**Price Radial Vane Diffusers**

***Division 23 – Heating, Ventilating, and Air Conditioning***

***Section 23 37 13 – Diffusers, Registers, and Grilles***

The following specification is for a defined application. Price would be pleased to assist in developing a specification for your specific need.

**PART 1 – GENERAL**

**1.01 Section includes**:

1. Radial Vane Diffusers.

**1.02 Related Requirements**

1. Section 01 30 00 – Administrative Requirements
2. Section 01 40 00 – Quality Requirements
3. Section 01 60 00 – Product Requirements
4. Section 01 74 19 – Construction/Demolition Waste Management and Disposal
5. Section 01 78 00 – Closeout Submittals
6. Section 01 79 00 – Demonstration and Training
7. Section 23 31 00 – HVAC Ducts and Casings
8. Section 23 32 00 – Air Plenums and Chases

**1.03 Reference Standards**

A. ASHRAE Standard 55 – Thermal Environmental Conditions for Human Occupancy; 2013

B. ASHRAE Standard 70 – Method of Testing the Performance of Air Outlets and Air Inlets; 2006

C. ASHRAE Standard 170 – Ventilation of Health Care Facilities; 2013

D. ASTM Standard E84 – Standard Test Method for Surface Burning Characteristics of Building Materials; 2016

E. ASTM D1308 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes; 2013

F. ASTM D4752 – Standard Practice for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub; 2015

G. SMACNA (SRM) – Seismic Restraint Manual Guidelines for Mechanical Systems; Sheet Metal and Air Conditioning Contractors’ National Association; 2008

H. UL Standard 723 – Standard for Test for Surface Burning Characteristics of Building Materials; 2008

**1.04 Administrative Requirements**

A. Pre-installation Meeting: Conduct a pre-installation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

B. Sequencing: Ensure that utility connections are achieved in an orderly and efficient manner.

**1.05 Submittals**

A. See Section 01 30 00 – Administrative Requirements for submittal procedures.

B. Product Data: Provide data indicating configuration, general assembly, and materials used in fabrication. Include catalog performance ratings that indicate air volume flow, initial pressure drop, sound performance, and throw, as tested in accordance with ASHRAE Standard 70-2006.

C. Shop Drawings: Indicate configuration, general assembly, and materials used in fabrication.

D. Certificates: Certify that air capacities, pressure drops, and selection procedures meet or exceed specified requirements.

E. Manufacturer's Installation Instructions: Indicate support and hanging details, installation instructions, recommendations, and service clearances required.

F. Project Record Documents: Record actual locations of units and control components.

G. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts lists.

H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements for additional provisions.

2. Extra Filters: Furnish one spare filter as required per component originally supplied with filters.

**1.06 Quality Assurance**

1. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum ten years of documented experience.
2. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

**1.07 Warranty**

1. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
2. Price Industries warrants that, at the time of shipment, the RVDC will be free from defects arising from manufacturing, workmanship, or a failure to adhere to Price Industries’ published catalog specifications and specified material. If Price Industries is notified in writing of any such defect within (1) year from the date of shipment, Price Industries will, at its sole option, repair, replace, or refund the purchase price paid by the Representative for the Product. Such remedies are the exclusive remedies available under this warranty.

