



SMP Parts AB



**Thank you very much for the confidence
you have shown in us by choosing SMP.**

Please read this manual very carefully before using the equipment.
The manual explains all the safety aspects when using the
equipment and how to obtain the best possible performance and
service life.

If you look after your SMP equipment properly you will have a
powerful and reliable companion for many years to come.

We welcome you as a customer of SMP Parts AB.

*You are also welcome to contact us at any time if you should require
any further information.*

www.smpparts.com

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Introduction

This manual

This manual for SMP's quick coupler HardLock contains instructions for the correct use and correct maintenance of the quick coupler and is intended to be used for the installation, operation and maintenance of the quick coupler.

SMP reserves the right to change the contents of this manual at any time without prior notice. New manuals can be ordered from SMP Parts.

Users of this equipment must carefully read and understand the contents of this manual. The safety information in this manual only refers to SMP's quick coupler HardLock, and does not cover excavators or tools.

This manual is an original manual in accordance with the Machinery Directive.

General

SMP HardLock is a quick coupler to connect buckets and other tools to a tool holder, for example an excavator arm. The term excavator will be used in the following. The quick coupler is manoeuvred hydraulically, which means that switching buckets and tools is done by the machine operator with the help of the excavator's hydraulic- and control systems.

The quick coupler has a hook, intended to be used for lifting with straps, chains or the equivalent. The maximum lift is specified on the hook.

The lift capacity of the excavator can be less than the quick coupler, and must never be exceeded. The lifting hook must not be used if the locking device is not working properly, or is damaged.

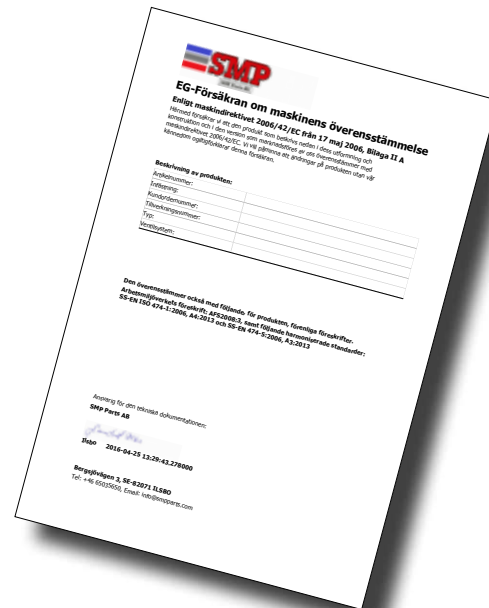
To minimise the risk of personal injury and damage to equipment, read and observe all the warnings and symbols on the equipment and in this manual before using the equipment.

Always check that there are no unauthorised persons in the work area before using the excavator.

Pressurise the quick coupler's locking device before using it and check that the bucket or tool locks perfectly in place in the quick coupler.

EU Declaration of Conformity

SMP Parts develops and manufactures all its products in accordance with European legislation and the Machinery Directive 2006/42/EC. The products are delivered with a CE certificate to guarantee that the equipment is manufactured in accordance with the applicable laws, rules and regulations.



Type plate

The type plate specifies the model designation, serial number and date of manufacture. The type plate also shows a CE symbol, to indicate that the product complies with the machinery directive.

TIP:

Fill in the field with the information on the quick coupler's type plate to have it handy in the event of service issues.

Part no.	Coupler
Machine	Min pressure MPa
Mfg. no.	Max pressure MPa
Weight Kg	Lifhook max ton
Year	WARNING Do not exceed the machine lift capacity

Bergsjövägen 3 82071 Ilso, Sweden

CE SMP SMP Parts AB

Art.nr 67854
www.smpparts.com

Safety

Precautions and warnings

This chapter contains safety information that must be taken into consideration before, during and after using the equipment.

The terms DANGER, WARNING, CAUTION and NOTE are used in this manual to indicate critical or other information related to safety. Always read the sections highlighted in this way to ensure that you can work safely with the equipment and avoid damaging it. An explanation of these terms is provided in the following:





DANGER indicates an imminent risk situation, which if not avoided can lead to fatal or severe personal injury. The word DANGER is only used to indicate the most extreme situations.

WARNING indicates a potentially dangerous situation, which if not avoided can lead to fatal or severe personal injury.

CAUTION indicates a potentially dangerous situation, which if not avoided can lead to minor or moderate personal injury. It can also be used to indicate unsafe procedures.

NOTE! This indicates information that is important for installers, operators and maintenance technicians, but which is not directly related to safety.

Warning symbols on machinery

	WARNING!
	READ THE USER MANUAL
	DO NOT STAND UNDER HANGING LOAD
	MOVING PARTS – PINCH RISK

DANGER!

Do not stand under a hanging load. Always pay attention to the machine's work area. No unauthorised persons must enter the work area when the excavator is in use. Always make sure that the machine has completely stopped and is secured before carrying out maintenance work or repairs.

WARNING!

Do not install the quick coupler before you have read and fully understood all the instructions in this manual.

WARNING!

Incorrect installation can put safety at risk. Do not hesitate to contact your dealer or SMP Parts if in doubt.

WARNING!

Check that the hydraulic system is completely without pressure before carrying out maintenance work or repairs. The hydraulic oil is under high pressure and can penetrate the skin and cause serious injury.

WARNING!

Never look for a leak by feeling with your hands. The hydraulic oil is under high pressure and can penetrate the skin and cause serious injury.

WARNING!

The tilt limit must be checked when installing the quick coupler to minimise the risk of personal injury.

WARNING!

