MidWestTech | Linde E 20, E 25, E 30, E 20/600, E 30/600 Electric Forklift Operator's M...

Operating Instructions

Linde Fork Lift Truck

E 20 - E 25 - E 30 - E 20/600 - E 30/600

With Electric Motors

336 804 2501 E

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TECHNICAL DATA

DESCRIPTION

Linde	Data Sheet for Material Handling Equipment Forklift Trucks	VDI 2198 V
Designation to DIN 15 140	Short form to DIN 15 140	
Refer to explanations to VDI 2198	Manufacturer's Data and Design Characteristics	Registration mark

Characteristics	1.1	Manufacturer (short form)		Linde	Linde	Linde	
	1.2	Model designation		E 20	E 25	E 30	
	1.3	Power unit: battery, diesel, petrol, LPG, mains power		battery	battery	battery	
	1.4	Operation: manual, pedestrian, stand-on, seated, order picker		seated	seated	seated	
	1.5	Load capacity	Q [t]	2.0	2.5	3.0	
	1.6	Load centre	c [mm]	500	500	500	
	1.8	Axle centre to fork face	x [mm]	434	435 (460) 2)	443 (463) 2)	
	1.9	Wheelbase	y [mm]	1509	1570	1670	
Weight	2.1	Service weight	[kg]	3880 (3925) 1)	4385 (4640) 2)	4845 (5050) 1)	
	2.2	Axle load with load, front/rear	[kg]	5110 / 820	6100 / 780	7030 / 795	
	2.3	Axle load without load, front/rear	[kg]	1880 / 1770	2285 / 2180	2360 / 2485	
Wheels and Tyres	3.1	Tyres: SE = supere lastic, L = air		L (SE) / L (SE)	L (SE) / L (SE)	SE / L (SE)	
	3.2	Tyre size, front		21x8-9/16 PR 5)	23x9-10/28 PR 5)	23x9-10 SE 3)	
	3.3	Tyre size, rear		16x6-8/14 PR 5)	18x7-8/16 PR 6)	18x7-8/16 PR 5)	
	3.5	Wheels, number front/rear (x = driven)		2x / 2	2x / 2	2x / 2	
	3.6	Track width, front	b10 [mm]	880	980	980 (980) 4)	
	3.7	Track width, rear	b11 [mm]	787	880	880	
Basic Dimensions	4.1	Mast/fork carriage tilt, forward/backward	degrees	5 / 7.5	5 / 7.5	5 / 7.5	
	4.2	Height of mast, lowered	h1 [mm]	2299 8)	2555 6)	2555 6)	
	4.3	Free lift	h2 [mm]	150	150	150	
	4.4	Lift	h3 [mm]	3250 (4475) 2) 8)	3250 (4475) 2) 8)	3250 (4475) 2) 6)	
	4.5	Height of mast, extended	h4 [mm]	3755 (4980) 2) 8)	4155 (5110) 2) 8)	4155 (5260) 2) 6)	
	4.7	Height of overhead guard (cabin)	h6 [mm]	2070 (2227) 1)	2070 (2227) 1)	2070 (2227) 1)	
	4.8	Height of seat/stand-on platform	h7 [mm]	1018 (1175) 1)	1018 (1175) 1)	1018 (1175) 1)	
	4.12	Tow coupling height	h10 [mm]	-	-	-	
	4.19	Overall length	l1 [mm]	3151	3375	3425	
	4.20	Length to fork face	l2 [mm]	2151	2375	2425	
	4.21	Overall width	b1/b2 [mm]	1088	1188	1188 (1238) 4)	
	4.22	Fork dimensions	s/e/l [mm]	45 x 100 x 1000 7)	45 x 100 x 1000 7)	45 x 125 x 1000 7)	
	4.23	Fork carriage to DIN ISO 72, class/form A, B		2A	2A	3A	
	4.24	Width of fork carriage	b3 [mm]	1088	1145	1145	
	4.31	Ground clearance, mast	m1 [mm]	108 (82) 8)	118 (104) 2) 8)	110 (86) 2) 6)	
	4.32	Ground clearance, centre of wheel base	m2 [mm]	120	120	120	
	4.33	Aisle width with pallets 1000x1200 across forks	Ast [mm]	3472 (3351) 9)	3680 (3560) 9)	3735 (3615) 9)	
	4.34	Aisle width with pallets 800x1200 along forks	Ast [mm]	3558 (3551) 9)	3858 (3760) 9)	3863 (3615) 9)	
	4.35	Turning radius	Wa [mm]	1727	1925	1975	
	4.36	Minimum distance between the centres of rotation	b13 [mm]	-	-	-	
Performance	5.1	Travel speed, with/without load	km/h	14 / 17	13 / 18	13 / 18	
	5.2	Lifting speed, with/without load	m/s	0.41 / 0.58	0.37 / 0.53	0.35 / 0.50	
	5.3	Lowering speed, with/without load	m/s	0.5 / 0.5	0.5 / 0.5	0.5 / 0.5	
	5.5	Tractive force, with/without load, 60 minute rating	N	3214 / 3957	3984 / 4371	3625 / 4356	
	5.6	Maximum tractive force, with/without load, 5 minute rating	N	9289 / 9573	10956 / 10668	11700 / 11232	
	5.7	Climbing ability with/without load, 30 minute rating	% 10)	8 / 13.8	8 / 13.8	7 / 12.2	
	5.8	Maximum climbing ability, with/without load, 30 minute rating	%	16 / 26.8	16 / 26.8	14 / 24	
	5.9	Acceleration time with/without load	s	4.9 / 4.5	5.0 / 4.6	5.2 / 4.8	
	5.10	Service brake		mechanical/electric	mechanical/electric	mechanical/electric	
Drive	6.1	Drive motor, 60 minute rating	kW	2x0.5	2x0.4	2x0.4	
	6.2	Lift motor, 15% rating	kW	13.0	13.0	13.0	
	6.3	Battery according to DIN 43531/35/36 A, B, C, no		A	A	A	
	6.4	Battery voltage/rated capacity (5h)	V/Ah	80 / 400 (480) 1)	80 / 500 (600) 1)	80 / 500 (600) 1)	
	6.5	Battery weight (±5%)	kg	1224 (1547) 1)	1536 (1672) 1)	1536 (1673) 1)	
	6.6	Power consumption in acc. with VDI cycle	kWh/h	-	-	-	
Others	8.1	Type of drive control		pulse control/stepless	pulse control/stepless	pulse control/stepless	
	8.2	Working pressure for attachments	bar	200 (220) 2) 8)	170 (185) 2) 6)	200 (215) 2) 6)	
	8.3	Oil quantity for attachments	l/min				
	8.4	Mean noise level at driver's ear	dB (A)				
	8.5	Towing coupling, design/type DIN 15170					
	8.6	Vibration value	m/s²				

