



SCHUST

STANDARD PRODUCTS DIVISION

A Division of Schust Engineering, Inc.

LIBERATOR. DUST COLLECTORS

OPERATION, INSTRUCTIONS & MAINTENANCE MANUAL



Illustrations are for reference purposes only. Actual products may vary and are subject to design and specification changes without prior notice.

See technical drawings supplied with equipment at the time of purchase for specific detail.

Model PPR TB-OIM-R3



PULSE JET PLEATED ELEMENT W/ ROOF ACCESS

FOR FURTHER INFORMATION, PARTS OR SERVICE:

CALL: 1 (260) 925-6550

FAX: 1 (260) 925-6093

Optimize collector performance!
Use only Schust OEM replacement parts and services.



Schust Engineering, Inc.

701 North Street Auburn, Indiana 46706

LIBERATOR.
DUST COLLECTORS

Model Number _____ Serial Number _____

Ship Date _____ Installation Date _____

Customer Name _____

Address _____

Filter Information _____

Options/Accessories _____

Other _____

TABLE OF CONTENTS

	Section	Page
INTRODUCTION	0.0	3
SAFETY RECOMMENDATIONS	1.0	4
GENERAL OPERATING PRINCIPLE	2.0	5
RECEIVING YOUR UNIT	3.0	7
ON SITE STORAGE RECOMMENDATIONS	4.0	8
LIFTING AND RIGGING GUIDELINES	5.0	9
ASSEMBLING THE DUST COLLECTOR	6.0	10
- INSTALLATION SEQUENCE	6.1	10
- FILTER INSTALLATION	6.2	10
- ELECTRICAL SUPPLY	6.4	13
- COMPRESSED AIR INSTALLATION	6.5	13
CLEANING SYSTEM SET-UP	7.0	15
START-UP/SHUT DOWN	8.0	16
- INITIAL START UP CHECK LIST	8.1	16
- START UP SEQUENCE	8.2	17
TROUBLE SHOOTING	9.0	18
- MAIN FAN	9.1	18
- HIGH PRESSURE DROP	9.2	18
- LOW PRESSURE DROP	9.3	22
- DUST COMING FROM THE EXHAUST STACK	9.4	23
- SHORT FILTER LIFE	9.5	24
ROUTINE MAINTENANCE	10.0	24

INTRODUCTION

With increased local and global awareness, the attention being given to the control of air pollutants, work area hygiene, capture, and disposal of nuisance dust in all industrial applications is becoming progressively more stringent. The proper design, installation, operation, and maintenance of collection equipment have never been more important.

This manual contains distinct advisory statements pertaining to operation and worker safety. Read this manual thoroughly. An understanding of dust control equipment operation is essential for safety. Improper operation or modification of this equipment may contribute to conditions in the work area or facility that could result in severe personal injury, product or property damage. Instruct all personnel on the safe use and maintenance procedures related to this equipment. Confer any uncertainty on application, use, or maintenance of this equipment with a qualified Schust representative.

All Local and National Codes must be considered when determining location and operation of dust collection equipment. Consult and comply as required.

Combustible and organic materials provide potential for fire and/or explosion hazards. You must consult with an expert in fire and explosion suppression systems, who are also familiar with local codes, for the selection, support, and installation guidance on the appropriate protection system(s).

NEVER allow sparks, flames, or any other ignition source to enter the hooding or ducting of a standard dust collector system, as this may result in the ignition or explosion of any combustible material collected.

Follow all OSHA Confined Space guidelines pertaining to this equipment. Please refer to the appropriate OSHA regulations for training, recognition, and qualification of confined space areas and permit required distinctions.

Schust recommends a schedule of inspection and timely repair of damaged, worn, or malfunctioning components to ensure safe and intended operation. Inspection and repair may be a requirement of any permitting. Please see your permit(s) for details should this be the case.

1.0 **SAFETY RECOMMENDATIONS**

IMPORTANT: No open flames, welding or sparks of any kind shall exist while servicing your unit. Dust laden air can be highly explosive. Most filter elements will burn if exposed to sparks, welding or open flames. Extreme care must be taken.

Because this unit may be under pressure or vacuum, do not attempt to open any device, doors or panels while fans or blowers are running.

Before servicing your collector, ensure the electrical power to the fan is shut off, locked out, and tested non operable.

This unit has a compressed air system with a maximum operating pressure of 100 psig. Ensure maximum design pressure is not exceeded.

Before servicing any portion of the compressed air system the supply air must be shut off, locked out, the pressure relieved and tested non operable.

If your unit is equipped with a rotary air lock, the chain/belt guard(s) must be installed prior to start-up.

Before servicing any portion of the discharge system the electrical power must be shut off, locked out and tested non operable.

A dust collector is a Confined Space as defined by OSHA. Understand and follow all OSHA regulations pertaining to Confined Space Entry when servicing your dust collector.

1.1 **PRIOR TO ENTRY:**

- A. Run the pulse cleaning system for 20 minutes with the fan off.
- B. Discharge the solids from the hopper.
- C. On toxic operations, purge the collector housing. Install a blank off plate in the inlet duct. Eliminate the source when possible. Continuous air monitoring and permit required per OSHA.
- D. Install catwalks and safety cables as required.
- E. Secure doors in an open position or remove doors.
- F. Wear proper PPE including a suitable respirator to protect all entrants from recognized hazards.

