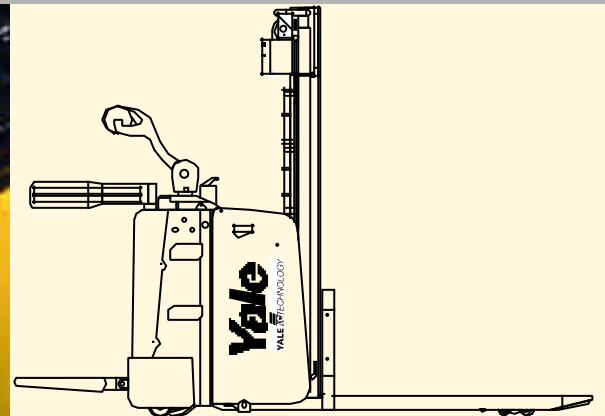


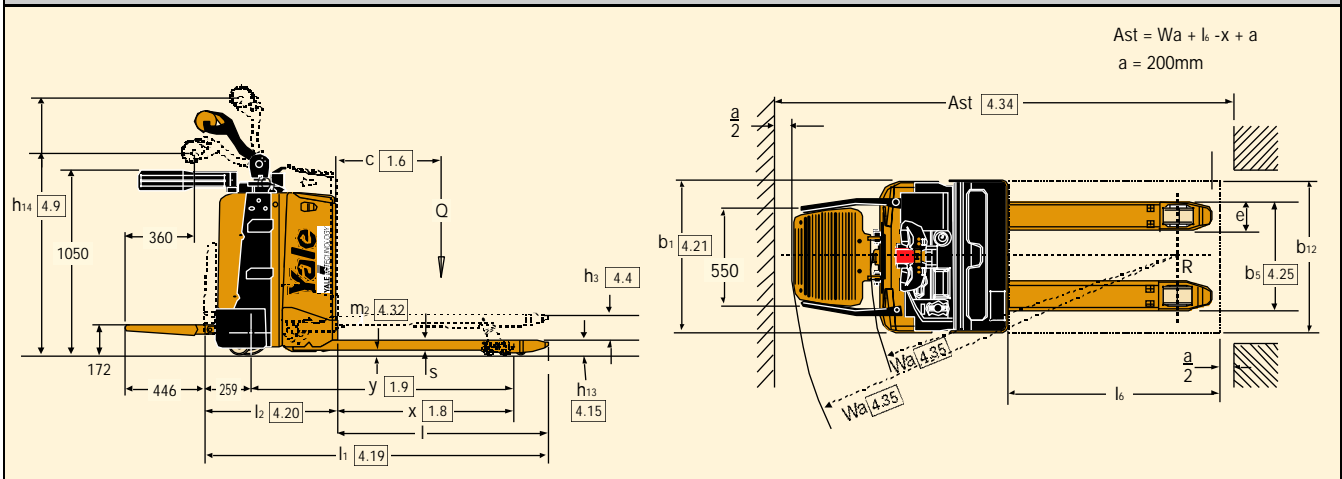
Powered Pallet truck with folding platform and side arms

