



# BYD FORKLIFTS

A COMPLETE MODEL RANGE POWERED BY LITHIUM IRON PHOSPHATE BATTERIES

BYD Europe B.V.

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🌐 www.byd.com 📅 June 2015



BYD trucks conform to the European Safety Requirements



BYD FORKLIFT



BYD FORKLIFT



BYD ebus – Pure Electric



BYD e6 – Pure Electric



BYD QIN-PHEV



BYD LIGHTING



BYD SOLAR

## ABOUT BYD

The BYD Company Limited employs 180.000 employees with a yearly turnover of over €8.5 billion, and is headquartered in Shenzhen (China).

Established in 1995, BYD is listed on both the Hong Kong and Shenzhen Stock Exchanges, and specializes in forklift, automotive, electric vehicles and buses, as well as in new energy (solar) and IT, with its ultimate goal to spur mass-market adoption of green technologies and help preserve the environment, reduce air pollution and resolve global energy crisis.

BYD Europe has been present in Europe since 1999, servicing the European market for batteries and energy storage solutions from Rotterdam. Lately BYD Europe has become a major supplier of pure electric solutions to public transportation all over Europe. Major countries like the Germany, UK, France, Netherlands, Spain and Poland are using BYD pure electric buses and/or taxis.

BYD Forklift started operations in 2010 in Shaoguan (China), with a one million m<sup>2</sup> – 50.000 units per year factory, equipped with the latest manufacturing technology such as automatic robot welding. The BYD forklifts have been since then marketed in China, and will be sold and serviced in all of Europe starting 2015. The BYD forklift headquarters is located since 2013 in Rotterdam.



### IT Business

Microelectronics  
LCD/LCM  
Li-ion Battery  
Fe Battery  
Ni-Battery & FPC  
Camera Module

Opto-Electronics  
UPS & DPS  
Cellphone Assembly & SMT  
Cellphone Design  
Precision Mechanical Components

### Auto Business

Auto Electronics  
Auto Tooling  
Auto Decoration  
Whole-vehicle Manufacture  
Auto Engineering Research Institute  
Testing Center  
Auto Non-standard Products  
Engine

### New Energy

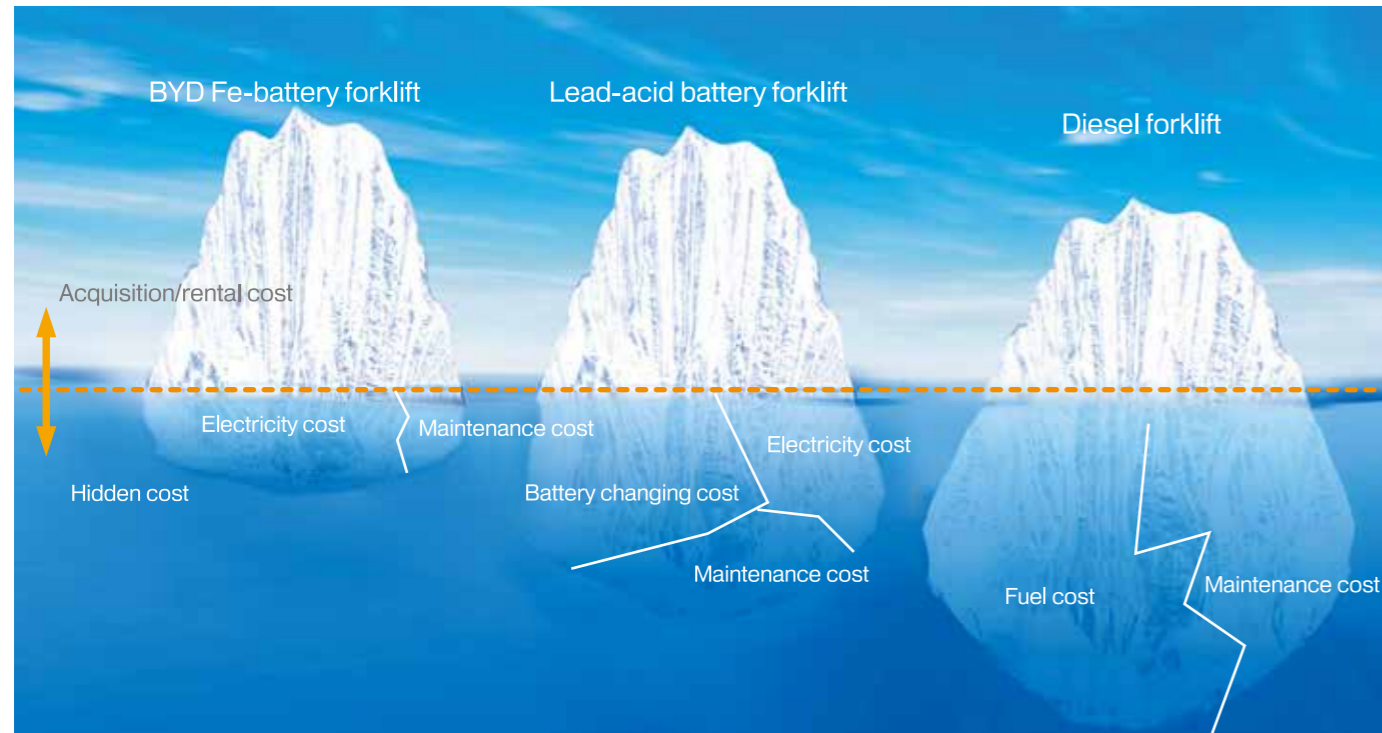
Solar Power Station  
Electric Vehicle  
Energy Storage Station  
LED



