

Won Germany IFOY Authoritative Awards



BUILDING YOUR DREAMS



BYD Forklift

Green Environmental Logistics Leader

BYD Forklift --A Combination of BYD Advanced Technologies

BYD Forklift is an important part of BYD New Energy Business. BYD engages **200** research staff and invests more than **¥200 million** to research and develop BYD forklift. BYD's Vertical Integration Strategy has made it possible to apply the company's world's leading battery technologies including BMS (Battery Management System), motor and electronic control technology to forklift products. As a result, BYD becomes the first supplier around the world to provide Iron-phosphate battery powered forklifts which are electric counterbalance forklift, pallet truck, reach truck and stacker.

The new factory built in Shaoguan is **130,000** square meters and is able to fulfill the mass production of **20,000** units per year.



Electric counterbalanced forklift
ECB



Pallet truck
CBD



Reach truck
CQD



Stacker
CDD

Clear-View Mast



Great visibility through the mast; The low profile front cowl also provides enhanced forward visibility.

Larger Operator Assist Grips



Designed to meet diverse operator needs.

Soft Lowering



Give operators speed control of the heaviest and lightest loads.

Clean & Easy Charging



No acid vapor released during the charging process.

Optional Fingertip Controls

Optional fingertip controls increase productivity and reduce operator fatigue.



Dual 3-Phase AC Brushless Motors

Weather proof dual 3-phase AC brushless motors; produce high power and torque and allow greater maneuverability.



Iron-Phosphate Battery

BYD's world leading Iron-Phosphate Battery is green, long-lasting and the most reliable battery that can withstand the toughest working conditions.



Solid Pneumatic Tire

Solid pneumatic tires are ideal for even the harshest terrains.



LOWEST OPERATING COSTS

 **>50%**

Lower operating costs as compared to diesel, gas or lead acid forklifts

EXCELLENT TEMPERATURE PERFORMANCE

 **-40°C to +60°C**

Normal use when the temperature is between -40°C to +60°C. At -40°C, the discharging rate of the iron battery remains over 60%, WHEREAS LEAD-ACID IS ALMOST 0.

LONG LIFE

 **4,000+**

After 4,000 cycles, the battery retains 80% of its original capacity. 4,000 cycles mean around 12 years' operation, considering once a day charging.

EXCELLENT ROI AND PAYBACK

 **Superior ROI and Payback as compared to any other forklift technology.**

After 4,000 cycles, the battery retains 80% of its original capacity. 4,000 cycles mean around 12 years' operation, considering once a day charging.

Environmentally-Friendly

Overcoming Defects of Traditional Battery Technology

BYD Iron-phosphate battery during use achieves zero emissions, zero pollution, the first real solution to the battery pollution problems in the traditional electric forklift industry, especially ideal for customers in sectors like food, medicine, supermarket, shop, cold chain, airports and others that have higher environmental requirements.

High Stability

Intelligent Protection System

BYD Forklift is equipped with advanced active stability system, including automatic leveling control system, automatic speed reduction system, mast control system, which largely improve the safety level of operation and control.

User-Friendly Design

The Technology Brings Better User Experience!

- Multi-language display instrument
- Safety features like operator presence system, anti-skid pedal
- Grill-like overhead guard, clear view mast for operator's better field of vision
- Handrail, multifunctional file folder

High Efficiency

Long-lasting Power for the Forklift

BYD Iron-phosphate battery charging efficiency is of more than 98%, at the same time with the three-phase AC induction motor, high intelligent electronic control system, according to the operating habits and operating conditions, providing different power modes, more efficient and easier to maintain.

