VENTURI FX

MANUAL v107

ANTEC controls
by price

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INTRODUCTION

General

In this manual, you will find information regarding:

- Venturi FX (VFX) specifications
- How to install the VFX with Constant Volume, Variable Volume, and Two Position Switch
- Detailed description of all options available for each setup

Safety Precautions

1. Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
2. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
3. Use this unit only in the manner intended by the manufacturer.
4. Before servicing or cleaning unit, switch power off at service panel and lock service panel to prevent power from being switched on accidentally.
5. Protect flammable materials nearby when brazing, use flame and heat protection barriers where needed. Always have a fire extinguisher ready.
6. The manufacturer assumes no responsibility for personal injury or property damage resulting from improper handling, installation, service or operation of the product.

Caution to Contractors

VFX Valves are not intended for use as temporary heat or ventilation sources during building construction. The units are not designed nor equipped to operate in a dusty construction environment. Internal parts can become coated in construction dust, resulting in loss of calibration and excess wear on the product which in turn can contribute to reduced life.

CAUTION ▼

This mark indicates an important point for the proper function of the VFX and any of its accessories. Pay close attention to all caution points throughout this manual.

For support and in-depth training on this product and other associated system components, please contact your local Antec Controls Representative.

For more information visit www.AntecControls.com

Product Overview

The Antec Controls Venturi FX Valve (VFX) is designed specifically for room pressure control in healthcare and laboratory applications. Paired with the maintenance-free, high accuracy Antec Controls Pressure Transducer (PTX) or the Pace™ Critical Space Controller (PACE) and an actuator, the VFX achieves precise airflow measurement and control for critical environments.

Technical Specifications

Environmental (Operating)	50°F to 122°F (10°C to 50°C), 5% to 95% R.H. (non-condensing)
Environmental (Storage)	-22°F to 122°F (-30°C to 50°C), 0% to 95% R.H. (non-condensing)
Valve Body	14 Ga Aluminum
Damper Assembly	Uncoated: Two 24 Ga galvanized steel plates and a Teflon gasket mounted on a zinc plated steel shaft. Coated: Two 22 Ga 316 stainless stee plates and a Teflon gasket mounted on a 316 stainless steel shaft.
Pressure Sensor	316 Stainless Steel Tubes

Airflow Ranges

	Airflow Range		
Unit Size	Minimum CFM (L/s)	Maximum CFM (L/s)	Kfactor
108	80 (38)	800 (378)	600
110	120 (57)	1300 (614)	975
112	180 (85)	1800 (850)	1400
114	250 (118)	2500 (1180)	1985
212	360 (170)	3600 (1700)	2800
214	500 (236)	5000 (2360)	4000

Flow Calculation

The VFX requires a 0 to 2 in.w.c. (0 to 498 Pa) transducer to measure flow. Using the differential pressure reading (dP), the flow is calculated using the following equation:

$$Q = Kfactor * \sqrt{dP}$$

NOTES:

1. Factory calibrated controls must be selected within the above flow range limits. When setting the flow, the value must be greater than the minimum setting and within the range limits. Selection of air flow below the listed values is not recommended. Stability and accuracy may not be acceptable at lower than recommended air flow limits.
2. Please refer to the VFX Product Submittals for all dimensional data.

GETTING STARTED WITH THE VENTURI FX (VFX)

Receiving Inspection

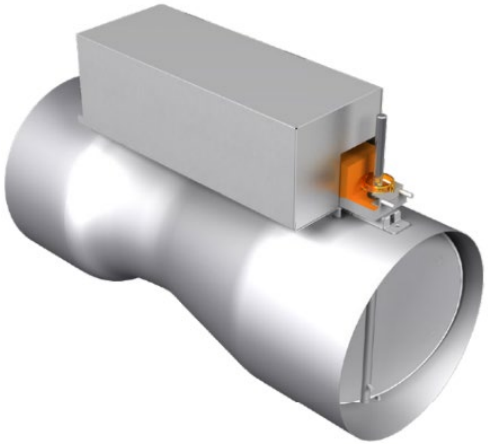
After unpacking the assembly, check carefully for shipping damage. If any damage is found, report it immediately to the delivering carrier. Damage may result from improper handling.

CAUTION

Do not tamper with the linkage assembly as the valve is shipped factory calibrated. Never carry or lift the valve by the damper shafter, flow measuring stations or the control enclosure.

In the Box

For each of the available controllers the order includes the following components outlined in this section.



