



ECB70 | ECB80

OPERATOR MANUAL

< OM-ECB70/802019001-EN >



BYD FORKLIFT

Welcome to use BYD electric forklift!
May our electric vehicles bring greater convenience to your work !

Please read the instructions carefully before you use the electric vehicle.

The instructions is a general instruction. We reserve the right to make technical modifications to electric vehicles. If there is discrepancy between the contents of the instructions and the physical objects, the objects shall prevail and instructions are only for reference

Warning

The vehicle operators must strictly enforce the ISO3691:2013 "safety code for powered industrial vehicles". Untrained personnel are strictly prohibited to operate this vehicle.



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FOREWORD

Thank you for choosing BYD electric forklifts.

These operating instructions explain in detail how to correctly operate the BYD electric forklifts, as well as the procedures that you should follow when conducting checks, maintenance and repairs on the forklifts.

Read through every chapter in the manual before operation for the correct use and maintenance of the forklifts. When the forklift is out for rental or transportation, keep this operation instruction together with the forklift and make sure that operators can use the manual whenever necessary.

Pay attention to the following signs:

DANGER

Indicates an imminent extremely hazardous situation. Failure to avoid it will cause severe injuries, major property damage or even death.

Warning

Indicates a potential extremely hazardous situation. Failure to avoid it might cause severe injuries, major property damage or even death

Caution

Indicates a potential hazardous situation. Failure to avoid it might cause slight to medium injuries, or property damage

Note

Note for detailed operation. Complying with the instructions will ensure a better operation of the BYD forklift.



Declaration

Operation Notice

BYD industrial vehicles can only be operated in the designated areas in the factory or in other specific environments, in compliance with Regulations on safety supervision of special equipment.

Inappropriate use of the BYD forklift might cause damages and losses, which the operators or proprietor instead of BYD should be held liable for. If the forklift needs to be operated in the environments other than those mentioned in this manual, contact with your local BYD dealer first for confirmation.

Any modification to the forklift is not allowed unless BYD's written consent is granted. Contact with BYD first before modifying the forklifts.

This manual is devised based on the standard forklifts. For other questions not covered in the manual, please check with BYD after sales service.

BYD Forklift is subject to ongoing development and optimizing the design of products. BYD Forklift reserves the right to alter the design, equipment, technical features, and technical specifications and so on. No guarantee of particular features of the forklift should therefore be assumed from the present operator manual.

Forklift Delivery

Every BYD forklift has passed through thorough performance tests before shipment. Although proper protection has also been adopted during transportation, it is advised to conduct a thorough inspection when the forklift arrives. Before delivering the forklifts to end customers, to guarantee that the forklift is in perfect condition, the followings checks should be conducted at BYD dealers:

1. Check if the wheel nuts are securely fastened.
2. Check the hydraulic oil level.
3. Check the braking function.
4. Check the travelling function.
5. Check the steering function.
6. Check the operation of mast and attachments (for counterweight forklift and stacker)
7. Check high voltage circuits.

To avoid inconveniences in future warranty claims, please check the functions of the forklift and check if the forklift is complete.



OPERATOR NOTICE

This chapter instructs on safety operation procedures that should be followed during the use of the BYD forklift.

The operator of the forklift should have obtained the driving permit in accordance with local regulations.

Before operating the forklift, check the data plate and capacity chart to know the loading capacity of the forklift and avoid the overloading during operation.

Warning signs and decals are pasted on the forklift. Get familiar with the decals and its contents.

Notice

Operator Qualification

Industrial vehicle can only be allowed to be operated by people with the qualification regulated by local laws. The operators should be those who have been specially trained and have experience in operating the industrial vehicles. The user or other entrusting part must confirm the qualification of the operators and make use of the tests before authorizing the person to operate the forklift.

The operating company must make sure that the operators understand all the safety messages on the industrial vehicles.

Please abide by relevant regulations and guide-principles, such as:

- 1.Operation of industrial vehicle
- 2.Lane and operative area regulation
- 3.Driver's right, responsibility and standard of behavior
- 4.Special operation area
- 5.Daily maintenance and repair
- 6.Regular maintenance and repair

For the proprietor, make sure following safety instruction on your industrial vehicles are observed.

DANGER

- 1.Unauthorized persons are not allowed to operate the industrial vehicle.
- 2.Safety devices and features will provide extra safety. Do not deactivate these safety device and features.
- 3.Make sure that the load is well palletized and trimmed to avoid its protruding the loading surface of forklift and thus slipping, collapsing and falling over.



4.Any modification on the forklift is not allowed. Contact with BYD before making any modification.

5.Do not overload. Before operation, please check the rated loading capacity and loading center on the capacity chart. When an attachment has been installed, abide by the rated loading capacity given on the attachment;

6.Do not operate the forklift after drinking. It might cause severe human injuries.

Caution

1.Read through the operation instructions before operating the forklift.

2.Operators should wear working boots and working clothes.

3.Do not operate the forklift with wet or greased hands.

4.Conduct the daily checking and regular maintenance on the forklift.

5.Stop operating the forklift when the abnormalities and damages are found on the forklift. Do not use the forklift until the forklift is fully repaired.

Nameplate and Decals

The forklift has a forklift nameplate and a battery nameplate. Read them before using the forklift.

The BYD forklift have notes or warning decals and signs to remind the operators of potential risks, as well as safety notices. Find and read all these decals and signs.

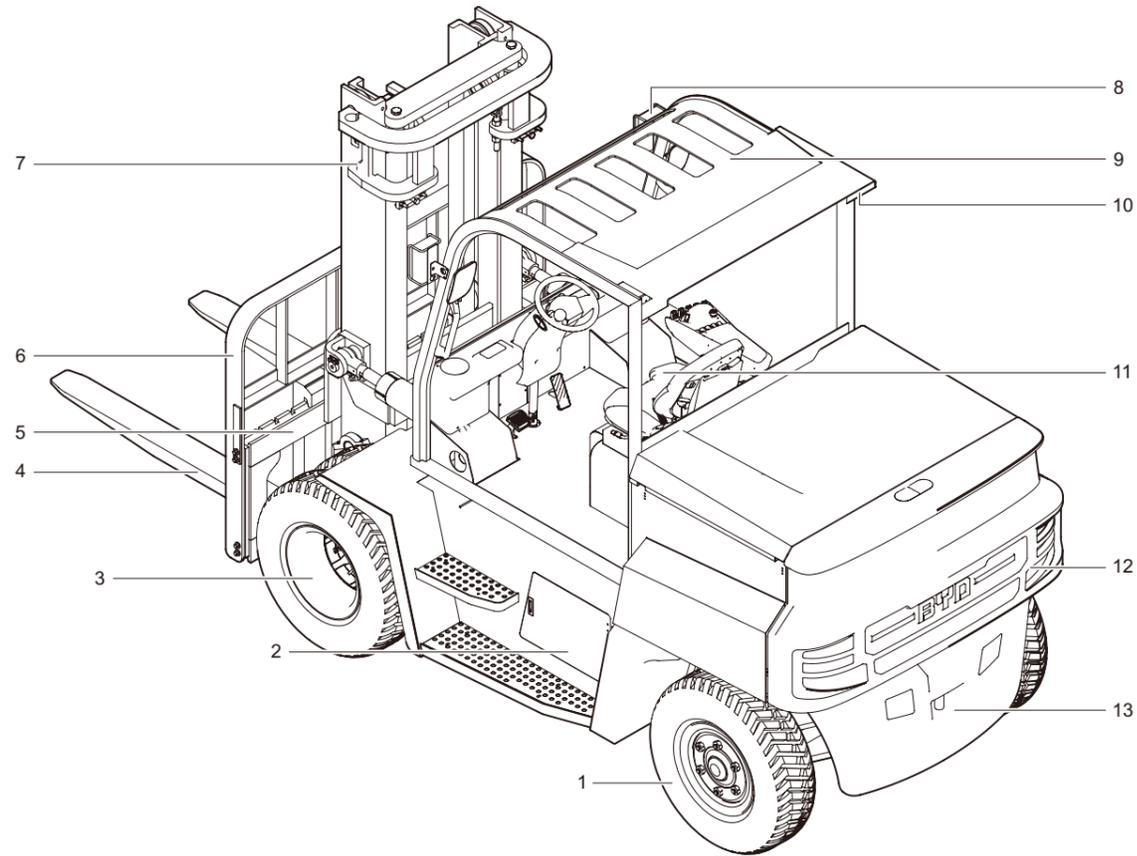
If the notes or warning decals and signs are missing or difficult to read, please contact your local BYD dealer for immediate replacement.

