USE AND MAINTENANCE MANUAL

CLAMP 1-2 PALLETS

ORIGINAL INSTRUCTIONS

INTRODUCTION

This manual includes instructions for assembly, maintenance (regular and extraordinary), and for possible faults with remedies.
The instructions in this manual do not replace but supplement the obligations for complying with current safety and accident prevention regulations, that are the user company's responsibility. The User is also bound to follow all instructions in this manual including training of personnel both in the use of the equipment and its maintenance.

SPECIFICATIONS AND USE OF EQUIPMENT

Equipment to be attached to forklifts, for the handling, approach, removal and transportation of 1-2 loads placed on pallets. Consisting of a base frame with fork support guide shoes, complete with hooks with ISO 2328 profile for attachment to the forklift or with semi-incorporated side-shifting; hydraulic system with valve for the synchronised opening-closing of the forks; forks, suitable for introduction into the pallet, bolted to supports driven by hydraulic linear actuators.

SYMBOLS USED

Situation with possible risk to the operator's safety.

Mandatory procedures to be carried out.

Notes to be read carefully.

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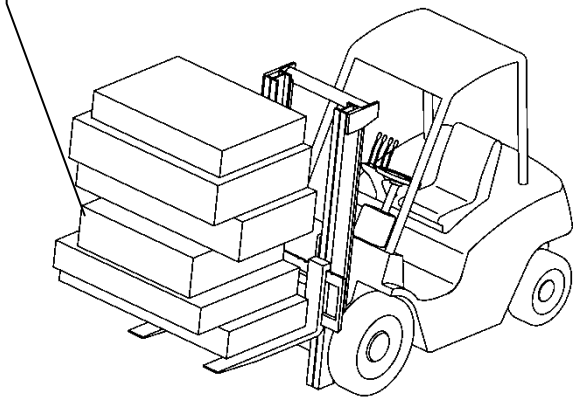
1. ADVICE FOR THE EQUIPMENT'S USE

USE OF THE EQUIPMENT FOR PURPOSES OR HANDLING DIFFERENT FROM THAT INDICATED IS PROHIBITED.

THE EFFECTIVE COMBINATION CARRYING CAPACITY BETWEEN THE FORKLIFT TRUCK AND THE EQUIPMENT IS THE RESPONSIBILITY OF THE FORKLIFT TRUCK MANUFACTURER AND MAY NOT CORRESPOND TO THAT INDICATED ON THE RATING PLATE.

1.1. PROHIBITED HANDLING

Transporting a load that is unstable or off-centre; too bulky reducing visibility; with a weight greater than the specified lifting capacity; move a load already deposited using the load to be deposited; using the equipment when structurally defective or malfunctioning.



Performing movements or manoeuvres with the load lifted high.

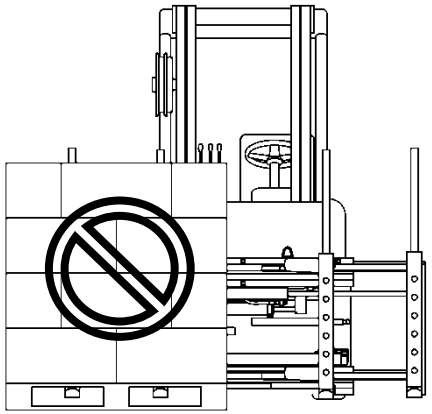
Proceeding at high speed in the presence of the uneven ground or uphill ramps.

Parking the forklift truck with the engine running and/or load lifted on uneven ground or ramps.

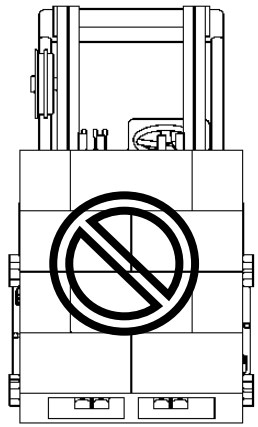
Transporting persons or performing manoeuvres with people within operating action of the forklift.

1.2. MANOEUVRES THAT COMPROMISE STABILITY OR VISIBILITY

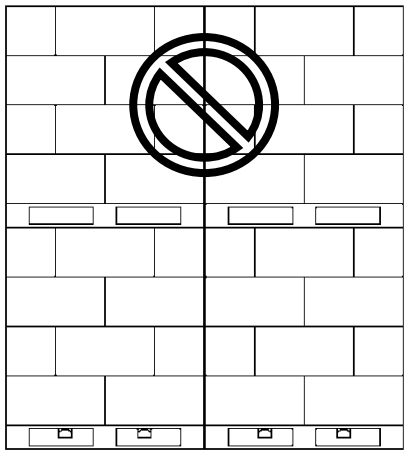
Lifting a single load on the side forks.



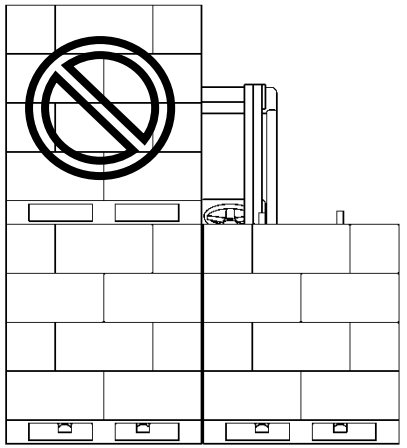
Lifting 2 stacked loads.



Lifting 4 loads at the same time.



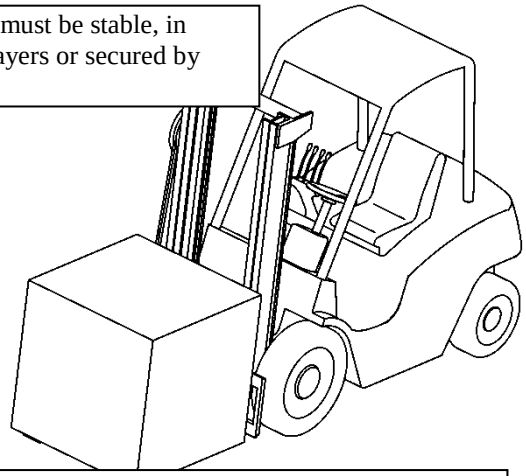
Lifting 3 loads one of which on one side.



1.3. CORRECT HANDLING

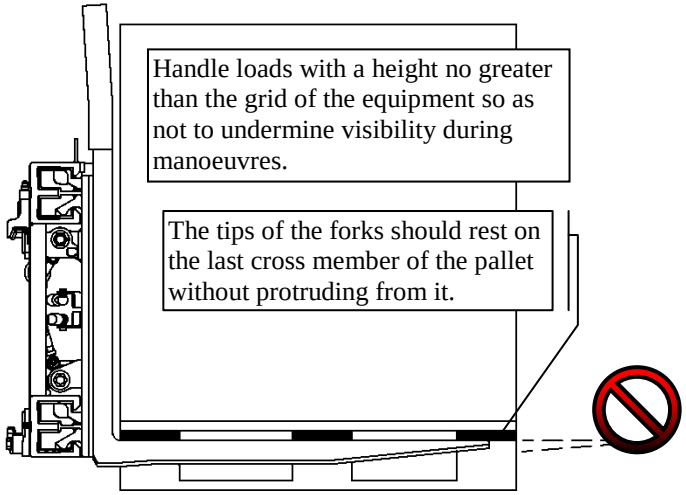
Pay attention when picking up the pallet to avoid damage or hazardous movements of adjacent loads.

The load must be stable, in crossed layers or secured by straps.



When moving with the forklift truck, keep the mast tilted (the tip of the fork up), the load slightly off the ground and centred, adjusting the speed according to the state of the road surface and any obstacles or presence of people along the route.

Before lifting, ensure that the external forks are correctly inserted into the pallet.

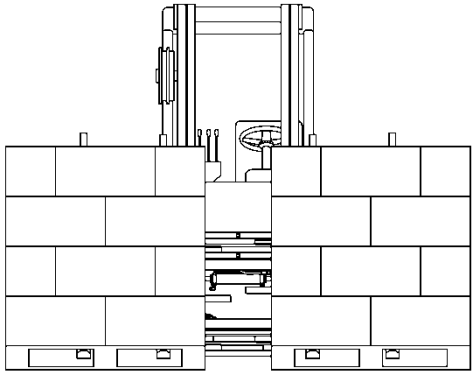


Handle loads with a height no greater than the grid of the equipment so as not to undermine visibility during manoeuvres.

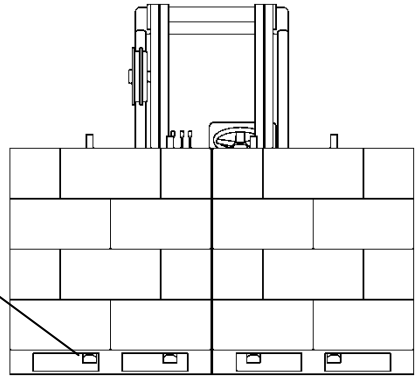
The tips of the forks should rest on the last cross member of the pallet without protruding from it.

