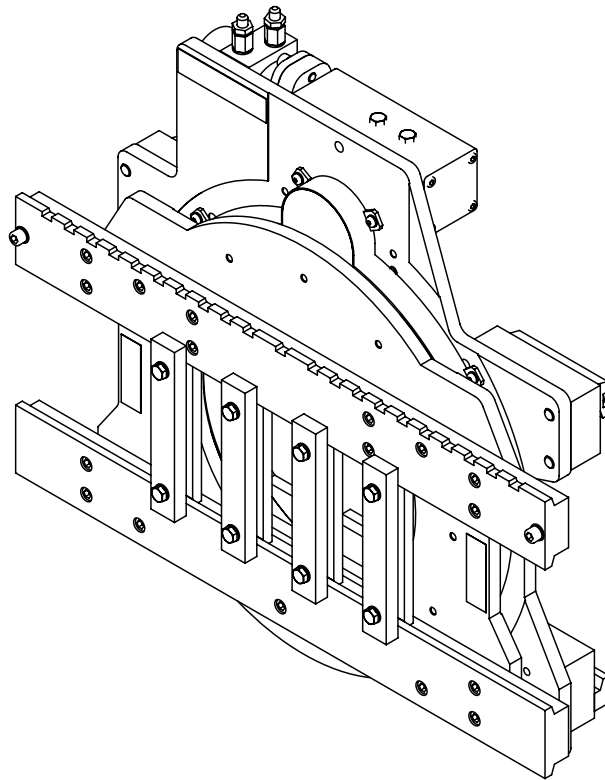




PRC-
PRC.T-
series



Rotators

User manual



User & Maintenance Manual

PRC & PRC-T Rotators

1. General information	3
1.1. Preface	3
1.2. Manual information.....	4
1.3. Contact information	4
1.4. Warranty	5
1.4.1 Warranty conditions	5
1.4.2 Warranty procedure.....	5
1.5. CE marking & type plate.....	6
2. Safety information	7
2.1. General safety information	7
2.2. Safety precautions	7
2.2.1. Commissioning	8
2.2.2. Warnings before each use	8
2.2.3. Warnings during use	8
2.2.4. Warnings during maintenance.....	9
2.3. Safety plates and symbols	9
3. Instructions specific to PRC and PRC.T rotators	10
3.1. Intended use.....	10
3.2. Installation of the PRC/PRC.T rotators.....	10
3.2.1. Installation of the PRC rotator.....	10
3.2.2. Installation of the PRC.T rotator	15
3.3. Operation of the PRC/PRC.T rotators	16
3.3.1. Loading.....	16
3.3.2. Load handling.....	17
4. Maintenance	18
5. Storage	19
6. Transport	20
7. Disposal	20

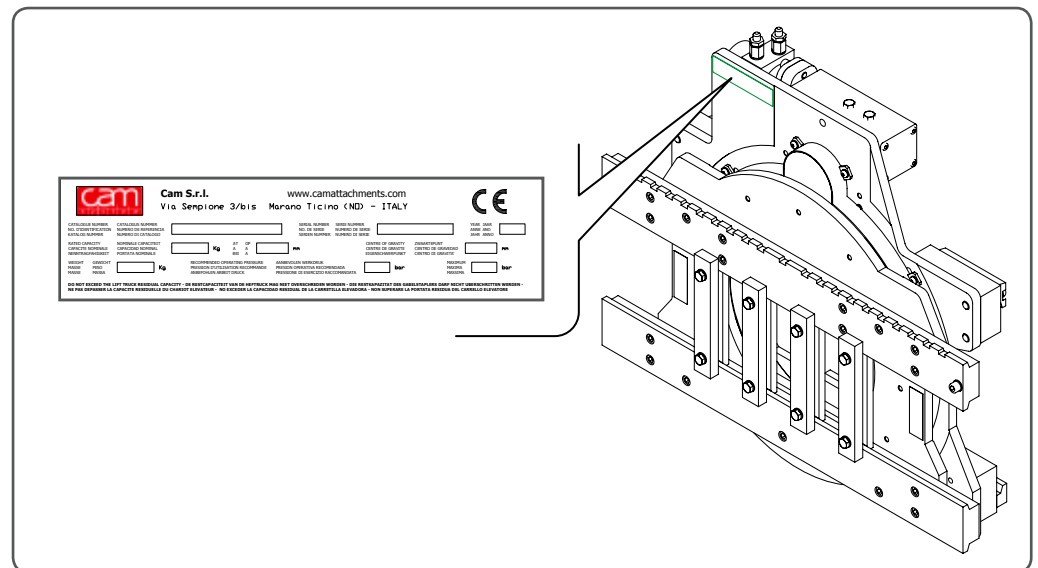
1. General information

1.1. Preface

This manual provides you with all the information necessary for the use and maintenance of your CAM System® attachment. Its efficiency and long life depend on adequate maintenance and the care taken in its use.

CAM S.r.l. and your dealer are at your disposal to provide additional information about the operation of your CAM System® attachment. They also sell original replacement parts to ensure a perfect fit.

- Before leaving the factory, all CAM System® attachments go through thorough testing to ensure maximum reliability.
- In all your communications with CAM S.r.l. or your dealer, always state the information indicated on the identification plate.



1.2. Manual information

Read this manual carefully before assembling, using or maintaining the CAM System® attachment. The manual describes the functioning, installation, use, transport and maintenance of the CAM System® attachment, as well as minimum safety measures and precautions. Contact CAM S.r.l. or your dealer if you require more information or clarification.

The present manual and its enclosures are an integral part of the CAM System® attachment and must always be kept with it. The operator and all persons who come into contact with the CAM System® attachment should read it carefully and regularly and have access to it at all times.

In the event of loss or damage, request a new manual from CAM S.r.l. or your dealer.

1.3. Contact information



Manufacturer: CAM S.r.l.

