



BAG DUMP HOPPER

Operation and Maintenance Manual

SELF-CONTAINED

BAG DUMP HOPPER STATION

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Safety Summary

This manual uses the following words to show different levels of danger:

DANGER means that you are very likely to be killed or injured if you don't take the needed steps to avoid the hazard. This is the highest level of warning.

WARNING is for a situation where you could be killed or injured if you don't avoid the hazard.

CAUTION means you could receive moderate or minor injuries, or equipment could be damaged if you don't avoid the hazard.

WARNING

COMPRESSED AIR could cause **DEATH, BLINDNESS** or **INJURY**.

Avoid contact. Compressed air can enter through skin pores, causing injury or death. Do not direct compressed-air jet stream at any person.

Wear safety eyewear wherever a Compressed-air source is in use.

WARNING

Material Handling and Processing machines could cause **DEATH, SHOCK,** or **INJURY**.

LOCK OUT and **TAG OUT** machine **POWER** before installation and during maintenance.

Adhere to Operation manual safety steps during install process or whenever adjustments are made.

DANGER

The Blower is fitted with an Exhaust Stack that provides for additional personnel safety by means of a finger guard grid. This motor/blower attachment **MUST** remain in place whenever the assembly can be energized. Serious injury may result.

CAUTION

Electric Motor-powered equipment must be installed such that motor contact with foam, liquid (including water) or other foreign substances does not occur. Do not allow these types of substances to enter the fan system, motor housing or electrical components. When operating equipment in potentially hazardous areas – environments containing dry chemicals or other volatile materials – an explosion-proof motor with special exhaust fittings must be utilized.

Failure to adhere to this precaution could lead to electrical shock resulting in flash fire (volatile substance exposure), resulting in equipment or property damage, personal injury or even death.

INTRODUCTION

For more than four decades Pneumatic Conveying Incorporated, aka Pneu-Con, has provided innovative and economical bulk material handling equipment. Combined with professional, top-quality installations Pneu-Con enjoys an ever-growing customer base. The core of Pneu-Con's quality products and services is the skill and expertise focused on our clients' projects. Our knowledgeable staff represents over 125 years of experience in the bulk material handling processing industry. Pneu-Con offers a complete spectrum of bulk handling equipment and services.

We also provide custom-engineered Central-Powered Systems to meet and exceed your needs. Our staff of craftsmen – fabricators, welders and machinists and field-service technicians – is available to engineer your specific requirements into a complete, efficient, reliable system. From system engineering, design & drafting, inventory control, accounting and documentation, our customers receive prompt quality service. Engineering support is backed by a large database of conveying equipment resources including CAD drawings, Case Histories, and Custom Engineering programs.

Please contact a sales engineer or local representative to discuss how Pneu-Con can provide complete conveying systems, superior-quality professional installations, system upgrades and expansions or a maintenance program for your present system.

Pneu-Con maintains stock on a large inventory of standard products and replacement parts to support customer service. Whether replacement parts, components or a complete turn-key conveying system; let Pneu-Con handle your next project. Contact Pneu-Con's Parts Department, Customer Service or a local representative if you're interested in replacement and/or spare parts for your present system.

This OMM includes safety precautions, installation steps, maintenance procedures and supporting engineering drawings to assist both production supervisors and facilities maintenance engineers. Please take the necessary time to read and fully understand this document in its entirety prior to operating the equipment.

ATTENTION! Plant Supervisors, Facility Managers and/or Shift Supervisors: Ensure that all personnel assigned to the operation and maintenance of this equipment has been fully trained. Periodically revisit this OMM to refresh & enforce knowledge base of the equipment and its intended use.

UNPACKING

The Bag Dump Hopper System is palletized and, depending on the application, may be packaged with ancillary equipment. Depending on shipping method and/or carrier limitations additional packages may be part of the complete shipment. Check packaging for markings indicating additional pallets, boxes or crates.

CAUTION The main Bag-Dump Hopper will be attached to the pallet by means of lag bolts, poly band-strapping and shrink wrap material. Should your unit be fully crated, Please Do Not damage or discard any other protective packing materials as they may be required should a return be necessary. Remove each item carefully checking shipment against packing list to ensure that each and every component is accounted. Some models will have the Control Panel attached directly to the Hopper's frame; others will have a Remote Panel. For added protection, the Panel may be packaged separately, in a "Jiffy" padded envelope. If Control Panel is of Remote type it may be packed within the Hopper (either secured to Grate or placed below, inside bottom) for added protection.

It is recommended that all packing materials be retained for at least the duration of the warranty period, typically one year, in case the unit should need service or repairs beyond the user's capacity or expertise. See RMA section at the back of this manual for details in obtaining a Return Authorization Number.

If damage is observed, when you unpack the Bag Dump Hopper, notify the carrier immediately to file a damage claim. Most carrier claim policies allow a fifteen-day window for such claims; therefore time is of the essence. Pneu-Con and/or the carrier may not be able to rectify claims outside 15-day window.

