

# Fork Positioner

**RAVAS**



**User manual**



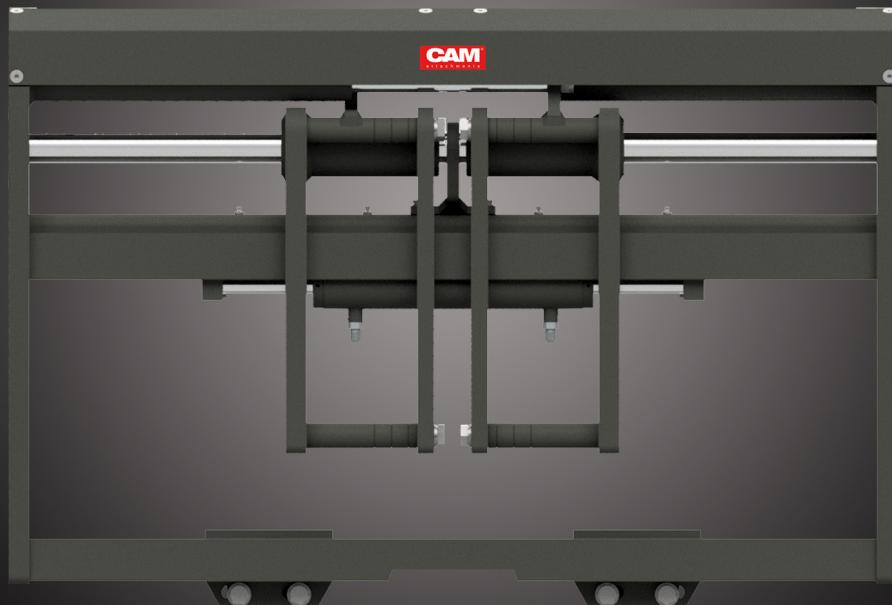


# Operating Manual

Fork Positioner

PL & PL-T series

Flexibility & experience



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CS	Czech	Tento návod najdete ve svém jazyce prostřednictvím odkazu níže.
DA	Danish	Du kan finde denne vejledning på dit sprog via nedenstående link.
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EL	Greek	Μπορείτε να βρείτε αυτό το εγχειρίδιο στη γλώσσα σας μέσω του παρακάτω συνδέσμου.
EN	English	You can find this manual in your language via below link.
ES	Spanish	Encontrarás este manual en tu propio idioma a través del siguiente enlace.
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HR	Croatian	Ovaj prirucnik mozete pronaci na svom jeziku putem donjeg linka.
HU	Hungarian	Ez a kézikönyv az Ön nyelvén az alábbi link alatt található.
IS	Icelandic	Hægt er að finna þessa handbók á þínu tungumáli á tenglinum hér að neðan.
IT	Italian	Cliccando sul link sottostante troverai il manuale nella tua lingua.
LT	Lithuanian	Šį vadovlėlį savo kalba rasite spustelėję žemiau esančią nuorodą.
LV	Latvian	Rokasgrāmatu latviešu valodā Jūs varat atrast izmantojot zemāk esošo saiti.
MT	Maltese	Tista'ssib dan il-manwal bil-lingwa tiegħek permezz tal-link ta' hawn taħt.
NL	Dutch	Je vindt deze handleiding in jouw taal via onderstaande link.
NO	Norwegian	Du finner denne håndboken på ditt språk via linken nedenfor.
PL	Polish	Niniejsza instrukcja obsługi dostępna jest w Twoim języku za pośrednictwem poniższego linku.
PT	Portuguese	Pode encontrar este manual no seu idioma através do link abaixo.
RO	Romanian	Puteți găsi acest manual în limba dvs. prin link-ul de mai jos.
SK	Slovak	Manuál vo vašom jazyku môžete nájsť v príloženom vysvietenom riadku.
SL	Slovenian	Ta priručnik najdete v svojem jeziku preko spodnje povezave.
SV	Swedish	Du kan hitta denna manual på ditt språk via länken nedan.
TR	Turkish	Bu kılavuzu aşağıdaki bağlantıdan kendi dilinizde bulabilirsiniz.



[www.tvh.com/PL\\_RV01](http://www.tvh.com/PL_RV01)

Thank you for using our product. For your safety and to ensure a correct operation, we would like to bring to your attention some aspects of this manual:

- This booklet supplies instructions for the correct operation and maintenance of the product. It is therefore necessary to pay the utmost attention to all of the paragraphs that illustrate the simplest and most secure way to operate and use this product.
- This booklet must be considered an integral part of the machine and must be included with the deed of sale.
- Neither this publication, nor part of it, can be reproduced without written authorisation on the part of the manufacturer.
- All of the information reported herein is based on data available at the moment of printing; the manufacturer reserves the right to carry out modifications to its own products at any moment, without notice and without incurring in any sanction. It is therefore suggested to always check for possible updates.

The person responsible for the use of the product must make sure that all of the safety rules in force in the country of its use are applied, to guarantee that the equipment is used in conformity with the use for which it is destined and to avoid any dangerous situation for the user.

The following warning signs are used in this manual to warn you for dangers and risks:



Informative, be careful.



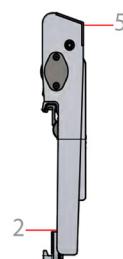
Warning, can lead to injury and damage if instructions aren't followed.



Danger, can lead to serious or fatal injury and serious damage if instructions aren't followed.

The following conventions are used in this manual:

PL & PL-T Series



N°	Convection
1	Top
2	Back
3	Left
4	Bottom
5	Front
6	Right



Unless otherwise stated, directions apply as seen from the operator's control seat when facing the attachment.

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## 1. INTRODUCTION

This manual contains all the necessary information on the installation and operation of the PL and PL-T Fork Positioners.

Some of the maintenance operations should only be carried out by professional technicians. If you require this information and the maintenance steps, please contact your dealer. Also included in this manual are a number of safety instructions to create a safe working environment.

With this equipment you can position the forks and sideshift the load (PL-T), resulting in more accurate handling and placement of the load. This makes it possible to reduce your overall handling time, reduce damage to pallets and products and increase your manoeuverability, even through tight corners.

Check your machine manual to make sure you opt for the equipment with the correct load capacity. Do not use this product for any other purposes.

Please read the manual thoroughly and observe the safety procedures before putting the unit into operation. The operator and all persons who come into contact with the equipment should read it carefully and regularly and have access to it at all times.

Keep this manual near the equipment and in a safe place for future reference. Contact your dealer for any further questions or concerns you may have.

We guarantee a long period of trouble-free operation if the unit is operated and maintained correctly.

We hope you will enjoy working with your attachment.



This equipment may be unsafe if adequate maintenance is neglected. Therefore, adequate maintenance facilities, trained personnel and procedures should be provided. Maintenance and inspection shall be performed in conformity to the following practices:

1. A scheduled planned maintenance, lubrication and inspection system should be followed (see maintenance instructions chapter 7).
2. Only qualified and authorised personnel shall be permitted to maintain, repair, adjust, and inspect the equipment.
3. Modifications and additions which affect capacity and safe operation shall not be performed by the customer or user without the manufacturer's prior written approval. Capacity, operation and maintenance plates or decals shall be changed accordingly.
4. If modifications are made without the written approval of the manufacturer, the warranty will no longer apply.

Any person in charge of putting the machine into operation, the operation itself or the maintenance of the machine is urged to carefully read and observe the following instructions. Make sure that the operators of this product are qualified and authorised to do so and are familiar with the safety instructions, making sure to follow all the procedures. Neglecting these instructions can cause injury or death.

