Mac Process

SECTIONALIZED

MCF DUST FILTER

INSTALLATION, OPERATION

& MAINTENANCE MANUAL

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It is the owner's responsibility to maintain the safety features included with this equipment. The safety features may include, but not necessarily be limited to: guards, access doors and covers, explosion vents, warning decals, caution decals, and advisory decals. Replacement safety features are available from Schenck Process

DO NOT attempt to operate this equipment until you have read and understood the contents of this manual. If you do not understand the contents of the manual bring it to the attention of your supervisor. This manual contains important safety instructions concerning the maintenance, use, and operation of this product. Failure to follow these instructions may result in serious injury or death.

NO haga funcionar este equipo hasta haber leido y comprehendido el contenido de este manual. Si aiguna partre del contenido del manual queda sin comprehender, notifiqueselo a su supervisor. Este manual contiene instrucciones importantes en cuanto al anterimiento, uso, y funcionamiento sequros de este producto. El no seguir las instrucciones contenidas en este manual podria ocasionar lesiones graves.

GENERAL INTRODUCTION

Congratulations on your selection of a MCF Dust Filter. As the owner/operator of this unit you have an important responsibility to see that it is operated and maintained in a safe manner. The unit will require very little attention to keep it in good operating condition. This manual has been prepared to aid you in that effort.

Throughout this manual, reference may be made to various components which may or may not be part of your particular system. They are included in the interest of fully describing typical MCF filter systems.

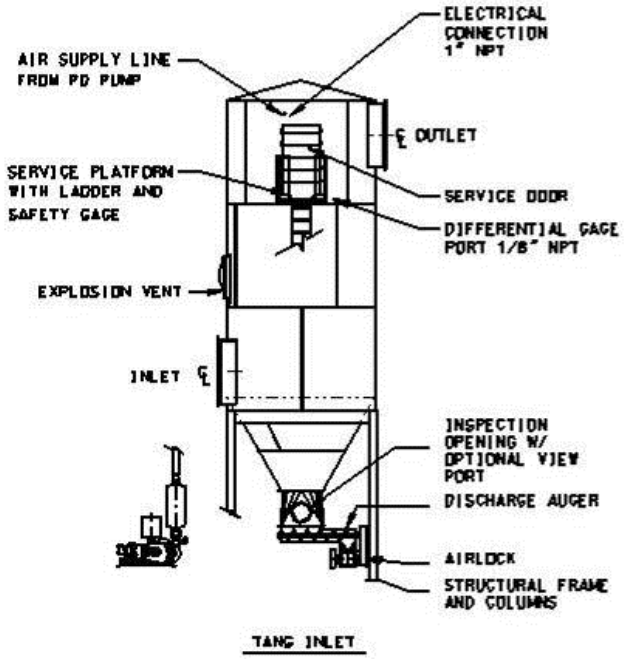


Figure 1-1 Typical Sectionalized MCF Dust Filter

Receiving Your Equipment

As soon as the equipment is received, it should be carefully inspected to make certain the unit is in good condition and all items listed on the packing list are received. Even though the equipment is mounted on heavy shipping skids at our plant it is possible for it to be damaged in shipment. All damages or shortages should be noted on the Bill of Lading. The purchaser must take immediate steps to file reports and damage claims with the carrier. All damages incurred to the unit in transit are the responsibility of the common carrier since it is the policy of Schenck Process LLC to make shipment F.O.B. from its factory. Ownership passes to purchaser when the unit is loaded **and accepted** by carrier. Any claims for in transit damage or shortage must be brought against the carrier by the **purchaser.**

If the unit is not going to be assembled and installed soon after arrival, it should be stored in a warm, dry location to protect against corrosion. Filter bags and cages or cartridges must be stored in a dry, rodent proof location.

SAFETY INFORMATION

WARNING!

Do not attempt to operate or maintain this piece of equipment until you have read and thoroughly understood all of the safety information contained in this manual. All such information must be taken seriously. This piece of equipment contains moving parts and potential pinch points which can cause serious injury or death. If you do not understand anything in this manual seek assistance from your supervisor before operating this equipment.

Recognize Safety Information

The symbol at left is used to alert you to important safety messages located throughout this manual. It also appears on the equipment to alert you to potential hazards. When you see this symbol you must read, understand, and heed the information that accompanies it.

Understand Signal Words

DANGER !
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING !
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION !
Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or property damage.

Warning Decals and Guards

This piece of equipment contains several warning decals located in many different locations. It is the owner/operator's responsibility to maintain the integrity of these decals and to ensure that all operators of the equipment are aware of them and understand their meaning. Replacement decals are available free of charge from your Schenck Process Service Representative, or by calling Schenck Process LLC at **1-888-821-2476**.

This piece of equipment may contain one or more safety guards to protect the operator(s) from injury. It is the owner/operator's responsibility to maintain the integrity of these guards and ensure that they are in place when the equipment is in operation.

WARNING!

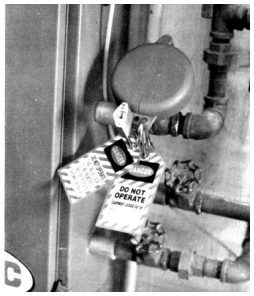
DO NOT attempt to operate this equipment with any guard removed. Replace damaged guards.

Lockout-Tagout Requirements

WARNING!

Before inspecting or servicing this equipment perform an approved lockout-tagout procedure on the electrical service, the compressed air (or other gas) supply, or any other energy source.

ELECTRICAL POWER



COMPRESSED AIR OR GAS

Figure 2-1 Lockout and Tagout of Electrical Service and Compressed Air (or other gas)

Control of this equipment must be in accordance with OSHA Standard 1910.147 "The control of hazardous energy (lockout-tagout)". This standard "requires employers to establish a program and utilize procedures for affixing appropriate lockout devices or tagout devices to energy isolating devices and to otherwise disable machines or equipment to prevent unexpected energizing, start-up or release of stored energy in order to prevent injury to employees".

For further information on Lockout-Tagout requirements, see your company's Safety Director or refer to OSHA Standard 1910.147.

Safety Precautions

WARNING! **Do not operate, inspect, or service this equipment unless all the following safety precautions are in effect:**

- Guards, access doors, and covers are in place and secure.
- The equipment has been wired and grounded in accordance with all applicable codes.
- If air being filtered contains toxic materials all necessary precautions to protect personnel have been taken.
- An approved lockout-tagout procedure has been followed before the equipment is inspected, disassembled, and/or serviced. The equipment is automatically controlled and may start without warning unless energy supplies are properly disconnected and locked out-tagged out.
- The control panel enclosure is closed and secured except as is necessary for service or adjustment.
- The service door is closed and secured. Do not enter filter while the system exhaust fan is operating; air flow can pull service door closed, trapping personnel inside.
- A confined space permit, if required by authorities having jurisdiction, has been obtained prior to personnel entering the unit. Check with your company's safety director for special instructions, testing prior to entry, etc. that may be required by the specific application.
- Explosion vents have been properly installed and ducted, as described below in the Installation section.
- **Do not** cut, weld or grind on the filter while it is in operation; dust laden air may be highly explosive. Refer to the proper National Fire Protection Association Manual for information on cutting, welding or grinding in hazardous areas.
- The work area is clean and orderly, free of debris, materials, tools, etc.
- Operating personnel are wearing proper ear and eye protection and have secured loose hair, clothing, jewelry, etc.

WARNING! **Failure to follow these instructions may result in death, personal injury, and/or property damage!**

Installation and Operation Cautions

- The MCF Cleaning arm timing is critical to the correct and efficient operation of these filters. Refer to the maintenance section for correct placement and adjustment of the timing.
- **BLOWERS and GEAR BOXES (on hi-temp filters) are shipped without lubrication oil;** do not operate before lubricating. Refer to the maintenance section for the lubrication schedule.
- All system piping must be clean internally before connecting to blower.
- Check lubrication level only when the equipment is stopped.
- Keep inlet filter clean.
- Keep belts properly tensioned and aligned.
- Keep pressure relief valves in good condition so that maximum pressure is not exceeded.
- Never attempt to regulate air flow by restricting intake or exhaust of a positive displacement blower.

NOTE: Full rated pressure is full pressure differential from inlet flange to discharge flange.

Read and Understand Safety Decals

Several safety labels are located on this piece of equipment to warn the operator(s) of potentially hazardous situations.

Decal Locations

The following figure shows typical locations for safety decals on the MCF filter. The locations of decals for your particular filter may vary from those indicated. Inspect your filter for locations of all decals.

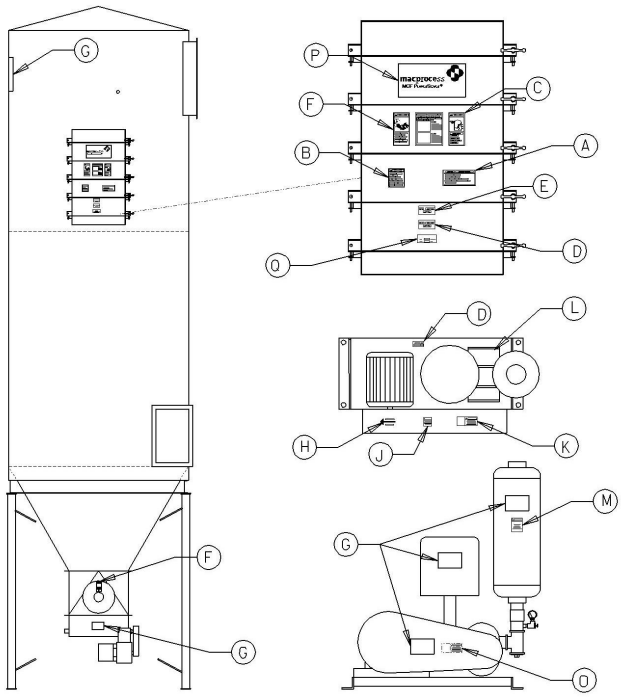


Figure 2-2 Typical Locations of Safety Decals (see next page for description of decals)

Safety Decals

Safety decals (and other information labels) may include, but are not necessarily limited to, the examples shown below. Locate all of the safety decals on your equipment and know their meaning prior to operating this dust filter. Free replacement decals are available; ask for decal kit P/N V247819.B01.

A.

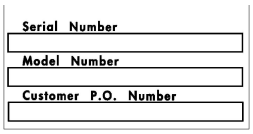
End User must determine hazard level for entry permit requirements.

B.

Equipment has moving blades, shaft, rotor or arm which may cause injury. It may also have valves discharging compressed gases.

C. 

Equipment can start without warning. Exhaust fan can create enough force to close and hold service door closed.

D. 

Typical Schenck Process LLC nameplate.

E. 

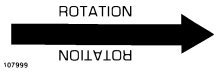
Typical Schenck Process LLC MCF Filter Patent Numbers

F. 

Equipment can start without warning. Cleaning Mechanism rotation can cause entrapment under cleaning arm which will induce serious injury.

G. 

Typical Schenck Process logo

H. 

Equipment must rotate in direction indicated on rotation arrow.

I. 

Equipment has rotating screw conveyor which may cause injury. Operate only when covers are in place.

J. 

Equipment may be remotely controlled.

K. 

Moving drive components can cause injury.

L. 

Check lubricant level before initial startup.

M. 

Do not weld or flame cut on silencer. May cause packing to enter into air stream and cause damage to cleaning mechanism.

N. 

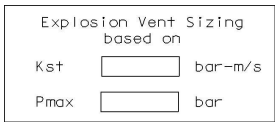
Moving blades will cause severe injury.

O. 

Do not operate equipment with guards removed.

P. 

MCF PowerSaver logo.

Q. 

Explosion vent sizing data (if explosion vent is required).

In addition, if your filter is equipped with an explosion vent the following figure shows typical locations for other safety decals.

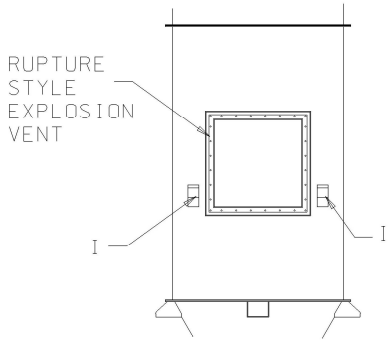


Figure 2-3 Typical Locations of Safety Decals for Explosion Vents

I. 

Stay clear of explosion vent. During an explosion, flame, explosive gases or flying material will be released.

The following ISO decals may appear on your MCF Filter:

Disconnect, lockout and tagout electrical and all other energy sources before inspecting, cleaning or performing maintenance on this filter.

This warning sign reminds operators and other users that they must read and understand the Operator Manual before storing, installing, inspecting, cleaning or servicing the filter.

This filter may be remotely controlled. It can start without warning unless it is properly locked out at the motor starter or local disconnect. Do not rely on the control system for safe lockout.

Equipment can start without warning. This access port should be equipped with safety lock.

PRINCIPLE OF OPERATION

The MCF filter is a top bag removal, pneumatically controlled, medium pressure high volume pulse cleaning dust filter. Cleaning air is generated by a positive displacement blower. MCF models range in size from a MCF572 with 6,921 sq. ft. of cloth to a MCF1652 with 23,954 sq. ft of cloth.

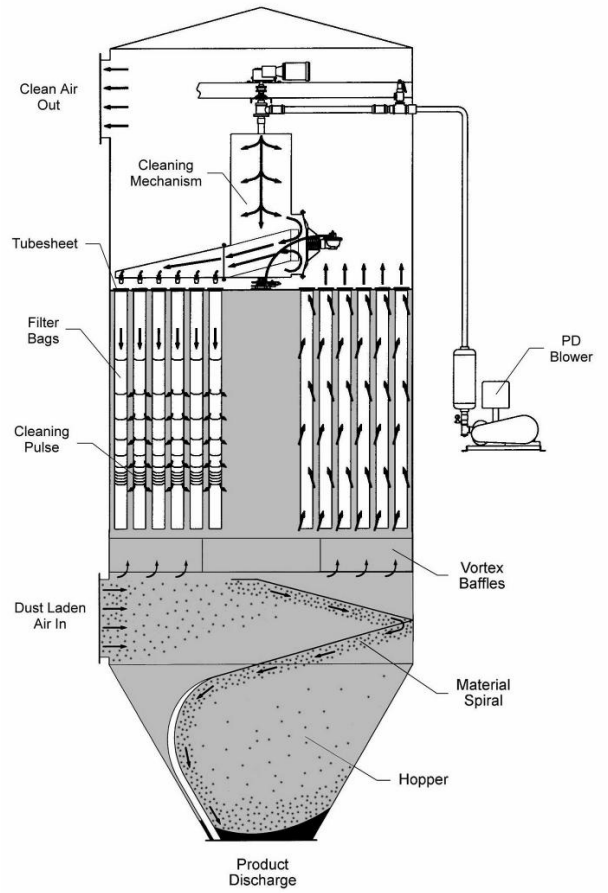


Figure 3-1 Principle of Operation

Air Flow through the Unit

Dust laden air enters the MCF through the tangential inlet near the bottom of the unit. A remote fan on the exhaust side draws air through the filter. A majority of the dust entering the unit is captured by the spiral and directed into the hopper and out the discharge. The remaining dust laden air is directed to the filter bags. Vortex baffles just below the filter bags straighten the air to prevent excessive wear on the bags. Filtered dust collects on the outside of the filter media. The MPHV cleaning mechanism pulses the dust off the filter bags and it drops into the hopper. Filtered air passes through the center of the filter bags and out through the clean air discharge at the top of the unit.

