



CAMCORP
A MEMBER OF THE SCHEUCH GROUP

INSTALLATION, OPERATION, & MAINTENANCE MANUAL

PULSE JET FILTER BAG & CARTRIDGE
TOP & BOTTOM LOAD DUST COLLECTOR

TABLE OF CONTENTS

SECTION 1: SAFETY

■ Safety Recommendations.....	3-5
-------------------------------	-----

SECTION 2: STORAGE AND INSPECTION

■ Baghouse, Cartridges, Accessory Parts, Fan, Ducting.....	6
■ Knife Gate, Dampers, Rotary Valve, Butterfly Valve, Level Indicators, AC Inverter	7

SECTION 3: INSTALLATION AND ASSEMBLY INSTRUCTIONS

■ Setting Up Your Unit/Operation Principle	8-11
■ Start-up Checklist.....	12-13
■ Start-up and Shutdown Procedures.....	14-15
■ Bag and Cage Installation.....	16-22
■ Bottom Load and Top Load Header Assembly	23-29
■ Timer Setup and Wiring.....	30-33
■ Magnehelic Gauge Setup	34
■ Explosion Vent Installation	35-36

SECTION 4: COMPONENT INFORMATION

■ Bags.....	38
■ Pleated Filter Elements	39-51
■ Cages	52
■ Diaphragm Valves.....	53-56
■ Pilot Valves	57-59
■ Compression Fittings	60-65
■ Timers.....	66-82
■ Magnehelic and Photohelic Gauges.....	83-89
■ Door Gasket.....	90-92
■ Silo Fluidizers	93-96
■ Sight Windows.....	97
■ Burst Sensors.....	98-101
■ Standard CAMCORP Paint.....	102-109

SECTION 5: TROUBLESHOOTING

■ Dust Collector	110-113
■ Timer	114
■ Compressed Air System.....	115

SECTION 6: ROUTINE MAINTENANCE

■ Inspections and Repairs	116
---------------------------------	-----

SECTION 1

SAFETY

RECOMMENDATIONS

Because this unit may be under pressure or vacuum do not attempt to open any device, doors or panels while fans or blowers are running. The unit has air hoses and valves with a maximum recommended operating pressure of 100 psig. To eliminate the danger of bursting, care must be taken to ensure maximum desired pressure is not exceeded.

Before servicing any portion of the compressed air system the air supply must be shut off and any pressure relieved.

If your unit is equipped with a discharge auger or an airlock, assure that chain guards are installed before start-up and servicing is attempted only after electrical power is locked out.

While servicing the filter it is very important that there are no open flames, welding or grinding sparks. Dust laden air could be highly explosive and extreme care must be taken. Most filter cartridges will burn if exposed to sparks, welding or open flames.

Before entering any dust collector

- Run cleaning mechanism 20-minutes with the fan off to clean the filter cartridges.
- Completely discharge dust solids from hopper, if applicable.
- Shut off compressed air supply and relieve pressure in the compressed air manifold.
- Lock out all electrical power on all equipment especially rotating equipment.
- On toxic operation, purge collector housing and install a blank in the inlet duct.
- Install catwalks and safety cables as required.
- Secure access doors in an open position or remove doors.

- Use the buddy system.
- Wear a respirator or appropriate breathing equipment.
- Use common sense.

Follow all current OSHA regulations relative to Lockout / Tag-Out and Confined Space Entry and any other applicable regulations when servicing your equipment.

On the following page are examples of safety stickers you will find on CAMCORP equipment. These will help identify potential hazards on the equipment.

SECTION 1

SAFETY

RECOMMENDATIONS

The DANGER & CAUTION stickers indicate serious potential hazards which may result in serious injury or possible death. Extreme care should be observed when working in these areas.

These stickers provide instruction or helpful information.



SECTION 1

SAFETY

RECOMMENDATIONS

Serial Number Plate

Important information contained on these is needed by CAMCORP when calling for parts or service.



QR Code - Ordering Spare Parts

CAMCORP makes ordering replacement parts easier and faster with QR code stickers. All you need is a mobile device and you've got instant access to your equipment's common spare parts and part numbers in one location.



Here's how it works:

1. Locate the QR sticker on your dust collection or pneumatic conveying equipment.
2. Open your QR code reader app on your mobile device. You can download an app by searching "QR code reader" in the Google Play (Android) or App Store (Apple).
3. Hold your phone over the QR code and your spare parts list will appear complete with part numbers and CAMCORP Parts contact information.

Don't have a QR sticker on your equipment? Contact the CAMCORP Parts Department to request your sticker today.

QR Code - Download Equipment Manual

Access to an electronic copy of this manual can be found by scanning the QR code sticker on your CAMCORP equipment. Simply follow the same instructions as Ordering Spare Parts.



SECTION 2

STORAGE AND INSPECTION

Baghouse, Bin Vent, Filter Receiver, Dirty Air Hopper and Housing

- Housing can be stored outside.
- Equipment must be blocked up to keep the flanges out of the dirt.
- Most units are supplied with a plain unfinished interior. If storage of more than two weeks is anticipated the interior should be prime coated before storage.
- Covering the unit with a tarp is recommended to help keep the interior from rusting or corroding as well as keeping the outer finish in new condition, however a tarp is not absolutely necessary.

Baghouse, Bin Vent, Filter Receiver, and Clean Air Plenum

- Unit can be stored outside.
- Compressed air header, diaphragm and solenoid valves must be tarped for weather protection.
- Position unit so water will not get in or remain inside the tube sheet area.
- Unit must be blocked up to keep the flanges, bag cups, venturis and air header out of water and dirt.
- Ports on diaphragm and solenoid valves must be plugged and taped to keep insects, dirt and moisture out.
- For extended storage (more than 4 weeks), it is recommended to remove the timer panel and solenoid valve assembly (if mounted). These components should be stored inside a cool dry area along with the copper or black nylon tubing. The solenoids should have all ports capped and taped to protect from insects, dirt and moisture.
- The unit should be tarped, but is not absolutely necessary.

Pleated Filter Cartridges

- Filter cartridges must be stored inside a cool dry area protected from moisture, rodents and insects.
- For extended storage, the boxes for the filter cartridges should be wrapped with plastic wrap or stretch wrap to protect from moisture.
- If the filter cartridges get wet for any reason, immediately lay them out with plenty of ventilation to dry in order to prevent mold and mildew.

Accessory Parts

- This includes all gauges, cartridge clamps, nylon or copper tubing, valves, gaskets and other parts not specifically called out.
- These items should be stored inside a cool dry place protected from moisture, insects, and rodents.

Fan and Fan Accessories

- Fans can be stored outside on a pallet or skid to keep them out of water and dirt.
- Fan silencers, outlet dampers, and inlet boxes should also be tarped and stored on a pallet or skid.
- Reference fan IOM manual for long-term storage.

Ducting

- Ducting can be stored outside on a pallet or skid to keep it off the ground.
- It should be positioned so that water does not sit on or in the ducting.
- If ducting is unpainted carbon steel it should be at least prime coated before storage.
- If ducting is already finish coated, it should be tarped to protect the finish, but this is not absolutely necessary.

SECTION 2

STORAGE AND INSPECTION

Knife Gate

- All limit switches, solenoids, and air cylinder ports must be capped and taped to prevent any moisture or dirt from entering.
- Equipment can sit outside provided it is covered with a tarp and is on a pallet or skid to keep it out of water and dirt.
- Reference knife gate IOM manual for long-term storage.

Isolation Dampers

- All limit switches, solenoids, and air cylinder ports must be capped and taped to prevent any moisture or dirt from entering.
- Equipment can sit outside provided it is covered with a tarp and is on a pallet or skid to keep it out of water and dirt.

Rotary Valve

- Rotor and interior of valve should be well oiled with vegetable oil to prevent rust and to maintain compatibility with product.
- Unit can be stored outside provided it is covered with a tarp and is on a pallet or skid to keep it out of water and dirt.
- Reference rotary valve IOM manual for long-term storage.

Butterfly (Wafer Valve)

- All limit switches, solenoids, and air cylinder ports must be capped and taped to prevent any moisture or dirt from entering.
- Unit can be stored outside provided it is covered with a tarp and is on a pallet or skid to keep it out of water, dirt and sunlight.
- Reference butterfly valve IOM manual for long-term storage.

Level Indicators

- Store these items inside a protected cool dry area.

AC Inverters

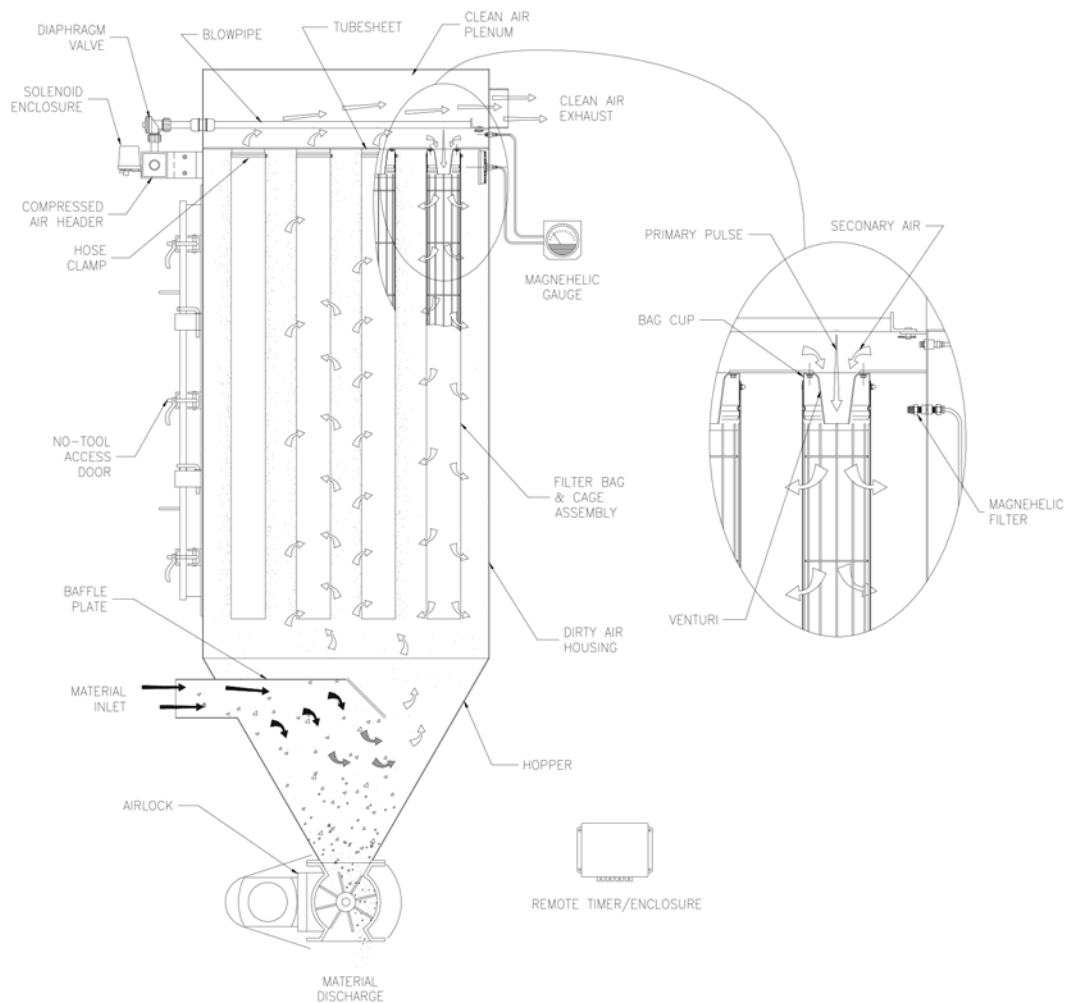
- Store these items and all other electrical controls inside a protected cool dry area.

SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Setting Up Your Unit/Operation Principle

- Solids laden air or gases enter the unit at the hopper or housing inlet.
- Air passes through the filter media.
- Solids are retained on the filter media surface.
- Cleaning cycle consists of a momentary blast of 90-100 psig compressed air:
 1. Momentarily taking a row of cartridges off stream through pressure reversal.
 2. Flexing filter cartridges.
 3. Solids are released to fall towards hopper and through rotary valve or other discharge equipment.



SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Setting Up Your Unit/Operation Principle continued

CAMCORP dust collectors are shipped either in one piece, fully assembled, or in two or more sections depending on the unit size and weight. Before attempting to move the dust collector or any of its sections, review both the certified general assembly drawing supplied from CAMCORP and the rigging and lifting guidelines included in this manual. Become familiar with the size and number of sections to be assembled, the orientation of inlet(s), outlet(s), access door(s) and compressed air header(s), as well as the number and location of lifting lugs.

Dust collectors of this type are manufactured from steel sheets or plate and are quite flexible. Therefore, even though care has been taken to maintain dimensional accuracy and squareness, some difficulty should be anticipated and temporary bracing in the field may be required.

The following sequential procedure will help to minimize any assembly difficulties:

STEP 1

Set up the supporting steel for the dust collector level and square. Precision at this point will greatly help facilitate erection and bolt hole alignment of the dust collector sections to follow.

STEP 2

Place the hopper with its girth channel on the supporting steel work. Check for squareness, and for bolthole alignment between the hopper flange and the girth channel. Apply the appropriate RTV silicone caulk around the periphery of the hopper flange with one bead on each side of the boltholes.

STEP 3

Lift the dirty air plenum, with the tube sheet, into place. DO

NOT LOWER THE PLENUM ONTO THE HOPPER FLANGE UNTIL ALIGNMENT IS ACCOMPLISHED. The silicone caulk makes horizontal movement very difficult once a load is applied. With the plenum suspended over the hopper ½" to 1", begin bolt hole alignment starting at the center of the plenum and working toward the ends by using tapered drift pins. If the wall(s) has flexed out of square it will be necessary to pry or pull it back into alignment. Depending on the size of the unit and the degree of difficulty, hydraulic jacks and come-alongs may be required. When the mating holes are properly aligned, finish lowering the plenum. Install the remaining bolts, washers, and nuts and torque to the appropriate specifications.

Step 4

Check the top of the dirty air plenum for squareness and bolthole alignment between the dirty air plenum and the tube sheet. Make sure that the silicone caulk has been applied between the top flange of the dirty air plenum and the underside of the tube sheet flange. Next, apply the caulk around the periphery of the topside of the tube sheet flange one bead to each side of the boltholes.

STEP 5

Lift the clean air plenum into place and assemble in the same fashion as in STEP 3. Again, do not lower the clean air plenum completely until preliminary alignment is accomplished. Start drift pin alignment at the center of the plenum on the compressed air header side since the header makes access to the flange more limited. When alignment is complete install the remaining bolts, washers, and nuts and torque to the appropriate specifications.

All CAMCORP dust collectors are provided with lifting lugs for ease in handling of the units during field erection and installation. The number and location of these lifting lugs

SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Setting Up Your Unit/Operation Principle continued

will vary depending on the model, size, and weight of the dust collector. Before attempting to rig and lift your dust collector review the certified general assembly drawing supplied from CAMCORP to verify the number and location of lifting lugs as well as visually checking this information on the actual unit. Large units are frequently shipped in several sections so check the lifting lugs provided on each section. If these cannot be used or there is some question about lifting lug location, consult the engineering staff at CAMCORP for proper location since proper care must be taken to prevent damage to housing or its components.

Rigging and Lifting Guidelines

Do not lift the dust collector by any attachments other than the lifting lugs provided.

Use all of the lifting lugs provided on the dust collector or a section of the dust collector when making a lift.

If the lifting lugs are located below the roofline of the dust collector or below the top of the section of the dust collector, a vertical pull must be made to avoid crushing the top of the unit. Use spreader beams to accomplish this vertical pull.

Attach tag lines at several locations to help in controlling the unit when lifted and to prevent spinning or swinging.

The dust collector should be lifted and lowered at a slow, uniform rate and not allowed to bounce or joggle since this can cause excessive impact stresses at the lift points.

Compressed Air Manifold

Typically, CAMCORP ships the compressed air manifold installed complete with diaphragm valves and solenoid enclosure(s), except when units are over legal shipping width

with them in place.

Doors and Flanges

Hold-downs on doors should only be hand tightened. Excessive pressure can distort the door panel itself resulting in leakage. All bolts on flanges should be tight. All ports in the dust collector not being used must be plugged prior to start-up.

Electrical

A 120-volt 60-Hertz circuit is required to operate the dust collector's pulse-jet cleaning system (unless a different voltage for components was requested). This timer must be wired according to the wiring diagrams and be provided with a circuit that is free from transient currents. The timer has a feature called "Demand Pulse" that allows the output terminals to be energized and de-energized by the high and low set points of a differential pressure switch such as a photohelic series 3000. The "Demand Pulse" terminals are marked "Pressure Switch". Do not over fuse.

The pulse timer boards have adjustable pulse duration and interval (time between valves firing) settings. Before applying power to the timer always check these settings according to the table below. Since there are many variances in operations and conditions these are presented only as initial start-up guidelines. If you experience problems in cleaning of the filter bags, please contact CAMCORP.

SECTION 3

INSTALLATION

AND ASSEMBLY

INSTRUCTION

Setting Up Your Unit/Operation Principle continued

TIMER BOARD ADJUSTMENTS (Recommended at start-up.)		
VALVE SIZE	PULSE DURATION	INTERVAL
3/4" (19.05 mm)	.10 TO .12 seconds	20 to 25 seconds
1" (2.54 cm)	.10 to .20 seconds	20 to 25 seconds
1-1/2" (3.81 cm)	.06 to .08 seconds	20 to 25 seconds

The firing sequence of the diaphragm valves on the dust collector should be set so that no two adjacent rows of cartridges fire in succession to ensure maximum cleaning and life of the filter media. This can only be achieved when wiring the pulse timer board to the solenoid valves. If you are experiencing a high-pressure drop across the filter bags in your dust collector the pulse interval should be reduced.

Apply electrical power to the timer and make sure that it is cycling completely through all rows of the unit. In some cases the timer panel may have more "positions" than required in which case the position selector cable needs to be attached to the proper numerical value corresponding to the number of diaphragm valves on the unit.

If your dust collector was shipped via common carrier rather than a contract hauler there is a possibility that the solenoid enclosure was not shipped installed on the unit. If this is the case, there is a mounting plate welded on the housing or the air header with the bolt pattern of the enclosure already drilled. Bolt the enclosure and install the nylon (or copper) tubing with the fittings provided making sure that the solenoids are connected to their corresponding diaphragm valve.

Valves and Piping

After the unit has been installed the diaphragm valves should be checked to make sure that the port marked "IN" is assembled to the compressed air manifold. The "IN" connection of the solenoid valve is connected to the diaphragm valve by means of 1/4" (6.35 mm) nylon or 1/4" (6.35 mm) copper refrigeration tubing. Each nut on the compression fittings should be checked for tightness before the compressed air manifold is pressurized. In most cases a slip fit fitting has been used. The integrity of the nylon tubing inside each fitting should be checked by pulling gently on each tube. If the tube pulls out, simply push it back into the fitting until it will not go any further. The solenoids are shipped with a plastic plug in the discharge side of the valve. These plugs must be removed for proper operation.

Gauges

The differential pressure gauge, mounting bracket, fittings and tubing are usually shipped loose in a box with the dust collector. When installing these make sure that the high-pressure port of the gauge is connected below the tube sheet and the low-pressure port is connected above the tube sheet on the dust collector. There are pipe couplings welded on the side of the dust collector for these connections. After the differential pressure gauge is permanently mounted the gauge needs to be zeroed prior to connecting the tubing to the gauge.

Auxiliary Equipment

All auxiliary equipment must be installed according to its manufacturer's specifications and interlocked with the entire system as needed. Direction of rotation of each item must be checked prior to start-up of the entire system.

SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Start-up Checklist

□ Installation

Make sure the unit is secured to the floor or mounting surface. The ladder(s) and platform(s) must be tightened and set up according to OSHA requirements. Ducting and piping must be secured and routed out of the way of traffic whenever possible to avoid injury. Ducting must also be free of all debris including moisture.

□ Interior of Dirty Air Plenum

In a bottom filter removal collector, inspect the filter cartridges, referring to the "Filter Cartridge Installation" section of this manual. Improperly installed cartridges may allow dusty air to enter the clean air plenum. High-level indicator, if so equipped, should be connected below the material inlet(s) to avoid over filling the hopper.

□ Interior of Clean Air Plenum

The blowholes in the blowpipes must be centered over the filter cartridges.

On top filter removal collectors verify that filter cartridges are properly installed.

On top filter removal collectors the bulkhead fittings must be checked for proper tightness and that the blowpipes are secured at both ends.

□ Exterior of Dust Collector

Access doors, inspection ports and spring-loaded relief vents should seat effectively to prevent leakage.

All bolts must be properly tightened.

Operate any equipment connected to the dust discharge of the dust collector. Check the rotation of any motor driven

equipment such as rotary airlocks, horizontal unloading valves, live bottom bin activators and screw conveyors. Check slide gates and butterfly valves for binding.

□ Explosion Relief Panels – Shear Bolt Style (when used)

Inspect explosion relief vents (when used) for broken or damaged explosion bolts. ASSURE THAT THERE ARE NO STEEL BOLTS USED FOR THE INSTALLATION OF THE EXPLOSION RELIEF PANEL!!! These bolts are made of special high tech poly-vinyl chloride and are designed to relieve at a specific pressure. A magnet should be used to check for steel bolts.

□ Explosion Relief Panels – Rupture Style (when used)

Inspect explosion relief vents for cracks and that all mounting bolts are tight.

□ Compressed Air System

The pulse timer board must be correctly wired and mounted in its enclosure in a suitable location.

All the ¼" (6.35 mm) copper or nylon tubing connections between the diaphragm and the solenoid valves must be tight and the tubing must not be crimped.

The plugs (when used) must be removed from the exhaust ports of the solenoid valves and the tubing from the diaphragm valves must be connected to the "IN" port on the solenoid valves.

The compressed air supply system must be equipped to supply clean, dry air to the pulsing air system. At this time assure that there is a suitable air pressure gauge on the air header for reading 0-160 psig. Start the compressed air supply system and check for air leaks in all parts of the system. If air is heard

SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Start-up Checklist continued

escaping through one or more of the blowpipes (with the timer off), please refer to the “Troubleshooting the Compressed Air System” section of this manual. Gauge pressure at the compressed air manifold(s) should be 90-100 psig.

With the compressed air system operating, energize the timer board to begin pulsing. Check to see that all solenoids are firing by placing a finger over the exhaust port of one of the solenoid valves. When the solenoid valve being checked is energized by an electrical pulse from the timer board the finger at the exhaust port should feel a short blast of air. Quickly move to the next solenoid valve in the firing order noting any valves that do not fire or are stuck open causing a continuous airflow out of the exhaust port of the valve. At this time note the quality of the compressed air. It should be clean, dry, and oil free.

Allow the compressed air system to operate as long as possible to clear the system of dirt, rust, scale, welding slag and metal chips that can cause the diaphragm valves to stick.

The pressure at the compressed air manifold must recover to 90-100 psig before each pulse. Make sure that there is adequate compressed air delivery for full pressure recovery when all other systems connected to the same air supply are operating at full capacity.

SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Start-up and Shutdown Procedures

Fan or Blower System

Start the fan or blower and check for proper rotation.

Check dust pickup points for proper suction. Balance airflow in individual ducts.

Check for air leakage at all flanged connections.

Equipment Start-Up Sequence

The compressed air supply system must be started first.

When the pressure gauge on the compressed air manifold indicates that the system is at full pressure (90-100 psig) the pulse timer can be energized.

Dust take away equipment such as rotary airlocks, screw conveyors, horizontal unloading valves, live bottom bin activators and pneumatic conveying systems can now be started in their correct sequence.

Check that all access doors, hatches, ports, and other openings are closed and latched or bolted.

The main exhaust fan can now be started and brought up to speed.

Start the dust-laden air through the collector. The collector should be started under partial load to allow the cartridges to become slowly and evenly coated with dust particles.

On pneumatic conveying systems watch the differential pressure gauge closely for the first hour or so. If unstable, the collector discharge system may be too small for the volume it is seeing. A quick fix is to reduce the material feed until the discharge rate can be increased.

Observe the manometer or magnahelic differential pressure gauge reading. As the new filter cartridges become coated with dust, the efficiency of the filtering action increases and the differential pressure across the filter cartridges will also increase. Slowly bring the collector to full load and note the final pressure drop across the filter cartridges. Never allow the pressure drop across the filter cartridges to exceed 17" (43.18 cm) w.g. maximum or the filter cartridges may collapse.

Note: If the pressure drop continues to increase over 5" (12.7 cm) w.g. and does not stabilize, decrease the timer "off time" to fifteen seconds. Should adjustment of the timer "off time" fail to cause the pressure drop to stabilize below 5" (12.7 cm) w.g., shut down the collector and refer to "Troubleshooting the Collector" or call your CAMCORP representative.

When the collector has stabilized the timer "off time" interval may be slowly increased for the most economical use of compressed air. As the "off time" is increased, the differential pressure will also increase. Readings up to 6" (15.24 cm) w.g. are acceptable, however we recommend operating at 3"-4" (7.62-10.16 cm) w.g. for maximum filter cartridge life. The timer "off time" may be decreased when lower differential pressure readings are desired. When adjusting the "off time" interval proceed in small steps allowing the differential pressure to stabilize for several hours between adjustments.

Check the main airflow with a pitot tube or equivalent measuring device to establish initial conditions. If the main airflow must be adjusted up or down to suit the process, repeat the steps above.

SECTION 3

INSTALLATION AND ASSEMBLY

INSTRUCTION

Start-up and Shutdown Procedures

Dust control systems

Reverse start-up procedure, shut down fan, then after a 5 or 10-minute delay, shut down the timer and discharge system.

Pneumatic systems

Reverse start-up procedure, shut down fan, then after 5 or 10 minute delay, shut down the timer and discharge system.

SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Bag and Cage Installation Bottom Load Bag

1. Insert cage into bag so that the bag seam is opposite the gap in the roll band top. Pull the bag over the cage until the bottom of the bag is against the cage bottom.
2. Fold the top of the bag inside the cage. The bag should extend down inside the roll band top to below the first groove (see figure 1). Smooth the folded fabric and distribute any excess fabric into several small pleats instead of one large one. Sleeve top bags are assembled the same way.
3. Loosely install a new clamp around the top of the bag/cage combination, with the clamp screw positioned midway between the gap in the roll band top and the bag seam (see figure 2). The clamp should be seated over the first groove, just tight enough to stay in place. Install a new optional felt seal around the bag cup. This seal helps prevent leakage of fine particulate.
4. Slide the bag/cage combination over the bag cup which is below the tubesheet. The bead on the inside of the cage (the back of the groove) should be squarely in the groove of the bag cup with the fabric of the bag between the cage top and the bag cup (see figure 3).
5. Using a socket wrench, tighten the clamp securely, making sure it stays in place over the groove in the cage top. To prevent leakage it is important to use greater than usual torque on the clamp for this application (50-60 in-lbs (22.68 - 27.22 kg) for slotted band type clamps). During tightening, rock the cage slightly to ensure the grooves are mating properly. After tightening you should not be able to rotate the bag and cage by hand. Over-tightening can strip the clamp.

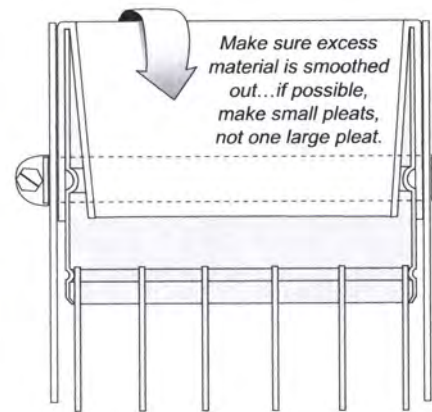


FIGURE 1

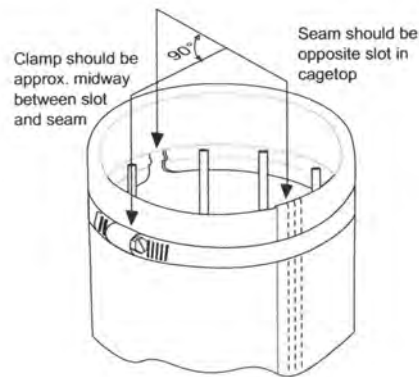


FIGURE 2

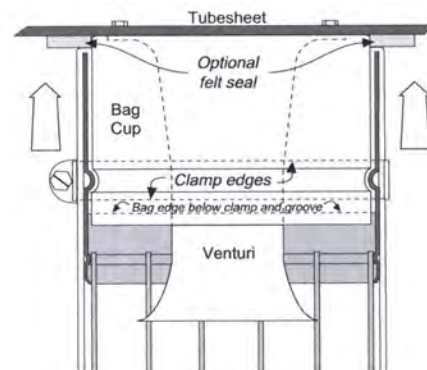


FIGURE 3

Note: if the clamp is placed too high, is not tightened adequately or the fabric is not past the groove, leakage may occur. Do not re-install used clamps.

SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Bag and Cage Installation

Top Load Bag

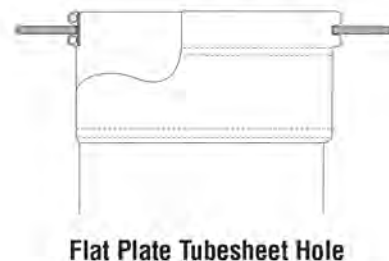
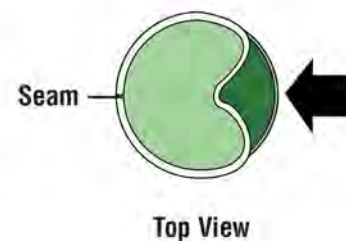
The snapband was developed to improve sealing efficiency. This design eliminates multiple parts, minimizing labor expenses. CAMCORP provides a uniform double beaded gasket in the cuff assembly. This assures a leakproof seal for flat plate tubesheet holes. When installing the bags, follow instructions provided.

Proper Installation of the Cuff

1. Form the snapband into the shape of a kidney. The vertical seam in the cuff should be on the outer radius of the kidney shape.
2. Seat the seam of the cuff into the hole first with the tubesheet fitting between the beads, with one above and one below it.
3. Release the band and it will spring securely into place. Use caution, and ensure all fingers are out of the tubesheet opening when the snapband is released. Make sure the snapband fits squarely in the hole and there are no kinks in the metal band.

NOTE: If you are converting to a snapband bag from some other type of sealing method, the tubesheet holes must be inspected carefully to ensure that proper sealing will result. The surface finish on the inside diameter must be relatively smooth. Any deep grooves or protrusions will cause leakage. A hole that was flame cut, but not ground smooth is one example. The tubesheet holes must be consistent in circumference from one hole to another.

If the circumference difference is determined by measuring, the holes should be checked to the nearest 0.001 in (0.0254 mm). Slight out-of-roundness is acceptable. Take three measurements for each hole and record the average of these three measurements. Compare all the hole averages. The



difference between the largest average and smallest average hole size should not exceed 0.020 in (0.508 mm). Try sample cuff in largest and smallest hole to confirm proper fit.

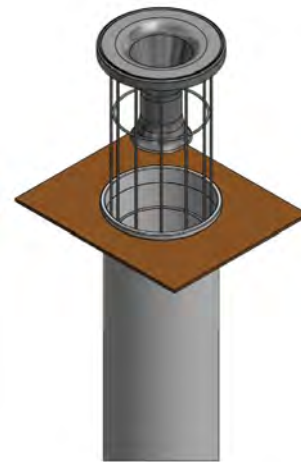
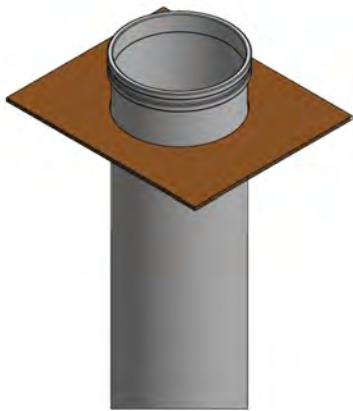
When checking the sample snapband in the hole for fit, push on the edge of the snapband slightly with your thumb to try and move it inward. If a gap occurs easily between the snapband and the edge of the tubesheet hole, leakage may result. If the inside surface of the hole is smooth, check the cuff fit by trying to spin the cuff in the hole. If it spins easily, it may leak.

SECTION 3

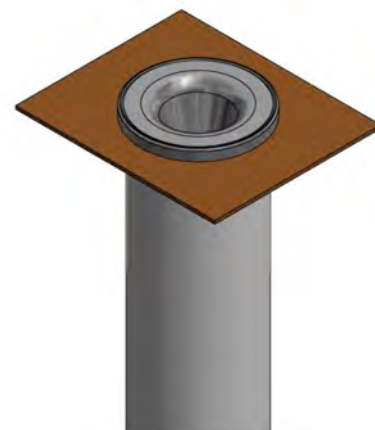
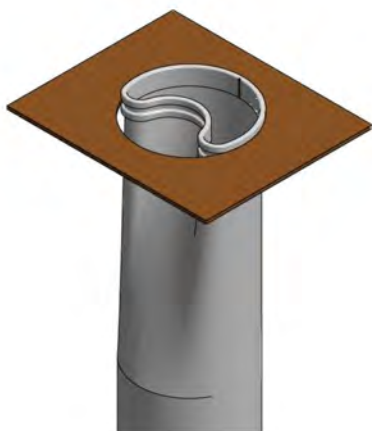
INSTALLATION AND ASSEMBLY INSTRUCTION

Bag and Cage Installation

1. Carefully lower the closed end of the filter bag through the tube sheet hole.
3. Check the fit of the snap band in the tubesheet hole. Bag should be even height above the tubesheet the entire circumference.



2. Form the top of the bag into 'kidney' shaped bend, insert the rounded half groove of the snap band into the tube sheet and let the kidney shape snap back to fill hole. Be sure seam is opposite bend.
4. Carefully lower cage into the filter bag and press down top of cage firmly over the filter snap band.

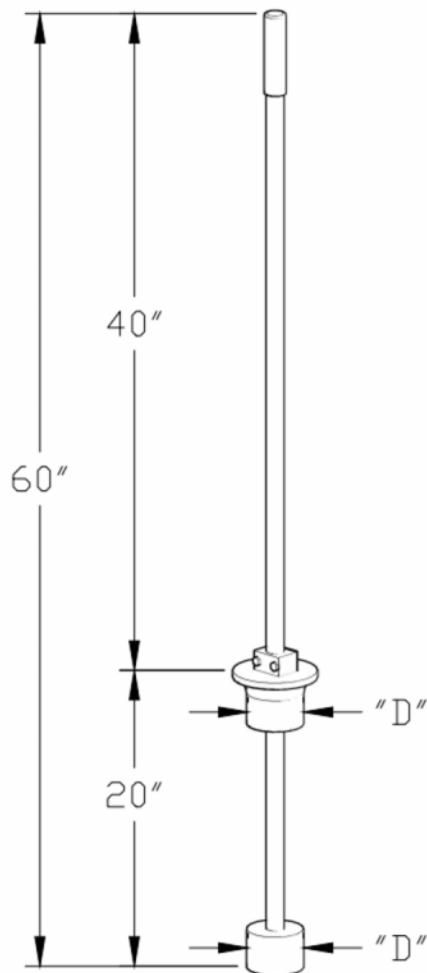
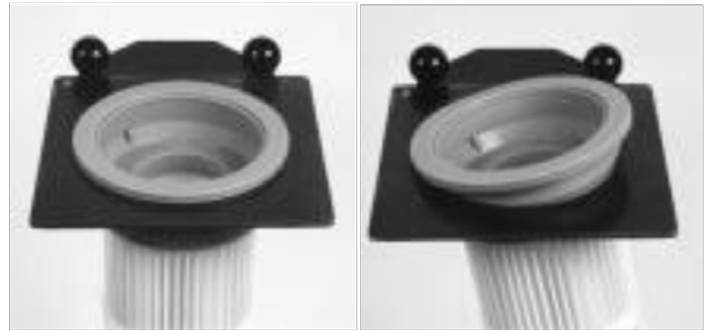


SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Cartridge Installation and Removal Tool

1. Insert tool into cartridge and adjust the top "D" by sliding down inside the core until it pops into the core. There is a set collar on top to adjust the top "D" to whatever depth you need. You will want to have it set at approximately 18-20" (45.72-50.8 cm) the bottom of the tool.
2. Wiggle the tool or turn into a circle until the cartridge comes free.
3. The cartridge will be free and able to be manually picked up.

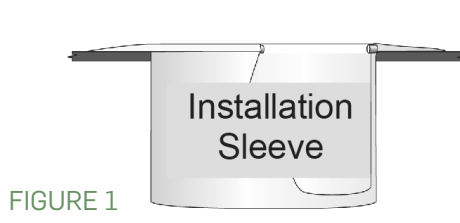


SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Bag and Cage Installation Bottom Load Cartridge

1. Before entering the dust collector and beginning the installation procedure, follow the proper lockout, tagout, and confined space entry procedures. Remove old bags and cages from the collector. Clean the bag cups/venturis so the urethane top will seal on a clean metal surface. Remove any sharp burrs or surface roughness that can cause tears in the urethane filter element tops. If there is access to the clean air plenum, it should be thoroughly cleaned after removing the used bags and cages.



Note for PTFE users: the surface of your ePTFE filter element is very delicate! When moving or handling, care must be taken to prevent any scraping of the surface. Cardboard or other smooth material should be placed on or around rough surfaces (such as door frames and handrails) to protect the filtration surface from damage during handling. Do not stack filter elements more than four high. Inspect each filter element for damage from shipping, storage, or handling. Do not use damaged elements; they may leak or fail prematurely.

