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Vittleveyor[®] System

Vertical Reciprocation Conveyor (VRC)

Installation and Service Manual

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Vittleveyor[®] Systems

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Important Safety Instructions

1. READ THESE INSTRUCTIONS.

2. KEEP THESE INSTRUCTIONS.

- 3. HEED ALL WARNINGS.
- 4. FOLLOW ALL INSTRUCTIONS.

5. DO NOT CLEAN THIS APPARATUS WITH A WATER SPRAY OR THE LIKE.

6. DO NOT BLOCK ANY VENTILATION OPENINGS. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

7. DO <u>NOT</u> INSTALL NEAR ANY HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTERS, STOVES OR OTHER APPARATUS THAT PRODUCES HEAT.

8. ONLY USE ATTACHMENTS/ACCESSORIES SPECIFIED BY THE MANUFACTURER.

9. TURN THE POWER SWITCH TO THE "OFF" POSITION WHEN THE APPARATUS IS NOT IN USE AND BEFORE SERVICING.

10. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL. SERVICING IS REQUIRED WHEN THE APPARATUS HAS BEEN DAMAGED IN ANY WAY, SUCH AS LIQUID HAS BEEN SPILLED OR OBJECTS FALLEN INTO THE APPARATUS, THE APPRATUS DOES NOT OPERATE NORMALLY.

Grounding Instructions

1. THIS MACHINE MUST BE CONNECTED TO A GROUNDED METAL, PERMANENT WIRING SYSTEM; OR AN EQUIPMENT-GROUNDING CONDUCTOR MUST BE RUN WITH THE CIRCUIT CONDUCTORS AND CONNECTED TO THE EQUIPMENT-GROUNDING TERMINAL OR LEAD ON THE CONVEYOR.

2. DANGER-CHECK WITH A QUALIFIED ELECTRICIAN OR SERVICEMAN IF THE GROUNDING INSTRUCTIONS ARE NOT COMPLETELY UNDERSTOOD, OR IF IN THE DOUBT AS TO WHETHER THE APPARATUS IS PROPERLY GROUNDED.

Overview

The Purpose of the Vittleveyor[®] System:

The Vittleveyor[®] System is designed to transport packaged food and currency between food preparation areas and customer serving areas. This transport can be at a drive-thru where two points consist of the final order assembly area and the drive-thru lane, or can be some form of internal conveyance where food and/or currency is moved between floors or from one point within a restaurant to another.

The Vittleveyor[®] is designed to move packaged customer orders quickly in high transaction restaurants. It was not designed, nor is it suited, to move bulk materials, live loads or any load in excess of 25 pounds. For best results, make sure that loads are not too heavy.

Applications Served:

While there are many different applications served by the Vittleveyor[®]. The Vittleveyor[®] can be classified for purposes of this document by the type of control systems that are present on any given machine. Currently there are two specific control systems. The control types are: Drive-thru and Vertical Reciprocating Conveyor (VRC). This document is for the VRC version.

Note that while the programmable controls vary between the two machines, the control box, which handles either of the controls contains the same computer and electronic drive system. What varies in the control box between the two classifications is the program in the computer. Control Boxes are designed to serve either classification once the proper program is loaded.

The VRC Vittleveyor[®] System:

The VRC Vittleveyor[®] provides the user with the following controls:

Upper Station:

The upper station offers the user a POWER on/off switch, a lighted SEND button and a lighted Recall button. Note that the light for the directional move is only operational when the carrier is in motion. The Up and Down Jog switches are also on this panel. If the unit is equipped with the optional Audio system, the Audio Power button and the Push to Talk button is also on the upper station control panel.

Lower Station:

The lower station offers the user a SEND and, as an option, a RECALL button.

User Operation Instructions

The VRC Vittleveyor® System:

The controls of the VCR Vittleveyor[®] System vary by level. The bottom level of the system is considered the Slave Station and the upper floor is considered the Master Station. Each station's controls are described below. Note that the VRC version of the Vittleveyor[®] uses a two shelf carrier specially designed to move trays of pre-packaged food.