1.4. PALLETS APPROACH

For the approach: fully open the equipment, insert the forks and lift the load, approach the pallets and deposit them on the floor. Repeat the manoeuvre until the desired position is achieved.



1.5. PALLETS RETREAT



For the retreat: insert the forks into the pallet and close the clamp until the external fork is in contact with the pallet.

Lift the load and fully open the clamp and deposit on the ground. Repeat the manoeuvre until the desired position is achieved.

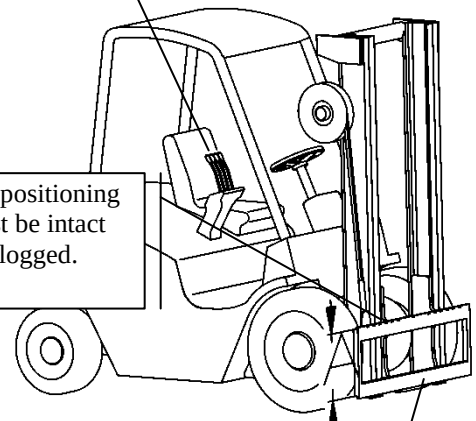
MANOEUVRES THE DESCRIBED ABOVE SHOULD NOT COMPROMISE THE STABILITY OF THE LOAD.

2. CONTROLS ON THE FORKLIFT

The hydraulic pump of the forklift, controlled by the distributor, must have a max. pressure of 18 MPa and a capacity of 25 - 30 l/m'.

The recommended inner diameter for any additional supply system is at least 9.5 mm.

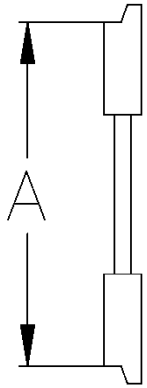
4-lever distributor for movements control.



The fork positioning slots must be intact and not clogged.

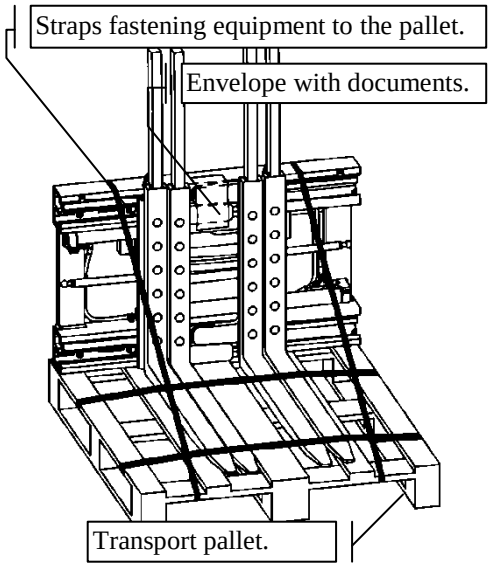
The fork carriage must be flat without protrusions on the front.

Dimension « A » ISO 2328 (mm) :
Class I = min. 304 – max. 305
Class II = min. 380 - max. 381
Class III = min. 474.5 – max. 476
Class IV = min. 595,5 – max. 597



3. EQUIPMENT DESCRIPTION

3.1. SHIPPING LAYOUT



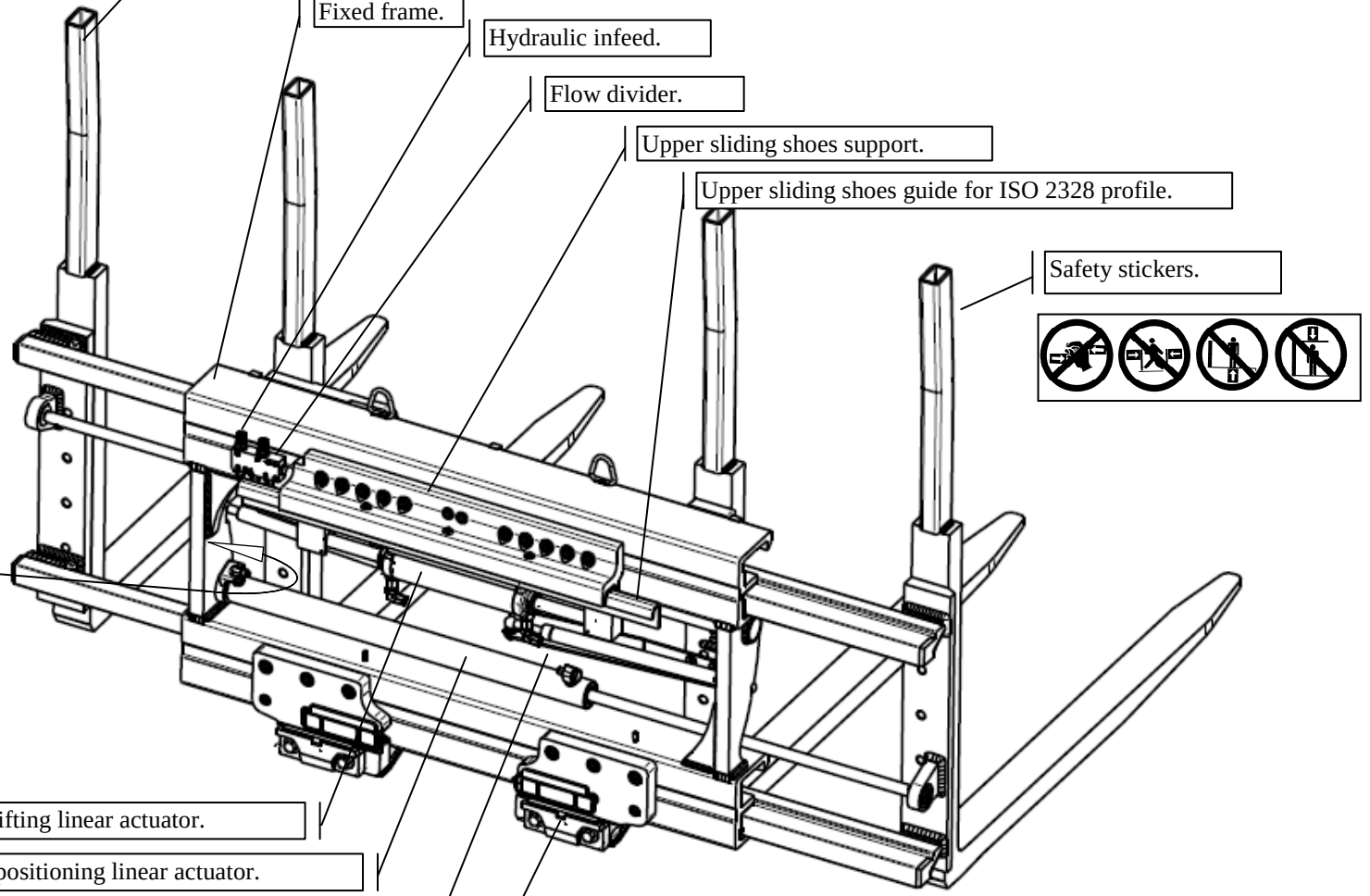
Identification plate.

CE	ANNO FABBRIC. - BAUJAHR MNFG. YEAR - ANNE FABRIC.	
TIPO - TYP TYPE - TYPE		
MATRICOLA - FABRIK NR. S. NUMBER - NR. FABRIC.		
PORTATA STRUTT. - TRAGKRAFT STR. CAPACITY - CAPACITE STRUCT.		KG
CON BARIC. A - MIT L. SP. WITH C.O.G. AT - AVEC C.D.G. A		MM
SPESSORE - VORBAUMASS THICKNESS - EPAISSEUR		MM
MASSA - EIGENGEWICHT WEIGHT - MASSE		KG
BARICENTRO - SCHWERPUNKT C.O.G. AT - C.D.G. A		MM
PRESSIONE MAX ESERCIZIO - MAX BETRIEBSDRUCK - MAX WORKING PRESSURE - PRESSION MAX SERVICE		BAR

RISPETTARE LA PORTATA COMPLESSIVA DEL CARRELLO E DELLA ATTREZZATURA - TRAGFÄHIGKEIT VON STAPLER UND ANBAUGERÄT BEACHTEN - RESPECT CAPACITY OF TRUCK AND

