Technical sheet:

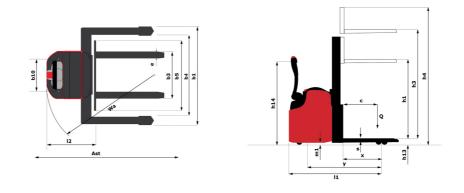
ES 412 LE





Technoid characteristics			L3 TIZ EL OIC	ated on Adgust 10, 2020 at 7.07 Aivi o
1.3 Power source Electrical		Technical characteristics		Metric
1.3	1.1	Manufacturer		Manitou
1.5	1.2	Model Name		ES 412 LE
1.5	1.3	Power source		Electrical
1.6 Load center of gravity	1.4	Operator type		Pedestrian
1.6	1.5		Q	1200 kg
1.9 Wheelbase Y 1245 mm	1.6		C	
Valght Service weight 924 kg 22 Weight on froat axie (laden) / rear axie (laden) 743 kg / 1381 kg 612 kg / 262 kg	1.8		X	683 mm
21 Service weight	1.9	Wheelbase	у	1245 mm
Weight on front axie (laden) / rear axie (laden) 743 kg / 1381 kg		Weight		
Weight on front axie (Unladen) / rear axie (Unladen)	2.1	Service weight		924 kg
Weight on front axie (Unladen) / rear axie (Unladen)	2.2	Weight on front axle (laden) / rear axle (laden)		743 kg / 1381 kg
Wheels	2.3	. , , , ,		
Tires type		. , , , ,		
3.3 Number of load wheels / Size of load wheels 2 / 82x70 3.4 Number of castor wheels / Size of castor wheels 1 / 1 3.4 Number of foot wheels / Size of destabilizer wheels 2 / 125x50 3.5 Number of front wheels / rear wheels 2 / 22 3.5.2 Number of drive wheels / Size of drive wheels 11/20x75 3.6 Front wheel gauge b10 517 mm 3.7 Rear wheel gauge b11 978 mm Umensions 4.15 Fork height in low position h13 85 mm 4.19 Overall length 11 1870 mm 4.20 Length of face of forks 12 720 mm 4.21 Overall width b1 1106 mm 4.22 Fork section / width / length \$ / e / 1 60 mm / 180 mm / 1150 mm 4.24 Fork section / width / length \$ / e / 1 60 mm / 180 mm / 1150 mm 4.24 Fork section / width / length \$ / e / 1 60 mm / 180 mm / 1150 mm 4.24 Fork section / width / length \$ / e / 1 60 mm / 180 mm / 1150 mm </td <td>3.1</td> <td></td> <td></td> <td>Polyurethane</td>	3.1			Polyurethane
3.4 Number of castor wheels / Size of castor wheels 1 / 1 3.4 Number of froth wheels / Size of the stabilizer wheels 2 / 12 3.5 Number of forth wheels / Size of drive wheels 2 / 2 3.5.2 Number of drive wheels / Size of drive wheels 1/230x75 3.6 Font wheel gauge b10 517 mm 3.7 Rear wheel gauge b11 978 mm Unmensions 4.15 Fork height in low position h13 85 mm 4.19 Overall length l1 1870 mm 4.20 Length to face of forks l2 720 mm 4.21 Overall width b1 1106 mm 4.22 Fork section / width / length \$ / e / I 60 mm / 180 mm 4.24 Fork carriage width b3 680 mm 4.31 Ground clearance at centre of wheelbase m2 20 mm 4.32 Ground clearance at centre of wheelbase m2 20 mm 4.3 Tavel speed (laden / unladen) 6 km/h / 6 km/h 1050 mm 5.1 Tavel speed (laden / unladen) 0.1 m/s / 0.24 m/s 3 km/s				·
3.4 Number of stabilizer wheels / Size of the stabilizer wheels 2 / 12 x 550 3.5 Number of front wheels / rear wheels 2 / 2 3.5.2 Number of five wheels / Size of drive wheels 1/230/75 3.6 Front wheel gauge b10 517 mm 3.7 Rear wheel gauge b11 978 mm Unerstons 4.15 For height in low position h13 85 mm 4.19 Overall length 11 1870 mm 4.20 Length to face of forks 12 720 mm 4.21 Overall width b1 1106 mm 4.22 Fork section / width / length \$ / e / I 60 mm / 180 mm / 1150 mm 4.24 Fork carriage width \$ / e / I 60 mm / 180 mm / 1150 mm 4.24 Fork carriage width \$ / e / I 60 mm / 180 mm / 180 mm 4.31 Ground clearance at centre of wheelbase m2 20 mm 4.32 Ground clearance at centre of wheelbase m2 20 mm 5.51 Travel speed (laden / unladen) 6 km/h / 6 km/h 5.2 Liffting speed (laden / unladen) 6 km/h / 6 km/h </td <td></td> <td></td> <td></td> <td></td>				
3.5 Number of front wheels / Iza of drive wheels 2 / 2 3.5 Number of drive wheels / Size of drive wheels 1 / 230x 75 3.6 Front wheel gauge b10 517 mm 3.7 Rear wheel gauge b11 978 mm Unimestors 4.15 Obright in low position h13 85 mm 4.19 Overall length 11 1870 mm 4.20 Length to face of forks 12 720 mm 4.21 Overall width b1 1106 mm 4.22 Fork section / width / length 5 / 2 / 1 60 mm / 1150 mm 4.24 Fork carriage width 5 / 2 / 1 60 mm / 1150 mm 4.31 Ground clearance below mast m1 3 5 mm 4.32 Ground clearance below mast m2 2 0 mm 4.32 Ground clearance below mast m1 3 5 mm 4.32 Fortomances m2 0 mm 5.1 Tavel speed (laden / unladen) 6 km/h / 6 km/h 5.2 Lifting speed (laden / unladen) 0.12 m/s / 0.24 m/s 5.3 Lowering speed (laden / unladen) 8 ½ / 10 ½ 5.1 Drive motor rating speed (laden / unladen) 8 ½ / 10 ½ 6.1 Drive motor rating speed (laden / unladen) <				