VRC Vittleveyor®

VRC Vittleveyor[®] System Master Station Control (Upper Level)

Button	Required Carrier Position	Operation initiated by pressing button
POWER	Not sensitive to carrier position	Pressing this button so that the light around the button is ON, places the machine in the run mode. Essentially, this turns the machine on so that the controls operate.
MANUAL Note: This is referred to as the JOG .	Not sensitive to carrier position	These are used to manually operate the carrier. One must hole the magnet key over the black button. Hold the key over the upper button makes the carrier go up. Holding the key over the lower button makes the carrier go down. Note that this switch is to be operated only by qualified and trained service personnel. It is not designed for normal use.
Upper Level SEND	Carrier must be at the upper level	Pressing the SEND button sends the carrier to the lower level.
Upper Level RECALL	Carrier must be at the lower level	Pressing the RECALL button will bring the carrier back to the upper level. <u>NOTE</u> : Verify that no one is inserting or removing items from the carrier before using this mode.
Lower Level SEND	Carrier must be at the lower level	Pressing the SEND button will send the carrier to the upper level.
Optional Lower Level RECALL	Carrier must be at the upper level	Pressing the RECALL button will bring the carrier back to the lower level <u>NOTE</u> : Verify that no one is inserting or removing items from the carrier before using this mode.

Operational Considerations

General:

Making the Vittleveyor[®] System a success at your site is much more than just installing the machine properly. The Vittleveyor[®] System must also be used correctly from an operational standpoint. For this system, below are operational considerations that have been relayed from other users of the equipment that have aided them in becoming successful.

The VRC Vittleveyor[®] System:

The most important operational consideration for the VRC Vittleveyor[®] is to get the order to the food prep/assembly area as soon as is possible. Most accomplish this by having their point of sale equipment transmit the order to the food prep area as soon as the total is generated. This allows the order to be assembled while the money portion of the transaction is being completed.

Some have decided to have the server prepare the drinks to give the food prep people more time to complete the order. All Vittleveyor[®] Systems are designed to carry drinks with lids without spilling. Operationally, however, it may be better to have them prepared by the server.

Like with the drive-thru Vittleveyor[®], it is very important to keep the equipment clean.

User Diagnostics

The user diagnostics in either version of the machine are designed to give the server an immediate indication that either one of the safety devices has been activated or that some form of drive/positioning malfunction has occurred.

User diagnostics use the lights or LED's depending on the specific system, associated with the server control panel in order to report the diagnostic information. For instance, if a safety bar is activated, the basket or car stops. If the server knows, as a result of these diagnostic reports, that the safety bar is the problem, they can clear the cause and get on with operation. Without this diagnostic report, the server may consider the equipment out of order, not take the remedial action and result in loss of use of equipment when not required.

Note that these are two classes of training for individual working on any of the Vittleveyor[®] systems. They are provided the title of either Trained Operators or Qualified Operators. The purpose of this distinction is to point out that there are different levels of ability required to do varying tasks associated with maintenance and problem resolution. Ignoring these distinctions places the person servicing the equipment at risk.

Trained individuals are those who have been fully trained by a Qualified Operator, understand the function of the Vittleveyor[®] System and its safety devices and have read and understood the Vittleveyor[®] manual. They must also be fully aware of all your company's policies regarding OSHA lockout/tag-out regulations and know how to follow those regulations. This individual is the front line of support with the equipment and should be restaurant personnel.

A Qualified Operator is a Trained Operator who is also familiar with, and has had formal training on the repair, maintenance and related safety procedures associated with that repair and maintenance of restaurant equipment and has attended the E. F. Bavis and Associates, Inc. Vittleveyor[®] Service Technician Training Seminar. It is the responsibility of the equipment owner to acquire training for and determine the level of the person working on the equipment. User diagnostics are geared toward the Trained Operator.

