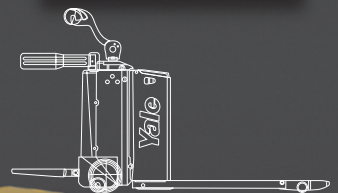


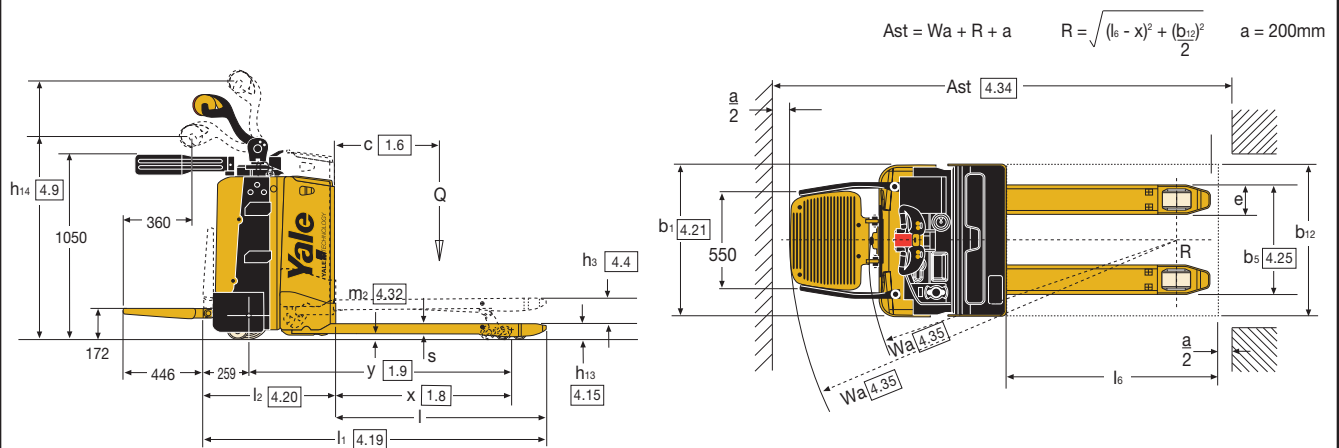
MPX, MPXV, MPXD Series

Powered Pallet Truck with folding platform and side arms
Pedestrian or Rider Operation - 2,000kg

