

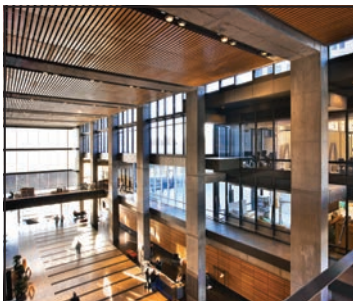


In-Wall Diffusers

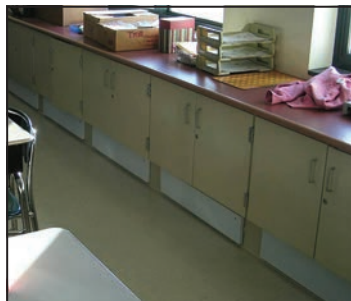
Price In-Wall Displacement Diffusers can be used in a wide variety of applications, from offices and schools, to architecturally driven projects such as theaters and lobbies, and even health care facilities. Like all displacement diffusers, the Price In-Wall Series provides low velocity supply air with high thermal comfort and minimal noise.

In-Wall Diffuser Family:

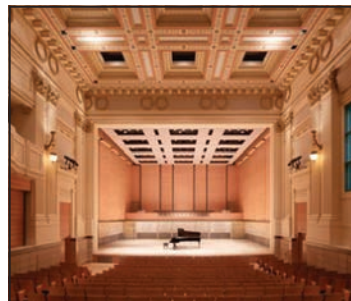
- DF1R
- DF1W
- Puraflo



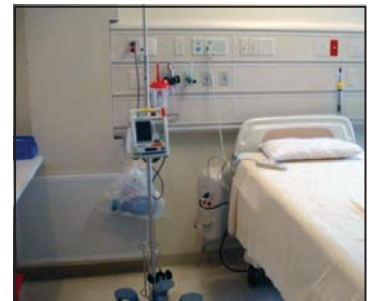
Provides architectural appeal



Flush mounting maximizes available floor area



Optional colors and finishes available



Puraflo series for health care

■ Displacement Ventilation In-Wall Diffusers

price®

Product Overview

Applications

The Price In-Wall Displacement Diffusers are designed to be integrated into the wall space and to provide a low velocity horizontal air pattern into a room. Along with the traditional benefits of displacement ventilation, these diffusers have the added feature of increasing the available space in the occupied zone.

The in-wall displacement diffusers can be installed individually or together in multiple sections to achieve both air distribution function and architectural form. Since each project presents its own set of architectural and engineering limitations and requirements, the Price In-Wall Displacement Diffusers can be manufactured in custom sizes and colors.

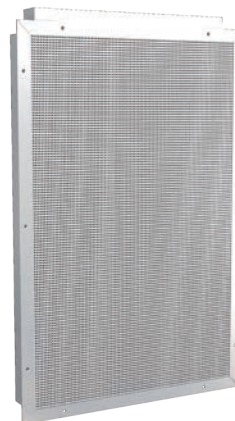
Models and Function

The **DF1W** features optional heavy steel and stainless steel construction. The perforated face and internal baffle ensure equalized air flow across the face of the diffuser, providing low velocity air into the room. These diffusers mount flush to the wall surface and allow for more floor space, making them ideal for high occupancy areas such as classrooms, office spaces, hotels, and convention centers. Since the DF1W is typically ducted from the top, the diffusers can also be sized to fit within nominal stud spacings to simplify building design.

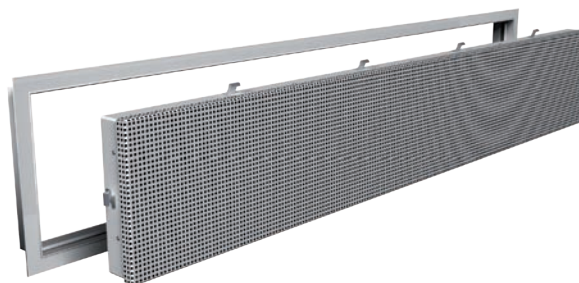
The **Puraflo** diffuser, while based on DF1W, has been designed uniquely for health care applications. It can be applied in waiting rooms, nursing stations, exam rooms, patient rooms, and hallways. As high air quality and cleanliness are necessities in health care facilities, the Puraflo features all the benefits of the DF1W with a standard removable face for easy cleaning and sterilization. The Puraflo also offers an optional stainless steel face and frame, corrosion resistance, and tamper-proof fasteners for security needs.

