



Linde Material Handling

*Linde*



## Automated Transporting Solution

# G-MATIC HP 10

Capacity 1.0t | Series 8928

### Autonomous transport miracle

- Autonomous transport solution for medium to long distances in mixed operations
- Load capacity 1000 kg and maximum speed of 8 km/h for fast transfer of loads
- Natural feature navigation for optimal orientation without additional infrastructure
- Independent avoidance of obstacles and flexible load pick-up for trouble-free process flows
- Cloud-based software control for effortless implementation and optimum adjustment

# TECHNICAL DATA (According to VDI 2198)

Characteristics	1.1	Manufacturer		Linde MH
	1.2	Model		C-MATIC HP 10
	1.2.a	Series		8928-01
	1.3.	Power Unit		Battery
	1.4	Operation		Automated
	1.5	Load capacity / Load	Q (t)	1.0
Weights	1.8	Axle centre to fork face	x (mm)	390
	2.1	Service weight	(kg)	170 <sup>1)</sup>
Wheels / Tyres	3.1	Tyres rubber, SE, pneumatic, polyurethane		Vulkollan
	3.4	Auxiliary wheels (dimensions)	(mm)	160 × 45
	3.5	Wheels, number front/rear (x = driven)	(∅)	2x +2
	3.6	Track width, front	b10 (mm)	584
Dimensions	4.4	Lift	h3 (mm)	40
	4.15	Height, lowered	h13 (mm)	222 <sup>2)</sup>
	4.16	Loading platform, length	l3 (mm)	1021 <sup>3)</sup>
	4.18	Loading platform, width	b9 (mm)	619 <sup>4)</sup>
	4.19	Overall length	l1 (mm)	1440
	4.21	Overall width	b1 (mm)	634
	4.33	Load dimension b12 × l6	b12 × l6 (mm)	860 × 1260
	4.34	Aisle width with predetermined load dimensions	Ast (mm)	2948 <sup>5)</sup>
4.35	Turning radius	Wa (mm)	1592 <sup>6)</sup>	
Performance	5.1	Travel speed, with/without load	(m/s)	2.2
	5.2	Lifting speed, with/without load	(m/s)	0.0203
	5.3	Lowering speed, with/without load	(m/s)	0.0203
Drive	6.4	Battery voltage/rated capacity (5 h)	(V)/(Ah) o. (kWh)	48 /120
Others	10.7	Sound pressure level LpAZ (at the driver's seat)	(dB(A))	< 70

1) Adaptor plate weight +45 kg

2) Adaptor plate +158 mm

3) Adaptor plate l3=1200

4) Adaptor plate b9=606

5) Including a=200 mm (min.) operating aisle clearance

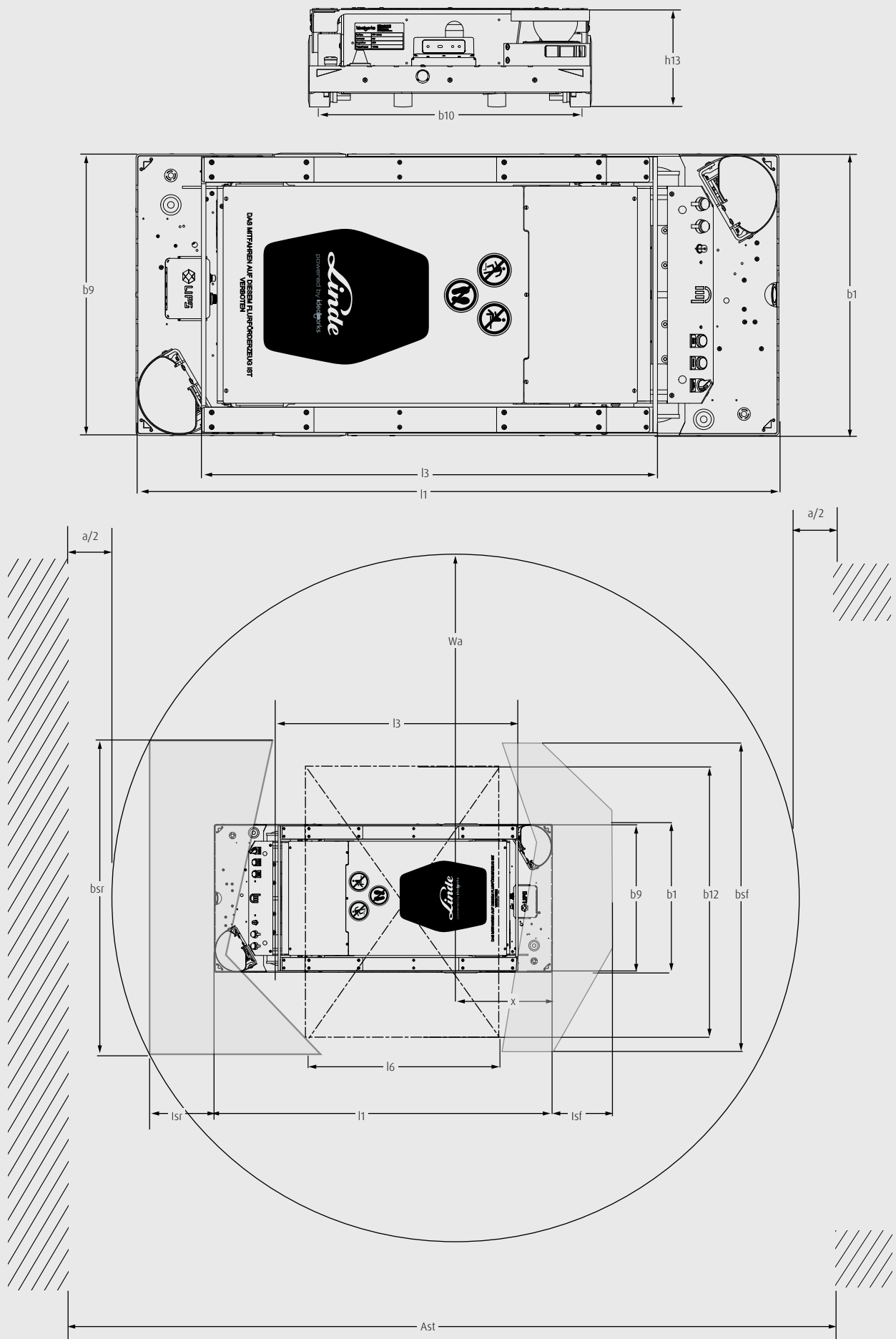
High tolerance (+/-300 mm & +/-15°) 90° pick-up Ast=3669 mm

