

# H.E Series Operating and Maintenance Manual

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 capacity, information and parts in the future**

Your serial number is a five digit number beginning with the last two digits in the year of manufacture i.e. 88001 means this equipment was manufactured in 1988 this will be required to obtain capacity information and parts in the future.



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# Foreword

Thank you for purchasing your new dust collector from N. R. Murphy Limited.

With proper care and maintenance your N. R. Murphy dust collector will provide years of trouble-free service. We are sure that it will prove to be a valuable asset to your company in maintaining the health and safety of you and your employees.

Our interest in you and your company does not end with the sale. If you have any questions, comments, require any system re-design, or wish to have your dust collector serviced by our factory trained service technicians, please do not hesitate to contact us. We would be pleased to discuss these issues with you.

It is our endeavor to manufacture the finest equipment available and the purpose of this manual is to assist you in keeping your dust collection system operating at its peak performance.

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## Safety Precautions



**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.



**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 been installed prior to operation of the equipment.

**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 and Operation of HE Series Dust Collectors

### 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 HEC dust collector may be mentioned throughout these instructions, the instructions apply to all HE 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 as 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.



**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. Filters and cages are supplied as separate unattached items for installation on-site by others. See pages 18 to 21 for proper installation procedures. **NOTE: this is very important that cage and filter installation be exactly as instructed to form an air tight seal between the dust chamber and the clean air chamber.**
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)
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**

1.  **CAUTION: 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.
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 filter tubes 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 the 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** (if supplied) See Rotary Air Lock manual

**Bin Level Indicator** (if supplied)

If supplied this has been factory pre-fitted and removed to ship loose for onsite installation by others. The bin level indicator can be wired in a manner such that it will turn the system off when the desired bin level is reached or it can be wired to a signalling 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 signalling device would be our recommendation as it gives some lead time to prepare for emptying the storage area.

## Direct Drive Industrial Exhausters

- Select proper size heater elements to match amperage as stated on the motor manufacturers nameplate. Never install oversized heaters as this can cause motor failure and nullify the warranty.
- On initial start-up with clean filters and all the ductwork **NOT** installed the overload heaters 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 will have to be restricted until the filters have built up a dust cake to create the required resistance.

## Overloading of 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.

## Procedure to Empty Waste (elevated internal storage)

- Switch off the blower (allow blower to decelerate for approx. 2 minutes)
- 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.
- **BE AWARE THAT WHEN THE BRIDGE IS BROKEN THE MATERIAL WILL FALL, TAKE PRECAUTIONS TO AVOID INJURY.**

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 of HE Series Dust Collectors

### Daily, Weekly, Monthly, Yearly Inspections (each day for the 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.
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 collector's 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 filter tube section of the duct collector for filter tube failure or abrasion. Notify N. R. Murphy Limited if any of the filters are unduly worn. Ensure that none of the filter tubes have become detached from the cages or the collar plate 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 filter tube section of the duct collector for filter tube failure or abrasion. Notify N. R. Murphy Limited if any of the filters are unduly worn. Ensure that none of the filter tubes have become detached from the cages or the collar plate during operation.
3. Check that all diaphragm valves are functioning.
4. Check all bearings **DO NOT OVERGREASE** (see Industrial Exhauster section)

### Inspections to take place every Three 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 filter tubes for wear and ensure that they are still installed correctly to the cages.
3. Lubricate waste material discharge slide gates (use only graphite as grease causes material to collect in the slides)

### Yearly Inspection

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 filter tubes for wear and ensure that they are still installed correctly to the cages.
3. Lubricate waste material discharge slide gates (use only graphite as grease causes material to collect in the slides)
4. Remove and clean all filter tubes if required. For clean side removal utilizing snap ring type filter tubes, be sure the groove on the cuff is properly engaged in the cell plate, then insert the cage and venturi down through the filter. **In dirty side filter removal collector ensure that they are installed correctly to the cages as per the instructions on pages 18 to 21.**

### Industrial Exhausters

1. Periodic checks of anchor bolts and bearings should be made 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**



4. **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 pac 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.**

### **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

### **Filter Tubes**

1. Frequent checks of filter tube wear and deterioration should be made. Worn or damaged filter tubes should be replaced.
2. A manometer reading across the filters that reads higher than a predetermined level after normal pulsing indicates that the filter tubes may be blinded and should be either cleaned or replaced. (also check Trouble Shooting chart)

### **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.

### **Doors**

1. 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

### **Storage Hoppers (if supplied)**

1. 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 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.

## 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. Explosion venting (if included) is based on the requirements of the National Fire Code of Canada, Section 5.3.1.4 (0.1m<sup>2</sup>/cubic meter of volume). 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 of your local authorities as to the requirements in your particular area.

### 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 onsite conditions. Onsite 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 equipment Serial number and a description of the component that you require. 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 the N. R. Murphy Limited or your Technical Representative.

