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*Jones
Edmunds &
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CONSULTING ENGINEERS AND SCIENTISTS
JEA

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~~RS AA BB~~

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SEP 12 2000

STATE OF FLORIDA
DEPT. OF ENV. PROTECTION
NORTHEAST DISTRICT-JAX

September 09, 2000

Ashwin Patel
Supervisor, Hazardous Waste Section
Department Of Environmental Protection
7825 Baymeadows way, Suite B200
Jacksonville, FL 32256-7590

Re: As-Built Certification of Perma-Fix Facility: Phase III of Construction Activities

Dear Mr. Patel:

I am submitting the attached as-built certification statement and documentation for Perma-Fix of Florida, Gainesville. As noted in the certification, the phase III construction activities of this project have been completed and inspected, as of September 7, 2000.

Phase III of the construction activities included the following items:

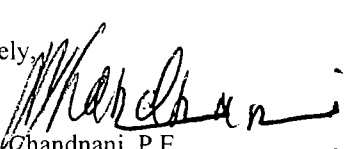
- Perma-Fix II process equipment, incl. Plough-Share Unit, Vacuum Pump, and associated ancillary equipment.
- Ventilation System for Perma-Fix II system (incl. ducting connection to the RTO, absorber & dust control equipment)
- Air Pollution Control System for Perma-Fix II system (incl. RTO, absorber, pulse bag filters, cartridge filters & HEPA filters)
- Air pollution control & ventilation system for the Quonset Hut.

The RTO will now be able to operate at full load condition provided the PFII process is operated at full load capacity of 3000 pounds per day, and the LSV process is also being operated at full load capacity.

Phase IV of the construction will include the Perma-Fix I process equipment, and the associated pollution control equipment. It is likely to be completed during early October 2000.

If there any questions or comments related to this submittal, please call me at (407) 269-2950 or (407) 468-5551.

Sincerely,


Suresh Chandnani, P.E.
Project Manager
JEA Inc.

Enclosures

Cc: Steven Douglas-PFF
Larry McNamara-PFF
Raymond Whittle-PFF
Ben Warren-PFF
Scott Ellis-SYA

DOCKET # P.21

As-Built Certification Statement

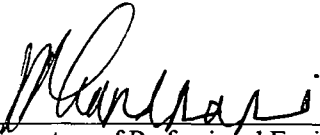
**AS-BUILT CERTIFICATION
FOR
PHASE III
OF
PERMA-FIX HAZARDOUS WASTE FACILITY CONSTRUCTION ACTIVITIES**

**AS-BUILT CERTIFICATION OF PERMA-FIX II PROCESS EQUIPMENT, AIR
POLLUTION CONTROL & DUCTING FOR PFII PROCESS, AIR POLLUTION
CONTROL EQUIPMENT FOR QUONSET HUT, CONNECTION OF ORGANIC
VAPOR PHASE VENTILATION DUCTING TO RTO, AND QUONSET HUT
MODIFICATIONS FOR PFII OPERATIONS**

**FACILITY NAME: PERMA-FIX OF FLORIDA
FACILITY ID# FLD 980 711 071
FACILITY HAZARDOUS WASTE PERMIT# 17680-003-HO**

This is to certify that, based on my review of the as-built drawings and the record drawings, and based on the inspection of the facility that I conducted on 09/07/00, the referenced Perma-Fix facility has been constructed in accordance with the design criteria specified in the Permit Application.

Perma-Fix has made minor changes to the layout of the Quonset Hut, to facilitate better flow of waste material, in and out of the Quonset Hut during daily operations. Specifically, the location of the Dress-Out Room has been changed, layout and length of the roller conveyor has been changed, and a sampling room has been added.



Signature of Professional Engineer

SURESH CHANDNAN/
Name & Title of Professional Engineer

Jones Edmunds & Assoc.
Company Name & Address

09/09/00
Certification Date



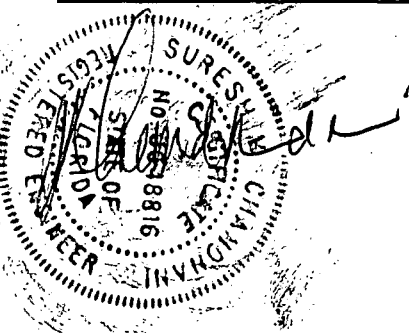
Signature of Responsible Company Official

Raymond Whittle, General Manager
Name & Title of Responsible Official

Perma-Fix of Florida, Inc.
1940 NW 67th Place, Gainesville, FL 32653
Company Name & Address

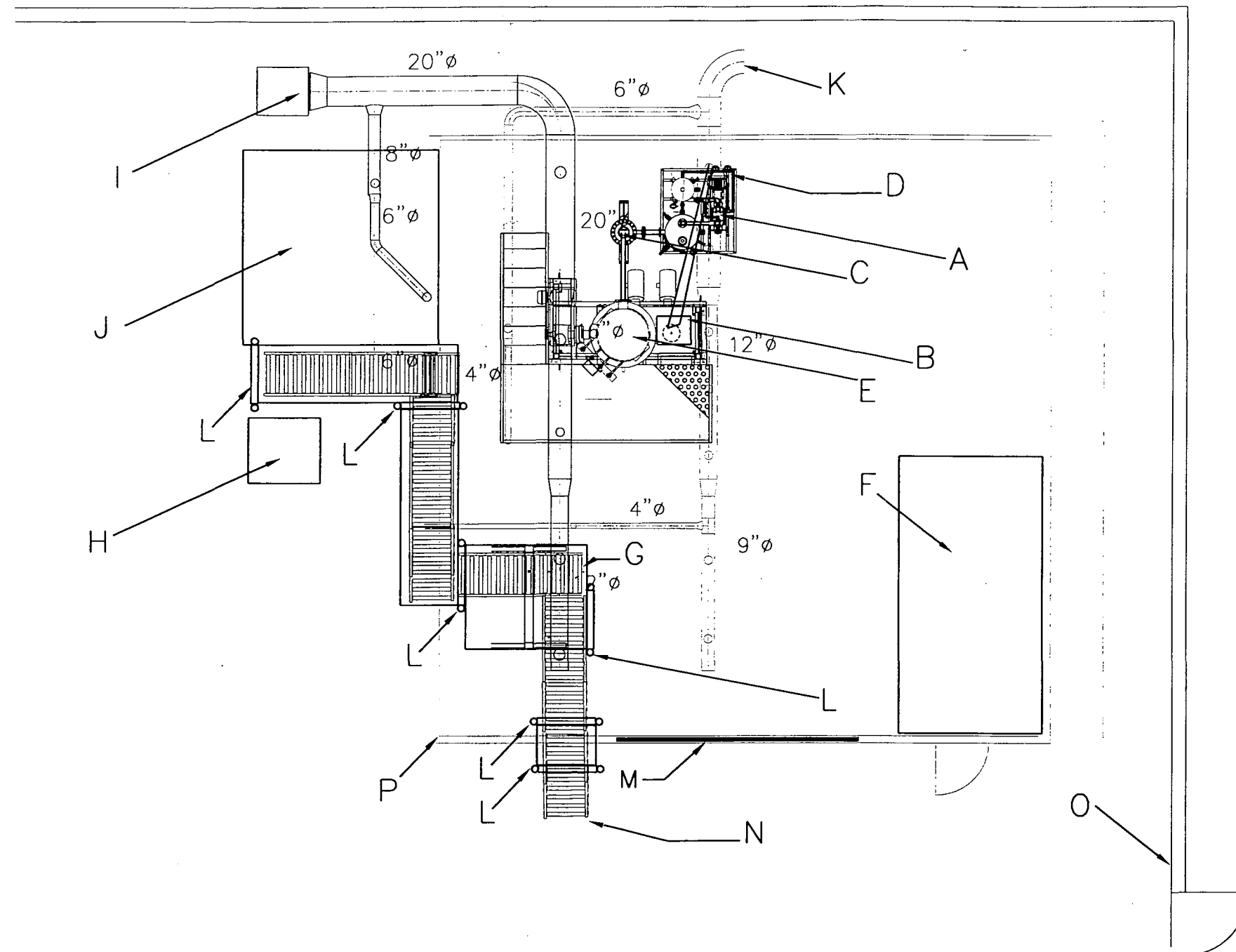
Certification Date

Professional Engineers' Seal & Signature:



Quonset Hut Layout

LEGEND



- A Absorber Tank
- B Plough Share Unit
- C Condensor
- D Vacuum Pump
- E PulseBuack Filter
- F Dress Out Room
- G Skid Mixer
- H Scale
- I Supply Air Fan
- J Sampling Room
- K To Exhaust Fan
- L Drum Guillotine Door
- M Roll Up Door
- N Roller Conveyor
- O Main Building Exterior
- P Quonset Hut

PERMA-FIX
ENVIRONMENTAL ENGINEERING

TITLE: EQUIPMENT LAYOUT FOR PERMA-FIX II PROCESS		
PREPARED FOR: PERMA-FIX OF FLORIDA 1940 NM 67 Place, Gainesville Florida		
SCALE: N.T.S.	APPROVED BY:	DRAWN: A.D.O.
DATE: 6/28/00		REVISED:
ACADFILE: c:\acadwin\acadfile\98-01\9801-23		DRAWING NUMBER: 972000-01

Cartridge Filter System for Quonset Hut

OptiFlo™ Cartridge

Standard 80% Cellulose, 20% Polyester, FR

Technical Information

Applications:

Recommended for applications with dry, granular, non-hygroscopic, non-abrasive dusts with moderate temperature and light to moderate loading.

AAF Part Number:

1658301-1

Media:

80% Cellulose, 20% Polyester, fire retardant

Construction:

Non-Woven, Pleated

Filter Area:

275 Sq. Ft.

Max. Operating Temperature:

180°F

Permeability:

14 CFM @ 1/2" w.g.

Fractional Filtration Efficiency:

99.9 + @ 0.5 Micron & Above

End Cap Construction:

22 ga. Galvanized Steel

Gasket:

Neoprene

Dimensions:

14" dia. x 28" long

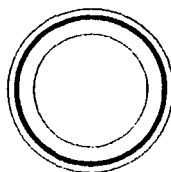
Estimated Weight of Filter:

17 lbs.

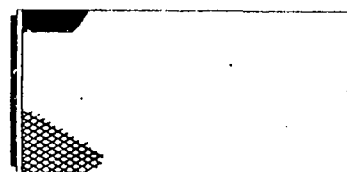
Inner & Outer Screen % Open:

72.6

*Actual filtration efficiency varies on dust concentration, particle size, particulate shape and characteristics. Data is typical and provided for informational purposes only.

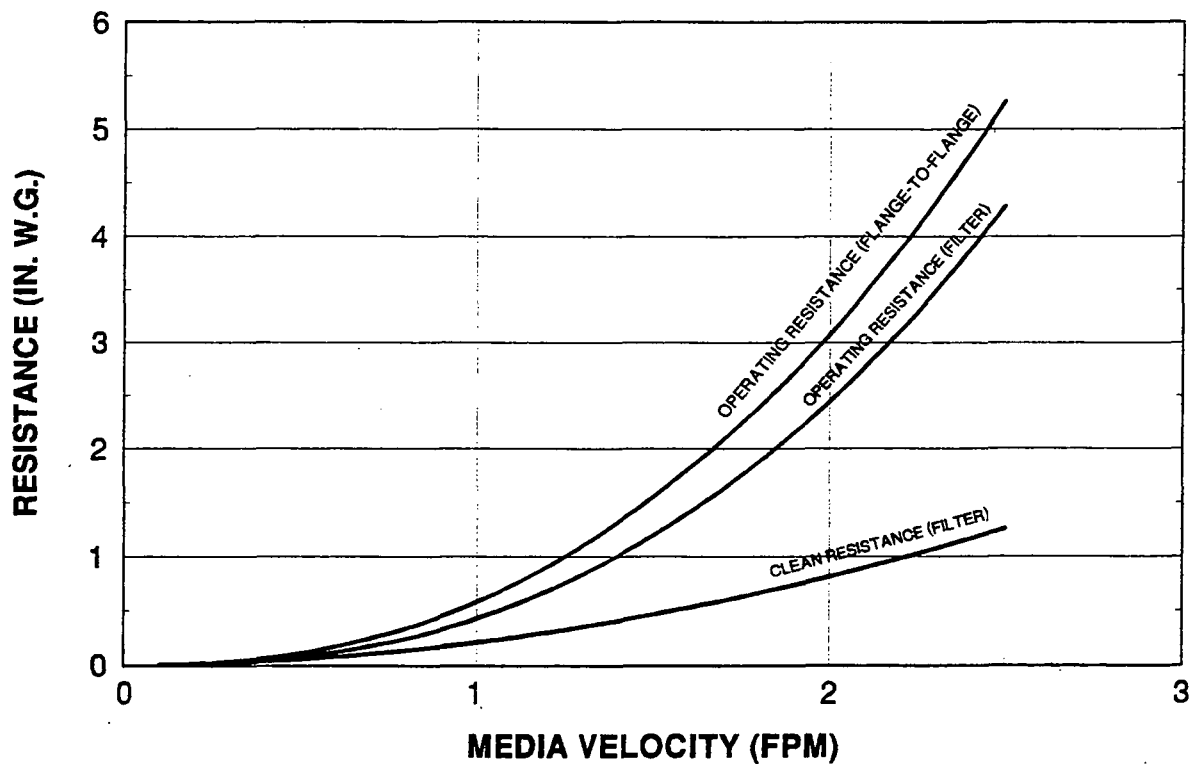


End View



Side View

OptiFlo RESISTANCE vs. MEDIA VELOCITY (WITH STANDARD MEDIA)



NOTE: Curves were derived from actual tests using flyash. Operating filter resistance can vary depending on the type and nature of dust being collected.

AAF OptiFlo

GENERAL DESCRIPTION

The **AAF OptiFlo** pulse-jet cartridge collector uses a modular building-block with housing pressure capability of -20 inches w.g. concept to cover a size range from 2200 sq. ft. to virtually any size to meet design requirements.

The collector hopper sides are inclined at least 60° from horizontal.

FILTER ELEMENTS

The basic filter element used in the **AAF OptiFlo** dust collector is the cartridge filter which contains 275 sq. ft. of media. This unique design allows for installation and change-out with a minimum of time and effort (less than one minute per cartridge). Each ruggedly constructed high efficiency filter is supplied with its own gasket. This guarantees a positive, airtight seal each time the filter is changed.

SIZES

The **AAF OptiFlo** pulse-jet cartridge collector is available in three heights; the 2RC, 3RC, and 4RC series. The 2RC units have filters two-high and two-wide, and the 3RC are three elements high, two-wide and the 4RC are four elements high, two-wide.

FACTORY ASSEMBLY

All of the **AAF OptiFlo** dust collectors are shipped factory assembled requiring only:

- Field bolting of the legs and braces,
- Field bolting of the housing and hopper section,
- Connection of any ductwork and the fan,
- Mounting and wiring of the control box,
- Compressed air supply hook-up,
- and installation of gauges (if ordered).

The factory builds the basic modules of each series for inventory; for larger sizes the module will be bolted together prior to shipment.

PAINT

Each module is painted inside and out with a rust inhibitive primer at the time of manufacture. After final assembly, a final finish coat is applied to the exterior.

ELECTRICAL SYSTEM

The **AAF OptiFlo** dust collector is supplied with NEMA 4 electrical solenoids and timer control.

NOTE: Because of the modular building block arrangement, factory mounting of the control box is not available.

