GR Series Filter

Operators Manual

Kice Industries, Inc.

1. Introduction

When you purchased your new Kice equipment, you bought a dependable and quality-built product. The range of equipment manufactured by Kice should satisfy nearly every conceivable industrial air-handling need.

We are proud of our products and the people at Kice who build them. At Kice, we start in our own foundry and follow the design and manufacturing standards that have proven superior for more than 75 years.

This owner's manual is intended as a guide for proper installation, operation and maintenance to keep your Kice equipment operating safely and efficiently on the job. Service and factory reconditioning information is also included for your benefit.

Sincerely,

Drew Kice
President
Kice Industries, Inc.

Warranty

The Company (Kice Industries, Inc.) warrants the equipment manufactured by the Company to be free of defects in material and workmanship for a period of one year from the date of shipment. Company agrees to repair or replace, at its option, any parts found to be defective in the opinion of the Company. Company is not liable for any costs in connection with the removal, shipment or reinstallation of said parts. This warranty does not apply to abrasion, corrosion, or erosion.

Purchaser agrees to look to the warranty, if any, of the manufacturer or supplier of equipment manufactured by others and supplied to the Company for any alleged defects in such equipment and for any damages or injuries caused thereby or as a result thereof.

PURCHASER SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ELECTRICAL COMPONENT MANUFACTURER'S RECOMMENDATIONS, UNDERWRITERS CODE AND ALL SAFETY PRECAUTIONS.

The only warranty extended under this agreement is the above express warranty and there are no other warranties, express or implied, including warranties of merchantability, fitness for a particular purpose or otherwise which extends beyond the face hereof. The Company and its dealers shall not in any event be liable for consequential or incidental damages and this agreement provides purchaser's sole and exclusive remedy. Any actions for breach of this agreement or warranty must be commenced within one year after the cause of action has occurred.

2. Important Information

Write down the MODEL and SERIAL NUMBER of the Kice equipment along with the same information for the auxiliary equipment. (Airlock valves, fans, speed reducers, motors, and sheaves size, type and any special modifications to standard).

For additional information, application assistance or special service, please contact us by phone at 316-744-7151 or email at sales@kice.com. We'll need to know the MODEL and SERIAL NUMBER of your Kice equipment. For ready reference, please record this information and the date of delivery or installation on the lines below. See the General Information section for the location of model and serial number.

Model _____

Serial Number _____

Date of Delivery or Installation _____

Additional Notes:

_____

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Contents

3. General Information

To The Owner

The purpose of this manual is to assist owners and operators in maintaining and operating the Kice equipment. Please read it carefully; information and instructions furnished can help you achieve years of dependable performance. If the manual is not included in your owner's packet, please contact our Customer Service Department.

Using This Manual

General operation and maintenance guidelines are outlined for owners and operators of Kice equipment. Operating conditions vary considerably and cannot be addressed individually. Through experience however, operators should have no difficulty in developing good operating, safety and monitoring skills.

The terms **"disconnect and lockout"** or **"lockout/tagout"** as used in this manual means that power to the equipment has been disconnected through the use of a padlockable, manual power cutoff or power lockout switch pursuant to 29 CFR 1910.147.

Photographs and illustrations were current at the time of printing but subsequent production changes may cause your equipment to vary slightly in detail. Kice Industries, Inc. reserves the right to redesign and change equipment as deemed necessary, without notification. If a change has been made to your equipment that is not reflected in this owner's manual or the Illustrated Parts Lists, write or call Kice Industries, Inc. for current information and parts.

Equipment Parts and Service

For service or assistance ordering parts, contact the Customer Service Department or Quick Ship Department.

Kice Industries, Inc.
5500 Mill Heights Drive
Wichita, Kansas 67219-2358
Toll Free: (877) 289-5423
Main Phone: (316) 744-7151
Fax: (316) 744-7355

IMPORTANT: Any unauthorized modification, alteration or use of non-approved attachments or drive units voids the warranty and releases Kice Industries, Inc. from any liability arising from subsequent use of this equipment. All Kice equipment is configured to be used in specific situations, handling particular types of material. Using equipment for any purpose other than that for which it was designed could result in personal injury as well as product or property damage.

NOTICE: Kice Industries, Inc. is the only authorized rebuilder of Kice equipment.

Kice equipment is designed and built to provide years of operation. As with any equipment, the following rules are essential for trouble-free operation:

- Proper installation.
- Regular maintenance.
- Correct operation within original design parameters.
- Proper application within a process.

Failure to properly install, maintain or operate Kice equipment can result in a variety of problems, including but not limited to: poor equipment performance, decreased equipment life, equipment failure, or dangerous operating conditions.

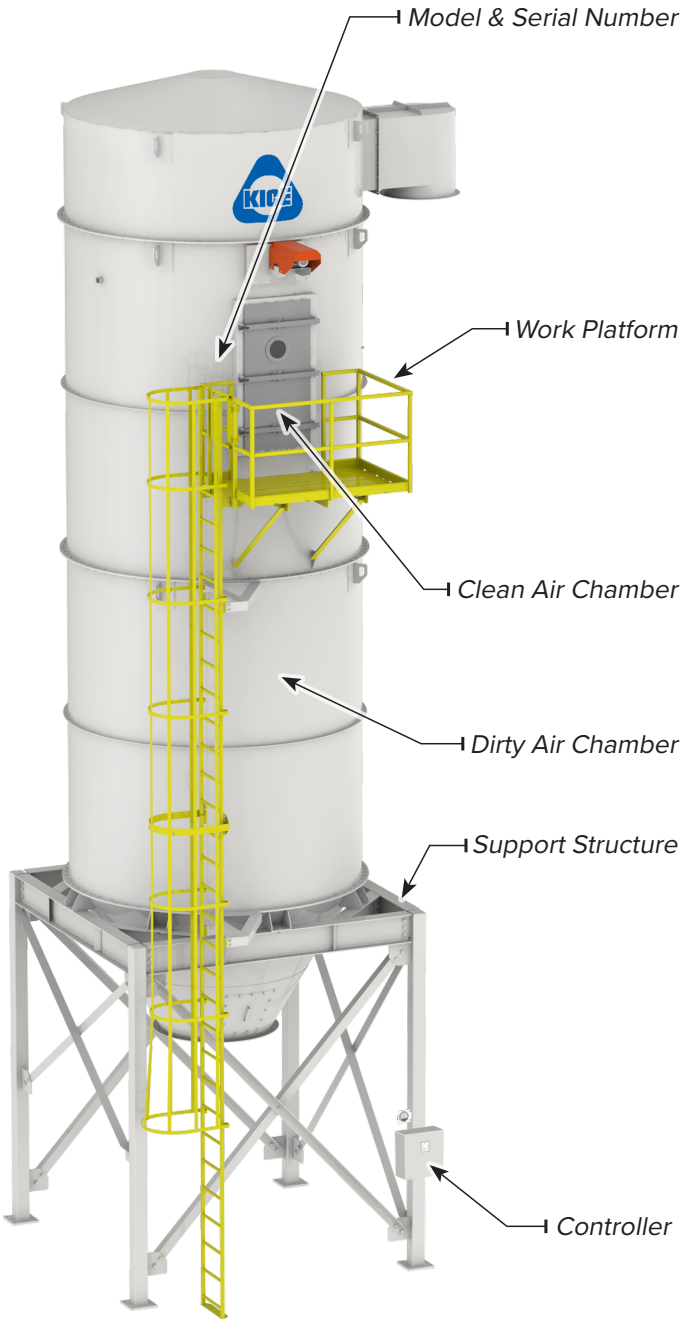
Purchased items (such as speed reducers, motors, and positive pressure pumps) are covered by the manufacturer's warranty. If there is a problem with a purchased item, check with the local supplier or service representative.

Model and Serial Number

The equipment model and serial number can be found near the entry door on the work platform.

Filter Terminology

The image below shows some of the standard and optional features of your Kice GR Series Filter. Note that this image is representative only; your machine's appearance may vary depending on the model and installed options.



4. Hazard Level Icons

Hazard Levels Symbols - In Manual

Throughout this manual you'll see icons that are specific to hazards or dangers. Refer to these symbols and their respective definitions as you install, maintain, and repair your Kice equipment.

DANGER

Danger is used to indicate the presence of a hazard that **WILL** cause **SEVERE** personal injury, death or substantial property damage if the warning is ignored.

WARNING

Warning is used to indicate the presence of a hazard that **CAN** cause **SEVERE** personal injury, death or substantial property damage if the warning is ignored.

CAUTION

Caution is used to indicate the presence of a hazard that **WILL** or **CAN** cause **MINOR** personal injury or property damage if the warning is ignored.

NOTE – This symbol indicates practical tips and guidance that could be helpful.

REFERENCE MATERIAL – This symbol indicates further information is referenced in or outside of this manual.

5. SAFETY PRECAUTIONS

Safety Symbols - On Equipment

This safety alert symbol is used to call your attention to an important safety messages on equipment, safety decals and in manuals, to warn you of possible danger to your personal safety. When you see this symbol, be alert. Your personal safety or the safety of others may be affected. Follow the instructions in the safety message.

On Equipment Safety Decals - On Equipment

Equipment safety decals should not be removed, covered, painted or otherwise become illegible. If this occurs they should be replaced immediately. Contact Kice Industries, Inc. Customer Service Department for replacements.

The following safety decals will be located on the equipment. Look for them!

WARNING

All owners and operators should read this manual and be instructed in safe operating and maintenance procedures before attempting to uncrate, install, operate, adjust or service this equipment.

