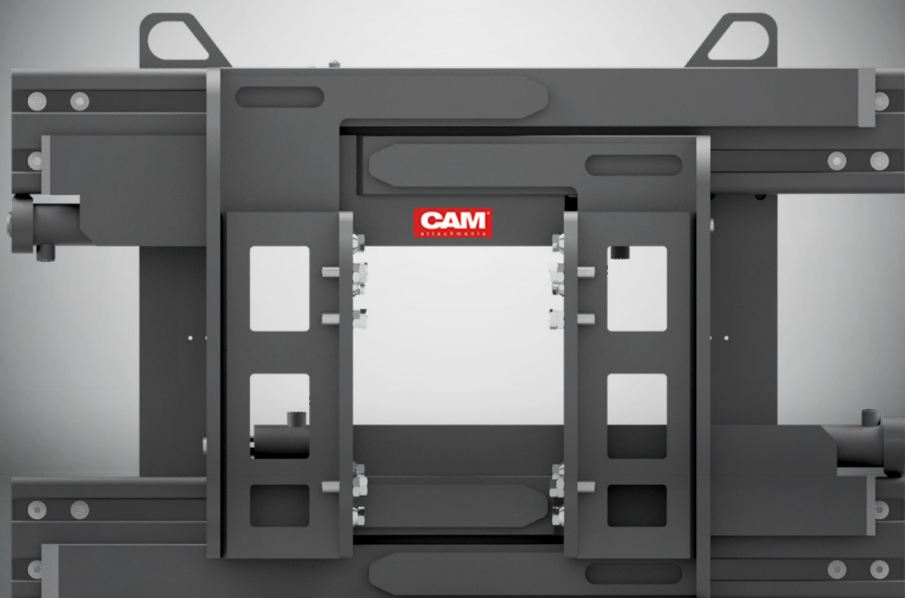




Operating Manual

Fork Positioner
WA & WA-T series

Flexibility & experience



BG	Bulgarian	Можете да намерите това ръководство на Вашия език чрез линка, посочен по – долу.
CS	Czech	Tento návod najdete ve svém jazyce prostřednictvím odkazu níže.
DA	Danish	Du kan finde denne vejledning på dit sprog via nedenstående link.
DE	German	Sie finden diese Bedienungsanleitung in Ihrer Sprache unter folgendem Link.
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 the below link.
ES	Spanish	Encontrarás este manual en tu propio idioma a través del siguiente enlace.
ET	Estonian	Oma emakeelse juhendi leiata allolevalt lingilt.
FI	Finnish	Löydät tämän manuaalin omalla kielelläsi alla olevan linkin taka.
FR	French	Vous trouverez ce manuel dans votre langue via le lien ci-dessous.
GA	Irish	Tá an lámhleabhar seo ar fáil i do theanga tríd an nasc thíos.
HR	Croatian	Ovaj priručnik 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 vadovėlį 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 priloženom vysvetlenom riadku.
SL	Slovenian	Ta priročnik 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/WA_RV01

Thank you for using our product. For your safety and to ensure correct operation, we would like to bring to your attention to the information contained within 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 instructions 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 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 with 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 situations for the user or third party.

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



Informative, be careful.



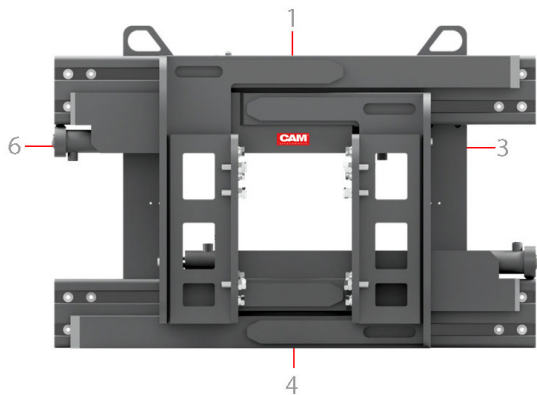
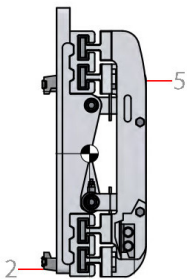
Warning, can lead to injury and damage if instructions aren't followed.



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

The following conventions are used in this manual:

WA & WA-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 WA and WA-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.

The WA series allows for positioning of the forks and sideshifting of the load (WA-T), this results in more accurate handling and placement of the load. This makes it possible to reduce your overall handling time, reduce damage to pallets or products and increase your manoeuvrability, 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.



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.

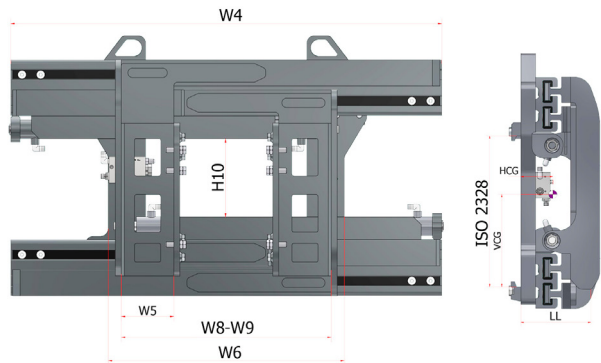
2. DESCRIPTION

2.1. Technical data

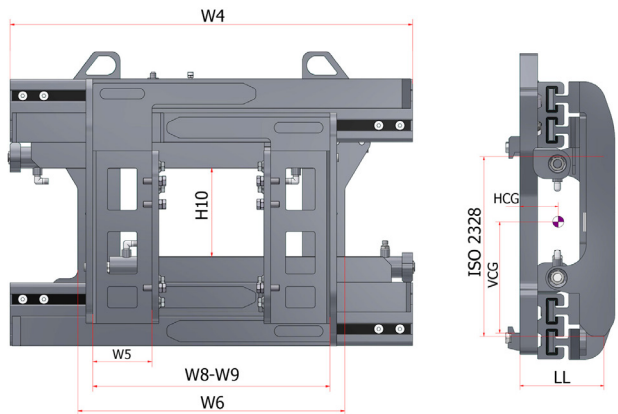


Always check the type plate for the correct information.
A complete overview with all technical data of each product can be found in chapter '10. Annexes'.

WA Series



WA-T Series



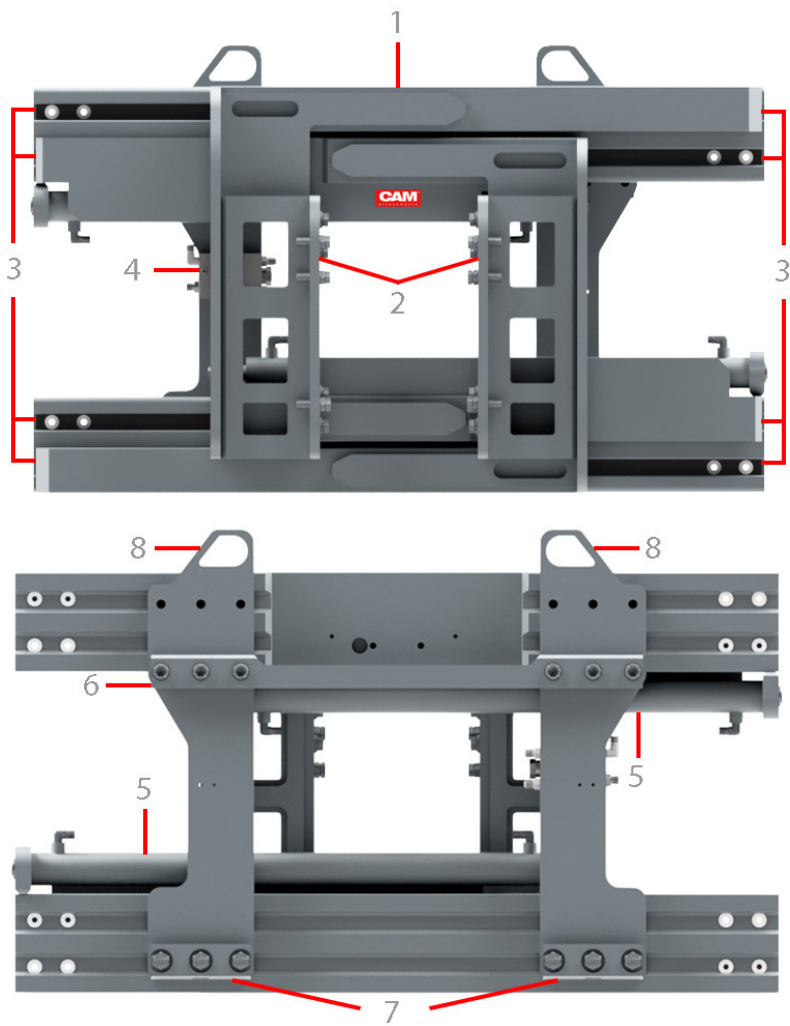
N°	Description
W4	Frame width
W5	Width of fork pocket
W6	Minimum width of lift truck carriage
W8 - W9	Opening range
H10	Internal view space

