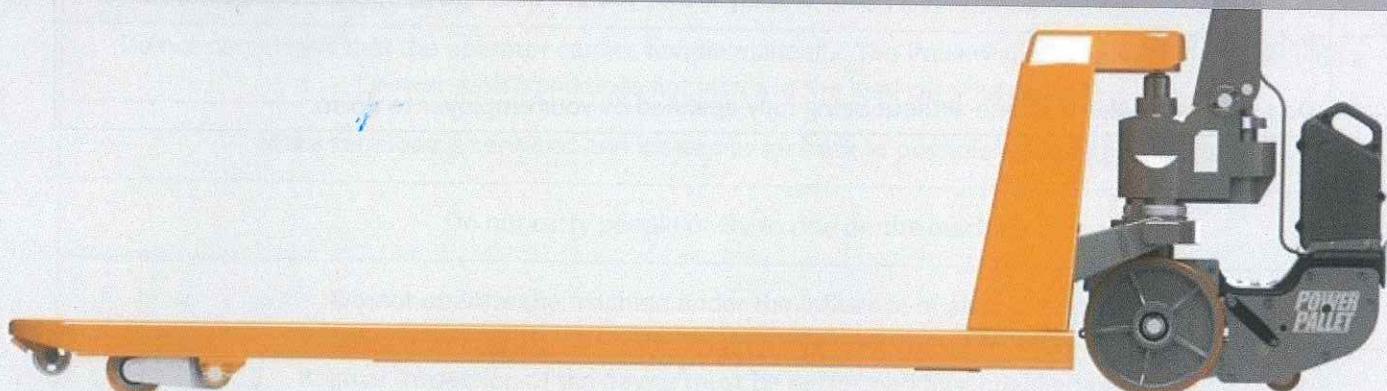




POWERHANDLING INC.

## POWERPALLET USER MANUAL



Published: Feb 4<sup>th</sup> 2016

# Operation

## Terms & Definitions

### Forward Travel

If the truck is moving away from the operator when the operator is standing directly behind the handle of the pallet-jack and away from the forks, it is said to be traveling forward.

### Backward Travel

If the truck is moving towards the operator when the operator is standing directly behind the handle of the pallet-jack and away from the forks, it is said to be traveling backward.

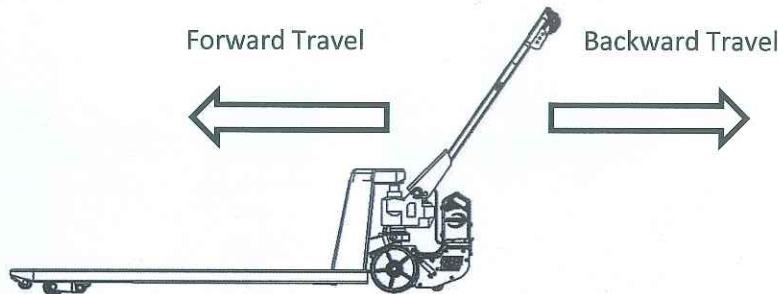


Figure 5: Forward and Backward Travel

### Base Unit

The base unit consists of the chassis enclosing the motor, drive system and the controller board. It also has a horn for warning and feedback.

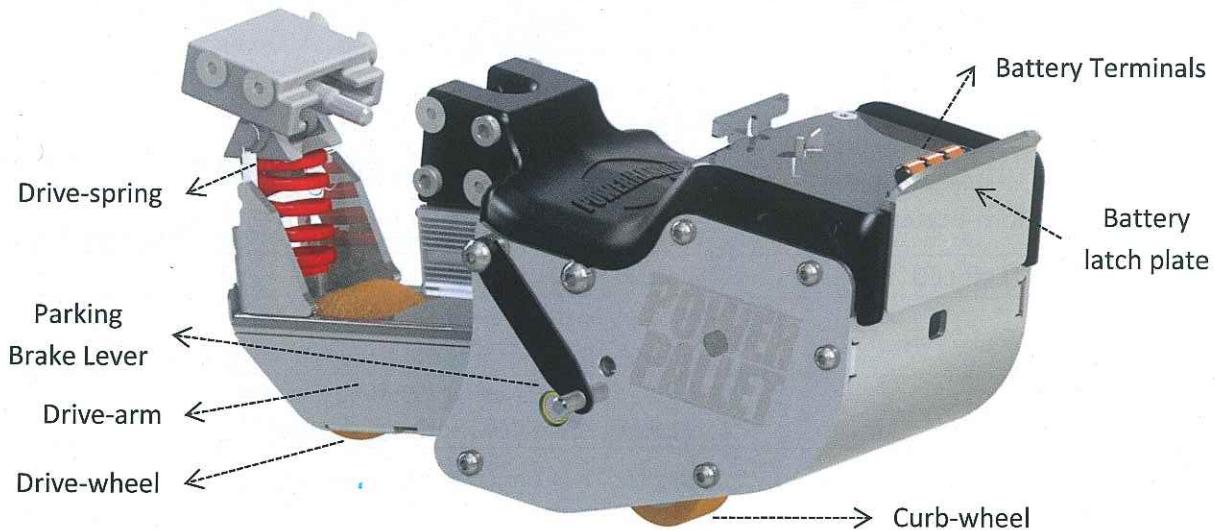


Figure 6: PowerPallet Base Unit

## User Controller

The User Controller allows the user to control and operate the PowerPallet.

