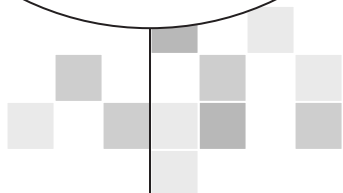
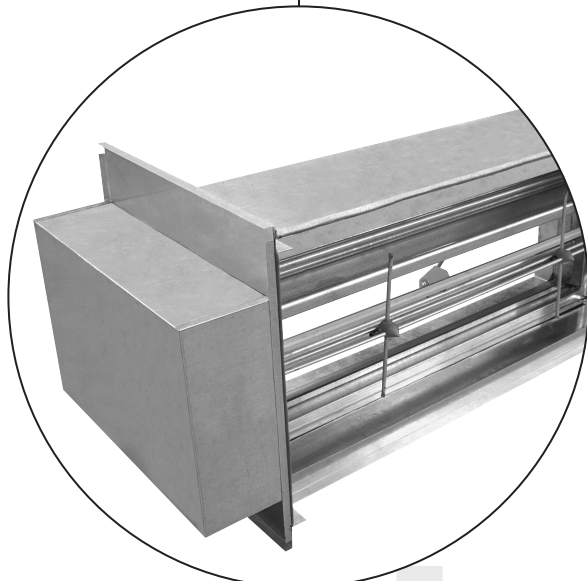




**AIR FLOW SOLUTIONS**

**RF-11  
Installation, Operation, and Maintenance  
Slip-In  
Variable Air Volume Terminals**



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## Model Number Description

Typical String: RF11 / 12.00 / 12.00 / 7 / H / B / A / 5000 / R / 1 / A / B					
Field	Field Description	Input Code	Description		
1	Model	RF11	Square / Rectangular Valve		
2	Duct Width	12.00	Width, inches		
3	Duct Height	12.00	Height, inches		
4	Regulator size	1	6" x 4" Min Duct Size (W x H)	O	24" x 48" Min Duct Size
		2	6" x 6" Min Duct Size	P	10" x 48" Min Duct Size
		3	8" x 6" Min Duct Size	Q	10" x 36" Min Duct Size
		4	10" x 8" Min Duct Size	R	10" x 42" Min Duct Size
		5	14" x 8" Min Duct Size	S	14" x 48" Min Duct Size
		6	18" x 6" Min Duct Size	T	12" x 48" Min Duct Size
		7	12" x 8" Min Duct Size	U	8" x 24" Min Duct Size
		8	18" x 8" Min Duct Size	V	14" x 40" Min Duct Size
		A	20" x 14" Min Duct Size	W	8" x 36" Min Duct Size
		B	30" x 12" Min Duct Size	X	8" x 48" Min Duct Size
		C	22" x 16" Min Duct Size		
		D	30" x 22" Min Duct Size		
		E	36" x 16" Min Duct Size		
		F	30" x 20" Min Duct Size		
		G	45" x 20" Min Duct Size		
		K	24" x 12" Min Duct Size		
		M	30" x 10" Min Duct Size		
		N	48" x 16" Min Duct Size		
5	Sensor / Range	H	PX-2 Cross Type - High Range		
		L	PX-2 Cross Type - Low Range		
6	Construction	B	20 ga Galvanized Steel		
7	Control Type	-	No Controls (Field Installed)		
		P	Pneumatic		
		A	Electronic Pressure Independent		
		D	Direct Digital Controls		
		F	DDC by Others (Factory Mounted)		
8	Control Package	- - - -	None		
	(Ex: SD - A - 5000)	5000	Enter applicable 4 digit CP number		
9	Control Location	R	Right Hand		
		L	Left Hand		
10	Transformer	-	None		
		1	120v - 1ph/60Hz		
		2	208v - 1ph/60Hz		
		3	277v - 1ph/60Hz		
		4	240v - 1ph/60Hz		
11	Control Enclosure	-	None		
		A	Standard Enclosure (Steel)		
		B	Universal Enclosure (Steel)		
		C	Std Enclosure with Hinged Panel (Steel)		
		D	Univ Enclosure with Hinged Panel (Steel)		
12	Disconnect Switch	-	None		
		B	SPST Line 120/277v 1-ph		
		C	DPST Line 208/240v 1-ph		
13	Optional Features & Accessories	C2	Manual Locking Damper		
		99	Special Construction - See Notes		