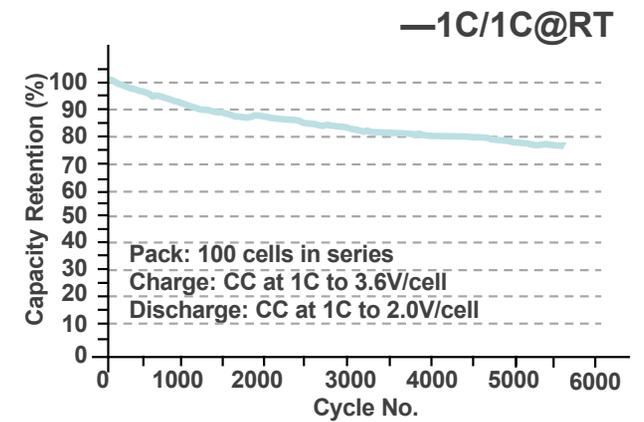
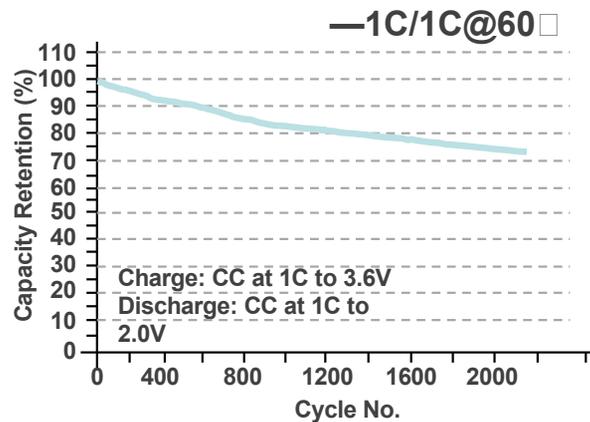
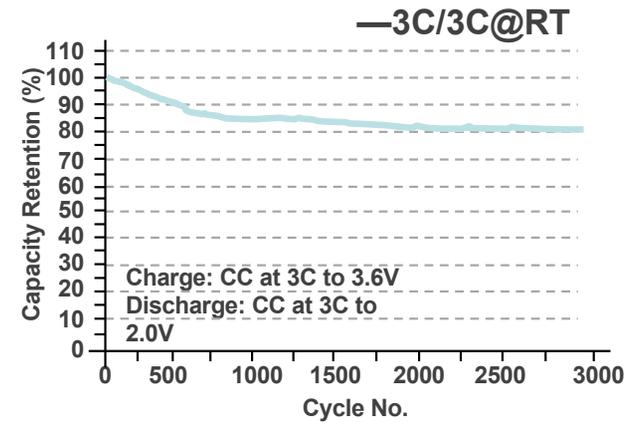
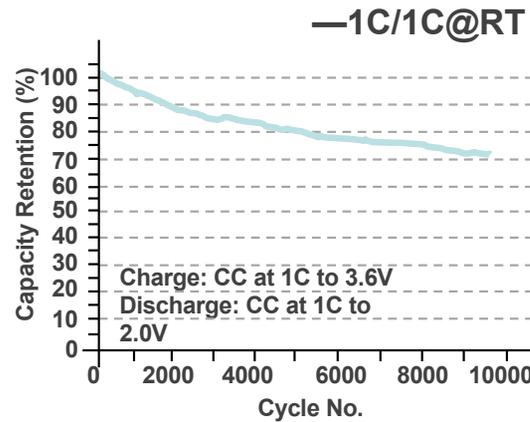


BYD Lithium-ion Iron-Phosphate Battery Cell



Life Cycle Tests

- More than 4,000 cycles life
- High energy output and high energy density
- Performs well in high temperature environments
- Excellent consistency



 Zero Emissions

Long Life Time 

 Maintenance-free

The Advantages of BYD Fe-battery

 Excellent Performance at Variable Temperature

High Safety 

 High Charging Rate Tolerance

 High Efficiency

Maintenance-Free

Completely sealed battery package, no need for maintenance

Avoid damages to battery caused by improper maintenance



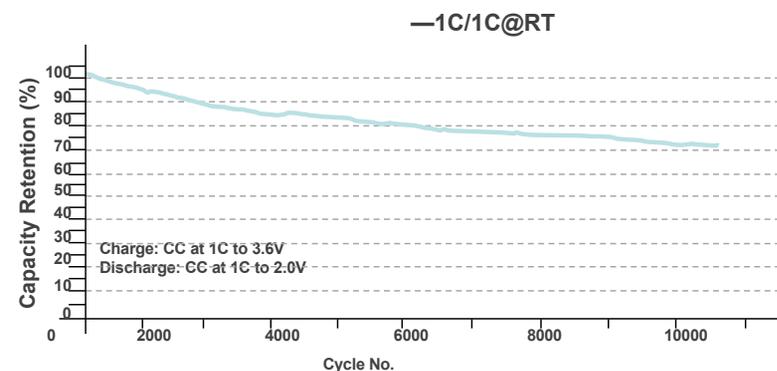
Long Life Time

4,000 Cycles

Under normal condition, the capacity retention after 4,000 cycles would remain above 80%

