TAC, TAF, TAH Central Station Air Handlers

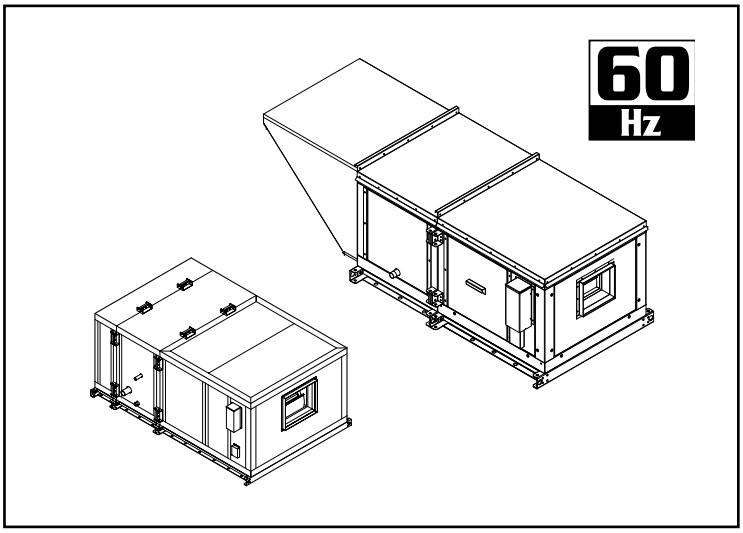
PRODUCT DATA & INSTALLATION

INDOOR AND OUTDOOR - HEATING, COOLING AND VENTILATING UNITS

Bulletin T80-TA-PDI-2

1097716

For the latest product updates and further information, visit **www.trentonrefrigeration.com**



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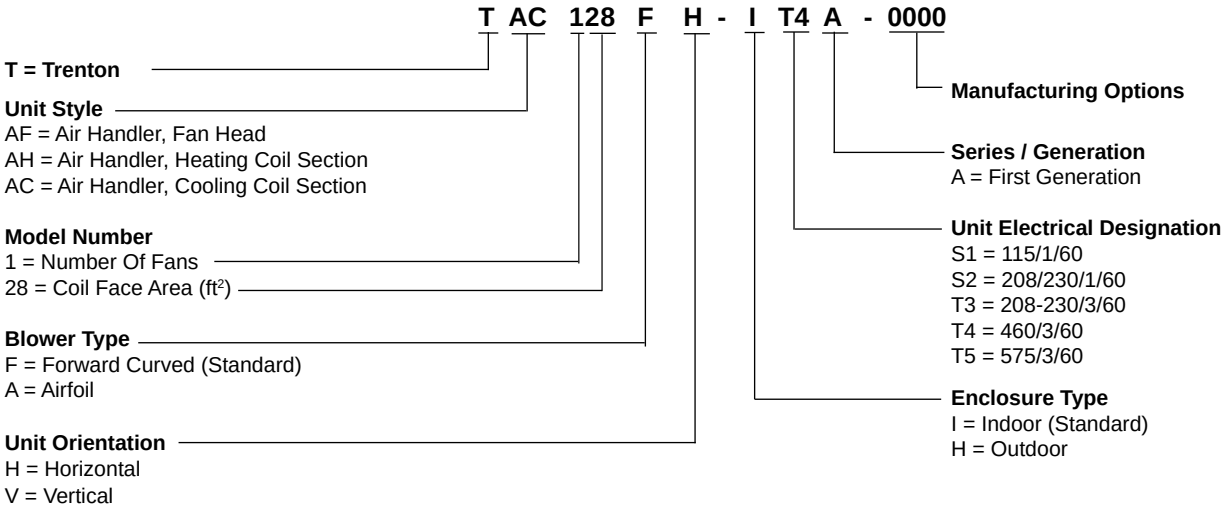
NOMENCLATURE



STANDARD FEATURES

● 14 Models ● Up to 6” Total Static Pressure

● Single Wall Heavy Gauge Galvanized Cabinet

● Efficient Forward Curved Blower ● Up to 64,000 CFM

● Internal Motor ● Up to 75 HP ● ETL Certification

● Horizontal and Vertical Cabinet Styles

● External Electrical Box Mounted to Cabinet

● Extended Grease Lines with External Access

● Stainless Steel Drain Pan on All Cooling Coils

● Aluminum Fan Head Drain Pan (Models AC137 thru 182, downblast configuration not available)

OPTIONAL FEATURES (Factory Mounted)

● Double Wall Cabinet with 2” Mineral Wool Insulation

● Outdoor Cabinet

● Internal Vibration Isolators

● Airfoil (Up to 8” Total Static Pressure)

● Disconnect Switch ● Flat Filter

● Angle Filters ● Mixing Box ● Dampers

● Aluminum Fan Head Drain Pan (Models AC103 thru 128, downblast configuration not available)

OTHER OPTIONS ARE AVAILABLE AT YOUR REQUEST. CONSULT FACTORY FOR PRICING.

BLOWER COMPONENTS

FEATURES A NEW ADVANCED DYNAMIC DESIGN BLOWER SECTION

• HIGH EFFICIENCY FAN PERFORMANCE
• FANS TESTED PER AMCA CODE No. 210
• MINIMUM FAN TIP SPEEDS
• CLASS II CONSTRUCTION

The air handler blower section is a matched assembly combining advanced engineering techniques with the finest materials available.
Forward-curved centrifugal fans were designed specifically to operate at low tip-speeds with minimum power consumption. To meet the low noise level requirements of comfort air conditioning, fan outlet velocities have been reduced without sacrificing good fan performance. Blowers are fully performance tested and certified in accordance with DIN, ISO, BS and AMCA 210 standards. Blowers are rated for CLASS II operation and have bearings selected to guarantee a minimum L50 life time of 200,000 hours. The fan section is complete with a rugged drive assembly. The heavy duty motor base is designed for quick and simple belt adjustment. All drives are furnished with matched V-belts.

EXCLUSIVE STEEL FRAME CONSTRUCTION

Sectionalized construction provides complete flexibility of unit arrangements with each individual section structurally designed to provide the absolute maximum in unit strength and rigidity. All static and dynamic forces are directly transmitted to the unit framework. The blowers are supported entirely by rigid frame members, eliminating all dynamic forces from the casing panel. Optional internal blower isolators are also available on all models.

For maximum durability, the entire cabinet assembly is fabricated of continuous galvanized steel. This heavy protective finish is maintained intact, completely undisturbed and is complimented with the use of corrosion resistant permanent fasteners. The positive fastening principle of a permanent fastener provides the rigidity and stability necessary for lifetime performance. Optional 2” insulated panels are available on all models. Outdoor construction is available on all models. These exclusive construction features offer you the ultimate in air handling design.

INTERNAL BLOWER CONSTRUCTION

All blower housings are manufactured in galvanized sheet steel. Impellers are also manufactured in galvanized sheet steel with tab locked blades. All impellers are balanced, both statically and dynamically, to an accuracy grade of G = 6.3 in accordance to DIN ISO 1940-1 and ANSI S2.19 – 1989. Bearings are self-aligning, single row, and deep groove ball type, in pillow block cast iron housings. All bearings have been selected to guarantee a minimum L50 life time of 200,000 hours. Operating temperatures range from -25°F to + 131°F (*-31°C to +55°C*) for all blowers. For operating temperatures outside these limits please consult factory. Extended lubrication lines are standard. Airfoil constructed blowers available for all models for static pressures above 6” – consult factory (models 103 & 104 excluded).

COIL INFORMATION

With the variety of coil sizes and types available for mounting in factory fabricated units it is important to follow a few general guidelines. Besides coil section space and unit arrangement configuration limitations, outlined below, care should be taken that all coils mounted in the same section have identical face dimensions. All coils by-passed with internal face and by-pass damper sections must be of small face area.

The maximum coil space available in standard coil sections is as follows:

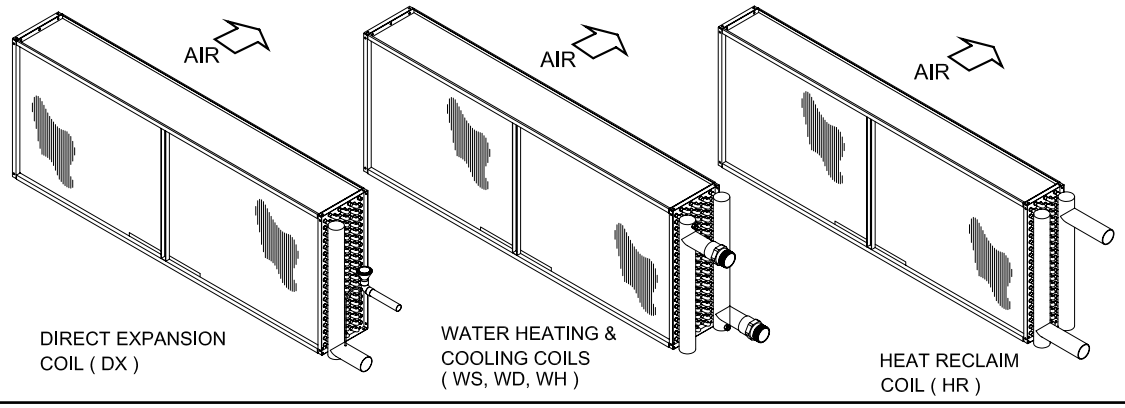
Draw Thru-Horizontal or
Vertical Cooling Coil Section..... = 17 7/8”
Heating Coil Section - 1 thru 8 Row…..... = 12 3/8”

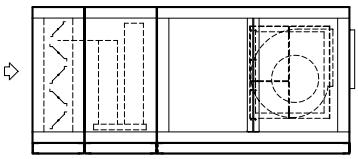
The table below lists the depth dimension of the various types and rows of coils. All dimensions are overall casing depth. In order for the coils selected on a specific unit to fit in a standard coil section, the sum of depth dimensions of the coils in series must not exceed the maximum space available.

Draw-Thru unit sizes 137 and 141 with small face area cooling coils are not equipped with the intermediate drain trough. For this reason, the maximum space available with these units may be increased by 2-3/4”.

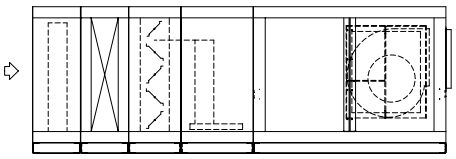
Selection of cooling & heating coils may be made from current catalogued data.

NOTE: Maximum water temperature not to exceed 200°F and air leaving 140°F.





Heating Coil in Re-Heat Position
Heating coil in reheat position with internal by-pass of cooling coil only. Cooling coil space consumed may not exceed 9 5/8”. Heating coils need not be same face area as cooling coil. **(Face and By-Pass Dampers not available on models 103 thru 111).**



Heating Coil in Pre-Heat Position
Cooling coil must be small face area. Heating coil may be large or small face area. For proper air distribution space is required between the heating coil and the internal face and by-pass damper section. An access section may be used for this purpose. **(Face and by-pass dampers not available on Models 103 thru 111).**

COIL CASING DIMENSIONS

ROWS	COIL TYPE				
	KWS	KWH	KWD	KHR	KDX
1	6-7/8	6-7/8	N/A	6-7/8	N/A
2	6-7/8	6-7/8	6-7/8	6-7/8	6-7/8
3	6-7/8	6-7/8	N/A	6-7/8	6-7/8
4	6-7/8	6-7/8	6-7/8	6-7/8	6-7/8
5	8-1/4	8-1/4	N/A	N/A	8-1/4
6	9-5/8	9-5/8	9-5/8	9-5/8	9-5/8
8	12-3/8	12-3/8	12-3/8	12-3/8	12-3/8
10	15-1/8	15-1/8	N/A	15-1/8	15-1/8

N/A = Not Available

UNIT SELECTION DATA

GENERAL

Certain basic factors must be predetermined prior to the selection of a central station air handler. The factors which will control the unit selection are applicable codes, ventilation requirements, heating and cooling space loads, acceptable temperature differentials, thermal media and installation limitations. The selection of the unit can then be resolved to five steps:

1. Unit type and size,
2. Cooling coil,
3. Heating coil,
4. Accessories and,
5. Motor size.

SELECTION OF UNIT TYPE AND SIZE

With the overall system designed to minimize the number of units and the heating, cooling and ventilation requirements for the various zones established, selection of the optimum unit size can be made based on the required air volume. The heating load, cooling load and ventilation requirement will establish a CFM need, any one of which may be the maximum.

The unit air volume for cooling is dependent upon the sensible space cooling load and the design dry bulb temperature differential. Normal temperature differentials for air conditioning are from 12 to 25°F. The minimum air volume is calculated using the following formula:

$$\text{CFM} = \frac{\text{Sensible Space Load (Btuh)}}{1.09 \times \text{Temp. Differential (°F)}}$$

Normal temperature differentials for heating are from 20 to 50°F. The required minimum air volume for heating calculated using the same formula.

The required air volume for ventilation is generally less than that for cooling or heating. However, where toxic fumes or unusual contaminants are encountered, the ventilation requirements may establish a minimum air volume in excess of that determined for cooling or heating.

The unit size can then be selected based on maximum air volume required. Usually more than one unit size can be selected to deliver the required air. Therefore, fan outlet velocity, coil face velocity, fan RPM and BHP should also be given consideration in the final selection. The fan performance tables are conveniently arranged with CFM,fan outlet velocity, coil face velocity, fan RPM and BHP in tabular form for simple selection of the optimum unit size.

SELECTION OF COILS

Having determined the unit size, the selection of the coil is resolved to three steps:

1. Choice of the face area coil for optimum face velocity,
2. Choice of the type of coil suited to the application, and
3. Determination of number of rows and fin series.

COOLING COIL

The coil size should be selected for maximum face velocity to obtain peak heat transfer efficiency and minimum cost. Generally 500 to 600 FPM is considered the optimum coil face velocity range for dehumidification application. Determination of the number of rows and fin spacing is made using the current cooling coil catalogues.

HEATING COIL

Selection of the heating coil is a choice of coil type, size and determination of the required number of rows and fin spacing.

Determination of the number of rows and fin spacing is made from the current Heating Coil Catalogues.

NOTE: Maximum water temperature not to exceed 200°F and air leaving 140°F.

SELECTION OF ACCESSORIES

Accessories should be selected to provide a complete heating/cooling unit with proper cleaning, mixing and control of the air. A complete line of accessories is available to simplify the selection and installation of accessories.

AIR CLEANING

A filter section should be selected to provide filter area such that the filter velocity will be compatible with the choice of filter media. Two filter sections are offered; flat, and angular, for units 114 thru 182. Units 103 thru 111 use flat only.

AIR MIXING

Mixing dampers are included as a simple means of introducing outside air with thorough mixing and proportional control of the recirculated and fresh air. A mixing box is available for each unit size and is also offered in combination with the angular filter section.

TEMPERATURE CONTROL

Dampers are often selected as an effective means of temperature control because they offer close control without time lag. Face and by-pass dampers are available for units 114 thru 182. The face and by-pass dampers are available with an internal by-pass duct (used with small face area coils only) or with an external by-pass duct.

SELECTION OF FAN MOTOR

The determination of the actual fan performance requires an accurate calculation of the resistance to air flow thru the entire system. This total resistance consists of two parts. The external static pressure of the distribution system, and the internal unit resistance.

The internal unit resistance is found by summing the resistances of the coils, various unit components and accessories. Components resistances are tabulated in Fan Performance Data tables (see pages 7-13).

FAN PERFORMANCE

DETERMINATION OF FAN SPEED AND MOTOR HP REQUIREMENTS

Final determination of the actual fan performance requires an accurate calculation of the total resistance to air flow through the entire system. This total static pressure (TSP) will consist of two parts: (1) the external resistance due to air flow through the ducts, discharge grilles, diffusers, etc. of the distribution system, and (2) the internal resistance of the unit which results from air flow through the coils, filters, unit cabinet and other accessories. The method of calculating the resistance for the various components of the distribution system are well established. The internal resistances are easily determined from Fan Performance Data tables (see pages 7-13) which tabulates the resistance values for the various unit components in increments of air volume. For the internal resistances as shown in Fan Performance Data tables (see pages 7-13). The resistances of the cooling and heating coils must be added. These may be obtained from the cooling and heating coil catalogues. After calculating the total static pressure, the fan speed and motor horsepower requirements can be accurately determined. With the unit model, CFM and TSP known, the fan RPM and BHP is easily determined from the Fan Performance Tables.

