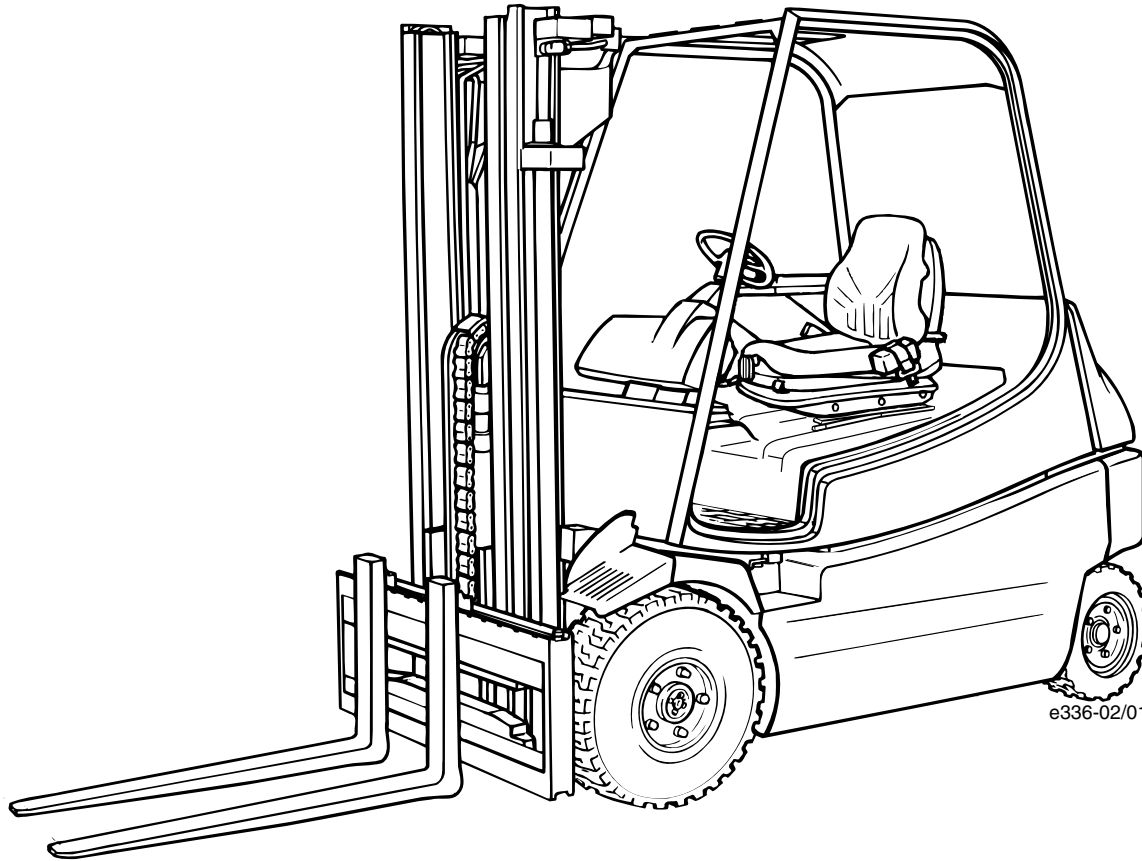




e336-02/01

Operating Instructions

Linde Fork Lift Truck

E 20 - 02 / E 25 - 02 / E 30 - 02

E 20/600 - 02 / E 25/600 - 02 / E 30/600 - 02

With Electric Motors

336 804 3001 GB

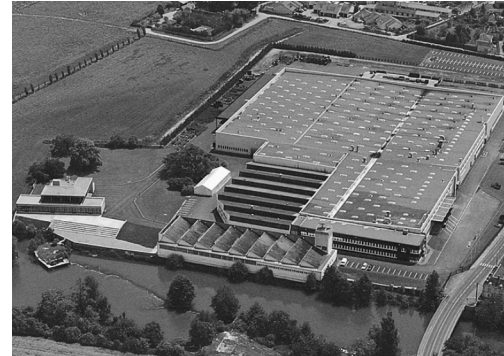
0704

Linde - Your Partner

Linde AG Linde Material Handling Division



Werk II, Aschaffenburg-Nilkheim



Fenwick-Linde, Châtelleraut



Lansing Linde Ltd., Basingstoke



Werk I, Aschaffenburg



Werk III, Kahl am Main



Linde Heavy Truck Division Ltd., Merthyr Tydfil

Linde, an enterprise operating worldwide in the investment and service sector, is one of the large industrial enterprises in the EC with its three business segments and six divisions.

The Linde Material Handling division is a leading manufacturer of industrial trucks and hydraulics. It includes eight manufacturing plants in the Federal Republic of Germany, France and Great Britain, as well as subsidiaries and branches in all economically important countries.

Linde industrial trucks enjoy a worldwide reputation - thanks to their high quality in engineering, performance and service.

Your Linde lift truck

offers the best in economy, safety and driving convenience. Therefore it is mainly in the hands of the operator to preserve the qualities of the truck for a long and profitable service life and to make full use of their benefits on the job.

These operating instructions tell you all you need to know about starting, operation, running and servicing the truck.

For maintenance and repair work not described in these operating instructions special technical skill and knowledge, measuring equipment and special workshop tools are often required. Please contact your authorised Linde dealer for this service.

Only qualified persons (experts) authorised by Linde are allowed to service the trucks.

For some attachments, the proprietary operating instructions supplied with them are applicable.

Follow all tips for operating the lift truck and carry out the maintenance and care prescribed in the inspection and maintenance schedule regularly, on time and with the specified lubricants.

To keep your warranty valid, all maintenance services must be performed by qualified persons authorised by Linde.

The terms "front", "rear", "left" and "right" refer to the position in which the item concerned is installed in the truck in relation to the forward travel direction.

Approved applications

Linde lift trucks are designed for transporting and lifting the loads stated in the load capacity diagram.

In particular, we refer to the VDMA booklet "Rules for the Normal and Proper Use of Industrial Trucks", to the accident prevention rules of your employer's liability insurance and the special measures for driving on public roads.

The rules for use of industrial trucks must be followed under all circumstances by the responsible persons, especially by the operating and service personnel.

The user, and not Linde, is responsible for any danger arising from applications not authorised by the manufacturer.

If you desire to use the truck for applications not mentioned in the manual and convert or supplement it for this purpose, please first contact your authorised Linde dealer.

No changes, especially conversions or modifications, may be made on your fork truck without the prior permission of the manufacturer.

Technical note

These operating instructions or excerpts thereof may only be copied, translated or transmitted to third parties after prior written approval by the manufacturer.

Linde pursues a policy of continuous progress in the design and construction of its products. As a result, the illustrations and technical details referring to design, fittings and engineering of lift trucks are subject to change if progress warrants it.

Therefore, the manufacturer will not accept any claims based on the specifications, illustrations and descriptions contained in this operating manual.

Please submit all enquiries concerning your fork truck and all orders for spare parts to your authorised distributor, making sure to state your correct shipping address.

For repairs, use only genuine Linde spare parts to ensure that your Linde fork truck will maintain its original technical standard. When ordering spare parts, it is important also to give the following information:

Lift truck model: _____

Manufacturer's serial no./Year built: _____

Handing-over date: _____

Also specify the manufacturer's number of the mast when ordering parts.

Mast no.: _____

Mast lifting height: _____ mm

When taking over the fork lift truck, transfer the data from the assembly type plates into this operating manual.

Truck takeover

Every fork truck undergoes careful inspection before leaving the factory in order to make sure that it will be in satisfactory condition and fully equipped as ordered when delivered to the customer. Authorised distributors are under obligation to reinspect the truck before delivery and to hand it over in good order. In order to avoid later complaints and inconvenience to customers, you are requested to ascertain that the truck is in satisfactory condition and fully equipped at the time of delivery and to acknowledge orderly handing/taking over of the truck in the manufacturer's certificate of conformity.

The following technical manuals are supplied with each fork truck:

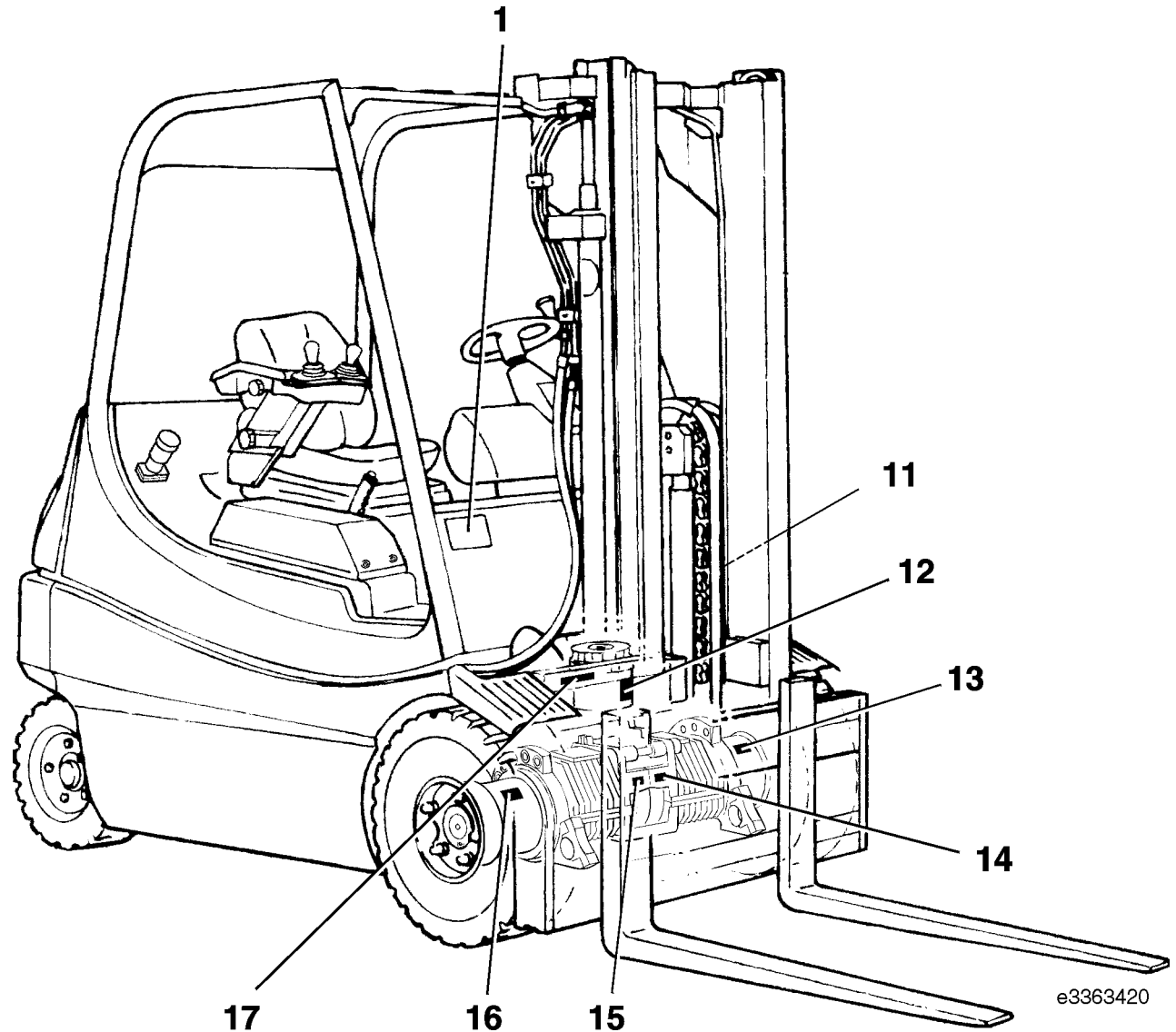
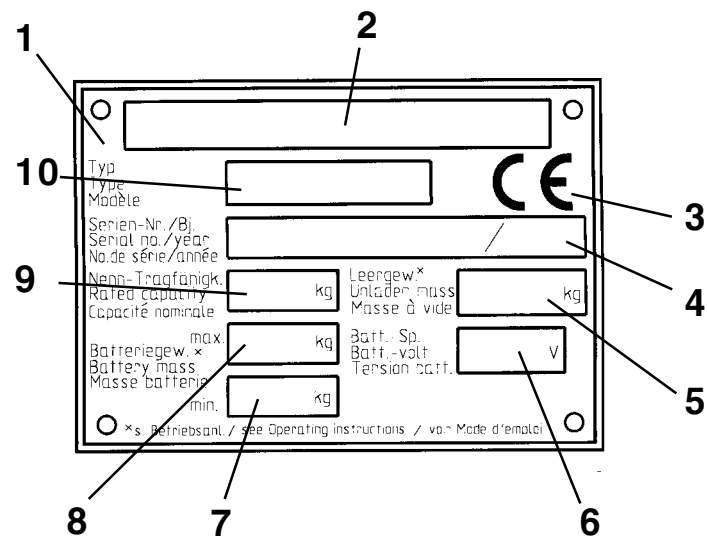
- 1 Operating manual
- 1 EC certificate of conformity
(The manufacturer certifies that the industrial truck conforms to EC guidelines for machines)
- 1 Rules for the normal and proper use of industrial trucks (VDMA)

Wishing you satisfactory operation and much success,
Your
Linde AG
Linde Material Handling Division
Aschaffenburg

Type plate

Description

- 1 Vehicle identification plate
- 2 Manufacturer
- 3 CE symbol
- (The symbol certifies that EC guidelines for machines and all applicable guidelines are fulfilled.)
- 4 Serial No./year
- 5 Unladen mass
- 6 Battery voltage
- 7 Min. battery mass
- 8 Max. battery mass
- 9 Rated capacity
- 10 Type
- 11 Mast number (glued)
- 12 Working hydraulics and power steering pump motor type plate
- 13 Reduction gearbox, left
- 14 Drive motor, left
- 15 Drive motor, right
- 16 Reduction gearbox, right
- 17 Manufacturer's plate (stamped)

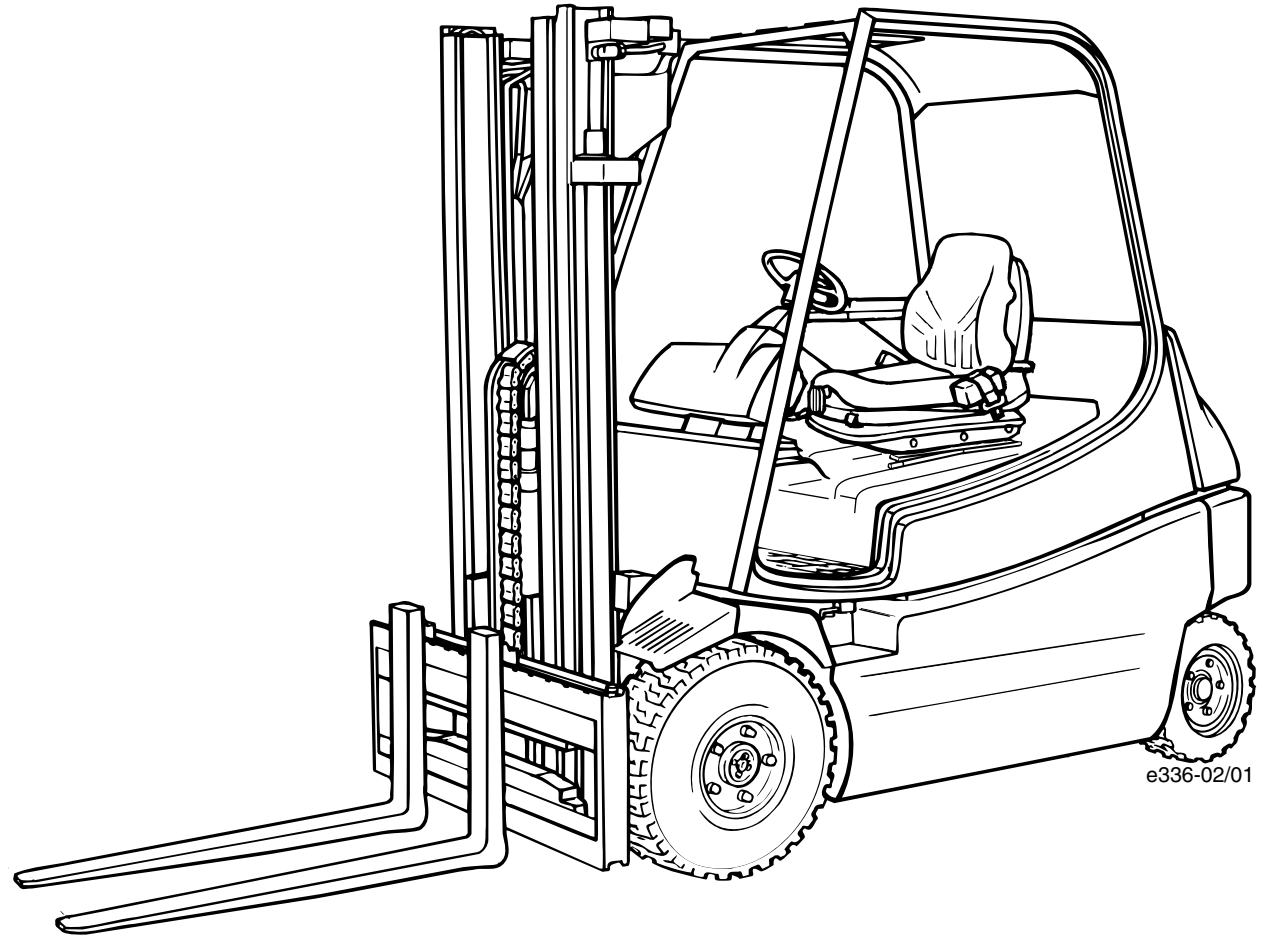


Fork lift truck models E 20 / E 25 / E 30 / E 20/600 / E 25/600 / E 30/600

Description

Advanced technology,
simple and ergonomic operation,
energy saving, environment-conscious and minimal maintenance, solid manufacture
and for availability of your lift truck
nearly all parts are available from Linde.
The success of a company
with about 9600 employees in eight plants.

The driver's position and the controls are arranged in accordance with state-of-the-art human engineering. The arrangement and operation of each control is adapted to the driver so that fatigue-free and therefore safe working is ensured. Of course, this includes the easily operated hydrostatic power steering with non-return lock, the service-proved double-pedal control - forward travel with the right accelerator pedal, reverse travel with the left- and only one central control lever for all lift mast functions.



e336-02/01

336 804 3001.0704

Table of contents

Description

	Page		Page		Page
Foreword	2	Check the condition, electrolyte level and specific gravity of the battery	25	Truck Data Management (LFM)	40
Approved applications	2	Battery change	26	Truck data acquisition	40
Technical note	3	Battery removal with a crane	26	Condition code	40
Truck takeover	3	Adjusting the driver's seat	27	Truck data acquisition - default setting (PIN number and condition code)	41
Description	5	Adjusting the swivel seat	27	Truck data acquisition - special setting (PIN number)	42
Type plate	5	Adjusting armrest of the driver's seat	27	Operating the horn	43
Technical data	10	Applying the seat belt, opening the seat belt	28	Opening, closing the electrical compartment cover	43
Noise emissions levels	12	Push, pull the emergency stop button	29	Fuses	44
Frequency characteristic for human body vibrations	12			Checking, renewing the fuses	44
Technical description	13	Operation	30	Automotive fuses	44
Drive	13	Driving	30	Main circuit fuses	44
Steering	13	Travel in the forward direction	30	Fuses (options)	45
Hydraulic system	13	Travel in the reverse direction	30	Before loading	46
Operation	13	Reversing direction	31	Positioning the forks	47
Brakes	13	Reversing the direction of travel	31	Loading	47
Handbrake	13	Malfunctions during operation	31	Transporting the load	48
Brush monitor	13	Singel-pedal model	32	Unloading	48
Electrical system	13	Steering system	34	Before leaving the lift truck unattended	48
General view of truck	14	Steering	34	Tow coupling	49
Controls and indicators	15	Braking system	35	Forced opening of overhead guard without Bowden cable	49
Composite instrument	16	Service brake, regenerative brake	35	Transport, Hoisting the truck	50
Hour meter	17	Foot brake	35	Transporting the truck on a lorry or low-bed trailer	50
Battery discharge indicator	17	Operating the electric motor brake (LBC)	35	Hoisting the truck with a crane	50
		Handbrake	35	Hoisting the truck with the eyebolts	50
Before operation	18	Engaging the handbrake	35	Wheel change	51
Safety rules	18	Releasing the handbrake	35	Jack locations: Changing the rear, front wheels	51
Safety information	18	Central control lever (joystick) operation of mast and attachments	36	Mast removal	52
Handling fluids and lubricants	18	Tilting the mast forward	36	Towing instructions	52
Accident prevention check	19	Tilting the mast back	36	Towing procedure	52
Operation of industrial trucks in the plant area	19	Raising the fork carriage	36	Tilting the mast manually	53
Running-in instructions	19	Lowering the fork carriage	36	Lowering the forks manually	53
Checks and services prior to initial operation of the truck	19	Operating the attachments	36	Emergency exit for trucks with rear windscreen	54
Daily checks	19	Operating the sideshift	36	Emergency exit for trucks with polycarbonate rear windscreen (special equipment)	54
Daily checks and servicing before operation	21	Operating the clamp	36		
Check the tyre inflation pressure	21	Single control lever operation of mast and attachments	37		
Check the tightness of the wheel nuts	21	Turning on the front working lights	38		
Opening the overhead guard	22	Turning on the rear working lights	38		
First lock-in position: Servicing position	22	Turning on the front windscreen wiper and washer	38		
Second lock-in position: Battery change	22	Turning on the rear windscreen wiper	38		
Closing the overhead guard	23	Turning on the lighting	38		
Check the battery charge	24	Turning on the hazard warning light	38		
Charging the battery	24	Turning on the directional indicator lights	38		
Connecting the battery to a suitable external charger	25	Electric heater	39		

Table of contents

Description

	Page		Page		Page
Maintenance	55	Inspection and maintenance every		Inspection and maintenance every	
Taking the truck out of operation	55	500 to 1000 hours or annually	66	3000 hours or every 2 years	77
Measures before taking the truck out of operation	55	Clean the steering axle	66	Renew the hydraulic oil	77
Putting the truck back into operation	55	Lubricate the steering axle	66	Change the oil in wheel drive	78
General information	55	Inspect the joystick boot	66		
Maintenance intervals	55	Check the control unit for function	66	Inspection and maintenance specifications	79
Work on the mast and on the front part of the truck	56	Clean the left and right wheel traction, power			
Securing the mast against tilting back	56	steering and working hydraulics pump motors	67	Lubricants recommendations	80
Mast versions	56	Clean the traction motor and tractor compartment		Hydraulic oil	80
Standard mast	56	fans	67	Bio hydraulic oil	80
Securing the raised standard mast	56	Clean the digital control	67	Gear oil	80
Duplex mast	56	Lubricate the mast and tilt cylinder pivots	68	Lubricating grease	80
Securing the raised duplex mast	57	Tighten the mast fastening bolts	68	Battery grease	80
Triplex mast	57	Sideshift: Clean, grease and check the mounting	69	Chain spray	80
Securing the raised triplex mast	57	Check the braking system	69	Vaseline	80
Services after the first 50 hours of operation	59	Check the brake linings, lubricate the brake		Troubleshooting guide	81
Inspection and maintenance chart	59	lever pivot	69	Electric circuit diagram (standard equipment)	83
Inspection and maintenance as required	62	Visual check of the motor brushes	70	Electric circuit diagram (options)	88
Check seat belt for condition and operation	62	Check the working and steering hydraulics for leaks	70	Hydraulic circuit diagram	90
Clean the lift truck	63	Check the counterweight, electric motors, chassis,		Index	92
Clean and spray the lift chain	63	wheel drives, overhead guard and steering axle			
Renew the carbon brushes	64	for security	70		
Tighten the wheel nuts	64	Mast, lift chain and end stops: Check condition,			
Check the tyres for damage and foreign objects	64	mounting and function	71		
Check the security of the hydraulic oil tank	65	Adjust the lift chain length,			
Lubricate the steer axle, mast and tilt cylinder		lubricate the lift chain with chain spray	71		
bearings	65	Check the fork quick-releases and fork stops	72		
Other cleaning and greasing work	65	Check the pre-tension of double hoses if attachments			
		are fitted	72		
		Check the hydraulic oil level	72		
		Check and oil the pedal and travel control linkage			
		pivots and overhead guard lock	73		
		Grease the overhead guard pivots	73		
		Check and lubricate other pivots and joints	73		
		Check the contactor	74		
		Change the wheel drive oil	74		
		Check the electric cables, cable connectors and			
		connections for condition and tightness	74		
		Renew the hydraulic breather, suction and pressure			
		filter	75		
		Check the wheel drives for oil leaks	76		
		Check the condition of the antistatic ribbon	76		

Technical data

Description

Linde		Data Sheet for				VDI 2198	
Forklift Trucks		Material Handling Equipment					
July 2002		Short form to VDI 3586					
Characteristics	1.1	Manufacturer	Linde	Linde	Linde	Linde	Linde
	1.2	Model designation	E 20	E 20/600	E 25	E 25/600	E 30
	1.3	Power unit: bat., diesel, petrol, LPG, mains power	battery	battery	battery	battery	battery
	1.4	Oper.: manual, ped., stand-on, seated, order picker	seated	seated	seated	seated	seated
	1.5	Load capacity	Q [t]	2,0	2,0	2,5	3,0
	1.6	Load centre	c [mm]	500	600	600	600
	1.8	Axle centre to fork face	x [mm]	424	424	447	450
	1.9	Wheelbase	y [mm]	1502	1502	1670	1670
	1.9	Axle load without load, front/rear	[kg]	1890 / 1770	2190 / 2050	2224 / 2566	2360 / 2485
Weight	2.1	Service weight	[kg]	3660	4240	4385	4790
	2.2	Axle load with load, front/rear	[kg]	5110 / 550	5590 / 650	6105 / 780	6454 / 836
	2.3	Axle load without load, front/rear	[kg]	1890 / 1770	2190 / 2050	2224 / 2566	2360 / 2485
Wheels and Tyres	3.1	Tyres: SE = superelastic, L = air	SE (P) / SE (P)	SE (P) / SE (P)	SE (P) / SE (P)	SE (P) / SE (P)	SE / SE (P)
	3.2	Tyre size, front	21 x 8 - 9 5)	21 x 8 - 9 5)	23 x 9 - 10 5)	23 x 9 - 10	23 x 9 - 10 3)
	3.3	Tyre size, rear	16 x 6 - 8 5)	16 x 6 - 8 5)	18 x 7 - 8 5)	18 x 7 - 8 5) 8)	18 x 7 - 8 5) 8)
	3.5	Wheels, number front/rear (x = driven)	2x / 2	2x / 2	2x / 2	2x / 2	2x / 2
	3.6	Track width, front	b10 [mm]	890	890	960	960
	3.7	Track width, rear	b11 [mm]	757	757	850	850
	4.1	Mast/fork carriage tilt, forward/backward	degrees	5 / 7,5	5 / 7,5	5 / 7,5	5 / 7,5
	4.2	Height of mast, lowered	h1 [mm]	2209 6) (2060) 1)	2209 6) (2060) 1)	2254 6) (2072) 2)	2248 6) (2075) 2)
	4.3	Free lift	h2 [mm]	150 (1525) 1)	150 (1525) 1)	150 (1424) 2)	150 (1274) 2)
Basic Dimensions	4.4	Lift	h3 [mm]	3150 (4475) 1)	3150 (4475) 1)	3050 (4265) 2)	3050 (4315) 2)
	4.5	Height of mast, extended	h4 [mm]	3655 (4980) 1)	3655 (4980) 1)	3707 (4913) 2)	3707 (4913) 2)
	4.7	Height of overhead guard (cabin)	h6 [mm]	2070	2227	2070	2227
	4.8	Height of seat/stand-on platform	h7 [mm]	1018	1175	1018	1175
	4.12	Tow coupling height	h10 [mm]	611	611	611	611
	4.19	Overall length	l1 [mm]	3151	3411	3375	3425
	4.20	Length to fork face	l2 [mm]	2151	2211	2375	2425
	4.21	Overall width	b1/b2[mm]	1089	1089	1180	1180
	4.22	Fork dimensions	s/e/l [mm]	45 x 100 x 1000	45 x 100 x 1000	45 x 100 x 1000	45 x 100 x 1000
	4.23	Fork carriage to DIN 15173, class/form A, B		2 A	2 A	2 A	3 A
	4.24	Width of fork carriage	b3 [mm]	1080	1080	1150	1150
	4.31	Ground clearance, mast	m1 [mm]	102 (76) 1)	98 (72) 1)	128 (98) 2)	126 (96) 2)
	4.32	Ground clearance, centre of wheel base	m2 [mm]	120	120	120	120
	4.33	Aisle width with pallets 1000x1200 across forks	Ast[mm]	3472	3532	3681	3744
	4.34	Aisle width with pallets 800x1200 along forks	Ast [mm]	3600	3660	3820	3873
	4.35	Turning radius	Wa [mm]	1727	1787	1925	1975
	4.36	Minimum distance between the centres of rotation	b13 [mm]	-	-	-	-
Performance	5.1	Travel speed, with/without load	km/h	15,5 / 17	15,5 / 17	15 / 16	15 / 16
	5.2	Lifting speed, with/without load	m/s	0,41 / 0,58	0,41 / 0,58	0,37 / 0,55	0,35 / 0,55
	5.3	Lowering speed, with/without load	m/s	0,5 / 0,5	0,5 / 0,5	0,5 / 0,5	0,5 / 0,5
	5.5	Tractive force, with/without load, 60 minute rating	N	3214 / 3567	3400 / 3800	3984 / 4371	3826 / 4356
	5.6	Max. tract. force, with/without load, 5 min. rating	N	9220 / 9573	9600 / 10200	10858 / 10680	11702 / 11232
	5.7	Climbing ability with/without load, 30 min. rating	%	8 / 13,8	8 / 13,8	8 / 13,8	7 / 12,2
	5.8	Max.climb. ability, with/without load, 30 min. rating	%	16 / 26,8	16 / 26,8	16 / 26,8	14 / 24
	5.9	Acceleration time with/without load	s	4,9 / 4,5	4,9 / 4,5	5,0 / 4,6	5,2 / 4,8
	5.10	Service brake		hydrostatic / electric	hydrostatic / electric	hydrostatic / electric	hydrostatic / electric
	6.1	Drive motor, 60 minute rating	kW	2 x 5,0	2 x 5,0	2 x 6,4	2 x 6,4
Drive	6.2	Lift motor, 15% rating	kW	13,5	13,5	13,5	13,5
	6.3	Battery according to IEC		254-2	254-2	254-2	254-2
	6.4	Battery voltage/rated capacity (5h)	V/Ah	80 / 440	80 / 560	80 / 550	80 / 550
	6.5	Battery weight (± 5%)	kg	1224	1547	1536	1872
	6.6	Power consumption in acc. with VDI cycle	kWh/h	-	-	-	-
	8.1	Type of drive control		digital	digital	digital	digital
Others	8.2	Working pressure for attachments	bar	205 (215) 1)	205 (215) 1)	170 (180) 2)	190 (205) 2)
	8.3	Oil supply for attachments	l/min	20	20	20	20
	8.4	Mean noise level at driver's ear	dB (A)	-	-	-	-
	8.5	Towing coupling, design/type DIN, No.		-	-	-	-

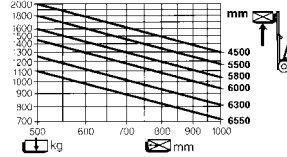
Note:

- 1) Type 183 mast, figures in parentheses for Triplex 183
- 2) Type 186 mast, figures in parentheses for Triplex 186
- 3) Optionally 23 x 10 - 12 SE tyres , overall width 1228 mm
- 4) Optionally Superelastic (SE) tyres
- 5) Optionally pneumatic tyres
- 6) With 150 mm free lift
- 7) Figures in parentheses for 23 x 10 - 12 SE tyres
- 8) Optionally 200 / 5-10 SE

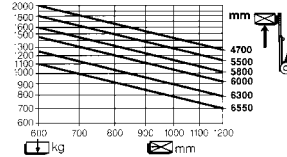
336 804 3001.0704

Lifting capacity diagrams for Standard and Duplex masts:

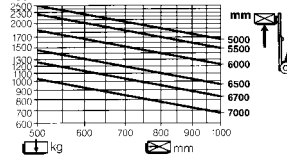
Typ: E 20



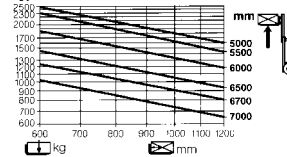
Typ: E 20/600



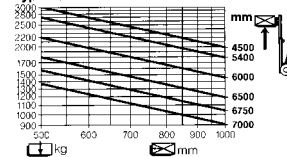
Typ: E 25



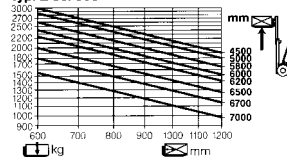
Typ: E 25/600



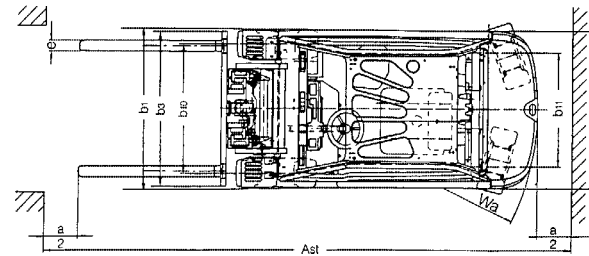
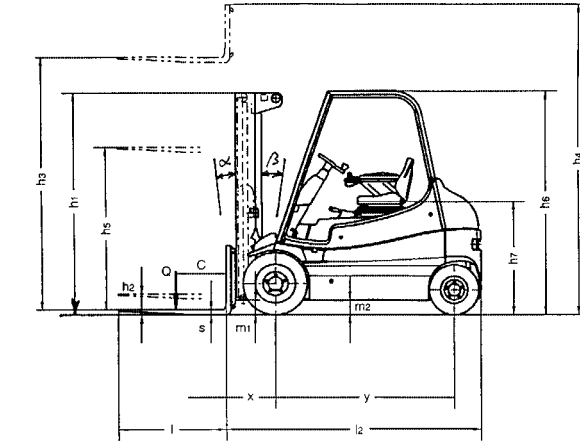
Typ: E 30



Typ: E 30/600



Capacity diagrams for trucks with SE tyres and without integralsideshift.



Safety clearance a = 200 mm

Overall height and lift height (mm)			Standard mast					Duplex mast				Triplex mast						
E 20	Lift	h3	3050	3150	3550	4050	4650	3020	3120	3320	3820	4475	4565	4865	5515	5965	6765	
E 20/600	Lift heights, retracted(with 150mm																	
	free lift - Standard)	h1	2159	2209	2409	2659	2959	2060	2110	2210	2460	2060	2110	2210	2460	2610	2910	
	Lift heights, extended	h4	3555	3655	4055	4555	5155	3525	3625	3825	4325	4980	5070	5370	6020	6470	7270	
	Free lift	h2	150	150	150	150	150	1524	1574	1674	1924	1525	1575	1675	1925	2075	2375	

Overall height and lift height (mm)			Standard mast					Duplex mast				Triplex mast					
E 25	Lift	h3	2850	3050	3450	4050	4550	2865	3165	3665	-	4265	4655	5305	5905	6555	-
E 25/600	Lift heights, retracted(with 150mm																
	free lift - Standard)	h1	2154	2254	2454	2754	3004	2072	2222	2472	-	2072	2222	2472	2672	2922	-
	Lift heights, extended	h4	3507	3707	4107	4707	5207	3513	3813	4313	-	4913	5303	5953	6553	7203	-
	Free lift	h2	150	150	150	150	150	1424	1574	1824	-	1424	1574	1824	2024	2274	-

Overall height and lift height (mm)			Standard mast					Duplex mast				Triplex mast					
E 30	Lift	h3	2850	3050	3450	4050	4550	2915	3215	3715	-	4315	4705	5355	5955	6605	-
E 30/600	Lift heights, retracted (with 150mm																
	free lift - Standard)	h1	2148	2248	2448	2748	2998	2075	2225	2475	-	2075	2225	2475	2675	2925	-
	Lift heights, extended	h4	3651	3851	4251	4851	5351	3716	4016	4516	-	5116	5506	6156	6756	7406	-
	Free lift	h2	150	150	150	150	150	1274	1424	1674	-	1274	1424	1674	1874	2124	-

E 20 with mast type 183; E 25, E 30 with mast type 186.

Noise emission value

Determined in a test cycle in accordance with EN 12053 from the weighted values in the operating modes DRIVING, LIFT-ING, IDLING.

Noise level at driver's station	
E 20 - E 30	$L_{PAZ} = 66 \text{ dB (A)}$
Uncertainty	$K_{PA} = 4 \text{ dB (A)}$

 **NOTE**
Higher or lower noise emissions can exist during operation of the truck, e.g. due to different operation, influence of the surroundings and additional noise emission sources.

Frequency characteristic for human body vibrations

The values are determined in conformance with EN 13059 on trucks with standard equipment according to the technical data sheet (driving over test course with bumps).
Frequency characteristic acc. to EN 12096

Measured frequency characteristic	$a_{w,zs} = 0.9 \text{ m/s}^2$
Uncertainty	$K = 0.3 \text{ m/s}^2$

Frequency characteristic given for hand and arm vibrations
Frequency characteristic $< 2.5 \text{ m/s}^2$

 **NOTE**
The frequency characteristic for the human body can not be used to determine the actual frequency load during operation. This load depends on the working conditions (condition of roadway, type of operation, etc.) and must therefore be determined at the site, if necessary.
The specification of hand and arm vibrations is required by law, even if the values, as in this case, do not signal any danger.

Technical description

Description

The 336 series electric fork trucks are designed for handling loads up to 2.0 tons with the E 20, up to 2.5 tons with the E 25, and up to 3.0 tons with the E 30 with a load centre of 500 mm.

The electric fork trucks E 20/600, E 25/600 and E 30/600 are designed for handling loads of 2.0 tons with the E 20/600, 2.5 tons with the E 25/600 and 3.0 tons with the E 30/600 with a load centre of 600 mm.

The closed chassis, the driver's workstation designed according to state-of-the-art human engineering concepts and the energy-saving digital controller (LDC) make this truck a valuable tool. The truck is of compact design, has good visibility, and maximum load and curve stability due to its long wheelbase.

The combined articulating axle allows the steer axle to swing within a wide range, affords good ground contact and safe handling when working inside and outside the plant and on poor roadways.

The fork truck has an electric travel drive, a hydraulic pump motor unit for the power steering and working hydraulics.

Drive

The truck has a twin-motor wheel drive with automatic curve control. The motors are integrated in a compact axle and drive the right and left drive wheel via a reduction gearbox for each wheel.

The required energy is supplied by the battery installed in the machine.

The digital controller provides stepless forward and reverse travel with the double accelerator pedals.

Steering

The kickback-free, smooth and nearly playfree truck manual steering via the small steering wheel operates the steering cylinder of the hydrostatic power steering.

The combined axle ensures on-the-spot steering and a high degree of safety in curves.

Hydraulic system

The hydraulic system consists of an electric motor and hydraulic pump for the power steering and for the mast lift and tilt cylinders, a hydraulic oil tank with a breather filter and dipstick and a suction filter.



DANGER

It is forbidden to connect any safety-critical functions to a third auxiliary hydraulics possibly installed.

Safety-critical functions are, for example, a ball clamp or slewing a fluid container, which can entail the inadvertent opening of the clamp or slewing.

If a safety-critical auxiliary function is required in conjunction with a third auxiliary hydraulics, this function must be connected via the first auxiliary hydraulics.

Operation

The traction motors are controlled by a separate accelerator pedal for forward and reverse travel. Infinitely variable control is possible in both directions from truck standstill to maximum speed. Both hands are always free for steering and for controlling the work operations. The result is fast reversing and fatigue-free stacking. Only one control lever (joystick) is provided for the control of the lift, lower and tilt functions. Additional control levers (joystick) are fitted for attachments.

Brakes

In addition to electrical braking, the fork truck can also be braked mechanically with two external shoe brakes by depressing the STOP pedal. When the accelerator pedal is released, the Linde Brake Control (LBC) brakes the truck electrically. If desired, the LBC can be deactivated with the diagnostic unit.



CAUTION

After having suppressed the electric brake control (LBC) a label with the information "Without electric brake control" must be placed so that the driver can see it well. Contact your Linde distributor.

As standard equipment, this truck model is provided with an energy recovery system. When braking, or the driving direction changes, the resulting generator energy is used to charge the battery.

Handbrake

The handbrake acts on the disc brakes fitted at both traction motors via a cable. When the handbrake is applied, the traction current is reduced by an electric switch.

Brush monitor

For the service life of the DC motors, it is important to replace worn carbon brushes in time.

The replacement of the brushes is indicated optically by the illumination of a warning lamp in the composite instrument.

