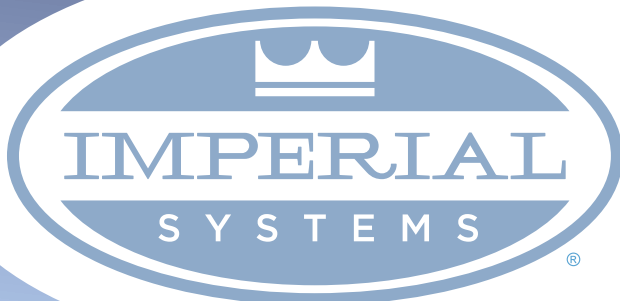


# CMAXXX

DUST & FUME COLLECTION SYSTEM

## Installation, Operation, And Maintenance Manual

version - B26



7320 West Market St. Mercer, PA 16137

800.918.3013 | [imperialsystemsinc.com](http://imperialsystemsinc.com)

## Table of Contents

<b>1. Introduction &amp; Warranty</b>	<b>4</b>	<b>5. Startup</b>	<b>20</b>
1.1. Introduction	4	<b>6. Maintenance</b>	<b>21</b>
1.2. Serial Number	4	6.1. Routine Maintenance	22
1.3. Warranty	5	6.2. Routine Electrical Maintenance	22
1.4. IDA In-Line Deflagration Arrestor	6	6.3. Filter Handling and Replacement	23
1.5. Fire Protection and Safety Guidelines	6	6.4. Safety Valve Maintenance	24
<b>2. Safety</b>	<b>7</b>	6.5. Spare Parts	25
2.1. Safety Alert Symbol and Signal Words	7	6.6. Replacement Filters	27
2.2. Operational Hazards	7	<b>7. Troubleshooting Guide</b>	<b>28</b>
2.3. Maintenance Hazards	8	<b>8. Appendices</b>	<b>31</b>
2.4. Hazards from Modifying Equipment	8	<b>A. Appendix A - Wiring Diagrams</b>	<b>31</b>
2.5. Pressurized Air Hazards	8	A.1. Fan Wiring Diagram	31
2.6. Safety Sign Locations	9	A.1. Solenoid Wiring Diagram	32
<b>3. Equipment</b>	<b>10</b>	A.1. Fan Wiring Diagram	33
3.1. Component Field Connections	12	<b>B. Appendix B - Do's and Don't of Duct Design</b>	<b>34</b>
3.2. Accessory Field Connections	12	<b>C. Appendix C - Accessories</b>	<b>35</b>
<b>4. Assembly &amp; Installation</b>	<b>14</b>		
4.1. Installation Preparations	14		
4.2. Assembly	14		
4.3. Duct Installation	16		
4.4. Compressed Air Installation	16		
4.5. Differential Pressure Kit Installation	16		
4.6. Electrical	16		

## 1. Introduction & Warranty

### 1.1. Introduction

Congratulations on your purchase of an Imperial Systems, Inc. product. This product has been designed and manufactured to the strictest specifications. It is our utmost desire that you achieve success and are rewarded with years of service from your equipment purchase.

Carefully examine your equipment upon receipt. Report any damage immediately to the freight carrier and register any claim. Should any material or manufacturing defects be discovered, report your findings to our service department along with the model, serial number, and date of purchase. We want to make sure that you are satisfied with the equipment. As always, we welcome input on how our products can be improved to serve you better.

Read and understand this manual before using your equipment. Follow all safety instructions. Keep this manual in an accessible place at all times.

Information provided in this manual is current as of the issue date. Imperial Systems, Inc. reserves the right to make design changes without further notice or liability.

Equipment modifications from original design and specifications are prohibited. Modifications may compromise safe operation of the machine, subjecting users to serious injury or death, and may void any remaining warranty.

This Operator's Manual does not replace, nor does its use release the owner from observing all safety codes and operating limitations, as well as any applicable federal, state, provincial, or local regulations.

### 1.2. Serial Number

The serial number plate is located in the lower left corner of the door below the CMAXX sticker.

For future reference, write your serial number in the space here:

BUILT WITH PRIDE IN MERCER, PA, USA		
<b>CMAXX</b>		
MODEL	JOB NO.	SERIAL NO.
<input type="text"/>	<input type="text"/>	<input type="text"/>
DATE OF ORDER	CUSTOMER	FILTERS
<input type="text"/>	<input type="text"/>	<input type="text"/>
A.T.C. RATIO	KST VALUE	DUST TYPE
<input type="text"/>	<input type="text"/>	<input type="text"/>
ONLY DELTA MAXX FILTERS NON-FACTORY FILTERS VOIDS WARRANTY		
imperialsystemsinc.com 800.918.3013		

**Model** – Model of dust collector that you have. The number in the model name represents the quantity of filters in the unit.

**Job Number** – Sales order number that the unit was sold under.

**Serial Number** – Serial number of the unit.

**Date of Order** – Date that the job was entered.

**Customer** – Customer that unit was sold to.

**Filters** - Part number for filters that were ordered with the unit.

**A.T.C. Ratio** – Air to cloth ratio that the unit was designed to operate at.

**KST Value** - KST Value is the explosive value of the dust being collected. The higher the value the more explosive the dust is.

**Dust Type** – Description of dust that collector was designed to filter.

# INDUSTRY LEADING

# Lifetime WARRANTY

Imperial Systems, Inc. warrants to the original purchaser that the major structural components of the CMAXX™ dust collector will be free from defects in materials and workmanship for the lifetime of the equipment, if properly installed, maintained and operated under normal conditions. Imperial Systems, Inc. Warrants filter cartridges to be free from defects in materials and workmanship for twelve (12) months from date of shipment.

Imperial Systems, Inc. does not warrant damages which are due to corrosion, abrasion, normal wear and tear, product modification or product misapplication. Imperial Systems, Inc. also makes no warranty whatsoever as to any goods manufactured or supplied by others, including, but not limited to, electric motors and control components. After Imperial Systems, Inc. has been given adequate opportunity to remedy any defects in material or workmanship, Imperial Systems, Inc. Retains the sole option to accept return of the goods, with freight paid by the purchaser, and to refund the purchase price for the goods on a prorated basis after confirming the goods are returned

undamaged and in usable condition. Such a refund will be the full extent of Imperial Systems, Inc. liability.

Imperial Systems, Inc. Shall not be liable for any other costs, expenses or damages, whether direct, indirect, special incidental, consequential or otherwise. The terms of this warranty may be modified only by a special warranty document

signed by the President of Imperial Systems, Inc. There exist no other representations, warranties or guarantees except as stated in this paragraph. All other warranties, including merchant-ability and fitness for a particular purpose, whether express or implied, are hereby expressly excluded and disclaimed.

**BREATHE BETTER, WORK SAFER  
FOR LIFE**

**FAILURE TO USE GENUINE IMPERIAL SYSTEMS, INC. REPLACEMENT PARTS & FILTERS WILL VOID THIS WARRANTY.**

### 1.4. IDA In-Line Deflagration Arrestor Certification

The IDA certification is optional. Contact Imperial Systems to verify if your CMAXX is equipped with the IDA certification. The CMAXX using the Proprietary DeltaMAXX IDA Filters is proven to completely isolate flame transmission and stop combustion from passing through the filters. With IDA you can safely return air back into the workplace.

This flame and deflagration isolation meets at least one of the required methods required by NFPA. Third party test results are available upon request.

To maintain IDA certification on collector, you must:

- Provide a dust sample for KST testing or provide a copy of a completed KST test.
- Dust cannot exceed a rating of 200 KST.
- Use Certified DeltaMAXX IDA Filters.
- Differential pressure cannot exceed 5 Inches of Water Column.
- Install a broken bag detector in return air duct.
- Install a burst indicator on pressure relief panel.
- Ground the dust collector.



**WARNING**

Prevent serious injury or death.  
Not following above requirements will void IDA rating and could result in property damage, death, or serious injury.

In the event of a deflagration the following must be performed before the unit is returned to service.

- Inspect unit for any deformation, or stress cracks.
- Inspect tube sheet to verify there is no deforming, and filters will seal against it properly.
- Inspect door hardware for proper function, verify there is no deformation or stress cracks in latch mechanism.
- Inspect lift rails for proper function.
- Replace filters with Certified DeltaMAXX IDA Filters. Filters can only be purchased from Imperial Systems.
- Replace pressure relief panel and burst indicator.
- Replace door gasket.
- Replace explosion vent braces.

Imperial Systems does offer an inspection service to verify your collector is operational. Please contact your sales representative for current pricing.

### 1.5. Fire Protection and Safety Equipment

The customer assumes the responsibility to contact their insurance company and or AHJ (Authority having Jurisdiction) to see what is required to meet the needs of fire protection, explosion ventilation, deflagration, isolation and any other related equipment. It is the customer's responsibilities to relay this information to Imperial Systems so that we can properly select and size the necessary equipment to meet their requirements.

The customer should adhere to any and all NFPA, OSHA, federal, state, codes, rules, and regulations.



**WARNING**

Filter are only bonded and grounded when using DeltaMAXX Prime Filters that are pushed back and properly touching the grounding tab and only if the collector is properly grounded.

## 2. Safety

### 2.1. Safety Alert Symbol and Signal Words

You must read, understand and follow the instructions given by the operating unit manufacturers, as well as the instructions in this manual. The safety information in this manual is denoted by the safety alert symbol:



This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

The level of risk is indicated by the following signal words:



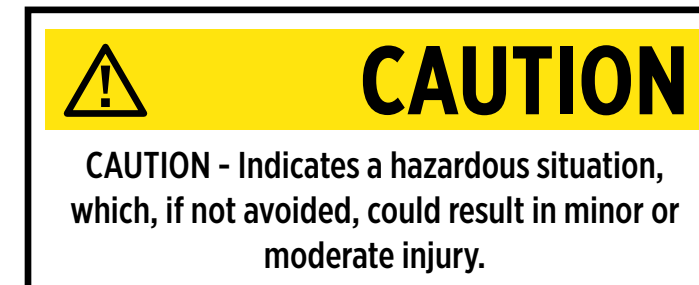
**DANGER**

DANGER - Indicates a hazardous situation, which, if not avoided, WILL result in death or serious injury.



