Linde Material Handling

## Automated Transporting Solutions

# C-MATIC

Capacity 1.0 t – 1.5 t | Series 8925

ION

**Flat load carrier for short and medium distances**

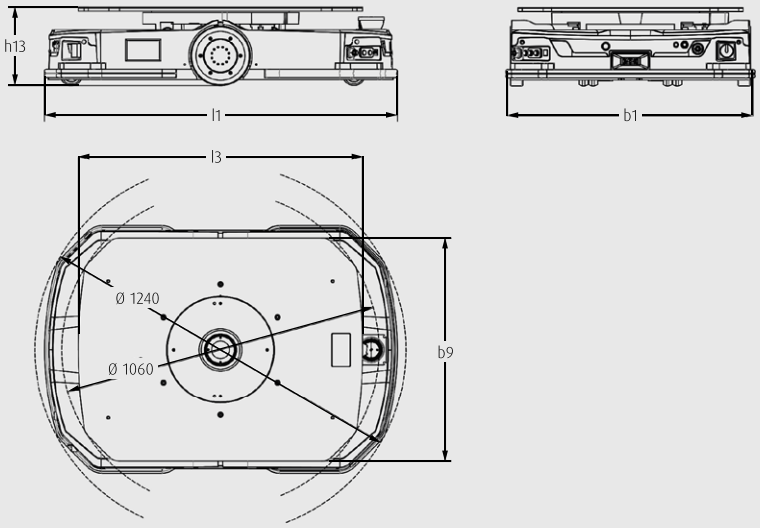
→ Effortless transport on load tables or direct transport on pallets between transfer stations
→ Rotating plate to reorientate the load
→ Models with capacities from 1000 to 1500 kg
→ Intelligent software control with efficient orientation via QR codes
→ Safety technology for hazard-free operation in dedicated areas

