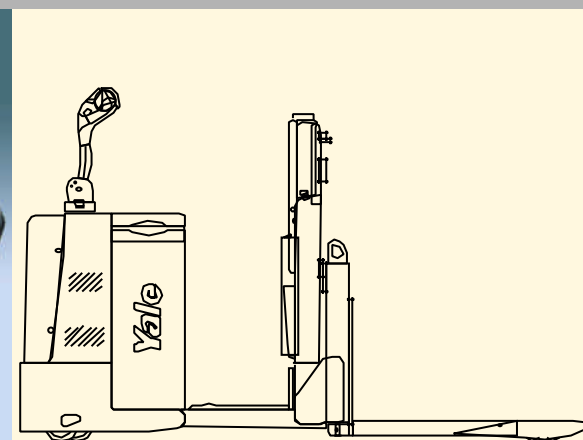
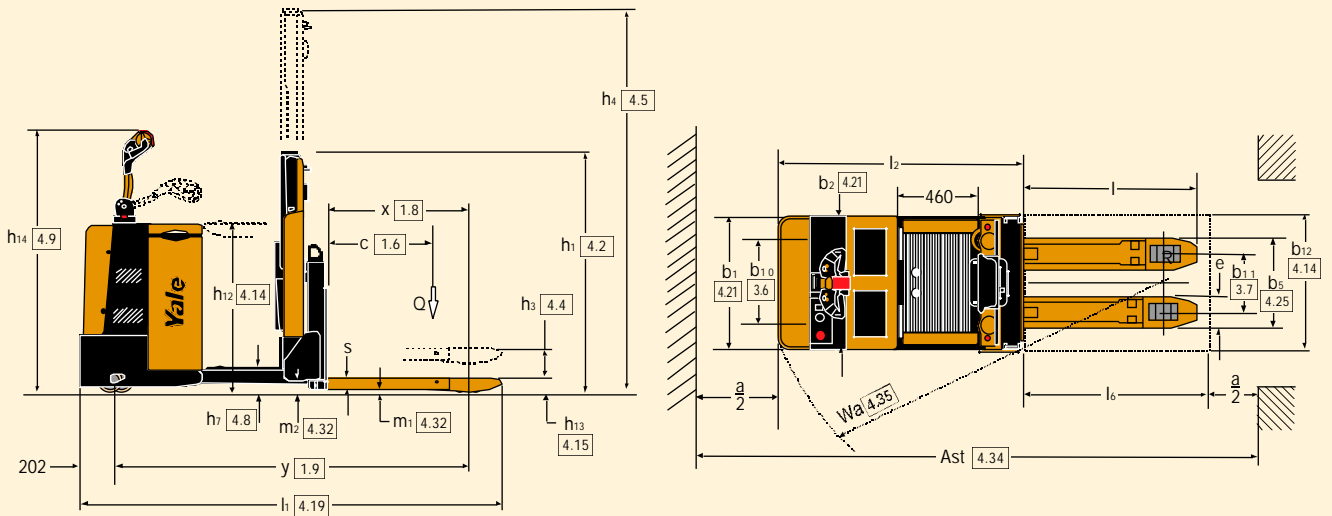