# THE BYD CONCEPT

## THE LOWEST COST OF OPERATION

Owning and operating a forklift entails many costs in addition to the purchase price or the rental monthly fee. We call them hidden costs, and can be very high, depending on the power technology used, be that an internal combustion engine or a battery powered forklift.



## OPERATING COSTS NOT PRESENT WHEN USING A BYD FORKLIFT

- Energy loss due to heating resulting from lead-acid battery charging
- Labour time to maintain the lead-acid battery (frequent level checking and refilling)
- Labour time to regularly replace the empty battery with a fully charged one
- Large amounts of expensive distilled water for lead-acid batteries

SAVINGS IN YEARLY OPERATING COSTS (*)		ONE SHIFT OPERATION COST/YEAR		TWO SHIFT OPERATION COST/YEAR	
CONCEPT	CRITERIA	LEAD-ACID	BYD FE BATTERY	LEAD-ACID	BYD FE BATTERY
ENERGY LOST AS HEATING	(1.7€/DAY)	400 €	0 €	800 €	0 €
BATTERY DAILY REPLACEMENT	(46 HR/YEAR)	690 €	0 €	1,380 €	0 €
BATTERY MAINTENANCE					
DISTILLED WATER REFILL	(250 L/YEAR)	100 €	0 €	200 €	0 €
YEARLY BATTERY AMORTIZATION	(OVER 5 YEARS)	500 €	0 €	1,000 €	0 €
TOTAL EXTRA COSTS		1,690 €	0 €	3,380 €	0 €

\*Estimate based on average data. Final savings depend on factors such as battery size, electricity price, labour cost, heavy or light use

## INVESTMENT IN NEW BATTERIES EVERY 4-6 YEARS IS UNNECESSARY WITH A BYD FORKLIFT

The BYD lithium iron phosphate battery has an extremely long life. Compared with a life of 1.000-1.500 cycles of a typical lead-acid battery, the BYD battery will operate much longer. After 8 years or 10,000 working hours, the BYD battery will retain more than 65%. 65% remaining capacity after 8 years or 10,000 working hours means that the battery will continue to operate for many more years.

10 Year Operation			
	BYD solution: 1 battery		Lead-acid solution: many batteries
Single shift - light use		=	
Single shift - heavy use Multi-shift		=	

## CHARGING THE BYD WAY

The BYD batteries are charged so fast that they never need to be removed from the forklift. Depending on the chosen BYD charger, full charging takes 1.5 hours or even less. Quick charging at lunch break will keep the BYD forklift ready for the rest of the shift. Of course side charging is so easy that the coffee breaks can be also used without reducing the life expectancy of the battery (no memory effect).

## MORE PRODUCTIVITY, SAFETY, AND DRIVER SATISFACTION WITH A BYD FORKLIFT

With a BYD forklift, the driver's time utilization is optimized. Instead of spending time replacing the battery, more productive tasks can be performed. Side charging is extremely user friendly and minimizes the risks of accident. A safer environment and happier drivers impact productivity in a positive way.



The BYD way



The old fashion way



Comfort equipment: full suspension seat, fingertip controls, triplex mast with dual free lift cylinders, and 4 way hydraulic valve.

## BYD FORKLIFT RANGE-2015

From 1.6T to 3.5T, the BYD forklift range covers the needs of the European rental and end-user markets. Every BYD forklift features as standard equipment the lithium iron phosphate battery, side charging, and ultra-fast charger, along with a high level of equipment.