3.2. DESCRIPTION

LOWERED FRAME



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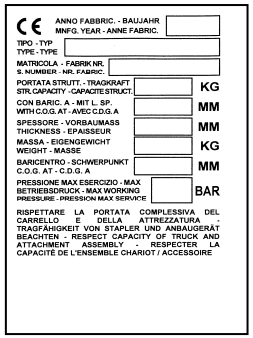
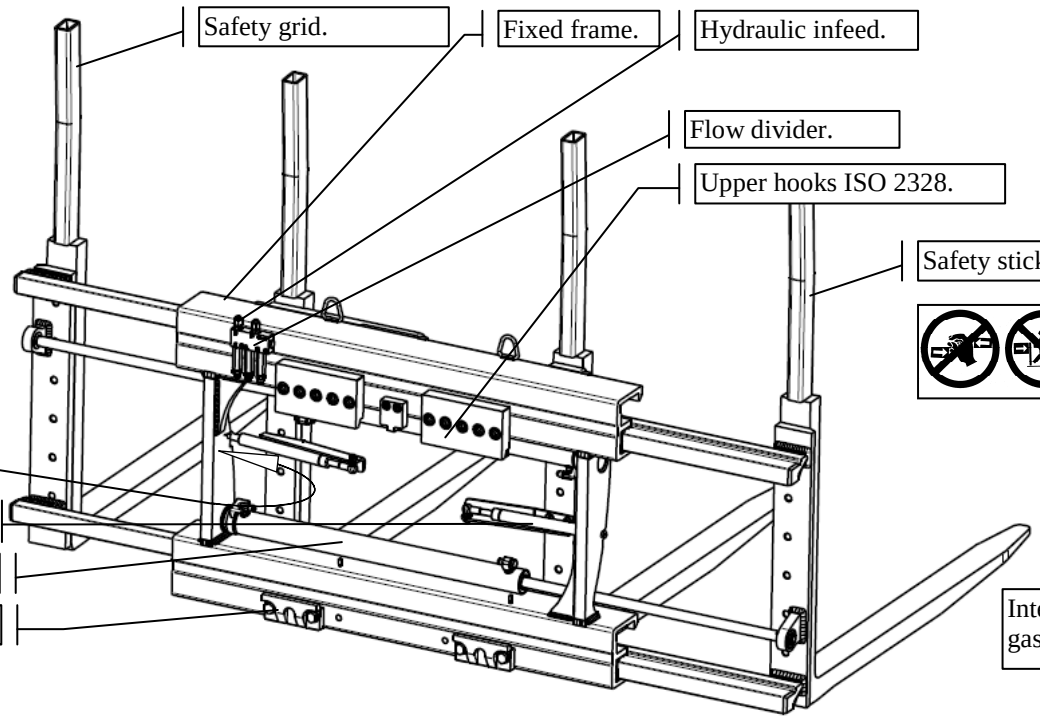
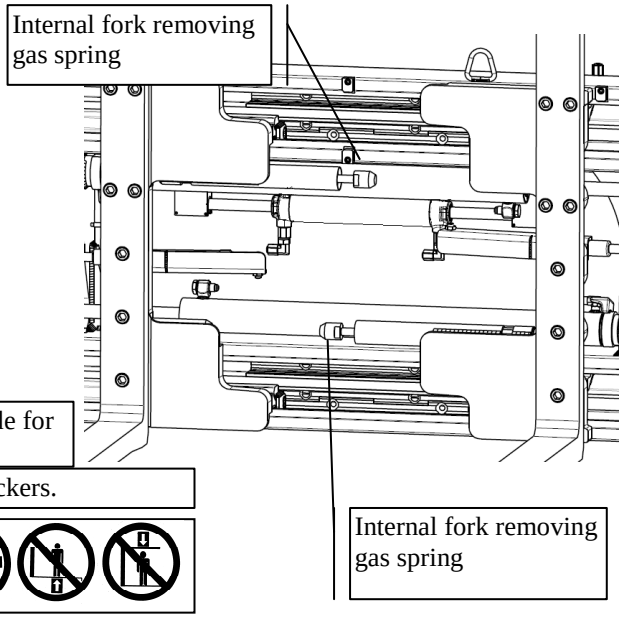
STANDARD FRAME

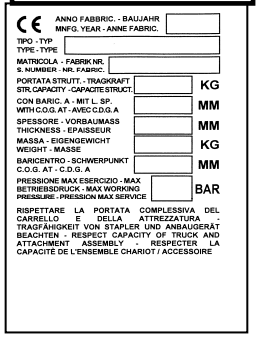


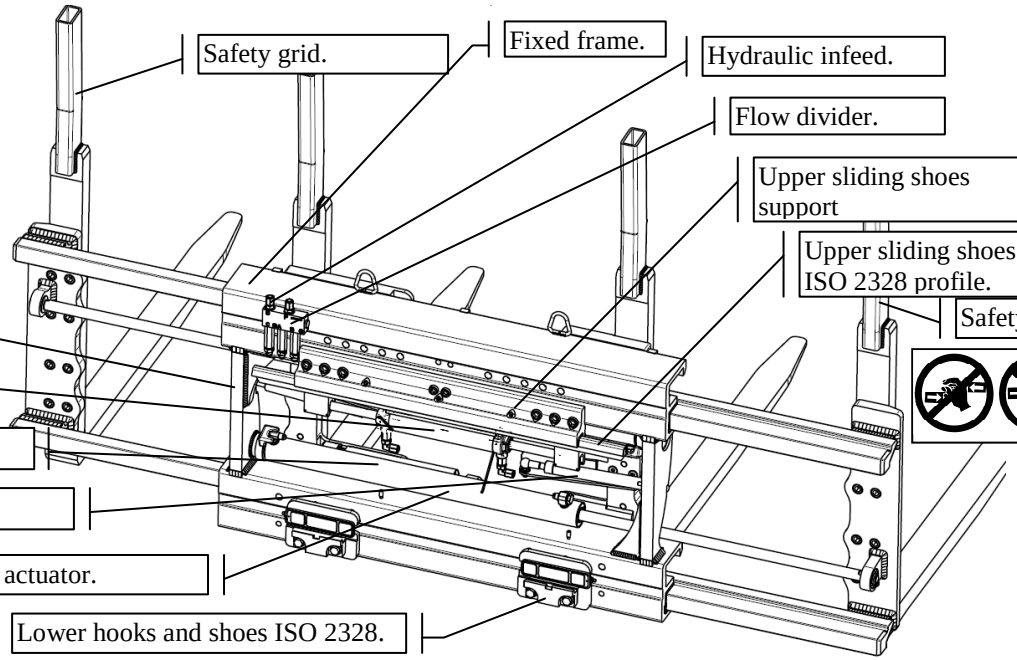


US VERSION DETAIL



US VERSION





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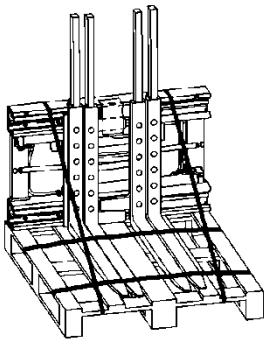
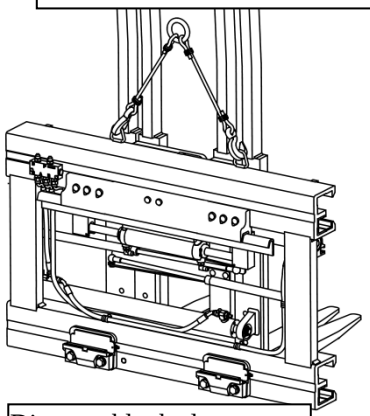
4. FASTENING TO THE FORKLIFT

4.1. HOOK

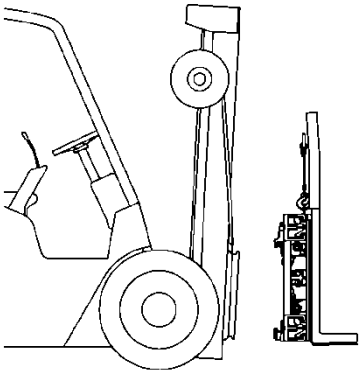


Remove the nylon cover and the fixing belts.

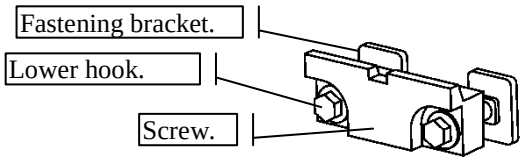
Lift with appropriate rings with UNI ISO 4479 hook.



Disassemble the lower hooks. ISO 3318 wrench.



Connect the equipment to the forklift so that the central stop of the upper shoe guide or the central stop engage the central notch of the fork carriage.



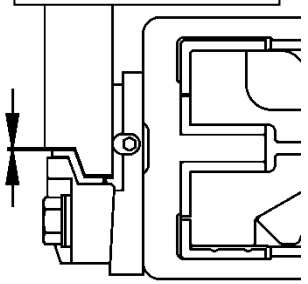
To dismantle the lower hooks, loosen the screws, avoiding the detachment of the fastening brackets, and move downwards.

4.2. FIXING OF LOWER HOOKS

Use a ISO 3318 hex wrench (mm) / (N/m):
Class 2= 22/ 120; Class 3= 24 / 200.

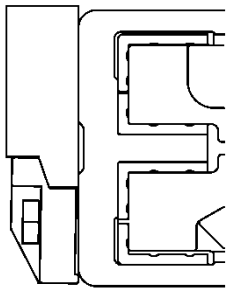
4.2.1. WITH SIDED-SHIFT 4.2.2. WITHOUT SIDE-SHIFT

Keep the distance of 1-2 mm when positioning the lower hooks.



