

**Jungheinrich proprietary  
48 Volt 3-phase AC technology  
for high torque and  
excellent productivity**

**Superior efficiency through  
energy reclamation during  
lowering and braking**

**AC controller for excellent  
reliability with CAN-Bus  
technology**

**Elevating operator cabin**

**Total lift height up to 25 feet**



## **EKV 410**

### **High-rack Stacker / Order Picker (2200 lbs.)**

The EKV 410 of the "Kombi" range with 48 Volt 3-phase AC technology, 2200 lbs. capacity and lift heights up to 25 feet stands for top performance in narrow-aisle warehousing. The ability to stack or retrieve whole pallets as well as to pick individual items from the rack increases both flexibility and economic performance. The EKV 410 is also specifically designed for operation outside the racking configuration as its compact design provides maximum maneuverability.

The clearly arranged cabin with a spacious workplace enables the operator to easily

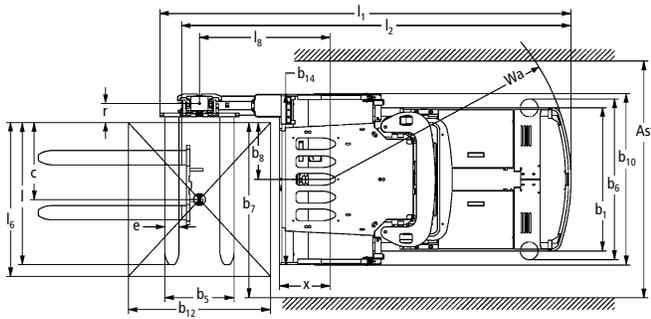
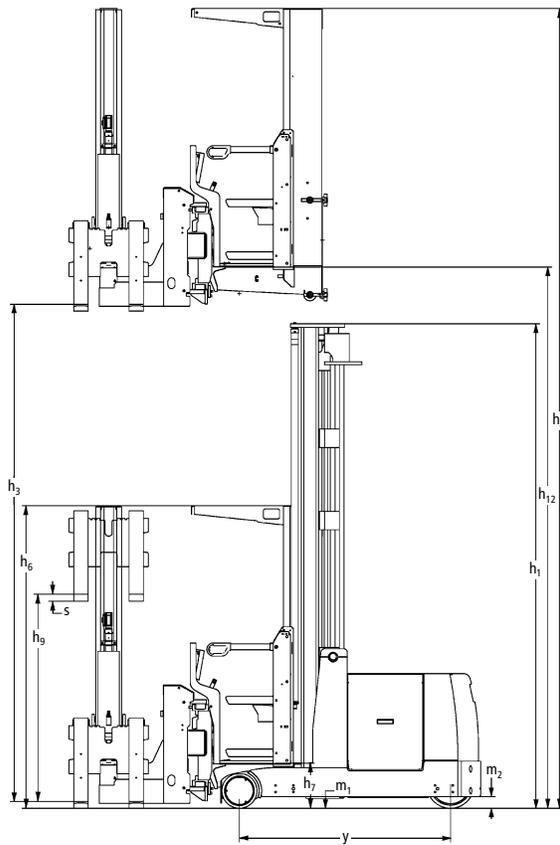
work with optimum efficiency. Large storage areas, ergonomic positioning of controls and the choice of standing or sitting operation make work significantly less demanding physically and thus faster and more efficient.

At the center of the cab area is the operating console, adjustable in both height and tilt angle. With a number of innovative performance characteristics, it defines the state of the art in systems ergonomics:

- Information transmission via graphic display. Important operating data are depicted in pictograms on a large LCD display.

- Individually adjustable steering characteristics and degree of steering lock.
- Travel and hydraulics are controlled via thumb controls.
- Two-handed operating concept for first-class operator comfort and confidence. Sensors register the operator's touch and pass this information to the onboard computer where all operational checks are carried out. The intensity of the required touch is individually adjustable.