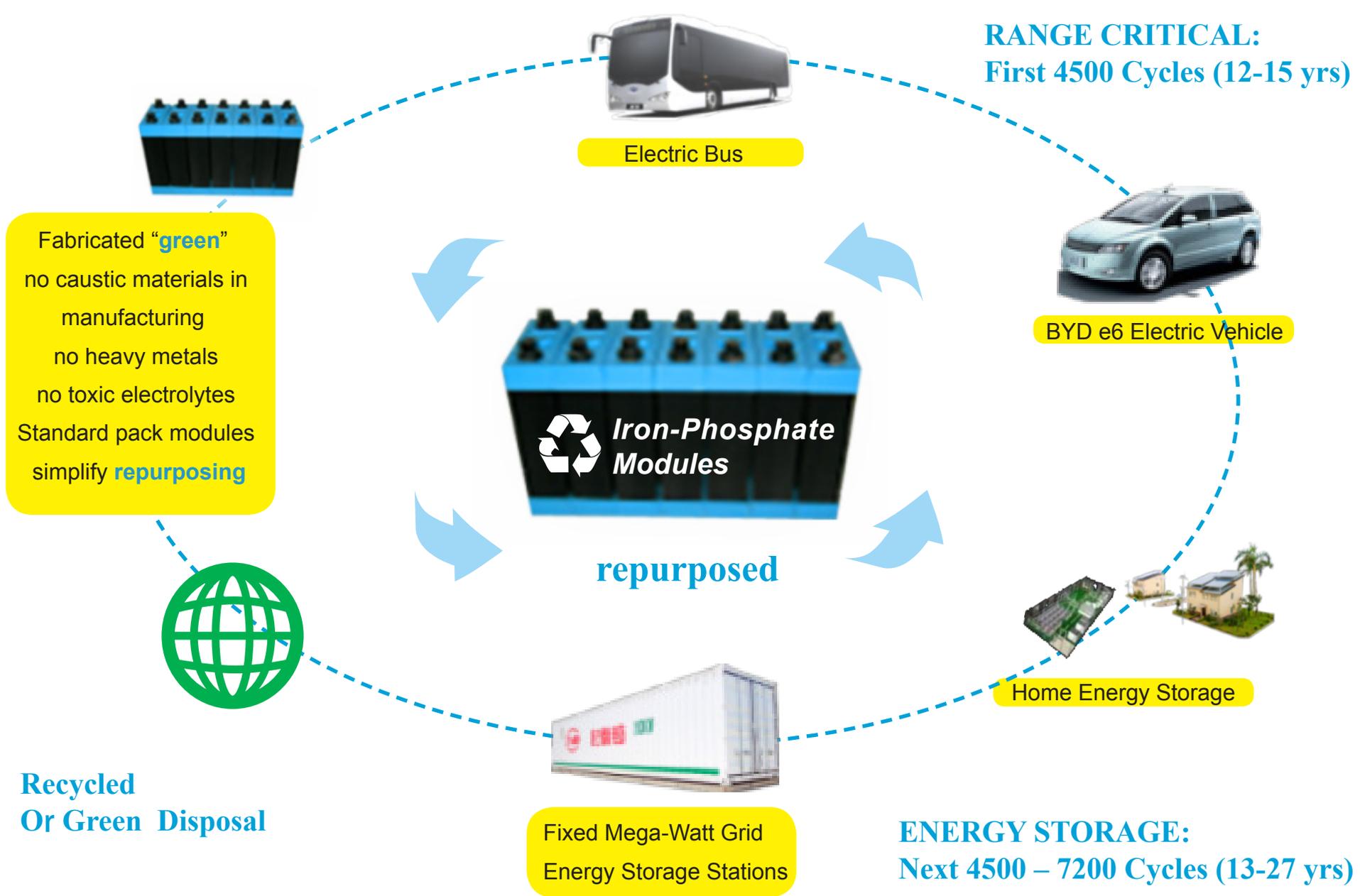
Battery could last for 10 years if being charged once a day; no need for replacement of battery within the life expectancy of forklift

Used battery recyclable for other applications such as energy storage system



The Life Time of the Cycle of Fe-battery

Part. 3 Cycle Life of BYD Iron-Phosphate Module



Part. 4 Highlights Of BYD Forklifts

Economic

- 1h fully charged for 6-8 hours of use
- 10 years battery lifetime with 5 years warranty
- Operating cost is 20% compared to diesel forklifts
- Completely sealed battery , no need for maintenance

Earthfriendly

- The battery is composed of recyclable green raw materials
- No toxic fumes or gas emission during operation

Safe

- The BYD iron-phosphate battery is widely used in BYD EV. And BYD ranks 1st in global EV sales for 3 consecutive years.
- Tested for international safety standards



AUTOMATIC SPEED REDUCTION WHEN TURNING

Truck speed reduces automatically upon turning of the vehicle to enhance lateral stability and reduce risk of tipping over.



