

# Product Portfolio



Decrease handling costs



Reduce inventory



Forklift-free environment



# LEAN LOGISTICS

The backbone of Lean manufacturing

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# Keep things rolling with Lean Logistics

## Benefits

- Improve work flow
- Reduce handling costs
- Enable reduction of stock level
- Reduce need for floor space
- Improve ergonomics
- Fast and safe truck loading

# Lean Dolly Type I



www.tuv.com  
ID 0000040591



| TECHNICAL SPECIFICATION                 |   |
|---|---|
| External dimensions                     | 24" x 15" or 24" x 22.5"                                      |
| Tare weight with CPD wheels, no corners | 14.5 lbs  |
| Wheel size                              | 4" wheels   |
| Wheel configuration                     | 2 fixed & 2 swivel  |
| Wheel material                          | CPD, rubber or PU   |
| Working capacity                        |   |
| - CPD – standard and ESD                | 550 lbs   |
| - Rubber – standard and ESD             | 550 lbs   |
| - PU – standard and ESD                 | 550 lbs   |
| Surface treatment                       | Blue zinc plated acc. to EN-ISO2081                           |
| Safe stacking                           | up to 15 units (77")  |
| Compatibility with Lean Adaptor Pallets | - Next Generation (DOS1696 & DOS1725)<br>- Type III (DOS1405) |

## OPTIONS

- Total brake on 1 or 2 swivel wheels
- RFID and Tracking compatibility
- Corner supports
- ESD compatibility

## ALSO AVAILABLE IN ISO- AND EURO-DIMENSIONS

- 600 x 400 mm
- 600 x 500 mm

## DESIGNED TO CARRY SLC'S AND TRAYS SIZED

- 24" x 22.5"
- 24" x 15"
- 12" x 15"

## ACCESSORIES

- Ergonomic handle
- Strapping device
- Oil dripping pan

# Lean Dolly Type II



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ID 0000040591



## TECHNICAL SPECIFICATION

|   |   |
|---|---|
| External dimensions                     | 24" x 15" or 24" x 22.5"                                      |
| Tare weight with CPD wheels, no corners | 15.5 lbs  |
| Wheel size                              | 4" wheels   |
| Wheel configuration                     | 4 swivel  |
| Wheel material                          | CPD, rubber or PU   |
| Working capacity:                       |   |
| - CPD – standard and ESD                | 550 lbs   |
| - Rubber – standard and ESD             | 550 lbs   |
| - PU – standard and ESD                 | 550 lbs   |
| Surface treatment                       | Blue zinc plated acc. to EN-ISO2081                           |
| Safe stacking                           | up to 15 units (77")  |
| Compatibility with Lean Adaptor Pallets | - Next Generation (DOS1696 & DOS1725)<br>- Type III (DOS1405) |

## OPTIONS

- Total brake on 1 or 2 swivel wheels
- RFID and Tracking compatibility
- Corner supports
- ESD compatibility

## ALSO AVAILABLE IN ISO- AND EURO-DIMENSIONS

- 600 x 400 mm
- 600 x 500 mm

## DESIGNED TO CARRY SLC'S AND TRAYS SIZED

- 24" x 22.5"
- 24" x 15"
- 12" x 15"

## ACCESSORIES

- Ergonomic handle
- Strapping device
- Oil dripping pan

# Lean Dolly Type V



| TECHNICAL SPECIFICATION                   |   |
|---|---|
| External dimensions                       | 24" x 15" or 24" x 22.5"                                      |
| Tare weight with CPD wheels, with corners | 16.5 lbs  |
| Wheel size                                | 4" wheels   |
| Wheel configuration                       | 4 swivel  |
| Wheel material                            | CPD, rubber or PU   |
| Working capacity:                         |   |
| - CPD – standard and ESD                  | 550 lbs   |
| - Rubber– standard and ESD                | 550 lbs   |
| - PU – standard and ESD                   | 550 lbs   |
| Surface treatment                         | Blue zinc plated acc. to EN-ISO2081                           |
| Safe stacking                             | up to 15 units (77")  |
| Compatibility with Lean Adaptor Pallets   | - Next Generation (DOS1696 & DOS1725)<br>- Type III (DOS1405) |

## OPTIONS

- Total brake on 1 or 2 swivel wheels
- RFID & Tracking compatibility
- ESD compatibility

## ALSO AVAILABLE IN ISO- AND EURO-DIMENSIONS

- 600 x 400 mm
- 600 x 500 mm

## DESIGNED TO CARRY SLC'S AND TRAYS SIZED

- 24" x 22.5"
- 24" x 15"
- 12" x 15"

