# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notice for the reader</td>
<td>5</td>
</tr>
<tr>
<td>Validity</td>
<td>5</td>
</tr>
<tr>
<td>Illustrations</td>
<td>5</td>
</tr>
<tr>
<td>Accentuated text</td>
<td>5</td>
</tr>
<tr>
<td><strong>Product description</strong></td>
<td>6</td>
</tr>
<tr>
<td>Product identification</td>
<td>6</td>
</tr>
<tr>
<td>Scope of delivery</td>
<td>6</td>
</tr>
<tr>
<td>Standard accessories</td>
<td>6</td>
</tr>
<tr>
<td>Optional accessories</td>
<td>6</td>
</tr>
<tr>
<td>Intended application</td>
<td>7</td>
</tr>
<tr>
<td>Product description</td>
<td>7</td>
</tr>
<tr>
<td>General properties</td>
<td>7</td>
</tr>
<tr>
<td>Typ with integrated Side shifting</td>
<td>7</td>
</tr>
<tr>
<td>Typ with separate Side shifting</td>
<td>7</td>
</tr>
<tr>
<td>Functional description</td>
<td>7</td>
</tr>
<tr>
<td>General functions</td>
<td>7</td>
</tr>
<tr>
<td>Typ with integrated Side shifting</td>
<td>7</td>
</tr>
<tr>
<td>Typ with separate Side shifting</td>
<td>7</td>
</tr>
<tr>
<td>Possible applications</td>
<td>8</td>
</tr>
<tr>
<td>Operator classification / Qualification</td>
<td>8</td>
</tr>
<tr>
<td>Period of operation</td>
<td>8</td>
</tr>
<tr>
<td>Forklift truck requirements</td>
<td>8</td>
</tr>
<tr>
<td>Safety</td>
<td>10</td>
</tr>
<tr>
<td>Qualification of personnel</td>
<td>10</td>
</tr>
<tr>
<td>Global safety</td>
<td>10</td>
</tr>
<tr>
<td>Personal safety</td>
<td>10</td>
</tr>
<tr>
<td>Product safety</td>
<td>11</td>
</tr>
<tr>
<td>Transport and mounting</td>
<td>13</td>
</tr>
<tr>
<td>Delivery and transport</td>
<td>13</td>
</tr>
<tr>
<td>Packaging</td>
<td>13</td>
</tr>
<tr>
<td>Unpacking</td>
<td>13</td>
</tr>
<tr>
<td>Mounting / Installation</td>
<td>14</td>
</tr>
<tr>
<td>Mounting and connections to the forklift truck (Typ with integrated Side shifting)</td>
<td>14</td>
</tr>
<tr>
<td>Mounting and connections to the forklift truck (Typ with separated Side shifting)</td>
<td>16</td>
</tr>
<tr>
<td>Mounting the forks</td>
<td>18</td>
</tr>
<tr>
<td>Load guard (optional)</td>
<td>19</td>
</tr>
<tr>
<td>Operation</td>
<td>20</td>
</tr>
<tr>
<td>Initial operation</td>
<td>20</td>
</tr>
<tr>
<td>Pressure settings</td>
<td>20</td>
</tr>
<tr>
<td>Setting the pressure (integrated Side shifting)</td>
<td>21</td>
</tr>
<tr>
<td>Conducting a trail</td>
<td>22</td>
</tr>
<tr>
<td>Continuous operation</td>
<td>23</td>
</tr>
<tr>
<td>Commissioning</td>
<td>23</td>
</tr>
<tr>
<td>Handling (continuous operation)</td>
<td>23</td>
</tr>
<tr>
<td>Operational pauses</td>
<td>24</td>
</tr>
<tr>
<td>Short pause</td>
<td>24</td>
</tr>
<tr>
<td>Restarting operations</td>
<td>24</td>
</tr>
<tr>
<td>Decommissioning</td>
<td>24</td>
</tr>
<tr>
<td>Decommissioning the attachment</td>
<td>24</td>
</tr>
<tr>
<td>Removing the attachment from the forklift truck</td>
<td>25</td>
</tr>
</tbody>
</table>
## Contents

**Fork Positioner**

**Maintenance and servicing**
- Preventive measures .............................................................. 26
- Regular inspections before starting work .......................... 26
- Regular maintenance .............................................................. 26

**Disposal**
- Disposal of the attachment .............................................. 28

**Addendum**
- Torque table for bolted fastenings ................................. 29
- Hydraulic circuits ................................................................. 30
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 trail operation.
- Working with the attachment.
- Maintenance 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.