Via Sempione, 3/BIS
28040 MARANO TICINO (Novara)
Tel. +39 0321 97019 - Fax +39 0321 923197
sales@camattachments.com
www.camattachments.com - www.camattrezzature.it
Partita IVA 02215700036 - R.E.A. 222506
Iscrizione Registro delle Imprese Novara NO 02215700036



Original replacement parts

TVH PARTS NV • PARTS & ACCESSORIES DIVISION

Brabantstraat 15 • BE-8790 Waregem
T +32 56 43 42 11 • F +32 56 43 44 88 • parts@tvh.com • www.tvh.com

Dealer:

1.4. Warranty

1.4.1 Warranty conditions



1. Each CAM System® attachment benefits from a warranty of twelve (12) months from the date of purchase.
2. The warranty is strictly limited to the replacement or the repair of the CAM System attachment, or parts thereof, showing a manufacturing defect, according to the final judgment of CAM S.r.l.
3. CAM S.r.l. shall never accept a warranty claim in the following events:
 - customer or end-user have carried out repairs or modifications to the CAM System attachment without explicit prior authorization from CAM S.r.l.; or
 - the defect results from assembly, maintenance, storage, or use in a manner which is inconsistent with the indications and recommendations in the CAM S.r.l. User & Maintenance Manual, use for purposes other than those described in the CAM S.r.l. User & Maintenance Manual, abnormal use, overloading, or normal wear. For example, warranty does not cover “tear or wear parts” (such as bushes, seal kits, etc.), or damage resulting from inappropriate use, maintenance or storage (e.g., corrosion resulting from storage in open air); or
 - the original CAM type plate, CAM label or serial number has been removed; or
 - non-original replacement parts have been used; or
 - the warranty period has lapsed.

1.4.2 Warranty procedure

Warranty claims are administered through your CAM dealer. Send the defective CAM System® attachments or components to your dealer, who will send it to with CAM S.r.l., for technical expertise.

1. All costs for handling, labour for dismantling, transport, inspections and duties shall be at the expense of the customer.
2. With respect to a warranty claim accepted by CAM S.r.l., transport of the replaced or repaired CAM System® attachment to the customer shall not be borne by the customer. The warranty excludes all handling and labour costs for re-assembly of the repaired or replaced CAM System® attachment on the forklift truck. The defective CAM System® attachments or parts shall automatically and without compensation become the property of CAM S.r.l. upon shipment of the replaced or repaired CAM System® attachment.
3. In cases where CAM S.r.l. rejects a warranty claim, CAM S.r.l. will supply a non-binding cost estimate for the repair of the CAM System® attachment. CAM S.r.l. will only proceed with the repair after having received the customer’s explicit instruction, such repair shall be at the customer’s expense.
4. CAM S.r.l.’s liability is limited to what is mandatory in accordance with applicable law. CAM S.r.l. can never be held liable for direct, indirect or consequential damage, or any claims for consequential compensation which arise out or in connection with the use of CAM System® attachments. In any event the maximum amount of CAM S.r.l.’s liability is explicitly limited to the purchase price of the CAM System® attachment.

1.5. CE marking & type plate

		Cam S.r.l.		www.camattachments.com			
Via Sempione 3/bis		Marano Ticino (NO) - ITALY					
CATALOGUE NUMBER NO. D'IDENTIFICATION KATALOG NUMMER	CATALOGUS NUMMER NUMERO DE REFERENCIA NUMERO DI CATALOGO	<input type="text"/>		SERIAL NUMBER NO. DE SERIE SERIEN NUMMER	SERIE NUMMER NUMERO DE SERIE NUMERO DI SERIE	<input type="text"/>	
RATED CAPACITY CAPACITE NOMINALE NENNTRAGFAHIGKEIT	NOMINALE CAPACITEIT CAPACIDAD NOMINAL PORTATA NOMINALE	<input type="text"/>	Kg	AT A BEI	OP A A	<input type="text"/>	mm
WEIGHT MASSE MASSE	GEWICHT PESO MASSA	<input type="text"/>	Kg	RECOMMENDED OPERATING PRESSURE PRESSION D'UTILISATION RECOMMANDEE ANBEFOHLEN ARBEIT DRUCK	AANBEVOLEN WERKDRUK PRESSION OPERATIVA RECOMENDADA PRESSIONE DI ESERCIZIO RACCOMANDATA	<input type="text"/>	bar
						CENTRE OF GRAVITY CENTRE DE GRAVITE EIGENSCHWERPUNKT	ZWAARTEPUNT CENTRO DE GRAVEDAD CENTRO DI GRAVITA'
						<input type="text"/>	mm
							<input type="text"/>
							bar
<p>DO NOT EXCEED THE LIFT TRUCK RESIDUAL CAPACITY - DE RESTCAPACITEIT VAN DE HEFTRUCK MAG NIET OVERSCHREDEN WORDEN - DIE RESTKAPAZITAT DES GABELSTAPLERS DARF NICHT UBERSCHRITTEN WERDEN - NE PAS DEPASSER LA CAPACITE RESIDUELLE DU CHARIOT ELEVATEUR - NO EXCEDER LA CAPACIDAD RESIDUAL DE LA CARRETILLA ELEVADORA - NON SUPERARE LA PORTATA RESIDUA DEL CARRELLO ELEVATORE</p>							

- 1) Equipment name/Catalogue number
- 2) Serial number
- 3) Year of construction
- 4) Equipment capacity
- 5) Centre of gravity of the load to which the equipment capacity refers
- 6) Equipment centre of gravity
- 7) Equipment weight
- 8) Recommended operating pressure
- 9) Maximum pressure on equipment entry

2. Safety information

2.1. General safety information

Failure to comply with basic safety standards and precautions or with the safety instructions and warnings in this manual and the enclosed brochure, or improper use of the CAM System® attachment, may cause damage and even lead to serious or even fatal injuries to the operator or people in the vicinity of the forklift truck fitted with the CAM System® attachment.

People who come into contact with the CAM System® attachment and use procedures, working practices or tools that are not described in this manual take full responsibility for the safe and proper operation of the CAM System® attachment.



The safety messages are displayed in the User & Maintenance Manual and on the CAM System attachment® with the following symbols:

The IMPORTANT messages are displayed before procedures which, if not observed, may cause damage to the operator.



The WARNING messages are displayed before messages which, if not observed, may cause damage to the CAM System® attachment.

The information, specifications and illustrations in this publication are based on the information available at the time of preparation.

Always comply with the general safety regulations relating to working with a forklift truck.

The forklift truck may only be driven by qualified forklift drivers who have also been trained in the operation of a forklift truck fitted with the CAM System® attachment.

Please take note of all the information provided in the operation manual of the forklift truck where the CAM System® attachment is to be mounted onto.

