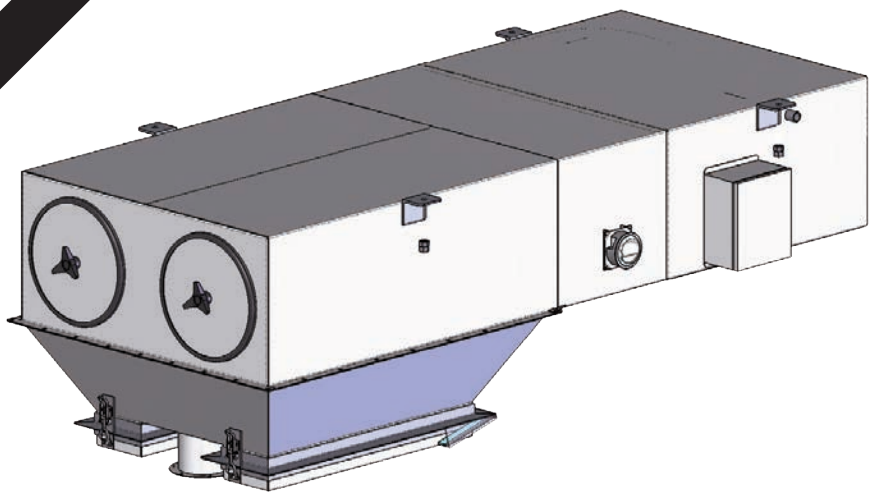
AQC

DUST COLLECTION
& SOURCE CAPTURE

Owner's manual for installation,
use and maintenance



MAXITOP™

INDEX

1 INTRODUCTION

This manual refers to MAXITOP ceiling cartridge dust collectors. The following pages will present each aspect of the unit, which is part of a complete air filtration system (fan, filter cartridges, controls etc.).

WARNING!

The use of MAXITOP dust collector will require proper installation and handling. Contact A.Q.C. Inc. if you have any doubt in regard to the use of your dust collector.
Not following directives and procedures could cause injuries or property damages.

2 INFORMATION ON THE MAXITOP DUST COLLECTOR

Model: _____ Serial number: _____

Delivery date: _____ Date of installation: _____

Name of customer: _____

Address: _____

_____

_____

Accessories: _____

Other: _____

3 PRESENTATION

The MAXITOP ceiling installed filtration unit is a dust collector with pulse cleaned filtration that cleans the whole surface of the cartridges. The dust collector offers high efficiency while requiring low energy consumption. The cartridges are cleaned one row at a time and in sequence.

The MAXITOP dust collector is largely used where airborne pollutants are a nuisance. Main applications are welding, buffing and sanding, pharmaceutical and food plants, handling of volatile particles, etc.

The MAXITOP unit can be equipped with or without fume arms, pulse with timer board or differential pressure controler, etc.

3.1 Each MAXITOP dust collector includes:

- 10 and 14 gauge steel cabinet with aluminum primer and polyurethane paint.
- Air inlet and outlet
- Direct drive fan.
- Control panel for automatic pulse cleaning
- Pressure gauge
- Access doors to filtration cartridges
- Dust collector drawers
- Compressed air tank
- Lift lugs aslo used for ceiling or wall support
- Valves and diaphragms

The MAXITOP unit may be delivered fully assembled but minimal field assembly may be required. The cleaning system electrical connection will need to be performed at the jobsite when installing the dust collector.

4 MODEL NUMBERS

Models	HP / Kw	Air flow CFM / L/s	Filter area ft.sq. / M2 (polyester)	Filter area ft.sq. / M2 (cellulose)	Compressed Air Required (P.S.I.)	Number of Arm	Weight [lbs] / [kg]
DB4-T315-AMB	3 / 2.2	3000 / 1415	520/48	1040 / 96	80 – 90	N/A (grid only)	800 / 363
DB4-T355-AMB	5 / 3.7	4500 / 2125	520/48	1040 / 96	80 – 90	N/A (grid only)	815 / 370
DB4-T315-206	3 / 2.2	2200 / 1040	520/48	1040 / 96	80 – 90	(2) 6'' X 10' / 160 mm X 3 m	940 / 427
DB4-T355-208	5 / 3.7	3500 / 1665	520/48	1040 / 96	80 – 90	(2) 8'' X 10' / 160 mm X 3 m	960 / 436
DB4-T355-306	5 / 3.7	3500 / 1665	520/48	1040 / 96	80 – 90	(3) 6'' X 10' / 160 mm X 3 m	1010 / 459

5 NORMAL USE

5.1 Start-up with new cartridges

Do not use the compressed air cleaning system until the pressure differential across the cartridges has increased to at least 1 inch W.G. in comparison to the starting pressure. The cleaning sequence should be kept at a 45 to 60 second delay between pulses. When the pressure differential increases to 2 inches W.G., the frequency between pulses may be reduced in order to maintain 2 inches W.G. differential. The dust collector can work at design air volume after one day of operation.

