

EFG 213-320

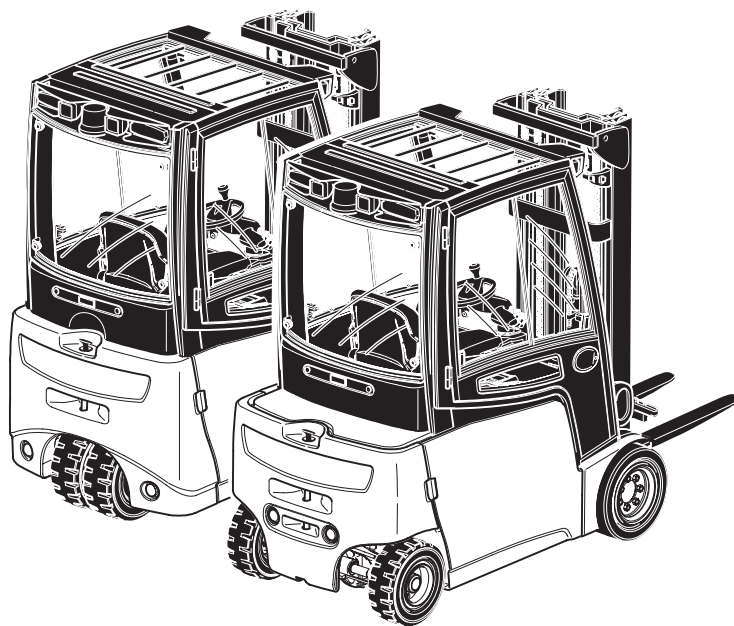
06.08-

Operating Instructions

GB

51099986

07.11



JUNGHEINRICH
Machines. Ideas. Solutions.

Declaration of Conformity



Jungheinrich AG, Am Stadtrand 35, D-22047 Hamburg
Manufacturer or his authorized representative in the Community

Type	Option	Serial No.	Year of construction
EFG 213 EFG 215 EFG 216k EFG 216 EFG 218k EFG 218 EFG 220 EFG 316k EFG316 EFG318k EFG 318 EFG 320			

Additional information

Authorised signatory

Date

(GB) EU Declaration of Conformity

The signatories hereby certify that the specified powered industrial truck conforms to the EU Directive 2006/42/EC (Machine Directive) and 2004/108/EEC (Electro-Magnetic Compatibility, EMC) including their amendments as translated into national legislation of the member countries. The signatories are individually empowered in each case to compile the technical documentation.

Foreword

The present ORIGINAL OPERATING INSTRUCTIONS are designed to provide sufficient instruction for the safe operation of the industrial truck. The information is provided clearly and concisely. The chapters are arranged by letter. Each chapter starts with page 1. The page identification consists of a chapter letter and a page number.

For example: Page B 2 is the second page in chapter B.

The operating instructions detail different truck models. When operating and servicing the truck, make sure that the instructions apply to your truck model.

Safety instructions and important explanations are indicated by the following graphics:



Used before safety instructions which must be observed to avoid danger to personnel.



Used before notices which must be observed to avoid material damage.



Used before notices and explanations.



Used to indicate standard equipment.



Used to indicate optional equipment.

Our trucks are subject to ongoing development. Jungheinrich reserves the right to alter the design, equipment and technical features of the truck. No guarantee of particular features of the truck should therefore be inferred from the present operating instructions.

Copyright

Copyright of these operating instructions remains with *JUNGHEINRICH AG*.

Jungheinrich Aktiengesellschaft

Am Stadtrand 35
22047 Hamburg - GERMANY

Telephone: +49 (0) 40/6948-0

www.jungheinrich.com

Table of contents

A Correct Use and Application

B Truck Description

1	Application	B 1
2	Assemblies and Functional Description	B 2
2.1	Truck	B 3
3	Standard Version Specifications	B 4
3.1	EFG 213-220 performance data	B 4
3.2	EFG 316-320 performance data	B 5
3.3	EFG 213-220 dimensions	B 6
3.4	EFG 316-320 dimensions	B 8
3.5	EFG 213-220 weights	B 10
3.6	EFG 316-320 weights	B 10
3.7	EFG 213-220 tyres	B 11
3.8	EFG 316-320 tyres	B 11
3.9	EFG 213-320 mast versions	B 12
3.10	EN norms	B 13
3.11	Conditions of use	B 13
4	Identification points and data plates	B 14
4.1	Truck data plate	B 16
4.2	Truck load chart	B 16
4.3	Fork load diagram (basic model)	B 17
4.4	Attachment load chart	B 17

C Transport and Commissioning

1	Transport	C 1
2	Lifting by crane	C 1
3	Securing the truck during transport	C 2
4	Using the truck for the first time	C 3
5	Operating the truck without its own drive system	C 3
6	Moving the truck when the electric/hydraulic steering has failed	C 4
7	Towing the Truck	C 4

D Battery Maintenance, Charging & Replacement

1	Safety regulations for handling acid batteries	D 1
2	Battery types	D 2
3	Battery removal and installation	D 3
3.1	Removal and installation using a multi-adapter (○)	D 3
3.2	Removal and installation using a worktable for crane loading (○)	D 5
3.3	Removal and installation using a fork shoe (○)	D 6
3.4	Removal and assembly for maintenance	D 7
4	Charging the battery	D 8
4.1	Charging the battery with a stationary charger	D 8
4.2	Charging the battery with an on-board charger	D 9