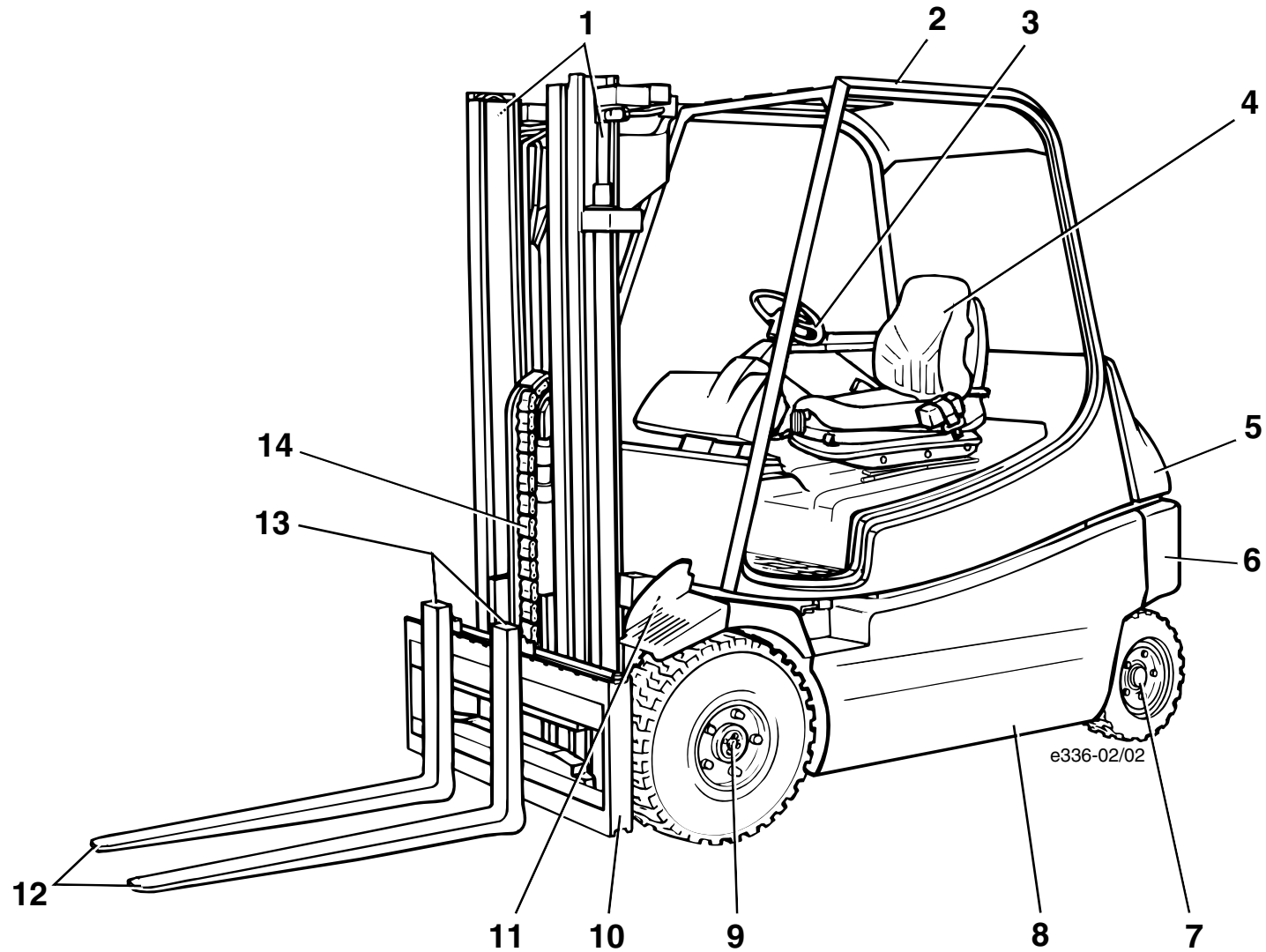
Electrical system

The electrical system is located and is well protected by the counterweight. The required energy is supplied by the 80 V battery mounted in the chassis. The tiltable overhead guard allows fast and easy replacement of the battery.

General view of truck

Description

- 1 Lift cylinder
- 2 Overhead guard (tiltable)
- 3 Steering wheel
- 4 Driver's seat
- 5 Cover (electrical system)
- 6 Counterweight
- 7 Steering axle
- 8 Chassis with battery compartment
- 9 Left reduction gearbox
- 10 Fork carriage
- 11 Tilt cylinder
- 12 Forks
- 13 Fork quick-releases
- 14 Lift chain

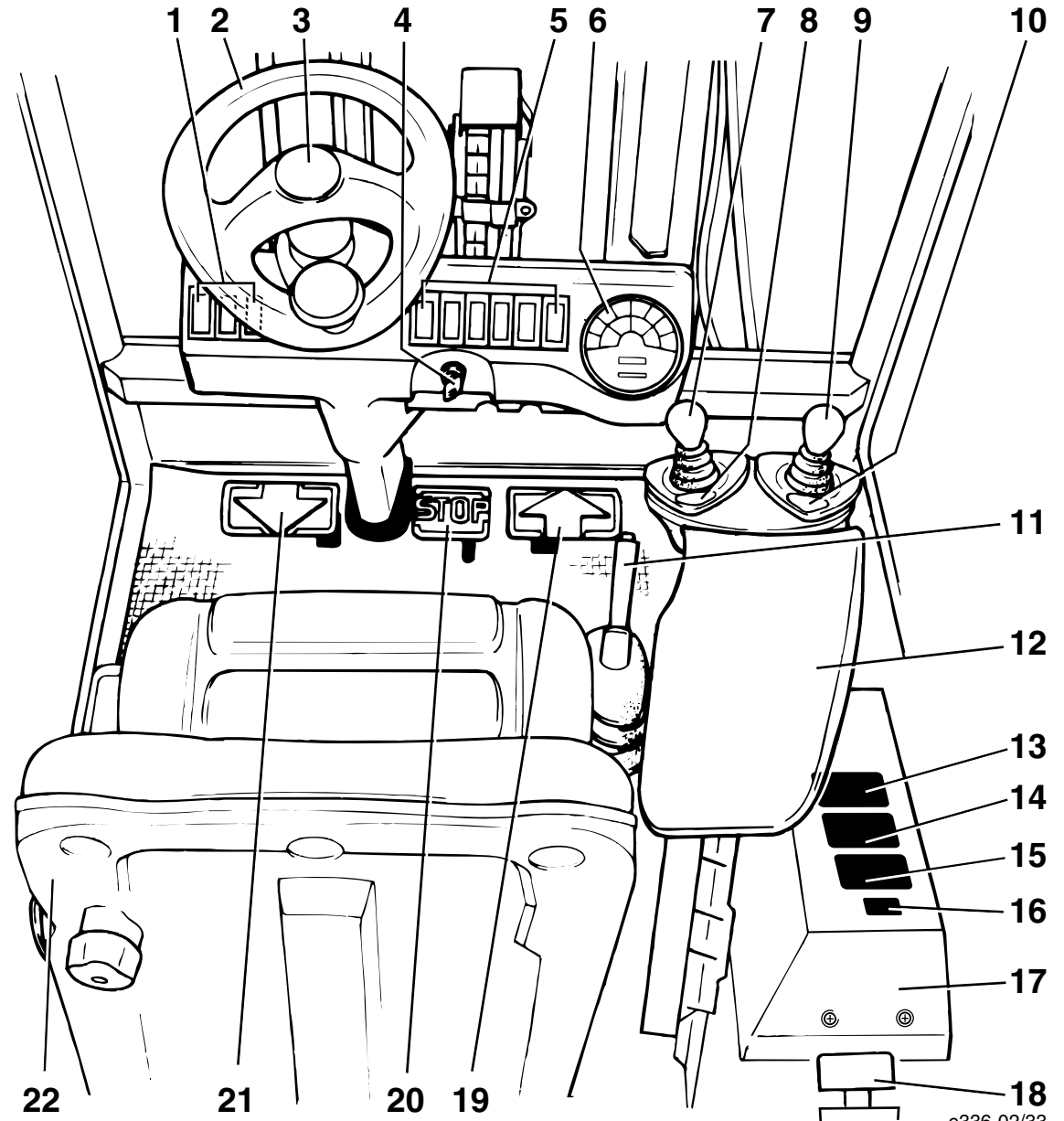


336 804 3001.0704

Controls and indicators

Description

- 1 Toggle switch for additional functions*
- 2 Steering wheel (hydrostatic power steering)
- 3 Signal horn
- 4 Switch key in key switch
- 5 Toggle switch for additional functions*
- 6 Combined instrument
- 7 Control lever (joystick) for working hydraulics
- 8 Symbol label for working hydraulics
- 9 Control lever (joystick) for auxiliary hydraulics (attachments)*
- 10 Symbol label for auxiliary hydraulics*
- 11 Handbrake
- 12 Armrest for driver's seat
- 13 Load capacity diagram
- 14 Notice plate
- 15 Load capacity plate (attachments)*
- 16 Notice plate "Without motor braking"***
- 17 Fuse cover
- 18 Emergency stop button
- 19 Forward accelerator pedal
- 20 Brake pedal
- 21 Reverse accelerator pedal
- 22 Driver's seat with seat switch



e336-02/33

* Option

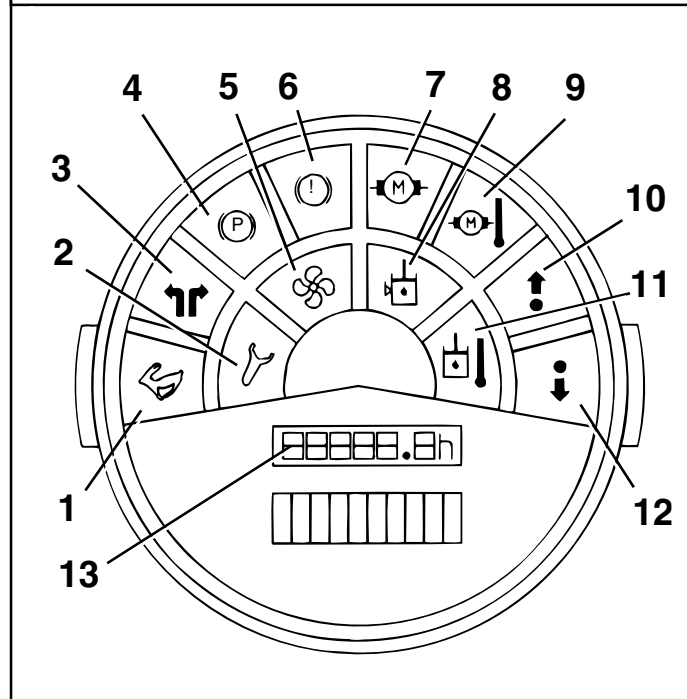
** Only with LBC disabled

336 804 3001.0704

Composite instrument

Description

Instrument	Purpose	Possible cause
Field weakening indicator light (1)* Service interval indicator light (2) Turn signal indicator light (3)* Parking brake warning light (4) Fan warning light (5) Brake shoe warning light (6)* Motor brush warning light (7) Hydraulic oil level warning light (8)* Motor temperature warning light (9) Forward travel switch indicator light (10)* Hydraulic oil temperature warning light (11)* Reverse travel switch indicator light (12)*	indicates truck is travelling faster indicates inspection and servicing is required indicates turn signal lights are on indicates handbrake is applied indicates fan may not be functioning properly indicates brake shoes are worn indicates motor brushes are worn. The motor no.*** appears in the LCD display (13). indicates hydraulic oil level is low. indicates motor temperature is too high. The motor no.*** appears in the LCD display (13). indicates forward direction of travel on single pedal model indicates hydraulic oil temperature is too high indicates reverse direction of travel on single pedal model	Perform the appropriate inspection and service** Electric fan defective, fuse blown, brushes worn, thermal sensors faulty, cables broken Too little oil in hydraulic circuit Electric fan faulty Hydraulic oil level is low, wrong oil filled, oil filter restricted



*** 1 = Right traction motor
 2 = Left traction motor
 3 = Pump motor

** The intervals can only be reset and changed with the appropriate diagnostic unit.
 Please contact your authorised distributor.

* Option

Composite instrument

Description

The composite instrument also contains the following indicators and instruments:

- 1 Battery discharge indicator
- 2 Hour meter (LCD display)

Hour meter

Indicates the operating time of the truck in hours. It operates only when the key switch is turned on, the emergency button pulled out and the seat switch activated.

The hour meter serves as proof of the operating time of the truck and for scheduling inspections and maintenance services.

The flashing "h" symbol (5) and decimal point (6) show that the hour meter is on.

The left row of figures (3) displays the full hours of operation, the right figure (4) indicates tenths of an hour.

NOTE

When replacing a defective hour meter, the number of effective service hours has to be noted. Affix this information near the new hour meter on durable tape.

It is also possible to set the replacement hour meter so that the actual aggregate service hours are displayed. Please contact your authorised dealer in this regard.

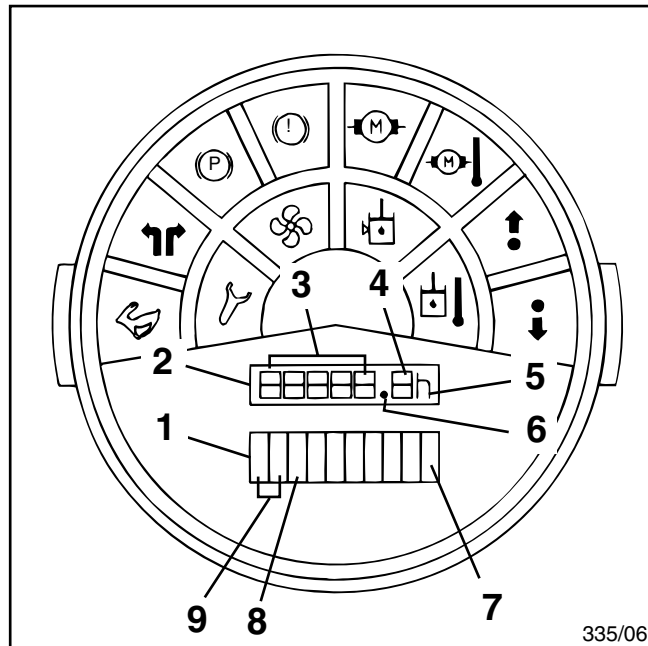
Battery discharge indicator

Indicates the battery state of charge when the key switch is turned on and the emergency button pulled out. It reduces the working speed when the battery discharge reaches 80 %.

The battery is fully charged when the right diode (7) is illuminated. As the battery discharges, the diodes (1) extinguish one by one from left to right.

If only the yellow diode (8) is illuminated, the battery discharge is up to 70 % and the battery must be recharged.

If the yellow diode (8) also extinguishes, the two red LEDs (9) begin to flash. The battery discharge is up to about 80 % and recharging is required.



335/06

Safety rules

The responsible persons, particularly the truck operator and servicing personnel, must be instructed in the rules for the normal and proper use of industrial trucks included with these operating instructions.

The employer must ensure that the driver has understood all of the safety information.

Please observe the guidelines and safety rules therein for example:

- information on the operation of industrial trucks
- rules for roadways and work areas
- rights, duties and safety rules for the operator
- operation in special areas
- information related to starting, driving and braking
- service and repair information
- recurrent inspections, accident prevention check
- disposal of greases, oil and batteries
- remaining risks.

The operator (employer) or the responsible person must ensure that all the guidelines and safety rules applicable for your truck are observed.

When instructing a trained operator, acquaint him with the

- special features of the lift truck (double-pedal control, main control lever, brake pedal)
- optional attachments
- special operating characteristics,

by training and practicing driving, shifting and steering operations until they are completely mastered.
Only then start to practice shelf-stacking.



ATTENTION

If the working area is not sufficiently illuminated, working lights* must be fitted to ensure the driver's view.



ATTENTION

Later modifications of drive or brake parameters of the LDC control make it necessary to inform and train again the truck driver.

The stability of the truck in the work area is ensured if employed properly. Should the truck tip over during an unauthorised application or due to incorrect operation, always follow the instructions depicted below.

Safety information

The precautions WARNING, CAUTION, ATTENTION and NOTE in this manual are provided to indicate special dangers or unusual information requiring special identification:



WARNING

indicates hazards that may result in personal injury or death and/or substantial damage to the product.



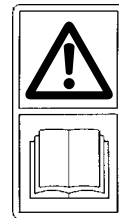
CAUTION

indicates hazards that may result in personal injury and/or substantial damage to the product.



ATTENTION

indicates hazards that may result in damage to or destruction of the product.



This note is found on various positions of the truck where special attention is required. Read the appropriate section of your operating instructions.

Further warning notices are also used for your safety. Please observe the various symbols.



NOTE

Identifies technical information requiring special attention because the connection may not even be obvious to skilled personnel.



Handling fluids and lubricants

Always handle fluids and lubricants as required and as specified by the manufacturer.

Only store fluids and lubricants in approved containers at specified storage places. As they could be inflammable, do not contact them with hot objects or a naked flame.

Follow the manufacturer's safety and disposal instructions when using fluids and lubricants and cleaning compounds.

Avoid spilling fluids and lubricants. Remove any spillage immediately with a suitable binding agent and dispose of as specified.

Also dispose of used or contaminated fluids and lubricants as specified.

Follow laws and regulations.

Clean the area surrounding the part in question before lubrication, filter renewal or repairs in the hydraulic system.

Only use clean containers when replenishing fluids and lubricants.

Discard parts in a way friendly to the environment.



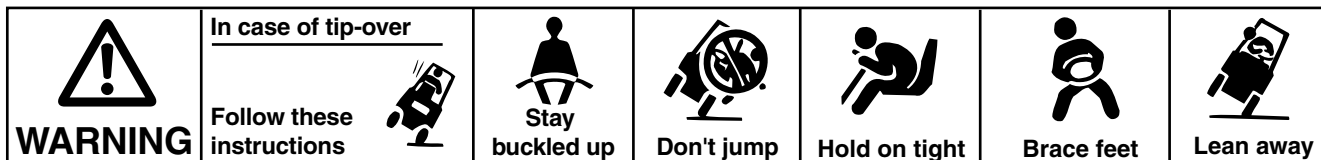
CAUTION

Do not allow hydraulic oil under pressure, for example at a leak, to penetrate the skin. Medical aid is required if such an injury occurs.



CAUTION

Improper handling of coolants and coolant additives and brake fluid puts your health and the environment at risk.



E335-2/149

Safety rules

Accident prevention check

The accident prevention regulations require that the forklift truck must be checked at least once a year for proper working condition by trained personnel. Please contact your authorised distributor in this regard.

Operation of industrial trucks in the plant area



ATTENTION

Many plant areas are so-called limited public traffic areas.

We advise you to check if your company liability insurance covers any damages occurring with your fork truck against third parties on "limited" public traffic areas.

Running-in instructions

The truck can be operated at full speed directly. Avoid sustained high loads on the working hydraulic system and the travel drive in the first 50 hours of operation.

Tighten wheel nuts daily prior to starting operation or after a wheel change until they are seated firmly, i.e. until no further tightening is possible.

Torque opposite

front wheel collar nuts to: 460 Nm

rear wheel collar nuts to: 210 Nm



NOTE

Refer to the tightening instructions on the tag attached to the steering column.

Before operation

Checks and services prior to initial operation of the truck*

- Check condition, level and specific gravity of electrolyte of the battery
- Check tyre inflation pressure
- Tighten wheel nuts
- Check hydraulic oil level
- Check steering system
- Check braking system
- Check mast and attachments
- Check condition and tightness of electric cables, connectors and connections

Daily checks*

- Check battery charge
- Tyre inflation pressure

* The description of the services can also be located in the index.

Check the tyre inflation pressure



ATTENTION

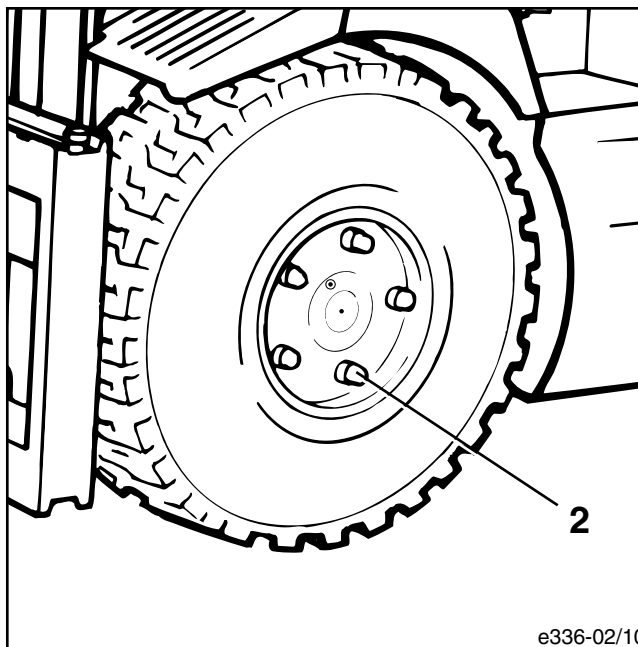
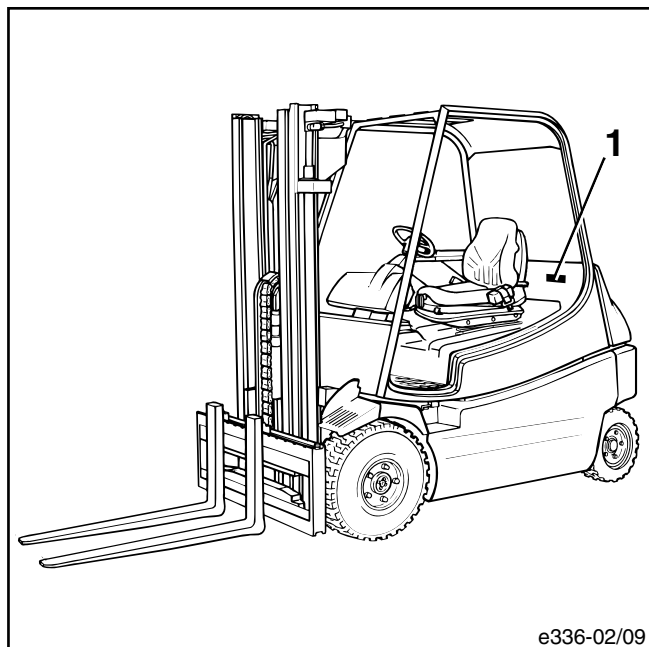
Low inflation pressure reduces tyre service life and truck stability.

- Check the tyres for correct inflation pressure.
- If required, inflate the tyres according to the information on the label (1).

Tyre inflation pressure in bar	front	rear
E 20 / E 20/600, 21x8-9 (16 PR)	10	
E 20 / E 20/600, 16x6-8 (14 PR)		10
E 25 / E 25/600, 23x9-10 (20 PR)	10	
E 25 / E 30 / E30/600 18x7-8 (16 PR)		10
E 25 / E 30, 23x9-10 (SE)	X	
E 30 / E 30/600, 23x10-12 (SE)	X	
E 25 / E 30 / E 30/600, 18x7-8 (SE)		X

Check the tightness of the wheel nuts

- Check the tightness of all wheel collar nuts (2).
- Tighten opposite nuts to a torque of:
front wheel collar nuts 460 Nm
rear wheel collar nuts 210 Nm



Daily checks and servicing before operation

Beginning operation

Opening the overhead guard



CAUTION

When the overhead guard is opened (position 1 or 2), do not open the cabin doors as this could damage the mounting of the gas-filled struts and the driver could suffer injury.

First lock-in position: Servicing position



NOTE

The electrical compartment cover (1) is mounted on the overhead guard and it tilts back with it.

- Apply the handbrake.
- Depress the emergency isolator button.
- To release the overhead guard, stand on the left-hand side of the truck.



NOTE

You require sufficient room for tilting back the overhead guard. Dimension A is at least 2600 mm and B at least 1400 mm.

- Pull the release lever (4) back. The overhead guard is unlocked and it is held only by the retaining latch (2).



ATTENTION

The overhead guard is swung up automatically by the flat spring package after it is unlocked with the locking lever (2).

- Take the load off the locking lever (2) by pushing the overhead guard in the direction of the arrow (3).
- Pull out the locking lever (2) and release the overhead guard. The overhead guard will swing up.
- Tilt the overhead guard by hand past the first lock-in position and release it.



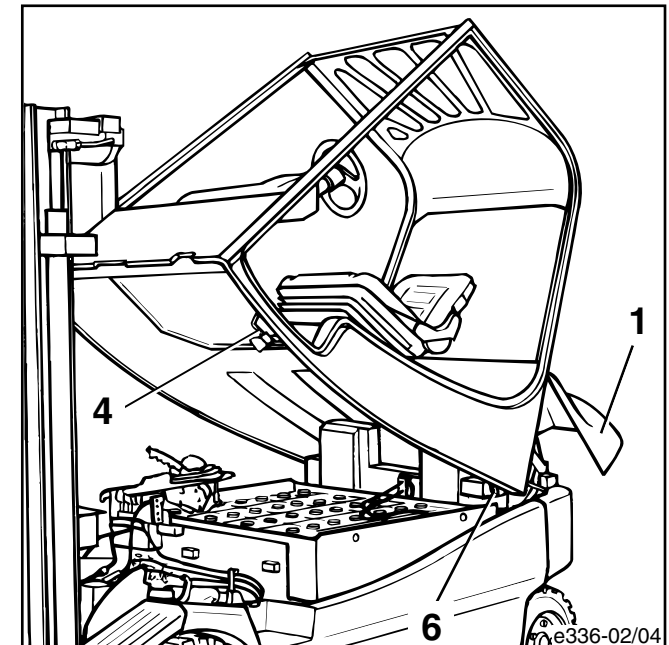
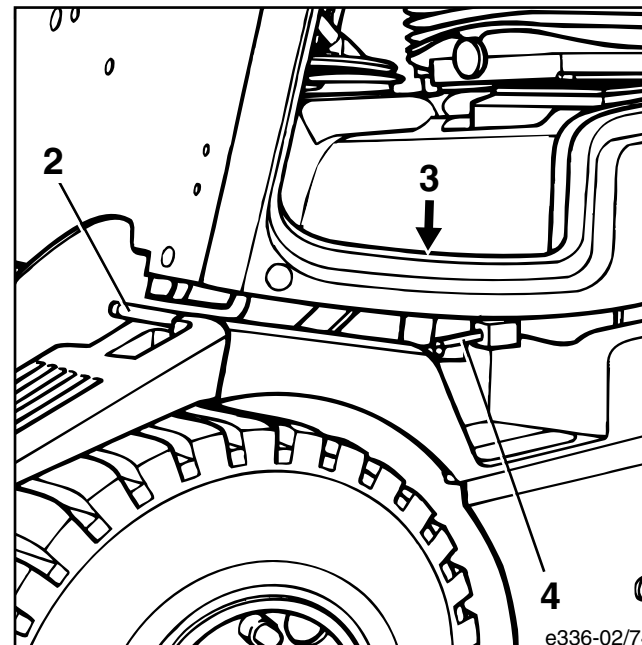
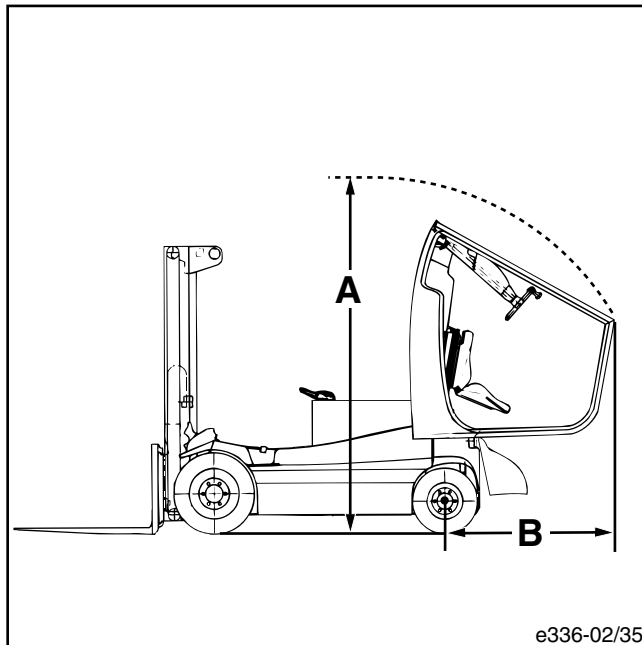
ATTENTION

On the full-fledged cabin remove only max. 1 door. If both doors are removed, the overhead guard can no longer be closed due to the high spring load.

Second lock-in position: Battery change

- Stand behind the truck on the left-hand side.
- Seize the overhead guard either at the grip* or the rear overhead guard support and tilt it back as far as the 2nd locking position (6).

* Option



Daily checks and servicing before operation

Beginning operation

NOTE

For safety reasons, a shock absorber (5) is installed to reduce the opening and closing speed.

Closing the overhead guard

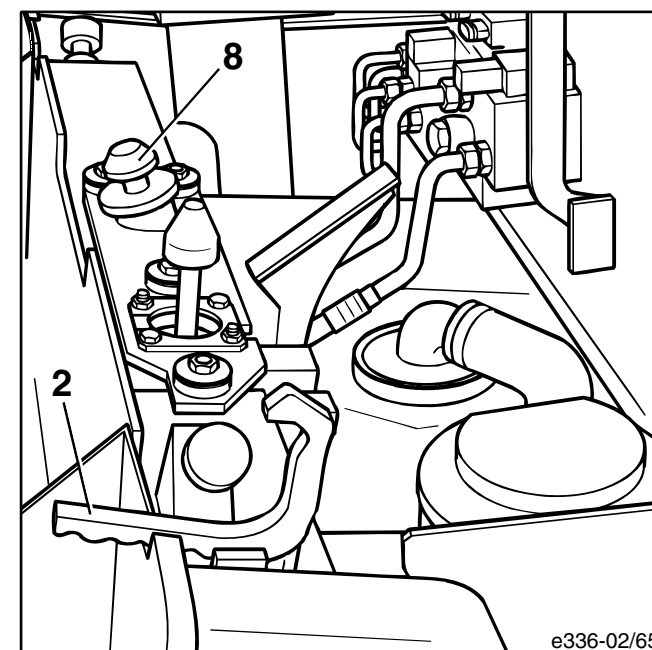
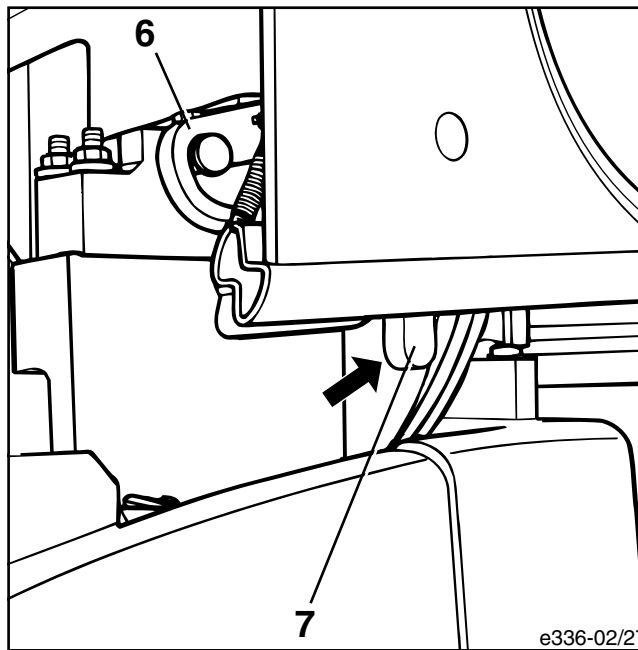
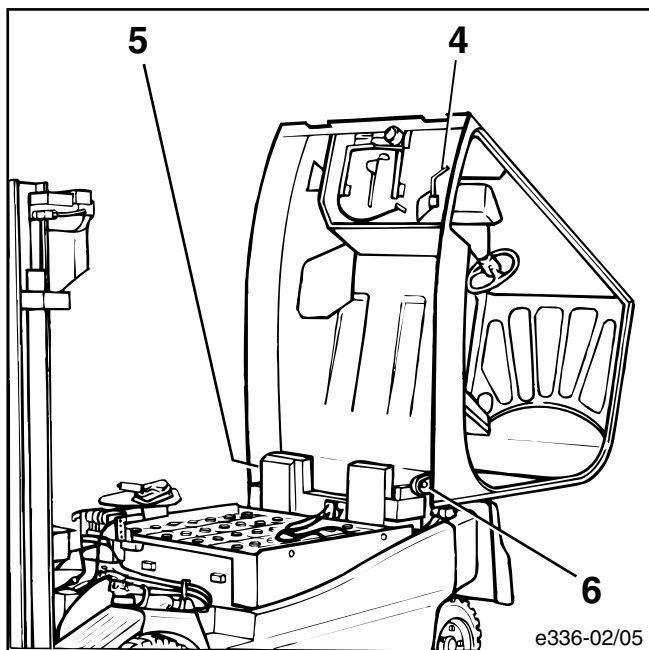
- Stand behind the truck on the left-hand side.
- Seize the overhead guard either at the grip* or the rear overhead guard support and tilt it back as far as the 2nd locking position (6).
- Push the lever (7) up until the lock (6) for the 2nd lock-in position is free.
- Tilt the overhead guard forward until it reaches the first lock-in position.
- Push the cabin slightly forward and pull the lever (4) out until the lock (6) is free.
- Tilt the overhead guard fully down until the lock engages.

NOTE

The overhead guard locking lever (2) and locking pin (8) lock in the end position.

The truck can be taken into operation only when the overhead guard is properly engaged.

* Option



Daily checks and servicing before operation

Beginning operation

Check the battery charge

- Apply the handbrake (3).
- Pull out the emergency isolator button (4).
- Insert the key (1) into the key switch and turn clockwise as far as possible.
- Check the battery charge at discharge indicator (5) in the composite instrument (2).

Charging the battery



ATTENTION

For the safe operation and maintenance of the batteries, follow the following instructions.



ATTENTION

The battery contains dissolved sulphuric acid, which is poisonous and caustic. Therefore wear protective equipment (protective apron and gloves) and protective glasses when working with battery acid. If clothing, skin or eyes nevertheless came in contact with battery acid, immediately flush the affected parts with water. In case acid contacted the eyes, seek medical aid at once! Neutralise spilt battery acid!

Gases are released when batteries are being charged. Do not expose the battery to sparks or open flames, as an explosion could result. Rooms in which batteries are charged or stored must be ventilated accordingly.



NOTE

Check that the specific gravity of the electrolyte is at least 1.14. Always charge and service the battery according to the manufacturer's instructions.

If you are not in possession of these instructions, please contact your distributor. Also follow the operating instructions for the optional battery charger. If a battery charger is already available, follow the instructions supplied with it.

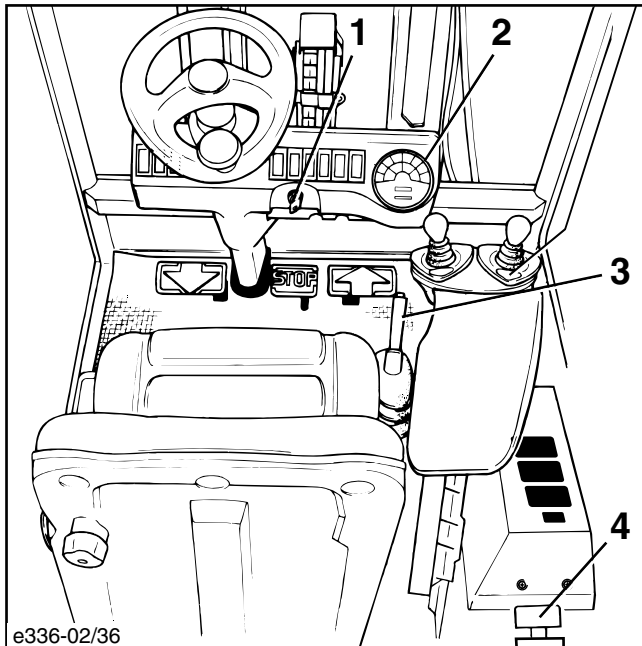


ATTENTION

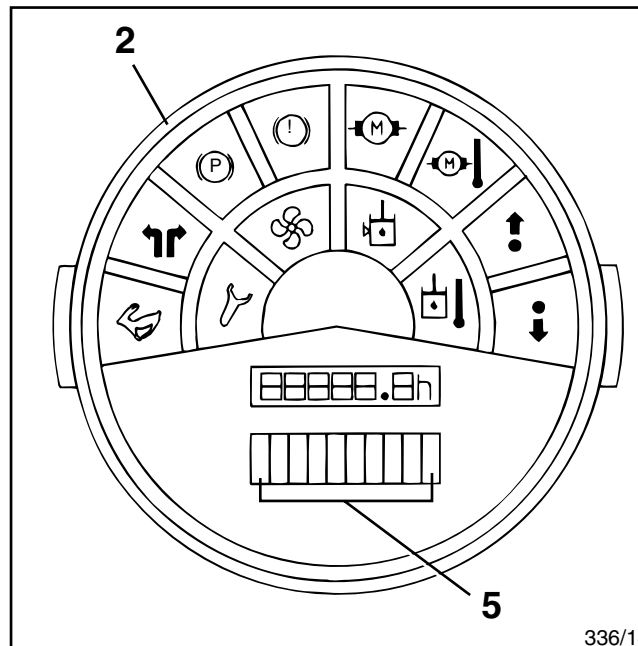
Do not place any metal parts on the battery - risk of a short!

Do not top up electrolyte before charging.

Please note that the overhead guard must be open during the entire charging period.



e336-02/36



336/14

Daily checks and servicing before operation

Beginning operation

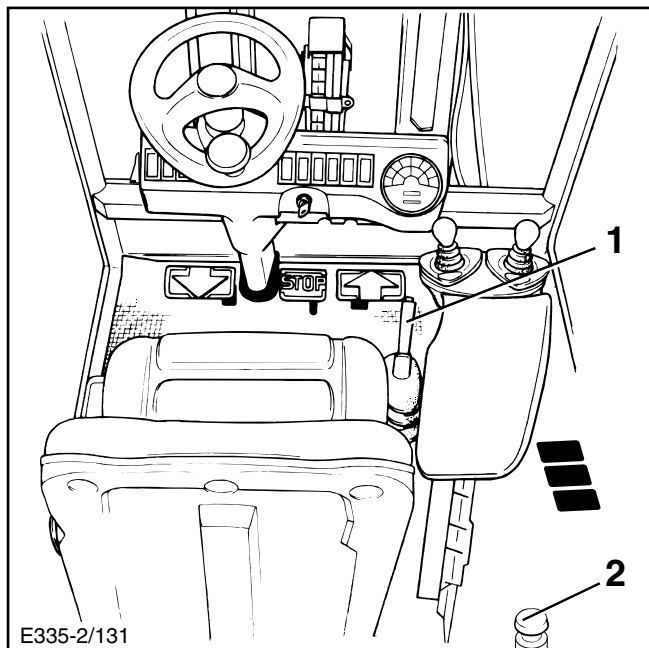
Connecting the battery to a suitable external charger



CAUTION

The charging current of the battery charger used for the battery charge should not be higher than 160 A. If your battery charger has a higher charging rate, ask your authorized dealer beforehand.

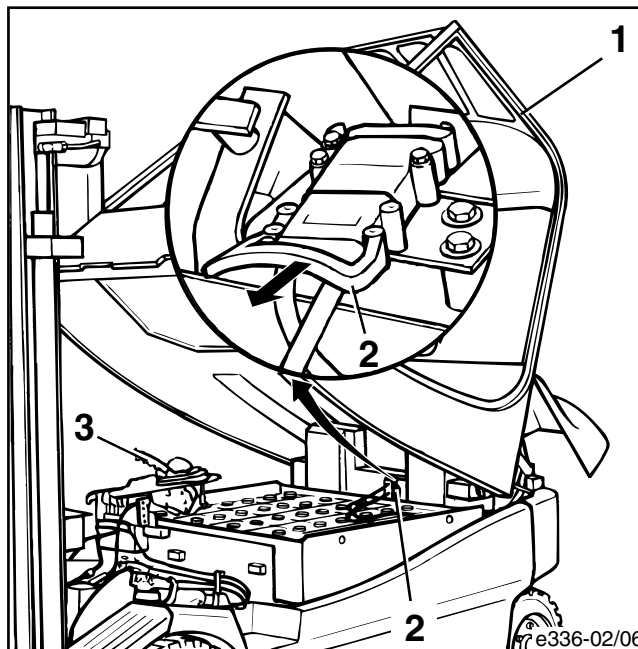
- Lower the forks.
- Tilt the mast slightly forward. The forks must rest on the ground.
- Apply the handbrake (1).
- Press the emergency isolator button (2).
- Release the overhead guard (3) and tilt it to the 1 or 2nd lock-in position.
- The front edge of the overhead guard must nevertheless be lifted at least 300 mm.
- Disconnect the battery socket (5) from the battery plug (4).
- Insert the charger plug into the battery connector.
- Switch on the battery charger.



Always recharge batteries without delay. Never leave batteries in a discharged state. This also applies to partially discharged batteries.

Check the condition, electrolyte level and specific gravity of the battery

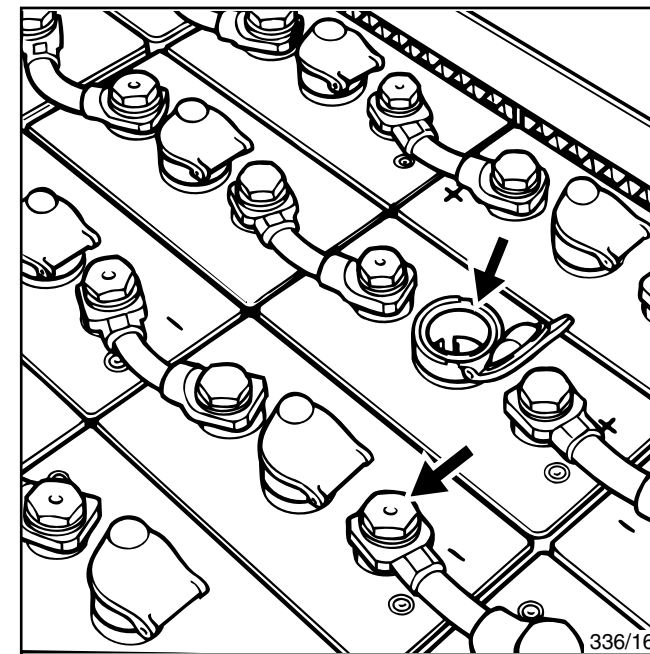
- Check the battery for casing cracks, lifted plates and electrolyte leakage.
- Unscrew the caps and check the electrolyte level.
- Unscrew the caps and check the electrolyte level. On batteries with check tubes, the fluid should be at the bottom of the tubes. On batteries without tubes, the fluid should be 10 - 15 mm above the plates.
- If the electrolyte level is low, top up with distilled water only.



- Remove corrosion on battery poles and coat with non-acidic grease.
- Retighten pole clamps firmly.
- Check the specific gravity using a hydrometer. The specific gravity of the electrolyte should be between 1.24 and 1.28.

