

**N.R. MURPHY LTD.**  
**DUST COLLECTORS**

## **C SERIES**

### **OPERATING & MAINTENANCE MANUAL**



## **REVISION 3 - ENGLISH**



430 Franklin Blvd.  
Cambridge ON Canada N1R 8G6



(519) 621-6210



(519) 621-2841



[nrmurphy.com](http://nrmurphy.com) | [4nodust.ca](http://4nodust.ca)



[4nodust@nrmurphy.com](mailto:4nodust@nrmurphy.com)

## **MANUFACTURER'S WARRANTY**

All equipment is guaranteed as per the original manufacturer's guarantee & warranty. All parts fabricated by N. R. Murphy Limited are guaranteed to be free from defects in material and workmanship under normal use and service for the period of one year from the date of delivery or 2,000 hours of operation, whichever occurs first, on the cost of parts only, NOT replacement labour. Cost of labour and/or transportation is by the customer. THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, WRITTEN OR ORAL, WHETHER EXPRESSED BY AFFIRMATION, PROMISE, DESCRIPTION, DRAWING, MODEL OR SAMPLE. ANY AND ALL WARRANTIES OTHER THAN THIS ONE, WHETHER EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED.

LIMITATION OF DAMAGES: THE COMPANY'S LIABILITY, WHETHER IN CONTRACT OR IN TORT, ARISING OUT OF WARRANTIES, REPRESENTATIONS, INSTRUCTIONS, OR DEFECTS FROM ANY CAUSE SHALL BE LIMITED EXCLUSIVELY TO REPAIRING OR REPLACING PARTS UNDER THE CONDITIONS AS AFORESAID, AND IN NO EVENT WILL THE COMPANY BE LIABLE FOR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF PROFITS, RENTAL OR SUBSTITUTE EQUIPMENT, OR OTHER COMMERCIAL LOSS.

LIMITATION OF DAMAGES: THE SELLER WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS) ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE TRANSACTIONS IT CONTEMPLATES. IN NO EVENT WILL THE SELLER'S LIABILITY EXCEED THE PRICE THE BUYER PAID TO THE SELLER FOR THE SPECIFIC GOODS PROVIDED BY THE SELLER GIVING RISE TO THE CLAIM OR CAUSE OF ACTION.

## **REGULATORY REQUIREMENTS**

1. All equipment is subject to the approval of all governing bodies concerned (i.e. Dept. of Labour, Ministry of the Environment, Building Department, Fire Marshall or Fire Department, etc.), and is the responsibility of the customer or their agent.
2. Ontario's Occupational Health and Safety Act mandates that owners or lessees of processes where dusts are handled, obtain a Pre-Start Health and Safety Review bearing the seal and signature of a registered professional engineering stating that he/she is satisfied that the process, machine or equipment is in compliance with the regulations.
3. On wood dust applications, refer to NFPA 664 for the requirements.
4. In all cases when returning the clean filtered air from a dust collector to a building, an approved fire damper must be installed in the return air duct.

# PLEASE READ THE ENTIRE MANUAL BEFORE HANDLING, ERECTING OR OPERATING EQUIPMENT

Record your dust collector serial number here: \_\_\_\_\_

This number will be required to obtain information and parts in the future.

## **FORWARD**

For over 80 years, N.R. Murphy Limited has been dedicated to manufacturing and distributing high quality products that meet the needs of a wide range of industrial applications.

As a leader in the industry, we understand the importance of maintaining a safe and healthy work environment. That's why our dust collection equipment is designed to effectively capture and remove airborne contaminants and pollutants, protecting the health and safety of your workers and improving the overall efficiency of your operations.

Our Operating and Maintenance Manuals have been carefully crafted to provide comprehensive instructions for the proper installation, operation, and maintenance of our equipment. They are user-friendly, with clear and concise language and detailed diagrams to help you understand the equipment and how it works.

At N.R. Murphy Limited, we believe that our commitment to quality doesn't end with the sale of our products. We are dedicated to providing our customers with the support they need to get the most out of their equipment. Our team of experts is available to answer any questions you may have and provide guidance on best practices for maintaining and optimizing your dust collection system.

Thank you for choosing N.R. Murphy Limited for your industrial dust collection needs. We are confident that our Operating and Maintenance Manuals will help you to get the most out of your equipment and ensure a safe and healthy work environment for years to come.



For the most up to date manuals, or manuals for our other product lines, please visit [www.nrmurphy.com/manuals](http://www.nrmurphy.com/manuals)

# TABLE OF CONTENTS

|                           |          |
|---------------------------|----------|
| <b>SAFETY PRECAUTIONS</b> | <b>1</b> |
| Precautions.....          | 1        |

|  |          |
|--|----------|
| <b>INSTALLATION &amp; OPERATION</b>                                | <b>3</b> |
| Introduction.....  | 3        |
| Shipment and Receiving.....  | 3        |
| Handling.....  | 3        |
| Preliminary Instructions Before Erecting.....                      | 4        |
| Preliminary Inspection Before & After Start-up for all Models..... | 5        |
| Using Drum Storage.....  | 6        |
| Rotary Air Lock.....   | 6        |
| Bin Level Indicator.....   | 6        |
| Direct Drive Industrial Exhausters.....                            | 7        |
| Overloading the Exhauster Motors.....                              | 7        |
| Procedures to Empty Waste (elevated internal storage).....         | 7        |
| Compressed Air Requirements for Cleaning.....                      | 7        |
| Pulse Board/Sequential Controller.....                             | 8        |
| Diaphragm Valves.....  | 11       |
| Solenoid/Pilot Valves.....   | 12       |
| Conclusion.....  | 13       |

|  |           |
|--|-----------|
| <b>INSPECTIONS</b>                                       | <b>14</b> |
| Daily Inspections for First Week of Operation.....       | 14        |
| Inspections for the end of First Week of Operation.....  | 14        |
| Inspections for the end of First Month of Operation..... | 14        |
| Inspections to take place every 3 months.....            | 14        |
| Yearly Inspections.....                                  | 15        |
| Industrial Exhauster.....                                | 15        |
| Electric Motors and Equipment.....                       | 16        |
| Cartridge Filters.....                                   | 16        |
| Cartridge Installation and Removal (CP Models).....      | 16        |
| Dust Collector Housing, Supports, Doors, Hoppers.....    | 18        |
| Assembly of Door Handle Kits.....                        | 18        |

TABLE OF CONTENTS (cont)

|   |               |
|---|---------------|
| <b>OPTIONAL</b>                                 | <b>20</b>     |
| Explosion Venting .....                         | 20            |
| Relief Latches.....                             | 21            |
| Safety Ladders, Walkways and Railings .....     | 23            |
| Spare Parts Recommended.....                    | 23            |
| Mounting Instructions for Magnehelic Gauge..... | 24            |
| <br><b>TROUBLE SHOOTING</b>                     | <br><b>25</b> |
| <br><b>DIAGRAMS</b>                             | <br><b>26</b> |
| CP 6-4-2 Pulse Jet - Exploded View .....        | 26            |
| <br><b>MAINTENANCE LOG</b>                      | <br><b>27</b> |

# SAFETY PRECAUTIONS

## Precautions

1. **Installation or Maintenance crews must comply with all requirements of the Occupational Health and Safety Act and Regulations and the Company Safety Rules at the Dust Collector location. All workers must have formal fall protection training if working at elevation. Depending on local codes, personnel may require confined space training.**
2. Read entire manual before assembly or operation.
3. Personnel involved with Dust Collectors must be thoroughly familiar with the equipment operation and should be alerted to any unsafe conditions.
4. Only trained, authorized personnel should have access to the equipment.
5. Maintenance crews should consist of at least two people. Never allow personnel to work inside the Dust Collector alone. Prior to start-up, account for all personnel.
6. All areas beneath the collector should be restricted to authorized personnel only, when overhead work is being performed. All personnel in the area must wear safety gear complying with accepted safety standards.
7. Before entering the collector, these additional precautions should be observed:
  - a. Turn OFF all electrical circuits, including the timing controls. Lock switches in the “OFF” position and remove all fuses.
  - b. Wear adequate protective gear, including a respirator if needed.
  - c. Make certain that all air flow has ceased.
  - d. Check the internal temperature for safe levels.
  - e. Keep inside the walkway area when working on bags and cages, when walkways are furnished.
8. On barrel/drum storage models, barrels can abruptly lift off the floor as soon as the fan/motor assembly is turned on. Keep hands away from the drums at this time.
9. The responsibility for providing safety accessories for equipment supplied by N.R. Murphy Limited is that of the user of the equipment. N.R. Murphy Limited sells equipment, exhausters with or without safety accessories, and accordingly, it can supply standard safety accessories and components if ordered. It is the customer’s responsibility to ensure that all necessary safety accessories have



EQUIPMENT WITH ROTATING PARTS CAN BECOME A SOURCE OF INJURY AND DEATH IF NOT PROPERLY INSTALLED, OPERATED OR MAINTAINED. Do not exceed the maximum operating temperature or speed limits for which the equipment was designed. Limits for industrial exhausters are available from N.R. Murphy Limited and must not be determined otherwise. Do not rely on limits obtained in any other manner. The user must make all personnel in contact with the equipment aware of all possible hazards.