2.0 **GENERAL OPERATION PRINCIPLE**

2.1 **FILTERING:**

- A. Solids laden air or gases enter the unit at the hopper inlet.
- B. The air stream starts to slow down as it enters the hopper and some of the heavier or concentrated material begins to drop out and make its way toward the hopper discharge.
- C. The air stream continues to flow and passes through the filter media.
- D. Solids are retained on the filter surface.
- E. The filtered air flows into the clean air plenum.
- F. Filtered air then exits the unit through the exhaust port located on the clean air plenum.

2.2 **PULSE JET AUTOMATIC FILTER CLEANING:**

- A. As the unit operates, dust starts to accumulate on the filter surface. This accumulation of dust is known as the dust cake. The dust cake provides both filtration efficiency and concentrates the solids to create a dense mass (cake) that will release and fall through the air stream and into the discharge hopper when the pulse jet cleaning system is activated.
- B. As the dust cake increases so does the pressure on the clean side as the fan works to overcome the continuously increasing restriction the dust cake creates. Pressure on the dirty side decreases.
- C. Pulse jet cleaning automatically removes the dust cake and restores normal operating pressures. Standard units provide continuous cleaning at preprogramed intervals to maintain filter media and differential pressures. Units equipped with an optional clean on demand control system will pulse only when the pressure difference between the clean and the dirty side becomes too much, or higher than a predetermined setting on the controller. Cleaning will stop when the pressure difference between the clean side and dirty side lowers to the predetermined set point on the controller.
 - 1. Pulse jet cleaning consists of a momentary blast of compressed air directed into the clean side of selected

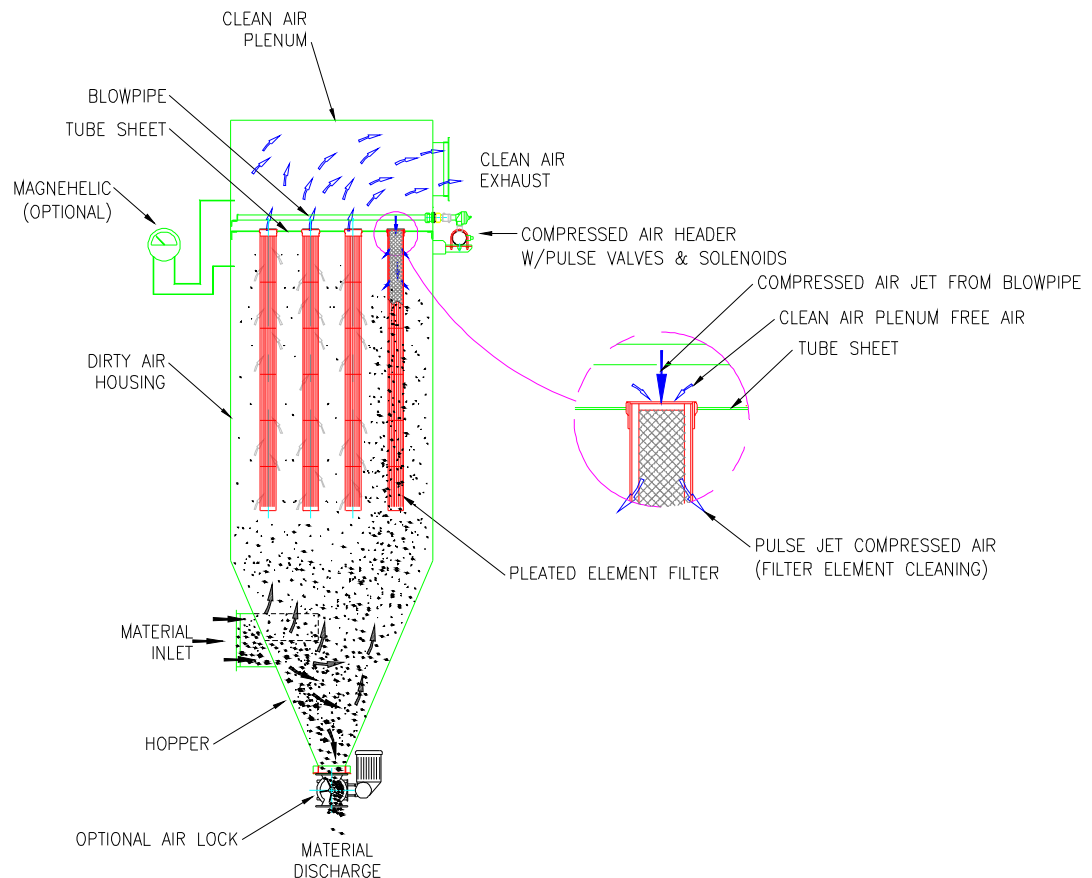
filters. NOTE: Different filter media perform best at different pressures and tend to be application benchmarked.

2. Momentarily taking a row of filters off stream through pressure reversal.
3. Flexing the filter.
4. Solids are released.

- D. The dust cake removed falls toward the discharge hopper.
- E. The difference in operating pressure between the clean side and the dirty side is reduced.
- F. A new dust cake begins to form on the dirty side of the filters.

2.3 SOLIDS REMOVAL:

- A. Dust is typically removed from the collector by means of a rotary air lock valve or other discharge equipment located at the bottom of the hopper.
- B. Process dust is either reclaimed or disposed of at this point.



3.0 **RECEIVING YOUR UNIT**

Prior to accepting shipment of your collector, care must be taken to inspect all equipment received for both proper count/quantity and for damage that may have occurred during shipping. Any and all irregularities must be noted on the carrier's copy of the shipping receipt. This information is vital and will assist in the settling of any claims for damages or shortages. Whether prepaid or collect freight, all equipment is shipped FOB from point of origin.

THE PURCHASER MUST BRING ANY CLAIMS FOR TRANSPORTATION DAMAGES OR SHORTAGES AGAINST THE CARRIER.

