

EFL1603-HV-9

HIGH CAPACITY ELECTRIC COUNTERBALANCED FORKLIFT 16T

 16000 kg  8000 mm



Undeniable Power For Challenging tasks
The EFL1603/1803-HV is designed for handling exceptionally heavy and bulky loads in industries such as construction, concrete, and aircraft servicing. With optimized dimensions, these trucks offer improved maneuverability and operational flexibility.

SPECIFICATION	REF	UNIT	VALUE
Manufacturer			EP
Model designation			EFL1603-HV-9
Battery voltage/nominal capacity		V/Ah	618.24/228
Rated capacity	Q	kg	16000
Load centre distance	c	mm	900
Service weight		kg	23580
Height, mast lowered	h ₁	mm	3640
Lift	h ₃	mm	4000
Height, mast extended	h ₄	mm	5600
Overall length	l ₁	mm	7015
Overall width	b ₁ /b ₂	mm	2530
Length to face of forks	l ₂	mm	5195
Fork dimensions	s/e/l	mm	90×220×1800
Turning radius	Wa	mm	4950
Drive			Electric
Operator type			Seated

Features

High Performance: High speed and high gradeability

High-voltage Li-ion batteries enable more power delivery to motors, improving acceleration and travel speeds for high-capacity trucks. PMSMs complement this with rapid response times, swiftly reaching required speeds and torques. This combination of PMSM and high voltage can provide stable and strong power output, which further gives high-capacity trucks excellent climbing capabilities ensuring that the forklift can cope with various applications with ease.

The high-voltage model offers a 1.5-2 times performance improvement over the low-voltage model. Taking the 10-ton model as an example:

100% improvement in travel speed for high voltage models in laden and unladen conditions.

The high-voltage model demonstrates a 45% faster lifting speed.

100% improvement in gradeability when unladen, 45% improvement when laden for high voltage models.



Energy Efficiency: extended runtime and fast charging

High-voltage Li-ion batteries have high energy density and can store more electrical energy within a compact volume. Notably, these high-voltage Li-ion batteries boast an impressive cycle life of up to 4000 cycles, ensuring long-term durability and minimizing the need for battery replacements.

The PMSMs incorporate advanced control technology to optimize motor efficiency. Unlike traditional AC motors, PMSMs have higher energy conversion efficiency and reduce energy waste.

Equipped with fast charging capabilities, the high-voltage models are compatible with vehicle-grade charging stations and support 1C charging rating, allowing them to be fully charged in as fast as 1-1.2 hours. This minimizes downtime and maximizes productivity, making it ideal for multi-shift operations.

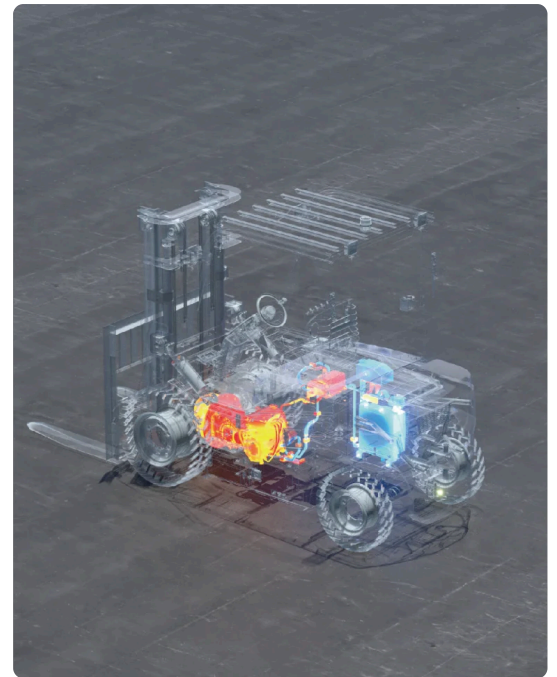


Safety Assured: Battery, motor protection, monitoring and mast buffering

The central controlling module- VCU (Vehicle Control Unit) extends the safety of the high-voltage forklifts. VCU provides precise control and real-time monitoring of critical parameters to ensure the truck operates within safe limits.

It also features turn speed control, which adjusts the forklift's speed based on the turning angle, ensuring stability during turns. An over-speed alarm alerts the operator if the forklift exceeds the safe speed limit.*

The high-capacity forklift mast is equipped with a hydraulic buffering system that ensures smooth lifting and lowering of loads. The mast width and the mast-to-chassis connection have been widened, providing a wider field of vision and better stability at height, allowing operators to handle loads with greater confidence and precision.



