Models VB / VR

OBSOLETE

Reduced Footprint for Tight Space Requirements

Front Access to All Internal Components

Vertical Belt Drive Blower Coil Units

ENVIRO-TEC®
ENGINEERING FOR EXCELLENCE

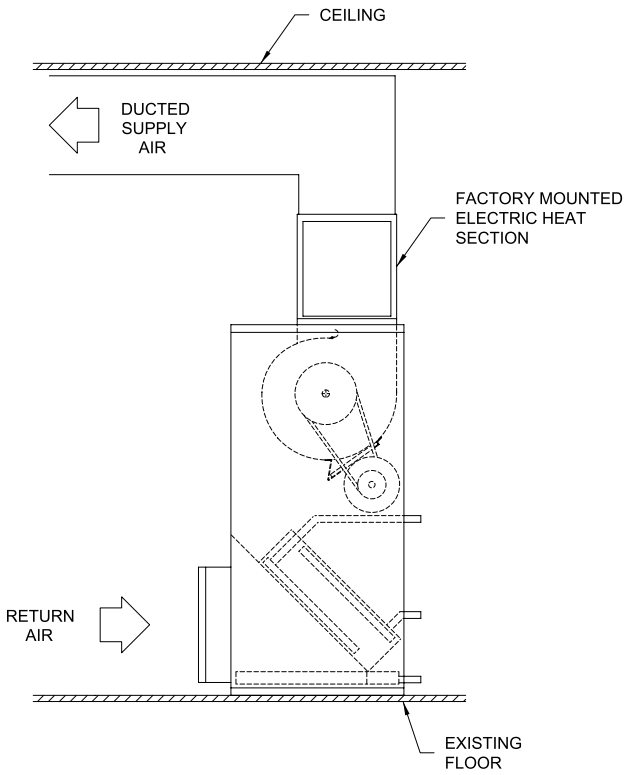
Rating and selection at www.enviro-tec.com

ENVIRO-TEC® • Table of Contents

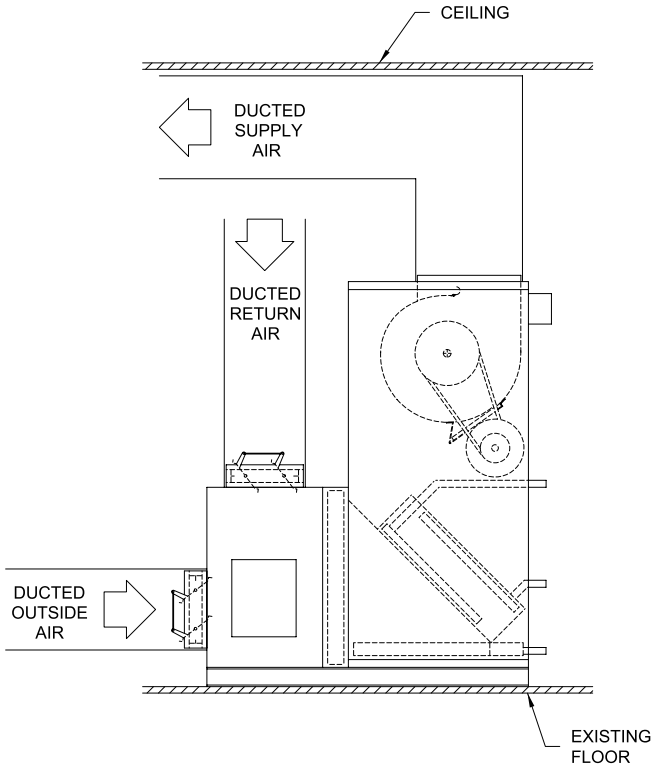
All data contained herein subject to change without notice.
Please refer to the ENVIRO-TEC® website at www.enviro-tec.com for the latest version of this catalog.

GENERAL NOTES

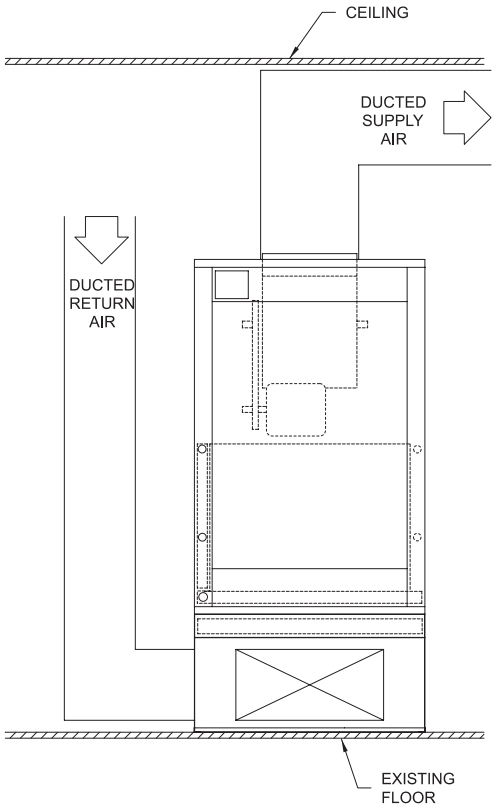
- The ENVIRO-TEC® ARI 410 certified Coil Selection Program (available at www.enviro-tec.com) provides all necessary selection and coil rating information for Model VB/VR belt drive blower coils.
- Some drawings are not shown in this catalog. Please refer to www.enviro-tec.com for complete submittal drawings for your project.
- ETL Report Number 510580.
- MEA Number MEA 55-98-E applies to all units with any combination of chilled water or R-22 direct expansion coils and either hot water coils, steam coils, or electric heat.
- All data contained herein subject to change without notice.



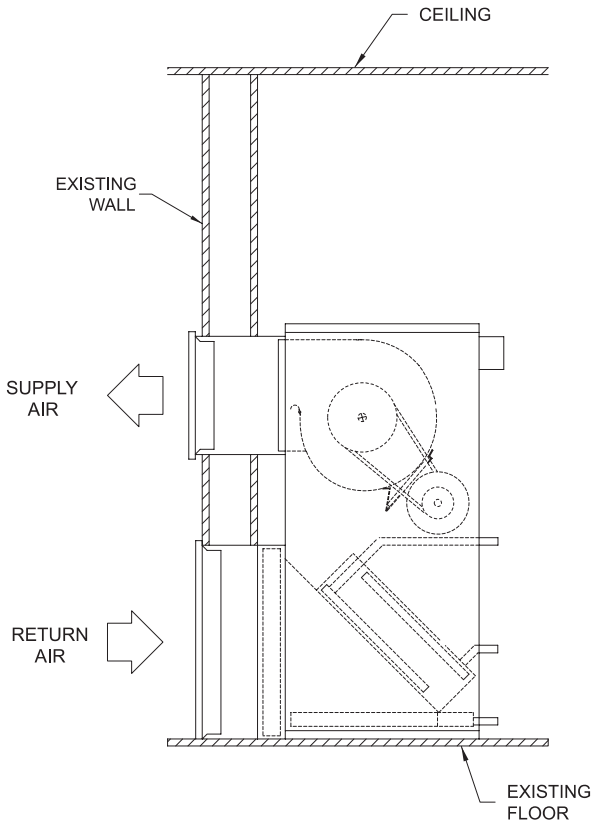
Model VR with Electric Heat
Mechanical Room Layout



Model VMR, Rear Return with Mixing Box
Mechanical Room Layout



Model VB, Bottom Return
Closet or Confined Space Layout



Model VR, Rear Return
Unit Handling Load in Adjacent Room

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STANDARD FEATURES

Construction
- G 60 galvanized steel cabinet construction
- 3/4" thick 4 lb/ft³ dual-density scrim reinforced foil faced insulation, glued and pinned in place
- 1" supply duct collars
- Removable access panel sized for easy handling
- Galvanized steel drain pan with 1 1/8" ODM outlet
- Left and right hand arrangement

Fan Assembly
- Forward curved fans
- Statically and dynamically balanced
- Solid steel shafting
- Ball bearings with a minimum design average life of 100,000 hours

Fan Motor and Drive
- NEMA design ODP motors
- 1750 RPM single speed, 60 Hertz
- Single phase motors with inherent thermal protection
- Three phase motors
- Rigid mount adjustable motor base
- Standard cross section "V-belt" drive with 1.2 service factor
- Adjustable pitch motor pulley and fixed pitch blower pulley

Coils
- ARI 410 certified and labeled
- 1/2" O.D. seamless copper tubes
- Collared and corrugated aluminum fins
- Manual air vent plug on all water coils
- 250 PSIG working pressure at 200°F
- Copper ODM sweat connections

Filters and Filter Rack
- Top access flat filter rack (VR)
- Front access filter rack (VB)
- 2" nominal throwaway filters

Electrical
- Fan motor wired and terminated to J-box
- All units ETL listed in compliance with UL/ANSI Standard 1995

OPTIONAL FEATURES

Construction
- 304 stainless steel drain pan
- Rubber-in-shear or spring type vibration isolators, floor mount
- Fan discharge arrangements
- Discharge plenum with double deflection supply grille (bottom and rear return units)
- Access panel with lift and turn fasteners
- Return plenum (VB bottom return unit)

Fan Motor and Drive
- TEFC motors
- High efficiency motors

Coils
- 4 and 6 row chilled water or R22 DX coils
- Elevated working pressure ratings
- 1 and 2 row hot water or standard steam
- 1 or 2 row standard hot water or steam in discharge coil section only
- Stainless steel coil casings
- Copper fins
- Auto air vents

Filter Rack/Filters
- 2" pleated filter
- Spare throwaway or pleated filters

Inlet Damper Section (VR rear return unit)
- Factory assembled and installed
- Heavy gauge galvanized steel formed blade dampers
- Low-leak dampers with extruded vinyl blade seals and flexible metal jamb seals
- Parallel blade operation

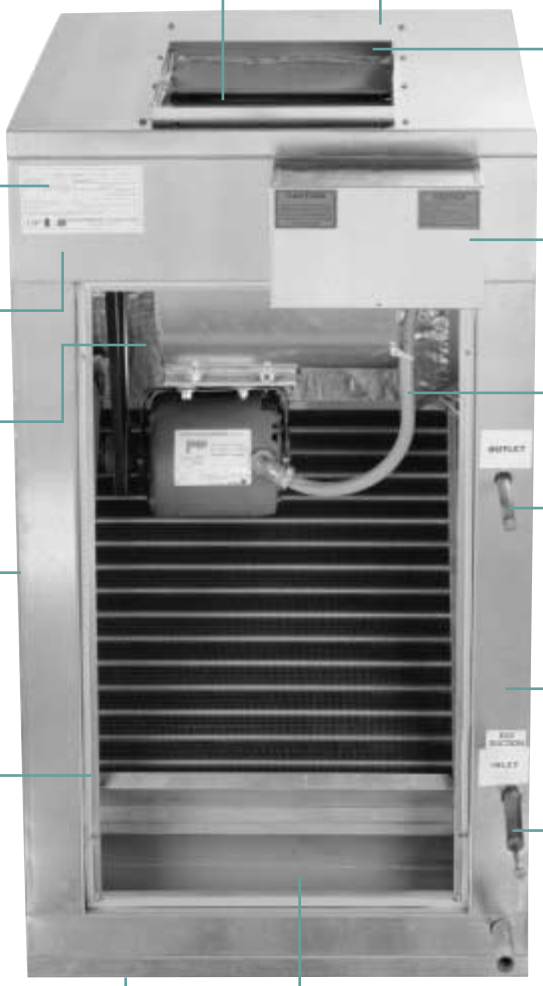
Electrical Control
- Motor wiring in conduit
- Single phase operating relay
- Three phase starter
- Toggle type single phase service switch
- Three phase disconnect switch
- Fused incoming power

Electric Resistance Heat Section
- Factory mounted electric heater with single point power connection, ETL listed as an assembly (see page 9)

Model VB, VR

(VR shown)

Models VB and VR blower coils have many standard and optional features which are unique to the industry (see page 4 for a complete listing).