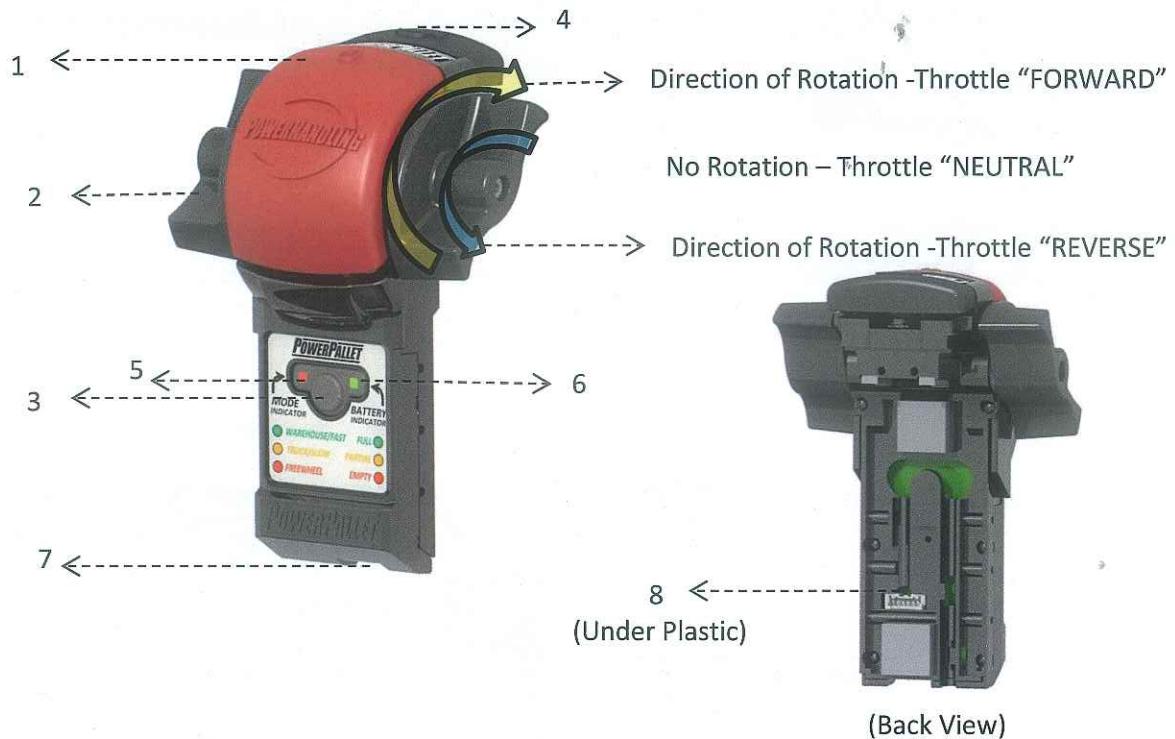


Figure 7: Parts of the User Controller

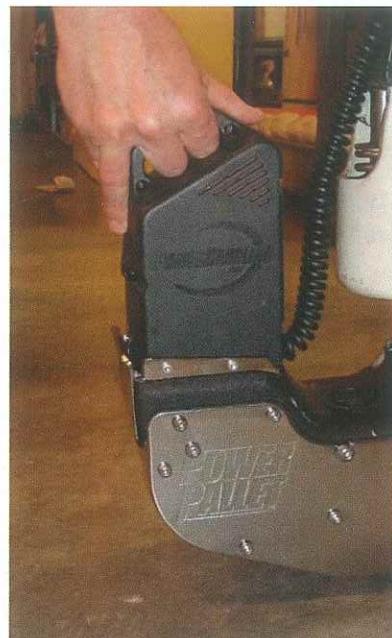
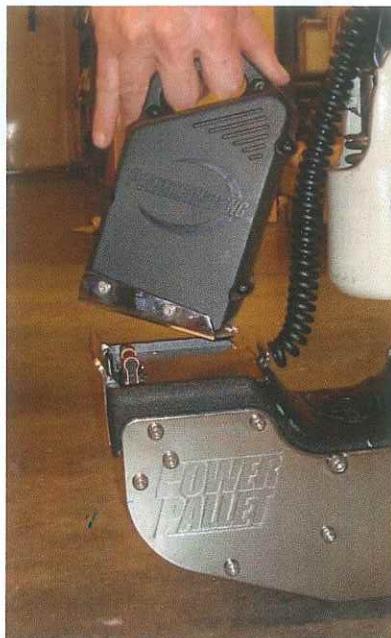
No.	Part	Use/Description
1	Belly-Button	<ul style="list-style-type: none"> <li>- Power up machine</li> <li>- Activate Belly-Stop</li> <li>- Initiate firmware upgrade of the machine</li> </ul>
2	Throttle	<ul style="list-style-type: none"> <li>- Drive the motor</li> <li>- Controlled descent on slope/hill</li> </ul>
3	Mode-Button	<ul style="list-style-type: none"> <li>- Switch mode of operation</li> <li>- Exit Belly-Stop</li> <li>- Power down machine when pressed along with Horn-Button</li> </ul>
4	Horn-Button	<ul style="list-style-type: none"> <li>- Beep Horn</li> <li>- Power down machine when pressed along with Mode-Button</li> </ul>
5	Left LED	<ul style="list-style-type: none"> <li>- Indicates mode of operation</li> </ul>
6	Right LED	<ul style="list-style-type: none"> <li>- Indicates battery level</li> <li>- Indicates high motor temperature &amp; if motor is overheated</li> </ul>
7	USB Port	<ul style="list-style-type: none"> <li>- Update firmware using a USB flash drive</li> <li>- USB Flash Drive Key (optional feature)</li> </ul>
8	GREEN Power LED	<ul style="list-style-type: none"> <li>- Indicates User Controller is powered</li> </ul>

## Device Operation

This section will detail the following:

- Battery Installation and Removal
- Power Up/Power Down
- Operating Modes
- Battery and Motor Temperature Indication
- Belly-Stop Braking
- Transition between Use States
- Parking Brake
- Manual Jack Operation

### Battery Installation

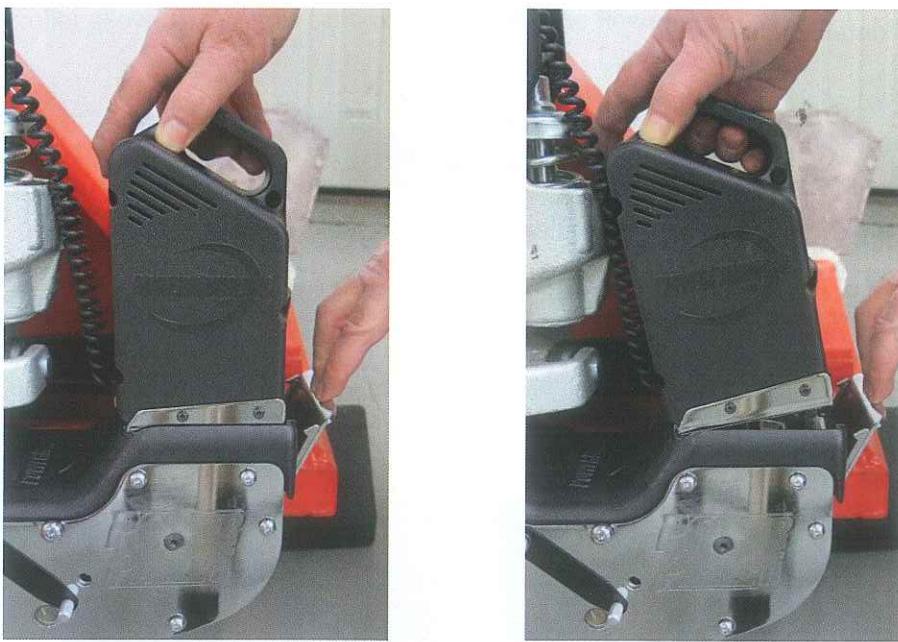


**Step 1:** Align and insert centrally located steel tabs on the front of the battery into the slots on the battery base-plate.

**Step 2:** Make sure the tabs on the back plate securely capture the battery from the back.

Figure 8: Installing the Battery

## Battery Removal



**Step 1:** Pull battery latch plate backward.

**Step 2:** Tilt battery forward and slide it out from the slots on the battery base-plate

Figure 9: Removing the Battery

## Power Up & Power Down

State	Action	Description
Power Up	Press Belly-Button with the battery installed	<ul style="list-style-type: none"><li>- Horn beeps once indicating the machine is awake</li><li>- Left LED indicates Warehouse Mode (default mode of operation), and the Right LED indicates the battery level</li></ul>
Power Down	<p>Any of these actions will power down the machine:</p> <ul style="list-style-type: none"><li>• Press Mode-Button + Horn-Button together with the machine completely stopped</li><li>• Leaving the machine idle for the timeout period</li><li>• Removing the PowerPallet battery from the base unit</li></ul>	<ul style="list-style-type: none"><li>- Idle timeout period is 100 seconds when the USB Flash Drive Key feature is not used</li><li>- Idle timeout period is 15 seconds when the USB Flash Drive Key feature is used</li></ul>

## Operating Modes

The 3 modes of operation for the PowerPallet are described in table below. The Left LED indicates the current mode of operation.

Mode of Operation	Left LED	Driving	Braking
Warehouse/Fast	GREEN Press Mode-Button to change mode	Tilt handle to speed control position, and then slowly rotate the throttle in the direction you wish the drive-wheel to rotate	- Full braking applied when handle is upright or horizontal - Braking is ON when the throttle is in neutral position - Variable braking <sup>1</sup> effective when throttle is rotated in the opposite direction of drive-wheel rotation
Truck/Slow (1/4 <sup>th</sup> speed of Warehouse Mode)	YELLOW	With handle upright or tilted within the speed control positional limits, slowly rotate the throttle in the direction you wish the drive-wheel to rotate	- Full braking applied when handle is horizontal - Braking is ON when the throttle is in neutral position - Variable braking <sup>1</sup> effective when throttle is rotated in the opposite direction of drive-wheel rotation
Freewheel/Manual	RED	- Drive disabled - Allows operator to manually operate the pallet-jack	- Braking is OFF when throttle is in neutral position - Variable braking effective when throttle is rotated forward/backward

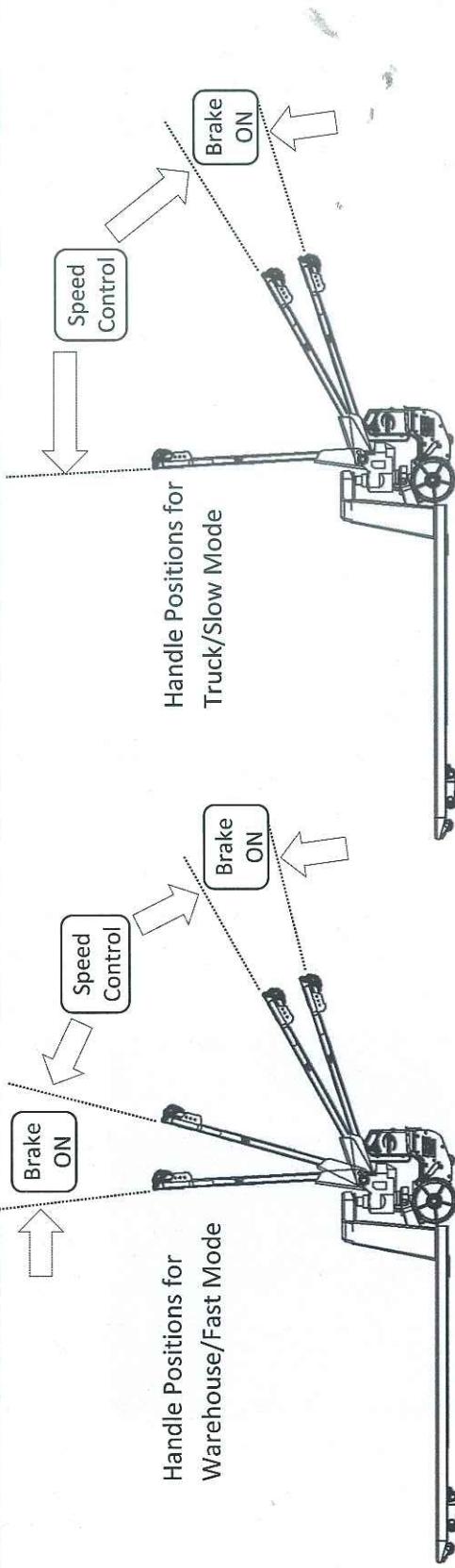


Figure 10: Handle Positions for Warehouse & Truck Modes

<sup>1</sup> Variable braking force is proportional to the relative degree of throttle rotation away from the neutral position.