Recommended spare parts could include the following:

- filter tubes
- fusible link for fire damper curtain
- replacement V-belts for Exhauster drive
- bearings
- door seal gaskets
- exhaustor wheel
- diaphragm valves or diaphragm valve repair kits
- solenoid valves or solenoid valve repair kits
- filter cages
- rotary air lock seals

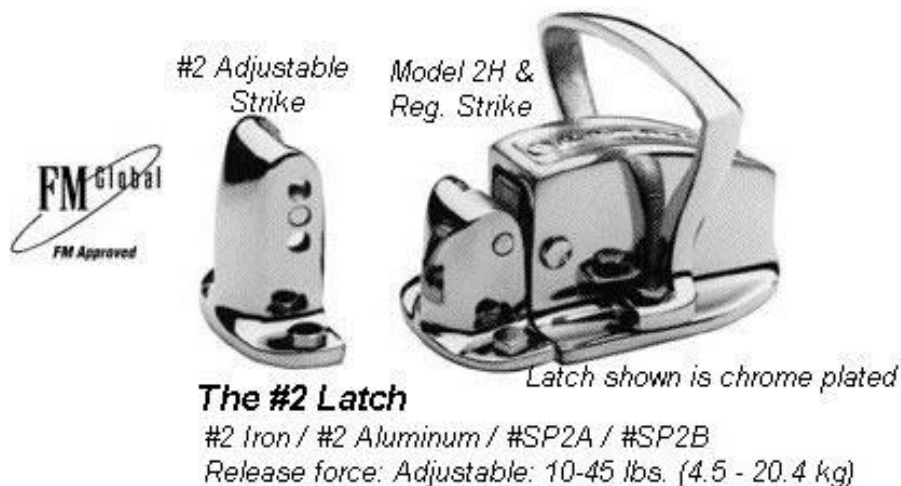
## Trouble Shooting Chart

PROBLEMS	PROBABLE CAUSES
DUST COMING THROUGH COLLECTOR DISCHARGE	<ul style="list-style-type: none"> <li>check for filter tubes which have become loose</li> <li>check for damaged, holed or ripped filters. For clean side removal utilizing snap ring type filter tubes, be sure the groove on the cuff is properly engaged in the cell plate, then insert the cage and venturi down through the filter. <b>In dirty side filter removal collector ensure that they are installed correctly to the cages as per the instructions on pages 18 to 21.</b></li> </ul>
BIN DOOR STUCK	<ul style="list-style-type: none"> <li>check for material build-up in slides. Lubricate waste material discharge slide gates (use only graphite as grease causes material to collect in the slides)</li> <li>in winter check for ice and material in slides</li> <li>check to ensure that gears on the sliding door are properly engaged</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 filters</li> <li>faulty or poorly designed ductwork</li> <li>ductwork obstruction (fire damper curtain partial closure)</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 packed due to overfilling of storage area</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> </ul>
COLLECTOR STORAGE WILL NOT EMPTY	<ul style="list-style-type: none"> <li>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.</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>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>open the diaphragm valve face and check for foreign matter, dirt stuck on the seat of diaphragm causing it to stay open</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>



Note that the collector storage section or drums should be emptied as often as is feasible. Air flow in the collector can pick material up out of storage and redeposit it in the filters reducing overall system performance. Collectors that have a rotary air lock discharge or other means of continuous material feed out should be run ALWAYS while the collector is in operation and during the shakedown period. If equipped with these devices the dust collector is not meant to store material above them and bridging can occur due to material packing.

## Relief Latches



### Operation

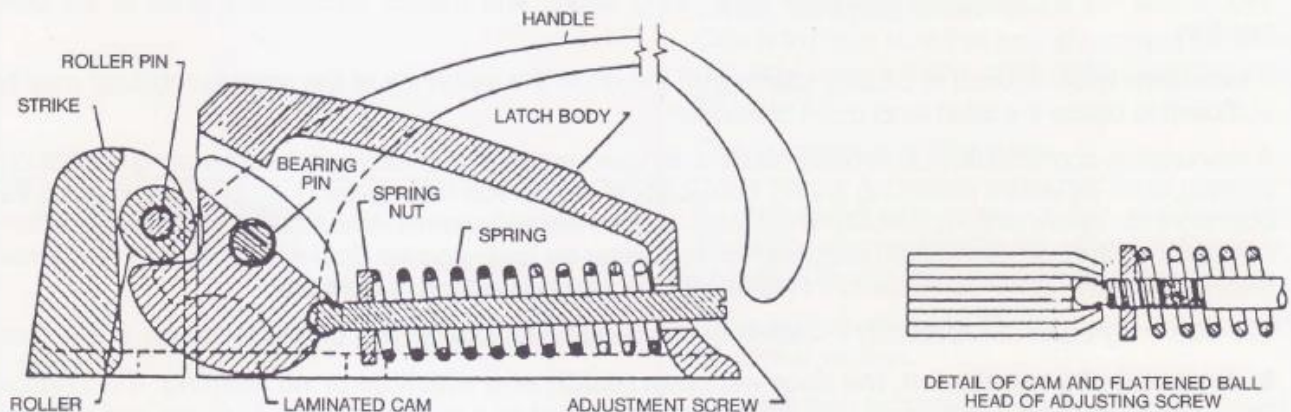
The relief latch operates in a manner similar to a toggle switch. When the door and latch are in the closed position, the latch will hold the door closed. When enough pressure is applied to compress the spring sufficiently to cause the cam into the open position, the latch will release opening the door. 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.