Button Light	Condition of Light	Meaning	Action (To be performed by a Qualified Operator)
POWER	Light will not come on when pressed	No Power to Vittleveyor [®] System	Check fuse or electrical breaker and restore power to Vittleveyor [®] circuit. If the breaker or fuse is not off or blown, CALL FOR SERVICE.
SEND or RECALL	FLASHING	Emergency Safety Bar above the customer opening has been tripped.	Clear obstruction. Press the button again for the transaction desired. If the carrier does not move to the proper position, CALL FOR SERVICE. If the lights continue to flash, but the carrier moves to the proper position, press the POWER button off and then on to reset the lights. If lights continue to flash after toggling power, CALL FOR SERVICE.
SEND and RECALL	FLASHING	Either some form of jam has occurred which delayed the carrier's arrival or the carrier has missed the proper stopping point.	Determine carrier position and CALL FOR SERVICE. Provide service personnel with carrier position and status of lights.

User Problem Resolution Chart

The VRC Vittleveyor[®] System:

The VRC Vittleveyor[®] does not have a sufficient number of lights in order to make a distinction between safety bar activation and faults within the drive system. Therefore, it offers only one diagnostic report, the flashing SEND light to indicate that there is some sort of problem. The server must use carrier position and remedial action in order to determine the problem or contact a Qualified Operator to resolve the problem.

The most common cause of the carrier stopping is activation of the safety bars. When this occurs, the SEND light will flash at the upper end. The Trained Operator should clear the

obstruction, Toggle the POWER button OFF, then back ON, and then press the SEND button of the sending station in order to place the machine back into operation.

If the carrier does not resume progress toward its destination when the SEND button is pressed, then see the section: Jogging the Carrier.

User Care and Maintenance

<u>General</u>:

The <u>most important</u> aspect of care and maintenance for any Vittleveyor[®] System <u>is to keep the</u> <u>system clean</u>. No other aspect will extend the life of the machine or keep downtime to a minimum.

The tape used to move the car, is designed as the major wear component of the system; therefore, this tape must be replaced as part of normal preventive maintenance. It is recommended that this component be replaced every other year on VRC's. If the machine is very heavily used, or if it sits in a particularly harsh environment, it is possible more frequent replacement may be required. Not replacing this tape may result in a catastrophic failure at some point in the future.

The Drive-thru Vittleveyor[®]:

The maintenance procedures for the users of the Drive-thru Vittleveyor[®] are listed on the following page:

Daily CareMonthly CareTrained Operators OnlyQualified Operators Only		Annual Care Qualified Operators Only
Clean all exposed internal and external surfaces including the carrier.	Check tape and guide tracks for loose mounting screws. Tighten as required.	Clean horizontal tape and guide tracks. Check mounting fasteners. Tighten as required.
Clean carrier.	Clean tape and guide track.	Replace main and door drive tape.
Clean all visible tape and guide tracks.	Check all exposed screws for tightness. Tighten as required.	Replace basket mounting blocks and screws.
Check customer and server Safety Bars for proper operation.	Clean and inspect door track, tape and tape track.	Inspect gearbox and add gear oil as required. Use AGMA Type 7C synthetic lubricant. <u>Do not</u> use EP rated gear lube.

Care and Maintenance

Care and Maintenance Notes:

- 1. Use only mild, non-abrasive, cleaners, such as Windex, that do not leave a residue. If soap and water is used to clean the unit, make certain that all surfaces are rinsed of any soap residue.
- 2. DO NOT lubricate the tape, tape track, guide track or guide wheels. These are either self lubricating or do not require lubrication. Lubricating these components leads to dirt problems.
- 3. Close server window in order to limit air flow and reduce dirt and grease build-up in machine.
- 4. To make maintenance easy, keep the jog magnet and skin wrench close to the unit.

The VRC Vittleveyor® Maintenance:

The VRC, because it is not exposed to the outside elements, is not subject to the wear that the drive-thru version experiences. This by no means indicates that it does not require regular maintenance. Like with the Drive-thru version, keeping the tape and track free from dirt, grease and environmental contaminants is paramount to the success of the machine. Everything contained in the previous maintenance chart for the drive-thru product applies to the VRC version.