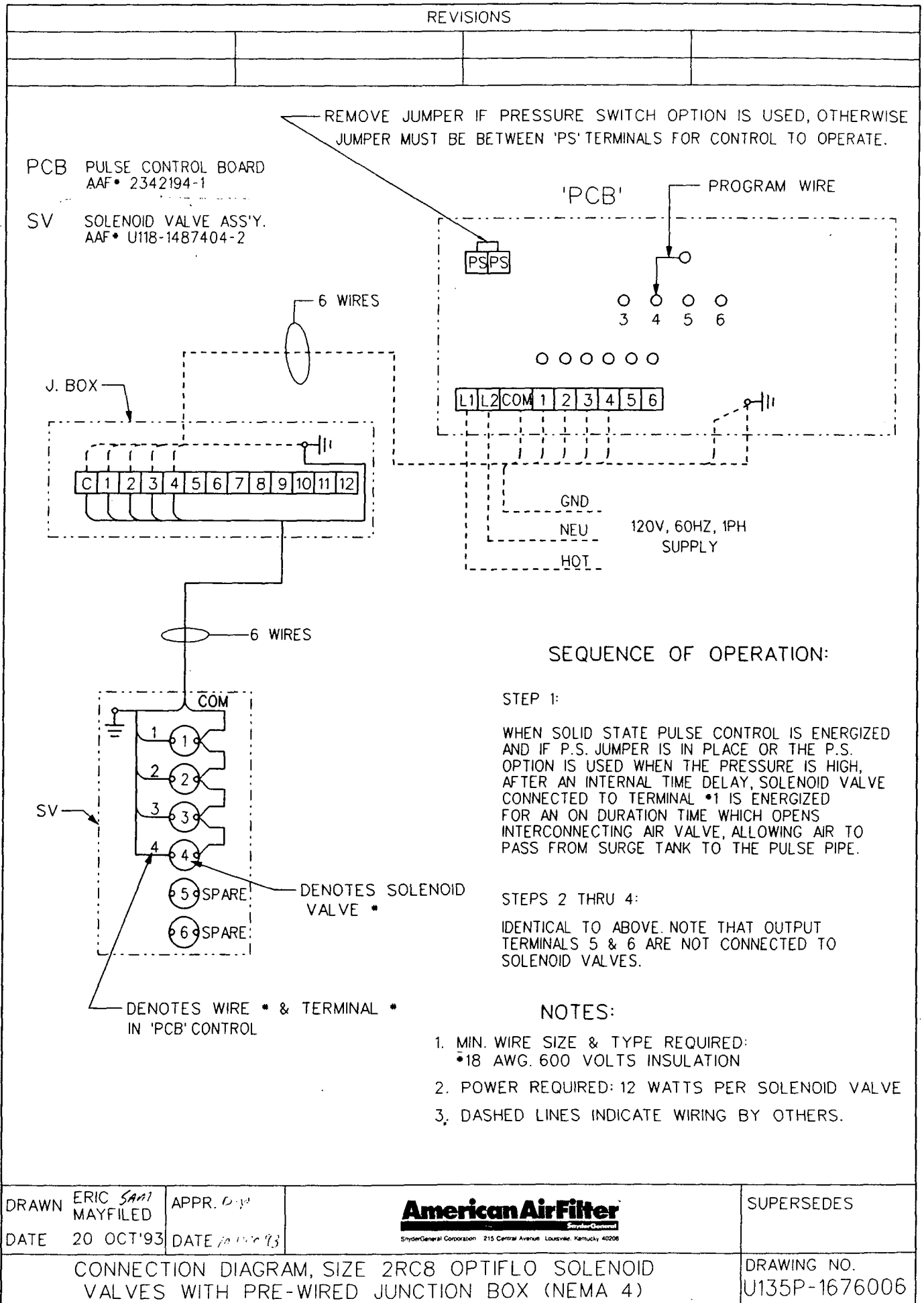
Pressure demand control is also available. (Photohelic gauge).

AIR SYSTEM

The **AAF OptiFlo** dust collector requires clean dry compressed air (-4 OF dewpoint, 80-100 psig) for cleaning. The air valves are arranged to pulse no more than one column of cartridges at a time for each collector.

The timer circuit is factory set to pulse at a 30 second interval.

					Dimensions		
Model	Number of Modules	Number of Cartridges	Filter Area (Square Feet)	Valve Quantity	Height	Width	Depth
2RC8	1	8	2,200	4	11' 8"	3' 4 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
2RC16	2	16	4,400	8	11' 8"	6' 8 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
2RC24	3	24	6,600	12	11' 8"	10' 3 ¹ / ₁₆ "	7' 5 ⁹ / ₁₆ "
2RC32	4	32	8,800	16	11' 8"	13' 4 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
2RC40	5	40	11,000	20	11' 8"	16' 8 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
3RC12	1	12	3,300	6	13' 2 ¹ / ₂ "	3' 4 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
3RC24	2	24	6,600	12	13' 2 ¹ / ₂ "	6' 8 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
3RC36	3	36	9,900	18	13' 2 ¹ / ₂ "	10' 3 ¹ / ₁₆ "	7' 5 ⁹ / ₁₆ "
3RC48	4	48	13,200	24	13' 2 ¹ / ₂ "	13' 4 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
3RC60	5	60	16,500	30	13' 2 ¹ / ₂ "	16' 8 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
3RC72	6	72	19,800	36	13' 2 ¹ / ₂ "	20' 3 ¹ / ₁₆ "	7' 5 ⁹ / ₁₆ "
4RC16	1	16	4,400	8	14' 9"	3' 4 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
4RC32	2	32	8,800	16	14' 9"	6' 8 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
4RC48	3	48	13,200	24	14' 9"	10' 3 ¹ / ₁₆ "	7' 5 ⁹ / ₁₆ "
4RC64	4	64	17,600	32	14' 9"	13' 4 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
4RC80	5	80	22,000	40	14' 9"	16' 8 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
4RC96	6	96	26,400	48	14' 9"	20' 3 ¹ / ₁₆ "	7' 5 ⁹ / ₁₆ "
4RC112	7	112	30,800	56	14' 9"	23' 4 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "
4RC128	8	128	35,200	64	14' 9"	26' 8 ³ / ₁₆ "	7' 5 ⁹ / ₁₆ "

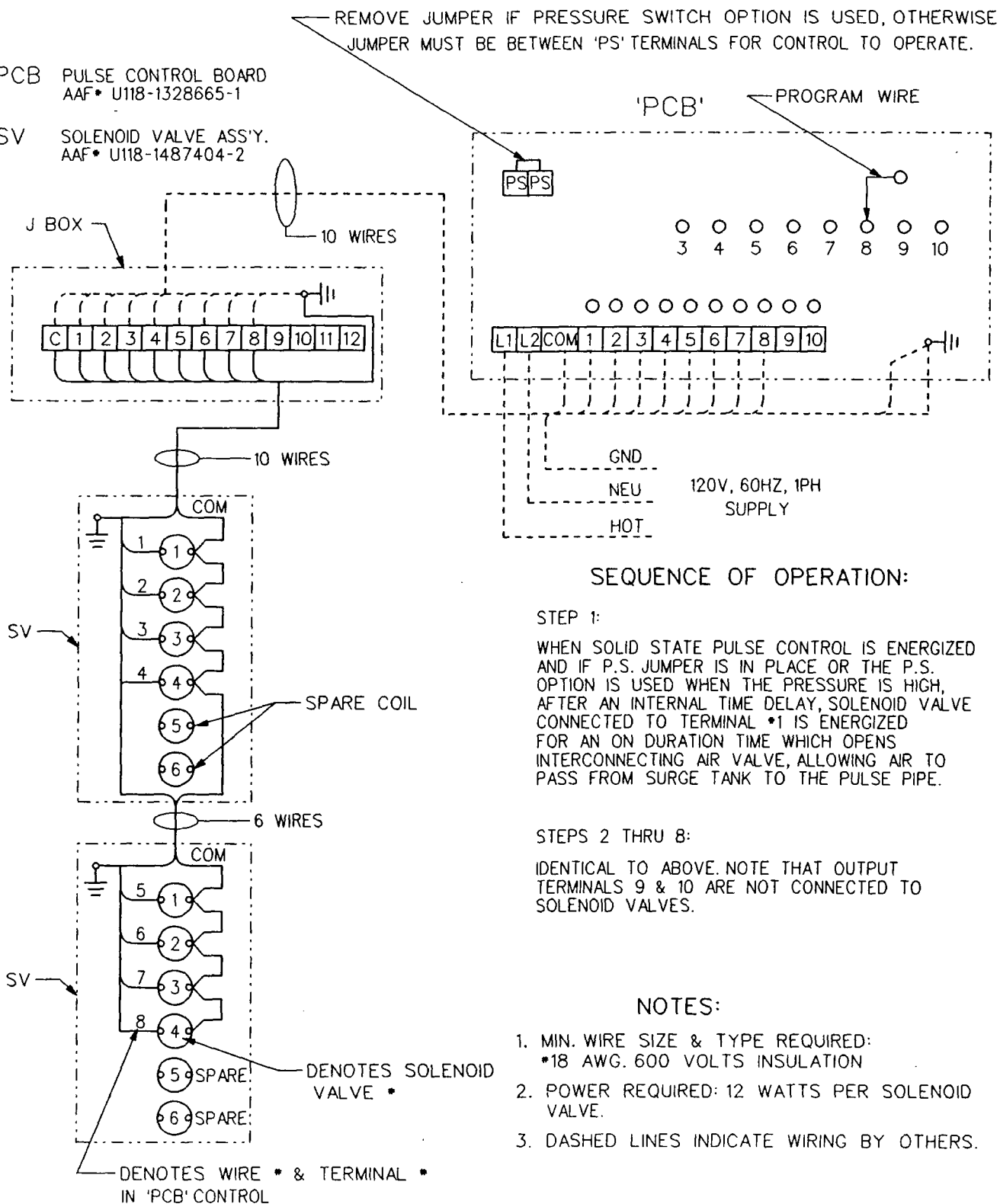


DRAWN	ERIC <i>SAH</i> MAYFILED	APPR. <i>D-10</i>	American Air Filter <small>SnyderGeneral Corporation 215 Central Avenue Louisville, Kentucky 40208</small>	SUPERSEDES
DATE	20 OCT'93	DATE	10/10/93	
CONNECTION DIAGRAM, SIZE 2RC8 OPTIFLO SOLENOID VALVES WITH PRE-WIRED JUNCTION BOX (NEMA 4)				DRAWING NO. U135P-1676006

REVISIONS

PCB PULSE CONTROL BOARD
AAF* U118-1328665-1

SV SOLENOID VALVE ASS'Y.
AAF* U118-1487404-2



DRAWN ERIC SAM
MAYFIELD
DATE 20 OCT '93

APPR. C-P
DATE 10/20/93

American Air Filter

ShyneGeneral Corporation 215 Central Avenue Louisville, Kentucky 40208

SUPERSEDES

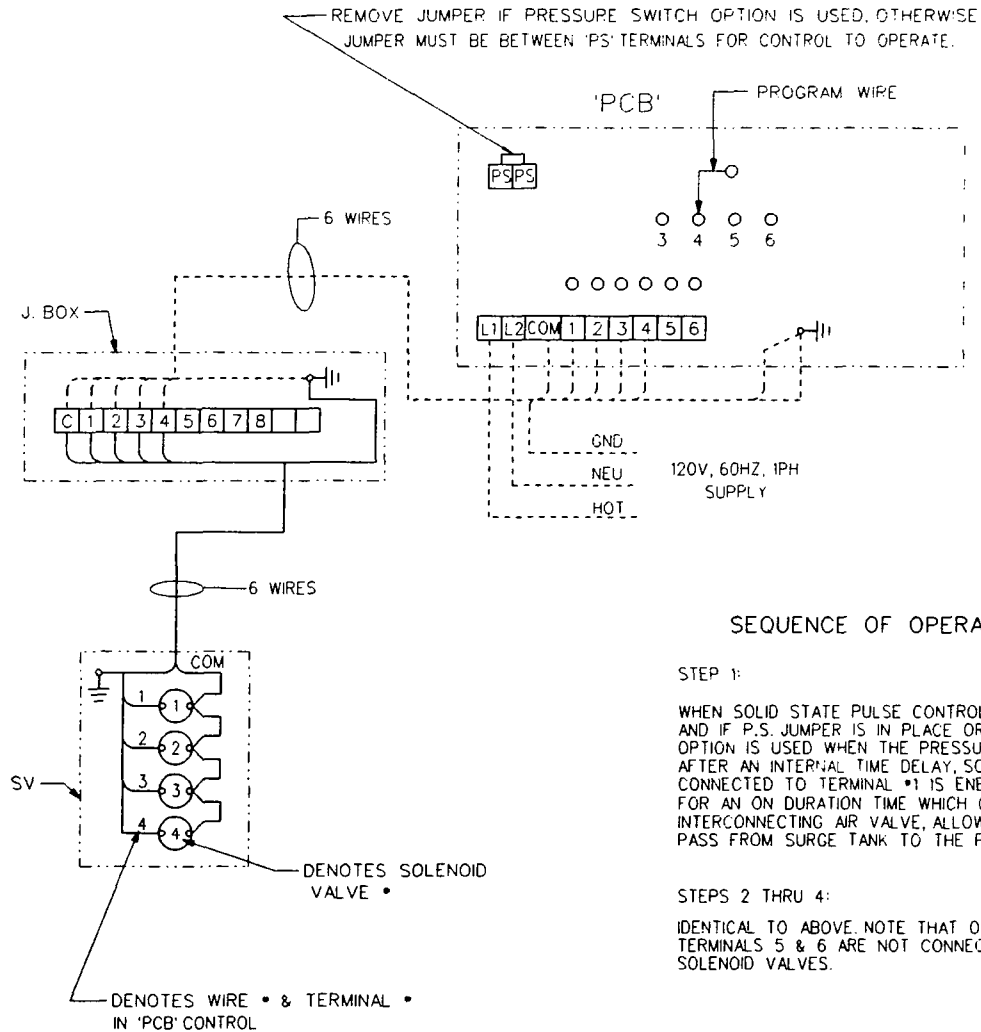
CONNECTION DIAGRAM, SIZE 2RC16 OPTIFLO SOLENOID VALVES WITH PRE-WIRED JUNCTION BOX (NEMA 4)

DRAWING NO.
U135P-1676394

REVISIONS

PCB PULSE CONTROL BOARD
AAF • 2342194-1

SV SOLENOID VALVE ASS'Y
AAF • U135-1679273-1
(CSA LABEL)
AAF • U135-1679273-13
(UL LABEL)



SEQUENCE OF OPERATION:

STEP 1:

WHEN SOLID STATE PULSE CONTROL IS ENERGIZED AND IF P.S. JUMPER IS IN PLACE OR THE P.S. OPTION IS USED WHEN THE PRESSURE IS HIGH, AFTER AN INTERNAL TIME DELAY, SOLENOID VALVE CONNECTED TO TERMINAL •1 IS ENERGIZED FOR AN ON DURATION TIME WHICH OPENS INTERCONNECTING AIR VALVE, ALLOWING AIR TO PASS FROM SURGE TANK TO THE PULSE PIPE.

STEPS 2 THRU 4:

IDENTICAL TO ABOVE. NOTE THAT OUTPUT TERMINALS 5 & 6 ARE NOT CONNECTED TO SOLENOID VALVES.

NOTES:

1. MIN. WIRE SIZE & TYPE REQUIRED:
•18 AWG. 600 VOLTS INSULATION
2. POWER REQUIRED: 12 WATTS PER SOLENOID VALVE
3. DASHED LINES INDICATE WIRING BY OTHERS.

DRAWN D. BOOTH
DATE 12 MAY 94

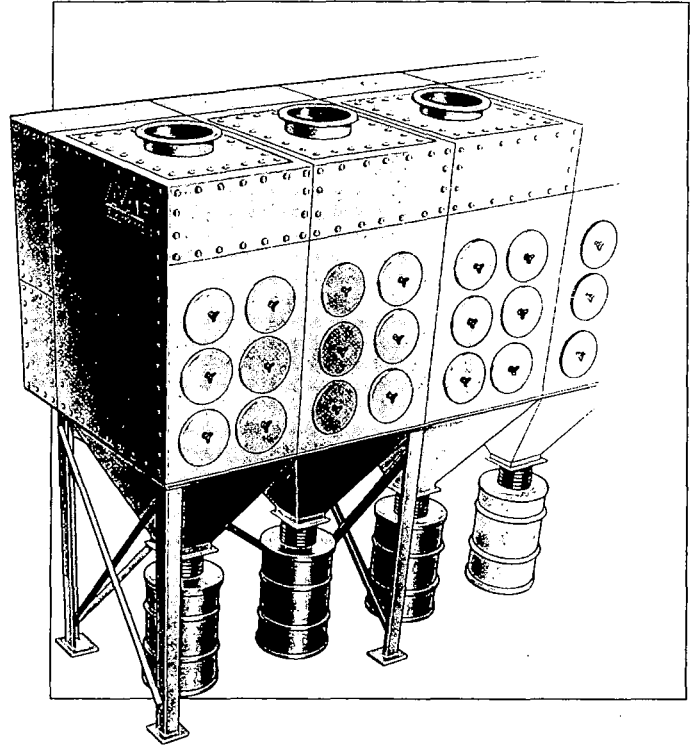
APPR. L.P.
DATE 2/2/99

SnyderGeneral
Corporation
215 Central Ave., Louisville, Kentucky 40208

SUPERSEDES

CONNECTION DIAGRAM, SIZES 2RC4 & 2RC8 OPTIFLO
SOLENOID VALVES WITH PRE-WIRED JUNCTION BOX (NEMA 9)

DRAWING NO.
U135P-1688985



OptiFlo™ Cartridge Dust Collector

*Installation, Operation
& Maintenance Manual*

OptiFlo™

Pulse-Jet Cylindrical Cartridge Dust Collector

Installation, Operation, and Maintenance Instructions

The OptiFlo Pulse-Jet Cylindrical Cartridge collector is a factory assembled automatic self-cleaning dust collector. It uses a modular building block concept to meet any air flow capacities and design requirements.

This bulletin contains the information necessary for installation, operation, and maintenance of the OptiFlo dust collector.

Read the entire manual and check each carton and crate against the shipping sheet (Form 1281) before beginning installation.