The recommended procedure for closing a door equipped with a #3 latch is to fold the handle back immediately prior to closing, or better explained to first open then close the handle. When folding the handle back, the cam should remain in the open position. If for any reason the cam remains in the closed position while the latch is open, the latch and or its mounting is defective and the door will bounce instead of latching

### Summary and Cautions for Operators

1. Violent slamming is potentially hazardous and must be avoided.
2. For reasons listed above, the door may not latch when closed. Beware of rebound
3. Keep clear of the door arc.
4. 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

## ADJUSTMENT CHART



LATCH MODEL	RELEASE PRESSURE (lbs.)		PRESSURE PER TURN	CHANGE (lbs.) PER ½ 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.

**NOTE:** 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.

\*\* #3 latch shown

To adjust, have the latch in the door closed position wherein one rivet which holds the laminated cam together is exposed. Turn the adjusting screw counter-clockwise to its loosest position, making sure the square nut does not come off the ball pin. Using the table above as a guide, tighten the adjusting screw a half turn at a time until the desired pressure is reached. It should be possible to feel the adjusting screw slipping into the relaxed position at each half turn. If the latch is mounted, adjustment can be made by turning the adjustment screw to its tightest position and backing off to the desired setting.

### Maintenance

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.

### Warnings and Limitations - ALL Latches

1. If the door is closed without sufficient force to trip the cam the door will rebound
2. 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 (#3) or by the cam being struck and rotated accidentally while in the open position.

3. 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 his 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.
4. The door may open unexpectedly if material (or someone) should fall and strike the interior of the door.
5. **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** as shown below. . Avoid standing in front of the door and the door arc area when the collector is in operation.



6. The latches should be set at the lowest practical setting.
7. Due to the brittle nature of cast materials, high impact loads may fracture the castings possibly resulting in a flying fragment. this is not expected to occur under normal operating conditions but is possible under severe conditions of use.

## 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.*

## Compressed Air Requirements for Cleaning

The pulse cleaning system for your collector will require compressed air 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.

## Sequential Controller

### AC Input, Pulse Cleaning of Bag House Dust Collectors Models DNC-T2003 through DNC-T2032

#### FEATURES

- **Universal voltage input:** 95 to 265 VAC 50/60 Hz
- **One SKU:** covers all voltages and time ranges required in your application
- **Advanced surface mount component technology:** extremely reliable and trouble free operation
- **Digital microprocessor controlled circuitry:** for precise pulse timing
- **Non-Volatile memory:** for retaining programmed settings
- **3 digit, 7 segment numeric display:** for ease of viewing controller operation
- **Easily programmable:** on/off times and last output used via keypad
- **Small footprint:** same size for 3, 6 and 10 output control
- **Time Ranges for all applications:** On Time: 50ms to 600 sec, Off time: 1 to 999 sec
- **2 modes of operation:** can be operated continuously or on demand via external pressure switch
- **Finger safe terminations:** reliable electrical connections and increases safety
- **RoHS construction:** suited for global applications
- **Supplied on metal chassis:** for mounting directly in a NEMA 4 box
- **Retrofit models available:** for direct drop in replacement of former product
- **UL/CUL:** File # E65038

a high pressure switch. Placing a jumper across the high pressure input forces the control to run continuously.

Note: Controls are shipped with jumper across pressure switch terminals

#### PROGRAMMING

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:** 60 seconds

#### TEST & DEFAULT MODES

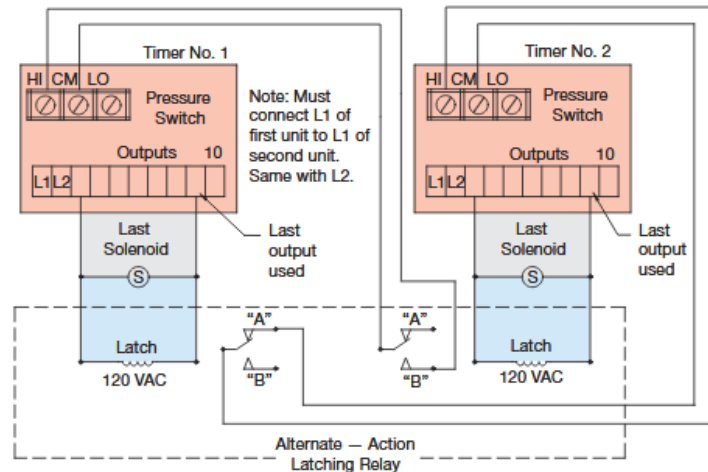
Test mode is entered by pressing and holding the select button for 3 seconds while the unit is in the normal operating mode. Once in test mode, the display will show tSt. Pressing the up or down arrow buttons toggles amongst outputs, and pressing select pulses the selected output for the preset ON-TIME. 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 the 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



## 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:** Solid state, 150VA max

Off State Leakage 1.5mA max

On State Voltage Drop: 1.5V max

### ENVIRONMENTAL:

**Operating Temperature:** -40 to +150 F (-40 to +66 C) 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 milliseconds – 600 seconds

**Off Time:** 1 – 999 seconds

**Resolution:** 10ms (50ms – 1 0 sec), 100ms

(10sec – 100sec), 1sec (100sec – 600sec)