Pedestrian or rider operation, 2,000 kg

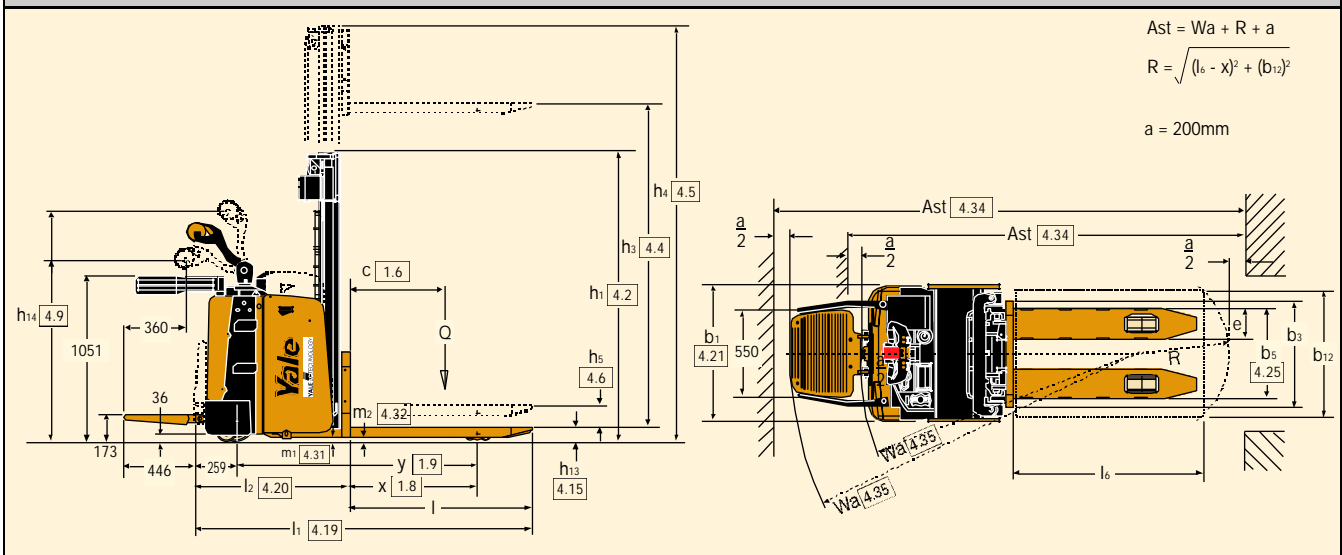


- Electric pallet truck with folding operator platform
- Side and rear protection models with fixed operator platform
- COMBI-MOSFET electronic control technology
- Yale AC Technology™
- Brushless power steering motor
- Double Pallet Handling Model
- Ride-on or pedestrian operation

Truck Dimensions - MP20X



Truck Dimensions - MP20XD

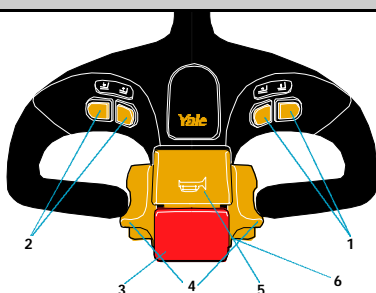


Aisle Widths

	MO20X					Battery Compartment 400 Ah**						
	b5 = 650mm					Pedestrian				Stand on		
	l	c	x*	fork overhang	length l6	y*	l1	wa*	ast	l1	wa*	ast
	980	400	801	179	1000	1321	1759	1580	1979	2205	2026	2425
	b5 = 520mm - 560mm					Pedestrian				Stand on		
	1183	600	1004	179	1200	1525	1962	1783	2179	2408	2230	2626
Roll container	1600	800	1421	179	1500	1942	2380	2201	2480	2826	2647	2926
Short pull rod	2356	1200	1405	951	2400	1926	3136	2185	3380	3582	2631	3826
Long pull rod	2356	1200	1860	496	2400	2381	3136	2640	3380	3582	3086	3826
Pull rod UK	2356	1200	1650	706	2400	2171	3136	2430	3380	3582	2876	3826

* With forks raised -103mm. ** = with 300Ah battery compartment -40mm, with 500Ah battery compartment + 50mm.

Tiller Head



- 1 MP20XD - proportional lift / lower buttons
MP20X - initial lift / lower buttons
- 2 on / off for initial lift
- 3 travel direction inverter button
- 4 butterfly control buttons for direction and speed
- 5 horn
- 6 creep speed (opposite side)