Forward curved fan

Premium grade, chromate coated, G 60 galvanized steel casing withstanding 125 hour salt spray test per ASTM B-117

1" duct collar allows for quick field connection of duct work

Product label including tagging, airflow and electrical information

ETL label (not shown)

NEMA 1 control enclosure houses optional starter, disconnect, fusing, relays, and other electrical options

Scrim reinforced foil faced insulation, glued and pinned in place

Motor wiring in optional conduit

Coil stubouts extend through unit casing front, reducing space required for installation

VR filter access from top (not shown) reduces space required for installation

Multi-bend construction for optimum strength and rigidity

Full size front access panel reduces space required for installation

Heating and cooling coil stubouts on opposite sides

Optional stainless steel drain pan

VB filter access from front (not shown) reduces space required for installation

ENVIRO-TEC®

Belt Drive Blower Coils, Designed For Maximum Installation Flexibility

The ENVIRO-TEC® VB/VR Belt Drive Blower Coils give maximum flexibility for selection and installation where extreme space restrictions exist. The units are designed with a slant coil and all front access to minimize the space used for installation.

The units are designed to exceed the stringent quality standards of the institutional market, while remaining cost competitive in the light commercial segment of the market.

ENVIRO-TEC® Belt Drive Blower Coils set the new standards for quality, flexibility, and competitive pricing.

For the Building Designer:

OPTIONAL COMPONENTS MEAN FLEXIBILITY

The extensive variety of standard options available on the VB/VR units are where you find the versatility to fit any HVAC system designer's needs.

Options include: Mixing boxes with standard low-leak dampers, blow thru electric heat with or without single point power connection. All electric heat units are listed with ETL as an assembly and carry the ETL label.

High efficiency motors, starters, disconnects and fusing mean easier coordination between mechanical and electrical trades.

Coil options allow for 4 or 6 row cooling coils.

For the Contractor:

LOWER INSTALLED COST

All VB/VR model blower coils are shipped completely assembled, reducing field installation time and labor. All units are thoroughly inspected and tested prior to shipment, eliminating potential problems at startup. Motor wiring is brought to a junction box and terminated. The junction box is located on the outside of the unit casing, reducing electrical hook-up time.

A wide variety of fan discharge configurations allow for increased flexibility and easier installation on the jobsite, resulting in cost reductions by eliminating expensive elbows, etc.

For the Owner:

QUALITY PRODUCT

VB/VR model blower coils are constructed from G 60 minimum spangled galvanized steel with a chromate coating. This metal surpasses the ASTM 125 hour salt spray test for corrosion and rust. Insulation is 3/4 inch, 4 pound per cubic inch dual density scrim reinforced foil faced insulation, which is glued and pin spotted for maximum positive adhesion. Insulation complies with UL 181, ASTM-C1071, NFPA 90A and 90B and meets bacteriological standard ASTM-C665 and C1136 for mold, mildew and humidity resistance.

All units, with or without Electric Heat, are ETL listed and labeled. All wiring is in compliance with NEC, assuring safety and quality for the owner.

Application Considerations

Model VB/VR Belt Drive Blower Coils offer a wide range of application flexibility, while maintaining a simple, easy to install unit design. These units are intended to provide comfort cooling and heating within a small footprint. They may be applied in many types of building structures including schools, office buildings, hospitals, condominiums, assisted living facilities, apartments or stores. Applications can be constant or variable volume.

There are many applications the VB/VR product can be utilized. Some examples are listed below.

Constant volume applications:

- Two-pipe hydronic system for cooling and/or heating
- Two-pipe hydronic cooling system with electric heat
- Four-pipe system with dedicated heating and cooling coils
- Direct Expansion (DX) split systems with hydronic heat
- Direct Expansion (DX) split systems with electric heat

Variable volume applications:

- Two-pipe hydronic system for cooling and/or heating.
- Two-pipe hydronic cooling system with electric heat.
- Four-pipe system with dedicated heating and cooling coils.

Acoustics

Control of noise within both occupied and unoccupied spaces has become increasingly important to designers and building owners/occupants. Proper consideration must be given to placement of indoor air conditioning units, particularly in the occupied space. Inherent flexibility of the fan and coil combination in the vertical configuration allows application in sound-sensitive areas. In such instances, a fan running at low speed with a high capacity coil normally yields satisfactory results. It also may be desirable to select a larger nominal capacity unit and operate it at a less than nominal airflow for further acoustic benefit.

Three phase motors are recommended for sound-sensitive applications to avoid potential single phase motor hum. Unit operation in the stall region of the fan curve is not recommended since it may cause unsatisfactory noise levels and excessive unit vibration.

Installation

These floor mounted units can be installed with external vibration isolation on a base rail (VR or VMR) or on a return plenum (VB) at the corner points. This includes corner brackets, ductwork, electrical connections and piping connections. One of the most important and basic IAQ issues is condensate management. The first step to ensure trouble-free operation is proper installation. It is very important that the unit be mounted high enough so that the condensate drain from the unit may be properly trapped. Please refer to the VB/VR IOM Manual (Stock I.D. IOM-VBVR) for specifics on this issue. As with all HVAC systems, these units should be installed according to all applicable ASHRAE standards, SMACNA and local code requirements.

Operating Limitations

Units must not be operated above maximum fan speed or unit airflow as listed in the Fan Performance section of this catalog. Unit operation at greater than maximum fan speed could drastically reduce bearing life and may result in a catastrophic failure. Operating at greater than the maximum allowable airflow in the cooling mode may result in unsatisfactory operation due to moisture carry over from the coil. In addition, it is often not economical to operate a unit at its maximum fan speed due to the greater motor power requirements.

Units with electric heat should not be operated below the minimum airflow listed in the Electric Resistance Heat section of this catalog to prevent excessive leaving air temperatures and electric heat limit trips. A hydronic (or steam) coil and electric heat should not be operated simultaneously to prevent excessive leaving air temperatures and limit trips. Electric heat units are equipped with a lockout switch that disables the electric heater if the temperature of the hydronic (or steam) coil is greater than 105°F (40°C).

Coils must not be operated above the fluid flow limits (7 ft/sec), where the coil performance would deteriorate (laminar flow) and noise or erosion may occur within the coil. Coils must also not be operated below the fluid flow limits (1 ft/sec). These high or low fluid flow rates may not be included in the ARI coil certification.

ENVIRO-TEC®

Coil Face Area and Filter Data

UNIT SIZE	INTERNAL COOLING AND HEATING COILS	DISCHARGE SECTION HEATING COILS	2" FILTERS (Quantity) & Size
08	2.1 (0.20)	2.1 (0.20)	(1) 16" x 20" x 2"
12	2.8 (0.26)	2.1 (0.20)	(1) 20" x 20" x 2"
16	3.6 (0.33)	3.2 (0.30)	(1) 24" x 24" x 2"
20	4.8 (0.45)	3.2 (0.30)	(1) 24" x 24" x 2"
25	5.7 (0.53)	4.6 (0.43)	(1) 24" x 24" x 2" (1) 12" x 24" x 2"
30	6.8 (0.63)	5.7 (0.53)	(1) 24" x 24" x 2" (1) 12" x 24" x 2"

NOTES:
1. Standard filters are 2" throwaway; optional filters are 2" pleated.
2. Filter sizes are nominal and standard size.
3. Coil face area is measured in square feet (square meters).

Nominal Coil Connection Sizes

UNIT SIZE	COIL TYPE											
	WATER				STEAM				REFRIGERANT[3]			
	1 ROW	2 ROW	4 ROW	6 ROW	1 ROW		2 ROW		4 ROW		6 ROW	
					STM.	COND.	STM.	COND.	LIQ.	SUCT.	LIQ.	SUCT.
08	5/8" (16)	5/8" (16)	7/8" (22)	7/8" (22)	1 1/8" (29)	7/8" (22)	1 1/8" (29)	7/8" (22)	5/8" (16)	5/8" (16)	5/8" (16)	5/8" (16)
12	5/8" (16)	5/8" (16)	7/8" (22)	7/8" (22)	1 1/8" (29)	7/8" (22)	1 1/8" (29)	7/8" (22)	5/8" (16)	7/8" (22)	5/8" (16)	7/8" (22)
16	5/8" (16)	5/8" (16)	7/8" (22)	1 1/8" (29)	1 1/8" (29)	7/8" (22)	1 3/8" (35)	1 1/8" (29)	5/8" (16)	7/8" (22)	5/8" (16)	7/8" (22)
20	5/8" (16)	5/8" (16)	7/8" (22)	1 1/8" (29)	1 3/8" (35)	1 1/8" (29)	1 3/8" (35)	1 1/8" (29)	5/8" (16)	7/8" (22)	5/8" (16)	7/8" (22)
25	5/8" (16)	7/8" (22)	1 1/8" (29)	1 3/8" (35)	1 3/8" (35)	1 1/8" (29)	1 5/8" (41)	1 1/8" (29)	5/8" (16)	7/8" (22)	5/8" (16)	1 1/8" (29)
30	7/8" (22)	7/8" (22)	1 1/8" (29)	1 3/8" (35)	1 5/8" (41)	1 1/8" (29)	1 5/8" (41)	1 1/8" (29)	5/8" (16)	1 1/8" (29)	5/8" (16)	1 1/8" (29)

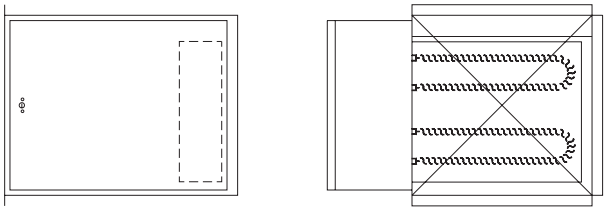
NOTES:
1. Based on Standard GPM Circuiting.
2. For other selections, please refer to the ENVIRO-TEC® coil selection program, available at www.enviro-tec.com.
3. Connection sizes for single circuit coils. Double circuit not available.
4. All dimensional data is outside diameter (O.D.), measured in inches (mm).

STANDARD FEATURES

- G 60 galvanized steel casing
- Flanged construction for direct unit mounting, in blow thru configuration
- Listed for zero clearance installation
- Meets National Electrical Code requirements
- Ni-Chrome wire in ceramic insulators
- Stainless steel element terminals and hardware
- Element support brackets on maximum 3 1/2" centers
- Solid cover with continuous full height hinge
- Overtemperature protection
- All internal wiring rated for 105°C minimum
- Airflow switch
- Incoming line power distribution block
- Up to 38 kW at nominal voltages
- ETL Listed in compliance with UL/ANSI Standard 1995
- Single point power connection
- Heater factory mounted to unit with ETL listing as an assembly

OPTIONAL FEATURES

- Main incoming power disconnect (non-fused)
- Fusing (main) (per NEC) (per step)
- Magnetic contactors wired for de-energizing operation
- Magnetic contactors wired for disconnecting operation
- Class II 24 volt control transformer
- Primary and/or secondary control transformer fusing
- System status pilot indicators
- Remote component mounting panels
- Fan motor fusing
- Fan motor relay or starter with heater interlock contacts (required on single point power connection)
- Pilot duty 24 volt fan relay
- De-rated elements
- Dual point power connection
- Fan interlock relay



Side View

Front View

Airflow

Blow Thru
(installed on unit discharge)

VOLTAGE	STANDARD HEATER KW LIMITS					
	Unit Size					
	08	12	16	20	25	30
120/1	5.5	5.5	5.5	5.5	5.5	5.5
208/1	10	10	10	10	10	10
230-240/1	11	11	11	11	11	11
277/1	13	13	13	13	13	13
208/3	14	17	17	17	17	17
230-240/3	14	18	18	18	18	18
460-480-575/3	14	20	21	27	35	38

NOTES:
1. Electric heat sections may be shipped separate for field installation to unit.
2. Factory certified submittals available upon request.
3. Standard heater kW limits are maximum per unit size and voltage.
4. Heater should not be operated below 45 CFM/kW.

HEATER AMP CALCULATION	
Voltage	AMPs per kW
120/1	8.33
208/1	4.80
230/1	4.34
240/1	4.16
277/1	3.61
208/3	2.77
230/3	2.54
240/3	2.40
460/3	1.255
480/3	1.202
575/3	1.004

ENVIRO-TEC®

Coils by ENVIRO-TEC®

ENVIRO-TEC® manufactures hot water, chilled water, direct expansion (DX), and standard steam coils for specific application with all Model VB/VR blower coils. ARI 410 certified and labeled, and strict on-site inspection before, during, and after installation guarantees the highest quality and performance available.