Venturi FX (VFX)

The VFX ships with several different components. The components are outlined in this section for a single VFX.

Component	Quantity	Description
Valve Body	1, 2 or 3	VFX **NOTE:** Dual and Triple VAV valves will be shipped as a ganged assembly.
Green Pressure Tubing	1	The low-pressure tubing comes with a length of tubing factory connected to the controller.
Red Pressure Tubing	1	The high-pressure tubing comes with a length of tubing factory connected to the controller.
Actuator	1, 2 or 3	The actuator is factory mounted on the mounting bracket and shaft. **NOTE:** Dual and Triple valves will be shipped with 2 and 3 actuators, respectively.
Controller	1	Single controller.

Construction Options

Below is an outline of some of the key options that are available when selecting and ordering Venturi FX (VFX). These options will affect its available flow range, how the valve is installed and under what system conditions it must operate.

See the VFX Product Submittal on AntecControls.com for Specifications and Dimensions of each option shown below.

Valve Size

The VFX is available in the following size options. The size selected below will be a factor in determining the airflow range of the valve.

8 inches

Model: VFX-108

Features:
- Available in Single construction only

10 inches

Model: VFX-110, VFX-210

Features:
- Available in Single and Dual construction
- Dual construction is provided in a welded ganged unit and no additional field assembly is required

12 inches

Model: VFX-112, VFX-212

Features:
- Available in Single and Dual construction
- Dual construction is provided in a welded ganged unit and no additional field assembly is required

14 inches

Model: VFX-114, VFX-214

Features:
- Available in Single and Dual construction
- Dual construction is provided in a welded ganged unit and no additional field assembly is required

Connection Type

The connection type of the valve will determine how the valve is installed in the ductwork. See the Installation Instructions section for more detail on the installation process.

Slip

Model: VV-SL

Features:
- VFX does not contain any mounting holes
- Single sizes are designed to slip into nominal sized round ductwork
- Dual, Triple and Quad sizes are designed to slip over rectangular ductwork

NOTE: See the Installing the Venturi FX for detailed installation instructions.

Flanged

Model: VV-FL

Features:
- VFX comes with pre-welded mounting flange

NOTES:
- See the Installing the Venturi FX for detailed installation instructions.
- See the VV Product Submittal for hole pattern and dimensions.

Coating

The Venturi FX is available in two different protective coating options depending on the application.

Aluminum

Model: VFX-AL

Features: Aluminum valve body with Stainless Steel (SS) internal hardware

NOTE: Can be mounted using sheet metal screws.

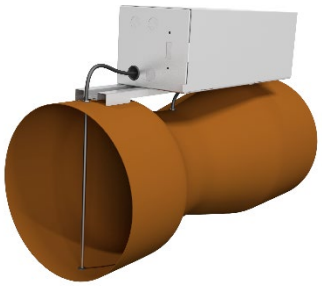
Phenolic – Class 1

Model: VFX-P1

Features: Phenolic coated valve body with Stainless Steel (SS) internal hardware

Scratches and holes can compromise the coating

NOTE: Do not use sheet metal screws in valve body.



INSTALLATION & MOUNTING INSTRUCTIONS

Installing the Venturi FX (VFX) Valve

The instructions below detail general installation of a VFX without the use of any valve accessories. When using accessories with the VFX, please see the appropriate installation detailed for the accessory being used in the Valve Accessories section.

Before Installation

1. Visually inspect the valve for damage
   a. Damage to the flow measuring stations in the valve can be detrimental to performance
   b. Damage to the coating on fume hood valves can lead to corrosion
2. Inspect the tamper proof paint on the actuator to ensure it has not been removed.
3. Ensure the Specification label for the valve matches the intended installation location.

General Installation Notes

1. Ductwork to be supported within eighteen inches (18 in., 457.2 mm) of the Venturi FX unless otherwise specified.
2. Access doors are not required.
3. Leave eight inches (8 in., 203.2 mm) of free space in all directions of the controls enclosure to facilitate future access to the controls.
4. During operation, the blade damper of the VFX may extend past the discharge of the valve. Ensure that a minimum of three inches (3 in., 76.2mm) of duct space is clear of any obstacles from the valve discharge.
5. Maximum screw lengths when installing the VFX are seen is the table below. If this screw length is exceeded, it may impede the rotation of the damper shaft.
   NOTE: Maximum screw length is based on screw distance of ½ in. (12.7 mm) from end of the VFX slip connection.