VDI 2198 - General Specifications

		Yale			Yale			Yale				
Characteristics	1.1	Manufacturer	Yale			Yale			Yale			
	1.2	Model designation	MP20X ⁽¹⁾			MP20X-MD ⁽¹⁾			MP20XD			
	1.3	Power: battery, diesel, LPG, electric mains	Battery			Battery			Battery			
	1.4	Operation: manual, pedestrian, stand, seat	Pedestrian (Stand-on)			Pedestrian (Stand-on)			Pedestrian (Stand-on)			
	1.5	Load capacity	Q (t)	2.0			2.0			1 + 1		
	1.6	Load centre	c (mm)	600			600			600		
	1.8	Load distance	x (mm)	1004 ⁽¹⁾			1004 ⁽¹⁾			992		
	1.9	Wheelbase	y (mm)	1485	1525	1575	1485			1702		
	Weights	2.1	Unladen weight (including battery)	kg	950 (1000) ⁽¹⁾			850 (900) ⁽¹⁾			(1100) 1050 ⁽⁹⁾	
2.2		Axle loading laden, front/rear	kg	1150 (1200) /1800 ⁽¹⁾			1070 (1120) /1780 ⁽¹⁾			(1150) 1100 / 1950 ⁽⁹⁾		
2.3		Axle loading unladen, front/rear	kg	750 (800) /200 ⁽¹⁾			670 (720) /180 ⁽¹⁾			(800) 750 / 300 ⁽⁹⁾		
Wheels and Tyres	3.1	Tyres: rubber, polyurethane, Vulkollan, front/rear	Vulkollan / Vulkollan			Vulkollan / Vulkollan			Vulkollan / Vulkollan			
	3.2	Tyre size, front	ø 254 x 90			ø 254 x 90			ø 254 x 90			
	3.3	Tyre size, rear	ø 85 x 94			ø 85 x 94			ø 85 x 74			
	3.4	Additional Wheels (dimensions)	ø 125 x 50			ø 125 x 50			ø 125 x 50			
	3.5	Wheels number front/rear (x = driven)	1x+2/4			1x+1/4			1x + 1 / 4			
	3.6	Track width, front	b 10 (mm)	526			484			484		
	3.7	Track width, rear	b 11 (mm)	390 ⁽¹⁾			390 ⁽¹⁾			375		
Dimensions	4.2	Height of mast, lowered	h1 (mm)							1560		
	4.3	Free lift	h2 (mm)							100		
	4.4	Lift height	h3 (mm)	130			130			1650		
	4.5	Height of mast, extended	h4 (mm)							2325		
	4.6	Initial lift	h5 (mm)							130		
	4.9	Height of tiller arm in working position min./max.	h14 (mm)	1220 / 1460			1220 / 1460			1220 / 1460		
	4.15	Lowered Height	h13 (mm)	85			85			90		
	4.19	Overall length (pedestrian)	l1 (mm)	1922	1962	2012	1922			2129		
	4.19	Overall length (stand-on)	l1 (mm)	2368 ⁽⁶⁾	2408 ⁽⁶⁾	2458 ⁽⁶⁾	2368 ⁽⁶⁾			2575 ⁽⁶⁾		
	4.20	Length to face of forks (pedestrian)	l2 (mm)	739	779	829	739			969		
	4.20	Length to face of forks (stand-on)	l2 (mm)	1185 ⁽⁶⁾	1225 ⁽⁶⁾	1275 ⁽⁶⁾	1185 ⁽⁶⁾			1415 ⁽⁶⁾		
	4.21	Overall width	b1/b2 (mm)	780			780			780		
	4.22	Fork dimensions	s/e/l (mm)	170/55/1183 ⁽⁵⁾			170/55/1183 ⁽⁵⁾			55 / 195 / 1190		
	4.23	Fork carriage DIN 15173, Class/form A, B								-		
	4.24	Fork carriage width	b3 (mm)							675		
	4.25	Outside fork width min./max ⁽¹⁾	b5 (mm)	560			560			570		
	4.31	Ground clearance under mast, laden	m1 (mm)							30		
	4.32	Ground clearance centre of wheelbase	m2 (mm)	30			30			30		
	4.33	Aisle width with pallet 1000x1200 crossways VDI 2198 (pedestrian)	Ast (mm)	1939	1979	2029	1939			2770		
		Aisle width with pallet 1000x1200 crossways VDI 2198 (stand-on)	Ast (mm)	2386 ⁽⁷⁾	2426 ⁽⁷⁾	2476 ⁽⁷⁾	2386 ⁽⁷⁾			3208 ⁽⁷⁾		
Aisle width with pallet 1000x1200 crossways VDI 3597 (pedestrian)		Ast (mm)							2178			
Aisle width with pallet 1000x1200 crossways VDI 3597 (stand-on)		Ast (mm)							2616 ⁽⁷⁾			
4.34		Aisle width with pallet 800x1200 lengthwise VDI 2198 (pedestrian)	Ast (mm)	2139	2179	2229	2139			2621		
		Aisle width with pallet 800x1200 lengthwise VDI 2198 (stand-on)	Ast (mm)	2586 ⁽⁷⁾	2626 ⁽⁷⁾	2676 ⁽⁷⁾	2586 ⁽⁷⁾			3059 ⁽⁷⁾		
4.34		Aisle width with pallet 800x1200 lengthwise VDI 3597 (pedestrian)	Ast (mm)							2378		
		Aisle width with pallet 800x1200 lengthwise VDI 3597 (stand-on)	Ast (mm)							2816 ⁽⁷⁾		
4.35		Turning radius (pedestrian - tiller in vertical position, snail function)	Wa (mm)	1743	1783	1833	1743			1970		
		Turning radius (stand-on)	Wa (mm)	2190 ⁽⁷⁾	2230 ⁽⁷⁾	2280 ⁽⁷⁾	2190 ⁽⁷⁾			2408 ⁽⁷⁾		
Performance	5.1	Travel speed laden/unladen (pedestrian)	km/h	6 / 6			6 / 6			6 / 6 ⁽¹⁰⁾		
	5.1	Travel speed laden/unladen (stand-on)	km/h	10 / 10,5 ⁽²⁾			6 / 6 ⁽⁹⁾			8 / 8,5 ⁽¹⁰⁾		
	5.2	Lift speed laden/unladen	m/s	0.03 / 0.04			0.03 / 0.04			0.16 / 0.22		
	5.3	Lowering speed	m/s	0.05 / 0.04			0.05 / 0.04			0.3 / 0.28		
	5.7	Gradeability laden/unladen ⁽³⁾	%	10 / 20 ⁽⁸⁾			10 / 20 ⁽⁸⁾			8 / 10		
	5.8	Max. gradeability laden/unladen ⁽³⁾	%	10 / 20 ⁽⁸⁾			10 / 20 ⁽⁸⁾			8 / 10		
5.10	Service Brake		el.magnetic			el.magnetic			el.magnetic			
Power Unit	6.1	Drive motor, S2 60 minute rating	kW	4			2.2			4.0		
	6.2	Lift motor, S3 16% rating	kW	2.0			2.0			2.0		
	6.3	Battery according to DIN 43531/35/36 A,B,C, no		no	no	no	no			no		
	6.4	Battery voltage/capacity at 5 hours rate	V/Ah	24/210			24/210					
				24/250	24/400	24/500	24/250			24 / 300		
	6.5	Battery weight (+/- 5%)	kg	24/300			24/300					
215						215						
6.6	Consumption according to VDI cycle	kWh/h	/			/			/			
Misc.	8.1	Drive control		Mosfet ~ AC			Mosfet ~ AC			Mosfet ~ AC		
	8.4	Average noise level at operator's ear	dB (A)	< 70			< 70			< 70		

