

Technical sheet :

# ES 412

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|       | Technical characteristics                                   |           | Metric                   | Imperial              |
|-------|---|-----------|--------------------------|-----------------------|
| 1.1   | Manufacturer  |           | Manitou                  | Manitou               |
| 1.2   | Model Name  |           | ES 412                   | ES 412                |
| 1.3   | Power source  |           | Electrical               | Electrical            |
| 1.4   | Operator type   |           | Pedestrian               | Pedestrian            |
| 1.5   | Max. capacity   | Q         | 1200 kg                  | 2646 lb               |
| 1.6   | Load center of gravity                                      | c         | 600 mm                   | 24 in                 |
| 1.8   | Distance from Load backrest to center of rear axle          | x         | 683 mm                   | 27 in                 |
| 1.9   | Wheelbase   | y         | 1245 mm                  | 49 in                 |
|       | Weight  |           |                          |                       |
| 2.1   | Service weight  |           | 874 kg                   | 1927 lb               |
| 2.2   | Weight on front axle (laden) / rear axle (laden)            |           | 729 kg / 1342 kg         | 1607 lb / 2959 lb     |
| 2.3   | Weight on front axle (Unladen) / rear axle (Unladen)        |           | 612 kg / 262 kg          | 1349 lb / 578 lb      |
|       | Wheels  |           |                          |                       |
| 3.1   | Tires type  |           | Polyurethane             | Polyurethane          |
| 3.3   | Number of load wheels / Size of load wheels                 |           | 2 / 82x70                | 2 / 82x70             |
| 3.4   | Number of stabilizer wheels / Size of the stabilizer wheels |           | 1 / 125x50               | 1 / 125x50            |
| 3.5   | Number of front wheels / rear wheels                        |           | 2 / 2                    | 2 / 2                 |
| 3.5.2 | Number of drive wheels / Size of drive wheels               |           | 1/230x70                 | 1/230x70              |
| 3.6   | Front wheel gauge   | b10       | 517 mm                   | 20 in                 |
| 3.7   | Rear wheel gauge  | b11       | 380 mm                   | 15 in                 |
|       | Dimensions  |           |                          |                       |
| 4.15  | Fork height in low position                                 | h13       | 85 mm                    | 3 in                  |
| 4.19  | Overall length  | l1        | 1870 mm                  | 74 in                 |
| 4.20  | Length to face of forks                                     | l2        | 720 mm                   | 28 in                 |
| 4.21  | Overall width   | b1        | 800 mm                   | 31 in                 |
| 4.22  | Forks section / width / length                              | s / e / l | 60 mm / 180 mm / 1150 mm | 2 in / 7 in / 45 in   |
| 4.24  | Fork carriage width   | b3        | 680 mm                   | 27 in                 |
| 4.31  | Ground clearance below mast                                 | m1        | 35 mm                    | 1 in                  |
| 4.32  | Ground clearance at centre of wheelbase                     | m2        | 20 mm                    | 0.79 in               |
| 4.35  | Turning radius  | Wa        | 1400 mm                  | 55 in                 |
|       | Performances  |           |                          |                       |
| 5.1   | Travel speed (laden / unladen)                              |           | 6 km/h / 6 km/h          | 4 mph / 4 mph         |
| 5.2   | Lifting speed (laden / unladen)                             |           | 0.12 m/s / 0.24 m/s      | 0.39 ft/s / 0.79 ft/s |
| 5.3   | Lowering speed (laden / unladen)                            |           | 0.30 m/s / 0.20 m/s      | 0.98 ft/s / 0.66 ft/s |
| 5.8   | Max Gradeability (laden / unladen)                          |           | 8 % / 10 %               | 8 % / 10 %            |
| 5.10  | Service brake   |           | Electro magnetic         | Electro magnetic      |
|       | Engine  |           |                          |                       |
| 6.1   | Drive motor rating S2 60 min                                |           | 1.20 kW                  | 1.20 kW               |
| 6.2   | Lift motor rating at S3 15%                                 |           | 3 kW                     | 3 kW                  |
| 6.4   | Battery voltage / capacity                                  |           | 24 V / 180 Ah            | 24 V / 180 Ah         |
| 6.5   | Battery weight (+/- 5%)                                     |           | 160 kg                   | 353 lb                |
|       | Miscellaneous   |           |                          |                       |
| 8.1   | Type of drive control                                       |           | AC                       | AC                    |
| 8.4   | Sound level at the driver's ear according to DIN 12 053     |           | 65 dB                    | 65 dB                 |

## Characteristics of masts and residual capacities

| Full Visibility Duplex (FVD)    |         | FVD 29       | FVD 34       | FVD 38       |
|---------------------------------|---------|--------------|--------------|--------------|
| h1 - Mast lowered height        | in (mm) | 76.4 (1940)  | 86.2 (2190)  | 94.1 (2390)  |
| h3 - Mast lifting height        | in (mm) | 115.7 (2940) | 135.4 (3440) | 151.2 (3840) |
| h4 - Mast extended height       | in (mm) | 132.5 (3365) | 152.2 (3865) | 167.9 (4265) |
| Residual capacity at max height | lb (kg) | 2646 (1200)  | 2205 (1000)  | 1764 (800)   |

| Free Lift Duplex (FLD)          |         | FLD 29       | FLD 34       |
|---------------------------------|---------|--------------|--------------|
| h1 - Mast lowered height        | in (mm) | 76.4 (1940)  | 86.2 (2190)  |
| h2 - Mast free lift             | in (mm) | 59.4 (1510)  | 69.3 (1760)  |
| h3 - Mast lifting height        | in (mm) | 115.6 (2935) | 135.2 (3435) |
| h4 - Mast extended height       | in (mm) | 132.5 (3365) | 152.2 (3865) |
| Residual capacity at max height | lb (kg) | 2646 (1200)  | 2205 (1000)  |

| Free Lift Triplex (FLT)         |         | FLT 42       |
|---------------------------------|---------|--------------|
| h1 - Mast lowered height        | in (mm) | 77.4 (1965)  |
| h2 - Mast free lift             | in (mm) | 57.9 (1470)  |
| h3 - Mast lifting height        | in (mm) | 166.9 (4240) |
| h4 - Mast extended height       | in (mm) | 186.4 (4735) |
| Residual capacity at max height | lb (kg) | 1433 (650)   |



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