VEHICLE VIEW AND TECHNICAL SPECIFICATIONS

This chapter explains the overview of the forklift and its relevant technical specifications.

Appearance

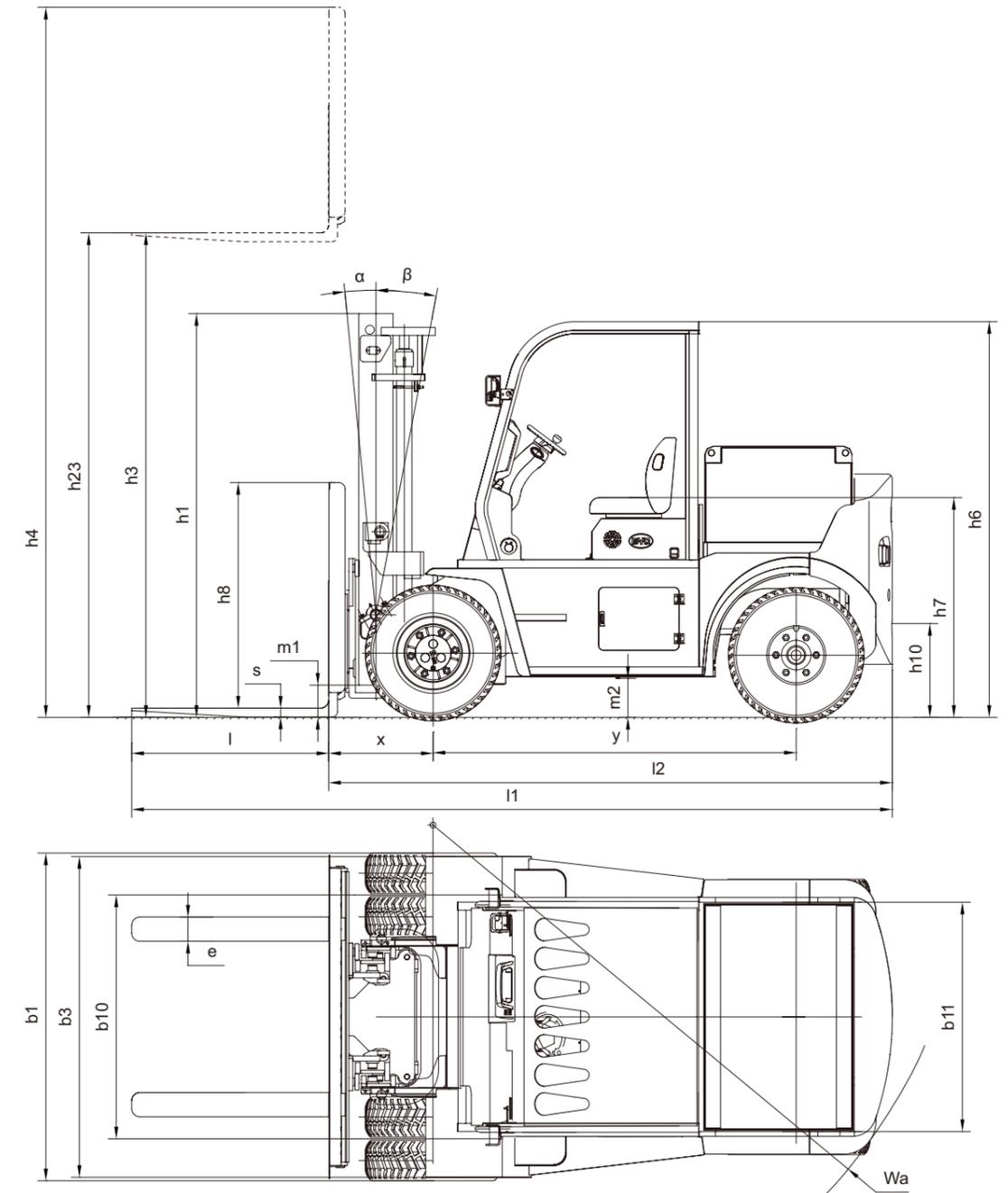
Forklift Appearance



No.	Name	No.	Name	No.	Name
1	Rear Wheel	6	Load Backrest	11	Using Area
2	Charging Door	7	Mast	12	Counterweight
3	Front Wheel	8	Front Lamp	13	Tow Pin
4	Fork	9	Overhead Guard		
5	Carriage	10	Rear Lamp		

Technical Specifications

Technical Drawing





Technical Specifications

Identification	1.1	Manufacturer			BYD	BYD
	1.2	Type			ECB70	ECB80
	1.3	Drive			Electric	Electric
	1.4	Operator Type			Seat	Seat
	1.5	Rated Capacity	Q	kg	7000	8000
	1.6	Load Center	c	mm	600	600
	1.7	Load Distance, Center of Drive Axle to Fork	x	mm	660	660
	1.8	Wheelbase	y	mm	2250	2250
Weight	2.1	Service Weight		kg	10350	10800
	2.2	Axle Load, with Load, Front/Rear		kg	15270/2080	16320/2480
	2.3	Axle Load, without Load, Front/Rear		kg	4296/6054	4496/6304
Wheel	3.1	Tires			Air inflated tyre	Air inflated tyre
	3.2	Tire Size, Front			8.25-15	8.25-15
	3.3	Tire Size, Rear			8.25-15	8.25-15
	3.4	Wheels, Number Front/Rear (X=Driven Wheels)			2x/2	2x/2
	3.5	Track Width, Front	b10	mm	1510	1510
	3.6	Track Width, Rear	b11	mm	1420	1420
Basic Dimensions	4.1	Tilt of Mast/Fork Carriage Forward/Backward	a/b	deg	5/10	5/10
	4.2	Height, Mast Lowered	h1	mm	2500	2500
	4.3	Free Lift Height	h2	mm	155	155
	4.4	Lift Height	h3	mm	3000	3000
	4.5	Height, Mast Extended	h4	mm	4465	4465
	4.6	Height of Overhead Guard	h6	mm	2565	2565
	4.7	Seat Height	h7	mm	1410	1410
	4.8	Coupling Height	h10	mm	610	610
	4.9	Overall Length	l1	mm	4745	4745
	4.10	Length to Face Of Forks	l2	mm	3525	3525
	4.11	Overall Width	b1	mm	2000	2000
	4.12	Fork Dimensions	s/e/l	mm	65/150/1220	65/150/1220
	4.13	ISO2328, Frame/Type A,B			4A	4A
	4.14	Fork Carriage Width	b3	mm	2000	2000
	4.15	Ground Clearance, with Load, Below Mast	m1	mm	170	170
	4.16	Ground Clearance, with Load, Center of Wheelbase	m2	mm	220	220
	4.17	Aisle Width for Pallets 1000x1200 Crossways	Ast	mm	5480	5480
	4.18	Aisle Width for Pallets 800x1200 Lengthways	Ast	mm	5280	5280
	4.19	Turning Radius	Wa	mm	3380	3380
	4.20	Inward Turning Radius	b13	mm	-	-
Performance Data	5.1	Travel Speed, with/without Load		Km/h	15/17	15/17
	5.2	Lift Speed, with/without Load		mm/s	350/400	350/400
	5.3	Lowering Speed, with/without Load		mm/s	500/400	500/400
	5.4	Max. Drawbar Pull, S2=5min, with/without Load		KN	40	40
	5.5	Max. Gradeability, S2=5min, with/without Load		%	15/20	15/20
	5.6	Acceleration Time (0-10km/H), with/without Load		s	6/5	6/5
	5.7	Service Brake			Hydraulic System	Hydraulic System
Drive	6.1	Drive Motor Rating at S2=60 Min		kW	14x2	14x2
	6.2	Lift Motor Rating at S3=15%ED		kW	24x2	24x2
Others	7.1	Type of Drive Control			AC	AC
	7.2	Operating Pressure for Hydraulic System		Mpa	18	18
	7.3	Sound Level at the Driver's Ear		dB(A)	75	75
	7.4	Towing Coupling, Type			-	-