⁽¹⁾ Value refer to truck with Servo Power Steering and battery compartment of 400Ah (300Ah for MD) and fork dimensions b5=560, L=1183
⁽²⁾ Speed with electric Servo Power Steering. For higher speed applications consult your dealer.
⁽³⁾ Values determined by wheel friction, if climbing ramps frequently (within 1h), consult your dealer
⁽⁴⁾ With mechanical steering and without side gates, 6/6km/h. With optional fixed or foldable side protection, 8/8.5km/h
⁽⁵⁾ See the adjacent table for additional forks dimensions

⁽⁶⁾ Add 61mm for fixed side protection. Add 110mm for fixed back protection.
⁽⁷⁾ Add 75mm for fixed side protection. Add 114mm for fixed back protection
⁽⁸⁾ 10/15 fixed side protection, 10/14 fixed back protection
⁽⁹⁾ Values refer to a truck equipped with mast as in row 4.4, and battery as in row 6.4
⁽¹⁰⁾ Traction speeds may vary with lift height
 () Value or text in parentheses refer to trucks fitted with fixed side protection or fixed rear protection

Models:

MP20X, MP20XD

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 accessible without having to lift the hand from the handle. Dual lift and lower buttons located on the tiller head can be readily accessed for left or right hand use. The travel direction inverter button is designed for maximum angle of contact with the operator's body. When activated, the direction of travel is automatically reversed and the truck comes to a stop. The horn is located on top of the tiller head actuated by thumb or forefinger. The creep speed control allows the truck to be operated with the tiller arm in the vertical position at reduced speed for manoeuvring in tight confines. 4 pre-set performance settings provide different performance levels for forward and reverse travel speeds, reverse current braking, release braking, lift speed and acceleration, easily selectable to suit driver preference. The MP20XD model includes a proportional control for lift.