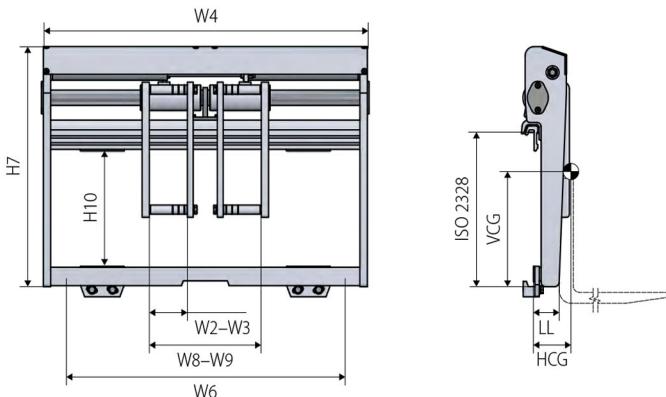
## 2. DESCRIPTION

### 2.1. Technical data

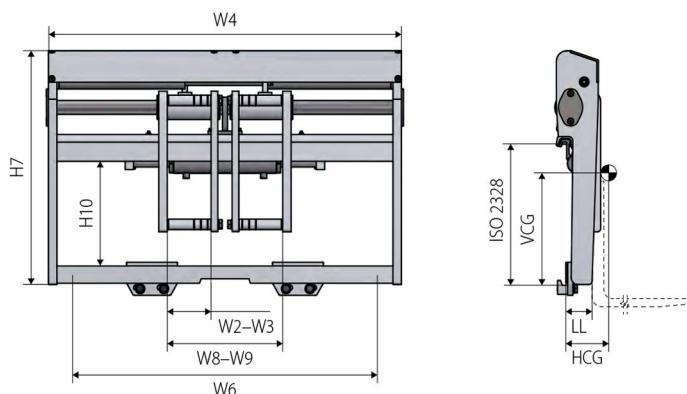


Always check the type plate for the correct information.  
A complete overview with all technical data of each product can be found in chapter '10. Annexes'.

#### PL Series



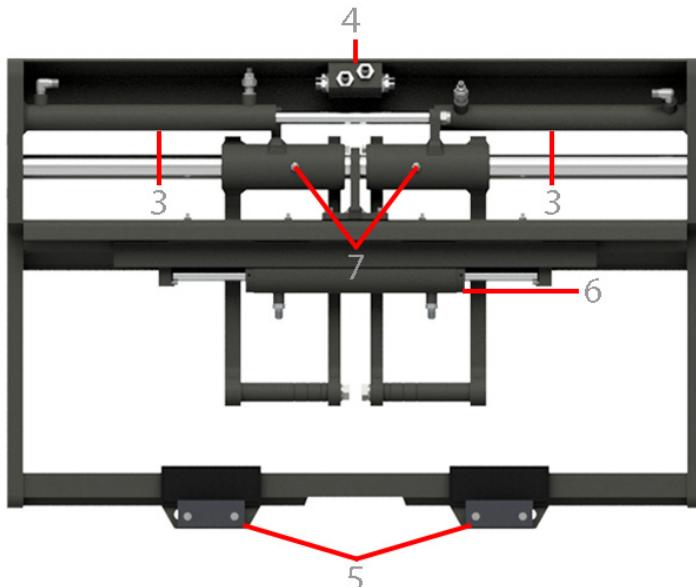
#### PL-T Series



Nº	Description	Nº	Description
<b>W2 - W3</b>	Width of forks	<b>H10</b>	Internal view space
<b>W4</b>	Frame width	<b>ISO2328</b>	FEM class
<b>W6</b>	Minimum width of fork carriage	<b>VCG</b>	Vertical centre of gravity
<b>W8 - W9</b>	Opening range	<b>HCG</b>	Horizontal centre of gravity
<b>H7</b>	Height of the equipment	<b>LL</b>	Lost load

## 2.2. Main components of the product

Nº	Component
1	Frame
2	Fork Supports
3	Fork Positioning Cylinders
4	Distribution Block
5	Hooks
6	Sideshifting Cylinder
7	Greasers



### 2.3. Placement of the decals

The safety and warning labels should be placed as described in the pictures below. See chapter 3 for the explanation of the safety warnings. If the decals are damaged or missing, replace them.

N°	Decal	Explanation	Ref
1		Brand decal	Contact your dealer
2		<ol style="list-style-type: none"> <li>1. Warning</li> <li>2. Important: carefully read the manual before using the equipment and carrying out the maintenance operations</li> <li>3. Important: risk of limb crushing</li> <li>4. Important: pressurised liquids.</li> </ol>	165TA4750
3.		Cylinder with plunger rods. Danger: Pressure supply only after complete sideshifter assembly	166TA5960



## 2.4. Type plate

1	CAM <sup>®</sup> attachments		3	4	Cam S.r.l. <a href="http://www.camattachments.com">www.camattachments.com</a> Via Sempione 3/bis Marano Ticino (NO) - ITALY				6	7	8
CATALOGUE NUMBER NO. D'IDENTIFICATION CATALOGUE NUMBER NUMERO DE REFERENCIA NUMERO DI CATALOGO				SERIAL NUMBER NO. DE SERIE SERIEN NUMMER		SERIE NUMBER NUMERO DE SERIE NUMERO DI SERIE		YEAR JAAR ANNO			
RATED CAPACITY CAPACITE NOMINALE CAPACIDAD NOMINAL NENNTRAGFÄHIGKEIT PORTATA NOMINALE		Kg/mm		HORIZONTAL CENTRE OF GRAVITY CENTRE DE GRAVITÉ HORIZONTAL CENTRO DE GRAVEDAD HORIZONTAL HORIZONTAL ZWAARTEPUNT CENTRO DE GRAVEDAD HORIZONTAL CENTRO DI GRAVITÀ ORIZZONTALE		mm		VERTICAL VERTICALE VERTICAL VERTICALE			
RECOMMENDED OPERATING PRESSURE PRESION DURANTE EL FUNCIONAMIENTO PRESIÓN OPERATIVA RECOMENDADA PRESSION D'EXERCIZIO RACCOMANDATA ANBEVOLEN WERKDRUK PRESSION D'UTILLISATION RECOMMANDÉE PRESSION D'EXERCICE RECOMMANDÉE ANBEVOLEN ARBEIT DRUCK		bar		MAXIMUM MASSIMA bbar		WEIGHT GEWICHT PESO MASSE		Kg			
DO NOT EXCEED THE LIFT TRUCK RESIDUAL CAPACITY - DE RESTCAPACITEIT VAN DE HEFTRUCK MAG NIET OVERSCHREIDEN WORDEN - DIE RESTKAPACITAT DES GABELSTAPLERS DASF 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											
2	13	12	11	5	9	10					

\* Indicates position of plate.



N°	Explanation
1	CAM attachments logo
2	Equipment capacity
3	Equipment name
4	Address
5	Horizontal centre of gravity
6	Serial number
7	CE logo
8	Year of production
9	Vertical centre of gravity
10	Thickness
11	Equipment weight
12	Maximum operating pressure
13	Recommended operating pressure

### 3. SAFETY INSTRUCTIONS

#### 3.1. Explanation of the safety decals



If the decals are damaged or missing, please replace them.

Make sure that all the safety messages are legible.

Replace damaged stickers by asking the manufacturer for new ones.

If the part to be replaced bears a sticker, ensure that a new sticker is applied to the new part.

Decal	Explanation	Reference
	<ol style="list-style-type: none"><li>1. Warning</li><li>2. Important: carefully read the manual before using the equipment and carrying out the maintenance operations</li><li>3. Important: risk of limb crushing</li><li>4. Important: pressurised liquids</li></ol>	165TA4750
	Cylinder with plunger rods. Danger: Pressure supply only after complete sideshifter assembly	166TA5960

#### 3.2. General safety instructions



- Do not operate the equipment unless you are qualified and authorised to do so.
- The person responsible for the use of the equipment must make sure that all of the safety rules in force in the country of its use are applied, to guarantee that the equipment is used in conformity with the use for which it is intended and to avoid any dangerous situation for the user.
- The operator should wear safety shoes and gloves when using or maintaining the equipment.
- People who come into contact with this equipment and apply procedures, working practices or use tools that are not described in this manual, are responsible for the safe and proper operation of the equipment.
- Never allow people to climb onto the equipment or load, or walk under it.
- Do not use the equipment to lift or transport people.
- Do not use the equipment for any other purposes than those intended.
- Never exceed the maximum allowed capacity that is indicated on the type plate.
- The safety precautions and warnings are indicated in the manual and on the equipment by means of visual messages.
- Failure to pay attention to these warning messages may jeopardise the safety of the operator with serious consequences for himself and other people.



