Robotic tow tractor
P-MATIC

Series 1190

Linde Material Handling

Safety
Thanks to its smart safety management, the P-MATIC anticipates and reacts autonomously to its direct environment. Advanced obstacles' detection provides real time speed adjustment to enhance the productivity while offering the utmost safety.

Performance
The unique infrastructure-free geoguidance system makes the solution flexible and scalable. Stand alone or within larger fleets of robotic trucks, the P-MATIC can easily interact with the customer's environment (doors, conveyors..) and even interface with WMS/ERP. The P-MATIC will always deliver the optimal drive speed to achieve the maximum throughput.

Comfort
The P-MATIC is natively designed to work in a shared environment with people. The user-friendly interface provides all needed controls & information at a glance. Moreover, the dual driving mode makes the P-MATIC intuitive to switch automatic/manual.

Reliability
Fully integrated in the warehouse product range, the P-MATIC benefits from all Linde quality standards, and the robust "DRIVEN BY BALYO" navigation technology. Always available, the P-MATIC will support your business 24/7 while offering significant costs-savings.

Productivity
Efficiency at work, efficiency in servicing.
With a computerized & remote diagnostic system, combined with predictive maintenance program, the P-MATIC remains available at any time.

Technical Data according to VDI 2198

Characteristics	1.1	Manufacturer		LINDE/BALYO
	1.2	Model designation		**P-MATIC**
	1.2a	Series		1190
	1.3	Power unit		Battery
	1.4	Operation		Robotic/manual
	1.5	Load capacity/Load	Q (t)	5.0
	1.7	Rated tractive force	F (N)	1800
	1.9	Wheelbase	y (mm)	1050[1]
Weights	2.1	Service weight	(kg)	1080[2][3]
	2.3	Axle load without load, front/rear	(kg)	634 / 446
Wheels/Tyres	3.1	Tyres rubber, SE, pneumatic, polyurethane		Polyurethane
	3.2	Tyre size, front		Ø 254 x 102
	3.3	Tyre size, rear		2x Ø 250 x 80
	3.4	Auxiliary wheels (dimensions)		2x Ø 100 x 40
	3.5	Wheels, number front/rear (x = driven)		1x + 2 / 2
	3.6	Track width, front	b10 (mm)	544[1]
	3.7	Track width, rear	b11 (mm)	675[1]
Dimensions	4.8	Height of seat/stand on platform	h7 (mm)	710 / 910
	4.9	Height of tiller arm in operating position, min/max	h14 (mm)	1020 / 1120
	4.12	Towing coupling height	h10 (mm)	300 / 290 / 345 / 400
	4.17	Rear overhang	l5 (mm)	365
	4.19	Overall length	l1 (mm)	1750[4]
	4.21	Overall width	b1/b2 (mm)	798 / 790
	4.32	Ground clearance, centre of wheelbase	m2 (mm)	40
	4.35	Turning radius	Wa (mm)	1485[5]
	4.36	Minimum pivoting point distance	b13 (mm)	1360
Performance	5.1	Travel speed, with/without load	(km/h)	8 / 8
	5.5	Tractive force, with/without load	(N)	1800
	5.6	Maximum tractive force, with/without load	(N)	4000
	5.7	Climbing ability, with/without load	(%)	<3.0 / 14.0
	5.8	Maximum climbing ability, with/without load	(%)	5.0 / 14.0
	5.9	Acceleration time, with/without load	(s)	6.5 / 4.6
	5.10	Service brake		Electro-magnetic
Drive	6.1	Drive motor, 60 minute rating	(kW)	3
	6.2	Lift motor, rating at S3 15%	(kW)	1.7
	6.3	Battery according to DIN 43531/35/36 A,B,C,no		no
	6.4	Battery voltage/rated capacity (5h)	(V/Ah)	24 / 375
	6.5	Battery weight (± 5%)	(kg)	295
	6.6	Power consumption according to VDI cycle	(kWh/h)	1.16
Others	8.1	Type of drive control		LAC
	8.4	Noise level at operator's ear	(dB(A))	< 70