DESCRIPTION

Pneu-Con Bag Dump/Hopper Stations provide efficient means of incorporating bagged, or similarly packaged, raw materials into your process line. Units are available with or without Dust Collector System which provides an efficient, economical means of dust extraction and filtration for your bag-breaking or bag-unloading processes.

Pneu-Con classifies a Bag Dump Hopper equipped with optional Dust Collector/Air Plenum as “*Self-Contained*” as it has an integral Motor/Pressure Blower Fan Assembly as the System’s vacuum-air source; typically pre-wired ready to connect to a standard grounded 240-480VAC/3Ø/20Amp wall receptacle (local – within 10 feet). The Dust Collection/Air Plenum System is fitted with Four Isolated *Vibra-Pulse™* Air-pulse Valve & Solenoids for automatic filter-cleaning of Filter Cartridges. The Blower Fan draws dust contaminants – produced when bag-breaking - down through the Bag-Breaker Grid then up & behind Baffle wall into the Dust-Collector’s Filters. Filtered air is then pulled through the Air Plenum and periodically the *Vibra-Pulse™* system will automatically clean the filter cartridges with pulses of compressed air. The controls can be set for On-Line (while conveying material) or Off-Line pulsing.

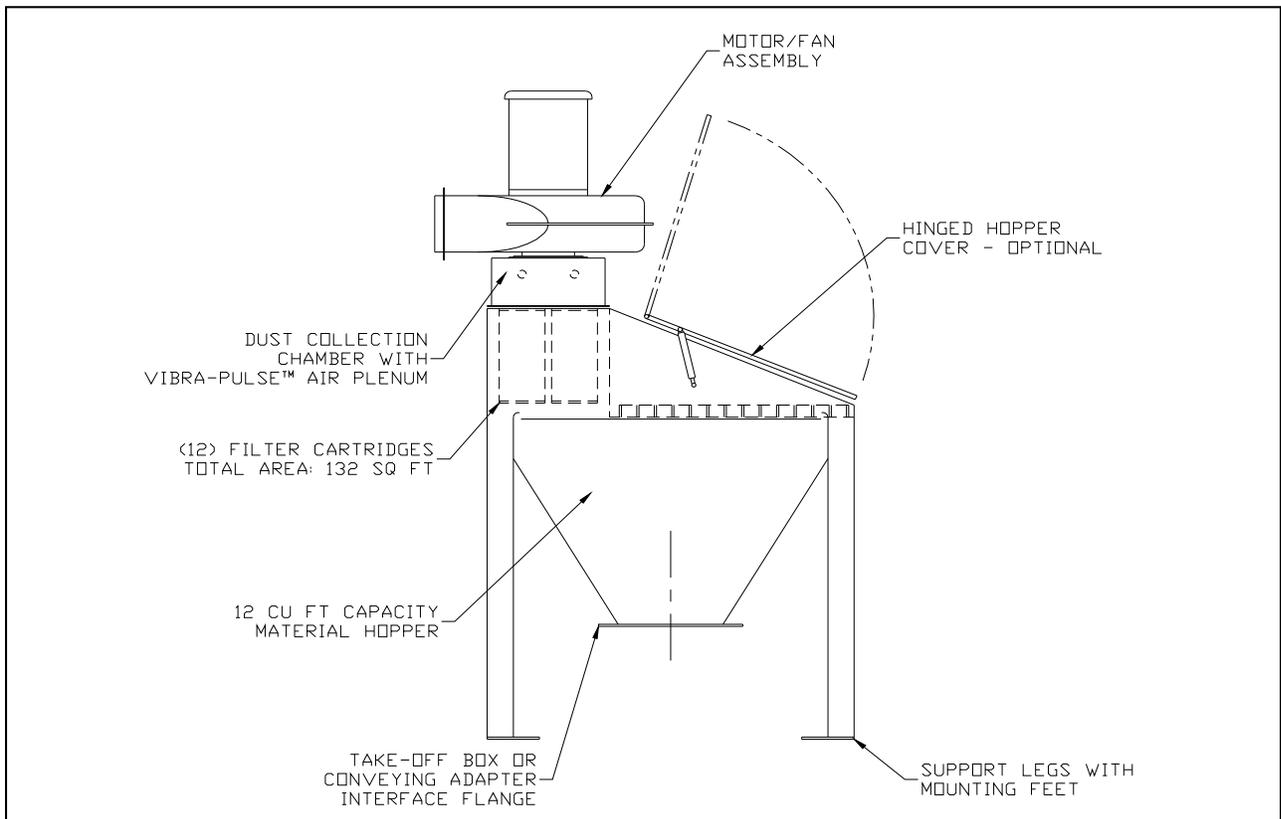


Figure 1-1 **Basic Components – Bag Dump Station**

The Bag Dump Station can operate as a stand-alone Bag-process unit or integrated into a complete conveying system with other components such as Bag Compactors, Sifters, Blenders, Powder Receivers or other process equipment. The bottom hopper discharge can be designed to interface with a Standard 12”sq Take-Off Box Flange, Rotary Airlock Valve or any style Conveying Line Adapter, to transfer the material to the next process point.

