Technical sheet:

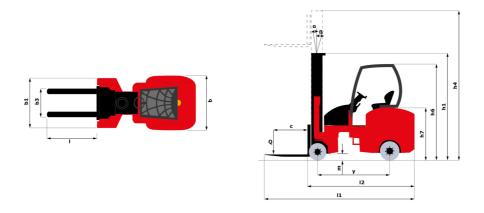
EMA II 20 HD-2





Model Name			EMA II 20 HD-2	breated on April 11, 2020 at 3.20 f M
Model Name		Technical characteristics		Metric
	1.1	Manufacturer		Manitou
	1.2	Model Name		EMA II 20 HD-2
Max. capacity	1.3	Power source		Electrical
Load cleater of gastly C	1.4	Operator type		Seated
Load distance, centre of drive axie to fook x 278 mm 1745	1.5	Max. capacity	Q	2000 kg
	1.6	Load center of gravity	c	500 mm
	1.8	- ,	X	
	1.9		٧	1745 mm
Service weight				
Weight on front ashe (laden) / rear ashe (Unideen)	2.1	•		8700 kg
Weight on front axie (Unladen) / rear axie (Unladen) Solid times S	2.2	•		-
Nine	2.3	. , , , ,		
Tires type	2.0	- , , , ,		0.00 kg / 0220 kg
Dimensions of front wheels	3 1			Solid tires
Dimensions of rear wheels				
Number of front wheels / rear wheels 2 / 2				
5.5.2 Number of drive wheels 2 2.6.6 Front wheel gauge b10 1110 mm 3.7 Rear wheel gauge b11 1370 mm 1.7 Height of overhead guard (cabin) h6 2260 mm 8.8 Set height/stank height h7 1200 mm .19 Overall length 11 3710 mm .20 Length to face of forks 12 2560 mm .21 Overall width b1 1350 mm .22 Forks section / width / length \$ / e / l 40 mm x 125 mm x 1150 mm .23 Fork carriage ISO 2378 (class/form) A/B 2 2 .24 Fork carriage ISO 2378 (class/form) A/B 3 800 mm .31 Ground clearance at centre of wheelbase m1 50 mm .32 Ground clearance at centre of wheelbase m2 130 mm .33 Alse levidith for 800 x 1200 crossways Ast 2000 mm .41 Aisle width for 800 x 1200 pallet lengthways Ast 2000 mm .5.1 Travel speed (laden / unladen) <td></td> <td></td> <td></td> <td></td>				
110 111 110 mm 111 110 mm 111 110 mm 111 11370 mm 111 110 mm				
Rear wheel gauge bil 1370 mm			h10	
Height of overhead guard (cabin) h6 2260 mm 18.8	3./		DII	1370 mm
1.8. Seat height/stand height h7 1200 mm .19 Overall length I1 3710 mm .20 Length to face of forks I2 2550 mm .21 Overall width b1 1350 mm .22 Fork section / width / length s / e / I 40 mm x 125 mm x 1150 mm .22 Fork carriage width b3 860 mm .31 Ground clearance below mast m1 50 mm .32 Ground clearance to wheelbase m2 130 mm .33 A isle width for 800 x 1200 crossways Ast 2000 mm .34 A isle width for 800 x 1200 pallet lengthways Ast 2000 mm .34 A isle width for 800 x 1200 pallet lengthways Ast 2000 mm .35 I fave leged (laden / unladen) 8.50 km/h 9 km/h 0.35 m/s -0.45 m/s .35 Lowering speed (laden / unladen) 0.35 m/s -0.45 m/s 6 % / 8 % .36 Lowering speed (laden / unladen) 6 % / 8 % 9 kW .31 D rive motor rating sS 60 min 10 kW 10 kW	4.7		h.c	0060
19 Overall length				
Length to face of forks 12 2560 mm 21 Overall width 1350 mm 22 Forks section / width / length 5 / e / l 40 mm x 1150 mm 23 Fork carriage lSt0 2328 (class/form) A/B 2 24 Fork carriage lSt0 2328 (class/form) A/B 2 24 Fork carriage width 53 860 mm 31 Ground clearance below mast m1 50 mm 32 Ground clearance at centre of wheelbase m2 130 mm 33 Aisle Width for pallets 1000 x 1200 crossways Ast 2000 mm 34 Aisle Width for 800 x 1200 pallet lengthways Ast 2200 mm 25 Performances				