# TECHNICAL DATA (according to VDI 2198)

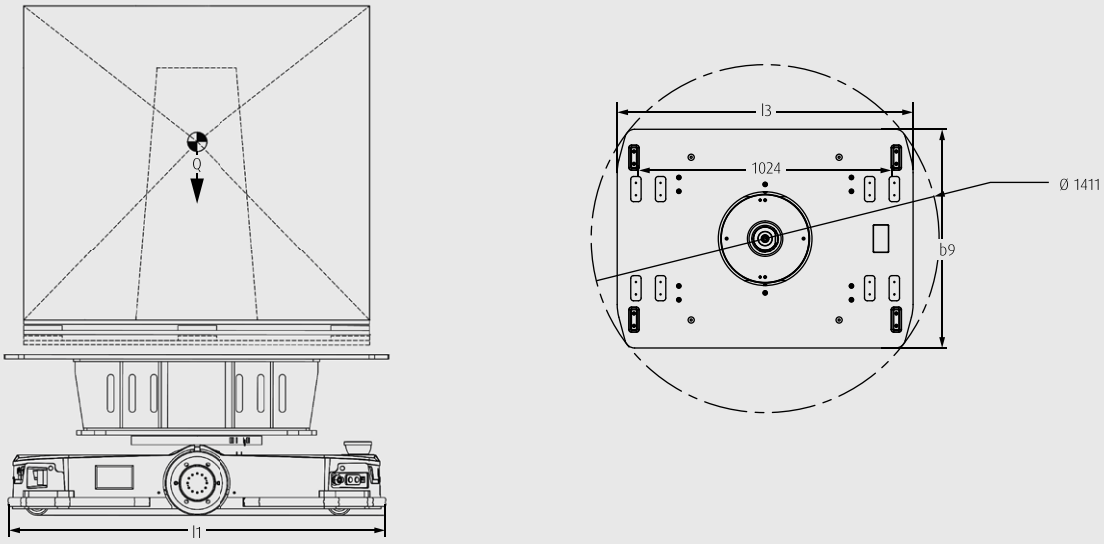
| | | | | | |
|---|---|---|---|---|---|
| Characteristics | 1.1 | Manufacturer (abbreviation) | | Linde MH | Linde MH |
| | **1.2** | **Manufacturer's type designation** | | **C-MATIC 10** | **C-MATIC 15** |
| | 1.2a | Series | | 8925-23 | 8925-23 |
| | 1.3 | Drive | | Battery | Battery |
| | 1.4 | Operation | | Automatic | Automatic |
| | 1.5 | Rated capacity/rated load | Q (t) | 1.0 | 1.5 |
| Weight | 2.1 | Service weight | kg | 230[1] | 235[1] |
| Tyres/chassis | 3.1 | Tyres: solid rubber, superelastic, pneumatic, polyurethane | | Polyurethane | Polyurethane |
| | 3.4 | Auxiliary wheels (dimensions) | | Ø200 × 40 | Ø200 × 40 |
| | 3.5 | Wheels, number front/rear (x = driven wheels) | | 2x + 4 | 2x + 4 |
| | 3.6 | Tread, front | b10 (mm) | 758 | 758 |
| Dimensions | 4.4 | Lift | h3 (mm) | 60 | 60 |
| | 4.15 | Height, lowered | h13 (mm) | 260 | 260 |
| | 4.16 | Length of loading surface | l3 (mm) | 950[2] | 950[2] |
| | 4.18 | Width of loading surface | b9 (mm) | 750[2] | 750[2] |
| | 4.19 | Overall length | l1 (mm) | 1180 | 1180 |
| | 4.21 | Overall width | b1/b2 (mm) | 832 | 832 |
| | 4.33 | Load dimension | b12 × l6 (mm) | 1200 × 1200 // (1080 × 1080)[3] | 1200 × 1200 // (1080 × 1080)[3] |
| | 4.34 | Aisle width predetermined load dimensions | Ast (mm) | 1897[4] | 1897[4] |
| | 4.35 | Turning radius | Wa (mm) | 618.5[5] | 618.5[5] |
| Performance | 5.1 | Travel speed, laden/unladen | km/h | 4.3/5.4 | 4.3/5.4 |
| | 5.8 | Max. gradeability, laden/unladen | % | < 5.0[6] | < 5.0[6] |
| Electric-engine | 6.3 | Battery according to DIN 43531/35/36 A, B, C, no | | Li-ION | Li-ION |
| | 6.4 | Battery voltage/nominal capacity K 5 | (V)/(Ah) o. kWh | 51.2/42 | 51.2/42 |
| | 6.5 | Battery weight (±5%) | kg | 22 | 22 |

1) Without adaptor plate
2) Loading platform rotation diameter: C-MATIC 10/15: Ø1060 mm
3) With loading platform: tables as load carrier are required.
   Pallet handling with adaptor plate (l3 × b9 = 1200 × 887 mm) with 3 fixation positions l6: 1016 mm (Position 1), 1000 mm (Position 2), 800 mm (Position 3)
   b12: < 1219 mm // (load inner dimensions l6.1 × b14)
4) Including a 200 mm (min.) operating aisle clearance.
   With adaptor plate and load dimensions (l6 × b12) of Euro pallet (800 × 1200) = 1642 mm; UK pallet (1000 × 1200) = 1762 mm: US pallet (1016 × 1219) = 1898 mm
5) Unladen rotation diameter C-MATIC 10/15: Ø1237 mm with adaptor plate: C-MATIC 10/15: Ø1411 mm
6) Allowed step height at rated speed ≤ 5 mm – with reduced speed ≤ 10 mm, traversable gap at rated speed ≤ 5 mm – with reduced speed ≤ 30 mm

## C-MATIC 10, C-MATIC 15



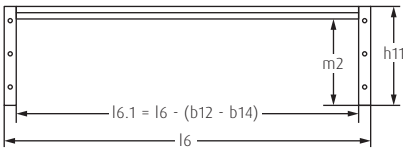

## ADAPTOR PLATE: C-MATIC 10, C-MATIC 15

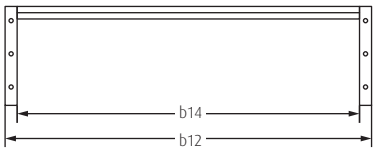


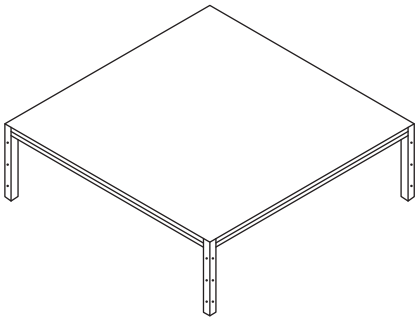

For safe transport, it is essential to ensure that the center of gravity and the height of the load are within the permissible range. This will be checked on a project-specific basis.

