



ATiB MATERIAL
HANDLING

USE AND MAINTENANCE MANUAL

GRIPPER WITH WELDED FORKS 474.170 |

GRIPPER WITH ROTATING FORKS 474.150

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GRIPPER WITH WELDED FORKS 474.170 | GRIPPER WITH ROTATING FORKS 474.150



READ THIS USE AND MAINTENANCE MANUAL CAREFULLY BEFORE
COMMISSIONING THE MACHINE

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1 SAFETY REGULATIONS FOR THE OPERATOR



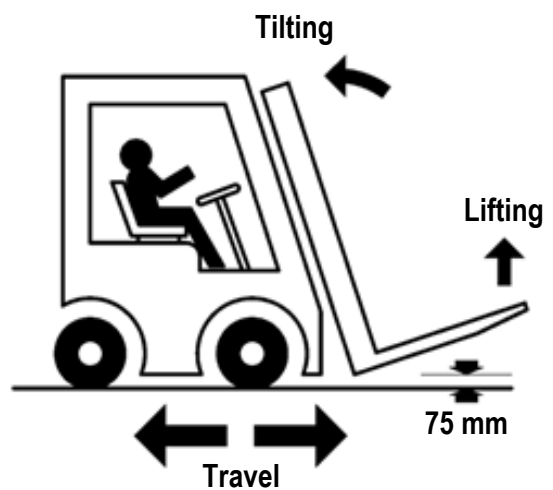
Do not transport passengers



Do not cross the upright



Do not stand under the load



2 INTRODUCTION

2.1 Use and Storage of the Manual

This "Use and Instruction Manual" (hereinafter referred to as the Manual) is issued together with the A.T.I.B. equipment. – "GRIPPER WITH WELDED FORKS 474.170 | GRIPPER WITH ROTATING FORKS 474.150" in accordance with DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17/05/2006 and subsequent additions.

The following indications are essential for correct use of the equipment and must be brought to the attention of the personnel assigned to installation, use, maintenance and repair.

This Manual must be considered an integral part of the equipment and must be kept until it is dismantled in an accessible, protected and dry place and must be available for quick reference.

In the event of loss and/or damage, the user can request a copy from the manufacturer.

The manufacturer reserves the right to modify this manual without prior notice and without the obligation to update previously distributed copies.

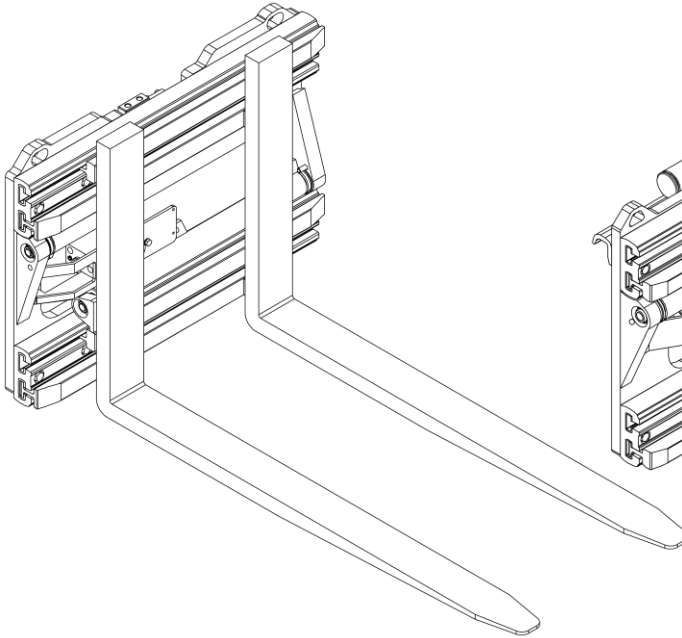
The manufacturer is exempted from any responsibility in the event of:

- Improper use of equipment;
- Use of equipment by untrained personnel;
- Use contrary to any national or international regulations;
- Inadequate scheduled maintenance;
- Unauthorised intervention or modification;
- Use of non-original and/or non-model specific spare parts;
- Full or partial non-compliance with instructions;
- Exceptional events.

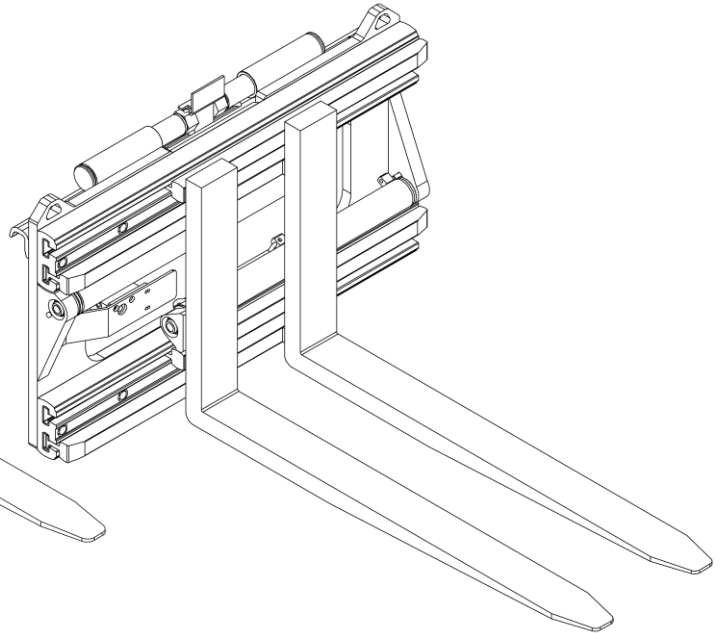
**The nominal capacity of the forklift truck/equipment combination has been set by the original manufacturer of the forklift truck and may be less than that indicated on the equipment plate.
Consult forklift truck plate (Directive 2006/42/EC).**

2.2 Equipment Description

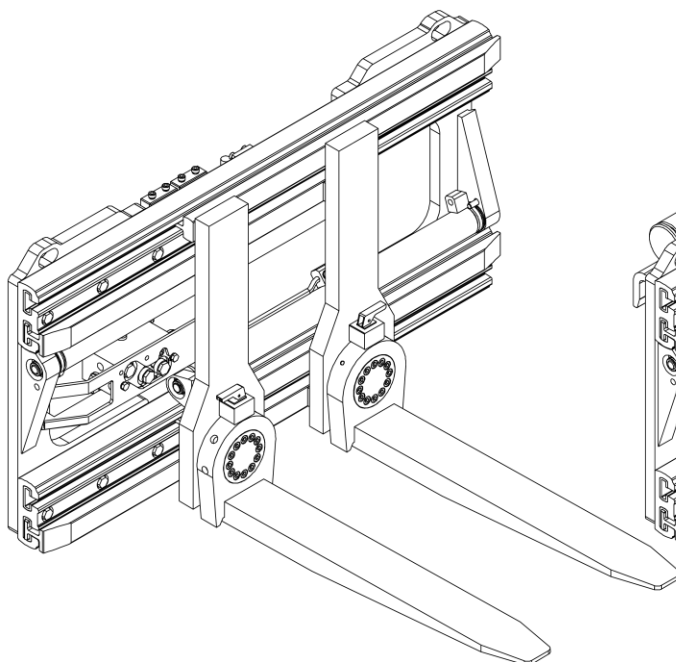
TYPE 474.170



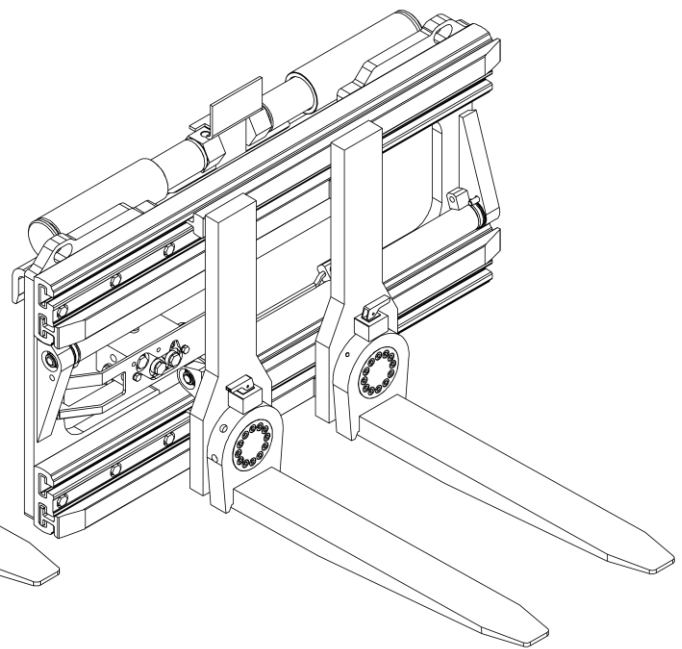
TYPE 474.170 WITH



TYPE 474.150



TYPE 474.150 WITH SISS



All the A.T.I.B. equipment – “GRIPPER WITH WELDED FORKS 474.170 | GRIPPER WITH ROTATING FORKS 474.150” are identified by means of an adhesive plate (see *Table 1*) located on the equipment (see *Figure 1*), always refer to the serial number.

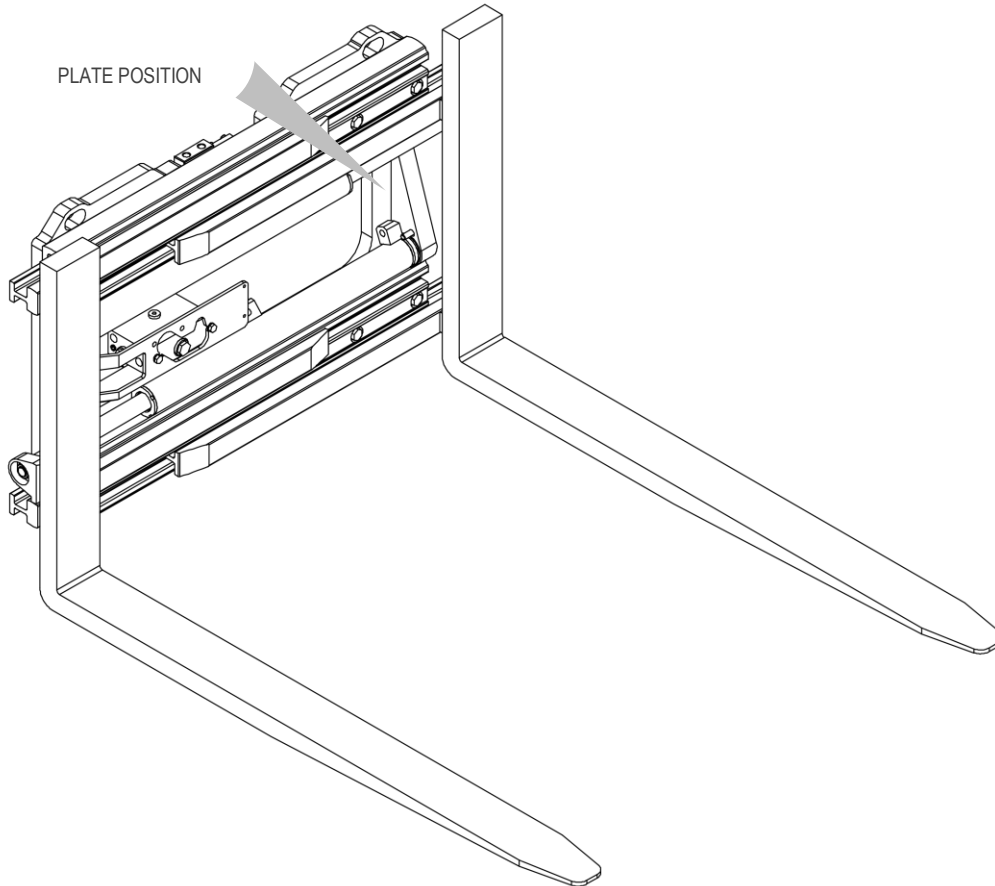


Figure 1



| | | | | |
|--|---|--|---|------|
| 1. TIPO / TYPE | 8. PORTATA NOMINALE / NOMINAL CAPACITY | kg/mm | 11. COPPIA MAX / MAX. TORQUE | daNm |
| 2. CODICE / CODE | 9. PORTATA IN SERRAGGIO / CLAMPING CAPACITY | kg/mm |   | |
| 3. MATRICOLA N° / SERIAL N° | 10. PRESSIONE MAX. DI ESERCIZIO / MAX. OPERATING PRESSURE | bar | | |
| 4. ANNO DI COSTRUZIONE / YEAR OF MANUFACTURE | NOTE: OSSERVARE I LIMITI DI PORTATA DELL'INSIEME CARRELLO CON ATTREZZATURA / WARNING: OBSERVE THE NOMINAL CAPACITY OF TRUCK AND ATTACHMENT COMBINED | A.T.I.B. S.r.l. Via Quinzanese snc, 25020 Dello (BS) - ITALY +39 030 9771711 info@atib.com - atib.com | | |
| 5. PESO / WEIGHT | | | | |
| 6. SPESSORE / THICKNESS | | | | |
| 7. CENTRO DI GRAVITÀ / CENTER OF GRAVITY | | | | |

Table 1

1. TYPE

Indicates equipment model as shown in the catalogue.

2. CODE

Indicates the equipment ordering code.

3. SERIAL N°

It progressively identifies the individual equipment.

In the event that the plate is missing or is damaged, the serial number is also stamped on the profile for connection to the fork-holder plate; for any information always refer to the serial number.

4. YEAR OF MANUFACTURE

Indicates the year of manufacture.

5. WEIGHT

Indicates the weight of the equipment in kg.

6. THICKNESS

Indicates the thickness of the equipment in mm.

7. CENTRE OF GRAVITY

Indicates the distance in mm of the CG centre of gravity of the equipment from the support plane of the fork-holder plate.

8. NOMINAL CAPACITY

Indicates the maximum load applicable to the lifting equipment and the maximum centre of gravity of the load itself.

9. CLAMPING CAPACITY

Indicates the maximum weight that can be lifted via clamping.

10. MAX. OPERATING PRESSURE

Indicates the maximum pressure expressed in bar at which the equipment can work.

11. MAX. TORQUE

Not applicable to this equipment.

The A.T.I.B. equipment – “GRIPPER WITH WELDED FORKS 474.170 | GRIPPER WITH ROTATING FORKS 474.150” has been conceived, designed and manufactured to grip and/or handle loads either on pallets or by clamping the load itself.

ISS = with INTEGRAL SIDESHIFT

SISS = with SEMI-INTEGRAL SIDESHIFT

This equipment must be attached to the fork carriage of the forklift truck and connected to the distributor via a hydraulic circuit.

