

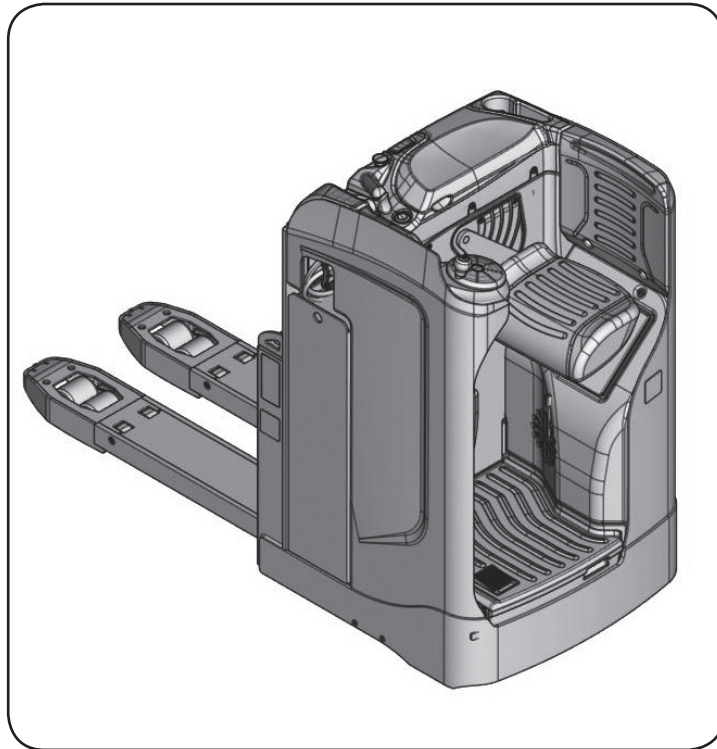
SERVICE REPAIR

MANUAL

Hyster C449 (RP2.0N, RP2.5N) Forklift

HYSTER

Technical information for Hyster service centres



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

C449...

RP2.0N
RP2.5N



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*

SECTIONS

This handbook is composed of the following sections:

- Section 1: **Presentation**
- Section 2: **Installation and setting**
- Section 3: **Diagnostics and measurement**
- Section 4: **Electrical system**
- Section 5: **Hydraulic system**
- Section 6: **Basic truck mechanics**
- Section 7: **Forks upright mechanics**
- Section 8: **Reduction unit**
- Section 9: **Braking system**
- Section 10: **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.

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Please click here, Then get the complete
manual**

JustClickHere 

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**

- 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.



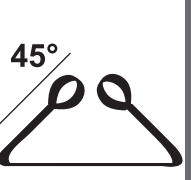

Change them in the following cases:

- 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.





Belt capacity table

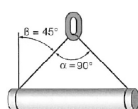
	Colour				
Working load capacity (kg)	purple	1000	2000	1400	800
	green	2000	4000	2800	1600
	yellow	3000	6000	4200	2400
	grey	4000	8000	5600	3200
	red	5000	10000	7000	4000
	brown	6000	12000	8400	4800
	blue	8000	16000	11200	6400
	orange	10000	20000	14000	8000
	orange	12000	24000	16800	9600
	orange	15000	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.


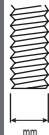



If it is not possible to unscrew the bolts because this product has been used, avoid applying extensions to the tools, instead slightly heat the area (at most 50°C) so as to eliminate the *LOCTITE 270* effect.

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	Class 10.9	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

BSP REVOLVING FEMALE		
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

ORFS REVOLVING FEMALE			
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:

- fitting movement on the pipe;
- presence of damage, cuts or abrasions on the surface layer;
- hardening or rigidity of the pipe, presence of burns or cracks due to heat;
- presence of cracks, damage or severe corrosion on the fitting;
- presence of leaking points on the pipe or on the fitting;
- presence of permanent creases, kinking, flattening or twisting on the pipe;
- presence of bubbles, softening, wear of the outer layer.

