Clamp / Fork Positioner
T411 lxx, T401 lxx

- T411 I: Clamp with welded-on forks and valveblock sideshift
- T401 I: Clamp with welded-on forks without valveblock sideshift
- T411 IA: Clamp with bolt-on forks and valveblock sideshift
- T401 IA: Clamp with bolt-on forks without valveblock sideshift
- T411 IZ: Fork positioner integrated with welded-on forks and valveblock sideshift
- T401 IZ: Fork positioner integrated with welded-on forks without valveblock sideshift
- T411 IZA: Fork positioner integrated with bolt-on forks and valveblock sideshift
- T401 IZA: Fork positioner integrated with bolt-on forks without valveblock sideshift
- T411 IH: Harbour clamp with welded-on forks and valveblock sideshift
- T401 IH: Harbour clamp with welded-on forks without valveblock sideshift
- T411 IAH: Harbour clamp with bolt-on forks and valveblock sideshift
- T401 IAH: Harbour clamp with bolt-on forks without valveblock sideshift
## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction</td>
<td>4</td>
</tr>
<tr>
<td>1.1 Working with this manual</td>
<td>4</td>
</tr>
<tr>
<td>1.2 Warning notes and symbols</td>
<td>4</td>
</tr>
<tr>
<td>1.3 Copyright</td>
<td>4</td>
</tr>
<tr>
<td>1.4 Qualified and authorised personnel</td>
<td>5</td>
</tr>
<tr>
<td>1.5 Warranty claims based on defects</td>
<td>5</td>
</tr>
<tr>
<td>1.6 Limits of applicable use</td>
<td>5</td>
</tr>
<tr>
<td>2. Safety aspects</td>
<td>6</td>
</tr>
<tr>
<td>3. Design</td>
<td>7</td>
</tr>
<tr>
<td>3.1 Proper use of the equipment</td>
<td>7</td>
</tr>
<tr>
<td>3.2 Improper use</td>
<td>8</td>
</tr>
<tr>
<td>4. Installation and checking out</td>
<td>8</td>
</tr>
<tr>
<td>4.1 Installation</td>
<td>8</td>
</tr>
<tr>
<td>4.2 Checking out</td>
<td>10</td>
</tr>
<tr>
<td>4.2.1 Bleeding the hydraulic system</td>
<td>10</td>
</tr>
<tr>
<td>4.2.2 Adjustment after putting into service</td>
<td>10</td>
</tr>
<tr>
<td>5. Operation</td>
<td>12</td>
</tr>
<tr>
<td>5.1 General</td>
<td>12</td>
</tr>
<tr>
<td>5.2 Load handling</td>
<td>12</td>
</tr>
<tr>
<td>5.3 Driving</td>
<td>12</td>
</tr>
</tbody>
</table>
6. Maintenance and servicing

6.1 General

6.2 Significant modification

6.3 Schedule for routine maintenance and lubricants

6.3.1 Fork Positioner

6.3.2 Forks

6.3.3 Identification plate and caution board

7. Troubleshooting

8. Disposal

9. Transport

10. Decommissioning and storage

11. Spare parts list (not part of the Operating Manual)

12. EC declaration of incorporation of partly completed machinery (Summary)

Our service department in Aschaffenburg will be happy to answer your technical questions and to provide additional support.

Technical Support:
0049 (0) 6021 865 395
0049 (0) 6021 865 284
0049 (0) 6021 865 352

Orders for spare parts Domestic
0049 (0) 6021 865205
0049 (0) 6021 865251

Orders for spare parts Export
0049 (0) 6021 865344
0049 (0) 6021 865348

Outside of normal business hours the Kaup – Service Hotline is available to you 365 days a year:
0049 (0) 172 6295 297
Monday - Friday: 17:00 – 7:00 Uhr
Saturday und Sunday: 8:00 – 18:00 Uhr

Kaup GmbH & Co KG • Braunstr. 17 • D-63741 Aschaffenburg • email: kaup@kaup.de • www.kaup.de
1. Introduction

1.1 Working with this manual

This operating manual contains important information on how to operate the attachment properly, safely and efficiently.

The operating manual shall be read, understood and applied by all personnel working on or with the equipment, for example:

- Installation and operating the equipment
- Inspection, maintenance and repair
- Transport and disposal

The manual must be kept available for ready reference at the equipment’s place of use.

The illustrations in this operating manual may deviate from the actual version of the equipment.

1.2 Warning notes and symbols

The following symbols are used in this operating manual to highlight details of special importance:

⚠️ Identifies details relating to do’s and don’ts for the purpose of avoiding injury and property damage.