N°	Description
ISO2328	FEM class
VCG	Vertical centre of gravity
HCG	Horizontal centre of gravity
LL	Lost load

2.2. Main components of the product

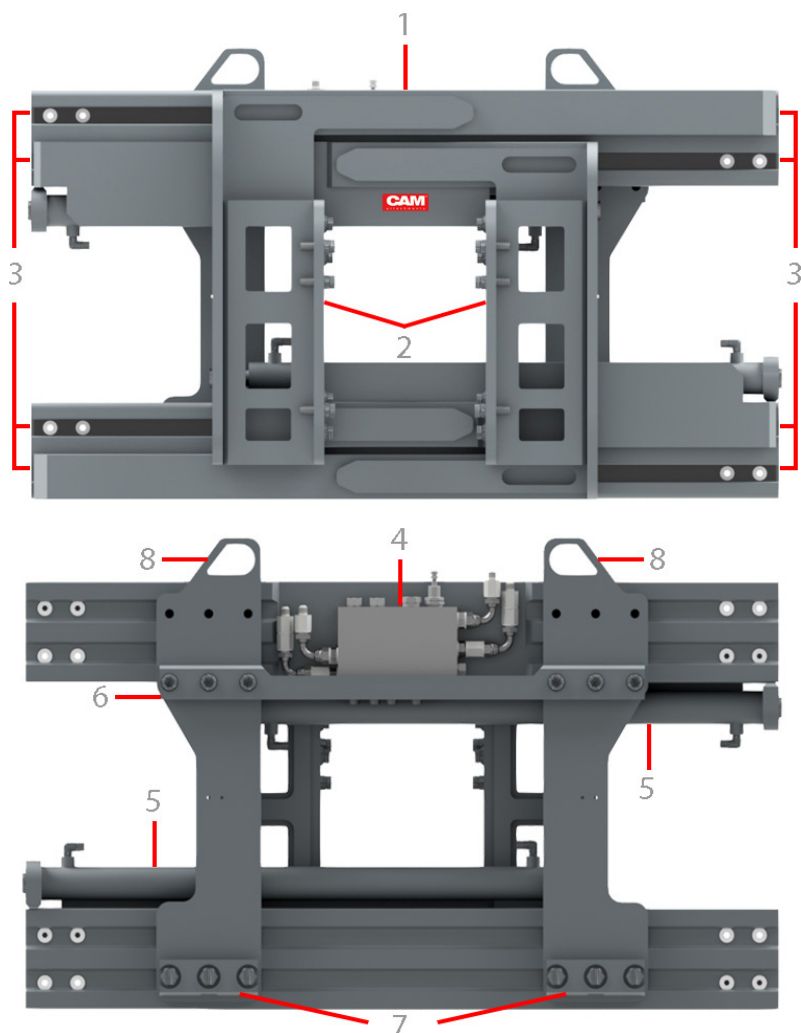
N°	Component
1	Frame
2	Fork pockets
3	Bushings
4	Flow divider block
5	Fork positioning cylinders
6	Upper hook
7	Lower hooks
8	Lifting hooks

WA



N°	Component
1	Frame
2	Fork pockets
3	Bushings
4	Valve
5	Fork positioning cylinders
6	Upper hook
7	Lower hooks
8	Lifting hooks

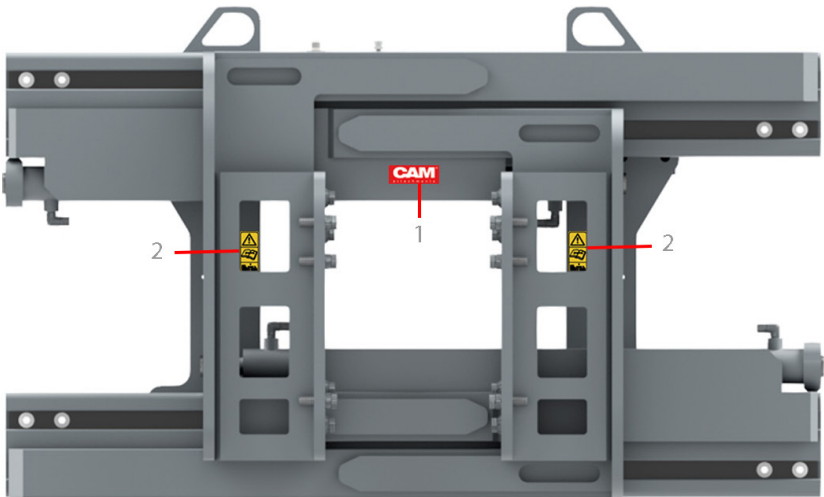
WA-T



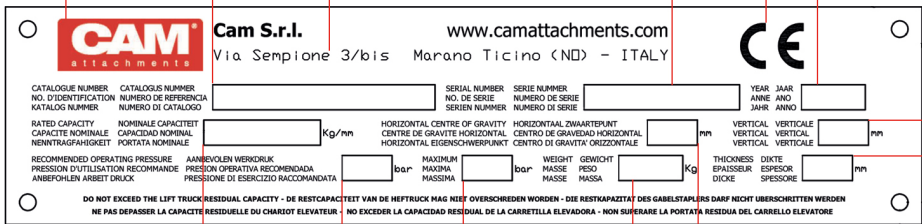
2.3. Placement of the decals

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.

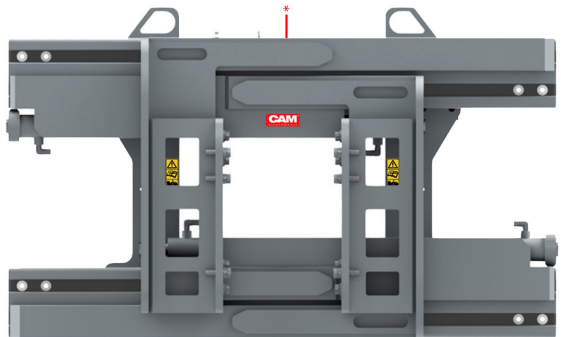
N°	Decal	Explanation	Ref
1		Brand decal	Contact your dealer
2		1. Warning 2. Important: carefully read the manual before using the equipment and carrying out the maintenance operations 3. Important: risk of limb crushing 4. Important: pressurised liquids.	165TA4750
3		Cylinder with plunger rods. Danger: Supply pressure only after complete sideshifter assembly.	166TA5960



2.4. Type plate

1	3	4	6	7	8	9	10
							
<p>DO NOT EXCEED THE LIFT TRUCK RESIDUAL CAPACITY - DE RESTCAPACITEIT VAN DE HEFTRUCK MAG NIET OVERSCHREIDEN WORDEN - DIE RESTKAPACITEIT DES GABELSTAPLERS DARF NICHT ÜBERSCHITTEN WERDEN NE PAS DÉPASSER LA CAPACITÉ RESIDUELLE DU CHARIOT ÉLEVATEUR - NO EXCEDER LA CAPACIDAD RESIDUAL DE LA CARRETILLA ELEVADORA - NON SUPERARE LA PORTATA RESIDUA DEL CARRELLO ELEVATORE</p>							
2	13	12	11	5			

* 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">1. Warning2. Important: carefully read the manual before using the equipment and carrying out the maintenance operations3. Important: risk of limb crushing4. Important: pressurised liquids	165TA4750
	Cylinder with plunger rods. Danger: Supply pressure 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 the hydraulic connections must be sealed in order to protect against contamination and damage.



Do not leave the truck unguarded without switching off the engine, applying the handbrake and removing the key.

5. ASSEMBLY AND INSTALLATION

5.1. Packing list

Description	Amount	Reference
Equipment	1	See chapter 10.2
Operating manual	1	168TA9723
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.

