

# Fork Positioner

## **Fork Positioner**

Operating Instructions

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# Fork Positioner

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## Notice for the reader

This document contains information and the code of conduct required for safely operating this attachment. We advise reading this document completely before operating the attachment. Keep this document ready for reference at all times.

In order to operate this attachment effectively, the following aspects are covered in this document:

- Transportation of the attachment, mounting and test operation.
- Working with the attachment.
- Maintaining and servicing the attachment.
- Detecting and eliminating disturbances.

### Validity

This document is valid for:

- the operating company.
- all persons working on or operating this attachment.

### Illustrations

Some of the illustrations in this document show the attachment in a simplified or diagrammatic manner.

### Accentuated text

Varying circumstances have been accentuated. Symbols mark important information. The following examples show the principal accents and symbols used:

1. Step, the next operational sequence.
2. Step, the next operational sequence.




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#### **These are health and safety notices!**

→ Warning notices point out dangers to life and limb or damage that may occur to the attachment through improper use.

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This is an indication of further available information. Such references are intended to help simplify working with the attachment.

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## Product description

### Product identification

All attachments are clearly marked with an identification plate. The identification plate is attached to the front right-hand side of the attachment as seen from the operator's driving position.

The identification plate bears the following information:

- Manufacturer and address.
- Warning notice concerning load capacity.
- Year of manufacture.
- Type.
- Serial number.
- Load capacity.
- Load centre of gravity.
- Empty weight.
- Centre of gravity.
- Hydraulic operating pressure.
- CE mark.
- Works number, if applicable.



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The identification plate must be replaced if it is missing or damaged!

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### Scope of delivery

The Fork Positioner, in future known as the attachment, is delivered completely assembled and ready for use.

#### Standard accessories

The attachment is delivered without accessories.

#### Optional accessories

Optional accessories and spare parts are obtainable on request.

Further information covering optional accessories can be found in the documentation included with the accessories.

## Intended use

The attachment is an additional accessory for forklift trucks that is used instead of forks for transporting loads.

A different application or an application in excess of the intended rating is not in compliance.

Misappropriate use in particular:

- Any kind of transportation of persons.
- Carrying loads in excess of the maximum stated on the identification plate.
- Clamping of loads between the forks.
- Displacing loads sideways that are not fully lifted off the ground.
- Operating an attachment that is not correctly mounted to the forklift truck.
- Operating a defective attachment.
- Operating an attachment on a defective forklift truck.
- Handling by unqualified persons.

## Product description

The attachment is based on a robust and torsion-resistant body made with a frame construction. Incorporated in this basic clamp body are four horizontal chromed guide beams.

two adjustable load arms are mounted on the guide beams in such a way that standard forks as per ISO 2328 can be hung and locked in place. Optionally, the forks can also be bolted to the load arms. This attachment design allows for carriage widths on the forklift truck that are smaller than the design width of the attachment, although min. dimensions must be maintained.

The upper cross beam is shaped as a continuous mounting hook at the back, which is in compliance with the dimensions in ISO 2328. Two lower mounting hooks are used to affix the attachment safely to the carriage of the forklift truck. These hooks are also available optionally as quick-release hooks.

## Function description

The load arms are adjusted horizontally by hydraulic cylinders which are operated from the driver's position on the forklift truck.

To ensure safe transportation, the load must be lifted with the forks adjusted to the widest possible setting. The hydraulic circuit has an integral lockvalve which holds the load arms in the position to which they have been adjusted. With a hydraulic side shift function, approach and manoeuvring inaccuracies are easily compensated for. This way, the load arms are simultaneously moved horizontally in the same direction, transverse to the direction as seen from the operator's driving position. Depending on the fork spacing of the load arms set, the then available residual lift of the hydraulic cylinders can be used for the side shifting function. When the load arms are in their end positions, side shifting is thus not possible.

## Possible applications

This type of attachment may only be used for the transportation of loads that can be carried on forks. Suitable loads are loads to be carried on pallets, in boxes or crates, in tubs, bins or in frames. These loads must have suitable load holding facilities such as pockets or must be elevated to accept the forks.

Other suitable loads are those elevated by chocks or in shelves, such as bar sections, or where the forks can enter the load itself, e.g. large pipes.

It is not allowed to clamp loads of any kind using only the tips of the load arms!

## Operator classification / qualification

As an operating company, you must have adequately qualified personnel to operate forklift truck attachments. Further details on this subject can be found in the following chapters of this instruction manual.

In the case of not having qualified personnel or having further doubts on this subject, contact the manufacturer for assistance.

## Period of operation

The attachment is designed for uninterrupted operation on forklift trucks.

