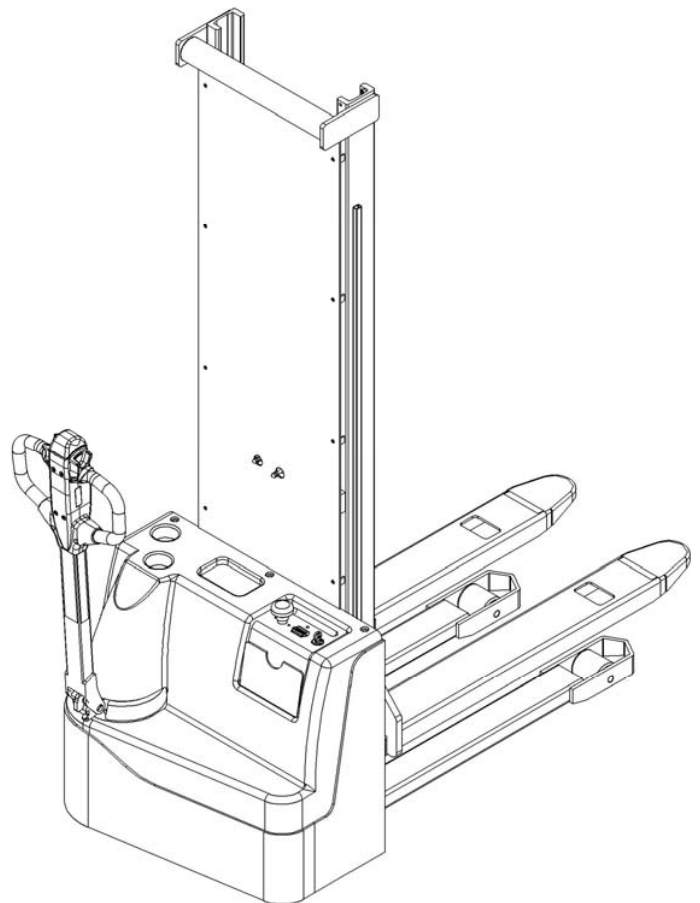


INSTRUCTION HANDBOOK

Electric Stacker ECL 10



WARNING

Do not use the electric 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.

Version 03/2014

ECL10-SMS-004_EN

FOREWORD

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

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



Chapter 11 describes specialized stipulations and regulations for the American market. Follow these instructions and stipulations if you operate the truck within the American market!

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.

This truck complies with the requirements according to EN 3691-1 (Industrial trucks- safety requirements and verification, part 1), EN 12895 (Industrial trucks- electromagnetic compatibility), EN 12053 (Safety of industrial trucks- test methods for measuring noise emissions), EN 1175 (Industrial truck safety – electrical requirements), assumed the truck is used according to the described purpose.

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 wastes randomly.
- To avoid leaking during the use of the products, the user should prepare some absorbable materials (scraps of wooden or dry duster cloth) to absorb the 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 stacker, 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 electric stacker according to this instruction handbook.

The in this handbook described trucks are self propelled pedestrian controlled electric power stacker, with electrically operated lifting function. The trucks are designed for stacking operations in dedicated racking by lifting and lowering the palletized load up to the desired lifting height.

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, prepared, level and adequate surfaces. The truck is intended to be used for indoor applications with ambient temperatures between +5°C and + 40°C and for light duty applications without crossing permanent obstacles or potholes. Operating on ramps is not allowed. While operating, the load must be placed approximately on the longitudinal centre plane of the stacker. Lifting or transporting people is forbidden. If travelling the load must be lowered to the lifting point.

It is not allowed to use this truck on tail lifts or loading ramps.

The capacity is marked on the load diagram as well on the Identification plate. The operator has to consider the warnings and safety instructions.
Operating lighting must be minimum 50 Lux.

Modification

No modifications or alterations to this 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 STACKER

a. Overview of the main components

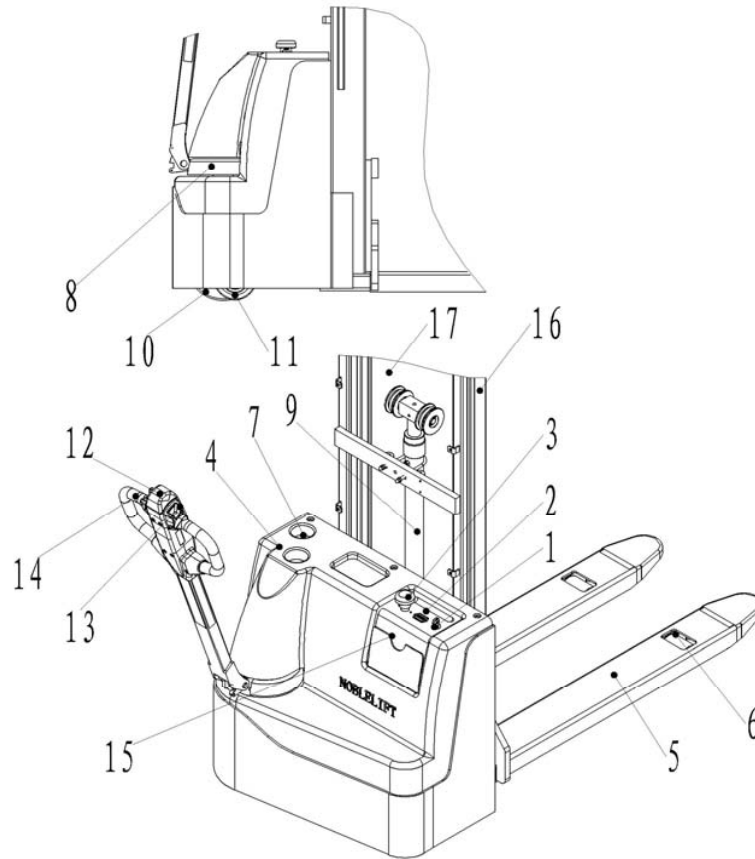


Fig. 1: Overview main components

- | | |
|---|------------------------------------|
| 1 Key switch | 10 Drive wheel |
| 2 Discharge indicator and charging indicating LED | 11 Castors |
| 3 Emergency button | 12 Safety (belly) button |
| 4 Main cover | 13 Accelerator (butterfly- switch) |
| 5 Forks | 14 Multifunction tiller |
| 6 Load wheels | 15 Front panel |
| 7 Charging cable | 16 Chassis with mast |
| 8 Drive motor cover | 17 Protective screen |
| 9 Hydraulic cylinder | |

b. Main technical data

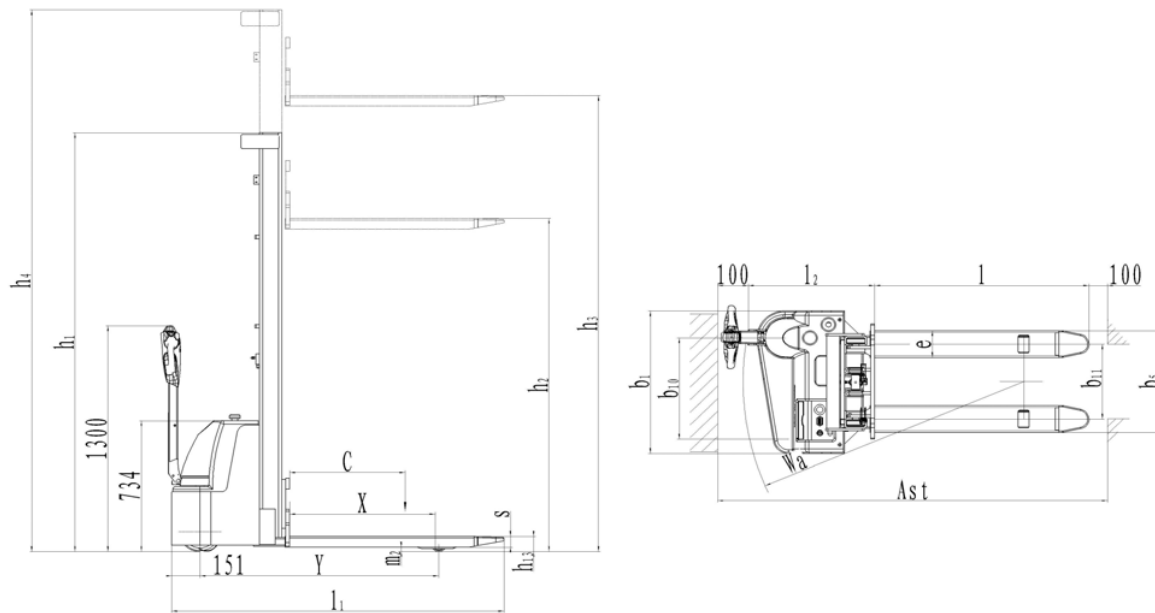


Fig. 2: Technical data

Table 1: Main technical data for standard version

Technical data sheet for industrial trucks acc. to VDI 2198					
Distinguishing mark	1.2	Manufacturer's type designation		ECL 1029	ECL 1029 M
	1.3	Drive		Battery	
	1.4	Operator type		Pedestrian	
	1.5	Load Capacity / rated load	Q (t)	1.0	
	1.6	Load centre distance	C (mm)	600	
	1.8	Load distance ,centre of drive axle to fork	X (mm)	800	733
	1.9	Wheelbase	Y (mm)	1281	
Weight	2.1	Service weight	kg	510	756
	2.2	Axle loading, laden front/rear	kg	580/930	786/970
	2.3	Axle loading, unladen front/rear	kg	385/125	530/226
Tyres, Chassis	3.1	Tires		Polyurethane (PU)	
	3.2	Tire size, front	Ø x w (mm)	Ø220 x 70	
	3.3	Tire size, rear	Ø x w (mm)	Ø80 x 93	
	3.4	Additional wheels(dimensions)	Ø x w (mm)	Ø124 x 60	
	3.5	Wheels, number front/rear(x=driven wheels)		1x+1 / 2	
	3.6	Tread, front	b ₁₀ (mm)	529	
	3.7	Tread, rear	b ₁₁ (mm)	420/ 535	1130 - 1500
Dimensions	4.2	Lowered mast height	h ₁ (mm)	1950	1935
	4.3	Free Lift height	h ₂ (mm)	70	70
	4.4	Lift	h ₃ (mm)	2840	2840
	4.5	Extended mast height	h ₄ (mm)	3325	3420
	4.9	Height of tiller in drive position min./ max.	h ₁₄ (mm)	785/ 1300	
	4.15	Height, lowered	h ₁₃ (mm)	85	40

	4.19	Overall length	l_1 (mm)	1800	1638
	4.20	Length to face of forks	l_2 (mm)	632	700
	4.21	Overall width	b_1 (mm)	800	1250
	4.22	Fork dimensions	s/e/l (mm)	60/150/1150	35/100/1150 ¹⁾
	4.25	Distance between fork- arms	b_5 (mm)	570/ 685	282 - 800
	4.32	Ground clearance, centre of wheelbase	m_2 (mm)	29	25
	4.33	Aisle width for pallets 1000X1200 crossways	Ast (mm)	2318	2341
	4.34	Aisle width for pallets 800X1200 lengthways	Ast (mm)	2250	2300
	4.35	Turning radius	Wa (mm)	1485	
Performance data	5.1	Travel speed, laden/ unladen	km/h	4.3 / 4.5	
	5.2	Lift speed, laden/ unladen	m/s	0,11/ 0,16	
	5.3	Lowering speed, laden/ unladen	m/s	0,13/ 0,11	
	5.8	Max. gradeability, laden/ unladen	%	5 / 10	
	5.10	Service brake		Electromagnetic	
Electric-motor	6.1	Drive motor rating S2 60min	kW	0.45	
	6.2	Lift motor rating at S3 7.5%	kW	2.2	
	6.3	Battery acc. to DIN 43531/ 35/ 36 A, B, C, no		no	
	6.4	Battery voltage, nominal capacity K5	V/Ah	2X 12/ 85 2)	
	6.5	Battery weight	kg	2X 25	
	6.6	Energy consumption acc. to VDI cycle	kWh/h	0.73	0.76
Additional data	8.1	Type of drive control		DC- Speed Control	
	8.4	sound level at driver's ear acc. to EN 12053	dB(A)	< 70	

1) Optional: 35/ 100/ 950

2) Optional: 2x12V / 106 Ah

Other type data

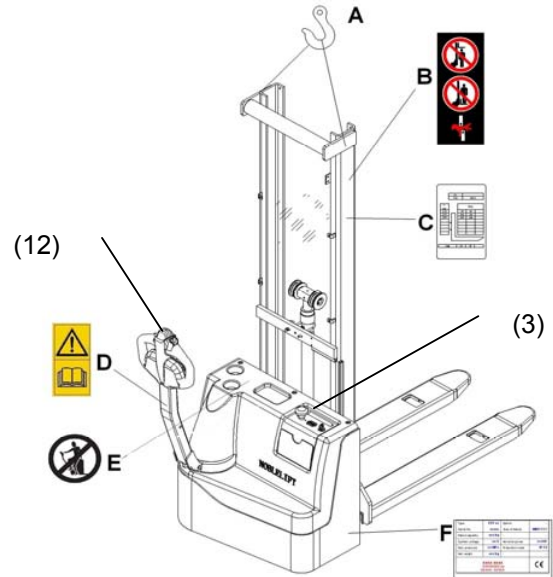
1.2	Manufacturer's type designation		ECL 1016	ECL 1020	ECL 1032	ECL 1035	ECL 1016 M	ECL 1020 M	ECL 1032M	ECL 1035M
1.8	Load distance ,centre of drive axle to fork	x(mm)	821		809		745		733	
2.1	Service weight	kg	430	450	525	540	676	696	771	786
2.2	Axle loading, laden front/rear	kg	550/880	560/890	590/935	600/940	736/940	756/940	796/975	406/980
2.3	Axle loading, unladen front/rear	kg	335/105	340/110	395/130	405/135	500/176	510/186	540/231	550/236
4.2	Lowered mast height	h_1 (mm)	1950	2350	2100	2250	1935	2335	2085	2235
4.3	Free Lift height	h_2 (mm)	1530	1930	70	70	1530	1930	70	70
4.4	Lift	h_3 (mm)	1530	1930	3140	3440	1530	1930	3140	3440
4.5	Extended mast height	h_4 (mm)	1950	2350	3625	3925	2120	2520	3720	4020
4.20	Length to face of forks	l_2 (mm)	620		632		688		700	
4.33	Aisle width for pallets 1000X1200 crossways	Ast (mm)	2312		2315		2336		2341	
4.34	Aisle width for pallets 800X1200 lengthways	Ast (mm)	2236		2245		2290		2300	
6.6	Energy consumption acc. to VDI cycle	kWh/h	0.68		0.73		0.71		0.76	

c. Description of the safety devices and warning labels (Europe and other, excepting USA)



For the USA –market, the description of the safety and warning labels is mentioned in chapter 11.

- A Crane hook label
- B Warning decal: Do not step under or on the forks
- C Residual lift capacity sticker
- D Sticker to read and follow these instructions
- E 'No passengers' decal
- F Identification plate (ID-plate)
- (3) Emergency button
- (12) Safety (belly) button



The truck has an emergency button(3) which stops all lifting-, lowering-, driving- functions and engages the failsafe electromagnetic brake when it is pushed. By pulling this button, the truck can be operated after the controller checked the functions. Before operating, insert the key and turn the switch (1) clockwise. To prevent against unauthorized access, turn the key anti-clockwise and remove it, if you not operate this truck. The truck is equipped with a safety (belly) button (12) which switches the driving function away from the operator, if the truck travels towards the operator and the tiller is activated in the tillers operating zone. Follow also the instructions given on the decals. Replace the decals if they are damaged or missing.

Fig.3: Safety and warning labels

d. Identification plate

- 1 Designation, type
- 2 Serial number
- 3 Rated capacity in kg
- 4 Supply voltage in V
- 5 Own mass (self weight) in kg without battery
- 6 Name and address of manufacturer)
- 7 Battery weight minimum/ maximum
- 8 Nominal power in kW
- 9 Load center distance
- 10 Manufacturing data
- 11 Option

1	Type	xx xx	Option	xx X xxx	
2	Serial No.	xxxxx	Year of Manuf.	MM/YY	11
3	Rated capacity	xxxx kg	Load center distance	xxx mm	10
4	System voltage	xx V	Nominal power	xx kW	9
5	Net weight without battery	xxx kg	Battery mass min/max	xxx / xxx kg	8
6	xxxx xxxxx xxxxxxxx xx xxxxx / xxxxxx		CE		7

If sold to the EU, here the place of the CE marking
CE

Fig. 4: Identification plate

WARNINGS, RESIDUAL RISK AND SAFETY INSTRUCTIONS



DO NOT

- Drive outside the stacking operation with a lifted load higher than the lifting point.
- Put foot or hand under or into the lifting mechanism.
- 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 the wheels, injury could result.
- Lift people. People could fall down and suffer severe injury.
- Push or pull loads.
- Use this truck on ramps.
- Use the truck without a removed protective screen (fig.1, pos. 17/ guarding).
- Side or end load. Load must be distributed evenly on the forks.
- Use the truck with unstable, unbalanced not stable load.
- Use truck without manufacturer's written consent.
- Supply on board charger with AC voltage other than 110V or 220V.

Watch difference in floor levels when driving. Load could fall down or the truck could get uncontrollable. Keep watching the condition of load. Stop operating the truck if load becomes unstable. Brake the truck and activate the emergency button (3) by pushing when sliding load on or off the truck. If the truck has any malfunctions, follow chapter 6. Practice maintenance work according to regular inspection. This truck is not designed to be water resistant. Use the truck under dry condition. Prolonged continuous operation might cause damage of the power pack. Stop operation if temperature of hydraulic oil is too high.



- 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 ramps.
- To prevent unintended sudden movements when not operating the truck (i.e. from another person, etc.) switch of the truck and remove the key.

4. COMMISSIONING, TRANSPORTING, DECOMMISSIONING

a. Commissioning

Table 2: Commissioning data

Type	ECL 1016	ECL 1020	ECL 1029	ECL 1016M	ECL 1020M	ECL 1029M
Commissioning weight [kg]	450	470	530	555	575	645
Version/ Lift [mm]	1600	2000	2900	1600	2000	2900
Type	ECL 1032	ECL 1035	ECL 1032M	ECL 1035M		
Commissioning weight [kg]	545	560	660	675		
Version/ Lift [mm]	3200	3500	3200	3500		

After receiving our new truck or for re-commissioning you have to do following before (firstly) operating the truck:

- Check if are all parts included and not damaged
- Eventually installation and charging the batteries (follow chapter 7)
- Do the work according to the daily inspections as well as functional checks.

b. Lifting/ transportation

For transporting, remove the load, lower the forks to the lowest position and fix the truck safe with dedicated lifting gear according to the following figures.

Lifting



USE DEDICATED CRANE AND LIFTING EQUIPMENT
DO NOT STAND UNDER THE SWAYING LOAD
DO NOT WALK INTO THE HAZARDOUS AREA DURING LIFTING

Park the truck securely and lash the truck according to the points identified in fig. 5

Lift the truck to its destination and place the truck securely before removing the lifting gear.

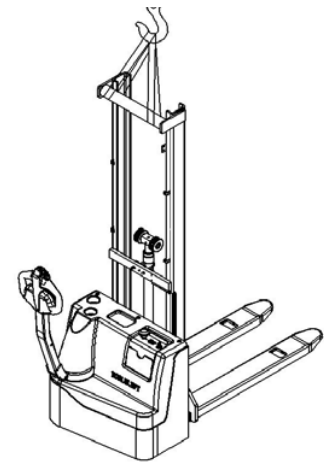


Fig.5: Lifting with a crane

Transportation



DURING TRANSPORTATION ON A LORRY OR TRUCK
ALWAYS FASTEN THE TRUCK SECURELY

Lower the forks and park the truck securely. Fasten the truck according to fig. 6 by fixing dedicated lashing belts at both sides each 2 pc of the trucks upper mast traverse and fasten the other side at the transporting truck.

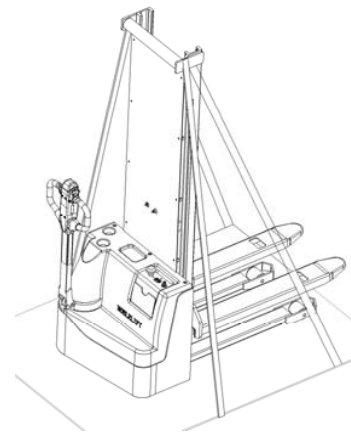


Fig. 6: Fixing points

C. Decommissioning

For storage, remove the load, lower the truck to the lowest position, grease all in this handbook mentioned greasing points (regular inspection), eventual protect the truck against corrosion and dust. Remove the batteries and jack the truck safety, so that there will be no flattening after storage.

For final decommissioning hand the truck to a designated recycling company. Oil, batteries and electric components must be recycled due to legal regulations.

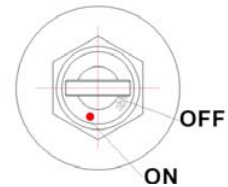


Fig.8: Key switch

3. 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 this truck. Check the truck on the following points before operation.



Remove load from truck and lower the forks.

DO NOT USE THE TRUCK IF ANY MALFUNCTION IS FOUND.

- Check for scratches, deformation or cracks.
- Check if there is any oil leakage from the cylinder._
- Check the vertical creep of the truck.
- Check the chain and rollers for damages or corrosion.
- Check the smooth movement of the wheels.
- Check the function of the emergency brake by activating the emergency button.
- Check, the tiller arm- switch braking function
- Check the lifting and lowering functions by operating the buttons.
- Check if the protective screen has no damages and that is correctly assembled.
- Check the audio warning signal.
- Check if all bolts and nuts are tightened firmly.
- Check the function of the key switch.
- Check the speed limitation switch.
- Visual check if there are any broken hoses or broken electric wires.
- If supplied with a backrest extension, check it for damages and correct assembling.

4. OPERATING INSTRUCTIONS



BEFORE OPERATING THIS TRUCK, PLEASE FOLLOW THE WARNINGS AND SAFETY INSTRUCTIONS (CHAPTER 3).

BEFORE OPERATING THIS TRUCK, ENSURE THAT THE LOAD OR OTHER EQUIPMENT NOT CAUSES INSUFFICIENT VISIBILITY!

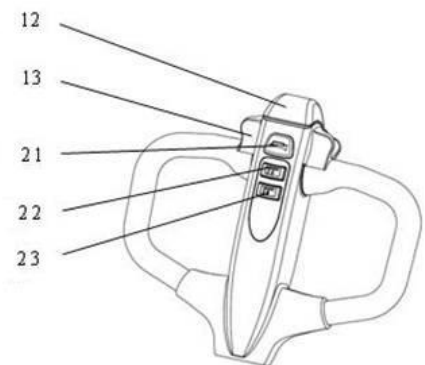


Fig.7: Tiller operating controls

Make sure, that the load is palletized and stable and that the daily inspection is carried out. For starting, insert the key and turn it clockwise to the "ON"- position. The key can be used only on pedestrian controlled power stacker. Eventually before inserting the key, the emergency button must be pulled carefully.

Press the horn button (21) to activate the audible warning signal.

a. Parking



DO NOT PARK THE TRUCK ON INCLINED SURFACES

The truck is equipped with an electromagnetic failsafe stopping and parking brake. Always lower the forks fully and drive the truck to a safe area. Turn the key anti-clockwise to the "Off" – position and remove the key.

b. Residual lift diagram

The residual lift diagram indicates the maximum capacity Q [kg] for a given load centre c [mm] and the corresponding lift height H [mm] for the truck with horizontal load.

The white markings on the mast indicate if the specific lifting limits reached.

For instance with a load centre of gravity distance c of 600 mm and a maximum lift height H of 3500 mm, the max. capacity Q is 600 kg.

No.	ECL10	
Type		
h_3 (mm)	Q (kg)	
3500	600	500
3200	800	600
2500	1000	800
2000	1000	1000
c (mm)	600	700

Fig. 9: Residual lift diagram

c. LiftingDO NOT OVERLOAD THE TRUCK! THE MAXIMUM CAPACITY IS



1000 kg.

LIFT ONLY CAPACITIES ACCORDING TO THE RESIDUAL LIFT DIAGRAM.

Travel with the lowered forks fully underneath the pallet and press the lifting button (fig. 7, 22) until you reached the desired lifting height.

d. Lowering

If the forks are in the racking, firstly travel out of the racking carefully with or without the pallet.

Press the lowering button (fig. 7, 23) carefully.

Lower the load until the forks are clear of the pallet, then drive the truck carefully out of the load unit.

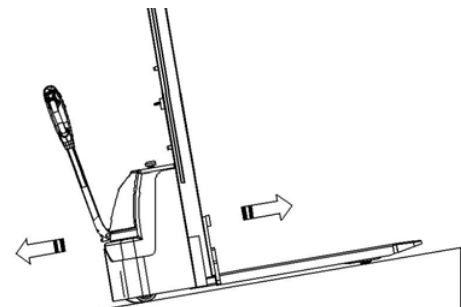


Fig.10: Load facing uphill

e. Travelling



TRAVEL ON INCLINES ONLY WITH THE LOAD FACING UPHILL.
DO NOT TRAVEL ON INCLINES MORE THAN SPECIFIED WITH THE TECHNICAL DATA.

TRAVELLING IS ONLY ALLOWED IF THE FORKS ARE LOWERED DOWN TO THE LIFTING POINT (<300MM).

After starting the truck by turning the inserted key to the "ON"- position (fig. 8; and eventually by pulling the emergency button carefully), move the tiller to the operating zone ('F', fig.11).

Turn the accelerator button to the desired direction forward 'Fw.' Or backwards 'Bw.'(fig. 11).

Control the travelling speed by moving the accelerator button (13) carefully until you reached the desired speed.

If you move the accelerator button back to the neutral position, the controller decelerates the truck until the truck stops. If the truck stopped, the parking brake will be engaged.

Drive carefully the truck to the destination. Watch the route conditions and adjust the travelling speed with the accelerator- button.

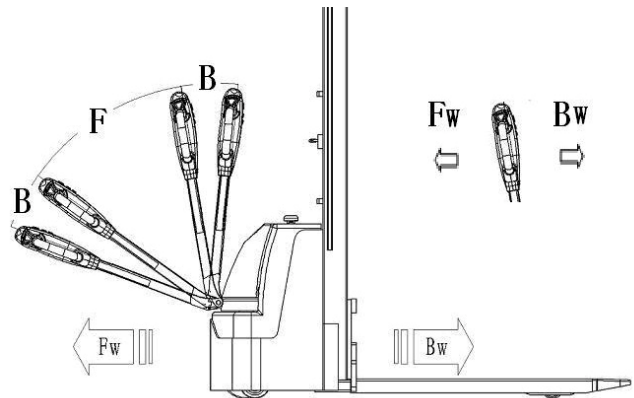


Fig.11: Operating direction

f. Steering

You steer the truck by moving the tiller to the left or right side.

g. Braking



THE BRAKING PERFORMANCE DEPENDS ON THE TRACK CONDITIONS AND THE LOAD CONDITIONS OF THE TRUCK

The braking function can be activated on several ways:

- By moving the accelerator button (13) back to the initial '0' position or by releasing the button, the regenerative braking is activated. The truck brakes until it stops.
- By moving the accelerator button (13) from one driving direction directly to the opposite direction, the truck brakes regenerative until it starts travelling into the opposite direction.
- The truck brakes, if the tiller is moved up or down to the braking zones ('B'). If the tiller is released, the tiller moves automatically up to the upper braking zone ('B'). The truck brakes until it stops.
- The safety (belly) button (12) prevents the operator from being crushed. If this

button is activated, the truck decelerates and/ or starts travelling into the backwards direction ('Bw.') for a short distance and stops. Please consider, that this button also operates, if the truck is not travelling and the tiller is in the operating zone.

h. Malfunctions

If there are any malfunctions or the truck is inoperative, please stop using the truck and activate the emergency button (3) by pushing it. If possible, park the truck on a safe area, turn the key switch (1) anti- clockwise and remove the key.