## ACCESSORIES

- Ergonomic handle
- Strapping device
- Oil dripping pan

# Lean Dolly Type VII



With sliding draw bar system



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ID 0000040591



## TECHNICAL SPECIFICATION

|   |   |
|---|---|
| External dimensions                     | 24" x 15" or 24" x 22.5"                                      |
| Tare weight with CPD wheels, no corners | 15.5 lbs  |
| Wheel size                              | 4" wheels   |
| Wheel configuration                     | 2 fixed & 2 swivel  |
| Wheel material                          | CPD, rubber or PU   |
| Working capacity:                       |   |
| - CPD – standard and ESD                | 550 lbs   |
| - Rubber – standard and ESD             | 550 lbs   |
| - PU – standard and ESD                 | 550 lbs   |
| Working capacity in tugger train        | 2200 lbs  |
| Max amount per tugger train             | 7-8 units   |
| Surface treatment                       | Blue zinc plated acc. to EN-ISO2081                           |
| Safe stacking                           | up to 15 units (77")  |
| Compatibility with Lean Adaptor Pallets | - Next Generation (DOS1696 & DOS1725)<br>- Type III (DOS1405) |
| Recommended max speed                   | 4 mph   |

## OPTIONS

- Total brake on 1 or 2 swivel wheels
- RFID & Tracking compatibility
- Corner supports
- Stealth version sliding tow system
- ESD compatibility

## ALSO AVAILABLE IN ISO AND EURO-DIMENSIONS

- 600 x 400 mm
- 600 x 500 mm

## DESIGNED TO CARRY SLC'S AND TRAYS SIZED

- 24" x 22.5"
- 24" x 15"
- 12" x 15"

## ACCESSORIES

- Ergonomic handle
- Strapping device
- Oil dripping pan

# Lean Dolly Type VIIC with elevated deck



| TECHNICAL SPECIFICATION                 |   |
|---|---|
| External dimensions                     | 24" x 15" or 24" x 22.5"                                      |
| Tare weight with CPD wheels, no corners | 39.5 lbs  |
| Wheel size                              | 4" wheels   |
| Wheel configuration                     | 2 fixed & 2 swivel  |
| Wheel material                          | CPD, rubber or PU   |
| Maximum Load Capacity:                  |   |
| - CPD – standard and ESD                | 155 lbs   |
| - Rubber – standard and ESD             | 155 lbs   |
| - PU – standard and ESD                 | 155 lbs   |
| Working capacity in tugger train        | 2200 lbs  |
| Max amount per tugger train             | 7-8 units   |
| Surface treatment                       | Blue zinc plated acc. to EN-ISO2081                           |
| Safe stacking                           | up to 3 units (77")   |
| Compatibility with Lean Adaptor Pallets | - Next Generation (DOS1696 & DOS1725)<br>- Type III (DOS1405) |
| Recommended max speed                   | 3 mph   |

## OPTIONS

- Total brake on 1 or 2 swivel wheels
- RFID & Tracking compatibility
- ESD compatibility

## ALSO AVAILABLE IN EURO-DIMENSIONS

- 600 x 400 mm

## DESIGNED TO CARRY SLC'S AND TRAYS SIZED

- 24" x 22.5"
- 24" x 15"
- 12" x 15"

## ACCESSORIES

- Ergonomic handle
- Oil dripping pan



# Lean Dolly 600 x 800 mm



**With 5 swivel wheels**



**With draw bar**



| TECHNICAL SPECIFICATION                 |   |
|---|---|
| External dimensions                     | 600 x 800 x 158 (495) mm                                      |
| Tare weight with CPD wheels             | 26.5 lbs  |
| Wheel size                              | 4" wheels   |
| Wheel configuration                     | 2 fixed & 3 swivel or 5 swivel                                |
| Wheel material                          | CPD, rubber or PU   |
| Working capacity:                       |   |
| - CPD – standard and ESD                | 1100 lbs  |
| - Rubber – standard and ESD             | 1100 lbs  |
| - PU – standard and ESD                 | 1100 lbs  |
| Working capacity in tugger train        | 3530 lbs  |
| Max amount per tugger train             | 5–6 units   |
| Surface treatment                       | Blue zinc plated acc. to EN-ISO2081                           |
| Safe stacking                           | up to 15 units (77")<br>with towing arm 91"                   |
| Compatibility with Lean Adaptor Pallets | - Next Generation (DOS1696 & DOS1725)<br>- Type III (DOS1405) |
| Recommended max speed                   | 4 mph   |

## OPTIONS

- Total brake on 1 or 2 swivel wheels
- RFID & Tracking compatibility
- Corner supports
- Draw bar
- ESD compatibility

## ALSO AVAILABLE IN ISO-DIMENSIONS

- 600 x 1000 mm

## DESIGNED TO CARRY SLC'S AND TRAYS SIZED

- 24" x 22.5"
- 24" x 15"
- 12" x 15"