## Battery & Motor Temperature Indication

The Right LED indicates battery level and motor temperature information.

Right LED	Indication	Description
Solid GREEN	Good battery	- > 70% battery remaining
Solid YELLOW	OK battery	- 40% - 70% battery remaining
Solid RED	Low battery	- 10% - 40% battery remaining
Flashing RED	Extremely low battery	- < 10% battery remaining - Replace or recharge battery immediately - Drive disabled
Flashing YELLOW	High motor temp.	- Machine performance limited to preserve motor
Flashing YELLOW (Horn beeps when driven)	Motor overheated	- Machine performance severely limited to preserve motor - Move truck to a safe area, and allow motor to cool-down

## Belly-Stop

Pressing or bumping against the Belly-Button while the truck is stationary or moving backward stops current operation, and drives the truck away a few feet from the operator as long as the Belly-Button is depressed.

If the truck is moving forward when the Belly-Button is pressed, current operation is stopped, and full braking is applied.

Belly-Stop Indication	Exit Belly-Stop
Left & Right LEDs flash RED with simultaneous horn beeping	Release Belly-Button, ensure throttle is in the neutral position and that the motor is stopped, and then press the Mode-Button

## Parking Brake

The parking brake is on the left side of the PowerPallet base unit. Figure 11 shows the 2 positions for the parking brake lever. When the parking brake is engaged, the PowerPallet motor is locked from spinning. Use the parking brake to avoid unwanted travel of the machine or whenever the machine is idle.



Parking Brake - Disengaged



Parking Brake - Engaged

Figure 11: Parking Brake: Engage & Disengage Positions

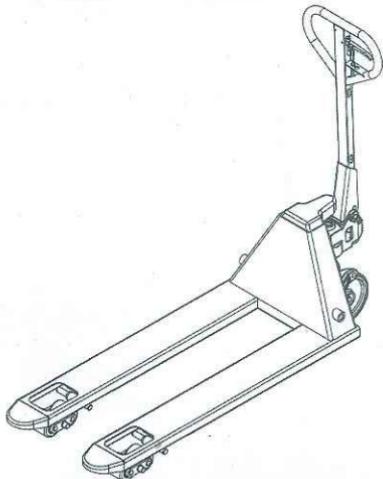
## Errors and Warnings

The PowerPallet indicates any errors or warnings using the Left and Right LEDs, and the horn. The table below lists the various indications and their corresponding descriptions.

Warning Indication	Warning	Description	Recommended Action
Left LED flashes GREEN in Warehouse Mode or YELLOW in Truck Mode	Attempting to override safety feature	Throttle input detected with steering handle upright or horizontal	See <a href="#">Handle Positions for Warehouse &amp; Truck Modes</a>
	Motor stalled for longer than 2 seconds	Insufficient throttle input	Increase throttle rotation
		Insufficient torque to move load	Reduce load on the pallet-jack
		Parking brake engaged	Disengage parking brake before attempting to drive
		Battery too low to move load	Replace battery with fully charged battery
Both LEDs flashing RED with no horn beeping	Belly-Stop active, Mode-Button pressed but throttle not in neutral position	Machine would continue to act as if Belly-Stop is active	To resume operation, return throttle to neutral position
Horn beeps continuously	Communication loss	Communication lost between the controller and throttle	Remove battery, wait for 15 seconds, and reconnect battery
Both LEDs flashing YELLOW on powering up	No USB Key (optional feature)	Machine will not operate without USB flash drive key installed	Power down, insert USB flash drive key, and power up machine
Both LEDs blink RED and YELLOW alternatively	No Application Firmware	Machine will not function without valid software	Update the device with the latest software (See <a href="#">Firmware Update</a> section)
Both LEDs blink RED and GREEN alternatively	Update Bootloader		
Horn beeps continuously	Downhill rolling	Machine rolling with no input from the throttle	<ul style="list-style-type: none"> <li>- If safe to do so, bring unit to a stop, lowering the load</li> <li>- Ensure if within operating parameter, if not, take machine out of service to get it fixed</li> </ul>

# OPERATING INSTRUCTION HANDBOOK

## HAND PALLET TRUCK



### WARNING

Do not use the truck before reading and understanding these operating instructions.

### NOTE:

- Please check the designation of your present type at the last page of this document as well as on the ID-plate.
- Keep for future reference.

## **FOREWORD**

Before operating this hand pallet truck read this ORIGINAL INSTRUCTION HANDBOOK carefully and understand the usage of the hand pallet truck completely. Improper operation could create danger.

This handbook describes the usage of different hand pallet trucks. When operating and servicing the hand pallet truck, make sure, that it applies to your type.

Keep this handbook for future reference. If this or the warning/ caution labels are damaged or got lost, please contact your local dealer for replacement.



**Chapter 10 describes specialized stipulations and regulations for the American market. Also follow these instructions and stipulations if you operate the truck within the American market!**

Some described functions are optional and therefore not absolutely necessarily equipped with your truck.

### **ATTENTION:**

- Environmentally hazardous waste, such as batteries, oil and electronics, will have a negative effect on the environment, or health, if handled incorrectly.
- The waste packages should be sorted and put into solid dustbins according to the materials and be collected disposal by 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 products, the user should prepare some absorbable materials (scraps of wooden or dry duster cloth) to absorb leaking oil in time. To avoid second pollution to the environment, the used absorbable materials should be handed in to special departments in terms of local authorities.
- Our products are subject to ongoing developments. Because this handbook is only for the purpose of operating /servicing the hand pallet truck, therefore please have understanding, that there is no guarantee out of particular features out of this handbook.



**NOTE: On this manual, the left sign means warning and danger, which can lead to death or serious injury if not followed.**

### **Copyright**

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## 1. CORRECT APPLICATION

It is only allowed to use this hand pallet truck according to this instruction handbook.

This truck is a manually operated hand pallet truck designed to lift and transport the rated load on industrial pallets. Do not lift or carry person and don't use this truck for other purpose than its intended use. A wrong usage can cause human injuries or can damage equipment.

The operator/ the operating company has to ensure the correct usage and has to ensure, that this truck is used only by staff, which is trained and authorized to use this truck.

**⚠** The truck has to be used on substantially firm, smooth, level and prepared surfaces.  
Driving with the load on slopes is not allowed. The load must be placed approximately on the longitudinal centre plane of the table and must be in satisfactory condition.

The capacity is marked on the identification plate and depending on the version eventually additionally on the capacity sticker. The operator has to consider the warnings and safety instructions.

The hand pallet truck is intended to be used for indoor applications with ambient temperatures between +5°C and + 40°C. Operating lighting must be minimum 50 Lux.

### Modification

No modifications or alterations to this hand pallet truck which may affect, for example, capacity, stability or safety requirements of the truck, shall be made without the prior written approval of the original truck manufacturer, its authorized representative, or a successor thereof. This includes changes affecting, for example braking, steering, visibility and the addition of removable attachments. When the manufacturer or its successor approve a modification or alteration, they shall also make and approve appropriate changes to capacity plate, decals, tags and operation and maintenance handbooks. By not observing these instructions, the warranty becomes void.