**PART 2 – PRODUCTS**

**2.01** **Radial Vane Diffusers**

1. Basis of Design: Price Industries, Inc.
2. Radial Adjustable Vane Diffuser: Models RAVD, ARAVD
3. Radial Adjustable Vane Diffuser with Perforated Face: Models RAVDP, ARAVDP
4. Radial Vane Diffuser with High Efficiency Filter: Models RVDC
5. General:
	1. The radial vane diffusers shall provide a low velocity, non-aspirating, radial air pattern for minimal entrainment of room air.
6. Performance:
	1. The manufacturer of the radial vane diffuser shall provide performance data for air volume, initial pressure drop, sound levels, and throw. All data must be tested in accordance with the most recent publication of ASHRAE Standard 70.
7. Radial Adjustable Vane Diffuser: [RAVD, ARAVD]:
	1. Supply and install Price [RAVD, ARAVD] radial vane diffusers of the sizes, configurations, and capacities indicated on the drawings and/or diffuser schedule.
	2. Each diffuser shall supply a radial, non-aspirating, low velocity air pattern (**select one**):
		1. One-way pattern, adjustable from horizontal to half radial pattern.
		2. Two-way pattern
		3. Three-way pattern
	3. Construction:
		1. Diffuser frame and control blades shall be aluminum.
		2. Plenum and equalization baffle material shall be (**select one**):
			1. Steel [RAVD]
			2. Aluminum [ARAVD]
		3. The diffuser shall consist of air deflector vanes below an equalization baffle.
		4. The adjustable vanes shall not protrude more than 0.6 inches below the ceiling system.
		5. The diffuser shall open easily with quarter-turn fasteners and safety cable for damper adjustment and cleaning.
		6. The plenum shall be fully accessible for cleaning with no internal baffles or obstructions.
		7. Mounting frames shall be provided for surface mounting and T-bar installation.
	4. Finish (**select one**):
		1. The diffuser shall have a white B12 baked-on powder coat finish.
			1. The paint finish must demonstrate no degradation when tested in accordance with ASTM D1308 (covered and spot immersion) and ASTM D4752 (MEK double rub) paint durability tests.
			2. The paint film thickness shall be a minimum of 2.0 mils.
			3. The finish shall have a hardness of 2H.
			4. The finish shall withstand a minimum salt spray exposure of 1000 hours.
			5. The finish shall have an impact resistance of 80 in-lb.
		2. The diffuser shall have a B25 finish to match a customer supplied sample.
	5. External Insulation (**optional**):
		1. The diffuser plenum shall be externally insulated with ½” aluminum foil-backed fiberglass insulation.
		2. Insulation shall not contain formaldehyde.
		3. Insulation and adhesive surface burning characteristics shall have a maximum flame/smoke spread of 25/50.
		4. Insulation shall meet the requirements of ASTM E84 and UL 723.
	6. Inlet damper (**optional**):
		1. The butterfly style damper shall be steel construction with standard white B11 baked-on powder coat finish.
8. Radial Adjustable Vane Diffuser with perforated face: [RAVDP, ARAVDP]:
	1. Supply and install Price [RAVDP, ARAVDP] radial vane diffusers of the sizes, configurations, and capacities indicated on the drawings and/or diffuser schedule.
	2. Each diffuser shall supply a radial, non-aspirating, low velocity air pattern.
	3. Construction:
		1. Diffuser frame, control blades, and perforated face shall be aluminum.
		2. Plenum and equalization baffle material shall be (**select one**):
			1. Steel [RAVDP]
			2. Aluminum [ARAVDP]
		3. The diffuser shall consist of a perforated face, and air deflector vanes below an equalization baffle.
		4. The adjustable vanes shall not protrude more than 0.6 inches below the ceiling system.
		5. The diffuser shall open easily with quarter-turn fasteners and safety cable for damper adjustment and cleaning.
		6. The plenum shall be fully accessible for cleaning with no internal baffles or obstructions.
		7. Mounting frames shall be provided for surface mounting and T-bar installation.
	4. Finish (**select one**):
		1. The diffuser shall have a white B12 baked-on powder coat finish.
			1. The paint finish must demonstrate no degradation when tested in accordance with ASTM D1308 (covered and spot immersion) and ASTM D4752 (MEK double rub) paint durability tests.
			2. The paint film thickness shall be a minimum of 2.0 mils.
			3. The finish shall have a hardness of 2H.
			4. The finish shall withstand a minimum salt spray exposure of 1000 hours.
			5. The finish shall have an impact resistance of 80 in-lb.
		2. The diffuser shall have a B25 finish to match a customer supplied sample.
	5. External Insulation (**optional**):
		1. The diffuser plenum shall be externally insulated with ½” aluminum foil-backed fiberglass insulation.
		2. Insulation shall not contain formaldehyde.
		3. Insulation and adhesive surface burning characteristics shall have a maximum flame/smoke spread of 25/50.
		4. Insulation shall meet the requirements of ASTM E84 and UL 723.
	6. Inlet damper (**optional**):
		1. The butterfly style damper shall be steel construction with standard white B11 baked-on powder coat finish.