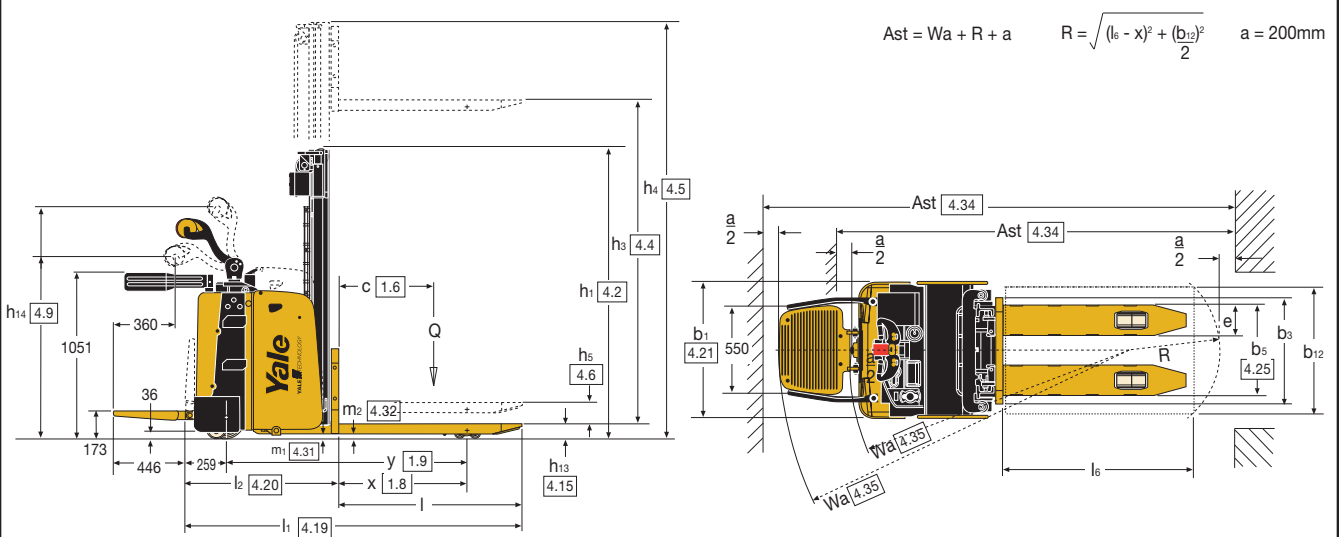


- Side and rear protection models with fixed operator platform
- COMBI-MOSFET electronic control technology
- Yale AC Technology™
- Brushless power steering motor
- Double Pallet Handling model
- Ride-on or pedestrian operation

Truck Dimensions - MP20X, MP20XV



Truck Dimensions - MP20XD



Aisle Widths - MP20X

	MP20X					Battery Compartment 400 Ah**						
	b ₅ = 650mm					Pedestrian				Stand		
	l	c	x*	fork overhang	length l ₆	y*	l ₁	wa*	ast	l ₁	wa*	ast
	980	400	801	179	1000	1321	1759	1580	1979	2205	2026	2425
Roll container	b ₅ = 520mm - 560mm					Pedestrian				Stand		
	1183	600	1004	179	1200	1525	1962	1783	2179	2408	2230	2626
	1600	800	1421	179	1500	1942	2380	2201	2480	2826	2647	2926
	2356 ♦	1200	1405	951	2400	1926	3136	2185	3380	3582	2631	3826
	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.

♦ With forks longer than 1600mm, e = 180mm

Fork and chassis dimensions - MP20XV

Battery compartment size for;	b ₅ = 520mm	b ₅ = 560mm	b ₅ = 650mm	l (mm)	x (mm)
210Ah battery	✓	✓	✓	988	809
	✓	✓	✓	1191	1012
	✓	✓	✓	1608	1430
315Ah battery	✓	✓	✓	988	809
	✓	✓	✓	1191	1012
	✓	✓	✓	1608	1430