The relative movement for adjusting the distance between the forks is achieved by means of two hydraulic cylinders.

Semi-integral sideshift motion between the parts attached to the fork carriage and those attached to the lifting equipment is carried out by two hydraulic cylinders.

Integral sideshift motion is carried out by a special valve and uses the same cylinders that handle the forks.

Fork carriage coupling components are manufactured in accordance with ISO 2328.

3 INSTALLATION

Checking the Nominal Capacity of the Equipment

To check the nominal capacity of the clamp, refer to the clamp's rating plate (See *Table 1* on page 6).



Ensure that the driver of the forklift truck is aware of the maximum capacity of the equipment so that they do NOT constitute a hazard to themselves or to persons working in proximity.

The forklift truck manufacturer is responsible for calculating the residual load capacity of the truck/equipment combination.

Checking the Operating Pressure and Oil Flow Rate

A.T.I.B. recommends observing the hydraulic flow rates and operating pressures provided in *Table 2*, to optimise operation of the equipment and avoid issues during work or commissioning. Values are for indicative purposes only and may vary depending on the equipment.

| TYPE and ISO | FLOW RATE (l/mm) | | | Operating pressure Maximum (Bar) |
|-----------------|------------------|---------|-------------|-------------------------------------|
| | minimum | maximum | recommended | |
| 474.170 ISO II | 10 | 40 | 20 | 175 |
| 474.170 ISO III | 15 | 40 | 25 | 175 |
| 474.170 ISO IV | 20 | 40 | 30 | 175 |
| 474.150 ISO II | 10 | 40 | 20 | 175 |
| 474.150 ISO III | 15 | 40 | 25 | 175 |

Table 2



OBSERVE THE INDICATED MAXIMUM OPERATING PRESSURES

3.1 Installation Procedure

3.1.1 Installing the Equipment

(NO SISS)

1. Prior to installation, check the condition of the fork carriage, ensuring that the lower profile is smooth.

2. Also make sure that the profiles of the fork-holder plate are not deformed, in order to ensure good coupling with the equipment.

3. Check the condition of the pipes, replacing those in a poor condition.

N.B. Although only type 474.170 is shown in the installation phase, the equipment installation procedure is identical for different versions (WITHOUT SISS).

4. Remove the lower couplings from the equipment (see *Figure 2*).

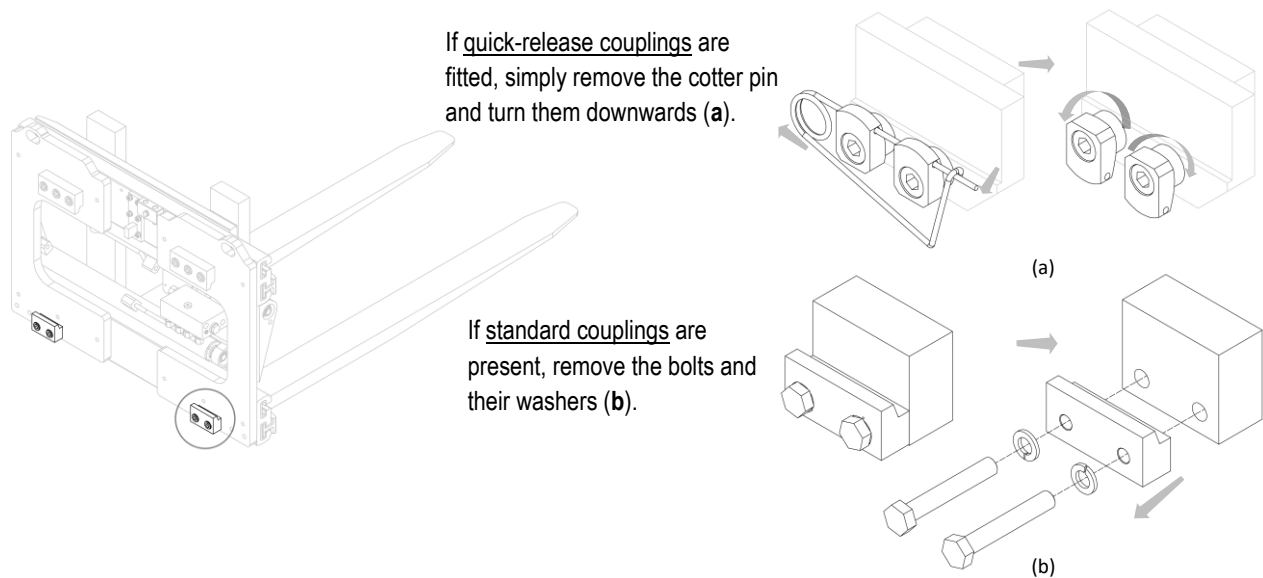


Figure 2

5. For handling, use straps or chains that are suitably sized in relation to the weight of the equipment as indicated on the plate (see *Figure 1* and *Table 1* on page 6).

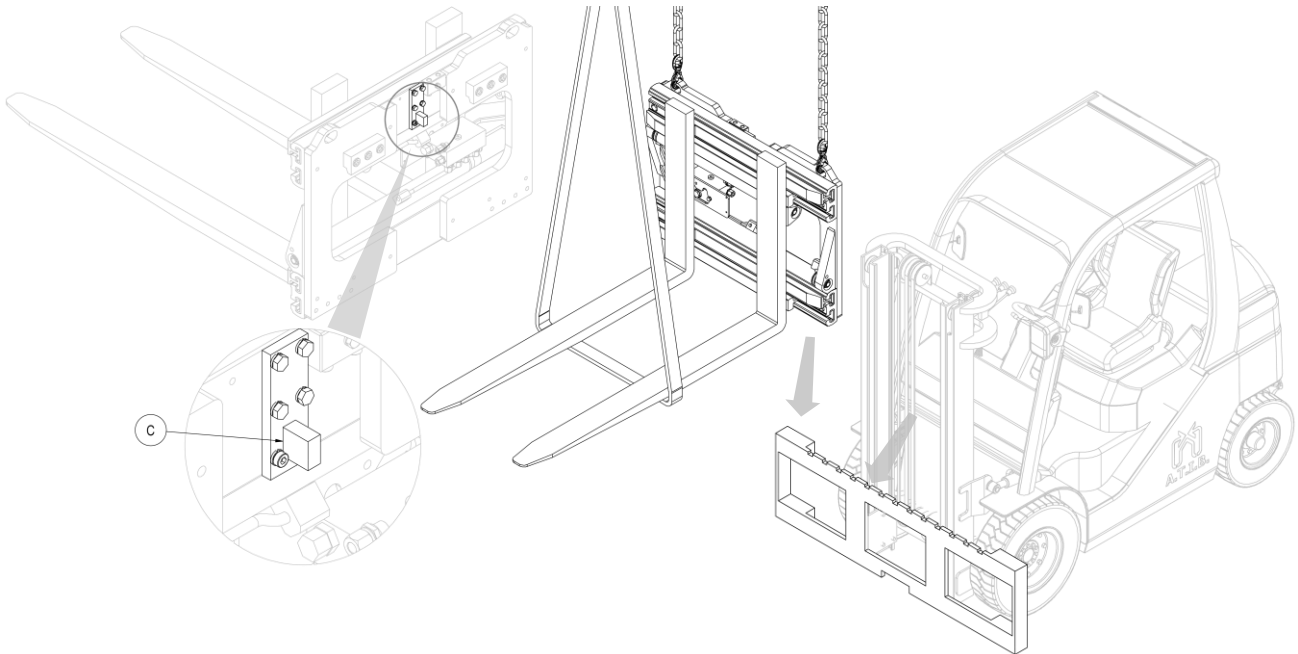


Figure 3

6. Then hook on the equipment using an overhead crane or hoist of sufficient capacity and position it on the fork carriage, taking care to fit centring pin **C** into the central notch on the fork carriage (see *Figure 3*).

7. Screw on the 2 lower couplings **G** in such a way that their bodies also remains coupled to the lower part of the fork carriage **P** (with max. clearance of 1.5 mm, see detail *Figure 4*), tightening with the torque indicated in *Table 3*.

| CLASS | THREAD | TIGHTENING TORQUE |
|---------|--------|-------------------|
| ISO II | M12 | 90 Nm |
| ISO III | M14 | 140 Nm |
| ISO IV | M16 | 220 Nm |

Table 3

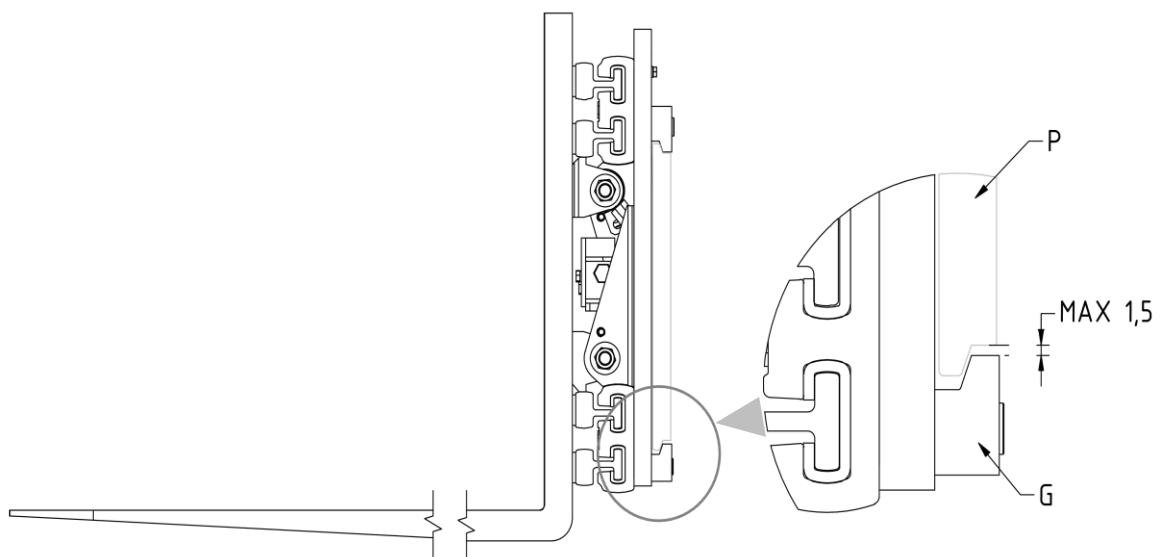


Figure 4

8. Lubricate contact surfaces.
9. Connect the hydraulic circuit, ensuring that the operating pressure of the lines is greater than or equal to that indicated on the rating plate (see *Figure 1* and *Table 1* on page 6).

3.1.2 Installing the Equipment - With Siss

WITH SISS

1. Prior to installation, check the condition of the fork carriage, ensuring that the lower profile is smooth which may otherwise affect the sliding of the lower pads.
2. In addition, ensure that the fork carriage profiles are not deformed in order to facilitate good coupling with the sideshift equipment.
3. Check the condition of the pipes, replacing those in a poor condition.

N.B. Although only type 474.170 is shown in the installation phase, the equipment installation procedure is identical for different versions (WITH SISS).

4. After removing the “protection bracket” (P) with its bolts, manually obtain the dual coupling A (with its sliding bushes), and position it on the upper profile of the fork carriage, taking care to fit the centring pin C into the central notch of the fork carriage (see *Figure 5*).

