ATiB MATERIAL HANDLING

INSTRUCTION MANUAL FOR USE

ROTATOR 360°

TYPE 301

I-D02-01-57 - Rev.3

INDEX

ROTATOR 360°
TYPE 301

⚠ WARNING ⚠

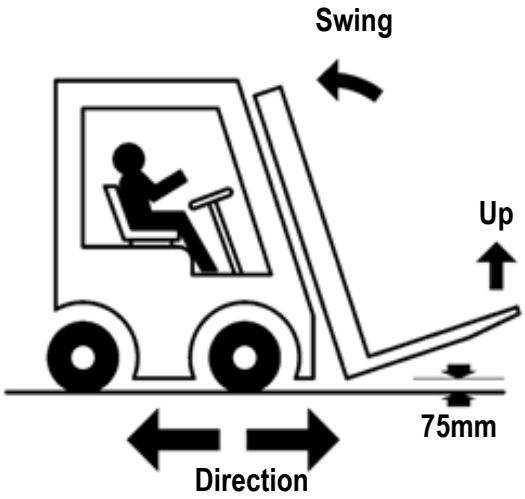
READ THIS MANUAL VERY CAREFULLY BEFORE STARTING-UP THE MACHINE

1 SAFETY RULES

Don’t carry passengers

Don’t cross the mast

Don’t pass under the load



2 INTRODUCTION

2.1 Use and upkeep of this manual

This "User Manual" (hereinafter referred to as Manual) is supplied together with the A.T.I.B. - ROTATOR 360° TYPE 301 pursuant the CE DIRECTIVE 2006/42/CE date 17/05/2006 and amendments.

The information contained here are imperative for the correct use of the attachment and must be known by the personnel who install, use, maintain and repair it.

This manual must be considered integral part of the attachment and must be kept as long as the attachment is in use on any machine in an accessible place, protected, dry and available for immediate consultation.

Should this manual be lost, the operator can apply for the supply of further copies from the manufacturer.

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

The manufacturer is not liable in cases of:

- Improper use of the attachment;

- Use by untrained personnel;

- Use contrary to current national and international laws;

- Lack of recommended maintenance;

- Non authorised modifications and repairs;

- Use of non original spare parts or parts for other models;

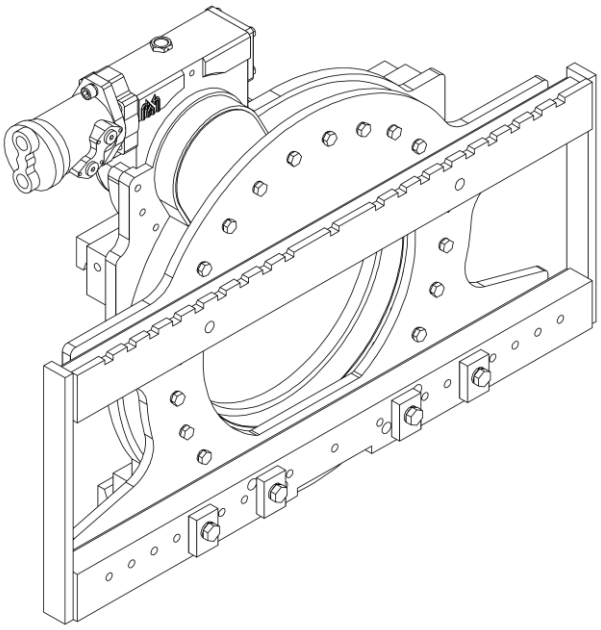
- Failure to adhere, either totally or partially, to these instructions;

- Exceptional circumstances.

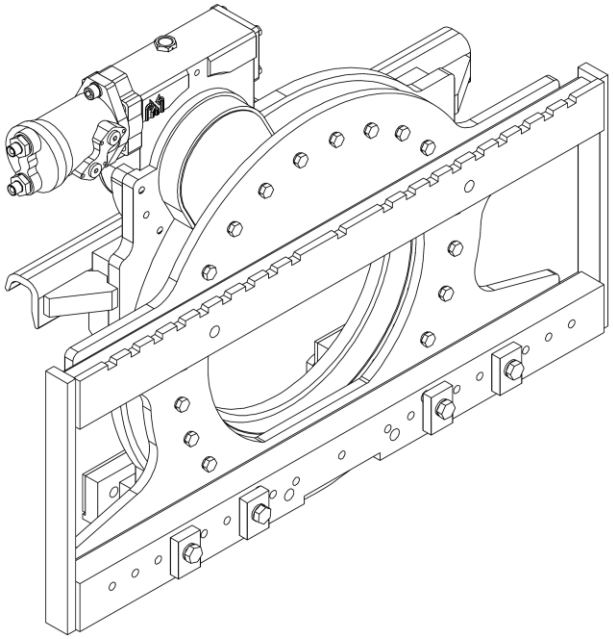
The Nominal Capacity of the forklift / Equipment combination is established by the original manufacturer of the forklift and may be lower than that indicated on the identification plate.
Consult the plate of the forklift (Directive 2006/42 / EC).

2.2 Description of equipment

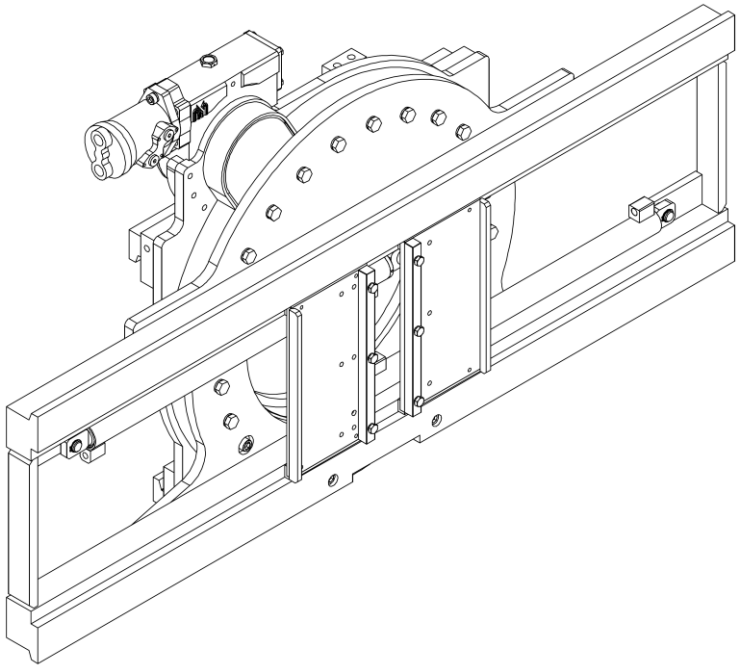
TYPE 301



TYPE 301 WITH SLS

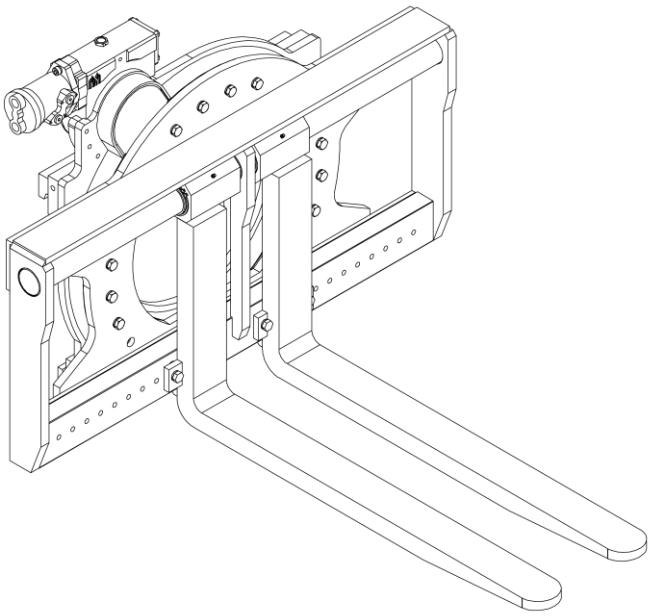


TYPE 301RFI

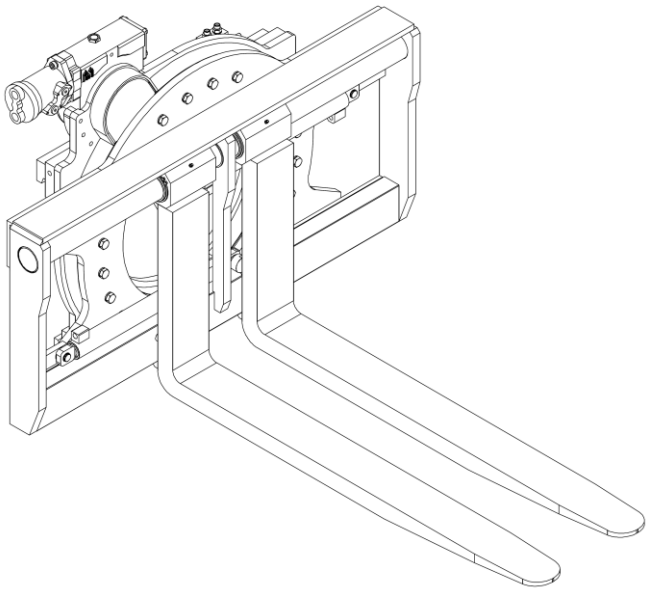


TYPE 301 PIN TYPE

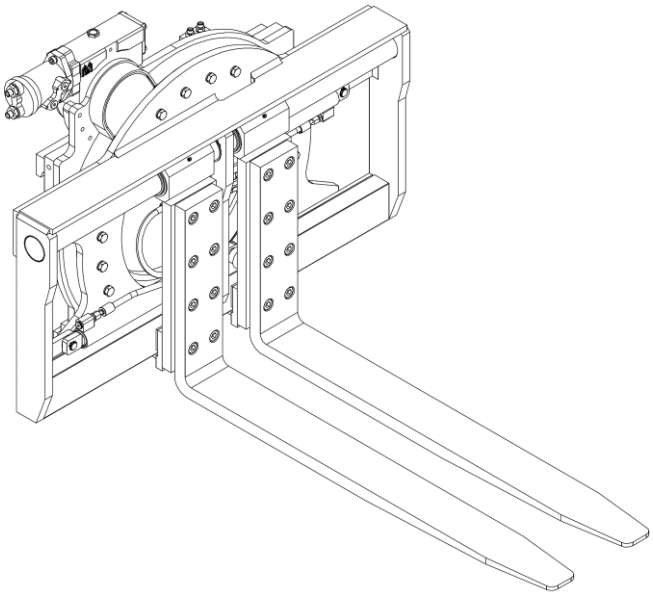
TYPE 301 (WITH AND WITHOUT SLS)



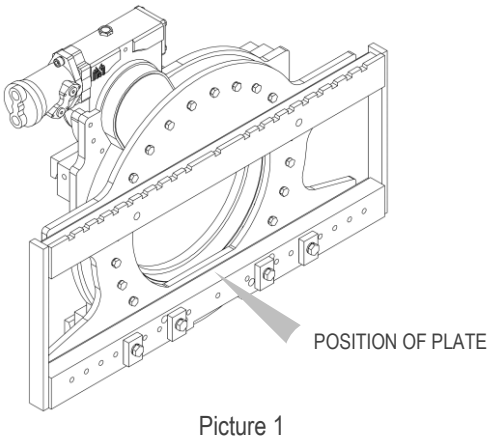
TYPE 301RFI PIN TYPE



TYPE 301RFI PIN TYPE BOLTED FORKS

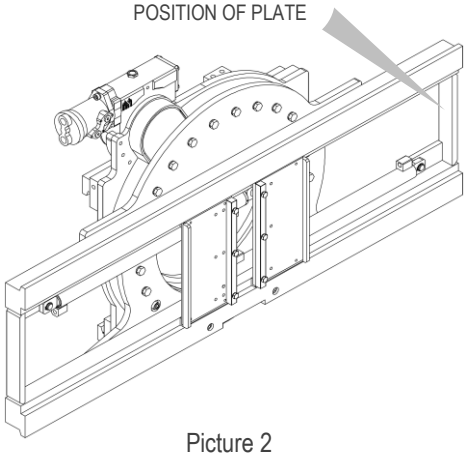


All the A.T.I.B. – ROTATOR 360° TYPE 301 equipment are identified by means of a sticky identification label on attachment (*Tab 1*) position of identification label on equipment the position of the identification plate (may vary depending on the equipment, *Picture 1/Picture 2/Picture 3*). Always refer to serial number.



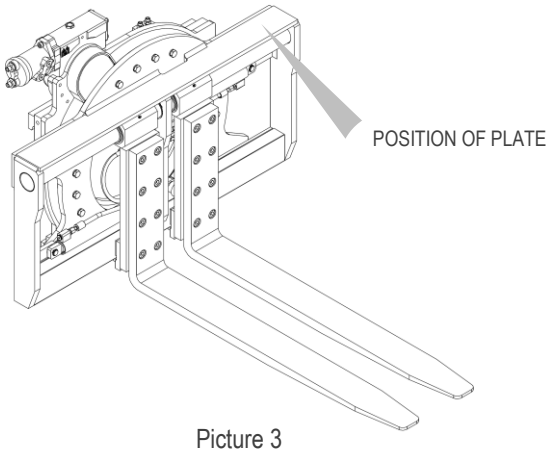
Picture 1

TYPE 301RFI



Picture 2

TYPE WITH PIN TYPE



Picture 3

1. TYPE	**8. NOMINAL CAPACITY**	**kg/mm**	**11. MAX. TORQUE**	**daN m**
2. CODE	**9. CLAMPING CAPACITY**	**kg/mm**	A.T.I.B.	CE
3. SERIAL N°				
4. YEAR OF MANUFACTURE	**10. MAX. OPERATING PRESSURE**	**bar**	**A.T.I.B. S.r.l.** Via Quinzanese snc, 25020 Dello (BS) - ITALIA +39 030/9771711 info@atib.com - **atib.com**	
5. WEIGHT				
6. THICKNESS	**WARNING: RESPECT THE RATED CAPACITY OF TRUCK AND ATTACHMENT COMBINED**			
7. CENTER OF GRAVITY				

Tab 1

1. **TYPE**
   It identifies the model of the equipment as shown in the catalogue.

2. **CODE**
   It identifies the equipment order code.

3. **SERIAL N°**
   It progressively identifies the individual equipment.
   The series number has been stamped should the tag go missing or be damaged. Always refer to the series number for any kind of information.

4. **YEAR OF CONSTRUCTION**
   It indicates the year of construction.

5. **WEIGHT**
   It indicates the weight of the equipment in kg.

6. **THICKNESS**
   It indicates the thickness of the equipment in mm.

7. **CENTER OF GRAVITY**
   It indicates the distance in mm of the equipment CG center of gravity from the fork holding plate table.

8. **NOMINAL CAPACITY**
   It indicates the maximum P load applicable to the hoisting equipment and the maximum CC barycentric distance of the load itself.

9. **CLAMPING CAPACITY**
   It indicates the maximum weight of the load lifted by clamping.

10. **MAX OPERATING PRESSURE**
    It indicates the maximum pressure applicable to the equipment.

11. **MAX COUPLE**
    Indicates the rotation torque of the equipment.

The A.T.I.B. - ROTATOR 360° TYPE 301 were planned and built to enable the rotation of load transported by forklift and the distance adjustment between fork centres through two-cylinder hydraulic actioning (301RFI).

SLI = with INTEGRAL SIDESHIFT
RFI = with INTEGRAL FORK POSITIONER
SLS = with SEMI-INTEGRAL SIDESHIFT
FB = pin type BOLTED FORKS

For the transport of the overturned load, it is necessary to use forks with reinforced lower hooks.

Upon customer request, special versions can be produced for foundries, the agricultural sector and the fishing industry.

This equipment must be applied between the fork holding plate of the forklift and the forks, and connected to the distributor by means of a hydraulic circuit.

The rotation movement between the parts integral with the fork holder plate and those integral with the lifting equipment is achieved by means of a hydraulic motor integrated with the reducer.

The relative adjustment movement of the fork center distance is achieved by means of two hydraulic cylinders which act directly on the two plates to which the forks are applied.

The semi-integral sideshifting movement between the parts integral with the fork holder plate and those integral with the lifting equipment is achieved by means of hydraulic cylinders.

The coupling components of the fork holding plate are manufactured in compliance with the ISO 2328 norm.

3 INSTALLATION

Verify the nominal capacity of equipment

To check the nominal capacity of equipment, consult the identification label (*Tab 1* pag.*7*).

⚠ WARNING ⚠

Make sure that the operator of the forklift is aware of the maximum capacity of the attachments, so as NOT to pose a danger to himself and to the people who work in his vicinity.

The forklift manufacturer is responsible for calculating the residual capacity of the forklift /equipment assembly.

Check operating pressure and flow rate of oil

A.T.I.B. advises to respect the hydraulic flow rates and operating pressures shown in *Tab 2*, in order to optimize the operation of the equipment and avoid problems during the work or commissioning phases. The values are indicative and may vary depending on the equipment.