Note:

1) Figures in brackets for higher version as option.

2) Figures in brackets refer to triplex masts.

3) Optional SE tyres 23x10-12.

4) Figures in brackets for tyres 23x10-12 SE.

5) Optional SE tyres.

6) Mast type 163, 164, 165.

7) Fork length "l" ≥ 1400 mm; s x e = 50 x 120 mm.

8) Mast type 183.

9) Figures in brackets acc. to VDI 2198, June 1980.

10) On short slopes, when crossing obstacles (refer to section "Travel").

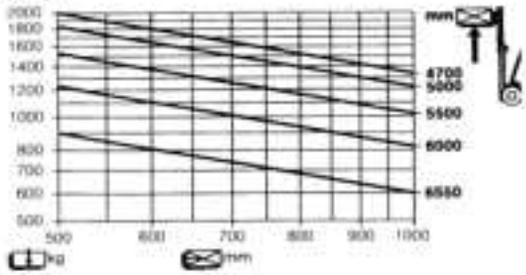
11) Data not available for EC standards since this harmonized standard is not yet available. Preliminary data on request.

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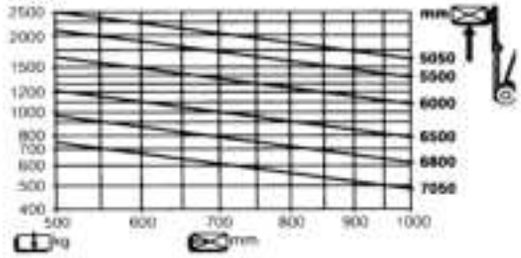
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Lifting capacity diagrams

