ATiB MATERIAL HANDLING

USE AND MAINTENANCE MANUAL

DOUBLE SIDESHIFT TYPE 107.2 |

TRIPLE SIDESHIFT TYPE 107.3

I-D02-01-54 - Rev.1

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DOUBLE SIDESHIFT TYPE 107.2 |

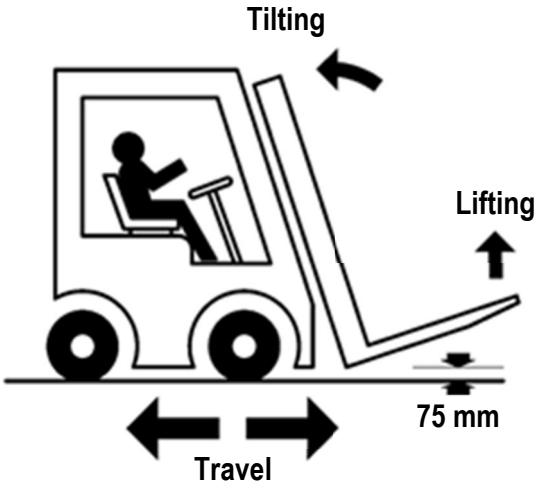
TRIPLE SIDESHIFT TYPE 107.3

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. – "DOUBLE SIDESHIFT TYPE 107.2 | TRIPLE SIDESHIFT TYPE 107.3" 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.

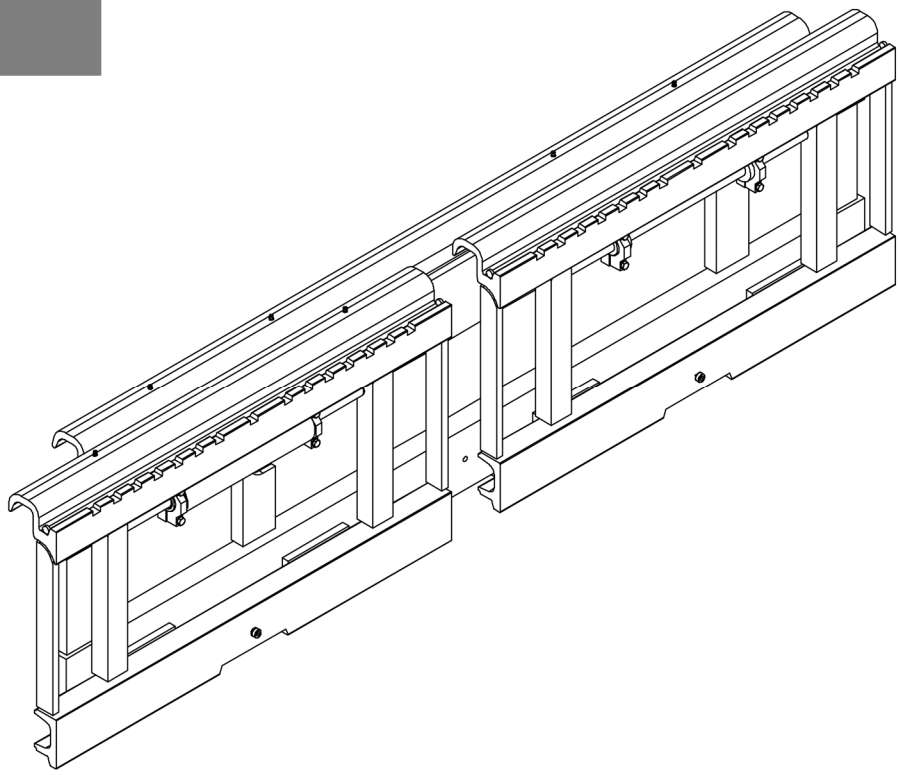
The manufacturer is exempted from any responsibility in the event of:

- 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.

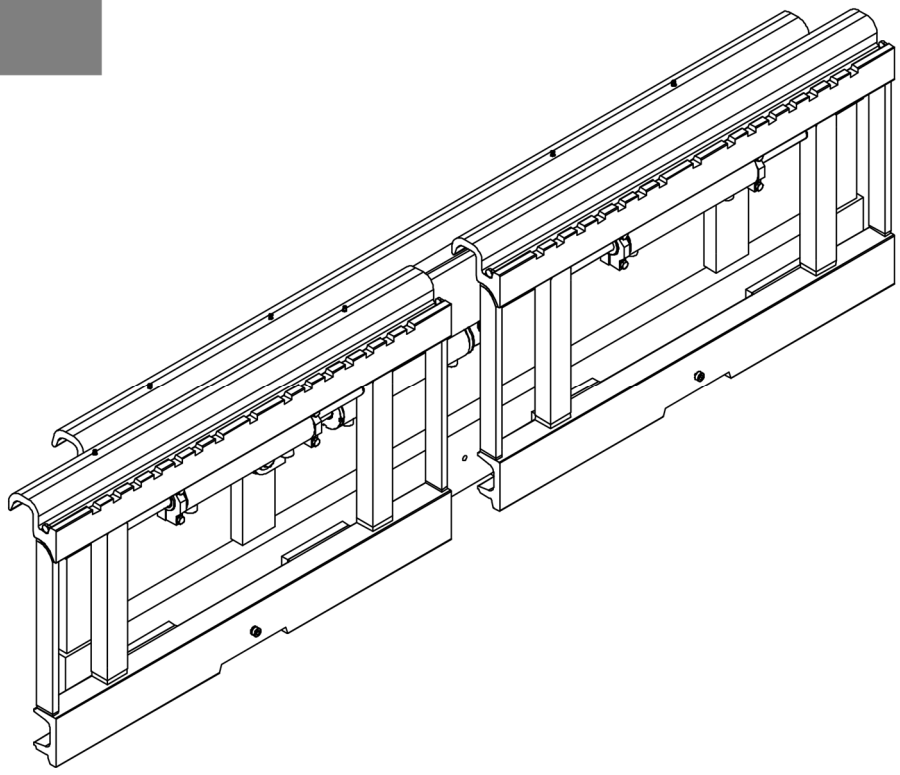
The nominal capacity of the forklift truck/equipment combination has been set by the original manufacturer of the forklift truck and may be less than that indicated on the equipment plate.
Consult forklift truck plate (Directive 2006/42/EC).

2.2 Equipment Description

TYPE 107.2



TYPE 107.3



All the A.T.I.B. equipment – "DOUBLE SIDESHIFT TYPE 107.2 | TRIPLE SIDESHIFT TYPE 107.3" is identified by means of an adhesive plate (see *Table 1*) positioned on the equipment (the position of the identification plate may vary depending on the equipment, see *Figure 1*). Always refer to the serial number.

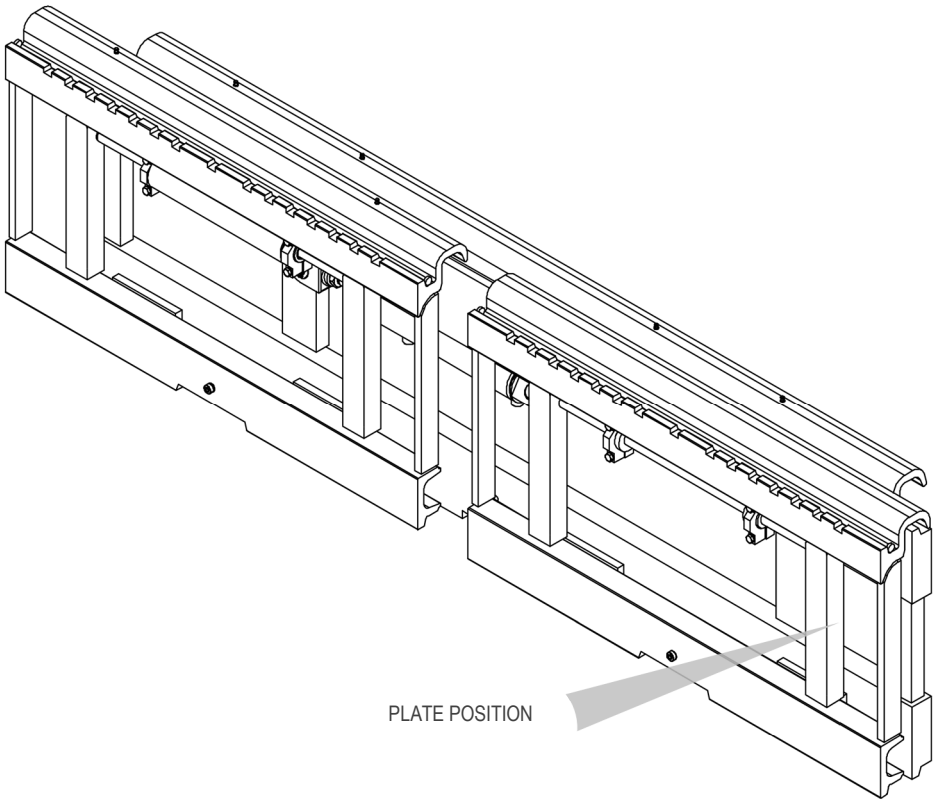


Figure 1

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**	A.T.I.B. CE	
3. MATRICOLA N° / SERIAL N°				
4. ANNO DI COSTRUZIONE / YEAR OF MANUFACTURE	**10. PRESSIONE MAX. DI ESERCIZIO / MAX. OPERATING PRESSURE**	**bar**	**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	**NOTE: OSSERVARE I LIMITI DI PORTATA DELL'INSIEME CARRELLO CON ATTREZZATURA / WARNING: OBSERVE THE NOMINAL CAPACITY OF TRUCK AND ATTACHMENT COMBINED**			
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 damaged, 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**
   Not applicable to this equipment.
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 – "DOUBLE SIDESHIFT TYPE 107.2 | TRIPLE SIDESHIFT TYPE 107.3" has been conceived, designed and constructed to allow the handling of multiple pallets at the same time.

