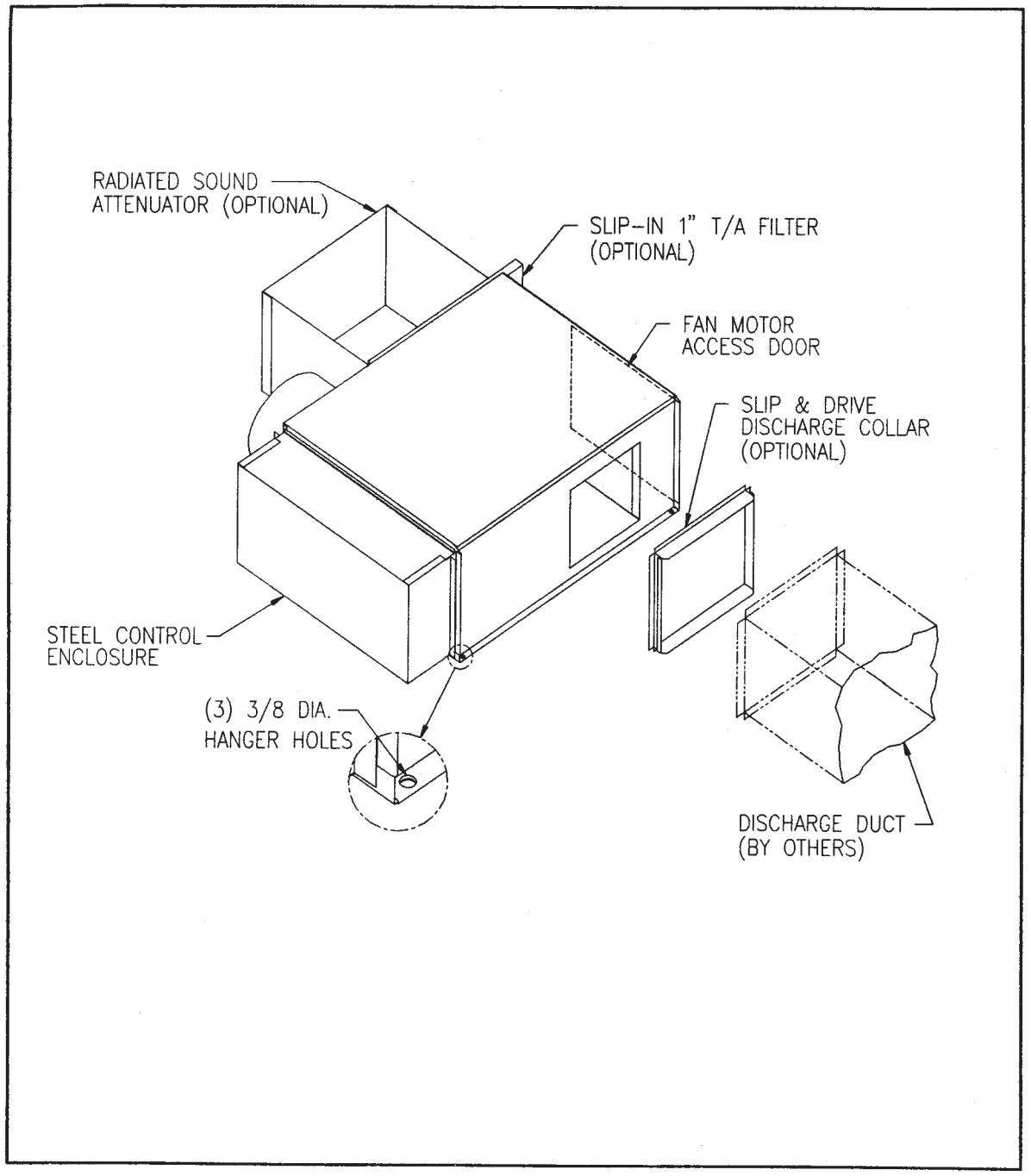
SFT/PFT INSTALLATION OPERATION & MAINTENANCE

FAN TERMINALS



Anemostat®
AIR DISTRIBUTION

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TERMINAL INSTALLATION

To ensure proper operation of the Fan Terminal, the following installation procedures must be implemented.

1. The terminal unit must be installed in a location which offers at least three diameters of straight duct upstream. Failure to do so will result in less than optimum operation.

2. Extreme care must be used when lifting the unit. Do not use the air flow measuring tubes for lifting the unit! This could result in damage to the unit and incorrect flow measurements.

3. The unit must be installed horizontally (the labels will be easily read). With reference to the primary air supply inlet, the fan and primary control enclosure will be on the right side. The motor access door will be on the left side. the unit may be suspended by three (3) 5/16" hanger rods which are secured through 3/8" diameter holes located along the bottom panel extension. (See page 2.)

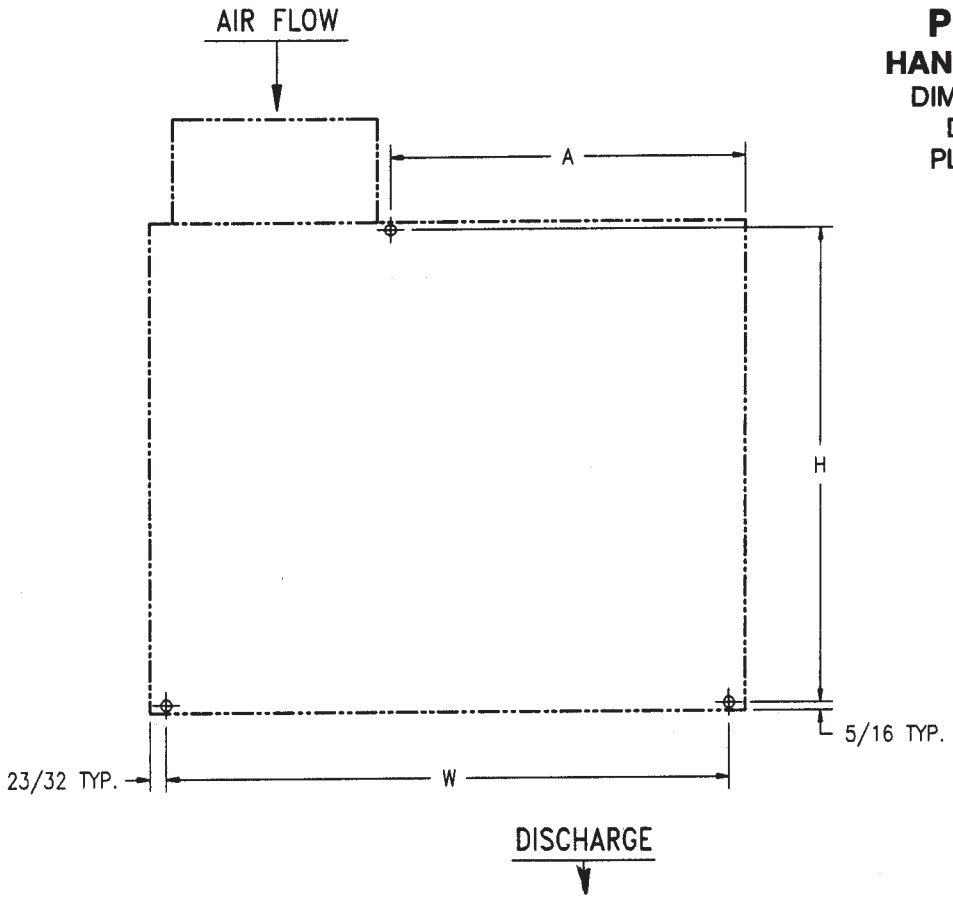
4. Care must be taken so as not to crimp the inlet or discharge duct connections.