Inform immediately the manager and, or call your service. If necessary, tow the truck out of the operating area by using dedicated lifting equipment.

i. Emergency

In emergencies, push the emergency button (3). All electrical functions will be stopped. Keep safe distance.

5. BATTERY CHARGING AND REPLACEMENT



- Only qualified personnel are allowed to service or charge the batteries. The instructions of this handbook and from the battery- manufacturer must be observed.
- These batteries are maintenance free; re- filling is prohibited.
- Recycling of batteries undergoes national regulations. Please follow these regulations.
- By handling batteries, open fire is prohibited, gases could cause explosion!
- In the area of battery charging neither burning materials nor burning liquids are allowed. Smoking is prohibited and the area must be ventilated.
- Park the truck securely before starting charging or installing/changing the batteries
- Before finishing the maintenance work, make sure, that all cables are connected correctly and that there are no disturbing towards other components of the truck.

The truck is equipped with following sealed liquid acid batteries:

- 2 pc 12V/ 85Ah(C5)
- Optional: 2 pc 12V/ 106Ah



IT IS ONLY ALLOWED TO USE SEALED LIQUID ACID BATTERIES.

THE WEIGHT OF THE BATTERIES HAS AN INFLUENCE TO THE TRUCKS OPERATING BEHAVIOR.

PLEASE CONSIDER THE MAXIMUM OPERATING TEMPERATURE OF THE BATTERIES.

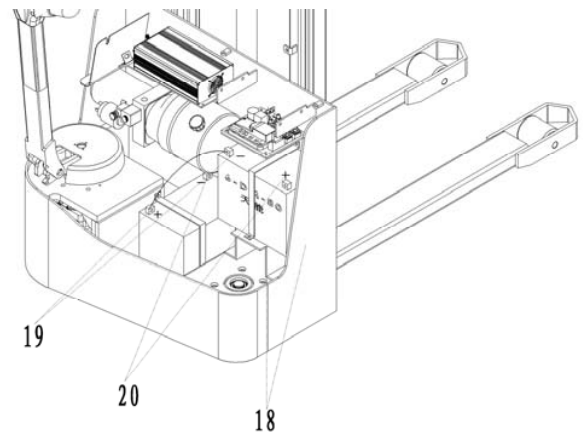


Fig. 12: battery replacement

a. Replacement

Park the truck securely and switch off the stacker with the key (1) and activate the emergency button (3). Unbolt the 2 screws on the main cover and remove the cover. Unbolt the screws of the negative terminals (indicated with '-') firstly, then unbolt the screws of the positive terminals (indicated with '+') and put the cables aside. Unbolt the batteries fixing bars and remove these (fig. 13). Remove the batteries carefully by observing not to hit the upper electrical instruments board or the upside oil tank. The installation is in the reverse order of the removal. Please connect the positive terminals firstly. Otherwise the truck could be damaged.

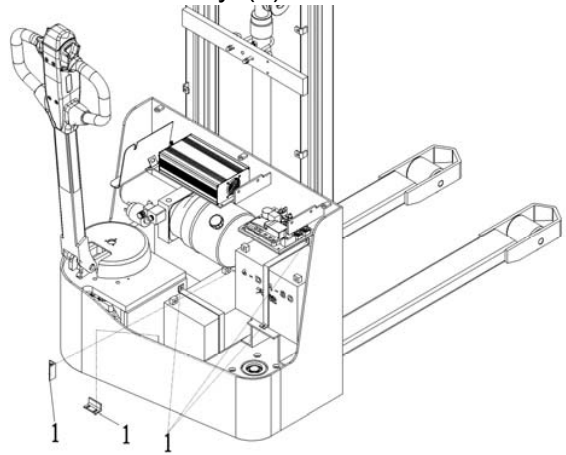
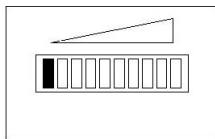


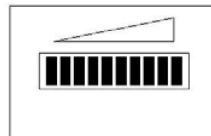
Fig. 13: Preparation to replace the batteries

b. Battery Indicator

The discharge status is indicated by ten red LED segments.



Battery discharged



Battery full charged

Fig.14: Battery discharge indicator

Only when the battery is properly charged, the most right LED lit. As the battery's state-of-charge decreases, successive LEDs light up, only one on at a time. The 2nd from left LED flashes, indicating "energy reserve" (70% depth of discharge). The 2 most left LEDs alternately flash, indicating "empty" (80% depth of discharge).

c. Charging



- The attached automatic charger is only available for the optional voltage of 110V or 220V as referred.
- The room, where you are charging must be ventilated.
- The exactly charge status can be only checked from the dischrge indicator. To control the status, the charging must be interrupted and the truck must be started.

Park the truck at a dedicated secured area with a deidcated power supply.

Lower the forks and remove the load.

Switch the truck off and connect the main power connector (7) to the power supply.

The charger starts charging the battery.

Charging is finished until the charging LED (fig.14,15) produces permanent green light. The charger then goes into a floating mode to prevent the battery against damages. Following table shows the function of the LED-status:

Table 3: LED-Status

LED- signal	Function
Red	Battery discharged
Orange	Charging
Green	Fully charged

When charging is finished, disconnect the connector from the socket and place it in the designated pocket.

6. REGULAR MAINTENANCE



- Only qualified and trained personnel are allowed to do maintenance on this truck.
 - Before maintaining, remove the load and lower the forks to the lowest position.
 - If you need to lift the truck, follow chapter 4 d by using designated lashing or jacking equipment. Before working, put safety devices (for instance designated lift jacks, wedges or wooden blocks) under the truck to protect against accidental lowering, movement or slipping.
 - Please pay attention by maintain the tiller arm. The gas pressure spring is pre-loaded by compression. Carelessness can cause injury.
 - 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.
 - If you need to change the wheels, please follow the instructions above. The castors must be round and they should have no abnormal abrasion.
- Check the items emphasized maintenance checklist.

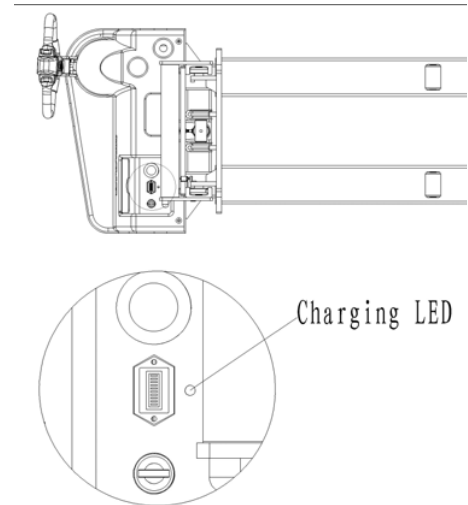


Fig. 15: LED- Status

a. Maintenance checklist

Table 4: Maintenance checklist		Interval (Month)			
		1	3	6	12
	Hydraulic				
1	Check the hydraulic cylinder, piston for damage noise and leakage		•		
2	Check the hydraulic joints and hose for damage and leakage		•		
3	Inspect the hydraulic oil level, refill if necessary		•		
4	Refill the hydraulic oil (12 month or 1500 working hours)				•
5	Check and adjust the function of the pressure valve (1000 kg +0/ +10%)				•
	Mechanical system				
6	Inspect the forks for deformation and cracks		•		
7	Check the chassis for deformation and cracks		•		
8	Check if all screws are fixed		•		

9	Check mast and chain for corrosion, deformation or damages, replace if necessary	•			
10	Check the gearbox for noise and leakage		•		
11	Check the wheels for deformation and damages, replace if necessary		•		
12	Lubricate the steering bearing				•
13	Inspect and lubricate the pivot points		•		
14	Lubricate the grease nipples	•			
15	Replace the guarding and/or protective screen if it is damaged	•			
Electric system					
16	Inspect the electric wiring for damage		•		
17	Check the electric connections and terminals		•		
18	Test the Emergency switch function		•		
19	Check the electric drive motor for noise and damages		•		
20	Test the display		•		
21	Check if correct fuses are used, if necessary replace.		•		
22	Test the audio warning signal		•		
23	Check the contactors		•		
24	Check the frame leakage (insulation test)		•		
25	Check function and wear of the accelerator		•		
26	Check the electrical system of the drive motor		•		
Braking system					
27	Check brake performance, if necessary replace the brake disc or adjust the air gap		•		
Battery					
28	Check the battery voltage		•		
29	Clean and grease the terminals and check for corrosion and damage		•		
30	Check the battery housing for damages		•		
Charger					
31	Check the main power cable for damages			•	
32	Check the start-up protection during charging			•	
Function					
33	Test the audio warning signal	•			
34	Check the air gap of the electromagnetic brake	•			
35	Test the emergency braking	•			
36	Test the reverse and regenerative braking	•			
37	Test the safety (belly) button function	•			
38	Check the steering function	•			
39	Check the lifting and lowering function	•			
40	Check the tiller arm switch function	•			
41	Test the key switch of damages and function	•			
42	Test the speed limitation switch (lifting height >~300mm)	•			
General					
43	Check if all decals are legible and complete	•			
44	Check if the protective screen and or guarding is not damaged	•			
45	Inspect the castor, adjust the height or replace it, if worn out		•		
46	Carry out a test run	•			

b. Lubricating points

Lubricate the marked points according to the maintenance checklist. The required grease specification is: DIN 51825, standard grease.

- 1 Bearings in wheels
- 2 Main frame post
- 3 Chain
- 4 Hydraulic system
- 5 Steering bearing
- 6 Gear box

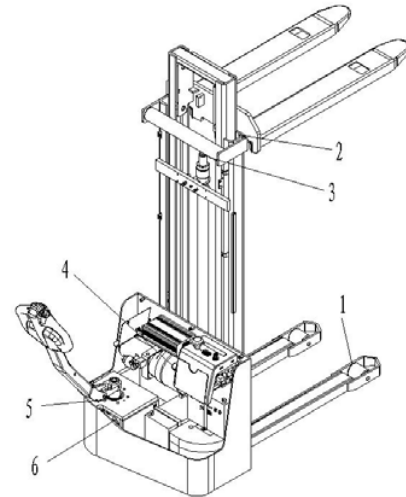


Fig. 16: Lubricating points

c. Check and refill hydraulic oil

The required hydraulic fluid- type is

- H-LP 46, DIN 51524
- Viscosity is 41.4 - 47
- Depending on the type the amount is ~ 2,5L to 3,0L

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.

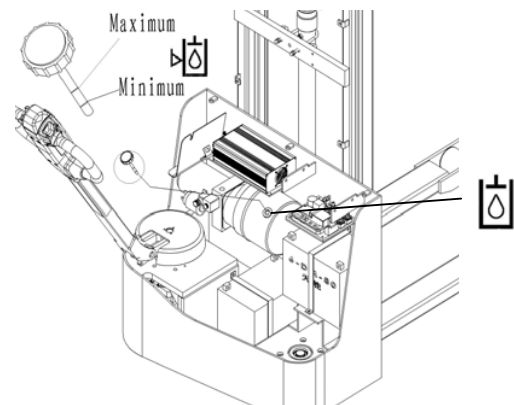


Fig. 17: Oil level

d. Checking electrical fuses

Remove the main cover. The fuses are located according to fig. 20; the size is according to table 5.

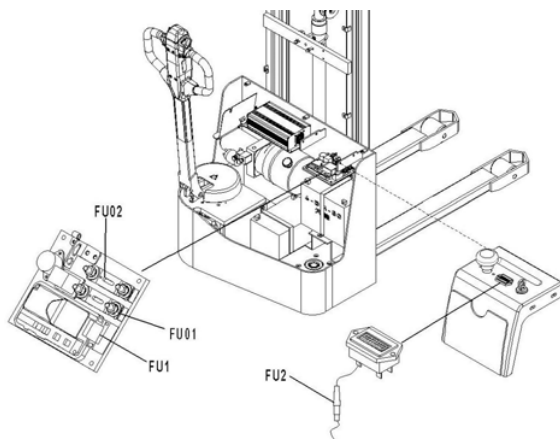


Fig. 18: Location fuses

Table 5: Size of the fuses

	Rate
FU1	10A
FU2	
FU 01	60A
FU 02	100A

e. Removing, reattaching guarding



DO NOT USE THUIS TRUCK, IF THE GUARDING IS DAMAGED OR NOT CORRECTLY ASSEMBLED!

If the guarding needs to be removed, unbolt the fixing screws and remove the screen carefully. The screws will remain with the screen. For reattaching place the screen to the right position and fix each screw correctly. If you need to replace parts, please call your next service partner.

7. TROUBLE SHOOTING



- If the truck has malfunctions follow the instructions, mentioned in chapter 6.

Table 6: Trouble shooting

TROUBLE	CAUSE	REPAIR
Load can't be lifted	Load weight too high	Lift only the max. capacity, mentioned on the ID-plate
	Battery discharged	Charge the battery
	Lifting fuse faulty	Check and eventually replace the lifting fuse
	Hydraulic oil level too low	Check and eventually refill hydraulic oil
	Oil leakage	Repair the hoses and/or the sealing of the cylinder
Oil leakage from air breathing	Excessive quantity of oil.	Reduce oil quantity.
Load can't be lowered	Dirty oil blocks control valve.	Check hydraulic oil and clean control valve. Replace the oil if necessary.
	The solenoid valve for lowering is not opened or is damaged.	Check or replace the valve for lowering.
Stacker not starts operating	Battery is charging	Charge the battery completely and then remove the main power plug from the electrical socket.
	Battery not connected	Connect the battery correctly
	The fuse is faulty	Check and eventually replace fuses
	Battery discharged	Charge the battery
	Combined emergency switch is activated	De-activate the combined emergency switch by insert and pull the knob.
	Tiller in the operating zone	Move the tiller firstly to the braking zone.

Only travelling in one direction	The accelerator and the connections are damaged.	Check the accelerator and the connections.
The stacker only travels very slowly	The battery is discharged.	Check the battery status at the discharge indicator
	The electromagnetic brake is engaged.	Check the electromagnetic brake
	The relating tiller cables are disconnected or damaged	Check the tiller cables and connections.
The stacker starts up suddenly	The controller is damaged.	Replace the controller.
	The accelerator not moves back to its neutral position.	Repair or replace the accelerator.

If the truck has malfunctions and can't be operated out of the working zone, jack the truck up and go with a load handler under the truck and safe the truck securely. Then move the truck out of the aisle.

8. WIRING/ CIRCUIT DIAGRAM

a. Electrical circuit diagram

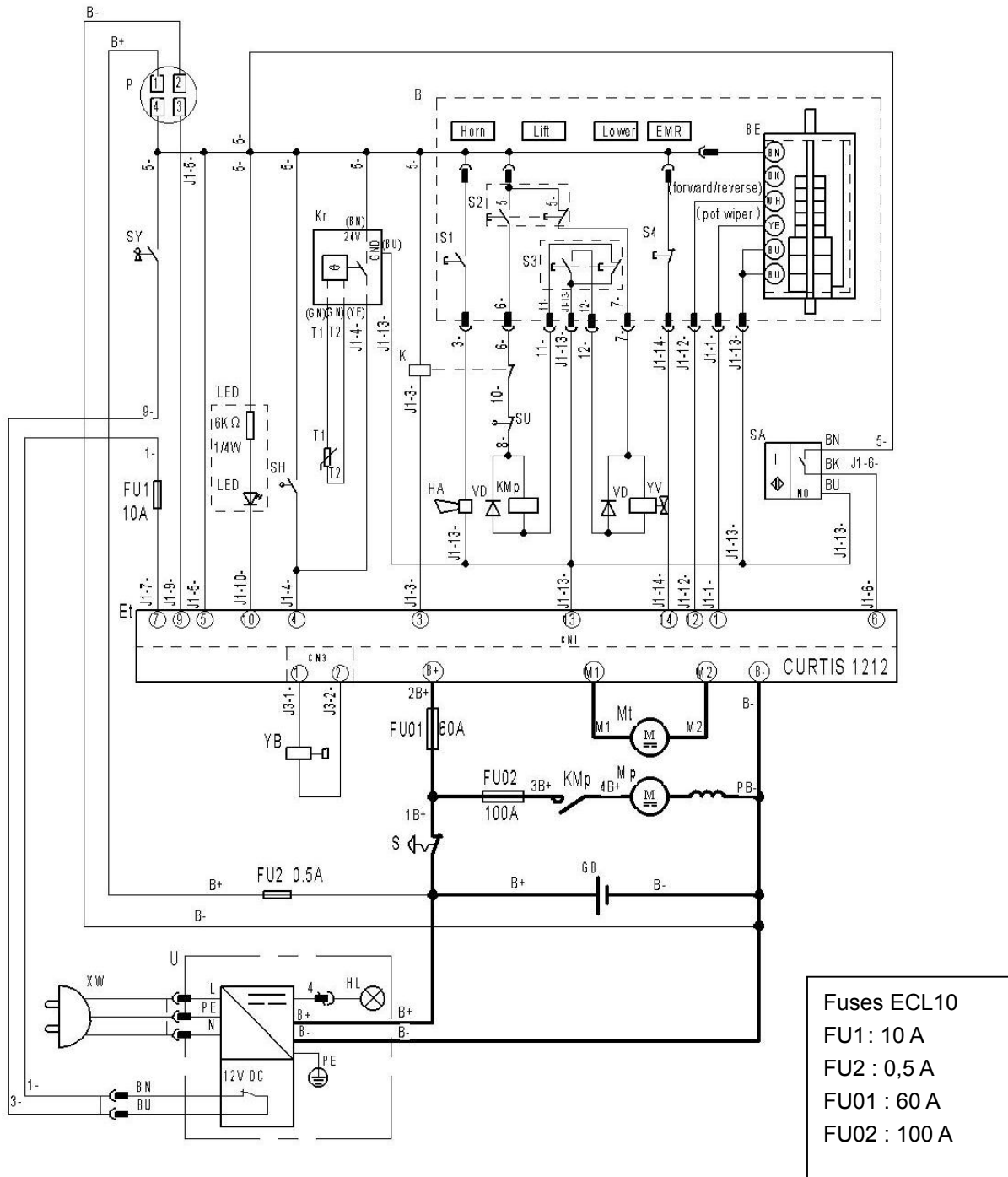


Fig. 19: Electric diagram ECL10

b. Hydraulic circuit

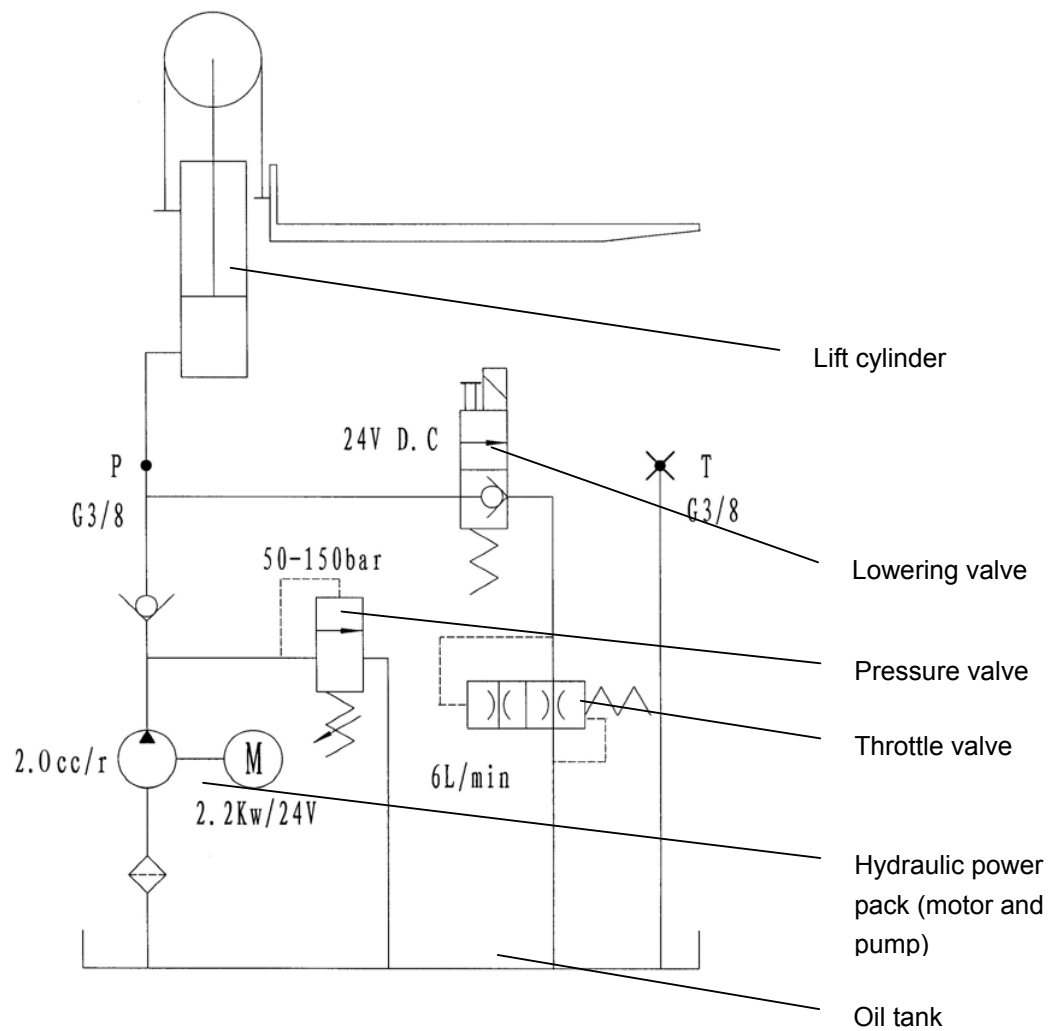


Fig. 20: Hydraulic circuit ECL10

9. SPECIALIZED STIPULATIONS FOR THE US- AMERICAN MARKET

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

a. Foreword/ Compliance

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 industrial truck.

IT IS LAW; 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 (required by OSHA § 1910.178). The training must satisfy OSHA requirements and as minimum the topics mentioned in this handbook. 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)
- UL 583 (Underwriters Laboratory)
- ANSI Z535.4 (American National Standards Institute)

 **DANGER** This sign indicates hazard situations, if not avoided, will result in serious injury or death. The instructions or precautions to this message must be observed to avoid the potential risk of injury or death.

 **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.

 **CAUTION** If not followed, caution indicated situations which may lead to minor injury. Instructions or precautions must be observed to avoid minor injury.

b. Description warning labels (only US- market)

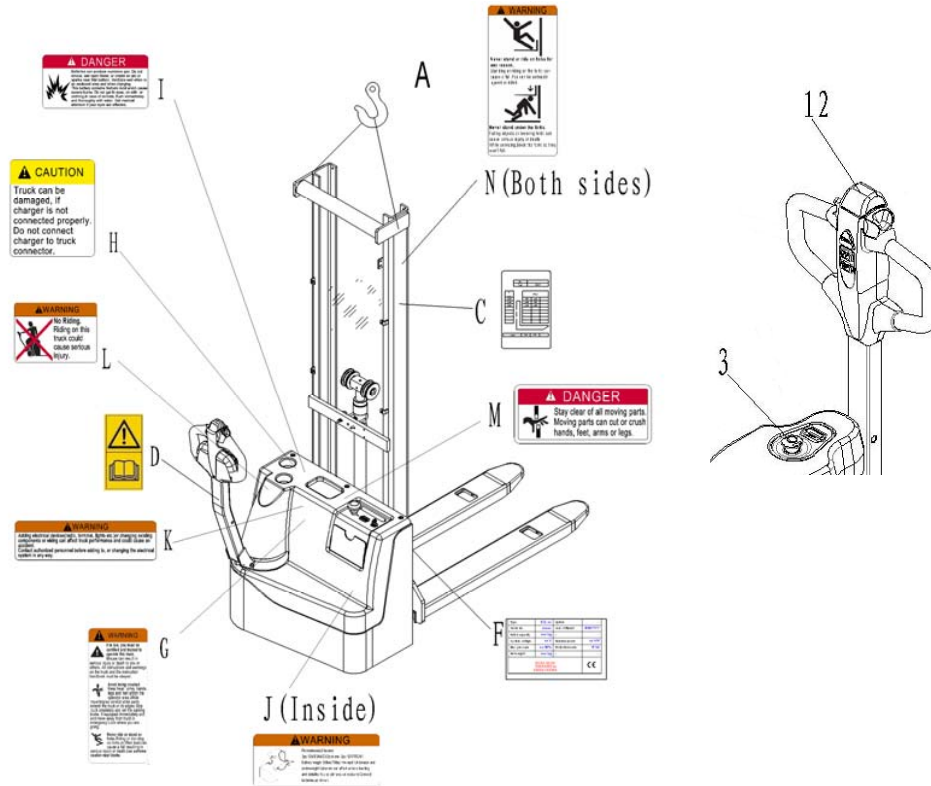


Fig. 30: Warning labels and safety devices (only USA)

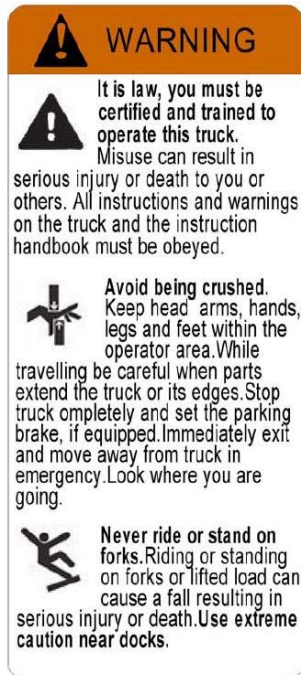
- | | |
|---|-----------------------------------|
| A Crane hook label | H Sign Caution charger |
| B (used only outside US) | I Sign danger battery |
| C Residual lift capacity sticker | J Sign warning battery size |
| D Sticker to read and follow these instructions | K Sign warning electrical devices |
| E (used only outside US) | L Sign danger not riding |
| F Identification plate (ID-plate) | M Sign danger being crushed |
| G Sign warning stay clear stop truck | 3 Combined emergency switch |
| | 12 Safety (belly) button |

The truck is equipped with a combined emergency switch (3) which stops all lifting-, lowering-, driving- functions and engages the failsafe electromagnetic brake when it is pushed. The function is described in chapter 2c. Follow the instructions given on the decals. Replace the decals if they are damaged or missing.

Sign read and follow this instruction (B)



Sign warning stay clear stop truck (G)



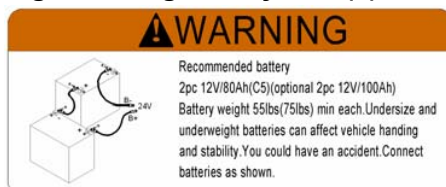
Sign Caution charger (H)



Sign danger battery (I)



Sign warning battery size (J)



Sign warning electrical devices (K)



Sign danger not riding (L)



Sign danger being crushed (M)



Sign not under, on forks



10. DECLARATION OF CONFORMITY (valid, if sold within the EU)

[GB] CE Declaration of Conformity

The signatory hereby declares that the specified machine conforms to the EU Directive 2006/42/EC (Machine Directive) and 2004/108/EEC (Electro-Magnetic Compatibility, EMC) including their amendments as translated into national legislation of the member countries. The signatory is individually authorized to compile the technical documents.

[D] EG-KONFORMITÄTSEKTLÄRUNG

Der Unterzeichner bescheinigt hiermit, dass die im Einzelnen bezeichnete Maschine den Europäischen Richtlinien 2006/42/EG (Maschinenrichtlinie) und 2004/108/EG (Elektromagnetische Verträglichkeit - EMV) einschließlich deren Änderungen sowie dem entsprechenden Rechtserlaß 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 especificada cumple con las Normas Europeas 2006/42/CE (Normativa para maquinarias) y 2004/108/CE (Compatibilidad electromagnética), incluyendo sus respectivas modificaciones, así como con el decreto-ley para la adaptación de las normas al derecho nacional. El signatario dispone de una autorización individual que le permite compilar la documentación técnica.