TYPE and ISO	FLOW (l/min)			Max operating pressure (Bar)
	Min.	Max.	recommended	
301 ISO II	10	60	25	175
301 ISO III	10	60	25	175
301 ISO IV [5000kg.@600mm.]	15	60	30	175
301 ISO IV [5500kg.@600mm.]	15	60	30	175
301 ISO IV [7000kg.@600mm.]	15	60	35	175
301 ISO IV [8000kg.@600mm.]	15	60	35	175
301 ISO IV [10000kg.@600mm.]	15	60	35	175
301RFI ISO II	15/**10**	60/**35**	35/**25**	175
301RFI III [3000kg.@500mm.]	15/**10**	60/**35**	35/**25**	175
301RFI III [3400kg.@500mm.]	15/**10**	60/**35**	35/**25**	175
301RFI III [4200kg.@500mm.]	15/**10**	60/**35**	35/**25**	175
301RFI III [4800kg.@500mm.]	15/**15**	60/**50**	35/**30**	175
301RFI IV	15/**15**	60/**50**	35/**30**	175

Tab 2

Values in bold refer to sideshift.

⚠ WARNING!! ⚠

RESPECT THE MAXIMUM WORKING PRESSURES INDICATED

3.1 Installation

3.1.1 Attachment installation - TYPE 301 without SIs

TYPE 301

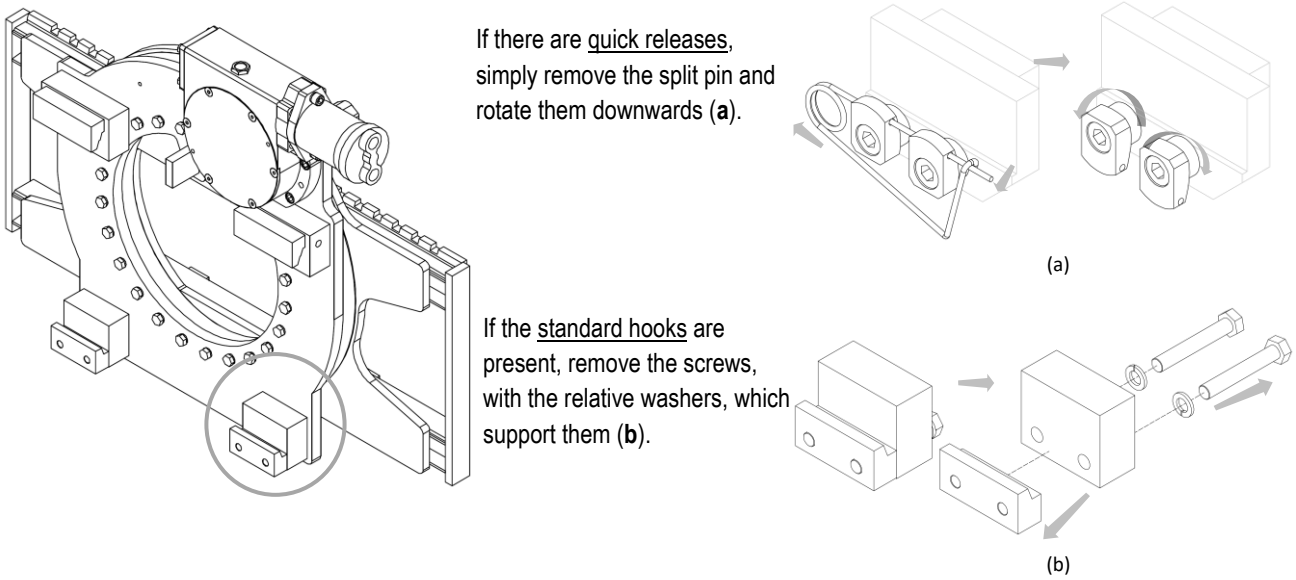
1. <u>Before installation</u>, verify the condition of the fork carriage, ensuring that it is not deformed.

2. Also make sure that the profiles of the fork holding plate are not deformed, in order to allow a good coupling with the equipment.

3. Check the condition of the pipes, replacing those that are in a bad condition.

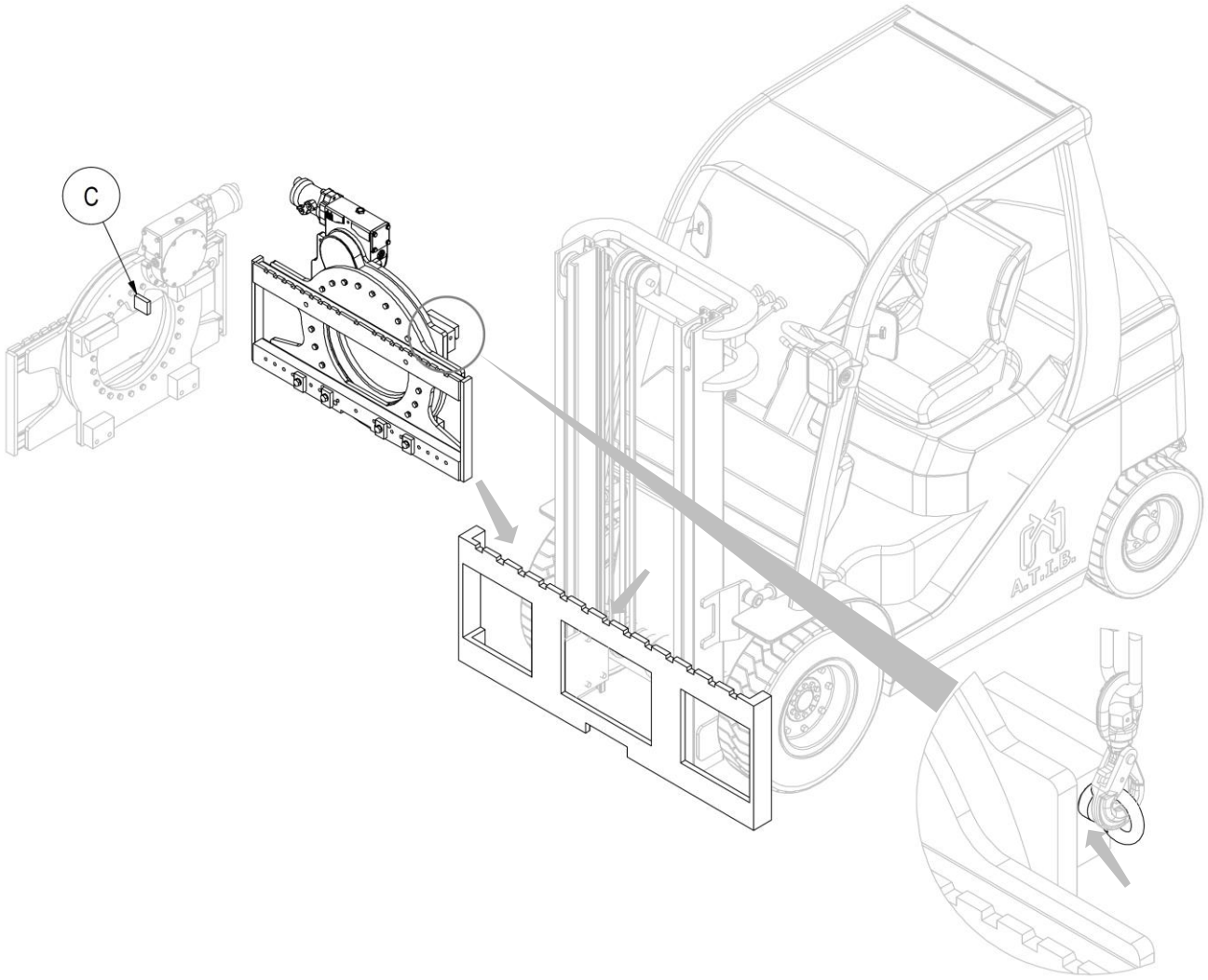
<u>NOTE:</u> Although only the standard type is shown in the following installation phase, the equipment installation procedure is the same for the other types as well (WITHOUT SLS).

4. Unscrew the lower hooks of equipment (*Picture 4*).



Picture 4

5. **Only adjustable eyebolts must be used for handling, which must be screwed into the appropriate side holes (*Picture 5*).**
   For handling, use belts or chains appropriately sized for the weight of the equipment, indicated on the identification plate (*Picture 1/Picture 2/Picture 3* and *Tab 1* pag.*7*).



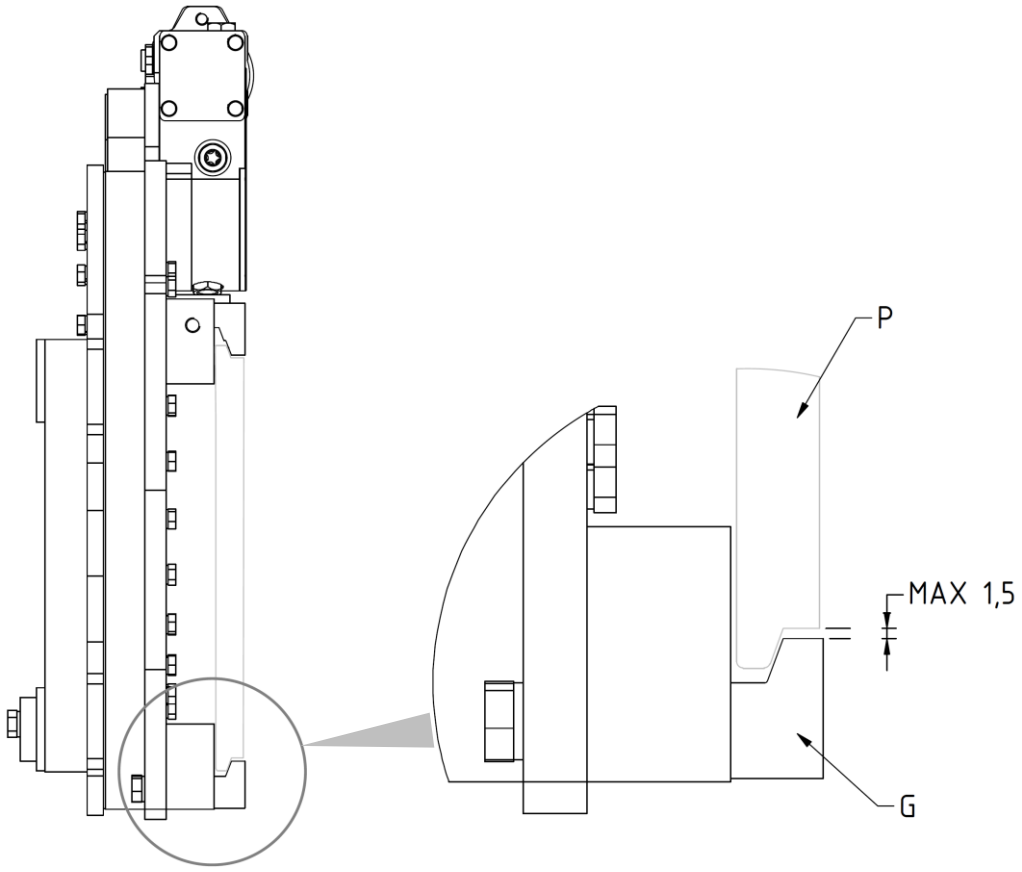
Picture 5

6. **with an overhead crane or with a hoist of sufficient capacity hook the attachment to the fork carriage, placing the centring tooth C into the central notch (*Picture 5*).**

7. **Screw the two bottom hooks G with bolts so that the attachment is safely mounted on the fork carriage P (with a tolerance max. 1,5mm, *Picture 6*), reaching to the following torques *Tab 3*.**

ISO 2328	THREAD	TORQUE
ISO II	M12	90 Nm
ISO III	M14	140 Nm
ISO IV	M16	220 Nm

Tab 3

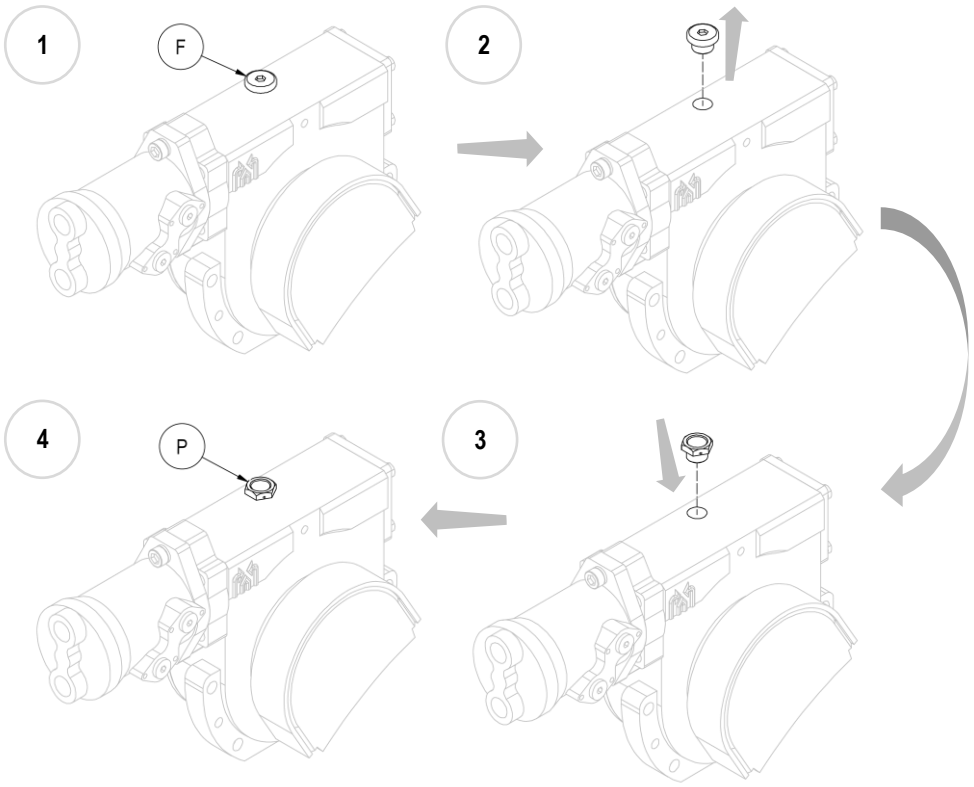


Picture 6

8. **Install the forks.**

9. **Lubricate the contact parts.**

10. <u>NOTE:</u> With the equipment installed, replace the blind iron oil filler cap (F) with the plastic one supplied (P), provided with vent (*Picture 7*).



Picture 7

11. Connect the hydraulic circuit, making sure that the operating pressure of the pipes is higher than or equal to that indicated on the identification label (*Picture 1/Picture 2/Picture 3* and *Tab 1* pag.*7).*

3.1.2 Attachment installation - TYPE 301 with Sls

TYPE 301 WITH SLS

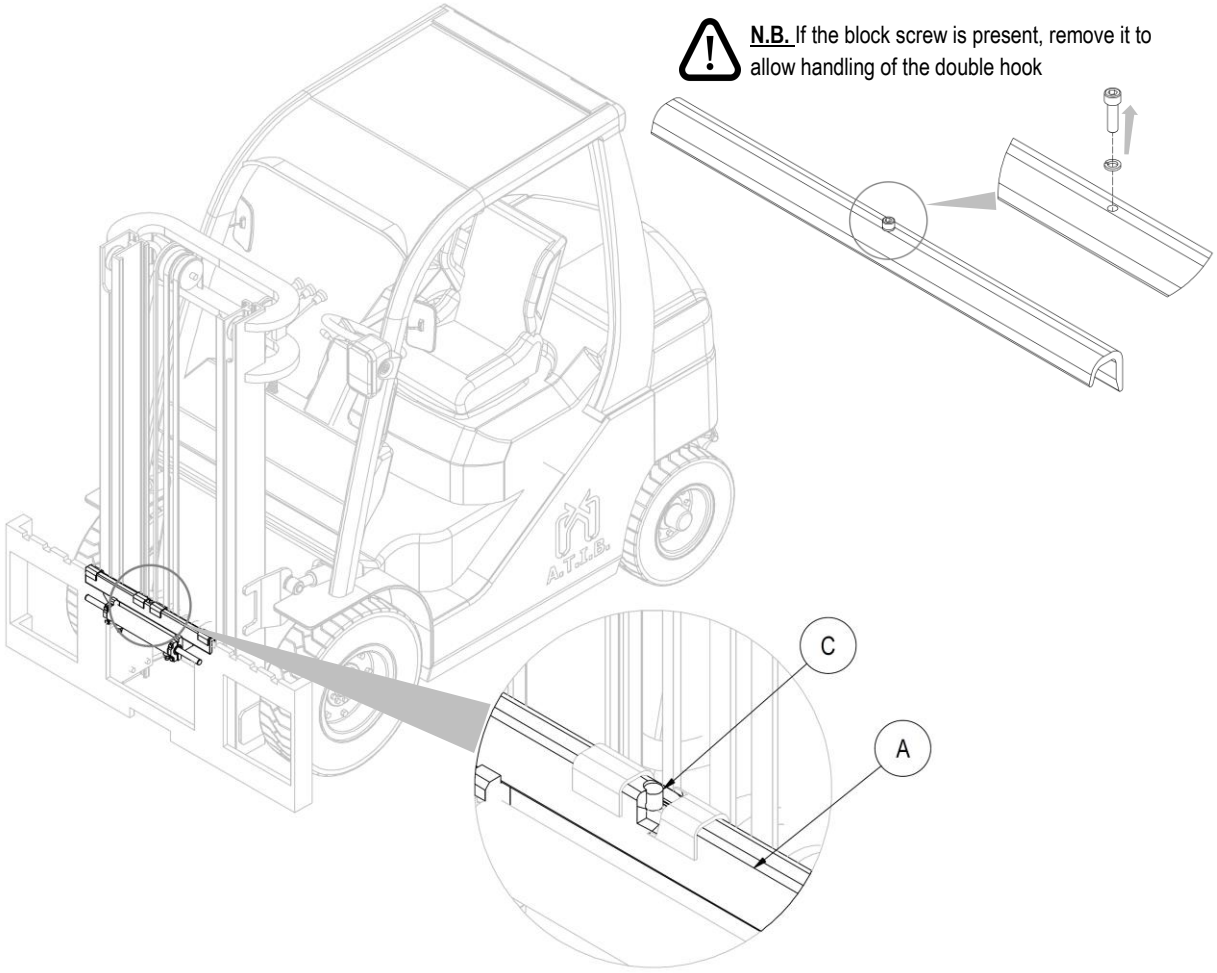
1. **<u>Before installation</u>, verify the condition of the fork holding plate, ensuring that it is not deformed.**

2. **Also make sure that the profiles of the fork holding plate are not deformed, in order to allow a good coupling with the shifting equipment.**

3. **Check the condition of the pipes, replacing those that are in a bad condition.**

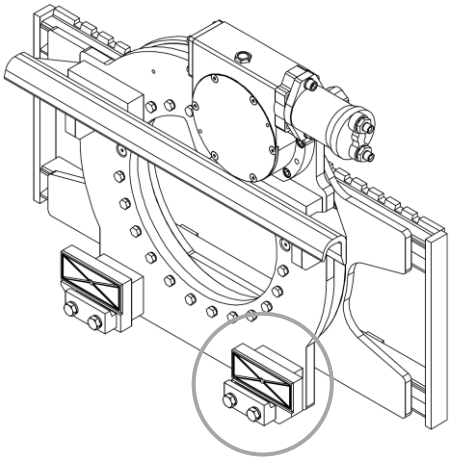
<u>NOTE.</u> Although only the standard type is shown in the following installation phase, the equipment installation procedure is the same for the other types as well (WITH SLS).