Whether you choose the Comfort or the Basic version, your BYD forklift will always deliver the lowest cost of ownership.



Optional full-steel cabin with heater



3.5 Ton Counterbalance



2.5 Ton Counterbalance



2.0 Ton Counterbalance



1.6 Ton Counterbalance



2.0 Ton Pallet truck



## PALLET TRUCK



The ergonomically designed BYD pallet truck offers maximum versatility due to its standard foldable platform and foldable side support protection side bars. It can be used to speedily load and unload trucks as well as in reduced space warehouse operations.

Efficient top charging of the lithium iron phosphate battery allows for increased productivity and lower operating costs.

As with any other BYD forklift, the life time battery can be partially charged and never needs to be removed, thus increasing operator user friendliness and safety, while greatly reducing fatigue.



### Model description PTP20

Load/capacity: 2000 kg

Battery: BYD Lithium Iron Phosphate

Charging: upside charging inlet

Fast charging/partial charging without memory effect



### Electric Power Steering

Allows the operator to maneuver the pallet truck with great ease and reduces fatigue



### Shock-absorbing and anti-skid platform

Delivers stable and comfortable standing for operator.

### 180 degree rotatable steering handle

Enables forklift work in narrow places.



### Ergonomically designed

Steering tiller handles with perfect touch match hands of different size.

### Automatic shut down

When handle is released or in vertical and horizontal position.



### The forklift will reverse immediately

Once the operator leans on the reverse protection button.

### Easy to shut down

Optimal location of the emergency stop button



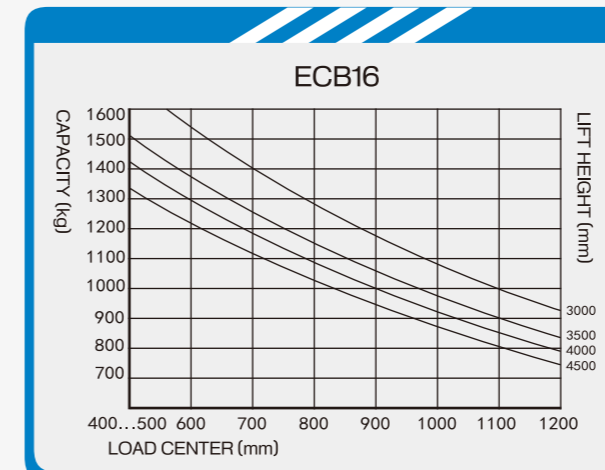
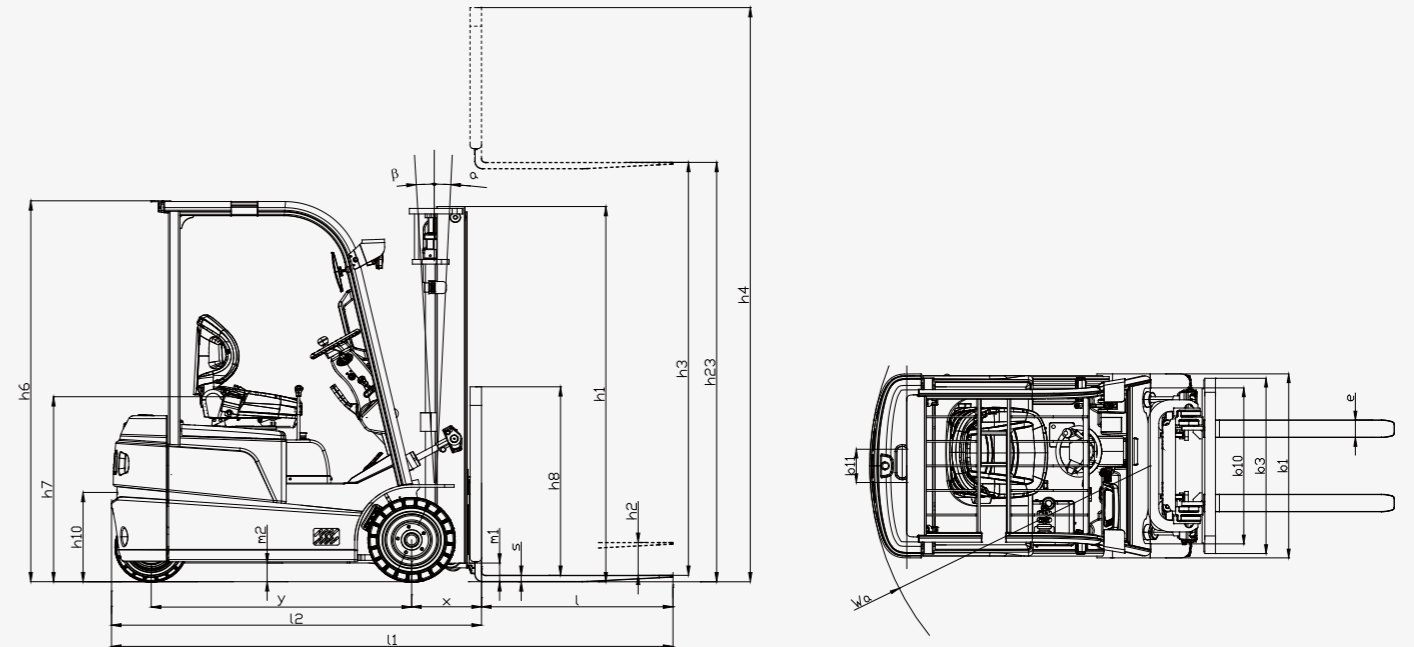
# SPECIFICATION SHEETS