The **DF1R** is a unique diffuser designed to deliver air into spaces from relatively hidden locations. Having no visible fasteners, the DF1R can be discreetly installed in stair risers, in a wall at floor level or in a toe kick, making it ideal for classrooms, theaters, and lobbies. The DF1R has an easy press-in face that is securely retained with mounting clips in a contractor-supplied plenum. A mud frame is available for drywall applications that require a clean appearance.

DF1W / Puraflo



DF1R



DISPLACEMENT VENTILATION

In-Wall Displacement Diffusers Puraflo Series

price

Product Information

Price Puraflo displacement diffusers are in-wall diffusers designed specifically for use in health care facilities. The diffuser discharges cool supply air evenly across the perforated face at low velocity with minimal turbulence or induction of room air. The air flows down to the floor level and travels across the floor where it is carried up by thermal plumes, delivering air directly to the breathing zone.

The Puraflo displacement diffuser is designed to be integrated in the wall or casework, increasing floor area in the occupied zone and seamlessly meshing into the space for architectural appeal.

To facilitate cleaning, the Puraflo is designed with a standard removable face. Optional features include tamper-proof fasteners and a stainless steel face. The superior air quality, thermal comfort and low noise levels of the Puraflo make it an excellent choice for patient rooms, hallways, waiting rooms, exam rooms, nursing stations, and any health care application where air quality demands are high.

Features

- Standard removable face.
- Flush, in-wall integration.

Construction/Finish: Puraflo

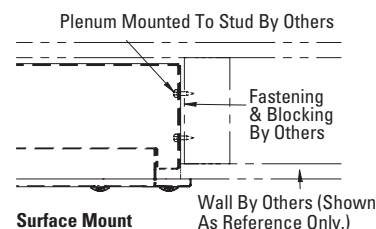
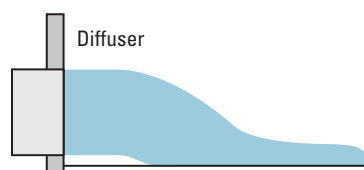
- Equalization Baffle – Aluminum
- Perforated Front Panel and Diffuser Frame – Coated Steel
- Plenum – Coated Steel
- Truss Head/Machine Screws – Stainless Steel

For optional and special finishes see color matrix.

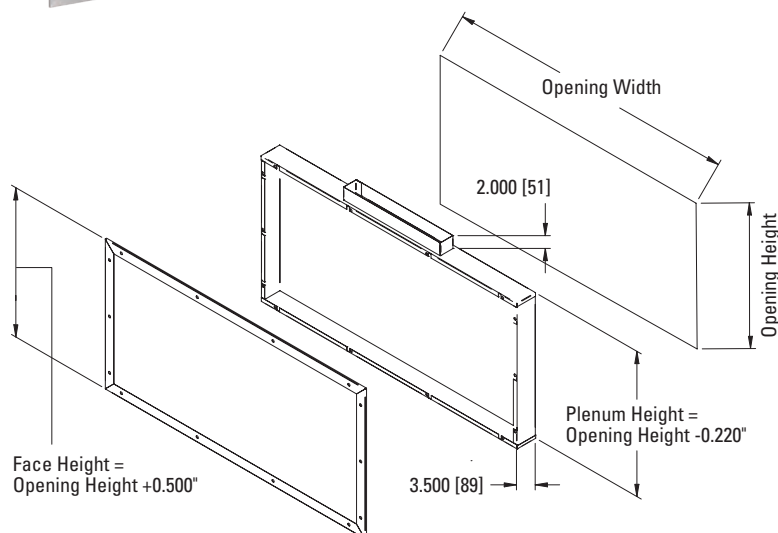
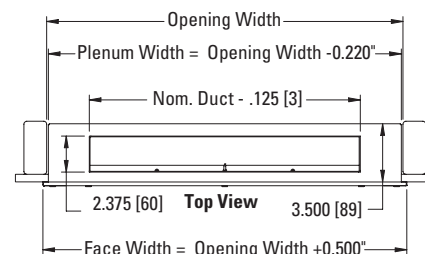
Options

- Diffuser face and frame – 304 stainless steel.
- Tamper proof fasteners.