# SAFETY PRECAUTIONS (cont).

THE WARNING NOTICE, AS ILLUSTRATED BELOW SHOULD BE ATTACHED TO INDUSTRIAL EXHAUSTERS AT ALL TIMES.

N. R. Murphy Limited

## Warning

This equipment has rotating parts and can cause serious personal injury or death. Keep body, hands and feet, loose clothing and foreign objects away from inlet, outlet, shafts and drives. Do not touch equipment or motor during operation as it may be hot.

Do not attempt any service or maintenance work without thoroughly adhering to the instructions and procedures as defined in the Operating and Maintenance Manual for this specific equipment.

No work is to be performed by untrained personnel. Be sure to disconnect all electrical power sources and lock the disconnect switch in the off position before commencing any work. Clean-out doors must be secure during operation. An unsecured clean-out door can become a projectile during operation because of pressure buildup.

*Additional safety accessories are available from N. R. Murphy Limited. The responsibility for providing necessary safety accessories is that of the user. Consult the manual for guidance.*

*Failure to follow the manufacturer's instructions for installation, operation, maintenance, adjustment, safety equipment or appropriate operation conditions can result in damage to the equipment, damage to other objects, personal injury or death.*



# INSTALLATION & OPERATION

## Introduction

The purpose of this section is to aid in the proper installation, operation and maintenance of your HE Series dust collector. These instructions are not intended to supplement good general practices and are not intended to cover detailed installation procedures. Although certain models such as the CP dust collector may be mentioned throughout these instructions, the instructions apply to all C Series prefixed models. It will be necessary to go through all the instructions and perform the operations applicable to your unit.

The receipt, handling, installation, operation and maintenance of N. R. Murphy Limited equipment is the responsibility of the user. It is important that the installation and start-up of the equipment be supervised or inspected by personnel experienced in such work and equipment.

## Shipment and Receiving

N. R. Murphy Limited has thoroughly inspected the equipment at the factory and has prepared your dust collector for shipment. The equipment should be in new condition when received unless damaged in transit. Upon acceptance by the carrier, as evidenced by a signed bill of lading, the carrier accepts responsibility for all shortages or damage, whether concealed or evident. Claims covering shortages or damage must be made to the carrier by the purchaser. Any shortages or damage should be noted by the user on the delivery receipt.

## Handling

Due to the fact that a large bulk and relatively thin walls are involved, more than average care should be exercised in the unloading and lifting of dust collection units. It is easy to create unsightly dents, or cause other damage to sheet metal components. It is exceedingly difficult to repair such damage or to restore it to its original appearance.

The factory has tried to make the handling of the equipment as simple as possible. Lifting lugs, punched holes in companion rings (used by removing bolt) and other aids are attached where feasible. It is important to locate and use these aids whenever the unit is unloaded, lifted or otherwise handled.

It is strongly urged that these lifting aids be used rather than attempting to use slings or other devices wrapped around the collector. One misplaced sling that causes the collector to slip and become damaged could result in many hours of rework.



# INSTALLATION & OPERATION (cont).



NEVER UNDER ANY CIRCUMSTANCES USE THE EXHAUSTER SHAFT TO LIFT THE COLLECTOR AS IT COULD CAUSE SEVERE DAMAGE TO THESE COMPONENTS.

Safe and smooth operation of equipment requires a proper foundation that is level, rigid and of sufficient structure and mass to support the equipment. **It is always imperative to consult a qualified engineer to design a proper foundation.** A properly designed concrete base is the preferred foundation. The concrete base mass should be a minimum of four times that of the exhaust equipment when the plan view area of the concrete base is no more than twice the plan view area of the exhauster. Steel platforms or bases are good alternatives when properly designed. Steel platforms must be braced in all directions.

## Preliminary Instructions Before Erecting

Also see erecting diagrams and specifications throughout the manual. The following points should be checked on all units, regardless of model:

1. Check to see that none of the cartridge filters have become detached from their mountings.
2. Check all fittings on the solenoid actuators and diaphragm valves and the tubing between them to be sure fittings are tight and that the tubing is not damaged.
3. Make sure the bolts holding the fan onto the collector shell roof have not vibrated loose during shipment (if supplied) Also examine the entire collector for similar problems. Although every effort is made before shipping to prevent these problems from occurring the vibration encountered by the equipment during shipment can result in nuts being loose when the equipment is received at its installation location. When setting up equipment with weather guards and covers added check that these items are securely fastened and have maintained necessary operational clearances around rotating or moving components to prevent serious damage or injury. When the collector is shipped in sections to be assembled at the installation location, be sure that an ample amount of caulking is applied at all bolted flange joints. Proper sealing is required to ensure an airtight installation.
4. Check all door seals and locks to ensure that the doors open and close through a full range of motion and that an air tight seal is being obtained when closed.
5. Open the fire damper and secure the curtain in place with the fusible link supplied (if not shipped ready for installation).

## INSTALLATION & OPERATION (cont).

6. It is necessary that the equipment operates in an airtight condition when the exhauster is running. Therefore the equipment should be examined for leakage. The simplest method to locate obvious leaks on large equipment is from inside the equipment post installation to look for light leaks. **BE SURE THE MAIN POWER SUPPLY IS TURNED OFF.** If any leaks are found make a request to the supplier or dealer to have issues rectified.
7. Collectors that have belt driven main exhausters should be checked to ensure that proper belt tension is maintained. See Exhauster maintenance manual for details.
8. Make sure that the connections between the exhauster inlet and the collector outlet are in place, airtight and tightly secured.
9. A qualified Industrial Electrician must be employed to do the wiring for the dust collection equipment according to any provided drawings or schematics. Solenoid valves must be field wired in sequence to the sequential pulse controller.
10. Knocked down support structures should be welded at all bolted joints and gussets upon erection. The dust collector should be tack welded to the support structure.

### Preliminary Inspection Before & After Start-up for all Models



**CAUTION: DISCONNECT AND LOCK OUT ALL POWER SOURCES TO THE EXHAUSTER**

1. Disconnect and lock out all power sources to the exhauster.
2. Check the exhauster wheel to inlet cone and exhauster wheel to exhauster housing clearance to ensure that there is no interference. Turn the exhauster wheel by hand, ensuring that it rotates freely. On direct drive applications it may become necessary to re-position the motor/exhauster wheel assembly by shifting and/or shimming as required to ensure an on centre position.
3. Check set screws and keys (or taper-lock hub if present) in the exhauster wheel, and bolts on cooling disc.
4. Ensure that bearings are properly aligned and lubricated with special attention to the locking mechanisms, cleanliness, and possible corrosion. Bearings showing signs of corrosion must be replaced prior to operation of the industrial exhauster.

# INSTALLATION & OPERATION (cont).

5. Do not run the exhauster until all ductwork is complete and ensure that the exhauster is turning in the correct rotation as shown on the exhauster case.
6. Make sure all access doors and other openings i.e. material discharge gate, drums are closed or in place to maintain suction.
7. An amp reading should immediately be taken on ALL motors on initial start-up after all installation conditions are completed. This will indicate the highest amp reading the collector will ever run under as the filters are clean. This is a check to ensure that the exhauster speed etc. are correct and that the motor is not overloaded.
8. With compressed air supply connected and wiring completed, check that all diaphragm valves are functioning.
9. Check to ensure that none of the cartridge filters have become loose and that they remain in position.
10. If speed reducers have been supplied, ensure that they have been filled to the proper level with the manufacturer's recommendation before starting. NOTE: some reducers have vent plugs and are lifetime lubricated and require no added lubricants.
11. Collectors with elevated internal storage and material discharge gates should be checked to ensure that gears on the sliding door are properly engaged (if supplied). After the collector is erected remove the bolts that hold the door in the closed position during shipping. Ensure that the gate is opening and closing properly and that it remains closed during collector operation. PLEASE NOTE: Do not overfill the storage area. Space must be allowed in the dust collector storage area to accommodate the material that will be displaced from the filters during the shaking cycle.

## Using Drum Storage

In some of the dust collectors, 45 gallon storage drums are used to store waste material. In some of these collectors it will be found that they do not fill evenly, previous installations have shown that differences in installation and inlet ductwork conditions will affect drum filling. Some material blow-by may occur, this does not reduce the efficiency of the collector but will require periodic clean-up.

## Rotary Air Lock

Some dust collectors may be designed/supplied with a rotary air lock. See our Rotary Air Lock Manual for more information ([www.nrmurphy.com/manuals](http://www.nrmurphy.com/manuals)).

## Bin Level Indicator

If supplied, this has been factory pre-fitted and removed to ship loose for on-site installation by others. The bin level indicator can be wired in a manner that it will turn the system off when the desired bin level is reached or it can be wired to a signaling device such as beacon or alarm. Bin level is selected in conjunction with the customer's requirements at a predetermined level. If after several weeks the level requires alteration due to unforeseen circumstances, it would be done so by the customer. A signaling device would be our recommendation as it gives some lead time to prepare for emptying the storage area.