[F] DECLARATION DE CONFORMITE CE

Par la présente déclaration, les soussignés certifient que le machines spécifié ci-dessus est conforme à la loi et aux directives européennes 2006/42/CE (directive sur les machines) et 2004/108/CEE (compatibilité électromagnétique - CEM), y compris aux modifications qui y sont apportées et à l'arrêté autorisant sa transposition en droit national. Chaque signataire est habilité à établir individuellement la documentation technique.

[NL] EG-CONFORMITEITSVERKLARING

Ondergetekenden verklaren hierbij dat - volgens de nationale wetgeving van de Lidstaten - de hierboven vermelde opgegeven machina beantwoordt aan de bepalingen qua veiligheid bij machines (EG richtlijn 2006/42/EC) en electro-magnetische compatibiliteit (EG richtlijn 2004/108/EEC).

Ondergetekenden zijn ieder individueel gemachtigd het technisch dossier samen te stellen.

[P] DECLARAÇÃO DE CONFORMIDADE CE

Pela presente, os signatários certificam que o máquina especificado está conforme às Directivas Europeias 2006/42/CE („Máquinas“) e 2004/108/CEE („Inocuidade Electromagnética - IEM“), incluindo as alterações das mesmas e o respectivo decreto-lei para a transposição em lei nacional. Cada um dos signatários está autorizado a proceder à elaboração da documentação técnica.

[I] DICHIARAZIONE DI CONFORMITÀ CE

I sottoscritti dichiarano che il veicolo per trasporti interni a macchina specificato soddisfa le Direttive Europee 2006/42/EC (Direttiva Macchine) e 2004/108/EEC (Compatibilità elettromagnetica - EMV) comprese le relative modifiche, come pure il rispettivo decreto legislativo per la conversione delle direttive in diritto nazionale. I sottoscritti sono singolarmente autorizzati alla creazione della documentazione tecnica.

[BG] ЕВРОПЕЙСКА ОБЩНОСТ - ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ

Подписаните удостоверяват с настоящето, че подробно описаното машина средство отговаря на европейския норматив 2006/42/EG (норматив за машини) и на 2004/108/EG (електро-магнетична съвместимост), включително с техните промени, както и на съответния указ за прилагане на нормативите в националното право. Подписаните при това са упълномощени поотделно да съставят техническата документация.

[CZ] EG - PROHLÁŠENÍ O SHODĚ

Níže podepsaný tímto potvrzuje, že podrobný popis uvedené stroje odpovídá Evropským směrnicím 2006/42/EC (směrnice pro stroje) a 2004/108/EEC (elektromagnetická interference - EMV) včetně jejich pozdějších úprav, jakož i příslušným právním výnosům pro uplatnění příslušné směrnice v rámci národního práva. Každý z podepsaných jsou jednotlivě způsobilí k vytvoření technických podkladů.

[DK] EF-OVERENSSTEMMELSESEKTLÆRING

Undertegnede attesterer hermed, at det specificerede maskine stemmer overens med de Europæiske Direktiver 2006/42/EU (maskindirektiv) og 2004/108/EØF (elektromagnetisk kompatibilitet - EMC) samt med den modsvarende lovvedtagelse til implementering af direktiver i den nationale lovgivning. De undertegnede er hver for sig beføjede til at sammenstille de tekniske dokumenter.

[EST] EL vastavusavaldus

Allakirjutanud tõendavad käesolevaga, et üksikasjaliselt kirjeldatud täpsustatud masin vastab Euroopa direktiividele 2006/42/EÜ (Direktiiv masinate kohta) ja 2004/108/EMÜ (Elektromagnetilise sobivus - EMS) kaasa arvatud nende muudatused ja nende vastavatele õigusmäärustele direktiivide muutmiseks siseriiklikuks õiguseks. Iga allakirjutanu üksikult on volitatud koostama tehnilist dokumentatsiooni.

[FIN] EU-YHDENMUKAISUUSSELOSTUS

Allakirjoittaneet todistavat täten, että kukin erikseen mainittu omalla voimantähteellä varustettu tehdaskone vastaa EU-direktiivien 2006/42/EC (koneenrakennusdirektiivi) ja 2004/108/EEC (sähkömagneettinen yhteensopivuus – EMC) määräyksiä sekä niiden muutoksia ja niiden kansalliseen lainsäädäntöön soveltamista koskevaa oikeussäätöä. Jokaisella allekirjoittaneista on oikeus itsenäisesti laatia asiaankuuluvia teknisiä asiakirjoja.

[GR] ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ ΕΟΚ

Οι υπογράφωντες βεβαιώνουν διά της παρούσης ότι το συγκεκριμένο μηχάνημα συμμορφώνεται προς την Κοινοτική Οδηγία 2006/42/ΕΚ («Μηχανήματα») και 2004/108/ΕΟΚ (Ηλεκτρομαγνητικής Συμβατότητας, ΗΜΣ), καθώς και οι τροποποιήσεις τους, όπως μεταφράστηκε στην εθνική νομοθεσία των χωρών μελών. Οι υπογράφωντες είναι σε κάθε περίπτωση εξουσιοδοτημένοι ατομικά να καταρτίσουν τα τεχνικά έγγραφα.

[H] EU KONFORMITÁSI NYILATKOZAT

Alulírottak ezennel igazolják, hogy a részletesen leírt a megadott gép megfelel a 2006/42/EC (Gép-Irányelv) és a 2004/108/EEC (Elektromágneses összeférhetőség - EMV) Európai Irányelveknek, beleértve azok módosításait, valamint az irányelvek nemzeti jogba történő átültetésére irányuló megfelelő jogi rendelkezést. Továbbá az alulírottak mindegyike rendelkezik meghatalmazással arra nézve, hogy összeállíthatja a műszaki dokumentációt.

[LT] ES atitikimo deklaracija

Žemiau pasirašę asmenys patvirtina, kad atskirai aprašytas nurodyta mašina atitinka Europos Sąjungos direktyvas 2006/42/EB (Mašinų direktyva) ir 2004/108/EEB (Elektromagnetinis suderinamumas – EMS) įskaitant jų pakeitimus, o taip pat ir atitinkamą teisės aktą dėl direktyvų įgyvendinimo nacionalinėje teisėje. Kiekvienas iš pasirašiusių asmenų turi teisę ruošti techninę dokumentaciją.

[LV] ES atbilstības deklarācija

Ar zemāk redzamajiem parakstiem tiek apliecināts, ka norādīts mašīna atbilst Eiropas Savienības normatīvām 2006/42/EG (Mašīnu normatīvas) un 2004/108/EEG (Elektromagnētiskā atbilstība – EMV), ieskaitot to izmaiņas, kā arī atbilstošos tiesiskos rīkojumus normatīvu pielāgošanai nacionālajai likumdošanai. Parakstu īpašnieki ir atsevišķi pilnvaroti sastādīt tehniskās dokumentācijas.

[NI] EU-KONFORMITETSERKLÆRING

Undertegnede bekrefter hermed at de enkelte betegnede maskin med kraftdrift tilsvarende de europeiske retningslinjene 2006/42/EC (maskinretningslinje) og 2004/108/EEC (elektromagnetisk fordraglighet - EMV) inklusiv disse endringer og den tilsvarende rettsforordning til omsetning av nasjonal rett. Hver undertegnede er fullmektig til å sette sammen de tekniske dokumentene.

[PL] DEKLARACJA ZGODNOŚCI Z NORMAMI UE

Niżej podpisani potwierdzają niniejszym, że opisany tutaj, napędzany określona maszyna spełnia wymagania określone w dyrektywach Europejskich 2006/42/EC (Maszyny) i 2004/108/EEC (Nieszkodliwość elektromagnetyczna - EMC) wraz z ich późniejszymi zmianami oraz odpowiednimi rozporządzeniami mającymi na celu przekształcenie tych dyrektyw w prawo krajów członkowskich. Niżej podpisani są pojedynczo upoważnieni do zestawiania dokumentacji technicznej.

[RO] DECLARAȚIE DE CONFORMITATE CE

Subsemnatii adevăresc prin prezenta că vehiculul de specificat mașină descris individual corespunde directivelor europene 2006/42/CE (Directiva privind mașinile) și 2004/108/CEE (Compatibilitatea electromagnetică - CEM) inclusiv modificărilor lor precum și actului legislativ corespunzător pentru transpunerea directivelor în drept național. Subsemnatii sunt fiecare în parte împuterniciți să întocmească documentația tehnică.

[RUS] Декларация соответствия стандартам ЕС

Настоящим лица, подписавшие документ, удостоверяют, что машина с указанной спецификацией соответствует европейским стандартам 2006/42/EG (Транспортная директива) и 2004/108/ЕWG (Электromagnитная совместимость - EMC), включая изменения в них, а также соответствующим национальным стандартам и нормам. Каждое по отдельности лицо, подписавшее документ, имеет полномочия для составления технической документации.

[SI] EG-KONFORMITETSFÖRKLARING

Underteckarna intygar härmed att det i detalj betecknade maskin uppfyller de Europeiska direktiven 2006/42/EG (Maskindirektiv) och 2004/108/EEG (Elektromagnetisk tålighet - EMV), inklusive ändringarna i detta och den motsvarande rättsförfordningen för att omsätta direktiven i nationell rätt. Underteckarna har var för sig fullmakt att sammanställa den tekniska dokumentationen.

[SK] vyhlásenie o zhode

Dolu podpísaní týmto potvrdzujeme, že podrobný popis uvedeného stroje zodpovedá Európskym smerniciam 2006/42/EC (ernica pre stroje) a 2004/108/EWG (elektromagnetická tolerancia – EMV) vrátane jeho neskorších úprav, rovnako zodpovedá aj príslušným právnym nariadeniam na uplatnenie smerníc v rámci národného práva. Každý z podpísaných je jednotlivo splnomocnený na vytvorenie technických podkladov.

[SLO] EU IZJAVA O SKLADNOSTI

Podpisani s tem potrjujemo, da posamično označeno določeno stroj vozilo odgovarja Evropski direktivi 2006/42/EC (Direktiva o strojih) in 2004/108/EEC (Elektromagnetna skladnost - EMV) vključno z njihovimi spremembami ter ustrezno pravno uredbo o prevzemu smernic v nacionalno pravo. Podpisniki so vsakokrat posamezno pooblašteni za izdajanje tehnične dokumentacije.

[TR] AB Uygunluk Açıklaması

İmza sahibi şahıslar, ayrıntıları belirtilen makine aracının, 2006/42/EC (Makine Yönergesi) ve 2004/108/EEC (Elektromanyetik Uyumluluk – EMC) no'lu Avrupa Yönergelerine ve bunların değişiklik sonucu oluşan metinlerine ve yönergelerin milli hukuk hükümlerine dönüştürülmesine dair ilgili hukuk karamanesine uygun olduğunu tasdik ederler. İmza sahibi şahıslar teknik dosyaları bir araya getirmek için münferiden vekil tayin edildi.

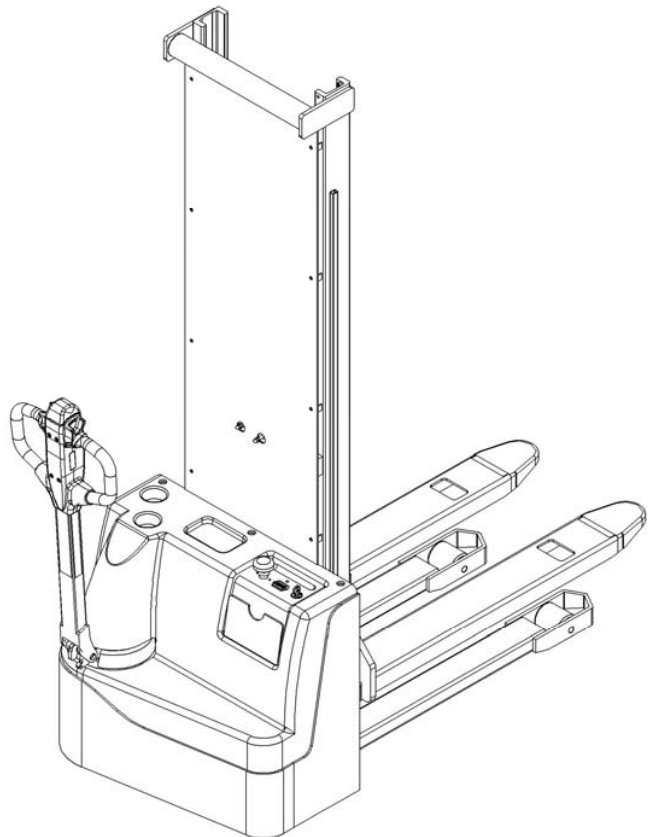
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Spare parts list

Electric Stacker ECL10



Version 02/2015

ECL10-BPT-006_EN

起始车辆识别号: 30150200167

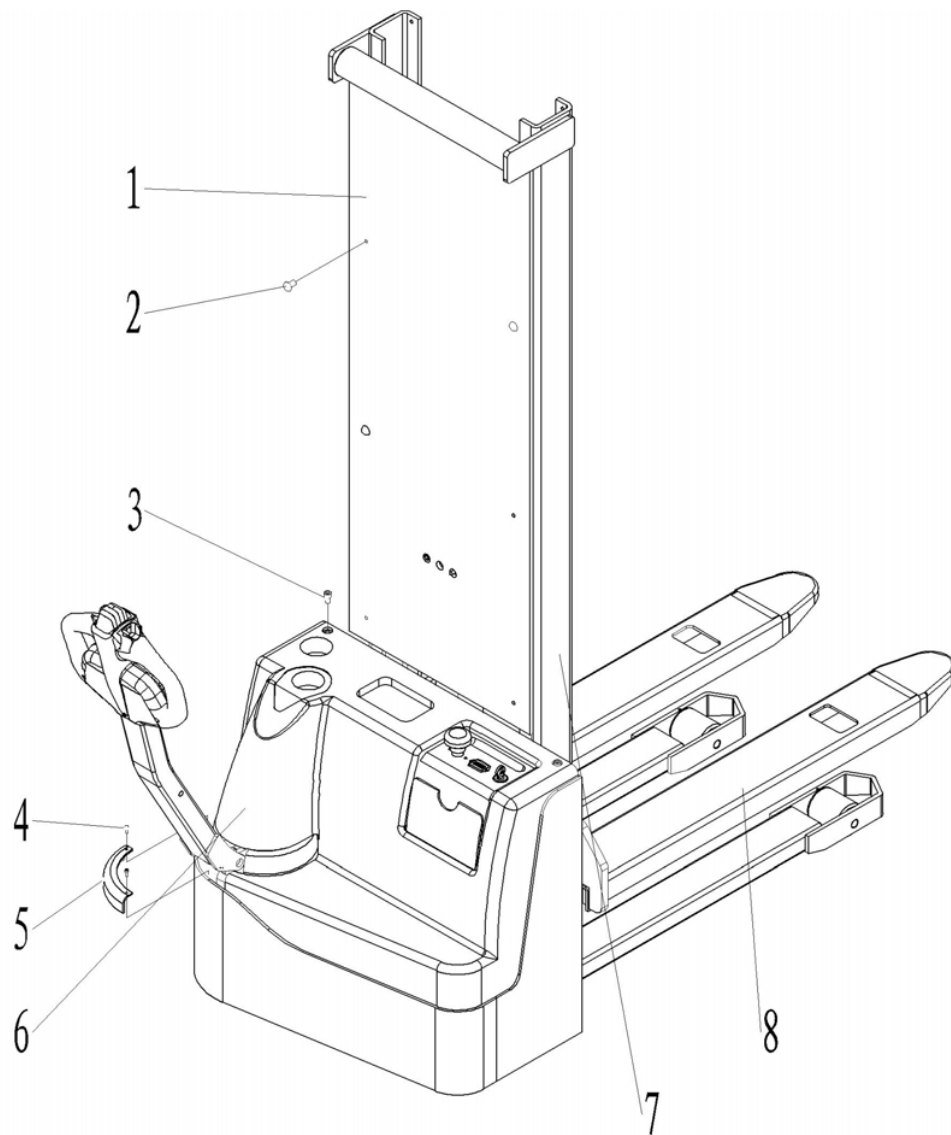
起始日期: 2015 年 2 月

更改文件号: Y2015-013

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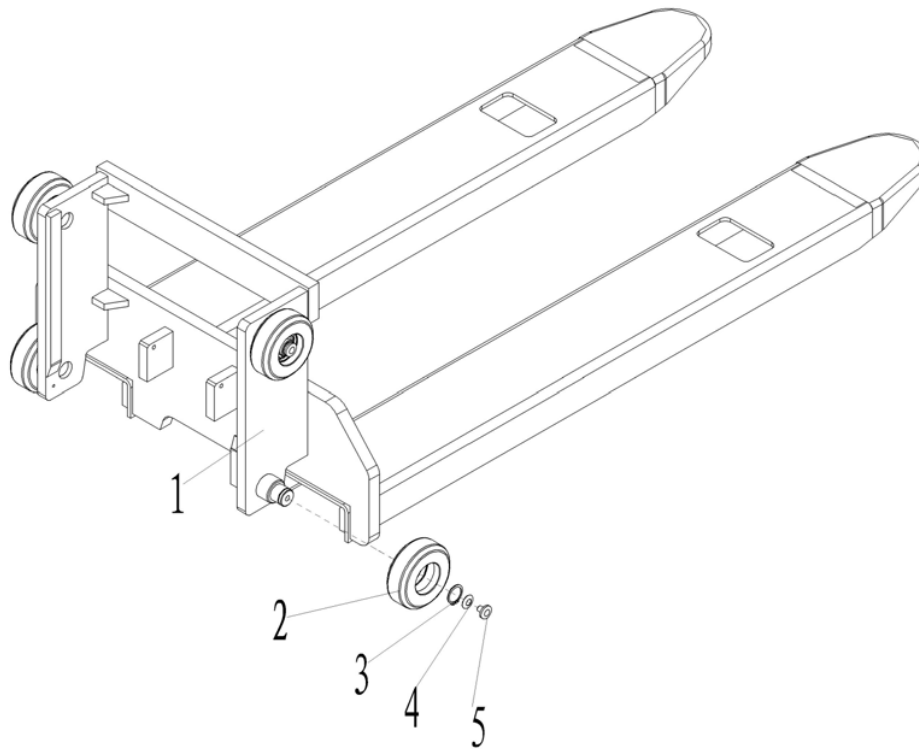
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Fig. 1 Main components



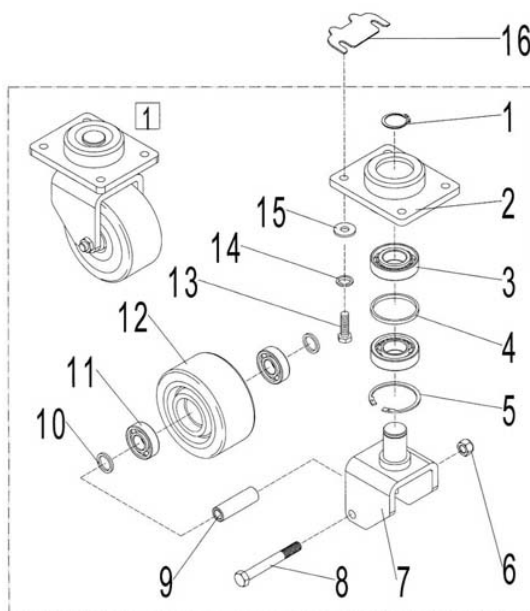
No.	Parts No.	Name	Qty.	Remarks
1	9000002061	Protective plate	1	Single mast 2000
	9000002097			Single mast 1600
	9000002119			Double mast 2900
	9000009969			Double mast 3200
	9000009980			Double mast 3500
2	0000023555	Screw	8	
3	1000423003	Screw	2	
4	0000023076	Screw	2	
5	9000002060	Open plate	1	
6	9000002059	Tank cover	1	
7	9000002023	Welded chassis (incl. outside mast))	1	Single mast 570X2000
	9000002092			Single mast 570X1600
	9000005952			Single mast 685X2000
	9000005959			Single mast 685X1600
	9000002108			Double mast 570X2900
	9000005964			Double mast 685X2900
	9000009966			Double mast 570X3200
	9000009988			Double mast 685X3200
	9000009977			Double mast 570X3500
	9000009990			Double mast 685X3500
8	9000002009	Fork assembly	1	Single mast 570
	9000005948			Single mast 685
	9000002101			Double mast 570
	9000005961			Double mast 685

Fig. 2 Fork



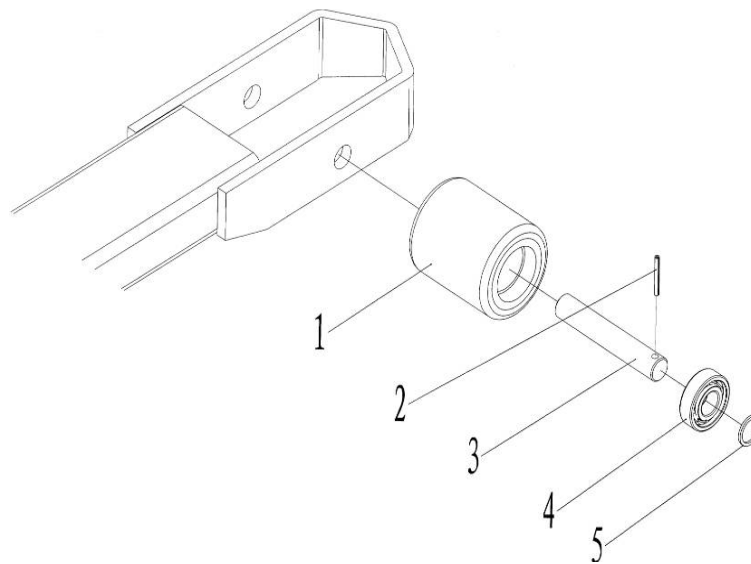
No.	Parts No.	Name	Qty.	Remarks
1	9000002010	Welded fork	1	Single mast 570
	9000005949		1	Single mast 685
	9000002102		1	Double mast 570
	9000005962		1	Double mast 685
2	2530402002	Bearing	4	
3	0000026013	Circlip for shaft – A type	4	
4	2500525001	Washer	2	
5	2500502003	Side cushion	4	

Fig. 3 Sideways castor



No.	Parts No.	Name	Qty.	Remarks
1	0000026008	Circlip for shaft	1	
2	2000405001	Bearing seat	1	
3	0000027013	Angular contact bearing	2	
4	2000413001	Sleeve	1	
5	0000026010	Circlip	1	
6	0000024015	Self- locking nut	1	
7	2000401007	Wheel frame	1	
8	0000023111	Bolt	1	
9	2000413002	Shaft sleeve	1	
10	1000525001	Washer	2	
11	0000027001	Bearing	2	
12	2020416001	Wheel	1	
13	0000023029	Screw	4	
14	0000023006	Spring washer	4	
15	0000025002	Flat washer	4	
16	9000005936	Adjust plate	4	
1	2040400001	Steering wheel assembly	1	

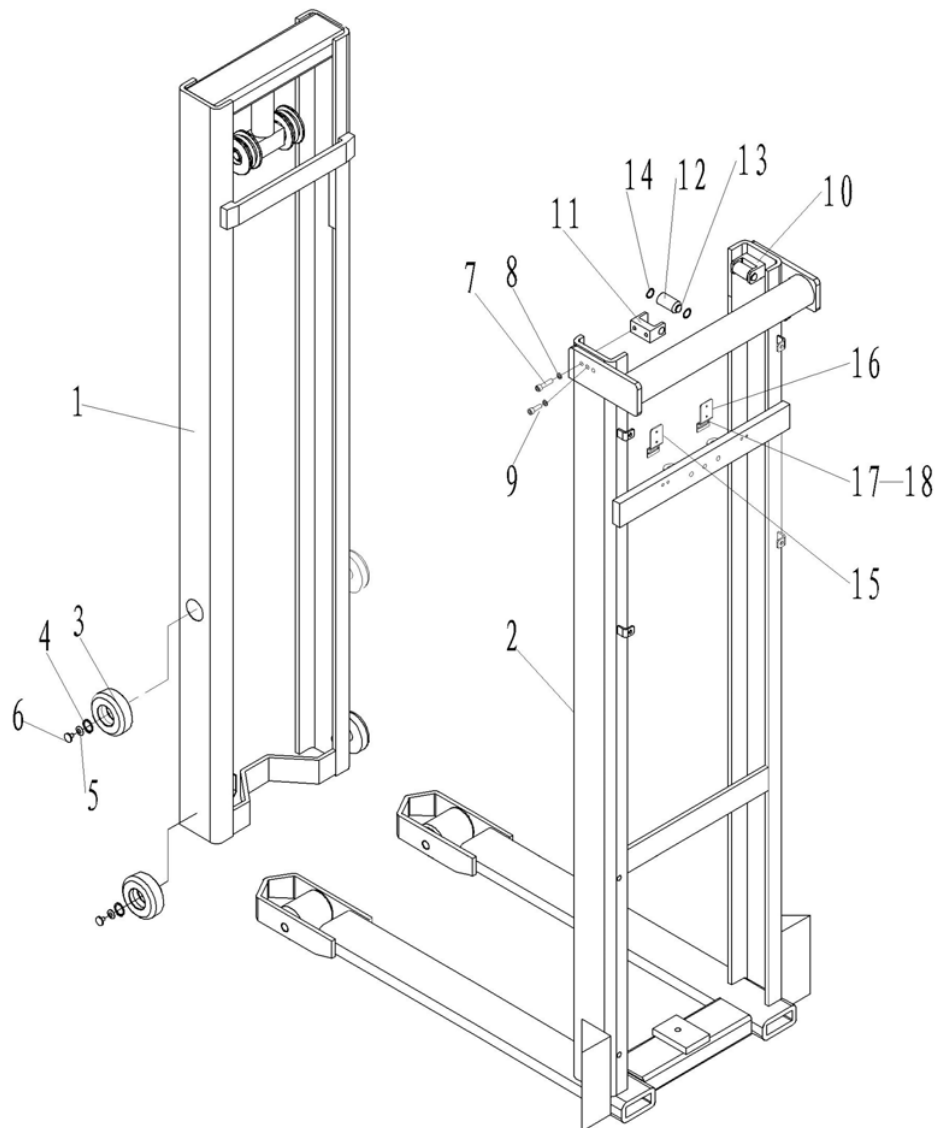
Fig. 4 Load wheel



No.	Parts No.	Name	Qty.	Remarks
1	2000416003	Load wheel	1	
2	0000028055	Dowel pin heavy	2	
3	1030507004	Axle	1	
4	0000027001	Bearing	2	
5	1000525001	Washer	2	