MPHV Cleaning

The MCF filter is a continuously operating self-cleaning filter. It uses MEDIUM PRESSURE HIGH VOLUME (MPHV) air to clean the bags. This air is supplied from a positive displacement blower located outside the unit. Cleaning air is stored in a tank within the clean air plenum. Cleaning air pressure climbs to approximately 7 psi within this tank before it is injected into the bags. A high volume blast of air is delivered by means of the diaphragm valve. Cleaning air is channeled to the bags through a rotating arm. The cleaning arm has a series of nozzles correlated to the tube sheet layout. Cleaning air exits these nozzles and enters the bags. This action cleans the bags by; (1) creating a shock wave that pops the bag, and (2) forcing a momentary reverse flow of air through the bags.

MCF Timing

The unique feature of the MCF filter is its patented timing mechanism. Once adjusted, this device assures a blast of cleaning air is injected directly into the center of the bag, regardless of the rotational speed of the cleaning arm. This device is mechanical and does not require electrical power to internal solenoids for firing.

Positive Displacement Blower

The MCF Filter requires a rotary positive displacement blower to supply the cleaning air. This blower has two figure-eight impellers rotating in opposite directions. As the impeller lobes pass the blower inlet, they trap a quantity of air. This entrapment occurs four times per revolution, moving the entrained air around the case to the blower outlet. Timing gears accurately position the impellers in relation to each other, maintaining the minute clearances so vital to the high volumetric efficiency of the rotary positive displacement blower. For further information on this equipment refer to the appendix.

Variable Cleaning Control Options: Air Diverter Valve

The Air Diverter Valve (ADV) cleaning cycle control is offered as an option on the MCF filters. This valve provides an economical method of controlling the cleaning cycle of the filter. The cleaning cycle can be extended from the base time to any cycle time desired above this base. This is useful for filter applications that require a longer duration between cleaning pulses, to prevent over-cleaning the filter media.

To extend the cleaning cycle with the ADV, a timer, Photohelic gauge, or PLC is required. The ADV functions as a by-pass valve to the cleaning system. To initiate cleaning the valve is closed and air is allowed to flow to the cleaning mechanism. The valve is left closed for the duration of one cleaning cycle. To interrupt the cleaning cycle the valve is opened and cleaning air is exhausted to the atmosphere. The frequency of the cleaning cycle is controlled by adjusting the duration of the open state of the valve.

Variable Frequency Drives

Variable Frequency Drives (VFD) are offered as an alternate option for cleaning-cycle control on the MCF Filters. This arrangement controls the speed of the rotating cleaning arm and blower, which directly controls the frequency of the cleaning cycle. Cleaning frequency is adjustable above and below the base cycle. The extent of control is limited by the physical limitations of the drive and the motor. With this type of control, the filter is usually provided with a non-standard base cleaning cycle, falling in the center of the desired adjustment range. Refer to Schenck Process Engineering Department for further details.

Air Exhaust

Returning filtered exhaust air into a facility can present hazards. The type of dust, its characteristics and the effect of a recirculation system malfunction must be considered. If system design dictates that filtered air be returned into the facility, the buyer is cautioned to take appropriate steps to monitor the air quality and provide appropriate safeguards as prescribed by OSHA, NFPA, Federal, State and Local codes and regulations.

WARNING!

<u>Never</u> return filtered air to a habitable space or building without proper monitoring and precautions.

INSTALLATION

Assembly of Filter: Sectionalized MCF

For your convenience, all sections have been numbered for easy assembly. Also, the hardware needed for each section is individually labeled for the specific purpose and packaged per section.

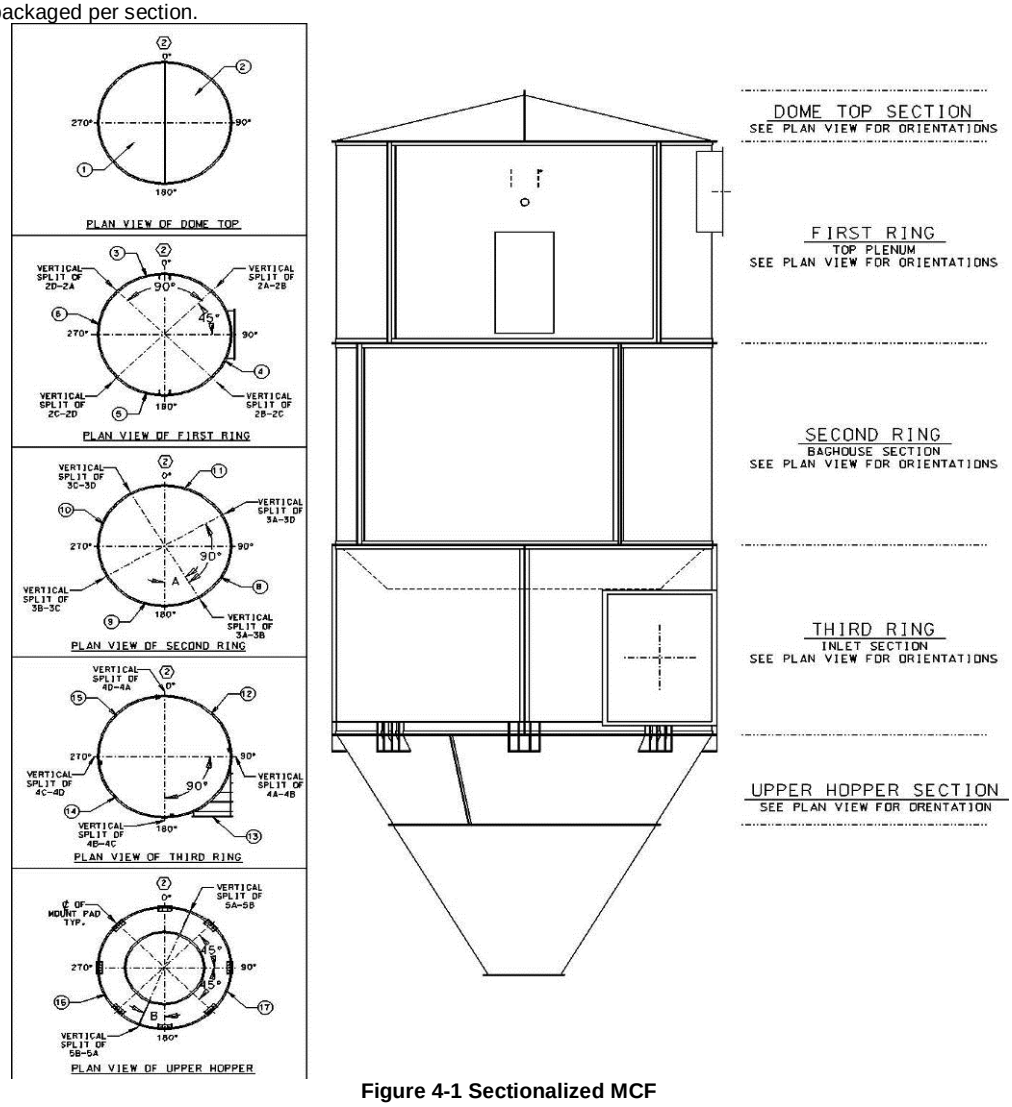
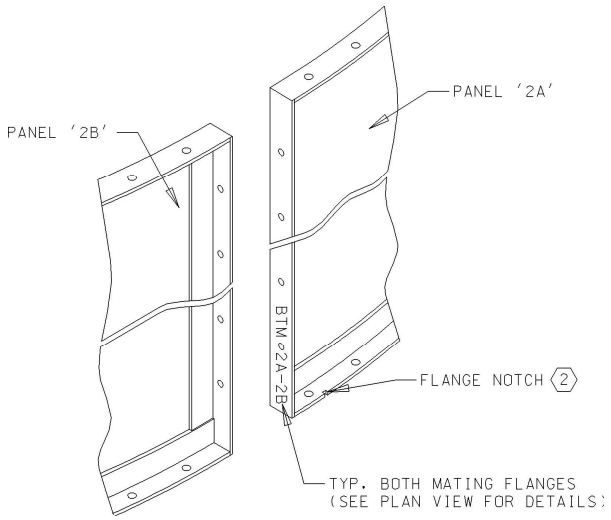


Figure 4-1 Sectionalized MCF



ITEM	QTY	DESCRIPTION
1	1	PANEL 1A - TOP DOME HALF
2	1	PANEL 1B - TOP DOME HALF
3	1	PANEL 2A - PANEL
4	1	PANEL 2B - PANEL
5	1	PANEL 2C - PANEL W/SERVICE DOOR
6	1	PANEL 2D - PANEL W/EXHAUST
7	2	TUBESHEET
8	1	PANEL 3A - PANEL
9	1	PANEL 3B - PANEL
10	1	PANEL 3C - PANEL
11	1	PANEL 3D - PANEL
12	1	PANEL 4A - PANEL
13	1	PANEL 4B - PANEL W/INLET
14	1	PANEL 4C - PANEL
15	1	PANEL 4D - PANEL
16	1	PANEL 5A - UPPER HOPPER HALF
17	1	PANEL 5B - UPPER HOPPER HALF
18	1	LOWER HOPPER 6

Location

Locate the MCF filter in a clear area away from normal personnel traffic on a flat and solid concrete or steel surface. Locate the filter so as to minimize supply and exhaust ductwork and so that explosion venting, if required, can be directed so that injury to personnel and damage to property **cannot** occur. Provide sufficient space for emptying the hopper and maintaining the unit.

DANGER!

During an explosion, a vent will release flame, explosive gases or flying material. The explosion venting must be directed away from personnel to prevent injury.

Foundation

The filter requires an adequate foundation, designed by a qualified structural engineer. Refer to the General Dimension drawings of your system for foot pad layout and weights. When calculating the loading for the foundation, the weight of the filter, material collected, and all auxiliary equipment must be considered together with snow, wind and seismic loads.

Support Structure

A support structure may be supplied by Schenck Process LLC as part of your MCF filter system. Figure 4-2 below shows a typical structure, which will vary from system to system depending on the size of the MCF filter.

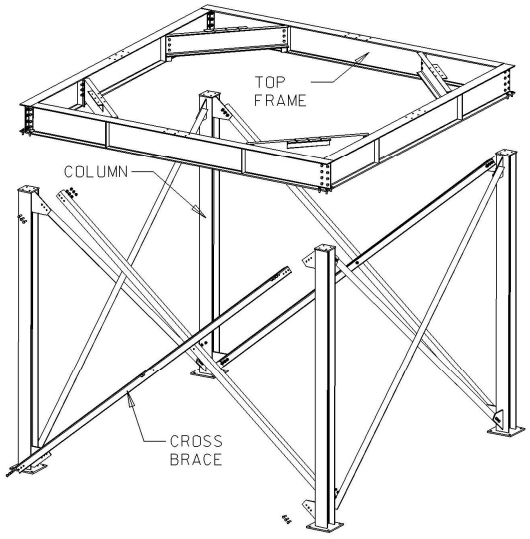
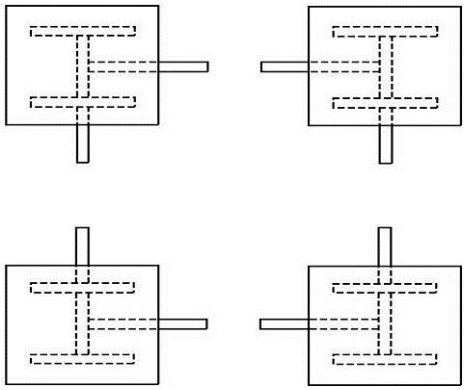


Figure 4-2 Optional Support Structure

To install the support structure:

1. Review the components of the support structure.
2. Set anchor bolts in the foundation according to the plan drawing. Locate the four columns and erect on your foundation as shown in the column configuration below. (Note column orientation) Install nuts but do not tighten. (Anchor bolts and nuts are not provided)



3. Attach cross bracing to (4) sides with grade A325, ¾" UNC (Length as provided) bolts and nuts. (Do not tighten at this time)
4. Assemble top frame (See figure 4-3). Locate the four top beams (Note all four beams are identical and may be placed on any side of the structure). For ease of installation, assemble on ground and then lift into place. Layout beams on ground and bolt together using grade A325, ¾" UNC x 2" bolts and nuts as supplied. Locate and attach the four identical diagonal corner beams to the top beams using grade A325, ¾" UNC x 2" bolts and nuts as supplied.

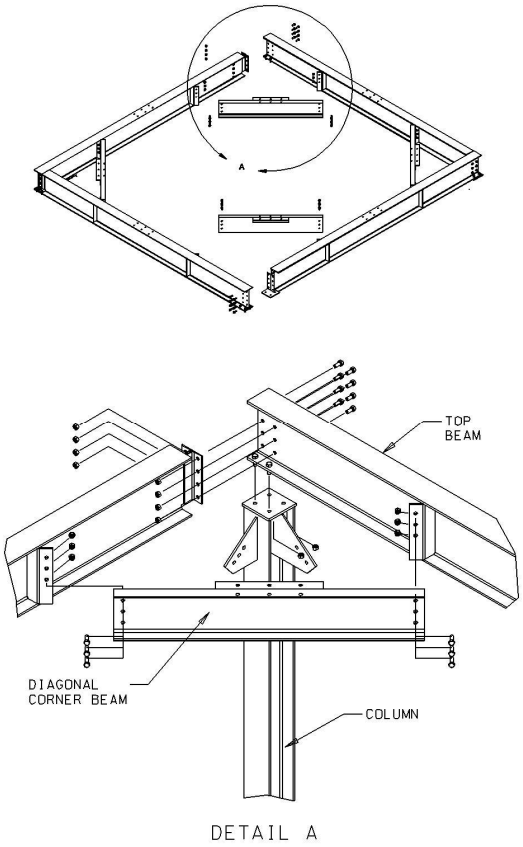


Figure 4-3 Top Frame Assembly

5. Lift top frame onto columns and bolt together with grade A325, ¾" UNC x 2-1/2" bolts and nuts as supplied.
6. Check the structure is square and plumb.
7. Tighten all bolts. Bolts must be tightened before allowing the structure to support the weight of the filter.
8. Touch-up paint on the support structure as needed. (Assembly should be complete and all bolts tightened prior to painting.)

Hopper Assembly:

Locate upper hopper halves 5A and 5B (see figure 4-1). For ease of installation, the sectionalized hopper should be bolted together up-side down with the top flange down. Apply a bead of silicone caulk to both vertical flanges of one panel. Bolt the adjoining sections together with ½" x 1-1/2" long bolts, lock washers and nuts.