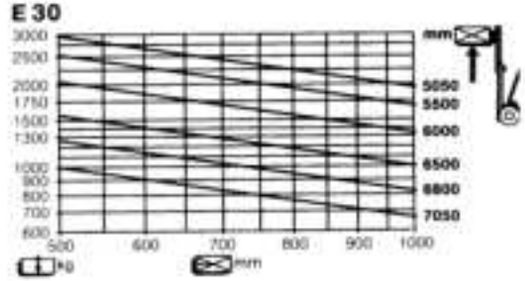
E 20

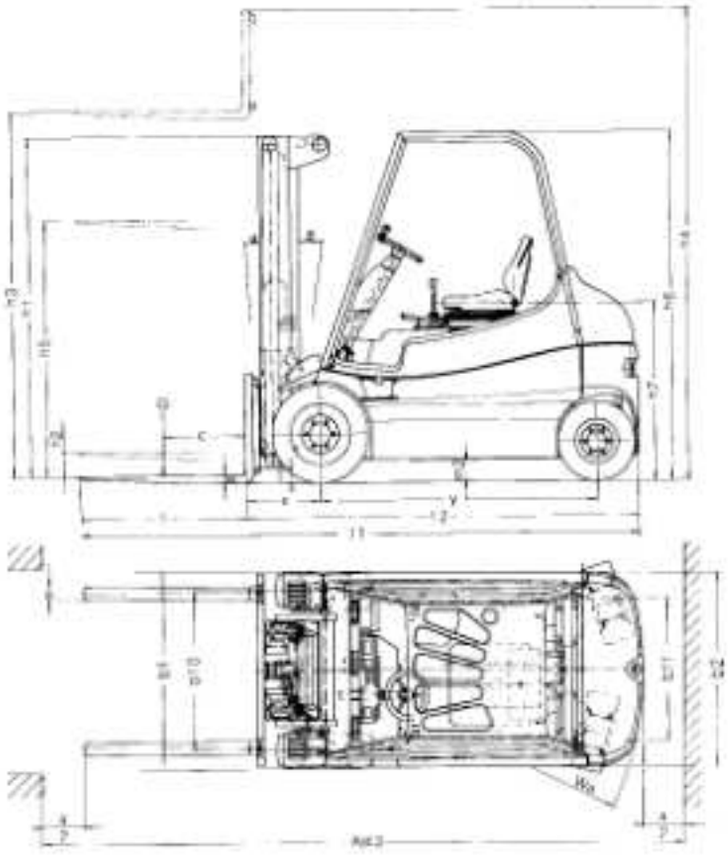


E 25



E 30





Overall height and lift height		(in mm)			E 20 with standard mast			
Lift heights	h3	2950	3250	3550	3950	4450	4750	5450
Overall lift heights, retracted (with 150 mm free lift - standard)	h1 a	2119	2269	2419	2619	2869	3019	3369
Overall heights, extended	h4	3455	3755	4055	4455	4955	5255	5955
Overall height and lift height		(in mm)			**E 20 with duplex mast**			
Lift heights	h3	3020	3320	3620	4020	4520	4820	
Overall heights, retracted	h1	2070	2220	2370	2570	2820	2970	
Special free lift	h2	1524	1674	1824	2024	2274	2424	
Overall and lift heights (Figures in brackets refer to E30)		(in mm)			**E 25 / E 30 with standard mast**				
Lift heights	h3	2550	2850	3350	3850	4350	4650	5150	6150
Overall lift heights, retracted (with 150 mm free lift - standard)	h1 a	2155	2305	2555	2705	2955	3205	3455	3955
Overall heights, retracted	h1	2110	2260	2510	2660	2960	3160	3410	3910
Overall heights, extended	h4	3355 (3605)	3655 (3905)	4155 (4305)	4455 (4805)	4855 (5005)	5455 (5855)	5955 (6255)	6955 (7105)
Special free lift duplex	h2	1375 (1225)	1525 (1375)	1775 (1625)	1925 (1775)	2125 (1975)			
Truck chassis width	b1	1089 mm (E 20), 1180 mm (E 25, E 30)							
Fork carriage width	b3	1080 mm (E 20), 1145 mm (E 25, E 30)							
Fork length	l	900, 1000, 1100, 1200 mm							
Safety distance	u	200 mm							

