

Technical sheet :

# ES 412

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|       | Technical characteristics                                   |           | Metric                   |
|-------|---|-----------|--------------------------|
| 1.1   | Manufacturer  |           | Manitou                  |
| 1.2   | Model Name  |           | ES 412                   |
| 1.3   | Power source  |           | Electrical - Lead        |
| 1.4   | Operator type   |           | Pedestrian               |
| 1.5   | Max. capacity   | Q         | 1200 kg                  |
| 1.6   | Load center of gravity                                      | c         | 600 mm                   |
| 1.8   | Distance from Load backrest to center of rear axle          | x         | 683 mm                   |
| 1.9   | Wheelbase   | y         | 1245 mm                  |
|       | <b>Weight</b>   |           |                          |
| 2.1   | Service weight  |           | 874 kg                   |
| 2.2   | Weight on front axle (laden) / rear axle (laden)            |           | 729 kg / 1342 kg         |
| 2.3   | Weight on front axle (Unladen) / rear axle (Unladen)        |           | 612 kg / 262 kg          |
|       | <b>Wheels</b>   |           |                          |
| 3.1   | Tires type  |           | Polyurethane cushion     |
| 3.3   | Number of load wheels / Size of load wheels                 |           | 2 / 82x70                |
| 3.4   | Number of stabilizer wheels / Size of the stabilizer wheels |           | 1 / 125x50               |
| 3.5   | Number of front wheels / rear wheels                        |           | 2 / 2                    |
| 3.5.2 | Number of drive wheels / Size of drive wheels               |           | 1/230x70                 |
| 3.6   | Front wheel gauge   | b10       | 517 mm                   |
| 3.7   | Rear wheel gauge  | b11       | 380 mm                   |
|       | <b>Dimensions</b>   |           |                          |
| 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        | 800 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                    |
| 4.33  | Aisle Width for pallets 1000 x 1200 crossways               | Ast       | 2581 mm                  |
| 4.34  | Aisle width for 800 x 1200 pallet lengthways                | Ast       | 2490 mm                  |
| 4.35  | Turning radius  | Wa        | 1400 mm                  |
|       | <b>Performances</b>   |           |                          |
| 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         |
|       | <b>Engine</b>   |           |                          |
| 6.1   | Drive motor rating S2 60 min                                |           | 1.20 kW                  |
| 6.2   | Lift motor rating at S3 15%                                 |           | 3 kW                     |
| 6.4   | Battery voltage / capacity                                  |           | 24 V / 180 Ah            |
| 6.5   | Battery weight (+/- 5%)                                     |           | 160 kg                   |
|       | <b>Miscellaneous</b>  |           |                          |
| 8.1   | Type of drive control                                       |           | AC                       |
| 8.4   | Sound level at the driver's ear according to DIN 12 053     |           | 65 dB                    |

## Characteristics of masts and residual capacities

| Central Cylinder Duplex (CCD)   |    | CCD 26 | CCD 29 | CCD 34 |
|---------------------------------|----|--------|--------|--------|
| h1 - Mast lowered height        | mm | 1782   | 1932   | 2182   |
| h2 - Mast free lift             | mm | 140    | 140    | 140    |
| h3 - Mast lifting height        | mm | 2550   | 2850   | 3350   |
| h4 - Mast extended height       | mm | 3068   | 3368   | 3868   |
| Residual capacity at max height | kg | 1200   | 1200   | 900    |

| Central Cylinder Simplex (CCS)  |    | CCS 15 | CCS 17 |
|---------------------------------|----|--------|--------|
| h1 - Mast lowered height        | mm | 1932   | 2182   |
| h2 - Mast free lift             | mm | 1420   | 1670   |
| h3 - Mast lifting height        | mm | 1420   | 1670   |
| h4 - Mast extended height       | mm | 1938   | 2188   |
| Residual capacity at max height | kg | 1200   | 1200   |

| Full Visibility Duplex (FVD)    |    | FVD 29 | FVD 34 | FVD 38 |
|---------------------------------|----|--------|--------|--------|
| h1 - Mast lowered height        | mm | 1932   | 2182   | 2382   |
| h3 - Mast lifting height        | mm | 2850   | 3350   | 3750   |
| h4 - Mast extended height       | mm | 3368   | 3868   | 4268   |
| Residual capacity at max height | kg | 1200   | 1000   | 800    |

| Free Lift Duplex (FLD)          |    | FLD 29 | FLD 34 |
|---------------------------------|----|--------|--------|
| h1 - Mast lowered height        | mm | 1932   | 2182   |
| h2 - Mast free lift             | mm | 1420   | 1670   |
| h3 - Mast lifting height        | mm | 2845   | 3345   |
| h4 - Mast extended height       | mm | 3363   | 3863   |
| Residual capacity at max height | kg | 1200   | 950    |

| Free Lift Triplex (FLT)         |    | FLT 42 |
|---------------------------------|----|--------|
| h1 - Mast lowered height        | mm | 1890   |
| h2 - Mast free lift             | mm | 1380   |
| h3 - Mast lifting height        | mm | 4160   |
| h4 - Mast extended height       | mm | 4678   |
| Residual capacity at max height | kg | 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](http://www.manitou.com)



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