## Unit Labeling

Labels are applied to each terminal as follows:

- Unit specific nameplate showing model number, manufactured date, and information regarding controls and heat provided as appropriate.
- The appropriate airflow calibration chart indicating the airflow at varying airflow sensor signals as shown on pages 8, 9, and 10.
- The appropriate wiring/piping diagram for controls provided by Anemostat. Refer to controls manual CM-1 for controls adjustment and troubleshooting procedures.
- Up arrow indicating the proper orientation of the unit for installation.
- Airflow direction arrow indicating the proper orientation of the duct connections.
- Sheet Metal Workers Union logo indicating unit produced by members of The Sheet Metal Workers Union.



**WARNING**

**HAZARDOUS VOLTAGE!  
RISK OF ELECTRIC SHOCK  
CAN CAUSE INJURY OR DEATH  
DISCONNECT ALL REMOTE POWER  
SUPPLIES BEFORE SERVICING**


**SINGLE DUCT AIR TERMINAL WITH ELECTRIC HEAT**

Model: RF-11      Size: XX  
Order: XXXXXX  
Mfg. Date: XX/XX/XX  
Control Package: XXXXX  
Location: XXXXXXXXXXXXX  
Heater Data: See heater name plate  
Heater Min. Airflow Req'd: XXX CFM

DESIGN AIRFLOW RATES / SIGNAL  
Min CFM:   XXX   /    XX VDC  
Max CFM:   XXX   /    XX VDC  
Aux CFM:   XXX   /    XX VDC


Use copper power supply wiring only

TAG:  
**XXXXXXXXXX**



**Anemostat**<sup>®</sup>  
A MESTEK COMPANY  
CARSON, CA 310-835-7500

Conforms to  
UL STD 1996  
UL STD 429



**Made in the USA**


L-27C1

**AIR TERMINALS**

Model: RF-11      Size: XX  
Order: XXXXXX  
Mfg. Date: XX/XX/XX  
Control Package: XXXXX  
Location: XXXXXXXXXXXXX

DESIGN AIRFLOW RATES / SIGNAL  
Min CFM:   XXX   /    XX VDC  
Max CFM:   XXX   /    XX VDC  
Aux CFM:   XXX   /    XX VDC

TAG:  
**XXXXXXXXXX**



**Anemostat**<sup>®</sup>  
A MESTEK COMPANY  
CARSON, CA 310-835-7500

**Made in the USA**

L-54C1

Nameplate for terminals with electronic analog controls or DDC controls

Nameplate for terminals with pneumatic controls without electric heat.

## Receiving and Inspection Instructions

- Check the bill of lading to verify receipt of all listed items (including any loose accessory items). Notify the carrier and the local ANEMOSTAT representative of any shortages or items shipped in error.
- Thoroughly examine all units for transportation damage (dents, punctures, etc). If damage is found, immediately notify and file a claim with the carrier. Note details of any damage on the bill of lading before signing for the shipment.
- Each terminal has a nameplate indicating the model number. When requested, the unit may also be mark with job-specific information (tagging). Locate the nameplate and verify that the correct units with options (controls, heating coils, etc) where received as ordered.
- Store units in a secure, dry location in the original packing, and do not stack any higher than as shipped.