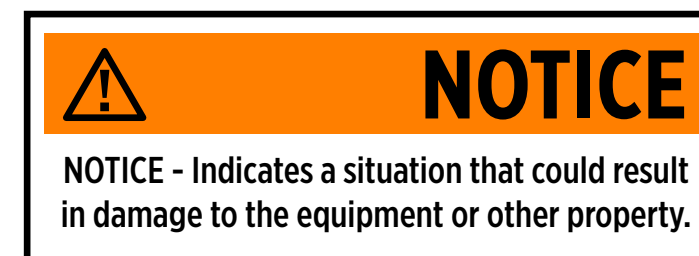
**WARNING**

WARNING - Indicates a hazardous situation, which, if not avoided, could result in death or serious injury.



**CAUTION**

CAUTION - Indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury.



**NOTICE**

NOTICE - Indicates a situation that could result in damage to the equipment or other property.

### 2.2. Operational Hazards



**WARNING**

Prevent serious injury or death.  
Read and understand this manual before operating equipment.



**WARNING**

Prevent serious injury or death from moving parts.  
Moving parts can crush and dismember.  
Do not operate without guards and shields in place.  
Disconnect and lockout power source before adjusting or servicing.

Carefully read all safety messages in this manual and on equipment safety signs. Keep safety signs in good condition and replace missing or damaged safety signs.

New equipment components and repair parts must include the current safety decal.

Learn how to properly operate equipment. NEVER operate or work around this equipment without proper instruction, while fatigued, or under the influence of alcohol, prescription or non-prescription medication or if feeling ill.

Keep your equipment in proper working condition.

Know the regulations and laws that apply to you and your industry. This manual is not to replace any regulations or laws. Additional information may be found at:

[www.nfpa.org](http://www.nfpa.org) or [www.osha.gov](http://www.osha.gov).

If you do not understand any parts of this manual, contact Imperial Systems, Inc. At 724-662-2801.

### 2.2.1. Prepare for Emergencies

Be prepared in case of emergencies. Keep a fire extinguisher appropriate for your dust type and a first aid kit next to the dust collector. Keep emergency phone numbers close to your phone. Know your address so emergency services can locate you if an emergency arises.

### 2.2.2. Replace Safety Signs

Replace missing or damaged safety signs. Safety sign locations are identified in Section 2.6 of this manual. Replacement safety signs are available from Imperial Systems, Inc.

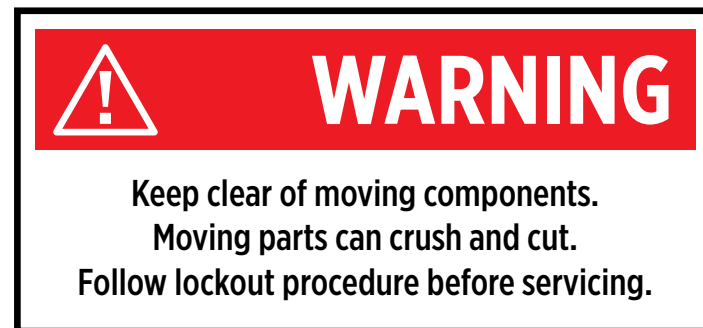
### 2.3. Maintenance Hazards

Before servicing, disconnect and lockout power source. Read and understand this manual. If you do not understand any part of the manual, contact Imperial Systems, Inc.

Always wear face and/or eye protection, safety shoes, and other protective equipment appropriate for the job.

Do not make unauthorized modifications. Contact Imperial Systems, Inc. at 724-662-2801 before you weld, cut/drill holes, or make any other modifications.

Always use Imperial Systems, Inc. replacement parts.

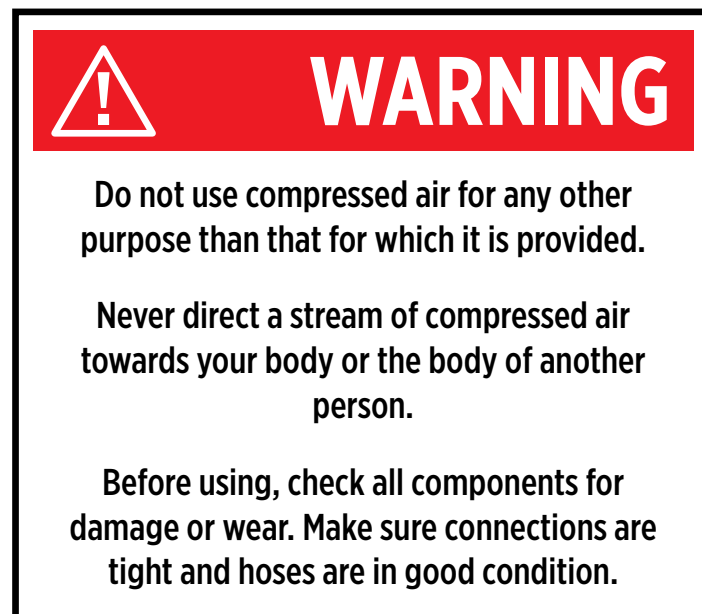


### 2.4. Hazards from Modifying Equipment

Do not make any alterations to your equipment. Altering may cause your equipment to be unsafe and may void the manufacturers' warranty.

### 2.5. Pressurized Air Hazards

Compressed air can cause serious injury or death.



### 2.6. Safety Sign Locations



### 3. Equipment

Your CMAXX Dust & Fume Collection System includes a CMAXX filtration unit, a support structure for the filtration unit, accessories, and an integrated control panel (ICP). The CMAXX filtration unit and the support structure must be assembled before use. The figures on this and the following page show all the parts of the fully assembled CMAXX.

- A. Silencer
- B. Fan
- C. Solenoid Enclosure
- D. Pressure Relief Valve
- E. Pressure Gauge
- F. Diaphragm Valve
- G. Compressed Air Fitting
- H. Differential Low Pressure Port
- I. Differential High Pressure Port
- J. Filter Removal Tool
- K. Door Handle
- L. Hopper
- M. Manual Slide Gate
- N. Flex Hose or Rhino Drum System
- O. Collection Drum Kit
- P. Header Tank
- Q. Serial Tag
- R. Dirty Air Inlet



- S. Lifting Lug
- T. Clean Air Plenum
- U. Dirty Air Plenum
- V. Access Door
- W. Filter Pulse Pipe
- X. Tube Sheet
- Y. Filter Gasket
- Z. Filter Pan
- AA. Pleated Filter Material
- BB. Filter Lift Rail Handle
- CC. Filter Lift Rail Door Stop



### 3.1. Component Field Connections

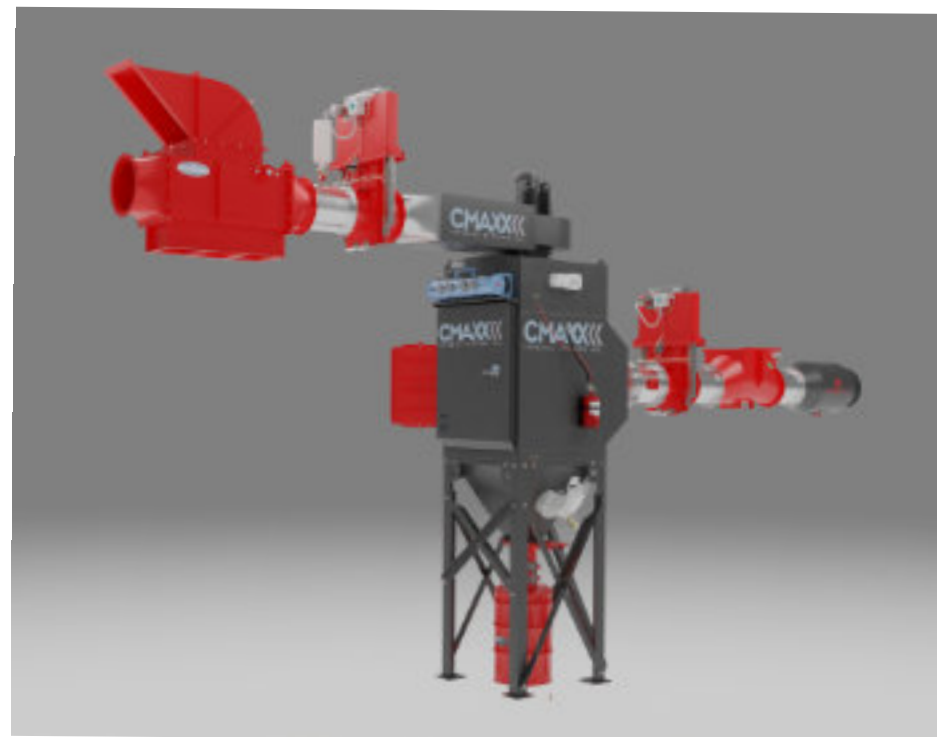
Connections between the CMAXX's components and external equipment must be made before use. These are summarized in the CMAXX Component Field Connections table. Ductwork designed for negative pressure and material handling must be connected to the filtered space. Compressed air must be brought to the CMAXX air tanks for the pulsed filter cleaning system. Connections are also needed between the ICP and the filtration unit, and between the ICP and some accessories.

#### CMAXX Component Field Connections

CMAXX Component	Customer-Provided Field Connection
Fan	<ul style="list-style-type: none"> <li>Ductwork from filtered space to CMAXX silencer/plenum (may be part of Imperial Systems installation contract)</li> <li>480 V<sub>AC</sub> from ICP to CMAXX fan</li> </ul>
Cleaning solenoids	<ul style="list-style-type: none"> <li>Compressed air from building to CMAXX inlet</li> <li>Multiple 24 V<sub>DC</sub> control signals from ICP to CMAXX solenoid manifold (one for each solenoid)</li> </ul>
Solenoid heater (optional)	24 V <sub>DC</sub> from ICP or building to CMAXX solenoid manifold
Differential pressure sensor	Tubing from ICP to CMAXX high and low differential (DP) ports

### 3.2 Accessory Field Connections

As shown in the figure below, your CMAXX system may include many accessories. The Accessory Field Connections table lists the accessories that may be included in your CMAXX system, and the connections which must be made to them. These connections are described in more detail in Section 5. Many of these accessories are required or recommended for combustible dust. Please refer to the CMAXX brochure at [www.isystemsweb.com/pld-7320](http://www.isystemsweb.com/pld-7320) for more information on the purpose of these accessories. Please refer to Appendix C for accessory models and information.



