

MS HBE series

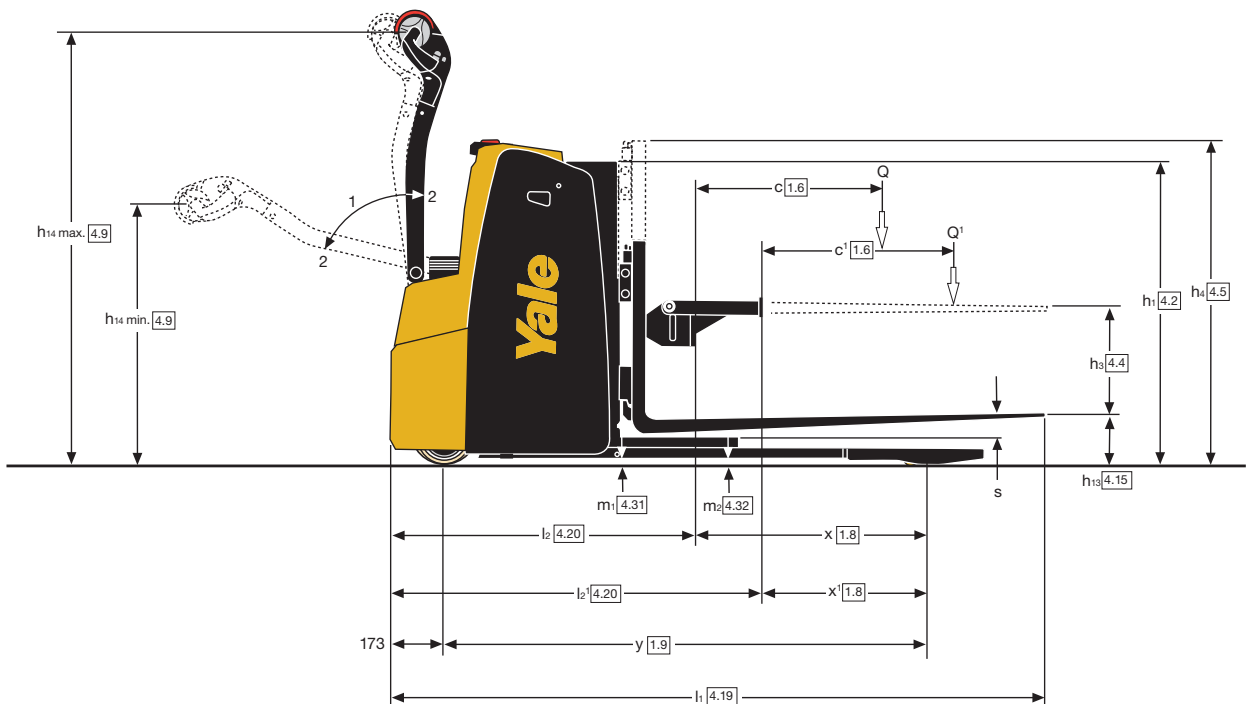
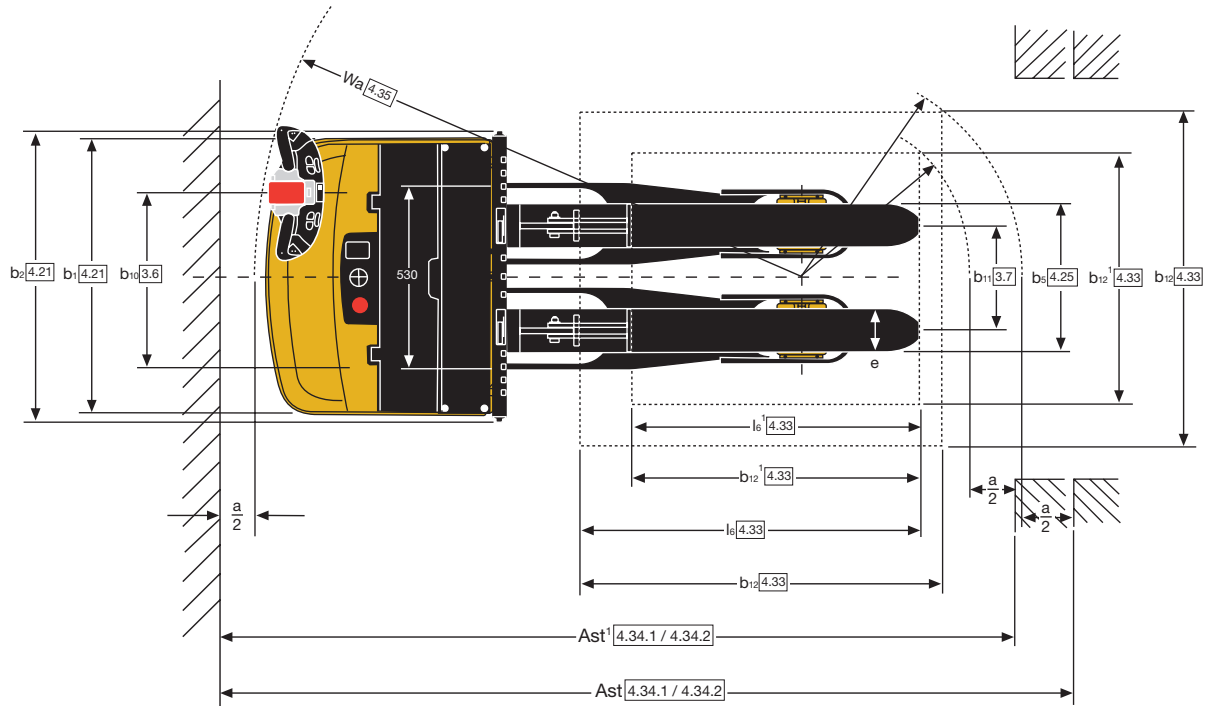
2,400kg