Installation Notes

Before Ordering:

Before ordering any of the Vittleveyor[®] products, make sure that the specifications of the machine are fully understood. A general specification print is available for each product. Also note that there is a great deal of information contained in this specification print. This information includes floor opening size(s), support requirements, electrical requirements and the like. The specification print is critical to measuring the unit for the site and then properly preparing the site to accommodate the Vittleveyor[®].

This information should be passed on to the general contractor as early as is possible.

Suggested Tools for Installation:

Having the proper tools to install the Vittleveyor^{\mathbb{R}} is very important to having a cost effective and proper installation. Below is a list of the basic tools required for an installation. Note that site conditions may require you to alter this list:

- 1. 2-6' or 8' ladders
- 2. 7/16" wrenches and sockets
- 3. 9/16" open end wrench
- 4. Screwdrivers Slotted and Phillips
- 5. Torx head screwdriver (T-15 and T-20) supplied with unit
- 6. Allen Wrench Set
- 7. Drill and bits
- 8. Hammer drill and 3/8" concrete bit
- 9. 3/8" x 2-1/2" anchors 4 required supplied with unit
- 10. 16' or 50' tape recommended
- 11. 2' or 4' level
- 12. Volt meter
- 13. Caulking gun
- 14. Crow bar
- 15. Sufficient moving equipment to transport equipment inside building, i.e. two 4 wheel carpeted dollies
- 16. 16 oz. Hammer
- 17. 3 man crew minimum

Arrival on Site:

The Vittleveyor[®] system must be transported to the site, preferably in the factory made crate in order to minimize shipping damage. Each crate includes a shock detector and tilt indicator to insure that the crate was not dropped or otherwise mishandled in transit. Note should be made of the condition of these shock or tilt indicators prior to accepting the Vittleveyor[®] crate with a notation being made on the receiving document of the condition of the shock indicator.

Once the crate is on site, the top can be opened by removing the screws which hold it in place. It is recommended that a screw runner with a #2 Phillips head bit be used to remove these screws from the crate and that the crate lid then can be removed. Most find that removing one or both of the ends of the crate provides sufficient access to the unit so that it can be unpacked. Do not stand on any part of the unit.

Before Installation – Work by Others:

The following work must be completed prior to installation of the Vittleveyor[®] into a site. This work is typically the responsibility of a general contractor.

VRC Unit

- 1. All necessary openings in the building.
- 2. All necessary openings shall be closed up to the machine.
- 3. 208-240vac, 50-60hz, 20A single phase power is to be connected at the top of the SERVER UNIT. A handybox with 12ga THHN pigtails is provided for this purpose. Electrical connections shall be made according to the NATIONAL ELECTRICAL CODE and/or any applicable LOCAL CODES.
- 4. The Vittleveyor[®] is listed by Underwriters Laboratories with regards to electrical, fire, shock and casualty hazards; however, the Vittleveyor[®] is not rated for penetrating fire floors or walls and/or compliance with any fire related standards. Applicable national, state and local codes should be complied with. (ASME B20.11-1990, SECTION 5.15).

Before Turning Unit Over for Operation:

VRC Unit

- The VRC needs to be plumb. Note: When leveling the machine only level from the surface on the inside of the machine. The machine should be checked for proper operation before continuing. The VRC is also to be secured to the building to prevent excess movement of the unit. If it is necessary to attach bracing to the machine, it is only acceptable to utilize the #10 thread rolling screws provided. Use the #19 drill bit provided to first drill a pilot hole. The only suitable position to drill is on either of the 31' faces, ¹/₂" to 2" inwards from either edge. Each fastener is rated for 100 pounds maximum.
- 2. The GEARBOX shall be vented by removing the plug from the end of the flexible tube after standing the unit.
- 3. The EMERGENCY STOP BARS are to be tested and should stop the carrier when activated. Check all stop switches.
- 4. The CONTROL BOX LID and PANELS shall be properly secured after setup.
- 5. The owners and operators shall be instructed on proper OPERATION of the unit.
- 6. The MANUAL JOG MAGNET should be removed from the area of the Upper Unit and stored in a secure place. Please note that operating the VRC via the MANUAL JOG MAGNET disables all safety and protective features of the machine. Damage to the machine or bodily injury can result from improper usage of the JOG function. This

feature is to be utilized for service and setup by authorized personnel only. The manual and Torx skin screwdriver should be stored with the MANUAL JOG MAGNET.