VDI 2198 - General Specifications

Characteristics	1.1	Manufacturer	Yale		Yale			Yale
	1.2	Model designation	MP20XV		MP20X			MP20XD
	1.3	Power: battery, diesel, LPG, electric mains	Battery		Battery			Battery
	1.4	Operation; manual, pedestrian, stand, seat, order picker	Pedestrian / Stand		Pedestrian / Stand			Pedestrian / Stand
	1.5	Load capacity	Q (kg)	2000	2000			1000 + 1000
	1.6	Load centre	c (mm)	600	600			600
	1.8	Load distance	x (mm)	1012 ^(A)	1004 ⁽¹⁾			992
	1.9	Wheelbase	y (mm)	1419	1491	1485	1525	1575
	1.9	Wheelbase	y (mm)	1419	1491	1485	1525	1575
Weights	2.1	Unladen weight (including battery)	kg	750 ^{(A) (B)}	875 ^{(A) (B)}	950 ⁽¹⁾ (1000) ^(B)		
	2.2	Axle loading laden, front/rear	kg	1050 / 1700 ^{(A) (B)}	1150 / 1725 ^{(A) (B)}	1150 ⁽¹⁾ (1200) ^(B) / 1800 ⁽¹⁾		
	2.3	Axle loading unladen, front/rear	kg	550 / 200 ^{(A) (B)}	650 / 225 ^{(A) (B)}	750 ⁽¹⁾ (800) ^(B) / 200 ⁽¹⁾		
Wheels and Tyres	3.1	Tyres: rubber, polyurethane, Vulkollan, front/rear		Vulkollan / Vulkollan		Vulkollan / Vulkollan		
	3.2	Tyre size, front		230 x 75		ø 254 x 90		
	3.3	Tyre size, rear		85 x 94		ø 85 x 94		
	3.4	Additional wheels (dimensions)		125 x 50		ø 125 x 50		
	3.5	Wheels number front/rear (x = driven)		1x + 2/2 / 1x + 2/4		1x + 2/4		
	3.6	Track width, front	b10 (mm)	480		526		
	3.7	Track width, rear	b11 (mm)	390 ^(A)		390 ⁽¹⁾		
Dimensions	4.2	Height of mast, lowered	h1 (mm)	-		-		
	4.3	Free lift	h2 (mm)	-		-		
	4.4	Lift height	h3 (mm)	130		130		
	4.5	Height of mast, extended	h4 (mm)	-		-		
	4.6	Initial lift	h5 (mm)	-		-		
	4.9	Height of tiller arm in working position min./max.	h14 (mm)	1220 / 1460		1220 / 1460 ⁽¹⁰⁾		
	4.15	Height, forks lowered	h13 (mm)	85		88		
	4.19	Overall length (pedestrian)	l1 (mm)	1850	1922	1922	1962	2012
		Overall length (stand)	l1 (mm)	2296 ^(C)	2368 ^(C)	2368 ⁽⁴⁾	2408 ⁽⁴⁾	2458 ⁽⁴⁾
	4.20	Length to face of forks (pedestrian)	l2 (mm)	658	730	739	779	829
		Length to face of forks (stand)	l2 (mm)	1104 ^(C)	1176 ^(C)	1185 ⁽⁴⁾	1225 ⁽⁴⁾	1275 ⁽⁴⁾
	4.21	Overall width	b1/b2 (mm)	716		780		
	4.22	Fork dimensions	s/e/l (mm)	55 / 170 / 1191		55 / 170 / 1183 ⁽³⁾		
	4.24	Fork carriage width	b3 (mm)	-		-		
	4.25	Maximum width across forks	b5 (mm)	560 ^(A)		560 ⁽¹⁾		
	4.31	Ground clearance under mast, with load	m1 (mm)	-		-		
	4.32	Ground clearance centre of wheelbase	m2 (mm)	30		30		
	4.33	Aisle width with pallet, 1000mm x 1200mm wide (pedestrian)	Ast (mm)	1858	1930	1939	1979	2029
		Aisle width with pallet, 1000mm x 1200mm wide (stand)	Ast (mm)	2308 ^(B)	2380 ^(B)	2386 ^(B)	2426 ^(B)	2476 ^(B)
	4.34	Aisle width with pallet, 800mm x 1200mm long (pedestrian)	Ast (mm)	2058	2130	2139	2179	2229
		Aisle width with pallet, 800mm x 1200mm long (stand)	Ast (mm)	2508 ^(B)	2580 ^(B)	2586 ^(B)	2626 ^(B)	2676 ^(B)
Performance	4.35	Turning radius (pedestrian)	Wa (mm)	1670	1742	1743	1783	1833
		Turning radius (stand)	Wa (mm)	2120 ^(B)	2192 ^(B)	2190 ^(B)	2230 ^(B)	2280 ^(B)
		Travel speed with/without load (pedestrian)	km/h	6.0 / 6.0		4.0 / 4.0		
	5.1	Travel speed with/without load (stand)	km/h	6.0 / 6.0 (7.4 / 7.5) ^(E)		8.5 / 12.0		
	5.2	Lift speed with/without load	m/s	0.03 / 0.04		0.03 / 0.03		
	5.3	Lowering speed with/without load	m/s	0.05 / 0.04		0.04 / 0.03		
	5.7	Gradeability with/without load ⁽²⁾	%	10 / 20 ^(B)	10 / 20 ^(B)	10 / 20 ^(B)		
	5.8	Max. gradeability with/without load ⁽²⁾	%	10 / 20 ^(B)	10 / 20 ^(B)	10 / 20 ^(B)		
	5.10	Service brake		Electromagnetic		Electromagnetic		
	6.1	Drive motor, S2 60 minute rating	kW	2.0		4.0		
Power Unit	6.2	Lift motor, S3 6% rating	kW	1.4		1.4		
	6.3	Battery according to DIN 43531/35/36 A,B,C, no		no	no	no	no	no
				-	-	24/210	-	-
	6.4	Battery voltage/capacity at 5 hours rate	V/Ah	24 / 210-250	24 / 315-375	24/250	24/400	24/500
				-	-	24/300	-	-
				-	-	212	-	-
	6.5	Battery weight (+/- 5%)	kg	215 - 240	297 - 317	212	303	364
Misc.	6.6	Energy consumption according to VDI cycle	kWh/h	0.44		0.47		
	8.1	Drive control		MOSFET ~ AC		MOSFET ~ AC		
	8.4	Average noise level at operator's ear according to EN 12053	dB (A)	< 70		< 70		

