Up to two shifts without changing the battery due to energy recovery and effective energy management

Modules for process integration: RFID technology, multiple height and weight capability, Logistics Interface

Up to 25 percent greater performance due to warehouse navigation with semi-automatic approach (optional)

Expandable to automatic operation – ideal for 3-shift operation

Highly flexible model with modular construction and integrated RFID positioning technology

ETX 513/515

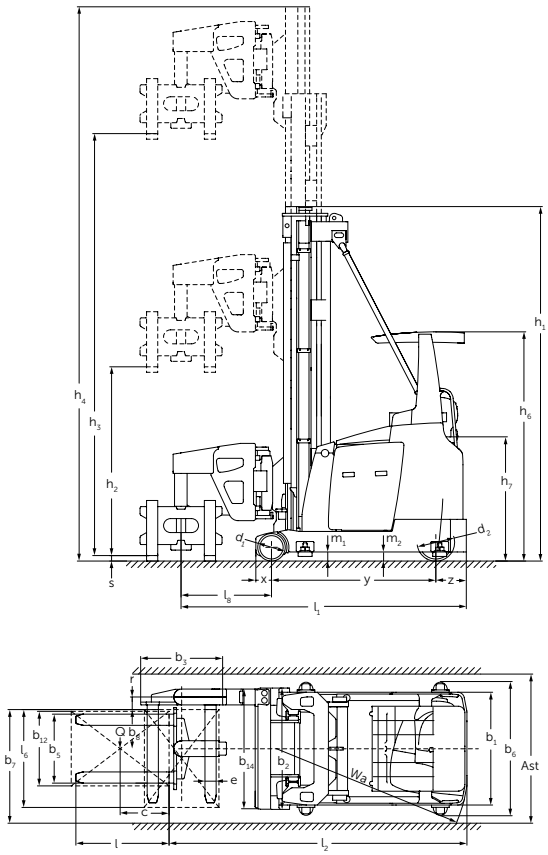
Electric sideways-seated / tri-lateral stacker with swivelling or telescopic forks (1,200/1,250/1,500 kg)

The ETX 513/515 high rack stackers are used for maximum performance in the high end area of a narrow aisle warehouse. They set new standards in terms of flexibility, economic efficiency and ergonomics.
Flexibility through modular construction: The Jungheinrich modular system has more than 5 million possible configurations providing flexibility from the outset. The advantage is adaptability to any warehousing and logistics strategy. Intelligent truck management with our in-house electronic controller, and CAN-Bus system offers options for a wide range of requirements with a large number of additional safety features available.
Excellent performance and energy efficiency: The important factors for fast throughput and outstanding cost efficiency. This is precisely what is offered by the Jungheinrich 3-phase AC technology with higher performance data and greater dynamics, matched by improved energy utilisation. The advantage: Full availability over two shifts in normal operation without the need to change the battery.
Tapping in to this performance level is simplicity itself for the ETX operator.

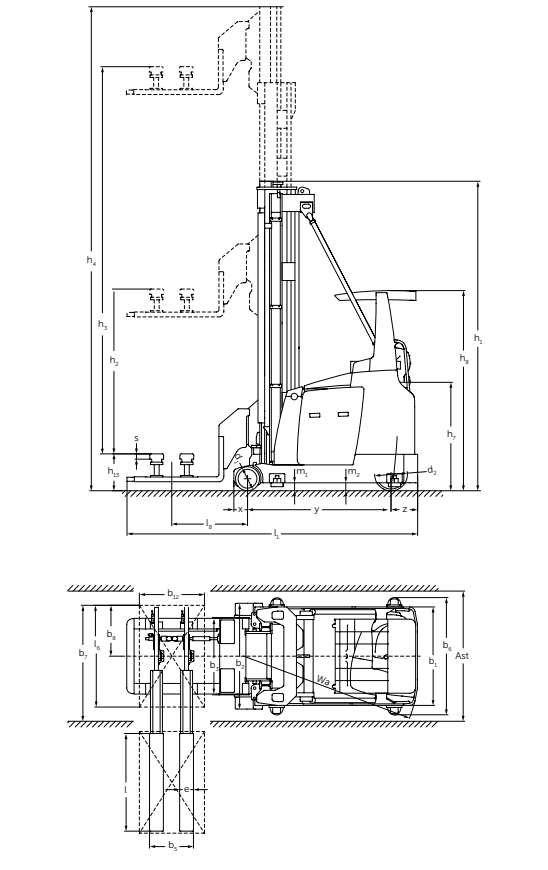
- Information transmitted via colour display. Important operating data is displayed rapidly and clearly in icon form.
- All parameters and programs can be set individually.
- Soft keys to control functions and menus.
- Camera / monitor system for effective storage and retrieval of pallets at great lift heights.
- Hydraulic control by thumb movement.
- Automotive style pedal arrangement for control and braking.
- Side seated position for fatigue-free operation.

