

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               |
| 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                  |
| Weight                    |   |           |                          |
| 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          |
| Wheels                    |   |           |                          |
| 3.1                       | Tires type  |           | Polyurethane             |
| 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                   |
| 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        | 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                    |
| 4.35                      | Turning radius  | Wa        | 1400 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 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                   |
| Miscellaneous             |   |           |                          |
| 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

| 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   | 1000   | 800    |

| 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   | 1000   |

| Free Lift Triplex (FLT)         |    | FLT 42 |
|---------------------------------|----|--------|
| h1 - Mast lowered height        | mm | 1965   |
| h2 - Mast free lift             | mm | 1470   |
| h3 - Mast lifting height        | mm | 4240   |
| h4 - Mast extended height       | mm | 4735   |
| Residual capacity at max height | kg | 650    |



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