WORK SAFELY AT ALL TIMES

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- All energy sources associated with the equipment must be locked and tagged out in compliance with 29 CFR 1910.147, local enforcement authorities, OSHA, and facility safety practices, before removing any protective cover, guard, grate or maintenance gate.
- It is the owner's and employer's responsibility to adequately train each operator in the proper and safe use of the equipment. Written safety programs and formal instruction are essential. All new employees must be made aware of company policies, standard operating procedures (SOPs) and established health and safety procedures.
- Experienced employees should receive refresher training for potential hazards and up to date training records should be maintained at the job site.
- Do not attempt to install, connect power, operate or service the equipment without proper instruction and until you have been thoroughly trained in its operation and use by your employer.
- Before applying power to any equipment, make certain that all personnel are clear of the machine.
- Always operate safely. Use personal protective equipment (PPE) such as hard hats, helmets, gloves, earplugs, protective eye-wear, etcetera when and where appropriate. Keep PPE in good repair and accessible to operator or other affected personnel.
- If it becomes necessary to climb into the filter for service or repair work, adequate securing devices and fall arresters must be worn by personnel.
- The equipment is fully encapsulated if properly connected during installation and should only be operated after all pipes and hoses, including upstream and downstream components, have been completely connected to the piping system. This will prevent human access while the machine is running.
- All protective covers, guards, grates, maintenance panels, switches and warning decals must be kept in place and in good repair. Any equipment with a damaged, malfunctioning, defective, or missing protective device must be taken out of service until the protective device can be repaired or replaced.
- The equipment may also have factory supplied guards for rotating components. Do not connect power to or operate the equipment unless all moving parts are completely enclosed and all guards, grates and maintenance panels are in place and securely fastened.
- Do not abuse, overload, mistreat or misuse the equipment or attempt to operate the equipment if it needs service, lubrication, maintenance or repair.
- The equipment may be installed and programmed to start automatically or be controlled from a remote location. Always keep clear of all moving parts on industrial equipment, until the POWER IS TURNED OFF AND LOCKED OUT.
- Do not attempt to work on, clean or service the equipment, open or remove any protective cover, guard, grate, connection or maintenance panel until the POWER IS TURNED OFF AND LOCKED OUT. A main disconnect device must be installed to achieve this.
- The compressed air supply must be disconnected from the system before service and repair work is carried out. The switch-off devices for the compressed air supply, as with the electrical supply, are the responsibility of the distributing company (operator) of the overall system.
- During installation and operation, make sure the motor and frame of each piece of equipment, including the filter, is effectively and separately grounded in accordance with OSHA safety and health standards, the National Electrical Code, local codes and DIN EN 60204-1 or DIN EN 60439-1 as required for the classified area.
- High voltage and rotating parts can cause series or fatal injury. Only qualified, trained, and experienced personnel should perform installation, operation, and maintenance of electrical machinery.
- If equipped with a maintenance panel incorporating any Protective Interlocking Limit Switch (PLS), the PLS must be interlocked with all electrical controls so that all motors or powered devices on the unit will be de-energized if any protected cover, guard, grate, or maintenance panel is open or removed. Interlock function of the PLS must be tested and logged daily by supervisory personnel.

- Never attempt to manually override or electrically bypass a safety device.
- Filters must be equipped with a properly functioning Protective Interlocking Electrical Control Switch (PCS), a Pad-lockable Manual Power Lockout Switch, along with the other basic safety equipment listed above. On-Off, interlock and padlock functions of the PCS must be tested and logged periodically by supervisory personnel.
- Any device powered by air or hydraulic pressure must be equipped with a properly functioning Padlockable Manual Pressure Lockout and Internal Pressure Relief Valve (PLV) capable of safely relieving motive pressure between the isolation valve and device.
- Any equipment used in the processing of combustible materials or in hazardous environments require evaluation by the owner and regulatory bodies to determine appropriate monitoring equipment, dust control, explosion protection and electrical equipment enclosures. Do not use the equipment in hazardous environments unless properly equipped for the hazard.
- Always keep the workplace clean and free of dirt and dust. Do not attempt to work on slippery or unsafe surfaces, ladders or work platforms when maintenance or repair work is being performed on the equipment.
- Do not use a ladder or work platform unless it is in good repair and rated for the load required. Do not exceed maximum load ratings when installing or servicing equipment.
- Never stand under any kind of hoists or lifting mechanisms whether or not it is loaded or in operation. Never stand under or near a component when it is being lifted.
- All equipment lifting devices must be inspected by qualified personnel before each use. Do not use a lifting device to transport equipment. Never use a lifting device that is damaged, deteriorated or in need of repair.
- The unit must be lifted by a means with sufficient lifting capacity.
- The operator must ensure that adequate lighting conditions are provided at the location of equipment operation.
- Never allow any kind of metal or other foreign objects to enter the equipment while in operation, unless the system is specifically designed as a wire or metal reclaim system. Examined raw materials should be used through the machine to ensure proper and consistent operation. A material separator should be installed on the raw gas inlet.
- Special attention must be devoted to outside contractors engaged to enter and perform work on the equipment or in the workplace. Particular care must be exercised to ensure all such personnel are fully informed of potential hazards and plant safety procedures. Special emphasis should be placed on the use of explosion proof electrical, cutting, or welding tools where required.
- Free outlet of product must be guaranteed at all times. Otherwise, blockage and severe damage may result, or a dangerous situation may occur.
- Airflow to the equipment must be switched off long enough (approximately 30 minutes) for dust to settle in the raw gas or dirty air chamber before the service entrance is opened. This is to prevent zone entrainment and mitigate the risk of a potential event outside the system.
- Drive components must be inspected and adjusted after transportation and periodically as required by operating conditions. Check sprocket, sheave and coupling alignment and spacing, drive belt tension, setscrews, keys, fasteners, bearings, shafts, and motors as appropriate to job conditions.
- It is ultimately the operator's responsibility to apply the above listed precautions and ensure proper equipment use, maintenance and lubrication. Keep these instructions and list of warnings with your machine at all times.
- It cannot be assumed that every acceptable safety procedure is contained herein or that abnormal or unusual circumstances may not warrant or require additional procedures.

WORK SAFELY AT ALL TIMES

6. Installation Preparation

The filter has been inspected at Kice prior to shipment and should be in excellent condition upon delivery. A thorough customer inspection of the filter and any accessories should be completed upon receipt to verify its condition.

Delivery inspection should be completed before signing carrier's release. When a carrier signs the Kice Industries, Inc. bill of lading, the carrier accepts responsibility for any subsequent shortages or damage, evident or concealed. Therefore any resulting claim must be made against the carrier by the purchaser. Evident shortage or damage should be noted on the carrier's delivery document before signature of acceptance. Inspection by the carrier for damage, evident or concealed, must be requested.

A qualified engineer should design the foundation and/or footings for the filter. The slab should be extended to support accessory equipment as needed, such as a floor mounted fan. Refer to the drawings provided of your equipment for foot pad locations and weights. The weight of all the equipment and associated material load, along with the environmental forces for the location, must be considered as part of the foundation design.

7. Storage

GR Series filters are shipped in many different configurations. These units may be handled and moved using good rigging techniques, being careful to avoid concentrated stresses that will distort any of the parts. Items or parts of the filter that are shipped knocked down will be clearly labeled for reassemble. If the filter is not to be installed promptly, store it in a clean, dry location to prevent rust and corrosion of steel components. If outdoor storage is necessary, protection should be provided. Cover any openings to prevent the accumulation of dirt and moisture inside the housing. Cover motors with waterproof material. Refer to the motor maintenance information for further storage instructions.

8. Installation

Use appropriate equipment when lifting or moving the GR Series filter. Make sure all persons and obstructions are clear from the path and installation area. When installing the equipment, make sure the moving parts inside the equipment are not accessible. This also fulfills EN ISO 13857-1 where required.

Contact Kice Industries, Inc., for any installation questions. **See following pages for installation details.**

The following hazards are present:

WARNING

Use appropriate equipment when lifting or moving the GR Series filter. Make sure all persons and obstructions are clear from the path and installation area. When installing the equipment, make sure the moving parts inside the equipment are not accessible. This also fulfills EN ISO 13857-1 where required.

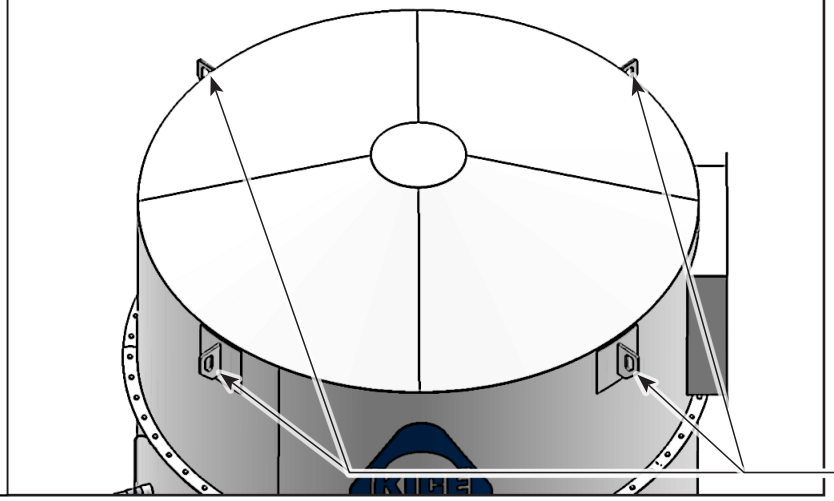
WARNING

High voltage and rotating parts can cause serious or fatal injury. Only qualified personnel should perform installation, operation and maintenance of electrical machinery. Make sure that any electric motor and the frame of the filter is effectively grounded in accordance with OSHA standards, the National Electrical Code and local codes.