2.2. Safety precautions



CAM S.r.l. cannot under any circumstances be held liable for accidents or damage resulting from the use of the CAM System® attachment by inadequately trained personnel or from in-appropriate use, or from even partial, non-observance of the safety standards and the intervention procedures contained in the present manual and in that of the forklift truck.

2.2.1. Commissioning

- Carry out a risk analysis on the assembly of the CAM System® attachment with the forklift truck prior to commissioning.
- The assembly of your forklift truck with the CAM System® attachment must be approved for use prior to commissioning.
- Obtain forklift truck manufacturer's certification concerning the residual capacity of the forklift truck after assembly with the CAM System® attachment.
- Affix a capacity table within sight of the forklift driver.

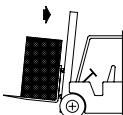
2.2.2. Warnings before each use

- A forklift truck equipped with a CAM System® attachment must only be operated by a specially trained forklift driver.
- Observe the residual capacity limits on the capacity table.
- Check all parts of the CAM System® attachment for rust, cracks or other damage before each use. Only use the CAM System® attachment if it is in perfect condition.
- Only use the CAM System® attachment in aisles and gangways that are wide enough for the necessary manoeuvring to be made while driving or handling the load.
- Do not use the assembly outdoors in high winds, as the forklift could tip over.
- Do not wear loose clothing with belts, cuffs, large sleeves. Do not wear scarves, shirts or anything else that may get caught in the moving parts.
- Verify whether all warning plates are in place and legible.
- Do not use the forklift truck unless it is in perfect working order.

2.2.3. Warnings during use



- Do not use the rotator for any other uses than those intended.
- Do not use the truck to transport people.
- Never exceed the maximum consented capacity.
- Do not undertake manoeuvres with the CAM System® attachment whilst the truck is moving.
- Do not leave the truck unguarded without lowering the load to the ground, applying the handbrake and switching off the engine first.
- Standing under the load is strictly forbidden.
- Never pass the arm through the upright. Remain inside the driver's cabin.
- Approach ramps or climbs backward.
- Driving downhill with the load in front reduces load stability.
- Lift the load 200 mm from the ground and do not proceed without having moved backward.
- Transporting non-permitted loads is forbidden.



2.2.4. Warnings during maintenance

- Before performing any maintenance or other operations on the CAM System® attachment, switch off the lift truck, apply the handbrake and remove the key from the panel.
- Use tools and equipment suited to the work to be undertaken.
- Use Loctite 242 on the screws to remount pieces previously disassembled.
- Do not leave any tools or equipment behind on any part of the machine.
- In the event of injuries caused by escaping oil under pressure, immediately seek medical assistance.
- In the event of non-anticipated workmanship or intervention, or following a procedure different to that indicated in the manual, consult CAM S.r.l. before proceeding in order to ascertain its feasibility.

2.3. Safety plates and symbols

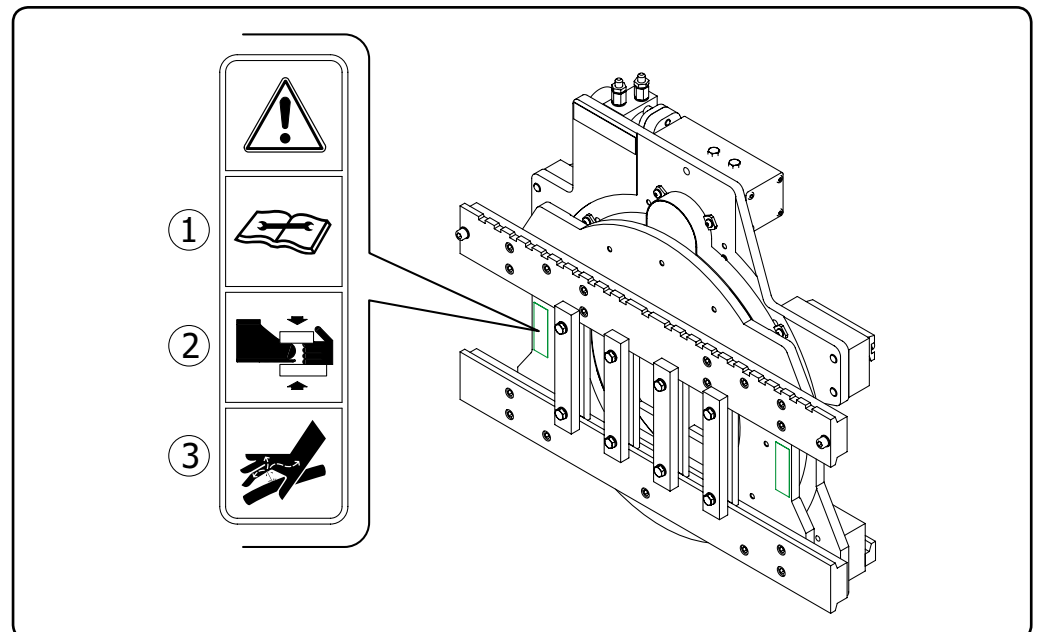
Self-adhesive stickers with safety symbols and/or messages are fitted to the CAM System® attachment.

These pages explain their precise location and the nature of the danger.



Make sure that all the safety messages are legible at all times. Clean using a cloth, soap and water. Do not use solvents, naphtha or petrol.

Replace damaged or missing stickers immediately. New ones can be ordered from the manufacturer, CAM S.r.l., or your dealer.



Upon replacement of a spare part, make sure that the replaced part contains the same safety warnings as the original spare part.

- 1) **Important:** carefully read the manual before using the CAM System® attachment and undertake the maintenance operations
- 2) **Important:** risk of limb crushing
- 3) **Important:** pressurized liquids

3. Instructions specific to PRC and PRC.T rotators

The CAM System® rotators of the PRC series are available in various standard models with capacities between 1000 and 7000 kg. By specific request, CAM S.r.l. can fit the CAM System® PRC rotators with a sideshifter (PRC.T).

This CAM System® PRC and PRC.T rotators comply with the health and safety requirements of the Machinery Directive 2006/42/EC. The EC Declaration of Conformity is supplied together with the CAM System® PRC and PRC.T rotators. Any modification to the design or any other addition can affect the safety and will invalidate the supplied EC Declaration of Conformity.