## ACCESSORIES

- Strapping device
- Multipurpose plywood deck

# Lean Dolly 1200 x 800 mm



| TECHNICAL SPECIFICATION                 |   |
|---|---|
| External dimensions                     | 1212 x 800 x 162 (502) mm                           |
| Tare weight with CPD wheels             | 42 lbs  |
| Wheel size                              | 4" wheels   |
| Wheel configuration                     | 2 fixed & 4-5 swivel                                |
| Wheel material                          | CPD, rubber or PU                                   |
| Maximum Load Capacity:                  |   |
| - CPD – standard and ESD                | 4 swivel 661 lbs    5 swivel 1102 lbs               |
| - Rubber – standard and ESD             | 4 swivel 661 lbs    5 swivel 1102 lbs               |
| - PU – standard and ESD                 | 4 swivel 661 lbs    5 swivel 1102 lbs               |
| Working capacity in tugger train        | 3527 lbs  |
| Max amount per tugger train             | 5–6 units   |
| Surface treatment                       | Blue zinc plated acc. to EN-ISO2081                 |
| Safe stacking                           | up to 15 units (77")<br>with towing arm 7.5 ft      |
| Compatibility with Lean Adaptor Pallets | - Next Generation (HADP10030, HADP10032, HADP10045) |
| Recommended max speed                   | 3.7 mph   |

## OPTIONS

- Total brake on 1 or 2 swivel wheels
- RFID & Tracking compatibility
- Corner supports
- Draw bar
- ESD compatibility

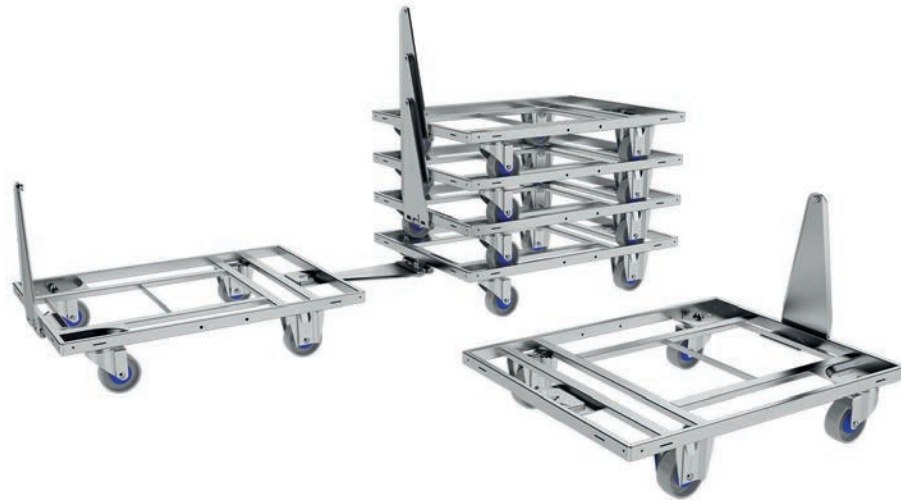
## DESIGNED TO CARRY SLC'S AND TRAYS

- 3 stacks of 800 x 400 mm
- 4 stack of 600 x 400 mm
- 8 stacks of 300 x 400 mm
- pallets, foldable cages and stillages

## ACCESSORIES

- Strapping device
- Multipurpose plywood deck

# Lean Dolly 800 x 600 mm



| TECHNICAL SPECIFICATION          |  |
|----------------------------------|--|
| External dimensions              | 800 x 600 x 162 (499) mm                       |
| Tare weight with CPD wheels      | 23 lbs   |
| Wheel size                       | 4" wheels                                      |
| Wheel configuration              | 2 fixed and 2 swivel                           |
| Wheel material                   | CPD, rubber or PU                              |
| Maximum Load Capacity:           |  |
| - CPD – standard and ESD         | 1102 lbs                                       |
| - Rubber – standard and ESD      | 1102 lbs                                       |
| - PU – standard and ESD          | 1102 lbs                                       |
| Working capacity in tugger train | 3527 lbs                                       |
| Max amount per tugger train      | 5–6 units                                      |
| Surface treatment                | Blue zinc plated acc. to EN-ISO2081            |
| Safe stacking                    | up to 15 units (77")<br>with towing arm 7.5 ft |
| Recommended max speed            | 3.7 mph  |

## OPTIONS

- Total brake on 1 or 2 swivel wheels
- RFID & Tracking compatibility
- Corner supports
- Draw bar
- ESD compatibility

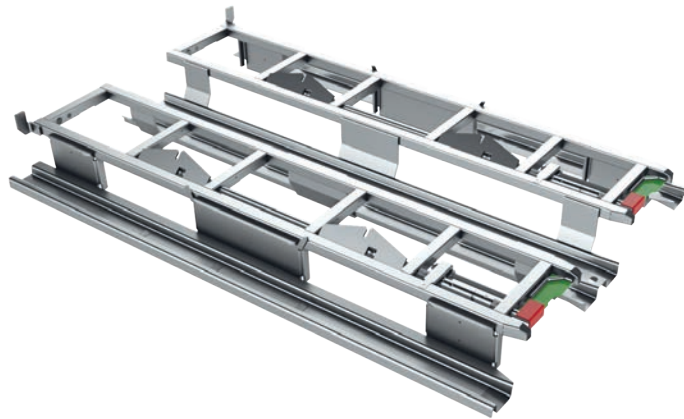
## DESIGNED TO CARRY SLC'S AND TRAYS

- 2 stack of 600 x 400 mm
- 4 stacks of 300 x 400 mm
- pallets, foldable cages and stillages

