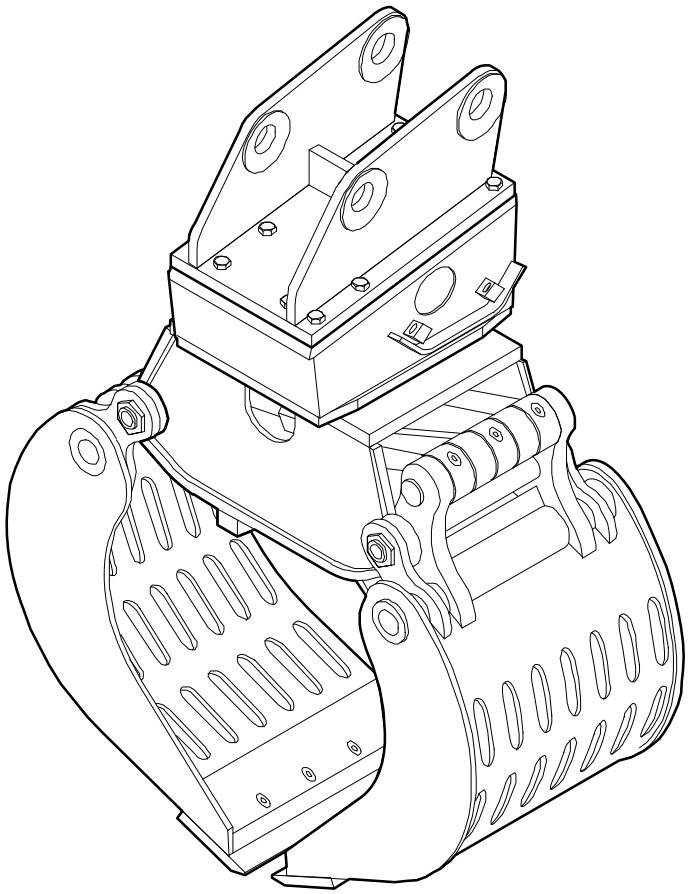
Operating instructions for MultiGapple

MG 100, MG 200, MG 300, MG 400, MG 500, MG 800, MG 1000, MG 1500, MG 1800, MG 2300, MG 2700, MG 5000



Part ID no. 3390 5068 01 - Original instructions

2011-08-02

Atlas Copco

Operating instructions for MultiGrapple

MG 100
MG 200
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MG 5000

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Contents

1 Foreword

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

These operating instructions contain:

- important safety instructions
- operating instructions for the MultiGrapple
- maintenance instructions for the MultiGrapple
- troubleshooting hints.

The operating instructions describe how to use the MultiGrapple 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, i.e. you.

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.

MultiGrippper operation outside the European Union is subject to the laws and regulations valid in the country of use. Please observe any other, more stringent national regulations and legislation related to the actual use.

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

We wish you every success with your MultiGrapple.

Atlas Copco Construction Tools GmbH

2 Accident prevention instructions

To avoid the risk of injury please observe the following instructions!

Familiarise yourself with the operating manual and the applicable instructions and regulations before starting work with the MultiGrapple.

When using the MultiGrapple in member states of the European Union, the regulations contained in the EC Machinery Directive 2006/42/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 where relevant. Please observe any other, more stringent national regulations and legislation related to the actual use.

Explanation of the symbols used in these operating instructions

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

The form and meaning of these symbols is described below:

Note

Marked text sections provide instructions on the correct use of the hydraulic tool aimed at avoiding incorrect operation or errors during work.

CAUTION!

Marked text sections provide safety instructions and hints to **prevent material damage.**

DANGER!

Marked text sections provide safety instructions and hints to
prevent personal injury.
The ultimate goal is accident prevention!

Education and qualification

Transporting the hydraulic tool is only allowed if carried out by people who:

- are authorised to operate a crane or a forklift truck according to the applicable national provisions,
- know all the relevant national/regional safety provisions and accident prevention rules,
- have read and understood the safety and transport sections of these Operating Instructions.

Installing, storing, maintaining and disposing of the hydraulic tool are only allowed if carried out by people who:

- know all the relevant national/regional safety provisions and accident prevention rules,
- have read and understood these Operating Instructions.

Operating the hydraulic tool is only allowed if carried out by qualified carrier drivers. Carrier drivers are qualified if they:

- have been trained to operate a carrier according to the national regulations,
- know all the relevant national/regional safety provisions and accident prevention rules,
- have read and understood these Operating Instructions.

Testing the hydraulic installation is only allowed if carried out by professionals. Professionals are people who are authorised to approve a hydraulic installation for operation according to the national regulations.

The hydraulic tool must only be repaired by professionals trained by Atlas Copco Construction Tools who have read and understood these Operating Instructions. The operational safety of the hydraulic tool is not guaranteed otherwise.

Intended use

Only attach the MultiGrapple to a hydraulic carrier of a suitable load-bearing capacity.

Only use the hydraulic grapple function of this tool for the following activities:

- demolition work (masonry, timber structures)
- sorting and loading work

Intended use also implies observing all instructions in these Operating Instructions.

Use other than intended

Never use the MultiGrapple

- to pull on supports, load-carrying elements and walls
- to push scrap material aside
- for hacking or pounding
- to relocate the carrier by placing the MultiGrapple on the ground to lift the carrier
- to lift or transport loads with lifting gears or sling devices
- under water
- in an environment where there is a risk of explosions

Safety equipment:

Personal safety equipment must comply with the applicable health and safety regulations.
Always wear the following personal safety equipment:

- safety helmet
- safety glasses with side protectors
- safety gloves
- safety shoes
- warning vest

Before attaching the MultiGrapple for the first time:

Before attaching or removing the tool and/or before carrying out any maintenance work on the hydraulic system of the tool/the carrier, ensure that the hydraulic system has been depressurised!

Also observe the operating instructions enclosed by the carrier manufacturer when using / transporting the carrier with the MultiGrapple attached.

Do not run any hydraulic lines for attachment of the MultiGrapple through the driver's cab! Hydraulic lines may spring a leak or even burst! The hydraulic oil gets very hot during operation.

Attaching the MultiGrapple:

Attaching the MultiGrapple 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.

When transporting the MultiGrapple, use only the lugs provided and suitable hoisting equipment!

The MultiGrapple should only be attached to a carrier with sufficient load capacity! The MultiGrapple usually requires carriers as described in chapter 11, Technical specifications.

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

If the MultiGrapple is attached to a carrier above this weight class excessively high mechanical loads may be applied to the hydraulic attachment.

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

Check the hydraulic lines on existing hydraulic systems! -All supply and return lines for the hydraulic oil must have a sufficient inside diameter and wall thickness.

Keep your hands away from bores and fitting surfaces when attaching the MultiGrapple, specifically when the boom is being moved!

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

Operating the MultiGrapple:

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

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

Stop the MultiGrapple immediately if anyone enters the danger zone! During MultiGrapple operation the danger zone is considerably greater than during the excavation operation - on account of fragments of stone 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 secured in a suitable manner through corresponding measures.

The swivel range is greater when unbroken scrap material is extending from the MultiGrapple.

Leaks in the hydraulic system or defective pressure relief valves can cause the MultiGrapple to close or rotate unexpectedly.

Scrap material can get stuck in the grapple leaves. The closing and opening actions can stop during operation and can be resumed unexpectedly.

Never start demolition work with the MultiGrapple in the lower part of a structure, since otherwise the upper structure might collapse.

Do not carry out any movements or demilotion work over the cab, other machines or other people, since parts falling down might cause damage or injuries.

Make sure that there are no gas pipes or other utilities circuits in the work area which might be damaged.

Never work in the vicinity of electric circuits or other sources of electricity. Make sure that there are no hidden circuits in the work area!

When working on floors/ roofs, ensure that they are strong enough to bear the weight of the carrier.

Keep the work area moist by continuously spraying it with water to avoid excessive dust.

Do not grab hold of hot parts!

The MultiGrapple becomes hot during operation.

The temperature of the hydraulic oil must be monitored

to ensure that it does not exceed 80 ^{0}C. If you measure an increased temperature in the carrier tank check the hydraulic installation and the pressure relief valve.

Observe the carrier manufacturer's safety instructions!

CAUTION!

Observe chapter 6.6 when operating the carrier with the MultiGrapple.

The MultiGrapple is only to be used for the applications described.

Removing the MultiGrapple:

Removing the MultiGrapple 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.

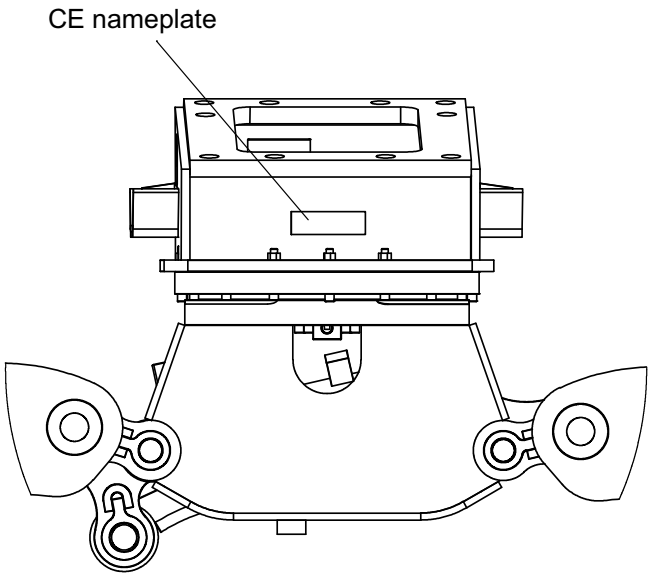
Observe the carrier manufacturer's safety instructions when using and adjusting the carrier.

Keep your hands away from bores and fitting surfaces when removing the MultiGrapple, specifically when the boom is being moved!

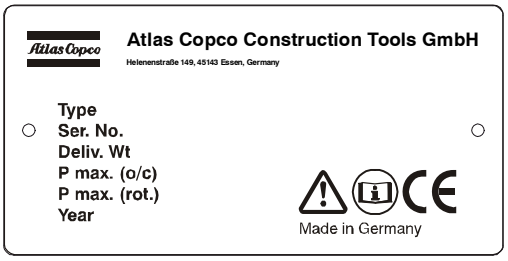
Collect any oil which runs out and dispose of it in accordance with the applicable statutory provisions to avoid environmental hazards.

