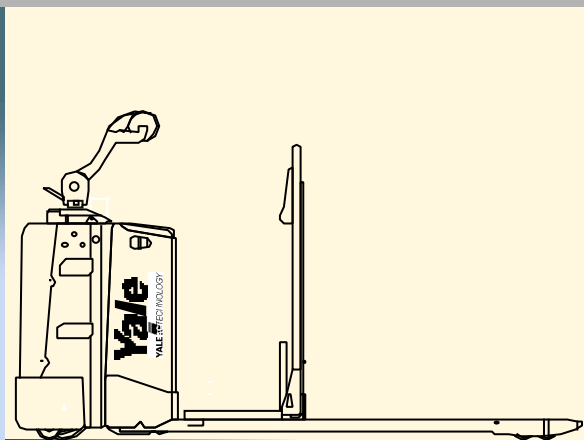


## Low Level Order Picker 2000kg

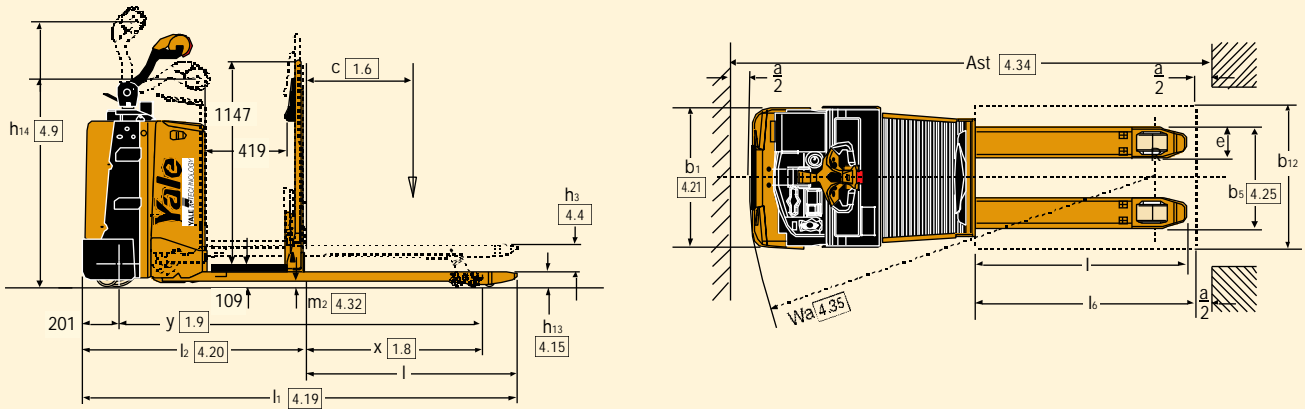


- Electronic horizontal order picker
- All sensitive spacious operator presence platform
- COMBI-MOSFET electronics
- Yale AC Technology™
- Brushless servo-steering option
- Supplementary lift option
- 4 preset performance settings to suit driver preferences
- Wide range of options to facilitate operation

## Truck Dimensions

$$Ast = Wa + l_6 - x + a$$

$$a = 200\text{mm}$$



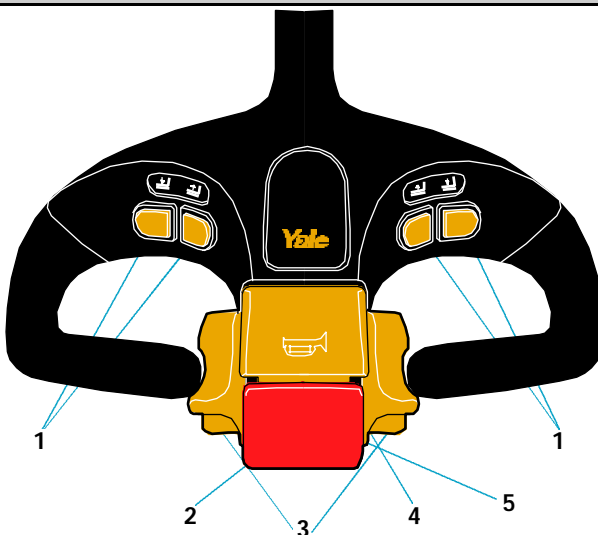
## Aisle Widths

	MO20F					Battery Compartment			
	$b_5 = 520\text{mm} - 560\text{mm} - 650\text{mm}$					400 Ah**			
	$l$	$c$	$x^*$	fork overhang	$l_6$	$y^*$	$l_1$	$wa^*$	$ast$
	1181	600	1002	179	1200	2046	2426	2266	2664
	1406	700	965	441	1400	2009	2651	2229	2864
Roll container	1606	800	965	641	1500	2009	2851	2229	2964
Short pull rod	2356	1200	1405	951	2400	2449	3601	2667	3864
Long pull rod	2356	1200	1860	496	2400	2904	3601	3119	3864
Pull rod UK	2356	1200	1650	706	2400	2694	3601	2911	3864