Smart and reliable strategy for thermal management

The high-capacity trucks utilize three distinct cooling systems to ensure optimal performance and reliability. Specifically, two water cooling systems are employed for the motor and the battery, while an oil cooling system is dedicated to the hydraulics system. The upgraded 2-in-1 water cooling unit simplifies pipeline layout, improving system efficiency and reducing potential leakage points while maintaining excellent cooling performance.

The water cooling systems provide superior cooling performance, preventing the truck from overheating even under the most demanding conditions or in the heat of summer.

Additionally, water cooling systems typically operate with less noise compared to air cooling systems that rely on high-speed fans.

The oil cooling system, on the other hand, is used for the hydraulics system. This system ensures that the hydraulic components remain within optimal temperature ranges, thereby maintaining their efficiency and preventing overheating.



Low maintenance: Longer battery life span and reliable components

Operating at a higher voltage allows the battery to be designed with fewer individual cells. The integrated battery pack design further streamlines the structure, improving reliability while reducing maintenance complexity and potential failure points.

The integrated hydraulic motor design further simplifies the system, improving reliability while reducing maintenance. Key components including the motor, controller and in-house developed battery are all IP67 rated and equipped with water-cooling, ensuring stable performance under demanding conditions.



Sustainability : Zero emissions for cleaner environment

As fully electric trucks powered by lithium-ion batteries, these forklifts produce zero emissions during operation, eliminating exposure to toxic fumes like carbon monoxide and nitrogen oxides. Unlike lead-acid batteries which can leak corrosive acid, lithium-ion batteries do not risk hazardous spills. The high-capacity li-ion trucks contribute to a cleaner and safer indoor working environment without compromising handling capabilities.

Strong adaptability adaptable to harsh outdoor weather conditions

Experience uninterrupted productivity through rain, puddles, and damp conditions with the overall IPX4 rating. Plus an exceptional IP67 rating for high-voltage components. Engineered to withstand harsh temperature, high-capacity trucks offer an ambient temperature range of -20°C ~ 40°C allowing them to perform no matter climate.

Battery heating when charging comes as a standard function for high capacity models, which is activated when the surrounding temperature is below zero to always offer an optimal temperature range for efficient and safe charging even in cold weather conditions.