# INSTALLATION & OPERATION (cont).

## Direct Drive Industrial Exhausters

- Select proper size overloads to match amperage as stated on the motor manufacturers nameplate. Never install oversized overloads as this can cause motor failure and nullify the warranty.
- On initial start-up with clean filters and all the ductwork NOT installed the overloads may kick out. Should this occur, you must restrict the airflow on the air inlet or outlet opening to allow the collector to start under additional system resistance. Completed systems will require blast gates with locking devices at all machines and on initial start-up if there is not enough resistance in the system air flow and will have to be restricted until the filters have built up a dust cake to create the required resistance.

## Overloading the Exhauster Motors

Low system resistance may cause overloading of the exhauster motor on any installation. Amperage draw must be checked on start-up of a completed system installation. If amperage draw is too high, resistance must be added to the system or exhauster speed must be changed. See under “Direct Drive Industrial Exhausters” for restricting or check with the factory.

## Procedures to Empty Waste (elevated internal storage)

1. Switch off the blower (allow blower to decelerate for approx. 2 minutes)
2. Open waste material discharge gate at the base of the storage section and allow material to fall out into truck or tote box. If material fails to discharge, check for bridging in unit storage section and if this has occurred break the bridge.
3. **BE AWARE THAT WHEN THE BRIDGE IS BROKEN THE MATERIAL WILL FALL, TAKE PRECAUTIONS TO AVOID INJURY.**

## Compressed Air Requirements for Cleaning

The pulse cleaning system for your collector will require compressed air to be delivered at 80 to 100 psi. The compressed air system must be capable of delivering clean dry, instrument quality air and no moisture (-40°C). Plant compressed air will be required with a suitable dryer to provide instrument quality air. This is to eliminate any possible moisture in the air mixing with particulate in the collector and blinding the filters, which could lead to premature filter failure. Every effort should be made to reduce and/or eliminate any possible moisture mixing with the particulate and blinding the filters.

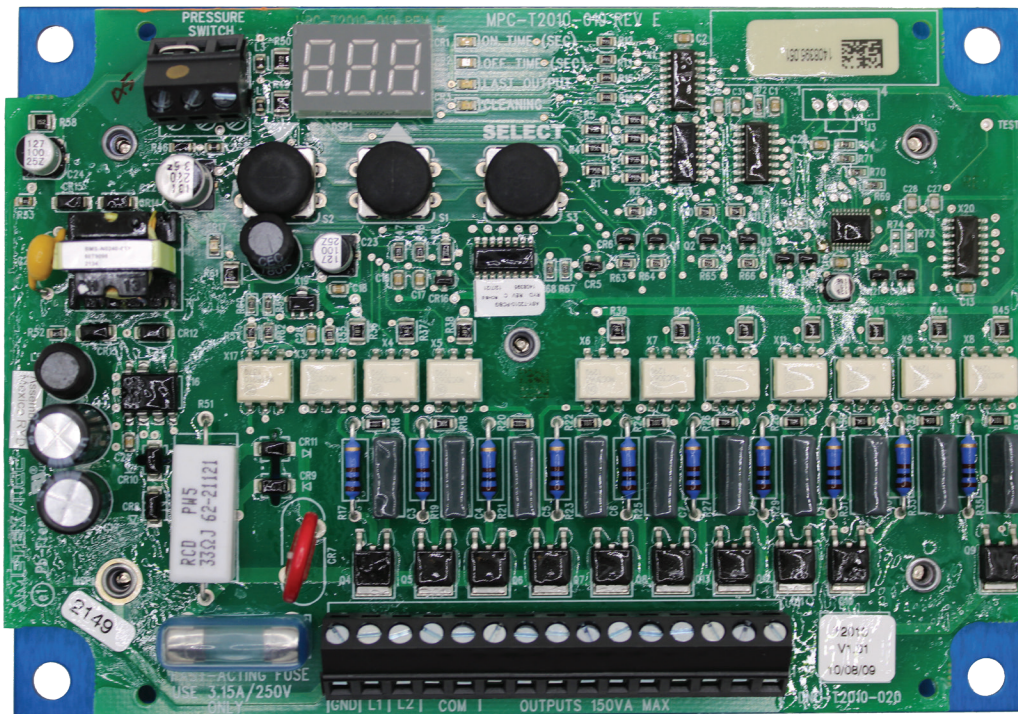
# INSTALLATION & OPERATION (cont).

## Pulse Board/Sequential Controller

### Factory Recommended Timing Settings

ON-TIME: 250 ms

OFF-TIME: 15 s



Programming is accomplished using 3 buttons: down, up, and select.

**Down:** decrements the active parameter.

**Up:** Increments the active parameter.

**Select:** Toggles amongst the adjustable parameters: on time, off time, and last output.

Programming mode timeout is 60 seconds.

### CAUTION:



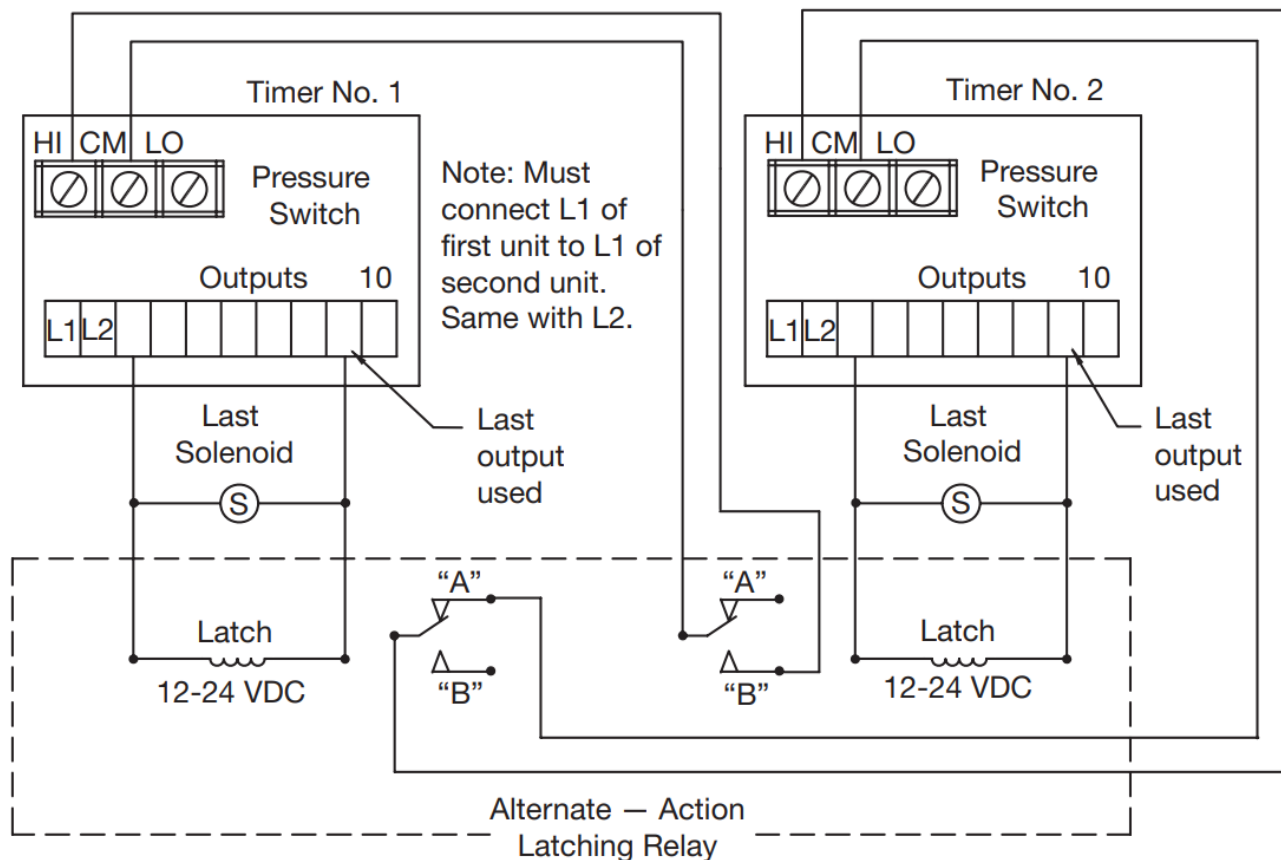
- Do not mount controls in high vibration areas without shock mounts.
- Do not mount controls in areas of high dust or corrosive atmospheres without a protective enclosure.
- Do not use a converter or inverter for the power source.
- Do not mount control in high transient voltage areas without an isolation transformer.
- Do not leave control box open.
- Do not allow a local repair shop to repair the controls, as it has some very sophisticated components that could be further damaged.



# INSTALLATION & OPERATION (cont).

**Test & Default Modes:** Test mode is entered by pressing and holding the select button for 3 seconds while the unit is in the normal operating mode. Once in test mode, the display will show tSt. Pressing the up or down arrow buttons toggles amongst outputs, and pressing select pulses the selected output for the present ON-TIME. Pressing the select button while the display shows tSt will change the display to “dFt”. While the display shows “dFt”, the up and down arrows toggle amongst “y”, “n”, and “dFt”. Pressing select when the message is “y” will set all adjustable parameters to the factory defaults. At any time in test and default modes, pressing and holding the select button for 1.5 seconds will revert the controller back to the normal operating mode.