3.5.2 Number of drive wheels / Size of drive wheels 1/230x75 3.6 Front wheel gauge b10 517 mm 3.7 Rear wheel gauge b11 978 mm Dimensions 4.15 Fork height in low position h13 85 mm 4.19 Overall length l1 1870 mm 4.20 Length to face of forks l2 720 mm 4.21 Overall width b1 1106 mm 4.22 Fork section / width / length b3 680 mm 4.24 Fork seating width b3 680 mm 4.31 Ground clearance below mast m1 35 mm 4.32 Ground clearance at centre of wheelbase m2 20 mm 4.39 Height tiller max. h14 1050 mm Performances m2 20 mm 5.1 Travel speed (laden / unladen) 0.12 m/s / 0.24 m/s 5.2 Lifting speed (laden / unladen) 0.30 m/s / 0.20 m/s 5.3 Lowering speed (laden / unladen) 0.30 m/s / 0.20 m/s 5.5 Service brake Electro magnetic				
Sear wheel gauge				
Sear wheel gauge			h10	
Dimensions Hamilton Hamilto				
1.15 Fork height in low position h13 85 mm 1.19 Overall length 11 1870 mm 1.20 Length to face of forks 12 720 mm 1.21 Overall width b1 1106 mm 1.22 Forks section / width / length 5 / e / 1 60 mm / 180 mm / 1150 mm 1.24 Fork carriage width 63 680 mm 1.24 Fork carriage width 63 680 mm 1.25 Ground clearance below mast m1 35 mm 1.20 Miles Miles Miles Miles 1.20 Miles Miles Miles Miles Miles 1.20 Miles Miles Miles Miles Miles Miles Miles 1.20 Miles Mile	3.7		511	370 Hilli
4.19 Overall length of face of forks 12 720 mm 4.20 Length to face of forks 12 720 mm 4.21 Overall width b1 1106 mm 4.22 Forks section / width / length \$ /e / 1 60 mm / 180 mm / 1150 mm 4.24 Fork carriage width b3 680 mm 4.31 Ground clearance below mast m1 35 mm 4.32 Ground clearance at centre of wheelbase m2 20 mm 4.9 Height tiller max. h14 1050 mm Performances 5.1 Travel speed (laden / unladen) 6 km/h / 6 km/h 5.2 Lifting speed (laden / unladen) 0.12 m/s / 0.24 m/s 5.3 Lowering speed (laden / unladen) 0.30 m/s / 0.20 m/s 5.8 Max Gradeability (laden / unladen) 8 % / 10 % 5.10 Service brake Electromagnetic Engine 6.1 Drive motor rating S2 60 min 1.20 kW 6.2 Lift motor rating S2 60 min 1.20 kW 6.3 Battery woltage / capacity 24 V / 180 Ah 6.5 Battery weigh	4 15		h13	85 mm
Length to face of forks 12 720 mm 4.21 Overall width 1106 mm 4.22 Forks section / width / length 5 / e / l 60 mm / 180 mm / 1150 mm 4.24 Fork carriage width 680 mm 4.24 Fork carriage width 680 mm 4.25 Ground clearance below mast m1 35 mm 4.32 Ground clearance at centre of wheelbase m2 20 mm 4.9 Height tiller max. h14 1050 mm Forfomances				
4.21 Overall width b1 1106 mm 4.22 Forks section / width / length s / e / l 60 mm / 180 mm / 1150 mm 4.24 Fork carriage width b3 680 mm 4.31 Ground clearance below mast m1 35 mm 4.32 Ground clearance at centre of wheelbase m2 20 mm 4.9 Height tiller max. h14 1050 mm Performances 5.1 Travel speed (laden / unladen) 6 km/h / 6 km/h 5.2 Lifting speed (laden / unladen) 0.12 m/s / 0.24 m/s 5.3 Lowering speed (laden / unladen) 8 % / 10 % 5.8 Max Gradeability (laden / unladen) 8 % / 10 % 5.10 Service brake Electro magnetic Engine 6.1 Drive motor rating \$2.60 min 1.20 kW 6.2 Lift motor rating \$2.50 min 1.20 kW 6.2 Lift motor rating \$2.50 min 1.20 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1<		-		
4.22 Forks section / width / length s / e / I 60 mm / 180 mm / 1150 mm 4.24 Fork carriage width b3 680 mm 4.31 Ground clearance below mast m1 35 mm 4.32 Ground clearance at centre of wheelbase m2 20 mm 4.9 Height tiller max. h14 1050 mm Performances 5.1 Travel speed (laden / unladen) 6 km/h / 6 km/h 5.2 Lifting speed (laden / unladen) 0.12 m/s / 0.24 m/s 5.3 Lowering speed (laden / unladen) 0.30 m/s / 0.20 m/s 5.8 Max Gradeability (laden / unladen) 8 % / 10 % 5.8 Service brake Electro magnetic Engine 6.1 Drive motor rating \$2.60 min 1.20 kW 6.2 Lift motor rating \$2.60 min 1.20 kW 6.2 Lift motor rating \$3.15% 3 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC		-		
4.24 Fork carriage width b3 680 mm 4.31 Ground clearance below mast m1 35 mm 4.32 Ground clearance at centre of wheelbase m2 20 mm 4.9 Height tiller max. h14 1050 mm Performances 5.1 Travel speed (laden / unladen) 6 km/h / 6 km/h 5.2 Lifting speed (laden / unladen) 0.12 m/s / 0.24 m/s 5.3 Lowering speed (laden / unladen) 8 % / 10 % 5.8 Max Gradeability (laden / unladen) 8 % / 10 % 5.10 Service brake Electro magnetic Engine 6.1 Drive motor rating s2 60 min 1.20 kW 6.2 Lift motor rating at S3 15% 3 kW 6.3 Battery cording to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery voltage / capacity 24 V/ 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC				