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

The equipment is able to perform the following functions:

- Lateral sideshift: the movement relative to the lateral sideshift, both with regard to the front sideshifts (1 or 2 depending on the type) and with regard to the rear sideshifting structure, is carried out by means of a hydraulic cylinder;

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, consult the plate on the clamp itself (See *Table 1* on page *6*).

⚠ ATTENTION ⚠

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 the 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/min)			Operating pressure Maximum (Bar)
	minimum	maximum	recommended	
107.2 [all]	10	20	15	200
107.3 [all]	10	20	15	200

Table 2

⚠ ATTENTION!! ⚠

OBSERVE THE INDICATED MAXIMUM OPERATING PRESSURES

3.1 Installation Procedure

3.1.1 Installing the Equipment on the Forklift

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.

4. Remove the pin, with the appropriate snap rings, which hold the rear structure's sideshift cylinder and, therefore, also the relative double hook, to the equipment structure (see *Figure 2*).

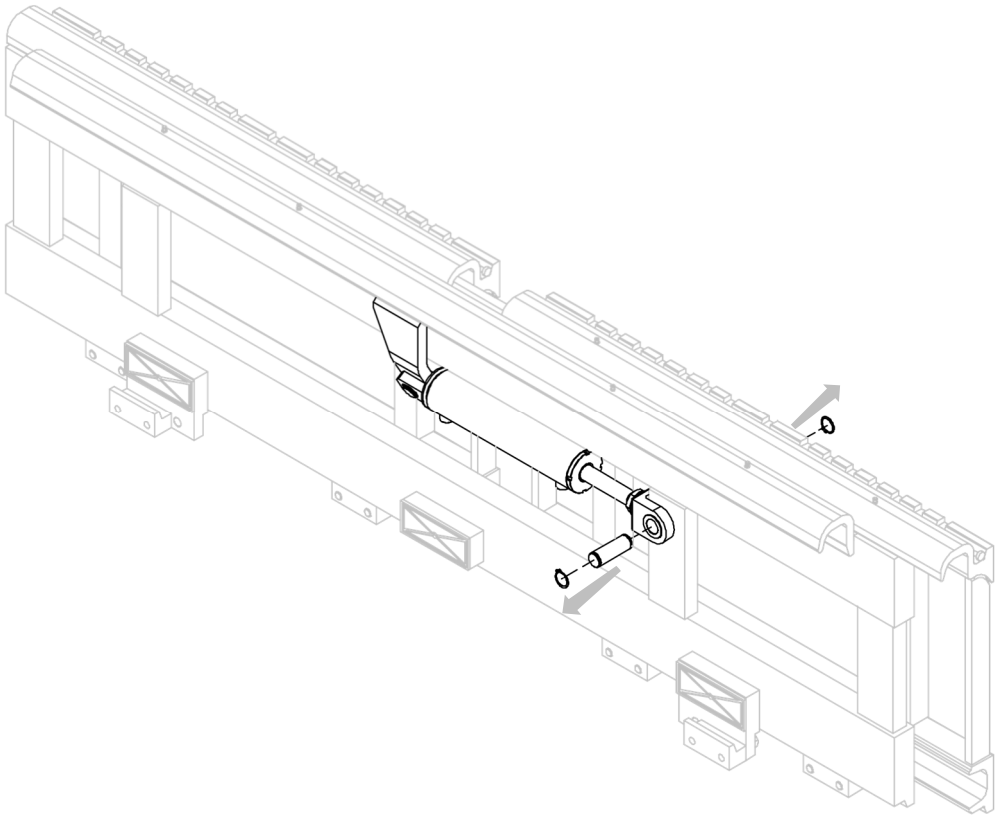


Figure 2

5. Obtain the dual coupling **A** (with its sliding bushes and sideshift cylinder), and position it on the upper profile of the fork carriage, taking care to fit the centring pin **C** into its central notch (see *Figure 3*).

