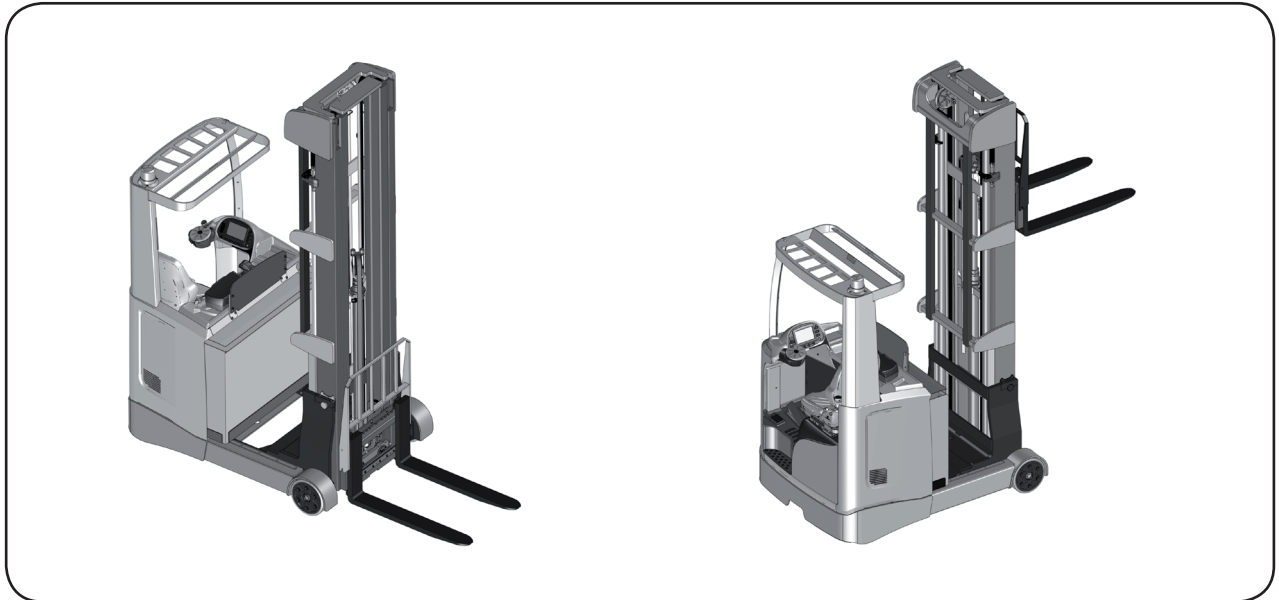


Technical information for Hyster service centres



This manual is intended solely for the specialized technicians of the Hyster service network.

D435.....

R1.4

R1.6N

R1.6

R1.6HD

R2.0

R2.0HD

R2.5



IMPORTANT

The Service Manuals are updated regularly, but may not contain the most recent product design modifications. The updated technical information is in any case available from your nearest authorised Hyster® dealer. The Service Manuals provide the guidelines for correct maintenance and are designed for use by appropriately trained technicians. Incorrect maintenance or non-compliance with the instructions contained in this manual could cause damage to property or injury and even death to people.

We therefore recommend that you read this manual carefully and keep it in a good condition so it is always decipherable and complete.

This manual does not replace the use and maintenance manual, it is a supplement to it.

HYSTER *Product support group*

GUIDE TO USING THE MANUAL

SECTIONS

This handbook is composed of the following sections:

- Section 1: **Presentation**
- Section 2: **Installation and settings**
- Section 3: **Diagnostics and measurements**
- Section 4: **Electrical system**
- Section 5: **Hydraulic system**
- Section 6: **Truck base mechanics**
- Section 7: **Mast assembly mechanics**
- Section 8: **Small fork mast mechanics**
- Section 9: **Reduction gear**
- Section 10: **Braking system**
- Section 11: **Standard maintenance**

Use the sections index with the numbered black bands to go quickly to the desired section.

SYMBOLS



Signals a danger that can cause accidents to people or damage to the machine.



Signals danger due to high temperatures.



Signals important notes or information to take into particular consideration.



Signals disposal/recycling of harmful substances under the protection of current legislation.

INSTALLATION PROCEDURES

For the installation procedures, carry out the reverse procedure to disassembly, observing any notes and information given for the truck to function properly.

GENERAL SAFETY RULES

PERSONAL SAFETY

- Always wear the personal protective equipment in situations requiring it.
- Pay particular attention to the risk of getting crushed due to moving parts, oscillations, material not properly secured when performing lifting operations or moving loads.
- Do not wear any rings, watches, jewellery, loose or hanging items of clothing such as scarves, unbuttoned jackets or tops with open zippers that can get caught up in moving parts.
- Never do any cleaning, lubrication or maintenance work with the battery connected.
- Using compressed air to clean the parts, protect yourself with goggles that have side protection. The maximum air pressure must not exceed 1 bar.

SAFETY AT THE WORKPLACE

- Make sure that all the work tools are perfectly efficient and ready for use. Keep the work surfaces clean and clear of debris that can come into contact with parts of the machine and cause damage.
- Make sure you keep sparks, naked lights and cigarettes away from fuels or flammable materials such as the gas of the batteries and fuels.
- Make sure that the work area is ventilated, well illuminated, dry and clean. Remove any puddles of water or oil stains.
- Make sure that the equipment, devices or lifting machinery used is able to sustain the load in a stable manner.
- Never use gasoline, diesel fuel or other flammable liquids such as detergents: instead use non-flammable and non-toxic trade solvents.
- When working outside the garage, move the machine preferably onto the level and block it. If working on a slope is inevitable, block the machine beforehand and move it onto a level area as soon as possible with a certain margin of safety.
- Disconnect the batteries and label all the controls to signal that work is in progress. Block the machine and every attachment that has to be raised.
- Never perform any servicing on the machine with persons at the controls, unless they are accredited operators and help with the operation to be performed.
- When towing use solely the prescribed coupling points and check that the pins and/or bolts are firmly secured before pulling. Lift and handle all the heavy parts with lifting equipment of adequate capacity. Use the lifting eyebolts intended for this purpose. Make sure no one is near the load to be lifted.
- Avoid twisting chains or metal ropes.
- Do not trust bent or damaged chains or ropes: do not use them for lifting or pulling. Always wear the safety gloves to handle them.
- Do not accumulate rags soaked in grease or oil: they are a great fire hazard. Always put them away into a closed metal container.
- Used oil must be specially collected. It must not be disposed of into normal drainage system pipes. Special companies can be employed to dispose of or recycle industrial oils according to the laws in force in individual countries.
- When welding is necessary, you must use appropriate safety protection: dark goggles, hard hat, overalls, gloves, safety footwear. Dark goggles must be worn also by those who are not doing the work if they remain nearby during the welding.