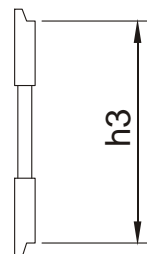


## Forklift truck requirements

The forklift truck carriage dimensions must comply with the ISO standard 2328.

The following values may help with the orientation:

- Reference dimension h3.
- Hydraulic delivery volumes.



Reference dimension h3

Category ISO 2328	h3 tolerance [mm]	Load lifting capacity [kg/mm]	Oil volume [l/min]		
			min.	recom mend ed	max.
2	381 -1	up to 2500/600	10	20	30
2	476 -1.5	up to 3600/500	10	20	30
3	476 -1.5	up to 5000/600	15	25	40



Smaller hydraulic delivery volumes result in lower speeds. Higher hydraulic delivery volumes result in excessive oil temperatures which will cause greater wear and lower efficiency of the hydraulic system.

## Safety

### Qualification of personnel

All persons working on or with the attachment must be adequately qualified to do so.

Operating personnel:

- Must have adequate instruction in the functional and operational processes.
- Knowledge of responsibilities inherent to executing the required work operations.

Service personnel:

- Well-founded knowledge of mechanical engineering, electrical engineering, and hydraulics.
- Authorisation to commission the attachment according to the relevant standards of safety technology.
- Well-founded knowledge of the structure and functioning of the attachment.

As an attachment operator, you are tasked to ensure that all persons involved in the set-up, operation, servicing, or repair of attachments have thoroughly read and understood the relevant parts of the Operating and Service Instructions.

### Overall safety

This attachment complies with the state of the art of science and technology. It is dependable and safe to operate. Even so, it could still harbour possible dangers to persons, or faults may occur. Attention to the Operating and Service Instructions is therefore mandatory at all times.

The manufacturer's Operating and Service Instruction manual provides a code of conduct for the operators of attachments and for all persons involved in the set-up, operation, servicing, or repair of attachments.



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#### **Risk of injury through improper use!**

Be aware that persons may be injured due to improper use. Furthermore, incorrect handling may also cause damage to the load or attachment.

- ➔ Always use the attachment for its intended purpose.
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## Personal safety

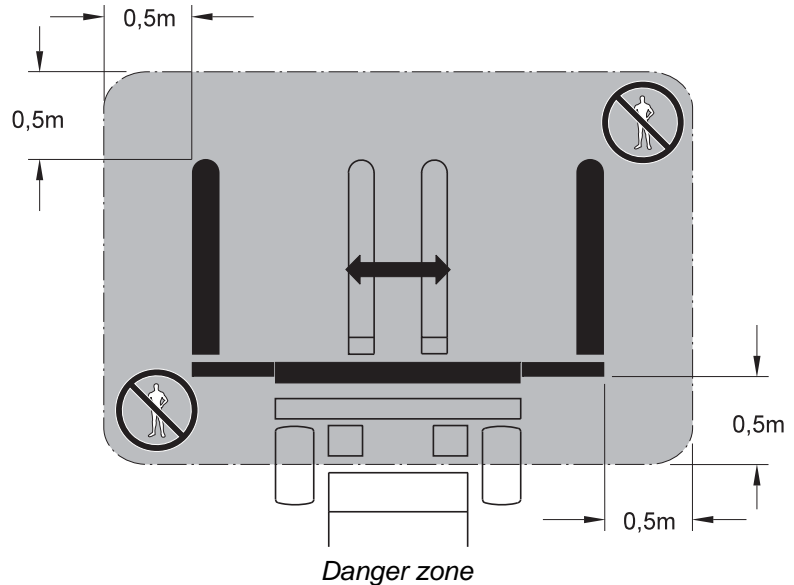


DANGER

### Danger to life through crushing and shearing!

When the attachment is moved, persons can be seriously injured by crushing or shearing, especially if caught between the rotating and shifting parts.

- ➔ The attachment may only be activated when no persons are present within the danger zone!



WARNING

### Crushing hazard

The attachment has a substantial empty weight. This may cause dangerous crushing action during mounting or storage procedures. You may be in danger of being crushed by the empty weight of the attachment.

- ➔ Taking this into consideration, initiate the appropriate safety precautions. Further details on this subject can be found in the following chapters.
- ➔ Always safeguard the attachment against the possibility of it falling over or falling off.



WARNING

### Toxicity hazards

Lubricants are harmful if brought in direct contact with the skin. Modern lubricants and hydraulic oils are optimized for technical functionality and can cause serious illness if swallowed or if they come into contact with the skin.

- ➔ Avoid all direct contact with lubricants and hydraulic fluids.