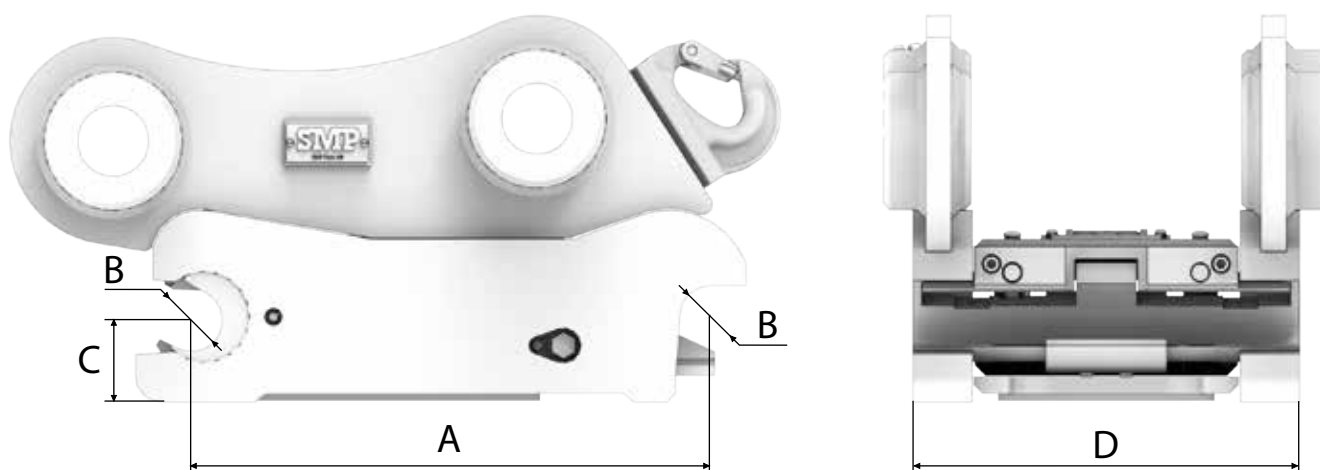
Never use equipment that is connected to the quick coupler if the locking device is not in the locked position.

WARNING!

Wear protective clothing when working with the equipment.

Technical data

Dimensions



Quick coupler model	S45	S50	S60	S70	S80	S90
Length [A] (mm)	429.8 ±0.2	429.8 ±0.2	479.8 ±0.2	599.8 ±0.2	669.8 ±0.2	749.8 ±0.2
Axle diameter [B] (mm)	Ø 45	Ø 50	Ø 60	Ø 70	Ø 80	Ø 90
Height [C] (mm)	Max 65	Max 65	Max 80	Max 100	Max 115	Max 125
Width [D] (mm)	288 ±1	268 ±1	338 ±1	448 ±1	588 ±1	618 ±1
Max hydraulic pressure (bar)	350	350	350	350	350	350
Machine weight (tonnes)	5–12	5–13	12–18	17–25	25–40	40–55

Installation

Installation

Before the work is started the machine and the equipment to be installed must be placed on a clean, smooth and horizontal surface without any obstructions.

WARNING!

Do not install the quick coupler before you have read and fully understood all the instructions in this manual.

WARNING!

Incorrect installation can put safety at risk. Do not hesitate to contact your dealer or SMP Parts if in doubt.

Dismantling of existing quick coupler

Disconnect the hydraulic hoses from the quick coupler and plug all the exposed hydraulic openings. Pull out the axles and remove the quick coupler. The axles supplied with the new quick coupler should normally be used for the installation. New axles for the new quick coupler are not supplied for some machines. In such cases the original axles are used.

WARNING!

Check that the hydraulic system is completely without pressure before disconnecting the pressure hoses to the locking mechanism. Hydraulic oil under pressure can penetrate the skin and cause serious injury. Plug the hydraulic hoses so that the excavator arm can be manoeuvred during the installation.

Installation of HardLock quick coupler

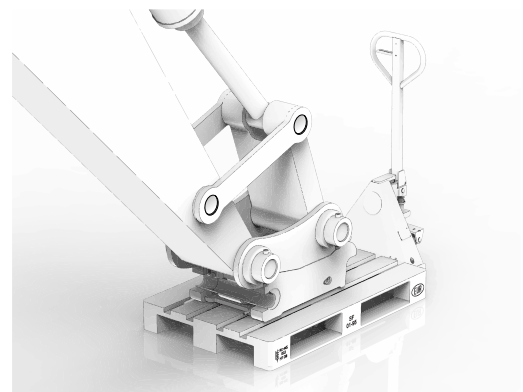
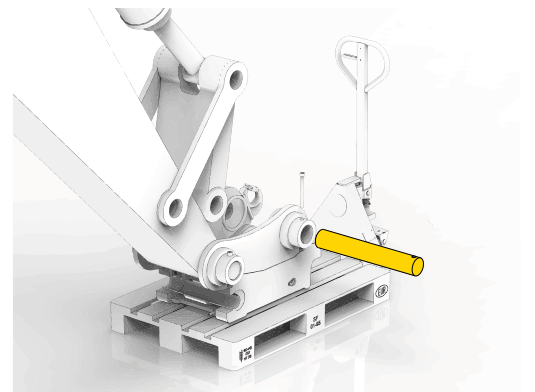
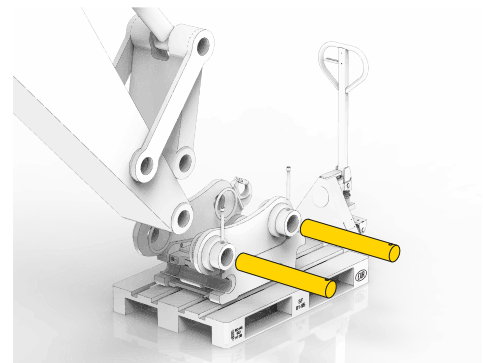
WARNING!

Be very careful when connecting the quick coupler and the excavator – pinch risk for hands and fingers.

Tip:

To simplify the installation it is possible to place the quick coupler on a pallet and adjust it to the correct position with a pallet lifter.