# APPLICATION INFORMATION

## PLATFORM: TABLE REQUIREMENTS



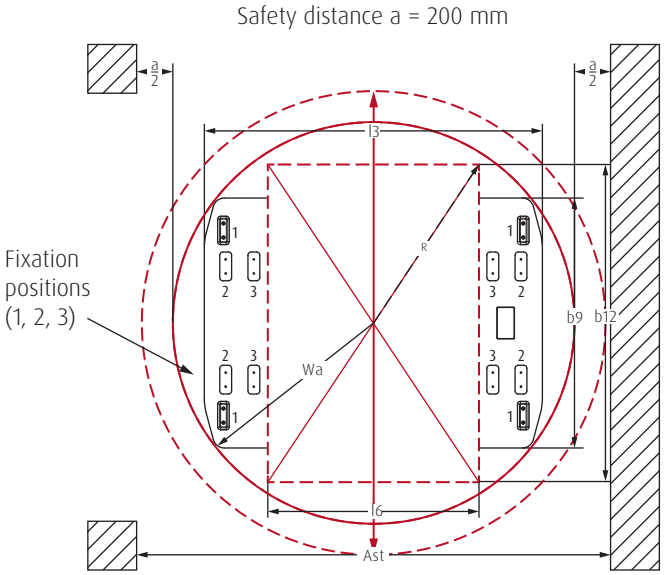



A QR code must be located centrally underneath the table for load identification and orientation

| Manufacturer's type designation | C-MATIC 10 | C-MATIC 15 |
|---|---|---|
| Dimension l6 × b12 × m2 (mm) | 1200 × 1200 × 290 | 1200 × 1200 × 290 |
| Inner dimensions l6.1 × b14 (mm) | 1080 × 1080 | 1080 × 1080 |
| Capacity (kg) | 1000 | 1500 |
| Loading height, unladen h11 (mm) | 330 | 330 |

## ADAPTOR PLATE: PALLET REQUIREMENTS

Safety distance a = 200 mm



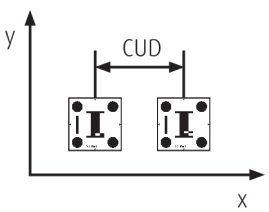

Ast = 2 × max (Wa, R) + a, with a = 200 mm

$$R = \sqrt{\left(\frac{b12}{2}\right)^2 + \left(\frac{l6}{2}\right)^2}$$

| Adaptor plate | C-MATIC 10 | C-MATIC 15 | Ast (mm) |
|---|---|---|---|
| Adaptor plate dimensions l3 × b9 (mm) | 1200 × 887 | 1200 × 887 | 1611 |
| Load dimensions (l6 × b12) | Fixation position 1, 2 or 3 | | |
| EPAL1, CP2: 800 × 1200 mm | Position 3 | Position 3 | 1642 |
| EPAL3, CP1: 1000 × 1200 mm | Position 2 | Position 2 | 1762 |
| Australia, GMA and North America: 1016 × 1219 mm | Position 1 | Position 1 | 1898 |

## LOCALISATION TECHNOLOGY

The max. QR codes unit distances (CUD) is limited to 1500 mm for vehicle localisation.
The different models are optimised for a standard CUD for loads without overhang.




| Manufacturer's type designation | Standard CUD (mm × mm) |
|---|---|
| C-MATIC 10 | 1400 × 1400 |
| C-MATIC 15 | 1400 × 1400 |