\* With forks raised -103mm

\*\* With 300Ah battery compartment -40mm / with 500Ah battery compartment + 50mm

## Tiller Head



- 1 lift / lower buttons
- 2 travel direction inverter button
- 3 butterfly control buttons for direction and speed
- 4 horn
- 5 creep button (on opposite side)

VDI 2198 - General Specifications					
Characteristics	1.1	Manufacturer		Yale	Yale
	1.2	Model designation <sup>(1)</sup>		<b>MO20F</b>	<b>MO20F-HD</b>
	1.3	Power: battery, diesel, LPG, electric mains		Battery	Battery
	1.4	Operation; manual, pedestrian, stand, seat		Stand-on	Stand-on
	1.5	Load capacity	Q (t)	2.0	2.0
	1.6	Load centre	c (mm)	600	600
	1.8	Load distance <sup>(1)</sup>	x (mm)	1002	1002
	1.9	Wheel base	y (mm)	2046	2046
	Weights	2.1	Unladen weight (including battery) <sup>(1)</sup>	kg	970
2.2		Axle loading unladen, front/rear <sup>(1)</sup>	kg	1130 / 1840	1130 / 1840
2.3		Axle loading unladen, front/rear <sup>(1)</sup>	kg	730/240	730/240
Wheels and Tyres	3.1	Tyres: rubber, polyurethane, Vulkollan, front/rear		Vulkollan / Vulkollan	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 125 x 50	ø 125 x 50
	3.5	Wheels number front/rear (x = driven)		1x+1/4	1x+1/4
	3.6	Track width, front	b 10 (mm)	484	484
	3.7	Track width, rear <sup>(1)</sup>	b 11 (mm)	390	390
Dimensions	4.4	Lift height	h3 (mm)	130	130
	4.9	Height of tiller arm in working position min./max.	h14 (mm)	1220 / 1460	1220 / 1460
	4.15	Lowered height	h13 (mm)	85	85
	4.19	Overall length	l1 (mm)	2426	2426
	4.20	Length to face of forks	l2 (mm)	1245	1245
	4.21	Overall width	b1/b2 (mm)	780	780
	4.22	Fork dimensions	s/e/l (mm)	170 / 55 / 1181	170 / 55 / 1181
	4.25	Outside fork width min./max <sup>(1)</sup>	b5 (mm)	560	560
	4.32	Ground clearance centre of wheelbase	m2 (mm)	30	30
	4.33	Aisle width with pallet 1000x1200 crossways VDI 2198	Ast (mm)	2464	2464
	4.34	Aisle width with pallet 800x1200 lengthwise VDI 2198	Ast (mm)	2664	2664
4.35	Turning radius	Wa (mm)	2266	2266	
Performance	5.1	Travel speed laden/unladen <sup>(2)</sup>	km/h	8 / 8,5	10 / 10,5
	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 / 0.04	0.05 / 0.04
	5.7	Gradeability laden/unladen <sup>(3)</sup>	%	10 / 20	10 / 20
	5.8	Max. gradeability laden/unladen <sup>(3)</sup>	%	10 / 20	10 / 20
	5.10	Service brake		el.magnetic	el.magnetic
Power Unit	6.1	Drive motor, S2 60 minute rating	kW	2.2 (4)	4.0 <sup>(4)</sup>
	6.2	Lift motor, S3 16% rating	kW	2.0	2.0
	6.3	Battery according to DIN 43531/35/36 A,B,C, no		no	no
	6.4	Battery voltage/capacity at 5 hours rate	V/Ah	24/400	24/400
	6.5	Battery weight (+/- 5%)	kg	330	330
	6.6	Consumption according to VDI cycle	kWh/h	/	/
Misc.	8.1	Drive control		Mosfet	Mosfet
	8.4	Average noise level at operator's ear	dB (A)	< 70	< 70

<sup>(1)</sup> Values refer to truck with Servo Power Steering and battery as in row 6.4, with fork dimensions b5=560 L=1181

<sup>(2)</sup> MO20F High Speed (12.5 km/h) version also available, consult your dealer.