NOTE

Discharges which are under 20 % of the rated capacity are deep discharges. Deep discharges shorten the service life of the battery.



Daily checks and servicing before operation

Beginning operation

Battery change

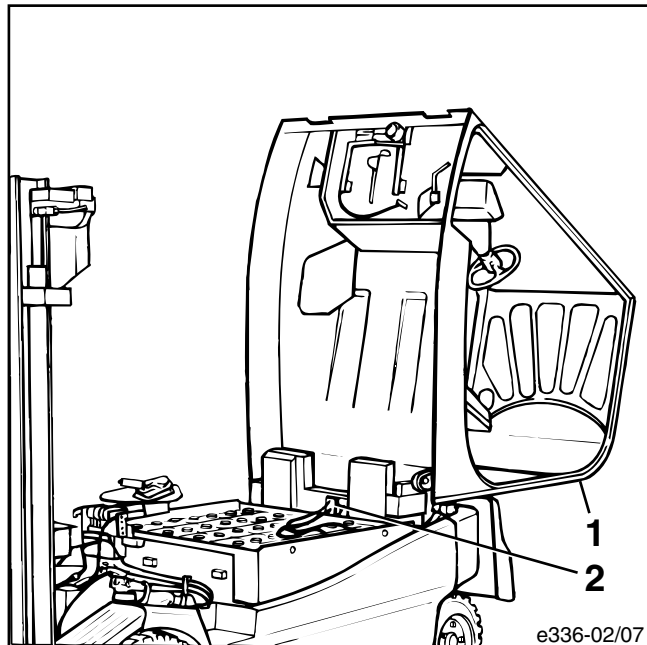
When changing the battery, at least 6 minutes must elapse between the disconnection and connection of the batteries. Otherwise the battery discharge indicator will display a false reading and reduce the speed of the working hydraulic system.



ATTENTION

The replacement battery must correspond to the standard battery both in size and weight. Deviations in weight must be compensated by additional weights. The battery must be secured against sliding. Please consult your authorised distributor.

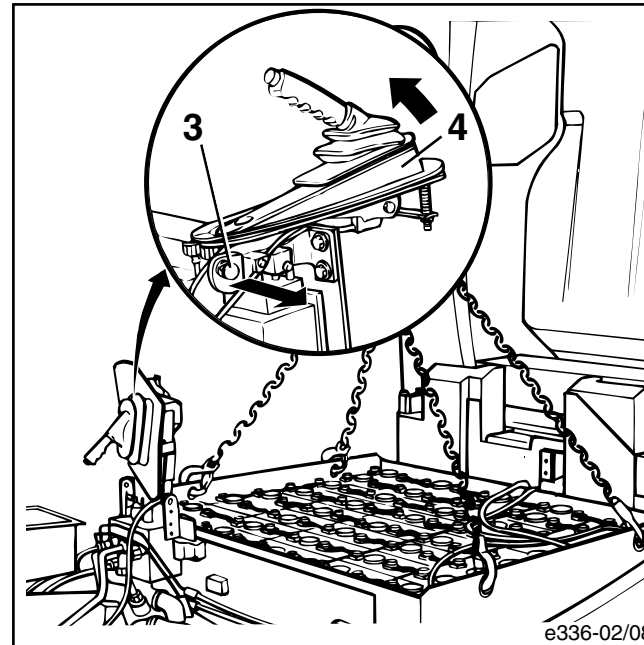
- Fully lower the fork carriage.
- Apply the handbrake.
- Depress the emergency isolator button.
- Open the overhead guard (1) to the second position.



Battery removal with a crane

Use a crane and a lifting gear with a sufficient load capacity (see technical data for battery weight).

- Disconnect the battery female connector (2) from the battery male connector.
- Pull out the locking pin (3), hold it and swivel the hand-brake and console assembly (4) upwards.
- Release the locking pin.
- Position the crane with the lifting sling over the battery.
- Attach the lifting gear to the battery.
- Lift the battery up and out of the chassis and remove to the side.



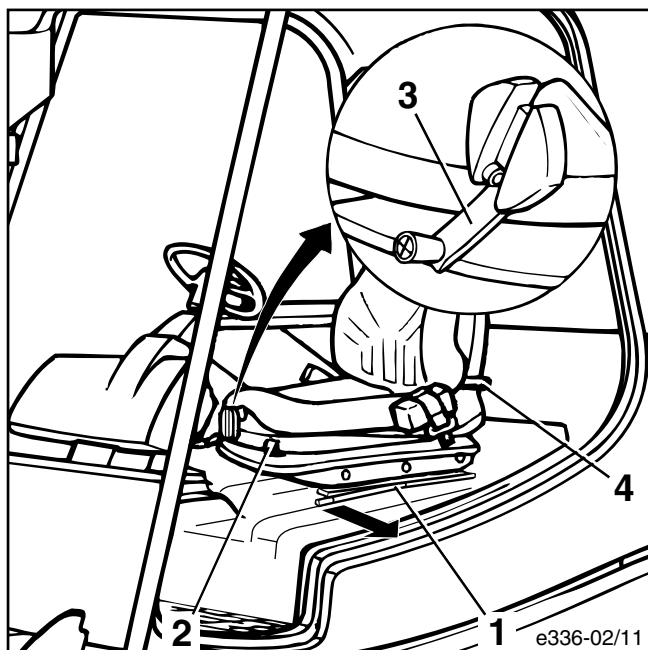
Daily checks and servicing before operation

Beginning operation

Adjusting the driver's seat

- For a horizontal adjustment of the seat, pull the lever (1) up.
- Slide the driver's seat forward or back in the rails until the optimum position for operating the steering wheel, pedals and control levers is obtained.
- Re-engage the lever.
- Lift the lever (4) to adjust the backrest.
- Swing the backrest forwards or backwards until a comfortable seating position is achieved.
- Engage lever (4) again.
- Fold out the crank (3) and rotate to adjust the seat spring to the driver's weight. The adjustment range from 50 kg to 130 kg is readable on the indicator (2).

NOTE
Prolonged sitting puts a great strain on the spinal column. Do light exercises regularly to prevent back problems.



Adjusting the swivel seat*

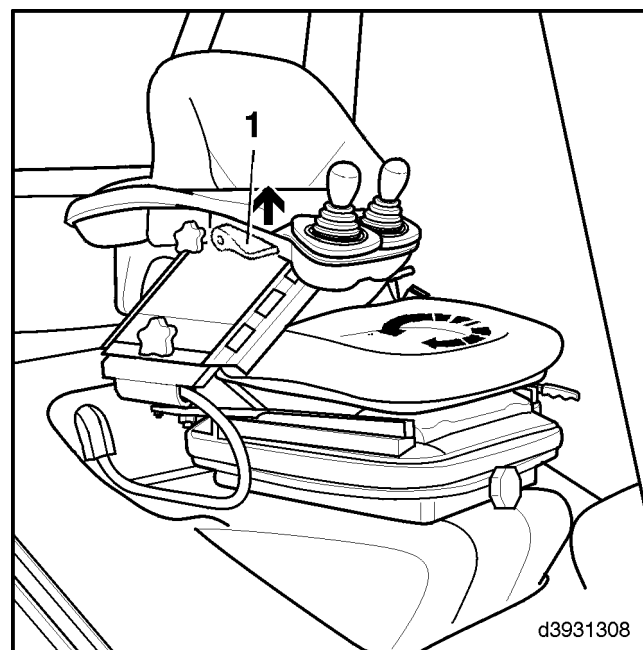
NOTE
The swivel seat allows better view to the rear when reversing for longer periods. It is recommended to set the seat to the straight-ahead position for longer periods of travel in the forward direction.

ATTENTION
When operating the truck, the swivel must be locked.

- Pull up the locking lever (1). This releases the swivel and allows the seat to be swivelled 17° to the right, lockable in the 0° and 17° positions.
- Engage the locking bolt (1) audibly.

NOTE
The swivel is maintenance-free.

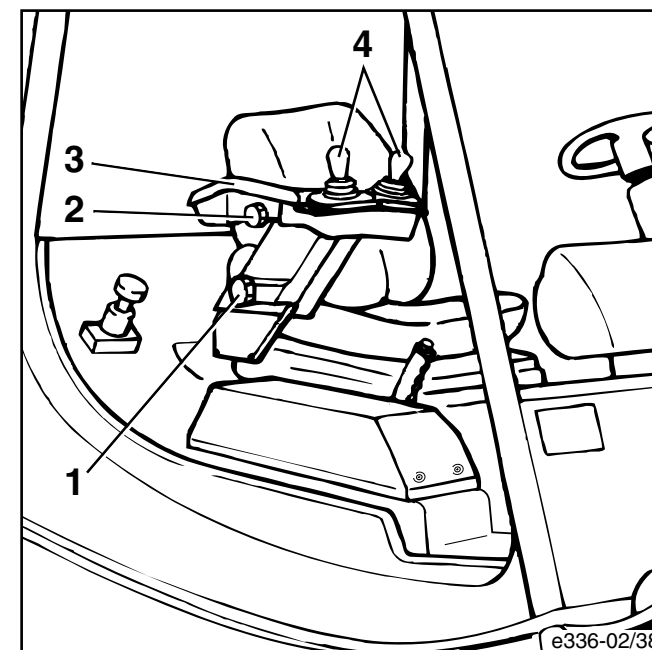
* Option



Adjusting armrest of the driver's seat

NOTE
After the clamping screw (1) is loosened, the armrest is automatically moved upward by spring pressure.

- Sit on the driver's seat and loosen the clamping screw (1).
- Push the armrest (3) down against the spring pressure until a comfortable arm position is achieved.
- Tighten the clamping screw (1).
- Loosen the clamping screw (2) and slide the armrest (3) forwards or backwards until the control levers (4) are easily reached.
- Tighten the clamping screw (2).



Daily checks and servicing before operation

Applying the seat belt



DANGER

The seat belt must always be applied during the operation of the truck! The seat belt is only for securing one person.

Driver cabs with closed, solid doors or bar-type doors comply with the safety requirements for driver retaining systems. We recommend the additional use of the seat belt. The seat belt must be used if the truck is operated with the doors open or removed.

PVC doors are not considered to be a driver restraint system.

NOTE

The automatic lock blocks the belt when the truck is tilting heavily. The belt can then not be pulled out of the retractor.

To unlock the automatic lock, carefully drive the truck off the side slope.

- Pull the seat belt (3) out of the retractor with a smooth movement.
- Place the seat belt over the loin area, not over the belly.
- Engage the tongue (2) in the lock (4).
- Check seat belt tension. The belt should be snug on the body.



CAUTION

The webbing should not be twisted, stuck or knotted.

Protect the lock (4) and retractor (1) against foreign particles and dirt.



NOTE

During operation of the truck (e.g. driving, lifting, etc.) the operator should sit as far back as possible so that the back contacts the backrest.

The automatic lock of the retractor allows sufficient freedom of movement on the seat during normal operation of the truck.

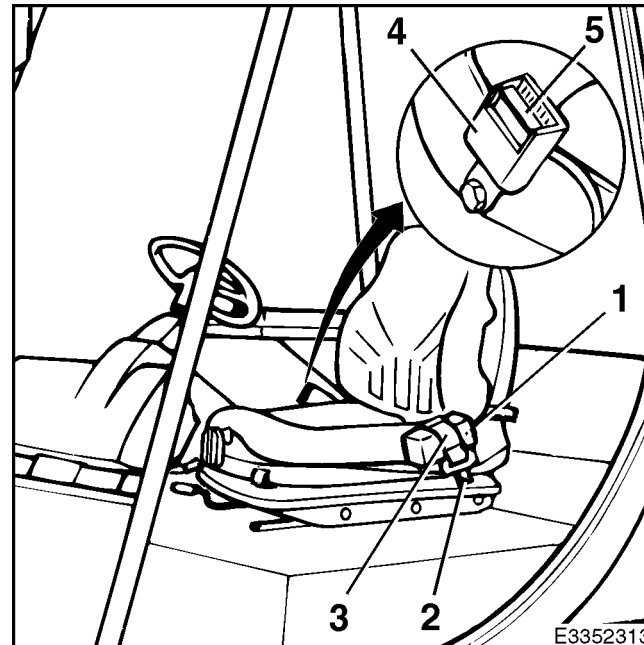
Beginning operation

Opening the seat belt

- Press the red button (5) on the lock (4) to disengage the belt.
- Return the tongue (2) back to the retractor (1) by hand.

NOTE

A belt which returns too fast can trigger the automatic lock when the tongue hits the enclosure. The belt can then not be pulled out with the usual force.



E3352313

Daily checks and servicing before operation

Beginning operation

Push the emergency isolator button

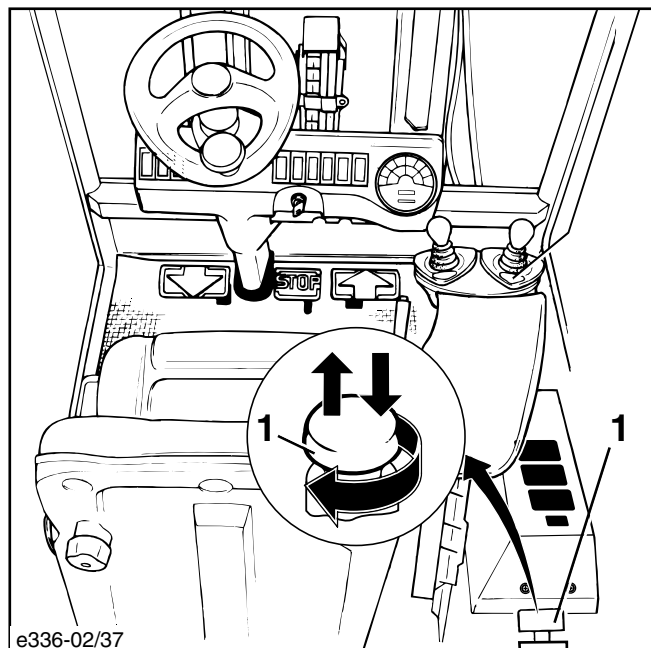
- Depress the emergency isolator button (1) and release it. This actuates the emergency isolator button and shuts off the truck completely.

Pull the emergency isolator button

- Depress the emergency isolator button (1) as far as possible, turn clockwise and pull it out. This actuates the emergency isolator button and makes the truck ready for operation.

NOTE

The emergency isolator button is unlocked and the truck operational only if this procedure is performed correctly.



Driving



CAUTION

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

NOTE

Always adapt your driving style to suit the conditions of the roadway (rough surfaces, etc.), especially hazardous work areas and the load.



ATTENTION

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

NOTE

All control levers must be in the neutral position.

- Sit down on the driver's seat (only this will actuate the seat switch beneath the driver's seat).
- Push in the emergency isolator button (4) against the spring, turn it clockwise to the stop and pull out.

NOTE

On certain Linde fork trucks (eg with container overhead guard, swivel seat) the torso clearance is reduced. Therefore only persons with a headroom of 30 mm between the head and overhead guard should operate this truck.

NOTE

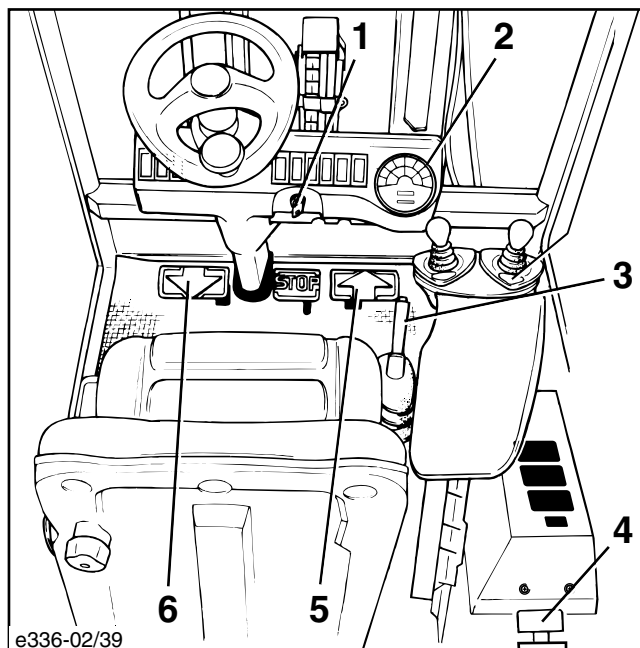
Only when the proper procedure is followed can the emergency stop be disengaged and the truck can again be operated.

- Apply the seat belt.
- Insert the key (1) into the switch lock and turn the key clockwise as far as possible.
- The symbol „h“ (8) and the decimal point (9) will flash and the hour meter (11) is turned on.
The battery discharge indicator (10) and all warning lights in the composite instrument (2) will be illuminated (warning lights will extinguish after approx. 2 seconds, except for warning light (7)).

NOTE

Operate the joystick and/or the drive pedals only after the indicator lamps (except 7) have extinguished. Otherwise the truck is switched off. Switch off and on the key switch to start the truck again.

- Raise the forks slightly and tilt the mast back.
- Release the handbrake (3) (indicator light (7) will extinguish).



e336-02/39

Travel in the forward direction

- Depress the right accelerator pedal (5) smoothly. Truck speed depends on how far the pedal is depressed.

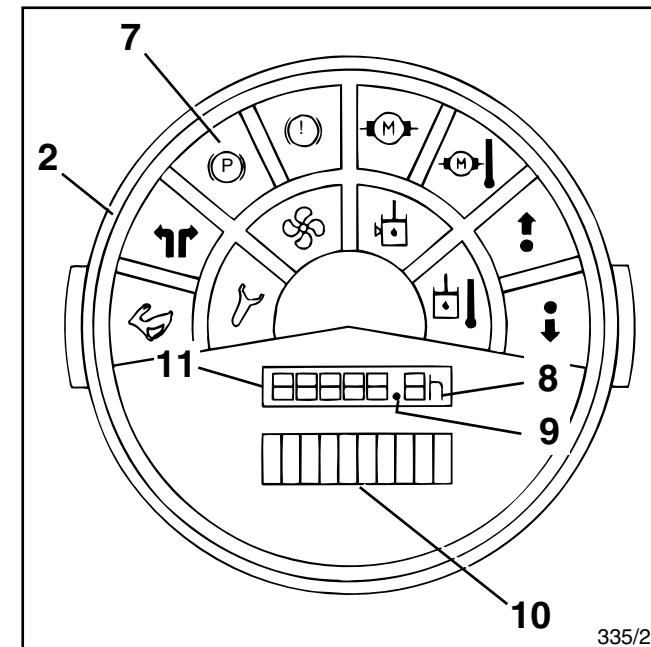
NOTE

Depressing the accelerator pedal fully will not increase the rate of acceleration as maximum acceleration is controlled automatically.

Travel in the reverse direction

- Depress the left accelerator pedal (6) smoothly. Truck speed depends on how far the pedal is depressed.

Truck speed depends on how far the pedal is depressed.



335/29

Reversing direction

Reversing the direction of travel

- Release the depressed accelerator pedal.
- Depress the accelerator pedal for the opposite direction of travel. The truck will be braked to a standstill electrically and then accelerated in the selected direction.
- Keep both feet on the accelerator pedals for easy control of the truck during travel.
- The accelerator pedals can be operated directly from one direction to the other.

NOTE

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

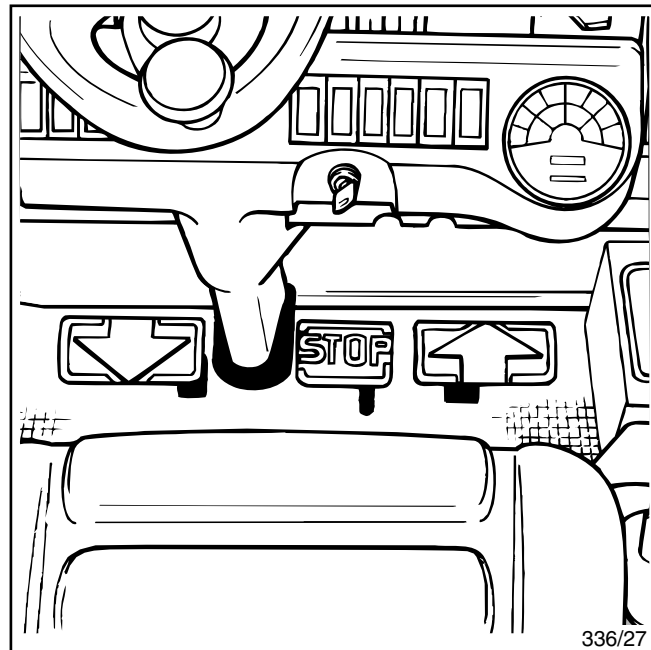
Malfunctions during operation



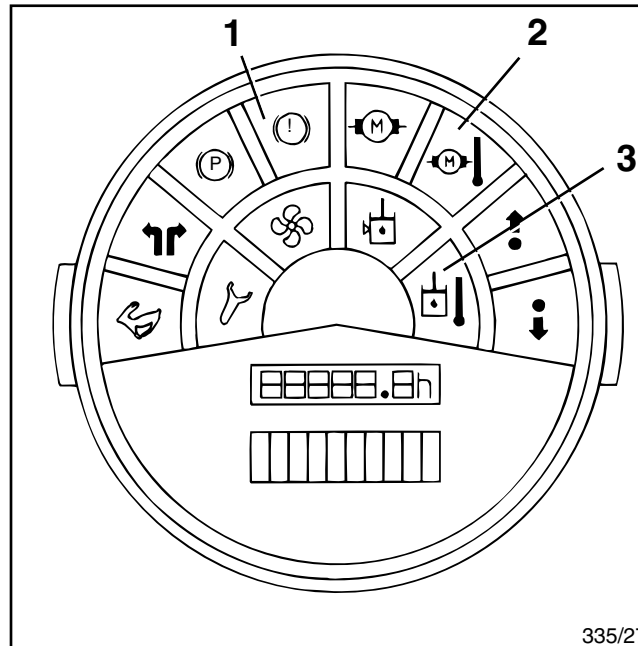
ATTENTION

If one of the following warning lights in the combined instrument illuminates during operation, stop the truck and remedy the fault without delay. (Refer to: Malfunctions, causes, remedy)

- Brake shoe wear indicator* (1)
- Motor temperature warning light (2)
- Hydraulic oil temperature warning light* (3)



* Option



Driving

**CAUTION**

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)(depending on the version) 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.)
- Push in the emergency isolator button (5) against the spring, turn it clockwise to the stop and pull out.

**NOTE**

On certain Linde fork trucks (eg with container overhead guard, swivel seat) the torso clearance is reduced. Therefore only persons with a headroom of 30 mm between the head and overhead guard should operate this truck.

**NOTE**

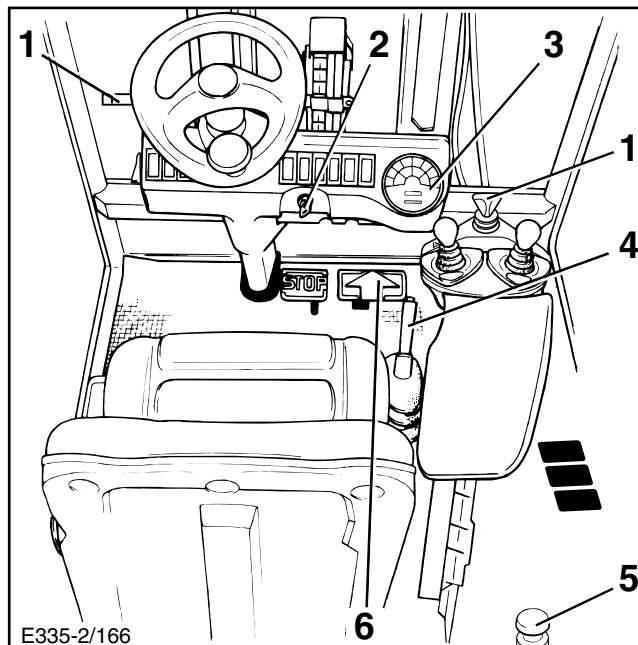
Only when the proper procedure is followed can the emergency stop be disengaged and the truck can again be operated.

- Apply the seat belt.
- Insert the switch key (2) into the switch lock and turn it clockwise as far as possible.
- The symbol "h" (10) and the decimal point (11) will flash and the hour meter (13) is turned on.
The battery discharge indicator (12) and all warning lights will be illuminated in the composite instrument (3) (the warning lights will extinguish after approx. 2 seconds, except for warning light (7)).

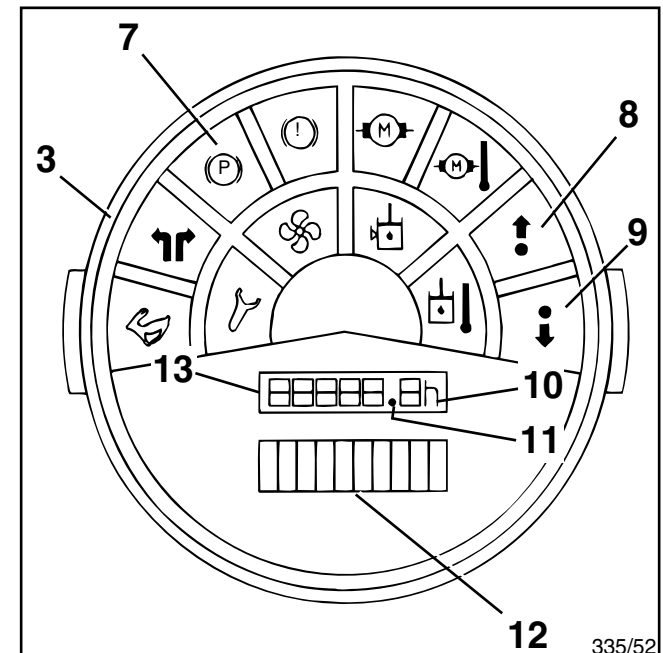
**NOTE**

Operate the joystick and/or the drive pedal only after the indicator lamps (except 7) have extinguished.
Otherwise the truck is switched off.
Switch off and on the key switch to start the truck again.

- Raise the fork carriage slightly and tilt it back.
- Release the handbrake (4) (indicator light (7) will extinguish).



E335-2/166



335/52

Single-pedal model

Operation

NOTE

Depending on the version, the directional control lever (1) is mounted in the armrest in front of the lift and tilt control levers or under the steering wheel.

Travel in the forward direction

- Push the directional control lever (1) forward.
- Depress the accelerator pedal (6) smoothly. Truck speed depends on how far the pedal is depressed.

Travel in the reverse direction

- Pull the directional control lever (1) back.
- Depress the accelerator pedal (6). The reversing speed of the truck depends on how far the pedal is depressed.

Reversing the direction of travel

- Release the accelerator pedal (6).
- Shift the directional control lever (1) to the opposite direction of travel.
- Depressing the accelerator pedal (6) will accelerate the truck in the new direction.

The directional control lever can be shifted directly to the opposite direction of travel. Without releasing the accelerator pedal, the truck will be braked to a standstill electrically and accelerated in the desired direction.

Malfunctions during operation



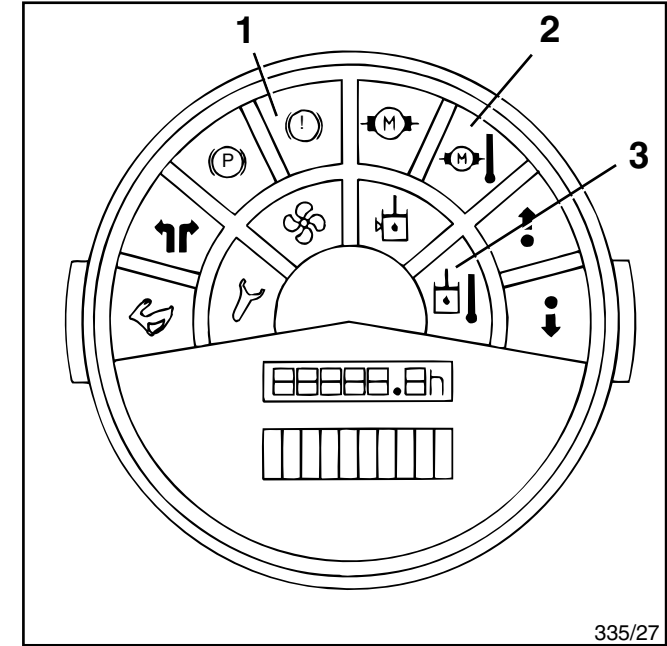
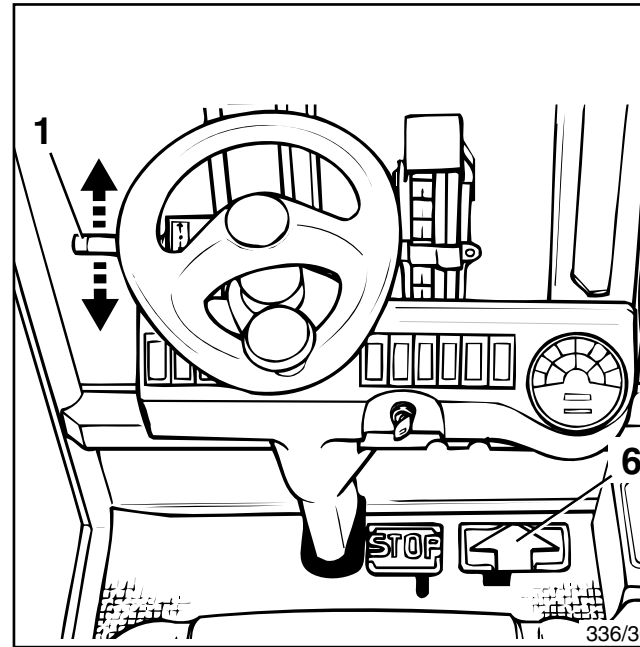
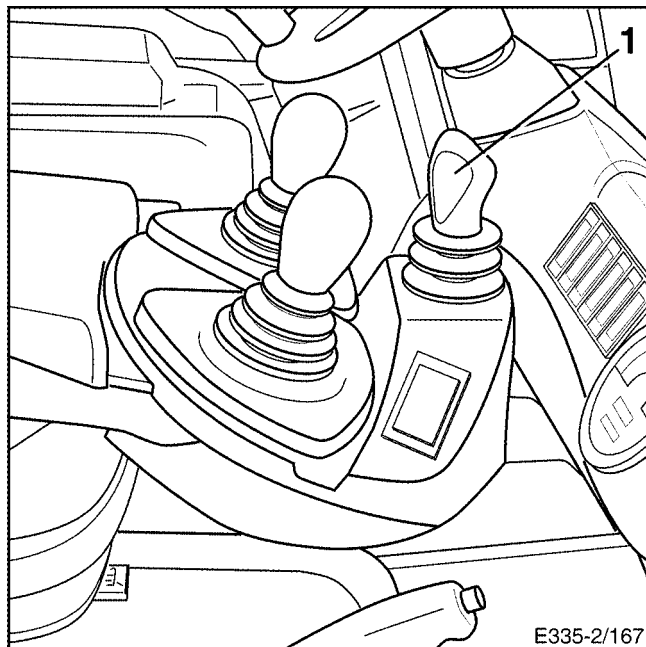
ATTENTION

If one of the following warning lights in the combined instrument illuminates during operation, stop the truck and remedy the fault without delay.

(Refer to: Malfunctions, causes, remedy)

- Brake shoe wear indicator* (1)
- Motor temperature warning light (2)
- Hydraulic oil temperature warning light* (3)

* Option



Steering

Due to the hydrostatic steering, only minimal effort is required for turning the steering wheel. This feature is particularly of benefit when working in narrow aisles.

- Take the truck into operation, drive and turn the steering wheel left and right through the full cycle.

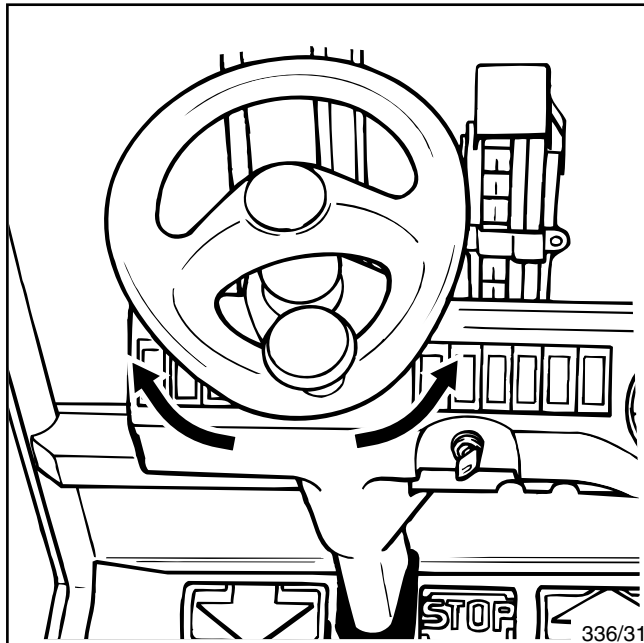


WARNING

Contact your authorised distributor if the steering is hard or has too much play. Do not operate the truck with a faulty steering system.

Turning radii

- E 20 1727 mm
- E 25 1925 mm
- E 30 1975 mm
- E 20/600 1787 mm
- E 25/600 1925 mm
- E 30/600 1975 mm



Braking system

Operation

Service brake, regenerative brake

- Release the depressed accelerator pedal and depress the pedal for the opposite direction of travel.

NOTE

Please ask for a demonstration of regenerative braking when taking over the truck.

Foot brake

- Release the accelerator pedals (1, 3).
- Depress the brake pedal (2).

NOTE

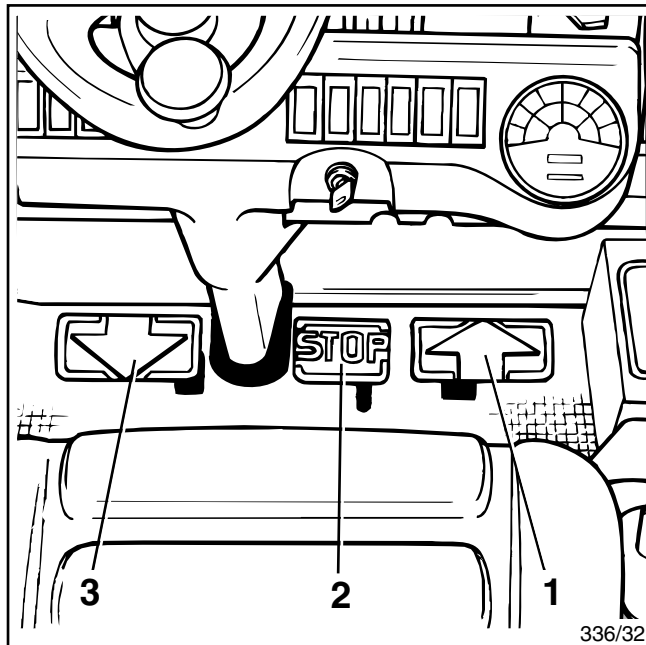
Depressing the brake pedal operates the mechanical external shoe brakes at both drive motors.



ATTENTION

For emergency stops, depress the brake pedal located between the accelerator pedals.

It is recommended that the driver acquaint himself with the operation and effect of the emergency brake without carrying a load. This should be done on a road stretch without traffic and at low speed. Depressing the brake pedal operates the hydraulic external shoe brakes at both drive motors.



336/32



ATTENTION

After cleaning the truck, the braking power may be reduced due to wetness. Before driving the truck perform a brake test and, if necessary, dry the brakes by operating them several times while driving slowly.

Operating the electric motor brake (LBC)

- Release the accelerator pedal (1 or 3) when driving. The pedal will return automatically to the neutral position and the truck will come to a standstill.

NOTE

This feature can be disabled with the diagnostic unit.

Handbrake

Use the mechanical handbrake to park the fork truck. Both external shoe brakes at the drive motors are applied by means of a cable.

NOTE

When the parking brake is operated, the drive current is reduced at the same time with an electric switch and the warning light will go on in the composite instrument (4).

Engaging the handbrake:

- Pull the handbrake lever (6) back firmly.

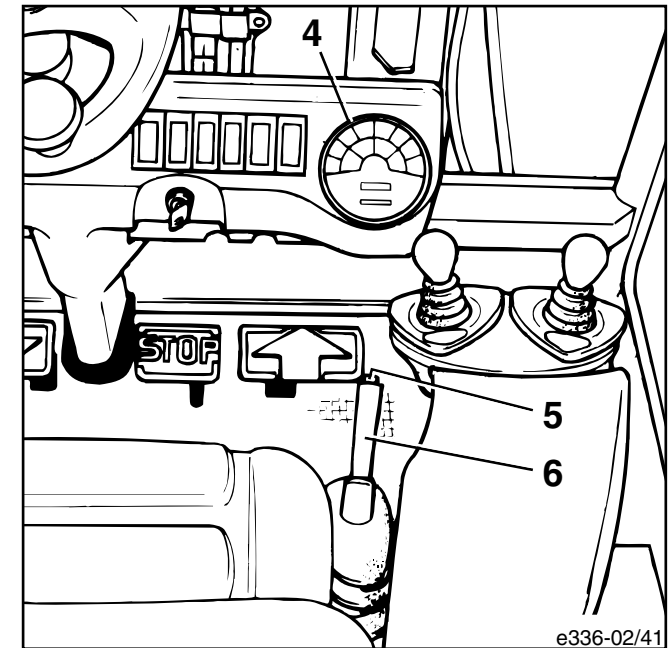
Releasing the handbrake:

- Press the release button (5) on the brake lever and push the lever forward.



WARNING

Please contact your authorised distributor signs of wear or faults become evident in the braking system. Do not operate the truck with a faulty braking system.



e336-02/41

Central control lever (joystick) operation of mast and attachments

Operation



WARNING

Use the lifting device and attachments only for authorised applications. The operator must be instructed in the handling of the lifting device and attachments. Observe the maximum lift height. Do not put your hands or any other part of the body into the lift mast or the space between the mast and truck.

Always operate the control levers smoothly; do not jerk. The speed of lifting, lowering and tilting is determined by how far the lever is moved. The lever is designed to return to the neutral position when released.



NOTE

Note the operating symbols with arrows.

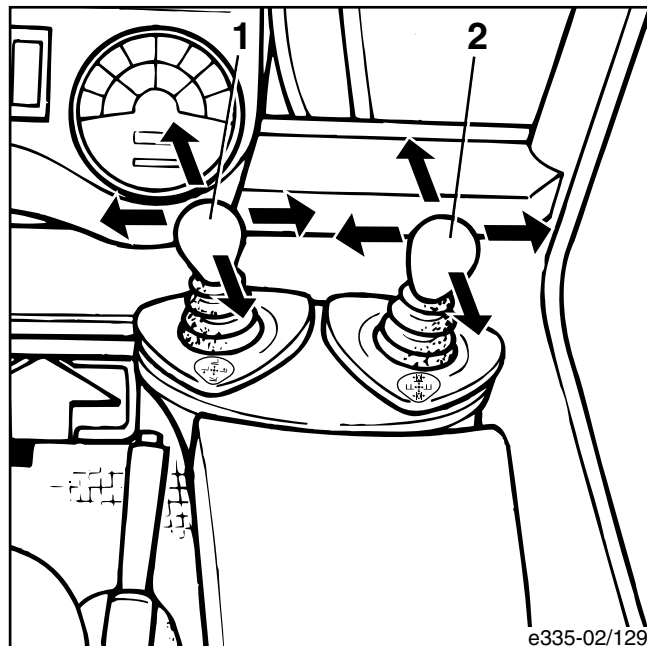


NOTE

On the single lever model both functions are operated simultaneously (e.g. lifting and tilting) when the control lever is moved to an intermediate position (about 45°).

Tilting the mast forward

- Push the control lever (1) forward.



Tilting the mast back

- Pull the control lever (1) back.

Raising the fork carriage



WARNING

Do not step on the raised forks. Increased danger of falling and being squeezed.

- Push control lever (1) to the right.

Lowering the fork carriage

- Push control lever (1) to the left.

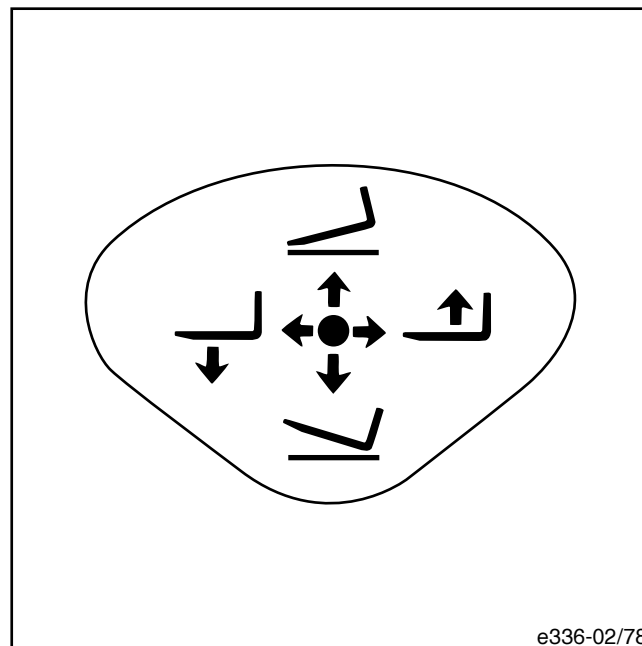
Operating the attachments

Attachments (e.g. sideshift, clamp, etc.) can be fitted on the lift truck as optional equipment. Observe the operating pressure and instructions for the attachment. One additional control lever is fitted for its operation.



NOTE

For each attachment, affix a load capacity label for the truck with attachment to the battery cover and affix a symbol label at the rear of the appropriate control lever.



Operating the sideshift

- Push control lever (2) to the left (this will move the sideshift to the left).
- Push control lever (2) to the right (this will move the sideshift to the right).