GENERAL INFORMATION

Filter Elements

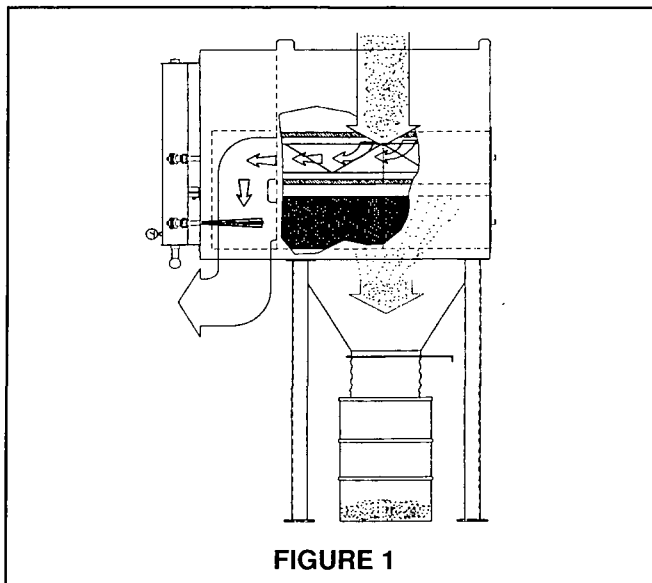
The basic filter element used in the OptiFlo dust collector is the OptiFlo cartridge filter. The OptiFlo filter consists of pleated media in a cylindrical configuration. This design allows for installation and change-out with a minimum of time and effort. Each OptiFlo filter is supplied with its own gasket to insure a positive, airtight seal each time the filter is changed.

The filters are installed horizontally, end-to-end, in pairs. Filter pairs are cleaned automatically in sequence so that only a small portion of the filters are off-line at any given time.

Normal Operation

During normal operation (See Figure 1), air enters the OptiFlo dust collector through the inlet and passes through the filter elements. Dust is collected on the outside surfaces of the elements and clean air flows through the center of the elements into the clean air plenum, in true "downflow" fashion where it exits through the clean air outlet.

During filter element cleaning, a solid-state control timer automatically selects pairs of elements to be cleaned, activating solenoid valves which open air diaphragm valves. High pressure air pulses directly into the center of the selected element pair for 100 milliseconds, blowing collected dust off the filter elements.



The dust is swept downward into the hopper by the prevailing air flow and by gravity.

Note: An inlet in each module is strongly recommended to optimize performance.

Sizes

The OptiFlo pulse-jet cartridge collector is available in these basic configurations: the 2RC, 3RC, and 4RC series. All modules are two filter elements wide and two deep. The 2RC modules have filters arranged two-high, 3RC modules have filters arranged three-high, and 4RC modules are four filters high. Each series offers standard factory assembled collectors with model designations such as: 2RC8; 2RC16; 2RC24; 2RC32; 3RC12; 3RC24; 3RC36; 3RC48; 4RC16; 4RC32; 4RC48 and 4RC64. The second number in the model designation indicates the total number of cartridges per collector.

Factory Assembly

All OptiFlo dust collectors are shipped factory-assembled requiring only:

- (1) field bolting of the hoppers, legs and braces,
- (2) connection of ductwork and/or the fan,
- (3) mounting and wiring of the control box,
- (4) connection of compressed air supply.

The OptiFlo dust collector is usually mounted on a reinforced concrete foundation. However, roof mounting is also possible. When calculating for foundation or roof mounting, the weight of the dust collector, material collected, and all auxiliary equipment must be considered together with snow, wind and seismic loads. See individual Specification Control Drawing for dust collector weight.

WARNING

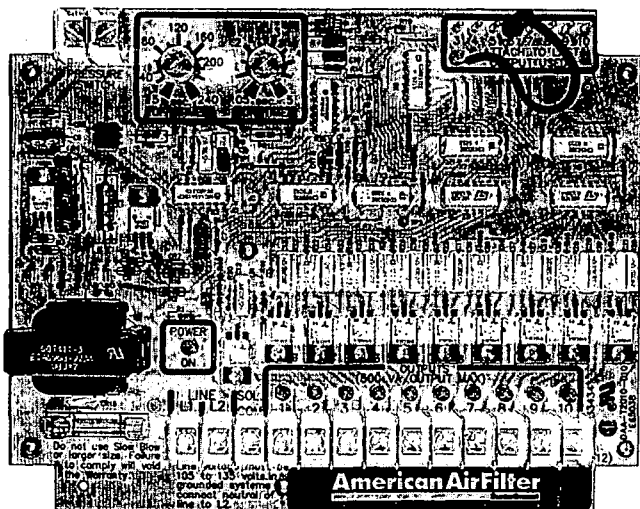
— Location must be clear of all obstructions such as utility lines or roof overhang (see specification control drawing), as a crane must be used to move the collector into position.

DUCTWORK AND ACCESSORIES

Connect the inlet duct to the inlet(s) above the access ports on the collector, or to the top inlet. Connect the clean air duct (or manifold) to outlet(s) located on the bottom and lower sides of the clean air plenum. Ductwork should be of sufficient gauge to withstand the system design pressure and should be independently supported.

The OptiFlo collector is not designed to support ductwork.

Attach hopper discharge device(s) per manufacturer's instructions.



Printed Circuit Program
Timer Control

ELECTRICAL CONTROLS AND WIRING

CAUTION

— Potential shock hazard. Disconnect power before servicing. Only qualified electrical personnel should work on this system.

The OptiFlo pulse-jet cartridge collector is supplied with NEMA 4 electrical solenoids and timer control (one control system per unit). NEMA 9 option is available.

Control wiring must be field installed between the solenoid valves and the timer output terminals as shown on the electrical connection diagram.

The pulse timer panel has a set of normally jumpered terminals labeled "pressure switch," used only when an optional remote control device (called demand pulse option) is used. The metal jumper is removed and the "normally open" contacts of the optional pressure switch are then connected to the "PS" terminals—see wiring diagram provided with this option.

Check to be sure the program wire (top right of

CAUTION

— To avoid permanent damage to the solid-state control, **do not:**

- (1) Connect 120v to the "PS" terminals.
- (2) Connect 120v to any of the "Output" terminals.
- (3) Connect an "Output" terminal to ground. The fuse on the panel does not protect from a direct short.

timer panel shown) is connected to the correct program pin. To do this, make sure that the program wire/pin matches the wiring diagram. Power should be supplied to the solid state timer board across terminals L1 and L2 as shown on the connection diagram. When the power is energized, the "Power On" light should illuminate and the unit should start pulsing. With the demand pulse option, the pressure switch settings must be 'zero' to start pulsing. The collector should not be allowed to pulse for any extended time without compressed air being supplied to the collector. Operation without

compressed air can damage the solenoid valves.

The pulse interval and duration are controlled by the solid-state timer. The pulse interval is factory set at 30 seconds which is satisfactory for most installations. However, since dust loads, media velocity and other factors will vary from one installation to another, it may be necessary to readjust the pulse interval to meet individual requirements. Contact your SG representative for assistance. The duration, preset at 100 milliseconds, is also adjustable. ***The duration should not be adjusted without consulting your SnyderGeneral representative.***

COMPRESSED AIR CONNECTION

The OptiFlo dust collector requires dry compressed air (-40F dewpoint, 90-100 psig) for cleaning. The timer circuit is factory pre-set to pulse at a 30 second interval. This will require nominal compressed air supplies as shown below:

SIZE REQUIRED	AIR REQUIRED (SCFM)	SIZE	AIR (SCFM)
2RC8	3	3RC36	9
2RC16	3	3RC48	12
2RC24	6	4RC16	3
2RC32	6	4RC32	6
3RC12	3	4RC48	9
3RC24	6	4RC64	12

Note: Adverse system conditions could require a reduced pulse interval which will **increase** compressed air usage.

The compressed air manifold on each module has a 1½" NPT pipe connection for the air supply.

GAUGE INSTALLATION

The magnahelic (pressure gauge) must be installed before initial start-up. Using appropriate tubing and connectors, connect the gauge high pressure port to the housing (dirty air) side, connect the gauge low pressure port to the plenum (clean air) side. Both ports are located on top of the collector.

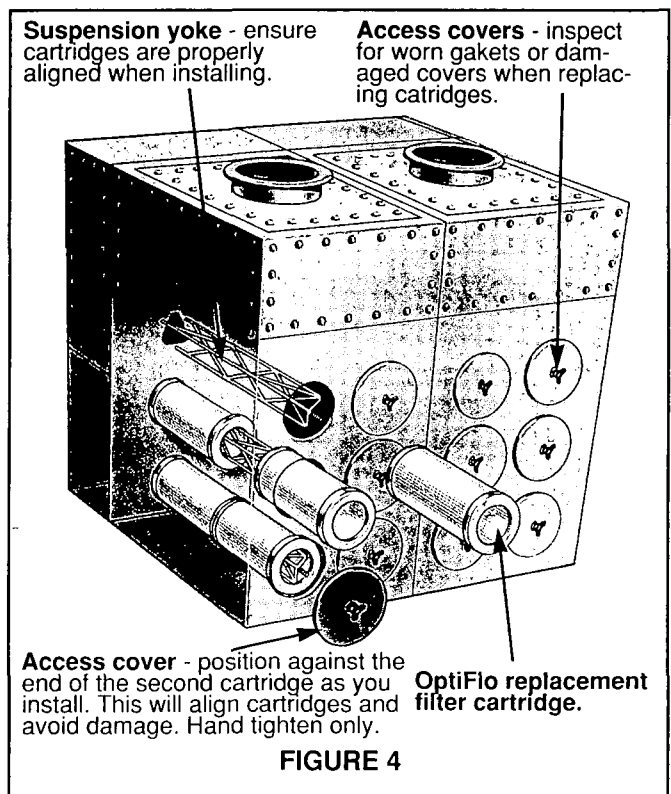
Install the air pressure gauge in the coupling on the compressed air reservoir.

FILTER INSTALLATION (FIGURE 4)

1. Remove access covers and set aside in a safe place

2. Rock used cartridges to break the gasket seal between cartridges and tubesheet (back wall).
3. Slide used cartridges out of the collector and dispose of properly.
4. Clean access covers, wipe off gaskets. Inspect covers and gaskets for damage. Replace any worn gaskets or damaged access covers.
5. Inspect new cartridges for damage from shipping, storage or handling. **Do NOT** use damaged cartridges.
6. Slide new cartridges, **gasket-end first**, onto the suspension yoke. While installing, be careful that cartridges do not contact the housing, handrails, open doors or any other objects which might damage or puncture the cartridge. Before the second cartridge is completely inside the collector, position the access cover against the end of the cartridge. Push the cartridge with the access cover into the collector. If any resistance is felt as the second cartridge is pushed, remove the access cover and check for obstructions. Pull the second cartridge out far enough to reposition the access cover and reinsert. Tighten the handle on the access cover.

Hand tighten only – do not use a wrench.



ON-LINE CLEANING

1. A timer continuously and progressively energizes the solenoid on each valve (attached to the compressed air reservoir), releasing a sharp burst of compressed air to a pulse pipe in line with a column of cartridges. On special applications using the demand pulse option, the timer operation can be activated (or deactivated) at high (or low) pressure drop settings.
2. This sharp burst of compressed air into the pulse pipe results in a shock wave traveling upstream through the center of the cartridges.
3. The shock wave and additionally induced clean air from the outlet plenum momentarily reverse air flow and dislodge accumulated dust from the filter cartridges.
4. The configuration allows discharged dust to fall freely into the hopper below. Additionally, the downward path of the incoming air will blow the dislodged dust toward the hopper.

INITIAL START-UP INSTRUCTIONS

1. Check the compressed air lines to be sure they are connected to the NPT connection on the compressed air manifold(s). Turn on the compressed air supply to the manifold(s). Pressure should be -100 psig.
2. Check that cartridges are properly installed. Close the access ports and secure tightly.
3. Be sure the hopper discharge device is operating properly. **Follow manufacturer's instructions.**
4. Energize the solid-state timer panel. The "On" light inside the enclosure will then be lit. With the demand pulse option, decrease the pressure switch set points to "zero" to activate timer.
5. Listen for firing of the pilot solenoids and diaphragm pulse valves to determine that they are operational. Note that as each solenoid is activated, a small puff of air vents from the hole at the solenoid valve base.
6. Partially open the fan damper or duct blast gates.

7. Start fan and note the initial differential pressure gauge reading. This gauge reading indicates the pressure drop across the filter face and eventually the dust cake. Rising pressure readings indicate that dust is being collected.

WARNING

— *Efficient fan sizing includes an allowance for pressure drop across filter media with a thin residual dust cake as the normal operating condition. During the initial dust caking period for NEW media, unit airflow may have to be restricted to avoid fan motor overload. Partial blank-off of the inlet or outlet will do. Fan motor amperage readings will indicate need and adequacy.*

Do not operate fan for extended periods without imposing the pressure drop induced by conditioned media or checking fan motor amperage.

NOTE: With a light dust load, changes in pressure drop may take days to change appreciably.

8. The final pressure drop reading should be in the range of 1 to 3 inches W.G. Cleaning pulses will cause momentary spikes in the pressure reading. In making adjustments to the factory settings, remember that:
 - Increasing the time interval between pulses will increase the pressure drop.
 - Decreasing the time interval will tend to lower the pressure drop.
 - Excessive pulsing can cause premature cartridge wear and adversely affect overall filtration efficiency.

With the demand pulse option adjust only the pressure settings.

Never adjust the pulse duration ("on time") without first consulting your SnyderGeneral representative.

Maintenance

1. Daily or Weekly — Record the collector pressure drop for at least the first 30 days of operation. Adverse operating conditions can be detected by a change in pressure drop. After start-up, the pressure drop will gradually rise to its normal operating level, which will be about 4.0" W.G.

2. Monthly — The access door(s) should be opened for internal inspection on a regular basis, at every 30 days.

Check that all cartridge retaining knobs are tight, and look for signs of excessive wear or damage on the cartridges.

Open the air reservoir drain plugs to expel any condensation. Check the compressed air line regulator, dryer and filter for proper operation. Also inspect the hopper outlet discharge device(s) for proper operation and air seal. ***Follow manufacturer's instructions for inspection and maintenance.***

3. Six Months—Ducts leading to and from the collector should be inspected for dust build-up at least once every six months. In addition, perform the following inspections:
 - a) Examine the filter cartridges.
 - b) Inspect joints for evidence of air or dust leakage.
 - c) Check for evidence of moisture or dust buildup within the collector.
 - d) Check all electrical apparatus for proper operation.
 - e) Check to see if the diaphragm pulse valves and solenoid valves are pulsing when energized by the timer.
 - f) Check discharge gas condition for signs of dust.
4. Filter Cartridge Replacement—Follow the procedures in the sections for Filter Cartridge Installation and Initial Start-Up Instructions.

TROUBLE SHOOTING

HIGH PRESSURE DROP READING:

Improper Timer Operation —

Check the wiring, fuses, and setting of pulse duration and interval. ***Do not adjust the pulse duration without consulting a SnyderGeneral representative.***

Insufficient Compressed Air —

Check the air supply to be sure the compressor is providing 90 to 100 psig. Check for a plugged filter in the compressed air line.

Solenoid Pilot Valve Malfunction —

Listen to be sure the solenoids are firing. Check for momentary air venting each time each solenoid fires. Clean and replace if necessary.

Leaky Dust Discharge Device —

A leaking rotary lock, screw conveyor, slide gate, etc., can overload the collector by preventing dust discharge. This will cause high pressure drop, shorten filter life, and reduced air volume. ***Follow manufacturer's recommended service procedures.***

Condensation —

High humidity will create blinded filter cartridges which results in excessive pressure drop. Run the cleaning mechanism with the fan off and timer activated to release the dust cake. If condensation is a recurring problem, pre-processing warm-up and post-processing purge periods of 15 to 20 minutes may help. Exterior insulation may also be necessary. Sources of moisture may come from leaky process ductwork, moisture in the process gas stream, or moisture in the compressed air system. Try blow-down of the compressed air reservoir(s) to eliminate condensate.

Collector Overloads —

Too much air or too much dust will create high pressure drops across the collector. Check the fan speed, system design, pre-cleaners and the damper position. Be sure the dust load and air volume are those the system was designed to handle.

VISIBLE DISCHARGE:

Improper Cartridge Installation —

Check that filter retainer knobs are tight.

Improper Sealing of the Cartridge —

Check sealing gasket on cartridge.

Insufficient Dust Cake —

The unit could be pulsing too frequently resulting in over-cleaning. Increase pulse interval or raise the high setting on the optional demand pulse switch to increase pressure drop slightly.

Cartridge Replacement Required —

Eventually the filter cartridge will wear out. Normally this results in excessive pressure drop, however, if the dust is very abrasive leaks can occur.

INSUFFICIENT HOOD CONTROL:

Incorrect Fan Rotation —

The incorrect rotation of the fan will not provide the system static pressure or volume required.

Fan V-belt Slippage —

Tighten the v-belts if necessary. Replace worn, broken or stretched belts.