## ACCESSORIES

- Strapping device
- Multipurpose plywood deck

# Lean Adaptor Pallet



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ID 0000040591



## TECHNICAL SPECIFICATION

|                       |                                     |
|-----------------------|-------------------------------------|
| External dimensions   | 48" x 30" or 48" x 45"              |
| Tare weight           | 81.5 lbs                            |
| Working capacity      | 2200 lbs                            |
| Surface treatment     | Blue zinc plated acc. to EN-ISO2081 |
| Safe stacking         |                                     |
| - loaded in transport | 2 units                             |
| - loaded at warehouse | 3 units                             |
| - empty               | 15 units                            |

## DESIGNED FOR ALL STANDARD LEAN DOLLIES

## OPTIONS

- Non-slip features
- RFID & Tracking compatibility
- ESD compatibility

## ALSO AVAILABLE IN ISO AND EURO-DIMENSIONS

- 1200 x 1000 mm
- 1200 x 800 mm

## ACCESSORIES

- EasyStrap
- Compatible with industry standard lids



# Mini Lean Pallet Size Dolly



| TECHNICAL SPECIFICATION          |   |
|----------------------------------|---|
| External dimensions              | 32" x 30"                               |
| Tare weight                      | 121 lbs                                 |
| Wheel size                       | 6.5" wheels                             |
| Wheel configuration              | 2 fixed & 2 swivel or 4 swivel          |
| Wheel material                   | PU and CPD                              |
| Working capacity                 | 2200 lbs                                |
| Working capacity in tugger train | 7500 lbs                                |
| Max amount per tugger train      | 6 units                                 |
| Surface treatment                | Blue zinc plated acc. to EN-ISO2081     |
| Safe stacking                    | up to 6 units (66") with draw bar (94") |
| Recommended max speed            | 4 mph                                   |

## OPTIONS

- Available with anti slip material or plywood deck
- Integrated strapping device
- ESD compatibility
- Total brake on 1 or 2 swivel wheels
- RFID & Tracking compatibility
- Corner supports
- Catch for towing one or two lines of Lean dollies
- Wheel spacer

## ALSO AVAILABLE IN EURO-DIMENSIONS

- 923 x 600 mm x 280 (1020) mm

## DESIGNED TO CARRY SLC'S, PALLETS AND BOXES

- Pallet sizes:  
32" x 30" or 800 x 600 mm
- Cages and foldable boxes

**COMPATIBLE WITH ALL LEAN DOLLIES, LEAN SHELF WAGON, AND TAXILINER.**

# Lean Pallet Size Dolly



With 6 wheels  
for 360° spinning



| TECHNICAL SPECIFICATION          |  |
|----------------------------------|--|
| External dimensions              | 48" x 45" or 32" x 30"                               |
| Tare weight                      | 170 or 117 lbs                                       |
| Wheel size                       | 6.5" wheels  |
| Wheel configuration              | 2 fixed & 2 swivel<br>4 swivel<br>2 fixed & 4 swivel |
| Wheel material                   | PU and CPD   |
| Working capacity                 | 2200 lbs   |
| Working capacity in tugger train | 7500 lbs   |
| Max amount per tugger train      | 6 units  |
| Surface treatment                | Blue zinc plated acc. to EN-ISO2081                  |
| Safe stacking                    | up to 6 units (66") with "draw bar" (94")            |
| Recommended max speed            | 4 mph  |

**COMPATIBLE WITH ALL LEAN DOLLIES, LEAN SHELF WAGON, AND TAXILINER.**

## OPTIONS

- Available with anti slip material or plywood deck
- Integrated strapping device
- ESD compatibility
- Total brake on 1 or 2 swivel wheels
- RFID & Tracking compatibility
- Corner supports
- 360° spinning on 6 wheels
- Catch for towing one or two lines of Lean dollies
- Wheel spacer
- Forklift guide

## ALSO AVAILABLE IN ISO- AND EURO-DIMENSIONS

- 1200 x 800 mm
- 1200 x 1000 mm

## DESIGNED TO CARRY SLC'S, PALLETS AND BOXES

- Pallet sizes: Euro, ISO & 48" x 45"
- SLC's in Euro, ISO or US boxes
- Cages and foldable boxes

# Lean Pallet Size Dolly with elevated deck



| TECHNICAL SPECIFICATION          |  |
|----------------------------------|--|
| External dimensions              | 47" x 31" x 24"                                      |
| Tare weight                      | 196 lbs  |
| Wheel size                       | 6.5" wheels  |
| Wheel configuration              | 2 fixed & 2 swivel<br>4 swivel<br>2 fixed & 4 swivel |
| Wheel material                   | PU and PA  |
| Working capacity                 | 2200 lbs   |
| Working capacity in tugger train | 8800 lbs   |
| Max amount per tugger train      | 6 units  |
| Surface treatment                | Blue zinc plated acc. to EN-ISO2081                  |
| Safe stacking                    | up to 66" with "handlag" (94")                       |
| Recommended max speed            | 4 mph  |