3.1. Intended use

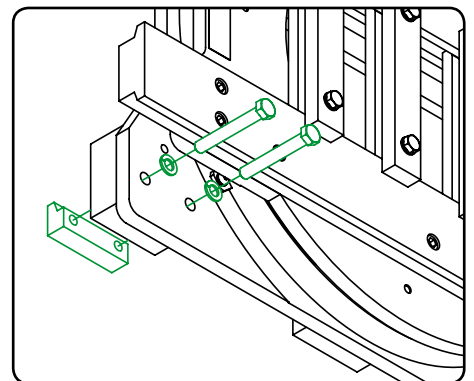
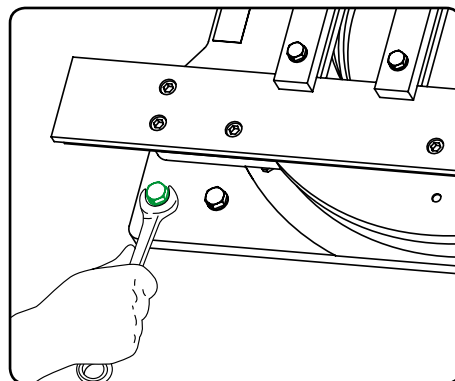
The CAM System® PRC and PRC.T rotators have been designed and manufactured for assembly onto and use solely in combination with a forklift truck, for lateral rotation of appropriate loads.

Prohibited use: Never use the CAM System® rotator for any other purpose than the one described herein above.

3.2. Installation of the PRC/PRC.T rotators

The CAM System® PRC and PRC-T rotators function according to the technical parameters stated, provided that they are correctly mounted on the forklift truck. Before installing, a careful visual check must be made in order to make sure that no damage has occurred during the transportation, storage and/or handling stages. In the event that one or more components are found to be damaged it is necessary to immediately notify CAM S.r.l., who will take corrective action at its own discretion.

3.2.1. Installation of the PRC rotator

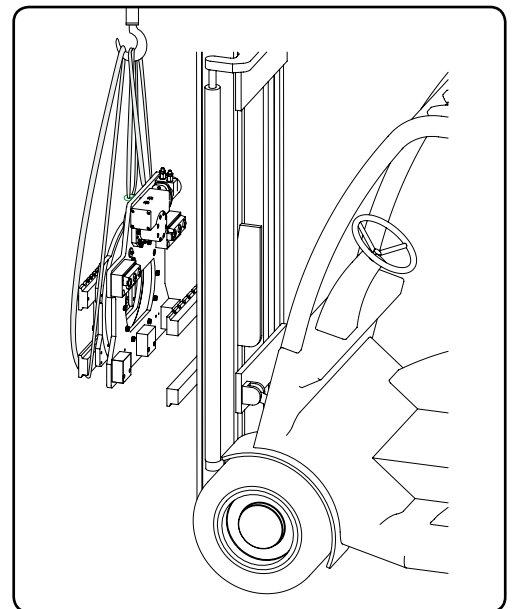
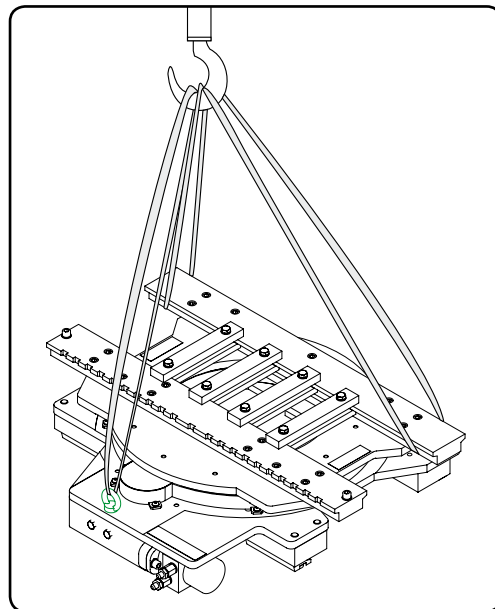
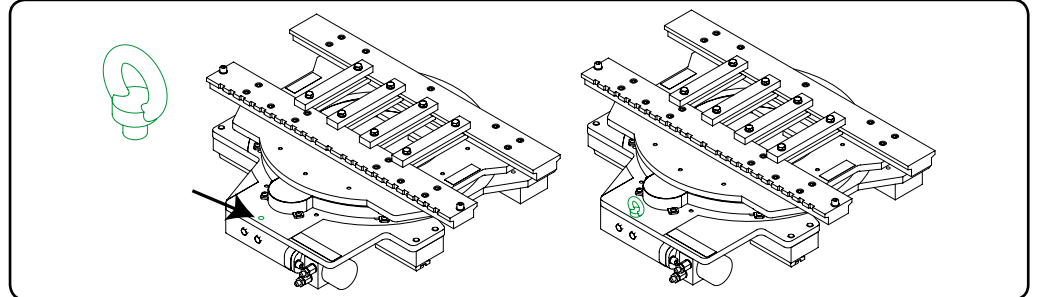


- Remove the lower hooks from both sides.

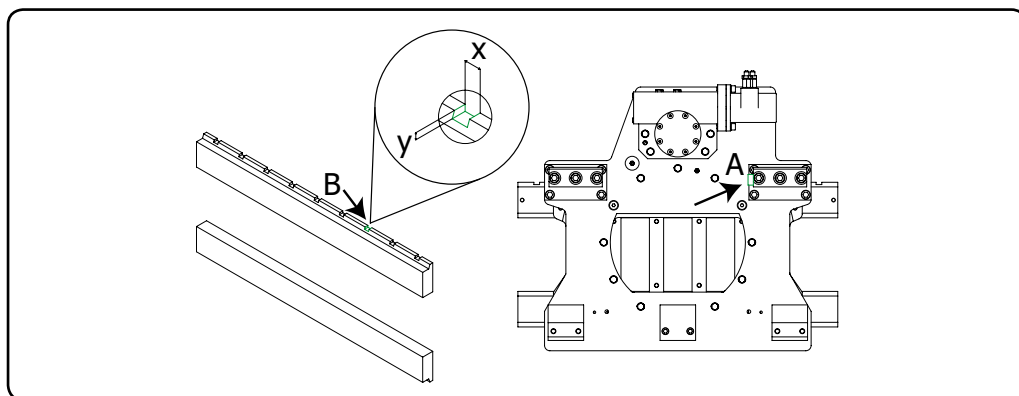


!!! Before lifting the CAM System® PRC or PRC.T rotator, make sure that the lifting devices (ropes, cables, hooks, etc) are adequate for the weight of the CAM System® attachment by consulting the corresponding characteristics on the label.