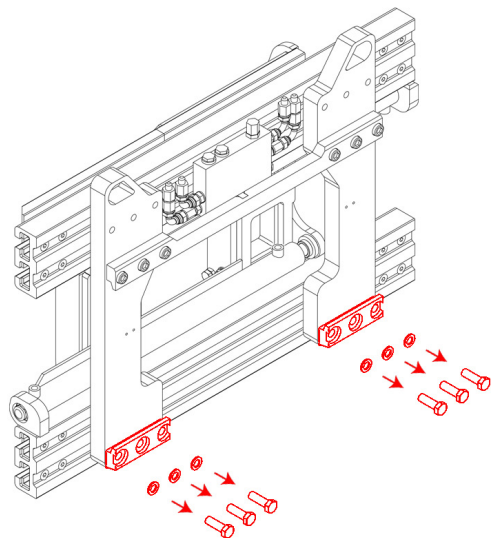
5.3. Assembly of the product



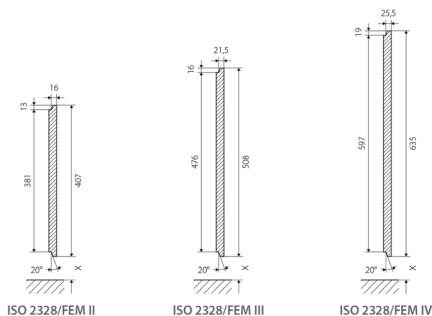
- Before installing the equipment, a thorough visual check must be carried out to make sure that no damage occurred during the transportation and handling stage.
- If one or more components are damaged, it is necessary to notify CAM attachments and agree on the measures to be taken.

WA & WA-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 diagram below.

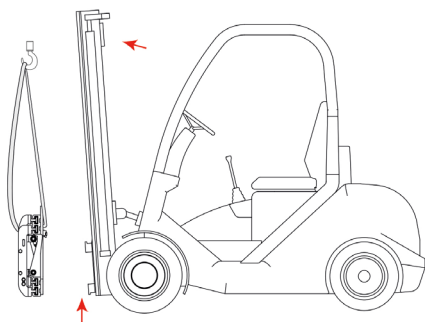


4. Strap and lift the equipment as indicated in the figure below. The minimum capacity of the lifting device must be 800 kg. Before installing the fork positioner please take the following into consideration.
 - FEM 2: 381.0 mm (min) - 382.0 mm (max)
 - FEM 3: 476.0 mm (min) - 477.5 mm (max)
 - FEM 4: 597.0 mm (min) - 598.5 mm (max)

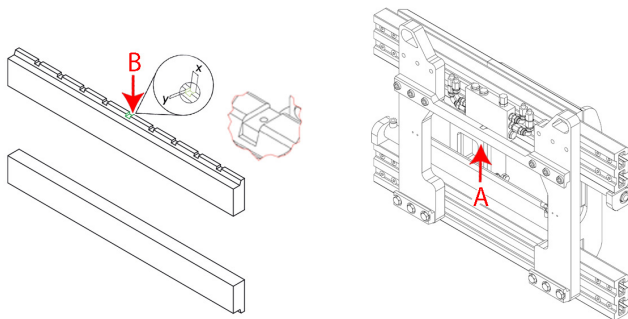


Before lifting the equipment, check the type plate to confirm the weight of the attachment. Select the appropriate materials according to the weight (slings, cables, hooks, etc.) Check the stability of the equipment before lifting. Only use lifting devices with sufficient capacity for the load and secure the equipment adequately, so that it can be lifted safely.

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

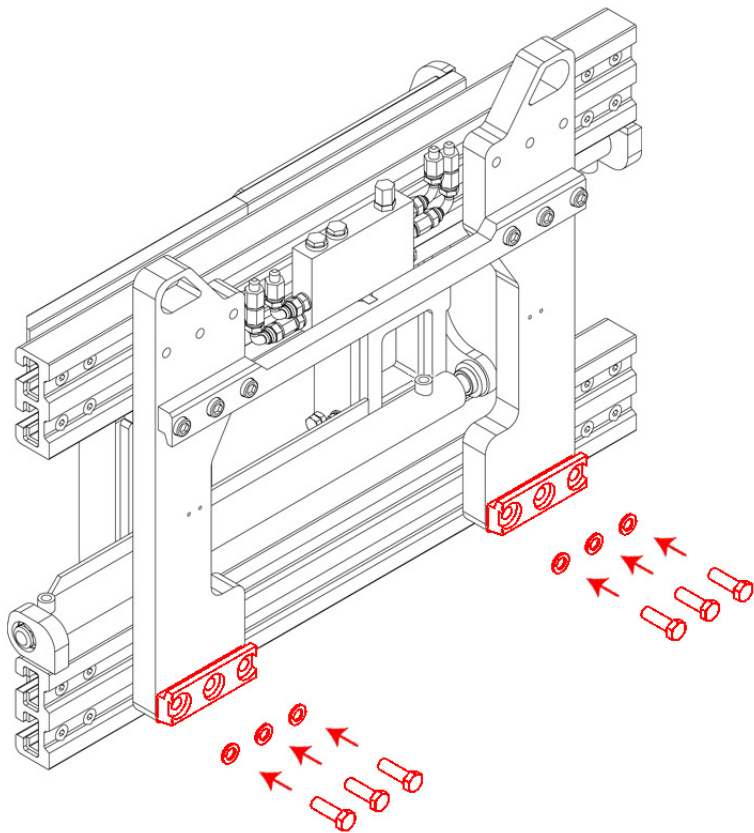


6. On mounting the equipment it is necessary to insert the stop A positioned inside the upper hook inside the slot B positioned on the lift truck side.



- 7. Position the equipment centrally to the lifting device. Engage the upper hook of the lifting device with the upper hook of the equipment.
- 8. Slowly lift the equipment by raising the lifting device and re-engage the two lower hooks, securing them with the corresponding bolts as indicated below.

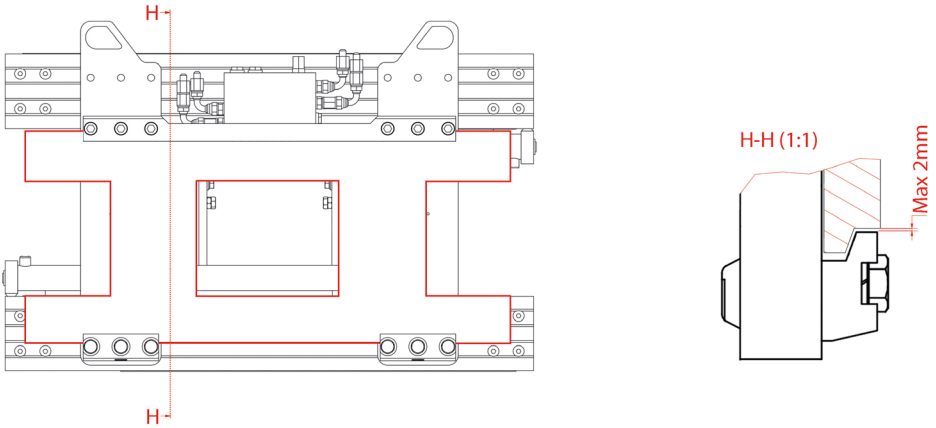
Screw dimension	Driving torque (Nm)		
	8.8 type	10.9 type	12.9 type
M12	85	120	140
M14	130	190	235
M16	200	300	350
M20	400	570	690
M24	700	1000	—



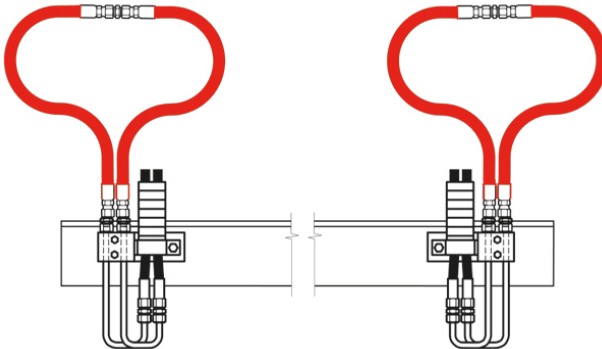
9. Check the hooks clearance



- 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

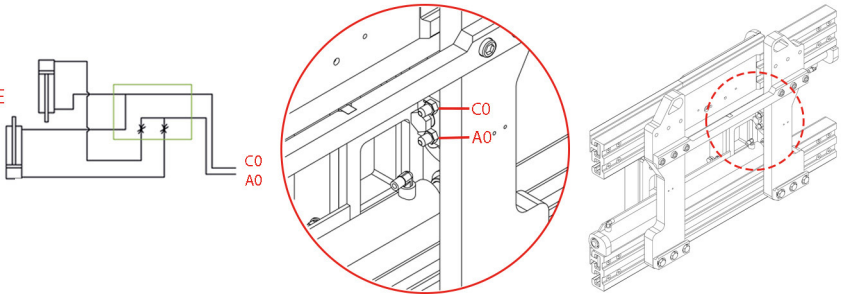
 Please see below diagram for hydraulic circuit

- Before installing forks, connect the required hydraulics. Directions apply as seen from the operator's control seat when facing the attachment.