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		Designation		Data Sheet for Material Handling Equipment Forklift Trucks	to VDI 2198			VDI 2198
Characteristics	1.1	Manufacturer (see page 1)						
	1.2	Model designation		E 20/600	E 30/600			
	1.3	Power unit: battery, diesel, petrol, LPG, mains power		battery	battery			
	1.4	Operation: man., pedest., stand-on, seated, ord.pic.		seated	seated			
	1.5	Load capacity	Q [t]	2.0	3.0			
	1.6	Load centre	c [mm]	600	600			
	1.8	Axle centre to fork face	x [mm]	424	465			
	1.9	Wheelbase	y [mm]	1502	1670			
Weight	2.1	Service weight	[kg]	4425	5320			
	2.2	Axle load with load, front/rear	[kg]	5990 / 760	7365 / 955			
	2.3	Axle load without load, front/rear	[kg]	2010 / 2150	2470 / 2850			
Wheels and Tyres	3.1	Tyres, front/rear (SE = CS superelastic, L = pneum.)		SE (L) / SE (L)	SE / SE (L)			
	3.2	Tyre size, front		21x8-9 (SE 2)	23x10-12 (SE 2)			
	3.3	Tyre size, rear		16x6-8 (SE 2)	18x7-8 (SE 2)			
	3.5	Wheels, number front/rear (x = driven)		2x/2	2x/2			
	3.6	Track width, front	b10 [mm]	880	886			
	3.7	Track width, rear	b11 [mm]	757	809			
Dimensions	4.1	Mast/fork carriage tilt, forward/backward	degree	5 / 7.5	5 / 7.5			
	4.2	Height of mast, lowered	h1 [mm]	2235 (2212) 1)	2235 (2215) 1)			
	4.3	Free lift	h2 [mm]	150 (1563) 1)	150 (1424) 1)			
	4.4	Lift	h3 [mm]	3150 (4885) 1)	3093 (4795) 1)			
	4.5	Height of mast, extended	h4 [mm]	3866 (5516) 1)	3841 (5486) 1)			
	4.7	Height of overhead guard (cabin)	h6 [mm]	2227	2227			
	4.8	Height of seat/stand-on platform	h7 [mm]	1175	1175			
	4.12	Tow coupling height	h10 [mm]	-	-			
	4.19	Overall length	l1 [mm]	3211	3430			
	4.20	Length to fork face	l2 [mm]	2211	2430			
	4.21	Overall width	b1/b2 [mm]	1088	1226			
	4.22	Fork dimensions	s/e/l [mm]	45 x 160 x 1000 3)	60 x 180 x 1000			
	4.23	Fork carriage to DIN ISO 2328, class/form A, B		2A	3A			
	4.24	Width of fork carriage	b3 [mm]	1080	1140			
	4.31	Ground clearance, mast	m1 [mm]	105 (79)	110 (96)			
	4.32	Ground clearance, centre of wheel base	m2 [mm]	120	128			
	4.33	Aisle width w. pallets 1000 x 1200 across forks	Ast [mm]	3532	3740			
	4.34	Aisle width with pallets 800 x 1200 along forks	Ast [mm]	3660	3869			
	4.35	Turning radius	Wa [mm]	1767	1970			
	4.36	Min. distance between the centres of rotation	b13 [mm]	-	-			
Performance	5.1	Travel speed, with/without load	km/h	14 / 17	13 / 15			
	5.2	Lifting speed, with/without load	m/s	0.41 / 0.58	0.35 / 0.55			
	5.3	Lowering speed, with/without load	m/s	0.5 / 0.5	0.5 / 0.5			
	5.5	Tractive force, with/without load	N	5214 / 3507	3826 / 4056			
	5.6	Max. traction force, with/without load	N	9229 / 8573	11782 / 11232			
	5.7	Climbing ability with/without load	%	8 / 13.8	7 / 12.2			
	5.8	Max. climbing ability with/without load	% 4)	16 / 25.8	14 / 24			
	5.9	Acceleration time with/without load	s	4.9 / 4.5	5.2 / 4.8			
	5.10	Service brake		mechanical/electric	mechanical/electric			
Electr. motor	6.1	Drive motor, rating	kW	2 x 5.5	2 x 5.4			
	6.2	Lift motor, rating	kW	13.5	13.8			
	6.3	Battery according to IEC		A	A			
	6.4	Battery voltage, rated capacity K_5	V/Ah	80 / 600	80 / 600			
	6.5	Battery weight	kg	1547	1872			
	6.6							
Other	8.1	Type of traction control		pulse control/stepless	pulse control/stepless			
	8.2	Working pressure for attachments	bar	200 (225)	200 (210)			
	8.3	Oil quantity for attachments	l/min					
	8.4	Mean noise level at driver's ear	dB (A)					
	8.5	Towing coupling, design, type DIN, no.						
	8.6	Vibration value	5)					

Notes:

1) Values in brackets for triplex mast.

2) Pneumatic tyres optional.

3) Fork carriage "l" ≥ 1400 mm; s/e = 50 x 120 mm.

4) On short slopes, when crossing obstacles (refer to section "Travel").

5) Data not available for EC standards since this harmonized standard is not yet available. Preliminary data on request.

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Driving

ATTENTION
Travel on long slopes over 15 % is generally not allowed due to the prescribed minimum brake applications and truck stability characteristics. Consult your distributor before driving on steeper slopes. The climbing ability rates given in the data sheet were derived from the tractive force of the truck and they apply only for crossing obstacles and for small differences in level.

NOTE
Always drive consistent with road conditions (rough surfaces, etc.), hazardous work areas and the truck load.

ATTENTION
The hydraulic pump motor is switched on when the steering or the working hydraulics are operated.

NOTE
The directional control lever (1) must be in the neutral position.
All control levers must be in the neutral position.

- Sit on the driver's seat (only this will operate the seat switch under the driver's seat.)
- Pull out the emergency stop button (5).
- Insert the switch key (2) into the switch lock and turn it clockwise as far as possible.
- The symbol "h" (7) and the decimal point (8) are flashing and the hour meter (10) is on.
- The battery discharge indicator (9) and all warning lights in the composite instrument (3) are illuminated. (All warning lights except warning light (11) go out after approx. 2 seconds.)
- Raise the fork carriage slightly and tilt it back.
- Release the handbrake (4) (warning light (11) will go out).