- Before using the batteries, make sure that both ends of the cables are connected to the terminals as prescribed: (+) with (+) and (-) with (-).
- Do not short-circuit the terminals.
- The gas released when charging is highly flammable. When charging, leave the battery compartment uncovered for more effective ventilation and take off the plugs.
- Never check the battery charge with "jumpers" obtained by putting metal items on the terminals.
- Before taking any action, check that no elements are shorted.
- Always disconnect the battery before working on the electrical system.
- For battery chargers and similar equipment, use solely auxiliary power sources with an effective ground connection to avoid any electric shocks.
- Fluid passing through a very small orifice can be virtually invisible and have sufficient force to penetrate under the skin; in such cases, having to make a check, use a card or a piece of wood.
- Having to check the system pressure, use the specific instruments.

BELTS, ROPES AND SUSPENSION ELEMENTS: USER ADVICE

- Keep a record of all the suspension elements used, stating the characteristics of the suspension elements and the data given on the identification plate .
- Never leave belts, cords or suspension elements in use whose identification plate has been lost.
- Always use belts, ropes or suspension elements of suitable dimensions. Concerning the suspension elements, take into consideration the lifting angle and any unbalancing of the load.
- The bells on the suspension elements must be sized in proportion to the hook of the overhead travelling crane and anyhow must be free to move easily.
- Always rest the load in the race of the hook.
- Never load the tip of the hook.
- When lifting, avoid sudden operations that can jerk on the ropes and belts.
- Never do any lifting with the ropes and belts twisted.
- Knots are not permissible. Always protect the ropes and belts when they come into contact with sharp edges.
- When moving with no load, to prevent impact and accidental hooking, hang the hooks in the bells and close the safety ones.

Using suspension elements under conditions of unbalanced load

If lifting unbalanced loads it is advised as a precaution to downrate the load capacities of the lifting elements:

- Slings with 2 booms, consider them as corresponding to 1 boom.
- Slings with 3 and 4 booms, consider them as corresponding to 2 booms.

Tips for maintenance

Periodically examine the belts, ropes and suspension elements according to current legislation to define their state of service.

Change them in the following cases:

- When the components show: deformation, cracks, hollows, cuts or abrasions.
- When the wear of the components exceeds 10% of the original dimensions.
- When the sling shows signs of overloading.

**Thanks very much for your reading,
Want to get more information,
Please click here, Then get the complete
manual**

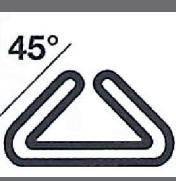
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NOTE:

**If there is no response to click on the link above,
please download the PDF document first, and then
click on it.**

**Have any questions please write to me:
admin@servicemanualperfect.com**

Belt capacity table

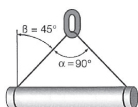
	Colour				
Working load capacity (kg)	purple	1000	2000	1400	800
	green	2000	4000	2800	1600
	yellow	3000	6000	4200	2400
	grey	4000	8000	5600	3200
	red	5000	10000	7000	4000
	brown	6000	12000	8400	4800
	blue	8000	16000	11200	6400
	orange	10000	20000	14000	8000
	orange	12000	24000	16800	9600
	orange	15000	30000	21000	12000
	orange	20000	40000	28000	16000
	orange	25000	50000	35000	20000
	orange	30000	60000	42000	24000
Coefficient		1	2	1.4	0.8

Rope capacity table

	Colour	Track (mm)				
Working load capacity (kg)	black	35	500	1000	700	400
	purple	50	1000	2000	1400	800
	black	50	1500	3000	2100	1200
	green	60	2000	4000	2800	1600
	yellow	75	3000	6000	4200	2400
	grey	120	4000	8000	5600	3200
	red	150	5000	10000	7000	4000
	brown	180	6000	12000	8400	4800
	blue	240	8000	16000	11200	6400
	orange	300	10000	20000	14000	8000
Coefficient			1	2	1.4	0.8

Suspension element capacity table

	Colour				
Working load capacity (kg)	purple	1000	1400	2100	2100
	green	2000	2800	4200	4200
	yellow	3000	3800	6300	6300
	grey	4000	5600	8400	8400
	red	5000	6600	9800	10500
Coefficient		1	1.4	2.1	2.1



Working load capacity: the working load capacity is calculated with an angle at the centre of 90°

TORQUE SETTINGS FOR SCREWS, NUTS AND FITTINGS



Before disassembling the various parts and nuts and bolts, read the following carefully.

To make the threaded matings secure, *LOCTITE 270* is used for tightening the screws.

If it is not possible to unscrew the bolts because this product has been used, avoid applying extensions to the tools, instead slightly heat the area (at most 50°C) so as to eliminate the *LOCTITE 270* effect.

In the cases described, reapply *LOCTITE 270* during installation in a moderate quantity (30% of the mating surface).

The torque setting used for tightening the threaded couplings is extremely important to make the coupling secure and the machine safe.

The tables on this page give the classes of bolts normally used with the relevant torque settings.

Nominal diameter	TORQUE SETTING Nm	
	Class 8	Class 10
M3	4	5.2
M4	7	9.15
M5	12.14	14.8
M6	17.2	20.9
M8	31.8	38.1
M10	50.5	60.3
M12	74.2	88.5
M14	101.2	120.8
M16	138.2	164.9
M18	176.6	203.5
M20	225.4	259.7
M22	278.8	321.2
M24	324.8	374.2
M27	422.3	486.5
M30	516.1	594.7

				Pre-load N	TORQUE SETTING Nm					
					Class 5.8	Class 8.8		Class 10.9		
M4	0.7	7	3	2400	1.92	1.44	3.07	2.3	4.17	3.13
M5	0.8	8	4	3880	3.88	2.91	6.2	4.65	8.43	6.33
M6	1	10	5	5490	6.58	4.94	10.5	7.9	14.3	10.8
M8	1.25	13	6	9990	16	12	25.6	19.2	34.8	26.1
M8	1	13	6	10700	17.1	12.8	27.4	20.5	37.3	27.9
M10	1.5	16	8	15825	31.7	23.8	51	38	69	52
M10	1.25	16	8	16700	33.4	25.1	53	40.1	73	55
M12	1.75	18	10	23025	55	41.4	88	66	120	90
M12	1.25	18	10	25150	60	45.3	96	72	130	98
M14	2	21	12	31400	88	66	140	105	190	145
M14	1.5	21	12	34125	96	72	155	115	210	155
M16	2	24	14	42850	135	105	220	165	300	225
M16	1.5	24	14	45600	145	110	235	175	320	240
M20	2.5	30	17	66875	270	200	430	320	580	435
M20	1.5	30	17	74250	295	225	475	355	650	485



= with lubricant

CORRECT METHOD FOR APPLYING FEMALE FITTINGS

To assure a reliable seal between female fittings and the adapters in this manual, it is necessary to observe the following procedure, which differs from the one for assembling rigid pipes.