E Operation

1	Safety Regulations for the Operation of Forklift Trucks	E 1
2	Controls and Displays	E 2
2.1	SOLOPILOT / MULTIPILLOT	E 4
2.2	Armrest control panel switch (○)	E 5
2.3	Side pocket control panel switch (○)	E 5
2.4	Dashboard control panel and driver's display	E 6
2.5	Battery Discharge Indicator, Battery Discharge Monitor, Hourmeter ..	E 11
3	Starting up the truck	E 12
3.1	Checks and operations to be performed before starting daily operation	E 12
3.2	Adjusting the driver's seat	E 12
3.3	Safety restraint belt	E 14
3.4	Mechanical safety restraint system (○)	E 15
3.5	Adjusting the steering column	E 16
3.6	To prepare the truck for operation	E 16
4	Industrial Truck Operation	E 17
4.1	Safety regulations for truck operation	E 17
4.2	Travel, steering, braking	E 19
4.3	Operating the lift mechanism and attachments (SOLOPILOT ●)	E 22
4.4	Operating the lift mechanism and attachments (MULTIPILLOT ○)	E 24
4.5	Emergency lowering	E 26
4.6	Adjusting the forks	E 26
4.7	Collecting, Lifting and Transporting Loads.	E 27
4.8	Parking the truck safely	E 28
4.9	Towing trailers	E 29
5	Troubleshooting	E 30
5.1	Temperature control	E 30

F Industrial Truck Maintenance

1	Operational Safety and Environmental Protection	F 1
2	Maintenance Safety Regulations	F 1
3	Servicing and Inspection	F 3
4	Maintenance checklist	F 4
5	Lubrication Schedule	F 6
5.1	Consumables	F 7
6	Maintenance Instructions	F 8
6.1	Preparing the truck for maintenance and repairs	F 8
6.2	Opening the rear panel	F 8
6.3	Checking the wheel attachments.	F 8
6.4	Rear wheel rated condition	F 8
6.5	Checking the hydraulic oil level	F 9
6.6	Check transmission oil level	F 10
6.7	Draining the oil	F 10
6.8	Adding oil	F 10
6.9	Replacing the hydraulic oil filter	F 10
6.10	Seat belt maintenance	F 11
6.11	Checking electrical fuses	F 12
6.12	Recommissioning	F 15
7	Decommissioning the industrial truck	F 15
7.1	Prior to decommissioning	F 15
7.2	During decommissioning	F 15
7.3	Returning the truck to operation after decommissioning	F 16
8	Safety checks to be performed at intervals and after unusual events ..	F 16
9	Final de-commissioning, disposal	F 16

Appendix

JH Traction Battery Operating Instructions



These operating instructions apply only to Jungheinrich battery models. If using another brand, refer to the manufacturer's operating instructions.



If using a battery with closed EPzV and EPzV ironclad plates, this must first be discussed with the manufacturer.

A Correct Use and Application



The “Guidelines for the Correct Use and Application of Industrial Trucks” (VDMA) are supplied with the truck. The guidelines form part of these operating instructions and must be observed. National regulations apply in full.

The truck described in the present operating instructions is an industrial truck designed for lifting and transporting loads.

It must be used, operated and serviced in accordance with the present instructions. All other types of use lie beyond the scope of application and can result in damage to personnel, the truck or property. In particular, avoid overloading the truck with loads which are too heavy or placed on one side. The data plate attached to the truck and the load diagram are binding with regard to the maximum load capacity. The owner must ensure that any damaged and/or illegible load diagrams are replaced. The industrial truck must not be used in fire or explosion endangered areas, or areas threatened by corrosion or excessive dust.

Proprietor responsibilities: For the purposes of the present operator manual the “proprietor” is defined as any natural or legal person who either uses the industrial truck himself, or on whose behalf it is used. In special cases (e.g. leasing or renting) the proprietor is considered the person who, in accordance with existing contractual agreements between the owner and user of the industrial truck, is charged with operational duties.

The proprietor must ensure that the truck is only used for the purpose it is designed for and that any danger to life and limb of the user and third parties is avoided. Furthermore, accident prevention regulations, safety regulations and operating, servicing and repair guidelines must be followed. The proprietor must ensure that all truck users have read and understood this operator manual.



Failure to comply with the operating instructions shall invalidate the warranty. The same applies if improper work is carried out on the truck by the customer or third parties without the permission of the manufacturer's customer service department.

Attaching accessories: The mounting or installation of additional equipment which affects or enhances the performance of the industrial truck requires the written permission of the manufacturer. In some cases, local authority approval shall be required.

Approval of the local authorities however does not constitute the manufacturer's approval.

Trailing and towed loads: The truck may only be used for trailing or towed loads for which the truck has been approved.