# EKX 410



| Standard values for working aisle widths (inches)         |                      |                          |                                     |           |
|---|----------------------|--------------------------|-------------------------------------|-----------|
| with rail guidance  |                      |                          |                                     |           |
| pallet size<br>(l x w)                                    | stacking-in<br>depth | Clear Aisle<br>width Ast | Transfer aisle (Ast <sub>3</sub> )* |           |
|   |                      |                          | theoretical                         | practical |
| 48 x 40   | 48                   | 65.75                    | 161                                 | +20       |
| * the practical transfer aisle width is a reference value |                      |                          |                                     |           |
| with wire guidance  |                      |                          |                                     |           |
| pallet size<br>(l x w)                                    | stacking-in<br>depth | Clear Aisle<br>width Ast | Transfer aisle (Ast <sub>3</sub> )* |           |
|   |                      |                          | theoretical                         | practical |
| 48 x 40   | 48                   | 68.5                     | 161                                 | +39       |
| * the practical transfer aisle width is a reference value |                      |                          |                                     |           |

| Lift height table EKX 410 |   |   |  |   |   |  |
|---------------------------|---|---|--|---|---|--|
| Designation               | Lift height<br>h <sub>3</sub><br>inches | Total lift<br>h <sub>ges.</sub> (h <sub>3</sub> +h <sub>9</sub> )<br>inches | Standing height<br>h <sub>12</sub><br>inches | Order picking height<br>h <sub>15</sub><br>inches | Collapsed mast height<br>h <sub>1</sub><br>inches | Extended mast height<br>h <sub>4</sub><br>inches |
| Two-stage<br>ZT           | 98                                      | 167   | 114  | 177   | 101   | 199  |
|                           | 108                                     | 177   | 123  | 186   | 101   | 209  |
|                           | 118                                     | 187   | 133  | 196   | 103   | 219  |
|                           | 128                                     | 196   | 143  | 206   | 108   | 229  |
|                           | 137                                     | 206   | 153  | 216   | 113   | 239  |
|                           | 147                                     | 216   | 163  | 226   | 118   | 248  |
|                           | 157                                     | 226   | 173  | 236   | 122   | 258  |
|                           | 167                                     | 236   | 182  | 245   | 127   | 268  |
|                           | 177                                     | 246   | 192  | 255   | 132   | 278  |
|                           | 187                                     | 255   | 202  | 265   | 137   | 288  |
|                           | 196                                     | 265   | 212  | 275   | 142   | 298  |
|                           | 206                                     | 275   | 222  | 285   | 147   | 308  |
|                           | 216                                     | 285   | 232  | 295   | 152   | 317  |
|                           | 226                                     | 295   | 241  | 304   | 157   | 327  |
| 236                       | 305                                     | 251   | 314  | 162   | 337   |  |