## 2. DESCRIPTION OF THE HAND PALLET TRUCK

### a. Main components

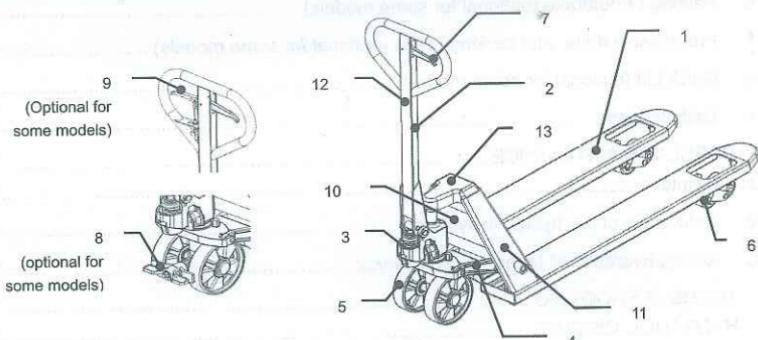


Fig.1: Overview

- |                                  |   |
|----------------------------------|---|
| 1 Chassis                        | 9 Progressive parking and drive brake, lever with drum brake (Optional) |
| 2 Tiller arm                     | 10 Identification plate (ID-plate)                                      |
| 3 Hydraulic pump                 | 11 Company logo and/or capacity sticker                                 |
| 4 Lifting mechanism              | 12 Lifting function instruction sticker                                 |
| 5 Steering (Front-) wheels       | 13 Eventually capacity sticker  |
| 6 Load wheels (single/ tandem)   |   |
| 7 Lever (for MEGA on both sides) |   |
| 8 Parking-/ Footbrake (Option)   |   |

### b. Main technical data

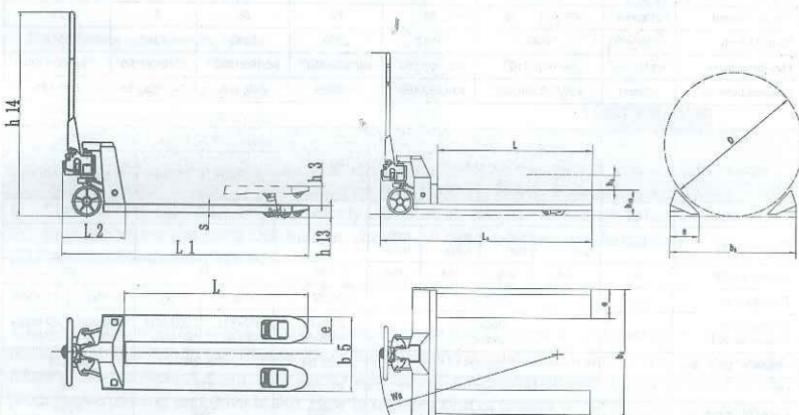


Fig. 2: technical data

Table 1: Main Technical data for standard version/ other version on request:

TYPE	Q(t)	AC 20 / AC 25 / AC 30			MEGA 26			GIGA 26		DELTA 20 / 26 / 30		
		2.0 / 2.5 / 3.0	2.6	2.6	76	76	78	76 (PU) / 80 (N)	77 / 78 / 80	77 / 78 / 80	2.0 / 2.6 / 3.0	
Load capacity	kg	68 / 80 / 90										
Service weight	mm	Ø200x50	Ø180x50		Ø200x50		Ø200x50		Ø200x50		Ø200x50	
Tyre size, front	mm											
Tyre size, rear (single / tandem)	mm	Ø80x93 / Ø80x70	Ø74x93 / Ø74x70		Ø82x93 / Ø82x70		Ø82x93 / Ø82x70		- / Ø80x70		Ø80x93 / Ø80x70	
Wheels nr. front, rear		2/2, 2/4			2/2, 2/4			2/4		2/2, 2/4		
Lift	$h_3$ (mm)	115			115			115		115		
Height of tiller (max.)	$h_{14}$ (mm)	1230			1228			1240		1230		
Height, lowered	$h_{13}$ (mm)	85	75		85			85		85		
Overall length	$L_1$ (mm)	1540			1562			1540		1540		
Fork dimensions	$s/e/L$ (mm)	50/160/1150 <sup>1)</sup>			53/160/1150 <sup>2)</sup>			50/160/1150		50/160/1150 <sup>3)</sup>		
Distance betw. forks	$b_5$ (mm)	450, 520, 540, 685			520	540	685	540, 685		450, 520, 540, 685		

TYPE		ACF 20H	ACF 20L	ACE 20	ACL 20	ACL 35	AC-Low
Load capacity	Q(t)		2.0		2.0	3.5	1.5
Service weight	kg	63	70	99	122	235	84
Tire size, front	mm	Ø200x50	Ø180x50	Ø200x50	Ø180x50	Ø200x50	Ø180x50
Tire size, rear (single / tandem)	mm	Ø80x93 / Ø80x70	Ø74x93 / Ø74x70	Ø82x93 / Ø82x70	Ø74x93 / Ø74x70	Ø80x93 / Ø80x70	Ø60x93 / Ø60x70
Wheels nr. front, rear		2/2, 2/4		2/2, 2/4		2/2, 2/4	2/2, 2/4
Lift	h3(mm)	115		115		115	114
Height of tiller (max.)	h14(mm)	1230		1260		1260	1230
Height, lowered	h13(mm)	85	75	85	75	85	51
Overall length	L1(mm)	1540		1540	2190	2190	1540
Fork dimensions	s/e/L(mm)	50/160/1150 <sup>a</sup>		50/160/1150 <sup>b</sup>	60/160/1800 <sup>b</sup>	60/160/1800 <sup>c</sup>	37/160/1150
Distance betw. forks	b5(mm)	450,520,540,685		838,850,1000	540/685	540,685	540,685,838
							630,685

TYPE		ACR				AC-TWO	ACZ		ACS	
		AC20 R500	AC20 R700	AC20 R1000	AC20 R1500		ACZ20H	ACZ20L	ACS20H	ACS20L
Load capacity	Q(t)	2.0		1.5		2.0		2.0		
Reel Diameter	mm	400-600	600-800	800-1200	1200-1600	-	-	-	-	-
Service weight	kg	144	149	168	190	76	75		83	
Tire size, front	mm	Ø200x50				Ø200x50	Ø200x50	Ø180x50	Ø200x50	Ø180x50
Tire size, rear (single / tandem)	mm	Ø80x93 / Ø80x70		Ø78x70 / Ø65x60		Ø80x93 / Ø80x70	Ø74x93 / Ø74x70	Ø80x93 / Ø80x70	Ø74x93 / Ø74x70	Ø80x93 / Ø80x70
Wheels nr. front, rear		2/2, 2/4		2/2, 2/4		2/2, 2/4		2/2, 2/4		
Lift	h3(mm)	115		85, 125 <sup>d</sup>		115		115		
Height of tiller (max.)	h14(mm)	1233		1233		1230		1230		
Height, lowered	h13(mm)	175	176	200	187	85	85	75	85	75
Overall length	L1(mm)	1250,1350,1450,1550,1600,1670		1540		1540		1540		
Fork dimensions	s/e/L(mm)	-/-/800,900,1000,1100,1150,1220		50/160/1150 <sup>e</sup>		50/160/1150 <sup>f</sup>	60/160/1150 <sup>g</sup>	60/160/1150 <sup>h</sup>	60/160/1150 <sup>i</sup>	60/160/1150 <sup>j</sup>
Distance betw. forks	b5(mm)	760	850	1000	1150	540,685	520,540,685	520,540,685	520,540,685	520,540,685

The noise level is less than 70dB.