**COMPATIBLE WITH ALL LEAN DOLLIES, LEAN SHELF WAGON, AND TAXILINER.**

## OPTIONS

- Available with anti slip material or plywood deck
- Integrated strapping device
- ESD compatibility
- Total brake on 1 or 2 swivel wheels
- RFID & Tracking compatibility
- Corner supports
- 360° spinning on 6 wheels
- Catch for towing one or two lines of Lean dollies
- Wheel spacer
- Forklift guide

## ALSO AVAILABLE IN ISO- AND EURO-DIMENSIONS

- 1200 x 800 x 600 mm
- 1200 x 1000 mm (97 kg)
- 48" x 45" (90 kg)

## DESIGNED TO CARRY SLC'S, PALLETS AND BOXES

- Pallet sizes: Euro, ISO & 48" x 45"
- SLC's in Euro, ISO or US boxes
- Cages and foldable boxes



# Lean Shelf Wagon



| TECHNICAL SPECIFICATION         |  |
|---------------------------------|--|
| External dimensions             | 50" x 32" x 66"  |
| Tare weight (2 shelves + floor) | 250 lbs  |
| Wheel size                      | 6.5" wheels  |
| Wheel configuration             | 2 fixed and 2 swivel   |
| Wheel material                  | PU and CPD   |
| Surface treatment               | Blue zinc plated acc. to EN-ISO2081  |
| Working capacity                | Per Shelf: 330 or 550 lbs (heavy-duty)<br>Per Unit: 990 or 1765 lbs (heavy-duty) |
| Max amount in tugger trains     | 6 units  |
| Recommended max speed           | 4 mph  |

## OPTIONS

- ESD compatibility
- Total brake on 1 or 2 swivel wheels
- RFID & Tracking compatibility
- 6 wheel option for 360° spinning
- Catch for towing one or two lines of Lean dollies
- Wheel spacer
- Forklift guide

## DESIGNED TO CARRY SLC'S AND TRAYS AND OTHER BOXES

## ACCESSORIES

- Transport & non-contamination cover

**COMPATIBLE WITH ALL LEAN DOLLIES, LEAN SHELF WAGON, AND TAXILINER.**

# Lean Dolly Shelf Wagon



| TECHNICAL SPECIFICATION   |                     |
|---------------------------|---------------------|
| External dimensions       | 613 x 404 x 1154 mm |
| Tare weight               | 82.7 lbs            |
| Wheel size                | 4" wheels           |
| Wheel configuration       | 2 fixed & 2 swivel  |
| Wheel material            | CPD, rubber or PU   |
| Working capacity          |                     |
| CPD - standard and ESD    | 551 lbs             |
| Rubber - standard and ESD | 551 lbs             |
| PU - standard and ESD     | 551 lbs             |
| Working load per shelf    | 66 lbs              |

## BENEFITS

- Improve work flow
- Compatible with the Lean Adaptor Pallet
- Adjustable shelf heights
- Enable reduction of stock level
- Reduce need for floor space
- Improve ergonomics
- Fast and safe truck loading
- Optimize vehicle fill

## OPTIONS

- Total brake on 2 swivel wheels
- RFID & Tracking compatibility

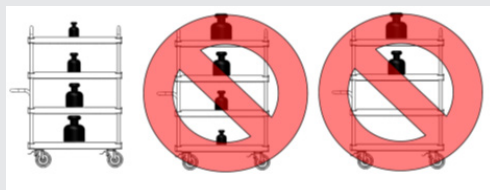
## DESIGNED TO CARRY SLC'S AND TRAYS

- 1 stack of 600 x 400 mm / shelf
- 2 stacks of 300 x 400 mm / shelf
- 4 stacks of 300 x 200 mm / shelf

# Lean Dolly Shelf Wagon Mini



| TECHNICAL SPECIFICATION      |                                     |
|------------------------------|-------------------------------------|
| External dimensions          | 606 x 953 x 1680 mm                 |
| Tare weight (with 3 shelves) | 172-174 lbs                         |
| Wheel size                   | 6.3" wheels                         |
| Wheel configuration          | 2 fixed and 2 swivel                |
| Wheel material               | PU or ESD                           |
| Surface treatment            | Blue zinc plated acc. to EN-ISO2081 |
| Working capacity             |                                     |
| Shelf                        | 331 lbs                             |
| Shelf if above 3.9 ft        | 220.5 lbs                           |
| Total unit                   | 992 lbs                             |



## BENEFITS

- Improve work flow
- Reduce handling costs
- Enable reduction of stock level
- Reduce need for floor space
- Improve ergonomics
- Fast and safe truck loading
- Optimize vehicle fill