If top load sleeve: insert the provided installation sleeve in the tubesheet hole to protect the membrane from the rough edges. (Installation sleeves are located in the box labeled 'Open First'.) Lower the element through the tubesheet hole, slip the installation sleeve off over the top of the element and complete the installation (see Figure 1).

2. Loosely install the clamp between the outer groove markings on the urethane top. The clamp should be on the top, just tight enough to stay in place. Do not re-install used clamps.



FIGURE 2

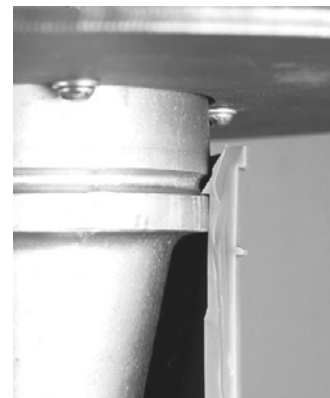


FIGURE 3

3. Carefully lift the pleated filter element and work the urethane top of the filter element onto the bags cups/venturi (see Figure 2). Protect the media surface during handling and installation to avoid any damage to the filter media pleats.
4. Gently push the filter element up onto the bag cup/venturi until the flexible lip in the inner urethane top snaps into place on the groove in the bag cup/venturi. Pull down slightly or rotate the element to ensure the internal lip is properly engaged in the groove (see Figure 3).

If properly installed, the urethane top of the element will not touch the underside of the tubesheet.

5. Center the clamp in the groove in the urethane top. Using a nut driver, hand tighten the clamp. Care should be taken when tightening the clamp:
 - Do not over tighten. Over tightening may cause a cutting of the urethane.
 - If the urethane material extrudes into the clamp band notches or around the edge of the clamp, over tightening has occurred.
 - Use of 'lined' clamp is recommended, which protects the

SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Bag and Cage Installation Bottom Load Cartridge

urethane from damage. Maximum width of the clamp band is 9/16" (1.43 cm).

After tightening, you should not be able to rotate the filter element by hand. Make sure the filter elements hang plumb and are not touching each other or the collector wall (see Figure 4).



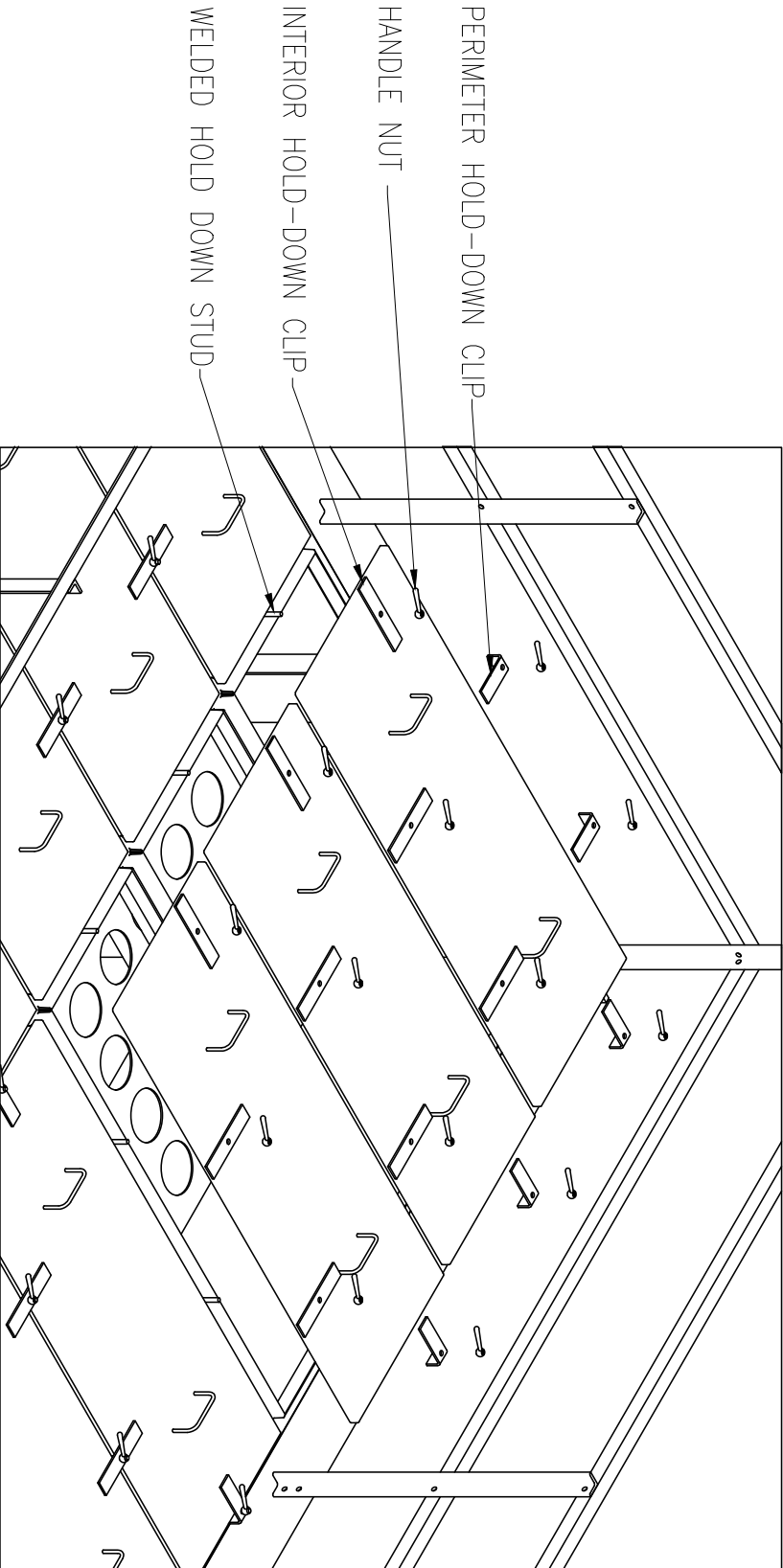
FIGURE 4

Operation Procedures for Bottom Load Collectors

- Leave the timer adjustments set as specified by the baghouse manufacturer until operation stabilizes (usually 24-48 hours). We also recommend a precoating agent to help establish an initial control layer. Once operation has stabilized, the time interval between pulses should be adjusted daily until the longest off-time possible has been attained without exceeding the designed differential pressure. Excessive pulsing will lead to shortened filter life. Set the pulse on-time at 0.06-0.10 seconds.
- The pressure of the compressed air at the baghouse air header should be set and adjusted as follows when using pleated filter elements: the initial setting should be 60 psi. Increase only if the differential pressure cannot be maintained. Then increase in 5-10 psi increments until it

reaches a maximum of 90 psi.

- Only dry compressed air should be supplied to the baghouse cleaning system.
- All inlet ducts should be equipped with baffles or deflector plates to prevent high velocity impingement of the particulate on the filter surface. Dust should never be allowed to build or stand in the hoppers.
- Verification of airflow should be completed after startup of the baghouse. In some cases, the airflow will be increased if proper airflow dampering or other method of controlling airflow is not utilized. Set the dampers or fan speed to the minimum required airflow at the ventilation point. If not controlled, increased pressure drop may occur due to increased grain loading and high gas velocity between filter elements.



LIFT-OFF DOOR REMOVAL

1. TURN OFF ALL LINES, FANS, BLOWERS, ETC. CONNECTED TO THE UNIT
2. REMOVE ALL HANDLE NUTS AND CLIPS AROUND DESIRED DOOR(S)
3. LIFT DOOR OFF AND PLACE OFF TO THE SIDE



TITLE:

8702 PULINA ROAD, LEBANON, KS 66215 PHONE: 913-831-5740 FAX: 913-831-5771

TOP-LOAD LIFT OFF DOOR REMOVAL

DATE:	DRAWN BY:	CHK. NO.:	REVISION:
01/08/10	DJR		

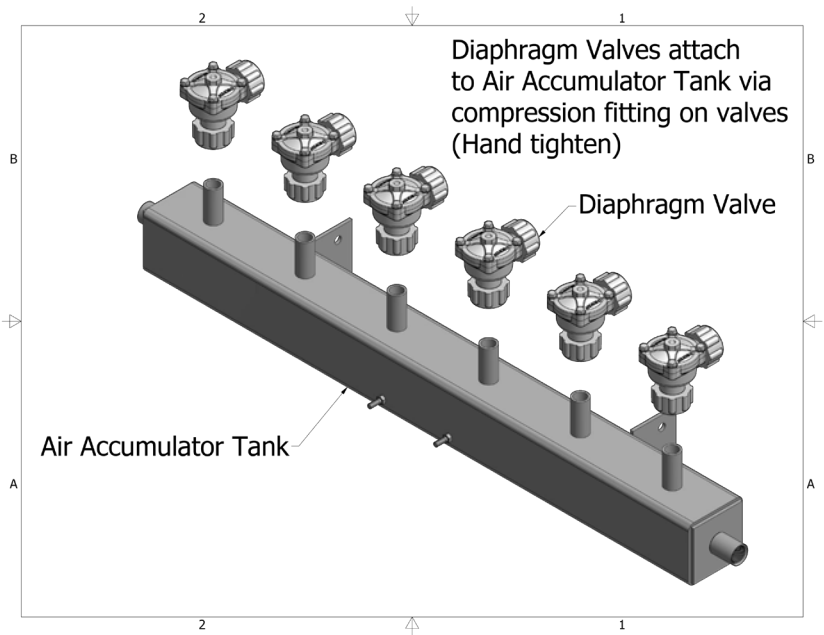
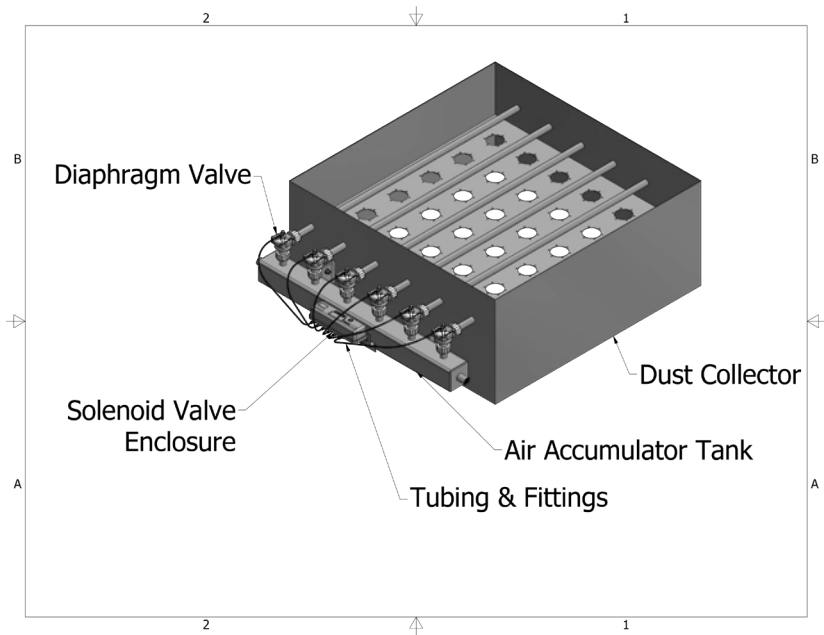
SECTION 3

INSTALLATION

AND ASSEMBLY

INSTRUCTION

Bottom Load and Top Load Header Assembly



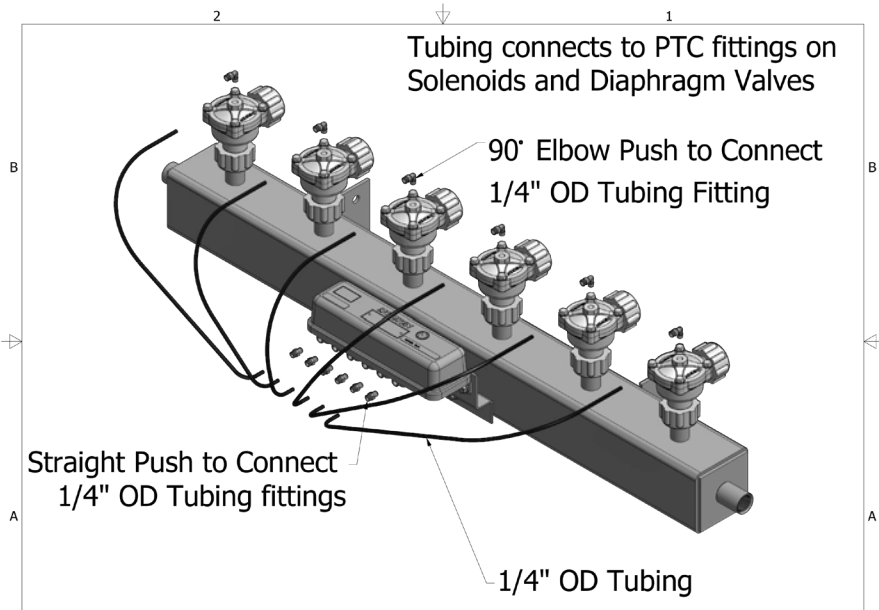
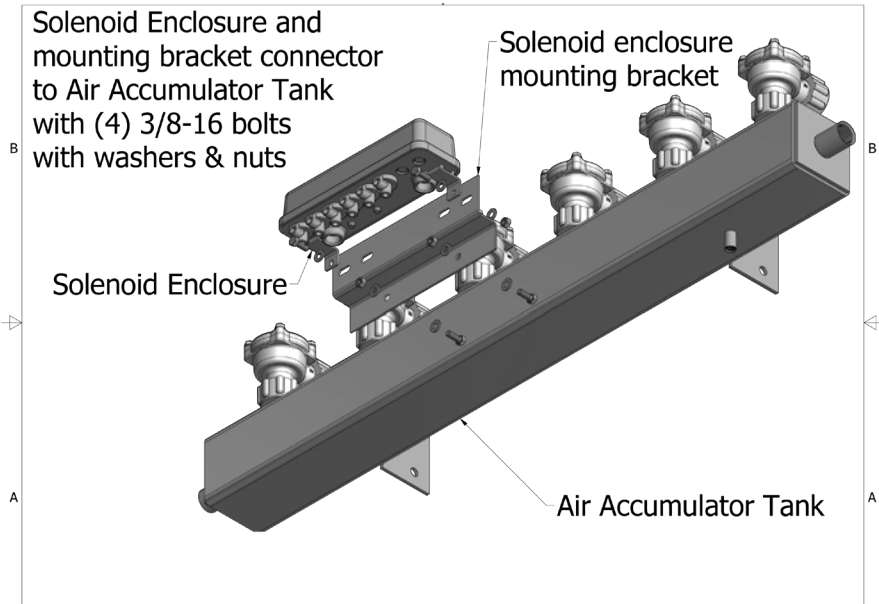
SECTION 3

INSTALLATION

AND ASSEMBLY

INSTRUCTION

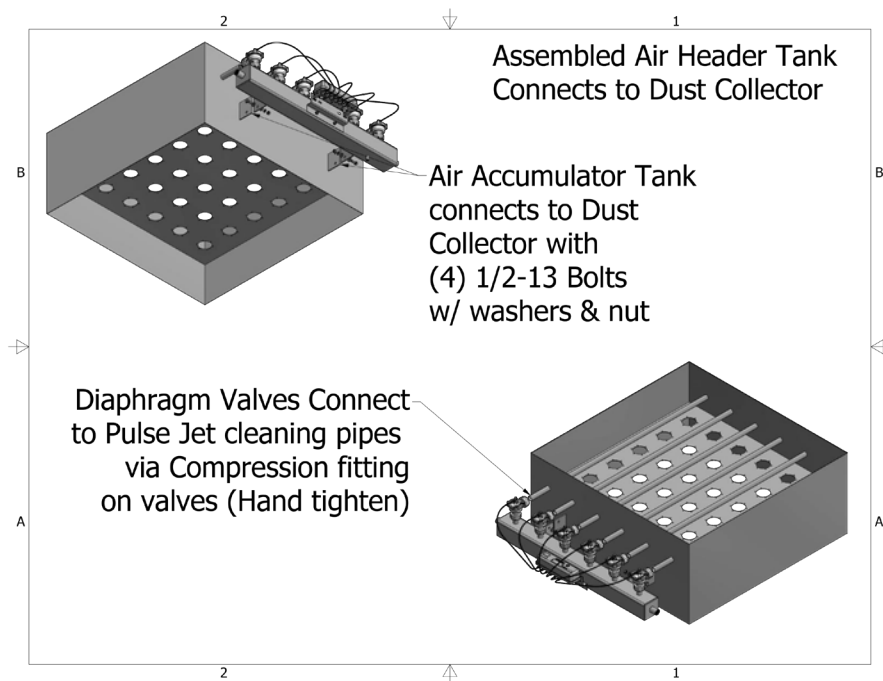
Bottom Load and Top Load Header Assembly



SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

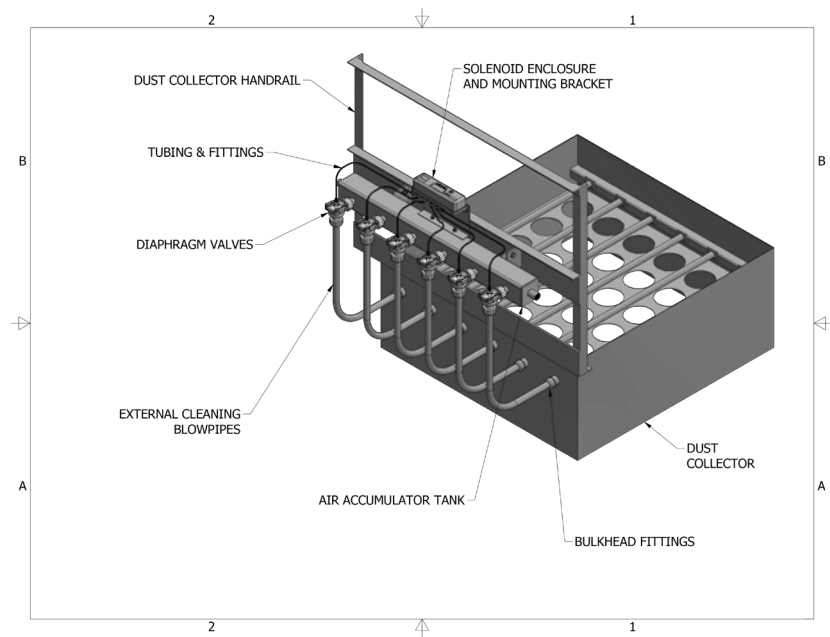
Bottom Load and Top Load Header Assembly



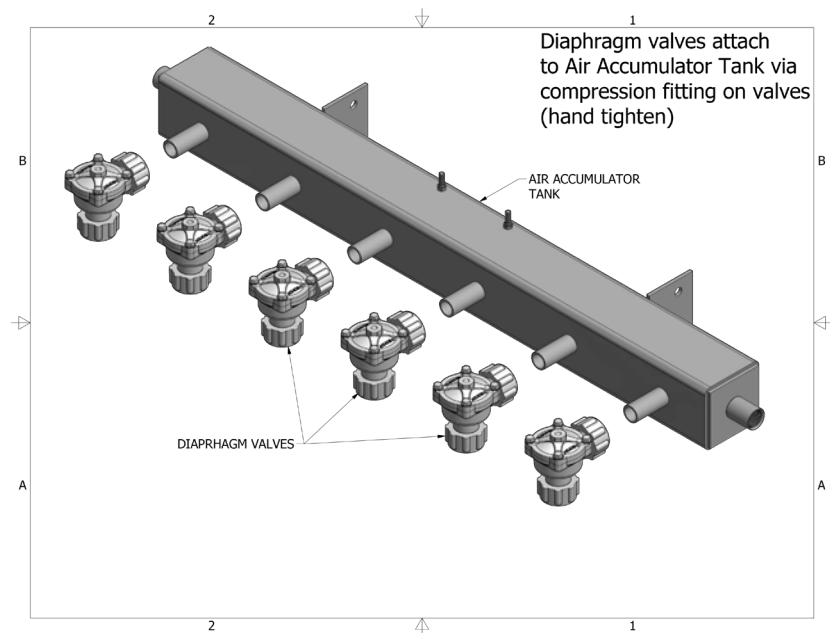
SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Bottom Load and Top Load Header Assembly



1. Mount the diaphragm valves on the air accumulator tank. Ensure to use the Air In side. Start the nuts on the valve but leave loose for easier install of the bent blowpipes. This step is typically done in the factory prior to shipment.

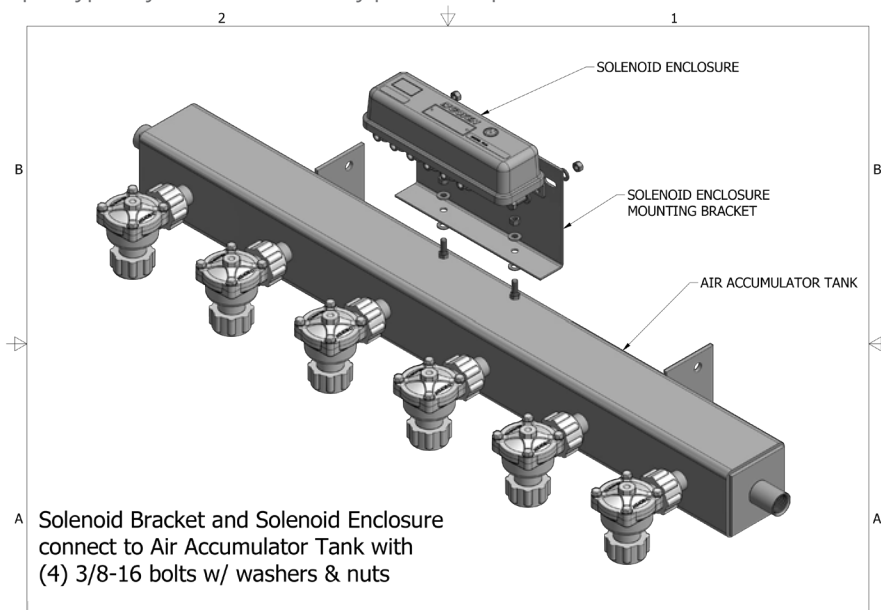


SECTION 3

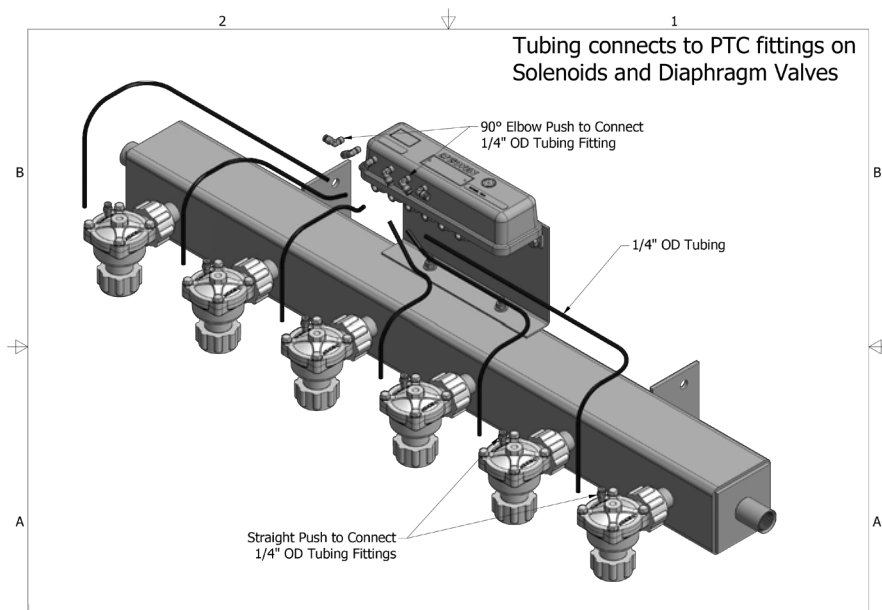
INSTALLATION AND ASSEMBLY INSTRUCTION

Bottom Load and Top Load Header Assembly

2. Mount the solenoid bracket to the air accumulator tank via the mounting studs on the tank and then mount the solenoid enclosure to the bracket. This step is typically done in the factory prior to shipment.



3. Run and connect 1/4" tubing (nylon tubing is typical, other options available) from the solenoid enclosure to each diaphragm valve. This step is typically done in the factory prior to shipment.

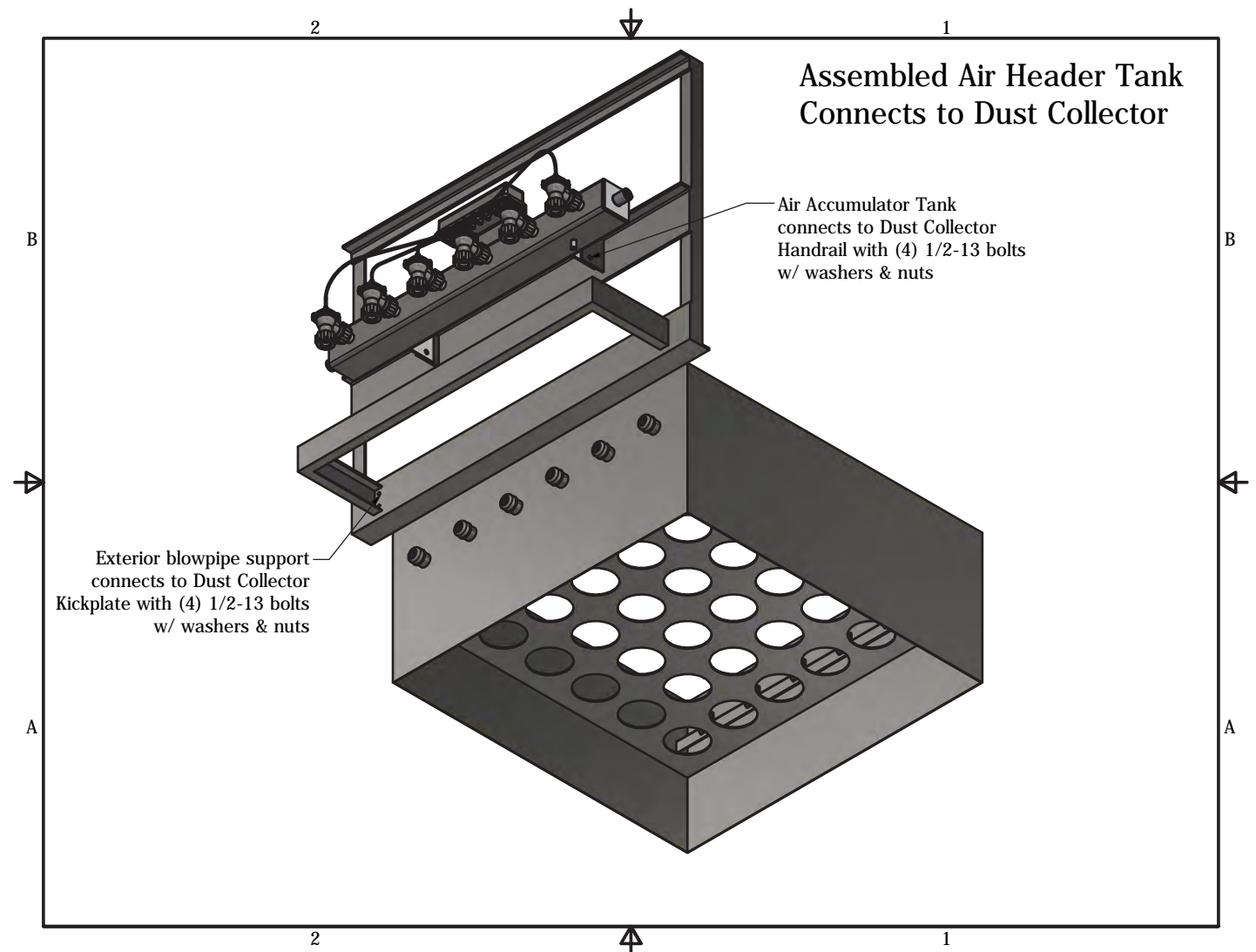


SECTION 3

INSTALLATION AND ASSEMBLY INSTRUCTION

Bottom Load and Top Load Header Assembly

4. Ensure the hand rail is level and all bolts tightened before mounting the air accumulator tank. Once ready, mount the accumulator to the handrails, level and tight all bolts so it does not move. Mount the exterior blowpipe support to the kickplate, level and tighten all bolts.



SECTION 3

INSTALLATION

AND ASSEMBLY

INSTRUCTION

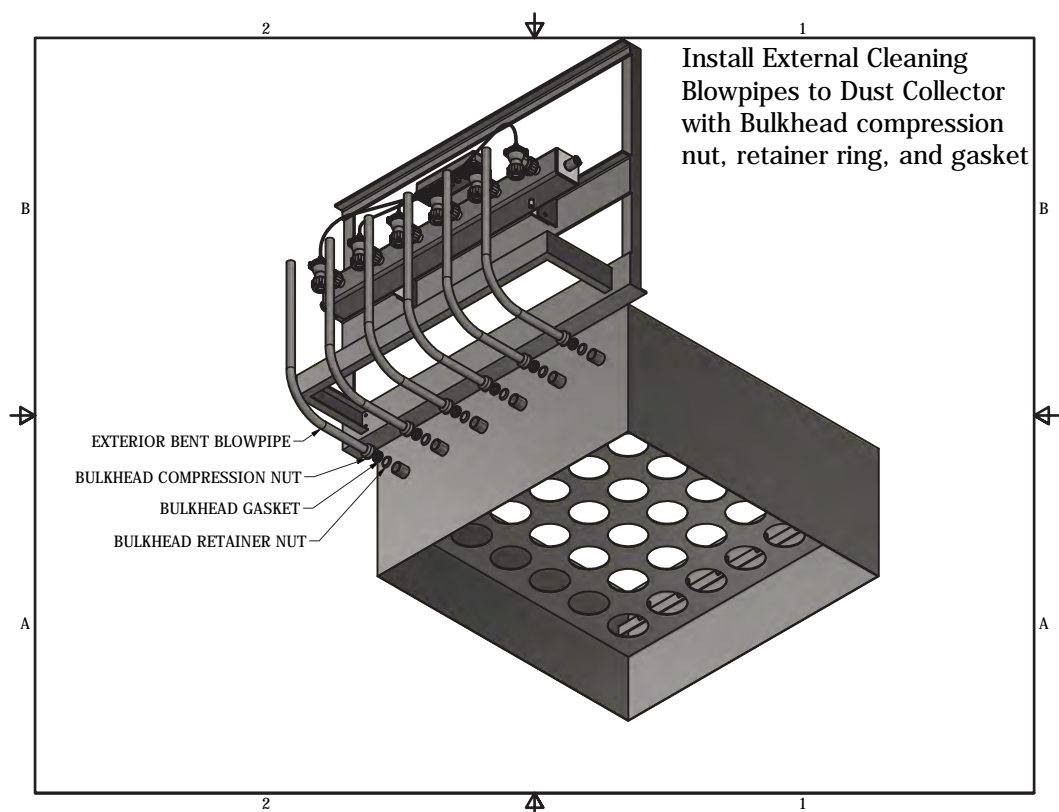
Bottom Load and Top Load Header Assembly

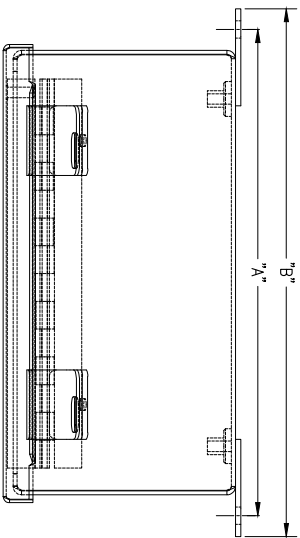
5. Mount the bent blowpipes. Starting with the outer most blowpipes, remove the compression nut, retainer ring, and gasket from the diaphragm valve and place on the blowpipe. Remove the nut, ring, and gasket from the Guardian coupling and place on the blowpipe.

Insert the pipe into the diaphragm valve first as far as possible. Next place the pipe in the Guardian body, some force maybe necessary to get it into the Guardian but it will go in. The blowpipe should rest on the blowpipe support bracket. Start the nuts on both the valve and Guardian (DO NOT CROSS THREAD EITHER), hand tighten the nuts, ensuring the blowpipe is level.

Once level, install the U-bolt to connect the blowpipe to the blowpipe support. The blowpipe should rest flat on the support channel; no gaps should be visible between the pipe and support. If there is the pipe is either to far or not far enough into the Guardian coupling.

Work your way in from the outer blowpipes to the center of the accumulator tank. Once all blowpipes are installed use a pipe wrench or channel lock and tighten all compression nuts so they snug. DO NOT OVER TIGHTEN THE COMPRESSION NUTS.





STANDARD TIMER						
TIMER TYPE	DIMENSIONS					ENCLOSURE RATING AVAILABLE
	"A"	"B"	"C"	"D"	"E"	
3-POSITION	8 3/4"	9 1/2"	4"	5"	4 1/4"	NEMA 4/NEMA 4X
6-POSITION	8 3/4"	9 1/2"	4"	5"	4 1/4"	NEMA 4/NEMA 4X
10-POSITION	8 3/4"	9 1/2"	4"	5"	4 1/4"	NEMA 4/NEMA 4X
20-POSITION	10 3/4"	11 1/2"	6"	7"	4 1/4"	NEMA 4/NEMA 4X
32-POSITION	10 3/4"	11 1/2"	6"	7"	4 1/4"	NEMA 4/NEMA 4X

TIMER BOARD ADJUSTMENTS (RECOMMENDED AT START-UP)		
VALVE SIZE	PULSE DURATION	INTERVAL
3/4"	.10 TO .12 SECONDS	20 TO 25 SECONDS
1"	.10 TO .12 SECONDS	20 TO 25 SECONDS
1 1/2"	.06 TO .08 SECONDS	20 TO 25 SECONDS

OPERATING VOLTAGE: 95 to 265 VOLTS A.C. 50/60 HZ

OUTPUT: SOLID-STATE SWITCH RATED AT 150 VA MAX PER OUTPUT

PROTECTION:
TRANSIENT VOLTAGE: 72 JOULE VARISTOR
SHORT CIRCUIT PROTECTION: 3.15 AMP FUSE

ENVIRONMENTAL:

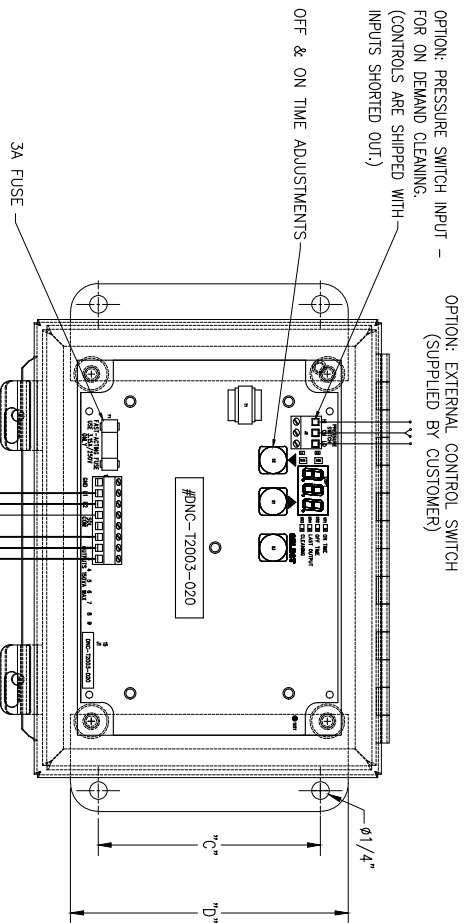
OPERATING TEMPERATURE: -40°F TO 150°F (-40°C TO 66°C)

*END USER MUST WIRE TIMER BOARD TO SOLENOID ENCLOSURE

*TIMER CAN BE MOUNTED ANY DISTANCE FROM SOLENOID ENCLOSURE

*SOLENOIDS REQUIRED TO MATCH THE NUMBER OF DIAPHRAGM VALVES TO PULSE

*LARGER UNITS MAY PULSE (2) VALVES AT ONCE. CONSULT FACTORY.



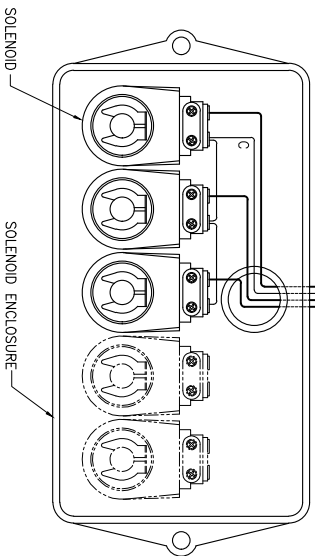
24 VDC, 120 VAC, 220V
OPTIONS AVAILABLE

3A FUSE

OPTION: PRESSURE SWITCH INPUT -
FOR ON DEMAND CLEANING.
(CONTROLS ARE SHIPPED WITH
INPUTS SHORTED OUT.)

