TECNA®
ITALIAN EXCELLENCE

OPERATING MANUAL

Hydraulic breakers TBK series

ENGLISH

AWARDED AMONG THE 100 ITALIAN EXCELLENCE

100 ECCELLENZE ITALIANE

The data specified here only serves as a product description.
A conclusion about a certain condition or suitability for a particular application cannot be derived from the information given here. The information does not absolve the user from making his/her own assessments and conducting tests. Keep in mind that our products are subject to a natural wear and ageing process.

A sample configuration is shown on the front page.
The product delivered can thus deviate from the figure.

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PAR DESCRIPTION

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1 GENERAL INFORMATION

PAR	DESCRIPTION

1.1 FOR THE OPERATING PERSONNEL

This operating manual gives you information regarding the safety, structure, functioning, operation and maintenance of the hydraulic breakers listed below:

TBK80	**TBK180**	
TBK100	**TBK250**	
TBK175	**TBK300**	

This operating manual ensures smooth and safe operation for a long time if the instructions are observed carefully.

Applicable documents

- Spare parts catalogue including the parts list and drawings
- Technical details regarding the hydraulic breakers

Applicable documents regarding supplied components (see section "14. ANNEX")

- See the parts list for the operating manual and data sheets of the individual components where available

The operating personal is mandatory to read the operating manual before to start to use the hydraulic breaker.
The original version of the operating manual is the one in Italian language. In case of doubts about the translation refer to the Italian version.

Safekeeping this operating manual

The operating manual (including the applicable documents) must be stored near the hydraulic breaker, in a dry ambient, protected by external environment, such that it is always accessible.

1 GENERAL INFORMATION

PAR DESCRIPTION

1.2 LIABILITY

TECNA is not liable for any material defect and guarantee claim in case of damage caused due to improper use and unauthorized interferences not provided for in this mounting instruction.

Details regarding material defect claims can be found in the General Terms and Conditions provided by TECNA.

Unauthorized structural modifications to the hydraulic breaker are not permitted for safety reasons.
In addition, you cannot make any changes in the installation (connections among other things).

Parts and components have been specially designed for the hydraulic breaker. We would also like to specifically draw your attention to the fact that parts and special equipment that has not been delivered by us, has also not been approved by us. Installing and/or using such products can affect the safety.

1 GENERAL INFORMATION

PAR DESCRIPTION

1.3 FOR BETTER UNDERSTANDING OF THIS MANUAL

CONVENTIONS

DANGER

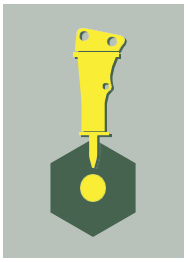
DANGER!
This danger sign indicates an imminent, great danger that, in all probability, causes severe injuries or even death in some cases if the dangerous situation is not dealt with properly.

WARNING

WARNING!
This danger sign indicates a possible danger that can cause severe injuries or even death in some cases if the danger situation is not dealt with properly.

CAUTION

CAUTION!
This danger sign indicates a potentially dangerous situation that can cause minor or moderate physical injuries or material damage if such a situation is not dealt with properly.



NOTE
This sign indicates additional information.

2 SAFETY

PAR DESCRIPTION

2.1 INTENDED USE

The hydraulic breaker has been manufactured in accordance with the generally accepted norms of technology. Nevertheless, there is danger to persons or property if you do not observe the following basic safety instructions and warnings about instructions in this operating manual.

- Read this operating manual thoroughly and in its entirety before you mount the hydraulic breaker and work with it.
- Keep the operating manual such that it is always easily accessible to all users.
- Always pass on the hydraulic breaker to a third party together with the operating manual.

INTENDED USE
Adhere to the operating conditions and capacities mentioned in the Technical Details.
The hydraulic breaker is a technical equipment and not meant for private use.

The intended use also assumes that you have thoroughly read and understood this operating manual and particularly chapter "2 SAFETY". Any other use or any use in excess thereof is considered as improper and thus strictly prohibited.

The operator and/or the user of the hydraulic breaker are responsible for all the damage caused due to improper use.

The hydraulic breaker is not suitable for operation in an explosive environment and the parameters and information in the mounting instruction are applicable at sea level.
The following is included under intended use:

- Following all the notes from the mounting instruction,
- Following the requirements, prohibitions and warnings and
- Adhering to the inspection and maintenance intervals.

2 SAFETY

PAR DESCRIPTION

2.2 QUALIFICATION OF THE PERSONNEL

The mounting, commissioning and operation, removal and maintenance (including maintenance and servicing) require basic mechanical and hydraulic knowledge and knowledge of the relevant technical terms.

Hence, these jobs may only be carried out by one relevant qualified person or an trained person under the supervision of a qualified person in order to ensure operational safety.

A qualified person is someone who can assess the work assigned to him/her, detect possible dangers and take suitable safety measures based on his/her professional training, knowledge and experiences and his/her knowledge about the relevant regulations.
A qualified person must adhere to the relevant technical rules.

2 SAFETY

PAR DESCRIPTION

2.3 PROHIBITION, WARNING, MANDATORY AND INSTRUCTION SIGNS ON THE DEVICE

The following signs are affixed on the hydraulic breaker (EN ISO 7010 2020):

General warning

Crushing warning

Loud noise warning

Hot surface warning

Wear eye protection

Wear safety footwear

Wear ear protection

Wear protective gloves

DANGER ZONE: During the breaker operation it is forbidden to stand within 10 meter from the excavator. Consult the excavator's user manual for further risks when using excavator.

Due to the particular application of the hydraulic breakers, the symbols during life time many often are damaged. It is responsibility of the user to restore them. It is possible contact TECNA to get new symbols to replace the lost ones.

2 SAFETY

PAR DESCRIPTION

2.4 BASIC SAFETY INSTRUCTIONS

2.4.1 GENERAL INSTRUCTIONS

The potential of danger changes due to the interplay of the hydraulic breaker and the excavator because the hydraulic breaker is mounted on the excavator arm. This operating manual does not replace the operating manual of the excavator on which the hydraulic breaker is mounted.
This operating manual must be read and followed.
The safety instructions help to prevent personal injury or damage to property when dealing with the hydraulic breaker and the environment. All users must read these safety instructions and follow them at all times.
In addition to the operating manual, the universally valid as well as local regulations regarding accident control, safety at work and rules for environment protection must be provided and observed.
Follow the instructions about using the hydraulic breaker in the excavator (or any support frame on which is installed) operating manual.

- Use the hydraulic breaker only if it is respected local laws about the noise in the area where operating.
- Repair the defects in the hydraulic breaker immediately. Inform TECNA immediately in case of malfunctions. Do not make any modifications or re-constructions in the hydraulic breaker, otherwise the declaration of conformity becomes invalid and the operating permit is terminated.
- Check the hydraulic breaker for visible defects such as cracks in the casing, screws, covering caps or seals.
- You may not fundamentally modify or re-construct the hydraulic breaker.
- Use the hydraulic breaker within the range of capacity only, which is specified in the Technical Details.
- Do not use the hydraulic breaker in explosive environments if there is no explicit permission for it.
- Wear the necessary protective equipment, e.g. protective helmet, ear muffs, protective clothing among other things as per the requirements.
- Do not wear loose clothing or jewelry that could get caught in the operating elements or other parts of the excavator arm and parts.
- Persons who are under the influence of alcohol, drugs or medicines may not transport, mount, commission, operate or repair the hydraulic breaker.
- The minimum age limit for the operating personnel is 18 years.
- Fasten all the loose objects such as tools and remove these objects from catwalks, levels, etc.
- Ensure that all the safety equipment belonging to the hydraulic breaker is available, installed properly and is fully functional. You may not change the position of the safety equipment, handle it or make it ineffective.
- Ensure that the user can stop working with hammer in any moment by using an EMERGENCY STOP button (it must be present at the excavator on which the breaker is assembled).
- Follow the warning, safety and risk signs attached to the hydraulic breaker. In addition, ensure that these signs are not removed and that they are always legible. Repair in case of damage.

PAR	DESCRIPTION
2.4	BASIC SAFETY INSTRUCTIONS

2.4.1 GENERAL INSTRUCTIONS

- Comply with the prescribed purity level as per ISO 4406 (c) of the hydraulic pressure medium
- You can find information regarding the purity level usually in excavator operating manual.
- Take measures to ensure that there are no dangerous situations for persons and property parameters if the need arises to stop the safety equipment for commissioning or maintenance work for instance. Follow the above-mentioned excavator operating manual for this.

DANGER **RISK OF BURNS!**

The hydraulic breaker heats up intensely during operation and can get very hot when in operation and may cause burns.

» Allow the hydraulic breaker to cool down before you touch it.
» Protect yourself with heat-resistant protective clothing e.g. gloves.
» Follow the ISO 13732-1 and EN 982 standards as well.