Leaks —

Leaking ductwork, access doors, explosion vents, dust discharge devices, or housing will cause insufficient suction at the pick-up point. Seal all leaks. ***Follow manufacturer's recommended procedures for service on discharge devices.***

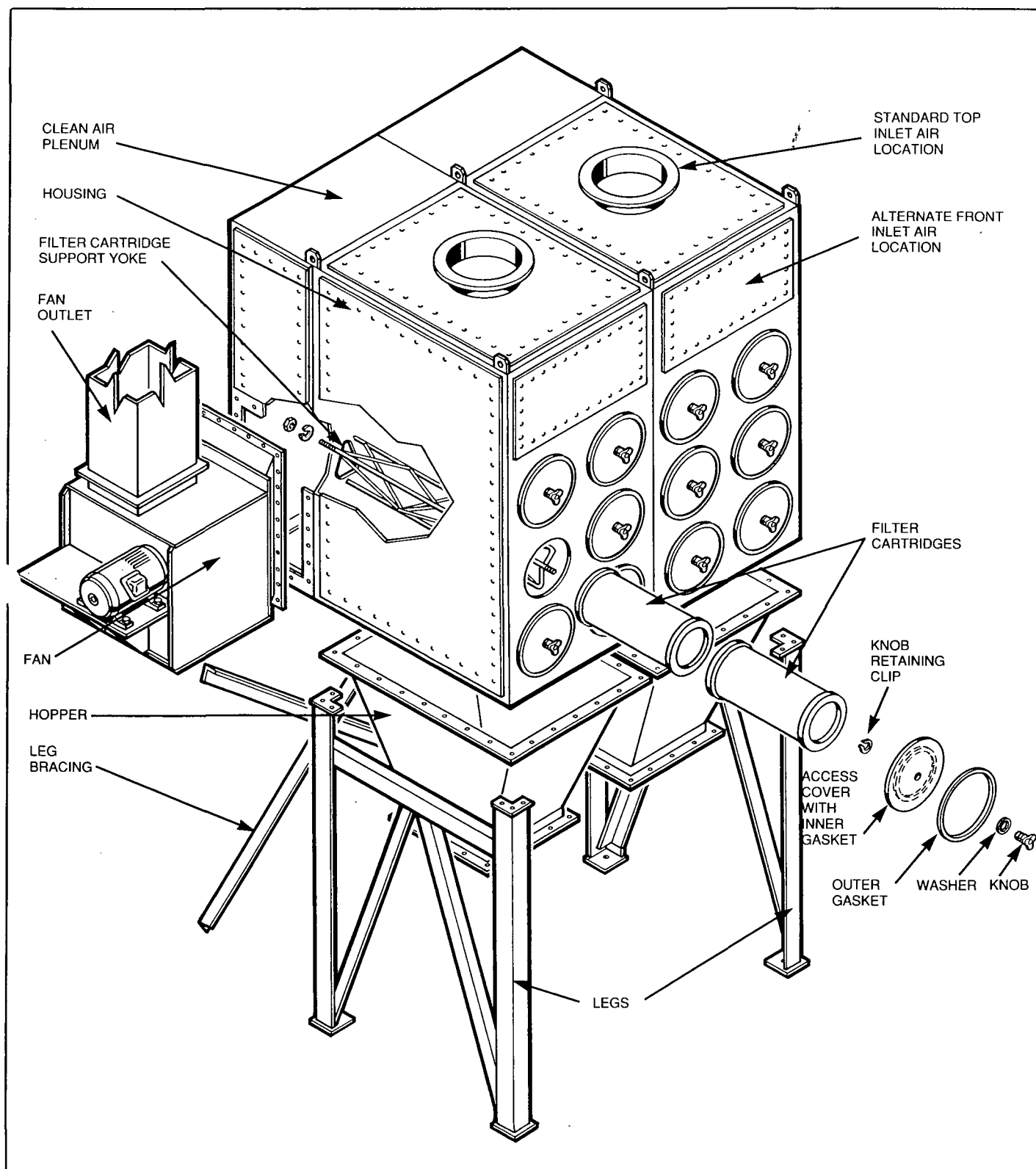
Clogged Air Passages —

Clogged ducts, closed dampers or closed gates will shut off air flow.

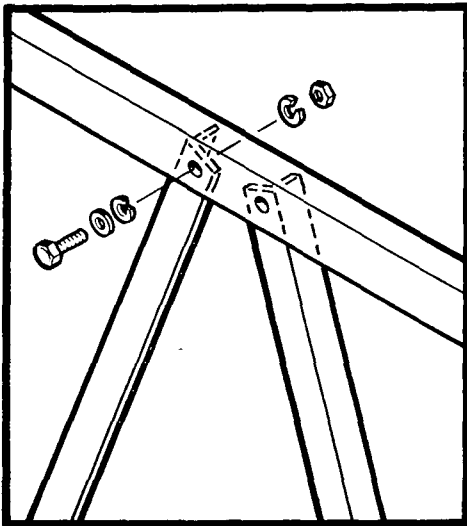
Undersized Ducts —

Undersized ducts will create excessive pressure losses for which the fan may not have been sized.

PARTS DRAWING

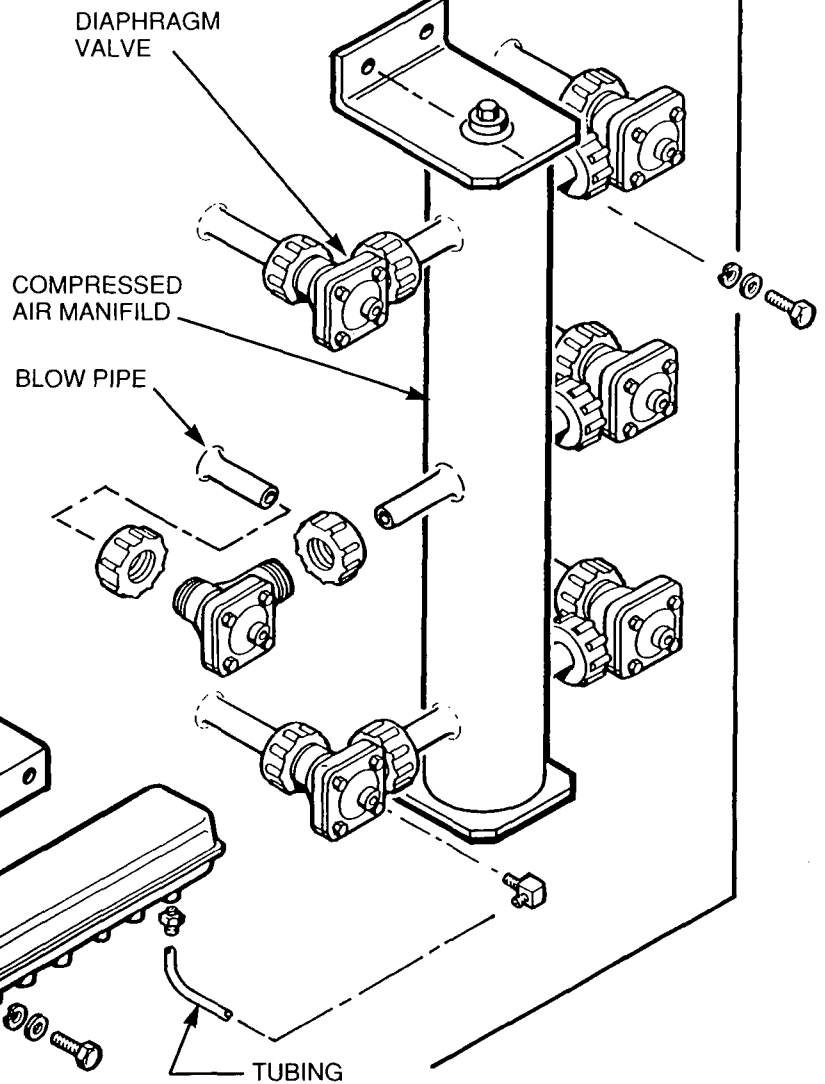


PARTS DRAWING



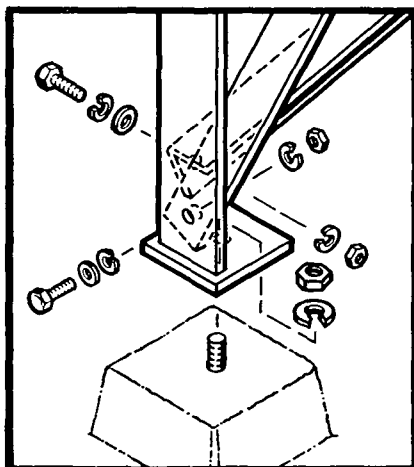
(SIDE BRACING)

ALL BOLTS ARE $\frac{5}{8}$ "-11 X $1\frac{3}{4}$ " A325
WITH $\frac{5}{8}$ " A563 NUTS & FLAT WASHERS



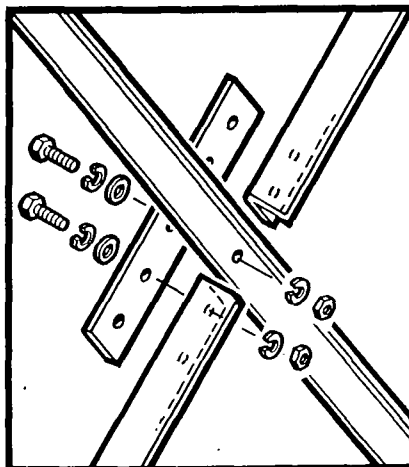
SOLENOID ENCLOSURE

TUBING



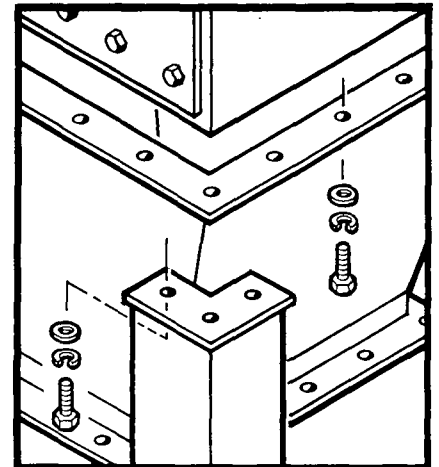
(BRACING & LEG ANCHOR)

ALL BOLTS ARE $\frac{5}{8}$ "-11 X $1\frac{3}{4}$ " A325
WITH $\frac{5}{8}$ " A563 NUTS & FLAT WASHERS



(LEG CROSS BRACING)

ALL BOLTS ARE $\frac{5}{8}$ "-11 X $1\frac{3}{4}$ " A325
WITH $\frac{5}{8}$ " A563 NUTS & FLAT WASHERS



(HOPPER & LEGS TO CABINET)

$\frac{1}{2}$ "-13 X $1\frac{1}{2}$ " LG. WITH WASHER & LOCKWASHER

OPTIFLO PULSE-JET CARTRIDGE COLLECTOR

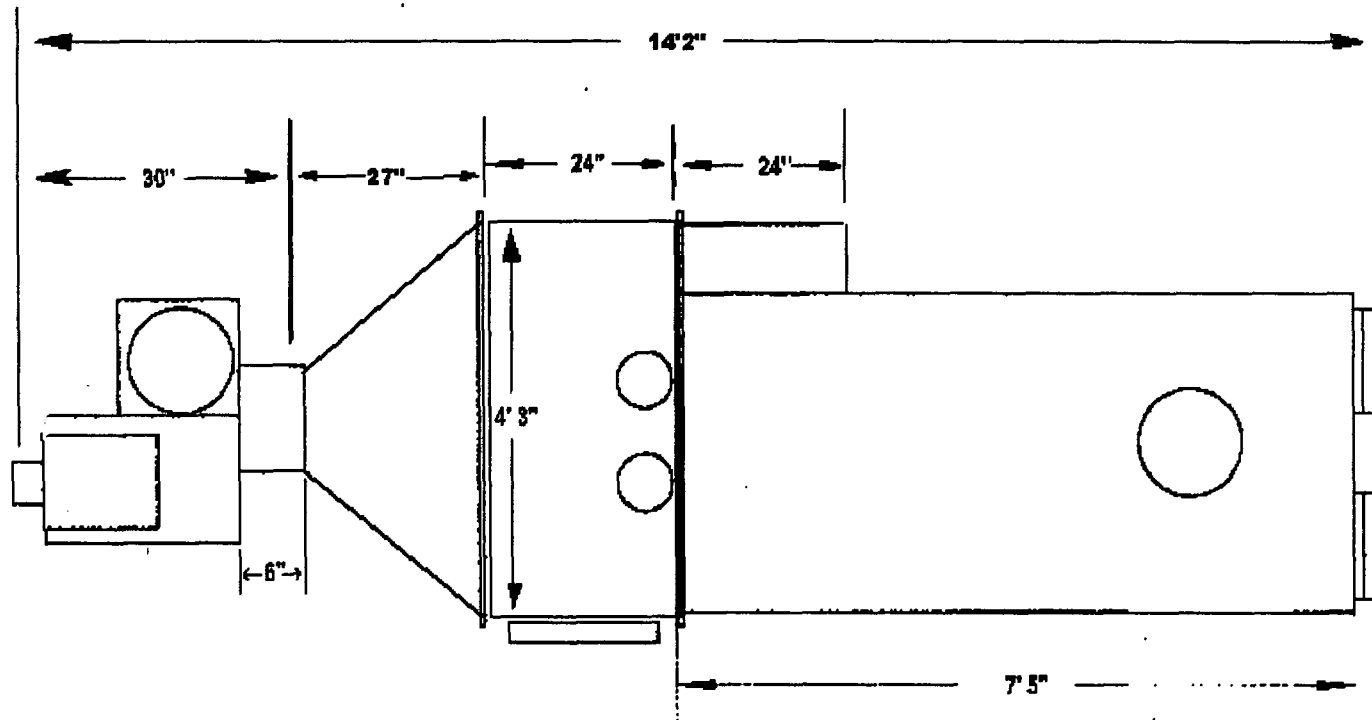
SUGGESTED SPECIFICATIONS

- A. Furnish a complete pulse-jet cartridge collector system as shown on the plans and/or listed in the equipment schedule. The system shall be capable of providing continuous on-line cleaning for a volumetric flow of _____ SCFM. The collector system shall operate at a velocity through the media of _____ FPM.
- B. The pulse-jet cartridge collector shall be supplied in factory assembled units incorporating one or more modules sized to meet airflow capacities and design requirements.
- C. Each module shall be constructed using min. 12 ga. mild steel, housing rated at -20" w.g., and shall come complete with pulse-jet pipework, (3/4", 1") single diaphragm air valves, pilot solenoid valve control boxes (NEMA 4,9), solenoids, and (4", 6") diameter externally mounted compressed air reservoir. They compressed air reservoir shall be provided with a (3/4", 1") NPT pipe coupling for attachment of clean dry compressed air supply at 90-100 psig and a temperature not exceeding 125°F.
- D. The collector shall utilize high efficiency pleated filter elements arranged in a horizontal configuration. The high efficiency filter's shall be assembled into a (single, double) horizontal cartridge arrangement. Each filter assembly shall have a minimum of 275 sq. ft. of media and shall be factory installed.
- E. Dust laden air shall enter above the horizontally arranged filter elements and move in a true downflow direction between the filter's. The airstream shall turn and pass through the filter media. The filter arrangement shall be such that heavier dust particles can drop out of the airstream as it turns to enter the filter media. The remaining dust shall be collected on the filter media. The clean air shall move through the tube sheet section and into a clean air plenum at the rear of the module.
- F. Each module shall be supplied with an upper front/top inlet and lower bottom/side outlet.
- G. The pulse-jet cartridge collector unit shall be supplied with a (NEMA 4,9) solid state printed circuit timer to control activation of the solenoids. The timer shall progressively energize solenoids which control pilot activated air valves attached to the compressed air reservoir. As the air valves are activated they shall release a sharp burst of 90-100 psig compressed air through the factory installed pulse pipe and orifices. The resultant shock wave and clean air induced from the clean air plenum shall momentarily reverse the primary airflow and dislodge the accumulated dust cake. The filter elements shall be arranged to allow the dust to fall into the hopper below. The hopper sides shall be inclined up from the horizontal at a minimum of (45°, 60°)
- H. The collector shall be an American Air Filter OptiFlo pulse-jet cartridge collector as manufactured by AAF International.