FAN PERFORMANCE INFORMATION

This catalogue contains all of the fan performance tables for central station air handlers. Units are equipped with forward curved fan wheels as standard.
Further pressure loss correction is required for vertical draw-thru central station air handlers, by adding the casing air pressure drop found in Fan Performance Data tables (see pages 7-13)

SELECTION RULES

The fan performance calculation procedure is predicated on the fact that a fan is a constant volume machine, provided the RPM and static pressure do not change. This means the delivered air volume (CFM) will not change, even though the temperature may. The BHP required is inversely proportional to final air temperature and altitude; consequently BHP decreases with an increase in final air temperature or higher altitude and increases with a decrease in final air temperature or lower altitude. This requires that the static pressure be adjusted for any air conditions other than standard. After the calculation of RPM and BHP, only the BHP need be corrected to the specified conditions.

SELECTION PROCEDURE

The following data is required to determine the fan performance. The unit type, unit size, CFM, total static pressure, operating temperature and altitude.

1. From table below, obtain the temperature and altitude conversion factor.
2. Divide the specified total static pressure by the conversion factor to obtain a corrected total static pressure.
3. At the specified CFM and corrected total static pressure, determine the RPM and BHP.
4. Multiply the BHP by the conversion factor to obtain the BHP required at the specified altitude and temperature.

EXAMPLE OF SELECTION PROCEDURE -

TAC111 with 5000 CFM @ 3.0” total static pressure, 60°F air temp, 5000 feet elevation:

1. Conversion factor = 0.85
2. New TSP = 3.0” / 0.85 = 3.5”
3. 3.5” = 1100 RPM and 4.45 BHP.
4. New BHP = 4.45 x 0.85 = 3.78

Selection = 5000 CFM @ 1100 RPM and 3.78 BHP.

TEMPERATURE AND ALTITUDE CONVERSION FACTORS

AIR TEMP. °F	ALTITUDE (FEET)								
	0	1000	2000	3000	4000	5000	6000	7000	8000
-20	1.2	1.16	1.12	1.08	1.04	1	0.97	0.93	0.89
0	1.15	1.1	1.08	1.02	0.99	0.95	0.92	0.88	0.85
20	1.11	1.06	1.02	0.98	0.95	0.92	0.88	0.85	0.82
40	1.06	1.02	0.98	0.94	0.91	0.88	0.84	0.81	0.78
60	1.02	0.98	0.94	0.91	0.88	0.85	0.81	0.79	0.76
70	1	0.96	0.93	0.89	0.86	0.83	0.8	0.77	0.74
80	0.98	0.94	0.91	0.88	0.84	0.81	0.78	0.75	0.72
100	0.94	0.91	0.88	0.84	0.81	0.78	0.75	0.72	0.7
120	0.92	0.88	0.85	0.81	0.78	0.76	0.72	0.7	0.67
140	0.89	0.85	0.82	0.79	0.76	0.73	0.7	0.68	0.65

FAN PERFORMANCE DATA
(Based on Ducted Outlet)

MODEL: 103 **Area (ft²): Outlet = 0.84** **LFA** (Large Face Area) **Coil: 2.24** **SFA** (Small Face Area) **Coil: N/A** **Forward Curved Fan: ATLI 9-9 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE [In.W.G]																										CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
700	833	313	NA	523	0.05	741	0.09	939	0.15	1116	0.21	1415	0.38	1664	0.57	1879	0.79	2070	1.03	-	-	-	-	-	-	-	-	-	-	-	-	0.01
800	952	357	NA	534	0.06	733	0.1	917	0.16	1086	0.22	1384	0.39	1636	0.58	1856	0.8	2051	1.04	2229	1.3	-	-	-	-	-	-	-	-	-	-	0.02
900	1071	402	NA	549	0.08	733	0.12	903	0.17	1063	0.24	1353	0.4	1606	0.59	1828	0.81	2027	1.05	2207	1.31	2374	1.59	2528	1.89	-	-	-	-	-	-	0.02
1000	1190	446	NA	567	0.09	740	0.14	897	0.2	1047	0.26	1325	0.42	1575	0.61	1797	0.82	1998	1.07	2182	1.33	2351	1.61	2508	1.91	2655	2.23	2794	2.56	-	-	0.03
1100	1310	491	NA	587	0.11	751	0.16	898	0.22	1038	0.28	1302	0.44	1545	0.63	1766	0.84	1967	1.08	2152	1.35	2323	1.63	2483	1.93	2633	2.25	2774	2.58	-	-	0.03
1200	1429	536	NA	607	0.14	765	0.19	904	0.25	1036	0.31	1285	0.47	1519	0.65	1736	0.87	1936	1.11	2121	1.37	2294	1.65	2455	1.95	2606	2.27	2749	2.6	2885	2.95	0.04
1300	1548	580	NA	629	0.17	782	0.22	914	0.28	1038	0.35	1275	0.5	1498	0.69	1709	0.9	1906	1.14	2090	1.4	2262	1.68	2424	1.98	2577	2.29	2722	2.63	2859	2.98	0.04
1400	1667	625	NA	652	0.2	799	0.26	927	0.32	1045	0.39	1269	0.55	1482	0.73	1685	0.94	1878	1.17	2060	1.43	2231	1.71	2393	2.01	2546	2.33	2692	2.66	2830	3.01	0.05
1500	1786	670	NA	676	0.23	818	0.3	942	0.37	1055	0.44	1269	0.59	1472	0.78	1667	0.98	1854	1.22	2032	1.47	2201	1.75	2362	2.05	2515	2.36	2661	2.69	2800	3.04	0.06
1600	1905	714	NA	701	0.27	838	0.34	959	0.41	1068	0.49	1272	0.65	1466	0.83	1653	1.04	1833	1.27	2007	1.52	2173	1.8	2332	2.09	2484	2.41	2629	2.74	2768	3.09	0.06
1800	2143	804	NA	755	0.36	881	0.45	995	0.53	1099	0.61	1289	0.77	1467	0.96	1639	1.17	1806	1.4	1968	1.65	2126	1.92	2279	2.21	2426	2.52	2569	2.85	2707	3.19	0.08
2000	2381	893	NA	813	0.48	926	0.57	1035	0.66	1134	0.75	1314	0.93	1480	1.12	1640	1.33	1794	1.56	1946	1.81	2094	2.08	2238	2.36	2379	2.67	2517	2.99	2651	3.33	0.1

MODEL: 104 **Area (ft²): Outlet = 1.03** **LFA** (Large Face Area) **Coil: 3.44** **SFA** (Small Face Area) **Coil: N/A** **Forward Curved Fan: ATLI 10-10 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE (In.W.G)																										CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
1000	971	291	NA	462	0.07	654	0.13	816	0.21	957	0.3	1191	0.52	1386	0.78	1556	1.07	1707	1.4	1845	1.75	1973	2.13	2092	2.54	-	-	-	-	-	-	0.01
1200	1165	349	NA	477	0.1	648	0.16	802	0.23	939	0.32	1174	0.54	1372	0.8	1545	1.1	1699	1.43	1840	1.78	1970	2.16	2091	2.57	2205	2.99	2313	3.44	2416	3.91	0.02
1400	1359	407	NA	500	0.13	653	0.19	794	0.27	925	0.36	1156	0.58	1354	0.84	1529	1.13	1686	1.46	1829	1.82	1961	2.2	2085	2.6	2201	3.03	2310	3.48	2415	3.95	0.03
1500	1456	436	NA	514	0.16	659	0.22	794	0.29	920	0.38	1147	0.6	1345	0.86	1520	1.15	1678	1.48	1822	1.84	1955	2.22	2079	2.63	2196	3.06	2307	3.51	2412	3.98	0.03
1700	1650	494	NA	545	0.21	675	0.28	799	0.35	917	0.44	1134	0.66	1327	0.91	1502	1.21	1660	1.53	1805	1.89	1940	2.27	2066	2.68	2184	3.11	2296	3.56	2403	4.03	0.04
1800	1748	523	NA	562	0.24	686	0.31	804	0.39	918	0.48	1129	0.69	1320	0.95	1493	1.24	1651	1.57	1796	1.92	1931	2.3	2058	2.71	2177	3.14	2290	3.59	2397	4.07	0.04
2000	1942	581	NA	599	0.31	710	0.39	819	0.47	924	0.56	1123	0.77	1307	1.02	1476	1.32	1633	1.64	1778	2	1913	2.38	2041	2.78	2161	3.21	2274	3.67	2383	4.14	0.05
2200	2136	640	NA	637	0.4	739	0.48	839	0.57	937	0.66	1124	0.87	1299	1.12	1463	1.41	1617	1.74	1760	2.09	1895	2.47	2022	2.87	2143	3.3	2257	3.76	2366	4.23	0.06
2400	2330	698	NA	678	0.5	771	0.59	863	0.68	954	0.78	1130	0.99	1296	1.24	1454	1.53	1603	1.85	1744	2.2	1878	2.58	2004	2.98	2124	3.41	2239	3.86	2348	4.34	0.08
2600	2524	756	NA	720	0.61	805	0.72	891	0.81	976	0.91	1141	1.13	1299	1.39	1450	1.67	1594	1.99	1731	2.34	1862	2.71	1987	3.12	2106	3.54	2220	3.99	2330	4.47	0.09
2800	2718	814	NA	763	0.74	841	0.86	921	0.97	1001	1.07	1156	1.3	1306	1.55	1450	1.84	1589	2.15	1722	2.5	1850	2.87	1972	3.27	2090	3.7	2203	4.15	2312	4.62	0.1
3000	2913	872	NA	807	0.9	880	1.02	954	1.14	1028	1.25	1175	1.49	1317	1.74	1455	2.03	1588	2.34	1717	2.69	1841	3.06	1961	3.46	2076	3.88	2187	4.33	2295	4.8	0.12
3100	3010	901	NA	830	0.98	899	1.11	971	1.23	1043	1.35	1185	1.59	1324	1.85	1459	2.13	1589	2.45	1715	2.79	1838	3.16	1956	3.56	2070	3.98	2180	4.43	2287	4.9	0.13
3150	3058	916	NA	841	1.02	909	1.15	981	1.28	1050	1.4	1191	1.64	1328	1.9	1461	2.19	1590	2.5	1715	2.84	1836	3.21	1954	3.6	2067	4.02	2177	4.46	2284	4.93	0.13
3200	3107	930	NA	852	1.07	919	1.2	989	1.33	1058	1.45	1197	1.7	1332	1.96	1463	2.25	1591	2.56	1715	2.91	1835	3.28	1952	3.67	2065	4.09	2174	4.54	2280	5	0.14

FAN PERFORMANCE DATA (cont'd)
(Based on Ducted Outlet)

MODEL: 106 **Area (ft²): Outlet = 1.45** **LFA** (Large Face Area) **Coil: 5.47** **SFA** (Small Face Area) **Coil: N/A** **Forward Curved Fan: ATLI 12-12 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE [In.W.G]																										CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
1800	1241	329	NA	435	0.16	579	0.25	702	0.35	812	0.46	1005	0.73	1172	1.03	1318	1.37	1450	1.74	1570	2.14	1681	2.57	1785	3.02	1882	3.5	1974	4	2061	4.51	0.02
2000	1379	366	NA	448	0.2	587	0.29	704	0.4	810	0.51	999	0.78	1164	1.09	1310	1.44	1443	1.81	1564	2.22	1676	2.65	1781	3.11	1880	3.59	1973	4.09	2061	4.61	0.03
2200	1517	402	NA	461	0.24	596	0.35	709	0.45	811	0.58	994	0.85	1156	1.16	1302	1.51	1435	1.89	1557	2.3	1670	2.74	1776	3.2	1875	3.68	1970	4.19	2059	4.72	0.03
2400	1655	439	NA	477	0.29	607	0.41	717	0.52	815	0.65	992	0.92	1151	1.24	1295	1.59	1427	1.98	1549	2.39	1663	2.84	1769	3.3	1869	3.79	1964	4.3	2055	4.84	0.04
2600	1793	475	NA	493	0.35	619	0.47	726	0.6	821	0.73	993	1.01	1147	1.33	1289	1.69	1420	2.08	1541	2.5	1655	2.95	1761	3.42	1862	3.91	1958	4.43	2049	4.96	0.04
2800	1931	512	NA	512	0.42	631	0.55	736	0.68	829	0.82	995	1.11	1146	1.44	1284	1.8	1413	2.19	1534	2.62	1647	3.07	1753	3.54	1854	4.04	1950	4.56	2042	5.1	0.05
3000	2069	548	NA	533	0.49	645	0.63	747	0.77	838	0.92	1000	1.22	1146	1.56	1282	1.92	1408	2.32	1527	2.75	1639	3.2	1745	3.68	1846	4.18	1942	4.71	2034	5.26	0.06
3200	2207	585	NA	555	0.58	659	0.73	759	0.88	848	1.03	1006	1.34	1149	1.69	1281	2.06	1405	2.46	1522	2.89	1633	3.35	1738	3.84	1838	4.34	1934	4.87	2026	5.42	0.07
3400	2345	622	NA	578	0.68	674	0.83	771	0.99	859	1.15	1014	1.48	1153	1.83	1282	2.21	1403	2.62	1518	3.05	1627	3.52	1732	4	1831	4.52	1926	5.05	2018	5.61	0.08
3600	2483	658	NA	603	0.78	691	0.95	785	1.12	871	1.28	1023	1.63	1159	1.99	1285	2.38	1403	2.79	1516	3.23	1624	3.7	1726	4.19	1825	4.71	1919	5.24	2010	5.8	0.09
3800	2621	695	NA	628	0.9	709	1.07	799	1.25	883	1.43	1032	1.79	1166	2.16	1289	2.56	1405	2.98	1516	3.42	1621	3.9	1722	4.39	1820	4.91	1913	5.46	2003	6.02	0.1
4000	2759	731	NA	654	1.04	728	1.21	813	1.4	896	1.59	1043	1.96	1174	2.35	1295	2.75	1408	3.18	1517	3.64	1620	4.11	1720	4.62	1816	5.14	1908	5.69	1997	6.25	0.11
4200	2897	768	NA	681	1.19	749	1.36	829	1.56	909	1.76	1054	2.15	1183	2.55	1301	2.96	1413	3.4	1519	3.86	1621	4.35	1718	4.85	1813	5.38	1904	5.94	1992	6.51	0.12
4400	3034	804	NA	708	1.35	771	1.53	846	1.73	923	1.94	1066	2.35	1193	2.76	1309	3.19	1419	3.64	1523	4.11	1623	4.6	1719	5.11	1812	5.65	1901	6.2	1989	6.78	0.13
4500	3103	823	NA	721	1.43	782	1.61	854	1.82	931	2.03	1072	2.45	1198	2.87	1313	3.31	1422	3.76	1525	4.23	1625	4.72	1720	5.23	1812	5.77	1901	6.33	1988	6.9	0.13
4600	3172	841	NA	735	1.52	793	1.71	863	1.92	938	2.14	1078	2.57	1203	3	1318	3.44	1426	3.9	1528	4.37	1626	4.87	1720	5.39	1811	5.93	1900	6.49	1986	7.08	0.14
4800	3310	878	NA	763	1.72	817	1.9	882	2.12	953	2.35	1090	2.8	1214	3.24	1327	3.7	1433	4.17	1534	4.66	1630	5.16	1723	5.69	1813	6.24	1900	6.8	1984	7.39	0.15
5000	3448	914	NA	791	1.92	841	2.11	902	2.34	970	2.57	1103	3.04	1226	3.51	1338	3.98	1442	4.46	1541	4.96	1636	5.47	1727	6.01	1815	6.56	1901	7.14	1984	7.73	0.17