4.31 Ground clearance below mast m1 35 mm 4.32 Ground clearance at centre of wheelbase m2 20 mm 4.9 Height tiller max. h14 1050 mm Performances 5.1 Travel speed (laden / unladen) 6 km/h / 6 km/h 5.2 Lifting speed (laden / unladen) 0.12 m/s / 0.24 m/s 5.3 Lowering speed (laden / unladen) 0.30 m/s / 0.20 m/s 5.8 Max Gradeability (laden / unladen) 8 % / 10 % 5.10 Service brake Electro magnetic Engine 6.1 Drive motor rating \$2.60 min 1.20 kW 6.2 Lift motor rating \$2.50 min 3 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery voltage / capacity 24 V / 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC		•		
4.32 Ground clearance at centre of wheelbase m2 20 mm 4.9 Height tiller max. h14 1050 mm Performances 5.1 Travel speed (laden / unladen) 6 km/h / 6 km/h 5.2 Lifting speed (laden / unladen) 0.12 m/s / 0.24 m/s 5.3 Lowering speed (laden / unladen) 0.30 m/s / 0.20 m/s 5.8 Max Gradeability (laden / unladen) 8 % / 10 % 5.10 Service brake Electro magnetic Engine 6.1 Drive motor rating \$2 60 min 1.20 kW 6.2 Lift motor rating at \$3 15% 3 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery voltage / capacity 24 V / 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC		-		
Height tiller max.				
Performances 5.1 Travel speed (laden / unladen) 6 km/h / 6 km/h 5.2 Lifting speed (laden / unladen) 0.12 m/s / 0.24 m/s 5.3 Lowering speed (laden / unladen) 0.30 m/s / 0.20 m/s 5.8 Max Gradeability (laden / unladen) 8 % / 10 % 5.10 Service brake Electro magnetic Engine 6.1 Drive motor rating S2 60 min 1.20 kW 6.2 Lift motor rating at S3 15% 3 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery voltage / capacity 24 V / 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC				
5.1 Travel speed (laden / unladen) 6 km/h / 6 km/h 5.2 Lifting speed (laden / unladen) 0.12 m/s / 0.24 m/s 5.3 Lowering speed (laden / unladen) 0.30 m/s / 0.20 m/s 5.8 Max Gradeability (laden / unladen) 8 % / 10 % 5.10 Service brake Electro magnetic Engine 6.1 Drive motor rating \$2 60 min 1.20 kW 6.2 Lift motor rating at \$3 15% 3 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery voltage / capacity 24 V / 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC	11.5	·		
5.2 Lifting speed (laden / unladen) 0.12 m/s / 0.24 m/s 5.3 Lowering speed (laden / unladen) 0.30 m/s / 0.20 m/s 5.8 Max Gradeability (laden / unladen) 8 % / 10 % 5.10 Service brake Electro magnetic Engine 6.1 Drive motor rating S2 60 min 1.20 kW 6.2 Lift motor rating at S3 15% 3 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery voltage / capacity 24 V / 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC	5.1			6 km/h / 6 km/h
5.3 Lowering speed (laden / unladen) 0.30 m/s / 0.20 m/s 5.8 Max Gradeability (laden / unladen) 8 % / 10 % 5.10 Service brake Electro magnetic Engine 6.1 Drive motor rating S2 60 min 1.20 kW 6.2 Lift motor rating at S3 15% 3 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery voltage / capacity 24 V / 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC				
5.8 Max Gradeability (laden / unladen) 8 % / 10 % 5.10 Service brake Electro magnetic Engine 6.1 Drive motor rating S2 60 min 1.20 kW 6.2 Lift motor rating at S3 15% 3 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery voltage / capacity 24 V / 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC		- ' '		
5.10 Service brake Electro magnetic Engine Company 6.1 Drive motor rating \$2.60 min 1.20 kW 6.2 Lift motor rating at \$3.15% 3 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery voltage / capacity 24 V / 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous AC		- , ,		
Engine Company 6.1 Drive motor rating \$2.60 min 1.20 kW 6.2 Lift motor rating at \$3.15% 3 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery voltage / capacity 24 V / 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC				
6.1 Drive motor rating \$2 60 min 1.20 kW 6.2 Lift motor rating at \$3 15% 3 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery voltage / capacity 24 V / 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous AC	3.10			Licono magneno
6.2 Lift motor rating at \$3 15% 3 kW 6.3 Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 6.4 Battery voltage / capacity 24 V / 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC	6.1			1 20 kW
6.3 Battery according to DIN 43531/35/36 A, B, C 6.4 Battery voltage / capacity 6.5 Battery weight (+/- 5%) Miscellaneous 8.1 Type of drive control Battery according to DIN 43531/35/36 A, B, C DIN 43535-B 24 V / 180 Ah 176 kg AC		•		
6.4 Battery voltage / capacity 24 V / 180 Ah 6.5 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC		-		
6.5 Battery weight (+/- 5%) 176 kg Miscellaneous 8.1 Type of drive control AC				
Miscellaneous 8.1 Type of drive control AC				
8.1 Type of drive control AC	0.5			170 kg
	8.1			A.C.