- The guarantee is applicable solely for the delivered design.
- The guarantee expires in case of incorrect mounting.
- Pay attention to high-voltage lines, underground cables and feed lines so that they are not damaged during operation. If they are damaged, measures must be taken immediately such that there is no danger due to it.
- Do not work with the hydraulic breaker if any persons are present on the hydraulic breaker (respect min. 10 [m] radius from breaker).
- Depending on the type of connection, keep in mind the pressure condition when connecting to the hydraulic system and when separating from the hydraulic system. The hydraulic system must be operated at zero pressure in case of an emergency.
- Keep persons and animals away from the sphere of activity of the hydraulic breaker during all the mounting and maintenance work.
- Never leave the hydraulic breaker unsupervised during the mounting and maintenance work.
- The hydraulic breaker may not be operated without the safety equipment and protective caps attached by TECNA.
- The defective components must only be replaced with the original parts having the same hydraulic and mechanical data, otherwise the safety and functioning cannot be maintained.
- All the safety equipment, fastenings as well as hydraulic connections and lines must be regularly checked for flawless condition.
- In case of injuries, visit a doctor who is knowledgeable about these injuries.
- Use sufficient respiratory protection in case of lot of dust formation or dust containing asbestos.

PAR	DESCRIPTION
2.4	BASIC SAFETY INSTRUCTIONS

2.4.1 GENERAL INSTRUCTIONS

FOR TRANSPORTATION

- Follow the transportation instructions on the packaging.

FOR MOUNTING AND REMOVING

- Follow the instructions of the manufacturer when using mechanical and hydraulic changing equipment.
- Connect first the breaker to the frame and only after this proceed with the hydraulic connections.
- Check that the excavator circuit pressure (inlet line and backflow line) are both at zero pressure before hydraulic connection.
- Only use a proper tool for that.
- Lay the lines such that they are not damaged.
- Ensure before commissioning that all the seals and fasteners at the ends are fit correctly and are undamaged such that liquids cannot leak out and foreign bodies cannot enter into the hydraulic breaker.
- Pay attention to utmost cleanliness when mounting so as to avoid impurities from entering the hydraulic lines, which could lead to wear and malfunctions in the hydraulic breaker and excavator components on which is installed.

FOR COMMISSIONING

- Ensure that all the hydraulic connections are closed. Operate a fully installed hydraulic breaker only.

FOR CLEANING

- Close all the openings using suitable protective equipment such that the cleaning agents do not enter the system.
- Use a suitable cleaning device for cleaning and follow the instructions regarding the cleaning device.
- Wear protective clothing (e.g. protecting goggles, face mask among other things) when dealing with compressed air or pressurized water.

FOR MAINTENANCE

- Carry out the prescribed maintenance work at intervals specified in the operating manual.
- Ensure that no line links, connections and components come off till the system is under pressure.
- Do not search for leakages with bare hands; the pressure medium can come out with high pressure which can cause injuries.

FOR DISPOSAL

- Dispose of the hydraulic breaker as per the country-specific regulations.
- Dispose of the pressure medium or grease as per the country-specific regulations.
- Dispose of the pressure medium residues or grease in accordance with the valid safety data sheets for pressure mediums and grease.
- Consult TECNA or your dealer when using biodegradable mediums.

2 SAFETY

PAR DESCRIPTION

2.5 DUTIES OF THE OPERATOR

The operator of the hydraulic breaker must train personnel regularly on the following topics:

- Following and using the operating manual as well as the legal regulations
- Intended operation of the hydraulic breaker
- Following the instructions of the site management and the operating instructions of the site operator
- Behavior in case of an emergency

2 SAFETY

PAR DESCRIPTION

2.6 PERSONAL PROTECTIVE EQUIPMENT

The instructions from the regulations, rules, national laws and ordinances must be adhered to.

Follow the country-specific rules and regulations as well.

3 SCOPE OF DELIVERY

PAR	DESCRIPTION

3.1 SCOPE OF DELIVERY

The following is included in the scope of delivery:

- Hydraulic hammer according to technical specification and "order specification".

- **Check the scope of delivery for completeness.**
- **Check the scope of delivery for possible transportation damage, also see section "5. TRANSPORT AND STORAGE".**
- **Check whether the technical specification is delivered and that the operating manual is suitable (per mail or in the internet site).**

4 PRODUCT DESCRIPTION

PAR DESCRIPTION

4.1 TECHNICAL SPECIFICATIONS

The technical specification contains the "Technical Details" to use the hydraulic hammer in the correct way.

Inform your dealer or TECNA, if the Technical Details are not provided during the delivery.

4 PRODUCT DESCRIPTION

PAR DESCRIPTION

4.2 DEVICE DESCRIPTION

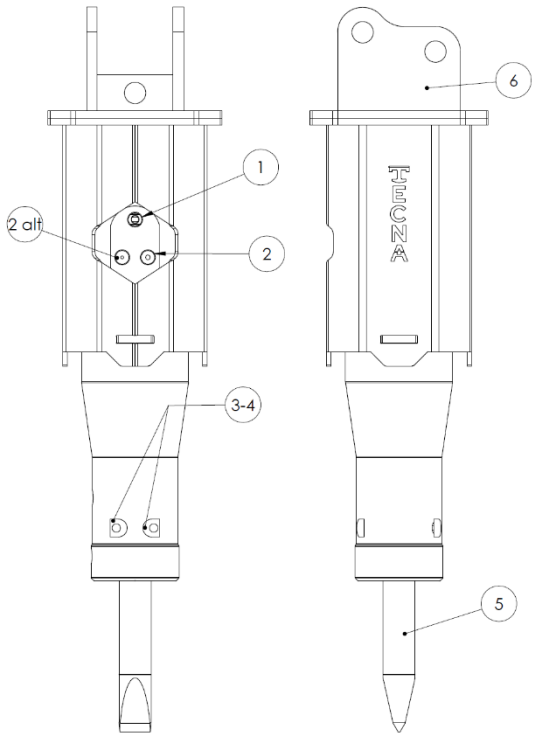


FIGURE 1 – Breaker

A sample design has been shown in the following figure.

The delivered hydraulic breaker can thus deviate from the figure

1 INLET Connection
2 OUTLET Connection
2 Alt OUTLET Connection alternative
3 Retain axle and ring seat
4 Retain axle and ring seat
5 Chisel
6 Cradle (standard or for fast joint)

4 PRODUCT DESCRIPTION

PAR DESCRIPTION

4.3 PRODUCT IDENTIFICATION

INFORMATION ON THE IDENTIFICATION PLATE

The meaning of the information on the identification plate is clarified with the help of the numbered fields from the following figures and the table.

The identification plate is attached on the side of the hydraulic breaker.

FIGURE 2 – Identification plate

N	TYPE OF INFORMATION	N	TYPE OF INFORMATION
1	Name and address of the manufacturer	6	Ideal pressure range [bar]
2	CE mark	7	Allowed flow rate range [l/min]
3	Model name	8	Manufacturing year
4	Serial number	9	Guaranteed sound power level [dB]
5	Input power (max) [KW]	10	Link to user's manual

TABLE 1 – Information regarding the identification plate

5 TRANSPORT AND STORAGE

PAR	DESCRIPTION
5.1	TRANSPORT AND STORAGE / MANUAL TRANSPORTATION

DANGER

DANGER OF MATERIAL DAMAGE AND PERSONAL INJURIES!

The hydraulic breaker or tool can fall down if not transported properly and cause damage to the hydraulic breaker or the tool and/or personal injuries since the parts could be sharp-edged, heavy, oily, unstable, loose and bulky.

» Ensure a stable position when transporting to the mounting location and secure the cargo from shifting.

» Use personal protective equipment (e.g. gloves, work shoes, protective goggles, work clothing, etc.).

» Follow the national laws and regulations for safety at work, health protection and transportation.

» Do not transport the hydraulic breakers on parts which have low stability, e.g. connecting hoses.

PAY ATTENTION TO THE FOLLOWING POINTS WHEN TRANSPORTING MANUALLY:

- Use a suitable technique and tools for lifting, putting down and moving.
- Use personal protective equipment (e.g. gloves, work shoes, protective goggles, work clothing, etc.).
- Do not transport the hydraulic breakers on parts which have low stability, e.g. connecting hoses.

CAUTION

DANGER OF DAMAGE TO HEALTH!

There is a danger of damage to health when lifting the hydraulic breaker or tool.

» It is recommended to use suitable lifting tools for lifting, putting down and moving during manual transportation.

Information regarding the weight of your hydraulic breaker can be found in the Technical Specification.

Transportation damage must be notified to TECNA or your dealer within a week of delivery to the following address:

TECNA Group S.r.l
Zona Industriale, Via Abruzzo 86
70021 Acquaviva delle Fonti (BA) ITALY
Tel. +39 (0) 80 7810000 / +39 (0) 80 3050136
Fax +39 (0) 80 3051812
info@tecnaonline.com / www.tecnaonline.com

You must comply with the environmental conditions specified in the Technical Details for the transportation and storage.

5 TRANSPORT AND STORAGE

PAR DESCRIPTION

5.2 TRANSPORTATION USING A LIFTING TOOL

WARNING

BRUISES AND FRACTURES!

If the hydraulic breakers fall down, they could cause severe injuries, e.g. bruises, fractures.