MODEL: 108 **Area (ft²): Outlet = 2.04** **LFA** (Large Face Area) **Coil: 7.4** **SFA** (Small Face Area) **Coil: N/A** **Forward Curved Fan: ATLI 15-15 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE [In.W.G]																										CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
2200	1078	297	NA	330	0.16	463	0.28	576	0.43	671	0.6	828	1	955	1.46	1065	1.97	1162	2.52	1250	3.11	-	-	-	-	-	-	-	-	-	-	0.02
2600	1275	351	NA	340	0.22	461	0.34	569	0.49	664	0.67	824	1.08	955	1.55	1068	2.08	1169	2.65	1259	3.26	1343	3.9	1421	4.58	1493	5.3	-	-	-	-	0.03
3000	1471	405	NA	356	0.3	464	0.43	565	0.58	657	0.76	817	1.17	951	1.66	1067	2.2	1170	2.78	1264	3.41	1349	4.07	1429	4.77	1503	5.5	1574	6.26	1640	7.06	0.04
3400	1667	459	NA	376	0.4	473	0.54	565	0.69	652	0.87	809	1.29	944	1.79	1063	2.34	1168	2.94	1264	3.58	1352	4.26	1433	4.97	1509	5.72	1581	6.5	1649	7.31	0.05
3800	1863	514	NA	398	0.52	486	0.67	571	0.83	652	1.01	803	1.44	937	1.94	1056	2.5	1163	3.11	1261	3.76	1350	4.45	1433	5.18	1511	5.95	1584	6.74	1654	7.57	0.07
4200	2059	568	NA	421	0.66	502	0.83	580	1.01	656	1.19	799	1.62	930	2.12	1048	2.68	1156	3.3	1255	3.97	1346	4.67	1430	5.41	1510	6.19	1585	7	1655	7.85	0.08
4400	2157	595	NA	433	0.74	511	0.93	586	1.1	659	1.29	798	1.72	927	2.22	1044	2.79	1152	3.41	1251	4.08	1343	4.79	1428	5.54	1508	6.32	1584	7.14	1655	7.99	0.09
4600	2255	622	NA	446	0.82	521	1.02	593	1.21	663	1.4	798	1.83	924	2.33	1041	2.9	1148	3.53	1247	4.2	1339	4.91	1425	5.67	1506	6.46	1582	7.29	1654	8.14	0.1
5000	2451	676	NA	471	1.01	542	1.24	609	1.44	674	1.65	801	2.09	922	2.59	1035	3.16	1141	3.79	1240	4.46	1332	5.19	1419	5.95	1500	6.75	1577	7.59	1650	8.46	0.11
5400	2647	730	NA	498	1.23	564	1.48	627	1.71	688	1.93	807	2.38	922	2.89	1031	3.46	1135	4.09	1232	4.77	1324	5.5	1411	6.27	1493	7.08	1571	7.93	1644	8.81	0.13
5600	2745	757	NA	511	1.35	575	1.61	637	1.85	696	2.08	812	2.55	923	3.06	1030	3.63	1132	4.26	1229	4.94	1320	5.67	1407	6.45	1489	7.26	1567	8.11	1641	9	0.14
5800	2843	784	NA	525	1.48	587	1.75	647	2.01	704	2.24	817	2.72	925	3.24	1030	3.81	1130	4.44	1226	5.12	1317	5.86	1403	6.63	1485	7.45	1563	8.3	1637	9.19	0.15
6000	2941	811	NA	539	1.62	599	1.9	658	2.16	713	2.41	823	2.9	928	3.42	1030	3.99	1129	4.62	1224	5.3	1314	6.03	1399	6.81	1481	7.62	1559	8.47	1633	9.36	0.16
6200	3039	838	NA	553	1.77	611	2.06	668	2.34	722	2.6	829	3.1	932	3.63	1032	4.21	1129	4.84	1222	5.53	1311	6.26	1396	7.04	1477	7.86	1555	8.72	1630	9.62	0.17
6600	3235	892	NA	581	2.09	636	2.4	690	2.7	742	2.99	843	3.52	941	4.07	1036	4.66	1129	5.29	1219	5.98	1306	6.72	1390	7.5	1470	8.32	1548	9.19	1622	10.1	0.2
7000	3431	946	NA	609	2.46	662	2.79	713	3.11	762	3.42	858	3.99	952	4.56	1043	5.16	1132	5.81	1219	6.49	1304	7.23	1385	8.01	1465	8.84	1541	9.71	1615	10.6	0.22

FAN PERFORMANCE DATA (cont'd)
(Based on Ducted Outlet)

MODEL: 111 **Area (ft²): Outlet = 2.86** **LFA** (Large Face Area) **Coil: 10.52** **SFA** (Small Face Area) **Coil: N/A** **Forward Curved Fan: ATLI 18-18 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE [In.W.G]																										CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
3000	1049	285	NA	287	0.21	399	0.36	496	0.54	581	0.74	726	1.18	847	1.69	953	2.25	1048	2.85	1135	3.49	1216	4.16	-	-	-	-	-	-	-	-	0.01
4000	1399	380	NA	308	0.35	402	0.54	487	0.74	566	0.96	705	1.45	827	2	934	2.6	1031	3.24	1120	3.93	1203	4.66	1279	5.41	1352	6.2	1420	7.03	1486	7.88	0.02
4500	1573	428	NA	322	0.45	410	0.65	489	0.87	563	1.09	697	1.6	817	2.17	924	2.79	1021	3.46	1110	4.16	1194	4.91	1270	5.68	1344	6.5	1413	7.34	1479	8.21	0.03
5000	1748	475	NA	338	0.57	420	0.79	494	1.02	564	1.26	692	1.8	808	2.39	914	3.03	1010	3.72	1100	4.45	1183	5.22	1261	6.02	1335	6.86	1405	7.73	1471	8.63	0.04
5400	1888	513	NA	351	0.67	429	0.91	500	1.16	566	1.42	690	1.97	803	2.57	907	3.23	1002	3.94	1091	4.68	1175	5.47	1253	6.29	1327	7.15	1397	8.04	1464	8.96	0.04
5800	2028	551	NA	364	0.8	440	1.05	507	1.31	571	1.58	689	2.16	799	2.78	901	3.45	995	4.18	1083	4.94	1166	5.74	1244	6.58	1318	7.46	1389	8.36	1456	9.3	0.05
6000	2098	570	NA	371	0.86	445	1.13	512	1.4	574	1.67	690	2.26	798	2.89	898	3.57	992	4.3	1080	5.07	1162	5.89	1240	6.73	1314	7.62	1384	8.53	1452	9.48	0.05
7000	2448	665	NA	406	1.27	475	1.57	536	1.88	592	2.19	698	2.84	797	3.53	890	4.25	979	5.02	1064	5.84	1144	6.69	1221	7.57	1294	8.5	1364	9.45	1431	10.4	0.07
7200	2517	684	NA	414	1.36	482	1.67	541	1.99	597	2.31	700	2.97	798	3.67	890	4.41	978	5.19	1061	6.01	1141	6.87	1217	7.76	1290	8.69	1360	9.66	1426	10.7	0.08
7400	2587	703	NA	421	1.46	488	1.77	547	2.1	601	2.43	703	3.11	799	3.82	890	4.57	976	5.36	1059	6.18	1138	7.05	1214	7.95	1286	8.89	1356	9.87	1422	10.9	0.08
7600	2657	722	NA	429	1.57	494	1.88	553	2.22	606	2.56	706	3.25	801	3.97	890	4.73	976	5.53	1057	6.37	1136	7.24	1211	8.15	1283	9.1	1352	10.1	1418	11.1	0.08
7800	2727	741	NA	436	1.68	501	2	558	2.34	611	2.69	710	3.4	802	4.14	891	4.9	975	5.71	1056	6.56	1133	7.44	1208	8.36	1279	9.32	1348	10.3	1415	11.3	0.09
8000	2797	760	NA	444	1.8	508	2.12	564	2.47	617	2.83	714	3.55	805	4.3	891	5.08	975	5.9	1055	6.76	1131	7.65	1205	8.58	1276	9.54	1345	10.5	1411	11.6	0.09
9000	3147	856	NA	483	2.48	542	2.82	596	3.21	645	3.6	735	4.41	820	5.23	900	6.07	978	6.94	1053	7.85	1126	8.79	1196	9.76	1265	10.8	1331	11.8	1395	12.9	0.12
10000	3497	951	NA	522	3.33	578	3.68	629	4.09	675	4.53	760	5.41	840	6.31	915	7.23	988	8.17	1059	9.13	1127	10.1	1194	11.1	1259	12.2	1322	13.3	1384	14.4	0.14

MODEL: 114 **Area (ft²): Outlet = 2.86** **LFA** (Large Face Area) **Coil: 13.7** **SFA** (Small Face Area) **Coil: 10.9** **Forward Curved Fan: ATLI 18-18 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE (In.W.G)																										CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
4000	1399	292	367	308	0.35	402	0.54	487	0.74	566	0.96	705	1.45	827	2	934	2.6	1031	3.24	1120	3.93	1203	4.66	1279	5.41	1352	6.2	1420	7.03	1486	7.88	0.01
5000	1748	365	459	338	0.57	420	0.79	494	1.02	564	1.26	692	1.8	808	2.39	914	3.03	1010	3.72	1100	4.45	1183	5.22	1261	6.02	1335	6.86	1405	7.73	1471	8.63	0.02
5400	1888	394	495	351	0.67	429	0.91	500	1.16	566	1.42	690	1.97	803	2.57	907	3.23	1002	3.94	1091	4.68	1175	5.47	1253	6.29	1327	7.15	1397	8.04	1464	8.96	0.03
5800	2028	423	532	364	0.8	440	1.05	507	1.31	571	1.58	689	2.16	799	2.78	901	3.45	995	4.18	1083	4.94	1166	5.74	1244	6.58	1318	7.46	1389	8.36	1456	9.3	0.03
6000	2098	438	550	371	0.86	445	1.13	512	1.4	574	1.67	690	2.26	798	2.89	898	3.57	992	4.3	1080	5.07	1162	5.89	1240	6.73	1314	7.62	1384	8.53	1452	9.48	0.03
7000	2448	511	642	406	1.27	475	1.57	536	1.88	592	2.19	698	2.84	797	3.53	890	4.25	979	5.02	1064	5.84	1144	6.69	1221	7.57	1294	8.5	1364	9.45	1431	10.4	0.04
7200	2517	526	661	414	1.36	482	1.67	541	1.99	597	2.31	700	2.97	798	3.67	890	4.41	978	5.19	1061	6.01	1141	6.87	1217	7.76	1290	8.69	1360	9.66	1426	10.7	0.05
7400	2587	540	679	421	1.46	488	1.77	547	2.1	601	2.43	703	3.11	799	3.82	890	4.57	976	5.36	1059	6.18	1138	7.05	1214	7.95	1286	8.89	1356	9.87	1422	10.9	0.05
7600	2657	555	697	429	1.57	494	1.88	553	2.22	606	2.56	706	3.25	801	3.97	890	4.73	976	5.53	1057	6.37	1136	7.24	1211	8.15	1283	9.1	1352	10.1	1418	11.1	0.05
7800	2727	569	716	436	1.68	501	2	558	2.34	611	2.69	710	3.4	802	4.14	891	4.9	975	5.71	1056	6.56	1133	7.44	1208	8.36	1279	9.32	1348	10.3	1415	11.3	0.06
8000	2797	584	734	444	1.8	508	2.12	564	2.47	617	2.83	714	3.55	805	4.3	891	5.08	975	5.9	1055	6.76	1131	7.65	1205	8.58	1276	9.54	1345	10.5	1411	11.6	0.06
9000	3147	657	826	483	2.48	542	2.82	596	3.21	645	3.6	735	4.41	820	5.23	900	6.07	978	6.94	1053	7.85	1126	8.79	1196	9.76	1265	10.8	1331	11.8	1395	12.9	0.07
10000	3497	730	917	522	3.33	578	3.68	629	4.09	675	4.53	760	5.41	840	6.31	915	7.23	988	8.17	1059	9.13	1127	10.1	1194	11.1	1259	12.2	1322	13.3	1384	14.4	0.09
11000	3846	803	NA	563	4.36	616	4.72	664	5.16	708	5.62	789	6.59	864	7.57	935	8.56	1003	9.57	1070	10.6	1135	11.7	1198	12.7	1259	13.8	1320	15	1379	16.1	0.11
12000	4196	876	NA	605	5.61	654	5.96	699	6.41	742	6.91	819	7.95	891	9.01	958	10.1	1023	11.2	1086	12.3	1147	13.4	1207	14.5	1266	15.7	1323	16.9	1379	18.1	0.13
13000	4545	949	NA	647	7.09	693	7.43	736	7.89	777	8.41	851	9.52	920	10.7	984	11.8	1046	13	1106	14.2	1164	15.3	1221	16.6	1277	17.8	-	-	-	-	0.16

FAN PERFORMANCE DATA (cont'd)
(Based on Ducted Outlet)

MODEL: 117 **Area (ft²): Outlet = 2.86** **LFA** (Large Face Area) **Coil: 16.8** **SFA** (Small Face Area) **Coil: 13.4** **Forward Curved Fan: ATLI 18-18 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE (In.W.G)																												CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
5000	1748	298	373	338	0.57	420	0.79	494	1.02	564	1.26	692	1.8	808	2.39	914	3.03	1010	3.72	1100	4.45	1183	5.22	1261	6.02	1335	6.86	1405	7.73	1471	8.63	0.01
6000	2098	357	448	371	0.86	445	1.13	512	1.4	574	1.67	690	2.26	798	2.89	898	3.57	992	4.3	1080	5.07	1162	5.89	1240	6.73	1314	7.62	1384	8.53	1452	9.48	0.02
7000	2448	417	522	406	1.27	475	1.57	536	1.88	592	2.19	698	2.84	797	3.53	890	4.25	979	5.02	1064	5.84	1144	6.69	1221	7.57	1294	8.5	1364	9.45	1431	10.4	0.03
8000	2797	476	597	444	1.8	508	2.12	564	2.47	617	2.83	714	3.55	805	4.3	891	5.08	975	5.9	1055	6.76	1131	7.65	1205	8.58	1276	9.54	1345	10.5	1411	11.6	0.04
8200	2867	488	612	451	1.92	515	2.25	570	2.61	622	2.97	717	3.71	807	4.48	893	5.27	975	6.1	1054	6.96	1130	7.86	1203	8.8	1274	9.77	1342	10.8	1407	11.8	0.04
8400	2937	500	627	459	2.05	521	2.38	577	2.75	627	3.12	722	3.88	810	4.65	894	5.46	975	6.3	1053	7.17	1128	8.08	1201	9.03	1271	10	1339	11	1404	12.1	0.04
8600	3007	512	642	467	2.19	528	2.52	583	2.9	633	3.28	726	4.05	813	4.84	896	5.66	976	6.51	1053	7.39	1127	8.31	1199	9.26	1269	10.3	1336	11.3	1401	12.3	0.04
8800	3077	524	657	475	2.33	535	2.67	589	3.05	639	3.44	730	4.22	816	5.03	898	5.86	977	6.72	1053	7.62	1126	8.54	1198	9.51	1266	10.5	1333	11.5	1398	12.6	0.04
9000	3147	536	672	483	2.48	542	2.82	596	3.21	645	3.6	735	4.41	820	5.23	900	6.07	978	6.94	1053	7.85	1126	8.79	1196	9.76	1265	10.8	1331	11.8	1395	12.9	0.05
9200	3217	548	687	490	2.63	550	2.98	602	3.37	650	3.77	740	4.6	823	5.43	903	6.29	980	7.17	1054	8.09	1126	9.04	1195	10	1263	11	1329	12.1	1392	13.2	0.05
9400	3287	560	701	498	2.8	557	3.14	609	3.54	657	3.95	745	4.79	827	5.64	906	6.51	981	7.41	1055	8.34	1126	9.29	1195	10.3	1262	11.3	1327	12.4	1390	13.4	0.05
9600	3357	571	716	506	2.96	564	3.31	615	3.72	663	4.14	750	4.99	831	5.86	909	6.75	983	7.66	1056	8.59	1126	9.56	1194	10.6	1260	11.6	1325	12.7	1388	13.7	0.05
9800	3427	583	731	514	3.14	571	3.49	622	3.9	669	4.33	755	5.2	835	6.08	912	6.98	986	7.91	1057	8.86	1126	9.83	1194	10.8	1259	11.9	1323	13	1386	14.1	0.06
10000	3497	595	746	522	3.33	578	3.68	629	4.09	675	4.53	760	5.41	840	6.31	915	7.23	988	8.17	1059	9.13	1127	10.1	1194	11.1	1259	12.2	1322	13.3	1384	14.4	0.06
11000	3846	655	NA	563	4.36	616	4.72	664	5.16	708	5.62	789	6.59	864	7.57	935	8.56	1003	9.57	1070	10.6	1135	11.7	1198	12.7	1259	13.8	1320	15	1379	16.1	0.07
12000	4196	714	NA	605	5.61	654	5.96	699	6.41	742	6.91	819	7.95	891	9.01	958	10.1	1023	11.2	1086	12.3	1147	13.4	1207	14.5	1266	15.7	1323	16.9	1379	18.1	0.08
13000	4545	774	NA	647	7.09	693	7.43	736	7.89	777	8.41	851	9.52	920	10.7	984	11.8	1046	13	1106	14.2	1164	15.3	1221	16.6	1277	17.8	-	-	-	-	0.1
14000	4895	833	NA	690	8.82	733	9.14	774	9.6	813	10.1	884	11.3	950	12.5	1012	13.8	1072	15	1129	16.3	1184	17.5	-	-	-	-	-	-	-	-	0.11
15000	5245	893	NA	733	10.8	774	11.1	813	11.6	850	12.1	919	13.3	982	14.6	1042	15.9	1099	17.3	-	-	-	-	-	-	-	-	-	-	-	-	0.13