1. Fit the dust protection rings (O-rings).
2. Manoeuvre the excavator stick so that its tip comes in the right position by the quick coupler. Fine-adjust the position of the quick coupler with a pallet lifter. The axle holes in the quick coupler must be completely in line with the corresponding hole in the excavator arm.
3. Visually check the axial play between the excavator arm stick and the quick coupler. Shims must be fitted if the play exceeds 3 mm.
4. Oil the bushings and axle and fit the axle. Drive in the axle completely by carefully tapping it with a soft mallet.
5. Manoeuvre the tilt link so that it aligns with the holes in the quick coupler. Visually check the axial play between the tilt link and the quick coupler. Shims must be fitted if the play exceeds 3 mm.
6. Lock the axles with the lock pins (included in the installation kit).



Installation

Hydraulic connection

WARNING!

Check that the hydraulic system is completely without pressure before removing the plugs from the hoses. Hydraulic oil under pressure can penetrate the skin and cause serious injury.

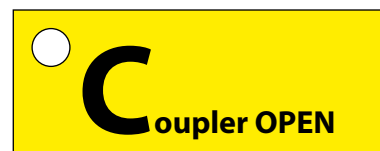
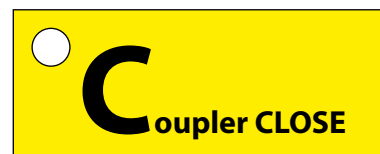
Hydraulic hoses and coupling are not supplied because of the large variations between different excavators. The installer will need to make or buy the hoses locally.

The hoses must comply with the specifications in the standard: EN 857 2SC.

Always use press-couplings when making hoses, reusable screw couplings are not permitted because of the high pressure.

Make sure that the hydraulic hoses have the right length so that there is no risk of them being damaged as a result of stretching or clenching. Carefully check that the hoses and couplings are fitted and tightened correctly in accordance with the recommendations of the manufacturer.

The hydraulic couplings are 1/4" BSP on all models.



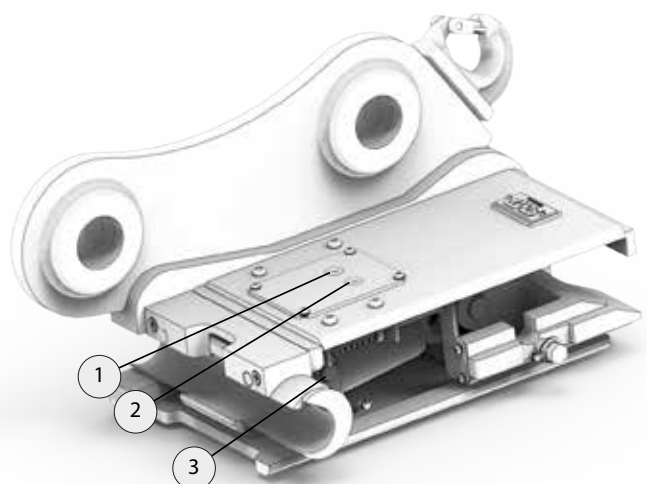
Connections

The hydraulic connections are marked with "Coupler close" for locking of the quick coupler, and "Coupler open" for opening of the quick coupler.

1. Hydraulic connection
2. Hydraulic connection
3. Pilot operated check valve 4CK30.

Locking and unlocking pressure

Model S45 – S90	Recommendation	
Locking pressure	Min 150 bar	Max 350 bar
Unlocking pressure	Working pressure	Max 350 bar



Inspection prior to delivery

Carry out the following checks after completing the installation.

1. Function test the quick coupler.
2. Check that there is no leakage.
3. Connect a bucket or tool and manoeuvre it to its end position.
4. Check that the bucket or tool is correctly and safety fitted in the quick coupler and that no hoses are stretched or clenched.
5. Lubricate according to the lubrication chart.
6. Clean the equipment before delivery to the end customer.
7. Fill in the dealer contact details on the back of this manual.

Indication

Indicators

The HardLock quick coupler has two indicators to help the operator to see whether the coupler is open or locked. One is on the eccentric in the form of an OPEN sticker, and the other is a spring based indicator that follows the movement of the locking key.

The different positions of the indicators are described under the heading CONNECTION PROCEDURE.

WARNING!

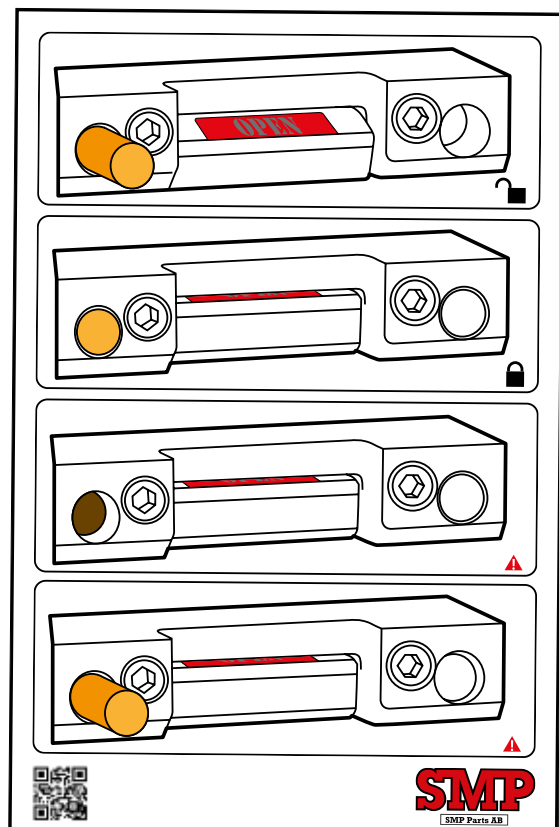
Do not use the HardLock coupler if the indicator does not work properly or is damaged.

WARNING!

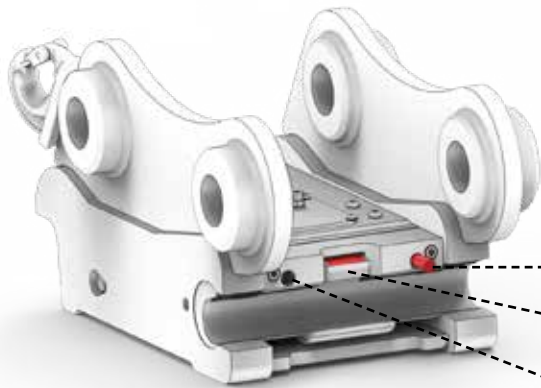
The positioning of the indicator can vary, depending on the model.