Secure the MultiGrapple after removal to prevent it from falling over!

3 Marking according to machinery directive 2006/42/EC



3.1 CE nameplate of the MultiGrapple



Name and address of manufacturer
Model
Serial no.
Weight of the hydraulic tool
Max. operating pressure ”Opening/Closing”
Max. operating pressure ”Rotating”
Year of manufacture of the hydraulic tool

The CE nameplate contains information on the MultiGrapple. The weight indication refers to the weight of the MultiGrapple.

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

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.

4 General information

4.1 Applications

The MultiGrapple is an attachment suitable for hydraulically operated carriers.

The MultiGrapple is suitable for the following activities:

demolition work (masonry, timber structures)

sorting and loading work

CAUTION!

Operating mistakes may damage the MultiGrapple and the carrier equipment.

As a rule, the MultiGrapple is operated from the driver's cab of the carrier. See sections 2 and 6.6.

4.2 Delivery

In principle, the MultiGrapple is delivered complete with:

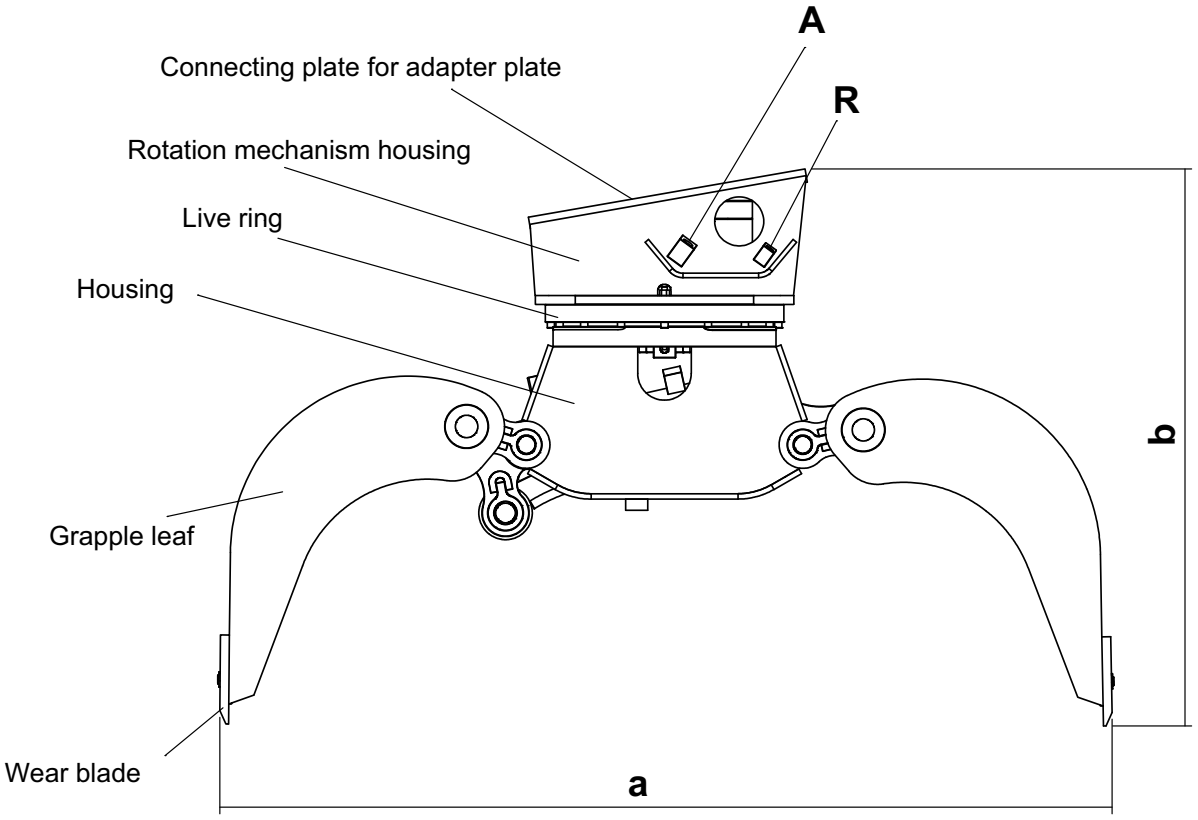
MultiGrapple, Operating Instructions, spare parts list and EC declaration of conformity.

Accessories: hoses as ordered.

Special accessories: e.g. adapter plate, hydraulic fittings for the carrier as ordered.

5 Main parts and components

Connection **A** = open
Connection **B** = close (located on the opposite side of the rotation mechanism housing)
Connection **R** = rotate



5.1 Table of dimensions

Model	a	b	Leaf width	Connections ”open” + ”close”	Rotation connection thread
MG 100	600	600	300	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 16 x 1.5	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 16 x 1.5
MG 200	750	650	450	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 20 x 1.5	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 16 x 1.5
MG 300	1100	750	500		
MG 400	1400	850	600	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 20 x 1.5	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 16 x 1.5
MG 500	1500	900	700		
MG 800	1700	1150	800	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 36 x 2	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 20 x 1.5
MG 1000	1950	1300	800		
MG 1500	1950	1300	1000		
MG 1800	2100	1500	1200		
MG 2300	2250	1650	1200	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 42 x 2	
MG 2700	2230	1700	1200		
MG 5000	3000	2000	1500	SAE 1” 6000 PSI	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 26 x 1.5

6 Installation

Wear your personal safety equipment during all installation activities.

6.1 Agents/consumables

The following consumables are used when operating the MultiGrapple:

6.1.1 Mineral hydraulic oil

All hydraulic oil brands prescribed by the carrier manufacturer are also suitable for operating the MultiGrapple.

However, the oil should comply with viscosity class HLP 32 or higher.

In summer and in hot 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 taken into consideration.

Optimum viscosity range	= 30- 60 cSt
Max. initial viscosity	= 2000 cSt
Max. oil temperature	= 80ºC

Please refer to chapter 7.5 for low-temperature MultiGrapple applications.

Check the oil filter!

An oil filter must be integrated in the return circuit of the hydraulic system. The maximum mesh width allowed for the oil filter is 50 microns; it must have a magnetic separator.

CAUTION!

The temperature of the hydraulic oil must be monitored

to ensure that it does not exceed 80 ˚C. If you measure an increased temperature in the tank check the hydraulic installation and the pressure relief valve.

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 fluids 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 Aftermarket 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.

CAUTION!

Never mix mineral and non-mineral hydraulic oils! Even small traces of mineral oil mixed in with environmentally friendly fluids 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.

6.1.3 Grease

Agents/consumables	Part ID No.
Cutter grease	3363 0949 14

When handling oils and greases observe the safety instructions that apply to these products!

6.2 Transport

DANGER!

Only transport the hydraulic tool with lifting equipment with the right load-bearing capacity for the weight of the hydraulic tool. Only lift and secure the hydraulic tool with lifting gear (ropes, chains, links etc.) with the right load-bearing capacity for the weight to be lifted.

6.2.1 Transport using a crane

You are not allowed to transport the multi grapple with a crane.

6.2.2 Transport using a forklift truck

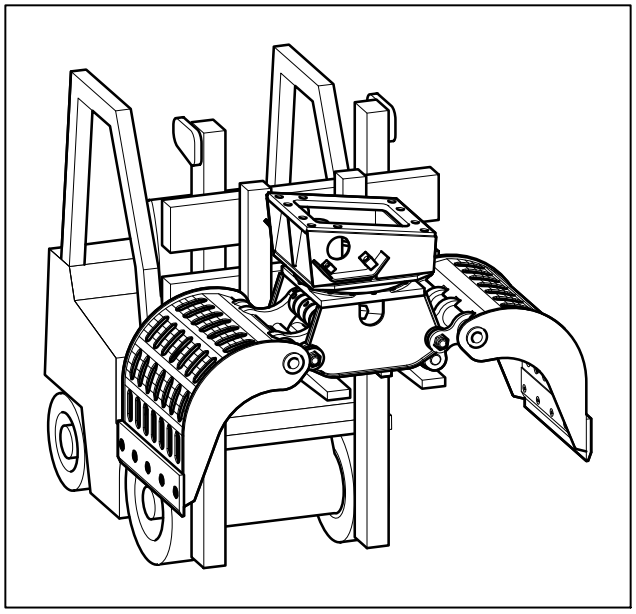
Move the fork of the forklift truck under the opened MultiGrapple so that the centre of gravity is between the prongs.

Move the prongs under the hydraulic tool so that it cannot topple over and fall off.

Make sure that there is nobody near or under the suspended hydraulic tool.

Always open the grapple leaves to transport the MultiGrapple.

Proceed as follows to ensure that the grapple leaves stay open:
Seal all hose ports and connections on the MultiGrapple with the enclosed plug fittings and cap nuts if the hydraulic hoses are removed. If the hydraulic hoses have been attached to the MultiGrapple, plug up the hoses.



Slowly lift the hydraulic tool.

Transport the hydraulic tool to its intended destination.

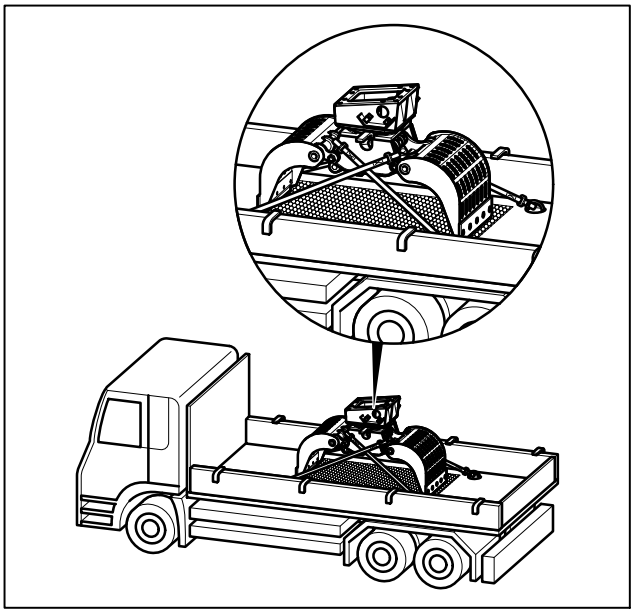
Deposit the hydraulic tool on the floor.

6.2.3 Transport using a lorry

Deposit the hydraulic tool on an anti-skid mat.

Secure the hydraulic tool with ropes or chains to the transport surface.