» Use suitable lifting tools for transportation.

» Pay attention to the prescribed position of the lifting straps.

DANGER

DANGER OF MATERIAL DAMAGE AND PERSONAL INJURIES!

The hydraulic breaker can fall down if not transported properly and cause damage to the hydraulic breaker and/or personal injuries. Parts of the hydraulic breaker can become disjointed or twisted.

» For transporting, do not fasten the hydraulic breakers on parts which have low stability, e.g. connecting hoses.

» Ensure that the sling gear does not rest on parts which have low stability.

Take into consideration the following points during transportation:

- Properties of the load (e.g. weight, center of gravity, fastening and suspension points).
- Manner of suspending or lifting the load.

Ensure that the load bearing capacity of the lifting tool is sufficient for transporting the hydraulic breaker safely. Use textile sling gears – in accordance with **DIN EN 1492-2**.

- Tighten the lifting strap on the hydraulic breaker as shown in **FIGURE 3** and ensure that the lifting strap does not go over the attachments, if installed (e.g. connecting hoses).

FIGURE 3 – Position of the lifting strap

Please contact TECNA for more information regarding the transportation.

5 TRANSPORT AND STORAGE

PAR DESCRIPTION

5.3 MOVING THE EXCAVATOR USING THE MOUNTED HYDRAULIC BREAKER

Follow the instructions in the excavator operating manual when moving the excavator using the mounted hydraulic breaker.

TRANSPORTATION ON THE LOADING PLATFORM

The hydraulic breaker must be positioned flat on the loading platform if the excavator (or the equipment on which it will be installed) is being transported by a different vehicle.
The hoses must not get damaged during the transport, e.g. due to crushing because they are bent to a great extent.

5 TRANSPORT AND STORAGE

PAR DESCRIPTION

5.4 STORAGE

The hydraulic breaker can be stored for up to six months in the company as long as the following criteria are met:

- The hydraulic breaker should be stored in the downward direction perpendicular to the tool so that the existing seals are not damaged due to the dead weight of the hydraulic breaker.

DANGER

DANGER OF MATERIAL DAMAGE AND PERSONAL INJURIES!

The hydraulic breaker must be secured as per the regulations for perpendicular storage to prevent it from falling down so that there is no damage to the hydraulic breaker and/or personal injuries.

» Secure the hydraulic breaker properly from tipping over.

- Store in dry and well ventilated rooms only and protect it from soil humidity.
- Cover with a sheet for protecting from dust and dirt.
- Close all connections using closing plugs.
- After opening the transport package, close it again properly for storage or transportation purposes.

Consult TECNA for storage exceeding six months.

6 MOUNTING THE HYDRAULIC BREAKER

PAR DESCRIPTION

6.1 UNPACKING

Dispose of the packaging as per the country-specific regulations.

6 MOUNTING THE HYDRAULIC BREAKER

PAR DESCRIPTION

6.2 MOUNTING CONDITIONS

The mounting must e done in a dry environment where all the necessary tool for the assembly operation are available and with adequate space to operate in safety condition. In case of quick coupler, this one must be installed at the excavator first, and must be operative before connecting to the breaker.

6 MOUNTING THE HYDRAULIC BREAKER

PAR DESCRIPTION

6.3 REQUIRED TOOL

You can mount and remove the hydraulic breaker using commercial tools.

6 MOUNTING THE HYDRAULIC BREAKER

PAR DESCRIPTION

6.4 NECESSARY ACCESSORIES

You need the following accessories for mounting the hydraulic breaker on the excavator:

- Hydraulic hoses (for connections, see Technical Specification of the hydraulic breaker and the excavator operating manual).

Contact your dealer for more information regarding the accessories.

6 MOUNTING THE HYDRAULIC BREAKER

PAR DESCRIPTION

6.5 MOUNTING

Have a sufficiently big collection container, enough cloth and medium binding materials ready to collect or absorb the hydraulic oil coming out.

DANGER

DANGER OF MATERIAL DAMAGE AND PERSONAL INJURIES!

An incorrectly mounted hydraulic breaker can cause considerable damage to property and persons. An incorrectly fastened hydraulic breaker can move in an uncontrolled manner and damage other equipment.

» Basic mechanical and hydraulic knowledge is necessary for mounting the hydraulic breaker. The hydraulic breaker may be mounted only by qualified personnel (see section "2.2 QUALIFICATION OF THE PERSONNEL").

» Ensure that the hydraulic hammer is fastened securely.

DANGER

DANGER DUE TO USAGE OF AN INCORRECT HYDRAULIC BREAKER RANGE!

Mounting an incorrect hydraulic breaker range, for both oleo-dynamic and weight coupling, can lead to malfunction of the breaker (low performances, rapid component wear) and damage the excavator support frame with consequent risks of injuries for person and object damage.

» Check whether you are using the correct hydraulic breaker on the basis of the model name on the identification plate.

» Check the scope of delivery for completeness.

» Check the scope of delivery for possible damage due to transportation.

» Check whether the operating manual is suitable for the hydraulic breaker.

1. You must ensure that the surroundings are clean before mounting and removing so that dirt does not enter the oil circuit. Only use non-linting fabric or specific paper for cleaning purposes.
2. Place the excavator arm in the optimal position to connect with the cradle and pull up the breaker.
3. In case of quick coupler, connect the breaker to the quick coupler before to pull up.

Follow the instructions of the quick-changer manufacturer, when used.

PAR	DESCRIPTION
6.5	MOUNTING

FIGURE 4: Holding the hydraulic breaker

4. Secure the hydraulic breaker on the quick-changer.

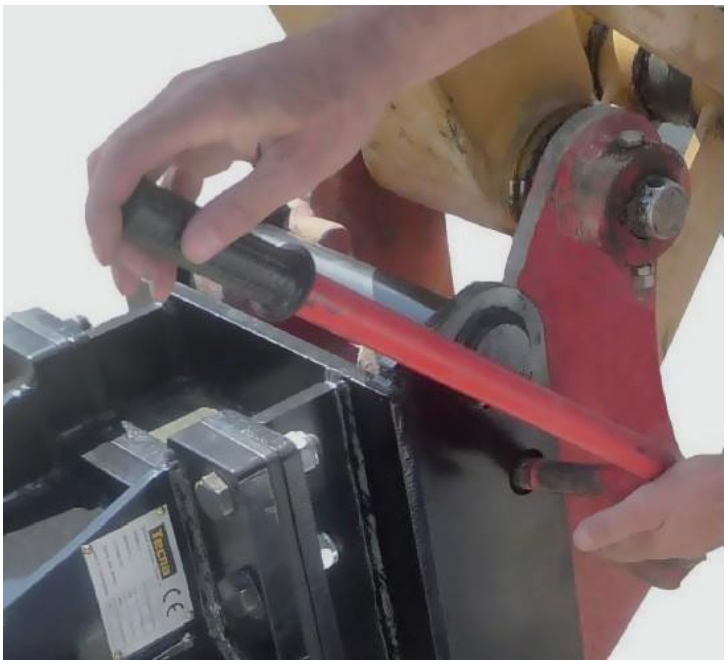


FIGURE 5: Securing the hydraulic breaker

6 MOUNTING THE HYDRAULIC BREAKER

PAR DESCRIPTION

6.6 FITTING AND REMOVING THE PLUG TOOL

FITTING THE CHISEL

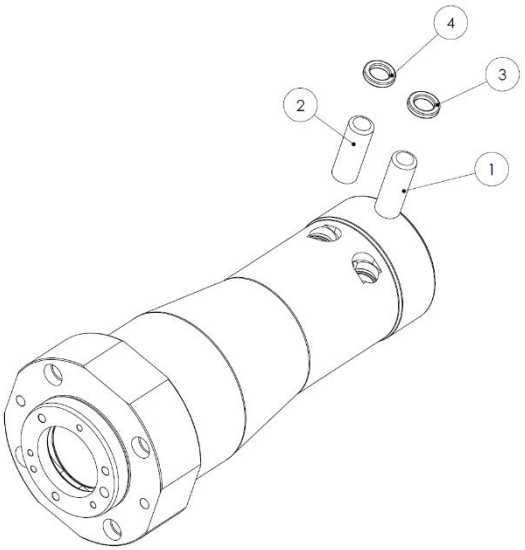


FIGURE 6: Fitting the plug tool

1. Remove blocking rings (3) and (4).
2. Remove the retaining axles (1) and (2).
3. Push the chisel into the seat until it blocks.
4. Insert the retain axles (1) and (2).
5. Insert the blocking rings (3) and (4).

