



Electric Tow Tractor 27- lbs. dbp (drawbar pull) P60Z SERIES 126

Linde Material Handling



The three-wheel electric tow tractor model P60Z, represents a significant advance in ergonomics and technology. Designed to ensure maximum operator comfort and minimum fatigue, as well as high productivity and lowest lifetime costs, it is particularly suited to a range of industrial environments including airports, railways, postal services, hospitals and the automotive industry. The P60Z has a nominal towing capacity of 13,000 lbs. and an unladen traction speed of 11.0 mph. An exclusive range of optional equipment ensures that this highly versatile tractor can be adapted for use in all types of applications.

Features

- Modern styling and powerful towing capability.
- Compact, rugged design for excellent maneuverability and versatility.
- Smooth, energy efficient, virtually noise free, digital traction control.
- Ergonomically-designed driver's compartment.
- Heavy duty, high performance design.
- Integral chassis suspension and low center of gravity provide both excellent anti-roll handling characteristics and superb stability.

Driver's compartment and controls

A low step facilitates access to the driver's compartment, which has a spacious, uncluttered floor plate covered with textured, non-slip rubber matting. The automotive layout of the pedals, direction lever, steering wheel and controls, enable safe, comfortable and efficient operation. A combination instrument indicates parking brake applied/low brake fluid level, driver alert, turn signal indicator, direction of travel, drive motor brush wear warning and drive motor temperature warning combined with progressive traction slow down. The instrument also includes a battery discharge indicator and hour meter to enable planning of maintenance intervals and battery charging schedules for optimum performance and reliability. The driver's compartment also provides storage space for drink containers and a clipboard, plus a fully adjustable PVC-covered seat with **document pouch**.

Chassis

The chassis has been designed for maximum strength and stability using the latest finite element stress analysis techniques. The lower, pressed steel section provides excellent rigidity and rugged strength

and protects all major components. The battery is located between the two axles for maximum stability. The top section is comprised of two robust, double-skinned, impact resistant, polyethylene moldings – the hood and seat pan. The latter of these can be tilted back to provide easy access for maintenance and battery changing. The modular design maximizes material utilization.

Transmission and suspension

A powerful 3.2 kW, separately excited (shunt wound) drive motor is mounted transversely on the drive axle. Power is transmitted to the rear wheels via a rugged drive axle and differential. Integral full chassis suspension ensures excellent ride characteristics.

Electrical system

The tractor is fitted with a micro processor based, digital, high frequency control system. In conjunction with the drive motor, it enables precise control of speed and acceleration for safe operation and high productivity. A high number of work cycles can be obtained from each battery charge due to the high efficiency of this system.

Safety

- Three independent braking systems.
- Emergency circuit isolator.
- Keyswitch.
- Fail-safe circuitry.
- Traction isolated by seat-switch and handbrake.
- Handbrake delay interlock allows gradient start without roll back.
- Electric horn.
- Electrical overload protection.
- Excellent stability.