OPTION: EXTERNAL CONTROL SWITCH
(SUPPLIED BY CUSTOMER)

OFF & ON TIME ADJUSTMENTS



SOLENOID

SOLENOID ENCLOSURE



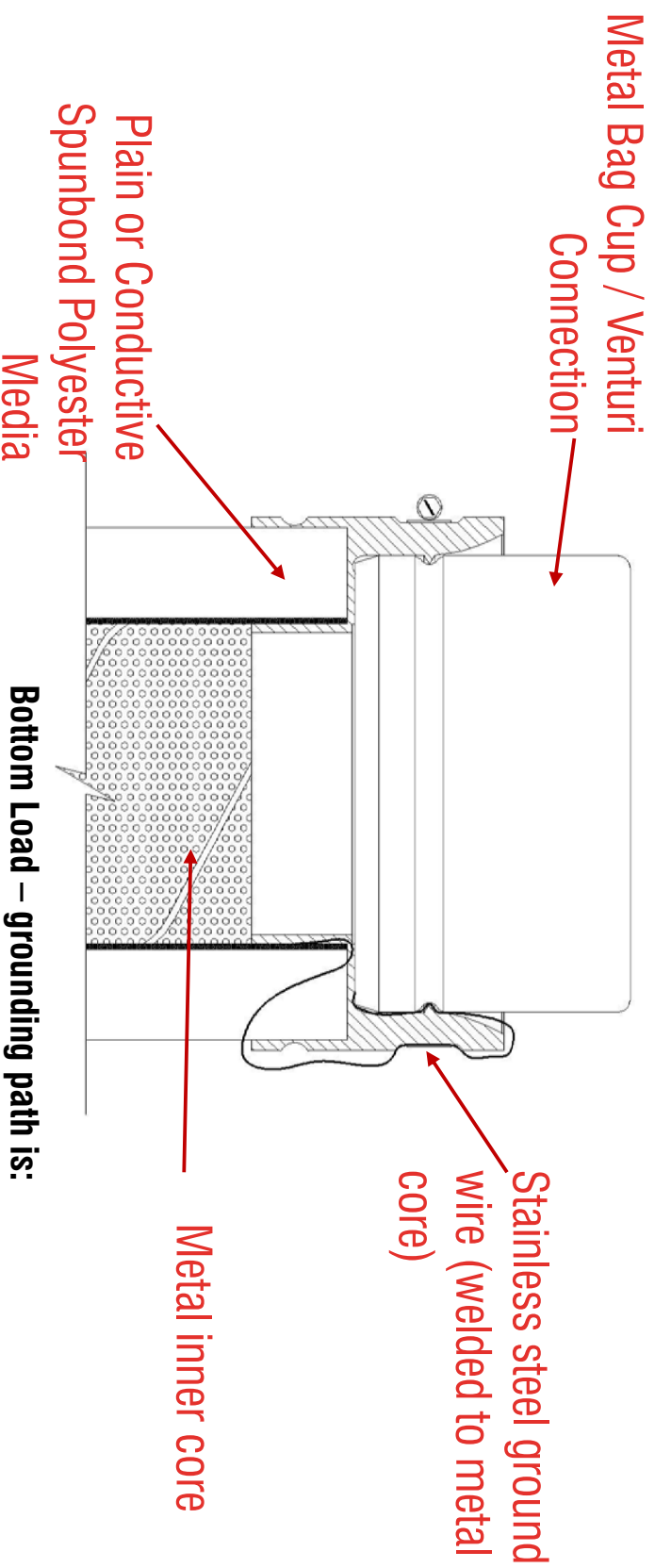
9712 PULM RD., DUBLIN, CA 94568 PHONE: 916-831-0700 FAX: 916-831-0071

TITLE:

NEMA 4/4X TIMER BOARD WIRING DIAGRAM

DATE:	DRAWN BY:	CHK. NO.:	REVISION:
10/19/18	BLB		

BL– Metal Core with Ground Wire Design



Bottom Load – grounding path is:

1. Media (if conductive)
2. Metal core
3. Ground wire
4. Metal bag cup connection
5. Tubesheet



8723 PLYMOUTH ROAD, LYNN, MA 01905 PHONE: 978-451-0700 FAX: 978-451-4271

TITLE:

CARTRIDGE GROUNDING

DATE:	DRAWN BY:	DATE:	REVISION:
01/10/19	BLB		

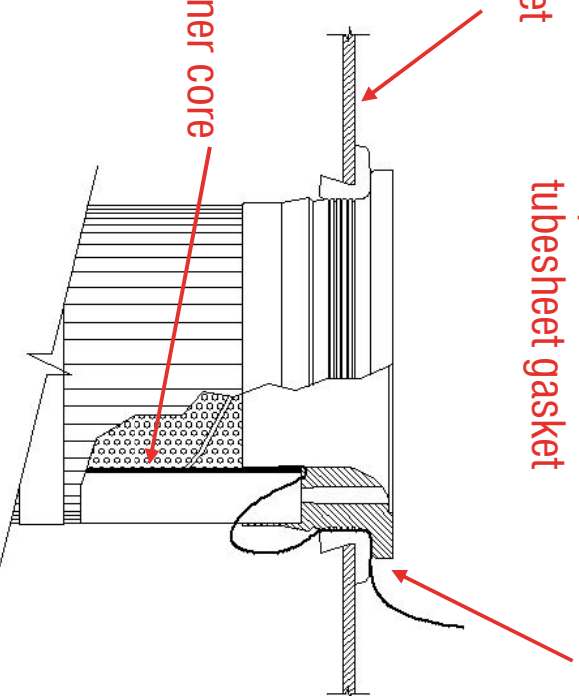
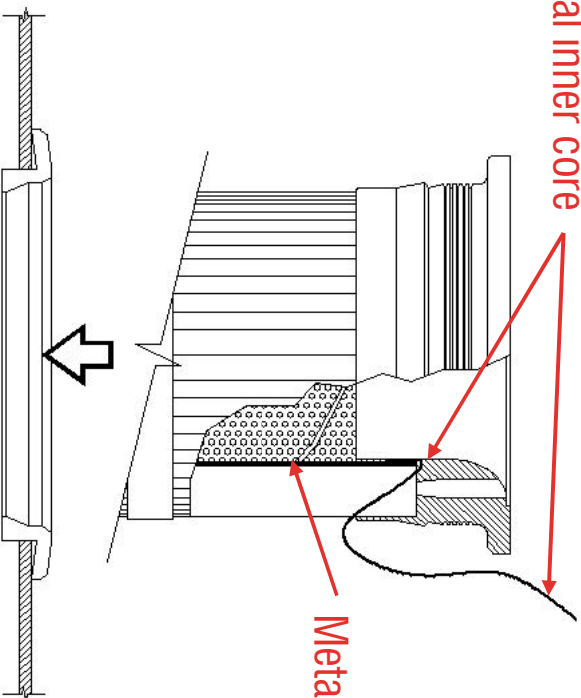
TL Ground Wire Placement

Stainless steel braided
ground strap – welded to
metal inner core

Tubesheet

Ground strap placed between OD of
top mold and ID of conductive EPDM
tubesheet gasket

Metal inner core



Grounding Instructions

1. Ensure ID of tubesheet hole is bare metal for conductivity purposes. Remove rust, scale, paint or coating prior to installing tubesheet gasket.
2. Place conductive EPDM tubesheet gasket in tubesheet hole. Conductive EPDM gasket will be BLACK. GRAY EPDM gasket is NOT conductive. DO NOT USE!
3. Grounding strap must be positioned to fit between OD of TL top mold and ID of conductive EPDM gasket.
4. Stainless steel braided ground strap is mechanically fastened to metal inner core.

Conductive EPDM gasket
placed in tubesheet.

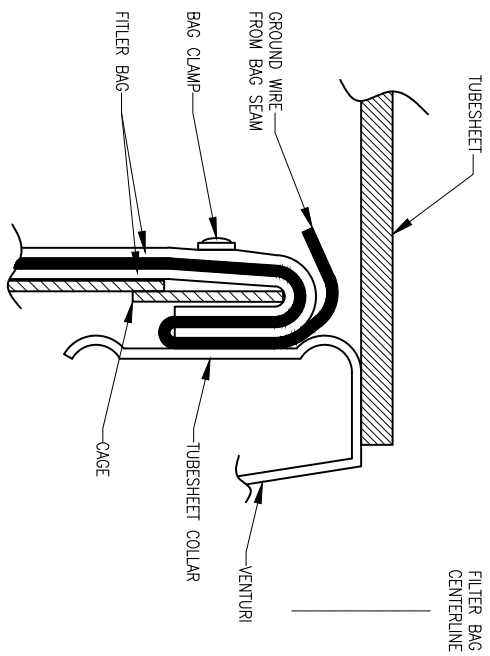


8723 PULASKI ROAD, LEBANON, KS 66215 PHONE: 817-481-0700 FAX: 817-481-4271

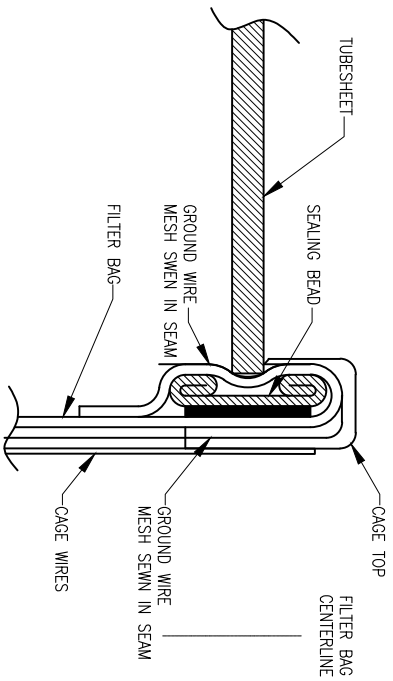
TITLE:

CARTRIDGE GROUNDING

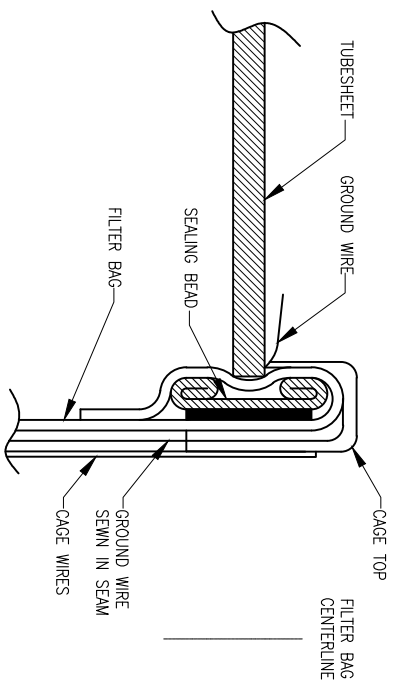
DATE:	DRAWN BY:	CHKD. NO.:	REVISION:
01/10/19	BLB		



BOTTOM ACCESS STYLE GROUNDWIRE

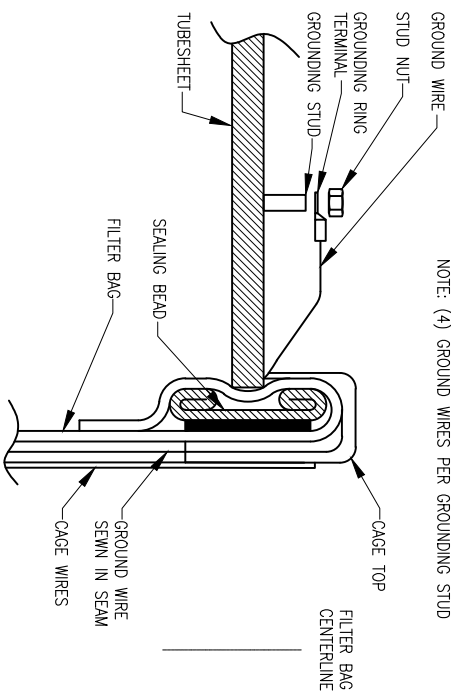


TOP ACCESS STYLE GROUNDWIRE MESH



TOP ACCESS STYLE GROUNDWIRE

NOTE: (4) GROUND WIRES PER GROUNDING STUD



TOP ACCESS STYLE GROUNDWIRE
W/ GROUNDING STUD

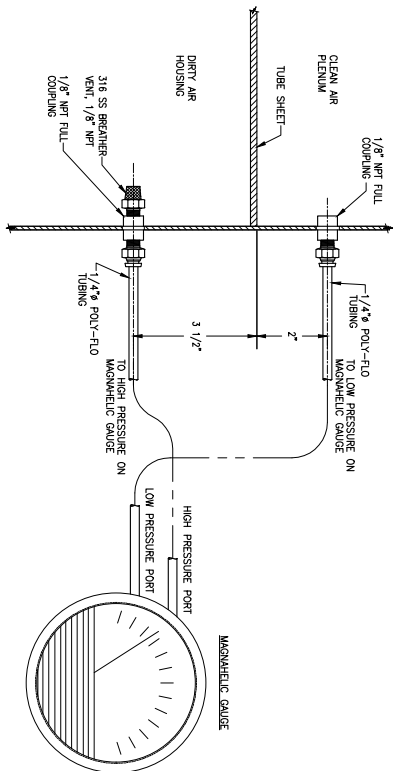


8723 PULASKI ROAD, LEBANON, TN 37035 PHONE: 615-881-0700 FAX: 615-881-4271

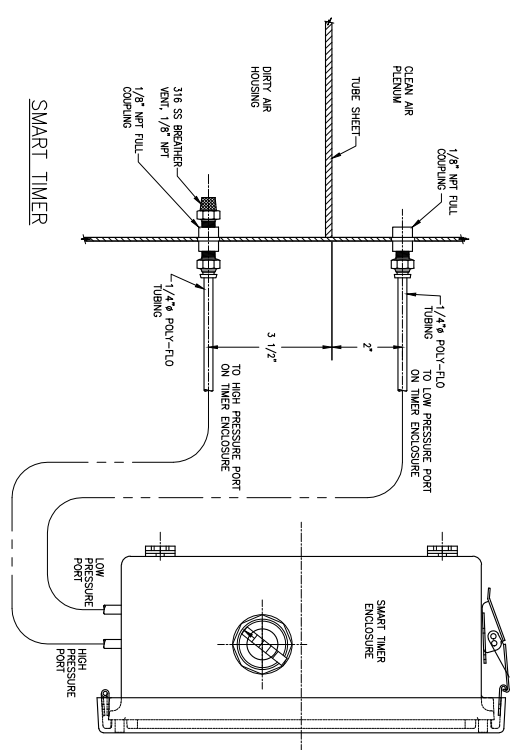
TITLE:

FILTER BAG GROUNDING

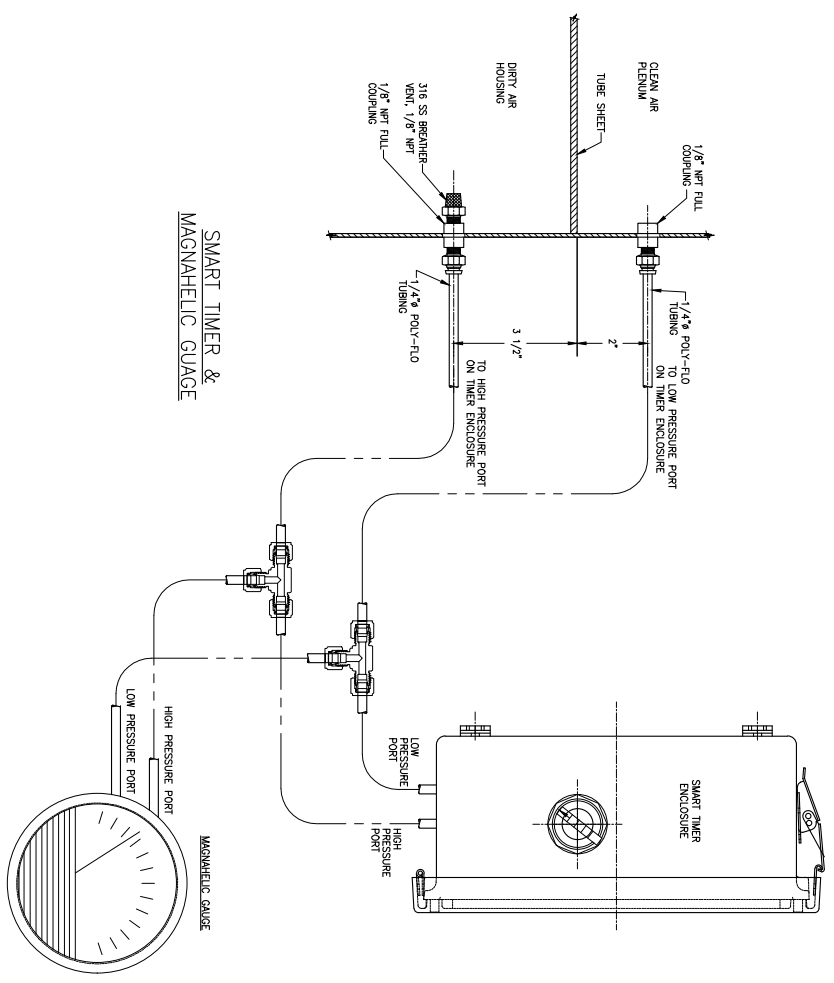
DATE:	DRAWN BY:	CHK. NO.:	REVISION:
01/04/19	BLB		



STANDARD:
MAGNAHELIC GUAGE



SMART TIMER



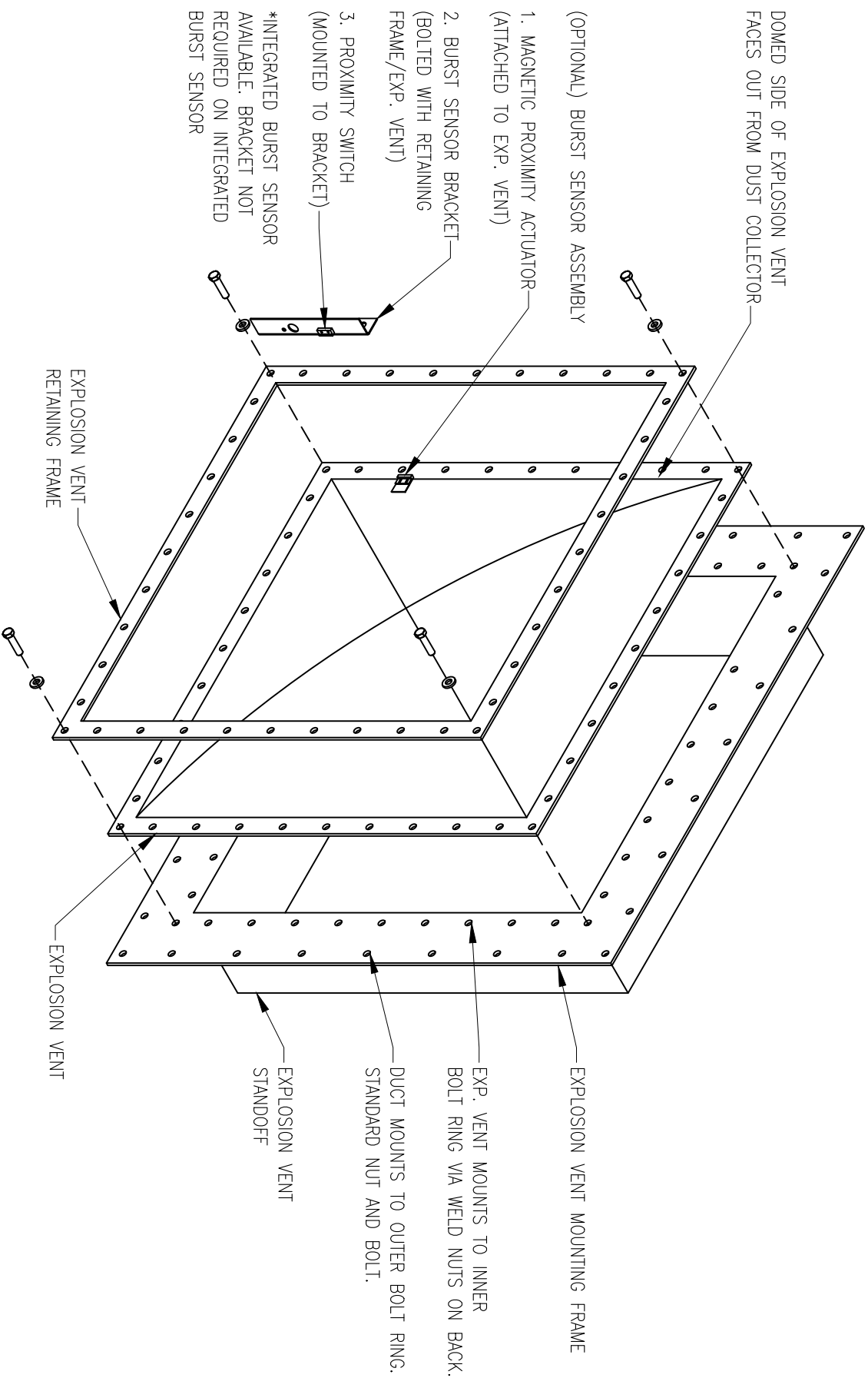
SMART TIMER &
MAGNAHELIC GUAGE

TITLE:



DIFFERENTIAL PRESSURE KITS

DATE:	DRAWN BY:	ENG. NO.:	REVISION:
11/19/18	BLB		



NOTE:

USE CARE WHEN HANDLING VENTS.
VENTS ARE VERY FRAGILE AND EASILY DAMAGE



9712 PULASKI ROAD, LEBANON, KY 40035 PHONE: 615-451-0700 FAX: 615-451-4071

TITLE:

DUCTED EXPLOSION VENT MOUNTING FRAME

DATE:

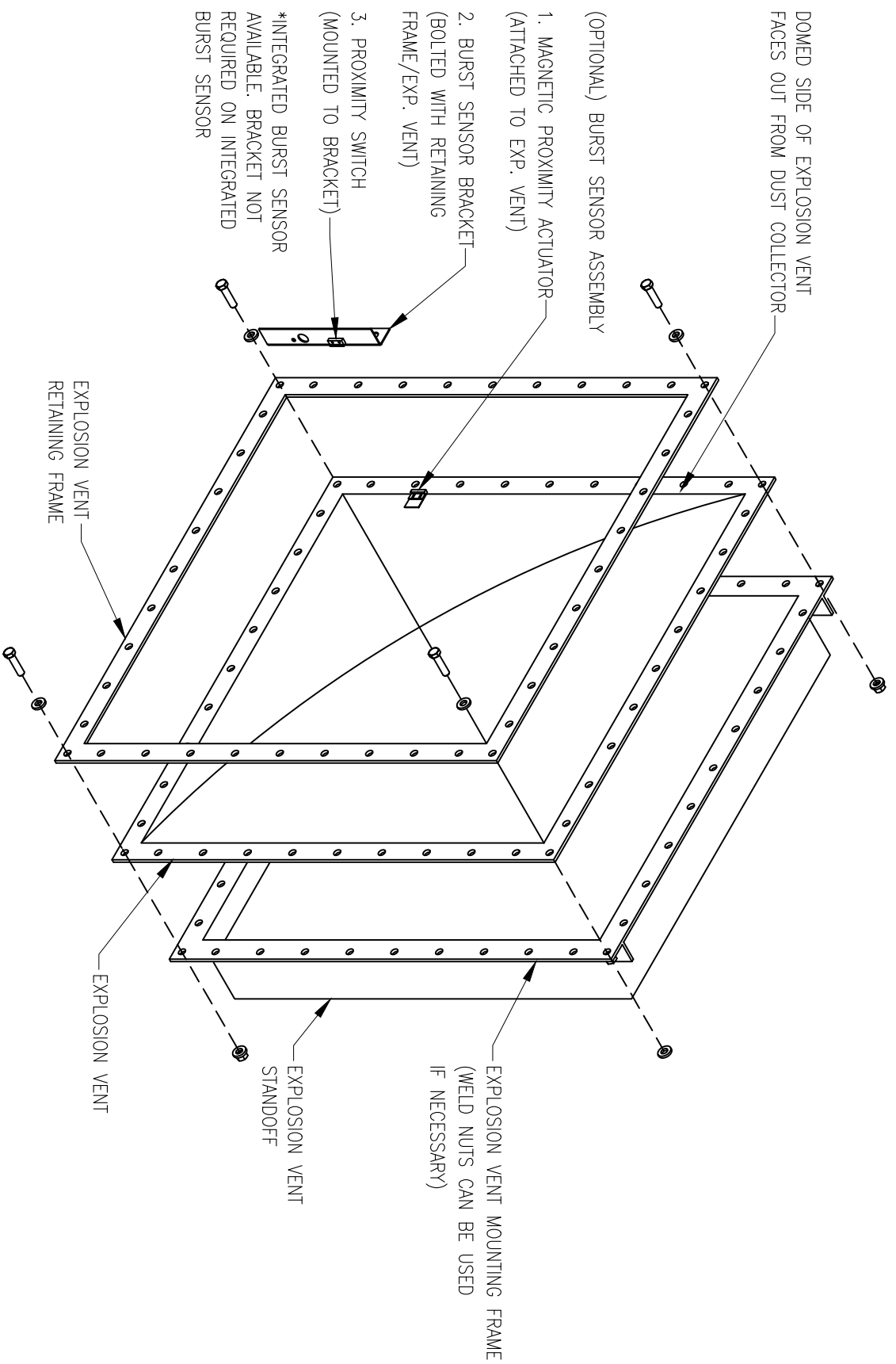
11/19/18

DRAWN BY:

BLB

CHKD. NO.:

REVISION:



NOTE:

USE CARE WHEN HANDLING VENTS.
VENTS ARE VERY FRAGILE AND EASILY DAMAGE



9712 PULASKI ROAD, LEBANON, KY 40035 PHONE: 615-451-0700 FAX: 615-451-4071

TITLE:

EXPLOSION VENT MOUNTING FRAME

DATE: 11/19/18
DRAWN BY: BLB
DWG. NO.:

REVISION:

SECTION 4

COMPONENT

INFORMATION

The following pages show details of the mechanical and electrical components of a typical dust collector. Below is information for identifying each component and repair kit if applicable.

QR Code - Ordering Spare Parts

CAMCORP makes ordering replacement parts easier and faster with QR code stickers. All you need is a mobile device and you've got instant access to your equipment's common spare parts and part numbers in one location.

Here's how it works:

1. Locate the QR sticker on your dust collection or pneumatic conveying equipment.
2. Open your QR code reader app on your mobile device. You can download an app by searching "QR code reader" in the Google Play (Android) or App Store (Apple).
3. Hold your phone over the QR code and your spare parts list will appear complete with part numbers and CAMCORP Parts contact information.

Don't have a QR sticker on your equipment? Contact the CAMCORP Parts Department to request your sticker today.

QR Code - Download Equipment Manual

Access to an electronic copy of this manual can be found by scanning the QR code sticker on your CAMCORP equipment. Simply follow the same instructions as Ordering Spare Parts.



BAGS

Standard or Custom Built to Specifications



Description

CAMCORP provides OEM replacement dust bags in a host of materials, depending on your baghouse requirements and we keep a large inventory of filter fabrics on-hand to meet the needs of our OEM customers.

CAMCORP provides the best bag or filtration solution – whether Pulse Jet, Shaker, or Reverse Air – for your industry and application.

Specifications

Types of Fabrics:

Aramids (Nomex®, Conex®, Charming®)

Acrylic

Cotton

Fiberglass

Polyester

PPS (Formerly called Ryton®)

P84®

Homopolymer Acrylic

Polypropylene

PTFE

& Many Other Filter Fabrics

Types of Fabrics:

simple

"Raw-edge top, disc bottom"

Snap band top

Flange top

Skirt top

Wire ring top

Multiple bottoms

Wear strips

Grounding straps

CAMCORP

A MEMBER OF THE SCHEUCH GROUP

ALL STATED SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION. VISIT CAMCORPINC.COM FOR THE LATEST INFORMATION.

bags rev. 11/18 ©CAMCORP, INC.

PLEATED FILTER ELEMENTS

Bottom Load Style 4-3/16", 45 pleats

Specification

- Bottom load style pleated filter element (PFE)
- Fits most industry standard 4-3/16" (10.64 cm) diameter venturi/bag cup connections
- Designed for smaller sized venturi bell mouth (<3.3" (8.38 cm) diameter) or designs without venturis
- Short profile polyurethane top boot maximizes available filter area in shorter filter designs
- Replaces 4-5/8" (11.75 cm) diameter bag and cage assembly

Standard Configuration

- 3.6" (91 mm) inner core diameter
- 0.71" (18 mm) nominal pleat depth
- Standard pleat count - 45 pleats
- Molded top boot and bottom puck made from bright white soft polyurethane rated to 225°F (107°C)
- Polyurethane, polypropylene and polyester components are safe for food contact

Options

- Special pleat counts (available range: 35-50 pleats)
- Polypropylene Core rated to 180°F (82°C)
- Galvanized and SS perforated metal (spiral formed) for temperatures > 180°F and for high pressure/vacuum applications.
- Grounded designs (with conductive media, metal core and stainless steel grounding wire extensions)

Filter Media

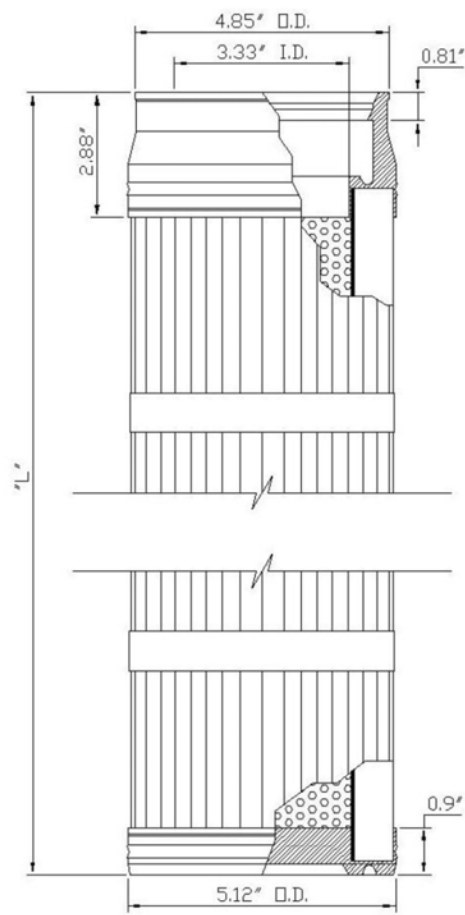
- Base filter media: 100% spunbond polyester (SPBE)
- Filtration efficiency: >99.9% for particle size range between 0.2 µ-2.0 µ - BGIA Dust Class "M" rating
- Weight: 8.0 oz/yd² (260 g/m²)
- Permeability: 15-30 acfm Frazier permeability at 0.5" (12.7 mm) w.g dP
- Mullenburst strength: 350 psi

MEDIA DESIGNATION	MEDIA DESCRIPTION
FM0103	100% spunbond polyester (SBPE)
FM0105	100% SBPE with hydrophobic & oliophobic finish
FM0109	100% SBPE with conductive grid
FM0203	100% SBPE with ePTFE membrane
FM0209	100% SBPE with conductive grid & ePTFE membrane

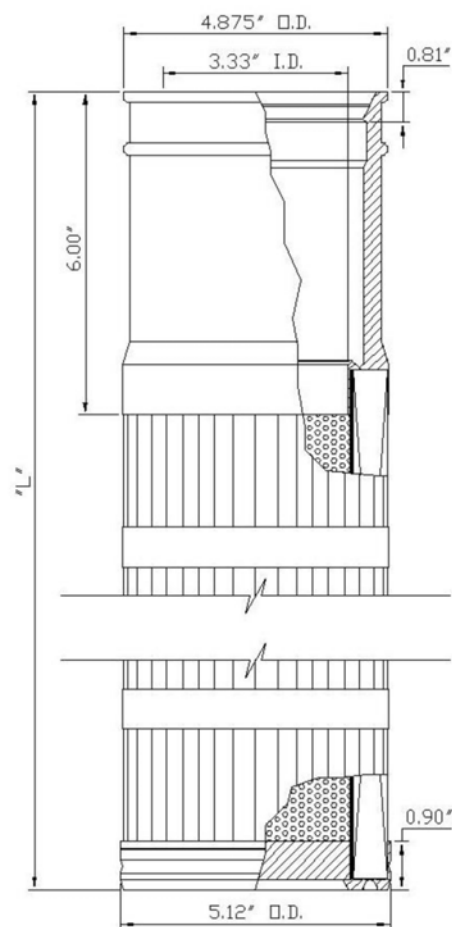
PLEATED FILTER ELEMENTS

Diagrams - Bottom Load Style

4-3/16", 45 pleats



NOMINAL LENGTH	OVERALL LENGTH "L"	FILTER AREA (sf) @ 45 pleats	NO. OF STRAPS
1.64' (0.5 m)	21.7" (55.12 cm)	8.7	1
2.20' (0.67 m)	28.2" (71.63 cm)	11.6	2
3.28' (1.0 m)	41.4" (1.05 m)	17.5	3
4.59' (1.4 m)	57.1" (1.45 m)	24.5	4
6.56' (2.0 m)	80.8" (2.05 m)	35.0	6



NOMINAL LENGTH	OVERALL LENGTH "L"	FILTER AREA (sf) @ 45 pleats	NO. OF STRAPS
1.64' (0.5 m)	25.0" (63.5 cm)	8.8	1
3.28' (1.0 m)	44.7" (1.14 m)	17.5	3
4.59' (1.4 m)	60.4" (1.53 m)	24.5	4
6.56' (2.0 m)	84.1" (2.14 m)	35.0	6

PLEATED FILTER ELEMENTS

Bottom Load Style - 5-1/8", 45 pleats

Specification

- Bottom load style pleated filter element (PFE)
- Fits most industry standard 5-1/8" (13.02 cm) diameter venturi/bag cup connections
- Designed for smaller sized venturi bell mouth (<3.3" (8.38 cm) diameter) or designs without venturis
- Short profile polyurethane top boot maximizes available filter area in shorter filter designs
- Replaces 5-3/4" (14.61 cm) diameter bag and cage assembly

Standard Configuration

- 3.6" (91 mm) inner core diameter
- 1.0" (25 mm) nominal pleat depth
- Standard pleat count - 45 pleats
- Molded top boot and bottom puck made from bright white soft polyurethane rated to 225°F (107°C)
- Polyurethane, polypropylene and polyester components are safe for food contact

Options

- Special pleat counts (available range: 35-60 pleats)
- Polypropylene Core rated to 180°F (82°C)
- Galvanized and SS perforated metal (spiral formed) for temperatures > 180°F and for high pressure/vacuum applications.
- Grounded designs (with conductive media, metal core and stainless steel grounding wire extensions)

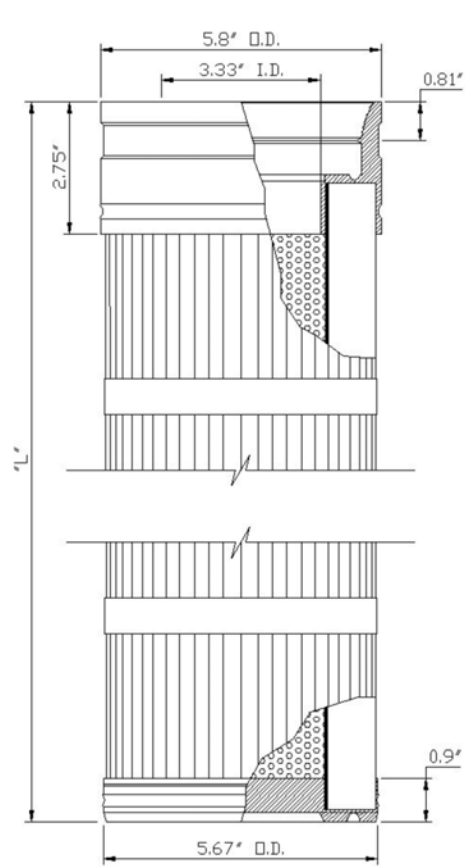
Filter Media

- Base filter media: 100% spunbond polyester (SPBE)
- Filtration efficiency: >99.9% for particle size range between 0.2 µ-2.0 µ - BGIA Dust Class "M" rating
- Weight: 8.0 oz/yd² (260 g/m²)
- Permeability: 15-30 acfm Frazier permeability at 0.5" (12.7 mm) w.g dP
- Mullenburst strength: 350 psi

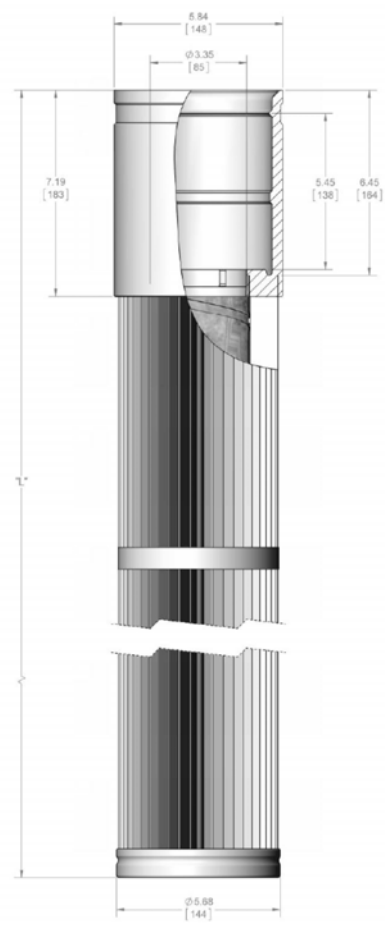
MEDIA DESIGNATION	MEDIA DESCRIPTION
FM0103	100% spunbond polyester (SBPE)
FM0105	100% SBPE with hydrophobic & oliophobic finish
FM0109	100% SBPE with conductive grid
FM0203	100% SBPE with ePTFE membrane
FM0209	100% SBPE with conductive grid & ePTFE membrane

