Technical sheet:

## **EMA II 20 HD-1**





Technical characterist   Manufacturer   Electrical   1.4 Operator type   Seated			EMAII 20 HD-1 GIC	ited off May 0, 2024 at 0.01.47 AM
Model Name		Technical characteristics		Metric
Power source	1.1	Manufacturer		Manitou
Seated	1.2	Model Name		EMA II 20 HD-1
1.5   Max. capacity	1.3	Power source		Electrical
1.6   Load center of gravity   c   500 mm	1.4	Operator type		Seated
1.8   Load distance, centre of drive axle to fork	1.5	Max. capacity	Q	2000 kg
1.9   Wheelbase   Y   1745 mm   Weight   Weight   Weight   Weight   Weight   Weight   Weight on front axie (laden) / ear axie (laden)   A200 kg / 4500 kg   A200 kg / 4500 kg   A200 kg / 4500 kg   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front wheels   Weight on front wheels   Weight on front wheels   Weight on front wheels / ear wheels   Weight on front wheels   Weight on front wheels / ear wheels   Weight on front wheels	1.6	Load center of gravity	C	500 mm
1.9   Wheelbase   Y   1745 mm   Weight   Weight   Weight   Weight   Weight   Weight   Weight   Weight   Weight on front axie (laden) / ear axie (laden)   A200 kg / 4500 kg   A200 kg / 4500 kg   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / ear axie (Unladen)   Weight on front axie (Unladen) / 472   A172	1.8		X	
Weight   Service weight   6900 kg   220   Weight on front axie (laden) / rear axie (laden)   4200 kg / 4500 kg   2200 kg / 4700 kg / 4700 kg   2200 kg / 4700 kg / 4	1.9		Y	1745 mm
Service weight		Weight		
2.2   Weight on front axie (laden) / rear axie (Unladen)	2.1	•		6900 kg
Weight on front axie (Unladen) / rear axie (Unladen)   2200 kg / 4700 kg		-		*
Nine   Solid times   Solid t		- , , , ,		• •
Solid tites		- , , , ,		2200 kg / 1700 kg
12   178   3.3   Dimensions of front wheels   412 x 178   457 x 178   3.3   Dimensions of rear wheels   457 x 178   457 x 178 x 17	2 1			Solid tires
A57 x 178   A57 x 178				
3.5       Number of front wheels / rear wheels       2 / 2         5.5.2       Number of drive wheels       2         3.6       Front wheel gauge       b10       1110 mm         3.7       Rear wheel gauge       b11       1250 mm         Umensions         4.7       Height of overhead guard (cabin)       h6       2260 mm         4.8       Seat height/Stand height       h7       1200 mm         4.19       Overall length       l1       3710 mm         4.20       Length to face of forks       l2       2560 mm         4.21       Overall width       b1       1250 mm         4.22       Fork section / width / length       s / e/1       40 mm x 125 mm x 1150 mm         4.22       Fork camiage ISO 2328 (class/form) A/B       2       2         4.24       Fork camiage width       b3       860 mm         4.31       Ground clearance below mast       m1       50 mm         4.32       Fork camiage width       b3       860 mm         4.33       Aisle width for pallets 1000 x 1200 crossways       Ast       1950 mm         4.34       Aisle width for solo x 1200 pallet lengthways       Ast       2150 mm         5.1       Travel speed (laden				
Number of drive wheels   2				
3.6       Front wheel gauge       b10       1110 mm         3.7       Rear wheel gauge       b11       1250 mm         4.7       Height of overhead guard (cabin)       h6       2260 mm         4.8       Seat height/stand height       h7       1200 mm         4.19       Overall length       11       3710 mm         4.20       Length to face of forks       12       2560 mm         4.21       Overall width       b1       1250 mm         4.22       Fork section / width / length       \$ / e / I       40 mm x 125 mm x 1150 mm         4.23       Fork carriage SC 2328 (class/form) A/B       2       2         4.24       Fork carriage width       b3       860 mm         4.31       Ground clearance below mast       m1       50 mm         4.32       Ground clearance at centre of wheelbase       m2       130 mm         4.33       Aisle Width for 900 x 1200 pallet lengthways       Ast       2150 mm         5.1       Travel speed (laden / unladen)       Ast       2150 mm         5.2       Lifting speed (laden / unladen)       0.35 m/s-0.45 m/s         5.3       Loweing speed (laden / unladen)       0.35 m/s-0.45 m/s         5.7       Gradeability (laden / unladen)				
Bear wheel gauge			h10	
Dimensions   Height of overhead guard (cabin)   h6   2260 mm				
Height of overhead guard (cabin)   h6   2260 mm     4.8   Seat height/stand height   h7   1200 mm     4.9   Overall length   11   3710 mm     4.20   Length to face of forks   12   2560 mm     4.21   Overall width   b1   1250 mm     4.22   Forks section / width / length   5 / e / l   40 mm x 125 mm x 1150 mm     4.23   Fork carriage ISO 328 (class/form) A/B   2     4.24   Fork carriage ISO 328 (class/form) A/B   2     4.24   Fork carriage width   b3   860 mm     4.31   Ground clearance below mast   m1   50 mm     4.32   Ground clearance at centre of wheelbase   m2   130 mm     4.33   Aisle Width for pallets 1000 x 1200 crossways   Ast   1950 mm     4.34   Aisle width for 800 x 1200 crossways   Ast   2150 mm     Ferformances	3.7		DII	1250 IIIIII