MODEL: 122 **Area (ft²): Outlet = 4.38** **LFA** (Large Face Area) **Coil: 21.1** **SFA** (Small Face Area) **Coil: 15.9** **Forward Curved Fan: ATLI 20-20 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE (In.W.G)																												CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
6000	1370	284	377	-	-	362	0.87	442	1.21	515	1.57	644	2.38	753	3.28	847	4.25	930	5.29	1005	6.38	1074	7.53	1137	8.72	1196	9.95	1252	11.2	1304	12.6	0.02
7000	1598	332	440	-	-	372	1.13	442	1.49	510	1.88	634	2.74	743	3.69	840	4.72	925	5.82	1003	6.98	1074	8.19	1140	9.45	1201	10.8	1259	12.1	1313	13.5	0.03
8000	1826	379	503	-	-	385	1.44	449	1.84	510	2.26	626	3.17	733	4.18	829	5.26	916	6.41	996	7.63	1069	8.9	1137	10.2	1200	11.6	1260	13	1316	14.5	0.03
9000	2055	427	566	-	-	402	1.82	460	2.25	516	2.71	624	3.68	725	4.74	819	5.87	906	7.08	986	8.35	1061	9.68	1130	11.1	1195	12.5	1256	14	1314	15.5	0.04
9500	2169	450	597	352	1.65	411	2.05	467	2.49	521	2.96	624	3.97	722	5.05	814	6.21	900	7.44	981	8.74	1055	10.1	1125	11.5	1191	13	1253	14.5	1312	16	0.05
10000	2283	474	629	364	1.89	420	2.29	475	2.75	527	3.24	626	4.28	721	5.39	811	6.57	896	7.83	975	9.15	1050	10.5	1120	12	1186	13.5	1249	15	1308	16.6	0.05
10500	2397	498	660	377	2.15	431	2.56	483	3.03	533	3.54	629	4.61	720	5.75	808	6.96	891	8.24	970	9.59	1045	11	1115	12.5	1181	14	1244	15.5	1304	17.2	0.06
11000	2511	521	692	390	2.44	441	2.85	491	3.33	540	3.86	632	4.96	721	6.14	806	7.38	888	8.68	965	10.1	1039	11.5	1110	13	1176	14.5	1239	16.1	1299	17.8	0.06
11500	2626	545	723	403	2.75	452	3.17	501	3.66	547	4.2	637	5.34	722	6.55	805	7.82	885	9.15	962	10.6	1035	12	1104	13.5	1171	15.1	1234	16.7	1294	18.4	0.07
12000	2740	569	755	416	3.09	463	3.52	510	4.02	555	4.57	642	5.74	725	6.98	805	8.28	883	9.65	958	11.1	1030	12.6	1099	14.1	1165	15.7	1228	17.3	1289	19	0.07
13000	2968	616	818	444	3.86	487	4.3	530	4.82	573	5.39	654	6.63	733	7.93	808	9.3	882	10.7	954	12.2	1023	13.7	1091	15.3	1155	17	1218	18.7	1278	20.4	0.09
14000	3196	664	-	472	4.75	511	5.21	552	5.74	592	6.33	669	7.62	743	9	815	10.4	885	11.9	953	13.5	1019	15.1	1084	16.7	1147	18.4	1208	20.1	1268	21.9	0.1
15000	3425	711	-	500	5.77	537	6.25	574	6.8	612	7.41	685	8.75	755	10.2	823	11.7	890	13.2	955	14.8	1019	16.5	1081	18.2	1142	19.9	1201	21.7	1259	23.6	0.12
16000	3653	758	-	529	6.94	563	7.44	598	8	634	8.62	703	10	770	11.5	835	13.1	898	14.7	960	16.4	1021	18.1	1080	19.8	1139	21.6	1197	23.5	1253	25.4	0.13
17000	3881	806	-	558	8.26	590	8.78	623	9.36	656	9.99	722	11.4	786	13	848	14.6	908	16.3	967	18	1026	19.8	1083	21.6	1139	23.5	1194	25.4	1249	27.3	0.15
18000	4110	853	-	587	9.74	617	10.3	648	10.9	679	11.5	742	13	803	14.6	862	16.3	920	18	977	19.8	1033	21.7	1088	23.6	1142	25.5	1195	27.5	1247	29.5	0.17
19000	4338	900	-	617	11.4	644	12	674	12.6	703	13.2	763	14.7	822	16.4	879	18.1	934	19.9	988	21.8	1042	23.7	1095	25.7	1147	27.7	1198	29.7	-	-	0.19

FAN PERFORMANCE DATA (cont'd)
(Based on Ducted Outlet)

MODEL: 128 **Area (ft²): Outlet = 5.5 LFA** (Large Face Area) **Coil: 26.9 SFA** (Small Face Area) **Coil: 20.2 Forward Curved Fan: ATLI 22-22 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE (In.W.G)																												CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
8000	1455	297	396	-	-	317	1.21	384	1.64	448	2.11	560	3.19	655	4.42	738	5.75	811	7.19	878	8.71	939	10.3	996	12	1049	13.7	1099	15.5	1146	17.4	0.01
9000	1636	335	446	-	-	323	1.48	385	1.94	444	2.44	553	3.55	648	4.81	732	6.2	807	7.68	875	9.26	938	10.9	996	12.7	1050	14.5	1101	16.3	1149	18.3	0.02
10000	1818	372	495	-	-	332	1.81	389	2.3	444	2.82	547	3.97	641	5.27	725	6.7	801	8.23	870	9.85	934	11.6	993	13.4	1048	15.2	1101	17.1	1150	19.1	0.02
11000	2000	409	545	-	-	343	2.19	396	2.72	447	3.27	544	4.46	635	5.8	718	7.26	794	8.83	864	10.5	928	12.3	988	14.1	1045	16	1098	18	1148	20	0.02
12000	2182	446	594	-	-	356	2.62	405	3.2	452	3.78	543	5.03	630	6.4	711	7.9	787	9.5	856	11.2	922	13	982	14.9	1040	16.9	1094	18.9	1145	21	0.03
13000	2364	483	644	322	2.53	370	3.12	415	3.74	459	4.37	545	5.67	628	7.09	706	8.62	780	10.3	849	12	914	13.9	976	15.8	1033	17.8	1088	19.9	1140	22	0.03
13500	2455	502	668	331	2.79	377	3.4	421	4.03	464	4.68	547	6.02	627	7.46	704	9.01	777	10.7	846	12.4	911	14.3	972	16.3	1030	18.3	1085	20.4	1137	22.6	0.03
14000	2545	520	693	340	3.07	384	3.69	427	4.35	468	5.02	549	6.4	627	7.86	703	9.43	775	11.1	843	12.9	907	14.8	968	16.7	1026	18.8	1081	20.9	1134	23.1	0.04
14500	2636	539	718	349	3.36	392	4	433	4.68	474	5.37	552	6.79	628	8.28	702	9.87	772	11.6	840	13.4	904	15.3	965	17.3	1023	19.3	1078	21.5	1130	23.7	0.04
15000	2727	558	743	358	3.68	400	4.33	440	5.03	479	5.75	555	7.2	630	8.73	701	10.3	771	12.1	837	13.9	901	15.8	961	17.8	1019	19.9	1074	22	1127	24.3	0.04
15500	2818	576	767	367	4.02	408	4.68	447	5.4	485	6.14	559	7.64	631	9.19	701	10.8	769	12.6	835	14.4	898	16.3	958	18.4	1015	20.5	1070	22.7	1123	24.9	0.05
16000	2909	595	792	376	4.39	416	5.06	454	5.8	491	6.55	563	8.09	633	9.68	702	11.4	769	13.1	833	15	895	16.9	955	19	1012	21.1	1067	23.3	1119	25.6	0.05
17000	3091	632	842	395	5.18	432	5.87	469	6.65	504	7.44	572	9.07	639	10.7	704	12.5	768	14.3	831	16.2	891	18.1	949	20.2	1006	22.4	1060	24.6	1112	26.9	0.05
18000	3273	669	-	414	6.07	449	6.78	484	7.58	517	8.42	583	10.1	646	11.9	709	13.7	770	15.5	830	17.5	888	19.5	945	21.6	1000	23.8	1054	26.1	1105	28.4	0.06
19000	3455	706	-	433	7.07	467	7.79	500	8.62	532	9.5	594	11.3	655	13.1	715	15	773	16.9	831	18.9	887	21	942	23.1	996	25.3	1049	27.7	1099	30	0.07
20000	3636	743	-	452	8.19	484	8.9	516	9.76	547	10.7	606	12.6	665	14.5	722	16.4	778	18.4	833	20.5	888	22.6	941	24.8	993	27	1045	29.4	1095	31.8	0.07
21000	3818	781	-	472	9.42	502	10.1	533	11	562	12	619	13.9	675	15.9	730	18	784	20	837	22.1	890	24.3	941	26.5	992	28.8	1042	31.2	1091	33.7	0.08
23000	4182	855	-	511	12.3	539	13	567	13.9	594	14.9	647	17	699	19.2	750	21.4	800	23.6	849	25.8	898	28.1	946	30.5	993	32.9	1040	35.4	1087	37.9	0.1
25000	4545	929	-	551	15.6	577	16.3	602	17.3	628	18.3	677	20.6	725	22.9	773	25.3	819	27.7	865	30.1	911	32.5	956	35	1000	37.5	-	-	-	-	0.12

MODEL: 137 **Area (ft²): Outlet = 6.9 LFA** (Large Face Area) **Coil: 35.8 SFA** (Small Face Area) **Coil: 29.1 Forward Curved Fan: ATLI 25-25 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE (In.W.G)																												CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
10000	1449	279	344	-	-	279	1.5	338	2.01	394	2.55	496	3.77	582	5.13	656	6.61	721	8.19	779	9.84	832	11.6	881	13.4	926	15.2	968	17.2	1009	19.2	0.02
12000	1739	335	412	-	-	289	2.08	340	2.67	390	3.27	484	4.57	569	6.02	646	7.59	714	9.28	775	11.1	831	12.9	883	14.9	931	16.9	976	18.9	1018	21	0.03
14000	2029	391	481	-	-	304	2.82	350	3.49	394	4.18	478	5.6	558	7.13	633	8.79	702	10.6	765	12.4	824	14.4	878	16.5	928	18.6	975	20.8	1020	23	0.04
15000	2174	419	515	-	-	313	3.26	356	3.98	398	4.7	477	6.19	554	7.78	627	9.47	695	11.3	759	13.2	818	15.2	873	17.3	924	19.5	972	21.7	1018	24.1	0.04
16000	2319	447	550	277	3.03	322	3.74	363	4.51	403	5.28	479	6.85	552	8.49	622	10.2	689	12.1	752	14.1	811	16.1	867	18.3	919	20.5	968	22.8	1014	25.1	0.05
17000	2464	475	584	289	3.55	331	4.28	371	5.09	409	5.91	482	7.57	551	9.27	619	11.1	684	13	746	15	805	17.1	860	19.3	913	21.5	962	23.9	1009	26.3	0.05
18000	2609	503	619	301	4.14	341	4.88	380	5.73	416	6.6	485	8.34	552	10.1	617	12	680	13.9	741	16	799	18.1	854	20.3	907	22.6	956	25	1004	27.5	0.06
19000	2754	531	653	313	4.79	351	5.55	388	6.43	424	7.34	490	9.18	554	11	616	13	677	14.9	736	17	793	19.2	848	21.5	900	23.8	950	26.3	998	28.8	0.06
20000	2899	559	687	326	5.52	362	6.28	398	7.19	432	8.14	496	10.1	557	12	617	14	675	16.1	733	18.2	788	20.4	842	22.7	894	25.1	943	27.6	991	30.2	0.07
21000	3043	587	722	338	6.33	373	7.09	407	8.02	440	9.01	502	11	561	13.1	619	15.1	675	17.3	730	19.4	784	21.7	837	24.1	888	26.5	937	29	985	31.6	0.08
22000	3188	615	756	351	7.21	384	7.98	417	8.93	449	9.95	509	12.1	566	14.2	622	16.4	676	18.5	729	20.8	782	23.1	833	25.5	883	28	931	30.5	978	33.2	0.09
23000	3333	642	790	365	8.18	396	8.95	428	9.91	458	11	517	13.2	572	15.4	625	17.6	678	19.9	729	22.2	780	24.6	830	27	879	29.5	926	32.1	973	34.8	0.09
24000	3478	670	825	378	9.24	408	10	438	11	468	12.1	525	14.4	578	16.7	630	19	681	21.3	731	23.7	780	26.2	828	28.7	875	31.2	922	33.9	968	36.6	0.1
26000	3768	726	893	405	11.6	432	12.4	460	13.4	488	14.5	542	16.9	592	19.5	641	22	689	24.5	736	27	782	29.6	827	32.2	872	34.9	916	37.6	960	40.5	0.12
28000	4058	782	-	432	14.4	457	15.2	483	16.2	509	17.3	560	19.9	608	22.6	655	25.3	700	28	744	30.7	787	33.4	830	36.2	872	39	914	41.9	956	44.8	0.14
30000	4348	838	-	460	17.7	482	18.4	506	19.4	531	20.6	579	23.2	625	26.1	670	28.9	712	31.8	754	34.7	795	37.6	836	40.6	876	43.5	916	46.5	955	49.6	0.16
32000	4638	894	-	488	21.4	509	22.1	531	23.1	554	24.3	599	27	643	29.9	686	33	727	36.1	767	39.2	806	42.3	844	45.4	882	48.5	-	-	-	-	0.18

FAN PERFORMANCE DATA (cont'd)
(Based on Ducted Outlet)

MODEL: 141 **Area (ft²): Outlet = 8.67** **LFA** (Large Face Area) **Coil: 40.3** **SFA** (Small Face Area) **Coil: 31.4** **Forward Curved Fan: ATLI 28-28 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE (In.W.G)																												CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
12000	1384	298	382	-	-	246	1.73	301	2.35	352	3.02	441	4.47	517	6.08	581	7.8	638	9.63	690	11.5	737	13.6	781	15.6	821	17.8	-	-	-	-	0.02
14000	1615	347	446	-	-	252	2.24	301	2.94	348	3.67	434	5.24	509	6.95	576	8.79	635	10.7	688	12.8	737	14.9	782	17.1	825	19.4	-	-	-	-	0.03
16000	1845	397	510	-	-	261	2.86	305	3.65	347	4.46	428	6.16	501	7.98	568	9.93	628	12	683	14.2	733	16.4	780	18.8	824	21.2	-	-	-	-	0.04
17000	1961	422	541	-	-	267	3.22	308	4.05	349	4.9	426	6.67	498	8.55	564	10.6	624	12.7	679	14.9	731	17.2	778	19.6	822	22.1	-	-	-	-	0.05
18000	2076	447	573	-	-	272	3.62	312	4.49	351	5.38	425	7.23	495	9.17	560	11.2	620	13.4	676	15.7	727	18	775	20.5	820	23	-	-	-	-	0.06
19000	2191	471	605	-	-	278	4.06	317	4.96	354	5.9	425	7.82	493	9.83	557	12	616	14.2	672	16.5	723	18.9	772	21.4	817	24	-	-	-	-	0.06
20000	2307	496	637	245	3.69	285	4.53	322	5.47	358	6.45	426	8.46	491	10.5	554	12.7	612	15	668	17.4	719	19.9	768	22.4	813	25.1	856	27.8	-	-	0.07
21000	2422	521	669	253	4.19	292	5.05	327	6.03	362	7.04	427	9.13	491	11.3	551	13.5	609	15.9	664	18.3	715	20.9	764	23.5	810	26.2	853	29	-	-	0.07
22000	2537	546	701	261	4.74	299	5.62	333	6.62	366	7.68	430	9.85	491	12.1	550	14.4	606	16.8	660	19.3	711	21.9	760	24.6	806	27.3	849	30.2	-	-	0.08
23000	2653	571	732	269	5.34	306	6.24	339	7.27	371	8.36	432	10.6	491	12.9	549	15.3	604	17.8	657	20.3	707	23	756	25.7	801	28.5	845	31.4	-	-	0.09
24000	2768	596	764	278	5.99	313	6.91	346	7.96	377	9.09	436	11.4	493	13.8	548	16.3	602	18.8	654	21.4	704	24.1	752	26.9	798	29.8	841	32.8	-	-	0.1
25000	2884	620	796	286	6.7	320	7.64	352	8.71	382	9.87	440	12.3	495	14.8	549	17.3	601	19.9	652	22.6	701	25.4	748	28.2	794	31.1	837	34.1	-	-	0.11
26000	2999	645	828	295	7.46	328	8.42	359	9.51	388	10.7	444	13.2	498	15.8	550	18.4	601	21.1	650	23.8	699	26.6	745	29.5	790	32.5	833	35.6	-	-	0.11
28000	3230	695	892	313	9.16	344	10.2	373	11.3	401	12.5	454	15.2	505	17.9	554	20.7	602	23.6	649	26.4	695	29.4	740	32.4	784	35.5	826	38.7	-	-	0.13
29000	3345	720	-	322	10.1	352	11.1	380	12.3	407	13.6	459	16.3	508	19.1	556	22	603	24.9	649	27.8	694	30.9	738	34	781	37.1	823	40.4	-	-	0.14
32000	3691	794	-	349	13.3	376	14.5	403	15.7	428	17	477	19.9	522	22.9	567	26	610	29.2	653	32.4	694	35.7	736	39	776	42.4	816	45.8	855	49.3	0.17