INSTALLATION

This Operation and Maintenance and Installation Manual for a Pneu-Con Self-contained Bag Dump Station includes Safety Precautions and Engineering Drawings to assist both Production Supervisors and Facilities Maintenance Engineers. It may be supplied, independent of, or integrated with other OEM equipment manuals.

BEFORE YOU BEGIN

- ✓ Check All Packaging and Materials Upon Receipt of Equipment
- ✋ Read All Instructions PRIOR to Operating this Equipment
- ☎ Call our Factory for Support or Start-up Assistance
- 📖 Review this Manual periodically to maintain full product awareness

Prepare the desired mounting surface ensuring that it is of sound mechanical condition and ready to accept the Bag Dump Station. The chosen site must be a horizontal surface (flat within $1/8$ " per four linear feet) and free from debris. The Bag Dump Station mounting feet shall be bolted securely to a mechanically sound surface. Transfer mounting-hole locations from the 4-inch wide tabs on each leg. Use sufficient lag screws with anchors when mounting onto concrete flooring.

NOTE: The Hopper Cover may have a Safety Interlock installed when coupled with Bag Compactors, Slide Gates or Rotary Airlock Valves. If your process system calls for material in the Hopper to be transferred to another

process point(s) it will be necessary to attach a Take-Off Box or similar Conveying Adapter; as standard there is approximately 11" ground clearance available, below discharge flange for attaching an Adapter.

Following site location set-up, and if so equipped, connect dedicated $\text{Ø}^{3/8}$ " compressed-air supply lines to the air fittings of the *Vibra-Pulse*[™] System's Pneumatic Diaphragm Valve. Optional Fluidizer Pads may require addition service loop connection. The air should be dry, filtered and efficiently regulated at 40-60psi (with 50psi being preferred). Make electrical connections from local junction box to the Pulse-Valve Control Solenoids and/or Bag Dump Control Panel. The Bag Dump Panel may include a Variable-Frequency Drive (VFD) for the fan motor.

COMPONENT DESCRIPTION

Receiving Hopper

The Standard 42" square Receiving Hopper design has a 60° Pyramidal transition to a 12" square Discharge Mounting Flange. The standard hopper is capable of holding up to 12 cubic feet of material, larger sizes are available. Standard Hopper construction is Aluminum; Stainless Steel or Painted Mild Carbon Steel optional.

Motor/Blower Fan

Bag Dump Stations are available with optional Self-contained Vacuum Dust-Collection System w/Air Plenum, consisting of Motor/Blower Fan (vacuum-air source) for basic vacuum function and *Vibra-Pulse*[™] (consisting of (2) paired sets of pulse valves/bottles & solenoids) filter-cleaning system.

Vibra-Pulse

The *Vibra-Pulse*[™] (VP) filter cleaning system automatically pulse-blasts the filters between each conveying cycle with pulses of air to dislodge accumulated materials from the filter surface. Dependant of service duty and material processed periodic manual filter cleaning may be required, refer to the Filter Maintenance section for additional filter service details.

Filtration

Standard Bag Dump Stations have optional 10C Dust Collection/Filtration system which includes 10 each 12” tall Pleated Standard-media Cartridge Filters (p/n: 100929-1). Filters are attached to a Tubesheet mounting/isolation plate; filters provide 110-ft² area of filtration. An optional Vibra-Pulse™ System cleans filters automatically. Optional PTFE-coated media Filter Cartridges (p/n: 101635) are available for handling “sticky” type material. Refer to Maintenance section for filter servicing instructions.