.21 Overall width b1 1350 mm .22 Fork section / width / length s / e / l 40 mm x 125 mm x 1150 mm .23 Fork carriage ISO 2328 (class/form) A/B 2 2 .24 Fork carriage width B3 860 mm .31 Ground clearance below mast m1 50 mm .32 Gound clearance at centre of wheelbase m2 130 mm .33 A isle Width for pallets 1000 x 1200 crossways Ast 2000 mm .34 A isle width for 800 x 1200 pallet lengthways Ast 2000 mm .51 Travel speed (laden / unladen) 8.50 km/h-9 km/h 6.50 km/h-9 km/h .52 Lifting speed (laden / unladen) 9.035 m/s-0.45 m/s 6.50 km/h-9 km/h 6.50 km/h-9 km/h .53 Lowering speed (laden / unladen) 9.035 m/s-0.45 m/s 6.50 km/h-9 km/h		•		
.22 Forks section / width / length s / e / l 40 mm x 125 mm x 1150 mm .23 Fork carriage Width b3 860 mm .24 Fork carriage width b3 860 mm .31 Ground clearance at centre of wheelbase m2 130 mm .32 Ground clearance at centre of wheelbase m2 130 mm .34 Aisle Width for pallets 1000 x 1200 crossways Ast 2000 mm .34 Aisle width for 800 x 1200 pallet lengthways Ast 2200 mm .51 Travel speed (laden / unladen) 8.50 km/h-9 km/h .52 Lifting speed (laden / unladen) 8.50 km/h-9 km/h .53 Lowering speed (laden / unladen) 9.85 km/h-9 km/h .54 Sardeability (laden / unladen) 6 % / 8 % .57 Gradeability (laden / unladen) 9.85 km/h-9 km/h .50 Sardice brake 9 kW .51 Drive motor rating \$2.50 min 9 kW .52 Lift motor rating \$2.50 min 9 kW .53 Battery worlang / capacity 48 V / 930 Ah .54				
2.23 Fork carriage ISO 2328 (class/form) A/B 2 2.24 Fork carriage width b3 860 mm 3.11 Ground clearance at centre of wheelbase m1 50 mm .32 Ground clearance at centre of wheelbase m2 130 mm .33 Aisle Width for pallets 1000 x 1200 crossways Ast 2000 mm .34 Aisle width for 800 x 1200 pallet lengthways Ast 2200 mm Performances .10 Travel speed (laden / unladen) 8.50 km/h-9 km/h .5.1 Lifting speed (laden / unladen) 0.35 m/s-0.45 m/s .5.2 Lifting speed (laden / unladen) 0.40 m/s-0.36 m/s .5.3 Lowering speed (laden / unladen) 0.40 m/s-0.36 m/s .5.1 Service brake Hydraulic Engline 10 time motor rating \$2.60 min 10 kW .5.1 Drive motor rating \$2.50 min 10 kW .5.2 Lift motor rating at \$3.15% 9 kW .5.4 Battery voltage / capacity 48 V/930 Ah .5.5 Battery according to DiN 43531/35/36 A, B, C 1300 kg				
Fork carriage width			s / e / l	
.31 Ground clearance below mast m1 50 mm .32 Ground clearance at centre of wheelbase m2 130 mm .33 Aisle Width for pallets 1000 x 1200 crossways Ast 2000 mm .34 Aisle width for 800 x 1200 pallet lengthways Ast 2200 mm .34 Performances		, ,		
.32 Ground clearance at centre of wheelbase m2 130 mm .33 Aisle Width for pallets 1000 x 1200 crossways Ast 2000 mm .34 Aisle width for 800 x 1200 pallet lengthways Ast 2200 mm Performances .10 Tavel speed (laden / unladen) 8.50 km/h-9 km/h .5.2 Lifting speed (laden / unladen) 0.35 m/s-0.45 m/s .5.3 Lowering speed (laden / unladen) 0.40 m/s-0.36 m/s .5.7 Gradeability (laden / unladen) 6 % / 8 % .10 Service brake Hydraulic Engine 10 kW .5.1 Drive motor rating S2 60 min 10 kW .5.2 Lift motor rating at S3 15% 9 kW .5.3 Battery according to DIN 43531/35/36 A, B, C DIN 43595 .5.4 Battery voltage / capacity 48 V / 930 Ah .5.5 Battery weight (*/- 5%) 1300 kg .5.5 Battery weight (*/- 5%) 1300 kg .5.5 Battery weight (*/- 5%) Moster AC speed controller .5.2 Working hydraulic pressure for attachments <td>4.24</td> <td>· ·</td> <td></td> <td></td>	4.24	· ·		