Battery Specifications

Forklift Type		ECB70, ECB80
Battery Voltage, Nominal Capacity	V/Ah	80/1000
Battery Weight	kg	1150

Working Environment

Working temperature: -10 ~ 40° C
 Working humidity: ≤ 90%
 Operating Altitude: ≤ 2000m
 Road: dry, hard, level and flat
 Storage: in airy storehouse

Caution

If the working environment is harsh, decrease the goods or reduce the speed

Danger

- 1.No sharp obstacle.
- 2.No strong acid or base on the road.
- 3.Do not soak the tire in the water for a long time.
- 4.Do not expose the truck to the burning sun.
- 5.No flammable gas, no flammable dust and no volatile flammable liquid.

Note

Contact with your BYD local dealer if the forklift is intended to be used in the following environments:

- 1.in places where explosives are stored
- 2.in dusty areas
- 3.in ports or water front with corrosive salt hazards
- 4.in chemical factories with acid and other chemical hazards
- 5.in potential explosive environments with dust or other explosive gas
- 6.in toxic environment
- 7.in radioactive environment
- 8.in other special environment

Nameplate and Decals

Forklift Nameplate

Electric (Iron-Phosphate Battery) Counterbalance Forklift			
Type		Service weight including battery	
Serial No.		Net weight (w/o battery)	
Year of manufacture		Battery weight (min.)	
Rated capacity (kg)		Battery weight (max.)	
Max. lift height		Battery voltage	
Wheel size, front		License No.	
Wheel size, rear		Part No.	
BYD (SHAOGUAN) CO., LTD. Add.: No.1, BYD Road, Zhenjiang Industrial Park, Shaoguan, Guangdong, China			

Note

- 1.The nameplate is placed on the left of the forklift.
- 2.After receiving the forklift, check the information on the nameplate and confirm if it complies with the one you've ordered.

Caution

- 1.Every forklift might have different specification. Check the nameplate before operation to confirm the forklift specification.
- 2.When transporting the load, it should not exceed the rated loading capacity of the forklift. Check and confirm the load of the forklift.

Battery Nameplate

铁电池/Iron-Phosphate Battery		
产品使用环境 Operating Conditions	环境温度 Ambient Temperature	
	相对湿度 Relative Humidity	
产品基本性能 Basic Performance	型号 Model	
	电池型号 Cell Model	
	标准容量 Nominal Capacity	
	标称电压 Nominal Voltage	
	工作电压 Operating Voltage	
	额定工作电流 Rated Operating Current	
	电池包重量 Weight	
	出厂编号 Serial No.	
Caution: Before operation, you must be familiar with specific requirement for output configuration by referring to the instruction manual.		
中国制造 Made in China BYD (SHAOGUAN) CO., LTD.		

Note

- 1.The battery nameplate is placed on the battery.
- 2.After receiving the forklift, check the information on the data plate and confirm if it complies with the one you've ordered.

Loading Capacity Chart

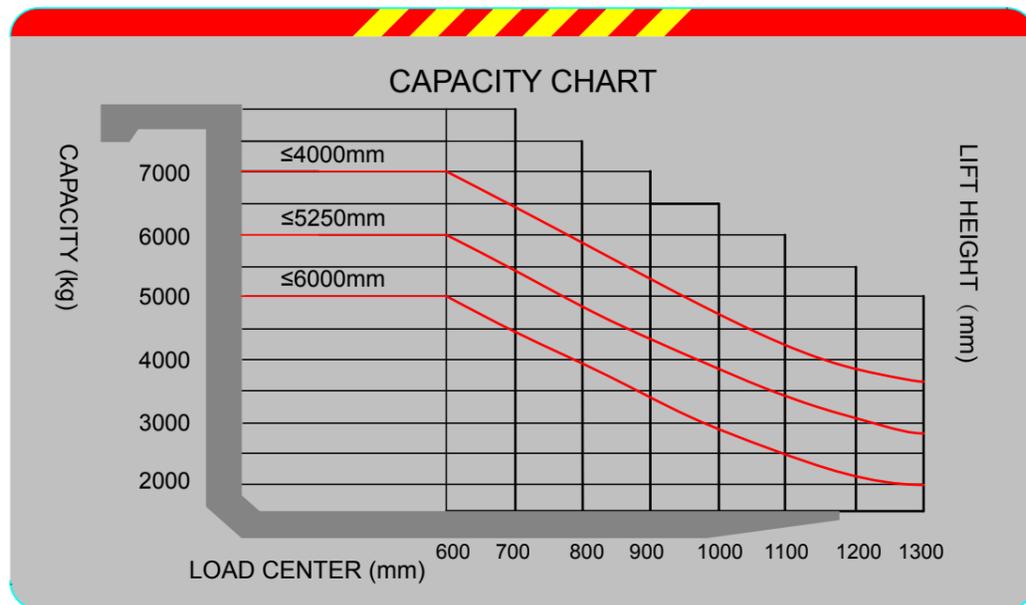
When the load center exceeds the rated one, the loading capacity of the forklift is reduced. The Loading capacity chart indicates the maximum loading capacity the forklift has corresponding to the different load center.

Suppose the cargo has the load center of 600mm and the expected lifting height is 4000mm.

1. Draw the vertical line at the coordinate of load center of 600mm and find the crossing point of this vertical line and the curve line of lift height of 4000mm.

2. The ordinate on the Y-axis of the crossing point reads 7000kg, which is the permissible maximum lifting load. Following the same reasoning, you can calculate the loading capacity in the case of other load center and lifting height.

If you want to increase the lifting height, decrease the load center (more reasonable packaging) and weight of the cargo.



Caution

1. Forklift specification varies depending on customer requirements. Refer to the load capacity chart for confirmation on the maximum allowed load;

2. The load capacity chart reflects only compact, well palletized and evenly centered loads within the load limit. Otherwise the stability of the forklift and the rigidity of the related parts will be impaired.

Other Decals

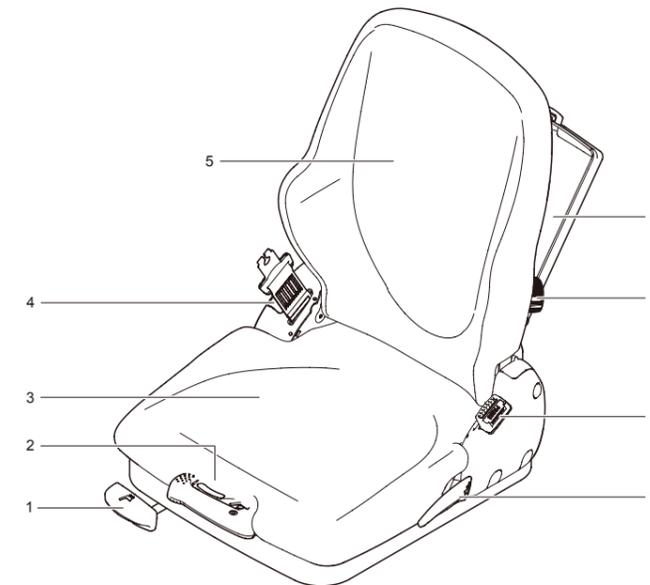
Please pay attention to notes or warning decals and signs before using.

OPERATING

This chapter explains how to operate BYD forklift correctly.