!!! Check the stability of CAM System® PRC and PRC.T rotator before lifting.



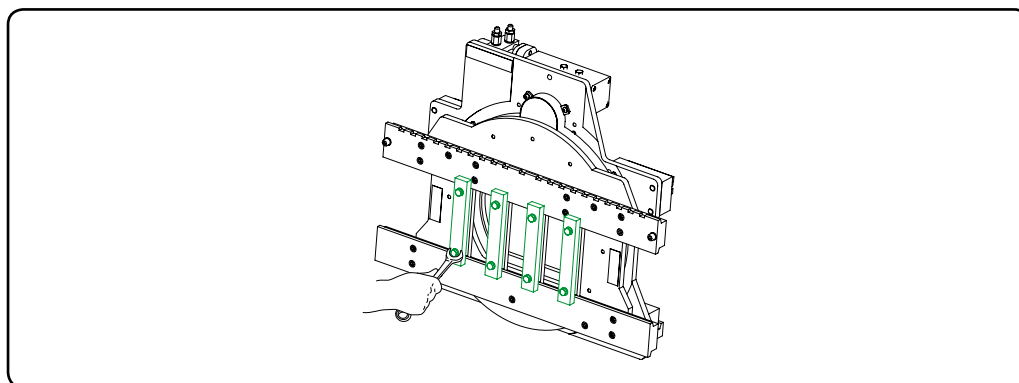
- Screw a threaded hook through the rotator plate (thread M16)
- Before installing the rotator, please take the following into consideration:
 - FEM 2: 381.0 mm (min) – 382.0 mm (max)
 - FEM 3: 476.0 mm (min) – 477.5 mm (max)
 - FEM 4: 597.0 mm (min) – 598.5 mm (max)
- Harness and raise the lift between the threaded hook and PRC bottom bar (as shown in the diagram)



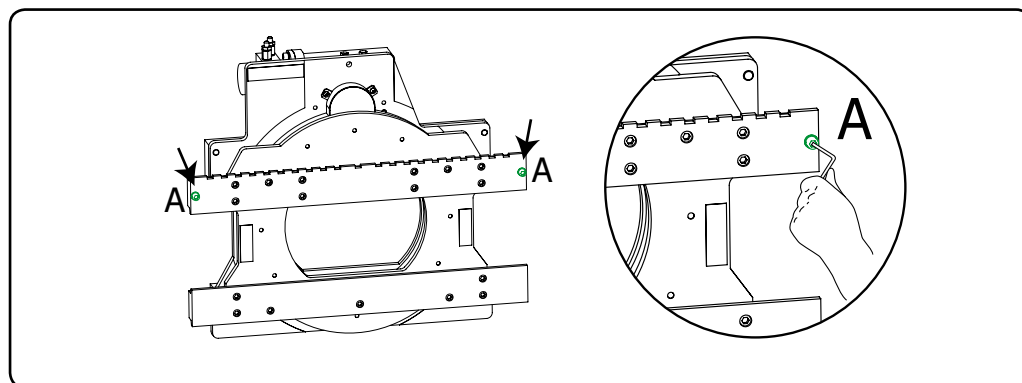
- On mounting the rotator it is necessary to insert the stop A positioned on one of the two upper jaws inside the slot B positioned on the lift truck side. Position the rotator centrally on the plate of the forklift truck.

Screw dimension	Driving torque (Nm)		
	8.8 type	10.9 type	12.9 type
M12	87	122	147
M14	138	194	235
M16	210	299	357
M20	411	578	696
M24	711	1000	-

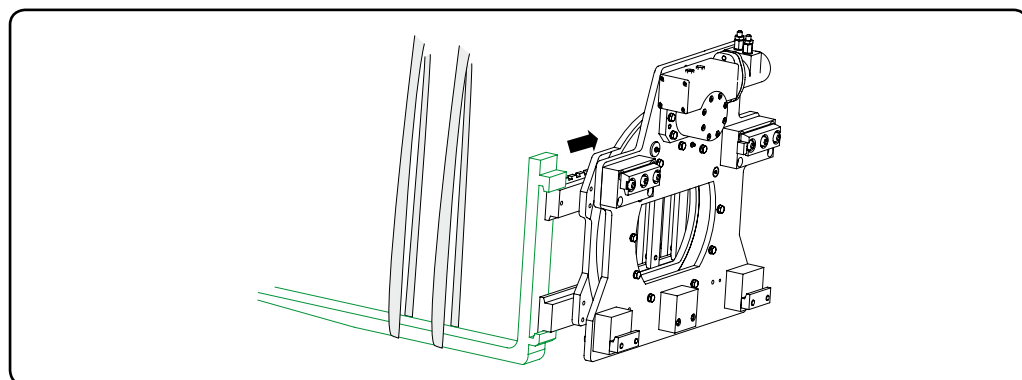
- Lift the rotator by lifting the lift truck plate and position the two lower blocking hooks, securing them with the relevant bolts.



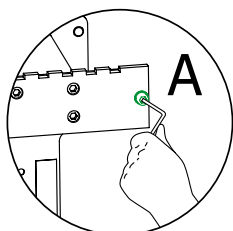
- Loosen the screws and remove the four blocks as indicated in the diagram



- Loosen and remove the two socket head screws (A) positioned on the sides of the rotator.