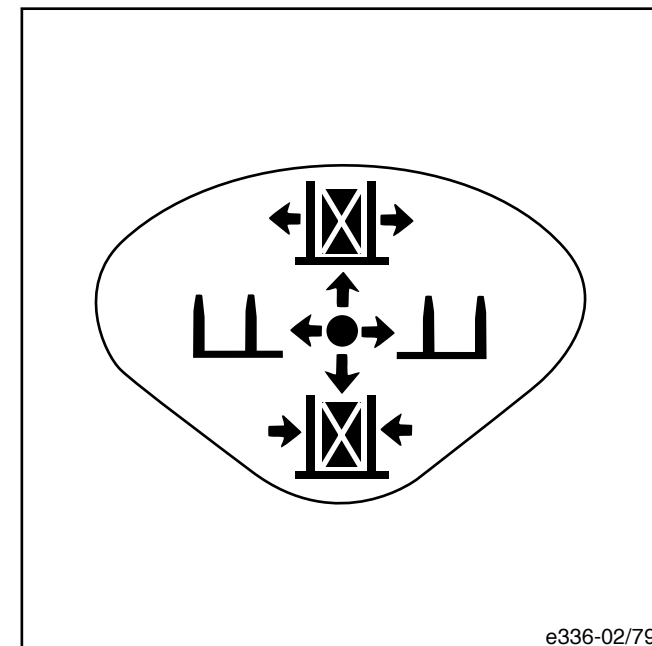
Operating the clamp

- Push control lever (2) forward (this will open the clamp).
- Pull control lever (2) back (this will close the clamp).



WARNING

Attachments not supplied with the truck may only be employed if an authorized distributor ascertains that a safe operation is assured in respect to load capacity and stability.



Single control lever operation of mast and attachments

Operation



WARNING

Use the lifting device and attachments only for authorised applications. The operator must be instructed in the handling of the lifting device and attachments. Observe the maximum lift height. Do not put your hands or any other part of the body into the lift mast or the space between the mast and truck.

Always operate the control lever smoothly; do not jerk. The speed of lifting, lowering and tilting is determined by how far the lever is moved. The lever is designed to return to the neutral position when released.



NOTE

Note the operating symbols with arrows.

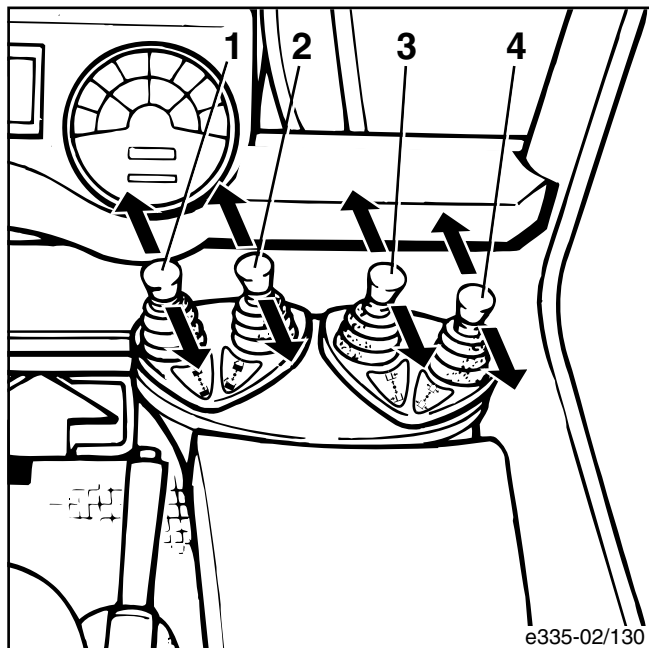
Raising the fork carriage



WARNING

Do not step on the raised forks. Increased danger of falling and being squeezed.

- Pull the control lever (1) back.



e335-02/130

Lowering the fork carriage

- Push the control lever (1) forward.

Tilting the mast forward

- Push the control lever (2) forward.

Tilting the mast back

- Pull the control lever (2) back.

Operating the attachments

Attachments (e.g. sideshift, clamp, etc.) can be fitted on the lift truck as optional equipment. Observe the operating pressure and instructions for the attachment.

One or two additional control levers are fitted for its operation.



NOTE

For each attachment, affix a load capacity label for the truck with attachment and a symbol label for the respective attachment to the battery cover.

Operating the sideshift

- Push control lever (3) forward (this will move the sideshift to the left).
- Pull control lever (3) back (this will move the sideshift to the right).

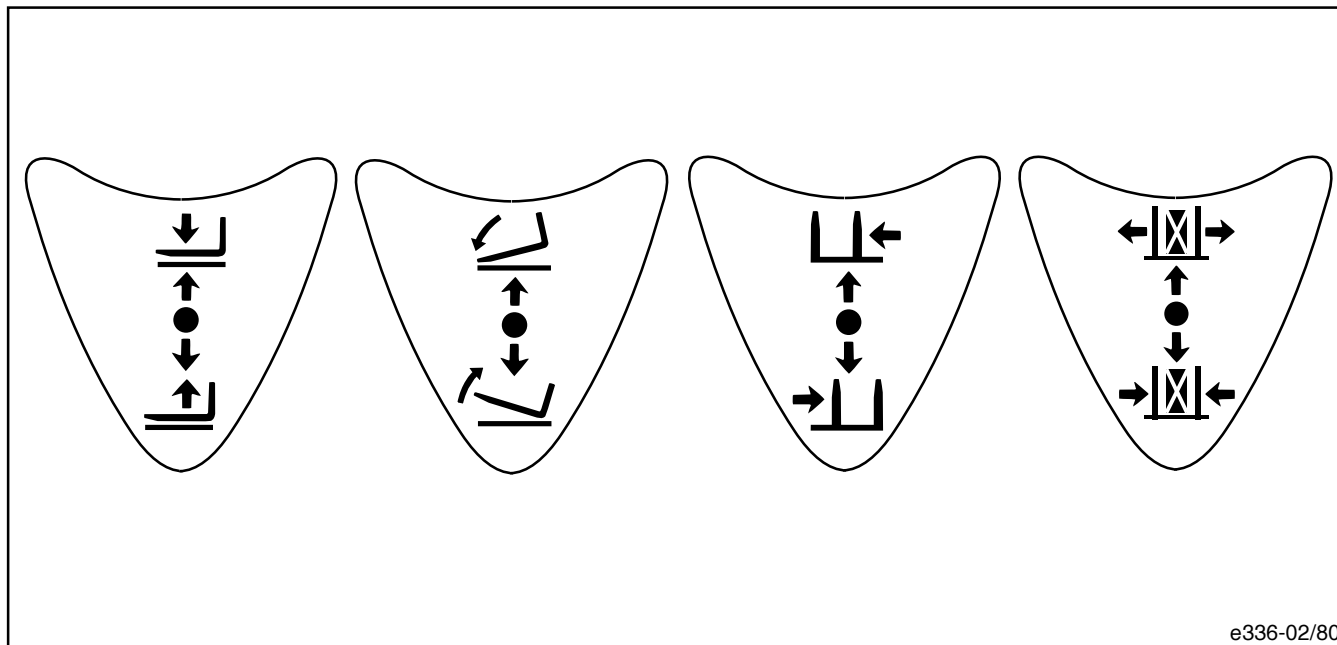
Operating the clamp

- Push control lever (4) forward (This will open the clamp).
- Pull back on control lever (4) (This will close the clamp).



WARNING

Attachments not supplied with the truck may only be employed if an authorised distributor ascertains that a safe operation is assured in respect to load capacity and stability.



e336-02/80

Working lights*, wipers*, lighting*, directional indicators*

Operation

NOTE

The switches (I and II) can be arranged in a different order on the instrument panel, depending on the model. Please observe the switch symbols.

Turning on the front working lights

The working lights are turned on and off with toggle switch (1).

Turning on the rear working lights

The working lights are turned on and off with toggle switch (2).

Turning on the front windscreen wiper and washer

- To actuate the front windscreen wiper, press the switch (3) to intermediate position.
- To also operate the windscreen washer, depress switch fully.

Turning on the rear windscreen wiper

- To operate the rear windscreen wiper, press the switch (4) to the intermediate position.

Turning on the lighting

- Depress the light switch (5) to the intermediate position to switch on the side marker lights and license plate light.
- Depress the light switch fully for dip beam.

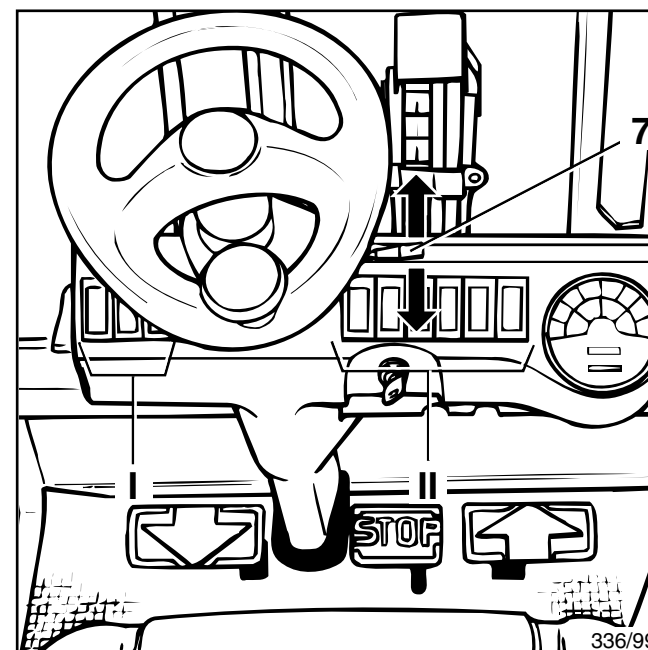
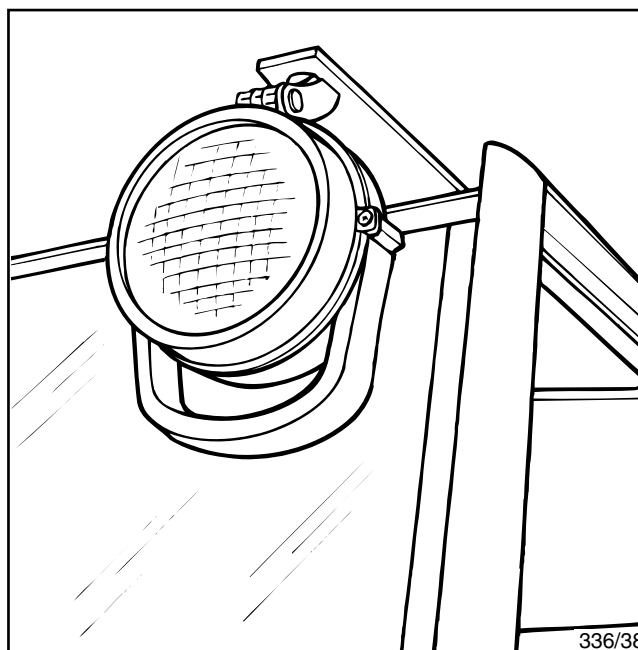
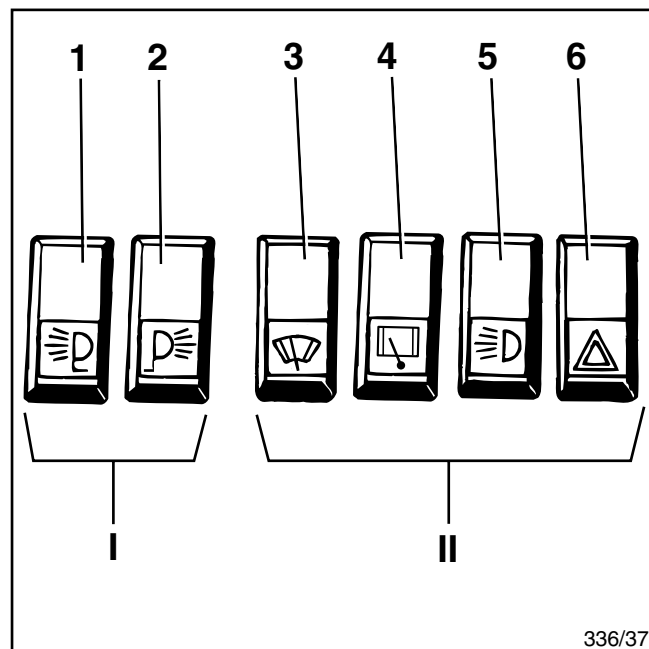
Turning on the hazard warning light

- Depress the hazard warning light switch (6).

Turning on the directional indicator lights

- Move the directional indicator switch (7) at the steering wheel forward or back. The left or right directional indicator light will flash.

* Option



Electric heater*

Heater controls

The air intake can be regulated with the control lever (1).

Air intake control lever positions

- Up: Air intake from outside.
- Down: Air intake from inside cabin.

The air flowing out of the outlet (2) is either heated or unheated fresh air, depending on the position of the control lever (1).

Heater selector switch (3)

The desired temperature can be selected with the selector switch when the heating is switched on.

The heater shuts off automatically when the set temperature is reached, and again when it drops.

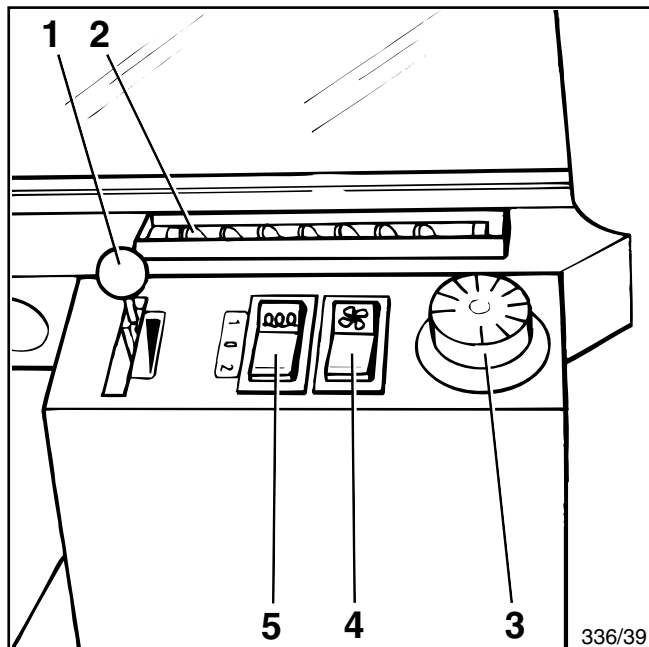
Fan switch (4)

- In centre position 0: off.
- In top position 1: Half fan power.
- In lower position 2: Full fan power.

Electric heater switch (5)

- In centre position 0: off.
- Top position 1: Half heating performance.
- Lower position 2: Full heating performance.

*Option



Truck data acquisition

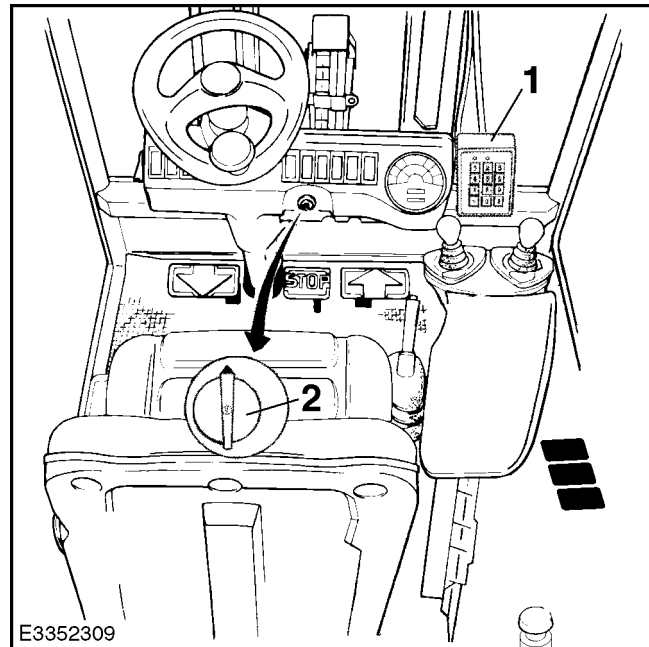
The input unit (1) for entering vehicle data is located next to the console.

The terminal has a keypad (3) with 12 keys. With the standard setting, a 5-digit PIN number assigned to the operator ensures that only authorised personnel can operate the truck. The truck can only be started after this PIN number and maybe a condition code (depending on the setting) has been entered.

NOTE

The PIN number can be enlarged from 5 to 8 digits. Before entry of the PIN number, please request your truck pool manager to give you the number of digits of the PIN number and the setting of the truck.

* Option



E3352309

Condition code

NOTE

The code indicates the state of the truck.

The following code numbers are available:

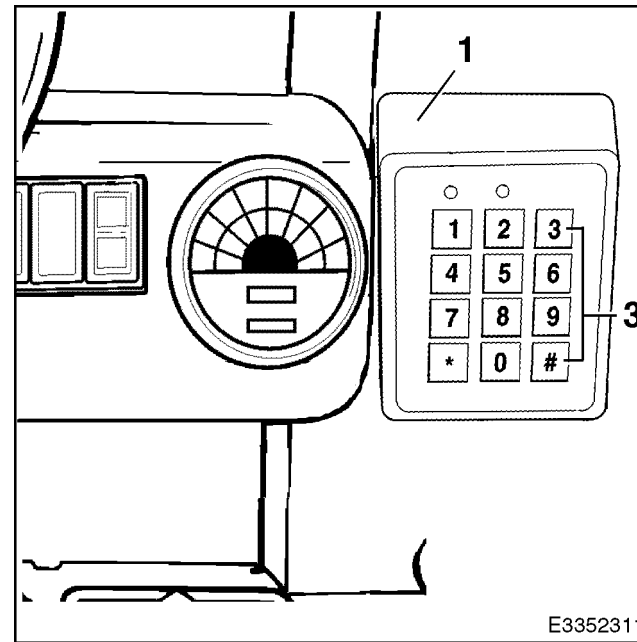
- 0 = Truck in working order
- 1 = Request Service (truck cannot be started)
- 2 = Request Maintenance (truck can be started)
- 3 = Driving problem
- 4 = Lifting problem
- 5 = Steering problem
- 6 = Damaged in accident
- 7 = User-defined**
- 8 = User-defined**
- 9 = User-defined**

** The condition codes 7, 8, 9 can be defined by the user as he chooses.

Please contact your truck pool manager for the definition of these condition codes.

NOTE

If you notice one of these conditions (eg driving problem) only after you have first logged in with condition code 0 (truck in working order), you must first log out (turn the rotary knob (2) anticlockwise as far as possible) and log in again with condition code 3 (driving problem).



E3352311

Truck Data Management (LFM)*

Truck data acquisition - default setting (PIN number and condition code)

Logging in and starting the truck:

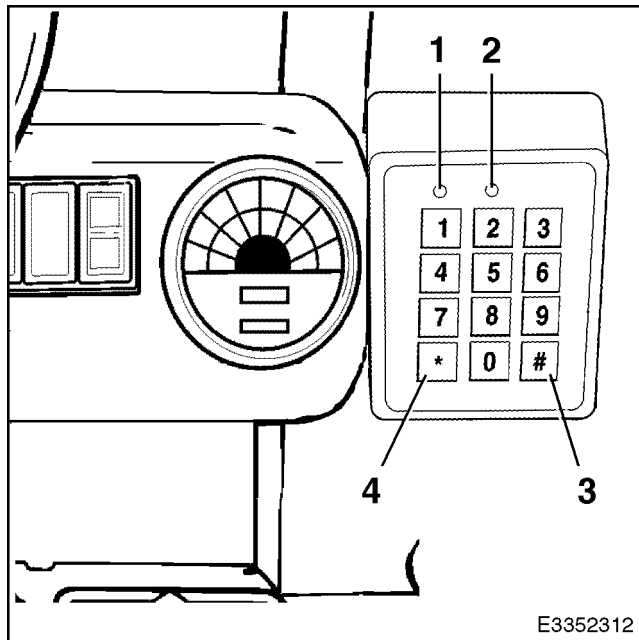
- Engage the parking brake.
 - Press any key to take the terminal into operation. The green LED (2) flashes.
 - Enter your PIN number and condition code (factory setting = 0 0 0 0 0).
- On a truck in proper working order as the following PIN No.: 00000 0.

NOTE

In case the incorrect PIN number was entered, it can be corrected after pressing the key (4) with the asterisk.

- Confirm the entry by pressing the #-key (3). The green LED (2) is on steadily.

* Option



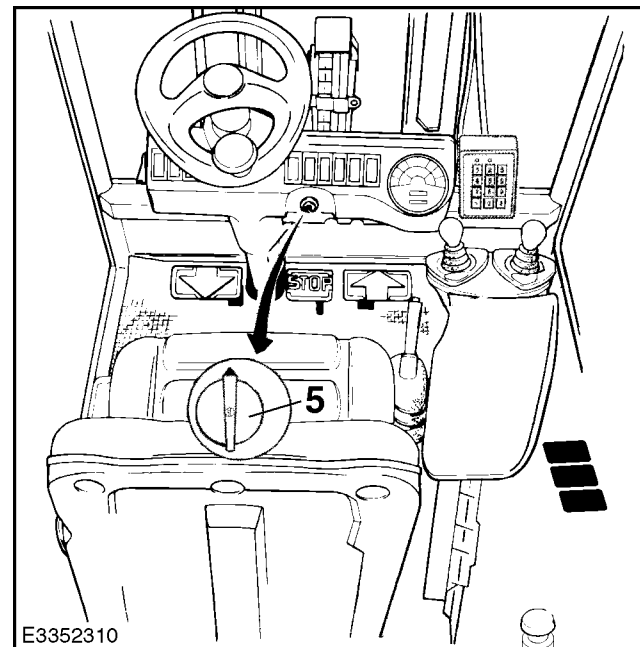
NOTE

If the red LED (1) comes on, an incorrect PIN number was entered. Press the key (4) with the asterisk and enter the correct number. After more than three incorrect inputs (factory setting), the red LED (1) is on steadily and the green LED (2) flashes. A valid PIN input is disabled for 10 minutes. The disable period can be terminated by entering a special PIN number. Please contact your pool manager.

- Turn the rotary knob (5) clockwise as far as possible and start the truck.

NOTE

If the truck does not start properly at the first attempt, the starting procedure can be repeated until the rotary knob (5) is returned to zero and the PIN number is deleted from memory after the expiration of the delay period.



NOTE

If the green (2) and red (1) LEDs are both illuminated steadily, the data must be read out. Please inform your pool manager at once.

Turning the truck off and logging out:

- Turn the rotary knob (5) anticlockwise as far as possible to turn off the engine.
- After an delay period (factory setting = 10 seconds), the red LED (1) comes on briefly and then the green (2) and red (1) LEDs flash about 3 seconds. During this time the truck can be started any time. The LEDs then go out and the PIN number is no longer stored.

NOTE

The delay time can be set between 10 seconds and 10 minutes with the FDE configuration software. Please contact your Linde dealer in this regard.

NOTE

Pressing the key (3) with the #-symbol after the engine is turned off terminates the delay period at once and the PIN number is deleted from memory.

Truck data acquisition - special setting (PIN number)

Logging in and starting the truck:

- Engage the parking brake.
- Press any key to take the terminal into operation.
The green LED (2) flashes.
- Enter your PIN number (factory setting = 0 0 0 0 0).

NOTE

In case the incorrect PIN number was entered, it can be corrected after pressing the key (4) with the asterisk.

- Confirm the entry by pressing the #-key (3).
The green LED (2) is on steadily.

NOTE

If the red LED (1) comes on, an incorrect PIN number was entered. Press the key (4) with the asterisk and enter the correct number. After more than three incorrect inputs (factory setting), the red LED (1) and the green LEDs (2) flash. A valid PIN input is disabled for 10 minutes. The disable period can be terminated by entering a special PIN number. Please contact your pool manager.

- Turn the rotary knob (5) clockwise as far as possible and start the truck.

NOTE

If the truck does not start properly at the first attempt, the starting procedure can be repeated until the rotary knob (5) is returned to zero and the PIN number is deleted from memory after the expiration of the delay period.

NOTE

If the green (2) and red (1) LEDs are both illuminated steadily, the data must be read out. Please inform your pool manager at once.

Turning the truck off and logging out:

- Turn the rotary knob (5) anticlockwise as far as possible to turn off the engine.
- After an delay period (factory setting = 10 seconds), the red LED (1) comes on briefly and then the green (2) and red (1) LED flash about 3 seconds. During this time the truck can be started any time. The LEDs then go out and the PIN number is no longer stored.

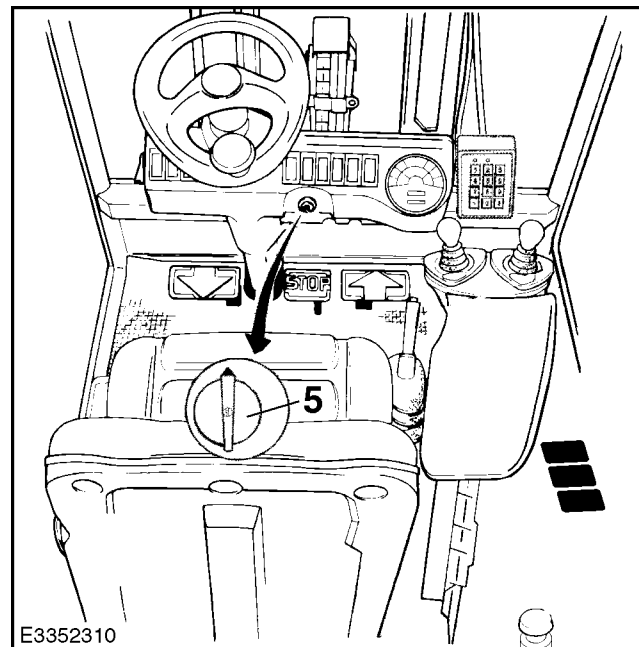
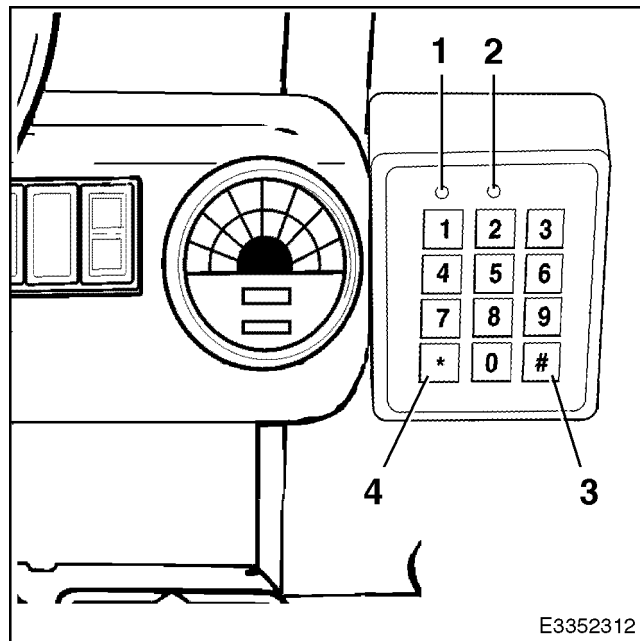
NOTE

The delay time can be set between 10 seconds and 10 minutes with the FDE configuration software. Please contact your Linde dealer in this regard.

NOTE

Pressing the key (3) with the #-symbol after the engine is turned off terminates the delay period at once and the PIN number is deleted from memory.

* Option



Horn, electrical compartment cover

Operation

Operating the horn

The horn serves as a warning signal, for example, on stretches with reduced visibility and at junctions.

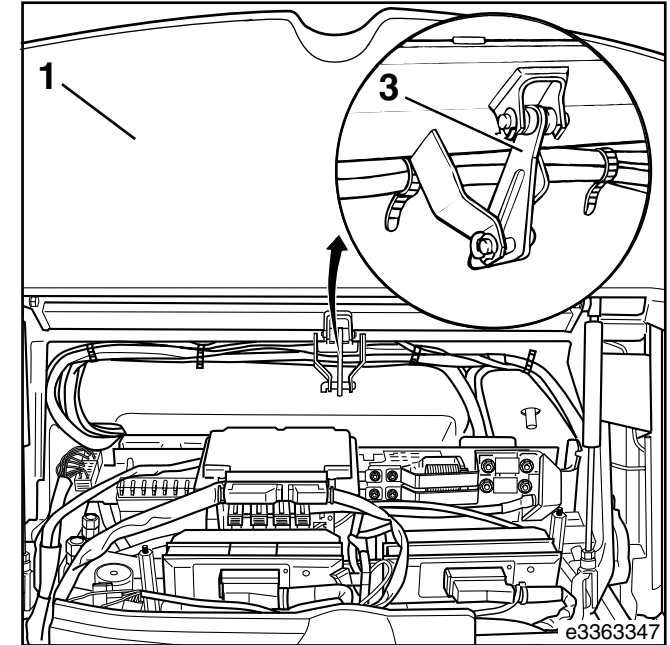
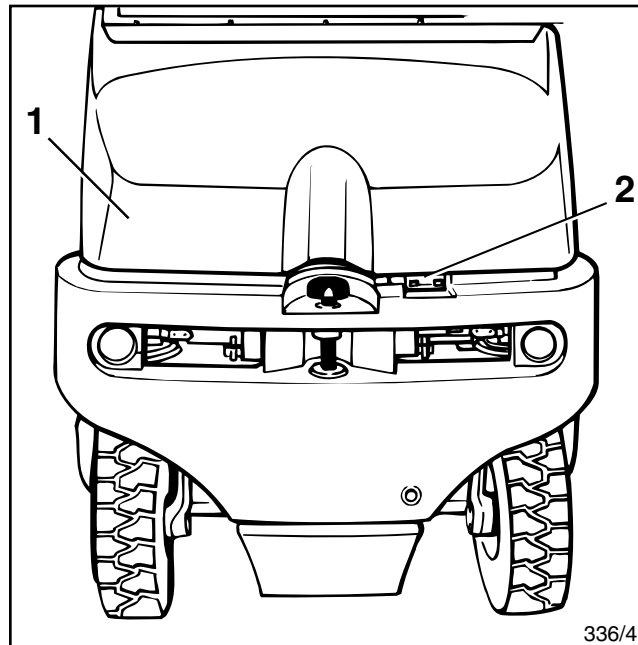
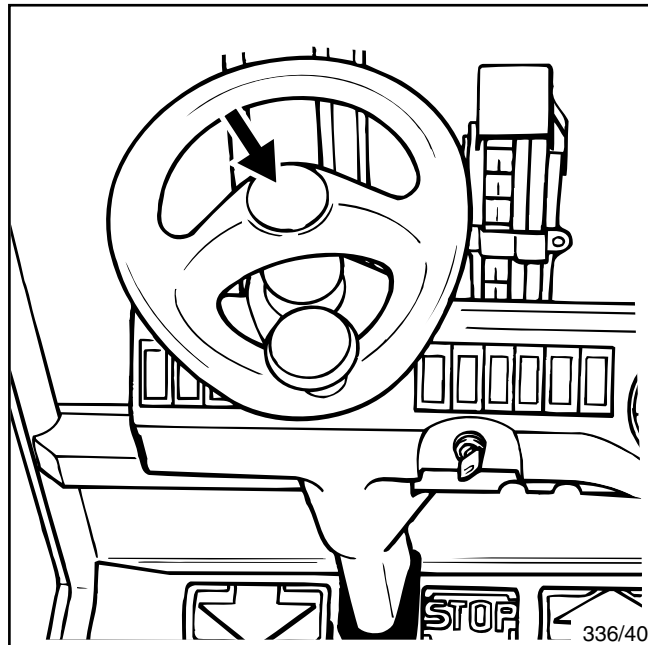
- Pressing the horn button will sound the horn.

Opening the electrical compartment cover

- Pull the cover (1) back out of the latch (2) and open upwards.
- Engage the stay (3) by hand.

Closing the electrical compartment cover

- Raise the cover (1) a little to take the pressure off the stay (3). The stay (3) unlocks automatically.
- Close the cover and press down firmly to engage the latch.



Checking, renewing the fuses

Automotive fuses



ATTENTION

Render the electrical system dead before changing fuses.



NOTE

The electrical system and single fuses are located in the counterweight under the cover.

- Open the electrical system cover.



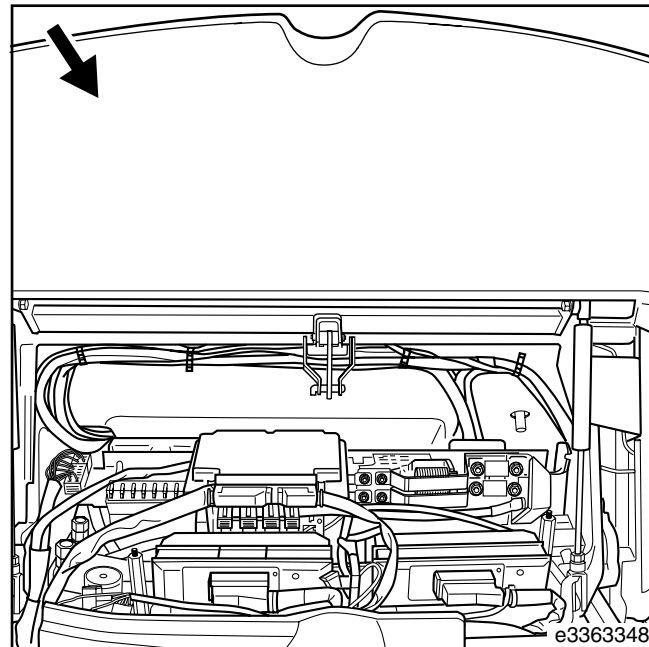
NOTE

On models E25 / E30 / E25/600 and E30/600, the fuse box (9) with the automotive fuses is located on the left-hand side of the truck. The two main circuit fuses are located on the right-hand side.



NOTE

On model E 20 / E 20/600 the fuses can be easily accessed from the battery side when the overhead guard is in the 2nd lock-in position. The fuse box with the automotive fuses is located on the truck right-hand side and the two main circuit fuses are on the left-hand side.



- Remove the fuse box (9) cover (10).

The fuses protect the following circuits:

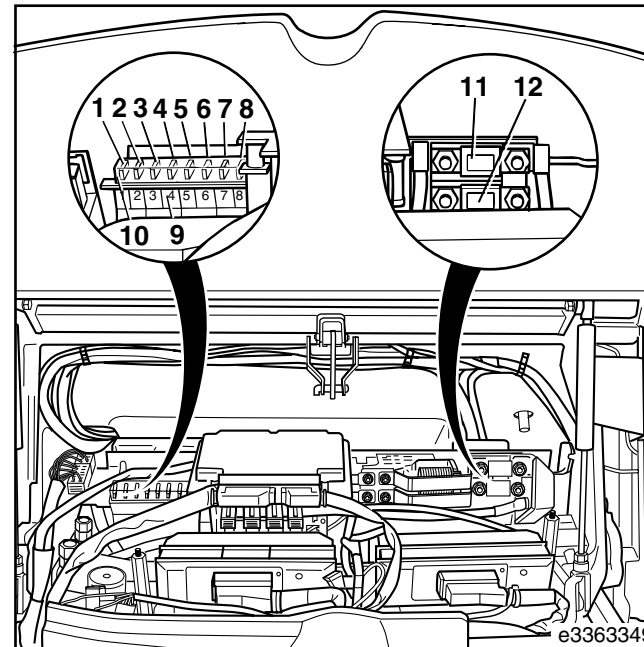
Note the numbers on the fuse box.



ATTENTION

Only use genuine Linde replacement fuses with a high voltage rating.

- | | | |
|---|---|------|
| 1 | Battery discharge indicator (6F1) | 10 A |
| 2 | Control circuit fuse (1F2) | 10 A |
| 3 | Horn (4F3) | 5 A |
| 4 | Fan (1F4) | 5 A |
| 5 | Fuse (1F5) | 5 A |
| 6 | Discharge circuit (1F6) | 5 A |
| 7 | Discharge circuit (F7) | 10 A |
| 8 | Discharge circuit (F8) | 5 A |



Main circuit fuses

The two fuses protect the following main circuits:

11 Left traction motor, Right traction motor (F2) 355 A

12 Hydraulic pump motor (F1) 250 A

Fuses (options)



ATTENTION

Render the electrical system dead before changing fuses.



NOTE

The fuses for the options are located under the electrical compartment cover (2).

- Remove the screws (1).
- Remove the fuse box covers.



NOTE

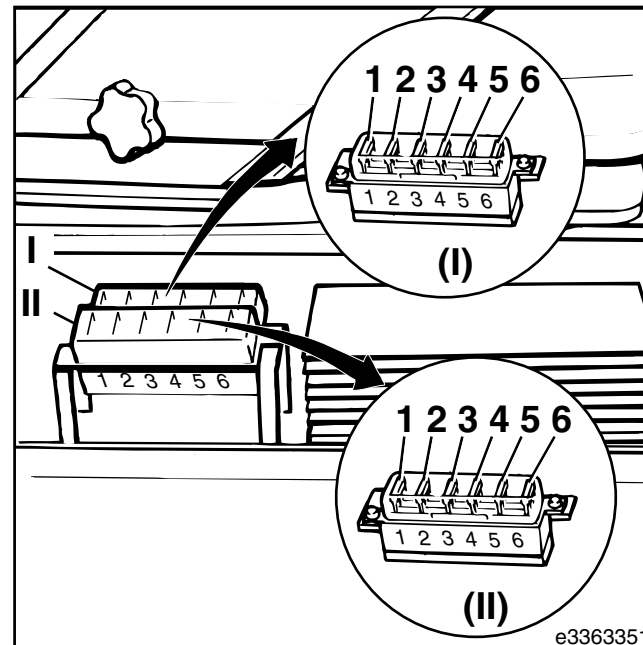
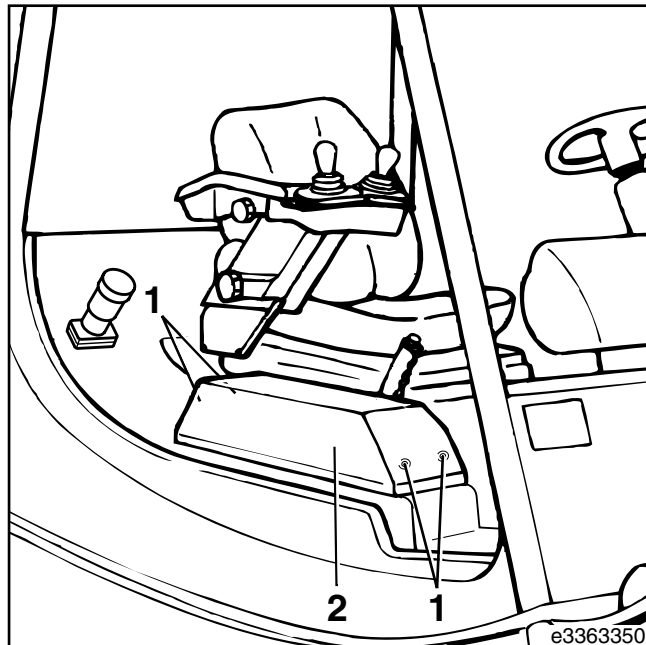
Depending on the equipment installed, there can be one or two fuse boxes.

Fuse box (I)

1	Working light (9F11)	15 A
2	Working light (9F12)	15 A
3	Working light (9F13)	15 A
4	Voltage converter (9F14)	15 A
5	Windscreen wiper (9F15)	15 A
6	Heater (9F16)	20 A

Fuse box (II)

1	Lighting system, front windscreen wiper (5F21)	15 A
2	Turn signal lights, rear windscreen wiper (5F22)	15 A
3	Left dip beam (5F23)	10 A
4	Right dip beam (5F24)	10 A
5	Left position lights (5F25)	5 A
6	Right position lights (5F26)	5 A



Before loading

Operation

Check the load capacity diagram (1) before picking up a load. If attachments are fitted, first check the respective load capacity plate (2).



DANGER

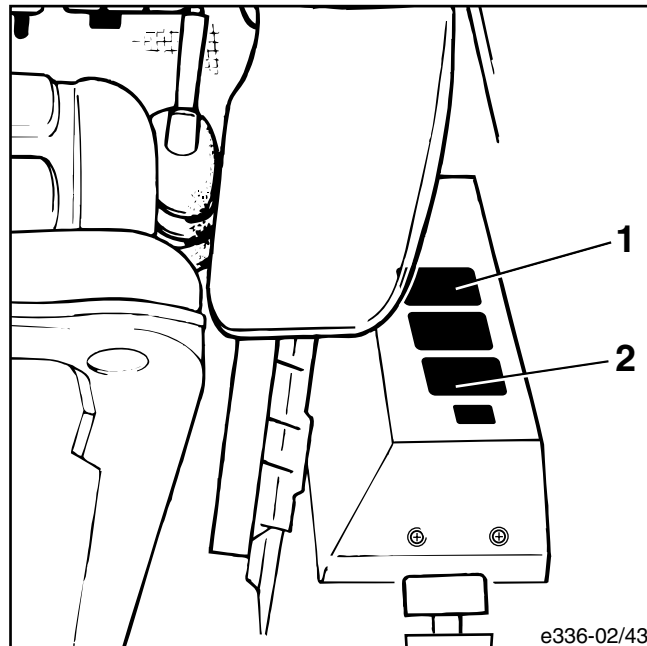
The weights given in the load capacity diagram and plate are only applicable to compact and homogeneous loads. Never exceed the load capacity of the lift truck. Overloading will reduce truck stability and the strength of forks and mast.