CAUTION

Ladder is not safe to use until all components and braces are properly installed.

WARNING

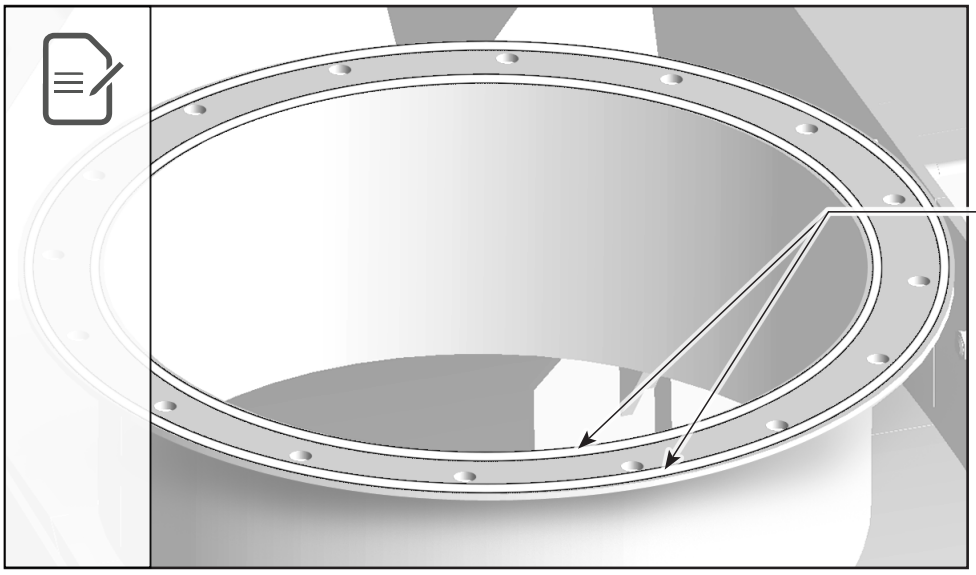


Step 1
☐ Move Filter to Install Area

Move filter to install area using proper equipment and rigging. These filters are shipped in sections and should be installed one section at a time.

Install Sequence:
1. Structure
2. Hopper
3. Inlet Section
4. Entry/Tube Sheet Section
5. Exhaust Section.

Lift only by the four indicated lugs.



Step 2
☐ Add Butyl Tape to Flanges

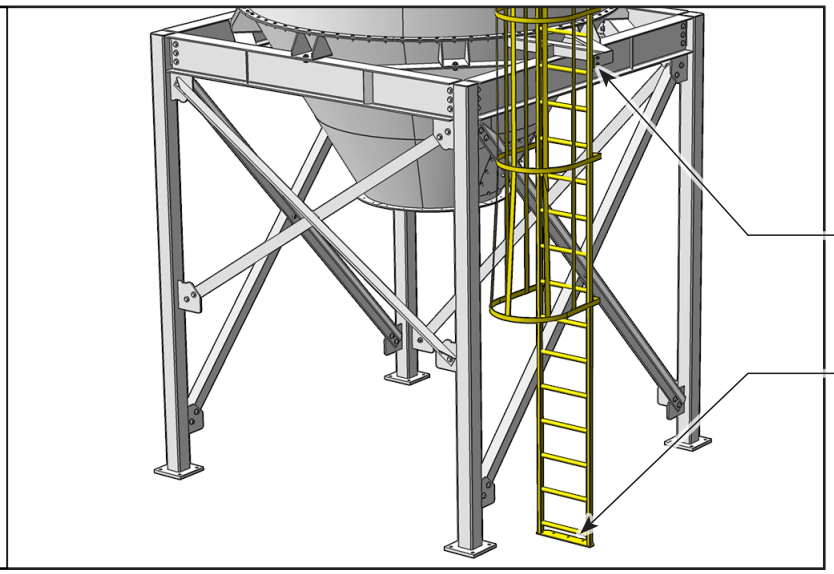
Mating surfaces should be free of any foreign materials. Check all flanges.

Apply supplied butyl tape around inside and outside perimeter.

Note:
If airlock valve is required it should be mounted to the hopper discharge flange. Additional support may be required. All duct work or stacks need to be independently supported.

Note:
Butyl tape can compress over time. Verify all fasteners stay fully tightened.

CAUTION



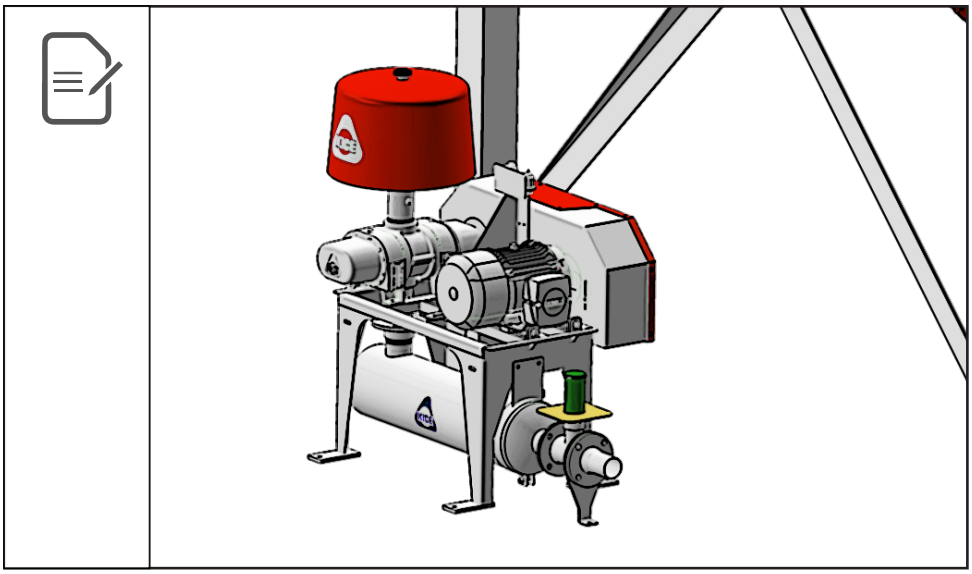
Step 3
☐ Anchor Ladder

Make sure all support braces are attached before using ladder.

Depending on span of ladder support braces may need connected.

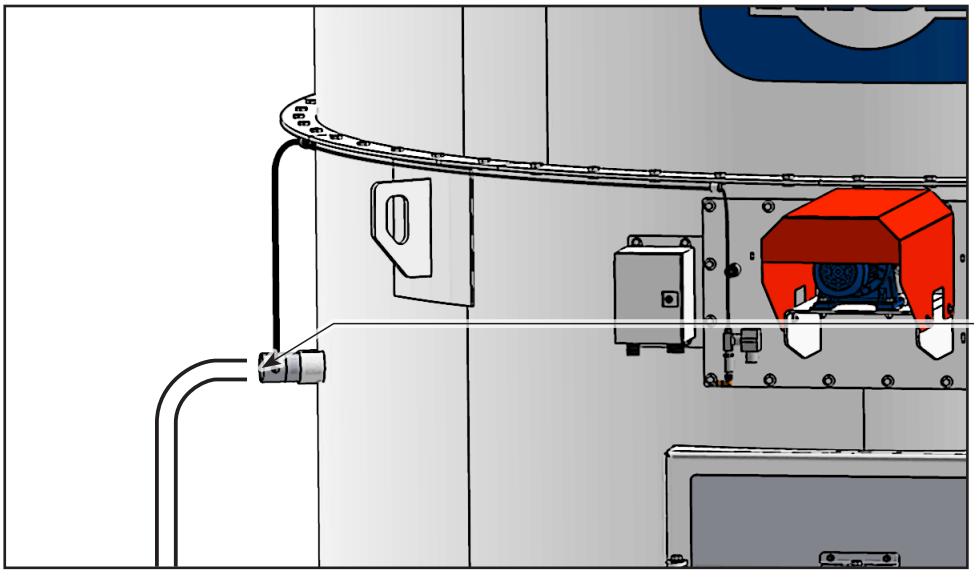
Shim ladder as needed for flush installation with pad.

Note:
Tighten all fasteners securely.



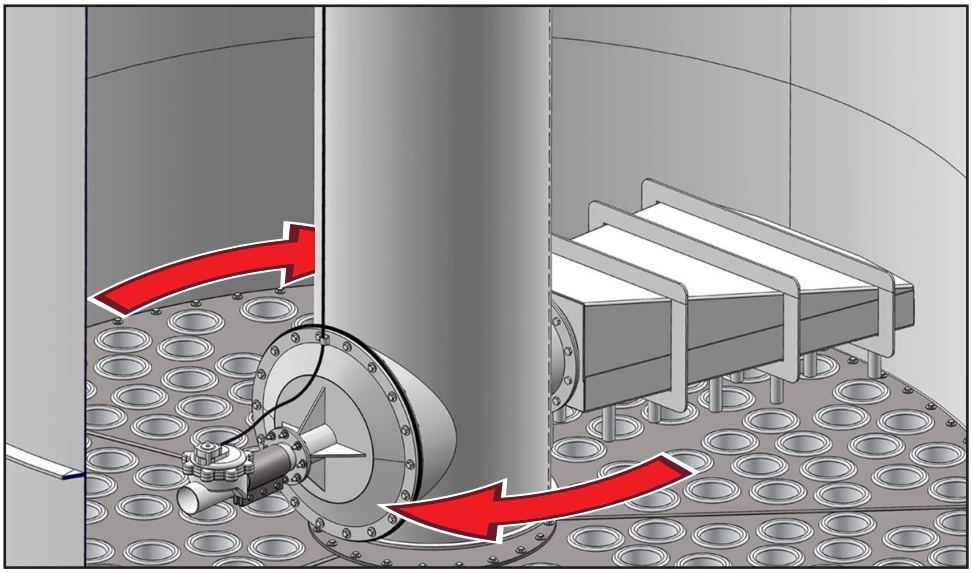
Step 4
☐ Install PD Blower

See Kice PD Blower manual for specific install instructions and startup procedures.