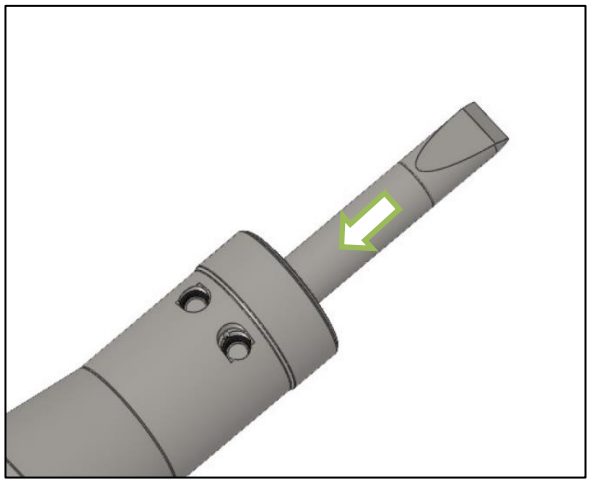


FIGURE 7: Pushing in the chisel

PAR	DESCRIPTION
6.6	FITTING AND REMOVING THE PLUG TOOL

CAUTION

CAUTION!
Pay attention to the weight of the plug tool! Transport the plug tool securely and use a lifting gear if necessary.

REMOVING THE PLUG TOOL

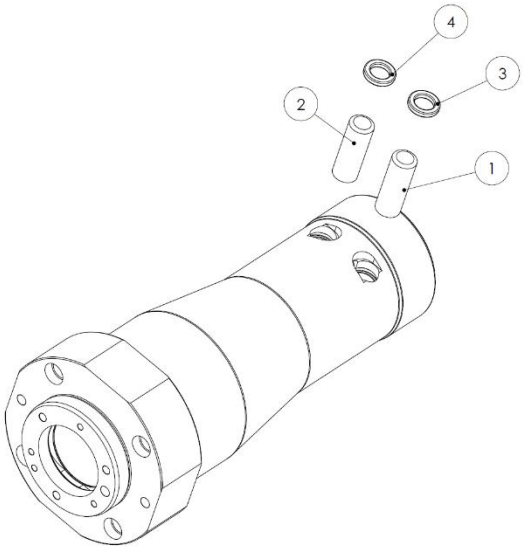


FIGURE 8: Removing the plug tool

1. Remove the blocking ring (3) and (4).
2. Remove the retaining axles (1) and (2)
3. Remove the chisel.
4. Insert the retain axles (1) and (2).
5. Insert the blocking rings (3) and (4).

CAUTION

CAUTION!
Pay attention to the weight of the chisel! Transport the chi securely and use a lifting gear if necessary.

6. Storing the chisel safely and securing it against shifting.

6 MOUNTING THE HYDRAULIC BREAKER

PAR DESCRIPTION

6.7 CONNECTING THE HYDRAULIC BREAKER HYDRAULICALLY

Follow the instructions of the excavator manufacturer.

CAUTION

WEAR AND MALFUNCTION!

The cleanliness of the pressure medium influences the lifetime of the hydraulic system. Impurities in the pressure medium lead to wear and malfunction. Particularly, foreign bodies such as filings in the hydraulic lines can damage the hydraulic system and components of both excavator and hydraulic breaker.

» Pay attention to total cleanliness.
» Check and Fit the connection lines such that they are free of dirt and clean.
» Ensure that no impurities enter the lines when closing them.
» Ensure that cleaning agents do not enter the hydraulic system.
» Do not use cotton waste or lint cloth for cleaning.
» Do not use hemp as a sealant.

CAUTION

DANGER OF INJURY WHEN MOUNTING UNDER PRESSURE!

Ensure that the hydraulic lines and hoses are at zero pressure before your start connecting otherwise you can get injured or damage the hydraulic breaker or the hydraulic system.

» Connect the relevant part of the hydraulic system at zero pressure before you fit the connecting hoses.

Pay attention to the parameters of the hydraulic system.

• Check the parameters of the excavator hydraulic system to ensure that they correspond to the Technical Details of the hydraulic breaker. If they do not correspond, the appropriate change must be made in accordance with the operating manual of the hydraulic system of the excavator.

PAR	DESCRIPTION
6.7	CONNECTING THE HYDRAULIC BREAKER HYDRAULICALLY

CAUTION

DAMAGE TO THE HYDRAULIC BREAKER!

Hydraulic lines and hoses, which are fitted under pressure, generate additional mechanical forces during operation which reduces the service life of the hydraulic breaker and the excavator hydraulic system.

» Fit the lines and hoses without tensioning (w/o pressure).

• Connect all the connections and follow the excavator operating manual.

Pay attention to the different designs of the hydraulic connections of the hydraulic breaker in the following figures. Check the instructions in the technical specification to connect the breaker to the excavator in the correct way.

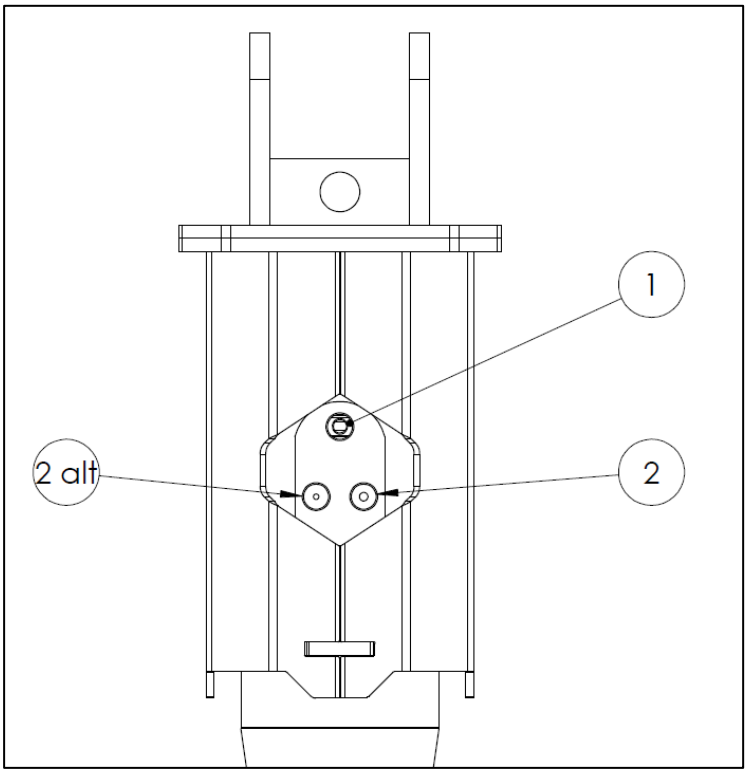


FIGURE 9: Hydraulic connections

PAR	DESCRIPTION

6.7 CONNECTING THE HYDRAULIC BREAKER HYDRAULICALLY

- Remove the protective caps of the hydraulic breaker and support device. Keep them safely since they have to be used again when closing the connections.

- Screw the connections of the hydraulic hoses in the hydraulic breaker and pay attention to the names of the connections:
  Input (IN) - **(1)**
  Output (OUT) - **(2)**
  Alternative Output (OUT Alt.) – **(2 Alt.)**

- Check in the technical specification at which output, 2 or 2 alt. , the backflow line has to be connected (the one not used must be closed with the screw plug).

- Connect the hydraulic hoses to the excavator frame connections and follow the operating manual of the excavator.

- Ensure that hoses are connected to all the connections or that the connections are closed using lock screws.

- Ensure by checking that the pipe fittings are tightened correctly.

Mark all the checked fittings, with a permanent marker for instance.

- Ensure that the pipes and hose lines and every combination of fittings, couplings or joints with hoses or pipes are checked for their safe working condition by a technical expert.

7 COMMISSIONING

PAR	DESCRIPTION
7.1	FIRST COMMISSIONING; RE-COMMISSIONING AFTER A STANDSTILL

DANGER

DANGER OF MATERIAL DAMAGE AND PERSONAL INJURIES!
The commissioning of the hydraulic breaker requires basic mechanical and hydraulic knowledge as well as knowledge regarding the usage of the excavator.
The hydraulic breaker may be commissioned only by qualified personnel (see section "2.2 QUALIFICATION OF THE PERSONNEL").

FIRST COMMISSIONING; RE-COMMISSIONING AFTER A STANDSTILL

Proceed as described in the following sections to operate the hydraulic breaker.

HEATING THE HYDRAULIC BREAKER

- Work carefully (not at max performances) if the temperature of the hydraulic breaker is below -20 °C so that the hydraulic breaker can heat up slowly.
- Ensure that the temperature range of the oil is optimum and do not exceed the max limit indicated in the technical specification.

CONDUCT A LEAKAGE TEST

- Conduct a leakage check of the hydraulic breaker by working for max 1' and then checking that all connections, pipes, and breaker do not show any leakage.

CONDUCTING A FUNCTIONAL CHECK

- Conduct a functional check of the hydraulic breaker by working at least five minutes with the hydraulic breaker.

REFILLING THE TOOL PASTE

- Refill tool paste at the greasing point **(1)**, take a grease-gun and operate it tool paste comes out from the bush.
- Use only copper grease for hydraulic breakers.
  REMARK: Greasing points are always located in the bottom part of the breakers.