## Counterbalance Forklift

Identification	1.1	Manufacturer			BYD
	1.2	Model			ECB16
	1.3	Drive			Electric
	1.4	Operator type			Seat
	1.5	Rated capacity	Q	kg	1600
	1.6	Load center	c	mm	500
	1.8	Load distance, center of drive axle to fork	x	mm	365
	1.9	Wheelbase	y	mm	1360
	Weight	2.1	Service weight		kg
2.2		Axle load, with load, front/rear		kg	4083/617
2.3		Axle load, without load, front/rear		kg	1466/1634
Wheels, Chassis	3.1	Tyres			SE
	3.2	Tyre size, front		mm	18x7-8
	3.3	Tyre size, rear		mm	15x4.5-8
	3.5	Wheels, number front rear (X=driven wheels)			2x/2
	3.6	Track width, front	b10	mm	890
	3.7	Track width, rear	b11	mm	190
	Basic Dimensions	4.1	Tilt of mast/fork carriage forward/backward	a/b	deg
4.2		Height, mast lowered	h1	mm	2020
4.3		Free lift	h2	mm	150
4.4		Lift height	h3	mm	3000
4.5		Height, mast extended	h4	mm	4050
4.7		Height of overhead guard	h6	mm	2050
4.8		Seat height	h7	mm	985
4.12		Coupling height	h10	mm	480
4.19		Overall length	l1	mm	2935
4.20		Length to face of forks	l2	mm	1935
4.21		Overall width	b1	mm	1050
4.22		Fork dimensions	s/e/l	mm	35/100/1000
4.24		Fork carriage width	b3	mm	1000
4.31		Ground clearance, with load, below mast	m1	mm	95
4.32		Ground clearance, center of wheelbase	m2	mm	95
4.33		Aisle width for pallets 1000x1200 crossways	Ast	mm	3460
4.34		Aisle width for pallets 800x1200 lengthways	Ast	mm	3580
4.35	Turning radius	Wa	mm	1570	
Performance Data	5.1	Travel speed, with/without load		Km/h	16/16
	5.2	Lift speed, with/without load		m/s	0.4/0.6
	5.3	Lowering speed, with/without load		m/s	0.58/0.47
	5.6	Max. drawbar pull, with/without load		KN	9.0/7.9
	5.8	Max. gradeability, with/without load		%	20/20
	5.9	Acceleration time, with/without load		s	4.5/4.0
Motor	5.10	Service brake			Mech./Hydr.
	6.1	Drive motor rating S2 60 min.		kW	5.5x2
	6.2	Lift motor rating at S3 15%		kW	12
	6.4	Battery voltage, nominal capacity K5		V/Ah	80/200
	6.5	Battery weight		kg	760
Others	8.1	Type of drive control			AC
	8.2	Operating pressure for attachments		bar	160
	8.4	Sound level at the driver's ear		dB(A)	65
	8.5	Towing coupling, type			PIN

## ECB16

MAST TABLE				
Description	Lift height h3 (mm)	Free lift h2 (mm)	Height, mast lowered h1 (mm)	Height, mast extended h4 (mm)
		ECB16	ECB16	ECB16
Two stage mast	3000	150	2020	4050
	3500	150	2260	4550
	4000	150	2510	5050
	4500	150	2809	5550
Two stage FFL mast	3000	970	2020	4050
	3500	1270	2320	4550
	4000	1520	2570	5050
Three stage FFL mast	4500	995	2045	5550
	5000	1195	2245	6050
	5500	1395	2445	6550
	6000	1595	2645	7050