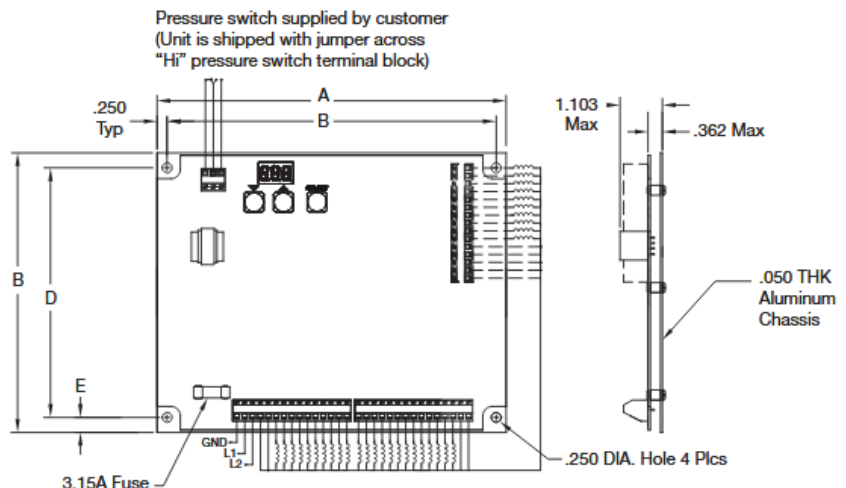
**Accuracy and Repeatability:**  $\pm 3\%$  over temperature and voltage range

### Default Settings:

**On Time:** 50 milliseconds

**Off Time:** 15 seconds

**Last Output:** Max. No. of Outputs



**Caution:**

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



# Diaphragm Valves

## GOYEN - T SERIES THREADED VALVES

### PRODUCT LEAFLET



T Series

### DESCRIPTION

High performance diaphragm valve with threaded ports. Available with integral pilot or as remotely piloted valve. Outlet at 90° to inlet.

### SUITABLE FOR

Dust collector applications, in particular for reverse pulse jet filter cleaning and its variations, including bag filters, cartridge filters and envelope filters, ceramic filters and sintered metal fibre filters.

### CONSTRUCTION

**Body:** Aluminium (diecast)

**Ferrule:** 305 SS

**Armature:** 430FR SS

**Seals:** Nitrile or Viton

**Spring:** 304 SS

**Screws:** 302 or 304 SS

**Diaphragm Seat:** PA-66 (standard), Viton or Nitrile coated mild steels, Nitrile, Viton or High Density PE

Refer to Q Series Solenoid product data sheet for solenoid construction details.

### OPERATION

**Recommended on-time range:** 50–500 ms

**Recommended time between pulses:**  
1 minute or greater

### 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.

Diaphragm and pilot inspection should be conducted annually.

### APPROVALS

- ATEX II 3 GD (RCA/RCAC only)
- CSA (C, US) [C22.2 No 139–10 and UL 429:2009] (CA & RCA)
- C-Tick (CA)
- EMC 2004/108/EC (CA)
- Low Voltage Directive 2006/95/EC (CA)

### WEIGHTS

SIZE	INTEGRAL PILOT [CA] KG [LB]	REMOTE PILOT [RCA] KG [LB]	SIZE	INTEGRAL PILOT [CA] KG [LB]	INTEGRAL PILOT [CA] KG [LB]
10	NA	0.06 [0.14]	50	2.89 [6.38]	2.68 [5.92]
35	1.04 [2.28]	0.83 [1.83]	62	3.31 [7.30]	3.09 [6.82]
45	1.50 [3.30]	1.28 [2.83]	76	4.77 [10.52]	4.56 [10.04]

### MAINTENANCE KITS

MODEL	NITRILE	VITON	LOW TEMPERATURE –60°C [–76°F] MIN.	INCLUDES
RCA10-6T	K1001	K1002	NA	Diaphragm kits include main and secondary diaphragms (where required) and all springs.
CA/RCA35T	K3500	K3501	K3502	
CA/RCA45T	K4502	K4503	K4522	
CA/RCA50/62T	K5004	K5000	NA	
CA/RCA76T	K7600	K7601	NA	O-ring, armature assembly, armature spring, ferrule
Pilot repair kit	K0380	K0384	NA	

### PRODUCT CHARACTERISTICS AND PERFORMANCE

NOM. SIZE	NOMINAL PORT SIZE		NUMBER OF DIAPHRAGMS	FLOW	
	MM	INCH		KV	CV
10	6	1/4	1	2.5	2.9
35	40	1.5	1	35	42
45	40	1.5	2	44	51
50	50	2	2	76	88
62	62	2.5	2	91	106
76	76	3	2	144	167

**Pressure Range:**  
30(5)–860(125) kPa(psi)

**Temperature Range:**  
Nitrile Seals: –40°C [–40°F] to  
82°C [179.6°F]  
Viton Seals: –29°C [–20.2°F]  
to 232°C [449.6°F]

## Maintenance – Diaphragm Valve

Improper Operation – turn off air and bleed system prior to servicing

1. Check the pilot 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.

# Solenoid Valves

## GOYEN - RCA3 SOLENOID PILOT VALVES

PRODUCT LEAFLET

### RCA3D - REMOTE SOLENOID PILOT VALVE TO CONTROL THE ACTUATION OF DUST COLLECTOR DIAPHRAGM VALVES



#### INSTALLATION

Prepare pilot mounting hole in panel to Ø 19.3/19.4 (Ø 0.760"). Panel thickness must exceed 1.5 mm (0.062"). Ensure o-ring is in place before tightening locknut. Preferably, install pilot valves with solenoid on top. For reliable operation, ensure supply voltage is within -10% and +15% of rated solenoid voltage. Replace components within 1 million cycles (refer to Spare Parts).