Once your claim has been filed with the carrier, please contact Schust Engineering. We will then recommend appropriate repair/replacement options or assist in returning to the factory depending on the extent of the damages.

3.1 **INSPECTION OF UNIT:**

NOTE:

Please note any of the above discrepancies on the shipping receipt and notify Schust Engineering immediately. No corrections may be made without the expressed written consent of Schust Engineering.

A. HOUSING:

Carefully examine the sheet metal housing of your collector. The unit should be inspected for rips, cracks, crushing, and or dents. A damaged housing may seriously affect the structural integrity and operation of the unit.

B. CONTROLS AND CLEANING SYSTEM:

The timer assembly, air header, pulse valves, and solenoid enclosures, need to be checked for signs of impact, loose fittings, etc.

C. COMPONENTS:

A count of all components received needs to be verified against the carrier's manifests and packing lists. Inspect shipping containers for rough handling, which may have resulted in hidden damage.

D. GENERAL:

The entire unit should be checked against the purchase order and drawings for configuration correctness.

4.0 **ON SITE STORAGE RECOMMENDATIONS**

NOTE:

Inside storage of all components is highly recommended. However, if temporary outside storage cannot be avoided, the following guideline is a recommendation only.

4.1 **PULSE JET PLEATED ELEMENT ROOF ACCESS UNITS:**

- A. Ports on the pulse and pilot valves must be plugged and taped to keep insects, dirt, and moisture out.
- B. The pulse valves, pilot valves, compressed air header, and components must be protected from the weather. A tarp may be considered.
- C. Position the unit so that water/moisture will not get into or remain in the tube sheet area.
- D. The unit must be blocked up as to keep flanges and air headers out of the water and dirt.
- E. If outside storage is anticipated to be more than four weeks, it is recommended to remove the timer panel and solenoid enclosure(s) (if mounted.) These components should be stored in a cool dry area along with any associated tubing and fittings. It is important to cap any ports and seal openings during this procedure.
- F. Care should be taken to ensure water does not accumulate and remain on the housing at any time during storage. Damage to painted surfaces can occur.
- G. Cap off collector inlet and outlet duct flanges.

4.2 **PLEATED FILTERS:**

- A. Filters should be stored inside, in a cool dry area protected from moisture, insects, and rodents.
- B. For extended storage, boxes of filters should be wrapped in plastic or stretch film to protect from moisture.
- C. If for any reason filters get wet, immediately provide them with plenty of ventilation in order to prevent mold and mildew.

4.3 ACCESSORIES:

- A. All gages, switches, gaskets, hardware, and items not specifically called out should be stored inside, in a cool dry location protected from insects, moisture, and rodents.
- B. Rotary valve rotor (if equipped) and interior should be well oiled. It is important that the lubricant maintain compatibility with the product being collected. Vegetable oil at a minimum is recommended. However, do so at your discretion. Cover with a tarp at your discretion.
- C. Platforms and ladders (if equipped) stored outside need to be blocked up as to keep them out of the water and dirt.

5.0 **LIFTING AND RIGGING GUIDELINES**

SAFETY NOTE:

Only trained, qualified personnel should perform rigging and setting operations. Use only certified, inspected, commercially available rigging equipment properly sized and configured for each lift.

5.1 GENERAL RECOMMENDATIONS:

- A. Use all of the lifting lugs provided on the dust collector unit or section when making a lift.
- B. Vertical pulls are required by means of a spreader beam when lifting lugs are located below the roofline of the collector or section. Failure to do so may result in crushing of the top of the collector or section.
- C. NEVER lift the collector or section by any attachment. Use lifting lugs only.
- D. All movements during the rigging process should be made in a slow, uniform manner as to avoid bouncing of the load. Should this occur the unit should be lowered and lift points inspected for stress. Repair and freshen up lift points and rigging as required.
- E. Use several taglines to help control the load from spinning or swinging.

6.0 **ASSEMBLING THE DUST COLLECTOR**

The Schust Engineering Standard Pleated Element Collector is shipped pre-assembled as a single unit. It is highly recommended that the general arrangement drawings and general rigging and lifting guidelines be reviewed at length prior to installation. Attention should be given to the approximate weights, lifting lug locations, and orientation of inlet and outlet flanges, access doors, compressed air headers, etc.

Concrete foundation and anchor preparation must match specifications. Soil should be verified suitable for collector installation.

6.1 **INSTALLATION SEQUENCE:**

- A. Leveling and squaring required.
- B. Rig and lift the unit(s) onto the prepared surface. Seal as required. It is important that the sealant maintain compatibility with product inside the container being vented. Install anchor fasteners. Torque to appropriate specifications.

6.2 **FILTER INSTALLATION, PLEATED (STANDARD MODELS):**

SAFETY NOTE:

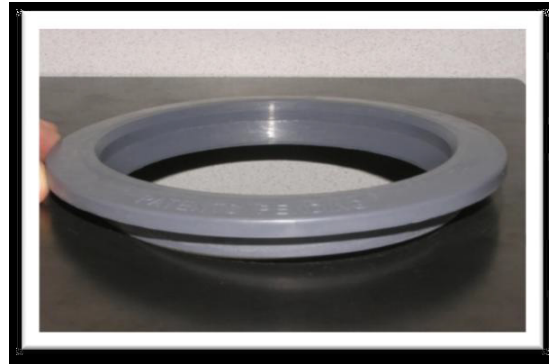
The inside of your dust collector is considered a confined space. Please follow OSHA requirements when entering for any reason.

