

M.K.O.B. 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.



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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.

NFPA Compliance

Make sure your installation complies with the local authorities and with the appropriate NFPA Standards, which are available from the *National Fire Prevention Association*.

These NFPA standards include, but are not limited to:

- *Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities, NFPA 61*
- *National Electrical Code, NFPA 70*
- *Standard for Combustible Metals, Metal Powders and Metal Dusts, NFPA 484*
- *Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities, NFPA 664*
- *Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing and Handling of Combustible Particulate Solids, NFPA 654*

Below is an excerpt from NFPA 654/664 regarding open dust collectors installed inside a building.

- *The collector is used only for dust pickup from wood processing machinery (i.e., no metal grinders and so forth).*
- *The collector is not used on sanders, molders or abrasive planers having mechanical material feed through the machine.*
- *Each collector has a maximum air-handling capacity of 5000 ft³/min (2.4 m³/sec)*
- *The collected dust is removed daily or more frequently if necessary to ensure efficient operation.*
- *The collectors is located at least 20 ft (6.1m) from any means of egress or area routinely occupied by personnel*
- *Multiple collectors in the same room are separated from each other by a least 20 ft (6.1m).*

Please note that a non-compliant installation can result in risks of fire and explosion.

MKOB Series Reference Pictures

MKOB c/w filter hanging rack & drum waste collection



MKOB c/w filter hanger arms & drum waste collection



MKOB c/w filter hanger arms & bag waste collection (front)



MKOB c/w filter hanger arms & bag waste storage (side)



Installation and Operation of MK Series Dust Collectors

Introduction

The purpose of this section is to aid in the proper installation, operation and maintenance of your MKOB Series dust collector. These instructions are not intended to supplement good general practices and are not intended to cover detailed installation procedures.

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

Do 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.

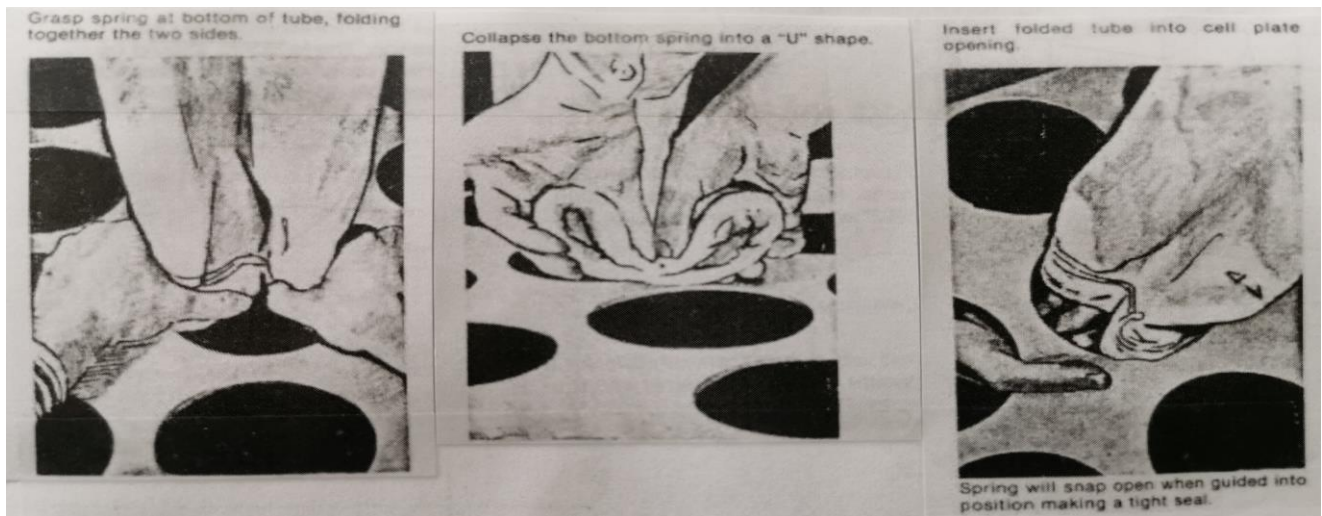


NEVER UNDER ANY CIRCUMSTANCES USE THE EXHAUSTER SHAFT TO LIFT THE COLLECTOR AS IT COULD CAUSE SEVERE DAMAGE TO THESE COMPONENTS.

