

MSS series

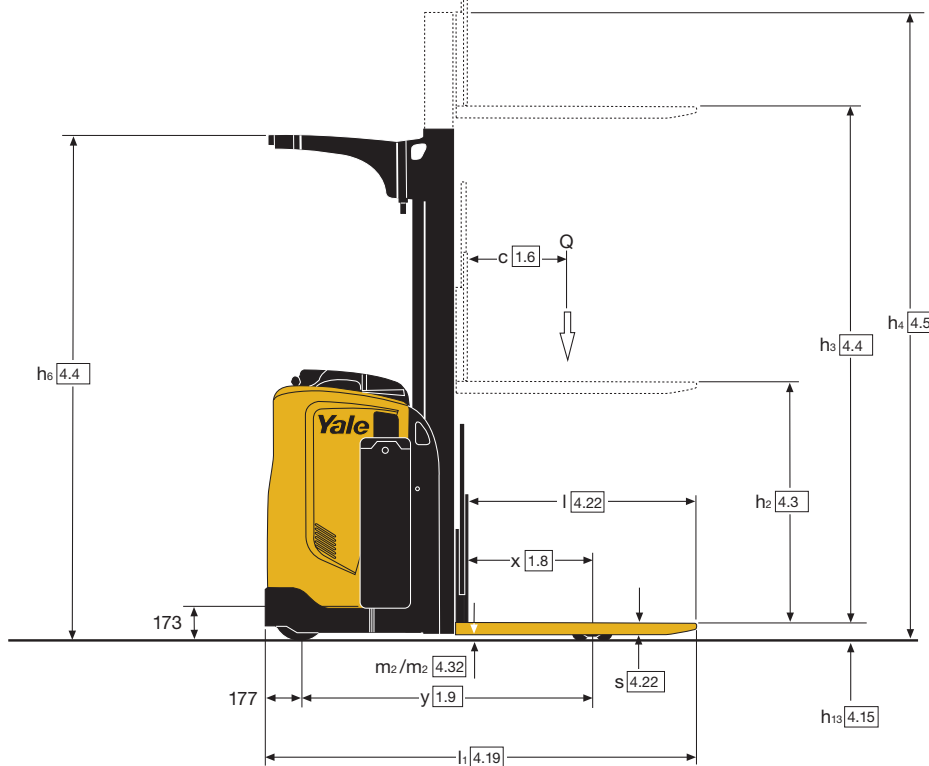
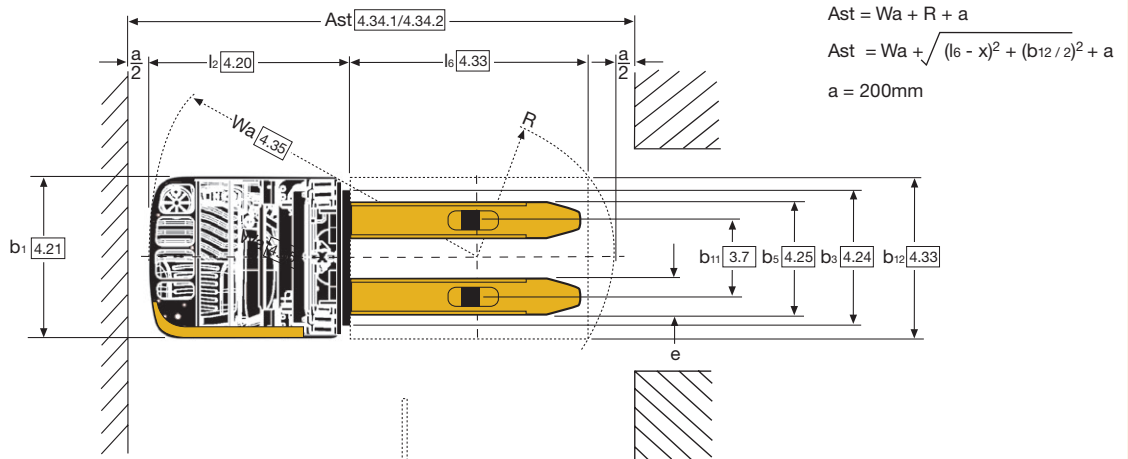
1,600kg

Rider Stacker Truck



- Adaptive seating
- Electronic fly-by-wire steering
- Narrow 798mm chassis for Europallet handling
- Speed reduction on cornering
- Combi MOSFET traction and pump control
- AC drive motor
- Automatic release braking
- Regenerative braking
- High lift mast

Truck Dimensions



Mast details

Mast type	h ₃ (mm)	h ₂ (mm)	h ₁ (mm)	h ₄ ⁽²⁾ (mm)	h ₆ (mm)	Weight ⁽³⁾ (kg)
2 stage NFL	3400	100	2200 ⁽¹⁾	3928	2145	369
	3600	100	2300 ⁽¹⁾	4128	2245	382
	3800	100	2400 ⁽¹⁾	4328	2345	395
	4000	100	2500 ⁽¹⁾	4528	2445	409
	4200	100	2600 ⁽¹⁾	4728	2545	422
2 stage FFL	3340	1718	2150	3868	2145	380
	3540	1818	2250	4068	2245	393
	3740	1918	2350	4268	2345	406
	3940	2018	2450	4468	2445	419
	4140	2118	2550	4668	2545	432
3 stage FFL	4900	1618	2150	5466	2145	518
	5180	1718	2250	5746	2245	537
	5460	1818	2350	6026	2345	556
	5740	1918	2450	6306	2445	575
	6020	2018	2550	6586	2545	594

⁽¹⁾ With free lift of 100mm.

