

MANUAL – INSTALLATION

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# Single Duct Variable Volume Control Assemblies - Direct Digital Controls

SDV Series

v200 – Issue Date: 10/04/22

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**PRICE**<sup>®</sup>

# SINGLE DUCT VARIABLE VOLUME CONTROL ASSEMBLIES

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# SINGLE DUCT VARIABLE VOLUME CONTROL ASSEMBLIES

## PRODUCT OVERVIEW

### General

The SDV assembly is designed to accept Direct Digital Controls (DDC) for VAV pressure independent operation.

The terminal unit controls are supplied by the controls contractor and either factory or field mounted and wired.

For information concerning controls, components, sequence of operation, etc., please refer to the documentation provided by the controls contractor.

### Receiving Inspection

After unpacking the assembly, check it for shipping damage. If any shipping damage is found, report it immediately to the delivering carrier. During unpacking and installation do not handle by the inlet velocity sensor, damper shaft, or tubing. Damage may result.

### Wiring

If controls have been factory mounted, a wiring diagram will be included with the unit indicating the factory mounted components. For field wiring of room sensors and other accessories, refer to the controls contractor's documentation. If the controls have been field mounted, refer to the controls contractor's documentation for all wiring information.

Damper rotation is always clockwise to the open position. An identification mark on the end of the shaft indicates the damper position.

The factory supplied sensing lines are color coded. Red indicates the total pressure or "HI" line which should be located on the upstream side. Green indicates the static pressure or "LO" line which should be located on the downstream side.

An optional protective enclosure may be provided to house the terminal unit control components. The enclosure cover is removable with two sheet metal screws.

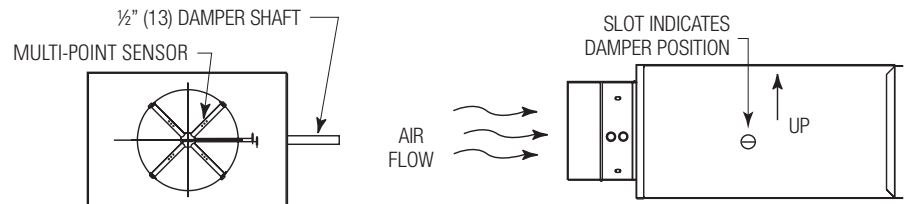
The velocity sensor is normally supplied as standard with the terminal unit. However, in some cases a flow sensing device supplied by the controls contractor may be factory or field mounted. Refer to the submittal drawing for illustration.

The air volume ranges listed are recommended for optimum performance. A minimum value of zero is also acceptable if no heating coils are attached.

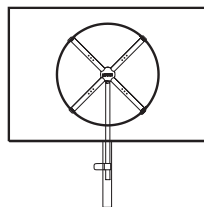
Selection of air flow limits below the listed values is not recommended. Stability and accuracy may not be acceptable at lower than recommended air flow limits. The actual performance will vary depending on the terminal unit controls supplied.

SDV ▼

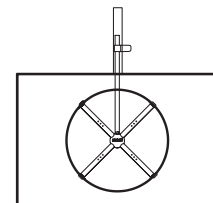
**FIGURE 1: SIDE MOUNTED CONTROLS - STANDARD CONSTRUCTION**



**FIGURE 2: BOTTOM MOUNTED CONTROLS - CB**



**FIGURE 3: TOP MOUNTED CONTROLS - CT**



# SINGLE DUCT VARIABLE VOLUME CONTROL ASSEMBLIES

## INSTALLATION INSTRUCTIONS

### Installing the SDV Terminal Unit

The basic SDV is light enough that it can be supported by the ductwork in which it is installed. Where accessory modules, such as coils, attenuators or multiple outlets are included, the assembly should be supported directly. Use the support method prescribed for the rectangular duct in the job specifications.

**NOTE:** For optimum performance there should be a minimum of three duct diameters of straight inlet duct, **same size as the inlet**, between the inlet and any transition, take off or fitting.