- 1) L= 800/ 900/ 1000/1100/ 1220 mm optional
- 2) L= 800/ 1000/ 1220 mm optional
- 3) L= 800/ 900/ 1000/ 1100/1220 optional ; DELTA 30: s= 60 mm
- 4) L= 800/ 900/ 1000/ 1100/ 1220 mm optional
- 5) L= 800/ 900/ 1000/ 1100/ 1220/ 1500/ 1800/ 2000/ 2500/ 3000 mm optional
- 6) L= 800/ 900/ 1000/ 1150/ 1220/ 1500/ 2000/ 2500/ 3000 mm optional
- 7) L= 1500/ 2000 mm optional
- 8) Lift for normal transportation: 85mm, for traverse transportation 85 – 125mm
- 9) L= 1100/ 1220 mm optional
- 10) L= 1000/ 1100/ 1220 mm optional

### C. Description of the safety devices and warning labels

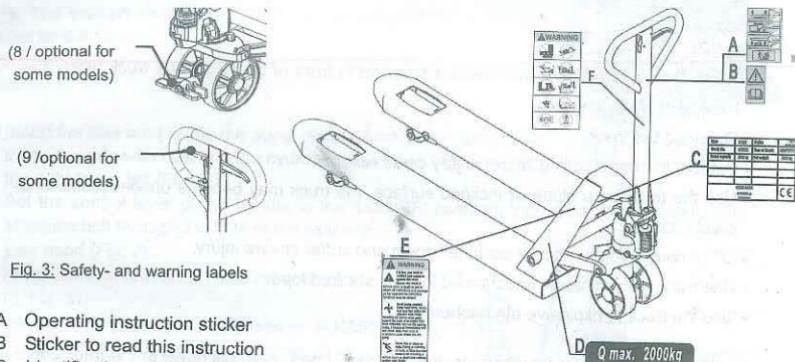


Fig. 3: Safety- and warning labels

- A Operating instruction sticker
- B Sticker to read this instruction
- C Identification plate (ID- plate)
- D Capacity sticker (both sides/ sample, for illustration only, capacity might be different for your type)
- E Sign warning stay clear stop truck (only US- market, chapter 10 describes further information)
- F Sign prohibited use (only US- market, chapter 10 describes further information)
- (G) Parking-/ Footbrake (Option)
- (H) Progressive parking and drive brake, lever with drum brake (Optional)

The safety and warning labels should be placed according to figure 3. The advices on the truck are additional to this handbook. Please follow the operating instructions. If the decals are damaged or missing, please replace them. Your truck might be optional equipped with a parking brake or with a progressive parking and drive brake. How to use this kind of brakes is described in chapter 6.

### d. Identification plate

- 1 Designation, type
- 2 Serial number
- 3 Rated capacity
- 4 Eventually company logo
- 5 Name and address of the manufacturer
- 6 Net weight
- 7 Manufacturing date
- 8 Option, Wheel combination, fork length, width over the forks

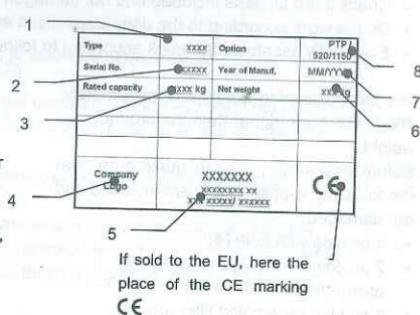


Fig. 4: ID-Plate

This document is a general handbook and it is  
not suitable for all models. It is intended for  
you only if you have a specific model.

### 3. WARNINGS AND SAFETY INSTRUCTIONS



#### DO NOT

- Allow other person than the operator to stand in front of or behind the truck when it is moving or lifting/lowering.
- Overload the truck.
- Put foot in front of rolling wheel, Injury could result.
- Use the truck on a slope or inclined surface, the truck may become uncontrollable and create danger.
- Lift or carry people. People could fall down and suffer severe injury.
- Use truck with unstable, unbalanced loosely stacked load.
- Use the truck in explosive atmospheres.

Watch difference in floor levels when moving the truck. Load could fall down or the truck could get uncontrollable. Keep watching the condition of load. Stop operating table if load becomes unstable.

Practice maintenance work according to regular Inspection. This truck is not designed to be water resistant, therefore use it in dry atmospheres.

### 4. COMMISSIONING, TRANSPORTING, STORAGE/ REASSEMBLING

#### a. Commissioning – Tiller assembling

After receiving our new hand pallet truck you may have to do following before firstly operating the truck:

- Check if are all parts included and not damaged
- Do the work according to the daily inspections as well as functional checks.
- Eventually assemble the truck according to following instructions.

The commissioning weight is approximately 10kg / six- pack higher than the product weight.

Before assembling, please make sure, that the following supplied parts are included and not damaged:

- 1 pc axle with hole (4)
- 2 pc dowel pin (5) [one is already assembled with the axle]
- 1 pc pre- assembled tiller arm (1)
- 1 pc pre- assembled chassis with pump unit (6)

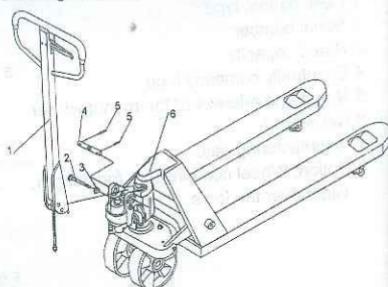


Fig.5 Tiller assembling

(1.Tillerarm / 2.Pin / 3.Nut / 4.Axle with hole  
5.Dowel pin / 6.Chassis with pump unit)

Note: The marked number on the tiller arm package and the chassis should be the same.

When attaching the handle, you had better squat just in front of the pallet truck.

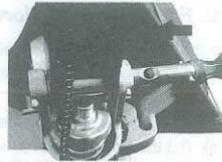


Fig. 6: Axle assembling

- a) Insert the tiller arm(1) into the pump piston, then use a hammer to insert the axle with hole into the hydraulic pump and tiller arm from the right to the left (Fig. 6 ).
- b) Set the control lever of the handle to the 'LOWER' position, then pass the adjusting nut, adjusting bolt through the hole of the axle with your hand (Fig. 7).
- c) Press the tiller arm down; take away the pin (2, Fig. 5).
- d) Set the control lever of the handle to 'RAISE' position, then raise the lever plate with the pin (2, Fig. 5) and insert the adjusting bolt into the front slot of lever plate. Note: Keep the adjusting nut under the lever plate.
- e) Use a hammer to insert the 2<sup>nd</sup> dowel pin (5, Fig. 5) into the 2<sup>nd</sup> hole of the axle.

The draw-bar is now assembled to the pump.

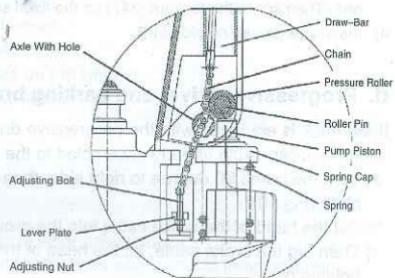


Fig. 7: Side view

## b. Hydraulic valve adjustment

On the tiller of your pallet truck, you will find the control lever, which can be regulated in three positions:

**Lower:** handle up, the lever moves back to the neutral, when released

**Neutral:** handle in center position

**Raise:** handle down

If necessary, you can adjust the lever according to following steps (Fig. 8):

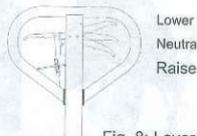


Fig. 8: Lever

- a) If the forks elevate while pumping in the **Neutral** position, turn the adjusting nut on the adjusting bolt clockwise until pumping action does not raise the forks and the **Neutral** position works properly.
- b) If the forks descend while pumping in the **Neutral** position, turn the adjusting nut counter-clockwise until the forks do not lower.
- c) If the forks do not descent when the control handle is in the **Lower** position, turn the adjusting nut clockwise until raising the control handle lowers the forks. Then check the **Neutral** position according to fig. 8 and be sure that the adjusting nut is in the proper position.
- d) If the forks do not elevate while pumping in the **Raise** position, turn the adjusting nut counter-clockwise until the forks elevate while pumping in the **Raise** position. Then check the **Lower** and **Raise** position.

### c. Foot brake (Optional for some models)

If the truck is ordered with a foot brake, please follow the next instructions. The foot brake might be already assembled with the truck.

- Remove the steering wheel (310).
- Put the Holding sleeve (341) in the under parts of pump body (322), and take off the parts from (310) one by one. Fasten the bolt (340) in the fixed hole.
- Install spring (342), brake plate (344), foot pedal (345) and (spring) washer (346) on the fixed seat (341) one by one. Then screw the locknut (347) on the fixed seat (341).
- Install the grease nipple (343).

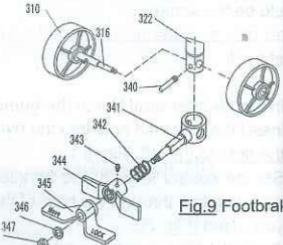


Fig.9 Footbrake

### d. Progressive- drive- and parking brake (optional for some models)

If the truck is equipped with the progressive drive and parking brake, the braking lever as well as the bowden cable already assembled to the tiller arm.

- Turn the pump 90 degree to right side, then pass through the brake cable behind the thrust plate.(Fig.10)
- Put the head of the brake cable into the groove of the hinge pin.
- Then tug the brake cable, let the head of the outer sleeve of the cable into the hole of the holding pin.