Sticker

The enclosed sticker is placed where it can be clearly seen in the cab to remind the operator of the function and position of the indicators.



Connection procedure

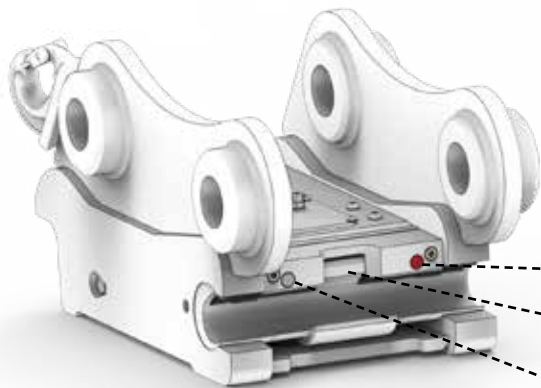


Open

Lock indicator = Visible, approx. 40 mm extrusion.

Eccentric = Open, sticker "open" shown.

Eccentric lock = Not visible, approx. 25 mm retracted

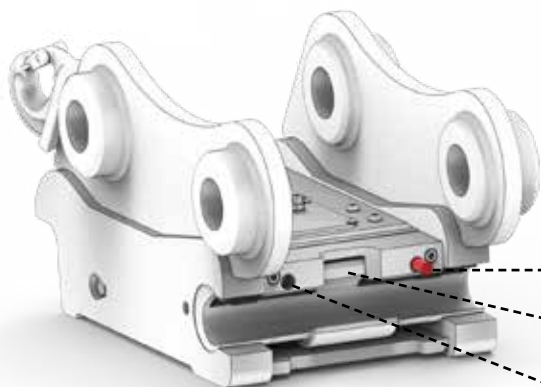


Locked

Lock indicator = Edge to edge with lock block.

Eccentric = Edge to edge with lock block.

Eccentric lock = Edge to edge with lock block.

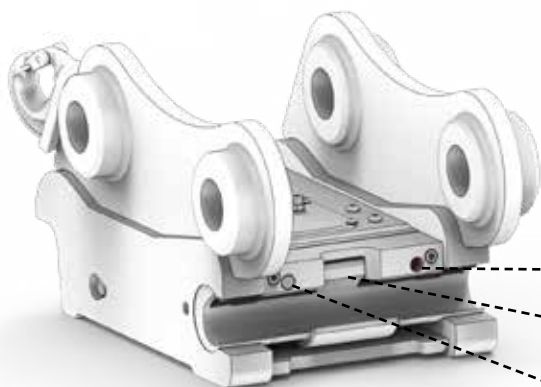


Locking key comes in middle of rear axle

Lock indicator = Visible, approx. 35 mm extrusion.

Eccentric = Edge to edge with lock block.

Eccentric lock = Not visible, approx. 20 mm retracted



Locking key goes over rear axle

Lock indicator = Not visible, approx. 15 mm retracted

Eccentric = Edge to edge with lock block.

Eccentric lock = Edge to edge with lock block.

Operation and handling

Coupling

WARNING!

It is under no circumstances allowed to connect and “pick up” a bucket or a tool with the eccentric lock axle, even if this is technically possible in some conditions. Never lift a bucket or tool unless the quick coupler is completely locked.

WARNING!

Check before connecting that the bucket or tool and the couplings on the quick coupler are free from any soil or debris that can interfere with the coupling.

DANGER!

Do not stand under a hanging load. Always pay attention to the machine’s work area. No unauthorised persons must enter the work area when the excavator is in use. Always make sure that the machine has completely stopped and is secured before carrying out maintenance work or repairs. **Risk area: 3 metres.**

WARNING!

The lifting hook must not be used if the locking device is not working properly, or is damaged.

WARNING!

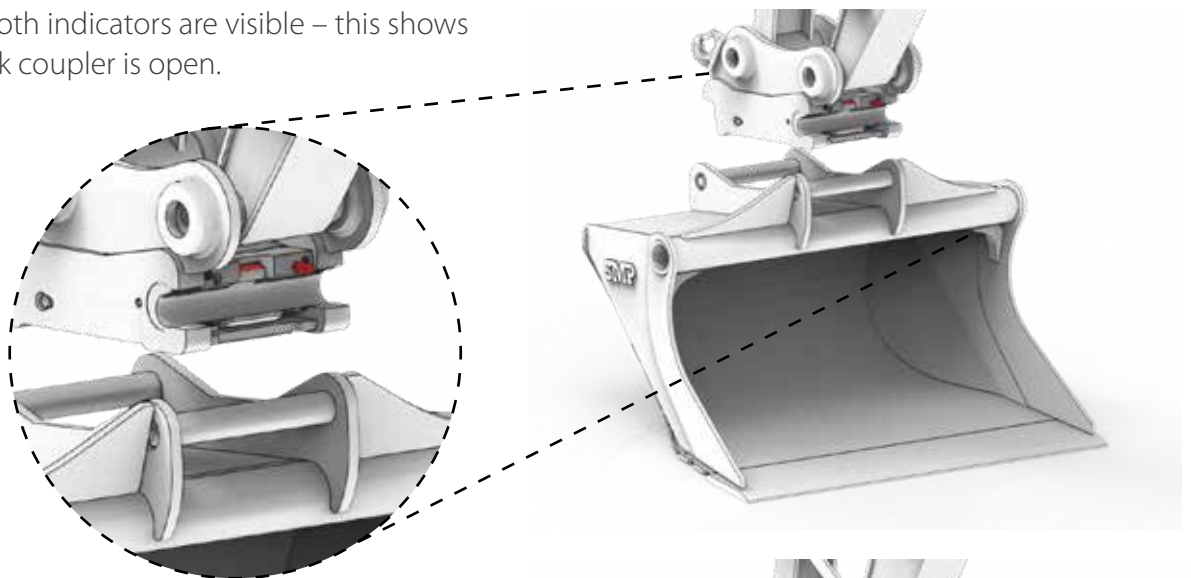
The lift capacity of the excavator can be less than the quick coupler, and must never be exceeded.