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.

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

Product identification

All attachments are clearly marked with a identification label. The identification label is attached to the front righthand side of the backplate as seen from the operators driving position.

The identification label bears the following information:
- Manufacturer and address
- Warning notice to load capacity.
- Year of manufacture.
- Type.
- Serial number
- Load capacity.
- Load centre.
- Mass.
- Centre of gravity.
- Hydraulic operating pressure.
- CE-Symbol.
- Works number, if applicable.

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 obtainable on request.

Further information covering optional delivered accessories may be found in the documentation delivered herewith.

Intended application

The Fork Positioner is an attachment for forklift trucks which replaces the trucks own forks and is used to transport loads.

A different application or an application far 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 label.
- Displacing loads sideways that are not free of the ground.
- Operating an attachment that is not correctly mounted on the forklift truck.
- Operating a defective attachment.
- Operating an attachment on a defective forklift truck.
- Handling by unqualified persons.
Product description

General properties
The attachment has a very sturdy and torsion-resistant basic chassis. Incorporated in this basic clamp body are two horizontal chromed guide bars.

Mounted on the guide bars are two adjustable fork carriers which are conform with ISO 2328 and enables standard forks to be used. Optionally, the forks can also be bolted on. The design allows for carriage widths that are smaller than the design width of the attachment, although min. dimensions must be maintained.

Typ with integrated Side shifting
The attachment also has an upper mounting hook.

The lower mounting hooks are available permanently mounted or, optionally, as quick-change hooks. With either configuration, the clearance to the lower carriage profile of the fork lift truck can be adjusted.

Typ with separate Side shifting
The attachment is fitted with a side shift that is flange-mounted in the rear. The clearance between the lower mounting hooks and the carriage profile of the fork lift truck can be adjusted.

Functional description

General functions
The load arms are adjusted horizontally by hydraulic cylinders which are operated from the drivers 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, approach and maneuvering inaccuracies of the truck operator are easily compensated.

Typ with integrated Side shifting
With the integrated side shift, the load arms are hydraulically moved horizontally in the same direction, transverse to the direction as seen from the operator's driving position. This integrated side shifting only applies when the load arms are at an intermediate position between the opening range of the attachment. The resulting reserve stroke of the adjusting cylinders is then available for side shifting.

Typ with separate Side shifting
The side shift is flange-mounted in the rear and hydraulically shifts the entire attachment transverse to the direction of travel as seen from the operator's driving position. It is always available to the operator, regardless of the position of the load arms.
**Possible applications**

This type of attachment may only be used for the transportation of loads that can to 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 load itself can be entered 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 adequate qualified personnel to operate forklift truck attachments. Further details to this subject may be found in the following chapters of this instruction manual.

In the case of not having qualified personnel or furthermore having doubts to this subject, you may ask Hans H. Meyer GmbH (or Hans H. Meyer Ltd.) 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 to the ISO Standard 2328.

The following values may help for the orientation:
- Reference dimension h3.
- Hydraulic delivery volumes.

Reference dimension h3.