1) (± 5 mm)
2) Figures with battery, see line 6.4/6.5.
3) (± 10%)
4) +10mm with hook
5) ± 0 mm = 3 PzS lateral; + 100 mm = 3 PzS vertical and 4PzS lateral; + 150 mm = 4 PzS vertical; + 225 mm = 4 PzS vertical

Standard Equipment/Optional Equipment

Standard Equipment

Navigation module on a robust frame with lighting signals, control panel, touch screen, communication module, navigation laser, front safety scanner, traction & steering software management

Drive wheel and tandem load wheels polyurethane

Lateral change 4PzS

Pre-setting for wet battery

Key switch truck acess

Lighting status column

3D camera for volume perception (technical conditions apply)

Optional Equipment

Pre-setting for gel battery

Fixed battery stand 2 batteries

Cable/connector Flex

Cable/connector Perfect

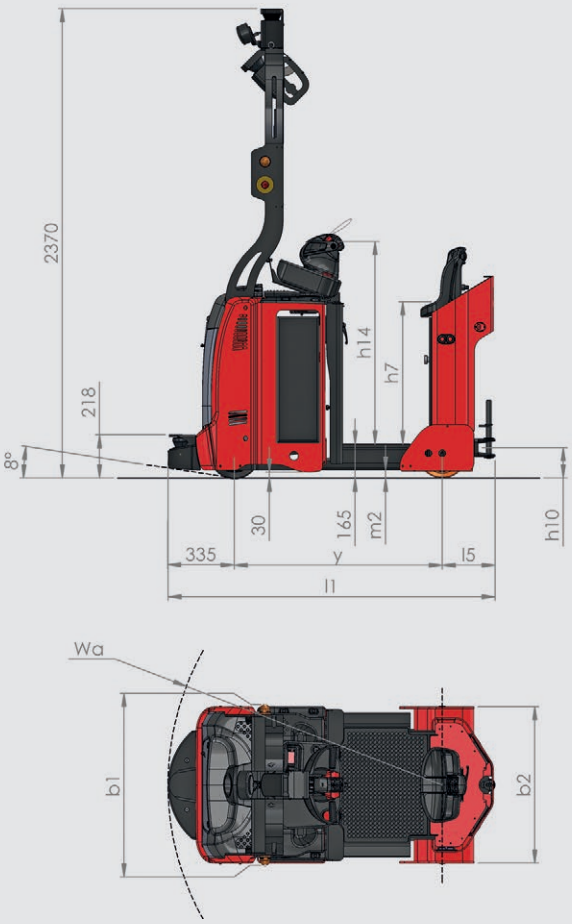
3 m cable extension

2D curtain laser

Blue spots single

Additional louder horn

Call button (COMBOX)



Features

Driving system

- Standard truck converted into a robotic truck
- Dual driving mode - automatic/manual
- Navigation laser, safety front scanner, 3D camera, embedded computer, emergency stop buttons, light and sound warning indicators

Geoguidance navigation

- Innovative infrastructure-free technology (no reflector)
  Relies on existing structural features (walls, columns, racks...)
- Real time mapping and localization
- Seamless integration in existing layouts, gradual extension or global deployment

Smart safety

- Real time speed-adaptive detection fields
- Dynamic cornering detection fields
- Autonomous decision-making capability with 3D camera
- Natural cohabitation with operators and other trucks
- Pallets or obstacles detection thanks to the rear laser scanner

User interface

- 7'' LCD touch screen
- Robotic truck, battery and system status
- Real time task management and report
- Intuitive path localization
- Service mode with PIN access
- Log extraction via USB

Operations management

- Trailers transport management
- Stand alone or WMS/ERP directed
- Supervisor software for task and smart traffic management
- Various task triggers: call buttons, sensors, PLCs, Supervisor software ...

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Printed in Germany 156.e.2.0216.IndA.Ki