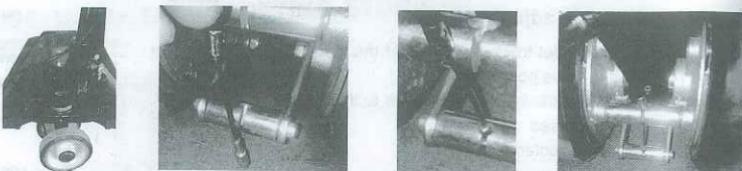


Fig.10: Progressive drive and parking brake

### e. Transporting

For transporting, remove the load, lower the truck to the lowest position and lash it safe with dedicated lashing straps.

### f. Storage/ Reassembling

For storage, remove the load, lower the truck to the lowest position, grease all in this handbook mentioned greasing points (regularly inspection) and eventually protect the truck against corrosion and dust. Jack the truck safety, so that there will be no flattening after storage. Reassemble the tiller in the opposite direction of the assembling.

## 5. DAILY INSPECTION

This chapter describes pre-shift checks before putting the truck into operation.

Daily inspection is effective to find the malfunction or fault on the truck and can maximize the lifetime. Check the truck on the following points before operation.

Remove load from truck and lower the forks to the lowest position.



**DO NOT USE THE TRUCK IF ANY MALFUNCTION OR FAULT IS FOUND.**

- Visually check for structural deformation or cracks of arms, forks, or any other component; and unusual noise or binding of the lifting mechanism.
- Check if there is any oil leakage.
- Check the vertical creep of the lifting mechanism.
- Check the smooth movement of the wheels.
- Check if there are any particles or damages on the wheels.
- Check if all the bolts and nuts are tightened firmly.
- If equipped, check the brake.
- Verify that all labels are in place.

## 6. OPERATING INSTRUCTIONS

- 
- When operating the truck, the operator has to wear safety shoes.
  - The truck is intended to be used for indoor applications with ambient temperatures between +5°C and +40°C.
  - The operating lighting must be minimum 50 Lux.
  - It is not allowed to use the truck on angled surfaces.
  - Never leave a loaded pallet truck unattended.

### a. Parking

Lower the forks to the lowest position and park the Hand pallet truck on a smooth and even level ground where the truck not disturbs any other operations. If equipped with a brake use the brake for parking the truck according to the description further below.

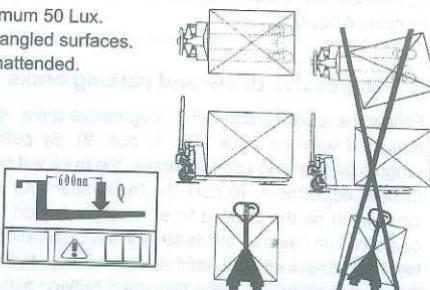


Fig.11: Load conditions

### b. Lifting

Check that the load does not exceed the loading capacity of the pallet truck. Roll the pallet truck with its forks slowly under the pallet/load until the back end of the fork rests against the load (Fig.11). Shift the operating lever down to the Lifting position. Lift the load by up- and down movements of the tiller arm. The load must be evenly distributed across both forks.



**DO NOT OVERLOAD THE TRUCK!**

### C. Lowering



DO NOT PUT FOOT OR HAND UNDER THE LIFTING MECHANISM.

Lower the load by shift the operating lever up to the lowering position carefully. By releasing the lever, the lowering movement will stop. Ensure there is adequate clearance behind, then move the pallet truck away.

### d. Moving



- Do not operate the truck on a slope or inclined surface.
- Watch difference of floor level when moving lifter. Load could fall down.
- Make the load stable to prevent it from falling down.
- The truck might be not equipped with a brake. In this case the braking distance is longer and depends on the operator.

If equipped, release the brake.

Move the truck by pushing or pulling the tiller arm. The tiller arm is connected to the steering rollers. The wheels are steered automatically by moving or steering the tiller arm.

### e. Parking-/ Footbrake (optional for some models)

Follow these instructions, if a parking-/footbrake is equipped with the truck (Fig. 1, pos. 8).

To apply the brake step on the "LOCK" side of the pedal (Fig. 9, pos.345) until its angle is 45°. To release the brake step on the "MOVE" side of the pedal (Fig. 9, pos.345) until it is in horizontal position.

### f. Progressive drive- and parking brake (optional for some models)

Follow these instructions, if a progressive drive- and parking brake is equipped with the truck (Fig. 1, pos. 9). By pulling the lever of the progressive parking and foot brake, the truck will brake smoothly to the desired adjustment. To park the truck, after fully pulling the lever, the small latch on the braking lever must be moved to the right, then the operator can release the lever. By start operating, the truck, pull the lever and then swing the latch to the left side, then release the lever. Depending on the load conditions the braking behavior is changing.



Please do not overstress the brake, it could generate loss in braking capacity.

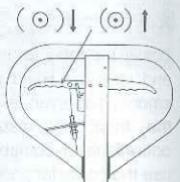


Fig. 12: Lever drive-  
and parking brake

### g. Quick Lift (optional for some models)

When the load is less than 120kg, the pallet truck has the quick-lifting function. It is about 5 times pumping to lift truck from the min. height to max. height. When the load is more than 120kg, the pumping function will automatically switch to a normal lifting speed.

## **h. Malfunctions**

If there are any malfunctions or the truck is inoperative, please stop using it. Place the truck at a safe place. Avoid further usage.

Inform immediately the manager and, or call your service.

## **7. REGULAR MAINTENANCE**



- Only qualified and trained personnel are allowed to do service on this truck.
- Before servicing the truck, remove the load and lower the forks to the lowest position.
- Completely immobilize pallet truck before working on components that might pinch fingers or hands if movement were allowed.
- Use approved and from your dealer released original spare parts.
- Please consider that oil leakage of hydraulic fluid can cause failures and accidents.
- It is allowed to adjust the pressure valve only from trained service technicians.
- Waste material like oil, used batteries or other must be probably disposed and recycled according to the national regulations and if necessary brought to a recycling company.
- All bushings and bearings have been lubricated at the factory. To increase their life, regular maintenance is recommended. Using the appropriate grease for the application and lubricate each grease fitting every 6 months.
- Harsh environments may require more frequent maintenance.

If you need to change the wheels, please follow the instructions above. The wheels must be round and they should have no abnormal abrasion.

### **a. Maintenance**

#### **DAILY**

- Follow chapter 5.

#### **MONTHLY**

- Check hydraulic oil level (more frequently for high use applications).
- All bearings and shafts are provided with long-life grease at the factory. Long-life grease should be applied to the lubrication points at monthly intervals or after each time the truck is cleaned. Clean off dirt and debris.

#### **EVERY SIX MONTH**

- Change oil (more frequently if color has substantially darkened or feels gritty). The required hydraulic fluid type is ISO VG32, its viscosity should be 30cSt at 40°C, total volume is about 0.3l.

**NOTE:** If hydraulic oil is milky white in color, water is in the hydraulic system. Change the hydraulic oil immediately.



Before starting operating the truck, ensure that all markings and decals are on the right place and not damaged (acc. to Fig. 3). If necessary replace the decals.

## b. Degaeration of the hydraulic system

Air may find its way into the pump during transportation, tilting or usage on uneven ground. It can result in not elevating forks whilst pumping in the **Raise** position. The air can be removed in the following way: Move the control handle to the **Lower** position, move then the tiller down several times. Thereafter normal operation can be resumed.

## c. Adding hydraulic oil to the pump reservoir

- Ensure forks are in lowered position.
- Lay pallet truck on either side. Position drain plug of hydraulic cylinder up.
- Remove the screw plug.
- Add hydraulic oil until level of oil is at bottom of hole.
- Replace drain plug, upright the truck

## 8. TROUBLE SHOOTING



If the truck has malfunctions, follow the instructions, mentioned under chapter 7.