#### Accessory Field Connections

Accessory	Requirement	Customer-Provided Field Connection	Model
Spark Trap	OPT	None	Imperial Spark Trap
Explosion Isolation Valve (EIV)	REQ/C	<ul style="list-style-type: none"> <li>24 V<sub>DC</sub> from ICP to EIV CP</li> <li>2x sensor connections from EIV CP to EIV</li> <li>Alarm signal from EIV CP to ICP</li> </ul>	Vigilex Vigiflap
Slide gate	OPT	<ul style="list-style-type: none"> <li>24 V<sub>DC</sub> from ICP</li> <li>Alarm contact to ICP</li> </ul>	
Fike Fire Suppression (FS)	OPT	<ul style="list-style-type: none"> <li>120 V<sub>DC</sub> from FS CP from ICP or building wiring</li> <li>Alarm contact from FS CP to ICP</li> </ul>	Fike CO <sub>2</sub> Suppression System
Fire Extinguisher	REC/C	<ul style="list-style-type: none"> <li>Alarm contact to ICP</li> </ul>	Firetrace Indirect
Smoke Detector	REC/C	<ul style="list-style-type: none"> <li>24 V<sub>DC</sub> from ICP</li> <li>Alarm contact to ICP</li> </ul>	Air Product & Controls RT-3000
Chemical explosion isolation (CEI)	OPT	<ul style="list-style-type: none"> <li>24 V<sub>DC</sub> from main CP to CEI CP</li> <li>Alarm contact from CEI CP to ICP</li> </ul>	
Explosion vent	REQ/Q	<ul style="list-style-type: none"> <li>24 V<sub>DC</sub> from ICP</li> </ul>	Fike Explosion Vent
Heavy duty abort gate	REC/C	<ul style="list-style-type: none"> <li>120 V<sub>AC</sub> to FS CP from ICP or building wiring</li> <li>Status contacts to ICP</li> </ul>	Imperial Abort Gate
Explosion tested drum kit	REC/C	<ul style="list-style-type: none"> <li>None</li> </ul>	Imperial Rhino Drum
Rotary Air Lock	OPT	<ul style="list-style-type: none"> <li>480 V<sub>AC</sub> to motor</li> <li>Status contacts to ICP</li> </ul>	
Drum level sensors	OPT	<ul style="list-style-type: none"> <li>Ultrasonic sensor wiring to drums</li> <li>Alarm contact to ICP</li> </ul>	
Broken filter sensor	OPT	<ul style="list-style-type: none"> <li>24 V<sub>DC</sub> from ICP</li> <li>Alarm contact to ICP</li> </ul>	Bindicator Flo-Guard Detector

STD: Standard Feature

OPT: Optional Feature

REQ/C: Required per NFPA for use with combustible dust (KST>0)

REC/C: Recommended for use with combustible dust (KST>0)

## 4. Assembly & Installation

### 4.1. Installation Preparations

#### 4.1.1. Recommended Tools & Equipment

- Screw Pin Clevis
- Drift Pins
- Wrenches
- Lifting Slings and Chains
- Pipe Wrenches
- Socket Wrenches
- Impact Wrench
- Crane or Forklift
- Drill and Drill Bits
- Large Crescent Wrench
- Pipe Sealant
- Screwdrivers
- Spreader Bar
- Impact Sockets

#### 4.1.2. Rigging Instructions

Do not make any alterations to your equipment. Altering may cause your equipment to be unsafe and may void the manufacturers' warranty.

1. Use all lifting points provided on the unit.
2. Use screw pin clevises, not hooks on lifting slings.
3. Use spreader bars to prevent damage to the unit's frame.
4. Refer to certified drawings for the weight and dimensions of the unit, subassemblies, and accessories to ensure adequate crane capacity.
5. Only qualified personnel should be allowed to lift or rig the equipment.
6. Refer to applicable OSHA regulations and local codes when using cranes, forklifts, and other lifting equipment.
7. Lift the unit and accessories separately and assemble after the unit is in place.
8. Use drift pins to align holes during assembly.

### 4.2. Assembly

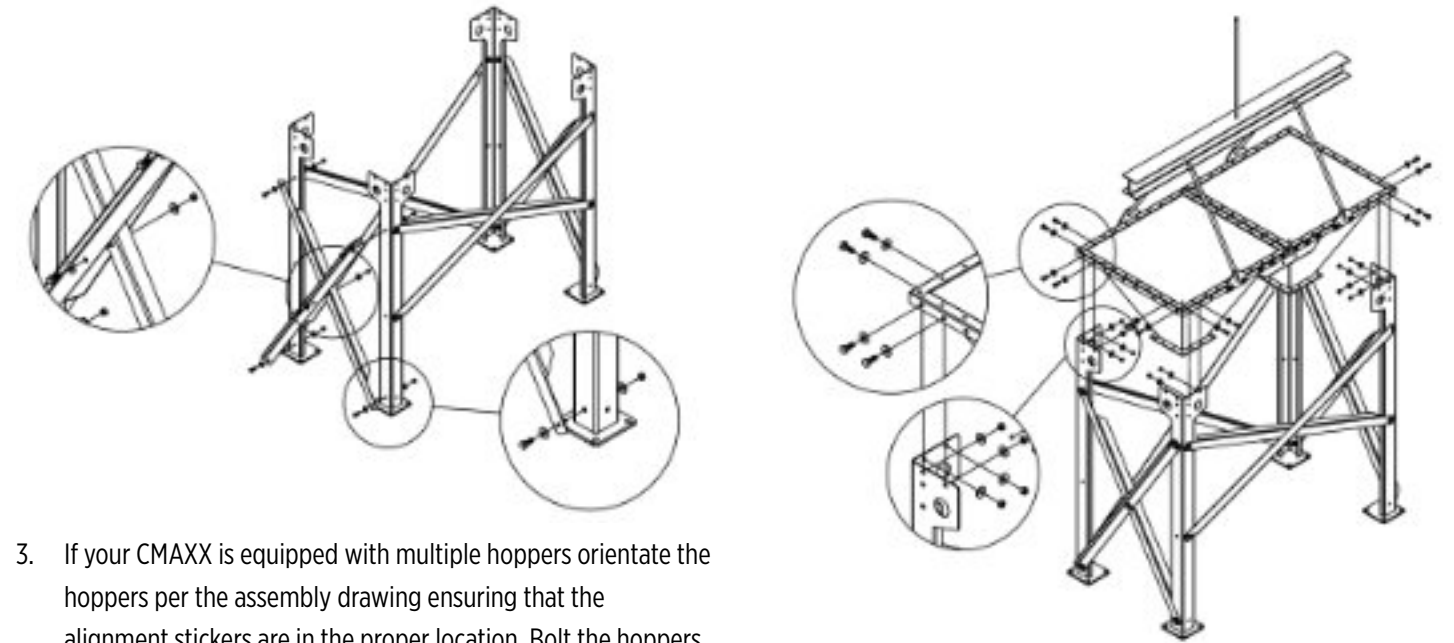


Scan the QR code or visit [www.isystemsweb.com/cmaxx-install-video](http://www.isystemsweb.com/cmaxx-install-video) to view the full assembly process.

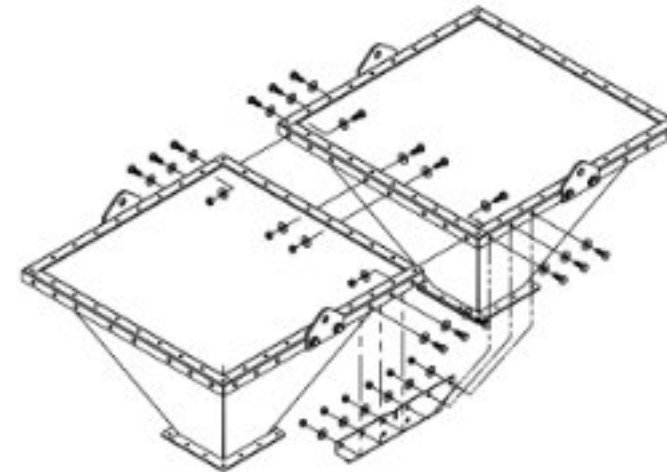


Fully assembled CMAXX with connections for fan power (1), ductwork to filtered space (2), filter cleaning compressed air piping (3), cleaning solenoid control wiring (4), and filter pressure sensor tubing (5).

1. Level a concrete pad for the collector to sit on. We recommend the pad to be at least 3' larger in all directions than the actual footprint of the machine. You will also need to take any ladders and duct supports into consideration when planning your concrete.
2. Locate and assemble the support structure according to the assembly drawing that came with your CMAXX. Leave all of the hardware loose at this time.

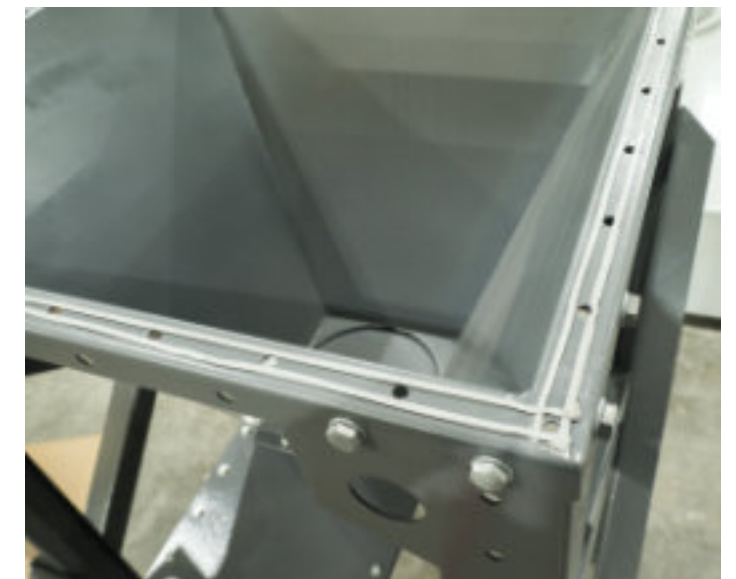


3. If your CMAXX is equipped with multiple hoppers orientate the hoppers per the assembly drawing ensuring that the alignment stickers are in the proper location. Bolt the hoppers together using supplied hardware, and gusset brackets.

