
# Electric Tow Tractor
# Capacity 6000 kg
# P 60 Z

SERIES 126-01

Linde Material Handling

## Safety

T ly profiled heavy duty, lower steel chassis provides assured protection for the operator and components and the low centre of gravity ensures exceptional stability. Three independent braking systems deliver effective stopping power for every operational and emergency situation.

## Performance

With a nominal towing capacity of 6.0 tonne and unladen traction speed of 17 km/h the P 60 Z offers flexible high performance which is optimised by the Linde digital control system that provides precise, energy saving control of acceleration and speed for safe operation and high productivity. The compact, profiled chassis ensures excellent manoeuvrability.

## Comfort

A low step facilitates access to spacious operator's compartment where the automotive layout of the pedals, direction lever, steering wheel and controls, together with a fully adjustable comfort-class seat provides a comfortable and fatigue-free working environment. Integral chassis suspension ensures excellent ride characteristics.

## Reliability

The heavy guage pressed steel lower chassis section is constructed for maximum strength and durability and protects all key components. Robust top chassis section comprises exceptionally strong double-skinned, impact resistant polyethylene mouldings. The rugged drive axle and differential are designed for operation in tough and demanding applications.

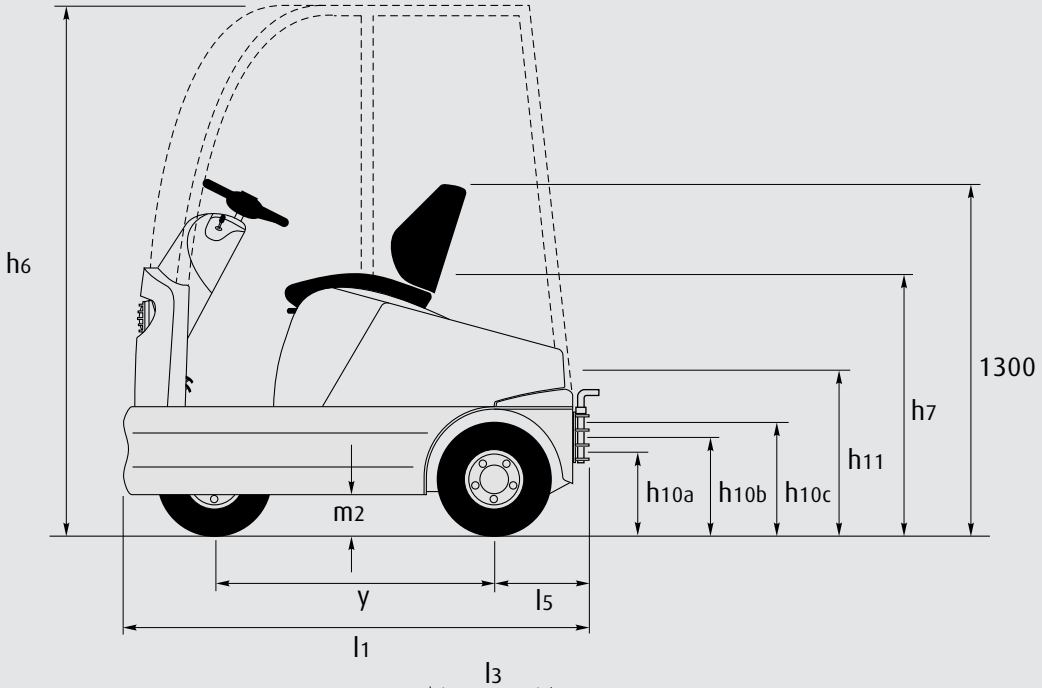
## Productivity

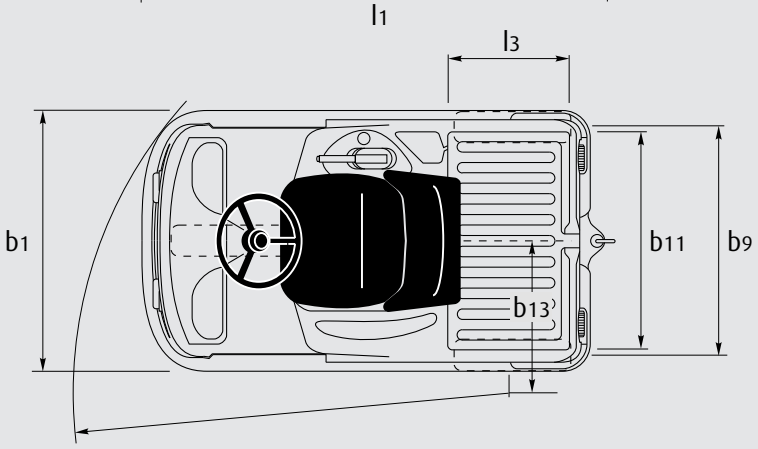
The powerful 3.2 kW drive motor provides impressive pulling power for a variety of intensive applications including the automotive industry, and airports. The energy saving Linde digital controller combined with compact manoeuvrability and an excellent interface between the operator and tractor, translates that power into versatile, seamless performance and high productivity.