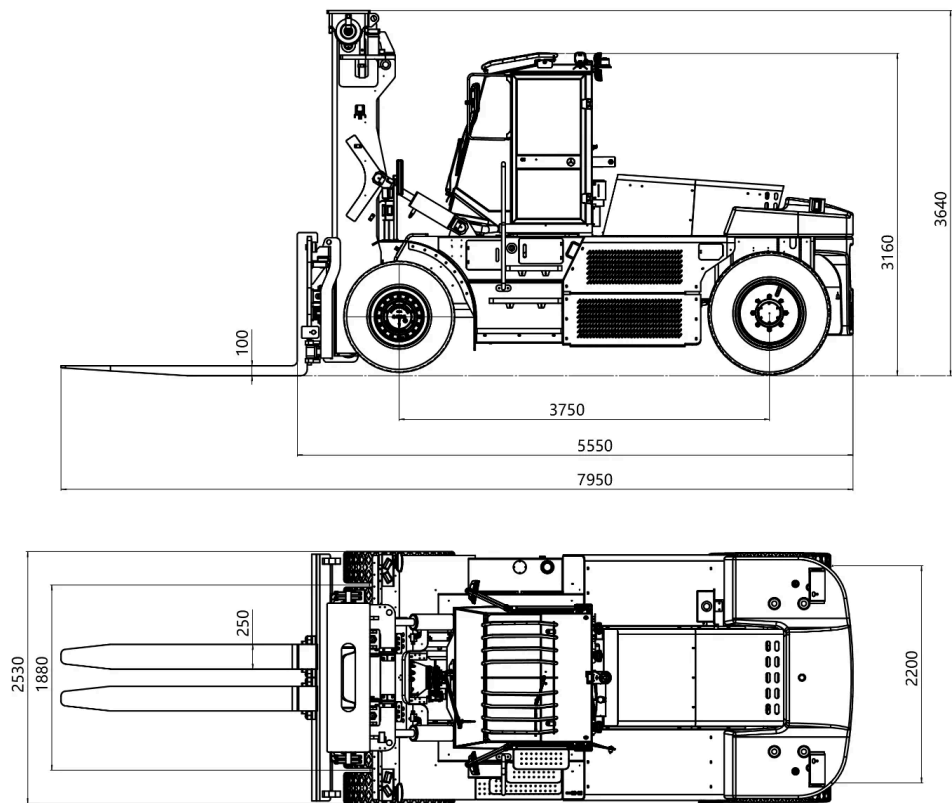


VDI Chart

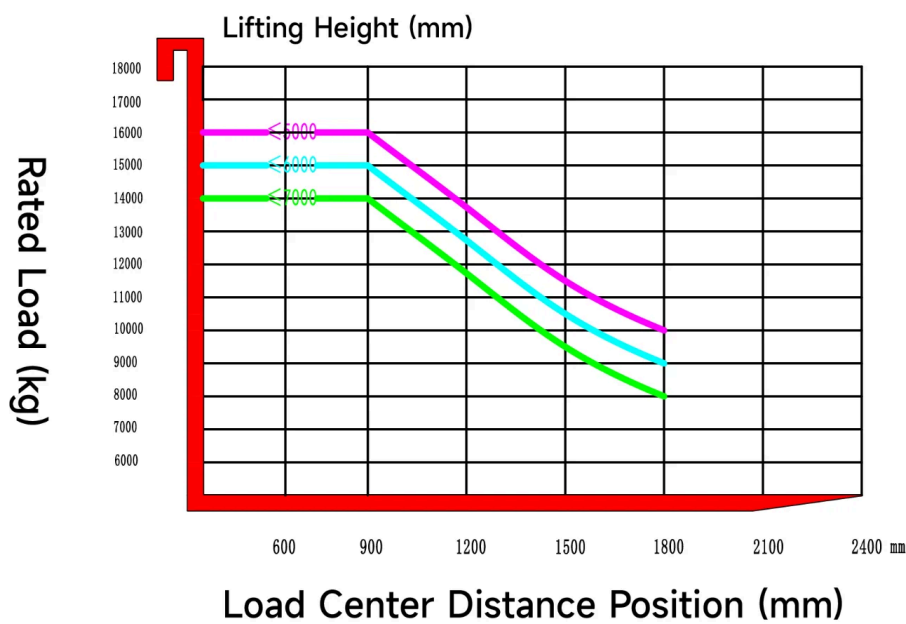
	SPECIFICATION	REF	UNIT	VALUE
1.1	Manufacturer			EP
1.2	Model designation			EFL1603-HV-9
1.3	Drive			Electric
1.4	Operator type			Seated
1.5	Rated capacity	Q	kg	16000
1.6	Load centre distance	c	mm	900
1.8	Load distance, centre of drive axle to fork	x	mm	1020
1.9	Wheelbase	y	mm	3500
2.1	Service weight		kg	23580
2.2	Axle loading, laden front/rear		kg	36800/2780
2.3	Axle loading, unladen front/rear		kg	11580/12000
3.1	Tyres			Pneumatic
3.2	Tyre size, front		mm	12.00-20-20PR
3.3	Tyre size, rear		mm	12.00-20-20PR
3.5	Wheels, number front/rear (x=drive wheels)			4×/2
3.6	Tread width, front	b ₁₀	mm	1880
3.7	Tread width, rear	b ₁₁	mm	2200
4.1	Tilt of mast/fork carriage forward/backward	α/β	°	6/12
4.2	Height, mast lowered	h ₁	mm	3640
4.3	Free lift	h ₂	mm	100
4.4	Lift	h ₃	mm	4000
4.5	Height, mast extended	h ₄	mm	5600
4.7	Height of overhead guard (cabin)	h ₆	mm	3160
4.8	Seat height relating to SIP/stand height	h ₇	mm	2000
4.12	Coupling height	h ₁₀	mm	430
4.19	Overall length	l ₁	mm	7015
4.20	Length to face of forks	l ₂	mm	5195
4.21	Overall width	b ₁ /b ₂	mm	2530
4.22	Fork dimensions	s/e/l	mm	90×220×1800
4.23	Fork carriage ISO 2328, class/type A, B			-
4.24	Fork carriage width		mm	2500
4.31	Ground clearance, laden, below mast		mm	155