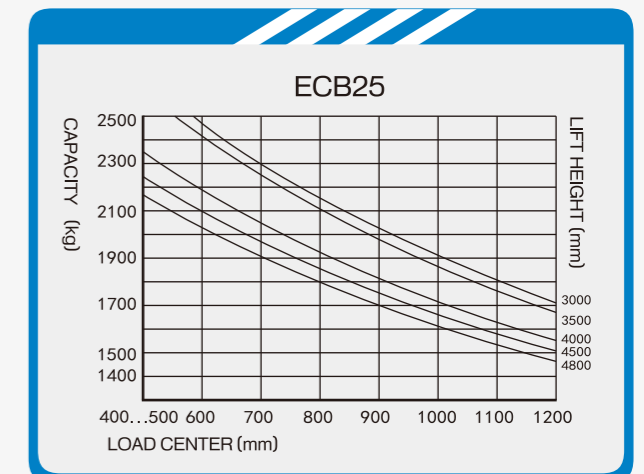
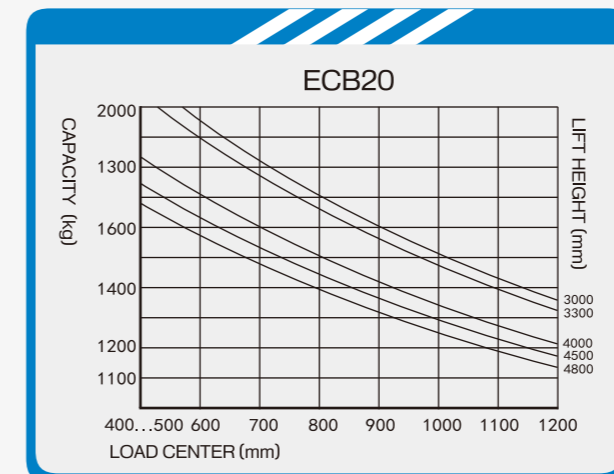
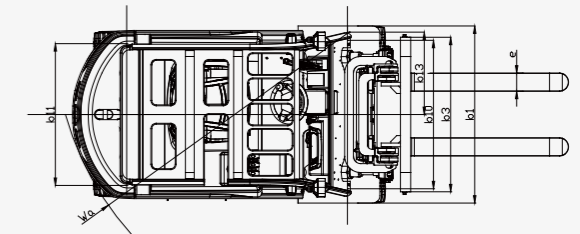
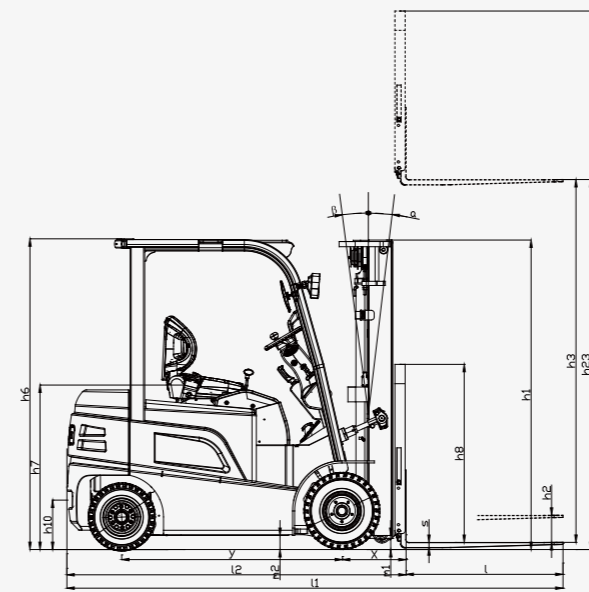
# SPECIFICATION SHEETS