4. **Manually take the double hook A (with the relative sliding bushings and relative sideshifting cylinder), and place it on the upper profile of the fork holder plate, taking care to fit the centring pin C in the central notch of the same (*Picture 8*).**

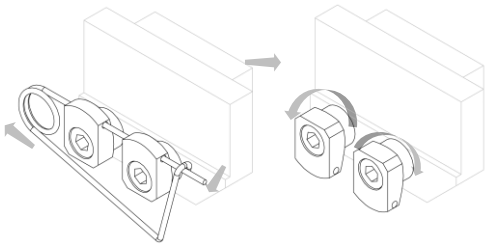


Picture 8

5. **Unscrew the lower hooks of equipment and lubricate the slide (*Picture 9*).**

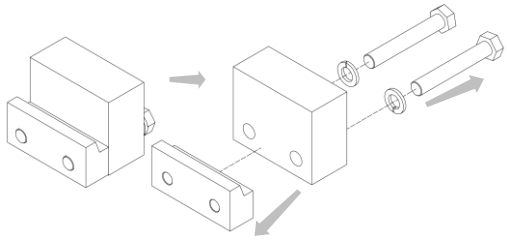


If there are quick releases, simply remove the split pin and rotate them downwards (**a**).



(a)

If the standard hooks are present, remove the screws, with the relative washers, which support them (**b**).

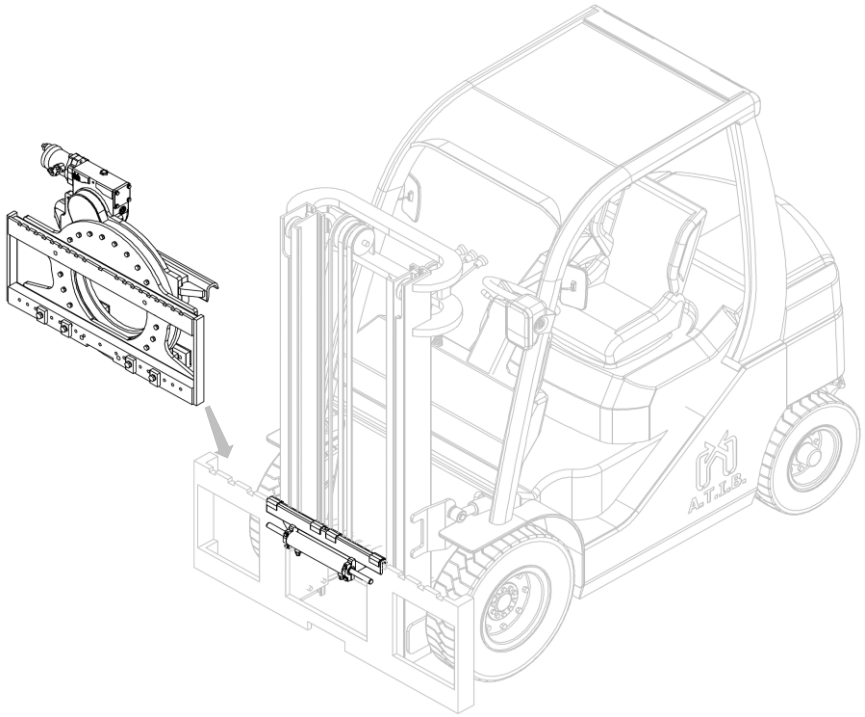


(b)

Picture 9

6. **For handling, use belts or chains appropriately sized for the weight of the equipment, indicated on the identification plate (*Picture 1/Picture 2/Picture 3* and *Tab 1* pag.*7*).**

7. **with an overhead crane or with a hoist of sufficient capacity hook the attachment on the double hook, taking care to position the equipment correctly (*Picture 10).***

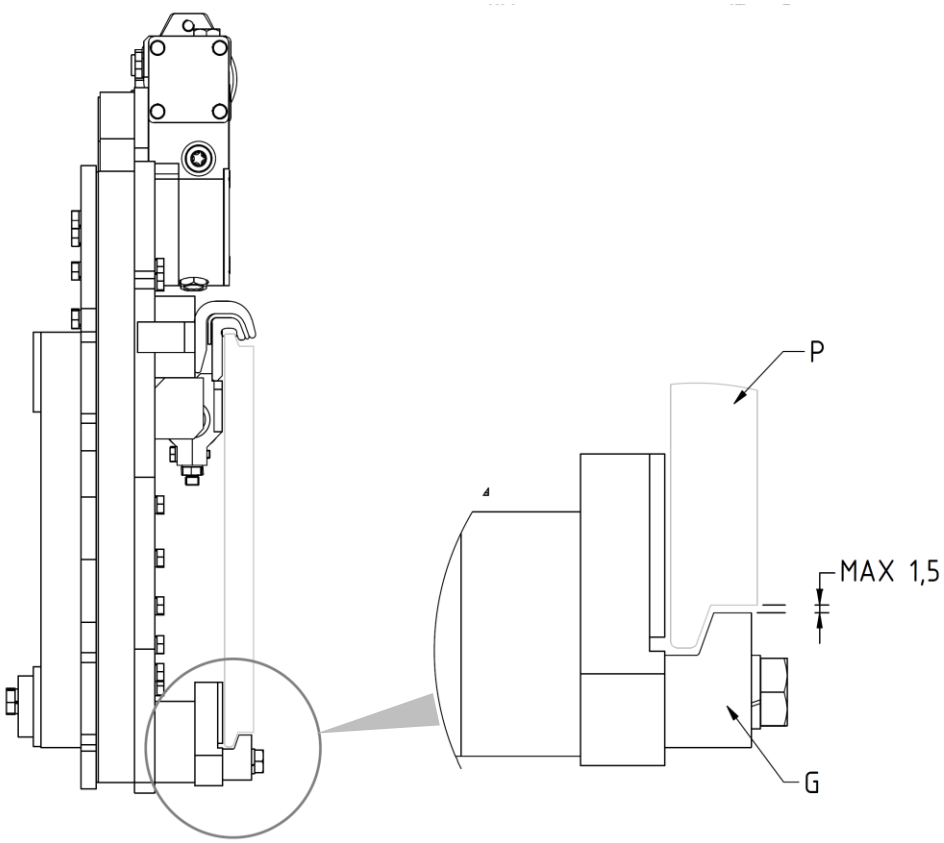


Picture 10

8. **Screw the two bottom hooks G with bolts so that the attachment is safely mounted on the fork carriage P (with a tolerance max. 1,5mm, *picture 11*), reaching to the following torques *Tab 4.***

ISO 2328	THREAD	TORQUE
ISO II	M12	90 Nm
ISO III	M14	140 Nm
ISO IV	M16	220 Nm

Tab 4

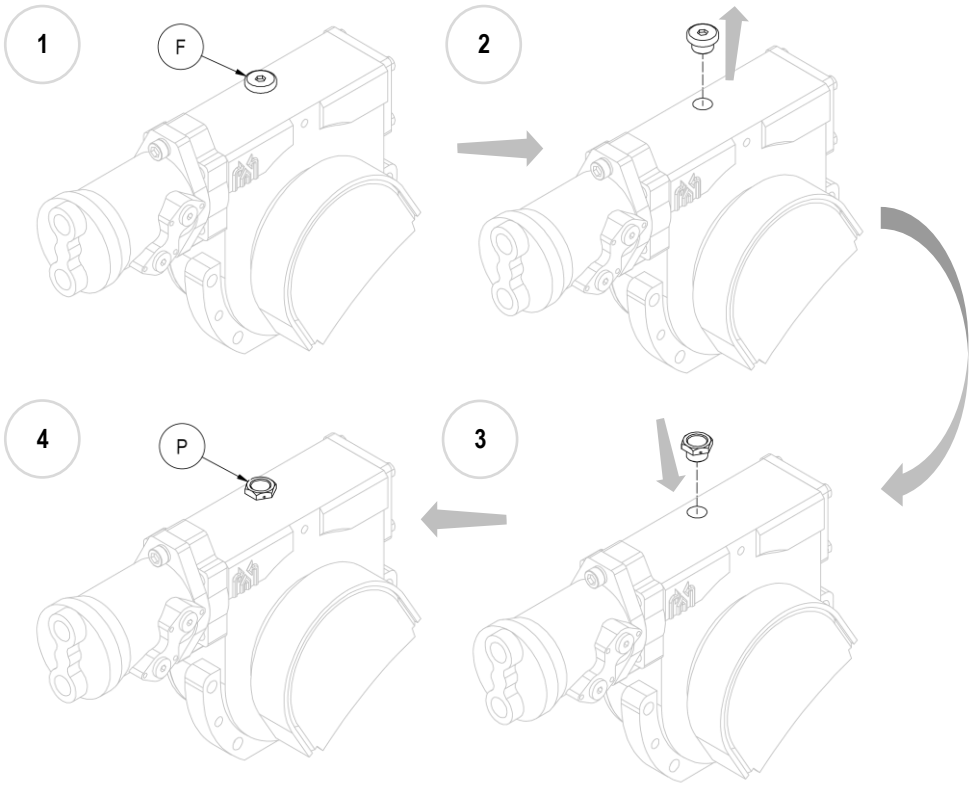


picture 11

9. **Install the forks.**

10. **Lubricate the sliding parts.**

11. <u>NOTE.</u> With the equipment installed, replace the blind iron oil filler cap (F) with the plastic one supplied (P), provided with vent (*Picture 12*).



Picture 12

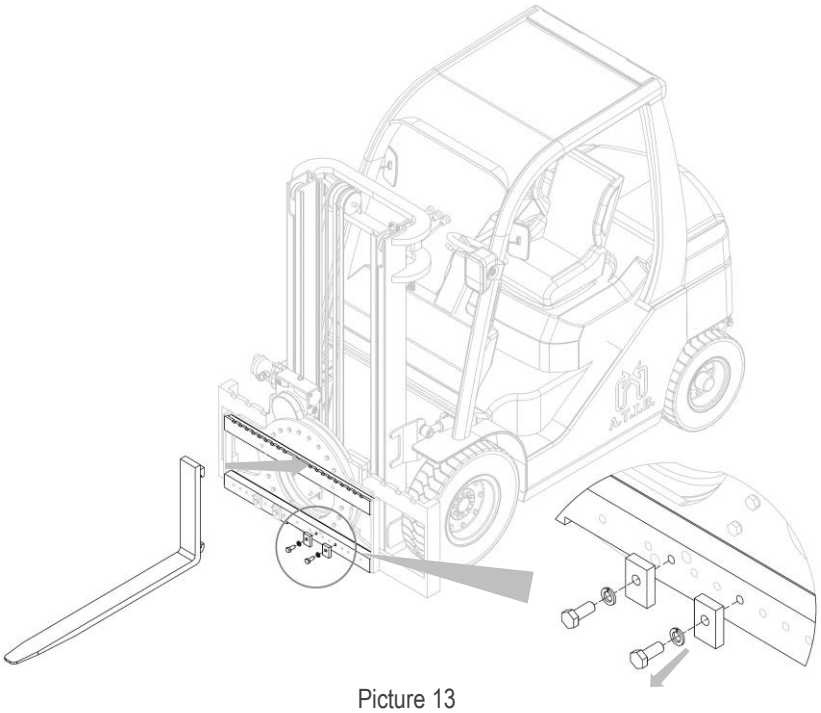
12. Connect the hydraulic circuit, making sure that the operating pressure of the pipes is higher than or equal to that indicated on the identification label (*Picture 1/Picture 2/Picture 3* and *Tab 1* pag.*7).*

3.2 Fork installation on the attachment

3.2.1 Fork installation – TYPE Standard

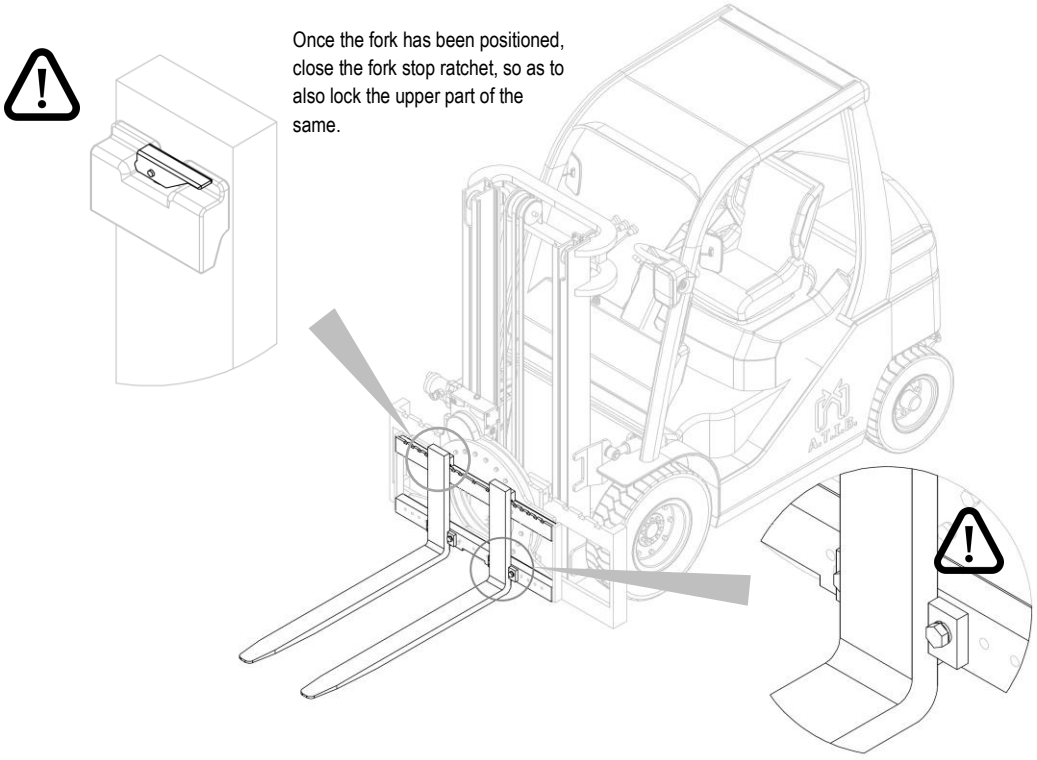
TYPE STANDARD / HOOKED ON

1. Apply the forks after unscrew the fork blocks from fork holders (*Picture 13*); according to the width of the forks, use the most suitable holes.