BRAKING ASSIST SYSTEM

The Braking Assist System allows for a stable stop, preventing the forklift from rolling forward or backwards after releasing the brake on a slope.



FORWARD TILT ANGLE CONTROL

The Forward Tilt Angle Control will automatically adjust the mast's forward tilt angle according to load weight and mast height, decreasing the chance of load spilling.



OVERLOAD PROTECTION

When load exceeds 10% of the load capacity, the lifting motor stops working.

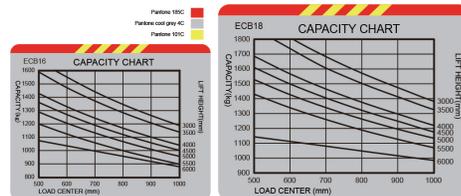


MULTI FUNCTION TFT SCREEN

Displays travel speed, battery remaining capacity, clock, working hours; three speed mode setting.

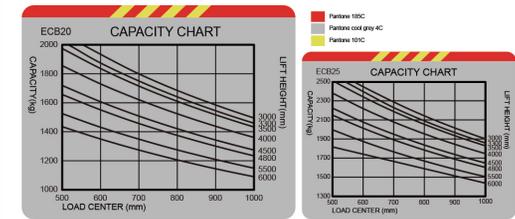
ECB16

1.6 Ton Counterbalance



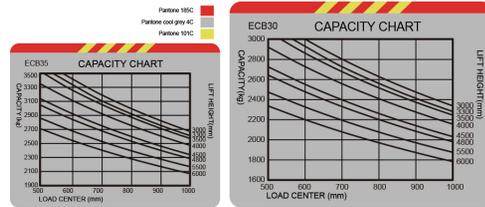
ECB20/25

2.0 -2.5 Ton Counterbalance



ECB30/35

3.0 -3.5 Ton Counterbalance



	Types Of Electric Forklift		Ecb16	Ecb18	Ecb20	Ecb25	Ecb30	Ecb35	
Dimensions	Overall Length	Mm	2,935	3,005	3,375		3,630		
	Length Of Face Of Forks	Mm	1,935	2,005	2,305		2,215		
	Overall Width	Mm		1,050		1,195		1,360	
	Lift Height	Mm		3,000		3,000		3,000	
	Max. Height	Mm		4,035		4,040		4,120	
	Min. Height	Mm		2,020		2,035		2,115	
	Overhead Guard Height	Mm		2,020		2,195		2,215	
	Fork Dimensions (S/E/L)	Mm		35/100/1,000		40/120/1,070		50/125/1,070	
	Width Over Forks	Mm		1,040		1,085		1,145	
	Tilt Range (Front/Rear)	°		5/7		5/8		5/8	
	Free Lift	Mm		150		150		150	
	Min. Aisle Width	Mm		3,460		4,300		4,490	
	Min. Turning Radius	Mm		1,570	1,640	2,020		2,210	
	Load Capacity	Kg		1,600	1,800	2,000	2500	3000	3500
	Load Center	Mm		500		5000		500	
Load Distance, Center Of Support Arm Wheel To Face Of Forks	Mm		365		375	425	375	460	
Wheelbase	Mm		1,360		1,505		1,725		
Weight	Service Weight Including Battery	Kg		3,100		4,200		5,440	
	Axle Load, With Load (Front/Rear)	Kg		4,083/617	4,495/605	4,091/699	5,811/889	6,693/1147	7,722/1,218
	Axle Load, Without Load (Front/Rear)	Kg		1,466/1,634	1,511/1,749	1,672/1,928	1,775/2,425	2,023/2871	2,274/3,166
Tires Performance	Wheel Size (Front)	Mm		18 X 7-8		21 X 8-9		23 X 10-12	
	Wheel Size (Rear)	Mm		15 X 4.5-8		18 X 7-8		200/ 50-10	
	Wheel Number, Front/Rear (X=Driven Wheels)			2X /2		2X /2		2X /2	
	Track Width (Front)	Mm		890		1,000		1,100	
	Track Width (Rear)	Mm		190		955		955	
	Travel Speed (With/Without Load)	Km/H		16/16		20/20		20/20	
	Lift Speed (With/Without Load)	Mm/S		500/550		420/500		380/450	
	Lowering Speed (With/Without Load)	Mm/S		530/500		500/450		500/450	
	Gradeability (With/Without Load)	%		20/20	18/20	20/20		20/20	
	Service Brake			Mechanical/Hydraulic					
Electric Motor	Drive Motor Rating At (S2=60 Min)	Kw		5 X 2		8 X 1		10 X 1	
	Lift Motor Rating At (S3=15%Ed)	Kw		16		20		24	
Battery	Battery Type		Iron - Phosphate Battery						
	Battery Power	Kwh		21.6		21.6/43.2		43.2	
	Charging Time	H		1		1.35/2.7		2.7/5.4	