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.

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PRESENTATION

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TRUCK PRESENTATION

The new range of pallet trucks with operator on the truck has a nominal capacity from 2000 kg to 2500 kg and are the ideal solution for reliability and durability in warehouses that require the transport of goods by medium to long distances. The reduced dimensions of the chassis are ideal for facilitating the movement and storage of the pallets during the trucks loading and unloading.

The main characteristics of the truck are:

Entrance on the platform width: 450mm.

Platform access height: 285mm.

Additional vibration dampening obtained through two rubber shock absorbers under the mat.

Steering wheel on the left side.

Handle support for the operator on the right side.

Intuitive travel and lifting controls.

Turning radius 1801 mm (with 1156mm forks) for working aisle of 2554mm.

Travel speed up to 9 km/h with load and up to 12Km/h without load.

465 Ah battery side removal

Battery lock.

CAN bus technology and communications systems.

Cooling system both of the engine compartment and of the control compartment for overheating.

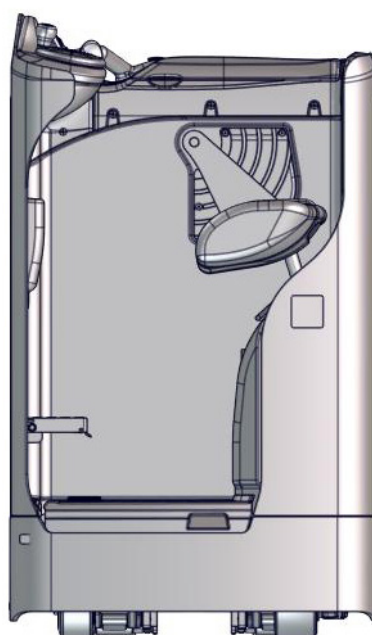
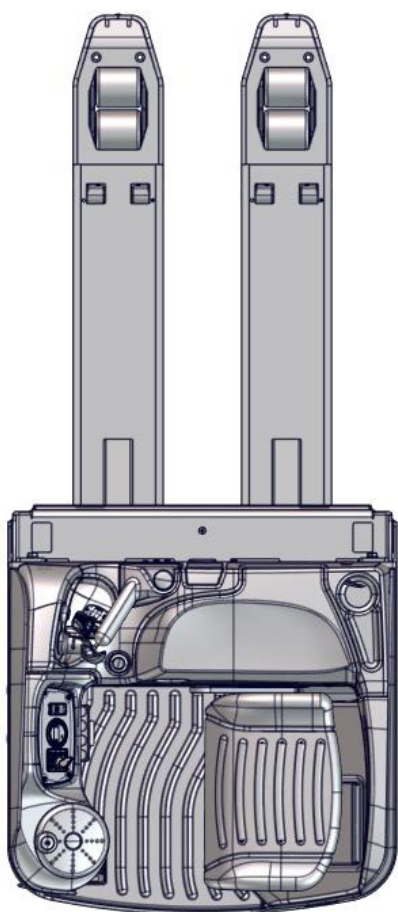
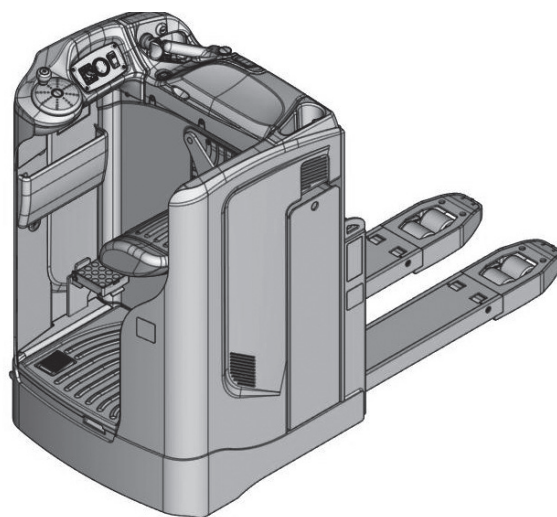
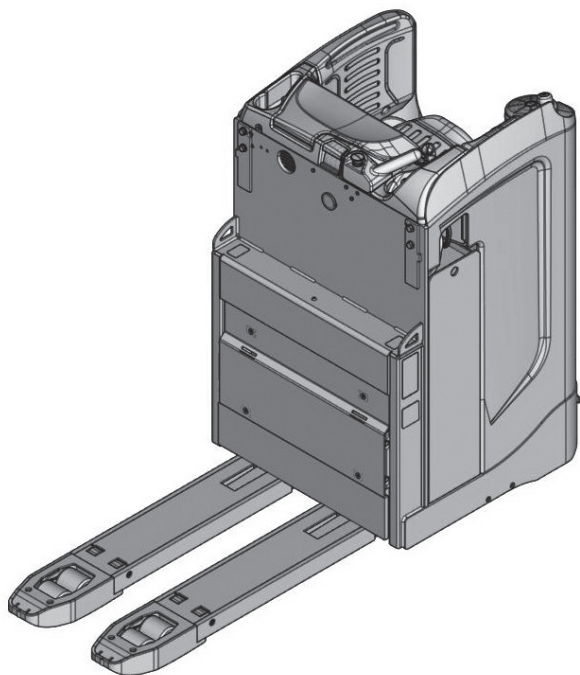
Controls and sensors with IP65 protection.