With adaptor plate Ast=2857 mm

6) With adaptor plate and EPAL1 or EPAL3

(loaded 800, 1000 × 1200) Wa=1327 mm

# C-MATIC HP 10



Safety field dimensions front min. 185 x 1650 mm ( $l_{sf}$  x  $b_{sf}$ ) and rear min. 185 x 1650 mm ( $l_{sr}$  x  $b_{sr}$ )  
 $A_{st} = 2 * Wa + a$ , with  $a = 200$  mm

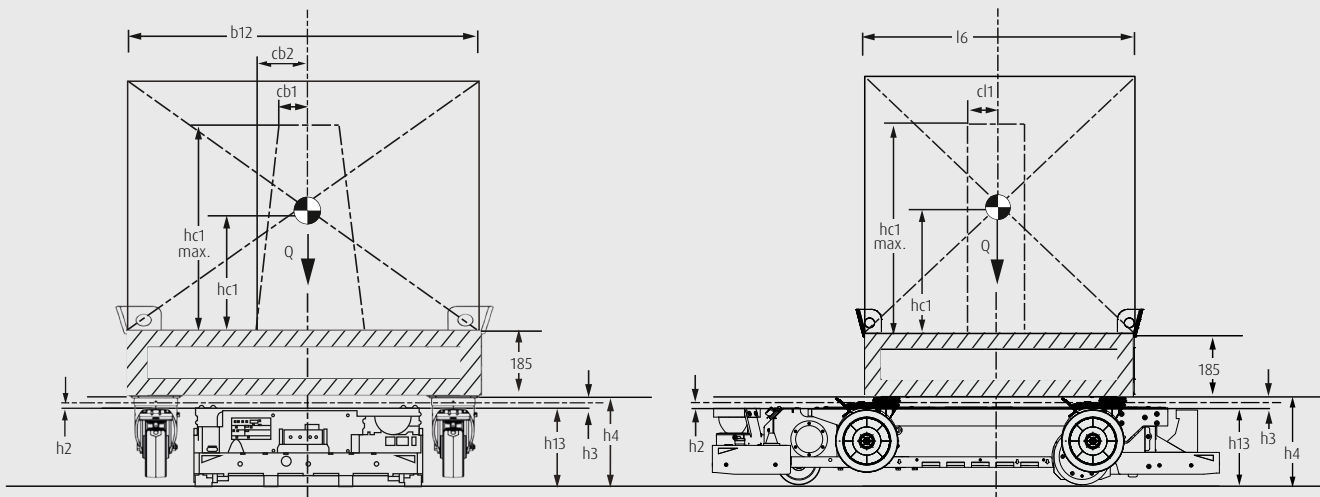
# APPLICATION VARIANTS

Applications	Load carrier dimensions	Max. capacity	Overall height (lift lowered)	Lift	Overall height, max. extended
	$l_6 \times b_{12}$ [x m <sup>2</sup> ] (mm)	Q (kg)	h <sub>13</sub> (mm)	h <sub>3</sub> (mm)	h <sub>4</sub> (mm)
Trolley transport	1260 × 860 × 235	1000	222	40	262
Direct pallet transport	1200 × 800   1200 × 1000	1000	380	40	420