WA

OPEN-CLOSE
FORKS

AO = OPEN
CO = CLOSE

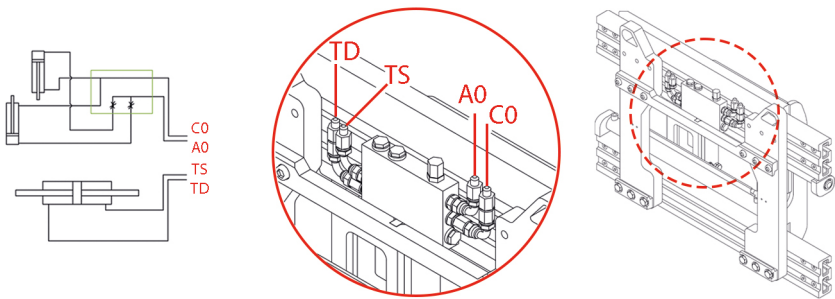


WA-T

OPEN-CLOSE
FORKS

SIDESHIFTING

AO = OPEN
CO = CLOSE
TS = SHIFT LEFT
TD = SHIFT RIGHT



- 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.

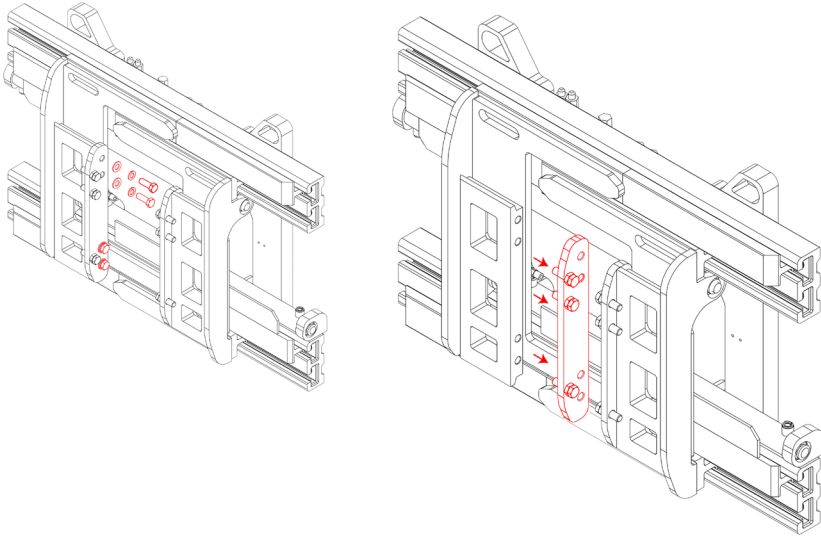
Model	Positioning						Sideshifting						Hydraulic functions
	Operating pressure			Oil flow rate			Operating pressure			Oil flow rate			
	Min	Recom- mended	Max	Min	Recom- mended	Max	Min	Recom- mended	Max	Min	Recom- mended	Max	
WA16 – WA23	80	160	220	12	20	30	-	-	-	-	-	-	1
WA30 – WA50	100	160	220	12	20	30	-	-	-	-	-	-	1
WA55 – WA90	100	160	220	15	25	40	-	-	-	-	-	-	1
WA16T – WA23T	80	160	220	12	20	30	140	160	220	15	15	25	2
WA30T – WA50T	100	160	220	12	20	30	140	160	220	15	15	25	2
WA55T – WA90T	100	160	220	15	25	40	140	160	220	15	18	30	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.

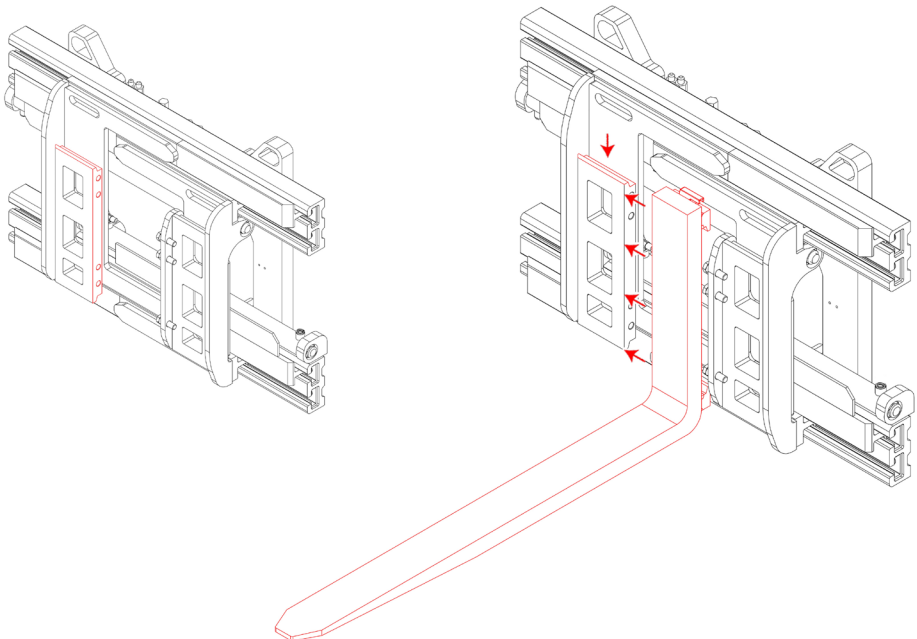
12. Forks mounting



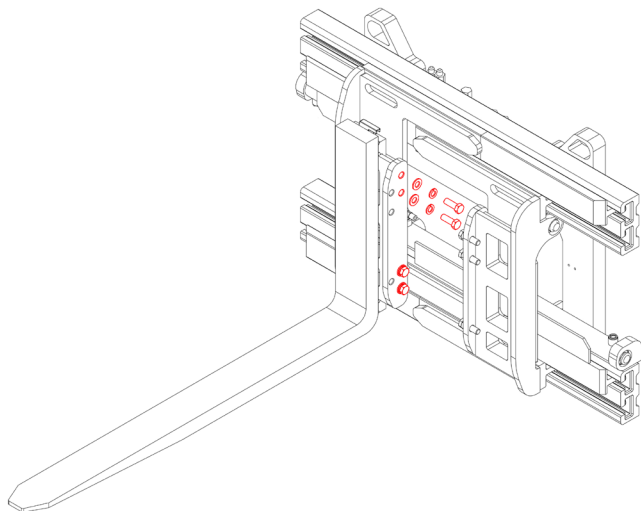
- Remove the four rear screws of the fork pocket lateral shoulder and remove it from the pocket as detailed below.



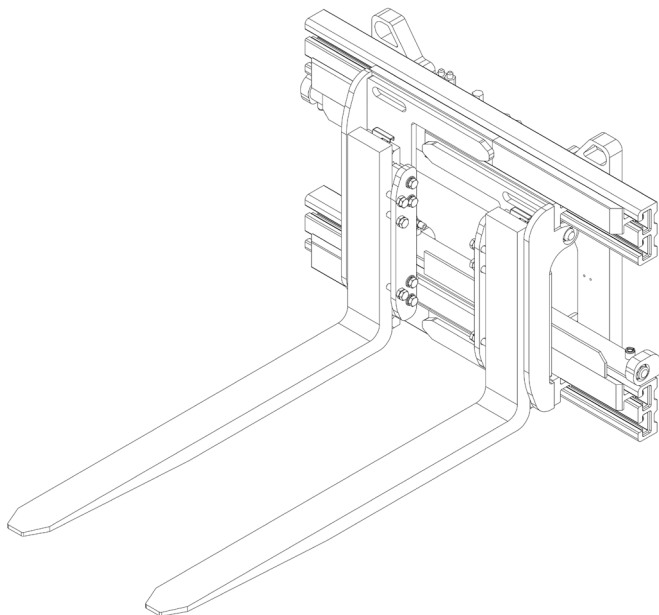
- The pocket is now fully accessible from the side. The fork should be moved in place and slid into position until securely engaged with the top hook of the fork pocket.