- A. Remove the blowpipes inside the clean air plenum. The blowpipes are held in place by means of a bulkhead fitting on one end. A nut and bolt combination on the other end. Remove the nut and bolt and loosen the bulkhead. Slide the blowpipe out of the bulkhead. Care should be taken not to drop any fasteners into the collector or the associated bin. Damage to discharge equipment may result.
- B. Remove old filters from the dust collector. The tubesheet/cell plate and clean air plenum (CAP) should be thoroughly cleaned to remove all residual dust.
- C. Inspect the tubesheet/cell plate holes for build up or corrosion and use a wire brush to remove buildup of any material that may interfere with the filter seal.
- D. In the case of conductive media/filter designs utilizing the electrically conductive gasket, ensure that the inside diameter of the tubesheet hole is not coated or painted, as this is the area where electrical grounding will occur.

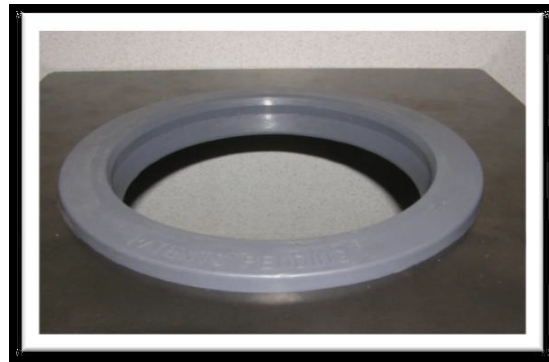
- E. In the case of filters with ePTFE membrane, the gasket will help protect the pleat tips during installation, but care should be taken during staging and handling of the filter elements into the dust collector. Cardboard or other smooth materials should be used to cover potential scrape hazards such as door frames and handrails. Care should be taken to stack or store the filters in such a manner to prevent or minimize the scraping of the fragile ePTFE membrane surface on the pleats.
- F. Inspect each filter element for damage from shipping, storage, or handling. Do not use damaged elements; they may leak or fail prematurely.
- G. *If the filter element has a stainless steel ground wire, please see additional instruction sheet for proper attachment of the grounding wire.*

Step 1 – Installation of Gasket

Place the gasket in the tubesheet hole with beveled bottom lip first (the outer top flange with printing should be facing upward).



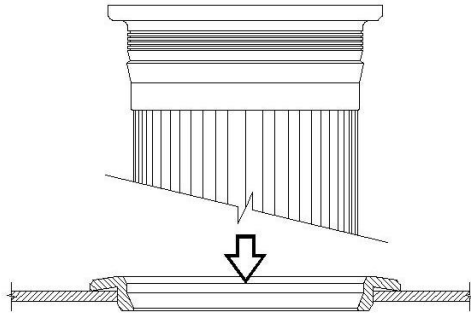
Press the gasket gently into the tubesheet hole by hand, it will self-center and seat. A properly installed gasket will have no deformations around the ID of the gasket, and the top flange will be flush against the top of the tubesheet.



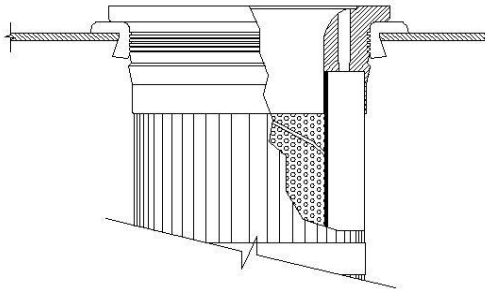
Step 2 – Installation of the Pleated Filter Element

Place the bottom puck of the filter element inside the gasket and press the filter down through the inside diameter of the gasket.

Lower the pleated filter element straight down (plumb) through the gasket.



Once the filter is lowered all the way into the gasket, the final sealing of the filter into the gasket will require slow, firm pressure to seat the stepped top down into the gasket and kick out the bottom flange to engage the seal. Stepping on the filter top is acceptable as long as steady, even pressure is applied.



- H. Continue until all filters are installed.
- I. Reinstall the blowpipes with the air holes facing down.
- J. Secure the access doors.

NOTE: At this point we typically recommend ultraviolet leak testing to ensure intended operation. This is especially important on critical or toxic processes or where EPA stack testing will eventually be performed for permitting requirements. Schust Engineering provides system start-up services if assistance is needed.

6.3 FLANGES AND DOORS:

All flanges must have fasteners installed and be tightened to appropriate specifications. **All doors should be hand tightened only. Excess pressure or over tightening may damage seals, distort components, and leakage may result.**

6.4 ELECTRICAL SUPPLY:

SAFETY NOTE:

Only qualified personnel or contractor should perform electrical installation.