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

Instrumentation

The pallet truck's dashboard features a multi-function indicator displaying information on the status of the truck and alarm conditions should they occur. Operational information includes the battery discharge indicator, odometer and performance level. The red mushroom button can be pressed to stop the pallet truck immediately in case of emergency.

Operator platform

The large operator platform allows the operator to find their own comfortable driving position; the foldable side arms are high relative to the level of the platform, providing the operator with maximum comfort and stability when manoeuvring. The cushioned platform incorporates an operator presence switch (or "man on board" sensor), preventing the truck from operating with no driver present. Optional rear access and side access fixed protection types are available, suitable for shuttle activity over medium to long distances. The dashboard has compartments for stationery and other small items with an optional A4 document holder.

Power-assisted steering

The electric motor completely eliminates steering effort, making the truck light and

easy to steer in all working situations. The power steering reacts quickly so there is no loss of performance compared to mechanical steering. Mechanical steering is standard for the MP20X-MD.

Chassis and forks

The pressed steel welded chassis is surface treated and painted with two-component epoxy paint. The 780mm width allows the handling of loads in tight spaces, such as inside containers or on lorry trailers. An optional lateral battery change is available. The forks have a low profile of 55 mm to assist picking up of low entry loads with a 130mm lift. The robust forks are made with two solid longitudinal members covered with a closing and reinforcing sheet. The ends are tapered and fitted with skid plates which enhance the handling of bottom boarded pallets.

MP20- XD

Mast and pallet forks (Q=1000 kg) A duplex high visibility mast, with protective wire mesh guard, provides 1650mm (h3) lift, mounted on the load arms. The rollers are sealed to maximise the service life of the pallet truck.

Initial lift forks (pallet truck)

The initial lift increases the floor clearance for travel over uneven surfaces, loading platforms, dockplates and ramps. Proportional buttons control lifting and lowering. Adjustable pull rods provide smooth and even lifting and lowering of the load arms. Heavy-duty tandem load wheels with grease points and sealed bearings are fitted as standard. With the pallet forks raised, traction is automatically cut when they are raised above 1.5m.

The combination of the raised mast and the initial lift can transport and stack two loads weighing 1,000 kgs each. A lateral battery change system is fitted as standard.

Battery

A full range of power options is provided by the choice of batteries. Batteries are 24 V with capacities of 210/300 Ah (standard MP20X-MD, MP20XD) or 400 Ah (standard MP20X), and a maximum battery capacity option of 500 Ah for MP20X.

Rollers and wheels

Rollers and wheels are Vulkollan. Tandem load wheels are fitted as standard. A single wheel, with smaller carrying capacity, and tandem or individual twin wheels are optional. On the MP20X the castor wheels are sprung with a torsion bar to facilitate manoeuvring and stability on uneven ground and loading ramps. The castor wheel on the MP20XD has limited suspension to

guarantee stability as well as traction.

Electric motors

The AC motor is 4 Kw (2,2Kw on the MP20X-MD), with instant response to forward and reverse traction inputs, providing considerable torque. The maintenance free motor (inspection intervals required every 1000 operating hours) provides low cost long operative life. The servo-steering with brushless motor with permanent magnets is maintenance free and incorporates the electronic control system. The lifting motor is DC compound of 2 kw, providing power in excess of the truck's operative requirements.

Traction – steering unit

The cast-iron gear train has helicoidal gears immersed in an oil bath. The motor is mounted vertically for efficient ventilation and to eliminate flexing stresses to the power cables to ensure reduced downtime. The steering is effected by gears, a maintenance and regulation-free system based on higher specification models

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 Combi MOSFET controller manages both the AC traction engine and the DC lifting motor reducing the need for electrical contactors. High energy efficiency and motor performance allow considerable hourly usage in operation, reducing battery charging. The combined characteristics of the traction motor and the control panel enhance efficiency of release and inversion braking, without reduction of autonomy, leaving the electromagnetic brake for parking and emergencies only. Electronic parameters are easily customised by a service technician with the choice of 4 pre-set performance levels.

Options

Options are available include:

- Cold store -30°C
- Forks of varying length and width
- Fixed protection with rear access (Biga)
- Fixed protection with side access (Bob)
- Twin-bed changeover for battery change
- Load backrest
- Lateral battery extraction (MP20X – MP20X-MD)



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

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Truck shown with optional equipment