PLEATED FILTER ELEMENTS

Diagrams - Bottom Load Style -
5-1/8", 45 pleats



NOMINAL LENGTH	OVERALL LENGTH "L"	FILTER AREA (sf) @ 45 pleats	NO. OF STRAPS
1.64' (0.5 m)	21.6" (54.86 cm)	12.3	1
3.28' (1.0 m)	41.3" (1.05 m)	24.6	3
4.59' (1.4 m)	57.0" (1.45 m)	34.5	4
6.56' (2.0 m)	80.7" (2.05 m)	49.2	6



NOMINAL LENGTH	OVERALL LENGTH "L"	FILTER AREA (sf) @ 45 pleats	NO. OF STRAPS
1.64' (0.5 m)	26.3" (66.80 cm)	12.3	1
3.28' (1.0 m)	46.0" (1.17 m)	24.6	3
4.59' (1.4 m)	61.8" (1.57 m)	34.5	4
6.56' (2.0 m)	85.4" (2.17 m)	49.2	6

PLEATED FILTER ELEMENTS

Bottom Load Style - 5-1/8", 45 pleats

Specification

- Bottom load style pleated filter element (PFE)
- Fits most industry standard 5-1/8" (13.02 cm) diameter bag cup/hub connections
- Designed for all sized venturi bell mouth (up to 3-3/8" (9.53 cm) diameter) or designs without venturis
- Universal boot combines larger core (to accommodate all sized venturis) and deep pleat 1.18" (30 mm) to maximize available area in short profile designs
- Replaces 5-3/4" (14.61 cm) diameter bag and cage assembly

Standard Configuration

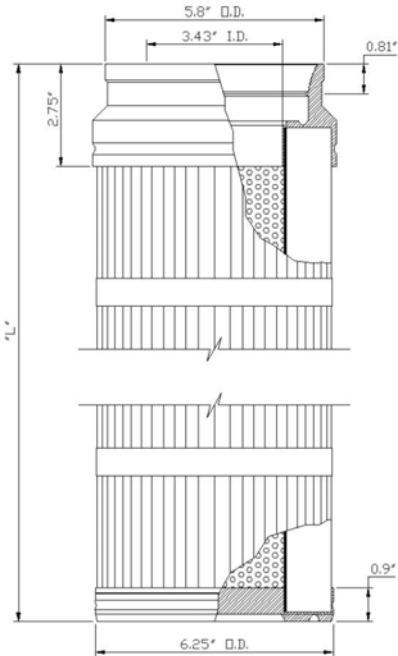
- 3.89" (99 mm) inner core diameter
- 1.18" (30 mm) nominal pleat depth
- Standard pleat count - 45 pleats
- Molded top boot and bottom puck made from bright white soft polyurethane rated to 225°F (107°C)
- Polyurethane, polypropylene and polyester components are safe for food contact

Options

- Special pleat counts (available range: 35-60 pleats)
- Polypropylene Core rated to 180°F (82°C)
- Galvanized and SS perforated metal (spiral formed) for temperatures > 180°F and for high pressure/vacuum applications.
- Grounded designs (with conductive media, metal core and stainless steel grounding wire extensions)

Filter Media

- Base filter media: 100% spunbond polyester (SPBE)
- Filtration efficiency: >99.9% for particle size range between 0.2 µ-2.0 µ - BGIA Dust Class "M" rating
- Weight: 8.0 oz/yd² (260 g/m²)



NOMINAL LENGTH	OVERALL LENGTH "L"	FILTER AREA (sf) @ 45 pleats	NO. OF STRAPS
1.64' (0.5 m)	21.6" (54.86 cm)	14.5	1
3.28' (1.0 m)	41.3" (1.05 m)	29.1	3
4.59' (1.4 m)	57.0" (1.45 m)	40.7	4
6.56' (2.0 m)	80.7" (2.05 m)	58.1	6

PLEATED FILTER ELEMENTS

Top Load Style - 6-1/4", 45 pleats

Specification

- Top load style pleated filter element (PFE)
- Metal top style rated for higher temperatures up to 375°F (190°C)
- Fits most industry standard 6-1/4" (15.88 cm) diameter tubesheet holes, fits tubesheet thickness from 1/8" to 1/4" (3.18 mm to 6.35 mm)
- Replaces 6-1/4" (15.88 cm) diameter bag and cage assembly

Standard Configuration

- 3.6" (91 mm) inner core diameter
- 1.0" (25 mm) nominal pleat depth
- Standard pleat count - 45 pleats
- Galvanized metal top and bottom pan components with high temperature potting compound, rated to 325°F (190°C)
- Polyurethane, polypropylene and polyester components are safe for food contact

Options

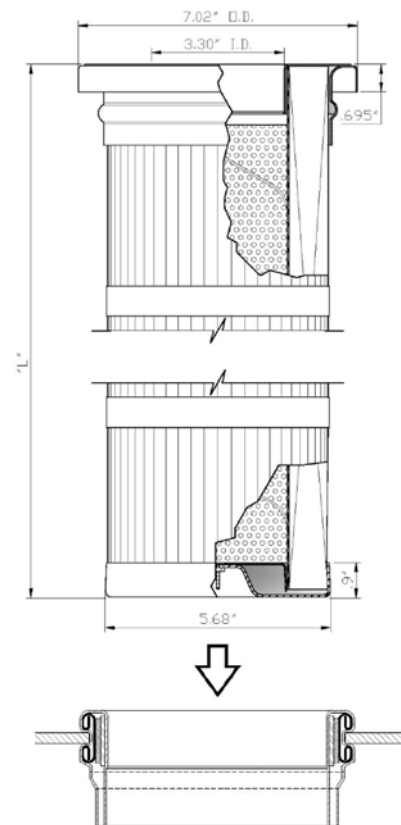
- Special pleat counts (available range: 35-45 pleats)
- Galvanized and SS perforated metal (spiral formed)
- Grounded designs (with conductive media, metal core and stainless steel ground wire straps sewn into snapband cuff)

Filter Media

- Base filter media: 100% self-supported pleatable aramid needle felt, singed both sides, treated with stiffening resin for pleating
- Filtration efficiency: >98% for particle size >3.0μ @ AMR (air-to-media-ratio) of 3.0 ft³/min/ft² - MERV 10 (per ASHRAE 52.2)
- Weight: 10.0 oz/yd² (338 g/m²)
- Permeability: 20-45 acfm Frazier permeability at 0.5" (12.7 mm) w.g. dP
- Mullenburst strength: 300 psi

MEDIA DESIGNATION	MEDIA DESCRIPTION
FM0301	10.0 oz./yd² stiffened aramid needle felt
FM0401	10.0 oz./yd² stiffened aramid needle felt laminated with ePTFE membrane

NOMINAL LENGTH	OVERALL LENGTH "L"	FILTER AREA (sf) @ 45 pleats	NO. OF STRAPS
1.64' (0.5 m)	20.0" (50.8 cm)	12.3	2
3.28' (1.0 m)	40.0" (1.0 m)	24.6	4
6.56' (2.0 m)	79.0" (2.0 m)	49.2	7



PLEATED FILTER ELEMENTS

Top Load Style - 6-1/4", 54 pleats

Specification

- Top load style pleated filter element (PFE)*
- Unique, aerodynamically designed high-flow orifice develops 30% more cleaning energy**
- Fits most industry standard 6-1/4" (15.88 cm) diameter tubesheet holes, fits tubesheet thickness from 1/8" to 1/4" (3.18 mm to 6.35 mm)
- Replaces 6-1/4" (15.88 cm) diameter bag and cage assembly

Standard Configuration

- 3.6" (91 mm) inner core diameter
- 1.0" (25 mm) nominal pleat depth
- Standard pleat count - 54 pleats
- Molded top boot and bottom puck made from bright white soft polyurethane rated to 225°F (107°C)
- iSeal™ gasket made from flexible gray EPDM rubber
- Polyurethane, EPDM rubber, polypropylene and polyester components are safe for food contact

Options

- Special pleat counts (available range: 35-60 pleats)
- Polypropylene Core rated to 180°F (82°C)
- Galvanized and SS perforated metal (spiral formed) for temperatures > 180°F (82°C) and for high pressure/vacuum applications
- Grounded designs (with conductive media, metal core and electrically conductive EPDM tubesheet gasket (iSeal gasket))

Filter Media

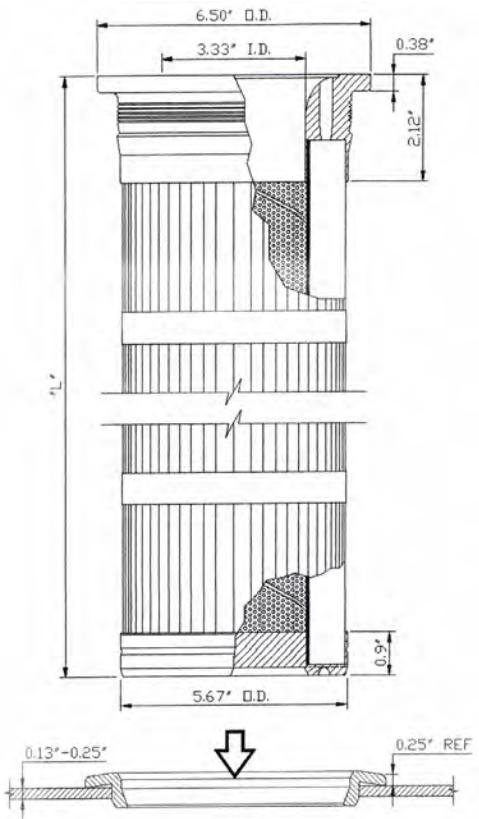
- Base filter media: 100% spunbond polyester (SBPE)
- Filtration efficiency: > 99.9% for particle size range between >0.2 µ-2.0 µ - BGIA Dust Class "M" rating
- Weight: 8.0 oz/yd² (260 g/m²)
- Permeability: 15-30 acfm Frazier permeability at 0.5" (12.7 mm) w.g. dP
- Mullenburst strength: 300 psi

MEDIA DESIGNATION	MEDIA DESCRIPTION
FM0103	100% spunbond polyester (SBPE)
FM0105	100% SBPE with hydrophobic & oliophobic finish
FM0109	100% SBPE with conductive grid
FM0203	100% SBPE with ePTFE membrane
FM0209	100% SBPE with conductive grid & ePTFE membrane

*U.S. Patent No. D 626,208 & Patent Pending
**Confirmed by Independent 3rd party testing

PLEATED FILTER ELEMENTS

Diagrams - Top Load Style - 6-1/4",
 54 pleats



NOMINAL LENGTH	OVERALL LENGTH "L"	FILTER AREA (sf) @ 54 pleats	NO. OF STRAPS
1.64' (0.5 m)	21.0" (53.34 cm)	14.8	1
3.28' (1.0 m)	40.7" (1.0 m)	29.6	3
4.59' (1.4 m)	56.4" (1.4 m)	41.3	4
6.56' (2.0 m)	80.0" (2.0 m)	59.1	6

PLEATED FILTER ELEMENTS

Top Load Style - 8-3/4", 85 pleats

Specification

- Top load style pleated filter element (PFE)*
- Unique, aerodynamically designed high-flow orifice develops 30% more cleaning energy**
- Fits most industry standard 8-3/4" (22.23 cm) diameter tubesheet holes, fits tubesheet thickness from 1/8" to 1/4" (3.18 mm to 6.35 mm)

Standard Configuration

- 5.0" (126 mm) inner core diameter
- 1.42" (36 mm) nominal pleat depth
- Standard pleat count - 85 pleats
- Molded top boot and bottom puck made from bright white soft polyurethane rated to 225°F (107°C)
- iSeal™ gasket made from flexible gray EPDM rubber
- Polyurethane, EPDM rubber, polypropylene and polyester components are safe for food contact

Options

- Special pleat counts (available range: 60-90 pleats)
- Galvanized and SS perforated metal (spiral formed)
- Grounded designs (with conductive media, metal core and electrically conductive EPDM tubesheet gasket (iSeal gasket))

Filter Media

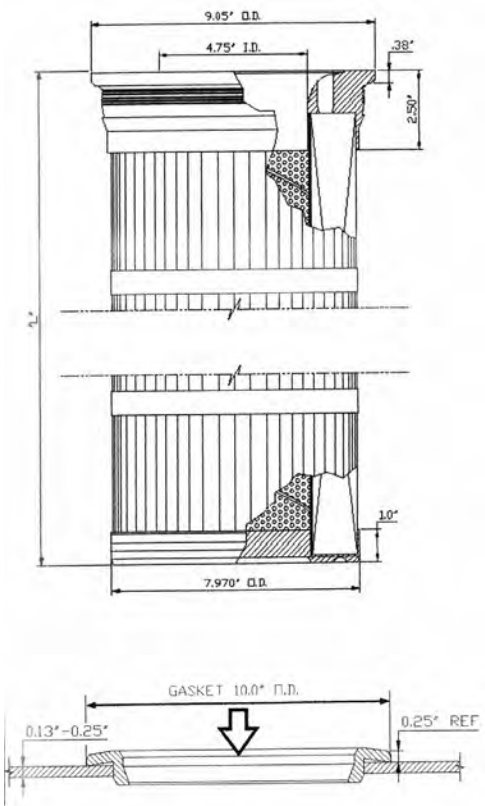
- Base filter media: 100% spunbond polyester (SBPE)
- Filtration efficiency: > 99.9% for particle size range between >0.2 µ-2.0 µ - BGIA Dust Class "M" rating
- Weight: 8.0 oz/yd² (260 g/m²)
- Permeability: 15-30 acfm Frazier permeability at 0.5" (12.7 mm) w.g. dP
- Mullenburst strength: 300 psi

*U.S. Patent No. D 626,208 & Patent Pending
**Confirmed by Independent 3rd party testing

MEDIA DESIGNATION	MEDIA DESCRIPTION
FM0103	100% spunbond polyester (SBPE)
FM0105	100% SBPE with hydrophobic & oliophobic finish
FM0109	100% SBPE with conductive grid
FM0203	100% SBPE with ePTFE membrane
FM0209	100% SBPE with conductive grid & ePTFE membrane

PLEATED FILTER ELEMENTS

Diagrams - Top Load Style - 8-3/4",
85 pleats



NOMINAL LENGTH	OVERALL LENGTH "L"	FILTER AREA (sf) @ 85 pleats	NO. OF STRAPS
1.64' (0.5 m)	21.2" (53.8 cm)	33.0	1
2.19' (0.67 m)	27.5" (69.9 cm)	43.6	2
3.28' (1.0 m)	40.8" (1.0 m)	66.0	3
4.59' (1.4 m)	56.6" (1.4 m)	92.4	4

PLEATED FILTER ELEMENTS

Top Load Style - 8-3/4", 100 pleats

Specification

- Top or bottom load style pleated filter element (PFE) with 3-lug style hold-downs
- Fits most industry standard 8-3/4" (22.23 cm) diameter tubesheet holes, fits tubesheet thickness from 1/8" to 1/4" (3.18 mm to 6.35 mm)

Standard Configuration

- 6.1" (156 mm) inner core diameter
- 1.18" (30 mm) nominal pleat depth
- Standard pleat count - 100 pleats
- Aluminum 3-lug style top cap and galvanized, closed, recessed bottom pan
- Potted with hard polyurethane potting compound
- Soft EPDM foam gasket (6 mm x 12 mm) can be placed on top of or under flange for bottom or top access installation
- Components rated for 225°F (107°C)

Options

- Special pleat counts (available range: 50-100 pleats)
- Galvanized and SS perforated metal (spiral formed)
- Grounded designs (with conductive media, metal core and SS ground wires)

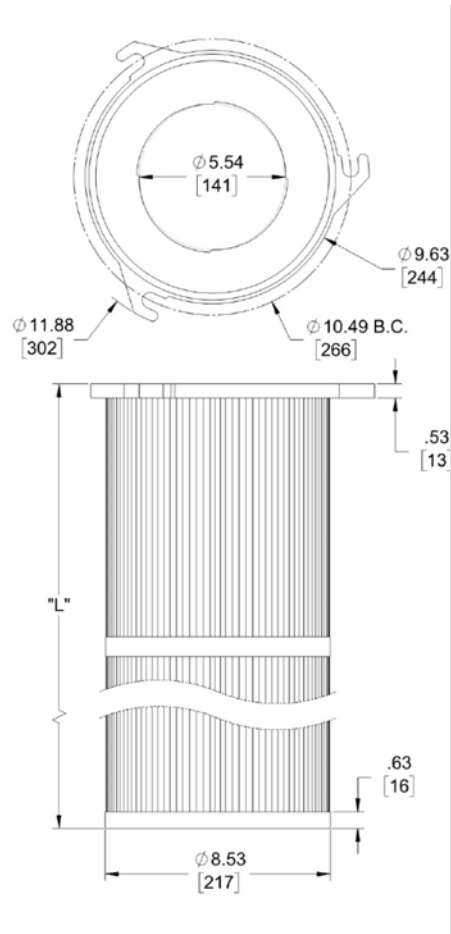
Filter Media

- Base filter media: 100% spunbond polyester (SBPE)
- Filtration efficiency: > 99.9% for particle size range between >0.2 µ-2.0 µ - BGIA Dust Class "M" rating
- Weight: 8.0 oz/yd² (260 g/m²)
- Permeability: 15-30 acfm Frazier permeability at 0.5" (12.7 mm) w.g. dP
- Mullenburst strength: 300 psi

MEDIA DESIGNATION	MEDIA DESCRIPTION
FM0103	100% spunbond polyester (SBPE)
FM0105	100% SBPE with hydrophobic & oliophobic finish
FM0109	100% SBPE with conductive grid
FM0203	100% SBPE with ePTFE membrane
FM0209	100% SBPE with conductive grid & ePTFE membrane

PLEATED FILTER ELEMENTS

Diagrams - Top Load Style - 8-3/4",
 100 pleats



NOMINAL LENGTH	OVERALL LENGTH "L"	FILTER AREA (sf) @100 pleats	NO. OF STRAPS
1.64' (0.5 m)	20.0" (50.8 cm)	32.3	1
2.19' (0.67 m)	26.5" (67.31 cm)	43.0	2
3.28' (1.0 m)	40.0" (1.0 m)	64.5	3
4.59' (1.4 m)	55.5" (1.4 m)	90.3	4

CARTRIDGE REMOVAL TOOL

Top access

Specifications

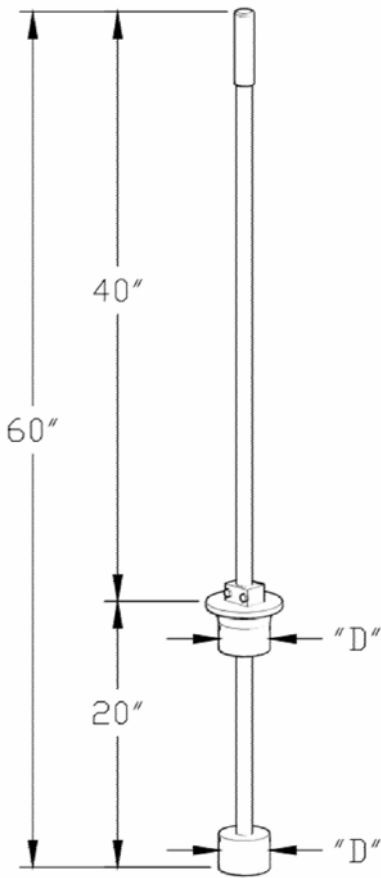
OAL length: 60.0" (152 cm)

OD tubing: 1" (2.54 cm) with non-slip grip

MODEL	SIZE	PART #
TL500 TL525 TL3N	2.8" (7.11 cm)	1910000002
TL600D TL612D TL620D TL625D	3.3" (8.38 cm)	1910000003
TL600 TL612 TL620 TL625 TL637 TL645 TL-WR TL-WAM	3.6" (9.14 cm)	1910000001
TL875	5.0" (12.7 cm)	1910000004

FEATURES:

- Patented design
- Soft polyurethane core and throat plugs designed provide snug fit for ease in removal



CAGES

Standard or Custom Built to Specifications



Description

Cages are available in a variety of configurations, finishes, and materials. Single-piece cages up to 23 feet (seven meters) in length or multiple section cages in unlimited lengths are available.

We offer a complete range of cages to fit nearly any manufacturer's dust collector. We also offer special venturi/cage assemblies and 304 and 316 stainless steel and epoxy coated cages designed to meet the most demanding applications.

Specifications

Diameters: 4- $\frac{3}{8}$ in. through 6- $\frac{1}{4}$ in. (111 through 159 mm)

Lengths: One-, two- or three- piece cages assembled 3 ft. through 33 ft. (0.9 through 10 m); Continuous length up to 23 ft. (7m)

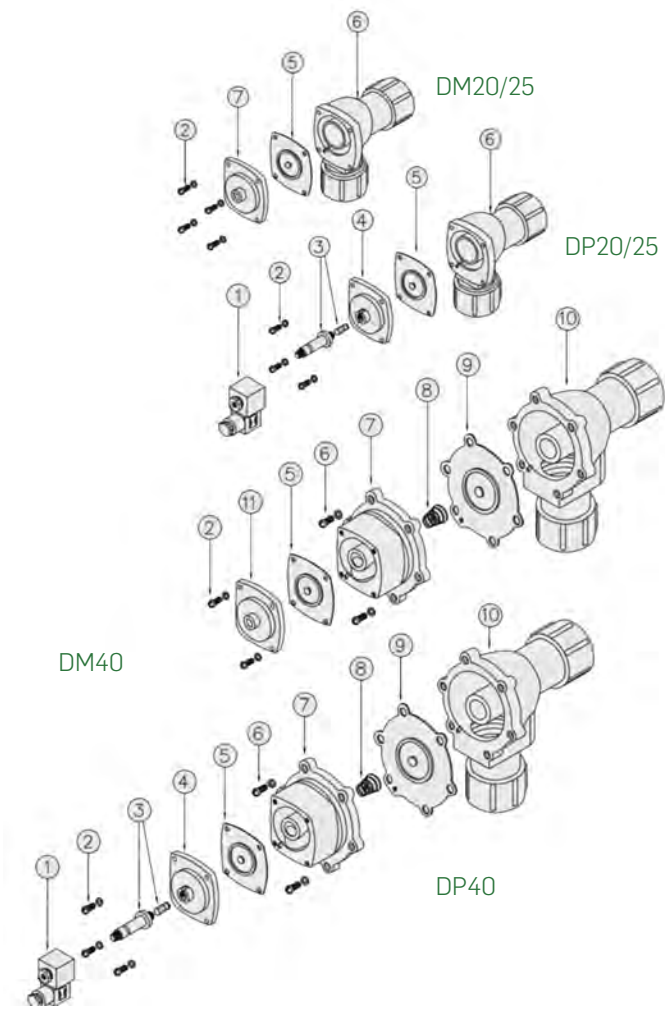
Types of Steel: 280/304/316 stainless steels, carbon steel, galvanized, other alloys upon request

Types of Finish: Raw, epoxy coated, painted, passivation

Shapes: Round/Star 8 / 10 / 12 / 16 / 20 vertical wires. Any ring spacing, adjustable to 0.04 in. (1 mm)

DIAPHRAGM VALVES

Compression Fitting Pulse Valve



Specifications

Fluid: Filtered and oilfree compressed air
Operating pressure: min 0,5; max 7,5 bar
Temperature range: + 176°F (-40°C +80°C) (-30°C +200°C)
Body cover: Die cast aluminium
Core tube: Stainless Steel
Plunger: Stainless Steel
Screws: Stainless Steel
Coil insulation: Class H
Connector: PG 9; IP65 DIN 43650 ISO 4400
Standard voltages: 230 -110 - 24V; 50-60VHz 19 VA; 24VDC 15W

	DESCRIPTION	DP/DM20	DP/DM25
1	Coil + Connector	BH10...V/50-60Hz	BH10...V/50-60Hz
2	Screws + Washer	VTE6x20+VROS6	VTE6x20+VROS6
3	Pole assembly	GPC10	GPC10
4	Cover	TCOP 25	TCOP 25
5	Diaphragm	M20	M25
6	Body	TCOR20/25MMG	TCOR25MMG
7	Cover remote operated	TCOP25FM	TCOP25FM

DP Integral solenoid pilot version
DM Remote pilot version

	DESCRIPTION	DP/DM20
1	Coil + Connector	BH10...V/50-60Hz
2	Screws + Washer	VTE6x20+VROS6
3	Pole assembly	GPC10
4	Cover	TCOP 25
4	Remote cover	TCOP25FM
5	Diaphragm	M25
6	Screws + Washer	VTE8x20+VROS8
7	Main cover	TCOP 40N
8	Spring	TMOL40
9	Main diaphragm	M40
10	Body	TCOR40MMG
11	Cover remote operated	TCOP25FM

DP Integral solenoid pilot version
DM Remote pilot version

Specifications

Body: Aluminum
Seals: NBR
Diaphragm: NBR, HYT, or CR as noted
Discs: NBR or PA as noted
Standard voltages: 24, 120, 240, 480 volts AC; 60Hz (or 110, 220 volts AC, 50 Hz)
Ambient temperature: AC constructions: 0°F to 185°F (-18°C to 85°C); 150°F (66°C) for valves with HYT diaphragms
Fluids: 0°F to 185°F (-18°C to 85°C except as noted. For temperatures to 300°F (149°C), specify FPM, suffix "V" (except where noted).

Solenoid Enclosures

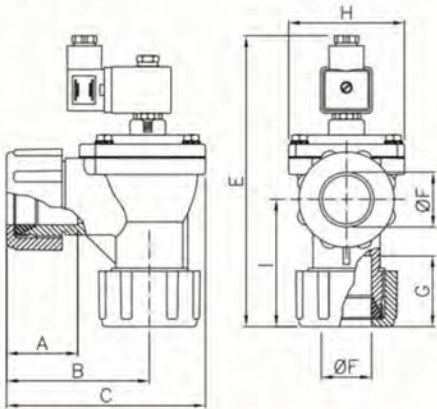
Standard: Watertight, Types 1, 2, 3, 3S, 4 and 4X
Optional: Explosion proof and Watertight Types 3, 3S, 4, 4X, 6, 6P, 7 and 9

DIAPHRAGM VALVES

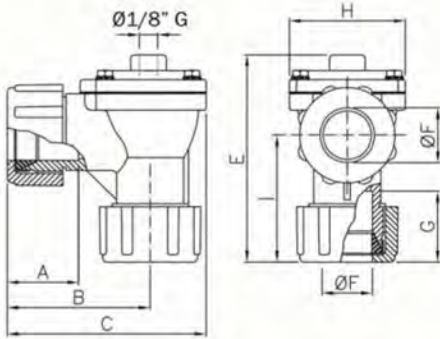
Compression Fitting Pulse Valve



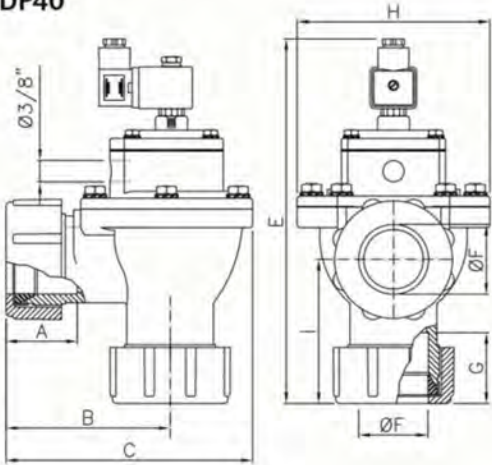
DP20 - DP25



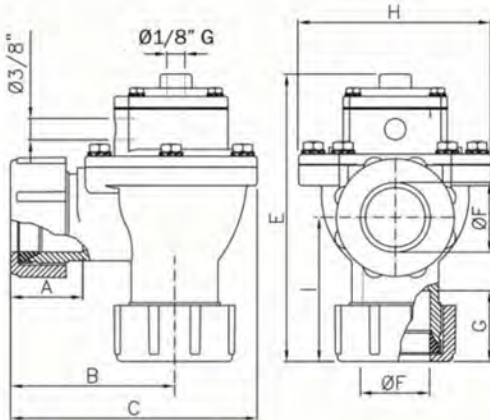
DM20 - DM25



DP40



DM40



Model	Ø (nom)	A	B	C	E	F	G	H	I	L	Weight lbs (kg)	Model	E	Weight lbs (kg)
DP 20	3/4"	48	90	128	~189	28.5	48	74	80	30.5	24.3 (1,1)	DM 20	131	2.2 (1)
DP 25	1"	48	90	128	~189	35	48	74	80	30.5	2.2 (1)	DM 25	131	19.9 (0,9)
DP 40	1-1/2"	66	114	180	~264	50	66	140	101	39	52.9 (2,4)	DM 40	206	50.7 (2,3)

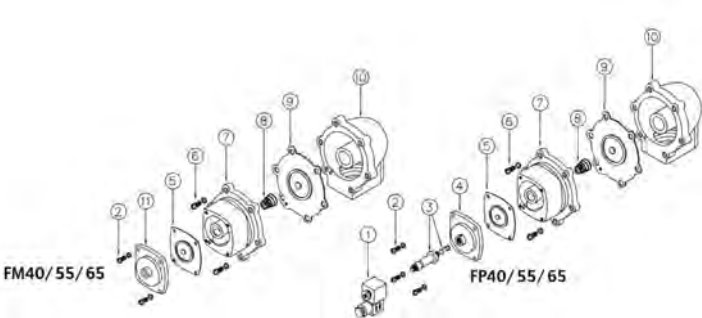
DIAPHRAGM VALVES

Threaded Pulse Valve



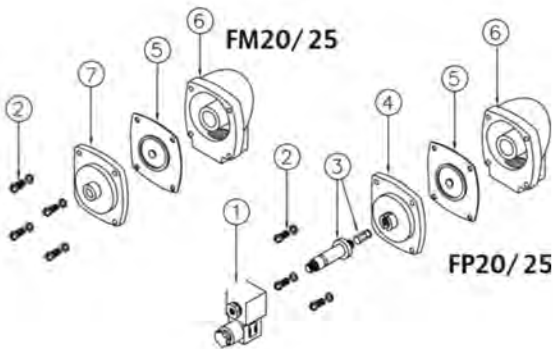
Specifications

Fluid: Filtered and oilfree compressed air
Operating pressure: min 0,5; max 7,5 bar
Temperature range: STD diaphragm + 176°F (-40°C +80°C);
(Viton diaphragm -30°C +200°C)
Body cover: Die cast aluminium
Core tube: Stainless Steel
Plunger: Stainless Steel
Screws: Stainless Steel
Coil insulation: Class H
Connector: PG 9; IP65 DIN 43650 ISO 4400
Standard voltages: 230 -110 - 24V; 50-60VHz 19 VA; 24VDC 15W



	DESCRIPTION	FP/FM20	FP/FM25
1	Coil + Connector	BH10...V/50-60Hz	BH10...V/50-60Hz
2	Screws + Washer	VTE6x20+VROS6	VTE6x20+VROS6
3	Pole assembly	GPC10	GPC10
4	Cover	TCOP 25	TCOP 25
5	Diaphragm	M25	M25
6	Body	COR40FFG	TCOR40FFG
7	Cover remote operated	TCOP25FM	TCOP25FM

FP Integral solenoid pilot version
FM Remote pilot version



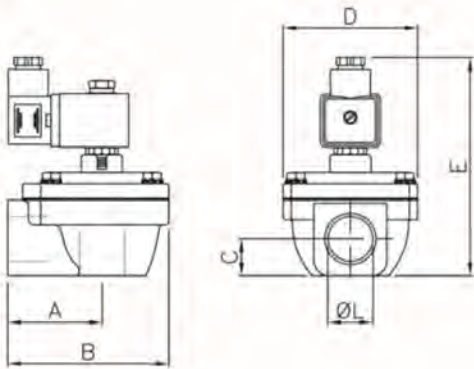
	DESCRIPTION	FP/FM40	FP/FM55	FP/FM65
1	Coil + Connector	BH10...V/50-60Hz	BH10...V/50-60Hz	BH10...V/50-60Hz
2	Screws + Washer	VTE6x20+VROS6	VTE6x20+VROS6	VTE6x20+VROS6
3	Pole assembly	GPC10	GPC10	GPC10
4	Cover	TCOP 25	TCOP 25	TCOP 25
5	Diaphragm	M25	M25	M25
6	Screws + Washer	VTE8x20+VROS8	VTE10x25+VROS10	VTE10x25+VROS10
7	Main cover	TCOP40	TCOP65G	TCOP65G
8	Spring	TMOL40	TMOL40	TMOL40
9	Main diaphragm	M40	M55	M75
10	Body	TCOR40FFG	TCOR55FFG	TCOR65FFG
11	Cover remote operated	TCOP25FM	TCOP25FM	TCOP25FM

FP Integral solenoid pilot version
FM Remote pilot version

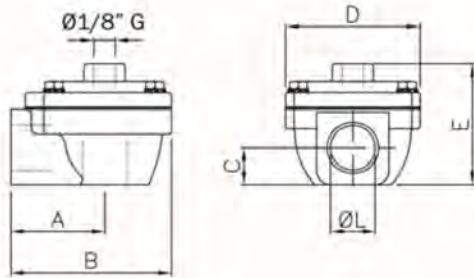
DIAPHRAGM VALVES

Threaded Pulse Valve

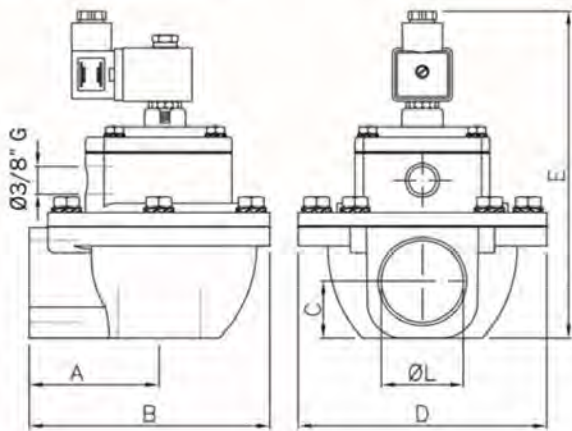
FP20 - FP25



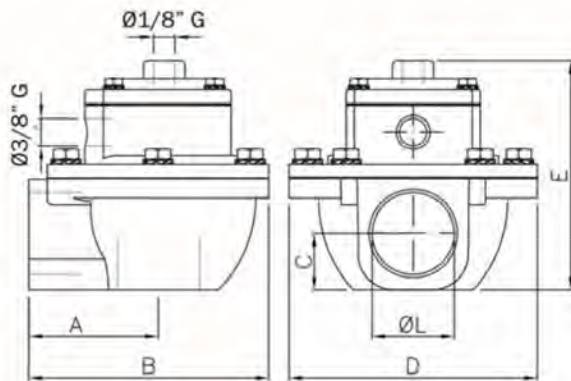
FM20 - FM25



FP40 - FP55 - FP65



FM40 - FM55 - FM65



Model	Ø L (nom)	A	B	C	D	E	Weight lbs (kg)	Model	E	Weight lbs (kg)
FP 20	3/4"	52	90	20.5	74	~125	13.2 (0,6)	FM 20	67	8.8 (0,4)
FP 25	1"	52	90	20.5	74	~125	11 (0,5)	FM 25	67	8.8 (0,4)
FP 40	1-1/2"	71.3	135	31	140	~188	35.3 (1,6)	FM 40	130	30.7 (1,4)
FP 55	2"	114	203	40	194	~225	77.2 (3,5)	FM 55	167	75 (3,4)
FP 65	2-1/2"	114	203	48	194	~225	75 (3,4)	FM 65	167	70.5 (3,2)

PILOT VALVES

Description

Suitable for ATEX Category Ex II 3 GD and IP65 and all other non-hazardous applications, for piloting diaphragm valves.

Options

- Heater
- Anti-condensation heater

Specifications

Body: Aluminum (diecast)

Pilot Body: Aluminum (diecast)

Ferrule: 305 SS

Armature: 430FR SS

Seals: Nitrile

Screws: 302 SS or 304 SS

Clip: Mild steel (plated)

Recommended on time range: 50–500 ms

Recommended time between pulses: 1 minute or greater

Installation

Ensure device is disconnected from power before opening the enclosure. These enclosures are all finished with the common solenoid terminals pre-wired.