Note: starting air volume will be greater than design air volume. Amperage draw will be higher than design.

5.2 Normal start-up (with used cartridges)

Once the dust collector has reached normal operating conditions, every day start-up is done without adjustment.

5.3 Pressure differential

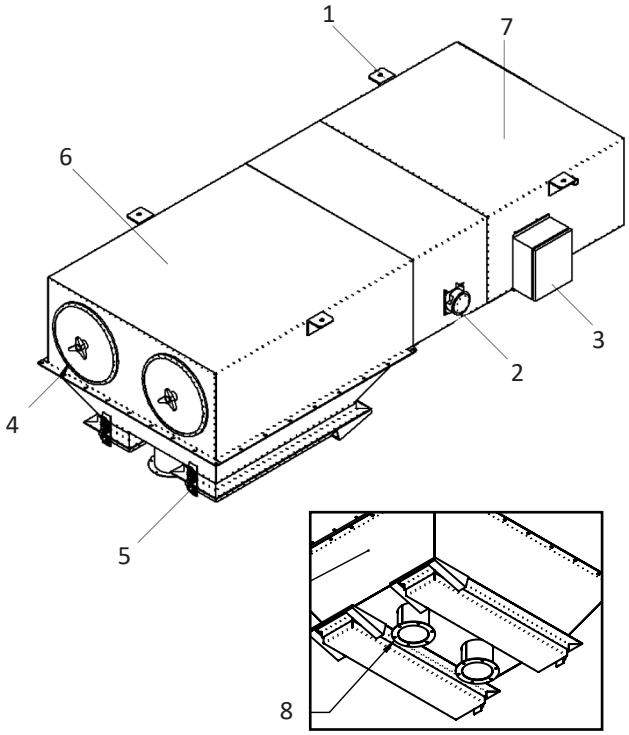
The normal operating pressure differential should vary from 0.75 to 4.0 inch W.G. for paper cartridges, and from 0.70 to 4.0 inch W.G for polyester cartridges (depending on collected dust and air to cloth ratio). If the designed pressure differential cannot be maintained, the pulse frequency must be changed. The pulse frequency can be increased or decreased by turning the adjustment screw on the electronic sequencer board.

6 OPERATION AND PURPOSE

During normal operation, the MAXITOP unit draws pollutants through the MAXAIR fume arms (if ordered) or through the inlet grilles if used for ambiant air cleaning. The automatic pulse control cleans the cartridges at regular intervals. Clean air can then be recycled in the facility if desired.

7 COMPONENTS

1. Lift and installation lugs (x4)
2. Pressure gauge
3. Pulse cleaning control panel
4. Cartridge access doors (x2)
5. Dust storage drawers (x2)
6. Filtration cartridges (x4)
7. Motor/blower/air tank compartment
8. Flanges for MAXAIR fume arms (x2 ou x3)



8 INSTALLATION

WARNING!

Installation of equipment must be performed as per local building laws and regulations. Structure must meet proper weight to support equipment.

8.1 Inspection of goods

MAXITOP filtration units are usually shipped fully assembled except for the installation of MAXAIR fume arms if ordered with the unit. Proceed with a visual inspection upon receiving the material and check for any damage or missing pieces. The unit is generally delivered on a skid.

Report damages immediately. Failure to do so will void any future claim.

8.2 Location

1. The location selected to install the unit must be able to support it's weight and the optional equipment. Dust weight contained in drawers must also be accounted for. This is an MAXITOP is an industrial dust collector and is equipped with a medium pressure blower. Noise is generated at some 90dba and more when pulsing. Location should be determined bearing workers position in the vecenity.
2. Install the dust collector in a manner to have access to the control panel, valves, fan, dust drawers and cartridges access doors.
3. A proper lifting device such has a lift or crane may be required for the installation of the unit.
4. For safety purposes, a minimum two (2) man crew should be assigned to install the dust collector.
5. A lifting device such as fork lift or scissor lift will be required to install the dust collector.