Check the correct positioning of the vertical and horizontal shoes and fastening brackets.

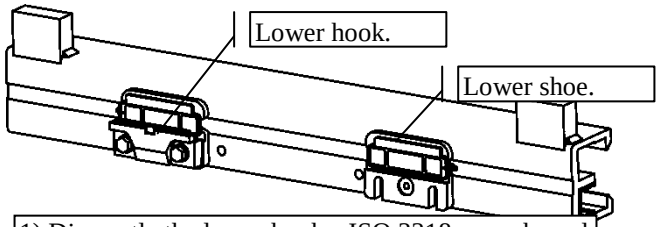
The lower hooks must lock the equipment to the fork carriage of the forklift.



4.3. LOWER HOOKS REPOSITIONING

In the presence of obstacles that do not allow proper attachment of the lower hooks, change the position of the hooks.

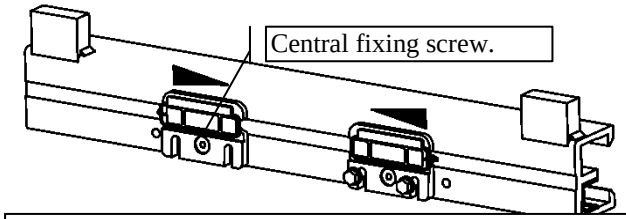
4.3.1. WITH SIDE-SHIFTING



1) Dismantle the lower hooks, ISO 3318 wrench, and related shoes with ISO 2328 profile.

2) Disconnect the lower hooks supports, ISO 3926 wrench.

3) Reposition and fix the hooks supports.



4) Use the hook fixing screws to correctly position the supports and tighten the central screw at 120 Nm.

5) Check the correct positioning of the vertical and horizontal shoes.

6) Fix the lower hooks as in point 4.2.1.

4.3.2. WITHOUT SIDE-SHIFTING

Position and fasten the lower hooks, using the hole that avoids the obstacle, as in point 4.2.2.

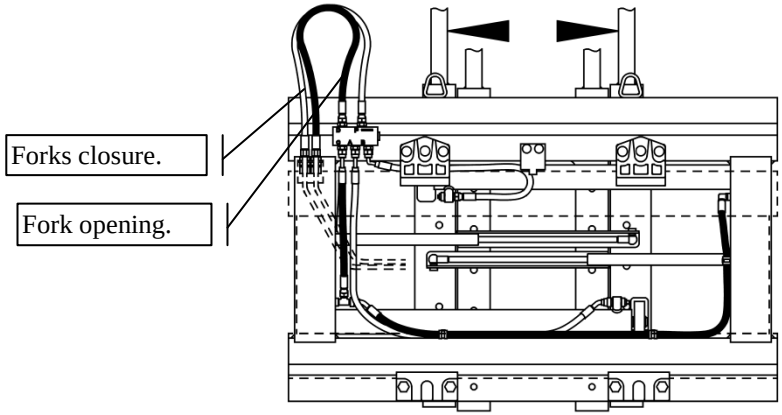
4.4. HOSES CONNECTION

Before connecting the hydraulic hoses, follow the manufacturer's instructions to remove the pressure in the forklift's circuit.

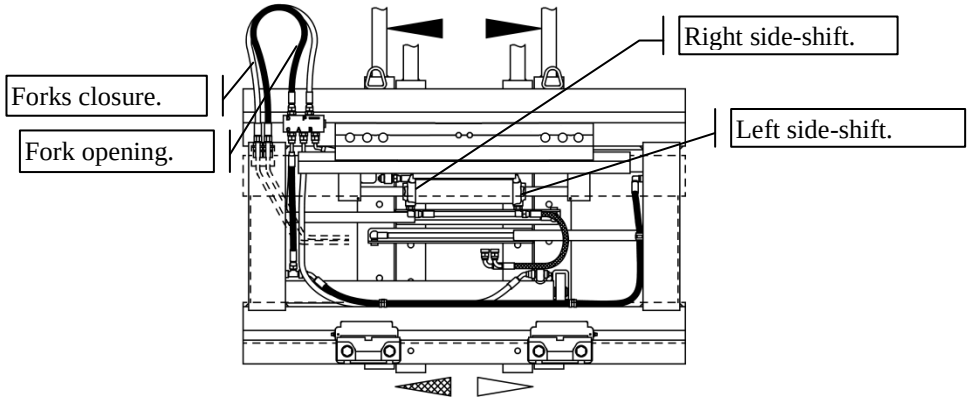
Possible leakage of oil from pipelines. Prepare a container to collect fluid.

The connecting hoses between the valve and the system of the forklift are optional.

4.4.1. WITHOUT SIDE-SHIFTING



4.4.2. WITH SIDE-SHIFTING



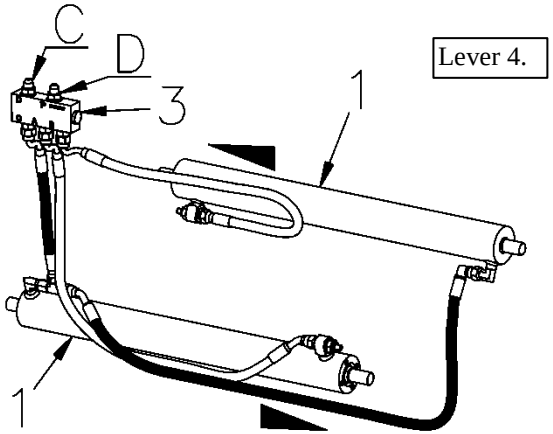
The frame moves laterally right and left; during the connection of the hoses, from the forklift to the flow divider, ensure that they allow the movement and do not rub against fixed parts.

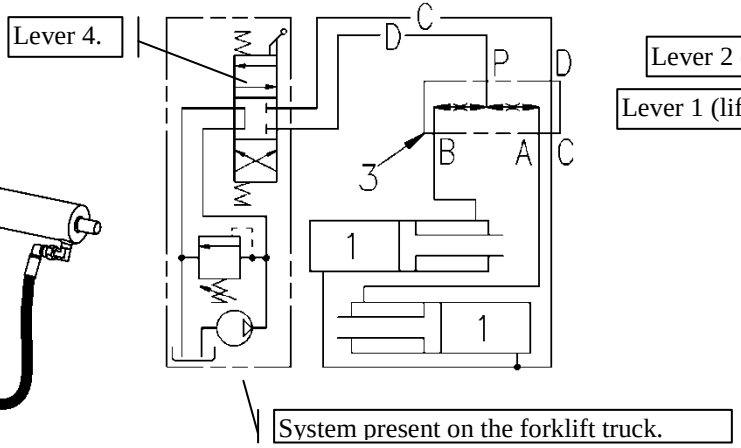
5. HYDRAULIC SYSTEM

Before connecting the hydraulic hoses, follow the manufacturer's instructions to remove the pressure in the forklift's circuit.

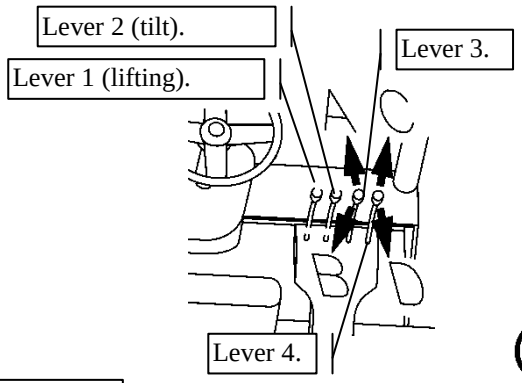
Possible leakage of oil from pipelines. Prepare a container to collect fluid.

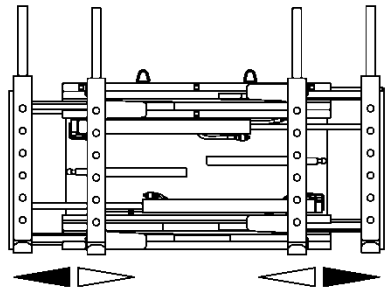
5.1. CONNECTION AND LAYOUT WITHOUT SIDE-SHIFTING





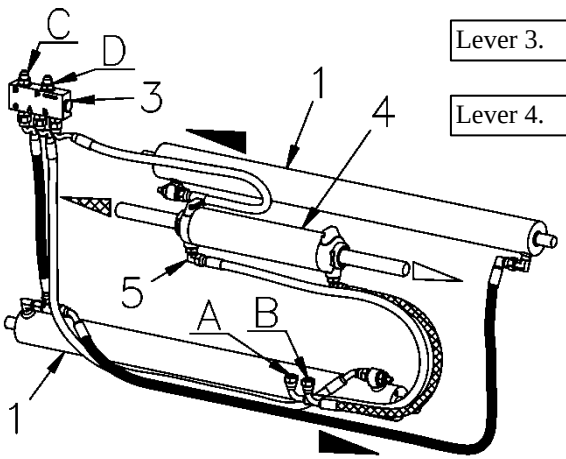
5.1.1. CONTROL OF MOVEMENTS

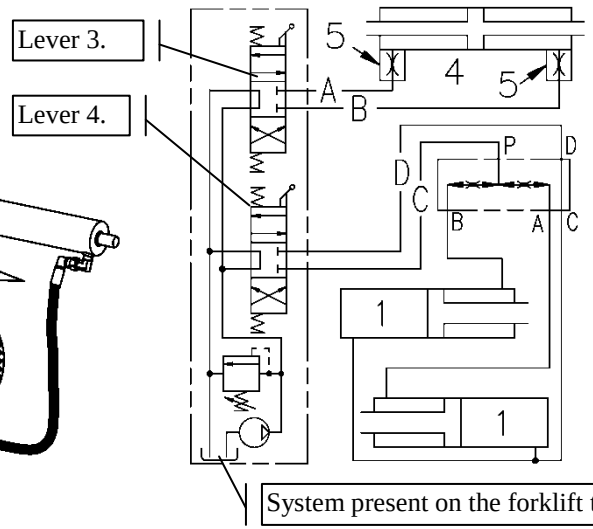




To check the connections, perform 5 complete movements, with and without the load.