Access via keypad.

Forks of various lengths and widths are available.



Optional integrated load rack.

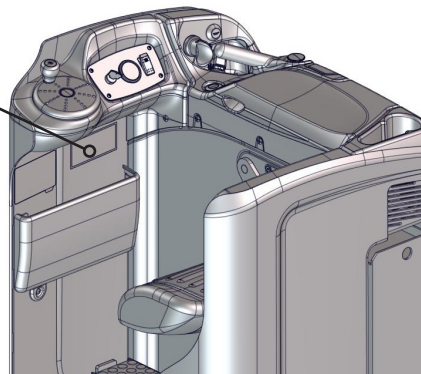
Optional light kit.

VIEWS OF THE TRUCK

TRUCK AND LOAD IDENTIFICATION DATA

TRUCK IDENTIFICATION DATA PLATE

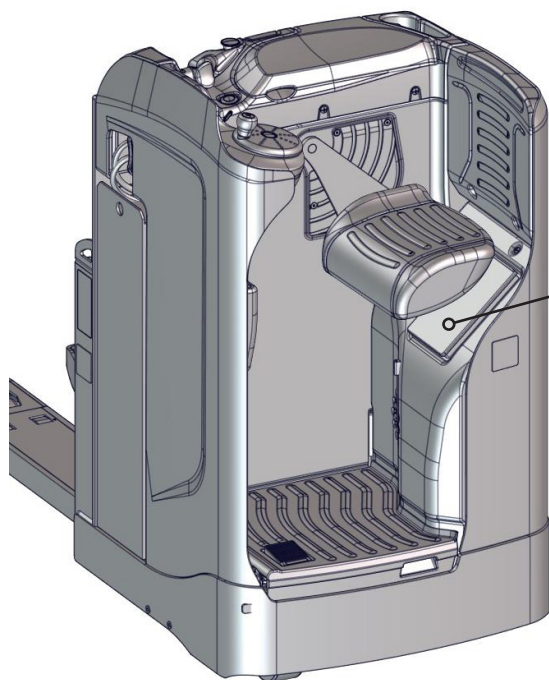
 HYSTER EUROPE, Centennial House, Frimley Business Park Frimley, Surrey GU16 7SG, United Kingdom MADE IN ITALY  4022857 - ITA		
MODELLO MODEL	MATRICOLO SERIAL NUMBER	ANNO DI COSTRUZIONE YEAR OF CONSTRUCTION
CAPACITÀ NOMINALE NOMINAL CAPACITY	MASSA SENZA BATTERIA MASS WITHOUT BATTERY	MASSA BATTERIA MIN MAX BATTERY MASS
PERSONE A BORDO PERSON ON BOARD	POTENZA NOMINALE NOMINAL POWER	BATTERIA BATTERY VOLTAGE
MASSIMA FORZA TRAZIONE MAXIMUM TRACTION FORCE	FORZA AL SANCIO POWER PULL	TEMPO DI APPLICAZIONE EXERTED TIME