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 E 25/600

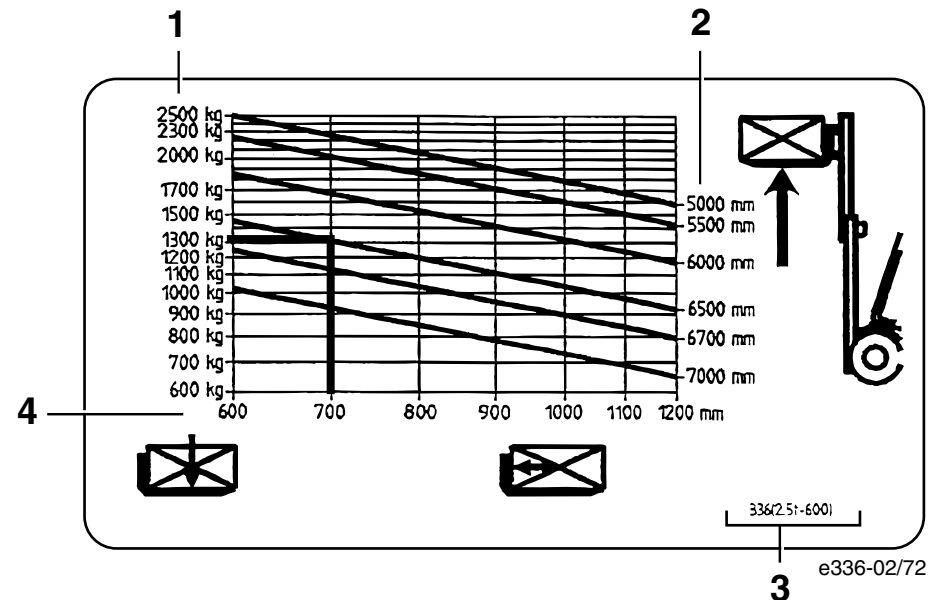
Load centre distance: 700 mm

Height of lift: 6500 mm

- Follow the vertical line for a load centre distance of 700 mm to the point where it intersects the line for a lift height of 6500 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 1300 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 Fork truck model with maximum load capacity
- 4 Load centre distance from fork-face in mm



Loading

Operation

Positioning the forks

- Pull up on the quick-release lever.
- Position the forks as required by the width of the load by sliding the forks to the right or left. Make sure that both forks are equally far from the centre of the truck.
- Allow the fork quick-releases to seat in the notch.



NOTE

The load centre should be midway between the forks.

Loading



WARNING

Do not step on the raised forks. Increased danger of falling and being squeezed.



WARNING

The loads must be picked up so that they do not project beyond the loading area of the truck, and will not fall over or off.

If needed, a load backrest* must be used.

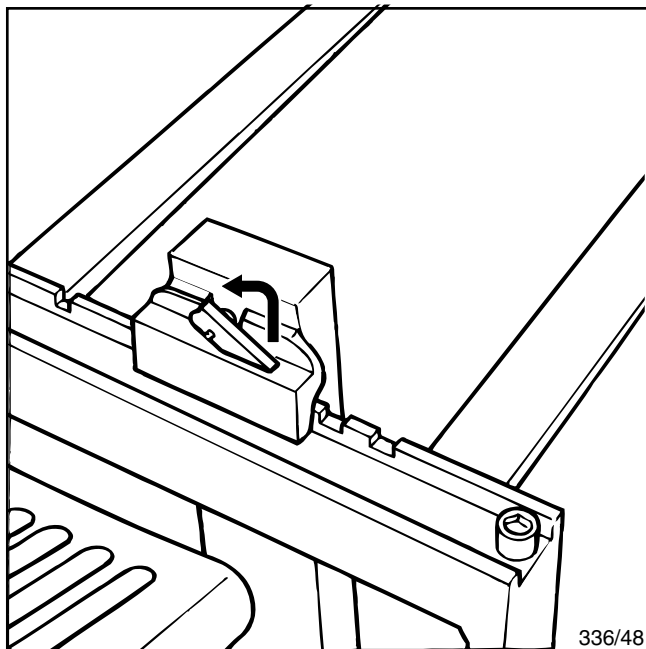
- Approach the load carefully and as accurately as possible.
- Set the mast to the vertical position.
- Elevate or lower the forks to the proper height.
- Carefully move the truck forward into the centre of the load until the load contacts the fork-face. Take care not to contact adjacent loads.

- Raise the fork carriage until the load rests freely on the forks.
- Reverse the truck until the load is clear.
- Tilt the mast back.

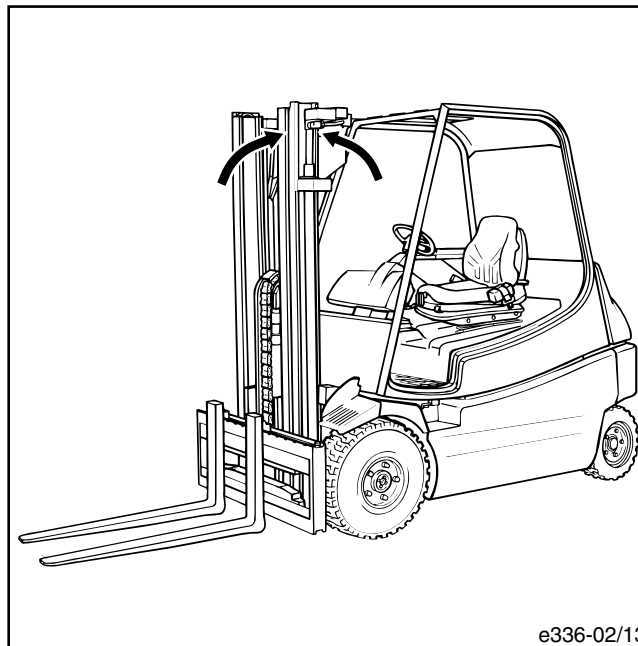


CAUTION

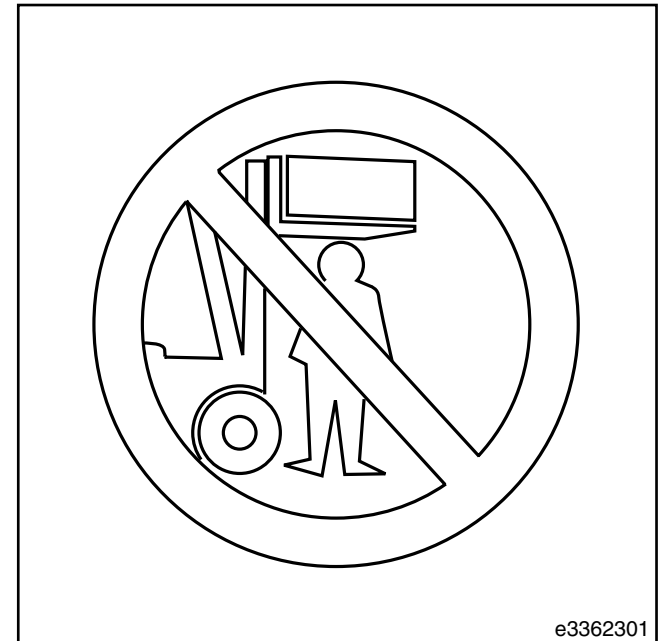
Do not stand under the elevated load. When travelling, the load should be carried as low as possible and the mast should be tilted back.



336/48



e336-02/13



e3362301

Transporting the load, unloading

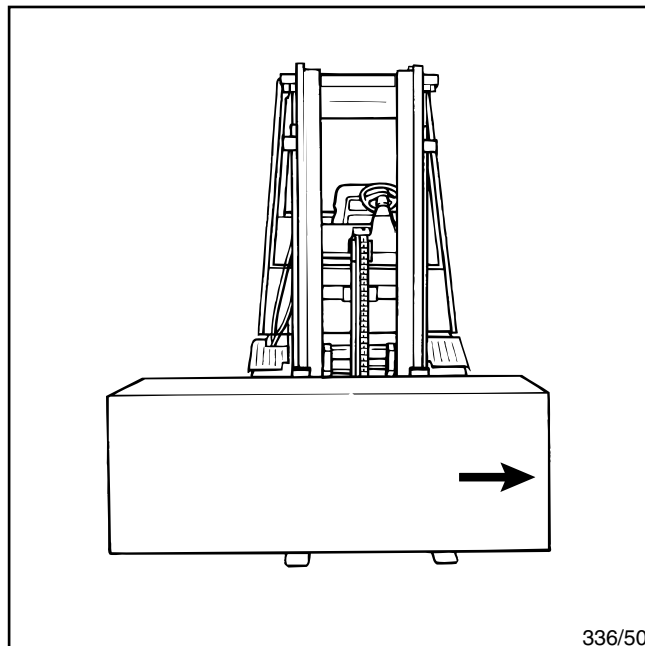
Operation

Transporting the load

NOTE

In goods traffic, the shipper must load and fasten the goods safely. Therefore pay attention to proper stacking and undamaged packaging, pallets, etc. The hauler is responsible for safe loading.

- Do not transport an off-centre load (e.g. if a sideshift is fitted).
- Transport the load near the ground.
- When travelling on slopes, always drive the truck with the forks facing uphill when carrying a load. Never drive or turn across the slope.
- If you do not have a clear view, work with a guide.
- If your load obstructs forward vision, you must travel with the load trailing, except when travelling uphill.



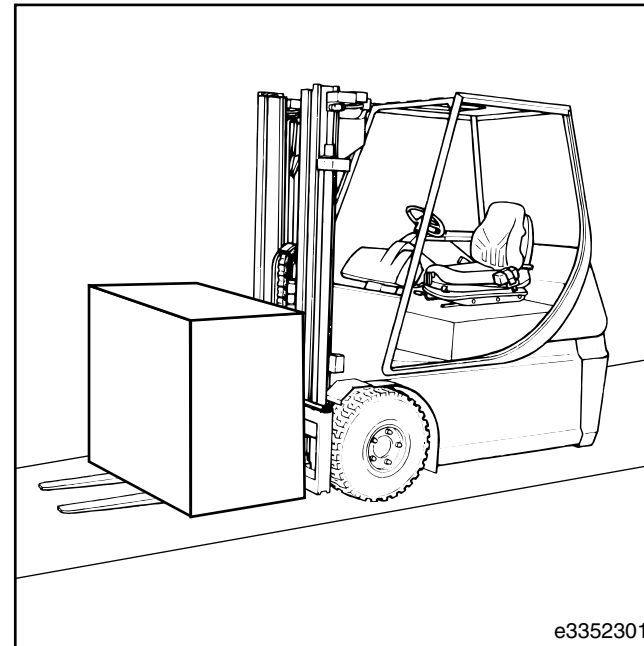
Unloading

- Carefully drive the truck up to the racking.
- Elevate the fork carriage to the proper height.
- Set the mast to the vertical position.
- Drive carefully into the rack.
- Lower the load slowly until the forks are clear.
- Reverse the truck.



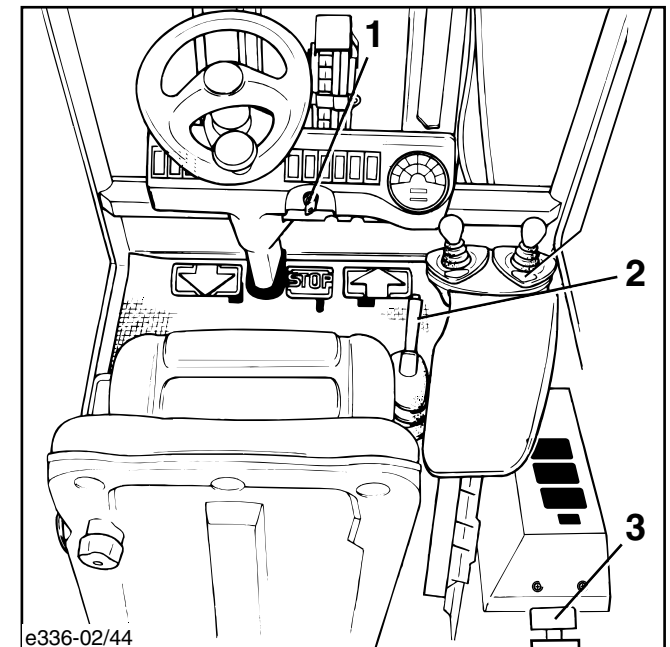
WARNING

Never park and leave the lift truck unattended with the load elevated.



Before leaving the lift truck unattended

- Deposit the load and lower the fork carriage.
- Slightly tilt the mast forward. The forks must touch the ground.
- Engage the handbrake (2).
- Depress the emergency stop button (3).
- Turn the switch key (1) anti-clockwise as far as possible and remove it.
- Open the seat belt.



Tow coupling

Tow coupling

NOTE

Only use the tow coupling for towing light trailers in the plant area.

(Please observe the valid accident prevention and VDI regulations.)

- Turn the tow pin (1) 90 degrees and pull it up.
- Insert the tow bar eye into the coupling.
- Press the tow pin down against the pressure of the spring, turn the pin 90° and allow it to engage in the lock.

Forced opening of overhead guard without Bowden cable

NOTE

Is only required if the overhead guard can not be opened via the Bowden cable with lever (4).

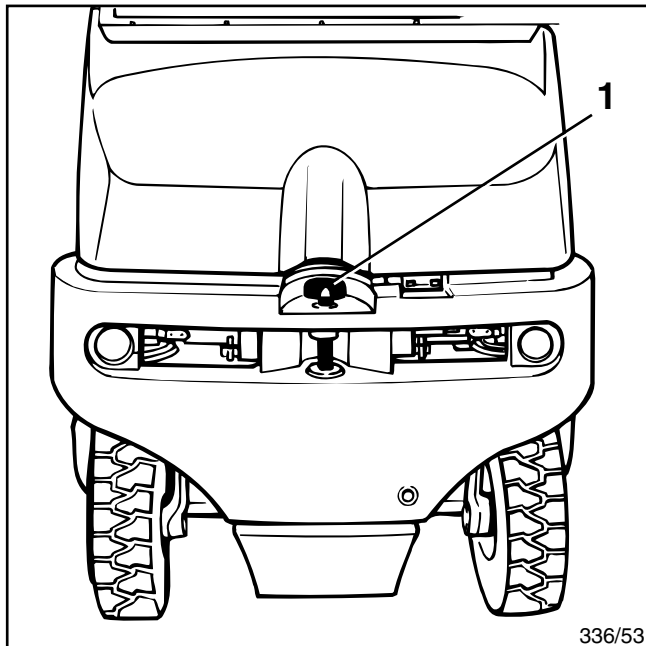
- Lower the mast.
If a triplex mast with double auxiliary hydraulics is fitted, lift the mast and secure against inadvertent lowering.
- Push against the lever (2) with a suitable tool (handle of hammer (1), iron bar, etc.).
The overhead guard is unlocked and it is held only by the latch (3).



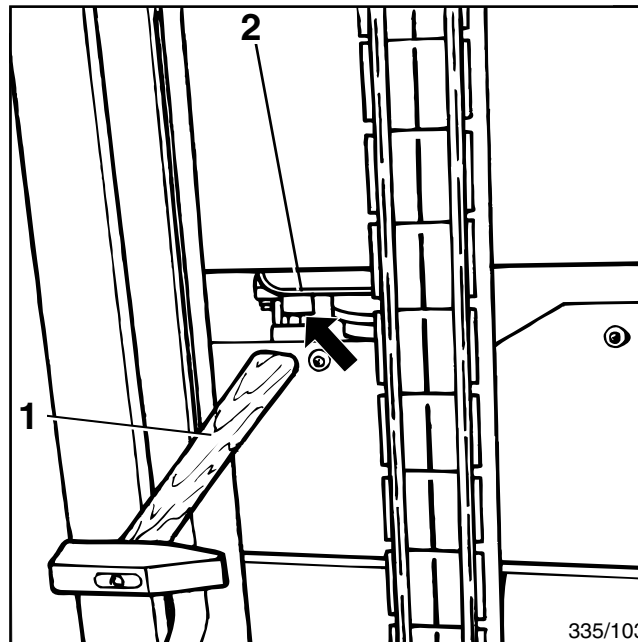
ATTENTION

After unlatching, the overhead guard is tilted up automatically by the spring pack.

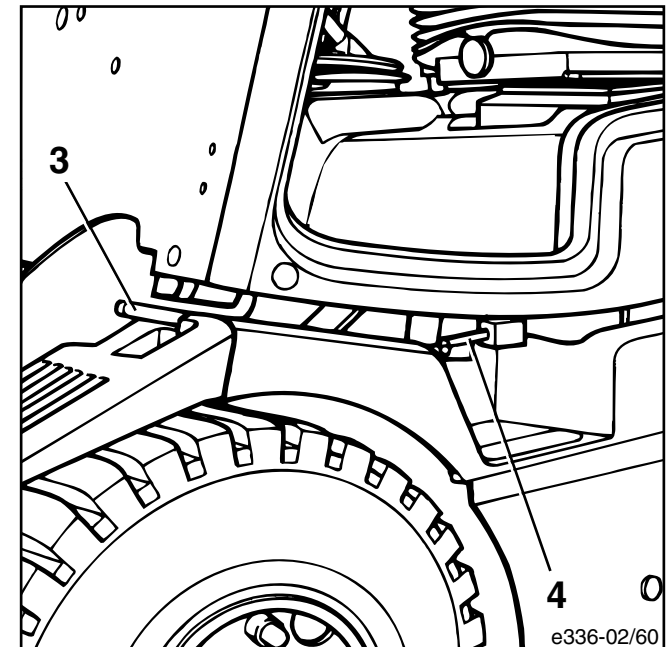
- The overhead guard can continue to be opened as usual.



336/53



335/103



e336-02/60

Transport, Hoisting the truck

Operation

Transporting the truck on a lorry or low-bed trailer

- Lower the mast.
- Apply the parking brake.
- Chock the truck.
- Lash down the truck.

Hoisting the truck with a crane



WARNING

When hoisting the truck with a crane make sure that no persons are within the working range of the crane!
Do not step under the elevated load!

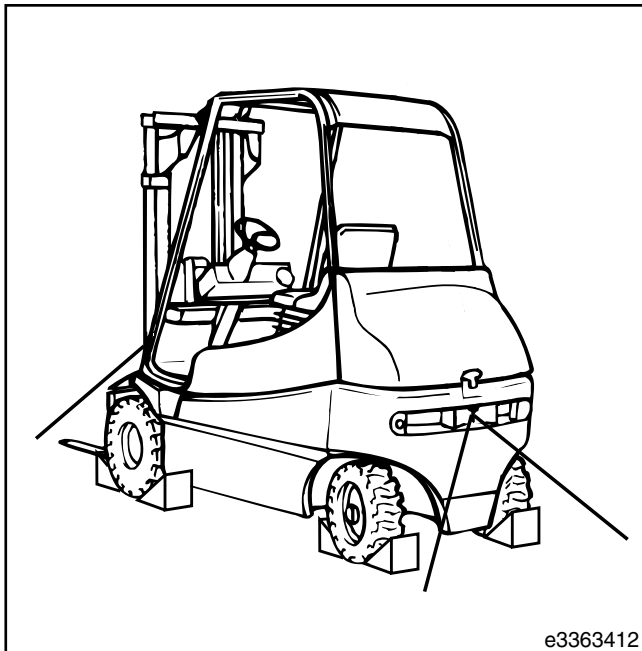


ATTENTION

Only use a lifting sling and crane with a sufficient load capacity.

For the truck weight incl. battery see the manufacturer's plate.

To hoist with a crane, attach the lifting slings at the points provided. The points on your lift truck are not extra identified.



ATTENTION

Tilt the mast fully back.

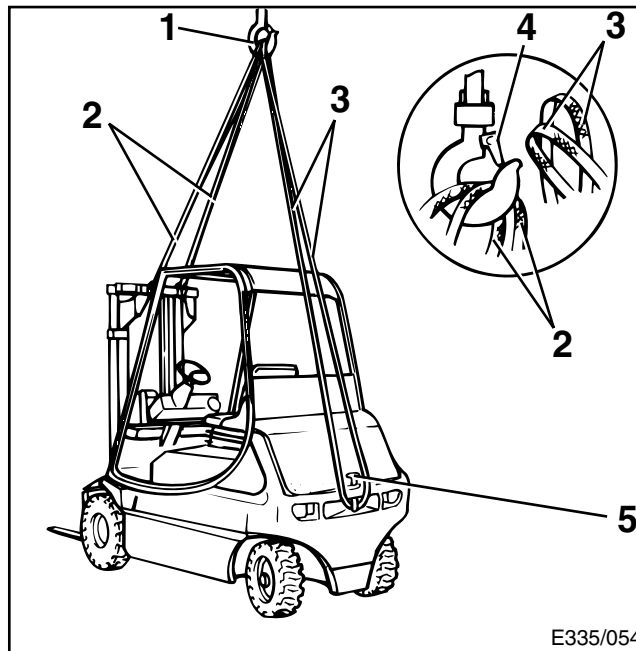
- Turn the tow pin (5) 90° and raise it. Insert a lifting sling (3) (3000 kg load capacity minimum) into the tow coupling.
- Press the tow pin down against the force of the spring, turn 90° and let it engage in the lock.
- Sling lifting slings (2) (3000 kg load capacity minimum) around the cross member on the outer upright of the mast.
- Hook the ends of the slings into the crane hook (1).



ATTENTION

The safety lock (4) must close after inserting the slings into the crane hook.

When the truck is being hoisted, the slings must not rub against the sides of the overhead guard, rear cover and any attachments fitted.



Hoisting the truck with the eyebolts*



CAUTION

Only use a lifting sling and crane with a sufficient capacity. See the manufacturer's plate for the truck.



ATTENTION

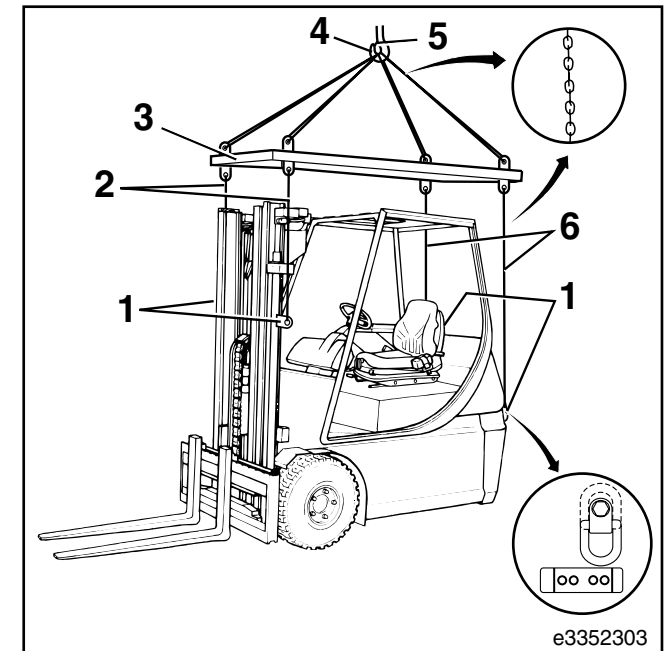
The truck may be hoisted with the eyebolts (1) only if the appropriate lifting equipment (3) is used with which the chains (2, 6) lead straight up from the eyebolts (1).

- Hook the chains (6) (minimum capacity 3000 kg) into the eyebolts (1) on the counterweight.
- Hook the chains (2) (minimum capacity 3000 kg) into the eyebolts (1) on the frame.



ATTENTION

After attaching the lifting slings to the crane hook (4), the hook safety (5) must close. The lifting gear must not touch the overhead guard and any attachments fitted.



Wheel change

Operation

Wheel change



CAUTION

Only use a jack with a sufficient load capacity. Minimum load capacity is 3600 kg.



CAUTION

If for a wheel change not antistatic wheels are mounted the truck must be fitted with an antistatic ribbon, because these wheels are not electrically conductive.

Please contact your authorised Linde dealer.

Jack locations:

Changing the rear wheels

- Loosen the fasteners of the wheel to be changed.
- Remove the tow pin (1) from the tow coupling.
- Pull the lid out of the hole in the counterweight.
- Insert the tow pin (1) fully into the hole.
- Place the jack under the tow pin and raise the truck. Make sure that the flat end of the tow pin rests on the piston of the jack.



ATTENTION

The truck may only be raised at this spot at the rear.

- Secure the lifted truck with suitable blocks of wood.
- Remove the wheel fasteners and change the wheel.
- Install the wheel fasteners and tighten them by hand.
- Lower the truck.
- Tighten all wheel fasteners to a torque of: 210 Nm.

Changing the front wheels

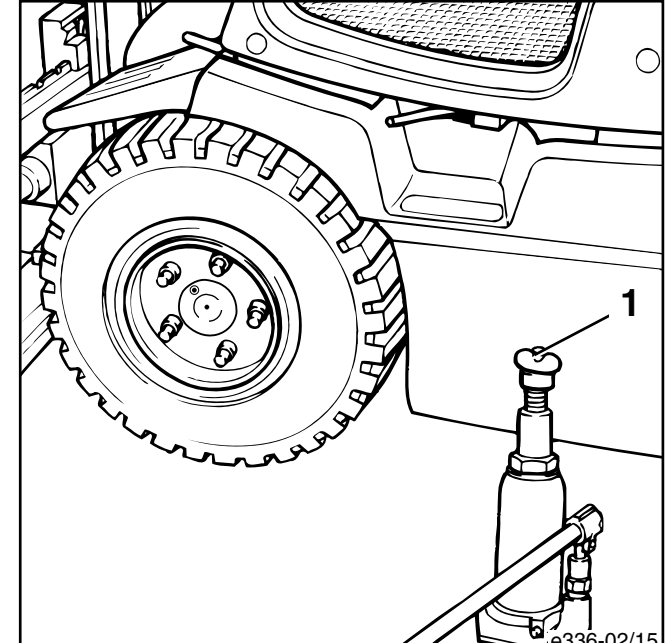
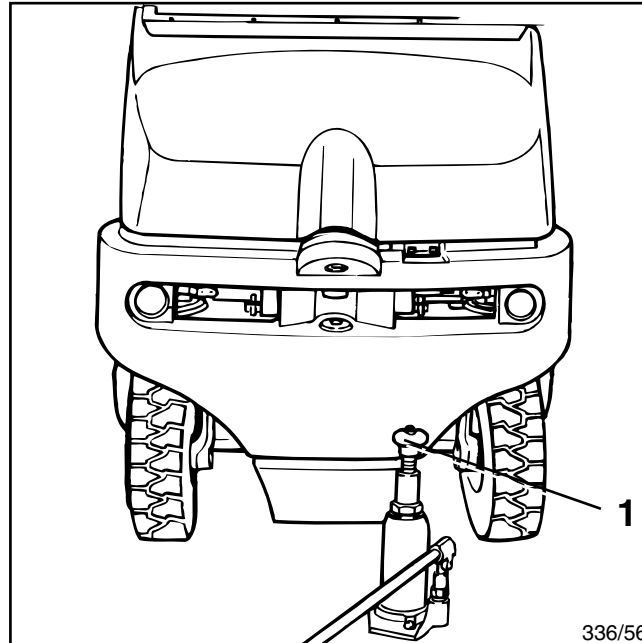
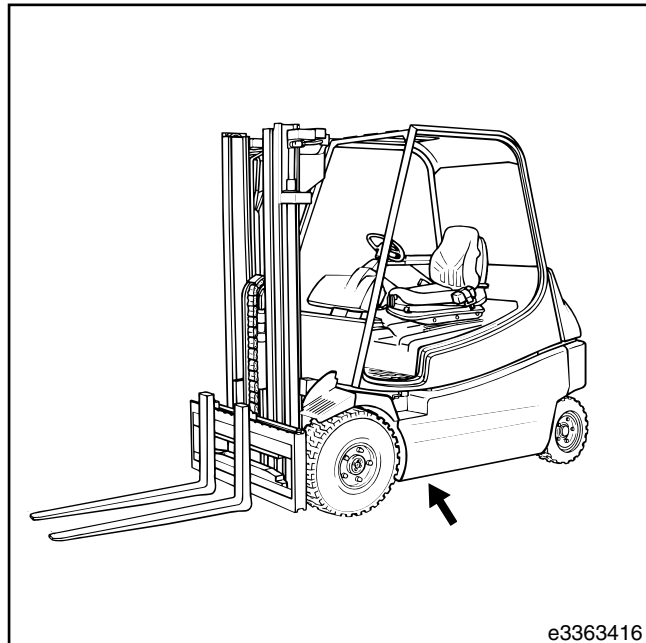
- Loosen the fasteners of the wheel to be changed.
- Remove the tow pin (1) from the tow coupling.
- Pull the lid out of the hole in the chassis at the front left-hand or right-hand side.
- Insert the tow pin (1) fully into the hole.
- Place the jack under the tow pin and raise the truck. Make sure that the flat end of the tow pin rests on the piston of the jack.



ATTENTION

The truck may only be raised at this spot at the front.

- Secure the lifted truck with suitable blocks of wood.
- Remove the wheel fasteners and change the wheel.
- Install the wheel fasteners and tighten them by hand.
- Lower the truck.
- Tighten all wheel fasteners to a torque of: 460 Nm.



Mast removal, towing instructions

Mast removal



CAUTION

Attach the lifting sling to the upper cross member (1) on the outer upright of the mast.

This work may only be performed by the qualified staff of your authorized distributor.

Towing instructions

If, in exceptional cases, the lift truck needs to be towed, a tow bar or rope can be attached to the tow pin in the tow coupling. A rope can also be attached at the bottom of the mast.



CAUTION

When towed, the truck can only be braked mechanically with the brake pedal or the hand-brake.

Towing procedure

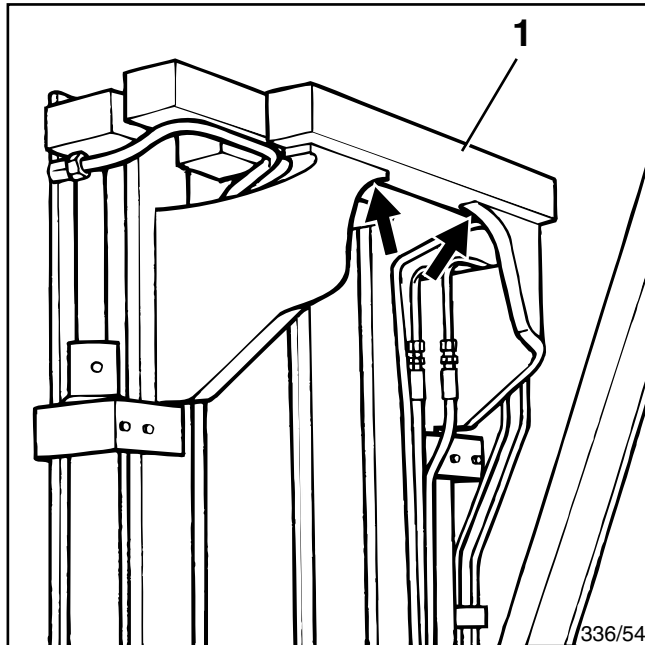


NOTE

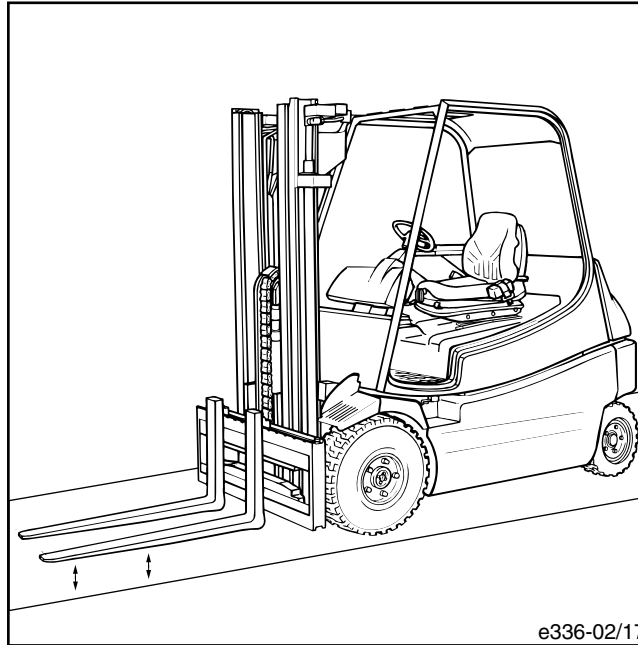
The power steering is inoperative when the emergency stop button is depressed.

- Depress the emergency stop button.
- Lower the load, but only so far that the forks will not contact the ground when towing.
- Remove the load.
- Attach the tow bar to the tow pin or a rope at the bottom of the mast.
- One driver must steer the truck being towed and operate the brake when needed.

Tow the fork truck and do not exceed the maximum operating speed of the truck.



336/54



e336-02/17

Tilting the mast and lowering the forks manually

Operation

Tilting the mast manually

NOTE

The overhead guard cannot be opened when the mast is tilted back.

If a malfunction exists, the mast can be tilted forward manually.

- Fully lower the fork carriage, if possible.



WARNING

Do not stand in the fork area when the mast is tilted back.

When the tilt cylinders are bypassed, the mast and forks can tilt forward.

- Remove the plug (1).
- Insert the screwdriver through the plug opening and fit it on the cheese head screw (2).
- Slowly turn the screwdriver counterclockwise approx. 2 revolutions.
- Push the mast forward with your hand.
- Disengage the overhead guard.
- Open the overhead guard.
- Turn the cheese head screw (2) clockwise as far as possible.

NOTE

Immediately screw the cheese head screw (2) back to the initial position when finished, otherwise the tilting cylinder cannot be operated with the control lever.

- Place the plug (1) into its position.

Lowering the forks manually

NOTE

If a malfunction exists, the forks can be lowered manually.

- Open the overhead guard to the first lock position or remove the plug (1).

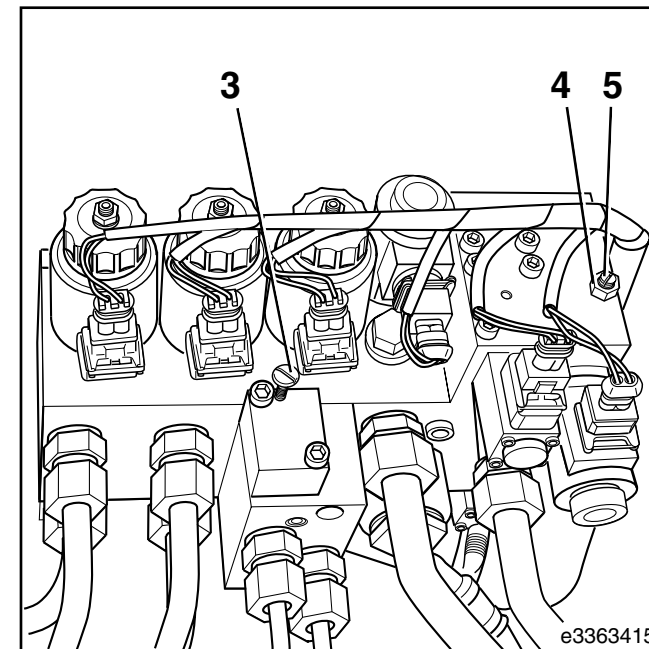
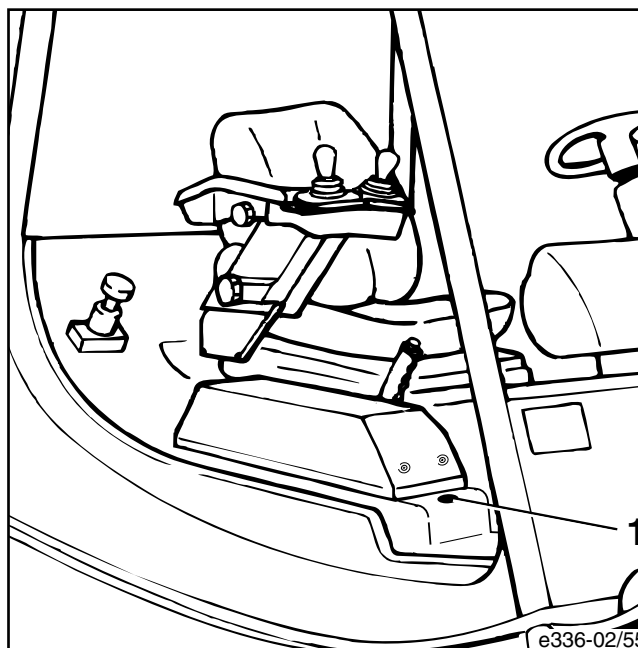
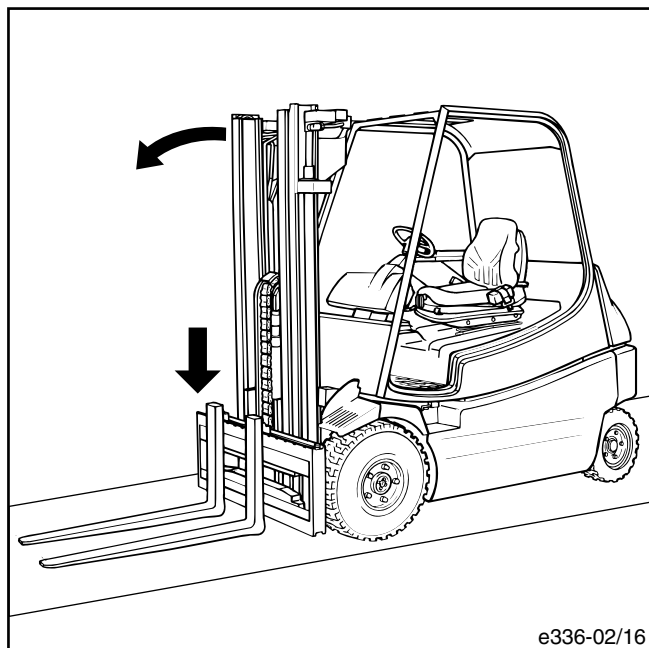


WARNING

Do not stand near the forks while they are being lowered.

Leave the screwdriver on the setscrew (5) during lowering to be able to stop lowering at any time.

- Loosen the locknut (4).
- Using a screwdriver, slowly turn the setscrew (5) anti-clockwise about 1 turn until the fork carriage is fully lowered.
- Turn the setscrew (5) clockwise as far as possible, otherwise the forks cannot be operated with the control lever.
- Tighten the locknut (4).



Emergency exit for trucks with rear windscreen

Operation

Emergency exit for trucks with rear windscreen

NOTE

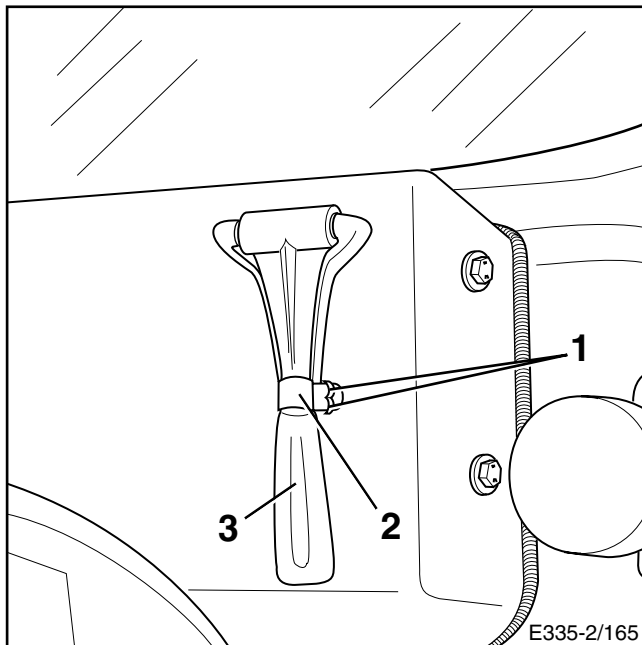
If the truck is fitted with a front and rear windscreen, it may not be possible to dismount at the side if the truck breaks down in a narrow aisle. In case of acute danger, the driver can leave the truck through the rear window. To do so, the driver must destroy the window with an emergency hammer.

- Pull the cotter pin (1) out of the mounting (2) located at the right side below the armrest on the cover of the additional electric equipment.
- Take the hammer (3) out of the mounting and cautiously break the window pane.



WARNING
Risk of injury!

- Remove any pane remnants.
- Carefully dismount from the truck through the rear window.



Emergency exit for trucks with polycarbonate rear windscreen*

NOTE

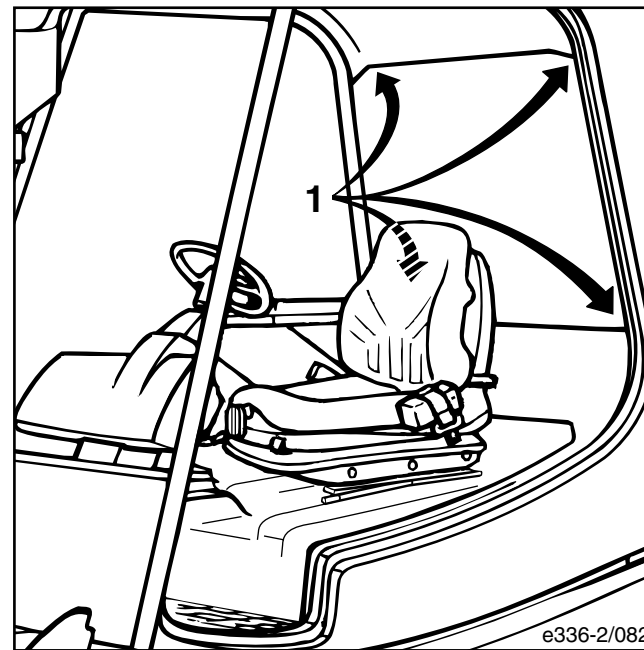
If the truck is fitted with a front and rear windscreen, it may not be possible to dismount at the side if the truck breaks down in a narrow aisle. In case of acute danger, the driver can leave the truck through the rear window. To do so, the driver must destroy the window with an emergency hammer.

- In case of acute danger completely loosen the four star knobs (1) counter clockwise.
- To open, push the rear windscreen with light pressure outside.
- Carefully dismount from the truck through the rear window.

NOTE

In trucks with a polycarbonate rear window the emergency hammer is not fitted.

* Option



Taking the truck out of operation

If the truck is taken out of operation for over 2 months, it must be parked in a well ventilated, frost-free, clean and dry room and the following measures must be carried out.

Measures before taking the truck out of operation

- Thoroughly clean the truck.
- Fully elevate the fork carriage several times, tilt the mast forward and back and, if fitted, operate the attachment several times.
- Lower the forks on a support until the chains are slack.
- Check the hydraulic oil level and add oil, if needed.
- Apply a thin film of oil or grease on all unpainted mechanical parts.
- Lubricate the truck.
- Check the condition and electrolyte level of the battery. Coat the battery terminals with non-acidic grease. (Follow the instructions of the battery manufacturer.)
- Spray all open electrical contacts with a suitable contact spray.