MODEL: 150 **Area (ft²): Outlet = 10.91** **LFA** (Large Face Area) **Coil: 49.3** **SFA** (Small Face Area) **Coil: 38.1** **Forward Curved Fan: ATLI 32-32 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE (In.W.G)																												CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
15000	1375	304	394	-	-	220	2.14	266	2.92	308	3.78	386	5.72	454	7.92	514	10.3	566	12.9	614	15.7	657	18.6	697	21.6	733	24.7	-	-	-	-	0.03
18000	1650	365	472	-	-	228	2.94	269	3.8	307	4.74	378	6.79	444	9.1	503	11.6	558	14.4	607	17.3	652	20.3	694	23.5	733	26.8	-	-	-	-	0.05
21000	1925	426	551	-	-	239	4	277	4.94	311	5.95	375	8.15	436	10.6	493	13.2	547	16	597	19.1	643	22.3	686	25.6	727	29.1	-	-	-	-	0.06
22000	2016	446	577	-	-	244	4.43	280	5.38	313	6.42	376	8.67	435	11.1	491	13.8	543	16.7	593	19.7	640	23	683	26.3	724	29.9	-	-	-	-	0.07
23000	2108	467	604	212	4.15	248	4.89	283	5.86	316	6.92	377	9.23	434	11.7	489	14.5	541	17.4	590	20.5	636	23.7	680	27.1	721	30.7	-	-	-	-	0.08
24000	2200	487	630	219	4.67	252	5.4	286	6.37	319	7.46	378	9.83	434	12.4	487	15.1	538	18.1	586	21.2	632	24.5	676	28	717	31.6	756	35.3	-	-	0.08
25000	2291	507	656	226	5.23	257	5.95	290	6.93	322	8.04	379	10.5	434	13.1	486	15.9	536	18.8	583	22	629	25.3	672	28.8	714	32.5	753	36.2	-	-	0.09
26000	2383	527	682	233	5.83	262	6.55	294	7.52	325	8.65	381	11.1	434	13.8	485	16.6	534	19.7	581	22.9	626	26.2	669	29.7	710	33.4	749	37.2	-	-	0.1
27000	2475	548	709	240	6.48	268	7.2	298	8.17	328	9.31	384	11.8	435	14.6	485	17.4	532	20.5	579	23.8	623	27.1	666	30.7	706	34.4	746	38.3	-	-	0.11
28000	2566	568	735	247	7.18	273	7.89	303	8.86	332	10	386	12.6	437	15.4	485	18.3	532	21.4	577	24.7	620	28.1	662	31.7	703	35.5	742	39.4	-	-	0.12
29000	2658	588	761	254	7.94	279	8.65	307	9.6	336	10.8	389	13.4	438	16.2	485	19.2	531	22.4	575	25.7	618	29.2	660	32.8	700	36.6	739	40.5	-	-	0.12
30000	2750	609	787	261	8.74	285	9.46	312	10.4	340	11.6	392	14.2	440	17.1	487	20.2	531	23.4	574	26.7	616	30.2	657	33.9	697	37.7	735	41.7	-	-	0.13
33000	3025	669	866	283	11.5	304	12.2	327	13.2	353	14.3	402	17	448	20.1	491	23.3	533	26.7	574	30.2	613	33.8	652	37.6	690	41.5	727	45.6	-	-	0.16
34000	3116	690	892	291	12.5	310	13.3	333	14.2	357	15.3	405	18.1	451	21.2	493	24.5	534	27.9	574	31.4	613	35.1	651	38.9	688	42.9	725	47	-	-	0.17
36000	3300	730	-	306	14.8	324	15.6	344	16.5	367	17.6	413	20.3	457	23.5	498	26.9	538	30.4	576	34.1	614	37.9	650	41.8	686	45.9	722	50	756	54.3	0.19
39000	3575	791	-	313	16	331	16.8	350	17.7	372	18.8	417	21.6	460	24.8	501	28.2	540	31.8	578	35.5	614	39.4	650	43.3	686	47.4	720	51.6	754	56	0.22

FAN PERFORMANCE DATA (cont'd)
(Based on Ducted Outlet)

MODEL: 164 **Area (ft²): Outlet = 13.74** **LFA** (Large Face Area) **Coil: 62.7** **SFA** (Small Face Area) **Coil: 49.3** **Forward Curved Fan: ATLI 36-36 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE (In.W.G)																										CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
18000	1310	287	365	-	-	195	2.51	235	3.4	273	4.36	338	6.45	393	8.76	442	11.3	485	13.9	524	16.7	560	19.6	593	22.7	624	25.8	654	29.1	-	-	0.04
20000	1456	319	406	-	-	198	2.99	236	3.96	272	4.98	335	7.17	391	9.58	440	12.2	484	15	524	17.9	560	20.9	594	24.1	626	27.3	656	30.7	-	-	0.05
22000	1601	351	446	-	-	202	3.53	238	4.6	272	5.68	334	7.98	389	10.5	438	13.2	482	16.1	522	19.1	559	22.2	594	25.5	626	28.9	657	32.4	-	-	0.06
24000	1747	383	487	-	-	207	4.15	241	5.3	274	6.47	333	8.9	387	11.5	435	14.3	480	17.3	520	20.4	558	23.7	593	27.1	626	30.6	657	34.2	-	-	0.07
26000	1892	415	527	-	-	212	4.83	245	6.09	276	7.34	333	9.91	385	12.6	433	15.5	477	18.6	518	21.8	556	25.2	591	28.7	624	32.3	656	36.1	-	-	0.08
28000	2038	447	568	-	-	218	5.59	250	6.96	279	8.31	334	11	384	13.9	431	16.9	475	20.1	515	23.4	553	26.9	589	30.5	622	34.2	654	38	-	-	0.1
30000	2183	478	609	-	-	224	6.45	255	7.91	283	9.37	336	12.3	384	15.3	430	18.4	473	21.6	513	25.1	551	28.6	587	32.3	620	36.2	652	40.1	-	-	0.11
32000	2329	510	649	197	5.95	231	7.4	261	8.96	288	10.5	338	13.6	385	16.7	430	20	471	23.4	511	26.9	549	30.6	584	34.4	618	38.3	650	42.3	-	-	0.13
34000	2475	542	690	204	6.98	237	8.45	266	10.1	293	11.8	342	15	387	18.3	430	21.7	471	25.2	510	28.9	547	32.6	582	36.5	615	40.6	647	44.7	-	-	0.14
36000	2620	574	730	213	8.14	244	9.63	272	11.4	298	13.1	345	16.6	389	20.1	431	23.6	471	27.2	509	31	545	34.8	580	38.9	613	43	645	47.2	-	-	0.16
38000	2766	606	771	221	9.43	251	10.9	279	12.7	304	14.6	350	18.3	392	21.9	433	25.6	471	29.4	508	33.3	544	37.2	578	41.4	611	45.6	643	49.9	-	-	0.18
40000	2911	638	811	229	10.9	258	12.4	285	14.2	310	16.2	354	20.1	396	23.9	435	27.8	472	31.7	509	35.7	543	39.8	577	44	610	48.4	641	52.8	-	-	0.2
42000	3057	670	852	238	12.5	266	13.9	292	15.8	316	17.9	360	22	400	26	438	30.1	474	34.2	509	38.3	543	42.5	576	46.9	608	51.3	639	55.9	-	-	0.22
44000	3202	702	892	247	14.2	273	15.7	299	17.6	322	19.7	365	24	404	28.3	441	32.5	477	36.8	511	41.1	544	45.4	576	49.9	608	54.4	638	59.1	-	-	0.24
46000	3348	734	933	256	16.2	281	17.6	306	19.5	329	21.7	371	26.2	409	30.6	445	35.1	480	39.5	513	44	545	48.5	577	53.1	607	57.8	637	62.6	-	-	0.26
48000	3493	766	-	265	18.3	289	19.7	313	21.6	335	23.8	376	28.5	414	33.2	449	37.8	483	42.4	515	47.1	547	51.7	578	56.5	608	61.3	637	66.2	-	-	0.29
50000	3639	797	-	274	20.6	297	21.9	320	23.9	342	26.1	382	31	419	35.8	454	40.7	487	45.5	518	50.3	549	55.2	579	60.1	609	65	637	70	-	-	0.31

MODEL: 182 **Area (ft²): Outlet = 17.27** **LFA** (Large Face Area) **Coil: 81.4** **SFA** (Small Face Area) **Coil: 63.9** **Forward Curved Fan: ATLI 40-40 T2**

CFM STD AIR	FAN OUTLET VEL (FPM)	COIL FACE VELOCITY (FPM)		TOTAL STATIC PRESSURE (In.W.G)																										CABINET SP (In. W.G)
				0.25		0.5		0.75		1		1.5		2		2.5		3		3.5		4		4.5		5		5.5		6		
		LFA	SFA	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
25000	1448	307	391	-	-	179	3.64	216	4.92	250	6.3	309	9.39	360	12.8	404	16.6	443	20.5	479	24.7	513	29.1	544	33.7	573	38.5	-	-	-	-	0.04
29000	1679	356	454	-	-	184	4.73	218	6.13	250	7.61	307	10.9	357	14.5	401	18.5	441	22.6	478	27.1	512	31.7	543	36.5	573	41.5	-	-	-	-	0.05
33000	1911	405	516	-	-	192	6.06	222	7.61	251	9.22	306	12.7	355	16.5	399	20.6	439	25	476	29.7	510	34.5	542	39.5	572	44.8	-	-	-	-	0.06
37000	2142	455	579	173	5.9	201	7.64	228	9.37	255	11.1	306	14.8	353	18.8	396	23.1	436	27.7	473	32.6	507	37.6	540	42.9	570	48.3	599	53.9	-	-	0.08
39000	2258	479	610	179	6.7	206	8.55	232	10.4	258	12.2	307	16	353	20.1	396	24.5	435	29.2	472	34.1	506	39.3	538	44.7	569	50.2	598	55.9	-	-	0.09
41000	2374	504	642	185	7.58	211	9.53	236	11.5	261	13.4	308	17.3	353	21.5	395	26	434	30.8	471	35.8	505	41.1	537	46.5	568	52.2	597	58	-	-	0.1
43000	2490	528	673	192	8.55	216	10.6	240	12.6	264	14.6	310	18.7	353	23	395	27.6	433	32.5	469	37.6	504	42.9	536	48.5	566	54.3	595	60.2	-	-	0.11
45000	2606	553	704	198	9.6	222	11.7	245	13.9	268	16	312	20.2	354	24.6	395	29.3	433	34.3	469	39.5	502	44.9	535	50.6	565	56.4	594	62.5	-	-	0.12
46000	2664	565	720	202	10.2	225	12.3	248	14.5	270	16.7	313	21	355	25.5	395	30.2	432	35.2	468	40.5	502	46	534	51.7	564	57.6	593	63.7	-	-	0.12
49000	2837	602	767	212	12	234	14.3	255	16.6	276	18.9	317	23.5	357	28.2	395	33.1	432	38.3	467	43.6	501	49.3	532	55.1	562	61.1	591	67.4	-	-	0.14
51000	2953	627	798	219	13.3	240	15.7	261	18.1	281	20.5	320	25.3	359	30.1	396	35.2	432	40.4	467	45.9	500	51.6	531	57.6	561	63.7	590	70	-	-	0.15
53000	3069	651	829	225	14.7	246	17.2	266	19.7	286	22.2	324	27.2	361	32.2	398	37.4	433	42.7	467	48.3	499	54.1	530	60.1	560	66.4	-	-	-	-	0.16
55000	3185	676	861	232	16.3	252	18.8	272	21.4	291	24	328	29.2	364	34.4	399	39.6	434	45.1	467	50.8	499	56.7	530	62.8	560	69.2	-	-	-	-	0.17
57000	3301	700	892	239	17.9	259	20.6	277	23.3	296	26	332	31.3	367	36.6	401	42.1	435	47.7	468	53.5	499	59.5	530	65.7	-	-	-	-	-	-	0.19
61000	3532	749	-	253	21.6	272	24.4	289	27.3	307	30.2	340	35.9	374	41.6	406	47.3	438	53.2	469	59.2	500	65.4	-	-	-	-	-	-	-	-	0.21
64000	3706	786	-	264	24.7	282	27.6	299	30.6	315	33.6	347	39.6	379	45.6	411	51.6	441	57.7	472	63.9	-	-	-	-	-	-	-	-	-	-	0.24

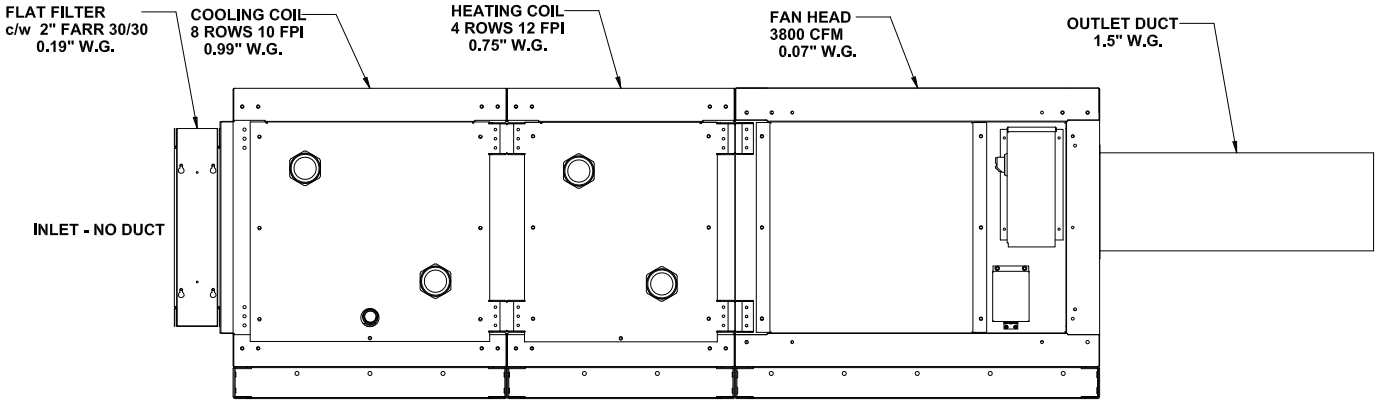
CALCULATION OF TOTAL STATIC PRESSURE

Example #1

1. Select model based on CFM requirement and estimated static pressure.
2. Example model selected: TAC108FH-IT4A - 3800 CFM @ 1.5” ESP.
3. Verify total static pressure by using charts supplied.
    a) For coil(s) static pressure refer to Coil Catalogue - 0.99” & 0.75”
    b) For filter area, see page 17 (3800 CFM / 10 ft^2) = 380 FPM
    c) For filter static pressure refer to Page 15 - 0.19” @ 380 FPM
    d) For cabinet effect static pressure refer to Fan Performance Data chart pg. 8 - 0.07”
    e) Inlet and outlet ducts static pressure calculated by others - 1.5” see Note.
4. Recalculate total static pressure - total now becomes 3.5”

Note: this example does not allow for detailed velocity inlet and outlet pressure.

MODEL: KAC108FH-IT4A-



CALCULATE TOTAL STATIC PRESSURE (TSP)

TSP: 0.19 + 0.99 + 0.75 + 0.07 + 1.5 = 3.5" W.G.