Female fittings without a gasket (metal/metal joint)

Screw on the nut by hand and then, with the aid of a wrench, tighten by another quarter turn.

Female fittings with O-ring

Screw on the nut by hand and then, with the aid of a wrench, tighten by another half turn.

In every case make sure that the pipe is properly aligned before tightening the nut on the adapter.

TORQUE SETTINGS

METRIC REVOLVING FEMALE			
UNF thread	Outside diameter of the pipe	Torque setting Nm	
		Nominal torque	min / max
M 12x1.5	6	20	15 - 25
M 14x1.5	8	38	30 - 45
M 16x1.5	8	45	38 - 52
	10		
M 18x1.5	10	51	43 - 85
	12		
M 20x1.5	12	58	50 - 65
M 22x1.5	14	74	60 - 88
	15		
M 24x1.5	16	74	60 - 88
M 26x1.5	18	105	85 - 125
M 30x2	20	135	115 - 155
	22		
M 36x2	25	166	140 - 192
	28		
M 42x2	30	240	210 - 270
M 45x2	35	290	255 - 325
M 52x2	38	330	280 - 380
	42		

REVOLVING FEMALE jic 37°			
UNF thread	Size	Torque setting Nm	
		Nominal torque	min / max
7/16-20	-4	15	9 - 21
1/2-20	-5	20	13 - 27
9/16-18	-6	30	18 - 42
3/4-16	-8	50	30 - 70
7/8-14	-10	69	44 - 94
1.1/16-12	-12	98	63 - 133
1.3/16-12	-14	118	73 - 163
1.5/16-12	-16	140	90 - 190
1.5/8-12	-20	210	135 - 285
1.7/8-12	-24	290	200 - 380
2.1/2-12	-32	450	300 - 600

REMOVING FEMALE BSP		
UNF thread	Torque setting Nm	
	Nominal torque	max
G1/4	20	15 - 25
G3/8	34	27 - 41
G1/2	60	42 - 76
G5/8	69	44 - 94
G3/4	115	95 - 135
G1	140	115 - 165
G1.1/4	210	140 - 280
G1.1/2	290	215 - 365
G2	400	300 - 500

REVOLVING FEMALE ORFS			
UNF thread	Size	Torque setting Nm	
		Nominal torque	max.
9/16-18	-4	14	16
11/16-16	-6	24	27
13/16-16	-8	43	47
1-14	-10	60	68
1.3/16-12	-12	90	95
1.3/16-12	-14	90	95
1.7/16-12	-16	125	135
1.11/16-12	-20	170	190
2-12	-24	200	225
2-1/2-20	-32	460	490



The values given in the tables refer to galvanized steel fittings. Fittings of other materials have other values.

INSTRUCTIONS FOR INSTALLING FLEXIBLE HOSES AND FITTINGS

Inspection of pipes and fittings

When even just one of the following conditions arises the pipe must immediately be disconnected and replaced:

- a shift of the connector on the pipe;
- the presence of damage, cuts or abrasions on the surface layer;
- hardening or stiffness of the pipe, the presence of burns or cracks due to heat exposure;
- the presence of cracks, damage or bad corrosion on the connector;
- the presence of leaks along the pipe or at the connector;
- the presence of permanent creases, compression, flattening or twists in the pipe;
- the presence of blisters, softening, wear of the external coat.

Pre-installation inspection

Before installing a flexible hose it is necessary to inspect the pipes carefully. First check that the type, size, reference code and length are correct, then check there is no debris, blockages, bubbles, peeling of the outer layer or any other visible defects.

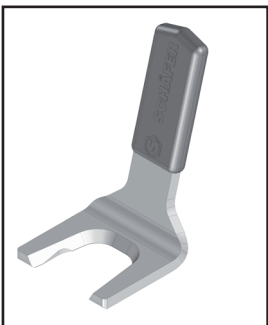
Installation

Avoid twisting the pipe, which could cause it to burst under pressure.

There must be an adequate radius of curvature to prevent constriction and collapse. The life of the assembled pipe decreases considerably when below the minimum radius of curvature.

The pressure can cause changes in the length of the pipe, up to + 2%. It will be wise to have a slightly greater length than the requirement in order to compensate for these changes.

Special wrench for hydraulic couplings



Code:

4075291 (C8 - C10)

4075292 (C12)

4075293 (C16)

SECTION CONTENTS

Presentation	1
Installation and settings	2
Diagnostics and measurements	3
Electrical system	4
Hydraulic system	5
Truck base mechanics	6
Mast assembly mechanics	7
Small fork mast mechanics	8
Reduction gear	9
Braking system	10
Standard maintenance	11

PRESENTATION

TRUCK PRESENTATION	2
VIEWS OF THE TRUCK	3
TRUCK AND LOAD IDENTIFICATION DATA	4
TRUCK IDENTIFICATION DATA PLATE	4
RESIDUAL LOAD PLATE	4
MAST SERIAL NUMBER PUNCHING AND LOCATION OF DOCUMENTATION	5
GENERAL SPECIFICATIONS	6
BATTERIES TABLE	10

TRUCK PRESENTATION

The new range of retractable trucks consists of 7 models with nominal load capacities from 1400 kg to 2500 kg.

Electrical system

All the motors benefit from the use of three phase AC alternate current technology: traction motor, steering motor and pump motor.

The high battery efficiency is ensured by the regenerative inversion and release braking.

The electronic controls VCM, ACE2 Traction, ACE2 Pump and EPS ACW communicate via a CAN-Bus system (Controller Area Network Bus). There are two separate CAN-Bus lines to improve the efficiency, reliability and independence of the modules.