JUNGHEINRICH
Machines. Ideas. Solutions.

ETX 513/515



ETX 513/ 515
Pivot/traverse fork



ETX 513/ 515
telescopic fork

Technical data in line with VDI 2198

Identification	1.1	Manufacturer (short form)			Jungheinrich			
	1.2	Model			**ETX 513**	**ETX 515**	**ETX 513**	**ETX 515**
	1.3	Drive			Electrics			
	1.4	Manual, pedestrian, stand-on, seated, order picker operation			tri-lateral stacker	tri-lateral stacker	Bi-lateral stacker	Bi-lateral stacker
	1.5	Load capacity/rated load	Q	t	1.25	1.5	1.2[1)]	1.2[1)]
	1.6	Load centre distance	c	mm	600			
	1.8	Load distance	x	mm	168	193	168	193
	1.9	Wheelbase	y	mm	1764	2094	1764	2094
Weights	2.1	Service weight		kg	6540	7530	6540	7530
	2.2	Axle load, w. load, front / rear		kg	5736 / 2058	6540 / 2490	5736 / 2058	6540 / 2490
	2.3	Axle load, w.o. load, front / rear		kg	3810 / 2730	4350 / 3180	3810 / 2730	4350 / 3180
Wheels / chassis	3.1	Tyres			Vulkollan			
	3.2	Tyre size, at front		mm	Ø 295 x 144	Ø 380 x 192	Ø 295 x 144	Ø 380 x 192
	3.3	Tyre size, at rear		mm	Ø 400 x 160			
	3.5	Wheels, number front/rear (x = driven wheels)			2 / 1x			
Basic dimensions	4.2	Mast height (lowered)	h_1	mm	3820	3920	3820	3920
	4.4	Lift	h_3	mm	5500			
	4.5	Extended mast height	h_4	mm	6650	6750	6650	6750
	4.7	Height of overhead guard	h_6	mm	2461			
	4.8	Seat height/stand height	h_7	mm	1360			
	4.19.2	Total length (without load)		mm	3492	3780	3425	3711
	4.20	Length incl. back of forks	l_2	mm	3176	3475		
	4.21	Total width	b_1/b_2	mm	1210 / 1450	1210 / 1450	1210 / 1210	1210 / 1250
	4.22	Fork dimensions	s/e/l	mm	40 / 120 / 1200	50 / 120 / 1200	60 / 180 / 1200	60 / 180 / 1200
	4.23	Fork carriage ISO 2328, class/type A, B			2A	2A		
	4.24	Fork carriage width	b_3	mm	880	880		
	4.25	Width over forks	b_5	mm	845	845	540	540
	4.29	Reach, sideways		mm	1290	1290	1300	1300
	4.31	Floor clearance with load under mast	m_1	mm	80			
	4.32	Floor clearance centre wheelbase	m_2	mm	85			
	4.33.16	Working aisle width for 1200 x 800 pallet	Ast	mm	1600	1600	1400	1450
	4.35	Turning radius	W_a	mm	2135	2460	2135	2460
	4.38.4	Pallet width		mm	800			
	4.38.5	Pallet length		mm	1200			
	4.38.7	Inner clear height of operator compartment		mm	1518			
Performance data	5.1	Travel speed, w. / w.o. load		km/h	10.5 / 10.5			
	5.2	Lift speed, w. / w.o. load		m/s	0.45 / 0.46	0.45 / 0.46[2)]	0.45 / 0.46	0.45 / 0.46[2)]
	5.3	Lower speed, w. / w.o. load		m/s	0.48 / 0.48			
	5.4	Traverse speed w. / w.o. load		m/s	0.3 / 0.3[3)]			
	5.10	Service brake			generated			
	5.11	Parking brake			electric spring-loaded			
Electrics	6.1	Drive motor rating S2 60 min.		kW	7.6			
	6.2	Lift motor rating at S3 25%		kW	21.0			
	6.3	Battery according to DIN 43531/35/36 A,B,C, no			3 PzS 465	5 PzS 775	3 PzS 465	5 PzS 775
	6.4	Battery voltage/nominal capacity K5		V/Ah	80 / 465	80 / 775	80 / 465	80 / 775
	6.5	Battery weight		kg	1238	1863	1238	1863
Misc.	8.1	Type of drive control			AC Control			
	8.4	Sound pressure level at operator's ear according to EN 12053		dB (A)	65			
	8.6	Steering			electric			