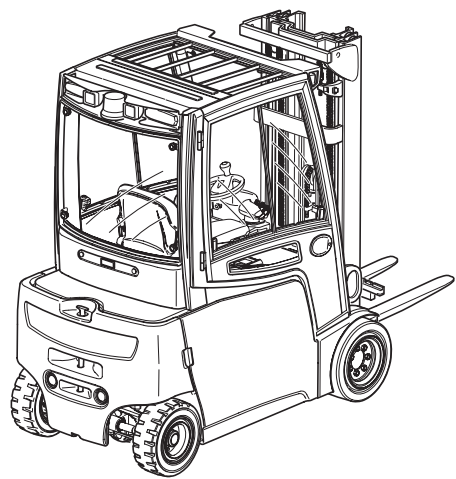
B Truck Description

1 Application

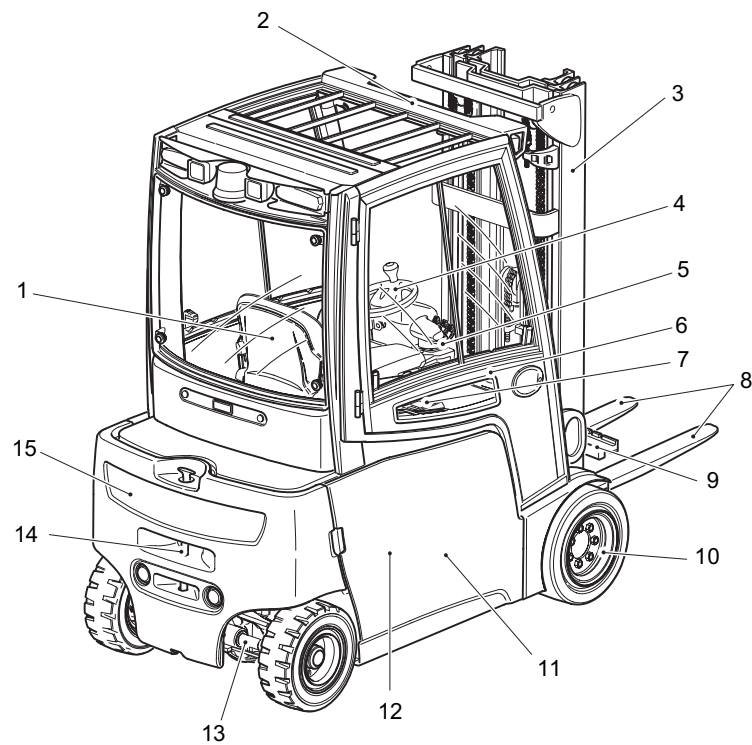
The EFG is a three- or four-wheel electric sit-down counterbalanced truck. It is cantilevered and the load handler mounted on the front of the truck can unload lorries without hindrance and deposit the load on ramps or in aisles. Closed bottom pallets can also be lifted.

Truck models and maximum capacity:

Type	Max. capacity	Load centre of gravity
EFG 213	1,300 kg	500 mm
EFG 215	1500 kg	500 mm
EFG 216k	1600 kg	500 mm
EFG 216	1600 kg	500 mm
EFG 218k	1800 kg	500 mm
EFG 218	1800 kg	500 mm
EFG 220	2000 kg	500 mm
EFG 316k	1600 kg	500 mm
EFG 316	1600 kg	500 mm
EFG 318k	1800 kg	500 mm
EFG 318	1800 kg	500 mm
EFG 320	2000 kg	500 mm



2 **Assemblies and Functional Description**



Item	Description	Item	Description
1	● Driver's seat	8	● Load handler
2	● Overhead guard	9	● Fork carriage
3	● Mast	10	● Drive axle
4	● Steering wheel	11	● Battery door
	○ Multifunction steering wheel	12	○ On-board charger (in battery compartment)
5	● SOLOPILOT	13	● Steering axle
	○ MULTIPILOT	14	● Trailer coupling
6	● Dashboard control panel	15	● Counterweight
7	● EMERGENCY DISCONNECT switch		

● = Standard equipment

○ = Optional equipment

2.1 Truck

Safety mechanisms: The overhead guard (2) protects the driver from falling objects. Pressing the EMERGENCY DISCONNECT switch rapidly disconnects all electrical functions in hazardous situations. Travelling and lifting can only be activated when the driver is seated. The dashboard control panel (6) displays the truck information.

Steering: The travel speed reduces as a function of the steering angle ("CurveControl"). The steering angle is shown in the display.

Operator position: The driver's seat (1) is a "comfort" seat, the steering column is adjustable. There are storage facilities for paper and the driver's personal items. The control and warning displays on the dashboard control panel (6) enable the system to be monitored during operation, thereby ensuring a very high level of safety.

Electrical/Electronic System: The driver can choose from five travel programs, depending on the load and the environment: from maximum performance to energy saving. The latest three-phase system using a CAN Bus allows for rapid troubleshooting. The advanced controller is simple, safe and flexible.

Drive System and Brakes: The 2-motor front drive provides maximum traction to the drive wheels at all times. Each motor receives the exact power it requires in proportion to the steering angle. The wheels do not spin and energy is converted efficiently.

The mechanical disk brake which acts as a service brake is maintenance-free. Encapsulated, it allows the truck to be used even in hostile environments. The truck also brakes to a halt regeneratively via the traction motors. This minimizes energy consumption.

The parking brake is electrically actuated. It is also used for emergency braking. A warning indicator appears when the parking brake is applied. Brake system faults are shown on the driver's display.

Emergency Stop Safety Feature: The emergency stop is controlled by the steering and traction controllers. If an error is detected the truck automatically brakes to a halt. Control displays on the driver's display indicate the emergency stop. Every time the truck is switched on, the system performs a self-diagnosis which only releases the parking brake (emergency stop) if the functionality test is positive.

Hydraulic System: All functions must be performed sensitively. To ensure greater efficiency, a hydraulic unit and a steering motor operate independently of each other. The micro pressure filter can be replaced from the top (without spilling hydraulic oil).

Mast: The maximum strength steel sections are narrow, allowing for good fork visibility in particular with the three-stage mast. The lift rails and the fork carriage run on permanently-lubricated and hence maintenance-free angled rollers.

3 Standard Version Specifications



Technical specification details in accordance with VDI 2198. Technical modifications and additions reserved.