#### CONSTRUCTION

**Body:** Aluminium (diecast)  
**Ferrule:** 305 SS  
**Armature:** 430FR SS  
**Seals:** Nitrile or Viton  
**Locknut:** Mild steel zinc passivated  
**Screws:** 302 SS or 304 SS  
**Clip:** Mild steel (plated)

#### DIMENSIONS AND WEIGHTS IN MM AND INCHES

SERIES	WEIGHT
RCA3D0, RCA3D1 (no solenoid)	0.174 kg/0.384 lb

#### OPERATION

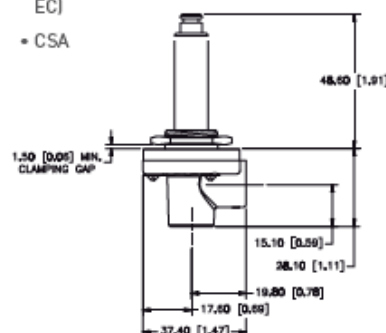
**Recommended on time range:** 50–500 ms  
**Recommended time between pulses:** 1 minute or greater

#### OPTIONS

None

#### APPROVALS

- C-Tick
- CE – EMC (2004/108/EC) and LV (2006/95/EC)
- CSA



#### PRODUCT PERFORMANCE

FLOW	MAXIMUM WORKING PRESSURE	MINIMUM WORKING PRESSURE	TEMPERATURE MIN	TEMPERATURE MAX	FLUID MEDIA
0.32 Cv/ 0.27 Kv	860 kPa/ 125 psi	0 kPa/0 psi	-40°C/-40°F	82°C/180°F	Air or inert gas

#### ORDER CODE\*

MODEL	THREAD TYPE	ORIFICE SIZE
RCA3D0-...	1/8" NPT	3.2 mm [0.126"]
RCA3D1-...	1/8" BSPP	3.2 mm [0.126"]

#### SPARE PARTS

- K0380 Nitrile replacement seal, armature, spring & ferrule kit.  
 K0384 As above in viton.

#### SUITABLE FOR

All Goyen dust collector diaphragm valves.

\* Please refer to Q Series Solenoid product data sheet on page 3 for information on electrical characteristics and to complete the order code, e.g. 1/8" NPT pilot valve with 240 VAC solenoid – RCA3D0-300

## Assembly of Door Handle Kits

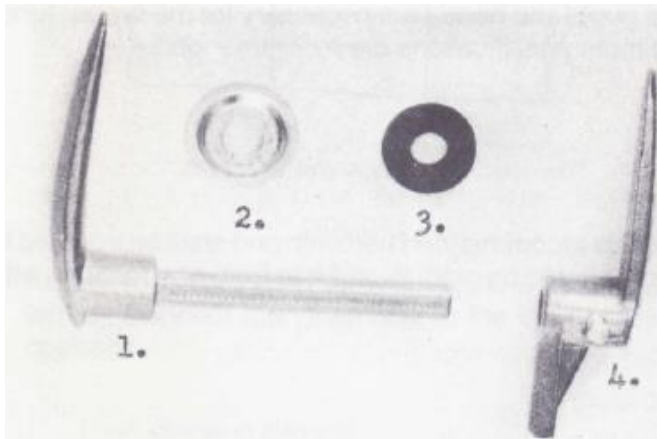


FIGURE 1

THE DOOR HANDLE KIT MAY HAVE MORE PARTS THAN REQUIRED. FIGURE 1 ILLUSTRATES THE ONLY PARTS THAT ARE NEEDED.

**PLEASE DISCARD ALL OTHER PARTS**

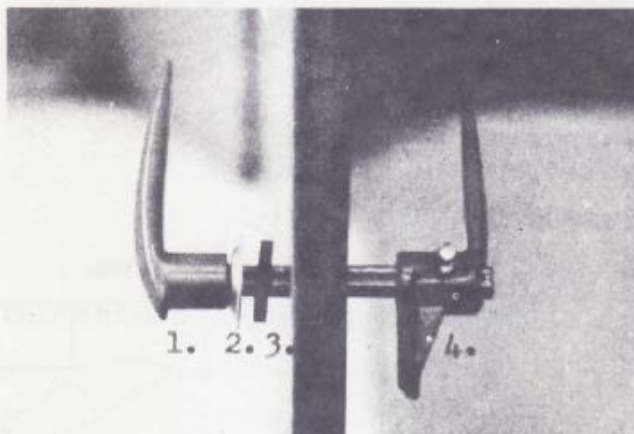
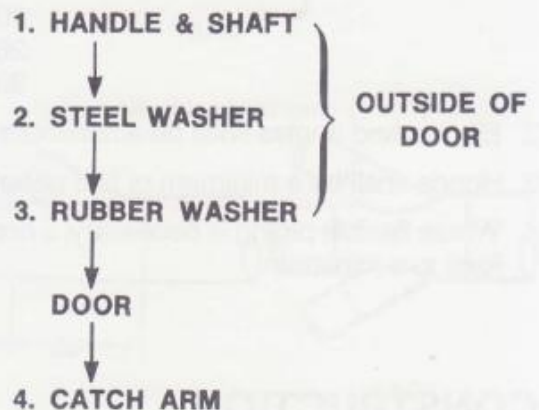


FIGURE 2

PARTS ARE INSTALLED AS IN FIGURE 2



ADJUST CATCH ARM UNTIL DOOR FITS TIGHTLY AGAINST RUBBER DOOR SEAL WHEN UNIT NOT OPERATING.

