

# Available - Unused Vertical Lift Module



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Norpak Handling Limited has available for sale – one only, never installed Diamond Phoenix SMARTdepot Dual-bay Vertical Lift Module System.

This equipment features our multi-bay, dual-access, dual-delivery unit utilizing our patented Cross-bay™ technology. This system consists of a tray size of 56" wide x 26" deep, a minimum 1" shelf rail adjustability and a 550lb. tray capacity with 190 trays provided on 3" centers. The trays are constructed entirely from 304 grade stainless steel, which was a requirement of the owner.

There are a number of unique features inherent in the design of the SMARTdepot™. One is the ability to deliver product from any bay to any available access opening. This unit features two delivery windows on the front and two on the rear. Each side utilizes an individual control screen. It is possible to control four delivery windows with two screens using Diamonds Split screen technology. This configuration allows up to four people to access the machine simultaneously or two people to utilize two windows each and eliminate any potential wait time for the next tray to arrive. Other features and advantages are discussed in the body this document.

Note: This unit is currently furnished with custom software to suit project specific requirements. This software will most likely have to be replaced or modified to suit the new application. Standard software alternatives are outlined within.

**SYSTEM DESIGN**The SMARTdepot™ with Cross-bay™ technology is equipped with "state-of-the-art" Smartaccess™ controls utilizing readily available "off-the-shelf" components offering a new and widerangingset of features in operation. The VLM proposed has 1" rail adjustability, on-boardintelligence, and 550 lbs tray capacity giving you the finest equipment available for thisapplication. The unit is controlled via a color touch screen user interface with split-screentechnology that allows control of both access openings on units equipped with dual-delivery.

The proposed system of one (1) Dual-bay unit will provide the following capacity:

|   | Qty | Survey Cube Ft. | SMARTdepot Cubic Ft. (proposed/max) | Survey Sq. Ft. | SMARTdepot Sq. Ft. (proposed/max) |
|---|-----|-----------------|-------------------------------------|----------------|-----------------------------------|
| Dual-bay "Marquis" VLM (56" x 26" 237") | 1   | N/A             | **367 / 367                         | N/A            | **1,937 / 1,937                   |

\*Based on proposed centers \*\*Based on 100% utilization

|                                   |                         |         |
|-----------------------------------|-------------------------|---------|
| *Footprint Requirements (Sq. Ft.) | Current method (approx) | N/A     |
| *Footprint Requirements (Sq. Ft.) | SMARTdepot (per unit)   | 128 ft2 |
| *Footprint Requirements (Sq. Ft.) | SMARTdepot (total)      | 128 ft2 |

\*Includes 36" aisle in front of unit and between shelving/racking areas. \*\*Approximations only. \*\*\*Based on quoted number of trays per unit. \*\*\*\*Based on side-to-side layout

## SYSTEM OPERATION

The SMARTdepot™ will be operated via the standard Smartaccess™ unit control (operator interface as mentioned above). A standard Multi-bay VLM has (1) access window on the face of the unit shows the "Marquis" version, which includes dual access and dual delivery windows for increased throughput applications. Using Diamond's patented Cross-bay™ technology the lift mechanism within the unit will access trays located in any bay and deliver it to the required access window. The product is loaded into, and picked from, the VLM tray. When product is needed the user can log into either access opening, simply enter the part number, or tray number, into the controller and the correct tray will be delivered to the correct delivery window. The tray is also delivered to the correct ergonomic pick position for each user (35", 38" or 41"). When the pick is complete the task complete button is pressed telling the unit to return the tray back into the system. If another tray were needed at that time the unit would deliver it to the next available delivery window. This process would continue until all picks are complete.

Technology within the SMARTdepot™ allows for all access openings to be active simultaneously (available on Dualdelivery units). This allows a tray to be delivered to one access opening for picking or putting, and then have another tray delivered to another access opening while the first is still occupied. This greatly increases the accessibility to the system and to the product keeping the user more productive.

This simultaneous picking feature is a standard feature with multi-bay technology and is not offered with most other Vertical Lift technology.