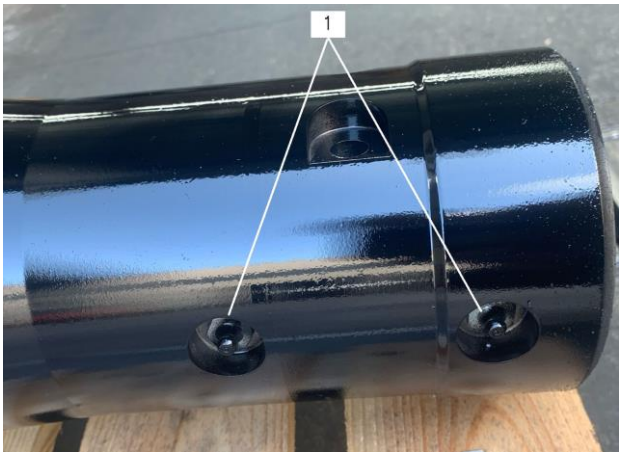


FIGURE 10: Greasing point

8 OPERATION

PAR DESCRIPTION

8.1 OPERATING RANGE

DANGER

DANGER OF MATERIAL DAMAGE AND PERSONAL INJURIES!
Working with the hydraulic breaker requires basic mechanical and hydraulic knowledge and knowledge regarding the use of the excavator.
Only qualified personnel may work with the hydraulic breaker (see section "2.2 QUALIFICATION OF THE PERSONNEL").

OPERATING RANGE

DANGER

DANGER OF MATERIAL DAMAGE AND PERSONAL INJURIES!
The excavator may be come unstable and can topple if the hydraulic breaker mass exceed the limit indicated in the excavator technical sheet.
Nobody should be present within 10 m of the tool when the hydraulic breaker is in operation since torn material can fly around.

» Stick to the operating range and follow the operating manual of the excavator.

» Stop work with the hydraulic breaker immediately if any persons are present in the operating range.

The hydraulic breaker must always be within the operator's field of vision during operation.

8 OPERATION

PAR DESCRIPTION

8.2 SITE SELECTION

The excavator should stand on a smooth firm ground, while working with the hydraulic breaker. Extra caution must be exercised in case of an uneven, sloping or movable sub-surface; see operating manual of the excavator.

8 OPERATION

PAR DESCRIPTION

8.3 INFORMATION REGARDING THE MODE OF OPERATION

- Use the hydraulic breaker only for removing stones, concrete and other solid material.
- Use the correct tool and method for the corresponding material when working, see chapter "9. TOOL".
- Use a moil point or chisel tool for breaking the material by penetrating into it.

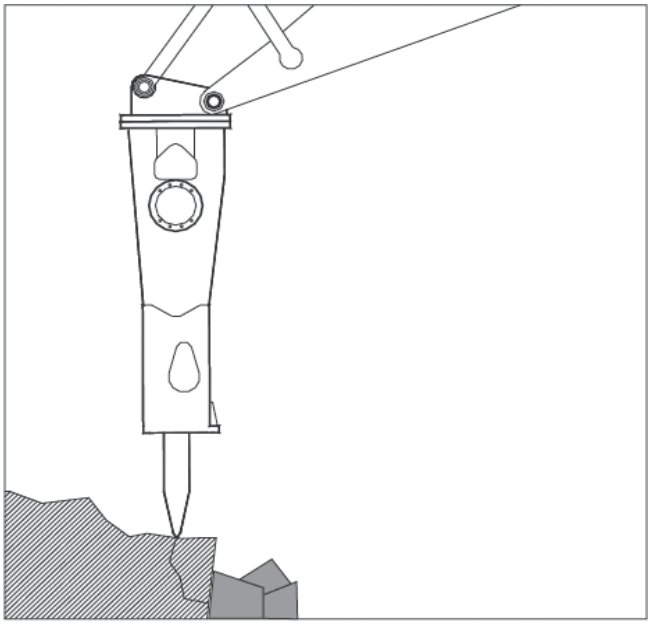


FIGURE 11: Breaking the material by penetrating

- Use a blunt tool for breaking the material using pressure wave.

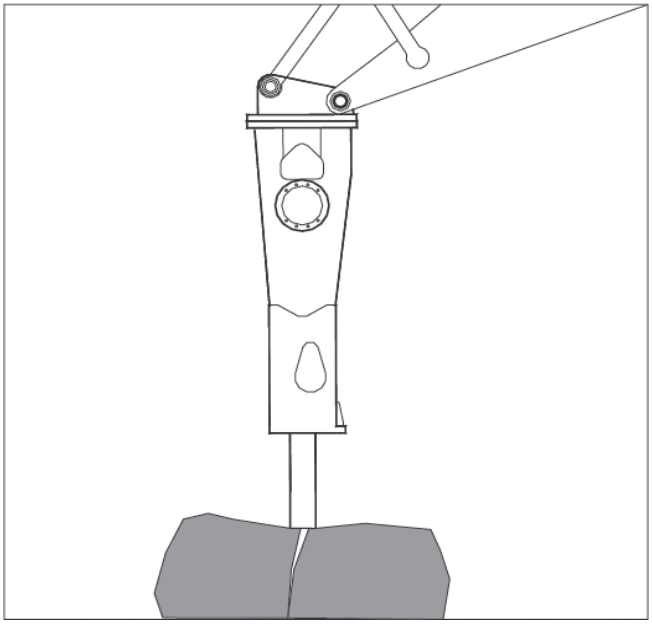


FIGURE 12: Breaking the material using a mechanical pressure wave

PAR	DESCRIPTION

8.3 INFORMATION REGARDING THE MODE OF OPERATION

- Always position the tool perpendicular to the surface to be broken.

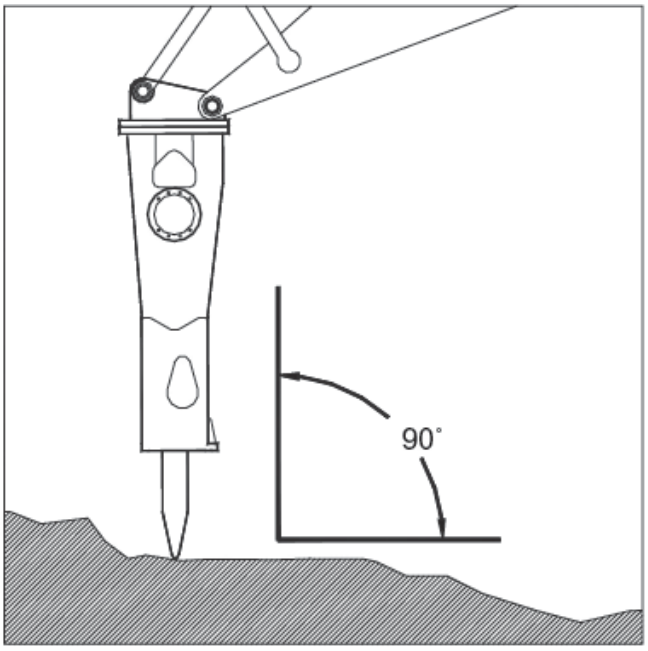


FIGURE 13: Positioning the tool perpendicularly

- Avoid minor irregularities on the surface to be broken when positioning the tool.
- Put correct pressure with the jib. Vibrations can be transferred to the excavator frame, which can cause damage to it, in case of too low or too high pressure of the jib on the hydraulic breaker.

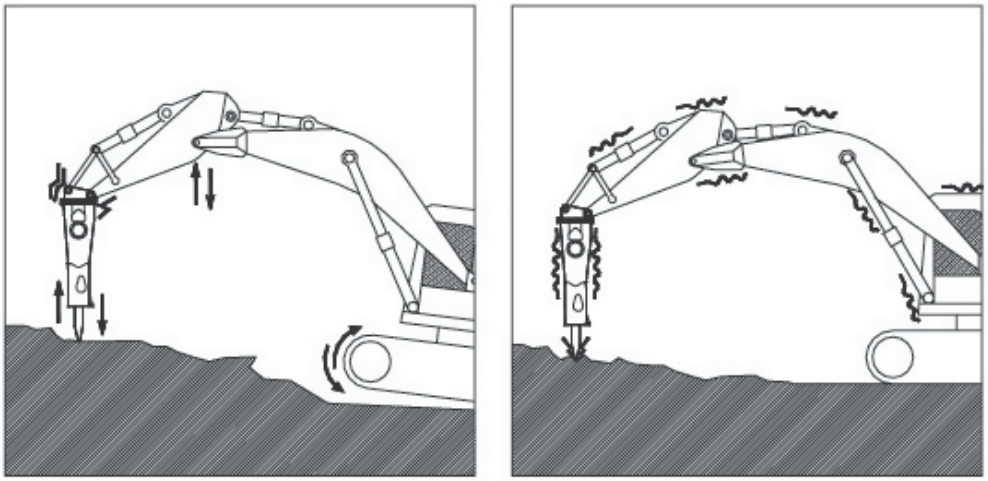


FIGURE 14: Vibrations

- Avoid strokes without load since it may damage the hydraulic breaker.
- Do not use the hydraulic breaker as a ripper or break lever.