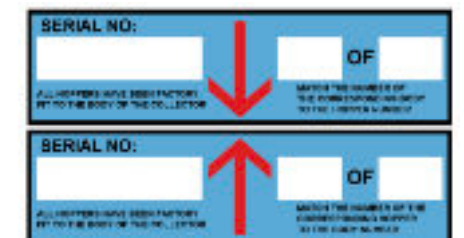


4. Bolt on the temporary lifting lugs to the hoppers to assist in lifting the hoppers onto the structure. Lift hoppers onto support structure and fasten to the structure using the supplied hardware. Use alignment pins as necessary to align holes. Leave all hardware loose at this time.

5. Remove the temporary lifting lugs from the hoppers, and apply two rows of sealant on the hopper flange surface.



6. Properly rig the body of the CMAXX and lift into place over the hoppers using alignment pin bars to align the hopper flange holes to the holes in the base of the CMAXX body. The arrows on the alignment stickers should be aligned to each other.



- Once all of the hardware is installed in the base flange of the CMAXX and properly tightened, proceed with tightening all of the support structure hardware.
- Securely anchor the CMAXX structure to the foundation using the holes in the foot pads.



#### 4.3. Duct Installation

All ducting should be galvanized steel and SMACNA class 1 (or better depending on the particulate in your application). Standard HVAC ducting will not be able to handle the negative pressure and will fail. Ducting should be fully run from the process collection points to the collector.

All ducting must be properly installed per manufacturer's specifications and fully sealed to prevent water leaks.

See Appendix B for Do's and Don'ts of Duct Design for requirements of how to interface ducting with the CMAXX.

#### 4.4. Compressed Air Installation

- Install a customer supplied regulator with gauge, filter, and automatic condensate valve in the compressed air supply line.
  - This system should be sized to deliver sufficient airflow to allow the cleaning system to recover to full pressure in between pulses.
  - The recommended airflow is 33 CFM. If the system cannot supply this, the pulse timing can be reduced at system startup. See section 5.

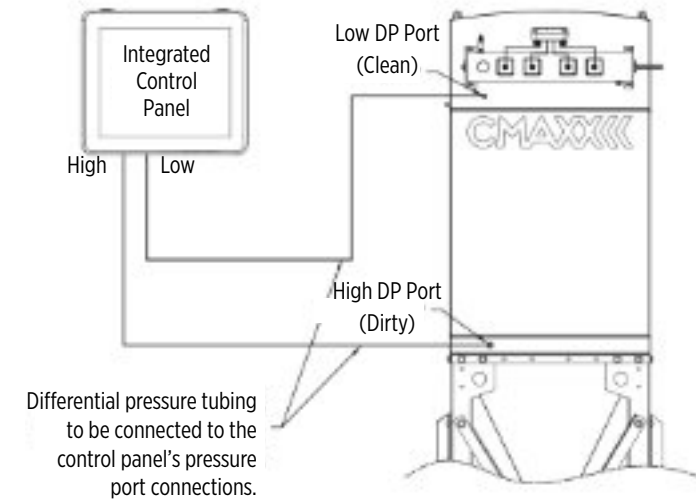
- The compressed air supply must be oil and moisture free. Contamination in compressed air used to clean filters will result in poor cleaning, reduced filter life, cleaning valve failure, and poor collector performance.
- Remove the pipe plug from the end of the air header tank and connect the compressed air supply line.
    - The supply line diameter must be at least 1 inch.
    - Use pipe sealant or thread sealing tape on all compressed air connections.
  - Turn off compressed air supply and bleed lines before performing service or maintenance work.

#### 4.5. Differential Pressure Kit Installation

There are high and low differential pressure (DP) ports on the CMAXX that need to be connected to the pressure ports on the integrated control panel via 1/4" OD tubing.

The low DP port is located in the clean air side of the dust collector near the air header tank, and the high DP port is located in the base frame of the CMAXX. See the following figure.

- Thread a push connect fitting into both 1/8" NPT DP ports on the CMAXX (there are both straight and 90 degree fittings supplied so that you can use the fitting that will work best in your application).
- Thread the push connect fittings into the 1/8" NPT pressure ports on the bottom of the control panel (typically, the straight fittings work best on the control panel).
- The differential pressure kit comes with a 100' roll of silver tubing. This tubing will be used to connect the high DP port on the CMAXX to the high pressure port on the control panel, and the low DP port on the CMAXX to the low pressure port on the control panel.
- To connect the tubing into the push connect fitting, cut the end of the tubing square and firmly push the tubing into the fitting until it fully clicks into place.
- When running the tubing between the CMAXX and control panel, do not kink the tube or clamp so tight that it crushes it. If your installation requires the control panel to be located further away from the CMAXX, then 50' of additional differential pressure tubing can be purchased from your Imperial Systems representative.



## WARNING

All wiring must be performed by a qualified electrician.

It is the customer's responsibility to ensure that this installation follows all national and local codes.

## NOTICE

All electrical wiring and connections, including electrical grounding, should be made in accordance with the National Electric Code and NFPA standards. A grounding lug is provided on the lower side of the unit for this purpose.

The maximum wire gauge is 1/10.



#### 4.6. Electrical

##### 4.6.1. Power Requirements

You will need to supply power to the integrated control panel (ICP) through a 480 V<sub>AC</sub> disconnect. The current rating of the disconnect should match that of the input circuit breaker in the ICP. The Input Circuit Breaker Size table gives nominal breaker ratings based on the fan motor size and may be helpful for your planning. Please contact Imperial Systems if you need help sizing your fan motor. The current rating for your CMAXX ICP should be verified with Imperial Systems prior to installation of the disconnect.

#### Input Circuit Breaker Size

Fan motor size (HP)	Breaker rating ( A )
5	15
7.5	20
10	30
15	40
20	60
25	70
30	80
40	100
50	100
60	110
75	150
100	200
125	225
150	250

#### 4.6.2. CMAXX Component Field Wiring

The figures below show the ICP and its electrical connections. The ICP includes terminals for connecting the ICP's starter/drive to the CMAXX fan (refer to item #1 in the figure). You will need to provide safe wire routing for a 3-phase 480 V<sub>AC</sub> connection through the wall of the ICP and to the fan located at the top of the CMAXX unit. See the Fan Wiring Diagram in Appendix A for wiring details.

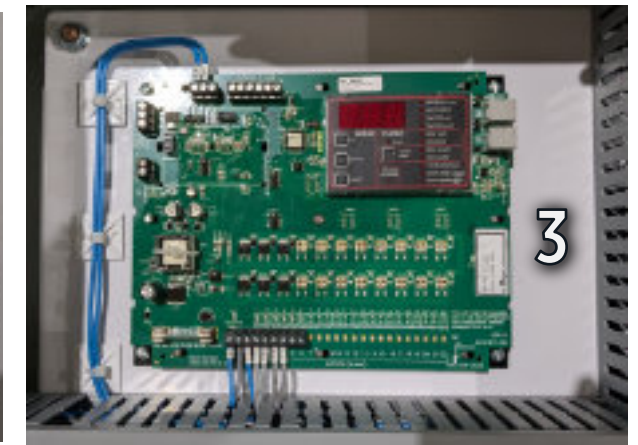
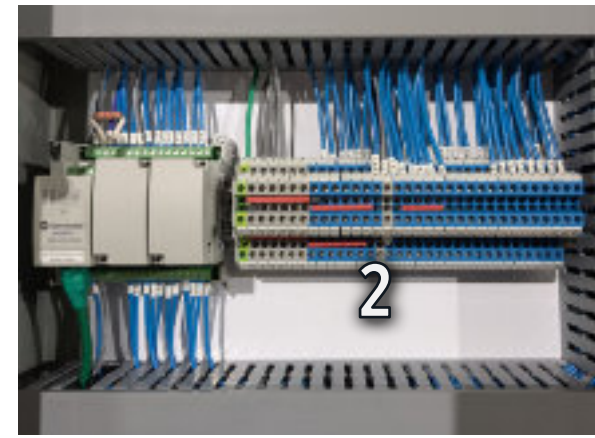
The ICP includes terminal blocks (#2) for connecting the ICP's timer control board outputs to the CMAXX cleaning solenoids. Each solenoid must be connected to a separate output terminal from the terminals connected to the timer control board (#3). You will need to provide safe wire routing for a multi-conductor 24 V<sub>DC</sub> connection through the wall of the ICP and to the solenoid manifold located on the upper face of the CMAXX unit (#4). See the CMAXX External Wiring Connections table for suggested wire type and size. See the Solenoid Wiring Diagram in Appendix A for wiring details.

The ICP may include terminals for the optional solenoid heater/thermostat. If included, you will need to provide safe wire routing for a 24 V<sub>DC</sub> connection through the wall of the ICP and to the solenoid heater located on the upper face of the

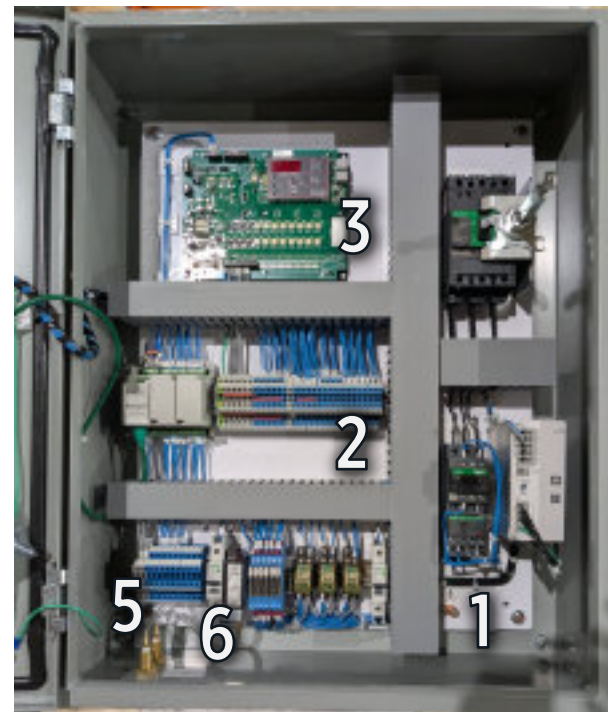
CMAXX unit. See the Solenoid Heater Wiring Diagram in Appendix A for wiring details, and the CMAXX External Wiring connections table below for suggested wire type and size. The ICP includes terminals for remote control/interlock and status monitoring of the CMAXX (#5). You can optionally field wire these for 24 V<sub>DC</sub> signals.