Seat

Seat Appearance



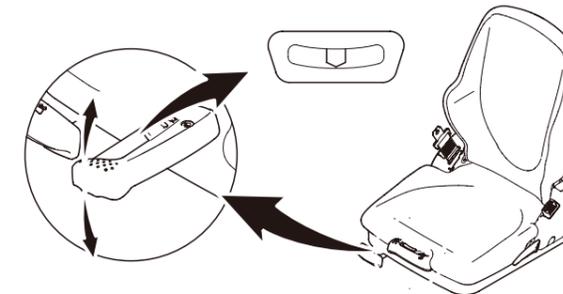
No.	Name	No.	Name	No.	Name
1	Seat Adjusting Handle	4	Seat Belt Retractor	7	Lumbar Support Adjusting Handle
2	Weight Adjustment Lever	5	Backrest	8	Seat Belt Buckle
3	Cushion	6	Seat Document Box	9	Backrest Adjusting Handle

Seat Operating

1. Weight adjustment

Fold out the weight adjustment lever completely, hold it at the front and move it upwards or downwards (10 movements from minimum to maximum). Before every new movement, bring the lever back to the starting position (audible locking sound).

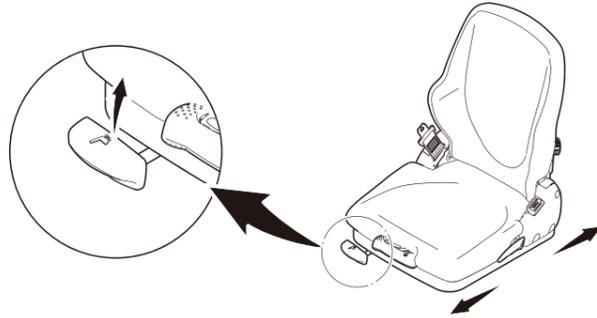
The driver's weight has been set correctly, when the arrow is in the middle of the viewing window. With the operator weight setting completed, fold the handle fully to the initial locked position.



2.Adjustment of lateral position of seat

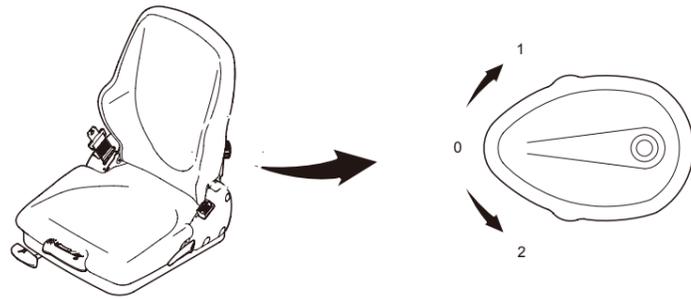
Pull up the recess of the lever. Move the seat forward and/or backward to find the right seat position.

Return the lever to its folded position and the seat has been adjusted.



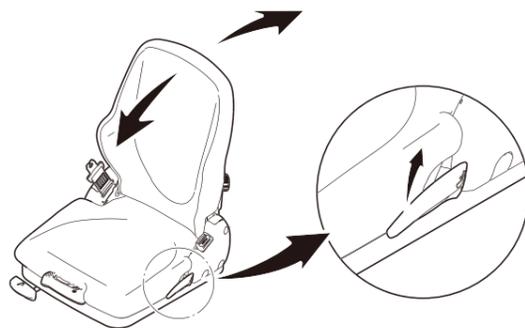
3.Lumbar support adjustment

Lumbar support can be adjusted to improve ride comfort of the operator. Rotating the adjusting lever upward can increase the bending extent of the upper portion of the backrest. Rotating the adjusting handle downward can increase the bending extent of the lower portion of the backrest.



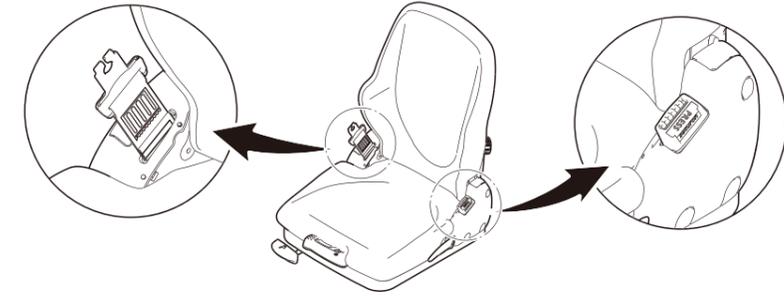
4.Backrest adjustment

Raise the lock handle, then adjust the backrest angle (while adjusting the backrest angle, ensure that the backrest is not blocked). Release the locking lever to lock the backrest.



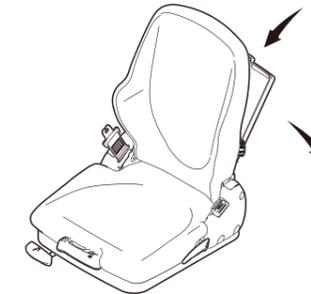
5.Seat belt

Pull out the seat belt slowly from the retractor, and then put the buckle end into the lock.



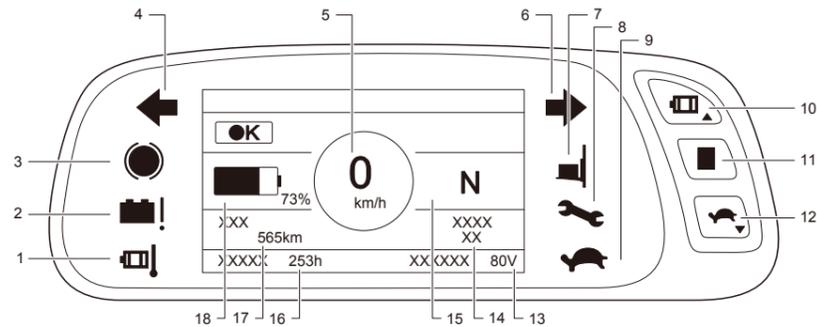
6.Seat document box

There is a document box on the rear side of seat, which could store documents, work gloves and other flat goods.



Dash Panel

Dash Panel Appearance



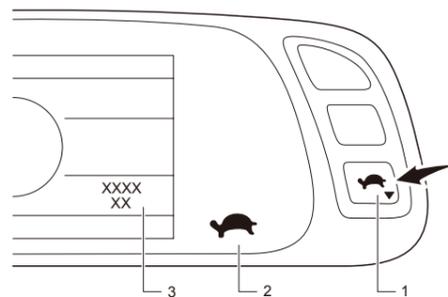
No.	Name	No.	Name	No.	Name
1	Motor Overheating Warning Indicator	7	Overload Warning Indicator	13	Voltage Message
2	Battery Error Warning Indicator	8	Checking and Diagnosis Indicator	14	Speed Mode
3	Parking Indicator	9	Speed Mode On Indicator	15	Gear
4	Left Turning Light	10	Enter	16	Total Hours
5	Warning Message	11	Functions	17	Odometer
6	Right Turning Light	12	Speed Mode Control Switch	18	Battery Message

Dash Panel Operating

1.Speed mode adjustment

Press the Speed Mode Control Switch to change the speed setting which including high, low and OFF (without speed mode control).

Press the Speed Mode Control Switch for 2 seconds and the indicator will be lit. Pressing the Speed Mode Control Switch will allow you to choose from the 3 speed settings including high, middle, low and OFF (without speed mode control).



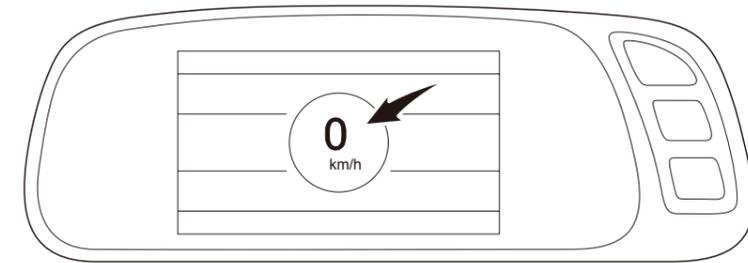
No.	Name	No.	Name	No.	Name
1	Speed Mode Control Switch	2	Speed Mode ON Indicator	3	Speed Mode

2.Working Indicator and Messages

During normal work, the message is the current speed.