Low Level Order Picker  
2000kg

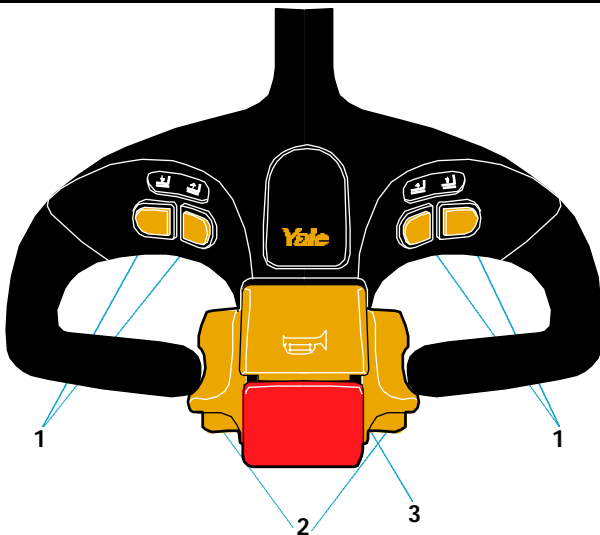


- Combi MOSFET Dualtech electronic control
- Constant platform height with independently rising forks
- Rising platform options 960/ 1200/ 1500mmhigh (MO20S)
- 480-560 Ah battery capacity
- Brushless servo-steering
- 4 preset performance settings to suit driver preferences
- Regenerative braking
- Yale AC Technology

## Truck Dimensions



## Tiller Head



- 1 lift / lower buttons
- 2 butterfly control buttons for direction and speed
- 3 horn

Note	b5 = 520mm - 560mm - 570mm b11 = 340mm - 380mm - 490mm					with 480 Ah battery *			
	C	l	x**	z	l6	y**	l1	Wa**	Ast
	(forks overhang)					(forks overhang)			
	mm	mm	mm	mm	mm	mm	mm	mm	mm
	500	1006	815	191	1000	2041	2434	2265	2450
	600	1156	965	191	1200	2191	2584	2415	2650
	700	1406	965	441	1400	2191	2834	2415	2850
	800	1606	965	641	1600	2191	3034	2415	3050
	1000	1956	1405	551	2000	2631	3384	2850	3445
<b>UK</b>	1000	1956	1356	600	2000	2582	3384	2805	3449
	1100	2156	1405	751	2200	2631	3584	2850	3645
<b>UK</b>	1100	2156	1356	800	2200	2582	3584	2805	3649
<b>UK</b>	1200	2356	1650	706	2400	2876	3784	3095	3845
<b>short</b>	1200	2356	1405	951	2400	2631	3784	2850	3845
<b>long</b>	1200	2356	1860	496	2400	3086	3784	3305	3845
	1450	2856	1860	996	3000	3086	4284	3305	4445

\* = value affected by larger battery with 560 Ah + 65mm

\*\*= all value for Y - X - Wa - are intended with lowered forks, with forks lifted 120 mm all this dimension will be reduced 70 mm.