#### 4.6.3. CMAXX Accessory Field Wiring

The ICP includes terminals for field wiring to external accessories (see Section 3.2)(#6). For each accessory, you will need to provide safe wire routing for the necessary connection through the wall of the ICP. See the CMAXX External Wiring Connections table for suggested wire type and size. See Appendix C for more information accessory wiring.



Cleaning solenoid wiring. Terminal blocks (2) are provided in the ICP to allow the customer to connect the timer control board (3) to the CMAXX cleaning solenoids (4) via safe field wiring.



CMAXX integrated control panel (ICP) example. The ICP contains a 480 V<sub>AC</sub> input circuit breaker, 480 V<sub>AC</sub> terminals for the CMAXX fan (1), terminals for the cleaning solenoid control wiring (2) from the timer control board (3), terminals for remote interlock monitoring (5) and accessory wiring (6) and tubing inlets for the filter differential pressure sensors.

#### CMAXX External Wiring Connections

Connection	Voltage	Current	Suggested Wire Type (Up to 100')
CMAXX main fan	480 V <sub>AC</sub>	Per fan HP	Size to match HP rating
Cleaning solenoids	24 V <sub>DC</sub>	0.8 A per solenoid	16 AWG solid core for each solenoid
Solenoid heater	24 V <sub>DC</sub>	4 A	12 AWG
EIV CP power supply	24 V <sub>DC</sub>	6.25 A	12 AWG
Dry contacts for alarms and status (common to all accessories)	24 V <sub>DC</sub>	<0.1 A	18 AWG
Fike fire suppression CP	120 V <sub>AC</sub>	2.6 A	16 AWG
Smoke detector	24 V <sub>DC</sub>	0.3 A	18 AWG
Abort gate	120 V <sub>AC</sub>	7 A	14 AWG
Explosion vent breakwire	24 V <sub>DC</sub>	<0.1 A	18 AWG two conductors
Explosion rated drum kit	Ground	Per input CB	Size to match CB rating
Airlock	480 V <sub>AC</sub>	2 A	14 AWG
Broken filter sensor	24 V <sub>DC</sub>	0.25 A	18 AWG

## 5. Startup

Imperial Systems, Inc. offers a system startup service. Please contact your sales representative for current pricing on this service. The startup requirements are:

1. Check all hardware to make sure it is tight, and all duct connections are sealed properly.
2. Check that filters are installed properly and that all lift rails are in up position.
3. Check that compressed air is on and regulated to 80 PSI (for CMAXX models CM002, CM004, and CM006) or 90 PSI (for all other CMAXX models).
4. Check that the integrated control panel is on and is properly programmed.
5. Review the CMAXX Diaphragm Valve Air Consumption table and adjust the cleaning pulse timing as necessary so that full compressed air system pressure is restored in between each pulse.
  - The default pulse On Time is 150 ms and the default pulse Off Time is 10 seconds. Thus for a 90 PSI system, the air system must have airflow 33 CFM or higher to use the default settings.
  - If the air system cannot deliver sufficient airflow for the default settings, then the pulse Off Time should be increased.
  - The pulse On Time should not typically be changed without consulting Imperial Systems.
6. Verify that the differential pressure ports on the body of the CMAXX are connected to the pressure tubing inlets on the ICP.
7. Set the control panel to pulse continuously and verify that the cleaning solenoids pulse properly. You should hear a short pulse of air every 10 seconds (or longer, if the Off Time was increased) in the dust collector.
8. If using a drum kit with a slide gate, make sure slide gate is open and drum is connected and sealed. Hopper on CMAXX is not intended to store material.
9. Set fan outlet damper to 40% open if not using a VFD.
10. Bump start fan and verify wheel is rotating in proper direction.
11. Start fan and allow to reach full operating speed. Check current draw. Fan should be operating below full load amp rating on motor name plate. If operating above full load amps, gradually close fan outlet damper until current drops below full load amps value.
12. It is recommended that air readings are taken at startup and the fan outlet damper is adjusted to match the rated CFM of your dust collector. A dust collector operating above the designed CFM will experience reduced filter life.

NOTICE

**Operating a dust collector above the design CFM will reduce filter life.**

**CMAXX Diaphragm Valve Air Consumption (CFM)**

		1" Diaphragm Valve, 80 PSI			1.5" Diaphragm Valve, 90 PSI		
On Time (msec)		100	150	200	100	150	200
Off Time (sec)	5	31.2	62.4	96.0	33.6	66.0	102.0
	10	15.6	31.2	48.0	16.8	33.0	51.0
	15	10.4	20.8	32.0	11.2	22.0	34.0
	20	7.8	15.6	24.0	8.4	16.5	25.5
	25	6.2	12.5	19.2	6.7	13.2	20.4
	30	5.2	10.4	16.0	5.6	11.0	17.0
	35	4.5	8.9	13.7	4.8	9.4	14.6
	40	3.9	7.8	12.0	4.2	8.3	12.8
	45	3.5	6.9	10.7	3.7	7.3	11.3
	50	3.1	6.2	9.6	3.4	6.6	10.2
	55	2.8	5.7	8.7	3.1	6.0	9.3
	60	2.6	5.2	8	2.8	5.5	8.5

## 6. Maintenance

Regular maintenance should be performed on your CMAXX per the schedule on the following page. Imperial Systems offers a ServiceMAXX program, which provides comprehensive inspections of your dust collection equipment. Please scan the QR code below or contact Imperial Systems for more details on the ServiceMAXX program.

If your collector is equipped with accessory devices, please refer to those devices' manuals for maintenance instructions.





Proper preventative maintenance on your dust collector will ensure the cleanest air possible and maximize the life of the machine.

trust the

DUST COLLECTION EXPERTS

### 6.1. Routine Maintenance

Frequency	Maintenance Item
Daily	Monitor the differential pressure. Maintaining a log of the differential pressure can assist in troubleshooting the collector if any issues come up. Once the differential pressure rises above 5 INWC and will not clean below 5 INWC, then the filters need to be replaced.
Monthly	Visually inspect the cleaning solenoid enclosure air tank and tube lines for leaks. Listen to the solenoid valves pulse to verify they are operating correctly and with the proper timing.
Annually	Inspect the door seals. Open the access doors and verify the door seals are intact and not breaking down. A properly sealed door will have a consistent layer of dust on the inside of the door. If there is streaking in the dust around the seal, then there is most likely a leak in the seal.
	Visually inspect the inside of the collector for signs of wear and material buildup in the hoppers. It is normal to have material buildup on the framework inside the collector. Verify that the filter lift rails are all the way up, fully seating the filters against the tube sheet.
	Visually inspect the filters for damage.
	Visually inspect the collector for loose hardware.
	Check compressed air pressure and measure total system airflow. Verify accuracy of the differential pressure gauge.
	Drain air tank to check for moisture.

### 6.2. Routine Electrical Maintenance

Frequency	Maintenance Item
Monthly	Visually inspect all wire connections for discoloration, and check for tightness.
	Visually inspect control panel fans and filters; clean as necessary.
	Ensure control panel fans run. Adjust thermostat if necessary to operate fans.
	Listen to fans for excessive noise.
	When the unit is running, make sure the fans inside the VFD operate by feeling the air above the drive to see if air is being moved.
	Ensure that the area around the fans and filters external to the enclosure is clear so that air can be moved.
	Remove dust and debris from inside the control panel by vacuum only. Blowing compressed air can cause damage.
	Ensure wire trough covers are in their proper place.
Ensure differential pressure tubing is seated properly and is connected on both ends.	
Annually	Perform thermal imaging scan to look for hot spots. Investigate any overheating components.

## WARNING

**Filters are only bonded and grounded when using DeltaMAXX Prime Filters that are pushed back and properly touching the grounding tab and only if the collector is properly grounded.**

### 6.3. Filter Handling and Replacement

## NOTICE

**Improper handling of a filter can ruin the filter.**

NEVER handle filters by the pleated paper media. This will damage the filters. Only handle by the top metal pan. Do not poke, hook, or puncture the filters with the filter removal tool or any other object. Do not attempt to force the door closed if it will not shut after filter install.

#### 6.3.1. Filter Removal

1. Lift filter cam lever and lock it in the extended position.



2. Using lever in extended position, lower lift rail assembly. Repeat on both sides of the filter before attempting to remove.



3. After lowering lift rails, remove the filters. Either grasp the filter by the metal pan on top, or use the filter tool. Only use the filter tool to capture the filter by the metal pan. Do not handle the filter media with your hands or the filter tool.



### 6.3.2. Filter Replacement

1. Make sure that cam levers have been used to lower all lift rail assemblies.
2. Remove the filters from their boxes. DO NOT handle the filter material. Handle filters only by the pans on top.
3. Align the filter pan with the lift rails. If correctly aligned, filters should slide easily on the lift rails. If filters will not slide into place, remove all filters and check that they are aligned properly. The Sure-Stop system (patent pending) will block filters that are improperly installed.
4. Return the lift rails to their normal position with the cam levers.
5. Close the collector's doors. If the doors do not close, the filter may not be installed correctly. Verify that the lift rails are locked in place and the filters are pushed back into the unit. If this does not work, remove filters and reinstall.