Step 5
☐ Connect Air Supply

Connect high pressure air supply from filter air tank to PD Blower.



Step 6
☐ Verify Rotation of Cleaning Arm

Prior to rotating the arm, verify the right angle reducer at the top of the cleaning manifold has lubricant installed. Then, manually push the cleaning arm and air tank around the entire 360 degree path. Verify that rotation is free and does not bind.

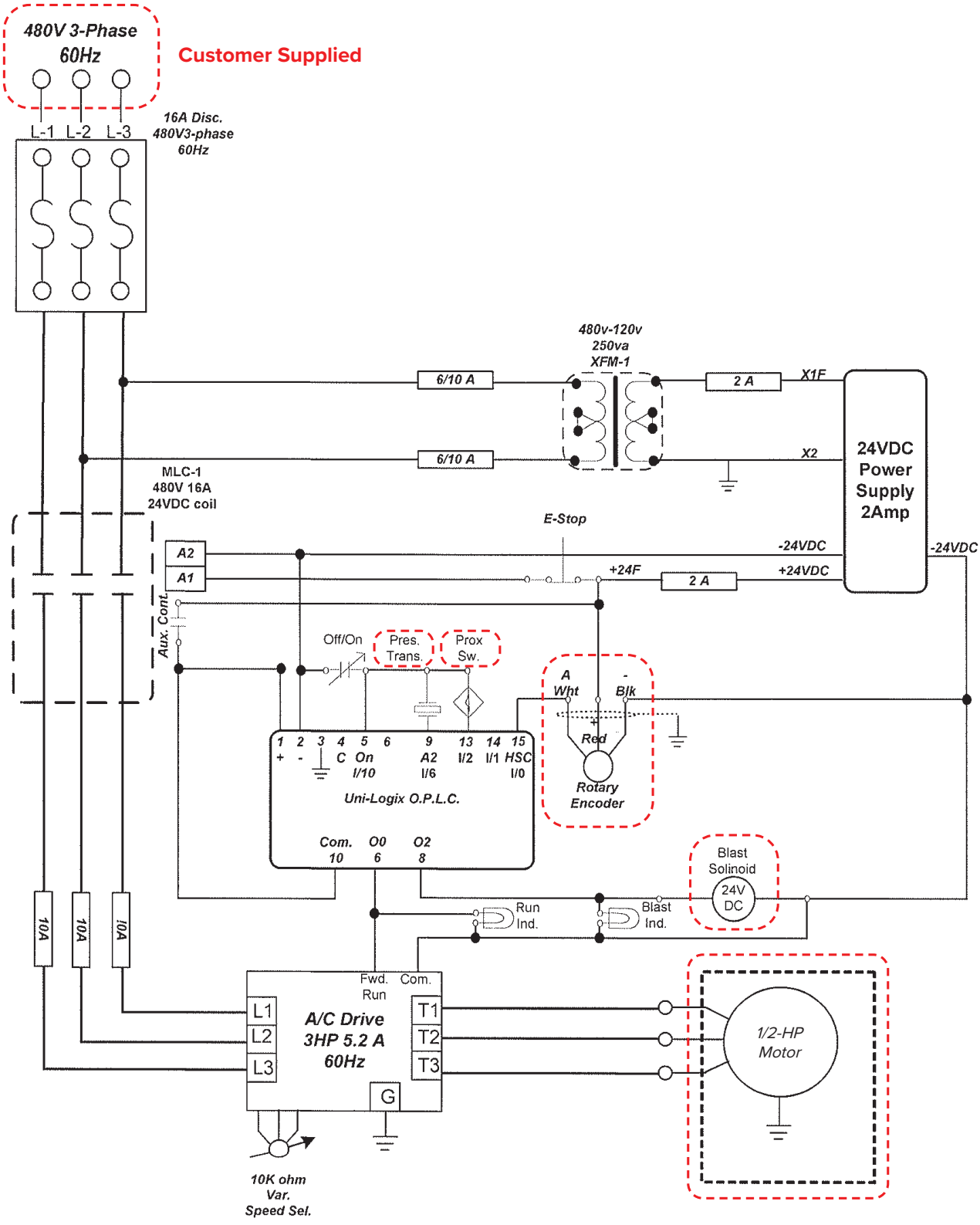
Use care when rotating the cleaning manifold manually. Too much force may damage the couplings.

If cleaning arm and air tank does not rotate freely see *Page 22 in Troubleshooting Section.*

Step 7

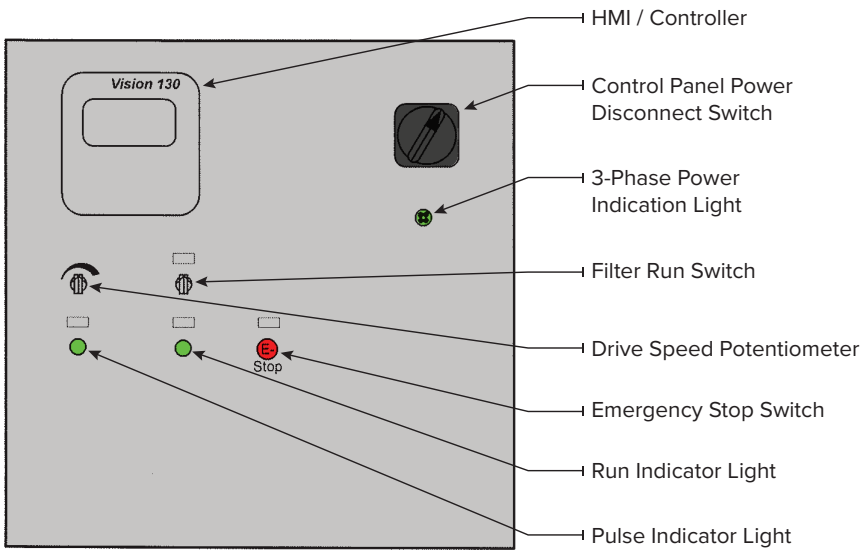
☐ Wire External Components to Control Panel

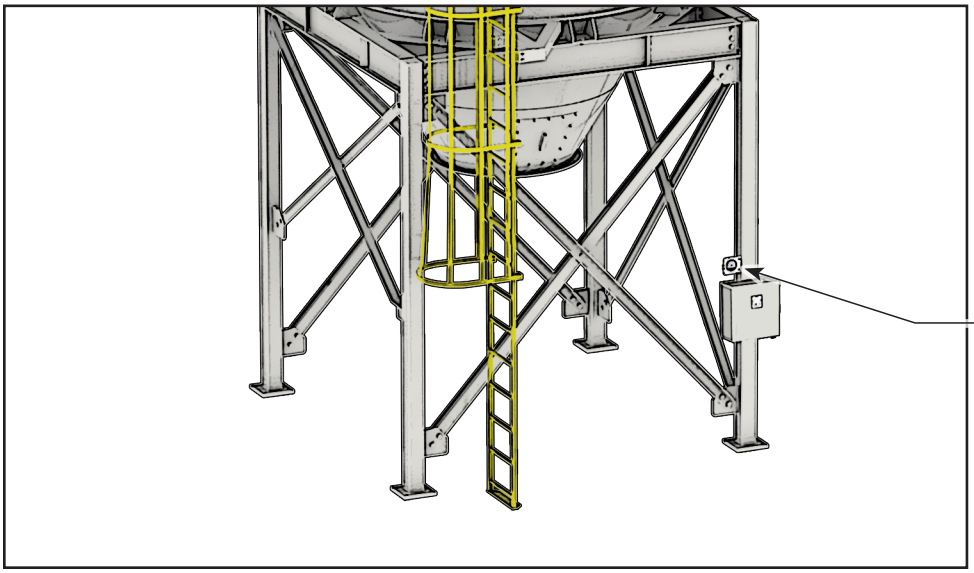
A local electrician must run the required power connections to the control panel and filter. The unit consists of both hardware and software and is connected to the filter by a communication cable for sensors and other wires (wires not included) to control gear motor and solenoid valve. The items indicated in the wiring schematic show the connections that need to be made in the field. Additional wire and conduit will be required. Control wires should be routed separately from motor wires.



Control Panel Overview

The operator should become familiar with the control panel before operating.