Air Pattern



Surface Mount



Dimensional Data (Nominal) - Imperial (inches)

W X H	Duct	Nom. Studs OC
14.5 x 23.5	2.5 x 12	16
14.5 x 29.5	2.5 x 12	16
14.5 x 35.5	2.5 x 12	16
14.5 x 47.5	2.5 x 12	16
22.5 x 29.5	2.5 x 18	24
22.5 x 35.5	2.5 x 18	24
22.5 x 47.5	2.5 x 18	24
29.5 x 23.5	2.5 x 18	31
35.5 x 23.5	2.5 x 18	37
47.5 x 23.5	2.5 x 18	49

Dimensional Data (Nominal) - Metric (mm)

W X H	Duct	Nom. Studs OC
360 x 590	60 x 300	400
360 x 740	60 x 300	400
360 x 890	60 x 300	400
360 x 1190	60 x 300	400
560 x 590	60 x 500	600
560 x 740	61 x 500	600
560 x 890	62 x 500	600
560 x 1190	63 x 500	600

Additional Imperial and Metric sizes available.
Please contact your local Price representative for more information.

In-Wall Displacement Diffusers DF1W / Puraflo

price[®]

Performance Data — Imperial Units

Unit Size W x H [in] Face Area [ft ²]	Inlet Size [in]	Face Velocity [fpm]	Air Flow [cfm]	Total Pressure [in. w.g.]	Static Pressure [in. w.g.]	Noise Criteria [NC]	Proximity to Outlet [ft]			
							ΔT = 5°F		ΔT = 10°F	
							DR		DR	
							15%	20%	15%	20%
14.5 x 23.5 [2.2]	2.5 x 12	20	44	--	--	--	--	--	--	--
		30	66	--	--	--	1	--	2	--
		40	88	0.01	--	--	4	1	6	2
		50	109	0.02	0.01	--	7	3	9	5
14.5 x 29.5 [2.8]	2.5 x 12	20	55	--	--	--	--	--	--	--
		30	83	0.01	--	--	1	--	3	--
		40	111	0.02	0.01	--	5	1	7	3
		50	138	0.03	0.02	--	8	4	10	6
14.5 x 35.5 [3.3]	2.5 x 12	20	67	--	--	--	--	--	--	--
		30	100	0.01	--	--	2	--	4	1
		40	134	0.02	0.01	--	6	2	8	4
		50	167	0.04	0.02	--	9	5	11	7
14.5 x 47.5 [4.5]	2.5 x 12	20	90	--	--	--	--	--	1	--
		30	135	0.02	0.01	--	3	--	5	1
		40	180	0.04	0.02	--	7	3	9	5
		50	225	0.06	0.03	16	10	6	13	8
22.5 x 22.5 [3.3]	2.5 x 18	20	66	--	--	--	--	--	1	--
		30	99	0.01	--	--	4	1	6	2
		40	132	0.02	0.01	--	8	4	10	6
		50	165	0.04	0.02	--	11	7	14	9
22.5 x 29.5 [4.4]	2.5 x 18	20	87	--	--	--	1	--	2	--
		30	131	0.02	--	--	5	1	7	3
		40	175	0.04	0.02	--	9	5	12	7
		50	218	0.06	0.03	16	13	8	15	10
22.5 x 35.5 [5.3]	2.5 x 18	20	105	0.01	--	--	1	--	3	--
		30	158	0.03	0.01	--	6	2	8	4
		40	211	0.05	0.02	--	10	6	13	8
		50	264	0.08	0.03	20	14	9	16	11
22.5 x 47.5 [7.1]	2.5 x 18	20	142	0.02	--	--	2	--	4	1
		30	213	0.04	0.02	--	8	3	10	5
		40	284	0.08	0.03	21	12	7	15	10
		50	355	0.13	0.05	28	16	11	18	13
29.5 x 23.5 [4.6]	2.5 x 18	20	91	--	--	--	1	--	3	--
		30	137	0.02	0.01	--	7	2	9	4
		40	183	0.04	0.02	--	11	6	13	8
		50	228	0.06	0.03	17	14	9	17	12
35.5 x 23.5 [5.5]	2.5 x 18	20	110	0.01	--	--	3	--	5	1
		30	165	0.03	0.01	--	8	4	10	6
		40	221	0.05	0.02	--	13	8	15	10
		50	276	0.08	0.04	22	16	11	19	14
47.5 x 23.5 [7.4]	2.5 x 20	20	148	0.02	--	--	5	1	7	3
		30	223	0.04	0.01	--	11	6	14	9
		40	297	0.07	0.03	22	16	11	18	13
		50	371	0.11	0.04	29	19	14	22	17