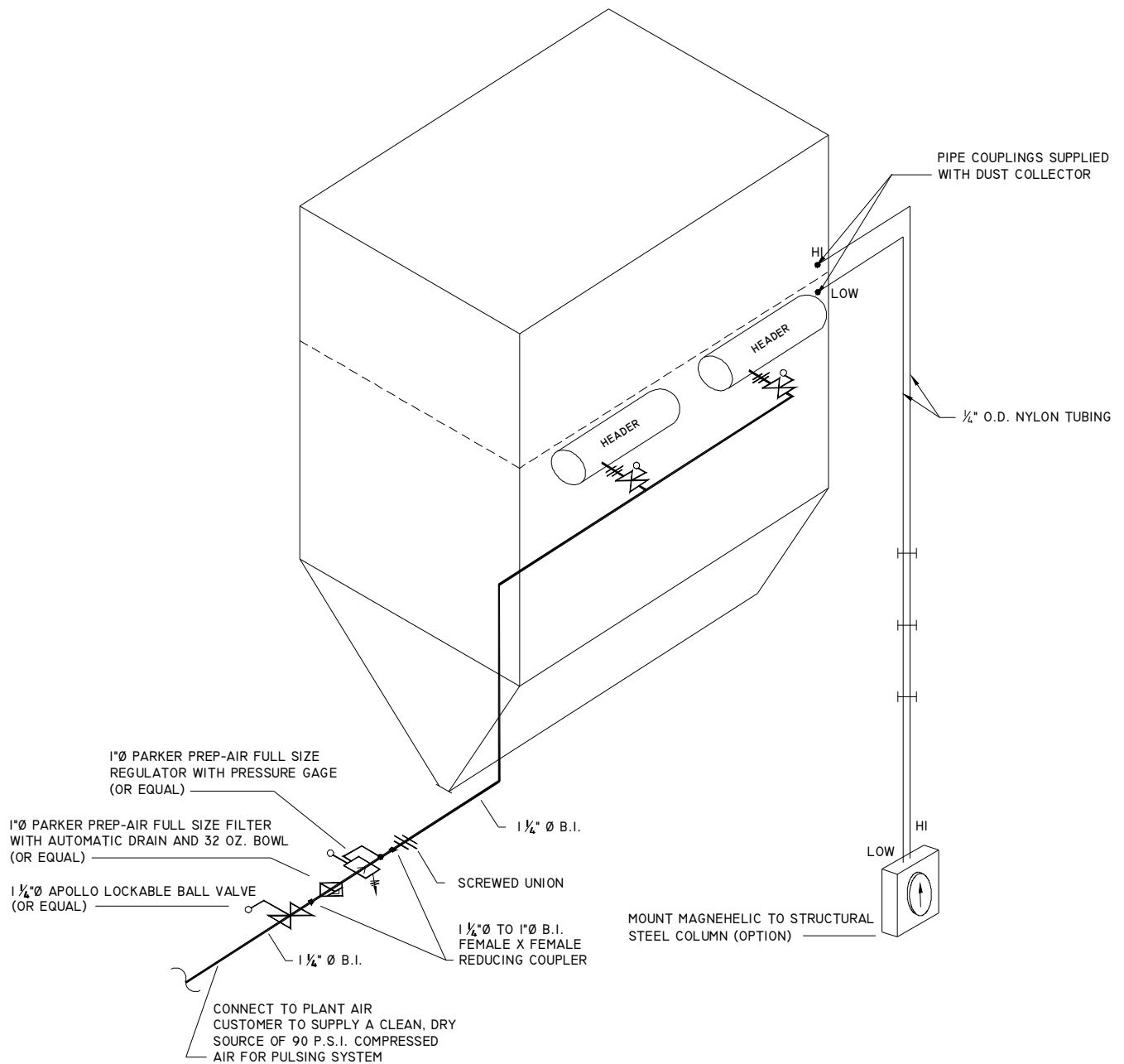
A 120-volt at 60-hertz electrical source (line input) is to be connected to the timer board of the pulse jet cleaning system. The circuit must be well grounded and free of transient spikes. It is highly recommended to run conduit into the bottom of the timer enclosure using seal tight connections especially for units located outside which may be subject to rain or snow.

6.5 COMPRESSED AIR:

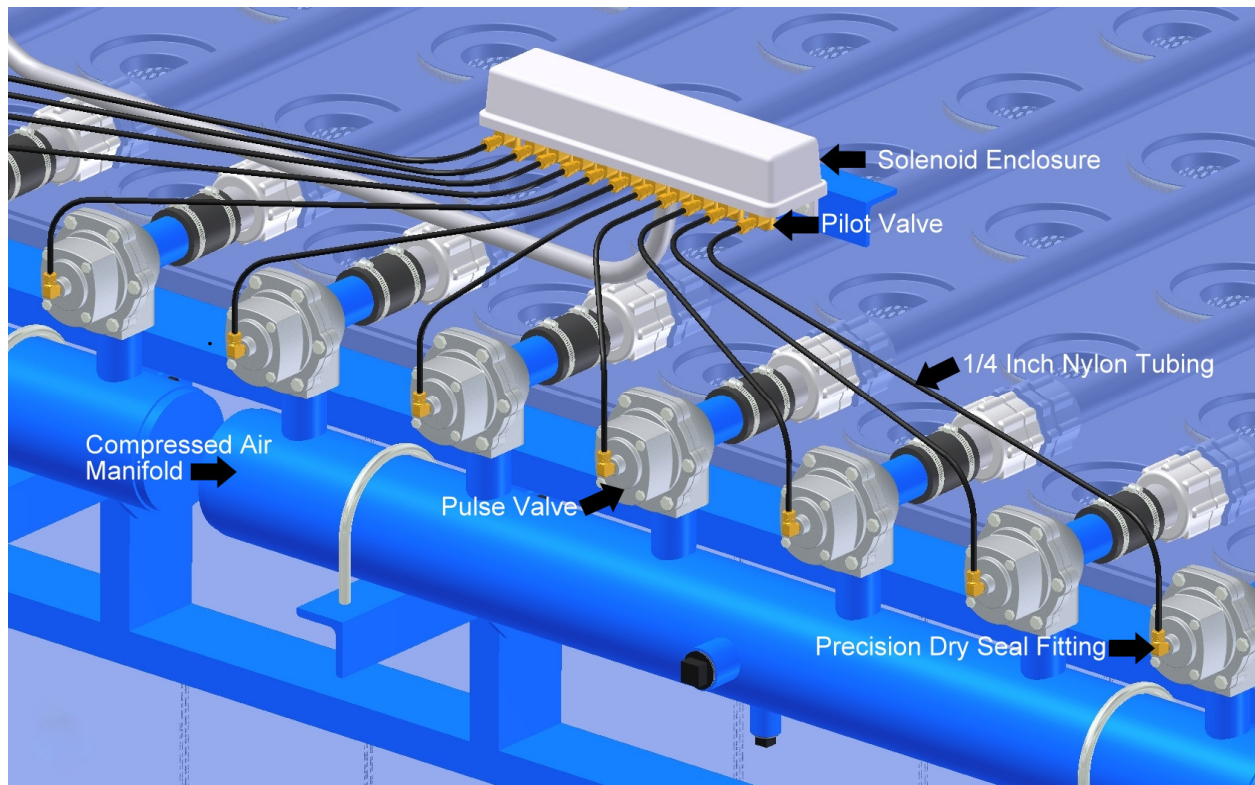
Schust Engineering Liberator Series Pulse Jet collectors come equipped with 1-1/4" female couplers provided on each compressed air manifold (header). A 90-PSI minimum supply of **clean, dry**, compressed air is to be delivered to the collector. See the compressed air piping schematic in this manual for recommended installation configuration.