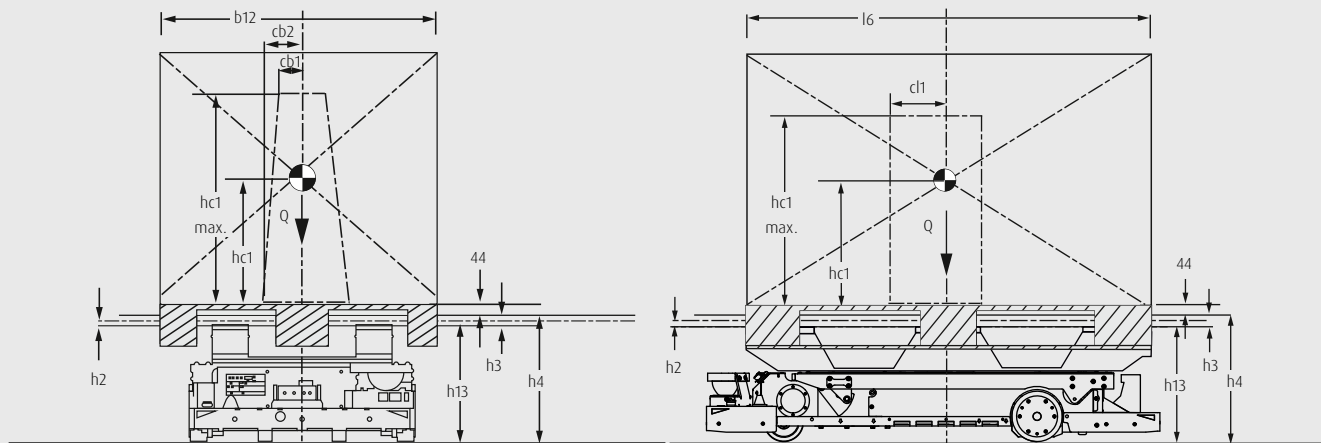
Vehicle variants	Entry height	Max height of CoG <sup>1)</sup>	Max. displacement of CoG in main driving direction (l)	Max. displacement of CoG lateral to main driving direction (b)	
	h <sub>13</sub> + h <sub>2</sub> <sup>2)</sup> (mm)	hc <sub>1</sub> (mm)	cl <sub>1</sub> (mm)	cb <sub>1</sub> (mm)	cb <sub>2</sub> (mm)
Platform for trolley transport	235	800	30	60	80
Adaptor plate for direct pallet transport	400	800	30	60	80

1) h<sub>2</sub> = free lift 2) CoG = Centre of Gravity

## TROLLEY TRANSPORT

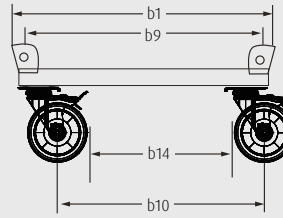
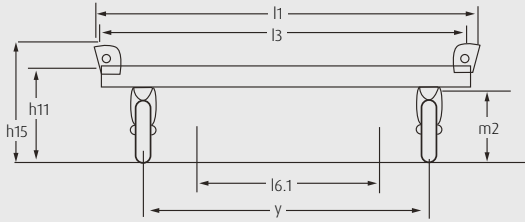


## PALLET TRANSPORT



# ADDITIONAL EQUIPMENT (TECHNICAL REQUIREMENTS)

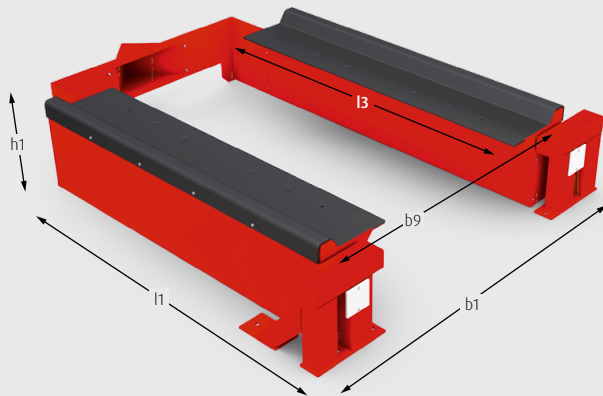
## TROLLEY TRANSPORT



Characteristics	Trolley
Dimensions l1 × b1 × m2 (mm)	810 × 1210 × 235
Load dimension b9 × l3 (mm)	800 × 1200
Min. inner entry l6.1 (mm)	> 660

- Stable trolley transport is ensured
- Made for high tolerances on pick-up locations