8.3 Installation

Unit may be installed in following manners:

Note: it is recommended to use industrial grade fasteners to attach the unit to the sup-port structure.

1. Usure the bottom of the collector is at a safe height to prevent accidents with workers or equipment.
2. Flush ceiling mount, by means of anchor bolts and vibration pads. (Figure 1)
3. Ceiling support structure. Suspended from from joices or support structure by means of angle iron braces or steel tubes and vibration pads. (Figure 2)

Figure 1

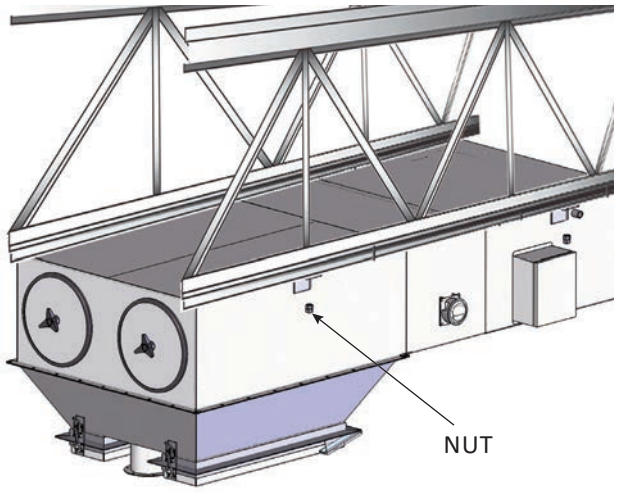
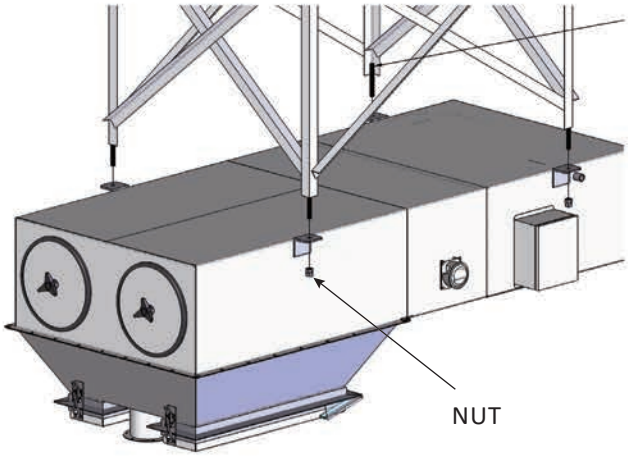


Figure 2



9 OPTIONAL EQUIPMENT

1. MAXAIR fume arm (Refer to the MAXAIR installation section).
2. ON/OFF remote push button control starter. (Refer to electrical section of this manual)

10 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 perform the installation. Lock off any power supply prior to servicing or maintenance.

The dust collector control panel acts has the blower motor starter and regulates the cartridge cleaning system.

The dust collector control panel is usually installed on the unit itself.

1. Using the electrical diagram supplied with the panel, connect the power supply from the main breaker (supplied by the customer) 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 schematics to perform connection to the power supply.
4. Verify for proper motor rotation.

10.1 Electrical connection for DCT-500 sequencer (figure 1)

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

Drawing # 3 shows a typical connection for a DCT-500 sequencer with 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.