Hydraulic system

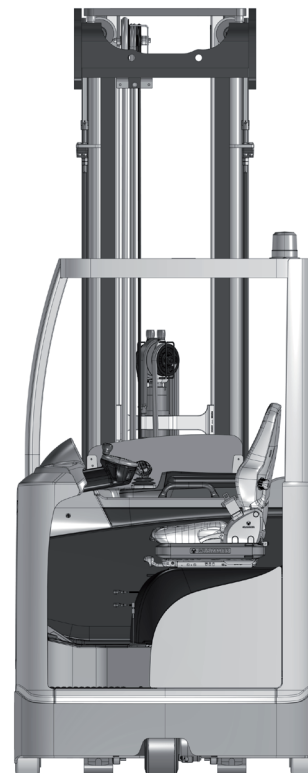
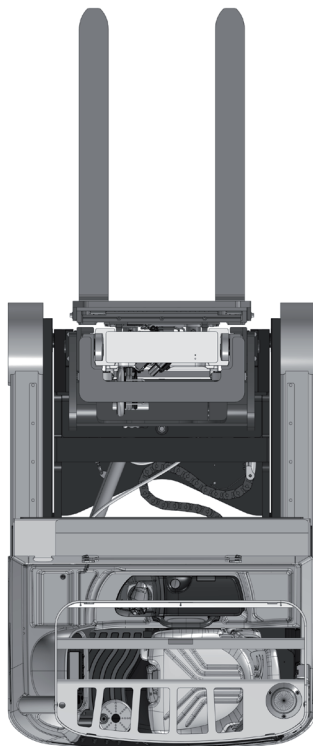
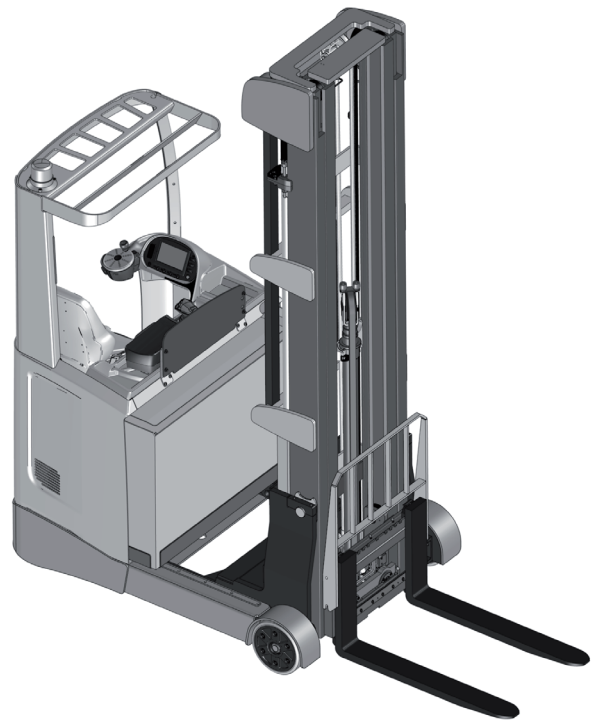
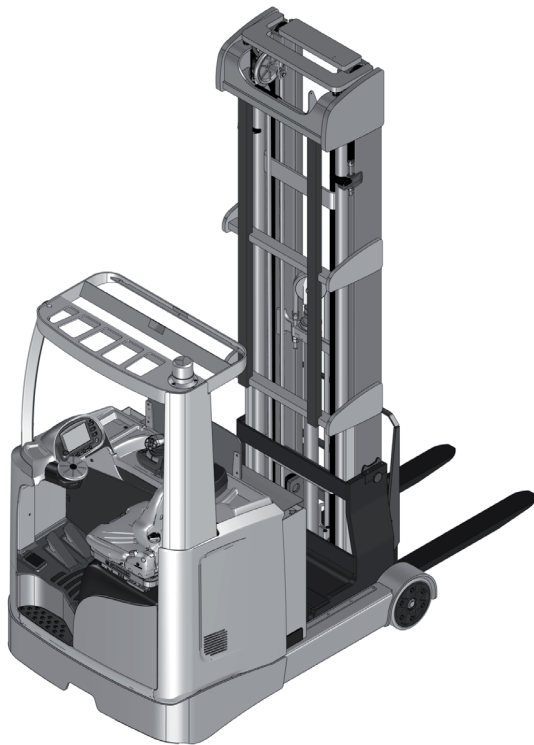
The 14 kW pump motor provides excellent performance thanks to the technology with proportional solenoid valves for the carriage out/return, lifting/lowering, fork tilting and side shifting operations with smooth movements of the actuators.

Mast

The masts comprise three stages: external, middle and internal.

The rigidity and stability characteristics of the masts allow the forks to reach maximum heights of between 5 and 12 metres depending on the model.

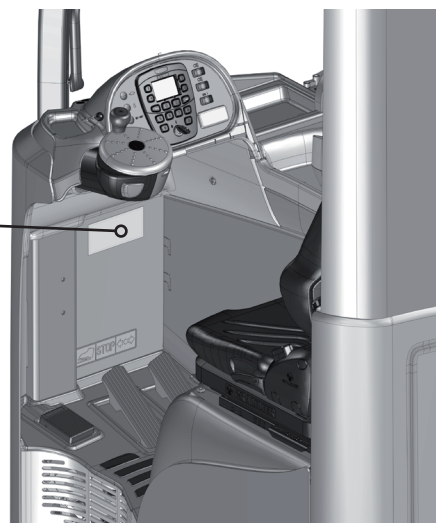
The lifting cylinders are single-acting plungers.

VIEWS OF THE TRUCK

TRUCK AND LOAD IDENTIFICATION DATA

TRUCK IDENTIFICATION DATA PLATE

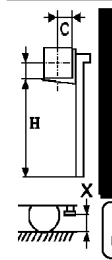
 HYSTER EUROPE, Centennial House, Frimley Business Park Frimley, Surrey GU16 7SG, United Kingdom MADE IN ITALY			
MODEL	SERIAL NUMBER	YEAR OF CONSTRUCTION	
NOMINAL CAPACITY kg	MASS WITHOUT BATTERY kg	BATTERY MASS MIN MAX kg	
PERSONS ON BOARD	NOMINAL POWER kW	BATTERY VOLTAGE Volt	
MAXIMUM TRACTION FORCE N	POWER PULL N	EXERTED TIME min	

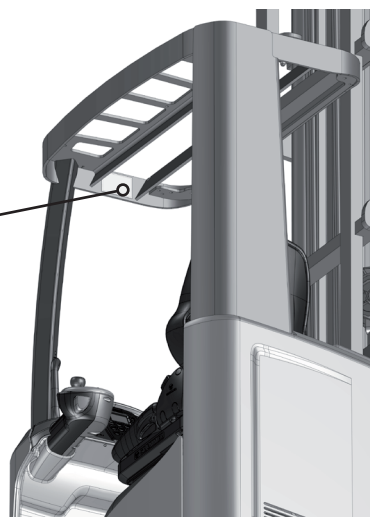


The truck identification data plate is located inside the driver's cab

- Manufacturer's name
- Model
- Serial number
- Weight without battery
- Year of manufacture
- Max. battery weight
- Min. battery weight
- Battery voltage
- Nominal load capacity
- Persons on board

RESIDUAL LOAD PLATE

SERIAL NUMBER			
ATTACHMENT			
	kg		H mm
	kg		H mm
	kg		H mm
	C mm	X mm	



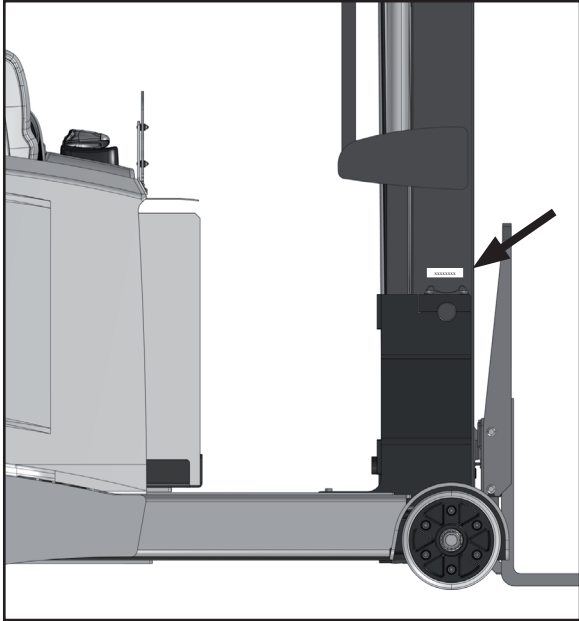
The load plate is located on the roof assembly

The load plate bears the following data:

- Model
- Liftable load values up to varying heights up to the maximum load with different distances from the load centre of gravity of the forks.



