

PART I - GENERAL

1.1 VACUUM BEDDING DISPENSING SYSTEM – VBDS 4900

- A. System Description – VBDS 4900 Vacuum Bedding Dispenser with Vacuum Conveyor and Remote Bedding Storage System. The Remote Bedding Storage System consists of a Bulk Bag Discharger. These systems are integrated with one another and linked to the tunnel washer. A dry contact shall interface with the bedding dispenser and the tunnel washer and shall be equipped with an on-off switch mounted on the control panel. A Vacuum Bedding Discharger, a Cage Inverter and a bedding dispensing head are combined to form a single system for conveying and dispensing paper/pulp or wood shaving types of bedding. The system automatically proportions and conveys the bedding product from bulk bags to the cage inverter/dispensing head combination. The system interfaces with most conventional tunnel washers. The Graphic Touch Panel HMI's visually and audibly alert the operator of cycle status, system functions and operations.

1.2 Warrantee

- A. The system shall be fully warranted for parts and service for one (1) year as described in the Equipment Sales Agreement.
- B. Extended Warrantee maybe purchased at any time within the one-year warrantee period.

PART II - PRODUCT

2. VACUUM BEDDING DISPENSING SYSTEM – VBDS 4900

2.1 Manufacturer

Roe Bio-Medical Products, LLC
125 Wilbur Place, Suite 150
Bohemia, NY 11716
631-236-9155
www.roebiomed.com

2.2 System Description –

2.2.1 Vacuum Bedding Dispenser - VBDS 4900

- A. A bedding dispenser with select Environmental Enrichment dispensing capabilities and a vacuum bedding transport, with integrated automated cage flipper and dust collection. Length- 5' bedding dispenser section with integral, object recognition system for discerning cage size and components, dust control system, 5 hp vacuum blower and a 42" roll-off table
- B. Dimensions:
- a. LENGTH-(without discharge roll-off conveyor) 60" (1525mm)
 - b. CONVEYOR HEIGHT-, adjustable +/- 4" (100mm) 36" (915 mm)
 - c. HEIGHT- overall, adjustable +/- 4" (100mm) 84" (2135mm)
 - d. WIDTHS-
 - i. for conveyors up to 36" (915mm) wide 49.5" (1258mm)
 - ii. for conveyors up to 42" (1067mm) wide 55.5" (1410mm)
 - iii. for conveyors up to 48" (1220mm) wide 61.5" (1520mm)
- C. Location – positioned at the clean side conveyor end of a tunnel washer. It may be separated by a post-wash sorting conveyor, to separate caging from non-caging materials exiting the tunnel washers.
- D. Vacuum receiver is located and stacked on the storage hopper as a module and is contained within the Bedding Dispenser envelope.
- E. Storage Hopper supports the vacuum receiver and is located within the Bedding Dispenser envelope.
- F. Volumetric Dispensing Module is positioned below and attached to the storage hopper. It is 97% accurate at dispensing 315 cc per cage of 1/8" cob bedding with a 99.5%+ repeatability. The Volumetric Dispensing Module is interchangeable with a Fluidizer Dispensing Module for dispensing paper pulp and similar materials.
- G. The Chute Module is configured to automatically direct bedding into the centers of multiple size cages as detected by the object recognition sensors. Typical configuration has two set of chutes for automatically dispensing into either 4 shoe box cages or 3 large cages. The Chute Module is interchangeable with other configurations such as 6 shoe box cages or 4 large cages, etc.

- H. Dust containment and Collection System with retractable dust shield, vacuum air filtration and optional HEPA Filtration, located within the Bedding Dispenser. No net additional air is required to transport bedding from the bedding storage room to the bedding dispenser. Filtered exhaust air is reused within the Bedding Dispenser to assist in cage drying.
- I. PLC controls with Graphic Touch Screen HMI and Ethernet communications with Bulk Bag Discharger.
- J. Cage indexing and alignment system.
- K. Object recognition sensors for determining cage sizes and components.
- L. Cage Flipper - Automated rotary clamp for turning cages to up-right position.
- M. Bedding level sensors, PLC controls with control panel at the dispenser.
- N. Through-puts of 300 to 1200 cages per hour.
- O. Vacuum blower power unit - 5 hp 460 volts, 60 Hz, 3 phase.
- P. Factory Acceptance Testing.