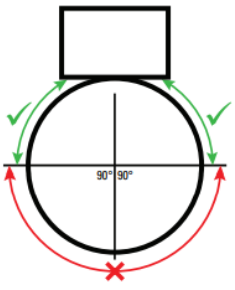
Valve Size	Maximum Screw Length
108	1/2 in. (12.7 mm)
110	3/8 in. (9.5 mm)
112	3/8 in. (9.5 mm)
114	3/8 in. (9.5 mm)

CAUTION

Do not screw into Phenolic or Kynar coated valve bodies. Screws will compromise its resistance to corrosion. **Warranty will be void if screws are used, excluding mounting slip connection multi-body valves.**

Enclosure Orientation

Venturi FX controls enclosures may be rotated 360 degrees around the ductwork.

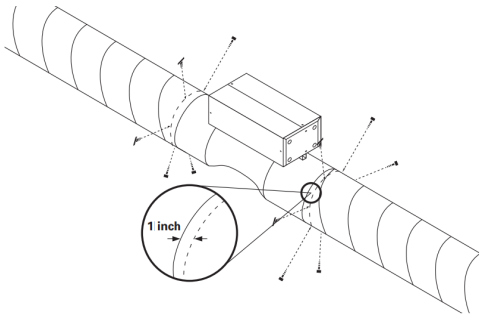


Enclosure Orientation

In fume hood applications, or in conditions that may cause condensation inside the ductwork, the enclosure should not be mounted within +/- 90 degrees from straight down.

Slip-Connection Venturi FX (VFX) Mounting Instructions

The instructions below are detailed for Aluminum VFXs only. Do not use screws for Phenolic coated valves.

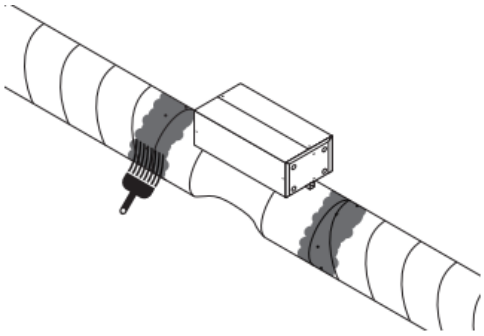


STEP 1

Mount the VFX by slipping both the inlet and the discharge one inch (1 in., 25.4 mm) into the appropriately sized ductwork.

STEP 2

Fasten the VFX to the ductwork using six (6) sheet metal screws per slip connection.



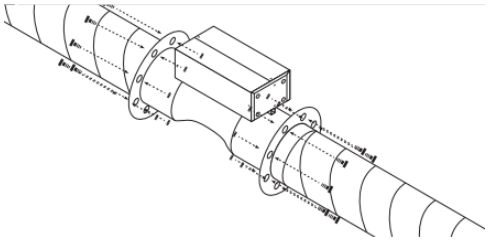
STEP 3

Seal the ductwork using duct sealer.

CAUTION

Instructions above are for slip valves without drawband clamps. For information on installing slip valves with drawband clamps, please see the Drawband Clamps

Flange-Connection Venturi FX (VFX) Mounting Instructions



STEP 1

Align the duct flange holes with the VFX flange holes and fasten using a bolt, lock washer and nut. Fasten every hole to reduce airflow leakage.

NOTE: It is recommended to use a duct sealant or gasket between the valve flange and the ductwork flange.

CAUTION

Instructions above are for flanged valves without companion flanges. For information on installing flanged valves with companion flanges, please see the Companion Flanges.

VALVE ACCESSORIES

Venturi FX (VFX) can function with a variety of different products to control air temperature, decrease noise and improve ease of installation.

Valve Accessories and Optional Products provided by Antec Controls include:

1. Hot Water Coils (VVHWC)
2. Electric Coils (VVEC)
3. Silencer (VVSIL)
4. Valve Companion Connections (VCT)
5. Valve Installation Tape (VIT)
6. Valve Actuator

CAUTION

Different types of valve accessories can be used with the VFX. When using accessories by Others, ensure the dimensions and installation are compatible with the Antec Controls VFX.

Hot Water Coils (VVHWC)

Hot Water Coils (VVHWC) are devices installed with VFX that control room environment by heating air moving through the valve. The VVHWC is designed to optimize heat transfer and access doors are available for upstream installation for convenient maintenance.

Overview

See the VVHWC Product Submittal on AntecControls.com for specifications and dimensions of the options below.

