AQC

DUST COLLECTION
& SOURCE CAPTURE

Owner's manual for installation, use and maintenance

MAXITUBE™

INDEX

1 INTRODUCTION

This present manual refers to the MAXITUBE dust collector equipped with an air pulse cleaning system. It includes important information concerning the installation, usage, and maintenance of your collector. Read this manual thoroughly and apply the directives and procedures. Staff and personnel using the system will have to be trained on safety measures and maintenance instructions.

WARNING!

The use of the collector or the type of dust to be filtered may require an explosion relief venting system. Dust collectors are not equipped with such device unless it was requested when ordered. Contact A.Q.C. Inc. if you have any doubt regarding the use of your collector.
Not following directives and procedures could cause injuries or property damages.

2 INFORMATION ON THE DUST COLLECTOR

Model: _____ Serial number: _____

Delivery date: _____ Date of installation: _____

Name of customer: _____

Address: _____

_____

_____

Accessories: _____

Other: _____

3 PRESENTATION

The MAXITUBE is a bag house dust collector with an air pulse cleaning system which cleans the entire surface of filtration. The up-flow type dust collector obtains high efficiency filtration while requiring low energy consumption. The bags are cleaned by means of a sequenced pulse of compressed air and this, one at a time.

The MAXITUBE dust collector is largely used in areas where dust is a nuisance. Main applications are for heavy dust concentrations such as wood, cement, pharmaceutical, welding, buffing, pharmaceutical operations, handling of volatile dusts, etc.

The MAXITUBE may offer multiple configurations for dust capture. Optional equipment may include a hopper with quick clip drum, drawer or with conveyor and rotary valve.

3.1 Each MAXITUBE unit includes :

- Fully welded steel cabinet with reinforcements.
- 2 to 20 rows of bags with specific media for your application.
- Air deflectors in the hopper to separate large debris.
- Bag cleaning systems by air pulsation and electronic sequencer.
- Factory prewired cleaning valves.
- Differential pressure indicator showing the status of cartridges.
- 3 steps paint finish: degreasing, prime coat, and polyurethane final coat.

The MAXITUBE unit is shipped in sections for final field assembly. Electrical connections for the cleaning system will be executed at the job site upon the collector’s final installation.

4 NORMAL USE

This present manual refers to the MAXITUBE dust collector equipped with an air pulse cleaning system. It includes important information concerning the installation, usage and maintenance of your collector. Read this manual thoroughly and apply the directives and procedures. Staff and personnel using the system will have to be trained on safety measures and maintenance instructions

WARNING!

Flammable or explosive dusts and solvents present a fire or explosion hazard within the collector. Under no circumstances should those pollutants be filtered by the collector unless it was designed for that effect and equipped with an explosion relief venting system or fire extinguishing device. This is the reason why a special attention is required with the handling or usage of dust collecting equipment in contact with flammable or explosive dusts and solvents. Any burning or flammable material such as a spark created by metal grinding, lit cigarettes, spark, etc. should be introduced within the collector where it could cause a fire or explosion.

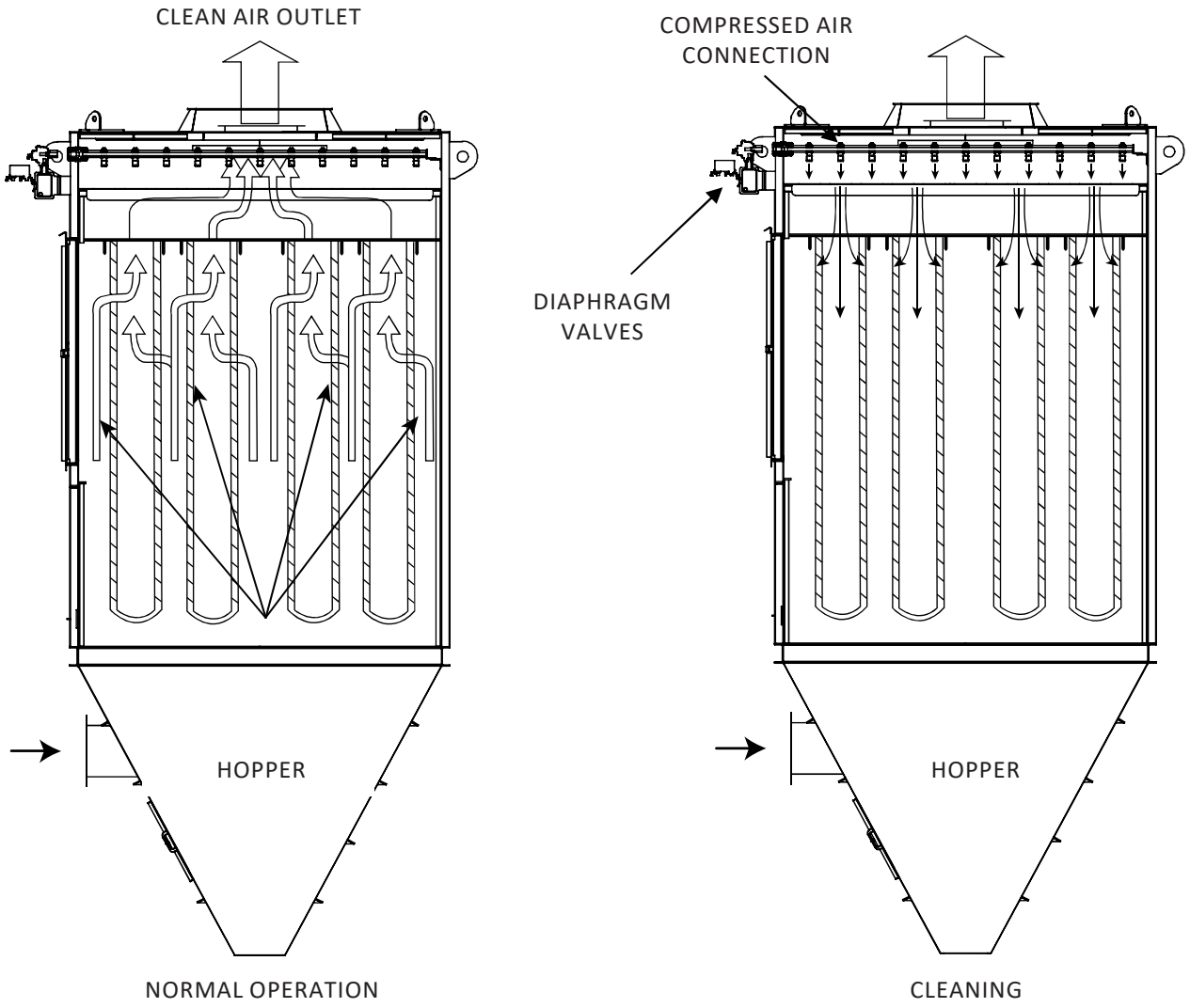
4.1 Operation

During normal operations, the MAXITUBE unit sucks dust laden air into the collector inlet. Smaller particles are vacuumed toward the bags and larger particles fall toward the dust storage section. Dust accumulates on the bag surface leaving clean air crossing the filter toward the collector outlet.

4.2 Bag cleaning

The cleaning of the filters is performed by using a reverse air pulse technology (see Figure 1). A solenoid and diaphragm valve system is aligned toward the cartridges and the shock wave created by releasing air at high velocity cleans the bags. The cleaning cycle starts from the first row and continues on every single row.

Figure 1



5 INSTALLATION

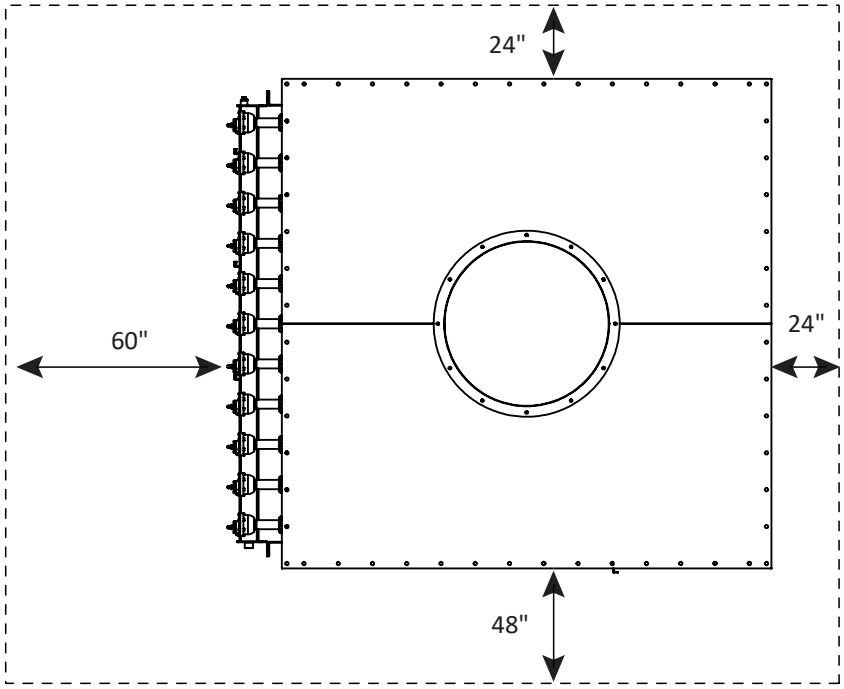
5.1 Inspection of dust collector

The MAXITUBE unit is shipped assembled or in sections. Proceed with a visual inspection upon receiving the material and check for any apparent damage that may have occurred on freight. Generally, shipment includes the filter cabinet and the dust storage section with support structure. Other optional components, such as flame front exhaust duct or back draft damper, may be delivered on separate skids.

5.2 Location

1. The area where the dust collector will be installed should be able to sustain the weight of such along with the accessories, ducting, blower and matter that will be stored. The construction of a flat and solid surface such as a concrete slab or platform may be required.
2. Wind factor and seismic zones should be considered before selecting the location of the dust collector.
3. Position the dust collector in a way to have access to the control panel, cleaning valves, pneumatic conduits, access door to filters, and dust storage systems as suggested in figure 2.
4. If the dust collector is equipped with an explosion relief venting system, follow guidelines for its location.

Figure 2



6 ASSEMBLY

6.1 Required tools

The following tools and equipment are required for the assembly of the dust collector:

- Crane or lift truck
- Spreader
- Chains
- Slings
- Shackles
- Eye bolts
- Spikes
- Wrench
- Sockets
- Power drill
- Concrete drill bit
- Concrete anchors
- Bolts
- Self tapping screws.
- Caulking

6.2 Structure assembly

Generally, the support structure is factory assembled but because of shipping purposes, some field assembly may be required. The next steps must be followed to assemble the dust collector structure.

1. Vertically install the outer support legs.
2. Install the cross braces with the hardware supplied as shown in figure 3. One is installed inside of the legs and the other outside of the legs. Do not tighten the screws at this moment.
3. With the use of a crane (or lifting device), slowly set the hopper onto the support plates. Attach the support legs to the hopper using the supplied hardware.
4. Level all components prior to tightening the cross braces using bolts, nuts and washers at meeting point # 2. Anchor the hopper section into the ground using anchor bolts (not supplied).
5. Withdraw the crane only when all components are firmly in place.

6.3 Assembly

1. Prepare the area where the collector will be installed, making sure it is clear and free of any obstacle.
2. Using eye bolts, slings and shackles, lift the dust storage section above the selected area and set slowly.
3. Once this section is firmly set to the ground, make sure it is leveled. Use anchor bolts to keep it in place.
4. Install a ground wire to the unit.

WARNING!

Apply two strips of butyl adhesive on the dust storage section upper outline. One strip should be applied inward of the bolt holes and one strip outward of the bolt holes (Figure 4).

5. Lift the filter cabinet using the lift lugs. Using spikes, position the cabinet above the dust storage section making sure to align the cabinet bolt holes with the dust storage bolt holes.

WARNING!

The use of a spreader is recommended to avoid damages to the filter cabinet.

6. Lower the filter cabinet onto the dust storage section and align the bolt holes.
7. Attach the filter cabinet to the dust storage section using the supplied nuts, washers and bolts. Tighten bolts for an adequate seal.
8. Use caulking to eliminate possible leaks.