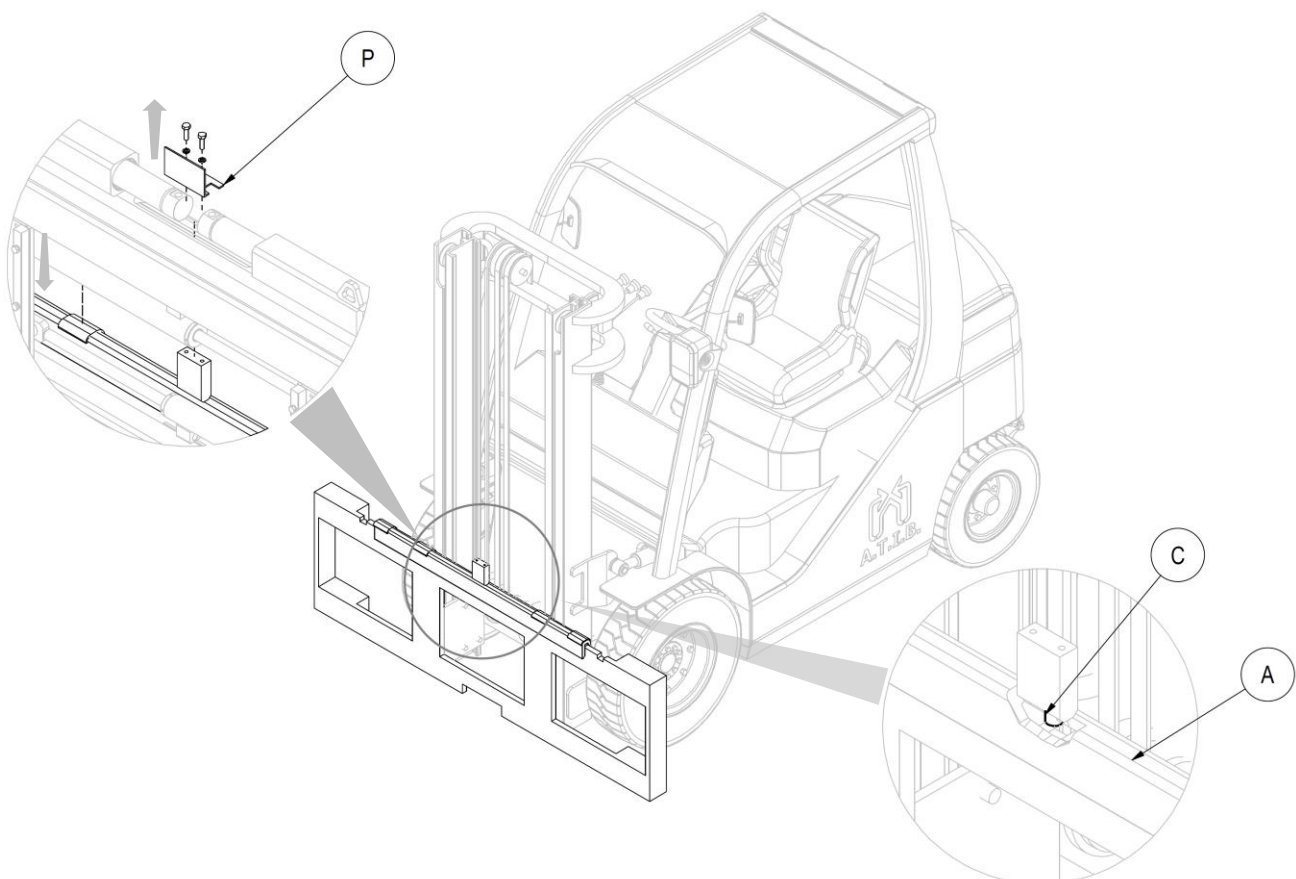


Figure 5

5. Remove the lower couplings from the equipment and grease the sliding gibs (see *Figure 6*).

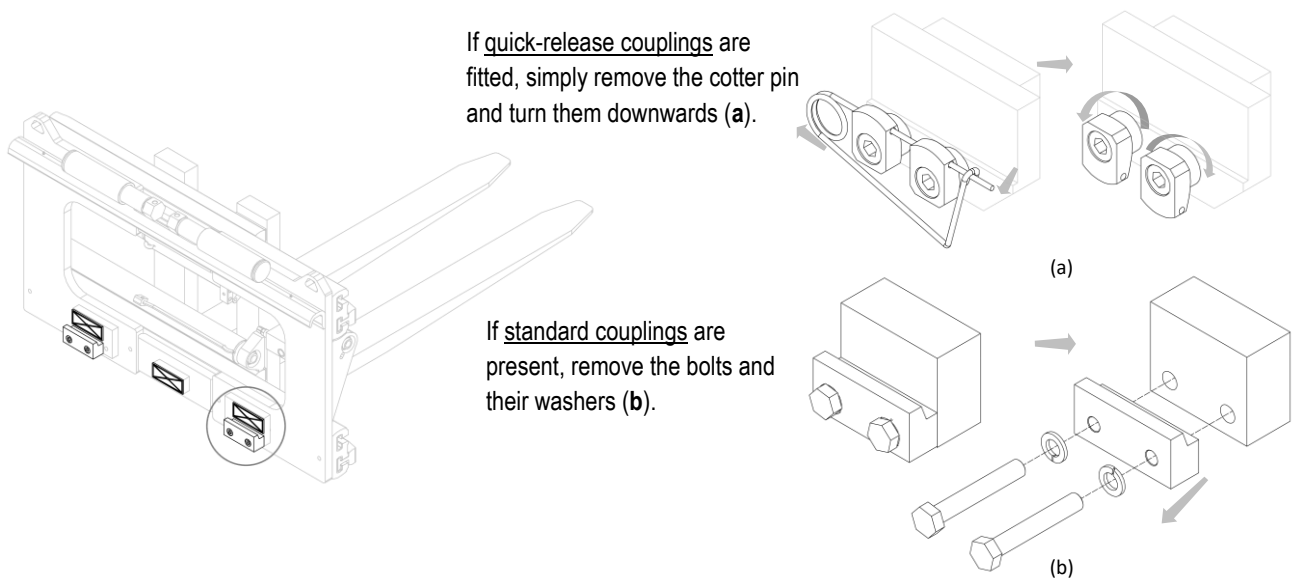


Figure 6

6. For handling, use straps or chains that are suitably sized in relation to the weight of the equipment as indicated on the plate (see *Figure 1* and *Table 1* on page 6).
7. Then hook on the equipment using an overhead crane or hoist of sufficient capacity and position it onto the dual coupling, taking care to position it correctly (see *Figure 7*).

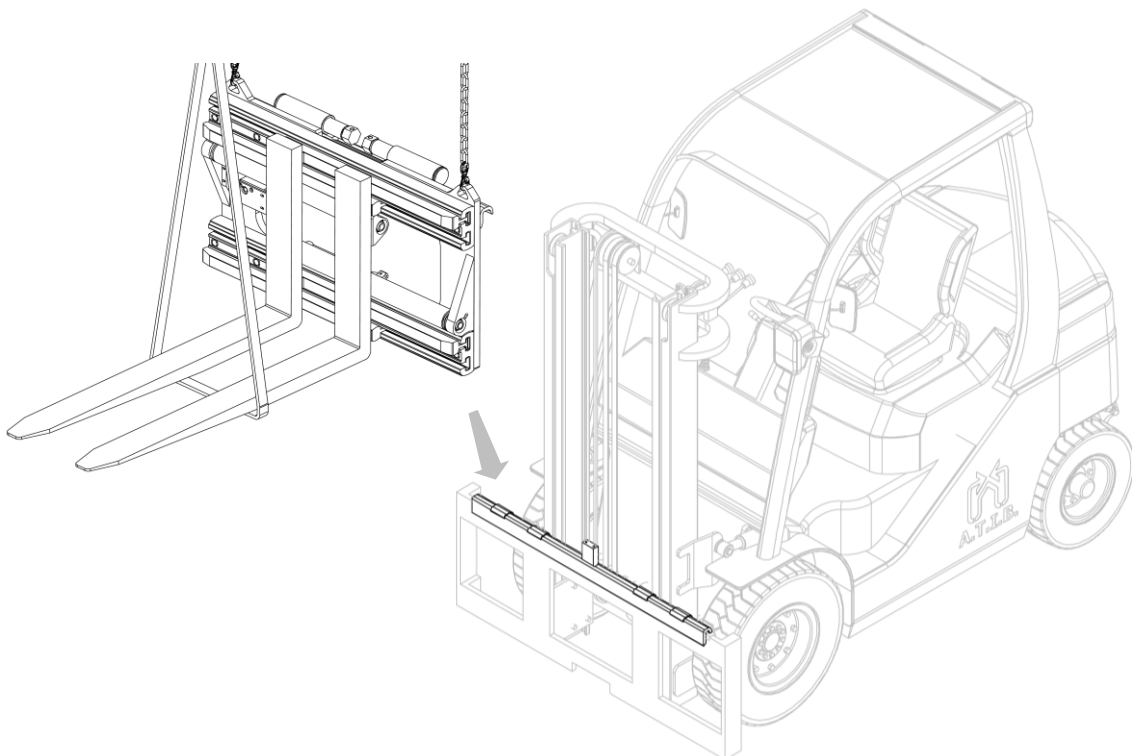


Figure 7

8. Reposition the “protection bracket”.
9. Screw on the 2 lower couplings **G** in such a way that their bodies also remains coupled to the lower part of the fork carriage **P** (with max. clearance of 1.5 mm, see detail *Figure 8*), tightening with the torque indicated in *Table 4*.

| CLASS | THREAD | TIGHTENING TORQUE |
|---------|--------|-------------------|
| ISO II | M12 | 90 Nm |
| ISO III | M14 | 140 Nm |
| ISO IV | M16 | 220 Nm |

Table 4

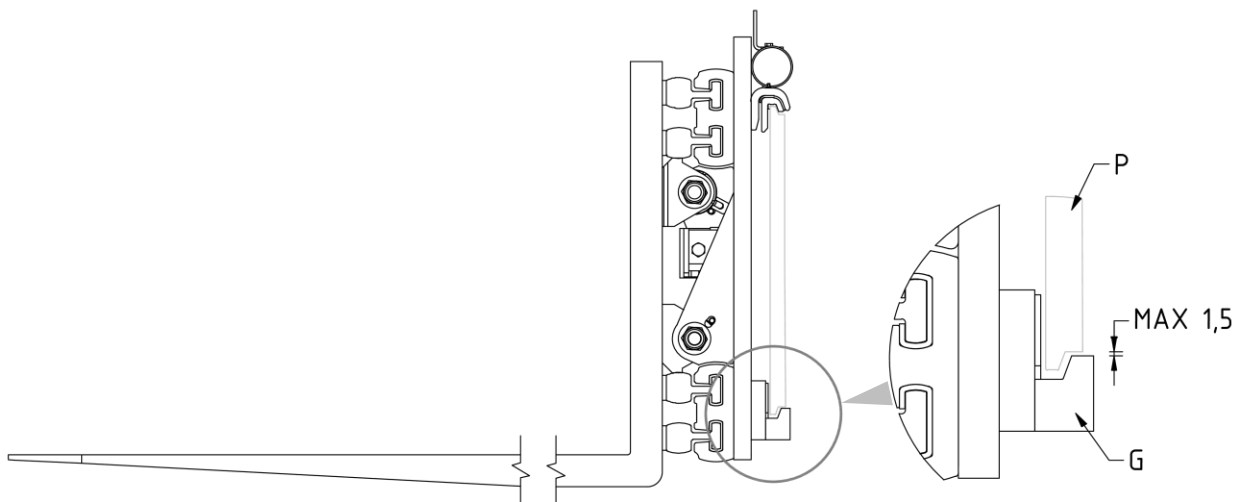


Figure 8

10. Lubricate contact surfaces.
11. Connect the hydraulic circuit, ensuring that the operating pressure of the lines is greater than or equal to that indicated on the rating plate (see *Figure 1* and *Table 1* on page 6).

3.2 Assembling the Aluminium Profiles

ALUMINIUM

1. Release the pressure from the hydraulic system and disconnect the lines.
2. Install the aluminium profiles one at a time, using the bolts provided (see *Figure 9* and *Figure 10*).

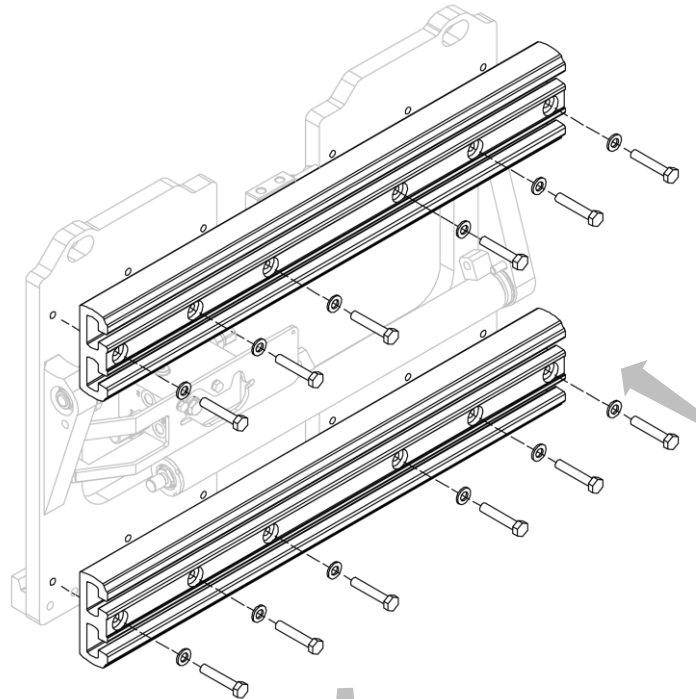


Figure 9

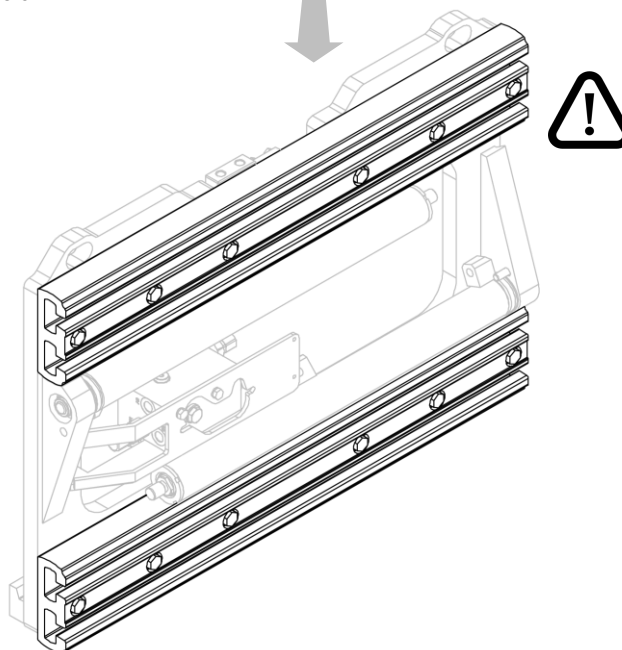


Figure 10

3.3 Assembling the Nylon Bushes

NYLON BUSHES

1. Release the pressure from the hydraulic system and disconnect the lines.
2. Insert the nylon bushes and secure them using the grub screws provided (see *Figure 11* and *Figure 12*).

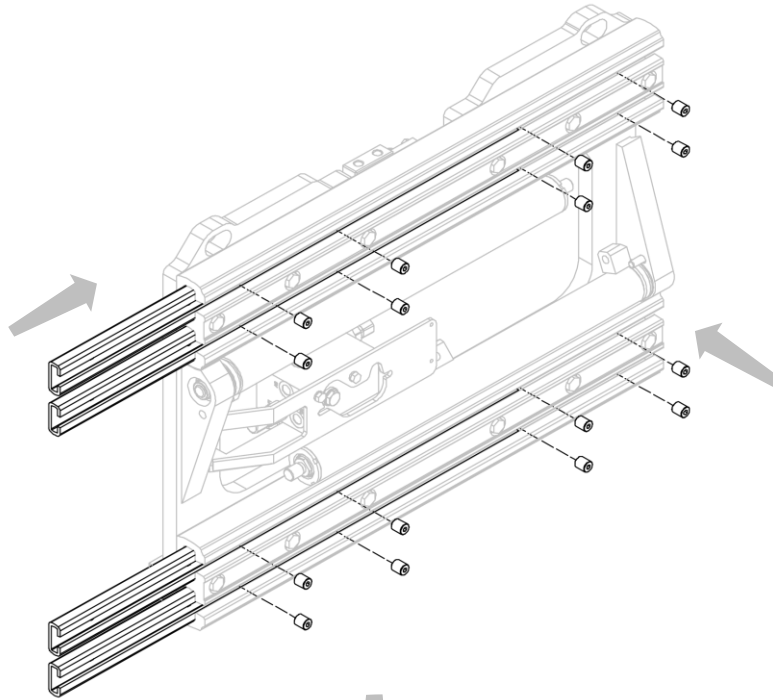


Figure 11

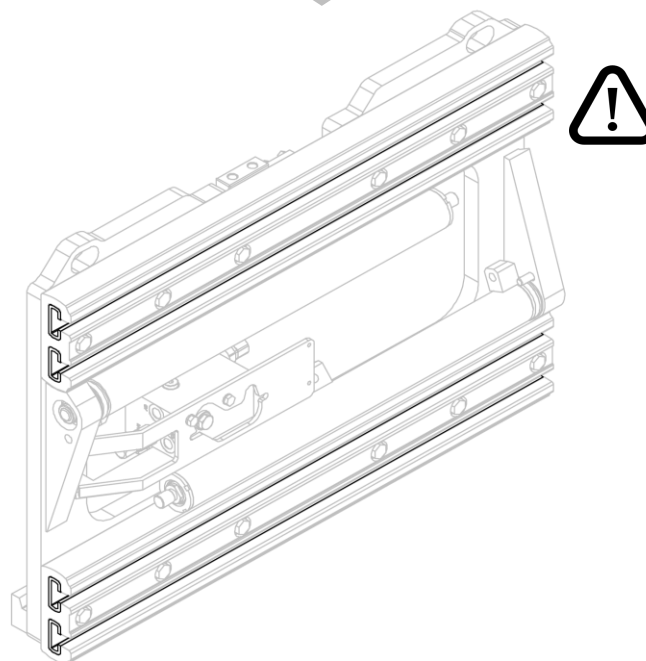


Figure 12

3.4 Assembling the Forks

3.4.1 Assembling the Forks onto the Equipment

N.B. Although only type 474.170 is shown, the procedure for installing the forks on the equipment is identical for version 474.150.