## Product safety



CAUTION

### Damage to the attachment and the load!

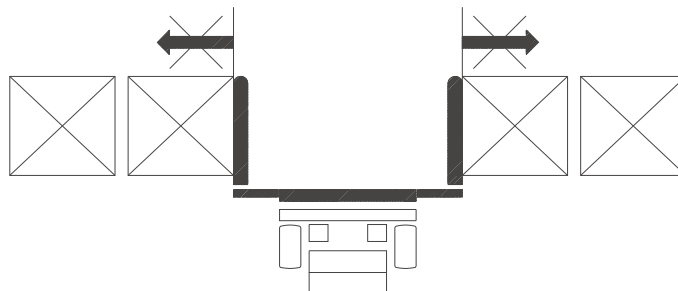
Incorrect handling can result in damage to the attachment and the load.

- ➔ Always position the attachment properly against the load.
- ➔ Always use the attachment and its functions in the correct form and manner.

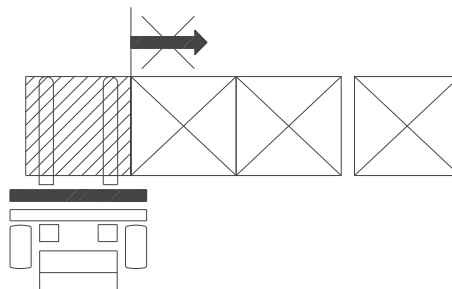
Always ensure compliance with the following instructions:

- Ensure that the attachment is mounted securely to the forklift truck.

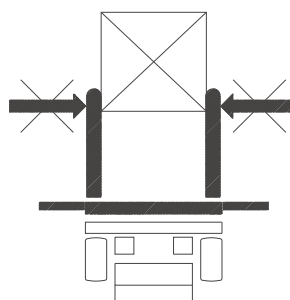
- Do not use the "Open" function to move loads sideways (figure „Loads being forced sideways while opening the load arms“). The load arms and attachment are not designed to withstand this kind of overloading, serious damage may be caused to both.
- Do not use the "Sideshift" function to move loads sideways without lifting them clear of the ground (figure „Loads being forced sideways while sideshifting“).
- Do not use the "Close" function to clamp loads between the tops of the fork-type load arms (figure „Jamming at the fork tips“).
- To ensure safe transport, the load must be placed fully against the fork rear edge when picked up and transported (figure „The load against the fork backs“). If the nominal load is picked up with an increased distance from the load centre of gravity, the attachment is overloaded. Overloading can cause damage to the attachment and the forklift truck. Also, there is an increased risk that the forklift truck may tip over.



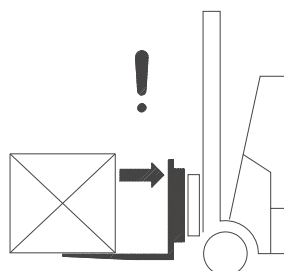
*Loads being forced sideways while opening the load arms*



*Loads being forced sideways while sideshifting*



*Jamming at the fork tips*



*The load against the fork backs*

## Transport and mounting

### Delivery and transport

The attachment is delivered on a pallet.

During transportation, the attachment must be either

- on the original pallet.
- securely mounted on the forklift truck.
- hung in appropriate lifting gear, i.e. with ropes or slings.

### Packaging

Generally, the attachment is delivered on a suitable transport pallet and secured with retaining bands. Film wrapping protects the attachment from weather influences and thereby mostly from corrosion during transport.

### Unpacking



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#### **Dangers through overturning!**

After the removal of all retaining bands, the attachment is in a free standing state and could possibly tip over.

- ➔ Be sure the pallet with the attachment is on a level surface.
  - ➔ Support the attachment with adequate lifting gear or supports before removing the retaining bands.
- 

Follow the next steps:

1. Remove the packaging.
2. Remove the retaining bands.
3. Dispose of any packaging materials in the approved manner.

Further steps are to be taken from the following chapters.

## Mounting / Installation

### Mounting and connection to the forklift truck

Mounting and installation work shall be implemented by competent personnel only.

Requirements:

- The attachment must be unpacked on the pallet, and the transport belts must be removed.

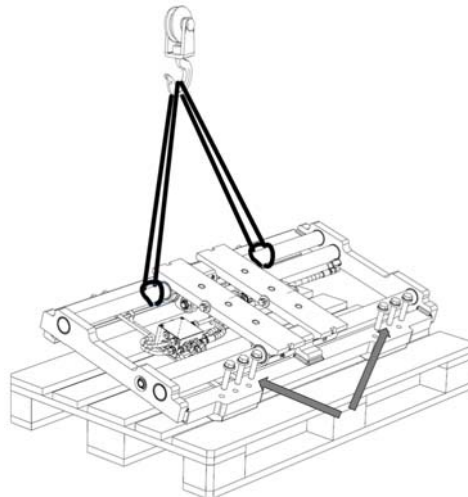


#### Environmental pollution through lubricants!

- ➔ Great attention must be paid in stopping hydraulic oil and lubricants from polluting the environment.