## ACCESSIBILITY

Four delivery windows will be provided at the standard floor level, two located at the front of the unit, and the other two at the rear. This dual-access / dual-delivery opening configuration provides maximum product accessibility, while retaining very high amounts of product storage and cube within the VLM. The ability to provide this unique array of openings allows the unit to be located in areas of the facility that may have obstructions that would impede access to a standard VLM or Vertical Carousel workstation. The right combination of access locations can be chosen based on final unit position or application factors. Product from any location in the unit will be delivered to the required access opening via the Cross-bay central lifting and extraction system. In theory the system allows 112" of horizontal storage space to be divided into two 56" locations. So instead of bringing down one large tray (i.e., level 10) that may have limited product availability, a series of two smaller trays (i.e., half of level 10 and half of level 25) are delivered allowing for the right product to be accessed at the available delivery window. This tray size handles 10.2 sq. ft. of product.

## DUAL-BAY VLM SYSTEM SPECIFICATIONS:

|                                      |   |
|--------------------------------------|---|
| Vertical Lift Module                 | Model DBMDD550-56-26-237                        |
| Overall Unit Height                  | 237"  |
| Overall Unit Width                   | 142.44"   |
| Overall Unit Depth                   | 93.25"  |
| Empty Tray Weight                    | 47.0 lbs.                                       |
| Required Room Height                 | 240"  |
| Work Table Height (from floor)       | 35", 38" and 41" (Multi-height delivery system) |
| 304 Stainless Steel Trays (per unit) | 190 (based on 1.5" product height)              |

|                                   |  |
|-----------------------------------|--|
| 304 Stainless Steel Trays (total) | 190  |
| Rail Positions (per unit)         | 192 (based on 3" rail spacing)   |
| Rail Positions (total)            | 192  |
| Usable Tray Depth                 | 26.22"   |
| Usable Tray Width                 | 56.0"  |
| Actual Tray Height                | 1.8"   |
| Maximum / Average Load per Tray   | 550 lbs / 550 lbs  |
| Minimum Rail Spacing (allowable)  | 3" (with 1" adjustability)   |
| Actual Rail Spacing               | 3"   |
| Maximum Load Height               | 29.25"   |
| Clearance above product           | 0.75"  |
| Unit Capacity (maximum)           | 80,000 lbs per bay (x 2 for Dual-bay unit)   |
| Unit Capacity (as configured)     | 190 trays x (550 lbs 47 lbs) = 113,430 lbs   |
| Lift Speed                        | up to 163'/minute (fully loaded)   |
| Lifting Drive Type                | AC Servo motor   |
| Power Supply required             | 575 Volt, 3-Phase, 60Hz, 40 Amps   |
| Controls                          | Touch Screen interface   |
| Safety Controls:                  | Switches on side panels. Light Curtains protect the access opening. Height detection system identifies max product height per tray |
| Computer Interface                | Included   |

|                                     |  |
|-------------------------------------|--|
| Individual Component Specifications | Trays: 14ga. stainless steel<br><br>Panels: 14ga. steel<br><br>Access Doors: 16ga. steel<br><br>Safety Doors: 14ga. steel<br><br>Columns: 12ga. steel<br><br>Roof Panels: 16ga. galvanized steel |
| Standard Colors                     | Graphite Frame / Diamond Blue Center Panels  |
| Unit Coating                        | Powder Coated  |

**SYSTEM INVESTMENT**Investment

One (1), DBMDD550-56-26-237 SMARTdepot™ VLM

**Included Items:**

- (190) 56" x 26", 550 lb capacity trays constructed from 304 Stainless Steel (192) Shelf Rail Pairs on 3" centers (2) Color Touch Screen Operator Consoles, w/adjustable arm (1 per side)(4) Operator Delivery Windows, at ground level, front and rearDual-access, Dual-delivery configuration

**Full Width Fluorescent Lights (227 candlepower)**

- Motor Over Current SensorsAccess Panel Safety InterlocksSide Service Access DoorsHeight Detection SystemDynamic StorageSafety Obstruction Beam CurtainsComputer interfacePart Locator FeatureMechanical/electrical installation as herein defined.Category 2 safety circuitryCS A approved electrical panel

**Features:**

**US Manufacturing** ensures dependable, accessible, quality equipment, parts and service. No issues with importing of parts or off-hour support.