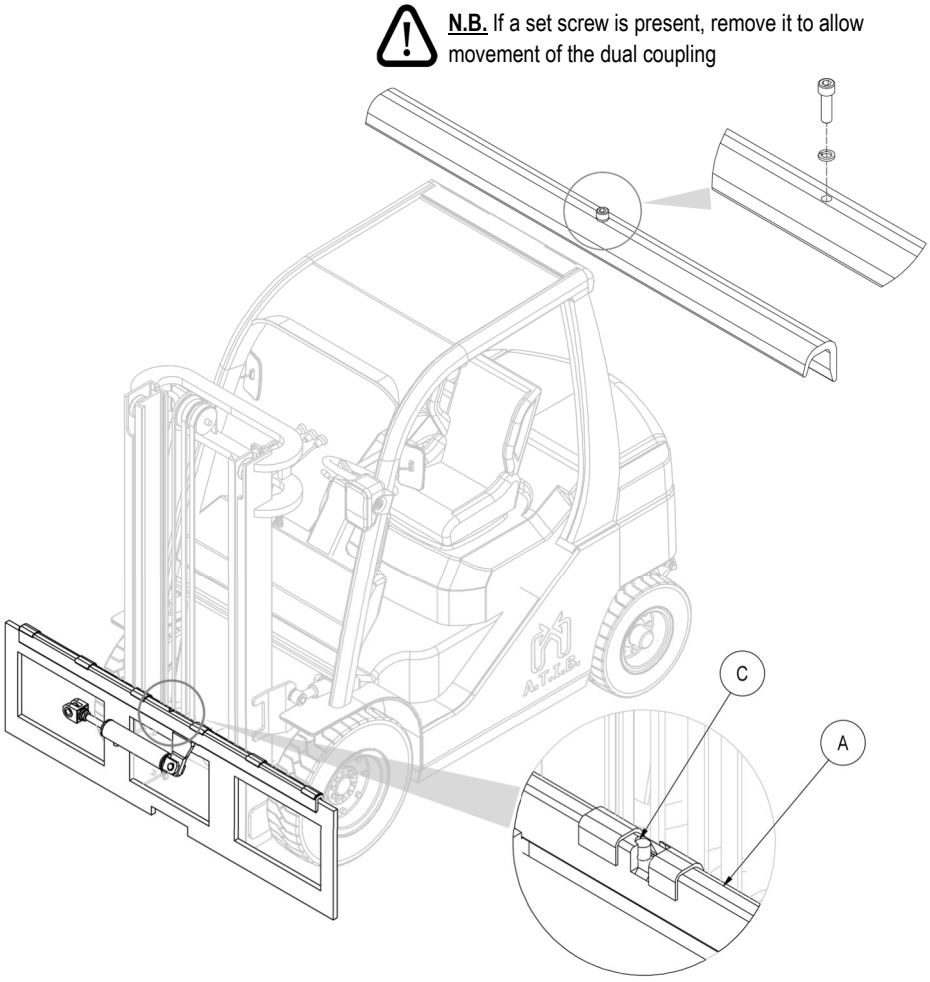


Figure 3

6. Remove the lower couplings from the equipment and grease the sliding gibs/rollers (see *Figure 4*).

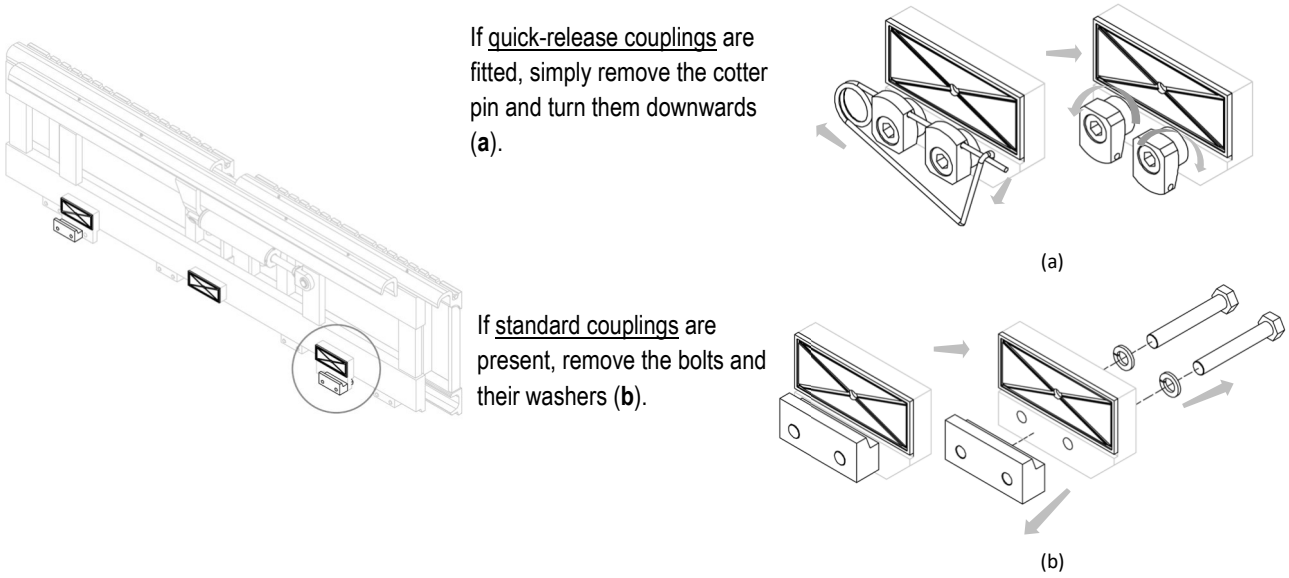


Figure 4

7. For handling, use belts or chains appropriately sized with regard to the weight of the equipment indicated on the plate (see *Figure 1* and *Table 1* on page *6*).

8. With an overhead crane or hoist of sufficient capacity, place the equipment on the double coupling, taking care to position it correctly (see *Figure 5)*.
   Once the equipment is in place, re-lock the cylinder fork using the previously removed pin and snap rings.

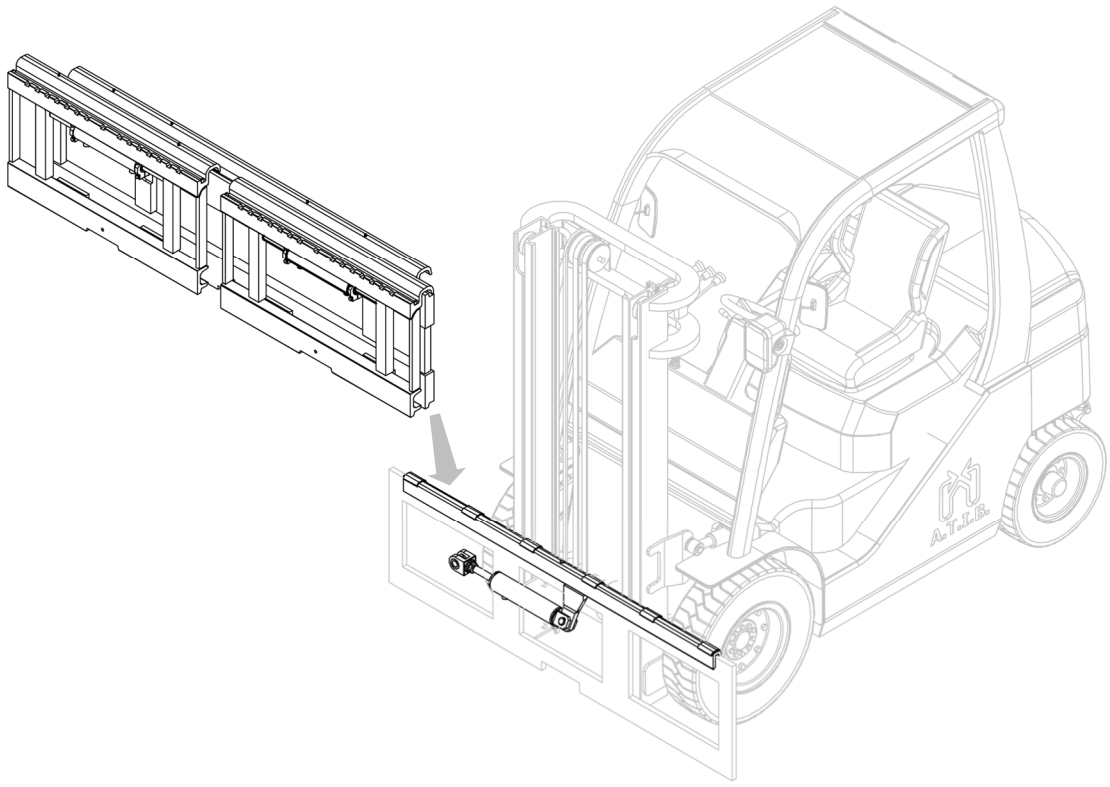


Figure 5

9. Tighten the 2 lower couplings **G** so that the body of the couplings remains coupled to the lower fork carriage plate **P** (with max. 1.5mm clearance, see detail *Figure 6*), tightening with the torque indicated in *Table 3*.

CLASS	THREAD	TIGHTENING TORQUE
ISO II	**M12**	**90 Nm**
ISO III	**M14**	**140 Nm**

Table 3

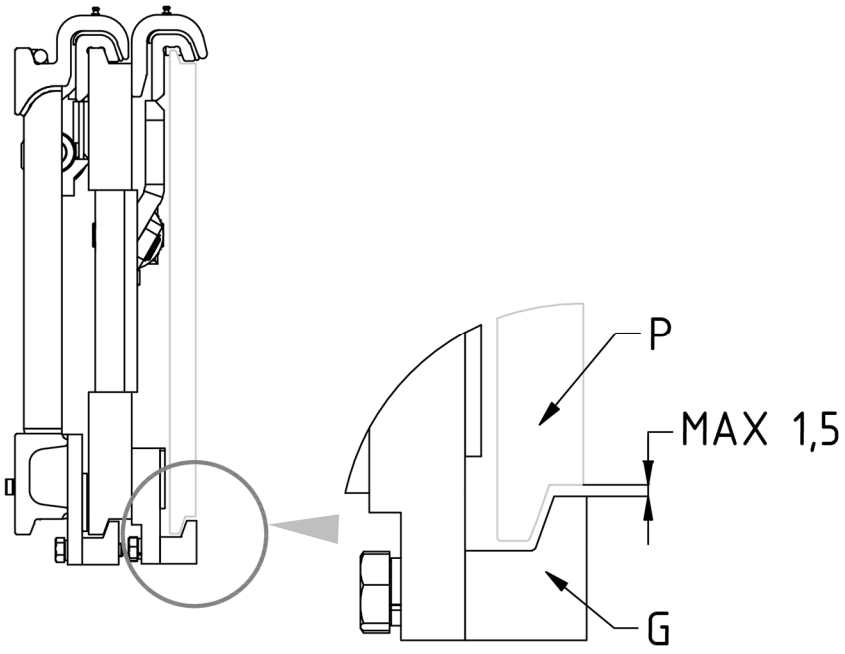


Figure 6

10. Lubricate the contact surfaces (see the *Lubrication* chapter on page *32*).

11. Install the forks (see chapter *Installing the Forks* on page *16*).

12. Connect the hydraulic circuit, making sure that the operating pressure of the lines is greater than or equal to that indicated on the identification plate (see *Figure 1* and *Table 1* on page *6)*.

3.1.2 Installing the Front Sideshifts

SIDESHIFTS

1. Release the pressure from the hydraulic system and disconnect the lines.

2. Take the double coupling **A** (with its sliding bushes and sideshift cylinder), and place it on the upper profile of the rear structure, taking care to fit the pin **C** into its centring notch (see *Figure 7*).