NOTE:

Do not use tape for threaded connections. Use only flexible white, non-hardening pipe and joint compound *if desired*.



TYPICAL COMPRESSED AIR PIPING SCHEMATIC



7.0 **CLEANING SYSTEM SET-UP**

Schust Engineering Liberator Series Pulse Jet Dust Collectors come with controls mounted, fully wired, and programmed.

7.1 **PULSE VALVES/PILOT VALVES:**

Each pulse valve needs to be connected to an individual pilot valve. Remove all shipping protective caps from both pulse valves and the pilot valves. From left to right connect the furthest left pulse valve mounted on the compressed air manifold to the furthest left pilot valve mounted in the solenoid enclosure using the fittings and tubing provided. Continue sequence until all lines are connected.

NOTES:

Liberator pulsejet collectors come with precision, dry-seal tube compression fittings specifically designed to be used with the 1/4" nylon tubing. However, Schust recommends using a non-hardening PTFE type sealant to ensure no leaks. Check each connection for tightness prior to pressurizing the manifold. Never back off a dry seal connection for alignment purposes.

7.2 INITIAL CONTROL SETTINGS:

Compressed Air Regulator Gage: *Application specific

Photohelic® Pressure Gage Set Points:

Low: *Application specific

High: *Application specific

Timer Board Settings:

On Time: *Application specific

Off Time: *Application specific

* Please contact Schust Engineering.

8.0 START UP/SHUT DOWN

8.1 INITIAL START UP CHECKLIST:

Safety should be given the highest priority during start-up. It is recommended that initial start-up be performed or supervised by Schust Engineering.

- A. Check all foundation anchors for tightness. Ensure any and all ladders, platforms, handrail, and toe board fasteners are secured, complete, and meet OSHA requirements.
- B. Any and all ducting and piping should be free of debris and moisture.
- C. Visually inspect the interior of the hopper, midsection, and clean air plenum. Remove all loose items.
 - Visually check to ensure a filter is in every hole.
 - Ensure all blowpipes are installed and the bulkhead fittings and opposite end fasteners are tight.
 - Secure all access doors.
- D. Operate any discharge equipment. Check for binding, rotation, etc. Ensure operation as intended.
- E. Inspect explosion panels, if used, for any damage and integrity. Read and understand all operating parameters and safety issues specifically associated with your explosion panels.

- F. Inspect the cleaning system to ensure all tubing is installed. Gently tug on each line to make sure it is snug. If the line pulls out trim it back and re secure. Ensure all shipping plugs are removed.
- G. Ensure the compressed air system is capable of supplying 90-100 psig of clean, dry air. Set the regulator to 20 psig. Slowly open the ball valve. Check system for leaks. Drain pressure. Repair as needed. Increase pressure incrementally. Test for leaks. Drain and repair as needed. Final regulator setting may be application specific.
- H. Energize the timer control. (If equipped with a Photohelic® turn both the low and high set points to the left or lowest setting.) The cleaning system should begin to pulse. Check each pilot valve for operation by placing a finger close to the exhaust port. Note: The timer sequence of operation is **not** in order from left to right as plumbed. This is by design. Please see Electrical Schematic for sequence. Repair any pilot or pulse valve that is not operating or remains open.
- I. The pressure in the manifold must fully recover prior to the next pulse. It is important to ensure adequate air volume is delivered. Especially when other systems connected to the same air supply are operating at full capacity.
- J. Set the low-pressure set point and the high set point on the Photohelic® controller (if equipped.)
- K. Bump the fan by quickly turning the power on then off. Check for proper rotation. If fan is running backwards, rewire and set the taps as needed.

SAFETY NOTE:

Only qualified personnel or contractor should perform electrical installation.

8.2 START UP SEQUENCE:

1. Ensure all access doors and any openings are securely closed.
2. Verify that the compressed air supply system is on.
3. Verify supply regulator pressure at 85 – 90 psig.
4. Energize the control panel.

5. Start the dust discharge and removal equipment. Follow proper sequence for rotary air locks, screw conveyors, live bottom bin activators, and pneumatic conveyor systems.
6. Start the main exhaust fan.
7. Start the dust-laden air through the collector. Partial loading on initial start-up is recommended. Thus allowing the filters to be slowly and evenly coated.

8.3 SHUT DOWN SEQUENCE:

1. Reverse the start-up procedure.

9.0 **TROUBLESHOOTING**

SAFETY NOTE:

Only trained, qualified personnel or contractor should perform troubleshooting.