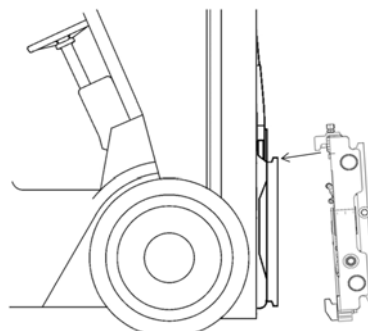
Follow the next steps:

1. Loosen and remove the screws on the lower mounting hooks and lift the attachment using suitable hoisting gear, e.g. ropes or slings, as shown in the diagram.



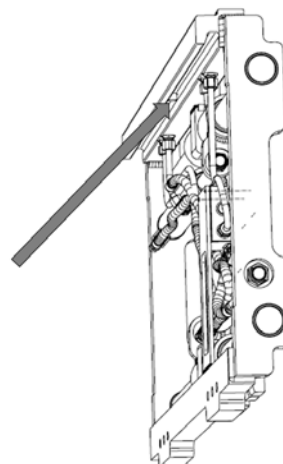
*Remove lower mounting hooks and lift up attachment*

2. Drive the forklift truck against the attachment from behind it and pick it up with the carriage.



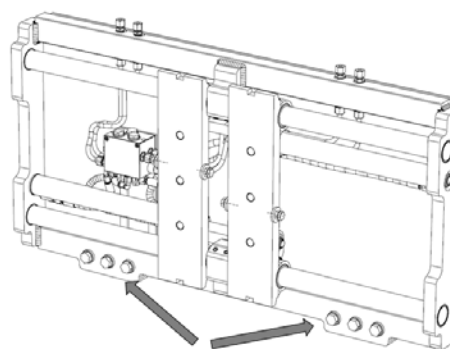
*Hooking the carriage onto the forklift truck*

- The centre locking pin on the attachment must lock in the centre groove of the forklift truck carriage.



*Centre locking pin on attachment*

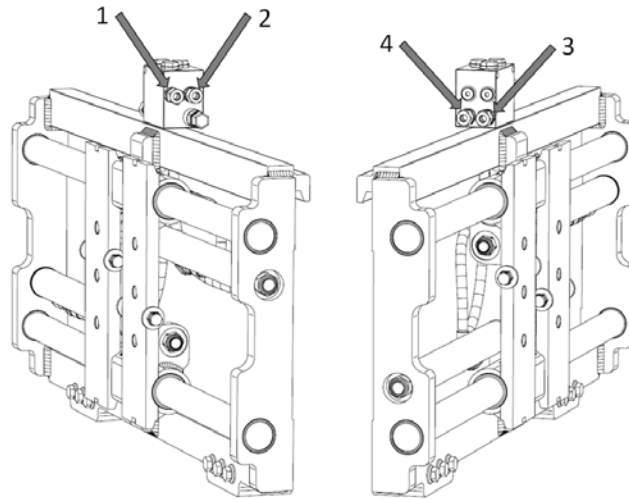
- Refit the lower mounting hooks.
- Screw in the attachment bolts. Now tighten up the bolts with a torque wrench.  
M14 screws for ISO2 attachments: Tightening torque = 205 Nm  
M16 screws for ISO3 attachments: Tightening torque = 310 Nm



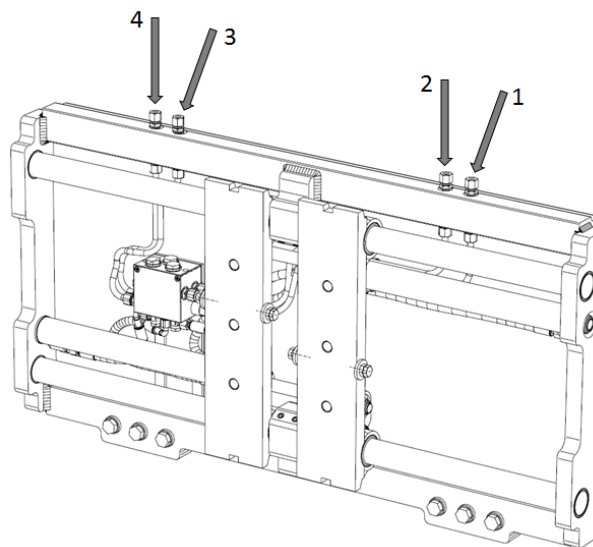
*Screw attachment of the claws*

- Connect the hydraulic jumper hoses to the attachment. Hook up the jumper hoses to the corresponding connections of the forklift truck.