3. Release the pressure from the hydraulic system and disconnect the lines.
4. Insert the fork assembly + forks into their housings and secure them to the cylinders using the nuts (see *Figure 13* and *Figure 14*).

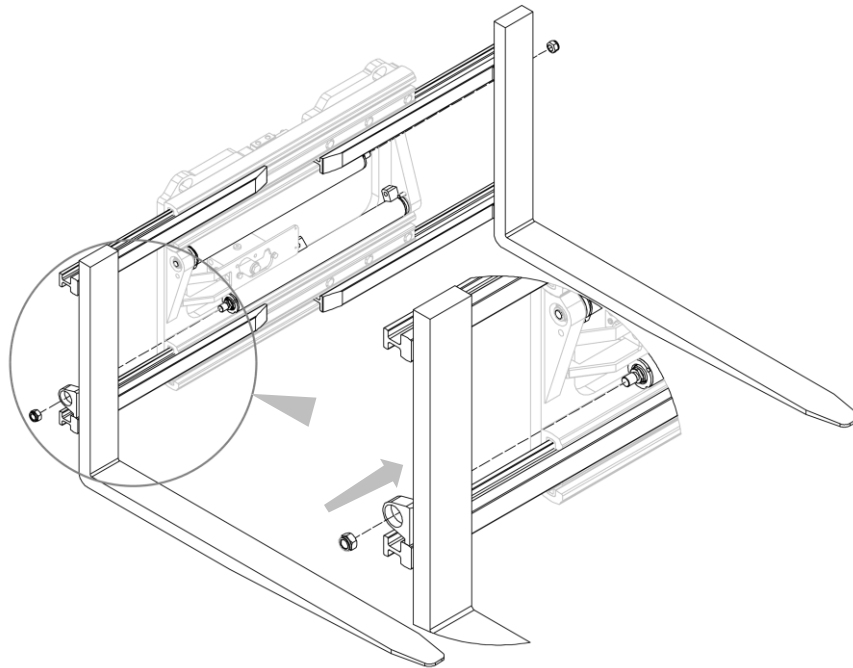


Figure 13

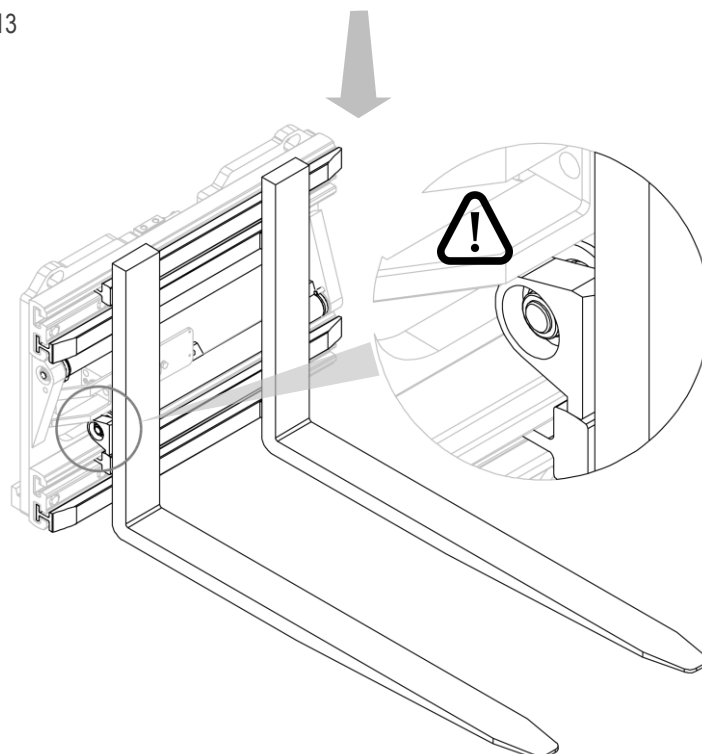


Figure 14

3.4.2 Fork Rotation – TYPE 474.150

ROTARY FORKS

1. Release the pressure from the hydraulic system and disconnect the lines.
2. Use *Figure 15* and *Figure 16* as guides.

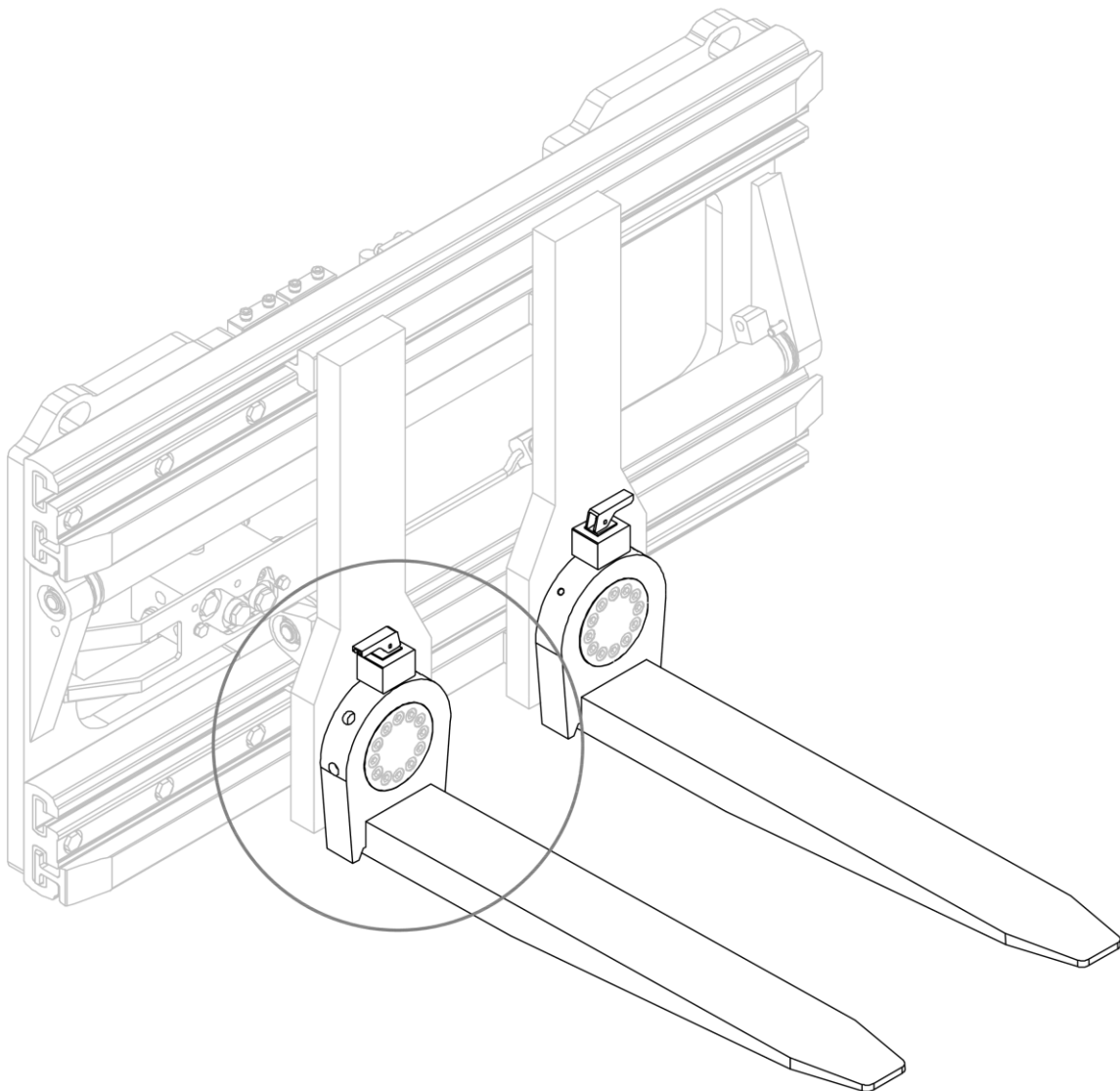


Figure 15

3. Open the fork-stop ratchets → 2.
4. Rotate the forks to the desired position (45/90°) → 3.
5. Close the ratchets and check that the forks are properly secured → 4.

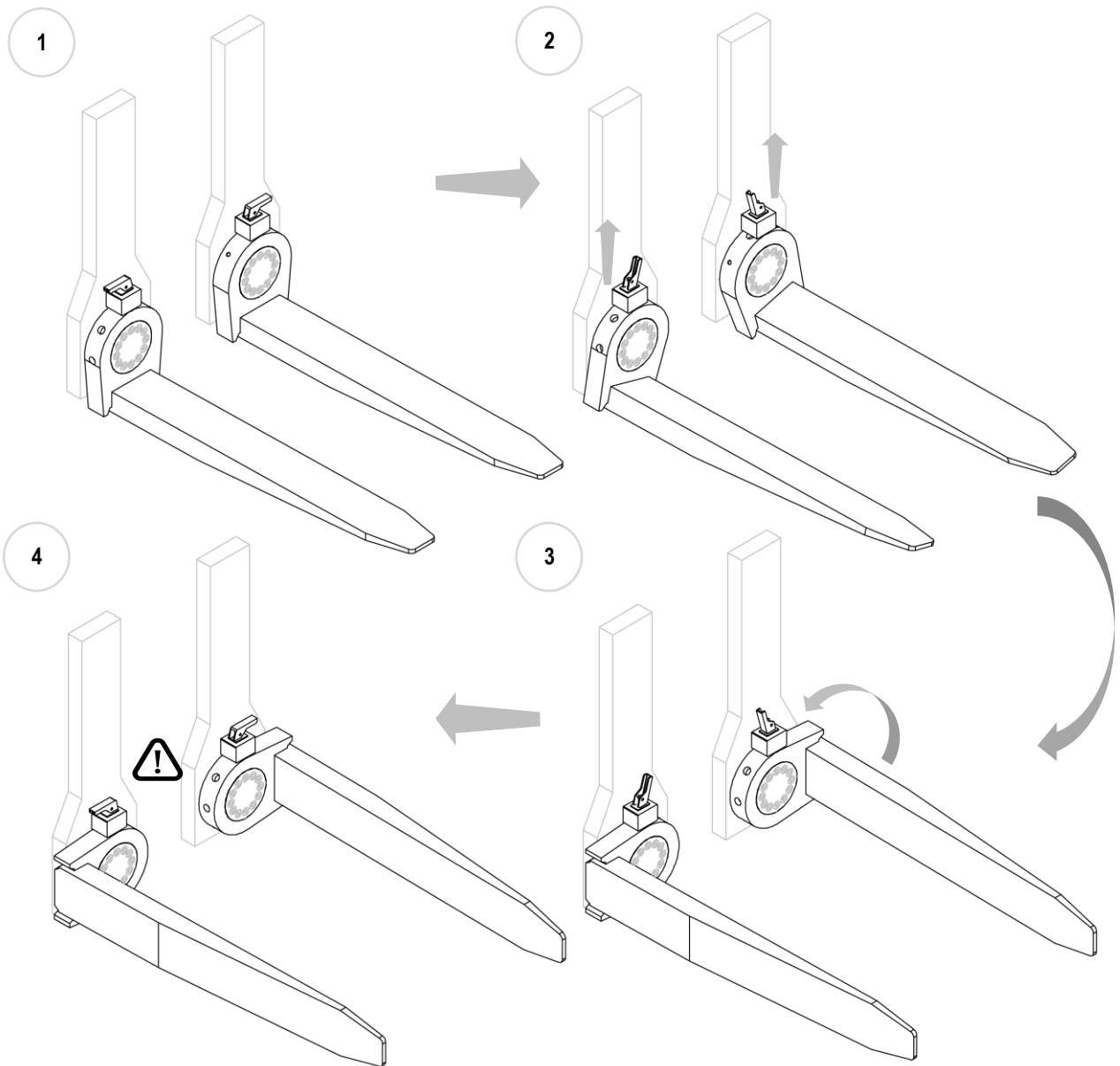


Figure 16

4 HYDRAULIC SYSTEM

N.B. Although only type 474.170 is shown in the images, the position of the solenoid valves is identical