Always refer to the load plate to be sure to lift an admissible load to an appropriate height.

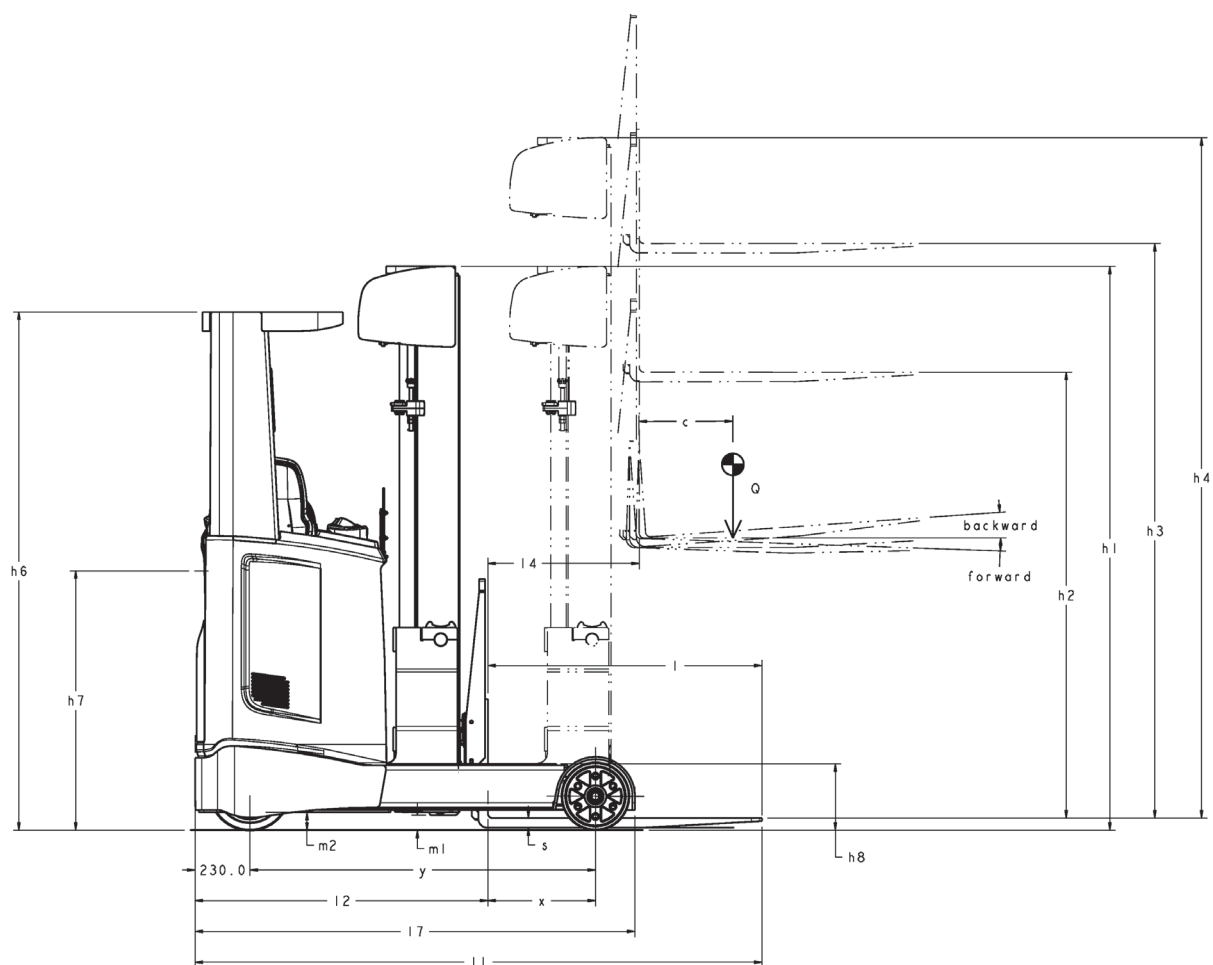
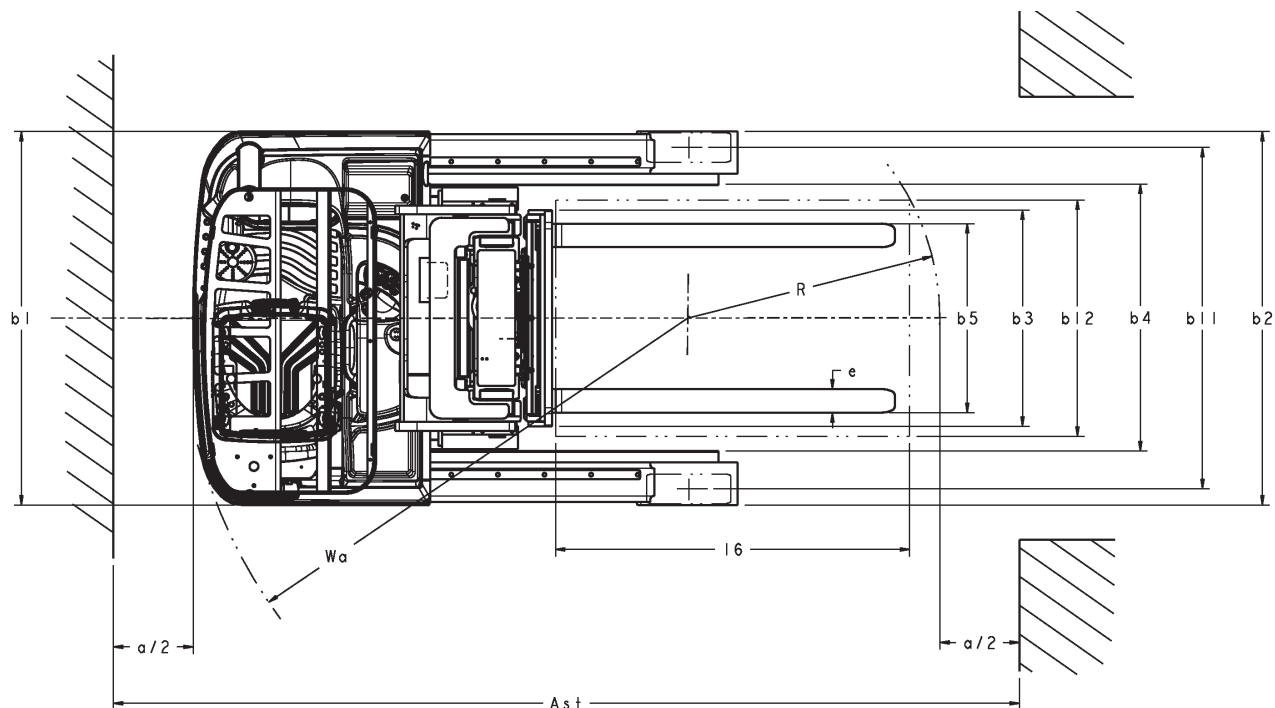
MAST SERIAL NUMBER PUNCHING AND LOCATION OF DOCUMENTATION