Picture 13

2. Apply the forks and screw back the fork blocks (*Picture 14*).

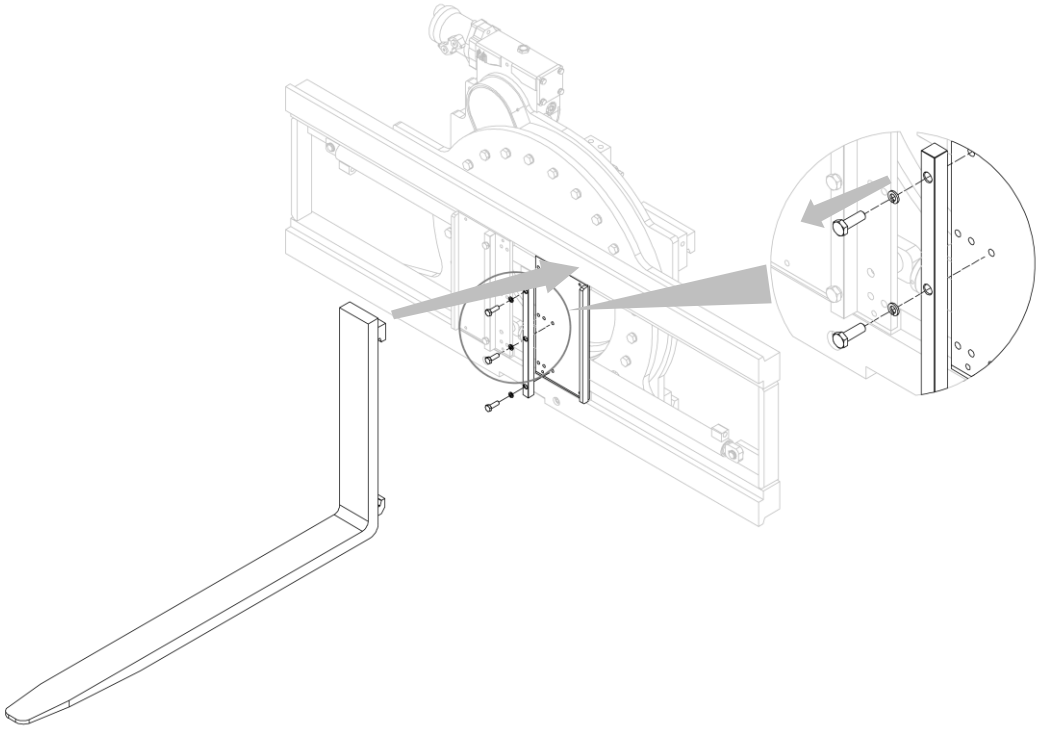


Picture 14

3.2.2 Fork installation – TYPE RFI

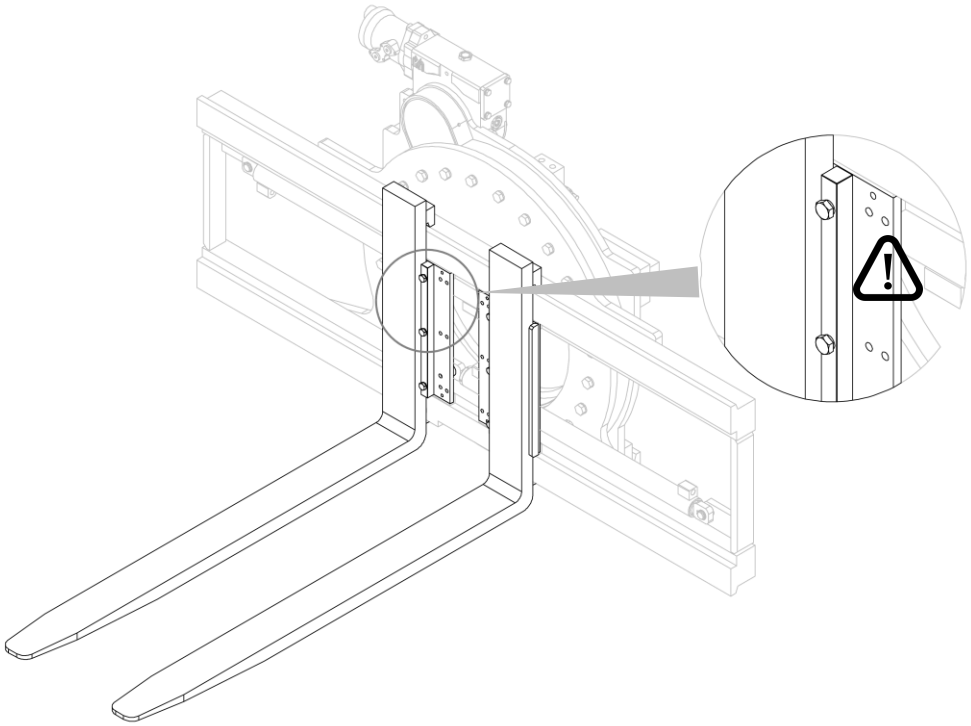
TYPE RFI

1. Apply the forks after unscrew the fork blocks from fork holders (*Picture 15*); according to the width of the forks, use the most suitable holes.



Picture 15

2. Apply the forks and screw back the fork blocks (*Picture 16*).

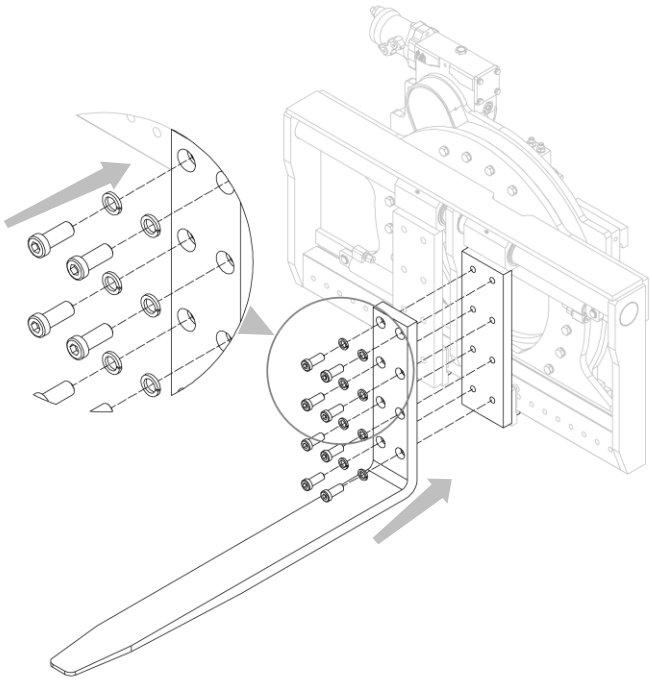


Picture 16

3.2.3 Fork installation – TYPE pin type FB

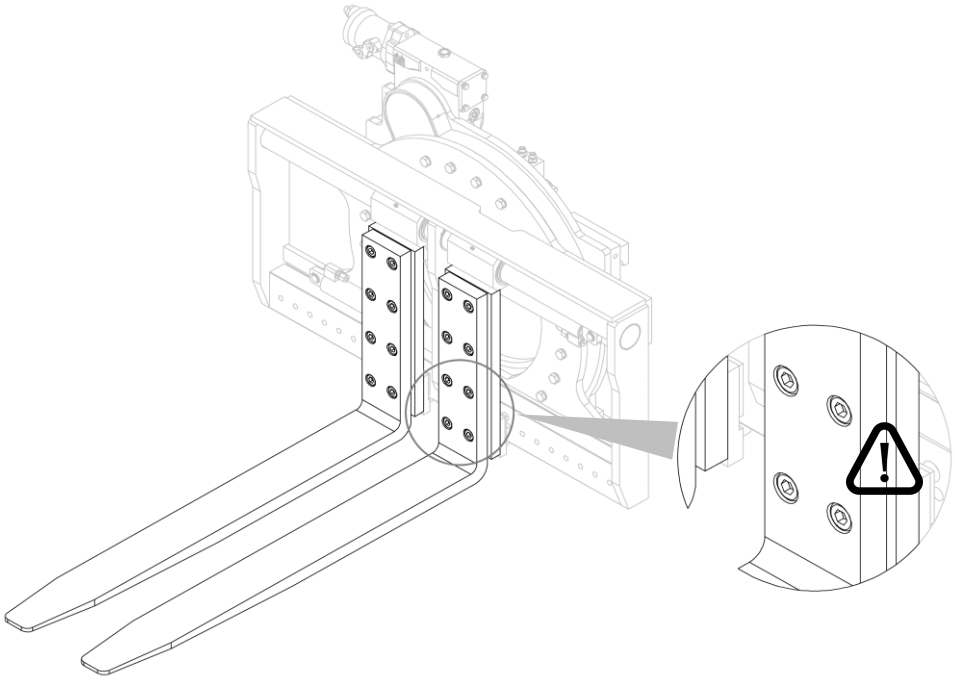
TYPE "BOLTED FORKS"

1. **Apply the forks on his fork holders, tightening the relative screws that lock them (*Picture 17*).**



Picture 17

2. **Check the correct locking of the forks (*Picture 18*).**



Picture 18

3.2.4 Fork installation – TYPE pin type

TYPE PIN TYPE

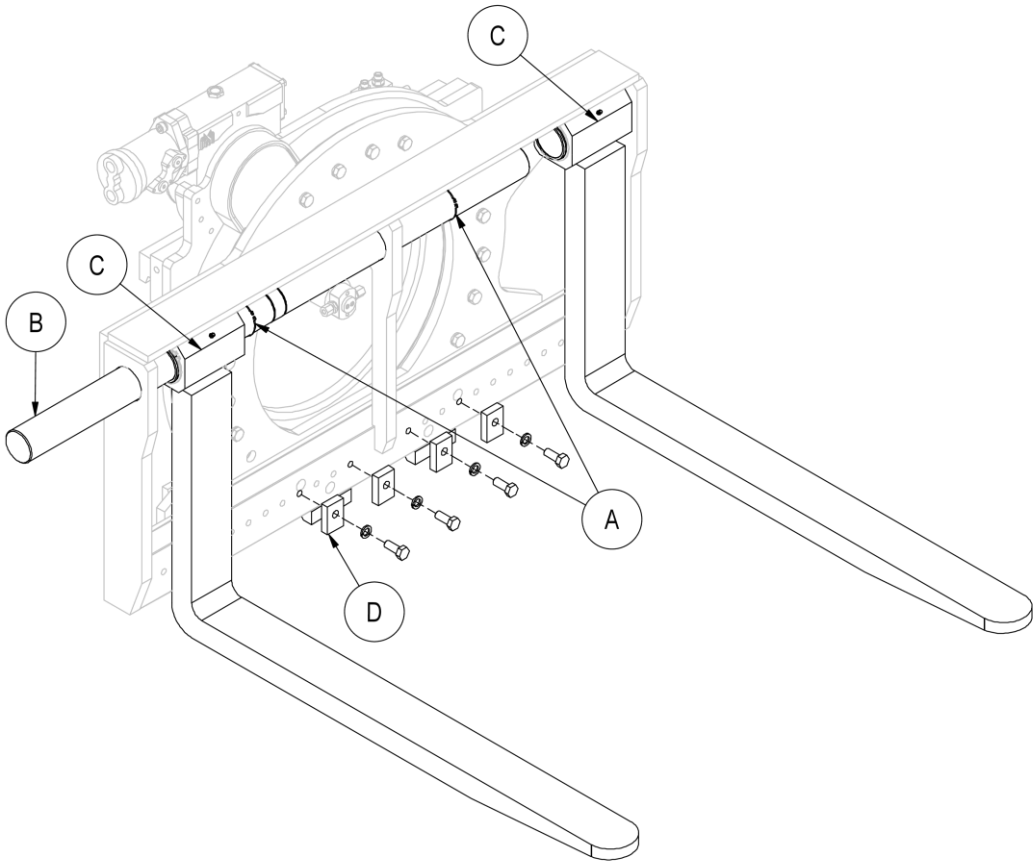
1. Loosen the snap rings A that lock the sliding bar and position them far enough away to be able to insert the forks.

2. **With the aid of a rubber hammer, gently push the sliding bar B out of its seat and insert, one at a time, the forks C, taking care not to deform or damage them.**

3. **Reposition the sliding bar and lock it using the appropriate elastic rings.**

4. **Position the forks and insert the fork stops D using the most suitable holes.**

5. **Refer to *Picture 19.***

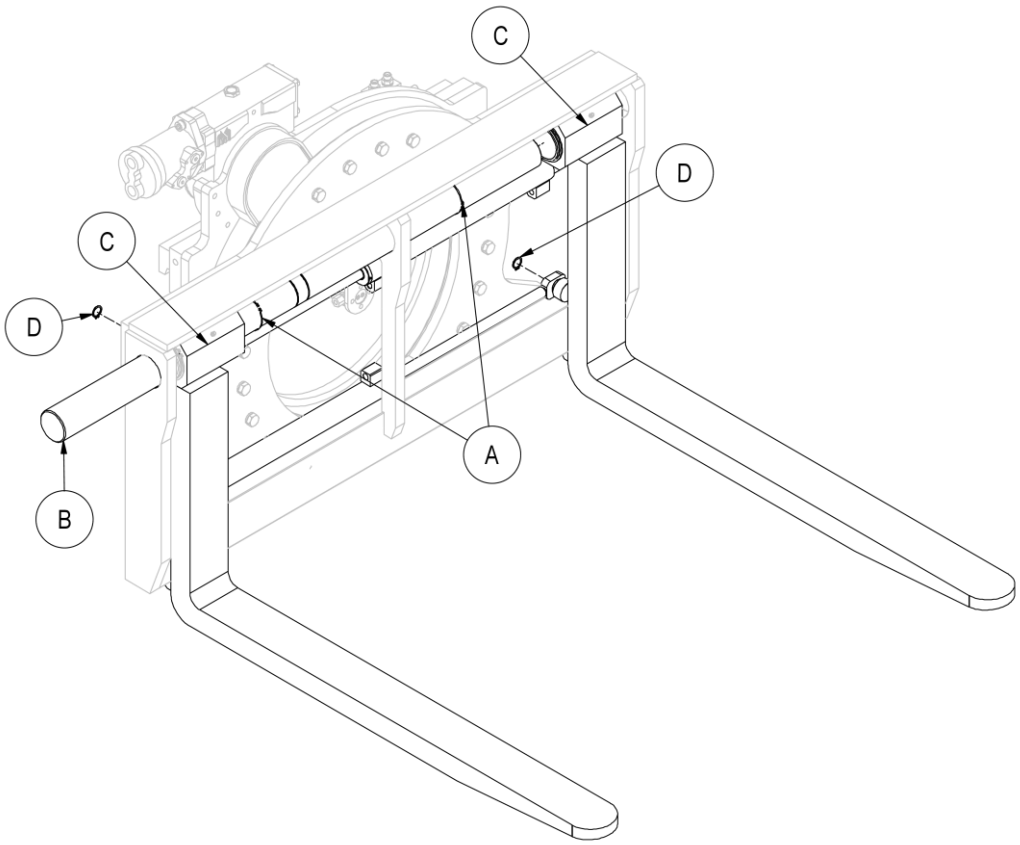


Picture 19

3.2.5 Fork install – TYPE RFI pin type

TYPE 301RFI PIN TYPE

1. **Fully open the fork cylinders.**
2. **Relieve the pressure of the hydraulic system and remove the pipes.**
3. **Loosen the snap rings A that block the slider bar and move at a sufficient distance to be able to insert the forks.**
4. **Using a rubber hammer, gently push the sliding bar B out of its seat and insert, one at a time, the forks C, taking care not to deform or damage them and taking care to position them correctly with respect to the ends of the cylinder rods.**
5. **Insert the elastic rings D that bind the cylinders to the forks.**
6. **Reposition the sliding bar and lock it using the appropriate elastic rings.**
7. **Refer to *Picture 20*.**

