ring	32
9.4.4	Checking the retainer bars	32
9.4.5	Checking the impact face of the percussion piston	32
9.4.6	Checking the breaker box for wear and cracks and checking the adapter for cracks ..	33
9.4.7	Checking/cleaning the DustProtector zone on the breaker boxes	33
9.4.8	Screw couplings with tightening torques	34
9.4.9	Checking pressure in piston accumulator and refilling if required	37
9.4.10	Checking that the high-pressure accumulator is in perfect working order	38
9.4.11	Checking the hydraulic lines before starting work	38
9.4.12	Checking the adapter bolts for wear	38
9.4.13	Checking and cleaning the hydraulic oil filter	38
10	Troubleshooting	39
10.1	Breaker does not start	39
10.2	Impact rate of hydraulic breaker too low	40
10.3	Impact force too low	40
10.4	Impact rate too high and impact force too low	41
10.5	Oil leaks from ports » P « and » T «	41
10.6	Oil leaks between cylinder cover and cylinder	41
10.7	Oil leaks from parts of hydraulic system for breaker (Screw couplings, hoses etc.) ...	41
10.8	Oil leaks from working tool	42
10.9	Oil leaks from high-pressure accumulator	42
10.10	Oil or grease leaks from ContiLube® II	42
10.11	Operating temperature too high	42
11	Disposal	43
12	The hydraulic breaker of the HB series	43
13	Technical specifications	44
	Index	45

1 Foreword

Please read this operating manual before using your Atlas Copco hydraulic breaker for the first time so as to avoid errors and breakdowns through incorrect usage.

These operating instructions contain:

- important safety regulations
- operating instructions for the hydraulic breaker
- maintenance instructions for the hydraulic breaker
- aids to troubleshooting

The operating instructions describe how to use the hydraulic breaker on site and should therefore be kept in the document compartment of the excavator cab.

Please pay careful attention to the safety regulations which are listed at the beginning of this manual and repeated in the relevant sections.

Responsibility for the observation of these safety regulations lies at all times with the operator.

All safety regulations listed in this manual comply with the laws and regulations of the European Union. Additional national regulations have also been taken into consideration wherever applicable.

Hydraulic breaker operation outside the European Union is subject to the laws and regulations valid in the country of use. More specific national regulations and laws that apply in your country must be observed.

Please note that reliable operation of the hydraulic breaker can only be guaranteed if genuine spare parts are used.

We wish you every success with your hydraulic breaker.

Atlas Copco Construction Tools GmbH

2 Accident prevention regulations

To avoid the risk of injury, please observe the following instructions.

Familiarise yourself with the operating manual and the applicable regulations before starting work with the hydraulic breaker.

When using hydraulic breaker in states of the Euro-

pean Union, the regulations contained in the EC machinery directive 98/37/EC must be observed and followed, as must all applicable national accident prevention regulations. In countries outside the European Union, the valid local statutes and regulations shall apply. In countries outside of this zone the corresponding general and specific laws and regulations must be observed.

Explanation of the symbols used in this operating instructions

To emphasise their importance, certain points in the operating instructions are marked with symbols,

which are described below.

Note

The marked text provides instructions on the correct use of the hydraulic tool aimed at avoiding incorrect operation or errors during work.



CAUTION!

The marked text provides safety regulations and instructions aimed at **avoiding damage to equipment**.



DANGER!

The marked text provides safety regulations and instructions aimed at **avoiding accidents and possible injuries**.

Before the first installation:

Before mounting/dismounting the hydraulic tool and/or any maintenance work on the hydraulics of the hydraulic tool/carrier the hydraulic system must be depressurized!

When using or transporting the carrier with the hydraulic breakers attached, the instructions included in the operating manual supplied by the carrier manufacturer must also be observed.

Do not run any hydraulic lines for attachment of the hydraulic breaker through the driver's cab! Hydraulic lines may spring a leak or even burst! During operations, the hydraulic oil becomes very hot.

Mounting the hydraulic breaker:

Mounting the hydraulic breaker requires the presence of an assistant, who must be instructed by the carrier driver. The carrier driver and assistant should agree beforehand on clear hand signals.

For transport purposes, use only the lugs provided and hoisting equipment of sufficient capacity.

The hydraulic breaker should only be mounted on an excavator with sufficient load capacity. The carriers specified under Section 13, Technical specifications are needed to install the hydraulic breaker.

Carriers below this weight class will not provide the required degree of stability and could even fall over during hydraulic breaker use, causing injury and damage.

Carriers above this weight class may apply excessively high mechanical loads to the attachment.

When attaching the adapter use only the special steel screws included in supply.

Check the nominal width of the hydraulic lines on existing hydraulic systems. It is important that supply and return lines for the hydraulic oil are adequately dimensioned.

Keep your hands away from bores and fitting surfaces when mounting the hydraulic breaker, especially when the carrier boom is moving.

Collect any oil which runs out and dispose of it in accordance with the applicable statutory provisions to avoid environmental hazards.

When putting into use hydraulic breakers with high-pressure accumulators the applicable national requirements are to be observed, e.g. in Germany an authorized person/inspection body is to inspect and certify the system on site before putting it into use.

Fitting and removing the working tool:

Always wear protective glasses when fitting or removing the working tool, since metal splinters may fly off when hammering out the locking bolts.

The working tool should only be fitted in the way described in this operating manual.

Never use your fingers to check whether the recesses on the working tool shaft are aligned to the slots for the retainer bars.

Operating the hydraulic breaker:

Close the front screen/splinter guard on the driver's cab to protect the driver from flying rock splinters during breaker operations.

Wear ear protectors

The national regulations of the country of use as regards excavator operations with percussive tools shall apply.

Guaranteed sound power level

The L_{WA} guaranteed sound power level is an upper limit, indication of which is mandatory under EU directive 2000/14/EC. The guaranteed sound power levels are listed in Section 13, Technical Specifications.

Do not start up the hydraulic breaker until both carrier and hydraulic breaker are in the correct position.

Stop the hydraulic breaker immediately as soon as persons are in the danger zone. The danger zone during the breaker operation is considerably greater than during the excavation operation - on account of fractions of stones and pieces of steel flying around - and for this reason, the danger zone must, depending on the type of material to be worked on, be enlarged correspondingly, or the danger zone must be secured in a suitable manner through corresponding measures.

Do not touch any hot parts

The hydraulic breaker heats up during operation.

Monitor the oil temperature

The temperature of the hydraulic oil must never exceed 80 °C. If higher temperatures are measured in the tank, the hydraulic system and/or the pressure-relief valve have to be checked.

Observe the excavator manufacturer's safety regulations.

CAUTION!

With regard to excavator operation when working with an attached hydraulic breaker, please refer to Section 6.5.

The hydraulic breaker is only to be used for the applications described.

Maintenance and repairs:

The piston accumulator integrated in the hydraulic breaker is pressurised. Before dismantling the hydraulic breaker it is essential that all gas be bled off. The same applies to removal of the filling valve "G" (see Section 9.4.9).

When filling the piston accumulator, ensure no-one is in the vicinity of the working tool. If the tool has jammed, the increase in pressure in the piston accumulator may cause it to spring out suddenly.

DANGER: risk of injury!

The piston accumulator should only be filled with nitrogen from the green nitrogen cylinder. Ensure that no other gas, e.g. air or oxygen, gets into the piston accumulator.

DANGER: risk of explosion!

Before replacing the pressure accumulator, the hydraulic system must be fully depressurised.

If one of the expansion bolts on the high-pressure accumulator should break, it is imperative that all bolts be replaced.

If any significant changes are made to the hydraulic system, a new acceptance inspection is to be carried out in accordance with the relevant national safety provisions.

Note:

Check the pressure accumulator in accordance with the national safety provisions. We recommend five-yearly maintenance intervals.

Dismounting the hydraulic breaker:

Dismounting the hydraulic breaker from the carrier requires the presence of an additional assistant who must be instructed by the carrier driver. The carrier driver and assistant should agree beforehand on clear hand signals.

When using the excavator or putting it out of operation, the safety instructions of the excavator manufacturer must be observed.

Keep your hands away from bores and fitting surfaces when dismantling the hydraulic breaker, especially when the carrier boom is moving.

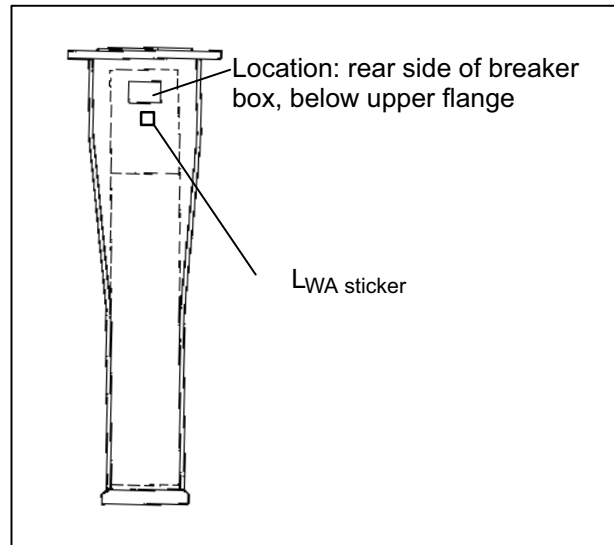
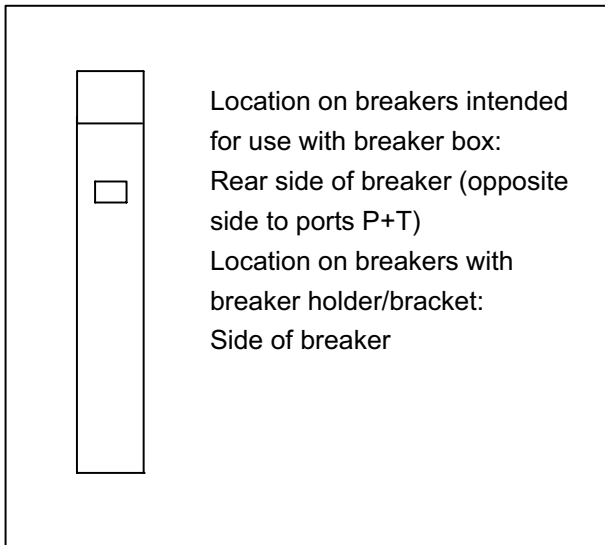
Collect any oil which runs out and dispose of it in accordance with the applicable statutory provisions to avoid environmental hazards.

Secure the hydraulic breaker after dismantling so that it cannot fall over.

3 CE markings EC machinery directive 98/37/EC

A. Product group: **Hydraulic breaker (without guide system)**

B. Product group: **Hydraulic breaker with breaker box**



3.1 CE sticker product groups A

CE sticker product groups A and B

1. Name and address of manufacturer
2. Model
3. Serial no.
4. Part ident. no.
5. max. operating pressure
6. Year of construction of product group
7. Weight of product group

3.2 CE sticker product groups B

Name and address of manufacturer

Model

Serial no.

Weight of product group

max. operating pressure

The CE nameplate contains information on the unit "breaker and breaker box". All weights indicated refer to the weight of this unit.

In accordance with EC directives CE nameplates must be affixed firmly and in a clearly visible position. Should these nameplates be lost or defaced, replacements can be ordered from your dealer/from Atlas Copco Construction Tools.

When selecting hoists and suspension aids for transporting the unit, the weights of the working tool and adapter may also have to be considered.

The following information must be provided:
Part ident. no. of the tool/ser. no. and date of delivery (from the delivery note).

3.3 Sticker for guaranteed sound level power



In accordance with EU directive 2000/14/EC, hydraulic breakers used within the EU must bear a marking legible from the outside stating the sound power level guaranteed by the manufacture.

4 General information

4.1 Applications

The hydraulic breaker is an attachment suitable for mounting on hydraulic-powered excavators.

The hydraulic breaker has been suited for the following operations:

Construction:

Demolition, tearing up, trenching, foundation work

Mining and quarrying:

Primary breaking, bench leveling, reducing mineral raw materials and rocks, tunnel construction

Under normal circumstances the hydraulic breaker is operated from the driver's cab of the carrier.

Please refer to Sections [2](#) and [6.5](#).