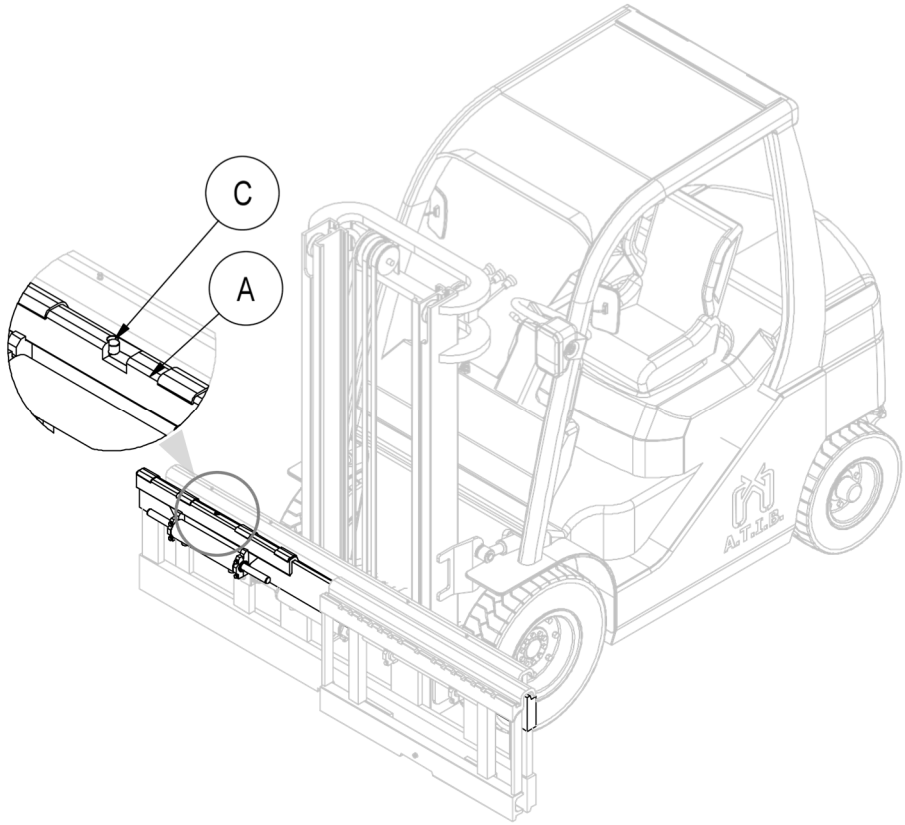


Figure 7

3. Remove the lower couplings from the equipment and grease the sliding gibs/rollers (see *Figure 8*).

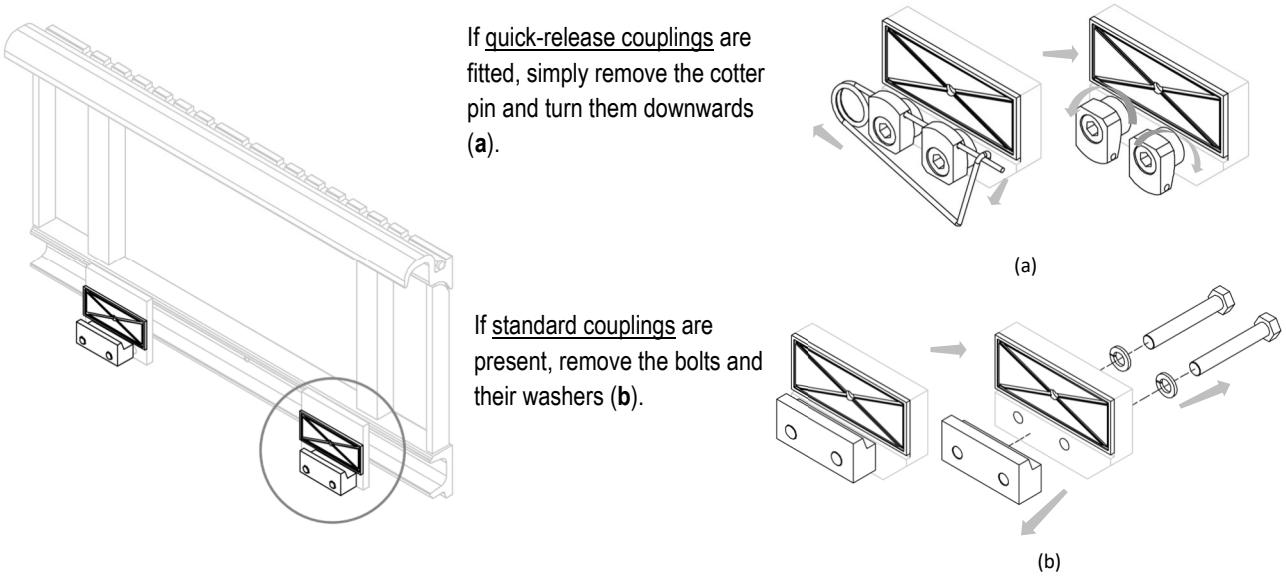


Figure 8

4. For handling, use belts or chains appropriately sized with regard to the weight of the equipment indicated on the plate (see *Figure 1* and *Table 1* on page *6*).

5. With an overhead crane or hoist of sufficient capacity, place the equipment on the double coupling, taking care to position it correctly (see *Figure 9*).

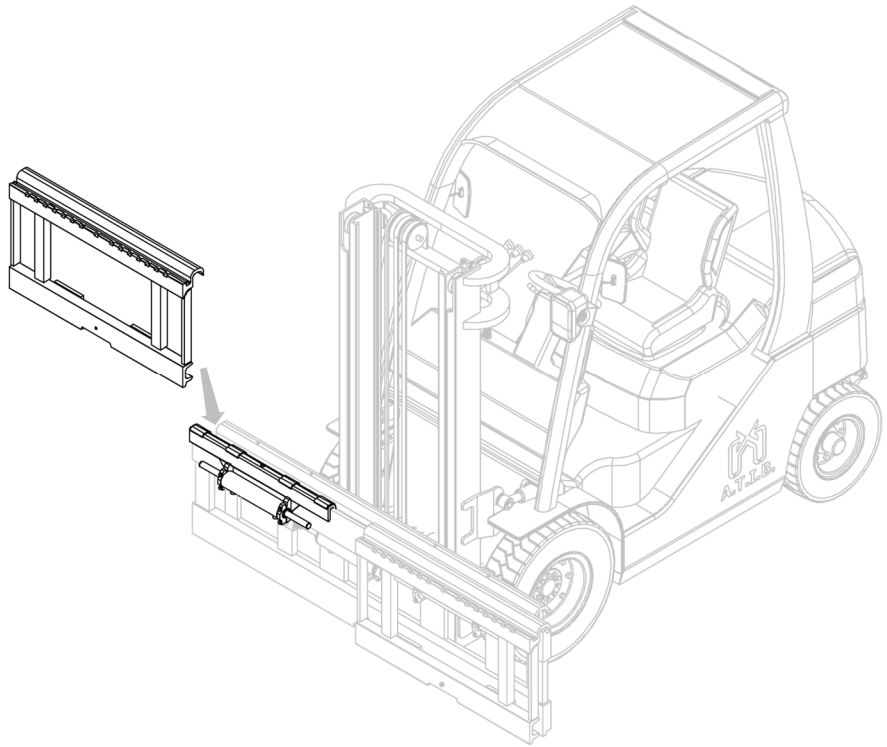


Figure 9

6. Tighten the 2 lower couplings **G** so that the body of the couplings remains coupled to the lower fork profile (**P**) of the rear structure (with max. 1.5mm clearance, see detail *Figure 6*), tightening with the torque indicated in *Table 3*.

CLASS	THREAD	TIGHTENING TORQUE
ISO II	**M12**	**90 Nm**
ISO III	**M14**	**140 Nm**

Table 4

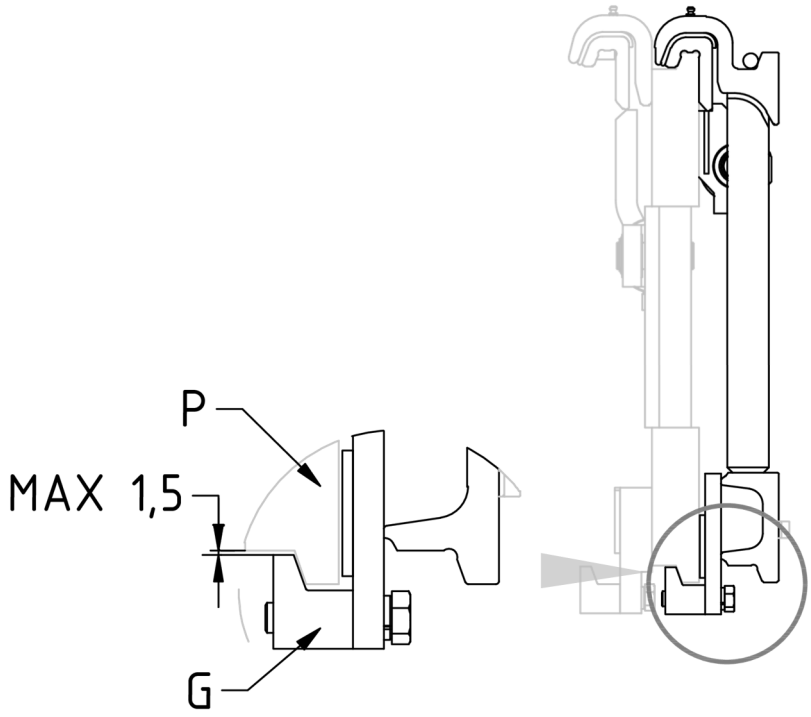


Figure 10

7. Lubricate the contact surfaces (see the *Lubrication* chapter on page *32*).

8. Install the forks (see chapter *Installing the Forks* on page *16*).

9. Connect the hydraulic circuit, making sure that the operating pressure of the lines is greater than or equal to that indicated on the identification plate (see *Figure 1* and *Table 1* on page *6)*.