Figure 3

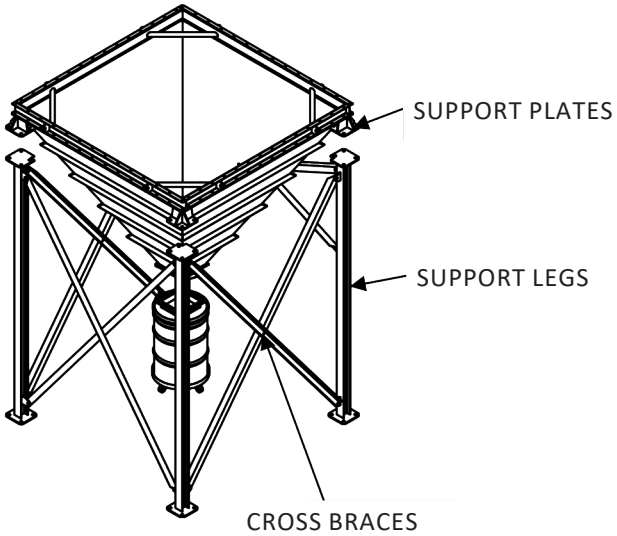


Figure 4

WARNING!

The use of improper lifting device may result in injuries or damages. Adequate lifting devices are required, and necessary precautions must be taken when handling the equipment.

6.4 Electrical connection

WARNING!

The electrical connection must be executed by a qualified electrician and with respect to codes and regulations. For safety measures, shut off power supply to the collector prior to performing the installation. Lock off any power supply prior to servicing or maintenance.

The dust collector control panel regulates the cartridge cleaning system. The dust collector control panel may be installed on the MAXITUBE unit, inside or outside the building or remote of the unit.

1. Using the electrical diagram supplied with the panel, connect the power supply from the main breaker to the control panel.
2. Refer to the descriptive identification plate to select proper voltage and amperage.
3. If the unit is supplied with a customized control panel, refer to the descriptive diagram to perform connection to the power supply.
4. Verify for proper motor rotation.

6.5 Electrical connection for DCT-500 sequencer

The MAXITUBE unit is equipped with 115 VAC solenoids which activate the cleaning valves. Those solenoids are integrated in a NEMA 4/12 box behind the filter cabinet and above the air tanks. Connections for those solenoids are factory wired. The DCT-500 sequencer activates the solenoids in a cascading sequence operating the cleaning valves.

Figure 5 shows a typical connection for a DCT-500 sequencer with a starter. The electronic board is activated upon fan start up using an auxiliary contact. The electronic board is fitted in a NEMA 4/12 box.

To activate the pulse cleaning system when the fan is OFF, install a selector or timer with constant feed on the inlet connector of the electronic board.

6.6 DCT-500 board specifications

Number of connectors: 4, 6, & 10

Power: 102-132 VAC 50-60 Hz.

Consumption: 2.5 W.

Power to solenoids: 3A max. per connector

Fuses: Type 3 AG, 3 A @ 250 VAC.

Temperature range: -40 to 140°F (-40 to 60°C)

Shutter time: 50 msec to 500 msec.

Shutter time accuracy: ±10 msec.

Shutter time stability: ±1 msec.

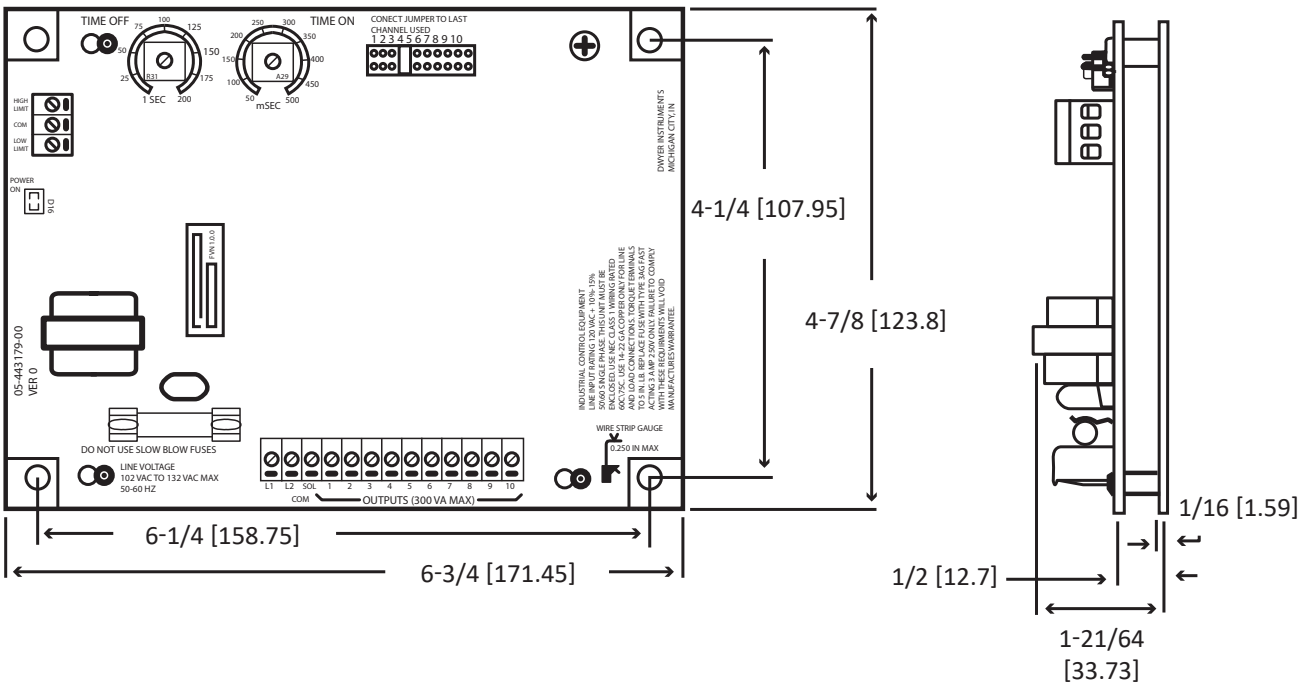
Lapse sequence: 1 second to 180 seconds.

Lapse sequence precision: ±5% settings.

Weight: 9 oz (255 g).

Approval agency: CE (pending).

Figure 5



COLOR CODE FOR WIRES

POWER FOR 600/480/380/208 VAC 3 PHASES

	FILAGE / WIRE
From 18 to 10 AWG	Black
8 AWG and more	Black
NEUTRAL	White
GROUND	Green

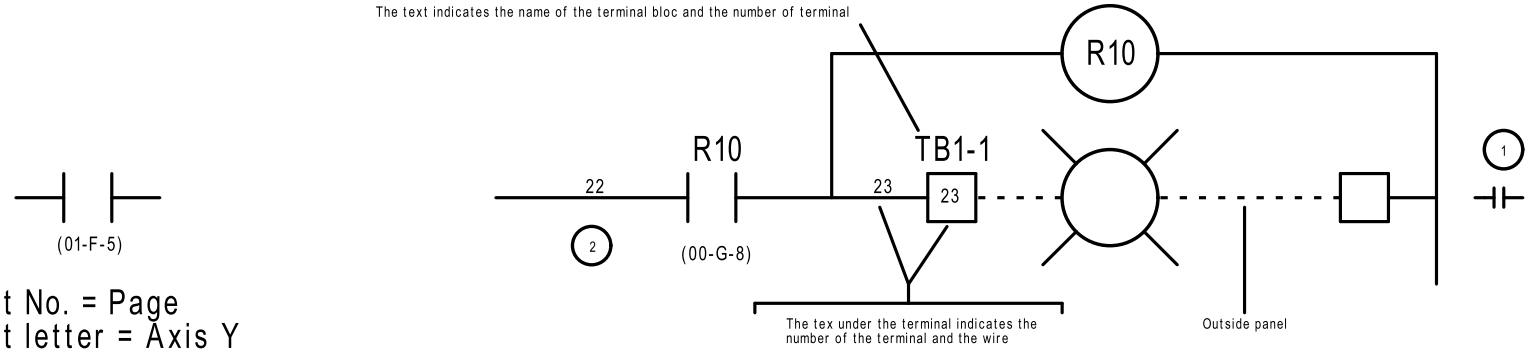
POWER FOR 240 VAC 1 PHASE

	WIRE
From 18 to 10 AWG	Black
8 AWG and more	Black

CONTROL WIRING

		WIRE
VDC POSITIVE	+12 VDC	Orange
VDC POSITIVE	+24 VDC	Brown
VDC NEGATIVE	0 VDC	Blue
VAC 24 VAC	24 VAC	Red
VAC 24 VAC	COM	White
VAC 120 VAC	L	Black
VAC 120 VAC	N	White
ANALOG	+ / -	2 cond shield (Black - Red)
DRY CONTACTS		Grey