**1" Rail Spacing Adjustability** allows rails to be positioned in a way to maximize cube and increase storage capacity.

**Six Cable lift system** with composite plastic pulleys provides less particle generation compared to chain driven technologies and requires less maintenance while ensuring positive lifting of all load situations.

**Five-wheel center guidance lift system** insures level platform, smooth and quiet operation, and reduced wear for improved overall life of the machines.

**Dynamic Optimization** function allows you to store product ranging from 1" to 29.25" without the need for pre-set rail spacing. This allows for increased flexibility and storage density with no unit modifications.

**Variable delivery height** workstation provides delivery heights of 35", 38" and 41". Correct heights are determined via the SMART-access™ user profile system or by overall product height.

**SMART-access™ Profile System** allows for users to have custom settings defined by the swipe of their badge or the entry of their password.

**Multi-bay VLM** with a standard tray capacity of **550 lbs.**

Patented **Cross-bay™ technology** allows for product to be retrieved/stored from any bay to any access opening using one integrated multi-bay unit and control system.

**Simultaneous operation** of multiple access openings allows for work to be performed by multiple people on multiple floors for increased productivity.

**Storage capacity** of up to 320,000 lbs total per unit is standard leaving no worries about unit overloading or choosing the right weight capacity out of various options.

**Fast and Reliable vertical travel speeds of up to 163'** per minute (no load) provides increased cycle times balanced with a safe delivery environment.

**Height Detection System** provides “on-the-fly” product height identification allowing the unit to dynamically store product based on location availability. This maintains the most storage density possible. System also protects against product overhang and other unsafe conditions.

**A Controller and Motor** design incorporating “**Closed-Loop**” **Vector technology** provides fast and reliable positioning, travel speeds and cycle times.

A “**state-of-the-art**” **control platform** using readily available “off-the-shelf” components tracks the location and height of every tray and opening as well as a myriad of other features and benefits.

**Intelligent Error messaging** is displayed in clear and easy to understand resolution feedback full text. No error codes to understand!

Unit is **100% modular in design** making increasing or decreasing unit height to accommodate new location or future growth easy and inexpensive compared to other units or technology.

## **Benefits**

### **Increased Productivity**

- Materials are delivered to the user at an ergonomically correct height, reducing walking, climbing, bending and reaching for heavy/sharp objects. Side-by-side access openings with shared lift provide pre-staging of next picks to increase productivity. User profile system automatically sets unit up for each user according to predetermined user settings making the unit immediately ready for the most productive usage. Unit is user friendly making it easy to use and easy to learn for experienced and new employees alike.

### **Increased Control**

- Pick product by tray number. Pick product by product number. Pick using Downloaded or Manually created Work Lists. Tray number restrictions. Tray number allocations. Individual tray password protection.

### **Increased Space Utilization**

- Utilizes all available ceiling height, reducing overall floor space requirements. Under utilized racks are eliminated. Clutter is eliminated from the aisles. Trays can be subdivided with metal or composite dividers to create discrete storage locations.

### **Improved Safety and Ergonomics**

- Operators do not use ladders to retrieve heavy or bulky boxes, nor risk walking down ladders with both hands occupied, reducing the risk of injury. All products are delivered to operators at one of three ergonomically correct waist high positions determined by the user profile settings. These heights are 35", 38" or 41" reducing potential reaching or lifting injuries. 32" tray depth option reduces reaching distance and potential issues associated with reach. Recessed toe area and relocated work counters aide in reaching distance reduction.

### **Intangibles**

- Parts are kept inside a fully enclosed system with a priority on minimizing particulates. Organized storage of raw material and finished product. Easy operation of system by trained and new personnel.