Technical data

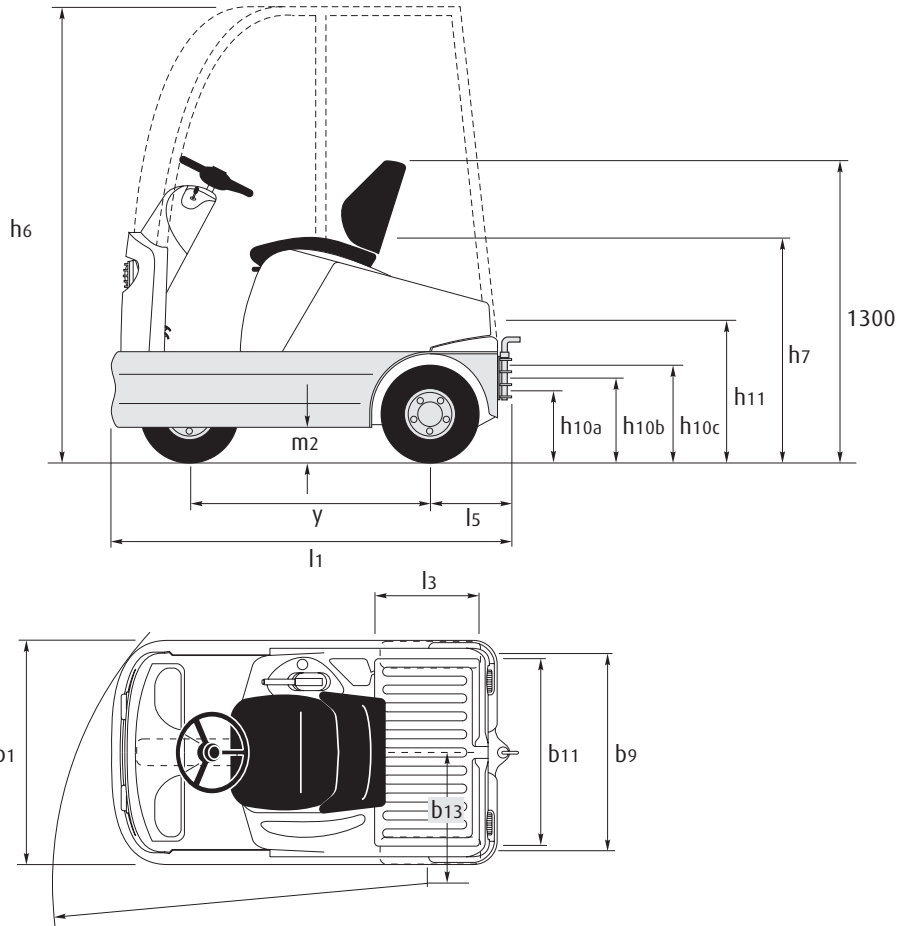
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Characteristics	1.1	Manufacturer		Linde
	1.2	Model designation		P60Z (48V)
	1.2	Power unit: battery, diesel, gasoline, LP gas		Battery
	1.4	Operation: manual, pedestrian, rider, seated, order picker		Seated
	1.5	Towed load capacity ¹⁾	Q lbs (kg)	13000 ¹⁾ (6000) ¹⁾
	1.7	Rated drawbar pull ¹⁾	lbs (N)	270 ¹⁾ (1200) ¹⁾
	1.9	Wheelbase	y in (mm)	41 (1040)
Weight	2.1	Service weight	lbs (kg)	2360 (1070)
	2.2	Axle load without load, front/rear	lbs (kg)	1036/1323 (470/600)
Wheels and Tires	3.1	Tire, front/rear: SE=CS superelastic, P=pneumatic ²⁾		P / P ²⁾
	3.2	Tire size, front		4.00 - 8, 6 ply
	3.3	Tire size, rear		4.00 - 8, 6 ply
	3.5	Wheels, number front/rear (x=driven)	b10 in (mm)	1 / 2x
	3.7	Track width, rear	b11 in (mm)	33.9 (860)
Dimensions	4.7	Height of overhead guard (cabin)	h6 in (mm)	77.2 (1960)
	4.8	Height of seat/rider platform	h7 in (mm)	35.1 (890)
	4.12	Tow coupling height	h10 in (mm)	a)11.4 (290) b)13.6 (345) c)15.8 (400) ⁵⁾
	4.13	Platform height, without load	h11 in (mm)	24 (610)
	4.16	Loading platform, length	l3 in (mm)	17.3 (440)
	4.17	Rear overhang	l5 in (mm)	13.6 (345)
	4.18	Loading platform, width	b9 in (mm)	32.7 (830)
	4.19	Overall length	l1 in (mm)	68.1 (1730)
	4.21	Overall width	b1 in (mm)	39.2 (996)
	4.32	Ground clearance, center of wheelbase	m2 in (mm)	4.5 (115)
	4.35	Turning radius	Wa in (mm)	65 (1650)
4.36	Internal turning radius	b13 in (mm)	23.6 (600)	
Performance	5.1	Travel speed, without load, 60 minute rating	m/h (km/h)	4.4/11 (7/17.6)
	5.5	Drawbar pull, without load	lbs (N)	270 (1200)
	5.6	Maximum drawbar pull, without load	lbs (N)	1010 (4500)
	5.7	Climbing ability, with/without load	%	See chart
	5.8	Maximum climbing ability, with/without load	%	See chart
	5.10	Service brake		Hydraulic/electric
Drive	6.1	Drive motor at 60 minute rating	hp (kW)	4.3 (3.2)
	6.4	Battery voltage / rated capacity (5h)	V/Ah	48 / 300
	6.5	Battery weight (+/- 5%)	lbs (kg)	1190 (540)
	6.7	Maximum battery tray dimensions: w/l/h ³⁾	in	32.68/16.3/2 4.69 ³⁾
Other	8.1	Type of drive control		Microprocessor/transistor
	8.4	Noise level at operator's ear	dB (A)	66

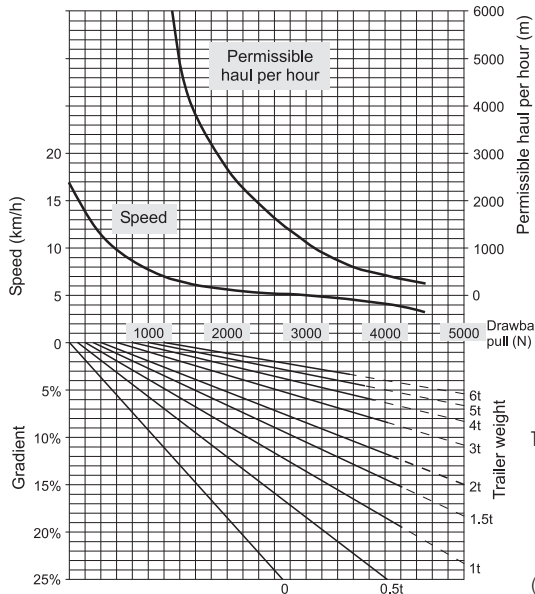
¹⁾ Based on level, dry surface with rolling resistance of 0.02 lbs/lbs (200 N/t). Refer to chart opposite page for specific operating conditions.