Table 2: Trouble shooting

No.	Symptom	Possible Causes	Corrective action
1	Forks don't raise, don't raise fully, or raise slowly	a) Low hydraulic fluid level or impurities in oil. b) Control lever is out of adjustment. c) Load is too heavy. Overload release valve is being activated. d) Temperature is too low and the hydraulic oil has become too thick. e) Air in the hydraulic oil.	a) Add approved hydraulic fluid or change oil as noted in chapter 7. b) Follow the procedure for adjusting the control lever in chapter 4. c) Reduce load. d) Move truck to a warmer location. e) Degaerate the hydraulic pump. (see chapter 7)
2	Forks don't lower or don't lower fully	a) Obstacle located under truck, in fork mechanism, etc. b) Control lever is out of adjustment. c) Fork was left in a raised position for an extended time causing exposed piston rod to rust. d) The piston rod or pump is deformed due to over-loading or uneven loading.	a) Use caution removing the obstacle. b) Follow the procedure for adjusting the control lever in chapter 4 c) Keep fork in the lowest position when not in use and keep piston rod well lubricated d) Replace the piston rod or pump
3	Forks lower without putting the control lever in the "lower" position	a) Oil impurities are preventing the release valve from fully closing. b) Some hydraulic components or seals are cracked or worn. c) Control lever is out of adjustment.	a) Drain and replace hydraulic fluid with approved fluid as noted in chapter 7. b) Inspect and replace components as needed. c) Follow the procedure for adjusting the control lever in chapter 4
4	Oil leakage	a) Worn or damaged seals b) Other cracked or worn parts	a) Replace seals b) Replace damaged parts

## 9. HYDRAULIC CIRCUIT

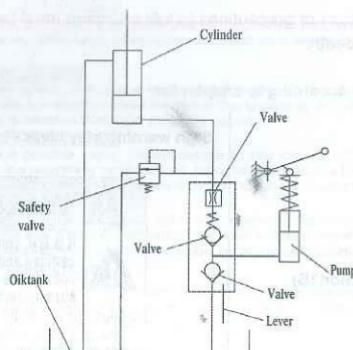


Fig.13: Hydraulic diagram

## 10. SPECIALIZED STIPULATIONS FOR THE US- AMERICAN MARKET

The content in this chapter is specialized for the US-American market.

Operating this truck requires knowledge which can be acquired from this instruction handbook. This handbook must be kept available throughout the entire period of use of the truck.

**YOU MUST BE TRAINED AND CERTIFIED TO OPERATE THIS TRUCK! READ AND OBEY ALL WARNINGS AND INSTRUCTIONS IN THIS MANUAL AND ON THE TRUCK!**

Only properly trained operators are allowed to operate a powered industrial truck. Your employer must train you and certify, that you are qualified to operate this truck. Depending on the context in this operating manual, the user can refer to several people, including the owner of the truck, anyone who leases or borrows this truck, and the operator as defined in ASME B56.1. Please pay attention to the section in ASME B56.1 concerning the operator. In this standard, it is defined that the safe operation is the responsibility of the operator (ASME B56.1-2003, Part II, section 5.1.1). You and others can be seriously injured or even killed if you don't use this truck correctly. Before operating your truck, inspect your truck and ensure that it is in correct working order. This truck was designed and built to current industry and government standards. For more information see following:

- ASME B56.1 (American Society of Mechanical Engineers)
- OSHA §1910.178 (Occupational Safety and Health Act)
- ANSI Z535.4 (American National Standards Institute)

**WARNING** If not followed, warning indicates hazard situations which may lead to moderate injury. The instructions or precautions to this message must be observed to avoid the potential risk of injury or death.

Decals on your hand pallet truck according to chapter 2c:

Sign operating instruction (A)



Sign read and follow this instruction (B)



Sign capacity (D)

(sample, your present truck might have a higher capacity!)

**Q max. 300kg**

Sign prohibited use (F)



Sign warning stay clear stop truck (E)



**WARNING**

It is law, you must be certified and trained to operate this truck. Misuse can result in serious injury or death to you or others. All instructions and warnings on the truck and the instruction handbook must be obeyed.



Avoid being crushed.

Keep head arms, hands, legs and feet within the operator area. While travelling be careful when parts extend the truck or its edges. Stop truck completely and set the parking brake, if equipped. Immediately exit and move away from truck in emergency. Look where you are going.



Never ride or stand on forks. Riding or standing on forks or lifted load can cause a fall resulting in serious injury or death. Use extreme caution near docks.

**[GB] CE DECLARATION OF CONFORMITY**

The signatory hereby declares that the machine described below in detail complies with the European Directive 2006/42/EC (Machinery Directive) including amendments as well as the legislative decree to incorporate the directives in national law. The signatory is individually authorized to compile the technical documents.

**[D] EG-KONFORMITÄTSERKLÄRUNG**

Der Unterzeichner bescheinigt hiermit, dass die im Einzelnen bezeichnete Maschine den Europäischen Richtlinien 2006/42/EG (Maschinenrichtlinie) einschließlich deren Änderungen sowie dem entsprechenden Rechtselőzű zur Umsetzung der Richtlinien in nationales Recht entspricht. Der Unterzeichner ist bevollmächtigt, die technischen Unterlagen zusammenzustellen.

**[E] DECLARACIÓN DE CONFORMIDAD CE**

El signatario certifica por medio de la presente que la máquina descrita en esta documentación cumple con la Directiva Europea 2006/42/CE (Directiva de máquinas), incluyendo sus respectivas modificaciones, así como con los Reales Decretos de transposición de la directiva al derecho nacional. El signatario dispone de una autorización individual que le permite compilar la documentación técnica.

**[F] DECLARATION DE CONFORMITE CE**

Les signataires certifient par la présente que les machines désignées individuellement satisfont aux directives européennes 2006/42/CE (directive machine), y compris leurs modifications ainsi que les décrets légaux concernant la mise en œuvre des directives dans le droit national. Les signataires sont respectivement et individuellement autorisés à regrouper les documents techniques.

**[NL] EG-CONFORMITEITSVERKLARING**

De ondertekenaars verklaren hiermee, dat de hieronder genoemde machine voldoen aan de Europese richtlijnen 2006/42/EG (Machinerichtlijn), inclusief de wijzigingen en wegevind voor de omzetting van de richtlijnen in nationaal recht. Ondergetekenden zijn ieder individueel gemachtigd het technisch dossier samen te stellen.

**[P] DECLARAÇÃO DE CONFORMIDADE CE**

Os signatários vêm por este meio certificar que os a máquina descritos em pormenor cumprem as directivas europeias 2006/42/CE (directiva relativa a máquinas) incluindo as suas alterações e o respetivo documento legal com vista ao cumprimento das directivas no enquadramento legal nacional. Os signatários estão individualmente autorizados a compilar os documentos técnicos.

**[II] DICHIARAZIONE DI CONFORMITÀ CE**

Con la presente i firmatari attestano che la macchina per movimentazione interna è conforme alla direttiva europea 2006/42/CE (Direttiva Macchine), compresa le relative modifiche, nonché al documento legale per la trasposizione di tali direttive nel diritto nazionale. I sottoscritti sono singolarmente autorizzati alla creazione della documentazione tecnica.

**[BG] ЕВРОПЕЙСКА ОБЩНОСТ - ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ**

С настоящото подписаните удостоверяват, че специфицираното тук машината средство отговаря на Европейските директиви 2006/42/EU (Директива за машините), включително на техните изменения, както и на съответното постановление за прилагане на директивите в националното право. Подписаните са съсътвено упътномощени поотделно да съставят техническата документация.

**[CZ] EG - PROHLÁSENI O SHODE**

Níže podepsaní tímto potvrzují, že podrobný popis stroje odpovídá Evropským směrnicím 2006/42/EC (směrnice pro strojní zařízení) včetně jejich pozdějších úprav, jakož i příslušném právním výnosům pro uplatnění příslušné směrnice v rámci národního práva. Každý z podepsaných je jednou zároveň způsobil k vytvoření technických podkladů.

**[DK] EF-OVERENSSTEMMELSESERKLÆRING**

Undertegnede erklærer hermed, at følgende maskine overholder de væsentligste krav i Rådets direktiv 2006/42/EF (Maskindirektivet) om indbyrdes tilhørne af medlemsstaternes lovgivning. Alle undertegnede har fuldmagt til selvstændigt at sammensætte det tekniske materiale.

**[EST] EL vastavasavaluds**

Настоящим лицом, подписавшим документ, удостоверяют, что напольное подъемно-транспортное средство с силовым приводом в указанной спецификации соответствует Европейским директивам 2006/42/EG (Директива о машинам), включая изменения в них, а также соответствующему правовому документу по трансформации директив в национальное право. Каждое по отдельности лицо, подписавшее документ, имеет полномочия для составления технической документации.

**[FIN] EU-YHDESMUKKAISUUSELOSTUS**

Allekirjoittavat todistavat läten, että yksilöity kone vastaa eurooppalaisista direktiivistä 2006/42/EY (konendirktiivi) kaikkine muutoksineen sekä sääädöksissä, joilla direktiivit on saatettu osaksi kansallista lainsääädäntöä. Allekirjoittajilla on kullokin erikseen valtuudet laata teknisiä dokumentteja.