Powered battery exchange stacker



- For the horizontal extraction of batteries on 1.5t to 5.5t electric counterbalance trucks
- Combi MOSFET AC and DC control
- AC drive motor
- Dual lift/lower controls on tiller head
- Low mounted tiller arm
- Robust construction

Truck Dimensions



VDI 2198 – General Specifications

Distinguishing mark	1.1	Manufacturer (abbreviation)		Yale
	1.2	Manufacturer's type designation		MS24HBE
	1.3	Drive: electric (battery or mains), diesel, petrol, fuel gas		Electric (battery)
	1.4	Operator type: hand, pedestrian, standing, seated, order-picker		Pedestrian
	1.5	Rated capacity/Rated load	Q (t)	2.4
	1.6	Load centre distance	c (mm)	514 ⁽³⁾ / 415 ⁽⁴⁾
	1.8	Load distance, centre of drive axle to fork	x (mm)	677 ⁽³⁾ / 477 ⁽⁴⁾
Weights	1.9	Wheelbase	y (mm)	1372
	2.1	Service weight ⁽³⁾	kg	914
	2.2	Axle loading, laden front/rear	kg	858 / 2456
Tyres/chassis	2.3	Axle loading, unladen front/rear	kg	624 / 290
	3.1	Tyres: polyurethane, tophane, vulkollan, front/rear		Polyurethane / Polyurethane
	3.2	Tyre size, front	ø mm x mm	230 x 75
	3.3	Tyre size, rear	ø mm x mm	50 x 70
	3.4	Additional wheels (dimensions)	ø mm x mm	150 x 50
	3.5	Wheels, number front/rear (x = driven wheels)		1x + 1/8
	3.6	Tread, front	b ₁₀ (mm)	510
Dimensions	3.7	Tread, rear	b ₁₁ (mm)	291
	4.2	Height, mast lowered	h ₁ (mm)	891
	4.4	Lift	h ₃ (mm)	291
	4.5	Height, mast extended	h ₄ (mm)	963
	4.9	Height drawbar in driving position min./max.	h ₁₄ (mm)	746 / 1242
	4.15	Height, lowered	h ₁₃ (mm)	142
	4.19	Overall length	l ₁ (mm)	1883
	4.20	Length to face of forks	l ₂ (mm)	868 ⁽³⁾ / 1068 ⁽⁴⁾
	4.21	Overall width	b ₁ /b ₂ (mm)	790 / 827
	4.22	Fork dimensions ⁽²⁾	s/e/l (mm)	40 / 125 / 1150
	4.25	Fork-carriage width	b ₅ (mm)	341 / 797
	4.31	Distance between fork-arms Min./Max.	m ₁ (mm)	20
	4.32	Ground clearance, laden, below mast	m ₂ (mm)	20
	4.33	Ground clearance, centre of wheelbase	b ₁₂ x l ₆ (mm)	1028 x 999 ⁽³⁾ / 830 x 738 ⁽⁴⁾
	4.34.2	Load dimension b ₁₂ x l ₆ crossways	A _{st} (mm)	2389 ⁽³⁾ / 2262 ⁽⁴⁾
Performance data	4.35	Turning radius	W _a (mm)	1572
	5.1	Travel speed, laden/unladen	km/h	4.4 / 6.0
	5.1.1	Travel speed, laden/unladen, backwards	km/h	4.4 / 6.0
	5.2	Lift speed, laden/unladen	m/s	0.05 / 0.07
	5.3	Lowering speed, laden/unladen	m/s	0.06 / 0.05
Electric engine	5.10	Service brake		Electromagnetic
	6.1	Drive motor S2 60 minute rating	kW	1.2
	6.2	Lift motor S3 15% rating	kW	2.2kW (S3 5%)
	6.3	Battery according to DIN 43531/35/36 A,B,C, no		no
	6.4	Battery voltage/nominal capacity K5	(V)/(Ah)	24 / 150 ⁽⁵⁾ ⁽⁶⁾
	6.5	Battery weight ⁽¹⁾	kg	144
	6.6	Energy consumption according to VDI cycle	kWh/h at no. of cycles	0.84
	8.1	Type of drive unit		AC-Controller
	10.7	Sound pressure level at the driver's seat	dB(A)	66