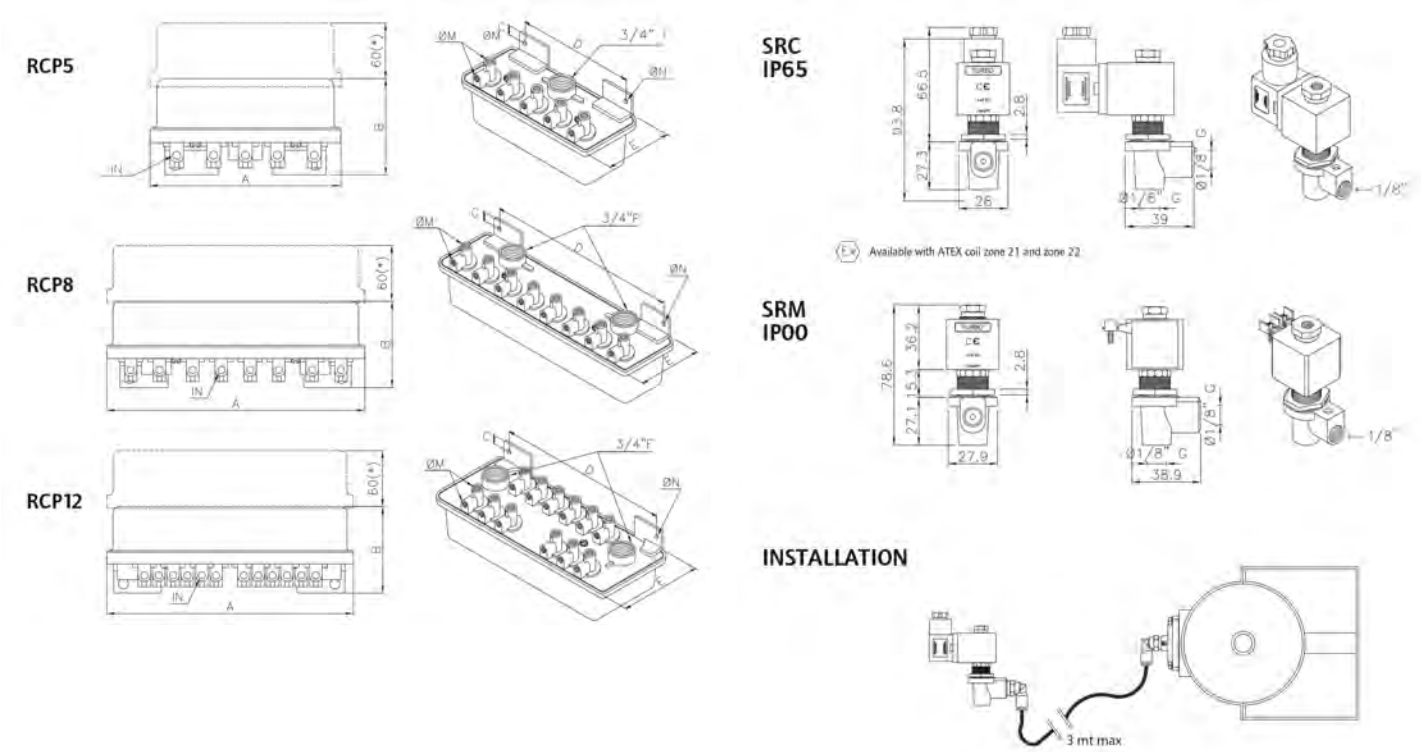


CAMCORP

A MEMBER OF THE SCHEUCH GROUP

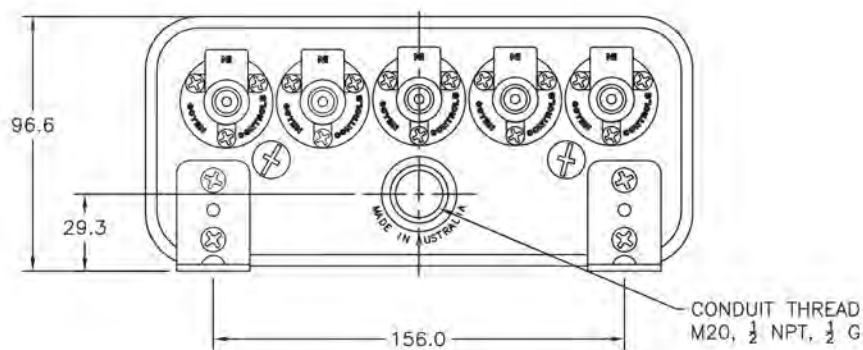
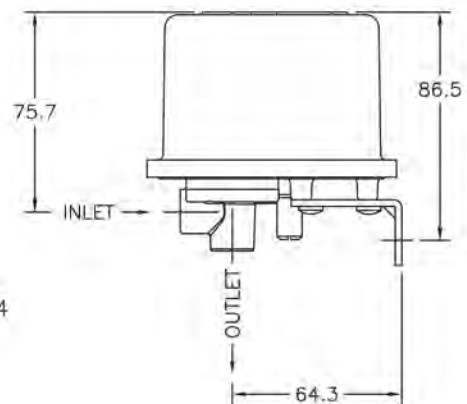
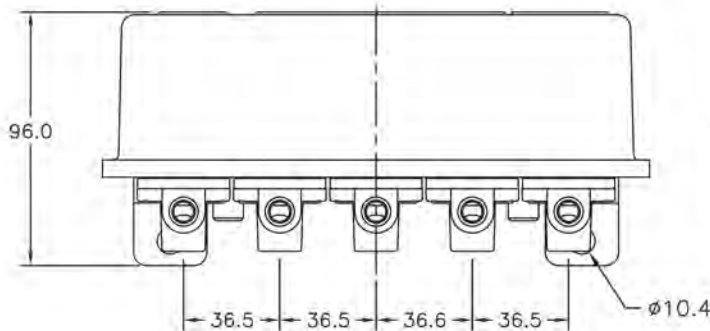
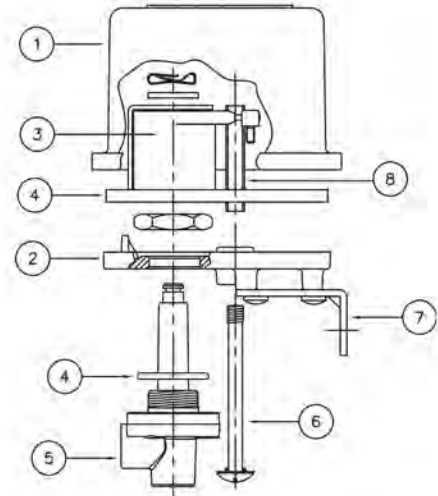
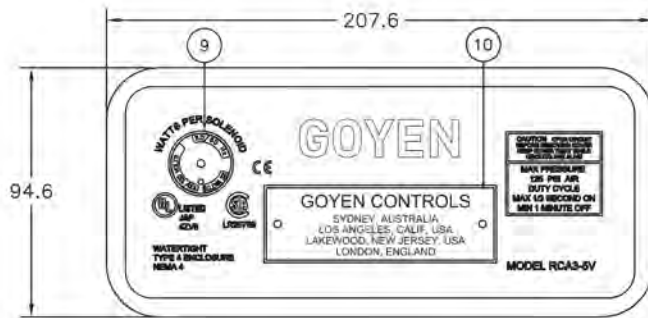
ALL STATED SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION. VISIT CAMCORPINC.COM FOR THE LATEST INFORMATION.

PILOT VALVES



MODEL	A	B	C	D	E	ØM	ØN	WEIGHT
RCP5	210	98	10	156	100	1/8" (3.175 mm)	11	3.75 lbs. (1,7 kg)
RCP8	333	98	10	267	100	1/8" (3.175 mm)	11	7.05 lbs. (3,2 kg)
RCP12	306	97	10	237	152	1/8" (3.175 mm)	11	9.70 lbs. (4,4 kg)

PILOT VALVES

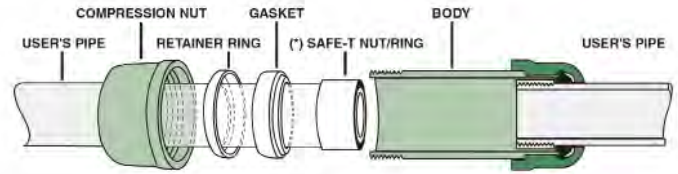


3-5V5 Series

Mass = 0.814 kg + 0.174 kg per valve pilot fitted
(1.795 lb + 0.384 lb per pilot valve fitted)

COMPRESSION PIPE FITTINGS

Quik-Joint



Application

- Join misaligned pipe. Quik-Joint allows 5° – 7° angular misalignment on each end nut for faster, lower cost installation of piping systems.
- Absorbs vibration. Elastometer gaskets reduce pipe vibration, noise and shock.
- Shortens installation time and lost parts. Replaces threaded unions requiring close tolerance and bolted style compression joints. Install and adjust Quik-Joint by hand, tighten with a pipe wrench.

Options

- Half-Couplings are available for weld joints.
- Compression nuts available in plain steel, stainless steel, bright zinc or nickel-chrome finish. Body available in plain steel pipe, bright zinc finish or stainless steel.

Assembly

1. Thread pipe ends (standard pipe thread).
2. Slide Quick-Joint nut, retainer and gasket onto pipe over threads.
3. Screw on Safe-T Nut/Ring—tighten to cover threads where they contact gasket.
4. Slide parts into body and tighten Quik-Joint compression nut.

Advantages

- Pipe will not pull out under excess pressure, pulsating loads, pipe deflection, or deterioration of gaskets due to age. Pressure Rated to 310 PSI.
- Quik-Joint nut, retainer and gasket will stay with pipe during disassembly, won't drop off in handling pipe section
- Safety without sacrificing angular misalignment.
- Low cost solution to a difficult safety problem. No straps or restraining brackets needed.
- Elastomer gaskets absorb shock and vibration in the piping system.

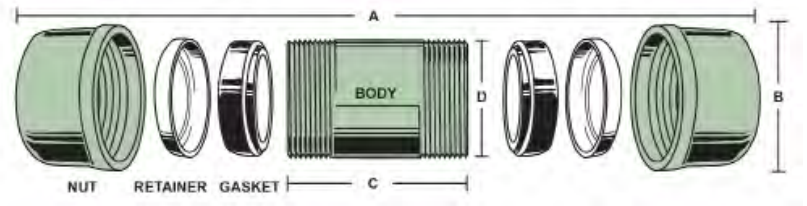
FEATURES:

- Body is machined to customer length requirement providing a wider design tolerance for assembly.
- Standard body is schedule 40 carbon or stainless steel pipe, two sizes larger than customer's pipe, providing 10° – 14° of total angular misalignment. When ordering, simply specify your pipe size.
- Body section of steel pipe is ideal for welding to tanks, reservoirs, headers as a half coupling, or for through-the-wall construction with one nut on the inside and one on the outside.
- Custom bodies can be furnished in 304, 316 stainless steel, or schedule 40 aluminum.

(*) Note: Safety ring is zinc die cast, with (1) internal thread
Safety nut is steel/stainless steel with (4) internal threads.

COMPRESSION PIPE FITTINGS

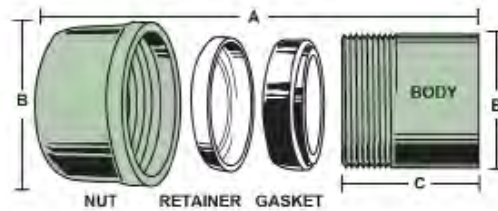
Diagrams



Quik-Joint Full Coupling

QUIK-JOINT SIZE (1)	ASSEMBLED LENGTH A		NUT DIAMETER B	BODY LENGTH C		BODY DIAMETER	ALLOWANCE FOR NUTS & GASKETS.CPIG	WEIGHT	
	STD. OR MIN.	LONG (1)		STD. OR MIN.	LONG			STD.	LONG
1/2"	3-1/2"	4-5/8"	1-11/16"	2-1/2"	3-5/8"	1-5/16"	1"	11 oz.	13 oz.
3/4"	3-1/2"	4-5/8"	2-1/32"	2-1/2"	3-5/8"	1-21/32"	1"	16 oz.	20 oz.
1"	3-5/8"	4-5/8"	2-1/4"	2-1/2"	3-1/2"	1-29/32"	1-1/8"	20 oz.	22.5 oz.
1-1/4"	3-5/8"	5"	2-3/4"	2-1/2"	3-7/8"	2-3/8"	1-1/8"	26 oz.	32.5 oz.
1-1/2"	4"	5"	3-5/16"	2-1/2"	3-1/2"	2-7/8"	1-1/2"	43 oz.	47 oz.
2"	4-5/16"	5-1/2"	3-3/4"	2-11/16"	3-7/8"	3-3/8"	1-5/8"	50 oz.	56 oz.

- (1) Nominal size of customer schedule 40 steel pipe I.P.S.
(2) No limit to extra length of body section



WHEN ORDERING SPECIFY: QUIK-JOINT SIZE, ASSEMBLED LENGTH, BODY LENGTH, BODY FINISH, GASKET MATERIAL, END NUT FINISH.

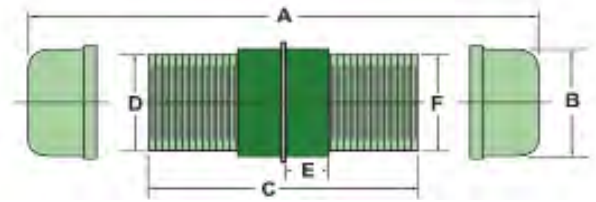
Quik-Joint Half Coupling (for weld joints)

QUIK-JOINT SIZE (1)	ASSEMBLED LENGTH A	NUT DIAMETER B	BODY LENGTH C	BODY DIAMETER D	ALLOWANCE FOR NUTS & GASKETS(1 EA.)	WEIGHT	
	MINIMUM RECOMMENDED (1) (2)		MINIMUM RECOMMENDED			STD. INCH	PER INCH
1/2"	1-3/4"	1-11/16"	1-1/4"	1-5/16"	1/2"	6 oz.	2.2 oz.
3/4"	1-3/4"	2-1/32"	1-1/4"	1-21/32"	1/2"	8 oz.	3 oz.
1"	1-13/16"	2-1/4"	1-1/4"	1-29/32"	9/16"	10 oz.	3.6 oz.
1-1/4"	2-5/16"	2-3/4"	1-3/4"	2-3/8"	9/16"	13 oz.	5 oz.
1-1/2"	2-1/2"	3-5/16"	1-3/4"	2-7/8"	3/4"	22 oz.	7 oz.
2"	2-9/16"	3-3/4"	1-3/4"	3-3/8"	13/16"	25 oz.	8 oz.

- (1) Body length must allow for 5/8" long thread, weld zone and space to tighten nut.
(2) Body is machined from schedule 40 pipe and can be cut to any length required over minimum.
(3) Body end opposite threads furnished square cut with chamfered O.D. for welding.

COMPRESSION PIPE FITTINGS

Diagrams



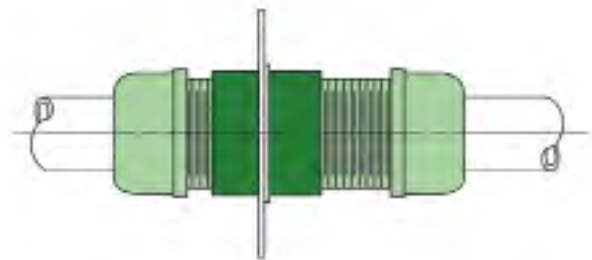
Bulkhead Design

QUIK-JOINT SIZE (1)	ASSEMBLED LENGTH A		COMPRESSION NUT B DIAMETER	BODY LENGTH C		BODY D O.D.	BULKHEAD NUT		GASKETS	
	STD.	MIN		STD.	MIN		E WIDTH	F O.D.	O.D.	WIDTH
1/2"	4-5/8"	4"	1.69"	3-5/8"	3"	1.32"	5/8"	1.53"	1.80"	3/32"
3/4"	4-5/8"	4-3/8"	2.03"	3-5/8"	3-3/8"	1.66"	3/4"	1.87"	2.15"	3/32"
1"	4-5/8"	4-5/8"	2.25"	3-1/2"	3-1/2"	1.90"	3/4"	2.16"	2.40"	3/32"
1-1/4"	5-1/4"	5-1/4"	2.75"	4-1/8"	4-1/8"	2.38"	7/8"	2.65"	2.90"	3/32"
1-1/2"	6"	6"	3.31"	4-1/2"	4-1/2"	2.88"	7/8"	3.25"	3.50"	3/32"
2"	6"	6"	3.75"	4-3/8"	4-3/8"	3.38"	7/8"	3.87"	4.25"	3/32"

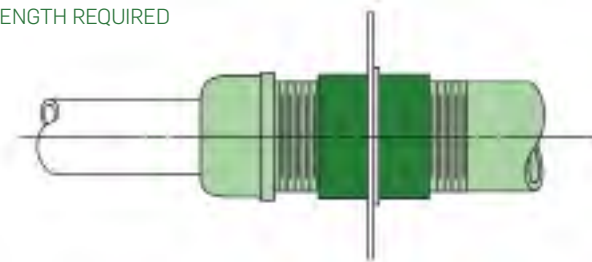
Bulkhead Features

- Eliminates welding cost and problems of heat distortion for a through-the-wall fitting.
- Compression nuts allow for 10° – 14° of angular misalignment between pipes to be connected.
- Complete fitting made from rugged steel with a plain or bright zinc finish.
- 304 or 316 stainless steel also available with chrome plated or stainless steel end nuts.
- Bulkhead nuts can be positioned anywhere along threaded body. Body can be any length required.
- Eliminates precision fit-up or pipe length when joining pipes or nipples. No threading required.
- Bulkhead hole can be close fit for effective sealing with gasket or liquid sealant.
- Bulkhead nuts can be tightened from either side.
- Bulkhead features can be added to the Quik-Joint Half-Couplings to provide a compression fitting on one side and any length of plain pipe on the other.

BULKHEAD NUTS CAN BE
POSITIONED ANYWHERE ALONG
THREADED BODY



QUIK-JOINT HALF-COUPLING
WITH BULKHEAD NUTS
CAN BE FURNISHED TO ANY
LENGTH REQUIRED



CAMCORP

A MEMBER OF THE SCHEUCH GROUP

ALL STATED SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION. VISIT CAMCORPINC.COM FOR THE LATEST INFORMATION.

compressionpipefittings rev. 11/18 ©CAMCORP, INC.

COMPRESSION PIPE FITTINGS

Properties of Rubber

	Natural Rubber	Nitrile BUNA-N	Silicone	Fluoro-Elastomer (Viton)
ASTM/SAE Classification	AA	BF	GE	HK
Tensile of compounded stocks	3500 psi	2500 psi	800 psi	3500 psi
Durometer	30-90	40-95	45-85	70-90
Elongation	Excellent	Good	Fair	Good
Aging	Good	Excellent	Excellent	Excellent
Heat aging	Good	Excellent	Excellent	Excellent
Sunlight aging	Poor	Good	Excellent	Excellent
Lubricating oil resistance	Poor	Excellent	Fair	Good
Aromatic oil resistance	Poor	Good	Poor	Good
Animal-vegetable oils resistance	Fair	Good	Good	Good
Flame resistance	Poor	Poor	Fair	Good
Tear resistance	Good	Fair	Poor	Fair
Abrasion resistance	Excellent	Good	Poor	Fair
Compression set resistance	Good	Good	Fair	Good
Permeability to gasses	Fair	Fair	Fair	Excellent
Dielectric strength	Excellent	Poor	Good	Good
Freedom from odor	Excellent	Fair	Fair	Fair
Maximum temperature, °F (°C)	210 (99)	260 (127)	500 (260)	500 (260)
Minimum temperature, °F (°C)	-65 (-54)	-60 (-51)	-180 (-118)	-40 (-40)

- NATURAL:** Gaskets available in 1/2" only. Extremely resilient with high tensile and elongation properties—also resistant to flexing, permanent set and electricity—also used as seals in food and beverage applications.
- NITRILE (Buna-N):** Gaskets available in all Quik-Joint sizes. Especially resistant to aromatic hydrocarbons, gasoline, petroleum oils, mineral and vegetable oils.
- SILICONE:** Gaskets available in all Quik-Joint sizes. Can withstand extreme heat or cold and retain flexibility— normal temperature range of -180°F to 500°F (-118°C to 260°C).
- VITON:** Gaskets available in 3/4", 1", 1 1/4", 1 1/2", 2" Quik-Joint sizes only. In addition to its ability to withstand extreme temperatures, it is also fuel and oil resistant.

COMPRESSION PIPE FITTINGS

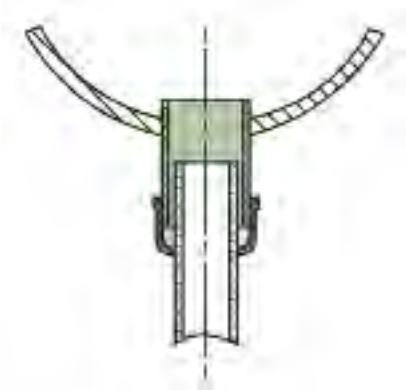
Pressure Tests

Quik-Joint Size	Gas Leakage	Gas Leakage with Safety Nut/Ring Option	Hydrostatic Leakage	Hydrostatic Leakage with Safety Nut/Ring Option
1/2"	200 psi	310 psi	200 psi	200 psi
3/4"	200 psi	310 psi	200 psi	200 psi
1"	200 psi	310 psi	200 psi	200 psi
1-1/4"	200 psi	310 psi	200 psi	200 psi
1-1/2"	200 psi	310 psi	200 psi	200 psi
2"	200 psi	310 psi	200 psi	200 psi

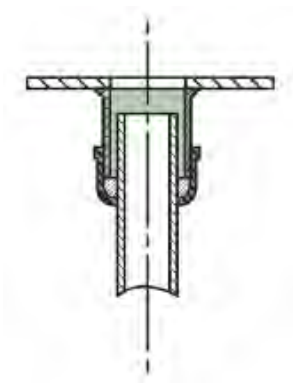
Approved 12/12/1996

Mounting Arrangements

Half-Coupling



Connect to round tanks, manifolds, reservoirs, headers by boring a hole, inserting Quik-Joint half-body and welding in place.

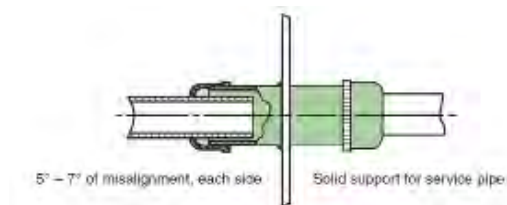


Weld Quik-Joint body directly at flat surface. Body will be supplied with O.D. chamfer weld prep.

COMPRESSION PIPE FITTINGS

Mounting Arrangements

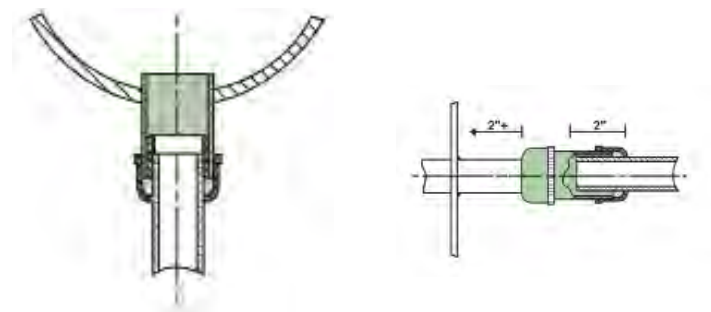
Full-Coupling Standard



Complete Quik-Joint on welded pipe nipple. For disassembly, allow Quik-Joint to slide toward wall enough to clear opposite service pipe. Provides maximum misalignment.

Mounting Arrangements

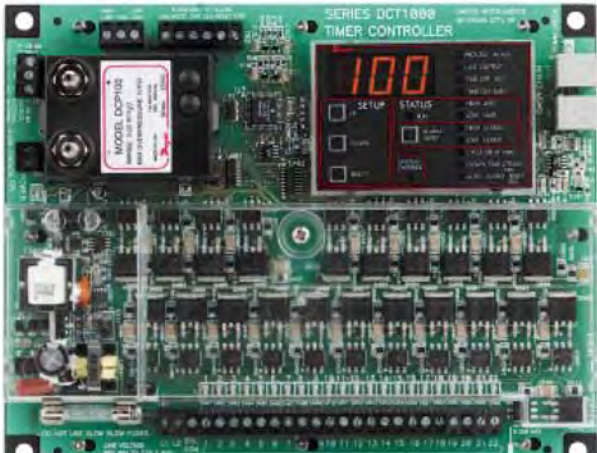
Half-Coupling - Standard with Safety Nut/Ring Option



For vertical mount with weight suspended from Quik-Joint, use Safe-T Nut Ring to prevent pipe from pulling out.

TIMER CONTROLLER

DCT 1000 Series



Application

The DCT1000 Dust Collector Timer Controller was designed to be used with pulse-jet type dust collectors for on-demand or continuous cleaning applications. The DCT1000 consists of three basic modules: the master controller, the optional channel expander (slave board) and the pressure module (DCP100/200).

General Description

This manual is limited to the installation and operation of the master controller and optional channel expander. For installation requirements on the pressure module, please refer to the installation and operating instructions for the DCP100/200.

Continuous cleaning applications do not require external inputs and can be used for time based “on-demand” cleaning through use of the cycle delay feature.

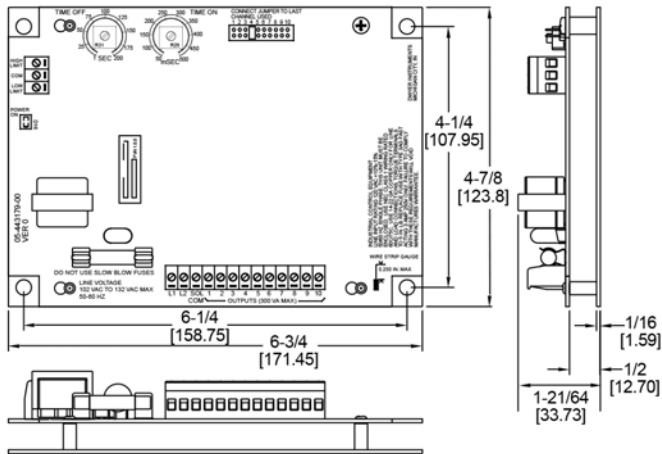
For on-demand applications, the plug-in pressure modules (DCP100/200) can be used to take full advantage of all the features the DCT1000 offers, or an external pressure switch (such as the Dwyer Photohelic®) can be used for High/Low limit control.

As with traditional Dwyer products, the Dwyer DCT1000 was designed so that it is easy to use, thus allowing for a quick and easy start up for your dust control applications. The contents inside this installation and operating manual will guide you through the features of the DCT1000 and how they can be applied to get the most out of your dust control requirements.

SPECIFICATION	DESCRIPTION
Storage temperature	-40°F to 176°F (-40°C to 80°C)
Operating ambient temperature	-40°F to 140°F (-40°C to 60°C)
Weight	1 lb. 3.0 oz. (538.6 grams)
Power	50 or 60 Hz, 85 to 270 VAC input
Power input	270 VAC RMS max., transients: 80 Joule @ 1000 msec/50 Joule @ 2 msec
Fuse	3A @ 250 VAC. Low voltage control circuitry is isolated from the line voltage for system safety
Output channels	up to 22 on one module, expandable to 255 using additional expansion modules
Solenoid supply	300 VA max.
On time	10 msec to 600 msec, 10 msec steps
On time accuracy	±10 msec
Off time	1 to 255 seconds, in 1 second steps
Off time accuracy	±1% of the value or ±50 msec, which ever is greater
DEFAULT SETTINGS	
Channels	All installed channels
Time-off	10 seconds
Time-on	100 msec
Downtime cycles	1 minute
Cycle delay	0 minutes
Low alarm	1.0" w.c. [0.25 kPa]
High alarm	6.0" w.c. [1.49 kPa]
Low limit	3.0" w.c. [0.75 kPa]
High limit	5.0" w.c. [1.24 kPa]
Auto alarm reset	5 seconds

TIMER CONTROLLER

Diagram



Installation

Warning



Always install and service this device with the power off and a lockout installed if required. Line voltages will be exposed at the power/output connector and at the fuse. For this reason, we have installed a plastic guard to protect the user from accidentally contacting line voltages.

Please note that the power guard serves as a safety feature and should not be removed under any circumstances.

For ease of installation and maintenance, the connectors and fuse have been left unprotected. The open frame design of the DCT1000 will require an enclosure that meets appropriate safety and local code requirements. For optimal performance, the enclosure should also protect the controller from dirt, water and direct sunlight. There are no special orientation requirements, and the controller mounts easily using the mounting holes on the factory installed base plate.

Caution



Do not run control wires, communication cables, or other class 2 wiring in the same conduit as power leads. The system may malfunction if class 2 wiring is run together with power conductors.

Power Requirements

The controller has a “universal” power supply that will allow operation on 120 VAC to 240 VAC power lines. The input voltage must be between 85 VAC and 270VAC either 50 or 60 Hz. No circuit changes are required when switching between these voltages. The solenoid loads, however, must be sized to accommodate the line voltage selected.

DCT1000 Terminal Connections

The line and solenoid connections are located at the lower edge of the board below the plastic guard. The terminal block is a “Euro” style connector system that clamps the wire within the connector body. The connector will accept wire sizes from 14 to 22 AWG. The wire should be stripped to no more than 0.25 inches to avoid shorts or expose line voltages creating a potential safety hazard. To assist you in determining the proper wire gauge required, a strip gauge is provided at the lower right corner of the board. The connector system used on the DCT1000 is specified for single connection but you can piggyback to a single lug provided that local codes allow for this and good workmanship practices are followed. To power up the master controller and the channel expander, connect line power to L1 and L2 (see dimensional specifications, Figure 2). Connect the solenoids between the selected output and the solenoid common. Solenoid common and L2 are internally connected. Switches connected to the control inputs at the top of the board must be isolated contacts connected

only to the relevant terminal and to the common terminals. The following subparagraphs describe the external switch connections. Refer to figure 1 for switch connection illustration.

External Pressure Connection

The controller may be used with an external pressure limit switch or sensor to provide demand-cleaning operation. The high limit and low limit inputs may be used for this purpose. A simple on-off system can be established with a single pressure switch connected to the high limit input. Better control can be achieved with a high and low limit switch/gauge such as the Dwyer Photohelic®. In this on-demand mode, time on, time off, and cycle delay may be

TIMER CONTROLLER

Installation

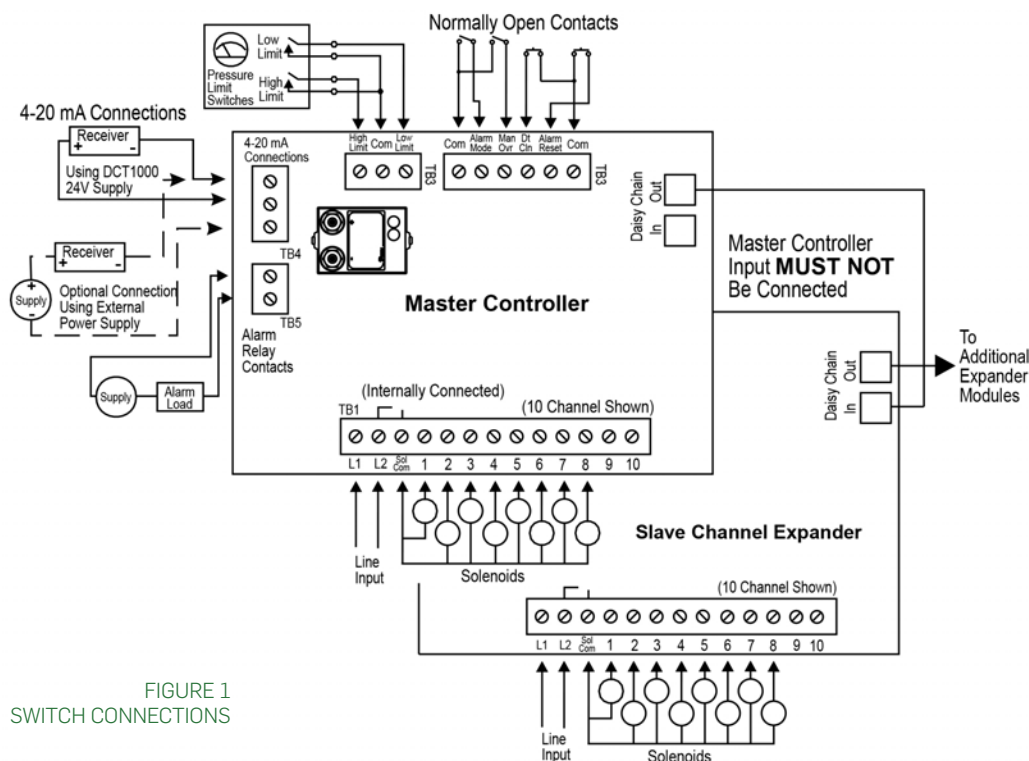


FIGURE 1
SWITCH CONNECTIONS

programmed to define the cleaning cycle.

A three pin terminal block (TB3) provides connection for external high and low limit switches (see Figure 1 on the next page). These switches must be isolated contacts. The common line must not be connected to equipment ground or protective ground, since these may introduce electrical noise and cause improper operation or possible damage to the control board. The operation of these inputs are summarized in the table.

Note: If a DCP100 or DCP200 pressure module is installed in the master controller, the switching functions on the previous page are ignored.

CURRENT OPERATION	LOW LIMIT SWITCH	HIGH LIMIT SWITCH	NEXT OPERATION
Hold	Open	Open	Hold
Hold or run	X	Closed	Run
Hold	Ø	Open	Hold
Hold	Closed	Ø	Run
Run	Closed	≠	Run
Hold	Closed	Ø	Run
Run	≠	Open	Hold
Ø - Transition from open to closed ≠ - Transition from closed to open X - Either open or closed			

TIMER CONTROLLER

Installation

The Series DCP Pressure Module

The Series DCP100 or DCP200 Pressure Modules are designed exclusively for use with the Dwyer DCT1000 Dust Collection Board for on-demand cleaning requirements. These series of modules are available in 10" w.c. [2.49 kPa] or 20" w.c. [4.98 kPa] ranges, which allow for differential process pressure measurement as indicated on the display of the master controller. An isolated 4-20 mA readout channel is provided for remote pressure display. The 4-20 mA output may be wired either for use with an external power supply and indicator or using the isolated on-board 24 volt power supply to power the loop.

Caution



Prior to installing the DCP100/200 please review the operating specifications carefully. Some operating systems, especially in pneumatic conveying applications, may see static pressure or vacuum conditions that exceed the capability of the DCP100/200 pressure module. For these conditions there are a number of alternate Dwyer pressure products that can be used to meet your application requirements, all of which can be terminated to the Dwyer DCT1000 dust collection timer board. For more information on these and other Dwyer products, please call us at (877-226-2677), or visit us on the web at camcorpinc.com.

Location

The system should be located in an enclosure that meets relevant safety standards and electrical codes. There are no other special orientation requirements as the pressure module is not orientation sensitive. Care should be observed when routing the air hoses to

ensure that any potential condensation or moisture will not drain into the sensor. Where heavy condensation is present, a drip loop or an in-line filter should be installed to ensure long term operation.

Connections

When a pressure module is installed, the 4-20 mA process signal and the alarm relay contacts are available. The circuit may be used with the internal 24-volt power source or with an external source. In either case, the 4-20 mA circuit is isolated from ground and other signals. The alarm relay contacts are isolated, normally

open contacts. Pressure connections may be made to the stepped hose barbs with either 1/8" or 3/16" I.C. tubing. The following subparagraphs describe the external switch connections. Refer to figure 1 for switch connection illustration.

Pressure Module Installation

The pressure module is attached to the Master Controller using integral connectors on both units. The insertion ports for the pressure module are located in the upper left quadrant of the DCT1000 Master Controller. The pressure module can be removed by compressing the retaining clips on each end of the module, then gently pulling the module out of the master controller board. When inserting the module, the following procedure should be adhered to insure proper installation:

1. Examine the bottom of the pressure module and note the orientation of the connectors.
2. Align the module so that these connectors match the connector receptacles on the controller board.
3. Orient the module with the four alignment pins over their respective mounting holes.
4. Gently press the module into the connectors and snap the retaining clips on either end of the module into their slots.
5. Always install and service this device with the power off and a lockout installed if required. "Hot" plugging the pressure module into an operating system may damage the system or cause the calibration parameters to be erased.

Caution



Do not force the module into the connectors. Forcing the insertion may damage the connectors. Properly aligned, the module should snap into place.

TIMER CONTROLLER

Installation

Alarm Mode Switch Connection

The auto alarm reset is controlled by the alarm mode switch connection. To enable the auto alarm reset the alarm mode input must be connected to a common connection. A jumper may be used when auto alarm reset is always active. A switch may be used if there are times that the auto alarm reset must be disabled. The switch must be an isolated contact and wired such that no connection is made between either of the wires and ground.

Alarm Reset Switch Connection

The alarm may be reset either by pressing the Alarm Reset button on the control panel or by an external switch connected between the alarm-reset terminal and one of the common terminals. The alarm reset will only operate if the pressure module is installed and the pressure has returned to a normal condition.

Connecting the 4-20 mA Loop

The pressure module provides an isolated 4-20 mA output, which may be used to remotely monitor the differential pressure across the dust bags or cartridges. The connection is made on the master control module at the terminal block designated for this signal. The connection is a 2-wire configuration with the option of using either an external 15 to 35 VDC power source or using the internal 24 VDC source.

Connecting the Alarm Relay

With the pressure module installed, a relay contact is provided for controlling an external alarm. This relay is a single form-A contact. It is activated when either the high alarm threshold is exceeded, or the pressure drops below the low alarm threshold. The connection is made at the two-pin connector TB5.

Demand Mode using a DCP100/200 Pressure Module

The DCT1000 system may be configured to be a self-contained on-demand control system with the installation of the DCP100 pressure module. When this module is installed, the master controller detects it and automatically sets the system to an on-demand mode, enabling features associated with the pressure sensor. The following subparagraphs describe the setup and operation of these pressure related features.

Manual Override Switch Connection

The manual override function allows the system to be set to the run mode regardless of other conditions. This mode is enabled when the manual override terminal and common are connected. It is disabled when they are disconnected. If the controller is to be run in continuous mode, a jumper wire may be wired across these terminals. When manual override is needed on a periodic basis, wire a SPST toggle switch between the manual override terminal and the common terminal.

Down Time Clean Connection

The down time clean operation forces the system into a run cycle for a programmed length of time between 0 – 255 minutes. The operation is initiated by connecting the down time clean terminal to a common terminal. This function is best accomplished through use of an external normally open switch.