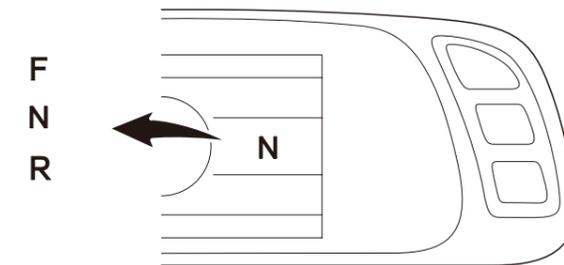
After the forklift is switched on, if the seat is vacant, warning message of "Please return to the seat" will be displayed.

When the battery charge is low and the buzzer sounds, warning message of "Charge the battery at once" will be displayed.



3.Gear

Gear letter of the forklift is shown on the dash panel, which may be F (forward), N (neutral), or R (reverse).



4.Dash panel setting

Press the middle button at the right to enter into the Setting.

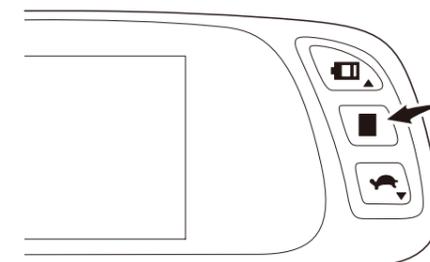
The operator can change the setting on the time, unit, working hours, background light, language and factory setting.

Functions of the 3 buttons:

(1)Upper button: Moving the cursor up. Increasing the value of digit and number.

(2)Middle button: Pressing this button to enter the Setting window. Select and enter the sub-menu. Select and confirm the digit and number.

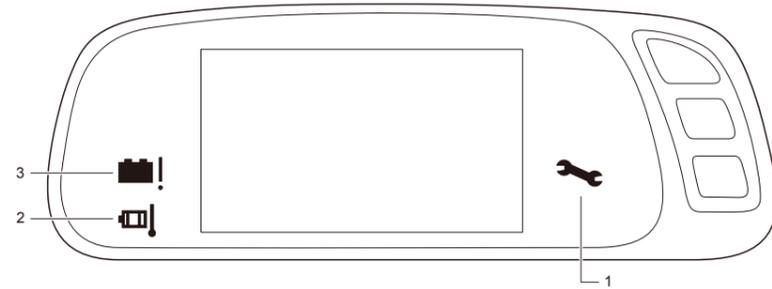
(3)Lower button: Moving the cursor down. Decreasing the value of digit and number.



5.Indicators

Explanation on the 3 indicators:

- (1)Indicator related to error, which appears in the case of error.
- (2)Indicator related to the temperature, which appears when some components are overheated.
- (3)Indicator related to the battery, which appears in the case of low battery and battery failure.



Trouble-shooting Methods:

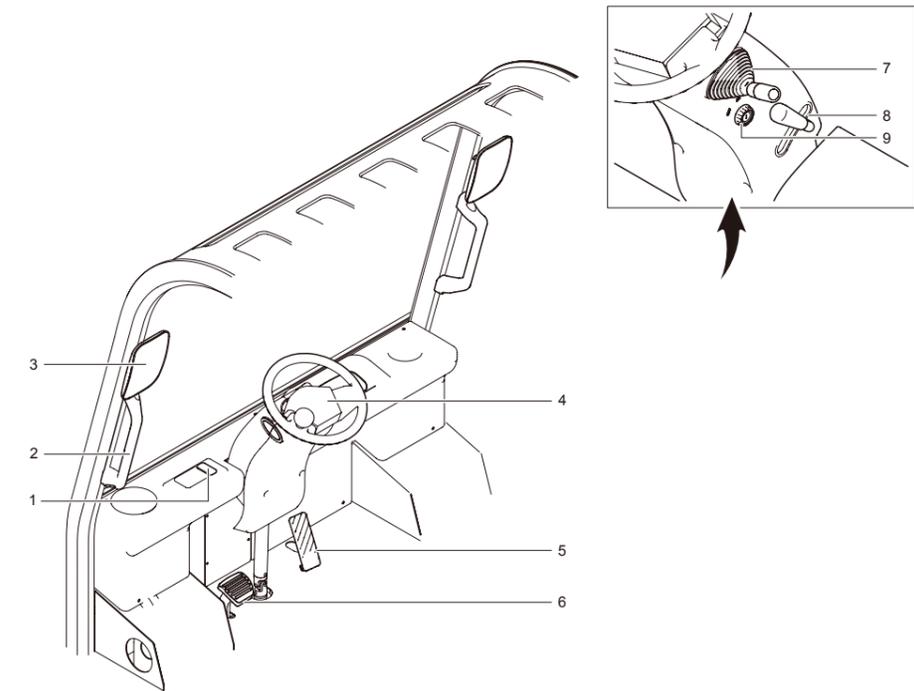
The following table contains all the error messages that could be shown in the multifunction display. Please refer to the trouble shooting method for solution when the following error occurs.

Category	Warning Message	Solution
Drive	LOGIC FAILURE #1	Battery charge is too low, charge the battery
	LOGIC FAILURE #3	Restart the forklift
	VMN LOW/VMN HIGH	Restart the forklift
	MASTER KO	Restart the forklift
	STBY I HIGH	Restart the forklift
	ENCODER ERROR	Restart the forklift
	INCORRECT START	Return the gear switch to stop and restart the forklift
	CAP CHARGE	Restart the forklift
	THERMIC SENSOR KO	Restart the forklift
Chassis system	VACC NOT OK	Check if the accelerator will return normally and restart the forklift
	PEDAL WIRE KO	Restart the forklift
Others	CONTACTOR OPEN	Restart the forklift
	AUX OUTPUT KO	Restart the forklift
	FORWARD+BACKWARD	Switch off the forklift, return the lever to stop position and restart the forklift
	NO CAN MESSAGE #3	Restart the forklift
Battery	WRONG SET BATTERY	Restart the forklift
Temperature	HIGH TEMPERATURE	Shut down the forklift for 5 minutes and restart it
	HIGH MOTOR TEMPERATURE	

After taking the recommended measures, contact the service personnel if the error message reappears and repeats more than 3 times.

Start and Control

Using Area Overview



No.	Name	No.	Name	No.	Name
1	EPB Switch	4	Steering Wheel	7	Combination Lights Control Lever
2	Get-On Handrail	5	Acceleration Pedal	8	Steering Wheel Adjusting Lever
3	Rear View Mirror	6	Brake Pedal	9	Ignition Switch

Start and Control

Ignition Switch

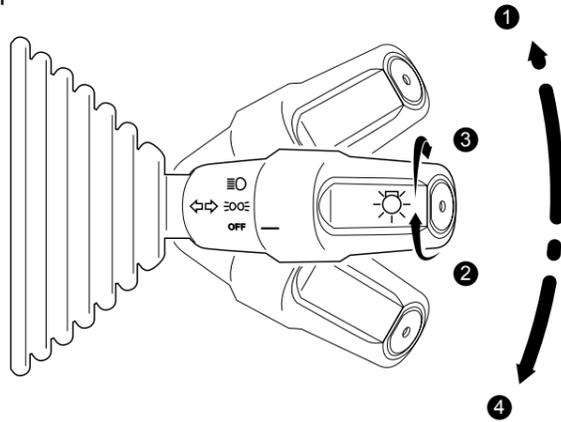
Insert the key into the ignition switch and rotate it to turn on the forklift. Rotate the key reversely and take off it to turn off the forklift.

Note

Before starting the forklift, pull up the right emergency disconnect switch.

Combination Lights Control

1. Left turning light: push the switch forward.
2. Clearance light: turn the switch clockwise to the first stop.
3. Working light: turn the switch clockwise to the second stop.
4. Right turning light: pull the switch backward.



Note

When the turning indicator is switched on, it would return automatically to neutral when changing direction is completed.