ATTENTION

Block up the truck so that all wheels are clear of the ground. This will prevent tyre deformation.

NOTE

Do not use a plastic foil to cover the truck as this enhances the formation and collection of condensation water.

NOTE

If the vehicle is to be taken out of operation for over 6 months, contact your authorised dealer for further measures.

Putting the truck back into operation

- Thoroughly clean the truck.
- Lubricate the truck.
- Coat the battery terminals with non-acidic grease.
- Check the condition and electrolyte level of the battery.
- Check the hydraulic oil for condensation water and change the oil, if necessary.
- Perform the same services as for commissioning.
- Take the truck into operation.

General information

Your truck will remain operational only if the maintenance and checks are carried out regularly and according to the information and instructions in the operating manual. The maintenance may only be performed by qualified authorised personnel. This work can be carried out by your authorised distributor under a service contract.

If you wish to do the work yourself, we recommend that the first three customer service checks be carried out by your distributor's mechanic in the presence of the responsible mechanic in your workshop, so that your staff can receive the appropriate instruction.

For all servicing, the truck must be placed on a level surface and the wheels secured.

Lower the fork carriage, tilt the mast slightly forward until the forks rest on the ground. Apply the parking brake. Depress the emergency stop button and remove the key switch.

When working on the truck with the fork carriage and/or mast elevated, secure them against inadvertent lowering.

For work on the front end of the truck, secure the mast against tilting back.

No changes, particularly no modifications and additions, may be made to the truck without the approval of the manufacturer.

Maintenance



ATTENTION

Missing or damaged plates and/or adhesives must be replaced. For location and order no. refer to Parts catalogue.

Perform a functional check and trial run after every servicing.



NOTE

When operating the truck under extreme conditions (i.e. extreme heat or cold, intensive dust concentration, etc.), the intervals given in the maintenance schedule should be reduced accordingly.



ATTENTION

Follow the precautions for handling fluids and lubricants.

Maintenance intervals



NOTE

Under certain conditions it is possible to change the maintenance intervals as given in the maintenance chart. The inspection and maintenance intervals depend on the operating and service conditions of the truck. For heavy duty conditions we recommend shorter intervals.

Please contact your authorised dealer in this regard.

Mast versions

Maintenance

Work on the mast and on the front part of the truck

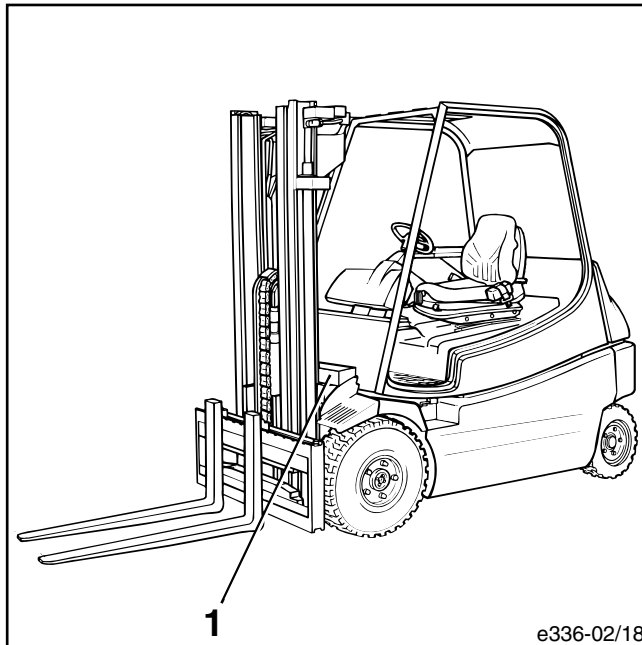


WARNING

Do not carry out any repairs or adjustments on the raised fork carriage and the front end of the truck before performing the following safety procedures. These safety precautions are only limited to the general servicing of your truck (checks and lubrication). For repairs (e.g. chain replacement, lift cylinder removal) further safety precautions are necessary. Please contact your authorised distributor.

Securing the mast against tilting back

To prevent the lifting mast from tilting back accidentally, insert a hardwood block of dimensions 120 x 120 x 800 mm (1) between the mast and chassis.



Standard mast

FUNCTION

When the inner mast is lifted, the chain pulleys and chains also go up so that the fork carriage is raised twice as fast due to the chain pulleys.

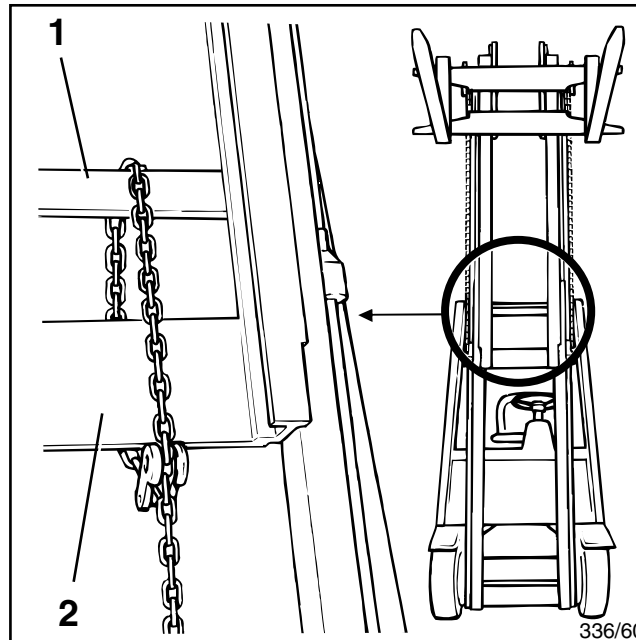
Securing the raised standard mast



WARNING

Use a chain of sufficient lifting capacity for each mast. Do not exceed the maximum height of lift.

- Raise the mast.
- Fasten the chain around the cross member of the outer upright (1) and the cross member of the inner upright (2).
- Lower the inner mast until it is held by the chain.



Duplex mast

NOTE

The advantage of this version is that the supplementary free lift height can be used even in spaces with a low ceiling (cellars, wagons, ships).

FUNCTION

The fork carriage is raised to the supplementary free lift height by the centre cylinder via the chain guide roller. It moves at twice the speed of the centre cylinder.

Then the inner mast is lifted by the two exterior cylinders, taking the fork carriage with it.

The centre cylinder is fitted to the extendible inner mast.

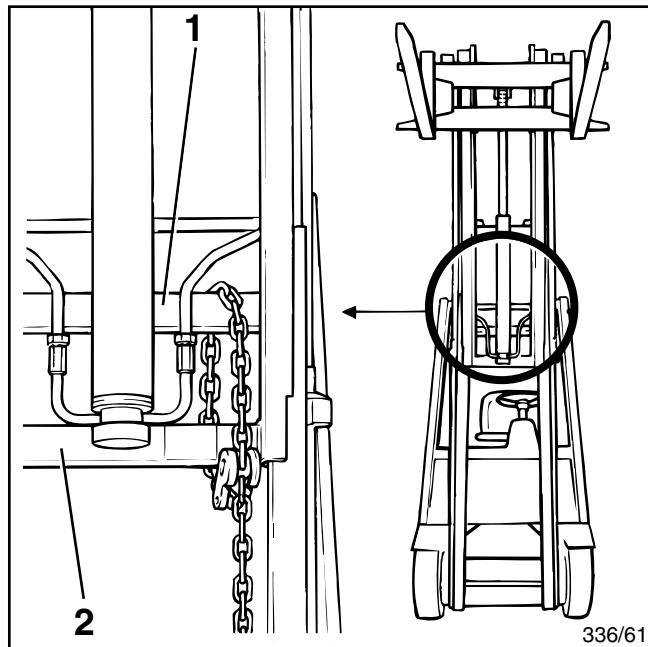
Securing the raised duplex mast



WARNING

Use a suitable chain for each type of mast. Do not exceed the maximum height of lift.

- Raise the mast.
- Fasten the chain around the cross member of the outer upright (1) and the cross member of the inner mast (2).
- Lower the inner mast until it is held by the chain.
- Lower the fork carriage completely.



Triplex mast

FUNCTION

The fork carriage is raised to the special free lift height by the centre cylinder via the chain guide roller. Then the two lift cylinders raise the inner mast.

When the inner mast is fully extended, two further lift cylinders raise the centre mast, which is raised together with the inner mast and fork carriage.

The centre cylinder is mounted on the extendible centre mast.

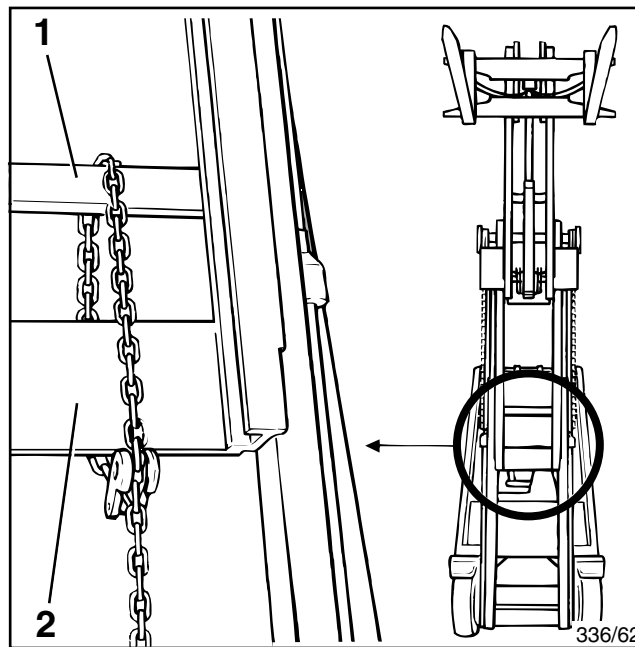
Securing the raised triplex mast



WARNING

Use a suitable chain for the particular lifting mast. Do not exceed the minimum height of lift.

- Raise the mast.
- Fasten the chain around the cross member of the outer mast (1) and the intermediate mast (2).
- Lower the mast until it is held by the chain.
- Fully lower the fork carriage.



Services after the first 50 hours of operation

NOTE

A description of the services can also be found in the index.

- Braking system
- Tighten the wheel nuts
- Check the tyres for damage and foreign objects
- Working and steering hydraulics: Renew the suction filter and check the hydraulic oil level
- Check the wheel drives for leaks
- Change the wheel drive oil
- Check the working and steering hydraulics for leaks
- Check the mounting of the steering axle, electric motors, wheel drives, counterweight and overhead guard
- Lubricate the mast and tilt cylinder pivots
- Mast, lift chains and stops: Check condition and mounting, lubricate with chain spray
- Check the electric cables, connectors and connections for condition and tightness
- Check the pretension of double hoses if attachments are fitted
- Retighten the mast fastening bolts

Services (A description of the service can also be located in the index.)	Before initial operation	After first 50 hours	Daily checks	As required
See page 19 for the services	•			
See page 59 for the services		•		
Check the battery charge			•	
Check the tyre inflation pressure			•	
Check seat belt for condition and operation				•
Clean the lift truck				•
Clean and spray the lift chain				•
Tighten the wheel nuts (every 100 hours minimum)				•
Check the tyres for damage and foreign objects				•
Renew the carbon brushes				•
Check the security of the hydraulic oil tank				•
Lubricate steer axle, mast and tilt cylinder pivots				•
Other cleaning and greasing work				•

Inspection and maintenance chart

Maintenance

Services (A description of the service can also be located in the index.)	every 500 to 1000 hours* or annually	every 3000 hours or every 2 years
Clean and lubricate the steering axle	●	
Inspect the joystick boot	●	
Check the control unit for function	●	
Clean the left and right wheel traction, power steering and working hydraulics pump motors	●	
Clean the traction motor and tractor compartment fans	●	
Clean the digital control	●	
Lubricate the mast and tilt cylinder pivots	●	
Retighten the mast fastening bolts	●	
Sideshift: Clean, grease and check the mounting	●	
Check the braking system	●	
Check the brake linings, lubricate the brake lever pivot	●	
Visual check of the motor brushes	●	
Check the working and steering hydraulics for leaks	●	
Check the counterweight, electric motors, chassis, wheel drives, overhead guard and steering axle for security	●	
Check the condition, lift cylinders, security and function of mast, lift chain and end stops	●	
Adjust the lift chain length and lubricate with chain spray	●	
Check the fork quick-releases and fork stops	●	
Check the pre-tension of double hoses if attachments are fitted	●	
Check the hydraulic oil level	●	
Check and oil the pedal and travel control linkage pivots and overhead guard lock	●	
Grease the overhead guard pivots	●	
Check and lubricate other pivots and joints	●	
Check the contactor	●	
Change the wheel drive oil (only once after 1000 service hours, further oil changes every 3000 hours)	●	
Check the electric cables, cable connectors and connections for condition and tightness	●	
Renew the hydraulic breather, suction and pressure filters	●	
Check the wheel drives for oil leaks	●	
Check the condition of the antistatic ribbon	●	
Renew the hydraulic oil (Bio hydraulic oil Aral Forbex SE 46 all 6000 service hours)		●
Change the oil in the wheel drive		●

* Depends on driving style and duty conditions. ** Option

Check seat belt for condition and operation

NOTE

For safety reasons the condition and operation of the retention system should be inspected regularly (monthly). Under extreme operating conditions this check is required daily before taking the truck into operation.

- Pull the belt (2) out fully and inspect for fraying.
- Check the lock (3) for correct operation and the retractor (1) for proper return of the belt.
- Check covers for damage.

- Check the automatic lock.
 - Park the truck on level ground.
 - Pull out the belt with a jerk.

The automatic lock should prevent the belt from unrolling from the retractor (1).

 - Swing the overhead guard to the first lock-in position.
- The automatic lock should prevent the belt from unrolling from the retractor (1).



CAUTION

Do not operate the truck with a faulty seat belt. Have a defective seat belt replaced immediately by your authorised dealer.



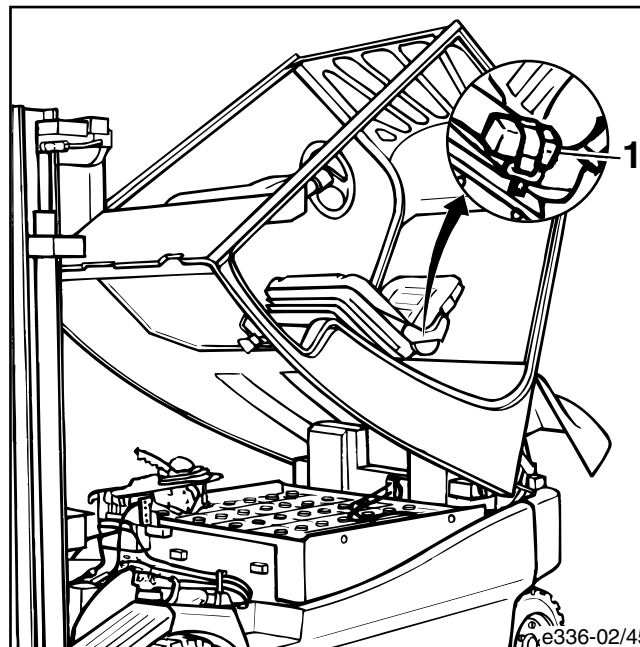
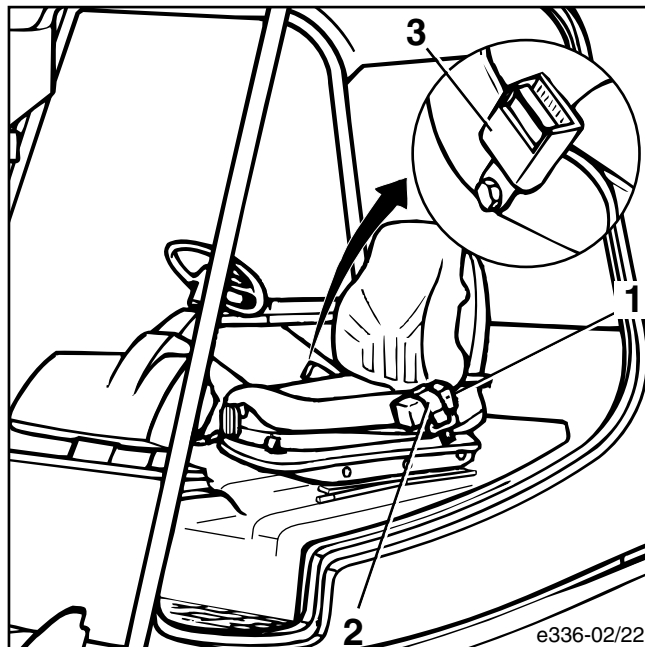
CAUTION

To prevent back injury, the weight setting should be set to the individual weight of the driver. To prevent injuries, do not store any objects in the tilting range of the seat.

To prevent accidents, check that all adjustments are properly engaged before operating the truck. Do not operate the seat adjusting devices while operating the truck.

Seat belts must be applied before operation of the truck. After an accident, the seat belt must be renewed. In the case of seat belts attached to the operator seat, the seat and mounting of the seat must also be inspected by qualified personnel.

Nuts and bolts should be checked regularly for tightness. A wobbling of the seat can indicate loose bolts or other faults. If malfunctions in the operation of the seat are detected (e.g. seat cushioning), contact your authorised dealer immediately to eliminate the cause. In case of non-observance, you put your health in danger and there is a higher risk of accidents.



Inspection and maintenance as required

Maintenance

Clean the lift truck

NOTE

The necessity of cleaning depends on the use of the truck. If used with aggressive media such as salt water, fertiliser, chemicals, cement, etc., clean the truck thoroughly after every application.

Hot steam or intensive degreasing solutions should be used with utmost care! The grease in the lubricated-for-life bearings will dissolve and leak out. As regreasing is not possible, the bearings will be damaged.

- Depress the emergency stop button.



Danger

For safety reasons the front axle and the area of the front axle of the truck should never be cleaned with a high pressure cleaning device. This may substantially reduce the braking effect during the first braking attempts after cleaning.



ATTENTION

When washing with a cleaning device, do not directly expose the electrical system, front axle area, electric motors and insulating material to the jet, cover them first.

Clean the oil filler openings along with the surrounding area and the grease nipples prior to lubrication. When cleaning with compressed air, first remove sticking dirt with a cold cleaner.

Clean and spray the lift chain

NOTE

The lift chain must be cleaned if dust on the chain prevents penetration of the lubricant.

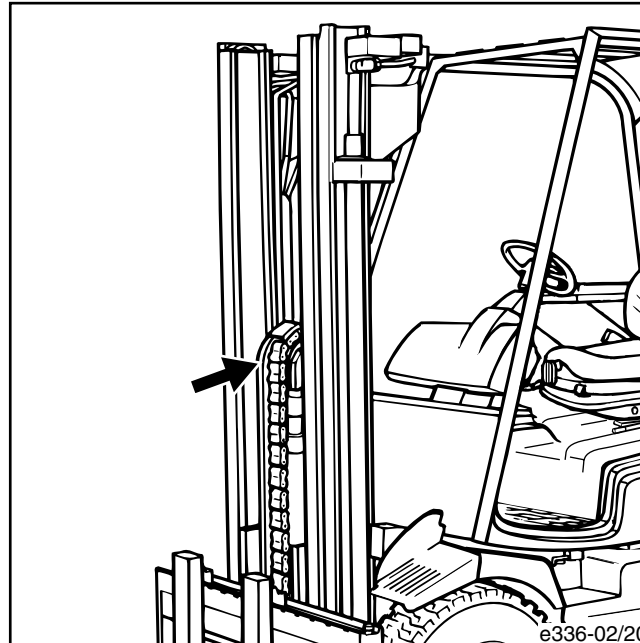
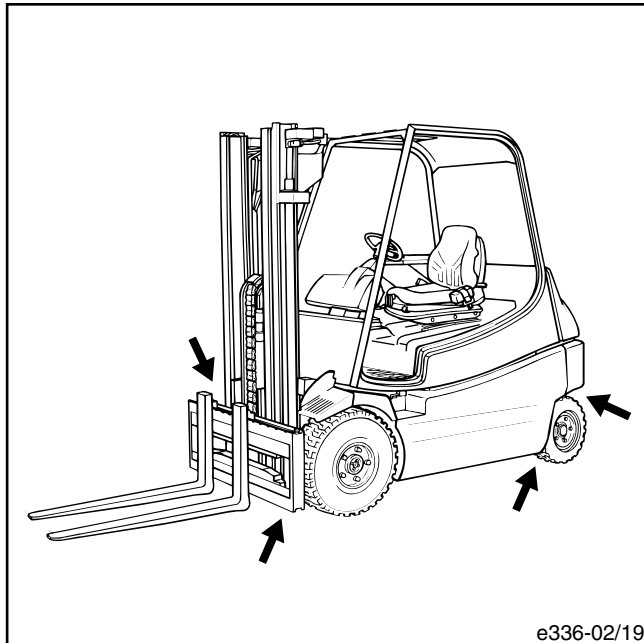
- Position an oil catch tray under the mast.
- Clean the chain using paraffin derivatives such as washing petrol (follow manufacturer's notes on safety).
- When using a steam jet, clean without additives.

- After cleaning, blow dry the chain at once to remove any water in the chain links and on the chain surface. During this procedure the chain should be moved several times.
- Spray the chain at once with Linde chain spray. Also move the chain when spraying.



ATTENTION

Lift chains are safety components. The use of cold cleaners, chemical cleaning agents and caustic or acidic and chlorinated fluids can be a direct cause of damage to the chains.



Inspection and maintenance as required

Maintenance

Renew the carbon brushes



ATTENTION
For the service life of the motors it is important to renew the carbon brushes in time.

When the carbon brushes must be changed, the warning light (1) in the composite instrument will go on.

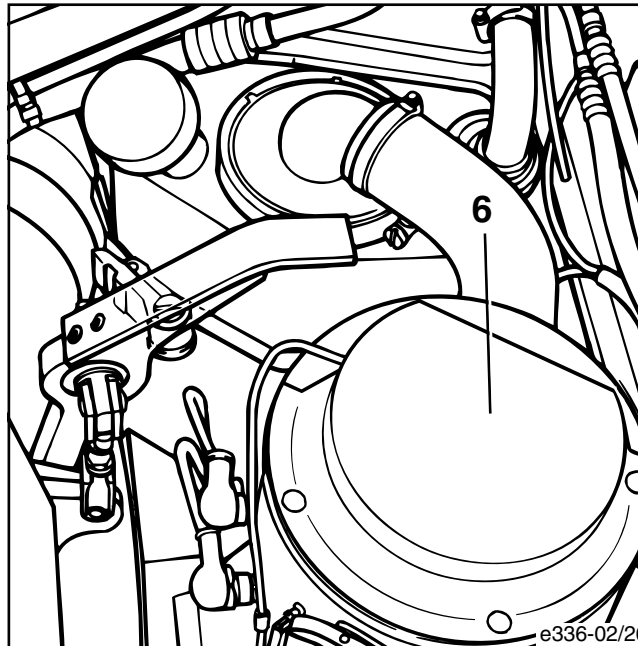
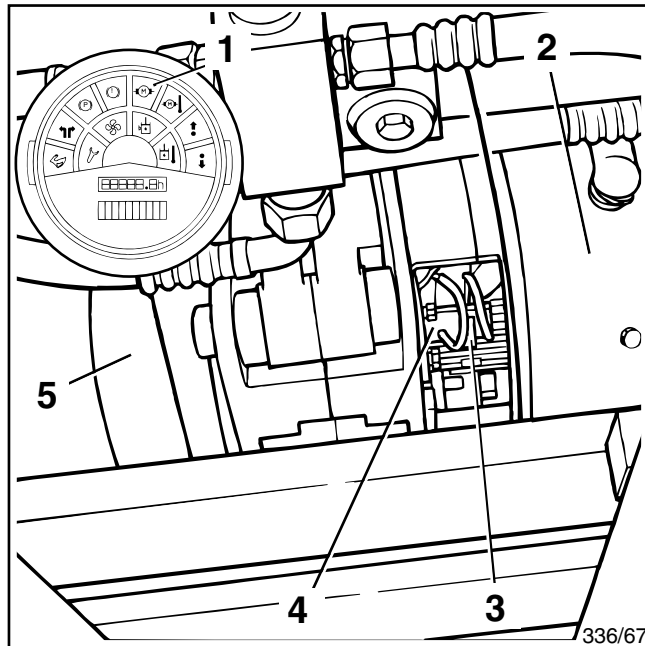
- Elevate the fork carriage and secure it against inadvertent lowering.
- Open the overhead guard to the 2nd lock-in position.
- Lift up the rubber cover on the traction motors.
- Remove the cover bands on the traction motors (2, 5) and the hydraulic pump motor (6).
- Relieve the tension of the carbon brush springs (3).
- Withdraw the brushes (4) from their guides.
- Replace the brushes.

- Pretension the springs and check the brush connections for firm seating.



NOTE
Renew the brushes only in sets.

- Fit the cover bands.



Tighten the wheel nuts

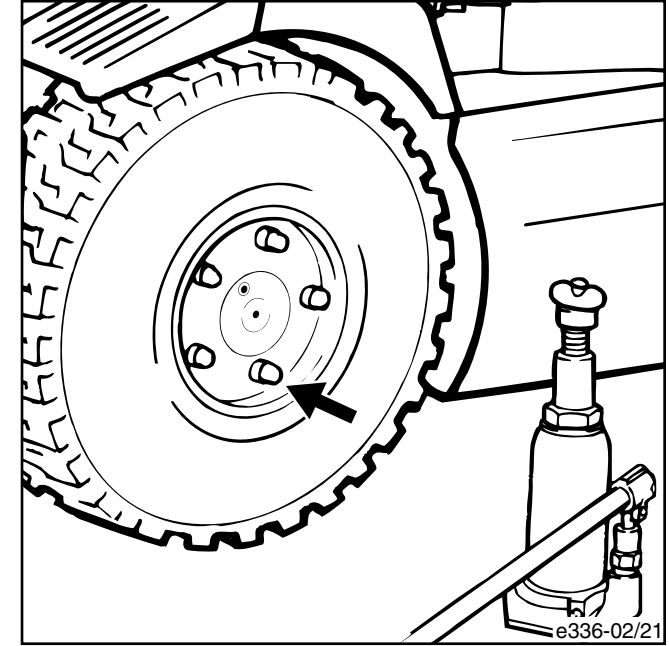


ATTENTION
(Every 100 hours minimum)

- Check all wheel collar nuts for the proper torque:
front wheel collar nuts 460 Nm
rear wheel collar nuts 210 Nm

Check the tyres for damage and foreign objects

- Secure the truck against rolling (apply the parking brake).
- Chock a wheel that is not to be raised.
- Jack up the truck until the wheels are clear of the ground.
- Secure the truck with wooden blocks.
- Check the wheels for ease of movement and remove anything hindering their movement.
- Renew worn or damaged tyres.



Inspection and maintenance as required

Maintenance

Check the security of the hydraulic oil tank

- Open the overhead guard to the first detent position.
- Check the tension of the hydraulic oil tank (3) mounting strap (1) and tighten with a ratchet lever (2) if required.
- Close the overhead guard.

Lubricate the steer axle, mast and tilt cylinder bearings

If used in clean and dry areas, truck servicing every 1000 service hours is sufficient as a rule. For mixed duty inside/outside, cleaning and greasing between 500 and 1000 service hours is recommended; but it is required at least every 12 month.

In an environment with dust, dirt, water and possibly de-icing salt or chemicals, weekly lubrication will extend the service life of the bearings substantially.

NOTE

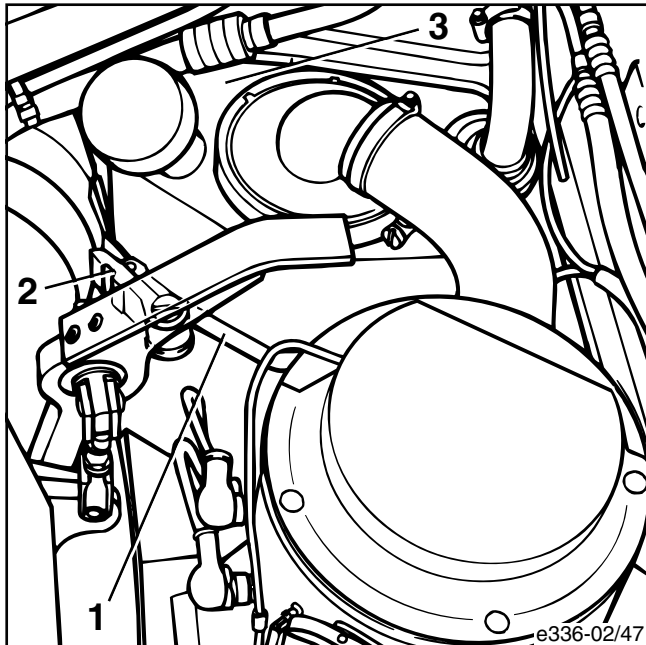
Greasing is always recommended after cleaning with a steam jet.

NOTE

Preferably lubricate the bearings with less grease more often than a lot of grease less frequently.

Other cleaning and greasing work

If used in clean and dry areas, truck servicing every 1000 service hours is sufficient as a rule. For mixed duty inside/outside, cleaning and greasing between 500 and 1000 service hours is recommended; but it is required at least every 12 month.



e336-02/47

Inspection and maintenance every 500 to 1000 hours or annually

Maintenance

Clean the steering axle



ATTENTION

Depress the emergency stop button and protect the electrical system (digital controller) against spray water.

- Thoroughly clean the steering axle with water or a cold cleaner.

Lubricate the steering axle



NOTE

Use lubricating grease.

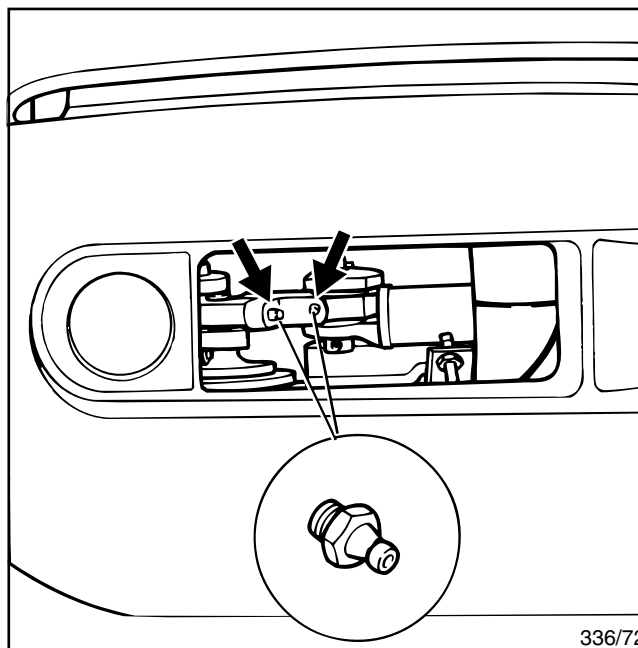
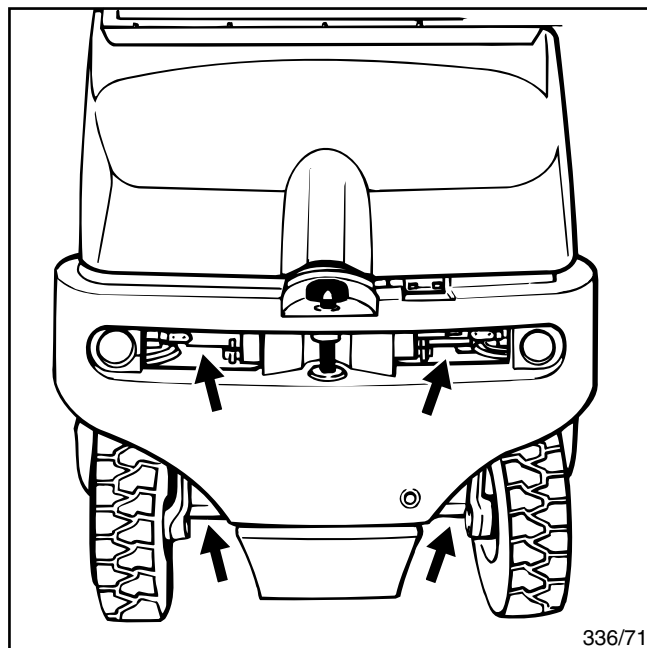
- Lubricate the track rods with grease at the lubricating nipples (arrowed) on the left and right side.
- Lubricate with a grease gun until new grease emerges at the bearings.

Inspect the joystick boot

- Check the boot for proper seating and for damage, replacing it if necessary.

Check the control unit for function

Special know-how and tools are required for checking the lowering stop valve and the release in the control unit. Please contact your Linde distributor.



Inspection and maintenance every 500 to 1000 hours or annually

Maintenance

Clean the left and right wheel traction, power steering and working hydraulics pump motors

- Raise and secure the fork carriage against inadvertent lowering.
- Depress the emergency button.
- Open the overhead guard to the 2nd lock-in position.
- Clean the traction motors and the power steering and working hydraulics pump motor with compressed air.

NOTE

Protect the electrical system and connections against moisture. Take care not to let water penetrate the electric motors. Should moisture penetrate the motors nevertheless, either operate the lift truck (drying with own heat) or dry the motors with heat, air jet, etc. in order to avoid corrosion damage.

Clean the traction motor and tractor compartment fans

NOTE

Contact your authorised distributor for cleaning the fans.

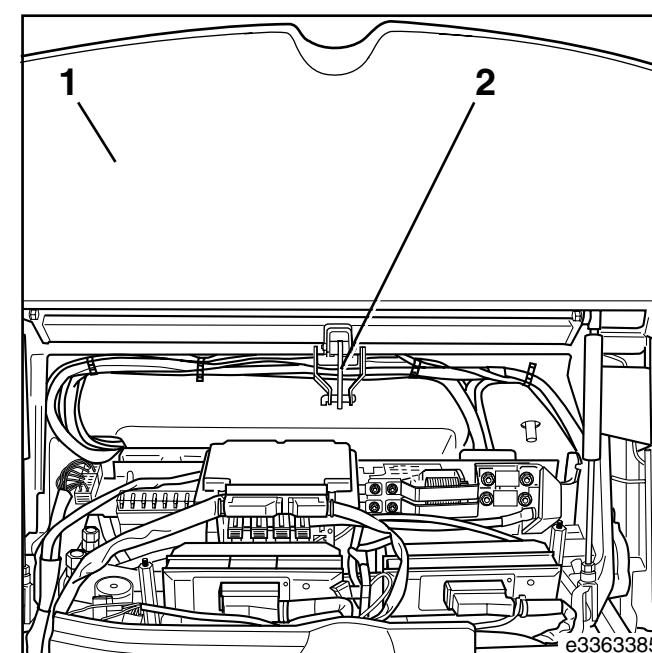
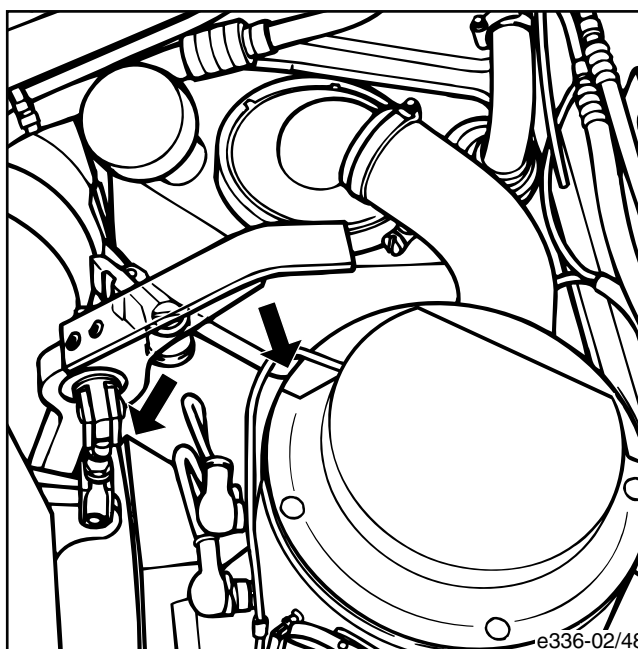
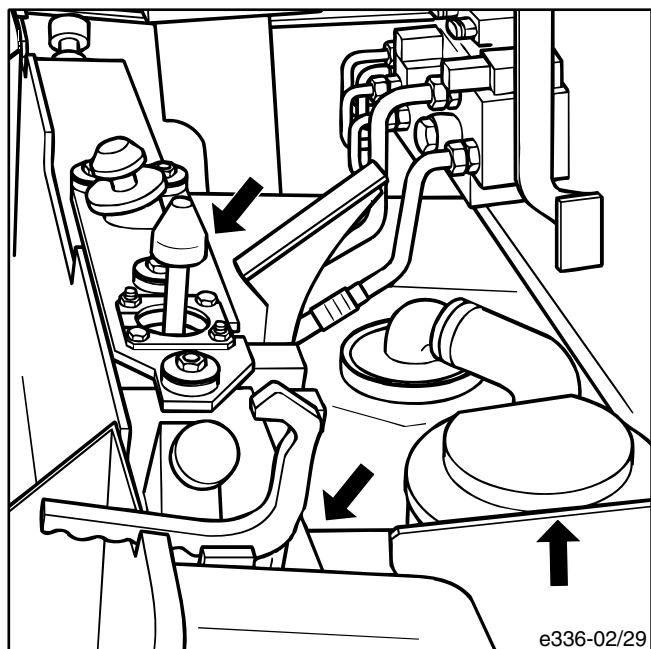
Clean the digital control

- Pull the electrical system cover (1) out of the latch raise it until it is supported by the stay (2).
- Unlock the connector and pull it out.
- Clean the digital control and fan with an air jet.

NOTE

Protect the electrical system and digital control against moisture.

- Refit the digital control cover.
- Insert the connector and lock it.
- Close the electrical compartment cover.



Inspection and maintenance every 500 to 1000 hours or annually

Maintenance

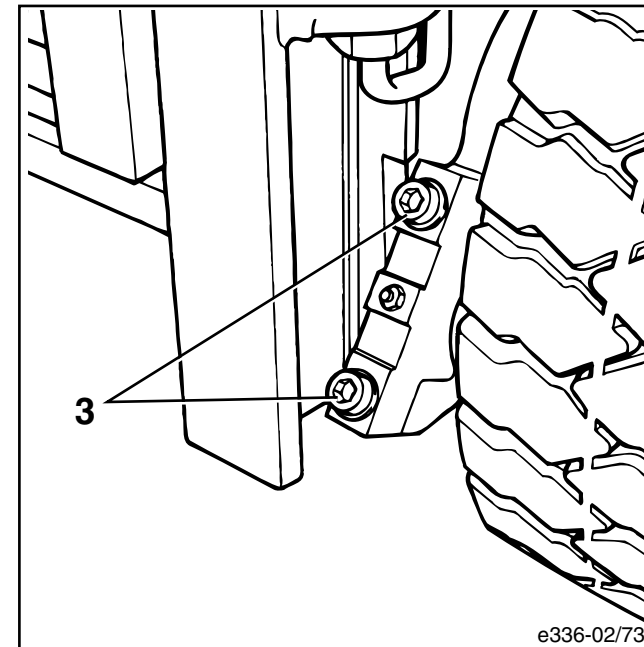
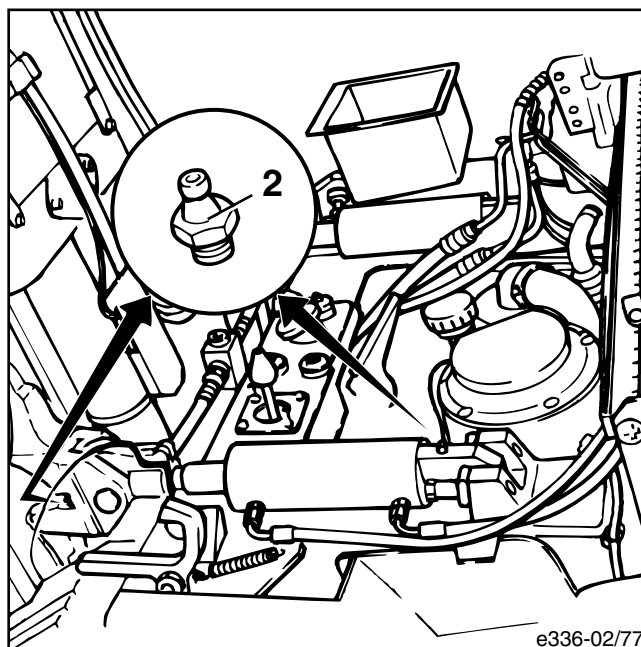
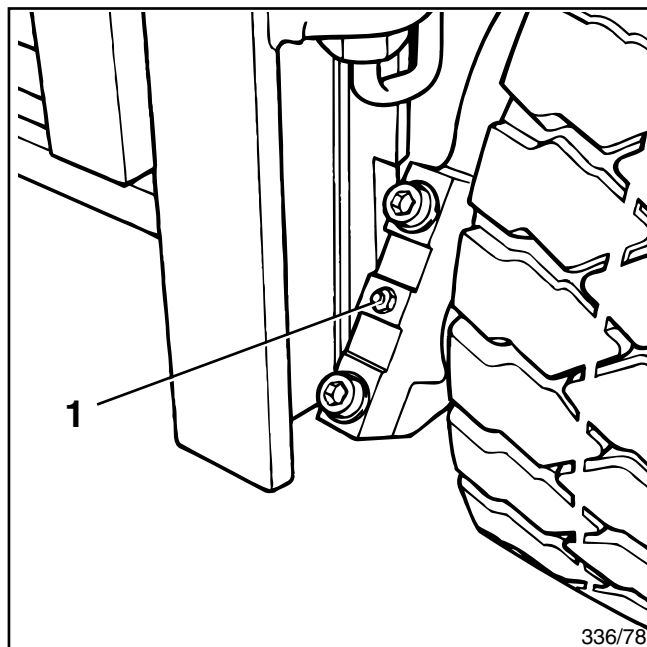
Lubricate the mast and tilt cylinder pivots

NOTE
Use a lubricating grease.