Secure the hydraulic tool to the loading surface as shown in the following illustration.



6.3 Attaching the adapter plate to the MultiGrapple

DANGER!

The adapter plate can come loose if the fastening screws are not designed for local high loads.

Only use the allen screws of strength category 8.8 and the pairs of lock washers included in the delivery to attach the adapter plate.

Open the grapple leaves and place the MultiGrapple on the floor within reach of the carrier. The hydraulic ports are facing the carrier.

Apply anti-seize compound to the allen screw threads before inserting them. The contact faces of the screw head and the lock washers must not be lubricated.

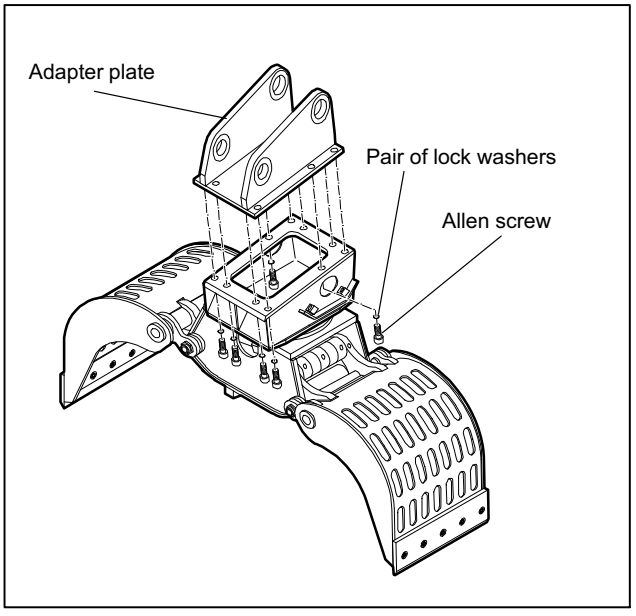
MultiGrapple	Keys and key sizes / tightening torque
MG 100	Allen key size SW 14 / 200 Nm
MG 200	Allen key size SW 14 / 200 Nm
MG 300	Allen key size SW 14 / 200 Nm
MG 400	Allen key size SW 14 / 200 Nm
MG 500	Allen key size SW 14 / 200 Nm
MG 800	Allen key size SW 17 / 390 Nm
MG 1000	Allen key size SW 22 / 1500 Nm
MG 1500	Allen key size SW 22 / 1500 Nm
MG 1800	Allen key size SW 22 / 1500 Nm
MG 2300	Allen key size SW 22 / 1500 Nm
MG 2700	Allen key size SW 22 / 1500 Nm
MG 5000	Allen key size SW 27 / 2300 Nm

DANGER!

Bores and surfaces can act like a pair of scissors and cut off or hurt parts of your body.

Never use your fingers to check bores or fitting surfaces.

Align the adapter plate to the connecting plate on the rotating mechanism housing as shown.



Fit a pair of lock washers onto every screw.

Tighten the allen screws with an allen key.

Tighten the allen screws with the required tightening torque.

6.4 Mechanical assembly of the MultiGrapple to the carrier

DANGER!

Only attach the MultiGrapple to a carrier with sufficient load capacity! (see chapter 11)
If the carrier is too light, it will not be sufficiently stable and it may fall over.

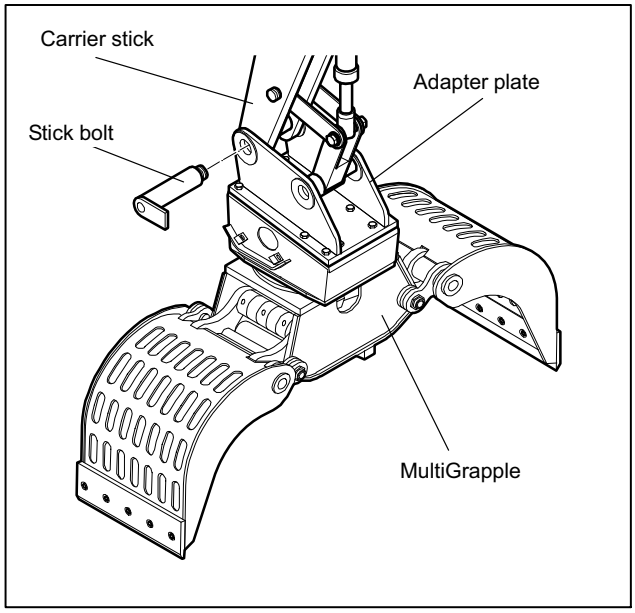
Only operate the carrier from the driver's cab while attaching the MultiGrapple!

The carrier driver and assistant must agree on clear hand signals. The assistant must be instructed by the carrier driver.

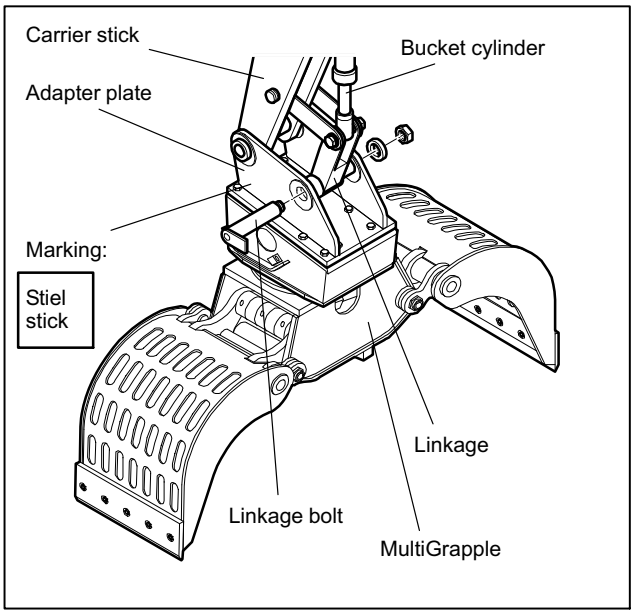
Keep your hands away from bores and fitting surfaces when attaching the MultiGrapple!

Do not grab hold of any parts when the carrier boom is being moved!

Never use your fingers to check that bores are properly aligned!



Position the MultiGrapple with the adapter plate attached so that it is in the same direction as the carrier and its equipment = stick. This will make it easier to move the carrier stick into the adapter plate so that the bores for the stick bolt line up.



To install the linkage bolt, the bucket cylinder of the carrier is moved into the proper position and the linkage is aligned manually. Then install and lock the linkage bolt.

It must be possible to insert the linkage bolt without effort. If not, check that the bores line up.

CAUTION!

Carefully move the bucket cylinder into both end positions after attaching the MultiGrapple. It must be possible to move the cylinder into both end positions without it being stopped by the adapter plate, unless an end stop has been provided on the adapter plate.

6.5 Hydraulic connection of the MultiGrapple to the carrier

DANGER!

<u>Before</u>attaching or removing the tool and/or before carrying out any maintenance work on the hydraulic system of the tool/the carrier, ensure that the hydraulic system has been <u>depressurised</u>!

A suitable hydraulic system for MultiGrapple operation must be available on the carrier.

Check the nominal width of the hydraulic lines on existing hydraulic systems! All supply and return lines for the hydraulic oil must have a sufficient inside diameter and wall thickness.- See section 11, Technical specifications.

Use only hoses/pipes which satisfy the following quality criteria:
Hydraulic hoses with 4 reinforcement wires according 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 person 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 11 Technical Specifications, can never be exceeded.

Lay the throw-off line of the pressure relief valve directly in the tank to ensure the safe functioning of the pressure relief valve!

Do not run any hydraulic lines for attachment of the MultiGrapple through the driver's cab! Hydraulic lines may spring a leak or burst and hot hydraulic oil may escape.

Remove the screw covers from the ports and save them for future use.

Check the connections to the MultiGrapple and the MultiGrapple hoses! Check the connecting threads to ensure that they are undamaged. Clean the connecting threads so that there is no sand or any other foreign matter on them!

Screw the hoses to the ports (you can find the tightening torques in chapter 8.3)

If you come to the conclusion that the system does not comply with the requirements listed above, the MultiGrapple must not be operated. For reasons of safety, consult the Atlas Copco Customer Center/Dealer in your area.

When connecting the hydraulic lines for the first time or when re-connecting them, secure the carrier in such a way that it is impossible for the MultiGrapple to switch on by itself.

6.6 Switching the MultiGrapple on-/off from the carrier

After the proper attachment of the MultiGrapple to the carrier, the MultiGrapple can be operated using the carrier's hydraulic system. All functions for normal excavator operations remain intact. The MultiGrapple is switched on and off using electrical and hydraulic signals. For further details please contact the carrier manufacturer and/or the Atlas Copco Customer Center/Dealer in your area.

When leaving the driver's cab, the safety switch for the electrical/hydraulic MultiGrapple operation system must be set to the "OFF" position
Carry out the above actions to prevent any unintended start-up of the MultiGrapple.

6.7 Removing the MultiGrapple from the carrier for short or long standstill periods

6.7.1 Removal from the carrier

Before attaching or removing the tool and/or before carrying out any maintenance work on the hydraulic system of the tool/the carrier, ensure that the hydraulic system has been depressurised!

For reasons of safety, switch off the carrier prior to carrying out the following activities!

If not described otherwise, removing the MultiGrapple is carried out in reversed order of attaching it.

Fully open the MultiGrapple and deposit it. Do not deposit it anywhere where it would obstruct traffic.

Plug up all open hose connections.

Remove the bolt locks from the linkage- and stick bolts and drive out the bolts with a steel arbour and a hammer.

Put a suitable cover over the MultiGrapple to protect it against the weather influences.

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

DANGER!

The carrier driver and assistant should agree beforehand on clear hand signals.

Keep your hands away from bores and fitting surfaces when removing the MultiGrapple! Do not grab hold of any parts when the boom is being moved!

Observe the carrier manufacturer's safety instructions.

The carrier manufacturer's instructions apply when putting the carrier out of operation.

7 Operating the MultiGrapple

Wear your personal safety equipment when operating the MultiGrapple.

7.1 Starting the MultiGrapple

First take the necessary precautions to make sure that people present are not in danger.

DANGER!

Close the front screen/splinter guard on the driver's cab as protection against splinters of rock flying around.

Stop the MultiGrapple immediately if anyone enters the danger zone! During MultiGrapple operation the danger zone is considerably greater than during the excavation operation - on account of fragments of stone 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 secured in a suitable manner through corresponding measures.