## Warning – Electrical Shock, Burn, and other Hazards

- Heating elements must be disconnected, or water coils allowed to cool prior to servicing. Electric heaters may start automatically, or water valves may open intermittently. It is essential to disconnect all power and control circuits prior to servicing to avoid burning hazards.
- All fastening straps or hangers must mechanically lock the terminal in place and withstand typical vibration and/or disturbances during use.
- Use caution during rigging such that all equipment remains adequately secured until it is affixed and secured in its final location.
- All supports must be designed to meet applicable local codes and ordinances. Before rigging and installation, check equipment weights such to ensure temporary and permanent supports are safely maintained.
- Make certain all power sources are disconnected prior to installation or servicing this equipment. Make certain if there are multiple power connections, that all are securely disconnected to avoid electrocution or shock injuries.
- Disconnect control circuits or pneumatic control systems to avoid injury when working on dampers or actuators, which may respond automatically to a remote control source.
- Guard against flame hazards when soldering or brazing water coil connections to avoid personal injury or property damage. Prior to using any open flame, keep a fire extinguisher nearby.
- All insulated units (except closed-cell) contain fiberglass wool. Disturbing the insulation could expose the installer to airborne particles of glass wool fibers and ceramic fibers. Certain jurisdictions feel that exposure to these fibers through inhalation can cause cancer. Glass wool fibers may also cause respiratory, skin or eye irritation.

## General Notes:

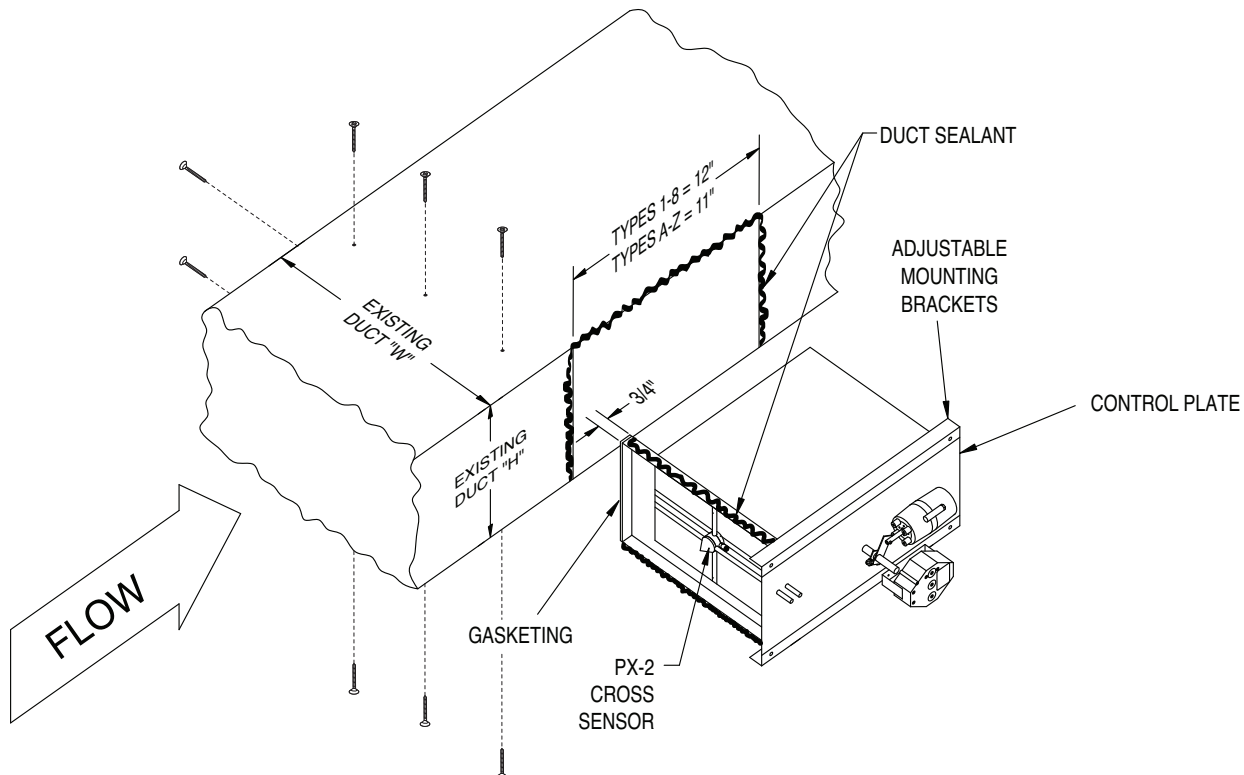
- THE FLOW SENSOR, PNEUMATIC TUBING AND DAMPER SHAFT ARE NOT TO BE USED FOR LIFTING OR SUPPORT. THEY ARE CRITICAL TO THE PROPER OPERATION OF THE UNIT.
- To avoid product damage, only lift or handle the RF-11 by fully supporting the unit from more than one location.
- Locate unit as per construction drawings, and be careful not to conflict with articles of other trades such as plumbing and electrical conduit.
- Consult SMACNA guidelines for proper transitioning and good workmanship practices.
- Using the support method from the construction plans and specification, suspend unit in a level horizontal plane noting direction of airflow. Do not secure hanging straps to unit appurtenances such as (but not limited to) electric heater cabinets, hot water coils, and control enclosures.