**Operating Logic:** The DNC-T2003 through DNC-T2032 controls are output sequencers with an adjustable ON TIME, OFF TIME, and LAST OUTPUT. Upon application of power to L1 and L2 terminals with the high pressure switch contacts closed, the OFF TIME is initiated. At the end of the preset OFF TIME, output 1 will turn on for the preset ON TIME. The control will cycle through all selected outputs until the high and low pressure switch contacts are opened. If the pressure switch contacts open during the ON TIME, the output will complete the active ON cycle. The next time the high pressure switch is closed the next output in the sequence is fired. Pressure monitoring with no hysteresis is achieved by using only a high pressure switch. Placing a jumper across the high pressure input forces the control to run continuously.



# INSTALLATION & OPERATION (cont).

## Specifications:

### Input:

Input Voltage: 95 - 265 VAC 50/60 Hz  
Power Consumption: 6.30 VA max plus load  
Circuit Protection: 3.15A fast acting fuse and 72J metal-oxide varistor at input

### Output:

Output Voltage: Solid state, 150VA max  
Off State Leakage: 1.5mA max  
On State Voltage Drop: 1.5V max

### Environmental:

Operating Temperature: -40 to +150F (-44 to +66C) Conformally coated with RTV to protect against moisture, corrosion, and vibration.

### Display:

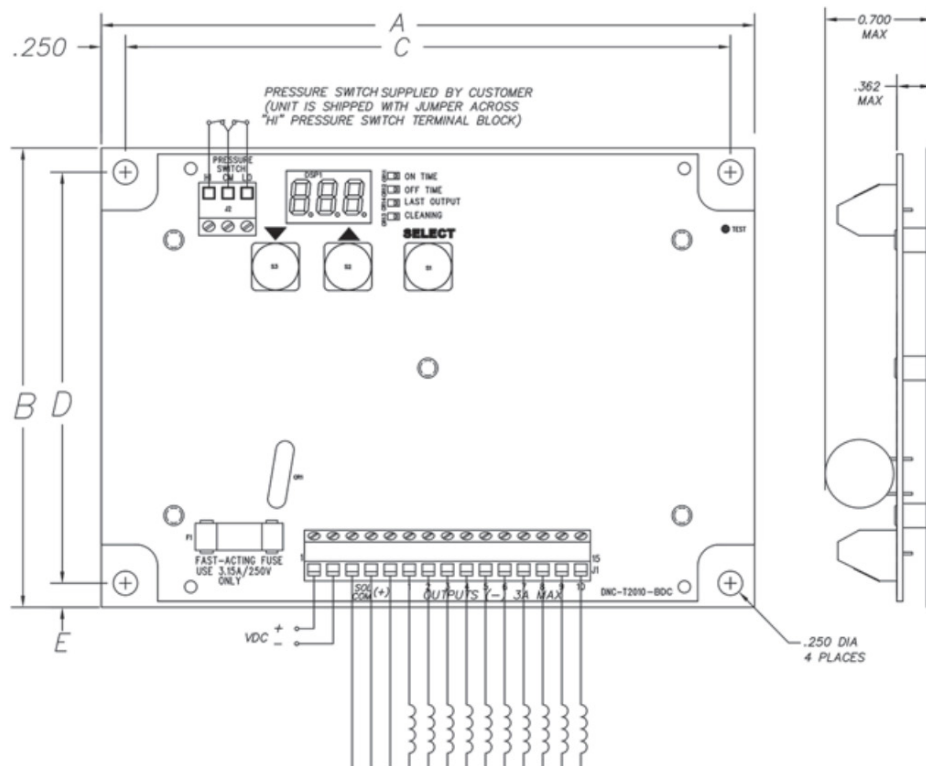
Display: 3 digit, 7 segment, green LED  
Indicator LEDs: 5 green SMT (power, cleaning, on time, off time, last output)

### Time Delay:

On Time: 50 ms - 600 s  
Off time: 1 s - 999 s  
Resolution: 10ms (50ms - 10s), 100ms (10s - 100s), 1 s (100s - 600s)  
Accuracy and Repeatability: +/- 3% over temperature and voltage range

### Default Settings:

On Time: 50 ms  
Off Time: 15 s  
Last output: Max No. of Outputs





# INSTALLATION & OPERATION (cont).

## Diaphragm Valves

### Maintenance

**BEFORE CONDUCTING ANY MAINTENANCE ACTIVITY ON THE SYSTEM ENSURE THAT COMPONENTS ARE FULLY ISOLATED FROM PRESSURE AND POWER SUPPLIES. PRESSURE AND POWER SHOULD NOT BE REAPPLIED UNTIL THE VALVE HAS BEEN FULLY ASSEMBLED.**

In the event that a diaphragm needs to be replaced, N.R. Murphy Ltd. stocks and supplies all sizes of repair kits.

### Improper Operation

1. Check the solenoid valve for malfunctioning.
2. If the diaphragm valve stays open, the bleed hole may be clogged. Disassemble valve and clean the bleed hole or replace the diaphragm.
3. If diaphragm valve stays closed, the diaphragm is broken and must be replaced.
4. Make certain pressure range to valve is maintained within 80 to 100 psi.

### Valve Replacement

1. Ensure tank and pipes are free from dirt, rust or other particulate.
2. Ensure supply air is clean and dry.
3. Mount valves to inlet pipes and blowtube to valves, ensuring no excess thread sealant can enter the valve itself.
4. Make electrical connections to solenoid or connect RCA pilot port to pilot valve (RCA valves only).
5. Apply moderate pressure to system and check for installation leaks.
6. Fully pressurize system.
7. Test fire and listen for proper actuation and crisp pulse noise.



# INSTALLATION & OPERATION (cont).

## Solenoid/Pilot Valves

### Maintenance

**BEFORE CONDUCTING ANY MAINTENANCE ACTIVITY ON THE SYSTEM ENSURE THAT COMPONENTS ARE FULLY ISOLATED FROM PRESSURE AND POWER SUPPLIES. PRESSURE AND POWER SHOULD NOT BE REAPPLIED UNTIL THE VALVE HAS BEEN FULLY ASSEMBLED.**

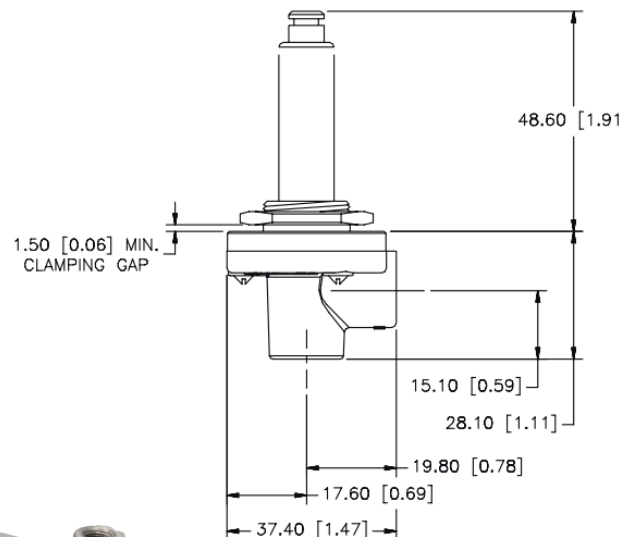
In the event that a solenoid needs to be replaced, N.R. Murphy Ltd. stocks and supplies all sizes of repair kits.

### NEMA-4 Enclosure

Given the electrical component, all solenoid valves must be housed within a NEMA-4 rated solenoid enclosure. These enclosures are available in a variety of sizes.

### Valve Replacement

1. Prepare pilot mounting hole in panel to diameter 19.3/19.4 (0.760").
2. Panel thickness must exceed 1.5 mm (0.62").
3. Ensure o-ring is in place before tightening locknut.
4. Preferably install pilot valves with solenoid on top.
5. Replace components within 1 million cycles.



# INSTALLATION & OPERATION (cont).

## Conclusion

By following the preceding instructions before operation, a great deal of difficulty can be avoided. These items have all been checked by the manufacturer prior to shipment of the equipment but it has been found that bolts, screws etc. loosen and that sealing material sometimes is damaged in transit.

The contents of this manual should be read and checked by the installer of the collector, whether it be the customer or the contractor. It is the responsibility of the customer to ensure that these instructions and inspections are carried out.

# INSPECTIONS

## Daily Inspections for First Week of Operation

1. Check the storage section for waste level to determine the frequency of emptying that will be required to keep the collector operating efficiently. Collectors with internal storage should be emptied as often as is feasible to prevent material being picked up and redeposited into the filters.
2. Check the storage section for material freezing or hardening to internal surfaces of the hopper. Material will become harder to remove and more material may agglomerate to these areas reducing the collectors ability to empty properly.
3. The collector is provided with differential pulse jet cleaning for the filters. Plant compressed air will be required with a suitable dryer to provide instrument quality air. This is to eliminate any possible moisture in the air mixing with particulate in the collector and blinding the filters, which could lead to premature filter failure.