<table>
<thead>
<tr>
<th>Category ISO 2328</th>
<th>h3 tolerance [mm]</th>
<th>Load lifting capacity [kg/mm]</th>
<th>Oil Volume [l/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>381 -1</td>
<td>up to 1600/500</td>
<td>20 ±5</td>
</tr>
<tr>
<td>2</td>
<td>381 -1</td>
<td>up to 2700/500</td>
<td>30 ±5</td>
</tr>
<tr>
<td>3</td>
<td>476 -1,5</td>
<td>up to 4000/600</td>
<td>40 ±5</td>
</tr>
<tr>
<td>3</td>
<td>476 -1,5</td>
<td>up to 5500/600</td>
<td>50 ±5</td>
</tr>
<tr>
<td>4</td>
<td>597 -1,5</td>
<td>up to 8000/800</td>
<td>60 ±5</td>
</tr>
</tbody>
</table>

Small hydraulic delivery volumes result in lower speeds. Higher hydraulic delivery volumes result in excessive oil temperatures which will cause greater wear and less efficiency in the Hydraulic system.
Safety

Qualification of personnel

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

Operating personnel:
- Must have adequate instruction in the functional and operational sequences.
- Knowledge of operational sequences while executing the required work operations.

Service personnel:
- Established knowledge of mechanical engineering, electrotechnology and hydraulics.
- Authorisation to commission the attachment according to the relevant standards of technical safety.
- Established knowledge of the composition and functioning of the attachment.

As an operator of attachments, it must be ensured that all persons involved in the mounting, operating, servicing or repairing of attachments have thoroughly read and understood the relevant parts of the Operating and Service Instructions.

Global safety

This attachment complies to the current state 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.

The manufacturer’s Operating and Service Instruction manual is a conduct of behavior for the operators of attachments and for all persons involved in the mounting, operating, servicing or repairing of attachments.

Risk of injury through improper application!
Be aware that persons may be at risk through improper use. Furthermore, damage to the cargo or the attachment may also result from incorrect handling.

⇒ Always use the attachment for its intended purpose.
Personal safety

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 the danger zone is free of all persons!

Dangers through crushing
The attachment has a substantial net weight. This may cause dangerous crushing actions during mounting or storage procedures. You may be in danger of being crushed by the attachment’s own net weight.

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

Dangers through poisoning!
Skin contact with lubricants is health threatening. The technical features of all modern lubricants and hydraulic oils can cause serious illness if swallowed or come into contact with the skin.

- Avoid all skin contact with lubricants and hydraulic oils.

Product safety

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

- Always apply the attachment correctly to the Cargo.
- Always use the attachment and its functions, in the correct form and manner.
Note the following instructions:
- Ensure that the attachment is mounted securely to the forklift truck.
- When "opening" the attachment, be sure not to shift other loads sideways (Illustrations “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.
- Loads on the ground must not be moved sideways with the "sideshift" function ((Illustrations “ Loads being forced sideways while sideshifting”).
- No loads are to be clamped between the tips of the load arms (Illustrations “Jamming at the fork tips”).
- To ensure safe transport, the load must be picked up and transported lying flush against the fork backs (Figure “The load against the fork backs”). If the nominal load is picked up with an increased distance from the load center 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.
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 security bands, but without any further packaging.

In some cases, foil packaging may be used to avoid corrosion.

Unpacking

WARNING
Dangers through overturning!

After the removal of all security 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 using lifting gear or similar before removing the security bands.

Follow the next steps:

1. Remove all existing packaging.
2. Remove the security 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 connections to the forklift truck (Typ with integrated Side shifting)

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

Requirements:
- Arrange the pallet with the attachment, so that the forklift truck can drive behind the back.
- Make sure that the attachment cannot fall over.

Environmental pollution through lubricants!

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

Follow the next steps:

1. Hook rope or lifting sling into upper guide beam. As an alternative, ring bolts can be screwed into existing threaded holes, and the equipment can then be lifted using hooks.

   ![With ring bolts and hooks](image1)

   ![With lifting sling](image2)

2. Unbolt and remove the lower mounting hooks.

   ![Fixing bolts for the lower mounting hooks](image3)

3. Drive the forklift truck centrally behind the hanging attachment.
4. Lower the attachment onto the fork carriage of the truck until the upper mounting hooks have completely closed over the carriage profile. Be sure that the centre locking pin of the attachment locates in the central notch of the carriage.