5. Proper clearance is required for removal and service of the fan terminal components. Refer to Table 1.

REQUIRED CLEARANCE (IN INCHES) FOR REMOVAL AND SERVICE

CABINET SIZE	MOTOR	AIR FILTER	CONTROLS
11/12	10.50	12.50	18.00
25	11.25	14.75	
33	11.25	14.75	
50	12.50	16.25	18.00
75	13.75	18.50	
10	15.25	21.25	

MODEL
PFT/SFT
HANGER HOLE
DIMENSIONAL
DETAILS
PLAN VIEW



Model Number SFT-	A	H	W
1105, 1106, 1107, 1108	18-5/16	23-5/8	27-9/16
1205, 1206, 1207, 1208	18-5/16	23-5/8	27-9/16
2506, 2507, 2508	18-5/16	23-5/8	27-9/16
2509, 2510	16-11/16	23-5/8	27-9/16
3308, 3309, 3310, 3312	19-13/16	23-5/8	27-9/16
5009, 5010, 5012, 5014	25-15/16	27-5/8	32-9/16
7510, 7512, 7514, 7516	25-15/16	34-5/8	42-9/16
1010, 1012, 1014, 1016	26-1/4	34-5/8	42-9/16

Model Number PFT-	A	H	W
1105, 1106, 1107, 1108	16-11/16	23-5/8	27-9/16
1205, 1206, 1207, 1208	16-11/16	23-5/8	27-9/16
2506, 2507, 2508, 2509, 2510	16-11/16	23-5/8	27-9/16
3308, 3309, 3310, 3312	18-3/8	23-5/8	27-9/16
5009, 5010, 5012, 5014	25-15/16	27-5/8	32-9/16
7510, 7512, 7514, 7516	25-15/16	34-5/8	42-9/16
1010, 1012, 1014, 1016	26-1/4	34-5/8	42-9/16

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ELECTRICAL CONNECTIONS

1. For terminals without electric heat, power is connected through the 7/8" knock-out to the terminal block in the fan control box. For terminals with electric heat, a single point connection is made to the terminal block in the electric heater control box.

2. The fan terminal I.D. label lists Maximum Fuse Size (MFS) for single point connection fan terminals that have loads consisting of both blower motor and electric heater. This is considered a motor group installation. For these units, the supply circuit must be fused individually.

   The supply circuit can be fused external to the unit by the installer. The electric heater may be specified with primary circuit fusing which would not require external fusing.

   If the blower motor is the only load, the MFS on the I.D. label is blank. In this case, the units may be field wired for multiple hookup from a single branch circuit, as specified by the National Electric Code/Canadian Electric Code, and Local Codes.

   Only special HACR-type circuit breakers may be used in place of fusing for overcurrent protection of motor group installations.

3. To determine the minimum wire size for terminals without electric heat, use the motor amperage listed on the terminal I.D. label. The terminal I.D. label lists the Minimum Circuit Ampacity (MCA) to determine the proper wire size for units with electric heat. The power supply wiring is to be sized in accordance with the National Electric Code/Canadian Electric Code and Local Codes.

4. The power supply terminal block is acceptable to use with copper conductors only.

PNEUMATIC CONNECTIONS

1. Main air is supplied to the primary control box through the hole marked M. The thermostat is connected through the hold marked T. The air flow measuring tubes are factory connected through the holes marked L and H.

2. Terminals that use pneumatic controls require a 20 psi supply of clean, dry, oil-free compressed air.

Electronic controls are typically factory wired for single point power voltage supply with fan relay and 24VAC power (from a stepdown transformer) as part of the fan circuit or electric heater circuit. Electronic controls may also be powered with a separate 24VAC supply provided by others.

ELECTRONIC ANALOG CONNECTIONS

1. The remote mounted thermostat is connected to the appropriate components located in the control box.

2. When hot water reheat is used, the relay in the control box must be wired to the water valve actuator.

ELECTRONIC DDC CONNECTIONS

1. Recommended wire from the SOLO/TX controller to the SOLOStat thermostat is Belden 8760 (3 pair), Belden 88760 (plenum), or Belden 9553 (6 conductor, 1 shield). The shield wire must be terminated on TB3, Common, SOLO/TX.

2. All wiring must be 18 AWG, stranded, twisted, shielded pair. Shields must be terminated (grounded) at the field panel end ONLY, and unterminated (grounded) at the field device end of the network.

3. When multi-dropping 24V power, 24VAC wiring must connect to the 24VAC of the next unit on the network. Likewise, the 24 RET wiring (identified as 24 COM on the terminal block) must connect to the 24 RET wiring of the next unit on the network.
   WARNING - SERIOUS DAMAGE MAY RESULT IF WIRED INCORRECTLY!

4. Crimp type or solder connections are recommended. **DO NOT USE WIRE NUTS!**

IMPORTANT!

All RS485 communication networks must be installed using twisted, shielded pair wiring. Each twisted pair must be individually shielded. If using unshielded wiring, cables must be placed in solid metal conduit alone, without DC switching or AC lines. In addition, the cable connecting the thermostat to SOLO/HX or SOLO/TX must have a ferrite sleeve installed on the cable close to the SOLO/HX or SOLO/TX, whichever is being used. Failure to use these types of conductors may result in various system communication problems such as excessive network retries, noise susceptibility, and loss of communication.