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.


Installation Instructions:

1. Your dust collector was knocked down for ease of shipping. Unpack all skids & visually inspect all parts for any signs of damage. If any damage is found, stop assembly & contact your N.R. Murphy representative immediately.
2. Install bolt-on legs to the hopper section mounted leg stubs, erect dust collector, & secure to the floor via a hole in each leg base.
3. Install individual filter tubes using the following method (see pictures below for reference):
 - a. Collapse 1 side of the snap band (located on open end of filter tube) into a "U" shape
 - b. Grasp snap band & fold together in order to insert into cell plate opening. Be sure the groove in the cuff is properly engaged in the cell plate,
 - c. Making sure the groove on the cuff is properly engaged in the cell plate, seat snap band into cell plate hole & allow collapsed snap band to return to normal round shape (you may have to push from the inside out)
👉 CAUTION, THE BAND WILL SNAP INTO PLACE, SO WATCH YOUR FINGERS
 - d. Tug on installed filter tube to ensure the filter cuff is properly installed into the cell plate.



4. Install the upper filter hanging rack or filter tube hanger arms (which ever came with your dust collector). If filter hanger arms, remove & save the filter retainer pins from the end of each arm.
5. Lift each filter by the top hanging loop or strap & secure upper portion of the filter by 1 of the following 2 methods:
 - a. If your dust collector came with filter hanger arms, slide loop of each filter over the hanger arm. Once all filters are installed, replace the filter retainer pins (from step 3)
 - b. If your dust collector came with a filter hanging rack, insert & fasten each filter strap to the corresponding buckle located directly over each cell plate hole (see section on filter replacement for buckle picture). Pull down on strap to tighten each filter taught but not stretched.
6. Install bolt-on legs to exhaust fan section, fan inlet should face up.
7. Reach inside the fan inlet or outlet (before installation) & manually turn wheel to ensure it rotates freely before continuing. Contact your local N.R. Murphy representative if the wheel makes any contact with the fan housing as this could ignite combustible material during operation. Be sure to check that all set screws holding wheel to motor shaft are tight.
8. Apply a generous amount of duct sealant/calking (supplied by others) to the mating flange surfaces & bolt fan outlet flange to dust collector inlet flange (proper sealing is required to ensure an airtight installation). Ensure all fasteners are tight.
9. Install appropriate gauge ducting to the fan inlet & wire exhaust fan motor as per all local building/electrical codes.
👉 BE SURE THE MAIN POWER SUPPLY IS TURNED OFF BEFORE ATTEMPTING ANY ELECTRICAL WORK
10. Install waste collection bags or drum connector sleeves (if 45 gallon drums are to be used) to each material discharge collar found under the hopper section. Bags/drum connector sleeves are fastened with the supplied clamps. If 45 gallon drums are to be used, go ahead & installed these to the other end of the drum connector sleeves with the supplied clamps.
11. Your dust collector is now ready for the preliminary inspection & start-up, see below.

Preliminary Inspection Before & After Start-up

1. Ensure that none of the filter tubes have become detached from the hanger rack/arms or the collar plate during installation, make sure all bolted connections are tight, & make sure all waste collection bag/drum connections are secure.
2. Install all ductwork & machine connections before operating dust collector to avoid an over current condition caused by not enough resistance to airflow.
3. Once all electrical connections are made, bump start the fan motor and ensure that the exhauster is turning in the correct rotation as shown on the exhauster case. Adjust electrical connections to change rotation if required.
 **CAUTION: DISCONNECT AND LOCK OUT ALL POWER SOURCES TO THE EXHAUSTER BEFORE ANY ADJUSTMENTS**
4. 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 motor is not overloaded.
5. 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.

Using Bag/Drum Storage

When 45 gallon storage drums or waste collection bags are used to collect/store waste material. It is likely to be found that they do not fill evenly. Previous installations have shown that differences in installation and inlet conditions will affect drum/bag filling. This does not reduce the efficiency of the collector but will require more frequent emptying of certain drums/drums.