The mast serial number is stamped on the mast itself.



The truck documentation is stored in the document holder behind the backrest of the seat.

GENERAL SPECIFICATIONS



	GENERAL SPECIFICATIONS					
CHARACTERISTICS	1.2	manufacturer's type designation		R1.4	R1.6	R1.6N
	1.3	motor unit: battery, diesel, LPG, petrol, electric		electric (battery)		
	1.4	driving: manual, on ground, standing, seated		seated		
	1.5	load capacity/rated load	Q (t)	1.4	1.6	1.6
	1.6	load centre of gravity	c (mm)	600	600	600
	1.8	load distance from load wheel axle - forks	x (mm)	258	308	202
	1.9	wheelbase (WB)	y (mm)	1400	1450	1450
WEIGHTS	2.1	weight with no load (including battery)	kg	3495	3546	3498
	2.3	load on axle with no load (front/rear) ⁽⁵⁾	kg	2055/1440	2103/1443	1955/1543
	2.4	load on axle with forks out with load (front/rear)	kg	885/4010	810/4336	757/4341
	2.5	load on axle with forks retracted with load (front/rear)	kg	1711/3184	1779/3367	1514/3584
WHEELS & TYRES	3.1	tyres: full rubber, polyurethane, vulkollan (front/rear)		vulkollan/vulkollan		
	3.2	front wheel size	ø (mm x mm)	343 x 140	343 x 140	343 x 140
	3.3	rear wheel size	ø (mm x mm)	285 x 100	285 x 100	285 x 100
	3.5	wheel quantity (x = traction) (front/rear)		1x/2	1x/2	1x/2
	3.7	rear track width	b 11 (mm)	1155	1155	1025
DIMENSIONS	4.1	mast tilt / forks forward/backward	α/β (°)	2 / 4	2 / 4	2 / 4
	4.2	height of closed mast	h1 (mm)	2195	2195	2195
	4.3	free lift	h2 (mm)	1648	1648	1648
	4.4	lifting height	h3 (mm)	5000	5000	5000
	4.5	height, mast extended ⁽¹⁾	h4 (mm)	5563	5563	5563
	4.7	height of protective roof assembly (cab) ⁽²⁾	h6 (mm)	2175	2175	2175
	4.8	seat height	h7 (mm)	1082	1082	1082
	4.10	armrest height	h8 (mm)	308	308	308
	4.19	total length	l1 (mm)	2523	2523	2629
	4.20	length to face of forks	l2 (mm)	1373	1373	1479
	4.21	overall width ⁽³⁾	b1/b2 (mm)	1265	1265	1125
	4.22	fork dimensions DIN ISO 2331	s/e/l (mm)	40/80/1150	40/120/1150	40/120/1150
	4.23	fork carriage ISO 2328, class/type A,B		2A	2A	2A
	4.24	fork carriage width	b3 (mm)	700	700	700
	4.25	outer fork width (min/max) ⁽⁸⁾	b5 (mm)	220/640	260/680	260/680
	4.26	distance between the clamps of the load wheels	b4 (mm)	900	900	795
	4.28	retractable travel	l4 (mm)	441	491	385
	4.31	ground clearance under mast with load	m1 (mm)	75	75	75
	4.32	ground clearance at wheelbase centre	m2 (mm)	75	75	75
	4.34.1	working aisle for pallet length 1000 x 1200 crosswise	Ast (mm)	2825	2834	2898
	4.34.2	working aisle for pallet length 800 x 1200 lengthwise	Ast (mm)	2895	2896	2976
	4.35	turning radius	Wa (mm)	1671	1718	1700
	4.37	length between the wheel arms	l7 (mm)	1795	1845	1845
	4.42	wheelbase height (from ground to footboard)	mm	550	550	550
	4.43	wheelbase height (between the steps between the footboard and the ground)	mm	371	371	371
PERFORMANCE	5.1	traction speed with/without load ⁽⁷⁾	km/h	11/11(14/14)	11/11(14/14)	11/11(14/14)
	5.1.1	traction speed with/without load reverse drive ⁽⁷⁾	km/h	11/11(14/14)	11/11(14/14)	11/11(14/14)
	5.2	lift speed with/without load ⁽⁷⁾	m/s	0,37 / 0,63 (0,47 / 0,73)	0,32 / 0,63 (0,42 / 0,73)	0,32 / 0,63 (0,42 / 0,73)
	5.3	lowering speed with/without load	m/s	0.55	0.55	0.55
	5.4	Retractable carriage speed	m/s	0,15 / 0,15	0,15 / 0,15	0.15 / 0.15
	5.7	grade ability with/without load	%	12 / 15	11 / 15	11 / 15
	5.8	maximum gradeability with/without load	%	12 / 15	12 / 15	12 / 15
	5.9	acceleration time, laden/unladen	s	- / -	- / -	- / -
	5.10	service brake		Electrical		
MOTOR UNITS	6.1	traction motor, power S2 60 minutes	kW	6,4	6,4	6,4
	6.2	lifting motor, power S3 15%	kW	14	14	14
	6.3	battery in compliance with DIN 43531/35/36 A,B,C, no		C	C	B
	6.4	battery rated voltage/capacity at 5 hours	V/Ah	48/700 ⁽⁶⁾	48/700 ⁽⁶⁾	48/700 ⁽⁶⁾
	6.5	battery weight ⁽⁴⁾	kg	1119	1119	1119
	6.6	consumption per VDI cycle	kWh/h	- / -	- / -	- / -
OTHER DATA	8.1	type of drive control		AC		
	10.1	working pressure for additional attachments	bar	180	180	180
	10.2	volume of oil for additional attachments	l/min	20	20	20
	10.7	noise level at the operating station	dB(A)	<69.7	<69.7	<69.7