For units equipped with optional hanging brackets, rods up to 3/8" diameter may be used with ANEMOSTAT brackets. Hanger rod locations are approximately 1" to 3" from the corner of the unit for most terminal configurations.

- Make certain not to obstruct service access to any electrical enclosures or access panels for access to the interior of the unit.
- Check with the local Anemostat representative if a terminal must be "flipped" over from its' intended orientation.

## Unit Placement and Installation

1. The RF-11 is a VAV air terminal unit – it is designed to slip into the side of square or rectangular HVAC duct to provide air flow control thru the duct. Provide a side opening/cutout in the duct as shown below:



2. Remove the (2) adjustable mounting brackets from the control plate, and retain the bracket screws.
3. Use appropriate duct sealant / adhesive and apply a vertical bead of sealant on the upstream and downstream side of the duct cut-out. Also, apply duct sealant on the top and bottom of the duct close to the cutout. The mounting brackets will be embedded in the sealant in a later step.
4. Apply sealant to the top and bottom flanges of the RF-11 sensor plate (on the top and bottom surfaces where the plate will meet the top and bottom of the duct inside). Slip the RF-11 into the duct side opening, noting direction of air flow. The RF-11 side control plate must be parallel to the side surface of the duct.
5. Fasten the RF-11 sensor plate (3 sides: top, bottom, far side) and the control plate (near side) to the duct using sheet metal screws with distorting or warping the damper assembly. The damper / damper shaft should rotate freely without binding.
6. Apply sealant to each mounting bracket, and loosely fasten to the top and bottom of the control mounting using the screws previously removed.
7. Drive screws thru the top and bottom flanges of the mounting brackets and into the top and bottom of the ductwork. Then, tighten the (4) screws on the front of the control plate to complete installation. Check for leaks as required.
8. Refer to wiring diagrams or other information for controls and pneumatic or electrical requirements.

## Clearance Requirements

- Line voltage and low voltage electrical enclosures must have adequate clearances to meet requirements of NFPA 70 (NEC). This is typically 36" minimum. Note that additional clearance requirements may be required by local codes or building construction specifications.
- When provided with optional bottom or side casing access plate/panel, provide sufficient clearance to allow access.
- Unit should hang freely, and not make contact with any structure above.
- There are no internally replaceable components in the RF-11 terminal units. All controls are externally accessible.

## Electrical Connections

**NOTE:** This manual was written with the understanding that the line power and control wiring drawings submitted for the specific project have been acquired and are available during installation.

- Electrical wiring, connections, fusing and installation must conform to the local building codes and the NATIONAL ELECTRIC CODE (ANSI / NFPA 70).
- Connect the electronically actuated RF-11 per wiring diagram supplied with the unit (or by ATC contractor).
- UL standards dictate that the power source must be within 10% of nameplate voltage, for safety and longevity. If incoming voltage is 10% above or below nameplate voltage, contact Power Company to correct before operating terminal.

## Start-up Procedures

**WARNING:** Failure to adhere to these instructions, unauthorized installation, adjustment, alterations, modifications or maintenance can void the manufacturer's warranty, cause property damage, personal injury or death. For assistance or additional information, consult a qualified contractor or an ANEMOSTAT representative.

- Verify all electrical wire terminations are tightened prior to energizing terminal. Some loosening may have occurred during shipment and installation.
- Prior to start-up, the project specific control sequence / wiring diagram should be read and understood. A copy of this schematic is located on the interior of the electrical enclosure. If factory supplied analog or DDC controls are supplied, contact the project control contractor for specific start-up and balancing information.