PAR	DESCRIPTION

8.3 INFORMATION REGARDING THE MODE OF OPERATION

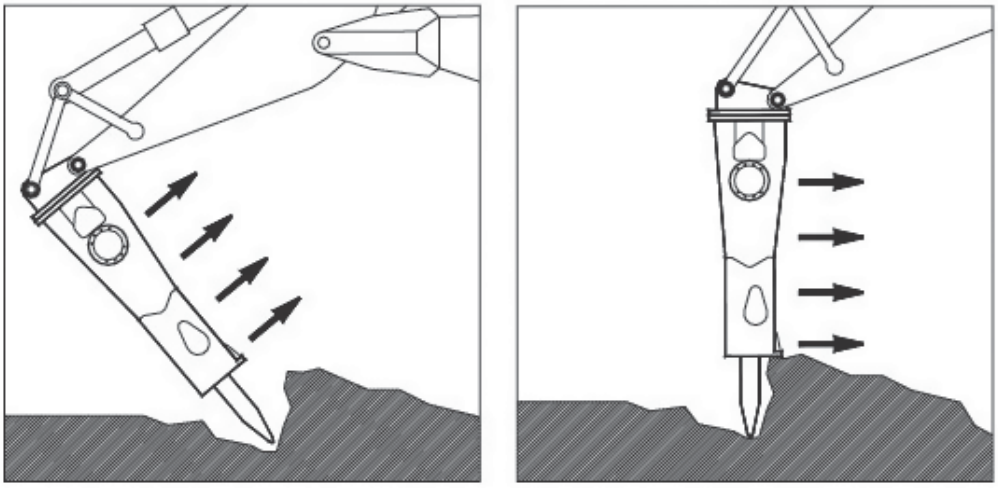


FIGURE 15: Do not rip

- Do not operate the hydraulic breaker for more than 30 seconds at the same point without the tool penetrating. It can lead to overheating and damage the tool tip. Search for a suitable point where the tool can penetrate, e.g. a weak spot in the material.
- Do not rotate the excavator such that you take support of the tip.

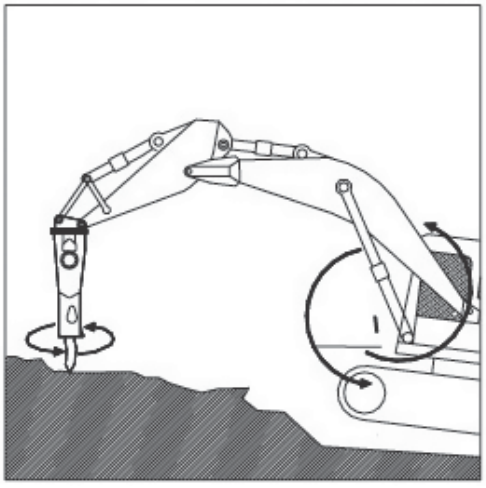


FIGURE 16: Do not rotate the excavator by the tip

- Keep the hydraulic breaker in a perpendicular position for at least one minute after every working hour if the hydraulic breaker has been operated in a horizontal position or upside-down position. This allows stones to come out from the bush for instance.

PAR	DESCRIPTION

8.3 INFORMATION REGARDING THE MODE OF OPERATION

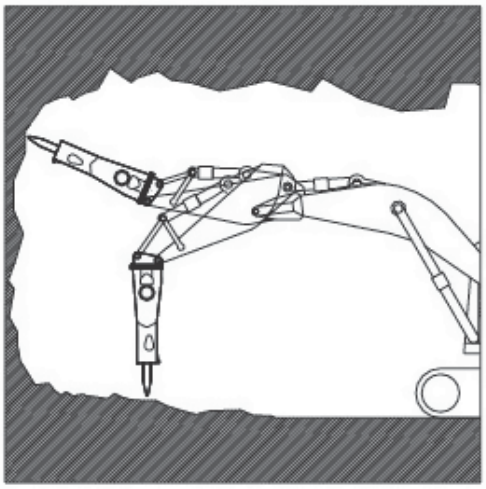


FIGURE 17: Perpendicular position due to upside-down position

- Do not operate the hydraulic breaker in case of fully lowered hydraulic cylinders at the jib.
- Ensure that the excavator parts (jib, hydraulic lines among other things) is not touched or damaged when moving the hydraulic breaker.
- Do not use the hydraulic breaker as a transportation device including the lugs.

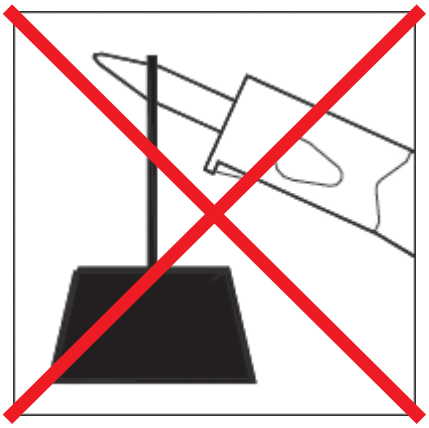


FIGURE 18: Hydraulic breaker is not a lifting tool

- Do not use the hydraulic breaker as a clearing device to remove material from the operating range.
- Work very carefully for the first 15 minutes at temperatures below 0 °C so that the tool can heat up slowly. Generally the tool should not be heated, in case never over 10°[C] (tool temperature), e.g. with a welding torch.
- According to the Technical Details of the dealer or authorized Service, change the nitrogen filling pressure if the hydraulic oil temperature is constantly above 70 °C.

8 OPERATION

PAR DESCRIZIONE

8.4 PROCESS FLOW

In this section, working with the hydraulic breaker has been described using an example as a process flow. Working with the hydraulic breaker requires using the excavator support frame and hydraulic circuit, w/o using excavator the breaker cannot work standing alone; therefore, the operation of the excavator support frame must be observed and hence this example can only be considered as information.

PRE-CONDITIONS

- The hydraulic breaker is attached to the quick-changer of the excavator support frame, see chapter “6. MOUNTING THE HYDRAULIC BREAKER”.
- The excavator with the breaker is standing in the working area.

WORK STEPS

- Start the excavator and execute further work steps for the operation as per the operating manual.
- Position the tool at the desired position.
- Firmly press on the material to be broken using the hydraulic breaker. The correct pressure is built if the excavator support frame gives the impression of becoming lighter.
- Start the hydraulic breaker and follow the instructions in section "8.3 INFORMATION REGARDING THE MODE OF OPERATION".
- Maintain the pressure and break the material by penetrating or by means of pressure waves.
- Change the position of the hydraulic breaker if the material is not broken within 15 seconds.
- Stop the hydraulic breaker if the material is broken.
- Repeat the preceding work steps till all the material has been broken and follow the instructions in section "8.3 INFORMATION REGARDING THE MODE OF OPERATION".
- Stop the excavator.

8 OPERATION

PAR DESCRIPTION

8.5 UNDERWATER OPERATION

The hydraulic breaker must be equipped with the corresponding kit for performing work under water. For more information, e.g. mounting the kit, maintenance, etc., please contact your dealer or the TECNA Customer Service.

9 TOOL

PAR DESCRIPTION

9.1 TOOL

Selecting the correct tool best-suited for a particular application is of great importance not only with respect to an increase in productivity of the hydraulic breaker but also with respect to the service life of the tool itself.

The hydraulic breakers are available with a range of specially-designed tools.
Here is a description of the most widely used tools for the most common jobs; customers can feel free to contact our Technical Department for special cases in order to find suitable solutions for any possible problems that may crop up or for specific problems. The preferences of the user, the type of machine and the special working conditions can also influence this choice.

The following overview serves as general information.

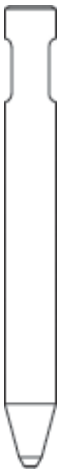
Chisel tool	Moil point tool	Blunt tool
		
Method **Penetrate and break**	**Method** **Penetrate and break**	**Method** **Knock and break**
Suitable for all kinds of digging or narrow trenching on soft/medium stratified rocks	Suitable for fine/medium-concrete demolition or soft, non-stratified rocks. Secondary breaking of hard and very hard blocks.	Suitable for fine/medium-concrete demolition or soft, non-stratified rocks. Secondary breaking of hard and very hard blocks.
Examples • Sandstone and soft metamorphous stone • Concrete demolition • Trenching • Roadwork • Frozen floor • Compacted soil	**Examples** • Sandstone and soft metamorphous stone • Concrete demolition • Trenching • Tunnel construction • Roadwork	**Examples** • Granite and hard metamorphous stone • Concrete demolition • Crushing boulders • Tunnel construction • Roadwork

TABLE 2 - Tools

10 MAINTENANCE (DIN EN 31051)

PAR	DESCRIPTION
10.1	CLEANING AND SERVICING

CAUTION

PENETRATING DIRT AND FLUIDS LEAD TO FAULTS!
Safe functioning of the hydraulic breaker is thus not ensured because of that.

» Pay attention to maximum cleanliness when working on the hydraulic breaker.

» Use a suitable cleaning device and follow the instructions regarding the cleaning device.

CAUTION

DAMAGE TO THE SURFACE DUE TO SOLVENTS AND AGGRESSIVE CLEANING AGENTS!
Aggressive cleaning agents can damage or ruin the seals and the surface of the hydraulic breaker and thus cause them to age faster.