3.1 EFG 213-220 performance data

	Description	EFG					
		213	215	216k 216	218k 218	220	
Q	Capacity (where C = 500 mm) *)	1300	1500	1600	1800	2000	kg
C	Load centre of gravity distance	500	500	500	500	500	mm
	Travel speed with / without load	16/16	16/16	16/16	16/16	16/16	km/h
	Raise lift speed with / without load	0.48/0.60	0.46/0.60	0.49/0.60	0.44/0.55	0.40/0.55	m/s
	Lower lift speed with / without load	0.55/0.55	0.55/0.55	0.55/0.55	0.55/0.55	0.55/0.55	m/s
	Gradeability (30 min) with / without load	7.6/12.5	7.3/12.3	7.3/12.3 7.0/11.5	6.2/10.7 5.9/10.5	5.7/10.4	%
	Max. gradeability (5 min) with / without load	28.0/35.0	27.0/35.0	27.0/35.0	26.0/35.0 25.0/35.0	24.0/35.0	%
	Acceleration (10m) with / without load	3.6/3.2	3.8/3.4	3.8/3.4	3.9/3.5	4.0 / 3.5	s

*) with vertical mast

3.2 EFG 316-320 performance data

	Description	EFG					
		316k	316	318k	318	320	
Q	Capacity (where C = 500 mm) *)	1600	1600	1800	1800	2000	kg
C	Load centre of gravity distance	500	500	500	500	500	mm
	Travel speed with / without load	17.0/17.0	17.0/17.0	17.0/17.0	17.0/17.0	17.0/17.0	km/h
	Raise lift speed with / without load	0.49/0.60	0.49/0.60	0.44/0.55	0.44/0.55	0.40/0.55	m/s
	Lower lift speed with / without load	0.55/0.55	0.55/0.55	0.55/0.55	0.55/0.55	0.55/0.55	m/s
	Gradeability (30 min) with / without load	7.3/12.3	7/11.5	6.2/10.7	5.9/10.5	5.7/10.4	%
	Max. gradeability (5 min rating) with / without load	27/35	27/35	26/35	25/35	24/35	%
	Acceleration (10m) with / without load	3.8/3.4	3.8/3.4	3.9/3.5	3.9/3.5	4/3.5	s

*) with vertical mast

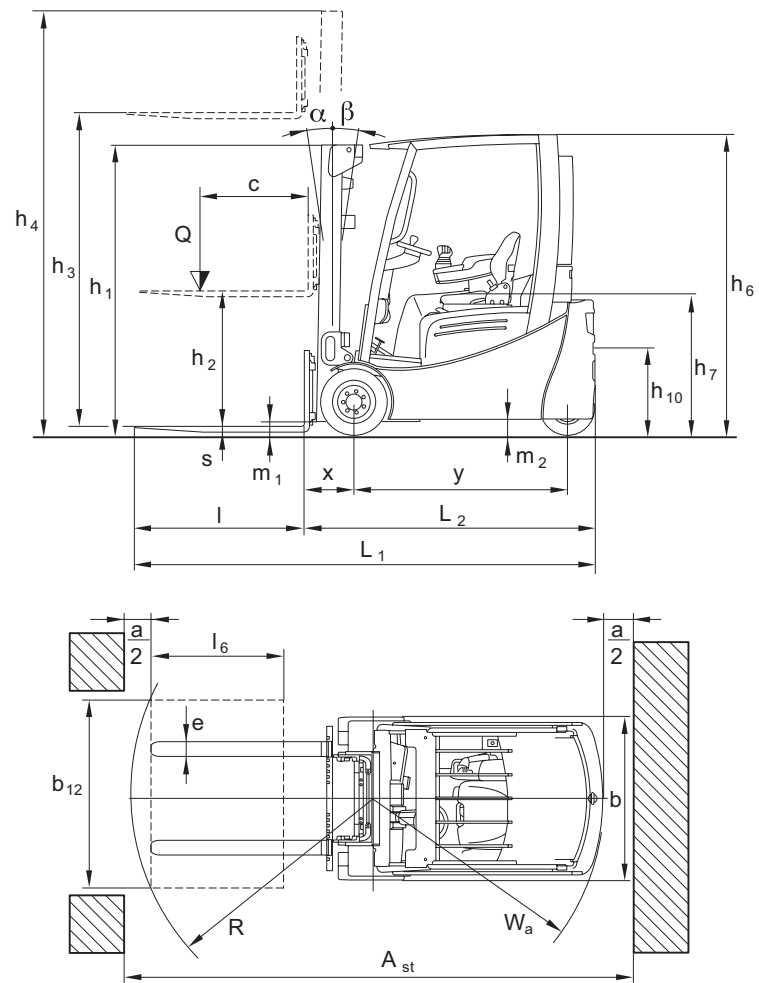
3.3 EFG 213-220 dimensions



All dimensions in mm

	Description	EFG				
		213	215	216k	218k	220
				216	218	
h ₁	Mast height retracted	2000	2000	2000	2000	2000
h ₂	Free lift	150	150	150	150	150
h ₃	Lift	3000	3000	3000	3000	3000
h ₄	Mast height extended	3560	3560	3560	3587	3587
h ₆	Overhead guard height	2040	2040	2040	2040	2040
h ₇	Seat height	920	920	920	920	920
h ₁₀	Tow height	560	560	560	560	560
L ₁	Length including forks	2924	2924	3037	3037	3145
				3145	3145	
L ₂	Length incl. fork shank ¹⁾	1774	1774	1887	1887	1995
				1995	1995	
b ₁	Overall width	1060	1060	1060	1120	1120
e	Fork width	100	100	100	100	100
m ₁	Ground clearance with load below mast	80	80	80	80	80
m ₂	Centre wheel base ground clearance	100	100	100	100	100
Ast	Working Aisle Width 800 x 1200 longitudinal pallets	3226	3226	3339	3339	3446
				3446	3446	
Ast	Working Aisle Width 1000 x 1200 traverse pallets	3104	3104	3216	3216	3323
				3323	3323	
W _a	Turning radius	1440	1440	1548	1548	1655
				1655	1655	
x	Load distance ¹⁾	335	335	340	340	340
y	Wheel base	1249	1249	1357	1357	1465
				1465	1465	