# STANDARD AND OPTIONAL EQUIPMENT

| | Manufacturer's type designation/equipment | C-MATIC 10 | C-MATIC 15 |
|---|---|---|---|
| Off board software | Smart routing algorithm | ○ | ○ |
| | Smart charging logic | ○ | ○ |
| | Interfaces to existing WMS, ERP, etc. | ○ | ○ |
| | Interfaces with infrastructure: doors, conveyors, etc. | ○ | ○ |
| | Interfaces with Linde Warehouse Management Systems | ○ | ○ |
| On board software | QR code navigation | ● | ● |
| | QR code load identification | ● | ● |
| | User-friendly log-on to the vehicle | ● | ● |
| Safety | Personal detection safety scanner in main direction of travel | ● | ● |
| | Dual lidar safety scanners on both front and rear sides for enhanced coverage | ○ | ○ |
| | Safety field switches between lifted and lowered platform | ● | ● |
| | Emergency stop buttons on all sides (left and right corners at both front and rear) | ● | ● |
| | Safety bumper around the vehicle (front, side, rear) | ● | ● |
| Navigation | Positional accuracy ±10 mm | ● | ● |
| | Stop accuracy ±5 mm | ● | ● |
| | Angular accuracy ±1° | ● | ● |
| | Navigation QR codes with interval 1400 × 1400 mm | ○ | ○ |
| HMI interface | Control buttons | ● | ● |
| | LED indicators | ● | ● |
| | Depending on situation plays warning sounds and/or voice package | ● | ● |
| Operation/ load handling | QR code load table identification | ○ | ○ |
| | Turn, transport and drop load through 90°, 180° and 270° | ● | ● |
| | Load table dimensions 1200 × 1200 mm | ○ | ○ |
| | Adaptor plate with a height range of 290-1000 mm above the floor – suitable for various handover tasks such as pick and drop stations, workstations, conveyors, etc. | ■ | ■ |
| | Differential drive with dual wheels | ● | ● |
| | Turn on the spot with and without locked platform | ● | ● |
| Environment | Wifi communication | ● | ● |
| | Ambient operating temperature +0 – +40°C | ● | ● |
| Energy | Li-ION battery | ● | ● |
| | Automatic Opportunity Charging Connector | ● | ● |
| Service | Switch for automated or maintenance mode | ● | ● |
| | Plug for Hand Control Unit | ● | ● |
| | Hand Control Unit | ○ | ○ |
| | Ramp to operate C-MATIC from delivery pallet | ○ | ○ |

● Standard equipment ○ Optional equipment ■ Special Equipment

# CHARACTERISTICS

Dynamic safety fields

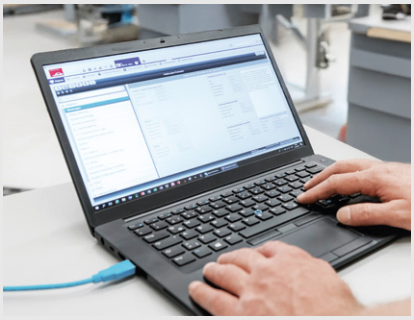
## Safety

→ Laser scanner for reliable detection of vehicle's surroundings
→ Immediate reaction to people, other vehicles or obstacles
→ Ideal combination of maximum productivity and highest possible safety
→ Stable collision protection and emergency stop switch for additional protection
→ Optionally, the vehicle can be equipped with two laser scanners, providing 360° coverage and enabling equal speed in both driving directions

Flexible load handling

## Handling

→ Orientation based on QR codes on the floor
→ Calculation of the optimal route for each individual transport job
→ QR codes on optional transport tables for load tracking
→ Direct transport of pallets with adaptor plate for different transfer heights
→ Optional self-charging station for fully automated battery charging



Efficient fault detection

## Service

→ Robust technology and long maintenance intervals for maximum availability
→ Easy access to all main components for fast maintenance
→ Rapid fault diagnosis via WLAN or wired network connection

Customer process focus as a standard

## Sales and realisation

→ Project-specific concept design including dynamic simulation and proof of concept on site if required
→ Combination of manual handling processes and the degree of automation can be optimised to fit the customer needs
→ One face to the customer for the whole process from first contact to the lifecycle phase
→ Intelligent, scalable software solutions to provide customers with full control of their processes
→ Project management and commissioning according to Linde standards with unified tools and templates over the entire network

Presented by:



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