Standard Features

- Designed, Manufactured and Tested by ENVIRO-TEC®
- ARI 410 Certified and Labeled
- 1/2" O.D. Seamless Copper Tubes
- Aluminum Fin Construction with Die-Formed Spacer Collars for Uniform Spacing
- Mechanically Expanded Copper Tubes Leak Tested to a Minimum 450 PSIG Air Pressure Under Water
- Manual Air Vent Plug on All Water Coils
- Copper ODM Sweat Connections
- 250 PSIG Working Pressure at 200°F
- Evaporator Coils are Factory Sealed and Charged with a Minimum of 5 PSIG Nitrogen or Refrigerated Dry Air
- Refrigerant coils are provided with a fixed orifice distributor

Optional Features

- Stainless Steel Coil Casings
- Auto Air Vents
- Elevated Working Pressure Ratings
- Heat Pump Compatible Cooling Coils
- Double Circuit DX Coils (intertwined with 50-50 split)
- .0075" Aluminum Fins
- .0075" Copper Fins
- .025" Tube Wall on Water Coils

ENVIRO-TEC® offers an expanding range of selection programs for unit and coil selection, available at www.enviro-tec.com. See your representative for more information.

Component Static Pressure Loss – Inches W.G.

UNIT SIZE	NOMINAL CFM	CABINET	FILTER[1,5] (2" T/A)	COIL[2, 3]						INLET DAMPER SECTION	ELECTRIC HEAT SECTION
				1 ROW	2 ROW	4 ROW		6 ROW			
						DRY	WET	DRY	WET		
08	800	0.09	0.25	0.05	0.10	0.17	0.25	0.26	0.37	0.04	0.05
12	1200	0.09	0.25	0.06	0.12	0.22	0.32	0.33	0.48	0.06	0.05
16	1600	0.10	0.25	0.06	0.12	0.23	0.33	0.35	0.50	0.09	0.05
20	2000	0.11	0.25	0.06	0.11	0.20	0.28	0.29	0.42	0.05	0.05
25	2500	0.12	0.25	0.06	0.12	0.20	0.29	0.30	0.44	0.06	0.05
30	3000	0.14	0.25	0.06	0.12	0.26	0.37	0.38	0.55	0.08	0.05

NOTES:

1. Filter static pressure based on half loaded filter.
2. Coil static pressure for standard coil, 10FPI.
3. For 12FPI, refer to the ENVIRO-TEC® Coil Selection Program, available at www.enviro-tec.com.
4. All static pressures are at nominal CFM.
5. If pleated filters are used in lieu of throwaway, the filter static pressure loss is 0.35.

60 Hz Motor

TSP	UNIT SIZE	08					12					16				
	ACTUAL CFM	600	700	800	900	1000	1000	1100	1200	1300	1400	1400	1500	1600	1700	1800
2.4"	RPM	N/A	N/A	N/A	1713	1726	N/A	N/A	N/A	N/A	1739	N/A	1556	1558	1562	1569
	BHP	N/A	N/A	N/A	0.72	0.80	N/A	N/A	N/A	N/A	1.07	N/A	1.21	1.29	1.37	1.47
2.2"	RPM	N/A	N/A	1632	1645	1659	N/A	N/A	N/A	N/A	1670	1486	1490	1494	1501	1509
	BHP	N/A	N/A	0.58	0.66	0.74	N/A	N/A	N/A	N/A	0.99	1.03	1.11	1.18	1.27	1.36
2.0"	RPM	N/A	N/A	1562	1574	1590	N/A	N/A	N/A	1584	1597	1420	1424	1429	1437	1448
	BHP	N/A	N/A	0.53	0.60	0.68	N/A	N/A	N/A	0.83	0.90	0.94	1.01	1.08	1.16	1.25
1.8"	RPM	N/A	1474	1486	1500	1517	N/A	N/A	1505	1513	1522	1350	1355	1362	1373	1385
	BHP	N/A	0.42	0.48	0.54	0.61	N/A	N/A	0.68	0.75	0.82	0.85	0.91	0.98	1.06	1.15
1.6"	RPM	N/A	1395	1407	1423	1442	N/A	N/A	1424	1433	1445	1276	1284	1294	1306	1320
	BHP	N/A	0.37	0.43	0.49	0.55	N/A	N/A	0.62	0.67	0.73	0.76	0.82	0.89	0.97	1.05
1.4"	RPM	1298	1310	1324	1341	1363	N/A	1331	1339	1350	1364	1201	1210	1223	1237	1253
	BHP	0.28	0.33	0.38	0.43	0.49	N/A	0.49	0.54	0.60	0.65	0.67	0.73	0.80	0.87	0.95
1.2"	RPM	1208	1220	1236	1256	1280	1231	1239	1250	1264	1280	1122	1135	1149	1166	1185
	BHP	0.24	0.28	0.33	0.38	0.44	0.40	0.43	0.47	0.52	0.58	0.59	0.64	0.71	0.78	0.86
1.0"	RPM	1108	1123	1142	1165	1193	1130	1141	1156	1173	1193	1040	1056	1073	1093	1114
	BHP	0.20	0.24	0.28	0.33	0.38	0.32	0.36	0.40	0.45	0.50	0.51	0.56	0.63	0.69	0.77
0.8"	RPM	1000	1018	1041	1069	1101	1023	1038	1056	1077	1100	954	973	994	1016	1040
	BHP	0.16	0.19	0.23	0.28	0.33	0.26	0.30	0.34	0.38	0.43	0.43	0.49	0.55	0.61	0.68
0.6"	RPM	880	903	932	965	1003	907	927	950	975	1002	864	887	911	936	963
	BHP	0.12	0.15	0.19	0.23	0.28	0.21	0.24	0.27	0.32	0.36	0.36	0.41	0.47	0.53	0.60
FAN SIZE		0906R					0909R					1008R				
COIL FACE AREA		2.1					2.8					3.6				
CFM @ 500FPM		1050					1400					1800				

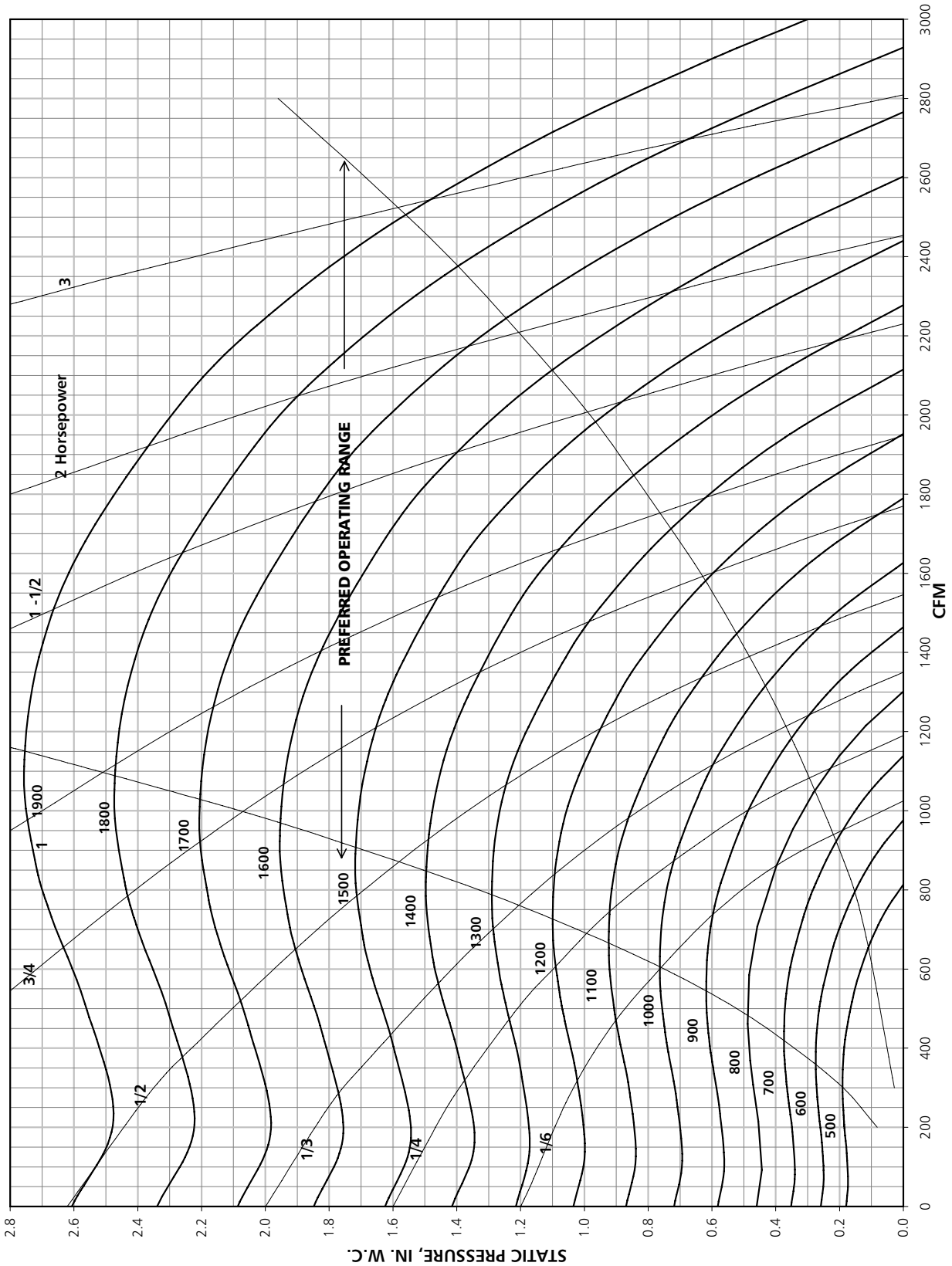
TSP	UNIT SIZE	20					25					30				
	ACTUAL CFM	1800	1900	2000	2200	2400	2400	2500	2600	2700	2800	2800	3000	3200	3400	3600
2.4"	RPM	1540	1540	1541	1550	1565	1069	1070	1072	1074	1077	1076	1078	1082	1087	1094
	BHP	1.36	1.42	1.50	1.67	1.87	1.50	1.56	1.63	1.71	1.79	1.75	1.88	2.03	2.18	2.36
2.2"	RPM	1474	1475	1478	1490	1508	1024	1026	1028	1031	1035	1031	1034	1039	1046	1054
	BHP	1.24	1.31	1.38	1.55	1.74	1.38	1.44	1.51	1.58	1.66	1.61	1.73	1.88	2.03	2.20
2.0"	RPM	1406	1409	1414	1429	1450	979	981	984	988	992	985	989	996	1003	1013
	BHP	1.12	1.19	1.26	1.43	1.62	1.26	1.32	1.39	1.46	1.54	1.47	1.59	1.73	1.88	2.05
1.8"	RPM	1337	1342	1349	1367	1391	932	935	939	943	948	937	943	951	960	970
	BHP	1.02	1.08	1.15	1.32	1.50	1.15	1.21	1.27	1.34	1.41	1.33	1.45	1.59	1.74	1.90
1.6"	RPM	1266	1273	1281	1303	1330	883	887	892	897	903	888	896	905	915	927
	BHP	0.91	0.98	1.05	1.20	1.39	1.04	1.10	1.16	1.23	1.30	1.20	1.32	1.45	1.60	1.76
1.4"	RPM	1192	1202	1212	1238	1267	833	838	843	849	856	838	847	857	869	882
	BHP	0.81	0.88	0.94	1.10	1.27	0.93	0.99	1.05	1.11	1.18	1.08	1.19	1.32	1.46	1.62
1.2"	RPM	1117	1128	1141	1170	1203	780	786	793	800	807	785	796	808	821	836
	BHP	0.72	0.78	0.85	0.99	1.17	0.83	0.88	0.94	1.00	1.07	0.96	1.07	1.20	1.33	1.48
1.0"	RPM	1038	1052	1067	1100	1136	726	733	740	748	757	730	743	756	771	787
	BHP	0.63	0.69	0.75	0.89	1.06	0.73	0.78	0.84	0.90	0.96	0.85	0.95	1.07	1.20	1.35
0.8"	RPM	956	972	989	1027	1067	668	677	685	695	704	672	687	703	720	737
	BHP	0.54	0.60	0.66	0.80	0.95	0.63	0.68	0.74	0.79	0.85	0.74	0.84	0.95	1.08	1.21
0.6"	RPM	869	888	908	950	994	608	617	628	638	649	611	628	646	665	685
	BHP	0.46	0.51	0.57	0.70	0.85	0.54	0.59	0.64	0.69	0.75	0.63	0.73	0.83	0.95	1.08
FAN SIZE		1010R					1509R					1511R				
COIL FACE AREA		4.8					5.7					6.8				
CFM @ 500FPM		2400					2850					3400				