2.2.2 Bulk Bag Discharger, Hoist and Rail

- A. Pneumatic Bulk Bag Bedding Delivery System designed to transport bedding from bulk storage bags in the bedding storage room via pneumatic tubes overhead to the cage washing area and bedding dispenser including features listed below. System rated for 2000 lbs. (one ton), ideal for standard bedding material bulk bags weighing between 600 lbs and 1200 lbs.
- B. Dimensions:
 - a. LENGTH-standard rail, longer or shorter by space allocation 100" (2542 mm)
 - c. HEIGHT- overall standard, higher or lower by headroom availability 120" (3050 mm)
 - d. WIDTHS-
 - i. for single bulk bag metering dischargers 60" (1525 mm) wide
 - ii. for dual bulk bag metering dischargers 120" (3050 mm) wide
- C. PLC controls with Graphic Touch Screen HMI and Ethernet communications with dispenser.
- D. Bedding level sensors in each of the Bulk Bag Metering Discharge Stations.
- E. Stainless steel bulk bag stand, supports and rails assembly with electric hoists and motorized trolleys rated for 1 ton.
- F. 2" diameter 304 SS Pneumatic Transport Tube.
- G. Continuous Supply System crossover piping and stainless steel pneumatically actuated valves provides uninterrupted supply of bedding to the Dispenser. The Graphic Touch Panel HMI displays system condition at both the bedding storage room and at the Bedding Dispenser (EQ-06) in the clean cagewash
- H. Factory Acceptance Testing.

2.3 System Operation - VBDS 4900 Vacuum Bedding Dispenser and Bulk Bag Discharger

- A. The dispenser is integrated with the tunnel washer and bedding is automatically replenished via the Bulk Bag Delivery System.
- B. Dispensing bedding- Bedding is automatically conveyed, on demand, from a storage system via the integral vacuum transport system and stored in the dispensing hopper. As cages leave the conveyor of the cage washer, the dispenser automatically senses the cage size and selects the appropriate programmed settings that match the cages. The programmed settings are operator adjustable, via the HMI graphic touch screen, to desired amount of bedding and select enrichment (if any) for each size cage. The dispenser then aligns the cages, clamps and gently inverts (flips) cages 180° to right side up. The appropriate amount of bedding and enrichment (if any) is then dispensed into the center of each cage. The vacuum air, that is generated by the 5 Hp vacuum blower located within the dispenser, is alternately used to transport the bedding and for collection of dust in the contained dispensing chamber. The vacuum air is filtered prior to entering the vacuum blower. The clean filtered air is recycled by exhaust onto the incoming cages to assist in drying them.
- C. Dust Containment and Collection System- An automatic retractable dust shield is lowered into position to seal the dispensing chamber while cages are being filled with bedding. During the filling process, when the vacuum receiver in the storage hopper is idle, the vacuum air is used to collect dust in the dispensing chamber. At the end of the dispensing cycle, the dust shield is retracted and cages moved onto the roll-off table.

2.4 Construction –

2.4.1 VBDS 4900 Vacuum Bedding Dispenser

- A. Storage Hopper- The storage-dispensing hopper shall be of 16 gauge stainless steel. Storage hopper design shall be coordinated to accept pneumatic bedding delivery system, including separator provided by vacuum bedding delivery system manufacturer. Integral low and high bedding level probes to signal

vacuum bedding delivery system shall be included.

- B. Structure- All structural support and panels shall be stainless steel. All sprockets, chains, etc. are of FDA approved materials such as stainless steel and acetal.
- C. Cage Conveyor- The unit shall be provided with 2" diameter, powered stainless steel rollers on 3" centers to convey the cages. Conveyor shaft bearings are sealed ball bearing type.
- D. Legs are adjustable for leveling the unit and adjusting the conveyor height.
- E. Controls- Graphic Touch panel with auxiliary E-stop switch is enclosed in a NEMA 4X and connected to the separate NEMA 4X enclosed PLC controls having speed control for the variable speed cage conveyor 24 Volt DC drive rollers.
- F. Storage Hopper Capacity: Total bedding storage capacity shall be 10 cu. ft.
- G. Vacuum Blower power unit- 5 hp 460/60/3 phase, is contained within an acoustically insulated compartment within the dispenser. Produces less than 70db.
- H. Roll-Off Table- 36" wide x 42" long detachable gravity roll-off table has 2" FDA approved urethane covered rollers, 3" on center. A photo-electric sensor is mounted on the side rail to detect that cages have cleared and prevent the Bedding Dispenser from processing cages until the excess of accumulated cages have been cleared.
- I. Disassembled Shipment- The unit shall be shipped disassembled for entry into building. Uncrated sections shall pass through a 3' 6" x 6'8" standard doorway.