[1)] For F (low profile telescopic forks) 1000 kg
[2)] In connection with performance package to 0.52 m/s
[3)] possible in connection with performance package to 0.4 m/s

In accordance with VDI Guideline 2198 this specification sheet provides details of the standard truck only. Non-standard tyres, different masts, optional equipment, etc. may result in different values.

ETX 513/515

Standard values for working aisle widths (mm)					
with rail guidance					
Pallet size	Stacking depth	Ast	Ast_3/VDI theoretical		Ast_3 practical
Side-shift version			**ETX 513**	**ETX 515**	
1200 x 800	1200	1600	3538	3820	+500
1200 x 1200	1200	1600	3689	3971	+500
800 x 1200	800	1300	3891	4173	+500
Version with telescopic forks			**ETX 513 T/F**	**ETX 515 T/F**	
1200 x 800	1200	1400	3698	3986	+500
with wire guidance					
Pallet size	Stacking depth	Ast	Ast_3/VDI theoretical		Ast_3 practical
Side-shift version			**ETX 513**	**ETX 515**	
1200 x 800	1200	1705	3538	3820	+1000
1200 x 1200	1200	1705	3689	3971	+1000
800 x 1200	800	1370	3891	4173	+1000
Version with telescopic forks			**ETX 513 T/F**	**ETX 515 T/F**	
1200 x 800	1200	1450	3698	3986	+1000

ETX 513/515

Standard mast types ETX 513/515							
	Lift h_3 (mm)	Lowered mast height h_1 (mm)		Free lift h_2 (mm)		Extended mast height h_4 (mm)	
		ETX 513	ETX 515	ETX 513	ETX 515	ETX 513	ETX 515
ZT	3000	2570	2670	-	-	4150	4250
	3500	2820	2920	-	-	4650	4750
	4000	3070	3170	-	-	5150	5250
	4500	3320	3420	-	-	5650	5750
	5000	3570	3670	-	-	6150	6250
	5500	3820	3920	-	-	6650	6750
	6000	4070	4170	-	-	7150	7250
	6500	4320	4420	-	-	7650	7750
	7000	4570	4720	-	-	8150	8250
	7500	4820	4970	-	-	8650	8750
	8000	5070	5220	-	-	9150	9250
	8500	-	5470	-	-	-	9750
	9000	-	5720	-	-	-	10250
DZ	5500	2900	-	1750	-	6650	-
	6000	3100	3200	1950	1950	7150	7250
	6500	3300	3400	2150	2150	7650	7750
	7000	3500	3600	2350	2350	8150	8250
	7500	3700	3800	2550	2550	8650	8750
	8000	3900	4000	2750	2750	9150	9250
	8500	4100	4200	2950	2950	9650	9750
	9000	4300	4400	3150	3150	10150	10250
	9500	4500	4600	3350	3350	10650	10750
	10000	4700	4750	3550	3500	11150	11250
	10500	-	4950	-	3700	-	11750
	11000	-	5100	-	3850	-	12250
	11500	-	5300	-	4050	-	12750
	12000	-	5450	-	4200	-	13250
	12500	-	5650	-	4400	-	13750
	13000	-	5800	-	4550	-	14250