## Inspections for the end of First Week of Operation

1. Check belt tension and correct if belts are loose.
2. Check the interior of the dust collector for cartridge filter failure or abrasion. Notify N. R. Murphy Limited if any of the filters are unduly worn. Ensure that none of the cartridges have become detached during operation.
3. Check that all diaphragm valves are functioning.
4. Check all bearings **DO NOT OVERGREASE** (see Industrial Exhauster section)

## Inspections for the end of First Month of Operation

1. Check belt tension and correct if belts are loose.
2. Check the interior of the dust collector for cartridge filter failure or abrasion. Notify N. R. Murphy Limited if any of the filters are unduly worn. Ensure that none of the cartridges have become detached during operation.
3. Check that diaphragm valves are functioning.
4. Check all bearings **DO NOT OVERGREASE** (see Industrial Exhauster section)

## Inspections to take place every 3 months

1. Lubricate all electric motors, speed reducers, exhauster bearings etc. as per manufacturers recommendations. **DO NOT OVERGREASE**. It should be noted that some speed reducers are lifetime lubricated.
2. Check all cartridge filters for wear and ensure that they are still installed correctly.
3. Lubricate waste material discharge slide gates (use only graphite as grease causes material to collect in the slides), if applicable.

# INSPECTIONS (cont).

## Yearly Inspections

1. Lubricate all electric motors, speed reducers, exhauster bearings etc. as per manufacturers recommendations. **DO NOT OVERGREASE**. It should be noted that some speed reducers are lifetime lubricated.
2. Inspect diaphragm and solenoid valves for leakage and mis-firing.
3. Check all cartridge filters for wear and ensure that they are still installed correctly.
4. Lubricate waste material discharge slide gates (use only graphite, as grease causes material to collect in the slides), if applicable.

## Industrial Exhauster

1. Periodic checks of anchor bolts and bearings should be done to look for vibration damage. If excessive vibration develops, check the following:
  - a. Accumulation of dirt and foreign matter on exhauster wheel.
  - b. Loose bolts on housing, drive or bearings.
  - c. Misaligned belts or improper belt tension. (belt driven exhausters only)
  - d. Loose bearing locking collars.
  - e. Loose set screws on exhauster wheel.
  - f. Damage to exhauster wheel caused by foreign matter.
  - g. Proper clearance between exhauster wheel and inlet collar.
2. On exhausters driven by belts, the tension should be checked and properly maintained. If belts show wear they should be replaced.
3. **Lubricate exhauster bearings in strict accordance with the manufacturer's recommendations. We would recommend that the bearings be re-lubricated every four to six months. It is always very difficult to give precise guidance on the amount of lubricant to supply to the bearings. WE DO KNOW THAT THE TENDENCY IS TO BE SOMEWHAT OVERZEALOUS. As a rule of thumb, one or two shots from the normal grease gun is sufficient and must be slowly applied while the units are turning. For reference, the original grease pack is only 48 to 55 grams (less than 2 ounces) which fills approximately 40% of the available space inside the sealed bearings. From this it should be realized that the bearing actually needs very little lubricant to perform satisfactorily. Bearings should be removed, inspected and replaced if necessary as soon as undue shaft vibration becomes apparent.**

# INSPECTIONS (cont).

## Electric Motors and Equipment

1. All electrical equipment should be maintained in accordance with instructions of the original manufacturer.
2. Periodic checks of motors should be made and checked to ensure that they are lubricated as per the manufacturer's instructions.
3. A qualified Industrial Electrician must be employed to do the wiring for the dust collection equipment according to any provided drawings or schematics.

## Cartridge Filters

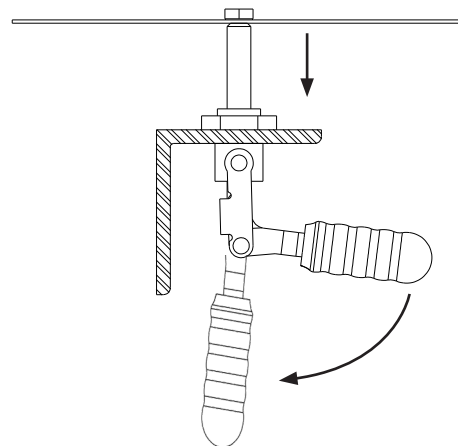
1. Frequent checks of cartridge filter wear and deterioration should be made. Worn or damaged filters should be replaced.
2. A manometer reading, rising above a pre-determined level after normal cleaning, indicates that the filters should be removed and cleaned. A lower than normal reading would indicate filters are off or worn out (holes). Dust would also be evident passing through the clean air outlet.

## Cartridge Installation and Removal (CP Models)



**CAUTION: BE CAREFUL NOT TO BUMP OR DROP CARTRIDGE FILTERS AS THEY ARE FRAGILE AND SUSCEPTIBLE TO DAMAGE.**

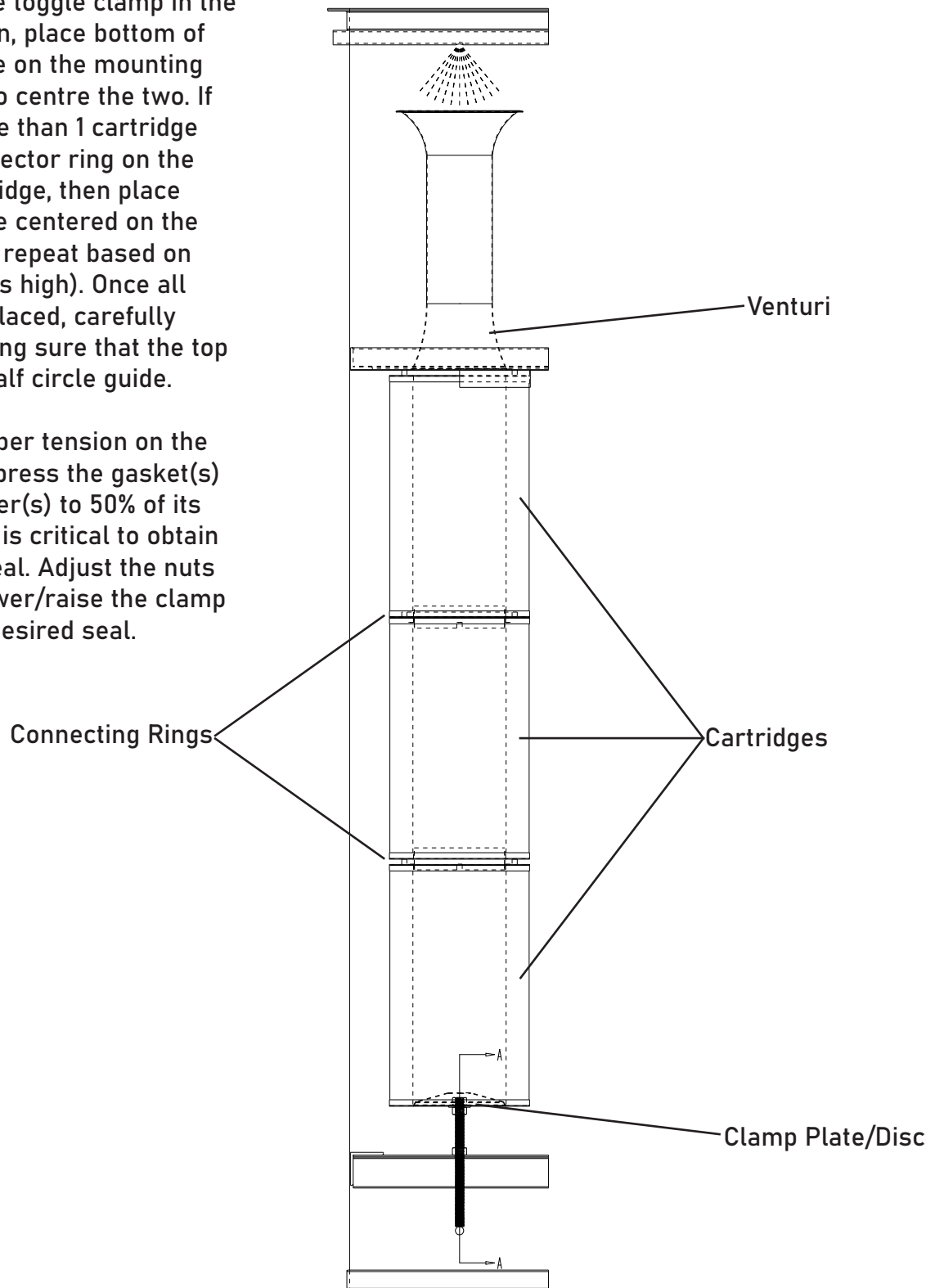
Removal: Typically our toggle clamps are ziptied in the closed position during shipping to lock the cartridge filters in place. This zip tie can be cut once the dust collector is installed. To remove the cartridge filters open the toggle clamp at the bottom of the cartridge filter a full 180 degrees, this will lower the clamp plate, releasing the cartridges from their compressed air-tight state. Pull the top of the cartridge out first, and then remove the filter. Repeat if two or three high. Keep the loose connecting collar between the cartridges for the new set of cartridge filters.



## INSPECTIONS (cont).

Installation: With the toggle clamp in the open (down) position, place bottom of closed end cartridge on the mounting disc, being careful to centre the two. If the collector is more than 1 cartridge high, place the connector ring on the top of the first cartridge, then place the second cartridge centered on the connector ring (and repeat based on how many cartridges high). Once all the cartridges are placed, carefully close the clamp, being sure that the top cartridge is in the half circle guide.