Options

Standard Capacity Hot Water Coil

Model: VVHWC-SC

Features:
- 22 Gauge zinc-coated steel casing
- One to four row construction
- Aluminum fins spaced at 10 fins per inch

High Capacity Hot Water Coil

Model: VVHWC-HC

Features:
- 22 Gauge zinc-coated steel casing
- One or two row construction
- Aluminum fins spaced at 12 fins per inch

Oversized Standard Capacity Hot Water Coil

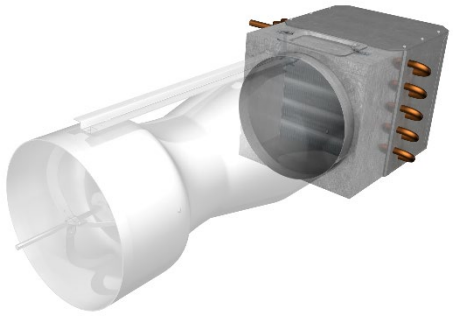
Model: VVHWC-OSC

Features:
- 22 Gauge zinc-coated steel casing
- One to four row construction
- Aluminum fins spaced at 10 fins per inch

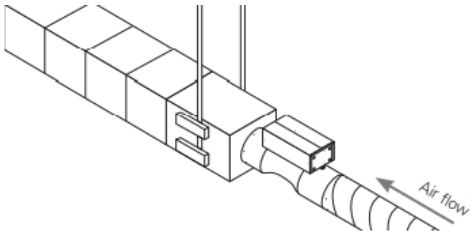
Oversized High Capacity Hot Water Coil

Model: VVHWC-OHC

Features:
- 22 Gauge zinc-coated steel casing
- One or two row construction
- Aluminum fins spaced at 12 fins per inch



Installation



STEP 1

Hot Water Coils are only available in supply orientation and should always be located down stream of the supply Venturi FX.

STEP 2

For single VVHWCs, position the bead connection so that it faces the airflow.

For multibody VVHWCs, position the slip connection so that it faces the airflow.

NOTE: Both single and multibody valves have slip and drive connections that will face down stream of the airflow.

STEP 3

Before installing the plumbing connections for the VVHWC, check the coil hand designation and ensure that it matches the system.

Generally, coils are plumbed with the supply connection located on the bottom of the leaving air-side and the return connection at the top of the entering air-side of the coil to provide counter flow heat exchange and positive coil drainage.

For one or two row water coils both parallel and counterflow orientations are acceptable, however, for three or four row water coils only counterflow orientation is acceptable.

If a universal coil is supplied, cap off the two unused connections.

The coils inlet for the heating medium is provided with copper connectors with the customers requested ends. If pipe fittings have been furnished, use a back-up wrench to install or uninstall the coil.

NOTE: The configuration of the coil connection varies with size, type and circuitry of coil.

STEP 4

Maintain proper clearance (minimum 1.5 in., 38.1 mm) between the coil and other structures such as the fan, filter racks, transition areas, etc.

STEP 5

Mount the coil firmly and level to ensure it's secure in its location and it's able to drain.

Use the support method prescribed for the duct work in the job specifications.

Coils with intermediate headers can be pitched 1/8 in. per foot (10.4 mm per m) of coil finned length towards the coils header/connection end.

The system must be adequately vented to operate effectively.

STEP 6

All field piping must be self-supporting. System piping should be flexible enough to allow for thermal expansion and contraction of the coil.

STEP 7

If freezing is likely, blow compressed air into the coil. This will ensure that it has been thoroughly drained.

Anti-freeze protection should be added if needed.

Electric Coils (VVEC)

Electric Coils (VVEC) are devices installed with Venturi FX that control room environment by heating the air moving through the valve. The VVEC operates using standard building electrical power and is designed to optimize heat transfer.

Overview

See the VVEC Product Submittal on AntecControls.com for specifications and dimensions of the options below.

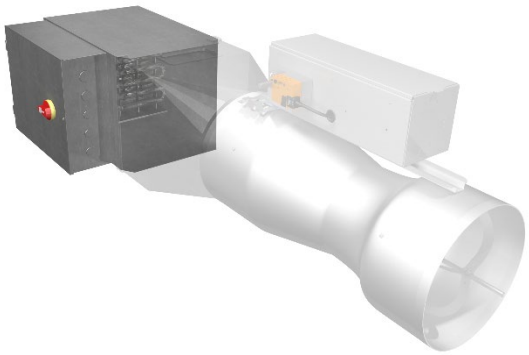
Options

Electric Coils

Model: VVEC

Features:

- Automatic reset thermal cut-out
- Manual reset thermal cut-out
- Air flow switch
- 20 Gauge galvanized steel, mechanically sealed, leak resistant construction
- SCR Controls – 2 to 10 VDC



CAUTION

When installing, do not handle the unit by the inlet velocity sensor. Ensure any packing material is removed from the inside of the unit.