DO NOT SUBSTITUTE FILTER MEDIA WITHOUT DISCUSSING YOUR APPLICATION WITH A PNEU-CON SERVICE REPRESENTATIVE

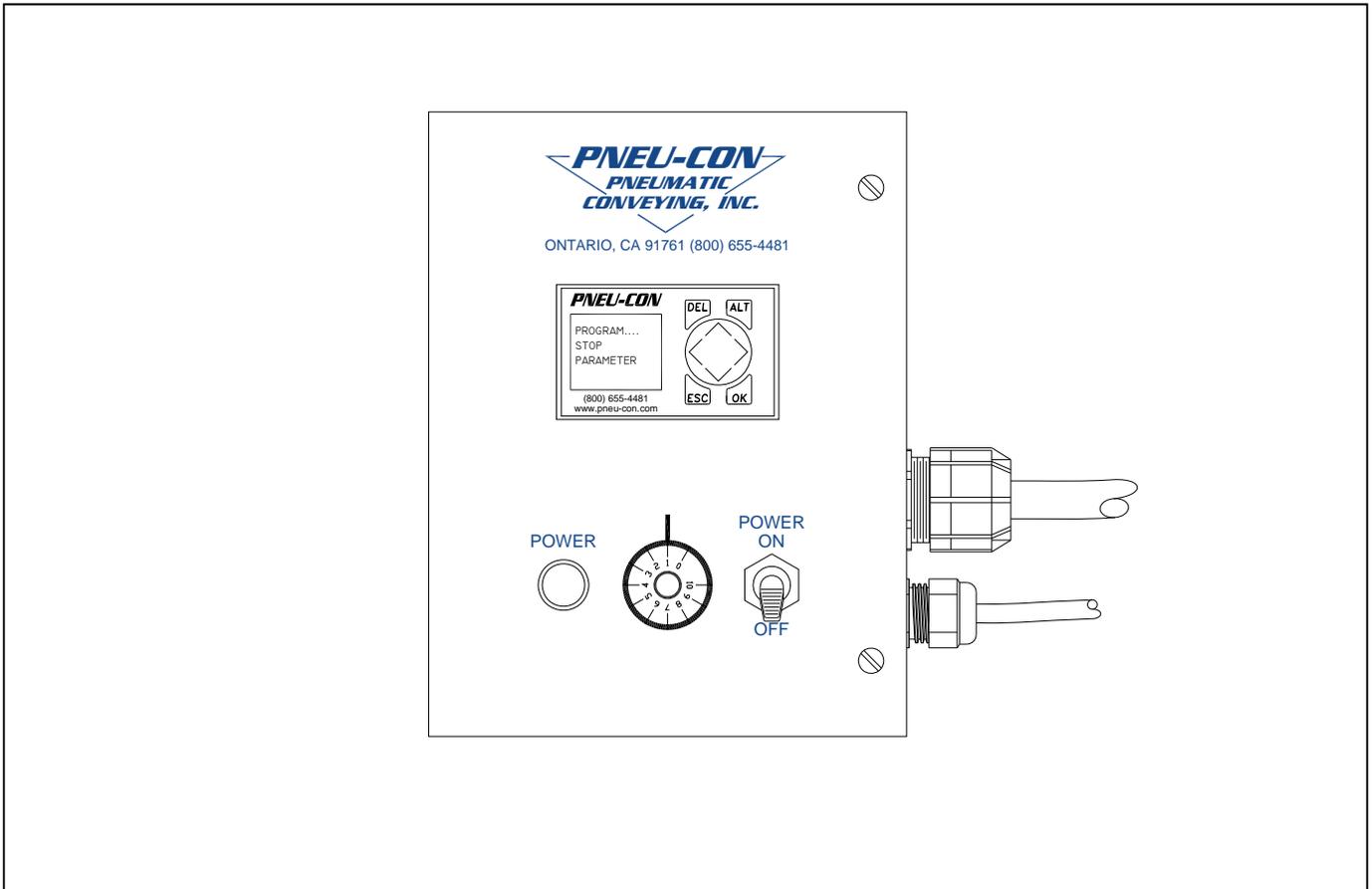


Figure 2-1 **Pulse Control Panel**

Pneu-Vue™ Pulse-Control Panel Enclosure

The programmable PLC Logic Relay is mounted in a NEMA-1 Enclosure and includes a Power ON/OFF Switch and Power ON Indicator Light; refer to Fig. 2-1 for the Control Panel Layout and wiring diagram provided with this manual.

PLC Logic Relay

The Logic Relay is a fully-programmable Solid-state PLC type controller with discrete timer functions, which may be field-adjusted to suit special user needs. The Controller is pre-set, at the factory, for optimum machine performance.

Timer Adjustments

Settings may be adjusted in the field to suit material and/or environmental conditions not addressed herein. Consult the factory about your special circumstances prior to altering timer settings. Should you require different timed cycles (ON time versus OFF time) than those provided from the factory, adjustments can be made to the Controller as follows (also please refer to supplied wiring diagram):

1. Upon start-up the Display Screen will show “System”, “Stop/Run” or other machine function Status.
2. Press “OK” to bring up Menu Selection Screen. Press center pad in down direction until flashing “Parameter” function is shown. Press “OK” to access the Timer-functions Screen.
3. Press UP or DOWN arrow until desired Timer function is attained then press “OK” for next screen.
4. When first digit flashes press “OK”, then UP or DOWN arrow to set desired time. Press Right arrow to access next digit, when digit is flashing it can be changed. Press UP or DOWN arrow until desired value is displayed. Press OK to keep value or arrow to change. Press Ok to accept/save, then Esc to return to previous menu.
5. Press Up or DOWN arrow to access other timer function(s) or press EC to save/return to previous menu.
6. Press Esc once again to return to the RUN Screen.

Notes: Standard Timer function choices are as follows:

- T1 Blower-Off
- T2 Pulse-Off
- T3 Pulse-On
- T4 Fluidizer Off (Optional)
- T5 Fluidizer On (Optional)

Circuit Breaker Operation

The Control Panel’s ON/OFF Toggle Switch is equipped with an integral circuit breaker to facilitate circuit overload protection. Once the circuit becomes overloaded the breaker “trips” placing the switch in the neutral position. To reset, place the switch in the OFF position and then back to the ON position.

SEQUENCE OF OPERATION

WARNING: If Unit is equipped with optional Safety Interlock, interconnected equipment will be prohibited from functioning while the Bag Dump's Hopper Cover is open.