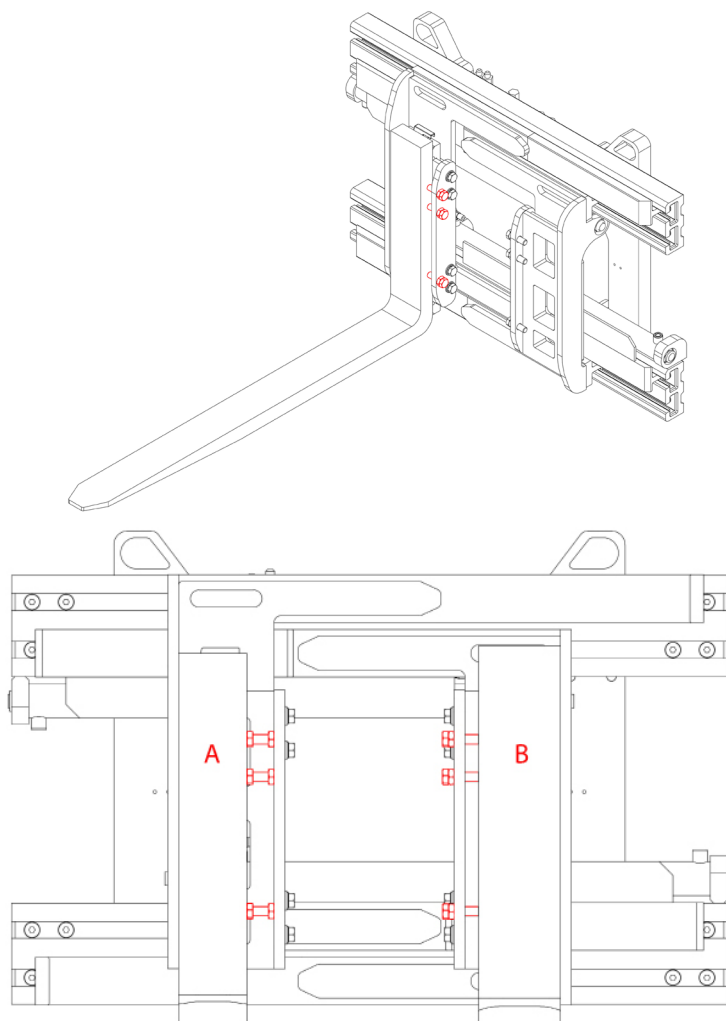
- Fit the lateral shoulder back in position and re-install the four rear screws previously removed. Ensure that they are all tight and secure.



- Repeat the process for the second fork. With both forks mounted confirm with a final check that all the necessary fixings are in place and secure.



- The WA attachment has the ability to accommodate forks with different widths. Install screws and nuts in the internal part of the pocket for narrower forks (A) and on the external part of the pocket for wider forks (B). (CAM S.r.l equips WA with screws and nuts in the internal part of the pocket).



13. Bleed the hydraulic system.

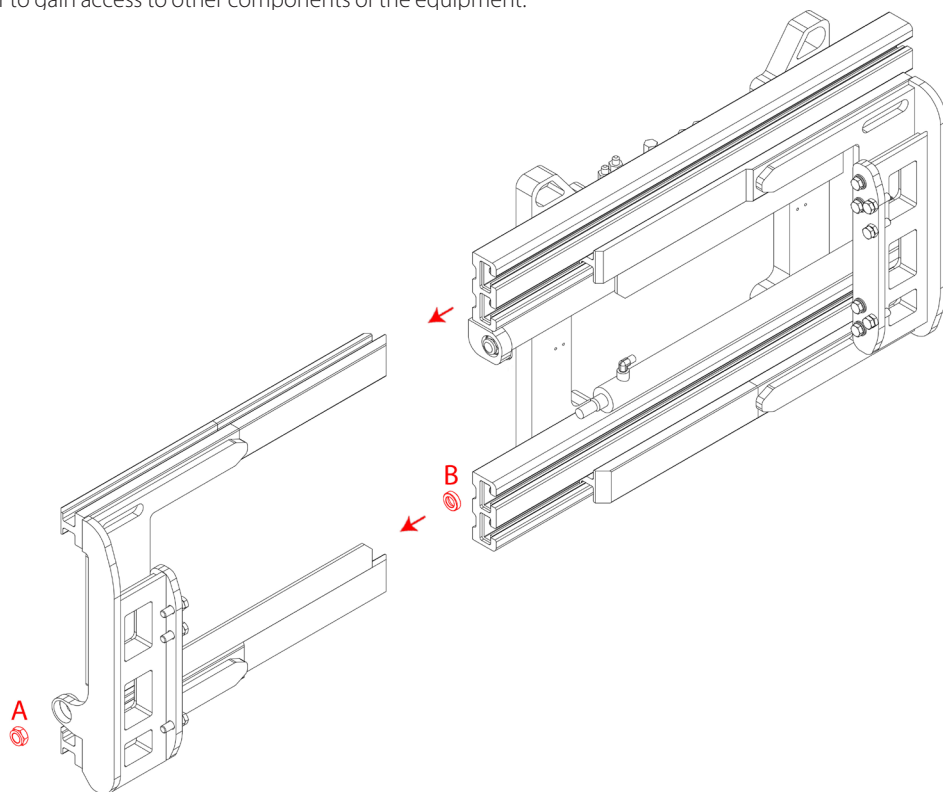
- Start the lifting device.
- Inspect the hydraulic circuit for any leaks.
- Operate five complete cycles opening and closing the pockets.
- Operate five complete cycles sideshifting Right and Left (WA-T).

14. Fork support removal.



The following procedures can be carried out with the equipment mounted on the lift truck.

Using the diagram and instructions below the fork support assembly can be removed for maintenance or to gain access to other components of the equipment.



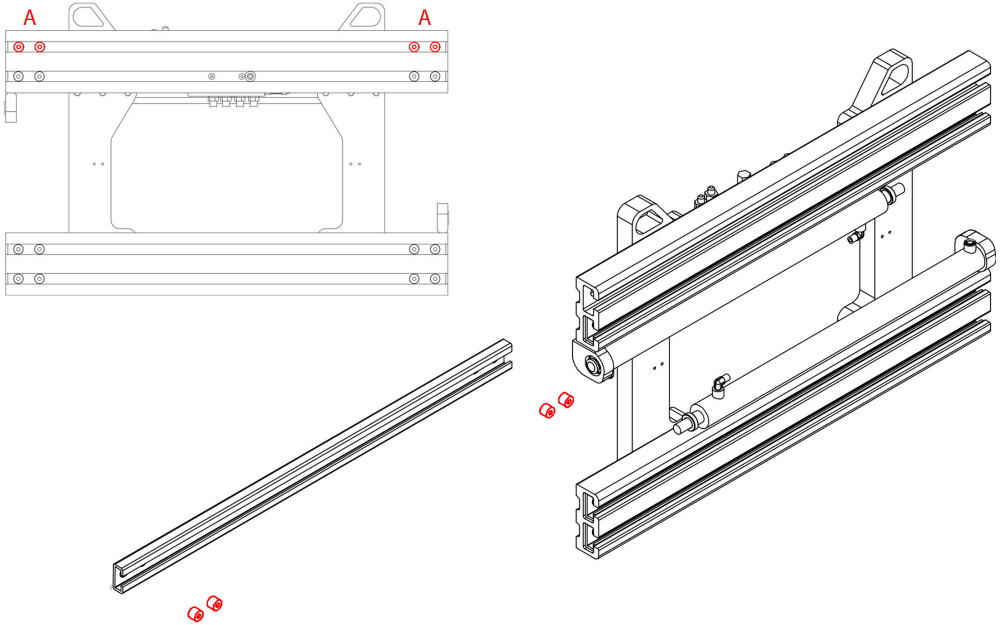
- Position the forks to frame width.
- Unscrew the nut (A) at the end of the cylinder rod to the assembly being removed.
- Slowly power the rod open to expose the rod end.
- Slide the rod end toward the cylinder and remove the washer (b) between the cylinder rod and the fork.
- Fully retract the cylinder rod.
- The fork support can now be removed from the frame.
- The procedure can be reversed for reassembly with the following to be noted;
 - Upon tightening the nut to the cylinder rod the nut should be tightened all the way and then released by a $\frac{1}{2}$ rotation in order to ensure correct regulation.
 - Prior to reassembly the upper and lower bushings should be inspected for wear. Bushing thickness should not be less than 1.5mm. If the bushings require replaced the part number is available in the spare parts list of the attachment which can be found using the guide in Chapter 10.4.
 - Bushings should be lubricated using EP2 REF 165TA3769) or equivalent.