The assembly should be mounted right side up. It should be level within  $\pm 10$  degrees of horizontal, both parallel to the air flow and at right angles to the air flow. The side of the assembly is labelled with an arrow indicating UP. Do not mount the control side of the assembly tight to a wall, pipe or other obstruction. Allow sufficient room for access to the controls.

**NOTE:** If CB (controls bottom mounted) option is chosen, then the housing is to be installed as noted above with exception of the damper shaft being oriented to the bottom of the housing. If the CT (controls top mounted) option is chosen, then the housing is to be installed as noted above with the exception of the damper shaft being oriented to the top of the housing.

To prevent excess air leakage, all joints should be sealed with an approved duct sealer. This would apply to all accessory module connections as well as the basic assembly.

### Air Volume Ranges

| Unit Size | CFM<br>Min - Max | L/S<br>Min - Max |
|-----------|------------------|------------------|
| 4         | 45-400           | 21-189           |
| 5         | 60-500           | 28-236           |
| 6         | 65-550           | 31-260           |
| 7         | 95-800           | 45-378           |
| 8         | 125-1100         | 59-519           |
| 9         | 160-1400         | 76-661           |
| 10        | 210-1800         | 99-850           |
| 12        | 300-2600         | 142-1227         |
| 14        | 430-3700         | 203-1746         |
| 16        | 575-5000         | 271-2360         |
| 24 x 16   | 1185-8400        | 559-3964         |

**NOTE:** Factory calibrated controls must be selected within the above flow range limits. A minimum value of zero is also available. When an auxiliary flow setting is specified, the value must be greater than the minimum setting and within the range limits.

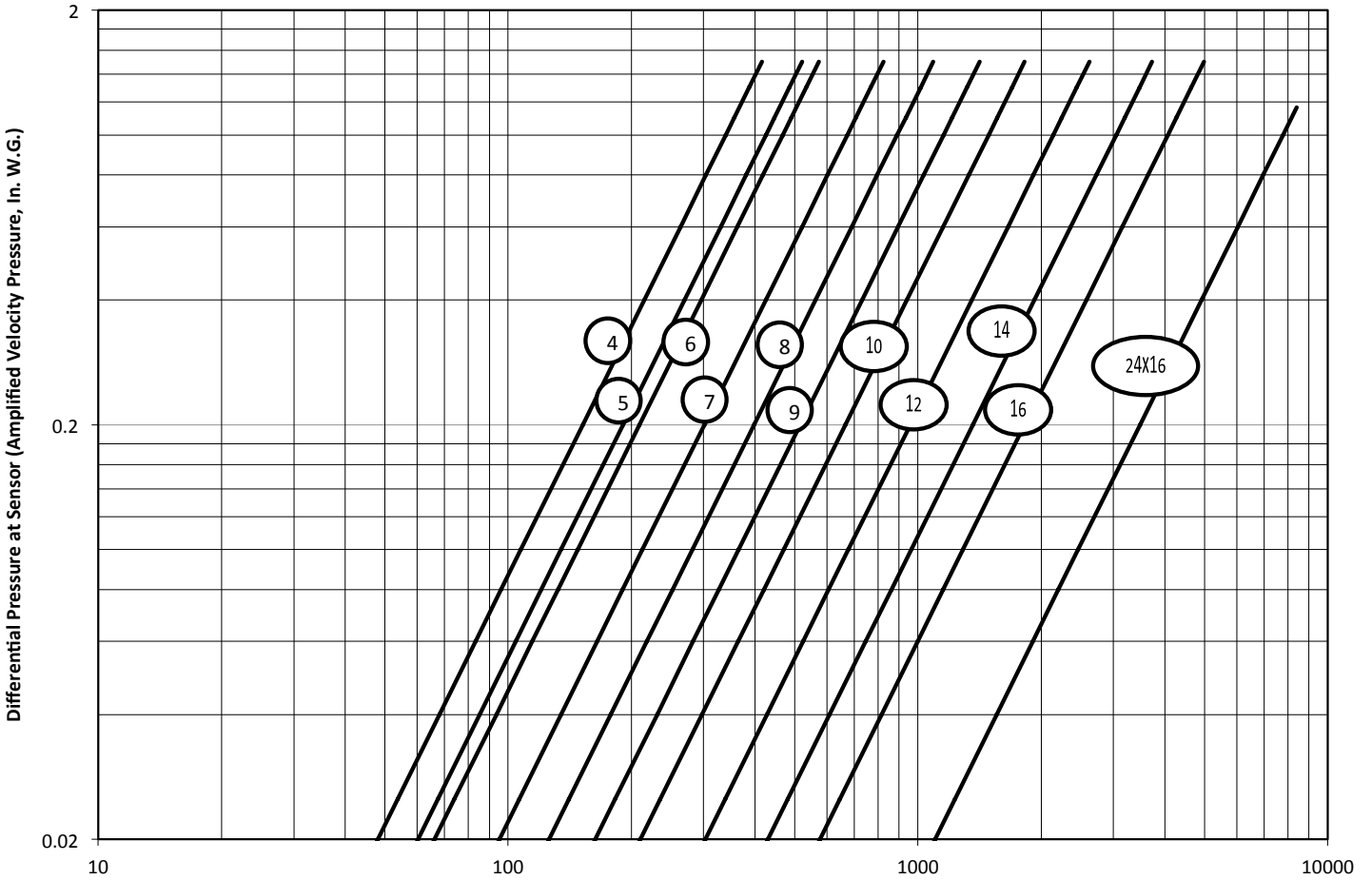
On controls mounted by Price but supplied by others, the air volume ranges are guidelines only.