4.1 Hydraulic System - Valve B2383022

VALVE B2383022

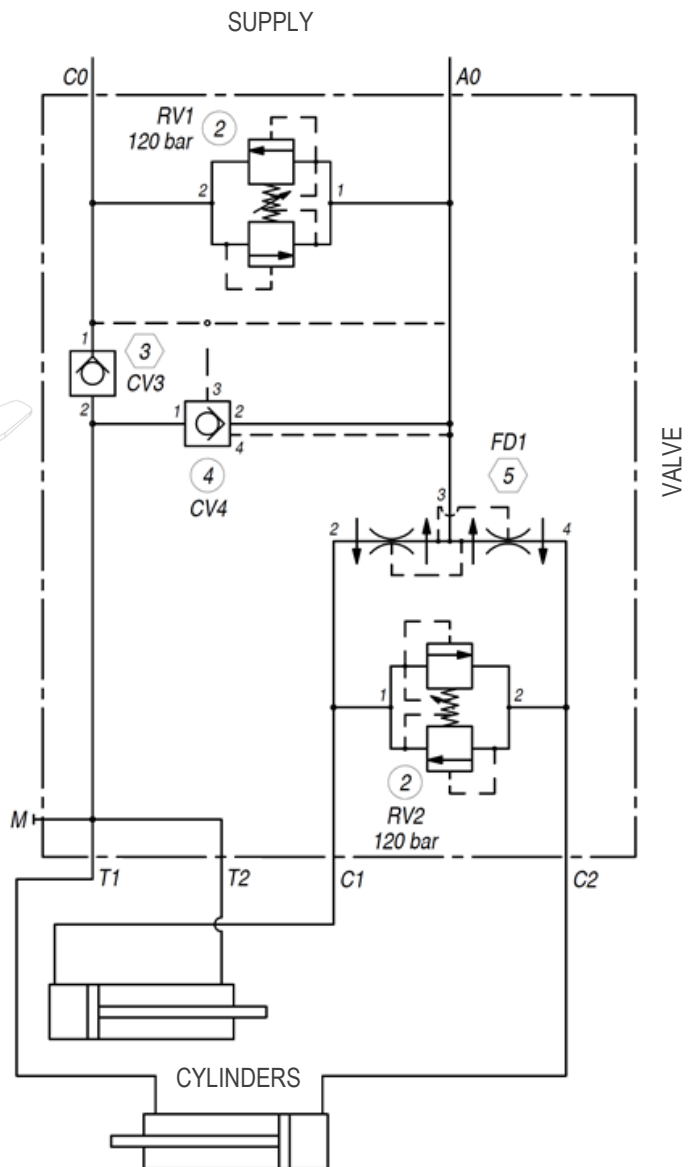
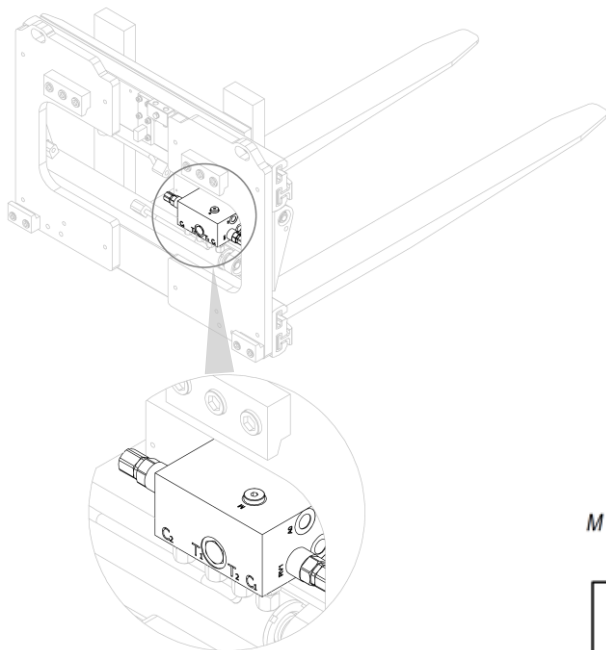


Figure 17

4.2 Hydraulic System - Valve B2383022 with Siss

VALVE B2383022

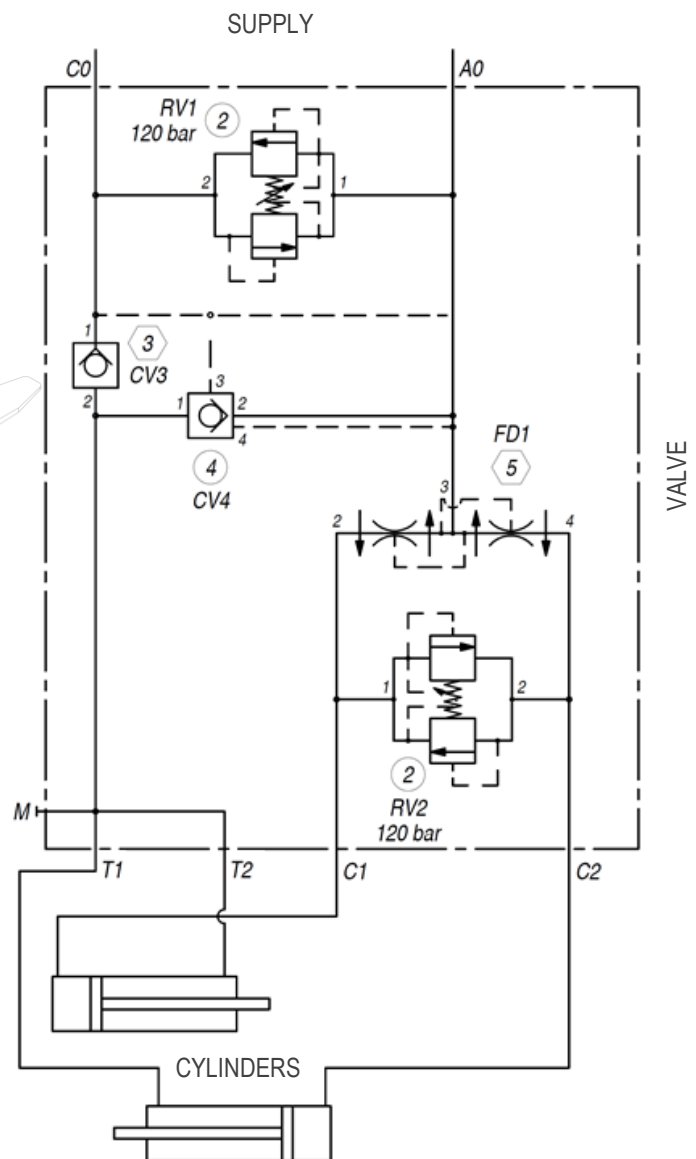
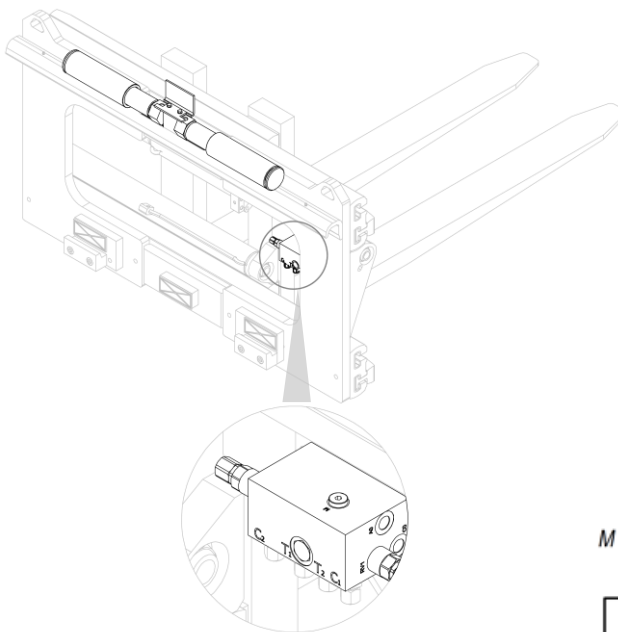
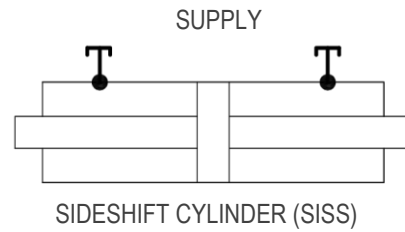


Figure 18

4.3 Hydraulic System – Iss – Valve B2383023

VALVE B2383023

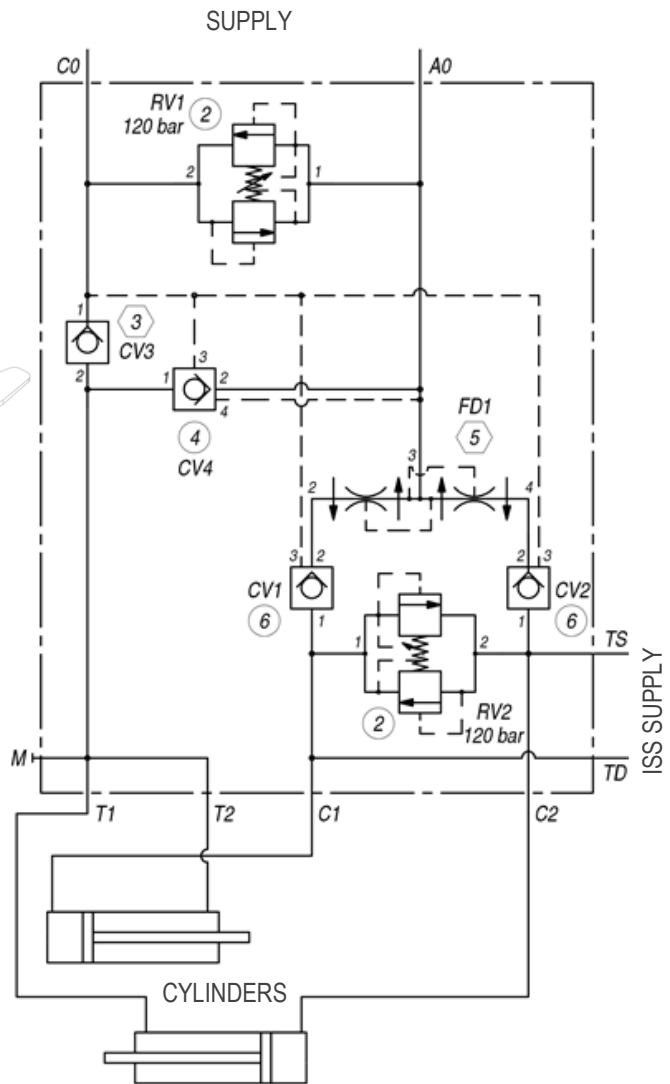
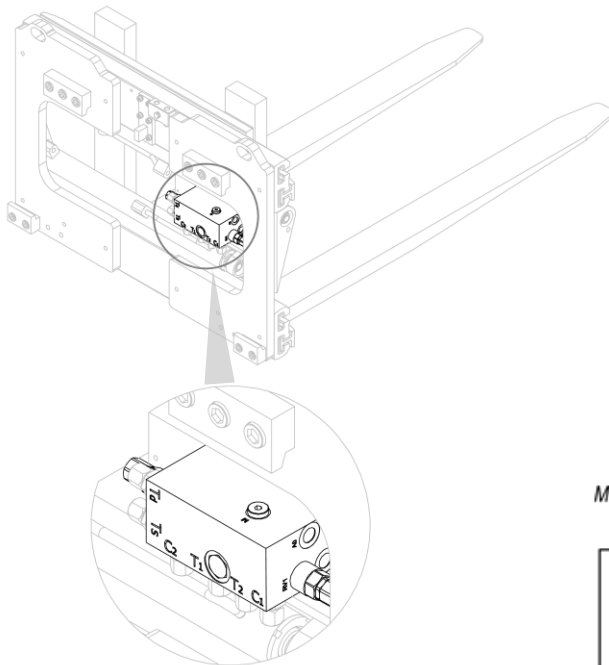


Figure 19

5 RULES GOVERNING USE

Before using the equipment, check the tightness of the piping and the correctness of assembly and also the connection by performing a dozen preliminary operations.

The following instructions must be followed when using the equipment:

1. Observe the capacity limits of the equipment.
2. Do not operate the equipment when persons or animals are within range of the forklift truck.
3. Do not attempt to lift loads by clamping them between the two forks.
4. Do not attempt to move loads sideways by dragging them across the floor.
5. Do not exceed the maximum pressure indicated on the rating plate.
6. Operate the equipment from the forklift truck driver's seat using only a single operator.
7. Operate the sideshift control lever gently to avoid water hammer as far as possible.
8. All operations relating to installation, use and maintenance must be carried out by specialist personnel using suitable equipment for the type of work to be carried out.
9. Carry out maintenance and/or repairs with the forklift truck stationary and the hydraulic circuit inactive, using appropriate means of protection (gloves, safety shoes, etc.).
10. Only operate cylinder rods when they are correctly fitted on the equipment;
The rods may otherwise be ejected at great speed by the elevated oil pressures.

The weighted sound pressure level is less than 70 dB (A).

If the equipment is subject to slight errors in the synchronisation of movement between the two forks, operator intervention is required to nullify the displacement differences, which will increment over time.

The operator simply needs to hold one of the two forks at the end of the opening or closing stroke for the time required for the other fork to recoup the accumulated difference in displacement.

All ATIB equipment is designed and manufactured according to a load positioned (with respect to its centre of gravity) at a certain distance from the vertical plane of the fork.

If the distance of the centre of gravity from the vertical part of the fork needs to be increased, the weight of the load must be reduced.

In this case, consult the chart shown in *Figure 20* where, as the distance from the centre of gravity increases (x-axis line), a multiplicative factor is included for load reduction purposes (y-axis line).

The multiplicative factor, obtained on the basis of the desired centre of gravity position, will be multiplied with the nominal capacity of the equipment. The product of this multiplication will be the actual transportable load.

The continuous line is to be considered for equipment declared with a 500mm centre of gravity load.

The dashed line is to be used for equipment declared with a 600mm centre of gravity load.

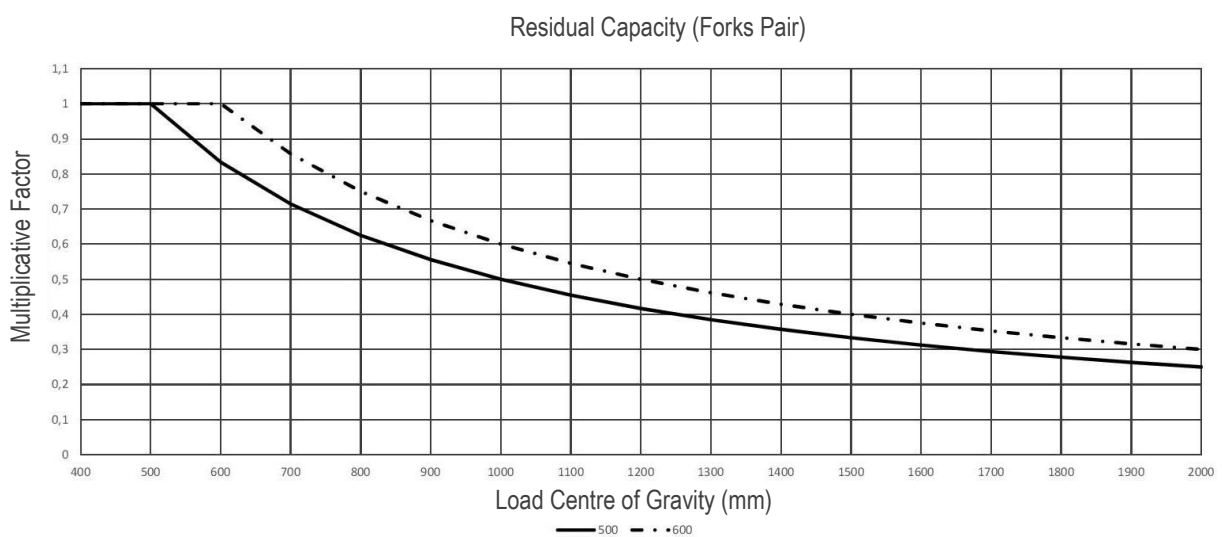


Figure 20

NOTE: calculations are valid only for “stable” loads. Contact the manufacturer for transporting liquid containers.