- Raise the fork carriage and secure it against inadvertent lowering with a chain.
- Lubricate the left and right mast pivot grease nipples (1).
- Lubricate with a grease gun until some fresh grease emerges at the pivots.
- Remove the securing chain and fully lower the fork carriage.
- Open the overhead guard to the 1st lock-in position.
- Lubricate the left and right grease nipples (2) of the tilt cylinder at the mast and chassis with grease.
- Lubricate with a grease gun until new grease emerges at the pivots.
- Close the overhead guard.

Retighten the mast fastening bolts

- Elevate the fork carriage and secure against inadvertent lowering.
- Check the fastening bolts (3) (2 on each side) of the mast pivot bearing shells for tightness.
Torque: 275 Nm



Inspection and maintenance every 500 to 1000 hours or annually

Maintenance

Sideshift*:

Clean, grease and check the mounting

- Clean the sideshift with a steam jet.
- Inspect the hydraulic pipes and hoses for chafe marks, and replace any pipes and hoses, if required.
- Check the hydraulic fittings and mounting elements for security and wear, and tighten or replace them, if required.
- Adjust the forks to gain access to the grease nipples (1).
- Lubricate the fork carriage grease nipples (1) with lubricating grease until new grease emerges at the side.

NOTE

The sideshift must be greased each time the truck is cleaned.

Check the braking system

The proper operation of the handbrake (1) and the brake pedal (2) must always be ensured. If faults due to mechanical wear become evident (e.g. worn brake linings or scored brake discs), please contact your authorised distributor.



CAUTION

Do not operate your fork truck if the brakes are faulty.

Check the brake linings, lubricate the brake lever pivot

- Depress the emergency button.
- Open the overhead guard to the 2nd lock-in position.
- Check the surface of the brake linings and brake discs.
- Check the thickness of the brake linings.
- Minimum brake lining thickness 4 mm.

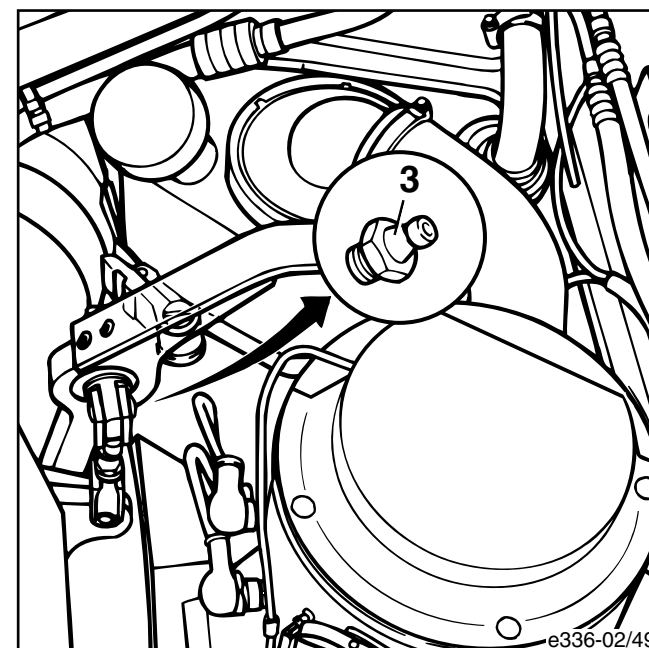
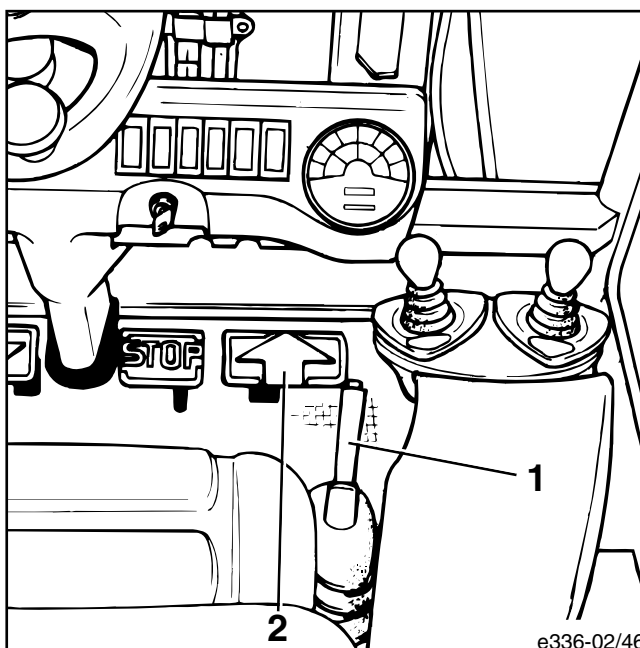
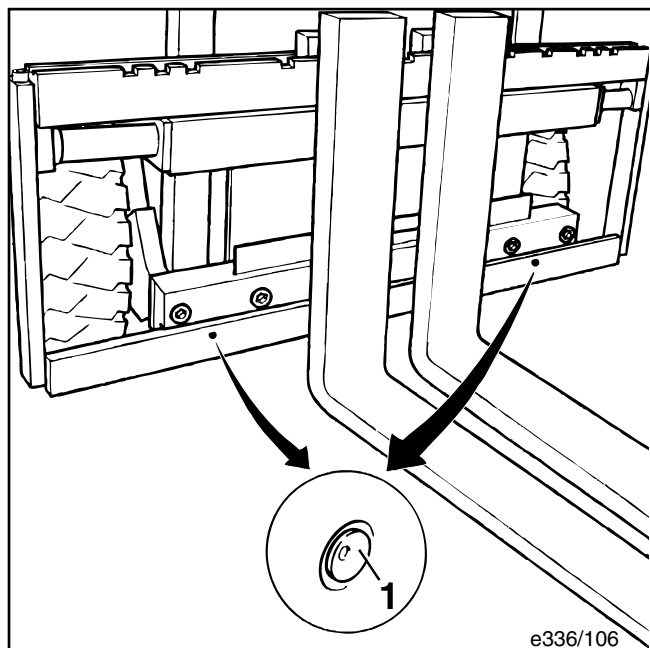


ATTENTION

Should faults or wear in the braking system become evident, please contact your authorised distributor.

- Lubricate the pivot grease nipples (3) with a grease gun until new grease emerges at the pivot.

* Option



Inspection and maintenance every 500 to 1000 hours or annually

Maintenance

Visual check of the motor brushes

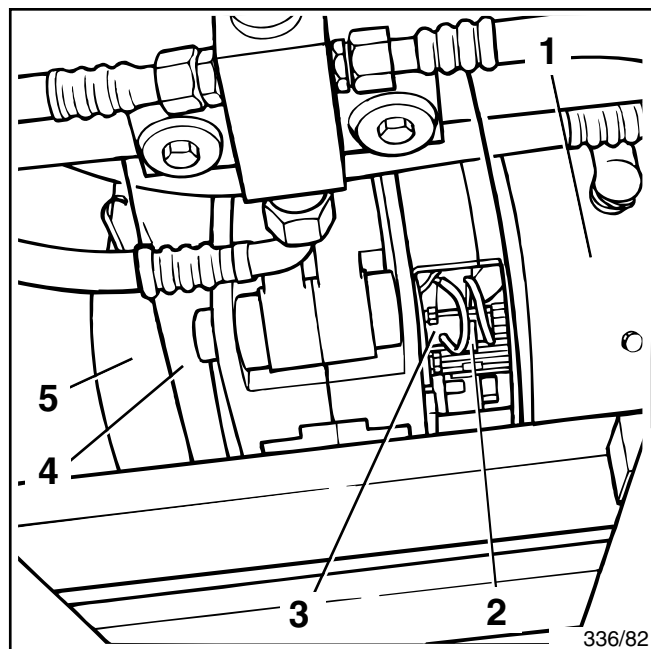
- Elevate the fork carriage and secure it against inadvertent lowering.
- Open the overhead guard to the 2nd lock-in position.
- Lift up the rubber cover (4) on the traction motors.
- Remove the cover bands on the traction motors (1, 5) and pump motor.
- Lift the carbon brush springs (2).
- Draw the brushes (3) out of their guides.
- Check the springs and brushes for ease of movement in the guides and visually inspect the brushes for condition and length, renewing them if necessary.
- Tension the brushes and check the brush connections for security.

Brush length

Traction motor original 40 mm, minimum 16 mm

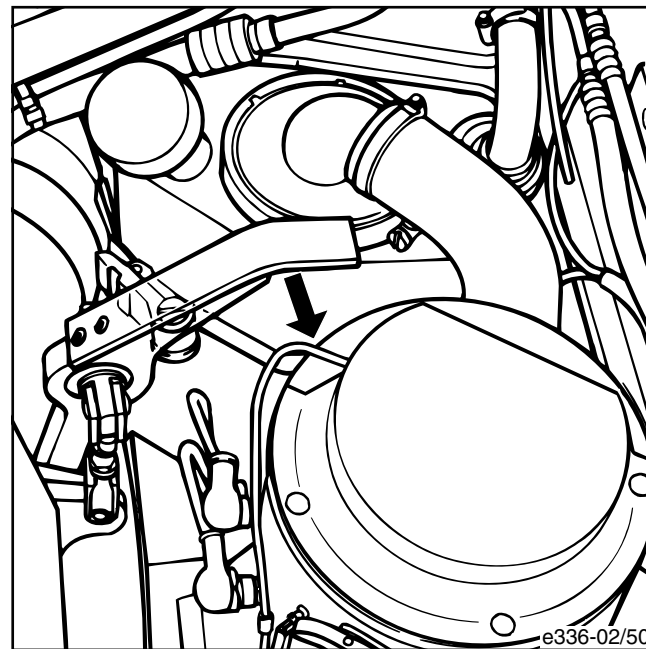
Pump motor original 40 mm, minimum 16 mm

- Refit the cover bands.



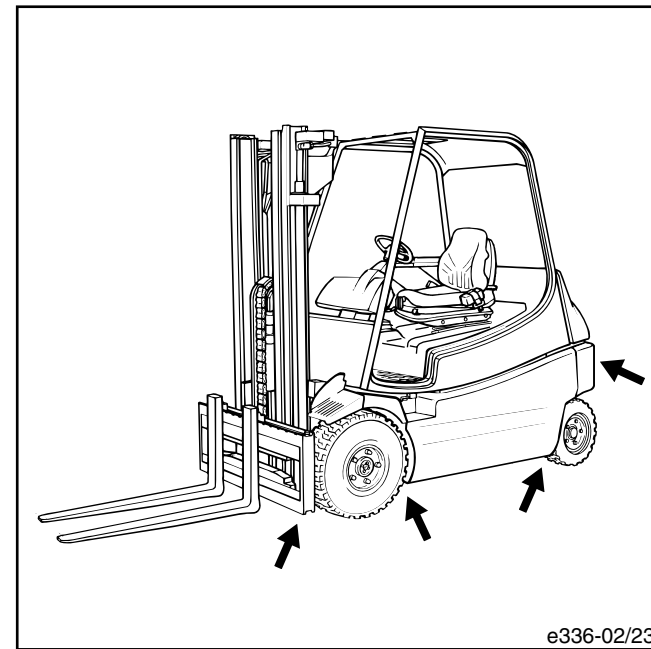
Check the working and steering hydraulics for leaks

- Check the working hydraulics and power steering pump, valves and pipes for leaks.
- Replace any porous hoses.
- Examine the pipes and hoses for chafe marks, replace if required.
- Close the overhead guard.



Check the counterweight, electric motors, chassis, wheel drives, overhead guard and steering axle for security

- Check the mounting elements of motor drive unit, steering and working hydraulics pump motor, counterweight, chassis, wheel drives, overhead guard and steering axle for security and wear.
- Tighten any loose nuts and bolts.
- Renew any damaged parts.
- Touch up the paint, if required.



Inspection and maintenance every 500 to 1000 hours or annually

Maintenance

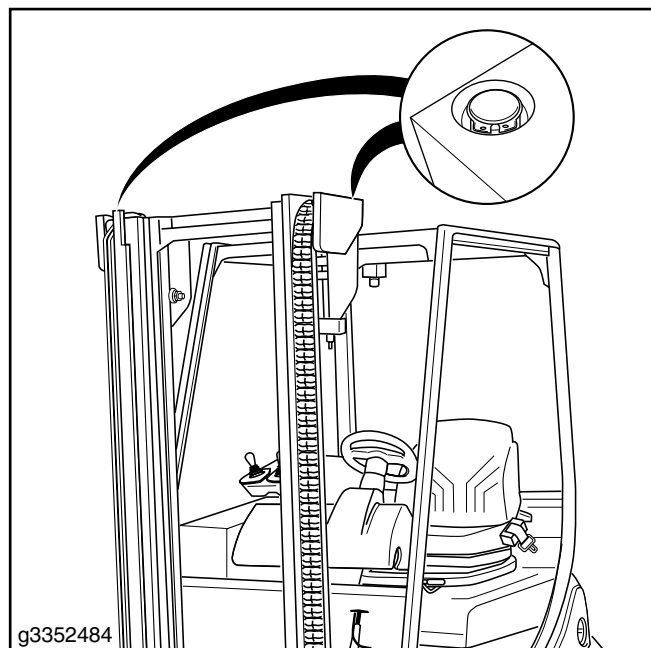
Mast, lift cylinders, lift chain and end stops: Check condition, mounting and function

- Clean the mast channels and chain thoroughly.
- Examine the chain for condition and wear, particularly in the area of the pulleys.
- Check the mounting of the chain at the chain anchor.
- Renew damaged chains.

NOTE

Single damaged or missing plastic links will not impair the function and service life of the chain.

- Inspect the mast, channel surfaces and rollers for condition and security.
- Check the condition and function of the end stops.
- Check the circlip on the piston rod mounting pin at the top of the mast for proper seating.



Adjust the lift chain length*

NOTE

As the lift chains* stretch with use, they must be checked and adjusted as necessary on the right and left sides.

- Completely lower mast.
- Loosen the locknut (1).
- Adjust chain length with the adjusting nut (2) on the chain anchor. The lower guide roller of fork carriage may project a maximum of 25 mm from inner mast channel.
- Tighten the locknut (1) firmly.
- Adjust the second chain.

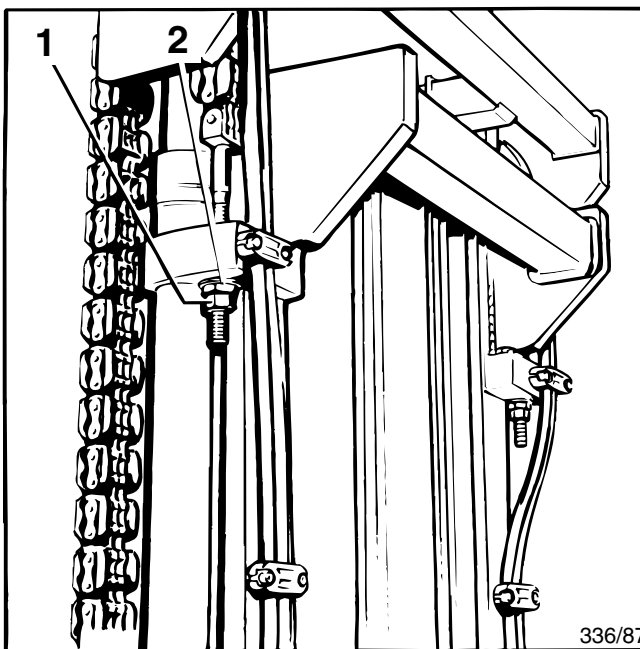
Lubricate the lift chain with chain spray

- Spray the guiding surfaces and chains with Linde chain spray.

NOTE

Trucks in service in the food industry must be lubricated with a thin oil approved for the food industry instead of chain spray.

* for standard (type 183 and 186) masts only



Adjust the lift chain length*

NOTE

The lift chain must be adjusted as it stretches with use.

- Completely lower mast.
- Loosen the locknut (1).
- Adjust chain length with the adjusting nut (2) on the chain anchor. The lower guide roller of fork carriage may project a maximum of 25 mm from inner mast channel.
- Tighten the locknut (1) firmly.

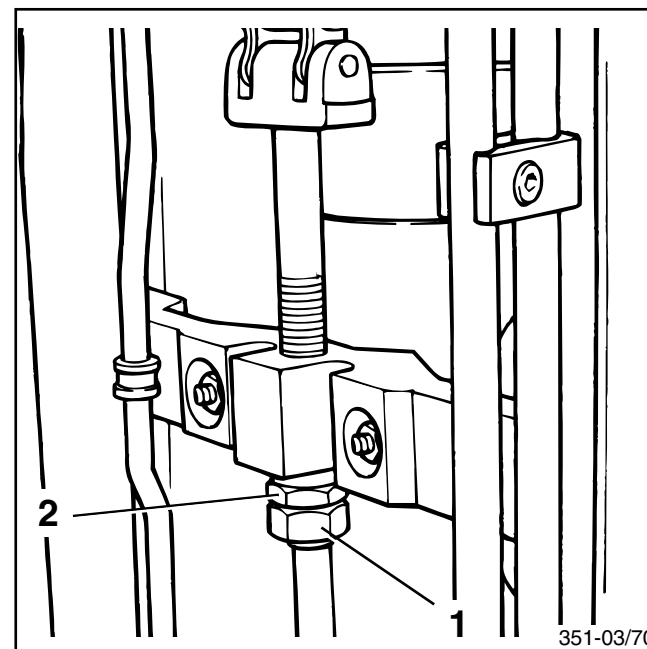
Lubricate the lift chain with chain spray

- Spray the guiding surfaces and chain with Linde chain spray.

NOTE

Trucks in service in the food industry must be lubricated with a thin oil approved for the food industry instead of chain spray.

* for duplex and triplex (type 183 and 186) masts only

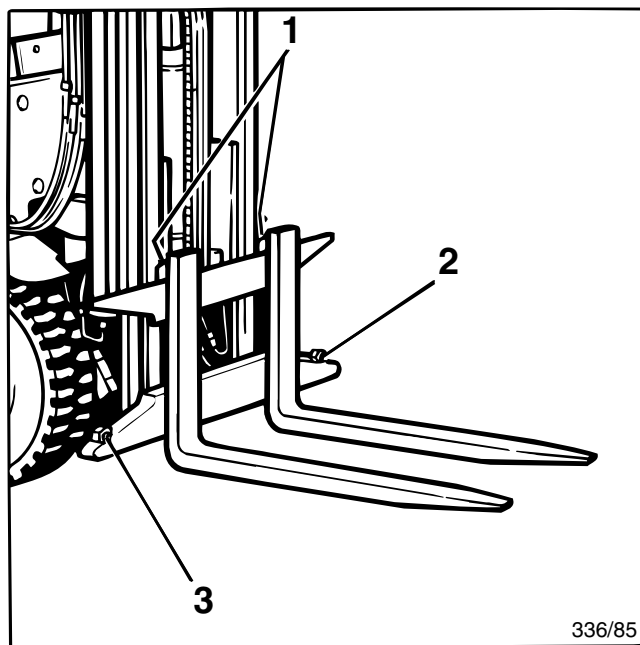


Inspection and maintenance every 500 to 1000 hours or annually

Maintenance

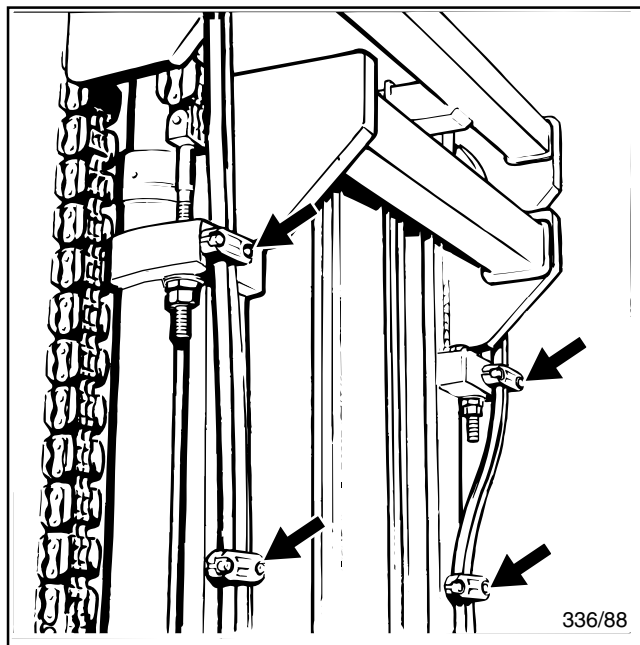
Check the fork quick-releases and fork stops

- Examine the forks for visible deformation and damage.
- Check the bolts of the fork quick-releases (2, 3) and fork stops (1) for proper seating and damage.
- Renew any defective parts.



Check the pre-tension of double hoses if attachments are fitted

- The pre-tension of the double hoses should be 5 to 10 mm per meter referred to initial length.
- Adjust the pre-tension to the specified value by shifting the hoses in the clamps.



Check the hydraulic oil level

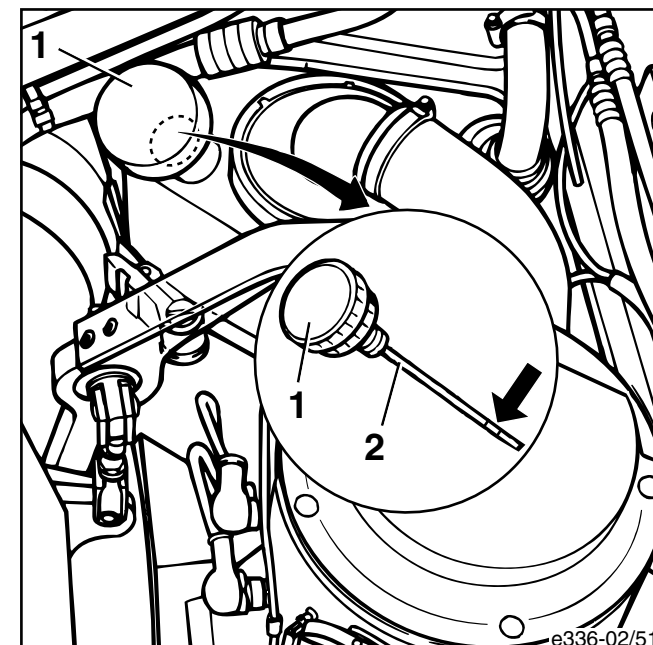


ATTENTION
Follow the precautions for handling fluids and lubricants.



ATTENTION
Check the hydraulic oil level only with the mast vertical and the fork carriage lowered.

- Apply the handbrake.
- Depress the emergency stop button.
- Tilt the overhead guard past the first lock-in position and release it.
- Pull out the breather filter (1) and oil dipstick (2).
- Wipe the oil dipstick with a clean cloth.
- Fully re-insert the breather filter and dipstick and pull it out again.
- The oil level should be between the marks on the dipstick.
- If needed, top up the hydraulic oil as far as the top mark.
- Refit the breather filter.



Inspection and maintenance every 500 to 1000 hours or annually

Maintenance

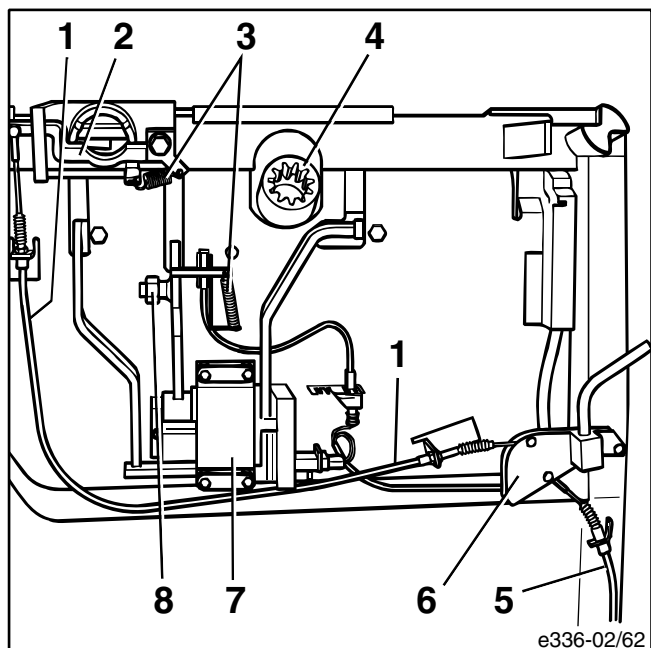
Check and oil the pedal and travel control linkage pivots and overhead guard lock



ATTENTION

The accelerator sensor (7) 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 tension springs (3) for proper operation.
- Lightly oil the lock (2), Bowden cables (1 and 5), tension springs and lever (6) as needed.
- Grease the disconnect point (4) of the steering.
- Lubricate the areas at which the pedal contacts the rocker (8) with Molikote-G compound (oil, if not available, but do not use grease).
- Close the overhead guard.



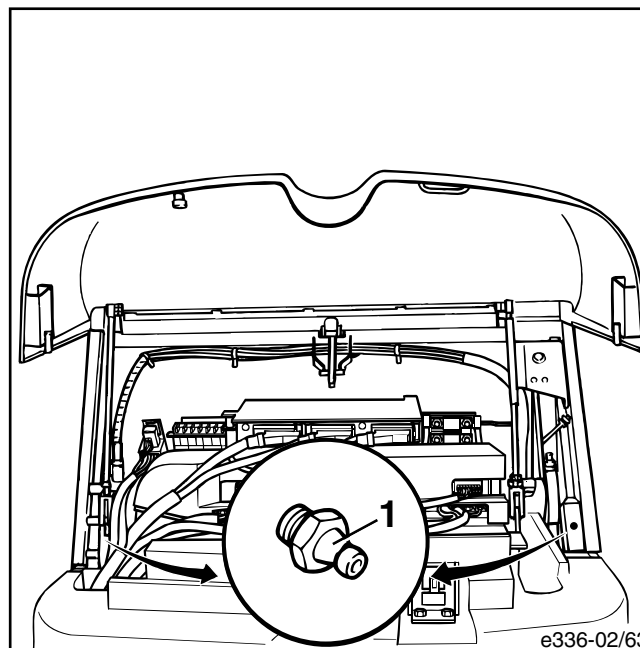
Grease the overhead guard pivots



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.
- Close the electrical compartment cover.

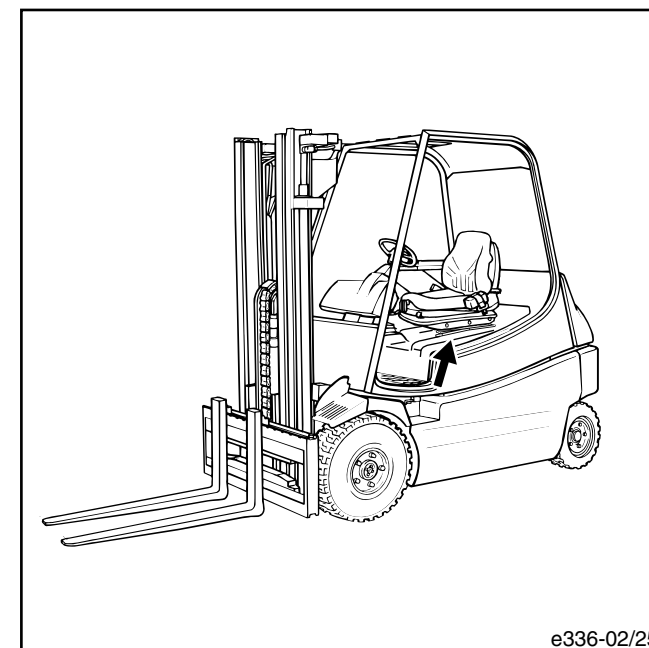


Check and lubricate other pivots and joints

Inspect and oil the pivots and joints of:

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

* Option

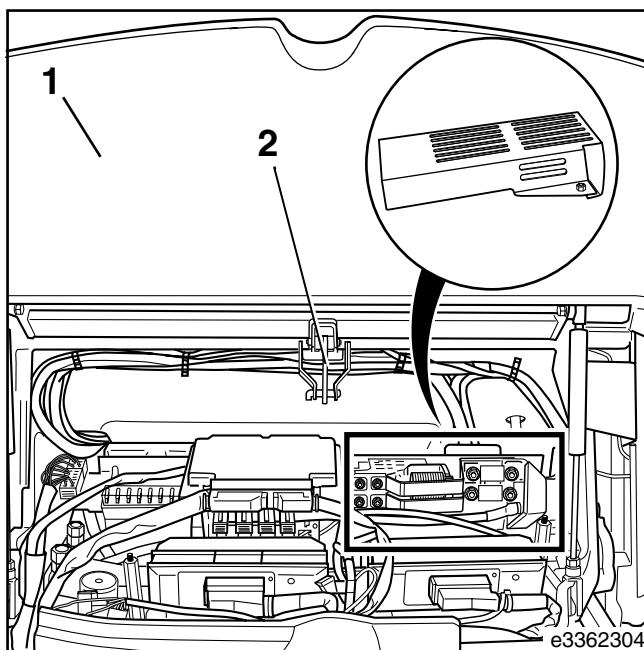


Inspection and maintenance every 500 to 1000 hours or annually

Maintenance

Check the contactor

- Open the electrical compartment cover (1).
- Remove the cover (2).
- Check contactor tips of starting contactor only and have them renewed, if required.
Please contact your authorised distributor.



Change the wheel drive oil



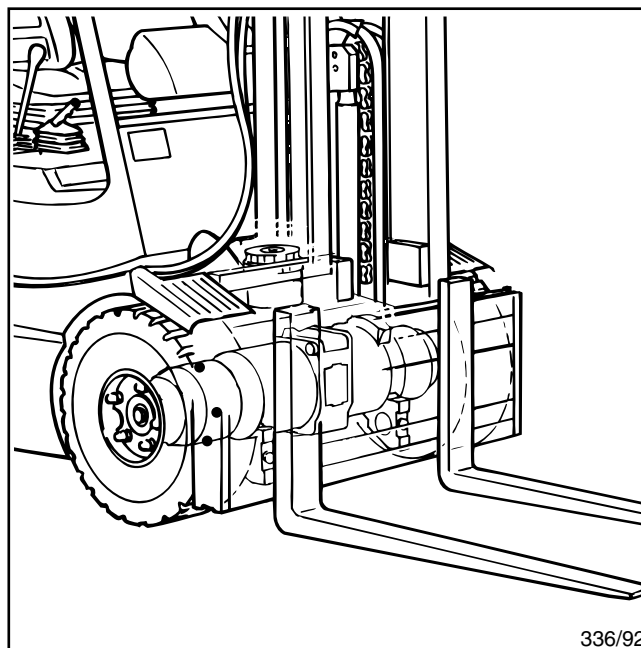
ATTENTION

Follow the precautions for handling fluids and lubricants.



NOTE

The wheel drive oil needs to be changed only once after 1000 hours, further oil changes are required every 3000 hours (for procedure see 3000-hour inspection and maintenance).



Check the electric cables, cable connectors and connections for condition and tightness



NOTE

Apply the handbrake and depress the emergency button before every servicing.

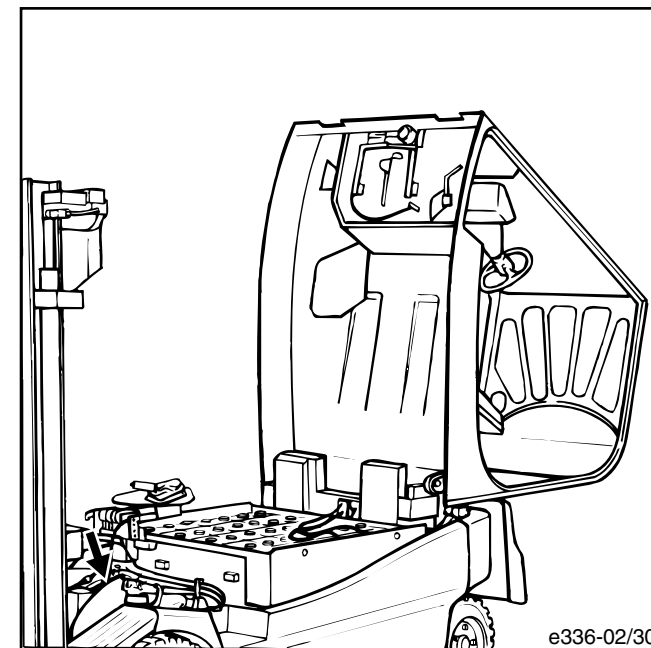
- Open the overhead guard to the 2nd lock-in position.
- Electric motor terminals: Check the connectors for security and traces of oxidation.
- Check the battery cables for security.
- Close the overhead guard and open the electrical compartment cover.
- Check the wiring for chafing and security.



NOTE

Oxidized connections and broken cables lead to drops in voltage causing malfunctions.

- Eliminate any traces of oxidation and renew any broken cables.
- Close the electrical compartment cover.



Inspection and maintenance every 500 to 1000 hours or annually

Maintenance

Renew the breather filter



ATTENTION

Follow the precautions for handling fluids and lubricants.

- Fully lower the mast.
- Open the overhead guard to the 2nd lock-in position.
- Pull the breather filter (1) and dipstick out of the filler neck.
- Pull the dipstick (4) out of the filter and install in the new breather filter.
- Install the breather filter in the filler neck.



NOTE

In a dusty environment, the filter may need more frequent renewal.

Renew the suction filter

- Loosen the fastening nut (2) on the clamping strap of the suction filter cover (3).
- Remove the suction filter cover.
- Pull out the suction filter slowly to allow the oil to flow back into the reservoir.
- Carefully insert a new suction filter into the filter housing.
- Clean the filter cover seal, coat with oil and re-install it.
- Refit the filter cover and clamping strap, and secure with the fastening nut.
- Check the filter for leaks in a trial run.
- Remove the breather filter (1) and dipstick (4) and check the oil level. If needed, add hydraulic oil up to the top mark on the filler neck.
- Install the breather filter.
- Fully lower the overhead guard.

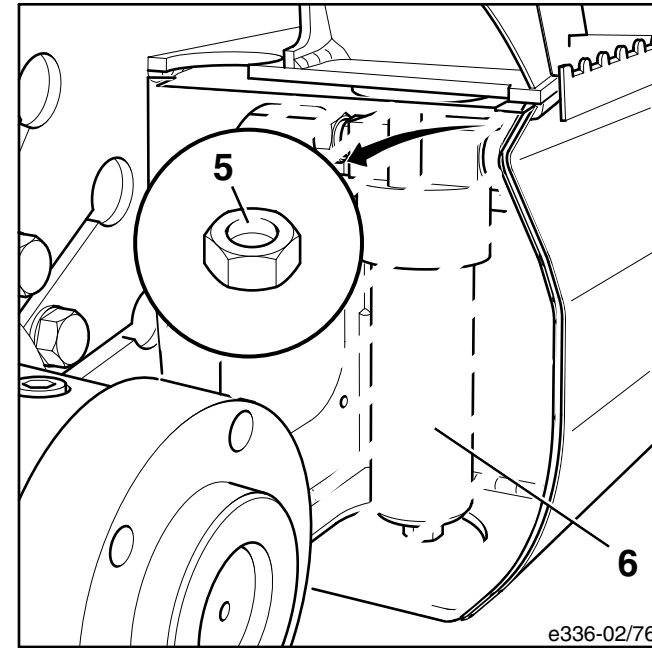
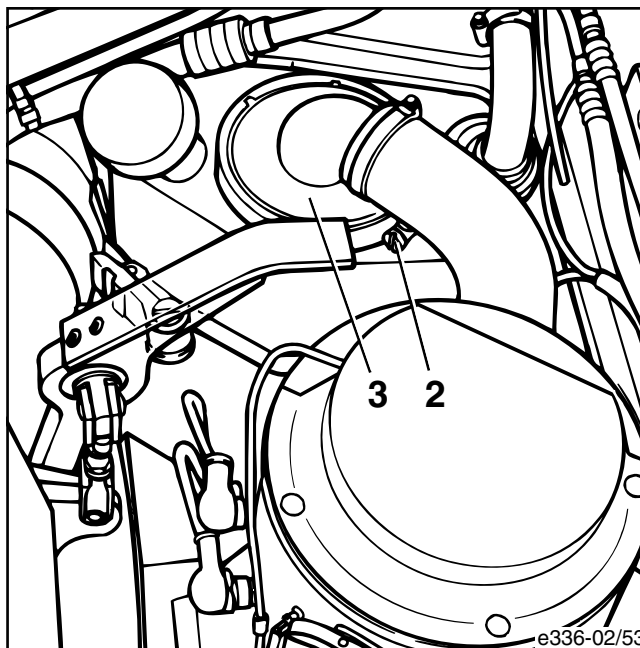
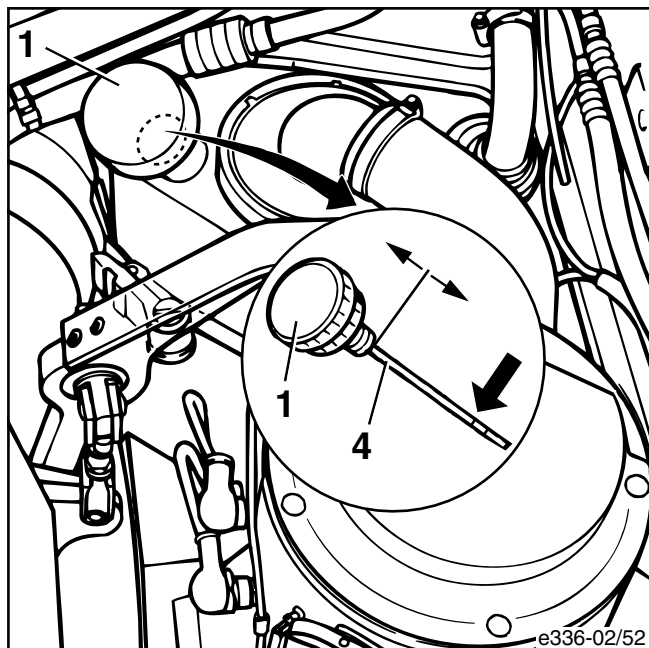
Change the pressure filter



NOTE

The pressure filter is located in the left-hand wheel guard behind a rubber cover.

- Lift the truck at the front left side and secure it.
- Remove the traction wheel.
- Remove the hexagonal nut (5) and take out the rubber cover.
- Loosen the filter case (6) with a wrench (WOF 30 mm).
- Remove the case downward by hand.
- Withdraw the filter element.
- Check the O-ring on the filter head and renew it, if damaged.
- Install a new filter element and tighten the filter case.
- Operate working hydraulics and check pressure filter for leaks.
- Install the rubber cover, traction wheel and lower the truck.



Inspection and maintenance every 500 to 1000 hours or annually

Maintenance

Check the wheel drives for oil leaks

NOTE

Both wheel drives can only be checked for leaks with the front wheels removed.

- Jack up the truck at the front left or right-hand side.
- Remove the front wheels.
- Inspect the oil leaks on the left and right wheel drives at the filler, drain and level plugs, the housing cover and at the end of the drive shafts for oil leaks.

NOTE

Contact your authorised distributor in case of leaks.

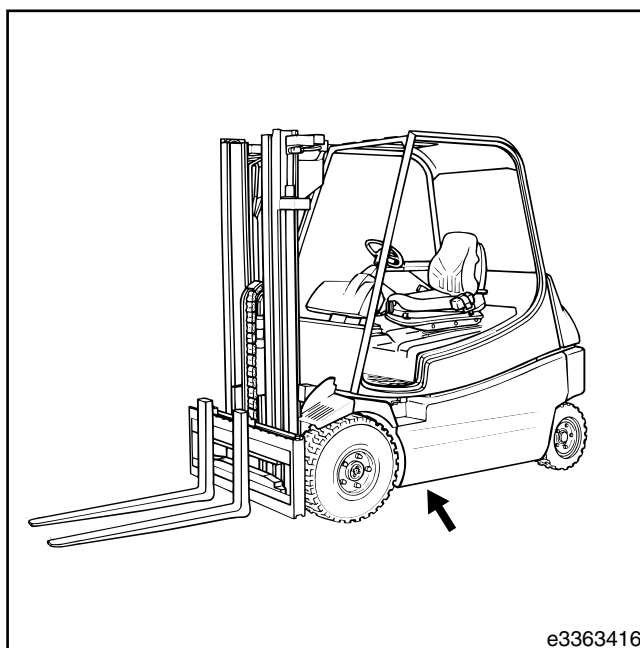
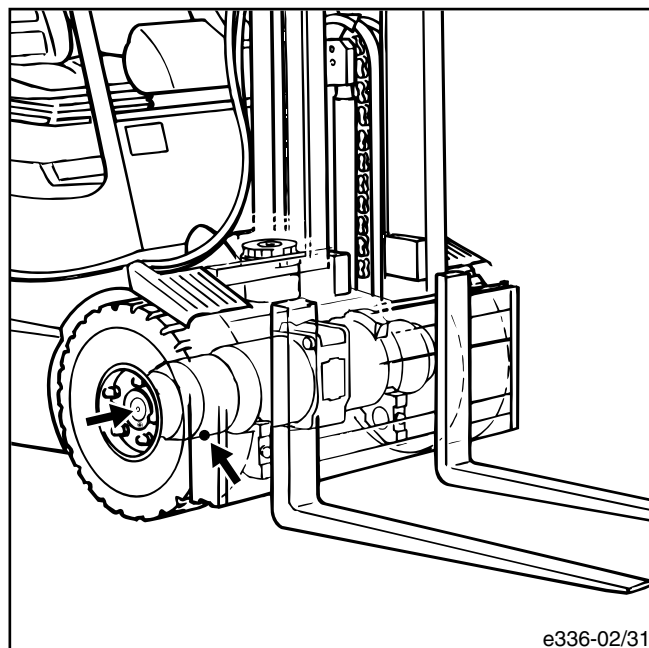
Check the condition of the antistatic ribbon*

- Check the antistatic ribbon underneath the frame bottom for security and wear.
- Replace a damaged antistatic ribbon.