.33 Aisle Width for pallets 1000 x 1200 crossways Ast 2000 mm .34 Aisle width for 800 x 1200 pallet lengthways Ast 2200 mm Performances .5.1 Travel speed (laden / unladen) 8.50 km/h-9 km/h .5.2 Lifting speed (laden / unladen) 0.35 m/s-0.45 m/s .5.3 Lowering speed (laden / unladen) 0.40 m/s-0.36 m/s .5.7 Gradeability (laden / unladen) 6 % / 8 % .5.7 Gradeability (laden / unladen) 6 % / 8 % .5.1 Drive motor rating seed on the following of the following o	4.31			
3.34 Aisle width for 800 x 1200 pallet lengthways Ast 2200 mm Performances 5.1 Travel speed (laden / unladen) 8.50 km/h-9 km/h 5.2 Lifting speed (laden / unladen) 0.35 m/s-0.45 m/s 5.3 Lowering speed (laden / unladen) 6 % / 8 % 5.7 Gradeability (laden / unladen) 6 % / 8 % 5.7 Service brake Hydraulic 6.7 Engine 10 kW 5.1 Drive motor rating \$2.60 min 10 kW 5.2 Lift motor rating \$2.50 min 9 kW 5.3 Battery according to DIN 43531/35/36 A, B, C DIN 43595 5.4 Battery voltage / capacity 48 V / 930 Ah 5.5 Battery weight (+/- 5%) 1300 kg 8.1 Type of drive control Mosfet AC speed controller 8.2 Working hydraulic pressure for attachments 200 bar 8.3 Oil flow rate for attachments 25 l/min 8.4 Measured/guaranteed mean noise level at the ear of the operator < 73 dB	4.32		m2	
Performances	4.33	Aisle Width for pallets 1000 x 1200 crossways	Ast	2000 mm
5.1 Travel speed (laden / unladen) 8.50 km/h·9 km/h 5.2 Lifting speed (laden / unladen) 0.35 m/s-0.45 m/s 5.3 Lowering speed (laden / unladen) 0.40 m/s-0.36 m/s 5.7 Gradeability (laden / unladen) 6 % / 8 % 5.7 Gradeability (laden / unladen) 6 % / 8 % 5.10 Service brake Hydraulic Engine 5.1 Drive motor rating \$2.60 min 10 kW 5.2 Lift motor rating at \$3.15% 9 kW 5.3 Battery according to DIN 43531/35/36 A, B, C DIN 43595 5.4 Battery voltage / capacity 48 V / 930 Ah 5.5 Battery weight (+/- 5%) 1300 kg Miscellaneous 3.1 Type of drive control Mosfet AC speed controller 3.2 Working hydraulic pressure for attachments 200 bar 3.3 Oil flow rate for attachments 25 l/min 3.4 Measured/guaranteed mean noise level at the ear of the operator < 73 dB	4.34	Aisle width for 800 x 1200 pallet lengthways	Ast	2200 mm
5.2 Lifting speed (laden / unladen) 0.35 m/s-0.45 m/s 5.3 Lowering speed (laden / unladen) 0.40 m/s-0.36 m/s 5.7 Gradeability (laden / unladen) 6 % / 8 % 5.1 Service brake Hydraulic 5.1 Drive motor rating S2 60 min 10 kW 5.2 Lift motor rating at S3 15% 9 kW 5.3 Battery according to DIN 43531/35/36 A, B, C DIN 43595 5.4 Battery voltage / capacity 48 V / 930 Ah 5.5 Battery weight (+/- 5%) 1300 kg Miscellaneous 3.1 Type of drive control Mosfet AC speed controller 3.2 Working hydraulic pressure for attachments 200 bar 3.3 Oil flow rate for attachments 25 l/min 3.4 Measured/guaranteed mean noise level at the ear of the operator < 73 dB				