4.2 Scope of supply

The scope of supply of a hydraulic breaker generally includes:

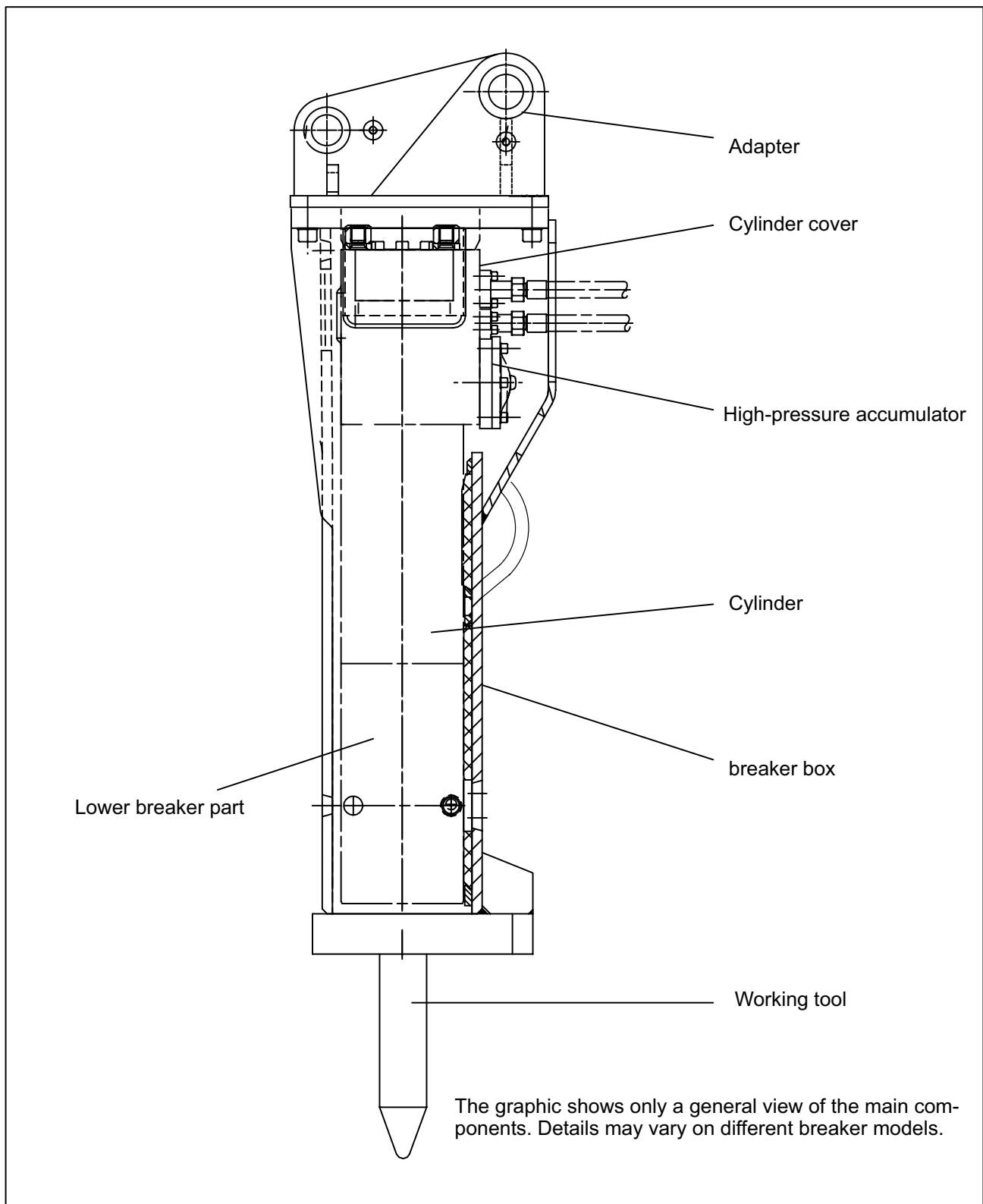
Hydraulic breaker, operating instructions, spare parts list and EC declaration of conformity.

Accessories: Mounting tool, hoses und service box according to the order.

Special accessories: e. g. adapter, hydraulic adapter kit for the excavator according to the order.

5 Main components

The hydraulic breaker has the following main components or assemblies:



6 Installation

6.1 Media/consumables

The following media/consumables are required to operate the hydraulic breaker:

6.1.1 Mineral hydraulic oil

All hydraulic oil brands prescribed by the carrier manufacturer are suitable for hydraulic breakers.

The oil should however correspond to viscosity class HLP 32 or higher.

In summer and in hotter climates, oils of viscosity class HLP 68 or higher should be used.

In all other respects the regulations of the carrier manufacturer are to be considered.

Optimum viscosity range = 30 - 60 cSt
Max. initial viscosity = 2.000 cSt
Max. oil temperature = 80 °C

Please refer to Section 8.12. for low-temperature hydraulic breaker applications.

6.1.2 Non-mineral hydraulic oil

In order to protect the environment or on technical grounds, hydraulic oils are currently being used which are not classified as HLP mineral oils.

Before using hydraulic oils of this kind it is imperative to ask the carrier manufacturer whether operations with such hydraulic oils are possible.

Our tools are basically designed for use with mineral oils. Before using other fluid types which have been approved by the carrier manufacturer, always consult our Customer Support Department. Following initial assembly and after any workshop repairs, our tools are subjected to a test run on a test bed powered by **mineral oil**.

Note:

When returning tools for repair, it is imperative that the name of the oil in use be indicated if you are using non-mineral oil.

6.1.3 Grease

Grease type	Pt.-Id.-No.
Chisel paste	3363 0660 65

Check the oil filter in the return line to the hydraulic system.

The mesh width of this filter should not exceed 50 micrometers and a magnetic separator must be fitted.



CAUTION!

Monitor the oil temperature.

The temperature of the hydraulic oil must never exceed 80 °C. If higher temperatures are measured in the tank, the hydraulic system and/or the pressure-relief valve have to be checked.



CAUTION!

Never mix mineral and non-mineral hydraulic oils! Even small traces of mineral oil mixed in with non-mineral hydraulic oil can result in damage to both hydraulic attachment and carrier.



CAUTION!

Non-mineral oil is no longer biodegradable if it is contaminated with mineral oil. Contaminated non-mineral oil must be disposed of as special waste in accordance with the applicable statutory regulations for environmental protection.

Always observe the relevant safety regulations when handling oils and greases.

6.1.4 Gas

Normal nitrogen, 99.8 % pure.

Use only nitrogen to fill the piston accumulator and ensure that no other gas, e.g. air, oxygen, is used.



DANGER!

Risk of explosion!

The nitrogen for the piston accumulator is in the green gas cylinder. Use of other gases could result in an explosion.

6.2 Attaching the adapter to the hydraulic breaker

Lay the hydraulic breaker on squared beams or a pallet within reach of the excavator boom with the service window of the breaker box facing upwards.

breaker box with two screws (referring to Section 6.3.)

Insert the elastic pad in the breaker box, **ensuring it is the right way round**, and fix the adapter to the

Then fit all screws. The required sizes for the Allen keys are shown below.

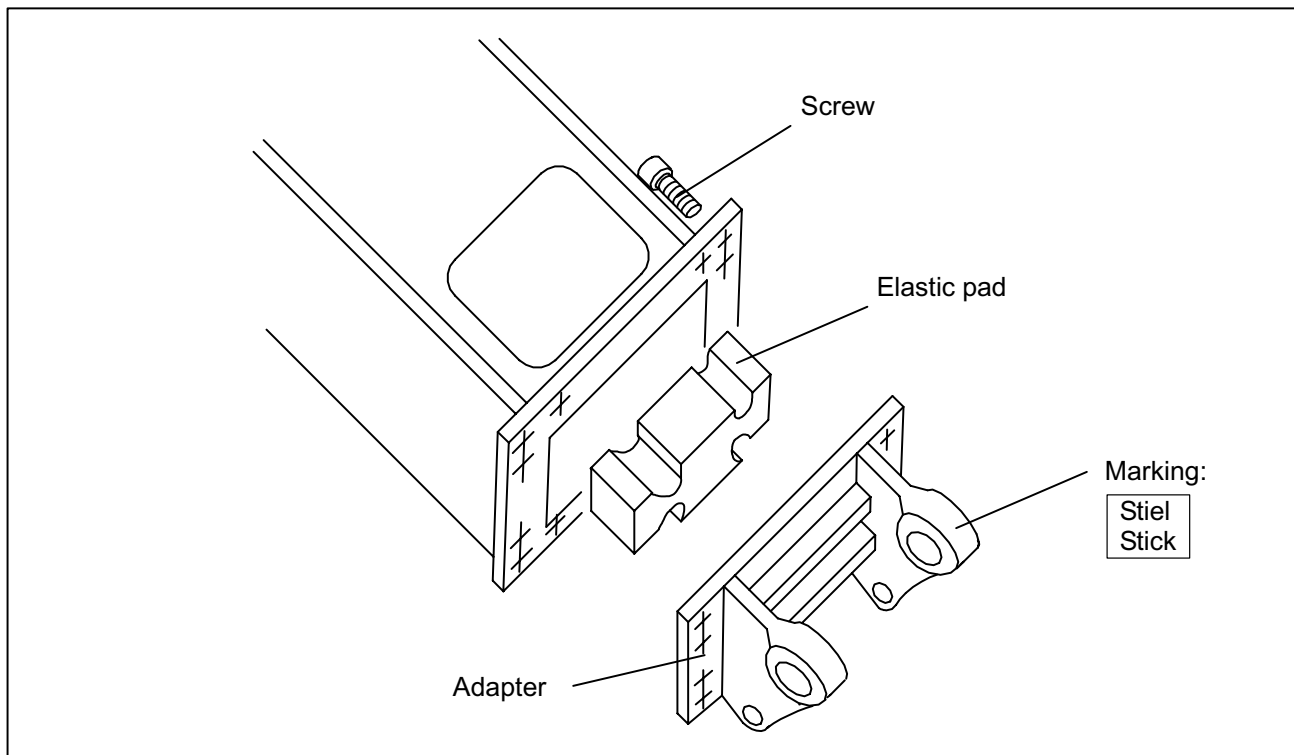
Model	Type of spanner - size
HB 2200 / 2200 DP	Allen key 22 / 1500 Nm
HB 3000 / 3000 DP, HB 4200 / 4200 DP, HB 5800 / 5800 DP, HB 7000 / 7000 DP	Allen key 27 / 2300 Nm

Only the special-steel Allen screws included in supply should be used to attach the adapter.



DANGER!

For transport purposes use only the lug(s) provided. Note the weight (name plate, section 3.2)



6.3 Mounting the hydraulic breaker on the excavator-mechanical aspects



DANGER!

Only mount the hydraulic breaker on an excavator with sufficient load capacity. If the excavator is too light it may become unstable and fall over.

During breaker mounting, the carrier should only be operated from the driver's cab.

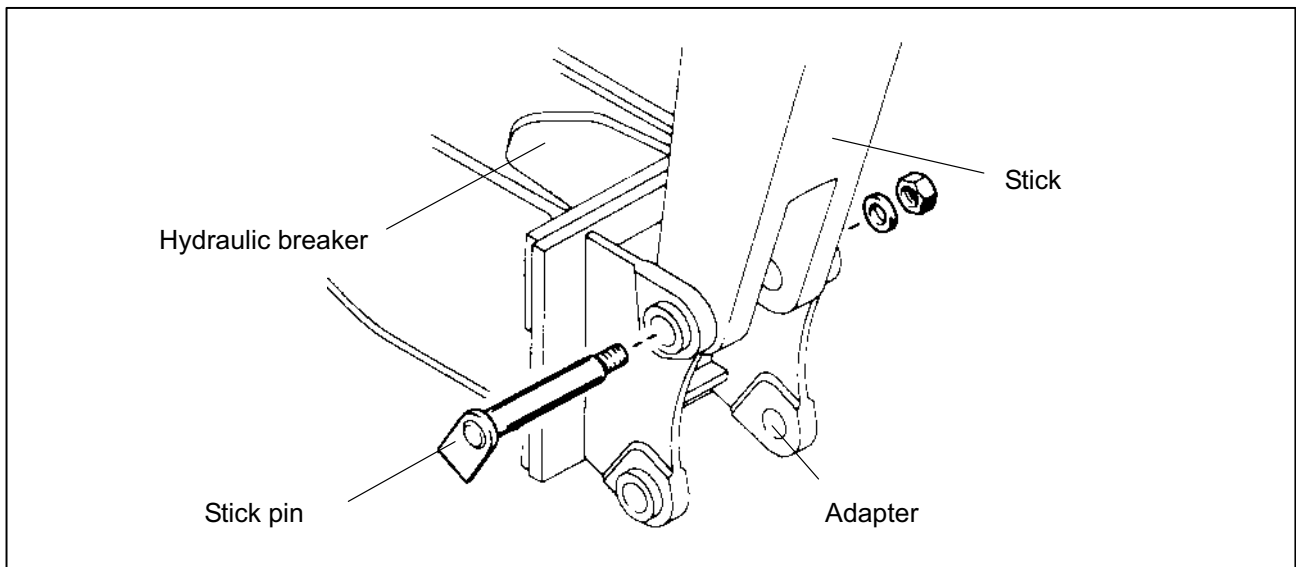
Agree with the assistant on clear hand signals. The assistant must be instructed by the excavator driver.

Keep your hands away from bores and fitting surfaces when mounting the hydraulic breaker.

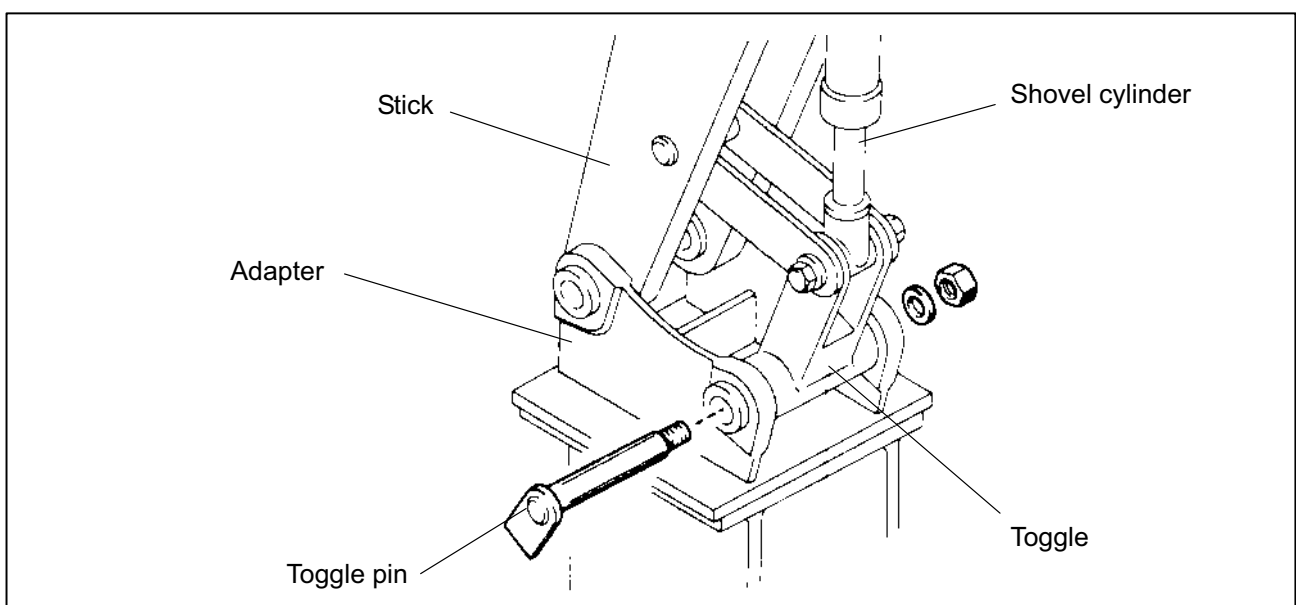
Do not touch any parts when the boom is moving.