Next, locate the one piece hopper cone. Its bottom flange will be 40" diameter. Apply a bead of silicone to its top flange and lift on to the horizontal flange of the upper hopper. Bolt the hopper cone and upper hopper together with ½" x 2" long bolts with two flat washers and one lock washer per bolt.

Turn the assembled hopper over to have the top flange, with mount pads, up. Lift with a spreader bar attached to the top flange at four mount pads. Set the hopper in the support structure.

WARNING! **Spreader bars are recommended to distribute the load evenly while lifting the filter.**

Check the orientation of any special attachments on job specific drawings. Attach the mount pads to the structure with ¾" x 2-3/4" long grade A325N bolts with a flat washer and a "hillside" washer at the structural channel beam. The top flange of the hopper must present a level surface to erect the rest of the filter. If it doesn't, loosen the connecting flanges as required to reposition the panels to achieve a level flange. Tighten all bolted connections. Each hopper half has two internal shipping support pipes. They should be removed at this time.

The discharge transition and airlock or other discharge accessory (if provided) may be installed now or at some later time. Locate the discharge transition; it will have a 40" diameter top flange and a bottom flange to mate the specified airlock. Apply caulk to the top flange and attach it to the hopper with 3/8" x 1-½" long bolts and nuts. Be sure that the airlock mating flange is correctly orientated. Attach the airlock, see airlock drawing for proper bolt size.

Ring 3, Inlet section, Assembly:

This section is made up of Ring 3 and the Vortex Breaker Assembly (see figure 4-1).

For ease of assembly, locate a level surface and build Rings 3, 2 and 1 on the ground and lift into place.

Locate sections 4A, Inlet section 4B, 4C and 4D.

Apply silicone caulk to all flanges.

Bolt vertical flanges of panels together with ½" x 1-½" long bolts, lock washers and nuts.

The lift lugs shown above are for lifting single panels or the assembled baghouse section. **DO NOT USE THESE LUGS TO LIFT MORE THAN THE BAGHOUSE SECTION.**

Vortex Assembly:

(Clockwise inlet is shown. Counterclockwise inlet is mirror image.)

Locate the vortex main support joist, the two joist halves, four vortex ring sheets and the 28 vortex breaker sheets.

Locate a level surface and layout joist section of vortex. Bolt together with ½" x 1-1/2" long bolts, lock washers and nuts.

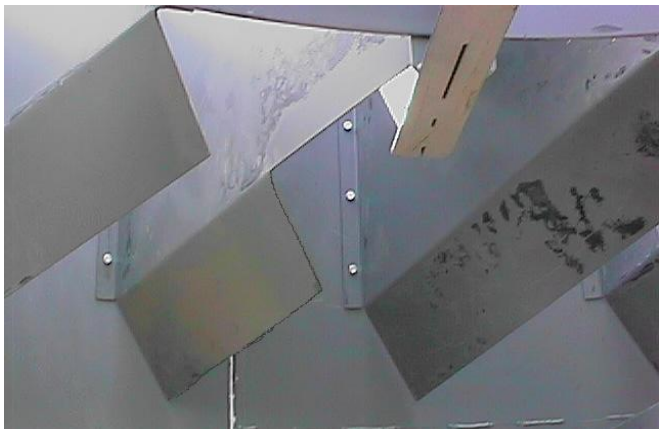
Insert vortex ring into inside slot of joist section. Rings will overlap each other. Bolt rings together with 3/8" x 1-1/2" bolts. Do not bolt ring to joist section at this time.

CAUTION: DO NOT bolt vortex splice directly to joist.

Lift vortex assembly into Ring 3 and onto tabs. Bolt vortex assembly down with ½" x 1-1/2" bolts, lock washer, flat washers and nut.

Install vortex panels with 3/8" x 1"bolts, flat washers, lock washers and nut. From inside the structure, the lip on panel should be down and to the right.

Where vortex panels meet the joist section, 4 places, use panels with half bottom section.



Ring 2, Baghouse Section, Assembly:

Locate sections 3A, 3B, 3C and 3D. As with the other sections, all flanges are sealed with silicone caulk. Align notch mark and arrow on Ring 2 with notch mark and arrow on Ring 3. Vertical flanges are bolted with ½" x 1-½" long bolts with lock washers. Horizontal flanges are bolted together with ½" x 2" bolts, two flat washers and one lock washer.

Tubesheet assembly:
Locate support column, support column ends and tubesheet. The MCF 572 & 756 tubesheet will be two sections, while the MCF 1120 and larger tubesheet will be four sections.

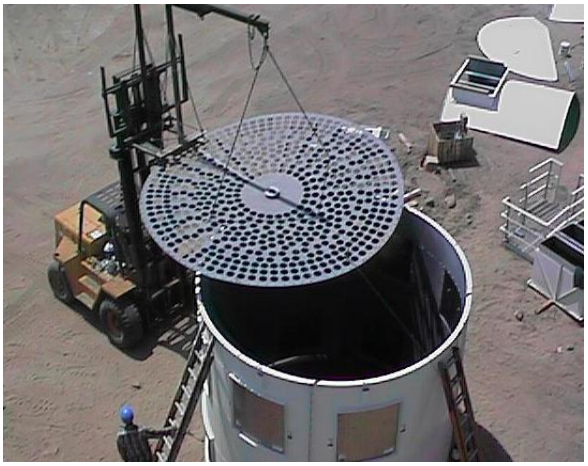
Apply a bead of silicone caulk to the inside edges of tubesheet. Align the tubesheet sections and install the ½" x 1-1/4" long bolts, lock washers and nuts but do not tighten. Install the lower bearing at the center of the tubesheet to insure proper alignment and then tighten all of the tubesheet section bolts.

Bolt the bottom support channel to the vortex joint assembly with ½" x 1-1/2" bolts, lock washers and nuts.

Bolt top support channel end to bottom side of tubesheet with ½" x 1-1/2" bolts, lock washers and nuts.

Install support column and lift tubesheet into place.

Note: The tubesheet will be bolted in-between Ring 2 and Ring 1.

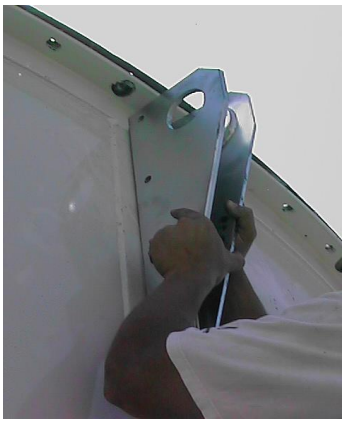


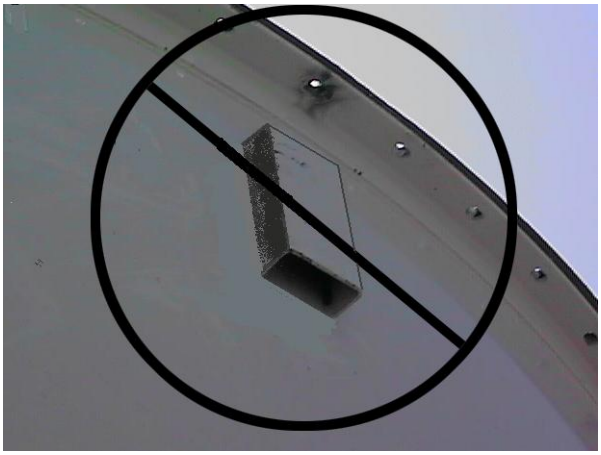
Ring 1, Top Plenum, Assembly:
Locate section 2A, exhaust section 2B, service door section 2C and section 2D.

As with all sections, all flanges are sealed with silicone caulk. Align notch mark and arrow on Ring 1 with notch mark and arrow on Ring 2. Vertical flanges are bolted with ½" x 1-½" long bolts, lock washers and nuts. Horizontal flanges are bolted together with ½" x 2" bolts, two flat washers, one lock washer and nut.

Locate the support channel. Lift support channel into Ring 1 and bolt to welded mounting plates. Bolt together with ½" x 1-1/2" bolts, flat washer, lock washer and nut.

The lift lugs shown below are welded to the top plenum panels. Install A325 bolts in holes that bolt the lugs and panels together. **USE THESE LUGS WHEN LIFTING MULTIPLE SECTIONS INTO PLACE.**





These lugs should be used for moving single panels or sections into place only.

Dome, Top Section, Assembly:

Locate sections 1A and 1B. As with all sections, all flanges are sealed with silicone caulk. Align notch marks on top section with notch marks on Ring 1. Bolt top sections together using ½" x 1-1/2" bolts, lock washers and nuts.

Lift dome onto Ring 1. The lifting lugs welded on the dome may be used to lift the dome only.

Bolt the dome section to Ring 1 with ½" x 2" bolts, two flat washers, lock washer and nut.

WARNING! **Do not use top dome lugs to lift all three sections in place.**

WARNING! **Do not use top dome lugs to lift more than the dome section.**

Apply silicone to horizontal flange of hopper assembly. Lift Rings 1. 2 and 3 onto hopper assembly making sure notch marks and arrows are aligned. Bolt together with ½" x 2" bolts, flat washers, lock washers and nuts.

Service Platform (see figure 4-4)

Platform may be mounted with the filter horizontal.
To install the front access service platform: (see figure 4-4)

1. Align holes in service platform with holes in platform adapter located below service door.
2. Bolt together with ½"UNC (as provided) bolt, nuts, and lock washers.
3. Position support clips over holes with weld-ons on both sides of service door and secure in position with ½"UNC (as provided) bolts and lock washers.
4. Attach (2) flat bar supports from clips to holes in both sides of service platform. Secure in position with ½"UNC (as provided) bolts, nuts, lock washers, and flat washers.

Ladder, Safety Cage, and Ladder Stand-off

Ladder and safety cages will come in pre-assembled 6 ft., 4 ft., or 3 ft. lengths and (1) 8 ft. section without a safety cage attached.

To assemble ladder and safety cages: (see figure 4-4)

1. Position ladder and safety cage assemblies on ground end to end with the entry section at either end. (Note: If ladder rungs are not 12" apart flip section end for end).
2. Join ladder side rails together with splice plate (as provided), 3/8" UNC bolts, and locknuts
3. Join lower safety cage bars to upper safety cage hoop using 3/8" UNC bolts and locknuts. (Note: safety bars should be on the inside of safety hoop.)
4. After all sections are joined together lift ladder into position and attach to service platform.
5. Position stand-off clips over holes with weld-ons located below service door and secure in position with ½"UNC (as provided) bolts and lockwashers.
6. Attach ladder stand-off to clips with ½"UNC (as provided) bolts, nuts, and flatwashers. Level stand-off and clamp to ladder rail. Pilot drill through hole in stand-off into ladder rail on both sides. Secure stand-off to ladder rail with ½"UNC (as provided) bolts, nuts, and flatwashers. (Note: Stand-off to ladder connection can be welded or bolted.)
7. Measure distance from bottom of ladder rung to ground. Cut 8 ft. section to this length. (Note: Check to make sure what end will maintain the 12" distance from rung to rung and cut the opposite end). Join ladder side rails together as described in step #2.
8. Position ladder foundation clip by clamping to the bottom of the ladder rail and pilot drill through (2) holes in foundation clip into ladder rail on both sides. Secure stand-off to rail with 3/8" UNC (as provided) bolts and locknuts. Secure foundation clip to ground. (Note: Foundation clips to ladder connection can be welded or bolted.)

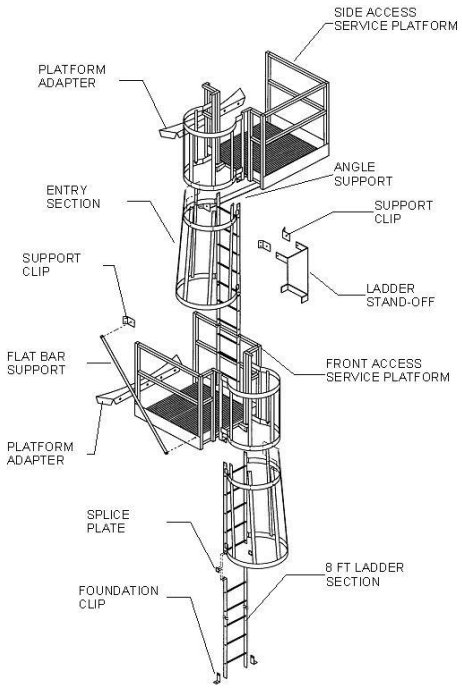


Figure 4-4 Typical Side and Front Access Service Platform and Ladder Assembly

Cleaning Mechanism:

The cleaning mechanism for the MCF 572 differs from the MCF 756 and larger models, refer to proper section.

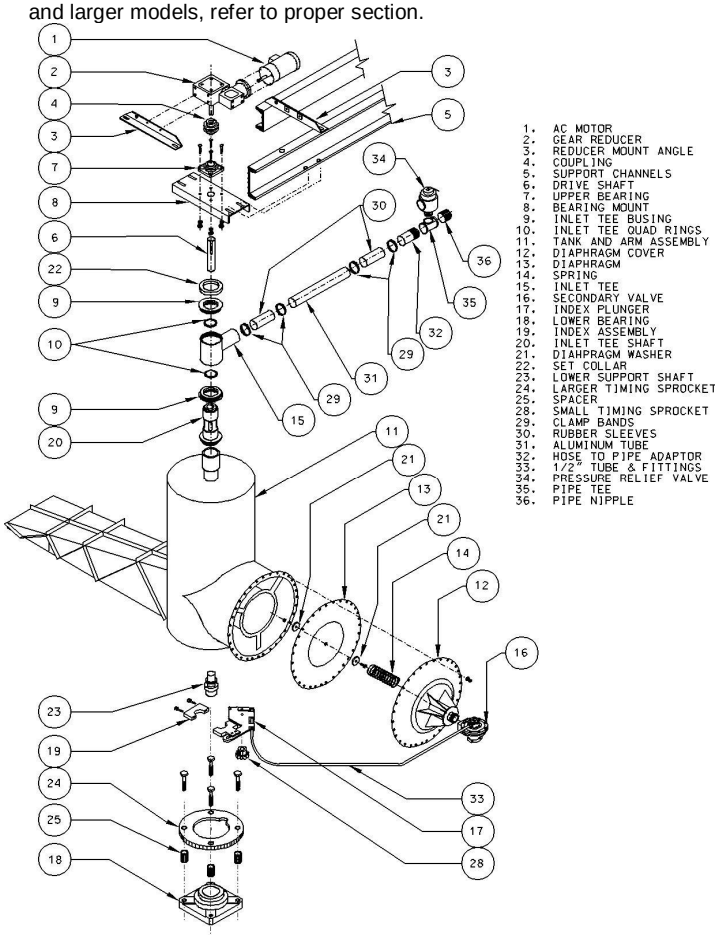


Figure 4-5 MCF572 Single arm

MCF572 Cleaning Mechanism:

1. Mount the lower bearing and index sprocket at the center of the tubesheet. Place the index sprocket on the bearing flange with the cut-out aligned with the grease zerk. Bolt to the tubesheet with ½" x 3-1/2" HHCS.
2. Lift the tank assembly into the top plenum. Insert the lower shaft into the lower bearing and tighten the screws. Carefully block the tank to stand upright.
3. Slide the drive shaft and key into the upper tank shaft.
4. Slide the lower drive plate with bearing over the drive shaft. Rotate and align the lower drive plate with the holes in the channel bottom flange. Bolt together with ½" x 1-1/2" long bolts with a flat and lock washer. The drive shaft is to extend approximately 3-1/8" above the drive plate. Tighten the set screws in the bearing.
5. Unblock the tank and install the distributor arm with 3/8" x 1" long bolts and lock washer. Rotate the tank and arm assembly, noting the height above the tubesheet at the end of the arm. Relocate the bearing plate so that the arm rotates through a full circle at the same height.
6. Place the lower half of the coupling on the drive shaft. The shaft is to be flush with the inner face of the coupling. Tighten the set screw. Loosely install the upper half of the coupling on the speed reducer. Place the sleeve in the lower half of the coupling.
7. Place the speed reducer assembly on top of the support channels and center the output shaft with the drive shaft. Engage the coupling with the sleeve. Attach the drive mount brackets to the support channels with ½" x 1-3/4" long bolts with two flat washers and one lock washer. Tighten the set screw in the coupling.
8. Install the index sensor assembly on the lower tank shaft with the valve oriented toward the primary diaphragm valve. Run the 1/2" O.D. tubing from port on the valve to the fitting on the side of the secondary valve. See the Maintenance section for detailed timing instructions.
9. Connect the tank air inlet with the 4" NPT coupling using the 2-½" O.D. tubing, hose connections, clamps, tube to pipe adapter and a 4" x 2-½" bushing.
10. Locate the MCF blower package in a convenient place at the base of the filter and pipe from the silencer discharge to the 4" NPT coupling in Ring 1.
11. Make electrical connections in accordance with all governing codes to the ½" HP distributor arm drive motor and the 7 ½ HP blower package motor. Use the 1" NPT coupling in the panel in ring 1 for internal electrical connections. Observe the rotation arrows, the distributor arm must rotate clockwise when viewed from above.