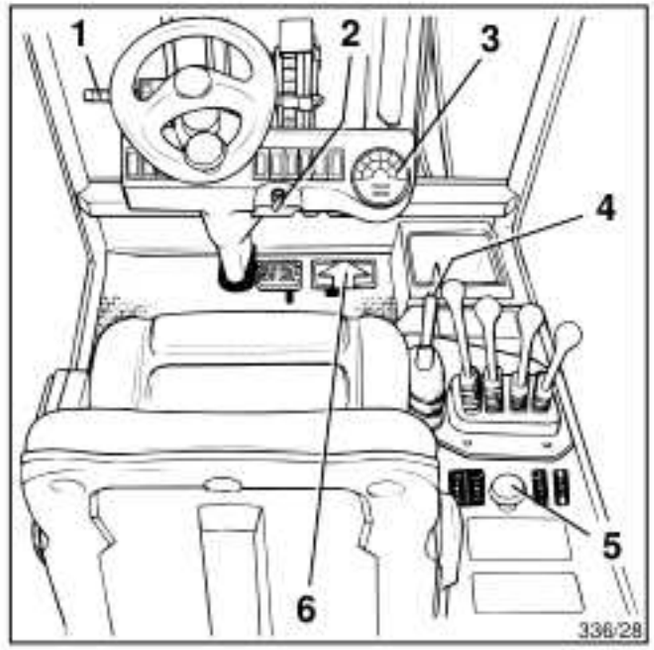
Travel in the forward direction

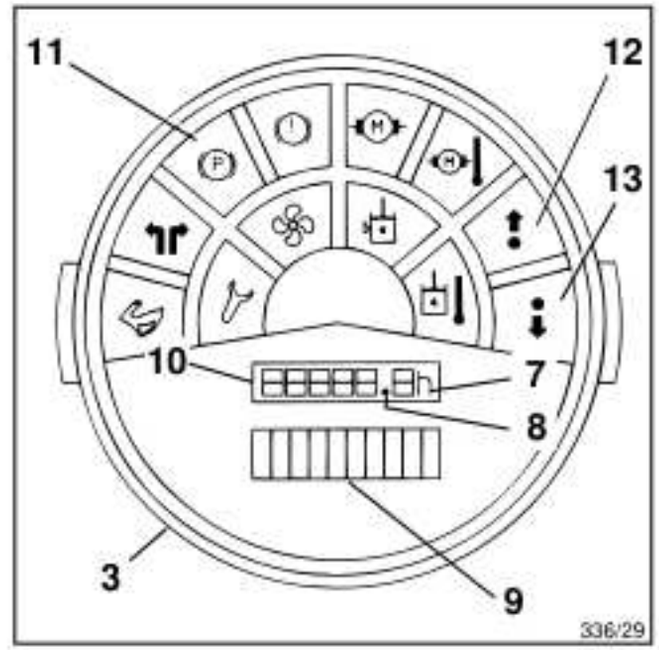
- Push the directional control lever (1) forward. Indicator light (12) in the combined instrument is illuminated.
- Depress the accelerator pedal (6) gently. Truck speed depends on how far the pedal is depressed.

NOTE
Depressing the accelerator pedal quickly does not increase the rate of acceleration as maximum acceleration is controlled automatically.

Travel in the reverse direction

- Pull the directional control lever (1) back. Indicator light (13) in the combined instrument is illuminated.
- Depress the accelerator pedal (6) smoothly. The reversing speed of the truck depends on how far the pedal is depressed.





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Check the load capacity diagram (1) before picking up a load.

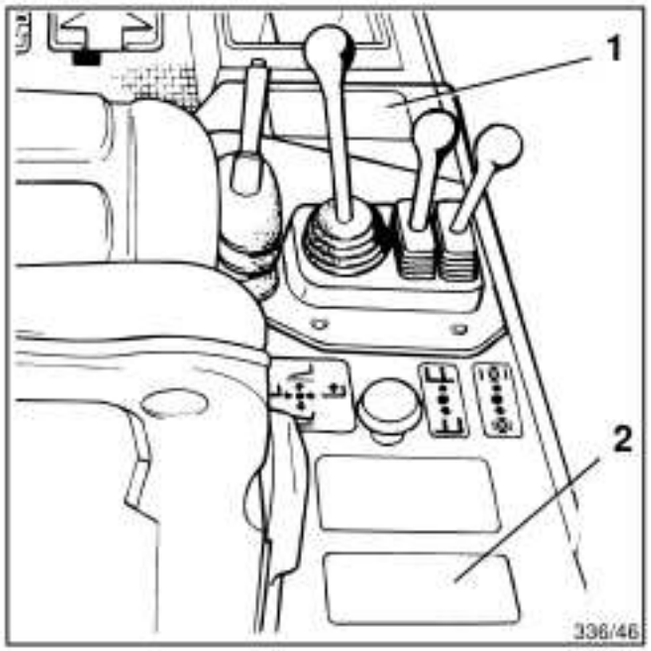
If attachments are fitted, first check the respective load capacity plate (2).

