

Ergonomics: efficient operating concept for more freedom of movement, with electrically adjustable control panel

Intelligence: truck tracking and behavior control via RFID technology for simple system integration

Energy Efficiency: top performance and lowest battery consumption with new synchronous AC motors

Flexibility: versatile design with modular construction and optional performance and assistance packages

Technology Leading: semi-automated position approach with exclusive Warehouse Navigation System



EKV 410/412/514/516k/516

Man-Up Turret Truck (2,200 - 3,500 lbs.)

The Jungheinrich® EKV series of turret trucks has been the global industry benchmark for years. Now with the introduction of new maintenance-free synchronous AC motors, the standard for higher performance has been raised - all while further reducing energy loss by as much as 10 percent. This allows the EKV to operate two full shifts on a single battery charge in most applications for more pallet moves per hour.

Since 2007, Jungheinrich systems trucks have used RFID transponder technology to track and control the behavior of turret trucks in the very narrow aisle. In addition, our exclusive Warehouse Navigation System uses this technology for fast, efficient and precise approach to pallet locations. Wasted travel, adjustments and

back-tracking can be eliminated. The productivity gains are up to 25% in most applications. And even if requirements change in the future, the system remains flexible and can easily adapt to expansions and changing demands.

Our modular performance and assistance packages ensure the EKV is specifically optimized for your unique application. The new Floor Pro option provides hydraulic vibration dampening over uneven floors for improved efficiency and performance. The sideshiftPLUS option helps facilitate load handling and saves time, while allowing the EKV to work effectively in very narrow aisles.

The operator compartment offers plenty of space and storage for the operator, while a foldable seat and electrically adjustable control panel allow for comfortable standing or seated operation. The large front barrier window provides an excellent view of the forks allowing the operator to easily confirm proper load engagement.