5. Central slot of the fork carriage

6. Refit the lower mounting hooks. Now tighten up the bolts with a torque wrench.

7. Connect the hydraulic jumper hoses to the attachment. Hook up the jumper hoses to the corresponding connections of the fork lift truck.
Mounting and connections to the forklift truck (Typ with separated Side shifting)

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

Requirements:
- Arrange the pallet with the attachment so that the forklift truck can approach it from the back.
- Make sure that the attachment cannot fall over.

Environmental pollution through lubricants!
➤ Great attention must be paid in stopping hydraulic oil and lubricants from polluting the environment.

Follow the next steps:
1. Hook rope or lifting sling into upper guide beam. As an alternative, ring bolts can be screwed into existing threaded holes, and the equipment can then be lifted using hooks.
2. Unbolt and remove the lower mounting hooks.

3. Drive the forklift truck centrally behind the hanging attachment.

4. Lower the attachment onto the fork carriage of the truck until the upper mounting hooks have completely closed over the carriage profile. Be sure that the centre locking pin of the attachment locates in the central notch of the carriage.

5. Central slot of the fork carriage
6. The spacing between the lower mounting hooks and the bottom edge of the fork lift truck carriage is adjustable. For this purpose, the fixing bolts (1) must first be released. Adjust the gap to approx. 0.5 mm by rotating the excenter bolts (2). Then, tighten the fixing bolts with a torque wrench.

7. Connect the hydraulic jumper hoses to the attachment. Hook up the jumper hoses to the corresponding connections of the fork lift truck.

Mounting the forks

**Use caution when using extra-wide forks**

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

➤ Over-wide forks must be prevented from falling off by additionally screwing to the arm carriers. Corresponding hole patterns are provided in the arm carriers ex-works.

Follow the next steps:

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

2. Push the forks sideways onto the fork arm carriers on the fork positioning equipment until the centre detent pin on the top hook latches into place.
3. Replace the retaining screws and tighten.

Load guard (optional)

Load guards are adjusted to the fork thickness. The appropriate threaded holes for mounting the load guard are provided on the attachment ex-works as standard.

The guard load bearing surface can be adjusted to the thickness of the forks being used.

To do this, undo the fixing screws shown in the illustration. Then remove the required number of spacer plates and re-fit the cross bars.
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 trucks tank.
2. When necessary, top up the hydraulic oil.
3. Take all functions, that being all cylinders, to the end of their travel.
4. Respectively, keep the hydraulic pressure constant for 10 seconds.
5. Inspect all hydraulic couplings for leakages.
6. When necessary, retighten any leaking hydraulic couplings.

Pressure settings (Typ with integrated Side shifting)

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. Ideally, a maximum pressure of 120 bar should not be overstepped for any of the functions.

This maximum pressure is to set on the forklift truck.

It is not always necessary to use the maximum hydraulic working pressure. The pressure settings should in fact be adjusted to suit the load type, this will guard against damage and prolong the working life of the attachment.

This pressure can be adjusted separately using the hydraulic valve on the attachment.

The cap nut has been refitted
Setting the pressure (integrated Side shifting)

Requirements:
- Prepare a load with the maximum permitted load capacity.

Follow the next steps:
1. Remove the existing cap nuts.
2. Slacken off the locknut.
3. Completely unscrew the adjusting screw (anti-clockwise).
4. Now lift the maximum load in preparation for setting the side shifting function.
5. Operate the sideward lever.
6. Slowly turn the adjustment screw for the side shift function clockwise until the load starts to move at an adequate speed.
7. Lock the adjustment screw with the locknut and refit the cap nut.

![Tightening the locknut](image)

All pressure settings have now been correctly adjusted.

**Conducting a trail**

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

Requirements:
- Choose a suitable load for the trail operation.
- The load chosen must be of the same type as the load to be

Follow the next steps:

1. Follow the next steps: Opened the load arms to an appropriatewidth 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 trail be a failure, 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.
- That the attachment is well seated on the forklift truck and that the retaining bolts for the upper and lower hooks are screwed in tightly (see addendum; Torque Table).

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 (levers, pedals and switches) etc., it is necessary that the operating instructions for these functions be taken from the forklift truck instruction manual.

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 label.

If reduced 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”.

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.
- Relieve the attachments hydraulic system of pressure (see forklift truck instruction manual).