In addition to the safety regulations described in this section, please take note of all the information provided in the manual of the lifting device onto which the equipment is to be mounted.

Failure to comply with the basic safety norms or precautions may lead to accidents during operation, maintenance or repair of the equipment.

It is often possible to avoid accidents by recognising potentially dangerous situations before they occur. The operator must be aware of potential dangers and possess the training, competence and equipment necessary to correctly carry out the work.

CAM attachments cannot under any circumstances be held responsible for accidents or damage resulting from the use of the equipment by inadequately trained personnel or if inappropriate use has been made of the same, as well as the, even partial, non-observance of the safety norms and the intervention procedures contained in the present manual and in that of your lifting device.

CAM attachments cannot envisage each possible circumstance that may result in danger. Therefore, the warnings given in the publication and appearing on the equipment are not exhaustive.

If equipment, procedures, work methods or working techniques are used that are not specifically advised by CAM attachments, it is necessary to make sure that there is no danger to the operator or other people.

## 4. TRANSPORT AND STORAGE

### 1. Transport

If you want to transport the equipment on a pallet, make sure that the attachment is securely fastened.

Safely transport the equipment by following the steps below:

1. Check the type plate to confirm the weight. Select the appropriate materials accordingly (sling, cable, hook, etc.).
2. Attach the equipment to the lifting device with the chosen lifting materials.
3. When lifting, only use equipment with sufficient capacity and ensure the load is securely fastened so that it can be lifted safely.
4. Place the equipment onto a pallet.
5. Secure the equipment onto a transport pallet with retaining bands.
6. Wrap the equipment with film to protect it from weather influences and corrosion during transport.



- Adjust your driving speed while driving over rough terrain and up and down slopes.
- Only transport the equipment in its lowest position.
- Before transporting the equipment, carefully read the instructions in the manual of the lifting device.

### 2. Storage

The equipment must always be stored in a dry, frost-free and temperature-controlled environment.

Do not store this product outside in a wet environment.

Store the equipment in a safe place and make sure it can't fall over.

Lubricate metal parts with an anti-corrosive agent.

Avoid direct sunlight.

**If the equipment is stored, you must seal the hydraulic connections against contamination and damage.**



Do not leave the truck unguarded without applying the handbrake and switching off the engine first.

## 5. ASSEMBLY AND INSTALLATION

### 5.1. Packing list

Description	Amount	Reference
Equipment	1	See chapter 10.2
Operating manual	1	168TA9449
Spare parts list	1	See chapter 10.4
CE certificate	1	See chapter 10.1

### 5.2. Safety instructions for assembly and installation of the product



- Wear safety gloves and safety shoes when assembling the equipment.
- The assembly and installation must be carried out by an expert.
- Make sure that the goods and packaging are in good condition.
- Before commissioning, carry out a risk analysis of the assembly of the CAM attachment on the forklift.
- Before using the equipment, carefully read the instructions in the manual of your lifting device.

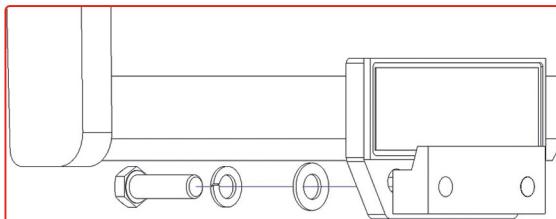
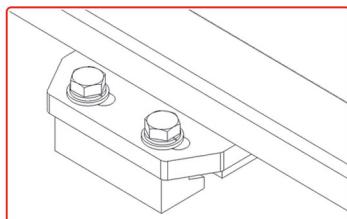
### 5.3. Assembly of the product



- Before installing the equipment, a thorough visual check must be carried out to make sure that no damage occurred during the transportation and handling stage.
- If one or more components are damaged, it is necessary to notify CAM attachments and agree on the measures to be taken.

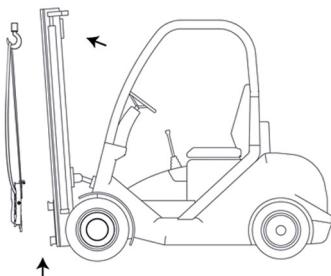
#### PL & PL-T

1. Remove the packing materials carefully.
2. Place the equipment on a flat surface.
3. Remove the lower hooks on both sides as indicated in the diagrams below.



4. Strap and lift the equipment as indicated in the figure below. The minimum capacity of the lifting device must be 800 kg. Before installing the equipment please take the following into consideration.

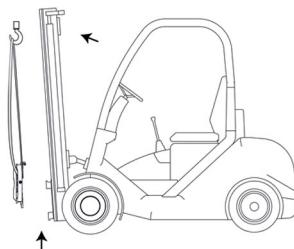
- FEM 2: 381.0 mm (min) - 382.0 mm (max)
- FEM 3: 476.0 mm (min) - 477.5 mm (max)
- FEM 4: 597.0 mm (min) - 598.5 mm (max)



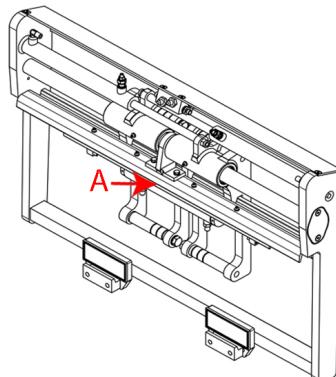
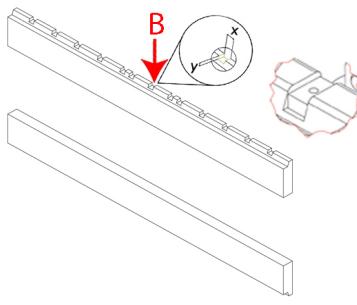
Before lifting the equipment, check the type plate to confirm the weight of the attachment. Select the appropriate materials according to the weight (slings, cables, hooks, etc.) Check the stability of the equipment before lifting.

Only use lifting devices with sufficient capacity for the load and secure the equipment adequately, so that it can be lifted safely.

5. Place the equipment parallel to the fork carriage of your lifting device.

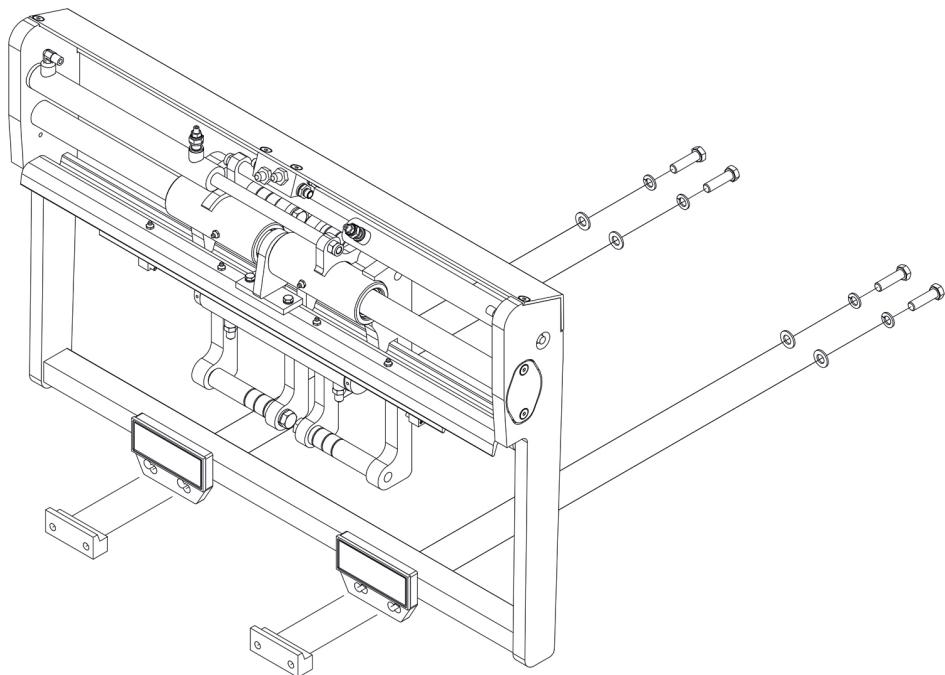


6. On mounting the positioner it is necessary to insert the stop A positioned on one of the two upper jaws inside the slot B positioned on the lift truck side.



