

- Low level orderpicker (MO20) 2000kg capacity
- Rising platform options 960-1200-1500 mm (MO20S)
- MOSFET transistor control on traction and hydraulics
- SEM drive motor



Truck shown with optional equipment

Main advantages of the MO20, MO20S range

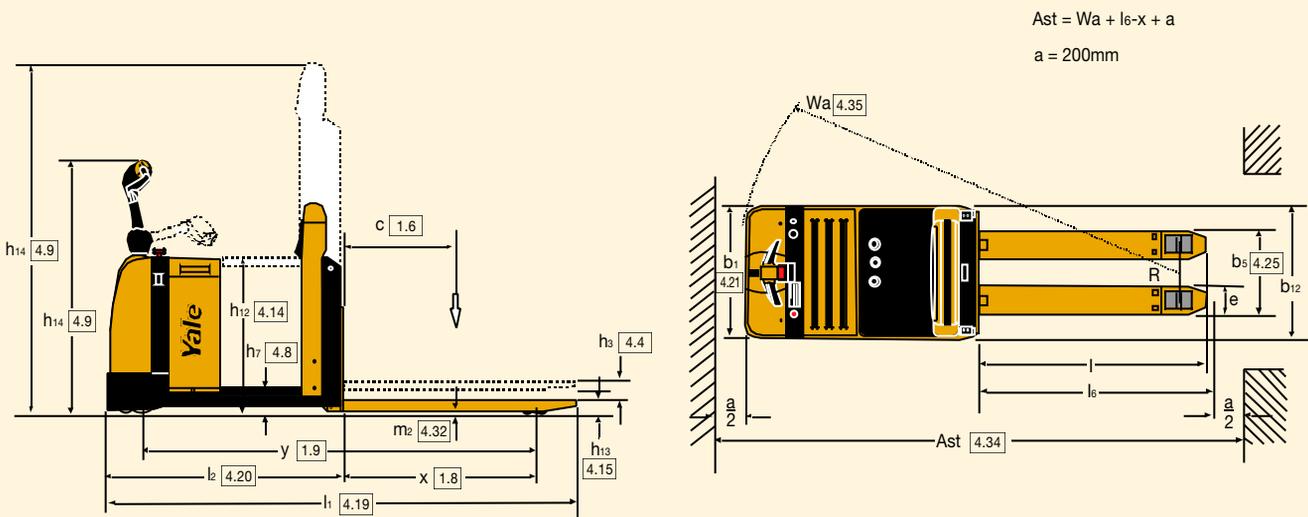
Operator comfort

- Ergonomic tiller head with angled grips and low effort controls for maximum operator comfort
- Dual fork lift/lower controls for right or left hand use. All controls accessible without having to lift hand off handle
- Spacious operator's compartment with easy on/off access
- Operator backrest featuring height adjustable seatpad, steady bar and creep speed advance buttons