4.8       Seat height/stand height       h7       1200 mm         4.19       Overall length       i1       3710 mm         4.20       Length to face of forks       i2       2560 mm         4.21       Overall width       b1       1250 mm         4.22       Fork section / width / length       \$ / e / l       40 mm x 125 mm x 1150 mm         4.23       Fork carriage ISO 2328 (class/form) A/B       2       2         4.24       Fork carriage width       b3       800 mm         4.31       Ground clearance below mast       m1       50 mm         4.32       Ground clearance at centre of wheelbase       m2       130 mm         4.33       Aisle Width for pallets 1000 x 1200 crossways       Ast       1950 mm         4.34       Aisle width for 800 x 1200 pallet lengthways       Ast       2150 mm         5.1       Travel speed (laden / unladen)       9 km/h-9.50 km/h       9 km/h-9.50 km/h         5.2       Lifting speed (laden / unladen)       9 km/h-9.50 km/h       0.35 m/s-0.45 m/s         5.7       Gradeability (laden / unladen)       8 % / 10.50 %       8 % / 10.50 %         5.7       Gradeability (laden / unladen)       8 % / 10.50 %       9 km/h         5.10       Service brake       Hydra	4.7		l c	0060
1.19   Overall length   11   3710 mm   1.20   Length to face of forks   12   2560 mm   1.20   Overall width   Ingular   1.25 mm   1.250 mm				
1.20       Length to face of forks       12       2560 mm         1.21       Overall width       b1       1250 mm         1.22       Forks section / width / length       s / e / l       40 mm x 125 mm x 1150 mm         1.23       Fork carriage ISO 2328 (class/form) A/B       2         1.24       Fork carriage width       b3       860 mm         1.31       Ground clearance below mast       m1       50 mm         1.32       Ground clearance at centre of wheelbase       m2       130 mm         1.33       Aisle Width for pallets 1000 x 1200 crossways       Ast       1950 mm         1.34       Aisle width for 800 x 1200 pallet lengthways       Ast       2150 mm         5.1       Travel speed (laden / unladen)       9 km/h-9.50 km/h       9 km/h-9.50 km/h         5.2       Lifting speed (laden / unladen)       0.35 m/s-0.45 m/s       0.40 m/s-0.36 m/s         5.3       Lowering speed (laden / unladen)       8 % / 10.50 %       8 % / 10.50 %         5.7       Gradeability (laden / unladen)       8 % / 10.50 %       8 % / 10.50 %         5.7       Gradeability (laden / unladen)       8 % / 10.50 %       8 % / 10.50 %         5.10       Service brake       Hydraulic         English       9 kW				
1.21   Owerall width   In the section   width   Inght   Inches		•		
Forks section / width / length				
Fork carriage ISO 2328 (class/form) A/B   2     4.24   Fork carriage width   b3   860 mm     4.31   Ground clearance below mast   m1   50 mm     4.32   Ground clearance at centre of wheelbase   m2   130 mm     4.33   Aisle Width for pallets 1000 x 1200 crossways   Ast   1950 mm     4.34   Aisle width for 800 x 1200 pallet lengthways   Ast   2150 mm     Forformances				
Fork carriage width   b3   860 mm     4.31   Ground clearance below mast   m1   50 mm     4.32   Ground clearance at centre of wheelbase   m2   130 mm     4.33   Aisle Width for pallets 1000 x 1200 crossways   Ast   1950 mm     4.34   Aisle width for 800 x 1200 pallet lengthways   Ast   2150 mm     Performances			s / e / l	
A.31   Ground clearance below mast   m1   50 mm     A.32   Ground clearance at centre of wheelbase   m2   130 mm     A.33   Aisle Width for pallets 1000 x 1200 crossways   Ast   1950 mm     A.34   Aisle width for 800 x 1200 pallet lengthways   Ast   2150 mm     Performances		, ,		
130 mm   1		,		
Ast 1950 mm Ast 2150 mm  Ast 2150 mm  Performances  5.1 Travel speed (laden / unladen) 9 km/h-9.50 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) 8 % / 10.50 % 5.10 Service brake Hydraulic  Engine 6.1 Drive motor rating S2 60 min 10 kW 6.2 Lift motor rating at S3 15% 9 kW 6.3 Battery according to DIN 43531/35/36 A, B, C 6.4 Battery voltage / capacity 48 V / 775 Ah 6.5 Battery weight (+/- 5%) 11435 kg				
Ast 2150 mm  Performances  5.1 Travel speed (laden / unladen) 9 km/h-9.50 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) 8 % / 10.50 % 6.10 Service brake Hydraulic  Engine 6.1 Drive motor rating \$2 60 min 10 kW 6.2 Lift motor rating at \$3 15% 9 kW 6.3 Battery according to DIN 43531/35/36 A, B, C 6.4 Battery voltage / capacity 48 V / 775 Ah 6.5 Battery weight (+/- 5%) 1435 kg			m2	