Before Installation

1. Check for shipping damage to heater assembly including, but not limited to, ceramic coil clips and wire damage. If damage is found, do not power up heater, file claim with carrier and/or replace heater.
2. Check electrical specification label to ensure proper voltage/current ratings.
3. Before wiring, review and adhere to all local building codes, ordinances and the National Electric Code, pertaining to installation of the equipment.
4. Determine if the unit is field flippable between left and right handling.
5. If mercury contactors are included, ensure the arrow on the label is pointed upward.

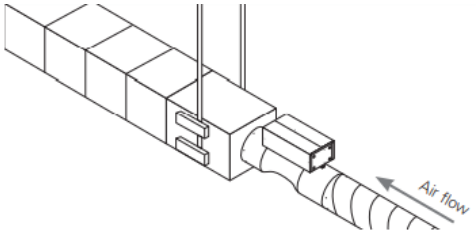
NOTES:

1. To maintain ETL certification, electric coils must only be installed as they have been marked on the installation label provided on the door of the electric coil control panel. (Installation Label PIC)
2. A minimum static pressure of 0.20 in.w.c (49.8 Pa) is required for stable operation with electric heater controls.

Electrical Installation

1. Review Electrical Wiring diagram included with heater (typically glued to inside of electrical enclosure door).
2. Ensure circuit powering the heater has proper capacity. Follow local building codes.
3. The electric duct heater must have an uninterrupted or unbroken electrical ground to minimize the chance of injury should an electrical fault occur. This may consist of an electrical wire or approved conduit when installed in accordance with existing electrical codes.
4. Review and inspect safety devices.
   a. Automatic Reset – trips if air surrounding the coils is too hot (~130F, 55C); will reset itself after cooling (~115F, 45C)
   b. Manual Reset – trips if air surrounding coils increases rapidly (~150F, 65C); to reset press the red tab towards the reset switch contacting the protruding metal tab on the relay
      i. If electric coil does not have a red tab, press down the protruding metal tab on the relay by hand
   c. Airflow Switch – trips ON when valve pressure differential is detected
      i. Ensure airflow switch probe points into the air stream
      ii. Note, the airflow switch must be mounted in a vertical plane; if this is not followed, the switch will always output a constant ON or OFF regardless of airflow

Mechanical Installation



STEP 1

Electric coils are only available in supply orientation and should always be located down stream of the supply Venturi FX (VFX).

STEP 2

Use the support method prescribed for the duct work in the job specifications.

STEP 3

Install the pressure sensor pick-up tube up-stream of the VFX valve.

CAUTION

Disconnect all incoming power before any electrical installation or service is performed on the unit(s).

Silencer (VVSIL)

The Silencer (VVSIL) is a highly engineered 14-inch (355.6 mm) silencer specifically designed for the full spectrum attenuation of sounds produced by Venturi FXs (VFX). The packless design provides minimal disturbance in the airflow resulting in low pressure drops across the silencer.

Overview

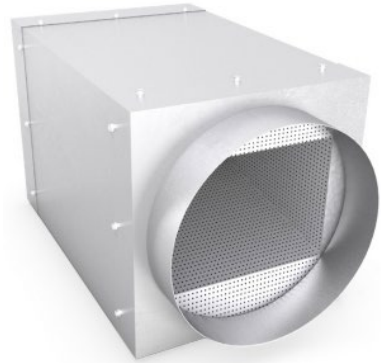
See the VVSIL Product Submittal on AntecControls.com for specifications and dimensions.