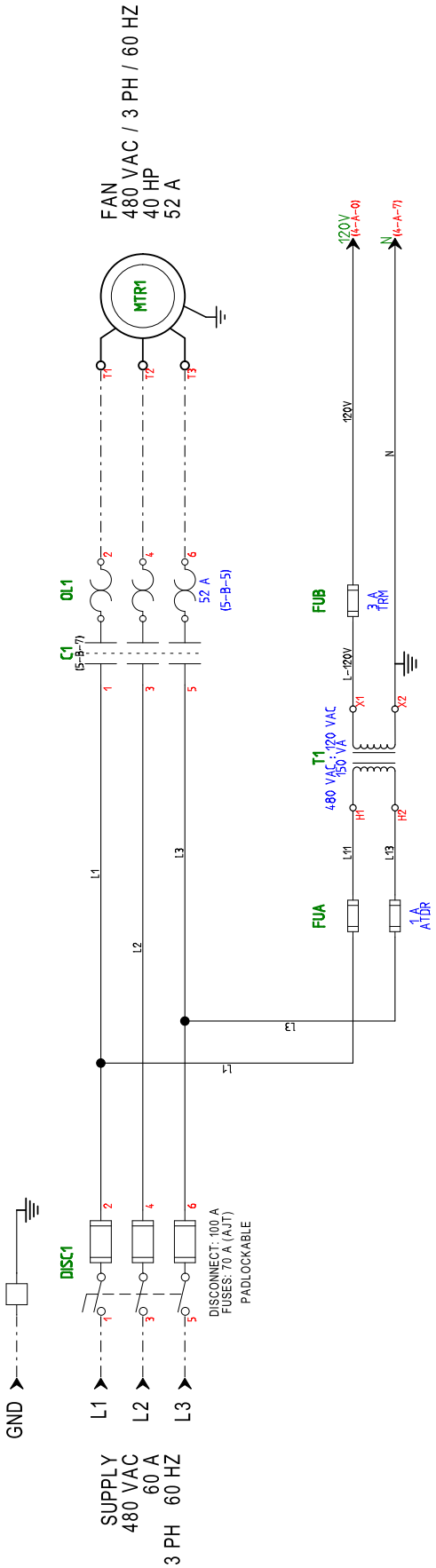
CROSSED REFERENCES

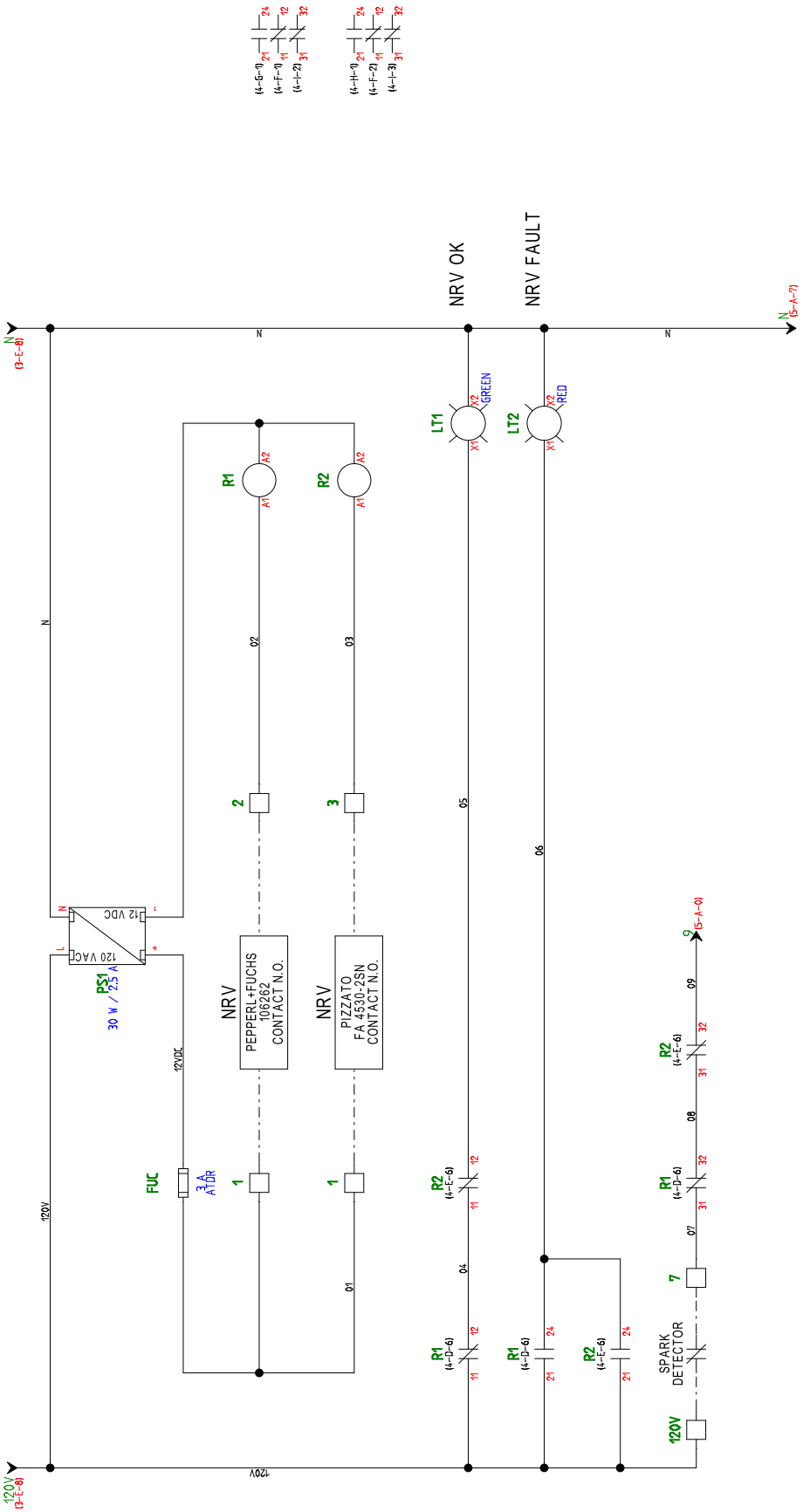


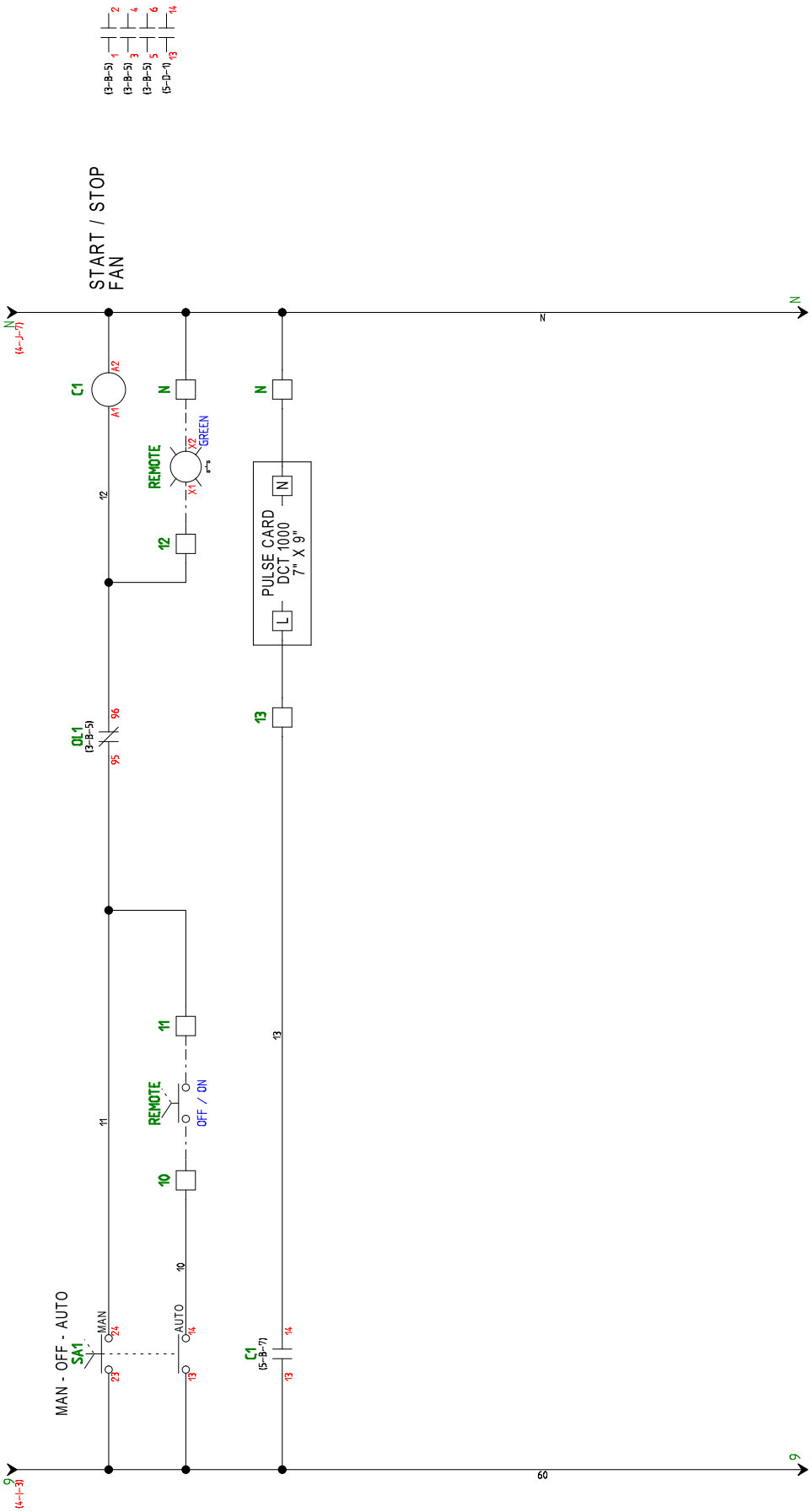
1st No. = Page
1st letter = Axis Y
2nd letter = Axis X

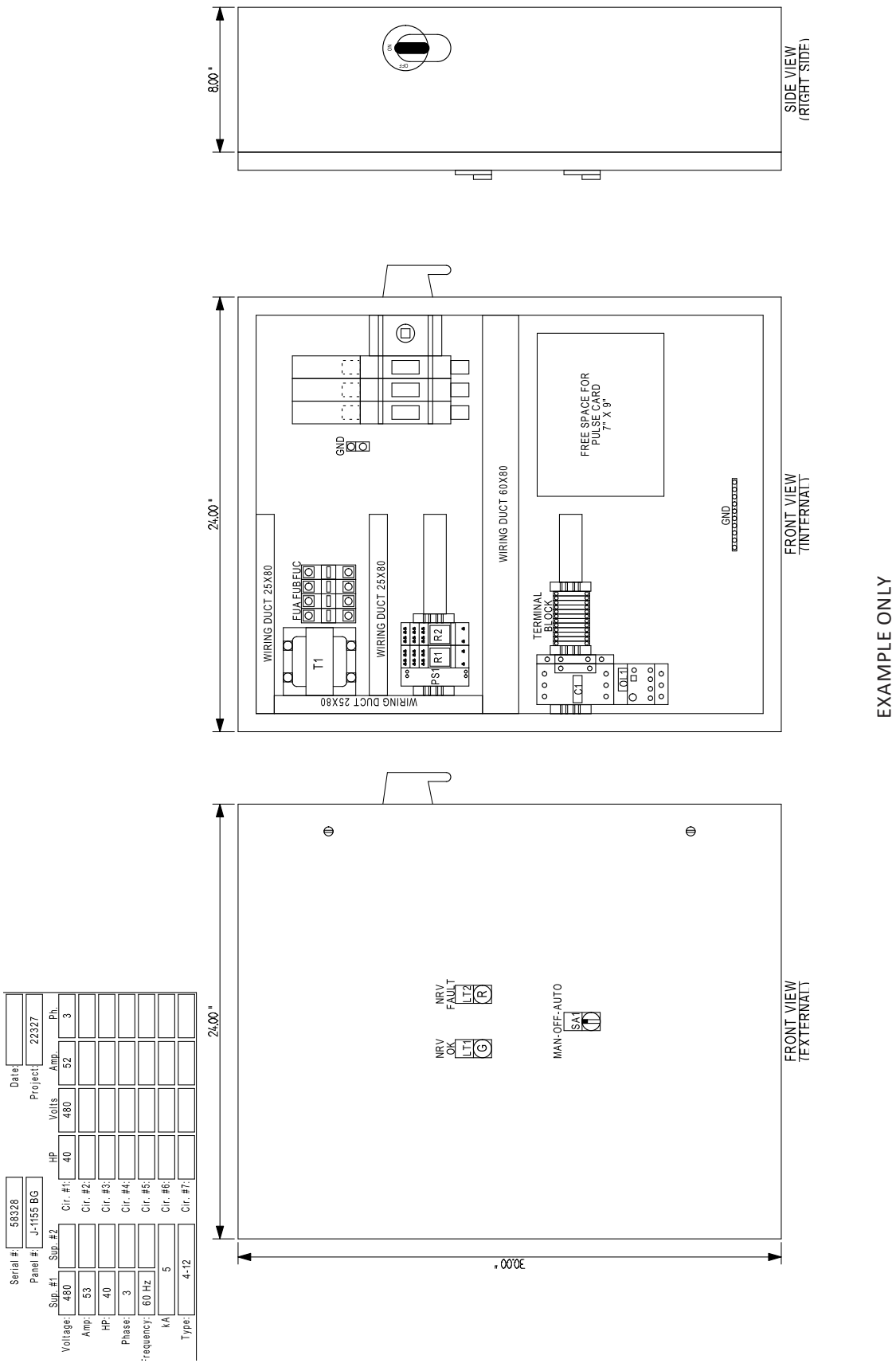
(1) Indicates the emplacement of auxiliary contacts, relays, contactors, etc.

(2) Indicates the origin of the auxiliary contacts, relays, contactors, etc.