GENERAL SPECIFICATIONS				
CHARACTERISTICS	1.2	manufacturer's type designation		R2.0 R2.5
	1.3	motor unit: battery, diesel, LPG, petrol, electric		electric (battery)
	1.4	driving: manual, on ground, standing, seated		seated
	1.5	load capacity/rated load	Q (t)	2.0 2.5
	1.6	load centre of gravity	c (mm)	600 600
	1.8	load distance from load wheel axle - forks	x (mm)	358 431
WEIGHTS	1.9	wheelbase (WB)	y (mm)	1500 1650
	2.1	weight with no load (including battery)	kg	3801 4230
	2.3	load on axle with no load (front/rear) ⁽⁵⁾	kg	2296/1504 2565/1665
	2.4	load on axle with forks out with load (front/rear)	kg	770/5030 876/5855
WHEELS & TYRES	2.5	load on axle with forks retracted with load (front/rear)	kg	1971/3829 2306/4424
	3.1	tyres: full rubber, polyurethane, vulkollan (front/rear)		vulkollan/vulkollan
	3.2	front wheel size	ø (mm x mm)	343 x 140 343 x 140
	3.3	rear wheel size	ø (mm x mm)	285 x 100 285 x 140
DIMENSIONS	3.5	wheel quantity (x = traction) (front/rear)		1x/2 1x/2
	3.7	rear track width	b 11 (mm)	1155 1195
	4.1	mast tilt / forks forward/backward	α/β (°)	2 / 4 2 / 4
	4.2	height of closed mast	h1 (mm)	2195 2195
	4.3	free lift	h2 (mm)	1582 1582
	4.4	lifting height	h3 (mm)	4650 4650
	4.5	height, mast extended ⁽¹⁾	h4 (mm)	5263 5263
	4.7	height of protective roof assembly (cab) ⁽²⁾	h6 (mm)	2175 2175
	4.8	seat height	h7 (mm)	1082 1082
	4.10	armrest height	h8 (mm)	308 308
	4.19	total length	l1 (mm)	2523 2600
	4.20	length to face of forks	l2 (mm)	1373 1450
	4.21	overall width ⁽³⁾	b1/b2 (mm)	1265 1345
	4.22	fork dimensions DIN ISO 2331	s/e/l (mm)	40/120/1150 45/120/1150
	4.23	fork carriage ISO 2328, class/type A,B		2A 2A
	4.24	fork carriage width	b3 (mm)	700 700
	4.25	outer fork width (min/max) ⁽⁸⁾	b5 (mm)	260/680 260/680
	4.26	distance between the clamps of the load wheels	b4 (mm)	900 900
	4.28	retractable travel	l4 (mm)	541 614
	4.31	ground clearance under mast with load	m1 (mm)	65 65
	4.32	ground clearance at wheelbase centre	m2 (mm)	65 65
	4.34.1	working aisle for pallet length 1000 x 1200 crosswise	Ast (mm)	2846 2938
	4.34.2	working aisle for pallet length 800 x 1200 lengthwise	Ast (mm)	2900 2978
	4.35	turning radius	Wa (mm)	1767 1911
	4.37	length between the wheel arms	l7 (mm)	1895 2045
	4.42	wheelbase height (from ground to footboard)	mm	550 550
	4.43	wheelbase height (between the steps between the footboard and the ground)	mm	371 371
PERFORMANCE	5.1	traction speed with/without load ⁽⁷⁾	km/h	14 / 14 14 / 14
	5.1.1	traction speed with/without load reverse drive ⁽⁷⁾	km/h	14 / 14 14 / 14
	5.2	lift speed with/without load ⁽⁷⁾	m/s	0.37 / 0.64 0.30 / 0.64
	5.3	lowering speed with/without load	m/s	0.55 / 0.50 0.55 / 0.50
	5.4	Retractable carriage speed	m/s	0,15 / 0,15 0.15 / 0.15
	5.7	grade ability with/without load	%	10 / 15 8 / 14
	5.8	maximum gradeability with/without load	%	12 / 15 12 / 15
	5.9	acceleration time, laden/unladen	s	- / - - / -
	5.10	service brake		Electrical
MOTOR UNITS	6.1	traction motor, power S2 60 minutes	kW	6,4 6,4
	6.2	lifting motor, power S3 15%	kW	14 14
	6.3	battery in compliance with DIN 43531/35/36 A,B,C, no		C C
	6.4	battery rated voltage/capacity at 5 hours	V/Ah	48/700 ⁽⁶⁾ 48/840 ⁽⁶⁾
	6.5	battery weight ⁽⁴⁾	kg	1119 1306
	6.6	consumption per VDI cycle	kWh/h	- / - - / -
OTHER DATA	8.1	type of drive control		AC
	10.1	working pressure for additional attachments	bar	180 180
	10.2	volume of oil for additional attachments	l/min	20 20
	10.7	noise level at the operating station	dB(A)	<69.7 <69.7