7. Position the equipment centrally to the lifting device.
8. Lift the equipment by raising the lifting device and reposition the two lower hooks, securing them with the corresponding bolts indicated below.

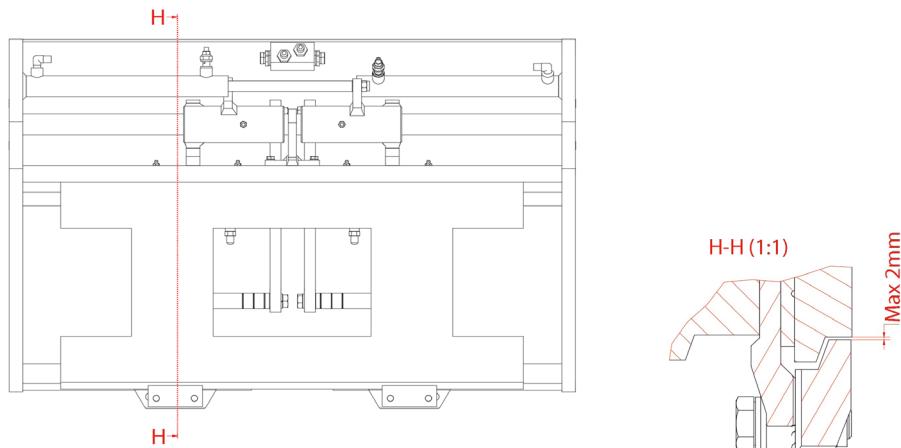
Screw dimension	Driving torque (Nm)		
	8.8 type	10.9 type	12.9 type
M12	85	120	140
M14	130	190	235
M16	200	300	350
M20	400	570	690
M24	700	1000	–



## 9. Check the hooks clearance



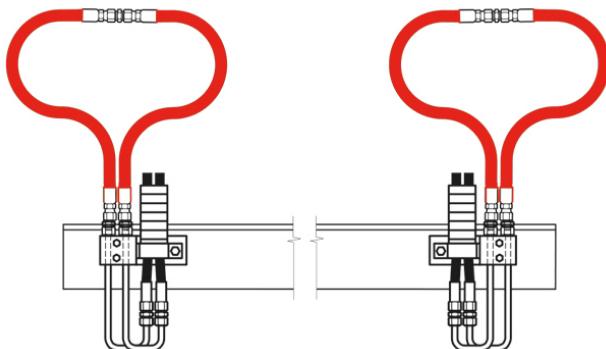
- As indicated in the diagram below, the hooks clearance should be no more than 2mm. Using a tape measure or rule ensure that the distance is less than the 2mm shown. In the event the distance exceeds 2mm the equipment must not be put in to service and you should contact your dealer for guidance.



## 10. Flush supply hoses



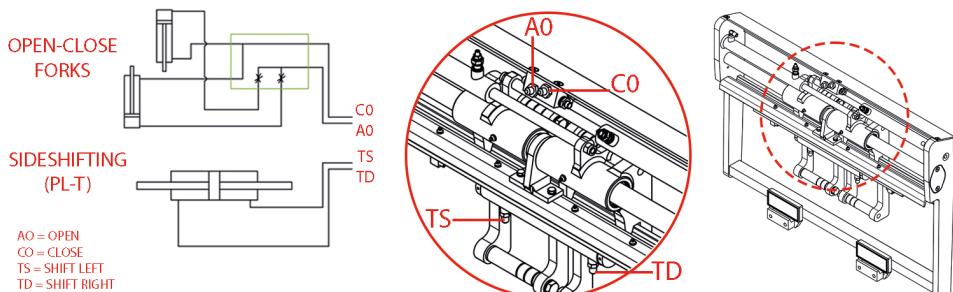
- Connect supply hoses to supply terminals and connect using union fittings.
- Operate auxilliary valves for 30 sec.
- Remove union fittings



## 11. Connect the hydraulics

**!** Please see below diagram for hydraulic circuit

- Before installing forks, connect the required hydraulics.



- To ensure correct use this equipment requires oil flow and oil pressure as indicated in the table below and as stated on the type plate.

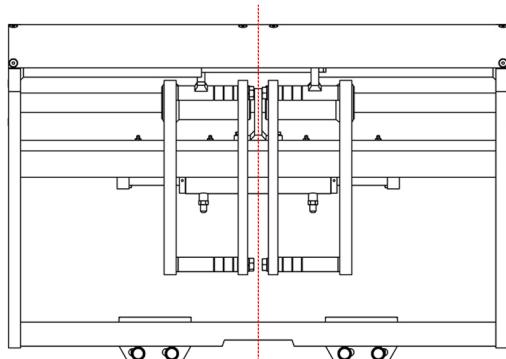
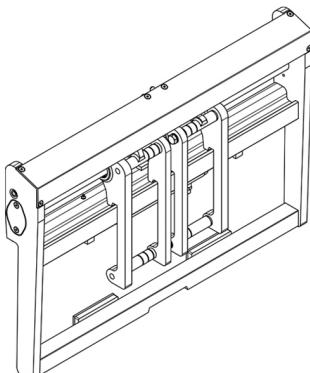
Model	Positioning						Sideshifting						Hydraulic functions
	Operating pressure			Oil flow rate			Operating pressure			Oil flow rate			
	Min	Recommended	Max	Min	Recommended	Max	Min	Recommended	Max	Min	Recommended	Max	
PL25 – PL35	80	160	220	5	16	25	-	-	-	-	-	-	1
PL50	80	160	220	8	16	30	-	-	-	-	-	-	1
PL25T – PL35T	80	160	220	5	16	25	130	160	220	6	12	18	2
PL50T	80	160	220	8	16	30	130	160	220	6	12	18	2

- A flow rate less than recommended will result in a lower operating speed.
- A flow rate greater than maximum can result in excessive heating, reduced system performance and short hydraulic system life.

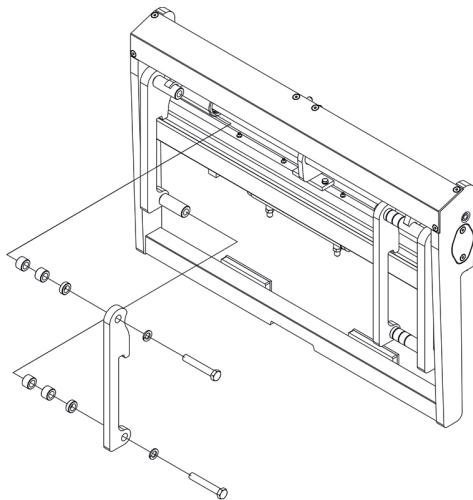
## 12. Forks mounting

**!**

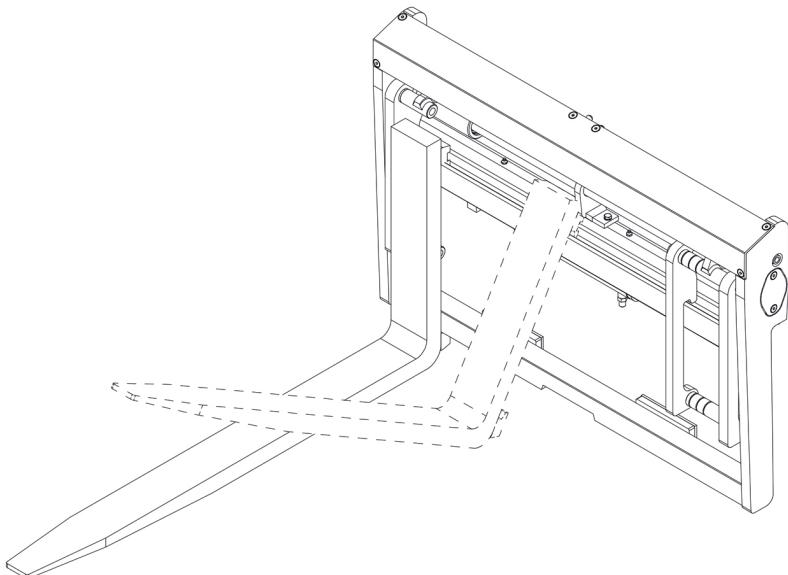
- Operate the cylinders so that the fork supports will be positioned in proximity of the centre as indicated in the diagram below.