## OPTIONS

- Total brake on 2 swivel wheels
- RFID & Tracking compatibility

## DESIGNED TO CARRY SLC'S

- 2 crates of 600 x 400 mm per level
- 4 crates of 300 x 400 mm per level

## ACCESSORIES

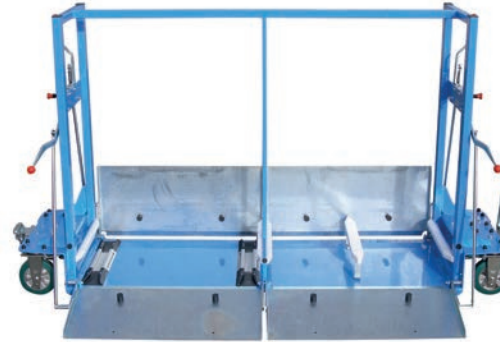
- Integrated strapping
- Number of shelves (1-4)
- Towing device

**CAN BE TOWED WITH ALL OTHER TOWABLE DOLLIES**

# Lean Taxiliner



3 Bay Version



4 Bay Version



| TECHNICAL SPECIFICATION       | 3 Bay Version     | 4 Bay version     |
|-------------------------------|-------------------|-------------------|
| External dimensions           | 80" x 56" x 28.5" | 98" x 56" x 28.5" |
| Length including the draw bar | 100"              | 118"              |
| Space between dividers        | 16"               | 16"               |
| Working capacity              | 1650"             | 1650"             |
| Tare weight                   | 474 lbs           | 622 lbs           |
| Maximum towing load           | 4960 lbs          | 4960 lbs          |
| Maximum speed                 | 9 mph             | 7.5 mph           |
| Min. turning circle           | 150"              | 171"              |
| Ramp elevation for Dollies    | 2.8"              | 3"                |
| Ground clearance              | 1.5"              | 1.5"              |
| Steering system SpurTrak™     | All wheel Steer   | All wheel Steer   |
| Surface treatment             | Powder coating    | Powder coating    |

## DESIGNED TO CARRY

- 600 x 400 mm Dollies
- Also ISO and US sized Dollies

## BENEFITS

- Ideal for logistic flows where the sequence cannot be controlled
- Reduce handling costs
- Enables the delivery of multiple article numbers in one delivery sequence
- Improve ergonomics
- Fast and safe internal transport
- Excellent tracking and steering stability

## OPTIONS

- Non-slip feature for the ramps
- Double locking device
- Additional floor guidance
- ESD compatibility
- RFID & Tracking compatibility
- 600 x 800 mm Dollies compatibility

**COMPATIBLE WITH ALL LEAN PALLET SIZE DOLLY AND LEAN SHELF WAGON.**

# We improve our customers logistics efficiency

## Innovative solutions and services for over 90 years

K.Hartwall was founded in Söderkulla, Finland in 1932. Over the years we have acquired in-depth knowledge of logistical processes and of their financial and environmental impacts.

Today we bring logistical efficiency by delivering innovative solutions, including returnable load carriers and associated services.

## Modernizing goods delivery and merchandising

K.Hartwall works closely with customers around the world to realise measurable benefits through improved logistical flows.

Our efficient global delivery capability has made K.Hartwall the partner of choice for several companies in the retail, dairy, beverage, logistics and Lean manufacturing sectors.



## AUTOMATE YOUR LOAD CARRIER MOVEMENTS

Today, almost half of all working hours are spent on manual routine jobs. The World Economic Forum estimates that by 2035, automation will reduce that number to 35%.

Key to this evolution, is the increasing deployment of AGVs and autonomous mobile robots (AMRs), which, in addition to boosting efficiency, can literally take the load off their human coworkers' backs.



**Watch  
the video**



A-MATE™ mobile robot can carry multiple load carriers such as pallets, carts, foldable cages, or adaptor pallets



- ✓ Omnidirectional driving system
- ✓ Extremely slim design

| TECHNICAL SPECIFICATION A-MATE |   |
|--------------------------------|---|
| Drive concept                  | Omnidrive   |
| Type                           | lifting fork  |
| Max driving speed              | 3.35 mph  |
| Lifting height                 | 43.3"<br>(max shelf height 39.3")                             |
| Load capacity                  | 2200 lbs  |
| Fork length                    | 47.2"   |
| Fork width                     | 22"   |
| Turning radius                 | 86.6"   |
| Ground clearance               | 0.47"   |
| Unit tare weight               | 1763.7 lbs  |
| Lift and transports            | all load carriers such as roll cages, pallets, foldable cages |
| Height                         | 72"<br>(76.8" with top scanner)                               |
| Width                          | 31.5"   |
| Length                         | 64"   |



- ✓ Bidirectional driving system
- ✓ Cantilevered forks and counterweight

| TECHNICAL SPECIFICATION A-MATE |   |
|--------------------------------|---|
| Drive concept                  | Bidirectional   |
| Type                           | lifting fork  |
| Max driving speed              | 3.35 mph  |
| Lifting height                 | 43.3"<br>(max shelf height 39.3")                             |
| Load capacity                  | 2200 lbs  |
| Fork length                    | 48.4"   |
| Fork width                     | 22"   |
| Turning radius                 | 118"  |
| Ground clearance               | 0.98"   |
| Unit tare weight               | 4409 lbs  |
| Lift and transports            | all load carriers such as roll cages, pallets, foldable cages |
| Height                         | 75.3"   |
| Width                          | 32.4"   |
| Length                         | 83.8"   |



## LiftLiner® SAY GOODBYE TO FORKLIFTS

The fully electric LiftLiner® product family is a unique solution for internal logistics and an excellent choice for forklift-free environments.