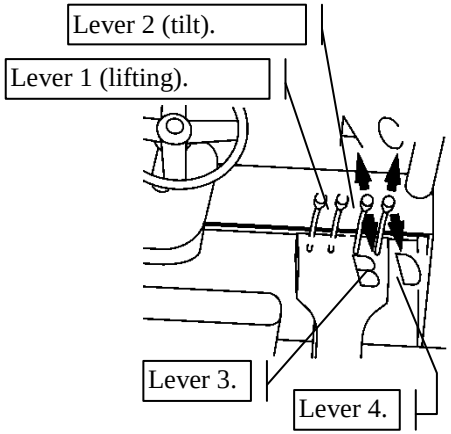
5.2. CONNECTION AND LAYOUT WITH SIDE-SHIFTING

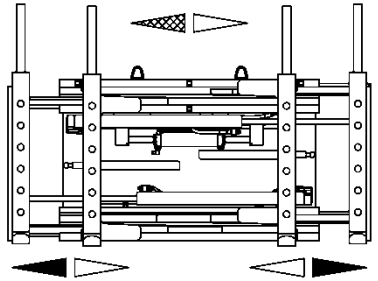




System present on the forklift truck.

5.2.1. CONTROL OF MOVEMENTS





To check the connections, perform 5 complete movements, with and without the load.

6. ADJUSTMENTS AND CONTROLS

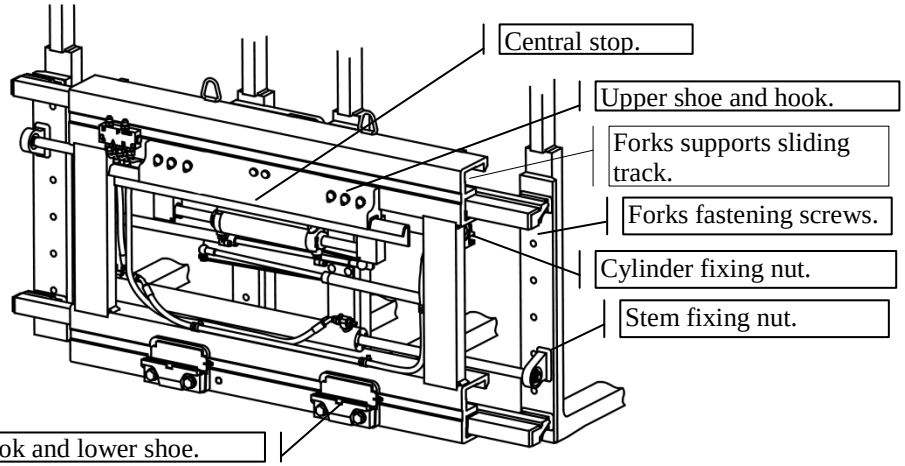
The equipment is not equipped with pressure relief valve; check that the pressure does not exceed 23 MPa with the application of pressure gauges on the distributor or consulting the specifications of the forklift. Contact our Aftersales service in the event of problems.

The synchronous closing of the forks is ensured by a flow divider, an error of 5% of the stroke cylinder is permissible. If there is a greater error, perform the minimum or maximum opening, **continuing the manoeuvre until the limit of both cylinders is achieved.**

7. DAILY CONTROLS

At the beginning of the shift check the points indicated and report any problem to the maintenance personnel.

- The centre stop of the cylinder support must engage the central notch of the forklift carriage.
- The lower shoes and hooks correctly positioned and locked, see point 4.2. LOWER HOOK ADJUSTMENT.
- Check for oil leaks from the cylinders or from the hydraulic system.
- Check tightness of the forks movement stem and cylinder fixing nuts.
- The sliding tracks of the forks must be clean and greased.
- Check the tightness of the forks fixing screws.



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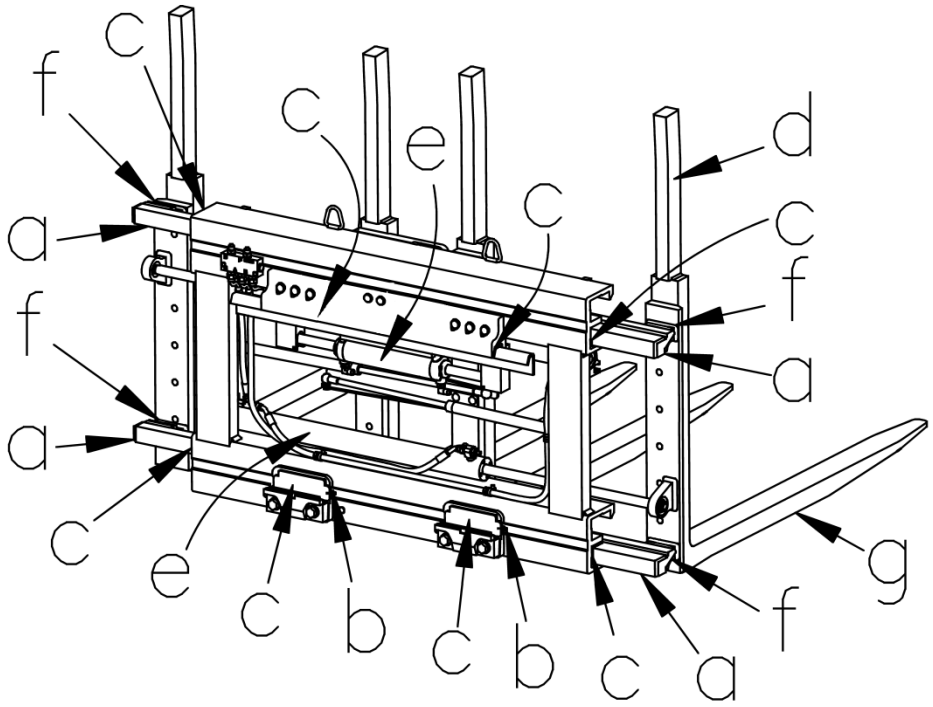
8. ROUTINE MAINTENANCE

Before disconnecting-connecting the hydraulic hoses, follow the manufacturer's instructions to remove the pressure in the forklift's circuit.



PERIODIC MAINTENANCE SCHEDULE	
OPERATIONS	**Working hours**
Cleaning and greasing of the clamp guides “a”. Greasing in points “b”.	200
Control of bolts tightness and oil leaks on the hydraulic connections.	
Check that the identification plates and warning stickers in "d" remain clearly legible.	
In addition to the operation every 200 working hours, carry out:	
Control and possible replacement of sliding shoes "c".	1000
Control the condition of the hoses and connectors.	
Control of the hydraulic actuators “e”; possible oil leaks from the cap and the condition of the stem's chromed surface.	
In addition to the operation every 200 and 1000 working hours, carry out:	
Check the integrity of the forks supports fixing base “f”.	2000
Check the wear in area “g” of the parts in contact with the ground.	
Examination for deformation or break in the structure and welds.	
Check that the angle between the horizontal and vertical sections of the fork does not exceed 90°.	

RECOMMENDED LUBRICANT:
Internal use: ISO X M2 (SHELL ALVANIA GREASE R2).
External use: ISO CB 32 (ESSO NUTO32).

The working hours should be halved when using the equipment in dusty, damp or corrosive environments.

Check the wear of the forks "g" in accordance with the ISO 5057 standard.

Position “b” grease nipples UNI 7763-AM6-5.8**.**

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9. EXTRAORDINARY MAINTENANCE

9.1. FORKS DISASSEMBLY

Before disconnecting-connecting the hydraulic hoses, follow the manufacturer's instructions to remove the pressure in the forklift's circuit.

Possible leakage of oil from pipelines. Prepare a container to collect fluid.

Before lifting the equipment, make sure the rings are intact, without deformations or the beginning of fractures.

1) Remove the upper - front central stops. ISO 3926 2 mm wrench.

2) Open the equipment at its minimum.

3) Disconnect the hydraulic hoses from the forklift, ISO3318 19mm wrench.