The truck identification data plate is located under the control area

- Name of the manufacturer
- Serial number
- Model
- Year of manufacture
- Rated capacity
- Weight without battery
- Battery min./max. weight
- Persons allowed on the truck
- Rated power
- Battery voltage

DOCUMENTATION POSITION

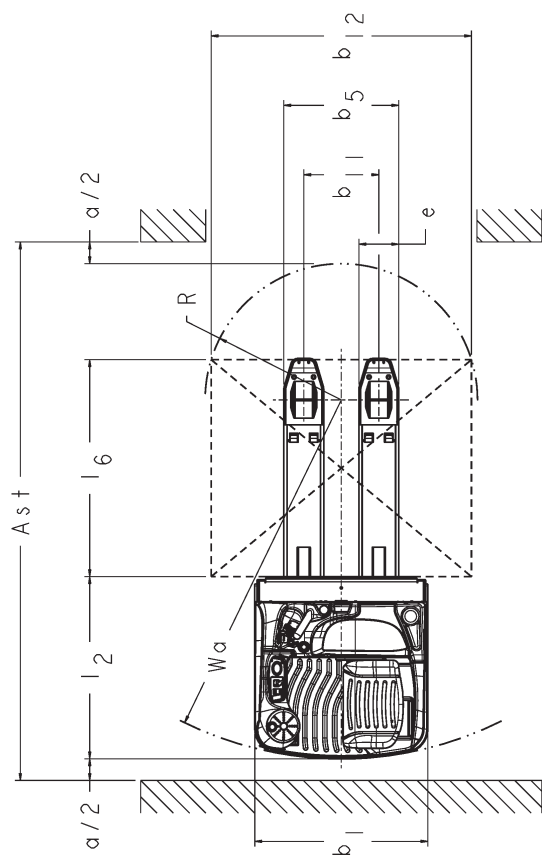


The truck documentation is located under the dedicated storage area under the seat.