SPECIFICATIONS

HEPA Filter System for Quonset Hut

PERMA-FIX BIBO FILTER SYSTEM



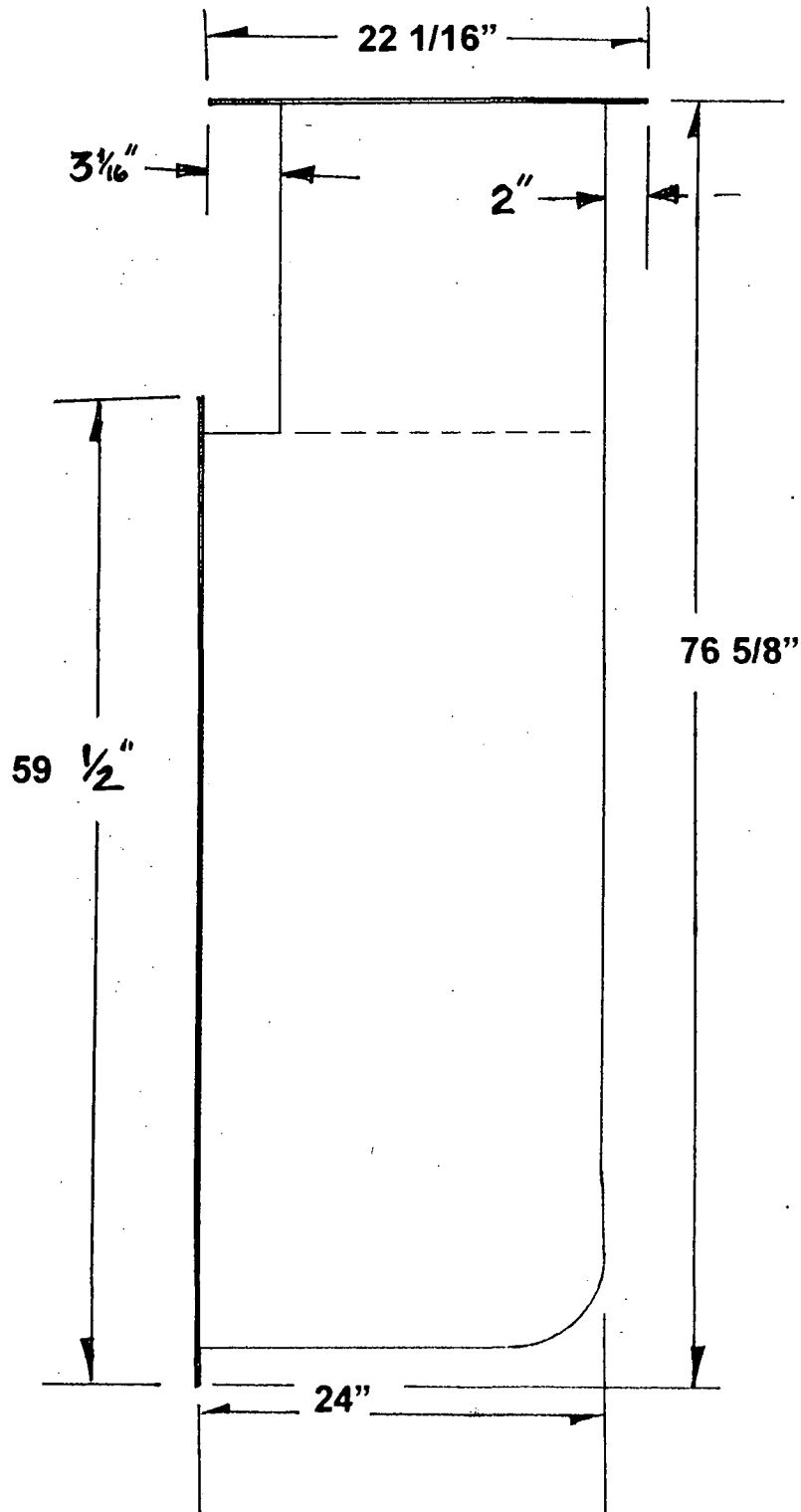
DRAWN BY: HJS1V
DATE: 6-8-2000

Air Pollution Systems

2655 Industrial Blvd
Jacksonville, FL 32239

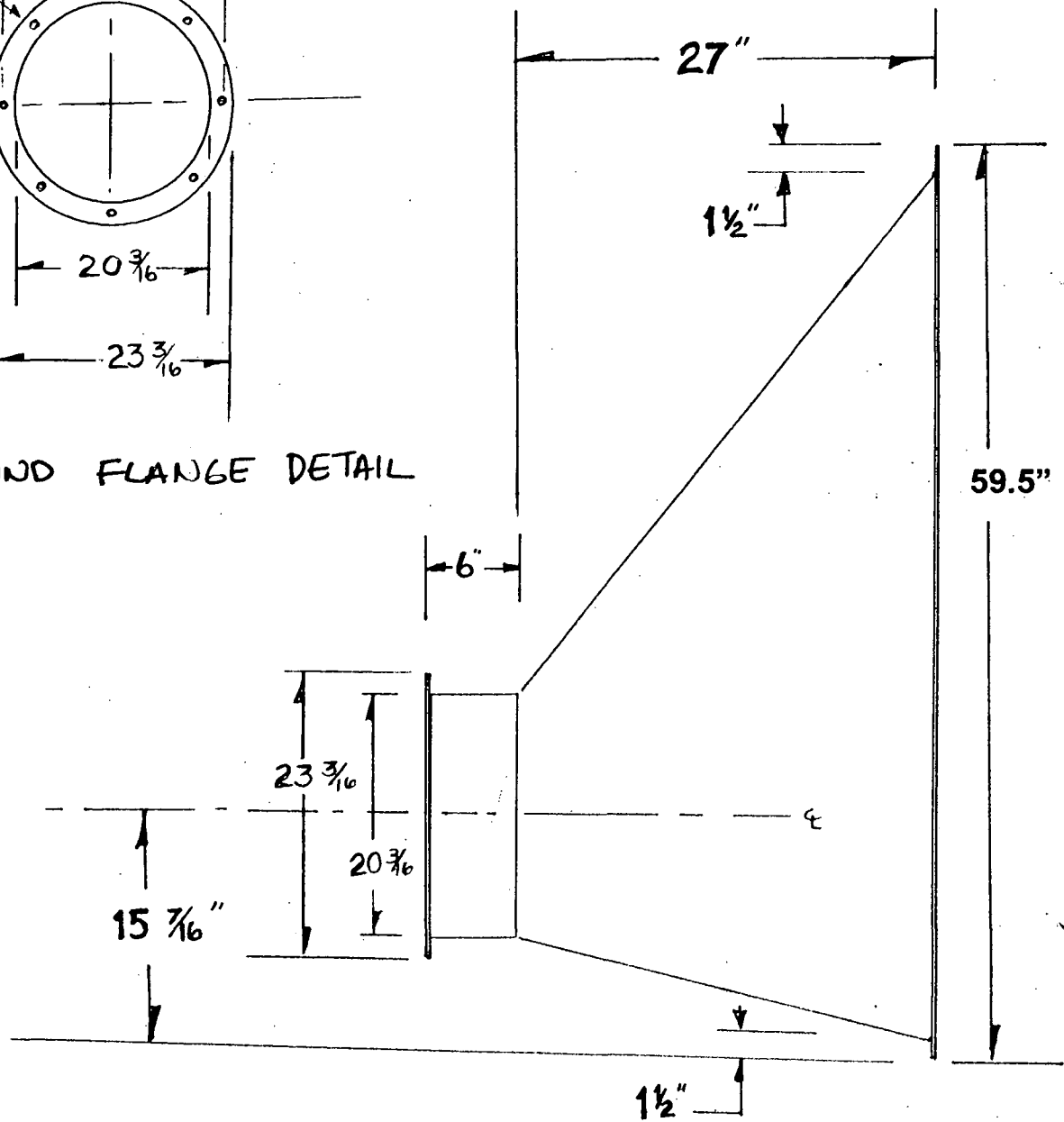
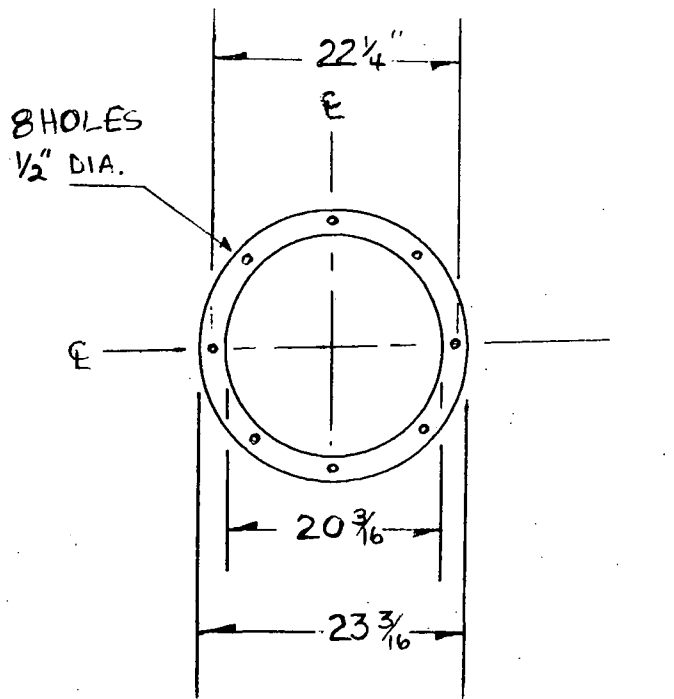
TOP
VIEW

OPTIFLO TRANSITION **Drawing 3 Side View**



304 SS

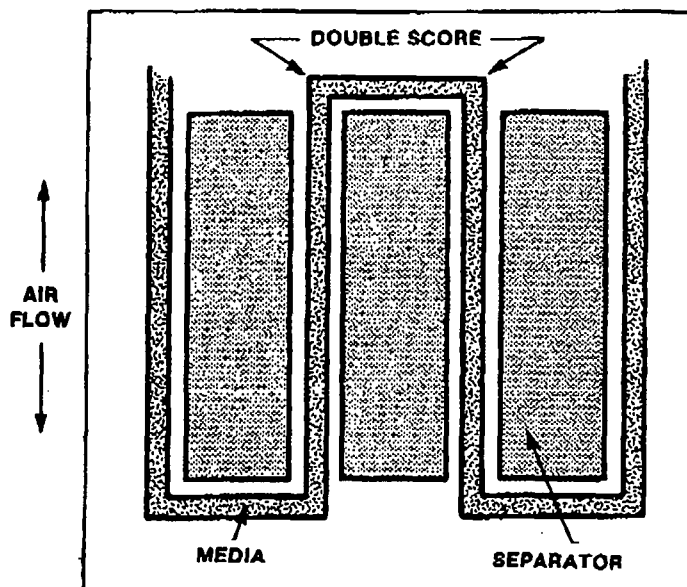
HEPA HOUSING / FAN TRANSITION Drawing 2 Side View



DOUBLE SCORED MEDIA PLEAT VS. ROLLED MEDIA PLEAT

DOUBLE SCORED MEDIA PLEAT

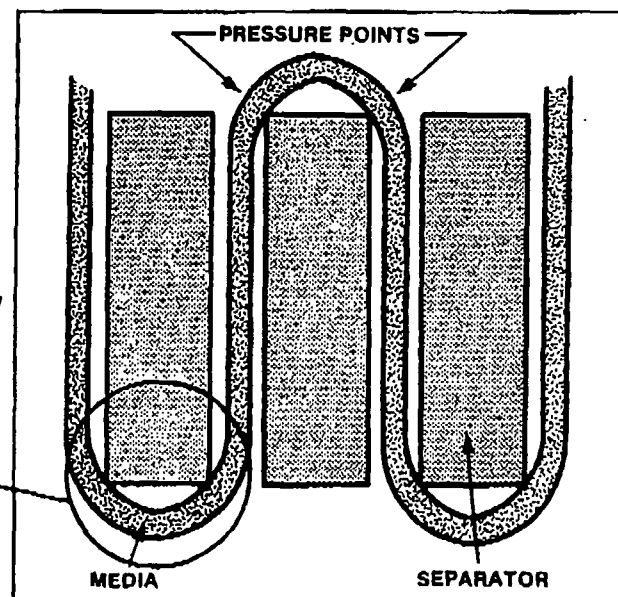
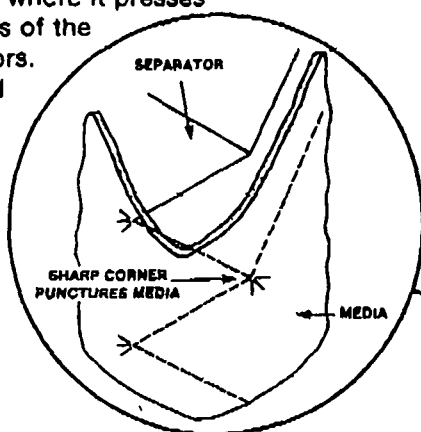
Each pleat in Astrocel® filters is formed by double scoring the media to fit the pleats squarely around the ends of the separators. There are no pressure points at which the media presses against the ends of the crimped separators to puncture the media.



(TOP VIEW)

ROLLED MEDIA PLEAT

The pleats in some competitive filters are formed by a single score line or by rolling the media around the ends of the separators. This creates pressure on the fragile media where it presses against the points of the crimped separators. Filters with rolled media or single score pleats are subject to a higher risk of media damage.



(TOP VIEW)

ASTROCEL I

Product Line Comparison Chart

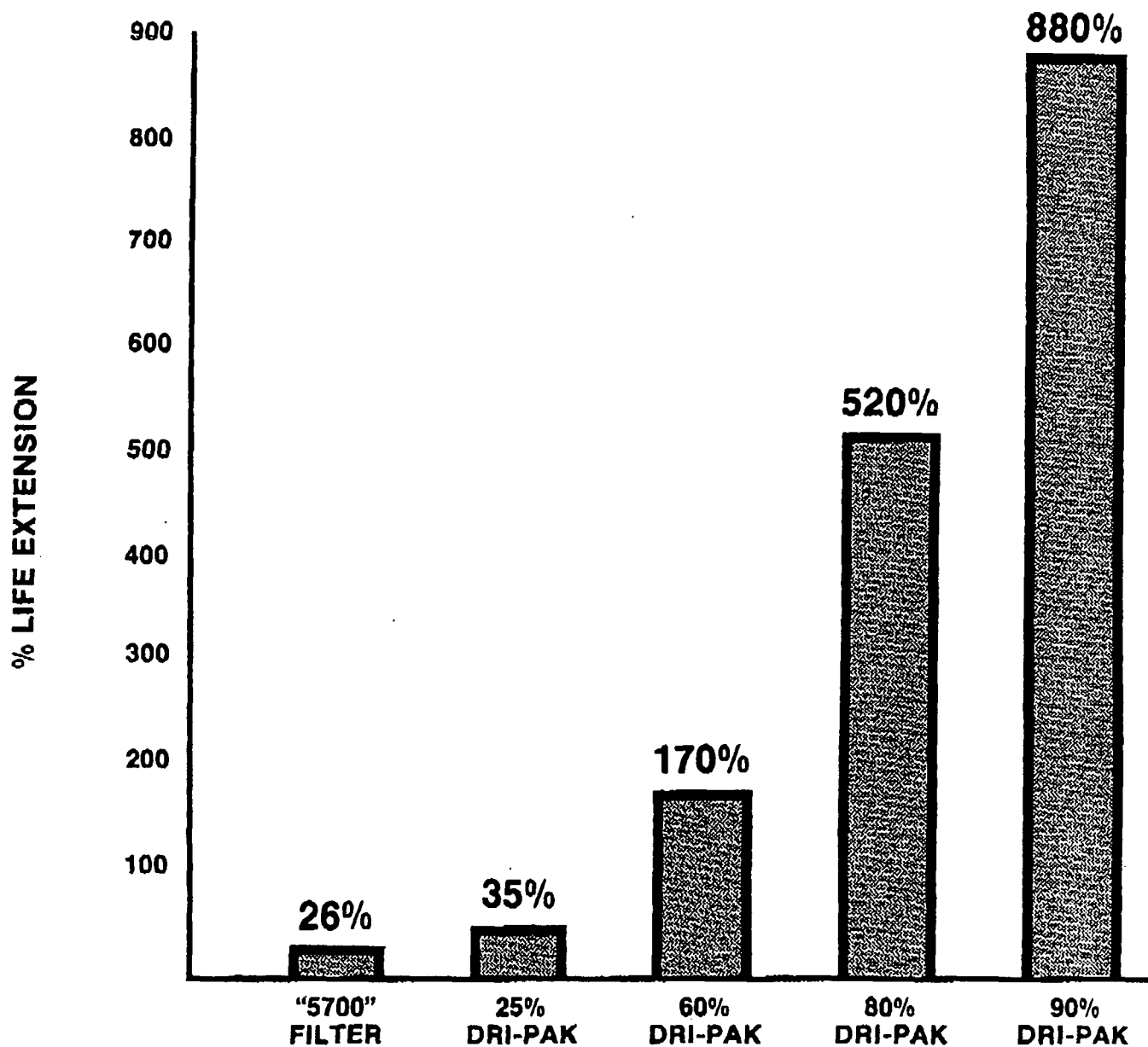
	Rated Efficiency (%)	Media Type	Test Method	Media Area (24x24)	Rated Initial Resistance (Inches W.G.)	Recommended Final Resistance (Inches W.G.)	Recommended Maximum Face Velocity (FPM)
ASTROCEL I							
5 $\frac{1}{8}$ " Deep HEPA	99.97/99.99	A	DOP	89 ft. ²	1.0	2.0 - 3.0	125
11 $\frac{1}{2}$ " Deep HEPA	99.97/99.99	A	DOP	145 ft. ²	1.0	2.0 - 3.0	250
11 $\frac{1}{2}$ " Deep HEPA (Full Face Pack)	99.97/99.99	A	DOP	200 ft. ²	1.0	2.0 - 3.0	250
5 $\frac{1}{8}$ " Deep ULPA	99.999/99.9995	E	DOP/LASER	89 ft. ²	1.25	2.0 - 3.0	125
11 $\frac{1}{2}$ " Deep ULPA	99.999/99.9995	E	DOP/LASER	200 ft. ²	1.25	2.0 - 3.0	250
ASTROCEL HCX	99.97	A	DOP	298 ft. ²	1.4	3.0	500
ASTROCEL - CELEBRITY							
CELEBRITY 1000	99.97	Z	DOP	145 ft. ²	1.1	2.0 - 3.0	250
CELEBRITY 2000	99.97	Z	DOP	235 ft. ²	1.4	2.0 - 3.0	500
ASTROCEL - NUCLEAR							
11 $\frac{1}{2}$ " Deep Nuclear	99.97	N	DOP	200 ft. ²	1.0	2.5 - 3.0	250
NUCLEAR HCX	99.97	N	DOP	298 ft. ²	1.3	2.5 - 3.0	375 (1500 CFM)

plastrocel.chl

* INITIAL RESISTANCE ** OR ** 8%



LIFE EXTENSION OF ASTROCEL FILTER USING VARIOUS AAF PREFILTERS



Test Conditions:

Filter Face Velocity 250 FPM
Air Flow Capacity 1000 CFM
Initial Resistance 1.0" W.G. (Astrocel Only)
Final Resistance 2.0" W.G. (Astrocel Only)
100% Outside Air (Louisville, KY)

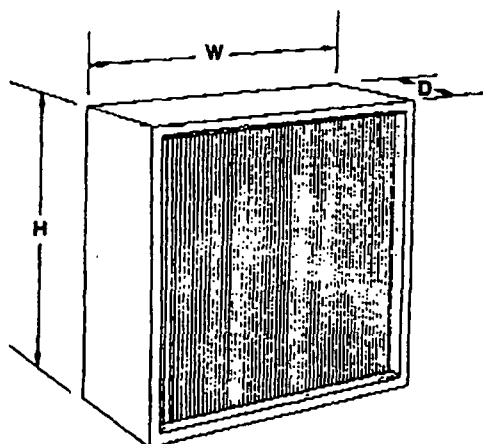
AIR FILTRATION PRODUCTS & SYSTEMS

SUBMITTAL

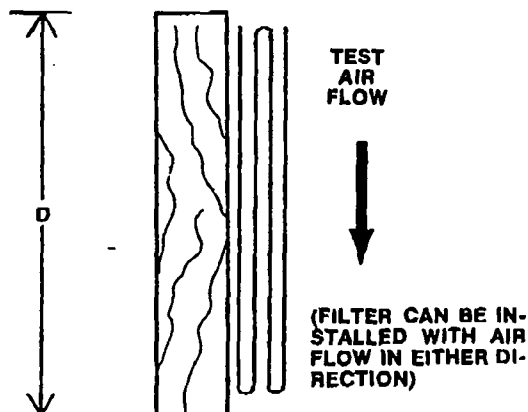
AFPS-117

**NUCLEAR GRADE
AstroCel I
WOOD CELL SIDES**

AAF CONTROL NO. _____ P.O. _____ DATE: _____ BY: _____
CUSTOMER: _____ LOCATION: _____
PROJECT: _____ LOCATION: _____
ENGINEER: _____ REFERENCE: _____



NOTE: THIS FILTER IS IDENTIFIED BY PART NUMBER ONLY - NOT BY STYLE CODE.



(CROSS SECTION - TOP VIEW)

SIZE: AS SHOWN ON DRAWINGS OR LISTED BELOW.

MEDIA - WATER REPELLANT GLASS MICROFIBER

☒ 99.97%

☐ _____

CELL SIDE MATERIAL:

☐ FIRE RETARDANT PLYWOOD

☒ FIRE RETARDANT PARTICLE BOARD

☐ _____

SEPARATORS:

☒ ALUMINUM

☐ VINYL COATED ALUMINUM

☐ _____

BOND:

☐ NEOPRENE RUBBER

☒ POLYURETHANE FOAM

☐ _____

GASKET MATERIALS: (3/4" x 1/4")

☒ NEOPRENE RE43E1

☐ _____

GASKET LOCATION:

☒ ONE SIDE

☐ BOTH SIDES

☐ NONE

AIR ENTERING

FACTORY TEST:

☐ 99.97% DOP @ 100% & 20% FLOW

☒ 99.97% DOP

☐ _____

FACEGUARD: (1/4" GALVANIZED HARDWARE CLOTH)

☐ BOTH SIDES

☒ NONE

☐ _____

UL 586 LABEL

☒ REQUIRED ☐ NONE

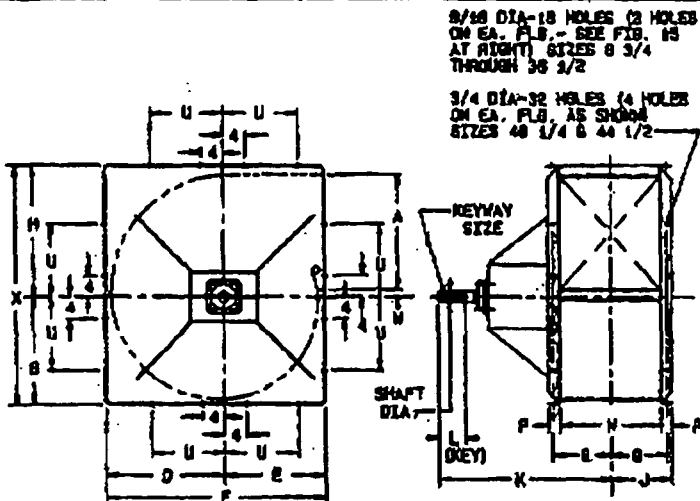
MIL SPECS:

FILTER MEDIA MEETS MIL-F-51079

ALL OTHER COMPONENTS AND METHODS OF CONSTRUCTION MEET MIL-F-51068.

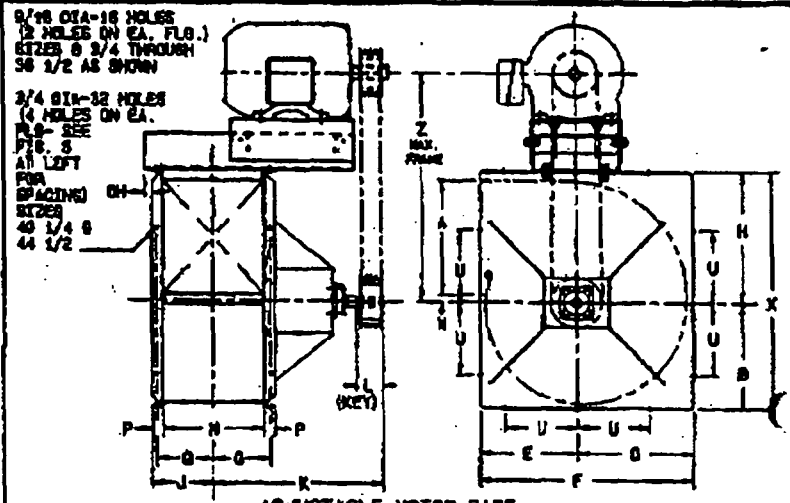
QUANTITY	CFM	INITIAL RESISTANCE	H	W	D	NOTES
	1000	1.0" W.G.	24	24	11 1/2	
	1500	1.3" W.G.	24	24	11 1/2	HIGH CAPACITY

FAN SIZE	WHEEL DIA.	MOTOR FRAME	
		MIN.	MAX.
8 3/4	9 7/16	40	184
10	10 25/32	40	184
12 1/4	12 7/32	50	250T
13 1/2	14 9/16	50	250T
15	15 3/16	50	250T
16 1/2	17 13/16	50	250T
18 1/4	18 11/16	50	250T
20	21 8/16	50	250T
22 1/4	24	50	250T
24 1/2	26 7/16	50	250T
27	29 1/8	50	250T
30	32 3/8	50	250T
33	35 9/16	50	250T
36 1/2	39 3/8	50	250T
40 1/4	43 7/16	100T	250T
44 1/2	48	100T	250T



ARRANGEMENT 1

TH CW



ADJUSTABLE MOTOR BASE ARRANGEMENT 9T & 9S

YH CGW

DIMENSIONS - INCHES

6 - ADD 1/4 TO "ON" FOR MOTOR FRAME STIFF OR WIND LAG
A - SUBTRACT 1/4 FROM "ON" FOR MOTOR FRAME STIFF AND 0.104 IN.-Y

FAN SIZE	SHAFT DIA.		KEYWAY SIZE		A	B	D	E	F	H	J	K		L		N	P	Q	U	W	X	Z	OH	
	CL I	CL II	CL I	CL II								CL I	CL II	CL I	CL II								CL I	CL II
8 3/4	3/4	NA	3/16 x 3/32	NA	8 8/16	7 5/8	9 1/16	7 1/2	10 9/16	10 3/8	4 29/32	13 1/8	NA	2 5/8	NA	7 3/16	1 1/8	4 15/32	6 1/16	11/16	18	24 1/8	1 1/16	NA
10	3/4	NA	3/16 x 3/32	NA	8 13/16	8 5/8	10 3/16	8 1/2	10 13/16	11 11/16	5 7/16	13 11/16	NA	2 5/8	NA	8 5/8	1 1/8	5	6 11/16	3/4	20 5/16	25 7/16	1	NA
12 1/4	1 3/16	1 3/16	1/4 x 1/8	1/4 x 1/8	11 31/32	10 1/2	12 1/2	10	22 1/2	24 1/16	6 15/32	22 1/2	22 1/2	3 3/4	3 3/4	10 11/16	1 1/8	6 1/32	7	31/32	24 9/16	29 9/16	1 1/16	1 1/16
13 1/2	1 3/16	1 3/16	1/4 x 1/8	1/4 x 1/8	13 7/32	11 1/2	13 3/4	11	24 3/4	15 3/8	7	23	23	3 3/4	3 3/4	11 3/4	1 1/8	8 8/16	7 11/16	1 1/32	26 7/8	30 7/8	1	1
15	1 3/16	1 3/16	1/4 x 1/8	1/4 x 1/8	14 19/32	12 3/4	15 1/4	12	27 1/4	17 5/16	8 1/32	24 1/8	24 1/8	3 3/4	3 3/4	13 1/16	1 1/2	7 13/32	8 9/16	1 7/32	30 1/16	32 13/16	1 5/16	1 5/16
16 1/2	1 3/16	1 7/16	1/4 x 1/8	3/8 x 3/16	16	14	16 3/4	13	29 3/4	19 15/16	8 11/16	24 3/4	24 3/4	3 3/4	3 3/4	14 3/8	1 1/2	8 1/16	8 3/8	1 7/16	32 15/16	34 7/16	1	1
18 1/4	1 7/16	1 11/16	3/8 x 3/16	3/8 x 3/16	17 23/32	15 7/16	18 1/2	16 1/4	32 3/4	20 13/16	8 7/16	27 13/16	27 13/16	3 1/2	3 1/4	16 7/8	1 1/2	8 13/16	10 3/8	1 17/32	36 1/4	37 1/16	1	1
20	1 7/16	1 11/16	3/8 x 3/16	3/8 x 3/16	19 7/16	17	20 3/8	15 1/2	36 7/8	22 5/8	10 3/16	28 11/16	28 11/16	3 1/2	3 3/8	17 3/8	1 1/2	9 5/16	11 3/4	1 15/16	38 5/8	39 7/8	1 1/8	1 1/8
22 1/4	1 7/16	1 11/16	3/8 x 3/16	3/8 x 3/16	21 5/8	19 7/8	22 9/16	17	38 9/16	25	11 3/16	31 11/16	31 11/16	3 3/8	3 3/8	19 3/8	1 1/2	10 9/16	13 1/4	1 7/8	43 7/8	44 1/4	1 1/4	1 1/4
24 1/2	1 11/16	1 15/16	3/8 x 3/16	1/2 x 1/4	23 13/16	20 3/4	24 13/16	18 1/2	40 5/16	27 3/4	18 5/32	32 3/4	32 13/16	3 3/8	3 3/8	21 15/16	1 1/2	11 17/32	14 3/4	2 1/16	46 1/8	48 2/8	1 1/8	1 1/8
27	1 15/16	2 3/16	1/2 x 1/4	1/2 x 1/4	25 1/4	22 7/8	27 1/4	20 1/4	47 1/2	30 1/2	15 3/4	36 1/4	36 1/4	3 1/2	3	23 1/2	2	12 7/8	16 1/2	2 1/4	53 3/4	45 3/4	1 1/4	1 1/4
30	1 15/16	2 3/16	1/2 x 1/4	1/2 x 1/4	28 5/32	25 3/16	30 1/4	22 1/4	52 1/2	33 11/16	15 1/16	37 9/16	37 9/16	3 1/4	3	26 1/8	2	14 3/16	18 1/2	2 11/32	56 1/2	48 1/4	1 1/4	1 1/4
33	1 15/16	2 3/16	1/2 x 1/4	1/2 x 1/4	32 1/16	27 5/8	33 3/16	24 1/2	57 11/16	36 7/8	16 3/8	40 7/8	40 7/8	3 1/4	3	29 3/4	2	16 1/2	20 3/4	2 13/16	64 1/2	57 1/8	1	1
36 1/2	2 3/16	2 3/16	1/2 x 1/4	1/2 x 1/4	35 13/32	30 11/16	36 11/16	27 1/2	64 3/16	48 1/16	17 7/8	42 3/16	43 1/16	3 1/4	3	31 3/4	2	17	23 1/4	3 5/32	71 1/4	58 13/16	13/16	5/16
40 1/4	2 3/16	2 7/16	1/2 x 1/4	5/8 x 5/16	38 7/8	34 5/32	40 7/8	36 1/4	71 1/8	44 31/32	20	46	46 7/8	3 1/4	3 1/8	35	2 1/2	18 7/8	24	3 1/2	79 1/8	61 8/16	1 5/16	1/2
44 1/2	2 7/16	2 11/16	5/8 x 5/16	5/8 x 5/16	43	37 23/32	43	39	79	48 19/32	21 27/32	50 1/8	51 3/16	3 1/8	3 1/8	38 11/16	2 1/2	20 23/32	26	3 7/8	87 3/16	65 11/16	1 7/8	3/4

[illegible]



CHICAGO BLOWER CORPORATION

an ISO 9001 Company
• 1675 Glen Ellyn Road • Glendale Heights, IL • 60139

Short Report

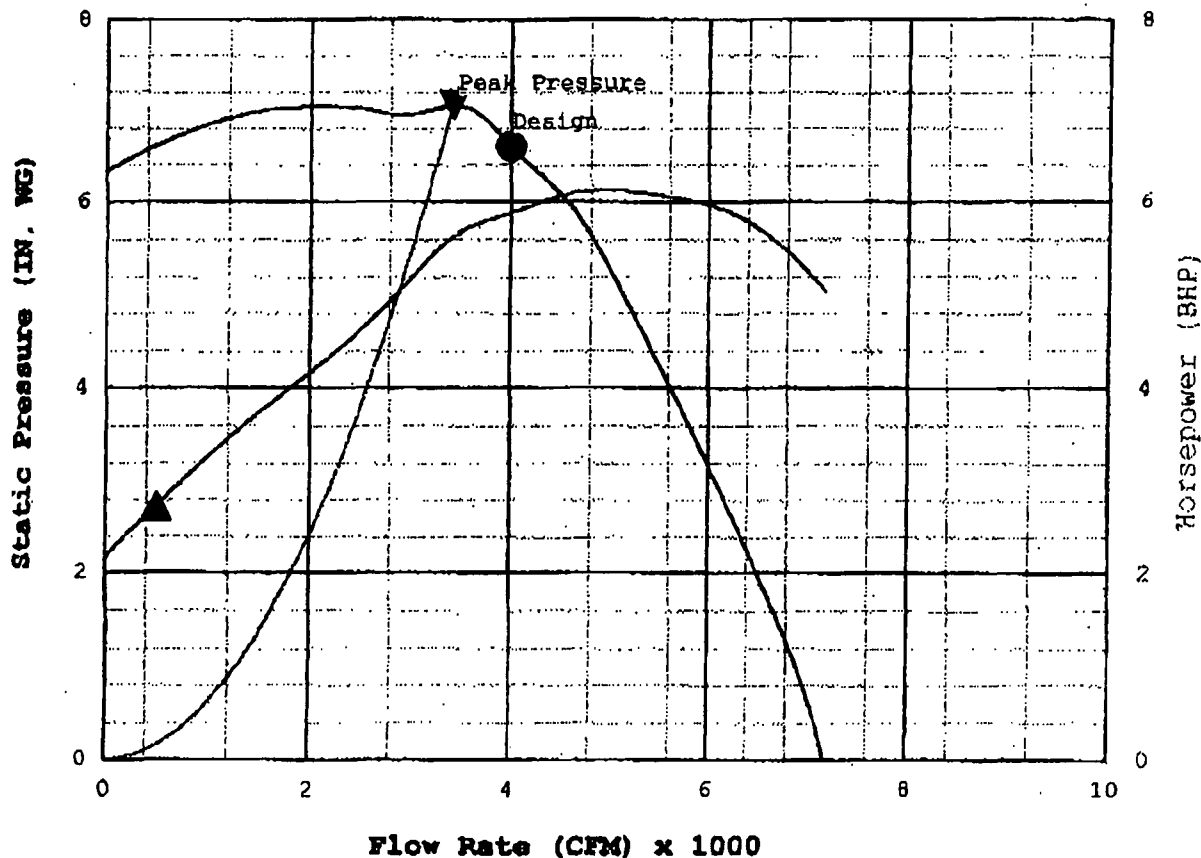
June 6, 2000

Job Description: Air Pollution Systems
Reference: Perma-Fix

Range Process Equipment
Mark Rutter / www.rangepro.com
Phone: 813-635-9844
Fax: 813-635-9311
e-mail: rangepro@gte.net