## Counterbalance Forklift

				BYD	BYD		
				ECB20	ECB25		
Identification	1.1	Manufacturer		BYD	BYD		
	1.2	Model		ECB20	ECB25		
	1.3	Drive		Electric	Electric		
	1.4	Operator type		Seat	Seat		
	1.5	Rated capacity	Q	kg	2000	2500	
	1.6	Load center	c	mm	500	500	
	1.8	Load distance, center of drive axle to fork	x	mm	425	425	
	1.9	Wheelbase	y	mm	1505	1505	
	Weight	2.1	Service weight		kg	3600	4200
2.2		Axle load, with load, front/rear		kg	4901/699	5811/889	
2.3		Axle load, without load, front/rear		kg	1672/1928	1775/2425	
Wheels, Chassis	3.1	Tyres			SE	SE	
	3.2	Tyre size, front		mm	21x8-9	21x8-9	
	3.3	Tyre size, rear		mm	18x7-8	18x7-8	
	3.5	Wheels, number front rear (X=driven wheels)			2x/2	2x/2	
	3.6	Track width, front	b10	mm	1000	1000	
	3.7	Track width, rear	b11	mm	955	955	
	Basic Dimensions	4.1	Tilt of mast/fork carriage forward/backward		a/b deg	5/8	5/8
4.2		Height, mast lowered		h1 mm	2035	2035	
4.3		Free lift		h2 mm	150	150	
4.4		Lift height		h3 mm	3000	3000	
4.5		Height, mast extended		h4 mm	4040	4040	
4.7		Height of overhead guard		h6 mm	2195	2195	
4.8		Seat height		h7 mm	1100	1100	
4.12		Coupling height		h10 mm	333	333	
4.19		Overall length		l1 mm	3375	3375	
4.20		Length to face of forks		l2 mm	2305	2305	
4.21		Overall width		b1 mm	1195	1195	
4.22		Fork dimensions		s/e/l mm	40/120/1070	40/120/1070	
4.24		Fork carriage width		b3 mm	1085	1085	
4.31		Ground clearance, with load, below mast		m1 mm	95	95	
4.32		Ground clearance, center of wheelbase		m2 mm	105	105	
4.33		Aisle width for pallets 1000x1200 crossways		Ast mm	4250	4250	
4.34		Aisle width for pallets 800x1200 lengthways		Ast mm	4045	4045	
4.35	Turning radius		Wa mm	2020	2020		
Performance Data	5.1	Travel speed, with/without load		Km/h	20/20	20/20	
	5.2	Lift speed, with/without load		m/s	0.36/0.54	0.36/0.54	
	5.3	Lowering speed, with/without load		m/s	0.45/0.37	0.45/0.37	
	5.6	Max. drawbar pull, with/without load		KN	12.7/9.0	12.5/9.5	
	5.8	Max. gradeability, with/without load		%	20/20	20/20	
	5.9	Acceleration time, with/without load		s	4.9/4.3	4.9/4.3	
	5.10	Service brake			Mech./Hydr.	Mech./Hydr.	
	Motor	6.1	Drive motor rating S2 60 min.		kW	5.5x2	5.5x2
		6.2	Lift motor rating at S3 15%		kW	12	12
		6.4	Battery voltage, nominal capacity K5		V/Ah	80/200	80/200
6.5		Battery weight		kg	540	840	
Others		8.1	Type of drive control			AC	AC
	8.2	Operating pressure for attachments		bar	160	186	
	8.4	Sound level at the driver's ear		dB(A)	65	65	
	8.5	Towing coupling, type			PIN	PIN	

## ECB20/25

MAST TABLE				
Description	Lift height h3 (mm)	Free lift h2 (mm)	Height, mast lowered h1 (mm)	Height, mast extended h4 (mm)
		ECB20/25	ECB20/25	ECB20/25
Two stage mast	3000	150	2035	4040
	3300	150	2185	4340
	4000	150	2575	5040
	4500	150	2830	5540
Two stage FFL mast	3000	985	2025	4040
	3500	1285	2325	4540
	4000	1535	2575	5040
Three stage FFL mast	4500	1075	2115	5540
	4800	1175	2215	5840
	5000	1435	2475	6540
	6000	1635	2675	7040