Please note the proper tension on the clamps should compress the gasket(s) on the top of the filter(s) to 50% of its original height. This is critical to obtain a proper air-tight seal. Adjust the nuts on the clamps to lower/raise the clamp plate to create the desired seal.





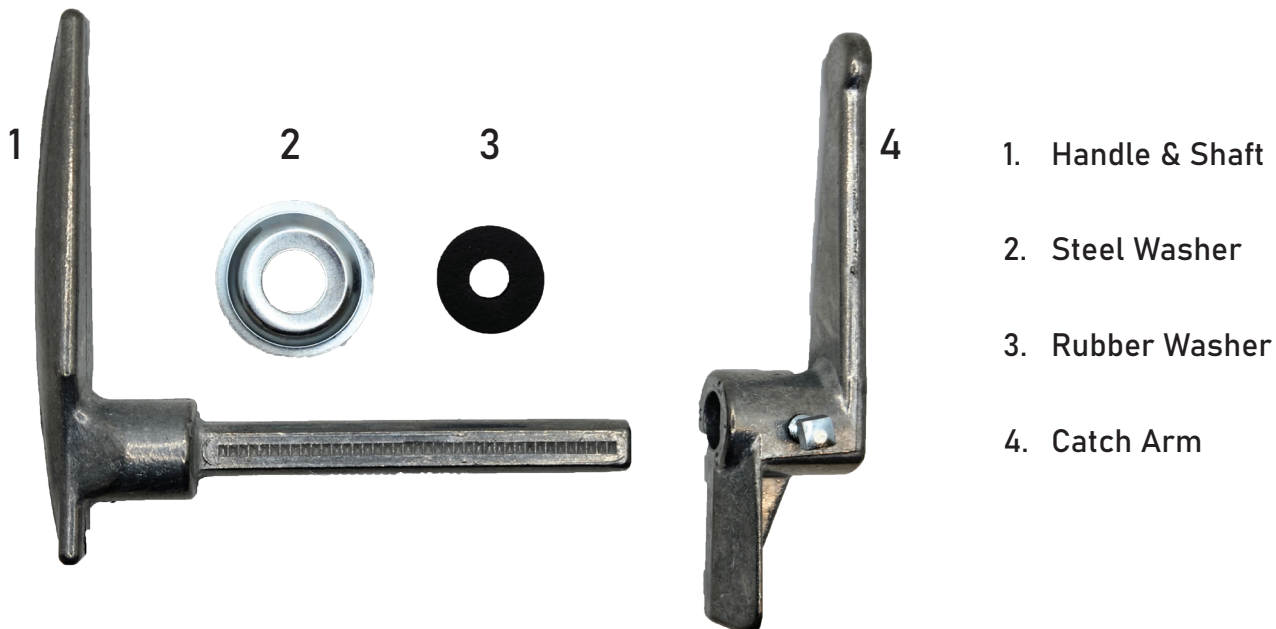
# INSPECTIONS (cont).

## Dust Collector Housing, Supports, Doors, Hoppers

1. The dust collector housing must be maintained in an air tight and water tight condition. Protection against corrosion is required in the form of periodic painting and sealing of joints. Most collector housings are fabricated from wiped galvanized material where possible and it has good resistance against corrosion under most conditions.
2. Access doors, inspection doors and waste material discharge gates must be kept closed at all times when the dust collector is in operation or a loss of suction will occur. Door seals and gasket seals should be regularly checked and replaced if worn, deteriorated or missing.
3. Check the storage section (if supplied) for material freezing or hardening to internal surfaces of the hopper. Material will become harder to remove and more material may agglomerate to these areas reducing the collector's ability to empty properly. Inspect and lubricate waste material discharge slide gates (use only graphite, as grease causes material to collect in the slides) Ensure that the gate still provides and airtight seal when closed.

## Assembly of Door Handle Kits

Our standard door handle kit may come with more parts than required. The photo below showcases the only components you'll need. Please discard any other pieces.



## INSPECTIONS (cont).



The door handle kits are assembled as seen in the figure to the left. First the handle and shaft, with the handle on the outside, followed by the steel washer and then the rubber washer on the exterior of the door. On the interior of the door is the catch arm.



Adjust the catch arm until the door fits tightly against the rubber door seal when the unit is not operating. If the door springs open when the unit shuts down, then the catch arm needs to be adjusted closer to the door for a tighter fit (see the figure to the left). If the door handle is too tight it may result in a shorter lifespan of the door frame gasket.

# OPTIONAL

## Explosion Venting

Explosion venting is an available option that comes in various forms due installation location and conditions, also due to varying local, municipal, provincial and federal regulations and oversight by various bodies. The authorities, having jurisdiction in some municipalities are mandating that the requirements of NFPA-68 Guide for Venting Deflagrations be followed. You should make inquiries to your local authorities as to the requirements in your particular area.

Explosion vents are typically shipped in a separate crate, uninstalled from the body of the dust collector. This is due to the fact that the panels are fragile, and should hence be handled with caution. To install, remove the temporary cover on the designated flange and bolt the explosion vent in a convex manner to the flange. In the event of a deflagration, the ruptured panel will have to be replaced with a new panel.

For information on installing and maintaining panel accessories, such as burst sensors, please see the instructions supplied in the individual packaging, or reach out to your technical representative.



**CAUTION: IN THE EVENT OF DEFLAGRATION, THE PANEL WILL RUPTURE RAPIDLY AND WITH LITTLE OR NO WARNING. AVOID STANDING IN FRONT OF THE PANEL AND THE PANEL ARC AREA WHEN THE COLLECTOR IS IN OPERATION.**



# OPTIONAL

## Relief Latches

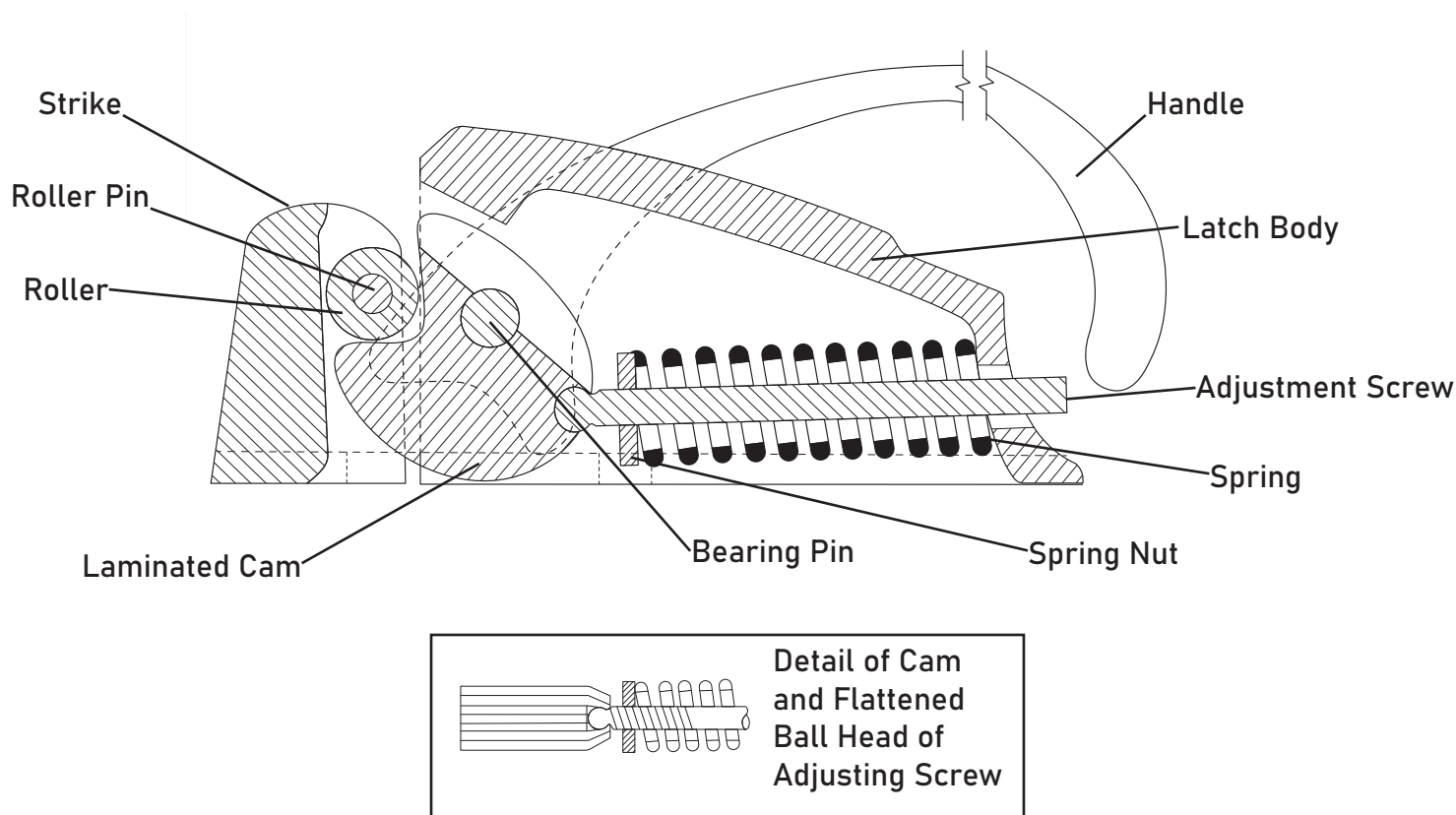
A less popular alternative to explosion vents, the relief latch operates in a manner similar to a toggle switch. When the door and latch are in the closed position, the latch will hold the door closed. When enough pressure is applied to compress the spring sufficiently to cause the cam into the open position, the latch will release opening the door. Closing is essentially the reverse of the above, with the force being supplied by the closing of the door. The forces required for operation depend upon the setting of the latch. The higher the setting and the larger the latch, the greater the required force.