Performances           5.1         Travel speed (laden / unladen)         9 km/h-9.50 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)         8 % / 10.50 %           5.10         Service brake         Hydraulic           Engine           6.1         Drive motor rating S2 60 min         10 kW           6.2         Lift motor rating at S3 15%         9 kW           6.3         Battery according to DIN 43531/35/36 A, B, C         DIN 43595           6.4         Battery voltage / capacity         48 V / 775 Ah           6.5         Battery weight (+/- 5%)         1435 kg	.33	Aisle Width for pallets 1000 x 1200 crossways	Ast	1950 mm
5.1       Travel speed (laden / unladen)       9 km/h-9.50 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)       8 % / 10.50 %         6.10       Service brake       Hydraulic         Engine         6.1       Drive motor rating \$2 60 min       10 kW         6.2       Lift motor rating at \$3 15%       9 kW         6.3       Battery according to DIN 43531/35/36 A, B, C       DIN 43595         6.4       Battery voltage / capacity       48 V / 775 Ah         6.5       Battery weight (+/- 5%)       1435 kg	.34	Aisle width for 800 x 1200 pallet lengthways	Ast	2150 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)       8 % / 10.50 %         5.10       Service brake       Hydraulic         Engine         6.1       Drive motor rating \$2 60 min       10 kW         6.2       Lift motor rating at \$3 15%       9 kW         6.3       Battery according to DIN 43531/35/36 A, B, C       DIN 43595         6.4       Battery voltage / capacity       48 V / 775 Ah         6.5       Battery weight (+/- 5%)       1435 kg				
5.3       Lowering speed (laden / unladen)       0.40 m/s-0.36 m/s         5.7       Gradeability (laden / unladen)       8 % / 10.50 %         5.10       Service brake       Hydraulic         Engine         6.1       Drive motor rating S2 60 min       10 kW         6.2       Lift motor rating at S3 15%       9 kW         6.3       Battery according to DIN 43531/35/36 A, B, C       DIN 43595         6.4       Battery voltage / capacity       48 V / 775 Ah         6.5       Battery weight (+/- 5%)       1435 kg	5.1	Travel speed (laden / unladen)		9 km/h-9.50 km/h
5.7       Gradeability (laden / unladen)       8 % / 10.50 %         5.10       Service brake       Hydraulic         Engine         6.1       Drive motor rating S2 60 min       10 kW         6.2       Lift motor rating at S3 15%       9 kW         6.3       Battery according to DIN 43531/35/36 A, B, C       DIN 43595         6.4       Battery voltage / capacity       48 V / 775 Ah         6.5       Battery weight (+/- 5%)       1435 kg	5.2	Lifting speed (laden / unladen)		0.35 m/s-0.45 m/s
Hydraulic         Engine       Hydraulic         6.1       Drive motor rating S2 60 min       10 kW         6.2       Lift motor rating at S3 15%       9 kW         6.3       Battery according to DIN 43531/35/36 A, B, C       DIN 43595         6.4       Battery voltage / capacity       48 V / 775 Ah         6.5       Battery weight (+/- 5%)       1435 kg	5.3	Lowering speed (laden / unladen)		0.40 m/s-0.36 m/s
Engine         Company           6.1         Drive motor rating S2 60 min         10 kW           6.2         Lift motor rating at S3 15%         9 kW           6.3         Battery according to DIN 43531/35/36 A, B, C         DIN 43595           6.4         Battery voltage / capacity         48 V / 775 Ah           6.5         Battery weight (+/- 5%)         1435 kg	5.7	Gradeability (laden / unladen)		8 % / 10.50 %
6.1       Drive motor rating S2 60 min       10 kW         6.2       Lift motor rating at S3 15%       9 kW         6.3       Battery according to DIN 43531/35/36 A, B, C       DIN 43595         6.4       Battery voltage / capacity       48 V / 775 Ah         6.5       Battery weight (+/- 5%)       1435 kg	.10	Service brake		Hydraulic
6.2       Lift motor rating at S3 15%       9 kW         6.3       Battery according to DIN 43531/35/36 A, B, C       DIN 43595         6.4       Battery voltage / capacity       48 V / 775 Ah         6.5       Battery weight (+/- 5%)       1435 kg		Engine		
6.3       Battery according to DIN 43531/35/36 A, B, C       DIN 43595         6.4       Battery voltage / capacity       48 V / 775 Ah         6.5       Battery weight (+/- 5%)       1435 kg	5.1	Drive motor rating S2 60 min		10 kW
6.4       Battery voltage / capacity       48 V / 775 Ah         6.5       Battery weight (+/- 5%)       1435 kg	5.2	Lift motor rating at S3 15%		9 kW
6.5 Battery weight (+/- 5%) 1435 kg	5.3	Battery according to DIN 43531/35/36 A, B, C		DIN 43595
· · · · ·	ó.4	Battery voltage / capacity		48 V / 775 Ah
Miscellaneous	ó.5	Battery weight (+/- 5%)		1435 kg
		Miscellaneous		
8.1 Type of drive control Mosfet AC speed controlle	B.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				
8.4 Sound level at the driver's ear according to DIN 12 053 73 dB		•		