	SPECIFICATION	REF	UNIT	VALUE
4.32	Ground clearance, centre of wheelbase	m ₂	mm	300
4.34.1	Aisle width for pallets 1000×1200 crossways	Ast	mm	7920
4.34.2	Aisle width for pallets 800 × 1200 lengthways	Ast	mm	7920
4.35	Turning radius	Wa	mm	4950
5.1	Travel speed, laden/unladen		km/h	20/20
5.2	Lift speed, laden/unladen		m/s	0.35/0.4
5.3	Lowering speed, laden/unladen		m/s	0.5/0.35
5.5	Drawbar pull, laden/unladen			92000/92000
5.6	Max. drawbar pull, laden/unladen		N	95000/95000
5.8	Max. gradeability, laden/unladen		%	20/30
5.10	Service brake			Mechanical/Hydraulic
5.11	Parking brake			Mechanical/Hydraulic
6.1	Drive motor rating S2 60 min		kW	90
6.2	Lift motor rating at S3 15%		kW	60
6.4	Battery voltage/nominal capacity		V/Ah	618.24/228
6.5	Battery weight		kg	932
6.6	Energy consumption according to DIN EN 16796		kWh/h	20.9 ¹⁾
6.7	Turnover output according to VDI 2198			/
6.8	Turnover efficiency according to VDI 2198			/
8.1	Type of drive unit			PMSM
10.1	Operating pressure for attachments		bar	180
10.2	Oil volume for attachments		ℓ/min	60
10.5	Steering design			Hydraulic
10.7	Sound pressure level at the driver's seat		dB(A)	< 75
15.1	Charger output current		A	115

Subject to modification of specifications and designs without prior notice as part of continuous product improvement. Images and technical data shown may include optional features and are provided for reference only. All dimensions are subject to standard manufacturing tolerances.



Load Curve Diagram



Mast Options

Mast Type	Lift Height (H3, mm)	Mast Lowered Height (H1, mm)	Mast Extended Height, No Backrest (H4, mm)	Mast Extended Height, With Backrest (H4, mm)	Free Lift Height, No Backrest (H2, mm)	Free Lift Height, With Backrest (H2, mm)	Forward Tilt (A, deg)	Backward Tilt (B, mm)	Load Distance (X, mm)	Weight, Mast (kg)
2-Standard Mast	3500	3380	5080	/	100	/	6	12	1020	6675
2-Standard Mast	4000	3640	5600	/	100	/	6	12	1020	6840
2-Standard Mast	4200	3690	5740	/	100	/	6	12	1020	6950
2-Standard Mast	4500	3840	6040	/	100	/	6	12	1020	7090
2-Standard Mast	5000	4090	6540	/	100	/	6	12	1020	7340
2-Free Mast	/	/	/	/	/	/	/	/	/	/
3-Free Mast	4000	2888	5695	/	1293	/	6	12	1110	8147
3-Free Mast	4500	3055	6195	/	1460	/	6	12	1110	8344
3-Free Mast	4710	3125	6405	/	1530	/	6	12	1110	8427
3-Free Mast	5000	3222	6695	/	1627	/	6	12	1110	8545
3-Free Mast	5500	3388	7195	/	1793	/	3	6	1110	8741
3-Free Mast	6000	3555	7695	/	1960	/	3	6	1110	8938
3-Free Mast	6500	3722	8195	/	2127	/	3	6	1110	9140
3-Free Mast	7000	3888	8695	/	2293	/	3	6	1110	9340
3-Free Mast	7500	4055	9195	/	2460	/	3	6	1110	9537
3-Free Mast	8000	4222	9695	/	2627	/	3	6	1110	9734

Options

Item	Options (optional items marked in yellow)
Fork dimension	220*90*1800 Can be customized
Fork carriage width option	2500mm Yes and can be customized
Front wheel material	Pneumatic Normal solid Non-marking solid
Rear wheel material	Pneumatic Normal solid Non-marking solid

ITEM	OPTIONS (optional items marked in yellow)
Battery capacity	618V228AH
Charger	618V-32A 618V-64A 618V-97A 618V-130A 618V-190A
Seat type	MSG85-722 MSG95G-722
Attachments	Sideshift and fork positioner – hook-on type forks (compound hook forks) Sideshift and fork positioner – roller-type forks Sideshift and fork positioner with through-shaft forks
Traction pin	Yes and not customized
Front lamp	LED
Rear lamp	LED
Warning lamp	LED rotating warning light rotating warning light with buzzer
Steering lamp	LED
Blue lamp	No Rear Front and rear
Area warning lamp	No Both sides
Rearview mirror	One in front Two on sides and one in front
Buzzer	Buzzer
Fire extinguisher	Yes and not customized
OPS system	Yes and not customized
USB interface	USB TYPE A/C
Electronic scale	No Yes and not customized
Telematics	Yes and not customized
Cabin	Upgrade full cabin④
Overhead guard	standard
Turn speed control	No Yes and not customized
Heating system during lithium battery charging	Yes and not customized
Operator identification device	No
Hydraulic system operating mode	Fingertip
Adjustable overspeed alarm	No Yes and not customized
Cigarette lighter socket	No Yes and not customized
Fog light	No Yes and not customized
Mast working light	LED*2 LED*4
Reversing radar	reversing radar + backup camera
Surround View System+Human recognition system	No Yes and not customized