Options

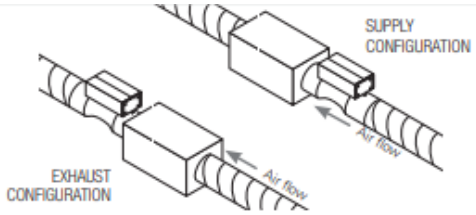
VV Silencer

Model: VVSIL

Features:
- Factory mounted transitions
- Slip connection
- Made to fit Single, Dual, Triple, or Quad valves
- 22ga Galvanized Steel Construction or 24ga 316 Stainless Steel Construction

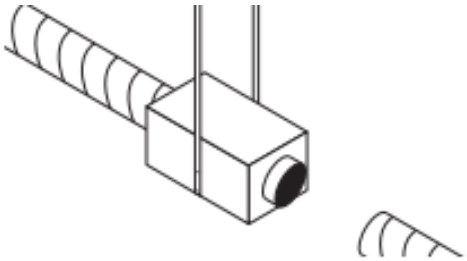


Installation



STEP 1

Position silencer before the inlet of the VFX when the VFX is operating as an exhaust valve. Position silencer on the discharge of the VFX when the VFX is operating as a supply valve.



STEP 2

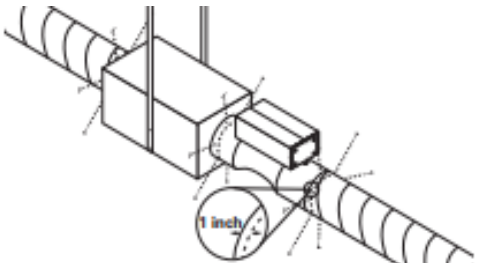
It is recommended that the silencer be installed prior to installing the VFX.

STEP 3

Use the support method prescribed for the duct work in the job specifications.

STEP 4

Mount the silencer to the duct. The slip connection should overlap a minimum of one inch (1") to ensure a proper fit.



STEP 5

Mount the VFX by slipping the appropriate end into the available duct work and the other end into the free slip connection of the silencer. Each slip connection should overlap a minimum of one inch (1 in., 25.4 mm) to ensure a proper fit.

STEP 6

Fasten all connections using six (6) sheet metal screws per slip connection.

STEP 7

Seal slip connections using duct sealer.

Valve Companion Connections (VCT)

Valve Companion Connections (VCT) come in two different types: drawband clamps and companion flanges.

Drawband clamps are designed as a connection method specifically for slip Venturi FXs. Drawband clamps are an alternative to directly fastening the valve to the ductwork. The drawband clamp provides uniform compression, connecting spiral or plain ductwork to a valve, ensuring that the valve is properly supported. Drawband clamps allow for quick installation or removal of the Venturi FX while minimizing damage from metal screws.

Companion flanges are available for single body valves. Companion flanges are to be slid onto duct with a 1.5-inch (38.1mm) overlap and mechanically fastened to the valve flange.

Overview

See the VCT Product Submittal on AntecControls.com for specifications and dimensions.

Options

Slip Connection Venturi FX with Drawband Clamps

Model: VCT - DBC

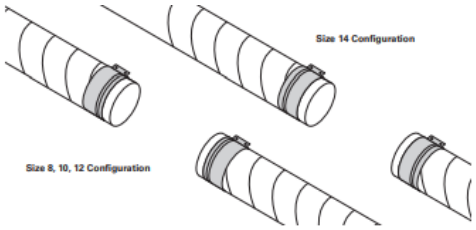
Features:
- Galvanized steel band and brackets
- UL 94 Elastomeric foam gasket
- Zinc plated flanged hex bolts with nylock nuts
- 25ga galvanized steel or 24ga 304 stainless steel construction

Flange Connection Venturi FX with Companion Flange

Model: VCT - CFL

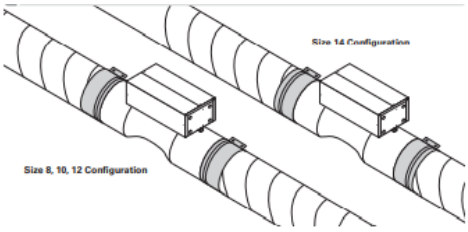
Features:
- Aluminum or 316 Stainless Steel (SS) construction

Slip-Connection Venturi FX (VFX) with Drawband Clamps Installation



STEP 1

Slide drawband clamps completely onto the inlet and discharge ductwork.



STEP 2

Mount the VFX by slipping both the inlet and the discharge one inch (1 in., 25.4 mm) into the appropriately sized ductwork.

STEP 3

Apply appropriate tape to seal valve to duct work if required. Two full wraps around the connection are recommended.

NOTES:

1. For non-corrosive applications duct tape can be used.
2. For corrosive applications VIT must be used.

STEP 4

Slide the drawband clamps onto the valve ensuring that at least one and a half inches (1.5 in., 38.1 mm) of the drawband clamps are in contact with the valve body.