DO NOT override safety features, remedy faulty safety switch if not functioning properly. To test safety interlock prop open the Bag Dump Hopper Cover slightly (enough so that safety switch does not detect cover), attempt starting interconnected equipment – it should not start, if connected equipment does start remedy before continued use of the equipment.

1. With Control Panel Power Switch is in **ON** position the Motor/Centrifugal Fan is energized and the **POWER** light will be illuminated.
2. Either of two Hopper filling situations exists:
 - a. Manual fill – where unopened raw-material bag is placed upon Bag-Breaker Grate, then opened
 - b. Automated fill – where Bulk Bag Unload is discharged into Bag Dump Hopper below
3. If Bag Dump is equipped with optional Dust Collection Chamber it will draw the dust byproduct up into the Air Plenum section. Periodically the **Vibra-Pulse™** System will cycle air pulses (either On-Line or Off-Line as programmed) to clean the Filter Cartridges.
4. If equipped with optional Fluidizers, the controller will periodically pulse the fluidizer-control solenoid.
5. After raw-material bag(s) are emptied, properly dispose into a Compactor or trash receptacle.
6. Repeat steps 2 thru 5 until desired amount of material has been placed into the Bag Dump's Hopper.
7. Close the Hopper Cover when not in use or if associated components are interconnected (The interlocked equipment will not operate while the cover is open).
8. Continue hopper loading process (steps 2 thru 7) as required or until hopper is full.

MAINTENANCE

DANGER! Prior to performing any service or repairs **LOCK OUT** and **TAG OUT** electrical power source. De-pressurize accessory compressed-air lines prior to disassembling fittings and hoses.

Filter Replacement

1. **Disconnect Power Cord from receptacle.**
2. Disconnect the Fan's Inlet Ducting from the rear of the Lid Assembly. Current design has Motor/Fan Assembly (mounted to support legs) and connected with ducting to the Fan on rear of unit with Quick-On II Coupling. If manufactured prior to June 2002 the Motor/Fan Assembly may be attached at top of Hopper Deck or Dust Collector enclosure; additional steps to gain access to the filters may be necessary.
3. Disengage the Latches at each end of the Dust Collector Air Plenum and lift from the Hopper – if no Alignment Pins are present, note location of *Vibra-Pulse*TM Bottle Assemblies.
4. Lift the Filter/Tubesheet Assembly from the Hopper and place on work surface. Depending on material your facility processes additional measures may be required to contain waste product.
5. Remove Filters from Tubesheet. Either clean as directed below, or replace with NEW or previously-cleaned DRY Cartridges, ensure Filter-mounting Gasket is in place. Properly dispose of waste material (accumulated from old filters), Cartridges & Gaskets.
6. Replace the Filter/Tubesheet Assembly back into the Dust-collector housing. Check Tubesheet Gasket condition and that it is in place – replace if worn or damaged.
7. Replace Dust Collector (Air Plenum) Enclosure on top of Tubesheet/Gasket noting location of *Vibra-Pulse*TM Bottle Assemblies. Ensure Tubesheet Alignment Pins (if equipped) are properly indexed.

Note: Exercise caution when performing this step – especially if air lines and Electrical connections are still intact.

Filter Maintenance

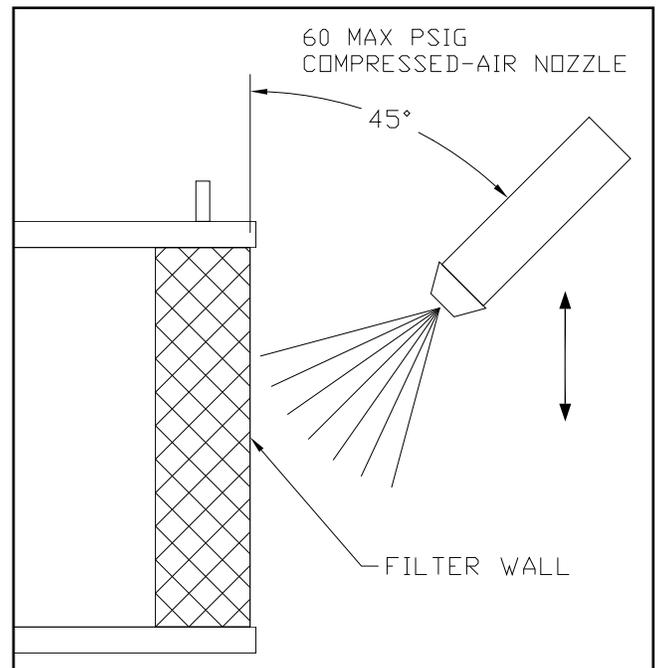
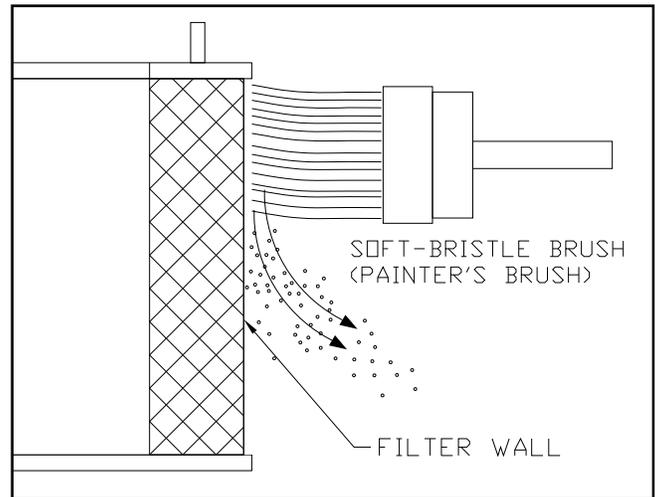
WARNING! If your Bag Dump Hopper is fitted with special PTFE-coated Filter(s) use extreme caution during handling and cleaning of the cartridge(s). You are cleaning filter media surface-coated with a PTFE membrane (approximate thickness of 1 to 1-½ mills or about 1/8 the thickness of plumber's tape) laminated onto a non-woven, spun-bond substrate. DAILY Filter Inspection is required. Clean periodically as dictated by service load, replace when damaged or worn as surface abrasions and damage adversely affect filter performance. **DO NOT SCRUB.**