If proper wiring is not used, the site may not meet FCC class A regulations for RFI emissions; thereby forcing the installer or user to make the necessary wiring changes at a later date.

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PRIMARY AIR FLOW ADJUSTMENT (Pneumatic Controls)

A pressure gauge or manometer is required for flow adjustment. Refer to Calibration Table on pages 10-11.

1. Connect pressure gauge or inclined manometer to the primary air flow taps. The upstream flow tap is connected to the high pressure side of the gauge. The downstream flow tap is connected to the low pressure side of the gauge.

2. Refer to the Calibration Table for the pressure reading at the required CFM.

CONTROLLERS

MODEL 20 SERIES CONTROLLER

Changing the limit controlled by the center knob also changes the limit controlled by the outer knob. the limit (either HI or LO), controlled by the center knob, should always be dialed first, and the limit controlled by the outer knob dialed last.

MODEL 23 CONTROLLER

1. Set the thermostat to call for minimum cooling and adjust the center knob (LO) of the controller to the desired minimum cooling. If setting for zero flow,. adjust only until zero flow is reached. Do not turn the knob further.

2. Set the thermostat to call for maximum cooling and adjust the outer knob (HI) of the controller to the desired maximum cooling CFM.

MODEL 24 CONTROLLER

1. Set the thermostat to call for maximum cooling and adjust the center knob (HI) of the controller to the desired maximum cooling. If setting for zero flow, adjust only until zero flow is reached. Do not turn the knob further.

2. Set the thermostat to call for minimum cooling and adjust the outer knob (LO) of the controller to the desired minimum cooling CFM.

MODEL 31 CONTROLLER

The thermostat reset start point is factory set at 8.0 psi. Follow these steps to field adjust this point.

1. Remove the gauge tap cap at G and attached the 0-30 psi gauge.

2. Adjust the thermostat pressure to the T port to the desired start point.

3. Adjust the RESET START knob until the gauge G pressure just beings to increase. The reading should be greater than 0.0 psi, but less than 0.3 psi.

4. Replace the gauge tap cap.

MODEL 31 CONTROLLER (continued)

The thermostat reset span is factory set at 5.0 psi. To field adjust the reset span follow these steps:

1. Remove the gauge tap cap at G and attach the 0-30 psi gauge.
2. Adjust the thermostat pressure to the T port to 20 psi.
3. Adjust the RESET SPAN knob until the gauge G pressure is equal to the desired reset span. This is total span pressure, not ending span pressure.
4. Replace the gauge tap cap.

For Normally Open or Normally Closed dampers with either Direct or Reverse Acting thermostats, follow these steps:

1. The LO STAT is always calibrated first, with 0 psi on the T port. This air flow setting will be the desired minimum for DA/Cooling or RA/Heating applications, or the maximum for RA/Cooling or DA/Heating applications.
2. The HI STAT is always calibrated second with 20 psi on the T port. This air flow setting will be the desired maximum of DA/Cooling or RA/Heating applications, or the minimum for RA/Cooling or DA/Heating applications.

NOTE: The minimum inlet static pressure, as shown on the performance data charts, is required for proper operation.

PRIMARY AIR FLOW ADJUSTMENT (Electronic Analog Controls)

The Fan Terminal uses electronic analog controllers series CEP-40XX. These controllers are analog, as opposed to digital which are computer compatible. To better understand the components of the terminal unit, definitions of each are included below.

CEP-40XX ELECTRONIC CONTROLLER/ACTUATOR

The device controls primary air supply between a minimum and maximum duct velocity rom 0 to 3000 FPM with an output terminal to permit duct velocity measurements.

CTE-1001 THERMOSTAT

This device is single function Cooling and Direct Acting; output voltage increases with increased flow.

CTE-1003 THERMOSTAT

This is a dual function device. It features Directing Acting Cooling/Reverse Acting Heating with separate setpoint indicators.

CTE-1004 THERMOSTAT

The CTE-1004 gas cooling with reheat. It has Direct Acting Cooling/Reverse Acting Reheat and a single setpoint indicator. It also has an auxiliary flow adjustment for heating.

CTE-1005 THERMOSTAT

This device, used for night setback applications, is Direct Acting and has control for Night/Day with separate setpoints.

CTE-1008 THERMOSTAT

It features Day/Night control. It is similar to the CTE-1005 , but used for night set up applications.

CTE-1004 CONSTANT VOLUME MODULE

This controls the primary supply air at a constant volume. It is able to drive the damper fully open or closed with a remote, contact closure. No room thermostat is required.

REE-1005 CHANGEOVER MODULE

The module contains an SPDT switch which is activated by a SSE-2001/2002 duct sensor or remote contact closure. It can be wired to multi-function thermostats for heating/cooling operation, morning warmup, night setback, etc.

REE-1016 RELAY MODULE COMPUTER INTERFACE

This converts a 4-20mA input to an output signal which is linear, over the adjust LO and HI air velocity limit setpoints. If LO is set to minimum and HI is set to maximum, the flow limits can be set directly by an automation system.

REE-4001 THREE STAGE ELECTRIC HEAT MODULE

By using this relay, the heating requirements may be actuated in three separate steps affording more precise temperature control.

REE-4002 FAN AND TWO STAGE ELECTRIC HEAT MODULE

By using this rely, the fan and two stages of reheat can be controlled.

REE-4006 TIME PROPORTIONING REHEAT MODULE

This relay is used for time proportioning control of electric hot water valves.

SSE-1001/1002 DUCT VELOCITY SENSOR

This air flow sensor is used in conjunction with the CEP series of controller-actuators to maintain the desired air flow.

SSE-2001/2002 DUCT VELOCITY SENSOR WITH TEMPERATURE SENSOR

Similar to the SSE 1001/1002, this device has temperature sensing for control methods such as heating/cooling changeover.

Maximum and minimum flow limits can be field adjusted without the use of additional measuring equipment. Adjustment is made with a Digital Voltmeter (DVM) at the room thermostat without accessing the air terminal. the electronic thermostat is a low voltage solid state thermistor device, with very rapid (almost instantaneous) response to temperature changes in the conditioned space.

To adjust the maximum and minimum flow limits, a small flat blade (1/8") screwdriver and a digital voltmeter (0-10VDC in .01 of VDC) are required. In addition, the ambient room temperature at the thermostat must be within 55-85F for proper calibration.