<sup>(3)</sup> Values determined by wheel friction, if climbing ramps frequently (within 1h), consult your dealer.

<sup>(4)</sup> With mechanical steering 2.2Kw, with servo assisted power steering 4 Kw.

## Models: MO20F

### Tiller Head and Controls

The tiller head is designed for operator comfort and features an ergonomic shaped handle with angled grips and integral hand guard. Large dimensioned, low effort butterfly buttons control direction of travel and speed as well as the electromagnetic brake. All controls are accessible without having to lift the hand from the handle. Dual lift and lower buttons are conveniently located on the tiller head and can be readily accessed for left or right hand use. The horn is located on top of the tiller head and conveniently actuated by thumb or forefinger. 4 preset performance settings provide different performance levels for forward and reverse travel speeds, reverse current braking and release braking. The settings are easily selectable to suit driver preference.

The tiller arm is spring assisted and returns automatically to the vertical position when released.

### Driving platform

The spacious operator platform allows easy on/off access from both sides, even with bulky loads commonly associated with order picking activities. The cushioned platform incorporates an operator presence switch (or "man on board" sensor), eliminating the need to look for a button with the foot and leaving the floor completely free from obstacles. A rear mounted integrated storage container for stationary can double as a step to facilitate order picking. A rear support for plastic film rolls or packaging tape is also available. The dashboard cover is equipped with compartments for stationary and other small items and an A4 document holder.

### Mechanical steering

The standard mechanical steering system via the tiller gives direct and precise driving of the truck in all situations. Optional electrical servo-assisted steering is also available.

### Servo power steering (optional)

The optional servo-assisted steering through the powerful electronic motor

reduces operator steering effort by up to 60%.

### Frame and forks

The frame is made of strong electro-welded metal sheets, surface treated and coated with 2-pack epoxy paint. The overall chassis width of 780mm makes the MO20F suitable for manoeuvring in the narrowest aisles. The forks have a low profile of 55 mm to assist picking up of low entry loads. 130mm of lift is provided as standard. The fork structure is particularly robust, made with two solid longitudinal members covered with a closing and reinforcing sheet. The ends of the forks are tapered and equipped with skid plates which enhance the handling of bottom boarded pallets.

### Battery

The battery compartment takes a battery size of up to 24V - 400 Ah, which, together with the characteristics of the traction motor, allows considerable flexibility in operation. A lateral battery extraction option is available.

### Rollers and wheels

All wheels are made from Vulkollan™. Tandem load wheels are standard, with twin tandem load wheels available as an option. An optional suspension mounted castor enhances driveability and stability on imperfect flooring.

### Electric motors

The drive motor is a robust AC motor of 2.2 Kw (4 Kw with optional electric servo-steering), with instant response to forward and reverse traction inputs, providing considerable torque in all situations. The maintenance free motor (inspection intervals required every 1000 operating hours), provides low cost long operative life. The optional servo-steering with brushless type DC motor with permanent magnets is maintenance free and incorporates the electronic control system. The lifting motor is a robust DC compound motor of 2 kw, providing power in excess of the truck's operative requirements, and is mounted vertically in order to allow

efficient cooling. The steering has maintenance-free and adjustment-free gears, a system normally associated with the highest specification.

### Hydraulic unit

The silent, powerful hydraulic pump, activated by the electric motor, is of double gear type. The transparent tank facilitates checking of the hydraulic oil level. Lowering is controlled by a solenoid valve activated directly by the tiller pushbuttons.

### Electronic controls

The MOSFET combi controller manages both the AC traction motor and the DC lift motor. The use of MOSFET technology eliminates the need for power contactors. The increased energy efficiency, combined with the high output from the motors allows the truck to achieve optimum working performance from the battery. The characteristics of the traction motor and the control panel facilitate the use of effective reverse current and regenerative braking, without impairing energy efficiency, leaving electromagnetic braking for use only when parking and in emergencies. The driver can select the performance level most suitable for his operational needs from the four different pre-defined levels, or, if applicable, from a customised level with personalised parameters previously input by a technician.

### Options

Various options to make your investment even more productive are available, including;

- Cold store to -30°C
- Various combinations of fork lengths and widths
- Lateral Battery Extraction
- Dust ingress protection on drive motor.



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Specification is subject to change without notice

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Truck shown with optional equipment