GENERAL SPECIFICATIONS

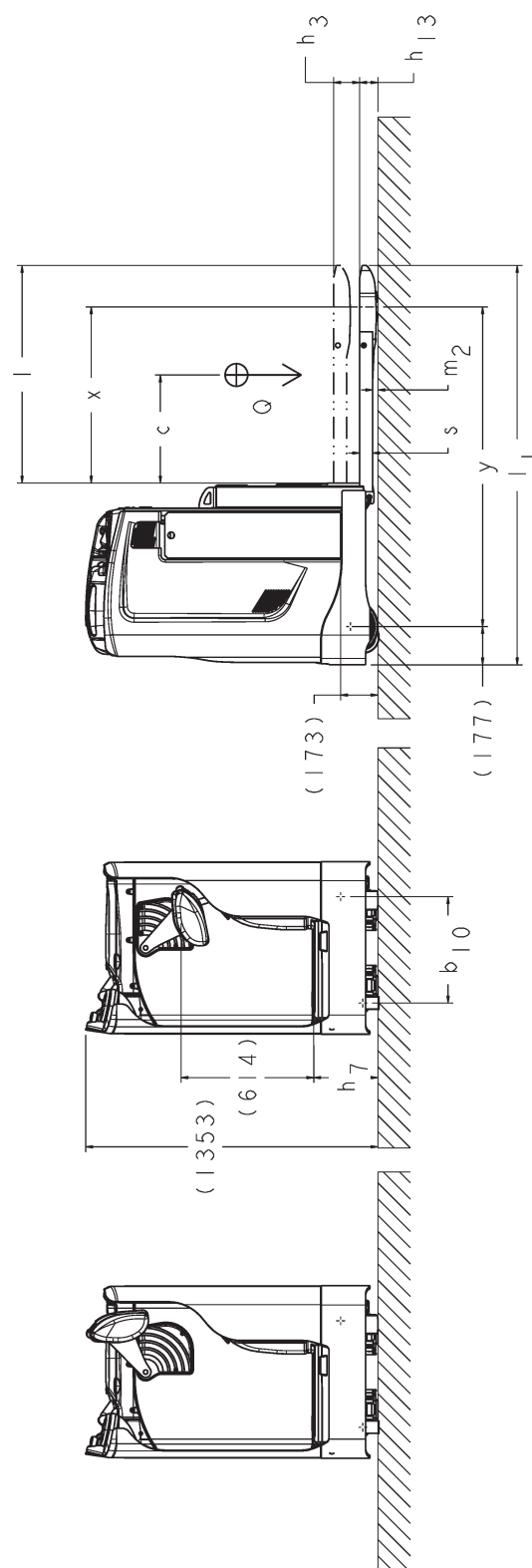
RP2.0 - RP2.5



$$Ast = W\alpha + R + a$$

$$Ast = W\alpha + \sqrt{(l_6 - x)^2 + (b_{12} / 2)^2} + a$$

$$a = 200$$



GENERAL SPECIFICATIONS				
Distinguishing mark	1.1	Manufacturer (abbreviation)		Hyster
	1.2	Manufacturer's type designation		RP2.0N
	1.3	Drive: electric (battery or mains), diesel, petrol, fuel gas		Battery
	1.4	Operator type: hand, pedestrian, standing, seated, order-picker		Stand
	1.5	Rated capacity/Rated load	Q (Kg)	2000
	1.6	Load centre distance ⁽¹⁾	c (mm)	600 ⁽²⁾
	1.8	Load distance, centre of drive axle to fork ⁽¹⁾	x (mm)	965
	1.9	Wheelbase ⁽¹⁾	y (mm)	1628
Weight	2.1	Service weight ⁽¹⁾	kg	1010
	2.2	Axle loading, laden front/rear	kg	1202 / 1808
	2.3	Axle loading, unladen front/rear	kg	755 / 255
Tyres, chassis	3.1	Tyres: polyurethane, tophane, vulkollan, front/rear		Vulkollan / Vulkollan
	3.2	Tyre size, front	ø (mm x mm)	254 x 90
	3.3	Tyre size, rear	ø (mm x mm)	85 x 90
	3.4	Additional wheels (dimensions)	ø (mm x mm)	150 x 60
	3.5	Wheels, number front/rear (x = driven wheels)		1x + 1 / 4
	3.6	Tread, front	b ₁₀ (mm)	492
	3.7	Tread, rear ⁽¹⁾	b ₁₁ (mm)	346
Dimensions	4.4	Lift	h ₃ (mm)	120
	4.8	Height of seat / platform	h ₇ (mm)	927 / 293
	4.15	Height, lowered	h ₁₃ (mm)	85
	4.19	Overall length ⁽¹⁾	l ₁ (mm)	1996
	4.20	Length to face of forks ⁽¹⁾	l ₂ (mm)	840
	4.21	Overall width	b ₁ (mm)	798
	4.22	Fork dimensions DIN ISO 2331 ⁽¹⁾	s/e/l (mm)	60 / 184 / 1156
	4.25	Distance over fork-arms ⁽¹⁾	b ₅ (mm)	530
	4.32	Ground clearance, centre of wheelbase	m ₂ (mm)	25
	4.33	Load dimension b ₁₂ × l ₆ lengthwise	b ₁₂ × l ₆ (mm)	800 x 1200
	4.34	Aisle width predetermined load dimensions	A _{st} (mm)	2465
	4.34.1	Aisle width for pallets 1000mm x 1200mm crossways ^{(1) (5)}	A _{st} (mm)	2554
	4.34.2	Aisle width for pallets 800mm x 1200mm lengthwise ^{(1) (5)}	A _{st} (mm)	2465
	4.35	Turning radius ⁽¹⁾	W _a (mm)	1801
Performance data	5.1	Travel speed, laden/unladen	km/h	9 / 12
	5.1.1	Travel speed, laden/unladen, backwards	km/h	9 / 9
	5.2	Lift speed, laden/unladen	m/s	0,027 / 0,037
	5.3	Lowering speed, laden/unladen	m/s	0,064 / 0,030
	5.8	Max. gradeability, laden/unladen	%	10.0/24.5
	5.10	Service brake		Electro Magnetic
Electric - engine Drive/lift mechanism	6.1	Drive motor S2 60 minute rating	kW	2,6
	6.2	Lift motor, S3 15% rating	kW	1.2
	6.3	Battery according to DIN 43531/35/36 A,B,C, no		no
	6.4	Battery voltage/nominal capacity K ₅	(V)/(Ah)	24 / 465
	6.5	Battery weight ⁽³⁾	kg	366
	6.6	Energy consumption according to VDI cycle ⁽⁴⁾	kWh/h at number of cycles	0.4
	8.1	Type of drive unit		AC Controller
Addition data	10.7	Sound pressure level at the driver's seat	dB (A)	82.5