FROM 108 PERFORMANCE CHART 3800 CFM
3.76 BHP
1261 RPM

COMPONENT AIR FRICTION (Inches Of Water)

UNIT SIZE	CFM	DAMPERS		VERTICAL UNIT CASING
		MIXING BOX	FACE & BYPASS	
103	800	0.02	NA	0.05
	1000	0.02		0.1
	1200	0.03		0.17
	1400	0.04		0.25
	1600	0.05		0.31
	1800	0.06		-
	2000	0.08		-
104	1000	0.02	NA	0.06
	1200	0.02		0.1
	1400	0.02		0.16
	1800	0.04		0.28
	2200	0.06		0.35
	2600	0.09		0.41
	3000	0.12		-
106	2000	0.03	NA	0.35
	2500	0.04		0.43
	3000	0.07		0.63
	3500	0.09		0.85
	4000	0.12		1.11
	4500	0.15		-
	5000	0.17		-
108	2200	0.02	NA	0.05
	2600	0.02		0.08
	3400	0.04		0.16
	3800	0.05		0.22
	4600	0.08		0.31
	5400	0.11		0.36
	7000	0.19		-
111	3000	0.02	NA	0.05
	3500	0.02		0.08
	4000	0.03		0.11
	5000	0.05		0.21
	6000	0.07		0.3
	8000	0.12		0.4
	10000	0.18		-
114	4000	0.02	0.02	0.06
	4500	0.02	0.03	0.08
	5000	0.03	0.04	0.11
	7000	0.06	0.07	0.26
	9000	0.1	0.11	0.36
	11000	0.15	0.16	-
	13000	0.19	0.22	-
117	5000	0.02	0.03	0.07
	6000	0.03	0.04	0.11
	7000	0.04	0.05	0.18
	9000	0.07	0.08	0.3
	11000	0.1	0.11	0.37
	13000	0.14	0.15	0.42
	15000	0.17	0.2	-

UNIT SIZE	CFM	DAMPERS		VERTICAL UNIT CASING
		MIXING BOX	FACE & BYPASS	
122	6000	0.02	0.02	0.04
	7000	0.02	0.03	0.05
	8000	0.03	0.04	0.08
	10000	0.04	0.06	0.14
	12000	0.06	0.08	0.24
	15000	0.09	0.13	0.33
	19000	0.15	0.2	-
128	8000	0.02	0.03	0.05
	9000	0.02	0.03	0.06
	10000	0.03	0.04	0.08
	13000	0.04	0.06	0.17
	17000	0.08	0.1	0.3
	21000	0.12	0.16	0.38
	25000	0.16	0.22	-
137	10000	0.02	0.02	-
	12000	0.02	0.03	-
	14000	0.03	0.04	-
	18000	0.05	0.07	-
	22000	0.07	0.1	-
	26000	0.1	0.13	-
	32000	0.15	0.2	-
141	12000	0.02	0.03	-
	14000	0.02	0.04	-
	16000	0.03	0.04	-
	20000	0.04	0.06	-
	24000	0.05	0.09	-
	28000	0.08	0.12	-
	36000	0.12	0.2	-
150	15000	0.02	0.03	-
	18000	0.04	0.04	-
	21000	0.04	0.05	-
	27000	0.07	0.08	-
	33000	0.1	0.12	-
	39000	0.15	0.17	-
164	18000	0.02	0.03	-
	20000	0.03	0.03	-
	24000	0.04	0.03	-
	32000	0.07	0.07	-
	40000	0.11	0.11	-
	48000	0.15	0.15	-
	56000	0.2	0.21	-
182	25000	0.03	0.03	-
	33000	0.04	0.03	-
	41000	0.07	0.07	-
	49000	0.11	0.11	-
	57000	0.15	0.15	-
	64000	0.2	0.21	-

NA - Not Available

When using cooling and heating coils refer to current catalogued data on these products for air friction.

To determine the air friction of combination mixing box and angular filter section add the individual resistance of the filters and mixing box at the applicable air volume.

FILTER AIR FRICTION (Inches Of Water)

FILTER FACE VELOCITY	FARR 30/30 (throw-aways)		FARR 44 (washable)	FL GOLD (metal / Renu frame)	ALUM. MESH (washable)
FPM	2"	4"	2"	2"	2"
250	0.1	0.08	0.03	0.1	0.08
300	0.14	0.12	0.05	0.13	0.1
350	0.17	0.15	0.06	0.15	0.12
400	0.21	0.19	0.07	0.18	0.15
450	0.26	0.23	0.09	0.21	0.18
500	0.31	0.27	0.11	0.25	0.21
550	NR	NR	0.14	0.29	0.24
600	NR	NR	0.16	0.33	0.27

To determine filter face velocity, divide the CFM by the filter area (see Physical Data table).

NR = Not Recommended

Ratings are at initial resistance.

SOUND
with the necessary attenuation analysis, which may include considerations of unit placement (away from occupied areas), acoustical insulation in the equipment room, duct silencers, or acoustical duct lining.

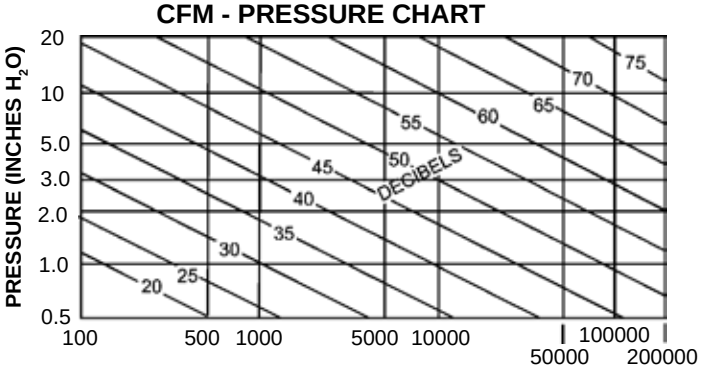
SOUND POWER LEVEL ESTIMATING
The following method of estimating centrifugal fan sound power level spectrums is taken from the latest ASHRAE sources. The method does not take into consideration such factors as cabinet attenuation or inefficient unit selection, but does provide conservative approximate values upon which to base an acoustical attenuation analysis.
Sound power levels in decibels are 10-12 watts in each of the eight octave bands may be estimated with the following formula:
dB = (Base dB) + (System dB) + (Blade Passage Frequency dB)

Base dB
The base dB is found in the table below by entering the octave band and reading the dB in the appropriate row.

OCTAVE BAND CENTRE FREQUENCY								
Hz	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
dB	47	43	39	33	28	25	23	20

SYSTEM dB
The system dB is found in the chart below by entering the chart at the flow rate, rise vertically to the pressure of the system and read the decibels

CFM - PRESSURE CHART



BLADE PASSAGE FREQUENCY dB
The Blade Passage Frequently dB is found:

1. For forward curved fan wheel units - add 2 dB to the one octave band which contains the frequency equal to the RPM of the fan.

2. For airfoil units - add 3 dB to the one octave band which contains the frequency equal to the RPM of the fan.

PERFORMANCE AND PHYSICAL DATA

DESCRIPTION			UNIT SIZE						
			103	104	106	108	111	114	117
CFM RANGE		COOLING (LFA Coil)	700-1230	1000-1890	1800-3000	2200-4000	3000-5800	4000-7500	5000-9200
		HEATING	700-2000	1000-3200	1800-5000	2200-7000	3000-10000	4000-13000	5000-15000
STANDARD FAN DATA	FORWARD CURVED	Outlet Area - Square Feet	0.84	1.03	1.45	2.04	2.86	2.86	2.86
		Number - Diameter (in) - Type	1 - 9 FC	1 - 10 FC	1 - 12 FC	1 - 15 FC	1 - 18 FC	1 - 18 FC	1 - 18 FC
		Shaft and Bearing Size (in)	3/4	3/4	1 3/16	1 3/16	1 7/16	1 7/16	1 7/16
OPTIONAL FAN DATA	AIRFOIL	Outlet Area - Square Feet	N/A	N/A	1.45	2.04	2.86	2.86	2.86
		Number - Diameter (in) - Type			1 - 12 AF	1 - 15 AF	1 - 18 AF	1 - 18 AF	1 - 18 AF
		Shaft and Bearing Size (in)			1 3/16	1 7/16	1 1/2	1 1/2	1 1/2
COIL DATA	LARGE	Number - Size (in)	1 - 15 x 21.5	1 - 18 x 27.5	1 - 21 x 37.5	1 - 30 x 35.5	1 - 30 x 50.5	1 - 30 x 65.5	1 - 30 x 80.5
		Face Area - Square Feet	2.24	3.44	5.47	7.4	10.54	13.7	16.8
	SMALL	Number - Size (in)	N/A	N/A	N/A	N/A	N/A	1 - 24 x 65.5	1 - 24 x 80.5
		Face Area - Square Feet						10.9	13.4
FILTER DATA	2" FLAT FILTER SECTION	Number - Size (in)	2 - 16x20x2	2 - 20x20x2	3 - 16x25x2	2 - 16x20x2 2 - 16x25x2	6 - 16x20x2	6 - 16x25x2	4 - 16x20x2 4 - 16x25x2
		Filter Area - Square Feet	4.4	5.6	8.4	10	13.3	16.7	20
	4" FLAT FILTER SECTION	Number - Size (in)	2 - 16x20x4	2 - 20x20x4	3 - 16x25x4	2 - 16x20x4 2 - 16x25x4	6 - 16x20x4	6 - 16x25x4	4 - 16x20x4 4 - 16x25x4
		Filter Area - Square Feet	4.4	5.6	8.4	10	13.3	16.7	20
	2" ANGULAR FILTER SECTION	Number - Size (in)	N/A	N/A	N/A	N/A	N/A	2 - 16x25x2 6 - 20x25x2	8 - 20x25x2
		Filter Area - Square Feet						26.4	27.8
	2' COMBI-NATION ANGULAR FILTER SECTION	Number - Size (in)	2 - 16x25x2	4 - 16x20x2	6 - 16x20x2	6 - 16x25x2	6 - 20x25x2	2 - 16x25x2 6 - 20x25x2	8 - 20x25x2
		Filter Area - Square Feet	5.6	8.9	13.3	16.7	20.9	26.4	27.8
METAL GAUGES	BLOWER SECTION	Frame	16	16	16	16	16	16	16
		Non Insulated Panels	16	16	16	16	16	16	16
		Insulated Panels	20	20	20	20	20	20	20
		Base	12	12	12	12	12	12	12
	COOLING COIL SECTION	Frame	16	16	16	16	16	16	16
		Non Insulated Panels	16	16	16	16	16	16	16
		Insulated Panels	20	20	20	20	20	20	20
		Base	12	12	12	12	12	12	12
MOTORS	MINIMUM HP		1/3	1/3	1/2	3/4	3/4	3/4	3/4
	MAXIMUM FRAME SIZE		184T	213T	215T	254T	256T	284T	284T

PERFORMANCE AND PHYSICAL DATA (cont'd)

DESCRIPTION			UNIT SIZE						
			122	128	137	141	150	164	182
CFM RANGE		COOLING (LFA Coil)	6000-11600	8000-14700	10000-19600	12000-22100	15000-27100	18000-34400	25000-44700
		HEATING	6000-19000	8000-25000	10000-32000	12000-32000	15000-39000	18000-50000	25000-64000
STANDARD FAN DATA	FORWARD CURVED	Outlet Area - Square Feet	4.38	5.5	6.9	8.67	10.91	13.74	17.27
		Number - Diameter (in) - Type	1 - 20 FC	1 - 22 FC	1 - 25 FC	1 - 28 FC	1 - 32 FC	1 - 36 FC	1 - 40 FC
		Shaft and Bearing Size (in)	1 11/16	2	2 7/16	2 7/16	2 3/16	2 7/16	2 7/16
OPTIONAL FAN DATA	AIRFOIL	Outlet Area - Square Feet	4.38	5.5	6.9	8.67	10.91	13.74	17.27
		Number - Diameter (in) - Type	1 - 20 AF	1 - 22 AF	1 - 25 AF	1 - 28 AF	1 - 32 AF	1 - 36 AF	1 - 40 AF
		Shaft and Bearing Size (in)	1 11/16	2	2	2 3/16	2 3/16	2 7/16	2 7/16
COIL DATA	LARGE	Number - Size (in)	1 - 36 x 84.5	1 - 36 x 107.5	2 - 24 x 107.5	2 - 27 x 107.5	2 - 33 x 107.5	2 - 42 x 107.5	2 - 42 x 139.5
		Face Area - Square Feet	21.1	26.9	35.8	40.3	49.3	62.7	81.4
	SMALL	Number - Size (in)	1 - 27 x 84.5	1 - 27 x 107.5	1 - 39 x 107.5	1 - 42 x 107.5	1 - 27 x 107.5 1 - 24 x 107.5	2 - 33 x 107.5	2 - 33 x 139.5
		Face Area - Square Feet	15.9	20.2	29.1	31.4	38.1	49.3	63.9
FILTER DATA	2" FLAT FILTER SECTION	Number - Size (in)	12 - 16x20x2	12 - 20x20x2	12 - 20x25x2	18 - 20x20x2	12 - 20x25x2 6 - 20x20x2	6 - 20x25x2 18 - 20x20x2	8 - 20x25 24 - 20x20
		Filter Area - Square Feet	26.7	33.4	41.6	50.2	58.4	70.6	90
	4" FLAT FILTER SECTION	Number - Size (in)	12 - 16x20x4	12 - 20x20x4	12 - 20x25x4	18 - 20x20x4	12 - 20x25x4 6 - 20x20x4	6 - 20x25x4 18 - 20x20x4	8 - 20x25 24 - 20x20
		Filter Area - Square Feet	26.7	33.4	41.6	50.2	58.4	70.6	90
	2" ANGULAR FILTER SECTION	Number - Size (in)	16 - 16x25x2	12 - 20x25x2	16 - 20x25x2	24 - 20x20x2	24 - 20x25x2	30 - 20x25x2	8 - 20X20X2 32 - 20X25X2
		Filter Area - Square Feet	33.4	41.8	55.5	66.7	83.2	104	133
	2' COMBI-NATION ANGULAR FILTER SECTION	Number - Size (in)	16 - 16x25x2	12 - 20x25x2	16 - 20x25x2	24 - 20x20x2	24 - 20x25x2	30 - 20x25x2	8 - 20X20X2 32 - 20X25X2
		Filter Area - Square Feet	33.4	41.8	55.5	66.7	83.2	104	133
METAL GAUGES	BLOWER SECTION	Frame	16	16	16	16	16	16	16
		Non Insulated Panels	16	16	16	16	16	16	16
		Insulated Panels	20	20	20	20	20	20	20
		Base	12	12	10	10	10	10	10
	COOLING COIL SECTION	Frame	16	16	16	16	16	16	16
		Non Insulated Panels	16	16	16	16	16	16	16
		Insulated Panels	20	20	20	20	20	20	20
		Base	12	12	10	10	10	10	10
MOTORS	MINIMUM HP		1	1-1/2	1-1/2	1-1/2	1-1/2	3	5
	MAXIMUM FRAME SIZE		324T	324T	364T	365T	365T	365T	405T

FAN MOTOR LOCATIONS

TOP VIEWS

MOTOR LOCATIONS M1 & M2
FOR MODELS 103 THRU 128 ONLY

MOTOR LOCATIONS M3 & M4
FOR MODELS 137 THRU 182 ONLY

LOCATIONS ARE TYPICAL FOR ALL
AIR FLOW CONFIGURATIONS

MOTOR CONSTRUCTION ARRANGEMENT

M1 LOCATION, - F1
M2 LOCATION, - F2
M3 LOCATION, - F1
M4 LOCATION, - F2

SEE MOTOR PART NUMBERS IN ELECTRICAL DATA TABLES

DRIVE INSTALLATION

A. All motors are mounted on a heavy duty slide base located inside the cabinet.
B. Drives are pre-set for desired RPM.
C. Belt tension is factory set.