## Hydraulic jumper hose connections



*ISO2 hydraulic connections*



*ISO3 hydraulic connections*

- 1: Open up arms
- 2: Close arms
- 3: Side shift to the right (in the direction of travel)
- 4: Side shift to the left (in the direction of travel)



## Mounting the forks



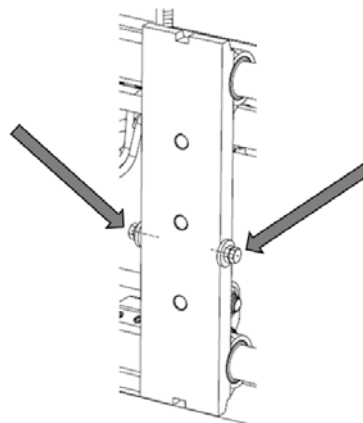
### Use caution when using extra-wide forks

The retaining screws in the sides of the fork carriers can only be used up to a maximum fork width.

- Over-wide forks must be prevented from falling off by additionally screwing them to the fork carriers. The corresponding drill patterns are implemented in the fork carriers.

Follow the next steps:

1. Loosen and remove each one of the retaining screws located on the sides of the fork carriers.



*Retaining screws*

2. Slide the forks laterally onto the fork carriers of the attachment until the centre locking pin of the upper mounting hooks engages.
3. Refit the retaining screws and tighten.

## Operation

### Initial operation

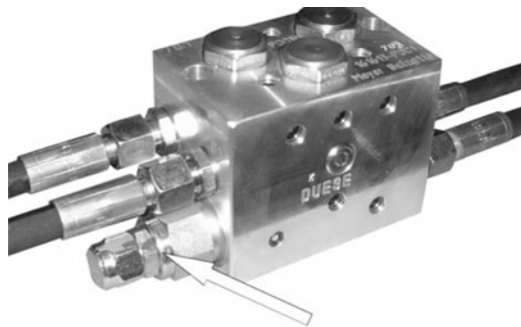
#### Initial operation

Follow the next steps:

1. Check the oil level in the forklift truck, as the attachment withdraws a certain volume of hydraulic oil from the truck tank.
2. When necessary, top up the hydraulic oil.
3. Take all functions, that being all hydraulic cylinders, to the end of their travel.
4. Keep the hydraulic pressure constant for 10 seconds on each function.
5. Inspect all hydraulic couplings for leakage.
6. When necessary, retighten any leaking hydraulic couplings.

#### Adjustment of Hydraulic Pressure

The preliminary working pressure necessary to operate the side shifting function of the load arms is preset in the factory. The diversity of hydraulic systems and forklift trucks and the different performance rates of these systems requires individual pressure settings. The maximum pressure for the side shift function is 120 bar. It is recommended to set the pressure only so high as to be able to shift the load to be transported sideways with adequate performance. This pressure is set on the valve of the attachment.



*The cap nut has been refitted*

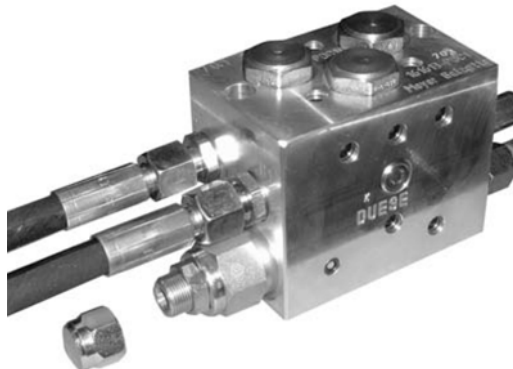
## Adjusting pressure for the side shifting function

Requirements:

- Prepare a load with the maximum permitted load capacity.

Follow the next steps:

1. Remove the existing cap nuts.



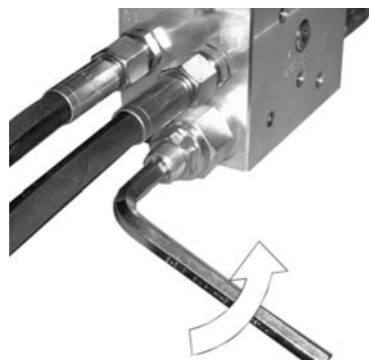
*Valve with cap nut removed*

2. Slacken off the locknut.



*Slackening off the locknut*

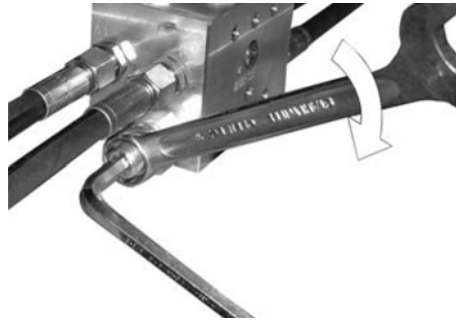
3. Completely unscrew the adjusting screw (anti-clockwise).