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 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 overload 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.

Procedure to Empty Waste

- Switch off the blower (allow blower to come to a complete stop)
- Manually shake each filter bag to dislodge any waste stuck in the filters.
- Open waste material discharge gate (if equipped) 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, MATERIAL WILL FALL. TAKE PRECAUTIONS TO AVOID INJURY.**
- Remove, empty, & replace waste collection bag/drum. Replace any bags with holes or tares. New bags can be purchased from N.R. Murphy, contact your local representative.

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 MK Series Dust Collectors

Daily, Weekly, Monthly, Yearly Inspections (each day for the first week of operation)

1. Check the storage section/bags/drums for waste level to determine the frequency of emptying that will be required to keep the collector operating efficiently.
2. Check the storage section (if equipped) 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. Ensure that the filters have been shaken at LEAST once a day. If the filter tubes are plugged due to over filling, they should be cleaned out manually.

Inspections for the end of First Week & Month of Operation

1. 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 hangers or the collar plate during operation and check that filters are taut.
2. Check to ensure bag/drum connections clamps, fan to collector connection bolts, & motor to fan housing bolts are tight.
3. Check to support leg to floor connections are tight.

Inspections for the end of First Month of Operation

1. 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 shaker frame or the collar plate during operation and check that filters are taut
2. Check to ensure bag/drum connections clamps, fan to collector connection bolts, & motor to fan housing bolts are tight.
3. Check to support leg to floor connections are tight.

Inspections to take place every Three Months

1. Lubricate all electric motors as per manufacturers recommendations. **DO NOT OVERGREASE**
2. Check to ensure bag/drum connections clamps, fan to collector connection bolts, & motor to fan housing bolts are tight.
3. Check to support leg to floor connections are tight.
4. Check all filter tubes for wear and ensure that they are pulled taut.
5. Lubricate waste material discharge slide gates (if equipped), use only graphite as grease causes material to collect in the slides.

Yearly Inspection

1. Lubricate all electric motors as per manufacturers recommendations. **DO NOT OVERGREASE.**
2. Check to ensure bag/drum connections clamps, fan to collector connection bolts, & motor to fan housing bolts are tight.
3. Check to support leg to floor connections are tight.
4. Check all filter tubes for wear and ensure that they are pulled taut.
5. Lubricate waste material discharge slide gates (use only graphite as grease causes material to collect in the slides)
6. Remove and clean all filter tubes if required (see section on removal & installation of filters)

Industrial Exhausters

Periodic checks of exhaust fan should be made for vibration. If excessive vibration develops, check the following:

- a. Accumulation of dirt and foreign matter on exhauster wheel.
- b. Loose bolts on fan housing (outlet to collector & motor to housing).
- c. Loose set screws on exhauster wheel.
- d. Damage to exhauster wheel caused by foreign matter.
- e. Proper clearance between exhauster wheel and housing.

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. Be sure filter tubes are taut at all times or cleaning of the filter tubes will be affected. Contact your local N.R. Murphy representative for replacement filter tube pricing.
2. A manometer reading across the filters that reads higher 3"wg after normal shaking indicates that the filter tubes may be blinded and should be either cleaned or replaced. (also check Trouble Shooting chart)
3. See section on filter removal & installation for reference.

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 an airtight seal when closed.

Waste collection bags/drums/bins



Note that the collector storage section or drums/bags/bin 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.

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 exhauster 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 dust collector 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 local representative.

Recommended on-hand spare parts for the MKOB series dust collector could include the following:

- filter tubes
- exhauster motor
- exhauster wheel

Trouble Shooting Chart

PROBLEMS	PROBABLE CAUSES
DUST BYPASSING FILTERS	<ul style="list-style-type: none"> • check for filter tubes which have become loose • check for damaged, holed or ripped filters. For snap ring type filter tubes be sure the groove on the cuff is properly engaged in the cell plate, then pull the filter taut at the top end by pulling down on the hanger strap.
BIN DISCHARGE DOOR STUCK	<ul style="list-style-type: none"> • 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) • in winter check for ice and material in slides • check to ensure that gears on the sliding door are properly engaged
INSUFFICIENT AIR FLOW	<ul style="list-style-type: none"> • exhauster wheel rotating in the wrong direction • dirty or clogged filters • faulty ductwork • ductwork obstruction
NO AIR FLOW (NO START)	<ul style="list-style-type: none"> • damaged exhauster motor • fan wheel jammed by material or foreign matter • blown fuses • storage bin is full and filters are packed due to overfilling of storage area
COLLECTOR NOISY	<ul style="list-style-type: none"> • broken or damaged exhauster wheel • exhauster out of balance • damaged exhauster motor • loose connections
COLLECTOR STORAGE WILL NOT EMPTY	<ul style="list-style-type: none"> • 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.

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.*

Installing or Removing Filter Tubes

Collapse the bottom spring into a "U" shape.



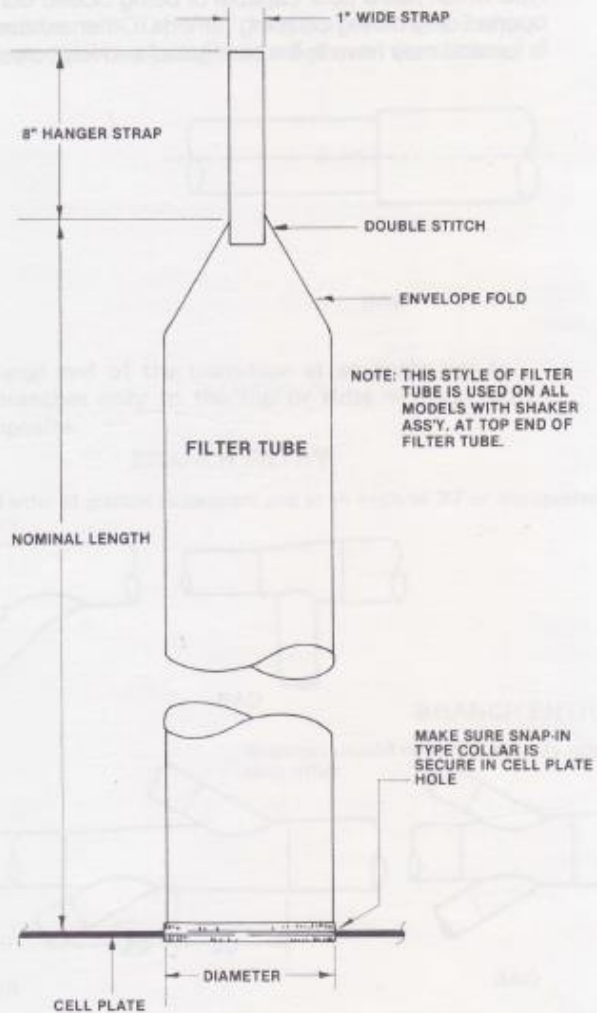
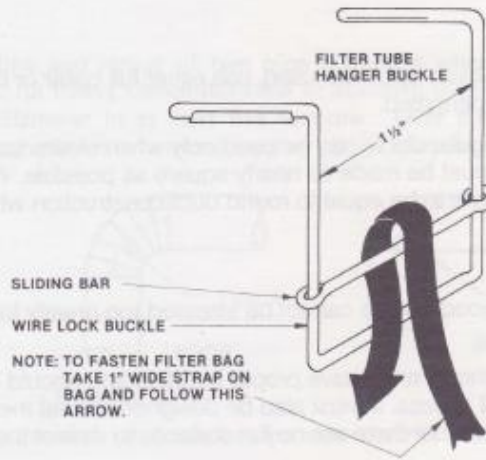
Grasp spring at bottom of tube, folding together the two sides.