» Never use solvents or aggressive cleaning agents.

» Use a suitable cleaning device and follow the instructions regarding the cleaning device.

CAUTION

DAMAGE TO THE HYDRAULIC SYSTEM AND SEALS!
The water pressure of a cleaning device can damage the hydraulic system and seals of the hydraulic breaker. Water displaces the oil from the hydraulic system and the seals.

» Use a suitable cleaning device and follow the instructions regarding the cleaning device.

- Close all the openings using suitable protective caps.
- When using damp cloths, the cloth must be made of a non-linting material. For that, only use water and a mild cleaning agent if necessary and follow the operating manual of the excavator regarding cleaning.

10 MAINTENANCE (DIN EN 31051)

PAR DESCRIPTION

10.2 INSPECTION AND MAINTENANCE

DANGER

DANGER OF MATERIAL DAMAGE AND PERSONAL INJURIES!
The safety instructions in chapter “2 SAFETY” must be followed.

- Always use the necessary personal protective equipment, safety shoes, protective gloves, etc.!
- The excavator must be stopped before working on the hydraulic breaker if the hydraulic breaker is still attached to the jib.
- Safeguard from an inadvertent re-start of the excavator (take out the key) and attach a corresponding warning sign. Depressurize the hydraulic system for the hydraulic breaker; see the operating manual of the excavator or the hydraulic system.

DANGER

DANGER OF DAMAGE!
Incorrect filling quantity and/or unsuitable lubricant (tool paste) causes damage to the hydraulic breaker!

10.2.1 ESTABLISHING PRESSURE RELIEF ON THE HYDRAULIC SYSTEM

The hydraulic system must be regulated, refer to the indication in the excavator manual . The hydraulic circuit relief valve must be set to the value indicated in the breaker technical specification.

10.2.2 LOG

The inspection and maintenance conducted must be documented completely, see section "14.2 PROOF OF MAINTENANCE".

10.2.3 INFORMATION REGARDING THE MAINTENANCE AND INSPECTION BODY

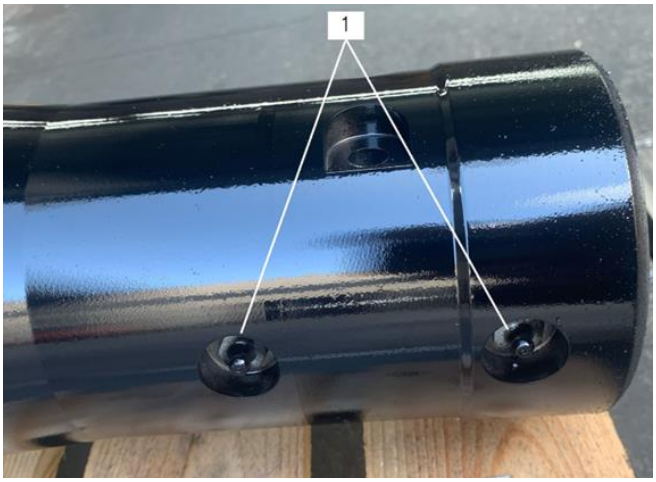


FIGURE 19: Lubrication point - (1) Lubricating nipple

A sample design has been shown in the following figure. The delivered hydraulic breaker can thus deviate from the figure.

PAR	DESCRIZIONE
10.2	INSPECTION AND MAINTENANCE
10.2.4	MAINTENANCE AND INSPECTION PLAN

Follow the maintenance and inspection instructions of the excavator; see the operating manual of the excavator.

WEAR MAINTENANCE

All movable parts are subject to wear, which depends on the operating time, load factor and the operating conditions. There are a few recommendations since the operating conditions are varied.

Period	Operating hours	Abbreviation in the maintenance and inspection plan
Semi-diurnal	4	1
Daily	8	2
Once in two weeks	80	3
Every 6 months	Approximately 1000	4
Every 12 months	Approximately more than 1500	5

You must reduce the maintenance interval in case of major stress on the hydraulic breaker or due to environmental influences (e.g. lot off dust formation, high humidity).

PAR	DESCRIZIONE
10.2	INSPECTION AND MAINTENANCE

10.2.4 MAINTENANCE AND INSPECTION PLAN

ACTIVITY	REMARK	PERIOD				
		1	2	3	4	5
Lubricating the tool using tool paste on the lubricating nipple, FIGURE 11	**Use the tool paste from section "14.1 TOOL PASTE" only. The period must be shortened to 2 hours if the environment is very dusty.**	X 1)				
Checking all side bolts and visible screw fittings.	**Tighten all the screw fittings if necessary.**	X 1)				
Checking the tool for wear and cracks.	**Sharpen the tool if necessary or replace it with a new tool.**	X 1)				
Checking the hydraulic lines and hoses for damage.	**Replace the hydraulic lines and hoses if necessary.**		X 1)			
Checking the clearance between the tool holder (bush) and the tool	**The clearance may not be greater than 5% of the tool diameter, otherwise immediately ask the dealer or an authorized service to replace the bush.**		X 1)			
Visual checking for leakages.	**Existing leakages must be repaired by the dealer or an authorized service, e.g. replacing seals.**		X 1)			
Checking the tool and the tool holder (bush) for traces of wear.	**The tool must be rotated by 180° and replaced by a new one in case of strong traces of wear and ridges.**			X 1)		
Replacing the seals and diaphragms of the nitrogen accumulator	**In case of tough conditions (high or low environment temperatures) and strong loads. Replacement must be done by the dealer or an authorized service.**				X 1)	
Replacing the seals and diaphragms of the nitrogen accumulator	**In case of normal conditions and normal loads. Replacement must be done by the dealer or an authorized service.**					X 1)
Checking the flow of hydraulic oil through the hydraulic breaker.	**Checking must be done by a qualified person and the check must be documented.**					X 1)
Checking the hydraulic lines and hoses.	**Checking must be done by a qualified person and the check must be documented.**					X 1)
		1) Including the following periods				

The hydraulic breaker must be checked regularly during operation for proper functioning. Inform TECNA immediately in case of malfunctions.

10 MAINTENANCE (DIN EN 31051)

PAR DESCRIPTION

10.3 REPAIRS

DANGER

DANGER OF MATERIAL DAMAGE AND PERSONAL INJURIES!
The safety instructions in chapter “2 SAFETY” must be followed.

TECNA offers you a comprehensive service offer for repairing the hydraulic breaker.

- Only use the original spare parts of TECNA for repairing the hydraulic breaker.
- Repair must be done only by dealers or authorized services.

SAFETY INSTRUCTIONS FOR REPAIRING

The hydraulic breaker may be dismantled for repairs if necessary.

Defective parts must be replaced by new ones, original TECNA parts, same version or latest one if interchangeable.

- Clean the external environment of fittings and devices before dismantling. Do not use cotton waste for cleaning.
- Close all the openings using protective caps.

10.3.5 NITROGEN CHARGING OF THE OIL NITROGEN ACCUMULATOR

GENERAL CONDITIONS

For the breaker to operate correctly, the oil nitrogen accumulator must be charged adequately. The discharged condition of the accumulator is shown by strong vibrations of the hydraulic breaker’s oil feed hose. It is recommended that you disassemble the accumulator every 1000 working hours (six months) and replace the rubber diaphragm even if it appears to be in a good condition; see section "10.2.4 MAINTENANCE AND INSPECTION PLAN".

Once the accumulator is discharged, the polyurethane diaphragm must be replaced under normal conditions, even if the condition appears to be satisfactory.

The oil nitrogen accumulator may be replaced by the dealer or an authorized service only.

PAR	DESCRIZIONE
10.3	REPAIRS

10.3.6 REPLACING HYDRAULIC LINES AND HOSES

Hydraulic lines and hoses must be replaced if the following criteria are found true during the inspection:

- Damage to the outer layer up to the insert (e.g. chafe marks, cuts or cracks)
- Outer layer brittleness (crack formation in the tubing)
- Deformation which does not correspond to the natural shape of the hose line in the depressurized as well as in the pressurized condition (also see DIN 20066)
- Leakages in the hose, hose line or valve
- Damage to or deformation of the valve which affects the functioning and stability of the quick fitting or the hose-fitting connection
- The hose has dislodged from the fitting.
- The connection components are corroded such that it is affecting the functioning and stability
- The installation requirements have not been met (see DIN 20066)
- The duration of storage and use has been exceeded

10 MAINTENANCE (DIN EN 31051)

PAR	DESCRIPTION
10.4	SPARE AND WEAR PARTS

CAUTION

DAMAGE TO PROPERTY AND PERSONS DUE TO DEFECTIVE SPARE PARTS!
Spare parts which do not meet the technical requirements specified by TECNA can cause damage to persons and property.

- Use the original spare parts provided by TECNA.

Spare parts can be ordered with the help of the exploded drawings and parts listreported in the technical specification.

» Specify the following data from the identification plate when placing an order:
– The serial number

» Specify the following data from the parts list:
– The component code

» In addition, specify the following:
– The quantity of the desired spare parts

» The desired mode of dispatch (e.g. parcel, cargo, freight, courier service, etc.).