## **SUPERIOR ON-BOARD INTELLIGENCE**

Communication from a host computer allows for downloading of Work-lists

Allows for picking product by assigned part number

Manual Tray Control via tray number

Selection of Manual, Automatic, or Remote Computer Control

Ability to personalize unit to each user via the Smart-access™ profile system

- Multiple height Ergo delivery configuration (allows product to be delivered to either 35", 38" or 41" based on user height)
- Tray lockout assignments (restricts users from specified trays)
- Tray allocation assignments (restricts users to specified trays)
- Language configuration (allows for all screens to instantly change to another language based on user profile. English, French and Spanish currently available)
- Etc.

Height detection system measures product height and determines best storage location.

- System also provides product protection by checking for overhanging product before it moves a tray horizontally onto the extractor or vertically into a storage position.

Dynamic storage logic automatically selects the best storage location, every cycle, for each tray as it is being stored with a minimum of only .75" clearance.

Storage rationale is as follows: Height detection system determines the height of tallest product on the tray. System searches for a storage location closest to the exact height but may use multiple rail positions by blocking rails above as needed. In the absence of exact height, next closest height location is selected. Systems main goal is to optimize available storage space.

Utilizes tray location sensor on the extraction bed to check if storage position is free prior to storing tray into that location.

**CONTROL SPECIFICATION: Smart-access Controller Features at a Glance**

- 15" Panel Mount TFT Flat Panel LCD Monitor
- Plastic Enclosure
- Intel Celeron 400 MHz "Fanless" Single Board Processor
- Resistive touch screen
- Expandable with auxiliary I/O ports
- Processor is designed to wall mount
- Perfect for self-serve, unattended or industrial application

**Optional POWER PICK / IM Software Packages**

| S = Standard O = Optional | SmartAccess  | PowerPick  | PowerIM                       |
|---------------------------|--|--|-------------------------------|
| Functionality             | Intelligent machine control with part location feature | SmartAccess with host interface and transaction processing | Enhanced inventory management |
| Manages Spaces            |  |  | S                             |
| Manages Inventory         |  |  | S                             |

|                                  |   |   |   |
|----------------------------------|---|---|---|
| Part Master Database             | S | S | S |
| Pick and Store Parts             | S | S | S |
| Cycle Count Locations            |   | S | S |
| Host Interface                   | S | S | S |
| Data Import                      | S | S | S |
| Data Export                      | S | S | S |
| Simple Pick List Processing      | S | S | S |
| Replenishments                   | S | S | S |
| Batch Processing                 |   | S | O |
| Report Printing                  | S | S | S |
| Label Printing                   | O | S | S |
| Kitting                          |   | O | O |
| Hot Picks                        | S | S | O |
| Hot Replenishments               | S | S | O |
| Hot Cycle Counts                 | S | S | O |
| Part and Location Verification   | O | S | S |
| Tracks Inventory Levels          |   |   | S |
| Controls Static Shelving Racks   |   | O | O |
| Pick and Put to Light Devices    |   | S | O |
| SQL Database                     |   | S | S |
| Multiple Work Zones              |   | S | S |
| Login by User ID                 | S | S | S |
| Supervisor and User Level Rights | S | S | S |
| Configurable Rights by User ID's | S | S | S |
| Counting Scale Support           |   | O | O |
| Barcode Scanner Interface        | S | S | S |

|                            |   |   |   |
|----------------------------|---|---|---|
| Touchscreen User Interface | S | O | O |
| Transaction History        | O | S | S |
| Tote Tracking              |   | S | S |
| Tote Label Printing        | O | S | S |
| Location Lockouts          | S | S | O |

**Stainless Steel Tray Features and Benefits:**

A tray made entirely from this high grade of stainless steel reduces any exposure to any galvanized finishes that would be present underneath an insert. Stainless steel inserts would also add additional weight when added to a conventional tray. Finally using a stainless steel tray eliminates the need to remove inserts for cleaning purposes

- Each tray is constructed entirely from 304 stainless steel. No need for stainless steel tray inserts. Stainless steel trays provide easier care and a longer lifespan than a traditional tray. Optional 304 stainless steel rail pairs further reduce potential contamination within the VLM