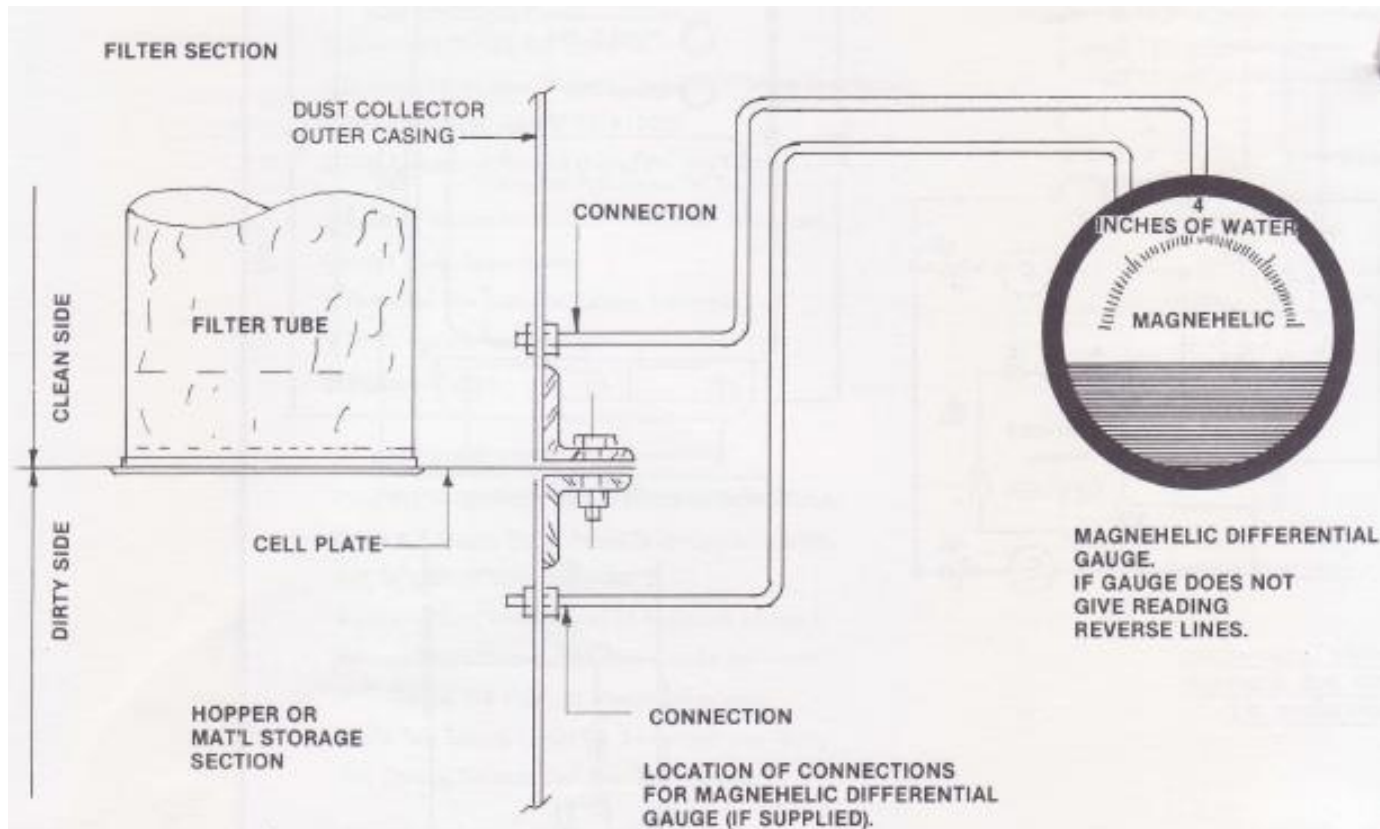
Insert folded tube into cell plate opening.



Spring will snap open when guided into position making a tight seal.



Instructions for use of Magnehelic Gauge



MAGNEHELIC DIFFERENTIAL PRESSURE GAUGE (MANOMETER)

BEFORE STARTING UNIT SET INDICATING NEEDLE AT "0"

START 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 FILTERS IN THE UNIT GET DIRTY, THE NEEDLE WILL TEND TO RISE TO BETWEEN 2" TO 6" DEPENDING ON MODEL OF UNIT & DUST LOADING.

WHEN NOTICEABLE DIFFERENCE IN SUCTION OCCURS, THE FILTERS SHOULD BE SHAKEN. AN UNUSUAL HIGH MANOMETER READING SHOULD ALSO BE PRESENT, BUT THIS CAN ALSO OCCUR IF CONNECTIONS TO MANOMETER ARE PLUGGED.