NOTES:

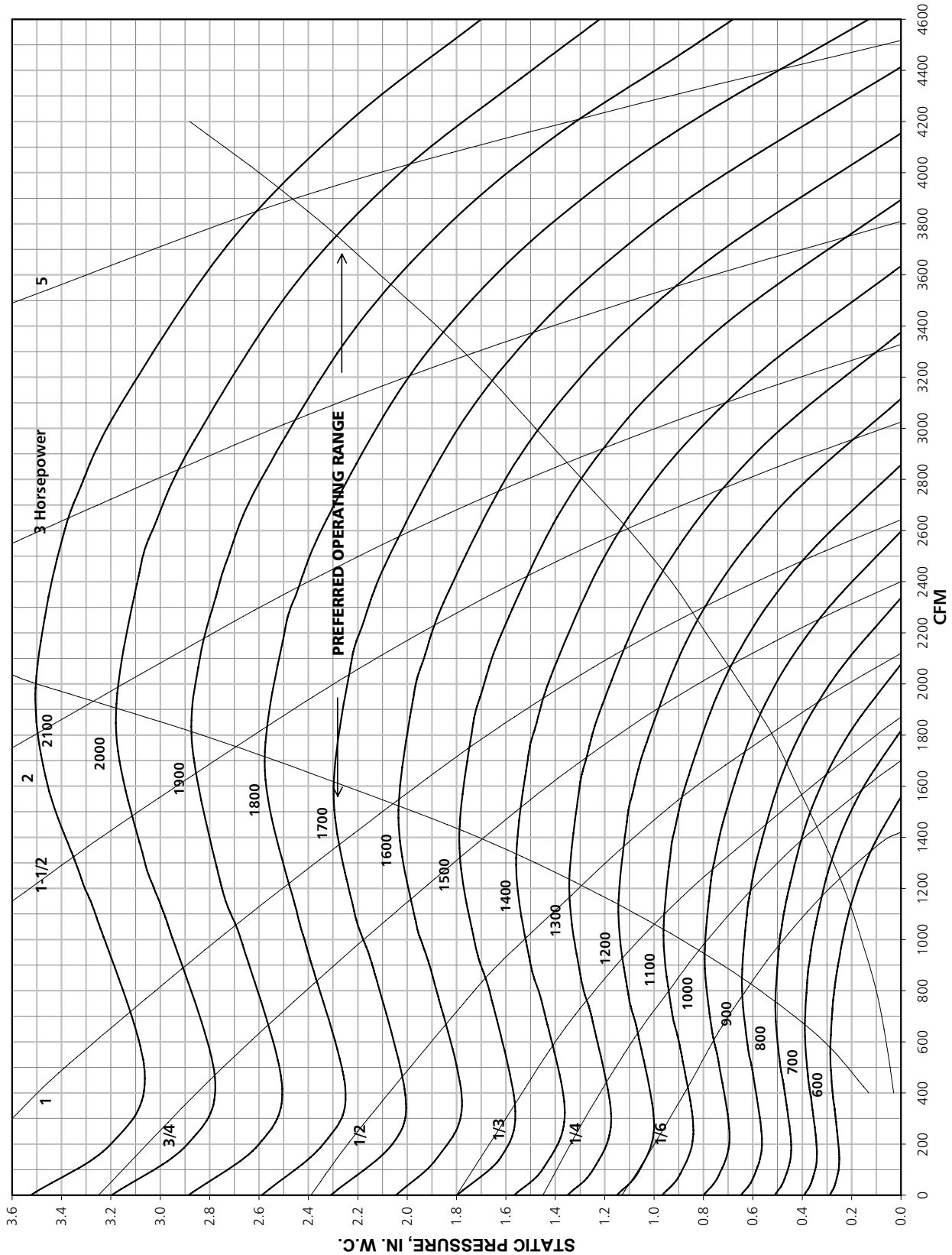
1. Consult factory for applications at operating conditions not shown above.
2. Fan motor voltage, fan rotation, and fan RPM may require field setting/adjustment.
3. Drive losses not included in fan performance.

ENVIRO-TEC®

Unit Size 08 (Fan 0906R)

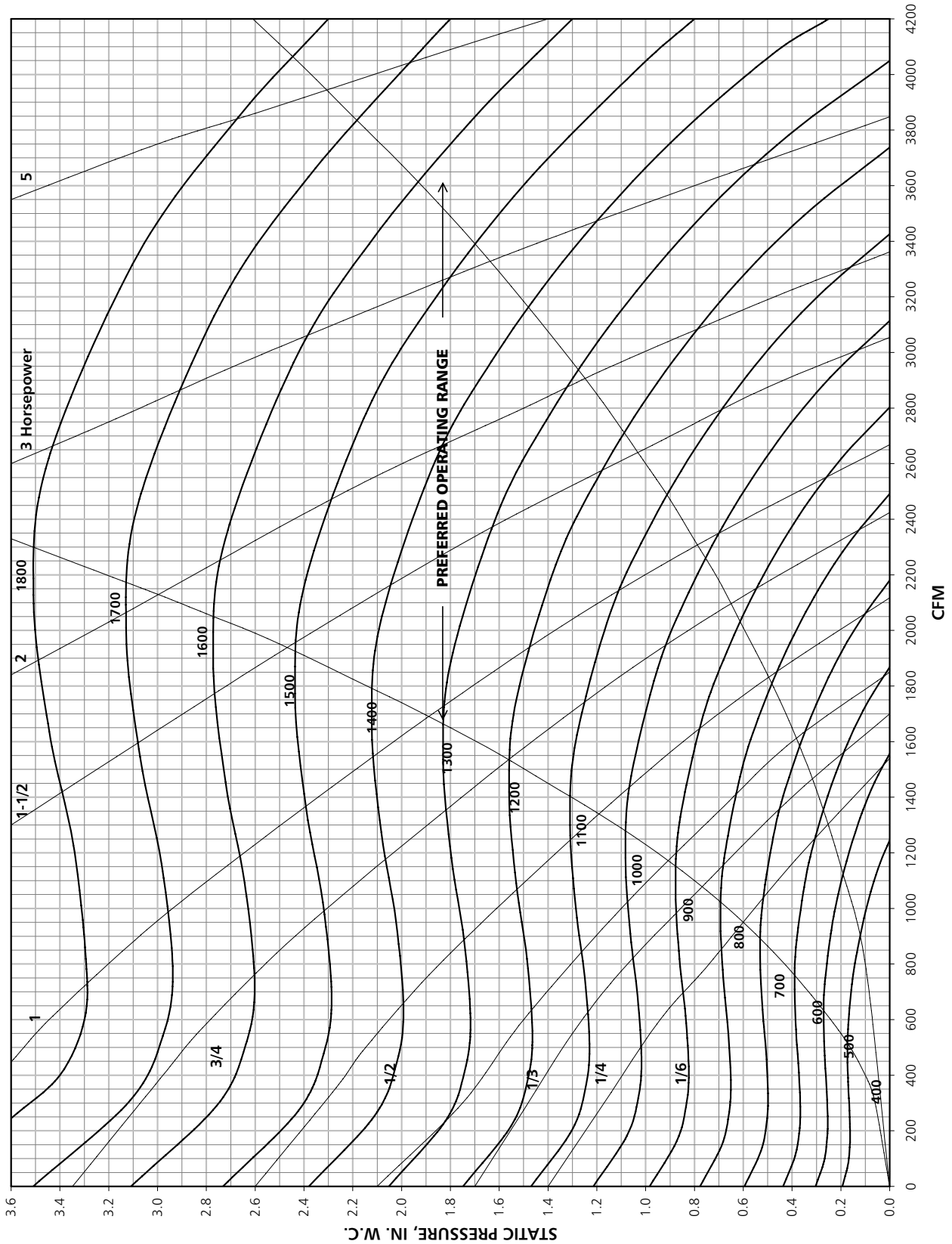


Unit Size 12 (Fan 0909R)

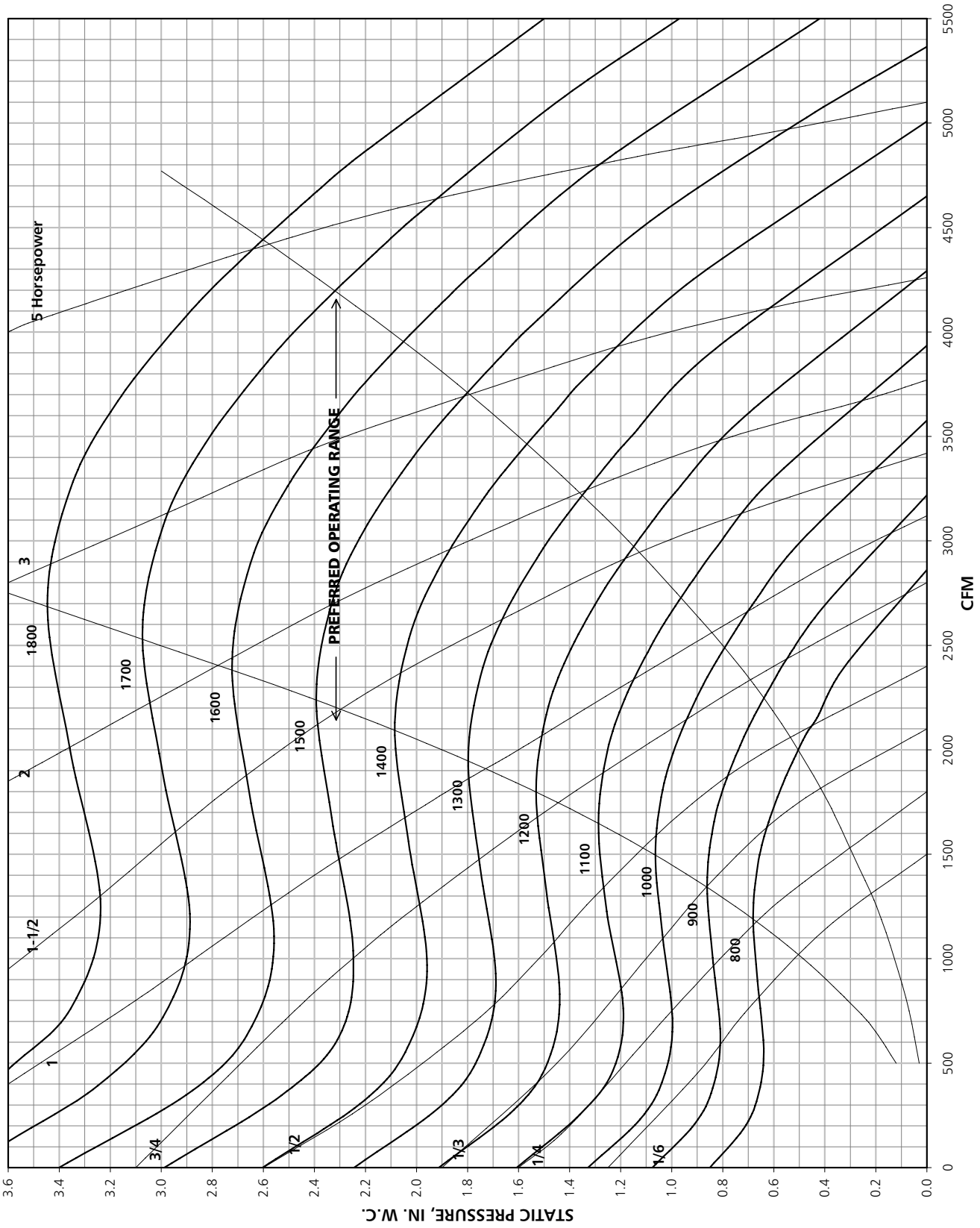


ENVIRO-TEC®

Unit Size 16 (Fan 1008R)