¹⁾ = + 25 mm DZ mast



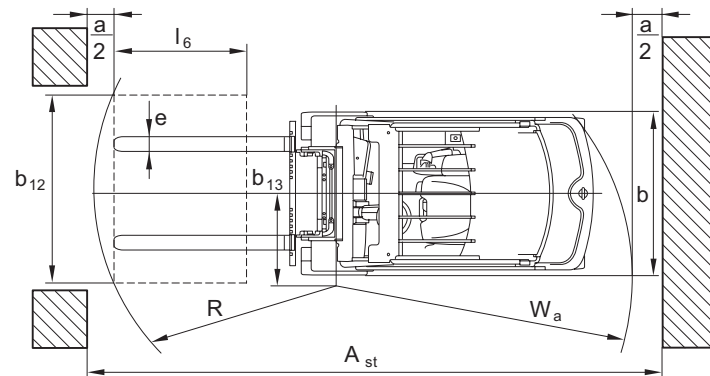
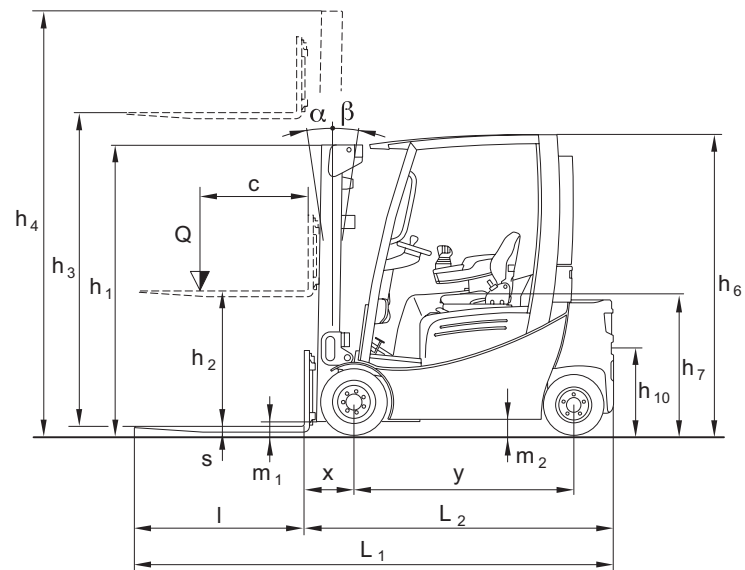
3.4 EFG 316-320 dimensions



All dimensions in mm

	Description	EFG				
		316k	316	318k	318	320
h ₁	Mast height retracted	2000	2000	2000	2000	2000
h ₂	Free lift	150	150	150	150	150
h ₃	Lift	3000	3000	3000	3000	3000
h ₄	Mast height extended	3560	33560	3587	3587	3587
h ₆	Overhead guard height	2040	2040	2040	2040	2040
h ₇	Seat height	920	920	920	920	920
h ₁₀	Tow height	410/ 580	410/ 580	410/ 580	410/ 580	410/ 580
L ₁	Length including forks	3140	3248	3140	3248	3248
L ₂	Length including fork shank	1990	2098	1990	2098	2098
b ₁	Overall width	1060	1060	1120	1120	1120
e	Fork width	100	100	100	100	100
m ₁	Ground clearance with load below mast	80	80	80	80	80
m ₂	Centre wheel base ground clearance	100	100	100	100	100
Ast	Working Aisle Width 800 x 1200 longitudinal pallets	3599	3725	3599	3701	3701
Ast	Working Aisle Width 1000 x 1200 traverse pallets	3403	3526	3403	3526	3526
W _a	Turning radius	1859	1985	1859	1985	1985
x	Load distance ¹⁾	340	340	340	340	340
y	Wheel base	1400	1508	1400	1508	1508

¹⁾ = + 25 mm DZ mast



3.5 EFG 213-220 weights



All dimensions in kg

Description	EFG				
	213	215	216k	218k	220
			216	218	
Truck weight (including battery)	2733	2978	3000	3256	3382
			3057	3207	
Front axle load (without lifting load)	1326	1310	1411	1409	1501
			1496	1520	
Front axle load (with lifting load)	3545	3870	4052	4380	4706
			4060	4405	
Rear axle load (without lifting load)	1407	1668	1589	1846	1881
			1561	1686	
Rear axle load (with lifting load)	488	608	548	675	676
			597	602	

3.6 EFG 316-320 weights



All dimensions in kg

Description	EFG				
	316k	316	318k	318	320
Truck weight (including battery)	3035	3001	3175	3141	3306
Front axle load (without lifting load)	1380	1493	1385	1499	1489
Front axle load (with lifting load)	4004	4043	4336	4367	4676
Rear axle load (without lifting load)	1655	1508	1790	1642	1817
Rear axle load (with lifting load)	631	558	638	574	630

3.7 EFG 213-220 tyres

Description		EFG 213-216	EFG 218	EFG 220
Tyre size, front	SE	18 x 7 - 8, 16 PR	200/50 - 10	
	Rubber	18 x 7 x 12 1/8"		
	Pneumatic	180/70 - 8 Diagonal, 16 PR; 7 bar	not available	
Tyre size, rear	SE	140/55 - 9		
	Rubber	15 x 5 x 11 1/4"		
	Pneumatic	15 x 4.5 - 8 Diagonal, 12 PR; 7 bar	not available	



Permissible tyres: See chapter F "Forklift Truck Maintenance". For any queries please contact your Jungheinrich customer adviser.

3.8 EFG 316-320 tyres

Description		EFG 316	EFG 318	EFG 320
Tyre size, front	SE	18 x 7 - 8, 16 PR	200/50 - 10	
	Rubber	18 x 7 x 12 1/8"	18 x 8 x 12 1/8"	
	Pneumatic	180/70 - 8 Diagonal, 16 PR; 7 bar	not available	
Tyre size, rear	SE	16 x 6 - 8		
	Rubber	16 x 5 x 10 1/2"		
	Pneumatic	150/75 - 8 Diagonal, 16 PR; 7 bar	not available	



Permissible tyres: See chapter F "Forklift Truck Maintenance". For any queries please contact your Jungheinrich customer adviser.