²⁾ Contoured solid superelastic (CSE) tires are available. ³⁾ w=width / l=length / h=height. ⁴⁾ three height adjustments.

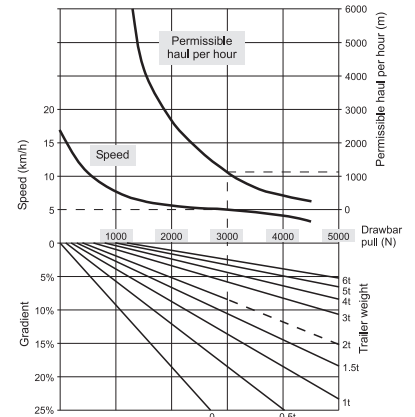
Linde
P60Z (24V)
Battery
Seated
13000 ¹⁾ (6000) ¹⁾
270 ¹⁾ (1200) ¹⁾
41 (1040)
2250 (1020)
926/1323 (420/600)
P / P ²⁾
4.00 - 8, 6 ply
4.00 - 8, 6 ply
1 / 2x
33.9 (860)
77.2 (1960)
35.1 (890)
a)11.4 (290) b)13.6 (345) c)15.8 (400) ⁵⁾
24 (610)
17.3 (440)
13.6 (345)
32.7 (830)
68.1 (1730)
39.2 (996)
4.5 (115)
65 (1650)
23.6 (600)
4.4/11 (7/17.6)
270 (1200)
1010 (4500)
See chart
See chart
Hydraulic/electric
4.3 (3.2)
24 / 500
980 (445)
32.68/12.87/2 4.69 ³⁾
Microprocessor/transistor
66



Performance Chart



Example of application



The example shown above illustrates

- a tractor towing a load of: 5500 lbs.
- operating on a slope of: 8%
- maximum traveling speed obtainable: 3 mph
- permissible length of run per hour: 3930 ft.

(Where the 8% slope is 197 ft. long, the complete cycle, including the return journey, can be performed 10 times per hour).

Load/gradient combinations shown by full line can be restated from stationary on the gradient.

The permissible haul per hour is the total distance traveled, including the return journey and down-hill gradients.

It is recommended that braked trailers are used for trailer loads exceeding 5500 lbs. and for all trailer loads where a gradient is involved.

Features

Steering

Manual steering is both light and responsive requiring minimum steering effort, thus ensuring high maneuverability with minimum operator fatigue.

Towing coupling and carrier

The tractor has a multi-position, rear towing coupling as standard equipment. The carrying compartment molded into the rear chassis has a load capacity of 330 lbs.

Lighting

The standard lighting package is comprised of two headlights protected by grills, side and rear lights and brake lights. A seven-pin trailer lighting socket is also fitted.



Braking

The tractor has three independent braking systems:

1. Hydraulic drum brakes on all three wheels.
2. Hand lever-operated parking brake mechanically connected to rear wheels.
3. Electrical regenerative braking occurs:
 - as accelerator pedal is released.
 - when opposite direction of travel is selected.
 - automatically on grades with release of the accelerator pedal.

Electrical energy is returned to the battery minimizing wear on the service brakes. On grades, speed is automatically reduced when the accelerator pedal is released to prevent over speeding.



Standard equipment

- 48V circuit with 12V lighting via DC/DC converter.
- Three wheel configuration.
- Single pedal accelerator and direction lever.
- Fully adjustable, PVC-covered seat.
- Pneumatic tires.
- 3.2 kW drive motor.
- Digital microprocessor, high frequency controller.
- Combination instrument indicating parking brake applied/low brake fluid level, driver alert, brush wear warning, motor temperature warning, battery discharge and elapsed time (hour meter).
- Multi-position, rear towing coupling.
- Head, side, rear and brake lights.
- Standard color scheme – Linde red (vermilion) and charcoal gray.

Optional equipment

- 24 Volt power.
- 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, fabric 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) tires – normal or non marking.
- Fabric-covered seat – with or without heating.
- Seat backrest extension.
- Multi-position, front towing coupling.
- Road lighting – as standard, plus turn signal indicators, hazard warning, reversing light, license plate holder and reflectors.
- Audible warning on reverse.
- Alternative color schemes.

Check with dealer/factory for additional equipment availability.

Linde Material Handling

Linde

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ANSI Standard truck meets all applicable mandatory requirements of ANSI/ISO-B56.1 standards for powered industrial trucks.
NOTE: Performance data may vary due to motor and system efficiency tolerances. The performance depicted represents nominal values obtained under typical operating conditions. Metric dimensions are in millimeters unless otherwise specified. All metric dimensions are not direct equivalents due to rounding data. The descriptions and specifications included on this data sheet were in effect at the time of printing. Linde Material Handling North America Corporation reserves the right to make improvements and changes in specification or design without incurring obligation. Please check with your authorized Linde dealer for information on possible updates or revisions.

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