⁽²⁾ With load backrest (h=1000) for carriage h₄ + 562mm (mast 2 stage), + 524 (mast 3 stage).

⁽³⁾ All weights are: mast structures

(weldment, cylinders, chain, pulley) + oil. EXCLUDED: forks, accessories.

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.

Lift trucks illustrated may feature optional equipment.

Values may vary with alternative configurations.

VDI 2198 – General Specifications

Distinguishing mark	1.1	Manufacturer (abbreviation)		Yale
	1.2	Manufacturer's type designation		MS16S
	1.3	Drive: electric (battery or mains), diesel, petrol, fuel gas		Electric (battery)
	1.4	Operator type: hand, pedestrian, standing, seated, order-picker		Stand / seated
	1.5	Rated capacity/Rated load	Q (t)	1.6
	1.6	Load centre distance ⁽¹⁾	c (mm)	600 ⁽²⁾
	1.8	Load distance, centre of drive axle to fork ⁽¹⁾	x (mm)	674
	1.9	Wheelbase ⁽¹⁾	y (mm)	1463
	Weights	2.1	Service weight	kg
2.2		Axle loading, laden front/rear	kg	1153 / 2090
2.3		Axle loading, unladen front/rear	kg	1088 / 555
Tyres/chassis	3.1	Tyres: polyurethane, tophane, vulkollan, front/rear		Vulkollan / Vulkollan
	3.2	Tyre size, front	ø (mm x mm)	254 x 90
	3.3	Tyre size, rear	ø (mm x mm)	85 x 66
	3.4	Additional wheels (dimensions)	ø (mm x mm)	150 x 79
	3.5	Wheels, number front/rear (x = driven wheels)		1x + 1 / 4
	3.6	Tread, front	b ₁₀ (mm)	475
	3.7	Tread, rear	b ₁₁ (mm)	400
Dimensions	4.2	Height, mast lowered ⁽⁴⁾	h ₁ (mm)	2300
	4.3	Free lift ⁽⁴⁾	h ₂ (mm)	100
	4.4	Lift ⁽⁴⁾	h ₃ (mm)	3600
	4.5	Height, mast extended ⁽⁴⁾	h ₄ (mm)	4128
	4.7	Height of overhead guard ⁽⁴⁾	h ₆ (mm)	2245
	4.8	Height of seat / platform	h ₇ (mm)	935 / 297
	4.10	Height of wheel arms	h ₈ (mm)	85
	4.15	Height, lowered	h ₁₃ (mm)	90
	4.19	Overall length ⁽¹⁾	l ₁ (mm)	2159
	4.20	Length to face of forks ⁽¹⁾	l ₂ (mm)	993
	4.21	Overall width	b ₁ (mm)	798
	4.22	Fork dimensions ⁽¹⁾⁽⁶⁾	s/e/l (mm)	55 / 185 / 1150
	4.24	Fork-carriage width	b ₃ (mm)	673
	4.25	Distance between fork-arms ⁽¹⁾	b ₅ (mm)	570
	4.31	Ground clearance, laden, below mast	m ₁ (mm)	25
	4.32	Ground clearance, centre of wheelbase	m ₂ (mm)	25
	4.33	Load dimension b ₁₂ x l ₆ crossways ⁽¹⁾	b ₁₂ x l ₆ (mm)	800 x 1200
4.34.1	Aisle width for pallets 1000mm x 1200mm crossways ⁽¹⁾⁽⁵⁾	A _{st} (mm)	2523	
4.34.2	Aisle width for pallets 800mm x 1200mm lengthwise ⁽¹⁾⁽⁵⁾	A _{st} (mm)	2501	
4.35	Turning radius ⁽¹⁾	W _a (mm)	1640	
Performance data	5.1	Travel speed, laden/unladen	km/h	9
	5.1.1	Travel speed, laden/unladen, backwards	km/h	9
	5.2	Lift speed, laden/unladen	m/s	0.14 / 0.28
	5.3	Lowering speed, laden/unladen	m/s	0.40 / 0.35
	5.7	Gradeability, laden/unladen	%	0.9 / 3.4
	5.8	Max. gradeability, laden/unladen	%	8.0 / 13.0
5.10	Service brake		Electro Magnetic	
Electric engine	6.1	Drive motor S2 60 minute rating	kW	2.6
	6.2	Lift motor, S3 15% rating	kW	3.0 ⁽³⁾
	6.3	Battery according to DIN 43531/35/36 A,B,C, no		no
	6.4	Battery voltage/nominal capacity K5	(V) / (Ah)	24 / 465
	6.5	Battery weight ⁽⁶⁾	kg	366 ⁽⁶⁾⁽⁷⁾
	6.6	Energy consumption according to VDI cycle	kWh/h at number of cycles	1.26
8.1	Type of drive unit		AC Controller	
10.7	Sound pressure level at the driver's seat	dB (A)	72.14	

⁽¹⁾ See Forks table.