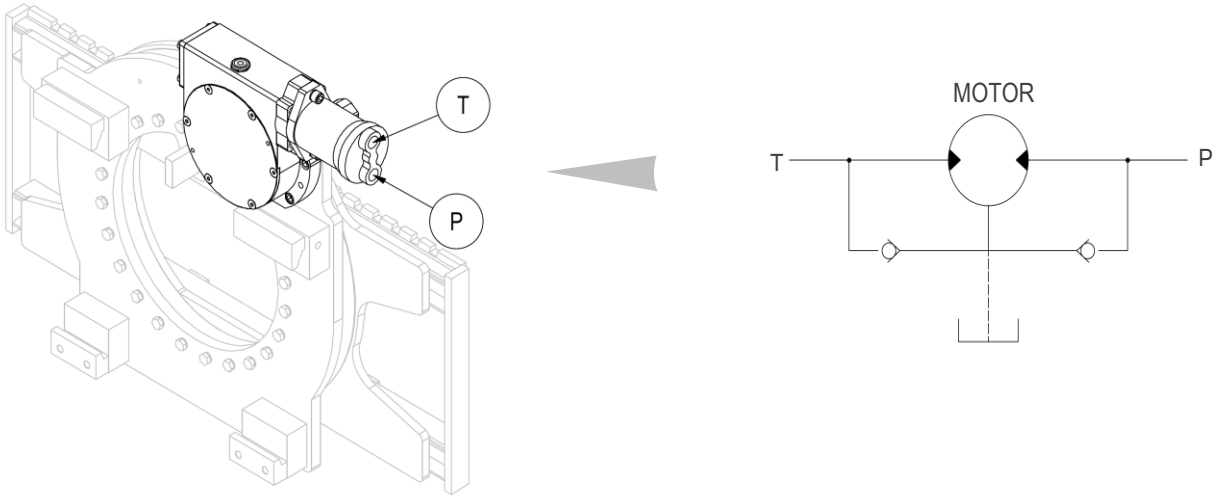


Picture 20

4 HYDRAULIC SYSTEM

4.1 Hydraulic system – TYPE 301 Standard / pin type

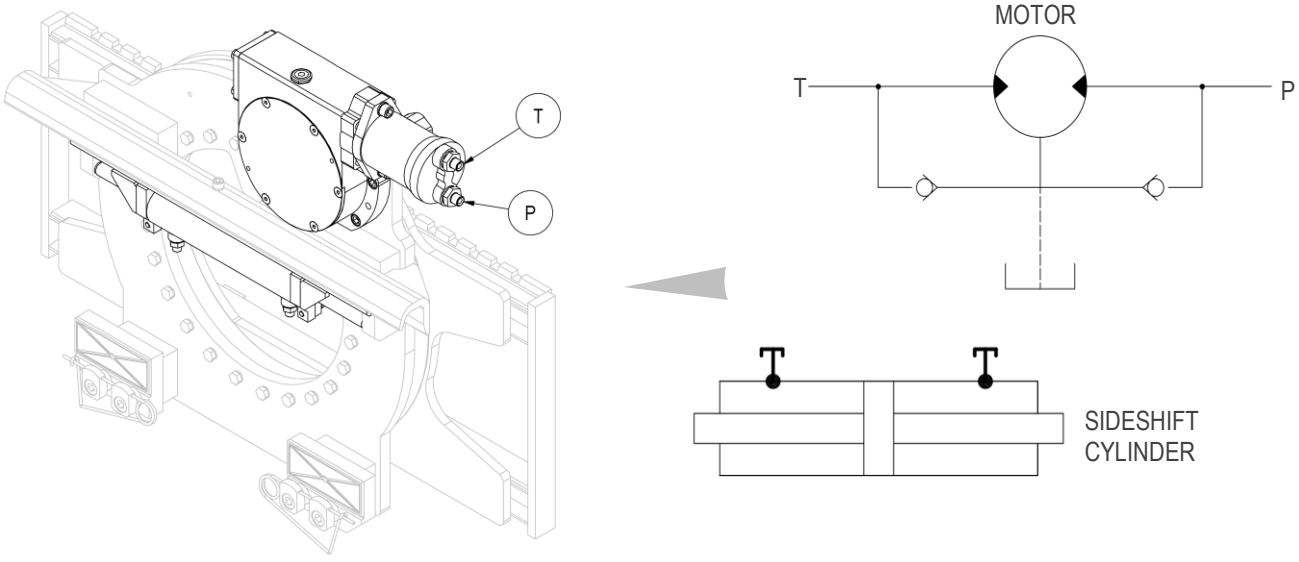
TYPE 301 STANDARD / PIN TYPE



Picture 21

4.2 Hydraulic system – TYPE 301 / pin type with SIs

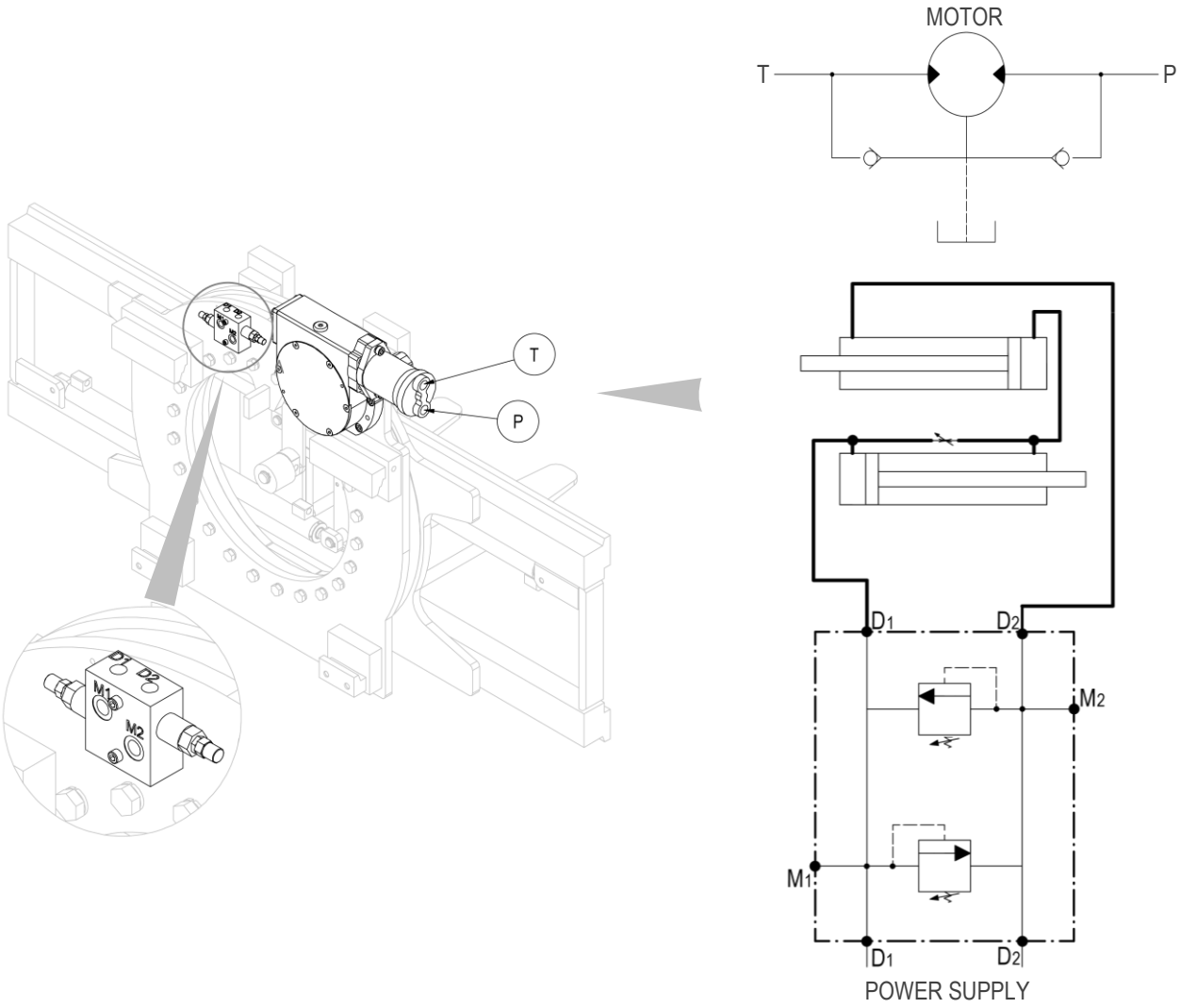
TYPE 301 STANDARD / PIN TYPE SLS



Picture 22

4.3 Hydraulic system – TYPE 301Rfi / Rfi pin type

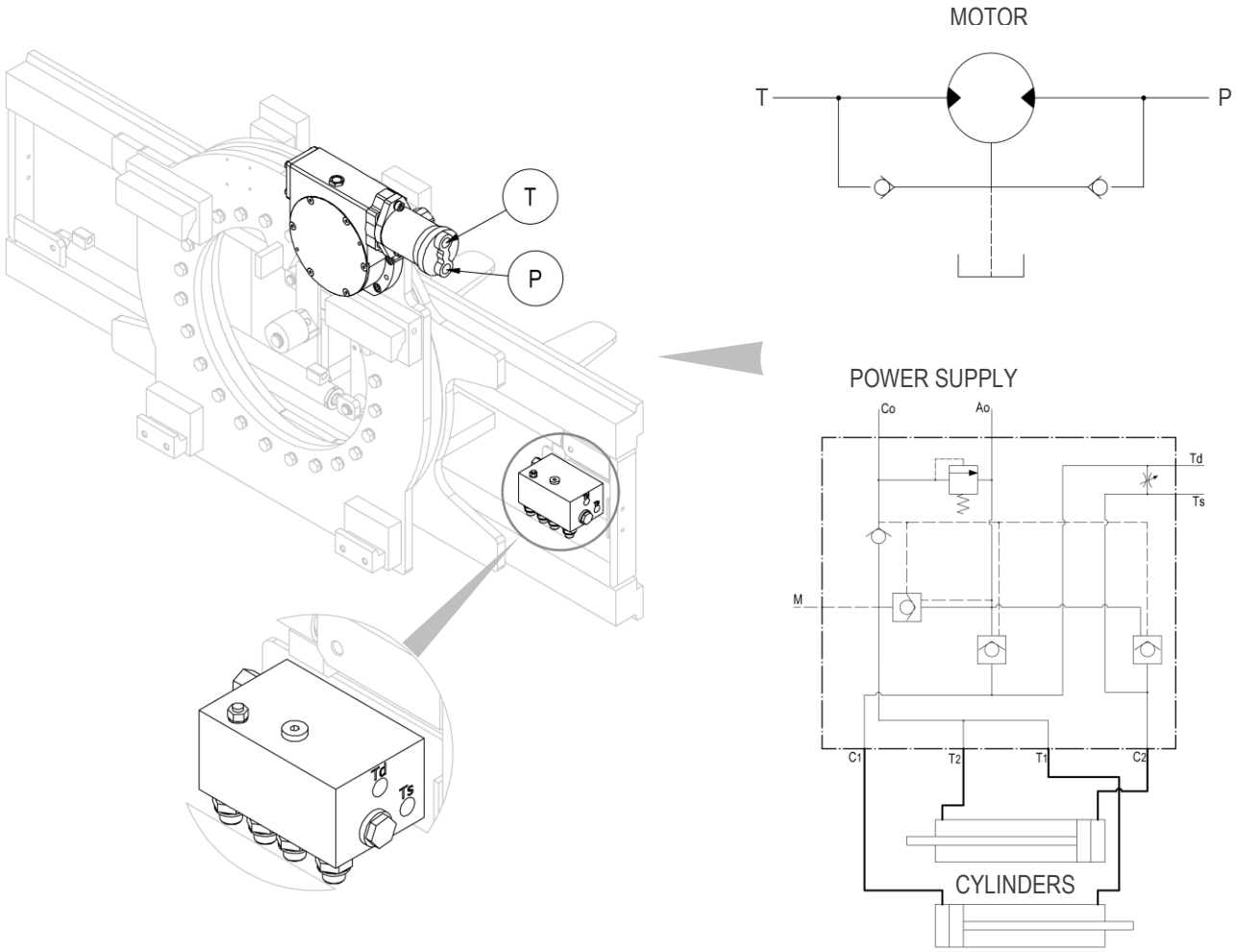
TYPE 301RFI / RFI PIN TYPE



Picture 23

4.4 Hidraulic system – TYPE 301Rfi / Rfi pin type with Sli

TYPE 301 WITH SLI



Picture 24

5 USE RULES

Before using the equipment, check the tightness of the pipes and the correctness of assembly and connection by performing about ten preliminary operations.

When using the equipment, it is necessary to follow the instructions listed below:

1. **Observe the capacity limits of the equipment.**
2. **Do not use the equipment when people or animals are within the range of action of the forklift.**
3. **Do not try to lift loads by clamping them between the two forks.**
4. **Do not try to move loads sideways by sliding them on the ground.**
5. **Do not exceed the maximum pressure value indicated on the identification plate.**
6. **Operate the equipment from the driver's seat of the forklift by a single operator.**
7. **Act gently on the translation control lever, avoiding water hammer as much as possible.**
8. **Any operation relating to installation, use and maintenance must be performed by specialized personnel equipped with appropriate equipment for the type of intervention to be carried out.**
9. **Carry out maintenance and / or repair operations with the forklift stopped and with the hydraulic circuit not active, using suitable protective equipment (gloves, safety shoes, etc.).**
10. **Operate the piston rods only when they are correctly mounted on the equipment; Otherwise, the piston rods could be violently ejected by the oil pressure.**

The considered acoustic pressure level is lower than 70 dB (A).

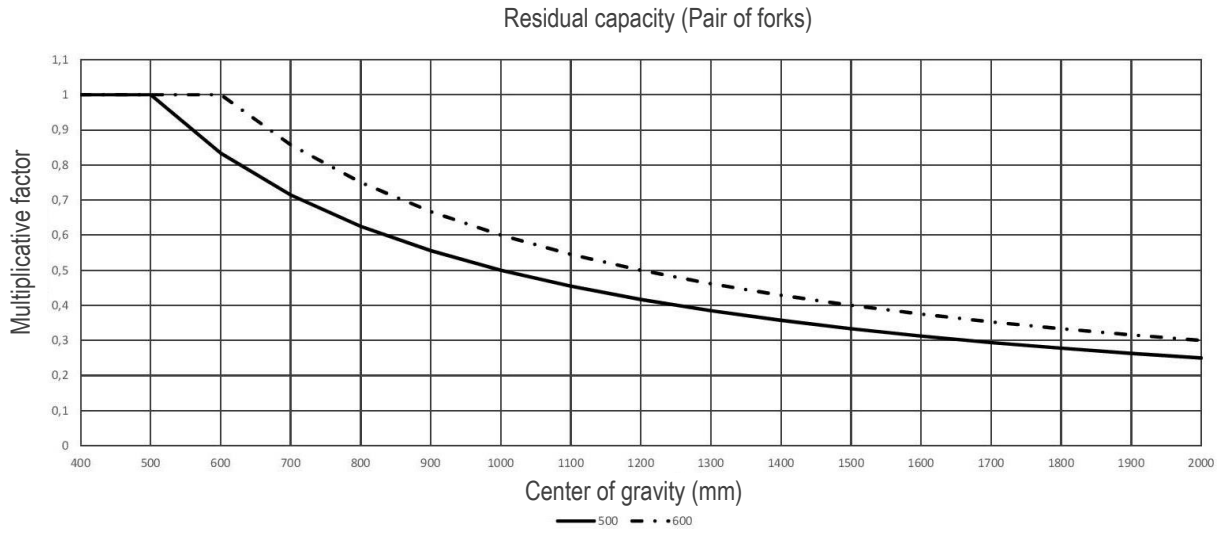
Should the equipment be subject to slight errors in the movement synchronism between the two forks, these movement differences, which will add up in time, will have to be annulled by an operator.
It will be sufficient for the operator to keep one of the two forks at the opening or closing end stroke, for the necessary time it will take for the other fork to recuperate the difference in movement accumulated.

Every ATIB attachments are projected and constructed according to a load positioned (as regards its centre of gravity) at a certain distance from vertical part of the fork.

If you need to increase the distance of the center of gravity as regards vertical part of the fork you have to reduce the weight of the load.
In this occasion, we suggest to control the chart *Picture 25*, where, according to the increase of the centre of gravity (x-axis) there is a load reduction multiplying factor (y-axis).

The multiplying factor, obtained based on desired load centre position, will be multiplied with nominal capacity of the equipment. The result of this multiplication will be actual capacity of the attachment.

Continuous line is for equipment with load center at 500 mm.
Dotted line is for equipment with load center at 600mm.



Picture 25

NOTE -This calculation is valid only for "stable" load, in case of movement of liquid material please contact the producer.

The affordable stroke can compromise the stability of the forklift.

To check the nominal capacity of the combination forklift – attachment ask the producer of the forklift.

The condition of the soil, the quickness of the movement of the load and the lifting height can affect the hold of the load and must be taken into consideration as regards specific occasions.

Side shifting movement is forbidden in movement.
Side shifting movement in condition of lifted mast is permitted only to bring back the load at the center of the mast.

Nominal capacity of the combination forklift – attachment is established by the producer of the forklift and can be lower than the one indicated on the identification label of the attachment.

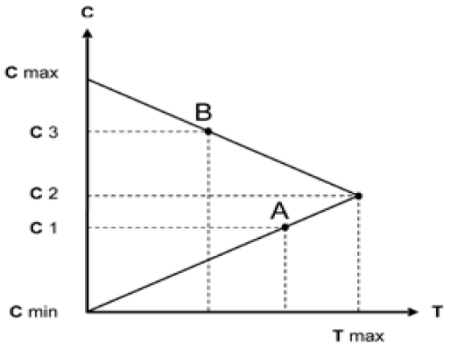
Check label of the forklift (Directive 2006/42/CE).

5.1 Integral sideshift

It is the one most frequently used in the ROTATOR 360° TYPE 301 and 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 can be higher than that defined by the standards on the stability of the forklift (100 + 100 mm up to 6300 Kg of capacity and 150 +150 mm for higher capacities) it could therefore generate problems on lateral stability and premature wear. of the upright profiles, it will be necessary to check applicability with the truck manufacturer.

The translation with a given load will be the minimum of the following two:

1. **Maximum opening (A max) minus load width (Lc) divided by two.** [(A max – Lc) / 2]
2. **Load width (Lc) minus minimum opening (A min.) divided by two.** [(Lc – A min) / 2]



T	Sideshift	A = (C 1 - C min) / 2
C	Opening range	B = (C max - C 3) / 2
A	Position before half opening range	T max = (C max - C min) / 4
B	Position after half opening range	C2 = (C max + C min) / 2

Picture 26

Travel outside the center of the load is only allowed on the ground. In this case, a loss of clamping force could occur with consequent possibility of load loss. As a precaution, it can be considered that the center of gravity of the equipment moves laterally by the translation value (per part). In the event that the precise value is required, the manufacturer of the equipment must be consulted.

6 PERIODIC MAINTENANCE

Failure to adhere to the norms and established times for maintenance operations, will be detrimental to the good functioning of the equipment and will annul the guarantee conditions.

All maintenance operations must be carried out with the forklift motionless and the hydraulic circuit not activated, perimeter the entire maintenance area, using the necessary protective devices and, if it is necessary to disassemble the cylinders, always using a tray or container to recover the oil still present in the cylinder itself.

To avoid problems regarding the use of the equipment, A.T.I.B recommends changing the hydraulic oil and its filters regularly and trying to keep the system as clean as possible during maintenance operations.

WARNING!!!

The hydraulic parts can be very hot. Use adequate protections.
Beware of any leaks. Oil under high pressure can damage the eyes and skin. Always wear protective goggles on the sides as well.
Never remove valves, hoses or other potentially pressurized parts when it is active.