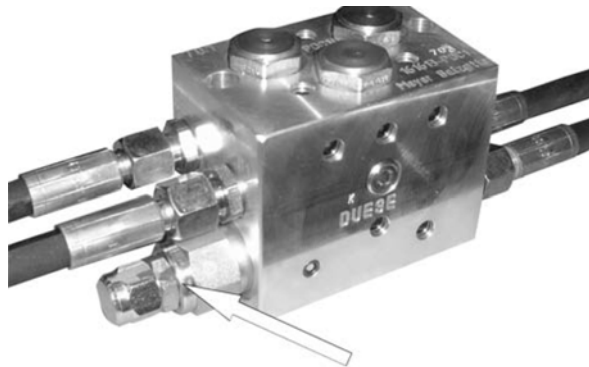
*Unscrew the adjusting screw*

4. Now lift the maximum load in preparation for setting the "sideshift" function.
5. Operate the "sideshift" lever.
6. Slowly turn the adjustment screw for the side shift function clockwise until the load starts to move at an adequate speed.

- Lock the adjustment screw with the locknut and refit the cap nut.



*Tightening the locknut*



*The cap nut has been refitted*

All pressure settings have now been correctly adjusted.

### Conducting a test run

During the test run, the verification of the load bearing capacity is to be carried out using the maximum load stated on the identification plate of the attachment. However, if the forklift truck identification plate specifies a lower load capacity, only loads to or below this specification may be transported!

Requirements:

- Choose a suitable load for the test run.
- The load chosen must be of the same type as the load to be transported during normal daily operations.

Follow the next steps:

1. Follow the next steps: Opened the load arms to an appropriate width to safely lift the load.
2. Lift the load to a height of approx. 10 cm off the floor.
3. Side shift the load to each side and hold the forklift truck lever in its fully deflected position for approx. 10sec.
4. Inspect all hydraulic elements and connections for leaks.
5. If all functions work correctly and no leaks are apparent, the attachment may now be put into operation.

Should the test run fail, check the pressure settings or reset them as required. If no serviceable result can be obtained, inform the appropriate supervisor responsible.

## Continuous operation

### Commissioning

Regular checks before starting work:

- Inspect the complete hydraulic system for leaks.
- Inspect for damage to hydraulic cylinders and fittings such as hoses, pipes, valves, and connectors.
- Inspect for wear and cracks in the load arms.
- Inspect for deformation of any parts; indication of a possible accident.
- Ensure that the attachment is well seated on the forklift truck and that the retaining bolts for the lower hooks are screwed in tightly.

If damage is detected:

- By no means is the attachment to be used!
- Inform the appropriate supervisor responsible immediately!

### Handling (continuous operation)

The attachment on its own, not attached to a forklift truck, cannot be activated and can therefore not be operated.

Because of the wide variety of forklift trucks and the differing operating functions etc., it is necessary that the operating instructions for these functions be taken from the forklift truck instruction manual.




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#### Danger to life

- ➔ Adhere to all safety regulations.
  - ➔ Pay attention to this instruction manual.
- 

The attachment may only carry loads in relation to its load centre that do not exceed the maximum load stated on the attachment identification plate.

If lower load capacities are stated on the rating plate for forklift trucks with attachments, then these specify the maximum loads to be carried.

Suitable load types and their handling can be found in chapter „Product description“ (page 6).

In case of a collision, the parts must be inspected by a competent person without delay. Deformation and cracks can lead to secondary damage.

## Operational pauses

### Short pause

A short pause can be defined as switching off the forklift truck to end a working day or before the start of a work break. In these or similar cases, follow the instructions in the forklift truck instruction manual.



### Dangers caused by falling or slipping loads!

- No loads may be resting on the load arms while the attachment is standing idle.
- Observe the instructions in the forklift truck instruction manual.
- Depressurise the attachment hydraulic system (see forklift truck instruction manual).

### Restarting operations

See section „Commissioning“ (page 21).

## Decommissioning

The attachment is decommissioned e.g. if it is removed from the forklift truck to reinstall it or to mount it to a different forklift truck at a later time.