The attainable sideshift may compromise the stability of the forklift truck.



It is advisable to consult the manufacturer of the forklift truck to check the residual capacity of the forklift truck-equipment assembly.



The condition of the road surface, the speed at which the load is handled and the elevation may all affect the load's grip, which must be taken into account on a case-by-case basis.



Displacing the load whilst in motion is prohibited.
Handling the load with the mast raised off the ground is only permitted when returning the load to the centre of the mast.

The nominal capacity of the forklift truck/equipment combination is established by the original manufacturer of the forklift truck and may be less than that indicated on the equipment plate.

Consult forklift truck plate (Directive 2006/42/EC).

5.1 Integral Sideshift

This is the type most frequently used in “GRIPPER WITH WELDED FORKS 474.170 | GRIPPER WITH ROTATING FORKS 474.150” uses the same cylinders that translate the forks. The stroke depends on the opening and will be equal to zero in maximum opening and minimum closing. **Since the stroke of the equipment may be higher than that defined by the stability regulations of forklift trucks (100 + 100 mm up to 6300 kg capacity and 150 +150 mm for higher capacities) and can, therefore, generate issues regarding lateral stability and premature wear of the upright profiles, it will be necessary to check feasibility with the forklift truck manufacturer.**

Sideshift with a given load will be the minimum between the following two values:

1. Maximum opening (A max) less load width (Lc) divided by two. $[(A \text{ max} - Lc) / 2]$
2. Load width (Lc) less minimum opening (A min) divided by two. $[(Lc - A \text{ min}) / 2]$

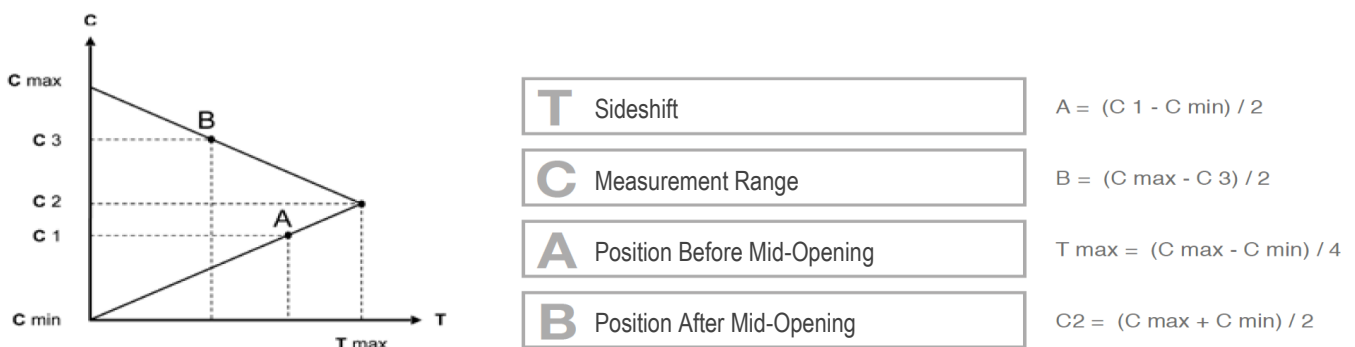


Figure 21



Off-centre sideshift of the load is only permitted on the ground. In this case, a loss of clamping force may occur, which may result in load loss. As a precaution, the centre of gravity of the equipment can be assumed to move laterally by the value of the sideshift (per side). If the precise value is required, consult the manufacturer of the equipment.

5.2 Handling Loads

The minimum transportable dimensions must be greater than the minimum grip. Depending on the load to be transported, this difference may vary and must be evaluated on a case by case basis by the operator.



Avoid handling and/or sideshift of the forklift truck/equipment with a load that is excessively high off the ground, as this may affect its stability.



Avoid displacing/handling unstable loads.



Avoid displacing/handling loads with an uncentred centre of gravity.

6 PERIODIC MAINTENANCE

Failure to comply with the rules and intervals established for maintenance will compromise the correct operation of the equipment and will void the conditions of the warranty.

All maintenance operations must be carried out with the forklift truck stationary and the hydraulic circuit disconnected and depressurised. The entire maintenance area must be barricaded using regulation protection devices and, if the cylinders require disassembly, a tray or container must be provided to catch the oil present in the cylinder.

To prevent issues when using the equipment, A.T.I.B. recommends changing the hydraulic oil and filters regularly and keeping the system as clean as possible during maintenance operations.

ATTENTION!!!

Hydraulic parts may be very hot. Use suitable protective equipment.

Watch out for leakage. High-pressure oil can injure eyes and skin. Wear protective eyewear that includes side shields.

Do not remove valves, lines or other potentially pressurised parts when this is active.

6.1 Maintenance Every 100 Hours

1. Check the condition of the hydraulic connections (lines and fittings), replacing worn parts if necessary.
2. Check tightening torque of the bolts of the lower retaining couplings of the equipment, ensuring that it is as indicated in *Table 3* (page 12) and in *Table 4* (page 15) and, if necessary, adjust the bolts holding them in place.
3. Check clearance between the lower part of the fork carriage and the lower equipment couplings, ensuring that it is as shown in *Figure 4* (page 12) and in *Figure 8* (page 15) and, if necessary, adjust the bolts holding them in place.
4. Clean and lubricate all sliding parts (see *Figure 33* on page 41 and *Figure 26* and *Figure 27* on page 42).

6.2 Maintenance Every 300 Hours

1. Check condition of bushes and sliding gibs. If excessively worn component are detected, replace the entire component assembly in question.
2. Carry out the additional operations listed in the previous point (*Point 6.1*).

6.3 Maintenance Every 1000 Hours

1. Check condition of bushes and sliding gibs. If excessively worn component are detected, replace the entire component assembly in question.
2. Carry out the additional operations listed in the previous points (Point 6.1 and 6.2 on page 29).

6.4 Maintenance Every 2000 Hours

1. Carry out a thorough inspection of the equipment. If possible, this should be carried out by qualified personnel who are able to identify any issues that may compromise the safety and efficiency of the equipment. There may be a number of defects, such as the following:
 - Check condition of all equipment components (cylinders, couplings, seals, fittings, grease nipples, etc.) to ensure that they are in good condition and replace any worn parts.
 - Check condition of sliding and working surfaces and replace if damaged.

For further potential issues (and their solutions), refer additionally to *Table 5* on page 40.

2. Disassemble cylinders and check condition of piston rods and seals. If a damaged or excessively worn seal is detected, it is always advisable to replace the entire seal assembly.
3. Replace seals in the event of oil leakage and replace rods if they are scratched (cylinders should always be tested when inserted into the equipment to prevent sudden ejection of rods).
4. Carry out the additional operations listed in the previous points (*Point 6.1*, and points 6.2 on page 29 and 6.3).

N.B. Reduce intervals in the event of use under particularly harsh conditions

7 DISASSEMBLY PROCEDURE

All maintenance operations must be carried out with the forklift truck stationary and the hydraulic circuit disconnected and depressurised. The entire maintenance area must be barricaded using regulation protection devices and, if the cylinders require disassembly, a tray or container must be provided to catch the oil present in the cylinder.

7.1 Removing the Equipment from the Forklift Truck

1. Release the pressure from the hydraulic system.
2. If the equipment is WITH SISS, remove the protection bracket on the dual coupling, as shown in *Figure 5* on page 13.
3. Remove the lower couplings from the assembly (see *Figure 2* and *Figure 6* on page 10 and 14).
4. For handling, use straps/chains that are suitably sized in relation to the weight of the equipment as indicated on the plate.
5. Then lift the equipment using the upper attachment points using an overhead crane or hoist of sufficient capacity and remove it from the forklift truck (see *Figure 3* and *Figure 7* on page 11 and 14).

7.2 Disassembling the forks

7.2.1 Removing the Forks from the Equipment

N.B. Although only type 474.170 is shown, the procedure for removing the forks from the equipment is identical for the 474.150. version.

1. Release the pressure from the hydraulic system and disconnect the lines.
2. Remove the fork assembly with the forks after unscrewing the nuts securing them to the cylinders (see *Figure 22* e *Figure 23*).

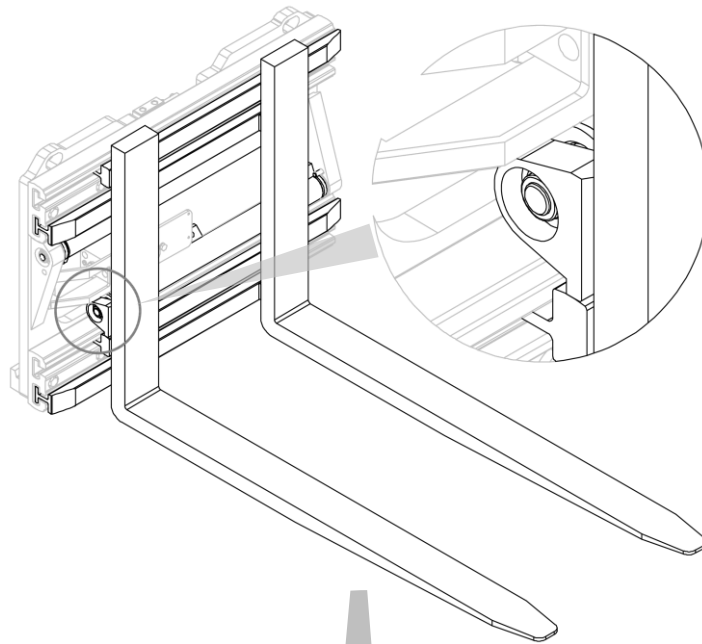


Figure 22

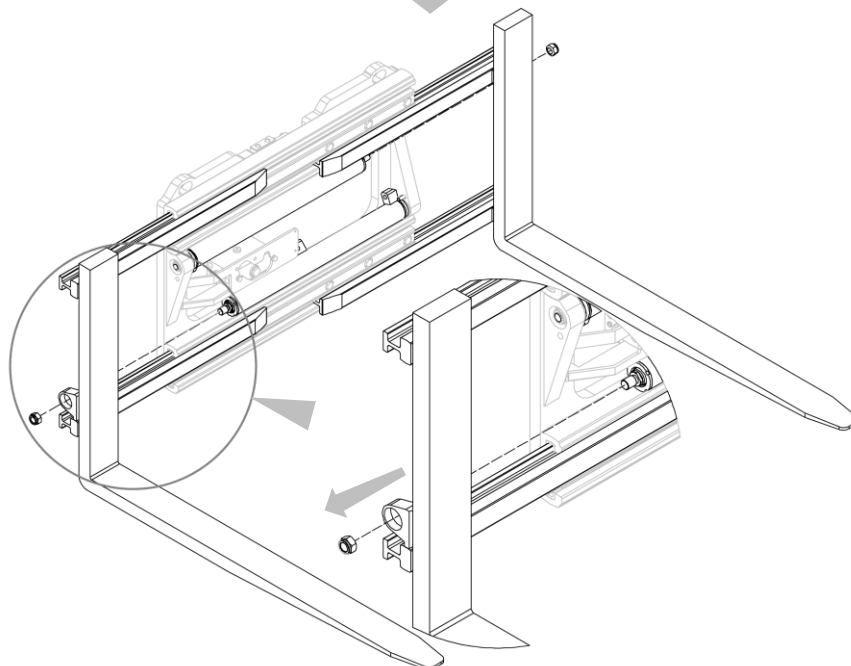


Figure 23

7.3 Disassembling the Nylon Bushes

NYLON BUSHES

1. Remove the fork assembly from the equipment.
2. Release the pressure from the hydraulic system and disconnect the lines.
3. Remove the nylon bushes after unscrewing the corresponding grub screws (see *Figure 24* and *Figure 25*).

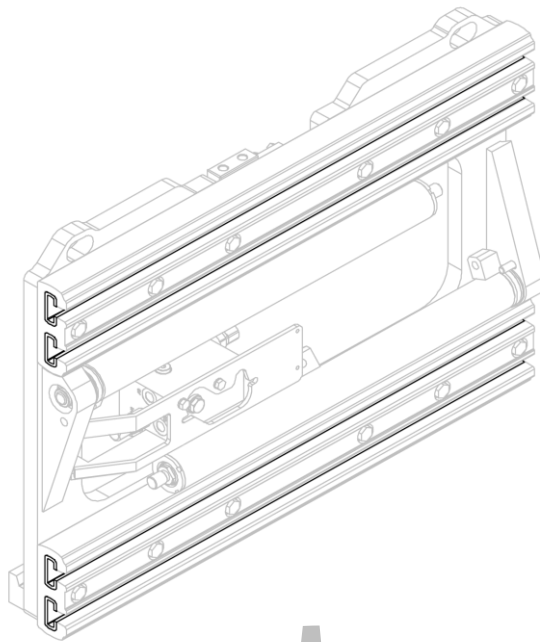


Figure 24

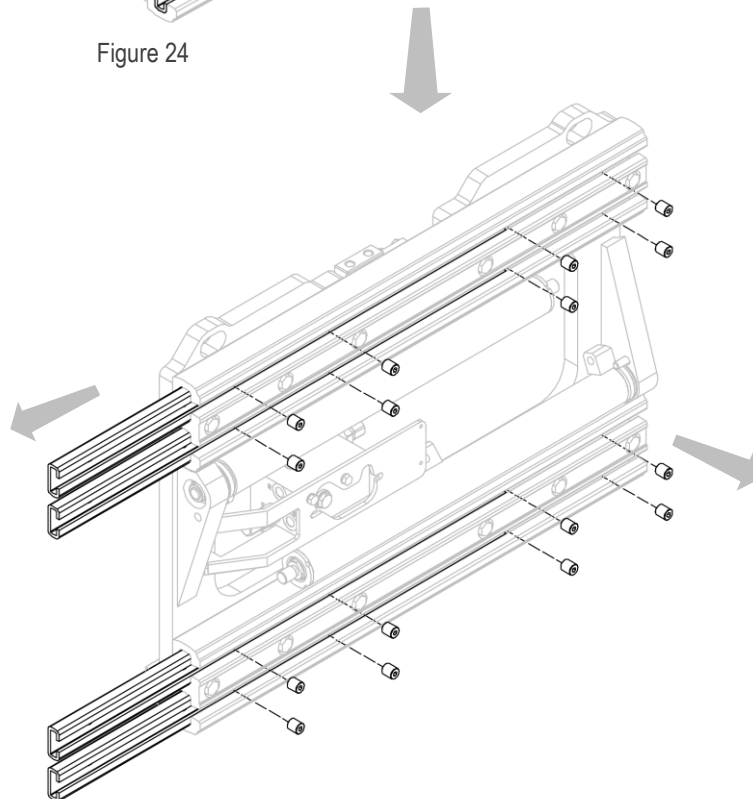


Figure 25

7.4 Disassembling the Aluminium Profiles

ALUMINIUM

1. Release the pressure from the hydraulic system and disconnect the lines.
2. Remove the aluminium profiles, one at a time, after unscrewing the bolts (see *Figure 26* and *Figure 27*).