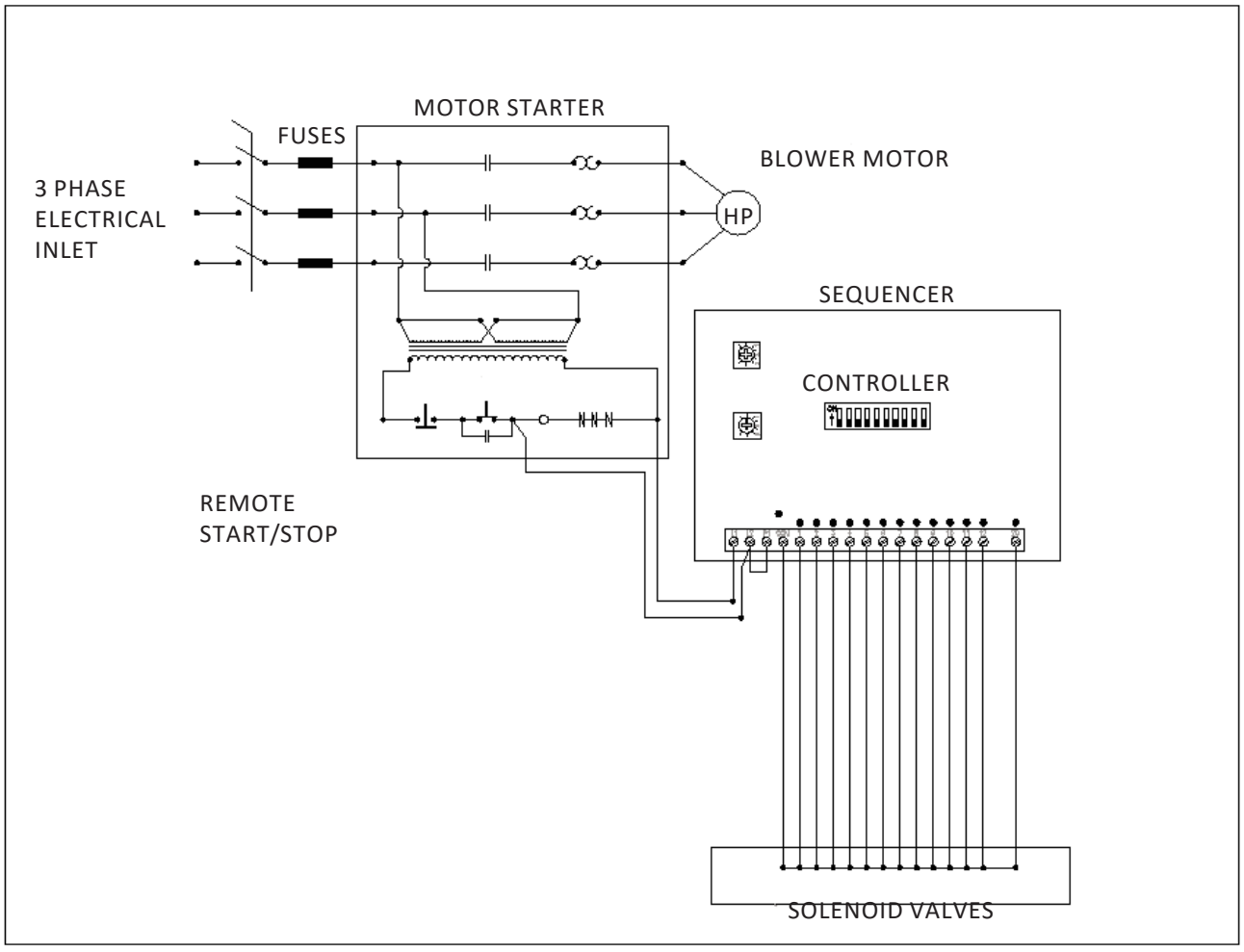
Refer to page 15 of this document to program the sequencer.

10.2 DCT-500 board specifications (figure 3)

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).