### Decommissioning the attachment

Requirements:

- a suitable vessel is at hand to catch escaping hydraulic oil.
- either sawdust or a similar binding agent is at hand to absorb leaked hydraulic oil.
- A suitable transport pallet is at hand.

Follow the next steps:

1. Remove dirt and potentially leaked or spilled used lubricant from the attachment using a pressure washer. Do not point the water jet directly at the sealing elements.
2. Leave the attachment to dry in the open air or speed up the procedure by using compressed air.
3. Apply fresh lubricant specified for this purpose to all parts requiring lubrication (for suitable lubricants, see chapter „Maintenance and servicing“ (page 24)).
4. Take all relevant moving parts through their movements to disperse the lubricant evenly.
5. Spray all blank metallic parts of the attachment with a commercial preservative intended for this purpose.
6. Switch off the forklift truck.
7. Relieve the hydraulic system pressure (see the instructions in the forklift truck manual).



## Removing the attachment from the forklift truck

### **Risk of injury through hydraulic oil spillage!**

When hydraulic connections are removed or opened, hydraulic fluid can leak. Spilled hydraulic fluid causes increased slip hazards. Skin contact may cause chemical burns.

→ Wear your personal protective gear.

Follow the next steps:

1. Disconnect the hydraulic jumper hoses from the forklift truck.
2. Catch any leaking hydraulic oil with an appropriate vessel.
3. Any spilled hydraulic oil must be bound using the appropriate binding agent and disposed of in accordance with regulations.
4. Remove the bolts on the lower mounting hooks.
5. Lift the attachment using suitable hoisting gear, e.g. ropes or slings (see chapter „Mounting and connection to the forklift truck“ (page 14)), off the forklift truck and deposit it on a transport pallet.
6. Secure the attachment on the pallet e.g. by tying it down to prevent it from accidentally falling off.
7. To safeguard against loss, refit the lower bolts and mounting hooks.
8. Store the attachment in a dry place and cover it using a suitable covering.

## Maintenance and servicing

Service and repairs at regular intervals are the vital key to prolonging the useful life of the attachment.



### Danger to life!

Escaping jets of high pressure hydraulic oil can cause serious injuries if the hydraulic circuit is not first depressurised before working on it!

→ Always depressurise the hydraulic circuits before performing work on the hydraulic system.



### Breakdown!

→ Repairs to major functional elements such as hydraulic cylinders and valves must only be carried out by persons trained to do so.

### Preventive measures

A higher rate of wear, possibly causing corrosion to the guide profiles, will result from attachments operating in extremely dirty environments, this can also have negative effects on other blank metallic surfaces, e.g. piston rods, causing leaks around the packing seals.

Quite often, dirt collecting on the attachment is caused by the front wheels of the forklift truck, which throw up dirt and grit from the road surface. It is therefore advisable to fit the truck with suitable mudguards.

### Regular inspections before starting work

The following points must be accounted for before starting work:

- Leakage in hydraulic cylinders, valves, and the various other hydraulic connections.
- Deformation and cracks on the support frame and the load arms.
- The correct mounting of the attachment on the forklift truck and especially the fastening bolts for the mounting hooks.



If damage is detected, inform the appropriate supervisor responsible immediately!

### Regular maintenance

Lubrication and maintenance intervals are dependant on the workload of the application and external influences e.g. the effects of dust and dirt, fluctuations in temperature change and weather conditions.

Recommended maintenance interval under normal conditions of use:  
Every 1000 operating hours.

Recommended lubricants:

- S2 (synthetic high-performance grease)
- Renolit S2



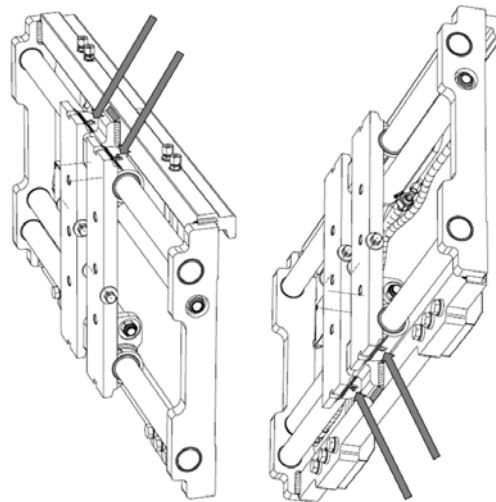
- Interflon fin grease MP 2/3



Do not use heavy-duty grease, high build-up greases, or greases containing graphite!