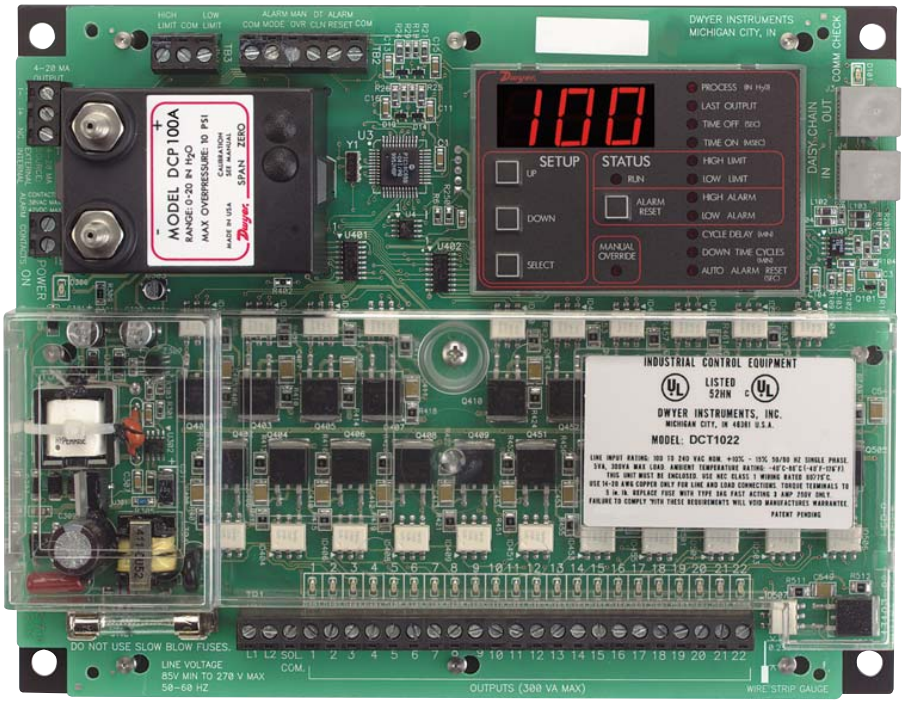

FAN
480 VAC / 3 PH / 60 HZ
40 HP
52 A
MTR1
T1
T2
T3
OL1
52 A
(5-B-5)
C1
(5-B-7)
FUB
2 A
FRM
120V
(4-A-0)
N
(4-A-7)
L-120V
X1
X2
T1
480 VAC-120 VAC
150 VA
H1
H2
FUA
1 A
ATDR
L11
L13
L1
L2
L3
DISC1
DISCONNECT: 100 A
FUSES: 70 A (AJT)
PADLOCKABLE
GND
SUPPLY
480 VAC
60 A
3 PH 60 HZ


NRV OK
NRV FAULT
LT1
GREEN
LT2
RED
R1
R2
PS1
30 W / 2.5 A
120 VAC
12 VDC
FUC
3 A
NRV
PEPPERL+FUCHS
106262
CONTACT N.O.
NRV
PIZZATO
FA 4530-2SN
CONTACT N.O.
SPARK
DETECTOR
120V
12VDC
N


START / STOP
FAN
MAN - OFF - AUTO
SA1
MAN
AUTO
REMOTE
OFF / ON
REMOTE
GREEN
C1
OL1
(3-B-5)
PULSE CARD
DCT 1000
7" X 9"
EXAMPLE ONLY



EXAMPLE ONLY



Thank you for purchasing the DCT1000 Dust Collector Timer Controller. You have selected a state of the art dust collector timer control that will provide years of dependable operation and service.

The DCT1000 Dust Collector Timer Controller was designed to be used with pulse-jet type dust collectors for on-demand or continuous cleaning applications.

Continuous cleaning applications do not require external inputs and can be used for time based “on-demand” cleaning through use of the cycle delay feature.

For on-demand applications, the plug-in pressure modules (DCP100A/200A) can be used to take full advantage of all the features the DCT1000 offers, or an external pressure switch (such as the Dwyer Photohelic®) can be used for High/Low limit control.

As with traditional Dwyer products, the Dwyer DCT1000 was designed so that it is easy to use, thus allowing for a quick and easy start up for your dust control applications. The contents inside this installation and operating manual will guide you through the features of the DCT1000 and how they can be applied to get the most out of your dust control requirements.

SPECIFICATIONS

DCT1000 Timer Controller:

Output Channels: 6, 10, & 22 channels. Expandable to 255 channels using DCT1122 & DCT1110 channel expander boards.

Power Requirements: 85 to 270 VAC, 50 or 60 Hz.

Solenoid Supply: 3A maximum per channel.

Fuse: 3A @ 250 VAC. Low voltage control circuitry is isolated from the line voltage for system safety.

Temperature Limits: -40 to 140°F (-40 to 60°C).

Storage Temperature Limits: -40 to 176°F (-40 to 80°C).

On Time: 10 msec to 600 msec, 10 msec steps.

On Time Accuracy: ±10 msec.

Off Time: 1 second to 255 seconds, 1 second steps.

Off Time Accuracy: ±1% of the value or ±50 msec, whichever is greater.

Weight: 1 lb 3.0 oz (538.6 g).

Agency Approvals: UL, cUL.

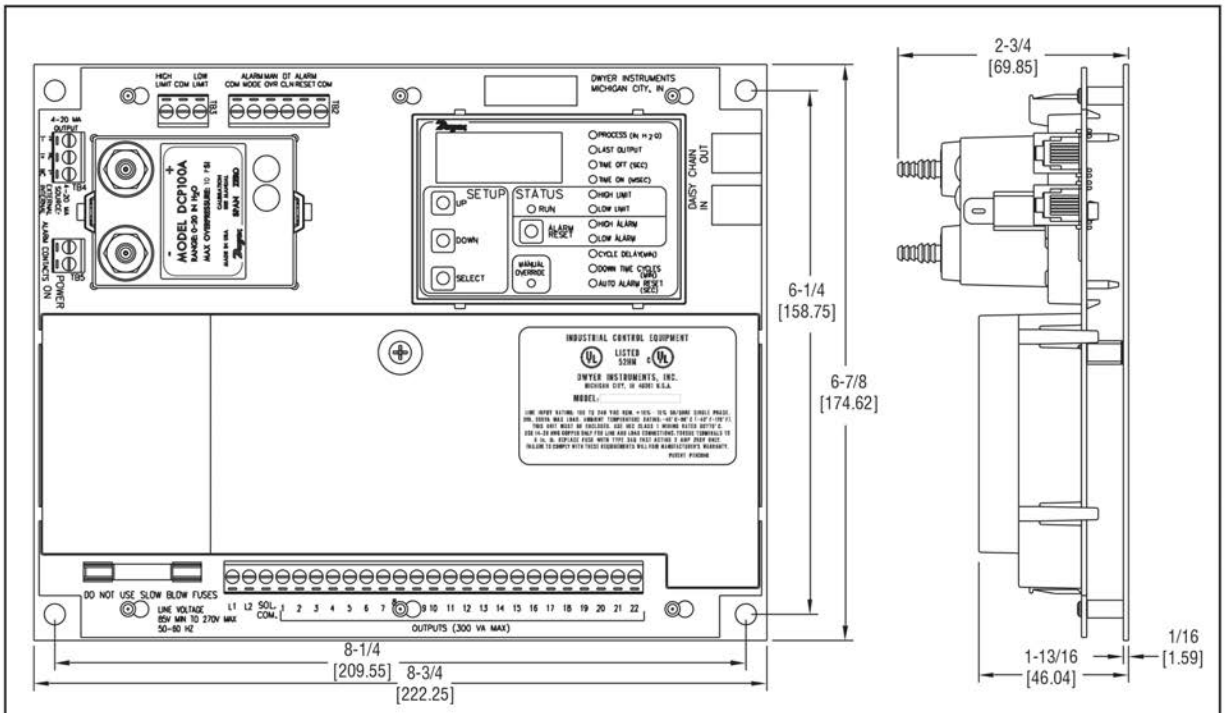
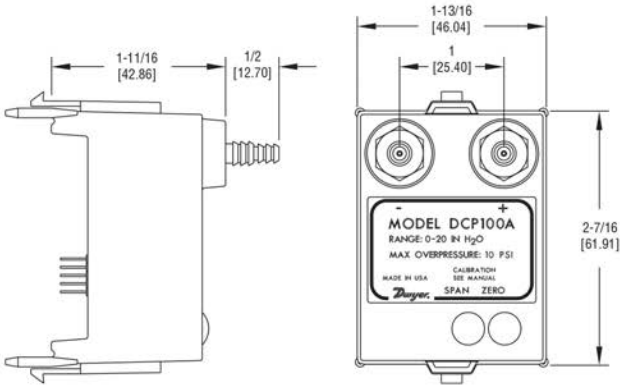


Figure 1 – Dimensional Specifications for the DCT1000 (shown with optional module DCP100A)



The DCP100A or DCP200A pressure modules are designed exclusively for use with the Dwyer DCT1000 Dust Collector Timer Controller boards for on-demand cleaning requirements. These series of modules are available in 10″ w.c. [2.49 kPa] or 20″ w.c. [4.98 kPa] ranges, which allow for differential process pressure measurement as indicated on the display of the master controller. An isolated 4-20 mA readout channel is provided for remote pressure display. The 4-20 mA output may be wired either for use with an external power supply and indicator or using the isolated on-board 24 volt power supply to power the loop.

SPECIFICATIONS

Pressure Ranges: 10″ w.c. or 20″ w.c.
Temperature Limits: -40 to 140°F (-40 to 60°C).
Pressure Limit: 10 psi (68.95 kPa).
Pressure Limit (differential): 10 psi (68.95 kPa).
Accuracy: ±1.5% F.S. @ 73°F (22.8°C).
Output Signal: 4-20 mA.
Alarm Contacts: 1.5A inductive load, 3A resistive load @ 30 VAC or 40 VDC.
Process Connections: Two barbed connections for use with 1/8″ (3.18 mm) or 3/16″ (4.76 mm) I.D. tubing.
Weight: 5.5 oz (155.9 g).

Table of Contents

1.0 Installing the DCT1000

Warning: Always install and service this device with the power off and a lockout installed if required. Line voltages will be exposed at the power/output connector and at the fuse. For this reason, we have installed a plastic guard to protect the user from accidentally contacting line voltages.

Please note *that the power guard serves as a safety feature and should not be removed under any circumstances.*

For ease of installation and maintenance, the connectors and fuse have been left unprotected. The open frame design of the DCT1000 will require an enclosure that meets appropriate safety and local code requirements. For optimal performance, the enclosure should also protect the controller from dirt, water and direct sunlight. There are no special orientation requirements, and the controller mounts easily using the mounting holes on the factory installed base plate.

Caution: Do not run control wires, communication cables, or other class 2 wiring in the same conduit as power leads. The system may malfunction if class 2 wiring is run together with power conductors.

1.1 Power Requirements

The controller has a "universal" power supply that will allow operation on 120 VAC to 240 VAC power lines. The input voltage must be between 85 VAC and 270VAC either 50 or 60 Hz. No circuit changes are required when switching between these voltages. The solenoid loads, however, must be sized to accommodate the line voltage selected.

1.2 DCT1000 Terminal Connections

The line and solenoid connections are located at the lower edge of the board below the plastic guard. The terminal block is a "Euro" style connector system that clamps the wire within the connector body. The connector will accept wire sizes from 14 to 22 AWG. The wire should be stripped to no more than 0.25 inches to avoid shorts or expose line voltages creating a potential safety hazard. To assist you in determining the proper wire gauge required, a strip gauge is provided at the lower right corner of the board. The connector system used on the DCT1000 is specified for single connection but you can piggyback to a single lug provided that local codes allow for this and good workmanship practices are followed. To power up the master controller and the channel expander, connect line power to L1 and L2 (see Dimensional Specifications, Figure 1). Connect the solenoids between the selected output and the solenoid common. Solenoid common and L2 are internally connected. Switches connected to the control inputs at the top of the board must be isolated contacts connected only to the relevant terminal and to the common terminals. The following subparagraphs describe the external switch connections. Refer to figure 2 for switch connection illustration.