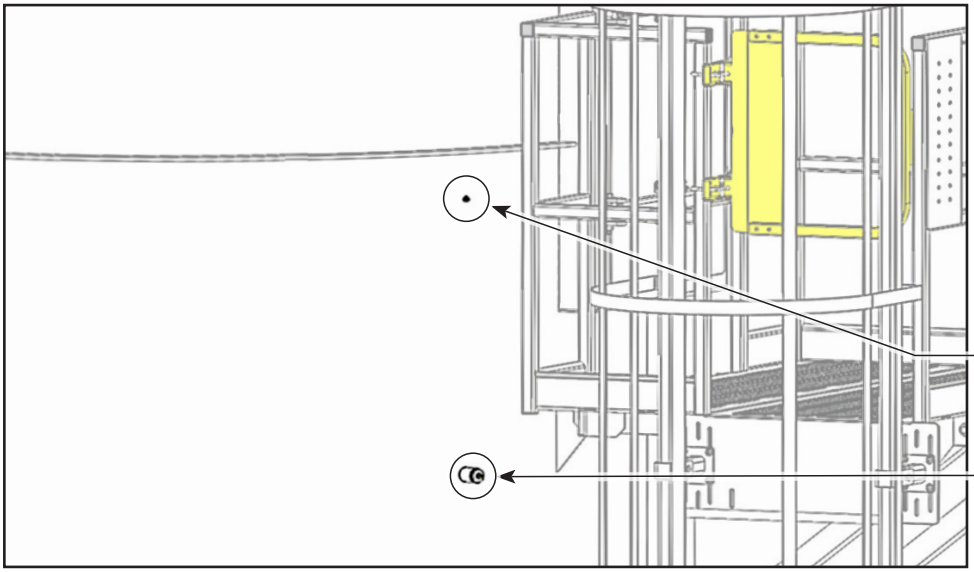




Step 8
☐ Install Magnehelic Gauge

Install magnehelic gauge in location as shown.

Gauge is provided to monitor pressure drop across the filter bags.



Step 9
☐ Connect Tubing to Gauge

Connect supplied tubing from magnehelic gauge to ports on the filter housing.

Step 10

☐ Install Filter Bags and Cages

Reference *Page 18 in the Filter Maintenance Section*.

Step 11

☐ Verify Airlock Rotation

Some systems will have a fan and airlock valve to be connected. Verify that the fan and airlock rotation direction is correct as marked.

Step 12

☐ Verify PD Blower Rotation

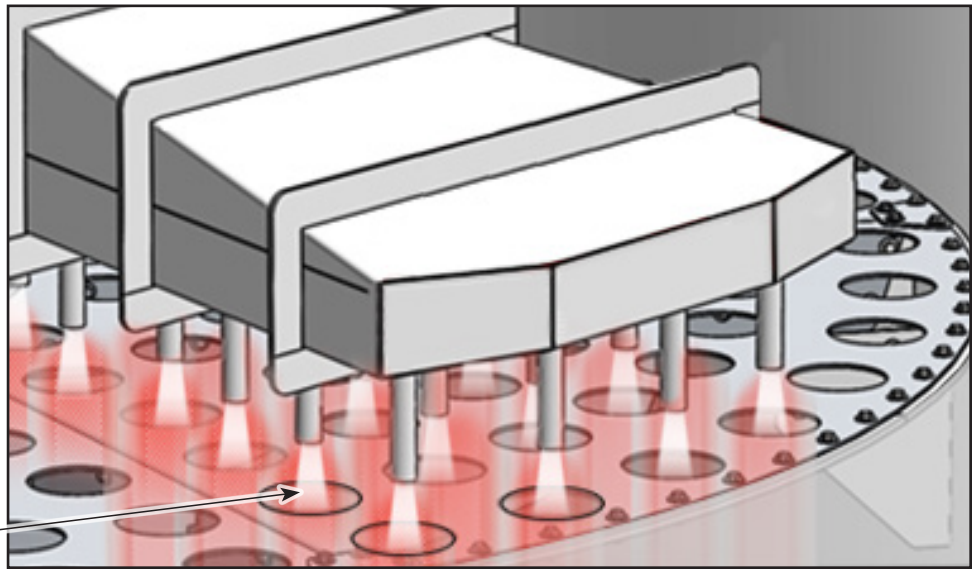
Check motor rotation by momentarily pushing the start button (BUMPING) and check flow direction of the air power unit. Reverse the motor connections if flow is in the wrong direction.

Step 13

☐ Test Run

Test run the filter. If any unusual noises occur, disconnect and lock out the power. Check the fan, airlock valve and screw conveyor, if furnished. Verify that the cleaning pulses are aligned with the bags.

See page 15 for Operating the Controller to adjust the alignment delay if the pulse is not aligned with the bags.



Verify cleaning pulses are aligned with bag locations

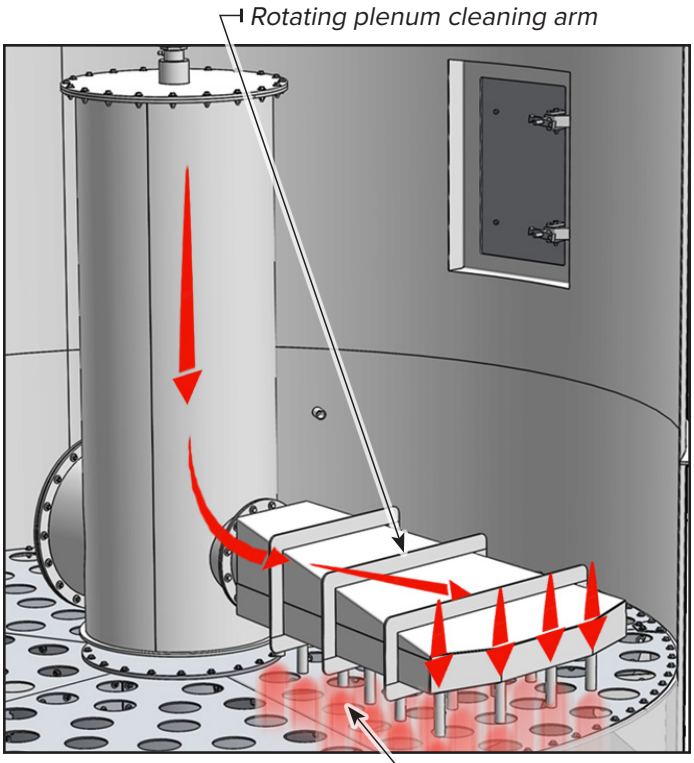
Step 14

☐ Reassemble

Reassemble any doors or covers removed during installation.

9. Filter Operation

A remote fan on the outlet of the clean air chamber draws air through the filter. Most of the dust entering the filter is directed to the hopper and out the discharge through the inlet diffuser entering the filter. The remaining dust laden air is directed to the filter bags. Dust collects on the outside of the filter media. Reverse air pulses periodically clean dust off the filter bags causing it to drop into the hopper. Filtered air then passes through the bags and out the clean air discharge.



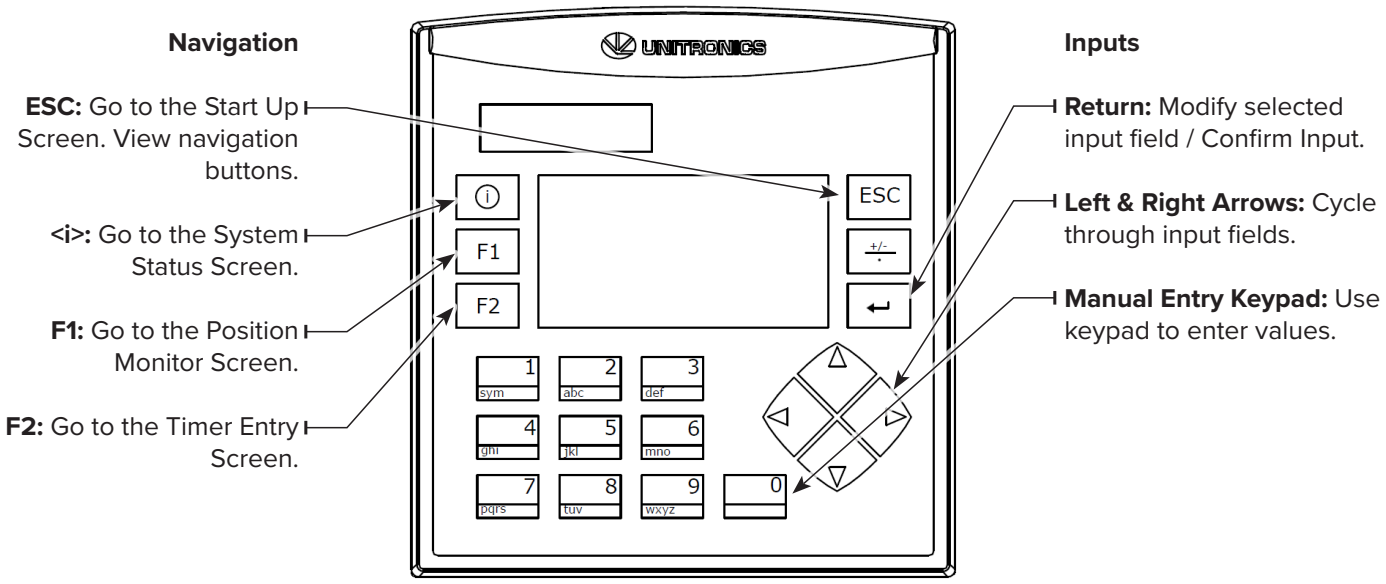
The reverse air pulses are controlled by pre-programmed manifold positions. A timer controls the duration of the blast. When the pulse valve opens it quickly discharges the tank of pressurized air through the manifold and into the filter bags in a specific section. This pulse of air creates a shock effect and causes the dust particles collected externally on the filter media to be dislodged and fall into the hopper. The cleaning air plenum rotates to a new section of bags and the controller sends a signal to open the pulse valve at the specified position. The cleaning cycle can be adjusted by the operator. The *filter controller panel is shown on page 12.*

Operating The Controller

The HMI controller contains all functions needed to move and control the rotating plenum cleaning arm. The standard HMI controller consists of single cabinet, positioned on the structural frame of the filter at eye level.