GENERAL SPECIFICATIONS				
CHARACTERISTICS	1.2	manufacturer's type designation		R1.6HD R2.0HD
	1.3	motor unit: battery, diesel, LPG, petrol, electric		electric (battery)
	1.4	driving: manual, on ground, standing, seated		seated
	1.5	load capacity/rated load	Q (t)	1.6 2.0
	1.6	load centre of gravity	c (mm)	600 600
	1.8	load distance from load wheel axle - forks	x (mm)	308 281
	1.9	wheelbase (WB)	y (mm)	1450 1500
WEIGHTS	2.1	weight with no load (including battery)	kg	4224 4617
	2.3	load on axle with no load (front/rear) ⁽⁵⁾	kg	2428/1796 2577/2040
	2.4	load on axle with forks out with load (front/rear)	kg	979/4845 985/5632
	2.5	load on axle with forks retracted with load (front/rear)	kg	2104/3720 2149/4468
WHEELS & TYRES	3.1	tyres: full rubber, polyurethane, vulkollan (front/rear)		vulkollan/vulkollan
	3.2	front wheel size	ø (mm x mm)	343 x 140 343 x 140
	3.3	rear wheel size	ø (mm x mm)	285 x 100 285 x 140
	3.5	wheel quantity (x = traction) (front/rear)		1x/2 1x/2
	3.7	rear track width	b 11 (mm)	1155 1195
DIMENSIONS	4.1	mast tilt / forks forward/backward	α/β (°)	2 / 4 2 / 4
	4.2	height of closed mast	h1 (mm)	3227 3227
	4.3	free lift	h2 (mm)	2680 2614
	4.4	lifting height	h3 (mm)	7900 7750
	4.5	height, mast extended ⁽¹⁾	h4 (mm)	8463 8363
	4.7	height of protective roof assembly (cab) ⁽²⁾	h6 (mm)	2175 2175
	4.8	seat height	h7 (mm)	1082 1082
	4.10	armrest height	h8 (mm)	308 308
	4.19	total length	l1 (mm)	2523 2600
	4.20	length to face of forks	l2 (mm)	1373 1450
	4.21	overall width ⁽³⁾	b1/b2 (mm)	1265 1345
	4.22	fork dimensions DIN ISO 2331	s/e/l (mm)	40/120/1150 45/120/1150
	4.23	fork carriage ISO 2328, class/type A,B		2A 2A
	4.24	fork carriage width	b3 (mm)	700 700
	4.25	outer fork width (min/max) ⁽⁸⁾	b5 (mm)	260/680 260/680
	4.26	distance between the clamps of the load wheels	b4 (mm)	900 900
	4.28	retractable travel	l4 (mm)	491 464
	4.31	ground clearance under mast with load	m1 (mm)	65 65
	4.32	ground clearance at wheelbase centre	m2 (mm)	65 65
	4.34.1	working aisle for pallet length 1000 x 1200 crosswise	Ast (mm)	2834 2903
	4.34.2	working aisle for pallet length 800 x 1200 lengthwise	Ast (mm)	2896 2970
	4.35	turning radius	Wa (mm)	1718 1767
	4.37	length between the wheel arms	l7 (mm)	1845 1895
	4.42	wheelbase height (from ground to footboard)	mm	550 550
	4.43	wheelbase height (between the steps between the footboard and the ground)	mm	371 371
PERFORMANCE	5.1	traction speed with/without load ⁽⁷⁾	km/h	14 / 14 14 / 14
	5.1.1	traction speed with/without load reverse drive ⁽⁷⁾	km/h	14 / 14 14 / 14
	5.2	lift speed with/without load ⁽⁷⁾	m/s	0,42 / 0,73 0,37 / 0,68
	5.3	lowering speed with/without load	m/s	0.55 0.55
	5.4	Retractable carriage speed	m/s	0,15 / 0,15 0.15 / 0.15
	5.7	grade ability with/without load	%	10 / 14 8 / 13
	5.8	maximum gradeability with/without load	%	12 / 15 12 / 15
	5.9	acceleration time, laden/unladen	s	- / - - / -
	5.10	service brake		Electrical
	6.1	traction motor, power S2 60 minutes	kW	6,4 6,4
MOTOR UNITS	6.2	lifting motor, power S3 15%	kW	14 14
	6.3	battery in compliance with DIN 43531/35/36 A,B,C, no		C C
	6.4	battery rated voltage/capacity at 5 hours	V/Ah	48/700 ⁽⁶⁾ 48/840 ⁽⁶⁾
	6.5	battery weight ⁽⁴⁾	kg	1119 1306
	6.6	consumption per VDI cycle	kWh/h	- / - - / -
	8.1	type of drive control		AC
OTHER DATA	10.1	working pressure for additional attachments	bar	180 180
	10.2	volume of oil for additional attachments	l/min	20 20
	10.7	noise level at the operating station	dB(A)	<69.7 <69.7

NOTES

- (1) with load grille h4 + 508 mm (all models except for 2 ton and 2.5 ton), h4 + 443 mm (2 ton and 2.5 ton models only)
- (2) with flashing light h6 + 120 mm; with protective grille h6 + 20 mm; with protective screen h6 + 30 mm
- (3) with load wheel side cover: 1289 mm (all models except for Narrow, 2.5 ton, HD 2.0 ton versions), 1153 mm (Narrow model only), 1373 mm (2.5 ton, HD 2.0 ton models only)
- (4) This value can vary by $\pm 5\%$
- (5) Forks retracted
- (6) see "batteries table"
- (7) the values in parentheses are optional
- (8) the side shift travel is ± 75 mm on all models. It is reduced to ± 25 mm for the Narrow model

BATTERIES TABLE

1.2	manufacturer's type designation		R1.4				
1.8	load distance from load wheel axle - forks	x (mm)	402	330	402	330	258
1.9	wheelbase (WB)	y (mm)	1400	1400	1400	1400	1400
2.1	weight with no load (including battery)	kg	3112	3309	3112	3320	3541
2.3	load on axle with no load (front/rear) ⁽⁵⁾	kg	1977/1135	2025/1285	1977/1135	2032/1289	2084/1457
2.4	load on axle with forks out with load (front/rear)	kg	682/3830	792/3917	682/3830	800/3921	914/4027
2.5	load on axle with forks retracted with load (front/rear)	kg	1778/2735	1753/2956	1778/2735	1760/2960	1741/3201
4.19	total length	l1 (mm)	2379	2451	2379	2451	2523
4.20	length to face of forks	l2 (mm)	1229	1301	1229	1301	1373
4.28	retractable travel	l4 (mm)	585	513	585	513	441
4.34.1	working aisle for pallet length 1000 x 1200 cross-wise	Ast (mm)	2718	2771	2718	2771	2826
4.34.2	working aisle for pallet length 800 x 1200 length-wise	Ast (mm)	2764	2829	2764	2829	2895
4.35	turning radius	Wa (mm)	1671	1671	1671	1671	1671
6.3	battery in compliance with DIN 43531/35/36 A,B,C, no		C	C	C "Super"	C "Super"	C "Super"
6.4	battery rated voltage/capacity at 5 hours	V/Ah	48/420	48/560	48/465	48/620	48/775
6.5	battery weight ⁽⁴⁾	kg	750	939	750	950	1165

1.2	manufacturer's type designation		R1.6				
1.8	load distance from load wheel axle - forks	x (mm)	452	380	452	380	308
1.9	wheelbase (WB)	y (mm)	1450	1450	1450	1450	1450
2.1	weight with no load (including battery)	kg	3162	3360	3162	3371	3592
2.3	load on axle with no load (front/rear) ⁽⁵⁾	kg	2018/1144	2069/1291	2018/1144	2077/1294	2133/1459
2.4	load on axle with forks out with load (front/rear)	kg	601/4162	714/4246	601/4162	721/4250	839/4352
2.5	load on axle with forks retracted with load (front/rear)	kg	1853/2909	1825/3135	1853/2909	1832/3139	1809/3383
4.19	total length	l1 (mm)	2379	2451	2379	2451	2523
4.20	length to face of forks	l2 (mm)	1229	1301	1229	1301	1373
4.28	retractable travel	l4 (mm)	635	563	635	563	491
4.34.1	working aisle for pallet length 1000 x 1200 cross-wise	Ast (mm)	2731	2781	2731	2781	2834
4.34.2	working aisle for pallet length 800 x 1200 length-wise	Ast (mm)	2767	2830	2767	2830	2896
4.35	turning radius	Wa (mm)	1718	1718	1718	1718	1718
6.3	battery in compliance with DIN 43531/35/36 A,B,C, no		C	C	C "Super"	C "Super"	C "Super"
6.4	battery rated voltage/capacity at 5 hours	V/Ah	48/420	48/560	48/465	48/620	48/775
6.5	battery weight ⁽⁴⁾	kg	750	939	750	950	1165