The swivel range is greater when unbroken scrap material is extending from the MultiGrapple.

Leaks in the hydraulic system or defective pressure relief valves can cause the MultiGrapple to close or rotate unexpectedly.

Scrap material can get stuck in the grapple leaves. The closing and opening actions can stop during operation and can be resumed unexpectedly.

7.2 Functional test

The carrier boom functions are used to lift and move the MultiGrapple.

Functional test: **Opening - Closing**

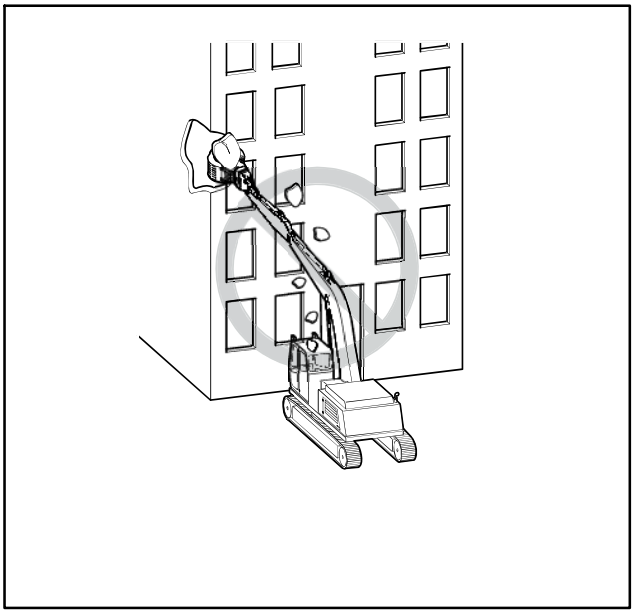
Operate the rocker switch in the leg-space area of the cab to open and close the MultiGrapple.

Functional test: **Rotating the MultiGrapple**

MultiGrapple rotation in **both** directions can most easily be tested by means of the function "Rotate grapple" or by using a new additional installation.

7.3 Instructions on the correct use of the MultiGrapple

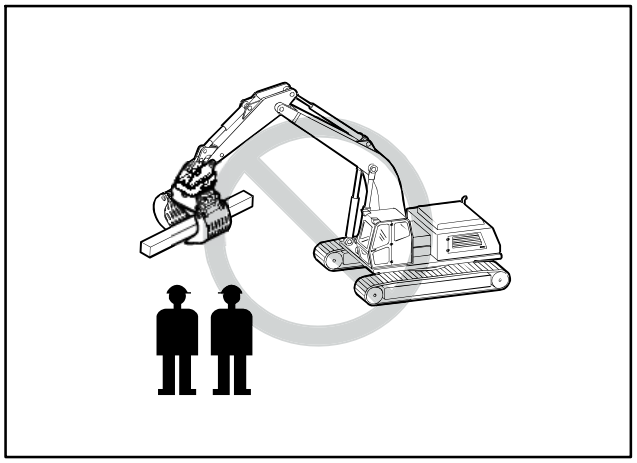
The MultiGrapple must only be used for the activities specified in section 4.1. Some examples of how to work with the MultiGrapple are listed below.



DANGER!

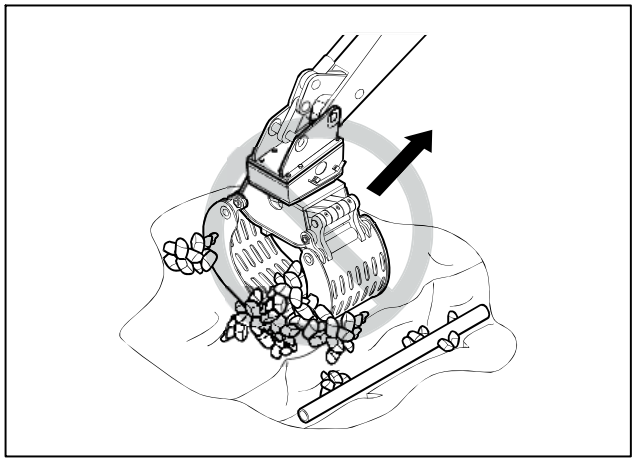
Never start demolition work with the hydraulic tool in the lower part of a structure, since otherwise the upper structure might collapse.

Instructions on the correct use of the MultiGrapple



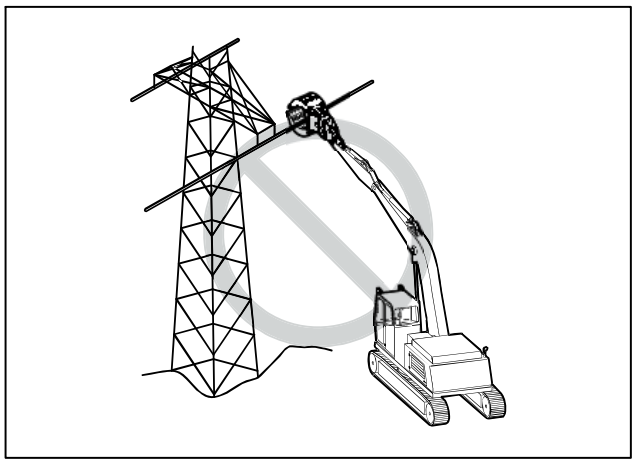
DANGER!

Do not carry out any movements or demolition work over the cab, other machines or other people, since parts falling down might cause damage or injuries!



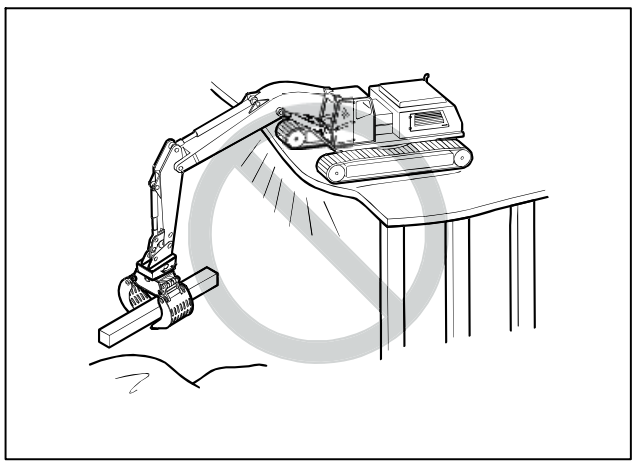
DANGER!

Make sure that there are no gas pipes or other utilities circuits in the work area which might be damaged.
Danger of explosions!



DANGER!

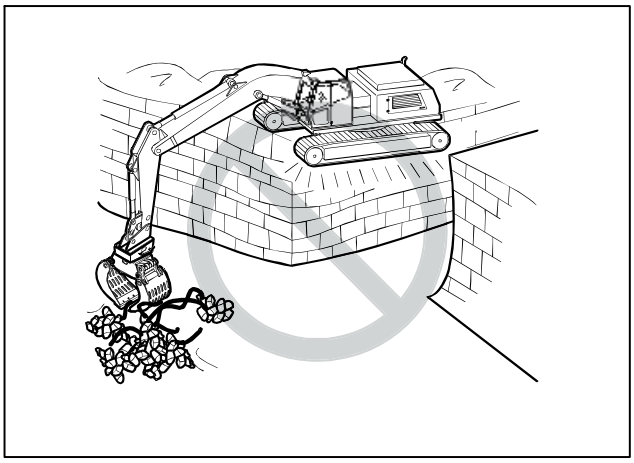
Never work in the vicinity of electric circuits or other sources of electricity. Make sure that there are no hidden circuits in the work area!
Risk of electric shock!



DANGER!

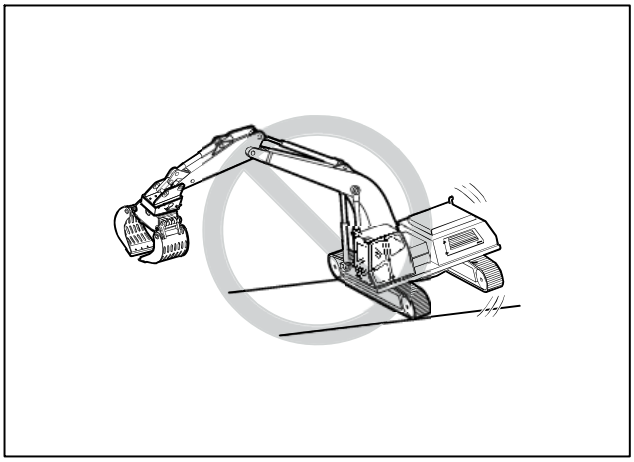
When working on floors/ roofs, ensure that they are strong enough to bear the weight of the carrier.
Danger of the structure collapsing!

Instructions on the correct use of the MultiGrapple



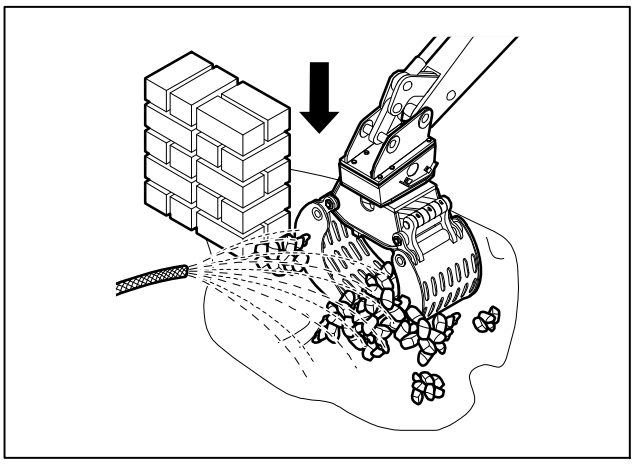
DANGER!

Only work with the hydraulic tool when the carrier is on a stable and safe surface!
Otherwise the carrier might topple over and cause injuries and damage.
Danger of the carrier falling over!