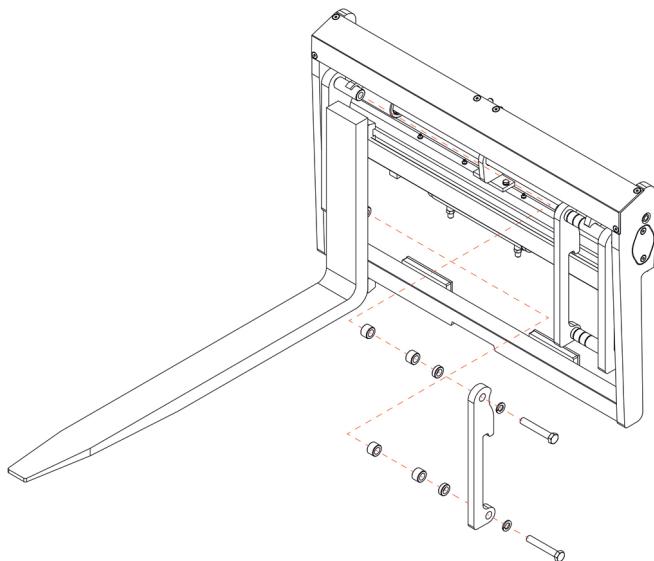
- Uninstall the "shoulders" of the fork pockets as indicated in the diagram below.



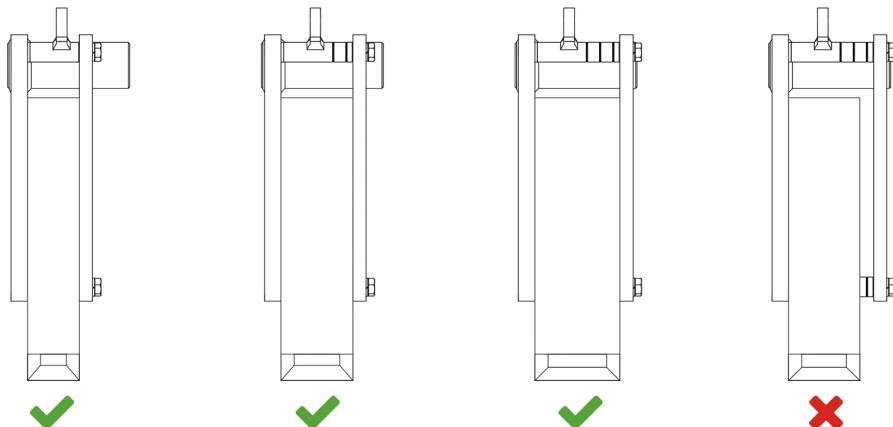
- Fit forks on PL as indicated in the diagram below.



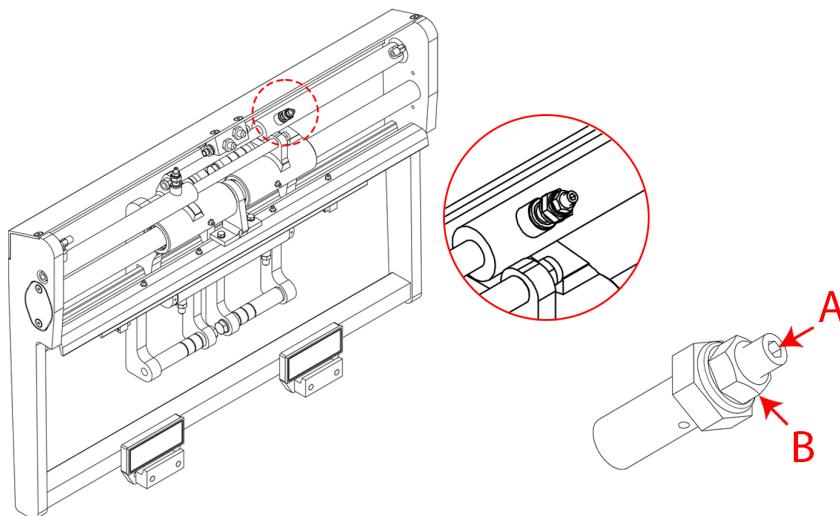
- Reinstall the "shoulders" of the fork pockets as indicated in the diagram below.



- The PL attachment has the ability to accommodate forks with different width. Add shims for wider forks, remove shims for narrower forks.



13. Cylinder speed adjustment.



Referring to the figure above, to adjust the cylinder speed slightly, do the following.

NOTE: The example shown in the picture refers to the regulation of the right cylinder, but the procedure is the same for both cylinders.

- Unscrew slightly the nut (B) to unlock the pin (A). A small loss of oil may occur.
- Screw the pin to decrease the cylinder slide speed, unscrew the pin to increase cylinder slide speed.
- Screw the nut to lock the pin.

14. Synchronism regulation.



- Unscrew slightly the nuts (B) on both L and R flow regulators.
- Fully unscrew the pins (A) on both L and R flow regulators.
- Operate at least five open and close cycles and check which fork operates faster.
- Screw the pin (A) max  $\frac{1}{4}$  round at a time on the faster fork and operate at least another five open and close cycles whilst checking for improved synchronization.

15. Bleed the hydraulic system.



- Start the lifting device.
- Inspect the hydraulic circuit for any leaks.
- Operate five complete cycles opening and closing the pockets.
- Operate five complete cycles sideshifting Right and Left (PH-T).

## 6. OPERATION

### 6.1. Safety instructions for operating the product



- A damaged or malfunctioning machine must never be used. If damage or malfunctions are discovered during pre-operation inspection or function tests, the machine must be tagged and removed from service.
- The lifting device may only be operated by persons who are qualified and authorised to do so.
- Check all the parts of the equipment for rust, cracks or other damage before each use.
- Only use the equipment after completing the daily checks and verifying that the equipment is in adequate working condition.
- Only use the equipment in aisles and gangways that are wide enough for the necessary manoeuvres to be made while driving or handling the load.
- If you use the equipment outdoors, never do so in high winds as the forklift could tip over.
- Check the correct installation before you put the equipment into use.
- Define and demarcate the working area and make sure that everyone stays sufficiently clear of the lifting device working area at all times.
- Be aware of overhead clearances and obstacles.
- Never stand or work under equipment to prevent third parties from being hit by falling objects during work.
- Adjust your speed according to the terrain.
- Never lift or transport an unlocked attachment.
- Do not use if there is a risk of unexpected movement, only use the vehicle on solid surfaces.
- Only operate the equipment from the operator's seat and make sure you have a complete overview of the work activities.
- Operate only in sufficiently illuminated areas.
- When the machine is not in use, avoid unexpected movement by ensuring the machine is in a stable position.
- Do not leave the truck unguarded without lowering the load to the ground, applying the handbrake and switching off the engine first.
- Do not wear loose clothing or belts, cuffs, large sleeves, scarves, shirts or anything else that may get caught in the moving parts.
- For safety reasons, arbitrary adaptations or modifications to the equipment are prohibited.
- In the event of non-envisioned workmanship or intervention or following a procedure different to that indicated in the manual, consult CAM attachments before proceeding, in order to ascertain its feasibility.
- Transportation of non-permitted materials is forbidden.
- Not intended for use in areas at risk of explosion and fire.
- Do not lift loads on inclines or gradients.
- Make sure that the load cannot move or fall.
- Before using the equipment, carefully read the instructions in the manual of your lifting device.
- In the event of injury caused by oil escaping under pressure, immediately seek medical assistance.