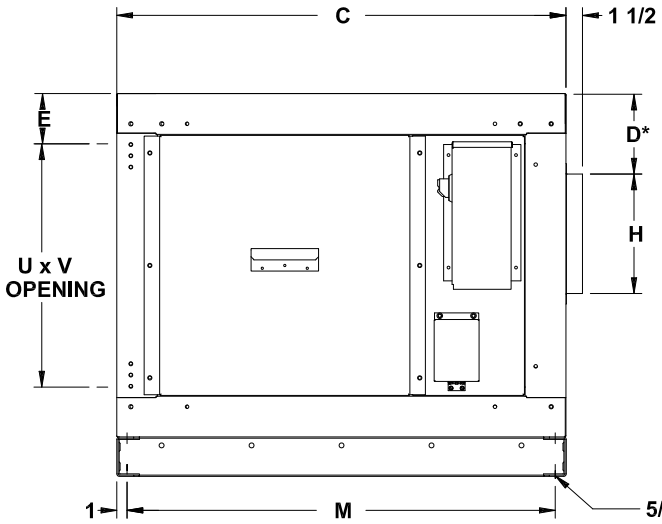
TAF

DIMENSIONAL DATA - HORIZONTAL VENTILATING UNITS

60Hz

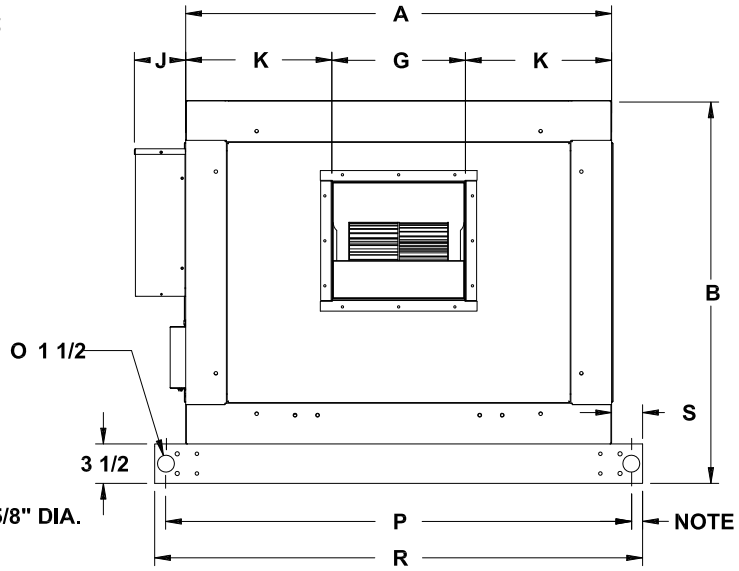
Models 103 - 128

SIDE VIEW



* For "D" dimension refer to FIG.1, 2, 3, or 4 for location.

END VIEW



NOTE: 103 THRU 108 = 1"
111 THRU 128 = 1 1/2"

DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	C	FIG. #1 D*	FIG. #2 D*	FIG. #3/4 D*	E	G	H	J	K	M	P	R	S	U	V
103	37 7/8	34	40	7 1/8	11 1/2	10 3/8	4 7/16	12 1/8	10 3/4	4 1/2	12 7/8	38	41 3/8	43 3/8	2 3/4	21 5/8	29
104	43 7/8	37	45 1/8	8 1/8	13 3/8	11 7/16	4 7/16	13 1/4	11 5/8	4 1/2	15 5/16	43 1/8	47 3/8	49 3/8	2 3/4	24 5/8	35
106	53 7/8	40 1/2	47	8 7/16	14 3/4	12 7/16	4 7/16	15 7/8	13 3/4	4 1/2	19	45	57 3/8	59 3/8	2 3/4	28 1/8	45
108	51 7/8	48	53 9/16	12 1/4	19 7/8	6 3/16	4 7/16	19	16 1/4	4 3/4	16 7/16	51 9/16	55 3/8	57 3/8	2 3/4	35 11/16	43
111	66 7/8	48	63 1/8	7 1/2	17 1/8	7 1/4	4 7/16	22 1/4	19 1/4	4 3/4	22 5/16	61 1/8	69 3/4	72 3/4	2 15/16	35 11/16	58
114	81 7/8	48	63 1/8	7 1/2	17 1/8	7 1/2	4 7/16	22 1/4	19 1/4	4 3/4	29 13/16	61 1/8	84 3/4	87 3/4	2 15/16	35 11/16	73
117	96 7/8	48	63 1/8	6 7/8	16 1/2	7 1/8	4 7/16	22 1/4	19 1/4	4 3/4	37 5/16	61 1/8	99 3/4	102 3/4	2 15/16	35 11/16	88
122	100 7/8	54	69 1/8	6 1/2	17 1/2	6 1/2	4 7/16	25 3/8	25 3/8	4 3/4	37 3/4	67 1/8	103 3/4	106 3/4	2 15/16	41 11/16	90 1/2
128	123 7/8	57	73 1/8	5 1/4	17	6 3/4	4 7/16	28 1/4	28 1/4	4 3/4	47 13/16	71 1/8	126 3/4	129 3/4	2 15/16	44 11/16	115

NOTE: All dimensions are approximate. Certified drawings available on request.

* NOTE: "D" DIMENSION VARIES BASED ON AIRFLOW CONFIGURATION

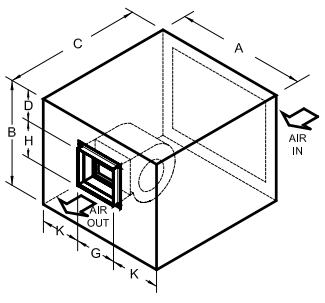


FIG. #1

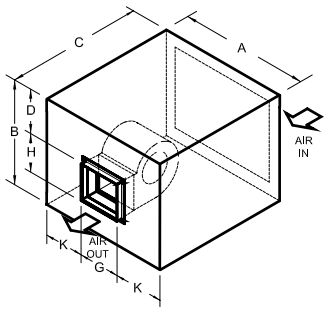


FIG. #2

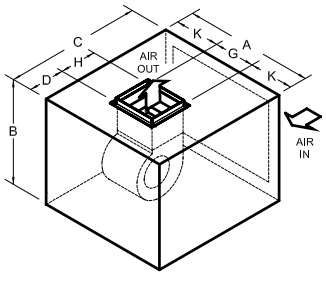


FIG. #3

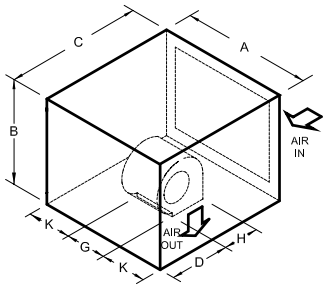
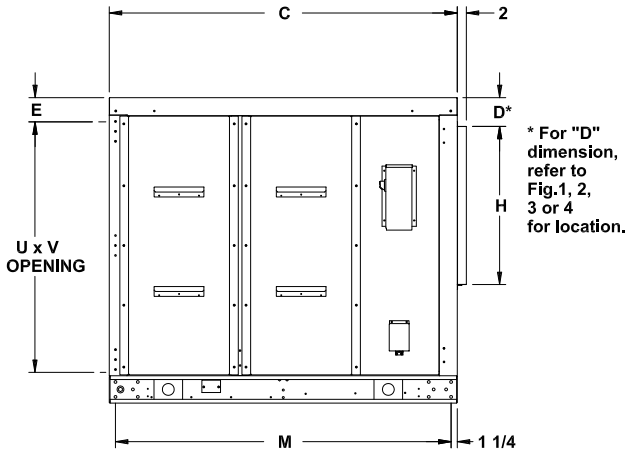


FIG. #4

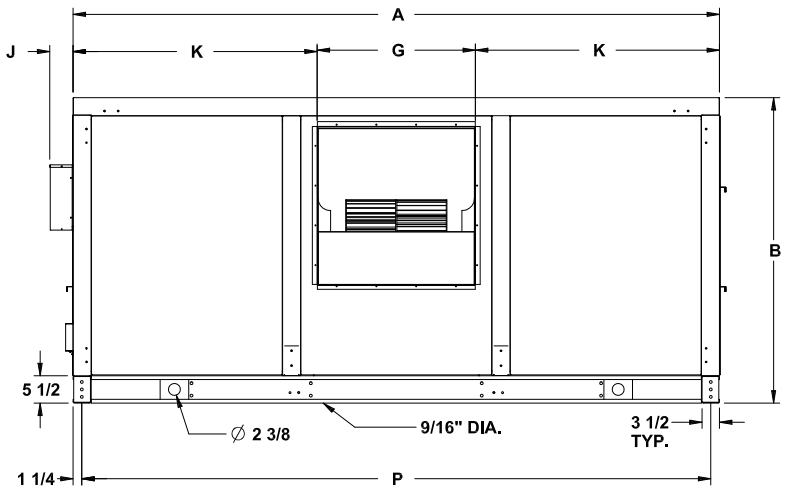
DIMENSIONAL DATA - HORIZONTAL VENTILATING UNITS

Models 137 - 182

SIDE VIEW



END VIEW



DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	C	FIG. #1 D*	FIG. #2 D*	FIG. #3/4 D*	E	G	H	J	K	M	P	U	V
137	130	61 1/2	70	5 3/4	17 7/8	15 7/8	4 7/16	31 3/4	31 3/4	4 3/4	49 1/8	67 1/2	127 1/2	55 3/4	121 1/8
141	130	70 1/2	75	6	20 1/4	17 7/8	4 7/16	35 5/8	35 5/8	4 3/4	47 3/16	72 1/2	127 1/2	61 3/4	121 1/8
150	130	79 1/2	82	10 1/4	27 7/8	19 3/4	4 7/16	40	40	4 3/4	45	79 1/2	127 1/2	74	121 1/8
164	130	97 1/2	90	17 7/8	37 1/2	23 1/4	4 7/16	44 3/4	44 3/4	5 3/4	42 5/8	87 1/2	127 1/2	86 1/2	121 1/8
182	160	97 1/2	96	10 7/8	31 5/8	23 1/2	4 7/16	50 1/4	50 1/4	5 3/4	54 7/8	93 1/2	157 1/2	86 1/2	151 1/8

NOTE: All dimensions are approximate. Certified drawings available on request.

* NOTE: "D" DIMENSION VARIES BASED ON AIRFLOW CONFIGURATION

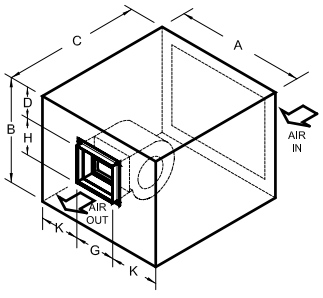


FIG. #1

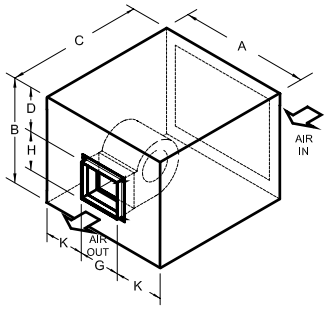


FIG. #2

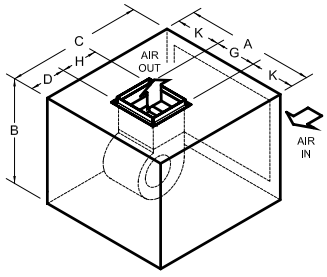


FIG. #3

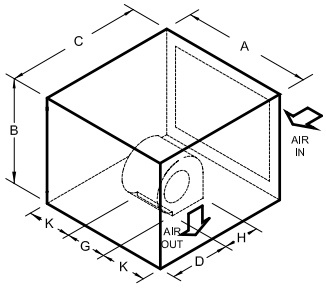
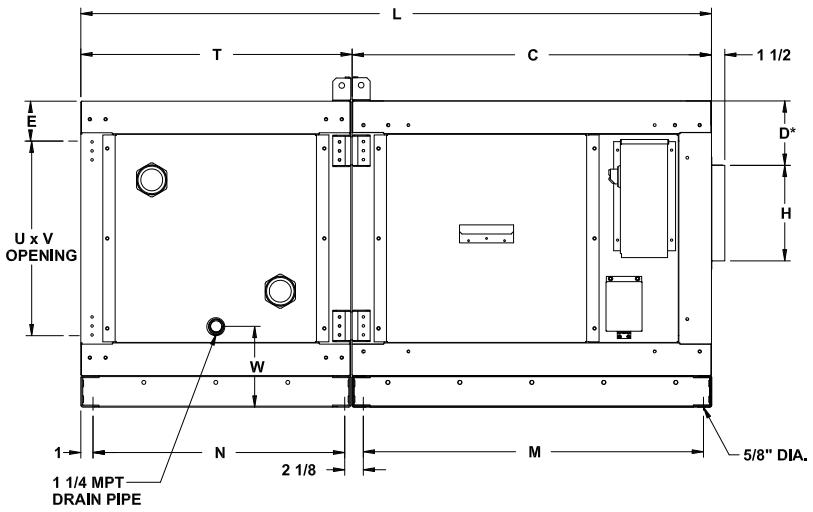


FIG. #4

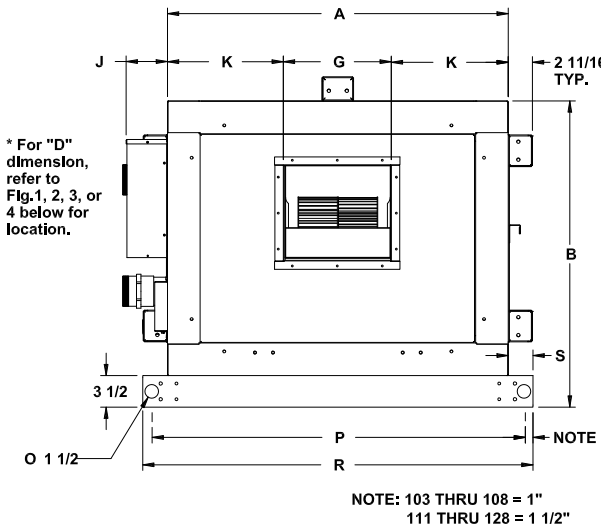
DIMENSIONAL DATA - HORIZONTAL COOLING UNITS

Models 103 - 128

SIDE VIEW



END VIEW



NOTE: 103 THRU 108 = 1"
111 THRU 128 = 1 1/2"

DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	C	FIG. #1 D*	FIG. #2 D*	FIG. #3/4 D*	E	G	H	J	K	L	M	N	P	R	S	T	U	V	W	V	W
103	37 7/8	33 1/2	40	7 1/8	11 1/2	10 3/8	4 7/16	12 1/8	10 3/4	4 1/2	12 7/8	70 1/8	38	28	41 3/8	43 3/8	2 3/4	30	21 5/8	29	8 7/8	29	8 7/8
104	43 7/8	36 1/2	45 1/8	8 1/8	13 3/8	11 7/16	4 7/16	13 1/4	11 5/8	4 1/2	15 5/16	75 1/4	43 1/8	28	47 3/8	49 3/8	2 3/4	30	24 5/8	35	8 7/8	35	8 7/8
106	53 7/8	40	47	8 3/8	14 3/4	12 7/16	4 7/16	15 7/8	13 3/4	4 1/2	19	77 1/8	45	28	57 3/8	59 3/8	2 3/4	30	28 1/8	45	8 7/8	45	8 7/8
108	51 7/8	48	53 9/16	12 1/4	19 7/8	6 3/16	4 7/16	19	16 1/4	4 3/4	16 7/16	83 1/2	51 9/16	28	55 3/8	57 3/8	2 3/4	30	35 11/16	43	8 7/8	43	8 7/8
111	66 7/8	48	63 1/8	7 1/2	17 1/8	7 1/4	4 7/16	22 1/4	19 1/4	4 3/4	22 5/16	93 1/4	61 1/8	28	69 3/4	72 3/4	2 15/16	30	35 11/16	58	9 1/4	58	9 1/4
114	81 7/8	48	63 1/8	7 1/2	17 1/8	7 1/2	4 7/16	22 1/4	19 1/4	4 3/4	29 13/16	93 1/4	61 1/8	28	84 3/4	87 3/4	2 15/16	30	35 11/16	73	9 1/4	73	9 1/4
117	96 7/8	48	63 1/8	6 7/8	16 1/2	7 1/8	4 7/16	22 1/4	19 1/4	4 3/4	37 5/16	93 1/4	61 1/8	28	99 3/4	102 3/4	2 15/16	30	35 11/16	88	9 1/4	88	9 1/4
122	100 7/8	54	69 1/8	6 1/2	17 1/2	6 1/2	4 7/16	25 3/8	25 3/8	4 3/4	37 3/4	99 1/4	67 1/8	28	103 3/4	106 3/4	2 15/16	30	41 11/16	90 1/2	9 1/4	90 1/2	9 1/4
128	123 7/8	57	73 1/8	5 1/4	17	6 3/4	4 7/16	28 1/4	28 1/4	4 3/4	47 13/16	103 1/4	71 1/8	28	126 3/4	129 3/4	2 15/16	30	44 11/16	115	9 1/4	115	9 1/4

NOTE: All dimensions are approximate. Certified drawings available on request.