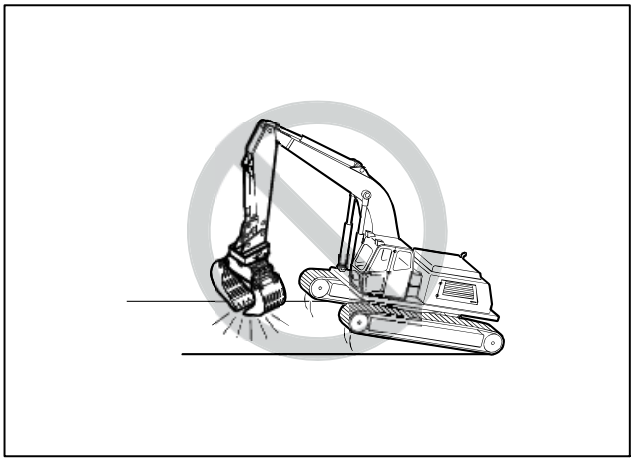
DANGER!

Never work sideways in case of full delivery in the direction of driving!
Danger of the carrier falling over!



DANGER!

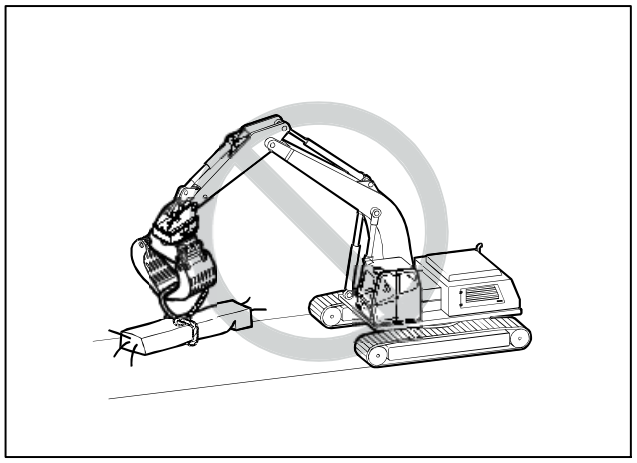
Keep the work area moist by continuously spraying it with water to avoid excessive dust.



CAUTION!

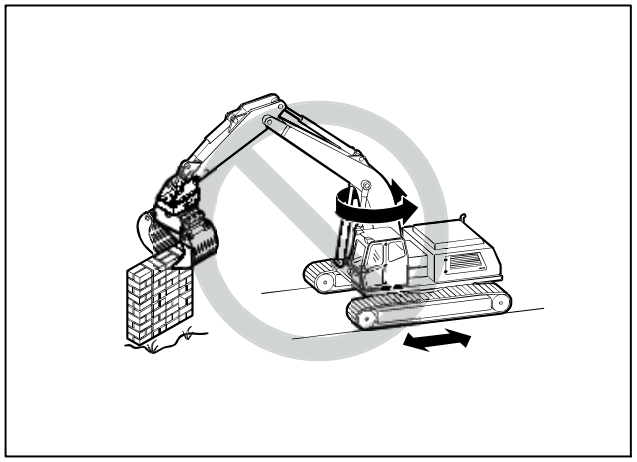
Never relocate the carrier by placing the hydraulic tool on the ground to lift the carrier!
This would seriously damage the hydraulic tool.

Instructions on the correct use of the MultiGrapple



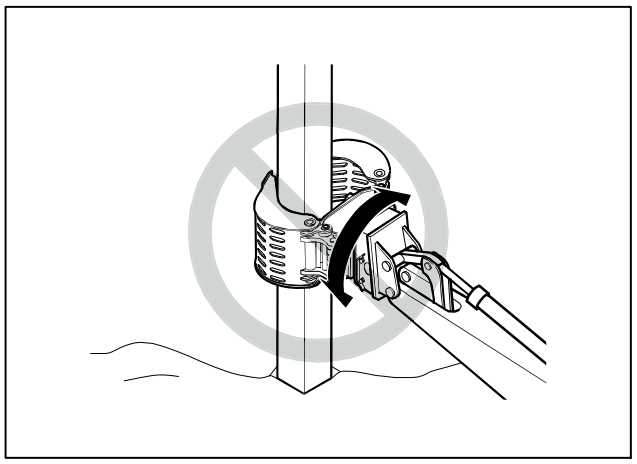
CAUTION!

Never use the hydraulic tool to lift or transport loads with lifting gears or sling devices!
This would damage the hydraulic tool.



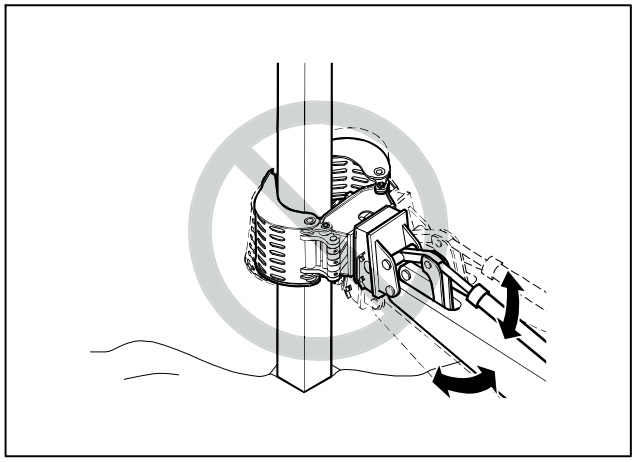
CAUTION!

Do not move the boom or the carrier while carrying out the gripping action!
This would seriously damage the hydraulic tool.



CAUTION!

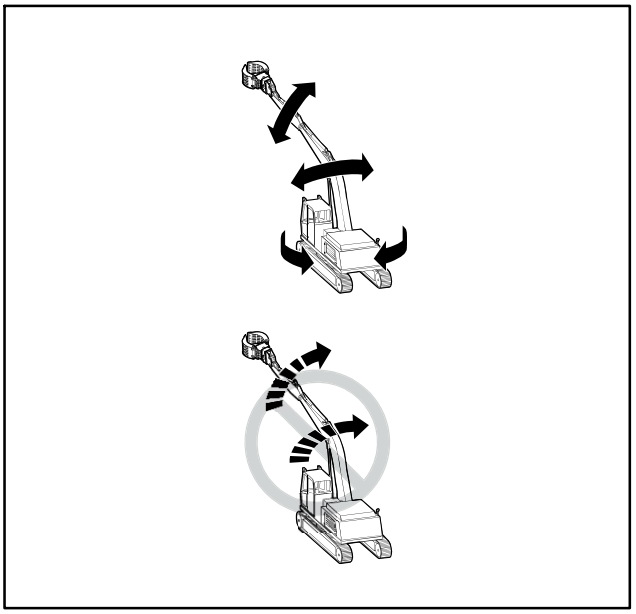
Never rotate the hydraulic tool while carrying out the gripping action!
This would seriously damage the hydraulic tool.



CAUTION!

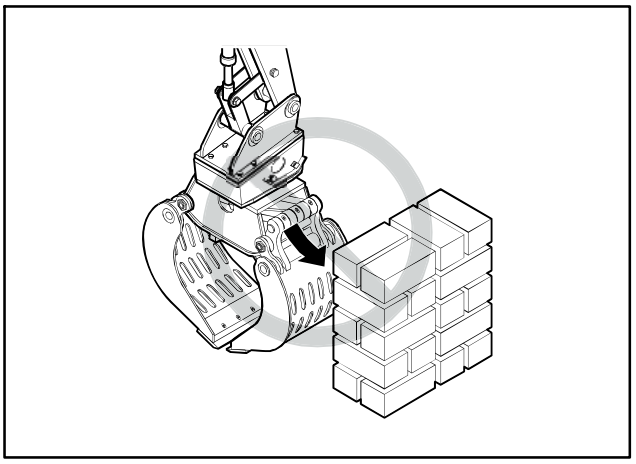
Never move the bucket cylinder while carrying out the gripping action!
This bending action would destroy the hydraulic tool!

Instructions on the correct use of the MultiGrapple



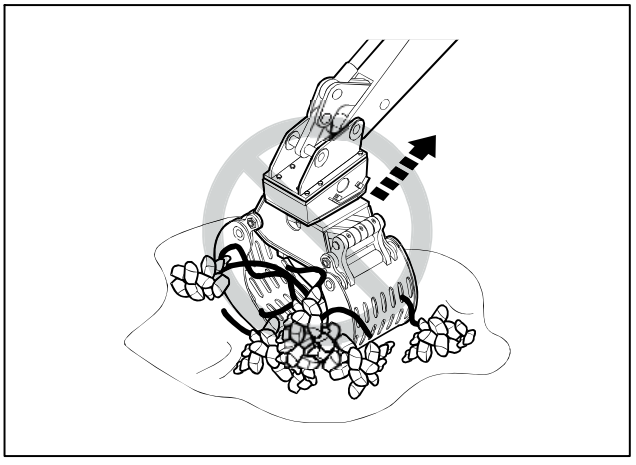
CAUTION!

Avoid abrupt movements!
The boom must be steered securely, slowly and accurately.



CAUTION!

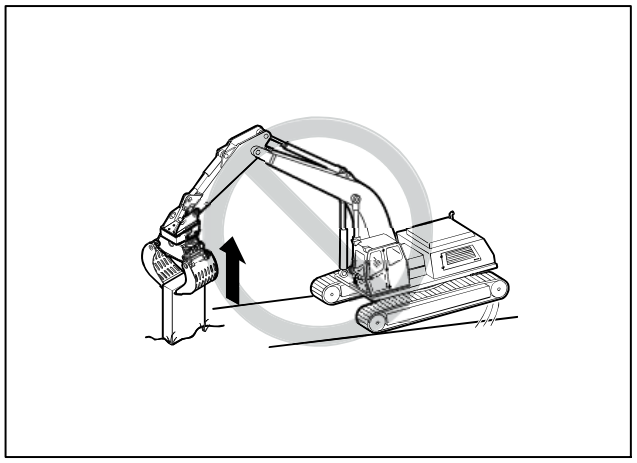
The hydraulic tool must not be used for hammering on the structure to be demolished!
This would seriously damage the hydraulic tool.



CAUTION!

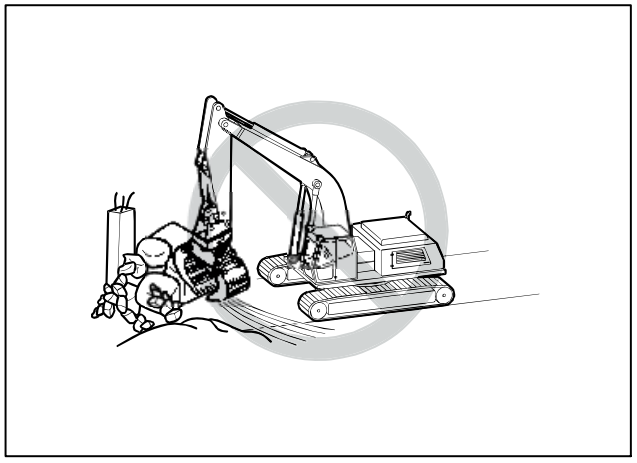
If the hydraulic tool jams in the structure to be demolished, do not make any sudden movements to free the tool!
This would seriously damage the hydraulic tool!