Travelling, Steering and Braking

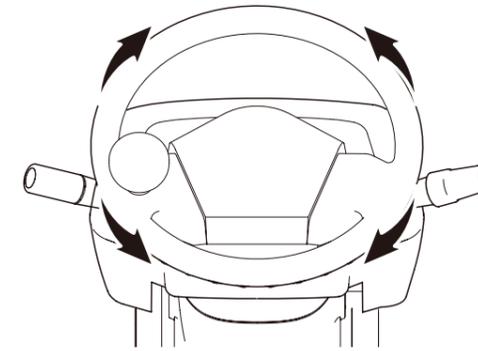
1. Travelling

Set the vehicle at the Forward gear. Depress the accelerator pedal, then the forklift travel forward.

Set the vehicle at the Reverse gear. Depress the accelerator pedal, then the forklift travel backward.

2. Steering

When travelling, turn the steering wheel right or left to steer.

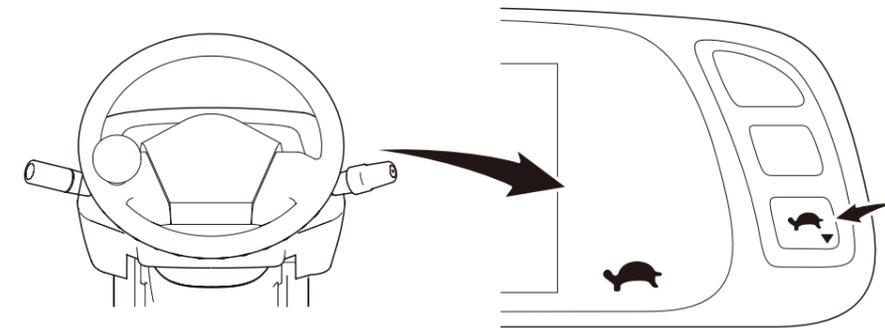


3. Braking

Depress the brake pedal to brake.

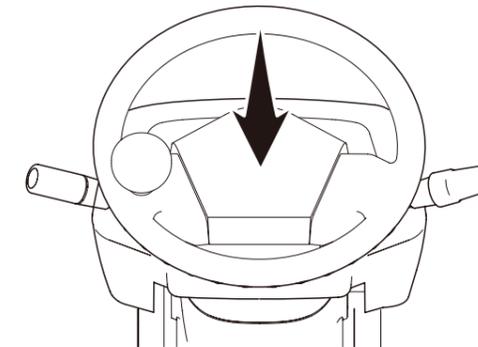
Low Speed Switch

Press the low speed control on the dash panel to choose low speed mode.



Horn

Press the horn button to send audible warning.



Parking

1. After bringing the forklift to a stop with the service brake, hold the hand brake lever and pull it towards your body.

2. To release the hand brake, press down the unlock button on the top of the hand brake lever and push it back.

Transporting Loads

Loading

Load on the ground:

1. Drive the forklift carefully up to the load and brake the forklift to a stop.
2. Lower the forks on the floor.
3. Insert the forks under the load.
4. Lift the forks.
5. When transporting, drive with caution, pay attention to the route condition and to the people ahead and maintain a proper driving speed. Transport the load to the designated place.

Load on the high shelf:

1. Drive the forklift carefully up to the load and brake the forklift to a stop.
2. Set the mast in the vertical position and raise the forks to the bottom of the load.
3. Insert the forks under the load.
4. Raise the load until it has left the shelf completely.
5. Reverse the forklift with caution at a low speed until the forklift leaves the stacking area.
6. Lower the forks.
7. When transporting, drive with caution, pay attention to the route condition and to the people ahead and maintain a proper driving speed. Transport the load to the designated place.

Danger

1. When approaching the load, do not travel at high speed to avoid crashing.
2. Do not stay beneath the raised load.

Caution

When transporting the load, the load should be securely fastened on a pallet with the gravity center well centered and with the proper stacking height. Do not damage the packing of the load. The operator should be held responsible for the safe loading and unloading.

Travelling

1. When travelling with load, make sure that the load is well centered on the forks.
2. After the load is placed on the forks, keep the mast tilted backwards and raise the forks above the floor.
3. During the travelling of the forklift, do not try raising the forks to avoid the danger of forklift nose over and losing stability.
4. If the stacked loads are high and affect the operator's visibility of the route ahead, operate the forklift in reverse except when the forklift is climbing the slope or inclines.

Warning

1. When driving the forklift on a slope, keep the forks always facing the uphill direction and drive in turtle speed mode when facing the downhill direction.
2. Do not cross or turn around on a slope.

Caution

1. Have a second person as lookout if the visibility of the operator is reduced.
2. Do not depress the brake pedal with a lot of force, since excessive force might cause damage to the braking system.

Unloading

1. Drive the forklift carefully up to the stacking destination and decelerate when approaching.
2. Raise the forks to the proper height.
3. Drive the forks and load into the shelf.
4. Set the mast in the vertical position and lower the forks to the proper height until they get separated from the forks.
5. Slowly remove the forks from the bottom of the load.
6. After driving the forks out, raise them and start the next.

Exiting from the Forklift

1. Lower the forks after unloading.
2. Turn the key anticlockwise to OFF position and take it out.
3. Pull off the hand brake.
4. Exit from the forklift.



Battery

Charging

Open the charge port, and then connect the charger connector. Follow the user manual of the charger to charge the forklift.



TRANSPORTATION AND STORAGE

This chapter explains how to transport and store the forklift.

Loading, Transporting and Unloading

Driving into the Transport Vehicle

Drive the forklift into the transport vehicle on turtle speed mode.

Caution

1. Have a supervisor or a second person on site as a lookout.
2. Make sure that the ground is strong enough to avoid the transport vehicle sinking into the floor.
3. Secure the transport vehicle with fixed block.
4. During loading and unloading, constantly check the rigidity and the stability of the ramp.

Transporting and Unloading

1. Use a transport truck or a low flat bed truck to transport the vehicle.
2. Unloading the forklift by crane follows the same procedure as the loading of the forklift.
3. When driving the forklift out of the transport vehicle, reverse the forklift with caution at low speed. The rest of the procedure is the same as required for driving the forklift onto the transport vehicle.

Storage and Restoring

Procedures of Storage

Clean and remove the dust on the forklift components and conduct the following procedures:

1. Check forklift for oil and water leakage and abnormal components. If yes, repair the forklift first.
2. Fully lift and lower the forks several times.
3. Lower the forks.
4. Spray a layer of lubricant over the parts left unpainted.
5. Check the hydraulic oil level and add if necessary.
6. Lubricate all the components.
7. Take off the key and make sure that forklift is disconnected from the battery power and press down the emergency disconnect switch. Battery status of charge should be around 50% to avoid over-discharge or full charge for long-term storage.
8. Use and operate the forklift for a while every month.

Procedures of Restoring

Clean and remove the dust on the forklift components and conduct the following procedures:

1. Lubricate all the components.
2. Fully lift and lower the forks and tilt masts several times.
3. Check the status of charge of the traction battery.
4. Check the hydraulic oil. Replace it if necessary.

Caution

The operator should repeatedly check the performance of the forklift brake when operating it for the first time after the forklift has been restored to service.

MAINTENANCE

This chapter explains how to maintain the forklift.

Daily Maintenance

Period and Items

Daily (or every 8 hours) and weekly (or every 40 hours) for daily inspection items, whichever comes first. If the forklift works less than 8 hours per day, conduct the inspection and checks on a daily basis. If daily working hours exceed 8 hours, conduct the inspection and checks every 8 hours.

Inspection checklist:

No.	Item	1 day	1 week
		8 hours	40 hours
1	Exterior	Check	
2	Wheel	Clean and tighten	Clean and tighten
3	Mast	Check	
4	Hydraulic System	Check	
5	Display	Check	
6	Warning Equipment	Check	
7	Brake	Check	Check
8	Travel, Steering and Control	Check	
9	Electric Connector and Fuse		Check
10	Clean		Clean
11	Others	Check	

Caution

These inspections should be conducted before operating the forklift.