3.9 EFG 213-320 mast versions



All dimensions in mm

VDI 3596 Description	Lift h_3	Free lift h_2		Height retracted h_1	Height extended h_4	
		EFG 213/ 215/216k/ 216/316/ 316k	EFG 218k/ 218/220/ 318/318k/ 320		EFG 213/ 215/216k/ 216/316/ 316k	EFG 218k/ 218/220/ 318/318k/ 320
ZT	2300	150		1650	2850	2885
	3000	150		2000	3550	3585
	3100	150		2050	3650	3685
	3300	150		2150	3850	3885
	3600	150		2300	4150	4185
	4000	150		2500	4550	4585
	4500	150		2800	5050	5085
	5000	150		3050	5550	5585
ZZ	5500	150		3400	6050	6085
	2300	1055	990	1605	2850	2915
	3000	1405	1340	1955	3550	3615
	3100	1455	1390	2005	3650	3715
	3300	1555	1490	2105	3850	3915
	3600	1705	1640	2255	4150	4215
DZ	4000	1905	1840	2455	4550	4615
	4350	1405	1340	1955	4900	4965
	4500	1455	1390	2005	5050	5115
	4800	1555	1490	2105	5350	5415
	5000	1630	1565	2180	5550	5615
	5500	1805	1740	2355	6050	6115
	6000	2005	1940	2555	6550	6615
	6500	2255	2190	2805	7050	7115

3.10 EN norms

EFG 213-220
noise emission level: 66 dB(A)

EFG 316-320
noise emission level: 67 dB(A)

in accordance with EN 12053 as harmonised with
ISO 4871.

- The noise emission level is calculated in accordance with standard procedures and takes into account the noise level when travelling, lifting and when idle. The noise level is measured at the driver's ear.

EFG 213-220 vibration: 0.53 m/s²

EFG 316-320 vibration: 0.51 m/s²

In accordance with EN 13059.

- The vibration acceleration acting on the body in the operating position is, in accordance with standard procedures, the linearly integrated, weighted acceleration in the vertical direction. It is calculated when travelling over bumps at constant speed.

Electromagnetic compatibility (EMC)

The manufacturer confirms that equipment complies with tolerance levels for electromagnetic emissions and resistance as well as static electricity discharge testing in accordance with EN 12895 including the normative procedures contained therein.

- No changes to electric or electronic components or their arrangement may be made without the written agreement of the manufacturer.

3.11 Conditions of use

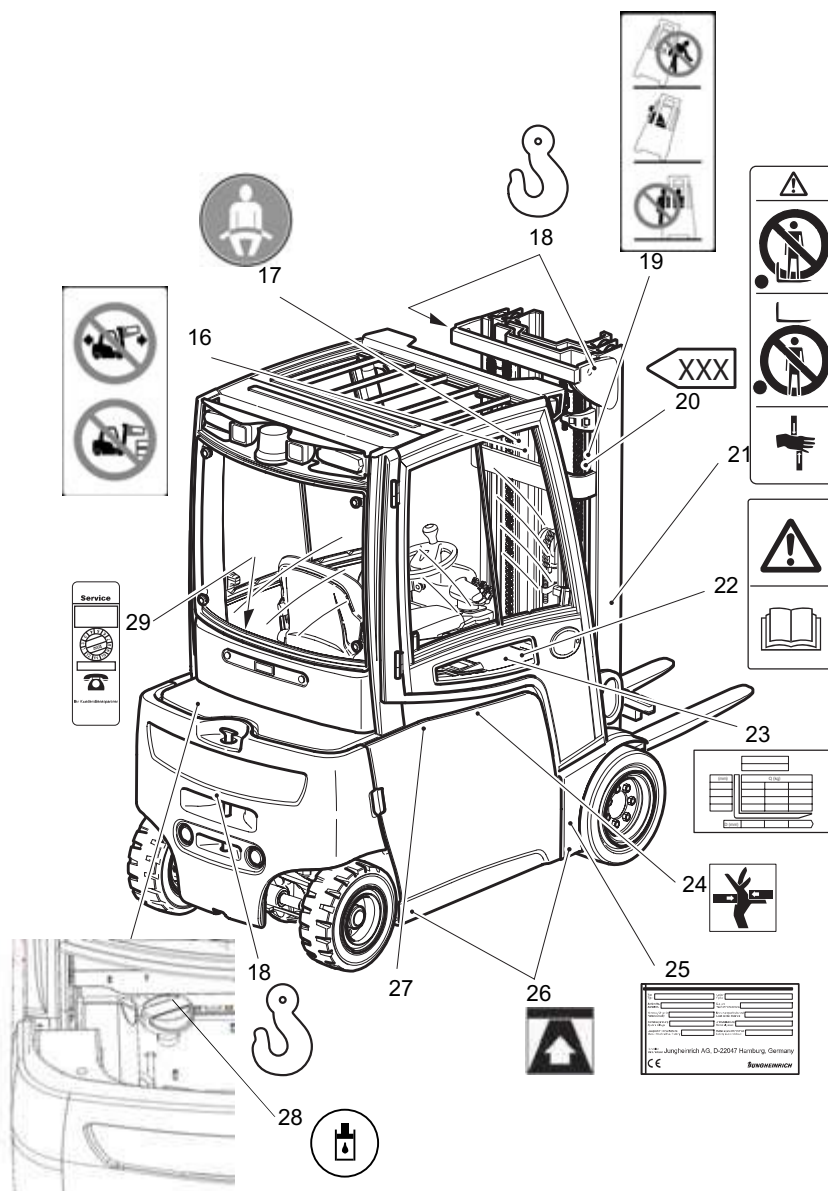
Ambient temperature

- operating at -20 °C to 40 °C

- Special equipment and authorisation are required if the truck is to be constantly used in conditions of extreme temperature or air humidity fluctuations.