1.2.1 External Pressure Connection

The controller may be used with an external pressure limit switch or sensor to provide demand-cleaning operation. The high limit and low limit inputs may be used for this purpose. A simple on-off system can be established with a single pressure switch connected to the high limit input. Better control can be achieved with a high and low limit switch/gage such as the Dwyer Photohelic®. In this on-demand mode, time on, time off, and cycle delay may be programmed to define the cleaning cycle. A three pin terminal block (TB3) provides connection for external high and low limit switches (see Figure 2 on the next page). These switches must be isolated contacts. The common line must not be connected to equipment ground or protective ground, since these may introduce electrical noise and cause improper operation or possible damage to the control board. The operation of these inputs are summarized as follows (see next page):

Current Operation	Low Limit Switch	High Limit Switch	Next Operation
Hold	Open	Open	Hold
Hold or Run	X	Closed	Run
Hold	Ø	Open	Hold
Hold	Closed	Ø	Run
Run	Closed	≠	Run
Hold	Closed	Ø	Run
Run	≠	Open	Hold

Ø Transition from open to closed
≠ Transition closed to open
X Either open or closed

Note: *If a DCP100A or DCP200A pressure module is installed in the master controller, the switching functions are ignored.*

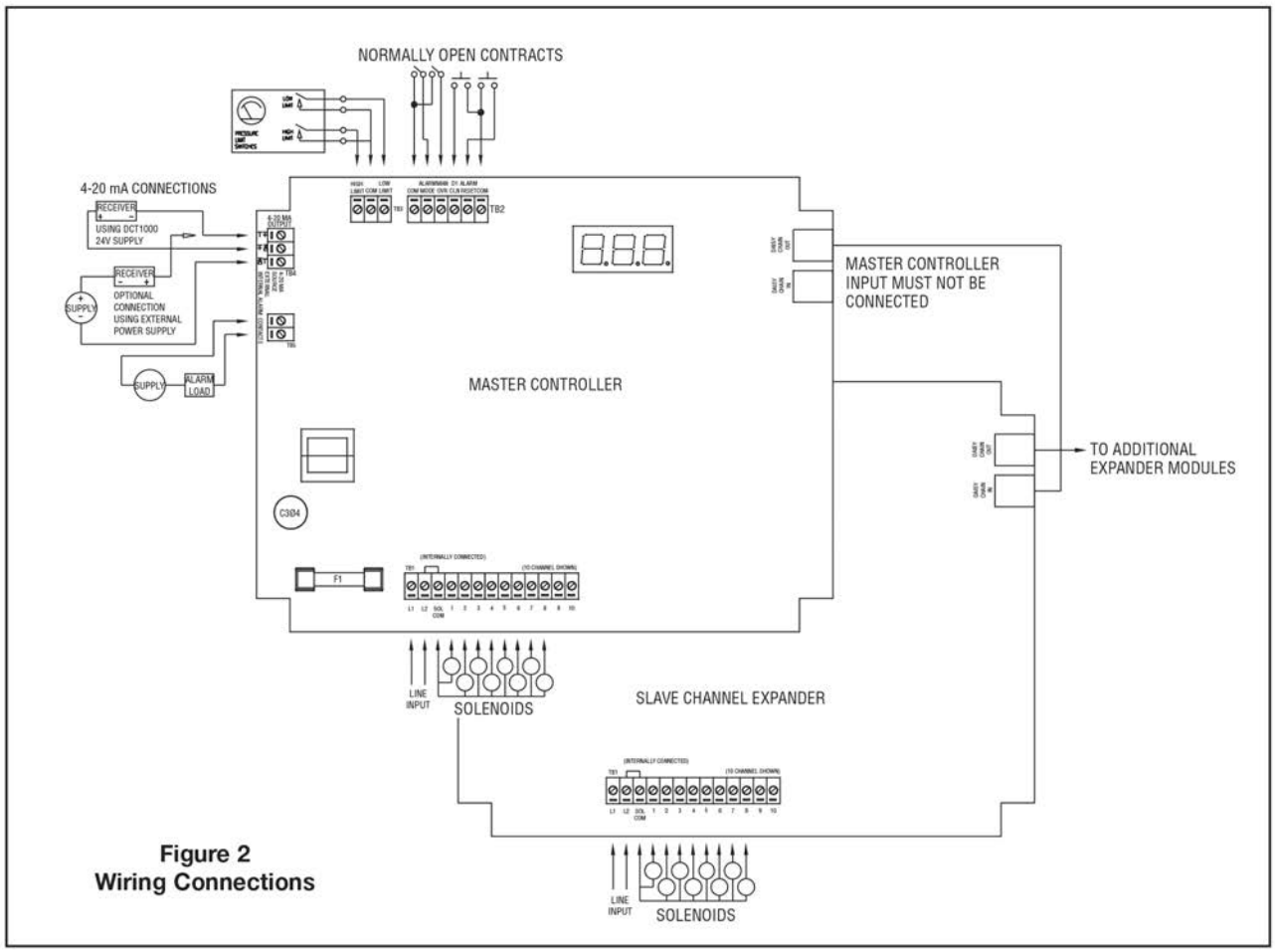


Figure 2
Wiring Connections

1.2.2 Manual Override Switch Connection

The manual override function allows the system to be set to the run mode regardless of other conditions. This mode is enabled when the manual override terminal and common are connected. It is disabled when they are disconnected. If the controller is to be run in continuous mode, a jumper wire may be wired across these terminals. When manual override is needed on a periodic basis, wire a SPST toggle switch between the manual override terminal and the common terminal.

1.2.3 Down Time Clean Connection

The down time clean operation forces the system into a run cycle for a programmed length of time between 0 – 255 minutes. The operation is initiated by connecting the down time clean terminal to a common terminal. This function is best accomplished through use of an external normally open switch.

1.2.4 Connecting Multiple Timer Boards

Both master controller boards and slave boards can have up to a maximum of 22 channels each. The system may be expanded up to 255 channels using master controller boards and slave boards. The DCT1000 will automatically detect the total number of channels involved and make their outputs available. You will note that both the master controllers and slave boards have a telephone style connector mounted on the upper right hand side of the board. These connectors are for use in systems requiring slave boards that must be daisy chained together to provide additional channel capability. For systems that require the slave boards, the master controller must not have any connection made to its daisy chain input unless it is designated as a slave control itself. (For larger systems requiring more than three slave boards, a master controller must be used as the fourth slave board to satisfy power requirements.) This sequence would repeat itself until the limit of 255 channels has been reached. The cables used are not ordinary telephone style cables.

Caution: Do not use telephone jumper cables. These have a "twist" in the connection and may damage the controllers. Cables designed for use with the DCT1000 are available from Dwyer Instruments (Model DCAC02-2 ft., DCAC04-4 ft., etc.).

1.2.5 Continuous Cycle Mode

The master controller has several operating modes available for different applications. Starting with the most basic mode, it is capable of operating in a continuous cleaning cycle. This can be initiated by either placing a jumper between the high limit input and the common, or the manual override input to the common connection. Controlling this cycle are three setup parameters: time off, time on, and cycle delay. Time on and time off specifically deal with the solenoid on time and the time interval between the end of the on pulse and the start of the next. The cycle delay allows a delay of up to 255 minutes to be programmed between the end of one complete cleaning cycle and the beginning of the next. This allows additional options for defining a cleaning profile.

1.3 DCP Installation

Caution: Prior to installing the DCP100A/200A please review the operating specifications carefully.

Some operating systems, especially in pneumatic conveying applications, may see static pressure or vacuum conditions that exceed the capability of the DCP100A/200A pressure module. For these conditions there are a number of alternate Dwyer pressure products that can be used to meet your application requirements, all of which can be terminated to the Dwyer DCT1000 Dust Collector Timer Controller. For more information on these and other Dwyer products, please call us at (219) 879-8000, or visit us on the web at www.dwyer-inst.com or www.dust-controls.com.

1.3.1 Location

The system should be located in an enclosure that meets relevant safety standards and electrical codes. There are no other special orientation requirements as the pressure module is not orientation sensitive. Care should be observed when routing the air hoses to ensure that any potential condensation or moisture will not drain into the sensor. Where heavy condensation is present, a drip loop or an in-line filter should be installed to ensure long term operation.

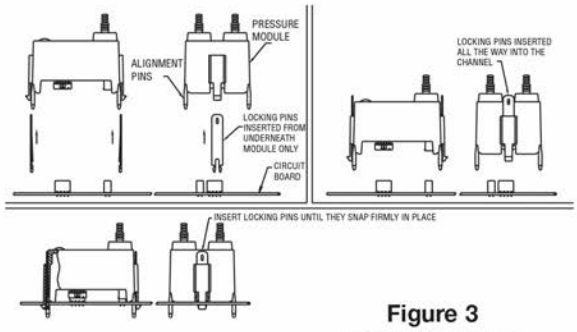


Figure 3
DCP Installation

1.3.2 Connecting DCP to Master Controller

The pressure module is attached to the Master Controller using integral connectors on both units. The insertion ports for the pressure module are located in the upper left quadrant of the DCT1000 Master Controller. The pressure module can be removed by compressing the retaining clips on each end of the module, then gently pulling the module out of the master controller board.

When inserting the module, the following procedure should be adhered to insure proper installation:

- Examine the bottom of the pressure module and note the orientation of the connectors.
- Align the module so that these connectors match the connector receptacles on the controller board.
- Orient the module with the four alignment pins over their respective mounting holes.
- Gently press the module into the connectors and snap the retaining clips on either end of the module into their slots.
- Always install and service this device with the power off and a lockout installed if required. "Hot" plugging the pressure module into an operating system may damage the system or cause the calibration parameters to be erased.

When installing or removing the module make sure to orient the module straight with board. Installing or removing the module at any angle may break the alignment pins.

1.3.3 Pressure Model Locking Pins

The DCP100A and DCP200A are supplied with locking pins to secure the module. In normal operation these are not required since the latching tabs are sufficient to secure the module even in a high vibration environment. However if the unit is to be shipped or used where severe mechanical shock could be encountered the locking pins ensure the module will not snap out of the board.

To install the locking pins, from underneath the module insert one pin behind each of the two latching tabs. Press these all the way into the channel. The ends of the tabs will extend through the slots at the top of these channels. Next insert the module in the board as described above, making sure it is properly aligned and snaps firmly in place. Press the exposed locking tabs down until the tab is seated behind the latch in the board. To remove the module, slide the locking tabs up using a small screw driver then remove the module as described above. See Figure 3.

1.3.4 DCP Connections

When a pressure module is installed, the 4-20 mA process signal and the alarm relay contacts are available. The 4-20 mA circuit is isolated from ground and other signals. The alarm relay contacts are isolated, normally open contacts. Pressure connections may be made to the stepped hose barbs with either 1/8″ or 3/16″ I.D. tubing.

Caution: Do not force the module into the connectors. Forcing the insertion may damage the connectors. Properly aligned, the module should snap into place.

1.3.5 DCP Maintenance

The pressure module should require very little maintenance under normal operational conditions. However, periodic calibration may be desirable to assure accuracy of the readings. The module may be removed and returned to the factory for calibration.

1.4 Alarm Mode Switch Connection

The auto alarm reset is controlled by the alarm mode switch connection. To enable the auto alarm reset the alarm mode input must be connected to a common connection. A jumper may be used when auto alarm reset is always active. A switch may be used if there are times that the auto alarm reset must be disabled. The switch must be an isolated contact and wired such that no connection is made between either of the wires and ground. See Figure 2 Wiring Connections.

1.4.1 Alarm Reset Switch Connection

The alarm may be reset either by pressing the Alarm Reset button on the control panel or by an external switch connected between the alarm-reset terminal and one of the common terminals. The alarm reset will only operate if the pressure module is installed and the pressure has returned to a normal condition. See Figure 2 Wiring Connections.

1.4.2 Connecting the 4-20 mA Loop

The pressure module provides an isolated 4-20 mA output, which may be used to remotely monitor the differential pressure across the dust bags or cartridges. The connection is made on the master control module at the terminal block designated for this signal. The connection is a 2-wire configuration with the option of using either an external 15 to 35 VDC power source or using the internal 24 VDC source. See Figure 2 Wiring Connections.

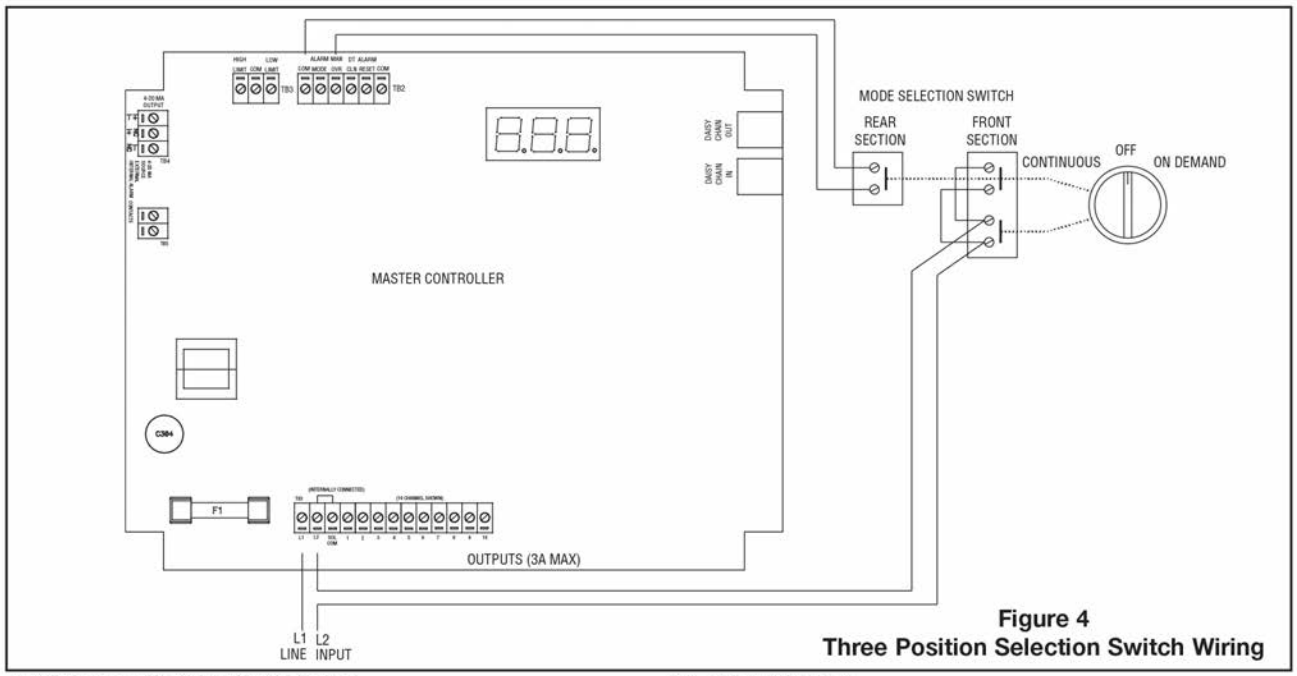


Figure 4
Three Position Selection Switch Wiring

1.4.3 Connecting the Alarm Relay

With the pressure module installed, a relay contact is provided for controlling an external alarm. This relay is a single form-A contact. It is activated when either the high alarm threshold is exceeded, or the pressure drops below the low alarm threshold. The connection is made at the two-pin connector TB5. See Figure 2 Wiring Connections