6.1 Maintenance every 100 hours

1. **Check the conditions of the hydraulic connections (pipes and fittings), replacing, if necessary, the worn parts.**
2. **Check the tightening torque of the bolts of the lower sealing hooks of the equipment, verifying that it is as indicated in Tables: *Tab 3* (pag. *13*) and *Tab 4* (pag. *17*) and, if necessary, intervene on the tightening of the screws that support them.**
3. **Check the clearance between the lower part of the fork holder plate and the lower hooks of the equipment, verifying that it is as indicated in *Picture 6* (pag.*17*) and *picture 11* (pag.*17*) and, if necessary, intervene on the tightening of the screws that support them.**
4. **Check the tightening torque of the bolts of the fork blocks. if necessary, intervene on the tightening of the screws.**
5. **Clean and lubricate all sliding parts (*Picture 40 and Picture 41* pag. *48*).**

6.2 Maintenance every 300 hours

1. **Check the condition of upper and lower sliding devices if an excessively worn component is found, it is recommended to replace the entire assembly of the component in question.**
2. **<u>Also</u> carry out the operations listed in the previous point (Point 06.01).**

6.3 Maintenance every 1000 hours

1. **Check the condition of upper and lower sliding devices if an excessively worn component is found, it is recommended to replace the entire assembly of the component in question.**
2. **3. Also carry out the operations listed in the previous points (*Point 6.1* and *6.2* pag.*31*).**

6.4 Maintenance every 2000 hours

1. **Proceed with a thorough inspection of the equipment; this, possibly, must be performed by qualified personnel, able to identify any problems that could compromise the safety and efficiency of use of the equipment. The defects that can be found can be many:**

   - Check the condition of all equipment components (cylinders, hooks, gaskets, fittings, grease nipples, etc.), verifying that their conditions are optimal and, if there are worn components, proceed with their replacement / repair.

   - Check the condition of the sliding and working surfaces and proceed with their replacement / repair if they are damaged.

   For further possible problems (and relative solutions) refer also to *Tab 5* pag.*47.*
2. **Disassemble the cylinders and check the condition of the rods and seals, if there is a damaged or excessively worn seal, it is always recommended to replace the entire assembly seals.**
3. **Replace the seals even in the event of oil leaks and the rods if scratched (the cylinders must always be tested inserted in the equipment in order to avoid the sudden expulsion of the rods).**
4. **Also carry out the operations listed in the previous points (*6.1*, and *6.2* e *6.3* pag.*31*).**

Please Note: Intensify interventions in case of use in particularly severe conditions

6.5 Rotator maintenance

6.5.1 Maintenance every 200 hours

1. **Check the hydraulic connections, replacing the worn parts.**
2. **Check the tightening torque of the bolts of the lower retaining hooks of the equipment and of the fifth wheel fixing bolts.**
3. **Check the oil level of the reducer through the inspection cap and in the case of a level lower than half of the cap, top up with the oil filler cap, oil AGIP BLASIA 307.**
4. **Grease the device by slowly rotating the equipment, we recommend the use of high-pressure lithium soap grease AGIP GR MU/EP2 (dropping point 205 °, ASTM penetration at 235 ° 250/300).**

6.5.2 Maintenance every 2000 hours

1. **Disassemble the rotating body by unscrewing the fifth wheel screws and replace the felt seal, fixing the new ones with BOSTIK 5242C glue after having cut them to size.**
2. **Check the state of wear of the fifth wheel components and, if necessary, disassemble and replace it as indicated in the section *Disassembly of the fifth wheel***
3. **With the rotating body disassembled, check that the pinion does not have worn teeth due to heavy use, if so, replace it.**
4. **In case of excessive tolerance between pinion and crown gear, replace the helical wheel of the reduction gear and / or pinion.**
5. **Completely Replace the gear oil.**

7 DISASSEMBLY PROCEDURE

7.1 Disassembly attachment from forklift

1. **Relieve the pressure of the hydraulic system.**

2. **Unscrew the lower hooks of equipment *Picture 4 and Picture 9* pag.*11, 16).***

3. **For handling, use belts or chains appropriately sized for the weight of the equipment, indicated on the plate.**

4. **With an overhead crane or with a hoist of sufficient capacity hook the attachment and remove it from forklift (*Picture 5 and Picture 10 pag.12, 16*).**

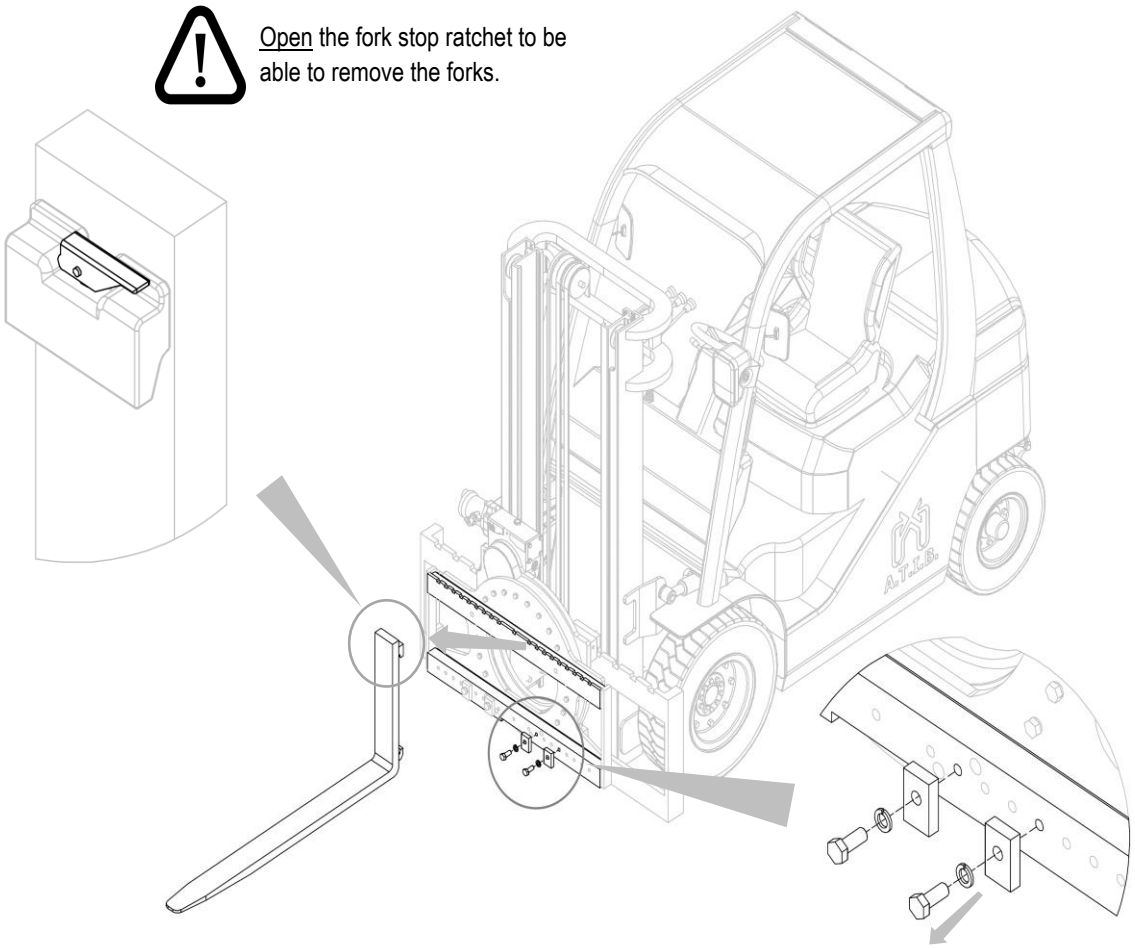
7.2 Fork disassembly

7.2.1 Fork disassembly – TYPE Standard

TYPE STANDARD / HOOKED FORK

1. **Relieve the pressure of the hydraulic system.**

2. **Remove the forks after unscrewing the fork blocks and having opened the fork stop ratchet (*Picture 27*).**



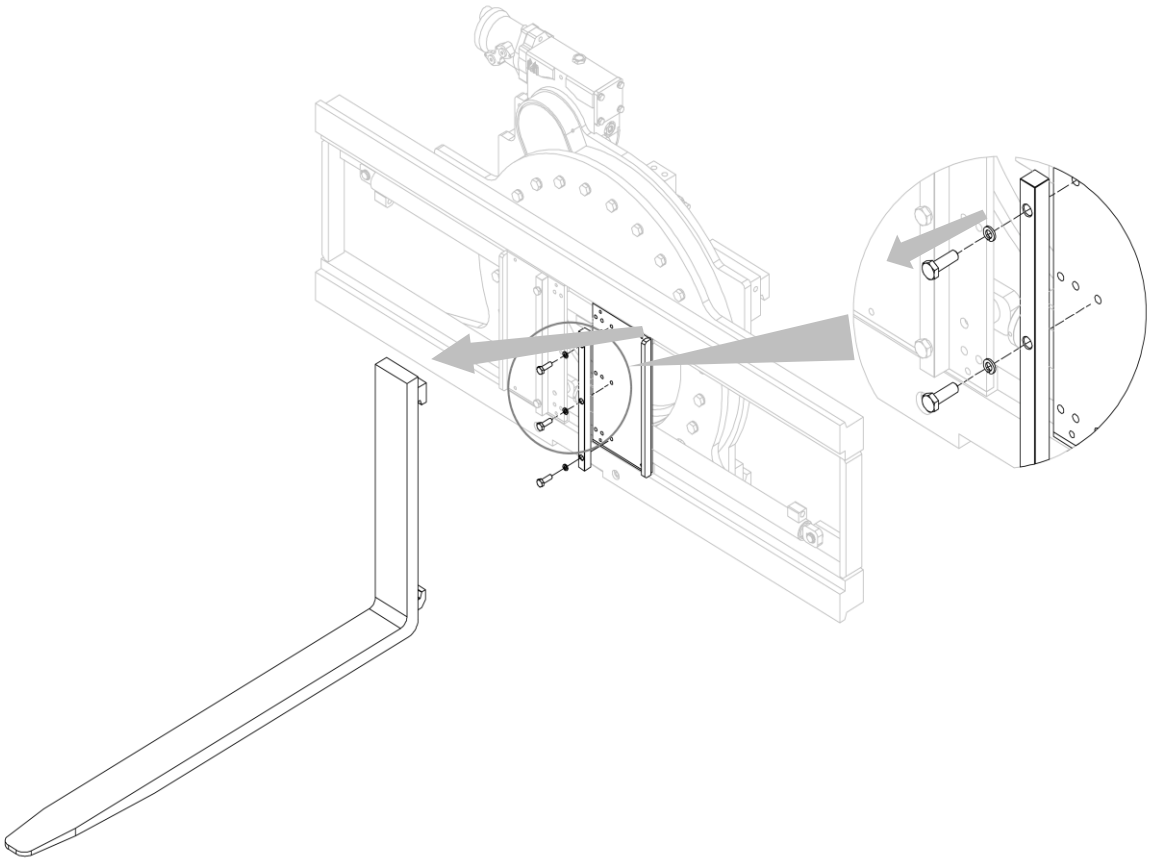
Picture 27

7.2.2 Fork disassembly – TYPE RFI

TYPE RFI

1. **Relieve the pressure of the hydraulic system.**

2. **Remove the forks after unscrewing the fork blocks (*Picture 28*);**



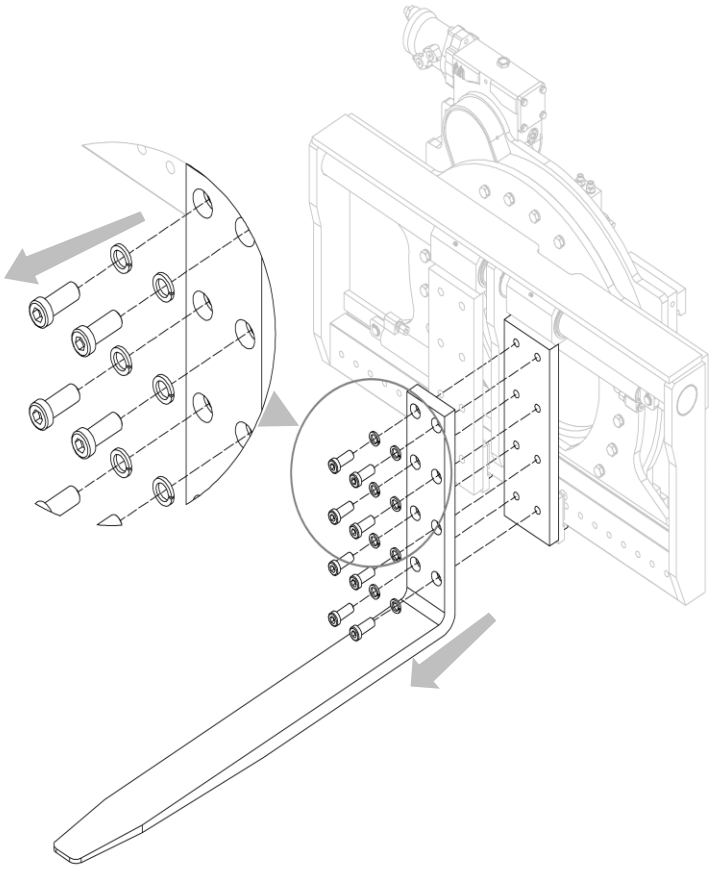
Picture 28

7.2.3 Fork disassembly – TYPE pin type FB

TYPE "BOLTED FORK"

1. **Relieve the pressure of the hydraulic system.**

2. **Remove the forks after unscrew the relative screws that lock them (*Picture 29*).**



Picture 29

7.2.4 Fork disassembly – TYPE pin type

TYPE PIN TYPE

1. Relieve the pressure of the hydraulic system and remove the tubes.

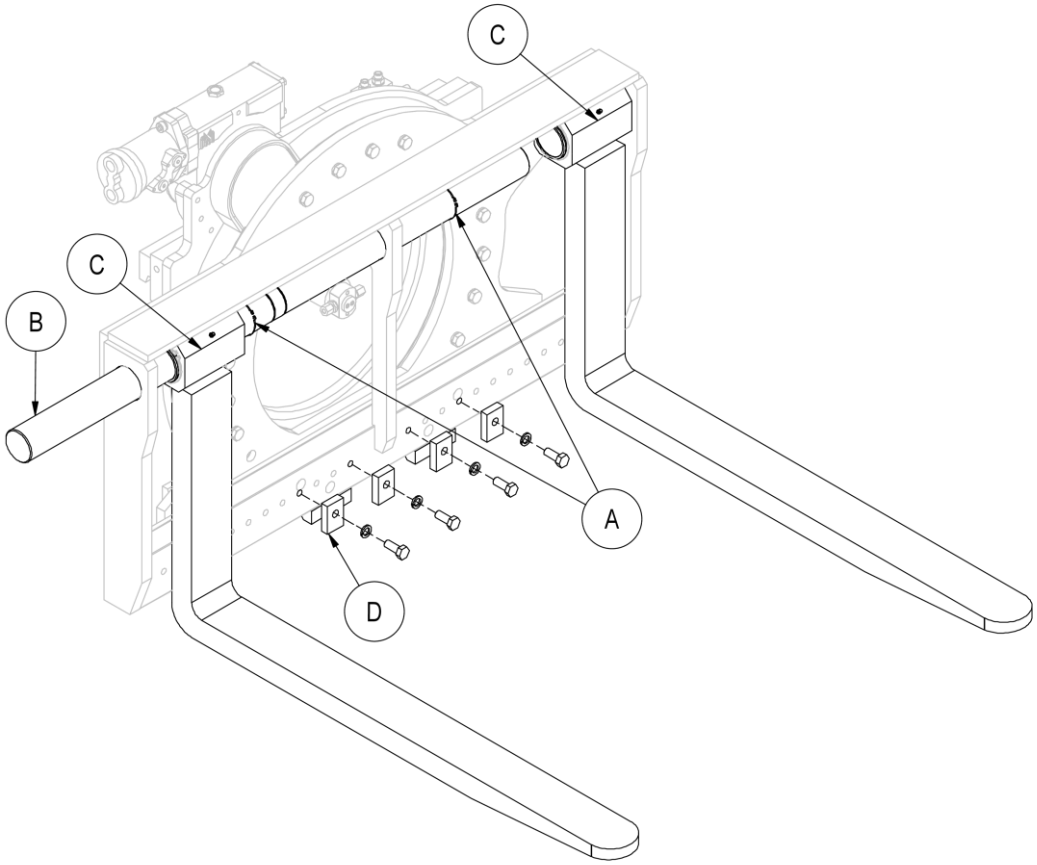
2. **Loosen the snap rings A that lock the sliding bar and position them far enough away to be able to remove the forks.**

3. **Remove the fork blocks D.**

4. **Fully open the forks.**

5. **Using a rubber hammer, gently push the sliding bar B out of its seat and remove, one at a time, the forks C, taking care not to deform or damage them.**