Safety Features of the Vittleveyor[®] System

VRC Unit:

The VRC is intrinsically safe considering that the maximum force that can be exerted by the CARRIER is limited electronically by the DRIVE to 25 pounds.

The VRC will automatically stop if it is stalled for over 10 seconds longer than a normal transaction would take.

In the downward motion of the CARRIER on the LOWER UNIT, the CARRIER is programmed to stop four inches before any pinch point. The switching is redundant.

The VRC has a SAFETY BAR above the LOWER opening and at the bottom of the UPPER opening. These have four sensors each. Two sensor report to a SAFETY MODULE circuit on the PLC, which will directly stop the motor. This is the first line of protection activated by the raising of the SAFETY BAR and will reset upon releasing the SAFETY BAR. The second line of protection is two additional sensors which report to the PLC. This causes the machine to stop and flashing lights indicate a fault at the operator's control. The machine must then be reset by toggling the power off, then on to resume operation.

The UPPER UNIT has a self actuating guillotine type door. The CARRIER automatically opens the door when it arrives at the level and closes it when it leaves.

The CARRIER travels in slow speed when accessible by the operators and at a high speed when not accessible. The shift points are controlled accurately by a counter connected to an output shaft.

Service Diagnostics

In order to service the machine, the Vittleveyor[®] system computer (PLC), provides LED indicators of the status of the machine. Below are tables of the input/output status by LED number. The Vittleveyor[®] System, computer is located in the control box. Note that whenever service work is done in the field, E. F. Bavis & Associates, Inc. is available to provide telephone assistance.

NUMBER	NAME	CONDITION	INDICATES
INPUTS			
0	N/A	OFF	NORMAL
1	DOOR SWITCH BY-PASS	ON	NORMAL
2	COUNTER	OFF ON FLASHING	DRIVE MOTOR OFF DRIVE MOTOR OFF DRIVE MOTOR RUNNING
3	N/A	OFF	NORMAL
4	UPPER STOP	OFF ON	NORMAL CARRIER AT UPPER POSITION
5	LOWER STOP	OFF ON	NORMAL CARRIER AT LOWER POSITION
6	LOWER SAFETY	OFF ON	NORMAL LOWERSAFETY BAR RAISED TO ACTIVATED POSITION
7	UPPER SAFETY	OFF ON	NORMAL UPPER SAFETY BAR RASIED TO ACTIVATED POSITION
8	OVERTRAVEL	OFF ON	NORMAL CARRIER HAS OVERUN STOP SWITCHES ON UPPER OR LOWER UNIT
9	N/A	OFF	NORMAL
10	DOOR SWITCH BY-PASS	ON	NORMAL
11	SEND UP SWITCH	OFF ON	NORMAL SEND UP SWITCH DEPRESSED
12	SEND DOWN SWITCH	OFF ON	NORMAL SEND DOWN SWITCH DEPRESSED
13	TEST MODE	OFF ON	NORMAL TEST MODE ENGAGED
14	N/A	OFF	NORMAL
15	POWER	OFF ON	POWER SWITCH OFF POWER SWITCH ON
OUTPUTS			
D17	DOWN SWITCH LIGHT	OFF ON	NORMAL PLC IS SENDING THE CARRIER DOWN
D18	N/A	OFF	NORMAL
D19	UP SWITCH LIGHT	OFF ON	NORMAL PLC IS SENDING THE CARRIER UP
D20	N/A	OFF	NORMAL
D21	N/A	OFF	NORMAL
D22	CPU ACTIVE	BLINKING	NORMAL
D27	N/A	OFF	NORMAL
D28	N/A	OFF	NORMAL
D33	DRIVE MOTOR SLOW SPEED UP	OFF ON	NORMAL DRIVE RUNNING UP SLOW
D34	DRIVE MOTOR HIGH SPEED UP	OFF ON	NORMAL DRIVE RUNNING UP FAST