Technical Data

Characteristics	1.1	Manufacturer				Jungheinrich	
	1.2	Model				EKX 410	
	1.3	Drive				Electric	
	1.4	Type of operation				order picker turret truck	
	1.5	Load capacity / rated load	Q	lb	kg	2,200	1,000
	1.6	Load center distance	c	in	mm	24.0	610
	1.8	Load distance, center of load axle to traverse rack	x	in	mm	17.7	450
	1.9	Wheelbase	y	in	mm	71.1	1,807
	1.10	Center of drive wheel to counterweight		in	mm	12.6	320
	Weights	2.1	Net weight including battery		lb	kg	13,007
2.2		Axle load, with load, front / rear		lb	kg	10,792 / 3,594	4,895 / 1,630
2.3		Axle load, without load, front / rear				7,613 / 5,395	3,453 / 2,447
Wheels, Chassis	3.1	Tires				Bestthane®	
	3.2	Tire size, at front		in	mm	11.6 x 5.7	295 x 144
	3.3	Tire size, at rear		in	mm	13.5 x 4.3	343 x 110
	3.5	Wheels, number front/rear (x = driven wheels)				2 / 1x	
	Dimensions	4.2	Collapsed mast height	h_1	in	mm	112.2
4.4		Maximum fork height (MFH)	h_3	in	mm	137.8	3,500
4.5		Overall extended height (OAE)	h_4	in	mm	238.2	6,050
4.7		Overhead guard height	h_6	in	mm	100.4	2,550
4.8		Platform height	h_7	in	mm	16.9	430
4.11		Auxiliary lift	h_9	in	mm	70.1	1,780
4.14		Maximum platform height	h_{12}	in	mm	154.7	3,930
4.19		Overall length	l_1	in	mm	144.3	3,665
4.20		Length to fork face, headlength	l_2	in	mm	132.6	3,369
4.21		Overall width	b_1 / b_2	in	mm	47.6 / 57.1	1,210 / 1,450
4.22		Fork dimensions, thickness / width / length	$s / e / l$	in	mm	1.57 x 4.72 x 47.24	40 x 120 x 1,200
4.23		Fork carriage ISO 2328, class/type A, B				2/B	
4.24		Fork carriage width	b_3	in	mm	34.6	880
4.25		Overall fork width	b_5	in	mm	33.7	856
4.29		Stack-in dimension	b_7	in	mm	52.4	1,330
4.30		Stack-in dimension from center of truck	b_8	in	mm	18.9	480
4.31		Ground clearance under mast (loaded)	m_1	in	mm	3.1	80
4.32		Ground clearance, center of wheelbase	m_2	in	mm	3.1	80
4.33		Clear working aisle for 48 x 48 pallets (L x W)	Ast	in	mm	68.5	1,740
4.35		Turning radius	Wa	in	mm	83.5	2,122
4.38		Distance to swivel-forks' pivot point to traverse rack	l_8	in	mm	43.4	1,103
4.39		Combined lift height	$h_3 + h_9$	in	mm	207.9	5,280
4.40		Order picking height	$h_{15}(h_{12}+63")$	in	mm	217.7	5,530
4.41		Distance swivelling forks' pivot-point to steering (traverse) rack	$l_8 - x$	in	mm	25.7	653
4.42		Pallet width	b_{12}	in	mm	48.0	1,219
4.43		Pallet length	l_6	in	mm	48.0	1,219
4.44		Operator compartment entry width		in	mm	19.3	490
4.45		Operator compartment clear height		in	mm	82.7	2,100
4.46		Operator compartment outside width	b_9	in	mm	56.7	1,440
4.47	Traverse rack width	b_{14}	in	mm	56.7	1,440	
4.48	Crane arm width	l_{10}	in	mm	6.8	172	
4.49	Distance swivelling forks' pivot-point to fork face	r	in	mm	5.7	144	
Performance	5.1	Maximum travel speed, loaded / unloaded		mph	km / h	5.6 / 5.6	9.0 / 9.0
	5.2	Lift speed, loaded / unloaded		ft / min	m / s	78.7 / 78.7	0.40 / 0.40
	5.3	Lower speed, loaded / unloaded		ft / min	m / s	78.7 / 78.7	0.40 / 0.40
	5.4	Traverse speed loaded / unloaded		ft / min	m / s	78.7 / 78.7	0.40 / 0.40
	5.10	Service brake				reverse current/regenerative	
	5.11	Parking brake				Electric spring loaded / discs	
Motors	6.1	Drive motor rating S_2 60 min.		hp	kW	9.3	6.9
	6.2	Lift motor kW output at S_3 15%		hp	kW	13.4	10.0
	6.3	Battery compartment (l x w x h)		in	mm	40.00 x 24.01 x 24.01	1,016 x 610 x 610
	6.4	Battery voltage	k_5	V	Ah	48	700
	6.5	Battery weight, nominal ³⁾		lbs	kg	2,240	1,016
Other	8.1	Type of drive control				Synchron Reluctance	
	8.4	Sound level at driver's ear	dB (A)			64	
	8.6	Steering				Electric	

In accordance with VDI Guideline 2198 this specification sheet provides details of the standard truck only.

Non-standard tires, different masts, optional equipment, etc. may result in different values.

1) with Speed Profile Plus, standard: (78.7 fpm / 78.7 fpm) / (0.4 mps / 0.4 mps)

2) with Lift Plus, standard: (98.4 fpm / 98.4 fpm) / (0.5 mps / 0.5 mps)

3) for minimum and maximum weights, (+/- 5%)