### 6.4. Safety Valve Maintenance

If a valve is discovered to be leaking it can be cleared by manually operating the valve to a pressure that will cause it to operate. Please note that valves with metal-to-metal seats are not absolutely "bubble tight" and they will allow a pressure loss over a period of time. If a valve has a leak, it should be replaced, as leaks are self-propagating.

Safety relief valves must be inspected and tested for operation periodically. It is the users' responsibility to determine the frequency of inspection as they are the only party familiar with the operating conditions and the relative hazards of an inoperative valve. It is recommended that at the very least each valve should be inspected semi-annually. Local ordinances may require more frequent inspection. Testing should be done by operating the valve either through the use of the operating device on the valve or if it doesn't have an operating device it should be connected to a source of pressure that will cause it to operate.

Valves that are capacity certified by the ASME are factory sealed. Tampering, altering, or adjustment of these valves voids any warranty and liability of the manufacturer. Repairs or resetting will be made only by the factory. Please contact the factory prior to returning any valve for service and securely package valves for shipping.

### 6.5. Spare Parts

Part Number	Description	Compatibility
<b>Complete Timer Controller</b>		
430042	6 Channel Timer Control Nema 4x with DP Module	CM002 - CM012
430042.001	10 Channel Timer Control Nema 4x with DP Module	Up to a CM020
430042.010	22 Channel Timer Control Nema 4x with DP Module	Up to a CM048 - larger sizes consult Imperial
<b>Replacement Timer Boards</b>		
430042.014	6 Channel Timer Board with Pressure Module	CM002 - CM012
Contact Factory	10 Channel Timer Board with Pressure Module	Up to a CM020
Contact Factory	22 Channel Timer Board with Pressure Module	Up to a CM048 - larger sizes consult Imperial
Contact Factory	Dp Module DCP100 10 W.G.	All that have these timer boards
<b>Hardware</b>		
Contact Factory	Positive Pressure Drum Kit with Manual Slide Gate	
430054	55 Gallon Drum with Lid	
Contact Factory	Drum Cover Lid with 10" Opening	
420041	Hose Clamp for 10" Flex Hose	
430055.002	Flex Hose Medium Duty Clear - 10" Per Foot	
Contact Factory	10" Manual Slide Gate	
430054.002	Drum Ring/Lever Lock	
<b>Diaphragm Valves</b>		
430035.001	1" Goyen Diaphragm Valve	Pre 2019 CM002 - CM006
430035.002	1.5" Goyen Diaphragm Valve	Pre 2019 CM008 and up
430106.001	1" Goyen Diaphragm Valve Repair Kit Standard	Pre 2019 CM002 - CM006
430106.014	1" Goyen Diaphragm Valve Repair Kit Viton High Temp	Pre 2019 CM002 - CM006
430106	1.5" Goyen Diaphragm Valve Repair Kit Standard	Pre 2019 CM008 and up
430106.013	1.5" Goyen Diaphragm Valve	Pre 2019 CM008 and up
430106.001	1.5" Goyen Diaphragm Valve Repair Kit Standard High Temp	Pre 2019 CM008 and up
430054.006	1" Autel Diaphragm Valve	CM002 - CM006
430054.007	1.5" Autel Diaphragm Valve	CM008 and up
430054.009	1" Autel Diaphragm Valve Repair Kit Standard	CM002 - CM006
430054.011	1" Autel Diaphragm Valve Repair Kit Viton High Temp	CM002 - CM012
430054.010	1.5" Autel Diaphragm Valve Repair Kit Standard	CM008 and up
430054.012	1.5" Autel Diaphragm Valve Repair Kit Standard High Temp	CM008 and up

Part Number	Description	Compatibility
<b>Pilot Solenoid Valve</b>		
430106.003	Standard Replacement Pilot Solenoid Valve	
Contact Factory	Viton High Temp Replacement Solenoid Valve	
430106.002	Standard Pilot Solenoid Valve Repair Kit	
Contact Factory	Viton High Temp Pilot Solenoid Valve Repair Kit	
<b>Dust Collector Hardware</b>		
490004011	Sealant Tube	
996013.010	Imperial Grey CMAXX Touch Up Paint (Spray Can)	
Contact Factory	Imperial Blue Header Tank Touch Up Paint (Spray Can)	
510019	Cartridge Removal Tool 3 Deep, 4-8 ft.	
510019	Cartridge Removal Tool 4 Deep, 4-8 ft.	
510020	Cartridge Removal Tool 6 Deep, 6-12 ft.	
<b>Explosion Vents and Fire Protection</b>		
430023.022	Explosion Vent, 36 x 44	
43023.010	Burst Indicator Lead Cable	
430023011	Burst Sensor	
430048	Sprinkler Side Wall Mounted 215°F	
<b>Explosion Vents and Fire Protection</b>		
Contact Factory	Particulate Monitor to Detect Broken Filters	Multiple Options
Contact Factory	Drum Dust Level Sensor	Multiple Options
<b>After Filter Gauge</b>		
430008.001	Magnahelic Gauge 0 - 10" WC	
430008.005	Gauge Mount	
430021	Magnahelic Gauge Filter	Pre 2019
460021.001	Magnahelic Gauge Filter	
420016	100' ¼" Silver Poly Tubing	
660001.007	Differential Pressure Tubing Kit	
430008	2½" Pressure Gauge, Header Tank	

## 6.6. Replacement Filters

Part Number	Description
<b>CMAXX Cartridge Filters - DeltaMAXX Prime - 2020 and later</b>	
204401201M	400 ft² Prime Nanofiber Filter
204401202M	400 ft² Prime Fire Retardant Nanofiber Filter
204401203M	400 ft² Prime Fire Retardant Nanofiber Filter with Ground Wire
204401228M	400 ft² Prime Fire Retardant IDA Certified Nanofiber Filter
204401205M	400 ft² Prime Fire Retardant IDA Certified Nanofiber Filter with Ground Wire
204401206M	400 ft² Carbon Impregnated Filter
204401207M	245 ft² Spunbond Filter
204401210M	245 ft² Spunbond Hydrophobic/Oleophobic Filter
204401212M	245 ft² Spunbond PTFE Filter
<b>CMAXX Cartridge Filters - DeltaMAXX - 2018 and earlier</b>	
460010013M	350 ft² Nanofiber Filter
460010002M	350 ft² Nanofiber Fire Retardant Filter
460010042M	350 ft² Nanofiber Fire Retardant Filter with Ground Wire
460010026M	350 ft² Nanofiber Fire Retardant IDA Filter
460010043M	350 ft² Nanofiber Fire Retardant IDA Filter with Ground Wire
460010014M	350 ft² Carbon Impregnated Filter
460010006M	225 ft² Spunbond Filter
460011M	225 ft² Spunbond Hydrophobic/Oleophobic Filter
460010018M	225 ft² Spunbond PTFE Filter
NOTE: DeltaMAXX Prime filters will fit into all models of CMAXX Dust & Fume Collectors. If your collector was manufactured in 2019 or early 2020, or if you're uncertain which filters you need, please contact Imperial Systems at 800-918-3013.	
<b>Overbags</b>	
460022	DeltaMAXX Overbag
460022.004	DeltaMAXX Prime Overbag
<b>After Filters</b>	
460023	24 x 24 x 2 Panel Pre-Filter
460024	24 x 24 x 12 Panel HEPA Filter
460024050	24 x 24 x 12 95% ASHRAE

## 7. Troubleshooting Guide

Problem	Probable Cause	Solution
<b>Blower fan motor does not start.</b>	Improper motor wire size.	Rewire using the correct wire gauges as specified by national and local codes.
	Motor not wired properly.	See motor manufacturers wiring diagram. Check and correct motor wiring for the supply voltage present. Follow wiring diagram and the National Electric Code.
	Motor not wired for available voltage.	Check the power supply to motor circuit on all leads.
	Input circuit down.	Check the power supply to motor circuit on all leads.
	Electrical supply circuit down.	Check the power supply circuit for proper voltage. Check for any fuse or circuit breaker fault. Replace as necessary.
<b>Blower fan motor starts, but does not stay running.</b>	Incorrect motor-starter installed.	Check for the proper motor starter and replace if necessary.
	Blower fan damper control not adjusted properly.	Check airflow in duct. Adjust damper control until proper airflow is achieved and the blower motor's amp draw is within the manufacturer's rated amps.
	Electrical circuit overload.	Check the power supply circuit has sufficient power to run all the equipment.
<b>Clean air outlet discharging dust.</b>	Filter cartridges not installed properly.	See filter installation.
	Damage to filter cartridges, dents in end caps, gasket damage, or holes in pleated media.	Replace filters as necessary. Use only genuine DeltaMAXX replacement filters.
<b>Insufficient airflow.</b>	Fan rotation backwards.	Compare rotation to the blower manufacturers rotation arrow.
		Check that all access doors are in place and secured. Check that the hopper discharge opening is sealed and the optional attachments are installed correctly.
	Exhaust fan area restricted.	Check fan exhaust area for obstructions. Remove material or debris. Adjust fan outlet damper if equipped.
	Filter cartridges need replacement.	Replace filters if necessary. Use only genuine Imperial Systems DeltaMAXX replacement filters.
	Lack of compressed air.	Check that a minimum of 75 PSI is available. See compressed air installation.
	Pulse cleaning not energized.	Use a voltmeter to check supply voltage to the timer board. Check and replace the fuse on the timer board if necessary.

Problem	Probable Cause	Solution
<b>Insufficient airflow.</b>	Dust storage container overflowed or plugged.	Clean out the dust storage container.
	Pulse valves leaking compressed air.	Lock out all the electrical power to the unit and bleed the compressed air supply. Check for debris, valve wear, or diaphragm failure by removing the diaphragm cover on the pulse valves. Check for solenoid leaks or damage. Check for leaks in the tubing from the pulse valve to the solenoid valves. Replace as necessary.
	Solid state timer failure.	Using a voltmeter, check supply voltage to the timer board. Check and replace the fuse on the timer board if necessary. If the fuse is good and input powder is present, but output voltage to the solenoid valves is not, replace the timer board.
<b>On demand pressure cleaning does not start.</b>	High setpoint no adjusted for system conditions.	Check tubing for kinks, breaks, contamination, or loose connections.
<b>Pulse cleaning never stops.</b>	Bypass terminals on the timer board jumpered.	Remove jumper wire on solid state timer board bypass terminal.
	High or low setpoint not adjusted for system conditions.	Adjust setpoint to current conditions.
<b>Alarm light is on.</b>	Pressure tubing disconnected or plugged.	Check tubing for kinks, breaks, contamination, or loose connections.
	Alarm setpoint too low.	Adjust to a higher value.
	Excess pressure drop.	Check cleaning system and compressed air supply. Replace filter cartridge if they do not clean down.
	Pressure tubing disconnected or plugged.	Check tubing for kinks, breaks, contamination, or loose connections.