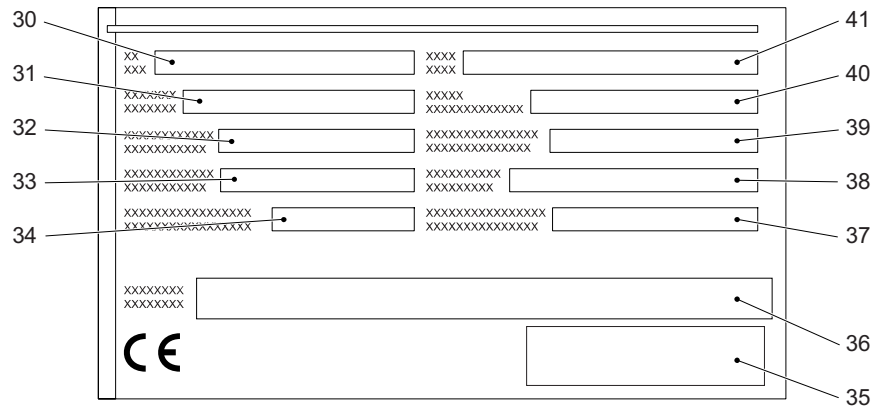
4 Identification points and data plates

 Warnings and notices such as load charts, strap points and data plates must be legible at all times. Replace if necessary.



Item	Description
16	Do not travel with raised load or mast forward tilt with raised load
17	Wear seatbelt
18	Strap points
19	Tipover caution, no passengers
20	Lift limit
21	Do not step onto or beneath the load, risk of trapping
22	Read the operating instructions
23	Capacity
24	Risk of trapping, in chassis behind the battery door
25	Data plate
26	Jack contact points
27	Serial number, on chassis behind the battery door
28	Add hydraulic oil
29	Test sticker (○)

4.1 Truck data plate



Item	Description	Item	Description
30	Type	36	Manufacturer
31	Serial no.	37	Min./max. battery weight (kg)
32	Rated capacity (kg)	38	Output (kW)
33	Battery: Voltage (V)	39	Load centre of gravity (mm)
34	Net weight w.o. battery (kg)	40	Year of manufacture
35	Manufacturer's logo	41	Option



For queries regarding the truck or ordering spare parts always quote the truck serial number (31).

4.2 Truck load chart

The capacity plate (23) gives the capacity (Q) of the truck in kg for a vertical mast. The maximum capacity is shown as a table with a given load centre of gravity D (in mm) and the required lift height H (in mm).

Example of how to calculate the maximum capacity:

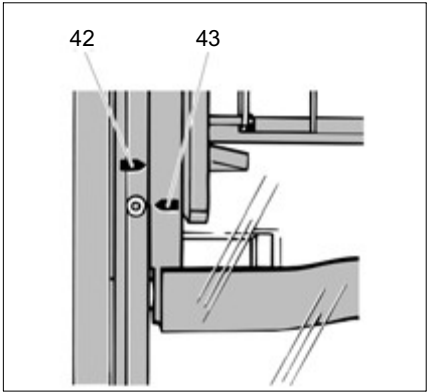
With a load centre of gravity D of 600 mm and a maximum lift height H of 3600 mm. the max. capacity Q is 1105 kg.

Example:

23

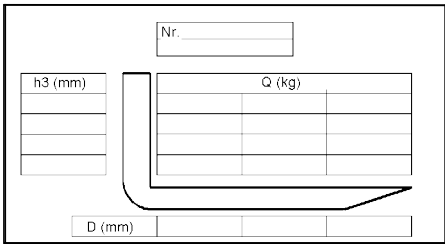
Nr.	
h3 (mm)	Q (kg)
4250	850 850 600
3600	1105 1105 850
2900	1250 1250 850
D (mm)	500 600 700

The arrow shape markings (42 and 43) on the inner and outer masts show the driver when the prescribed lift limits have been reached.



4.3 Fork load diagram (basic model)

The fork load diagram give the truck's capacity Q in kg. The maximum capacity for the various load centres of gravity (D in mm) is shown in chart form.



4.4 Attachment load chart

The attachment load chart gives the truck's capacity Q in combination with the respective attachment in kg. The serial number specified in the load chart must match the data plate of the attachment, as the capacity for each truck is specifically indicated by the manufacturer. It is shown in the same way as the truck's capacity and can be determined accordingly.



For loads with a centre of gravity above 500 mm upward, the capacities are reduced by the difference of the altered centre of gravity.

C Transport and Commissioning

1 Transport

Transport can be carried out in two different ways, depending on the height of the mast and the local conditions:

- Vertically, with the mast assembled (for low heights)
- Vertically, with the mast dismantled (for large heights), all hydraulic lines between the basic truck and the mast separated.

Safety Instructions for Assembly and Commissioning



On site assembly of the truck, commissioning and driver instruction may only be carried out by personnel trained and authorised by the manufacturer

The hydraulic lines may only be connected to the basic truck / mast interface and the truck commissioned when the mast has been properly assembled.

2 Lifting by crane



Only use lifting gear with sufficient capacity
(transport weight = net. weight + battery weight, see truck data plate).