10.2.1 Typical connection for DCT-500 series electronic board figure 1

Figure 1



10.3 Electrical connection for DCT-1000 sequencer

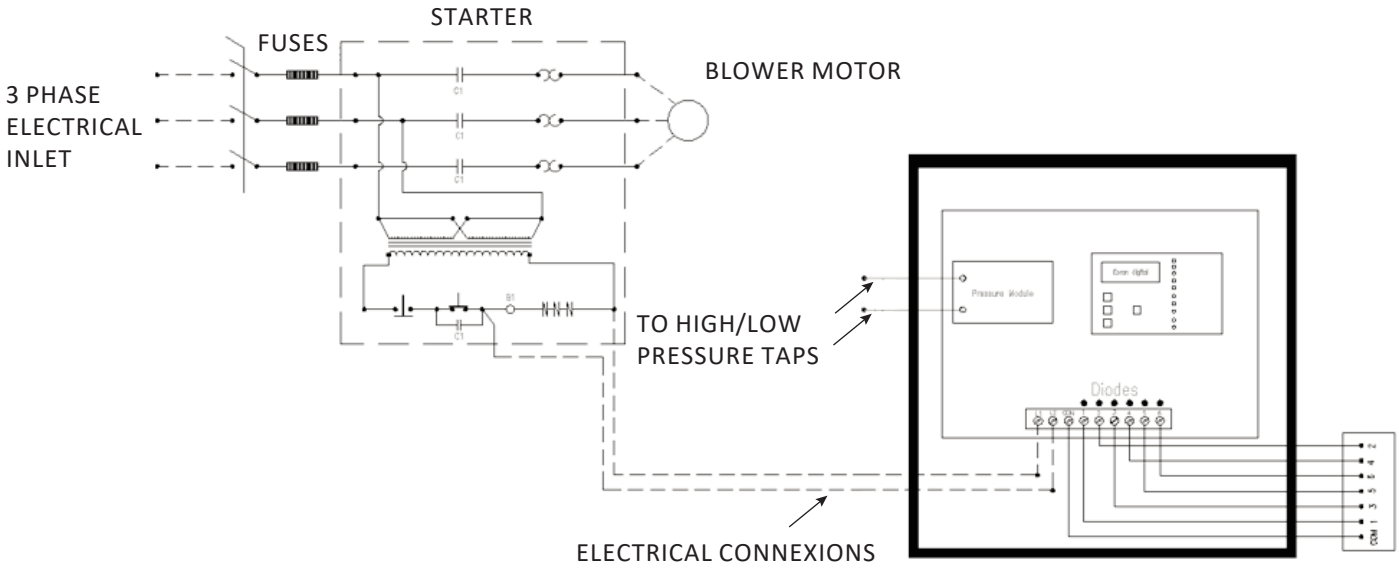
The MAXITOP dust collector is equipped with 115V solenoids which activate the cleaning valves. These solenoids are grouped in a NEMA 4 ½ panel installed behind the cabinet, above the air tanks. A differential control panel (DCP) may also be included on the electronic panel. Wiring for these solenoids is factory assembled. The DCT-1000 activates the solenoids in sequence in response to either cartridge pressure drop or a continuous bases. Figure 2 represents a typical connection with a starter to a DCT-1000 sequencer card. The electronic panel is activated in parallel with the fan startup. This operation will regulate the pulsation required as per the status of the filters.

10.4 DCT-1000 board specifications (figure 2)

DCT-1000 controller:
Number of connectors: 6, 10 & 22 Extendable to 255 connections by using extension card DCT-1122 & DCT-1110
Power: 85-270 VAC, 50-60 Hz.
Consumption: 5 W.
Power to solenoids: 3A max per connection.
Fuses: 3 A @ 250 VAC.
Temperature range: -40 to 140°F (-40 to 60°C).
Shutter time: 10 msec to 600 msec.
Shutter time accuracy: ±10 msec.
Down time: 1 second to 255 seconds
Down time accuracy: ±1% of setting
Weight: 1 lb, 3.0 oz (538.6 g).
Approval agency: UL, cUL.
DCP pressure module:
Pressure range: 10» w.c. ou 20» w.c.
Temperature range: -40 to 140°F (-40 to 60°C)
High pressure: 10 psig (68.95 kPa).
High pressure (differential): 10 psig (68.95 kPa)
Accuracy: ±1.5% F.S. @ 73°F (22.8°C).
Outlet signal: 4-20 mA.
Weight: 5.5 oz (155.9 g).

10.4.1 Typical connection for DCT-1000 sequencer figure 2

Figure 2



10.5 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 behind the MAXITOP dust collector.
- Connect air line to the tank 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.**

10.6 Electrical connections check and initial start-up

1. Ensure all electrical connections are sealed and current flows to the panel.
2. Ensure remotre controls (if ordered) are properly wired and breakers are OFF.
3. Remove objects away from air inlet or fume arm hoods.
4. Switch breaker to ON.
5. Switch the starter to ON and shut it OFF immediately. Check for proper fan rotation by looking at arrow on the motor.

Note : excessive air volume may shorten the filter life or cause an electrical surcharge to the motor or electrical system.

11 MAGNEHELIC GAUGE

The Magnehelic is a differential pressure gauge used to measure the pressure differential of the cartridges. This allows a visual reference on the filters status and indicates when it is time to replace.

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.

12 SHUT DOWN

To shut down the system, follow these steps. Stop the MAXITOP from the remote on-off switch. 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.

13 SPARK PRODUCING ACTIVITIES

If sparks are generated, they could cause a fire on the cartridges. Do not use the MAXITOP dust collector if sparks are generated or install a certified spark trap. Applications such as metal and wood should not be mixed on the same system.

14 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 use of the collector.

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

14.1 Cartridge replacement

The life expectancy is limited by it's resistance to the particles to be filtered and will require periodical replacements.

However, should a cartridge tear or fail, replacement should be performed as soon as possible.