6. **Refer to *Picture 30.***

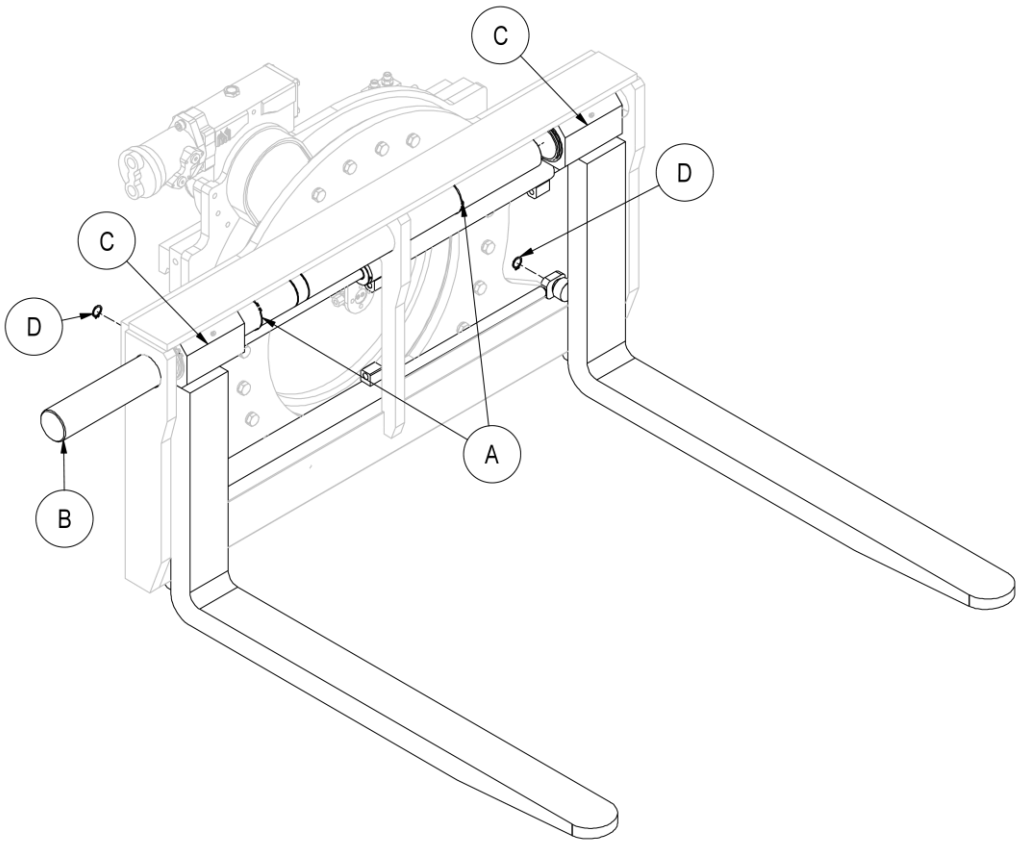


Picture 30

7.2.5 Fork disassembly – TYPE RFI pin type

TYPE 301RFI PIN TYPE

1. **Fully open the fork cylinders.**
2. **Relieve the pressure of the hydraulic system and remove the tubes.**
3. **Loosen the elastic rings A that lock the sliding bar and position them far enough away to be able to remove the forks.**
4. **Remove the D elastic rings that bind the cylinders to the forks.**
5. **5. Using a rubber hammer, gently push the sliding bar B out of its seat and remove, one at a time, the forks C, taking care not to deform or damage them.**
6. **Refer to *Picture 31*.**

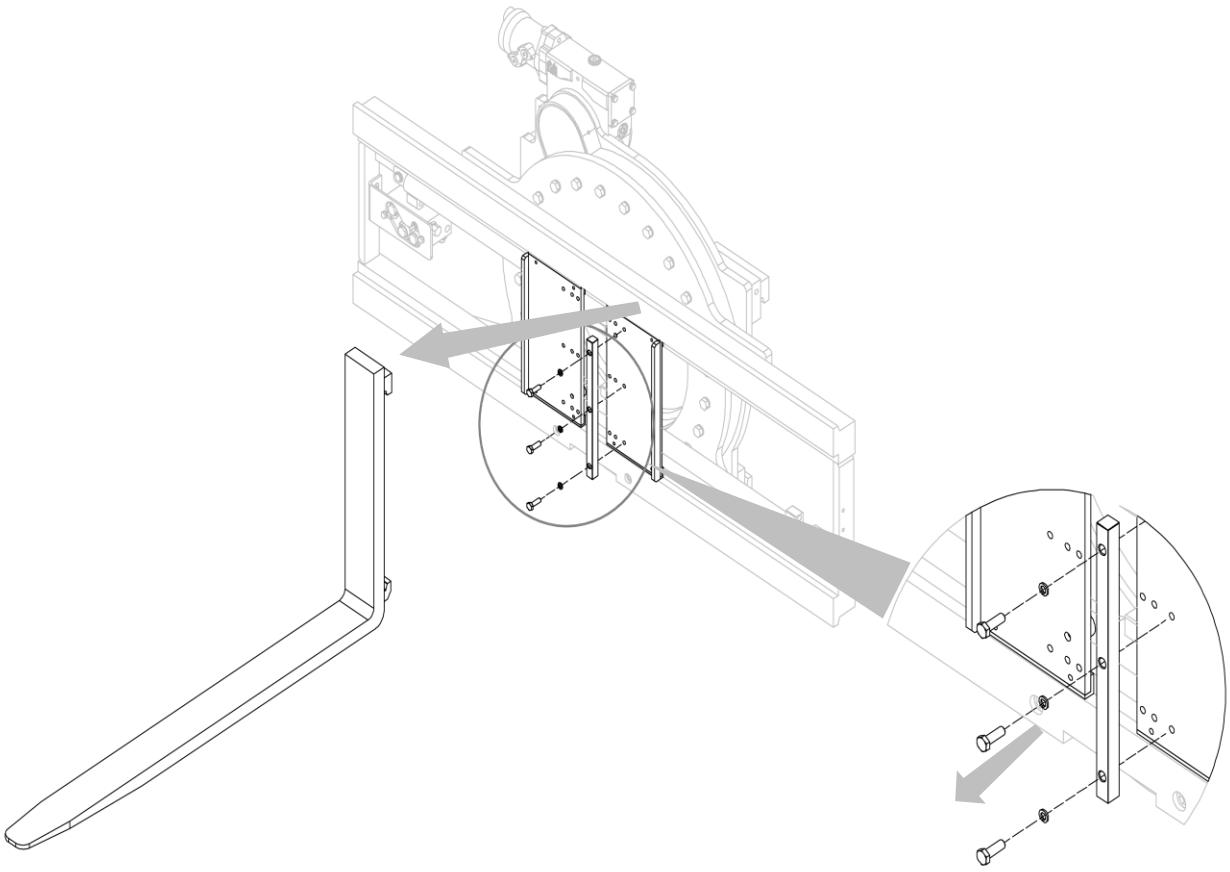


Picture 31

7.3 Fork cylinders removal (rfi)

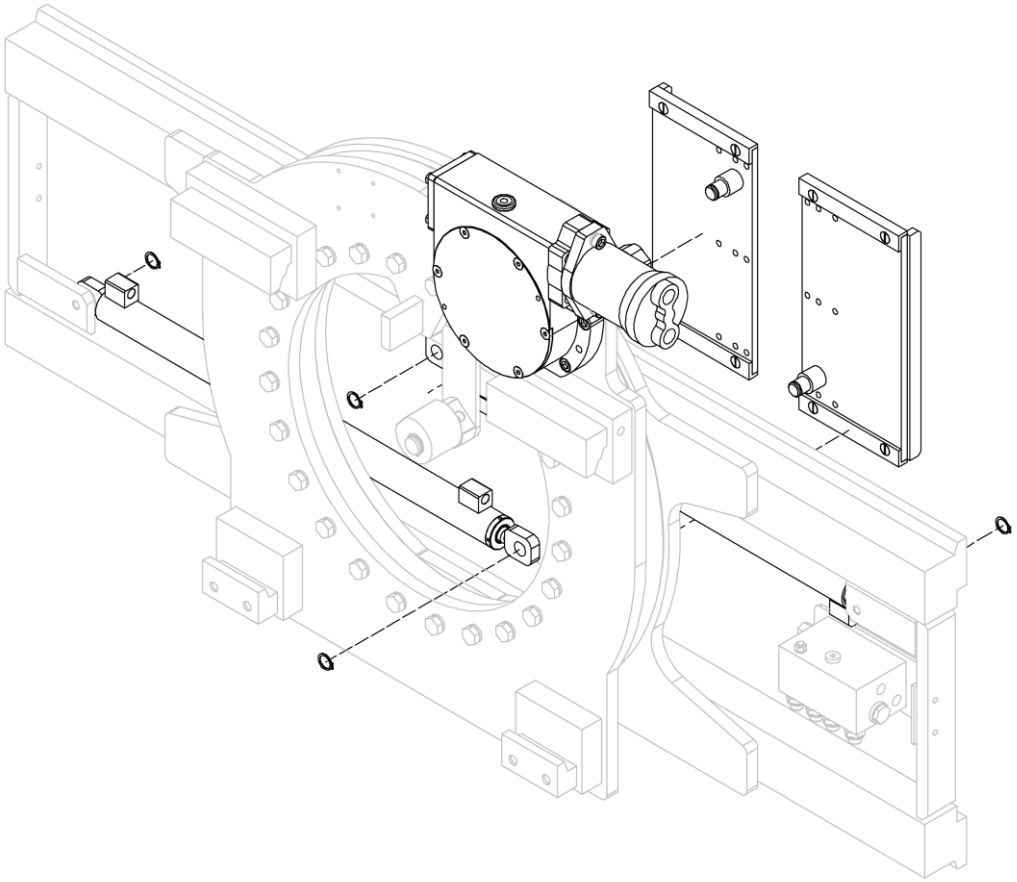
1. **Relieve the pressure of the hydraulic system and remove the tubes.**

2. **Remove the forks after remove fork blocks (*Picture 32*).**



Picture 32

3. **Remove the the fork holders from attachments, after having removed the relative elastic rings that bind them to the cylinders (*Picture 33*).**



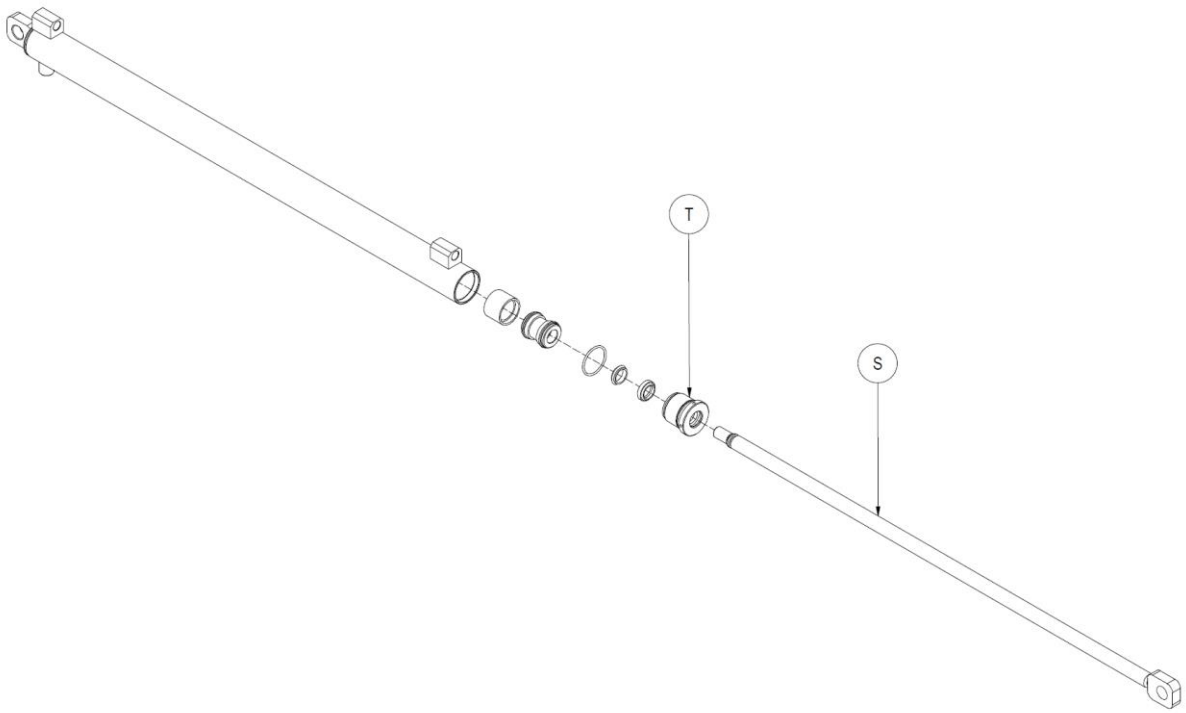
Picture 33

4. **Remove the cylinders, after removing the relative snap rings that bind them to the equipment structure (*Picture 33*).**

7.3.1 Fork cylinder disassembly and reassembly

If it is necessary to replace the entire cylinder, reassemble everything following the instructions listed in the previous point in reverse, if you also need to replace some cylinder component, proceed as indicated below:

1. **Clamp the cylinder in a vice with rubber jaws (taking care not to deform the housing).**
2. **with a sector wrench unscrew the cup T.**
3. **If you find it difficult to unscrew the cap, it is necessary to slightly heat the area of the thread concerned to facilitate unscrewing.**
4. **Unscrew the stem C.**
5. **Disassemble / separate the rest of the components and seals from each other.**
6. **Replacing the worn components, follow the previous steps in backwards, re-lock the cap applying a medium strength thread locker.**
7. **If there is a damaged seal, it is advisable to replace the entire kit.**
8. **Refer to *Picture 34.***



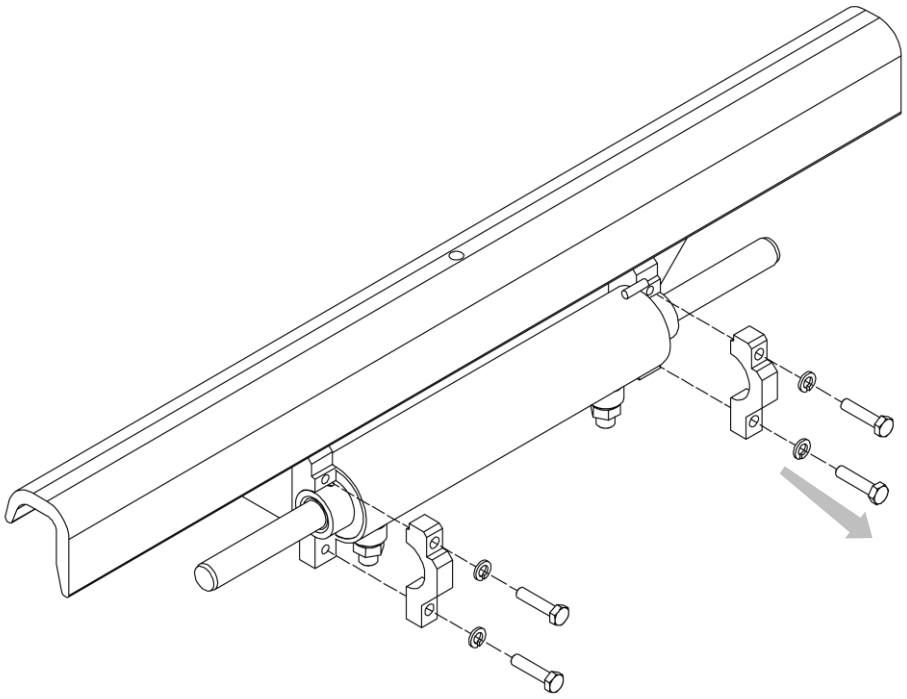
Picture 34

7.4 Sideshift cylinder removal (sls)

1. **Relieve the pressure of the hydraulic system and remove the tubes, making sure to place a tray or container under the fittings to recover the oil still present in the cylinder.**

2. **Remove the cylinder from its seat after removing the front half-collar and the relative screws / pins that lock it.**

3. **Refer to *Picture 35.***

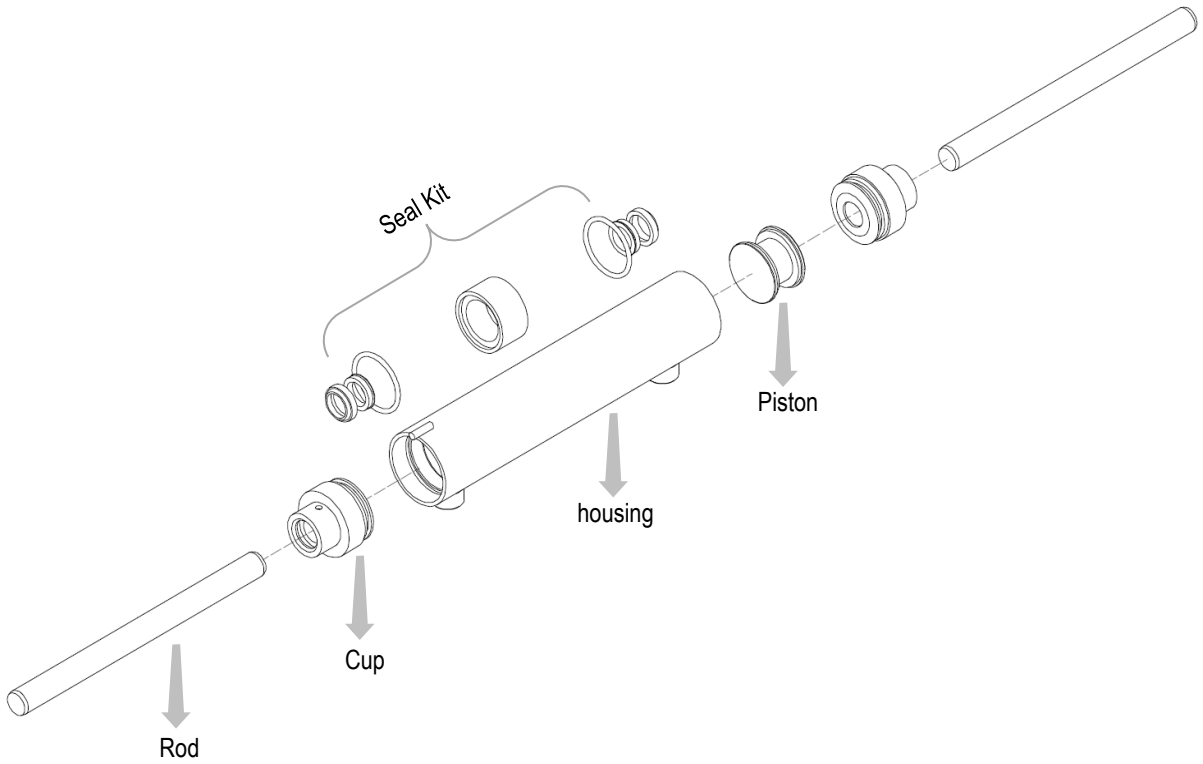


Picture 35

7.4.1 Sideshift cylinder disassembly and reassembly

If it is necessary to replace the entire cylinder, reassemble everything following the instructions listed in the previous point in reverse (use new cylinder), if you also need to replace some cylinder component, proceed as indicated below (*Picture 36*):