DANGER
The weights given in the load capacity diagram and plate are only applicable to compact and homogeneous loads. Never exceed the load capacity of the lift truck. Overloading will reduce truck stability and the strength of forks and mast.

The maximum load capacity is governed by the height of lift and the load centre distance.

NOTE
- Before transporting off-centre or swinging loads,
- before transporting loads with the mast tilted forward or the load not near the ground,
- loads with a large load centre distance,
- before operating attachments,
- with wind force 6

check the load limits and contact your authorised distributor.



Example:

Load centre distance: ..... 600 mm

Height of lift: ..... 6000 mm

- Follow the vertical line for a load centre distance of 600 mm to the point where it intersects the line for a lift height of 6000 mm.
- Follow the horizontal line at the point of intersection to the left to read the maximum load capacity.
- In this case the maximum load is ..... 1500 kg.

Proceed in the same manner for other heights and load centre distances. The values in the diagram apply to both forks and even distribution of loads.

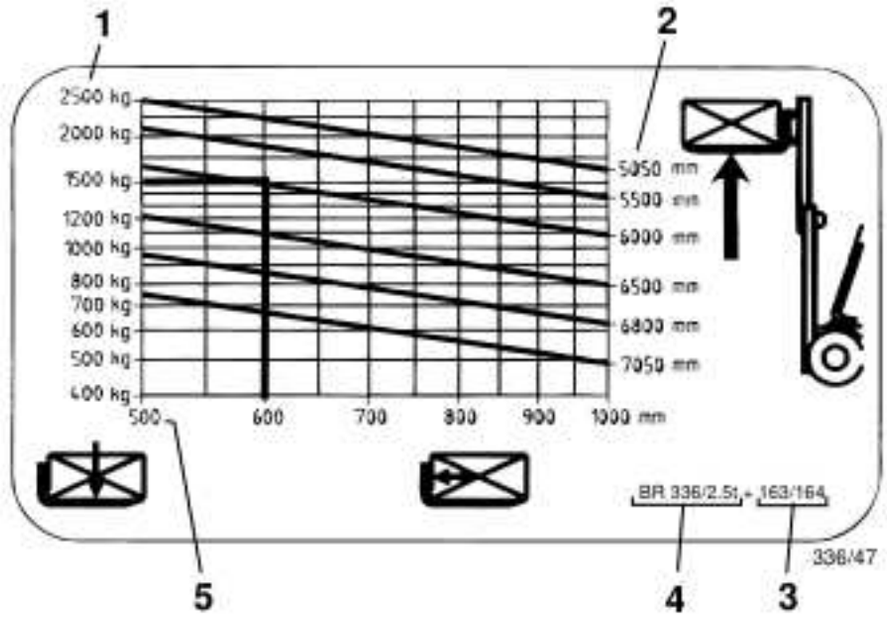
1 Maximum load capacity in kg

2 Height of lift in mm

3 Mast type

4 Fork truck model with maximum load capacity

5 Load centre distance from fork-face in mm



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Check and oil the pedal and travel control linkage pivots and overhead guard lock

ATTENTION
The accelerator sensor (5) must only be adjusted by trained skilled personnel. Please contact your authorised distributor.

- Open the overhead guard to the 2nd lock-in position.
- Check the pin and joint retainers for security.
- Lightly oil the lever pivots and clevises as required.
- Inspect the leg spring (2) and tension spring (4) for proper operation.
- Lightly oil the lock (3), Bowden cables (1 and 8), tension spring and lever (7) as needed.
- Grease the disconnect point (6) of the steering.
- Lubricate the areas at which the pedal contacts the rocker (9) with Molikote-G compound (oil, if not available, but do not use grease).

Grease the overhead guard pivots

NOTE
Use lubricating grease.

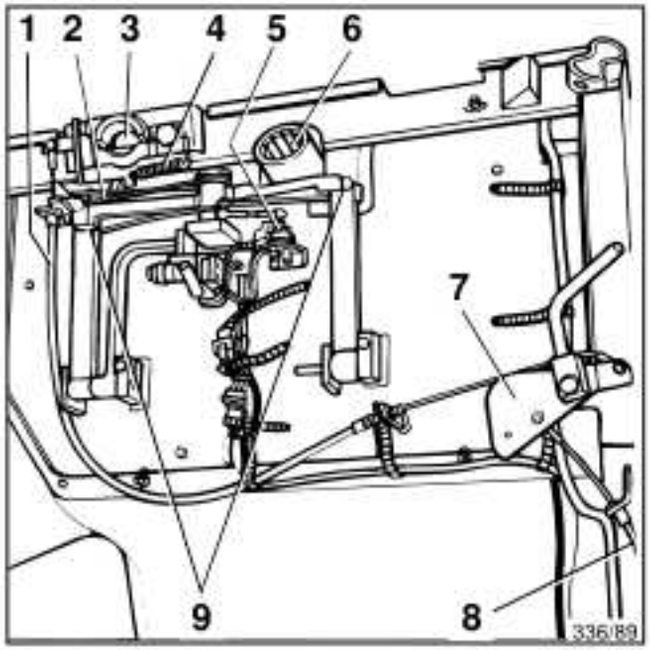
- Open the electrical compartment cover.
- Lubricate the grease nipple (1) on the left and right pivot pins.
- Lubricate with a grease gun until new grease emerges at the pivots.