2.4.2 Bulk Bag Discharger, Hoist and Rail:

- A. Stainless steel bulk bag stand, supports and rails assembly with electric hoists and motorized trolleys rated for 1 ton.
- B. 16 gage Stainless steel Dual Head Bulk Bag Metering Discharge Stations with level sensors and variable speed metering drive motors.
- C. PLC controls with Graphic Touch Screen HMI are wall mounted in a NEMA 4X stainless steel enclosure.
- D. Continuous Supply System has stainless steel crossover piping and stainless steel pneumatically actuated valves.
- E. Sectional Shipment - The unit shall be shipped in sectional components for entry into building. Uncrated sections shall pass through a 3' 6" x 6'8" standard doorway.

2.5 MEP Services / Utilities

2.5.1 VBDS 4900 Vacuum Bedding Dispenser - Clean Cagewash Room

- A. Compressed air to Cage washing area- 12 CFM capacity having a consumption rate of 8 CFM @ 90PSI per 640 cages per hour processing rate.
- B. Electrical –
 - a. 120VAC 60Hz 1phase, at 30 amps.
 - b. 230/460 VAC, 60Hz,
- C. Communications – Plenum Rated CAT 5e or CAT 6 shall run through ½" conduit between VBDS 4900 Vacuum Bedding Dispenser controls in Clean Cage Washroom and Bulk Bag Discharger controls in the Bedding Storage Area.
- D. Estimated heat load – 20,000 BTU/hr

2.5.2 Bulk Bag Discharger, Hoist and Rail – Bedding Storage Area / Room

- A. NO heat load is generated in Bedding Storage area.
- B. Electrical –
 - a. 120 VAC 1 phase, at 20 amps for Single Bulk Bag Discharger.
 - b. 120 VAC, 1 phase, 40 amp service for Dual Bulk Bag Discharger option with continuous supply system crossover piping and valves.
- C. Compressed air to Bedding Storage Area:
 - a. N/A for Single Bulk Bag Discharger
 - b. -12 CFM capacity having a consumption rate of 1 x 12 Cu Ft Day @ 90PSI for Dual Bulk Bag Discharger system option with continuous supply system crossover piping and valves, per 640 cages per hour processing rate.
- D. Vacuum conveying air for the bedding conveyance will come from the clean bedding storage area / room at the rate of 215 CFM in 3 x 60-120 second cycles per 640 cages per hour processing rate. The discharge (HEPA Filtered) air will be recycled for use in the Bedding Dispenser in the clean cage washroom at the rate of 215 CFM. The system does not require air from the outside.

PART III – EXECUTION

3.1 Installation and Start Up

- A. Installation – The system shall be installed by manufacturer.
- B. Installation Costs – The costs of the installation shall be included in the sale of the system by the manufacture under the sales Agreement, specifically described in “Attachment B” entitled “Installation”.
- C. Start up – The manufacturer shall start up and prove out the system using the animal bedding materials supplied by the end user.

3.2 Delivery

- A. Shipping – The system shall be shipped FOB delivered to the job site.
- B. Uncrating – The system shall be uncrated by the manufacture at the time of installation.
- C. Storage – The customer shall be responsible for storage costs, if any.
- D. Delivery – The customer shall set the delivery date with the intent of immediate installation upon delivery. Delivery date shall be 90 days after receipt of Purchase Order, unless otherwise agreed to in writing by both the customer and the manufacture.

3.3 Training

- A. An on-site training course of 1 day shall be provided by a factory representative.

3.4 Documentation

- A. The manufacturer shall furnish all necessary manuals and as-built documents pertaining to the system.