Connecting Multiple Timer Boards

Both master controller boards and slave boards can have up to a maximum of 22 channels each. The system may be expanded up to 255 channels using master controller boards and slave boards. The DCT1000 will automatically detect the total number of channels involved and make their outputs available. You will note that both the master controllers and slave boards have a telephone style connector mounted on the upper right hand side of the board. These connectors are for use in systems requiring slave boards that must be daisy chained together to provide additional channel capability. For systems that require the slave boards, the master controller must not have any connection made to its daisy chain input unless it is designated as a slave control itself. (For larger systems requiring more than three slave boards, a master controller must be used as the fourth slave board to satisfy power requirements.) This sequence would repeat itself until the limit of 255 channels has been reached. The cables used are not ordinary telephone style cables.

Caution



Do not use telephone jumper cables. These have a “twist” in the connection and may damage the controllers. Cables designed for use with the DCT1000 are available from Dwyer Instruments

TIMER CONTROLLER

Installation

(Model DCAC02-2 ft., DCAC04-4 ft., etc.).

Continuous Cycle Mode

The master controller has several operating modes available for different applications. Starting with the most basic mode, it is capable of operating in a continuous cleaning cycle. This can be initiated by either placing a jumper between the high limit input and the common, or the manual override input to the common connection. Controlling this cycle are three setup parameters: time off, time on, and cycle delay. Time on and time off specifically deal with the solenoid on time and the time interval between the end of the on pulse and the start of the next. The cycle delay allows a delay of up to 255 minutes to be programmed between the end of one complete cleaning cycle and the beginning of the next. This allows additional options for defining a cleaning profile.

Master Controller Panel Features

We've made it easy to navigate the DCT1000. Menu items can be accessed simply by pressing the "SELECT" button. The menu item that you are currently accessing is indicated by the illumination of an LED. To change menu items, all you have to do is push "UP" to increase a value or push "DOWN" to decrease a value. There are no keystrokes that you need to memorize, special combinations, or passwords that are required.

The master controller is equipped with an on board display and programming information center. The controller will power-up with the process indicator illuminated. If a pressure module is installed, the display will indicate the measured pressure in inches of water (w.c.); otherwise it will normally be blank.

Last Output Setup

The Last Output setup selects the last channel to be activated. When first selected, the display will flash the last output available in the system. With single board installations, this will be the number of channels installed, typically 10 or 22. This value becomes more important when multiple modules are installed. The last output value flashed will be the sum of all channels available in the system.

After the last available channel indication has completed, the

currently programmed last channel value is displayed. This value may be changed using the Up and Down buttons. The minimum value is one while the maximum value is the maximum number of installed channels, including all expansion modules.

You may restore the factory default setting by pressing both Up and Down simultaneously and holding for about four seconds. The default value is the maximum number of channels. Pressing Select will change the setup mode to Time Off Setup.

Time Off Setup

Time off defines the period of time between solenoid activations when no channels are enabled. This may be set between one second and 255 seconds. The factory default is 10 seconds. The display will show the current time off setting when the time off setup mode is entered. The value may be changed using the Up and Down buttons. Pressing both Up and Down simultaneously and holding for approximately four seconds will restore the default value of 10. Pressing the Select switch will change the setup mode to Time On Setup.

Time On Setup

Time On Setup sets the solenoid on time. The display will indicate the currently programmed time on setting. This is measured in milliseconds. Using the Up and Down buttons, the value may be changed. The value may be set between 10 msec and 600 msec in 10 msec increments. Pressing the Up and Down buttons simultaneously for approximately four seconds will restore the factory default value of 100 msec. Pressing the Select button will advance the setup mode to the High Limit setup if the pressure module is installed. With no pressure module, it will step to Cycle Delay Setup.

High Limit Setup

The High Limit Setup, available only with a pressure module installed, sets the pressure at which the cleaning cycle will begin. This value may be between zero and the pressure module calibration pressure. Normally, the High Limit should be above the Low Limit. If, however, the High Limit pressure is set below the Low Limit, the cleaning cycle will begin when the High Limit is exceeded and stop when the pressure falls below the High Limit.

TIMER CONTROLLER

Installation

The Low Limit in this case will have no effect. Pressing both Up and Down buttons simultaneously and holding for about four seconds will restore the factory setting for High Limit to 5.0" w.c. [1.24 kPa]. Pressing Select will change the system to the Low Limit Setup mode.

Low Limit Setup

The operation of the Low Limit, available only with a pressure module installed, is identical to the High Limit except that the default Low Limit pressure is 3.0" w.c. [0.75 kPa]. The upper settable value is the calibration pressure of the pressure module and the lower limit is zero. Pressing Select will change the system to the High Alarm Setup mode.

High Alarm Setup

The operation of the High Alarm Setup is identical to the High and Low Limit Setup and is only available when a pressure module is installed. The High Alarm default is 6.0" w.c. [1.49 kPa]. The upper settable value is the calibration pressure of the pressure module and the lower limit is zero. Pressing Select will change the system to the Low Alarm Setup mode.

Low Alarm Setup

The operation of the Low Alarm Setup is identical to the High and Low Limit Setup. The Low Alarm default is 1.0" w.c. [0.25 kPa]. The upper settable value is the calibration pressure of the pressure module and the lower limit is zero. Pressing Select will change the system to the Cycle Delay Setup mode.

Cycle Delay Setup

The cycle delay inserts a delay time between the end of the last channel and the beginning of the first channel. This may be set to between zero and 255 minutes. The factory default is zero. Setting the value to zero will disable the delay. Pressing Select will change the system to the Down Time Cycles Setup mode.

Down Time Cycles Setup

The Down Time Cycles setup will select a value between zero and 255 minutes. The factory default is one minute. Selecting zero will disable the operation. When the down time cycles is activated by shorting the down time cycles input to the common terminal, the

system will enter a forced cleaning mode for the programmed duration. The cycle delay, if one is programmed, will not be inserted in the timing cycle. Pressing Select will change the system to the Auto Alarm Reset Setup mode, if a pressure module is installed, or to Process when no pressure module is available.

Auto Alarm Reset Setup

The Auto Alarm Reset Setup, available only when a pressure module is installed, allows the auto alarm reset time to be selected. This value may be set between zero and 255 seconds.

The factory default value is five seconds. When the auto alarm reset is enabled by shorting the auto alarm reset terminal to a common terminal, the alarm will be reset after the pressure returns to the normal range and the timeout has expired. Pressing Select will change the system to Process mode.

Restoring Factory Defaults

The DCT1000 has been programmed with factory default values that meet most industry operating conditions. In the event that you want to restore all of the parameters to the original factory default values:

1. Return the master controller to the process mode.
2. Press and hold both UP and DOWN buttons. The display will indicate a 10-second countdown, at the end of which all parameters will be restored to factory defaults. Releasing the switches prior to the end of the count will stop the process and no modification will be made. Likewise, in each of the parameter setup modes, pressing and holding the UP and DOWN buttons simultaneously will reset the individual default value, leaving other settings unchanged.

Maintenance Support and Diagnostics

We've also included a number of features that will aid maintenance personnel in diagnosing problems or verifying that the system is operating.

Power Indicator

A power on LED indicator is provided at the center left edge of the board. This will be illuminated when the power supply is operating properly. If the power LED is not illuminated, the primary power

TIMER CONTROLLER

Installation

may be off or there is a fault in the power circuit.

Active Channel Indicator

Located just above the solenoid terminations, you will find that each channel is provided with an LED that is illuminated when the triac switch is on. This allows a visual correlation between the channel being pulsed and the operation of the solenoid.

Comm Check Indicator

The comm check indicator can be found in the upper right hand corner of the slave and master controller board (just above the "out" terminal, a telephone style connector). This indicator is used for two purposes. First, on a master controller a brief flash once per second is produced to indicate that the system is operating. Second, this indicator is used to show when the communication check operation is performed on slave boards. The master controller will check each of the slave boards at a rate of about one inquiry per second, starting with the slave board connected directly to the master controller and ending with the last slave board in the chain. The master controller will flash its Comm Check LED for about 250 msec each time it makes a communication check. The external module selected for test will also flash its Comm Check LED for about the same time each time it is interrogated. Observing this test sequence will indicate that the communication between boards is operational. When a slave board powers up, the Comm Check LED will be illuminated continuously. It will be extinguished when the master controller has initialized its communication channel. This indicator then shows that a master controller is operating and that each slave board is responding properly on the daisy chain.

Error Codes

Error codes will be displayed on the three-digit display when certain faults occur. Most of these indicators are associated with the daisy chain communication, but certain error codes pertain to single board operation also.

DISPLAY	MEANING	ACTION REQUIRED
Err 1	This is a "watchdog" reset that is enabled when the master controller isn't able to cycle through its operation.	Make sure all electrical connections are appropriately shielded so the master controller is not disrupted by noise.
Err 2	The pressure module has failed to respond to the request of the master controller.	The master controller will try to recover from the fault. If unsuccessful, replace the pressure module.
Err 3	Communication error in the daisy chain interface. This will only appear when the master controller is used in conjunction with a slave board.	Make sure the control cable used in the daisy chain interface is properly shielded from noise.
Err 4	The master controller has detected a change in module configuration or a fault in one of the modules.	Reinstall all modules in accordance with the instructions in the factory IOM.
Err 5	If the fault described in "Err 4" is not corrected, the master controller will reconfigure the modules that are responding properly and operate at a degraded condition.	Reinstall all modules. Contact factory if the problem persists.
Err 6	A message error affecting the software of the master controller or one of its modules.	Check the integrity of all connecting cables used to drive slave boards for additional solenoids. Also check the electrical grounding of the system installation.
Err 7	Indicates that one of the triac drivers are not functioning.	Return to factory for evaluation and repair.
Err 8	Internal Error.	Contact the factory.
Err 9	Unassigned message code.	Contact the factory.

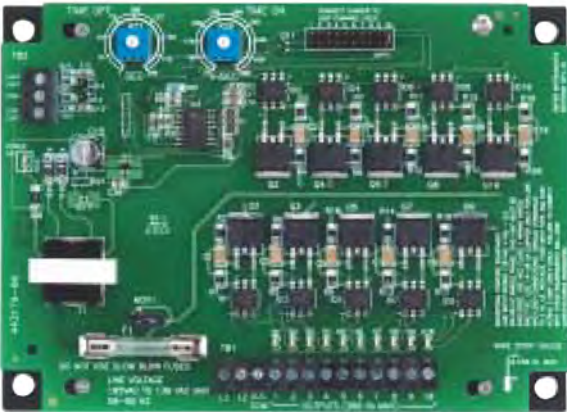
TIMER CONTROLLER

Glossary of Terms

- **Run Mode:** The term used when the timer board is firing the solenoids.
- **Modules:** A major system component such as the DCT1000 master controller or a DCP100 pressure module.
- **Pressure Module:** The pressure measurement subsystem that includes the software and hardware for on-demand cleaning, alarms and signal retransmission of the process variable (i.e., the differential pressure across the dust bags).
- **Master Controller:** The primary timer board that contains all of the major features, connections for external inputs and power to drive the DCT1000 Dust Collector Timer Controller system.
- **Power Guard:** A plastic shield that covers the output triacs and other line voltage circuitry.
- **Demand Cycle Mode:** A process in which the run mode is enabled through the on-board pressure module or an external switch such as the Dwyer Photohelic®.
- **Euro Connector:** A “caged” connection used to terminate solenoids, incoming power, or external switches on the DCT1000
- **Continuous Cycle Mode:** A time based cycling mode dependent on solenoid time on/off settings and time set between complete cycles.
- **Manual Override:** Allows the user to override the DCT1000 remotely or from the master controller panel through use of a switch or a wire jumper.
- **Slave Board:** A channel expander that is used in conjunction with the master controller to accommodate additional solenoids on larger dust collection systems. It can be recognized easily as it does not have the on-board display panel or the power supply present. A master controller may also be used as a slave board.

TIMER CONTROLLER

DCT 500 Series



Application

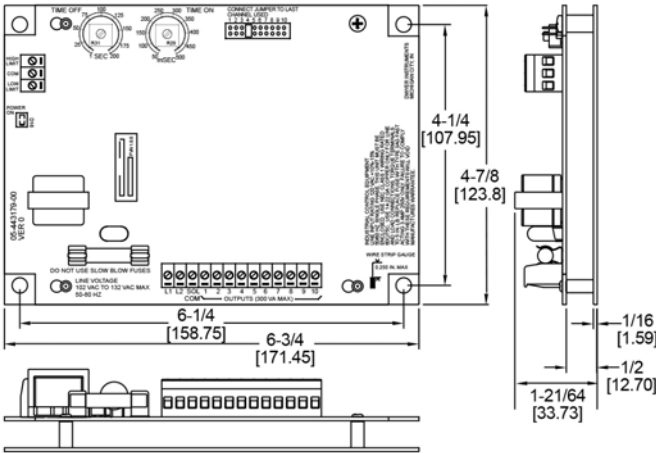
The Series DCT 500 Timer Controller is a timing system for pulse-jet type dust collectors or pneumatic conveying systems in either continuous or on-demand cleaning applications. It is provided with either 4, 6, or 10 channels.

General Description

The DCT 500 was designed for ease of installation in your dust collector system. For installations requiring fewer channels than available on the board, a shorting plug is provided to allow selection of the last used channel. Time-on and time-off settings are selected using two potentiometers. High-limit and low-limit control inputs are provided for use with on-demand systems.

When used in a continuous mode the high-limit input is jumpered. For safety, the control circuitry including the control inputs and the last channel jumper, is isolated from the power line.

SPECIFICATION	DESCRIPTION
Storage temperature	-40°F to 176°F (-40°C to 80°C)
Operating ambient temperature	-40°F to 176°F (-40°C to 80°C)
Weight	9 oz (255 gm)
Power	102 to 132 VAC 50 or 60 Hz, 1.8W max no load power
Fuse	Type 3AG, 3A @250VAC
Output channels	4, 6, and 10 channels available
Solenoid supply	300 VA
On time	50 msec to 500 msec
On time accuracy	±5% of setting
Off time	1 second to 200 seconds
Off time accuracy	5% of setting



TIMER CONTROLLER

Installation

WARNING



Always install and service this device with the power off and a lockout installed if required. Line voltages are exposed on the board. As a result, this device is not intended to be installed in any open location. It must be installed within an enclosure that meets appropriate safety and local code requirements. Follow applicable safety procedures when installing or servicing this product.

Always replace the fuse with the proper type and rating.



The fuse is Type 3 AG fast acting 3 Amp @ 250V. DO NOT use slow-blow type fuses. Failure to comply with this requirement will pose a Power serious safety risk and will void manufacturer's warranty.

Power Requirements

The controller is designed for operation on 120 VAC 50/60 Hz power. The input voltage must be between 102 VAC and 132 VAC either 50 or 60 Hz. The solenoid loads must be rated for 120 VAC operation.

Location

The system must be located in an enclosure that meets relevant safety standards and electrical codes. There are no other special orientation requirements. Mount it using the four mounting holes in the baseplate. The baseplate back is flush, so no special spacers are needed to accommodate obstructions except for those imposed by the location itself.

Connections

The line and solenoid connections are located at the lower edge of the board. The terminal block is a "Euro" style connector system that clamps the wire within the connector body. The connector will accept wire sizes from 14 to 22 gauge. These terminals should be torqued to 5 in. lb. The connectors are specified for single connection but multiple wires may be connected to a single lug provided local codes allow this and good workmanship practices are followed. When using stranded wire, make sure that there are no "stray" strands. These pose safety hazards and may cause system failure or damage. Connect the line power to L1 and L2. Connect the solenoids between the selected output and

the solenoid common. Solenoid common and L2 are internally connected. Refer to figure 2-1.

The wire should be stripped to no more than 0.25 in. A strip gauge is provided at the lower right corner of the board. Longer than this may cause shorts or expose line voltages to possible contact.

Switches connected to the control inputs at the top of the board must be isolated normally open contacts connected only to the relevant terminal and to the common terminals. The following subparagraphs describe the external switch connections. Refer to figure 2-1 for switch connection illustration.

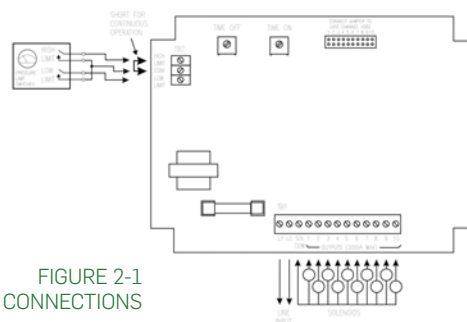


FIGURE 2-1
SWITCH CONNECTIONS

TIMER CONTROLLER

Installation

External Limit Switch Connection

The controller may be used with an external pressure limit switch or sensor to provide demand-cleaning operation. A three pin terminal block provides connection for external high and low limit switches. A simple on-off system can be established with a single pressure switch connected to the high limit input. Better control can be achieved with a high and low limit switch/gauge such as the Dwyer Photohelic® pressure gauge. The switches must be isolated contacts between the high or low limit input and the common connection. The wiring from the switches must be two or three wires with no other connections made to these. The common line must not be connected to equipment ground or protective ground, since these may introduce electrical noise and cause improper operation or possible damage to the control board. The operation of these inputs is summarized as follows:

CURRENT OPERATION	LOW LIMIT SWITCH	HIGH LIMIT SWITCH	NEXT OPERATION
Hold	Open	Open	Hold
Hold or run	X	Closed	Run
Hold	Ø	Open	Hold
Hold	Closed	Ø	Run
Run	Closed	≠	Run
Hold	Closed	Ø	Run
Run	≠	Open	Hold
Ø - Transition from open to closed ≠ - Transition from closed to open X - Either open or closed			

Operating Modes

Continuous Cycle Mode

The DCT 500 has two operating modes available for different applications. Starting with the most basic mode, it is capable of operating in a continuous cleaning cycle. This can be initiated by placing a jumper between the high limit input and the common connection. Two setup parameters control operation: time off, time on. Time on and time off specifically deal with the solenoid on time and the time interval between the end of the on pulse and the start of the next.

Demand Mode

Demand mode operation can be configured using the high limit and low limit inputs. A simple on-off system can be setup with a single pressure switch connected to the high limit input. Better control can be achieved with a high and low limit switch set such as is provided in the Photohelic® pressure gauge. In this ondemand mode, time on and time off may be programmed to define the cleaning cycle.

System Setup

Last Channel Selection

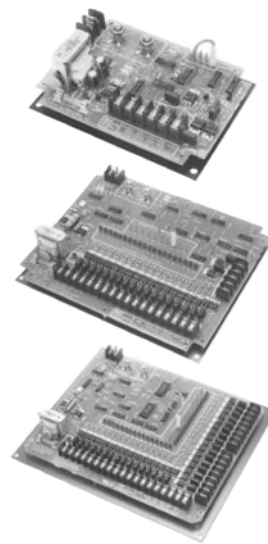
A jumper connector is provided to select the last channel used. Place the jumper on the two pins corresponding to the last channel used in the installation.

Time Off and Time On Setup

Time off defines the period of time between solenoid activations when no channels are enabled. This value may be set between 1 second and 200 seconds with a resolution of 1 second. Time on defines the solenoid on time. The value may be set between 50 msec and 500 msec with a resolution of 10 msec. If adjustments are made while the system is in operation, the new setting will take effect in the following solenoid cycle. Do not use excessive force to turn the potentiometers. This will damage the unit.

TIMER CONTROLLER

Models DNC-T2003-T2032



General Description

Operating Logic: The control can function in 2 modes:

Continuous Mode: The pressure switch terminals are shorted. Upon application of input voltage, the control activates output #1 after the preset off time. It will continue to activate outputs sequentially until input voltage is removed.

On Demand Mode: The pressure switch terminals are connected to an isolated set of contacts of a differential pressure switch. The control will activate the outputs sequentially whenever the pressure switch contacts are closed. When the pressure switch contacts open, the output sequencing stops. Re-closing of the contacts will cause the control to resume activating the outputs.

Program wire allows the user to select the maximum number of outputs to be activated.

Note: Controls are shipped with jumper across pressure switch terminals.

Specifications

Time Delay

On-Time: Adjustable from 50 to 500 milliseconds

Off-Time: Range A - adjustable from 1.5 to 30 seconds; Range B - adjustable from 8.5 to 180 seconds

Note: Range S designates customer specified time range. Consult factory for parameters

Repeatability: $\pm 3\%$ over temperature and voltage ranges Input

FEATURES:

- **Digital Timing Circuitry:** Allows for stable timing from -40°F to 150°F temperature range
- **Pulse Time:** Line synchronized to eliminate 8 milliseconds triac turn off variation
- **10 Amp-400/600V Output. Triacs:** For maximum protection against output shorts. 200 VA load rating.
- **RTV Coating:** Conformally coated for protection against vibration, humidity and contamination
- **2 Modes of Operation:** Can be operated continuously or "on demand" via external pressure switch
- **Field Selectable:** For numbers of outputs required
- **LED Indicators:** For compartment being cleaned indication
- **Rugged Timing. Adjustments:** Large stable potentiometers are used for "on" and "off" time adjustments
- **Metal Chassis Provided:** For mounting directly into NEMA-4 box
- **Timer Life Tested for 24-Hours:** To eliminate field failures
- **Input Protection:** 30 joule metal oxide varistor
- **Warranted to be free from defects in materials or workmanship for One Year from date of purchase**
- **Made in USA**

CAMCORP

A MEMBER OF THE SCHEUCH GROUP

TIMER CONTROLLER

Specifications continued

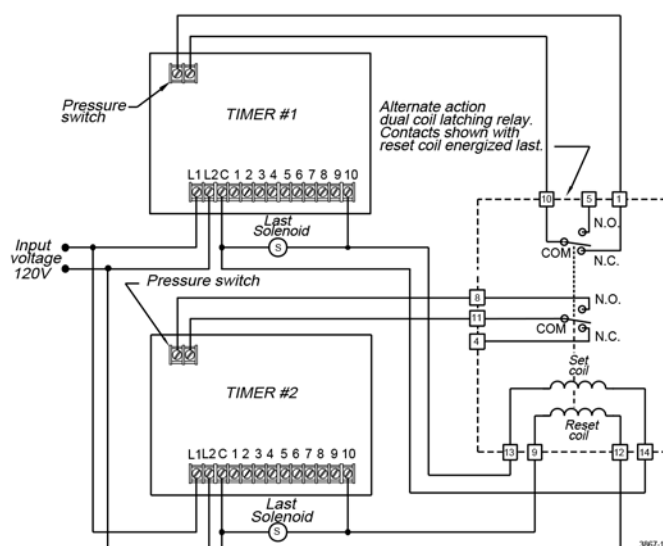
Operating Voltage: 120 \pm 10%, 220 \pm 10% VAC
Frequency: 50/60 Hz
Power Consumption: 2 VA Max.

Output

Type: Solid-state switch (Triac)
Switch Rating: 200 VA maximum per output Protection
Transient Voltage: 30 joule metal oxide varistor
Short Circuit Protection: 3 Amp. fuse Environmental
Operating Temperature: -40°F to 151°F (-40°C to 66°C)
Storage Temperature: -40°F to 158°F (-40°C to 70°C)

To expand the number of outputs in "continuous cleaning mode", any two timers can be connected via a dual coil alternate action latch relay as shown in the diagram to the right.

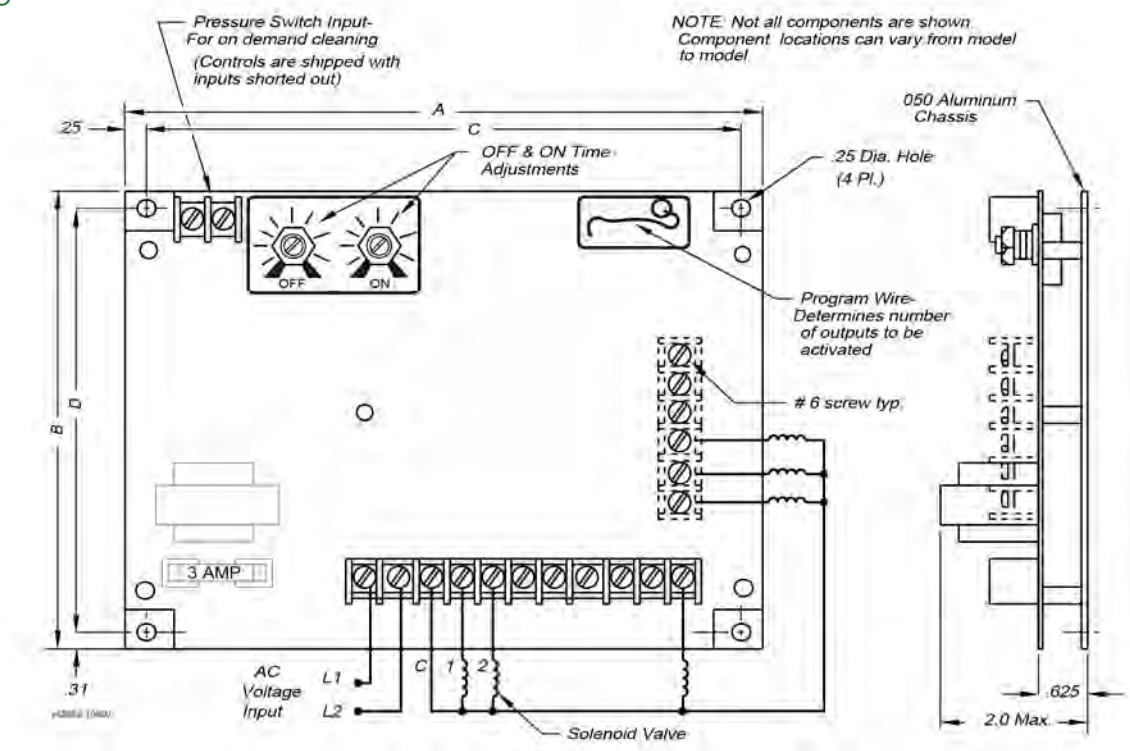
The output pulse from the last compartment of Timer No. 1 activates the latch coil opening the reset contacts connected to pressure switch terminals of Timer No. 1, causing Timer No 1 to stop sequencing. At the same time, the latch contacts connected to pressure switch Timer No. 2 close which will cause Timer No. 2 to start sequencing until the last output activation causes the reset coil to unlatch the relay and Timer No. 1 begins sequencing. This cycle will continue until voltage is removed from the system.



WIRING DIAGRAM TO FACILITATE
EXPANDED OUTPUT MODE

TIMER CONTROLLER

Wiring Diagram

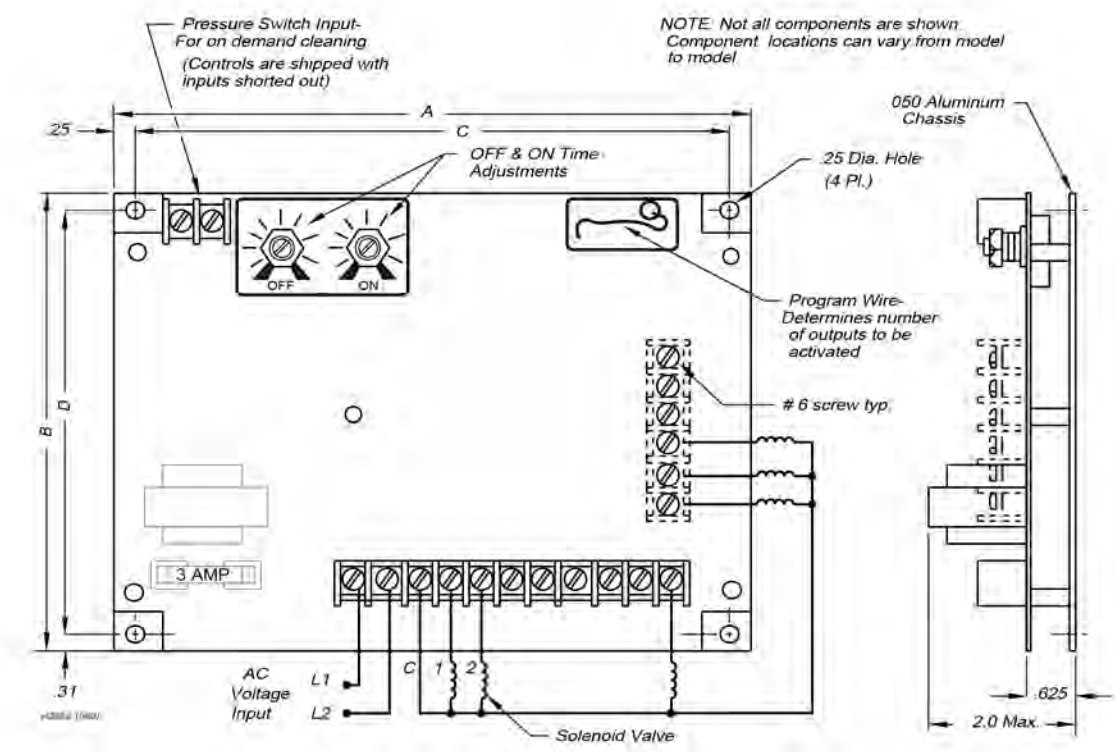


DNC-T2003 through DNC-T2032 120VAC Input Voltage

MAXIMUM NO. OF OUTPUTS	DIMENSIONS				SIZE OF NEMA-4 ENCLS. REQUIRED	PROGRAMMABLE NO. OF OUTPUTS	OFF TIME IN SECONDS
	A	B	C	D			
3	6-3/4"	4-7/8"	6-1/4"	4-1/4"	8" X 6" X 3-1/2"	1-3	1.5-30
							8.5-180
6	8-3/4"	6-7/8"	8-1/4"	6-1/4"	10" x 8" x 4"	2-6	1.5-30
							8.5-180
10	8-3/4"	6-7/8"	8-1/4"	6-1/4"	10" x 8" x 4"	3-10	1.5-30
							8.5-180
20	10-3/4"	8-7/8"	10-1/4"	8-1/4"	12" x 10" x 5"	11-20	1.5-30
							8.5-180
32	12-3/4"	10-7/8"	12-1/4"	10-1/4"	14" x 12" x 6"	17-32	1.5-30
							8.5-180

TIMER CONTROLLER

Wirind Diaaram



DNC-T2006 through DNC-T2032 220VAC Input Voltage

MAXIMUM NO. OF OUTPUTS	DIMENSIONS				SIZE OF NEMA-4 ENCLS. REQUIRED	PROGRAMMABLE NO. OF OUTPUTS	OFF TIME IN SECONDS
	A	B	C	D			
6	6-3/4"	4-7/8"	6-1/4"	4-1/4"	10" x 8" x 4"	2-6	1.5-30
							8.5-180
10	6-3/4"	4-7/8"	6-1/4"	4-1/4"	10" x 8" x 4"	3-10	1.5-30
							8.5-180
20	10-3/4"	8-7/8"	10-1/4"	8-1/4"	12" x 10" x 5"	11-20	1.5-30
							8.5-180
32	12-3/4"	10-7/8"	12-1/4"	10-1/4"	14" x 12" x 6"	17-32	1.5-30
							8.5-180

Note: Special time ranges are availabale with the following maximum to minimum time ratio restrictions: ON Time - 10:1; Off Time - 20:1

TIMER CONTROLLER

Accessories

ENCLOSURE FOR	DIMENSIONS
DNC-T2003	8" x 6" x 31/2"
DNC-T2006	10" x 8" x 4"
DNC-T2010	10" x 8" x 4"
DNC-T2020	12" x 10" x 5"
DNC-T2032	14" x 12" x 6"
Pilot Lamp	NEMA-4 Rated Red Light
On/Off Switch	NEMA-4 Rated w/Legend Plate
Alternate Action Dual Coil Latch Relay	
Socket For Latch Relay	

CAMCORP, Inc. offers NEMA 4 type enclosures for mounting our controls. These enclosures are made of heavy gauge steel and have a continuous hinge cover. All seams are continuously welded. The finish is gray hammer-tone enamel inside and out, over phosphatized surfaces.

Note. In order to keep abreast of the latest technology, CAMCORP, Inc. reserves the right to change components and/or design of controls without notice.

2. Do not mount controls in areas of high dust or corrosive atmospheres without a protective enclosure.
3. Do not use a converter or inverter for the power source.
4. Do not mount control in high transient voltage areas without an isolation transformer
5. Do not leave control box open.
6. Do not allow a local repair shop to repair the controls, as we employ some very sophisticated components that could be further damaged. For service, call us directly: 800-226-2677.

Important Notice

Our timers are capable of use in a wide array of devices and in various applications. Any device or system incorporating a timer should be so designed that, in the event of failure, malfunction or normal wear-out of the timer, the system will become inoperative in a manner which will prevent property damage or bodily Injury.

Caution

1. Do not mount controls in high vibration areas without shock mounts.

MAGNEHELIC DIFFERENTIAL PRESSURE GAUGE

2000 Series



Specifications

Dimensions: 4-3/4" dia. X 2-3/16" deep (12 cm dia. X 5.56 cm dia.)

Weight: 1 lb. 2 oz. (.54 kg)

Finish: Baked dark gray enamel.

Connections: 1/8 N.P.T high and low pressure taps, duplicated, one pair side and one pair back.

Accuracy: Plus or minus 2% of full scale, at 70°F (21°C). (Model 2000-0, 3%; 2000-00, 4%).

Pressure Rating: 15 PSI.

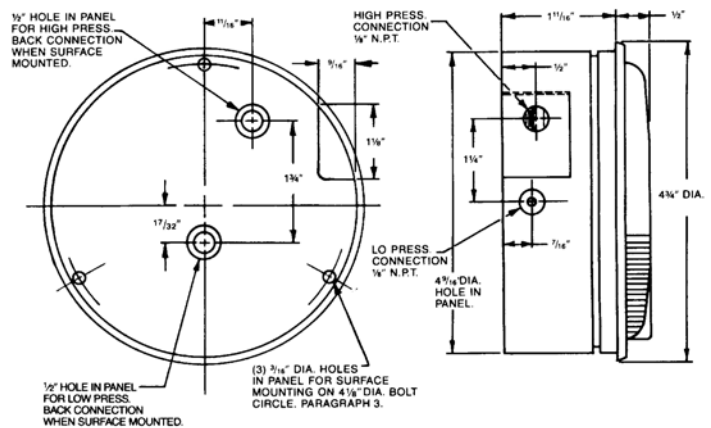
Ambient Temperature Range: 20° to 140°F (-7°C to 60°C)

Standard gauge accessories include two 1/8" (3.18 mm) N.P.T. plugs for duplicate pressure taps, two 1/8" (3.18 mm) pipe thread to rubber tubing adapters, and three flush mounting adapters with screws.

Caution: For use with air or compatible gases only.

For repeated over-ranging or high cycle rates, contact factory.

Hydrogen Gas Precautionary Note: The rectangular rare earth magnet used in the standard gauge may not be suitable for use with hydrogen gas since a toxic and explosive gas may form. For hydrogen service, consult the factory for an alternate gauge construction.



MAGNEHELIC DIFFERENTIAL PRESSURE GAUGE

Installation

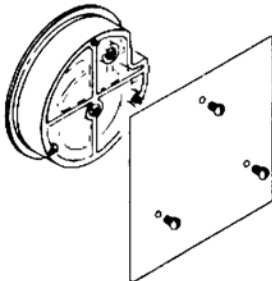
1. Select a location free from excessive vibration and where the ambient temperature will not exceed 140°F (60°C) Also, avoid direct sunlight which accelerates discoloration of the clear plastic cover. Sensing lines may be run any necessary distance. Long tubing lengths will not affect accuracy but will increase response time slightly. Do not restrict lines. If pulsating pressures or vibration cause excessive pointer oscillation, consult the factory for ways to provide additional damping.
2. All standard Magnehelic gauges are calibrated with the diaphragm vertical and should be used in that position for maximum accuracy. If gauges are to be used in other than vertical position, this should be specified on the order. Many higher range gauges will perform within tolerance in other positions with only rezeroing. Low range Model 2000-00 and metric equivalents must be used in the vertical position only.

3. Surface Mounting

Locate mounting holes, 120° apart on a 4-1/8" (10.48 cm) dia. circle. Use No. 6-32 machine screws of appropriate length.

4. Flush Mounting

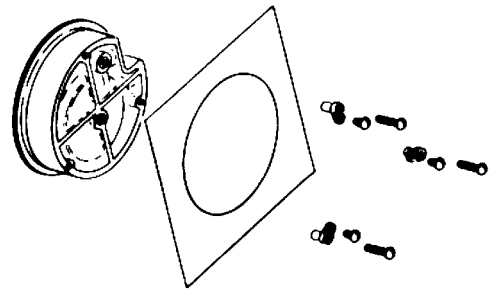
Provide a 4 9/16" (11.59 cm) dia. opening in panel. Insert gauge and secure in place with No. 6-32 machine screws of appropriate length, with adaptors, Part No. 360c, firmly secured in place. To



mount gauge on 1-1/4" to 2" (3.16 cm to 5.08 cm) pipe, order optional A-610 pipe mounting kit.

5. To zero the gauge after installation

Set the indicating pointer exactly on the zero mark, using the



external zero adjust screw on the cover at the bottom. Note that the zero check or adjustment can only be made with the high and low pressure taps both open to atmosphere.

MAGNEHELIC DIFFERENTIAL PRESSURE GAUGE

Maintenance

Operation

Positive Pressure: Connect tubing from source of pressure to either of the two high pressure ports. Plug the port not used. Vent one or both low pressure ports to atmosphere.

Negative Pressure: Connect tubing from source of vacuum or negative pressure to either of the two low pressure ports. Plug the port not used. Vent one or both high pressure ports to atmosphere.