With it, you avoid complex sequencing and maximise the flexibility you need for efficient deliveries to your production line and within your operation. You can load and unload carts, roll cages and dollies in different sizes from both sides to truly enable a streamlined logistics process.

The innovative crossbar coupling system offers an impressively tight and precise turning circle for a very efficient transport.

The rooftop shape and tilting technology of the carts allows for ergonomic and safe handling even of heavy loads.

## BENEFITS

- Eliminate sequencing
- Improve employee Health & Safety
- Save space, time and money




**TRANSPORTS**

- ✓ Carts
- ✓ Daughter carts

**TECHNICAL SPECIFICATION**

|  |                          |
|--|--------------------------|
| Standard Daughter Cart Sizes Available           | 32" x 24"                |
|  | 32" x 30"                |
| *Custom daughter cart sizes available by request | 48" x 32"                |
|  | 48" x 40"                |
|  | 48" x 45"                |
|  | 50" x 50"                |
| Ground clearance when down/up                    | 2.4"                     |
| Wheel size                                       | 8" wheels                |
| Wheel configuration                              | 2 per mother cart        |
| Wheel material                                   | PU                       |
| Maximum Load Capacity per Mother Cart            | 2200 lbs                 |
| Tare weight per pair of LiftLiners               | 880 lbs                  |
| Coupling   | Crossbar Coupling System |
| Surface treatment                                | Powder coating           |
| Time to lift                                     | Less than 3 seconds      |

LiftLiner system operates in pairs (2, 4, 6, or 8).



For more details about the use of the Lean products please contact K.Hartwall


**TRANSPORTS**

- ✓ Roll cages
- ✓ Dollies

**TECHNICAL SPECIFICATION**

|                                 |                                  |
|---------------------------------|----------------------------------|
| 1 LiftLiner® RC                 | 1 pair/4 loading bays            |
| Max train length                | 2 LiftLiner® RC (8 loading bays) |
| Max payload per loading bay     | 1100 lbs                         |
| Length                          | 183 in                           |
| Width                           | 40 in                            |
| Height                          | 22 in                            |
| Tare weight (1 mothercart)      | 838 lbs                          |
| Tare weight (1 LiftLiner® RC)   | 1676 lbs                         |
| Max train speed 2 LiftLiner® RC | 5 mph                            |
| Turning Radius 2 LiftLiner® RC  | 236 in                           |
| Ground Clearance                | 1.5/2.5 in                       |

**ROLL CAGE COMPATIBILITY**

|                               |                  |
|-------------------------------|------------------|
| Roll cage depth               | 23.6 to 31.5 in* |
| *without collision protection |                  |
| Roll cage width               | 27.6 to 34 in    |
| Wheel diameter                | 4 to 5 in        |

Can transport the Compactainer®, Foldia®, Security Compactainer, & Rigid Postal Roll Cage.

# elephantBoard® and Daughter Cart for the LiftLiner



| TECHNICAL SPECIFICATION ELEPHANTBOARD (4 SHELVES) |                                |
|---|--------------------------------|
| External dimensions                               | 32" x 57" x 71"                |
| Maximum working capacity                          | 1100–2200 lbs                  |
| Shelf material                                    | Rotomoulding plastic           |
| Number of shelves                                 | 1–4                            |
| Distance between shelves                          | 14"                            |
| Tare weight                                       | 143 lbs                        |
| Wheel type  | 2 swivel and 2 fixed           |
| Wheel material                                    | Heavy-duty polyurethane wheels |
| Wheel size  | 8"                             |
| Surface treatment                                 | Blue Zinc Plated               |
| Amount per LiftLiner                              | 2 units                        |

| TECHNICAL SPECIFICATION DAUGHTER CART |                                  |
|---------------------------------------|----------------------------------|
| External dimensions                   | 48" x 40" or 48" x 45"           |
| Maximum working capacity              | 2200 lbs                         |
| Tare weight                           | TBD                              |
| Wheel type                            | 2 fixed and 2 swivel or 4 swivel |
| Wheel material                        | Polyamide                        |
| Wheel size                            | 8"                               |
| Surface treatment                     | Blue zinc plated                 |
| Amount per LiftLiner                  | 2 units                          |

Also available in ISO size.