The HMI is designed for continuous operation in industrial environments. The unit consists of both hardware and software and is connected to the filter by a communication cable for sensors and other wires to control gear motor and solenoid valve (not included). Mounted on the front face of the cabinet is the controller user interface or keypad. This user interface should be positioned so it is easily accessible by the operator.

The user interface consists of specific functions and hierarchy. Primary navigation functions are shown below.

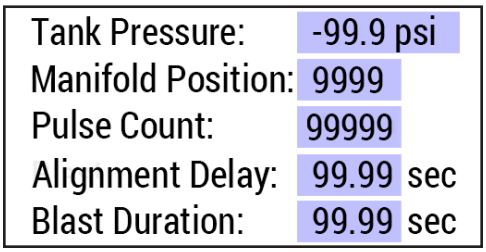


Controller Monitoring and Variable Details

The HMI controller enables the operator to set specific functionality that best fits the filter application. These variables can be set via the user interface and monitored in real-time as the filter is functioning.

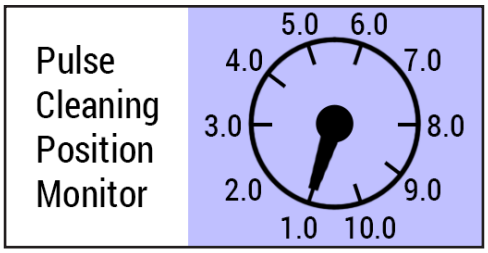
Start Up Screen (ESC command)

View navigation.



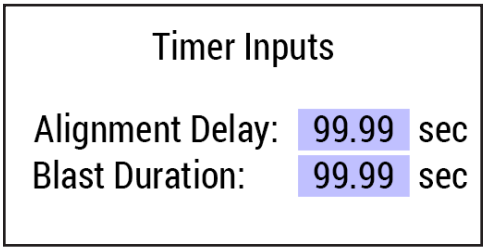
Pulse Cleaning Screen (<i> command)

View cleaning Tank Pressure, Manifold Position, Pulse Count, Alignment Delay value and Blast Duration value.



Position Monitor Screen (F1 command)

View the position of the cleaning arm and the activation of the cleaning pulses.



Timer Entry Screen (F2 command)

Adjust the Alignment Delay and Blast Duration here. The Alignment Delay is used to fine-tune the position of the manifold when the cleaning pulse is activated. The Blast Duration is the amount of time the valve is left open during a pulse. Default value for Blast Duration is 0.50 seconds (500 ms).

How to Scoll between input fields:
Use left and right arrow buttons to scroll between input fields.

To change a selected input field:
1) With field selected, press return.
2) Enter the new setting via the keypad.
3) Press return again to store the value.

Start-Up Procedure

Step 1
☐ Turn on both control panel and filter. Rotate "Run" switch at control panel to turn on the bag cleaning system.

Step 2
☐ Turn on and check incoming air pressure from PD Blower. Tank pressure is displayed on the filter control panel.

Step 3
☐ Periodically check screw conveyors and airlocks (if furnished) for proper directions of rotation.

Step 4
☐ Verify rotating cleaning arm is freely turning a full 360 degree cycle in the proper direction (clockwise).

Step 5
☐ Set desired cleaning pressure. Turn the drive speed potentiometer control counterclockwise to slow the rotation speed of the cleaning manifold, increase off time, and increase cleaning pressure. Turn the drive speed potentiometer clockwise to increase the rotation speed of the cleaning manifold, decrease the off time, and decrease the cleaning pressure. Recommended cleaning pressure is 6-8 psi.

Step 6
☐ Allow the sequence controller to operate for 5 to 10 minutes to assure the mechanism has not been damaged in shipment and to allow a short run-in time for the electronics.

Shut-Down Procedure

After the filter is placed into operation, a good practice to follow on shutdown is as follows:

Step 1
☐ Shut off suction fan.

Step 2
☐ Allow the reverse air cleaning, airlock and screw conveyor to operate for at least 15 minutes (a longer period of time is desirable if the operation will allow).

Step 3
☐ Then shut down the remainder of the system.

10. Filter Maintenance

The following hazards are present:

Depressurize the valve and bleed air from the air tank before making repairs. To do so, it is only necessary to activate the solenoid on the pilot valve or remove one pilot valve from one blast valve.

When performing maintenance, all energy sources associated with the filter must be locked and tagged out in compliance with 29 CFR 1910.147, local enforcement authorities, OSHA, and facility safety practices, before removing any protective cover, guard, grate or maintenance gate.

Daily Filter Inspection

Step 1
☐ Check and note pressure differential across the filter bags. It is recommended that filter bags be replaced when they can no longer be cleaned to 6.0” WC differential pressure.

Step 2
☐ Check the control panel to make sure the system is operating and the tank pressure is building up and discharging at each cleaning cycle.

Lubrication

Lubrication of the internal right angle gear reducer above the air tank should be changed every 2500 hours or every 6 months of operation or as required by the application. The external gearmotor contains a grease packed reducer that is considered maintenance free but the operator should consult the gearmotor documentation for 5 year service recommendations.

Recommended Lubricants:
Normal Operation (up to 150°F): *JAX Worm Gear Lube XC*

High Temp Operation (up to 300°F): *JAX Syngear Industrial Gear Oil, ISO 460*

Food Grade: *JAX Flow-Guard Synthetic Fluid, ISO 460*

Installing Filter bags

For correct and trouble free operation filter bags should be installed as shown in the following instructions.

The following hazards are present:

WARNING

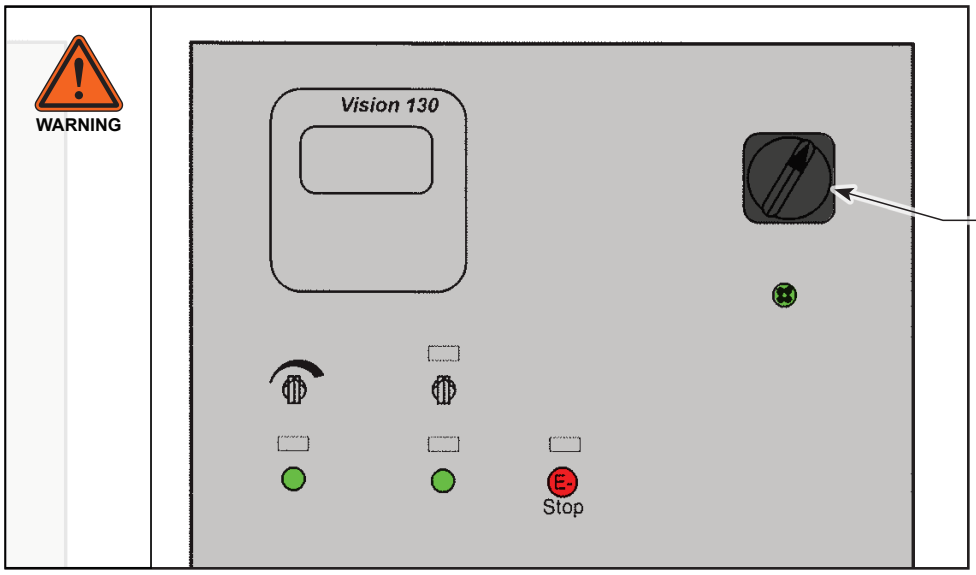
When performing maintenance, all energy sources associated with the filter must be locked and tagged out in compliance with 29 CFR 1910.147, local enforcement authorities, OSHA, and facility safety practices, before removing any protective cover, guard, grate or maintenance gate.

WARNING

Disconnect power before touching any component part.

WARNING

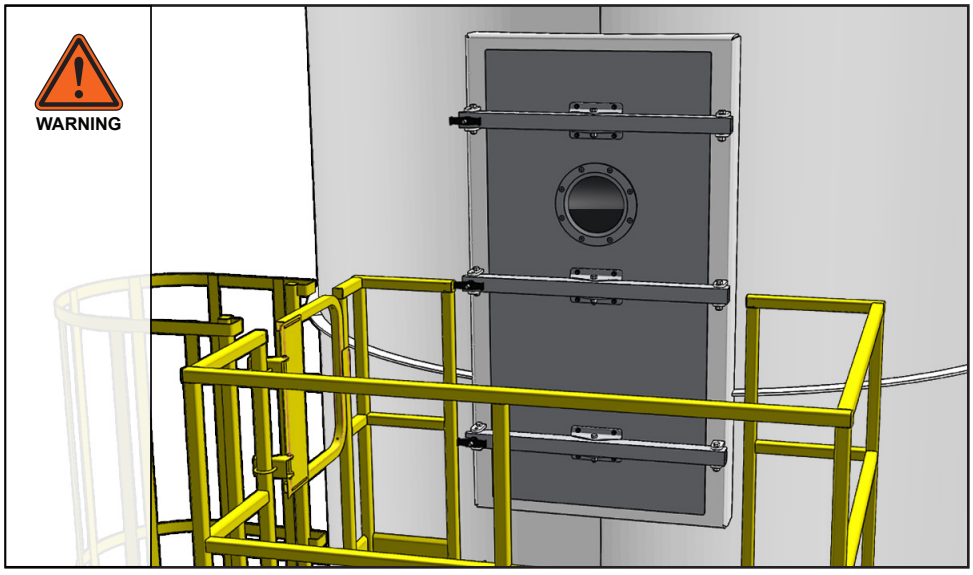
Depressurize the valve and bleed air from the air tank before making repairs. To do so, it is only necessary to activate the solenoid on the pilot valve or remove one pilot valve from one blast valve.