⁽²⁾ Applies to one pallet = 1200mm.

⁽³⁾ Value referred to S3 12%.

⁽⁴⁾ See Mast table.

⁽⁵⁾ Stacking aisle widths (lines 4.34.1 & 4.34.2) are based on the VDI standard calculation as shown on illustration. The British Industrial Truck Association recommends the addition of 100mm to the total clearance (dimension a) for extra operating margin at the rear of the truck.

⁽⁶⁾ The battery nominal weight may change according to supplier in the range 366-393kg.

⁽⁷⁾ The battery actual weight is nominal weight +/- 5%.

⁽⁸⁾ With 2 stage mast and b₅ = 570mm the s dimension increases 5mm for first 250mm at toe.

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MSS series

Model: MS16S



Fork dimensions

Mast type	Fork length ⁽¹⁾ l (mm)	Load centre distance c (mm)	Wheelbase y (mm)	Overall length l ₁ (mm)	Length to face of forks ⁽²⁾ l ₂ (mm)	Load distance ⁽¹⁾ x (mm)	Turning radius Wa (mm)	Distance between fork arms b ₅ (mm)	Load dimensions			Aisle width A _{st} (mm)
									l ₆ (mm)	b ₁₂ (mm)	pallet position	
2 stage	1000	500	1463	1966	966	674	1640	570	1000 1200	1200 800	crossways lengthwise	1000
	1150	600	1463	2116	966	674	1640	570	1000 1200	1200 800	crossways lengthwise	1150
3 stage	1000	500	1463	2009	1009	631	1640	570	1000 1200	1200 800	crossways lengthwise	1000
	1150	575	1463	2159	1009	631	1640	570	1000 1200	1200 800	crossways lengthwise	1150

⁽¹⁾ 2-stage only: less 27mm with a load backrest fitted.
⁽²⁾ 2-stage only: add 27mm with a load backrest fitted.

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Controls

The electronic fly-by-wire steering requires minimum effort and allows rapid manoeuvring. A spinner knob is standard.

The low effort butterfly button controls direction of travel and speed and the opening and closing of the electromagnetic brake. Horn, lift and lower lever is conveniently located beneath the handgrip for fingertip operation.

Seat

A contoured polyurethane fully vertically adjustable cushion seat permits seated, leaning and standing operation/support to relieve fatigue over extended travel runs.

Operator's compartment

A padded armrest enhances operator comfort. The wide chassis width offers generous leg room.

The floor presence switch enables traction. Releasing the floor presence switch automatically applies the electromagnetic brake.

Chassis

The heavy duty, pressed steel, welded chassis provides protection for the drive train and battery.

The compact chassis width of 798mm facilitates the handling of Europallet in loading/unloading applications and block storage. The low step height of 297mm facilitates easy on/off.

Mast

A variety of mast types, including full free lift 2 and 3 stage masts, is offered. Rollers are permanently lubricated and sealed for maximum service life. Masts are bolt-on type.

A Lexan transparent guard is fitted as standard.

A wire mesh guard is available as an option.

Traction and pump control

A MOSFET high frequency COMBI controller is used to regulate both traction and pump operation.

The controller features automatic braking (reverse current braking) and regenerative braking as well as antirollback start-up on an incline.

Automatic speed reduction when cornering is activated via the controller which also features an in-built diagnostic system and alarm history as well as thermal protection.

Drive unit

The AC drive motor delivers fast travel speeds in the laden/unladen condition, high start-up torque and acceleration as well as efficient running. The use of AC motor technology eliminates forward and reverse contactors. The motor is mounted vertically for easy access, improved ventilation and minimum contamination from floor conditions.

Brake

The electromagnetic brake is electrically released and spring applied. Reverse current braking is applied by inverting the direction of travel. Releasing the butterfly button induces both reverse current braking (adjustable) and regenerative braking.

The brake is opened and closed by activation of the butterfly button with the foot presence switch depressed. The brake is closed by lifting the foot off the foot presence switch.

Instrumentation

A combined hourmeter/battery discharge indicator is featured on the instrument panel. The indicator also displays alarm conditions should they occur. A quick disconnect traction cut-out button is mounted near the armrest.

Overhead guard

A robust overhead guard is bolted to the outer frame of the mast.

Height from 2145mm to 2545mm (depending on mast height).

A Lexan transparent and a wire mesh guard are available as options.

Options

A comprehensive range of options including mast options, fork lengths of 1000mm and 1150mm with 570mm width, side battery removal table and battery change trolley are available.

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

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