Jungheinrich EKX 412		Jungheinrich EKX 514		Jungheinrich EKX 516k		Jungheinrich EKX 516	
Electric order picker turret truck		Electric order picker turret truck		Electric order picker turret truck		Electric order picker turret truck	
2,600	1,200	3,000	1,400	3,500	1,600	3,500	1,600
24.0	610	24.0	610	24.0	610	24.0	610
17.7	450	17.5	445	17.5	445	17.5	445
71.1	1,807	72.4	1,840	76.8	1,950	87.4	2,220
12.6	320	11.1	282	11.1	282	11.1	282
13,261	6,015	14,440	6,550	15,146	6,870	17,637	8,000
11,905 / 3,759	5,400 / 1,705	12,610 / 4,145	5,720 / 1,880	13,647 / 4,542	6,190 / 2,060	14,528 / 6,195	6,590 / 2,810
7,716 / 5,523	3,500 / 2,505	8,708 / 5,732	3,950 / 2,600	8,973 / 6,173	4,070 / 2,800	10,097 / 7,540	4,580 / 3,420
Besthane®		Besthane®		Besthane®		Besthane®	
11.6 x 5.7	295 x 144	15.0 x 7.6	380 x 192	15.0 x 7.6	380 x 192	15.0 x 7.6	380 x 192
13.5 x 4.3	343 x 110	15.7 x 6.3	381 x 192	15.7 x 6.3	381 x 192	15.7 x 6.3	381 x 192
2 / 1x		2 / 1x		2 / 1x		2 / 1x	
112.2	2,850	116.3	2,955	116.3	2,955	116.3	2,955
137.8	3,500	137.8	3,500	137.8	3,500	137.8	3,500
238.2	6,050	238.2	6,050	238.2	6,050	238.2	6,050
100.4	2,550	100.4	2,550	100.4	2,550	100.4	2,550
16.9	430	16.9	430	16.9	430	16.9	430
70.1	1,780	70.1	1,780	70.1	1,780	70.1	1,780
154.7	3,930	154.7	3,930	154.7	3,930	154.7	3,930
144.3	3,665	144.3	3,665	148.6	3,775	159.3	4,045
132.6	3,369	133.0	3,379	137.4	3,489	148.0	3,759
47.6 / 57.1	1,210 / 1,450	47.6 / 57.1	1,210 / 1,450	47.6 / 57.1	1,210 / 1,450	47.6 / 57.1	1,210 / 1,450
1.57 x 4.72 x 47.24	40 x 120 x 1,200	1.97 x 4.72 x 47.24	50 x 120 x 1,200	1.97 x 4.72 x 47.24	50 x 120 x 1,200	1.97 x 4.72 x 47.24	50 x 120 x 1,200
2/B		2/B		2/B		2/B	
34.6	880	34.6	880	34.6	880	34.6	880
33.7	856	33.7	856	33.7	856	33.7	856
52.4	1,330	52.4	1,330	52.4	1,330	52.4	1,330
18.9	480	18.9	480	18.9	480	18.9	480
3.1	80	3.1	80	3.1	80	3.1	80
3.1	80	3.1	80	3.1	80	3.1	80
68.5	1,740	68.5	1,740	68.5	1,740	68.5	1,740
83.5	2,122	83.5	2,122	87.9	2,232	98.5	2,502
43.4	1,103	43.4	1,103	43.4	1,103	43.4	1,103
207.9	5,280	207.9	5,280	207.9	5,280	207.9	5,280
217.7	5,530	217.7	5,530	217.7	5,530	217.7	5,530
25.7	653	25.9	658	25.9	658	25.9	658
48.0	1,219	48.0	1,219	48.0	1,219	48.0	1,219
48.0	1,219	48.0	1,219	48.0	1,219	48.0	1,219
19.3	490	19.3	490	19.3	490	19.3	490
82.7	2,100	82.7	2,100	82.7	2,100	82.7	2,100
56.7	1,440	56.7	1,440	56.7	1,440	56.7	1,440
56.7	1,440	56.7	1,440	56.7	1,440	56.7	1,440
6.8	172	6.8	172	6.8	172	6.8	172
5.7	144	6.1	154	6.1	154	6.1	154
5.6 / 5.6	9.0 / 9.0	6.5 / 6.5	10.5 / 10.5	6.5 / 6.5	10.5 / 10.5	6.5 / 6.5	10.5 / 10.5
78.7 / 78.7	0.40 / 0.40	88.6 / 88.6	0.45 / 0.45	118.1 ²⁾ / 118.1 ²⁾	0.60 ²⁾ / 0.60 ²⁾	118.1 ²⁾ / 118.1 ²⁾	0.60 ²⁾ / 0.60 ²⁾
78.7 / 78.7	0.40 / 0.40	98.4 / 98.4	0.50 / 0.50	98.4 / 98.4	0.50 / 0.50	98.4 / 98.4	0.50 / 0.50
78.7 / 78.7	0.40 / 0.40	78.7 / 98.4 ¹⁾	0.40 / 0.50 ¹⁾	78.7 / 98.4 ¹⁾	0.40 / 0.50 ¹⁾	78.7 / 98.4 ¹⁾	0.40 / 0.50 ¹⁾
reverse current/regenerative Electric spring loaded / discs		reverse current/regenerative Electric spring loaded / discs		reverse current/regenerative Electric spring loaded / discs		reverse current/regenerative Electric spring loaded / discs	
9.3	6.9	12.1	9.0	12.1	9.0	12.1	9.0
13.4	10.0	33.5	25.0	33.5	25.0	33.5	25.0
41.25 x 23.74 x 30.47	1,048 x 603 x 774	41.50 x 24.02 x 34.41	1,054 x 610 x 874.7	41.50 x 27.95 x 34.41	1,054 x 710 x 874	41.50 x 39.61 x 34.41	1,054 x 1,006 x 874
48	1,085	80	500	80	625	80	875
3,325	1,508	3,138	1,423	3,700	1,678	5,042	2,287
12.8	325	12.8	325	12.8	325	12.8	325
Synchron Reluctance 64 Electric		Synchron Reluctance 64 Electric		Synchron Reluctance 64 Electric		Synchron Reluctance 64 Electric	