3.1.3 Installing the Forks

FORKS

1. Release the pressure from the hydraulic system and disconnect the lines.

2. Install the forks on the sideshifts:

   - If there are two side safety screws, remove them and install the forks on the sides,
   - If there is a central safety screw, as in the figures below, remove it and install the forks from the centre of the sideshift, where the appropriate slit is present.

3. Make sure, once the forks are installed, to close the fork stop ratchet and screw the safety screw (or screws) back in.

4. For reference, see *Figure 11* and *Figure 12*.

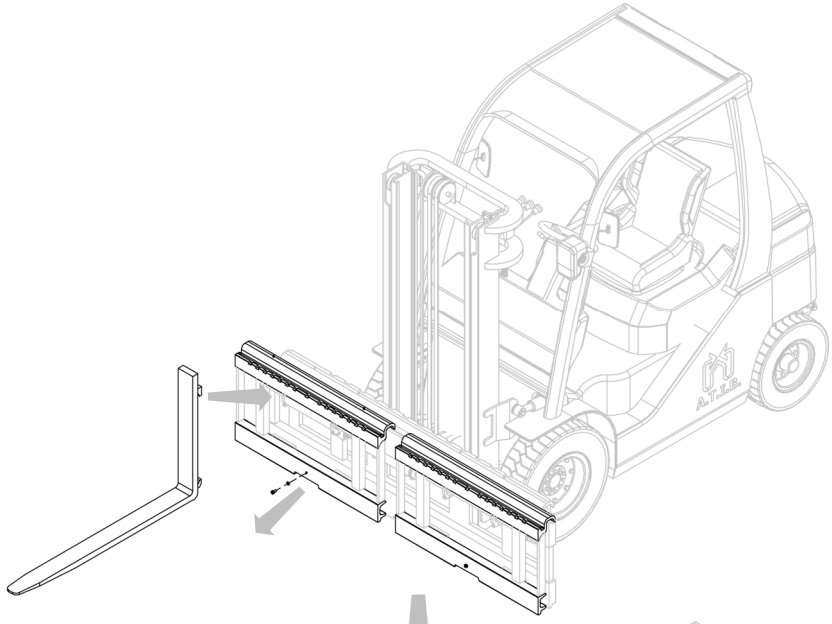


Figure 11

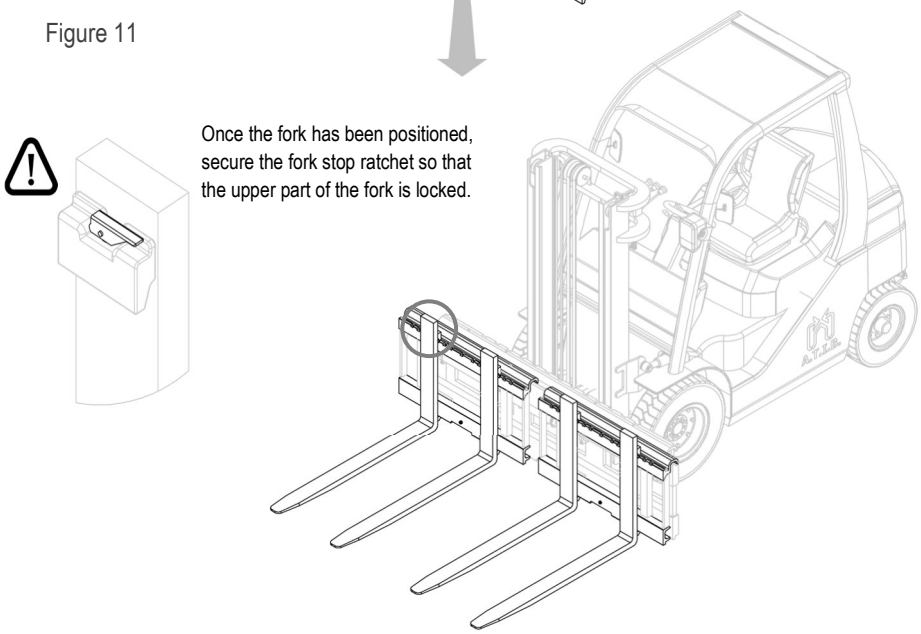


Figure 12

4 HYDRAULIC SYSTEM

4.1 Hydraulic System - TYPE 107.2

2 FRONT CYLINDERS

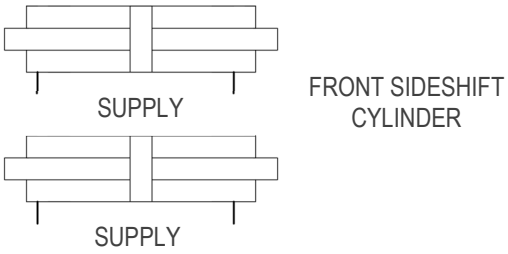


Figure 13

1 FRONT and 1 REAR

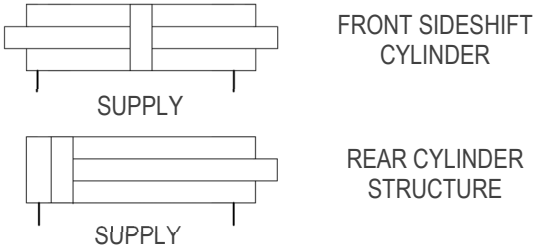


Figure 14

4.2 Hydraulic System - TYPE 107.3

TRIPLE SIDESHIFT

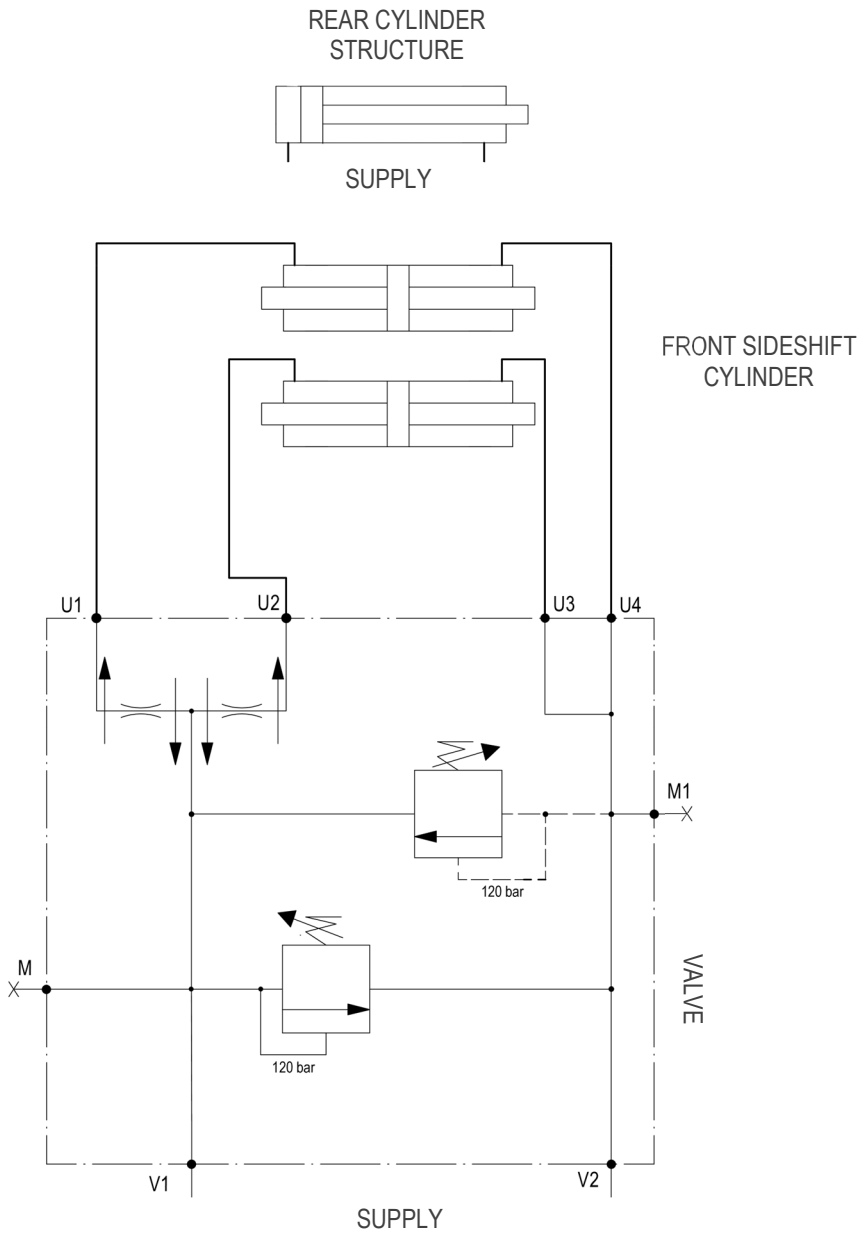


Figure 15

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 move loads sideways by dragging them across the floor.
4. Do not exceed the maximum pressure indicated on the rating plate.
5. Operate the equipment from the forklift truck driver's seat using only a single operator.
6. Operate the sideshift control lever gently to avoid water hammer as far as possible.
7. 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.
8. 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.).
9. 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).