Instructions on the correct use of the MultiGrapple



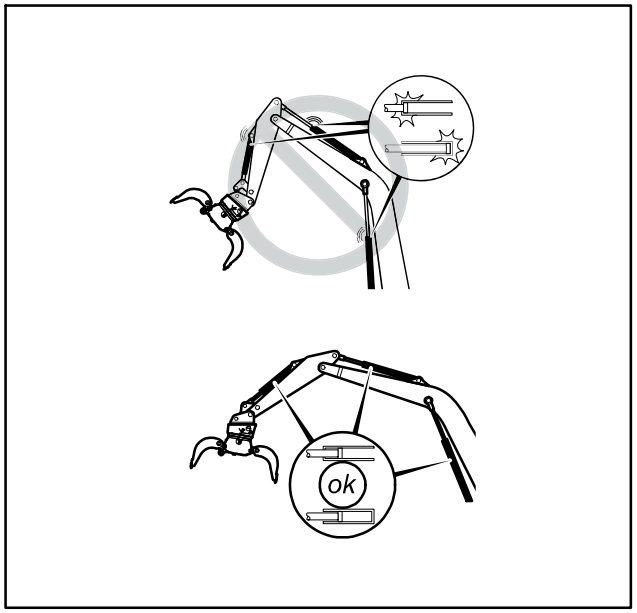
CAUTION!

Never pull at girders, supports or walls with the hydraulic tool!
This would damage the hydraulic tool and the adapter plate and the carrier might become unstable.



CAUTION!

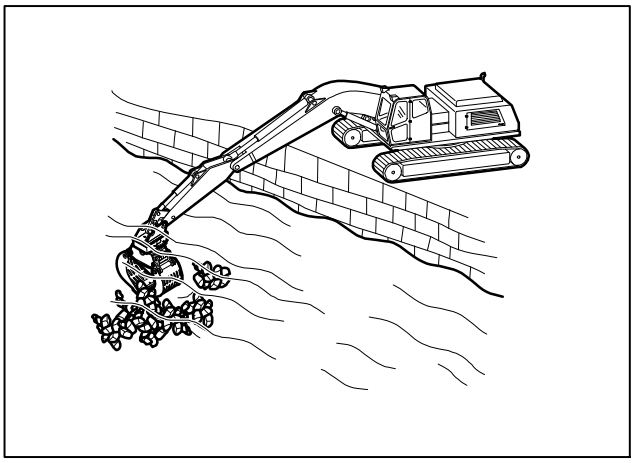
Never use the hydraulic tool to move scrap material aside!
This would damage the hydraulic tool!



CAUTION!

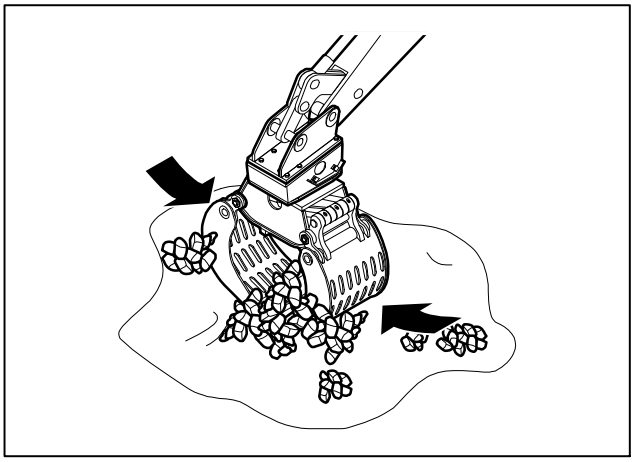
Avoid operating the hydraulic tool when the carrier stick and bucket cylinder are in one of their end positions. These end positions have damping facilities; the hydraulic cylinder may be damaged by prolonged use while in its end positions.
Reposition the carrier so that you do not have to work with the cylinder in its end positions.

Instructions on the correct use of the MultiGrapple



CAUTION!

Never use the hydraulic tool under water!
This would seriously damage the hydraulic tool!



CAUTION!

The MultiGrapple must only be used for hydraulically operated closing and opening of the grapple leaves and not for any other activities. If required, the MultiGrapple must be moved to another position.
The MultiGrapple must not be used for:

- pulling,
- pushing scrap material aside,
- hacking or pounding,
- relocating the carrier by placing the MultiGrapple on the ground to lift the carrier,
- lifting or transporting loads with lifting gears or sling devices,
- underwater work,
- working in an environment where there is a risk of explosions.

7.4 Working in high ambient temperature

The temperature of the hydraulic oil must be monitored to ensure it does not exceed 80 °C. If you measure an increased temperature in the tank check the hydraulic installation and the pressure relief valve.

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

7.5 Working in low ambient temperature

There are no special instructions for temperatures down to minus 20 °C.

At temperatures below minus 20 °C, the carrier must be warmed up prior to use in the way described by the carrier 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 MultiGrapple are left out in the open, the carrier and all its equipment must be warmed up before the MultiGrapple can be started up. The carrier manufacturer's instructions must be complied with.

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

The MultiGrapple cannot be started up until the oil temperature is 0 0°C or higher.

Observe the carrier manufacturer's instructions.

CAUTION!

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

Note

The MultiGrapple and the carrier 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 MultiGrapple will cause internal stresses in the unit resulting in its failure.

Operation without allowing the hydraulic oil to heat up first will result in damage.

8 MultiGrapple care and maintenance

Wear your personal safety equipment during all maintenance activities.

8.1 General instructions

In order to obtain the best performance from the MultiGrapple, maintenance work should be carried out by the operator at the prescribed intervals.

DANGER!

Observe the relevant safety provisions while carrying out maintenance work!

Always depressurise the hydraulic system before carrying out maintenance work on the MultiGrapple!

Proceed as follows:
- Switch off the engine but leave the ignition switched on.
- Repeatedly open / close / rotate the MultiGrapple

Before carrying out work on the MultiGrapple make sure that there is nobody between the open arms!
Risk of accidents!

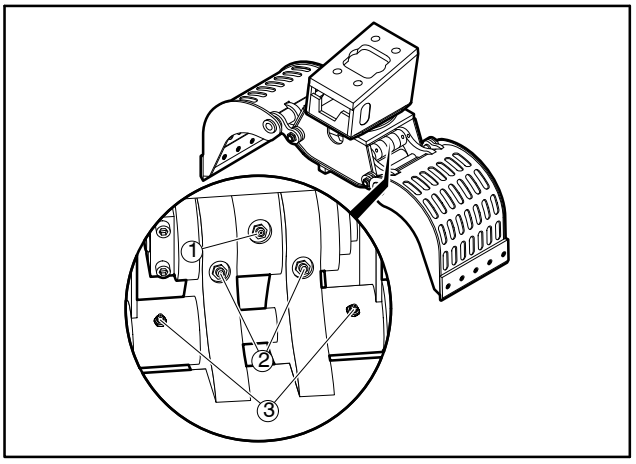
8.2 Maintenance activities to be carried out by the carrier driver

8.2.1 Lubricating the MultiGrapple

The MultiGrapple must be lubricated as indicated below.

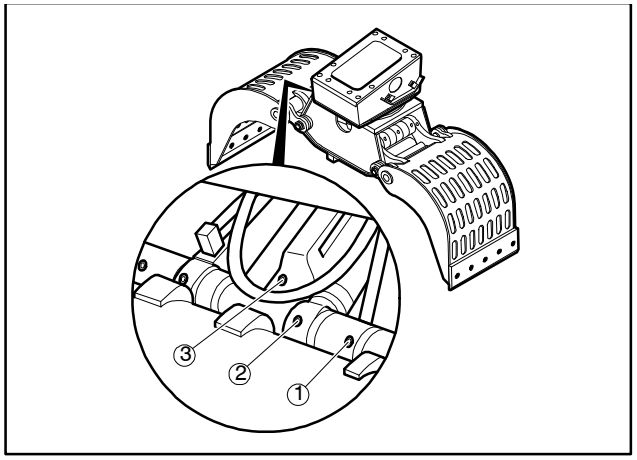
Use Atlas Copco cutter grease, part ID no. 3363 0949 14 and the manual grease gun, part ID no. 0909 1071 00.

When handling oils and greases observe the safety instructions that apply to these products!



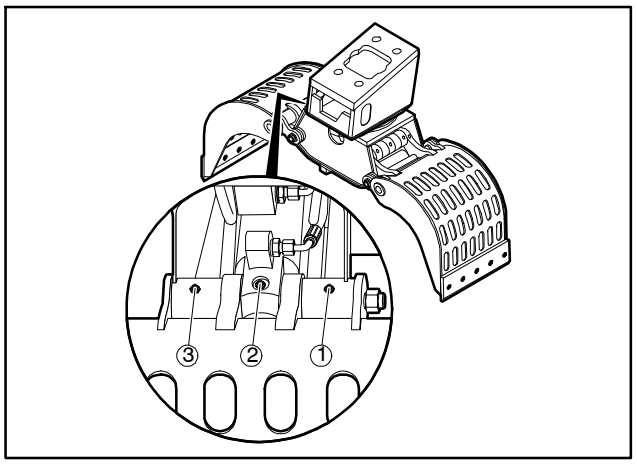
MG 100

Lubrication point 1	once every 8 hours
Lubrication point 2	once every 8 hours
Lubrication point 3	once every 8 hours



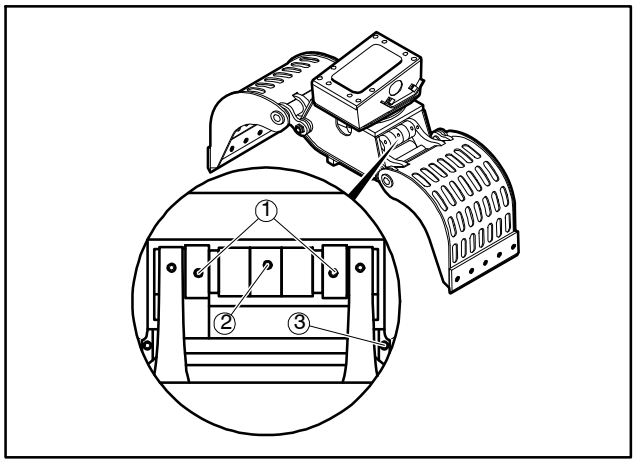
MG 200 to MG 5000

Lubrication point 1	once every 8 hours
Lubrication point 2	once every 8 hours
Lubrication point 3	1 stroke from the manual grease gun once every 8 hours