Note

Before conducting the daily inspection, recheck for any fault and error found earlier.

Content Description

1. Exterior

- (1) Check the forklift body for damage and deformation.
- (2) Check the floor where the forklift is parked for oil leakage.
- (3) Check the condition of the nameplate and decals.
- (4) Check if any parts loose or fall off.

Note

If oil leakage occurs, confirm the location of the oil leakage and contact the BYD after sales service.



2.Wheel

- (1)Check on a daily basis if the wheel fasteners are secured or loose. Fasten them if they are loose.
- (2)Take out debris embedded in the tire.
- (3)If the four tires are unevenly worn, or the tires are found damaged, or the rims are bent, then replace the wheels.

3.Mast

- (1)Check the cylinders, oil pipes, and hoses for oil leakage.
- (2)Check the working equipment for deformation and damage. check if the bolts are securely fastened.

4.Hydraulic system

Check the hydraulic oil level in the oil tank.

5.Display

- (1)Check if the battery voltage and status of charger displayed are correct.
- (2)Check if any error/fault indicator appears on the display.

6.Warning equipment

- (1)Press horn to see if it works.
- (2)Check if other warning equipment work properly.

7.Braking System

Move the handle to the braking zone while the forklift is travelling, to check whether the brakes operate efficiently.

8.Travel, Steering and Control Inspection

- (1)Check for the operation of the tiller and abnormal sounds by rotating the tiller forward or backward and turning the tiller right or left.
- (2)Check for the operation of buttons.
- (3)Check the fasteners for looseness or missing.

9.Electric System Inspection

- (1)Check connectors and tighten the loose parts. Check electrical connectors for abnormality (for example, sign of burning).
- (2)Check fuses of main controller and replace them if necessary. Check whether the copper bus bar of the main controller is burnt. If so, replace it.
- (3)Check whether low voltage fuse and relay work properly. Replace them if necessary.



Warning

Disconnect the battery before checking the electric system.

10.Clean

Clean the whole forklift with the compressed air.

11.Others

Check if there are others problems.

Regular Maintenance

Period and Items

Period for regular inspection and maintenance, whichever comes first. For example, if the forklift works less than 250 hours in 6 weeks, conduct the following inspection and checks every 6 weeks, otherwise conduct the following inspection and checks every 250 hours. Perform the maintenance service accordingly

Category	Item	6 (Weeks)	3	6	12	Months
		250	500	1000	2000	
Chassis System	Gear Oil Replacement	1st replacement		Replacement		
	Braking Fluid Replacement			Replacement		
	Steering Axle Lubrication	Lubrication				
Mast	Chains Adjustment	Adjustment				
	Chains Lubrication	Lubrication				
	Mast Cleaning	Clean				
	Mast Clearance Adjustment	Adjustment				
Hydraulic System	Mast Tilt Rotating Pin Lubrication	Lubrication				
	Hydraulic Oil Replacement of Main Oil Tank				Replacement	
	Hydraulic Oil Replacement of Tilt Mechanism			Replacement		
	Return Filter Element Replacement		1st Replacement		Replacement	
	High Pressure Element Replacement		1st Replacement	Replacement		
Electric System	Air Filter Replacement				Replacement	
	Electric System Inspection		Check			

Note

If the working environment is harsh, the maintenance interval should be reduced, and advice from BYD after sales personnel should be sought.

Type and Parameters of Consumable Items

Item	Consumable Items	Volume Needed	Type
Gear Oil Replacement	Gear Oil	As Needed	Mobilfluid424
Braking Fluid Replacement	Brake Fluid	As Needed	DOT-4
Steering Axle Lubrication	Lithium Lubrication Grease	As Needed	EP3
Chains Lubrication	Machine Oil	As Needed	20#(Winter), 40#(Other Seasons)
Mast Tilt Rotating Pin Lubrication	Lithium Lubrication Grease	As Needed	EP2
Hydraulic Oil Replacement of Main Oil Tank	Hydraulic Oil	130L	ISOVG46, ISOVG68
Hydraulic Oil Replacement of Tilt Mechanism	Hydraulic Oil Used for Planes	As Needed	10# Hydraulic Oil Used for Planes

Note

The given quantities are maximum values and take the actual quantities as the standard.

Content Description

1.Chassis system

- (1)Replace the gear oil.
- (2)Replace the brake fluid.
- (3)Lubricate the steering axle.

2.Mast

- (1)Check the tension the lift chains, adjust them if necessary.
- (2)Lubricate the chains
- (3)Clean the mast.
- (4)Lubricate the mast tilt rotating pin.

3.Hydraulic system

- (1)Periodically replace hydraulic oil of the main oil tank.
- (2)Periodically replace hydraulic oil of the tilt mechanism.
- (3)Replace the return filter and high pressure filter element periodically.
- (4)Replace the air filter.

4.Electric System

(1)Check connectors and tighten the loose parts. Check electrical connectors for abnormality (for example, sign of burning).

(2)Check fuses of main controller and replace them if necessary. Check whether the copper busbar of the main controller is burnt. If so, replace it.

(3)Check if fuse and relay work properly and replace them if necessary.

Warning

Disconnect the battery before checking the electric system.

Chassis System Maintenance

Front Wheel Replacement

1.Park the forklift on a flat place. Turn the key switch to OFF then remove it. Press the emergency disconnect button. Place a wedge under the wheels to prevent unexpected motion of the wheels.

2.Jack up the forklift until the tires are off the ground and loosen the wheel nuts.

3.Remove the wheel nuts and wheels.

4.Follow the reverse procedures to install the wheels back on.

Rear Wheel Replacement

1.Park the forklift on a flat place. Turn the key switch to OFF then remove it. Press the emergency disconnect button. Place a wedge under the wheels to prevent unexpected motion of the wheels.

2.Jack up the forklift until the tires are off the ground and loosen the wheel nuts.

3.Remove the wheel nuts and wheels.

4.Follow the reverse procedures to install the wheels back on.

Gear Oil Replacement

Before replacement, run the forklift until the gear box gets lightly heated. Park the forklift on a level floor, apply the hand brake, switch off the forklift, remove the key and press down the emergency disconnect switch. Lift the forklift with jack and secure the wheels with wedges. Open the rear cover and remove the wheels.

1.Clean the surrounding areas around the "Oil dipstick plug", "Oil filler plug" and "Oil drain plug". Place a container below the "Oil drain plug".

2.Remove "Oil dipstick plug", "Oil filler plug" and "Oil drain plug" and drain all the gear oil and then tighten "Oil drain plug".

3.Add the gear oil through oil filler hole until the gear oil overflows out of "Oil dipstick plug" and then tighten "Oil dipstick plug" and "Oil filler plug".

Braking Fluid Replacement

1.Run the forklift until the driving axle gets lightly heated. Park the forklift on a level floor, apply the hand brake, switch off the forklift, remove the key and press down the emergency disconnect switch.

2.Clean the surrounding area around the braking fluid drains plug, and place a container below it.

3.Remove the braking fluid drain plug and drain the braking fluid.

4.Reinstall the braking fluid drain plug and tighten it securely.

5.Add some braking fluid into the braking fluid reservoir. Slightly loosen the braking fluid drains plug and press down brake pedal once completely to exhaust air out. Repeat this procedure more than 3 three times until the air is removed completely and add braking fluid to 2/3 of the braking reservoir.

6.Tighten braking fluid drain plug and clean the residual fluid spill.

Steering Axle Lubrication

Add grease to the steering axle through the lubrication nozzle in the steering axle. Operate the grease applicator until fresh grease overflows.

Note

1.If the forklift is used in a place dusty, dirty, or having a lot of chemicals, lubricate the bearings on a weekly basis to extend their service life.

2.The method of increasing grease application times but decreasing grease amount applied each time is better than the method of decreasing grease application times but increasing great amount applied each time.

Mast Maintenance

Chains Adjustment

The standard mast has the main lift chain that is needed to be adjusted, the free list mast has the main lift chain set and the free lift chain that are needed to be adjusted. Before adjustment, park the forklift on a level ground and fully lower the mast, switch off the forklift, take off the key and press down the emergency disconnect button.