1. **Place the cylinder on a horizontal plane.**
2. **If only the stems need to be replaced, just remove them from the cylinder cap.**
3. **If you need to replace the seals and / or other parts, it is necessary unscrew the cup with a sector wrench.**
4. **If you find it difficult to unscrew the cap, it is necessary to slightly heat the area of the thread concerned to facilitate unscrewing.**
5. **Replacing the worn components, follow the previous steps in backwards, re-lock the cap applying a medium strength thread locker.**
6. **If there is a damaged seal, it is advisable to replace the entire kit.**



Picture 36

7.5 Disassembly of the fifth wheel

1. **Relieve the pressure of the hydraulic system and disconnect the pipes.**

2. **Remove the attachment from forklift (see the point 7.1 pag 34).**

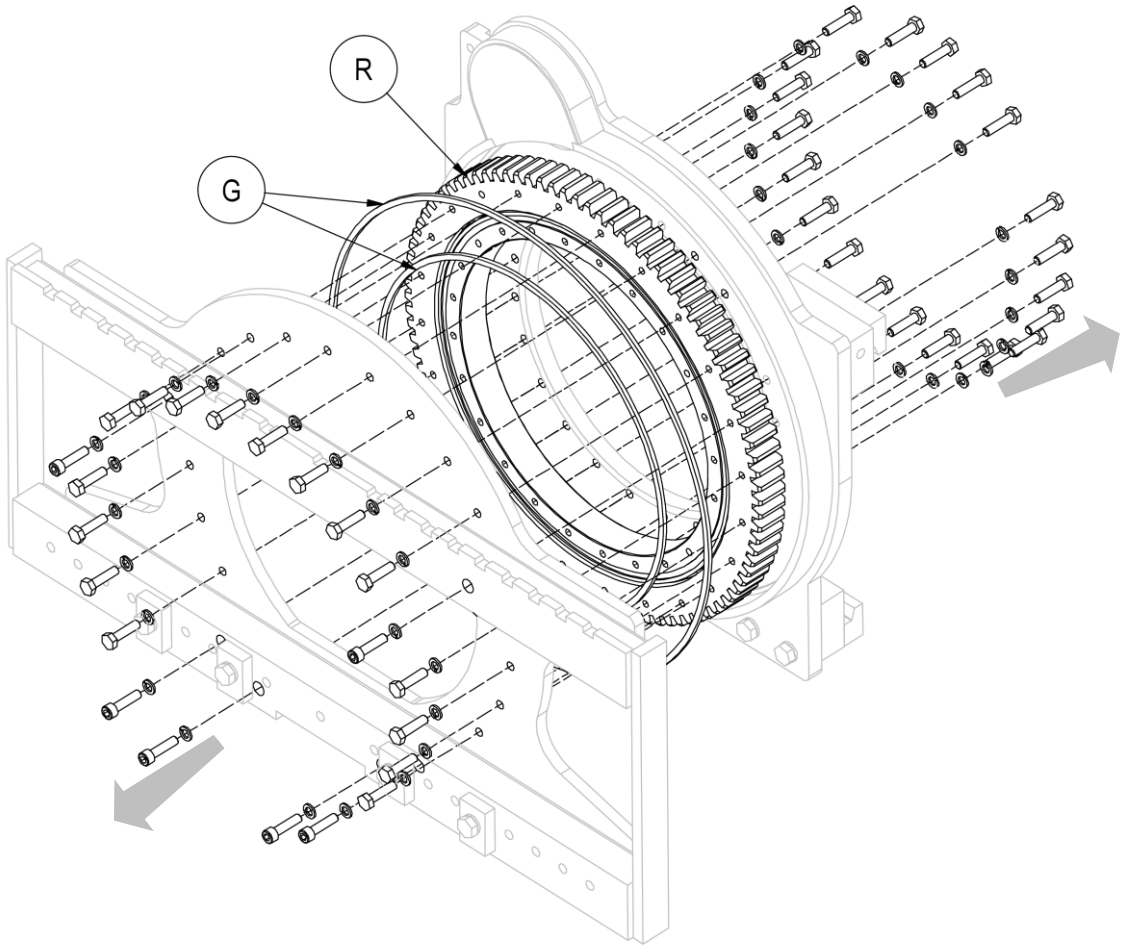
3. **Remove the reducing gear and motor from the equipment (see 7.6 point 3).**

4. **Remove the front part of the rotating body, making sure to adequately support all parts in order to carry out the operation safely (*Picture 37*).**

5. **In order to remove the fifth wheel R, it is also necessary to remove the screws from the rear of the equipment (*Picture 37*).**

6. **Remove the fifth wheel, and if necessary, insert a new one.**

7. **Reassemble everything following the instructions listed above backwards, remembering to replace the felt gaskets G with new ones, which will be fixed with adhesive such as BOSTIK 5242C.**



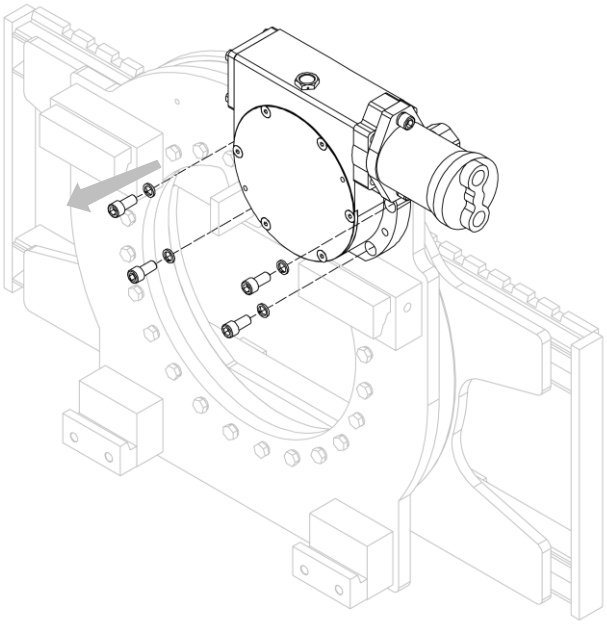
Picture 37

7.6 Reducing gear and motor disassembly

1. **Relieve the pressure of the hydraulic system and disconnect the pipes.**

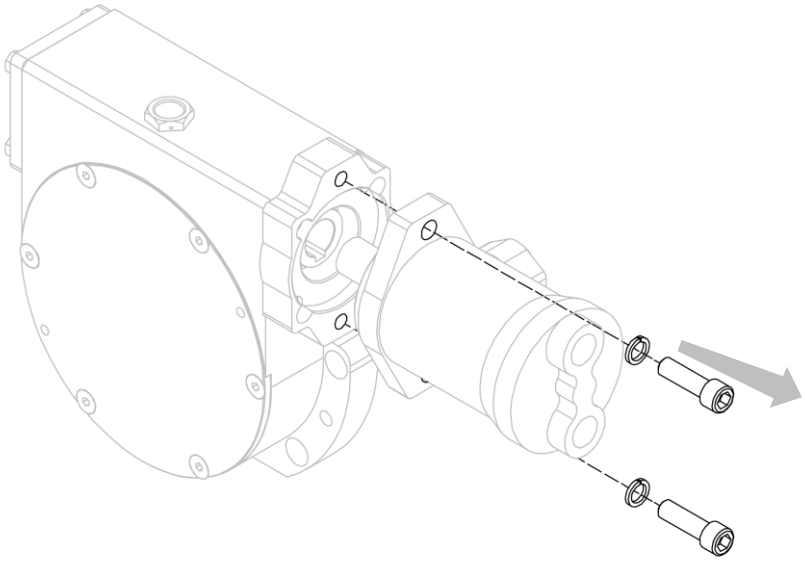
2. **Remove the attachment from forklift (see the point 7.1 pag 34).**

3. **Remove the reducing gear and motor from the equipment structure, after removing the relative screws (*Picture 38*).**



Picture 38

4. **Separate the motor from reducing gear, after removing the relative screws (*Picture 39*).**



Picture 39

8 BREAKDOWNS AND SOLUTIONS

8.1 Breakdowns and solutions

FAILURE	CAUSE	SOLUTION
Insufficient strength	Too low setting of the maximum pressure valve	Increase the pressure without exceeding the maximum limit
	Insufficient pressure	Contact the forklift manufacturer
	Worn Pump	Replace
	Worn cylinder seals	Replace
	Lack of oil in the tank	Top up
Loss of pressure	Leakage of oil from the slam-shut valve	Disassemble and clean; if necessary, replace them
	Leakage of oil from the pipes and joints	Tighten the joints or replace them
	Loss load while sideshifting	Lower the side shift pressure
Slow opening and closing	Low oil flow	Check the tank level and the pump
		Bottlenecks in the system: Search and delete them
	Insufficient pressure	Set the maximum pressure valve
	Mechanical deformations of some parts	Repair or replace
	Worn cylinder seals	Replace
	Lack of oil in the tank	Top up
Irregular side shift	Presence of air in the hydraulic system	Bleed the hydraulic system
	Worn slide parts	Replace
	Excessive friction between the sliding parts	Clean and lubricate the sliding parts
	Worn cylinder seals	Replace
	Snap in rotation	decrease the eccentricity of the loads
	Lack of oil in the tank	Top up
	Noise and / or vibrations	Replace worn bearings and / or lubricate and / or replace the motor
	Worn hydraulic motor	Replace motor

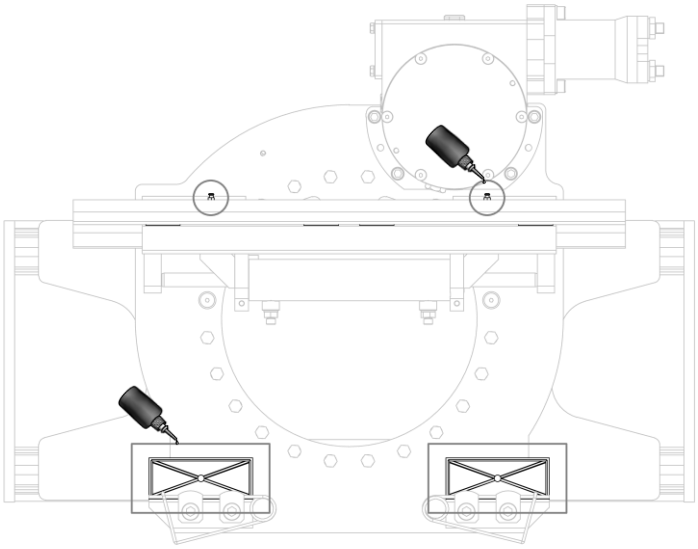
Tab 5

Should there be other problems, please contact A.T.I.B. S.r.l.

8.2 Lubrication

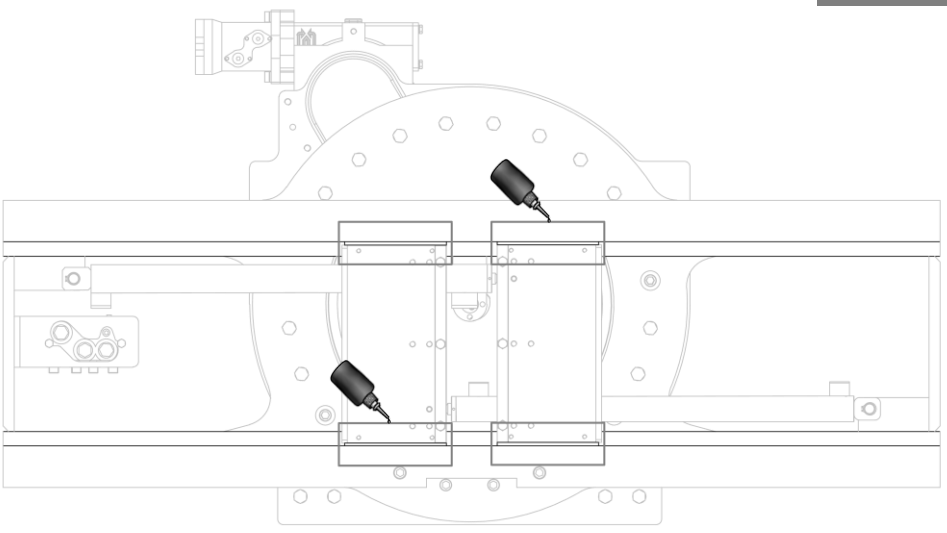
1. **Lubricate the sliding parts using the special grease nipples.**
2. **Lubricate the sliding gibs and sliding axles / surfaces.**
3. **Lubrificate fifth weel using the special grease nipples.**

TYPE 301 SLS



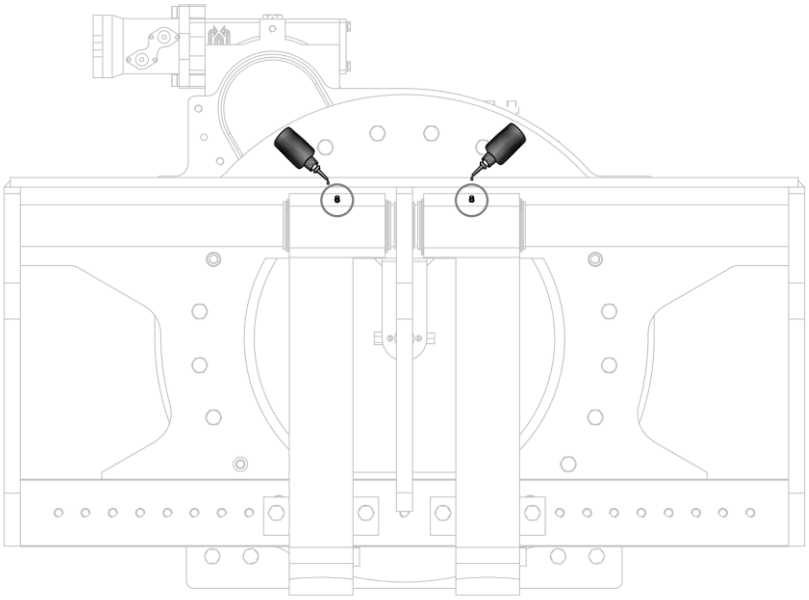
Picture 40

TYPE 301RFI



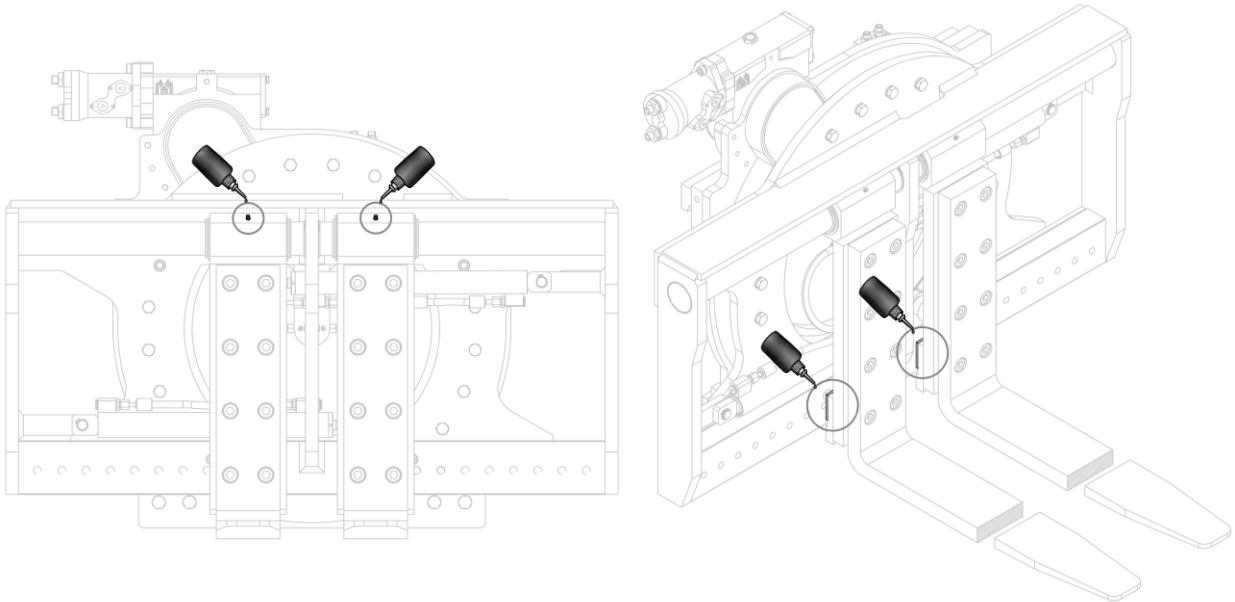
Picture 41

TYPE 301 PIN TYPE



Picture 42

TYPE 301RFI PIN TIPE



Picture 43

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