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 16*, 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.

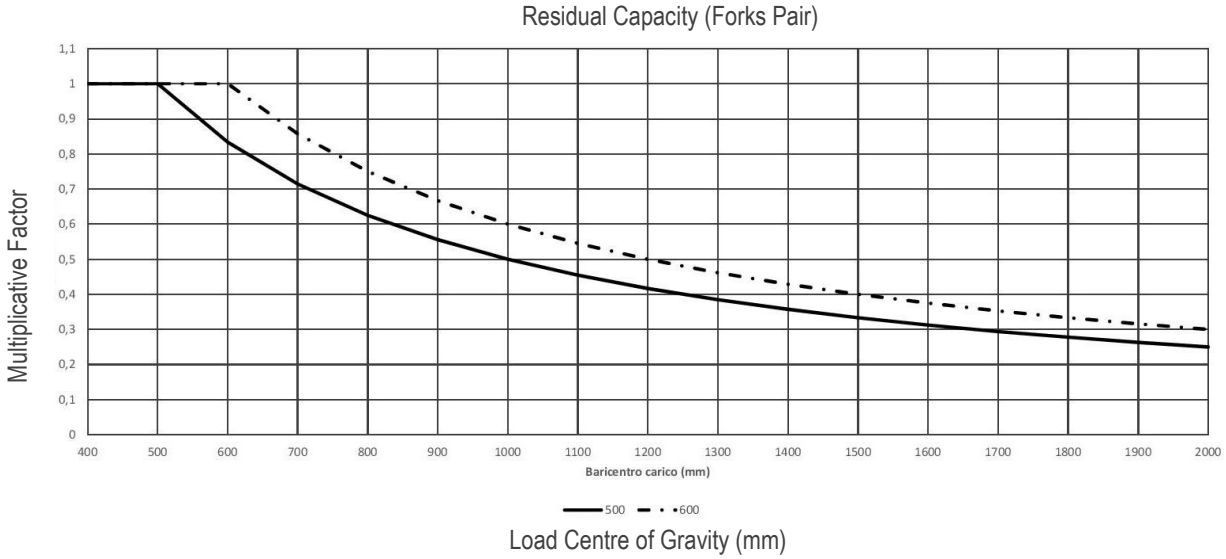


Figure 16

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).

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 the correct locking of the front sideshifts with regard to the rear structure's plate
3. Check the tightening torque of the bolts of the lower retaining hooks of the equipment, checking that it is as indicated in *Table 3* (page *12*) and *Table 4* (page *15*), and, if necessary, tighten the screws that support them.
4. Check the clearance between the lower part of the fork carriage plate and the lower equipment couplings, checking that it is as shown in *Figure 6* (page *12*) and *Figure 10* (page *15*), and, if necessary, tighten the screws that support them.
5. Clean and lubricate all sliding parts (see *Figure 23 and Figure 24* on page *32*).

6.2 Maintenance Every 300 Hours

1. Check the condition of the bushes and sliding gibs/rollers and, if excessively worn component are detected, A.T.I.B. recommends replacing the entire component assembly in question.

2. Check the condition of the clamping unit, replacing damaged and/or excessively worn components if necessary.

3. Carry out the additional operations listed in the previous point (Point *6.1*).

6.3 Maintenance Every 1000 Hours

1. Check the condition of the bushes and sliding gibs/rollers and, if excessively worn component are detected, A.T.I.B. recommends replacing the entire component assembly in question.

2. Carry out the additional operations listed in the previous points (Points *6.1* and *6.2* on page *23*).

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 possible problems (and related solutions) refer to *Table 5* on page *31*.

2. Dismantle cylinders and check condition of piston rods and seals. If a damaged or excessively worn seal is detected, A.T.I.B. recommends replacing 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 (Points *6.1*, *6.2* 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 and disconnect the lines.
2. Remove the lower couplings from the structure (see *Figure 4* on page *11).*
3. For handling, use straps/chains that are suitably sized in relation to the weight of the equipment as indicated on the plate.
4. Then lift the equipment with an overhead crane or hoist of sufficient capacity and remove it from the forklift (see *Figure 5* on page *11*).

7.2 Removing the Front Sideshifts

1. Release the pressure from the hydraulic system and disconnect the lines.
2. Remove the lower couplings (see *Figure 8* on page *14).*
3. For handling, appropriately sized belts/chains must be used on the basis of the weight.
4. Then lift the sideshift with an overhead crane or hoist of sufficient capacity and remove it from the rear structure (see *Figure 9* on page *14*).

7.3 Disassembling the forks

FORKS

1. Release the pressure from the hydraulic system and disconnect the lines.

2. Install the forks on the sideshifts:

   - If there are two side safety screws, remove them and remove the forks on the sides.
   - If there is a central safety screw, as in the figures below, remove it and remove the forks from the centre of the sideshift, where the appropriate slit is present.

3. Be sure to open the fork stop ratchet to allow the forks to be removed.

4. For reference, see *Figure 17* and *Figure 18*.

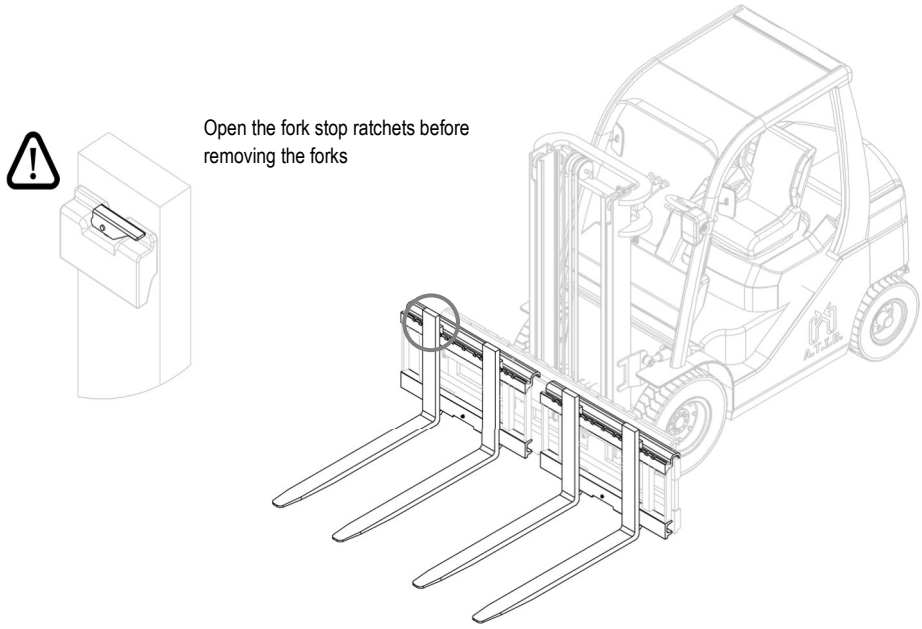


Figure 17

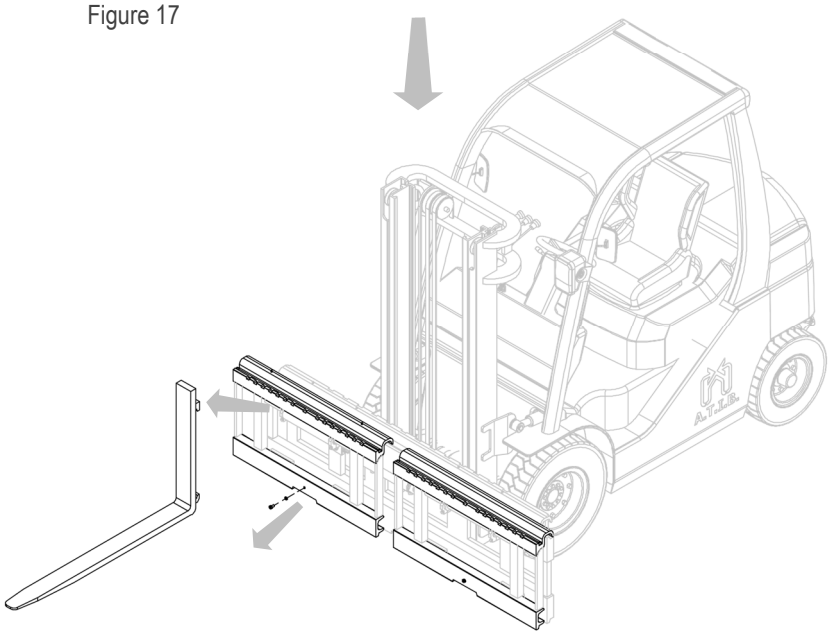


Figure 18

7.4 Removing the Front Sideshift Cylinder

CYLINDER SISS

1. Release the pressure from the hydraulic system and disconnect the lines, ensuring that a tray or container is made available beneath the fittings to catch the oil in the cylinder.