Performance Notes:

- Sound and pressure drop tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
- Air flow is in cubic feet per minute, cfm.
- Pressure is in inches of water, in. w.g.
- The NC values, sound pressure level, are based on a room absorption of 10 dB, re 10⁻¹² watts and one diffuser.
- ΔT is the difference between the room air temperature 3 ½ ft above the floor and the temperature of the supply air.
- Proximity to outlet is the minimum distance from an outlet to the occupant in order to achieve the listed DR value.
- Distances closer to the diffuser have a higher DR than the cataloged value.
- DR is the predicted percentage of people dissatisfied (PPD) due to draft. A value of less than 20 meets the requirements of ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy.
- Blanks (--) indicate that the DR is below the specified value at all distances from the diffuser face.
- DR catalog data is presented for an occupant density of 25 people/1000ft², which is the default occupancy density for classrooms (ages 5-8) given by ASHRAE 62.1-2004. For other occupant densities, please refer to the DV Room Designer Software.
- Performance data for standard diffusers not listed in the catalog is available in Price AIO Software.

Performance Data — Metric Units

Unit Size W x H [mm] Face Area [m ²]	Inlet Size [mm]	Face Velocity [m/s]	Air Flow [L/s]	Total Pressure [Pa]	Static Pressure [Pa]	Noise Criteria [NC]	Proximity to Outlet [m]			
							$\Delta T = 2.8^{\circ}\text{C}$		$\Delta T = 5.6^{\circ}\text{C}$	
							DR		DR	
							15%	20%	15%	20%
360 x 590 [0.2]	60 x 300	0.10	17	--	--	--	--	--	--	--
		0.15	29	3.34	--	--	0.3	--	0.6	--
		0.20	32	4.48	2.59	--	1.2	0.3	1.8	0.6
		0.25	35	5.73	3.47	--	2.1	0.9	2.7	1.5
360 x 740 [0.25]	60 x 300	0.10	25	--	--	--	--	--	--	--
		0.15	38	5.06	--	--	0.3	--	0.9	--
		0.20	50	9.10	4.40	--	1.5	0.3	2.1	0.9
		0.25	63	14.34	7.00	--	2.4	1.2	3.0	1.8
360 x 890 [0.3]	60 x 300	0.10	30	2.97	--	--	--	--	--	--
		0.15	46	6.79	2.94	--	0.6	--	1.2	0.3
		0.20	61	12.20	5.36	--	1.8	0.6	2.4	1.2
		0.25	76	19.23	8.53	--	2.7	1.5	3.4	2.1
360 x 1900 [0.4]	60 x 300	0.10	41	4.71	--	--	--	--	0.3	--
		0.15	61	10.76	3.80	--	0.9	--	1.5	0.3
		0.20	82	19.33	6.96	--	2.1	0.9	2.7	1.5
		0.25	102	30.45	11.13	16	3.0	1.8	4.0	2.4
560 x 590 [0.31]	60 x 500	0.10	32	--	--	--	--	--	0.3	--
		0.15	47	3.26	--	--	1.2	0.3	1.8	0.6
		0.20	63	5.85	3.19	--	2.4	1.2	3.0	1.8
		0.25	79	9.22	5.06	--	3.4	2.1	4.3	2.7
560 x 740 [0.39]	60 x 500	0.10	40	--	--	--	0.3	--	0.6	--
		0.15	60	4.68	--	--	1.5	0.3	2.1	0.9
		0.20	80	8.41	4.16	--	2.7	1.5	3.7	2.1
		0.25	100	13.24	6.62	--	4.0	2.4	4.6	3.0
560 x 890 [0.47]	60 x 500	0.10	48	2.75	--	--	0.3	--	0.9	--
		0.15	72	6.27	2.79	--	1.8	0.6	2.4	1.2
		0.20	96	11.27	5.09	--	3.0	1.8	4.0	2.4
		0.25	120	17.76	8.10	20	4.3	2.7	4.9	3.4
560 x 1190 [0.64]	60 x 500	0.10	65	4.35	--	--	0.6	--	1.2	0.3
		0.15	97	9.93	3.65	--	2.4	0.9	3.0	1.5
		0.20	129	17.85	6.69	20	3.7	2.1	4.6	3.0
		0.25	162	28.13	10.68	27	4.9	3.4	5.5	4.0