Differential Pressure: Connect tubing from the greater of two pressure sources to either high pressure port and the lower to either low pressure port. Plug both unused ports. When one side of gauge is vented in a dirty, dusty atmosphere, we suggest an A-331 Filter Vent Plug be installed in the open port to keep inside of gauge clean.

- a. For portable use or temporary installation, use 1/8" (3.18 mm) pipe thread to rubber tubing adapter and connect to source of pressure with rubber or Tygon tubing.
- b. For permanent installation, 1/4" (3.18 mm) O. D., or larger, copper or aluminum tubing is recommended. See accessory bulletin S-101 for fittings.

No lubrication or periodic servicing is required. Keep case exterior and cover clean. Occasionally disconnect pressure lines to vent both sides of gauge to atmosphere and rezero. Optional vent valves, (bulletin S-101), should be used in permanent installations.

Calibration Check: Select a second gauge or manometer of known accuracy and in an appropriate range. Using short lengths of rubber or vinyl tubing, connect the high pressure side of the Magnehelic gauge and the test gauge to two legs of a tee. Very slowly apply pressure through the third leg. Allow a few seconds for pressure to equalize, fluid to drain, etc., and compare readings. If accuracy unacceptable, gauge may be returned to factory for recalibration. To calibrate in the field, use

the following procedure.

1. With gauge case, P/N 1, held firmly, loosen bezel, P/N 4 by turning counterclockwise. To avoid damage, a canvas strap wrench or similar tool should be used.
2. Lift out plastic cover and "O" ring.
3. Remove scale screws and scale assembly. Be careful not to damage pointer.
4. The calibration is changed by moving the clamp, P/N. 70-b. Loosen the clamp screw(s) and move slightly toward the helix if gauge is reading high, and away if reading low. Tighten clamp screw and install scale assembly.
5. Place cover and O-ring in position. Make sure the hex shaft on inside of cover is properly engaged in zero adjust screw, P/N 230-b.
6. Secure cover in place by screwing bezel down snug. Note that the area under the cover is pressurized in operation and therefore gauge will leak if not properly tightened.
7. Zero gauge and compare to test instrument. Make further adjustments as necessary.

Caution: If bezel binds when installing, lubricate threads sparingly with light oil or molybdenum disulphide compound.

Warning: Attempted field repair may void your warranty. Recalibration or repair by the user is not recommended. For best results, return gauge to the factory. Ship prepaid to:

CAMCORP, Inc.
9732 Pflumm Road
Lenexa, KS 66215

MAGNEHELIC DIFFERENTIAL PRESSURE GAUGE

Troubleshooting Tips

Gauge won't indicate or is sluggish

1. Duplicate pressure port not plugged.
2. Diaphragm ruptured due to overpressure.
3. Fittings or sensing lines blocked, pinched, or leaking.
4. Cover loose or "O" ring damaged, missing.
5. Pressure sensors, (static tips, Pitot tube, etc.) improperly located.
6. Ambient temperature too low. For operation below 20°F (-7°C) order gauge with low temperature, (LT) option.

Pointer stuck-gauge can't be zeroed

1. Scale touching pointer.
2. Spring/magnet assembly shifted and touching helix.
3. Metallic particles clinging to magnet and interfering with helix movement.
4. Cover zero adjust shaft broken or not properly engaged in P/N 230-b adjusting screw.

We generally recommend that gauges needing repair be returned to the factory. Parts used in various sub-assemblies vary from one range of gauge to another, and use of incorrect components may cause improper operation or failure. Gauges repaired at the factory are carefully calibrated and tested to assure "like-new" operation. After receipt and inspection, we will be happy to quote repair costs before proceeding.

Consult factory for assistance on unusual applications or conditions.

Use with air or compatible gases only.

Ordering Instructions

When corresponding with the factory regarding Magnehelic® gauge problems, refer to the call-out numbers in this view on the next page. Be sure to include model number, pressure range, and any special options. Field repair is not recommended; contact the factory for repair service information.

CAMCORP

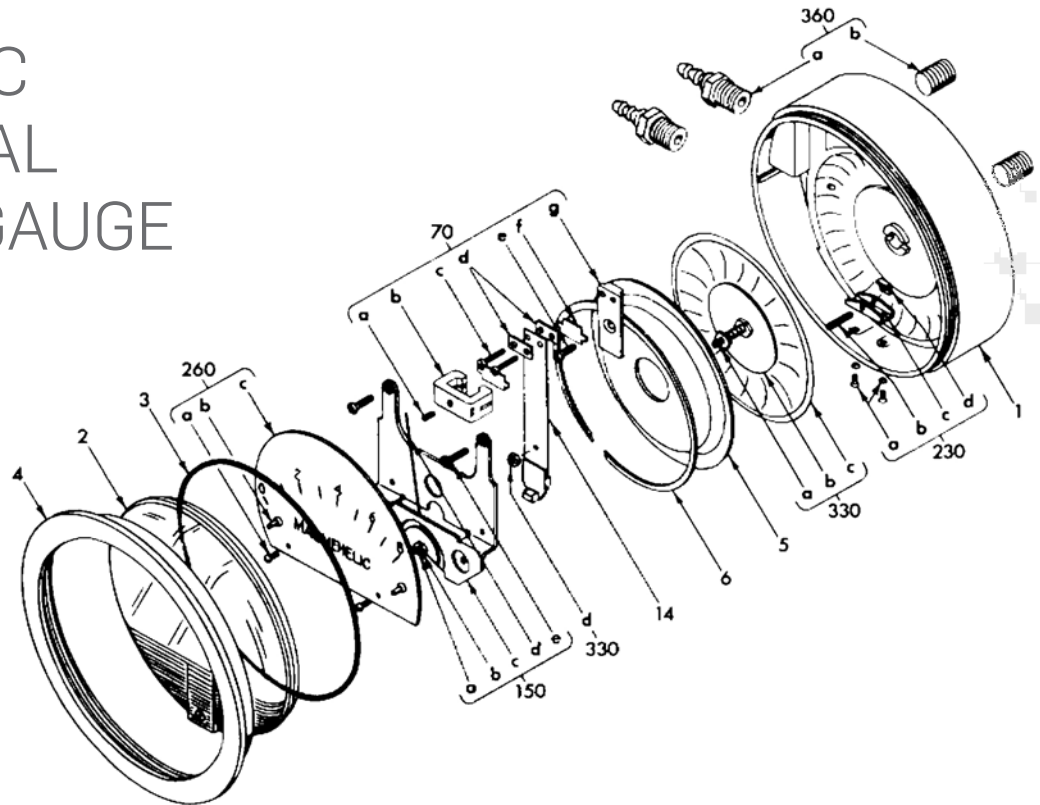
A MEMBER OF THE SCHEUCH GROUP

ALL STATED SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION. VISIT CAMCORPINC.COM FOR THE LATEST INFORMATION.

magnehelicgauge2000 rev. 07/19 ©CAMCORP, INC.

MAGNEHELIC DIFFERENTIAL PRESSURE GAUGE

Magnehelic Gauge Exploded View



1. Case
2. Cover with zero adjust assy.
3. "O" ring seal
4. Bezel
5. Diaphragm sealing plate
6. Retaining ring
70. Range Spring assembly
 - a. Clamp set screw
 - b. Clamp
 - c. Mounting screws (2 req'd)
 - d. Clamping shoe (2 req'd)
 - e. Clamp plate screw
 - f. Spacer (2 req'd)
 - g. Clamp plate
14. Range Spring with magnet
150. Wishbone Assembly -consists of:
 - a. Front jewel
 - b. Locking nut
 - c. Wishbone
 - d. Pointer
 - e. Mounting screws (2 req'd)
 - f. Helix assembly (not shown)
 - g. Pivots (2 req'd) (not shown)
 - h. Rear jewel (not shown)
230. Zero adjust assembly-consists of:
 - a. Foot screws with washers (2 req'd)
 - b. Adjust screw
 - c. Foot
- d. Finger
260. Scale Assembly-consists of:
 - a. Mounting screws (2 req'd)
 - b. Bumper pointer stop (2 req'd)
 - c. Scale
330. Diaphragm Assembly -consists of:

(Arbor press needed to install)

 - a. linkage assy., complete
 - b. Front plate
 - c. Diaphragm
 - d. Rear plate (not shown)
 - e. Plate washer (not shown)
360. Mounting Hardware Kit
 - a. Adapter -pipe plug 1/8" (3.18 mm) NPT to rubber tubing - (2 req'd)
 - b. Pipe plug 1/8" (3.18 mm) NPT-(2 req'd)
 - c. Mounting lug (3 req'd)
 - d. Long screw (3 req'd)
 - e. Short screw (3 req'd)

PHOTOHELIC GAUGE

3000MR/3000MRS Series



Description

Using solid state technology, the SERIES 3000MR & 3000MRS Photohelic® Switches/Gauges combine the functions of a precise, highly repeatable differential pressure switch with a large easy-to-read analog pressure gauge employing the durable, time-proven Magnehelic® gauge design. Switch setting is easy to adjust with large external knobs on the gauge face. Gauge reading is unaffected by the switch operation will indicate accurately even if power is interrupted. Solid state design now results in greatly reduced size and weight. Units can be flush mounted or surface mounted with hardware supplied. 3000MR models employ versatile electromechanical relays with gold over silver contacts – ideal for dry circuits. For applications requiring high cycle rates, choose 3000MRS models with SPST (N.O.) solid state relays. All models provide both low and high limit control and include 18-inch (45 cm) cable assemblies for electrical connections.

Compatible with air and other non-combustible, non-corrosive gases, they can be used in systems with pressures to 25 psig (1.725 bar). Optional construction is available for use to either 35 psig (2.42 bar) or 80 psig (5.51 bar).

Gauge Specifications

Service: Air and non-combustible, compatible gases.

Wetted Materials: Consult factory.

Accuracy: $\pm 2\%$ of FS (3000-0 $\pm 3\%$ of FS). (3000-00 $\pm 4\%$ of FS).

Pressure Limit: -20" Hg to 35 psig (-0.677 bar to 1.72 bar). MP option: 35 psig (2.41 bar), HP option: 80 psig (5.52 bar).

Temperature Limits: 20 to 120°F (-6.67 to 48.9°C).

Process Connections: 1/8" (3.18 mm) female NPT (duplicated side and back).

Size: 4" (101.6 mm) dial face, 5" (127 mm) OD x 3-1/8" (79.38 mm); -SS Bezel: 4-3/4" (120.7 mm) OD x 2-21/32" (67.5 mm).

Weight: 1.8 lb (816 g).

FEATURES:

- Gauge reading unaffected by switch operation and will continue to read pressure even during power loss
- Zero and range adjustments outside of gauge means no disassembly in normal service
- Solid state design allows for switching in high cycle rate applications without degradation

3000 MR Switch Specifications

Switch Type: Each set point has 1 form C relays (SPDT)

Relay Contacts: (Resistive load) 1 form C rated 1.0 A @ 30 VDC, 0.3 A @ 110 VDC or 0.5 A @ 125 VAC. Gold over clad silver – suitable for dry circuits.

Electrical Connections: 18" (46 cm) cable assembly with 8 conductors. Optional lengths to 100' (30.5 m).

Power Requirements: 24 VDC, regulated 10%.

Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.

Set Point Adjustment: Adjustable knobs on face.

Agency Approvals: CE.

CAMCORP

A MEMBER OF THE SCHEUCH GROUP

PHOTOHELIC GAUGE

3000MRS Specifications

Switch Type: Each set point has a solid state relay.

Switching Voltage: 20 to 280 VAC (47 to 63 Hz).

Switching Current: 1.0 A (AC) max., 0.01 mA (AC) min., (2) SPST NO.

Electrical Connections: 18" (46 cm) cable assembly with 6 conductors, optional lengths to 100' (30.5 m).

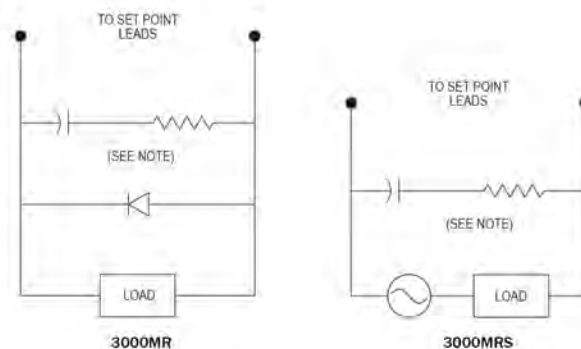
Power Requirements: 24 VDC, regulated $\pm 10\%$.

Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.

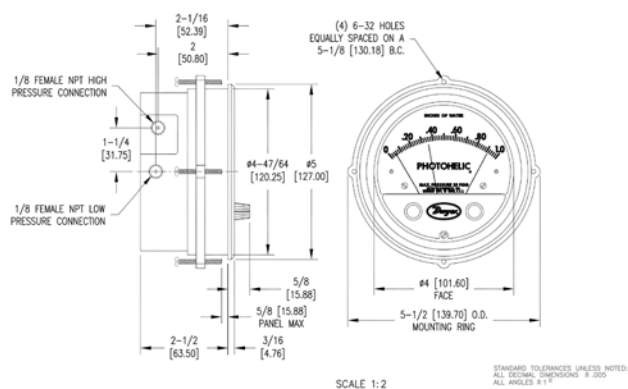
Set Point Adjustment: Adjustable knobs on face.

Agency Approvals: CE.

Wiring Diagram



Dimensions



DOOR GASKET

Black, White, and White High-Temperature

Black

PROPERTY	TYPICAL VALUES
Density,pcf	16 +/-3
Compression deflection, 25% psi (ASTM D 1056-98)	5-9
Heat resistance: compression deflection (ASTM D 1056-98) Oven-aged 7 days @ 158°F (70°C) Change from original C/D value, %	+13
Water absorption, % (ASTM D 1056-98)	<5
Compression set (ASTM D 1056-98, Suffix B2) 22 hrs. @ 73.4°F (23°C), 50% deflection 24-hour recovery @ RT, %	8
Flammability of inerior materials FMVSS 302 (Suffix Z1)	Pass
Chemical stress resistance GM9308P, Method B, (Suffix Z2)	Pass
Weather resistance (ASTM D 518, Method A, Suffix Z3) 2000 hour outdoor exposure in Arizona Samples mounted at 45° angle facing South	Pass
UL 50 (Suffix Z4) UL tested and certified	Meets gasket requirements
UL 508 (Suffix Z5) UL tested and certified	Meets gasket requirements

NOTE: The above tests are performed on a standard ASTM 250° test rectangle. Test results will vary depending on the cross-sectional area of the profile.

DOOR GASKET

Black ST Adhesive

PROPERTY	TYPICAL VALUES
Heat activated adhesive	E2
High-performance adhesive	VR-2 Acrylic
Core	Black acrylic foam
Tape thickness (excluding liner) Minimum Maximum	0.47" (1.20 mm) 0.43" (1.10 mm) 0.51" (1.30 mm)
Tape density (excluding liner) Minimum Maximum	43 lb/ft3 (690 kg/m3) 39 lb/ft3 (625 kg/m3) 47 lb/ft3 (755 kg/m3)
Release liner	Red polyolefin
Rolls widths	Available upon request

White

NOTE: The above tests are performed on a standard ASTM 250° test rectangle. Test results will vary depending on the cross-sectional area of the profile.

Specifications

These products meet the flammability requirements of FAR 25/JAR 25/CS 25 Appendix F, Part 1, (a)(1)(iv) and (a)(1)(v) horizontal flammability test and Automotive Standard PART 571FMVSS302. The sponge is closed cell with low water absorption and dust ingress protection to IP65.

The density range in white has been approved by the WRAS (Water Regulations Advisory Service) for use in contact with potable water at temperatures up to 185°F (85°C). The listing number is 1304521.

482°F (250°C) intermittent
Environment Resistance: Silicone rubber products have an excellent resistance to ozone, oxidation, ultraviolet light, corona discharge, cosmic radiation, ionising radiation and weathering in general.

Options

- Mouldings, sheeting, gaskets, cables, extrusions, compound, tubing
- Cord, section, strip and profiles
- Pressure sensitive adhesive backing
- Joined rings and gaskets
- Full range of standard colors
- Capability to color match

Temperature Range: -76°F to 446°F (-60°C to 230°C) and up to

DOOR GASKET

White General Characteristics

TEST	RESULT	STANDARD
Brittle point	-112°F (-80°C)	ASTM D748
Limiting oxygen index	24.0%	BS 2782 Part 1
Thermal conductivity	$6.4 \times 10^{-2} \text{ W.m}^{-1}.\text{K}^{-1}$	BS 874 Part 2
Radiation resistance	$>10^5$ Grays (10^7 Rads) typical	

White Mechanical Properties

PROPERTY	UNITS	TYPICAL VALUE						TEST METHOD
		GP200	GP250	GP350	GP400	GP450	GP530	
Density*	kg.m ⁻³ lb ft ³	200 12.5	250 15.5	300 19	400 25.0	450 28	530 33	BSENISO 845
Hardness**	Shore OO Shore A	35 +/-5 <5	42 +/-5 5	56 +/-5 15	65 +/-5 17	70 +/-5 24	80 +/-5 30	ASTM D2240
Compression stress 40% strain***	kPa psi	50 7.3	90 13	120 17.4	185 24	230 34	470 68	BSENISO 3388 part 1, 2
Tensile strength	MPa psi	0.6 87	0.6 87	0.75 108	0.75 108	1.5 217	2.0 290	BSENISO 1798
Elongation to failure	%	140	145	120	120	130	130	BSENISO 1868
Compression set 50% compression 24-hours recovery 22-hours @ 158°F (70°C)	%	5.0	3.8	3.6	3.0	3.0	3.0	BSENISO 1858
Compression set 22-hours @ 212°F (100°F)	%	6.7	4.8	4.4	4.3	4.3	4.0	BSENISO 1856

* Density measured on 0.98" (25 mm) diameter cord sample. The density of samples of different sizes will be different than stated here.

** Hardness measured on 0.39" (10 mm) thick samples. At less than 0.39" (10 mm) the measured hardness will increase with density.

The Shore A values are provided as a guideline for comparison to solid materials and as such are not designed for use in specifications.

*** Compression stress measured on samples as defined in BSENISO 3386.

The compressive stress on samples of different dimensions, especially thickness may vary from that quoted here.

CAMCORP

A MEMBER OF THE SCHEUCH GROUP

ALL STATED SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE
OR OBLIGATION. VISIT CAMCORPINC.COM FOR THE LATEST INFORMATION.

doorgasket rev. 11/18 ©CAMCORP, INC.

SILO FLUIDIZER

Standard

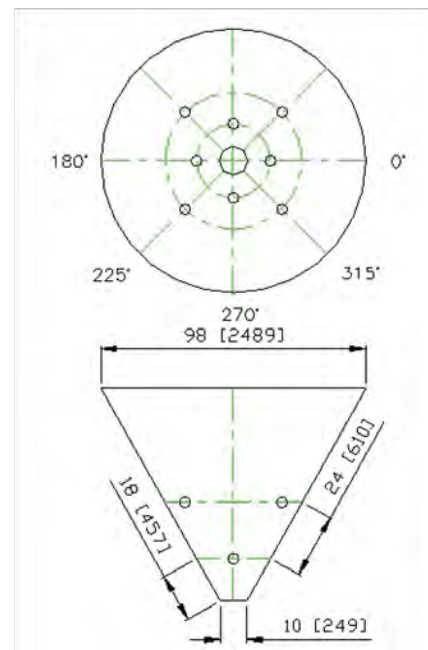


Application

The Silo Fluidizer is designed for assisting the flow of dry powdered products in flat or conical silos and hoppers. For standard units, the installation should be PH neutral and temperature should be less than 350° F (170°C). The Fluidizers work best when the product moisture content is less than 12-15%. Large particles such as gravel, feed, grain, and pellets do not aerate. The Fluidizers also do not work well in applications where the particles are interlocking such as wood shavings, shredded plastic or fiberglass.

Placement Guidelines

Aerate the bottom 1/3 – 1/2 of the outlet cone. Slope of the cone should be at least 45° for maximum effectiveness. On curved surfaces the mounting diameter must be greater than 16" (40.64 cm) to ensure proper sealing (a modification can be made for tighter curvature). Locate the first row of Fluidizers 12"-18" (30.48 cm - 45.72 cm) from the discharge opening. There should be enough units to space every 20"-24" (50.8 cm - 60.96 cm) on this row. Subsequent rows should alternate to achieve complete coverage. Spacing on higher rows can be increased.



SILO FLUIDIZER

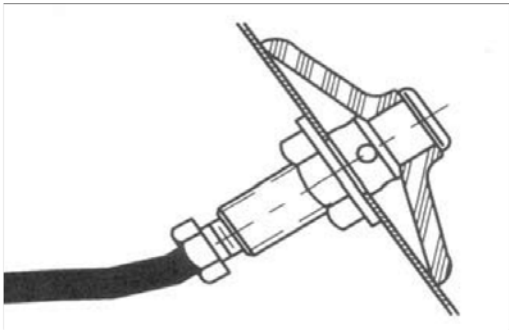
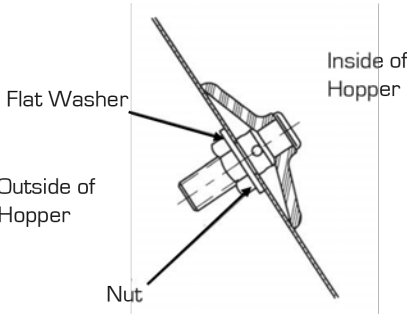
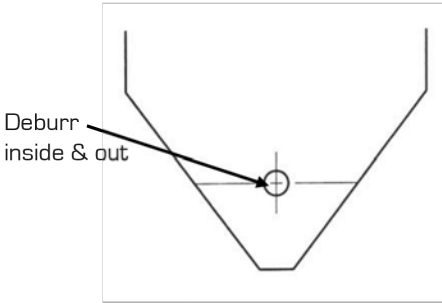
Installation

Standard installation for the Silo Fluidizer requires a through hole drilled or cut in the hopper wall. There is no welding or threaded couplings required. The use of the EZ-In external mounting kit allows for installation and maintenance of the Silo Fluidizer from outside the silo. This is especially useful when there are confined space constraints or limited access to the interior of process hoppers.

- 1. Drill appropriate size hole (see table) in silo wall
- 2. Deburr inside and outside of hole. If not deburred, damage to O-ring will occur. Make sure the area where the Fluidizer will be mounted is free of debris or defects (dents, caked

FLUIDIZER	HOLE SIZE - DIAMETER
43XX	7/8" (22 mm)
44XX	1-1/16" (27 mm)
45XX	1-3/8" (35 mm)
48XX	1/2" (13 mm)

- material, weld seams, etc).
- 3. From the inside of the silo, have one person insert disk and stem assembly into the hole.
 - 4. From the outside of the silo, have a second person put the flat washer and nut onto the stem.
 - 5. Torque nut to approximately 25 ft. lbs (35 N m). 20 ft. lbs (27 N m) for the 48XX series.
 - 6. Attach air supply line to the stem.



SILO FLUIDIZER

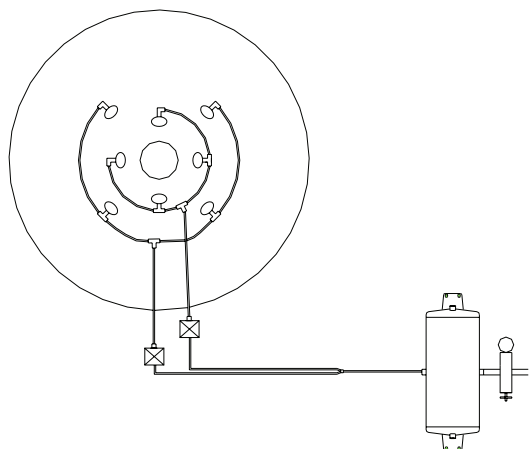
Suggested Maintenance

Maintenance on Silo Fluidizers is minimal. However, periodic visual inspections should be made to check for wear. The following inspection should be performed once a year:

1. Check for wear on the Fluidizer disk. Disk should seal tightly against the hopper wall. Check for uneven wear on the disk. If it is no longer round along the outside edge, this is a sign of uneven air flow and the disk should be replaced.
2. Check to make sure no product has “caked” or hardened beneath the disk. This can be cleaned by removing the disk and stem assembly. Also check to make sure the o-ring on the stem has not been crushed or flattened.
3. When reinstalling the Silo Fluidizer, be sure to tighten the nut to the recommended 25 ft. lbs. [35 N m] of torque.

Air Distribution

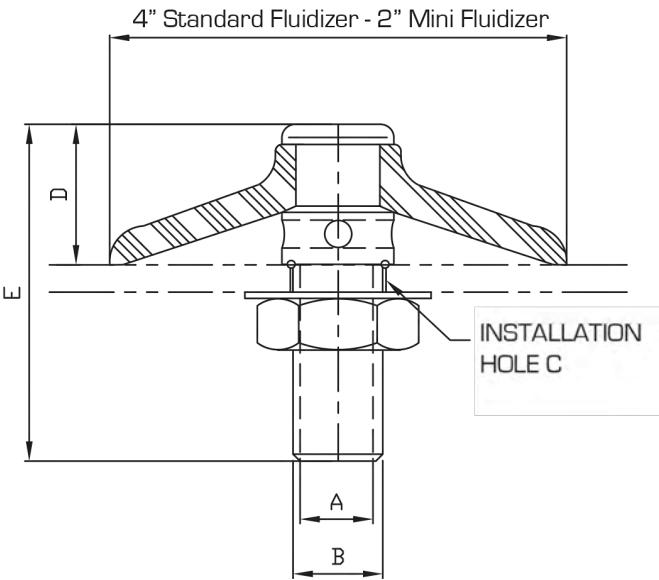
Only operate the Fluidizers while discharging material from the silo to avoid creating air channels or voids. To ensure balanced air distribution it is recommended to use an air manifold or operate no more than four Fluidizers together as shown:



Air Consumption

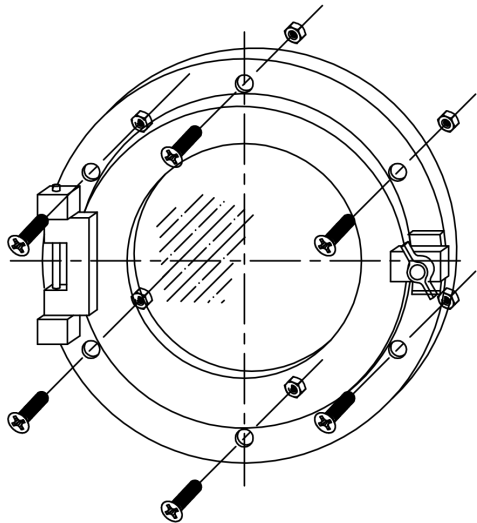
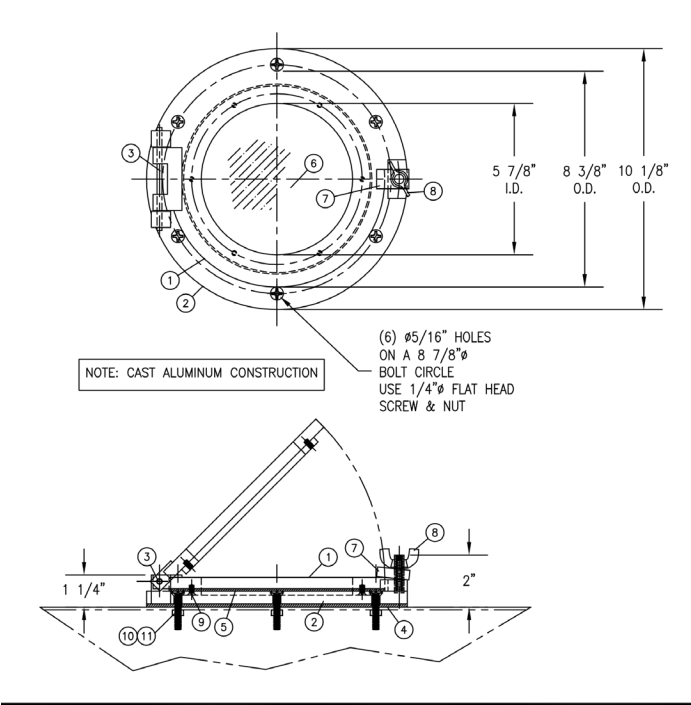
Pulsed air flow saves air and decreases the chance of air pockets and channeling to occur. Every product and application is unique, but typical pulse sequencing is 2-3 seconds on with a 7-10 second off time. Air capacity for the different models is shown on the Fluidizer Data Sheet (See Appendix 2). Air consumption for your application can be calculated by the following: $\text{CFM} \times \# \text{ of Fluidizers} \times \text{total on time (sec)}/\text{minute} \times 1 \text{ min}/60 \text{ sec.} = \text{Total CFM Required}$

SILO FLUIDIZER



SERIES	STEM MATERIAL	DISK COLOR	DISK MATERIAL	A	B	C	D	E	AIRLINE OPTIONS
4300	Steel	Blue	Silicone	1/4" (6.35 mm) NPT	1/2" (12.7 mm) NPT	7/8" (22 mm)	1-3/16" (30 mm)	3" (76 mm)	3/8" to 1/2" (10-12 mm) tubing
		White							
	Aluminum	Blue							
		White							
	Stainless steel	Blue							
		White							
4400	Steel	Blue	Silicone	1/2" (12.7 mm) NPT	3/4" (19.05 mm) NPT	1-1/6" (27 mm)	1-1/4" (32 mm)	3-1/16" (78 mm)	1/2" to 3/4" (13-19 mm) tubing or hose
		White							
	Aluminum	Blue							
		White							
	Stainless steel	Blue							
		White							
4500	Steel	Blue	Silicone	3/4" (19.05 mm) NPT	1" (2.54 cm) NPT	1-3/8" (35 mm)	1-1/4" (32 mm)	3-1/4" (83 mm)	3/4" to 1" (19-25 mm) hose
		White							
	Aluminum	Blue							
		White							
	Stainless steel	Blue							
		White							

SIGHT WINDOWS



INTEGRATED BURST INDICATOR

For explosion vents and AD-series rupture discs

General Description

The Fike Integrated Burst Indicator (BI) is a normally closed circuit that can carry a low energy electrical signal. During burst, the indicator is physically broken causing an open condition in the indication circuit. This open condition can then be detected by process control equipment.

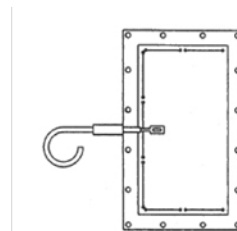
The Integrated Burst Indicator is intrinsically safe for Division 1, Class I, II, III, Groups A, B, C, D, E, F and G when connected through a listed safety barrier (CSA, FM, UL) with entity parameters $U_i = 28.4$ V, $P_i = 0.615$ W, $I_i = 93$ mA, $L_i = 5.6$ mH, $C_i = 1.8$ nF.

Fike CSA approved intrinsically safe barriers:

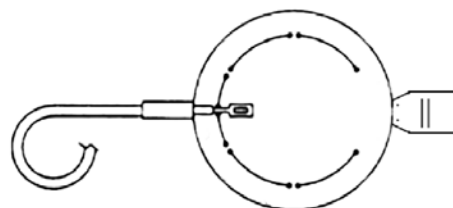
- 02-16086 Safety Barrier
- 02-9884 Switching Repeater
- 02-12110 Isolating Switch Amplifier
- 02-13775 Isolating Switch Amplifier

Caution

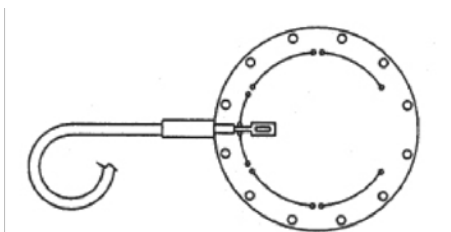
Exceeding the maximum voltage, current, or temperature values shown can cause permanent damage to the Burst Indicator circuit.



EXPLOSION VENT WITH BURST INDICATOR
(RECTANGULAR)



RUPTURE DISC WITH BURST INDICATOR



EXPLOSION VENT WITH BURST INDICATOR (ROUND)

INTEGRATED BURST INDICATOR

Initial Inspection

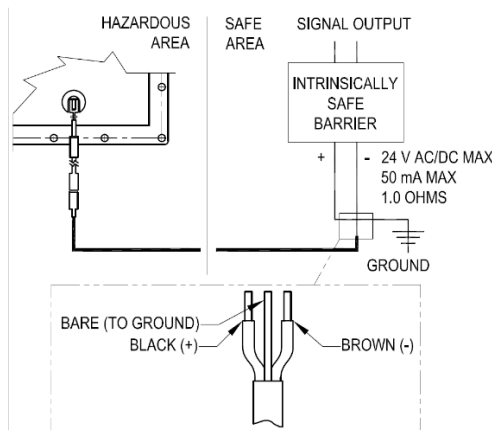
The Integrated Burst Indicator was thoroughly inspected before shipment and found to be free of mechanical and electrical defects. As soon as the assembly is unpacked, inspect it thoroughly for any damage that may have occurred in transit. Save all packing material until the inspection is completed. If damage is found, notify CAMCORP, Inc. (913) 831-0740.

Installation

Install the rupture disc or vent in accordance with the instructions provided. Install the disc/vent with the raised retaining tab on the downstream side. Torque evenly to the recommended torque value given in the disc/vent instructions or on the tag. Plug in the lead cable to the appropriate connection.

Caution

- Use care during installation not to bend the indicator lead support. Sharp or extreme bends in the support area may damage the indicator.



- Use care during installation to not pull, tug, or otherwise stretch the Kapton® circuit. Stretching the circuit may damage the indicator.
- Before installing, ensure the vent frame is free of burrs and sharp edges which may damage the indicator.
- Excessive torque could damage the Integrated Burst Indicator circuit.

Wiring

The Integrated Burst Indicator acts like a normally closed switch. Indication occurs when the circuit is broken (open). Do not exceed current or voltage limits or permanent damage to the indicator may occur.

Environment Rating

CSA Listed Div. I Class I, II, III, Groups A, B, C, D, E, F and G;

Replacement

Follow the same procedure as installation. Unplug the lead cable and discard old disc/vent. Install disc/vent per instructions and plug in lead cable D3513-115-X.

Maintenance

The Integrated Burst Indicator is maintenance-free. If the circuit becomes open for any reason, the entire assembly must be replaced.

Certification for explosion vents and AD-series rupture discs Standards:

- IEC 60079-0 : 2011
- IEC 60079-11 : 2011

Reference of IECEx Certificate:

- IECEx CSA 17.0022X

Protection marking:

- Ex ia IIB T4 Ga
- Ex ia IIIC T135°C Da

BURST INDICATOR

2-way connector for explosion vents, rupture discs

General Description

The Fike Burst Indicator (BI) is a normally closed circuit that can carry a low energy electrical signal. During burst, the indicator is physically broken causing an open condition in the indication circuit. This open condition can then be detected by process control equipment.

Specifications

Input Voltage: 24 volts Maximum, AC or DC

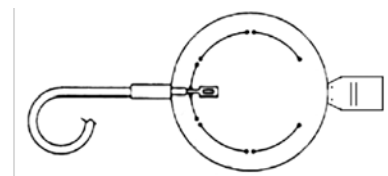
Input Current: 50 mA Maximum

Resistance: 1.0 Ohm

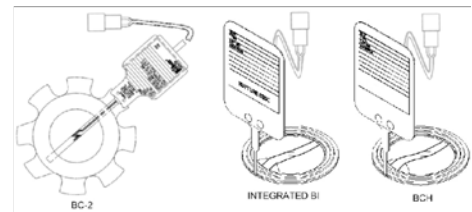
Operating Temperature: 400° F (204° C) Maximum

Caution

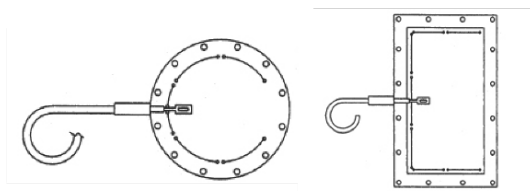
Exceeding the maximum voltage, current, or temperature values shown can cause permanent damage to the Burst Indicator circuit.



AD MODEL RUPTURE DISC WITH BURST INDICATOR



BCH, BC-2 BURST INDICATORS & INTEGRATED BI



EXPLOSION VENT WITH BURST INDICATOR (ROUND) & (RECTANGULAR)

Initial Inspection

The Burst Indicator was thoroughly inspected before shipment and found to be free of mechanical and electrical defects. As soon as the assembly is unpacked, inspect it thoroughly for any damage that may have occurred in transit. Save all packing material until the inspection is completed. If damage is found, notify CAMCORP, Inc. (913) 831-0740.

Installation

Install the rupture disc or vent in accordance with the instructions provided. Torque evenly to the recommended torque value given in the disc/vent instructions or on the tag. Plug in the lead cable to the appropriate connection.

BURST INDICATOR

Caution

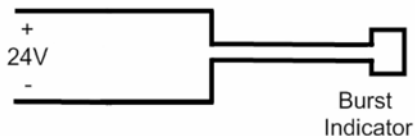
- Use care during installation not to bend the indicator lead support. Sharp or extreme bends in the support area may damage the indicator.
- Use care during installation to not pull, tug, or otherwise stretch the Kapton® circuit. Stretching the circuit may damage the indicator.
- Before installing, ensure the vent frame is free of burrs and sharp edges which may damage the indicator.
- Excessive torque could damage the Burst Indicator circuit.