Never use your fingers to check whether the bores are flush.

To mount the hydraulic breaker, carefully lower the stick of the boom into the adapter. An assistant directs the movement of the stick until the bores in the stick are flush with those in the adapter. Then insert the stick pin and lock.



Lift up the hydraulic breaker. Extend the shovel cylinder until the bore in the toggle is flush with those in the adapter. Insert toggle pin and lock.





CAUTION!

After mounting the breaker, carefully extend and retract the shovel cylinder to its full extent in each case. It is important that the cylinder can be fully ex-

tended and retracted without any difficulty. If problems are encountered, please consult our Customer Support.

6.4 Mounting the hydraulic breaker on the excavator-hydraulic aspects



DANGER!

Before mounting/dismounting the hydraulic tool and/or any maintenance work on the hydraulics of the hydraulic tool/carrier the hydraulic system must be depressurized.

The excavator must have a hydraulic system suitable for breaker operations.

Check the nominal width of the hydraulic lines on existing hydraulic systems. All feed and return lines for the hydraulic oil must have a sufficient inside diameter. Refer to Section 13, Technical specifications.

Use only hoses/pipes which satisfy the following quality criteria:

Hydraulic hoses with 4 wire spiral layers to DIN EN 856

Hydraulic pipes: seamless, cold drawn steel pipes to DIN EN 10305.

The safety facilities on the hydraulic system must be checked by a professional/authorised persons for their quality (CE mark etc.), suitability and proper functioning prior to their first use. By checking the setting of and, where possible, attaching a lead seal to the pressure limiting valve, it can be guaranteed that the system's working pressure, laid down in accordance with chapter 13 Technical Specifications, can never be exceeded.

The return line from the breaker must run direct to the oil tank in order to guarantee a reliable return oil flow.

The pressure-relief overflow line must run direct from the pressure-relief valve to the tank to ensure the reliable functioning of the valve.

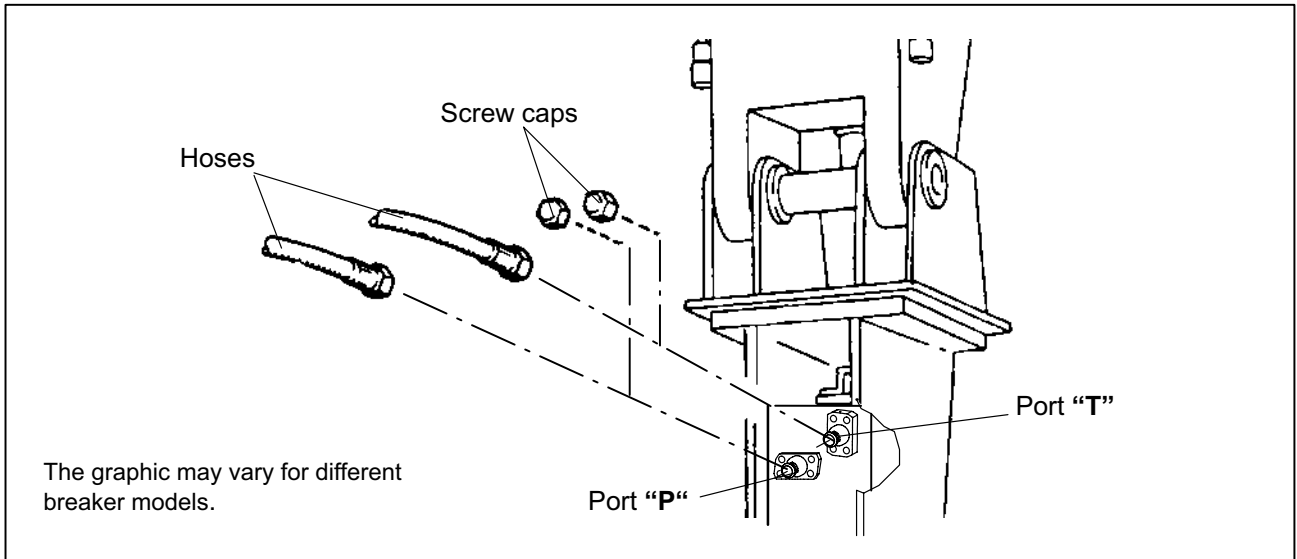
Do not run any hydraulic lines for attachment of the hydraulic breaker through the driver's cab! Hydraulic lines may spring a leak or even burst, releasing hot hydraulic oil.

Unscrew the caps from ports " P " and " T " and put them in the toolbox for safekeeping. The pressure port " P " is marked in red.

Check the connecting threads on the hydraulic breaker ports and the corresponding hose connectors to ensure they are undamaged. Sand or other foreign bodies in the threads must be cleaned away.

Screw the hoses to the ports. (Tightening torques see section 9.4.8)

If you come to the conclusion that the system does not comply with the requirements listed above, the hydraulic breaker must not be operated. For reasons of safety, you should absolutely contact the Customer Support Department then.



When connecting or reconnecting the hydraulic lines, the carrier must be secured in such a way that auto-

matic start-up of the hydraulic breaker is reliably avoided.

6.5 Switching the hydraulic breaker on/off from the carrier

After the proper attachment of the hydraulic breaker to the carrier, the hydraulic breaker can be operated using the carrier's hydraulic system. All functions for normal excavator operations remain intact. The hydraulic breaker is switched on and off using electrical and hydraulic signals. For further details please contact the carrier manufacturer or our Customer Support Department.

port Department.

When leaving the driver's cab, the safety switch for the electrical/hydraulic breaker operation system must be set to the "OFF" position.

So as to reliably prevent any unintended start-up of the hydraulic breaker.

6.6 Dismounting the hydraulic breaker from the excavator for short or lengthy periods of non-use

6.6.1 Dismounting from excavator

Unless otherwise stipulated, the hydraulic breaker is dismantled in reverse order to mounting.

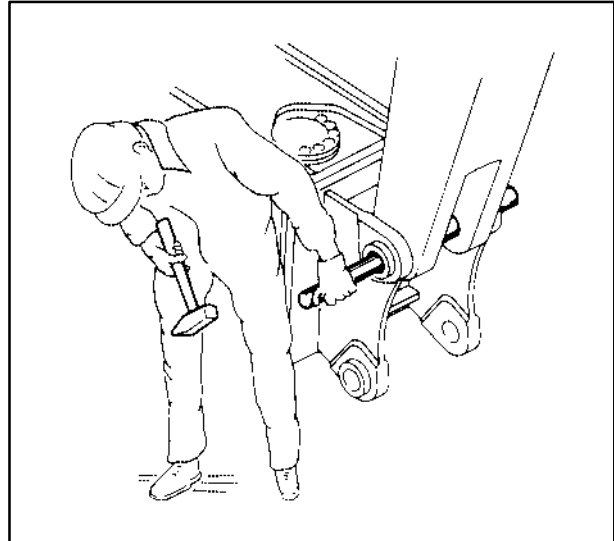
Before mounting/dismounting the hydraulic tool and/or any maintenance work on the hydraulics of the hydraulic tool/carrier the hydraulic system must be depressurized.

For safety reasons, the carrier must be switched off before performing the following work.

Lay the hydraulic breaker flat on the ground.

Unscrew the hoses from the boom and seal them with appropriate caps.

Unlock the toggle and stick pins and knock out the pins using a steel rod and a breaker.



DANGER!

Collect any oil which runs out and dispose of it in accordance with the applicable statutory provisions to avoid environmental hazards.

Agree on hand signals with the assistant.

6.6.2 Short period of non-use

Switch off the excavator electrics for the pressure supply to the hydraulic breaker.

Lay the hydraulic breaker flat on the floor.

Keep your hands away from bores and fitting surfaces when dismantling the hydraulic breaker.

Do not touch any parts when the boom is moving.

Wear protective glasses when fitting and removing the working tool.

Observe the excavator manufacturer's safety regulations.

When putting the excavator out of operation, please observe the excavator manufacturer's instructions.



CAUTION!

6.6.3 Lengthy period of non-use

If the breaker is to remain out of use for more than 14 days, the following maintenance work must be performed:

- Remove the working tool
- Bleed the gas from the piston accumulator
- Open ports " P " and " T "
- Apply a thick coating of grease to the wear bushes
- Push the percussion piston into upper end stroke position using an auxiliary tool (rod/pipe/transport device)
- Close ports " P " and " T " once again
- Close the lower wear bush using the dust cap

The hydraulic breaker should be stood vertically. Secure the hydraulic breaker during lengthy periods of non-use to ensure that it cannot fall over.

The hydraulic breaker must not be stored horizontally since the fitted seals would become deformed and thus ineffective.



DANGER!

Wear protective glasses when fitting and removing the working tool.

When opening port connections and when pushing up the percussion piston, oil may run out.

Collect any oil which runs out and dispose of it in accordance with the applicable statutory provisions to avoid environmental hazards.

7 Fitting/removing the working tool

7.1 Selecting the right working tool

The standard working tools available for the hydraulic breaker are depicted below. The different tip geometries will influence production performance depending on the type of job. Please refer to the following table for application recommendations.

Note: Only genuine working tools may be used. If other makes of working tools are used, the warranty will cease to apply.


Sharp tips will produce better results. Resharpenering is possible using suitable tools.


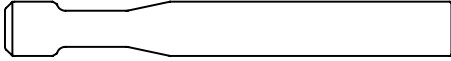
The working tools must be adequately cooled during remachining using a suitable coolant.

Never weld or flame-cut the working tools.

The high temperatures involved will modify the microstructure of the tool.

Working tools for hydraulic breakers

Designation	Application
Standard designs	
Conical point 	Universal use

Designation		Application
Flat chisel cross-cut		Mining, foundations, trenching, demolition
Blunt tool		Mining, breaking oversizes, demolition

7.2 Fitting the tool (After breaker delivery to the site)

In general the working tool is not fitted when the breaker is delivered. For fitting move the hydraulic breaker into horizontal position using the excavator boom and deposit it on a support (e.g. squared beams).



CAUTION!

For safety reasons, the carrier must be switched off before performing the following work.

Always wear protective glasses when fitting or removing the working tool, since metal splinters may fly off when hammering out the locking pins.

7.2.1 Additional requirements for hydraulic breakers with DustProtector:

Knock out the additional locking pins (1) for the DustProtector.

The guide ring (2) with floating ring (3) and counter ring (4) can now be removed.

Remove the chisel stripper (5). The special tool has to be adjusted for each breaker model. See the diagram on page 21!

Remove all additional plugs in the lower area of the breaker box.

Knock the locking pins for the retainer bars out of the lower breaker part using the drift contained in the toolbox.

Remove both sealing plugs from the retainer bar slots.

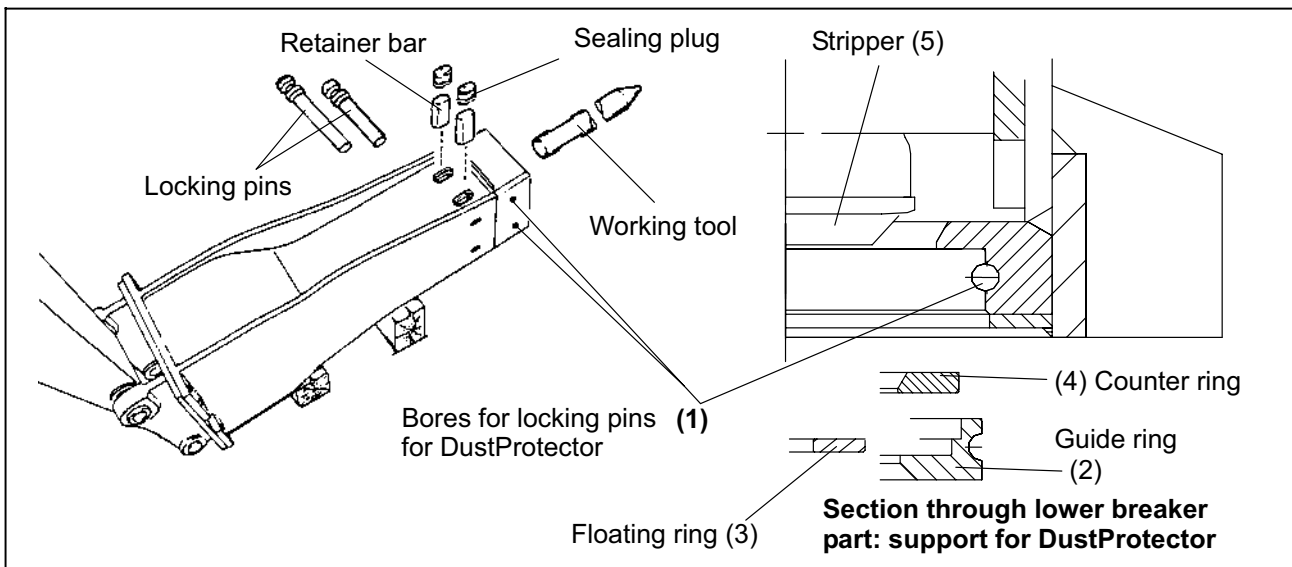
Remove the retainer bars by turning a screw into the M12 thread provided and using the screw to pull out the bar.