1. Remove the thermostat cover by releasing the spring clips on both sides of the thermostat.

2. Plug the voltmeter into the thermostat meter taps.

3. Adjust the cooling setpoint slider all the way to the right for minimum cooling. Adjust the MIN INCR potentiometer to the desired DC voltage (Reference the DC voltage vs. the CFM curve on page 13). The minimum setpoint must be adjusted first.

4. Adjust the cooling setpoint slider all the way to the left for maximum cooling. Adjust the MAX INCR potentiometer to the desired DC voltage (Reference DC voltage vs. CFM curve on page 13). The maximum setpoint must be adjusted last.

NOTE: The minimum inlet static pressure, as shown on the performance data literature, is required for proper operation.

PRIMARY AIR FLOW ADJUSTMENT (Electronic DDC Controls)

The Fan Terminal utilizes the SOLO system for DDC applications. This system is comprised of the components listed below.

SOLO/TX
The SOLO/TX is a standalone, digital, terminal box controller for pressure independent VAV systems.

SOLOStat
This is the general purpose model for room monitoring applications.

SOLOTool
This portable, hand-held operator terminal is networked to the system via Public Unitary Protocol (PUP).

A12100/Spectra MouseView
This is a completely mouse-driven, color graphic, operator interface.

Temperatures and air flows can be monitored and setpoints can be adjusted with the hand-held operator terminal (SOLOTool) connected directly to the zone thermostat (SOLOStat) or the system network. The SOLO System can also be accessed from a higher level automation system or IBM (or compatible) PC.

1. Use a 1/16" allen key to remove the SOLOStat cover. Remove by turning the allen screws clockwise on both sides of the SOLOStat and slide the cover off.

2. Plug the SOLOTool into the RJ-11 jack on the SOLOStat.

3. Power up the SOLOTool using the DC power switch or the AC power adaptor.
4. Address the SOLOT/TX Controller by pressing UNIT. Select item 1 and enter the controller's ID number. This number is typically the controller's serial number. After entering the ID, press YES.
5. Use the CNFG key to perform the following functions:

   Change Defaults
   Change the Date or Time
   Item Recording
   Transmit Items

6. To examine or modify Attributes, use the MENU key.

   Temperatures/Flows
   Setpoints
   Schedules
   Runtimes/Cycle Time

   Use the arrow keys to step through the Attributes. To modify an Attribute, press Clear, enter the value and press YES. An Attribute can also be examined or modified by pressing CHAN and entering the appropriate channel number. The HEX key is used to enter letters.

FAN DISCHARGE AIR FLOW ADJUSTMENT

A small flat blade 1/8" screwdriver is required to adjust the fan discharge air flow.

1. Fan discharge air flow is field adjusted by varying the downstream static pressure and/or adjusting the motor speed controller.
2. The fan performance curves show the CFM for the various downstream static pressure (D.S.Ps) in inches of water.
3. For fan only applications, unit sizing should include return air duct losses.
4. Terminals are designed to operate from 0.1 to 0.8 D.S.Ps without an electric heater. Motors may overload if terminals are operated at D.S.Ps below 0.1" w.g. If terminals are operated at D.S.Ps above 0.8"w.g., freewheeling may result in possible motor damage.

CALIBRATION TABLE FOR PNEUMATIC SENSORS

SIZE	DESCRIPTION	CFM @ 1" △P	CFM @ .04" △P
5H	TRAVERSE-HIGH	380	75
5L	TRAVERSE-AIR DAM	250	50
5P	PX-2 CROSS SENSOR-HIGH	380	75
5Q	PX-2 CROSS SENSOR-AIR DAM	250	50
5A	ANALOG HOT WIRE (300-3000 FPM)	400	40
6H	TRAVERSE-HIGH	584	120
6L	TRAVERSE-AIR DAM	400	80
6P	PX-2 CROSS SENSOR-HIGH	584	120
6Q	PX-2 CROSS SENSOR-AIR DAM	400	80
6A	ANALOG HOT WIRE (300-3000 FPM)	550	55
7H	TRAVERSE-HIGH	801	160
7L	TRAVERSE-AIR DAM	600	120
7P	PX-2 CROSS SENSOR-HIGH	801	160
7Q	PX-2 CROSS SENSOR-AIR DAM	600	120
7A	ANALOG HOT WIRE (300-3000 FPM)	1000	100
8H	TRAVERSE-HIGH	1088	220
8L	TRAVERSE-AIR DAM	800	160
8P	PX-2 CROSS SENSOR-HIGH	1088	220
8Q	PX-2 CROSS SENSOR-AIR DAM	800	160
8A	ANALOG HOT WIRE (300-3000 FPM)	1000	100
9H	TRAVERSE-HIGH	1315	265
9L	TRAVERSE-AIR DAM	1050	210
9P	PX-2 CROSS SENSOR-HIGH	1315	165
9Q	PX-2 CROSS SENSOR-AIR DAM	1050	210
9A	ANALOG HOT WIRE (300-3000 FPM)	1300	130

$\triangle P = (\text{DESIRED CFM} \div \text{CFM @ 1.00" } \triangle P)^2$ *Table 4a. Calibration Table*

$\text{ACTUAL CFM} = \text{CFM @ 1.00" } \triangle P \times \sqrt{\text{MEASURED} \triangle P}$

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CALIBRATION TABLE FOR PNEUMATIC SENSORS

SIZE	DESCRIPTION	CFM @ 1" △P	CFM @ .04" △P
10H	TRAVERSE-HIGH	1767	355
10L	TRAVERSE-AIR DAM	1300	280
10P	PX-2 CROSS SENSOR-HIGH	1767	355
10Q	PX-2 CROSS SENSOR-AIR DAM	1300	260
10A	ANALOG HOT WIRE (300-3000 FPM)	1600	160
12H	TRAVERSE-HIGH	2542	510
12L	TRAVERSE-AIR DAM	2000	400
12P	PX-2 CROSS SENSOR-HIGH	2542	510
12Q	PX-2 CROSS SENSOR-AIR DAM	2000	400
12A	ANALOG HOT WIRE (300-3000 FPM)	2300	230
14H	TRAVERSE-HIGH	3629	725
14L	TRAVERSE-AIR DAM	2800	560
14P	PX-2 CROSS SENSOR-HIGH	3629	725
14Q	PX-2 CROSS SENSOR-AIR DAM	2800	560
14A	ANALOG HOT WIRE (300-3000 FPM)	3150	315
16H	TRAVERSE-HIGH	4427	885
16L	TRAVERSE-AIR DAM	4000	800
16P	PX-2 CROSS SENSOR-HIGH	4427	885
16Q	PX-2 CROSS SENSOR-AIR DAM	4000	800
16A	ANALOG HOT WIRE (300-3000 FPM)	4100	410