### Caution for operators:

- If excessive force is used in closing (slamming) the door, the tendency of the door to rebound may be sufficient to cause the latch and door to re-open. A rebounding door should not normally cause a dangerous situation unless some aggravating condition exists such as violent slamming and or the immobility of the person closing the door. It is also recommended that the operator should keep their hand between his body and the door while closing it. The forces involved and therefore the hazards involved increase with the size and setting of the latch.
- If the door is closed without sufficient force to trip the cam the door will rebound.
- If for some reason, the cam is in the closed position while the door is open, the door will rebound rather than latching when closed. This could be caused by a misaligned strike (all latches) and/or a loose handle, or by the cam being struck and rotated accidentally while in the open position.
- Keep clear of the operating parts of the latch and handle, particularly the laminated cam, strike roller, handles and the stops for #3 latches and handles.
- The door may open unexpectedly if material (or someone) should fall and strike the interior of the door.
- In the event of a deflagration, the door will open rapidly and with little or no warning. Doors that are used for this purpose are clearly marked as DANGER. Avoid standing in front of the door and the door arc area when the collector is in operation.

Latches must have the relief feature tested periodically to insure that corrosion and or build-up of foreign materials has not affected the operational characteristics of the mechanism. Under normal operating conditions, lubricate the bearing pin within the laminated cam with a light oil (SAE-10-30) every six months. Model #3 latches should have the set screws in the handle tightened as needed.

# OPTIONAL



| Latch Model | Release Pressure (lbs.) |         | Pressure per Turn | Change (lbs) per 1/2 Turn | Full Turns Available |
|-------------|-------------------------|---------|-------------------|---------------------------|----------------------|
|             | Minimum                 | Maximum |                   |                           |                      |
| 1           | 3.9                     | 17      | 1.46              | .73                       | 9                    |
| 2           | 10                      | 37      | 1.86              | .93                       | 14.5                 |
| 3           | 43                      | 180     | 5.96              | 2.98                      | 23                   |
| 4           | 58                      | 285     | 9.87              | 4.94                      | 23                   |

Note: Check model number shown on all latches near handle.

Precise pressure adjustment is not possible due to the location of the strike, the amount of gasket compression, spring differences in a given lot, friction, etc. The listed values are a guide only, and if the release pressure is critical, the pressure must be measured directly for more accuracy. The estimated variance is plus or minus two full turns.

# OPTIONAL

## Safety Ladders, Walkways and Railings

These are available as an option and are usually reserved for larger installations or where frequent inspection and access is required. They are factory pre-fitted and shipped removed for installation at the customer's location. In some cases additional supports may be required due to on-site conditions. On-site welding is always required at bolted joints.

## Spare Parts Recommended

To avoid losses in operation it is always recommended that the customer stock operational and plant critical components. We at N. R. Murphy try to stock many of the common components but due to incoming replacement orders and new equipment builds sometimes these components are not always in house. Other items such as exhaustor wheels when not in stock will require several days to fabricate and balance before it can be shipped to a customer who may have their entire plant down.

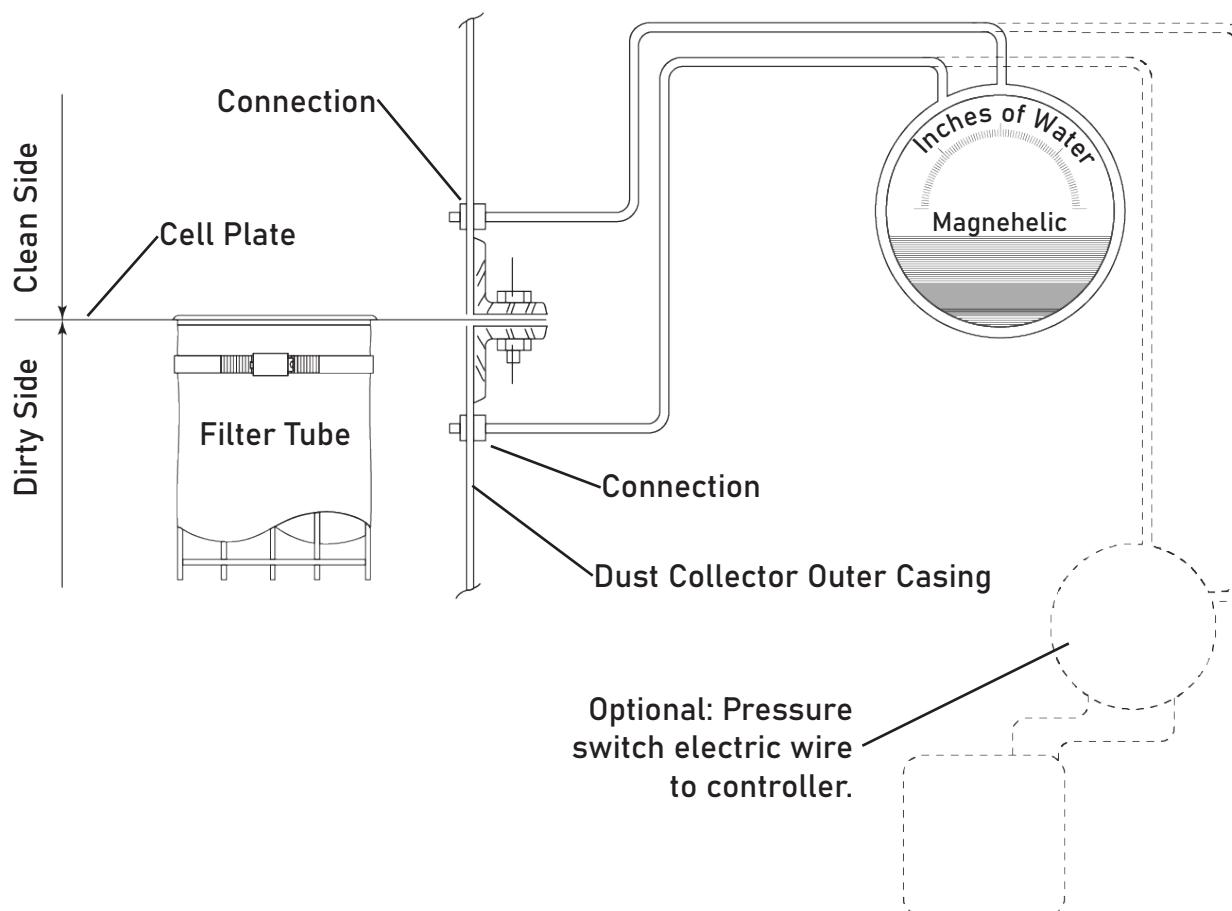
Replacement and maintenance parts may be obtained through N. R. Murphy Limited by providing us with the exhaustor Serial number and a description of the component that you require and if possible the exhaustor shaft diameter or bearing size. Due to the custom built nature of many of our products, we maintain files on every piece of equipment we sell. If further information is required please contact N. R. Murphy Limited or your Technical Representative.

Recommended spare parts could include the following:

- Filter cartridges
- Fusible link for fire damper curtain
- Replacement V-belts for Exhaustor Drive
- Bearings
- Door Seal Gaskets
- Exhaustor Wheel

# OPTIONAL

## Mounting Instructions for Magnehelic Gauge



Magnehelic Differential Pressure Gauge (sometimes referred to as a manometer) may be separate as shown or mounted in the control panel depending on the options that are selected.

Before starting the unit, set indicating needle to "0".

Start the unit, if there is no reading and indicating needle has dropped to less than "0" onto the needle stop, reverse lines to gauge. You should now get a reading.

As the cartridge filters in the unit get dirty, the needle will tend to rise to between 2" and 6" depending on the model of unit and dust loading.

When noticeable difference in suction occurs, the cartridge filters should be cleaned/replaced. An unusually high manometer reading should also be present, but this can also occur if connections to manometer are plugged. In this case you should blow the lines clear.