Wiring

The Burst Indicator acts like a normally closed switch. Indication occurs when the circuit is broken (open). Do not exceed current or voltage limits or permanent damage to the indicator may occur.

The 2-way connector BI circuit is not grounded to the vent frame or rupture disc support ring.

The Burst Indicator is maintenance-free. If the circuit becomes open for any reason, the entire assembly must be replaced.



Replacement

Follow the same procedure as installation. Unplug the lead cable and discard old disc/vent. Install disc/vent per instructions and plug in lead cable.

Maintenance



Protective & Marine Coatings

ACROLON™ 218 HS ACRYLIC POLYURETHANE

PART A	B65-600	GLOSS SERIES
PART A	B65-650	SEMI-GLOSS SERIES
PART B	B65V600	HARDENER

Revised: September 22, 2017

PRODUCT INFORMATION

5.22

PRODUCT DESCRIPTION

ACROLON 218 HS is a polyester modified, aliphatic, acrylic polyurethane formulated specifically for in-shop applications. Also suitable for industrial applications. A fast drying, urethane that provides color and gloss retention for exterior exposure.

- Can be used directly over organic zinc rich primers (epoxy zinc primer and moisture cure urethane zinc primer)
- Color and gloss retention for exterior exposure
- Fast dry
- Outstanding application properties

PRODUCT CHARACTERISTICS

Finish:	Gloss or Semi-Gloss
Color:	Wide range of colors available
Volume Solids:	65% ± 2%, mixed, may vary by color
Weight Solids:	78% ± 2%, mixed, may vary by color
VOC (EPA Method 24):	Unreduced: <300 g/L; 2.5 lb/gal mixed Reduced 10% with R7K15: <340 g/L; 2.8 lb/gal mixed Reduced 9% with MEK, R6K10: <340 g/L; 2.8 lb/gal
Mix Ratio:	6:1 by volume, 1 gallon or 5 gallon mixes premeasured components

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	4.5 (112.5)	9.0 (225)
Dry mils (microns)	3.0 (75)	6.0 (150)
~Coverage sq ft/gal (m²/L)	175 (4.3)	346 (8.5)
Theoretical coverage sq ft/gal (m²/L) @ 1 mil / 25 microns dft	1040 (25.5)	

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 6.0 mils wet (150 microns):

	@ 35°F/1.7°C	@ 77°F/25°C 50% RH	@ 120°F/49°C
To touch:	4 hours	30 minutes	20 minutes
To handle:	18 hours	6 hours	4 hours
To recoat:			
minimum:	18 hours	8 hours	6 hours
maximum:	3 months	3 months	3 months
To cure:	14 days	7 days	5 days
Pot Life:	4 hours	2 hours	45 minutes

(reduced 5% with Reducer R7K15)

Sweat-in-Time: None

If maximum recoat time is exceeded, abrade surface before recoating.

Drying time is temperature, humidity, and film thickness dependent. Paint temperature must be at least 40°F (4.5°C) minimum.

Shelf Life: Part A* - 36 months, unopened
Part B - 24 months, unopened
Store indoors at 40°F (4.5°C) to 100°F (38°C).

*Aluminum (Part A, Rex # B65SW655) has a shelf life of 24 months.

Flash Point: 55°F (13°C), Seta, mixed

Reducer/Clean Up:

Spray: Reducer R7K15, MEK R6K10, R7K11, Reducer #58
Brush / Roll: Reducer #132, Reducer #58, R7K11

RECOMMENDED USES

Specifically formulated for in-shop applications.

For use over prepared metal and masonry surfaces in industrial environments such as:

- Structural steel
- Rail cars and locomotives
- Conveyors
- Bridges
- Wind Towers - onshore and offshore
- Offshore platforms - exploration and production
- Suitable for use in USDA inspected facilities
- Conforms to AWWA D102 Outside Coating Systems #4 (OCS-4), #5 (OCS-5) & #6 (OCS-6)
- Acceptable for use in high performance architectural applications
- Acceptable for use over and/or under Loxon S1 and Loxon H1 Caulking
- A component of INFINITANK
- Over FIRETEX® hydrocarbon systems
- Suitable for use in the Mining & Minerals Industry
- Tank exteriors
- Pipelines
- Ships

PERFORMANCE CHARACTERISTICS

Substrate*: Steel

Surface Preparation*: SSPC-SP10/NACE 2

System Tested*:

1 ct. Macropoxy 646 @ 6.0 mils (150 microns) dft

1 ct. Acrolon 218 HS Gloss @ 4.0 mils (100 microns) dft

*unless otherwise noted below

Test Name	Test Method	Results
Abrasion Resistance¹	ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load	43 mg loss
Adhesion³	ASTM D4541	1976 psi
Corrosion Weathering³	ASTM D5894, 27 cycles, 9072 hours	Rating 10 per ASTM D610, for rusting; Rating 10 per ASTM D714, for blistering
Direct Impact Resistance¹	ASTM D2794	50 in. lb.
Dry Heat Resistance¹	ASTM D2485, Method A	200°F (93°C)
Flexibility¹	ASTM D522, 180° bend, 1/8" mandrel	Passes
Humidity Resistance²	ASTM D4585, 100°F (38°C), 1500 hours	Rating 10 per ASTM D610, for rusting; Rating 10 per ASTM D714, for blistering
Pencil Hardness	ASTM D3363	3H
Salt Fog Resistance³	ASTM B117, 15,000 hours	Rating 10 per ASTM D610, for rusting; Rating 10 per ASTM D714, for blistering

Meets the requirements of SSPC Paint No. 36, Level 3 for white and light colors. Dark colors may require a clear coat.

Complies with ISO 12944-5 C5I and C5M requirements.

Footnotes:

¹ Finish coat only tested

² Primer Zinc-Clad II Plus
Intermediate Macropoxy 646

Finish Acrolon 218 HS

³ Primer Zinc-Clad III HS



Protective & Marine Coatings

ACROLON™ 218 HS ACRYLIC POLYURETHANE

PART A	B65-600	GLOSS SERIES
PART A	B65-650	SEMI-GLOSS SERIES
PART B	B65V600	HARDENER

Revised: September 22, 2017

PRODUCT INFORMATION

5.22

RECOMMENDED SYSTEMS

		Dry Film Thickness / ct.	
		Mils	(Microns)
Steel:			
1 ct.	Macropoxy 646	5.0-10.0	(125-250)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Steel:			
1 ct.	Zinc Clad II Plus	3.0-5.0	(75-125)
1 ct.	Macropoxy 646	5.0-10.0	(125-250)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Steel:			
1 ct.	Zinc Clad IV	3.0-5.0	(75-125)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Steel:			
1 ct.	Corothane I-GalvaPac Zinc Primer	3.0-4.0	(75-100)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Steel:			
1 ct.	Epoxy Mastic Aluminum II	6.0	(150)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Steel:			
1 ct.	Recoatable Epoxy Primer	4.0-6.0	(100-150)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Concrete/Masonry:			
1 ct.	Kem Cati-Coat HS Epoxy Filler/Sealer	10.0-20.0	(250-500)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Aluminum/Galvanizing:			
1 ct.	DTM Wash Primer	0.7-1.3	(18-32)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)

FIRETEX ONLY:

Finish Coat for FIRETEX Hydrocarbon Systems:

1 ct. Acrolon 218 HS Polyurethane*

*Consult FIRETEX PFP Specialist for recommended dft range

The systems listed above are representative of the product's use, other systems may be appropriate.

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.

Minimum recommended surface preparation:

- * Iron & Steel: SSPC-SP6/NACE 3, 1-2 mil (25-50 micron) profile
- * Galvanizing: SSPC-SP1
- * Concrete & Masonry: SSPC-SP13/NACE 6, or ICRI No. 310.2R, CSP 1-3

* Primer required

Surface Preparation Standards					
Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE	
White Metal	Sa 3	Sa 3	SP 5	1	
Near White Metal	Sa 2.5	Sa 2.5	SP 10	2	
Commercial Blast	Sa 2	Sa 2	SP 6	3	
Brush-Off Blast	Sa 1	Sa 1	SP 7	4	
Hand Tool Cleaning	Rusted C St 2	C St 2	SP 2	-	
Pitted & Rusted	D St 2	D St 2	SP 2	-	
Rusted	C St 3	C St 3	SP 3	-	
Power Tool Cleaning	Pitted & Rusted D St 3	D St 3	SP 3	-	

TINTING

Tint Part A with Maxitoner Colorants.

- Extra white tints at 100% tint strength
- Ultradeep base tints at 150% tint strength

Five minutes minimum mixing on a mechanical shaker is required for complete mixing of color.

APPLICATION CONDITIONS

Temperature:	35°F (1.7°C) minimum, 120°F (49°C) maximum (air and surface) 40°F (4.5°C) minimum, 120°F (49°C) maximum (material) At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging:	1 gallon (3.78L) mix: 5 gallon (18.9L) mix:
Part A:	.86 gal (3.25L) 4.29 gal (16.2L)
Part B:	.14 gal (0.53L) 0.71 gal (2.7L)
(premeasured components)	
Weight:	11.2 ± 0.2 lb/gal ; 1.3 Kg/L mixed, may vary with color

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.



Protective & Marine Coatings

ACROLON™ 218 HS ACRYLIC POLYURETHANE

PART A	B65-600	GLOSS SERIES
PART A	B65-650	SEMI-GLOSS SERIES
PART B	B65V600	HARDENER

Revised: September 22, 2017

APPLICATION BULLETIN

5.22

SURFACE PREPARATIONS

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Iron & Steel

Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Commercial Blast Cleaning per SSPC-SP6/NACE 3. For better performance, use Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (1-2 mils / 25-50 microns). Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Aluminum

Remove all oil, grease, dirt, oxide and other foreign material by Solvent Cleaning per SSPC-SP1. Primer required.

Galvanized Steel

Allow to weather a minimum of six months prior to coating. Solvent Clean per SSPC-SP1. When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch. Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-SP7 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned or before flash rusting occurs. Primer required.

Concrete and Masonry

For surface preparation, refer to SSPC-SP13/NACE 6, or ICRI No. 310.2R, CSP 1-3. Surfaces should be thoroughly clean and dry. Concrete and mortar must be cured at least 28 days @ 75°F (24°C). Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement and hardeners. Fill bug holes, air pockets and other voids with Steel-Seam FT910. Primer required.

Follow the standard methods listed below when applicable:

ASTM D4258 Standard Practice for Cleaning Concrete.
ASTM D4259 Standard Practice for Abrading Concrete.
ASTM D4260 Standard Practice for Etching Concrete.
ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete.
SSPC-SP 13/Nace 6 Surface Preparation of Concrete.
ICRI No. 310.2R Concrete Surface Preparation.

Surface Preparation Standards					
Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE	
White Metal	Sa 3	Sa 3	SP 5	1	
Near White Metal	Sa 2.5	Sa 2.5	SP 10	2	
Commercial Blast	Sa 2	Sa 2	SP 6	3	
Brush-Off Blast	Sa 1	Sa 1	SP 7	4	
Hand Tool Cleaning	C St 2	C St 2	SP 2	-	
Pitted & Rusted	D St 2	D St 2	SP 2	-	
Rusted	C St 3	C St 3	SP 3	-	
Power Tool Cleaning	Pitted & Rusted	D St 3	SP 3	-	

APPLICATION CONDITIONS

Temperature: 35°F (1.7°C) minimum, 120°F (49°C) maximum (air and surface)
40°F (4.5°C) minimum, 120°F (49°C) maximum (material)
At least 5°F (2.8°C) above dew point

Relative humidity: 85% maximum

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Reducer/Clean Up:

Spray.....Reducer R7K15, MEK, Reducer #58, or R7K111
Brush/RollReducer #132, R7K132, Reducer #58, or R7K111
If reducer is used, reduce at time of catalyzation.

Airless Spray

Pressure.....2500 - 2800 psi
Hose.....3/8" ID
Tip0.13" - .017"
Filter.....60 mesh
Reduction.....As needed up to 10% by volume with R7K15 or R7K111, or up to 9% with MEK, R6K10*

Conventional Spray

GunBinks 95
Cap63P
Atomization Pressure.....50 - 70 psi
Fluid Pressure.....20 - 25 psi
Reduction.....As needed up to 10% by volume with R7K15 or R7K111, or up to 9% with MEK, R6K10*

Brush

Brush.....Natural Bristle
Reduction.....As needed up to 10% by volume*

Roller

Cover3/8" woven with solvent resistant core
Reduction.....As needed up to 10% by volume*

If specific application equipment is not listed above, equivalent equipment may be substituted.

* Note: Reducing more than maximum recommended level will result in VOC exceeding 340g/L



Protective & Marine Coatings

ACROLON™ 218 HS ACRYLIC POLYURETHANE

PART A	B65-600	GLOSS SERIES
PART A	B65-650	SEMI-GLOSS SERIES
PART B	B65V600	HARDENER

Revised: September 22, 2017

APPLICATION BULLETIN

5.22

APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Mix contents of each component thoroughly with low speed power agitation. Make certain no pigment remains on the bottom of the can. Then combine six parts by volume of Part A with one part by volume of Part B (premeasured components). Thoroughly agitate the mixture with power agitation. Re-stir before using.

If reducer is used, add only after both components have been thoroughly mixed.

Apply paint at the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	4.5 (112.5)	9.0 (225)
Dry mils (microns)	3.0 (75)	6.0 (150)
~Coverage sq ft/gal (m ² /L)	175 (4.3)	346 (8.5)
Theoretical coverage sq ft/gal (m ² /L) @ 1 mil / 25 microns dft	1040 (25.5)	

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 6.0 mils wet (150 microns):

	@ 35°F/1.7°C	@ 77°F/25°C 50% RH	@ 120°F/49°C
To touch:	4 hours	30 minutes	20 minutes
To handle:	18 hours	6 hours	4 hours
To recoat:			
minimum:	18 hours	8 hours	6 hours
maximum:	3 months	3 months	3 months
To cure:	14 days	7 days	5 days
Pot Life:	4 hours	2 hours	45 minutes
(reduced 5% with Reducer R7K15)			
Sweat-in-Time:		None	

If maximum recoat time is exceeded, abrade surface before recoating.
Drying time is temperature, humidity, and film thickness dependent.
Paint temperature must be at least 40°F (4.5°C) minimum.

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Reducer #132, R7K132. Clean tools immediately after use with Reducer #132, R7K132. Follow manufacturer's safety recommendations when using any solvent.

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and adhesion.

Do not apply the material beyond recommended pot life.

Do not mix previously catalyzed material with new.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with Reducer #15, R7K15 or MEK, R6K10.

Mixed coating is sensitive to water. Use water traps in all air lines. Moisture contact can reduce pot life and affect gloss and color.

Quick-Thane Urethane Accelerator is acceptable for use. See data page 5.97 for details.

E-Z Roll Urethane Defoamer is acceptable for use. See data page 5.99 for details.

Refer to Product Information sheet for additional performance characteristics and properties.

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.



Protective RECOATABLE EPOXY PRIMER

& Marine Coatings

PART G B67A5
PART G B67H5
PART G B67R5
PART G B67WJ5000
PART H B67V5

LIGHT GRAY
TAN
RED OXIDE
WHITE
HARDENER

Revised: April 15, 2016

PRODUCT INFORMATION

4.45

PRODUCT DESCRIPTION

RECOATABLE EPOXY PRIMER is a rust inhibitive high build catalyzed polyamide/bisphenol A epoxy primer designed for fast dry and quick or extended recoatability.

- Meets Class A requirements for Slip Coefficient, .50 (Red Oxide only)
- Long pot life
- High build coating for economical application
- One year recoatability
- Low temperature application - down to 35°F (1.5°C)
- Corrosion resistant (contains zinc phosphate)
- Outstanding application properties

PRODUCT CHARACTERISTICS

Finish:	Flat
Color:	Red Oxide, Tan, Light Gray, White
Volume Solids:	65% ± 4%, mixed
Weight Solids:	81% ± 2%, mixed
VOC (EPA Method 24):	Unreduced: <320 g/L; 2.67 lb/gal mixed Reduced 5%: <340 g/L; 2.88 lb/gal
Mix Ratio:	1:1 by volume

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	6.0 (150)	9.0 (225)
Dry mils (microns)	4.0* (100)	6.0* (150)
~Coverage sq ft/gal (m²/L)	175 (4.3)	260 (6.4)
Theoretical coverage sq ft/gal (m ² /L) @ 1 mil / 25 microns dft	1040 (25.5)	

*See Performance Tips section

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 6.0 mils wet (150 microns):

	@ 35°F/1.5°C	@ 77°F/25°C	@ 120°F/49°C
		50% RH	
To touch:	1 hour	15 minutes	10 minutes
Tack free:	2 hours	30 minutes	15 minutes
To recoat:			
minimum:	6 hours	2 hours	30 minutes
maximum:	1 year	1 year	1 year
To cure:	14 days	14 days	2 days
<i>If maximum recoat time is exceeded, abrade surface before recoating.</i>			
<i>Drying time is temperature, humidity, and film thickness dependent.</i>			
Pot Life:	8+ hours	8 hours	3 hours
Sweat-in-time:	1 hour	30 minutes	10 minutes

Shelf Life:	36 months, unopened indoors at 40°F (4.5°C) to 100°F (38°C).	Store
Flash Point:	80°F (27°C), PMCC, mixed	
Reducer/Clean Up:	Reducer #54, R7K54 or R7K111 Below 80°F (27°C): Above 80°F (27°C): In California	Reducer #100, R7K100, R7K104, or R7K111 Reducer R7K111

RECOMMENDED USES

For use as a shop or field applied epoxy primer where a variable recoat window is required due to construction schedules, distribution logistics and environmental considerations. Affords flexibility in projects when completion schedules cannot be specified.

- Primer for structural steel
- Paper mills
- Power plants
- Suitable for use in USDA inspected facilities
- Nuclear Power Plants
- Nuclear fabrication shops
- DOE Nuclear Fuel Facilities
- DOE Nuclear Weapons Facilities
- This product meets specific design requirements for non-safety related nuclear plant applications in Level II, III and Balance of Plant, and DOE nuclear facilities*.

* Nuclear qualifications are NRC license specific to the facility.

PERFORMANCE CHARACTERISTICS

Substrate*: Steel

Surface Preparation*: SSPC-SP6/NACE 3

System Tested*:

1 ct. Recoatable Epoxy Primer @ 5.0 mils (125 microns) dft

*unless otherwise noted below

Test Name	Test Method	Results
Abrasion Resistance	ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load	200 mg loss
Accelerated Weathering - QUV¹	ASTM D4587, QUV-A, 5,000 hours	Passes
Adhesion	ASTM D4541	1050 psi
Corrosion Weathering	ASTM D5894, 13 cycles, 4,368 hours	Rating 10 per ASTM D714 for Blistering; Rating 7 per ASTM D610 for Rusting
Direct Impact Resistance	ASTM D2794	160 in. lbs.
Dry Heat Resistance	ASTM D2485	250°F (121°C) (dis-colors)
Flexibility	ASTM D522, 180° bend, 1" mandrel	Passes
Moisture Condensation Resistance	ASTM D4585, 100°F (38°C), 2000 hours	Passes, no cracking or delamination
Pencil Hardness	ASTM D3363	3H
Salt Fog Resistance¹	ASTM B117, 5,600 hours	Passes, no cracking or delamination
Slip Coefficient, Red Oxide^{**}	AISC Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts	Class A, 0.50
Surface Burning*	ASTM E84/NFPA 255	Flame Spread Index 15; Smoke Development Index 30

*System tested (Report No. IM54.1157-02-01):
Recoatable Epoxy Primer @ 4.6 mils (115 microns) dft
Macropoxy 646 @ 5.0 mils (125 microns) dft

**Refer to Slip Certification document

Epoxy coatings may darken or yellow following application and curing. Provides performance comparable to products formulated to federal specifications: Mil-P-23377, Mil-P-53022

Footnotes:

¹ Acrolon 218 HS topcoat



Protective RECOATABLE EPOXY PRIMER

& Marine Coatings

PART G	B67A5	LIGHT GRAY
PART G	B67H5	TAN
PART G	B67R5	RED OXIDE
PART G	B67WJ5000	WHITE
PART H	B67V5	HARDENER

Revised: April 15, 2016

PRODUCT INFORMATION

4.45

RECOMMENDED SYSTEMS

		Dry Film Thickness / ct.	
		Mils	(Microns)
Steel, catalyzed epoxy topcoat:			
1 ct.	Recoatable Epoxy Primer	4.0-6.0	(100-150)
2 cts.	Tile-Clad HS Epoxy	2.5-4.0	(63-100)
Steel, polyurethane topcoat:			
1 ct.	Recoatable Epoxy Primer	4.0-6.0	(100-150)
1-2 cts.	Hi-Solids Polyurethane	3.0-4.0	(75-100)
Steel, acrylic epoxy topcoat:			
1 ct.	Recoatable Epoxy Primer	4.0-6.0	(100-150)
2 cts.	Water Based Catalyzed Epoxy	2.5-3.0	(63-75)
Steel, acrylic topcoat:			
1 ct.	Recoatable Epoxy Primer	4.0-6.0	(100-150)
2 cts.	Pro Industrial DTM Acrylic Coating	2.5-4.0	(63-100)
Galvanized:			
1 ct.	Recoatable Epoxy Primer	4.0-6.0	(100-150)
2 cts.	Tile-Clad HS Epoxy	2.5-4.0	(63-100)
FIRETEX ONLY:			
Steel & Galvanized Substrates being primed for FIRETEX only:			
1 ct.	Recoatable Epoxy Primer	2.0-5.0	(50-125)

The systems listed above are representative of the product's use, other systems may be appropriate.

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.

Minimum recommended surface preparation:

Iron & Steel:	SSPC-SP6/NACE 3, 2 mil (50 micron) profile
Galvanizing*:	SSPC-SP1

*See Surface Preparations section on page 3 for application of FIRETEX intumescent coating systems

Surface Preparation Standards					
Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE	
White Metal	Sa 3	Sa 3	SP 5	1	
Near White Metal	Sa 2.5	Sa 2.5	SP 10	2	
Commercial Blast	Sa 2	Sa 2	SP 6	3	
Brush-Off Blast	Sa 1	Sa 1	SP 7	4	
Hand Tool Cleaning	Rusted C St 2	C St 2	SP 2	-	
Pitted & Rusted	D St 2	D St 2	SP 2	-	
Rusted	C St 3	C St 3	SP 3	-	
Power Tool Cleaning	Pitted & Rusted D St 3	D St 3	SP 3	-	

TINTING

Do not tint.

APPLICATION CONDITIONS

Temperature:	
air and surface:	35°F (1.6°C) minimum, 140°F (60°C) maximum
material:	50°F (10°C) minimum
	At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging:	
Part G:	1 gallon (3.78L) and 5 gallon (18.9L) containers
Part H:	1 gallon (3.78L) and 5 gallon (18.9L) containers
Weight:	13.26 ± 0.2 lb/gal ; 1.6 Kg/L, mixed

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.



Protective RECOATABLE EPOXY PRIMER

& Marine Coatings

PART G	B67A5	LIGHT GRAY
PART G	B67H5	TAN
PART G	B67R5	RED OXIDE
PART G	B67WJ5000	WHITE
PART H	B67V5	HARDENER

Revised: April 15, 2016

APPLICATION BULLETIN

4.45

SURFACE PREPARATIONS

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Iron & Steel (atmospheric service)

Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Commercial Blast Cleaning per SSPC-SP6/NACE 3. For better performance, use Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). Prime any bare steel the same day as it is cleaned.

Galvanized Steel

Allow to weather a minimum of six months prior to coating. Solvent Clean per SSPC-SP1. When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch. Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-SP7 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned.

In preparing galvanized steel substrates for the application of FIRETEX intumescent coating systems, Surface Preparation Specification SSPC-SP 16 must be followed obtaining a surface profile of minimum 1.5 mils (38 microns). Optimum surface profile will not exceed 2.0 mils (50 microns).

Previously Painted Surfaces

If in sound condition, clean the surface of all foreign material. Smooth, hard or glossy coatings and surfaces should be dulled by abrading the surface. Apply a test area, allowing paint to dry one week before testing adhesion. If adhesion is poor, or if this product attacks the previous finish, removal of the previous coating may be necessary. If paint is peeling or badly weathered, clean surface to sound substrate and treat as a new surface as above.

Surface Preparation Standards

Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal	Sa 3	Sa 3	SP 5	1
Near White Metal	Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast	Sa 2	Sa 2	SP 6	3
Brush-Off Blast	Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	C St 2	C St 2	SP 2	-
Pitted & Rusted	D St 2	D St 2	SP 2	-
Rusted	C St 3	C St 3	SP 3	-
Power Tool Cleaning	D St 3	D St 3	SP 3	-

APPLICATION CONDITIONS

Temperature:	
air and surface:	35°F (1.6°C) minimum, 140°F (60°C) maximum
material:	50°F (10°C) minimum At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Reducer/Clean Up

Below 80°F (27°C)	Reducer #54, R7K54 or R7K111
Above 80°F (27°C)	Reducer #100, R7K100, R7K104 or R7K111
In California	Reducer R7K111

Airless Spray

Pressure	2400 psi
Hose	1/4" ID
Tip	.017"
Filter	60 mesh
Reduction	As needed up to 5% by volume

Conventional Spray

Gun	Binks
Fluid Nozzle	66
Air Nozzle	63PB
Atomization Pressure	50 psi
Fluid Pressure	12-20 psi
Reduction	As needed up to 5% by volume

Brush

Brush	Natural Bristle
Reduction	Not recommended

Roller

Cover	3/8" - 1/2" woven with solvent resistant core
Reduction	Not recommended

Plural Component Spray...Acceptable

Refer to April 2010 Technical Bulletin - "Application Guidelines for Macropoxy 646 & Recoatable Epoxy Primer Utilizing Plural Component Equipment"

If specific application equipment is not listed above, equivalent equipment may be substituted.



Protective RECOATABLE EPOXY PRIMER

& Marine Coatings

PART G B67A5
PART G B67H5
PART G B67R5
PART G B67WJ5000
PART H B67V5

LIGHT GRAY
TAN
RED OXIDE
WHITE
HARDENER

Revised: April 15, 2016

APPLICATION BULLETIN

4.45

APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Mix contents of each component thoroughly with low speed power agitation. Make certain no pigment remains on the bottom of the cans. Then combine one part by volume of Part G with one part by volume of Part H. Thoroughly agitate the mixture with power agitation. Allow the material to sweat-in as indicated. Re-stir before using.

If reducer solvent is used, add only after both components have been thoroughly mixed, after sweat-in.

Apply paint at the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	6.0 (150)	9.0 (225)
Dry mils (microns)	4.0* (100)	6.0* (150)
~Coverage sq ft/gal (m ² /L)	175 (4.3)	260 (6.4)
Theoretical coverage sq ft/gal (m ² /L) @ 1 mil / 25 microns dft	1040 (25.5)	

*See Performance Tips section

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 6.0 mils wet (150 microns):

	@ 35°F/1.5°C	@ 77°F/25°C 50% RH	@ 120°F/49°C
To touch:	1 hour	15 minutes	10 minutes
Tack free:	2 hours	30 minutes	15 minutes
To recoat:			
minimum:	6 hours	2 hours	30 minutes
maximum:	1 year	1 year	1 year
To cure:	14 days	14 days	2 days

If maximum recoat time is exceeded, abrade surface before recoating.
Drying time is temperature, humidity, and film thickness dependent.

Pot Life:	8+ hours	8 hours	3 hours
Sweat-in-time:	1 hour	30 minutes	10 minutes

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Reducer #54, R7K54. Clean tools immediately after use with Reducer #54, R7K54. Follow manufacturer's safety recommendations when using any solvent.

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and adhesion.

Do not apply the material beyond recommended pot life.

Do not mix previously catalyzed material with new.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with Reducer #54, R7K54.

Material must be at least 50°F (10°C) prior to catalyzing.

Quik-Kick Epoxy Accelerator is acceptable for use. See data page 4.99 for details.

When coating over aluminum and galvanizing, recommended dft is 2-4 mils (50-100 microns).

Refer to Product Information sheet for additional performance characteristics and properties.

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

SECTION 5

TROUBLESHOOTING

Dust Collector

Excessive Pressure Drop Across Bags and Filter Cartridges

"Start Up Checklist" section.

The differential pressure gauge or manometer on your dust collector should read 6" (15.24 cm) w.g. or less. Higher readings and/or steadily increasing readings are an indication that the main airflow through the dust collector may be restricted and a potential process problem such as poor suction at duct pickup points may exist. In extreme cases (over 17" (43.18 cm) w.g.) filter cartridges will be damaged. Check the following:

Pressure Gauge

Check the differential pressure gauge or manometer and the tubing leading to the dust collector for proper operation. Disconnect the lines at the gauge or manometer and clear with compressed air. Look for loose fittings, cracked, broken or pinched tubing. Make sure that the gauge is zeroed or that the manometer is level, zeroed and contains the correct fluid.

Compressed Air System

Inspect the compressed air system as follows to make sure that all of the filter cartridges are being cleaned:

1. If none of the solenoid valves are operating, check the timer using the "Troubleshooting the Timer" section.
2. Check the air pressure at the compressed air manifold. It should recover to 90-100 psig before each pulse. If not, check to make sure that the compressed air supply system is in good operating condition, correctly sized, and supply lines are not too small or restricted. Listen for the sound of compressed air flowing continuously through one or more diaphragm valves. This is an indication of a valve or valves "stuck" in the pulsing position. The usual causes for this condition are either a leak in the tubing between the solenoid and diaphragm valves or dirt in the solenoid and/or diaphragm valves.
3. Check to see that all solenoid valves are firing by holding a finger over each solenoid exhaust port as described in the

SECTION 5

TROUBLESHOOTING

Dust Collector continued

Filter Cartridges Loaded with Dust

This is a condition known as blinding. If the dust is dry see the next four paragraphs below. If the dust is wet see the paragraphs below on "Water Leaks" and "Condensation".

Dust Not Discharging from the Hopper

Check hopper for over-loading or bridging across the dust discharge. Correct by repairing dust discharge equipment, replacing with higher capacity equipment, installing hopper vibrators, etc. as required to keep the hopper empty.

Air Flow Too High

If the main airflow is too high to allow dust to drop off of the filter cartridges, an excessive pressure drop across the dust collector will result and dust will build up in the system. In many cases this high pressure drop in turn leads to a reduction in the main air flow so that it is necessary to remove the dust accumulation from the filter cartridges (and the rest of the system) before measuring the main air flow volume.

Visually inspect the cartridges for heavy caking. If caking is evident see the note below and take the necessary action to clean the cartridges. Next, measure the main airflow with a pitot tube or equivalent device and compare with the original volume for which the unit was designed. If the flow is too high, cut back the main fan to prevent a recurrence of the problem.

Particle Size and Dust Load

If possible, compare the dust particle size and loading with the original design specifications. Finer dust may cause a higher pressure drop. Do not hesitate to call CAMCORP as we have experience with many kinds of dust.

Water Leaks

Inspect the dust collector housing and ductwork for holes,

cracks or loose gasketing where water could enter the collector.

Condensation

If moisture has been condensing inside the collector check the dew point temperature of the incoming air stream. It may be necessary to insulate the collector and/or the ductwork leading to the collector to keep surface temperatures above the dew point and prevent condensation inside the dust collector.

NOTE: Collectors that have blinded cartridges can possibly be put into service by running the pulsing air system for 15 to 30 minutes with a 10-second "off time" and without the main fan or blower running. If the pressure drop is not lower when the main fan is started again remove the filter cartridges from the collector and replace. Make sure the timer "off time" has been reset to specifications prior to re-start. Information pertaining to filter bag cleaning may be obtained by calling your CAMCORP sales representative.

SECTION 5

TROUBLESHOOTING

Dust Collector continued

Extremely Low Pressure Drop

Differential Pressure Gauge

Check the differential pressure gauge or manometer and the tubing leading to the dust collector.

Holes in Filter Cartridges or Incorrectly Installed

Inspect the filter cartridges for holes, rips, tears or excessive wear. Assure that the filter cartridges were installed correctly according to the "Filter Cartridge Installation" section.

Ductwork and Dampers

Inspect the ductwork to and from the dust collector for air leaks or blockage. Assure that any dampers in the system are correctly positioned to allow for proper air flow through the dust collector.

Leaks in the Housing

Check the tube sheet (flat steel sheets from which the filter cartridges are suspended) and the dust collector housing for holes, cracks or loose gasketing that would permit air to bypass the dust collector or filter cartridges.

Continuous Flow of Dust in the Clean Air Exhaust (Primary Dusting)

Holes in the Tube Sheets

Check the tube sheet for holes, cracks or loose bolts that would permit dusty air to bypass the filter cartridges.

Puff of Dust in the Clean Air Exhaust After Each Pulse (Secondary Dusting)

Compressed Air Manifold Pressure too High

Check compressed air manifold pressure gauge. If the pulsing air pressure is over 100 psig the filter cartridges may flex excessively and allow fine dust to pass through the filter material.

Worn Filter Cartridges

Inspect the filter cartridges for wear. Worn cartridges may not stop fine dust when flexed by a compressed air pulse.

Residual Dust

If dust has migrated into the clean air plenum because of a dropped filter cartridge, torn filter cartridge or a hole in tube sheet, etc., the pulsing air may stir up the dust and allow it to escape into the clean air exhaust after each pulse. Residual dust may also be driven down inside the filter cartridges by the pulsing air. If the filter cartridges are filled with several inches of dust clean both the clean air plenum and the filter cartridges to avoid further problems.

SECTION 5

TROUBLESHOOTING

Dust Collector continued

Short Filter Cartridge Life

This is often a complicated problem to diagnose and we recommend calling CAMCORP for advice. The following list may be helpful in performing some preliminary checks:

Temperature

Operating temperature above the recommended limit of the filter cartridge material.

Chemical Attack

Filter material degrades due to attack from certain chemicals in the dust or gasses in the air stream.

High Moisture

High moisture content in the collector may cause certain filter cartridge material to shrink, degrade (more rapidly at elevated temperatures) or blind off.

Localized Abrasion

Abrasion of the filter cartridges where high velocity dusty air hits the filter cartridges. A dust impingement baffle may be required to be installed on the inlet of the dust collector.

SECTION 5

TROUBLESHOOTING

Timer

Check for mechanical damage.

If the "Power On" indicator is not on, check for 120 VAC power input. The "hot" line connection must be connected to terminal "L1", as this is the fused terminal.

Check for a blown fuse; if replacement is necessary, use only 2 AMP standard 3AG fuse (1-1/4" (3.175 cm) long). Do not use a slow-blow type fuse.

Check the wiring from the timer to the solenoids for open or short circuits.

After performing the steps above, if the timer is still not functioning properly (no output voltage, sequencing problems, etc.) please contact your CAMCORP representative.

SECTION 5

TROUBLESHOOTING

The Compressed Air System

Pulsing Failure of all Valves or the Same Numbered Valve on Each Header

Pulse Time Board Inoperative

Check pulse timer board for 120 VAC pulse between each numbered terminal on timer board and solenoid common terminal. Repair or replace timer if necessary.

Open or Short Circuit in Wiring Between Pulse Timer Board and Solenoids

Check continuity with ohmmeter or suitable tester and repair as required.

Pulsing Failure of Valves of Any Location

Plastic Plug in Solenoid Exhaust Port

Remove and discard plug.

Ruptured Diaphragm

Disassemble valve in question and inspect diaphragm(s). Replace with a repair kit if necessary.

Pinched or Plugged Tubing Between Solenoid and Diaphragm Valve.

Inspect tubing and replace if necessary.

Continuous Passage of Compressed Air through One or More Blowpipes

1/4" (3.175 cm) O.D. Tubing or Fittings Disconnected, Leaking or Broken.

Inspect and repair as required. Always use new ferrules in fittings when replacing copper tubing.

Diaphragm Valve Air Bleed Hole or Passage Restricted

Disassemble and inspect the diaphragm valve in question as follows:

- 3/4" (19.05 mm) valves - check for plugged air bleed hole in diaphragm.
- 1" (2.54 cm) valves - check for plugged air bleed passages in valve body and cover.
- 1-1/2" (3.81 cm) valves - check for plugged or restricted air bleed passages.

Pinched or Plugged Tubing Between Solenoid and Diaphragm Valve.

Inspect tubing and replace if necessary.

SECTION 6

ROUTINE MAINTENANCE

Inspection

Frequency will vary as widely as there are operating conditions. In general proceed as follows:

- Daily - Check unit differential pressure
- Weekly - Check pulse timer board and solenoid valves for function. This usually is only listening to check uniform time in intervals between blasts
- Monthly - Lubricate fan, rotary valve and screw conveyor. Check seals on latter two for dust loss
- Quarterly - On top access units, check for dust accumulation in clean air plenum

Repairs

- Filter cartridges - Generally replacement, although some applications can be laundered.
- Solenoid valves - Repair kits are available if a valve is stuck open or fails to operate.
- Diaphragm valves - Repair kits are available if a valve is stuck open or fails to operate due to a ruptured diaphragm
- Rotary valves - Usually a matter of periodic seal and blade replacement. More detailed information is supplied with the valve.
- Screw conveyors - Periodic replacement of "V" belts and shaft seals. Inspect hanger bearings during filter bag change. Failure will be detected by the squeal.
- Fans - "V" belt tension and replacement of bearings if running rough. Make sure rotor balance is maintained.

CAMCORP

A MEMBER OF THE SCHEUCH GROUP

CAMCORP, Inc.
9732 Pflumm Road
Lenexa, KS 66215

Phone 877-226-2677
E-mail info@camcorpinc.com
Web www.camcorpinc.com