### **NOTE**

IF DOOR SPRINGS OPEN WHEN UNIT SHUTS DOWN, THEN CATCH ARM NEEDS TO BE ADJUSTED CLOSER TO DOOR FOR TIGHTER FIT (SEE FIGURE 3).

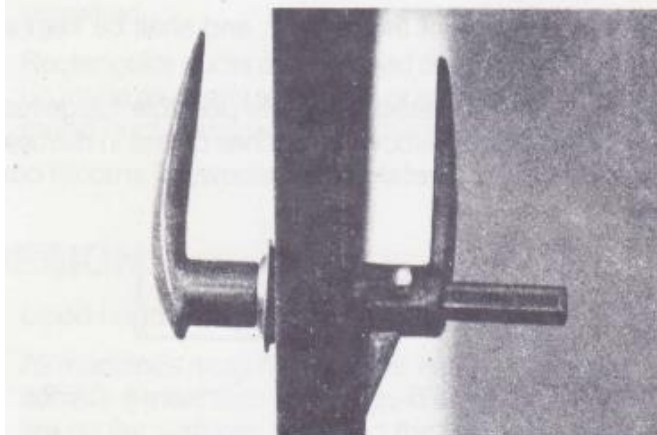


FIGURE 3

## Installing or Removing Filter Tubes

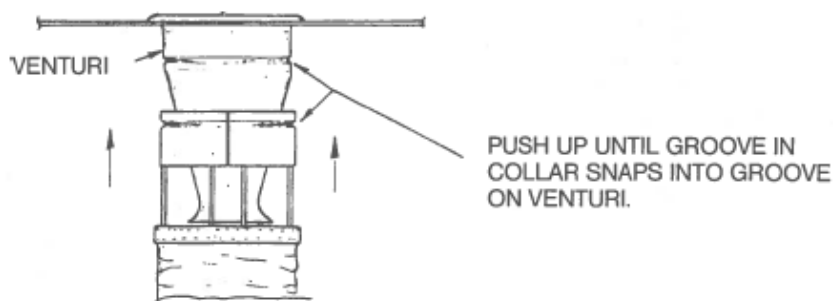
### BAG INSTALLATION AND REMOVAL FROM WITHIN FILTER CHAMBER

(If this style supplied)

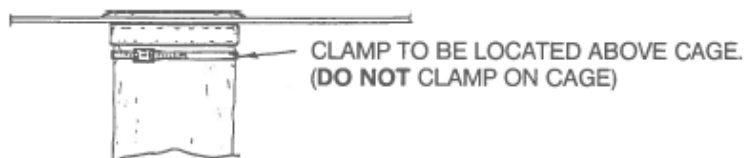
1. Pull the filter bag over the cage from the bottom, leaving approximately 6" clearance at the top of the cage.



2. Slip the cage over the venturi and push the cage straight up. See diagram.



3. When the cage has been properly secured to the venturi, pull the filter bag up over the venture so that it fits snug, and clamp into place.



## PAGE 18 - FILTER BAG INSTALLATION FROM WITHIN FILTER CHAMBER (DIRTY SIDE)

It is very important that cage and filter bag installation be done exactly as instructed in the HE Maintenance Manual (page 18) and this additional sheet to ensure an air-tight seal between the dust chamber and the clean air chamber.

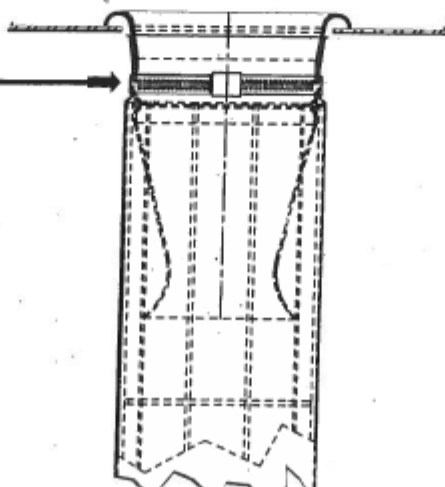
The filter bags that you will receive have a plain end on the open end, not cuffed as illustrated in the HE manual.

Install the filter bag over the cage as illustrated in the manual. When you slip the cage over the venturi, the cage collar must snap into place in the venturi groove. This will secure the cage properly to the venturi. Clamp the filter bag on to the venturi just above the cage collar.