15. Bushing removal.



The following procedures can be carried out with the equipment mounted on the lift truck.

Using the diagram and instructions below the bushings can be removed for inspection or replacement.



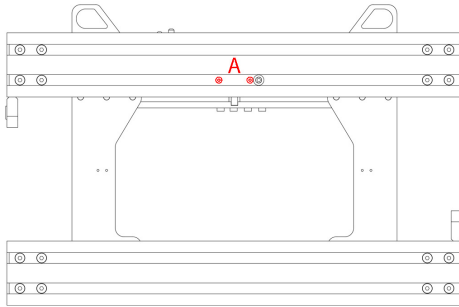
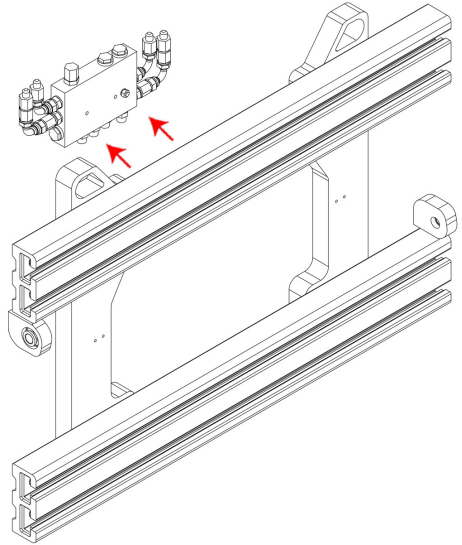
- The fork support assembly should first be removed from the frame as instructed in step 16.
- Remove the four bushing retainer screws (A) from inside the frame to release the bushing required.
- If available drive a new bushing in to one end to displace the bushing to be inspected and/or replaced. If a bushing is not available to do this then bushing should be pushed by hand from one end until worked free.
- The procedure can be reversed for reassembly with the following to be noted;
 - Bushings should be lubricated using EP2 REF 165TA3769) or equivalent.

16. Valve removal.



The following procedure can be carried out with the equipment mounted on the lift truck.

Using the diagram and instructions below the valve can be removed for inspection or replacement.



Before removing hydraulic components pressure must be relieved from the system.

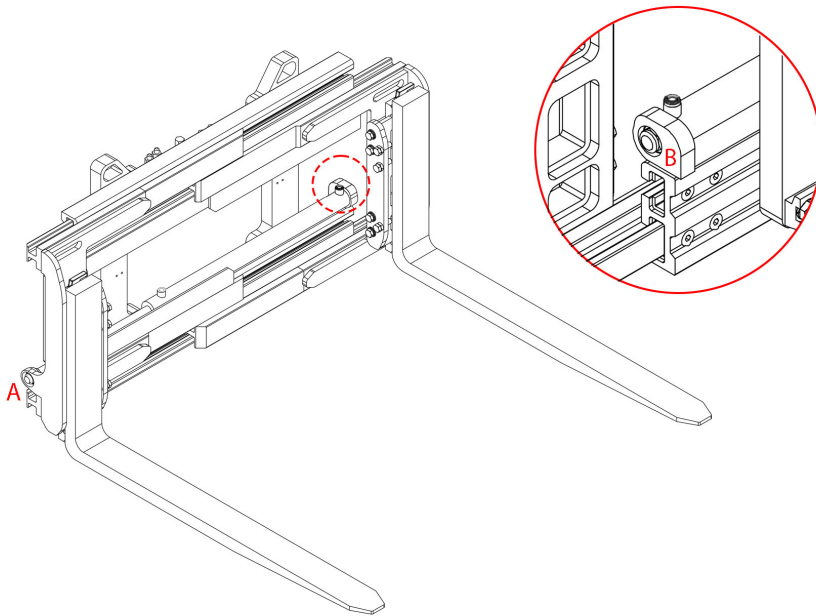
- If the forks and or fork support assemblies are present, position them to their maximum opening capacity to gain access to the valve area. If they are absent the valve area will already be accessible through the frame.
- Remove valve guard or bumpers if they are present.
- Remove the two screws (A) which secure the valve to the frame.
- The valve can now be removed from the frame.
- Disconnect all hydraulic supply hoses and cylinder tubing from the valve. To ensure no contamination occurs blank off the ends of all the disconnected equipment and label clearly for reassembly.
- For reassembly reverse the procedure.

17. Cylinder removal.



The following procedure can be carried out with the equipment mounted on the lift truck.

Using the diagram and instructions below the valve can be removed for inspection or replacement.



Before removing hydraulic components pressure must be relieved from the system.

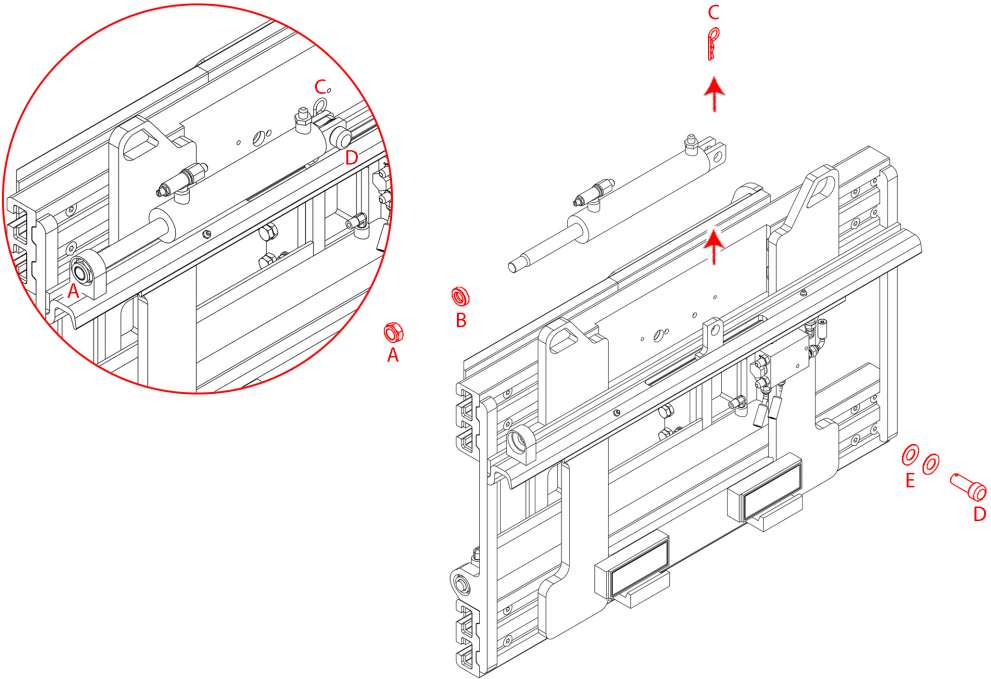
- If the forks and or fork support assemblies are present, position them outside the width of the frame.
- If present remove bumper cap screws and remove the bumper.
- Unscrew the nut (A) at the end of the cylinder rod.
- Slide the rod end toward the cylinder and remove the washer located between the cylinder rod and the fork.
- Disconnect the hydraulic lines from the cylinder ports and label clearly for reassembly.
- Disconnect the cylinder base by removing the last retaining nut (B). The cylinder can now be removed from the frame.
- The procedure can be reversed for reassembly with the following to be noted;
 - Upon tightening the nut to the cylinder rod the nut should be tightened all the way and then released by a $\frac{1}{2}$ rotation in order to ensure correct regulation.
 - When reassembled the equipment must be tested. This is to be done by completing five full cycles of hydraulic movement. The first five should be carried out without load whilst the second five should have a load in place. The equipment should operate correctly without issue before it is returned to service.

18. Side shifting cylinder removal.



The following procedure **cannot** be carried out with the equipment mounted on the lift truck.

Using the diagram and instructions below the cylinder can be removed for inspection or replacement.



Before removing hydraulic components pressure must be relieved from the system.