⁽¹⁾ These values may vary of +/-5%.

⁽²⁾ With 2 stage mast and b₅=570mm the s dimension increases 5mm for first 250mm at toe

⁽³⁾ These values are with loadbackrest up

⁽⁴⁾ These values are with loadbackrest down

⁽⁵⁾ Available battery 24V / 100Ah Li-Ion (144kg)

⁽⁶⁾ Available battery 24V / 200Ah Li-Ion (154kg)

Lift trucks illustrated may feature optional equipment.

Values may vary with alternative configurations.

All values are nominal values and they are subject to tolerances.

For further information, please contact the manufacturer.

Yale products might be subject to change without notice.

MS HBE series

Models: MS24HBE



This product is specifically designed for the horizontal extraction of batteries from 1.5t to 5.5t electric counterbalance forklift trucks.

Tiller head and controls

The tiller head features an ergonomic shaped handle with angled grips and integral hand guard. Large butterfly buttons control the direction of travel and speed as well as the electromagnetic brake.

Lift and lower buttons are conveniently located on the tiller head.

The travel-direction inverter button is designed to activate when in contact with the operator's body. When depressed, the direction of travel is automatically reversed and the truck comes to a stop. The creep speed control allows all functions of the truck to be operated with the tiller arm in the vertical position when operated at reduced speed for manoeuvring in tight confines.

Tiller arm

The spring-assisted tiller arm is mounted onto the drive unit. The low anchor point requires minimum steering effort and the long tiller arm increases the operating clearance when working inside the truck's envelope.

The tiller must be in the operating position, or the creep speed button depressed for the truck to be fully operational, including traction and fork operations.

Dashboard instrumentation

The truck's dashboard features a battery discharge indicator and hour meter. The red mushroom shaped button can be pressed to stop the truck immediately in case of an emergency.

Chassis

The drive gear and main components are fully enclosed by the chassis for maximum protection.

Battery

The MS24HBE utilises a 24V - 150Ah battery with a charger built into the truck.

Wheels

Wheels are manufactured from Polyurethane, the Load Wheels are contained within the chassis to avoid any impact with the load unit.

Electric motors

The MS24HBE features a powerful 1kW SEM traction motor, which guarantees an excellent response to operating commands and maintains sufficient torque in various situations. Maintenance is limited, with inspection intervals recommended every 500 hours of service for a long operational life. The lift motor is a 2kW DC compound motor, which makes light work of any workload.

Traction – Steering Unit

The drive motor is connected directly to the helicoidal gear transmission running in an oil bath. The motor is mounted vertically for efficient ventilation and to reduce flexing stresses to the power cables, ensuring reduced downtime.

Hydraulic unit

A heavy duty compound wound motor drives the pump. Inputs to the motor and proportional valve are received from the controller to control lifting and lowering performance.

Electronic controls

The MS24HBE features a Combi MOSFET controller, which regulates both the SEM traction motor and the DC lift motor. High energy efficiency and motor performance allows fast and efficient counterbalance truck battery exchange. Smooth progressive control is available at all times. The controller features automatic braking (reverse current braking) and regenerative braking on release of the butterfly buttons as well as anti roll-back/start-up on gradients.

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
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Safety: This truck conforms to the current EU requirements. Specification is subject to change without notice.

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