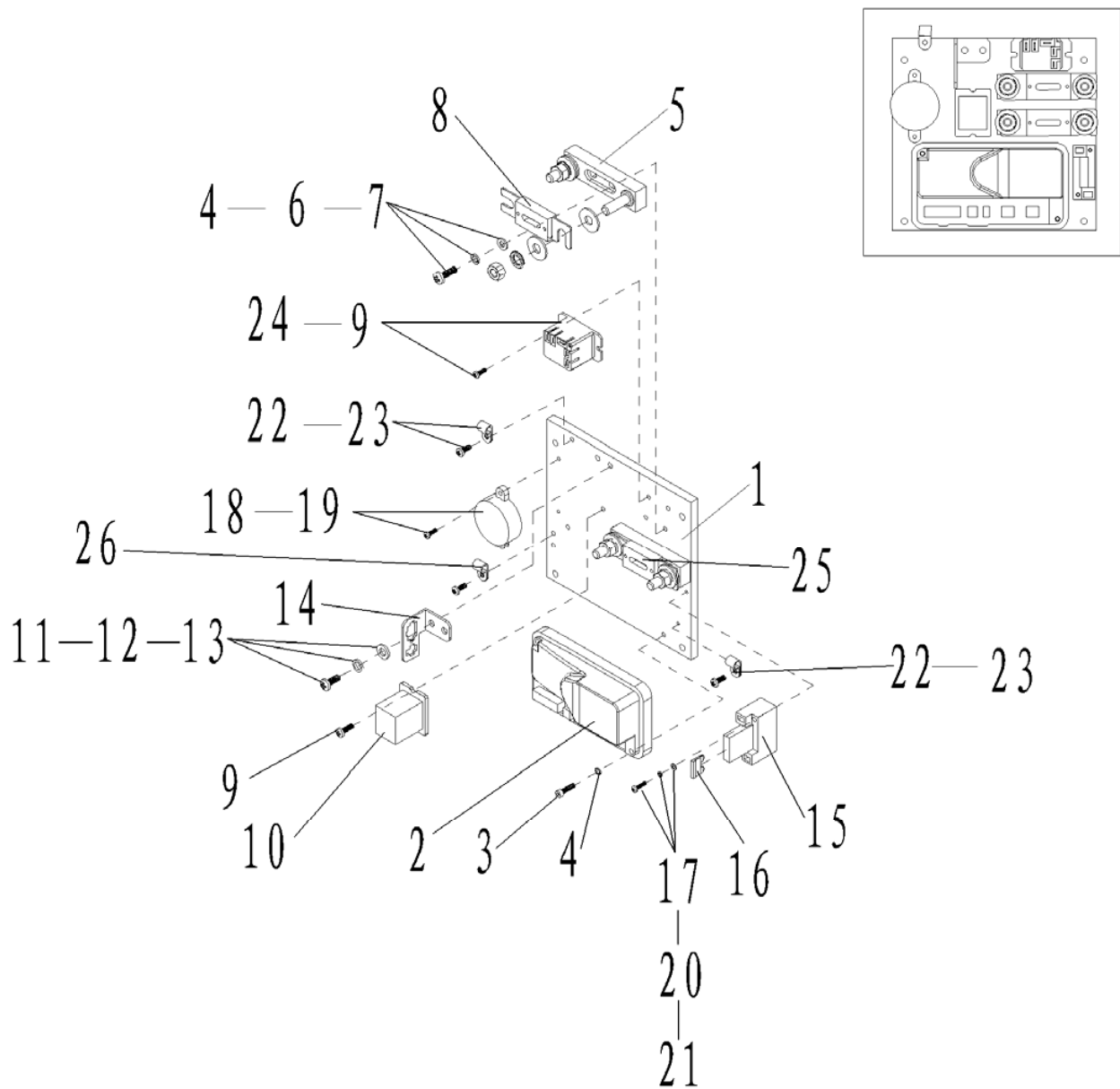
Fig. 5 Mast Assembly

5.1 Double Mast



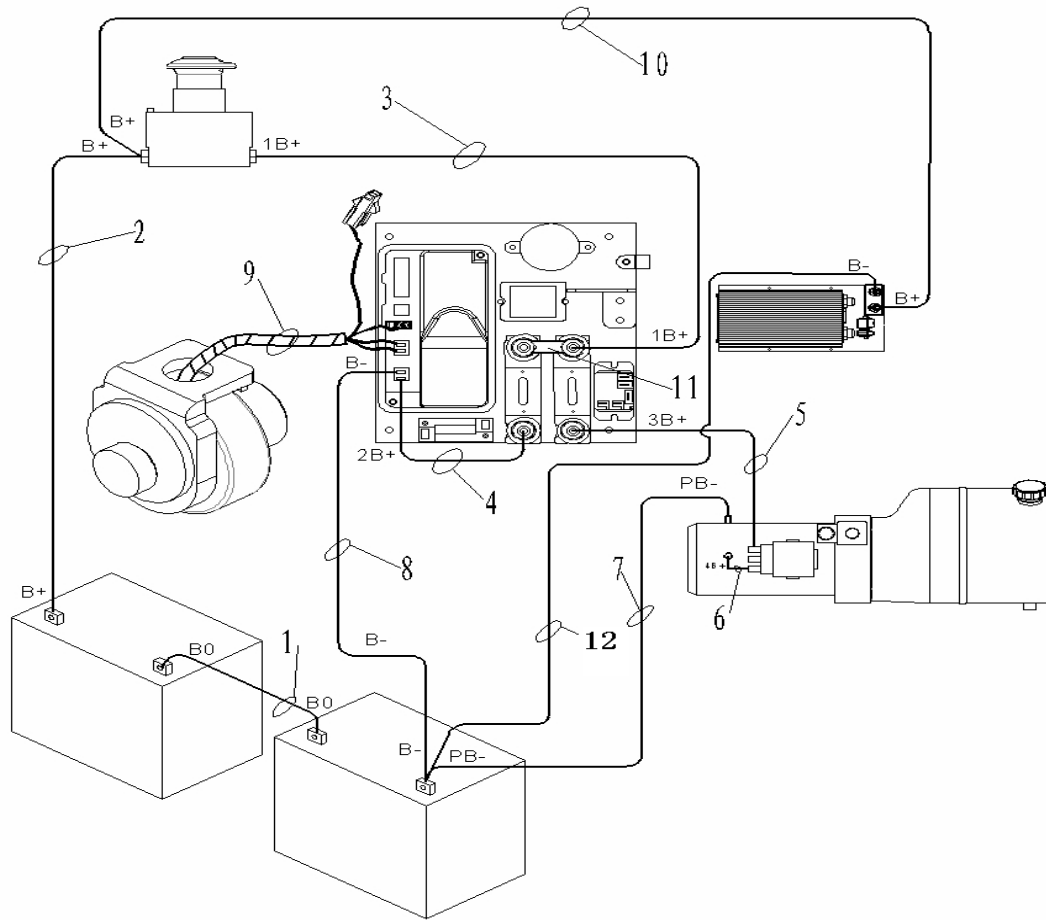
No.	Parts No.	Name	Qty.	Remarks
1	9000002124	Inner mast welding	1	2900
	9000009973			3200
	9000009984			3500
2	9000002108	Welded chassis	1	570X2900 Whole chassis, also see fig. 1
	9000005964			685X2900
	9000009966			570X3200
	9000009988			685X3200
	9000009977			570X3500
	9000009990			685X3500
3	2530402002	Bearing	4	
4	0000026013	Circlip for shaft-A type	4	
5	2500525001	Helical washer	2	Quality depends on situation
6	2500502003	Side cushion	4	
7	0000023172	Screw	4	
8	0000025001	Standard spring washer	4	
9	0000023047	Screw	2	
10	2530500002	Guide wheel	2	Assembly
11	2530504007	Wheel seat	2	
12	2500511002	Guide wheel	2	
13	2500507003	Hinge pin	2	
14	0000026034	Circlip for shaft-A type	4	
15	9000002120	Micro switch fixed plate	1	
16	9000005946	Approach switch fixed plate	1	
17	0000023555	Screw	4	
18	0000023055	Flat washer	4	

Fig. 6 Electronic control board assembly



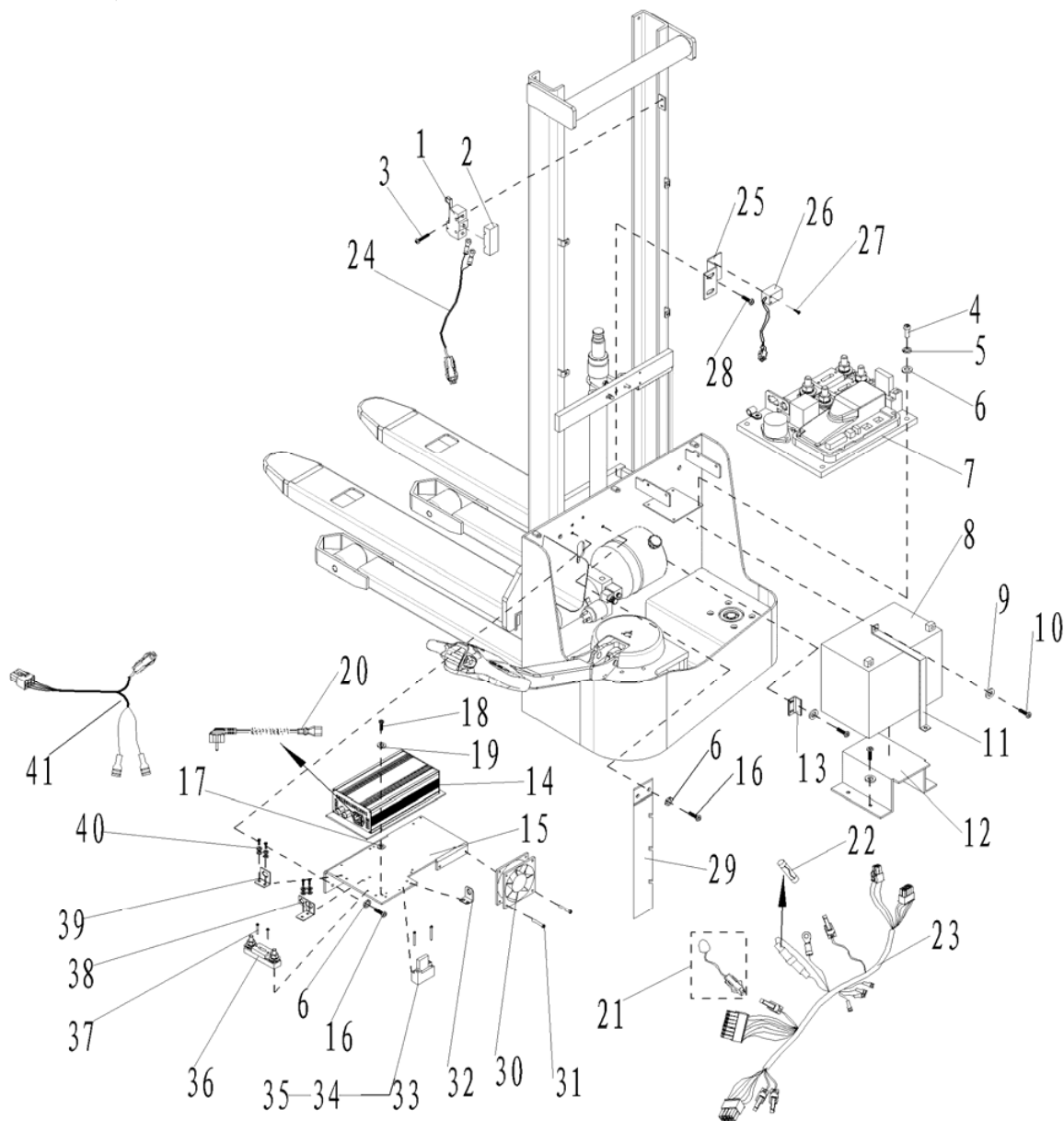
No.	Parts No.	Name	Qty.	Remarks
1	9000002066	Aluminum plate	1	
2	9000009802	Controller CURTIS1212P-2501	1	
3	0000023033	Screw	2	
4	0000025018	Spring washer	8	
5	1000434007	Fuse holder SYV	2	
6	0000025019	Flat washer	6	
7	0000023211	Screw	2	
8	2210434004	Bolted fuse	1	
9	0000023071	Screw	2	
10	9000005985	Temperature protection module BD-W-115-N	1	
11	0000023516	Screw	2	
12	0000025014	Flat washer	2	
13	0000025015	Spring washer	2	
14	1000404005	Connector	1	
15	1000434021	One position vehicle fuse holder BD	1	
16	1000434040	Plug fuse	1	
17	0000023074	Screw	2	
18	9000007394	Electric buzzer	1	
19	0000023648	Screw	2	
20	0000025003	Spring washer	2	
21	0000025026	Flat washer C	2	
22	1000403004	Strain relief UC-2	2	
23	0000023307	Screw	4	
24	9000002322	Relay ARP12F-1C	1	
25	1000434020	Bolted fuse	1	
26	9000002325	Strain relief UC-5	2	

Fig. 7 Main Harness



No.	Parts No.	Name	Qty.	Remarks
1	9000002409	B0 wire	1	
2	9000002410	B+ wire	1	
3	9000002411	1B+ wire	1	
4	9000002412	2B+ wire	1	
5	9000002413	3B+ wire	1	
6	9000002414	4B+ wire	1	
7	9000002415	PB- wire	1	
8	9000002416	B- wire	1	
9	9000002417	Driving wheel harness	1	
10	9000002418	Charger anode B+ wire	1	
11	1020434003	Copper bar 1	1	
12	9000008788	Charger anode B- wire	1	New add

Fig.8 Electric parts and components

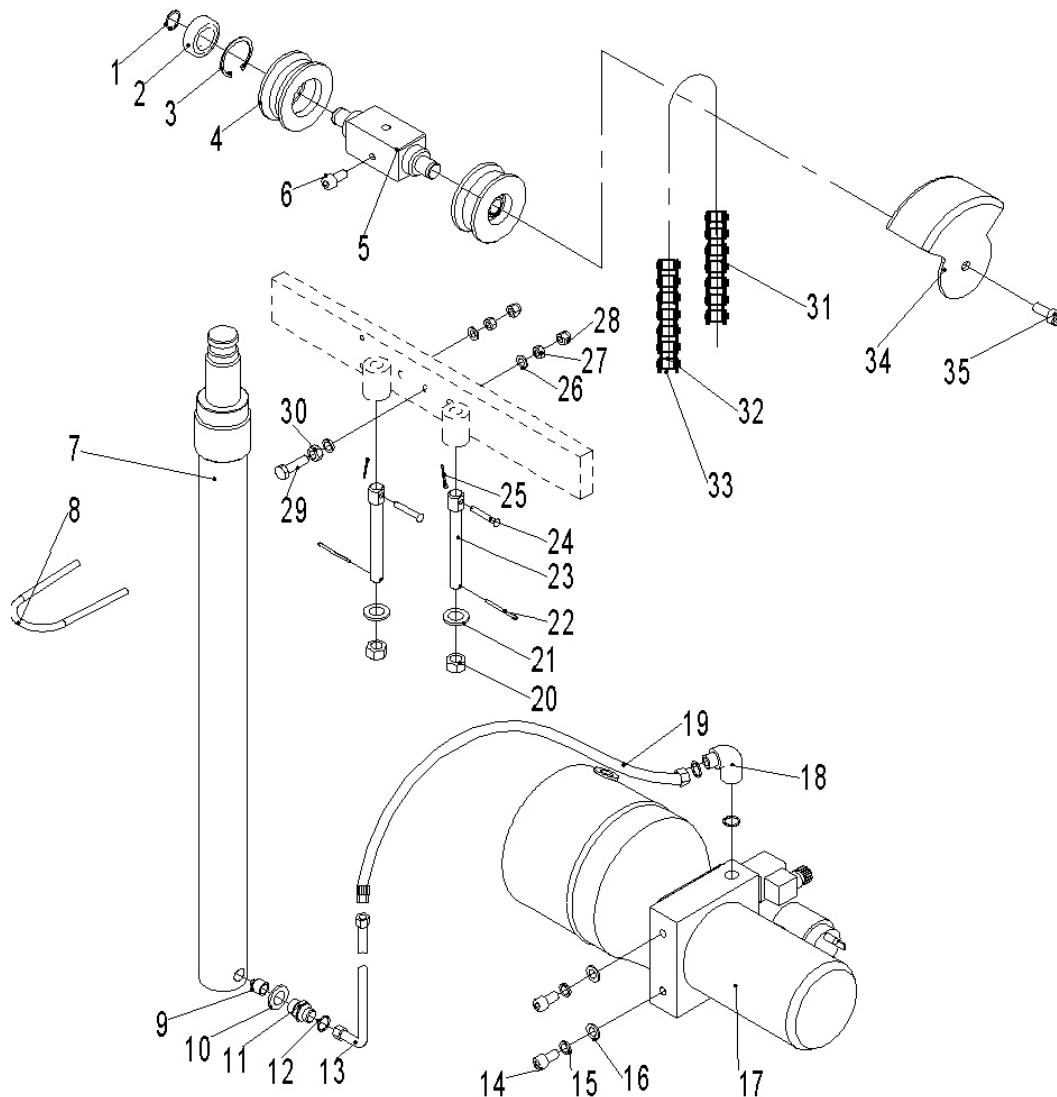


No.	Parts No.	Name	Qty.	Remarks
1	2040634001	Micro switch	2	
2	2040603002	Micro switch protective cover	2	
3	0000023033	Screw	4	
4	0000023107	Screw	6	
5	0000025015	Spring washer	18	Add 6 piece
6	0000025014	Flat washer	12	Add 6 piece
7	9000002065	Electronic control assembly	1	
8	1000432001	Battery 12V/85Ah	2	Optional
	2100432001	Battery 12V/106Ah	2	
9	0000025011	Flat washer	8	
10	0000023012	Screw	8	
11	9000002062	Accumulator holder	1	
12	9000002063	Accumulator fixed seat	1	With106Ah battery
13	9000002064	Accumulator fixed angle iron	2	
14	9000002068	Charger 24V/10A NCN24101P22	1	Input voltage: 220AC
	9000008638	Charger 24V/10A QQE240-11CH59	1	Input voltage: 100-240AC
15	9000008678	Accumulator holder	1	Change
16	0000023076	Screw	6	
17	1000418002	Valve washer	1	
18	0000023056	Screw	4	
19	0000025019	Flat washer	4	
20	1010434009	Double end spring wire plug 3*0.75(Australian)	1	Optional
	1010434011	Double end spring wire plug 3*0.75(English)	1	
	1010434012	Double end spring wire plug 3*0.75(European)	1	
	1010434013	Double end spring wire plug 3*0.75(Italian)	1	
	1010434014	Double end spring wire plug 3*0.75(Sweden)	1	
	2530334005	Double end spring wire plug 3*0.75(American)	1	
	1010434023	Double end spring wire plug 3*0.75(Asian)	1	
21	9000002192	LED Fault display assembly	1	
22	9000002324	Fuse tube 5	1	
23	9000002407	Control harness	1	
24	9000002408	Micro switch harness	1	

25	9000002079	Approach switch fixed plate	1	
26	9000007427	Approach switch NBN5-FT-E2	1	single Mast
	9000007428	Approach switch NBN5-FT-E2	1	double Mast
27	0000023075	Screw	2	
28	0000023042	Screw	2	
29	9000005937	Cable holder	1	
30	1010434007	air fan ADDA DC12V	1	
31	0000023041	Screw	2	
32	1010404005	Connector	1	
33	1000434021	One position vehicle fuse holder BD	1	
34	1010434008	Plug fuse	1	
35	0000023074	Screw	2	
36	1000434007	Fuse holder SYY	1	
37	0000023211	Screw	2	
38	1000404005	Connector	1	
39	1010404006	Connector	1	
40	0000023516	Screw	6	
41	9000008787	air fan wire	1	

Fig.9 Hydraulic System

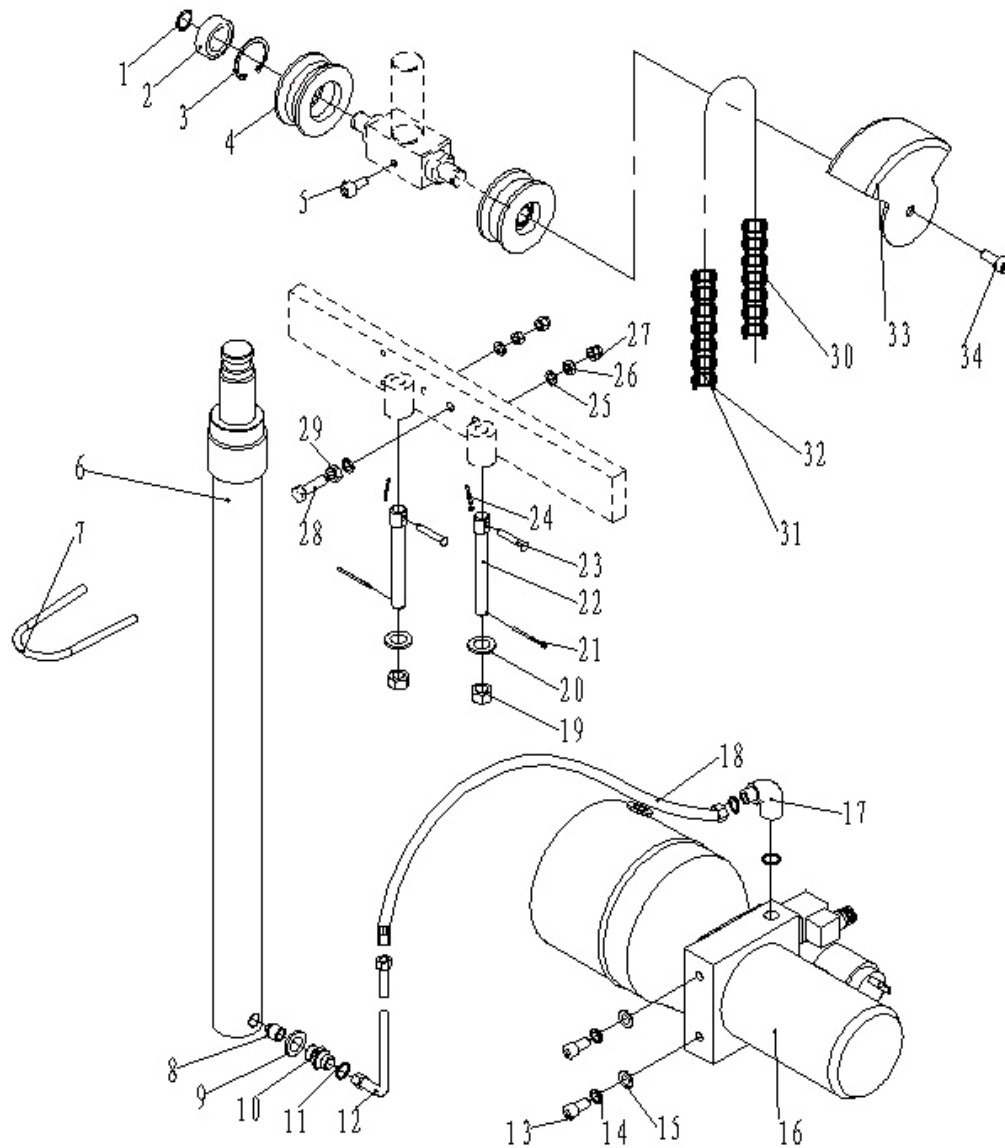
9.1 Single mast hydraulic system



No.	Parts No.	Name	Qty.	Remarks
1	0000026003	Circlip for shaft	2	
2	0000027001	Bearing	2	
3	0000026009	Circlip for hole	2	
4	2510510001	Chain wheel	2	
5	2500502005	Cylinder joint	1	
6	0000023067	Screw	1	
7	9000002081	Cylinder assembly	1	ECL1020

	9000002099	Cylinder assembly	1	ECL1016
8	2530202002	Cylinder bracket	1	
9	2000337001	Safety pressure valve assembly	1	
10	0000022051	Seal washer assembly	1	
11	2000317002	Straight joint	1	
12	0000022011	O type rubber seal ring	3	
13	9000002082	High pressure steel tube	1	
14	0000023099	Screw	2	
15	0000023006	Spring washer	3	
16	0000025106	Flat washer	2	
17	2130300002	Hydraulic power pack 24V2.2KW2.0 volume	1	
18	0000017002	O type ring plane seal joint J	1	
19	9000002083	High pressure rubber tube	1	
20	0000024087	I type nut	4	
21	0000025079	Flat washer	2	
22	0000028011	Cotter pin	2	
23	2500502007	End chainman	2	
24	0000028110	Headless hinge pin	2	
25	0000028092	Cotter pin	2	
26	0000025011	Flat washer	2	
27	0000024086	I type nut	2	
28	0000024092	Cap nut	2	
29	0000024013	I type nut	2	
30	0000023503	Bolt full thread	1	
31	0000029301	Roller chain	2	ECL1020
	0090000432	Roller chain	2	ECL1016
32	0000028030	Hinge pin	2	
33	0000028010	Cotter pin	2	
34	2530504001	chain wheel	2	
35	0000023044	Screw	2	

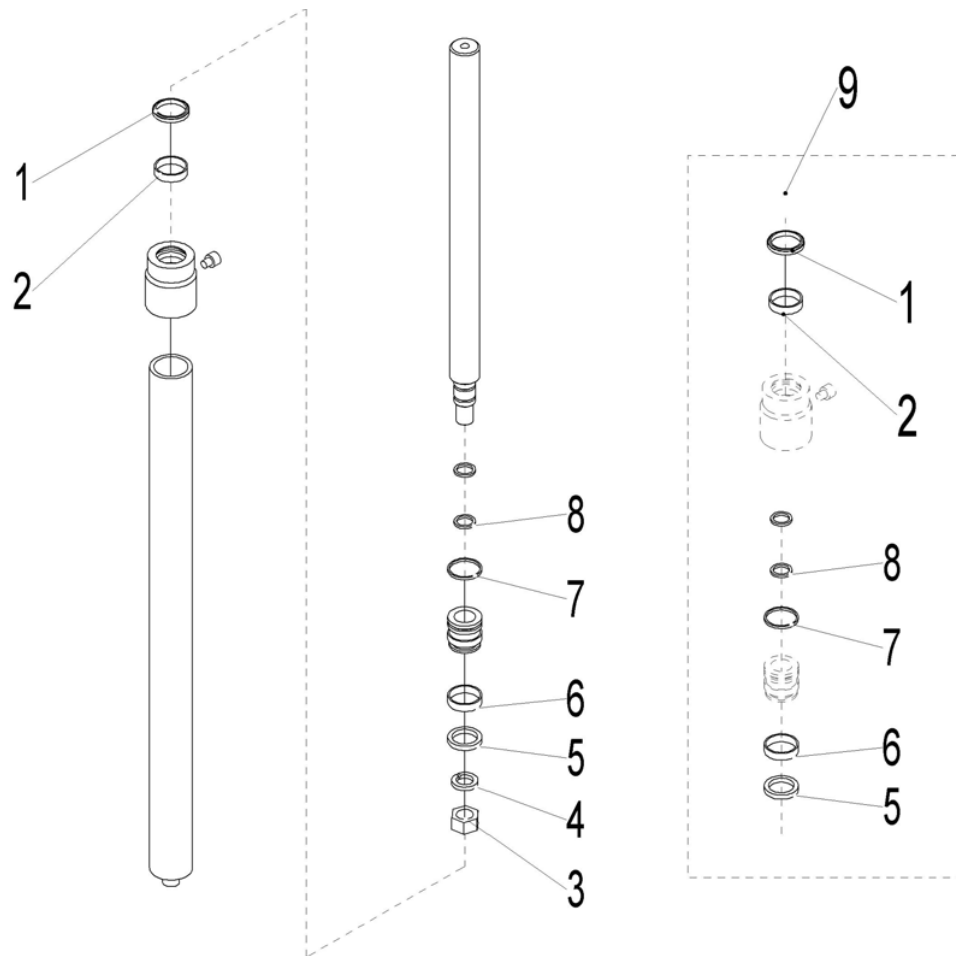
9.2 Double mast hydraulic system



No.	Parts No.	Name	Qty.	Remarks
1	0000026003	Circlip for shaft	2	
2	0000027001	Bearing	2	
3	0000026009	Circlip for hole	2	
4	2510510001	Chain wheel	2	
5	0000023067	Screw	1	
6	9000002122	Cylinder assembly	1	ECL1029
	9000009971			ECL1032
	9000009982			ECL1035