2. Remove the equipment from the forklift (see *Removing Equipment From the Forklift Truck* on page *25*).

3. Remove the cylinder from its seat after removing the front half-collar and the relative screws and washers (plugs may alternatively be present) that hold it.

4. For reference, see *Figure 19*.

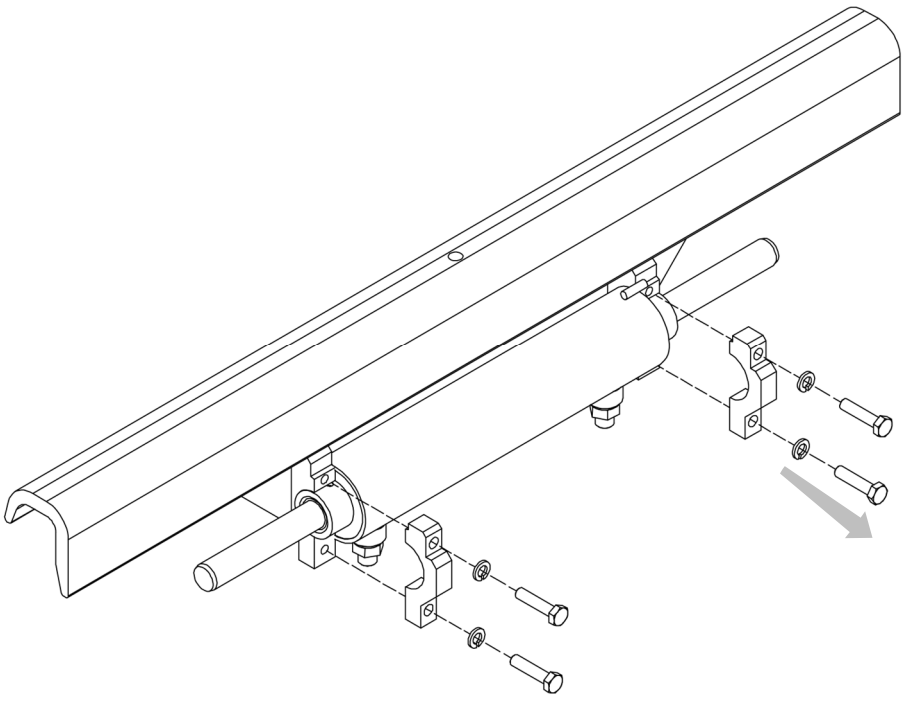


Figure 19

7.4.1 Disassembling and Reassembling the Cylinder

If the entire cylinder needs to be replaced, reassemble following the instructions listed in the previous point in reverse order (using the new cylinder). If any cylinder components need to be replaced, proceed as indicated below (see *Figure 20*):

1. Place the cylinder on a horizontal surface.
2. If only the rods need to be replaced, simply remove them from the cylinder cap.
3. If seals and/or other parts need to be replaced, the cap must be unscrewed using a C-hook spanner.
4. If the cap will not unscrew, slightly heat the area of the thread in question to facilitate unscrewing.
5. Replace damaged parts and reassemble by repeating the above steps in reverse order, taking care to relock the cylinder cap using medium strength threadlocker.
6. If a damaged seal is found, it is advisable to replace the entire seal assembly.

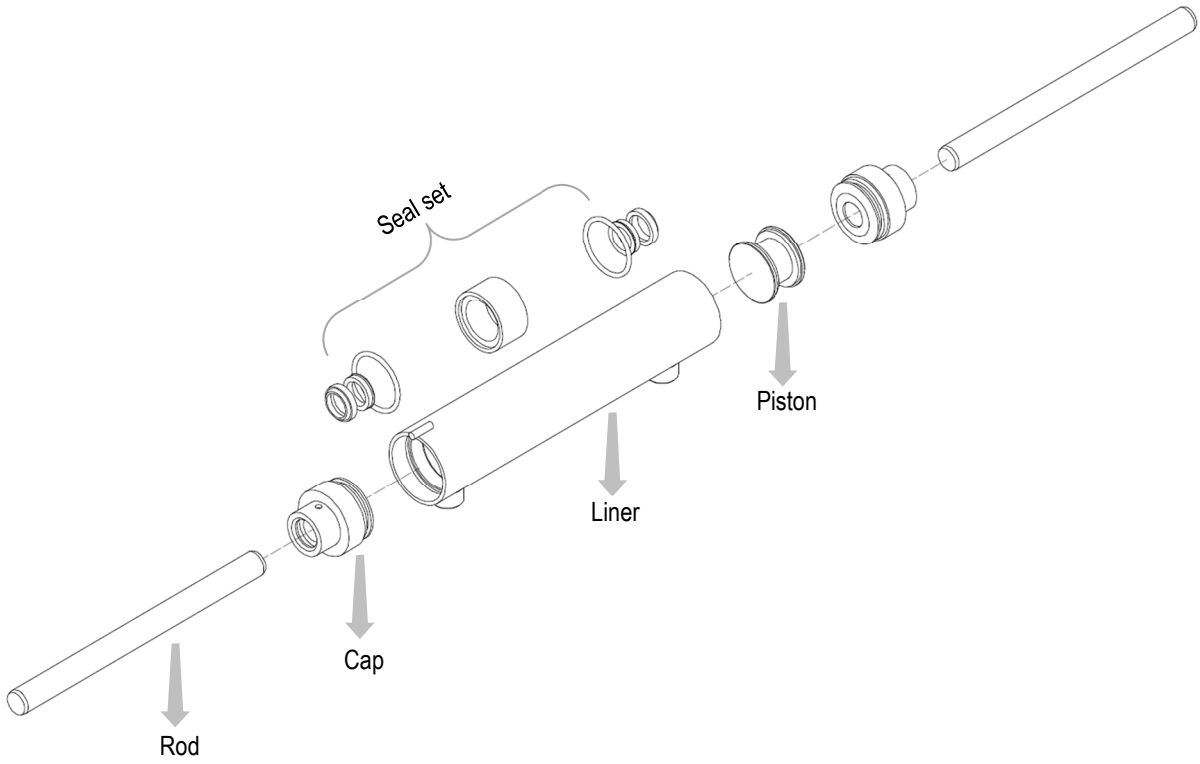


Figure 20

7.5 Removing the Rear Cylinder Structure

REAR CYLINDER STRUCTURE

1. Release the pressure from the hydraulic system and disconnect the lines, ensuring that a tray or container is made available beneath the fittings to catch the oil in the cylinder.
2. Remove the two front sideshifts (see *Removing the Front Sideshifts* on page *25*).
3. Remove the equipment from the forklift (see *Removing Equipment From the Forklift Truck* on page *25*).
4. Remove the pins (with their snap rings) that hold the cylinder (see *Figure 21*).
5. Remove the cylinder.