1.5 Three Position Selection Switch Wiring

An optional mode selection switch is available with the weather-proof enclosure. With this switch the user may select either continuous cleaning, on-demand cleaning, or off. This switch is supplied factory wired as shown in Figure 4. The switch has a front and rear section. The front section, consisting of two independant contacts, controls the power to the board. These contacts must be wired in parallel as shown in the diagram. The rear section controls the manual override, which when closed will force the system into a continuousmuct be reconneccted, follow the wiring diagram.

Caution: Do not interconnect the low voltage manual override leads with the power leads. This will destroy the control board as well as pose a serious shock hazard

2.0 Programming the DCT1000 Master Controller

We've made it easy to navigate the DCT1000. Menu items can be accessed simply by pressing the "SELECT" button. The menu item that you are currently accessing is indicated by the illumination of an LED. To change menu items, all you have to do is push "UP" to increase a value or push "DOWN" to decrease a value. There are no keystrokes that you need to memorize, special combinations, or passwords that are required.

The master controller is equipped with an on board display and programming information center. The controller will power-up with the process indicator illuminated. If a pressure module is installed, the display will indicate the measured pressure in inches of water (w.c.); otherwise it will normally be blank.

2.1 • Last Output

The Last Output setup selects the last channel to be activated. When first selected, the display will flash the last output available in the system. With single board installations, this will be the number of channels installed, typically 6, 10 or 22. This value becomes more important when multiple modules are installed. The last output value flashed will be the sum of all channels available in the system.

After the last available channel indication has completed, the currently programmed last channel value is displayed. This value may be changed using the "UP" and "DOWN" buttons. The minimum value is one while the maximum value is the maximum number of installed channels, including all expansion modules.
The default value is the maximum number of channels. Pressing "SELECT" will change the setup mode to Time Off Setup.

2.2 • Time Off (Sec.)

Time off defines the period of time between solenoid activations when no channels are enabled. This may be set between one second and 255 seconds. The factory default is 10 seconds. The display will show the current time off setting when the time off setup mode is entered. The value may be changed using the Up and Down buttons. Pressing both "UP" and "DOWN" simultaneously and holding for approximately four seconds will restore the default value of 10.

2.3 • Time On (msec)

Time On Setup sets the solenoid on time. The display will indicate the currently programmed time on setting. This is measured in milliseconds. Using the "UP" and "DOWN" buttons, the value may be changed. The value may be set between 10 msec and 600 msec in 10 msec increments. Pressing the "UP" and "DOWN" buttons simultaneously for approximately four seconds will restore the factory default value of 100 msec. Pressing the "SELECT' button will advance the setup mode to the High Limit setup if the pressure module is installed. With no pressure module, it will step to Cycle Delay Setup.

2.4 • High Limit [Only available when DCP connected]
The High Limit Setup, available only with a pressure module installed, sets the pressure at which the cleaning cycle will begin. This value may be between zero and the pressure module full scale pressure. Normally, the High Limit should be above the Low Limit. If, however, the High Limit pressure is set below the Low Limit, the cleaning cycle will begin when the High Limit is exceeded and stop when the pressure falls below the High Limit. The Low Limit in this case will have no effect. Pressing "SELECT" will change the system to the Low Limit Setup mode.

2.5 • Low Limit [Only available when DCP installed]
The operation of the Low Limit, available only with a pressure module installed, is identical to the High Limit except this value sets the pressure where the cleaning cycle will end. The upper settable value is the calibration pressure of the pressure module and the lower limit is zero. Pressing "SELECT" will change the system to the High Alarm Setup mode.

2.6 • High Alarm [Only available when DCP installed]
The operation of the High Alarm Setup is identical to the High and Low Limit Setup and is only available when a pressure module is installed. The High Alarm default is 0. The upper settable value is the full scale pressure of the pressure module and the lower limit is zero. Pressing "SELECT" will change the system to the Low Alarm Setup mode.

2.7 • Low Alarm [Only available when DCP installed]
The operation of the Low Alarm Setup is identical to the High and Low Limit Setup. The Low Alarm default is 0. The upper settable value is the full scale pressure of the pressure module and the lower limit is zero. Pressing "SELECT" will change the system to the Cycle Delay Setup mode.

2.8 • Cycle Delay (min)
The cycle delay inserts a delay time between the end of the last channel and the beginning of the first channel. This may be set to between zero and 255 minutes. The factory default is zero. Setting the value to zero will disable the delay. Pressing "SELECT" will change the system to the Down Time Cycles Setup mode.

2.9 • Down Time Cycles (min)
The Down Time Cycles setup will select a value between zero and 255 minutes. The factory default is one minute. Selecting zero will disable the operation. When the down time cycles is activated by shorting the down time cycles input to the common terminal, (see figure 2) the system will enter a forced cleaning mode for the programmed duration. *NOTE:* The cycle delay, if one is programmed, will not be inserted in the timing cycle. Pressing "SELECT" will change the system to the Auto Alarm Reset Setup mode, if a pressure module is installed, or to Process when no pressure module is available.

2.10 • Auto Alarm Reset (sec) [Only available when DCP installed]
The Auto Alarm Reset Setup, available only when a pressure module is installed, allows the auto alarm reset time to be selected. This value may be set between zero and 255 seconds. The factory default value is five seconds. When the auto alarm reset is enabled by shorting the auto alarm reset terminal to a common terminal, (See Figure 1) the alarm will be reset after the pressure returns to the normal range and the timeout has expired. Pressing "SELECT" will change the system to Process mode.

3.0 Maintenance Support and Diagnostics

We have also included a number of features that will aid maintenance personnel in diagnosing problems or verifying that the system is operating.

3.1 Restoring Factory Defaults
The DCT1000 has been programmed with factory default values that meet most industry operating conditions. In the event that you want to restore all of the parameters to the original factory default values:

(1) Return the master controller to the process mode.
(2) Press and hold both "UP" and "DOWN" buttons.

The display will indicate a 10-second countdown, at the end of which all parameters will be restored to factory defaults. Releasing the switches prior to the end of the count will stop the process and no modification will be made. Likewise, in each of the parameter setup modes, pressing and holding the "UP" and "DOWN" buttons simultaneously will reset the individual default value, leaving other settings unchanged.

3.2 Power Indicator
A power on LED indicator is provided at the center left edge of the board. This will be illuminated when the power supply is operating properly. If the power LED is not illuminated, the primary power may be off or there is a fault in the power circuit.

3.3 Active Channel Indicator
Located just above the solenoid terminations, you will find that each channel is provided with an LED that is illuminated when the triac switch is on. This allows a visual correlation between the channel being pulsed and the operation of the solenoid.

3.4 Comm Check Indicator
The comm check indicator can be found in the upper right hand corner of the slave and master controller board (just above the "out" terminal, a telephone style connector). This indicator is used for two purposes. First, on a master controller a brief flash once per second is produced to indicate that the system is operating. Second, this indicator is used to show when the communication check operation is performed on slave boards. The master controller will check each of the slave boards at a rate of about one inquiry per second, starting with the slave board connected directly to the master controller and ending with the last slave board in the chain. The master controller will flash its Comm Check LED for about 250 msec each time it makes a communication check. The external module selected for test will also flash its Comm Check LED for about the same time each time it is interrogated. Observing this test sequence will indicate that the communication between boards is operational. When a slave board powers up, the Comm Check LED will be illuminated continuously. It will be extinguished when the master controller has initialized its communication channel. This indicator then shows that a master controller is operating and that each slave board is responding properly on the daisy chain.

3.5 Error Codes

Error codes will be displayed on the three-digit display when certain faults occur. Most of these indicators are associated with the daisy chain communication, but certain error codes pertain to single board operation also. These codes are:

Display	Meaning	Action Required
Err 1	This is a "watchdog" reset that is enabled when the master controller isn't able to cycle through its operation.	Make sure all electrical connections are appropriately shielded so the master controller is not disrupted by noise.
Err 2	The pressure module has failed to respond to the request of the master controller.	The master controller will try to recover from the fault. If unsuccessful, replace the pressure module.
Err 3	Communication error in the daisy chain interface. This will only appear when the master controller is used in conjunction with a slave board.	Make sure the control cable used in the daisy chain interface is properly shielded from noise.
Err 4	The master controller has detected a change in module configuration or a fault in one of the modules.	Reinstall all modules in accordance with the instructions in the factory IOM.
Err 5	If the fault described in "Err 4" is not corrected, the master controller will reconfigure the modules that are responding properly and operate at a degraded condition.	Reinstall all modules. Contact factory if the problem persists.
Err 6	A message error affecting the software of the master controller or one of its modules.	Check the integrity of all connecting cables used to drive slave boards for additional solenoids. Also check the electrical grounding of the system installation.
Err 7	Indicates that one of the triac drivers are not functioning.	Return to factory for evaluation and repair.
Err 8	Internal Error.	Contact the factory.
Err 9	Unassigned message code.	Contact the factory.

4.0 Glossary of Terms

- **Run Mode:** The term used when the timer board is firing the solenoids.
- **Pressure Module:** The pressure measurement subsystem that includes the software and hardware for on-demand cleaning, alarms and signal retransmission of the process variable (i.e., the differential pressure across the dust bags).
- **Master Controller:** The primary timer board that contains all of the major features, connections for external inputs and power to drive the DCT1000 Dust Collector Timer Controller system.
- **Power Guard:** A plastic shield that covers the output triacs and other line voltage circuitry.
- **Demand Cycle Mode:** A process in which the run mode is enabled through the on-board pressure module or an external switch such as the Dwyer Photohelic®.
- **Euro Connector:** A "caged" connection used to terminate solenoids, incoming power, or external switches on the DCT1000.
- **Continuous Cycle Mode:** A time based cycling mode dependent on solenoid time on/off settings and time set between complete cycles.
- **Manual Override:** Allows the user to override the DCT1000 remotely or from the master controller panel through use of a switch or a wire jumper.
- **Slave Board:** A channel expander that is used in conjunction with the master controller to accommodate additional solenoids on larger dust collection systems. It can be recognized easily as it does not have the on-board display panel or the power supply present. A master controller may also be used as a slave board.

Still need help? Please feel free to contact one of our customer service representatives at 219-879-8000 or visit us on the web at www.dwyer-inst.com or www.dust-controls.com. Thank you for choosing Dwyer Instruments.

6.7 Compressed air connection

WARNING!

Compressed air must be free of oil and humidity. Contamination of compressed air may result in a poor cartridge filtration, decreased cleaning and reduced life time. Purge the compressed air line to remove any debris prior to connecting air line to the dust collector air tank. Shut off the compressed air system and purge all air lines prior to servicing or maintaining the collector.

- Locate the pneumatic air tank(s) behind the MAXITUBE dust collector.
- Connect air line to the tank(s) using pipe seal. Check for possible leak(s).