EMA II 20 HD-1 - Dimensional drawing



## Characteristics of masts and residual capacities

Free Lift Triplex (FLT)		FLT 56	FLT 60	FLT 66	FLT 70	FLT 76	FLT 80	FLT 86	FLT 90	FLT 95	FLT 102	FLT 106
Mast/fork carriage tilt, forward	۰	1	1	1	1	1	1	1	1	1	1	1
Mast/fork carriage tilt, backward	۰	3	3	3	3	3	3	3	3	3	3	3
h1 - Mast lowered height	mm	2750	2900	3150	3290	3590	3720	4020	4150	4500	4690	4820
h2 - Mast free lift	mm	1930	2080	2330	2470	2770	2900	3200	3330	3650	3870	4000
h3 - Mast lifting height	mm	5550	6000	6600	7020	7620	8010	8610	9000	9500	10200	10560
h4 - Mast extended height	mm	6380	6830	7430	7850	8450	8840	9440	9830	10475	11175	11535
Residual capacity with integrated side shift at max heigth	kg	1600	1450	1450	1300	1300	1200	1100	1000	900	750	650





## **Head Office**

B.P. 249 - 430 rue de l'Aubinière 44150 Ancenis Cedex - France Tel: +33 (0)2 40 09 10 11 - Fax: +33 (0)2 40 09 10 97 www.manitou.com



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