CAUTION! **Only trained and authorized persons should be permitted to service or maintain electrical components. It is the buyer's/installer's responsibility to ensure that all applicable electrical codes are met.**

MCF756 and Larger Cleaning Mechanism:

1. AC MOTOR
2. GEAR REDUCER
3. GEAR REDUCER MOUNT ANGLE
4. COUPLING
5. DRIVE SUPPORT CHANNELS
6. DRIVE SHAFT
7. UPPER BEARING
8. BEARING MOUNT PLATE
9. INLET TEE BUSHING
10. INLET TEE QUAD RINGS
11. TANK AND ARM ASSEMBLY
12. DIAPHRAGM COVER
13. DIAPHRAGM
14. SPRING
15. INLET TEE
16. SECONDARY VALVE
17. INDEX PLUNGER
18. LOWER BEARING
19. INDEX ASSEMBLY
20. INLET TEE SHAFT
21. DIAPHRAGM WASHER
22. SET COLLAR
23. LOWER SUPPORT SHAFT
24. LARGE TIMING SPROCKET
25. SPACER
28. SMALL TIMING SPROCKET
29. BAND CLAMPS
30. RUBBER SLEEVES
31. ALUMINUM TUBE
32. NIPPLE
33. 1/2" TUBE & FITTINGS
34. LOWER BEARING PLATE
37. PRESSURE RELIEF VALVE
38. PIPE TEE & HEX BUSHING
39. PIPE NIPPLE

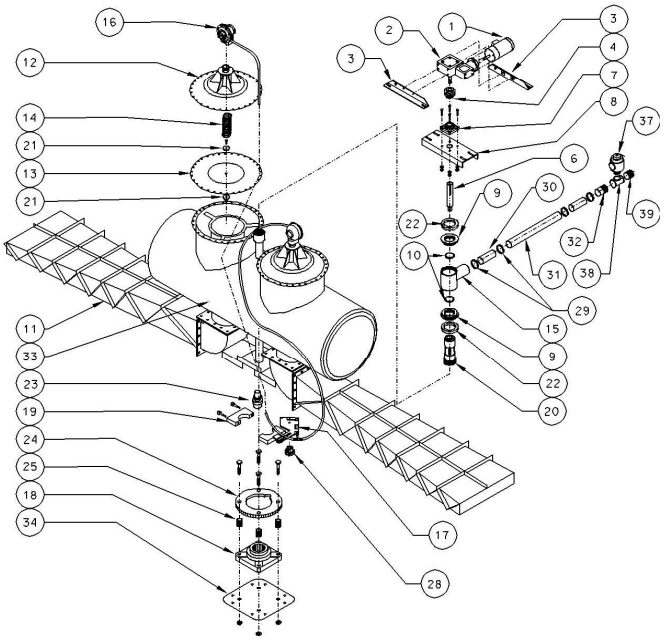


Figure 4-6 MCF756 and Larger Dual Cleaning Arm

1. Mount the lower bearing and index sprocket at the center of the tubesheet. Place the index sprocket on the bearing flange with the cut-out aligned with the grease zerk. Bolt to the tubesheet with ½" x 3-1/2" HHCS.
2. Lift the tank assembly into the plenum and insert the lower shaft into the lower bearing and tighten the set screws. Block the tank to stand up.
3. Slide the drive shaft into the upper tank shaft with a ½" square key.
4. Slide the bearing plate and bearing onto the drive shaft, then rotate the plate to align it with the holes in the bottom flange of the channels. Fasten with 1/2" x 1-½" long bolts with a flat and lock washer. The drive shaft is to extend approximately 5 1/8" above the bearing plate, tighten the set screws in the bearing.
5. Unblock the tank and install both distributor arms. The right arm is marked with an "R" (left arm marked with an "L") on the top and bottom of the end opposite the flange. They may be installed on

either side. Rotate the tank and arm assembly through a full revolution noting the height above the tubesheet at the ends of the arms. Reposition the bearing plate as required so that the arms rotate through a full circle at the same height.

6. Place the lower half of the coupling on the drive shaft. The shaft is to be flush with the inner face of the coupling. Tighten the set screw. Loosely install the upper half of the coupling on the output shaft of the speed reducer. Place the sleeve in the lower half of the coupling.
7. Place the speed reducer assembly on top of the support channels and center the output shaft with the drive shaft. Engage the coupling with the sleeve. Attach the drive mount brackets to the channels with ½" x 1-½" bolts with a flat and lock washer. Tighten the set screws in the coupling.
8. Install the index sensor assembly on the lower tank shaft with the valve on the same side of the tank as one of the secondary diaphragm valves. Run 1/2" O.D. tubing from ports on the valve to the fitting on each secondary valve. See the Maintenance section for detailed timing instructions.
9. Place the MCF blower package in a convenient location at the base of the filter. Run the piping from the silencer discharge to the 4" coupling on the panel in ring 1.
10. Connect the tank inlet to the 4" coupling with 4" O.D. tubing, hose connectors, clamps, and a tubing to pipe adapter.
11. Make the electrical connections, in accordance with all governing codes, to the ½ HP arm drive motor and the 7 ½ HP blower package mower. Use the 1" NPT coupling in ring 1 for internal electrical connection. Observe the rotation arrows. The distributor arm must rotate clockwise when viewed from above.

CAUTION! **Only trained and authorized persons should be permitted to service or maintain electrical components. It is the buyer's/installer's responsibility to ensure that all applicable electrical codes are met.**

Explosion Venting
Venting Guidelines

This section is intended as a general guide only: For further information refer to NFPA Standard 68, "Explosion Venting" and consult with your insurance carrier.

- Explosion venting is **required** whenever the filter will process explosive dusts as defined by NFPA.
- Dust filters handling explosive dusts should be located outside of buildings wherever possible.
- Explosion vents must not be obstructed in any way and must be protected from snow/ice buildup. Explosion vents **must** be oriented so that flame, explosive gases, or flying material **cannot** injure personnel or damage property.
- Dust filters inside of buildings should be located next to an exterior wall; the explosion vent(s) **must** be ducted to the outside of the building. Vent ducts must be kept as short and straight as possible, avoiding bends. Such ducts must be capable of withstanding a pressure at least as high as that expected to develop inside the filter itself in the event of an explosion. Ducts increase internal pressures inside the filter, and special reinforcement of the filter may be required. Consult Schenck Process Engineering Department regarding your specific application.
- Any duct will decrease the effectiveness of the vent.

Explosion Vents-General

Explosion vents are available from Schenck Process LLC as part of the filter system. The rupture panel style functions by bursting the panel itself.

Explosion vents are installed **after** the filter unit is assembled on its support structure.

Installing Explosion Vent Housings

To install the Explosion Vent Housing:

1. Remove the bolted shipping cover from the explosion vent housing opening.
2. Apply a bead of silicone caulk around the explosion vent housing assembly flange. Lift housing into position and bolt with ½-13 x 1" lg. bolts with flat washers.

NOTE: The sloped end of the housing assembly must be toward the filter bottom.

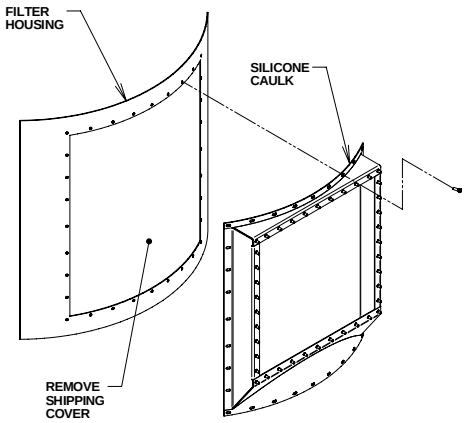


Figure 4-7 Typical Explosion Vent Housing

Installing Domed Rupture Panel Style Vents

The installation of the rupture panel style vent should be performed by two people.
Refer to Figure 4-8 below.

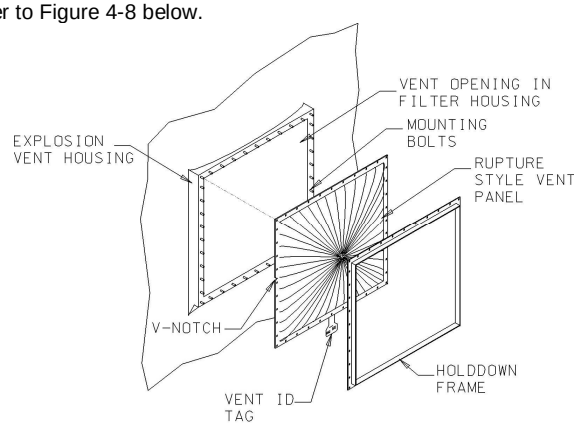


Figure 4-8 Typical Rupture Style Explosion Vent

1. Remove the hold-down frame from the vent mount on the side of the filter.
2. Carefully remove the rupture style vent panel from the crate (**CAUTION!** Edges of the vent panel are sharp!) Avoid excessive flexure of the vent.
3. Place the vent panel over the protruding bolts in the housing wall. The vent panel must be oriented correctly. The panel ruptures on three sides and hinges on the fourth. The hinge side is indicated by a v-notch in the edge. Place the panel with the v-notch to the left and the I.D. tag at the bottom as shown in figure above. The dome must protrude outward as shown or the panel will not function.
4. Place the hold down frame over the bolts, making sure that an even pressure is brought to bear on the panel.
5. Tighten nuts evenly and use an alternating pattern to prevent damage to the vent panel. Tighten nuts to 20-25 ft. lbs. of torque. It is not necessary to use an excessive amount of pressure to clamp the panel securely.

CAUTION! **Excessive tightening may damage fasteners or the explosion vent panel.**

Ductwork and Accessories

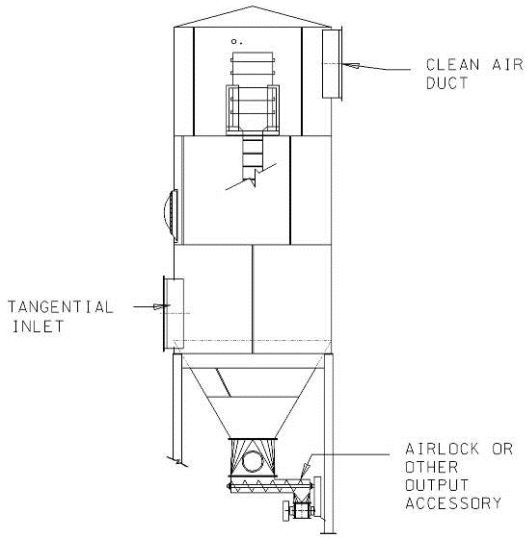


Figure 4-9 Location of Ductwork and Accessories

1. Connect the inlet duct to the high entry inlet or tangential inlet on the filter. High inlet velocities or elbows to close to the inlet can cause premature bag abrasion. Good industrial ventilation practices should be used when designing inlet duct.
2. Connect the clean air duct to the exhaust located at the top of the filter housing. Ductwork must be constructed to withstand the system design pressure. The ductwork must be independently supported; the MCF filter **is not** designed to support ductwork.
3. Attach any auxiliary equipment (such as an airlock or screw conveyor) to the discharge flange of the hopper.

Discharge Auger Assembly

The discharge auger assembly includes transitions with bolted inspection opening, discharge auger and optional airlock, and is typically shipped assembled. Install the assembly after the filter has been erected on its support structure.

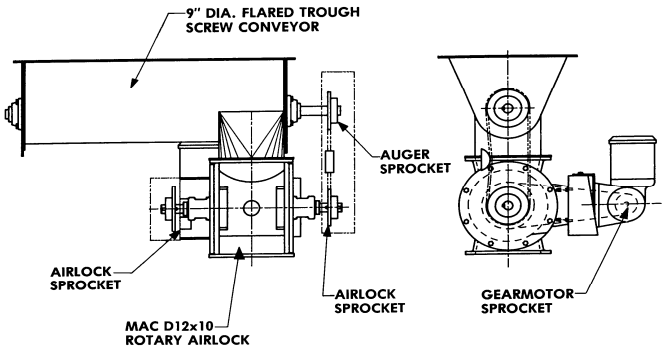


Figure 4-10 Discharge Auger Assembly

To install the auger assembly:

1. Determine the correct orientation for the auger discharge. The transition may be rotated through 360 degrees in 15 degree increments.
2. Apply a bead of silicone caulk to the transition flange and bolt it to the hopper flange with 3/8-16UNC x 1-1/4 bolts with lock washers.

Pump Package

Pump package is shipped without lubricant. Refer to lubrication section under Start-up and Operation.

To install the pump package:

1. Locate package on concrete pad with pressure (discharge) side to left of ladder when facing filter.
2. Air supply line connection is located to left side of and above service door.
3. Install piping from pump discharge silencer to filter (piping is normally not supplied by Schenck Process). Be sure that there is no foreign material in the piping. Dirt and scale will effect the operation of the filter cleaning mechanism.