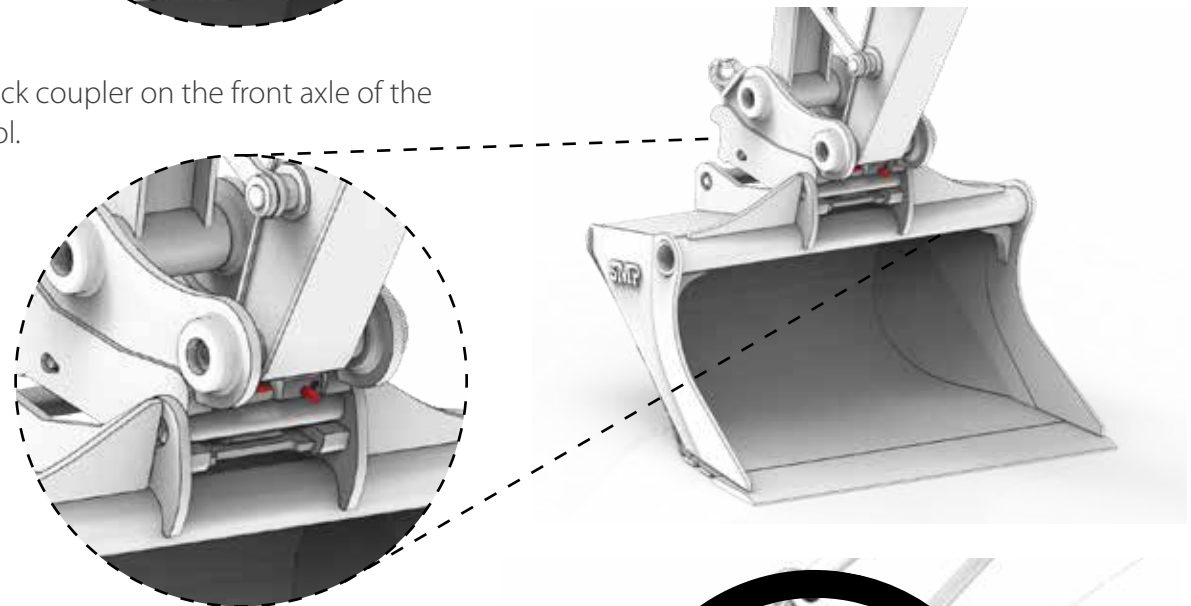
Tip:

It is easier to couple if the bucket/tool and the excavator are in line with each other and on a level surface.

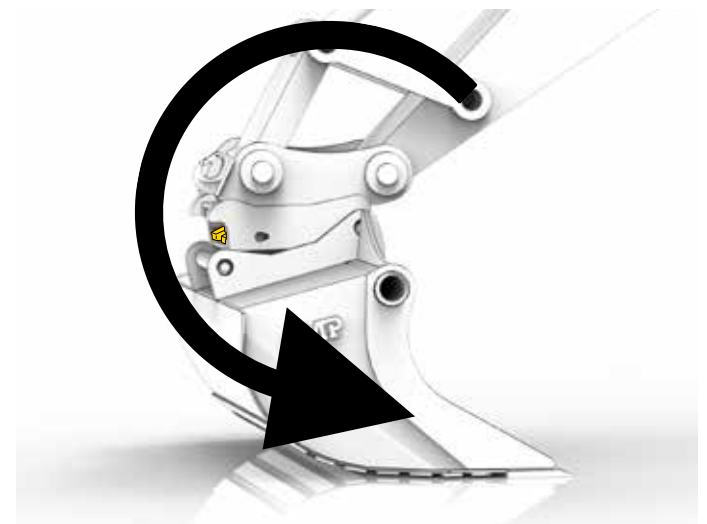
1. Check that both indicators are visible – this shows that the quick coupler is open.



2. Place the quick coupler on the front axle of the bucket or tool.



3. Manoeuvre the tilt function so that the quick coupler engages with the rear axle on the bucket or tool.



Operation and handling

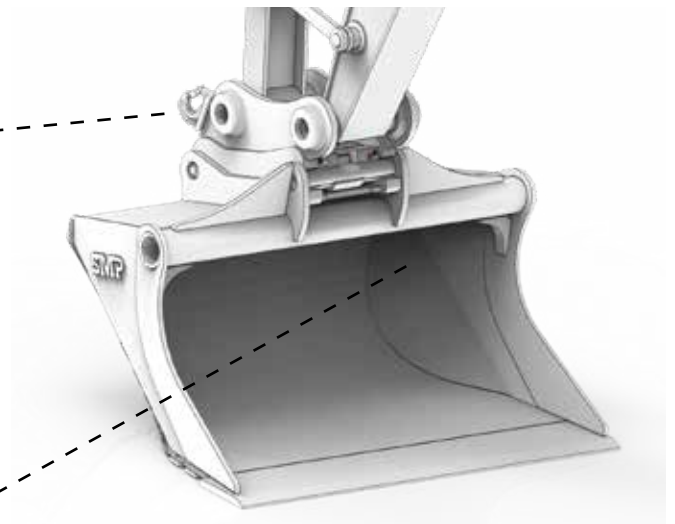
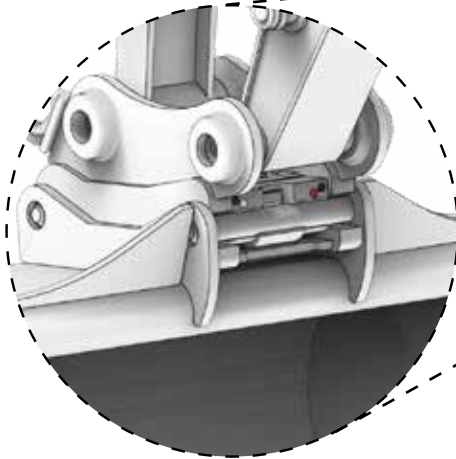
4. Manoeuvre the locking function to lock the bucket or tool in the quick coupler.