Charger

For BYD Forklift



Charger		
Electrics	Name	80V100a(200A60a)
	Operating Voltage	Three -Phase Ac 380V ± 15%
	Input Power	11.8 Kw
	Output Voltage	Dc80v
	Output Current	Dc100a(200A/60A)
	Output Power	10 Kw
Physical Property	Overall Length	483 Mm
	Overall Width	483 Mm
	Overall Height	780 Mm
	Net Weight	94 Kg
	Charging Connector	1 Pcs
	Quantity	1 Pcs
	Length Of Charging Cable	2M
Safety	Enclosure Protection	Ip21
	Noise	<65Db
	Operating Temperature	-10 ° C-40 ° C
	Surrounding Humidity	30%-90%

Forklift Model & Technical Parameters



Electric counterbalanced forklift
ECB



Pallet truck
CBD



Reach truck
CQD



Stacker
CDD



Tractor
QD

Electric Forklift Model			ECB16
Characteristic	1.1	Manufacturer	BYD
	1.2	Drive	Electric
	1.3	Operator Type	Sitting Driving
	1.4	Rated Load	Kg 1600
	1.5	Load Center	Mm 500
	1.6	Mast Forward Distance	---
	1.7	Overhand (Front/Rear)	Mm 365/210
	1.8	Wheelbase	Mm 1360
Weight	2.1	Total Weight(Including Battery)	Kg 3100
	2.2	Front/ Rear Axle Load (With Load)	Kg 4700
	2.3	Front/ Rear Axle Load (No Load)	Kg 3100
Wheel	3.1	Wheel Type	Solid Tires
	3.2	Front Wheel Size	18 x 7- 8
	3.3	Rear Wheel Size	15 x 4.5- 8
	3.4	Front/Rear Wheel Number (X=Driven Wheels)	2X/2
	3.5	Front Wheel Distance	Mm 890
	3.6	Rear Wheel Distance	Mm 190
Dimensions	4.1	Tilt Range Before/After	Deg 5/7
	4.2	Free Lift Height	Mm 150
	4.3	Lift Height	Mm 3000
	4.4	Mast Height:Retract / Max (From the ground)	Mm 2020/4035
	4.5	Overhead Guard Height	Mm 2020
	4.6	Ground Clearance Of The Seat	Mm 985
	4.7	Coupler Height	Mm 480
	4.8	Size Length*Width*Height(With Fork)	Mm 2935X1050x2050
	4.9	Size Length*Width*Height (No Fork)	Mm 1935X1050x2050
	4.10	Fork Size (Length*Width*Thickness)	Mm 1000X100x35
	4.12	Minimum Gap(Mast To The Ground)	Mm 95
	4.15	Minimum Gap(Frame To The Ground)	Mm 95
	4.16	Right Angle Stacking Channel Width , Tray1000*200	Mm 3460
	4.17	Right Angle Stacking Channel Width , Tray1000*200	Mm 3580
Performance	4.18	Minimum Turning Radius	Mm 1570
	5.1	Driving Speed(Full Load / No Load)	Km/H 16/16
	5.2	Lifting Speed(Full Load / No Load)	Mm/S 500/550
	5.3	Descent Speed(Full Load / No Load)	Mm/S 530/500
	5.4	Hook Traction(Full Load / No Load)	Kn 9/7.9
	5.5	Gradeability(Full Load / No Load)	% 20/20
	5.6	Macceleration Time(Full Load / No Load) 0- 10	S 4.5/4
	5.7	Brake Form	Mechanical / Hydraulic
	Drive	6.1	Walking Motor
6.2		Pump Motor	Rated /Max Power Kw 16/19
6.3		Battery Type	Iron Lithium Battery
6.4		Battery Capacity	V/Ah 270
6.5		Voltage	V 80
Other	7.1	Electronic Control Type	Ac Control(Low Voltage)
	7.2	Working Pressure Of Hydraulic System	Mpa 16
	7.3	Noise Level Of The Drivers ' Area	Db(A) 65
	7.4	Traction Connection	Pin