## Maintenance

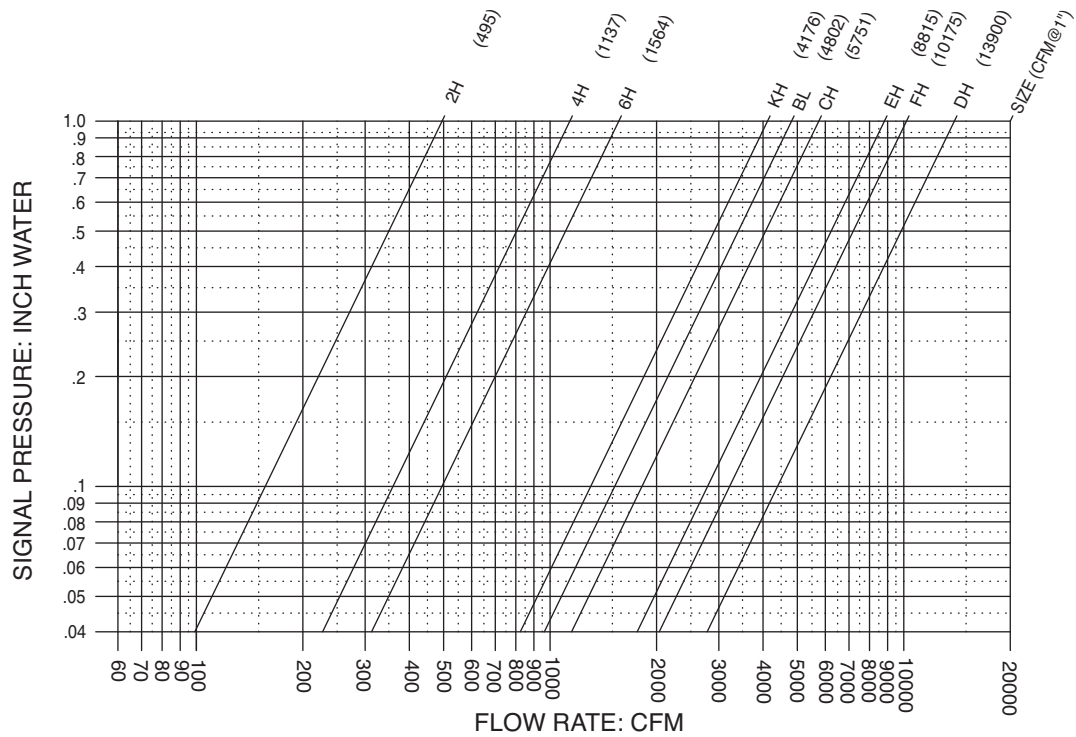
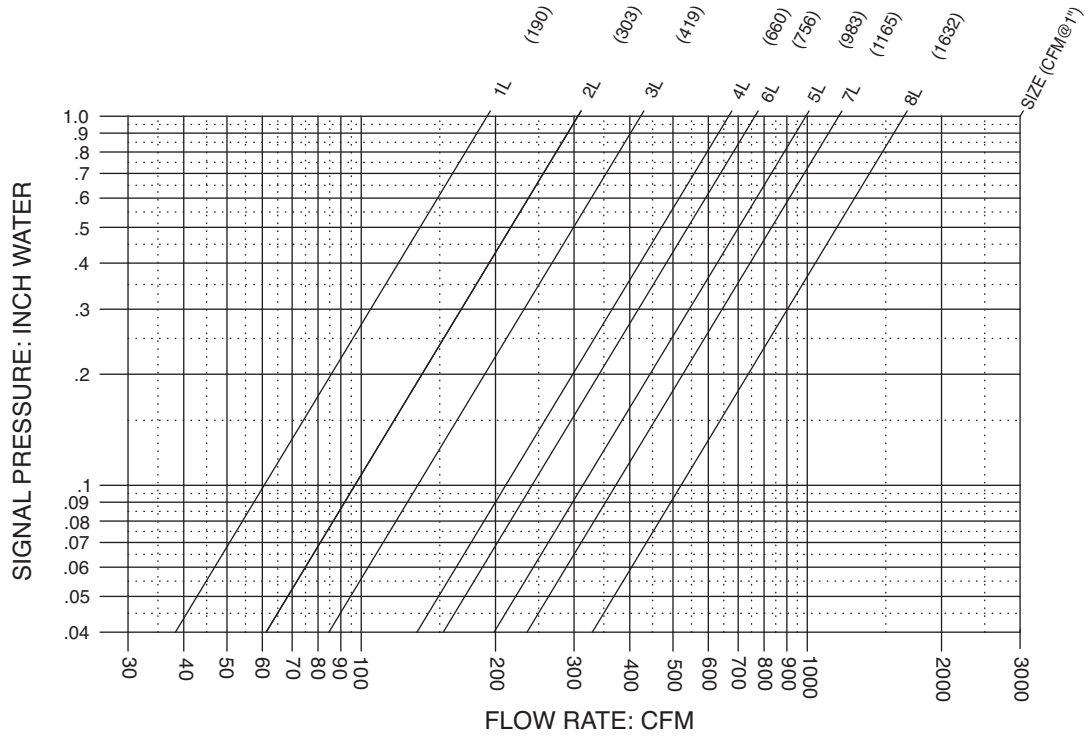
- The RF-11 VAV terminal unit has been designed and constructed for years of reliable use.