Lowering speed (laden / unladen) Gradeability (laden / unladen) Service brake Engine 5.1 Drive motor rating \$2.60 min 5.2 Lift motor rating at \$3.15% Battery according to DIN 43531/35/36 A, B, C 5.4 Battery voltage / capacity Battery weight (+/- 5%) Miscellaneous 8.1 Type of drive control Working hydraulic pressure for attachments 3.2 Working hydraulic pressure for attachments 3.3 Oil flow rate for attachments Measured/guaranteed mean noise level at the ear of the operator 1 0.40 m/s-0.36 m/s Hydraulic 1 10 kW 1 10 kW 9 kW 1 30 kg 1 300 kg Mosfet AC speed controller 2 200 bar 4 3 4 Measured/guaranteed mean noise level at the ear of the operator 4 73 dB	5.1	Travel speed (laden / unladen)		8.50 km/h-9 km/h
Gradeability (laden / unladen) Service brake Engine 5.1 Drive motor rating \$2.60 min 5.2 Lift motor rating at \$3.15% Satery according to DIN 43531/35/36 A, B, C DIN 43595 5.4 Battery voltage / capacity Battery weight (+/- 5%) Miscellaneous 3.1 Type of drive control Working hydraulic pressure for attachments 3.2 Working hydraulic pressure for attachments 3.3 Oil flow rate for attachments Measured/guaranteed mean noise level at the ear of the operator Messured/guaranteed mean noise level at the ear of the operator	5.2	Lifting speed (laden / unladen)		0.35 m/s-0.45 m/s
Engine 5.1 Drive motor rating \$2 60 min 5.2 Lift motor rating to DIN 43531/35/36 A, B, C 5.4 Battery voltage / capacity 6.5 Battery weight (+/- 5%) 6.6 Battery weight (+/- 5%) 6.7 Miscellaneous 8.1 Type of drive control 8.2 Working hydraulic pressure for attachments 8.3 Oil flow rate for attachments 8.4 Measured/guaranteed mean noise level at the ear of the operator 6.5 Mydraulic 8.6 Measured/guaranteed mean noise level at the ear of the operator 6.7 A dB 6.8 Mydraulic 6.9 Hydraulic 6.1 DiN 43595 6.4 A Battery voltage / capacity 6.5 Battery weight (+/- 5%) 6.6 Battery weight (+/- 5%) 6.7 DIN 43595 6.8 Working hydraulic pressure for attachments 6.9 Working hydraulic	5.3	Lowering speed (laden / unladen)		0.40 m/s-0.36 m/s
Engine Incomposition Incomposition </td <td>5.7</td> <td>Gradeability (laden / unladen)</td> <td></td> <td>6 % / 8 %</td>	5.7	Gradeability (laden / unladen)		6 % / 8 %
5.1 Drive motor rating \$2.60 min 10 kW 5.2 Lift motor rating at \$3.15% 9 kW 5.3 Battery according to DIN 43531/35/36 A, B, C DIN 43595 5.4 Battery voltage / capacity 48 V / 930 Ah 5.5 Battery weight (+/- 5%) 1300 kg Miscellaneous 3.1 Type of drive control Mosfet AC speed controller 3.2 Working hydraulic pressure for attachments 200 bar 3.3 Oil flow rate for attachments 25 l/min 3.4 Measured/guaranteed mean noise level at the ear of the operator < 73 dB	5.10	Service brake		Hydraulic
5.2 Lift motor rating at S3 15% 9 kW 5.3 Battery according to DIN 43531/35/36 A, B, C DIN 43595 5.4 Battery voltage / capacity 48 V / 930 Ah 5.5 Battery weight (+/- 5%) 1300 kg Miscellaneous 3.1 Type of drive control Mosfet AC speed controller 3.2 Working hydraulic pressure for attachments 200 bar 3.3 Oil flow rate for attachments 25 l/min 3.4 Measured/guaranteed mean noise level at the ear of the operator < 73 dB		Engine		
Battery according to DIN 43531/35/36 A, B, C DIN 43595 48 V / 930 Ah 5.5 Battery weight (+/- 5%) Miscellaneous 3.1 Type of drive control Working hydraulic pressure for attachments 3.2 Working hydraulic pressure for attachments 3.3 Oil flow rate for attachments Measured/guaranteed mean noise level at the ear of the operator DIN 43595 48 V / 930 Ah 1300 kg Mosfet AC speed controller 200 bar 25 l/min 473 dB	6.1	Drive motor rating \$2 60 min		10 kW