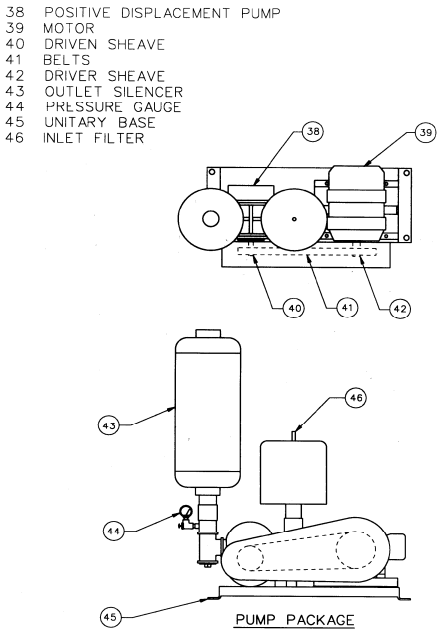


Figure 4-11 Pump Package

Electrical Controls and Wiring

Electrical Connections

Distributor arm: Drive is a 1 HP motor (refer to label on motor for power requirements). It is accessible to conduit through a 1" NPT coupling located in filter sidewall above the service door. In high temperature units operating above 165˚F the drive and motor are located outside of the unit.

CAUTION! **The distributor arm rotation must be clockwise when looking down from above. Reverse operation could result in damage to the index mechanism or "Backing-off" of threaded components.**

Pump package: Motors vary from 2 HP to 15 HP, all are 230/460 volt 3 phase 60 Hz unless specifically ordered otherwise.

Airlock: See airlock service manual.

Fan: See fan service manual.

CAUTION! **Only trained and authorized persons should be permitted to service or maintain electrical components. It is the buyer's/installer's responsibility to ensure that all applicable electrical codes are met.**

NOTE: The motors should be interlocked such that they start and shut-down in the following sequence:

Start-up:

1. Airlock and discharge auger.
2. Distributor arm drive and pump package.
3. Main system fan.

Shut-down:

1. System fan.
2. After variable time delay (0-15 min.) pump package and distributor arm drive.
3. Airlock and discharge auger.

Optional MCF filter control panel is designed to make the task of start-up and shut-down simpler, faster, and more efficient. The control logic is such that all motors are started in order by pushing the system start button and will stay running until one of the following occur:

1. The stop button is depressed and the system goes into a shut down period. The main fan stops immediately and the rest of the system continues to run for an adjustable time before stopping.

2. Any one of system motors is overloaded, the system will go into a shut down cycle. To restart, troubleshoot and correct the problem, then push the overloaded motor starter reset button and restart the system.

If the filter is being used to vent a gas fired dryer, to prevent fires and explosions, the main exhaust fan **must** be interlocked with the gas burner in such a way as to allow the fan to operate an adequate period of time to purge the dust collector of combustible gases before turning on the burner. The installation of a gas detection device in the system should be investigated and evaluated for each application.

Magnehelic Gauge or Photohelic Switch\Gauge

A magnehelic differential pressure gauge is available as an option. The gauge indicates the difference in pressure between the input and discharge sides of the filter. An excessively high reading indicates that filter media are becoming clogged and that more frequent cleaning pulses are required.

A photohelic switch/gauge is a second option. The photohelic switch/gauge indicates differential pressure **and** controls the cleaning operation. When an electronic circuit in the switch/gauge detects differential pressure in excess of a predetermined set point, it provides a dry contact closure which initiates the cleaning cycle. When differential pressure drops to a predetermined set point, the switch/gauge opens the contact, thus stopping the cleaning cycle. This method of control reduces compressed air needed and increases bag life.
To install either type of gauge refer to Figure 4-12 below and to the manufacturers documentation.

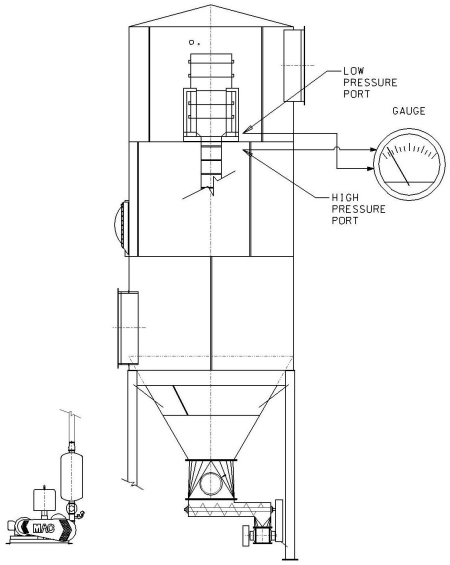


Figure 4-12 Installation of Differential Pressure Gauge

Installing the Magnehelic Differential Pressure Gauge

1. Mount the gauge in a convenient place for easy viewing.
2. Install the tubing fittings in the pressure ports of the magnehelic pressure gauge and in the ports on the filter. The filter ports are normally located on the right side of the filter from the service door.
3. Run the plastic tubing supplied from the filter ports to the gauge ports. The low pressure line runs from the filter port above the tube sheet to the low pressure port (usually the lower port) on the gauge. The high pressure line runs from the filter port below the tube sheet to the high pressure port (usually the upper port) on the gauge.
4. Verify that the filter is installed inside the housing on the high pressure port.

Installing the Photohelic Differential Pressure Switch/Gauge

Install the photohelic switch/gauge and run air piping as for the magnehelic gauge as described above.

In addition:

1. Connect electric power to contacts labeled ‘L1’ and ‘L2’ on the switch/gauge. Refer to the label on the switch/gauge for power requirements.
2. Connect contacts labeled “NO” and “C” on the switch/gauge to motor starter on distributor arm and pump package
3. Install jumpers on the switch/gauge according to the Figure 4-13.

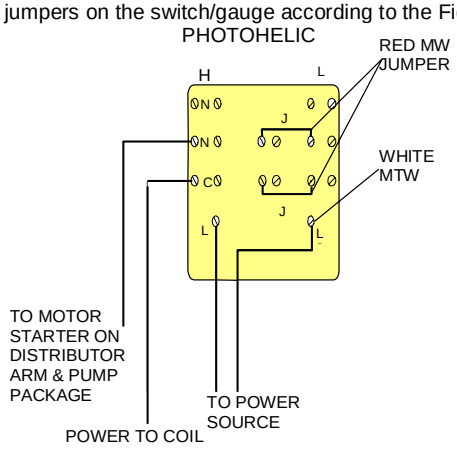


Figure 4-13 Jumpers and Wiring of the Photohelic Switch/Gauge

Bag and Cage Installation

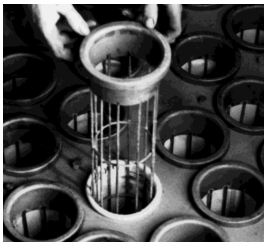
Filter bags and cages are shipped loose and are installed after the MCF filter has been assembled and set in place. Installation of bags and cages is made from inside the unit.

Install bags and cages as follows:

1. Lower bottom of bag through hole in tube sheet.
2. Fold snap band (bag top) to insert it into tube sheet hole.
3. Fit the groove of snap band to the edge of the tube sheet and allow band to snap in place.

4. Check the fit of the snap band. It should be a secure fit all around with no wrinkles in the snap band. The top of the bag should be above tubesheet approximately 3/8”.

5. Lower the cage into the bag. When in position the flange will rest on the tubesheet.
6. 7Insert all bags and cages in their proper position.

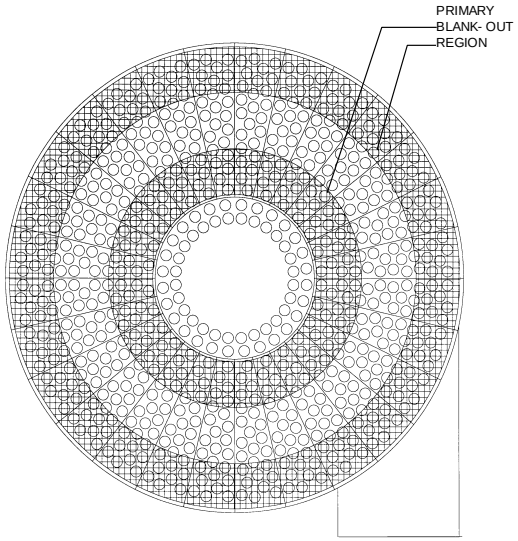


CAUTION!

Do not use bent or rusted cages.

Tubesheet Hole Blankout Installation

For blank-out placement, see the following pictures and illustration. Blank-out plug installation requires either a large dead blow or rawhide hammer. Run a bead of silicone caulking around the flange of the blank-out plug. Position the blank-out plug over the appropriate tubesheet hole and strike it firmly in the center of the plug. This will start the fit into the tubesheet. Once it is started it can be firmly seated by using a ball peen hammer and tapping around the perimeter until the flange is flush on the tubesheet. On larger MCF units, follow the general pattern of the unit shown in the illustration.



MCF 572 AND LARGER TANGENTIAL INLET

Installation Instructions: Bags with Grounding Straps for Grounding Metal Cages

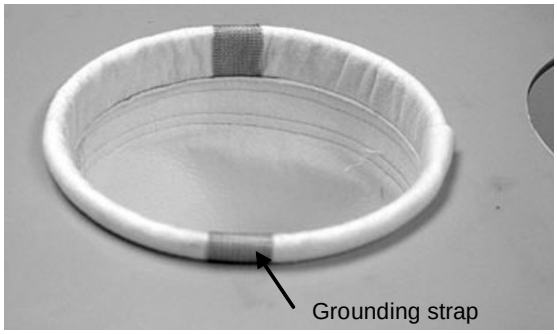
Proper installation of bags and cages is required to ensure that the metal cages are not isolated from ground with the tubesheet (cell plate) in applications that have potential for an explosion hazard.

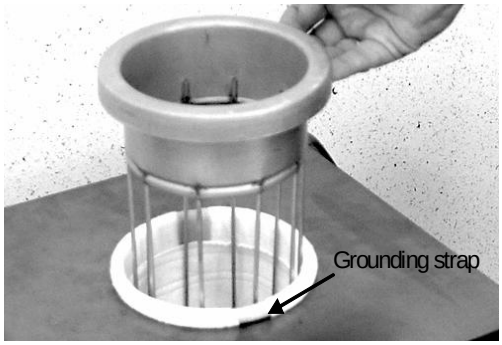
WARNING!

The effectiveness of a grounding mechanism depends upon proper installation and connection of the grounding mechanism to an adequately collector component. Failure to properly install and connect grounding mechanism or maintain grounding of the collector component may result in static electricity discharge and possible explosion of dust stream within the collector and serious property damage and/or bodily injury. Proper installation must be verified per Section B of these instructions prior to operating collector.

Section A: Bag Installation

The two grounding straps at the top of the bag are intended to ground the cage to the tubesheet. Ensure that the hole is cleaned to remove dust and corrosion buildup. Install bag in hole and insert cage.





Section B: Verification of Proper Grounding

Proper installation must be confirmed by testing to verify $1x10^6$ (1 megohm) maximum resistance at 500 volts between cage and tubesheet (cell plate).

Top load collector: testing resistance between cage and tubesheet.

In addition to the proper installation and grounding of bags and cages, the end user should select an appropriate filter media for use in bags. Refer to the National Fire Protection Association (NFPA) "Recommended Practice on Static Electricity," NFPA 77-2000 edition for more information (www.nfpa.org).

SYSTEM START-UP AND OPERATION

The following inspection should be made before the initial start-up of the system and for normal operation thereafter.

WARNING! **Disconnect and properly lockout-tagout all electrical connections before performing any inspection procedures.**

Cleaning Mechanism

1. Reducer is factory lubricated in most cases. Prior to startup, verify the oil level (NOTE: Reducers on hi-temp filters with side drive or top drive are not factory lubricated. Refer to the Hub City lubrication and installation instructions in the MCF HI-TEMP INSERT, MAN3037).
2. Bearings are pre-lubricated and should not require lubrication at start up.
3. Drive coupling (Item 4) ships disengaged. Loosen set screws and slide couplings together. Tighten set screws. Refer to Figure 9-1 for illustration.
4. Jog the drive motor on and off quickly to check direction of rotation. The proper direction of the cleaning arm is CW as viewed from the top. Listen for sounds of unwanted mechanical contact.

Pump Package

1. Pump package is shipped dry. Install proper level of lubricant. Refer to the Lubrication Fluids Table for the proper lubricants required for this unit. Refer to the maintenance section for procedures and quantities of lubricant. Further information is also contained in the pump package manual.
2. Remove belt guard and check belts for alignment and tension.
3. Rotate pump by hand to check freedom of rotation and binding.
4. Jog the drive motor on and off quickly to check direction of rotation. The proper direction is indicated by a decal on the drive guard. Listen for sounds of unwanted mechanical contact. If pump knocks do not start. See Trouble Shooting Guide.
5. Replace guard.
6. Start pump and filter and operate for 15 minutes, check for hot spots, noise and other indications of interference. Allow pump to cool to room temperature and recheck oil level.
7. Start pump and filter. Observe operation for the first hour.
    a. Monitor pressure at pump outlet, it should be 6 to 8 PSIG when the filter pulses.
    b. Check amp draw in the motor. See motor name plate for rating.

Pump Operation

1. Check oil level daily for first week of use, then weekly thereafter.
2. Check intake filter weekly, or more often if dust conditions are severe. Clean as required. Filter element is a dry type element with a 1/4" polyester foam pre-filter. Pre-filter may be cleaned by washing with mild soap and warm water.
3. Check the drive belts tension after 24 hours of operation, then check periodically. Tighten if necessary.

Filter Bags

1. Check filter bags for proper installation.
2. When the MCF Filter is started up in cold weather or if the unit is handling high temperature gases there is a danger of condensation forming on the filter bags and inside the housing. This is a very undesirable situation and can be avoided by preheating the filter for about 30 minutes. Preheating is accomplished by starting the fan and filter and allowing it to run without any dust loading. Before doing this the MCF filter cleaning mechanism and pump package should be run alone with the main exhaust fan shut down for about 10 minutes to clean and remove all of the dust cake on the bags.
3. Dust emission may occur from exhaust at start up but it should disappear after a new dust cake is formed on the bags. This should only take a few hours. If the dust emission persists, the filter bags should be rechecked to be certain that they seat properly in the tube sheet.

System Parameters

Use this page to record the operating conditions of the system once start-up is complete and you have made the final adjustments. You will find this information very valuable for future reference when troubleshooting the system or when monitoring its performance.