ETX 513/515

ETX standard equipment

- Sprung, adjustable and weight-adjustable operator seat with armrests.
- Pivoting operating module with overhead guard.
- Operating console adjustable in height and distance to the operator.
- Graphics-compatible display with function keys for status and service displays.
- Effortless, precise manoeuvring with electronic power-assisted steering.
- Camera/colour monitor system (5.6") for reliable stacking and retrieval.
- Integrated rack height select without no load sensor.
- Diagonal travel with optimum speed profile (dependent on travel direction).
- Gentle movement at best efficiency due to stepless speed control of all drives.
- Electromagnetic spring-loaded brake acts on load and drive wheel.
- End position and transfer cushioning of all hydraulic functions.
- Manually overlaid swivelling/sideshift.
- Integrated diagnostic system with display and service interface.
- Energy recovery while braking and lowering.
- CAN-Bus networked controllers.
- Two RFID readers for load and drive direction.

ETX optional equipment

- 'Lifting and sideshift' performance module.
- Modular telescopic forks in various designs (standard or flat design).
- Symmetrical fork positioner for lifting loads of different sizes.
- Asymmetrical fork positioner, adjustment to load size and sideshift for comfortable picking.
- Mechanical rail guidance in different designs.
- Wire guidance for precise control in the aisle with no mechanical loading of components.
- Enclosed cab (glass version).
- Synchronised swivelling in or outside the aisle (automatic process).
- Heating in foot-well.
- Radio with CD player and MP3 interface.
- Modular system of lift / travel and lower cut-outs.
- End of aisle control with speed reduction.
- Integrated Jungheinrich personal protection system (PPS optional), factory-fitted integration into the safety computer.
- Impact protection (mixed operation of two trucks in the aisle)

Warehouse navigation for semi-automatic approach within the aisle.

- LED working lights and LED interior lighting.
- Converters in different designs (e.g. power supply terminals, printer etc.).
- DIN A4 writing pad.
- Document holder.
- Rack height select plus automatic stacking with active reach control.
- Optional no load sensor in the fork tips or on load handler.
- Jungheinrich radio data terminals with mechanical and electrical interfaces for material flow management systems.
- Laser scanner including bracket.
- Jungheinrich Information System for Truck Management (ISM).

Guidance systems in narrow aisles ensure high performance

Guidance systems guarantee safe truck operation and provide the best solution for high performance and high travel speed. They reduce the space required due to the extremely low clearance between truck and racking and significantly reduce strain on the operator.

The advantages of wire guidance

- Automatic, rapid alignment and guidance of the truck (with 125 mm safety clearance) without mechanical stress.
- Approaching the guide wire up to an angle of almost 90°.
- Parameterisation of up to six different frequencies.
- Modulation (e.g. unblock frequency) of up to three frequencies.
- Continuously level floor. Advantages: Easy cleaning and high level of flexibility regarding the trucks to be used.

The advantages of mechanical guidance

- Narrow aisle widths due to narrow safety clearance (100 mm).
- High travel speed.

ETX 513/515

High level of efficiency from 'manual' to 'automatic'.
The ETX can be adapted for use in any warehouse or for any application thanks to its modularity and innovative control technology. Irrespective of whether your warehouse is manual, semi-automatic or fully automatic: The ETX has the appropriate technology on board.