The Vertical Reciprocating Conveyor (VRC) Diagnostics of the Control Box:

D35	DRIVE MOTOR	OFF	NORMAL
	SLOW SPEED DOWN	ON	DRIVE RUNNING DOWN SLOW
D36	DRIVE MOTOR	OFF	NORMAL
	HIGH SPEED DOWN	ON	DRIVE RUNNING DOWN FAST
D41	UPPER SAFETY BAR	ON	NORMAL
	UPPER RIGHT SWITCH	OFF	UPPER LEVEL SAFETY BAR IS PUSHED DOWN
D42	UPPER SAFETY BAR	ON	NORMAL
	UPPER LEFT SWITCH	OFF	UPPER LEVEL SAFETY BAR IS PUSHED DOWN
D43	LOWER SAFETY BAR	ON	NORMAL
	LOWER RIGHT SWITCH	OFF	LOWER LEVEL SAFETY BAR IS PUSHED UP
D44	LOWER SAFETY BAR	ON	NORMAL
	LOWER LEFT SWITCH	OFF	LOWER LEVEL SAFETY BAR IS PUSHED UP
D47	BOARD INDICATOR	ON	NORMAL
D48	BOARD FAULT	OFF	NORMAL
	INDICATOR	ON	PLC HAS A PROBLEM

Other Technical Information

Control Box Fuses:

Note: To reduce the risk of the fire and/or shock only replace fuses with same type and rating.

Small Control Box:

The Control Box for the Vittleveyor[®] has four fuses located within it. Two fuses are located on the Regenative Drive. The other two fuses are located on the PLC. Following is a list of fuses with size, location and purpose.

SIZE	LOCATION	PURPOSE
AGC10	DC drive board, top fuse	Controls one leg of the 208-240vac feed to the Regenative Drive
AGC10	DC drive board, lower fuse	Controls remaining leg of the 208-240vac feed to the Regenative Drive
AGC3	Horizontal fuse	Controls 24vdc to the Door, Lamps, Input Switches, etc.
AGC1	Vertical fuse	Controls 10vac to the PLC logic

What does Jogging the Carrier Mean?

The movement of the carrier of Vittleveyor[®] systems is controlled by the computer found in the control box. However, when some sort of problem develops that impedes or stops the carrier when under this automatic control, service personnel may have to manually move the carrier back to the home position in order to reset the machine so that the automatic system can operate the carrier. This manual moving of the carrier outside the automatic control is called jogging the carrier.

What types of things would require the carrier to be jogged? Full travel of the safety bar, a dirty machine such that the carrier moves too slowly that it does not arrive within the allotted time, or some sort of mechanical impediment that stops the carrier before it arrives at the destination.

Jogging the VRC Unit:

There are two Magnetic sensors one above and one below the speaker on the server control panel, which control the jogging of the machine.

Before attempting to JOG the unit, make sure that there are no physical obstacles in the way of the carrier and that all people are clear of the machine.

In order to manually move the carrier in toward the lower level, apply the north side of the jog magnet, which was provided with your unit, 5/8" black button below the speaker. This will cause the carrier to move down toward the lower level. Applying the north end of the magnet to the 5/8" black button that is above the speaker will cause the carrier to move up, toward the upper level.

When jogging the unit, be careful not to crash the carrier into the bottom of either end of the machine, as the over-travel switches are by-passed when jogging is being used. If the carrier does not move when it is jogged, do not attempt to free the jam by jogging the unit back and forth. This will cause damage and make repair of the cause of the problem more difficult and time consuming. If a jam of this type occurs, call the factory for support.

Wiring Diagrams of the Vittleveyor[®] Units:

All versions of the Vittleveyor[®] use the same control box. What varies between the versions is the field wiring. The diagrams that follow document the control box and field wiring of the various models.

Vittleveyor[®] Control Box Wiring



VRC Vittleveyor[®] System