CAUTION DO NOT use excessively-high air or water pressure. DO NOT use stiff-bristle brushes or similar devices. DO NOT otherwise scratch specially-treated filter surfaces. DO NOT use oils, solvents, harsh detergents or other abrasive cleaning agents & solvents. DO NOT apply direct (perpendicular to the pleated surface) air or water pressure on the dust side of the filter. **NEVER** point compressed-air nozzles directly at anyone!
DO wear appropriate protective clothing for the contaminant you are cleaning and ensure any residue generated is properly contained and discarded per local environmental regulations.

Filters are crucial to the Bag Dump's Dust Collector performance AND provide needed protection to the Motor/Blower Fan Assembly. Check filters DAILY. Filters are cleanable; however you MUST exercise care and follow the procedures outlined below. Should filter(s) require more-frequent manual cleaning please review your specific operating conditions with PCI Customer Service to achieve a suitable solution.

CLEANING: DRY METHOD

1. Clean the Filter off-line (fan off) for 10 minutes with pulse frequency on 15-second intervals at 60psi or as close as possible to these levels, given your particular equipment design. Leave the pulse duration set at 100 milliseconds. Should Pleated Cartridge Filters require further cleaning beyond that accomplished by the *Vibra-Pulse™* system, remove and clean as follows:
2. Carefully lift out Tubesheet/Cartridge assembly from Bag Dump Hopper.
3. Loosen the Cartridge mounting hardware and remove Filter(s) from Tubesheet. If required clean the Tubesheet Plate at this time – allow to dry thoroughly.
4. While holding filter at the Upper (open) End Cap lightly tap bottom (closed-end cap) against a firm surface to dislodge majority of larger particles, rotating as you work completely around filter.
5. Lightly brush excess debris lodged within pleats in a sweeping motion as required starting from each end and working towards middle of filter. Turn filter over end-for-end and repeat.
6. And/or vacuum, from dust side, using a soft-bristle brush so as not to embed particles further into media.
7. Vacuum inside at Closed-End Cap to remove accumulated debris – if any.
8. Apply a jet from compressed-air nozzle/wand held away from surface at 45° to filter's surface. DO NOT allow air device to scrape filter surface as damage may result. The air device opening must Ø3/8" or larger to prevent filter damage. Move nozzle along the full length of filter in a steady up & down motion.
9. Using same technique in step 8, sweep inside of cartridge.
10. Repeat steps 8 & 9 again to provide a clean sweep of both inner & outer surfaces.
11. As an option, a vacuum nozzle can be used to clean the pleats as described in steps 8 & 9.
12. After thorough cleaning, re-attach Filters onto the Tubesheet and install assembly into the dust-collector housing. If you have to manually clean the filter frequently, please review your specific operating conditions with customer service or a representative.



CLEANING: WET METHOD

Additionally, cleaning can be achieved using a mild detergent followed by air-drying.

1. Pre-clean and brush Cartridge as described in Dry-Method above to remove excess dust particles.
2. Place filter in a container with 2%-3% (approximately 4 oz per gallon of water) solution of mild dish soap such as Ivory®, Joy® or Palmolive®. Allow to soak for ten minutes.
3. Remove from solution and flush with stream of clean low-pressure water. Hold hose end/nozzle away from and at 45° to filter surface. Water stream must not exceed 70 psig. **DO NOT SCRUB.**
4. Rinse thoroughly, from the inside straight through to outside, under low-pressure stream of water. Rinse until all soap residual has been removed.
5. Allow filter to air dry completely, normally 24-48 hour period @ 70° F or lower. DO NOT dry filter inside of the Dust Collector. DO NOT apply direct heat (from hair dryer or heat gun) as damage will result.
6. After thorough cleaning re-attach Filter onto Tubesheet. Torque Hex Nuts to 10-12 ft-lb, DO NOT over-tighten. Place Tubesheet/Filters Assembly into the Hopper opening, then replace Air Plenum Assembly ensuring Alignment Pins (if equipped) are properly engaged.