- Remove the equipment from the lift truck
- Slowly power the cylinder rod open to expose the rod end.
- Unscrew the nut of the cylinder rod (A)
- Slide the rod end toward the cylinder and remove the washer (B) located between the cylinder rod and the frame.
- Disconnect the hydraulic lines from the cylinder ports and label clearly for reassembly.
- At the cylinder base end remove the locking clip (C).
- The cylinder pin (D) can now be removed along with the positioning washers (E) leaving the cylinder free to be disengaged from the extruded profile.
- The procedure can be reversed for reassembly with the following to be noted;
 - Upon tightening the nut to the cylinder rod the nut should be tightened all the way and then released by a $\frac{1}{2}$ rotation in order to ensure correct regulation.
 - Upper and lower bushings should be inspected and replaced if any bushing has worn to less than 2.5mm
 - Clean upper and lower bushing contact surfaces and bushings
 - Bushings should be lubricated using EP2 REF 165TA3769) or equivalent.

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-envisaged 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

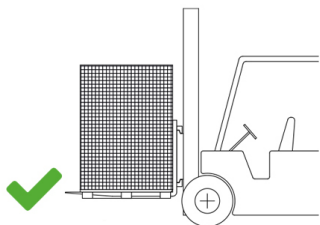
First, use the hydraulic levers to check which levers operate which function.

Operate all the functions several times with no load to check if they function normally and smoothly.

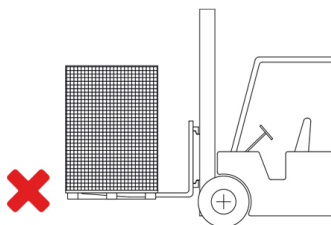
Before lifting a load, operate the forks several times to remove air from the circuit.

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.

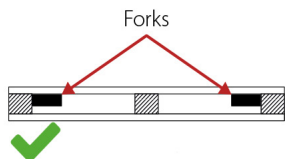


Correct pick-up

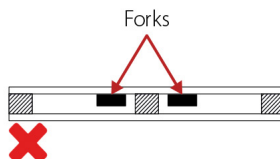


Incorrect pick-up

2. The forks must be spaced inside the pallets.



Correct pick-up



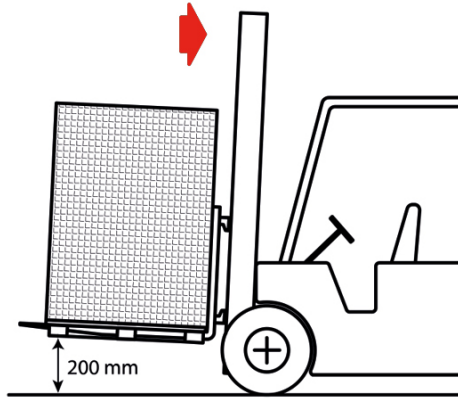
Incorrect pick-up

6.2.2. Load handling



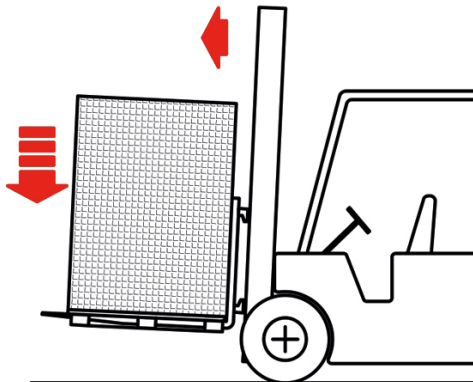
- Never drive with a non-centred load (shifted towards the left or right).
- Make sure that loads can't move freely, they may fall and cause accidents.

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 person or persons responsible for the operation of the equipment.

2. Cleaning

Clean as needed and use a cloth dampened 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 should be done by the person or persons responsible for the operation of the equipment.



* 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 should be done by the person or persons responsible for the operation of the equipment.

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 should be done by the person or persons responsible for the operation of the equipment.



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.

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 should be done by the person or persons responsible for the operation of the equipment.

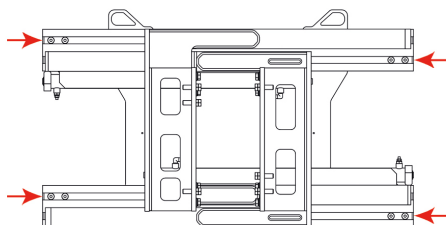


After completing any maintenance service procedure, always test the attachment through five complete cycles.

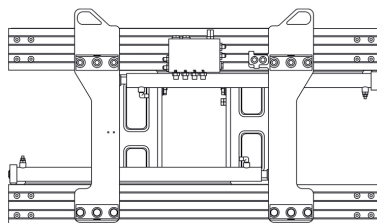
First, test without the load, then test with a load to make sure the attachment operates correctly before returning to service.

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 (WA-T series).



WA SERIES



This should be done by the person or persons responsible for the operation of the equipment.



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.	<p>The forks interfere with the extrusion.</p> <p>Inadequate lubrication of upper and lower fork carriages.</p> <p>Lack of adequate oil flow from the carriage.</p> <p>Inverted alimentation hoses</p>	<p>Check if there is enough play between the forks and the extrusion to allow for sliding. Lubricate upper and lower fork carriages as indicated in chapter 7.3.6</p> <p>Check the oil flow coming from the forklift and set it as indicated in the table in chapter 5.3.11.</p> <p>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.</p>
2	The movement of the forks is slow.	Oil flow from carriage is low.	Check the oil flow coming from the fork lift and set it as indicated in the table in chapter 5.3.11
3	The positioner moves empty but not with load.	<p>No pressure from carriage.</p> <p>No oil arrives from the fork lift.</p>	<p>Check the pressure coming from the fork lift and set it as indicated in the table in chapter 5.3.11</p> <p>Check the fork lift positioner connection pipes, try inverting connections.</p>
4	Irregular operation.	<p>Excessive wear of the sliding blocks.</p> <p>Air bubbles in the system.</p>	<p>Replace the sliding blocks, spare parts list attached.</p> <p>Check the system as indicated in chapter 5.3.13</p>
5	Oil leaking from the cylinders.	Worn or damaged seals.	Replace the seal kit as per the attached spare parts list.
6	Very slow translation.	<p>Worn or damaged seals.</p> <p>Lack of adequate oil flow from carriage</p>	<p>Replace the seal kit as per the attached spare parts list</p> <p>Check the oil flow coming from the fork lift and set it as indicated in the table in chapter 5.3.11</p>
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.	<p>Check the integrity of the various parts.</p> <p>Mechanical lock</p>	<p>Replace the damaged parts as per the attached spare parts list.</p> <p>Check for mechanical interference and that there are no objects impeding movement.</p>

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.

10.1. CE certificate

Done at Marano Ticino.

(Daniele Antonietti)