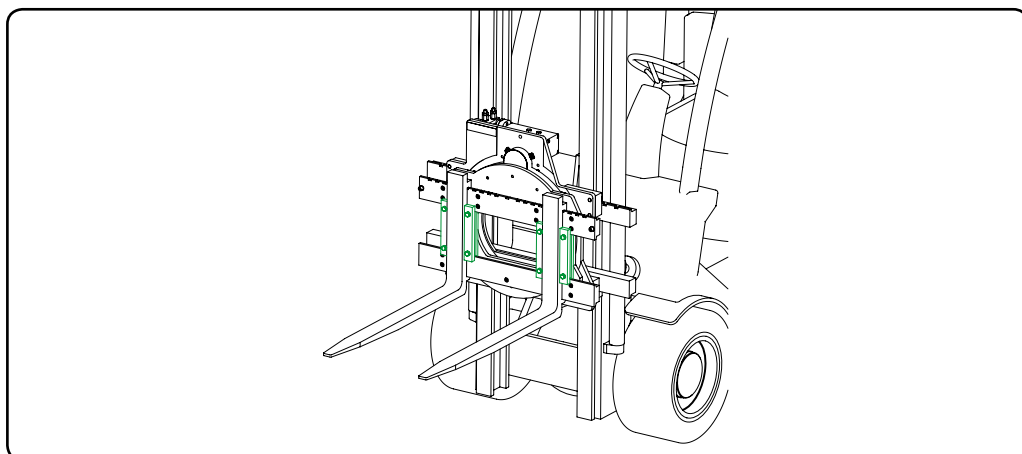


- Lift and fit the first fork from the left and the second fork from the right on to the rotator. Move the two forks inwards, centering them on the CAM System® attachment.

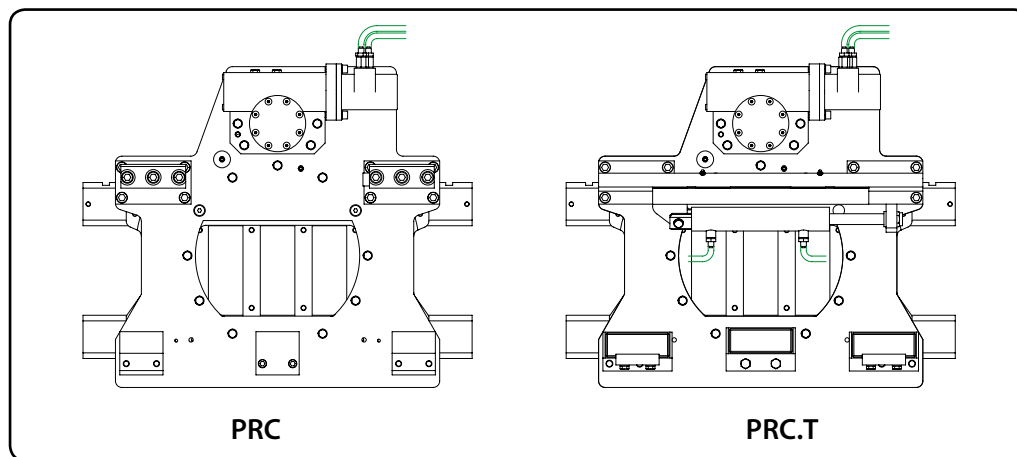


!!! Insert and secure the safety socket head screws (A) previously removed from both sides.

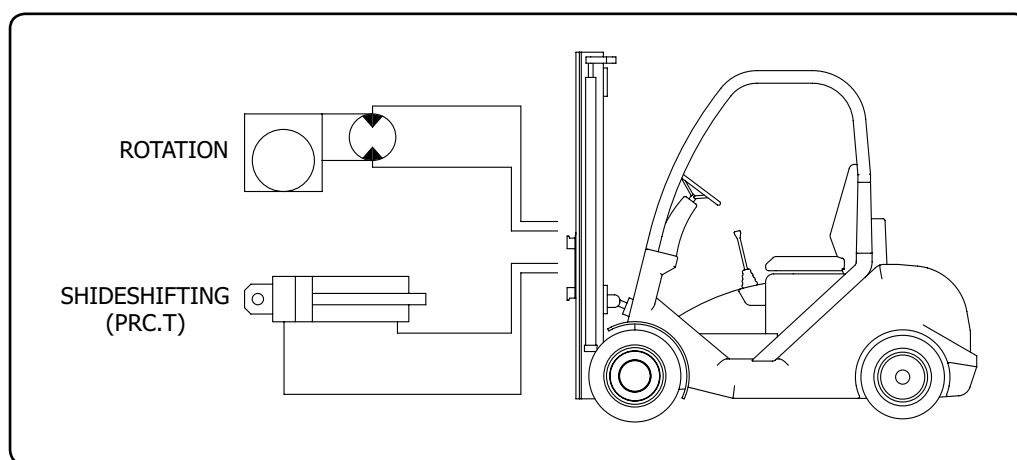
This is to fix the forks as a precaution.



- Secure the forks by inserting and fixing the previously removed safety blocks on the sides of each fork.



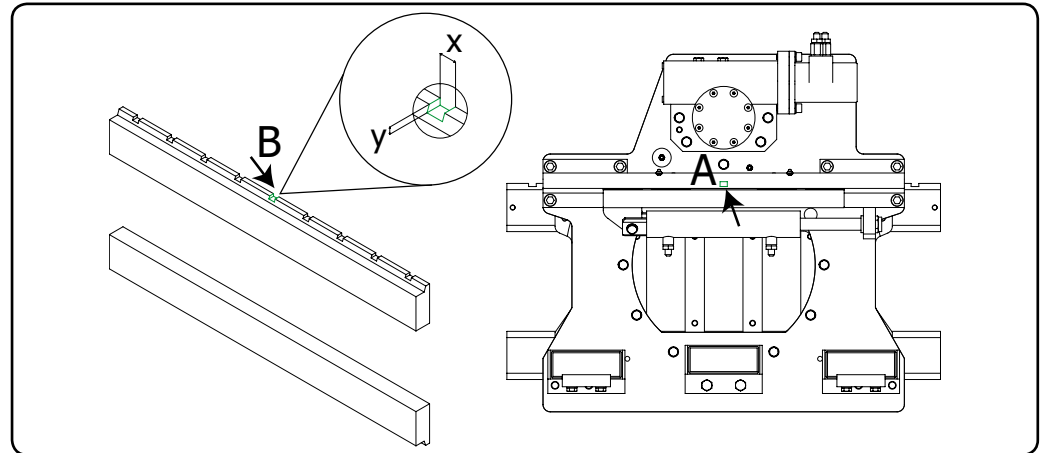
- Connect the required hydraulics (see below hydraulic circuit).



- For correct use, CAM System® rotator needs an oil flow rate of 25 l/min with a maximum pressure 180 bar.
- A flow rate less than recommended will result in a lower rotating speed.
- A flow rate greater than maximum can result in excessive heating, reduced system performance and short hydraulic system life.

3.2.2. Installation of the PRC.T rotator

- Remove the lower hooks on both sides (as described on previous pages).
- Harness and raise the lift (as described on previous pages).