9.1 MAIN FAN WILL NOT START:

A. NO POWER:

1. No power to the motor. Check for blown fuses, loose wires, main disconnect switch is off, etc.

B. FAN BELTS:

1. Fan belt(s) are no longer on the sheaves. Lock out unit and look inside the fan guard. If belt(s) are missing/fallen off, or broken, replace with new correct size belt(s). Belt alignment and tension is critical to proper operation.

9.2 HIGH PRESSURE DROP ACROSS THE FILTERS:

The pulse cleaning system may not be working correctly. **For example:** Say the differential pressure controller (switch) for this scenario, is set to begin the pulse cleaning system at an upper set point of 6" water gage and a lower set point of 4". As the cleaning system continues to cycle the pressure should drop. When the pressure is reduced to the lower set point the pulse system should stop. Therefore, the pressure gage is intended to read 6" or less in this case.

Higher readings may be an indication that the main air flowing through the collector is becoming restricted. This can produce potential process

problems such as poor suction through the duct system and or at the pick up points.

Filters subjected to very high differential pressure can be damaged.

A. PRESSURE GAGE:

1. Check the tubing between the pressure gage and the dust collector housing for leaks. Ensure connections as intended. Look for loose fittings, cracked, or pinched tubing. Replace or repair as needed.
2. Using clean, dry compressed air, pressurize the tubing sending compressed air down the line toward the collector. Ensure the lines and connectors are clear. **NEVER apply compressed air to the gage.**
3. Zero the gage. Remove both pressure lines from the gage. Using the external zero screw located on the front of the gage, turn as needed to set the indicating pointer exactly on the zero mark.
4. Reconnect both lines. Ensure the upper and lower set points are at application-determined values. Observe for proper operation.

B. COMPRESSED AIR:

1. Check to make sure the compressor supplying the collector is on and capable of delivering 90 psig or more of pressure to the collector. (Manifold pressure is application specific and may be regulated at a different pressure.)
2. Check the ball valve to ensure it is turned to the on position. (Handle position runs in the same direction of the supply pipe.)
3. Check the regulators for function and settings.
4. Observe for proper operation. The manifold pressure must be able to recover prior to the next pulse. If not, check to make sure the compressed air system is in good operating condition, correctly sized, and supply lines are not too small or restricted.

C. MANIFOLD PRESSURE:

1. Listen for the sound of compressed air flowing continuously through a pulse valve and into the blow pipe. This is an indication that one or more of the pulse valves are stuck in the pulsing position. Repair/rebuild kits are available for both the pulse valves and the pilot valves. Contact your Schust representative.
2. Check the tubing between the pilot valve and the pulse valve for leaks. Ensure connections to the pulse valve and the pilot valve enclosure as intended. Look for loose fittings, cracked, or pinched tubing. Replace or repair as needed.
3. Check for dirt or debris in the pilot and or pulse valves.

D. TIMER BOARD:

1. Look for signs of damage to the timer and housing. Replace and repair as needed.
2. Check for 120 VAC line voltage power input to the timer. If voltage is present an indicator should be on. If not check the fuse on the timer board. **Replace with only the same size and type.** Ensure the hot side of the supply voltage line is connected to L1 as this is the fused terminal.
3. Check the wiring between the timer and the solenoids for open or short circuits.
4. After performing the above steps and the board still appears not to be functioning properly, please contact your Schust Engineering representative.

E. DUST NOT DISCHARGING FROM THE HOPPER:

1. Check the hopper for overloading condition. Dust can bridge across the discharge causing the hopper to fill with dust. Correct by repairing the discharge equipment. Replace with higher capacity equipment. Or, install hopper vibrators, etc. as required to keep the hopper clear.
2. NEVER store material in the hopper. Ensure hopper is clear prior to shutting the system down.

F. FILTERS:

If the cleaning system appears to be working correctly however, high pressure is still indicated on the gage, the filters could be loaded with dust. This is a condition known as blinding.

Collectors with blinded or caked filters may possibly be put back into service by first running the pulse cleaning system with the main fan not running. Set the "Off Time" on the timer board to 3 seconds or to the lowest setting in which the compressed air system can recover to the regulated operating pressure between pulses. Run the cleaning system for 15 to 30 minutes. Reset the timer board to the original design setting. Turn the main fan on. If the pressure drop is not lower the filters need to be changed.

G. AIR FLOW TOO HIGH:

1. If the main airflow is too high to allow dust to drop off of the filter, and excessive pressure drop across the dust collector will result. Dust will build up in the system.
2. If the system is installed with a fan inlet damper check to see if it is still in the same original location. If it has been opened up set it back to the original setting.
3. Test to see that the fan is turning at the original RPM not faster. Original RPM is critical to proper operation.
4. If the associated duct or hooding has been removed or modified, higher system volumes may occur. Contact Schust Engineering for system evaluation services.

H. PARTICLE SIZE AND DUST LOAD:

1. If possible, compare the dust particle size to the original design specifications. Finer dust may cause a higher pressure drop. If the application has changed or the system is seeing a higher dust loads than originally designed contact Schust Engineering for system evaluation services.

I. MOISTURE:

1. Inspect the dust collector housing and ductwork for holes, cracks, leaks, and areas where water could enter the collector.