Restarting operations
See section “Commissioning” (Page 23).

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

Decommissioning the attachment

Requirements:
- a suitable vessel to be 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.
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”).
4. Take all relevant moving parts through their movements to disperse the lubricants evenly.
5. Spray all blank metallic parts with a commercial preservative intended for this purpose.
6. Switch off the forklift truck.
7. Relieve the hydraulic system of 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 to regulations.
4. Remove the bolts on the lower mounting hooks.
5. Place the attachment on the transport pallet and unhook the carriage from the upper mounting hooks of the attachment by inclining the pylon forward and lowering it.
6. Secure the attachment on the pallet e. g. by tying it down to prevent it from accidentally falling over.
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 attachments working life.

**Danger to life!**
Escaping jets of high pressure hydraulic oil can cause bad injuries if the hydraulic circuit is not first depressurised before working on it! ➔ Work on the hydraulic system must only be carried out after first depressurising the hydraulic circuits.

**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:
- Leakages in hydraulic cylinders, valves and the various other hydraulic connections.
- Deformation and cracks in 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 lubricants:
- S2 (synthetic high-performance grease)
- Interflon fine grease MP 2/3 (do not use heavy-duty grease containing graphite!)

Follow the next steps:
1. With the help of a high-pressure cleaner, remove all dirt and the remains of lubrication from the guide profiles.
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, if necessary by using a torque-wrench to check tightness (a torque table can be found in the addendum).
6. 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, as that would risk pushing out bushes and wiper rings.
7. Take all relevant moving parts through their movements to disperse the lubricants evenly.
8. Spray all blank metallic parts 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. Decommission the attachment (see the last chapter).
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.
Torque table for bolted fastenings

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

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

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

<table>
<thead>
<tr>
<th>Threads</th>
<th>Strength category</th>
<th>For bolts Verbus Ripp 100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8,8</td>
<td>10,9</td>
</tr>
<tr>
<td>M4</td>
<td>3.1 Nm</td>
<td>4.5 Nm</td>
</tr>
<tr>
<td>M5</td>
<td>6.1 Nm</td>
<td>8.9 Nm</td>
</tr>
<tr>
<td>M6</td>
<td>10.4 Nm</td>
<td>15.5 Nm</td>
</tr>
<tr>
<td>M8</td>
<td>25 Nm</td>
<td>37 Nm</td>
</tr>
<tr>
<td>M10</td>
<td>51 Nm</td>
<td>75 Nm</td>
</tr>
<tr>
<td>M12</td>
<td>87 Nm</td>
<td>130 Nm</td>
</tr>
<tr>
<td>M14</td>
<td>140 Nm</td>
<td>205 Nm</td>
</tr>
<tr>
<td>M16</td>
<td>215 Nm</td>
<td>310 Nm</td>
</tr>
<tr>
<td>M18</td>
<td>300 Nm</td>
<td>430 Nm</td>
</tr>
<tr>
<td>M20</td>
<td>430 Nm</td>
<td>620 Nm</td>
</tr>
<tr>
<td>M22</td>
<td>580 Nm</td>
<td>830 Nm</td>
</tr>
<tr>
<td>M24</td>
<td>740 Nm</td>
<td>1060 Nm</td>
</tr>
<tr>
<td>M27</td>
<td>1100 Nm</td>
<td>1550 Nm</td>
</tr>
<tr>
<td>M30</td>
<td>1500 Nm</td>
<td>2100 Nm</td>
</tr>
</tbody>
</table>

Tightening Torque Values
Hydraulic circuits

Type with integrated side shifting

Meaning of the markings on the hydraulic valve
A  Open load-arms
B  Close load-arms
S1 + S2  Side shifting to the left and right
ZA1 + ZA2  Cylinder connections to the piston-head side
ZB  Cylinder connections to the piston-rod side

Type with separate side shifting

Meaning of the markings on the hydraulic valve
A  Open load-arms
B  Close load-arms
ZA1 + ZA2  Cylinder connections to the piston-head side
ZB  Cylinder connections to the piston-rod side