The order must be addressed to your dealer with the specification of the order number.

11 REMOVING THE HYDRAULIC BREAKER FROM THE EXCAVATOR

PAR	DESCRIPTION
11.1	REMOVING THE HYDRAULIC BREAKER FROM THE EXCAVATOR

WARNING **DANGER OF MATERIAL DAMAGE AND PERSONAL INJURIES DUE TO PRESSURISED EQUIPMENT.**
When operating pressurized and live wire equipment, there is always a danger of injury due to the emergent hydraulic oil or current passing through the body.

» Before dismantling, check whether the hydraulic system is at zero pressure and the electrical drive is idle.

Have a sufficiently big collection container, enough cloth and medium binding materials ready to collect or absorb the hydraulic oil coming out.

1. Position the hydraulic breaker in a safe position for removal.
2. Release the pressure to zero in the hydraulic breake; see the excavator operating manual.
3. Provide a container for collecting the emergent hydraulic fluid.
4. Disconnect the hydraulic hoses from the excavator jib connections.
5. Collect the emergent hydraulic fluid in the container provided and dispose it legally.
6. Close the connections using the corresponding protective caps.
7. Release the hydraulic breaker cradle from the excavator starting from the back pin as illustrated in the figure 20 - 21.

FIGURE 20: Releasing the hydraulic breaker

PAR	DESCRIPTION
11.1	REMOVING THE HYDRAULIC BREAKER FROM THE EXCAVATOR

8. Remove the second pin connecting cradle to excavator. In case of quick coupler refer to quick coupler user manual.

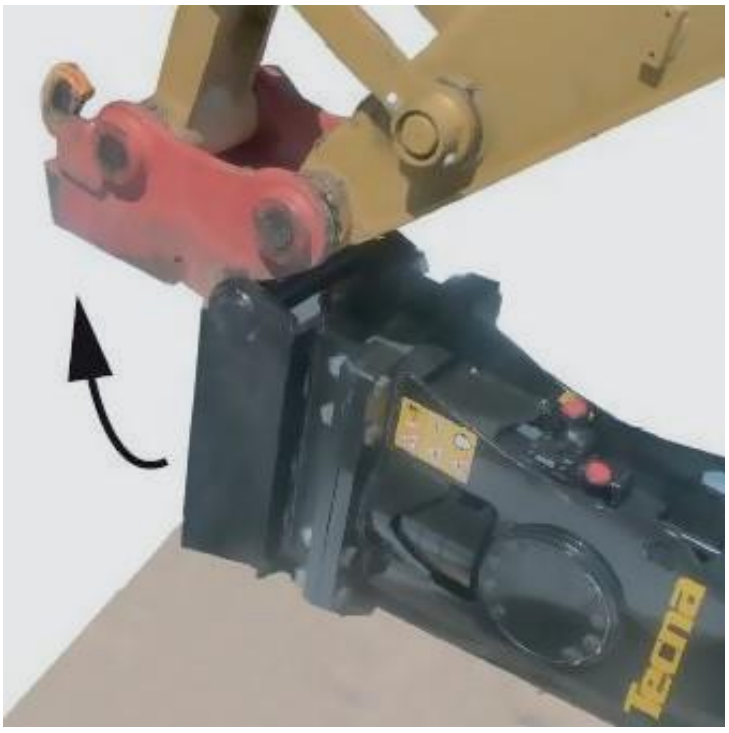


FIGURE 21: Removing the connection to the quick-changer (step 1)

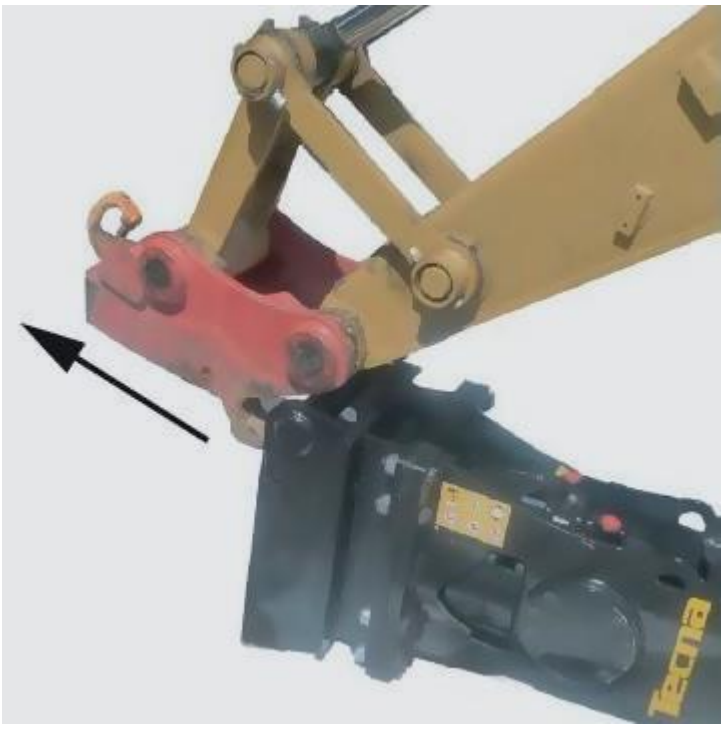


FIGURE 22: Removing the connection to the quick-changer (step 2)

12 DISPOSAL

PAR	DESCRIPTION

12.1 DISPOSAL

Careless disposal of the hydraulic unit and pressure medium can lead to environmental pollution.

Therefore, you must observe the following points:

- Dispose of the hydraulic breaker and pressure medium as per the country-specific regulations.
- The hydraulic breaker does not emit any hazardous substances if it is used as directed. Hence, there are no negative effects on human beings and the environment under normal circumstances.
- The hydraulic breaker can be reused mainly with respect to the material because of the high metal content. An optimum metal recycling can be achieved by dismantling individual assemblies.

13 CAUSE OF MALFUNCTION AND TROUBLESHOOTING

PAR DESCRIPTION

13.1 CAUSE OF MALFUNCTION AND TROUBLESHOOTING

TABLE OF FAULTS

The hydraulic breaker is indifferent to faults if the prescribed operating conditions, particularly the hydraulic oil - and the lubricant quality, are complied with.

The breaker does not operate	
No pressure in the hydraulic system.	**Check the hydraulic system on the excavator; see the operating manual of the excavator.**
Hydraulic oil temperature is too high.	**Check the hydraulic system on the excavator; see the operating manual of the excavator**
Hydraulic breaker is not connected hydraulically.	**Connect the hydraulic breaker to the hydraulic hoses intended for that. Check if inlet and outlet were connected in wrong way.**
The breaker operates with reduced power	
Pressure is too low in the hydraulic system.	**Check the hydraulic system on the excavator; see the operating manual of the excavator. Check the relief valve opening pressure.**
Hydraulic oil temperature is too high.	**Check the hydraulic system on the excavator; see operating manual of the excavator.**
Leakage in hydraulic system.	**Check the hydraulic system and repair the existing leakages.**
Accumulator defect, pressure hoses are vibrating strongly.	**Get the diaphragm of the accumulator removed or replaced from the dealer or an authorized service.**
Oil flow rate is too low.	**Increase the oil flow rate; see operating manual of the excavator.**
The breaker is very irregular	
Alternating pressure in the hydraulic system.	**Check the hydraulic system on the excavator; see operating manual of the excavator.**
Hydraulic oil temperature is too high.	**Check the hydraulic system on the excavator; see operating manual of the excavator.**
Leakage in hydraulic system.	**Check the hydraulic system and repair the existing leakages.**

TABLE 3: Table of faults

For more information on troubleshooting, contact your dealer or an authorized service. See the operating manual of the excavator in case of faults in the excavator circuit.

14 ANNEX

PAR DESCRIPTION

14.1 TOOL PASTE

TECNA recommends to use grease based on copper.
The tool paste specification is listed in Table 4.

TYPICAL PROPERTIES	Method	Typical Value
NLGI class		3
Thickener nature		Organic
Color		Copper plate
Nominal operating range, °C		-20 ÷ 200
Worked penetration @ 20°C, dmm	ASTM D-217	250
Worked stability, 100.000 strokes, dmm	ASTM D-217	275
Dropping point, °C	ASTM D-566	none
Pour point, °C	ASTM D-97	-24
Base oil viscosity grade, ISO	ASTM D-445	>1000
4 ball wear test,1200 rpm, 75°C, 40 Kg. 1 h., mm	ASTM D-2266	0,7
4 ball EP Test, weld load , Kg.	ASTM D-2783	> 800
Evaporation, 22 h. @ 150°C, %	ASTM D-972	< 1
Resistance in humid cabin, h.	ASTM D-1748	> 500
Relative density @ 15°C, Kg./m3	ASTM D-1480	930
Solid contents (Copper, Graphite, Molibdenium Disulfide); w%		11

14 ANNEX

PAR DESCRIZIONE

14.2 PROOF OF MAINTENANCE

Date	Operating hours	Work carried out	Carried out by name, signature

Copy if necessary

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