MP20XV

- ⁽²⁾ Values determined by wheel friction - if climbing ramps frequently (several times an hour), consult your dealer.
- ^(B) 10/15 fixed side protection, 10/14 fixed back protection.
- ^(A) Values refer to truck with a battery compartment of 210Ah and fork dimensions b5 = 560mm, l = 1191mm.
- ^(B) Add 50kg with fixed back protection.
- ^(C) Add 110mm with fixed back protection.
- ^(D) Add 114mm with fixed back protection.
- ^(E) Values in parentheses refer to trucks fitted with fixed side protection.

MP20X, MP20XD

- ⁽¹⁾ Values refer to truck with a battery compartment of 400Ah and fork dimensions b5 = 560mm, l = 1183mm.
- ⁽²⁾ Values determined by wheel friction - if climbing ramps frequently (several times an hour), consult your dealer.
- ⁽³⁾ See the adjacent table for additional forks dimensions.
- ⁽⁴⁾ Add 61mm for fixed side protection. Add 110mm for fixed back protection.
- ⁽⁵⁾ Add 75mm for fixed side protection. Add 114mm for fixed back protection.
- ⁽⁶⁾ 10/15 fixed side protection, 10/14 fixed back protection.
- ⁽⁷⁾ Values refer to a truck equipped with mast as in line 4.4, and battery as in line 6.4.
- ⁽⁸⁾ Traction speeds may vary with lift height.
- ⁽⁹⁾ Value in parentheses refer to trucks fitted with fixed side protection or fixed rear protection.
- ⁽¹⁰⁾ For versions with Fixed Platform and Scooter Control, height of tiller head is 1275mm

MPX, MPXV, MPXD Series

Models: MP20X, MP20XV, 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.

MP20X versions with a fixed platform are available with Scooter Control steering as an option, which helps to reduce operator effort while steering. By keeping the operator within the footprint of the truck and close to the truck frame, it increases operator protection and fork tip visibility is excellent.

Instrumentation

The pallet truck's dashboard features a multi-function indicator displaying information on the status of the truck and warnings should they occur. Operational information includes the battery discharge indicator, hourmeter 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.

Electric Fly-by-Wire Steering System

The operator requires minimum effort to manoeuvre the truck. In addition the turning rotation ratio of the tiller arm to the drive wheel has been increased to 75°:90° – this means that when the operator turns the tiller arm 75°, the drive wheel turns 90°. The operator is therefore able to carry out the required handling tasks with reduced effort and arm movement, reducing driver fatigue and increasing productivity.

Direct steering (MP20XV)

The direct steering system design reduces the steering effort, making the truck easy to steer in all working situations. The steering reacts immediately to ensure maximum performance.

Chassis and forks

The pressed steel welded chassis is surface treated and painted with two component epoxy paint. The 780mm width (MP20XV = 716mm) 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 and a closing and reinforcing sheet. The ends are tapered and fitted with skid plates which enhance the handling of bottom boarded pallets.

MP20XD

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. Standard batteries are 24 V with capacities of 210Ah (standard MP20XV), 210/300 Ah (standard 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 and XV 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, (MP20XV = 2kW) 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 lifting motor is DC compound, providing power for 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 motor 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 side protection with rear access (Biga)
- Fixed rear protection with side access (Bob)
- Twin-bed changeover for battery change
- Load backrest
- Lateral battery extraction (MP20X)



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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