Battery voltage / capacity Battery weight (+/- 5%) Miscellaneous 3.1 Type of drive control Working hydraulic pressure for attachments 3.2 Working hydraulic pressure for attachments 3.3 Oil flow rate for attachments Measured/guaranteed mean noise level at the ear of the operator 48 V / 930 Ah 1300 kg Mosfet AC speed controller 200 bar 25 l/min 47 3 dB	6.2	Lift motor rating at S3 15%		9 kW
Battery weight (+/- 5%) Miscellaneous 3.1 Type of drive control 3.2 Working hydraulic pressure for attachments 3.3 Oil flow rate for attachments 3.4 Measured/guaranteed mean noise level at the ear of the operator 3.5 Battery weight (+/- 5%) 3.6 Mosfet AC speed controller 3.7 Mosfet AC speed controller 3.8 A working hydraulic pressure for attachments 3.9 A working hydraulic pressure for attachments 3.0 A working hydraulic pressure for attachments 3.1 A working hydraulic pressure for attachments 3.2 Working hydraulic pressure for attachments 3.3 A working hydraulic pressure for attachments 3.4 Measured/guaranteed mean noise level at the ear of the operator	6.3	Battery according to DIN 43531/35/36 A, B, C		DIN 43595
Miscellaneous 3.1 Type of drive control Mosfet AC speed controller 3.2 Working hydraulic pressure for attachments 200 bar 3.3 Oil flow rate for attachments 25 l/min 3.4 Measured/guaranteed mean noise level at the ear of the operator < 73 dB	6.4	Battery voltage / capacity		48 V / 930 Ah
Type of drive control Nosfet AC speed controller Working hydraulic pressure for attachments Oil flow rate for attachments Measured/guaranteed mean noise level at the ear of the operator Nosfet AC speed controller 200 bar 25 l/min < 73 dB	6.5	Battery weight (+/- 5%)		1300 kg
Working hydraulic pressure for attachments 200 bar 3.3 Oil flow rate for attachments 25 l/min 3.4 Measured/guaranteed mean noise level at the ear of the operator <73 dB				
Working hydraulic pressure for attachments 200 bar 3.3 Oil flow rate for attachments 25 l/min 3.4 Measured/guaranteed mean noise level at the ear of the operator <73 dB	8.1			Mosfet AC speed controller
Oil flow rate for attachments 25 l/min Measured/guaranteed mean noise level at the ear of the operator <73 dB	8.2	•		•
Measured/guaranteed mean noise level at the ear of the operator <73 dB	8.3			
,	8.4			
5.4 Sound level at the drivers ear according to DIN 12 U53	8.4	Sound level at the driver's ear according to DIN 12 053		73 dB

EMA II 20 HD-2 - Dimensional drawing



Characteristics of masts and residual capacities

Free Lift Triplex (FLT)		FLT 55	FLT 60	FLT 66	FLT 76	FLT 80	FLT 86	FLT 90	FLT 100	FLT 106
α - Mast/fork carriage tilt, forward	۰	1	1	1	1	1	1	1	1	1
β - Mast/fork carriage tilt, backward	۰	3	3	3	3	3	3	3	3	3
h1 - Mast lowered height	mm	2750	2900	3150	3590	3720	4020	4150	4590	4820
h2 - Mast free lift	mm	1930	2080	2330	2770	2900	3200	3330	3770	4000
h3 - Mast lifting height	mm	5500	6000	6600	7620	8010	8610	9000	10020	10560
h4 - Mast extended height	mm	3680	6830	7430	8450	8840	9440	9830	11000	11540
Residual capacity with integrated side shift at max heigth	kg	1500	1500	1450	1400	1350	1300	1250	1000	850





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