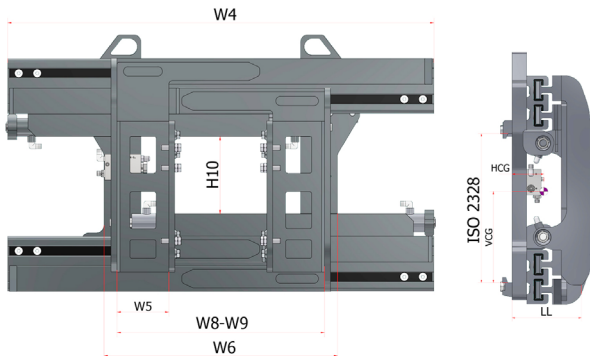
10.2. Technical data

WA series

Model	Capacity	W8-W9	W4	W6	W5	H10	LL	HCG	VCG	Weight	ISO 2328
	kg/mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	
WA16-A0	1600/500	560-1740	950	750	130	210	185	81	255	253	2
WA16-B0	1600/500	560-1840	1050	750	130	210	185	80	254	262	2
WA16-C0	1600/500	560-1940	1150	750	130	210	185	82	255	279	2
WA20-A0	2000/500	560-1740	950	750	130	210	185	81	255	255	2
WA20-B0	2000/500	560-1840	1050	750	130	210	185	80	257	265	2
WA20-C0	2000/500	560-1940	1150	750	130	210	185	82	255	279	2
WA23-A0	2300/500	560-1740	950	750	130	210	185	80	249	259	2
WA23-B0	2300/500	560-1840	1050	750	130	210	185	80	250	270	2
WA23-C0	2300/500	560-1940	1150	750	130	210	185	80	249	280	2
WA30-A0	3000/500	560-1840	1050	800	150	285	203	91	297	324	3
WA30-B0	3000/500	560-1940	1150	900	150	285	203	89	293	335	3
WA30-C0	3000/500	560-2100	1320	900	150	285	203	88	292	355	3
WA35-A0	3500/500	560-1840	1050	800	150	285	203	86	295	337	3
WA35-B0	3500/500	560-1940	1150	900	150	285	203	89	293	345	3
WA35-C0	3500/500	560-2100	1320	900	150	285	203	88	292	369	3
WA40-A0	4000/500	550-1930	1150	900	150	240	234	99	314	454	3
WA40-B0	4000/500	560-2100	1320	1000	150	240	235	98	314	486	3
WA40-C0	4000/500	560-2400	1600	1050	150	240	234	98	314	550	3
WA45-A0	4500/500	560-1940	1150	900	150	240	234	98	314	455	3
WA45-B0	4500/500	560-2100	1320	1000	150	240	234	99	314	503	3
WA45-C0	4500/500	560-2400	1600	1050	150	240	234	99	314	555	3
WA50-A0	5000/500	560-1940	1150	900	150	240	234	90	311	468	3
WA50-B0	5000/500	560-2100	1320	1000	150	240	235	90	311	495	3
WA50-C0	5000/500	560-2400	1600	1050	150	240	234	90	311	520	3
WA55-A0	5500/600	560-2100	1320	1000	200	242	250	115	281	608	4
WA55-B0	5500/600	560-2400	1600	1050	200	242	250	112	282	690	4
WA65-A0	6500/600	560-2380	1600	1050	200	330	250	109	291	783	4
WA65-B0	6500/600	560-2580	1800	1200	200	330	250	107	290	835	4
WA80-A0	8000/600	660-2390	1800	1250	200	250	305	135	290	1510	4
WA90-A0	9000/600	600-2590	2000	1350	200	245	310	145	288	1595	4

Attachment not recommended for clamping between forks

WA



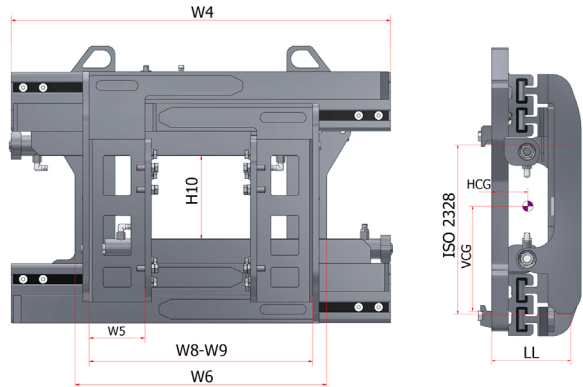
10.2. Technical data

WA-T series

Model	Capacity	W8-W9	W4	W6	W5	H10	LL	HCG	VCG	Weight	ISO 2328
	kg/mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	
WA16-AOT	1600/500	560-1740	950	750	130	210	185	81	255	253	2
WA16-BOT	1600/500	560-1840	1050	750	130	210	185	80	254	262	2
WA16-COT	1600/500	560-1940	1150	750	130	210	185	82	255	279	2
WA20-AOT	2000/500	560-1740	950	750	130	210	185	81	255	255	2
WA20-BOT	2000/500	560-1840	1050	750	130	210	185	81	255	265	2
WA20-COT	2000/500	560-1940	1150	750	130	210	185	82	255	279	2
WA23-AOT	2300/500	560-1740	950	750	130	210	185	80	249	259	2
WA23-BOT	2300/500	560-1840	1050	750	130	210	185	80	249	270	2
WA23-COT	2300/500	560-1940	1150	750	130	210	185	80	249	280	2
WA30-AOT	3000/500	560-1840	1050	800	150	285	203	93	294	324	3
WA30-BOT	3000/500	560-1940	1150	900	150	285	203	93	294	335	3
WA30-COT	3000/500	560-2100	1320	900	150	285	203	93	294	355	3
WA35-AOT	3500/500	560-1840	1050	800	150	285	203	94	295	337	3
WA35-BOT	3500/500	560-1940	1150	900	150	285	203	94	295	345	3
WA35-COT	3500/500	560-2100	1320	900	150	285	203	94	295	369	3
WA40-AOT	4000/500	560-1940	1150	900	150	240	234	99	314	454	3
WA40-BOT	4000/500	560-2100	1320	1000	150	240	234	99	314	486	3
WA40-COT	4000/500	560-2400	1600	1050	150	240	234	98	314	550	3
WA45-AOT	4500/500	560-1940	1150	900	150	240	234	98	314	455	3
WA45-BOT	4500/500	560-2100	1320	1000	150	240	234	99	314	503	3
WA45-COT	4500/500	560-2400	1600	1050	150	240	234	99	314	555	3
WA50-AOT	5000/500	560-1940	1150	900	150	240	234	99	314	468	3
WA50-BOT	5000/500	560-2100	1320	1000	150	240	234	99	311	495	3
WA50-COT	5000/500	560-2400	1600	1050	150	240	235	99	315	520	3
WA55-AOT	5500/600	560-2100	1320	1000	200	330	250	115	292	608	4
WA55-BOT	5500/600	560-2400	1600	1050	200	330	250	112	282	690	4
WA65-AOT	6500/600	560-2380	1600	1050	200	330	250	109	291	783	4
WA65-BOT	6500/600	560-2580	1800	1200	200	330	250	107	290	835	4
WA80-AOT	8000/600	660-2390	1800	1250	200	250	305	135	290	1510	4
WA90-AOT	9000/600	600-2590	2000	1350	200	245	310	145	288	1595	4

Attachment not recommended for clamping between forks

WA-T



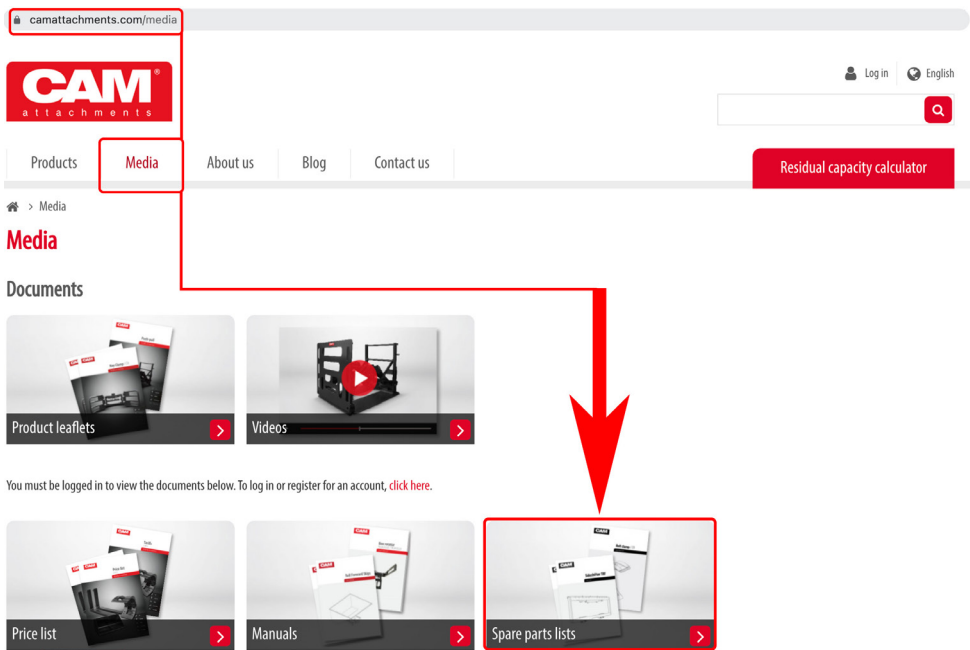
10.3. Hydraulic Information

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.

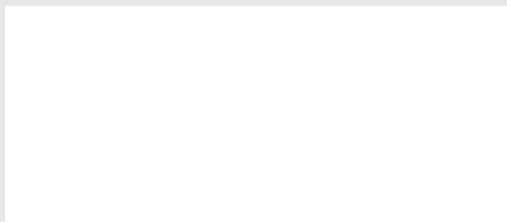
10.4. Spare parts

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
info@camattachments.com



Agri



Construction



Industry



Food &
beverage



Paper
handling

Brabantstraat 15
8790 Waregem
Belgium
T +32 56 43 42 11
F +32 56 43 44 88

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