Step 1

☐ Disconnect Power at Panel

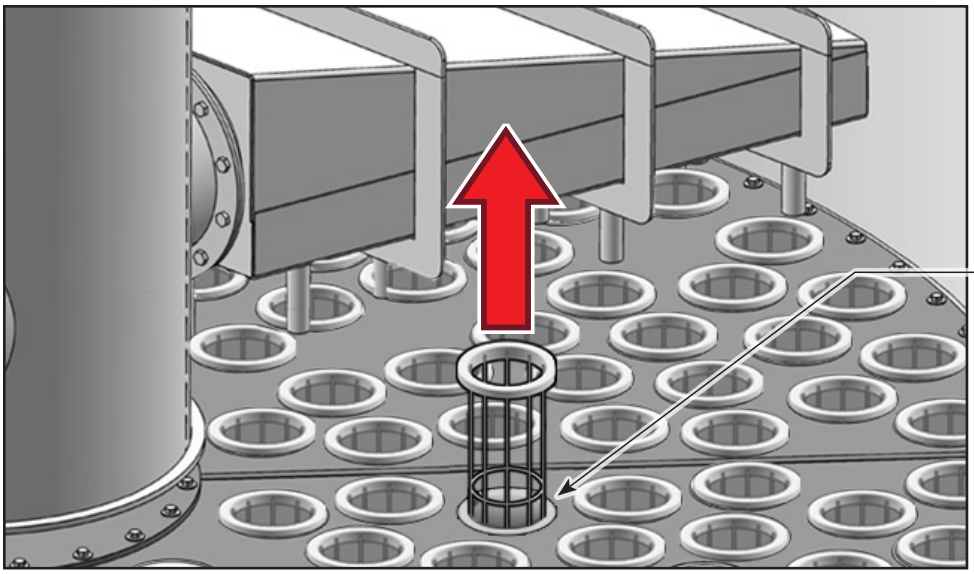
Disconnect power into control panel.



Step 2

☐ Ensure Clear and Free Platform

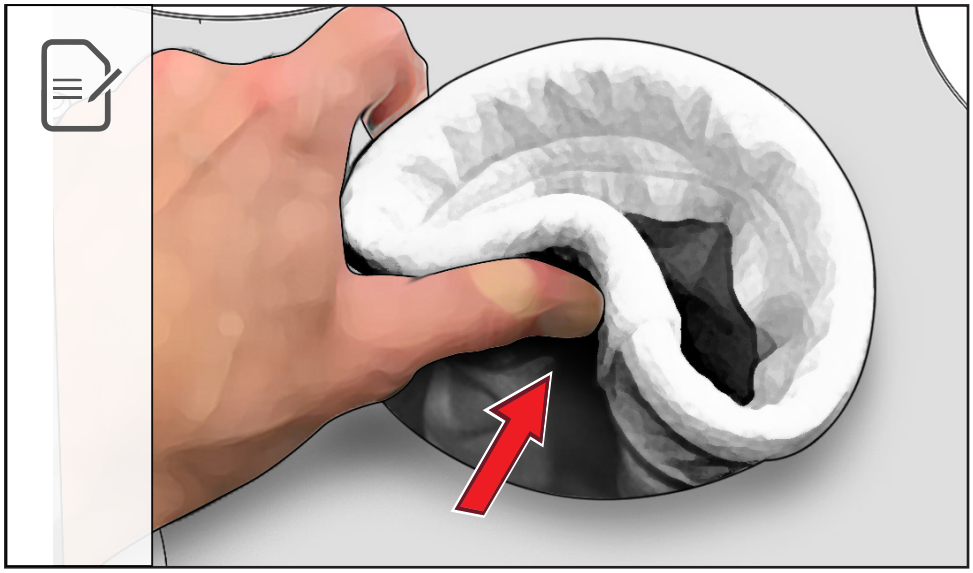
Before opening and entering the filter access door ensure platform is free and clear of tools or other items that could restrict opening of door or movement in and out of clean air chamber.



Step 3

☐ Remove Cage

Carefully pull each cage up revealing the filter bag ring and snap.

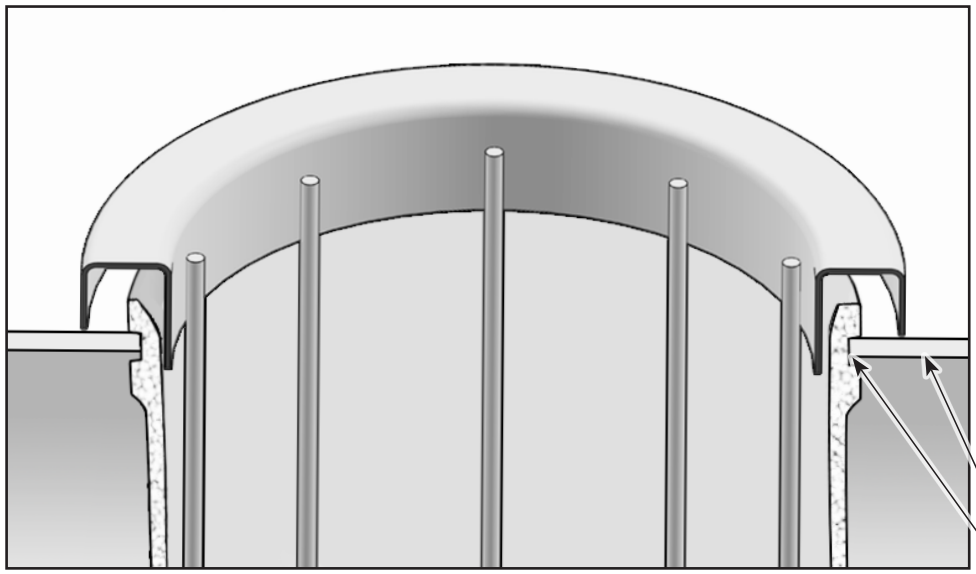


Step 4

☐ Remove Snap Band and Bag

Bend the snap band at the top of the bag to remove it from the tube sheet hole. The used filter bag can be dropped into the dirty air chamber. Retrieve all used filter bags after installation is complete.

Note:
Bag should snap out of place.

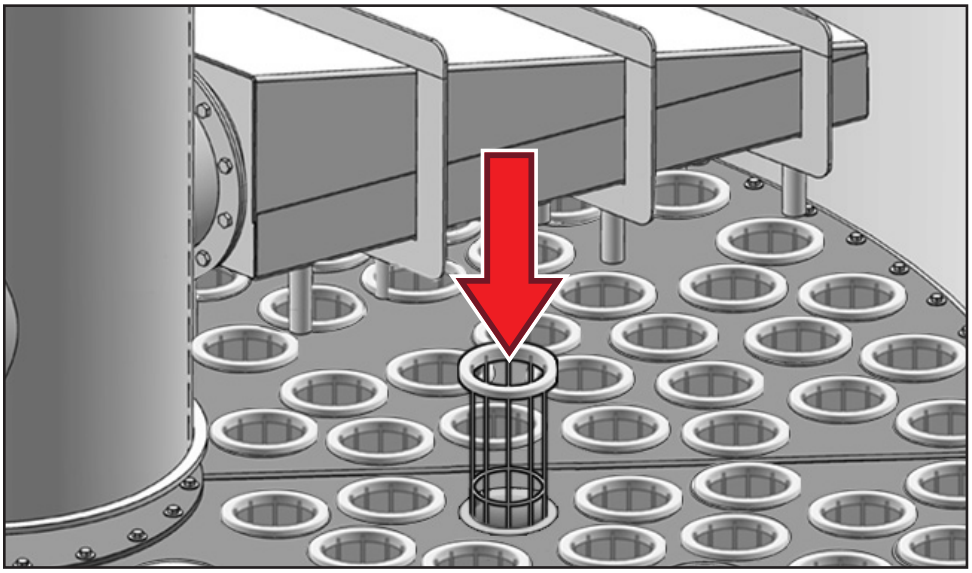


Step 5

☐ Install New Filter Bag

Place the new filter bag into the hole on the tube sheet. Ensure the groove of the snap band is lined up with the edge of the hole in the tube sheet and let the bag snap into place.