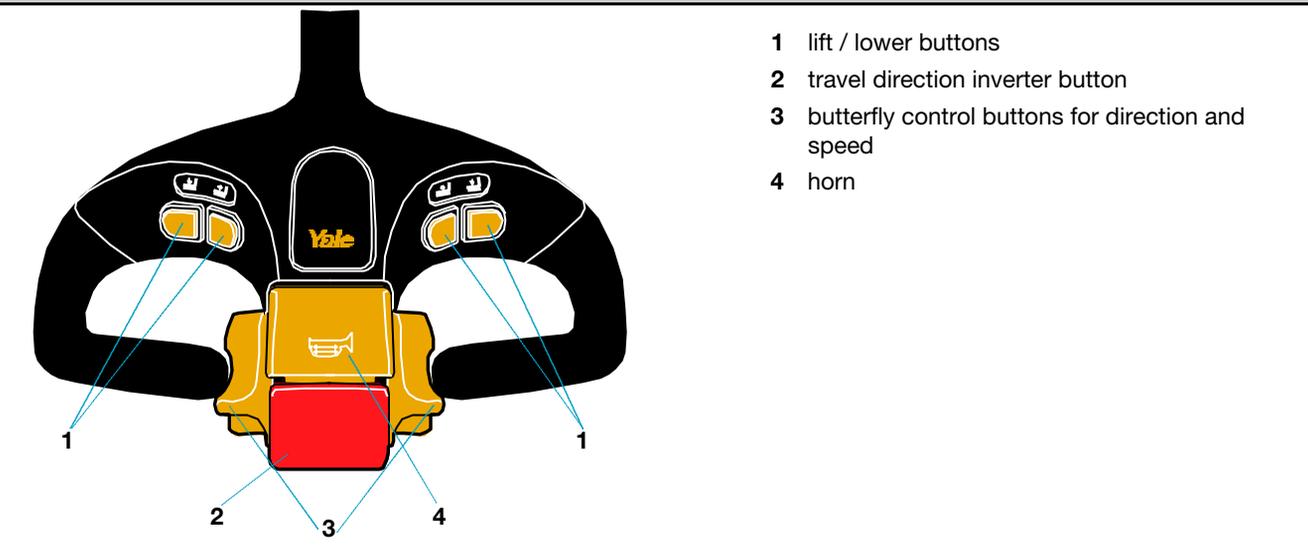
Performance with efficiency

- MOSFET traction controller for stepless progressive speed control, automatic release braking and regenerative braking
- MOSFET pump control for efficient hydraulic operation
- SEM drive motor technology for high performance travel speeds and superior speed control

Truck Dimensions



Tiller Head



VDI 2198 - General Specifications

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Characteristics	1.1	Manufacturer		Yale	Yale	
	1.2	Model designation		MO20	MO20S	
	1.3	Power: Battery, Diesel, LPG, Electric mains		Battery	Battery	
	1.4	Operation: Manual, pedestrian, stand-on, seated, orderpicker		Orderpicker	Orderpicker	
	1.5	Load capacity	Q (t)	2.0 ²	2.0 ²	
	1.6	Load centre	c (mm)	600	600	
	1.8	Load distance	x (mm)	965	965	
	1.9	Wheelbase	y (mm)	2225	2225	
	Weights	2.1	Unladen weight	kg	1040	1060
2.2		Axle loading laden, front/rear	kg	1160 / 1880	1165 / 1895	
2.3		Axle loading unladen, front/rear	kg	780 / 260	795 / 265	
Wheels and Tyres	3.1	Tyres - rubber, polyurethane	front/rear	Poly / Poly	Poly / Poly	
	3.2	Tyre size - front		Ø 260 x 95	Ø 260 x 95	
	3.3	Tyre size - rear		Ø 85 x 90	Ø 85 x 90	
	3.4	Additional wheels (dimensions)		Ø 150 x 75	Ø 150 x 75	
	3.5	Wheels - number front/rear (x = driven)		1 x + 1/4	1 x + 1/4	
	3.6	Track width - front	b10 (mm)	500	500	
	3.7	Track width - rear	b11 (mm)	340	340	
Dimensions	4.4	Lift height	h3 (mm)	120	120	
	4.8	Height of seat/platform	h7 (mm)	140	140	
	4.9	Height of tiller arm in working position min./max.	h14 (mm)	1200 / 1315	1200 / 1315	
	4.14	Platform height, raised	h12 (mm)	-	960 / 1200 / 1500	
	4.15	Lowered height	h13 (mm)	85	85	
	4.19	Overall length	l1 (mm)	2605	2605	
	4.20	Length to face of forks	l2 (mm)	1449	1449	
	4.21	Overall width	b1/b2 (mm)	800	800	
	4.22	Fork dimensions	s/e/l (mm)	55 / 180 / 1150	55 / 180 / 1150	
	4.25	Outside fork width	b5 (mm)	520	520	
	4.32	Ground clearance, centre of wheelbase	m2 (mm)	60	60	
	4.33	Aisle width for pallets 1000 x 1200 wide	Ast (mm)	2655	2655	
	4.34	Aisle width for pallets 800 x 1200 long	Ast (mm)	2855	2855	
4.35	Turning radius	Wa (mm)	2420	2420		
Performance	5.1	Travel speed, laden/unladen	Kph	8.5 / 9.5	8.5 / 9.5	
	5.2	Lift speed, laden/unladen	m/s	0.029 / 0.037	0.029 / 0.037	
	5.3	Lowering speed, laden/unladen	m/s	0.048 / 0.044	0.048 / 0.044	
	5.8	Max. gradeability, laden/unladen	%	8 / 20	5 / 20	
	5.10	Service brake		Electromagnetic	Electromagnetic	
Motors	6.1	Drive motor rating (S2 60 min)	kW	2.6	2.6	
	6.2	Lift motor rating (S3 10%)	kW	2.0	2.0	
	6.3	Battery to DIN 43531/35/36 A, B, C, no		43535 B	43535 B	
	6.4	Battery voltage/capacity (5 hour rate)	kg	24 / 480	24 / 480	
	6.5	Battery weight		410	410	
Other	8.1	Drive control		MOSFET	MOSFET	

Tiller head and controls

The standard control features tiller arm steering. The tiller head features an ergonomic shaped handle with integral hand guard. Large dimensioned, low effort butterfly buttons control direction of travel and speed as well as the electromagnetic brake. Releasing the butterfly buttons causes automatic release (reverse current) braking and regenerative braking. Lift and lower buttons are conveniently located on the tiller head and can be readily accessed for left/right hand use. The horn is located on top of the tiller head and conveniently actuated by thumb or forefinger. On release the tiller arm reverts to the vertical position.