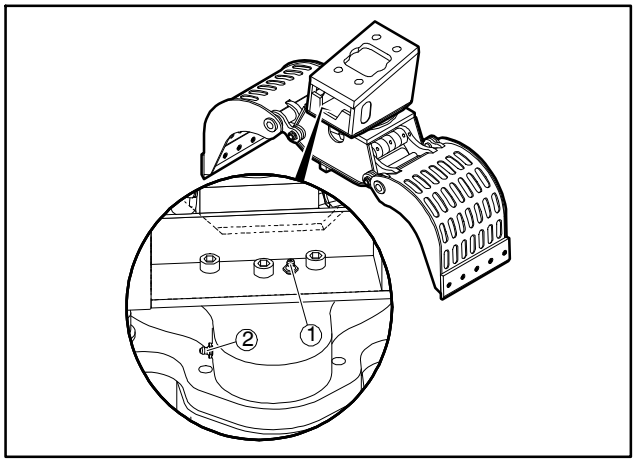
MG 100

Lubrication point 1	once every 8 hours
Lubrication point 2	once every 8 hours
Lubrication point 3	once every 8 hours



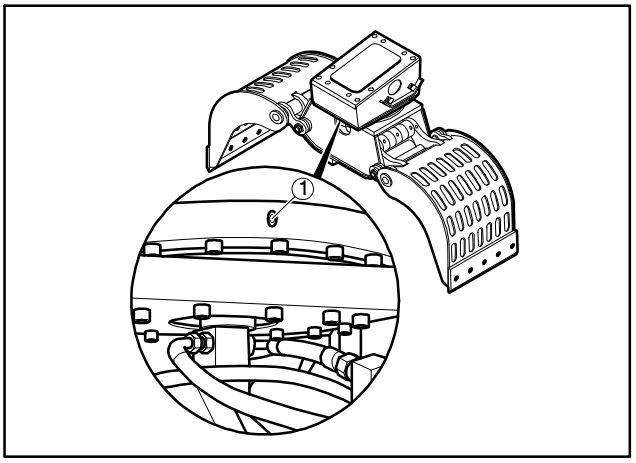
MG 200 to MG 5000

Lubrication point 1	once every 8 hours
Lubrication point 2	once every 8 hours
Lubrication point 3	once every 8 hours



MG 100

Lubrication point 1	once every 8 hours



MG 200 to MG 5000

Lubrication point 1	once every 8 hours

8.2.2 Checking for cracks

Check the MultiGrapple and the adapter plate for cracks before starting to work. (Visual inspection of load-bearing parts and welds.)

8.2.3 Checking for wear

Check the wear knives for wear every day. Reverse or replace the wear knives if the MultiGrapple no longer closes completely.

8.2.4 Checking the hydraulic lines before starting to work

This is a visual check of all lines (pipes and hoses) from the pump to the MultiGrapple and from there to the tank. Tighten any loose screw connections and hose clamps. Replace damaged pipes and/or hoses.

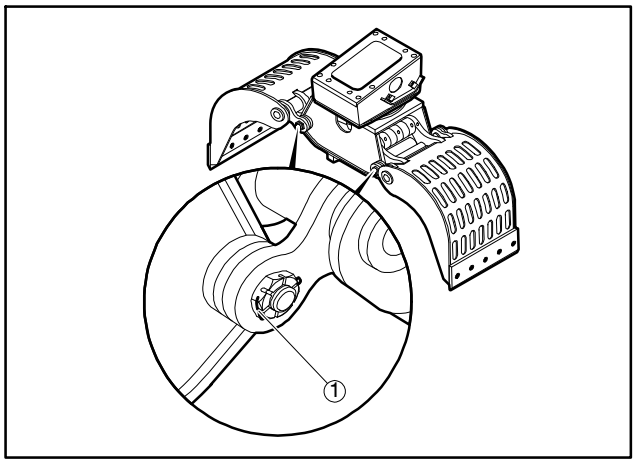
8.2.5 Checking the adapter plate pins for wear

This visual inspection is only possible if the MultiGrapple has been removed from the carrier. Rework or replace the pins if you find any extreme signs of wear, such as cracks, notches or severe erosion.

8.2.6 Checking and cleaning the hydraulic oil filter

An oil filter must be integrated in the return circuit of the hydraulic system. The maximum mesh width allowed for the oil filter is 50 microns; it must have a magnetic separator. Replace the oil filter cartridge after the first 50 operating hours. Then check the oil filter every 500 operating hours and replace as required.

8.2.7 Checking the hinge pin locking facilities



Check the hinge pin locking facilities (1) every day. Replace damaged castle nuts and split pins.

8.2.8 Checking the screws and bolts on the adapter plate

Every day, check that all allen screws on the adapter plate are tight. If required, re-tighten them with the tightening torques as specified. (You can find the tightening torques in the table in section 8.3).

8.2.9 Retightening the screws and bolts on the rotating mechanism (except MG 2300)

Retighten all screws and bolts on the rotating mechanism housing and the live ring with the required tightening torques every 100 operating hours (you can find the tightening torques in the table in section 8.3).

8.2.10 Retightening the screws on the rotating mechanism housing (MG 2300)

Retighten all screws (1) on the rotating mechanism housing with the required tightening torque every 100 operating hours (you can find the tightening torque in the table in section 8.3).

8.2.11 Checking the live ring and its screws (MG 2300)

Weekly check if there is axial or radial clearance in the live ring. Check all screws (2) of extending by stretching or looseness. Unscrew and remove the screws (1) from the rotating mechanism housing. Remove the upper part from the multi grapple. Check the condition of the live ring and replace it if defective. Replace extended screws and retighten all screws (2) on the live ring with the required tightening torque (you can find the tightening torque in the table in section 8.3). Fit the upper part on the multi grapple. Screw the screws (1) of the rotating mechanism housing and tighten all screws (1) with the required tightening torque (you can find the tightening torque in the table in section 8.3).

8.2.12 Retightening the screws and bolts on the wear blades

Retighten all screws and bolts on the wear knives with the required tightening torques every 10 operating hours (you can find the tightening torques in the table in section 8.3).

8.3 Maintenance schedule / Tightening torques

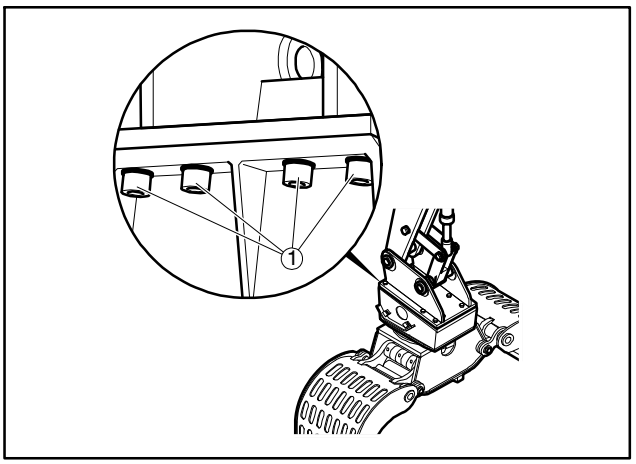
Connection point	No.	Timing	MG 100	MG 200	MG 300
(see page 35, 36)	-	-	Tightening torque		
Adapter plate*	1	daily	200 Nm	200 Nm	200 Nm
Rotation mechanism housing	1	weekly	70 Nm	130 Nm	130 Nm
Gear ring	2	weekly	40 Nm	110 Nm	110 Nm
Wear blade	1	if necessary	-	-	300 Nm

Connection point	No.	Timing	MG 400	MG 500	MG 800
(see page 35, 36)	-	-	Tightening torque		
Adapter plate*	1	daily	200 Nm	200 Nm	390 Nm
Rotation mechanism housing	1	weekly	130 Nm	130 Nm	130 Nm
Gear ring	2	weekly	110 Nm	110 Nm	130 Nm
Wear blade	1	if necessary	300 Nm	300 Nm	550 Nm

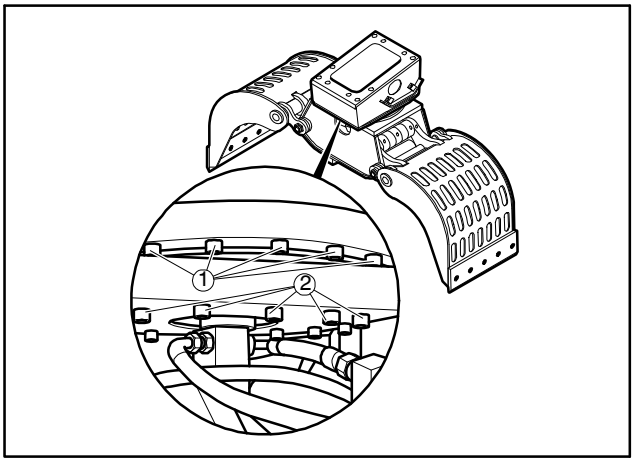
Connection point	No.	Timing	MG 1000	MG 1500	MG 1800
(see page 35, 36)	-	-	Tightening torque		
Adapter plate*	1	daily	1500 Nm	1500 Nm	1500 Nm
Rotation mechanism housing	1	weekly	130 Nm	200 Nm	200 Nm
Gear ring	2	weekly	130 Nm	300 Nm	300 Nm
Wear blade	1	if necessary	550 Nm	550 Nm	550 Nm

Connection point	No.	Timing	MG 2300	MG 2700	MG 5000
(see page 35, 36)	-	-	Tightening torque		
Adapter plate*	1	daily	1500 Nm	1500 Nm	2300 Nm
Rotation mechanism housing	1	weekly	300 Nm	300 Nm	300 Nm
Gear ring/live ring	2	weekly	300 Nm	300 Nm	300 Nm
Wear blade	1	if necessary	550 Nm	550 Nm	1350 Nm

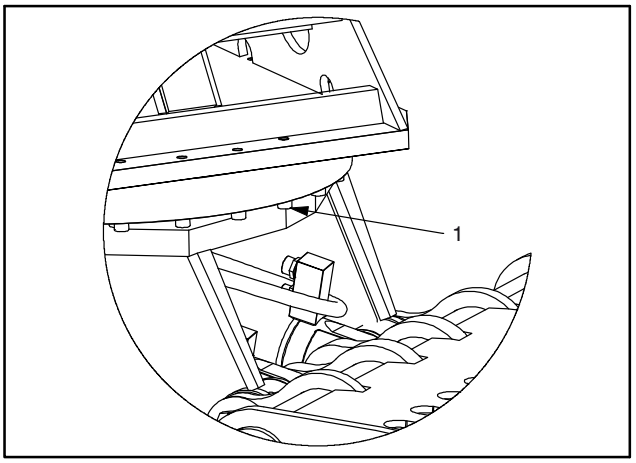
* Apply anti-seize compound to the allen screw threads before inserting them. The contact faces of the screw head and the lock washers must not be lubricated.