## 6.2. Operating instructions

Please see chapter 7 for the maintenance schedule.



- The lifting device with attachment installed needs to be approved for use prior to commissioning.
- Be sure to obtain the manufacturer's certification concerning the residual capacity of the lifting device, after installation of the attachment.

### 6.2.1. Load lifting



Perform the daily maintenance check before each use as described in chapter 7.3. Maintenance instructions.

After lifting the load with a sideshifting attachment, always position the forks in the centre.

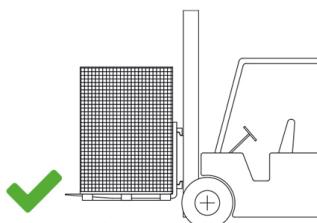
#### Before starting

First, use the hydraulic levers to check which levers operate which function.

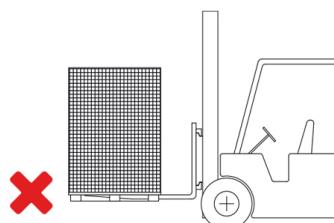
Operate all the functions several times with no load to check if they function normally and smoothly. Before lifting a load, operate the forks several times to remove air from the circuit.

#### Using the forks for loading and lifting

1. The load must be positioned against the back of the forks and not towards the tips of the lifting forks.

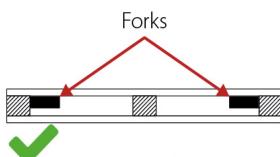


Correct pick-up

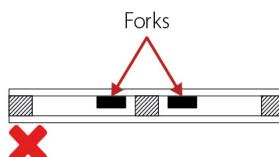


Incorrect pick-up

2. The forks must be spaced inside the pallets.



Correct pick-up

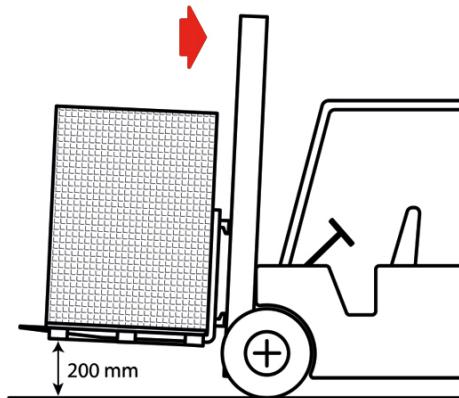


Incorrect pick-up

### 6.2.2. Load handling

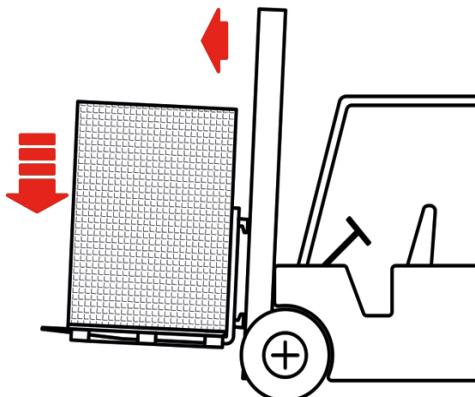
- Never drive with a non-centred load (shifted towards the left or right).
- Make sure that loads can't move freely, they may fall and cause accidents.

1. Set the forks of your lifting device in the correct position and as wide as possible for the load to be carried
2. Adjust the forks to the correct width so you can provide a more even distribution.
3. Pick up the load parallel to the floor. Always use both forks.
4. When moving your lifting device, lift the load 200 mm from the ground.  
If you are using a lift truck, make sure you tilt the mast backwards.



Correct pick-up

5. Position the centre of gravity of the load as close as possible to the centre of the equipment to minimize lateral offset. This will reduce torque requirements and increase the stability of your lifting device.
6. To unload the equipment, first bring the forks back to their start position. Bring the mast to a vertical position and then slowly lower the forks.



## 7. MAINTENANCE

### 7.1. Safety instructions for the maintenance of the product

- For maintenance, place the equipment in its lowest position to the ground. Switch off the vehicle's engine and remove the key.
- Use tools and equipment suitable for the work to be carried out.
- Do not leave any tools or equipment behind on any part of the machine.
- The operator should wear safety shoes and gloves when using or maintaining the equipment.
- Before maintaining the equipment, carefully read the instructions in the manual of your lifting device.
- Make sure you read the operating manual before carrying out maintenance.
- This manual contains all the necessary information on the installation and operation of the equipment.
- Some of the maintenance operations should only be carried out by professional technicians. If you require this information and the maintenance steps, please contact your dealer.
- Do not carry out maintenance work if the hydraulic system is pressurised (remove ignition key).
- In the event of injuries caused by escaping oil under pressure, immediately seek medical assistance.

**!** Use Loctite 242 (REF 126TA5184) on the screws to reinstall parts previously disassembled. After completing any service procedure, always test the equipment through five complete cycles (as instructed in chapter '5.3.15 'Bleed the hydraulic system').

### 7.2. Maintenance schedule

Task	8H	D	W	M	6M	Y
1. Daily maintenance check		✓				
2. Cleaning			✓			
3. Check the hydraulic circuit		✓				
4. Check the connections of the hydraulic system	✓					
5. Check bolts and screws			✓			
6. Lubrication				✓		
7. Check the wear of the seals						✓

8H: every 8 hours, D: daily, W: weekly, M: monthly, 6M: every 6 months, Y: yearly

### 7.3. Maintenance instructions

**!** In the event of problems or if any operations not specifically described in this manual must be performed, please consult CAM attachments or the retailer.

#### 1. Daily maintenance check

A daily check of the equipment can limit wear to a minimum:

- Make sure that the instruction manual is complete, legible and available for reference.
- Check the entire machine for damage, corrosion or cracks in structural components before each use. This should be done by the user.

## **2. Cleaning**

Clean as needed and use a cloth damped in a soapy solution (REF 131TA5500)\* or wipes (REF 147TA3378). Do not use solvents, petrol, strong detergents etc.

If the equipment is heavily soiled, the use of a pressure cleaner is only permitted providing that it is set to a maximum of 200 bars.

When you use a high-pressure cleaner, do not direct the jet onto the bearings and seals, otherwise, the grease will be washed out and the lifespan of the machine will be shortened.



Never use sandpaper or abrasive material on the attachment.

This can be done by the user.



\* Soap solution must be diluted by 5 to 10%. Use the soap solution to wash off the dirt and wipe off the soap residue with a cloth dipped in clean water.

## **3. Check the hydraulic circuit**

Check the hydraulic circuit for any leaks.

Replace any damaged hydraulic hoses to prevent them from rupturing and causing any accidents.



Never try and search for leaks or plug a leak by hand. Liquids under high pressure can easily penetrate skin and clothing, and may cause serious injuries.

This may only be done by a qualified service technician and according to the manufacturer's instructions.

## **4. Check the connections of the hydraulic system**

Make sure that the hydraulic system is connected with the correct hydraulic hoses.

While wearing safety gloves, check that there is no oil leakage from the pipes, fittings or cylinders.

This can be done by the user.



Never try to seal a leak yourself. This can cause injuries or damage to your skin and clothes.

Only qualified and authorised personnel is permitted to repair or maintain the product.

To prevent leaks, replace hydraulic hoses if needed, while wearing safety gloves.

This may only be done by a qualified service technician and according to the manufacturer's instructions.

## 5. Check bolts and screws

Check that all the screws are properly tightened and check the lifting device attachment hooks. In case of damage or loose bolts/screws, replace/tighten them.

This can be done by the user.