- When mounting the rotating plate, stop A needs to be inserted in slot B.
- Lift the rotator by raising the plate of the lift truck and position the two lower sliding hooks, securing them with the relative bolts (as described on previous pages).
- Remove the four blocks, the two socket head screws and insert the forks. Reposition the safety rods and the socket screws, make the hydraulic connections (as described on previous pages).



!!! Always test the proper and safe functioning of the forklift truck after each fitting of the CAM System® rotator.

3.3. Operation of the PRC/PRC.T rotator

3.3.1. Loading

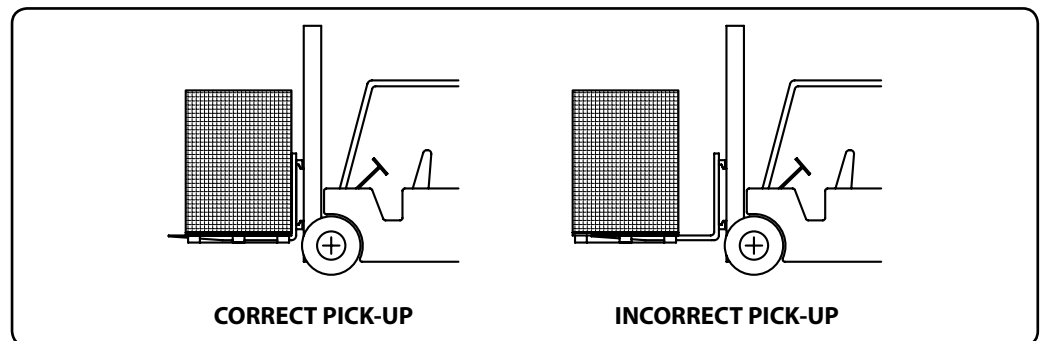
1. Before starting

First, operate the hydraulic levers to check which lever operates what function.

!!! Before using the rotator, carefully read the instructions of the lift truck manual.

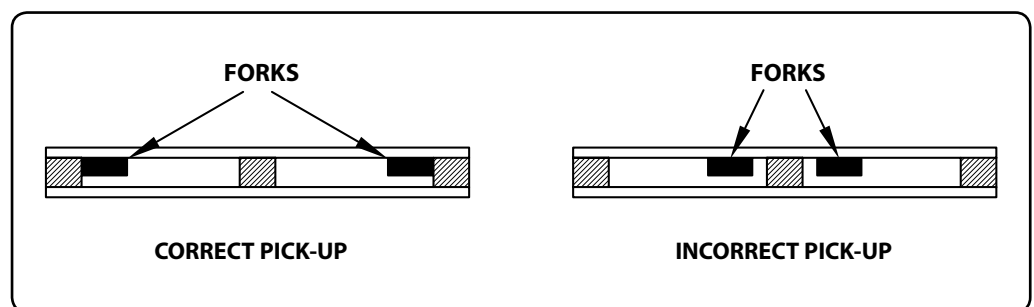
Use the rotation function several times with no load to check if it functions normally and smoothly.

Check the hoses, fittings and rotation drive for leaks (and cylinder for PRC.T).



2. Loading

- Make sure the load is positioned against the carriage and not towards the tips of the forks.
- Position the load as close to the centre as possible to reduce the torque requirements and increase truck stability.



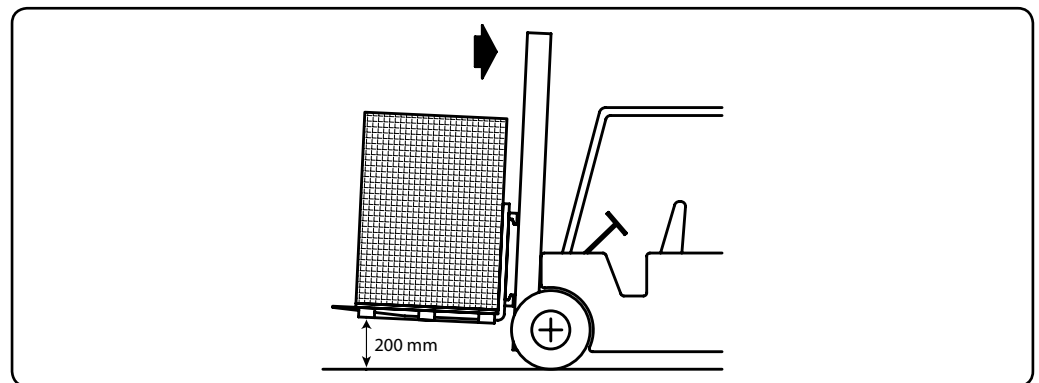
- Distance the forks inside the pallets.



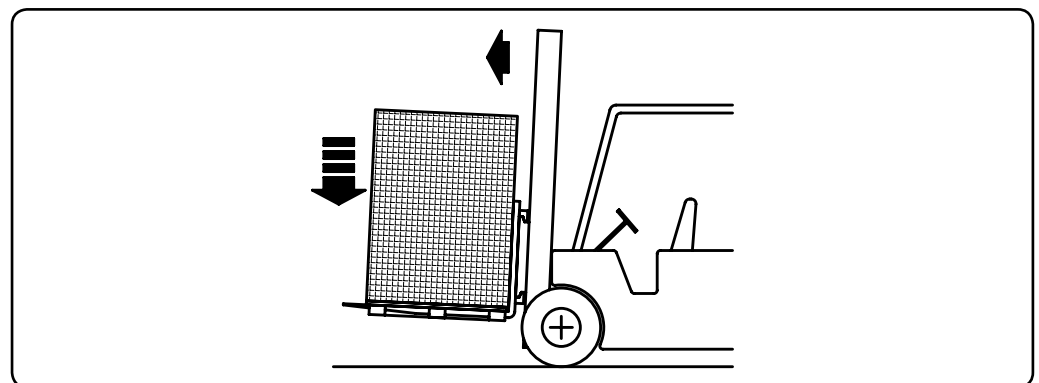
Always centre the forks after lifting the load (provided that a sideshifter is present).

3.3.2. Load handling

- Do not drive with a non-centered load (shifted towards the left or right).
- Make sure that the load cannot move or fall, thus causing accidents.
- Do not lift the load, take into account the height of the working environment.
- Make sure that you have a clear view of the shop floor. Fit extra rearview equipment if necessary.