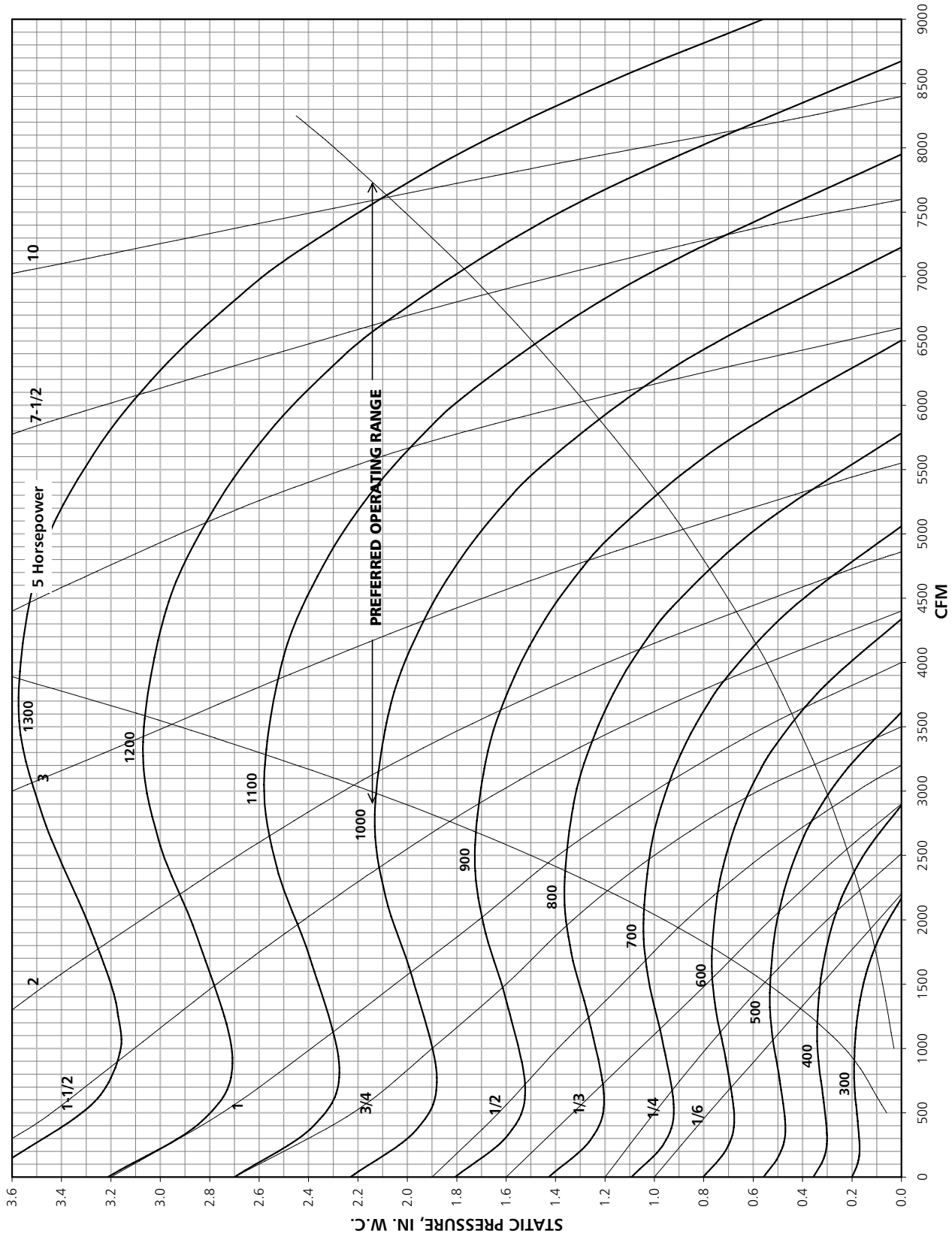


Unit Size 20 (Fan 1010R)

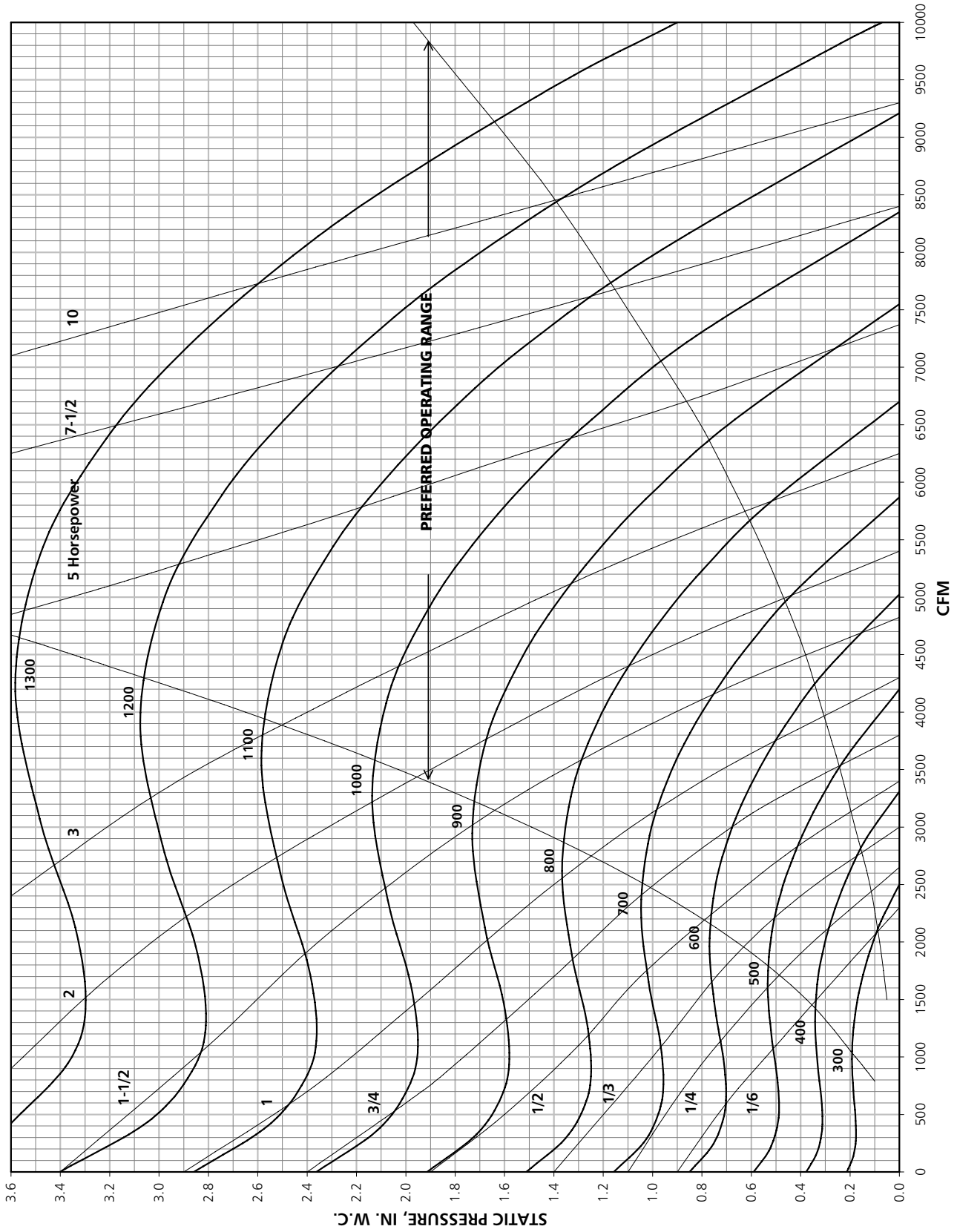


ENVIRO-TEC®

Unit Size 25 (Fan 1509R)

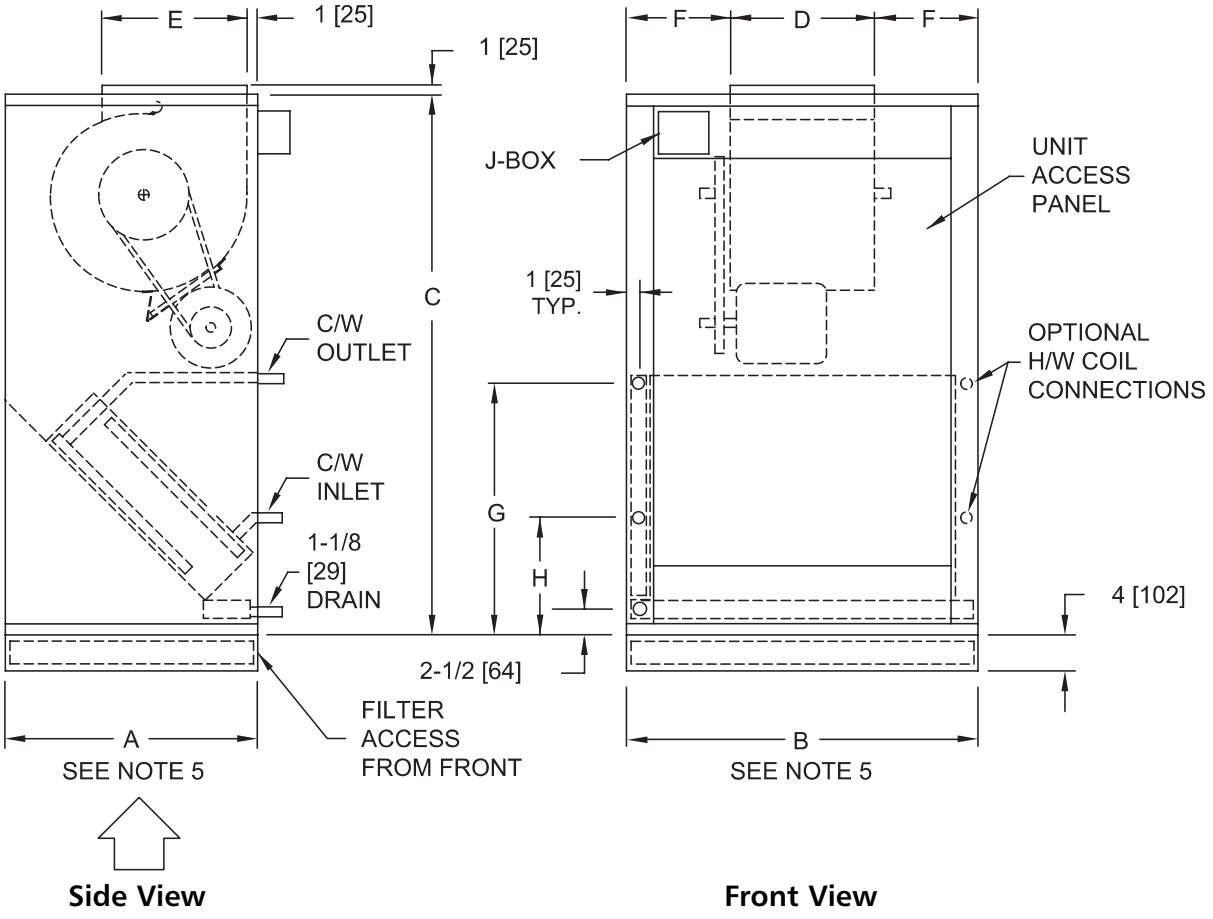


Unit Size 30 (Fan 1511R)



ENVIRO-TEC®

Model VB (Bottom Return)