Selection of air flow limits below the listed values is not recommended. Stability and accuracy may not be acceptable at lower than recommended air flow limits. The actual performance will vary depending on the terminal unit controls supplied.

# SINGLE DUCT VARIABLE VOLUME CONTROL ASSEMBLIES

## INSTALLATION INSTRUCTIONS

### SP300 Calibration Curves



**Air Flow: CFM at Standard Density**

#### Calibration Equation

$$VP = \left(\frac{Q}{K}\right)^2$$

**VP** - differential pressure at sensor, inches w.g.

**Q** - air flow rate, cfm at standard density.

**K** - calibration constant

| Unit Size | K    |
|-----------|------|
| 4         | 340  |
| 5         | 426  |
| 6         | 468  |
| 7         | 673  |
| 8         | 890  |
| 9         | 1155 |
| 10        | 1487 |
| 12        | 2141 |
| 14        | 3045 |
| 16        | 4074 |
| 24 x 16   | 7785 |

1. Setting flow limits for a differential pressure of less than 0.02 inches is NOT recommended. Stability and accuracy of flow limits may not be acceptable due to low velocity pressure signal. Performance will vary depending on the terminal unit controls provided.
2. For field calibration of air flow limits refer to the control contractor's documentation.

# SINGLE DUCT VARIABLE VOLUME CONTROL ASSEMBLIES

## MAINTENANCE

### SP300 Removable Sensor Maintenance Instructions

1. Detach SP300 high and low signal tubing between sensor and controls at the tee connections as shown in Figure 1.
2. Undo latches holding sensor in unit and remove sensor as shown in Figure 2.
3. Clean sensor by blowing compressed air through both HIGH and LOW signal tubing.
4. Wipe off any foreign particles with a clean rag.
5. Reinstall sensor into unit ensuring that it is in the correct orientation and fasten latches to securely hold sensor in unit.