特定的符号指示有关设备使用和其它建议的详细信息。

- Specific details relating to the efficient use of the attachment and other advice.

- Lists are denoted by a shadowed box.

- Steps to be performed by the operator are denoted by a black dot.

(1) In illustrations, particular elements have numbered pointers. Numbers in brackets in the text refer to the corresponding elements.

1.3 Copyright

This documentation including all parts is copyrighted. Any use or change outside the narrow limits of copyright law without permission from KAUP GmbH & Co KG is forbidden and liable to prosecution. This applies, in particular, to reproduction, translation, microfilming as well as storage and processing in electronic systems.
1.4 Qualified and authorised personnel

Qualified and authorised personnel are equipped by way of their education and training to perform the tasks assigned to them in accordance with accepted practice and safety regulations. They are assigned tasks by the equipment owner.

1.5 Warranty claims based on defects

KAUP shall not be liable for any damage to the equipment resulting from:

- Improper use / operation.
- Modifications to components.
- Inappropriate installation, maintenance, inspection and servicing.
- Assignment of unqualified or non-authorised personnel.
- Claims raised by third parties.

1.6 Limits of applicable use

KAUP-attachments are intended for use under the following climatic conditions:

- Average ambient temperature for continuous operation: +25°C
- Allowable maximum ambient temperature, short term (up to 1h): +40°C
- Allowable minimum ambient temperature for attachments intended for indoor use: +5°C
- Allowable minimum ambient temperature for attachments intended for outdoor use: -20°C

Standard models of KAUP-attachments are NOT suitable for:

- Use in cold storage facilities.
- Use in explosive environments.
- Use in conjunction with hydraulic systems involving biological oils.
- Use in rough environmental conditions (e.g. seawater).
- The transport of acidic liquids.
2. Safety aspects

As the user, extend the safety instructions with generally applicable, legal and other measures that ensure a safe and environmentally friendly operation of the attachment.

Pay close attention to all safety- and danger-related signs on the attachment and in this operating manual. Failure to observe these can result in severe injury or even death.

Pay close attention to the operating manual provided by the manufacturer of the fork lift truck.

Keep a safe distance away from moving, reciprocating or rotating parts of the attachment to avoid danger of crushing, pinching or entanglement.

Notify the responsible department/person immediately of changes and faults in operation of the attachment that affect safety.

The attachment shall be shut down.

Use aids to vision (e.g. mirrors, camera, etc.) where goods being transported obstruct vision.

Only allow work on the attachment to be carried out by qualified and authorised persons. Adhere to the legal minimum age in the country of operation!

The attachment should only be used for the purpose intended.

Never work on or with attachments while under the influence of drugs, alcohol or medicines which affect reaction time.
3. Design

A clamp / fork positioner consists of a clamping body (1), on which the slide (2) is mounted with forks (3). Cylinders (5) move the slides (2), which are equipped with sliders (4). A lift truck (6) is screwed directly onto the clamp body (1). Models T411 IA, T411 IZA, and T411 IAH have slides (7), to which forks (8) are connected using screws (9).

3.1 Proper use of the equipment

Clamps are intended for the transport of loads on pallets and non-palletized goods, e.g. bales, crates and cartons.

Fork positioners are designed for carrying loads on pallets or in skeleton containers.

Proper use of the machine and/or equipment includes the following:

- Observance of the operating manual at all times.
- Observance of the technical data on the identification plate on the attachment.
- Adherence to the specified inspection and maintenance instructions.
3.2 Improper use

- Exceeding the allowable load capacity and load centre.
- Dragging or pushing loads with the attachment.
- Transporting persons with the load or load handling devices.
- Mounting auxiliary equipment on the attachment such that the original mode of usage is changed, (e.g. fork extensions) must be authorised by the manufacturer.

4. Installation and checking out

4.1 Installation

Installation and commissioning should be performed by qualified and authorised personnel only.

Pay attention to a sufficient load-carrying capacity of the lifting means.

The following are examples of preferred lifting means:

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Part-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 kg/M16</td>
<td>9710160008</td>
</tr>
<tr>
<td>1200 kg/M16</td>
<td>0360010201</td>
</tr>
<tr>
<td>2000 kg/M16</td>
<td>0360010301</td>
</tr>
</tbody>
</table>

Integrated clamps / fork positioners are components of the lift truck and must be installed into the lifting frame according to the lift truck manufacturer’s specifications. This applies in particular to the choice of mast rollers, stops, chain attachments and hydraulic connections.
- Install the lifting frame rollers (1) onto the roller pins (2) of the attachment.