4.1 Machines with higher working pressure

Lift the bucket or tool about 5 cm over the ground and carefully run the bucket cylinder to its end position. This is to ensure that the correct locking pressure is achieved.



5. Check on the indicators that the quick coupler has locked – both indicators should be “hidden”.



6. Carefully check that the bucket or tool is secure, by tapping it against the ground.

Disconnection

WARNING!

Never open the locking device in such a position that the bucket or tool can fall off the quick coupler.

DANGER!

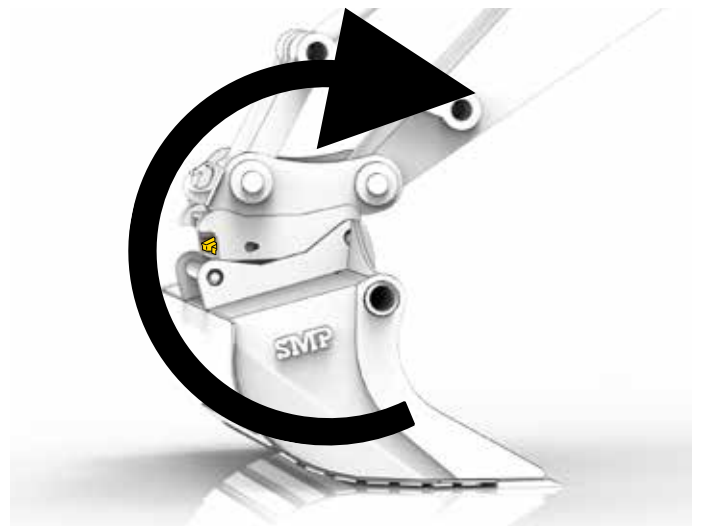
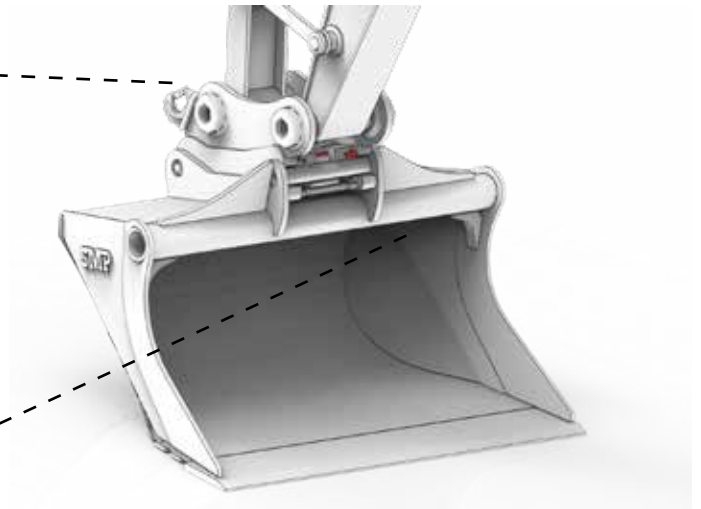
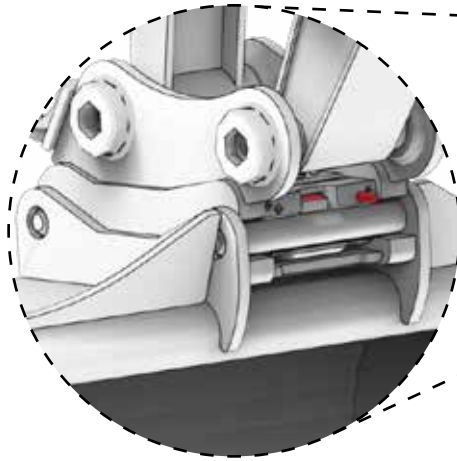
Do not stand under a hanging load. Always pay attention to the machine's work area. No unauthorised persons must enter the work area when the excavator is in use. Always make sure that the machine has completely stopped and is secured before carrying out maintenance work or repairs.

1. Place the bucket or tool on the ground before opening the lock and uncoupling.
2. Open the quick coupler's locking device.



Operation and handling

1. Carefully uncouple the bucket or tool.



Troubleshooting

There can be many reasons for defective functionality. The following list indicates several checks that cover some of the main categories of possible reasons for faults.

- Check if foreign objects, such as stones or scrap, have fastened and blocked the mechanical functions on the quick coupler.
- Check that there is no mechanical damage.
- Check that there are no faults or functional interference on the excavator.
- Check that there is no leakage.

Decide if you can repair the fault yourself, or whether a service technician must be called.

WARNING!

Do not carry out any repairs for which you do not have the requisite competence.

CAUTION!

Wear protective clothing when working with the equipment.

WARNING!

The machine must always be switched off while service or maintenance work is in progress.

Service and maintenance

Service and maintenance

It is important to carry out service and maintenance at regular intervals to ensure the best possible service life for the quick coupler.

CAUTION!

Wear protective clothing when working with the equipment.

WARNING!

The machine must always be switched off while service or maintenance work is in progress.