Remove the dust cap from the working tool bore and put it in the toolbox for safekeeping.

Clean away any dirt adhering to the working tool in the insertion zone, then thoroughly lubricate the shaft of the working tool and the bushes with chisel paste.

One cartridge of chisel paste is included in supply.

The retainer bars are also to be lubricated. Then insert the working tool, turning it until the retainer bars slide easily into the slots.



The working tool should only be fitted in the way described here.

Push the chisel stripper (5) by hand over the working tool and snap it into position in the support groove on

the lower wear bush.
Refer to diagram and comments below.

Fitting the working tool without previously removing the parts of the DustProtector system will turn the stripper (5) the wrong way out, thus rendering it useless.

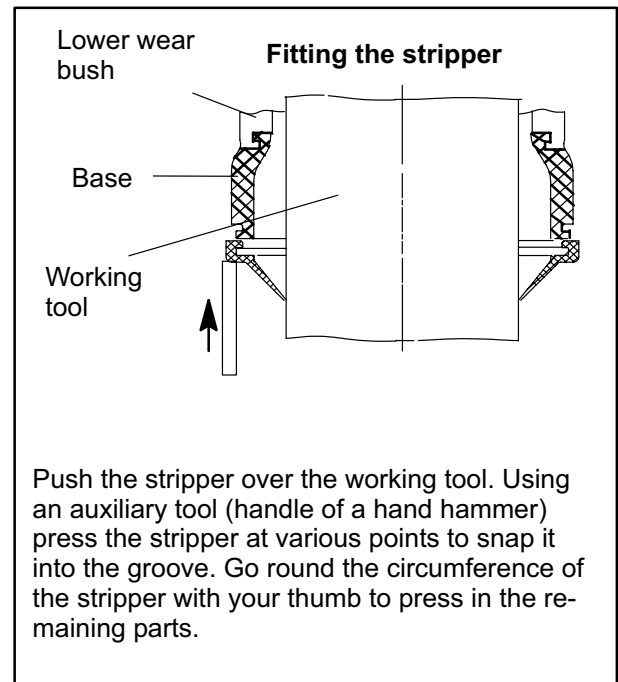
The parts of the DustProtector system are then refitted in reverse order.

When fitting part 4, make sure it is the right way round (bevel on inside diameter).

If necessary, remove any rock dust adhering to parts 2 to 4 and the support in the breaker box and then lubricate using chisel paste.

Replace the sealing plugs and drive the locking pins for the retainer bars back into position.

On Vibrosilenced Plus breakers, replace all sealing elements in the lower breaker box zone.



7.3 Removing the tool

Removal of the working tool for whatever reason is effected in reverse order to fitting, observing the specific features of the individual breaker models.

Please note that the tip of the working tool may remain hot for some time after use.



DANGER!

8 Operating the hydraulic breaker

8.1 Starting up the hydraulic breaker

First of all, precautionary measures should be taken to rule out the risk of accidents.



DANGER!

Only operate the hydraulic breaker from the driver's seat in the excavator cab.

Close the front screen / splinter guard on the driver's cab to avoid injury from flying rock splinters.

Wear ear protection to prevent hearing impairment. Anyone in the immediate vicinity of breaker operations should also wear ear protection.

Move the excavator into operating position.

Do not start up the hydraulic breaker until the breaker is in position and contact pressure is applied to the working tool.

Now start up the hydraulic breaker using the foot or hand switch.

Never try to break with the breaker without first applying contact pressure since this could cause damage to the carrier.

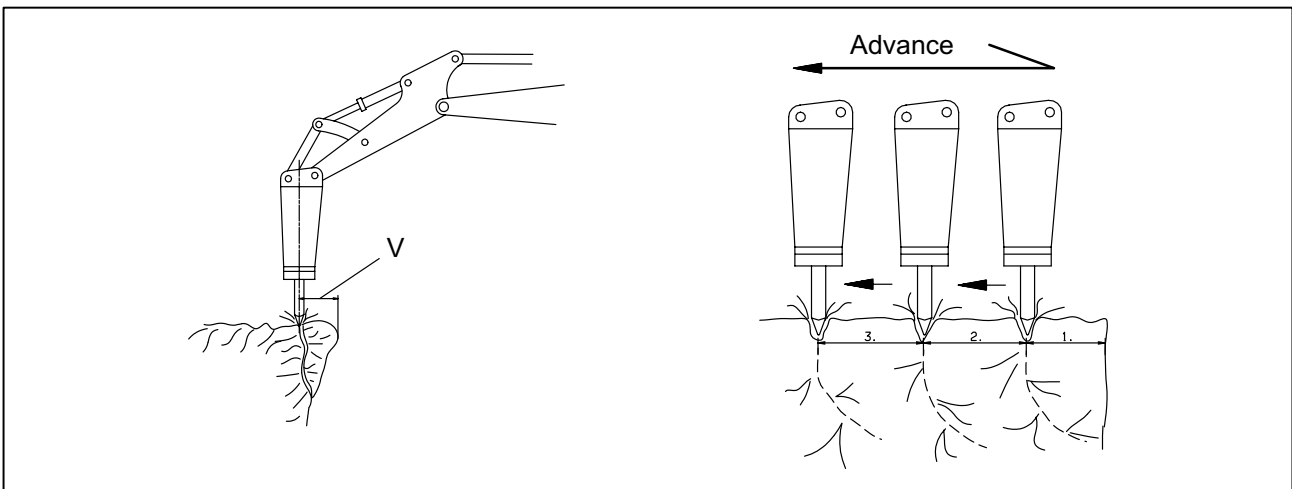
Stop the hydraulic breaker immediately as soon as persons are in the danger zone. The danger zone during the breaker operation is considerably greater than during the excavation operation - on account of fractions of stones and pieces of steel flying around - and for this reason, the danger zone must, depending on the type of material to be worked on, be enlarged correspondingly, or the danger zone must be secured in a suitable manner through corresponding measures.

8.2 Advance

The advance distance (marked "V") should be such that the rock breaks within 30 seconds at the most. If this is not the case, reduce the amount of advance or reposition the breaker at a different point of attack.

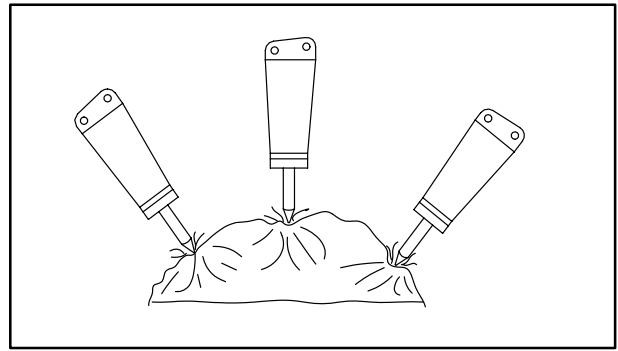
Advancing in large steps will not improve working results.

Advancing in small steps is more effective.



8.3 Angle of attack

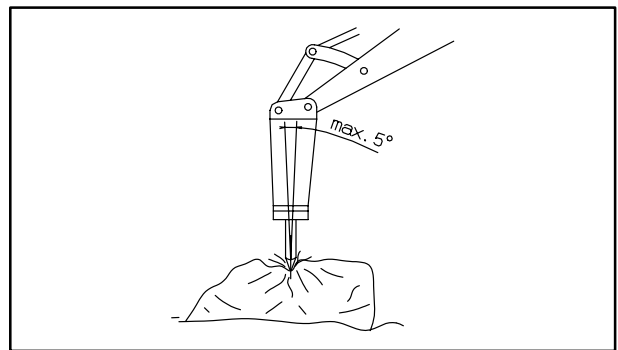
The working tool should always be positioned at right-angles to the working surface. If this is not the case, the hydraulic breaker will wear more quickly and in the long term will suffer damage.



8.4 Breaker rocking

Rock the breaker gently (no more than approx. 5°) during breaking to allow the dust to escape from beneath the tip of the working tool. If dust is allowed to build up, it will act as a cushion to prevent the full impact energy of the breaker being transferred to the material being broken.

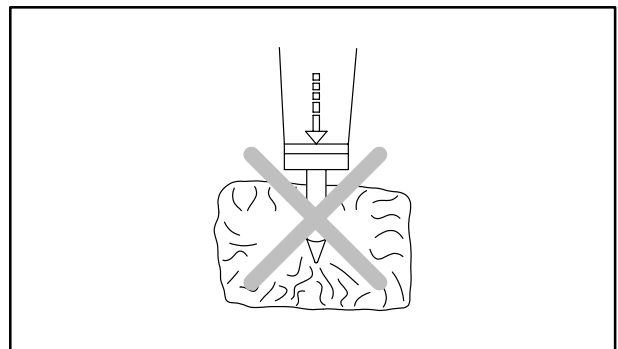
Excessive rocking will, however, cause bending strains resulting in damage to the working tool and the hydraulic breaker.



8.5 Never drive the working tool into the ground

If the advance step is too large, or the breaker is not rocked to allow dust to escape, the working tool will be driven into the material without breaking it sufficiently. The tip of the working tool will glow red hot and lose its hardness.

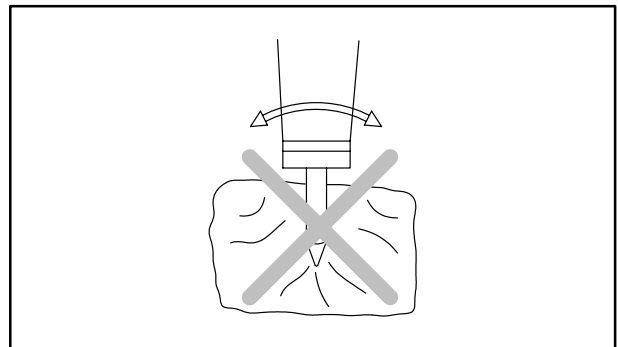
Operating in this way is not allowed!



8.6 Never lever with the breaker

Never attempt to use the hydraulic breaker as a crowbar, as this will cause the working tool to break.

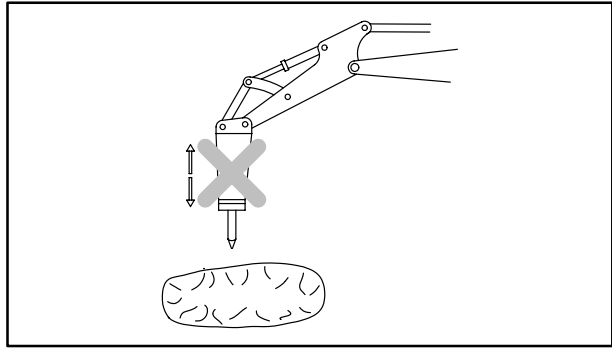
Operating in this way is not allowed!



8.7 Never use as a sledgehammer

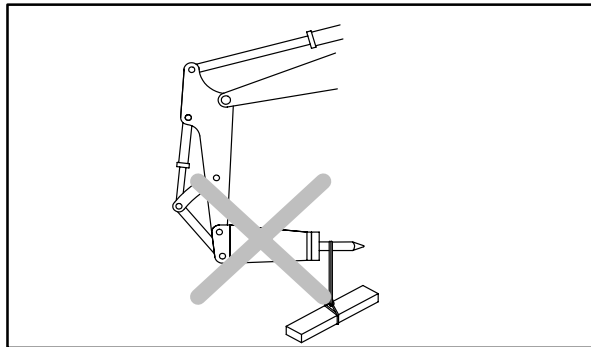
Before starting up, rest the breaker on the ground. Never attempt to use the breaker and the excavator boom as a sledgehammer to break material.

Operating in this way is not allowed!



8.8 Never use for transport purposes

The hydraulic breaker is not designed to lift or transport loads. Unsuitable application!



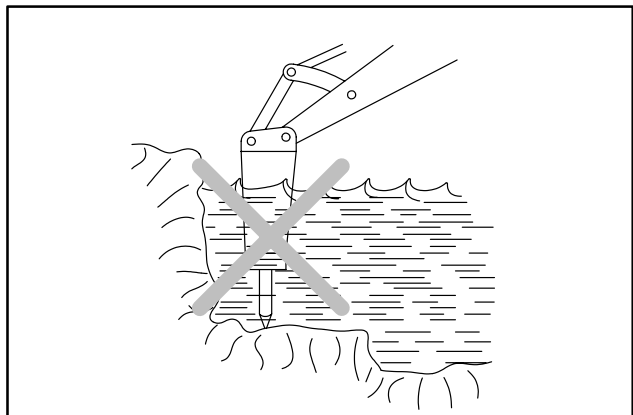
8.9 Using the hydraulic breaker in or under water

The hydraulic breaker must never be used in or under water without prior conversion.

In order to avoid damage to the hydraulic breaker, Atlas Copco Construction Tools has developed a special connecting kit for underwater applications containing all necessary components incl. safety equipment to keep water out of the lower breaker part by means of compressed air.

There is a separate document, part ident. no. 3390 5021 04 (German), part ident. no. 3390 5021 01 (English), providing operating instructions and spare parts lists for underwater applications.

Please always contact our Customer Support **before** starting work in or under water.