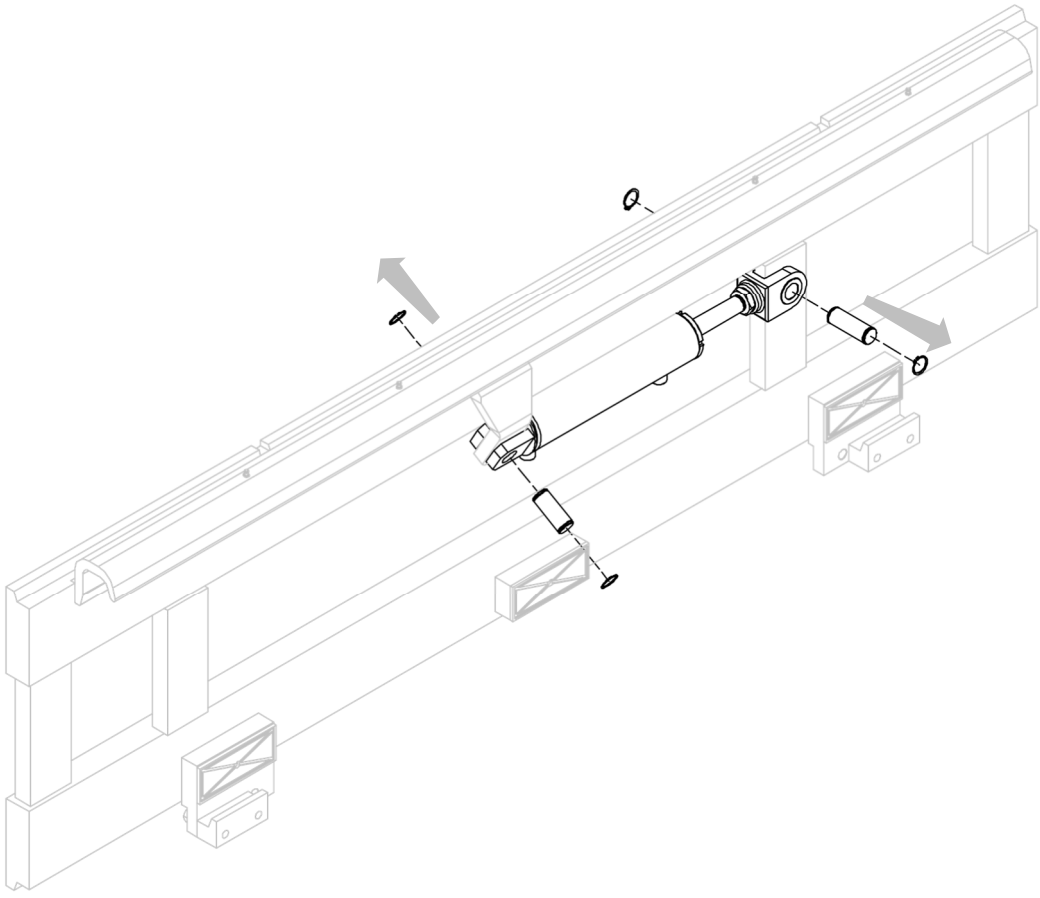


Figure 21

7.5.1 Disassembling and Reassembling the Cylinder

If the entire cylinder needs to be replaced, reassemble everything by following the instructions listed in the previous point in reverse order (using the new one). If any internal components of the cylinder need to be replaced, proceed as indicated below (see *Figure 22*):

1. Place the cylinder on a horizontal surface.
2. Loosen the locknut that holds the fork.
3. Unscrew the fork.
4. Unscrew the cylinder head (the rod can be welded or screwed to the piston).
5. Remove the cap with the help of a C-hook spanner.
6. The threads of the A.T.I.B. cylinders are usually locked with the aid of a thread locking solution. If there is a certain difficulty in removing the cap, it is necessary to slightly heat the area of the thread concerned to facilitate unscrewing.
7. Remove the various components and replace the damaged ones.
8. If a damaged seal is found, it is advisable to replace the entire seal assembly.

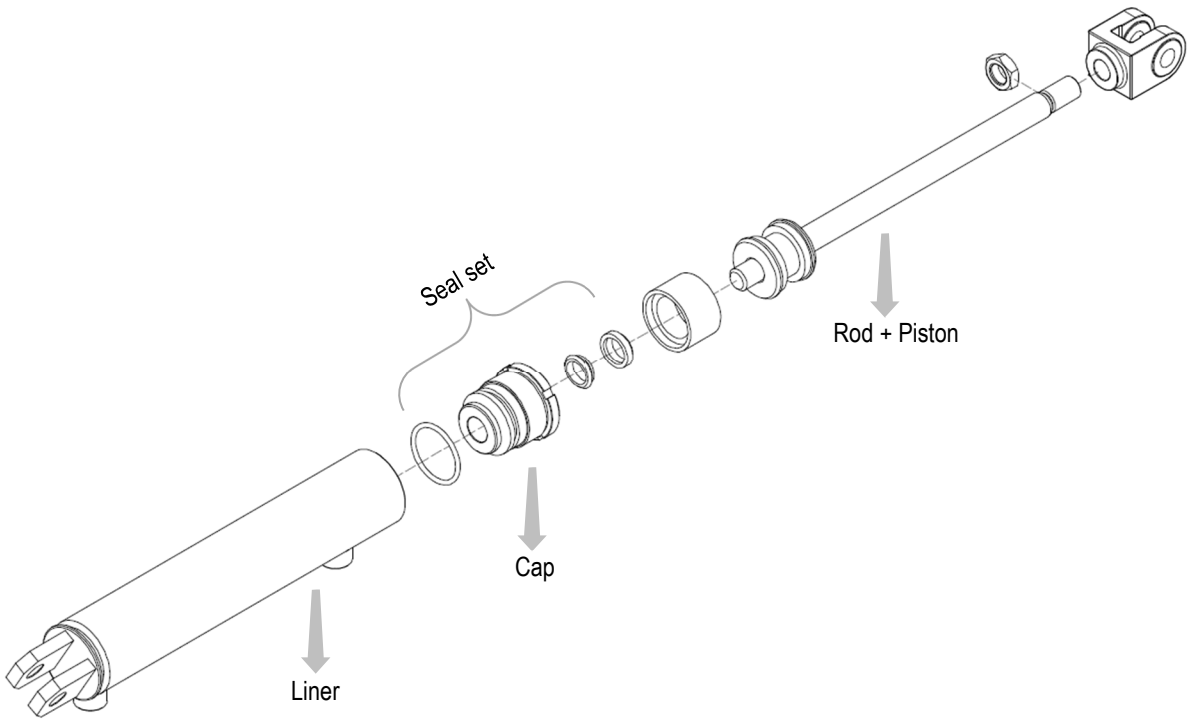


Figure 22

8 TROUBLESHOOTING

8.1 Probable Faults and Solutions

FAULT	CAUSE	SOLUTION
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
Sideshift slow	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 the gibs/rollers and the sliding surfaces.

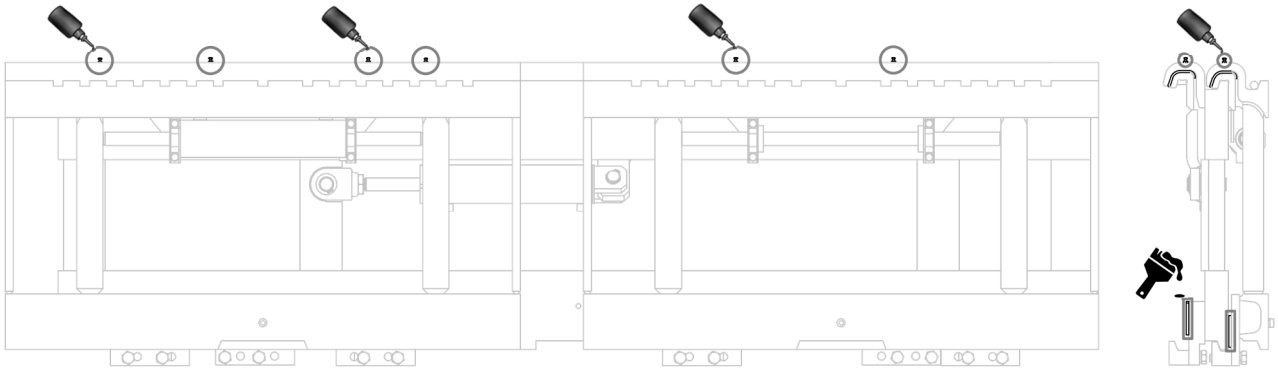


Figure 23

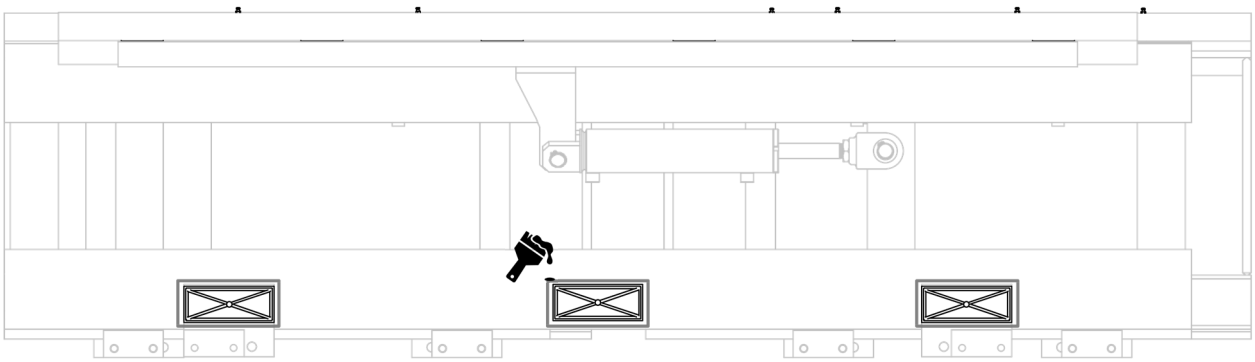


Figure 24

MADE IN ITALY

A.T.I.B. S.r.l.
Via Quinzanese snc, 25020 Dello (BS) - ITALY

+39 030 977 17 11
info@atib.com
atib.com