Problem	Probable Cause	Solution
<b>Clean output lights flash but system is not functioning.</b>	Improper wiring.	Check wiring between the timer control board and the solenoid valve coils.
	Defective solenoids.	Check all solenoid coils for proper operation.
	Timer board not powered.	Check power light on timer board's LED display. If not illuminated, check the fuse on the timer board. Replace as necessary.
	Timer board defective.	If LED is illuminated, observe the output display. Install a temporary juicer across the main override terminal to the COM terminal. Output LED's should flash in sequence. Check output using a multimeter measure from SOL COM to a solenoid output. The needle will deflect when the LED flashes for that output if voltage is present at output terminals during flash, replace board if necessary.
<b>Low alarm light flashing.</b>	Not set to zero during setup.	Set Low Alarm setting to 0.0 INWC then hit reset to enable it.
<b>Door not closing.</b>	Filters are not loaded correctly.	Make sure the filters are fully pushed back into the correct position. Then lift filter rails into the locked position using the cam levers.

## Appendix A: Wiring Diagrams

### A. Wiring Diagrams

A full wiring diagram will be provided to the customer after the CMAXX has been ordered and the integrated control panel (ICP) has been designed. These will vary depending on which CMAXX accessories the customer has selected. The following typical wiring diagrams show the most commonly occurring connections and are meant to help the customer understand and plan for the electrical work.

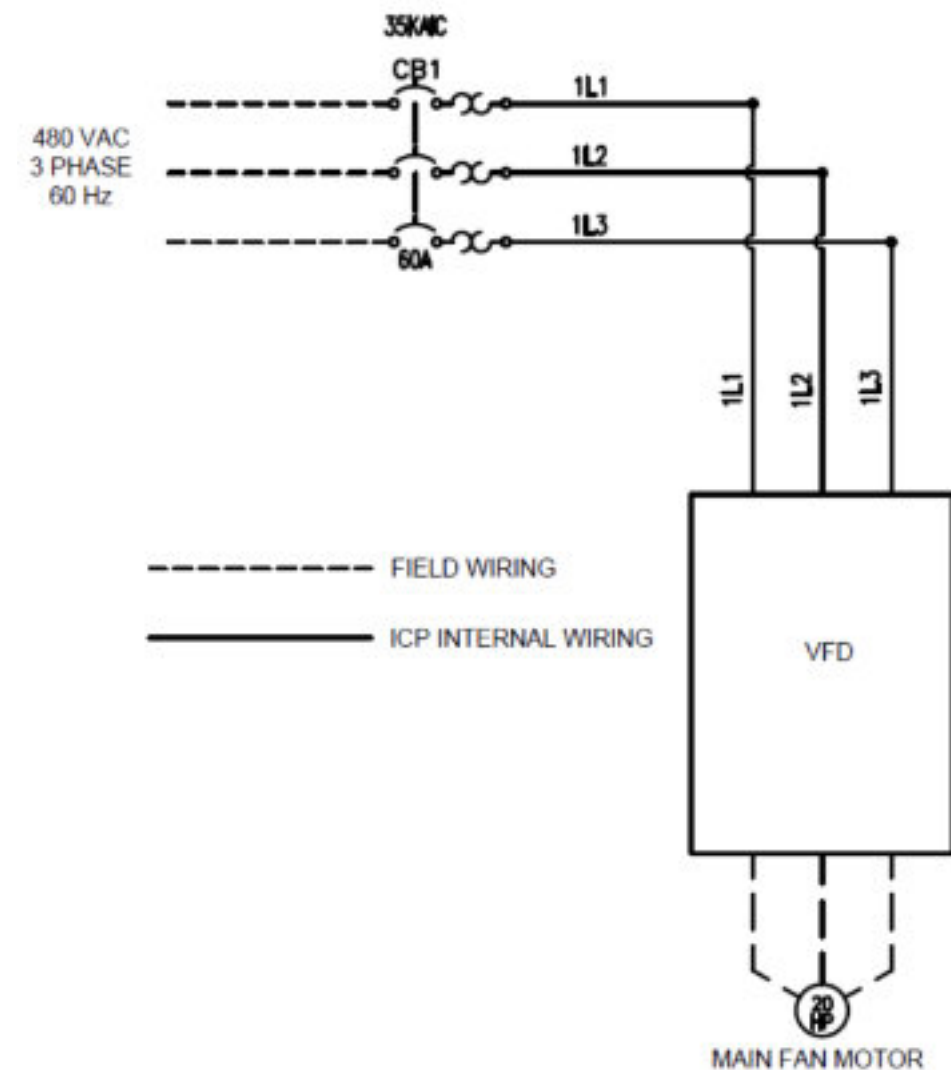
Service to the ICP should be provided through a three-phase 480 V<sub>AC</sub> disconnect, sized according to the input circuit breaker size table in Section 4.

#### A.1. Fan Wiring Diagram

The main CMAXX fan is fed by three-phase 480 V<sub>AC</sub> power, supplied from the ICP. The ICP will include either an across-the-line (ATL) starter, a soft-starter (SS), or a variable frequency drive (VFD).

Use of a VFD is recommended to allow the customer to save energy when the fan does not need to run at full speed. This is typically the case for the first few months after filter installation, depending on what fumes and dust are being extracted. This case represents a substantial energy savings, especially for large fans. A VFD also typically will not run the motor above its rated full load amps on startup, thus reducing wear and tear and extending the life of the fan and associated equipment.

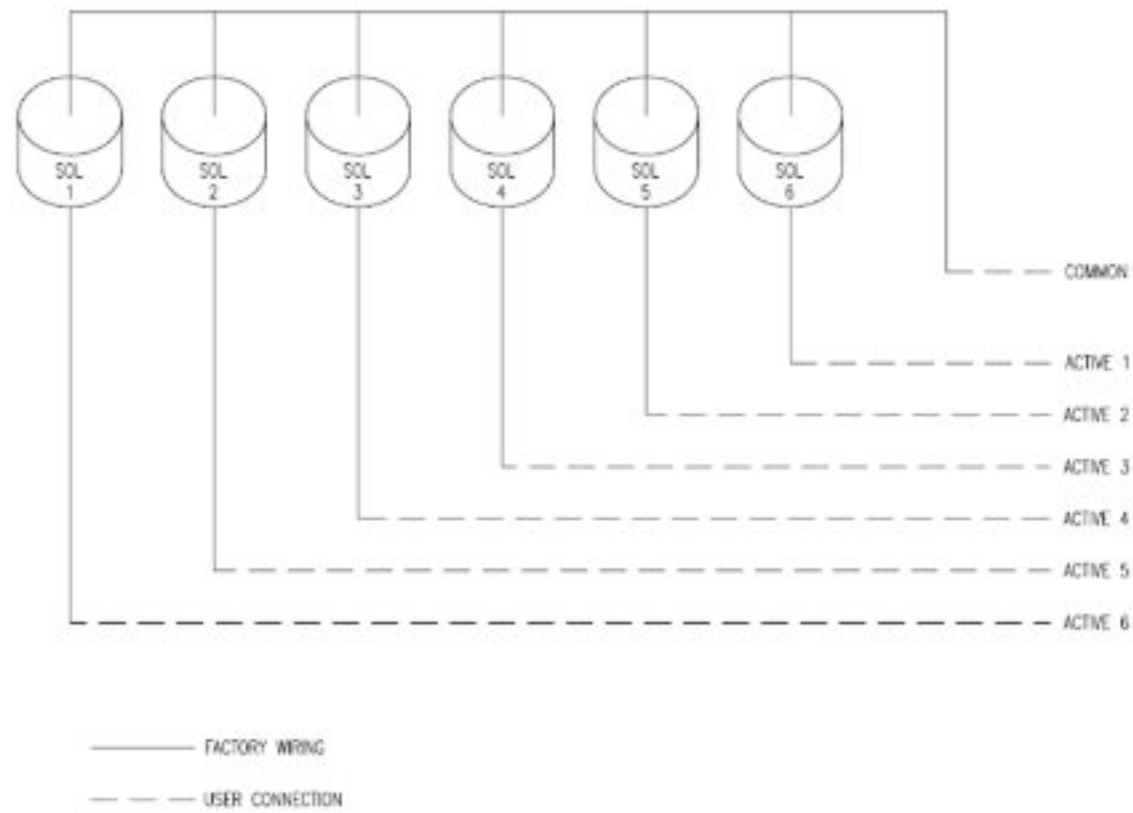
The diagram below shows typical wiring for a fan controlled by a VFD.



### A.2. Solenoid Wiring Diagram

The CMAXX's cleaning solenoids run on 24 V<sub>DC</sub> control signals transmitted from the ICP. The common for these signals is +24 V<sub>DC</sub>. Each cleaning solenoid has its own control signal, which is pulled low (0 V<sub>DC</sub>) periodically in order to fire the solenoid and thus send a pulse of compressed air to clean the filters. The timing of these pulses is controlled by the dust collector timer (DCT) board in the ICP.