Note: If Unit requires excessive manual cleaning of filters, please review your specific operating conditions with Pneu-Con Customer Service or contact your area representative.

TROUBLESHOOTING

The following situations may occur when installing or operating the Bag Dump Station, please attempt to remedy the problem you have encountered prior to contacting Pneu-Con or its representatives for service. Exercise applicable safety precautions while working on electrical devices or compressed-air equipment.

Problem	Probable Cause	Solution
Material is not being conveyed	<ol style="list-style-type: none"> 1. Filter is clogged 2. Flow-Control Valve wide open 	<ol style="list-style-type: none"> 1. Remove and Clean 2. Close Valve, then open until proper material flow achieved, check for foreign objects in line
Motor has high-pitched runaway sound during conveying cycle	Hopper full	Shorten the Motor's ON time
Motor does not run	<ol style="list-style-type: none"> 1. No electrical supply 2. Tripped circuit breaker 3. Hopper Cover open enabling Safety Interlock 	<ol style="list-style-type: none"> 1. Remedy as required 2. Reset Circuit Breaker, or Remedy as required 3. Close Hopper Cover
Power light does not operate	<ol style="list-style-type: none"> 1. No electrical supply available 2. Blown Fuse/Circuit Breaker 	<ol style="list-style-type: none"> 1. Check for power at outlet 2. Check Fuse/Circuit Breaker
Filter clogged or becomes dirty quickly	<ol style="list-style-type: none"> 1. Intermittent or No air supply available 2. Air pressure to pulse valves too low 3. Pulse cycle setting too low, not enough pulses during OFF time 	<ol style="list-style-type: none"> 1. Check for broken or loose airline fittings 2. Increase air supply pressure – Do Not exceed 80 psi 3. Decrease cycle lengths for more pulses during OFF time

RECOMMENDED SPARE PARTS

To insure minimal down time, due to maintenance issues, Pneu-Con recommends that a spare parts kit (see table below) be kept in stock. Additional Bag Dump parts may be required to suit your application and/or Unit design, for details contact our Parts Department.

Min Qty	Item	Part No.
10	Filter Cartridge, 12" SB Polyester	100929-1
1	Filter/Tubesheet Gasket	103529
1	Pulse Valve Assembly, 120VAC	100273-3
1	'070' Control Circuit Board (pre-2006)	101066-4
1	PLC Control Module (post-2006)	104070-4

Returns

Should your Bag Dump Hopper System or any of its components require service or replacement, contact the factory for a Return Material Authorization (**RMA**) number prior to returning items. A return should only be executed after exhausting all possible remedies outlined in the Troubleshooting section, or attempts to remedy as instructed by customer service technical staff.

Prior to contacting PCI have the unit's serial number (located on side of Hopper near Cover, or noted on previous page) and any other information relating to the specific order available when calling; especially if your Unit was not purchased directly from Pneu-Con, we may not have you as a customer in our database.

For proper receiving and tracking, please ensure that all accompanying paperwork references your assigned RMA number.

Thank you for choosing Pneu-Con Inc. for your material handling needs, if you should have any further questions as to the operation of this unit or any other PCI product please contact Customer Service at (909) 923-4481 or (800) 655-4481, Monday thru Friday between the hours of 8:00 AM and 4:30 PM Pacific Time.



STANDARD CONDITIONS OF SALE

1. PNEU-CON, DIVISION OF PCI, (henceforth referred to as PCI) guarantees that its products are free from defects in materials and workmanship, and that if, within one year from date of shipment thereof, any guaranteed products should fail for the foregoing reasons, PCI will replace or repair such product free of charge under conditions described herein.

PCI does not guarantee the performance of any product except as may be expressly stated to the contrary in the applicable quotation or other documents of which these conditions are a part.

Guarantees of products not manufactured by PCI, including purchased components, shall be limited to the guarantees and warranties of the respective manufacturers.

THE WARRANTIES, OBLIGATIONS AND LIABILITIES OF PCI SET FORTH HEREIN ARE EXCLUSIVE AND IN SUBSTITUTION FOR ALL OTHER WARRANTIES, OBLIGATIONS AND LIABILITIES OF PCI, EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ANY NON-CONFORMANCE OR DEFECT IN PRODUCT. IN NO EVENT SHALL PCI BE LIABLE TO BUYER OR ITS CUSTOMERS FOR LOSS OF USE, REVENUE OR PROFIT, OR FOR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR RELATING TO THE TRANSACTIONS HEREIN.

2. ALL CLAIMS under the guarantee above must be made promptly in writing to PCI. Defective material must either be returned to PCI, freight prepaid, or made available for inspection at customer's location within thirty (30) days of written claim.

3. RETURNS - Before returning any material, CUSTOMER will request a Returned Material Authorization (RMA) number from PCI and this number must be used to identify the returned material and all associated documents. ALL RETURNED MATERIAL MUST BE SHIPPED PRE-PAID.