$\triangle P = (\text{DESIRED CFM} \div \text{CFM @ 1.00" } \triangle P)^2$

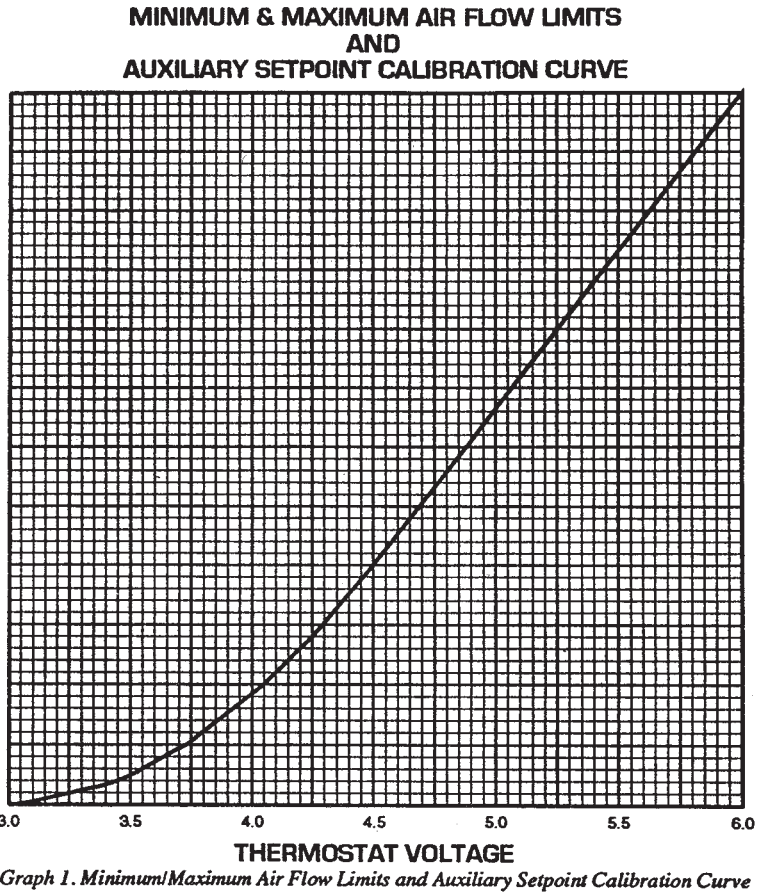
$\text{ACTUAL CFM} = \text{CFM @ 1.00" } \triangle P \times \sqrt{\text{MEASURED } \triangle P}$

Table 4a. Calibration Table

CALIBRATION CURVE FOR ELECTRONIC ANALOG SENSORS

The calibration curve shows the relationship between velocity voltage signals and nominal primary air delivery (CFM) for the air terminal.

	INLET SIZE								
	16	14	12	10	9	8	7	6	5
	4200	3200	2356	1636	1326	1047	800	588	408
	3850	2933	2159	1499	1216	960	733	539	374
	3500	2667	1963	1363	1105	873	667	490	340
	3150	2400	1766	1227	995	786	600	441	306
	2800	2133	1570	1090	884	698	533	392	272
C	2450	1867	1374	954	774	611	467	343	238
F	2100	1600	1178	818	663	524	400	294	204
M	1750	1333	981	682	553	436	333	245	170
	1400	1067	785	545	442	349	267	196	136
	1050	800	589	409	332	262	200	147	102
	700	533	393	273	221	175	134	98	68
	350	267	196	136	111	87	67	49	34
	0	0	0	0	0	0	0	0	0



Graph 1. Minimum/Maximum Air Flow Limits and Auxiliary Setpoint Calibration Curve

SERVICE AND REPLACEMENT OF BLOWER AND/OR MOTOR

The Fan Terminal has a side removal motor and blower. For ease in removal and service, the motor is wired with a quick disconnect plug and the blower housing has a removable inlet ring. **The electrical power must be disconnected before servicing the unit.** After the air terminal is de-energized, the procedures listed below must be followed.

1. Remove the blower motor access door from the terminal casing.
2. Disconnect the blower motor wiring using the quick disconnect plug located at the motor shell.
3. The motor, inlet ring, and blower wheel, are removed as an assembly. Remove the mounting bolts retaining the inlet ring to the blower housing.
4. The blower and motor assembly can be bench serviced. The motor blower assembly is replaced by following the above steps in reverse order.

SERVICE AND REPLACEMENT FOR ELECTRICAL AND PNEUMATIC PARTS

The Fan Terminals have a control enclosure as a standard feature. The control enclosure houses the blower motor capacitor, speed controller, motor relay, pneumatic electric switches, control transformer, air flow pressure switch, terminal blocks, disconnect switch, pneumatic or electronic air volume reset controller and the actuator that controls the inlet valve. A control wiring diagram for each air terminal is attached to the unit. Individual components in the panels are not field repairable. If one proves defective, it should be removed and a replacement component installed.

FAN TERMINAL MAINTENANCE

Before performing any maintenance, disconnect power and allow the blower motor to come to a complete stop. Disconnect the capacitor for safety. Dirt accumulation can cause motor overheating. Use a vacuum to remove dirt accumulations from the motor, especially in and around the motor vent openings.

The Fan Terminal may be provided with a temporary air filter. The air filter is installed on the left side of the unit, into filter rails located in the induction air plenum. The air filters should be replaced after fan terminal installation and start-up. Check the air filters regularly based on the condition of the operating environment and replace as necessary.

Periodically inspect and check for unusual noises or vibrations, high motor current, poor wiring, loose mounting bolts, and worn relay contacts.

The blower motor requires periodic re-oiling. The motor only requires a drop or two of SAE non-detergent oil. If the motor is operating in an extremely dirty or damp environment, re-oil more frequently. Do not over oil. Over-oiling can damage or reduce the motor life.