- Install additional stops to prevent the rollers from coming out of the mast.

- Using lifting equipment (3), lift the built-in attachment and move it into the lifting frame.

- Connect the mast chain to the eyes (4) on the carriage and secure the chain.

- Install the stops necessary to prevent the carriage from moving too far and disengaging from the mast of the forklift.

- Connect the hydraulics (5) to the truck’s hydraulic system.

**Mast designs vary, so the procedure for installation might not necessarily be as described here. Always comply with the specifications and instructions issued by the manufacturer of the mast.**

Lift trucks equipped with attachments that hold loads using force (e.g. paper clamps) must have a second device to operate that prevents the unintended release of the load. Also take note in this respect of the operating instruction of the lift truck.
Before initial operation, check the functions and the identification of the attachment with the movement directions of the operating elements (operating lever, joystick, etc.).

Mount the residual carrying capacity notice and identification of the operating elements (if not already present) of the combination of lift truck/attached equipment on the lift truck.

4.2 Checking out

KAUP-attachments are delivered pre-lubricated. If the attachment has been in storage for a longer period, we recommend that it be lubricated again before being placed in service. See 6. Maintenance and onwards.

Failure of the safety devices (e.g. the pressure relief valve and the non-return valve) and incorrect connection of the controls to the actuators can cause malfunctioning of the attachment and damage to it.

After mounting and before initial operation, check the functions and the identification of the attached equipment with the movement directions of the operating elements (operating lever, joystick, etc.).

4.2.1 Bleeding the hydraulic system

- Start the lift truck.
- Open and close the clamp / fork arm positioner up to the limit stop several times.
- Inspect the hydraulic connections for leakage.

4.2.2 Adjustment after putting into service

The hydraulic system is under pressure. During work on hydraulic components oil spurting out can cause injuries. Unload the system in accordance with the operating instructions of the lift truck manufacturer. In the case of injuries caused by high pressure oil, inform the works physician and seek out a specialist immediately.

- Synchronising the arms

The synchronization of arms is adjusted ex-factory. This can alter for different friction conditions (wear), temperatures and volumes conveyed. Perform a readjustment. The recommended working temperature of the hydraulic fluid is approx. 35 °C.
The synchronization is adjustable by means of two throttles on the bottom of the cylinders.

Adjustment of the clamp pressure  Setting the clamping pressure with a pressure limiting valve

Attachments are adjusted ex-factory to a pressure of 160 bar.

A change in pressure is necessary only, if the load

- slips or
- is damaged.

Make the settings in the numerical sequence and in the direction of the arrows.

The pressure indication on the manometer gauge drops after clamping. This is not a malfunction of the attachment, being caused by the installation of a transmission.
5. Operation

5.1 General

- At least once per working shift, the machine and equipment must be inspected for visible damage and defects. Repeat faults to your superior and have them rectified without delay.
- Be aware of persons present in the area where you are working or driving and ensure that they are not endangered.
- Do not transport any load exceeding that specified on the residual load plate for the particular combination of lift truck and attachment.
- Note the load-bearing capacity of the attachment as stated on the rating plate. This figure always represents the load carried by two or more fork arms.
- The nominal capacity of the forks must exceed the load.

5.2 Load handling

- Set the forks as wide apart as possible for the load to be carried.
- Position the mast vertically and take up the load parallel to the floor.
- Always transport pallets, boxes and containers using both forks.
- Drive the attachment up to the load to maximum extent.
- Raise the load about 300 mm and tilt the mast backwards.
- Centre the load to the middle of the lift truck during take-up and transport.

5.3 Driving

- Ensure that pallets, boxes, containers and packaging are in good condition.
- Do not drive with the mast tilted forward.
- Take care when driving that neither the attachment nor the load comes into contact with the ground.
- Ensure that multiple items stacked on top of one another are securely fastened.
6. Maintenance and servicing

6.1 General

Regular maintenance is essential to ensure reliable operation and long service life of the KAUP attachment.

Ensure that maintenance and servicing are performed by qualified and authorised personnel only.

Lubrication and cleaning work on the attachment may also be performed by the lift truck operator.

Perform maintenance and servicing work only when the attachment is parked securely on a stable, level foundation. For installing and removing, it is recommended to use a pallet to take the attachment. The attachment can thus be securely placed and transported.

Pay attention to a sufficient load-carrying capacity of the lifting means.

Replace missing or defective warning signs on the attachment.