Before replacing the cartridges, shut the fan OFF, shut power OFF to the sequencer and all related components. Lock the breaker in the electrical board. Compressed air feeding the the tank must be shut OFF and tan must be bled.

Maintenance staff should wear adequate protective cothing and eye wear and breathing apparatus is suggested. Purge the unit of all gases. Ensure no air is moving within the unit and interior temperature is safe to perform maintenance procedures.

Follow theses steps to remove the cartridges.

WARNING!

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

1. Remove the cartridge round access door by unscrewing the knob. Ensure that you do not damage the rubber gasket seal around the access door. Start this procedure from the top row of cartridges.
2. Slowly twist the cartridge half a turn to remove the deposit of dust that could be on top of the cartridge.
3. Gently slide out the cartridge along the yoke. Repeat steps 3 and 4 if it is a modle with two (2) cartridges deep.
4. Disposal of dirty cartridges must be done according to environmental regulations.
5. Check for any excessive dust accumulation in the hopper and clean if necessary.

Follow these steps to install the new cartridges.

Note: older type MAXITOP dust collectors are equipped with open/open and open/closed type cartridges. More recent type MAXITOP dust collectors are equipped with open/open and open/open type cartridges. Ensure you order the proper type of cartridges for replacement.

1. Ensure that you have the same cartridges as originally installed in the collector.
2. Slide the cartridges onto the yokes starting the open/open type. Check for the integrity of the cartridge seal.
3. Install the access door back onto the cabinet making sure the rubber gasket seal is well attached. Screw the knob in and assure all components are sealed
4. Switch power and compressed air system back on before starting the unit.

14.2 Dust disposal

Shut down the system and empty the dust storage bin as needed to minimize the accumulation of dust in the hopper.

14.3 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 in line air filters 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 activating solenoids, pneumatic hoses and possible leaks. Correct any problem and replace defective parts.

14.4 Programming instructions DCT-500 sequencer

The card program was 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.

14.5 DCT-1000 sequencer

The card programming was set at the factory. The valves 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, other parameters may be programmed such as low and high pressures, pulse connectors, 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 is passed.
7. **"CYCLE DELAY"** allows a waiting period between each cleaning cycle.
8. **"DOWN TIME CYCLE"** allows one or more cleaning cycles after the shutdown of the system.
9. **"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.

15 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.

Frequency of inspections	Components	Procedures
Daily	Arm joints, socket and damper	Ensure arm stays in desired position for source capture.
		Open and close air damper to ensure proper operation.
		Move arm left and right. Ensure no grinding or squeeking is heard or felt.
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 unit and components.
		Check cartridges status and filtration efficiency. Replace cartridges if necessary.
		Check for chipped paint or presence of rust. Perform touch-ups if necessary.
		Check fasteners supporting the unit.

16 TROUBLESHOOTING

Problem	Probable cause	Solution
Dust or smoke at the clean air outlet	Cartridges are not installed correctly.	Check installation of cartridges and repair if necessary. Seal the whole assembly (Refer to the replacement cartridge section on page 2).
	Cartridges are not adjusted	Screw in tight in order to have the gaskets squeezed against the frame.
	Cartridges are damaged	Replace defective cartridges (Refer to the replacement cartridge section on page 2).
	Gaskets are damaged	Check the gaskets on the access doors, honeycomb plate, and on the filters.
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.
	Cartridges need to be replaced	Remove and replace the used cartridges with the same type of cartridges. (Refer to cartridges replacement section on page 2)
	No pressure in air system	Ensure there is a minimal 90 psig in the system. (Refer to eletrical connection on page 2)
	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 2)
	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.
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 2).
	Shortage of compressed air	Ensure there is a minimal 90 psig in the system. (Refer to eletrical connection on page 2)

Problem	Probable cause	Solution
Filtration has minimal effect	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 duration. (Refer to sequencer card adjustment on page 2)
	High level of humidity loads the filters	Check the filtered material. 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.
	Air temperature is higher than anticipated	Check for air temperature. 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	Check if solenoids work properly.
	Defective sequencer card	Check 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.
	Alarm value is too low	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.

17 WARRANTY

17.1 ***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").

17.2 ***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.

17.3 ***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.

17.4 ***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.**

17.5 ***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.**

18 LIMITATION OF LIABILITY

18.1 ***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.**

18.2 ***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.**

18.3 ***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.

19 APPLICABILITY

19.1 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.

20 GOVERNING LAW

20.1 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.