**[GR] ΔΙΑΔΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ ΕΟΚ**

Οι υπογράφοντες βεβαιώνουν διά της παρούσας ότι το συγκεκριμένο μηχάνημα συμμορφώνεται προς την Κοινωνική Οδηγία 2006/42/EK («Μηχανήματα»), συμπεριλαμβανομένων των τροποποιήσεων, καθώς και των νομοθετικών διαταγμάτων για τη μεταφορά Οδηγιών στην εθνική νομοθεσία. Οι υπογράφοντες είναι σε κάθε περίπτωση εξουσιοδοτημένοι αποκαλύπταν τα τεχνικά έγγραφα.

**[H] EU KONFORMITÁSI NYILATKOZAT**

Alulirottak ezennel igazolják, hogy a részletesen leírt, a gép megfelel a 2006/42/EK (Gép Irányelv) Európai Irányelvöknek, beleértve azok módosításait, valamint az irányelv nemzeti jogba történő általánosítására irányuló, megfelelő jogi rendelkezést. Továbbá az alulirottak mindegyike rendelkezik meghatalmazzal arra nézve, hogy összehilltethet a műszaki dokumentációt.

**[LT] ES atitinkimo deklaracija**

Zemiau pasirašę asmenys patvirtina, kad atskirai aprašytas mašina atitinka Europos Sajungos direktyvą 2006/42/EB (Mašinų direktyva), išskaitant ir jos pakelimus bei tai atitinkančių teisės aktų dėl direktyvų įgyvendinimo nacionaliniuose teisės aktuose. Pasirašę asmenys yra atskirai atitinkamai galėję sudaryti techninius dokumentus.

**[LV] ES atitīkumības deklarācija**

Ars Žemėm parakstijusiās personas apliecinā, ka detalizēti aprakstītās mašīna atbilst Eiropas Savienības direktīvām 2006/42/EK (Mašīnu direktīva), ieskaņot to izmāsalas, kā arī atbilstoši tiesiski rīkojumu direktīvu pielāgošanai nacionālajai likumdošanai. Parakstījušās personas ir atsevišķi pilnvarotas sastādīt tehniskās dokumentācijas dokumentācijas.

**[NL] EU-KONFORMITETSERKLÄRING**

Undertegnede bekræfter hermed at de enkelte betegnede maskin med kraftdrift overensstemmer med de europeiske retningslinjene 2006/42/EC (masinretningslinje) med endringer, samt den tilsvarende rettsforordning til implementering i nasjonal lovgivning. De undertegnede er hver for seg bemyndiget til å sammenstille de tekniske dokumentene.

**[PL] DEKLARACJA ZGODNOŚCI Z NORMAMI UE**

Sygnatariusze potwierdzają niniejszym, że wyszczególniona maszyna odpowiada dyrektywie europejskiej 2006/42/WE (Dyrektiva maszynowa) wraz ze zmianami oraz rozporządzeniem prawnym dotyczącym wdrożenia dyrektywy do prawa krajowego. Każdy z sygnatariuszy jest upoważniony do samodzielniego stwierdzenia dokumentacji technicznej.

**[RO] DECLARATIE DE CONFORMITATE CE**

Subsemnatii adeveresc prin prezentă că utilajul de mașină, descris individual, corespunde directivelor europene 2006/42/CE (Directiva privind mașinile) inclusiv modificărilor lor, precum și actului legislativ corespunzător prentru transpunerea directivelor în dreptul național. Semnatarii sunt împotrivni individual să redacteze documentația tehnică.

**[RU] Декларация соответствия стандартам ЕС**

Наставящим лица, подписавшие документ, удостоверяют, что машина в указанной спецификации соответствует Европейским директивам, 2006/42/EG (Директива по машинам), включая изменения в них, а также соответствующему правовому документу по трансформации директив в национальное право. Каждое по отдельности лицо, подписавшее документ, имеет полномочия для составления технической документации.

**[SI] EG-KONFORMITETSFÖRKLARING**

Undertecknade intygar härmed att den specificerade maskin är tillverkad i överensstämmelse med de Europeiska direktiven 2006/42/EG (Maskindirektivet), inklusive ändringarna i dessa och motsvarande harmoniseringar i nationell rätt. Undertecknade är var och en för sig berättigad att sammantäcka de tekniska dokumenten.

**[SK] Vyhľásenie o zhode**

Podpisane osoby týmto potvrdzujú, že podrobne popísaný stroje zdôvodňuje európskym smernicam 2006/42/ES (smernica o strojnych zariadeniach) vrátane ich zmien, ako aj príslušnému právnemu výnosu na uplatnenie smerníc v národnom práve. Podpisane osoby sú vždy jednotlivé spomocnené na zostavovanie technickej dokumentácie.

**[SLO] EU IZJAVA O SKLADNOSTI**

Podpisani potrjujemo, da podrobno opisano gnero stroj usstreza Evropski direktivi 2006/42/ES (Direktiva o strojih), vključno z njenimi spremembami in ustrezno pravno uredbo za izvajanje direktiv v nacionalno zakonodajo. Podpisniki so posamečno pooblaščeni za sestavljanje tehnične dokumentacije.

**[TR] AB Uygunluk Açıklaması**

İmza sahibleri bu yazi ile, belirtilen makine istif aracının Avrupa Yönetmeliğlerine 2006/42/EG (Makine Yönetmeliği), bunun getirdiği değişikliklere ve yasal yönetmeliğlerin ulusal yasaya göre değişmesi için olan yasal genelgeye uygun olduğunu onaylamaktadır. Her bir imza sahibi teknik belgeleri ve oluşturma konusunda yetkilidir.

(1) Type/ Typ/ Tip/ Modello/ Typpi/ Tipo / ΤΥΠΟΣ/ Tipus/ Tip/ Tip/ Tips/ Tipas/ Tüüp:

(2) Serial No./ Serien-Nr./ N° de série/ Seriennummer/ № de serie/ Numero de serie/ Serien/ Serijano/ συάριον αριθμός/ Seriové číslo/ Szérszám/ Nr Seriyin/ Serijska številka/ Vyrobné číslo/ Серийный номер/ Seri No./ Seeriari/ Sérías Nr./ Serijos numeris:

(3) Year of constr./ Baujahr/ Année de constr./ Bouwjaar/ År de constr./ Anno di costruzione/ Produktionsår/ Byggeår/ Tillverkningsår/ Valmistustuvuosi/ Årno fabriko/ έτος κατασκευής/ Rok výroby/ Gyártási évi/ Rakprodukcji/ Letnik / I od изготовления / Üretim yılı /

(4) Manufacturer or his authorized representative in Community/ Hersteller oder in der Gemeinschaft ansässiger Vertreter/ Fabricant ou son mandataire établi dans la Communauté/ Fabrikant of zijn in de Gemeenschap gevestigde gemachtigde/ Fabricante o representante establecido en la Comunidad/ Construtor ou Representante estabelecido na Comunidade/ Costruttore oppure il suo rappresentante nella Comunità/ Fabrikant eller dennes Fællesskabet etablerede befaldeagtigede/ Produsent eller agent innen felleskapet/ Tillverkare eller representant inom EU/ Valmistaja tai yhteisömaassa oleva edustaja / V'rrobe nebo jeho zastoupeno/ Gyártó / producent albo jego przedstawiciel w EG (Wspólnota Europejska)/ Konceptwta/ή έκπινη γηπεία, αληγηγέζωτο/ Üretici ya da Bölgedeki Yetkili Temsilci/ Proizvajalec ali pooblaščeni zastopnik s sedežem v EU/ Výrobca alebo zástupca so stálym bydliskom v EU / Изготвитель или его представитель, зарегистрированный в стране Содружества/ Tootja või organisatsiooni pakknev esindaja/ Ražotјis vai vietējais uzņēmuma pārstāvis / Gamintojas arba šalyje reziduojuantis atstovas:

(5) Date/ Datum/ Data/ Fecha/ datum/ Dato/ päiväys/ Kuupäev/ Datums/дата/ Dátum/ dátum/ tarhi/ περιοριζή

(6) Authorised signatory/ Im Auftrag/ pour ordre/ Incarcato/ Por orden de/ per procuração/ op last van/ på vegne af/ på uppdrag/ Etter oppdrag/ psta/ Ulesandrel/ pavedus / v.i. / По поручению / megbízásáról / дължностно лице / z povelení / z poverenia / po nalogu / na polecenie / din sarcina / adina / Յօն՝ չլույնի

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  - Or the declaration is not complete.
- In this case please ask for a copy