DESIGN SQA CENTRIFUGAL SISW
SIZE 18 1/4, CLASS 1
MAX. RECOMMENDED RPM 2706 AT 70 DEG. F
18 1/4 NOM. DIA., 100% WIDTH
CFM AT INLET DENSITY FT3/MIN 4000
STATIC PRESSURE IN. WG 6.60
DENSITY LB/FT3 .0750
TEMPERATURE DEG. F 70
SPEED RPM 2211
BHP HP 5.88
STATIC EFFICIENCY PERCENT 70.6
TIP SPEED FPM 11398
OUTLET VELOCITY FPM 2047
OUTLET AREA 1.953 FT2

● - Design Point ▼ - Peak Pressure ▲ - Power vs. Vol



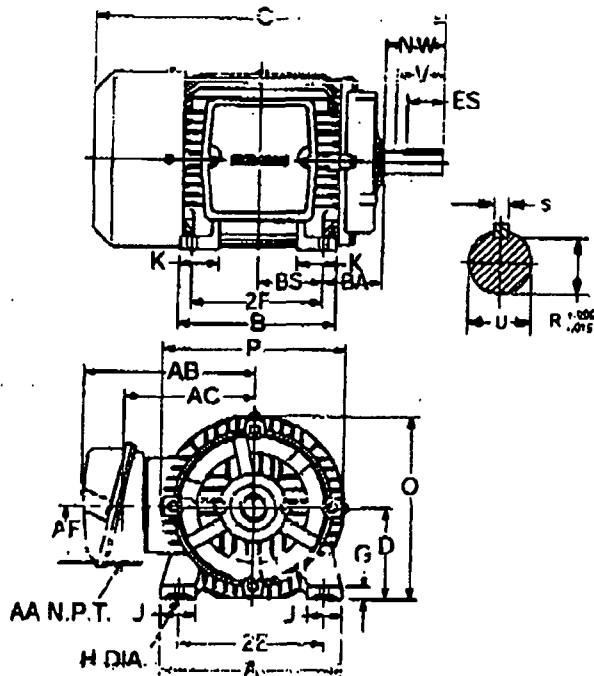
CAUTION: FAN MUST NOT OPERATE LEFT OF PEAK PRESSURE CURVE, EXCEPT FOR START-UP

SIEMENS

Section 4
Part 4.3
Page 2
Date 12/98

Application Manual for NEMA Motors

Type RGZP — Totally Enclosed Fan Cooled Frames 213T - 256T



Standard Dimensions in Inches

FRAME	213T	215T	254T	256T
A	10.0	10.1	11.8	11.8
U	7.0	8.5	10.1	11.8
C	17.5	18.0	22.3	24.0
D	5.25	5.25	6.25	6.25
2E	8.50	8.50	10.00	10.00
2F	5.50	7.00	8.25	10.00
G	0.7	0.7	0.8	0.8
H	0.41	0.41	0.53	0.53
J	2.0	2.0	2.4	2.4
K	2.0	2.0	2.5	2.5
N-W	3.38	3.38	4.00	4.00
O	10.3	10.3	12.4	12.4
P	10.2	10.2	12.2	12.2
U	1.375	1.375	1.625	1.625
V	3.12	3.12	3.75	3.75
ES	2.41	2.41	2.91	2.91
BS	2.75	3.50	4.12	5.00
AA (NPT)	1.00	1.00	1.25	1.25
AB	9.0	9.0	9.9	9.9
AC	9.97	9.97	7.87	7.87
AF	2.9	2.9	2.9	2.9
R	1.201	1.201	1.416	1.416
S	0.312	0.312	0.375	0.375
Approx. Ship Wt. (Lbs.)	130	162	250	300

Notes

(D) Frames 142T-256T + .000-.002
Frames 334T-448T + .000-.002
(S) .125 to .750 + .002-.000
Over .750 to 1.600 + .003-.003

(U) .750 to 1.600 + .000-.0005
Larger than 1.600 + .000-.001
(V) Shaft length available for coupling,
pinion or pulley hub.

Certified Print

CUSTOMER CHICAGO BLOWER

P.O.# 106258-00 (Job #241185)

S.O.# 2035143

H.P. 7.5

RPM 1600

FRAME 213T

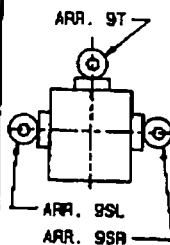
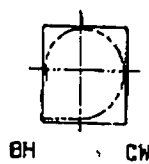
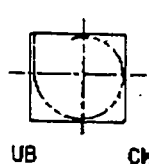
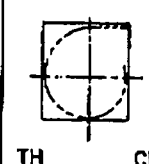
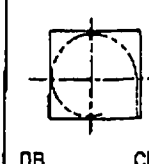
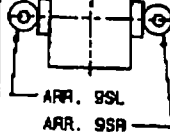
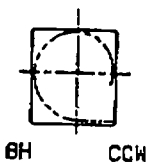
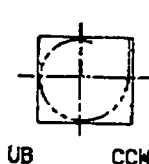
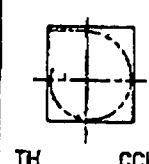
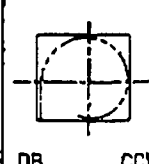
PH 3

HZ 60

BY KEVIN BROOKING

DATE 04-AUG-2000

Not for construction, installation or application purposes, unless certified.

ITEM NO.	MOTOR DATA						OPTIONAL ACCESSORIES	ARR. 9 MOTOR POSITIONS VIEW FROM DRIVE SIDE SHOWN	DISCHARGE & ROTATION VIEW FROM DRIVE SIDE SHOWN A/1 ILLUSTRATED - NO MOTOR BASES FOR ARR 9 MOTOR POSITIONS, SEE DIAGRAM AT LEFT				
	HP	RPM	CURRENT	FRAME	TYPE	MOT. POS.			BH	CW	UB	CW	TH
1	7.5	1800	3/60/230/460	213T	TEFC	9T	19,17,4A,8A,11, 6,1,2,9B,10						
													

OPTIONAL ACCESSORIES

- FLANGED INLET-PUNCHED: SEE DWG. 36-0-59.
- FLANGED OUTLET-PUNCHED: SEE DWG. 36-0-175.
- SLIP INLET COLLAR: SEE DWG. 36-0-59.
- HOUSING DRAIN: SEE DWG. 36-0-59.
 - DRAIN ONLY.
 - DRAIN WITH PLUG.
- COOLING WHEEL AND GUARD.
- OSHA BEARING & SHAFT GUARD.
- EXTENDED GREASE TUBE FITTING.
- CLEAN-OUT DOOR: SEE DWG. 36-0-59.
 - QUICK CLAMP TYPE. @3:00
 - PLUG TYPE.
 - BOLTED FLUSH DOOR.
- SPARK RESISTANT CONSTRUCTION
 - TYPE "B", CLASS 1 ONLY (8 3/4 - 18 1/4)
 - TYPE "C" (12 1/4 - 44 1/2)
- SHAFT SEAL.
- OSHA BELT GUARD.
- INLET SCREEN.
- INLET VOLUME CONTROL: SEE DWG. 36-0-104. (12 1/4 - 44 1/2)
- INLET COMPANION FLG., SEE DWG. 36-0-59.
- OUTLET COMPANION FLG., SEE DWG. 36-0-175.
- TYPE "T" VIBRATION BASE
 - RUBBER IN SHEAR: SEE DWG. 36-0-381.
 - SPRINGS: SEE DWG. 36-0-382.
- MOUNTING MOTOR AND DRIVE.
- OUTLET DAMPER CONTROL: SEE DWG. 36-0-66.
- OFFSET MOTOR BASE (UB DISCH., A/9T).
- SPECIAL PAINT.

NOTES

REFER TO ORDER ACKNOWLEDGMENT FOR SHIPPING DETAILS.

* APPROPRIATE MOTOR BASE REQUIRED PER MOTOR FRAME

CBC to furnish motor and adj drive.

CUSTOMER Air Pollutions Systems
Orlando, Fl **PO#** A20061-A
JOB NAME Perma-Fix of Florida
LOCATION Gainesville, Fl.
ARCHITECT/ENGINEER

**DESIGN 36A, AIRFOIL SQUARE ("SQA") FAN, SISK
ARRANGEMENT 1 & 9T/9S, CLASS I & II**
CHICAGO BLOWER CORPORATION
1675 GLEN ELLYN ROAD, GLENDALE HEIGHTS, IL. 60139

FURNISHED FOR SALES PURPOSES - DIMENSIONS NOT CERTIFIED BY CBC	DATE	SUBMITTED BY	SALES OFFICE
DRAWING CERTIFIED BY CBC - FURNISHED FOR APPROVAL - NOT RELEASED FOR PRODUCTION	DATE	CBC ENGINEER	SOP
DRAWING CERTIFIED BY CBC - APPROVAL NOT REQUIRED - RELEASED FOR PRODUCTION	DATE	CBC ENGINEER	DWG. #

6/12/00

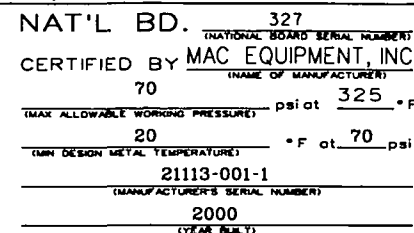
HS

241165-1

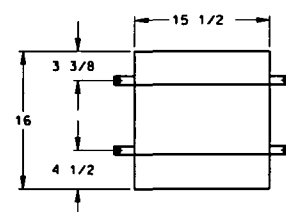
**SIEMENS ENERGY & AUTOMATION
MOTORS AND DRIVES DIVISION
ELECTRICAL MOTOR DATA SHEET**

CUSTOMER :	Chicago Blower Corporation
CUSTOMER'S ORDER NO. :	105258-00 Job #241181-1 to -4
SIEMENS ORDER NO.:	2036143
TYPE :	RGZP
HORSEPOWER :	7.5
VOLTAGE :	230/460
PHASE :	3
HERTZ :	60
FRAME :	213T
SYNCHRONOUS R.P.M. :	1800
FULL LOAD R.P.M :	1750
EFFICIENCY:	1/2: 89.0 3/4: 90.0 F.L.: 89.5
POWER FACTOR	1/2: 0.66 3/4: 0.77 F.L.: 0.83
FULL LOAD AMPS (at 460V) :	9.5
LOCKED ROTOR AMPS :	64.0
FULL LOAD TORQUE (LB. FT.) :	23
STARTING TORQUE (%FLT) :	210
BREAKDOWN TORQUE (%FLT) :	270
INSULATION :	F
SERVICE FACTOR :	1.16
AMBIENT TEMPERATURE :	40°C

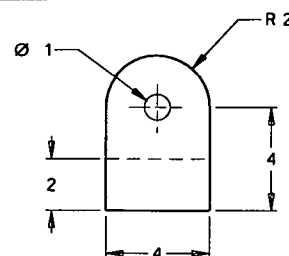
Pulse Filter System on Plough-Share Unit (PF II reactor)



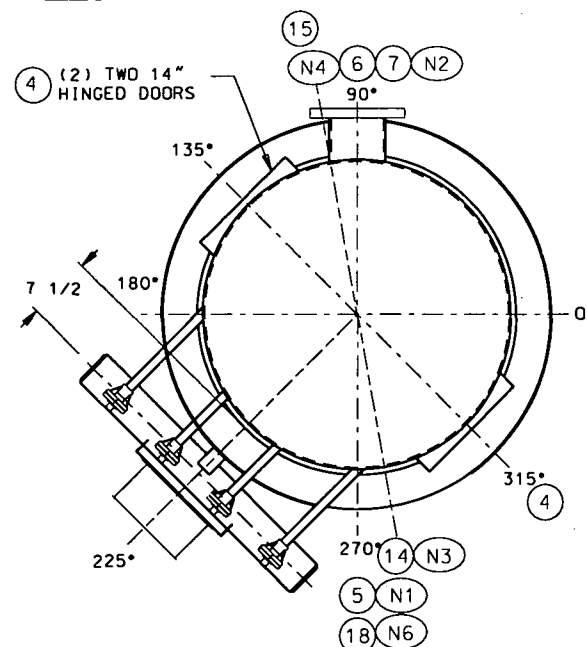
MTR'S REQD. ON
 (3)(11)(10)(12)(14)(15)



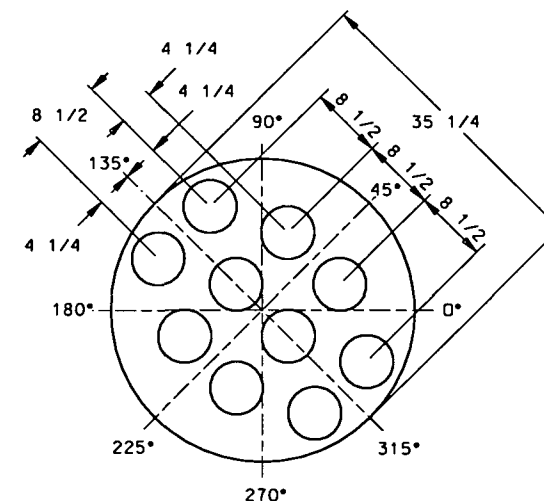
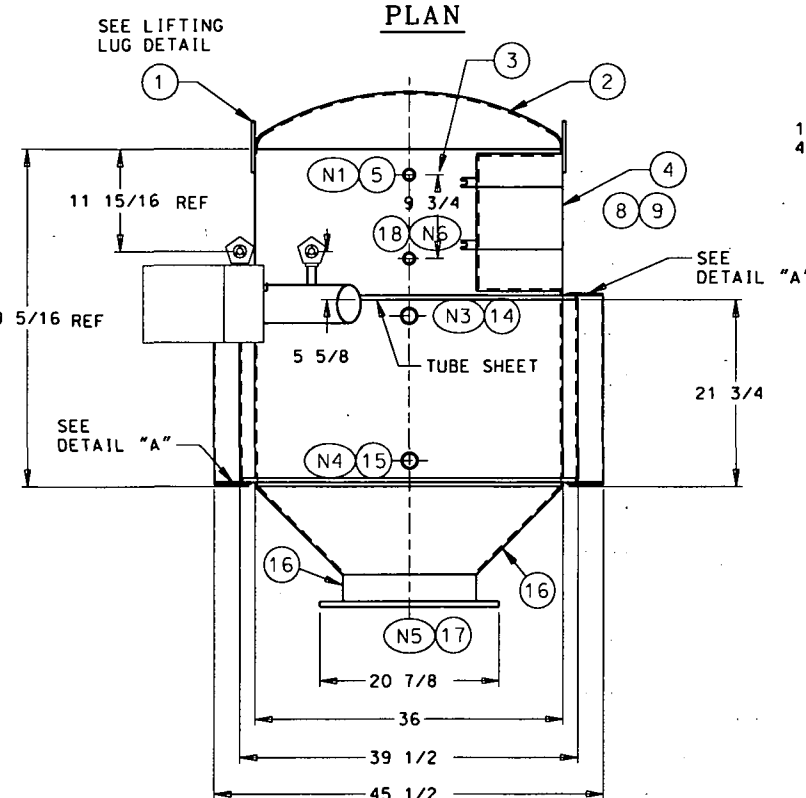
HINGED DOORS
(2) TWO REQ'D



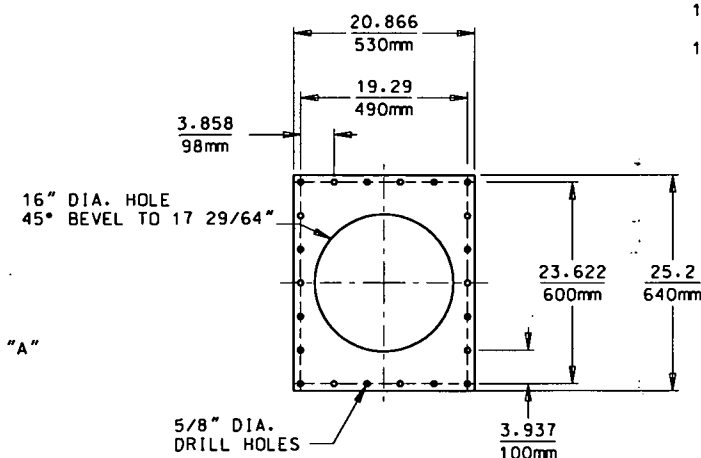
LIFTING LUG
(NTS)



PLAN



18RT10 TUBE SHEET

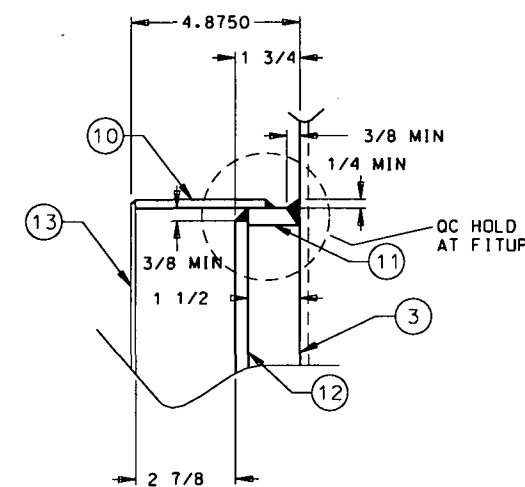


FLANGE ADAPTER
5/8" THK

This print is certified to be dimensionally correct to $\pm 1/4$ inch on all components, $\pm 1/2$ on overall dimensions up to 120 inches and $\pm 1 1/2$ on all dimensions greater than 120.