### **IMPORTANT - THE CLAMP MUST BE ABOVE THE CAGE AND ON THE VENTURI TO FORM A DUST TIGHT SEAL**

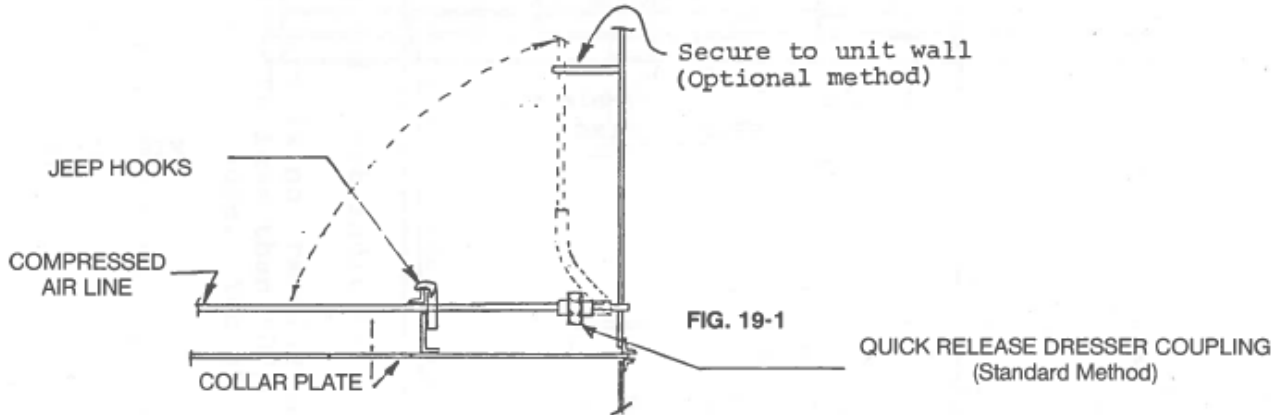
Place the clamp on the filter approximately 1/8" above the cage collar, on the straight portion of the venturi. **DO NOT** clamp higher on the tapered section as clamp can become insecure and result in leakage.

The clamp must be held straight while tightening. Tighten until the filter bag is securely clamped to the venturi.

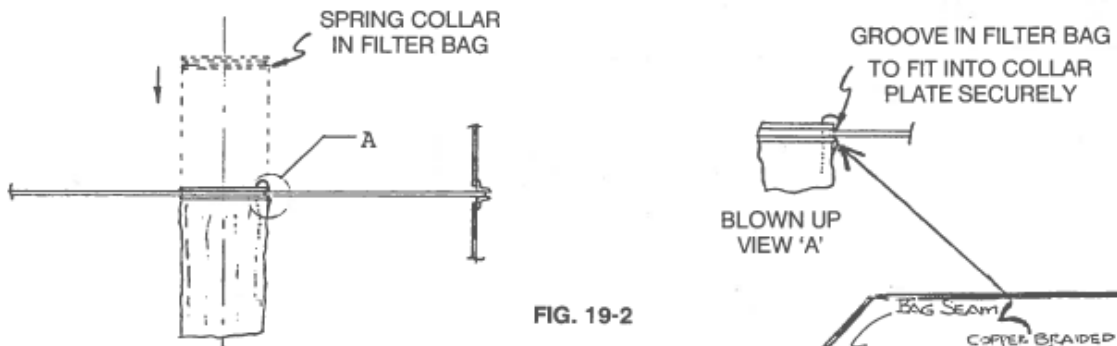


## BAG INSTALLATION AND REMOVAL FROM CLEAN SIDE ABOVE FILTER CHAMBER (If this style supplied)

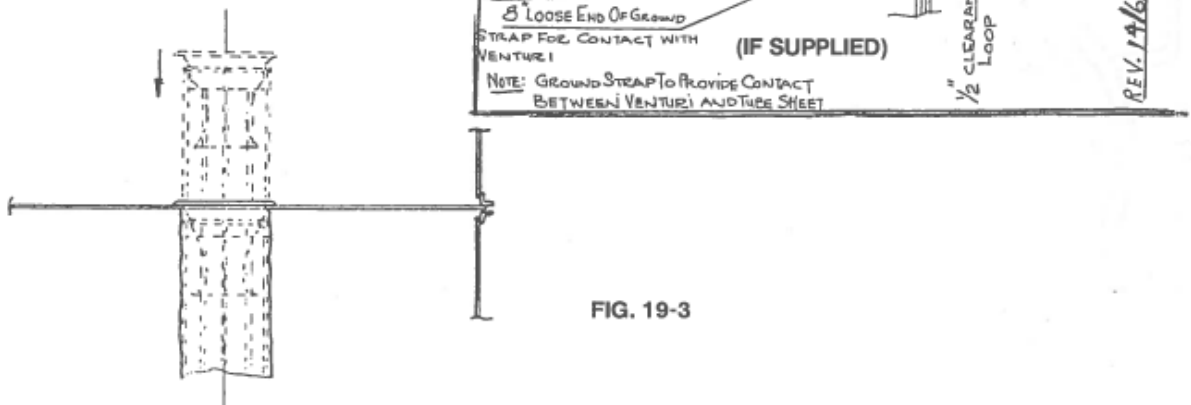
1. Remove compressed air line at dresser coupling.



2. Insert filter bag through collar plate hole and snap spring collar into position. See FIG. 19-2.



3. Insert cage and venturi into filter bag. See FIG. 19-3.





4. Reposition compressed air lines into horizontal position and secure. Refer to FIG. 19-1.
5. For removal reverse procedure.
6. In some cases, split cages can or may be supplied. These are a simple snap together assembly as illustrated in FIG. 19-4.