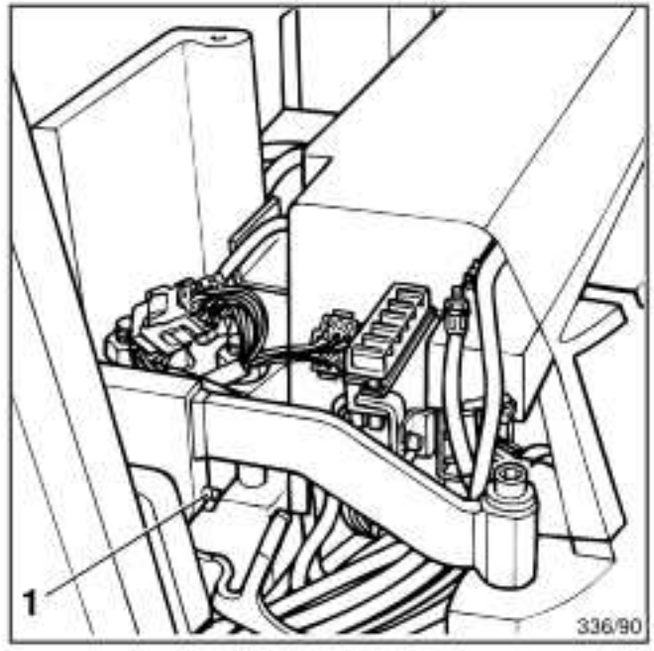
Check and lubricate other pivots and joints

Inspect and oil the pivots and joints of:

- seat guide
- wiper-washer system*
- cabin door locks and hinges*

* Option







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OPERATOR WARNING AND SAFETY DECALS *(continued)*

Operator Warnings Decal

Read and understand the following before operating the truck:



⚠ WARNING

SIT-DOWN RIDER TRUCK OPERATOR WARNINGS

1. CHECK YOUR TRUCK - The truck should be checked daily before being placed in service. If found to be in need of repair, defective, or in any way unsafe it should be reported immediately to the proper authority and removed from service until restored to a safe operating condition.

2. KNOW YOUR TRUCK - Do not operate this truck unless you have been trained and authorized to do so. Read all warnings and instructions in the Operator's manual on this truck; or obtain them from plant Safety Director or the local Linde representative.

3. KEEP INSIDE - Operate truck only from designated operating position. Operate the truck only when you are in the normal operating position and seated in the Operator's seat. Never place any part of your body into the mast structure, between the mast and the truck, or outside the truck. Do not carry passengers.

4. PROTECT YOURSELF - Do not operate truck without overhead guard.

5. SEAT BELT - MAKE SURE YOUR SEAT BELT IS FASTENED BEFORE OPERATING THE TRUCK.

6. LATERAL TIPOVER - Can occur loaded or unloaded by a combination of speed and sharpness of turn. SLOW DOWN BEFORE TURNING. With the mast raised, lateral tipover also can occur by turning and/or braking when moving rearward, turning and/or accelerating forward or turning on an incline or ramp. TRAVEL WITH THE MAST LOWERED. The potential for lateral tipover will be further increased by overloading, excessive rearward tilt or off-center positioning of the load. Don't risk injury or death. Drive smart.

7. LONGITUDINAL TIPOVER - Can occur by driving with the load down slope on an incline or ramp, overloading, excessive forward tilt or aggressive braking when moving forward or accelerating rearward with the mast elevated. TRAVEL WITH THE MAST LOWERED. Don't risk injury or death. Drive smart.

8. LATERAL OR LONGITUDINAL TIPOVER - Can occur if the truck is driven over objects on the floor or ground, off the edge of improved surfaces, or into potholes, or by impacting overhead obstacles or collision with other objects. Don't risk injury or death. Drive smart.

9. DON'T JUMP OFF - If your truck begins to tip over, DON'T JUMP. Hold the steering wheel tightly, brace feet, and lean away from tip. Stay in the seat to avoid being trapped between the truck and the ground.

10. HIGH LOADS - Do not handle loads which are higher than the load backrest or load backrest extension unless load is secured so that no part of it could fall backward.