9. Radial Vane Diffuser with high efficiency filter: [RVDC]:
	1. Supply and install Price [RVDC] radial vane diffusers with high efficiency filters of the sizes, configurations, and capacities indicated on the drawings and/or diffuser schedule.
	2. Each diffuser shall supply a high induction vortex air pattern projecting horizontally from the diffuser.
	3. Construction:
		1. The diffuser shall consist of a ceiling mounting frame, face panel, airtight filter housing, a replaceable high efficiency filter, and an optional remote operated volume control damper.
		2. The diffuser mounting frame, radial vane face, and plenum shall be aluminum.
		3. The border shall have an integral knife edge flange with penetrates a silicone gel in the filter frame to provide a leak-proof seal.
		4. The face panel shall incorporate a radial patter of air slots and fixed horizontal deflectors.
		5. The face shall be easily removed with 90° quick-release fasteners for easy access for cleaning or filter replacement.
		6. The face assembly shall be connected to the diffuser plenum with safety chains.
		7. Mounting frames shall be provided for surface mounting and T-bar installation.
	4. Filter:
		1. The filter housing shall be 0.040 inch thick aluminum construction with an airtight seal at all joints and corners.
		2. The inlet collar shall be sealed to the top of the filter housing.
		3. The filter shall be a two inch thick pleated microglass element in a three inch deep anodized aluminum frame.
		4. The filter shall have an integral cavity filled with gel which shall provide a leak tight seal between the filter frame and the border.
		5. The filter shall be supplied with a static pressure port to allow measurement of the pressure drop across the filter.
		6. The unit shall be factory sealed and tested to assure leakage is consistent with the filter.
		7. Filters shall be packaged separately from the filter housing in a factory carton until site conditions are appropriate for installation (by others) of the filter in the housing.
		8. The filter shall be held in place by four cam-type retainers which can be turned 90° by hand, providing an easy means of removing and replacing filters without disturbing the filter housing in the ceiling or the duct connection.
		9. The filter shall be individually tested for particle penetration and initial air flow resistance, and shall be of type (**select one**):
			1. High Efficiency (HE) filter shall provide 95% efficiency on 0.30 μm particulate.
			2. High Efficiency Particulate Air (HEPA) filter shall provide 99.99% efficiency on 0.30 μm particulate.
			3. Ultra-Low Penetration Air (ULPA) filter shall provide 99.9995% efficiency on 0.12 μm particulate.
	5. Finish (**select one**):
		1. The diffuser shall have a white B12 baked-on powder coat finish.
			1. The paint finish must demonstrate no degradation when tested in accordance with ASTM D1308 (covered and spot immersion) and ASTM D4752 (MEK double rub) paint durability tests.
			2. The paint film thickness shall be a minimum of 2.0 mils.
			3. The finish shall have a hardness of 2H.
			4. The finish shall withstand a minimum salt spray exposure of 1000 hours.
			5. The finish shall have an impact resistance of 80 in-lb.
		2. The diffuser shall have a B25 finish to match a customer supplied sample.
	6. External Insulation (**optional**):
		1. The diffuser plenum shall be externally insulated with ½” aluminum foil-backed fiberglass insulation.
		2. Insulation shall not contain formaldehyde.
		3. Insulation and adhesive surface burning characteristics shall have a maximum flame/smoke spread of 25/50.
		4. Insulation shall meet the requirements of ASTM E84 and UL 723.
	7. Inlet damper (**optional**):
		1. The butterfly style damper shall be steel construction with standard white B11 baked-on powder coat finish.

**PART 3 – EXECUTION**

**3.01 Examination**

 A. Verify that conditions are suitable for installation.

 B. Verify that field measurements are as shown on the drawings.

**3.02 Installation**

1. Install in accordance with manufacturer’s instructions.
2. See drawings for the size(s) and locations of radial vane diffuser inlets.
3. Support components individually from structure in accordance with SMACNA (SRM).
4. Do not support components from ductwork.
5. Connect to ductwork in accordance with Section 203 31 00.

**3.03 Adjusting**

1. Ensure supply air to the radial vane diffusers by performing pitot traverse of the main supply duct.
2. Balance outlets according to manufacturer’s recommendations.
3. Verify that field measurements are as shown on the drawings.

**3.04 Field Quality Control**

1. See Section 01 40 00 – Quality Requirements for additional requirements.

**3.05 Cleaning**

1. See Section 01 74 19 – Construction Waste Management and Disposal for additional requirements.

**3.06 Closeout Activities**

1. See Section 01 78 00 – Closeout Submittals for closeout documentation requirements.
2. See Section 01 79 00 – Demonstration and Training for additional requirements.