DUST MATERIAL:_____

DUST PARTICLE SIZE:_____

FILTER MODEL:_____

FILTER S/N:_____

AIR/CLOTH RATIO:_____AIR FLOW_____CFM

PHOTOHELIC GAUGE SET POINTS: (if provided)

High:_____"H_2O Low:_____"H_2O

DIFFERENTIAL PRESSURE:_____"H_2O

(after the filter has stabilized)

FAN MODEL/MANUFACTURER:_____

FAN S/N:_____

FAN RPM:_____

FAN DESIGN:_____ CFM @_____ "SP, _____ BHP

Notes:

High Temperature Units

For MCF units encountering high temperatures in excess of 400 degrees F. the cleaning arm and pump should be operated during the preheat cycle. This will prolong the life of temperature sensitive materials in the cleaning mechanism by cooling them.

NOTE: AIR DIVERTER VALVES should be in the closed (clean) position during preheat cycles.

MAINTENANCE

It is recommended that one individual be assigned to monitor the operation of the dust-collection system. The individual assigned should have maintenance manuals and manufacturer's documentation for all components readily available. He/she should be thoroughly familiar with the manuals so as to be able to pinpoint trouble should it occur.

The individual responsible for the system should follow a regular schedule of inspection and maintenance. The exact schedule will depend on the particular system and the number of hours it operates per day or week. A typical maintenance schedule is shown below.

Disconnect and properly lockout-tagout the electrical and compressed air service before performing any maintenance or service procedures on the filter.

Sample Maintenance Schedule

Weekly

1. Check and record magnehelic (or photohelic) gauge readings on all filters. Adverse operating conditions can be detected by a change in pressure drop.
2. Check for dust in clean air outlet from filter.
3. Check filter hoppers for continuous discharge of dust.
4. Check fan and motor bearings for excessive heat or vibration.
5. If pressure pneumatic conveying equipment is used to dispose of dust, check the positive displacement pump for vibration, overheating, and proper lubrication. Also, compare reading on the pressure gauge with previous readings. Clean air-inlet filter or replace as necessary. It is important to follow the manufacturer's recommendation on equipment of this nature.
6. Check explosion vent(s) (if provided) for damage (broken bolts or damaged panel).

Monthly (or at manufacturer's recommended intervals)

1. Check the filter bags for signs of excessive wear or damage.

Six Months

1. Check for evidence of moisture or dust buildup inside the filter housing.
2. Check oil in all gear motors. Do not overfill.
3. Check belt tension on all V-belt drives.

Bag Replacement

The filter bags are the heart of the filter and need a program of inspection, cleaning, and replacement to maintain high operating efficiency.

1. Shut down the system, and lockout-tagout the electrical and compressed air service.
2. Remove cage and inspect for rust or damage and replace if necessary.
3. Remove the bag and inspect for excessive wear, replace if necessary.
4. Reinstall clean filter bags as described in the Installation section.

Bag Cleaning

Natural fiber fabrics (wool or cotton) are subject to shrinkage when wet with water. These fabrics must be dry cleaned. Synthetic filter fabrics (Orlon, Dacron, Nomex, polypropylene, and Teflon) should also be dry cleaned.

1. Thoroughly vacuum clean the filter bags to remove the bulk of the dust.
2. Dry clean the bags using a standard dry cleaning procedure. Use pure dry cleaning solvent. Do not use dry cleaning detergents and/or additives that require the addition of water, as these may cause fabric shrinkage.
3. Dry the bags. Drip drying is the recommended drying method. Tumble drying, if used, must be done at low temperatures.

Industrial dry cleaning establishments are available in many cities. These companies specialize in filter bag cleaning and will normally provide the most satisfactory results.

Lubrication

Gearmotors

Located on distributor arm drive and optional airlock drive.

Refer to the Lubrication Fluids Table for lubricants. Refer to the Lubrication Schedule for recommended replacement times. Do not use lubricants containing sulfur and/or chlorine extreme pressure additives which are corrosive to worm gear bronze. For double reduction reducers, the primary and secondary units each have independent oil reservoirs.

Motors

Standard motors are permanently lubricated and require no further attention.

Pump

The positive displacement pump is shipped dry. At the gear end the timing gear teeth are lubricated by being partially submerged. The gear teeth serve as oil slingers for gear end bearings. At the drive end the bearings are grease lubricated.

Filling Procedure

Remove square head vented oil fill plug on gear end. Remove oil level plug located in head plate. Fill gear case until oil drips out of the oil level hole.

Add fresh oil as required to maintain proper oil level. In typical 8 hour per day operation, oil should be drained, flushed and replaced every 6 months, more often with increased operating time or severe conditions.

Bearings on drive end of blower require grease lubrication initially and every 2 months of operation in typical 8 hour days, more often with increased operating time or severe conditions.

Recommended Oil & Grease

1. Under ambient temperature operating conditions use any good quality SAE 40 non-detergent oil.
2. In cold climates use SAE 20 during the winter months.
3. Use No. 2 bearing grease in all climates.

NOTE: For additional information on positive displacement pump consult the manufacturer's manual included with pump package.

Lubrication Fluids Table

Equipment	AMBIENT Temperature Lubricant $T<125^{O}F$	MEDIUM Temperature Lubricant $125<T<225^{O}F$	High Temperature Lubricant $225<T<475^{O}F$
Airlock gear reducer	SEE AIRLOCK MANUAL	NOT Recommended	NOT Recommended
Positive displacement pump	SEE PUMP MFR Literature	NOT Recommended	NOT Recommended
Cleaning Arm Drive	Mobil Glygoyle 460 Polyglycol (PAG) or equivalent	Mobil Glygoyle 460 Polyglycol (PAG) or equivalent	NOT Recommended
Cleaning Mechanism Lower Bearing	NO 2 Bearing grease	Synco Super Lube #71150 Hi-Temp Grease	Synco Super Lube #71150 Hi-Temp Grease

Lubrication Schedule

COMPONENT TO BE SERVICED	DAILY SERVICE		
AMBIENT OPERATION	**8 HOURS**	**16 HOURS**	**24 HOURS**
PUMP	26 WEEKS	13 WEEKS	8 WEEKS
PUMP BEARINGS	9 WEEKS	4 - WEEKS	3 WEEKS
GEAR BOXES (INTERNAL)	6 MONTHS	22 WEEKS	14 WEEKS
BEARINGS	YEARLY	8 MONTHS	6 MONTHS
HIGH TEMPERATURE OPERATION 150 TO 250°F			
GEAR BOXES (INTERNAL)	16 WEEKS	12 WEEKS	8 WEEKS
GEAR BOXES (EXTERNAL)	6 MONTHS	22 WEEKS	14 WEEKS
BEARINGS	16 WEEKS	12 WEEKS	8 WEEKS
HIGH TEMPERATURE OPERATION 250 TO 450°F			
GEAR BOXES (INTERNAL)	12 WEEKS	8 WEEKS	4 WEEKS
GEAR BOXES (EXTERNAL)	6 MONTHS	22 WEEKS	14 WEEKS
BEARINGS	12 WEEKS	8 WEEKS	4 WEEKS

MCF Cleaning Mechanism

How the Cleaning Mechanism Works

The success of the MCF Filter centers around its positive, controlled, cleaning mechanism. Every bag is cleaned the same number of times, with the same amount of cleaning air. Bag cleaning is accomplished using medium pressure (6-9 psig) reverse air, in a completely controlled manner.

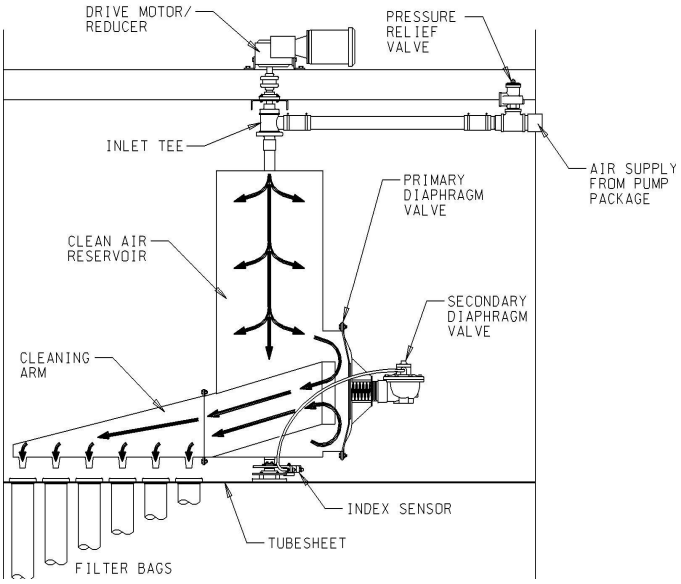


Figure 6-1 Typical Cross Section of Cleaning Mechanism.

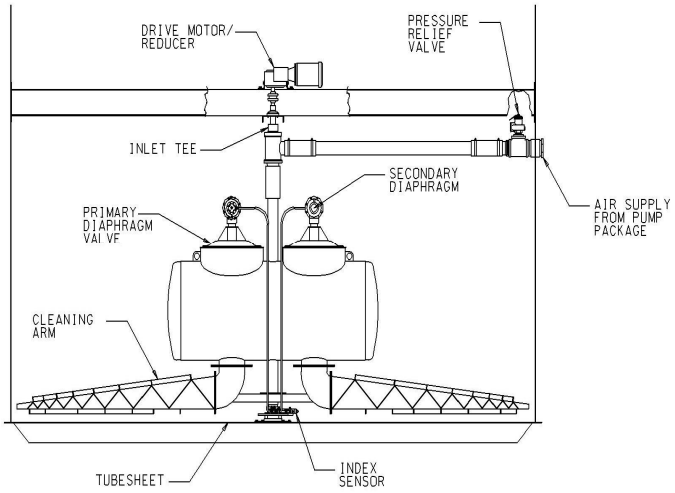


Figure 6-2 Typical Cross Section of 756, 1120 and 1652 Cleaning Mechanism

The cleaning, or distribution arm, is formed to correspond with the pie shaped sections of the tube sheet. The tube sheet is the punched hole plate where the filter bags are attached. As the distribution arm rotates (clock-wise, looking down on tube sheet), pressure builds in the cleaning air reservoir. As the arm passes over every third tube sheet segment, the pneumatic index sensor mechanism vents the pilot air line of the secondary diaphragm valve. This causes a chain reaction; the secondary diaphragm opens, and the large primary diaphragm rapidly opens off of its seat, allowing compressed air from the air reservoir to flow into the distribution arm. Venturi nozzles, located on the under side of the distribution arm, are positioned over the filter bag centers as cleaning air is released into the bags.

Venturi Nozzles

Rolled Flange Top cage

No Tool Snap Ring Bag and Cage Assembly

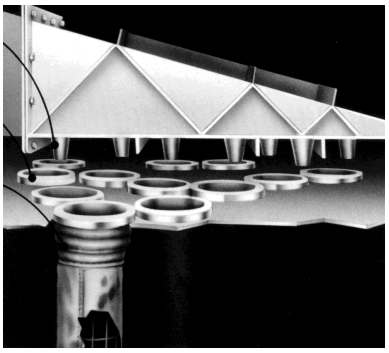


Figure 6-3 Typical Distribution Arm Detail

Adjustment

DANGER! **Do not enter the cleaning mechanism compartment when the cleaning arm and/or the main exhaust fan are rotating or energized.**

WARNING! **Before inspecting or servicing this equipment perform an approved lockout-tagout procedure on the electrical service, the compressed air (or other gas) supply or any other energy source.**

DANGER! **Remotely started equipment can operate without warning!!!**

Before attempting to make any adjustments on the cleaning mechanism, read and understand all instructions thoroughly. The motor powered, rotating arm has sufficient power to cause severe

injury and the close confines of the compartment limits personnel movement. Read and understand the other safety information contained in this booklet before attempting any maintenance or adjustments.

In order for the cleaning mechanism to function properly, the cleaning "pulse" must occur as the venturi nozzles pass directly over the centerlines of the individual filter bags. Adjustment of the index sensor assembly clamp controls cleaning air pulse timing. Refer to the illustration at right and item number 19 in Figure 9-1 on the cleaning mechanism illustration.

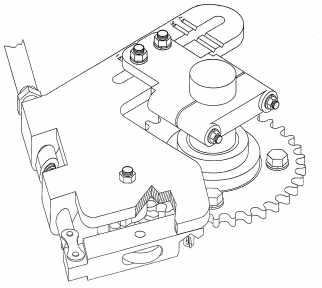


Figure 6-4 Typical MCF Index Sensor

This mechanism is "rough" timed at the factory, but requires fine tuning once the baghouse is installed in the field. All models of MCF baghouses, from the Compact to the large Panelized units, utilize the same method and similar parts for initiating the cleaning pulse. Timing adjustment procedure is the same for all units.

CAUTION!

Be sure the main system fan has been de-energized and locked out, before opening the door of the cleaning mechanism compartment. DO NOT ENTER the compartment; observe operation of the rotating cleaning arm and timing of the cleaning pulse while standing OUTSIDE the compartment. Be extremely careful while operating the arm when the access door is open. When making adjustments, shut off and lockout all power to the rotating arm, system fan, and positive displacement blower before entering the compartment.

Determining if the index sensor assembly needs adjustment requires observation of the operating cleaning arm with the positive displacement pump running. Observe the position of the distribution arm nozzles when the mechanism pulses. Observe all nozzles because it is possible for some nozzles to line up while others are misaligned. See the tube sheet illustration.

How the Index Sensor Assembly Works

The index sensor assembly serves two simple functions. It (1) blocks off the pilot air line to the secondary diaphragm valve, while the cleaning air reservoir builds up pressure and (2) vents the pilot air line, opening the secondary and primary diaphragms, allowing compressed air flow to the venturi nozzles. See the illustrations at the beginning of this section for specific cleaning mechanism arrangements of the three major MCF collector variations.

A stationary index sprocket is mounted over the reservoir shaft flange bearing (bolted directly to the tube sheet), and this fixed sprocket is positioned just below the rotating cleaning air reservoir (tank). The adjustable index sensor bracket clamps to the rotating pivot shaft of the tank. Rotation of the tank shaft causes the index cam sprocket to rotate. As the index cam sprocket actuating lobe contacts the roller wheel the rocker arm pulls the plunger from its seat releasing the air that allows the diaphragm valves to open and vent, permitting rapid air flow to the cleaning arm nozzles. When the plunger return spring pushes the plunger back against its seat the PD pump air pressure resets (closes) the diaphragm valves and pressure begins to build in the cleaning air reservoir tank. This cycle repeats as the index sensor passes over every third, pie-shaped tube sheet segment.

Changing position of the index sensor bracket, relative to the stationary index sprocket, changes the timing of the back-flushing cleaning air. Shifting the bracket opposite to the cleaning arm rotation delays (retards) the pulse. Moving the bracket, in the same direction the arm turns, advances the pulse firing.

Adjusting MCF Filter Index Sensor Timing (MCF 572 through MCF 1652)

CAUTION!

For this procedure, it will be necessary to energize the distributor arm drive and the pump package. DO NOT ENTER the filter while the distributor arm is in motion. Lock out power to the main system fan and secure the service door in the open position. Fan can create enough force to close and hold the service door closed.