## VDI 2198 - General Specifications

VDI 2198 - General Specifications					
Characteristics	1.1	Manufacturer		Yale	Yale
	1.2	Model designation		<b>MO20</b>	<b>MO20S</b>
	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 <sup>2</sup>	2.0 <sup>2</sup>
	1.6	Load centre	c (mm)	600	600
	1.8	Load distance	x (mm)	965	965
	1.9	Wheelbase	y (mm)	2191	2191
	Weights	2.1	Unladen weight	kg	820
2.2		Axle loading laden, front/rear	kg	1085 / 1735	1120 / 1790
2.3		Axle loading unladen, front/rear	kg	580 / 240	610 / 300
Wheels and Tyres	3.1	Tyres - rubber, polyurethane front/rear		Vulkollan	Vulkollan
	3.2	Tyre size - front		Ø 254 x 90	Ø 254 x 90
	3.3	Tyre size - rear		Ø 85 x 94	Ø 85 x 94
	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	b <sub>10</sub> (mm)	495	495
	3.7	Track width - rear	b <sub>11</sub> (mm)	340	340
Dimensions	4.2	Height of mast lowered	h <sub>1</sub> (mm)	1384	1384 / 1604
	4.4	Lift height	h <sub>3</sub> (mm)	120	120
	4.5	Height of mast, extended	h <sub>4</sub> (mm)	-	2214 / 2434
	4.8	Height of seat/platform	h <sub>7</sub> (mm)	150	150
	4.9	Height of tiller arm in working position min./max.	h <sub>14</sub> (mm)	1230 / 1495	1230 / 1495
	4.14	Platform height, raised	h <sub>12</sub> (mm)	-	980 / 1200
	4.15	Lowered height	h <sub>13</sub> (mm)	85	85
	4.19	Overall length	l <sub>1</sub> (mm)	2584 <sup>(1)</sup>	2584 <sup>(1)</sup>
	4.20	Length to face of forks	l <sub>2</sub> (mm)	1428 <sup>(1)</sup>	1428 <sup>(1)</sup>
	4.21	Overall width	b <sub>1</sub> /b <sub>2</sub> (mm)	780 / 770	780 / 770
	4.22	Fork dimensions	s/e/l (mm)	55 / 180 / 1156	55 / 180 / 1156
	4.25	Outside fork width	b <sub>5</sub> (mm)	520	520
	4.32	Ground clearance, centre of wheelbase	m <sub>2</sub> (mm)	60	60
	4.33	Aisle width for pallets 1000 x 1200 wide	A <sub>st</sub> (mm)	2650 <sup>(1)</sup>	2650 <sup>(1)</sup>
	4.34	Aisle width for pallets 800 x 1200 long	A <sub>st</sub> (mm)	2850 <sup>(1)</sup>	2850 <sup>(1)</sup>
4.35	Turning radius	W <sub>a</sub> (mm)	2415 <sup>(1)</sup>	2415 <sup>(1)</sup>	
Performance	5.1	Travel speed, laden/unladen	Kph	10.5 / 11 <sup>(4)</sup>	10.5 / 11 <sup>(4)</sup>
	5.2	Lift speed, laden/unladen	m/s	0.03 / 0.04	0.03 / 0.04
	5.3	Lowering speed, laden/unladen	m/s	0.05 / 0.045	0.05 / 0.045
	5.8	Max. gradeability, laden/unladen	%	8 / 8 <sup>(5)</sup>	8 / 8 <sup>(5)</sup>
	5.9	Acceleration time (over 10m) with, without load		6 / 5 <sup>(4)</sup>	6 / 5 <sup>(4)</sup>
	5.10	Service brake	kW	Electromagnetic	Electromagnetic
Motors	6.1	Drive motor rating (S2 60 min)	kW	4.0	4.0
	6.2	Lift motor rating (S3 10%)		2	2
	6.3	Battery to DIN 43531/35/36 A, B, C, no	kg	B	B
	6.4	Battery voltage/capacity (5 hour rate)	V/Ah	24 / 480	24 / 480
	6.5	Battery weight	kg	410	410
	6.6	Consumption according to VDI cycle		0.81	0.81
Other	8.1	Drive control		AC-MOSFET	AC-MOSFET
	8.4	Average noise level at operator's ear	dB (A)	<70	<70

(1) + 65 mm with bigger battery 560 Ah ( 357 x 625 x 784 h )

(2) 1,5 ton with single load roller wheel

(4) Drive mode and setting related

(5) Gradeability is limited to truck's geometry

## Models: MO20, MO20S

### 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.

The steering featured provides effortless mechanical – servopower steering for the driver, via an electric motor which takes all the steering effort, creating good driver control and manoeuvrability.

Dual slow speed forward and reverse direction buttons are located on the backrest allow the operator to move the truck whilst walking alongside, to the next pick location without having to board.

The embedded floor presence switch, is automatically depressed by driver presence, to enable traction.

Releasing the floor presence switch, i.e. the driver getting out, automatically applies the electromagnetic brake.

### Chassis

The sturdy bumper plate provides protection against collision impact. For very arduous applications, additional "bull bar" front bumper plates is 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. Rubber antislip plate 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 standard.

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 560 Ah (long chassis).

### 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 skipad 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 Combi MOSFET high efficiency dual technology, regulate both AC traction and DC 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. The truck is equipped with 4 level preset performances helpful to match the application needs.

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 AC technology 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 for reduced maintenance.

The motor is mounted vertically, fixed to improve ventilation and eliminate cable twist to extend the working life. 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 changing. The 4 point wheel layout creates 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 Mosfet 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 transparent tank 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, total and partial worked time, odometer, sensor tester and more. 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.



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Truck shown with optional equipment