STEP 5

Tighten both nuts to 15 in·lbs (1.69 Nm) to ensure that the drawband clamp is securely fastened to the valve body and duct work. Neither the valve nor the band clamp should shift after fastening.

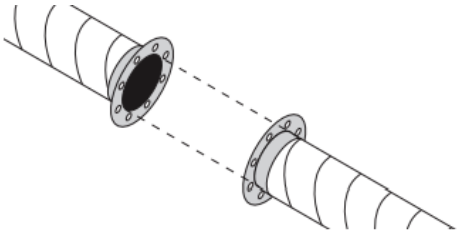
NOTE: Over-torqueing the drawband clamp may cause improper connection. Recommended torque is listed on the drawband clamp label (typically the first torque setting on an electrical drill).

CAUTION ▼

Ensure location of bead is correct. For size 8, 10 and 12 valves, the bead should be on the valve. For size 14 valves, the bead should be on the ductwork. Refer to torque rating on the drawband clamp label.

Do not screw through the drawband clamp into the VFX body.

Flange-Connection Venturi FX with Companion Flanges Installation



STEP 1

Slide companion flanges completely onto the inlet and discharge ductwork with the flanged end of the companion flanges toward the free space.

STEP 2

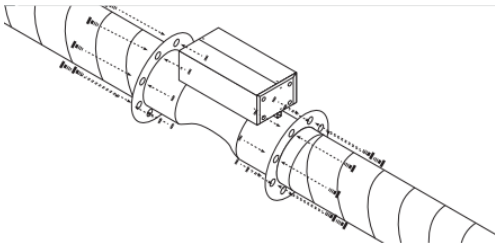
Align hole pattern to match opposing companion flange.

STEP 3a

For Aluminum Companion Flanges, fasten each companion flange with six (6) sheet metal screws. Apply duct sealant to seal the ductwork.

STEP 3a

For Stainless Steel Companion Flanges, continuously weld the companion flange to the duct to ensure zero leakage.



STEP 4

Align the duct flange holes with the venturi flange holes and fasten using a bolt, lock washer and nut. Fasten every hole to reduce airflow leakage.

NOTE: It is recommended to use a duct sealant or gasket between the valve flange and the ductwork flange.

Valve Installation Tape (VIT)

Valve Installation Tape (VIT) is used during installation of the Venturi FX in corrosive applications and is wrapped around the valve and ductwork connection to ensure an airtight seal.

Overview

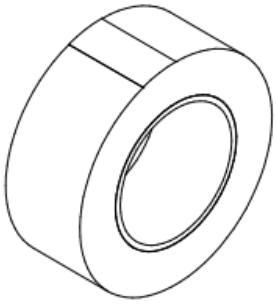
See the VIT Product Submittal on AntecControls.com for specifications.

Options

Valve Installation Tape

Model: VIT

Features:
- PTFE adhesive tape
- 108 ft. (32.9 m) in length
- 2.0 in. (50.8 mm) in width



Valve Actuator

Valve actuators are wired into the valve controller and are attached to the linkage bars of the valve. The actuator controls the position of the blade damper inside of the Venturi FX which controls the amount of air that flows through the valve. Valve actuators come in two main options: Standard Speed and High Speed.

Overview

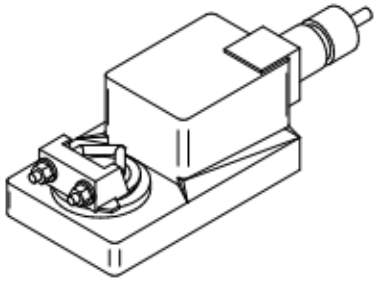
See the Valve Actuator Product Submittal on AntecControls.com for list of all available models with their associated specifications and dimensions.

Options

Standard Speed Actuator

Model: SSA

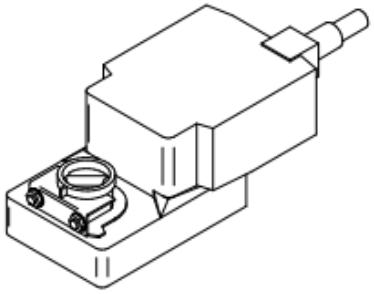
Features:
- Running time ranging between 75 to 95 seconds
- External push button manual override
- Reversible direction of rotation with built-in switch
- 2-10 VDC or 2P



High Speed Actuator

Model: HSA

Features:
- Running time ranging between 2.5 to 4 seconds
- External push button manual override
- Reversible direction of rotation with built-in switch
- 2-10 VDC or 2P



BALANCING

The balancing process is required in the field to ensure that the valves are providing the necessary flow into and out of the pressure-controlled space. The process involves measuring the airflow through the valve in the field, using third party calibrated equipment and comparing it to the calibrated position feedback from the Venturi FX (VFX).