FIGURE 1 ▼

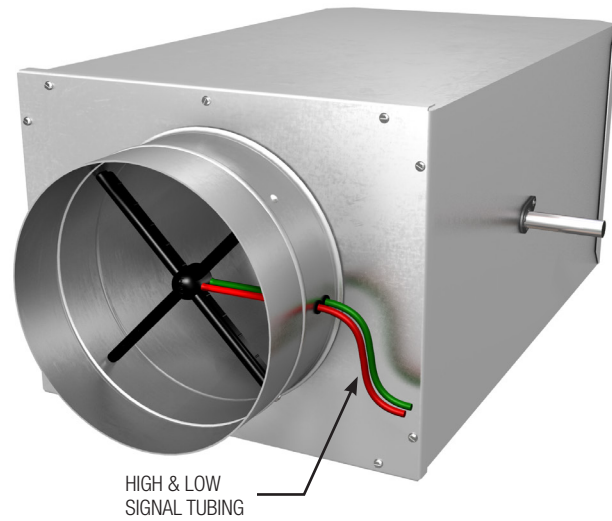
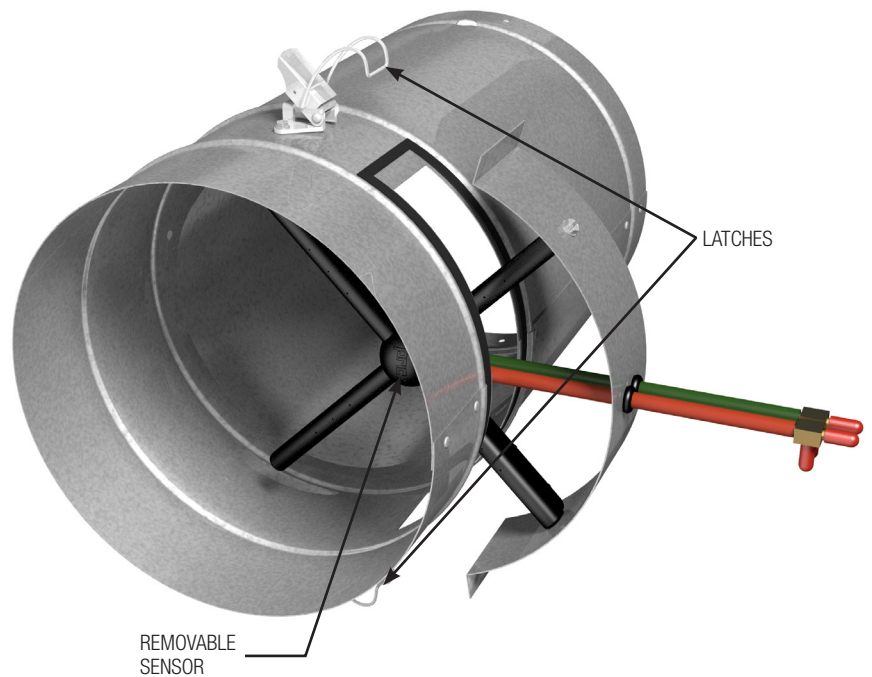


FIGURE 2 ▼



# SINGLE DUCT VARIABLE VOLUME CONTROL ASSEMBLIES

## MAINTENANCE

### Replacement Parts

| Component                     | Part#      | Description  |
|-------------------------------|------------|--|
| <b>Removable SP300 Sensor</b> | 041688-001 | Sensor SP300, Sizes 4,5 & 6                        |
|                               | 041688-002 | Sensor SP300, Size 7                               |
|                               | 041688-003 | Sensor SP300, Size 8, Size 24x16 (qty. 4 required) |
|                               | 041688-004 | Sensor SP300, Size 9                               |
|                               | 041688-005 | Sensor SP300, Size 10                              |
|                               | 041688-006 | Sensor SP300, Size 12                              |
|                               | 041688-007 | Sensor SP300, Size 14                              |
|                               | 041688-008 | Sensor SP300, Size 16                              |
|                               | 247072-001 | Duct Cover for Removable Sensor Sizes 4,5 & 6      |
|                               | 247072-002 | Duct Cover for Removable Sensor Size 7             |
|                               | 247072-003 | Duct Cover for Removable Sensor Size 8             |
|                               | 247072-004 | Duct Cover for Removable Sensor Size 9             |
|                               | 247072-005 | Duct Cover for Removable Sensor Size 10            |
|                               | 247072-006 | Duct Cover for Removable Sensor Size 12            |
|                               | 247072-007 | Duct Cover for Removable Sensor Size 14            |
|                               | 247072-008 | Duct Cover for Removable Sensor Size 16            |
|                               | 203132-999 | .250" Green Tubing, Low Signal                     |
|                               | 203136-999 | .250" Red Tubing, High Signal                      |
|                               | 041510-001 | Rubber Grommet RB-215                              |
|                               | 041683-001 | Tee, Brass, .250" x .250" x .250"                  |

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