# Technical Data

as of: 01/2010

|                  |  |   |   |                     |
|------------------|--|---|---|---------------------|
| Characteristics  | 1.1  | Manufacturer (abbreviation)   | Jungheinrich  | 1.1                 |
|                  | 1.2  | Manufacturer's type designation   | <b>EKX 410</b>                                      | 1.2                 |
|                  | 1.3  | Drive type  | electric  | 1.3                 |
|                  | 1.4  | Type of operation   | high rack stacker / order picker                    | 1.4                 |
|                  | 1.5  | Load capacity/rated load (lbs)  | 2200  | 1.5                 |
|                  | 1.6  | Load center distance c (inches)   | 24.0  | 1.6                 |
|                  | 1.8  | Load distance, center of drive axle to fork x (inches)                        | 16.9  | 1.8                 |
|                  | 1.9  | Wheelbase y (inches)  | 70.1  | 1.9                 |
|                  | Weights  | 2.1   | Service weight including battery (see line 6.5) lbs | 11504               |
| 2.2              |  | Axle loading, loaded front/rear lbs   | 10606 / 3102  | 2.2                 |
| 2.3              |  | Axle loading, unloaded front/rear lbs   | 6984/4519   | 2.3                 |
| Wheels / Chassis | 3.1  | Tire  | Vulkollan   | 3.1                 |
|                  | 3.2  | Tire size, front inches   | 11.6 X 5.7  | 3.2                 |
|                  | 3.3  | Tire size, rear inches  | 13.5 X 5.5  | 3.3                 |
|                  | 3.5  | Wheels, number front and rear (x = driven wheels)                             | 2/1 x   | 3.5                 |
|                  | 3.6  | Track width, front b <sub>10</sub> (inches)                                   | 57.1  | 3.6                 |
|                  | 3.7  | Track width, rear b <sub>11</sub> (inches)                                    | -   | 3.7                 |
|                  | Dimensions   | 4.2   | Collapsed mast height h <sub>1</sub> (inches)       | 122.0 <sup>1)</sup> |
| 4.3              |  | Free lift h <sub>2</sub> (inches)   | -   | 4.3                 |
| 4.4              |  | Lift height h <sub>3</sub> (inches)   | 157.5 <sup>1)</sup>                                 | 4.4                 |
| 4.5              |  | Extended mast height h <sub>4</sub> (inches)                                  | 257.9 <sup>1)</sup>                                 | 4.5                 |
| 4.7              |  | Overhead guard (cab) height h <sub>6</sub> (inches)                           | 100.4   | 4.7                 |
| 4.8              |  | Seat height/standing height h <sub>7</sub> (inches)                           | 15.6  | 4.8                 |
| 4.11             |  | Auxiliary lift h <sub>9</sub> (inches)  | 68.9  | 4.11                |
| 4.14             |  | Standing height, elevated h <sub>12</sub> (inches)                            | 173.0 <sup>1)</sup>                                 | 4.14                |
| 4.19             |  | Overall length (without load) l <sub>1</sub> (inches)                         | 140.8   | 4.19                |
| 4.20             |  | Length to face of forks l <sub>2</sub> (inches)                               | 128.9   | 4.20                |
| 4.21             |  | Overall width b <sub>1</sub> (inches)   | 47.6  | 4.21                |
| 4.22             |  | Fork dimensions s/e/l (inches)  | 1.6 X 4.7 X 47.2                                    | 4.22                |
| 4.23             |  | Fork carriage, class and type   | 2 / A   | 4.23                |
| 4.24             |  | Fork carriage width b <sub>3</sub> (inches)                                   | 34.6  | 4.24                |
| 4.25             |  | Width across forks b <sub>5</sub> (inches)                                    | 31.2  | 4.25                |
| 4.27             |  | Width across guide roller b <sub>6</sub> (inches)                             | 61.0  | 4.27                |
| 4.29             |  | Insert dimension b <sub>7</sub> (inches)                                      | 52.0  | 4.29                |
| 4.30             |  | Insert dimension from vehicle center line b <sub>8</sub> (inches)             | 19.9  | 4.30                |
| 4.31             |  | Ground clearance, loaded, under mast m <sub>1</sub> (inches)                  | 3.0   | 4.31                |
| 4.32             |  | Ground clearance, center of wheelbase m <sub>2</sub> (inches)                 | 3.1   | 4.32                |
| 4.33             |  | Aisle width for pallets ( 40 X 48 [l x w] ) Ast (inches)                      | 65.8  | 4.33                |
| 4.35             |  | Turning radius Wa (inches)  | 80.1  | 4.35                |
| 4.38             |  | Distance to swivelling fork pivot point l <sub>8</sub> (inches)               | 43.4  | 4.38                |
| 4.39             |  | Total lift h <sub>3</sub> +h <sub>9</sub> (inches)                            | 226.4 <sup>1)</sup>                                 | 4.39                |
| 4.40             |  | Order picking height h <sub>12</sub> +63.0 (inches)                           | 236.0 <sup>1)</sup>                                 | 4.40                |
| 4.41             |  | Distance swivelling fork pivot point-steering rack l <sub>8</sub> -x (inches) | 26.6  | 4.41                |
| 4.42             |  | Pallet width b <sub>12</sub> (inches)   | 40.0  | 4.42                |
| 4.43             |  | Pallet length l <sub>6</sub> (inches)   | 48.0  | 4.43                |
| 4.44             |  | Clear width driver compartment entrance (inches)                              | 17.7  | 4.44                |
| 4.45             |  | Clear driver compartment height inside (inches)                               | 84.3  | 4.45                |
| 4.46             |  | Driver compartment width outside b <sub>2</sub> (inches)                      | 56.7  | 4.46                |
| 4.47             | Width swivelling reach frame b <sub>14</sub> (inches)          | 57.9  | 4.47  |                     |
| 4.48             | Width extension arm l <sub>10</sub> (inches)                   | 7.5   | 4.48  |                     |
| 4.49             | Distance swivelling forks pivot point-fork carriage r (inches) | 5.4   | 4.49  |                     |
| Performance      | 5.1  | Travel speed, loaded/unloaded mph   | 5.6   | 5.1                 |
|                  | 5.2  | Lift speed, loaded/unloaded ft/m  | 70.9 / 78.7   | 5.2                 |
|                  | 5.3  | Lowering speed, loaded/unloaded ft/m  | 78.7 / 78.7   | 5.3                 |
|                  | 5.4  | Reach speed, loaded/unloaded ft/m   | 49.2 / 49.2   | 5.4                 |
|                  | 5.10   | Service brake   | reverse current / regenerative                      | 5.10                |
|                  | 5.11   | Parking brake   | electric spring loaded                              | 5.11                |
| Motors           | 6.1  | Drive motor rating 60 min. kW/hp  | 4.4 / 5.9   | 6.1                 |
|                  | 6.2  | Lift motor rating at 20% kW/hp  | 9.5 / 12.7  | 6.2                 |
|                  | 6.4  | Battery voltage v   | 48  | 6.4                 |
|                  |  | Battery nominal capacity range ah   | 460 - 700   |                     |
|                  | 6.5  | Battery weight range lbs  | 2118-2340   | 6.5                 |
| Other Details    | 8.1  | Type of drive control   | AC POWER CONTROL                                    | 8.1                 |
|                  | 8.4  | Sound level at driver's ear db (A)  | 61  | 8.4                 |
|                  | 8.6  | Steering  | electric  | 8.6                 |