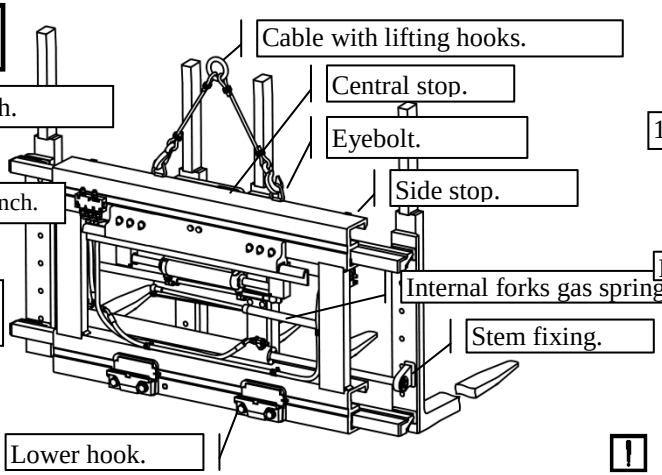
4) Remove the lower hooks, ISO 3318 wrench.

5) Block the stem with an ISO 3318 22 mm wrench, and remove the cylinder stem fixing nut with an ISO 1174 30 mm wrench.

6) Disconnect the gas spring with an ISO 3318 16 mm wrench for the locking nut and 13 mm wrench for the support.

7) Remove the upper - front external stops. ISO 3926 2 mm wrench.

8) Use cables and hooks to remove the equipment from forklift.

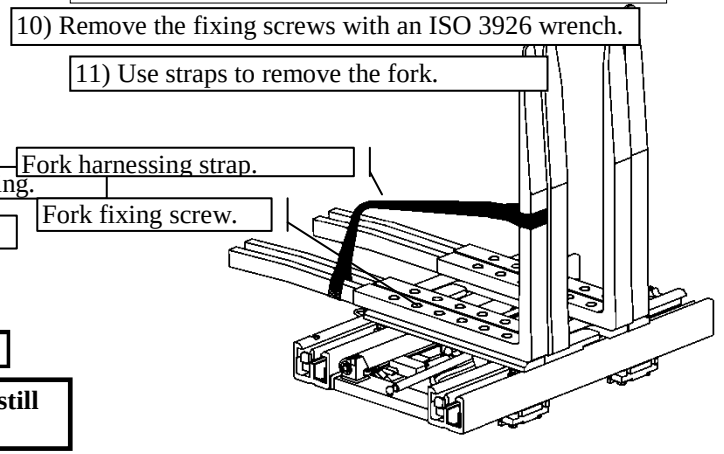


Pay attention when placing the equipment on the ground. There are uncontrolled moving parts with the detachment of the gas springs and cylinder stems.

9) Place the equipment on the ground (or on a pallet).

10) Remove the fixing screws with an ISO 3926 wrench.

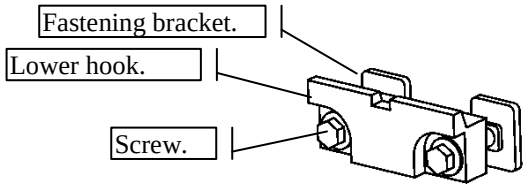
11) Use straps to remove the fork.



The gas springs can be replaced with the equipment still attached to the forklift. Perform points 1) 2) 6) only.

In order to change the internal forks gas springs US version1) clamp open; 2) unscrew the gas spring fixing nut, wrench ISO 1174 16 mm.

Apply "LOCTITE" 243 threadlocker on the threads during the assembly (follow the instructions on the package) and tighten at 660 Nm.



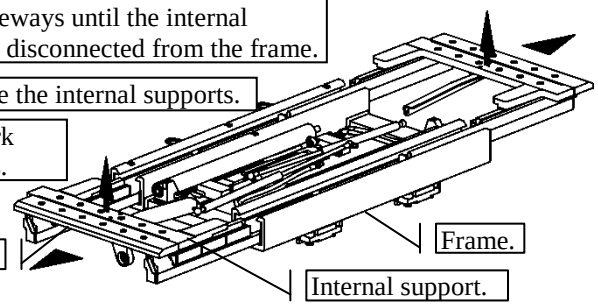
To dismantle the lower hooks, loosen the screws, avoiding the detachment of the fastening brackets, and move

9.2. SUPPORTS DISASSEMBLY

1) Remove the internal and external fork supports sideways until the internal supports are disconnected from the frame.

2) Lift and remove the internal supports.

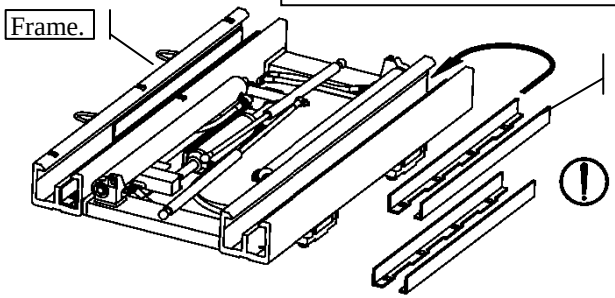
3) Remove the fork supports sideways.



9.3. FRAME SHOES DISASSEMBLY

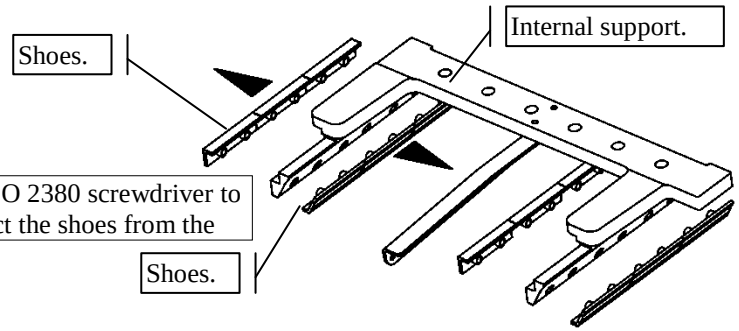
1) Remove the shoe fixing screws with an ISO 2380 screwdriver.

2) Extract the guide shoes sideways.

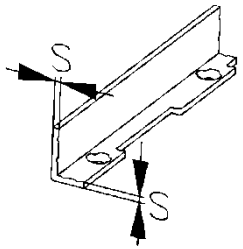


Apply "LOCTITE" 243 threadlocker on the threads during the assembly (follow the instructions on the package).

9.4. SUPPORTS SHOES DISASSEMBLY

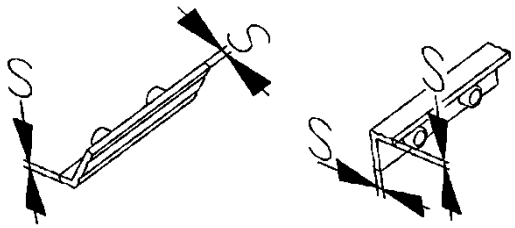


9.5. FRAME SHOES CONTROL



Replace the shoes if there are cracks, permanent deformations or the thickness "S" is less than 5 mm.

9.6. SUPPORT SHOES CONTROL



Replace the shoes if there are cracks, permanent deformations or the thickness "S" is less than 5 mm.

CARRY OUT THE PROCEDURE IN REVERSE ORDER TO RESTORE THE DISMANTLED PARTS.

9.7. CYLINDER MAINTENANCE

9.7.1. REMOVAL OF CYLINDERS AND REPLACEMENT OF SEALS

Before disconnecting-connecting the hydraulic hoses, follow the manufacturer's instructions to remove the pressure in the forklift's circuit.

Possible leakage of oil from pipelines. Prepare a container to collect fluid.

1) Open the clamps to the maximum.

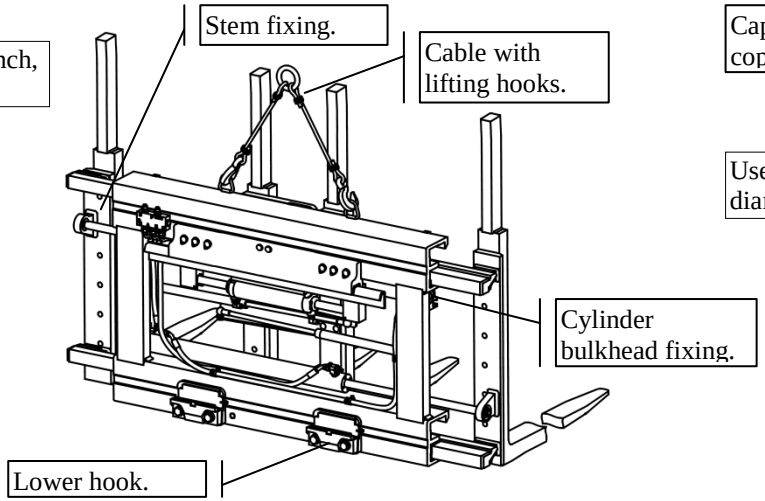
2) Block the cylinder stem, ISO 3318 22 mm wrench, and remove the nut, ISO 1174 30 mm wrench.