Performance Notes:

- Sound and pressure drop tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
- Air flow is in Litres per second, L/s.
- Pressure is in Pascals, Pa.
- The NC values, sound pressure level, are based on a room absorption of 10 dB, re 10⁻¹² watts and one diffuser.
- ΔT is the difference between the room air temperature 1 m above the floor and the temperature of the supply air.
- Proximity to outlet is the minimum distance from an outlet to the occupant in order to achieve the listed DR value.
- Distances closer to the diffuser have a higher DR than the cataloged value.
- DR is the predicted percentage of people dissatisfied (PPD) due to draft. A value of less than 20 meets the requirements of ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy.
- Blanks (--) indicate that the DR is below the specified value at all distances from the diffuser face.
- DR catalog data is presented for an occupant density of 25 people/100m², which is the default occupancy density for classrooms (ages 5-8) given by ASHRAE 62.1-2004. For other occupant densities, please refer to the DV Room Designer Software.
- Performance data for standard diffusers not listed in the catalog is available in Price AIO Software.

In-Wall Displacement Diffusers

SECTION 23 06 30 – PRODUCT

PART 1 - GENERAL

1.1 Summary

- A. This section includes the following:
 - 1. Floor mounted displacement diffusers

1.2 Related Documents

- A. 23 01 00 – Operation and Maintenance of HVAC Systems
- B. 23 05 00 – Common Work Results for HVAC
- C. 23 09 00 – Instrumentation of Control for HVAC
- D. 23 20 00 – HVAC Piping and Pumps
- E. 23 30 00 – HVAC Air Distribution

1.3 Submittals

- A. Product Data: For each type of product indicated, include rated capacities, furnished specialties and accessories.
- B. Shop Drawings: For each type of product indicated, include the following:
 - 1. Detail equipment assemblies and indicated dimensions.
 - 2. Required clearances.
 - 3. Method of field assembly.
 - 4. Revit models
- C. Coordination Drawings: Include floor plans, and other details, drawn to scale, one which the following items are shown and coordinated with each other, based on input from installers of the items involved:
 - 1. Ceiling-mounted items including;
 - a. Fixtures
 - b. Lighting fixtures
 - c. Speakers
 - d. Sprinklers
 - e. Access panels
 - f. Diffusers
 - g. Grilles
 - h. Air inlets
 - i. Perimeter molding for exposed or partially exposed cabinets.
- D. Operation and Maintenance Data: To include in emergency, operation and maintenance manuals, maintenance schedules and repair part lists for all parts.

1.4 Quality Assurance

- A. Product Options: Include drawings indicating size, profiles and dimensional requirements of the displacement ventilation diffusers that are based on the specific system indicated.
- B. Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 100 by a testing agency acceptable to authorities having jurisdiction and marked for intended use.

1.5 Coordination

- A. Coordinate layout and installation of diffusers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

- B. Specific configuration of the supply and return ductwork and at each unit has been indicated on the drawings. If the configuration of the units furnished on the project differs from that indicated on the drawings (whether or not the units furnished are the specific units or an acceptable substitute), it shall be the contractor's responsibility to modify ductwork, etc., as required to accommodate the actual configuration of units furnished on the project.