MAC EQUIPMENT, INC.

BY MOHAM A. DATE 09/07/00



SHELL JACKET
CLOSURES DETAIL "A"

DESIGN DATA

DESIGN PRESSURE (MAWP)	-TO(FV) TO TO PSI JACK
DESIGN TEMPERATURE	325°F
WORKING PRESSURE	---
WORKING TEMPERATURE	---
CORROSION ALLOWANCE	NONE
STRESS RELIEVING REQUIRED	NONE
RADIOGRAPH REQUIRED	NO
JOINT EFFICIENCY (SHELL/HEAD)	.7/.85
BULK DENSITY	---
FLOW RATE	---
SHOP HYDRO TEST PRESSURE	98 PSI
PAINTING	NONE
EMPTY WEIGHT	1020 LBS
OPERATING WEIGHT	---
WEIGHT FULL WITH WATER	1834 LBS
CONSTRUCTION CODE	ASME SEC VIII DIV-1 199B ED. 1999 AD
STAMP REQUIRED:	YES. FOR STEAM JACKET
CUSTOMER ADDRESS:	

SCHEDULE OF OPENINGS

[illegible]

ITEM	ITEM DESCRIPTION	QTY.
1	LIFT LUG, 3/8" THK SA-240-304	1
2	ASME CODE F&D HEAD, 1/4" THK, SS SA-240-304	1
3	BAGHOUSE, 1/4" THK SA-240-304	1
4	HINGED SERVICE DOOR, 15 1/2" x 16" x 1/4" SA-240-304	2
5	1/2" HALF CPLG,NPT,3000# SA-182-304	1
6	EXHAUST NOZZLE PIPE,4" SCH40 SA-312-304	1
7	4" FLG,150# ANSI,RFSS,SS SA-182-304	1
8	HEADER ASSY W/NEMA 7 TIMER ENCL 304SS	1
9	DIAPHRAGM VAWLE, SS 304SS	4
10	INSULATION RING, 1/4"x4" 304SS	1
11	SHELL JACKET CLOSURE,1/2"x1-1/2" SA-240-304	1
12	SHELL JACKET, 1/4" SA-240-304	1
13	INSUL, 3" THK W/12GA SKIN OUTSIDE 304SS	1
14	1-1/2" FULL CPLG,NPT,3000# SA-182-304	1
15	1-1/2" FULL CPLG,NPT,3000# SA-182-304	1
16	45° CONE, 1/4" THK SA-240-304	1
17	FLANGE ADAPTER, 20-7/8"x25-1/8"x5/8" SA-240-304	1
18	1/2"NPT 3000# CPLG FOR D/P GAUGE SA-182-304	2
19	PLATE,16"ODx1/4"THK, ROLLED SA-240-304	2
20	NIPPLE,1-1/2x4"LG SA-312-304	2



MAC

EQUIPMENT, INC. HOUSTON, TEXAS 77041
(800) 955-7735

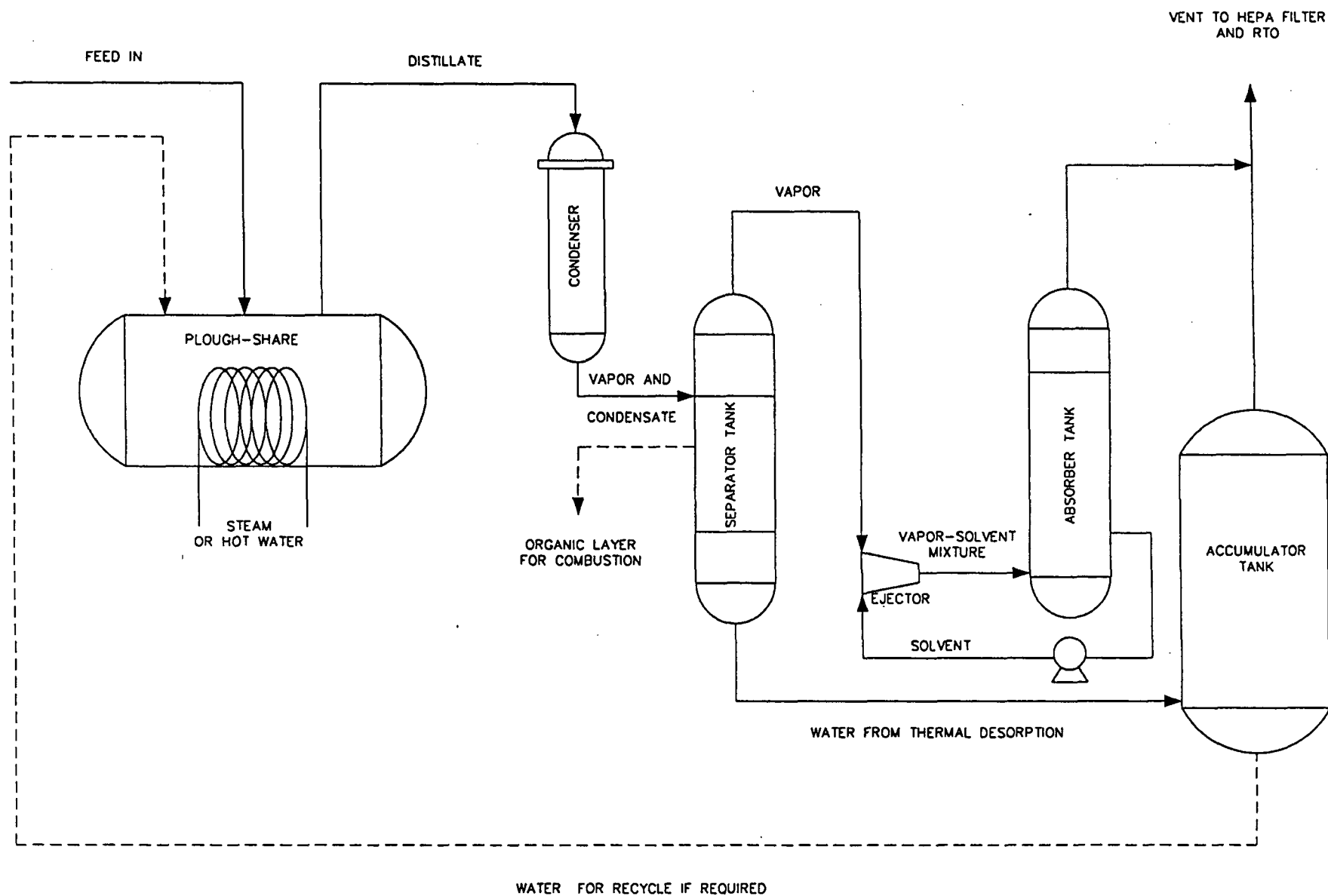
MOD. NO.	18RT10 FILTER	CUSTOMER	PERMA-FIX
S/O	21113-001		
PO NO.	T-86-00	ITEM NO.	001
SYS. NO.	21113		- - -
B/M NO.	21113-001		21113-001-01
DATE	2000		




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DRAWN BY	DATE	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
SCALE		TO ENCLOSE	
		JOB NO.	DRAWING NO.

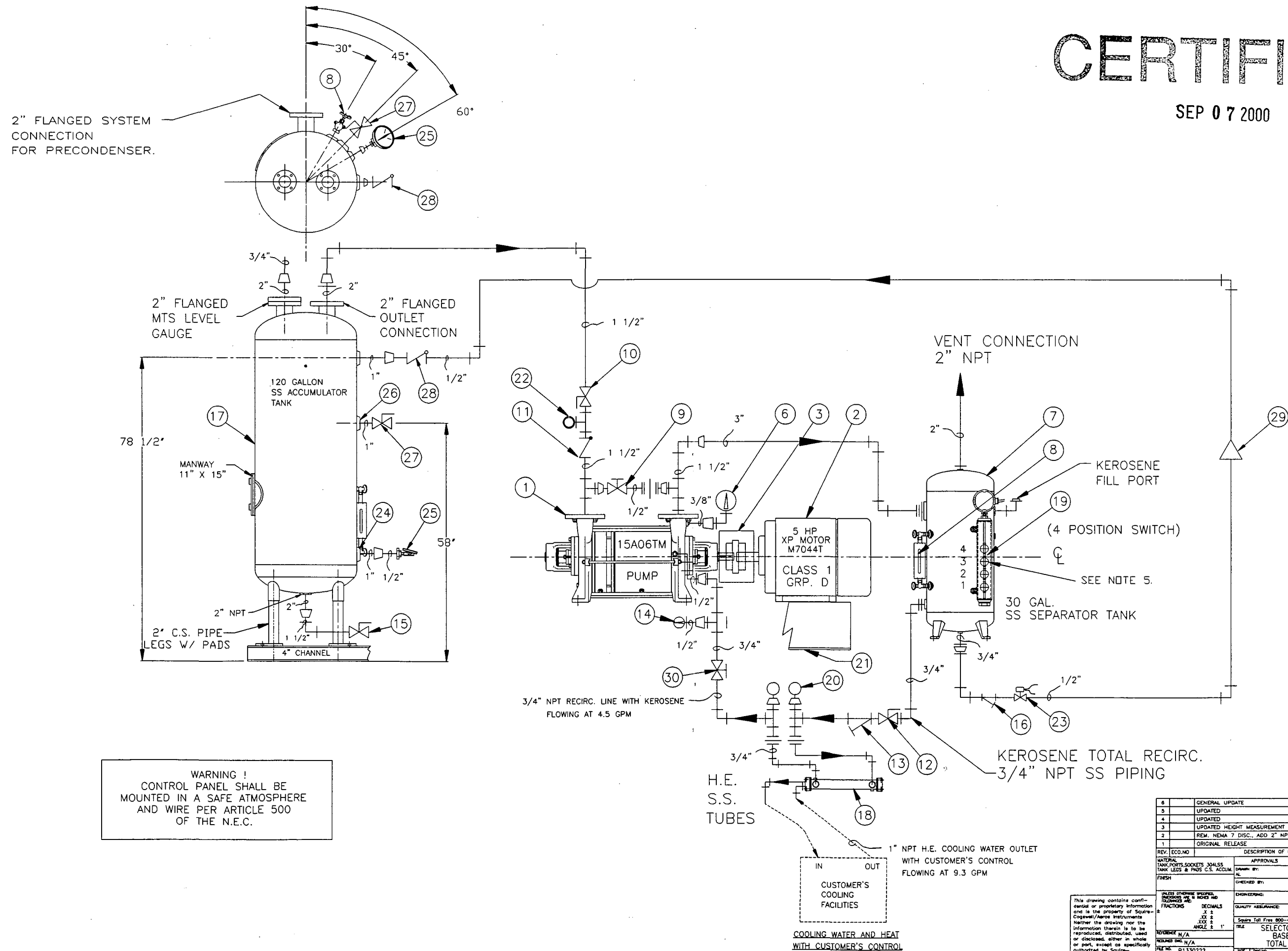
Condenser/Absorber System for PF II Unit



TITLE: Figure 1.82 THERMAL DESORPTION STEP - PERMA-FIX II PROCESS		
PREPARED FOR: PERMA-FIX OF FLORIDA, INC.		
SCALE: N.T.S. DATE: 5/24/99 ACAD FILE: P:\MARIA\AUTOCAD\WATER-99.DWG	APPROVED BY: 	DRAWN: K.J. REVISED: DRAWING NUMBER:

Vacuum System for PF II Unit

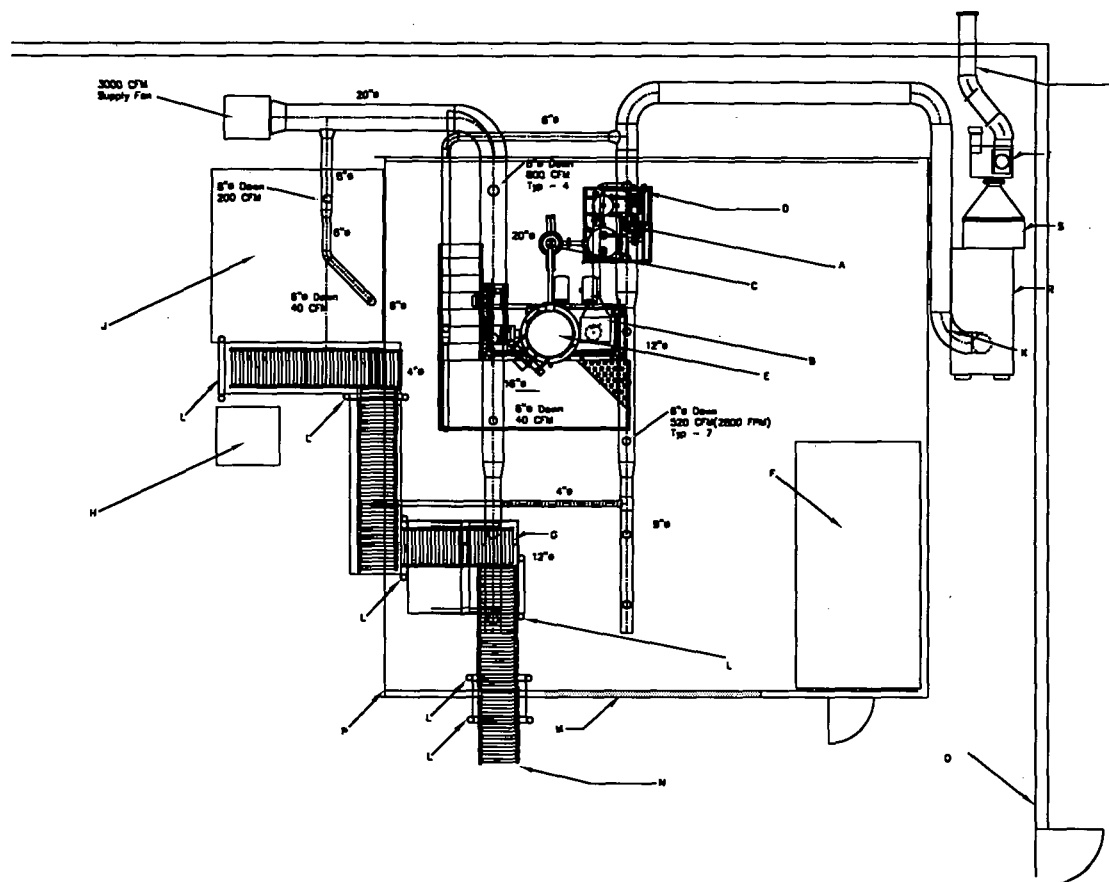
SEP 07 2000



Ventilation Ducting System for Quonset Hut

LEGEND

- A Absorber Tank
- B Plough Share Unit
- C Condensor
- D Vacuum Pump
- E PulseBuck Filter
- F Dress Out Room
- G Skid Mixer
- H Scale
- I Supply Air Fan
- J Sampling Room
- K To Exhaust Fan
- L Drum Guillotine Door
- M Roll Up Door
- N Roller Conveyor
- O Main Building Exterior
- P Quonset Hut
- Q Connection to RTO
- R Dust Collector
- S Hepa Unit
- T Fan



Handwritten signature
9/8/2000

PERMA-FIX
ENVIRONMENTAL ENGINEERING

TITLE: VENTILATION LAYOUT FOR PERMA-FIX I & II PROCESS		
PREPARED FOR: PERMA-FIX OF FLORIDA 1940 NM 67 Place, Gainesville Florida		
SCALE: N.T.S.	APPROVED BY:	DRAWN: A.D.O.
DATE: 6/28/00		REVISED:
ACAD FILE: c:\acadwin\acadfile\98-01\9801-23		DRAWING NUMBER: 973000-01