(1) See Forks table

(2) Applies to one pallet = 1200mm

(3) These values may vary of +/- 5%.

(4) Values obtained with 40 cycles

(5) Stacking aisle widths (lines 4.34.1 & 4.34.2) are based on the VDI standard calculation as shown on illustration. The British Industrial Truck Association recommends the addition of 100 mm to the total clearance (dimension a) for extra operating margin at the rear of the truck.

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BEFORE INSTALLATION

Make sure in advance that all the tools required to unload the truck are available (bridge crane, lift truck, lifting slings, etc.). Before delivering to the client it is very important to check the suitability of the place where the carriage is to be installed.

FORKS TABLE

	b ₅ = 480 - 530 - 560 - 670 mm b ₁₁ = 346 mm													
	C	I	x ⁽¹⁾	I-x	I ₆	b ₁₂	R	y ⁽¹⁾	I ₂	I ₁	Wa ⁽¹⁾	a	Ast ⁽²⁾	Forks weight ⁽³⁾
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
	500	1006	815	191	1200	800	555	1478	840	1846	1654	200	2409	147
	600	1156	965	191	1200	1000	552	1628		1996	1801		2554	156
	700	1406		441	1200	800	464			2246			2465	165
	800	1606		641	1200	800	464			2446			2465	173
	1000	1956	1405	551	2000	1200	845	2068		2796	2236		3281	204.5
	1100	2156		751	2400	800	1072			2996			3508	212.5
	1500	2856		1860	996	3000	1200			1288			2523	3696
UK	1000	1956	1356	600	2000	1200	880	2019	840	2796	2188	200	3268	205.5
	1100	2156		800	2400	800	1118			2996			3506	213.5
	1200	2356	1650	706	2400	800	850			2313			3196	2479
UK SHORT	1200	2356	1405	951	2400	800	1072	2068	840	3196	2236	200	3387	220.5
UK LONG	1200	2356	1860	496	2400	800	672	2523	840	3196	2687	200	3383	229
	For all batteries													

(1) With lowered forks - for lifted forks -68mm.

(2) Aisle width for longitudinal pallet.

(3) All weights are: forks + tie rods.

All values are nominal and subject to tolerances. For more information, please contact the manufacturer.

Hyster products are subject to change without notice.

The lift trucks illustrated may feature optional equipment.

The values may vary depending on the configurations.