Standard Mast Types Two-Stage Mast ZT

Lift height		Combined lift height		Order picking height		Overall extended height		EKX 410	EKX 412	Collapsed mast height		EKX 514	EKX 516k	EKX 516	Collapsed mast height	
h_3		$h_{total} (h_3+h_9)$		$h_{15} (h_{12} + 63")$		h_4				h_1					h_1	
in	mm	in	mm	in	mm	in	mm			in	mm				in	mm
118	3,000	188	4,780	198	5,030	218	5,550	•	•	103	2,600	•	•	•	107	2,705
137	3,500	207	5,280	217	5,530	238	6,050	•	•	113	2,850	•	•	•	117	2,955
157	4,000	227	5,780	237	6,030	258	6,550	•	•	123	3,100	•	•	•	127	3,205
177	4,500	247	6,280	257	6,530	278	7,050	•	•	132	3,350	•	•	•	137	3,455
196	5,000	266	6,780	276	7,030	297	7,550	•	•	142	3,600	•	•	•	146	3,705
216	5,500	286	7,280	296	7,530	317	8,050	•	•	152	3,850	•	•	•	156	3,955
236	6,000	306	7,780	316	8,030	337	8,550	•	•	162	4,100	•	•	•	166	4,205
255	6,500	325	8,280	335	8,530	356	9,050	•	•	173	4,375	•	•	•	180	4,555
275	7,000	345	8,780	355	9,030	376	9,550	•	•	184	4,650	•	•	•	190	4,805
295	7,500	365	9,280	375	9,530	396	10,050	•	•	194	4,925	•	•	•	200	5,055
314	8,000	385	9,780	394	10,030	415	10,550	—	•	205	5,200	•	•	•	209	5,305
334	8,500	404	10,280	414	10,530	435	11,050	—	•	216	5,475	•	•	•	223	5,655
354	9,000	424	10,780	434	11,030	455	11,550	—	—	—	—	•	•	•	233	5,905
374	9,500	444	11,280	453	11,530	474	12,050	—	—	—	—	•	•	•	243	6,155
393	10,000	463	11,780	473	12,030	494	12,550	—	—	—	—	—	•	•	253	6,405
413	10,500	483	12,280	493	12,530	514	13,050	—	—	—	—	—	•	•	263	6,655