Do not use third party spare parts. Through poor quality or incorrect matching they can result in a risk of accident. The EC Declaration of Conformity by the manufacturer becomes invalid and you assume full responsibility in the case of accident.

Use only original spare parts from the manufacturer.

The hydraulic system is under pressure. During work on hydraulic components oil spurting out can cause injuries. Unload the system in accordance with the operating instructions of the lift truck manufacturer. In the case of injuries caused by high pressure oil, inform the works physician and seek out a specialist immediately.

Screw connections can loosen due to vibration of the attachment. During routine maintenance check that screw connections are correctly torqued and replace screws which are visibly damaged.

Note the following tightening torques which are valid for screws with connecting surfaces according to ISO 4762, ISO 4014, ISO 4032 etc.:

<table>
<thead>
<tr>
<th>Screw/bolt rating</th>
<th>8.8</th>
<th>10.9</th>
<th>12.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6 thread</td>
<td>9.3Nm</td>
<td>14Nm</td>
<td>16Nm</td>
</tr>
<tr>
<td>M8 thread</td>
<td>23Nm</td>
<td>33Nm</td>
<td>39Nm</td>
</tr>
<tr>
<td>M10 thread</td>
<td>45Nm</td>
<td>66Nm</td>
<td>77Nm</td>
</tr>
<tr>
<td>M12 thread</td>
<td>77Nm</td>
<td>115Nm</td>
<td>135Nm</td>
</tr>
<tr>
<td>M16 thread</td>
<td>190Nm</td>
<td>280Nm</td>
<td>330Nm</td>
</tr>
<tr>
<td>M20 thread</td>
<td>385Nm</td>
<td>550Nm</td>
<td>640Nm</td>
</tr>
</tbody>
</table>
Failure of the safety devices (e.g. the pressure relief valve and the non-return valve) and incorrect connection of the controls to the actuators can cause malfunctioning of the attachment and damage to it.

After mounting and before initial operation, check the functions and the identification of the attached equipment with the movement directions of the operating elements (operating lever, joystick, etc.).

6.2 Significant modification

Significant modifications are, for example, those which affect the stability, performance, speed and strength of components.

Modifications to the attachment may only be made with prior approval by the manufacturer.

6.3 Schedule for routine maintenance and lubricants

<table>
<thead>
<tr>
<th>Lubricants approved and recommended by KAUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greases</td>
</tr>
<tr>
<td>Lithium soap grease</td>
</tr>
<tr>
<td>NLGI Class 2</td>
</tr>
<tr>
<td>Complex soap grease</td>
</tr>
<tr>
<td>NLGI Class 2</td>
</tr>
<tr>
<td>Teflon spray</td>
</tr>
</tbody>
</table>

The specified maintenance schedules can change as a result of the operating conditions such as extreme cold, heat and dust or poor ground conditions and this must be taken into account by the owner.

With other loads, such as fork arms with a length of over 2,400 mm or raised load centres, amended/shorter maintenance intervals should be agreed by the user with the manufacturer.
6.3.1 Clamp / Fork Positioner

**Daily**

- Check all lines, hoses and connections for leakage and damage.

**After 50h / every 500h thereafter**

Check:
- Upper screws (10) on the clamp body (7).
- Lower screws (11) on the clamp body (7).

Replace loose or damaged screws. Torque the screws as specified in Chapter 6.1 General.
Weekly

Grease:
- Sliding pieces (2) by way of the greasing nipples (1).

Every 200h

Check wear on:
- Sliding pieces (2).

As necessary

Replace worn sliders (2) by removing nut (5) from each cylinder (6). Pull both slides to the side to remove. Remove the screw (3, 3a). Replace the sliders (2). When installing the new sliders, make sure that the axial stops (4) are correctly seated. Remount the screw (3, 3a). Push the slides into clamp body and reinstall nuts (5) of cylinders (6).

After installing or removing a cylinder (6), always check the clearance between the cylinder mount and nut of the cylinder (9). Cylinders are installed with axial clearance of 1.5 to 2 mm.

6.3.2 Forks

After 50h / every 500h thereafter

Check screws:
- (2) on the forks (3).

Replace loose or damaged screws. Torque the screws as specified in Chapter 6.1 General.
Annually

Inspect the heel of the fork (1) for wear and cracks.

Remove forks from service when wear exceeds 10% of the thickness of the fork.

As necessary

Bent forks are not safe to operate and their continued use should be prevented.

Straightening of forks may only be performed by the manufacturer of the fork or by one of his authorised workshops.

You can increase the service life of forks by using forks especially protected against wear.