1) ZT performance data measured for 400 ZT – values according to performance specification (within 10% tolerance of measured values)

# The Jungheinrich Advantage

## 48 Volt 3-phase AC technology

Constant application of 3-phase AC technology for travel, hydraulics and steering is a major characteristic for the EKH 410.

The advantages:

- Optimum energy consumption due to excellent efficiency factor in all motors.
- Stepless speed control of hydraulic motor.
- Optimized thermal economy allows the use of corrosion-free, heat-resistant plastic containers for hydraulic oil.
- High torque for excellent responsiveness.
- Reduced maintenance by elimination of components susceptible to wear (carbon brushes, commutator, contacts, etc.).

## Economic efficiency

During reclamation lowering of the forks, energy is being fed back into the battery. Energy is also fed back into the system during braking (regenerative braking). Energy reclaimed in this way is available for subsequent energy consumption.

The advantages:

- Longer operating times with the same battery capacity.
- Improved order picking efficiency.
- Shorter battery charging times with prolonged battery life at the same time.
- Lower investments for smaller batteries and lower energy costs.



Operating panel

## Reliability

3-phase AC drive control and CAN-Bus make the EKH user-friendly, configurable, economical and reliable.

The advantages:

- Individual adjustment to suit the application.
- Steplessly adjustable speed profiles in and out of narrow aisles.
- Easier and less expensive care of components.

## Standard equipment

- Ergonomic operator cab with overhead load guard.
- Spring-cushioned, height-adjustable and foldable seat.

- Compact operating panel with graphic display, battery discharge monitor, operating hour meter, key switch, emergency stop switch, clock, lift height and steering position display.
- Spring clip on rear panel.
- Electric power-assisted steering.
- Travel-direction-dependent diagonal travel speed profiles (for lifting and driving at the same time).
- AC power control with CAN-Bus connection.
- Wear-free braking with energy regeneration.
- Spring-loaded parking brake on drive wheel.
- Stepless speed control of hydraulic motor.
- End position and transfer cushioning of all hydraulic functions.
- Simultaneous lowering of main and additional lift.
- Synchronized rotation/reach cycle.
- Integrated diagnostic system.
- Removable rear cover for excellent service accessibility.
- Hinged battery cover and removable battery side panels.
- Warning flashing light during lowering and travel operation.
- Emergency lowering of main lift under rear cover.
- Slack chain safety device.
- Foldable bottle holder.



Battery cover



**Mixed Sources**

Product group from well-managed forests, controlled sources and recycled wood or fiber  
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