2. Condensation. If moisture has been condensing inside the collector, check the dew point of the incoming air stream. It may be necessary to insulate the collector and associated ductwork to keep the surface temperatures above the dew point and prevent condensation on the filters.
3. Moisture/oil present in the compressed air used for cleaning. Any moisture/oil present in the cleaning air will be transferred directly to the filter media. Moisture combined with fine particles can result in solidification of product and filter failure. Clean dry air is required

9.3 LOW PRESSURE DROP ACROSS THE FILTERS:

A. PRESSURE GAGE:

1. Check the tubing between the pressure gage controller and the dust collector housing for leaks. Ensure connections as intended. Look for loose fittings, cracked, or pinched tubing. Replace or repair as needed.
2. Using clean, dry compressed air, pressurize the tubing sending compressed air down the line toward the collector. Ensure the lines and connectors are clear. **NEVER apply compressed air to the gage.**
3. Zero the gage. Remove both pressure lines from the gage. Using the external zero screw located on the front of the gage, turn as needed to set the indicating pointer exactly on the zero mark.
4. Reconnect both lines. Ensure the upper and lower set points are at application-determined values. Observe for proper operation.

B. FILTERS:

1. Check and ensure that the filters are installed correctly as described earlier in the Filter Installation section of this manual. Inspect filters for excessive wear, tears, and holes. Replace as needed.

C. DUCT AND DAMPERS:

1. Blocked ductwork and/or too many closed dampers will result in low pressure drop across the collector. Clear any blockage

in the duct and reset dampers to original positions. If associated duct or hooding has been removed, capped, or modified, lower system volumes may occur. Contact Schust Engineering for system evaluation services.

D. HOUSING:

1. Check the tube sheet (flat steel sheet from which the filters are suspended) and the collector housing for holes, cracks, or loose gaskets, which would permit air to bypass the collector or filters.

9.4 DUST COMING FROM THE EXHAUST STACK:

A. CONTINUOUS:

1. Holes in the filters.
2. Filters not installed correctly or wrong size.
3. Filters missing.
4. Holes in the tube sheet.

B. PUFF ONLY AFTER EACH CLEANING SYSTEM PULSE:

1. Compressed air manifold pressure too high. If the pulsing pressure is higher than the application specified value, the filters may flex excessively and allow fine dust to pass through the material.
2. Worn filters. Thin worn filters may not stop fine dust when flexed by the cleaning system. Inspect filters for wear.
3. Residual dust. Dust may have gotten into the clean air plenum due to filter failure, incorrect filter installation, torn filter, wear, hole in the tube sheet, etc. The cleaning system pulsing air may stir up the dust and allow it to escape into the exhaust stack after each pulse. Locate and repair the problem. Clean the clean air plenum prior to putting the unit back in service to avoid further problems.
4. Holes formed in the bottom of a filter will often allow the filter to fill with dust up to the location of the hole. Several inches of dust can accumulate. Pulsing air will stir up this dust and allow it to exit the collector through the exhaust. Replace

filters as needed. Clean the clean air plenum prior to putting the unit back in service to avoid further problems.

9.5 **SHORT FILTER LIFE:**

This is often a very complicated problem to diagnose. We recommend that you call Schust Engineering for advice. The following may be helpful in performing some preliminary checks:

1. Temperature. Operating temperature above the recommended limit of the filter bag material.
2. High moisture. High moisture content in the collector may cause certain filter materials to shrink or degrade. Elevated temperatures will accelerate this process.
3. Chemical attack. Certain chemicals in the air stream and or dust can degrade filter material.

10.0 **ROUTINE MAINTENANCE**

The following includes general recommendations for maintenance. Frequency will vary based on actual operating conditions and duty cycle requirements. This guideline is not intended to satisfy any permit requirements should they exist. Please contact Schust Engineering for third party inspection and system performance reports should you have the need.

10.1 **INSPECTION:**

1. Daily. Check unit differential pressure.
2. Weekly. Check pulse timer board settings, solenoid, and pulse valves for operation. Listen for uniform time intervals between blasts/pulses.
3. Monthly. Lubricate fan, rotary valve and screw conveyor. Inspect seals on the rotary valve and screw conveyor for dust loss.
4. Quarterly. Check for dust accumulation in the clean air plenum.

10.2 **REPAIRS:**

1. Filters. Replacement.

2. Pilot Valves. Repair kits are available if a valve is stuck open or fails to operate.
3. Pulse Valves. Repair kits are available if a valve is stuck open or fails to operate.
4. Timer Board. Fuse replacement or circuit board replacement.
5. Rotary Valves. Usually a matter of seal and blade replacement. More detailed information is supplied with the valve.
6. Fans. Periodic replacement of the belts. Belt tension and sheave alignment is important to operation. Periodic bearing replacement. Ensure fan wheel balance is maintained.

Schust Engineering, Inc. is a full service company. We offer a full line of standard pre engineered equipment and spare parts. We provide a full range of engineering, fabrication, and installation services related to dust and fume control. From spare parts to custom designed multi million CFM dust collection systems. *Schust Engineering* is *your* dust collector company.

Parts

Standard Pulse Jet Filter Bags, &
ALL others

Filter Support Cages, Various Types

Pressure Switches and Gages

Pulse Valves

Pilot Valves and Solenoids

Rebuild Kits for Pulse Valve &
Cleaning Systems Components

Timer Boards

Pre Coat

Fluorescent Leak Detection Powder

Full Service

Complete Ventilation System
Evaluations

Custom Design Collection
Systems

Standard Pre-Engineered
Collectors

Fabrication and Manufacturing

Install Crews and Equipment

Conversions and Retrofits

Start-Up Engineering Services

On Site Project Management &
Supervision

Specializing in Complete Turnkey
Project Management

CALL: 1 (260) 925-6550

FAX: 1 (260) 925-6093



Schust Engineering, Inc.

701 North Street Auburn, Indiana 46706

LIBERATOR.
DUST COLLECTORS