4. Any replacement parts will be shipped freight collect. Shipment of replacements prior to receipt and inspection of presumed defective parts does not waive the rights of PCI. The decisions to repair, replace, or issue credit for defective material rests solely with PCI.

5. PRICES - All prices are F.O.B. PCI dock, Ontario, California, or point of manufacture. Prices do not include sales, use, excise, or similar taxes, which shall be paid by the PURCHASER or in lieu thereof, the PURCHASER, shall provide PCI with a certificate of tax exemption acceptable to the taxing authorities.

6. ORDERS - Are binding and valid, all orders must be accepted in writing by the COMPANY at its principal office in Ontario, California. PCI reserves the right to refuse any order prior to its written acceptance.

7. DELIVERY - Delivery dates refer to the dates when it is estimated that the equipment will be ready for shipment from the place of manufacture and are based on prompt receipt by the seller of the order and of information without interruption. It is understood and agreed that shipping dates are approximate only and while PCI will use all reasonable diligence to meet them, it does not guarantee any shipping date.

8. DELAYS - If shipment is delayed at PURCHASER'S request, payments due upon and after shipment is due as though shipment has been made at the time CUSTOMER was notified that shipment was ready.

If shipment is delayed more than seven (7) days at CUSTOMER'S request, material may be stored at PCI premises or a public warehouse; and CUSTOMER agrees to pay all reasonable storage and removal charges related to such storage.

9. PAYMENT TERMS - Unless otherwise specified all payments are null and void, and shall be deemed deleted from this agreement, and all remaining terms of the agreement shall remain in full force and effect, due within thirty (30) days of the invoice date. Invoices not paid within this time period are subject to an interest charge of one-and-one-half percent (1-1/2%) per month (18% annually) on the unpaid balance. BUYER agrees to pay to SELLER all costs and reasonable attorney fees for collection of delinquent accounts.

10. ENGINEERING CHANGES - PCI reserves the right to make changes in designs and/or construction in its products at any time without incurring any

obligation on units previously delivered to modify such units to include subsequent changes.

11. TERMINATION - Upon written notice to PCI PURCHASER may terminate the contract of which these conditions are a part. For standard products the PURCHASER shall incur a cancellation fee of twenty percent (20%) of the selling price of such equipment.

For special products not part of PCI's standard product line, PCI shall cease work and deliver to PURCHASER all completed or partially completed equipment and work in process. PURCHASER shall pay PCI the contract price for all completed equipment, plus all expenses borne by, or on behalf of, PCI in connection with partially completed work including direct factory and engineering costs, cancellation charges to PCI on account of any commitments made under the contract, and an additional 10% of all charges to cover overhead.

12. PURCHASER - will use and shall require its employees to use all safety device and guards on the shipment and maintain the same in proper working order. PURCHASER shall use and require its employees to use safe operating procedures in operating the equipment. If PURCHASER fails to observe the obligations in this paragraph, PURCHASER agrees to indemnify and save PCI harmless from any liability or obligation incurred by PCI to persons injured directly or indirectly in connection with the operation of the equipment. PURCHASER further agrees to notify PCI promptly and in any event within thirty (30) days, of any personal injury or damage to property and to cooperate fully with PCI in investigating and determining the causes of such accident or malfunction. In the event that PURCHASER fails to give such notice to PCI or to cooperate with PCI, PURCHASER agrees to indemnify and save PCI harmless from any claims arising from such accident or malfunction.

13. CONTRACTS INVOLVING FIELD ERECTION

A) PURCHASER'S cancellation of this contract during or after erection of equipment (associated with this contract) performed by field subcontractors is subject to payment for all actual costs; including materials ordered, subcontracts issued, materials delivered and any other cost reasonably incurred as a result of the cancellation, plus the value of the work completed based on the percentage of completion of the value of erection as determined from the breakdown on the contract value established for billing purposes plus ten percent (10%) of the contract price.

B) Prior to field mobilization for erection, Purchaser may be able to delay commencement of erection for a period up to 12 months provided that a mutually acceptable adjustment to the contract price is negotiated, including overhead and profit thereon, as a result of said delay. In addition, VENDOR shall be entitled to an extension of the contract time equal to the extent of the delay or any consequence thereof.

C) If Prior to field mobilization for erection, PURCHASER delays the commencement of erection beyond 12 months; VENDOR has the option of canceling the contract and being reimbursed pursuant to Paragraph A above. If VENDOR does not exercise its' right to cancel then the parties will negotiate an equitable adjustment to the contract price plus an extension of time to complete the contract.

14. GENERAL:

A) This agreement is the final and complete agreement of the parties. There are no other agreements, contracts, understandings, or representations, oral or written, expressed or implied with respect to this transaction or the equipment being sold hereunder. No amendment thereto shall be effective unless in writing and signed by the parties.

B) In all cases clerical errors are subject to correction.

C) In the event that any terms or this agreement be or become or are declared to be invalid or void by any court of competent jurisdiction such terms shall be

D) The validity, enforceability and interpretation of the above terms and conditions shall be determined and governed by the laws of the state of California.



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