# Technical data (according to VDI 2198)

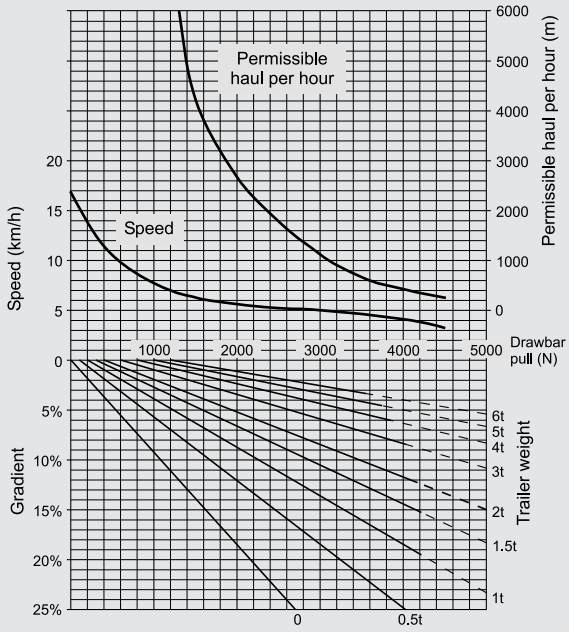
| | | | | | |
|---|---|---|---|---|---|
| Characteristics | 1.1 | Manufacturer | | LINDE | |
| | 1.2 | Model designation | | **P60Z (48V)** | **P60Z (24V)** |
| | 1.3 | Power unit: battery, diesel, petrol, LP gas, mains power | | Battery | Battery |
| | 1.4 | Operation: manual, pedestrian, stand-on, seated, order picker | | Seated | Seated |
| | 1.5 | Load capacity | Q (t) | 6.0 [1] | 6.0 [1] |
| | 1.7 | Rated drawbar pull | F (N) | 1200 [1] | 1200 [1] |
| | 1.9 | Wheelbase | y (mm) | 1040 | 1040 |
| Weight | 2.1 | Service weight | kg | 1070 | 1020 |
| | 2.2 | Axle load without load, front/rear | kg | 470/600 | 420/600 |
| Wheels and tyres | 3.1 | Tyres, front/rear (SE = CS superelastic, P = pneumatic) | | P/P [2] | P/P [2] |
| | 3.2 | Tyre size, front | | 4.00-8/6 PR | 4.00-8/6 PR |
| | 3.3 | Tyre size, rear | | 4.00-8/6 PR | 4.00-8/6 PR |
| | 3.5 | Wheels, number front/rear (x = driven) | | 1/2x | 1/2x |
| Dimensions | 3.6 | Track width, front | b10 (mm) | 0 | 0 |
| | 3.7 | Track width, rear | b11 (mm) | 860 | 860 |
| | 4.7 | Height of overhead guard (cabin) | h6 (mm) | 1960 | 1960 |
| | 4.8 | Height of seat/stand-on platform | h7 (mm) | 890 | 890 |
| | 4.12 | Towing coupling height | h10 (mm) | a) 290 b) 345 c) 400 | a) 290 b) 345 c) 400 |
| | 4.13 | PLatform height, without load | h11 (mm) | 610 | 610 |
| | 4.16 | Loading platform, length | l3 (mm) | 440 | 440 |
| | 4.17 | Rear overhang | l5 (mm) | 345 | 345 |
| | 4.18 | Loading platform, width | b9 (mm) | 830 | 830 |
| | 4.19 | Overall length | l1 (mm) | 1730 | 1730 |
| | 4.21 | Overall width | b1 (mm) | 996 | 996 |
| | 4.32 | Ground clearance, centre of wheelbase | m2 (mm) | 115 | 115 |
| | 4.35 | Turning radius | Wa (mm) | 1650 | 1650 |
| | 4.36 | Minimum pivoting point distance | b13 (mm) | 600 | 600 |
| Performance | 5.1 | Travel speed, without load | km/h | 7/17 | 7/17 |
| | 5.5 | Tractive force, without load, 60 minute rating | N | 1200 | 1200 |
| | 5.6 | Maximum tractive force, without load, 5 minute rating | N | 4500 | 4500 |
| | 5.7 | Climbing ability with/without load, 30 minute rating | % | See graph | See graph |
| | 5.8 | Maximum climbing ability with/without load, 5 minute rating | % | See graph | See graph |
| | 5.10 | Service brake | | Hydraulic/electric | Hydraulic/electric |
| Drive | 6.1 | Drive motor, 60 minute rating | kW | 3.2 | 3.2 |
| | 6.3 | Battery according to Euro norm | | IEC 254-2 | IEC 254-2 |
| | 6.4 | Battery voltage/rated capacity (5h) | V/Ah | 48/330 | 24/550 |
| | 6.5 | Battery weight (± 0,5 %) | kg | 540 | 445 |
| | 6.6 | Power consumption according to VDI cycle | kWh/h | [3] | [3] |
| Other | 8.1 | Type of drive control | | Electronic/stepless | Electronic/stepless |
| | 8.4 | Noise level at operator's ear | dB (A) | 66 | 66 |
| | 8.5 | Tow coupling, design/type, DIN | | No | No |

[1] Based on level, dry surface with rolling resistance of 200 N/t.
Refer to graph opposite for specific operating conditions and when the application involves inclines or ramps.
[2] Contoured solid (superelastic) tyres are available.
[3] Refer to manufacturer for figures.