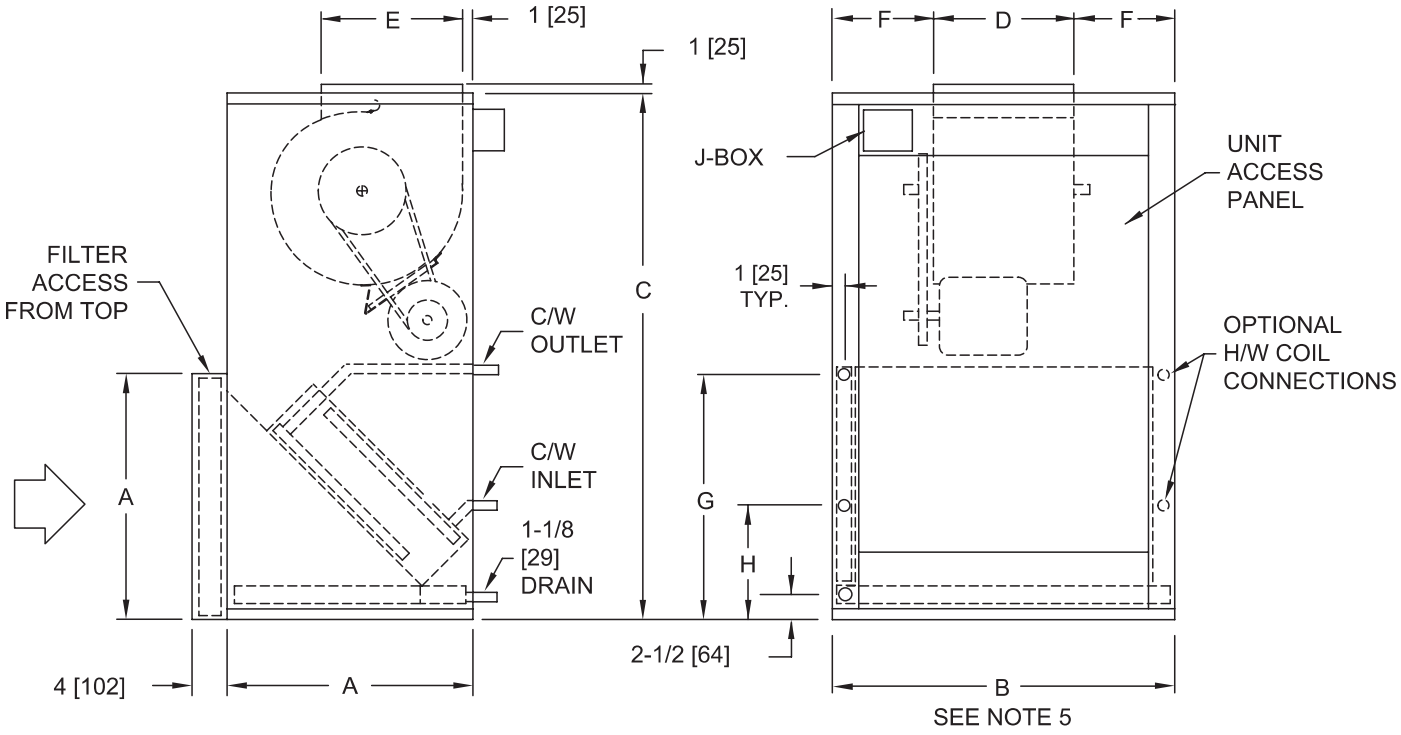
Dimensional Data

UNIT SIZE	A	B	C	D	E	F	G	H
08	19 [483]	26 [660]	46 [1168]	8-1/4 [210]	11-1/4 [286]	8-7/8 [225]	20 [508]	10-1/4 [260]
12	21 [533]	26 [660]	46 [1168]	12 [305]	11-1/4 [286]	7 [178]	23-1/4 [591]	9-3/4 [248]
16	25 [635]	29 [737]	54 [1372]	10-1/4 [260]	8-1/2 [216]	9-3/8 [238]	25-3/4 [654]	10-3/4 [273]
20	28 [711]	29 [737]	54 [1372]	13-1/4 [337]	8-1/2 [216]	7-7/8 [200]	30-3/4 [781]	10-1/2 [267]
25	28 [711]	39 [991]	60 [1524]	13-1/4 [337]	16 [406]	12-7/8 [327]	28-3/4 [730]	12-1/4 [311]
30	28 [711]	39 [991]	60 [1524]	15 [381]	16 [406]	12 [305]	30-3/4 [781]	10-1/2 [267]

NOTES:

1. All dimensions +/- 1/4" [6mm].
2. Maximum total coil rows: 6.
3. All drawings subject to change without prior notice. Refer to www.enviro-tec.com for current submittal drawings.
4. Left hand unit shown; right hand unit has C/W and H/W piping connections mirrored.
5. Filter assembly runs the full length of the unit size.
6. Drawings not for installation purposes.

Model VR (Rear Return)



Side View **Front View**

Dimensional Data

UNIT SIZE	A	B	C	D	E	F	G	H
08	19 [483]	26 [660]	46 [1168]	8-1/4 [210]	11-1/4 [286]	8-7/8 [225]	20 [508]	10-1/4 [260]
12	21 [533]	26 [660]	46 [1168]	12 [305]	11-1/4 [286]	7 [178]	23-1/4 [591]	9-3/4 [248]
16	25 [635]	29 [737]	54 [1372]	10-1/4 [260]	8-1/2 [216]	9-3/8 [238]	25-3/4 [654]	10-3/4 [273]
20	28 [711]	29 [737]	54 [1372]	13-1/4 [337]	8-1/2 [216]	7-7/8 [200]	30-3/4 [781]	10-1/2 [267]
25	28 [711]	39 [991]	60 [1524]	13-1/4 [337]	16 [406]	12-7/8 [327]	28-3/4 [730]	12-1/4 [311]
30	28 [711]	39 [991]	60 [1524]	15 [381]	16 [406]	12 [305]	30-3/4 [781]	10-1/2 [267]

NOTES:
1. All dimensions +/- 1/4" [6mm].
2. Maximum total coil rows: 6.
3. All drawings subject to change without prior notice. Refer to www.enviro-tec.com for current submittal drawings.
4. Left hand unit shown; right hand unit has C/W and H/W piping connections mirrored.
5. Filter assembly runs the full length of the unit size.
6. Drawings not for installation purposes.

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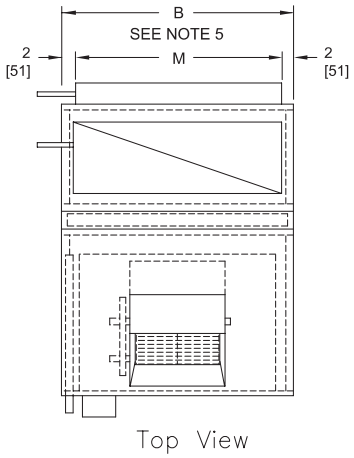
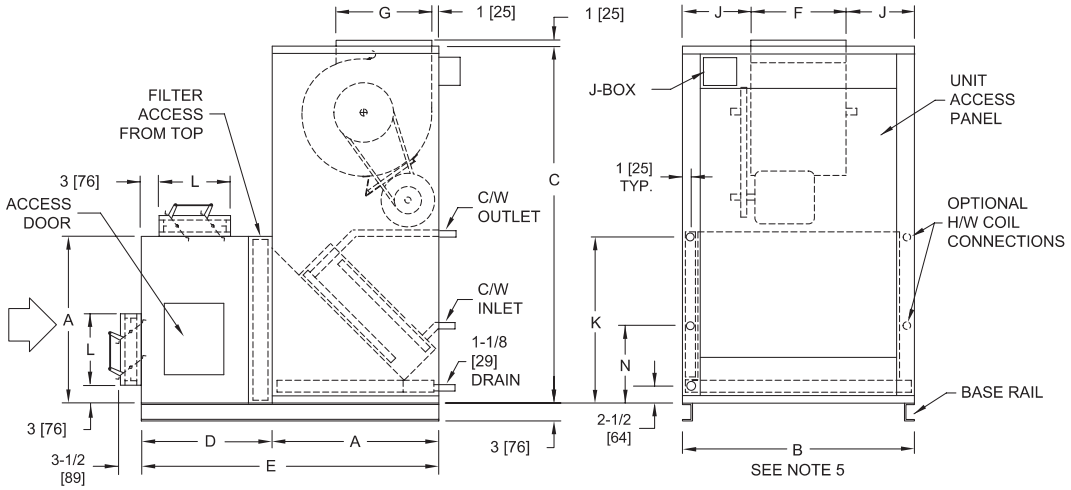
Model VMR with Inlet Damper Section

UNIT SIZE	K	L	M	N
08	20 [508]	6 [152]	22 [559]	10-1/4 [260]
12	23-1/4 [591]	9 [229]	22 [559]	9-3/4 [248]
16	25-3/4 [654]	9 [229]	25 [635]	10-3/4 [273]
20	30-3/4 [781]	12 [305]	25 [635]	10-1/2 [267]
25	28-3/4 [730]	12 [305]	35 [889]	12-1/4 [311]
30	30-3/4 [781]	12 [305]	35 [889]	10-1/2 [267]





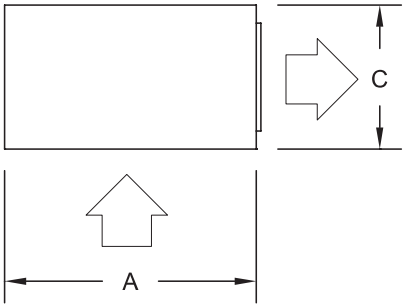
Dimensional Data

UNIT SIZE	A	B	C	D	E	F	G	J
08	19 [483]	26 [660]	46 [1168]	15 [381]	34 [864]	8-1/4 [210]	11-1/4 [286]	8-7/8 [225]
12	21 [533]	26 [660]	46 [1168]	18 [457]	39 [991]	12 [305]	11-1/4 [286]	7 [178]
16	25 [635]	29 [737]	54 [1372]	18 [457]	43 [1092]	10-1/4 [260]	8-1/2 [216]	9-3/8 [238]
20	28 [711]	29 [737]	54 [1372]	21 [533]	49 [1245]	13-1/4 [337]	8-1/2 [216]	7-7/8 [200]
25	28 [711]	39 [991]	60 [1524]	21 [533]	49 [1245]	13-1/4 [337]	16 [406]	12-7/8 [327]
30	28 [711]	39 [991]	60 [1524]	21 [533]	49 [1245]	15 [381]	16 [406]	12 [305]

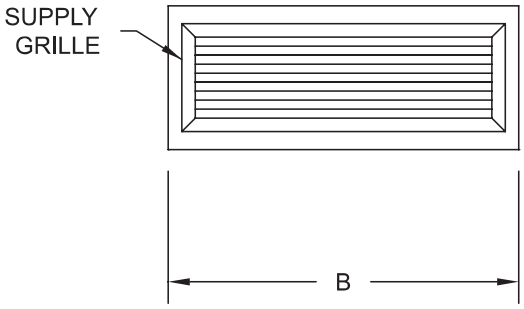
NOTES:

1. All dimensions +/- 1/4" [6mm].
2. Maximum total coil rows: 6.
3. All drawings subject to change without prior notice. Refer to www.enviro-tec.com for current submittal drawings.
4. Left hand unit shown; right hand unit has C/W and H/W piping connections mirrored.
5. Filter assembly runs the full length of the unit size.
6. Drawings not for installation purposes.

Supply Plenum with Double Deflection Grille (VB and VR)



Side View



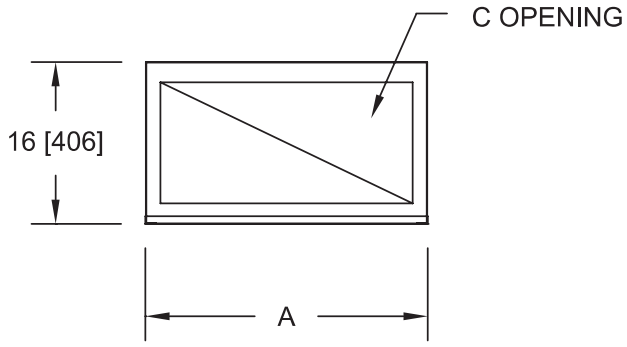
Front View

Dimensional Data

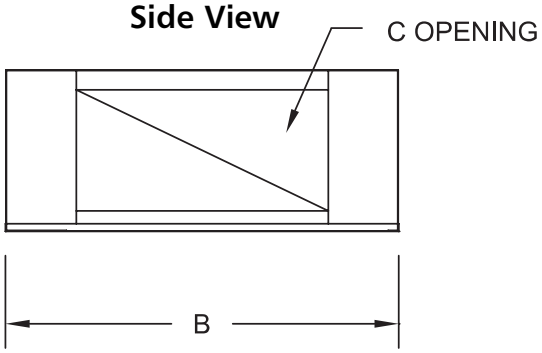
UNIT SIZE	A	B	C	SUPPLY GRILLE
08	19 [483]	26 [660]	12 [305]	18 X 8 [457 X 203]
12	21 [533]	26 [660]	12 [305]	22 X 8 [559 X 203]
16	25 [635]	29 [737]	14 [356]	24 X 10 [610 X 254]
20	28 [711]	29 [737]	16 [406]	24 X 12 [610 X 305]
25	28 [711]	39 [991]	16 [406]	30 X 12 [762 X 305]
30	28 [711]	39 [991]	16 [406]	36 X 12 [914 X 305]

NOTES:
1. All dimensions +/- 1/4" [6mm].
2. All drawings subject to change without prior notice. Refer to www.enviro-tec.com for current submittal drawings.
3. Supply plenum shipped attached to unit.
4. Supply plenum includes a steel double deflection supply grille; location is front as shown.
5. Supply plenum may not be combined with blow through electric heat.