PART 2 – PRODUCTS

2.1 General

- A. Manufacturers shall be responsible for examining applications of each type of unit to assure that each will operate properly in the intended application.
- B. Unit sizes are shown as selected in accordance with the principles set forth in the ASHRAE Guide and Manufacturer's literature.
- C. All items of a given type shall be the products of the same manufacturer.

2.2 Manufactureres

- A. In Part 2 articles where titles below introduce lists, the following requirements apply to selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

Manufacturers shall demonstrate that they have successfully supplied and installed displacement ventilation products, as well as the computer modeling thereof for a minimum of 10 years. Manufacturers must be pre-qualified to bid based on the completion of a minimum of xx jobs in similar climates. Manufacturers shall provide a list of completed jobs and references.

2.3 DF1W Displacement Diffusers

- A. Approved Manufacturers:
 - 1. Price
- B. Description: Furnish and install Price model series DF1W (WxH) with the sizes and capacities indicated on the plans and air outlet schedule.
- C. Performance: Air shall be delivered to the space at low noise levels and low velocities that are even across the diffuser face, in all ducting configurations and without the use of nozzles.

Diffuser Manufacturer shall provide sound and pressure drop data derived from tests in accordance with ASHRAE Standard 70-2006. Performance data for Draft Rate (%DR) shall be provided based on tests in accordance with ASHRAE Standard 55-2004. A manufacturer software program that allows room comfort evaluation for specific operating conditions and diffuser locations shall be available to aid in performance assessment. If such a computer program is not available from the manufacturer, the manufacturer shall supply, free of charge, a CFD model of the representative spaces completed by a modeling contractor who has demonstrable qualifications to model such spaces. These shall include no less than 10 years of experience in the modeling of displacement ventilation systems, thorough validation of the code through comparison to empirical data as well as a list of references.

In-Wall Displacement Diffusers

- D. Construction: The 1 way flat faced in-wall displacement diffuser, model DF1W, shall be constructed with an equalization baffle behind the operative diffuser face for uniform, low velocity, distribution of supply air. Both the equalization baffle and face shall be securely retained in the diffuser frames. Plastic nozzle arrays or any plastic components are unacceptable. The diffuser frames shall be constructed of 20 gauge steel for rigidity and protection of the operative face. The operative face shall be constructed of painted 18 gauge perforated steel, and the frame shall be provided in painted 20 gauge steel. The plenum shall be 24 gauge steel. The internal baffling elements shall be constructed of aluminum. The diffuser shall be available for duct connection at the top. The paint shall be powder coat polyester. Epoxies and their derivatives are unacceptable. Visible non-metallic components are unacceptable.
- E. Mounting/Fastening: The diffuser front panel shall be bolted to the plenum through the wall with factory provided fasteners.

2.4 Puraflo Displacement Diffusers

- A. Approved Manufacturers:
- Price
- B. Description: Furnish and install Price model series Puraflo (WxH) with the sizes and capacities indicated on the plans and air outlet schedule.
- C. Performance: Air shall be delivered to the space at low noise levels and low velocities that are even across the diffuser face, in all ducting configurations and without the use of nozzles. Diffuser Manufacturer shall provide sound and pressure drop data derived from tests in accordance with ASHRAE Standard 70-2006. Performance data for Draft Rate (%DR) shall be provided based on tests in accordance with ASHRAE Standard 55-2004. A software program that allows room comfort evaluation for specific operating conditions and diffuser locations shall be available to aid in performance assessment. If such a computer program is not available from the manufacturer, the manufacturer shall supply, free of charge, a CFD model of the representative spaces completed by a modeling contractor who has demonstrable qualifications to model such spaces. These shall include no less than 10 years of experience in the modeling of displacement ventilation systems, thorough validation of the code through comparison to empirical data as well as a list of references.
- D. Construction: The 1 way flat faced in-wall displacement diffuser, model Puraflo, shall be constructed with an equalization baffle behind the operative diffuser face for uniform, low velocity, distribution of supply air. Both the equalization baffle and face shall be securely retained in the diffuser frames. Plastic nozzle arrays or any plastic components are unacceptable. The diffuser frames shall be constructed of 20 gauge steel for rigidity and protection of the operative face. The operative face shall be constructed of painted 18 gauge perforated steel, and the frame shall be provided in painted 20 gauge steel. The plenum shall be 24 gauge steel. The internal baffling elements shall be constructed of aluminum. The diffuser face shall be field-removable for cleaning. The diffuser shall be available for duct connection at the top. The paint shall be powder coat polyester. Epoxies and their derivatives are unacceptable. Visible non-metallic components are unacceptable.