DUTY	OIL
Continuous	Every year
Intermittent	Every 2 years
Occasional	Every 5 years

Table 7. Lubrication Schedule

REPLACEMENT FILTER SIZES

MODEL	FILTER SIZE	ANEMOSTAT PART #
SFT/PFT-11	14" x 20" x 1"	15-09
SFT/PFT-12	14" x 20" x 1"	15-09
SFT/PFT-25	14" x 20" x 1"	15-09
SFT/PFT-33	14" x 20" x 1"	15-09
SFT/PFT-50	18" x 20" x 1"	15-23
SFT/PFT-75	18" x 20" x 1"	15-23
SFT/PFT-10	20" x 25" x 1"	15-38

GENERAL TROUBLESHOOTING

To troubleshoot suspected problems, a 0-1" w.g. Magnehelic and a 0-20 psi pressure gauge are required.

1. Be sure there is air flow through the terminal. the central fan must be on, the damper open, etc.

2. Power must be supplied to the terminal. This includes line voltage to the fan circuit, 18 psi minimum to the pneumatic circuit, or 24VAC to the electronic circuit.

PNEUMATIC CONTROLS

If overcooling or undercooling occur, the problem must be isolated as follows:

TUBING CONNECTIONS

Visually check the tubing connections and compare them with the proper control schematic. Check to be sure that each tube is tightly connected. Verify that 20 psi main air is available.

THERMOSTAT

Set the position of the thermostat temperature adjustment lever tot he full cooling position. Connect the 0-1" w.g. gauge to the balance tap and compare the signal pressure with the signal marked on the terminal label. These signals should be approximately equal.

Move the lever to the minimum cooling position. If the thermostat is working properly, the inlet valve will close off causing the signal pressure to approach its minimum setpoint or zero.

Results other than those above indicate a temperature adjustment must be made. Move the thermostat lever to a position slightly warmer or colder than the original setting.

If the inlet valve does not reduce CFM when the thermostat is set for minimum cooling, check the pressure in the thermostat line. It should be 0 psi for a direct-acting thermostat and 20 psi for a reverse-acting thermostat. If the pressure is not as indicated, the thermostat may need to be replaced.

PNEUMATIC MOTOR

Check the motor for leaks and check the linkage connection to the primary air inlet valve.

CFM

Overcooling can also occur due to excessive CFM at minimum air setting. Ventilation air may have to be reduced or reheat added to maintain temperature control.

Undercooling may be an indication of insufficient duct pressure (air) and/or insufficient system cooling capacity. The following procedure is required:

Check the inlet pressure to see that minimum pressure for CFM required is available at the terminal.

Check the supply air cold duct temperature.

ELECTRONIC ANALOG CONTROLS

Check for loose wires at the connections.

Compare the control diagram located on the fan control access door to the wiring connections.

Check for proper primary and secondary voltages.

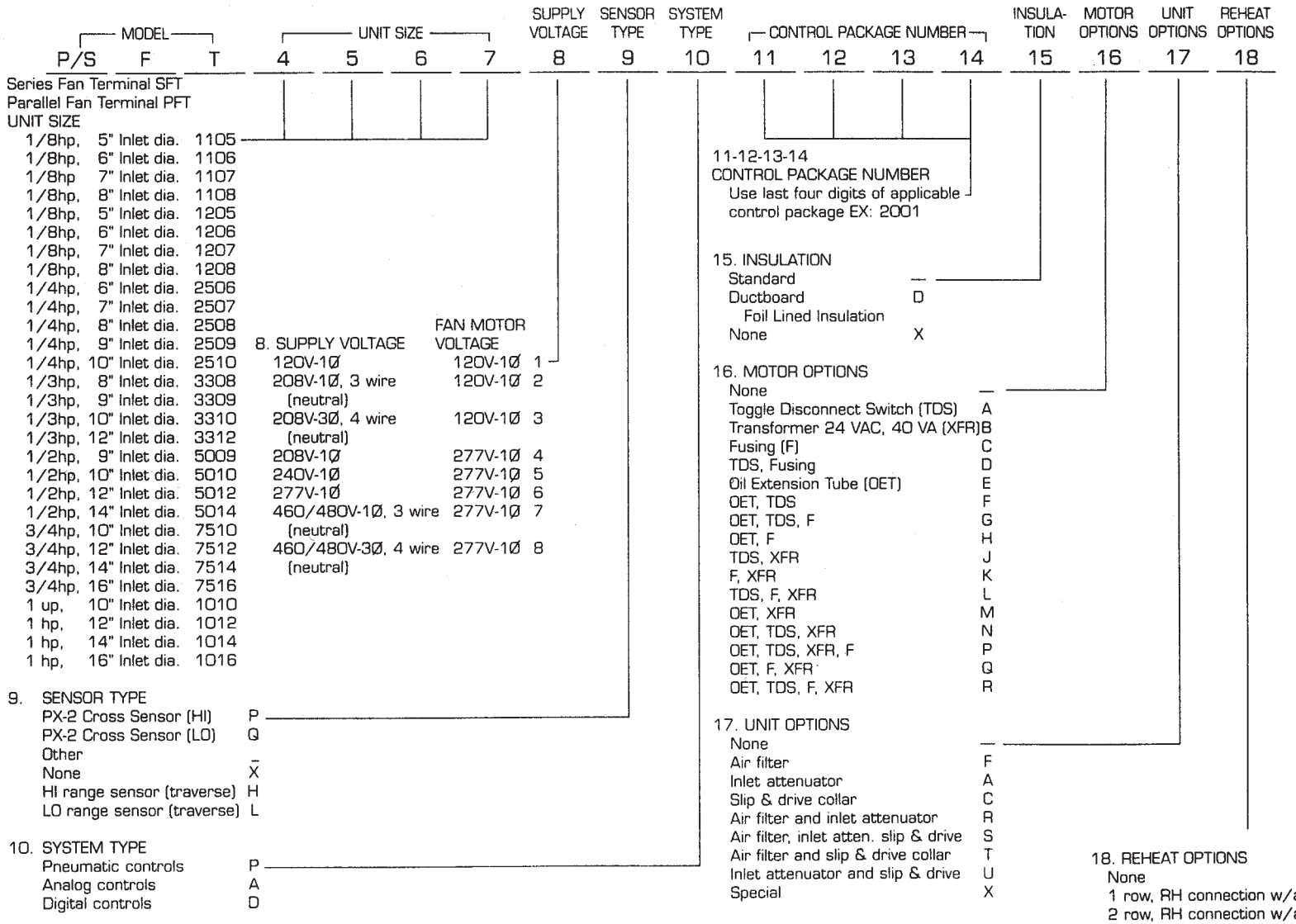
Verify that the supply voltage between the controller and the thermostat is between 8.7 and 9.6 VDC when measured between terminals 4 and 5. If not, the controller may need to be replaced.