8.10 Hydraulic breaker used in tunnelling

Do not use the hydraulic breaker for tunnelling involving overhead, horizontal or floor work before taking preventative measures!

Penetration by dust, stone fragments and/or water can lead to malfunctions during operation and may even cause the hydraulic breaker to stop working.

Consequently, preventative measures for protecting the hydraulic breaker in applications of this type are listed in a separate document, pt. id. no. 3390 5015 04 (German), pt. id. no. 3390 5015 01 (English).

Please therefore contact the Customer Support department of Atlas Copco Construction Tools before using the breaker for such work.

8.11 Working in high outside temperatures

The temperature of the hydraulic oil must be monitored to ensure it does not exceed 80 °C. If higher temperatures are measured in the tank, oil cooler must be fitted, and/or installation and pressure-relief valve have to be checked.

Only use hydraulic oils of sufficient viscosity. In summer and in tropical climates, the minimum requirement is a hydraulic oil of type HLP 68.

8.12 Working in low outside temperatures

For temperatures down to 20 °C below freezing there are no special regulations.

At temperatures below minus 20 °C, the carrier must be warmed up prior to use in the way described by the excavator manufacturer. In the majority of cases, carriers and attachments are kept in protected or even heated areas when not in use.

However, if the carrier and the hydraulic breaker are left out in the open, the carrier and all equipment must be warmed up before the hydraulic breaker can be started up. The excavator manufacturer's regulations must be observed in full.

Ensure that the hydraulic oil in the carrier is at least at 0 °C.

The hydraulic breaker cannot be started up until the oil temperature is over 0 °C.

Please observe the excavator manufacturer's regulations.

CAUTION:

During operations, leave the excavator engine and pumps running even during breaks.

CAUTION:

At temperatures of below 0 °C there is an increased risk of tool fracture.

This can be prevented by preheating the tool slowly and gradually!

Note:

The hydraulic breaker and excavator will not operate to full capacity until the oil temperature has reached at least 60 °C.

CAUTION:

Feeding hot hydraulic oil to an extremely cold hydraulic breaker will cause internal stresses in the unit resulting in its failure.

If the breaker is used without pre-heating the oil:

- the breaker seals may fracture
- the diaphragm in the high-pressure accumulator may tear

8.13 Operating the breaker with the cylinders fully extended or retracted



CAUTION!

Operating the breaker with the shovel/stick cylinders fully extended or retracted must be avoided at all costs. These end positions are equipped with damping functions; continuous operation at full extension/retraction can result in damage to the hydraulic cylinders.

Remedy: reposition carrier and/or boom.

8.14 AutoControl - the combined valve system (all models of the HB series)

The AutoControl system is a combination of a pressure holding valve and a switching valve.

The **pressure holding valve** ensures precision breaker operation under any operating conditions

and allows energy recovery of up to 30 % when working in hard rock.

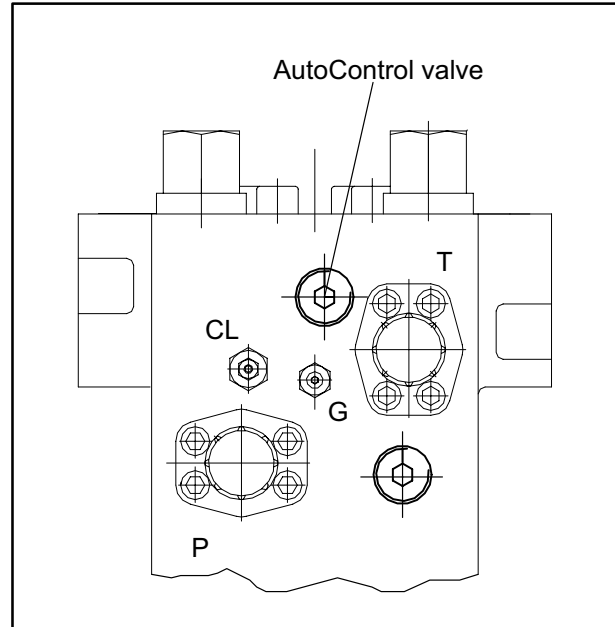
The **switching valve** automatically reduces the stroke length to reduce the single blow force.

8.14.1 AutoControl for normal operations

All hydraulic breakers of the HB series are equipped with AutoControl as standard.

The system adapts fully automatically to operating conditions, requiring no manual intervention on the part of the excavator driver.

For applications requiring high single blow energy, the breaker operates at full piston stroke and high percussive force.



8.14.2 AutoControl for special requirements

For special requirements, e. g. where the emphasis is on low-vibration working, the AutoControl system can be blocked mechanically to the higher impact rate and reduced percussive force.

For further information on this subject please contact our Customer Support.

8.15 StartSelect - AutoStart/AutoStop (all models of the HB series)

Models of the HB series are supplied ex factory set to **"AutoStart"** mode, i. e. when they are switched on, the breakers start in operating position without the need for contact pressure to be applied.

By making a reversible modification, the breaker can be set quickly to a different mode:

"AutoStop" (= Automatic shut-off)

The AutoControl system protects the breaker from damaging idle blows.

Contact pressure needs to be applied before the breaker is started. During operation, the breaker shuts off automatically if the percussion piston no longer strikes the working tool. The breaker is thus protected against idle blows.

This setting provides greater productivity and simplifies handling in the following applications:

This operating mode is of advantage in the following applications:

- secondary reduction of mined rock
- working with the breaker in horizontal/overhead position
- size reduction of light concrete structures

- trenching
- bench levelling in the quarry
- excavating foundations in rock
- size reduction of heavy concrete structures

For more information on this modification, please refer to the spare parts lists of these models.

8.15.1 Changing StartSelect modes

To change from "AutoStart" to "AutoStop" mode on site, lay the breaker flat on the ground.

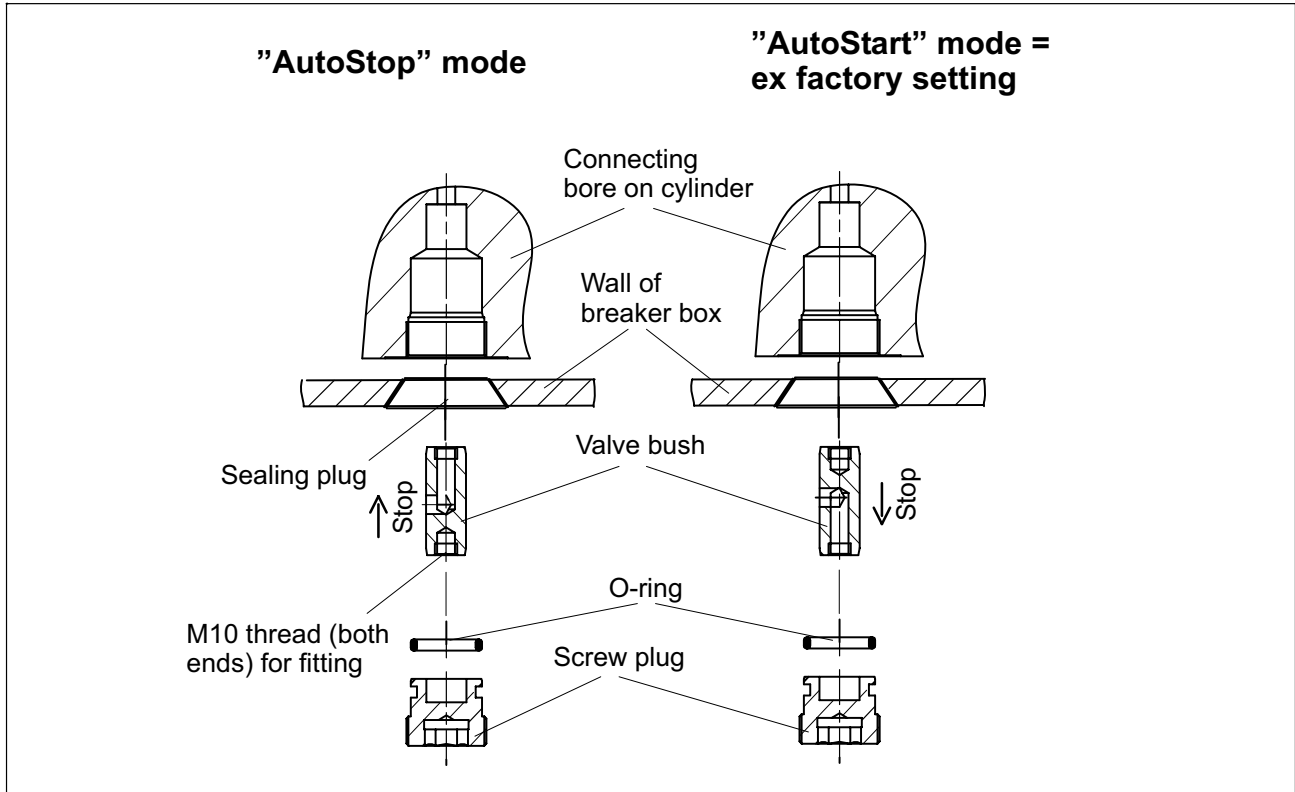
Turn off the carrier engine. Remove all hoses to and from the breaker on the boom and seal off open hose ends. If stop cocks are provided on the boom system, close them.

Remove the sealing plug from the front-side/right-

hand side of the breaker box. Behind this plug, in the wall of the cylinder, is a screw plug.

Collect any oil which runs out and dispose of it in accordance with the applicable statutory provisions to avoid environmental hazards.

The diagram shows how the valve bush is fitted to select between "AutoStart" or "AutoStop" modes.



8.16 Pressure shut-off valve HB 5800 and HB 7000

The pressure shut-off valve protects the hydraulic breaker against hydraulic overload by shutting the breaker off if hydraulic input is too high.

Overloads occur when the pump delivery and pressure from the carrier are too high. The carrier driver can rectify this by reducing the engine speed or setting the carrier to a lower mode level.

How to adjust pump delivery:

- Start the carrier
- Set to maximum rpm and highest mode level
- Switch on the breaker system

- If the hydraulic breaker does not work, reduce rpm or mode level and restart the breaker
- Repeat this procedure until the hydraulic breaker runs normally without misfiring.

Once operating temperature has been reached, the oil flow rate can be increased.

The advantage of the pressure shut-off valve is that, through manual adjustment, it allows the maximum blow energy to be utilized without overloading the hydraulic breaker.

Despite the pressure shut-off valve, the carrier hydraulics still need to be set for hydraulic breaker operation.

9 Maintenance work to be performed by the excavator driver

9.1 Automatic lubrication using of the hydraulic breaker of the HB series

9.1.1 Automatic lubrication using ContiLube® II

Hydraulic breakers in the Marathon® series are equipped with the ContiLube® II automatic lubrication unit as standard.

ContiLube® II is attached near the service opening on the upper part of the breaker box.

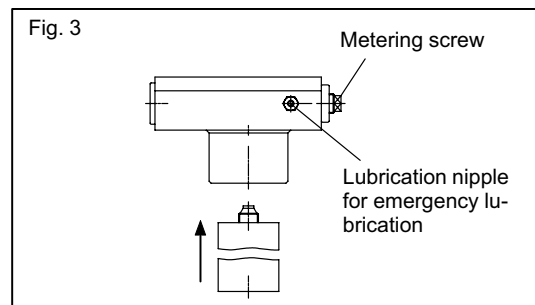
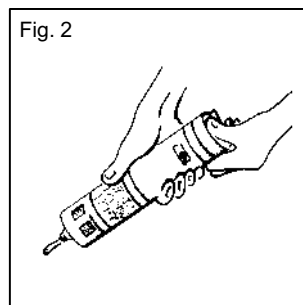
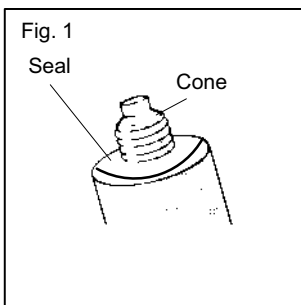
For information on operation and maintenance of the ContiLube® II, please refer to the additional operating manual.

Language of the operating manual	Part ident. no.
English	3390 5013 01
French	3390 5013 03
German	3390 5013 04
Spanish	3390 5013 05
Italian	3390 5013 07

9.1.2 Changing the lubricant cartridge

The diagrams below depict the logical steps involved in preparing and fitting a new cartridge.

- Open the cartridge by taking off the cap and, on sealed cartridges, by cutting off the seal above the cone (Fig. 1)
Important: Do not cut off or damage the cone itself!
- Depress the cartridge piston with your thumb until lubricant emerges from the threaded end (Fig. 2).
- Screw the cartridge into the bore provided in the pump unit as far as it will go. The ContiLube® II is now ready for operation (Fig. 3).



9.1.3 Operating the ContiLube® II

Please observe the following information:

- ContiLube® II is self-bleeding, i.e. the system requires no additional bleeding.
- The cartridge is made of transparent, recyclable plastic (PE), so the lubricant level in the cartridge can be monitored at all times from the driver's cab by observing the position of the piston, which is red.
- The piston end of the cartridge must never be sealed off, as this would render delivery impossible.
- The amount of lubricant delivery per stroke can be set using the metering screw, allowing the unit to be adapted to differing requirements. Turn the screw clockwise = smaller delivery per stroke
Turn the screw anticlockwise = greater delivery per stroke
- Once the cartridge is empty, the pump unit must be sealed off to prevent water or dust penetration. Close the unit with a dust cap or simply leave the empty cartridge in position until a new cartridge is available.
- Emergency lubrication is possible via the lubrication nipple on the front of the ContiLube® II. See chapter 9.1.2, Fig. 3.
- The connections for hoses used to operate the ContiLube® II unit must be checked once a week to ensure they have not come loose.