ECB20	ECB25	ECB30	ECB35	CBD20	CQD16	CDD14	QD50
BYD	BYD	BYD	BYD	BYD	BYD	BYD	BYD
Electric	Electric	Electric	Electric	Electric	Electric	Electric	Electric
Sitting Driving	Sitting Driving	Sitting Driving	Sitting Driving	Standing Driving	Sitting Driving	Walking Driving	Sitting Driving
2000	2500	3000	3500	2000	1600	1400	5000
500	500	500	500	600	600	600	—
—	—	—	—	—	588	—	—
425/375	425/375	500/335	500/335	—	188 (Mast Extension) /400 (Mast Shrink)	665(Front)	402/385
1505	1505	1725	1725	1365	1470	1245	1013
3620	4220	5000	5600	550	4270	1200	1000
4920/700	5830/890	7072/928	8113/987	890/1660 (Drive Side/Load Side)	Mast Extension : 900/4970 (Drive Side/Load Side) Mast Shrink : 2335/3535 (Drive Side/Load Side)	880/1525 (Drive Side/Load Side)	—
1690/1930	1793/2427	2333/2667	2584/3016	450/100 (Drive Side/Load Side)	Mast Shrink : 1875/2395 (Drive Side/Load Side) Mast Shrink : 2620/1650 (Drive Side/Load Side)	700/320 (Drive Side/Load Side)	410/590
Solid Tires	Solid Tires	Solid Tires	Solid Tires	Polyurethane	Polyurethane	Polyurethane	Inflatable Tires
21 x 8-9	21 x 8-9	28X9-10	28X9-10	230x75	343x145	230x75	4.00-8
18 x 7-8	18 x 7-8	200/50-10	200/50-10	85x70	330x100	85x75	5.00-8
2X/2	2X/2	2X/2	2X/2	1X+2/4	1X/2	1X+2/4	2/2X
970	970	1120	1120	426	—	518	229
955	955	955	955	510	1170	380	835
5/8	5/8	5/8	5/8	—	2/4	—	—
150	150	150	150	110	2900 (No Shelves)	150	—
3000	3000	3000	3000	195	8500	3200	—
2035/4040	2035/4040	2115/4120	2115/4120	85/195 (Fork)	3496/9743 (With Shelves) 3496/9138 (No Shelves)	85/3649	—
2195	2195	2215	2215	—	2345	—	—
1100	1100	1140	1140	—	1133	—	980
333	333	333	333	—	—	—	332 ± 80 (Standard Configuration)
3375 x 1195 x 2195	3375 x 1195 x 2195	3630X1360x2215	3630X1360x2215	1730 x 726 x 1290	3143X1270x3496 (Mast Extension)	1918X800x1255	1800X980x1544
2305 x 1195 x 2195	2305 x 1195 x 2195	2560X1360x2215	2560X1360x2215	670 x 726 x 1290	1925X1270x3496 (Mast Extension)	758X800x1255	1746X980x1544
1070 x 100 x 40	1070 x 120 x 40	1070X125x45	1070X125x50	1125*180*50	1200X100x35	1150X190x60	—
95	95	110	110	21	67	25	—
105	105	130	130	40	76	30	110
4250	4250	4410	4410	2065	2901	1564	—
4300	4300	4620	4620	2330	2852	2432	—
2020	2020	2270	2270	1650	1758	1564	1550
15/15	15/15	20/20	20/20	6/6	13/13	6/6	11/14
450/500	450/500	380/450	380/450	50/60	380/680	170/280	—
550/480	550/480	550/450	550/450	70/65	550/550	260/320	—
12.7/9	12.5/9.5	17.4/12.2	17.2/13.6	—	—	—	7.6
15/20	15/20	20/20	20/20	8/15	12/12	5/10	10/20
4.9/4.3	4.9/4.3	4.9/4.3	4.9/4.3	3.5/3	5.6/5.0	2.5/2	6.2/5.2
Mechanical / Hydraulic	Mechanical / Hydraulic	Mechanical / Hydraulic	Mechanical / Hydraulic	Electromagnetic Brake	Mechanical / Hydraulic	Electromagnetic Brake	Mechanical / Hydraulic
8.5/18.8	8.5/18.8	21.5/27	21.5/27	1.3/2.6	6.8/13.2	1.5/3.6	5.5/9.8
20.7/28	20.7/28	24 /28	24/28	2.2/2.7	12/19	3/3.7	—
Iron Lithium Battery	Iron Lithium Battery	Iron Lithium Battery	Iron Lithium Battery				
270/540	270/540	540	540	110	270	270	110
80	80	80	80	24	80	24	48
Ac Control(Low Voltage)	Ac Control(Low Voltage)	Ac Control(Low Voltage)	Ac Control(Low Voltage)				
14.2	16.8	17.9	19.6	10	22	22	—
75	75	75	75	75	65	75	80
Pin	Pin	Pin	Pin	—	—	—	Pin