Daily inspection

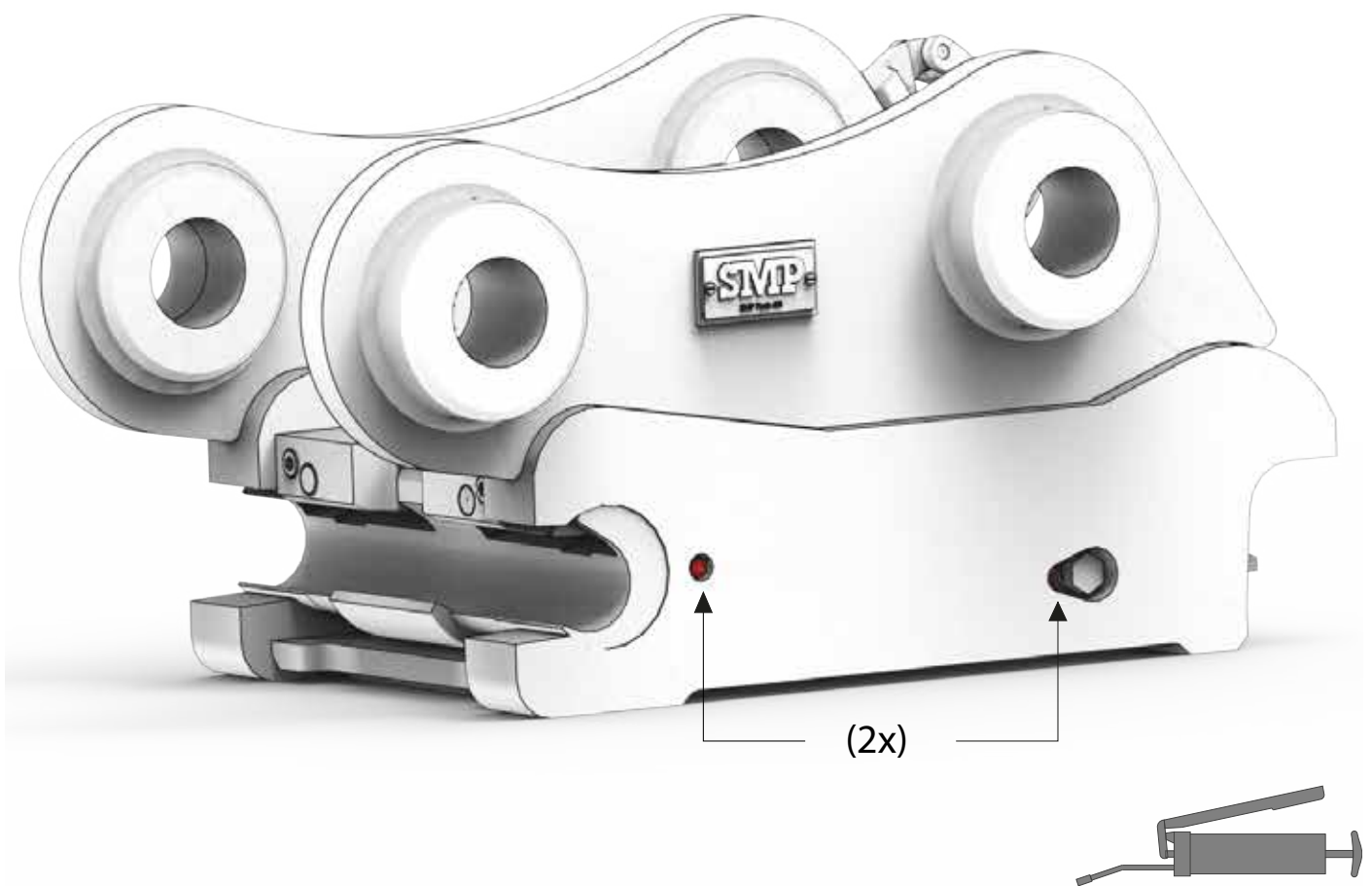
- Manoeuvre the quick coupler and check its function.
- Visually check the lock pins and nuts on the axles.
- Check the hydraulic system for any leakage.
- Check for any cracks or damage.
- Check that the quick coupler is correctly attached to both the bucket and the excavator.
- Clean the quick coupler.
- Check the axial play, and add shims if necessary.
- Check the lock on the lifting hook.

Weekly inspection

- Lubricate according to the lubrication chart.
- Check the attachment of the axles, retighten locking screws and nuts.