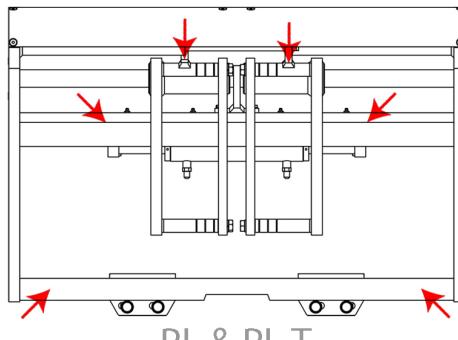


After completing any maintenance service procedure, always test the attachment through five complete cycles.

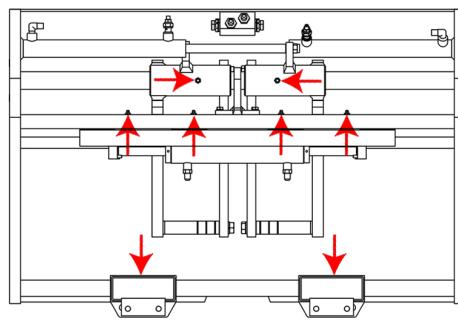
First, test without the load, then test with a load to make sure the attachment operates correctly before returning to service.

## 6. Lubrication

- Every 200 hours lubricate upper and lower frame bars with grease type EP2 (REF 165TA3769) or equivalent.
- Every 200 hours lubricate upper and lower sideshift bearings with grease type EP2 (REF 165TA3769) or equivalent (PL-T series).



PL & PL-T



PL & PL-T

This can be done by the user.



Do not use grease containing molybdenum disulphide for lubrication.

## **7. Check the wear of the seals**

Every 2000 hours check the wear of the seals and replace them if necessary.

This may only be done by a qualified service technician and according to the manufacturer's instructions.

## 8. TROUBLESHOOTING

N°	Problem	Cause	Action
1	The movement of the forks is not synchronized, one fork reaches the full stroke before the other.	The forks interfere with the extrusion.  Inadequate lubrication of upper and lower fork carriages.  Lack of adequate oil flow from the carriage.  Inverted alimentation hoses.  The syncronism is not regulated.	Check if there is enough play between the forks and the extrusion to allow sliding.  Lubricate upper and lower fork carriages as indicated in chapter 7.3.6  Check the oil flow coming from the forklift and set it as indicated in the table in chapter 5.3.11.  Refer to the image in chapter 5.3.11: check that block A has the right connections to the carriage; try to invert the two block A feed pipes with the two transfer cylinder B feed pipes.  Adjust the syncronism as indicated in chapter 5.3.14
2	The movement of the forks is slow.	Oil flow from carriage is low.  Lack of cylinder speed regulation.	Check the oil flow coming from the forklift and set it as indicated in the table in chapter 5.3.11  Regulate cylinder speed as indicated in chapter 5.3.13
3	The sideshift moves empty but not with load.	No pressure from carriage.  No oil arrives from the fork lift.	Check the pressure coming from the forklift and set it as indicated in the table in chapter 5.3.11  Check the fork lift-positioner connection pipes, try another way if available, or invert the pipes with another way.
4	Irregular operation.	Excessive wear of the sliding blocks.  Air bubbles in the system.	Replace the sliding blocks, spare parts list attached.  Check the system as indicated in chapter 5.3.15
5	Oil leaking from the cyclinders.	Worn or damaged seals.	Replace the seal kit as per the attached spare parts list.
6	Very slow translation.	Worn or damaged seals.  Lack of adequate oil flow from carriage	Replace the seal kit as per the attached spare parts list  Check the oil flow coming from the forklift and set it as indicated in the table in chapter 5.3.11
7	The positioner does not attach to the carriage plate.	Wrong lift truck carriage size.	Check the dimensions of the ISO2328 carriage.
8	Positioner damaged.	Check the integrity of the various parts.  Mechanical lock	Replace the damaged parts as per the attached spare parts list.  Check for mechanical interference and that there are no objects impeding movement.

If none of these troubleshooting suggestions or solutions were helpful, please contact your local dealer or the manufacturer.

## **9. FINAL DECOMMISSIONING AND DISPOSAL**

Final, proper decommissioning or disposal of the product must be performed in accordance with the regulations of the country in which the product is used. In particular, regulations governing the disposal of batteries, fuels and electronic and electrical systems must be observed.

Waste packaging should be sorted and put into solid dustbins according to the materials and needs to be collected by the local special environment protection bureau.

To avoid pollution, it's forbidden to throw away the waste randomly. To avoid pollution during the use of the product, the user should prepare some absorbing materials (scraps of wood or dry duster cloth) to absorb leaking fluids in time. To avoid secondary pollution to the environment, the used absorbing materials should be handed in at special departments of local authorities.

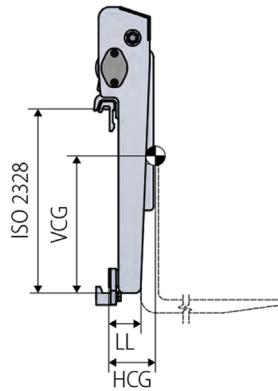
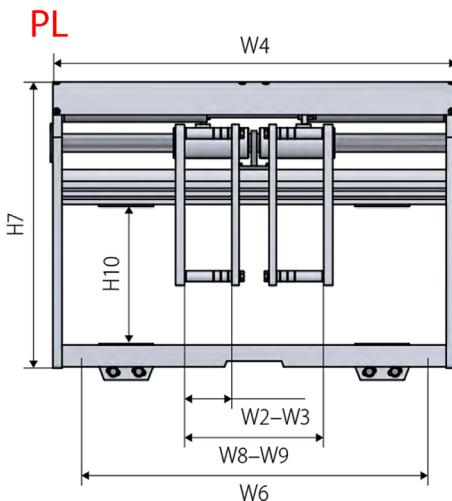


## 10.2. Technical data

### PL series

Model	Capacity kg/mm	W8-W9 mm	W4 mm	W6 mm	W2-W3 mm	H10 mm	H7 mm	LL mm	HCG mm	VCG mm	Weight kg	ISO 2328
PL25.092	2500/600	340-790	920	800	80-130	300	670	70	38	370	106	2
PL25.098	2500/600	340-850	980	800	80-130	300	670	70	38	370	109	2
PL25.104	2500/600	340-910	1040	800	80-130	300	670	70	38	370	113	2
PL25.110	2500/600	340-970	1100	800	80-130	300	670	70	38	370	118	2
PL25.115	2500/600	340-1020	1150	800	80-130	300	670	70	38	370	121	2
PL25.125	2500/600	340-1120	1250	800	80-130	300	670	70	38	370	128	2
PL25.130	2500/600	340-1170	1300	800	80-130	300	670	70	38	370	131	2
PL25.135	2500/600	340-1220	1350	950	80-130	300	670	70	38	370	130	2
PL25.140	2500/600	340-1270	1400	950	80-130	300	670	70	38	371	133	2
PL25.145	2500/600	340-1320	1450	950	80-130	300	670	70	38	371	136	2
PL35.110	3500/500	380-960	1100	900	100-130	385	780	80	42	440	162	3
PL35.115	3500/500	380-1010	1150	900	100-130	385	780	80	42	440	168	3
PL35.125	3500/500	380-1110	1250	1000	100-130	385	780	80	42	440	177	3
PL35.130	3500/500	380-1160	1300	1000	100-130	385	780	80	42	441	181	3
PL35.135	3500/500	380-1210	1350	1000	100-130	385	780	80	42	441	185	3
PL35.140	3500/500	380-1260	1400	1100	100-130	385	780	80	42	441	188	3
PL35.145	3500/500	380-1310	1450	1100	100-130	385	780	80	42	444	197	3
PL35.150	3500/500	380-1360	1500	1150	100-130	385	780	80	42	444	198	3
PL50.110	5000/500	380-960	1100	900	100-150	365	780	80	43	421	170	3
PL50.115	5000/500	380-1010	1150	900	100-150	365	780	80	43	421	176	3
PL50.125	5000/500	380-1110	1250	1000	100-150	365	780	80	43	421	188	3
PL50.130	5000/500	380-1160	1300	1000	100-150	365	780	80	43	420	193	3
PL50.135	5000/500	380-1210	1350	1000	100-150	365	780	80	43	419	197	3
PL50.140	5000/500	380-1260	1400	1100	100-150	365	780	80	43	418	200	3
PL50.145	5000/500	380-1310	1450	1100	100-150	365	780	80	43	417	205	3
PL50.150	5000/500	380-1360	1500	1150	100-150	365	780	80	43	417	208	3
PL50.155	5000/500	380-1410	1550	1250	100-150	365	780	80	43	417	213	3
PL50.160	5000/500	380-1460	1600	1250	100-150	365	780	80	43	417	218	3
PL50.165	5000/500	380-1510	1650	1300	100-150	365	780	80	43	417	225	3