## Factory Mounted DDC Controls

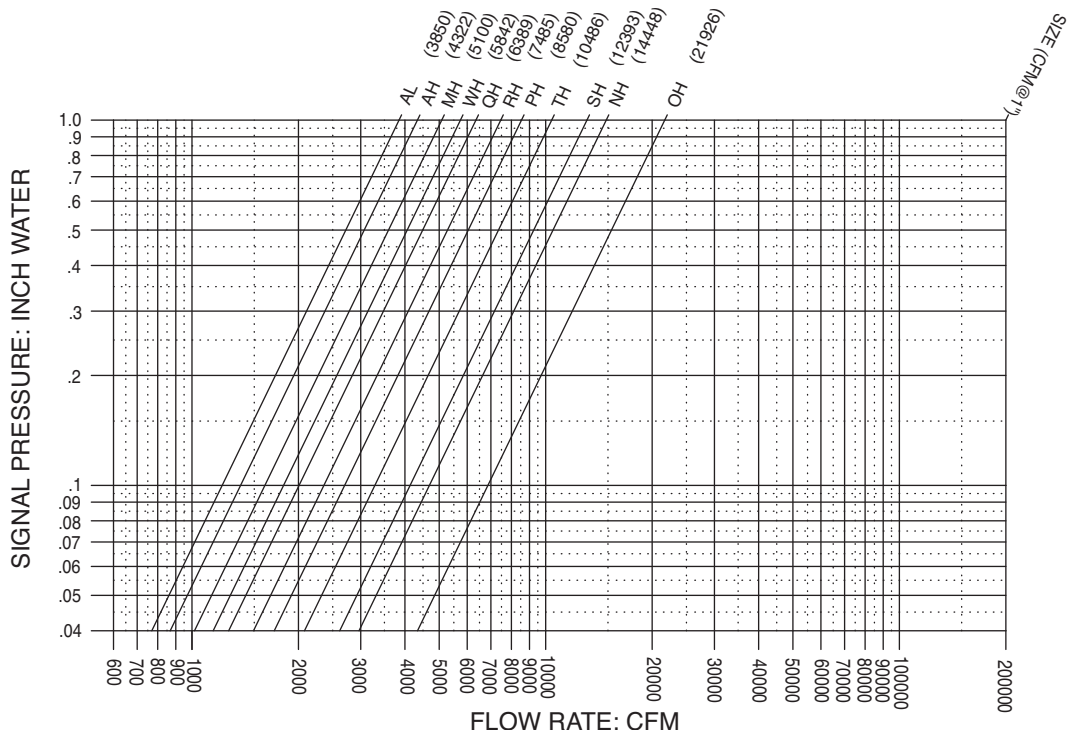
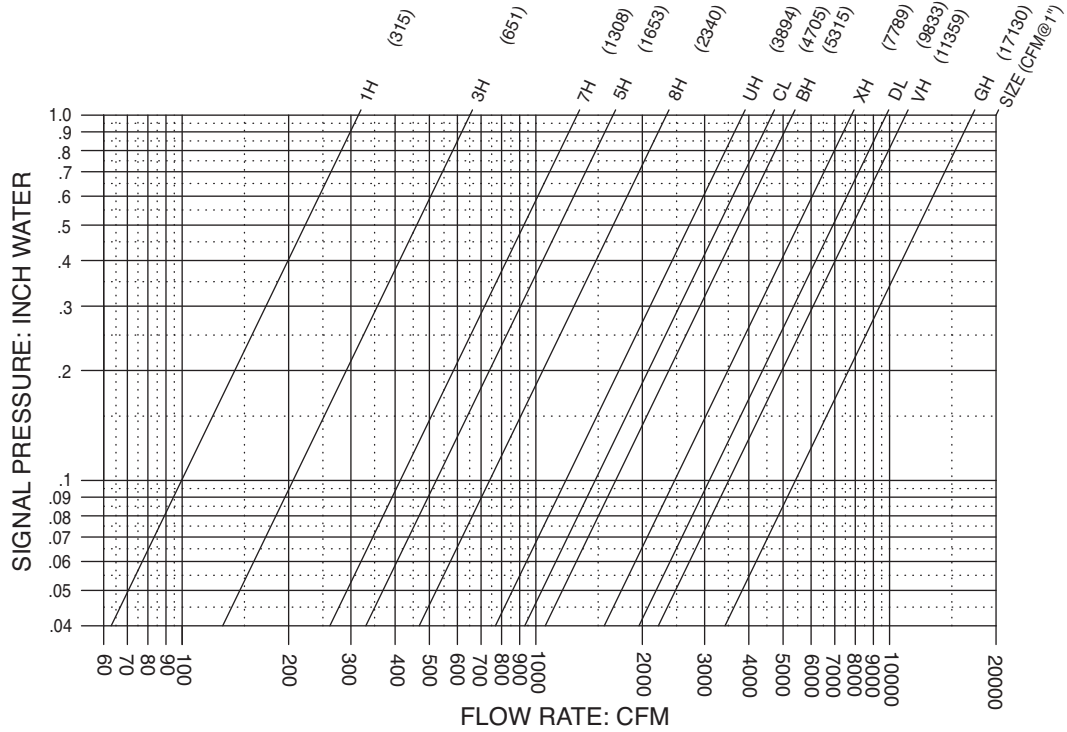
Anemostat will factory mount DDC controls of all types. Refer to the wiring diagrams provided by the temperature control manufacturer for proper wiring of these controls. The maximum and minimum CFM range is determined by the controls.

# Airflow Sensor $\Delta P$ Versus Airflow

C23 / C24 / C31 Series Pneumatic Controls & DDC Controls\*







## Altitude Correction Factors

Barometric Pressure (in h.g.)	Altitude (feet)	Density lb/ft <sup>3</sup>	Correction Factor
29.92	0	.075	1.03
20.28	500	.074	1.01
28.85	1000	.072	0.99
28.33	1500	.071	0.98
27.82	2000	.070	0.96
27.32	2500	.068	0.95
26.81	3000	.067	0.93
26.33	3500	.066	0.91
25.84	4000	.065	0.89
25.37	4500	.064	0.88
24.89	5000	.062	0.86
24.44	5500	.061	0.85
23.98	6000	.060	0.83
23.54	6500	.059	0.82
23.09	7000	.058	0.80

**Example:** Determine the airflow sensor signal of aN 8H unit at 2170 CFM located at an elevation of 5000 ft., for a 3000 series pneumatic controller.

To use the correction factor:

$$\text{Correction factor} \times \text{CFM at unit location} = .86 \times 2170 = 1870 \text{ CFM}$$

Referencing the 8H flow curve, shown on page 9, find 1870 CFM @ .64" w.c. sensor signal pressure. The velocity controller set at .64" signal pressure will result in 1870 CFM at 5000 ft. elevation.