## OPTIONS

- Eliminate the need for forklifts and reduce the risk of accidents at manufacturing and assembly lines
- Lower maintenance costs
- Reduce overall operator costs
- Require only one operator making multiple deliveries on one route trip
- Enable to carry smaller and kitted loads in addition to pallet units in the same train
- Faster delivery rates - takes seconds to unload

# Accessories – Wheel Overview

## Ø 4" WHEELS



**CPD WHEEL**



**RUBBER WHEEL**



**POLYURETHANE WHEEL**



**ESD RUBBER WHEEL**



**ESD HYBRID WHEEL  
NON-MARKING**



**ESD POLYURETHANE  
WHEEL**



**CLEAN WHEEL**

## Ø 6.5" WHEELS



**POLYURETHANE WHEEL**



**SOLID WHEEL PA**

- All our wheels are equipped with ball bearings to ensure
  - lower rolling resistance
  - lower noise
  - long life span
- Very high load capacity and quality
- The wheels are designed to be used also in a tugger train





**MULTIPURPOSE DECK  
FOR 600 X 800 MM LEAN DOLLIES**

| TECHNICAL SPECIFICATION |                |
|-------------------------|----------------|
| External dimensions     | 23.5" x 31.5"  |
| Material                | Coated plywood |
| Max. load               | 1100 lbs       |
| Supplied                | Ready to use   |

#### DESIGN

- Compatible with 600 x 800 Lean Dollies

#### BENEFITS

- Provides a close deck for smaller packages
- Easy to use
- Equipped with two ergonomic handles



**ERGONOMIC HANDLE  
FOR TOWING OF DOLLIES**

| TECHNICAL SPECIFICATION |                                 |
|-------------------------|---------------------------------|
| External dimensions     | 18.5" (L) x 16" (W) x 35.5" (H) |
| Surface treatment       | Blue zinc plating               |
| Weight                  | 11 lbs                          |
| Wheel type and size     | CPD 4"                          |
| Supplied                | Ready to use                    |

#### DESIGN

- Both for 600 x 400 and 600 x 800 Lean Dollies

#### BENEFITS

- Ergonomic and safe way to move the dollies



**EASY STRAP  
FOR LEAN ADAPTOR PALLET**

| TECHNICAL SPECIFICATION |   |
|-------------------------|---|
| Modular length          | 90" – 150"  |
| Material                | Textile with metal hook   |
| Max. load to be tripped | 2200 lbs = max. load to be distributed on one or more Adaptor Pallets |
| Max. load by stacking   | 2200 lbs  |
| Supplied                | Ready to use and to be attached to the Adaptor Pallet.                |

To be used in connection with the Lean Adaptor Pallet and secure the transported boxes.

## DESIGN

- Adjustable length
- Directly attached to the Lean Adaptor Pallet

## BENEFITS

- Safer transportation
- Easy to attach
- Reusable



**COVER  
FOR LEAN SHELF WAGON**

| TECHNICAL SPECIFICATION |  |
|-------------------------|--|
| External dimensions     | 32" x 49.5" x 66"  |
| Material                | PVC (polyvinyl chloride)   |
| Packing                 | Delivered as complete kit for 1 unit                             |
| Supplied                | Delivered ready for use and to be attached to the Adaptor Pallet |

Designed for closed transportation of the Lean Shelf Wagon between warehouses or from for example unloading areas outside to inside. The cover is very easy to flip over and open as well as closing.

## DESIGN

- Access from both long and short sides if needed
- Easy manual handling due to Velcro-closing
- Flip-up and attach sides for less space consuming handling

## BENEFITS

- Weather protection
- Protection against contamination
- Transport safety under truck transportation
- Internal transport safety
- Easy manual handling
- Space friendly solution



**DRIPPING PAN  
FOR 600 X 400MM LEAN DOLLIES**

#### TECHNICAL SPECIFICATION

|                     |                          |
|---------------------|--------------------------|
| External dimensions | 24" x 16"                |
| Material            | PVC (Polyvinyl chloride) |
| Supplied            | Ready to use             |

Designed to be placed between the Dolly and the packages transported.

#### BENEFITS

- Prevents liquid dripping from boxes on the floor
- Prevents accidents
- The solution stays stackable while being attached with the dripping pan



**TOW TRACTOR  
DRAW BAR**

#### TECHNICAL SPECIFICATION

|                                    |  |
|------------------------------------|--|
| Max. load on the draw bar          | 13 230 lbs   |
| Max. load on the pin               | 4400 lbs   |
| Compatible with Lean Dollies sized | 24" x 15"<br>24" x 22.5"<br>32" x 30"<br>48" x 45" |
| Surface treatment                  | Blue zinc plated                                   |
| Supplied                           | Assembled ready to mount on the tugger             |

#### DESIGN

For the tractor types:  
Jungheinrich EZS350 and Linde P30/P50.  
It can also be adjusted for other tractor types.

#### BENEFITS

- Enable towing of all Lean Dollies in various combinations.



CREATING FUTURE-FIT  
**SMART  
MOVES**  
LOGISTIC SOLUTIONS

K. HARTWALL

MAKE THE NEXT  
**SMART MOVE**  
IN LOGISTICS

COST SAVINGS  
UP TO 40 %

PRODUCTIVITY  
INCREASED BY  
UP TO 55%

3-4 TIMES LESS  
MANUAL HANDLING  
OPERATIONS  
PER TOTE

BETTER  
SAFETY AND  
ERGONOMICS



DAIMLER

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