- Before driving the lift truck, lift the load 200 mm from the ground. Travel backwards at a maximum speed of five (5) km/h (3,1 mph).
- Do not brake abruptly or make abrupt movements when travelling with a load.



- To unload, first bring the upright to a vertical position and then slowly lower the forks.

4. Maintenance

In the event of problems or if operations are to be undertaken that are not specifically described in this manual, please consult CAM S.r.l. or your dealer.



Before carrying out maintenance on the grippers remove the key from the control panel of the truck to avoid any accidental movement. Apply the handbrake and operate the lever to eliminate hydraulic pressure.

For safety reasons, unauthorized adjustments or modifications to the CAM System® attachment are prohibited and will void the CAM S.r.l. warranty.

After completing any service procedure, always test the CAM System® rotator through five complete cycles.

A CAM System® attachment that has been dropped cannot be used unless it has undergone a thorough inspection for damage. Only use CAM System® attachments that do not present any damage.

Only clean the CAM System® attachment with a cloth dampened in a soapy solution. Do not use solvents, petrol, strong detergents etc. If the CAM System® attachment is heavily soiled, the use of a pressure cleaner is only permitted providing that it is set to a maximum of 200 bar.

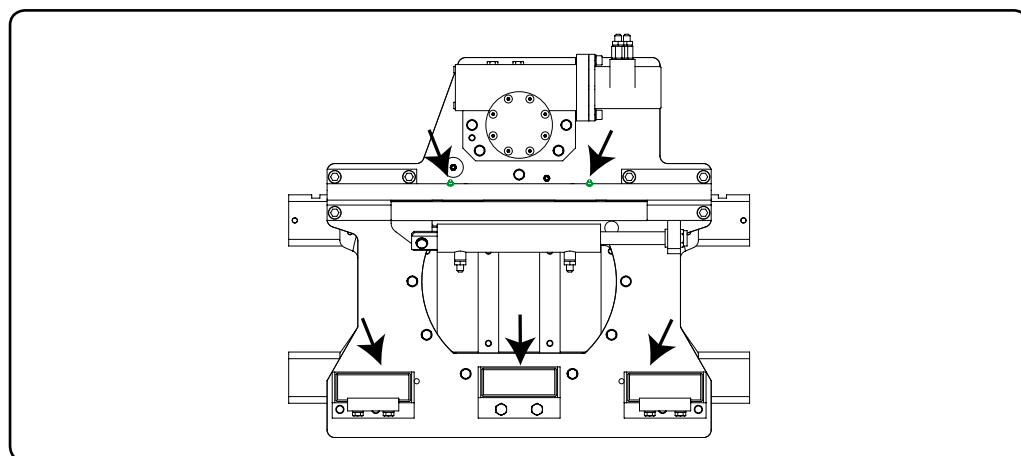
All warning symbols and labels should remain legible at all times. Only clean the safety indicators with a cloth dampened in a soapy solution. Do not use solvents, petrol, strong detergents etc.

Replace damaged and/or illegible markings, stickers or decals

Every 100 hours

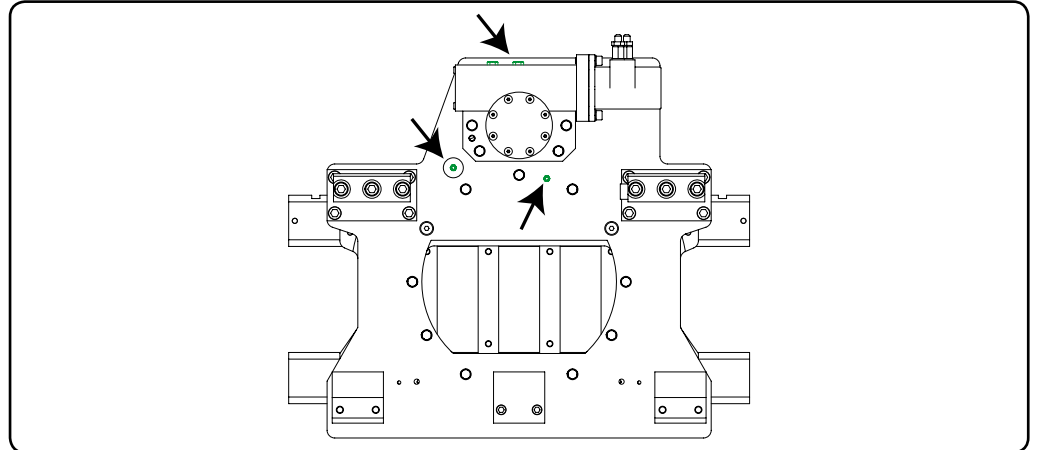
- Check for loose or missing bolts, worn or damaged hoses, and hydraulic leaks.
- Check the truck attachment hooks.
- Check decals and nameplate for legibility.

Every 200 hours



- Lubricate upper and lower side shifter bearings with grease type EP2 or equivalent (version PRC.T)
- Check that screws/bolts respect the driving torque indicated in the previous table

Every 500 hours



- Lubricate the bearing ball race and gear (as indicated in the diagram above) with grease type EP2 or equivalent. Rotate 90° and grease in each position.
- Check the integrity of the felt strip positioned between bearing and front plate.
- Check rotator drive gearcase lubricant level:
Lubricant should be filled up to the end cover level hole. If necessary, add lubricant through the end cover hole. From models PRC8D up to PRC55D, use oil type EP220, for model PRC70D, use grease type EP00. Replace plug

Every 2000 hours (version PRC.T)

- Check the wear of the jack seals and replace them if necessary.

5. Storage

Forklifts fitted with an interchangeable CAM System® attachment must be parked in a specially designated place.

Store the CAM System® attachment in a dry, frost-free area. Lubricate metal parts with an anti-corrosive agent.

Deposit the CAM System® attachment on the floor when not in use so that it cannot tip over.

6. Transport

Move the CAM System® attachment only when it is fitted to the fork carriage. Never try to move the CAM System® attachment by hand.

7. Disposal

Should you decide to scrap the CAM System® attachment, please make sure it is disposed of in an adequate scrap yard which is in compliance with current regulations.

Take any oil residues to specialised centres.

Before proceeding, please separate the rubber or plastic parts from the rest of the material.

Parts exclusively made of plastic, aluminium or steel may be recycled if collected by the special disposal centres.



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