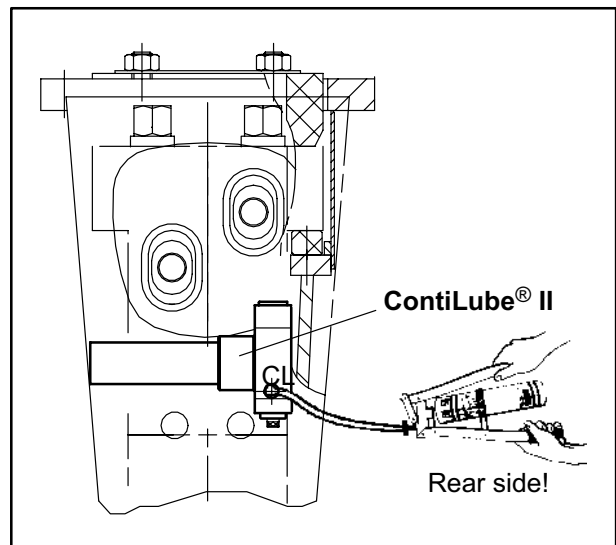
9.2 Manual lubrication without or upon failure of ContiLube® II

For manual lubrication, stand the hydraulic breaker upright on the working tool and apply contact pressure. 5 to 15 shots from a grease gun are sufficient for breakers without DustProtector, 5 to 10 shots for breakers with DustProtector.

Manual lubrication is required if no automatic lubricating unit is fitted to the breaker or the ContiLube® II unit has failed.

For preference, only genuine chisel paste should be used for lubrication.

Genuine chisel paste is available in fully self-emptying standard cartridges. Fully emptied cartridges can be recycled.



9.2.1 Filling device for the chisel paste

Atlas Copco Construction Tools offers a filling device to refill emptied cartridges, which is fitted on a 45 kg grease container and allows empty cartridges to be refilled as required.

500 g cartridges for ContiLube® II, part ident. no. 3362 2639 00

Manual grease gun for ContiLube® II cartridges: part ident. no 3363 0345 67

15 kg grease container, **part ident. no. 3362 2639 00**

45 kg grease container, **part ident. no. 3362 2632 75**

For further information on this subject please contact our Customer Support.

General comment: Hydraulic breakers in the DustProtector®-Version have a distinctly lower grease consumption. The lubricant delivery rate should be set by the carrier driver to meet requirements.

9.3 Care and maintenance timetable

Work to be performed by excavator driver

During the shift	Daily	Weekly	When changing tool, but latest every 100 operating hours	As required
<ul style="list-style-type: none"> ■ Lubricate working tool with-breaker upright-and contact pressure applied <p>Intervals: appr. all 2 hours. 5 to 15 shots (breakers without Dust Protector) and 5 to 10 shots (with Dust Protector) with the grease gun.</p> <p>If automatic lubrication fitted, check level, replace cartridge if necessary</p>	<ul style="list-style-type: none"> ■ Tighten screw couplings (during first 50 operating hours) ■ Check hydraulic lines for leaks ■ Check pipe clamps on carrier ■ Tensioning bolts: Visual check and/ or sound check by metallic hitting of the upper hexagons/washers thru the service openings of breaker box 	<ul style="list-style-type: none"> ■ Check screw couplings ■ Check locking pins on retainer bars for tight fit ■ Check function of plugs ■ Check adapter and breaker box for cracks ■ In normal use: clean and grease DustProtector components ■ The connections for hoses used to operate the Conti-Lube II unit must be checked to ensure they have not come loose. 	<ul style="list-style-type: none"> ■ Check wear to working tool ■ Check wear to lower wear bushes ■ Check impact face of percussion piston for wear/ damage ■ Check impact face of working tool for damage ■ Check working tool for burring ■ Check retainer bars for burring 	<ul style="list-style-type: none"> ■ Replace bent and squashed pipes ■ Replace damaged hoses ■ Check pressure in piston accumulator ■ On dust-intensive jobs: clean and grease DustProtector components ■ Check adapter bolts for wear

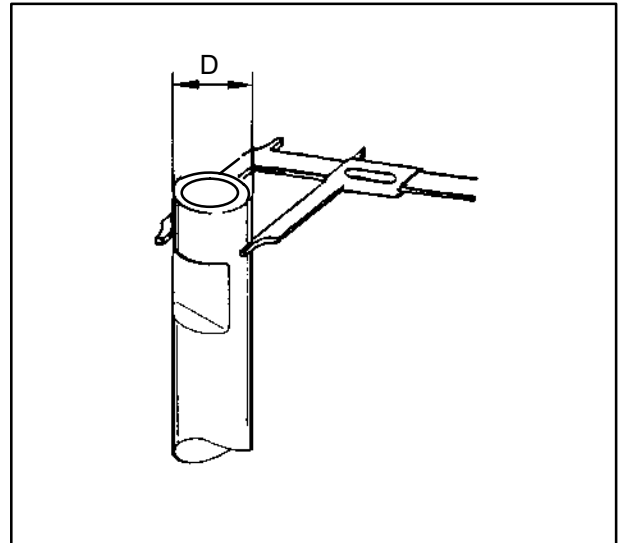
9.4 Check

9.4.1 Checking the working tool for wear

Check the working tool for wear each time the tool is changed and at the latest after 100 operating hours. If the shaft of the tool has worn down to below the permissible minimum.

Model	Minimum diameter D
HB 2200	145 mm
HB 3000	160 mm
HB 4200	175 mm
HB 5800	195 mm
HB 7000	205 mm

Any burring on the working tool must be smoothed off carefully.



9.4.2 Checking the wear bushes

The inside diameter of the lower wear bush has to be checked every time the working tool is changed and at the latest every 100 operating hours.

If the diameter has enlarged due to wear, both wear bushes and the buffer ring must be replaced.

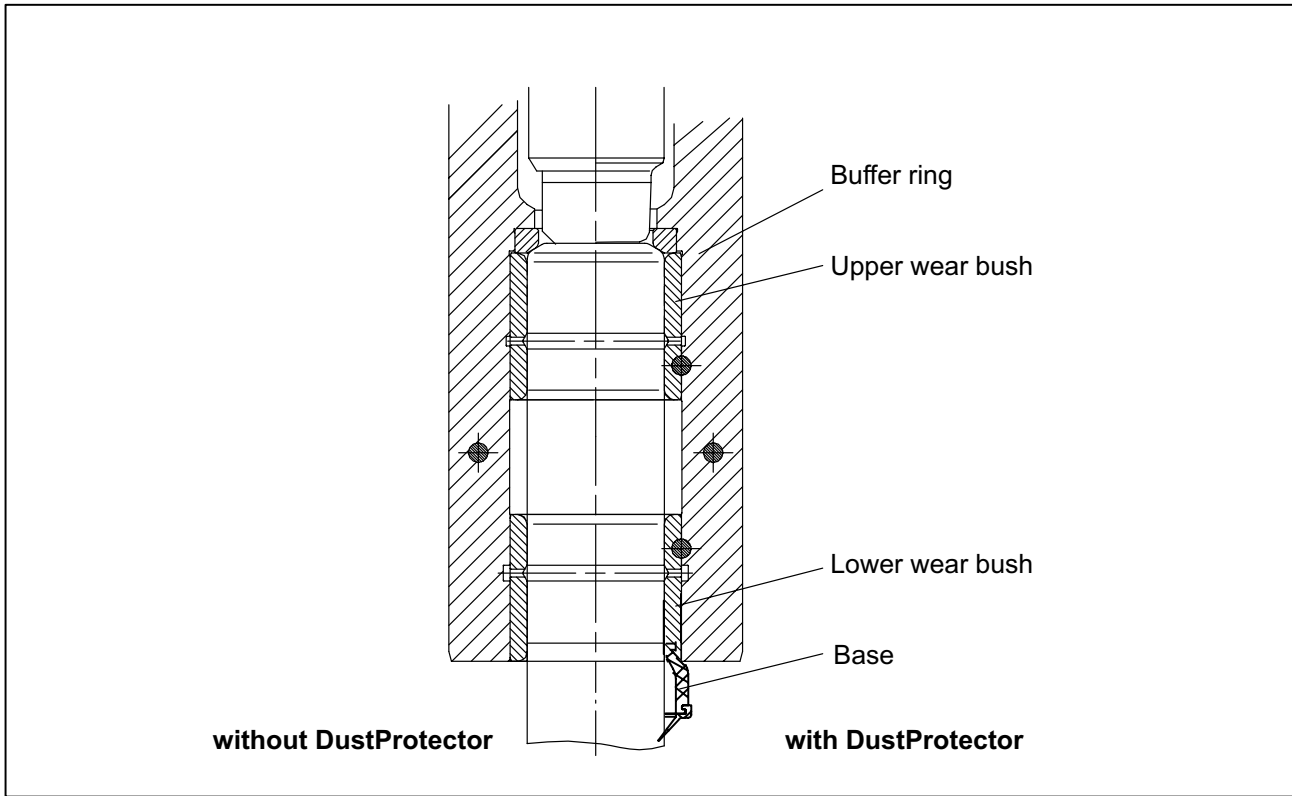
A template is included in the delivery to check the inside diameter, which must not exceed the maximum dimension indicated in the table.

Working tool and chisel stripper must be removed prior to checking.

Model	∅ template	max. permissible diam.
HB 2200	150	155 mm
HB 3000	165	170 mm
HB 4200	180	185 mm
HB 5800	200	205 mm
HB 4000	210	215 mm

Note:

The wear bushes and buffer ring must be replaced in a suitably-equipped workshop. Before fitting new parts, remove any grease residues inside the lower breaker part.



9.4.3 Checking the buffer ring

The inside diameter of the lower wear bush has to be checked every time the working tool is changed and at the latest every 100 operating hours.

If the diameter has enlarged due to wear, both wear bushes and the buffer ring must be replaced.

There is a Gauge to check the inside diameter.

The maximum dimension must not exceed indicated in the table.

Working tool and chisel stripper must be removed prior to checking.

Model	max. permissible diam.
HB 2200	155 mm
HB 3000	170 mm
HB 4200	185 mm
HB 5800	205 mm
HB 4000	215 mm

9.4.4 Checking the retainer bars

Both retainer bars must be checked each time the tool is changed. If excessive wear is detected (e. g. sharp edges, notches, noticeable indentations) the retainer bars must be replaced.

Any burring on the retainer bars must be smoothed off carefully.

The two seal plugs for the retainer bars should also be examined to ensure they are not damaged.

9.4.5 Checking the impact face of the percussion piston

From time to time, the impact face of the percussion piston should be checked for wear or damage. Once the working tool has been removed, shine a torch

onto the impact face. If chipping or wear is detected, do not resume work with the hydraulic breaker and inform our Customer Support.

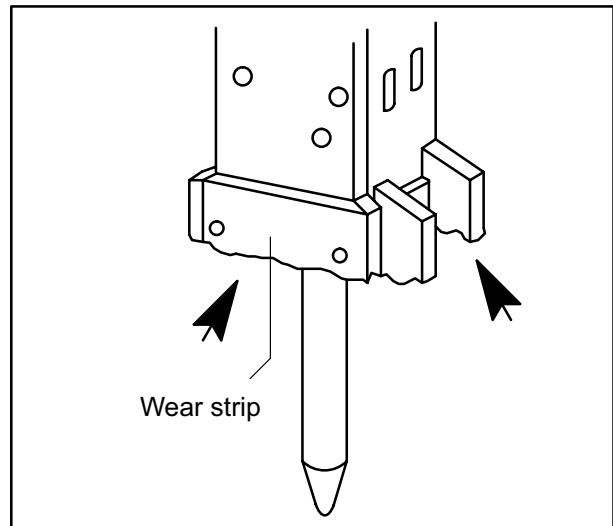
9.4.6 Checking the breaker box for wear and cracks and checking the adapter for cracks

Both the adapter and the breaker box must be checked weekly for cracks. If cracking is detected, repairs / remachining should be effected to avoid more serious damage.

Heavily worn breaker boxes must be replaced so as to avoid further damage to the lower breaker part. The wear strips attached at the lower end of the breaker box can be replaced if required. The procedure is described in the relevant repair manuals.

Note:

If the wear strips are heavily worn, the guiding system for the percussion unit can get out of function.



9.4.7 Checking/cleaning the DustProtector zone on the breaker boxes

In order to ensure the efficiency and function of the DustProtector at the lower end of the breaker box, it should be checked on a regular basis - depending on the level of dust involved in breaker operations.

In dust-intensive applications the DustProtector should be checked every week (i.e. every 40–50 operating hours). It is important to the functioning of the unit that the floating ring (part 3, see page 21) is able to follow the movements of the breaker and working

tool. Dust penetration can limit the installation space available and impede the stripper effect of the unit. The area in front of the flexible chisel stripper must be cleaned of loose dust. The stripper itself must be free of damage.

Regular cleaning and greasing of the components and their support faces will maintain the function of the unit and thus increase the availability of the hydraulic breaker. Please refer also to Section 7

Maximum permissible diameter for floating rings

Model	∅ template	max. permissible diam.
HB 2200	150	155 mm
HB 3000	165	170 mm
HB 4200	180	185 mm
HB 5800	200	205 mm
HB 7000	210	215 mm

Inside diameters are checked using a slide gauge or the appropriate template from the toolbox.

9.4.8 Screw couplings with tightening torques

On percussive tools such as hydraulic breakers, the screw couplings are subjected to particularly high loads. During the first 50 operating hours the screw couplings on the breaker must be checked daily,

thereafter once a week. Tighten any loose connections without exceeding the prescribed tightening torque.