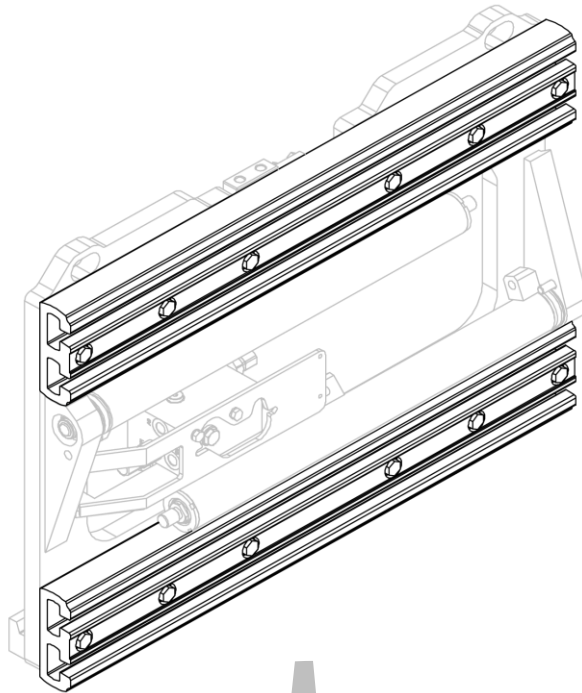


Figure 26

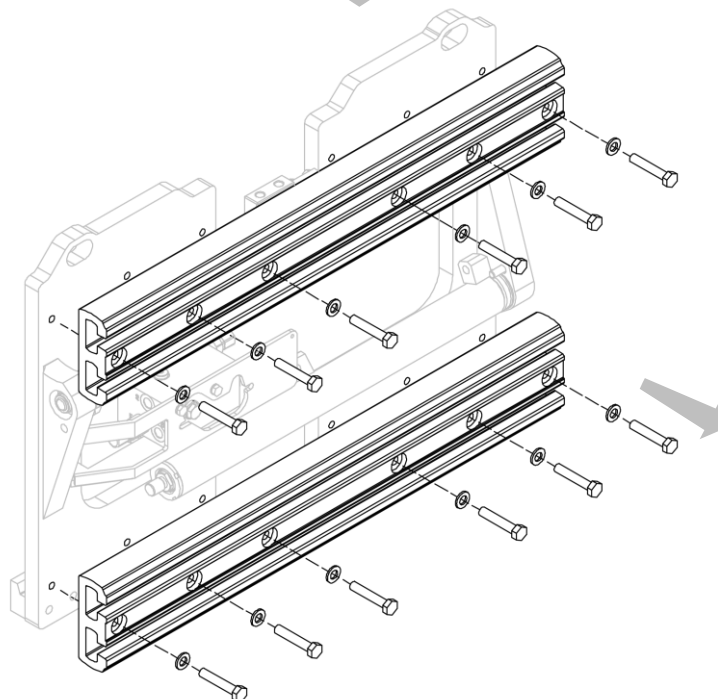


Figure 27

7.5 Removing the Fork Cylinders from the Equipment

N.B. Although only type 474.170 with siss is shown, the procedure for removing and disassembling the fork cylinders is identical for version 474.150.

FORK CYLINDERS

1. Open the cylinders.
2. Release the pressure from the hydraulic system and disconnect the lines.
3. Remove the nuts **D** that secure the cylinders to the forks (see *Figure 28*).

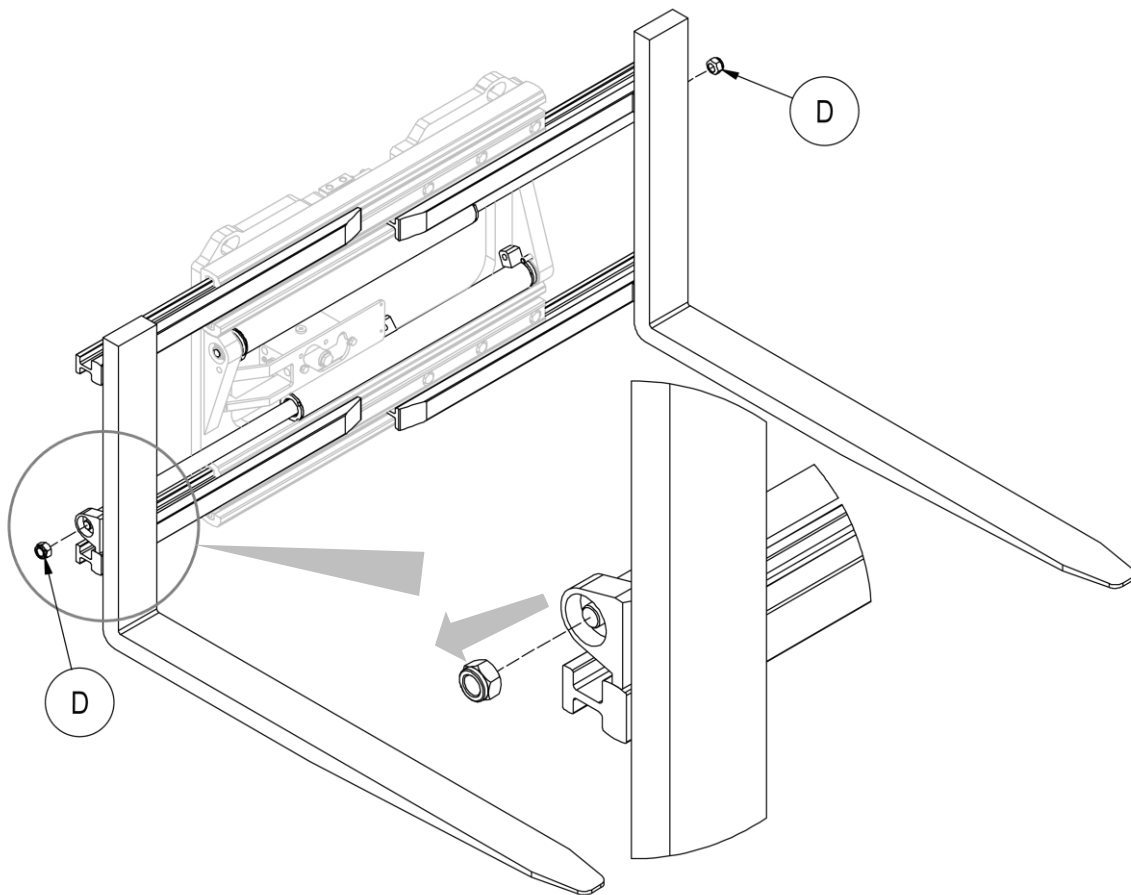


Figure 28

4. Reconnect the hydraulic system.
5. Close the cylinders.

6. Release the pressure from the hydraulic system and disconnect the lines.
7. Remove the nuts **D** that secure the cylinders to the equipment assembly and remove the cylinders, taking care not to damage them (see *Figure 29*).

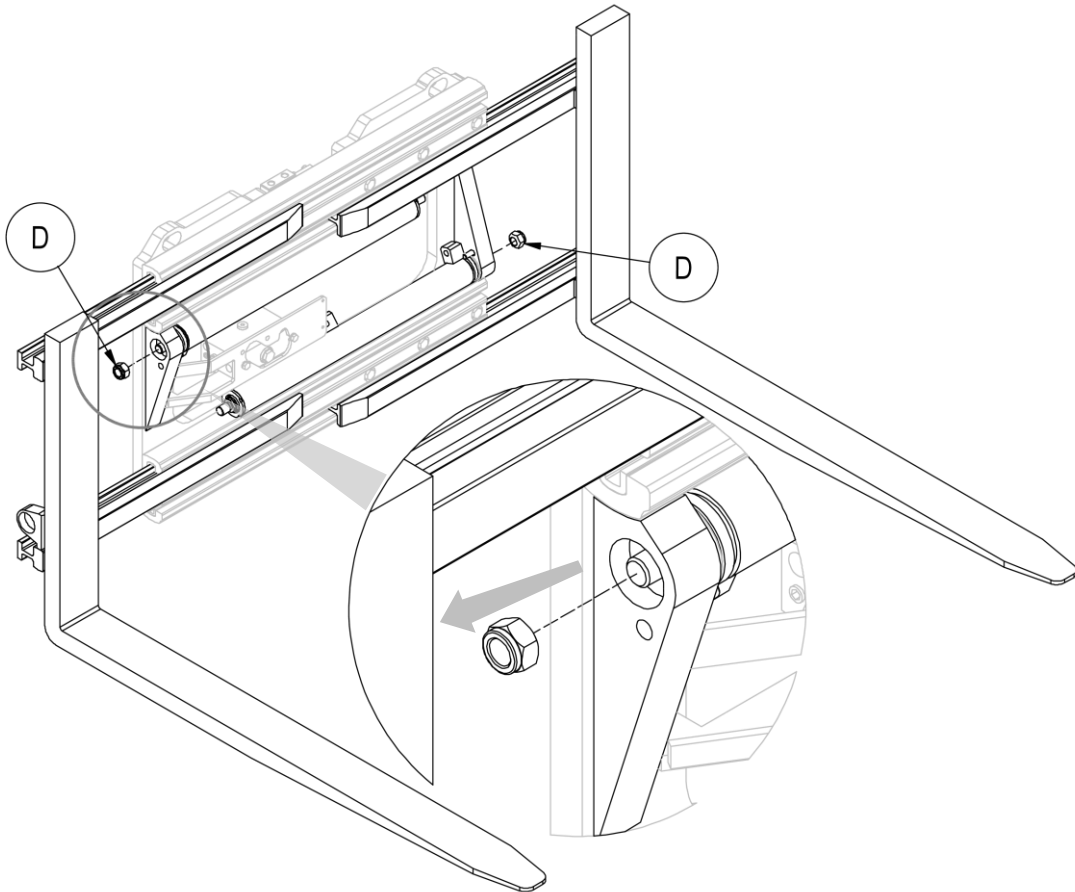


Figure 29

7.5.1 Disassembling and Reassembling the Fork Cylinders

If the entire cylinder needs to be replaced, reassemble following the instructions listed in the previous point. If any cylinder components need to be replaced, proceed as indicated below:

1. Clamp the cylinder body in a vice using soft jaws (taking care not to deform the liner).
2. Use a C-hook spanner to remove cap **T**.
3. If the cap will not unscrew, slightly heat the area of the thread in question to facilitate unscrewing.
4. Unscrew rod **C**.
5. Disassemble/separate the rest of the components and seals (this will be easy and rather intuitive at this stage).
6. Replace damaged parts and reassemble by repeating the above steps in reverse order, taking care to relock the cylinder cap using medium strength threadlocker.
7. If a damaged seal is found, it is advisable to replace the entire seal assembly.
8. Use *Figure 30 as a guide*.

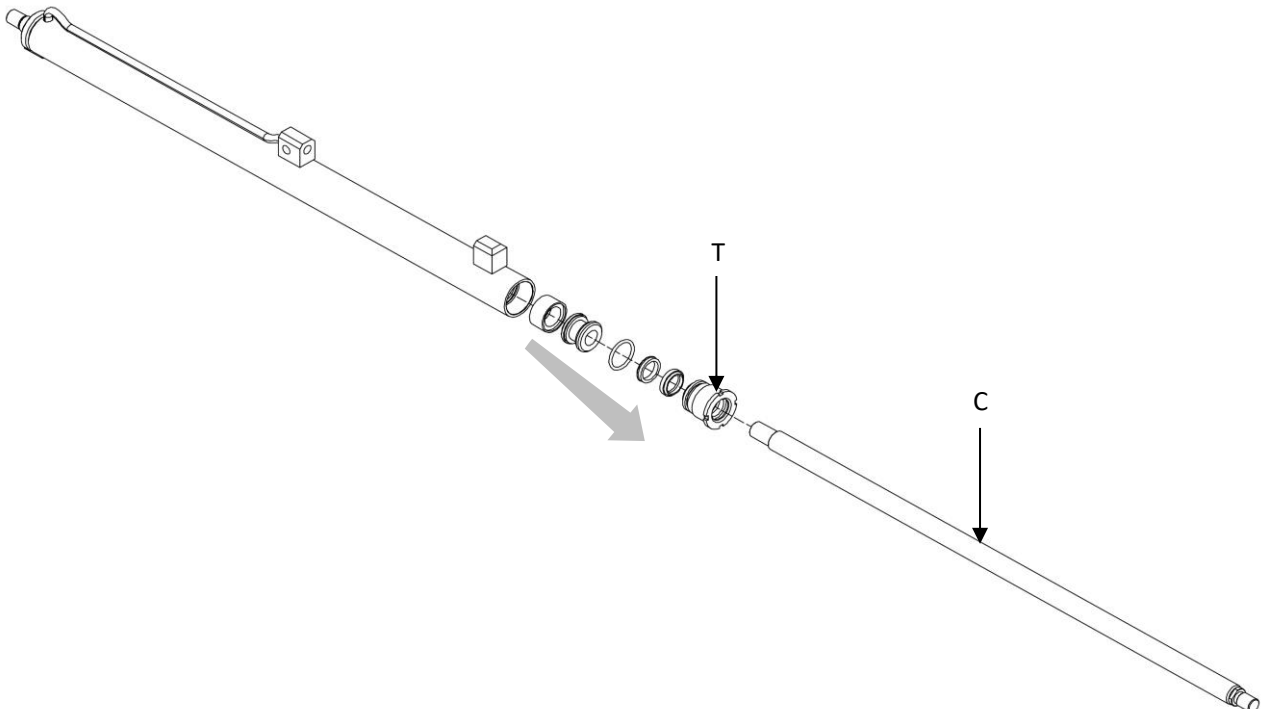


Figure 30

7.6 Sideshift Cylinder Maintenance (siss)

CYLINDERS SISS

1. Release the pressure from the hydraulic system and disconnect the lines.
2. Remove the equipment from the forklift truck, as outlined in point *Removing the Equipment from the Forklift Truck* on page 31.
3. Remove dual coupling (A) after removing the “protection bracket” (P) with its associated bolts, (in *Removing the Equipment from the Forklift Truck* this step has already been outlined).
4. Extract the rods one at a time and remove the seals from their housings (after removing the snap ring that holds them in place).
5. Replace damaged parts and reassemble by repeating the above steps in reverse order.
6. If a damaged seal is found, it is advisable to replace the entire seal assembly.
7. Use *Figure 31* and *Figure 32* as guides.