11. STABILIZE YOUR LOAD - Do not handle unstable or loosely stacked loads. Use special care when handling long, high, or wide loads to avoid losing the load, striking bystanders, or tipping truck.

12. CENTER YOUR LOAD - When using forks, space forks as far apart as load will permit. Before lifting, be sure load is centered and forks are completely under load.

13. NEVER OVERLOAD - Do not overload truck. Check capacity plate for load weight and load center information.

14. AVOID SUDDEN MOVEMENTS - Start, stop, travel, steer, and brake smoothly. Sudden movements can endanger yourself and others.

15. LOOK OVERHEAD - Elevate forks or other lifting mechanism only to pick up or stack a load. Lift and lower with mast vertical or slightly back. - NEVER FORWARD. Watch out for obstructions, especially overhead.

16. MINIMUM TILT - Operate tilting mechanism slowly and smoothly. Do not tilt forward when elevated except to pick up or deposit a load. When stacking use only enough backward tilt to stabilize load.

17. EYES AHEAD - Travel with load or lifting mechanism as low as possible and tilted back. Always look in direction of travel. Keep a clear view, and when load interferes with visibility, travel with lifting mechanism trailing (except when climbing ramps).

18. CARE ON RAMPS - Use special care when operating on ramps - travel slowly, and do not angle or turn. When truck is loaded, travel with load uphill. When truck is empty, travel with lifting mechanism downhill.

19. SLOW DOWN - Observe applicable traffic regulations. Yield right-of-way to pedestrians. Slow down & sound horn at cross aisles and wherever vision is obstructed.

20. WATCH PEOPLE - Do not allow anyone to stand or pass under lifting mechanism, directly behind truck or within rear swing area when turning.

21. WORK PLATFORMS - DO NOT LIFT OR CARRY PERSONNEL USING THE FORKS OF THE TRUCK, not even with a work platform. The truck is designed for transporting, warehousing and stacking of material, not personnel.

22. SHUT DOWN COMPLETELY - Before getting off truck, neutralize travel control, fully lower lifting mechanism and set the parking brake. Also shut off power when leaving truck unattended. Block wheels if truck is parked on an incline.

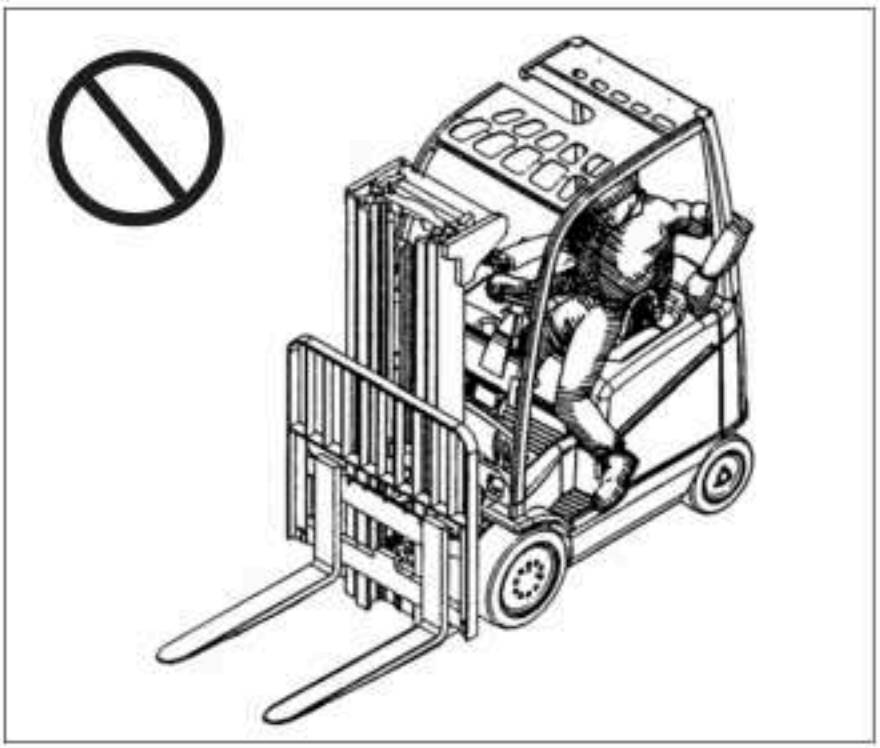
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Failure to comply with these warnings will create an unreasonable risk of injury to yourself and others.

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OPERATING POSITION

Face the truck when mounting and dismounting. Maintain a three-point contact, one foot and two hands with the truck when mounting or dismounting. Never exit a moving truck. Never jump on or off the truck.



⚠ WARNING:

Operate the truck only when you are in the normal operating position. Keep hands and feet inside the Operator's Compartment.



⚠ WARNING:

Keep hands, feet and legs out of the upright

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