The following screws/couplings must be checked:

Connection point	Part-no.	Interval	HB 2200/DP	HB 3000/DP	HB 4200/DP	HB 5800/DP	HB 7000/DP	
(see page 36)	-	-	Type of spanner size Nm					
Adapter	1	daily	Allen key 22 / 1500 Nm	Allen key 27 / 2300 Nm				
Tie rods *)	2	sound check weekly	see page 34					
Allen screw/hex. screw (valve cover/control valve)	3	in case of repair	Allen key 17 / 380 Nm					
AutoControl system	4	in case of repair	Allen key 22 / 300 Nm					
Screw plug (Perc. chamber ventilation)	5	in case of repair	Jaw spanner 41 / 200 Nm					
Filling valve » G « Screw plug	6	in case of repair	Socket spanner 22 / 130 Nm Allen key 5 / 20 Nm					
Ports » P « und » T «	7	weekly	Jaw spanner 50/55 / 400 Nm			Jaw spanner 55/60 / 400 Nm		
Allen screws for flanges	8	weekly	Allen key 12 / 130 Nm	Allen key 10 / 80 Nm				
High-pressure accumulator (fixing screws)*	10	weekly	Allen key 14 / 350 Nm	Socket spanner 30/ 430 Nm	Socket spanner 30 / (see Tightening stipulations **)			
Hose connections Contilube® II	11	weekly	Socket and jaw spanners of varying sizes					
Screw plug for StartSelect	-	in case of repair	Allen key 17 / 200 Nm					

* The tie rod heads are visible through openings in the breaker box

Tightening regulations for tie rods HB 2200

1. Pretighten the tie rods to 500 Nm, proceeding in a crosswise fashion,
2. then tighten each tie rod through 120° (2 sides of hexagonal head) in a crosswise fashion,
3. finally tighten each tie rod again through 120° (2 sides of hexagonal head) in a crosswise fashion.

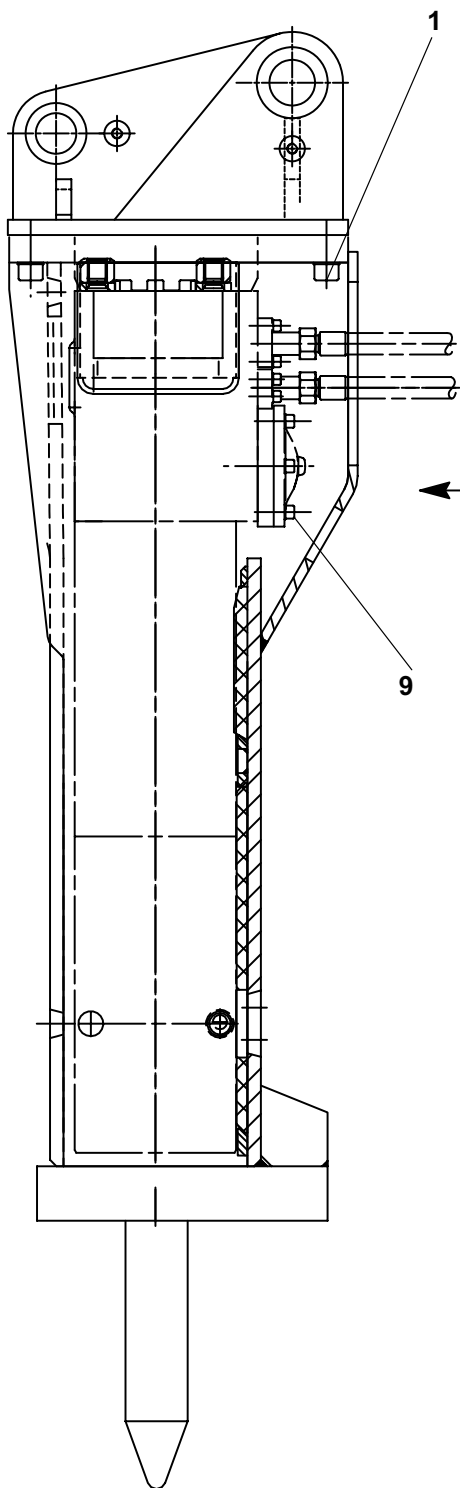
Tightening regulations for tie rods HB 3000. HB 4200, HB 5800

1. Pretighten the tie rods to 500 Nm, proceeding in a crosswise fashion,
2. then tighten each tie rod through 120° (2 sides of hexagonal head) in a crosswise fashion,
3. finally tighten each tie rod again through 180° (3 sides of hexagonal head) in a crosswise fashion.

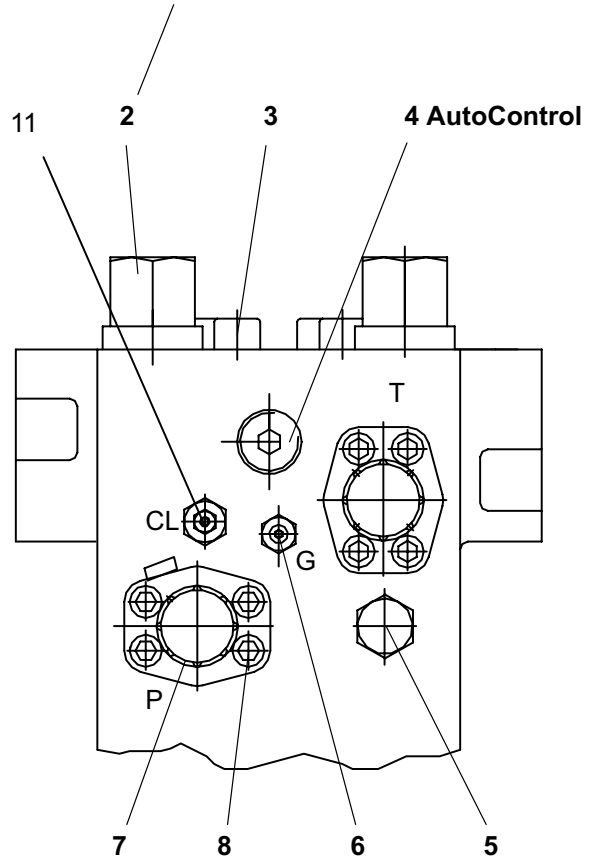
Tightening regulations for tie rods HB 7000

1. Pretighten the tie rods to 500 Nm, proceeding in a crosswise fashion,
2. then tighten each tie rod through 180° (3 sides of hexagonal head) in a crosswise fashion,
3. finally tighten each tie rod again through 180° (3 sides of hexagonal head) in a crosswise fashion.

- ** Tightening regulations for anti-fatigue bolts on high-pressure accumulators HB 3000/DP (**to SN 2083**), HB 4200/DP (**to SN 1556**), HB 5800/DP (**to SN 48**), HB 7000/DP (**to SN 168**)
 1. Treat the threads and thread inserts for the reduced-shaft bolts with an anti-seize agent.
 2. Degrease and dry the surfaces between the bolt heads, the washers, and the cover for the high pressure storage vessel.
 3. Pretighten the reduced-shaft bolts to 50 Nm, proceeding in a crosswise fashion,
 4. then tighten each bolt through 30° in a crosswise fashion,
 5. finally tighten each bolt again through 60° in a crosswise fashion.
- ** Tightening regulations for anti-fatigue bolts on high-pressure accumulators HB 3000/DP (**from SN 2084**), HB 4200/DP (**from SN 1557**), HB 5800/DP (**from SN 49**), HB 7000/DP (**from SN 169**)
 1. Treat the threads and HeliCoil thread inserts for the reduced-shaft bolts with an anti-seize agent.
 2. Treat the surfaces between the bolt head, washer, and high-pressure accumulator cover with anti-seize.
 3. Place on the high-pressure accumulator, and tighten the anti-fatigue bolts by hand in a crosswise fashion.
 4. Pretighten the reduced-shaft bolts to 100 Nm, proceeding in a crosswise fashion,
 5. then tighten each bolt through 30° in a crosswise fashion,
 6. finally tighten each bolt again through 60° in a crosswise fashion.



Tensioning bolts:
Visual check and/or sound check
by metallic hitting of the upper
hexagons/washers thru the ser-
vice openings of breaker box.



View X
 (without breaker box)

On HB 3000, 4200, 5800 and 7000 the
connection points 7 and 8 are on the
sides of the cylinder cover.

The graphic may vary for different breaker models

9.4.9 Checking pressure in piston accumulator and refilling if required

The following accessories are available for the order:
 1 nitrogen filling device
 1 pressure gauge 1/4", 0–25 bar, test class 1.6
 1 nitrogen cylinder

These items should be on hand at all times to allow the following checking and maintenance work to be performed.

Checking:

If the performance of the hydraulic breaker starts to drop, the gas pressure in the breaker's piston accumulator should be checked. The piston accumulator does not need to be refilled until the gas pressure has dropped to the minimum level or below.

Note: The pressure should be checked at an operating temperature of 60–70 °C.
 Lay the hydraulic breaker flat to check the pressure. Do not apply contact pressure to the working tool.

Unscrew the plug from filling valve "G" and connect up the pressure gauge.

Read off the pressure.

The required pressure in the piston accumulator is as follows:

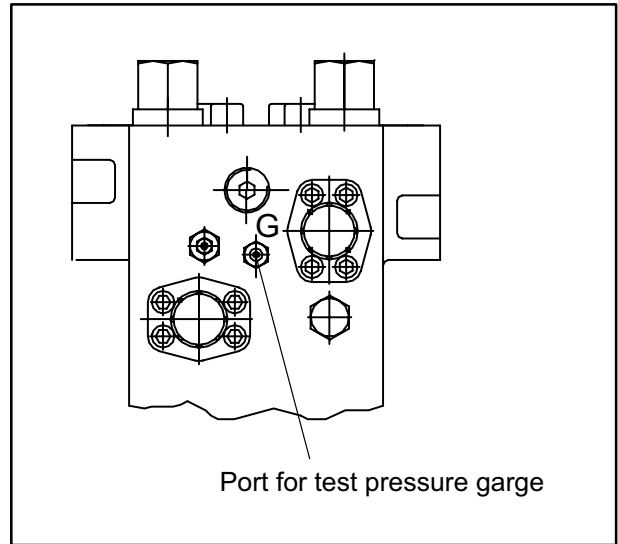
Model	at operating pressure 60-70°C + no contact pressure to the working tool!	
	Minimum gas pressure	Required gas pressure
HB 2200/DP	12,0 bar	15,5 bar
HB 3000/DP	12,5 bar	16,0 bar
HB 4200/DP	8,6 bar	11,5 bar
HB 5800/DP	9,4 bar	12,5 bar
HB 7000/DP	9,0 bar	11,5 bar

Filling/refilling

All tools and parts required for filling are contained in the toolbox.

Preparations:

- Connect the pressure-relief valve to the nitrogen cylinder.
- Connect one nozzle of the filling hose to the Minimes port on the pressure-relief valve.
- Close the pressure-relief valve
- Open the valve on the nitrogen cylinder



- Unscrew the plug from filling valve "G".
- Press the free nozzle on the filling hose into the filling valve "G".

Filling the piston accumulator:

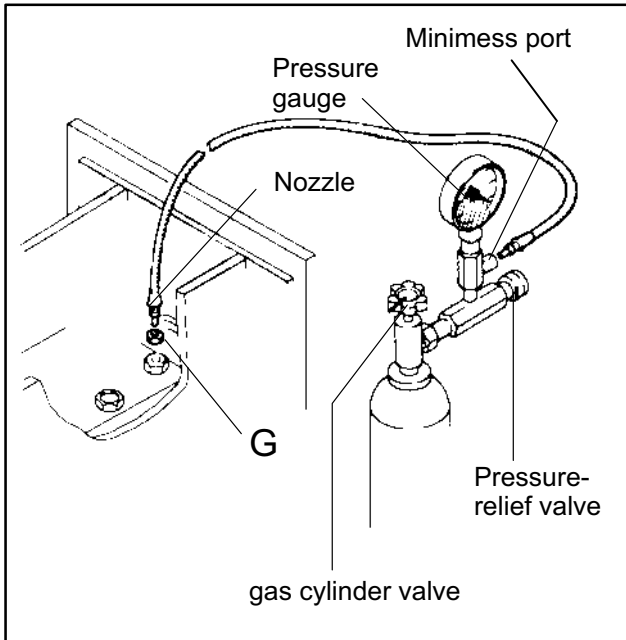
- Slowly open the pressure-relief valve to allow the nitrogen to flow into the piston accumulator. The pressure increase can be read on the pressure gauge.
- Close the pressure-relief valve when the pressure in the piston accumulator has reached the required level +10 %.
- Pull the filling hose out of filling valve "G".

Checking and lowering pressure:

- Remove the filling hose from the pressure-relief valve and connect it to the pressure gauge.
- Press the free nozzle of the filling hose back into filling valve "G" and read off the pressure.
- The pressure in the piston accumulator can be lowered to the required reading by repeatedly pushing in and pulling out the hose nozzle.

After filling:

- Screw the plug back onto filling valve "G" to close it.
- Close the valve on the nitrogen cylinder
- Open the pressure-relief valve fully to allow any residual gas to escape.
- Remove the pressure-relief valve.



Use only nitrogen from the green gas cylinder to fill the piston accumulator.

Never use any other gas, e.g. air or oxygen.

DANGER: risk of explosion

When filling the piston accumulator, ensure no-one is in the vicinity of the working tool.

If the tool has jammed, the increase in pressure in the piston accumulator may cause it to spring out suddenly.

DANGER: risk of injury!