3) Close the cylinder to its minimum.

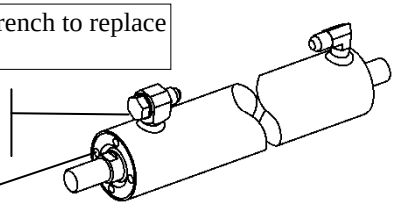
With the stem released the cylinders can tilt downwards.

4) Disconnect the cylinders feed hose with an ISO 3318 19 mm wrench.

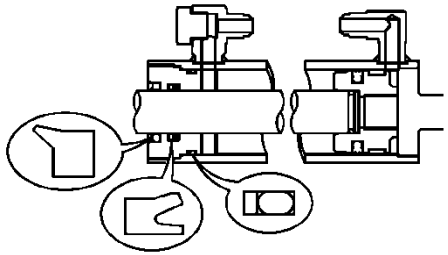
5) Unscrew the nut on the bulkhead with an ISO 1174 30 mm socket wrench and remove the cylinder.



Use an ISO 3318 19 mm wrench to replace the copper washer.



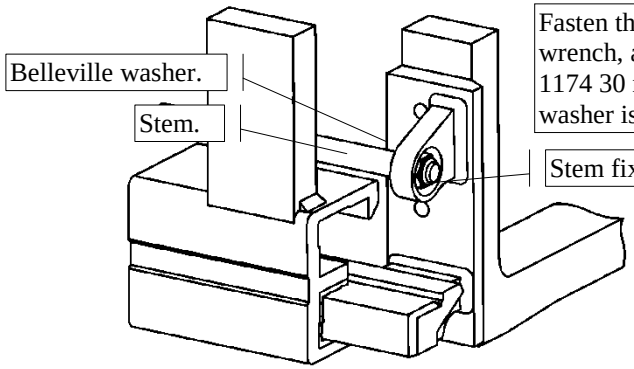
Use a fork wrench for diameters 12 – 60 mm and with 4 mm diameter pin to remove the cylinder cap.



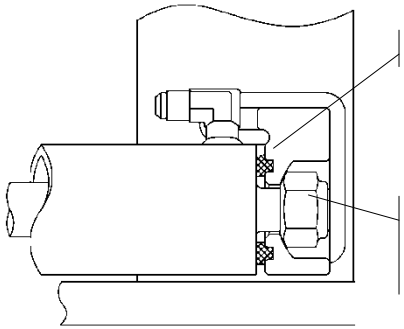
CARRY OUT THE ABOVE PROCEDURES IN REVERSE ORDER TO RESTORE THE DISMANTLED PARTS.

Respect assembly direction when replacing the seals and work in a dust-free environment.

9.7.2. CYLINDERS ASSEMBLY STEM SIDE



9.7.3. CYLINDERS ASSEMBLY BULKHEAD SIDE



9.8. REMOVAL OF FLOW DIVIDER

Before disconnecting-connecting the hydraulic hoses, follow the manufacturer's instructions to remove the pressure in the forklift's circuit.

Possible leakage of oil from pipelines. Prepare a container to collect fluid.

9.8.1. DETACHMENT FROM THE FORKLIFT

The equipment may have to be disconnect from the forklift depending on the overall dimensions of the masts.

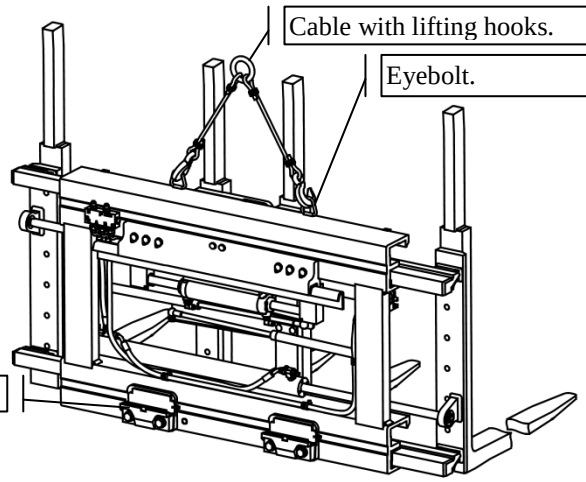
1) Disconnect the feed hoses from the forklift, ISO ISO3318 19 mm wrench.

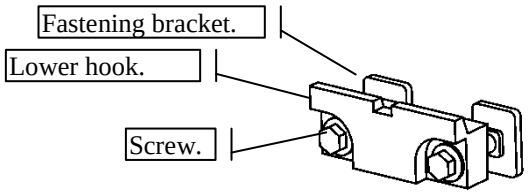
2) Remove the lower hooks, ISO 3318 wrench.

3) Use cables and hooks to remove the equipment from forklift.

Before lifting the equipment, make sure the rings are intact, without deformations or the beginning of fractures.

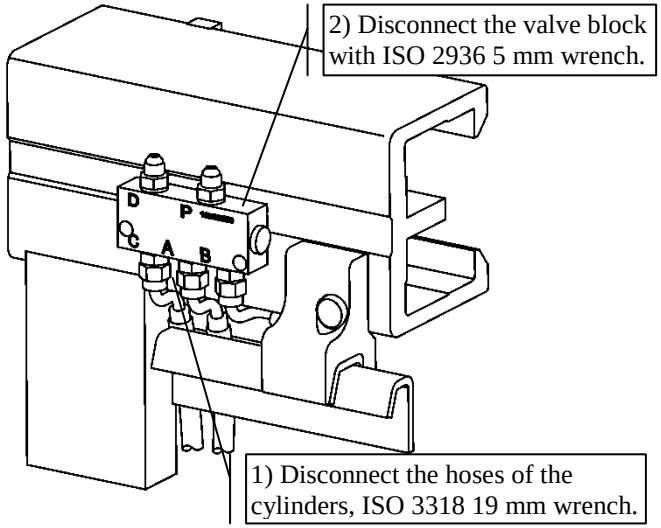
4) Place the equipment on the ground.





To dismantle the lower hooks, loosen the screws, avoiding the detachment of the fastening brackets, and move downwards.

9.8.2. VALVE DETACHMENT



CARRY OUT THE ABOVE PROCEDURES IN REVERSE ORDER TO RESTORE THE DISMANTLED PARTS

9.9. SIDE-SHIFT MAINTENANCE

9.9.1. DISASSEMBLY OF SHOES AND CYLINDER

Before disconnecting the hydraulic hoses, follow the manufacturer's instructions to remove the pressure in the forklift's circuit.

Possible leakage of oil from pipelines. Prepare a container to collect fluid.

Disconnect the equipment from the forklift to perform this maintenance, see points 3 -4 -8 9.1. DETACHMENT FROM THE FORKLIFT

1) Remove the spring pin with a DIN 6450 d.4 mm punch.

The shoes support block is free to drop.

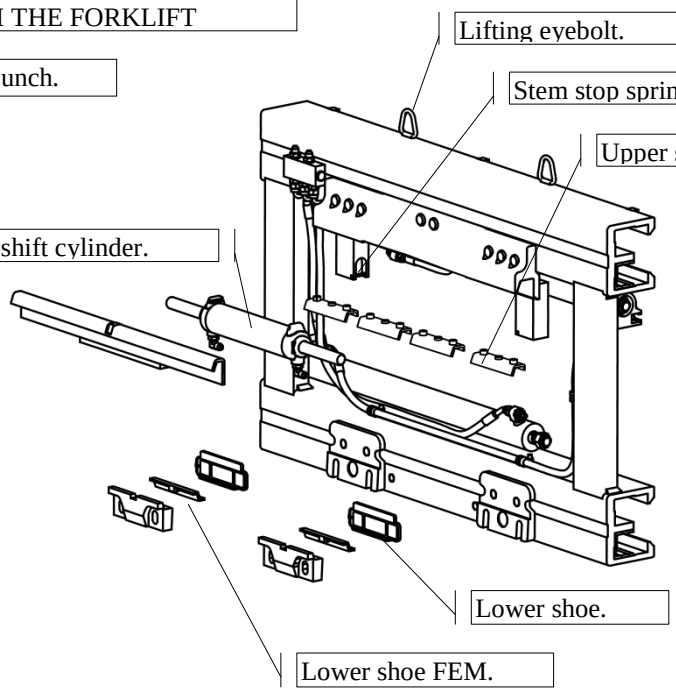
2) Disconnect the cylinder from the support.

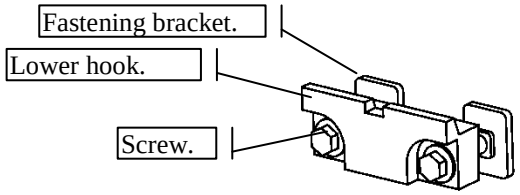
3) Remove the upper sliding shoes with a DIN 6450 4 mm punch.

4) Detach the lower horizontal and vertical guide shoes with an ISO 2380 screw driver.

Before lifting the equipment, make sure the rings are intact, without deformations or the beginning of fractures.