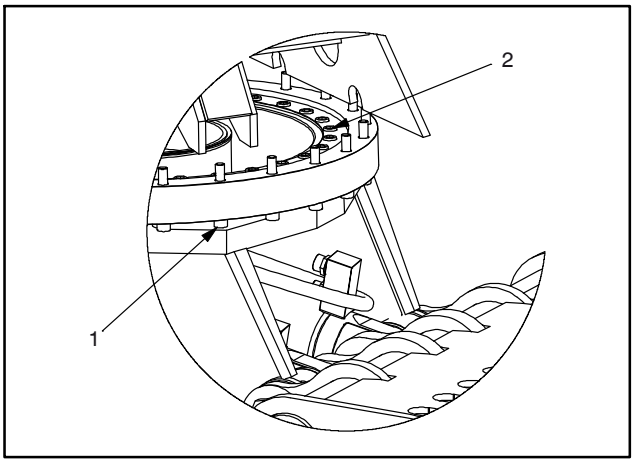
Connection point:
Adapter plate, no. 1



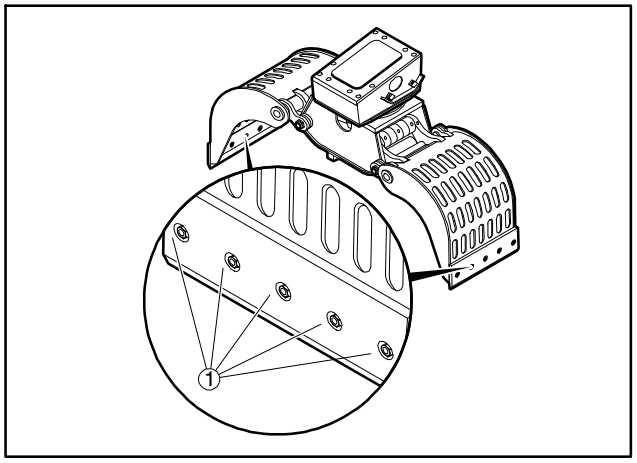
Connection point:
Rotation mechanism housing, no. 1
Gear ring, no. 2



Connection point (MG 2300):
Rotation mechanism housing, no. 1



Connection point (MG 2300):
Rotation mechanism housing, no. 1
Live ring, no. 2



Connection point:
Wear blade, no. 1

9 Common problems - causes and remedies

9.1 The MultiGrapple does not work

Cause	Remedy	By
Check valve in line **"Opening"** or **"Closing"** closed	Open the check valve	Carrier driver
Defective couplings blocking lines **"Opening" / "Closing"**	Replace defective coupling parts	Workshop
Electrical equipment in the system defective	Check the electrical equipment and repair as necessary	Workshop
Rocker switch defective	Check the rocker switch and replace as necessary	Workshop
Magnet on switch-on valve defective	Replace the magnet	Workshop

9.2 The closing power of the MultiGrapple is insufficient

Cause	Remedy	By
The "Opening"- and **"Closing"**-lines have been mixed up	Properly connect the **"Opening"** and **"Closing"**lines. Only in case of different pressure settings of the **"Opening"** and **"Closing"**lines, i.e. existing system is also suitable for MultiGrapple operation.	Carrier driver
Operating pressure too low	Correct the operating pressure	Workshop / Atlas Copco Customer Center/Dealer in your area

9.3 The MultiGrapple cannot be rotated

Cause	Remedy	By
Rotation motor/gear unit/ transmission defective	Replace the defective parts	Atlas Copco Customer Center/ Dealer in your area

9.4 Operating temperature too high

Cause	Remedy	By
Pump delivery too high - excess oil squirts out via pressure relief valve	Correct the carrier engine speed. Correct pump pilot system if available	Carrier driver or Atlas Copco Customer Center/ Dealer in your area
Pressure relief valve defective	Fit new pressure relief cartridge	Atlas Copco Customer Center/ Dealer in your area
Oil level in tank too low	Top up oil	Carrier driver or workshop

9.5 Oil leaks from hydraulic ports

Cause	Remedy	By
Cap nuts loose	Tighten cap nuts	Carrier driver

9.6 Insufficient lubrication

Cause	Remedy	By
Intervals between lubrication too long	Lubricate more frequently	Carrier driver

10 Disposal

CAUTION!

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

- Put the MultiGrapple out of operation and disassemble it as described in section 6.7.
- Dispose of the MultiGrapple in line with all applicable regulations or consult an authorised and specialised recycling company.

11 Technical specifications

Model	MG 100	MG 200	MG 300	MG 400	MG 500	MG 800
Service weight ⋆ [kg]	90	175	290	450	460	825
Recommended carrier category [t]	0.7 - 1.2	1.2 - 3.0	2 - 5	4 - 8	5 - 9	10 - 16
Dimensions Jaw opening [mm] Leaf width [mm] Height [mm]	 600 300 600	 750 450 650	 1100 500 750	 1400 600 850	 1500 700 900	 1700 800 1150
Max. closing force [t]	0.6	1.5	2.0	2.3	2.4	3.8
Capacity (SAE) [l]	30	70	100	150	200	400
Oil flow range [l/min] Grip function	15	25	35	40	35 - 50	70 - 100
Operating pressure [bar] Grip function	300					350
Oil flow range [l/min] Rotation function	3 - 5	5 - 10		10 - 15		20 - 25
Operating pressure [bar] Rotation function	150 - 170					190 - 210
Connections ”Open” / ”Close”	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 16 x 1.5	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 20 x 1.5		Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 20 x 1.5		Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 36 x 2
Connection ”Rotate”		Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 16 x 1.5		Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 16 x 1.5		Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 20 x 1.5
Hose size (open / close) (req. rated size) [mm]	8	8			8	20
Hose size (twist mechanism) (req. rated size) [mm]					8	
Pipes (open / close) [mm]	10 x 1.5	12 x 1.5			12 x 1.5	25 x 4
Pipes (twist mechanism) [mm]		10 x 1.5			12 x 1.5	

⋆ MultiGrapple incl. medium-sized adapter plate
Note that the working weight may be much higher depending on the adpter plate.

Model	MG 1000	MG 1500	MG 1800	MG 2300	MG 2700	MG 5000
Service weight ⋆ [kg]	1150	1480	1800	2280	2750	5300
Recommended carrier category [t]	12 - 20	16 - 24	20 - 28	25 - 38	28 - 50	50 - 80
Dimensions Jaw opening [mm] Leaf width [mm] Height [mm]	 1950 800 1300	 1950 1000 1300	 2100 1200 1500	 2250 1200 1650	 2230 1200 1700	 3000 1500 2000
Max. closing force [t]	4.6	5.5	6.8	8.0	9.0	13
Capacity (SAE) [l]	500	700	850	900	1000	1600
Oil flow range [l/min] Grip function	85 - 120	120 - 170	150 - 170	160 - 180	180 - 200	280 - 300
Operating pressure [bar] Grip function	350					
Oil flow range [l/min] Rotation function	20 - 25		30 - 35			50 - 60
Operating pressure [bar] Rotation function	190 - 210					
Connections ”Open” / ”Close”	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 36 x 2			Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 42 x 2		SAE 1” 6000 PSI
Connection ”Rotate”	Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 20 x 1,5					Solderless joint with cutting ring DIN 2353 or sealing cone with 24° M 26 x 1,5
Hose size (open / close) (req. rated size) [mm]	20	20		25		
Hose size (twist mechanism) (req. rated size) [mm]	8					16
Pipes (open / close) [mm]	25 x 4			30 x 5		
Pipes (twist mechanism) [mm]	12 x 1,5					18 x 2

⋆ MultiGrapple incl. medium-sized adapter plate
Note that the working weight may be much higher depending on the adpter plate.

12 EC Declaration of Conformity (EC Directive 2006/42/EC)

We, Atlas Copco Construction Tools GmbH, hereby declare that the machines listed below conform to the provisions of EC Directive 2006/42/EC (Machinery Directive), and the harmonised standards mentioned below.

MultiGrapple	Part number	Year of first marketing
MG 100	3363 1036 50	11/2008
MG 200	3363 1036 51	11/2008
MG 300	3363 1036 52	11/2008
MG 400	3363 1036 53	11/2008
MG 500	3363 0982 20	02/2007
MG 800	3363 0982 21	02/2007
MG 1000	3363 0982 22	02/2007
MG 1500	3363 0982 23	02/2007
MG 1800	3363 0982 24	02/2007
MG 2700	3363 0982 25	02/2007
MG 5000	3363 1036 55	11/2008

Following harmonised standards were applied:

◆ EN ISO 9001:2000

Technical Documentation authorised representative:

Stephan Schröer

Atlas Copco Construction Tools GmbH

45143 Essen

Germany

General Manager:

Lothar Sprengnetter

Manufacturer:

Atlas Copco Construction Tools GmbH

45143 Essen

Germany

Place and date:

Essen, 29 December 2009

13 EC Declaration of Conformity (EC Directive 2006/42/EC)

We, Atlas Copco Construction Tools GmbH, hereby declare that the machines listed below conform to the provisions of EC Directive 2006/42/EC (Machinery Directive), and the harmonised standards mentioned below.

MultiGrapple	**Part number**
MG 2300	3363 1124 62

Technical Documentation authorised representative:

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General Manager:

Lothar Sprengnetter

Manufacturer:

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Place and date:

Essen, 2011-08-02

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