1.Standard mast lift chain adjustment

Loosen the upper and lower nuts of the lift chain, and then screw the middle nut to adjust the length of the chain. After adjustment, make the forks remain level and the chains remain the same tightness, and then tighten nuts.

Caution

After adjustment, make sure that the chains aren't slack when the lift cylinder is in the original position.

2.Free lift mast lift chain adjustment

(1)Loosen the upper and lower nuts of the lift chain, and then screw the middle nut to adjust the length of the chain. After adjustment, make the chains remain the same tightness, and them tighten nuts.

(2)Loosen the upper and lower nuts of the free lift chain, and then screw the middle nut to adjust the length of the chain. After adjustment, make the forks remain level and the chains remain the same tightness, and them tighten nuts.

Chains Lubrication

1.Clean the exterior of the lift chain and remove dust and debris.

2.Add the machine oil and let it penetrate the chain joint.

3.After lubrication, lift and lower the mast several times.

Mast Cleaning

Take out debris between the roller and the channel of the mast.

Mast Clearance Adjustment

1.General Description of Mast Roller

A circlip locks the mast roller, bearing, and the dust protection that are installed on the mast or the carriage stub. The bearing is used to adjust the clearance of the mast and carriage by the adjusting screw, which is installed on the other side of the stub. Adjusting screw is secured by a secure pin.

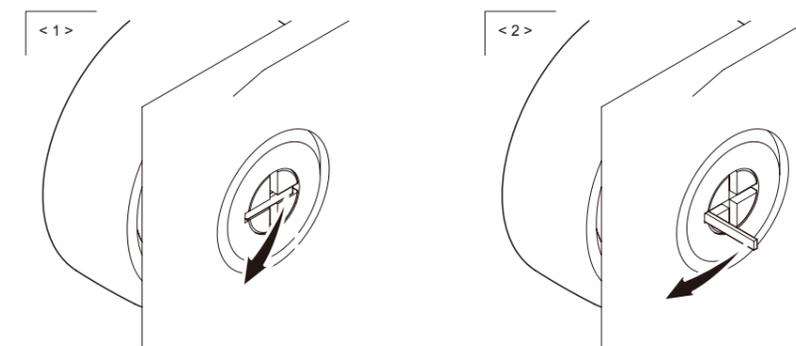
2.General Carriage and Mast Clearance Adjustment Procedure

(1)Lift the mast to expose the position of the adjusting screw.

(2)Bend the secure pin to expose the adjusting screw.

(3)Use the screw to adjust the clearance.

(4)After adjustment, bend the secure pin to secure the adjustment screw.



3.Adjustment Order

2-stage mast:

- (1)Clearance between the outer mast and the inner mast.
- (2)Clearance between the inner mast and the carriage.

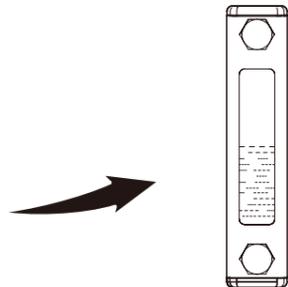
3-stage mast:

- (1)Clearance between the outer mast and the middle mast.
- (2)Clearance between the middle mast and the inner mast.
- (3)Clearance between the inner mast and the carriage.

Hydraulic System Maintenance

Hydraulic Oil Filling

- 1.Park the forklift on the level floor and apply the handbrake, remove the key, press down the emergency disconnect switch and open the seat cover fully.
- 2.Open the seat cover plate completely to observe the oil level gauge.
- 3.If there is no hydraulic oil in the oil level gauge, open the top cover of the return oil filter and add oil.



Caution

- 1.While adding oil, be careful to prevent dust and water from entering the oil tank.
- 2.Do not mix different types of hydraulic oil.
- 3.When disposing the waste oil, keep children away and do not pour it into the sewer or onto the ground.
- 4.Using unauthorized hydraulic oil might cause damage to hydraulic system. Use only authorized hydraulic oil. If you need to switch to other types of hydraulic oils, contact with the BYD forklift after sales service people.

Hydraulic Oil Replacement

- 1.Drive the forklift to the maintenance ditch, switch off the handbrake, remove the key and press down the Emergency Disconnect Switch.
- 2.Fully lower the forks, apply the hand brake, and place a container below the oil drain of the tank. Unplug the oil drains plug at the bottom of the oil tank and drain the hydraulic oil.
- 3.Before putting the plug back on, make sure that the seal ring is complete and intact and then secure the plug.
- 4.Add a small amount of hydraulic oil first to check if the seal ring on the drains plug is OK. Tighten the plug if oil leakage occurs.
- 5.Add hydraulic oil into the oil tank and measure the oil level with the dipstick.
- 6.Remove and clean the residual oil spill on the oil tank and forklift bottom and working area.

Caution

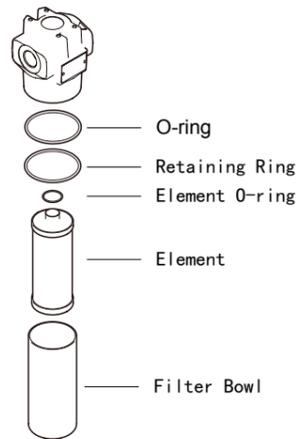
- 1.While adding oil, be careful to prevent dust and water from entering the oil tank.
- 2.Do not mix different types of hydraulic oil.
- 3.When disposing the waste oil, keep people away and do not pour it into the sewer or onto the ground.
- 4.Using unauthorized hydraulic oil might cause damage to hydraulic system. Use only authorized hydraulic oil. If you need to switch to other types of hydraulic oils, contact with the BYD forklift after sales service people.

Return Filter Element Replacement

- 1.Park the forklift on a level ground and fully lower the mast and apply the parking brake. Take off the key, press down the emergency disconnect switch and open the seat cover fully.
- 2.Put the clean cloth around the return filter.
- 3.Unscrew the filter bowl and pull the out filter element.
- 4.Clean the cover plate and check if the seal and the O-ring are in good condition, replace them if necessary.
- 5.Check if the spread and the O-ring of the new element are in good condition, replace them if necessary.
- 6.Use clean hydraulic oil to lubricate the O-ring of the new element, fit the new element carefully and screw the cover plate.
- 7.After replacement, operate the hydraulic system to check if there is any leakage.

High Pressure Filter Element Replacement

1. Park the forklift on a level ground and fully lower the mast and apply the parking brake. Take off the key, press down the emergency disconnect switch and open the seat cover fully.
2. Put the clean cloth around the return filter.
3. Unscrew the filter bowl and pull the out filter element.
4. Clean the filter bowl and check if the O-ring is in good condition, replace it if necessary.
5. Check if the spread and the O-ring of the new element are in good condition, replace them if necessary.
6. Use clean hydraulic oil to lubricate the O-ring of the new element, fit the new element carefully.
7. Screw in the filter bowl fully and then unscrew by one quarter-turn.
8. After replacement, operate the hydraulic system to check if there is any leakage.



Check and Replace the Air Filter

1. Park the forklift on a level ground and fully lower the mast and apply the parking brake. Take off the key, press down the emergency disconnect switch and open the seat cover fully.
2. Check the air filter and replace it if necessary.

Electric System Maintenance

High Voltage Electric Inspection

1. High Voltage Electric Inspection

Check connectors and tighten the loose parts. Check electrical connectors for abnormality (for example, sign of burning).

2. Main Controller Inspection

Check connectors of main controller and tighten the loose parts. Check fuses of main controller and replace them if necessary. Check whether the copper busbar of the main controller is burnt. If so, replace it.

Low Voltage Electric Inspection

1. Low Voltage Electric Inspection

Check the connection jackets for looseness. Reinstall them if loose.

2. Low Voltage Fuse and Relay Inspection

Check whether low voltage fuse and relay work properly. Replace them if necessary.

Warning

Disconnect the battery before checking the electric system.



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