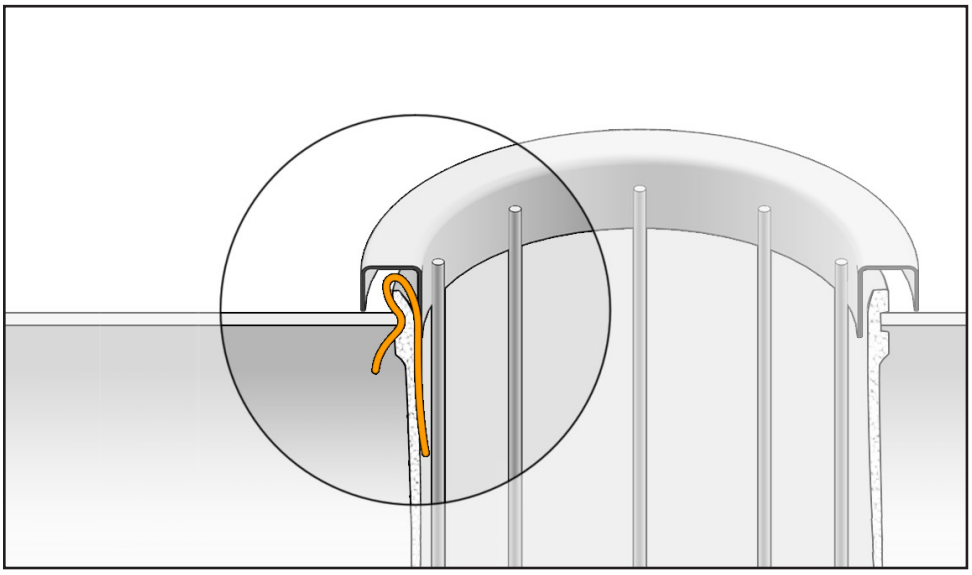
Check the fit of the snap band. It should fit securely all around without any gaps. The top ring of the band should be above the tube sheet.



Step 6

☐ Lower the Cage Into the Bag

Lower the cage into the bag. The flange of the cage will rest on the top ring of the filter bag.



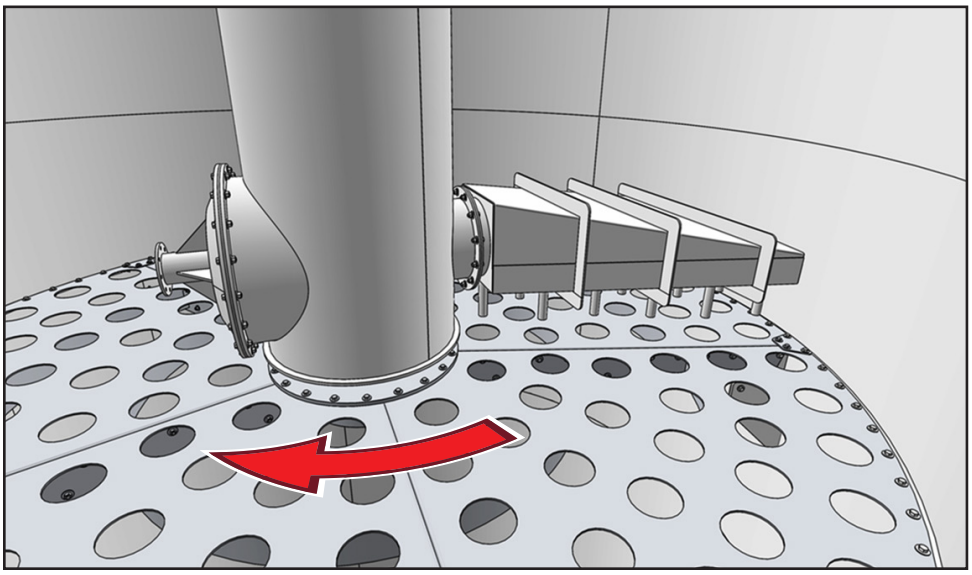
Step 7 (Optional)

☐ Install Grounding Straps

Grounding straps at the top of the bag are intended to ground the cage to the tube sheet. Install the bag in the tube sheet hole ensuring the ground strap is in good contact with the cage and tube sheet.

Ensure proper grounding by verifying the resistance between the cage and tube sheet does not exceed 10 ohms.

Refer to NFPA 77 Recommended Practice on Static Electricity for additional information.



Step 8

☐ Advance Arm

Manually move the manifold to gain access to all cages and bags.

Step 9

☐ Verify Rotation

Allow the cleaning system to run for approximately two minutes. Listen for any unusual sounds or any components hitting.

Ensure all tools and bags are removed from clean air chamber before startup.

11. Troubleshooting - Common Problems

The following hazards are present:

When performing maintenance, all energy sources associated with the filter must be locked and tagged out in compliance with 29 CFR 1910.147, local enforcement authorities, OSHA, and facility safety practices, before removing any protective cover, guard, grate or maintenance gate.

Disconnect power before touching any component part!

Testing and troubleshooting the circuit board with a grounded test instrument or applying any external voltage to pressure switch terminals will cause serious damage to circuit board components. Failure to comply will void any warranty.

A. Dust Discharge from Clean Air Chamber

Probable Cause/Suggested Remedies:
1. Check for holes in the filter media.
2. Check filter bag installation (see Installation).

B. Pressure Drop Starts to Increase

Probable Cause/Suggested Remedies:
1. After a long period of time, the dust may buildup to the point that the filter media needs to be removed for cleaning. (This condition may be corrected by running the cleaning cycle without the dusty air flowing through the filter media section.)
2. If the air volume has been increased to the filter, the air-to-cloth ratio or interstitial velocity may exceed the recommended values.
3. Bags may need to be replaced.

C. Inlet Air Volume Insufficient

Probable Cause/Suggested Remedies:
1. Check the fan direction of rotation.
2. Check the fan speed (drive belts may be slipping or sheaves may be reversed).
3. Check for high pressure differential (*see "B" - Pressure drop starts to increase*).

D. Product Does Not Discharge

Probable Cause/Suggested Remedies:
1. Check the direction of rotation of the airlock and screw conveyor (if furnished).
2. Check for plugged or partially plugged gravity spouting.
3. Check for bridging in the filter hopper.

E. Pressure Holds Constant in Air Tank - Blast Valve Fails to Fire

Probable Cause/Suggested Remedies:
1. Check that the cleaning system run switch is turned on. The system can be powered up but the cleaning system won't function until the run switch is on.
2. Check the the position indicator on the control panel to ensure the system senses the cleaning manifold is turning.
3. Check that the solenoid valve is operating correctly.

F. Cleaning Pressure Varies

Probable Cause/Suggested Remedies:
1. Check "off" time potentiometer.
2. Check blast duration setting.

G. Pressure in Air Tank will Not Build

Probable Cause/Suggested Remedies:
1. Check the blast valves for leaks.
2. Check to see if the blast valve is stuck open and bleeding air straight into the filter. (This is usually caused by the solenoid operated 2 way pilot valve being stuck open).
3. Check the air piping for leaks.
4. Check connections for leaks between the air tank and the blast valve.
5. Check supply air PD Blower operation.

H. Controller Troubleshooting

Probable Cause/Suggested Remedies:
1. Check input power.
2. Observe RED power light.

Some Things NOT TO DO

1. DO NOT mount controls in high vibration areas without shock mounts.
2. DO NOT mount controls in areas of high dust or corrosive atmospheres without a protective enclosure.
3. DO NOT use a converter or inverter for the power source.
4. DO NOT mount the control in a high transient voltage area without an isolation transformer.
5. DO NOT leave the control box door open.
6. DO NOT allow a local repair shop to repair the controller. For service info call Kice.

Replacement Parts

It is recommended that only Kice supplied replacement parts be used. These parts carry a standard Kice warranty.

12. Explosion Vents

Explosion Vents

Many fine dusts collected by filters are combustible. Most dusts can catch fire if three components are present: fuel, ignition source and oxygen. Dust is the fuel, a spark or flame may provide the ignition source, and air provides the oxygen. The deflagration index (Kst) and the maximum deflagration pressure (Pmax) of a particular dust will determine the violence of the fire and the amount of destructive force that has to be vented from the filter. This information, provided by the operator, will be used to calculate the number of explosion vents required for Kice Filters.

The National Fire Protection Association (NFPA) provided comprehensive guidelines and standards for dealing with explosive dusts and fires. The following publications provide valuable information on fire and explosion protection and can be helpful to insure your facility is properly equipped.

- NFPA 652 – Standard on the Fundamentals of Combustible Dust
- NFPA 61 - Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities
- NFPA 68 - Standard on Explosion Protection by Deflagration Venting
- NFPA 69 - Standard on Explosion Prevention Systems
- NFPA 77 - Recommended Practice on Static Electricity
- NFPA 654 - Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids
- NFPA 664 - Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities

This is not a comprehensive list of standards for all applications. These and other standards and guidelines from the NFPA that may be applicable for your facility can be ordered or viewed at *http://www.nfpa.org*.

Vent area may differ between explosion panel manufacturers. The required vent area should be verified when replacing panels. Contact Kice Industries for explosion vent replacement and information.

13. Torque Values

Recommended U.S. BOLT TORQUE* *Coarse thread only*							
		SAE Grade 5	SAE Grade 5	SAE Grade 8	SAE Grade 8	Socket head cap screw	Socket head cap screw
Bolt Dia.	Thread Size	lb – ft	N – m	lb – ft	N – m	lb – ft	N – m
1/4	20	8.4	11	12	16	11	15
5/16	18	17	24	25	33	23	31
3/8	16	31	42	44	59	41	55
7/16	14	49	67	70	95	65	59
1/2	13	74	100	110	140	100	140
9/16	12	100	140	150	210	140	200
5/8	11	140	190	210	290	200	270
3/4	10	240	330	380	510	350	480
7/8	9	390	520	610	820	570	770
1	8	570	780	910	1100	850	1200
1-1/8	7	790	1100	1300	1700		
1-1/4	7	1100	1500	1800	2500		
1-3/8	6	1500	2000	2400	3200		
1-1/2	6	1900	2600	3200	4300		
1-5/8	5.5	2400	3300	4300	5900		
1-3/4	5	3000	4100	5000	6800		
2	4.5	4500	6100	7500	10000		

*Values above are approximations; consult with the manufacturer for torque data.
Significant variation may exist within the same grade and size between manufacturers.

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