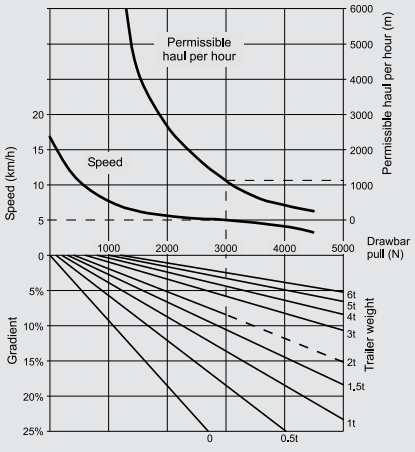



## Performance Chart




## Example of application




The example shown above illustrates
a tractor towing a.....2 tonne load
operating on a slope of.....8%
maximum travelling speed obtainable.....5 km/h
permissible length of run per hour.....1200 m
(Where the 8% slope is 60 m long, the complete cycle, including the return journey, can be performed 10 times per hour).

Load/gradient combinaisons shown by full line can be restarted from stationary on the gradient.

The permissible haul per hour is the total distance travelled, including the return journey and any downhill gradients.

It is recommended that braked trailers are used for trailer loads exceeding 2.5 tonne and for all trailer loads where a gradient is involved.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# Equipment

## Standard equipment

**General**

Three wheel configuration
Excellent stability
48 V circuit with 12 V lighting via DC/DC converter
Single pedal accelerator and direction lever
Fully adjustable, PVC covered seat
Pneumatic tyres
3,2 kW drive motor
Multi-position rear towing coupling
Full road lighting
Standard colour scheme - vermillion and charcoal grey

**Electronics**

Microprocessor based, digital, high frequency control
Combined instrument indicating parking brake applied/low brake fluid level, driver alert, brush wear warning, motor temperature warning, battery dischargew and elapsed time (hour meter)

**Batteries and chargers**

48 V, 200 or 220 Ah
48 V, 300 or 330 Ah to IEC
24 V, 500 or 550 Ah to IEC
Easy vertical lift out battery change
A range of chargers is available to suit application and mains supply requirements selected

**Safety**

Three independant braking systems
Hydraulic drum brakes on all three wheels
Parking brake actuating on rear wheels
Regenerative electric braking as accelerator pedal released or opposite travel direction
Emergency circuit isolator
Keyswitch
Fail-to-safe-circuitry
Traction isolated by seatswitch and handbrake
Handbrake delay interlock allows gradient start without roll back
Electric horn
Electrical overload protection

## Optional equipment

24 V circuit
Maximum travel speed inhibitor
Full cab with two lift-off side glass doors and rear hatch, front and rear screen wipers, front screen washer and demister, interior light and mirror, and two exterior mirrors
Cab with roll-up fabrik sides and lower rear panel including glass front and rear screens, front and rear wipers, interior light and mirror, and two exterior mirrors
Canopy with front screen, wiper and washer
Contoured solid (superelastic) tyres - normal or non-marking
Fabric covered seat - with or without heating
Seat backrest extension
Multi-position towing coupling - rear or / and front
Automatic towing couplings (to DIN 15170-E2):
- One rear
- One front
- One rear with extension
- Two rear with extension
Remote inching control
Flashing beacon on top of cab or on pole
Audible warning on reverse travel
Front collision detection

# Features

## Chassis
→ Integral full chassis suspension
→ Exceptionally strong steel lower chassis
→ High impact resistant polyethylene top section
→ Tilting top section for easy maintenance and battery access

## Operator's compartment
→ Low step access and exit
→ Spacious leg room
→ Fully adjustable comfort-class seat
→ Ergonomic automotive pedal and control layout
→ Excellent all-round visibility

## Steering
→ Light and responsive steering
→ Minimum steering effort
→ Large lock-to-lock angle
→ Excellent manoeuvrability

## Braking
→ Three independent braking systems
→ Hydraulic drum brakes on all three wheels
→ Parking brake actuating on rear wheels
→ Regenerative electric braking as accelerator pedal released or opposite travel direction selected
→ Superb regenerative braking control on gradients

## Tow coupling
→ Multi-position rear towing coupling as standard
→ Optional automatic couplings
→ Front and rear mounting options

## Controller
→ Precise control of speed and acceleration
→ Highly efficient energy saving system
→ Increased number of work cycles from battery
→ Programmable performance parameters
→ Higher productivity ratios
→ Powerful 3.2 kW drive motor transversley mounted on drive axle

## Batteries & chargers
→ 48 V, up to 330 Ah
→ 24 V, up to 550 Ah
→ Easy vertical lift out battery change
→ Range of chargers to suit application

## Serviceability
→ Tilting seat mounting cover
→ Easy access for maintenance and battery
→ Multi-function instrument display assists scheduled maintenance planning
→ Low maintenance design for maximum uptime



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