NOTE

The antistatic ribbon must always remain in contact with the ground.

* Option



Renew the hydraulic oil



ATTENTION

Follow the precautions for handling fluids and lubricants.

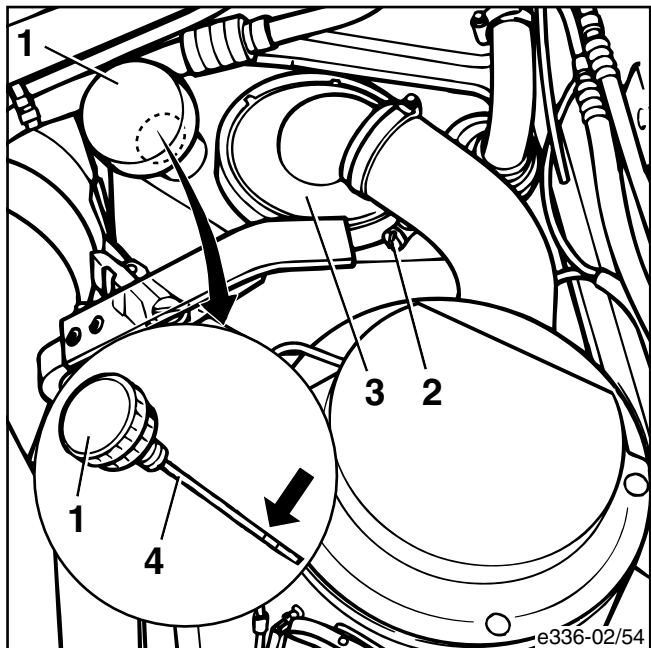


NOTE

The hydraulic oil can only be pumped out with the appropriate aid (hand pump).

- Install the filter along with the filter cover.
- Pull out the breather filter (1) and check the oil level with the dipstick (4). Add oil as required through the filler neck up to the top mark in the filler neck.
- Close the overhead guard.
- Lower the fork carriage completely.
- Open the overhead guard to the 2nd lock-in position.
- Unscrew the fastening bolt (2) on the suction filter cover (3).
- Remove the breather filter cover.
- Withdraw the suction filter slowly so that the oil can flow back into the tank.
- Pump out the hydraulic oil with the appropriate hand pump.
- Fill new hydraulic oil into the hydraulic oil tank.

Hydraulic oil tank capacity..... approx. 28.5 litres

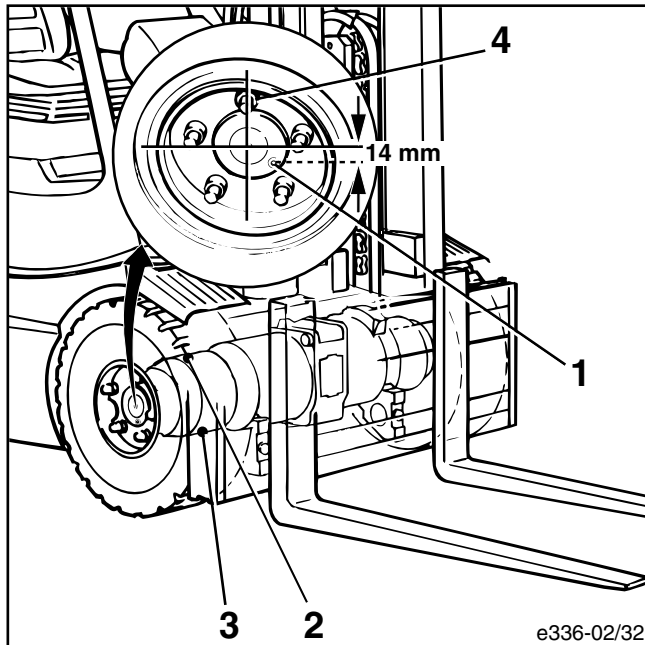


Change the oil in wheel drive**ATTENTION**

Follow the precautions for handling fluids and lubricants.

- Operate the truck until the wheel drives are warm.
- Park the truck so that wheel nut (4) is at the top.
The level plug (1) is approx. 14 mm below the imagined horizontal line.
- Remove the wheel (see front wheel change).
- Clean the area around the filler, drain and level plugs.
- Position an oil catch tray under drain plug (3).
- Remove the level plug (1), filler plug (2) and drain plug (3) and drain the gear oil completely.
- Clean the magnetic plug on the drain plug (3).
- Refit and tighten the drain plug (3) (Torque 20 Nm) with magnetic plug.

- Fill 450 cc gear oil in each gear drive through the level plug opening (2) and wait at least 5 minutes.
- Check if the oil level reaches the level plug opening (1).
- Refit and tighten the level and filler plugs.
- Mount the wheel.
- Change the oil in the other wheel drive.



Inspection and maintenance specifications

Maintenance

No.	Assembly	Aids / Oils and Lubricants	Filling Capacity / Settings
1	Hydraulic system	Filter element Hydraulic oil	Mesh = 15 µm 28.5 litres
2	Wheel drives	Gear oil	For first filling approx. 500 cc For oil change approx. 450 cc
3	Tyres	Air	front and rear 10 bar
4	Wheels	Traction wheel Rear wheel	Torque 460 Nm Torque 210 Nm
5	Electrical system: Left traction motor, hydraulic pump motor Right traction motor Discharge circuit Discharge circuit Discharge indicator Control current Fan Horn	Fuse Fuse Fuse Fuse Fuse Fuse Fuse Fuse	1 x 355 A 1 x 250 A 2 x 5 A 1 x 10 A 1 x 10 A 1 x 10 A 1 x 5 A 1 x 5 A
6	Electric motors: Traction motor Hydraulic motor	carbon brushes carbon brushes	Original 40 mm, min.16 mm Original 40 mm, min.16 mm
7	Battery	Distilled water Non-acidic grease	As required As required
8	Mast tilt cylinder pivot	Lubricating grease	As required
9	Steering axle	Lubricating grease	As required
10	Mast and chain guide	Linde chain spray	As required

336 804 3001.0704

Lubricant recommendations

Hydraulic oil

Recommendation for **regular** duty:

Hydraulic oil **ISO-L-HM 46** to ISO 6743-4 or **HLP ISO VG 46** to DIN 51524 T.2 (factory filling), average continuous oil temperature 40 °C to 60 °C.

Recommendation for **heavy** duty:

Hydraulic oil **ISO-L-HM 68** to ISO 6743-4 or **HLP ISO VG 68** to DIN 51524 T.2, average continuous oil temperature over 60 °C.

Recommendation for **light** duty at low ambient temperatures:

Hydraulic oil **ISO-L-HM 32** to ISO 6743-4 or **HLP ISO VG 32** to DIN 51524 T.2, average continuous oil temperature under 40 °C.

Recommendation for **strongly varying** operating condition:

All the above applications can be covered with an hydraulic oil **ISO-L-HV 46** to ISO 6743-4 or **HVLP ISO VG 46** to DIN 51524 T.3.

Such hydraulic oils have a high viscosity index (multigrade oils).

Bio hydraulic oil

Biologically fast-degradable pressure fluid

Aral Forbex SE 46



ATTENTION

Do not mix bio-oils with mineral oils. Other fluids from other manufacturers cannot be recommended.



NOTE

The above oil recommendations are only guidelines.

If case of doubt we recommend contacting your authorized Linde distributor.

Recommendations of representatives of the oil industry should also be checked with your authorized truck dealer.

Only the above-mentioned oils are approved by the manufacturer. Costly damage can result if other hydraulic oils are used or mixed.

Gear oil

Preferably SAE 80 W - 90 API GL5, also suitable is SAE 85 W - 90 API GL4 (to DIN 51512).

Lubricating grease

Linde lithium-based heavy duty grease with EP additives and MOS₂.

Designation to DIN 51825 KPF 2N-20, (see Parts Catalogue for Order No.)

Do not mix with greases having another base than lithium.

Battery grease

Non-acidic lubricating grease (terminal grease)

Chain spray

Linde chain spray (see Parts Catalogue for Order No.)

Brake fluid

DOT 3 brake fluid to SAE J 1703 (e.g. Ate type S) or DOT 4 to SAE J 1704 or FMVSS 116 (e.g. Ate type SL).

Vaseline

Troubleshooting guide

Trouble	Possible Cause	Remedy	See Page
Abnormal noise	Suction filter restricted. Suction hoses leak, oil foams. Hydraulic pump damaged, seals faulty, causing air intake. Oil of wrong viscosity, low oil level in tank.	Clean or replace filter. Tighten hose connections. Check oil level, top up if necessary. Have inspected by your authorised distributor. Change oil, use specified viscosity. Replenish oil.	75 70, 72 72, 77, 80
No or too low pressure in system	Pump suction faulty, noises. Pump failure, pressure valves do not close, valve seat damage. Pipeline broken or leaky. Oil of low viscosity, causing high leakage losses.	Change oil, replenish oil. Have repaired by distributor's mechanic. Replace pipe or tighten connections. Change oil, use specified viscosity.	72, 77 70 77, 80
Oil pressure fluctuates	Causes as under abnormal noise. Lift and tilt cylinders have tight spots. Mast does not extend completely or retracts slightly after being extended.	See under abnormal noise. Have boots replaced by a workshop. Replenish oil.	72
Hydraulic oil temperature too high	Pump failure, valves leaking. Oil level too low.	Have repaired by a workshop. Check oil level; if necessary, replenish oil.	72
Failure of the working hydraulic system	Battery discharge at 80 %. Faulty fuse.	Check, charge or replace the battery. Renew the fuse.	24, 25
Truck does not start	Battery is discharged. Loose electrical connections. Overhead guard not locked correctly. Fuses blown.	Check, charge or replace the battery. Tighten battery terminals, coat with non-acidic grease. Check electric motor cable connections. Close the overhead guard correctly. Replace fuses.	24, 25 25 74 23 44, 45

Electric circuit diagram (standard equipment)

A1	Double module, traction and lift controller
A2	Combicontroller
1A1	Traction controller
1A4	Accelerator sensor
2A1	Lift controller
1B1	Rpm sensor 1M1, right
1B2	Rpm sensor 1M2, left
1B4	Temperature sensor in 1M1
1B5	Temperature sensor in 1M2
2B1	Control lever (joystick), basic
2B2	Control lever (joystick), options
2B3	Temperature sensor in 2M1
2B8	Rpm sensor 2M1
3B1	Curve angle sensor
3B2	Curve sensor
1C2	Suppressor capacitor, temperature sensor in 1M1 22nF/63V
1C3	Suppressor capacitor, temperature sensor in 1M2 22nF/63V
2C1	Suppressor capacitor, temperature sensor in 2M1 22nF/63V
4C1	Suppressor capacitor, horn 470nF/400V
1E1	EMV-Filter
1E2	EMV-Filter
F1	Traction motor fuse, right, 250 A
F2	Traction motor fuse, left and lifting, 355 A
F7	Discharge circuit fuse, 10 A
F8	Discharge circuit fuse, 5 A
1F2	Control fuse, 10 A
1F4	Fuse, fan 5 A
1F5	Fuse, 5 A
1F6	Discharge circuit fuse, 5 A
4F3	Fuse, horn, 5 A
6F1	Discharge indicator fuse, 10 A
G1	Battery
4H1	Signal horn
K1	Contacteur
K2	Charge/discharge circuit relay
K3	Charge/discharge circuit relay
5K2	Stop light relay
9K3	Relay, relay driver 2
1M1	Traction motor, right
1M2	Traction motor, left
2M1	Pump motor
9M1	Fan, traction compartment
9M2	Fan, power module
9M3	Fan, traction motors and lift motor
6P2	Composite instrument

R1	Charge/discharge resistor
R2	Discharge resistor
1R1	Charge/discharge resistor
1R2	Terminal resistance
1R3	Terminal resistance
2R1	Terminal resistance
2R2	Terminal resistance
S1	Key switch
S2	Emergency stop switch
S3	Seat switch
S4	Overhead guard switch
1S4	Handbrake switch
1S5	Service brake switch
1S13	Directional switch, single-pedal model/SRTN
1S14	Carbon brush wear switch, traction motor, right
1S15	Carbon brush wear switch, traction motor, left
2S5	Carbon brush wear switch, pump motor
4S1	Horn button
U1	Voltage converter
1V1	Freewheel diode, contactor
1V2	Free wheel diode, relay
1V3	Freewheel diode, relay
9V3	Freewheel diode, relay
X1	Connector, 42 pins
X2	Connector, 10 pins
X3	Connector S2, 2 pins
X4	Terminal, contactor coil K1, 2 pins
X7	Terminal, curve sensor, 4 pins
X8	Terminal, voltage converter, 4 pins
X9	Terminal, overhead guard switch, 3 pins
X10	Battery plug
X11	Connector A1, 29 pins
X12	Connector, charge/discharge circuit, 6 pins
X13	Connector A2, 121 pins
X17	Connector for 6 pin terminal board
X31	Main earth point on current bar
1X1	Connector 1B1, 4 pins
1X2	Diagnostic plug, traction controller
1X3	Connector 1B2, 4 pins
1X4	Connector 1S4, 3 pins
1X5	Connector 1S5, 3 pins
1X6	Connector 1S1, 2 pins
1X7	Connector 1M1, 4 pins
1X8	Connector 1M2, 4 pins
1X10	Connector 1A4, 4 pins
1X13	Connector 1A1, 16 pins
2X2	Connector 2B3, 4 pins
2X3	Connector 2B1, 6 pins
2X4	Connector 2B2, 6 pins

2X5	Diagnostic plug, lift control, 4 pins
2X6	Connector 2M1, 4 pins
3X1	Connector 3B2, 4 pins
4X1	Connector 4S1, 2 pins
5X13	Connector, repeater indicator light, 3 pins
6X1	Diagnostic plug, composite instrument, 4 pins
6X9	Connector 6P2, 36 pins
9X7	Connector, option, 6 pins
9X10	Connector 9M1, 2 pins
9X11	Connector 9M2, 2 pins
9X12	Connector 9M3, 2 pins
2Y1	Valve, lowering
2Y2	Valve, lifting
2Y3	Valve, tilt forward
2Y4	Valve, tilt backward
2Y5	Valve, accessory 1B
2Y6	Valve, accessory 1A
2Y7	Valve, accessory 2B
2Y8	Valve, accessory 2A
2Y9	Enable valve
2Y10	Valve, lowering,safety

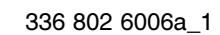
Cable colours

BK	black	GN	green
WH	white	VT	violet
BU	blue	RD	red
OG	orange	YE	yellow
BN	brown	GY	grey

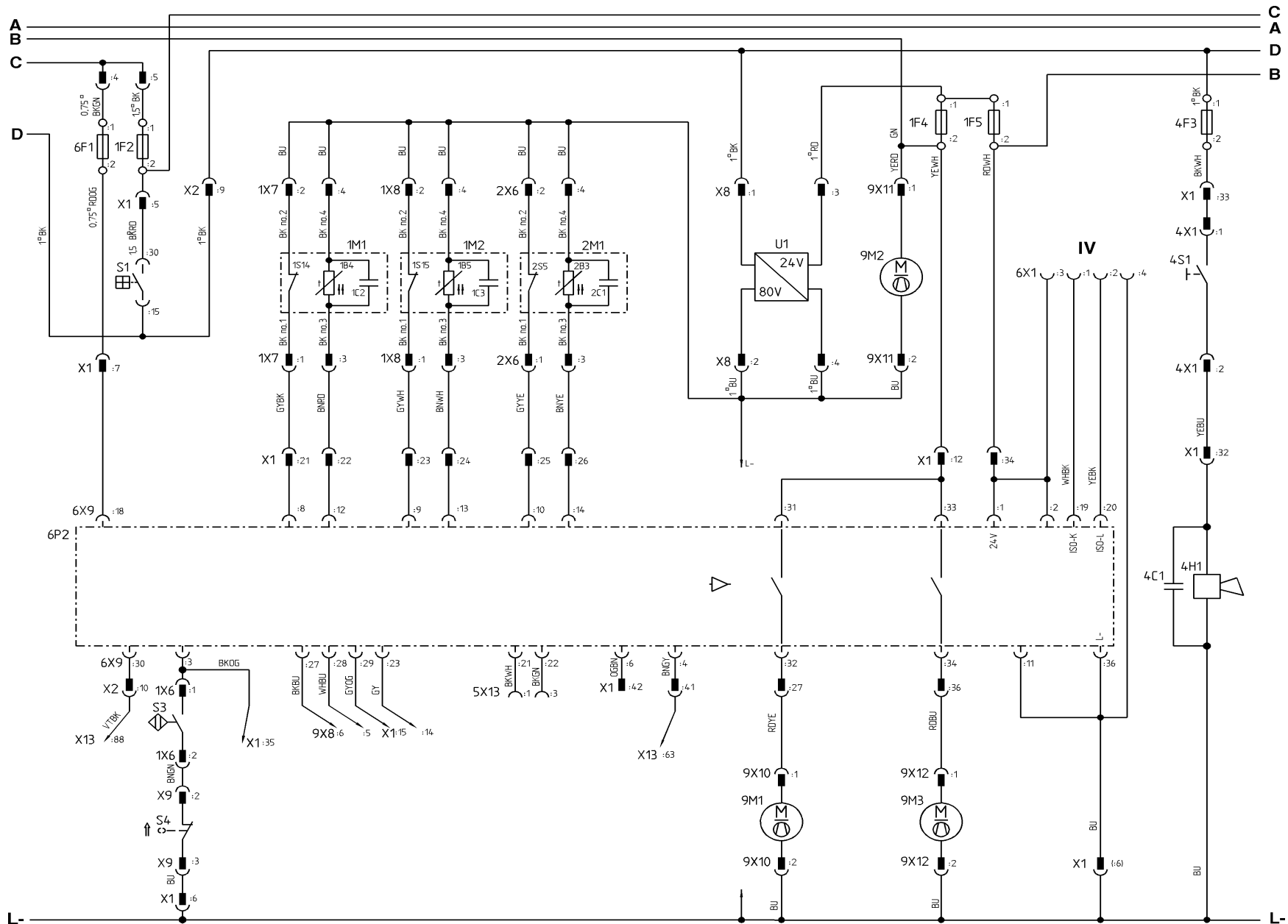
All cables without gauge data = 0.5 mm²

All cables without colour code = BK

I	Voltage supply for optional; heater.
II	Voltage supply for optional; voltage converter and working light.
III	Terminal 15.
IV	Diagnostic plug, composite instrument.
V	Circuit termination plug shown in operated state.
VI	Diagnostic plug, lift control.
VII	Direction of travelling switch for single-pedal
VIII	Encoded plug for two-pedal truck.
IX	The switch is actuated when the handbrake is not applied.
X	This line is interrupted on trudes with engageable speed limit.
XI	The switch is actuated when the service brake is not applied.
XII	Circuit termination plug shown in operated state.
XIII	Diagnostic plug, traction control.
↑	shown in operated state.



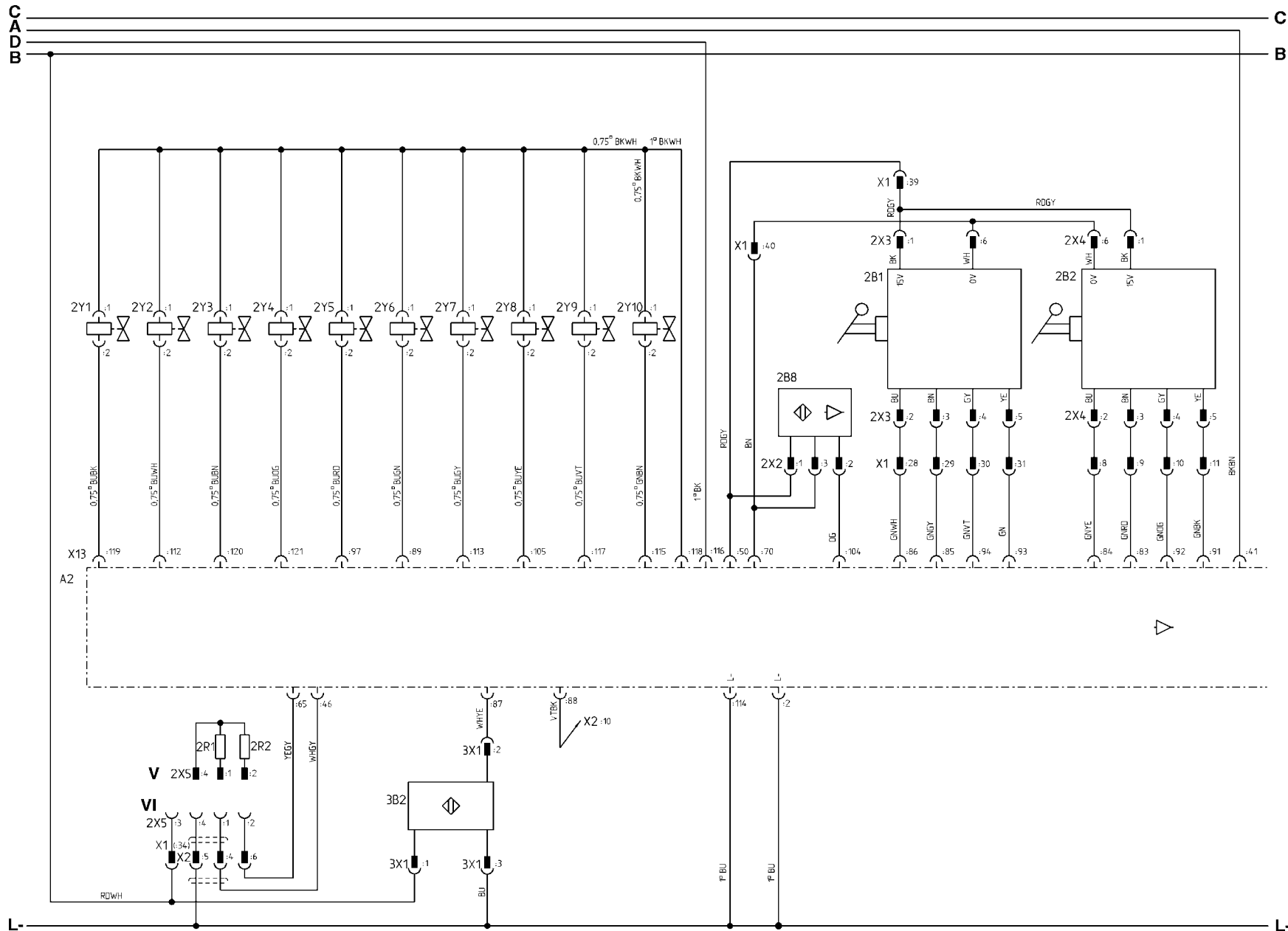
Electric circuit diagram (standard equipment)



336 802 6006a_2

336 804 3001.0704

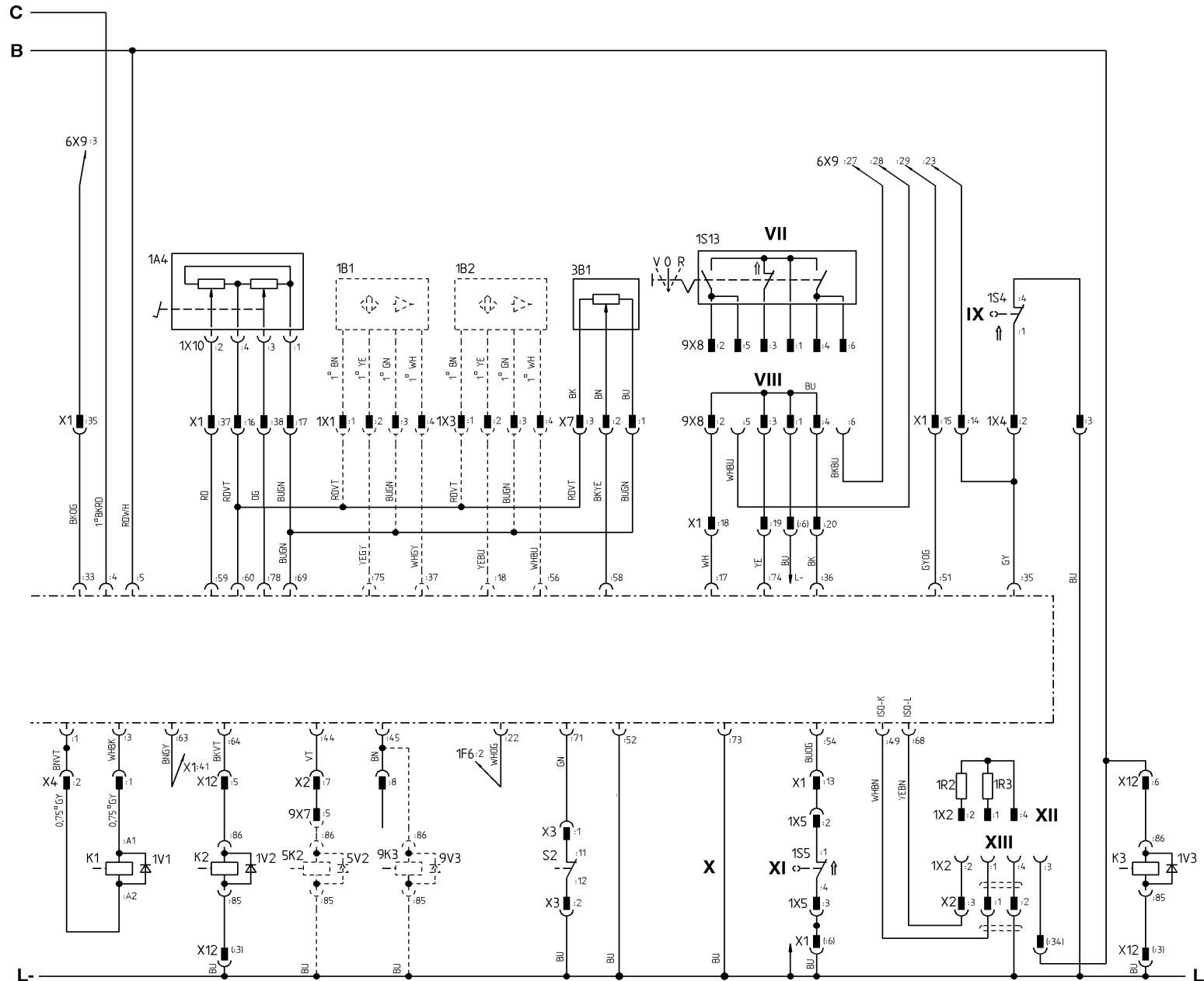
Electric circuit diagram (standard equipment)



336 804 3001.0704

Electric circuit diagram (standard equipment)

336 804 3001.0704



336 802 6006a_4

Electric circuit diagram (options)

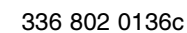
5E2	Left dip beam	5S11	Light switch	(I)	Heater
5E3	Right dip beam	5S12	Hazard light switch	(II)	Working lights
5E4	Left parking light	5S13	Turn signal switch	(III)	Seat heater
5E5	Right parking light	5S14	Stop light switch	(IV)	Working lights
5E6	Left rear position light	9S1, 9S2	Working light switch	(V)	Front wiper
5E7	Right rear position light	9S3	Front wiper/washer switch, intermittent/cont.	(VI)	Rear wiper
5E8	Left license plate light	9S4	Rear wiper/washer switch, intermittent/cont.	(VII)	Strobe light
5E9	Right license plate light	9S7	Switch working lights	(VIII)	Lighting
9E1-9E6	Working lights			(IX)	Flasher and hazard flasher unit
9E9	Seat heater	9U1	Voltage converter	(X)	Buzzer when reversing
9E10	Heater	9U2	Voltage converter		
		9U3	Voltage converter		
5F21	Fuse, lighting	9U4	Voltage converter		
5F22	Fuse, flasher system	9U5	Voltage converter		
5F23	Fuse, left dip beam				
5F24	Fuse, right dip beam	X1	Connector, 42 pins		
5F25	Fuse, left position lights	X2	Connector, 10 pins		
5F26	Fuse, right position lights	1X11	Connector, 42 pins		
9F11	Fuse, working lights	4X2	Connector, 3 pins		
9F12	Fuse, working lights	5X1a	Connector, 6 pins		
9F13	Fuse, working lights	5X1b	Connector, 6 pins		
9F14	Fuse, voltage converter	5X5a	Connector, 3 pins		
9F15	Fuse, wiper	5X5b	Connector, 3 pins		
9F16	Fuse, heater	5X13	Connector, 3 pins		
		9X1	Connecting strip L-		
4H15	Strobe light	9X2	Connector, 3 pins		
4H16	Buzzer	9X4	Connector, 3 pins		
5H8	Left front turn signal light	9X5	Connector, 6 pins		
5H9	Left rear turn signal light	9X6	Connector, 4 pins		
5H10	Right front turn signal light	9X7	Connector, 6 pins		
5H11	Right rear turn signal light	9X9	Connector, 6 pins		
5H18	Switch illumination	9X13	Connector, 2 pins		
5H19	Switch illumination	9X14	Connector, 2 pins		
5H20	Left stop light	9X15	Connector, 9 pins		
5H21	Right stop light	9X16	Connector, 6 pins		
9H1-9H7	Switch illumination	9X17	Connector, 6 pins		
		9X18	Connector, 4 pins		
4K1	Buzzer relay	9X19	Connector, 4 pins		
5K1	Flasher unit	9X20	Connector, 4 pins		
5K2	Stop light relay	9X21	Connector, 4 pins		
9K1	Front intermittent wiper relay	9X22	Connector, 2 pins		
9K2	Rear intermittent wiper relay	9X23	Connector, 1 pins		
9M6	Front wiper motor				
9M7	Rear wiper motor				

Colour code

BK	black
WH	white
BU	blue
OG	orange
BN	brown
GN	green
VT	violet
RD	red
YE	yellow
GY	grey

The numbers before the cable colour corresponds to the cable gauge

Cables without specification of gauge = 0.5 mm²



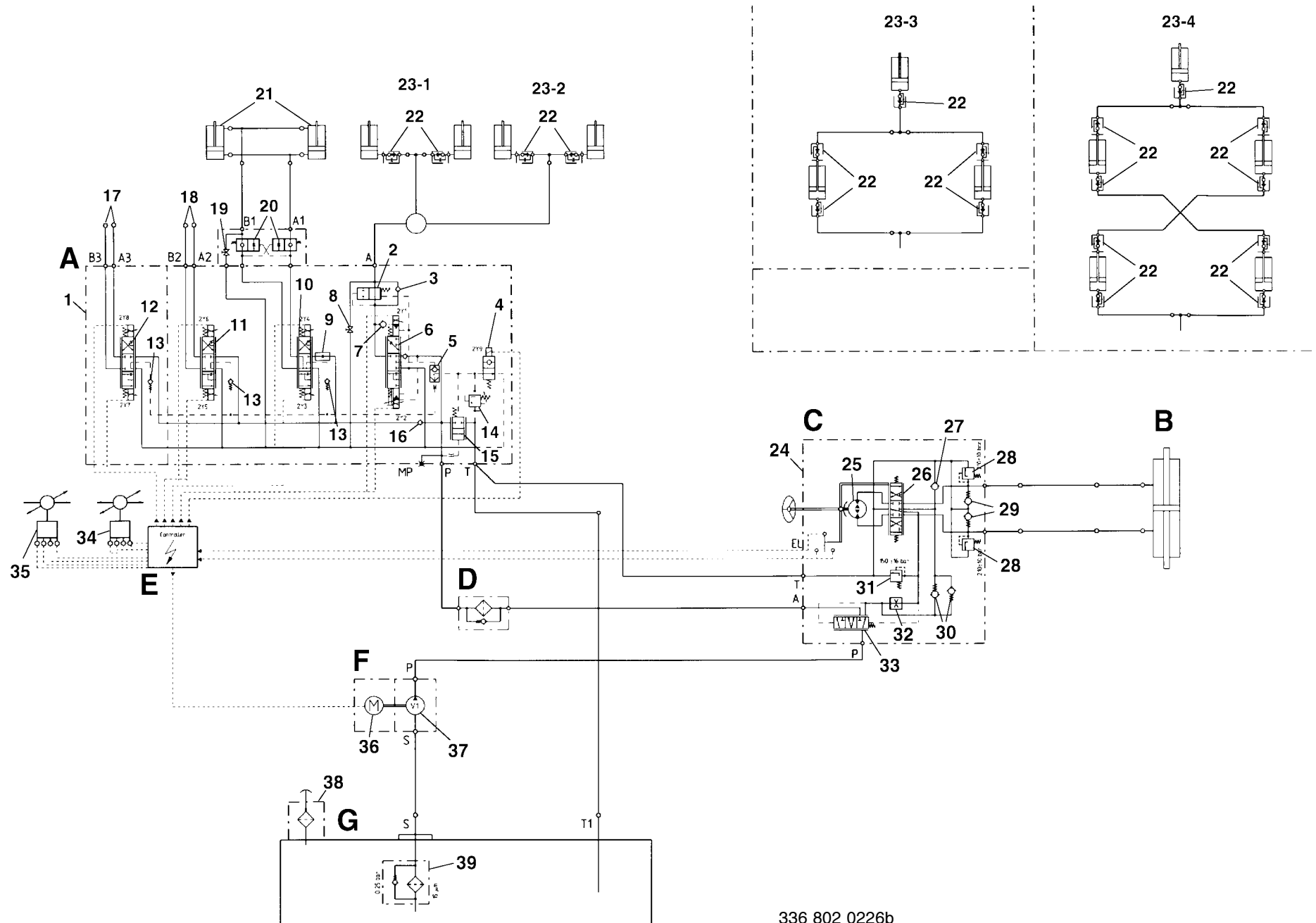
Hydraulic circuit diagram

A Working hydraulics		B Steer axle E 20, series 306 E 25, series 307 E 30, series 307	
1	Control valve		
2	Lowering brake valve		
3	Check valve		
4	2/2 way valve, control		
5	Changeover valve		
6	3/3 way valve, lowering		
7	Check valve		
8	Release valve, lower fork manually		
9	Flow regulating valve		
10	5/3 way valve, tilting		
11	5/3 way valve, auxiliary hydraulics* 1		
12	5/3 way valve, auxiliary hydraulics* 2		
13	Check valve		
14	Pressure limiting valve	E 20	230+5bar
		E 25	185+5bar
		E 30	210+5bar
15	2/2 way valve		
16	Check valve		
17	Cylinder, auxiliary hydraulics* 2		
18	Cylinder, auxiliary hydraulics* 1		
19	Short circuit valve, tilt mast manually		
20	2/2 way valve		
21	Tilt cylinder		
22	Line break protection		
23-1	E 20 standard mast, series 183, 2.0 t lifting system		
	E 25, E 30 standard mast, series 186, 3.0 t lifting system		
23-2	E 20/600 standard mast, series 183, 2.0 t lifting system		
	E 25/600, E 30/600 standard mast, series 186, 3.0 t lifting system		
23-3	E 20 duplex mast, series 183, 2.0 t lifting system		
	E 25, E 30 duplex mast, series 186, 3.0 t lifting system		
23-4	E 20 triplex mast, series 183, 2.0 t lifting system		
	E 25, E 30 triplex mast, series 186, 3.0 t lifting system		
		C Steering hydraulics	
		24	Steering control valve
		25	Orbitrol unit
		26	7/3 way valve
		27	Check valve
		28	Hose break protection 210 ± 10 bar
		29	Make-up valve
		30	Check valve
		31	Pressure limiting valve 150 ± 16 bar
		32	Restrictor
		33	3/3 way valve
		D Pressure filter	
		E Lifting controller	
		34	Joystick, auxiliary hydraulics* 1 and 2
		35	Joystick, working hydraulics
		F Working and steering hydraulics	
		36	Electric motor 80 V
		37	Hydraulic pump E 20 16 cc/rev
			E 25 / E 30 22 cc/rev
		G Hydraulic oil reservoir	
		38	Breather filter
		39	Suction filter 0.25 bar, 15 µm nominal

* Option

Hydraulic circuit diagram

336 804 3001.0704



336 802 0226b

Index

A

Accident prevention check	19
Adjust the lift chain length, lubricate the lift chain with chain spray	71
Adjusting armrest of the driver's seat	27
Adjusting the driver's seat	27
Adjusting the swivelseat	27
Approved applications	2
Automotive fuses	44
Applying the belt, opening the belt	28

B

Battery change	26
Battery discharge indicator	17
Battery grease	80
Battery removal with a crane	26
Before leaving the lift truck unattended	48
Before loading	46
Before operation	18
Bio hydraulic oil	80
Brakes	13
Braking system	35
Brush monitor	13

C

Central control lever (joystick) operation of mast and attachments	36
Chain spray	80
Change the oil in wheel drive	78
Change the wheel drive oil	74
Charging the battery	24
Check and lubricate other pivots and joints	73
Check and oil the pedal and travel control linkage pivots and overhead guard lock	73
Check the conditions of the antistatic ribbon	76
Check seat belt for condition and operation	62
Check the battery charge	24
Check the brake linings, lubricate the brake lever pivot ...	69
Check the braking system	69
Check the condition, electrolyte level and specific gravity of the battery	25

Page

Check the contactor	74
Check the counterweight, electric motors, chassis, wheel drives, overhead guard and steering axle for security ..	70
Check the electric cables, cable connectors and connections for condition and tightness	74
Check the fork quick-releases and fork stops	72
Check the hydraulic oil level	72
Check the pre-tension of double hoses if attachments are fitted	72
Check the security of the hydraulic oil tank	65
Check the tightness of the wheel nuts	21
Check the tyre inflation pressure	21
Check the tyres for damage and foreign objects	64
Check the wheel drives for oil leaks	76
Check the working and steering hydraulics for leaks	70
Checking, renewing the fuses	44
Checks and services prior to initial operation of the truck	19
Clean and spray the lift chain	63
Clean the digital control	67
Clean the left and right wheel traction, power steering and working hydraulics pump motors	67
Clean the lift truck	63
Clean the steering axle	66
Clean the traction motor and tractor compartment fans ...	67
Closing the overhead guard	23
Composite instrument	16
Connecting the battery to a suitable external charger	25
Controls and indicators	15

D

Daily checks and servicing before operation	21
Daily checks	19
Data Logger	39
Description	2
Drive	13
Driving	30
Duplex mast	57

E

Electric heater	39
-----------------------	----

Page

Electrical system	13
Electric circuit diagram (stanard equipment)	83
Electric circuit diagram (options)	88
Emergency exit for trucks with rear windscreen	54
Emergency exit for trucks with polycarbonate rear windscreen (special equipment)	54
Engaging the handbrake	35

F

Foot brake	35
Forced opening of overhead guard without Bowden cable	49
Frequency charakteristic for human body vibrations	12
Fuses (options)	45
Fuses	44

G

Gear oil	80
General information	55
General view of truck	14
Grease the overhead guard pivots	73

H

Handbrake	13, 35
Handling fluids and lubricants	18
Hoisting the truck with a crane	50
Hoisting the truck with the eyebolts	50
Hour meter	17
Hydraulic oil	80
Hydraulic circuit diagram	90
Hydraulic system	13

I

Inspection and maintenance as required	62
Inspection and maintenance every 500 to 1000 hours or annually	66
Inspection and maintenance every 3000 hours or every 2 years	77

Index

	Page		Page		Page
Inspect the joystick boot	66	Operation	13, 28	T	
Inspection and maintenance chart	59	Operation of industrial trucks in the plant area	19	Table of contents	7
Inspection and maintenance specifications	79	Other cleaning and greasing work	65	Taking the truck out of operation	55
L		P		Technical data	10
Loading	47	Positioning the forks	47	Technical description	13
Lowering the fork carriage	36	Push, pull the emergency stop button	21	Technical note	3
Lowering the forks manually	53	Putting the truck back into operation	55	Tighten the wheel nuts	64
Lubricants recommendations	80	R		Tilting the mast back	36
Lubricate the mast and tilt cylinder pivots	68	Raising the fork carriage	36	Tilting the mast forward	36
Lubricate the steer axle, mast and tilt cylinder bearings ..	65	Releasing the handbrake	35	Tilting the mast manually	53
Lubricate the steering axle	66	Renew the carbon brushes	64	Tow coupling	49
Lubricating grease	80	Renew the hydraulic breather, suction and pressure filter	75	Towing instructions	52
M		Renew the hydraulic oil	77	Towing procedure	52
Main circuit fuses	44	Retighten the mast fastening bolts	68	Transporting the load	48
Maintenance	55	Reversing direction	31	Transporting the truck on a lorry or low-bed trailer	50
Maintenance intervals	55	Reversing the direction of travel	31	Travel in the forward direction	28
Malfunctions during operation	31	Running-in instructions	19	Travel in the reverse direction	28
Mast removal	52	S		Triplex mast	57
Mast versions	56	Safety information	18	Troubleshooting guide	81
Mast, lift chain and end stops:		Safety rules	18	Truck takeover	3
Check condition, mounting and function	71	Securing the mast against tilting back	56	Turning on the directional indicator lights	38
Measures before taking the truck out of operation	55	Securing the raised duplex mast	57	Turning on the front windscreen wiper and washer	38
N		Securing the raised standard mast	56	Turning on the front working lights	38
Noise emissions level	12	Securing the raised triplex mast	57	Turning on the hazard warning light	38
O		Service brake, regenerative brake	35	Turning on the lighting	38
Opening the overhead guard	22	Services after the first 50 hours of operation	58	Turning on the rear windscreen wiper	38
First lock-in position: Servicing position	22	Sideshift: Clean, grease and check the mounting	69	Turning on the rear working lights	38
Second lock-in position: Battery change	22	Singel-pedal model	32	Type plate	5
Opening, closing the electrical compartment cover	43	Single control lever operation of mast and attachments ..	37	U	
Operating the attachments	36	Standard mast	56	Unloading	48
Operating the clamp	36	Steering system	34	V	
Operating the electric motor brake (LBC)	35	Steering	13, 34	Visual check of the motor brushes	70
Operating the horn	43			W	
Operating the sideshift	36			Wheel change	51
				Work on the mast and on the front part of the truck	56