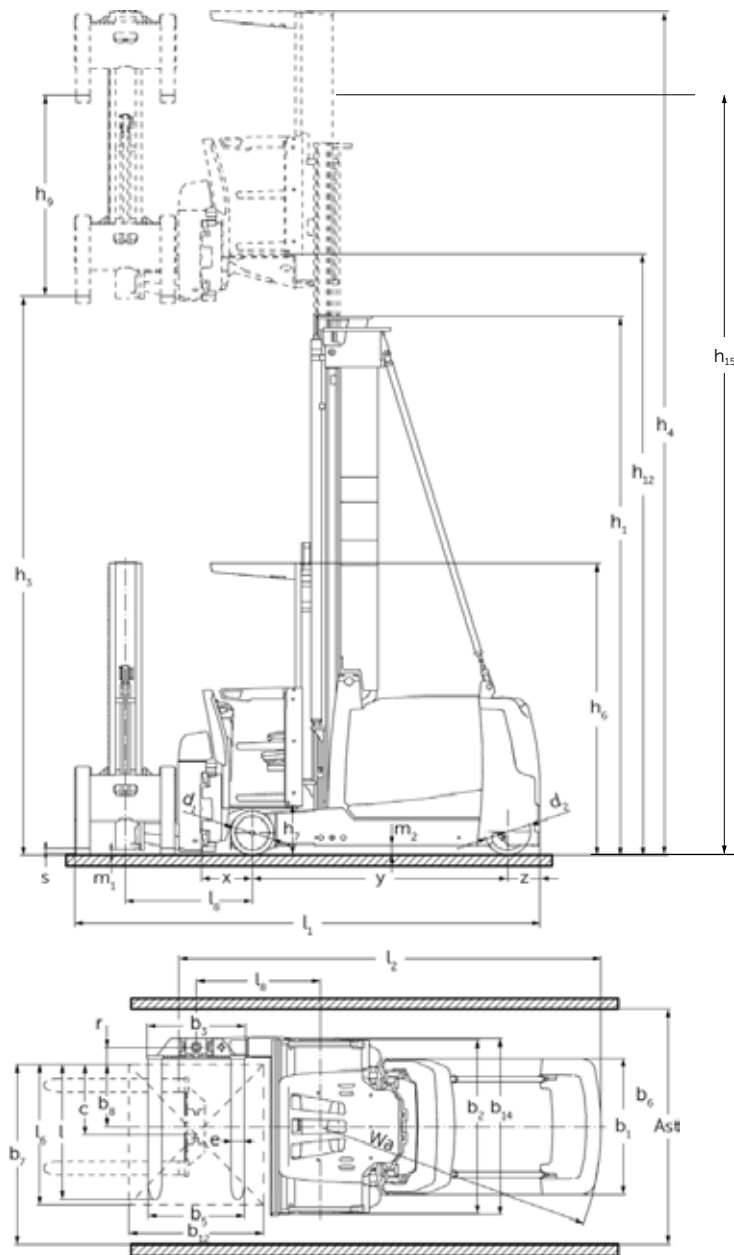
• Truck model, available mast

Standard Mast Types Three-Stage Mast DZ

Lift height		Total lift		Order picking height		Overall extended height		EKX 410	EKX 412	Collapsed mast height		EKX 514	EKX 516k	EKX 516	Collapsed mast height	
h_3		$h_{total} (h_3+h_9)$		$h_{15} (h_{12}+63")$		h_4				h_1					h_1	
in	mm	in	mm	in	mm	in	mm			in	mm				in	mm
157	4,000	227	5,780	237	6,030	258	6,550	—	—	—	—	•	•	•	101	2,550
177	4,500	247	6,280	257	6,530	278	7,050	•	•	104	2,625	•	•	•	107	2,710
196	5,000	266	6,780	276	7,030	297	7,550	•	•	111	2,800	•	•	•	114	2,895
216	5,500	286	7,280	296	7,530	317	8,050	•	•	118	2,975	•	•	•	122	3,095
236	6,000	306	7,780	316	8,030	337	8,550	•	•	125	3,150	•	•	•	130	3,295
255	6,500	325	8,280	335	8,530	356	9,050	•	•	131	3,325	•	•	•	138	3,495
275	7,000	345	8,780	355	9,030	376	9,550	•	•	138	3,500	•	•	•	146	3,695
295	7,500	365	9,280	375	9,530	396	10,050	•	•	145	3,675	•	•	•	154	3,895
314	8,000	385	9,780	394	10,030	415	10,550	—	•	152	3,850	•	•	•	162	4,095
334	8,500	404	10,280	414	10,530	435	11,050	—	•	159	4,025	•	•	•	170	4,295
354	9,000	424	10,780	434	11,030	455	11,550	—	—	—	—	•	•	•	177	4,495
364	9,250	434	11,030	444	11,280	465	11,800	—	—	—	—	•	•	•	181	4,595
374	9,500	444	11,280	453	11,530	474	12,050	—	—	—	—	•	•	•	185	4,695
393	10,000	463	11,780	473	12,030	494	12,550	—	—	—	—	—	•	•	192	4,875
413	10,500	483	12,280	493	12,530	514	13,050	—	—	—	—	—	•	•	199	5,045
433	11,000	503	12,780	512	13,030	533	13,550	—	—	—	—	—	—	•	206	5,215
452	11,500	522	13,280	532	13,530	553	14,050	—	—	—	—	—	—	•	213	5,395
472	12,000	542	13,780	552	14,030	573	14,550	—	—	—	—	—	—	•	220	5,565
492	12,500	562	14,280	572	14,530	593	15,050	—	—	—	—	—	—	•	227	5,750
511	13,000	581	14,780	591	15,030	612	15,550	—	—	—	—	—	—	•	235	5,950
531	13,500	601	15,280	611	15,530	632	16,050	—	—	—	—	—	—	•	247	6,250
551	14,000	621	15,780	631	16,030	652	16,550	—	—	—	—	—	—	•	258	6,550
570	14,500	640	16,280	650	16,530	671	17,050	—	—	—	—	—	—	•	270	6,850

• Truck model, available mast

The Jungheinrich Advantage



Standard values for working aisle widths