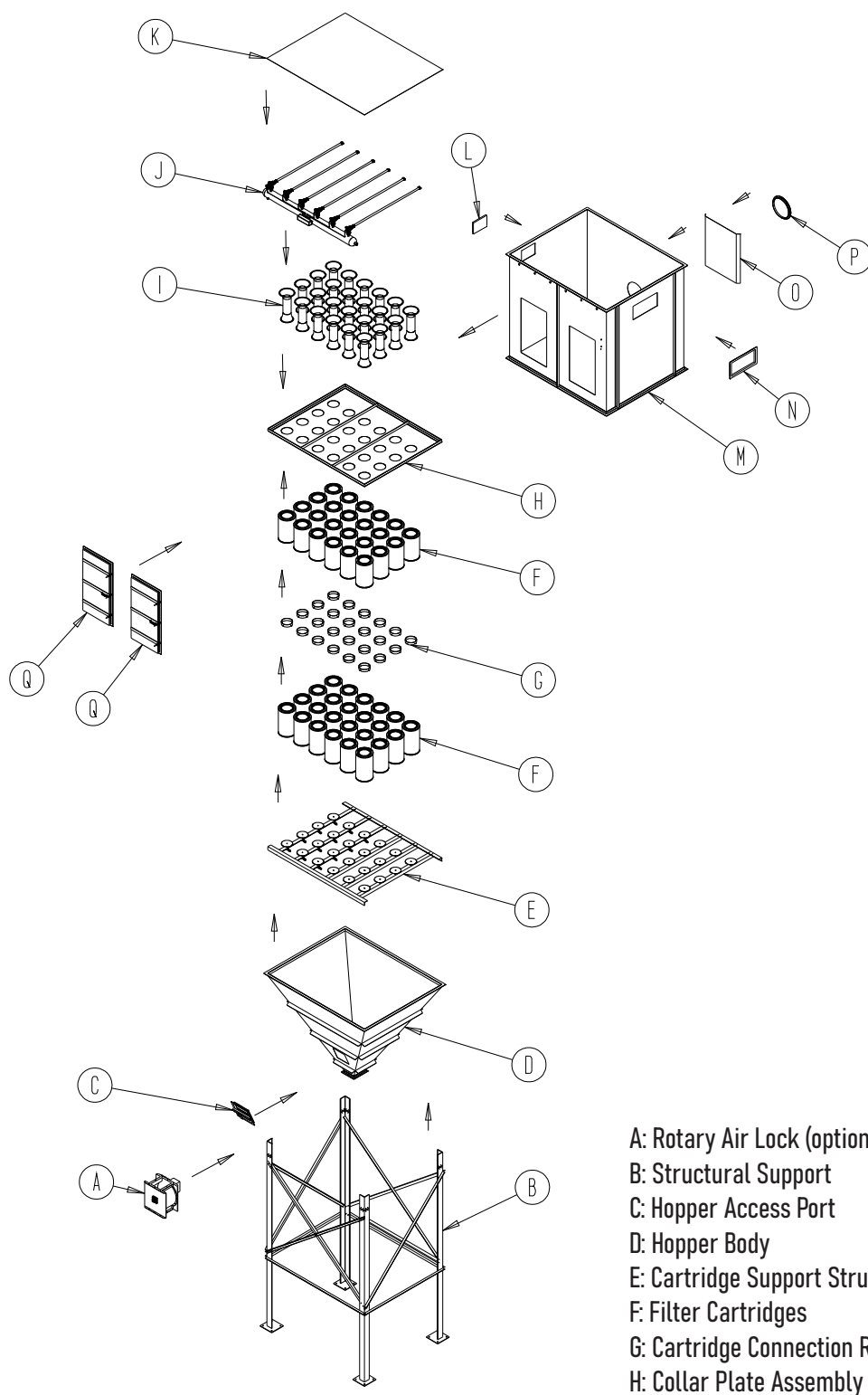


# TROUBLE SHOOTING

| PROBLEM   | PROBABLE CAUSE  |
|---|---|
| Dust coming through collector discharge                   | <ul style="list-style-type: none"> <li>• Check that the cartridge filters are properly installed.</li> <li>• Check for holes in the cartridge filters.</li> </ul>   |
| Insufficient air flow                                     | <ul style="list-style-type: none"> <li>• Exhauster wheel rotating in the wrong direction.</li> <li>• Check belt tension on exhauster.</li> <li>• Access doors open.</li> <li>• Dirty or clogged cartridge filters.</li> <li>• Faulty/broken diaphragm valves.</li> <li>• Faulty or poorly designed ductwork.</li> <li>• Ductwork obstruction (fire damper partial closed).</li> </ul>   |
| No air flow   | <ul style="list-style-type: none"> <li>• Fire damper curtain has closed.</li> <li>• Blown fuses.</li> <li>• Storage bin is full and filters are plugged/packed due to overfilling of storage area.</li> <li>• Broken or loose drive belts on the fan motor.</li> </ul>  |
| Collector Noisy   | <ul style="list-style-type: none"> <li>• Broken or damaged exhauster wheel.</li> <li>• Exhauster out of balance.</li> <li>• Exhauster or shaker bearings worn, loose set screws, blown seals due to over-greasing.</li> <li>• There are loose guards.</li> </ul>  |
| Air compressor running continuously or running out of air | <ul style="list-style-type: none"> <li>• Diaphragm valve open - check to see which one is open by listening for a continuous air leak. Once you find the valve that is open:               <ol style="list-style-type: none"> <li>1. Check the small hose that runs from the solenoid valve to the diaphragm valve for holes or breaks in the line, replace if necessary.</li> <li>2. Open the diaphragm valve face and check for foreign matter, dirt stuck on the seat of diaphragm causing it to stay open. Also check for holes in the seal.</li> </ol> </li> </ul> |
| Diaphragm valve not working                               | <ul style="list-style-type: none"> <li>• Check solenoid valve to make sure it is working, replace as necessary.</li> <li>• Open the diaphragm valve face and check for foreign matter, dirt stuck on the seat of diaphragm causing it to stay open. Also check for holes in the seal.</li> </ul>  |
| Filters caking up and not being cleaned by compressed air | <ul style="list-style-type: none"> <li>• Turn off the dust collector and open the drain cock on the bottom of the compressed air manifold. Required pressure is 80 to 100 PSI.</li> </ul>   |

# DIAGRAMS

## CP 6-4-2 Pulse Jet - Exploded View



# MAINTENANCE LOG

Motor Data

HP:                    Voltage:    /        /                    RPM:                    FLA:                    Service Factor:  
Drive Sheave:                    Driven Sheave:                    Sheave Alignment:

| Date | Tension | Lubricate Bearings | Technician |
|------|---------|--------------------|------------|
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |

# MAINTENANCE LOG

Motor Data

HP:                      Voltage:     /       /                      RPM:                      FLA:                      Service Factor:  
Drive Sheave:                      Driven Sheave:                      Sheave Alignment:

| Date | Tension | Lubricate Bearings | Technician |
|------|---------|--------------------|------------|
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |
|      |         |                    |            |



# N.R. MURPHY LTD.

---

## DUST COLLECTORS

More **Experience** More **Quality** More **Value**

 **N.R. MURPHY LTD.**  
DUST COLLECTORS

**INDUSTRIAL EXHAUST FANS**  
OPERATING & MAINTENANCE MANUAL



REVISION 3 - ENGLISH

430 Franklin Blvd.  
Cambridge ON Canada N1R 8G6

(519) 621-6210 (519) 621-2841

[nrmurphy.com](http://nrmurphy.com) | [4nodust@nrmurphy.com](mailto:4nodust@nrmurphy.com)

 **N.R. MURPHY LTD.**  
DUST COLLECTORS

**MKOB SERIES**  
OPERATING & MAINTENANCE MANUAL



REVISION 3 - ENGLISH

430 Franklin Blvd.  
Cambridge ON Canada N1R 8G6

(519) 621-6210 (519) 621-2841

[nrmurphy.com](http://nrmurphy.com) | [4nodust@nrmurphy.com](mailto:4nodust@nrmurphy.com)

 **N.R. MURPHY LTD.**  
DUST COLLECTORS

**FB SERIES**  
OPERATING & MAINTENANCE MANUAL



REVISION 3 - ENGLISH

430 Franklin Blvd.  
Cambridge ON Canada N1R 8G6

(519) 621-6210 (519) 621-2841

[nrmurphy.com](http://nrmurphy.com) | [4nodust@nrmurphy.com](mailto:4nodust@nrmurphy.com)

 **N.R. MURPHY LTD.**  
DUST COLLECTORS

**MK SERIES**  
OPERATING & MAINTENANCE MANUAL



REVISION 3 - ENGLISH

430 Franklin Blvd.  
Cambridge ON Canada N1R 8G6

(519) 621-6210 (519) 621-2841

[nrmurphy.com](http://nrmurphy.com) | [4nodust@nrmurphy.com](mailto:4nodust@nrmurphy.com)

 **N.R. MURPHY LTD.**  
DUST COLLECTORS

**HE SERIES**  
OPERATING & MAINTENANCE MANUAL



REVISION 3 - ENGLISH

430 Franklin Blvd.  
Cambridge ON Canada N1R 8G6

(519) 621-6210 (519) 621-2841

[nrmurphy.com](http://nrmurphy.com) | [4nodust@nrmurphy.com](mailto:4nodust@nrmurphy.com)

 **N.R. MURPHY LTD.**  
DUST COLLECTORS

**ROTARY AIR LOCK**  
OPERATING & MAINTENANCE MANUAL



REVISION 3 - ENGLISH

430 Franklin Blvd.  
Cambridge ON Canada N1R 8G6

(519) 621-6210 (519) 621-2841

[nrmurphy.com](http://nrmurphy.com) | [4nodust@nrmurphy.com](mailto:4nodust@nrmurphy.com)

(519) 621-6210 | [4nodust@nrmurphy.com](mailto:4nodust@nrmurphy.com) | [nrmurphy.com](http://nrmurphy.com)