As an option electronic fly by wire steering wheel control is offered. A spinner knob is standard. The steering, butterfly speed/brake control and push button lift/lower controls are grouped on a console. A lamp on the console indicates the straight ahead position of the drive wheel. The steering console can be raised into a vertical position to provide the operator with walk-on access to the battery cover for second level picking.

The floor presence switch must be depressed to enable traction. Releasing the floor presence switch automatically applies the electromagnetic brake.

Dual slow speed advance buttons located in the backrest allow the operator to move the truck forward, walking alongside, to an adjacent pick location without having to board the truck.

Chassis

The sturdy bumper plate provides protection against collision impact. For very arduous applications, additional corner bumper plates are available (optional). The powerhead including the operator platform is independent of the lifting section which means the platform remains at a constant low height for stepping on/off. The MO20 features a fixed platform with intermediate step-up located in the back rest for second level access. Slip resistant strips are located on the walk-on battery cover which is a made of a sturdy steel construction.

A handrail mounted on top of the chassis is optional.

The MO20S features a rising platform with a document recess located in the backrest. 3 height options are offered (960/1200/1500 mm) to facilitate second /third level picking. Lifting and lowering of the platform is controlled by foot buttons located in the cab floor. The 1200/1500 mm rising platform options feature a front retention plate. The 1500 mm rising platform features interlocked side arms.

Side battery extraction featuring battery rollers is offered as an option. The battery compartment offers a maximum battery size up to 480 Ah.

Forks

The forks raise independently of the powerhead section. Adjustable pull rods provide smooth even lifting and lowering. The load wheel pivot axle is located on the top section of the fork for added protection. Load wheels and fork levers are fitted with grease points for extended service life in arduous applications. Tandem load wheels are standard. Exit and entry rollers are standard for 1000/1150 mm fork lengths.

As an option supplementary fork lift is offered. This enables the operator to raise/lower the forks to maintain a constant comfortable working height throughout the picking cycle.

A full range of fork widths and lengths is available.

Traction and pump control

A new generation MOSFET high frequency COMBI controller is used to regulate both traction and pump operation. Energy efficient, smooth progressive control is available at all times. The controller features automatic braking (reverse current braking) and regenerative braking on release of the butterfly button as well as antirollback start-up on an incline.

Using a plug-in console the controller can be adjusted for forward and reverse travel speeds, reverse current braking, release braking and acceleration.

Drive unit

The separately excited (SEM) 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 SEM motor technology eliminates forward and reverse contactors for reduced maintenance.

The motor is mounted vertically for easy brush access, improved ventilation and minimum contamination from floor conditions. It is flanged directly on to a helical gear transmission running in an oil bath. Drive wheel is mounted automobile style to the wheel hub for easy change. The 4 point wheel layout confers optimum stability characteristics.

Hydraulics

A heavy duty motor drives the pump. Fork lift/lower functions are actuated directly from the push button controls via the Combi controller. The combination of proportional control valve and ramped start/stop of the pump motor on the MO20S ensures smooth control and operation of the lifting and lowering of the platform. A spy glass facilitates checking of the oil level.

Brake

The electromagnetic brake is electrically released and spring applied. The brake is opened and closed by activation of the butterfly buttons with the foot presence switch depressed. The brake is closed by lifting the foot off the foot presence switch. Reverse current braking is applied by inverting the direction of travel. Releasing the butterfly buttons induces both reverse current braking (adjustable) and regenerative braking.

Instrumentation

A combined hourmeter/battery discharge indicator with lift interrupt is featured on the dashboard. The indicator also displays alarm conditions should they occur. A quick disconnect traction cut-out button is mounted on the dashboard.

Options

A comprehensive range of options including pick list support tray, fork lengths and widths, tyre options, side battery removal and battery change trolley, cold store protection is available.

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



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Yale is a registered trade mark.
Publication part no. 258980275

Printed in The United Kingdom

(110110HG) EN