Pallet size (L x W)		Stacking-in depth		Clear aisle width (Ast)		Transfer aisle (Ast ₃) theoretical						Transfer aisle (Ast ₃)* practical	
						EKX 410/412/514		EKX 516k		EKX 516			
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
With rail guidance													
48 x 40	1,219 x 1,016	48	1,219	66.5	1,689	142.8	3,627	146.7	3,726	158.4	4,023	+19.7	+500
48 x 48	1,219 x 1,219	48	1,219	66.5	1,689	156.3	3,967	160.9	4,087	172.5	4,382	+19.7	+500
With wire guidance													
48 x 40	1,219 x 1,016	48	1,219	68.5	1,740	151.7	3,853	163.5	4,153	175.2	4,450	+39.4	+1,000
48 x 48	1,219 x 1,219	48	1,219	68.5	1,740	166.9	4,239	170.9	4,341	182.5	4,636	+39.4	+1,000

*The practical transfer aisle width is a reference value.

Note: (Ast) refers to the clear working aisle. (Ast₃) refers to the transfer aisle.

The Jungheinrich Advantage

Ergonomics

- Generous compartment space for operator to drive truck, order pick and store job-related accessories.
- Large panoramic front barrier window provides excellent view of the fork tips allowing the operator to easily confirm proper load engagement.
- Optimum operator positioning due to electronically adjustable control panel for superior comfort.
- Padded knee supports for comfort while order picking.
- Comfortable sitting or standing operation due to the spring-loaded, adjustable and foldable seat.
- Large LCD color display with all important information at a glance. High flexibility through softkey control.
- Comfort package with bright LED work lights and dual operator fans.
- Electronic power steering for easy, precise maneuvering.
- Modular storage systems (optional).

Productivity

- Simultaneous lifting and lowering of main and auxiliary masts saves time for greater productivity.
- Crane arm with auxiliary mast for additional 70" lift.
- Electromagnetic spring-loaded brakes on load and drive wheel.
- Battery rollers for quick and efficient battery changing.
- Diagonal drive with direction-dependent speed profiles for maximum productivity.
- Jungheinrich curveCONTROL for calculated speed reduction in curves.