6.3.3 Identification plate and caution board

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>KAUP order number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Identification plate without CE-Mark</td>
<td>only by quality department</td>
</tr>
</tbody>
</table>
Before putting into operation carefully read and take note of the operating and security instructions. 0100016401

Never reach into the unit as long as parts could still be moving due to the danger of squashing or shearing. 0100016601

Use suspension point! 0100015001

KAUP – order number without, engraved in the material

7. Troubleshooting

Troubleshooting should only be performed by qualified and authorised personnel.

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clamp / Fork Positioner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening and closing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No synchronism</td>
<td>WE throttles on the cylinder unequally adjusted</td>
<td>Adjust the WE throttles on the cylinder</td>
</tr>
<tr>
<td>Movement too slow</td>
<td>Insufficient fluid flow from truck's hydraulics</td>
<td>Increase flow rate of truck's hydraulics</td>
</tr>
<tr>
<td>Load not holding</td>
<td>Pressure too low</td>
<td>Increase the pressure from the lift truck</td>
</tr>
<tr>
<td></td>
<td>Pressure too low on pressure relief valve</td>
<td>Increase pressure on the pressure relief valve</td>
</tr>
<tr>
<td></td>
<td>Cylinders have internal leaks</td>
<td>Replace sealing kits</td>
</tr>
<tr>
<td>Clearance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carriage has too much clearance</td>
<td>Slider is worn</td>
<td>Replace sliders</td>
</tr>
<tr>
<td>Carriage tilts at outer limit</td>
<td>Slider is worn</td>
<td>Replace sliders</td>
</tr>
<tr>
<td>Carriage rubbing against guide section</td>
<td>Slider is worn</td>
<td>Replace sliders</td>
</tr>
</tbody>
</table>
## Fault Table

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil leakage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At cylinder</td>
<td>WE throttle leaky</td>
<td>Replace the WE throttle</td>
</tr>
<tr>
<td></td>
<td>Sealing kit defective</td>
<td>Replace sealing kit</td>
</tr>
<tr>
<td></td>
<td>Screw fitting is leaking</td>
<td>Tighten / seal screw fitting</td>
</tr>
<tr>
<td></td>
<td>Piston rod scored</td>
<td>Replace piston rod and sealing kit</td>
</tr>
<tr>
<td>Solenoid valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not functioning</td>
<td>Solenoid coil defective</td>
<td>Replace solenoid coil</td>
</tr>
<tr>
<td></td>
<td>No power to the magnet</td>
<td>Inspect power cable and connections</td>
</tr>
</tbody>
</table>

Legend: FFZ = lift truck, WE-Drossel = elbow-type screwed throttle

### 8. Disposal

Prevent environmental damage by disposing of the following items properly in accordance with relevant national regulations:

- Hydraulic fluids, greases, lubricants and soiled working materials (Cleaning rags, etc.)
- Packaging material (Pallets, straps, cartons and plastic sheeting)

After decommissioning, the attachment should be disposed of in accordance with local legislation and regulations.

### 9. Transport

During transport of the attachment, care should be given to using appropriate means of support (e.g. pallets). These must not be damaged. The attachment must be secured against slipping or tipping over on the support.

### 10. Decommissioning and storage

If the attachment is to be stored for an extended period, all hydraulic connectors must be sealed against contamination and damage. Store the attachment in a clean, dry environment.

### 11. Spare parts list (not part of the Operating Manual)
12. EC declaration of incorporation of partly completed machinery (Summary)

KAUP GmbH & Co. KG
Braunstraße 17
63741 Aschaffenburg

We declare, that the partly completed machinery

<table>
<thead>
<tr>
<th>Model:</th>
<th>Clamp / Fork Positioner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type:</td>
<td>T411 Ixx, T401 Ixx</td>
</tr>
</tbody>
</table>

meets the requirements of the 2006/42/EC machine directive as delivered and is intended for installation in a machine.

The following fundamental health and safety requirements of Appendix 1 of the above-mentioned directive have been applied and adhered to:

- Articles 1.1.2, 1.1.3, 1.1.5, 1.3.2 and 1.3.4

The special technical documentation according to Appendix VII B has been produced.

The manufacturer commits itself to electronically transfer special documents for partly completed machinery to Community & National authorities upon request.

The person authorised to compile the technical documents:

Head of Quality department

Initial startup is not permitted until it has been determined that the machine into which the incomplete machine will be installed meets the requirements of EU machine directive 2006/42/EG.

Aschaffenburg,

Head of Quality department