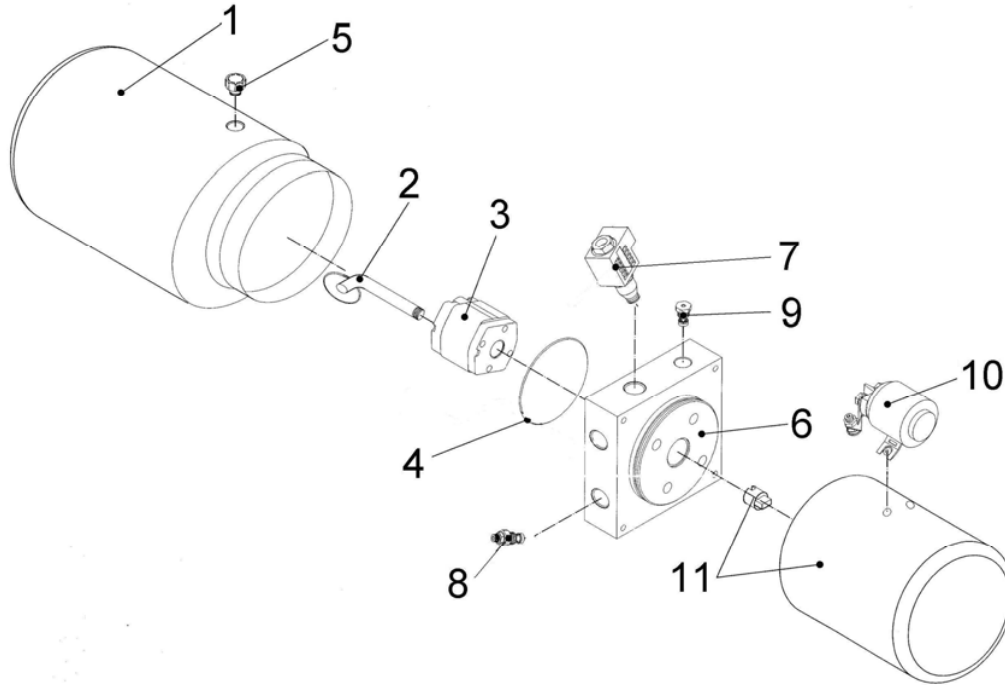
7	2530202002	Cylinder bracket	1	
8	2000337001	Safety anti-explosion valve assembly	1	
9	0000022051	Seal washer assembly	1	
10	2000317002	Straight joint	1	
11	0000022011	O type rubber seal ring	3	
12	9000002082	High pressure steel tube	1	
13	0000023099	Screw	2	
14	0000023006	Spring washer	3	
15	0000025106	Flat washer	2	
16	2130300002	Pump station 24V2.2KW2.0 volume	1	
17	0000017002	Joint JTJ8-G3/8-M16x1.5	1	
18	9000002082	High pressure rubber tube	1	
19	0000024087	I type nut	2	
20	0000025079	Flat washer	2	
21	0000028011	Cotter pin	2	
22	2500502007	End chainman	2	
23	0000028110	Headless hinge pin	2	
24	0000028092	Cotter pin	2	
25	0000025011	Flat C level	2	
26	0000024086	I type nut	2	
27	0000024092	Cap nut	2	
28	0000024013	I type nut	2	
29	0000023503	Bolt full thread	1	
30	0000029268	Roller chain	2	ECL1029
	0090000550			ECL1032
	0090000551			ECL1035
31	0000028030	Hinge pin	2	
32	0000028010	Cotter pin	2	
33	2530504001	chain wheel	2	
34	0000023044	Screw	2	

Fig. 10 Cylinder assembly



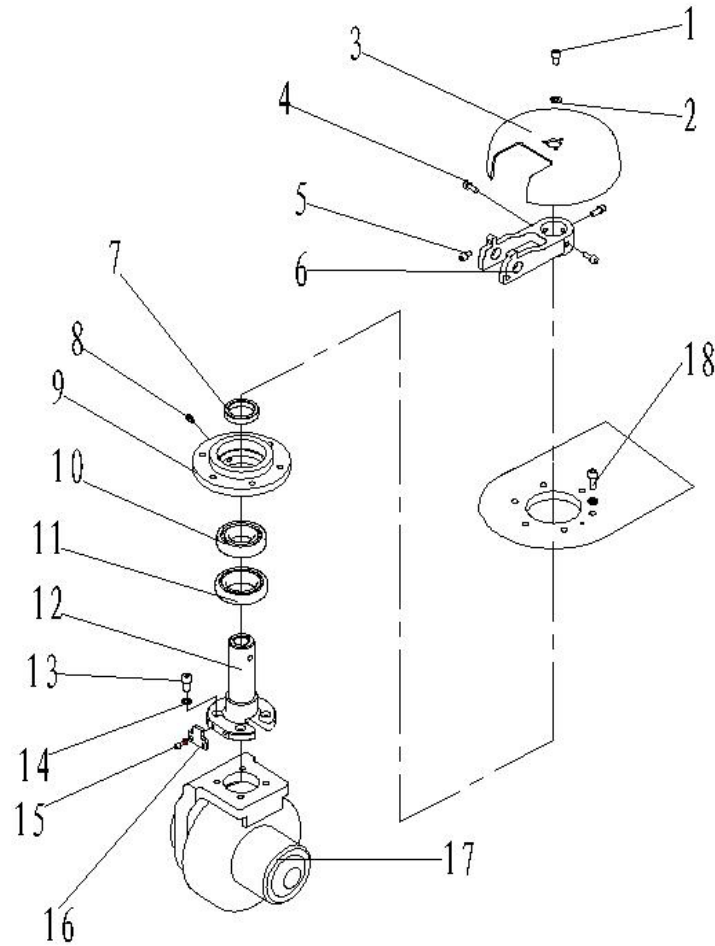
No.	Parts No.	Name	Qty.	Remarks
1	2000322001	Dust ring	1	
2	2000322002	Support ring for shaft	1	
3	0000024074	I type nut Fin thread	1	
4	0000025033	Spring washer	1	
5	2010322001	Y type sealing ring	1	
6	2000322003	Support ring for hole	1	
7	0000022013	O ring	1	
8	0000022014	O ring	2	
9				Sealing parts pack

Fig. 11 Pump system



No.	Parts No.	Name	Qty.	Remarks
1	2130301001	Oil tank	1	
2	2500217001	Oil suction pipe	1	
3	2500237001	Gear pump	1	
4	2500222001	O ring	1	
5	2500237005	Refill cover	1	
6	2500215002	Center valve block	1	
7	2110234001	solenoid valve	1	
8	2500235002	Overflow valve	1	
9	2500235003	Check valve	1	
10	2110234003	Contactor	1	
11	2110234002	Motor	1	

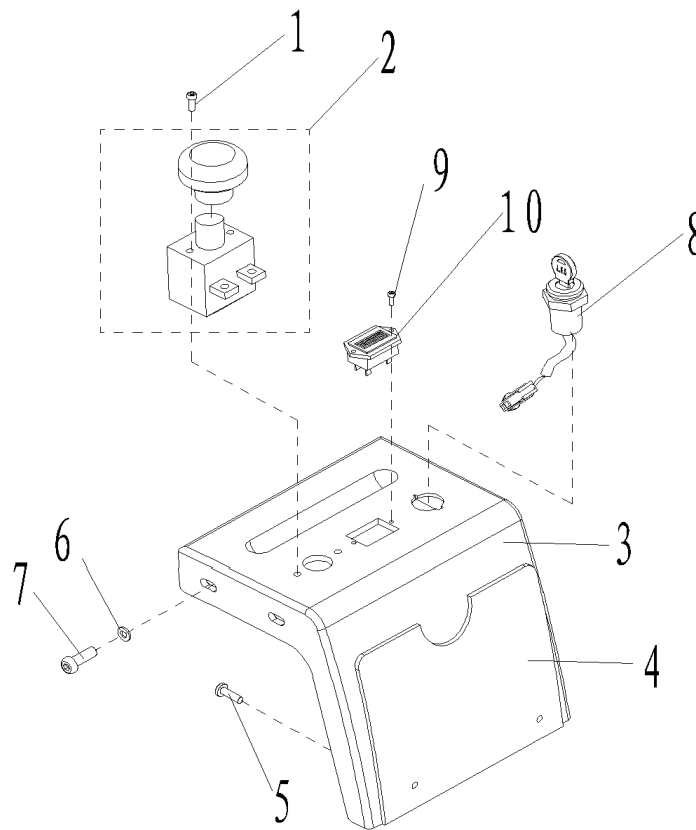
Fig.12 Driving system



No.	Parts No.	Name	Qty.	Remarks
1	0000023059	Screw	3	
2	0000025019	Flat washer	3	
3	9000002090	Driving wheel cover	1	
4	0000023044	Screw	3	
5	0000023089	Screw	1	
6	9000002089	Handle seat	1	
7	9000002087	Locating sleeve	1	
8	0000023042	Screw	4	
9	9000002086	Bearing seat	1	
10	0000027048	Bearing	1	

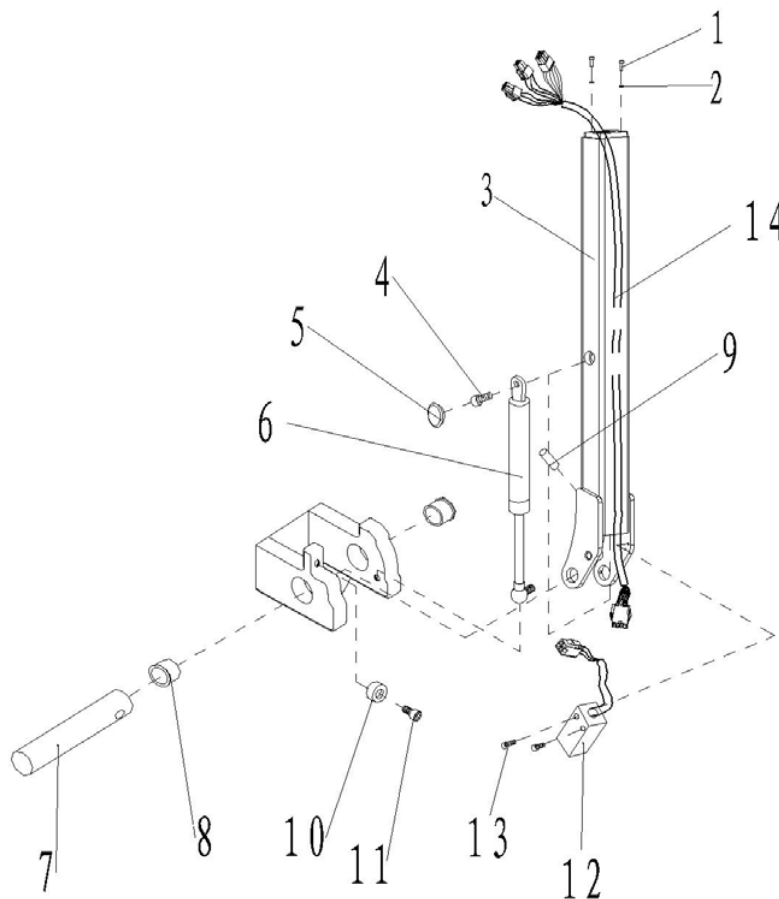
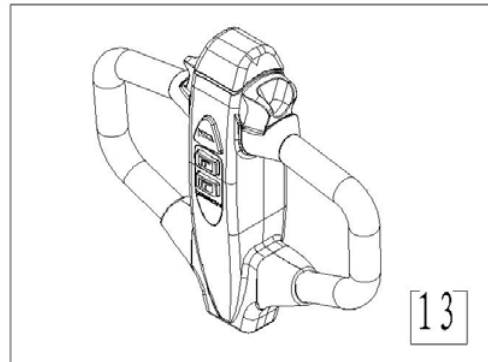
11	0090000038	Roller bearing	1	
12	9000002085	Connecting flange	1	
13	0000023034	Screw	4	
14	0000023006	Spring washer	10	
15	0000025010	Spring washer	4	
16	9000002088	Locating block	1	
17	9000001023	Driving wheel	1	
18	0000023088	Screw	6	

Fig.13 Instruments board assembly



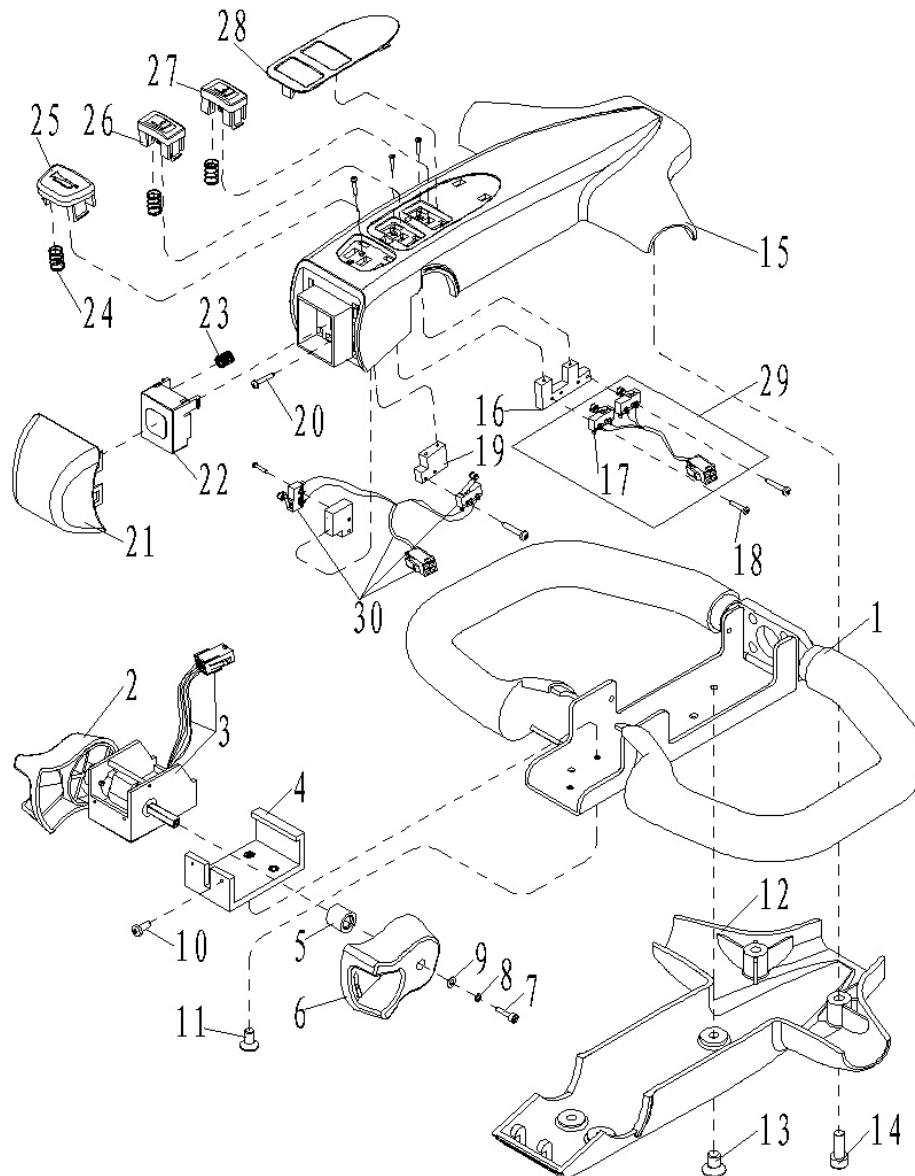
No.	Parts No.	Name	Qty.	Remarks
1	0090000041	Screw	2	
2	2240434001	DC power switch ZDK31-250	1	
3	9000002070	Instruments cover	1	
4	9000002071	Clipboard	1	
5	0000024002	I type nut	4	
	0000023075	Screw	4	
6	0000025011	Flat washer C level	4	
7	0000023089	Screw	4	
8	1010434002	General key switch LKS-101A	1	
9	1000123003	Screw	2	
10	9000009801	Discharge indicator	1	

Fig.14 Tiller arm assembly



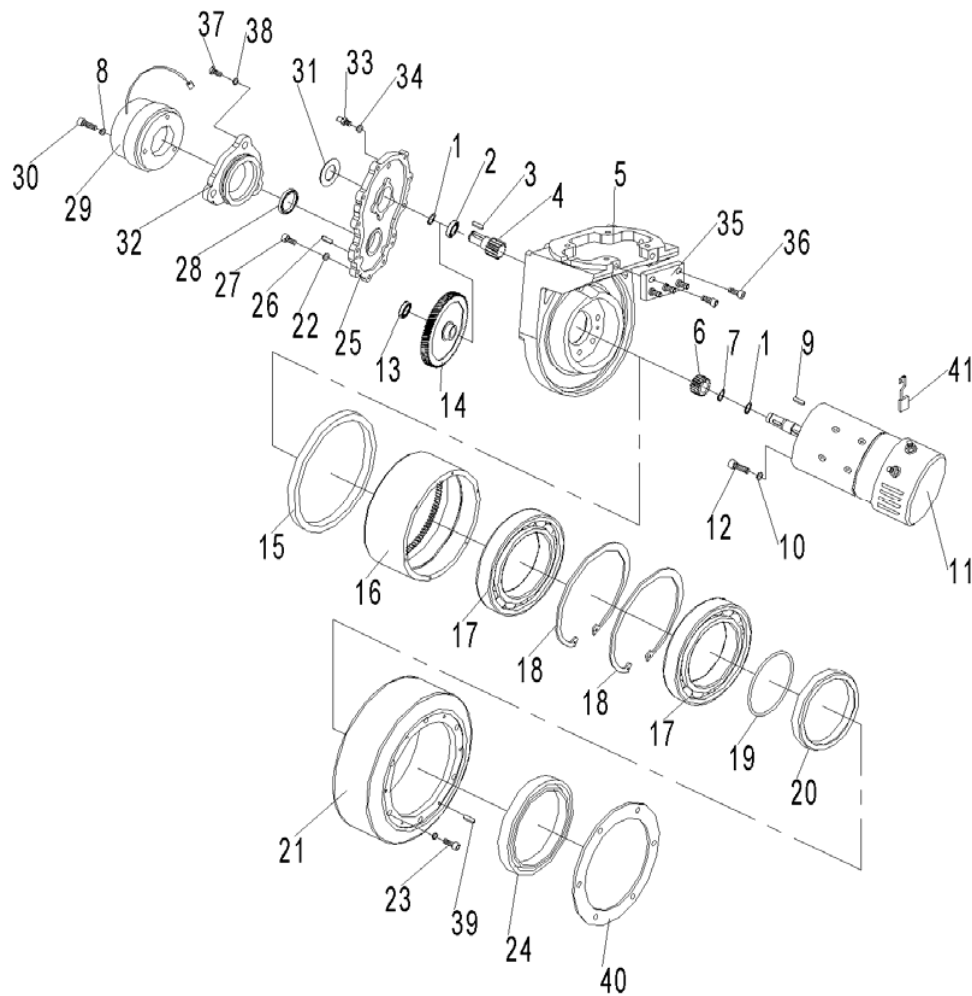
No.	Parts No.	Name	Qty.	Remarks
1	0000023061	Screw	4	
2	0000025004	Spring washer	4	
3	9000005940	Handle lever welding part	1	
4	1000123001	Screw	1	
5	1030418001	Sleeve	1	
6	9000007398	Air spring	1	F=800N
7	9000005945	Spindle	1	
8	0000013002	Shoulder sleeve	2	
9	0000028163	Cylindrical pin heavy	1	
10	0000025004	Spring washer	1	
11	0000023089	Screw	1	
12	9000007427	Proximity switch NBN5-FT-E2	1	
13	0000023075	Screw	2	
14	9000002406	Handle harness	1	
15	9000001927	Handle	1	

Fig.15 Economic tiller head



No.	Parts No.	Name	Qty.	Remarks
1	9000002189	Handle seat	1	
2	9000002175	Left driving switch	1	
3	9000008334	Accelerator BD-190	1	
4	9000002177	Accelerator connecting part	1	
5	9000002188	Sleeve	2	
6	9000002176	Right driving switch	1	
7	0000023304	Screw	2	
8	0000025003	Spring washer	2	
9	0000025026	Flat washer	2	
10	0090000190	Lock screw	2	
11	0090000189	Sunk screw	3	
12	9000002179	Handle downside cover	1	
13	0000023138	Sunk screw	4	
14	0000023040	Screw	2	
15	9000002178	Handle upper cover	1	
16	9000002311	Micro switch fixing large part	1	
17	9000002161	Micro switch SS-5GL2	4	
18	0090000261	Self-tapping screw	14	
19	9000002310	Micro switch fixing small part	2	
20	0090000262	Self-tapping screw	7	
21	9000002180	Belly seat	1	
22	9000002181	Belly inner seat	1	
23	9000002182	Spring 0.8	4	
24	9000002186	Spring 0.6	6	
25	9000002183	Horn button	1	
26	9000002184	Lifting button	1	
27	9000002185	Lowering button	1	
28	9000002187	Label	1	
29	9000002473	Handle micro switch assembly 2	1	
30	9000002190	Handle micro switch assembly 1	1	

Fig.16 Driving wheel assembly

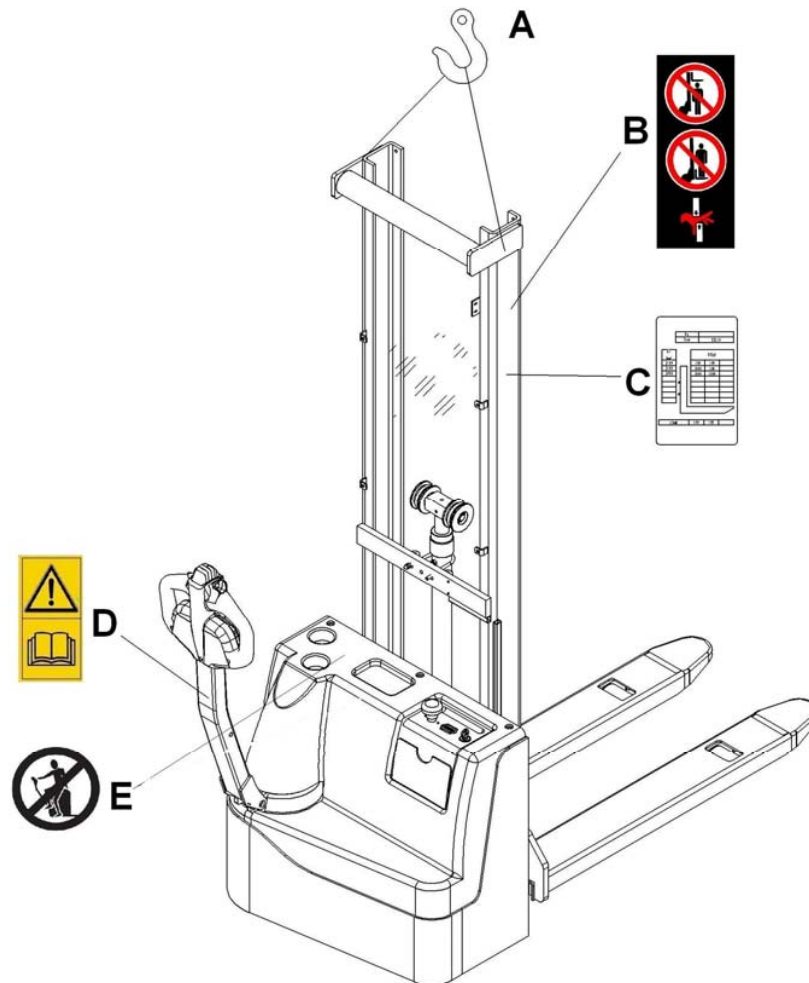


No.	Parts No.	Name	Qty.	Remarks
1	0000026005	Retainer ring	2	
2	0000027068	Bearing	1	
3	0000036005	Flat key A	1	5X18
4	9000002136	Bearing shaft	1	19EL100005
5	9000002137	Reduction box body	1	19EL100001
6	1070309001	Pinion	1	
7	0000026004	Retainer ring	1	
8	0000025009	Spring washer	3	
9	0000036002	Flat key	1	5X15
10	0000025020	Washer	5	

11	9000002138	Permanent magnet motor 0.45kW	1	
12	0000023061	Screw	5	
13	0000027086	Bearing	1	
14	1070309002	Gear wheel	1	
15	0090000178	Oil seal ring	1	
16	9000002139	Inner gear ring	1	19EL100008
17	0090000179	Bearing	2	
18	0090000180	Retainer ring	2	
19	0090000181	O ring	1	
20	9000002140	Filter seal seat	1	19EL100009
21	9000002141	Wheel	1	19EL110000
22	0000025006	Spring washer	11	
23	0090000182	Screw	10	
24	9000002142	Seal ring	1	19EL100011
25	1070302007	Gear box cover	1	
26	0000028144	Cylindrical pin	2	
27	0000023063	Screw	11	
28	0090000183	Oil seal	1	
29	1070335002	Electromagnetic brake	1	
30	0000023674	Screw	3	
31	1070302008	Blank cap	1	
32	1070302009	Protective sleeve	1	
33	1070123001	Air plug	1	
34	0000025021	Washer assembly	1	
35	1070302010	Cable fixed plate	1	
36	0000023675	Screw	2	M5X16
37	0000023065	Screw	3	
38	0000025012	Spring washer	13	
39	0090000184	Cylindrical pin	2	
40	0090000185	O ring	1	
41	9000002143	Carbon brush	1	

1. Gear spare parts need to offer in pairs.

Fig.17 Sticker for EU

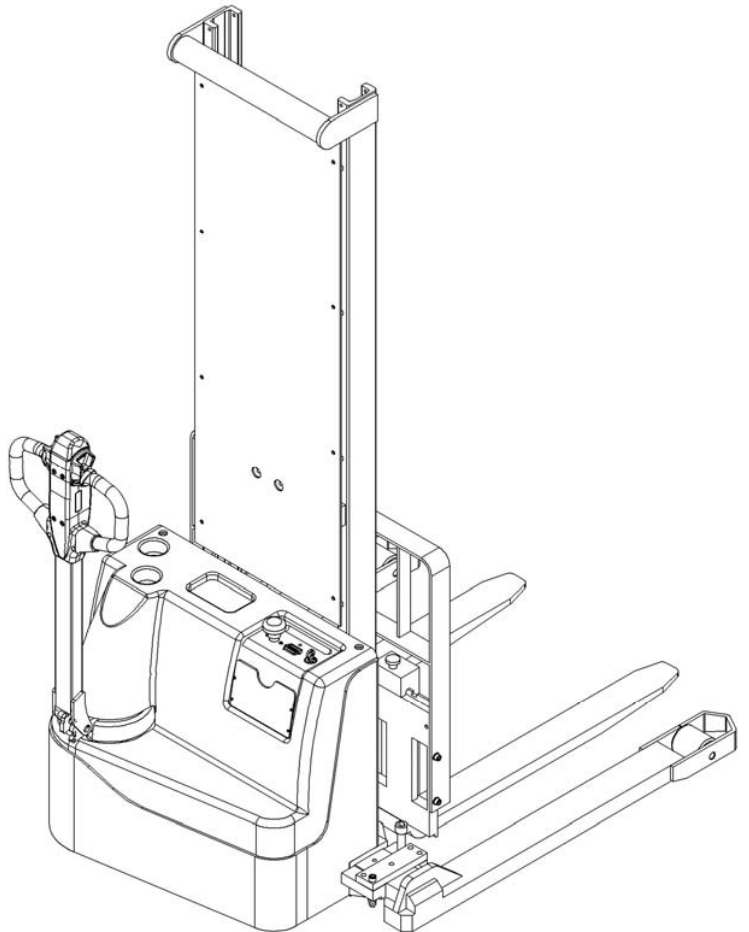


No.	Art No.	Description	Qty.	Note
A	9000005967	Sign hook	2	
B	9000003923	Forbidden under/above the fork	1	
C	9000005968	Sign load curve	1	
D	9000003570	Sign read and follow this instruction	1	
E	9000003573	'No passengers' decal	1	

No.	Art No.	Description	Qty.	Note
A	9000005967	Sign hook	2	
C	9000005968	Sign load curve	1	
D	9000003570	Sign read and follow this instruction	1	
G	9000003575	Sign warning stay clear stop truck	1	
H	9000003576	Sign caution charger	1	
I	9000003577	Sign danger battery	1	
J	9000003578	Sign warning battery size	1	
K	9000003579	Sign warning electrical devices	1	
L	9000003580	Sign danger not riding	1	
M	9000005970	Sign Danger moving parts.	1	
N	9000005971	Forbidden under/above the fork	2	

Spare parts list

Electric Stacker ECL 10M



Version 02/2015

From truck identification number:

30150200167

ECL 10M-BPT-003-EN

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Fig.1 S ticker for EU

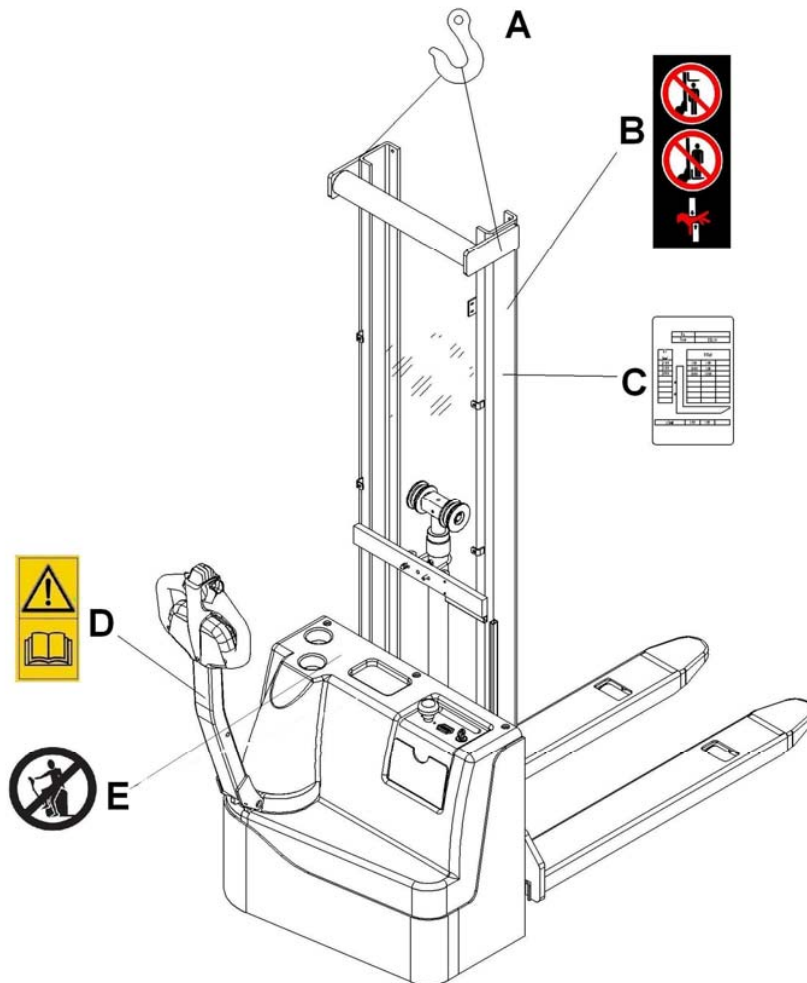


Fig.1 Sticker for EU

No.	Art No.	Description	Qty.	Note	standard
A	9000005967	Sign hook	2		
B	9000003923	Forbidden under/above the fork	1		
C	9000005968	Sign load curve	1		
D	9000003570	Sign read and follow this instruction	1		
E	9000003573	'No passengers' decal	1		

Fig.2 S ticker for US

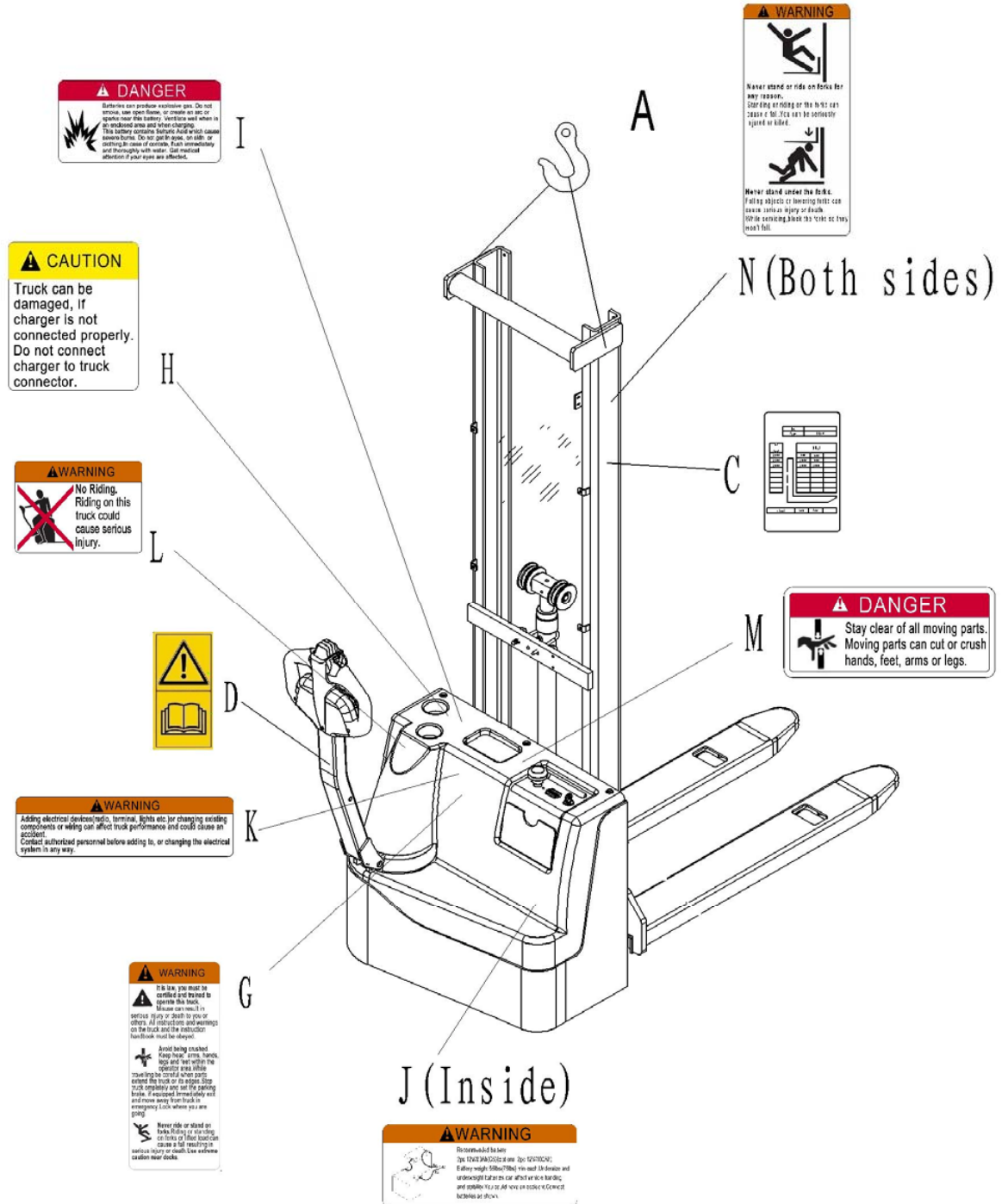


Fig.2 Sticker for US

No.	Art No.	Description	Qty.	Note	standard
A	9000005967	Sign hook	2		
C	9000005968	Sign load curve	1		
D	9000003570	Sign read and follow this instruction	1		
G	9000003575	Sign warning stay clear stop truck	1		
H	9000003576	Sign caution charger	1		
I	9000003577	Sign danger battery	1		
J	9000003578	Sign warning battery size	1		
K	9000003579	Sign warning electrical devices	1		
L	9000003580	Sign danger not riding	1		
M	9000005970	Sign Danger moving parts.	1		
N	9000005971	Forbidden under/above the fork	2		

Fig. 3 Appearance

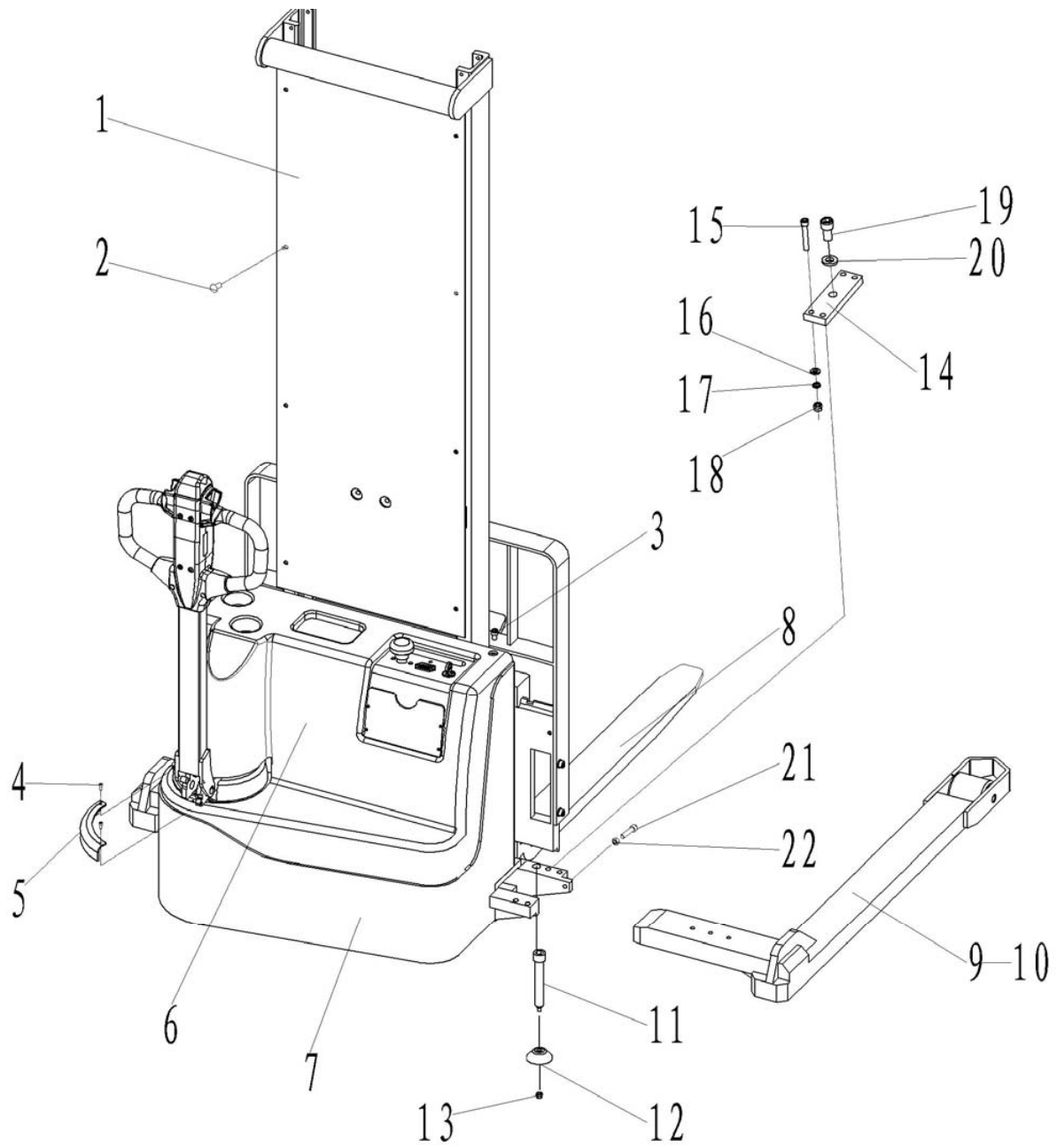


Fig. 3 Appearance

No.	Parts No.	Name	Qty.	Remarks	standard
1	9000002061	Protective plate	1	One-stage-mast	
	9000002097			One-stage-mast	
	9000002119			Two-stage-mast	
	9000009980			Two-stage-mast	
	9000009969			Two-stage-mast	
2	0000023555	Screw	8	M6x16	GB/T70.2=ISO7380
3	1000423003	Screw	2	M10X30	
4	0000023076	Screw	2	M5x12	GB/T70.1=ISO4762
5	9000002060	Opening plate	1		
6	9000002059	Box cover	1		
7	9000007457	Welded chassis	1	One-stage-mast	
	9000007475			One-stage-mast	
	9000007480			Two-stage-mast	
	9000010166			Two-stage-mast	
	9000010168			Two-stage-mast	
8	9000007451	Fork assembly	1	One-stage-mast	
	9000007476			Two-stage-mast	
9	9000007471	Welded right front leg	1		
10	9000007466	Welded front leg	1		
11	2050423001	Screw	2		
12	2050402001	Supporting seat	2		
13	0000024003	Nut	4	M8	GB/T889.1=ISO7040
14	9000007473	Pressing plate	2		
15	0000023518	Screw	8	M12x80	GB/T70.1=ISO4762
16	0000025032	Washer	8	12	GB/T95
17	0000025024	Washer	8	12	GB/T93
18	0000024006	Nut	8	M12	GB/T889.1=ISO7040
19	2050402003	Positioning pin	2		
20	0000025031	Washer	2	20	GB/T95
21	0000023025	Screw	4	M10x40	GB/T70.1=ISO4762
22	0000024013	Nut	4	M10	GB/T6170=ISO4032

Fig. 4 Fork

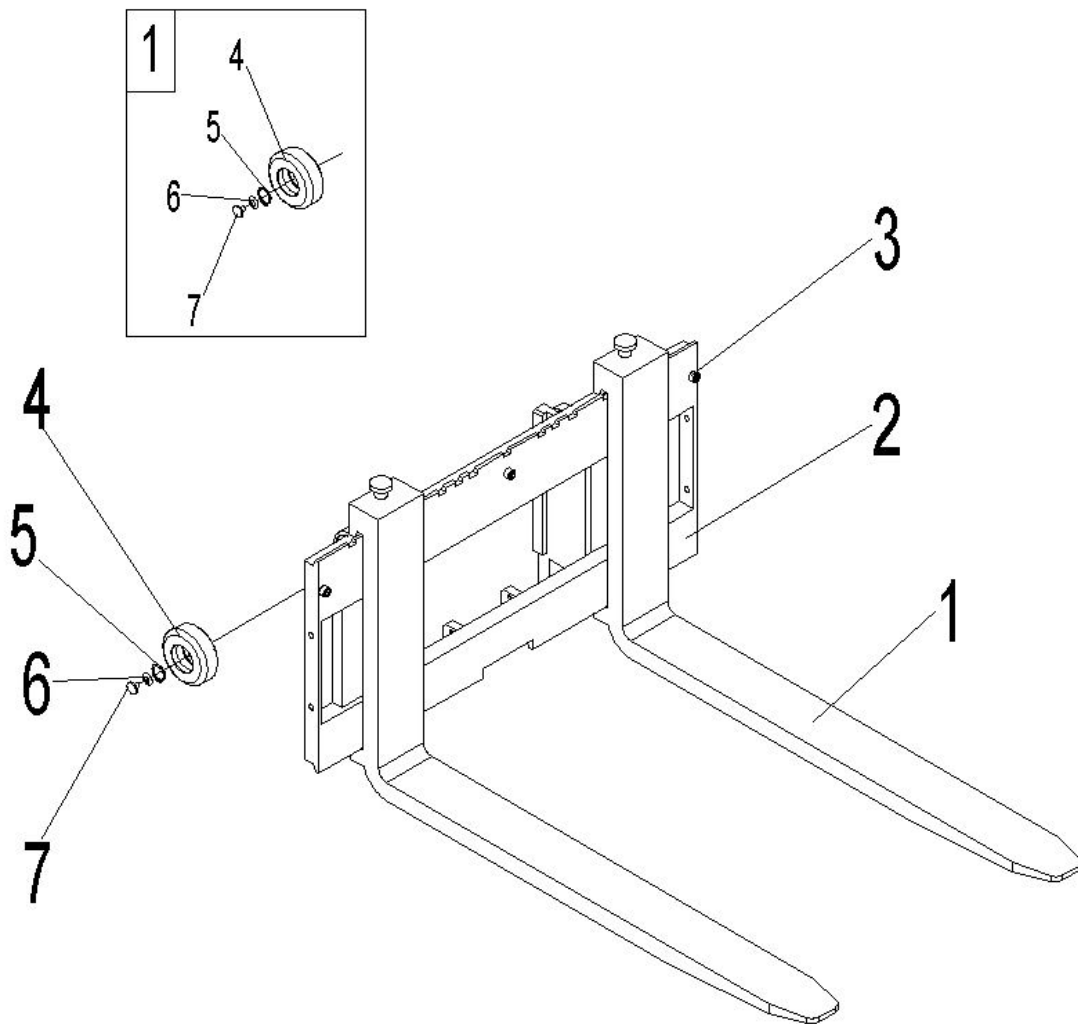


Fig. 4 Fork

No.	Parts No.	Name	Qty.	Remarks	standard
1	2080501001	Fork	2	950	
	2090501001	Fork	2	1150	
2	9000007453	Fork holder	1		
3	0000023088	Screw	3	M10x25	GB/T70.1=ISO4762
4	2530402002	Roller	4		
5	0000026013	Retaining ring	4	25	GB/T894.1
6	2500525001	Washer	2		
7	2500502003	Side block	4		
1	9000010404	wheel accessories	4		

Fig. 5 Load backrest (optional)

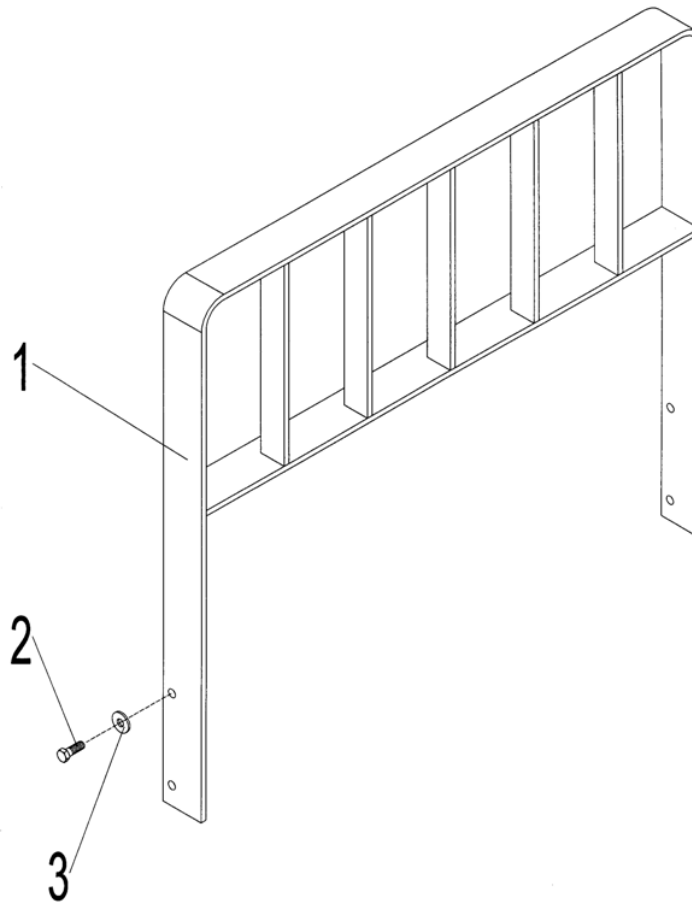


Fig. 5 Load backrest (optional)

No.	Parts No.	Name	Qty.	Remarks	standard
1	2100501004	Load backrest	1		
2	0000023034	Screw	4	M10x20	GB/T70.1=ISO4762
3	0000025002	Washer	4	10	GB/T95

Fig. 6 Castor

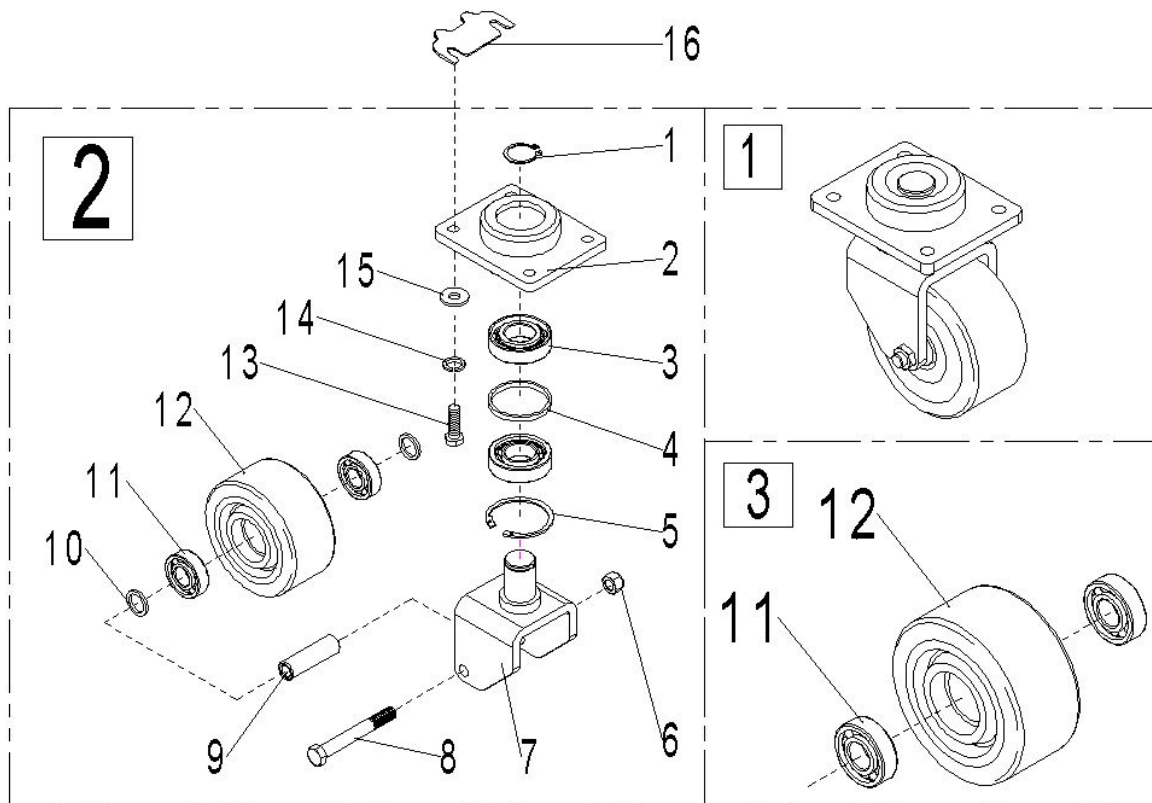


Fig. 6 Castor

No.	Parts No.	Name	Qty.	Remarks	Standard
1	0000026008	Retaining ring	1	30	GB/T894.1
2	2000405001	Bearing seat	1		
3	0000027013	Bearing	2	7206C/DB	GB/T292
4	2000413001	Bushing	1		
5	0000026010	Retaining ring	1	62	GB/T893.1
6	0000024015	Nut	1	M14	GB/T889.1=ISO7040
7	2000401007	Wheel frame	1		
8	0000023111	Bolt	1	M14x100	GB/T5782=ISO4014
9	2000413002	Shaft sleeve	1		
10	1000525001	Washer	2		
11	0000027001	Bearing	2	6204	GB/T276=ISO3290
12	2020416001	Wheel	1		

13	0000023029	Screw	4	M10x35	GB/T70.1=ISO4762
14	0000023006	Spring washer	4	10	GB/T93
15	0000025002	Washer	4	10	GB/T95
16	9000005936	Adjusting plate	4		
①	2040400001	Steering wheel assembly	1		
②	9000010408	steering wheel accessories	1		
③	9000003638	wheel accessories	1		

Fig. 7 Load wheel

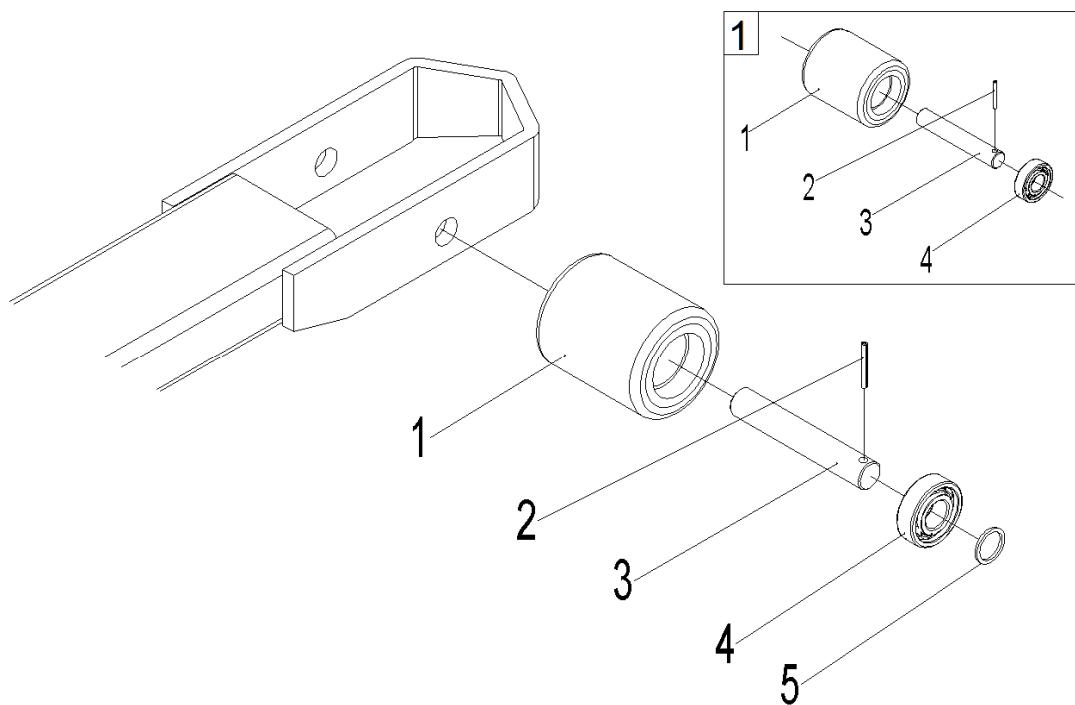
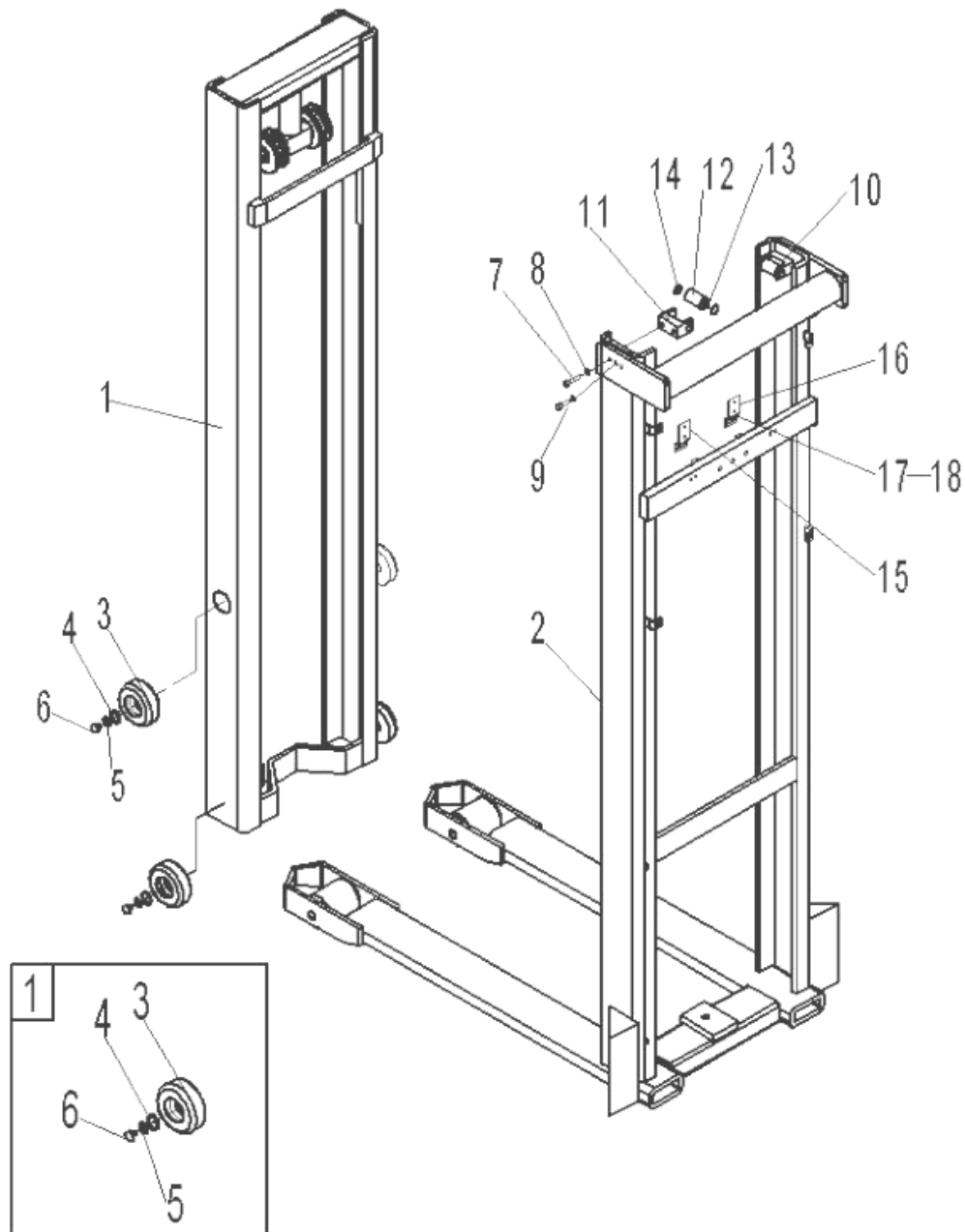