Attachment not recommended for clamping between forks

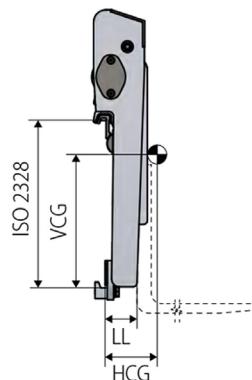
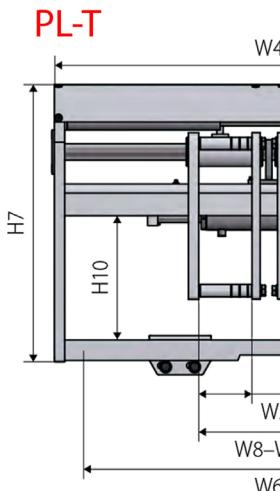


## 10.2. Technical data

### PL-T series

Model	Capacity kg/mm	W8-W9 mm	W4 mm	W6 mm	W2-W3 mm	H10 mm	H7 mm	LL mm	HCG mm	VCG mm	Weight kg	ISO 2328
PL25T.092	2500/600	340–790	920	800	80/130	300	670	70	38	369	112	2
PL25T.098	2500/600	340–850	980	800	80/130	300	670	70	38	369	115	2
PL25T.104	2500/600	340–910	1040	800	80/130	300	670	70	38	369	120	2
PL25T.110	2500/600	340–970	1100	900	80/130	300	670	70	38	369	122	2
PL25T.115	2500/600	340–1020	1150	900	80/130	300	670	70	38	369	128	2
PL25T.125	2500/600	340–1120	1250	950	80/130	300	670	70	38	369	132	2
PL25T.130	2500/600	340–1170	1300	950	80/130	300	670	70	38	369	135	2
PL25T.135	2500/600	340–1220	1350	1050	80/130	300	670	70	38	369	137	2
PL25T.140	2500/600	340–1270	1400	1050	80/130	300	670	70	38	369	140	2
PL25T.145	2500/600	340–1320	1450	1050	80/130	300	670	70	38	369	143	2
PL35T.110	3500/500	380–960	1100	900	100/130	385	780	80	42	446	173	3
PL35T.115	3500/500	380–1010	1150	900	100/130	385	780	80	42	446	177	3
PL35T.125	3500/500	380–1110	1250	1000	100/130	385	780	80	42	446	185	3
PL35T.130	3500/500	380–1160	1300	1000	100/130	385	780	80	42	447	190	3
PL35T.135	3500/500	380–1210	1350	1000	100/130	385	780	80	42	447	195	3
PL35T.140	3500/500	380–1260	1400	1100	100/130	385	780	80	42	447	198	3
PL35T.145	3500/500	380–1310	1450	1100	100/130	385	780	80	42	447	202	3
PL35T.150	3500/500	380–1360	1500	1150	100/130	385	780	80	42	447	206	3
PL50T.110	5000/500	380–960	1100	900	100/150	365	780	80	43	420	184	3
PL50T.115	5000/500	380–1010	1150	900	100/150	365	780	80	43	420	191	3
PL50T.125	5000/500	380–1110	1250	1000	100/150	365	780	80	43	420	208	3
PL50T.130	5000/500	380–1160	1300	1000	100/150	365	780	80	43	420	212	3
PL50T.135	5000/500	380–1210	1350	1000	100/150	365	780	80	43	420	215	3
PL50T.140	5000/500	380–1260	1400	1100	100/150	365	780	80	43	420	222	3
PL50T.145	5000/500	380–1310	1450	1100	100/150	365	780	80	43	422	224	3
PL50T.150	5000/500	380–1360	1500	1150	100/150	365	780	80	43	422	229	3
PL50T.155	5000/500	380–1410	1550	1250	100/150	365	780	80	43	422	235	3
PL50T.160	5000/500	380–1460	1600	1250	100/150	365	780	80	43	422	240	3
PL50T.165	5000/500	380–1510	1650	1300	100/150	365	780	80	43	422	245	3

Attachment not recommended for clamping between forks



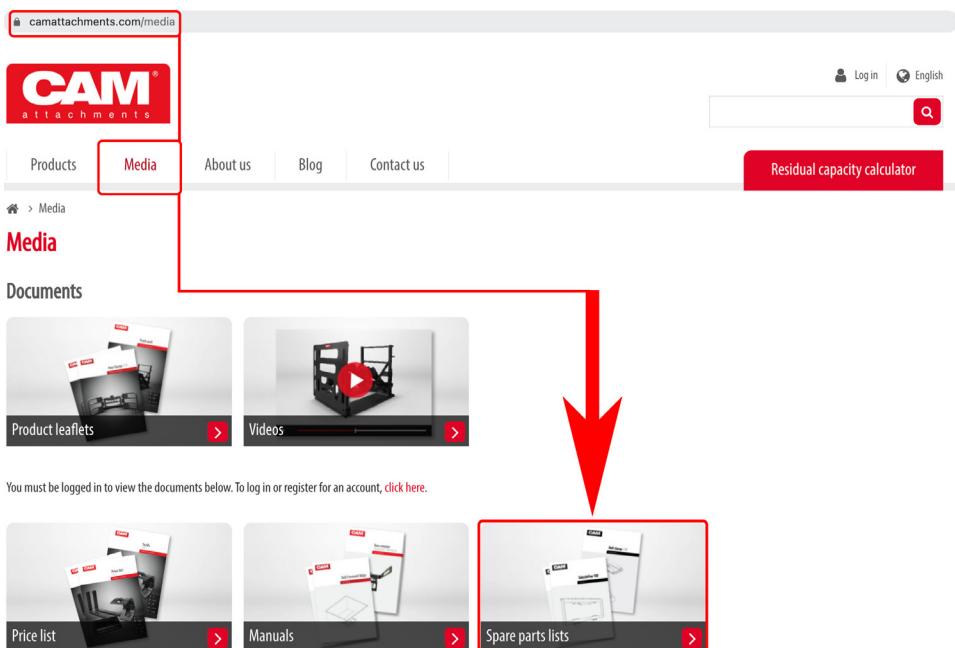
### **10.3. Hydraulic Information**

As each attachment is individual please see chapter 5.3.11 for guidance on hydraulic connection. The spare parts list included with the equipment contains an attachment specific hydraulic scheme.

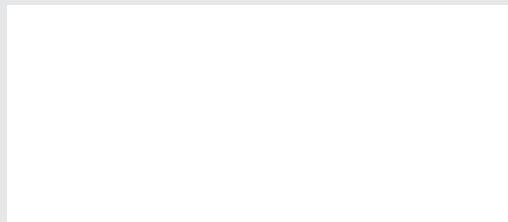
## 10.4.Spare parts

Since the parts lists have different revisions, linked to each serial number, it is always recommended to consult the CAM attachments website or to contact the supplier or dealer to obtain the correct revision.

- On the equipment you can find attached a copy of the spare parts list and a copy of the user manual.
- Spare parts list is available for download and consulting on the cam website, under "MEDIA" as detailed in the image below.



Your distributor:



Made in Italy for TVH PARTS NV.



[www.camattachments.com](http://www.camattachments.com)  
[info@camattachments.com](mailto:info@camattachments.com)

-  Agri
-  Construction
-  Industry
-  Food & beverage
-  Paper handling

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