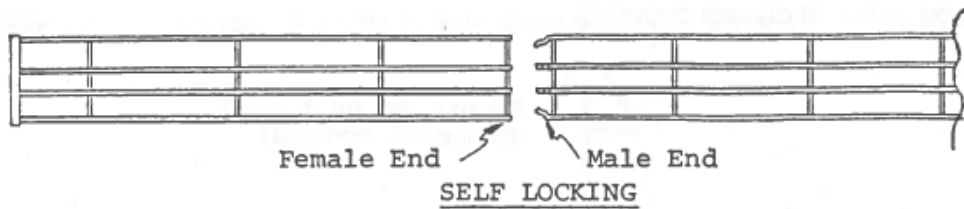
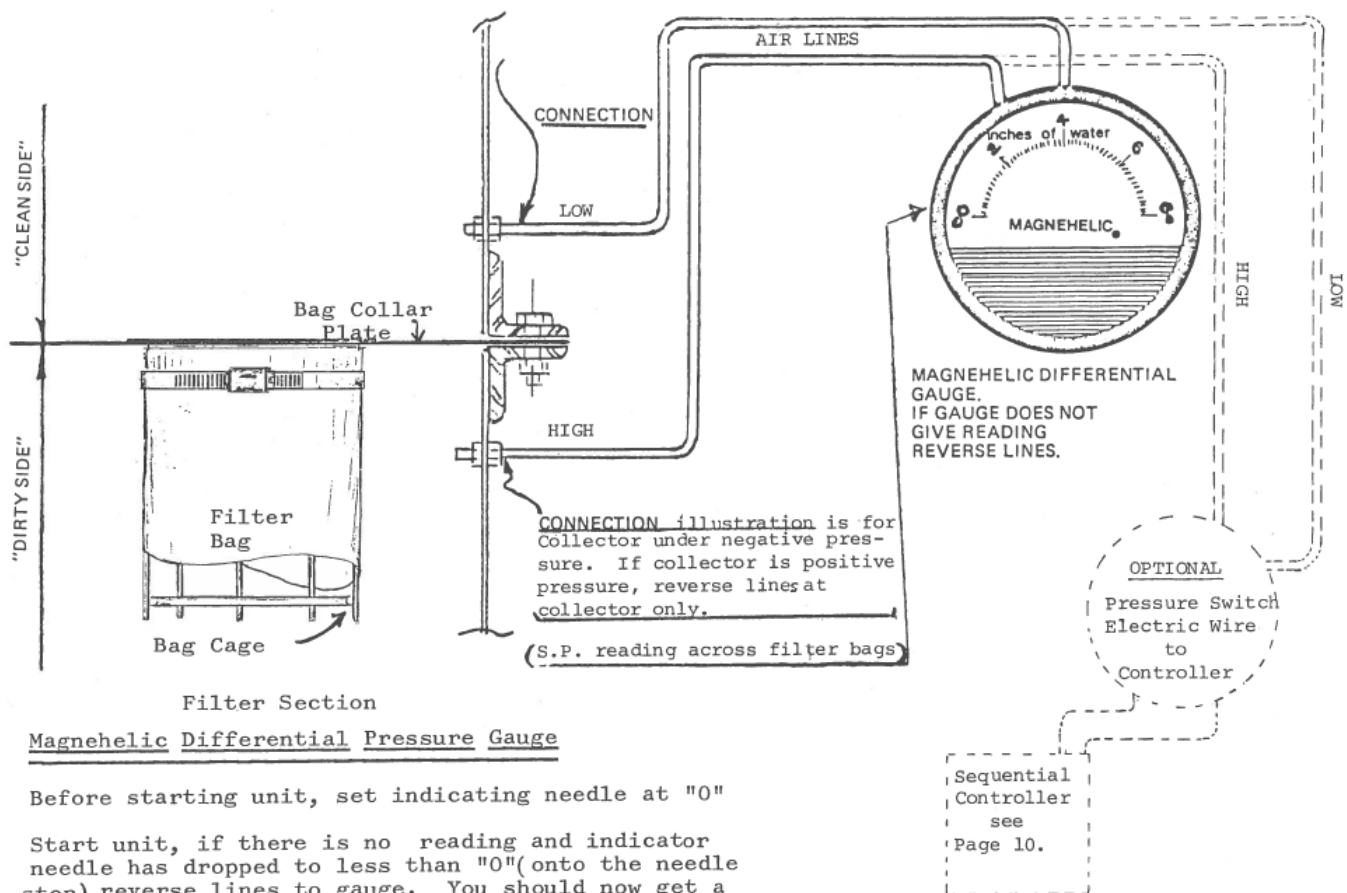


FIG. 19-4

## Mounting Instructions of Magnehelic Gauge



### Filter Section

#### Magnehelic Differential Pressure Gauge

Before starting unit, set indicating needle at "0"

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

As the bags in the unit get dirty, the needle will tend to rise.

LOCATION OF CONNECTIONS FOR MAGNEHELIC DIFFERENTIAL GAUGE (IF SUPPLIED).

## Maintenance Log

**Motor Data** HP \_\_\_\_\_ VOLTAGE \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ RPM \_\_\_\_\_ FLA \_\_\_\_\_ SERVICE FACTOR \_\_\_\_\_

DRIVE SHEAVE \_\_\_\_\_ DRIVEN SHEAVE \_\_\_\_\_ SHEAVE ALIGNMENT \_\_\_\_\_

BELT TENSION \_\_\_\_\_ EXHAUSTER ROTATION \_\_\_\_\_ AMP DRAW \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

[illegible]