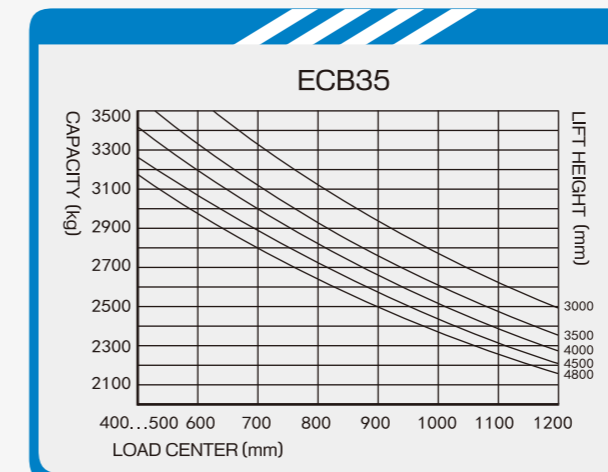
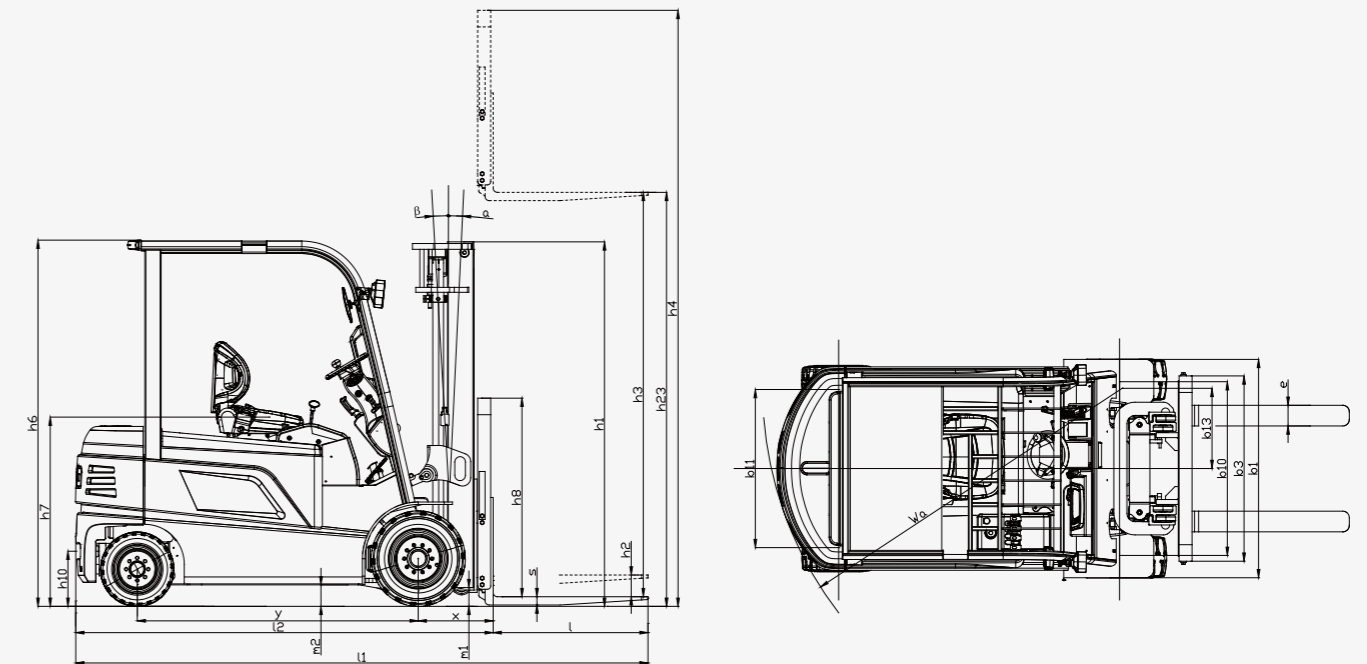
# SPECIFICATION SHEETS