Note: The use of an air dryer is strongly recommended to avoid any problem related to humidity in the compressed air system. Install a shut off valve, pressure regulator and filter on the compressed air line. Those components are not supplied by A.Q.C. unless required by the customer. All components must meet a maximum 90 PSIG pressure. NEVER ALLOW MORE THAN 100 PSIG. Damages to components may occur.

WARNING!

All components must meet a maximum 90 PSIG pressure. NEVER ALLOW MORE THAN 100 PSIG. Damages to components may occur.

6.8 Ventilation ducting

- The dust collector should be installed as close as possible to the source of dust in order to minimize the length of ventilation ducting.
- Do not install short radius elbows.
- Install taps with 30 degrees inlet or less.
- Do not install straight T taps.
- Join ducting using tapping screws and caulking for a proper seal.

7 START UP

7.1 Check list

Prior to starting the collector for the first time, the check list must be followed to ensure a proper continuous operation.

1. Remove all objects in and around the inlet and outlet.
2. Check if all accessories and optional equipment are installed correctly.
3. Ensure the compressed air gauge indicates 90 PSIG. Check for air leaks.

7.2 Electrical connections

WARNING!

The electrical connections must be executed by a qualified electrician and with respect to codes and regulations. For safety measures, shut off power supply to the collector prior to perform the installation.

1. Ensure all electrical connections sealed and power is available.
2. Check remote control connections (if any) and that all breakers are OFF.
3. Switch ON power to the unit.
4. Start the fan and shut off immediately. Check fan rotation. The rotation is indicated on the label of the fan.
5. Adjust the adequate air volume using the air damper (if any) at the fan outlet.

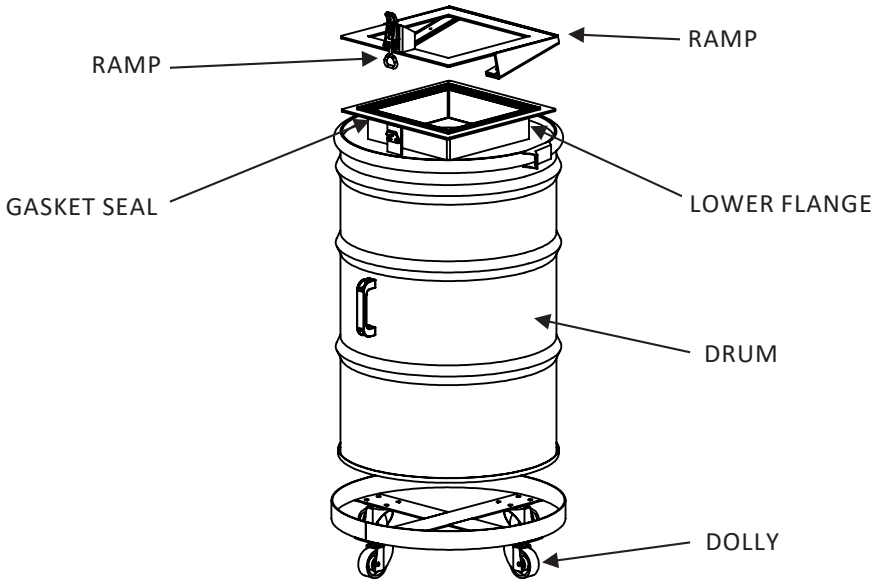
Note: An excessive air volume may shorten the life expectancy of the cartridges or cause an electrical power surge on the fan and the system.

8 OPTIONAL EQUIPMENT

8.1 Quick clip drum, ramp and buggy

This option eases the removal of dust filled 55 gallons drums. The quick clip flange allows fast changes of drums without the help of tools. The buggy permits easy displacement of full drums.

Figure 6



Follow these steps to remove the drum from the collector:

1. Hold up the drum
2. Unlock the quick clip system
3. Lower drum onto the ramp slides
4. Slide drum slowly toward you

WARNING!

Do not let drum fall free while unlocking the quick clip system. Be careful when releasing the quick clip.

Follow these steps to install the drum back into position:

1. Ensure the flange gasket seal is in place and intact. Replace if damaged.
2. Slide the drum into the ramp slides.
3. Check to make sure the drum flange is pushed at the end of the slide.
4. Lift drum up.
5. Attach the drum to the quick clip system.
6. Check the seal assembly. Adjust quick clip system if there is a leak.

8.2 Platforms and ladders

Platforms and ladders are available for 8 to 80 cartridges MAXITUBE units. They may be stationary or attached to the dust collector structure. Contact an A.Q.C Inc. Representative to know which platform design is best suited for your needs.

Instructions for platform and ladder assembly are included on delivery.

WARNING!

Ensure platforms and ladders are correctly installed before climbing on the platform.

8.3 Explosion relief vent

Note on explosion venting panels: a minimum clearance of 25' (8 meters) free of obstacles, pedestrian walkway, building walls, trees or bushes is required to allow dispersion of possible blast. Contact factory for details.

A.Q.C. Inc. will not be held liable nor responsible for any injury or damage caused by fire or explosion as per the agreement issued upon construction of the dust collector.

However, the explosion relief vent is designed to meet NFPA-68 criteria, related to explosion venting systems. The entire venting surface is calculated using such criteria. The explosion venting door is held shut using handles especially designed to open under a specific pressure. Handles were factory adjusted as per the manufacturer's requirements considering the explosion venting surface, the type of handles and the type of attachments.

WARNING!

The explosion vent must point in a direction away from workers area, offices, pedestrian walkways or any other area usually accessible, vegetation or any matter that would sustain damages caused by an explosion.

8.4 Magnehelic gauge

The Magnehelic gauge is a differential pressure gauge used to measure the difference between the clean and dirty air. This allows a visual reference on the filters status and indicates when it is time to replace it.

This gauge is generally factory installed unless under specific request to A.Q.C. If the Magnehelic gauge is not part of the collector, connect the **(HIGH-PRESSURE)** tube on the **"dirty"** side of the collector. Connect the other **(LOW-PRESSURE)** tube on the **"clean"** side of the collector. This gauge is not available when the collector is supplied with a DCT-1000 electronic board and a DCP pressure module since it is this one that will read the pressure differential.

9 START/STOP PROCEDURE

9.1 Start up with new filters

Shut 50% off all inlet and outlet dampers (if any) before starting the unit. This procedure is mostly helpful when the dust to be filtered sticks to the filter surface. Do not operate the filtration system until the pressure differential has increased by at least 1 w.g. from the starting point. This operation allows "caking" onto the cartridges for a better filtration efficiency.

9.2 Regular start up

Ensure all optional equipment are operational including the blower (i.e. screw conveyor, rotary valves, etc.). Open the compressed air valve and activate the sequencer. Start the blower and allow dirty air into the filtration unit. It is imperative that you follow the sequence of this operation.

9.3 Shut down

To shut down the system, follow these steps. Cut power to the fan. Shut off compressed air to unit and sequencer. Close inlet and outlet dampers in order not to have dirty air back into the collector and avoid risks of explosion.

If optional equipments are installed, shut down such equipment in reverse order.

10. SAFETY

10.1 Staff-Workers

All tasks on the dust collector must be performed by a minimum of 2 people and this, at all times. Once all duties have been completed, remove all tools from inside the collector.

WARNING!

Never work alone inside the dust collector. All staff must be accounted for prior to closing the collector access doors and starting the collector.

Workers must wear protective clothing and apparatus such as safety goggles, gloves, respiratory equipment, etc. when working inside the collector.

Instructions in this booklet must be read and understood prior to performing tasks on the collector.

10.2 Electrical components

All electrical components must be shut down and main breaker locked to avoid any possible risk of electrocution when handling or working on such components.

10.3 Explosive dusts

If the dust to be collected is naturally explosive or inflammable once inside the collector, an explosion relief venting system and/or a fire extinguishing device will be required. If you have any doubt as to the nature of the dust to be collected, call your A.Q.C. representative.

10.4 Anchors

All sections of the dust collector including the optional equipment must be bolted to the floor in order for the unit to be stable and secured, should an explosion occur or in case of high winds.

10.5 Interior installation

When a dust collector equipped with an explosion relief venting system is installed inside the premises, the unit must be installed within 3 meters (10 feet) of an exterior wall and the explosion vents has to be connected to an exhaust duct leading outside. This duct must be designed to sustain the same pressure as the one within the dust collector. If clean air is returned into the premises, dispositions should be taken to exhaust the air back outside should a filter be defective or any other possible failure. A safety after-filter could be installed to protect the staff against accidental breathing of unfiltered dusts.

The air flow coming out of the collector should be headed away from the staff, offices, pedestrian walkways, and any other area accessible to people.

10.6 Spark producing activities

When the dust or particles to be collected are stocked within the collector or adjacent equipment, there should be no welding process or any other spark or flame producing activities around the collector until the system has been shut down and cleaned. If such operations have to be performed, the filter elements must be removed from the collector and stored in a dry area.

11 MAINTENANCE

WARNING!

Refer to the Safety section prior to proceeding with any maintenance or inspection on the dust collector.

A preventive maintenance program should dismiss most emergency shut downs and extend the expected life time of the system. The charts contained in this chapter explain the maintenance operations and procedures in case of problems with the system.

The schedules and delays in between operations may be modified with conclusive experiments or with a specific usage of the collector.

If you have any questions, do not hesitate to call an A.Q.C. Inc. representative.

11.1 Replacement of bags

If a top bag removal system is used, the bags with the supporting cages must be removed from the top of the tube sheet. There are two types of top bag removal systems. Knee high where the roof of the collector must be removed, and the top bag plenum which is a walk-in. Each row has a blow tube that extends the full depth of the collector, this tube must be removed to access each row of filters.

WARNING!

Knee high top bag removal. To access top of collector, service person must work on top of collector. A safety harness must be used to prevent falls from the collector, the harness should be safely clamped to the safety rail. Always work in groups of two.

Note : Some baghouse collectors use a pleated filter that quadruples the filter area, in this case there are no cages.

Maintenance staff must wear protective goggles and an adequate respiratory apparatus. Purge the system of all gazes and vapors other than air. Ensure the air flow is shut off and that the interior temperature is at a safe level.

Follow these steps to remove the bags.

WARNING!

The use of safety equipment and adequate protection is needed for the changing of filters. The filter bags may be heavier than expected. Use caution when removing the filters to avoid injury. Do not drop the filters.

Dust bags do not puncture easily, and they should last many years. A telltale sign of leakage will be dust appearing in the return ducting system. Also, upon removal of the roof, or in the top bag removal plenum, look for traces of dust out of the filter outlet that will indicate which filters are leaking. Have the new set of filters ready. The metal internal structure prevents the filters from caving in on themselves.

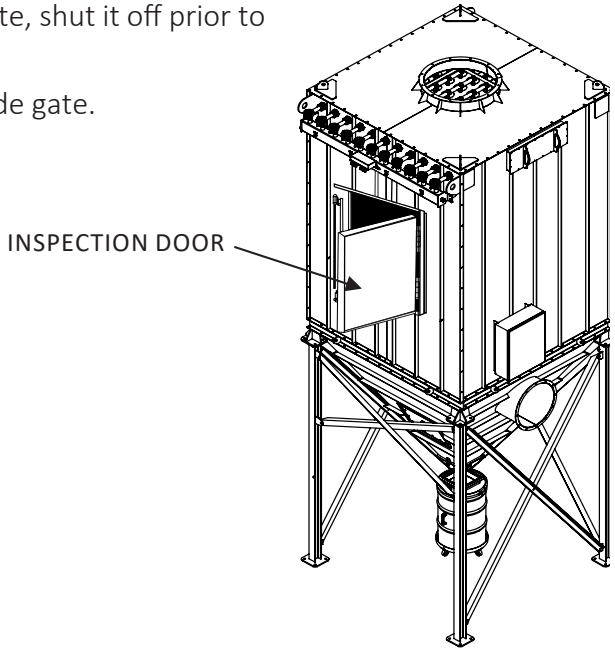
1. Remove the cage by lifting out of the hole in the tube sheet.
2. Remove the bag and dispose of it.
3. Replace new bag in the hole (see instructions) snapping it in place.
4. Insert the cage over inside of the filter and push in place.