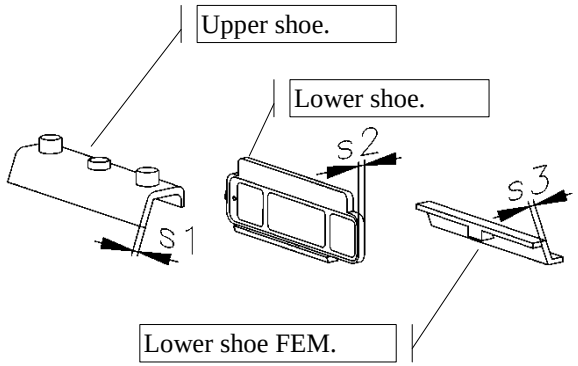
5) Place the equipment on the ground.





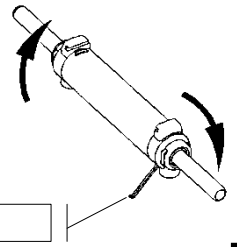
To dismantle the lower hooks, loosen the screws, avoiding the detachment of the fastening brackets, and move downwards.

9.9.2. SHOES CONTROL

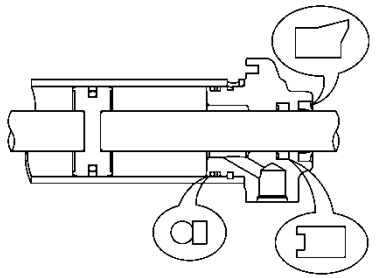


Replace the shoes if there are cracks, permanent deformations or the thickness is less than: s1 2 mm; s2 3 mm; s3 3 mm.

9.9.3. REPLACEMENT OF SEALS



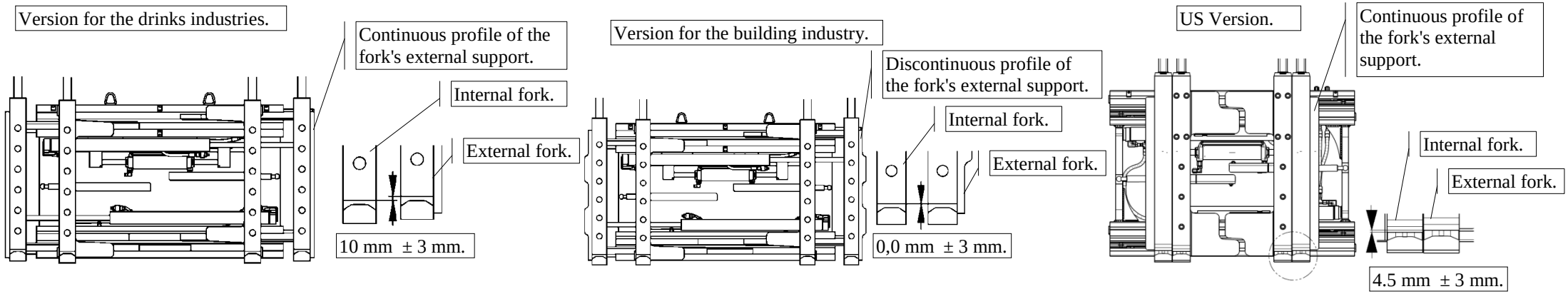
Rotate the cap until the circlip is completely out.



Respect assembly direction when replacing the seals and work in a dust-free environment.

CARRY OUT THE ABOVE PROCEDURES IN REVERSE ORDER TO RESTORE THE DISMANTLED PARTS

10. VERSIONS FOR FORK ALIGNMENT



11. LIST OF POSSIBLE FAULTS WITH CAUSES AND REMEDIES

The external displacement of the forks is not performed or the movement is slow and uneven.	Insufficient oil pressure and/or flow rate.	Control and/or adjustment of the hydraulic pump and the oil level in the tank of the forklift.
	Residual air in the hydraulic circuit.	Control of the oil level in the tank of the forklift. Bleed the residual air in the hydraulic circuit.
	Blockage or leak in the hydraulic circuit.	Check the hoses of the hydraulic system; eliminate the blockages replacing the damaged hoses.
	Faulty flow divider valve.	Replace.
	Leakage in the cylinders.	Replacing the cylinder seals or replace the cylinders.
	Excessive friction in the sliding guides.	Clean and grease. Check for any deformation or excessive wear of the shoes.
	Impurities in the oil of the hydraulic circuit.	Consult the forklift documentation for oil filtration and cleaning of the system.
The internal forks do not position correctly.	Gas springs exhausted.	Replace.
	Excessive friction in the sliding guides.	Clean and grease. Check for any deformation or excessive wear of the shoes.
Synchronisation is not maintained during opening - closing.	Excessive friction in the sliding guides.	Clean and grease. Check for any deformation or excessive wear of the shoes.
	Faulty flow divider valve.	Replace.
	Hydraulic circuit blocked or broken.	Eliminate obstruction or replace damaged hose.
	Impurities in the oil of the hydraulic circuit.	Consult the forklift documentation for oil filtration and cleaning of the system.
	Leakage in the cylinders.	Replacement of cylinder seals.
Slow, irregular or blocked side-shift.	Insufficient oil pressure and/or flow rate.	Control and/or adjustment of the hydraulic pump and the oil level in the tank of the forklift.
	Residual air in the hydraulic circuit.	Control of the oil level in the tank of the forklift. Bleed the residual air in the hydraulic circuit.
	Blockage or leak in the hydraulic circuit.	Check the hoses of the hydraulic system; eliminate the blockages replacing the damaged hoses.
	Cylinder leakage.	Replacement of cylinder seals.
	Impurities in the oil of the hydraulic circuit.	Consult the forklift documentation for oil filtration and cleaning of the system.
	Encrustation or deformation of the forklift plate.	Clean, grease or eliminate the deformations.
	Incorrect adjustment of the lower hooks.	Carry out the adjustments as indicated in point 4.2. "FIXING OF HOOKS".
	Sliding shoes worn.	Replace.

IN CASE OF PROBLEMS OTHER THAN THOSE DESCRIBED ABOVE, PLEASE CONTACT OUR SERVICING DEPT.

12. NOISE EMISSION

- Sound pressure level of the weighted emission A in the workplace, where this exceeds 70 dB (A); if said level does not exceed 70 dB(A), it must be indicated.

-Maximum weighted instantaneous sound pressure C in the workplace, where this exceeds 63 Pa (130 dB relative to 20 µPa).

-Weighted sound power level A emitted by the machine, if the sound pressure level of the weighted emission A in workplaces exceeds 80 dB (A).

13. RECYCLING

Replaced parts should be disposed of, as in the case of complete destruction, separately depending on the nature of the material and in compliance with the requirements of the law on the disposal of solid industrial waste.

NB: The pieces not mentioned in the table are made of steel.

Transport pallet	Wood
Straps and protective cover for shipment	Heat shrink polyester
Cylinder caps	Cast iron
Guide shoes	Nylon
Hoses / fittings	Polyester / steel
Seals	Polyurethane and NBR
Paint	Epoxy polyester
Oil and grease	Dispose of in compliance with local regulations

14. WARRANTY

The manufacturer guarantees all its products for 12 months or 2000 working hours (whichever occurs first) from the date of shipment.
If used more than 8 hours per day the warranty period shall be reduced proportionately.
The warranty is limited to the replacement, ex-factory of the manufacturer, of those parts identified as being defective due to defects in materials or workmanship; it does not include the cost of labour or travelling expenses for the replacement of such parts.
It is further understood that recognition of the warranty is void if the anomaly results from the inappropriate use of the product, if the implementation was not carried out according to the manufacturer's specifications or if non-original parts have been used for modifications or replacement.
The equipment is not guaranteed for uses that exceed the performance indicated on the rating plate and in the documentation.
All equipment is covered by insurance for any damage caused to third parties by defective parts or their malfunction; damage caused by improper use or misuse is not included.

15. FACSIMILE OF THE EC CONFORMITY CERTIFICATE

Dichiarazione CE di Conformità

Noi — NOME COSTRUTTORE
INDIRIZZO COSTRUTTORE
XXXXXXXXXXXXXXXX

Dichiariamo sotto la nostra esclusiva responsabilità che il prodotto:

Tipo	YYYYYYYYYYYYYYYY
Marca	XXXXXXXXXXXXX
Modello	WWWWWWWWWw
Matricola	JJJJJJJJJJ
Anno di fabbricazione	VVVV

è conforme alle disposizioni della Direttiva Macchine 2006/42/CE
e alle disposizioni della norma EN 1726-2

Persona autorizzata a costituire il fascicolo tecnico

Nome	Pietro
Cognome	Foroni
Posizione	Direttore Ufficio Tecnico
Indirizzo	29027 Casoni di Podenzano - Piacenza (Italy)

Persona autorizzata a redigere la dichiarazione

Nome	Claudio
Cognome	Carnieletto
Posizione	Direttore Assicurazione Qualità e Post Vendita

Piacenza, 10 dicembre 2009