Verify the velocity sensor wires from the controller by testing for continuity between the wire to terminals 1 and 3 and terminals 2 and 3. If there is no continuity, the sensor may need to be replaced.

Verify the thermostat maximum and minimum potentiometer voltage. If minimum and maximum cannot be adjusted between 0 and 6 VDC, the thermostat may need to be replaced.

If troubleshooting procedures indicate the need to replace a controller or duct sensor, the two parts must be calibrated together as a set. Replacement instructions are as follows:

The thermostat minimum must be set to fuller counterclockwise. Wire the sensor to the controller. The connection of the thermostat is not necessary. Remove the sensor from the duct so no air flows over the sensor. Connect the digital voltmeter to #2(+) and #4(-) terminals of the controller. Adjust the sensor calibration pot on the side of the controller next to "R" terminal to 9 VDC $\pm$ 1 VDC. If the sensor calibration pot is covered with a circular sticker, remove the sticker. Voltage will overshoot and then settle down to a steady voltage. Allow the voltage to stabilize for five minutes and readjust as necessary.



Note: Use 2nd digit of applicable control package Ex: FP-2001

Anemostat® AIR DISTRIBUTION

MOTOR TROUBLESHOOTING GUIDE

TROUBLE	CAUSE	ACTION
MOTOR FAILS TO START	Blown fuse	Replace fuse and check for grounded winding
	Low voltage	Inadequate wiring or extension cords. Low system voltage
	Improper line connections	Compare connections with diagram supplied with terminal
	Defective motor	Repair or replace
	Defective capacitor	Replace
	Defective speed controller	Replace
MOTOR STALLS	Overloaded motor	Check primary air flow and motor speed control setting
	Low motor voltage	See that nameplate voltage is maintained
MOTOR DOES NOT REACH FULL SPEED	Voltage too low at motor	Increase motor speed controller. Check for poor connections and voltage unbalance.
	Starting load too high	Check primary air flow
MOTOR TAKES TOO LONG TO ACCELERATE	Excess loading or high inertia load	Check primary air flow and motor speed control setting
	Applied voltage too low	Check for poor connections. Increase supply voltage wire size.
	Defective motor	Repair or replace
MOTOR VIBRATES OR IS EXCESSIVELY NOISY	Motor misaligned	Realign
	High or unbalanced voltages	Check wiring connections
	Worn, damaged, dirty or overloaded bearings	Replace, check loading and alignment
MOTOR OVERHEATS WHILE RUNNING UNDER LOAD	Overload	Check primary air flow
	Dirt preventing ventilation	Clean motor
	Faulty connection	Clean, tighten or replace
	High or low voltage	Check voltage at motor. Correct voltage is 10% above or below rated.
	Defective motor	Repair or replace

Table 8. Motor Troubleshooting Guide

PRODUCT LABEL LOCATION

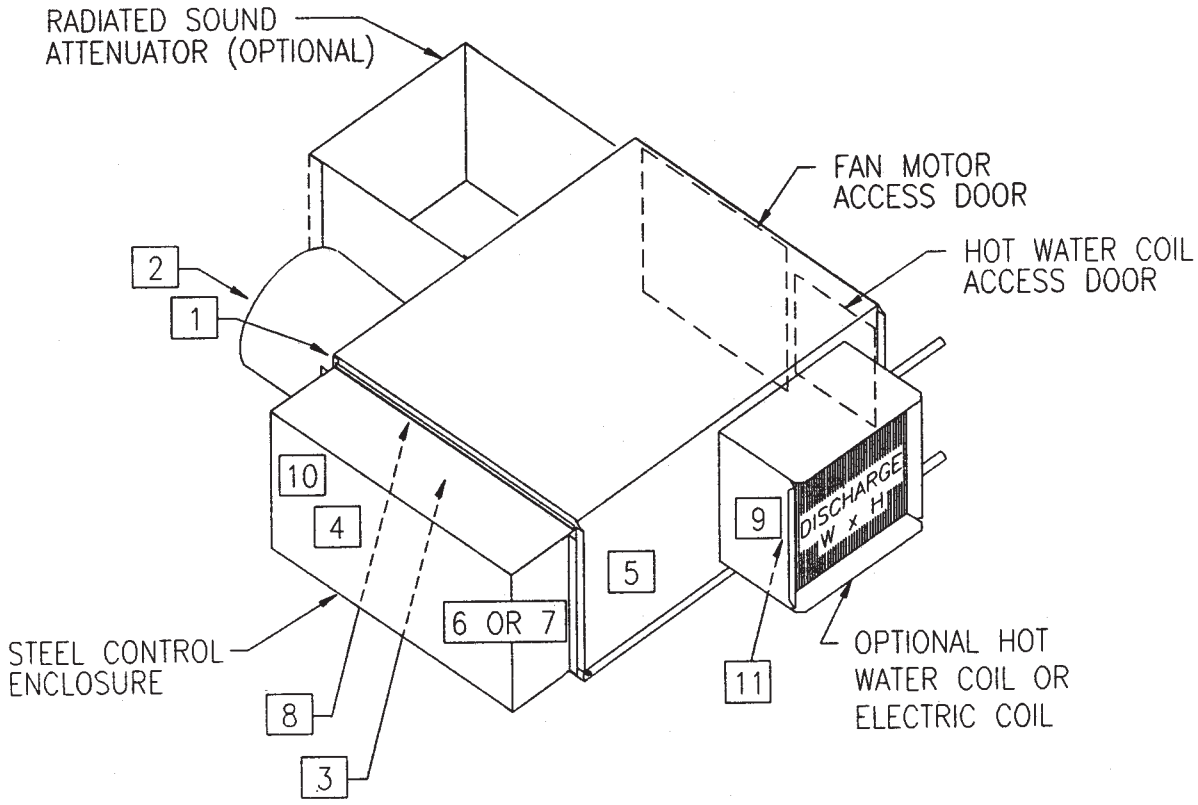


Figure 2. Product Label Location

1 INLET	5 ORIENTATION	9 WATER COIL LIMITS
2 CAUTION	6 120V/277V INPUT POWER TERMINAL	10 CONTROL DIAGRAM
3 AIR FLOW ARROW	7 208V/240V INPUT POWER TERMINAL	11 ELECTRIC HEATER
4 POWER WARNING	8 I.D.	