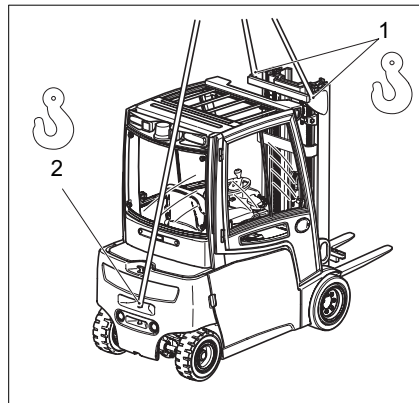
- Park the truck safely
(see Chapter E).
- Attach the crane slings to the top cross member of the mast (1) and the trailer coupling (2).



Always attach the crane belts or chains to the eyes of the upper cross member (mast) and the trailer hitch.
The mast must be tilted back fully.
The crane belt or the chain on the mast must be at least 2 m long.



Lifting slings should be fastened to the harness in such a way that they do not come into contact with any attachments or the overhead guard when it is being raised.



3 Securing the truck during transport



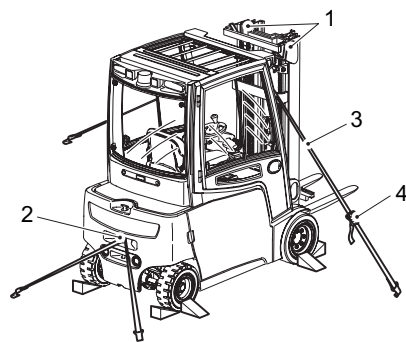
The truck must be securely fastened when transported on a lorry or a trailer. The lorry / trailer must have fastening rings and a wooden floor.

- To fasten the truck attach the tensioning belt (3) to the upper cross member of the mast (1) or over the mudguard (5) and attach it to the trailer hitch (2).
- Tighten the tensioning belt (3) with the tensioner (4).

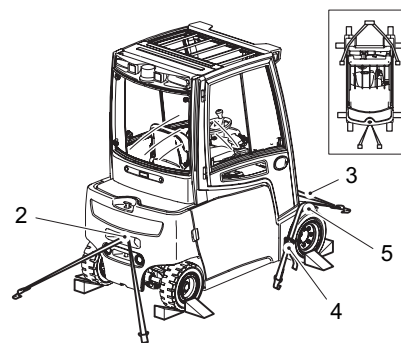


Loading must be carried out by specially trained staff in accordance with recommendations contained in Guidelines VDI 2700 and VDI 2703. In each case correct measurements must be made and appropriate safety measures adopted.

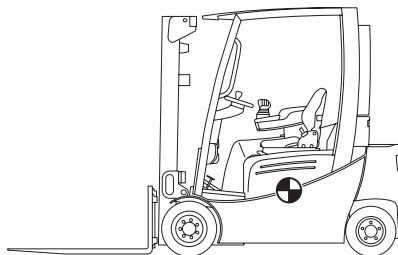
Attaching with a mast



Attaching without a mast



The following illustration shows the approximate centre of gravity.



4 Using the truck for the first time



Commissioning and driver instruction must be performed by trained personnel. If several trucks have been delivered, make sure that always the serial numbers of the load handlers, masts and basic trucks match each other.



Only operate the truck with battery current. Rectified AC current will damage the electronic components. The battery leads (tow cable) must be less than 6m long.

To prepare the truck for operation after delivery or transport the following tasks must be carried out:

- Fit and charge the battery if required, see “Battery removal and installation” and “Charging the battery” in Chapter D.
- Start up the truck as indicated. see “Starting up the truck” in chapter E.

5 Operating the truck without its own drive system

To move the truck without power supply, the brake must be released as follows



Before the driver leaves the truck with the brake released, the truck must be prevented from accidentally rolling away by using suitable means.

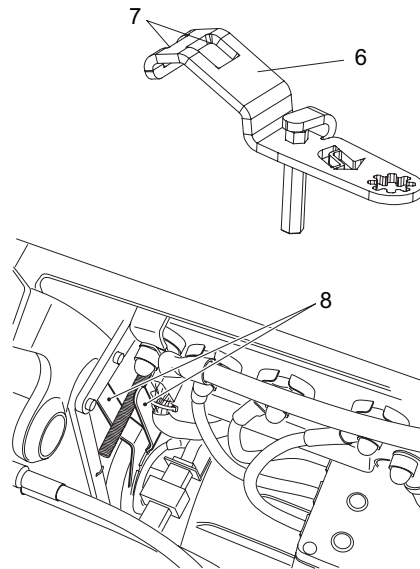
- Place the auxiliary tool (6) on the lever (8) with the notches (7) (Jungheinrich symbol can be read from the left hand side of the truck).
- Pull the lever (6) forward (forks direction) or backward (towards the operator position) and lock it in position. The lever should engage. The drive wheels are no longer blocked / braked by the brake.



The auxiliary tool (6) to apply the lever (8) is located in the document pocket in the backrest of the seat.



Before starting the truck again, the lever (6) must be restored to the centre “travel” position. The truck can only operate in the travel position.



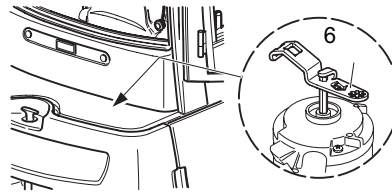
6 Moving the truck when the electric/hydraulic steering has failed



The truck cannot be steered if the steering hydraulic system or the truck electronics are damaged.

To steer the truck without power, apply the steering as follows.

- Turn the EMERGENCY DISCONNECT switch and key switch off.
- Secure the truck to prevent it from rolling away
- Undo the sensor connector above the motor shaft (pull the red unlocking lever) and place the auxiliary tool (6) on the hex. socket screw and turn the drive to the required steering position.



7 Towing the Truck

To tow the truck, proceed as follows:

- Attach the tow bar / rope to the trailer coupling of the recovery vehicle and the truck to be recovered.
- Disconnect the battery.
- Release the parking brake.
- Steer the truck as indicated in "Moving the truck when the electric/hydraulic steering has failed".