ES 412 LE - Dimensional drawing



Characteristics of masts and residual capacities

Full Visibility Duplex (FVD)		FVD 29	FVD 34	FVD 38
h1 - Mast lowered height	mm	1940	2190	2390
h3 - Mast lifting height	mm	2940	3440	3840
h4 - Mast extended height	mm	3365	3865	4265
Residual capacity at max height	kg	1200	1200	1200

Free Lift Duplex (FLD)		FLD 29	FLD 34
h1 - Mast lowered height	mm	1940	2190
h2 - Mast free lift	mm	1510	1760
h3 - Mast lifting height	mm	2935	3435
h4 - Mast extended height	mm	3365	3865
Residual capacity at max height	kg	1200	1200
Height at may canacity	mm	2035	3/135

Free Lift Triplex (FLT)		FLT 42
h1 - Mast lowered height	mm	1960
h2 - Mast free lift	mm	1470
h3 - Mast lifting height	mm	4240
h4 - Mast extended height	mm	4730
Residual capacity at max height	kg	1200
Height at max capacity	mm	4240





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



This publication provides a description of the configuration versions and options for Manitou products, which may differ for equipment. The equipment presented in this brochure may be part of a series, as an option, or it may not be available, depending on the versions. Manitou reserves the right, at any time and without notice, to amend the specifications described and represented. The specifications provided do not bind the manufacturer. For more details, please contact your Manitou agent. This is not a contractually binding document. The presentation of the products is not contractually binding. List of specifications non-exhaustive. The logos as well as the visual identity of the company are owned by Manitou and cannot be used without authorisation. All rights reserved. The photos and diagrams contained in this brochure are only provided for consultation and information purposes.

MANITOU BF SA - Limited company with board of directors - Share capital: 39,668,399 euros - 857 802 508 RCS Nantes