Follow the next steps:

1. Remove dirt and soiled lubricant adhering to the outside of the attachment by using a pressure washer if necessary. Do not point the water jet directly at the sealing elements.
2. Leave the attachment to dry in the open air or speed up the procedure by using compressed air.
3. Inspect the attachment for leaks in hydraulic cylinders, valves, and the various other hydraulic connections.
4. Inspect the load arms, forks and the main frame for deformation and cracks.
5. Inspect all fastening bolts and check tightness; use a torque wrench if necessary (a torque table can be found in the addendum).
6. Apply fresh lubricant specified for this purpose to all parts requiring lubrication (for suitable lubricants, see above). Use a manual grease press only (max. 4 strokes) to apply lubricant to the bearings on the fork carriers. The use of high-pressure grease presses is not permitted.



*Lubrication points*

7. Take all relevant moving parts through their movements to disperse the lubricant evenly.
8. Spray all blank metallic parts of the attachment with a commercial preservative intended for this purpose.



Always give the type and serial number (see product identification label) when technical assistance or spare parts are required!

## Disposal

After the expiration of the assigned working period or working life has been reached, the attachment may be decommissioned and scrapped.

### Disposal of the attachment

Follow the next steps:

1. Decommissioning the attachment.
2. Take appropriate measures to ensure that the attachment is kept from being used again.
3. Dismantle the attachment professionally.
4. Separate all individual parts and scrap them according to the materials used.
5. Dispose of all surplus fluids according to regulations.

## Addendum

### Torque table for bolted fastenings

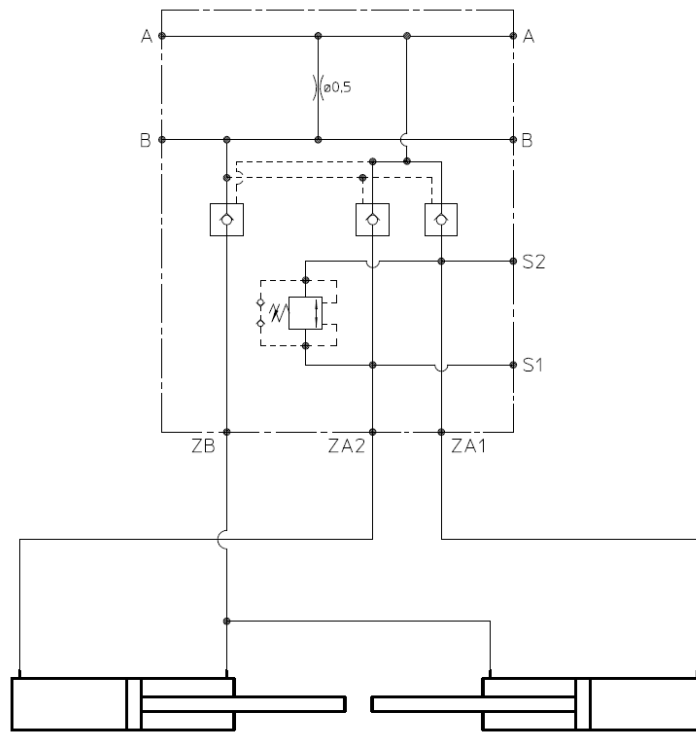
When tightening cylinder head and hexagon type bolts, the correct torque must be obtained by using a torque wrench.

The necessary torque requirements are classified by bolt sizes and strengths in the table below.

Old and used bolts must always be replaced by new ones.

Threads	Strength category			For Verbus Ripp 100 bolts
	8.8	10.9	12.9	
M4	3.1 Nm	4.5 Nm	5.3 Nm	---
M5	6.1 Nm	8.9 Nm	10.4 Nm	10 Nm
M6	10.4 Nm	15.5 Nm	18 Nm	18 Nm
M8	25 Nm	37 Nm	43 Nm	37 Nm
M10	51 Nm	75 Nm	87 Nm	80 Nm
M12	87 Nm	130 Nm	150 Nm	120 Nm
M14	140 Nm	205 Nm	240 Nm	215 Nm
M16	215 Nm	310 Nm	370 Nm	310 Nm
M18	300 Nm	430 Nm	510 Nm	---
M20	430 Nm	620 Nm	720 Nm	---
M22	580 Nm	830 Nm	970 Nm	---
M24	740 Nm	1060 Nm	1240 Nm	---
M27	1100 Nm	1550 Nm	1850 Nm	---
M30	1500 Nm	2100 Nm	2500 Nm	---

## Hydraulic circuits



*Hydraulic circuits*

Meaning of the markings on the hydraulic valve

A	Open load arms
B	Close load arms
S1	Side shift to the left (in the direction of travel)
S2	Side shift to the right (in the direction of travel)
ZA1 + ZA2	Cylinder connections to the floor sides
ZB	Cylinder connections to the bar sides