Replace roof

11.2 Dust disposal

1. Shut down the system and empty the dust storage bin as needed to minimize the accumulation of dust in the hopper.
2. If the unit is equipped with drums, empty those when 2/3 full.
3. If the unit is equipped with a slide gate, shut it off prior to removing the drums.
4. Put back the drums and open the slide gate.

Figure 7



11.3 Compressed air system

WARNING!

Shut off the compressed air valve and bleed the line feeding the collector prior to performing maintenance on the unit.

1. Periodically check the compressed air components such as the air dryer and regulator. Replace the in line air filters that's feeding compressed air to the unit.
2. Remove any humidity that may be present in the compressed air lines using the recommendations of the manufacturer.
3. With the compressed air system switched on, check the cleaning valves, the activated solenoids, the pneumatic hoses for possible leaks. Correct any problem and replace defective parts.

11.4 Explosion vent

1. If the system requires an explosion vent, the following components must be checked.
2. Explosion vent must be free of any obstruction.
3. Check for corrosion or rust.
4. Check for any physical or mechanical damages.
5. Ensure the sign is still on the door.
6. Ensure the explosion vent is protected from ice and snow.
7. Check for cracks or for metal fatigue.
8. Ensure there are no missing parts.
9. Swing door open and ensure mechanical parts are well lubricated.
10. Ensure the door is well sealed against the dust collector.

11.5 Control panel

The sequencer is designed to control the air pulse cleaning valves (jet pulse). It allows the programming of a cleaning sequence which will be repeated permanently acting on the solenoid valves. The pilot indicating lights (diodes) show which solenoid is powered. For units equipped with auxiliary accessories (rotary valves, screw conveyors), refer to the documents included with the control panel.

11.6 Programming instructions

11.6.1 DCT-500 sequencer

The card programming is factory adjusted. The valves opening time is set at 100 msec and the delay between each opening is set at 10 seconds.

Should those delays be modified for any reason, adjust the potentiometers located at the top of the electronic board. **"PULSE ON"** represents the opening time and the **"PULSE OFF"** represents the delay in between each cleaning sequence.

Refer to the manufacturer's owner's manual for any questions concerning the DCT-500 sequencer.

Note: Do not readjust the valves opening time **"PULSE ON"** or the delay between each cleaning until appropriate tests have been made. A too short or too long delay could reduce the life expectancy of the filters. Contact your A.Q.C. representative for questions.

11.6.2 DCT-1000 sequencer

The card programming is set at the factory. The valve opening time was set at 100 msec and the delay set at 10 seconds. Furthermore, if the electronic card was supplied with a pressure module for on demand cleaning other parameters may be programmed such as low and high limits, high and low alarms, etc.

Should those delays be modified for any reason, adjust them as per the following instructions:

Press the **"SELECT"** button to scroll the different programming options. Press **"UP"** and **"DOWN"** buttons to modify the value.

1. **"LAST OUTPUT"** sets the amount of valves the system uses.
2. **"TIME OFF"** sets the delay in between each pulse.
3. **"TIME ON"** sets the valve opening time.
4. **"HIGH LIMIT"** sets the highest limit at which the sequencer will start pulsing (available only with the DCP pressure module).
5. **"LOW LIMIT"** sets the lowest limit at which the sequencer will stop pulsing (available only with the DCP pressure module).
6. **"HIGH ALARM"** and **"LOW/ALARM"** are adjustments for an alarm signal to be activated if either of the two (2) settings are passed.
7. **"CYCLE DELAY"** allows a waiting period between each cleaning cycle.
8. **"AUTO ALARM RESET"** allows the original automatic alarm settings.

Refer to the manufacturer's owner's manual for any questions concerning the DCT-1000 sequencer.

Note: Do not readjust the valves opening time **"PULSE ON"** or the delay between each cleaning until appropriate tests have been made. A too short or too long delay could reduce the life expectancy of the filters. Contact your A.Q.C. representative for questions.

12 MAINTENANCE AND INSPECTION

The chart indicated below shows different inspections and the frequency at which they should be performed.

Frequency of inspections	Components	Procedures
Daily	Dust collector	Check the clean air outlet for possible presence of dust or smoke traces.
		Check the level of dust in the storage bins or drums. Empty if needed.
		Check the proper operation of the diaphragm valves.
	Magnehelic gauge	Check and log data. If the values indicated are above the fixed limits, refer to the troubleshooting section.
Weekly	Filters	Check for possible leaks. Repair if necessary.
		Ensure the cartridges are well sealed.
		Look for accumulation of dust or debris above and inside the filters. Clean if necessary.
Yearly	Dust collector	Perform a complete inspection of the fume arm and components.
		Check the status of the cartridges and the filtration efficiency. Replace if necessary.
		Check for missing or chipped paint and rust. Remove rust and apply paint touch ups.
		Check status on explosion venting systems as per the manufacturer's recommendations. (Refer to the explosion vent section 6.3 on page 28)

13 TROUBLESHOOTING

Problem	Probable cause	Solution
Dust or smoke at the clean air outlet	Failure of a filter	Open top to check.
Insufficient suction of dust	Fan rotates the wrong way	Check rotation of fan.
	Access doors are not properly sealed	Check all access doors and gaskets. Also check hopper for leaks. (Refer to installation on page 9)
	Fan has obstructions	Check for obstructions at the fan outlet. Remove any debris. Adjust the air damper.
	Filters need to be replace	Remove and replace the used filters with the same.
	No pressure in air system	Ensure there is a minimal 90 PSIG in the system. (Refer to electrical connection on page 12)
	Air pulse cleaning is insufficient.	Check if voltage output to the sequencer is sufficient. Check and change fuse(s) if required. (Refer to electrical connection on page 26)
	Leaks in the compressed air system	Lock all electrical breakers hooked up to the dust collector and bleed the pneumatic lines. Check for debris, wear and tear or a break in the diaphragm valve by removing the cover. Check for possible leaks at solenoids near the pneumatic hoses. Replace if necessary.
	The sequencer card does not respond	Check if voltage output to the sequencer is sufficient. Check and replace the fuse if required. If voltage and fuse are working and card still does not respond, change the card. (refer to card connection on page 2)
Filtration has minimal effect	Air pulse cleaning is insufficient	Check if voltage output to the card is sufficient. Check and replace fuse if required (refer to card connection diagram on page 12)

Problem	Probable cause	Solution
Filtration has minimal effect	Shortage of compressed air	Ensure there is a minimal 90 PSIG in the system. (Refer to electrical connection on page 10)
	Valves do not work properly	Lock all electrical breakers hooked up to the dust collector and bleed the pneumatic lines. Check for debris, wear and tear or a break in the diaphragm valve by removing the cover. Check for leaks at the solenoids and on the pneumatic hoses. Replace and repair all damages. If the valves are frozen, check the air dryer or install a heating element around the valves.
	Wrong adjustment in pulsation sequence	Check for cleaning delay and that duration is adequate. (Refer to sequencer card adjustment on page 11)
	High level of humidity loads the filters	Check for relative humidity in the collector. Check for leaks. Take necessary measures to lower the humidity level.
	Wrong filter material	Replace the filters as per the recommendations of A.Q.C. Inc.
	Temperature of gas filtered is higher than anticipated	Check for temperature of gas. Improve the situation to obtain appropriate temperature
	Presence of static electricity in collector	Ground collector and components
Cleaning cycle light is ON but nothing happens	Solenoids are not wired properly	Check wiring between sequencer card and solenoids.
	Defective solenoids	Verify that solenoids work properly.
Cleaning cycle light is ON but nothing happens.	Defective sequencer card	Verify if sequencer card is defective by following the manufacturer's recommendations.
The alarm light is ON (DCT-1000)	Alarm value is too low	Adjust to a higher value.
	Too much pressure loss	Check and clean compressed air system. Replace cartridges if normal pressure does not resume to normal
	The pneumatic data hose is unplugged, broken or clogged.	Check the pneumatic hoses connected to the DCP pressure module for any leak or tear. Replace if necessary.

14 WARRANTY

14.1 ***Coverage:*** Aireau Quality Control Inc. or its designated affiliate (the "Seller") selling the product (the "Product"), warrants that the Product sold by Seller will be free from defects in material and workmanship for a period of 12 months from the date of its installation or 14 months from the date of shipment by Seller, whichever date is earlier (the "Warranty Period").

14.2 ***Exceptions:*** This warranty does not apply to any Product or portion thereof that: (i) has been used in a manner not in compliance with Seller's or manufacturer's documentation and instructions, (ii) has had changes, alterations or repairs made by a person other than a person authorized by Seller, (iii) has been improperly installed or used or has been installed or used contrary to applicable codes, standards, laws and regulations, (iv) has been subjected to improper storage, accident, neglect, misuse or abuse, (v) has been damaged during shipping, (vi) has been subject to damages resulting from normal wear and tear, (vii) has not been used with appropriate fire protection systems or explosion venting when required or (viii) has not been installed by a licensed contractor with experience in fire and explosion hazards and applicable codes, laws and regulations . For greater certainty, this warranty does not apply to filters sold as part of, or for use with, the Product. Unless specifically accepted otherwise in writing by Seller, Seller does not warrant that electrical equipment will comply with any laws or regulations of the customer's jurisdiction.

14.3 ***Claims:*** To benefit from this warranty, customer must notify Seller in writing of the Product defect, which notice shall include a reasonable description of the defect, within 10 days from the date such defect is discovered or ought to have been discovered.

14.4 ***Remedy:*** During the Warranty Period and subject to the terms herein, Seller will, at its option, either: (i) repair or replace the Product or any defective parts or components (except for filters) with Product, parts or components (except filters) free from defect or (ii) credit or refund the purchase price of the Product. If Seller so requests, customer must return the defective Product to Seller's place of business determined by Seller. Shipping, installation, removal and re-installation costs will be solely borne by the customer. **The foregoing shall be customer's sole and exclusive remedy for any defect in the product, its parts and components and for any breach of the warranty herein.**

14.5 ***Disclaimer:*** **Except as set forth in this section 1, each of seller, its affiliates and their directors, officers, subcontractors and representatives (the "seller parties") disclaims all representations and warranties, whether written, oral, express, implied, statutory, or otherwise, including all implied warranties of merchantability, quality, fitness for a particular purpose, non-infringement, and warranties arising from a course of dealing, course of performance, usage, or trade practice and customer hereby expressly waives any right related thereto. Without limitation to the foregoing and except as expressly set out herein, the seller parties do not represent or warrant that: (a) the use of the product will be timely, uninterrupted or operate in combination with any other hardware, software, system or data or (b) the product will meet customer's intended use, requirements or expectations.**

15 LIMITATION OF LIABILITY

15.1 ***Limitation of Liability:*** **Notwithstanding anything to the contrary, in no event will the seller parties' liability arising out of, or related to, the product or its parts and components, whether pursuant to contractual or extracontractual liability, tort or under any other theory of liability, exceed the price paid to seller for the product giving rise to such liability.**

15.2 ***Exclusion of Consequential and Similar Damages:*** **Notwithstanding anything to the contrary, in no event will the seller part ies be liable for any indirect, punitive, special, exemplary, incidental, consequential or other similar damages of any type or kind (including loss of revenue, profits, use or other economic advantage, damages due to product failure, work stoppage or delays in delivery) arising out of, or in any way connected to, the product or its use, breach of contract, tort (including negligence), strict liability, product liability, or otherwise, regardless of cause, even if the seller parties had previously been advised of the possibility of such damages or could have reasonably foreseen them.**

15.3 ***Fire and Explosion and Acceptance of Risk:*** Customer acknowledges that improper installation or use of the Product may result in fire or explosion. To minimize such risks, proper installation, operation, and maintenance of the Product in accordance with all applicable codes, standards, laws and regulations is critical. Prior to installation and use, customer shall ensure that the Product meets the applicable codes, laws and regulations, including those related to the addition of appropriate fire protection systems or explosion venting. Installation shall be performed by a licensed contractor with experience in fire and explosion and applicable codes, laws and regulations.

16 APPLICABILITY

16.1 The terms herein constitute the only warranty given by Seller with respect to the Product. No other terms and conditions, whether included on a purchase order or in any other document, shall apply or bind the Seller with respect to the Product warranty and all such terms and conditions and documents are expressly disclaimed.

17 GOVERNING LAW

17.1 These warranty terms will be governed by and construed under the laws in force in the Province of Ontario, Canada, excluding its conflict of law rules.