Start the distributor arm drive and the pump package. From the service platform, observe the location of the venturi nozzles when "firing" or pulsing takes place. Pulsing will occur over every third pie-shaped segment of the tube sheet. Refer to Figure 6-5 for the correct position of the distributor arm and its nozzles. The cleaning mechanism should fire when the nozzles are directly over the centerline of all of the filter bags. Observe the cleaning pulse for several rotations of the distributor arm. If the cleaning pulse does occur in the correct position, no further action is required. Proceed with normal filter start-up routine. If the cleaning pulse does not hit the bag centerline, the index sensor timing must be adjusted. This is done by moving the index sensor assembly in relation to the distributor arm.

Note that the index sensor assembly is located entirely below the rotating tank and arm and does rotate with them. It is also on the same side of the tank; and is approximately in line with the secondary valve.

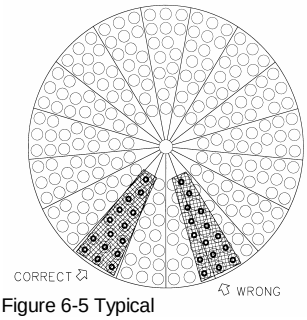


Figure 6-5 Typical Alignment Illustration

When the cleaning pulse occurs **befor**e the nozzles reach the centerline of the bags, timing must be retarded. Loosen the two bolts in the clamp and move the assembly a small amount opposite from the direction of rotation.

When the cleaning pulse occurs **after** the nozzles pass the centerline of the bags, the timing must be advanced. Loosen the two bolts in the clamp and move the assembly a small amount in the direction of rotation.

Repeat these adjustments as required to direct the cleaning pulse into the bag centerlines. Be sure to tighten the index clamp bolts after final adjustment.

If the index sensor is grossly out of time, it may be reset relatively easily:

1. Disconnect drive coupling on drive gear box allowing the distributor arm to swing freely.
2. Rotate the distributor arm to line up the arrow on the cleaning arm and the arrow on the housing wall. Block the distributor arm in this position.
3. Loosen the two index clamp bolts until the index sensor can be moved easily by hand.
4. With the nozzles on the distributor arm located directly over the bags, rotate the index sensor assembly clockwise (looking down on bags) until the actuator lobe on the cam is centered on the 1-1/8" diameter roller wheel and is causing the plunger to open from its seat. Tighten bolts on index sensor clamp.
5. Re-engage drive coupling, remove block form distributor arm, and check for proper firing sequence from outside the

filter. Fine tune the adjustment as previously directed.

NOTE: If attempts at aligning the cleaning arm have been unsuccessful with this method, disconnect power to the pump and the cleaning arm. Remove the drive coupling. Have one person start the pump while another person is at the plenum access door. The cleaning arm should not be rotating. Enter the filter plenum and rotate the arm by hand. Observe where the firing takes place. Turn off the pump and adjust the index sensor in the direction required as recommended previously. Repeat as needed to fine tune the adjustment.

CAUTION!

If the pump runs very long in this state the relief valve will open and there will be a very loud hissing noise from the pump area. This is normal but ear protection is recommended for the person near the pump. Watch the pressure gauge on the pump and do not allow it to exceed 15 psi or damage to the equipment may occur. This will not happen if the relief valve is working properly.

Replace Large Diaphragm

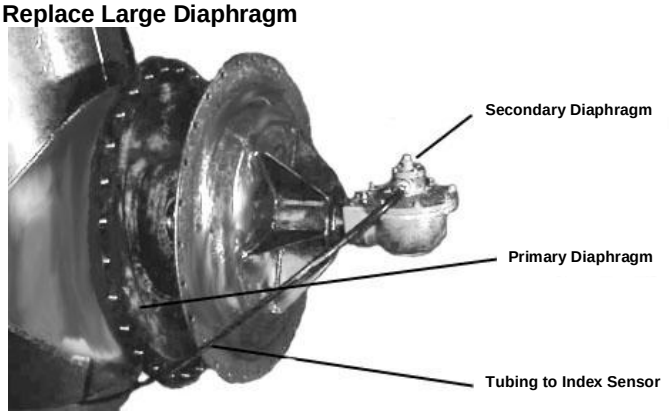


Figure 6-6 Typical MCF Larger Diaphragm Details

1. Lock out all power before entering filter.
2. Disconnect 1/2" bleed line at secondary valve head.
3. Remove nuts around large valve head and remove it. Be careful of large diaphragm spring to avoid dropping it down a bag.
4. Remove old diaphragm assembly. Some older MCF Models, have fabricated diaphragms which require a rebound cushion on the valve head. New MCF Models have one piece molded diaphragms that do not require this cushion ring. This ring should be removed when upgrading your filter with the molded diaphragm.
5. Clean flanges on tank and valve head.
6. Place the new diaphragm on the studs with the side of the diaphragm marked 'tank side' towards the tank.
7. With diaphragm spring in place in valve head, place valve head on studs. Be sure that secondary valve is oriented correctly (exhaust points down).
8. Tighten all nuts until snug against the valve head.
9. In an alternating pattern, torque all nuts to 28 foot/pounds. **CAUTION:** To insure a proper torque reading, move the torque wrench in a slow and smooth manner (Do not jerk the torque wrench).

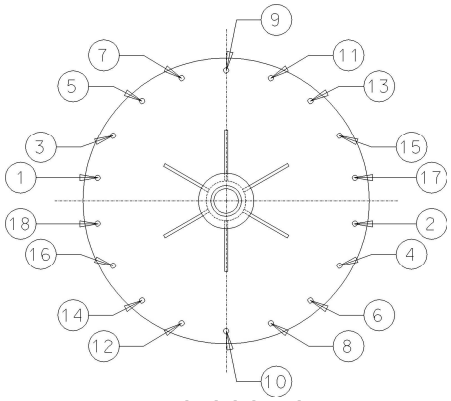


FIGURE 6-7 Typical tightening sequence.

10. Re-attach 1/2" line.

CAUTION: Torque all nuts to 28 foot/pounds to reduce the risk of fatigue failure. By pre-loading the bolts to 28 foot/pounds, the alternating stress exerted by the diaphragm firing on the bolts will be kept to a minimum.

Replace Shaft Seals on Air Inlet Tee

1. Lock out all power before entering filter.
2. Loosen hose clamps on the air supply line and remove it.
3. Disconnect the drive coupling between the gear reducer and the tank shaft.
4. Tie off the tank to the filter housing at the rings provided and place blocks under the ends of the cleaning arms to support the assembly.
5. Remove four bolts holding motor and reducer plate to channels and slide it over on the channels. Use clamps to secure plate to channel temporarily.
6. Turn the lower drive plate (below channels) 90° and lift the drive plate and shaft out of the tank.
7. Loosen the shaft collar directly above the inlet tee and slide it off the tank.
8. Slide the air inlet tee off the tank shaft.
9. Remove old quad rings (2) and install new set.
10. Slip tee back on shaft with light coat of grease.
11. If tee still appears to be loose then bushings need replaced. This can be done by removing tee, and threading the bushings out of the tee. NOTE: Top bushing is right-hand thread and bottom bushing has left-hand thread. Left hand thread bushing has notch in edge of bushing.
12. Reassemble by reversing the procedure above.

Replace Index Sensor

1. Lock out all power before entering filter.
2. Disconnect air line(s) from the sensor valve. High temp units have two lines attached to this valve.
3. Remove two 5/16” bolts clamping the assembly to the tank shaft and remove the assembly. Install new sensor assembly and replace air lines.

Magnehelic Gauge

1. Most filters are designed to operate at a differential pressure of 3 to 5 inches of water. When starting a new filter the differential pressure may be less than 1 inch until a mat of dust begins to build on the fabric. Once the filter reaches equilibrium pressure, the magnehelic gauge becomes an indicator of the operation of the entire system. So long as the gauge reads between 3 and 5 inches of water, the system will be delivering design volume flow.
2. When differential pressure exceeds the upper limit, the filter should be checked for malfunction. (See Troubleshooting Section) If none is found, the excessive pressure means the bags should be cleaned or replaced. Normally, the bags should not require attention until after many months of operation.
3. When the filter differential pressure falls below the lower limit, the system, again, should be checked for malfunction. (See Troubleshooting Section).

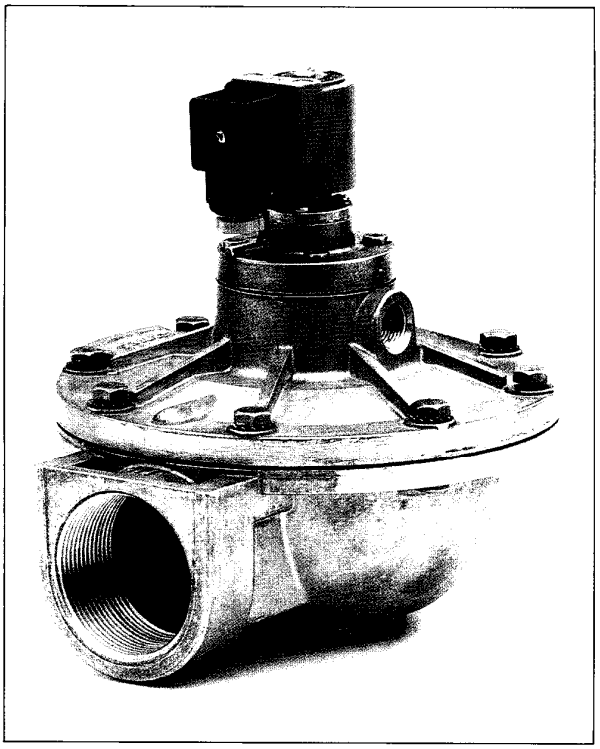
GOYEN CONTROLS

TECH SPEC CAS-1
"T" SERIES DIAPHRAGM VALVES

The ¾" "T" series was the first Goyen valve to be offered to the industry. The series has now grown to include 7 sizes, ranging from ¾" (20mm) up to 3" (76mm).

All of these valves have right angle bodies, as the 90 deg. angle between inlet and outlet is considered a most suitable configuration for dust collector applications. The design offers ease of installation, low restriction to air flow, and so provides an excellent cleaning pulse.

The valves can be operated by either integral pilot solenoids (CA models) or remote pilot solenoids (RCA models).



CONSTRUCTION

Body and cover, are pressure diecast aluminium.

General purpose diaphragms are made from a Buna N elastomer, reinforced with nylon mesh, and are suitable for temperatures ranging from 180 deg. F (82 deg. C) down to -40 deg. F (-40 deg.C.) High temperature diaphragms are made from reinforced Viton, and are suitable for temperatures up to 450 deg. F (232 deg.C.) All seals are designed to meet the same operating criteria.

SPECIFICATION

Pilot Connections - ⅛".
Exhaust Connection: Tapered Pipe Threads 20T - ⅛", 25T - ¼", 35/45/50/62T - ⅜", 76T - ½".
Maximum working pressure: 860Kpa (8.6 Bar) (125 psi) Recommended working pressure: 760Kpa (7.6 Bar) (110psi)
Recommended pilot for RCA models: RCA3D2T

ELECTRICAL

Solenoid coil on CA models. Type QR or QD
Protection Class: QR - Nema 4, IP65 - DIN Socket
QD - Nema 1, IP31 - Conduit thread

STANDARD VOLTAGES AVAILABLE ARE
100/120 Volt 50/60 Hz.
200/240 Volt 50/60 Hz.
24 Volt DC.

SPARE PARTS

Part numbers of diaphragm repair kits are shown in Table for both standard (Buna-N) and high temperature (Viton) elastomers.

Spare parts kits for pilot solenoid valves consist of ferrule tube, plunger and spring. The part numbers for these kits are M1131B (Buna-N) and M1167B (Viton). These kits service all CA valves, AC or DC voltages.

ORDERING

When ordering "T" Series valves, the following need to be specified:

- valve size (diameter)
- CA or RCA
- coil type, voltage, Hz for CA models

A typical valve might be specified as follows:
CA40T-QR-240/50

DIAPHRAGM VALVES

... with integral pilot control (CA)
... for remote pilot control (RCA)

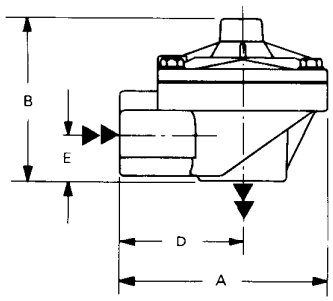
Model	Pipe Size	ORIFICE Inches	ORIFICE mm	Cv Factor	REPAIR KITS Buna N	REPAIR KITS Viton
CA/RCA 20T*	¾"	¾"	20	11.2	M1204B	M2082B
CA/RCA 25T*	1"	1"	25	25	M1183B	M1887
CA/RCA 35T*	1½"	1½"	40	42	M1581	M1761
CA/RCA 45T2	1½"	1½"	40	53	M2162	M2457
CA/RCA 50T	2"	2"	50	87	M1638A	M1157A
CA/RCA 62T	2½"	2½"	62	100	M1638A	M1157A
CA/RCA 76T	3"	3"	76	135	M1798	M1925

* Single diaphragm models Kv = .86 Cv

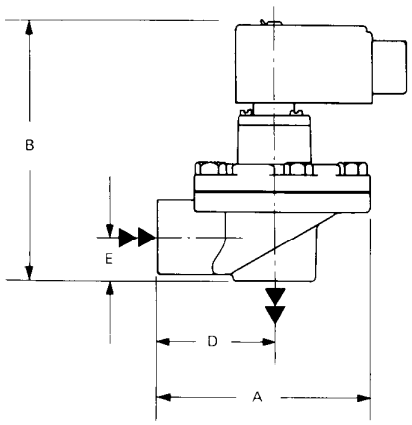
DIMENSIONS ... all diaphragm valve models

VALVE MODEL	ORIFICE		A		B		WIDTH		D		E	
	INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm
RCA20T	¾"	20	3.97	101	2.97	75	3.44	87	2.19	56	.78	20
RCA25T	1"	25	4.13	104	3.03	77	3.25	83	2.50	63	.87	22
RCA35T	1½"	40	4.75	120.5	3.66	95	4.37	111	2.56	64	1.20	30
RCA45T2	1½"	40	5.41	138	4.72	125	4.96	126	2.93	75	1.28	32
RCA50T	2"	50	8.11	206	6.06	154	7.25	184	4.49	114	1.57	40
RCA62T	2½"	62	8.25	210	6.81	173	7.25	184	4.63	117	1.94	48
RCA76T	3"	76	8.63	219	8.00	203	7.88	200	4.69	119	2.50	63
CA20T	¾"	20	3.95	101	4.91	125	3.44	87	2.19	56	.78	20
CA25T	1"	25	4.13	104	4.95	125	3.25	83	2.50	63	.87	22
CA35T	1½"	40	4.75	119	5.75	142	4.37	111	2.56	64	1.20	30
CA45T2	1½"	40	5.41	138	6.71	175	4.96	126	2.93	75	1.28	32
CA50T	2"	50	8.11	206	8.15	204	7.25	184	4.49	114	1.57	40
CA62T	2½"	62	8.25	210	8.75	224	7.25	184	4.63	117	1.94	48
CA76T	3"	76	8.63	219	9.84	250	7.88	200	4.69	119	2.50	63
RCA25TD	1"	25	4.13	105	5.50	138	3.25	83	2.50	64	3.38	86

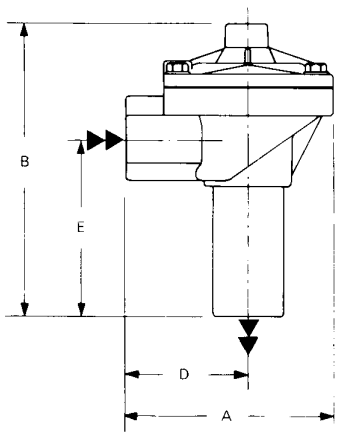
ALL RCA-T MODELS



ALL CA-T MODELS



MODEL RCA25TD



TROUBLESHOOTING

The items listed below are intended as a quick reference for common problems that may be encountered with a dust filter. If you are experiencing any difficulties not covered or have any questions concerning your filter, contact your local Schenck Process representative or Schenck Process LLC

Disconnect and properly lockout-tagout the electrical and compressed air service before performing any maintenance or service procedures on the filter.