Part. 5 Advantages of BYD Electric Forklift

Braking Assist System

Braking Assist System allows truck to stay still for a short time instead of rolling forward or afterward after releasing the brake on the ramp or slope.



Without Braking Assist System



With Braking Assist System

Tilting Protection At Height

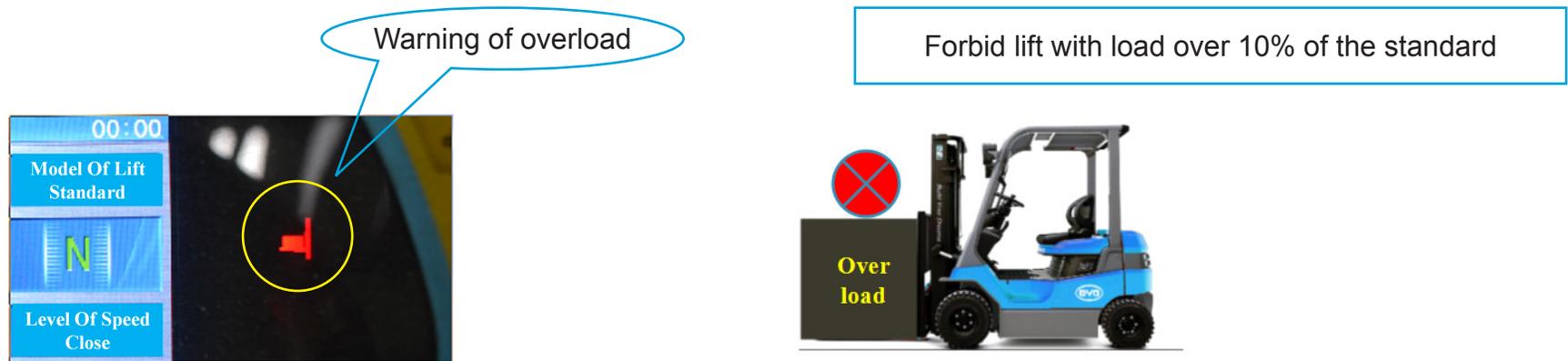
Automatically limit the front tilting angle depending on the load handled and lift height Reduce the risk of dropping of cargo and tip-over of the truck.



Active mast front tilt angle control		W/O Load				Full Load	Over Load
		7°	5°	3°	1°	0°	Limit the operation of lifting motor
	Max. front tilt angle	7°	5°	3°	1°	0°	Limit the operation of lifting motor
	Max. rear tilt angle	-11°	-11°	-11°	-11°	-11°	Limit the operation of lifting motor

Overload Protection

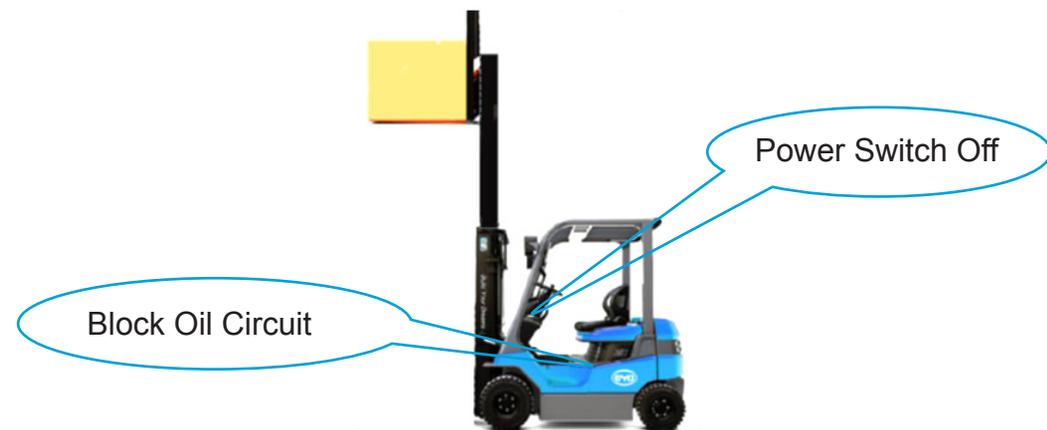
When the load exceeds the loading capacity, warning sign appears on display and forks are not allowed to move upwards for the protection of truck and safety concern.