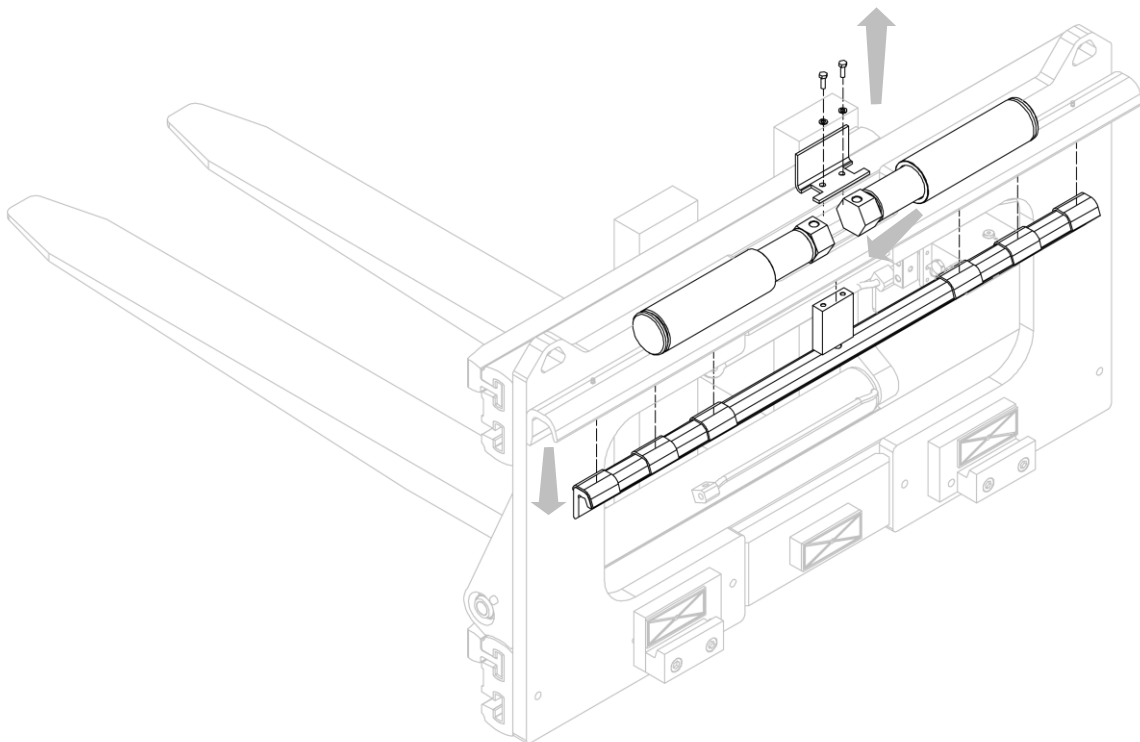


Figure 31

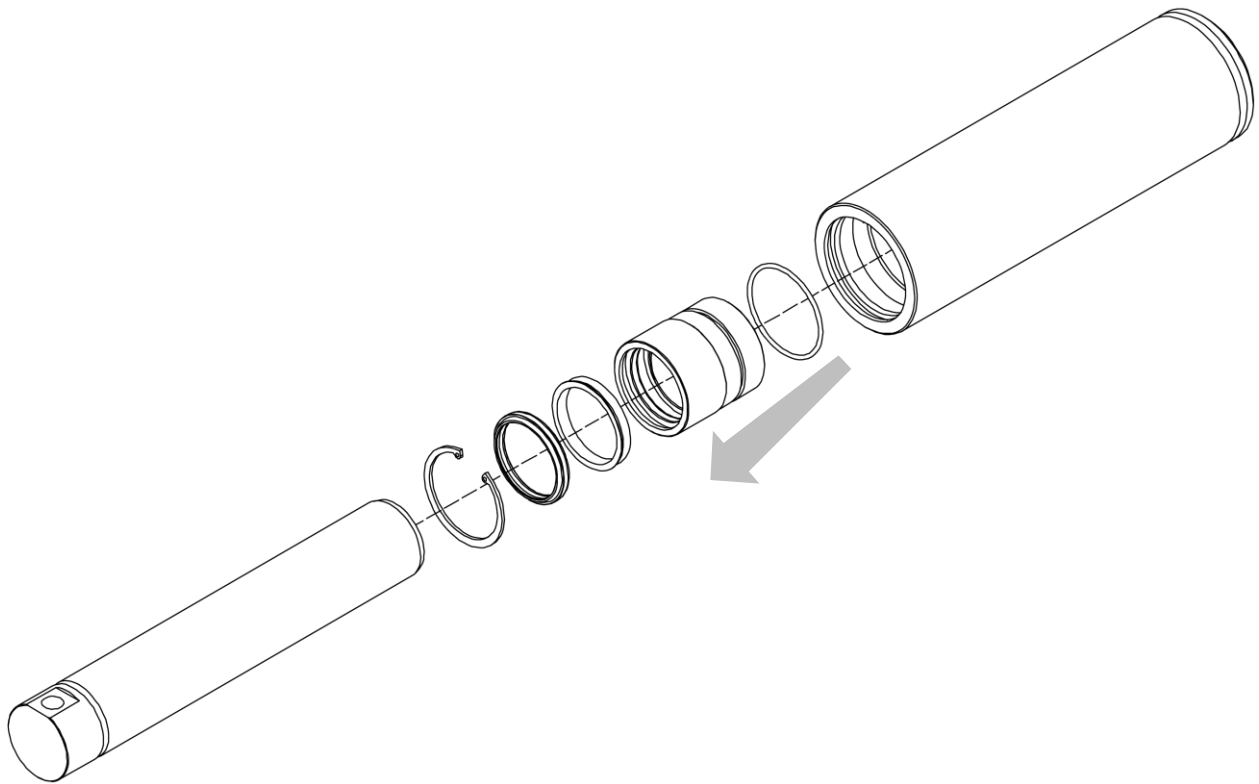


Figure 32

N.B. Although only type 474.170 with sis is shown, the procedure for removing and disassembling the sidershift cylinders is the same for version 474.150 (WITH SISS).

8 TROUBLESHOOTING

8.1 Probable Faults and Solutions

| FAULT | CAUSE | SOLUTION |
|--------------------------|---|---|
| Insufficient force | Calibration of the maximum pressure valve too low | Increase the pressure without exceeding the maximum limit |
| | Insufficient pressure | Contact the forklift truck manufacturer |
| | Worn pump | Replace it |
| | Worn cylinder seals | Replace them |
| | No oil in the tank | Fill up |
| Pressure drop | Oil leakage through pipes and fittings | Tighten the fittings or replace them |
| | Oil leakage from the cylinders | Replace the seals or, if necessary, the cylinders |
| | Load loss in sideshift | Lower sideshift pressure |
| Slow opening and closing | Low oil flow rate | Check the tank level and/or the pump Constrictions in the system: search for them and remove them |
| | Insufficient pressure | Adjust the calibration of the maximum pressure valve |
| | Mechanical deformations of some parts | Repair or replace |
| | Worn cylinder seals | Replace them |
| | No oil in the tank | Fill up |
| Erratic displacement | Air in hydraulic system | Purge system |
| | Worn gibs or sliding rollers | Replace |
| | Excessive friction between sliding parts | Clean and grease sliding parts |
| | Worn cylinder seals | Replace them |
| | No oil in the tank | Fill up |

Table 5

For further issues, contact A.T.I.B. S.r.l.

8.2 Lubrication

1. Lubricate sliding components using grease nipples.
2. Grease gibs and bars/sliding surfaces (e.g. nylon bushes).

N.B. Although only type 474.170 is shown, the lubrication procedure is identical for the 474.150 version.

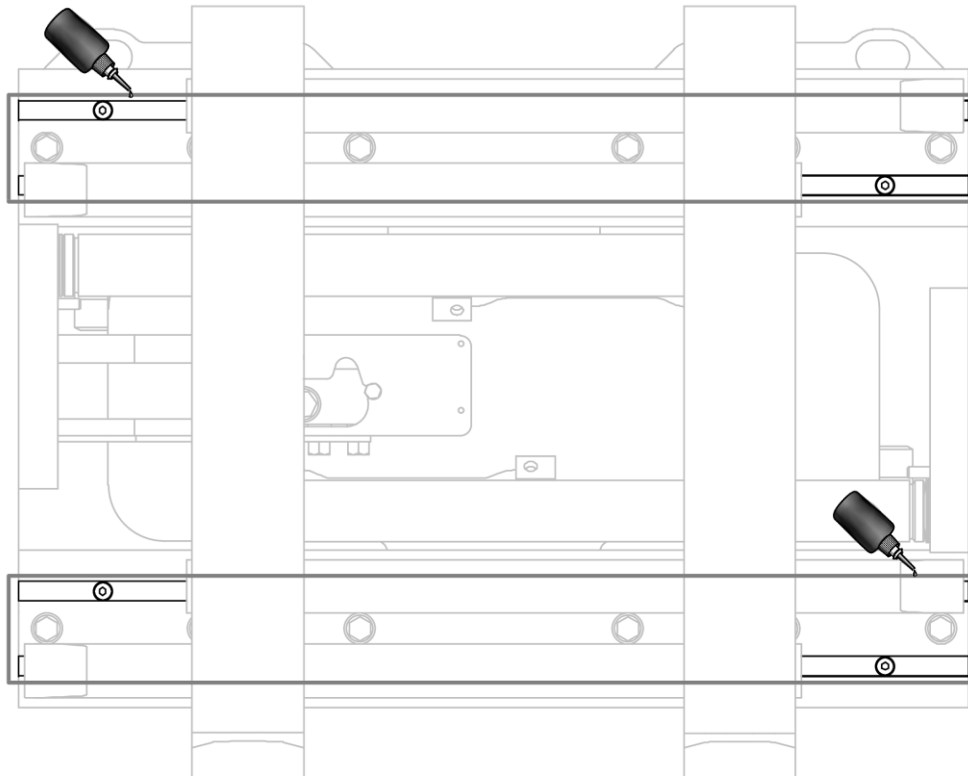


Figure 33

WITH SISS

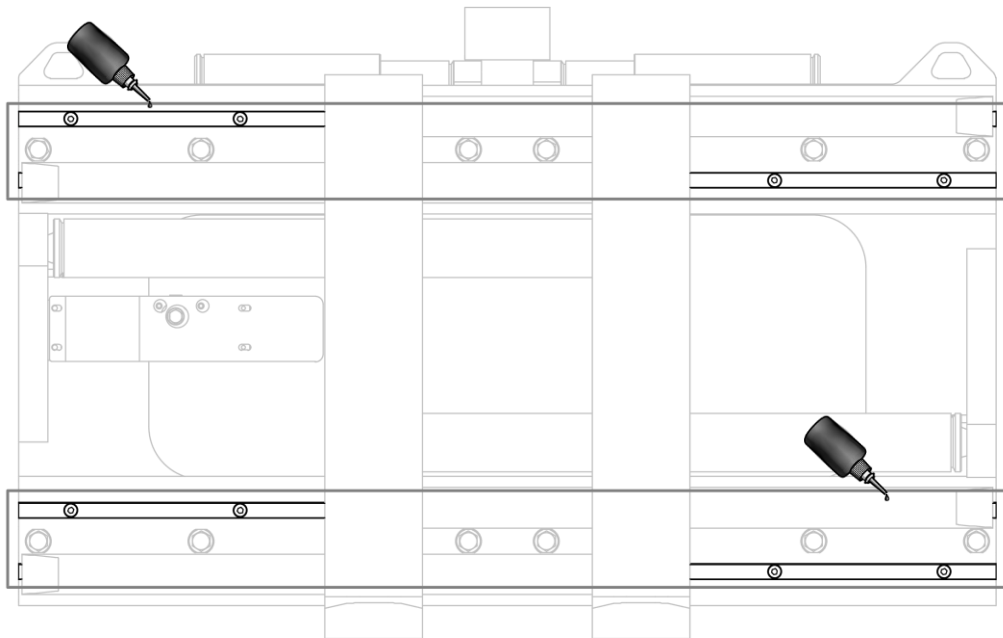


Figure 26

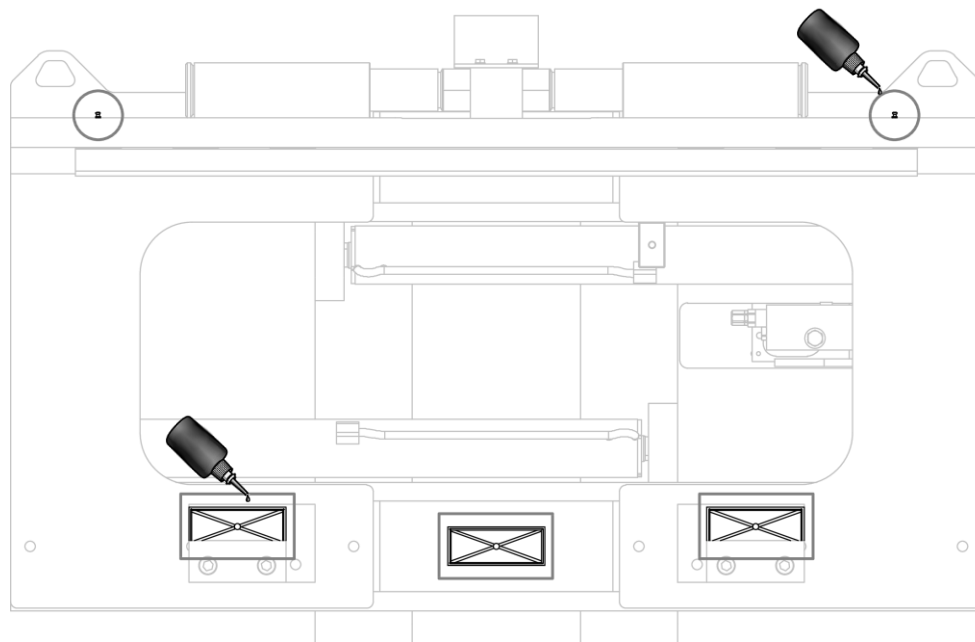


Figure 27

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