## Counterbalance Forklift

Identification	1.1	Manufacturer			BYD
	1.2	Model			ECB35
	1.3	Drive			Electric
	1.4	Operator type			Seat
	1.5	Rated capacity	Q	kg	3500
	1.6	Load center	c	mm	500
	1.8	Load distance, center of drive axle to fork	x	mm	460
	1.9	Wheelbase	y	mm	1725
	Weight	2.1	Service weight		kg
2.2		Axle load, with load, front/rear		kg	7722/1218
2.3		Axle load, without load, front/rear		kg	2274/3166
Wheels, Chassis	3.1	Tyres			SE
	3.2	Tyre size, front		mm	23x10-12
	3.3	Tyre size, rear		mm	200/50-10
	3.5	Wheels, number front rear (X=driven wheels)			2x/2
	3.6	Track width, front	b10	mm	1110
	3.7	Track width, rear	b11	mm	955
	Basic Dimensions	4.1	Tilt of mast/fork carriage forward/backward	a/b	deg
4.2		Height, mast lowered	h1	mm	2115
4.3		Free lift	h2	mm	150
4.4		Lift height	h3	mm	3000
4.5		Height, mast extended	h4	mm	4120
4.7		Height of overhead guard	h6	mm	2215
4.8		Seat height	h7	mm	1140
4.12		Coupling height	h10	mm	333
4.19		Overall length	l1	mm	3630
4.20		Length to face of forks	l2	mm	2560
4.21		Overall width	b1	mm	1360
4.22		Fork dimensions	s/e/l	mm	50/125/1000
4.24		Fork carriage width	b3	mm	1145
4.31		Ground clearance, with load, below mast	m1	mm	110
4.32		Ground clearance, center of wheelbase	m2	mm	130
4.33		Aisle width for pallets 1000x1200 crossways	Ast	mm	4410
4.34		Aisle width for pallets 800x1200 lengthways	Ast	mm	4260
4.35	Turning radius	Wa	mm	2210	
Performance Data	5.1	Travel speed, with/without load		Km/h	20/20
	5.2	Lift speed, with/without load		m/s	0.38/0.42
	5.3	Lowering speed, with/without load		m/s	0.55/0.45
	5.6	Max. drawbar pull, with/without load		KN	17.2/13.6
	5.8	Max. gradeability, with/without load		%	20/20
	5.9	Acceleration time, with/without load		s	4.9/4.3
Motor	5.10	Service brake			Mech./Hydr.
	6.1	Drive motor rating S2 60 min.		kW	10x2
	6.2	Lift motor rating at S3 15%		kW	22
	6.4	Battery voltage, nominal capacity K5		V/Ah	80/400
	6.5	Battery weight		kg	1460
Others	8.1	Type of drive control			AC
	8.2	Operating pressure for attachments		bar	180
	8.4	Sound level at the driver's ear		dB(A)	65
	8.5	Towing coupling, type			PIN

## ECB35

MAST TABLE				
Description	Lift height h3 (mm)	Free lift h2 (mm)	Height, mast lowered h1 (mm)	Height, mast extended h4 (mm)
		ECB35	ECB35	ECB35
Two stage mast	3000	150	2115	4120
	3500	150	2315	4620
	4000	150	2615	5120
	4500	150	2915	5620
Two stage FFL mast	3000	960	2080	4120
	3500	1260	2380	4620
	4000	1510	2630	5120
Three stage FFL mast	4500	1080	2200	5620
	4800	1230	2350	6120
	5500	1500	2620	6620
	6000	1750	2870	7120



# SPECIFICATION SHEETS

## Electric Pallet Truck

Identification	1.1	Manufacturer			BYD
	1.2	Model			PTP20B
	1.3	Drive			Electric
	1.4	Operator type			Stand-on/Pedestrian
	1.5	Load capacity	Q	kg	2000
	1.6	Load center	c	mm	600
	1.8	Load distance, center of support arm wheel to face of forks	x	mm	930
	1.9	Wheelbase	y	mm	1365
	Weight	2.1	Service weight including battery		kg
2.2		Axle load, with load, driver/castor/fork wheel		kg	880/150/1520
2.3		Axle load, without load, driver/castor/fork wheel		kg	270/150/130
Wheels, Chassis	3.2	Wheel size, front		mm	230x70
	3.3	Wheel size, rear		mm	85x75
	3.4	Additional wheels		mm	120x50
	3.5	Wheels, number front /rear (x=driven wheels)			1x+2/4
	3.6	Track width, front	b10	mm	430
	3.7	Track width, rear	b11	mm	510
	Dimensions	4.4	Lift	h3	mm
4.8		Platform height	h7	mm	95
4.9		Height of tiller in drive position, min/max	h14	mm	1055/1340
4.15		Lowered height	h13	mm	85
4.19		Overall length	l1	mm	1730
4.20		Length to the face of forks	l2	mm	605
4.21		Overall width	b1	mm	725
4.22		Fork dimensions	s/e/l	mm	50/180/1120
4.25		Width over forks	b5	mm	590/650/560
4.32		Ground clearance, center of wheelbase	m2	mm	21
4.34		Aisle width for pallets 800X1200 lengthways	ast	mm	2094
4.35	Turing radius	Wa	mm	1650	
Performance Data	5.1	Travel speed, with/without load		km/h	5.5/6
	5.2	Lift speed, with/without load		m/s	0.05/0.06
	5.3	Lowering speed, with/without load		m/s	0.070/0.065
	5.8	Max. gradeability, with/without load		%	8/15
	5.10	Service brake			electromagnetic
Electric motor	6.1	Drive motor rating S2 60 min		kW	1.5
	6.2	Lift motor rating at S3 15%		kW	1.5
	6.4	Battery voltage/nominal capacity K5		V/Ah	24/110
	6.5	Battery weight		kg	60
Others	8.1	Type of drive control			AC