DANGER!

Warning:

Only use the hose nozzle to relieve the pressure.

Never use nails, screwdrivers or similar objects for this purpose as they will damage the filling valve.

Before removing the complete filling valve " G ", the piston accumulator must be completely depressurised. To this end unscrew the valve plug and depress the valve piston in the filling valve using the nozzle of the filling hose.

This will allow the nitrogen to escape safely from the cylinder cover of the hydraulic breaker.

9.4.10 Checking that the high-pressure accumulator is in perfect working order

If the normally motionless pressure hose to the breaker (port " P ") starts to jerk violently, there is a problem with the high-pressure accumulator.

Switch off the hydraulic breaker immediately and replace the high-pressure accumulator.

Before mounting/dismounting the hydraulic tool and/or any maintenance work on the hydraulics of the hydraulic tool/carrier the hydraulic system must be depressurized.

Check the pressure accumulator in accordance with the national safety provisions. We recommend five-yearly maintenance intervals.



DANGER!

9.4.11 Checking the hydraulic lines before starting work

Carry out a visual check on all lines (pipes and hoses) from the pump to the hydraulic breaker and back to the tank. Tighten any loose screw couplings

and hose clamps. Damaged pipes/hoses must be replaced.

9.4.12 Checking the adapter bolts for wear

This visual check is only possible when the hydraulic breaker has been dismantled from the excavator. If

excessive wear is detected (cracks, notches, noticeable indentations etc.) the screws must be replaced.

9.4.13 Checking and cleaning the hydraulic oil filter

An oil filter must be fitted in the return line to the hydraulic system. The oil filter must have a mesh no greater than 50 microns and be equipped with a magnetic separator.

A new oil filter cartridge should be fitted for the first time after 50 operating hours. Thereafter the oil filters should be checked every 500 operating hours and changed if necessary.

10 Troubleshooting

10.1 Breaker does not start

Cause	Remedy	by
Pressure and return lines mixed up	Connect breaker hoses correctly	Excavator driver
Check valve in pressure and/or return lines closed	Open check valve	Excavator driver
Gas pressure in piston accumulator too high	Check pressure in piston accumulator, reset to correct value	Excavator driver
Oil level in tank too low	Refill oil	Excavator driver
Defective screw couplings blocking pressure or return line	Replace defective coupling halves	Workshop
Electrical equipment for breaker hydraulics defective	Check electrical equipment for breaker hydraulics	Workshop
Magnet on switch-on valve defective	Replace magnet	Workshop
Operating pressure too low	Check excavator engine speed, Check pump delivery and pressure-relief valve; check operating pressure	Excavator driver or Customer Support
Pressure shut-off valve activated (HB 5800 und HB 7000)	Check and reduce carrier engine speed and/or mode level	Excavator driver

10.2 Impact rate of hydraulic breaker too low

Cause	Remedy	by
Inadequate hydraulic oil delivery	Correct excavator engine speed; check operating pressure; check setting on carrier	Excavator driver
Loose coupling in pressure or return line	Check coupling, tighten if necessary	Excavator driver
Check valve in pressure or return line partially closed	Open check valve	Excavator driver
Flow resistance too high on oil filter or oil cooler	Check oil filter/cooler, clean or replace	Excavator driver
Gas pressure in piston accumulator too high	Check gas pressure in piston accumulator, bleed off if necessary	Excavator driver
Working tool jams in lower breaker part Note: contact pressure must be applied along hydraulic breaker axis	Correct boom direction; deburr working tool; check wear to working tool and wear bushes	Excavator driver
Inside diameter of return line too small	Change inside diameter Refer to Section 13, Technical specifications	Workshop
Return pressure too high	Check and lower return pressure	Customer Support
Hydraulic oil returns to tank via valve section. Not permitted!	Note: hydraulic oil must return direct to tank or to filter	Customer Support or Workshop
Diaphragm in high-pressure accumulator defective Note: hose at port " P " jerks violently	Replace high-pressure accumulator. Note: Observe the national safety regulations	Workshop
Temp. of hydraulic oil in tank above 80 °C	Check oil level in hydraulic tank and top up if required	Excavator driver
Hydraulic oil pressure too low	Check pressure, modify if necessary; fit new type-tested pressure relief cartridges where necessary	Workshop

10.3 Impact force too low

Cause	Remedy	by
Gas pressure too low	Fill piston accumulator	Excavator driver
Delivery rate from hydraulic system pump inadequate	Check pump characteristics with measuring device and compare with original specifications; if necessary replace pump	Checking: Customer Support Replacing: Customer Support of excavator manufacturer

10.4 Impact rate too high and impact force too low

Cause	Remedy	by
No gas in piston accumulator	Fill piston accumulator	Excavator driver
O-rings defective HB 2200: parts. 18 und 20 * HB 3000/4200 parts 28 und 42 * HB 5800: parts 24 und 28 * HB 7000: parts 16 und 18 *	Replace O-rings	Workshop

* parts nos refer to valid spare parts lists

10.5 Oil leaks from ports » P « and » T «

Cause	Remedy	by
Cap nuts loose	Tighten cap nuts	Excavator driver
CL hose connection on port " P " for ContiLube® II (or plug if ContiLube® II not fitted) loose	Tighten hose connections Tighten plug	Excavator driver

10.6 Oil leaks between cylinder cover and cylinder

Cause	Remedy	by
Tie rods loose	Tighten tie rods	Workshop
Seals defective	Replace seals (see spare parts lists)	Workshop

10.7 Oil leaks from parts of hydraulic system for breaker (Screw couplings, hoses etc.)

Cause	Remedy	by
Screw couplings loose; flange connections on valve loose	Tighten screw couplings; if necessary replace defective parts; check hydraulic system for breaker, replace defective parts Note: use only genuine spares	Excavator driver or workshop

10.8 Oil leaks from working tool

Cause	Remedy	by
Lower piston seals defective	Dismantle hydraulic breaker; re-place seals; avoid possible excessive lubrication of working tool	Workshop

10.9 Oil leaks from high-pressure accumulator

Cause	Remedy	by
Fixing screws for high-pressure accumulator loose	Replace O-ring a. back-up ring HB 2200, HB 7000: parts 11+12 * HB 3000, 4200, 5800: parts 35 + 36 * Tighten fixing screws	Workshop

* Part nos. refer to valid spare parts lists

10.10 Oil or grease leaks from ContiLube® II

Cause	Remedy	by
Screw couplings are loose	Tighten screw couplings	Excavator driver

10.11 Operating temperature too high

Cause	Remedy	by
Oil level in tank too low	Refill oil	Excavator driver or Workshop
Excavator pump delivery too high; oil is constantly returned to the tank via the pressure-relief valve	Correct excavator engine speed Reset pump	Excavator driver Customer Support
High outside temperature and no oil cooler fitted	Fit oil cooler	Workshop or Customer Support
Pressure-relief valve defective or valve with a bad characteristic curve	Fit new type-tested pressure relief cartridges or a more precise pressure-limiting valve	Workshop

11 Disposal



CAUTION!

Dispose of the hydraulic breaker and the hydraulic oil in accordance with the applicable statutory provisions on environmental protection.

- Put the hydraulic breaker out of operation and disassemble it as described in sections 7.3 and 6.6.
- Dispose of the hydraulic breaker in line with all applicable regulations or consult an authorised and specialised recycling company.

12 The hydraulic breaker of the HB series

The available versions are listed in the table below.

Versions available in series	2200	2200 DP	3000	3000 DP	4200	4200 DP	5800	5800 DP	7000	7000 DP
AutoControl	●	●	●	●	●	●	●	●	●	●
ContiLube® II	●	●	●	●	●	●	●	●	●	●
DustProtector	-	●	-	●	-	●	-	●	-	●
StartSelect	●	●	●	●	●	●	●	●	●	●
Vibrosilenced Plus	●	●	●	●	●	●	●	●	●	●

13 Technical specifications

Model	HB 2200 HB 2200 DP	HB 3000 HB 3000 DP	HB 4200 HB 4200 DP	HB 5800 HB 5800 DP	HB 7000 HB 7000 DP
Service weight* [kg]	2150	3000	4120	5800	7000
Recommended carrier class [kg]	26 - 40	32 - 50	42 - 75	55 - 100	65 - 120
Impact rate [min ⁻¹] impact rate	AutoControl 280 - 550	AutoControl 280 - 540	AutoControl 270 - 530	AutoControl 280 - 460	AutoControl 280 - 450
Dimensions (excl. working tool)					
Length [mm]	1946/1991	2250	2404	2635	2808
Width [mm]	650	670	670	860	850
Depth [mm]	700	800	800	940	1035
Oil flow rate [l/min]	140 - 180	210 - 270	250 - 320	310 - 390	360 - 450
Operating pressure [bar]	160 - 180				
Max. static pressure [bar] (to be set on pressure-relief valve for breaker circuit)	200				
Piston accumulator** Minimum gas pressure [bar] Required gas pressure [bar]	12,0 15,5	12,5 16,0	8,6 11,5	9,4 12,5	9,0 11,5
Sound power level *** measured [L _p dB (A)] r = 10 m	91	93	92	92	92
Sound power level *** guaranteed [L _{WA} dB (A)]	121	122	122	121	121
Working tool diameter [mm]	150	165	180	200	210
Connecting thread on ports » P « and » T «	Connection flange SAE 1 1/4" - 6000 psi	1 5/8-12 UNF with JIC cone 37°		P: 1 5/8-12 UNF with JIC cone 37° T: 1 7/8-12 UNF with JIC cone 37°	
Inside diameter: Hoses [mm] Pipes [mm]	25 (1") 25 (1")	30 30		Hoses and pipes connecting Connecting » P « = Ø 30 Hoses and pipes connecting Connecting » T « = Ø 40	

* Hydraulic breaker incl. breaker box, working tool and medium sized adapter.

** at operating temperature of 60–70 °C and no contact pressure to the working tool

*** measuring process based on directive 2000/14/EC

Index

A

- Accident prevention regulations, 7
- Advance, 22
- Angle of attack, 23
- Applications, 11
- Attaching the adapter to the hydraulic breaker, 14
- AutoControl - the combined valve system, 26
- AutoControl for normal operations, 26
- AutoControl for special requirements, 26
- Automatic lubrication using ContiLube® II, 28
- Automatic lubrication using of the hydraulic hammer of □the HB series, 28

B

- Breaker does not start, 39
- Breaker rocking, 23

C

- Care and maintenance timetable, 30
- CE markings EC machinery directive 98/37/EC, 10
- CE sticker product groups A, 10
- CE sticker product groups B, 10
- Changing StartSelect modes, 27
- Changing the lubricant cartridge, 28
- Check, 31
- Checking and cleaning the hydraulic oil filter, 38
- Checking that the high-pressure accumulator is in perfect working order, 38
- Checking the adapter bolts for wear, 38
- Checking the breaker box for wear and cracks and checking the □adapter for cracks, 33
- Checking the buffer ring, 32
- Checking the hydraulic lines before starting work, 38
- Checking the impact face of the percussion piston, 32
- Checking the retainer bars, 32
- Checking the wear bushes , 31
- Checking the working tool for wear, 31
- Checking/cleaning the DustProtector zone on the breaker boxes, 33

D

- Dismounting from excavator, 18
- Dismounting the hydraulic breaker from the excavator for short or lengthy periods of non-use, 18
- Disposal, 43
- DustProtector, 20

E

- Explanation of the symbols used in this operating instructions, 7

F

- Filling device for the chisel paste, 29
- Fitting the tool, 20
- Fitting/removing the working tool, 19
- Foreword, 6

G

- Gas, 14
- General information, 11
- Grease, 13

H

- Hydraulic breaker used in tunnelling, 25

I

- Impact force too low, 40
- Impact rate of hydraulic breaker too low, 40
- Impact rate too high and impact force too low, 41
- Installation, 13

L

- Lengthy period of non-use, 19

M

- Main components, 12
- Maintenance work to be performed by the excavator □driver, 28
- Manual lubrication without or upon failure of ContiLube® II, 29
- Media/consumables, 13
- Mineral hydraulic oil, 13
- Mounting the hydraulic breaker on the excavator-hydraulic aspects, 16
- Mounting the hydraulic breaker on the excavator-mechanical aspects, 15

N

- Never drive the working tool into the ground, 23
- Never lever with the breaker, 23
- Never use as a sledgehammer, 24
- Never use for transport purposes, 24
- Non-mineral hydraulic oil, 13

O

- Oil leaks between cylinder cover and cylinder, 41
- Oil leaks from high-pressure accumulator, 42

- Oil leaks from parts of hydraulic system for breaker, 41
- Oil leaks from ports » P « and » T «, 41
- Oil leaks from working tool, 42
- Oil or grease leaks from ContiLube® II, 42
- Operating temperature too high, 42
- Operating the breaker, 25
- Operating the ContiLube® II, 28
- Operating the hydraulic breaker, 22

P

- piston accumulator, 37
- Pressure shut-off valve HB 5800 and HB 7000, 27

R

- refilling if required, 37
- Removing the tool, 21

S

- Scope of supply, 11
- Screw couplings, 34

- Selecting the right working tool, 19
- Short period of non-use, 18
- Starting up the hydraulic breaker, 22
- StartSelect - AutoStart/AutoStop, 26
- Sticker for guaranteed sound level power, 11
- Switching the hydraulic hammer on/off from the carrier, 18
- symbols, 7

T

- Technical specifications, 44
- The hydraulic breaker of the HB series, 43
- Troubleshooting, 39

U

- Umgebungstemperatur hoch, 25
- Using the hydraulic breaker in or under water, 24

W

- Working in low outside temperatures, 25

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