- RFID technology for truck positioning in narrow aisles
- Inductive guidance with multi-frequency control
- Redundant route and height measurement
- Active reach control with correction of the mast backward tilt
- Warehouse navigation with precise approach and automatic stacking
- Load handling alternatively by sideshift or telescopic forks

Modules for automation

- Automation computer with radio module for data transfer
- System interface for communication with the warehouse management computer
- Apron navigation by means of inductive guidance and cornering by RFID control
- Redundant safety cut-outs via unblock frequency or warehouse management computer
- Precise positioning for safe lifting of loads
- Optional with centring frame, perimeter monitoring and gap check (telescopic forks)
- No-load sensor
- Built-in charger with busbar operation for three-shift operation without battery change
- Personal protection system (PPS)

Prerequisite for automation
When justifying automation and the requirements which are necessary, our system consultants should be consulted in advance of a project. Here are a few examples of what is to be considered:

- Warehouse control and processes must be configurable for an automated system (warehouse management computer, warehouse management system)
- Configure warehouse environment accordingly (conveyor technology, defined transfer positions)
- Uniform loads if possible (max. two loads; observe the quality of the load carrier)
- Observe tolerances for floors and racking systems
- Area security and access monitoring
- Maximum lift heights on request

Design, commissioning and service from a single source
We offer you:

- Design, planning and development
- Material flow, capacity planning and calculation of economic efficiency
- Fork lift trucks and racking
- Hardware and software for warehouse management and control
- Design and commissioning
- Service and support for all system components

Benefit from the advantages




Pioneers of 3-phase AC technology
More than 150,000 Jungheinrich 3-phase AC trucks are in use all over the world. This depth of knowledge is reflected in today's drive and control technology:
- Excellent productivity.
- Low energy consumption.
- Effective thermal economy.
- Reduced maintenance and wear.

High throughput levels
- 3-phase motors with high torque.
- High acceleration, rapid lift, dynamic ancillary movements.
- Quiet traverse/pivot system with high reach speeds.
- Diagonal travel speed settings as a function of travel direction and height.
- Faster duty cycles through synchronised traverse (optional).

Economic energy management
- Double energy-saving benefits through regenerative braking and lowering.
- Longer operating times on a single battery charge (up to 2 shifts).
- Shorter charge times.
- Active energy and battery management.
- Longer battery service life.
- Battery rollers for rapid battery replacement.

RFID ground control (standard)
- Truck control with transponder technology.
- Permanent route measuring for precise identification of all warehouse areas.
- High flexibility regarding switching and safety functions (aisle end stop, lift / travel cut-outs, speed reductions)
- Optimisation of travel speed profile relative to the floor topology.

Control and CAN-Bus system
- All movements and speeds can be set and adjusted via software parameters.
- Electronically controlled drive wheel brake and wear-free electromagnetic multi-plate brake on the load wheels (ETX 515).

Commissioning and maintenance
- Quick and reliable commissioning through teach-in process.
- 1000 operating hours service interval.
- Electronics with wear-free sensor system.
- The gear oil in maintenance-free and sealed for life.

Reliable operation – high availability
- Robust and maintenance-free three-phase AC drive systems - no wearing parts.
- 70% fewer cables and plugs due to CAN-Bus.
- Extremely torsion-resistant mast for high residual capacities and low mast sway.

Jungheinrich warehouse navigation (optional)
- Linking the ETX to a Warehouse Management System (WMS) using a radio data terminal or scanner.
- Direct acceptance of the destination in the narrow aisle by the truck computer.
- Automatic vertical positioning.
- Automatic horizontal position control system.
- Automatic stacking operation.
- Effective twin cycles.
- Elimination of incorrect positioning through RFID location detection.
- Maximum flexibility in the warehouse, as the existing WMS can be modified to cater for warehouse extensions

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The German production facilities in Norderstedt and Moosburg are certified. ISO 9001 ISO 14001

Jungheinrich fork lift trucks meet European safety requirements. CE

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