Variable Volume VFX

Adjustments to the flow reading can be made by adjusting the Kfactor.

NOTE: When using PACE or CAVA controllers from Antec Controls, please refer to the appropriate manual for instructions on adjusting the settings described below.

Kfactor

The Kfactor is a multiplier that is applied to the controller's differential pressure reading. Its default value is dependent on the valve size being used.

Increasing the Kfactor from its default value will increase the flow reading. Decreasing the Kfactor from its default value will decrease the flow reading. To determine the Kfactor required, simply use the following formula.

$$Kfactor = \frac{Balancer's\ Airflow\ Measurement}{Flow\ Reading}$$

Recommended Balancing Procedure

Below are the recommended steps to take when balancing VFX.

1. Depending on the balancer's process (which varies based on local requirements, balancer's test method, etc…), one of the following will be required:
   a. One airflow will be measured. Typically, the Max Scheduled airflow for the valve.
   b. Two airflows will be measured. Typically, the Max Scheduled and Min Scheduled airflow for the valve.
2. Calculate a Kfactor adjustment for any readings taken.
3. If two airflows are measured and do not result in the same Kfactor adjustment, apply Kfactor that applies best to both readings.

TROUBLESHOOTING

Venturi FX Troubleshooting

Symptoms	Possible Cause
Noise	Foreign material in valve Vibrating duct work
Actuator Does Not Operate	Confirm that power is being delivered to the unit Verify control signal Verify that the disconnect switch (where available) is not open Verify that the fuse (where available) is not blown Verify that actuator control signal is connected to the correct analog output as per the submittals
Actual airflow does not match airflow feedback	Confirm that there is no blockage inside the duct or valve Confirm that there is no damage to any tamper proof paint Verify that there are no ductwork leaks before or after the valve Verify that the valve is installed in the correct orientation Verify the tubing has not been kinked, damaged, and that the red tube is connected to the high port and the green tubing is connected to the low port

Electric Coil Troubleshooting

Symptoms	Possible Cause	Potential Solution
No Heat	Disconnection Switch	Check to see if the door interlock is active
	Fuses	Use a Digital Multimeter (DMM) to measure resistance (R) of each fuse, should read a negligible amount. If R is in MΩ, fuse most likely is blown, order a new fuse from replacement list
	Wiring	De-energize panel and trace wires with wiring diagram to check for loose or broken/burned wires
	Transformers	The transformer provides 24 volts to secondary; with primary voltage active, use a digital multi-meter to measure the secondary: 24V ± 2V, if not in this range, replace transformer
	Automatic Temperature Limit-Switch	Increase airflow to allow coils to cool faster, switch will automatically reset
	Manual Temperature Limit-Switch	Use the metal tab (if applicable) to press towards the switch to reset it, the airflow may have to be increased
	Airflow Switch	Consult “Airflow Switch” Troubleshooting section
Heat Cycles On/Off	Automatic Temperature Limit-Switch	Increase airflow to allow coils to cool faster, switch will automatically reset, check to see if airflow to coils is unobstructed
	Manual Temperature Limit-Switch	Use the metal reset tab (if applicable), press it toward the switch to contact the switch and reset it, airflow should be increased, check to see if airflow to coils is free
	Airflow Switch	Consult “Airflow Switch” Troubleshooting section

Replacement Parts

Replacement parts are available. Please contact your local Antec Controls Representative.

Technical Support

If technical support is required, please contact us:
By Email: Applications@AntecControls.com
By Phone: 866.884.3524
Hours of Operation: Monday – Friday, 8:00 AM to 4:30 PM CT

NOTE: If you will need support after hours, please contact us 48 hours in advance.

Product Improvement is a continuing endeavour at Antec Controls by Price. Therefore, specifications are subject to change without notice.

Consult your Sales Representative for current specifications or more detailed information. Not all products may be available in all geographic areas. All goods described in this document are warranted as described in the Limited Warranty.

The complete product catalog can be viewed online at **AntecControls**.com