## PALLET TRANSPORT



Pick-and-drop station



C-MATIC HP with adaptor plate

Characteristics	C-MATIC HP 10 EPAL1 pallet length	C-MATIC HP 10 EPAL3 pallet length
Dimensions l1 × b1 × h1 (mm)	1610 × 1134 × 325	1762 × 1235 × 235
Pallet supporting surface h11 (mm)	280	280
Load dimension l3 × b9 (mm)	1200 × 800	1200 × 1000
Max. load capacity (kg)	1000	1000

- Stable pallet transport is ensured via pick-and-drop station
- Made for pallet transport with short-side leading

# AUTOMATIC CHARGING STATION

## Fully automated charging

- Designed solution includes charging station
- Intermediate charging possible during operating breaks
- Charging of several vehicles via one station
- Vehicle can also be charged while loaded



## CHARGER

Model		48V 40A 1.9 kW	
Basic	Plug Type	Type F (EU) or G (UK)	
Physical	Dimension b × l × h	(mm)	830 × 788 × 288
	Weight	(kg)	40
	Length of power line	(m)	2.5
Input	Rated voltage	(V)	230
	Mains fuse protection	(A)	16
	Power	(W)	3680
	Grid frequency	(Hz)	50/60
Output	Power	(W)	1920
	Voltage	(V)	48
	Current	(A)	40
Others	Ambient temperature	(°C)	+5/+30
	Storage temperature	(°C)	+5/+30

# STANDARD AND OPTIONAL EQUIPMENT

Model		C-MATIC HP 10 with loading platform	C-MATIC HP 10 with adaptor plate
Digitalisation	Intelligent routing algorithms	●	●
	Intelligent charging logic	●	●
	Standard interfaces to existing WMS, ERP, etc.	○	○
	Standard interfaces with infrastructure: doors, conveyors, etc.	○	○
Safety	Control buttons (On, Off, Reset)	●	●
	Personal safety around the robot with two diagonal safety scanners	●	●
	Safety field switch between platform raised and lowered	●	●
	Two diagonally positioned emergency stops	●	●
	Audio-communication	●	●
Lighting	Robot status light	●	●
	Direction indicators when turning	●	●
	BlueSpot in front and rear direction	●	●
	Indirect blue line on floor	●	●
Load Handling	Multi-colour status column at the rear of the robot	○	○
	Load pick-up with high tolerances for manual positioning on marked floor	●	–
	Natural feature navigation based on SLAM technology	●	●
	Camera-based load recognition	●	–
	Longside leading trolley transport with load dimensions of 1200 × 800 mm	●	–
	Trolley transport with customised load dimensions <1600 × 1600 mm	○	–
Environment	Short-side leading pallet transport with EPAL1 and EPAL3 pallets	–	●
	Wifi communication	●	●
Energy	Ambient temperature +5/+40°C	●	●
	Li-ION battery	●	●
	Automatic opportunity charging connectors	●	●
	Automatic charging station	○	○
Service	Energy charging status information based on flashlights in each corner	●	●
	Plug for remote hand control unit	●	●
	Hand control unit	○	○
Driving	Can be transported on ISO forks	●	●
	Differential drive with dual forward wheel drive	●	●
	High performance obstacle avoidance feature	●	●

● Standard equipment    ○ Optional equipment    – Not available

# CHARACTERISTICS



Safety around the vehicle



Flexible load handling



Easy access to main components



Focus on customer processes as standard

## Safety

- Laser scanner for reliable detection of the complete vehicle environment
- Immediate reaction to people, vehicles or obstacles to avoid collisions
- Stable load pick-up when transporting pallets and rolling racks for safe transport of goods
- Ideal combination of flexibility, productivity and maximum safety
- Emergency stop switch on both sides for additional protection in everyday warehouse life

## Handling

- Infrastructure-free SLAM technology for optimum use in automated mixed operation
- Independent bypassing of obstacles for stable and trouble-free material flow
- High tolerance load pick-up for reliable transport of pallets and roller racks
- Cloud-based control software for fast implementation and effortless vehicle management
- Powerful Li-ION battery and self-charging function for 24/7 operation

## Service

- Robust technology and low maintenance requirements for maximum availability
- Easily accessible components for rapid maintenance
- Fault diagnosis via service laptop or remote maintenance function for low service costs
- Extensive Linde MH service network for repairs and maintenance around the clock

## Sales and realisation

- Project-specific concept design including dynamic simulation and proof of concept on site if necessary
- Combination of manual handling processes and 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 best control of their processes
- Project management and commissioning according to Linde MH standards with unified tools and templates in the entire network

Presented by:

Subject to modification in the interest of progress. Illustrations and technical details could include options and are not binding for actual constructions. All dimensions subject to usual tolerances.



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