It is imperative that the control panel enclosure be secured at all times unless access is required.

Troubleshooting Filter Cleaning Mechanism

POSSIBLE CAUSE	SOLUTION
1. High differential pressure across tube sheet. (5" H_2O and rising)	
a) Cleaning pump not running.	• See section on pump to determine fault.
b) Low pump pressure	• Check gauge on pump, normal pressure is (6 to 8 psi) if low refer to pump troubleshooting guide.
c) Clogged or deteriorated gauge line	• Clean or replace lines. If installation is several years old replacement of lines may be necessary. • Check internal filter on differential pressure port on filter housing. Replace if blocked.
d) Bad gauge	• Normally the gauge will fluctuate during cleaning pulse. If needle does not move replace the gauge.
e) Bags binding	• Inspect bag dust cake. High humidity and condensation will cause dust cakes that are difficult to remove. Run filter with exhaust fan off and without dust load for 15 to 30 minutes until cake is removed. • Preheat filter on start up to avoid condensation. If air stream is extremely humid then review application with Schenck Process, LLC • If condensation is a recurring problem, start and operate the system with no dust load until the filter reaches ambient temperature. It may also be necessary to operate the system with no dust load for a time at shut down.
f) System air volume too high	• Check air flow of system and compare with design values. If air flow is too high review application with manufacturer.
g) Dust particle size too small	• Small particles (less than 10 microns) will affect efficiency of filter media. Analyze particle size distribution with original design parameters. If excessive amounts of small particles are present then review application with manufacturer.
h) Bag fit on cages too tightly	• Check bag fit on cages with the pinch test. You should be able to pinch ½" of fabric at any position. Tight bags will not allow the bags to 'flex' properly for cleaning. If bags are too tight replace them. Bags which have been cleaned or washed may shrink and must be checked for proper fit on cage.
i) Cleaning mechanism timing unsynchronized	• Refer to maintenance section for correct timing adjustment
j) Cleaning mechanism malfunction.	• Listen to filter for the distinct cleaning pulse. (3 to 7 sec cycle) If pulse is not heard see "Cleaning Mechanism Malfunction"
2. Low differential pressure. (less than 1/2" H_2O)	
a) Check items 1a and 1b.	• Verify lines to magnehelic gauge are properly connected.
b) Holes in bags.	• Replace worn bags.
c) Incorrect bag installation causing leakage.	• Look for dust in clean air plenum. Refer to bag installation procedure.
3. Cleaning mechanism malfunction.	
a) Cleaning arm not running	• Check motor. • Check power supply. Make necessary repairs to get motor running. • Check shear coupling on drive shaft. Replace if needed and correct problem that caused shear.
b) Leak in air line from secondary valve to index valve	• Repair or replace line.
c) Index sensor malfunction	• Visually inspect for loose parts and wear. Remove sensor and bench test valve. Connect 7 psi air line to valve and manually actuate. Replace if plunger will not seal.
d) Secondary valve malfunction	• Disassemble and inspect diaphragm for tears and wear. Replace if damaged.

e) Primary diaphragm malfunction.	•	Remove cover to diaphragm. Inspect for tears and wear. Replace if damaged.
4. Poor bag life.		
a) Incorrect filter media.	•	High temperatures, chemical content, and dust composition will affect bag life.
b) Abrasion	•	Poor inlet design practices such as high inlet velocities and elbows on the inlet can cause accelerated abrasion on bags. Consult Schenck Process LLC for guidance.
c) Damaged cages	•	Damaged, corroded or bent cages can wear on bags. Replace cages. Coated or stainless steel cages are available.
d) Moisture in air stream.	•	Moisture will cause acids to form in some applications which weaken the filter media. Check moisture level and composition of dust and air stream. Consult Schenck Process LLC for review of application.
e) Excessive air to cloth ratio.	•	Check air to cloth ratio and compare to original specifications.
f) Improper cleaning.	•	Review cleaning procedures. Improper cleaning can shorten bag life.
5. Dust in exhaust air		
a) Normal for start up period and new bags	•	Allow filter to run for 48 to 96 hours.
b) Holes in bags	•	Replace worn bags
c) Blank-out plugs installed incorrectly	•	Check all blank-out plugs for tight fit.

Troubleshooting Pump Package

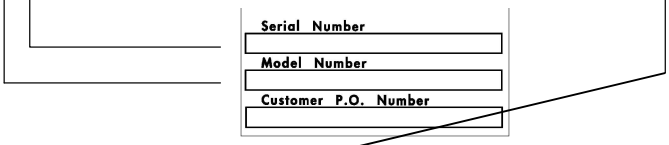
POSSIBLE CAUSE		SOLUTION
1. Knocking		
a) Unit out of time	•	Reset timing per manufacturers manual.
b) Housing distortion due to external strains from pipes and/or drive tension	•	Relieve pipe loads on pump and adjust belt tension.
c) Worn gears	•	Replace timing gears per manufacturers manual.
d) Worn bearings	•	Replace bearings per manufacturers manual.
e) Worn bearing fit	•	Replace bearing and/or head plate per manufactures manual.
2. Excessive temperature in blower.		
a) Too much oil in gear case or drive cover	•	Reduce oil level to recommended levels.
b) Clogged filter or muffler	•	Remove clog or replace component.
c) Worn impeller clearances	•	Restore clearances per manufactures recommendations.
3. Impeller end or tip drag		
a) Incorrect clearances	•	Restore clearances per manufacturers recommendations.
b) Case or frame distortion	•	Relieve pipe loads on pump and adjust belt tension.
c) Excessive operation pressure	•	If all other aspects of the filter system are ok then reduce drive speed to provide 7 psi max pressure.
4. Lack of air volume		
a) Slipping belts	•	Correct belt tension
b) Worn clearances	•	Restore clearances per manufactures recommendations.
c) Leak in system	•	Check for leaks in pipe lines and connection from pump to cleaning mechanism. Repair as needed.
5. Excessive bearing or gear wear		
a) Improper lubrication	•	Correct oil level and follow lubrication schedule.
b) Worn filter	•	Replace filter
6. Loss of oil		
a) Vents plugged	•	Check and replace vents in headplate, gear case or drive cover
b) Worn seals	•	Check for leakage around head plate and gear case. Replace leaking seals.

The above is intended as a quick reference for common problems that may be encountered with a dust filter. If you are experiencing any difficulties not covered above or have any questions concerning your filter, contact your local Schenck Process representative or the Schenck Process Service Center at 1-888-821-2476.

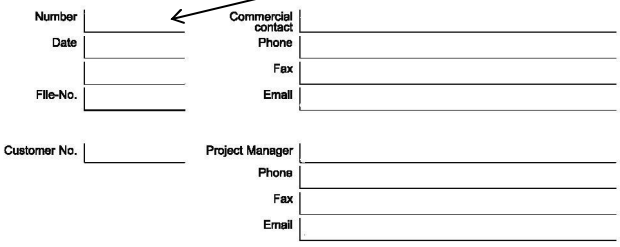
ORDERING SPARE PARTS

To order spare parts by phone, dial 1-**888-821-2476** (U.S. & Canada) or 1-**816-891-9300** (International). The following information is necessary when placing an order for spare parts to help ensure prompt service:

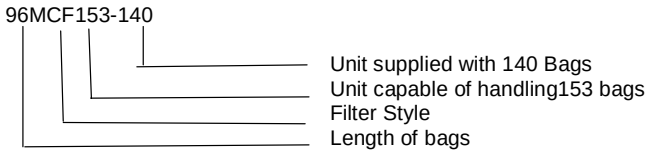
1. Model Number
2. Serial Number
3. Part Description
4. Part Number
5. Quantity Required
6. Schenck Process Job Number (or Sales Order Number)



Order Acknowledgement



Model Designations



Cleaning Mechanism

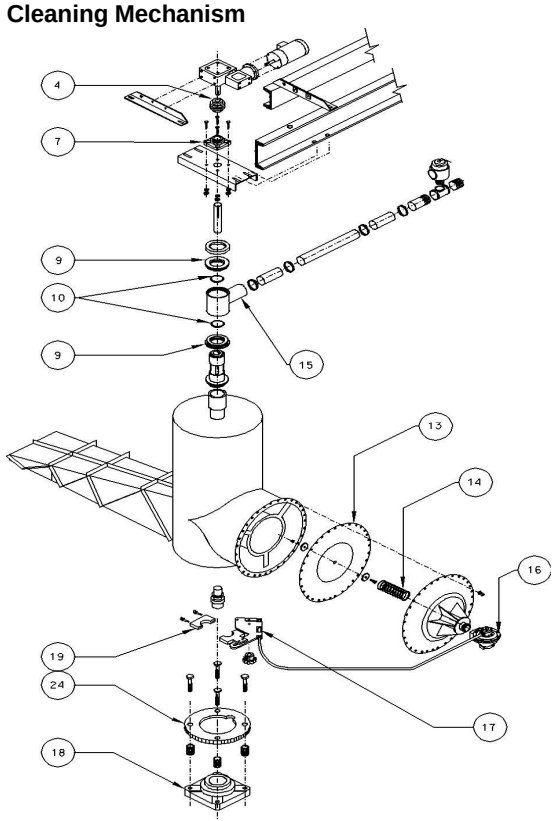


Figure 9-1 Typical MCF572 Cleaning Mechanism

Cleaning Mechanism Spare Parts List (MCF 572)

Item No.	Part No.	Description
4	V321057.B01	Rubber Sleeve
"	V324950.B01	Coupling 1-1/5" Bore
"	V321050.B01	Coupling 1-3/8" Bore
7	V312471.B01	Top Shaft Bearing 1-3/8" (4) Bolt Flange
9 & 10	V246654.B01	Quad Rings & Bushings
13	V350867.B01	12" Diaphragm
14	V310947.B01	12" Diaphragm Spring (MCF 361, 494, 572)
15	V350689.B01	Inlet Tee Assembly
16	V200353.B01	Secondary Diaphragm Valve
17	V246116.B01	Replacement Tip, Shaft, Spring, & Chain Link
--	V335731.B01	Replacement Spring
18	V332197.B01	Bottom Shaft Bearing 1-7/16" (4) Bolt Flange
19	V627624.B01	Index Sensor
24	V350325.B01	Timing Sprocket
--	V310236.B01	Cleaning Arm Nozzle
--	V311005.B01	Blank-off Plug

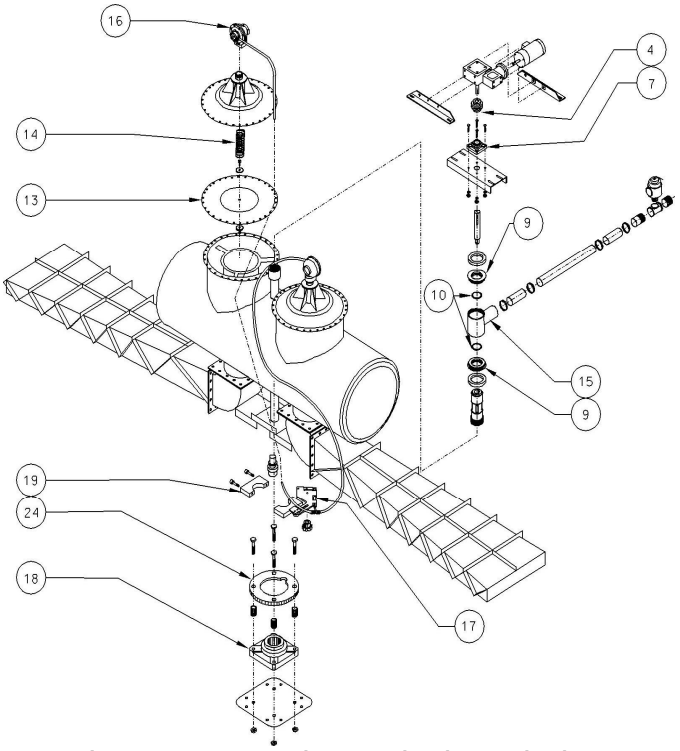


Figure 9-2 MCF756 and Larger Cleaning Mechanism

Cleaning Mechanism Spare Parts List (MCF 756 and larger)

Item No.	Part No.	Description
4	V325215.B01	Rubber Sleeve (MCF756)
"	V332651.B01	Rubber Sleeve (MCF1120-1652)
"	V333560.B01	Coupling 1-5/8" Bore
"	V325214.B01	Coupling 1-1/4" Bore
7	V305314.B01	Top Shaft Bearing 2" (4) Bolt Flange
9 & 10	V247794.B01	Quad Rings & Bushings
13	V350866.B01	10" Diaphragm (MCF756)
"	V350867.B01	12" Diaphragm (MCF1120/1652)
14	V310946.B01	10" Diaphragm Spring (MCF756)
"	V310947.B01	12" Diaphragm Spring (MCF1120/ 1652)
15	V371588.B01	Inlet Tee Assembly
16	V323543.B01	Secondary Diaphragm Valve
17	V246116.B01	Replacement Tip, Shaft, Spring, & Chain Link
--	V335731.B01	Replacement Spring
18	V326578.B01	Bottom Shaft Bearing 2-15/16" (4) Bolt Flange
19	V350263.B01	Index Sensor
"	V313244.B01	Timing Sprocket (MCF 756-1652)
--	V310236.B01	Cleaning Arm Nozzle
--	V311005.B01	Blank-off Plug

Top Removal Bags

Bag Length	16 Oz. Dacron	16 Oz. DYNA-MAC	14 Oz. Polypropylene
96"	V310758.B01	V177591.B01	V310761.B01
120"	V310755.B01	V177592.B01	V310760.B01
144"	V310043.B01	V177593.B01	V310759.B01

Top Removal Cages

	Galvanized Cage Length and Part Number		
Filter Style	96"	120"	144"
MCF	V306096.B01	V306102.B01	V306105.B01

Miscellaneous Spare Parts

Item No.	Part No.	Description
--	V307179.B01	Magnehelic Gauge 0-15" WC