Fig. 7 Load wheel

No.	Parts No.	Name	Qty.	Remarks	standard
1	2000416003	Load wheel	1		
2	0000028055	Roll pin	2	5x40	GB/T879.1=ISO8752
3	1030507004	Rotating axle	1		
4	0000027001	Bearing	2	6204	GB/T276=ISO3290
5	1000525001	Washer	2		
1	9000010405	wheel accessories	1		

Fig. 8 Mast assembly

8.1 Two-stage-mast



8.1 Two-stage-mast

No.	Parts No.	Name	Qty.	Remarks	Standard
1	9000002124	Inner mast welding	1	Two-stage-mast 2900	
	9000009984			Two-stage-mast 3500	
	9000009973			Two-stage-mast 3200	
2	9000007480	Welded chassis	1	Two-stage-mast 2900	
	9000010166			Two-stage-mast 3500	
	9000010168			Two-stage-mast 3200	
3	2530402002	Roller	4		
4	0000026013	Retaining ring	4	25	GB/T894.1
5	2500525001	Washer	2		
6	2500502003	Side cushion	4		
7	0000023172	Screw	4	M8x30	GB/T70.1=ISO4762
8	0000025001	Standard spring washer	4	8	GB/T93
9	0000023047	Screw	2	M8x25	GB/T70.1=ISO4762
10	2530500002	Guide wheel	2	组件	
11	2530504007	Wheel seat	2		
12	2500511002	Guide wheel	2		
13	2500507003	Pin roll	2		
14	0000026034	Retaining ring	4	12	GB/T894.1
15	9000002120	Micro switch fixing plate	1		
16	9000005946	Proximity switch fixing plate	1		
17	0000023555	Screw	4	M6x16	GB/T70.2=ISO7380
18	0000023055	Washer	4	6	GB/T95
19	9000010404	wheel accessories	4		

Fig. 9 Electronic control board assembly

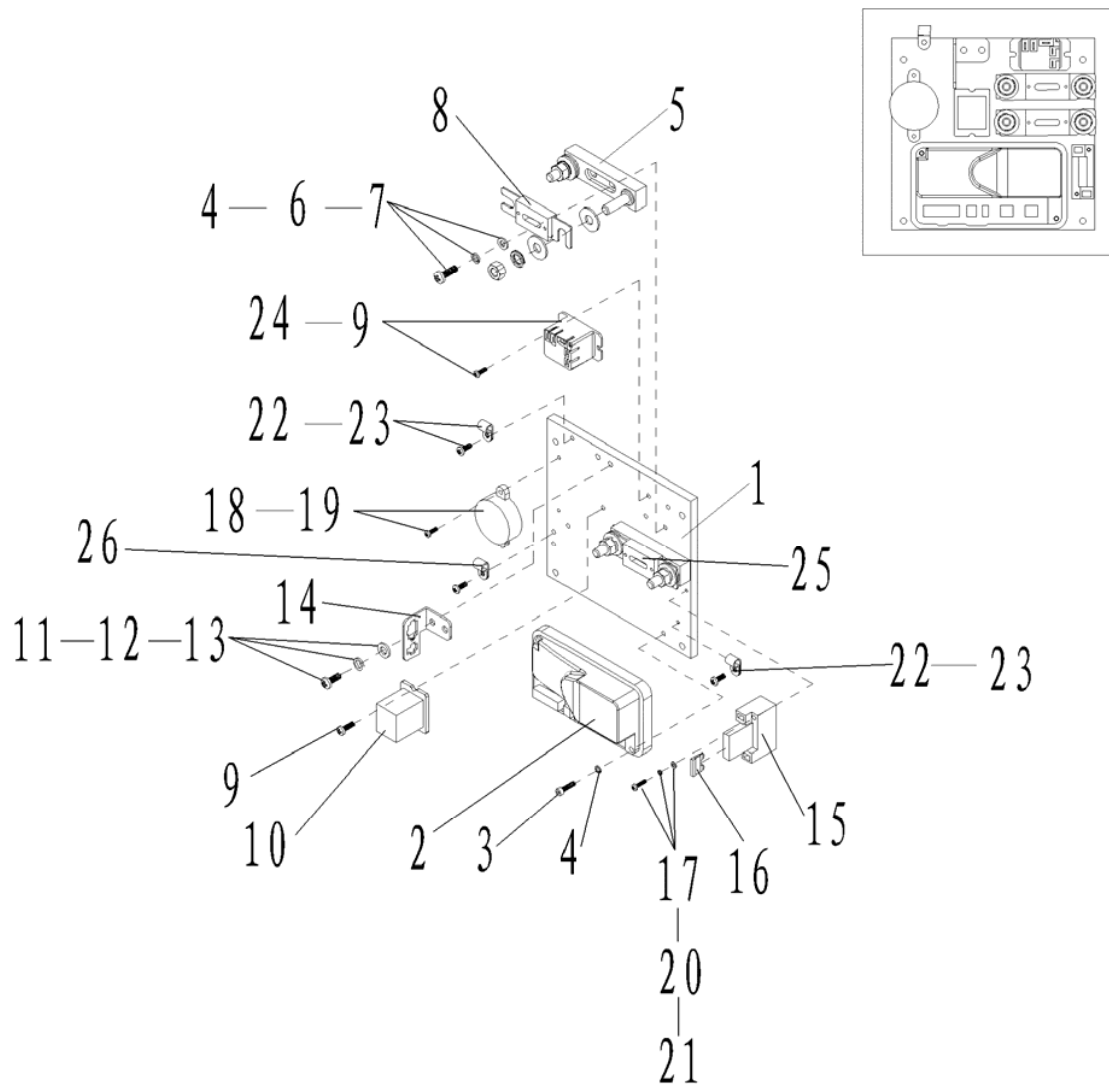


Fig. 9 Electronic control board assembly

No.	Parts No.	Name	Qty.	Remarks	Standard
1	9000002066	Aluminum plate	1		
2	9000009802	Controller CURTIS1212P-2501	1		
3	0000023033	Screw	2	M4x25	GB/T70.1=ISO4762
4	0000025018	Standard spring washer	8		GB/T93
5	1000434007	Fuse seat	2	SYT	
6	0000025019	Washer	6	4	GB/T95
7	0000023211	Screw	2	M4x16	GB/T818=ISO7045
8	2210434004	Fuse	1	150A	
9	0000023071	Screw	2	M4x8	GB/T818=ISO7045
10	9000005985	Temperature protection module BD-W-115-N	1		
11	0000023516	Screw	2	M5x10	GB/T818=ISO7045
12	0000025014	Washer	2	5	GB/T95
13	0000025015	Standard spring washer	2	5	GB/T93
14	1000404005	Connector	1		
15	1000434021	Fuse seat	1	BD-1X10A	
16	1000434040	Fuse	1	10A	
17	0000023074	Screw	2	M3x30	GB/T818=ISO7045
18	9000007394	Buzzer	1		
19	0000023648	Screw	2	M3x8	GB/T818=ISO7045
20	0000025003	Standard spring washer	2	3	GB/T93
21	0000025026	Washer	2	3	GB/T95
22	1000403004	Strain relief UC-2	1		
23	0000023307	Screw	1	M4x10	GB/T818=ISO7045
24	9000002322	Relay ARP12F-1C 24VDC	1		
25	1000434020	Fuse	1	60A	
26	9000002325	Strain relief UC-5	2		

Fig. 10 Main harness

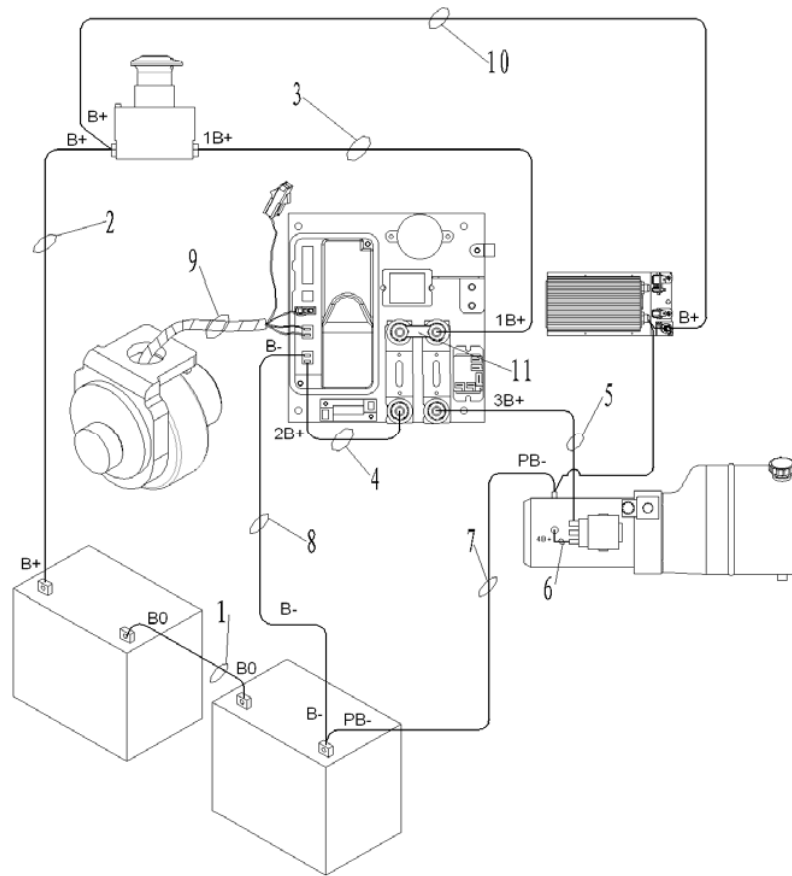


Fig. 10 Main Harness

No.	Parts No.	Name	Qty.	Remarks	Standard
1	9000002409	B0 wire	1		
2	9000002410	B+ wire	1		
3	9000002411	1B+ wire	1		
4	9000002412	2B+ wire	1		
5	9000002413	3B+ wire	1		
6	9000002414	4B+ wire	1		
7	9000002415	PB- wire	1		
8	9000002416	B- wire	1		
9	9000002417	Driving wheel harness	1		
10	9000002418	Charger anode B+ wire	1		
11	1020434003	Copper bar —	1		
12	9000008788	Charger B- wire	1		

Fig.11 Electric parts and components

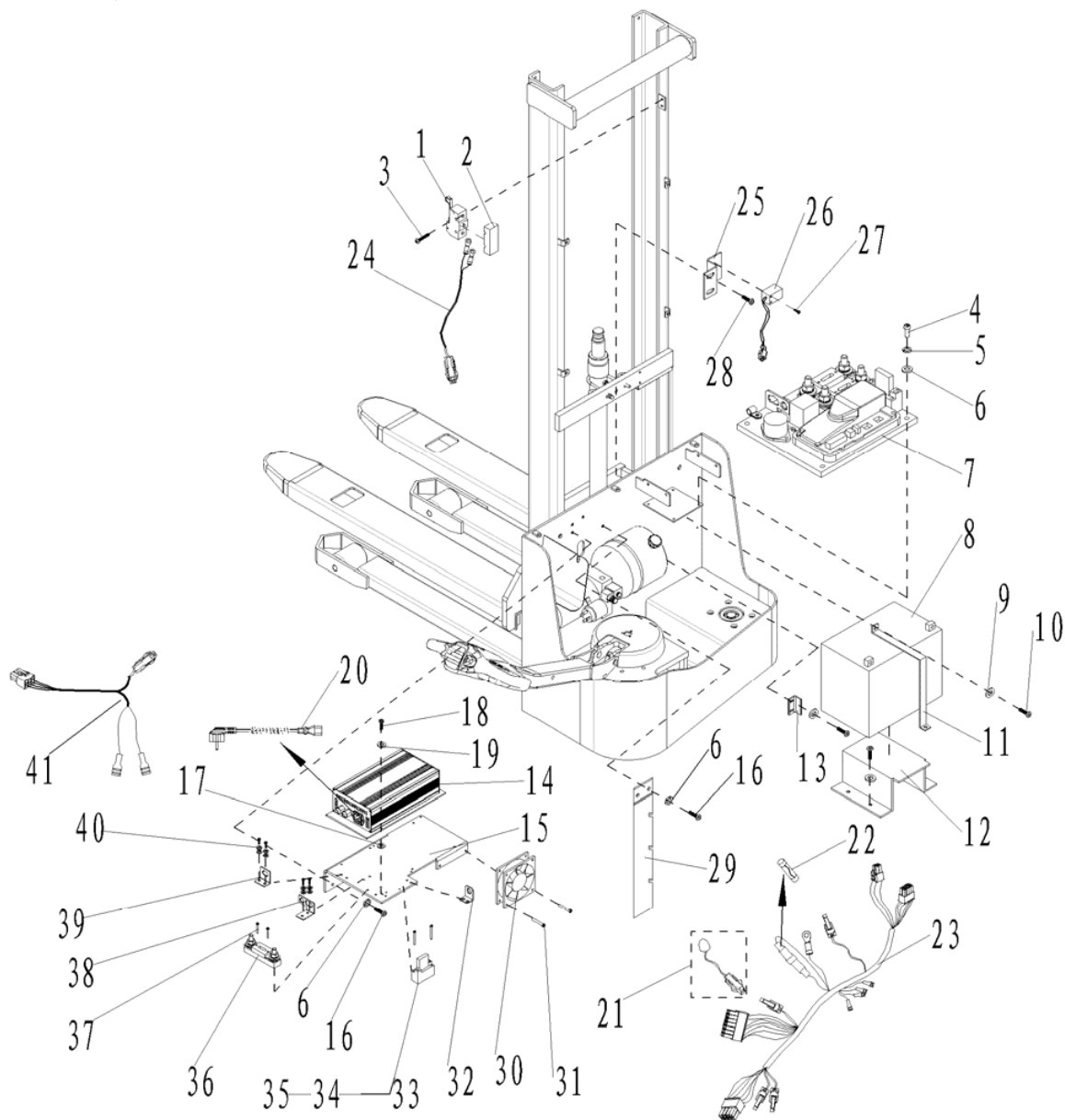


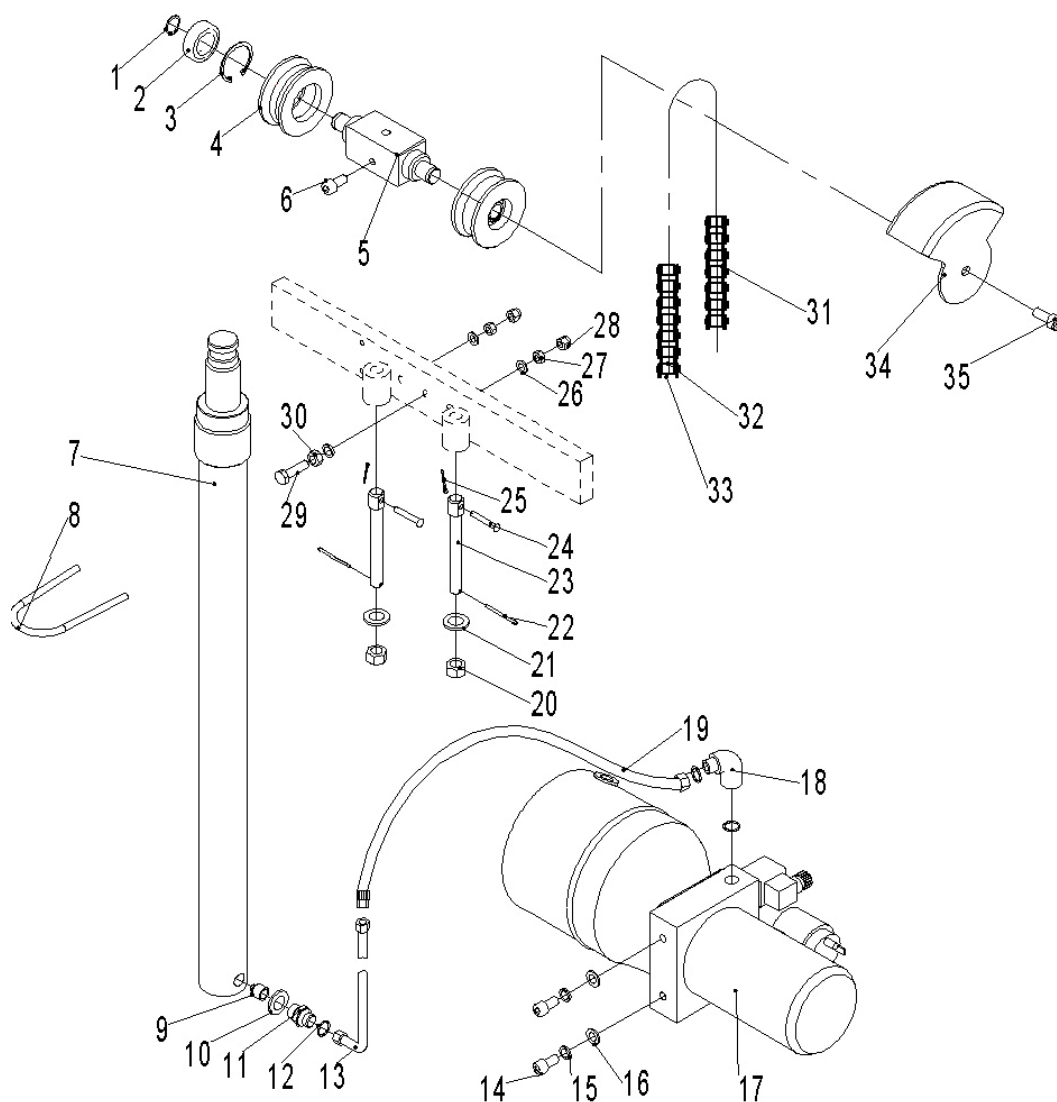
Fig.11 Electric parts and components

N o.	Parts No.	Name	Qty .	Remarks	standard
1	2040634001	Micro switch XZ-15GW22-B	2		
2	2040603002	Micro switch protective cover	2		
3	0000023033	Screw	4	M4x25	GB/T70.1=ISO4762
4	0000023107	Screw	6	M5x16	GB/T70.1=ISO4762
5	0000025015	Standard spring washer	18	5	GB/T93
6	0000025014	Washer	6	5	GB/T95
7	9000002065	Electronic control assembly	1		
8	1000432001	Battery 12V/85Ah	2	Optional	
	2100432001	Battery 12V/106Ah	2		
9	0000025011	Washer	8	8	GB/T95
10	0000023012	Screw	8	M8x12	GB/T70.1=ISO4762
11	9000002062	Battery holder	1		
12	9000002063	Battery fixing seat	1	With 106Ah battery	
13	9000002064	Battery fixing angle iron	2		
14	9000002068	Charger 24V/10A NCN24101P22	1	Input voltage: 220AC(domestic trade)	
	9000008638	Charger 24V/10A QQE240-11CH59	1	Input voltage: 100-240AC(foreign trade)	
15	9000008678	Battery holder	1		
16	0000023076	Screw	6	M5X12	GB/T70.1=ISO4762
17	1000418002	Valve washer	1		
18	0000023056	Screw	4	M4X12	GB/T70.1=ISO4762
19	0000025019	Washer	4	4	GB/T95
20	1010434009	Double end power cort plug 3*0.75(Australian)	1	Optional	
	1010434011	Double end power cort plug 3*0.75(English)	1		
	1010434012	Double end power cort plug 3*0.75(European)	1		
	1010434013	Double end power cort plug 3*0.75(Italian)	1		
	1010434014	Double end power cort plug 3*0.75(Sweden)	1		
	2530334005	Double end power cort plug 3*0.75(American)	1		
	1010434023	Double end power cort plug 3*0.75(Asian)	1		

21	9000002192	LED Fault display assembly	1		
22	9000002324	Fuse tube	1	5*20 0.5A	
23	9000002407	Control harness	1		
24	9000002408	Micro switch harness	1		
25	9000002079	Proximity switch fixing plate	1		
26	9000007427	Proximity switch NBN5-FT-E2	1	One-stage-mast	
	9000007428	Proximity switch NBN5-FT-E2	1	Two-stage-mast	
27	0000023075	Screw	2	M3X20	GB/T70.1=ISO4762
28	0000023042	Screw	2	M6x10	GB/T70.1=ISO4762
29	9000005937	Cable holder	1		
30	1010434007	Fan ADDA DC12V	1		
31	0000023041	Screw	2	M4x30	GB/T818=ISO7045
32	1010404005	Connector holder	1		
33	1000434021	Fuse seat	1	BD-1X10A	
34	1010434008	Fuse	1	1A	
35	0000023074	Screw	2	M3x30	GB/T818=ISO7045
36	1000434007	Fuse seat	1	SYV	
37	0000023211	Screw	2	M4x16	GB/T818=ISO7045
38	1000404005	Connector holder	1		
39	1010404006	Connector holder	1		
40	0000023516	Screw	6	M5x10	GB/T818=ISO7045
41	9000008787	Fan connecting wire	1		

Fig.12 Hy draulic system

12.1 One-stage-mast hydraulic system



12.1 One-stage-mast hydraulic system

No.	Parts No.	Name	Qty.	Remarks	standard
1	0000026003	Retaining ring	2	20	GB/T894.1
2	0000027001	Bearing	2	6204	GB/T276=ISO3290
3	0000026009	Retaining ring	2	47	GB/T893.1
4	2510510001	Chain wheel	2		
5	2500502005	Base	1		
6	0000023067	Screw	1	M8x16	GB/T70.1=ISO4762
7	9000002081	Cylinder assembly	1	ECL1020	

	9000002099	Cylinder assembly	1	ECL1016	
8	2530202002	Cylinder hoop	1		
9	2000337001	Safety explosion-proof	1		
10	0000022051	Combination seal washer	1	16	
11	2000317002	Straight joint	1		
12	0000022011	O rubber seal ring	3	8x1.8	GB/T3452.1=ISO3601
13	9000002082	High pressure steel tube	1		
14	0000023099	Screw	2	M10x45	GB/T70.1=ISO4762
15	0000023006	Standard spring washer	3	10	GB/T93
16	0000025106	Washer	2	10	GB/T95
17	2130300002	Pump station	1		
18	0000017002	O ring seal joint	1	JTJ8-G3/8-M16x1.5	
19	9000002083	High pressure rubber tube	1		
20	0000024087	Nut	4	M14	GB/T6170=ISO4032
21	0000025079	Washer	2	14	GB/T95
22	0000028011	Split pin	2	3x40	GB/T91=ISO1234
23	2500502007	Chain tension bar	2		
24	0000028110	Pin roll	2	6x40	GB/T880
25	0000028092	Split pin	2	1x8	GB/T91=ISO1234
26	0000025011	Washer	2	8	GB/T95
27	0000024086	Nut	2	M8	GB/T6170=ISO4032
28	0000024092	Nut	2	M8	GB/T923
29	0000024013	Nut	2	M10	GB/T6170=ISO4032
30	0000023503	Bolt	1	M10x35	GB/T5783=ISO4017
31	0000029301	Roller chain	2	ECL1020	GB/T1243=ISO606
	0090000432	Roller chain	2	ECL1016	GB/T1243=ISO606
32	0000028030	Pin roll	2	6x45	GB/T882=ISO2341
33	0000028010	Split pin	2	2x20	GB/T91=ISO1234
34	2530504001	Chain wheel cover	2		
35	0000023044	Screw	2	M8x20	GB/T70.1=ISO4762

7	2530202002	Cylinder hoop	1		
8	2000337001	Safety explosion-proof	1		
9	0000022051	Combination seal	1	16	
10	2000317002	Straight joint	1		
11	0000022011	O rubber seal ring	3	8x1.8	GB/T3452.1=ISO3601
12	9000002082	High pressure steel	1		
13	0000023099	Screw	2	M10x45	GB/T70.1=ISO4762
14	0000023006	Standard spring	3	10	GB/T93
15	0000025106	Washer	2	10	GB/T95
16	2130300002	Pump station 24V2.2KW2.0	1		
17	0000017002	Joint	1	JTJ8-G3/8-M16x1.5	
18	9000002082	High pressure rubber	1		
19	0000024087	Nut	2	M14	GB/T6170=ISO4032
20	0000025079	Washer	2	14	GB/T95
21	0000028011	Split pin	2	3x40	GB/T91=ISO1234=ISO1234
22	2500502007	Chain tension bar	2		
23	0000028110	Pin roll	2	6x40	GB/T880
24	0000028092	Split pin	2	1x8	GB/T91=ISO1234
25	0000025011	Washer	2	8	GB/T95
26	0000024086	Nut	2	M8	GB/T6170=ISO4032
27	0000024092	Nut	2	M8	GB/T923
28	0000024013	Nut	2	M10	GB/T6170=ISO4032
29	0000023503	Bolt	1	M10x35	GB/T5783=ISO4017
30	0000029268	Roller chain	2	ECL1029	GB/T1243=ISO606
	0090000550			ECL1032	GB/T1243=ISO606
	0090000551			ECL1035	GB/T1243=ISO606
31	0000028030	Pin roll	2	6x45	GB/T882=ISO2341
32	0000028010	Split pin	2	2x20	GB/T91=ISO1234
33	2530504001	Chain wheel cover	2		
34	0000023044	Screw	2	M8x20	GB/T70.1=ISO4762