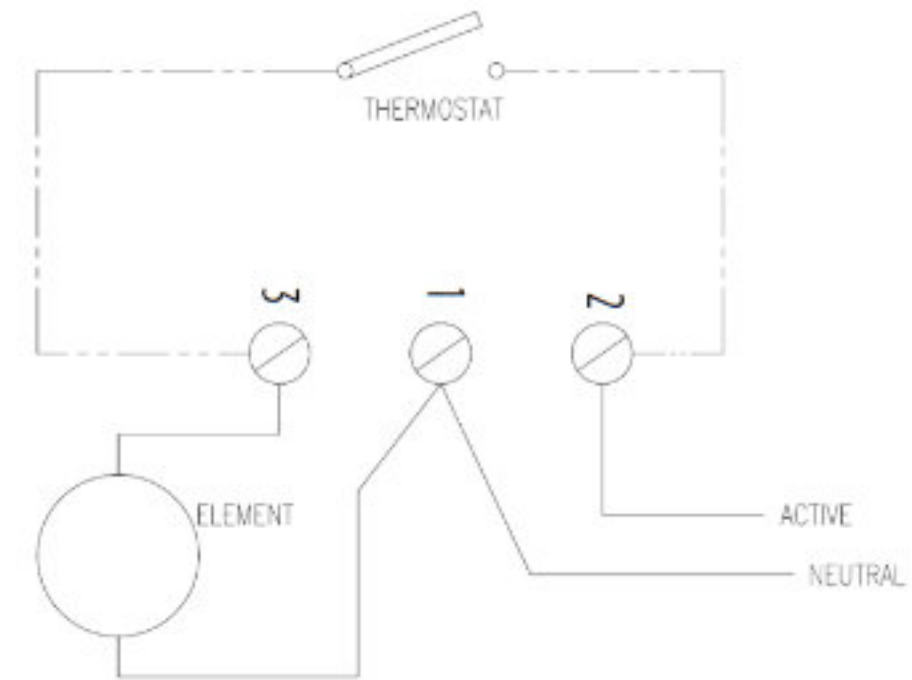
The diagram below shows typical wiring for a solenoid bank. The actual number of solenoids will vary by CMAXX model. The ICP includes one terminal block for the solenoid COMMON (+24 V<sub>DC</sub>) and one terminal block for each solenoid's ACTIVE control signal.



### A.3. Solenoid Heater Wiring Diagram

In some customer environments, Imperial Systems will recommend a solenoid heater and thermostat be installed on the solenoid manifold. When this is the case, the ICP will include a heater power supply circuit with terminal blocks for field connections to the solenoid heater.

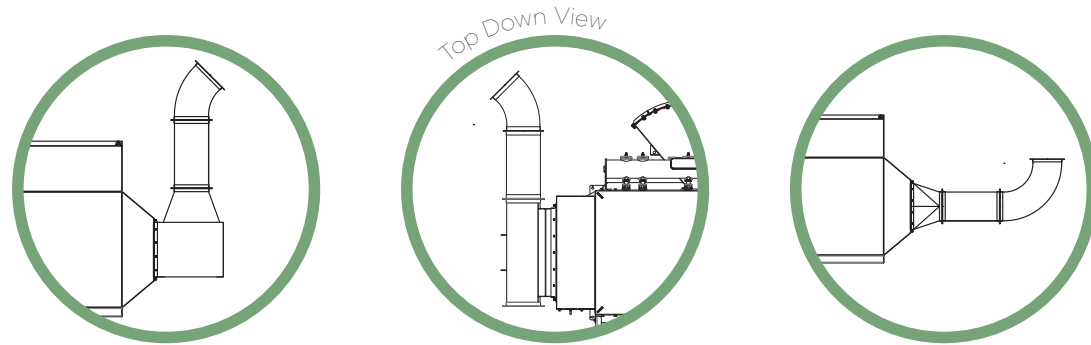
The diagram below shows typical wiring for a solenoid heater/thermostat. The ICP includes a terminal block for the +24 V<sub>DC</sub> ACTIVE signal and the 0 V<sub>DC</sub> NEUTRAL signal.



## Appendix B: The Do's & Don't of Duct Design

When designing a dust collection system, it is critical to keep in mind the relationship between the duct work and the inlet. If improperly designed, the layout can create upset conditions within the collector, potentially damaging the filters and affecting the efficiency of the unit.

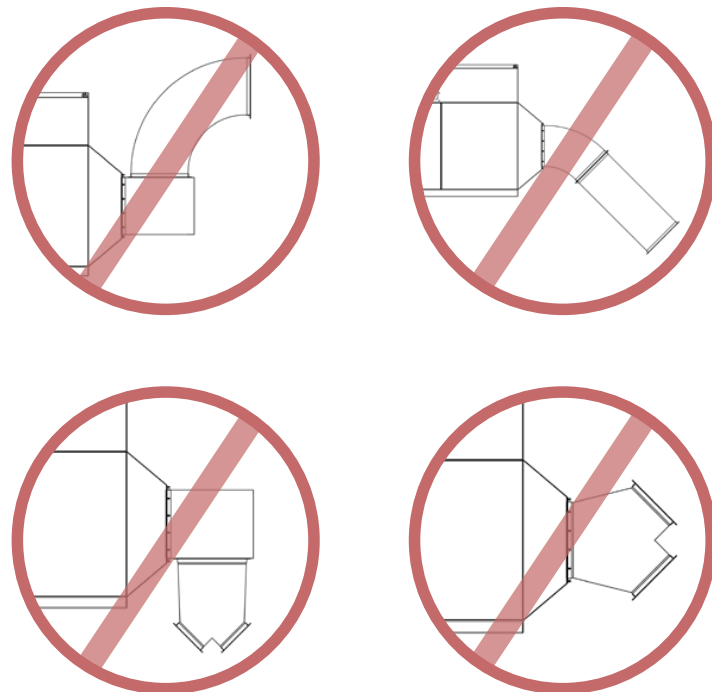
### DO design your system this way



### Basic Tips for Duct Design

- All transitions are recommended to be 1x the duct diameter in length.
- All pieces of duct immediately following a transition is recommended to be at least 2x the duct diameter before the next fitting.
- All elbows in the duct before an inlet are recommended to be at least 2x the centerline radius.

### DO NOT design your system this way



## Appendix C: Accessories

Your CMAXX system may come with accessories for system monitoring and/or fire suppression. Refer to the CMAXX brochure at [www.isystemsweb.com/pld-7320](http://www.isystemsweb.com/pld-7320) for more information on the purpose of those accessories. Below is a listing of available accessories and links to more information about each.

*Note: The models listed below are examples that are often specified with a CMAXX system. Your Imperial Systems sales representative may recommend different models to best fit your needs. Please reach out to Imperial Systems to discuss a solution tailored to your application and location.*

### 1. Spark Trap

Make: Imperial Systems (Mercer, PA), [www.imperialsystemsinc.com](http://www.imperialsystemsinc.com)

Model: Spark Trap

Datasheet/landing page: <https://www.isystemsweb.com/dust-collection-equipment/spark-arrestor/>

### 2. Explosion Isolation Valve (EIV)

Make: Vigilex (Saint-Georges-Sur-Loire, France), [www.vigilex.eu](http://www.vigilex.eu)

Model: VigiFlap

Datasheet/landing page: <https://bossproductsamerica.com/solutions/fire-explosion-mitigation/explosion-isolation-diversion/explosion-isolation-valve-ev-vf/>

### 3. Slide Gate

Make: Boss Products (Schertz, TX), [www.bossproductsamerica.com](http://www.bossproductsamerica.com)

Model: Raptor Spark FireBreak Shutter EM-FBS

Datasheet/landing page: <https://bossproductsamerica.com/wp-content/data-sheets/Boss-Catalog.pdf>

### 4. Fike Fire Suppression System

Make: Fike Corporation (Blue Springs, MO), [www.fike.com](http://www.fike.com)

Model: CO<sub>2</sub> Suppression System

Datasheet/landing page: <https://www.fike.com/fire-protection/solutions/co2/>

## 5. Fire Trace Extinguisher

Make: Firetrace International (Scottsdale, AZ), [www.firetrace.com](http://www.firetrace.com)

Model: Indirect CO<sub>2</sub> Extinguishers IHP-500, IHP-1000, IHP-2000

Datasheet/landing page: <https://www.firetrace.com/passive-fire-suppression-system>

## 6. Smoke detector

Make: APC (Auburn Hills, MI), [www.apcfire.com](http://www.apcfire.com)

Model: RT-3000 photoelectric smoke detector

Datasheet/landing page: [https://apcfire.com/product/ductsmokedetector\\_rt3000\\_weatherproof/](https://apcfire.com/product/ductsmokedetector_rt3000_weatherproof/)

## 7. Chemical Explosion Isolation

Make: Fike Corporation (Blue Springs, MO), [www.fike.com](http://www.fike.com)

Model: HRD explosion suppression systems

Datasheet/landing page: <https://www.fike.com/explosion-protection/solutions/suppression/>

## 8. Explosion Vent

Make: Fike Corporation (Blue Springs, MO), [www.fike.com](http://www.fike.com)

Model: CV-S series rectangular explosion vent

Datasheet/landing page: <https://www.fike.com/explosion-protection/solutions/venting/>

## 9. Abort Gate

Make: Imperial Systems (Mercer, PA), [www.imperialsystemsinc.com](http://www.imperialsystemsinc.com)

Model: Heavy duty abort gate

Datasheet/landing page: <https://www.isystemsweb.com/dust-collection-equipment/heavy-duty-abort-gates/>

## 10. Explosion Tested Drum Kit

Make: Imperial Systems (Mercer, PA), [www.imperialsystemsinc.com](http://www.imperialsystemsinc.com)

Model: Rhino Drum

Datasheet/landing page: <https://www.isystemsweb.com/dust-collection-equipment/rhino-drum/>

## 11. Rotary Airlock

Make: Boss Products (Schertz, TX), [www.bossproductsamerica.com](http://www.bossproductsamerica.com)

Model: Rotary valve HTS series

Datasheet/landing page: <https://bossproductsamerica.com/solutions/process-components/rotary-valve-vdl-hts/>

## 12. Drum Level Sensor

Make: Imperial Systems (Mercer, PA), [www.imperialsystemsinc.com](http://www.imperialsystemsinc.com)

Model: Dust level sensor

Datasheet/landing page: <https://www.isystemsweb.com/dust-collection-equipment/dust-level-sensor/>

## 13. Broken Filter Sensor

Make: Bindicator (Spartanburg, SC), [www.bindicator.com](http://www.bindicator.com)

Model: Flo-Guard broken bag detector

Datasheet/landing page: <https://www.bindicator.com/p/material-handling/flo-guard/>