Power-Off Protection

When the vehicle loses power, the solenoid valve gets closes and circuit gets blocked. As the result the mast cannot move up or down, nor shall it tilt backward or forward.

Mast shall not drop when the power is cut off.



Buffering Device For Mast Control

A buffering device is activated when the mast gets lowered. It helps to progressively reduce the lowering speed down to zero to prevent the impact to both the cargo and forklift which is usually brought by the sudden stop of mast.



Low-Battery Protection

BMS (Battery Management System) monitors the condition of each battery cell. In the case that the battery retention drops to 5%, the system will block the control of mast and remind driver of the need to recharge the battery.

Lifting motor is locked when the remaining battery retention is less than 5%.



Regenerative Braking

When the operator's foot is lifted from the accelerator, progressive braking force is applied automatically which helps regenerate energy for the battery and extend the working time and at the same time reduce the wear and tear to the brake pad.



User-Friendly Design

BYD forklift is equipped with OPS (Operator Presence Sensing). The operator's presence has to be detected before his orders could be processed by the machine. When the operator leaves the seat, the OPS system will be activated in 2 seconds to reduce the risk of accidents.

User-Friendly Design, Let Technology Bring A Better User Experience!



Large Driver Assist Grip

The design of large driver assist grip allows operator to access the truck with more ease.



High rear combined lamps

The integration of turning light, braking light and back-up lamp helps enhance the visibility of truck and safety of operator.



File holder

Convenient design for the operator to keep files in necessary good order.



Upward visibility

The overhead guard takes the forms of grill to helps ensure a clear upward visibility when handling goods at height.

Case In Europe

Customer Groups: Mercedes-Benz, Volkswagen, Bosch, Others customers mainly working on GLASS, FOOD & FLOWERS.

Model: 1.6T, 2.0T, 2.5T & 3.5T Counter Balance Forklifts



Case In Japan

Customer Name: Nippon Salvage Service Co., Ltd.

Business Field: Heavy Machinery Rental

Customers Brief Introduction: Nippon Salvage Service Co., Ltd. is one of the famous rental company in Kansai area and is the first agent of BYD forklift in Japan

Model: 2.5T Balance Forklift & 3.5T Balance Forklift



Case In Australia

Customer Name: ZECO ENERGY

Business Field: Forklift Agent

Customers Brief Introduction: Well-known forklift service provider in Australia.

Model: 2.5T Balance Forklift



Case In China

Customer Name: Gree electric appliances co., Ltd.,

Business Field: Household appliance manufacture

Customers Brief Introduction: Gree is currently the world's largest air conditioning enterprise which makes integration of r &d, production, sales and service

Model: 3.0T Balance Forklift



Customer Name: Midea Group Company

Business Field: Household appliance manufacture

Customers Brief Introduction: Midea group is the large-scale comprehensive enterprise group, mainly making household appliance manufacture and ranking No.5 of the most valuable brand in China.

Model: 3.5T Counter Balance Forklift & 2.0T Pallet Forklift



Cooperative company



High Efficiency, Low-cost

BYD Aims=High Quality+Save Cost

cost of use

Save 80% of the cost compared with tradition diesel forklift

Save 50% of the cost compared with ordinary electric forklift

Authoritative Awards

In May 2016 in Hannover, Germany, BYD electric forklift participated in IFOY (International Forklift-Truck of the Year) International Year forklift Award for the first time. Twenty five jury members from many countries around the world test the BYD forklift strictly for one week. BYD forklift beat the competition with half a century of history, won the IFOY International Forklift Year Award, The award is awarded by the world's most authoritative economic, scientific and technical media review panel. It is regarded as the global forklift industry benchmark. It bring a disruptive storm to the forklift industry .

BYD electric forklift has entered the United States, Japan, Australia, Brazil , Germany and other strategic markets successfully, Global sales have more than 5500 units as of 2016 year , it is breaking the international forklift giant long monopoly position gradually , redefine the global forklift market new pattern.





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