Fig. 13 Cy linder assembly

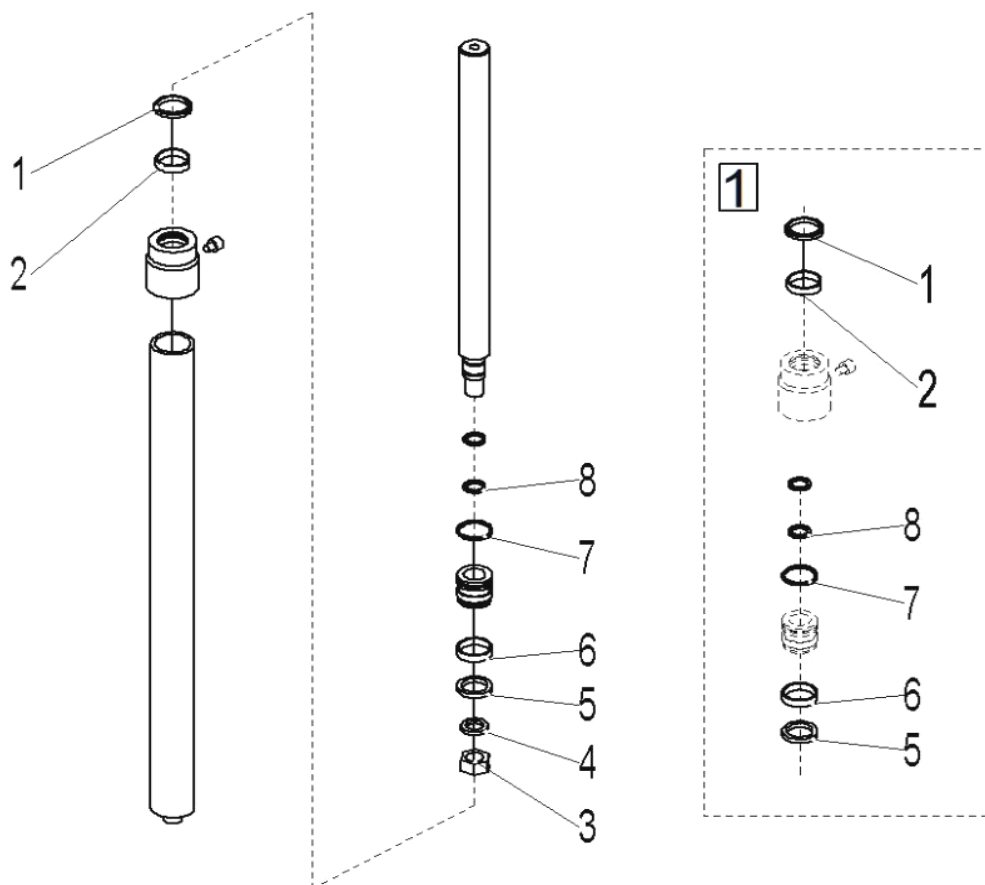


Fig. 13 Cylinder assembly

No.	Parts No.	Name	Qty.	Remarks	standard
1	2000322001	Dust ring	1	40X48-5/6.5	
2	2000322002	Support ring for shaft	1	40X10-2	
3	0000024074	Nut	1	M20x1.5	GB/T6171= ISO8673
4	0000025033	Standard spring washer	1	20	GB/T93
5	2010322001	Y seal ring	1	45X35-6	
6	2000322003	Support ring for hole	1	45X10-2	
7	0000022013	O ring	1	45X3.1	GB1235
8	0000022014	O ring	2	25X3.1	GB1235
1	9000010407	sealing accessories	1	Sealing parts	

Fig. 14 Pump system

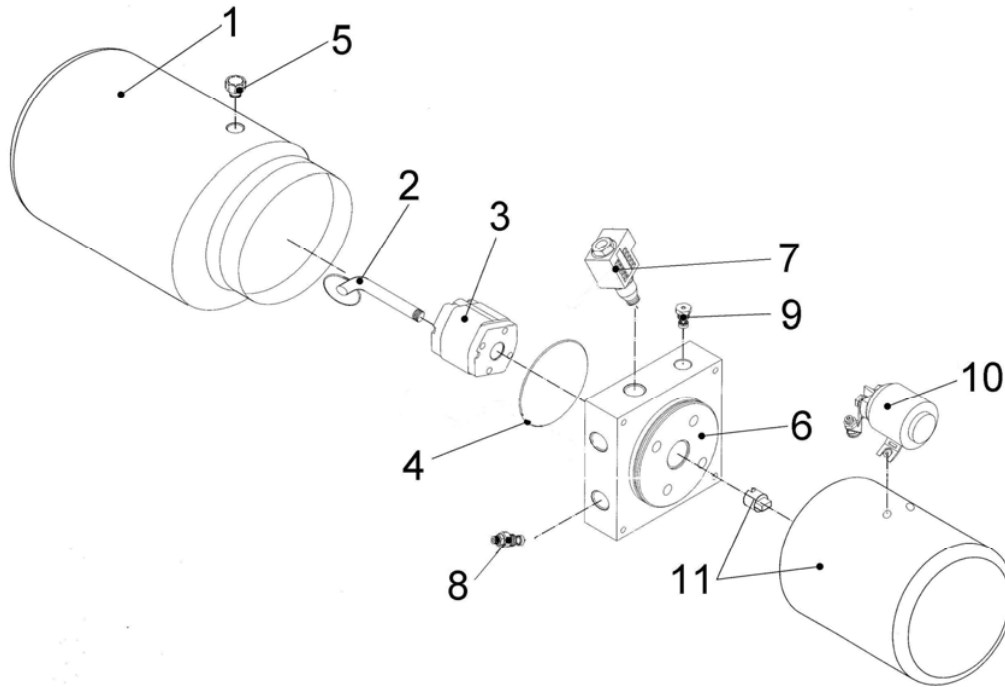


Fig. 14 Pump system

No.	Parts No.	Name	Qty.	Remarks	standard
1	2130301001	Oil tank	1		
2	2500217001	Oil suction pipe	1		
3	2500237001	Gear pump	1		
4	2500222001	O ring	1		
5	2500237005	Refill cover	1		
6	2500215002	Center valve block	1		
7	2110234001	solenoid valve	1		
8	2500235002	Overflow valve	1		
9	2500235003	Check valve	1		
10	2110234003	Contactor	1		
11	2110234002	Motor	1		

Fig.15 Driving system

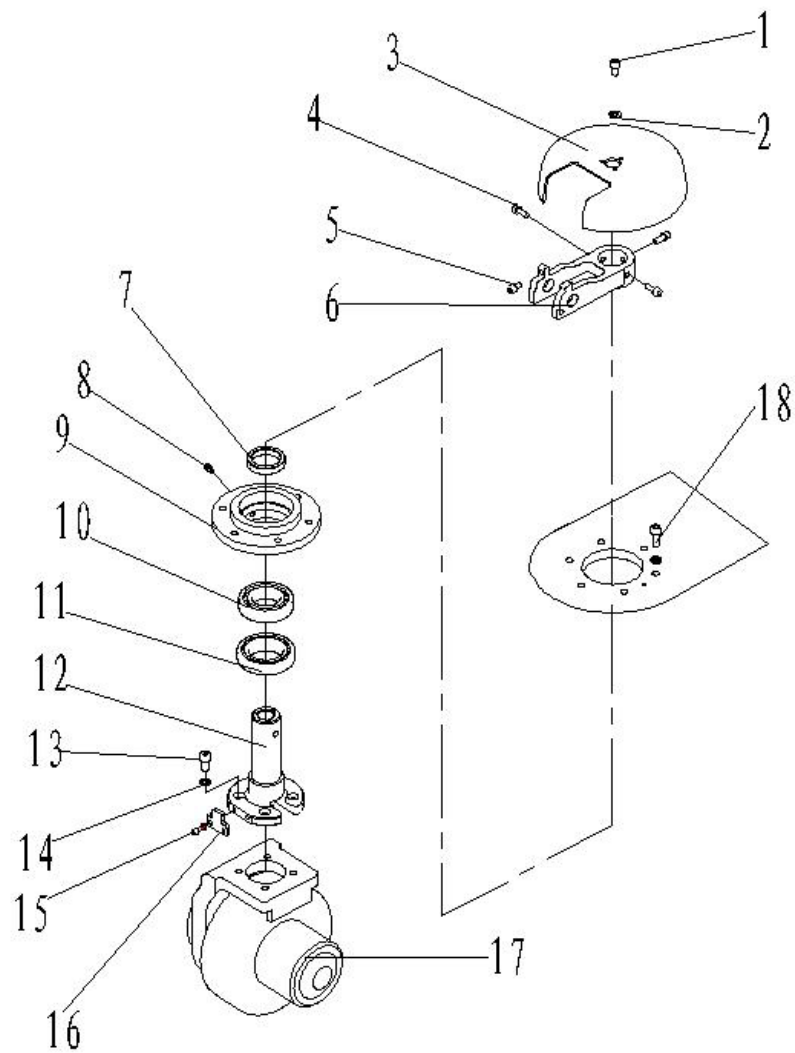


Fig.15 Driving system

No.	Parts No.	Name	Qty.	Remarks	standard
1	0000023059	Screw	3	M4x8	GB/T70.1=ISO4762
2	0000025019	Washer	3	4	GB/T95
3	9000002090	Driving wheel cover	1		
4	0000023044	Screw	3	M8x20	GB/T70.1=ISO4762
5	0000023089	Screw	1	M8x12	GB/T70.1=ISO4762
6	9000002089	Handle seat	1		
7	9000002087	Locating bushing	1		
8	0000023042	Screw	4	M6x10	GB/T70.1=ISO4762
9	9000002086	Bearing seat	1		
10	0000027048	Bearing	1	6209	GB/T276=ISO3290
11	0090000038	Bearing	1	32011	GB/T297
12	9000002085	Connecting flange	1		
13	0000023034	Screw	4	M10x20	GB/T70.1=ISO4762
14	0000023006	Standard spring washer	10	10	GB/T93
15	0000025010	Standard spring washer	4	6	GB/T93
16	9000002088	Locating block	1		
17	9000001023	Driving wheel	1		
18	0000023088	Screw	6	M10x25	GB/T70.1=ISO4762

Fig.16 Instrument components

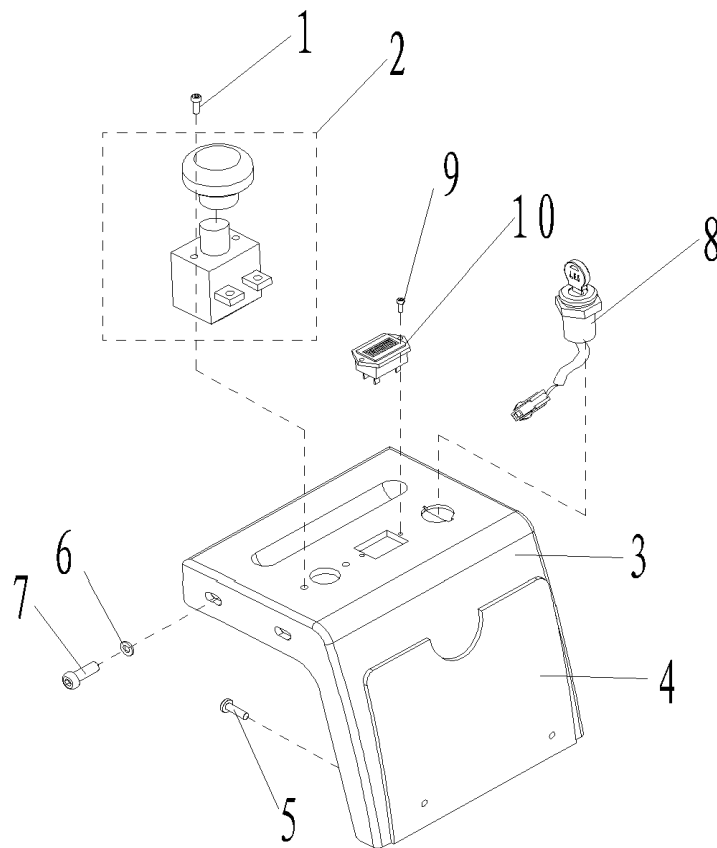


Fig.16 Instrument components

No.	Parts No.	Name	Qty.	Remarks	standard
1	0090000041	Screw	2	M5x10	GB/T70.2=ISO7380
2	2240434001	DC power switch ZDK31-250	1		
3	9000002070	Instruments board	1		
4	9000002071	Clipboard	1		
5	0000024002	Nut	4	M3	GB/T6170=ISO4032
	0000023075	Screw	4	M3x20	GB/T70.1=ISO4762
6	0000025011	Washer	4	8	GB/T95
7	0000023089	Screw	4	M8x12	GB/T70.1=ISO4762
8	1010434002	Key switch LKS-101A	1		
9	1000123003	Screw	2	M4x8	GB/T70.2=ISO7380
10	9000009801	Indicator	1		

Fig.17 T iller arm assembly

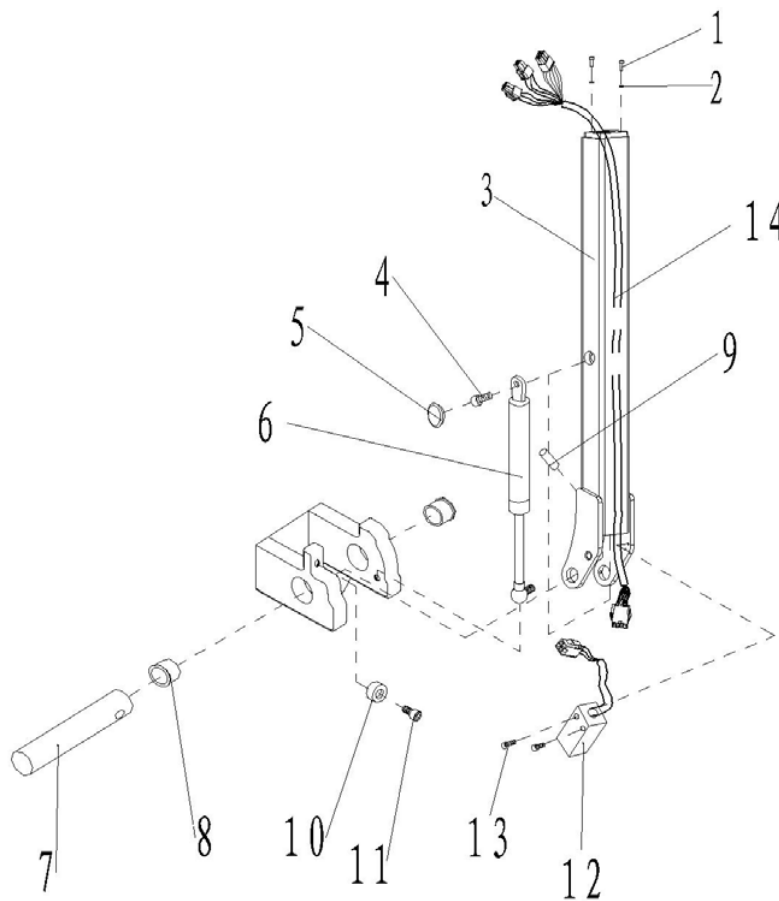
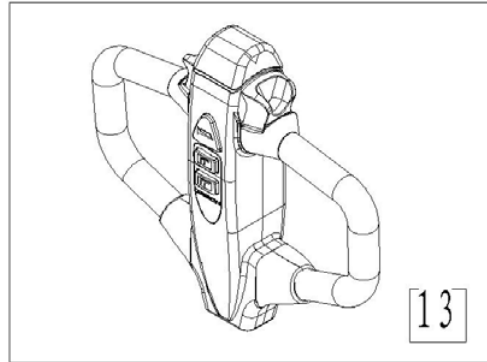


Fig.17 Tiller arm assembly

No.	Parts No.	Name	Qty.	Remarks	standard
1	0000023061	Screw	4	M8x25	GB/T70.1=ISO4762
2	0000025004	Standard spring washer	4	8	GB/T93
3	9000005940	Handle lever welding part	1		
4	1000123001	Screw	1	M8X20	
5	1030418001	Seal bushing	1		
6	9000007398	Air spring	1	F=800N	
7	9000005945	Rotating axle	1	Ø 20X78	
8	0000013002	Shoulder harness	2	20X22X12	
9	0000028163	Roll pin	1	4x35	GB/T879.1=ISO8752
10	0000025004	Standard spring washer	1	8	GB/T93
11	0000023089	Screw	1	M8X12	GB/T70.1=ISO4762
12	9000007427	Proximity switch NBN5-FT-E2	1		
13	0000023075	Screw	2	M3X20	GB/T70.1=ISO4762
14	9000002406	Handle harness	1		
15	9000001927	Handle	1		

Fig.18 Economic tiller head

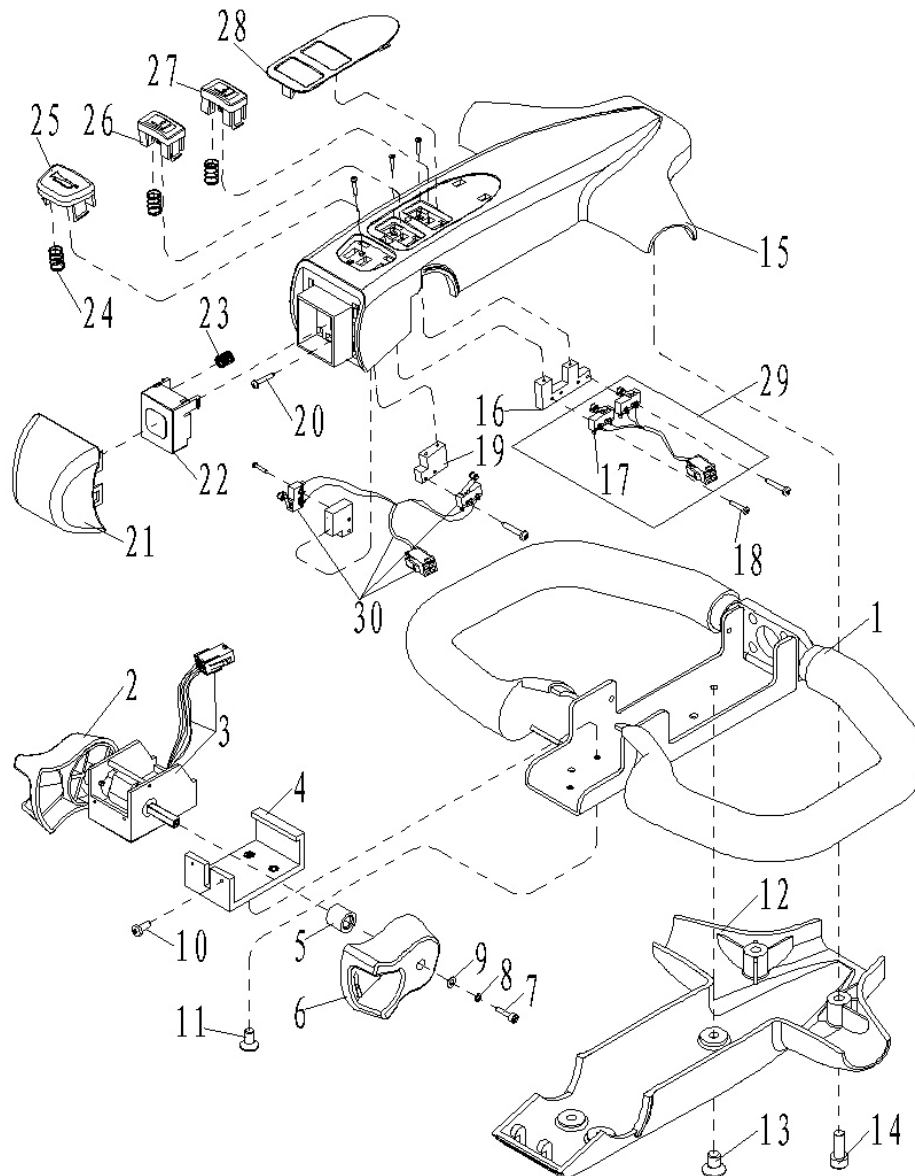


Fig.18 Economic tiller head

No.	Parts No.	Name	Qty.	Remarks	standard
1	9000002189	Tiller seat	1		
2	9000002175	Left driving switch	1	ABS	
3	9000008334	Accelerator BD-190	1		
4	9000002177	Accelerator connecting part	1	ABS	
5	9000002188	Bushing	2	ABS	
6	9000002176	Right driving switch	1	ABS	
7	0000023304	Screw	2	M3X12	GB/T70.1=ISO4762
8	0000025003	Spring washer	2	3	GB/T93
9	0000025026	Washer	2	3	GB/T95
10	0090000190	Screw	2	M3X8	GB/T6560
11	0090000189	Screw	3	M4X8	GB/T70.3=ISO10642
12	9000002179	Tiller downside cover	1		
13	0000023138	Screw	4	M6X10	GB/T70.3=ISO10642
14	0000023040	Screw	2	M6X16	GB/T70.1=ISO4762
15	9000002178	Tiller upper cover	1		
16	9000002311	Micro switch fixing large part	1		
17	9000002161	Micro switch SS-5GL2	4		
18	0090000261	Screw	14	ST2.2x13	GB/T845=ISO7049
19	9000002310	Micro switch fixing small part	2		
20	0090000262	Screw	7	ST2.2 X 9.5	GB/T845=ISO7049
21	9000002180	Belly seat	1		
22	9000002181	Belly inner seat	1		
23	9000002182	Spring 0.8	4		
24	9000002186	Spring 0.6	6		
25	9000002183	Horn button	1		
26	9000002184	Lifting button	1		
27	9000002185	Lowering button	1		
28	9000002187	Label	1		
29	9000002473	Tiller micro switch assembly 2	1		
30	9000002190	Tiller micro switch assembly 1	1		

Fig.19 Driving wheel assembly

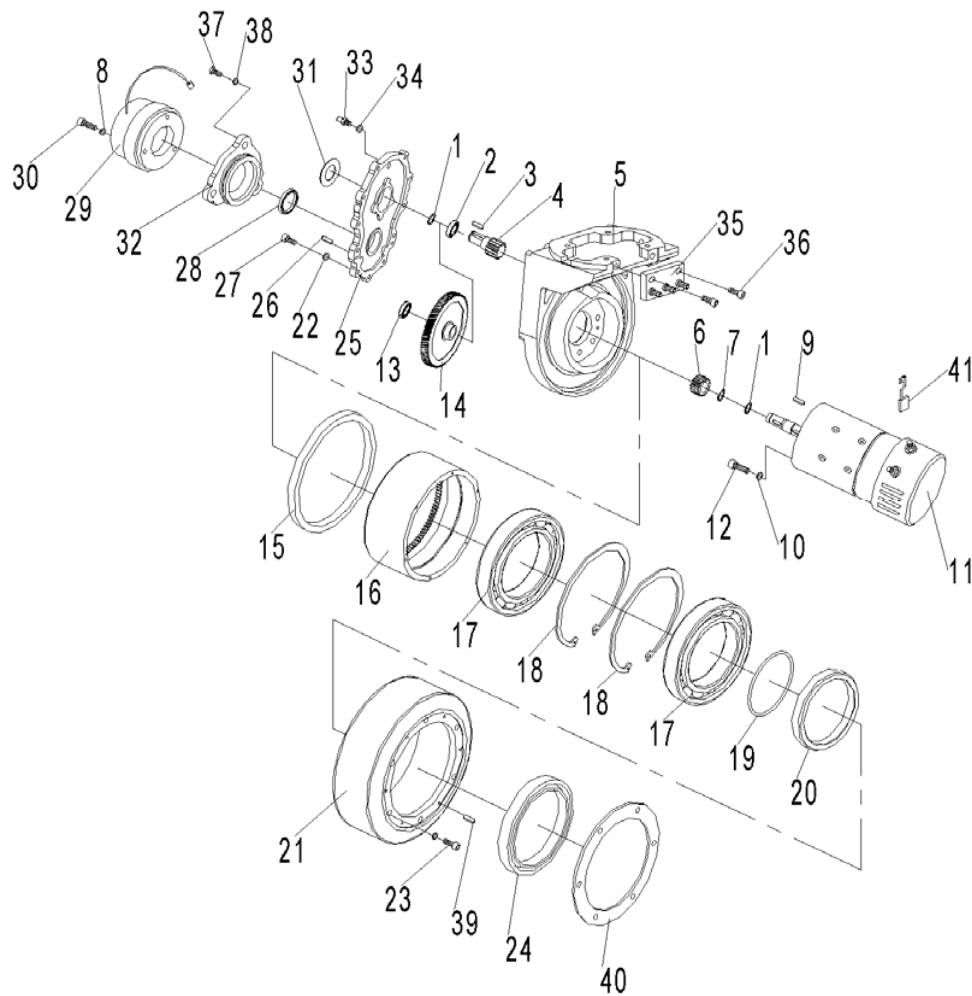


Fig.19 Driving wheel assembly

No.	Parts No.	Name	Qty.	Remarks	standard
1	0000026005	Retaining ring	2	17	GB/T894.1
2	0000027068	Bearing	1	6203	GB/T276=ISO3290
3	0000036005	Flat key	1	A5X18	GB/T1096
4	9000002136	Gear shaft	1		
5	9000002137	Gear box	1		
6	1070309001	Small gear	1		
7	0000026004	Retainer ring	1	15	GB/T894.1
8	0000025009	Spring washer	3	4	GB/T93
9	0000036002	Flat key	1	A5X15	GB/T1096
10	0000025020	Washer	5	8	

11	9000002138	Permanent magnet motor	1		
12	0000023061	Screw	5	M8X25	GB/T70.1=ISO4762
13	0000027086	Bearing	1	61905	GB/T276=ISO3290
14	1070309002	Gear wheel	1		
15	0090000178	Oil seal	1	160X174X10	GB9877
16	9000002139	Inner gear ring	1	19EL100008	
17	0090000179	Bearing	2	61824	GB/T276=ISO3290
18	0090000180	Retaining ring	2	150	GB/T894.1
19	0090000181	O ring	1	115X2.65	GB/T3452.1=ISO3601
20	9000002140	Filter seal seat	1	19EL100009	
21	9000002141	Wheel	1	19EL110000	
22	0000025006	Spring washer	11	6	GB/T93
23	0090000182	Screw	10	M5X14	GB/T70.1=ISO4762
24	9000002142	Seal ring	1	19EL100011	
25	1070302007	Gear box cover	1		
26	0000028144	Roll pin	2	B6X20	GB/T120.2=ISO8735
27	0000023063	Screw	11	M6X16	GB/T70.1=ISO4762
28	0090000183	Oil seal	1	17X28X7	GB9877
29	1070335002	Electromagnetic brake	1		
30	0000023674	Screw	3	M4X45	GB/T70.1=ISO4762
31	1070302008	Cover	1		
32	1070302009	Protective bushing	1		
33	1070123001	Vent plug	1	M10X1	
34	0000025021	Combination washer	1	10	
35	1070302010	Cable fixed plate	1		
36	0000023675	Screw	2	M5X16	GB/T70.2=ISO7380
37	0000023065	Screw	3	M5X25	GB/T70.2=ISO7380
38	0000025012	Spring washer	13	5	GB/T93
39	0090000184	Roll pin	2	5x20	GB/T119.1=ISO2338
40	0090000185	O ring	1	140x2.65	GB/T3452.1=ISO3601
41	9000002143	Carbon brush	1		

1. Gear spare parts need to offer in pairs.

Easy worn parts list

No.	Art No.	Description	Qty.	Fig./Position	Note
1	2000416003	Small wheels	2	Fig.7/1	Load wheel
2	0000027001	Bearing	4	Fig.6/11 Fig.7/4 Fig.12.1/2 Fig.12.2/2	Castor Load wheel One-stage mast hydraulic system Two-stage mast hydraulic system
3	9000002141	Driving wheel	1	Fig.19/21	Driving wheel assembly
4	9000002143	Carbon brush	4	Fig.19/41	Driving wheel assembly
5	2040634001	Micro-switch	1	Fig.11/1	Electric parts and components
6	9000007398	Air spring	1	Fig.17/6	Tiller arm assembly
7	2000322002	Support ring for shaft	1	Fig.13/2	Cylinder assembly
8	0000022014	O seal ring	2	Fig.13/8	Cylinder assembly
9	0000022013	O seal ring	1	Fig.13/7	Cylinder assembly
10	2000322003	Support ring for hole	1	Fig.13/6	Cylinder assembly
11	2010322001	Y seal ring	1	Fig.13/5	Cylinder assembly
12	0000022011	O seal ring	3	Fig.12.1/12 Fig.12.2/11	One-stage mast hydraulic system Two-stage mast hydraulic system
13	1000434008	Fuse	1	Fig.9/8	Electronic control board assembly
14	1000434020	Fuse	1	Fig.9/25	Electronic control board assembly
15	1000434040	Fuse seat	1	Fig.9/16	Electronic control board assembly

16	9000002324	Fuse tube	1	Fig.11/22	Electric parts and components
17	9000002192	LED fault display assembly	1	Fig.11/21	Electric parts and components
18	9000002322	Relay	1	Fig.9/24	Electronic control board assembly
19	9000002190	Tiller micro-switch assembly 1	1	Fig.18/30	Economic tiller head
20	9000002473	Tiller micro-switch assembly 2	1	Fig.18/29	Economic tiller head
21	9000007427	Proximity switch	2	Fig.17/12	Tiller arm assembly
22	9000008334	Accelerator	1	Fig.18/3	Economic tiller head