Return Plenum (Model VB)



Side View



Front View

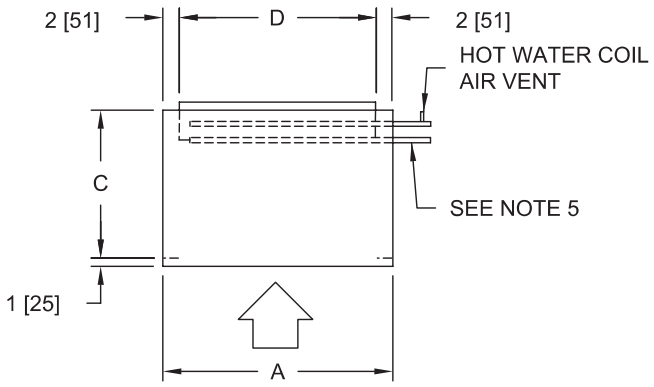
Dimensional Data

UNIT SIZE	A	B	C OPENING
08	19 [483]	26 [660]	9 X 16 [229 X 406]
12	21 [533]	26 [660]	9 X 18 [229 X 457]
16	25 [635]	29 [737]	9 X 22 [229 X 559]
20	28 [711]	29 [737]	12 X 22 [305 X 559]
25	28 [711]	39 [991]	12 X 25 [305 X 635]
30	28 [711]	39 [991]	12 X 25 [305 X 635]

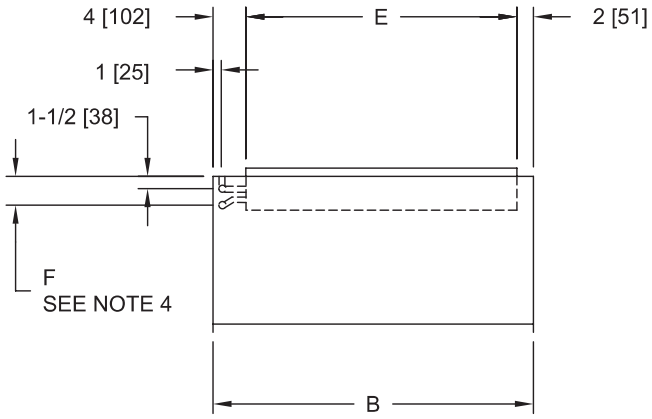
NOTES:
1. All dimensions +/- 1/4" [6mm].
2. All drawings subject to change without prior notice. Refer to www.enviro-tec.com for current submittal drawings.

ENVIRO-TEC®

Discharge Section with Heating Coil (VB and VR)



Side View



Front View

Dimensional Data

UNIT SIZE	A	B	C	D	E	F (4)				WGT. (3) lbs [kg]
						HOT WATER		STEAM		
						1 ROW	2 ROW	1 ROW	2 ROW	
08	19 [483]	26 [660]	12 [305]	15 [381]	20 [508]	2-3/4 [70]	2-3/4 [70]	2-3/4 [70]	2-3/4 [70]	37 [17]
12	21 [533]	26 [660]	12 [305]	17 [432]	20 [508]	2-3/4 [70]	2-3/4 [70]	2-3/4 [70]	2-3/4 [70]	41 [19]
16	25 [635]	29 [737]	14 [356]	21 [533]	23 [584]	2-3/4 [70]	3 [76]	2-3/4 [70]	3-1/4 [83]	52 [24]
20	28 [711]	29 [737]	14 [356]	24 [610]	23 [584]	2-3/4 [70]	3 [76]	3-1/4 [83]	3-1/4 [83]	58 [26]
25	28 [711]	39 [991]	18 [457]	24 [610]	33 [838]	2-3/4 [70]	3 [76]	3-1/4 [83]	3-3/4 [95]	81 [37]
30	28 [711]	39 [991]	18 [457]	24 [610]	33 [838]	3 [76]	3-1/4 [83]	3-3/4 [95]	3-3/4 [95]	81 [37]

Coil Connection Sizes

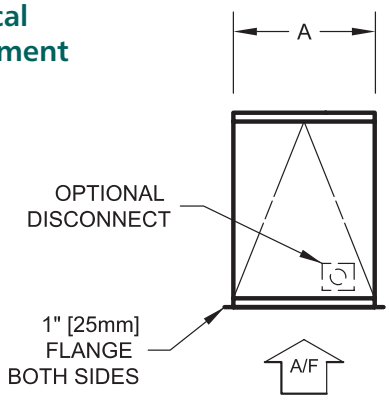
UNIT SIZE	HOT WATER		STEAM			
	1 ROW	2 ROW	1 ROW		2 ROW	
			STEAM	CONDENSATE	STEAM	CONDENSATE
08	5/8 [16]	5/8 [16]	1-1/8 [29]	7/8 [22]	1-1/8 [29]	7/8 [22]
12	5/8 [16]	5/8 [16]	1-1/8 [29]	7/8 [22]	1-1/8 [29]	7/8 [22]
16	5/8 [16]	5/8 [16]	1-1/8 [29]	7/8 [22]	1-3/8 [35]	1-1/8 [29]
20	5/8 [16]	5/8 [16]	1-3/8 [35]	1-1/8 [29]	1-3/8 [35]	1-1/8 [29]
25	5/8 [16]	7/8 [22]	1-3/8 [35]	1-1/8 [29]	1-5/8 [41]	1-1/8 [29]
30	7/8 [22]	7/8 [22]	1-5/8 [41]	1-1/8 [29]	1-5/8 [41]	1-1/8 [29]

NOTES:

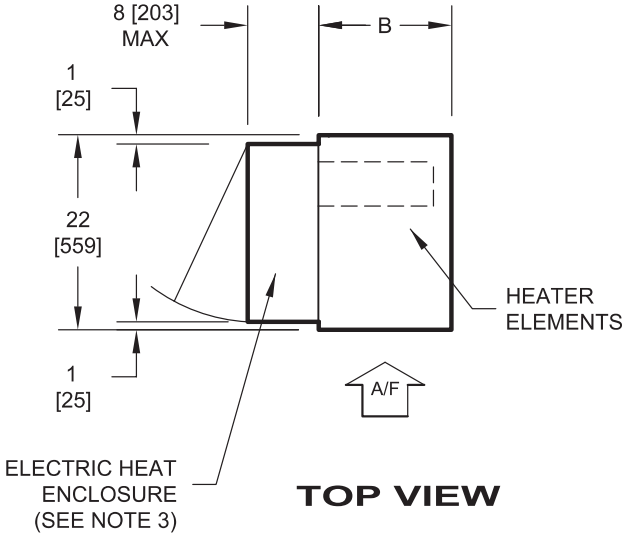
1. All dimensions +/- 1/4" [6mm].
2. This section required with 6 row cooling in conjunction with hot water and all steam heating.
3. Weight with 2 row coil.
4. Coil connection dimension + 1/2" [13mm].
5. **Hot Water Coils:** Supply – bottom, Return – top. **Steam Coils**: Steam – top, Condensate – bottom.
6. All drawings subject to change without notice. Refer to www.enviro-tec.com for current submittal drawings.

Blow Through Electric Heat (VB and VR)

Vertical Arrangement

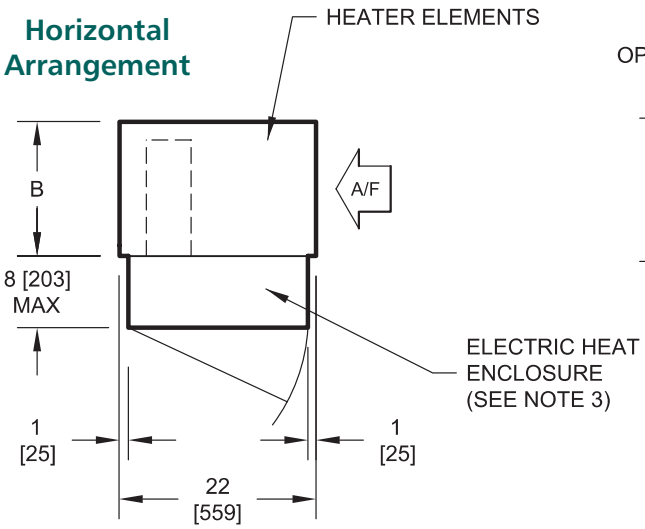


SIDE VIEW

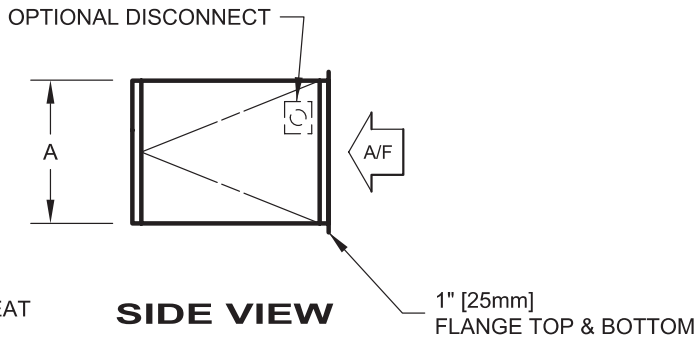


TOP VIEW

Horizontal Arrangement



TOP VIEW



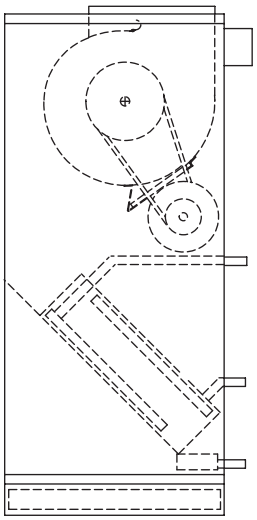
SIDE VIEW

Dimensional Data

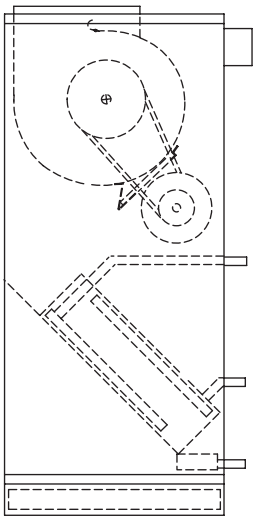
UNIT SIZE	SINGLE WALL		
	A	B	WEIGHT lbs [kg]
08	11-5/8" [295]	8-1/2" [216]	42 [19]
12	11-5/8" [295]	12-1/4" [311]	42 [19]
16	13-3/4" [349]	10-1/2" [267]	42 [19]
20	13-3/4" [349]	13-1/2" [343]	50 [23]
25	17-1/4" [438]	13-1/2" [343]	55 [25]
30	17-1/4" [438]	16-1/4" [413]	55 [25]

NOTES:
1. All dimensions are +/- 1/8" [3mm].
2. All drawings subject to change without notice. Refer to www.enviro-tec.com for current submittal drawings.
3. Electric heat enclosure specified left or right with air to back. Standard control enclosure is right hand.

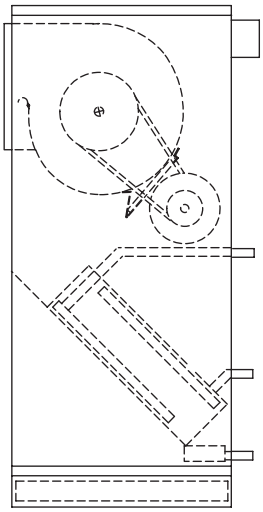
Model VB



Standard Rotation
Arrangement 2

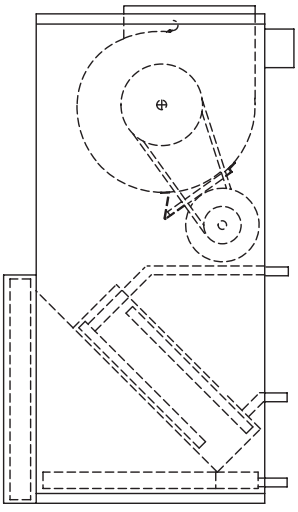


Reverse Rotation
Arrangement 1

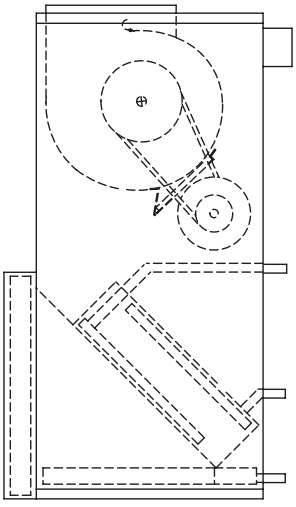


Horizontal Rear Discharge
Arrangement 7

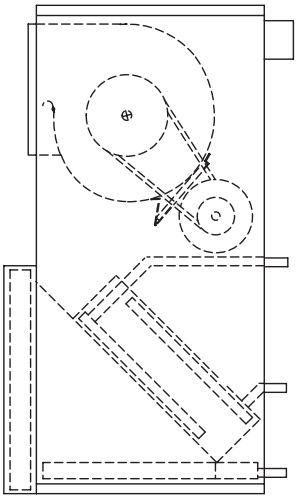
Model VR



Standard Rotation
Arrangement 2



Reverse Rotation
Arrangement 1



Horizontal Rear Discharge
Arrangement 7

NOTES:
1. Refer to Dimensional Data for unit dimensions.
2. All drawings subject to change without prior notice. Refer to www.enviro-tec.com for current submittal drawings.
3. Fan arrangements are also available with inlet damper section (Model VR).
4. Side access filter rack standard on arrangement 7 (Model VR).