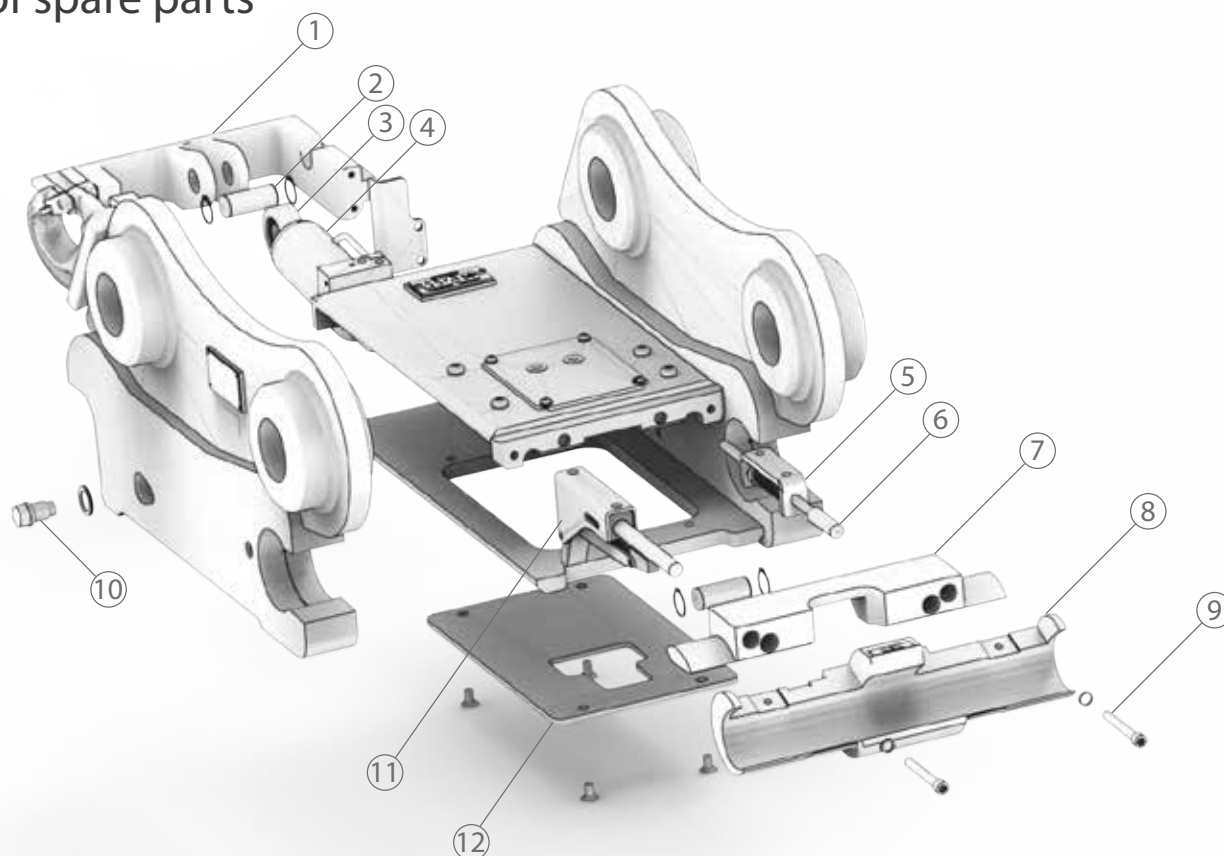
Lubrication chart

Lubricate the quick coupler with grease at least once a week and at least every 40 working hours.



Spare parts

List of spare parts



Model	S45	S50	S60	S70	S80	S90	
Pos.	Part number						Designation
1	209743	209743	209742	209741	207894	210967	Locking wedge
2	208676	208676	207685	207685	207685	207685	Axle
3	67134	67134	67417	67098	67098	63284	Hydraulic cylinder
4	67185	67185	67135	67135	67135	61136	Sealing kit
5	209321	209321	209321	209321	209321	209321	Indicator complete
6	67280	67280	67280	67280	67280	67280	Indicator top
7	209740	209739	209738	209737	207893	210965	Lock block
8	209736	209735	209734	209733	207891	210963	Eccentric
9	63847	63847	60964	60964	60097	60097	Screw
10	208975	208975	208983	208983	208983	208983	Wedge stop
11	209909	209909	209182	209182	209182	209182	Eccentric lock
12	—	—	210062	208407	208407	208407	Protective plate



A series of horizontal dashed lines for writing notes, spanning the width of the page.

SMP Parts AB facts

SMP Parts has been developing and manufacturing equipment for excavators and loaders since 1980 and is now one of the leading players in the industry. In addition to our in-house developed tiltrotator we also offer several different quick couplers, excavator buckets, grading buckets and accessories in our product range. We are proud of our manufacturing of high-quality products and our processes always comply with the highest standards of quality and safety in the industry. By specially adapting our products we can find an optimal solution for the specific working environment and operations of every customer. Our entire company works towards the same objectives – to put your preferences and requirements, and those of all our other customers, first and foremost.

SMP Parts has over 100 employees in Sweden, Norway, Finland and Germany, and has dealers in Sweden, Norway, Finland, Denmark, Germany, England, France and the Benelux countries. All development and manufacturing takes place at the head office and factory in Ilsbo, Sweden.

■ **Head office / factory**

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■ **Sales and service**

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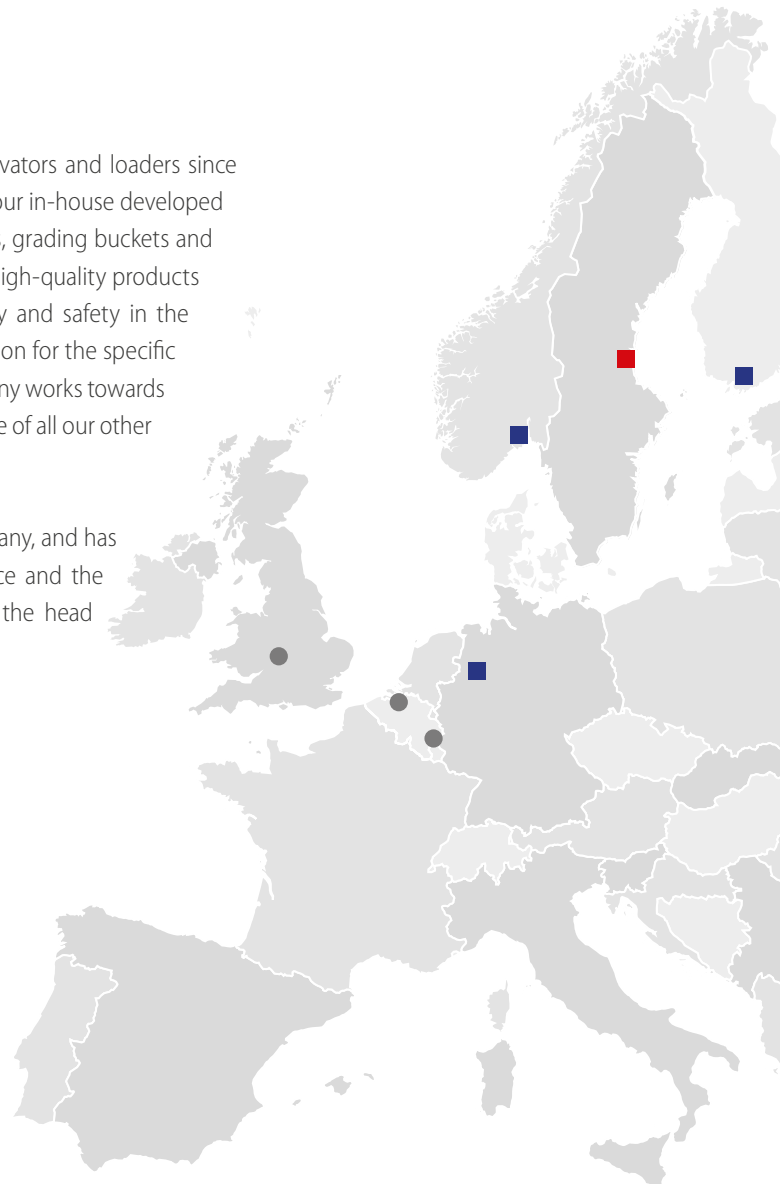
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