Intelligent Systems

- RFID technology for tracking and controlling truck behavior in the very narrow aisle.
- Wire guidance with multi-frequency control.
- Warehouse Navigation System with precise location approach and automatic stacking procedure.

Flexibility

- Multiple optional performance packages to meet application and throughput demands.
- Available assistance systems for improved processing and easier pallet handling.
- CAN-Bus system for reliable data transfer and high flexibility.

High Energy Efficiency

- New, exclusive synchronous AC motor technology reduces energy losses and allows even longer operating times.
- Dual energy recovery during braking and lowering via patented hydraulic valve technology.
- Reduced energy consumption from compact hydraulic system with short transmit distances and less resistance.
- Compact electronics mean less cables and connectors, and tuning of all components to one another.
- Active battery and energy management reduces the current peaks and conserves the battery and components.
- High performance allows up to two shifts on a single battery charge (guaranteed on 514/516k/516 models).

Commissioning And Maintenance

- Quick and reliable commissioning through teach-in process.
- The integrated diagnostic system allows for fast and accurate fault diagnosis.
- 1,000 hour service intervals lower maintenance costs and greater reliability.
- Maintenance-free synchronous AC motors and wear-free sensor systems ensure high operational reliability.

warehouseNAVIGATION System (Optional)

- Up to 25% higher throughput efficiency in the very narrow aisle warehouse.
- Simple connection of the EKK to the existing Warehouse Management System (WMS) via the Logistics Interface middleware.
- Automatic horizontal and vertical positioning within +/- 2mm accuracy.
- Automatic stacking and retrieval operation.
- Automatic confirmations back to the WMS eliminate manual scanning for process reliability and time savings.
- High flexibility to accommodate future warehouse expansion.

Performance Packages

- liftPLUS for increased lifting speeds.
- speedprofilePLUS for weight-based optimization of traverse speed.
- Residual capacityPLUS for increasing residual capacities.
- Floor Pro system for hydraulic vibration dampening on uneven floors.
- sideshiftPLUS for additional 4" traverse to each side.

Assistance Systems

- Jungheinrich warehouseNAVIGATION for semi-automated location approach.
- Jungheinrich Logistics Interface middleware for easy connection to any existing WMS.
- Stack-by-Light spotlights for directional-assisted stacking.
- Pick-by-Light spotlights for directional-assisted order picking.
- operationCONTROL for load weight indication on the display and warning signal if parameterized weight is exceeded.
- positionCONTROL for height pre-selection.
- PPS Standard and PPS Plus integrated personnel protection systems sense presence of pedestrians and obstructions in the aisle and alert operator; slow and/or stop truck as necessary.
- Floor Spots as visual warning signals for pedestrians - available in both directions.

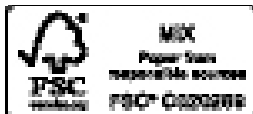
Optional Features

- Comfort Plus driver's seat with lumbar support and heating.
- Synchronized swiveling and traversing of the forks (automatic process).
- Modular storage systems.
- Wire or rail guidance for efficient control.
- Auxiliary mast with higher additional lift.
- Symmetrical fork positioner to accommodate different size pallets and load widths.
- Asymmetrical fork positioner for adaptation to load size and sideshift for comfortable order picking.
- Jungheinrich radio data terminals with electrical interfaces for WMS.
- Jungheinrich barcode scanner and holder with multiple mounting positions.
- Easy Access Entry System via soft key, PIN code or transponder.

Parts when you need them

Jungheinrich's Parts Fast or Parts Free Guarantee ensures next-business-day delivery by 5:00 PM of all Jungheinrich parts in the United States, or they're free, including freight. For customers in Canada and Mexico, the guarantee ensures shipping of parts within 24 hours from the time the order was placed by the dealer. See your local Jungheinrich dealer for program details.

* Programs may be subject to change without notice and may vary by region. Please ask your local Jungheinrich dealer for complete terms and conditions.



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