- E. Mounting/Fastening: The diffuser front panel shall be bolted to the plenum through the wall with factory provided fasteners. The front panel shall be field-removable for cleaning.

2.5 DF1R Displacement Diffusers

- A. Approved Manufacturers:
- Price
- B. Description: Furnish and install Price model series DF1R (WxH) with the configurations and mounting types indicated on the plans and air outlet schedule.
- C. Performance: Air shall be delivered to the space at low noise levels and low velocities that are even across the diffuser face, in all ducting configurations and without the use of nozzles. Diffuser Manufacturer shall provide sound and pressure drop data derived from tests in accordance with ASHRAE Standard 70-2006. Performance data for Draft Rate (%DR) shall be provided based on tests in accordance with ASHRAE Standard 55-2004. A software program that allows room comfort evaluation for specific operating conditions and diffuser locations shall be available to aid in performance assessment. If such a computer program is not available from the manufacturer, the manufacturer shall supply, free of charge, a CFD model of the representative spaces completed by a modeling contractor who has demonstrable qualifications to model such spaces. These shall include no less than 10 years of experience in the modeling of displacement ventilation systems, thorough validation of the code through comparison to empirical data as well as a list of references.
- D. Construction: The 1 way flat faced recessed displacement diffuser, model DF1R, shall be constructed with an equalization baffle behind the operative diffuser face for uniform, low velocity, distribution of supply air. Both the equalization baffle and face shall be securely retained in the diffuser frames. Plastic nozzle arrays or any plastic components are unacceptable. There shall be no visible fasteners on the front panel. The operative face shall be constructed of painted 18 gauge perforated steel. The installation frame shall be constructed of 24 gauge steel. The internal baffling elements shall be constructed of aluminum. The paint shall be powder coat polyester. Epoxies and their derivatives are unacceptable. Visible non-metallic components are unacceptable. The diffuser shall be supplied with an installation frame for recessed installation that is not visible from the room. (The diffuser shall be supplied with an installation frame for recessed installation which allows the diffuser to be installed in areas where plaster is required).
- E. Mounting/Fastening: The diffuser shall be installed within the supplied installation frame. The diffuser shall have no visible fasteners or framing, and shall be held within the supplied installation frame via secure mounting clips.

In-Wall Displacement Diffusers

2.6 Diffuser Accessories

- A. AFSDs for displacement diffuser models: DF1W, DF1WSS, PuraFlo
 - 1. Approved Manufacturers:
 - a. Price
- B. Description: Furnish and install Price model series Adjustable Flow Station for Displacement Diffusers, AFSD, (DiAxH) as indicated on the plans and air outlet schedule.
- C. Performance: The manufacturer shall supply pressure loss data and air flow ranges for the various sensing device sizes.
- D. Construction: The air flow sensor shall be of a cross configuration. The sensor shall have twelve total pressure sensing ports and a center averaging chamber designed to accurately average the flow across the inlet of the assembly. Sensor shall meet accuracy within 5% with a 90° sheet metal elbow directly at the inlet of the assembly. The air flow sensor shall amplify the sensed air flow signal. Two flexible tubes, one connected to the high pressure port and the other connected to the low pressure port of the air flow sensor, shall extend through the assemble housing to allow for easy monitoring of the air flow.

The unit shall be constructed of 22 gauge zinc coated steel. The damper shall incorporate a lever for manual adjustment and a wing-nut for locking the damper in position.

PART 3 – EXECUTION

3.1 Installation – General

- A. Install displacement diffusers level and plumb. Maintain sufficient clearance for normal services, maintenance, or in accordance with construction drawings.
- B. Complete installation and startup checks according to manufacturer's instructions and perform the following.
 - 1. Verify that inlet duct connections are as recommended by manufacture to achieve proper performance.
 - 2. Verify that any identification tags are visible.
 - 3. Verify locations of thermostats, humidistats, and other exposed control sensors with Drawings and room details before installation.