Motor Electrical Data

MOTOR HP	SINGLE PHASE AMPS				THREE PHASE AMPS			
	115V	208V	230V	277V	208V	230V	460V	575V
1/3	6.6	3.0	3.3	2.3	1.6	1.4	0.8	0.6
1/2	9.0	4.0	4.5	3.0	2.2	1.8	1.1	0.7
3/4	11.0	5.4	5.5	4.4	2.6	2.5	1.3	0.9
1	12.6	6.2	6.3	5.2	3.4	3.4	1.7	1.4
1 1/2	15.0	7.8	7.5	7.4	5.0	5.0	2.5	2.0
2	--	--	--	--	6.0	6.0	3.0	2.4

NOTES:
1. AMPs shown above are NEC full load AMPs for standard motor. Actual motor nameplate AMPs may vary.
2. Consult factory for applications requiring special motors.

Unit Weight Data[1]

UNIT COMPONENTS		UNIT SIZE					
		08	12	16	20	25	30
BASIC UNIT		125 (57)	131 (60)	160 (73)	167 (76)	231 (105)	236 (107)
DAMPER SECTION		42 (19)	53 (24)	59 (27)	73 (33)	91 (41)	91 (41)
BLOW THRU ELECTRIC HEATER		47 (21)	47 (21)	47 (21)	55 (25)	61 (28)	61 (28)
DISCHARGE COIL SECTION[2]		32 (15)	32 (15)	43 (20)	46 (21)	66 (30)	78 (35)
SUPPLY PLENUM		22 (10)	26 (12)	35 (16)	38 (17)	76 (35)	76 (35)
RETURN PLENUM (VB)		29 (13)	30 (14)	33 (15)	35 (16)	44 (20)	44 (20)
COIL	1 ROW	12 (5)	14 (6)	17 (8)	21 (10)	25 (11)	28 (13)
	COIL WATER WEIGHT	1.7 (1)	2.2 (1)	2.8 (1)	3.7 (2)	4.5 (2)	6.1 (3)
	2 ROW	13 (6)	17 (8)	21 (10)	28 (13)	32 (15)	36 (16)
	COIL WATER WEIGHT	3.7 (2)	4.6 (2)	5.9 (3)	8.0 (4)	9.5 (4)	11.7 (5)
	4 ROW	26 (12)	34 (15)	37 (17)	50 (23)	59 (27)	65 (30)
	COIL WATER WEIGHT	7.3 (3)	9.1 (4)	11.5 (5)	15.7 (7)	18.9 (9)	21.6 (10)
	6 ROW	38 (17)	51 (23)	58 (26)	77 (35)	92 (42)	102 (46)
	COIL WATER WEIGHT	10.7 (5)	13.4 (6)	17.2 (8)	23.2 (11)	28.2 (13)	32.3 (15)

NOTES:
1. Unit weight data is shipping weight in pounds (kilograms).
2. Discharge section includes a 2 row coil.

Motor/Drive Weight Data[1,2]

TYPE	MOTOR HP					
	1/3	1/2	3/4	1	1 1/2	2
SINGLE PHASE	37 (17)	37 (17)	45 (20)	47 (21)	55 (25)	N/A
THREE PHASE	34 (15)	34 (15)	40 (18)	43 (20)	46 (21)	53 (24)

NOTES:
1. Includes motor, pulleys, belts, and motor base.
2. Motor/drive weight data is shipping weight in pounds (kilograms).

ENVIRO-TEC®

GENERAL

Furnish and install ENVIRO-TEC® Model VB/VR/VMR Belt Drive Blower Coil Units where indicated on the plans and specifications. Units shall be completely factory assembled and tested and shipped as one piece except where noted.

All units shall be capable of meeting or exceeding the scheduled capacities for cooling, heating and air delivery. All unit dimensions for each model and size shall be considered maximums.

All units shall be designed with coils, fans, motor/drive and drain pan completely contained within the unit cabinet.

Electric heat to be in the blow-thru configuration.

Hot water and steam coils to be in a blow thru configuration when installed in a discharge plenum.

Units shall be ETL listed in compliance with UL/ANSI Standard 1995.

All unit coils shall meet or exceed the scheduled cooling and heating capacity, selected and rated in accordance with ARI 410.

CONSTRUCTION

All units shall be fabricated of heavy gauge galvanized steel with a minimum G 60 zinc coating, able to withstand a 125 hour salt spray test per ASTM B-117. Panels shall be die-formed "multi-bend" construction for optimum strength and rigidity. All exterior panels shall be single wall. Insulation shall be 3/4 inch, 4 pound per cubic foot dual density scrim reinforced foil faced insulation, glued and pinned with mechanical fasteners for maximum positive adhesion. Insulation must comply with UL 181, ASTM-C1071, NFPA 90A & 90B and meets bacteriological standard ASTM-C665 and C1136 for mold, mildew and humidity resistance. Minimum thermal conductivity shall be 0.24. All units shall have minimum 1" duct collars on discharge and return.

The access panel shall be fully insulated and attached with standard lift and turn fasteners on at least two opposite sides. No coil or drain piping or electrical connections shall pass through any access panel.

Each unit shall be furnished with a one-piece heavy gauge (galvanized steel) (304 stainless steel) drain pan with welded corner construction.

(Rubber-in-shear) (Spring) type unit mounting vibration isolators shall be provided by the unit manufacturer.

FAN ASSEMBLY

All units shall be furnished with DWDI forward curved centrifugal blowers statically and dynamically balanced for smooth operation. All blower wheels shall have two setscrews and shall be mounted on solid steel shafting rotating in ball bearings with a minimum design average life of 100,000 hours. All blower assemblies shall have resilient mounted cartridge type permanently lubricated ball bearings.

FAN MOTOR & DRIVE ASSEMBLY

All fan motors shall be standard NEMA design motors of the horsepower listed in the equipment schedule. All motors shall be 1750 RPM, 60-hertz (ODP) (ODP E+) single speed motors rated for continuous duty. All motors shall be reversible rotation type. Three phase motors shall be "across-the-line" start type in 56 Frame size up through two horsepower.

All motors shall be mounted on an adjustable base.

All motor wiring is to be terminated in a junction box, external to the unit casing.

All fan drive assemblies shall include an adjustable pitch motor pulley, a fixed pitch blower pulley and a standard cross section "V-belt". All fan drives shall be selected at a minimum service factor of 1.2.

COILS

All unit coils shall be rated in accordance with ARI 410.

All coils shall be 1/2" O.D. seamless copper tubes with collared and corrugated aluminum fins. All tubes shall be mechanically expanded to provide an efficient bond between tube and fin. All water coils shall be provided with a manual air vent fitting to allow for coil venting. Valve core type vent fittings shall not be accepted.

All CW, HW, & DX coils shall have 0.0055" aluminum fins and 0.016" tube wall thickness. All steam coils shall have 0.0055" aluminum fins and 0.025" tube wall thickness.

All steam coils shall be suitable for temperatures above 35°F and 15-psig maximum operating pressure.

All coils shall be hydrostatically tested with air under water at 450-psig minimum pressure.

Direct expansion coils shall be tested to 500-psig pressure and factory sealed and charged with a minimum of 5-psig nitrogen or refrigerated dry air. DX coils shall be provided with a fixed orifice refrigerant distributor. A field supplied thermal expansion valve (TXV) can be mounted directly to the refrigerant distributor.

OPTIONS

Coil casing shall be fabricated from 304 Stainless Steel.

Fin material shall be (0.0075" aluminum) (0.0075" copper).

Provide automatic air vents, in lieu of manual air vents.

Tube wall thickness shall be 0.025" on chilled water, hot water, and direct expansion coils.

FILTER RACK ASSEMBLY
All units shall be furnished with a flat filter rack designed to accept 2" nominal, standard sized, throwaway filters. One complete set of spare throwaway filters shall be provided for each unit.

OPTIONS
Unit shall be furnished with a flat filter rack designed to accept 2" nominal, standard sized, pleated filters. One complete set of spare pleated filters shall be provided for each unit.

INLET DAMPER SECTION – Model VR only
Where shown on the plans, the unit manufacturer shall furnish a fully insulated mixing box section (factory assembled and installed inlet damper section) to be mounted next to the unit on base rail (unit & mixing box).

The mixing box section shall include heavy gauge formed steel blade dampers in a heavy gauge steel frame with extruded vinyl blade seals and flexible metal jamb seals. All damper actuators and drive linkage shall be (furnished and installed in the field by others) (factory furnished and installed by the unit manufacturer).

RETURN PLENUM SECTION – Model VB only
Where shown on the plans, the unit manufacturer shall furnish a fully insulated return air plenum section to be mounted under the unit in the field. Return plenum will have a solid bottom & back panel with right, left, and front openings all with the same dimensions. The return plenum right and left openings will be covered with a sheet metal panel that can be removed and used to cover the front opening (for field modification) or discarded when more than one opening is required. The return air can be from the front and/or sides.

SUPPLY PLENUM SECTION
Where shown on the plans, the unit manufacturer shall furnish a fully insulated supply air discharge section complete with a double deflection supply grille (cannot be used with discharge heating coil plenum options).

ELECTRICAL CONTROL
The unit fan motor shall be completely factory wired to an external electrical enclosure. Each unit shall include fan motor operating control with 24-volt control voltage. Each unit shall include motor circuit fusing, control circuit transformer with (primary) (and secondary) fusing and terminal strip for connection of field wiring.

A main incoming power non-fused disconnect switch shall be factory furnished and wired by the unit manufacturer for single point power connection.

ELECTRIC RESISTANCE HEATER
Where shown on the plans, the unit manufacturer shall furnish an electric resistance heating assembly with the heating capacity, voltage and steps as shown in the schedule. The heater assembly shall be designed and rated for installation to the blower coil unit in the blow-thru configuration without the use of duct extensions or transitions between the unit and the heater assembly. The heater assembly shall be factory assembled to the blower coil unit and completely factory wired for single point power connection to the unit. The heater/unit assembly shall be listed for zero clearance meeting all N.E.C. requirements and be ETL listed in compliance with UL/ANSI Std. 1995.

All heating elements shall be of open coil design using nichrome wire mounted in ceramic insulators and housed in an insulated heavy gauge galvanized steel housing. All elements shall terminate in a machine staked stainless steel terminal secured with stainless steel hardware. The element support brackets shall be spaced no greater than 3-1/2" on center. All internal wiring shall be rated for 105°C minimum.

All heaters shall include over temperature protection. All heaters shall include a non-adjustable airflow switch.

An incoming line power distribution block shall be provided. The power distribution block shall be designed to accept incoming power wiring capable of carrying 125% of the calculated load current.

In addition to the above, electric heaters shall include the following options:
- Main incoming power disconnect (non-fused) (fused)
- Main fusing per (N.E.C.) (step)
- Magnetic contactors wired for (de-energizing) (disconnecting) operation
- Class II 24 volt control transformer
- Primary and/or secondary control transformer fusing
- System status pilot lights
- Remote component mounting panel
- Fan motor fusing
- Fan motor relay or starter with heater interlock contacts (required on single point power connection)
- Pilot duty 24 volt fan relay
- De-rated elements (for longer life)
- Dual point power connection
- Fan interlock relay

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