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SFT/PFT PRODUCT LABELS

The Fan Terminal may have up to eleven labels which are critical for proper installation and operation. Prior to installation, locate and familiarize yourself with the following:

1. INLET LABEL

It is necessary to have a minimum of three diameters of straight duct upstream from the terminal for optimum operation. Example: A terminal unit with a 10" diameter inlet must have a minimum of 30" of straight cylindrical duct connected ahead of it. Figure 3.

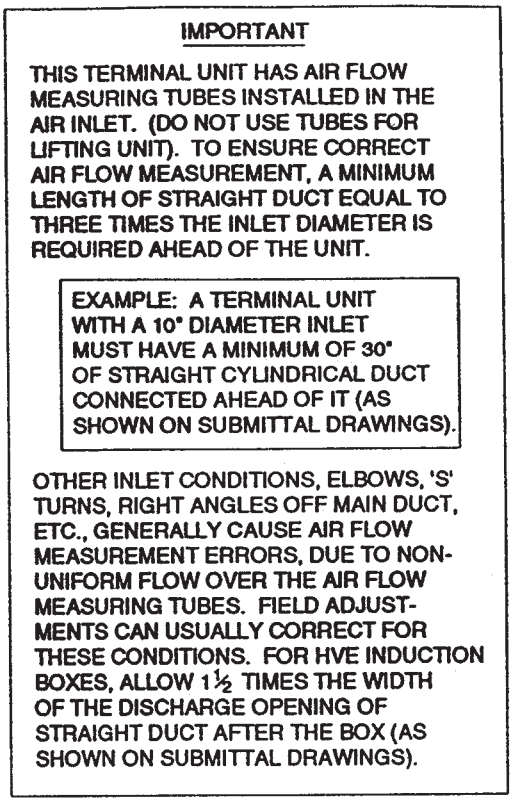

Figure 3. Inlet label

2. CAUTION LABEL

The air flow measuring tubes, located in the air inlet, must not be used for handling the terminal unit. Lifting the unit by these tubes could cause them to become dislodged and unable to provide accurate air flow readings. Figure 4.

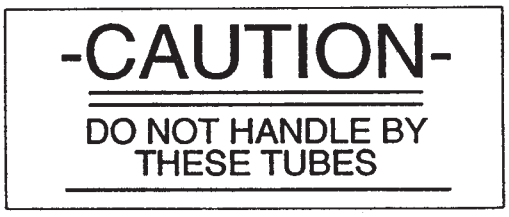

Figure 4. Caution label

3. AIR FLOW ARROW LABEL

The air flow directional arrow is situated on the bottom of the unit. The terminal must be installed horizontal with the air flow arrow to ensure proper operation. Figure 5.

Figure 5. Air Flow Arrow label

4. POWER WARNING LABEL

Before servicing the terminal unit, be sure to disconnect the remote power source. Failure to do so could result in SERIOUS injury. Figure 6.

Figure 6. Power Warning label

5. ORIENTATION LABEL

Both the terminal unit and the containers carry 'THIS SIDE UP' labels. Maintaining the unit in an upright position is critical during shipment and installation. Figure 7.

Figure 7. Orientation label

6. 120V/277V INPUT POWER TERMINAL LABELS

These labels identify the input power connections for Line (L), Neutral (N), and Ground (G) for 120V or 277V, 1 phase power supplies. Figure 8.

Figure 8. 120V/277V Input Power Terminal labels

7. 208V/240V INPUT POWER TERMINAL LABELS

These labels identify the input power connections for Line (L1), Line (L2), and Ground (G) for 208V or 240V, 1 phase power supplies. Figure 9.

Figure 9. 208V/240V Input Power Terminal labels

8. I.D. LABEL

On the bottom or each terminal unit is the identification label. It contains pertinent information regarding the manufacturing of the product, technical specifications, and environmental requirements. Note that the MFS line will be blank if the only load is the blower motor. Figure 10.

ANEMOSTAT® PRODUCTS DIVISION
FAN POWERED
TERMINAL UNITS

DATE OF MFG. _____
FACTORY ORDER NO. _____
CATALOG NO. _____
TAG NO. _____
PRIMARY AIR INLET:
MAX CFM _____ MIN. CFM _____
FAN MOTOR:
VOLTS _____ PHASE _____
CYCLE _____ F.L.A. _____
H.P. _____
FAN CFM _____ ⊕D.S.P. _____
UNIT SUPPLY:
VOLTS _____ PHASE _____ CYCLE _____
ELECTRIC HEATER: MIN REQ CFM _____
MIN. CIRCUIT AMPACITY _____
MAX FUSE SIZE _____
• ZERO CLEARANCE TO COMBUSTIBLE MATERIAL
• MAX OUTLET AIR TEMPERATURE 200°F
• UNIT IS DESIGNED TO OERATE FROM 0.1 TO 0.8
• D.S.P.s W/O HEATER. REFER TO INSTALLATION INSTRUCTIONS WHEN E. HEATER IS USED.
• USE COPPER POWER SUPPLY WIRING.

Figure 10. I.D. label -

9. WATER COIL LIMITS LABEL

Located on the side of the optional heating coil is the inlet water pressure and temperature limits. The maximum inlet water pressure for water coils is 300 psi. The maximum inlet water temperature is 250° F. Figure 11.

MAX INLET WATER PRESS 300 PSI
MAX INLET WATER TEMP 250°F
SUITABLE FOR HOT WATER ONLY

Figure 11. Water Coil Limits label

10. CONTROL DIAGRAM LABEL

On the inside of the Fan Control Access Door is the electrical power wiring and control wiring/ piping for the terminal. Figure 12.

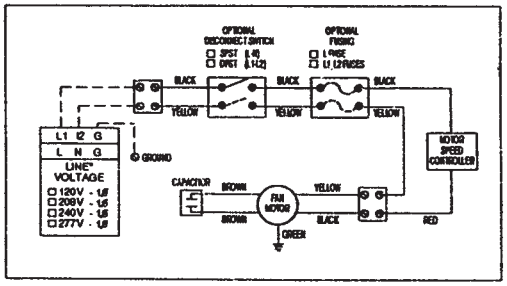

Figure 12. Control Diagram label

11. ELECTRIC HEATER LABEL

At the bottom of the unit is the Electric Heater label which indicates the unit has been evaluated with the UL listed Duct Heater.