* NOTE: "D" DIMENSION VARIES BASED ON AIRFLOW CONFIGURATION

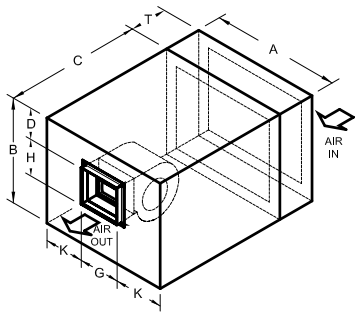


FIG. #1

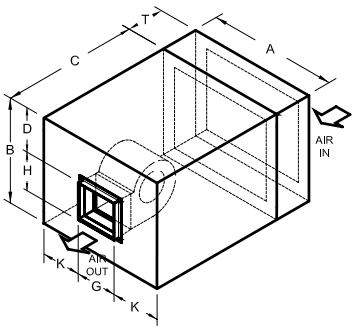


FIG. #2

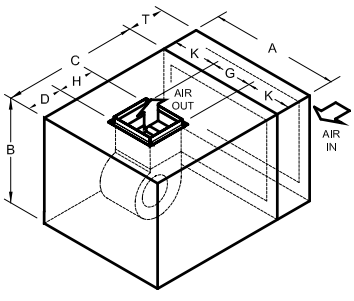


FIG. #3

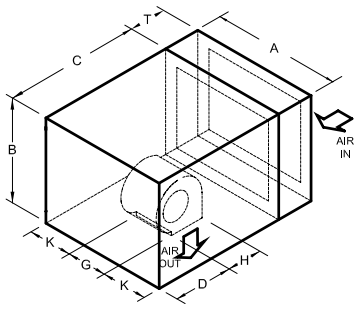
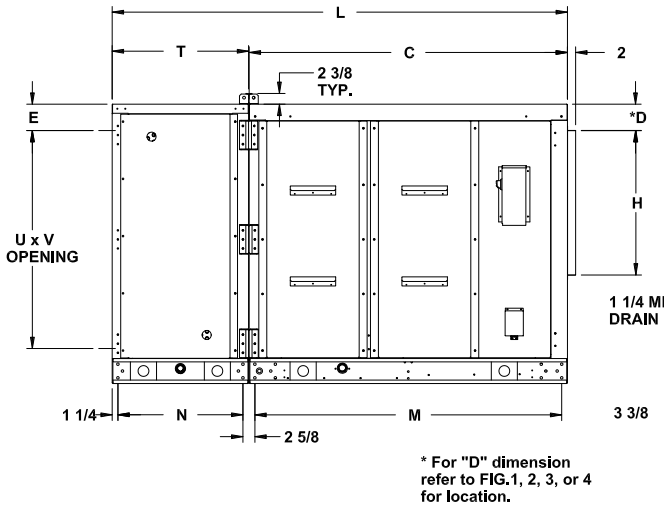


FIG. #4

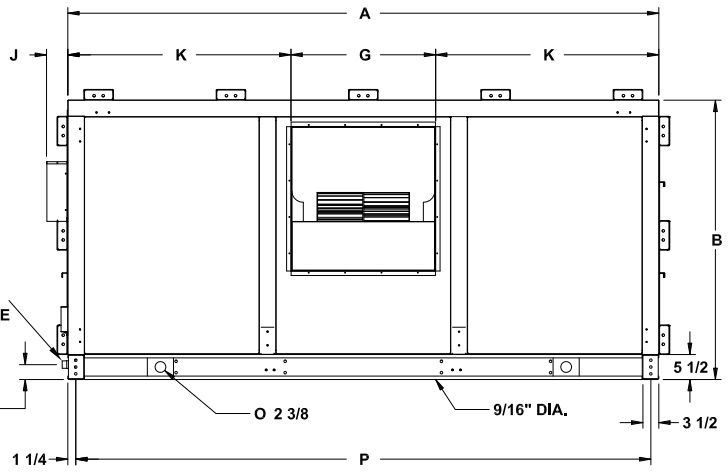
DIMENSIONAL DATA - HORIZONTAL COOLING UNITS

Models 137 - 182

SIDE VIEW



END VIEW



DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	C	FIG. #1 D*	FIG. #2 D*	FIG. #3/4 D*	E	G	H	J	K	L	M	N	P	T	U	V
137	130	61 1/2	70	5 3/4	17 7/8	15 7/8	4 7/16	31 3/4	31 3/4	4 3/4	49 1/8	105 1/8	67 1/2	32 1/2	127 1/2	35	55 3/4	121 1/8
141	130	70 1/2	75	6	20 1/4	17 7/8	4 7/16	35 5/8	35 5/8	4 3/4	47 3/16	110 1/8	72 1/2	32 1/2	127 1/2	35	61 3/4	121 1/8
150	130	79 1/2	82	10 1/4	27 7/8	19 3/4	4 7/16	40	40	4 3/4	45	117 1/8	79 1/2	32 1/2	127 1/2	35	74	121 1/8
164	130	97 1/2	90	17 7/8	37 1/2	22 1/8	4 7/16	44 3/4	44 3/4	5 3/4	42 5/8	125 1/8	87 1/2	32 1/2	127 1/2	35	86 1/2	121 1/8
182	160	97 1/2	96	10 7/8	31 5/8	23 1/2	4 7/16	50 1/4	50 1/4	5 3/4	54 7/8	131 1/8	93 1/2	32 1/2	157 1/2	35	86 1/2	151 1/8

NOTE: All dimensions are approximate. Certified drawings available on request.

* NOTE: "D" DIMENSION VARIES BASED ON AIRFLOW CONFIGURATION

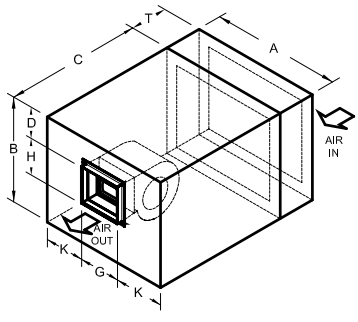


FIG. #1

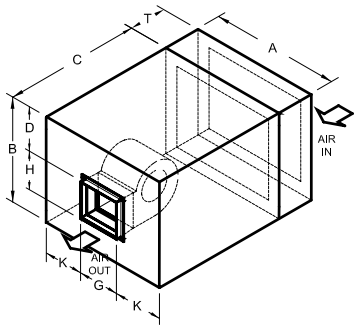


FIG. #2

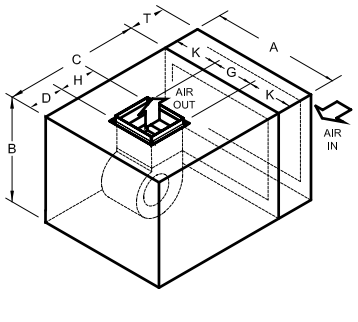


FIG. #3

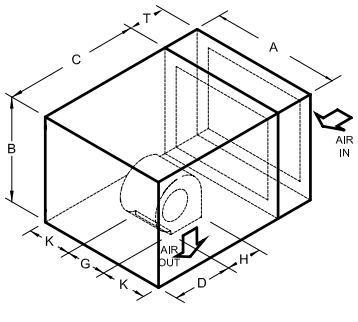
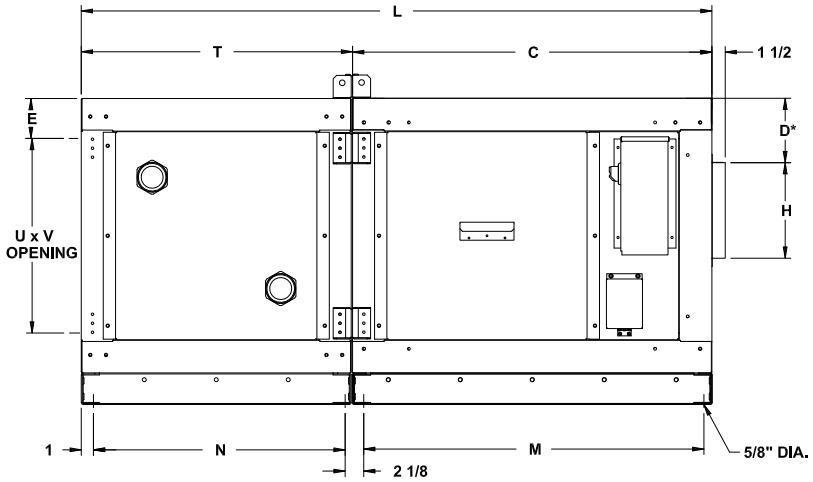


FIG. #4

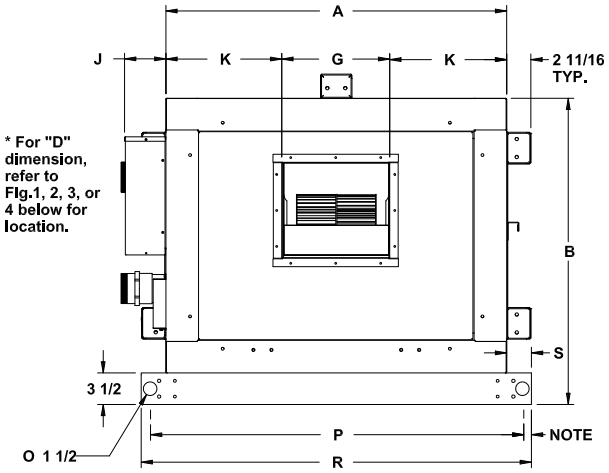
DIMENSIONAL DATA - HORIZONTAL HEATING UNITS

Models 103 - 128

SIDE VIEW



END VIEW



NOTE: 103 THRU 108 = 1"
111 THRU 128 = 1 1/2"

DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	C	FIG. #1 D*	FIG. #2 D*	FIG. #3/4 D*	E	G	H	J	K	L	M	N	P	R	S	T	U	V
103	37 7/8	33 1/2	40	7 1/8	11 1/2	10 3/8	4 7/16	12 1/8	10 3/4	4 1/2	12 7/8	65 1/8	38	23	41 3/8	43 3/8	2 3/4	25	21 5/8	29
104	43 7/8	36 1/2	45 1/8	8 1/8	13 3/8	11 7/16	4 7/16	13 1/4	11 5/8	4 1/2	15 5/16	65 1/4	43 1/8	23	47 3/8	49 3/8	2 3/4	25	24 5/8	35
106	53 7/8	40	47	8 3/8	14 3/4	12 7/16	4 7/16	15 7/8	13 3/4	4 1/2	19	72 1/8	45	23	57 3/8	59 3/8	2 3/4	25	28 1/8	45
108	51 7/8	48	53 9/16	12 1/4	19 7/8	6 3/16	4 7/16	19	16 1/4	4 3/4	16 7/16	78 5/8	51 9/16	23	55 3/8	57 3/8	2 3/4	25	35 11/16	43
111	66 7/8	48	63 1/8	7 1/2	17 1/8	7 1/4	4 7/16	22 1/4	19 1/4	4 3/4	22 5/16	88 1/4	61 1/8	23	69 3/4	72 3/4	2 15/16	25	35 11/16	58
114	81 7/8	48	63 1/8	7 1/2	17 1/8	7 1/2	4 7/16	22 1/4	19 1/4	4 3/4	29 13/16	88 1/4	61 1/8	23	84 3/4	87 3/4	2 15/16	25	35 11/16	73
117	96 7/8	48	63 1/8	6 7/8	16 1/2	7 1/8	4 7/16	22 1/4	19 1/4	4 3/4	37 5/16	88 1/4	61 1/8	23	99 3/4	102 3/4	2 15/16	25	35 11/16	88
122	100 7/8	54	69 1/8	6 1/2	17 1/2	6 1/2	4 7/16	25 3/8	25 3/8	4 3/4	37 3/4	94 1/4	67 1/8	23	103 3/4	106 3/4	2 15/16	25	41 11/16	90 1/2
128	123 7/8	57	73 1/8	5 1/4	17	6 3/4	4 7/16	28 1/4	28 1/4	4 3/4	47 13/16	98 1/4	71 1/8	23	126 3/4	129 3/4	2 15/16	25	44 11/16	115

NOTE: All dimensions are approximate. Certified drawings available on request.

* NOTE: "D" DIMENSION VARIES BASED ON AIRFLOW CONFIGURATION

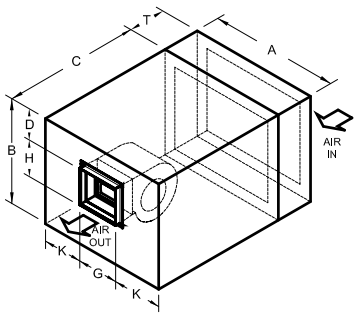


FIG. #1

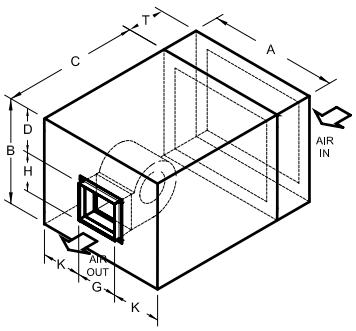


FIG. #2

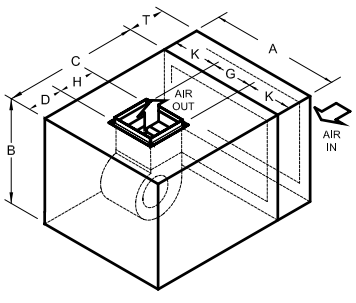


FIG. #3

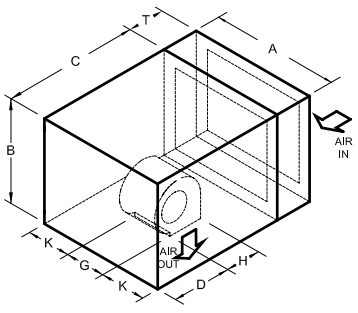
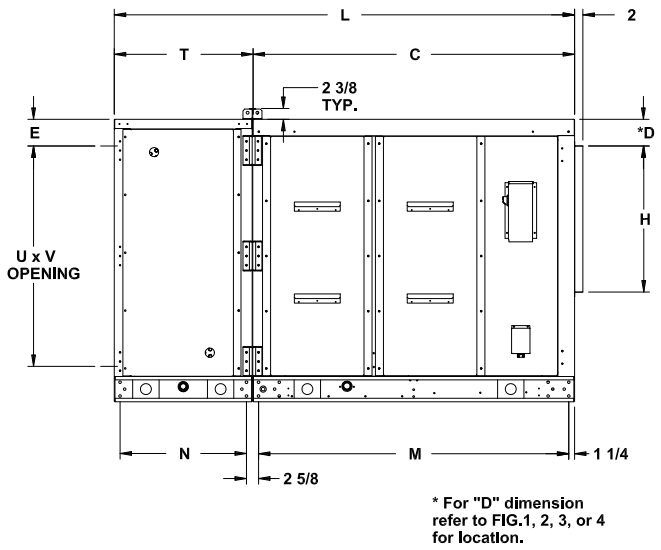


FIG. #4

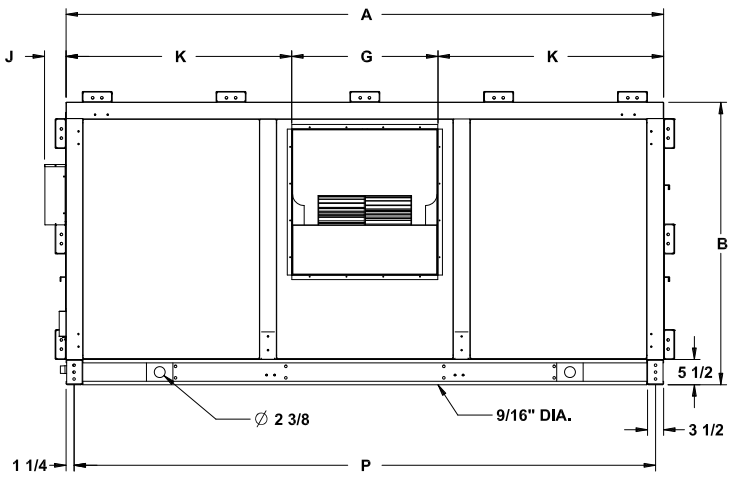
DIMENSIONAL DATA - HORIZONTAL HEATING UNITS

Models 137 - 182

SIDE VIEW



END VIEW



DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	C	FIG. #1 D*	FIG. #2 D*	FIG. #3/4 D*	E	G	H	J	K	L	M	N	P	T	U	V
137	130	61 1/2	70	5 3/4	17 7/8	15 7/8	4 7/16	31 3/4	31 3/4	4 3/4	49 1/8	95 1/8	67 1/2	22 1/2	127 1/2	25	55 3/4	121 1/8
141	130	70 1/2	75	6	20 1/4	17 7/8	4 7/16	35 5/8	35 5/8	4 3/4	47 3/16	100 1/8	72 1/2	22 1/2	127 1/2	25	61 3/4	121 1/8
150	130	79 1/2	82	10 1/4	27 7/8	19 3/4	4 7/16	40	40	4 3/4	45	107 1/8	79 1/2	22 1/2	127 1/2	25	74	121 1/8
164	130	97 1/2	90	17 7/8	37 1/2	22 1/8	4 7/16	44 3/4	44 3/4	5 3/4	42 5/8	115 1/8	87 1/2	22 1/2	127 1/2	25	86 1/2	121 1/8
182	160	97 1/2	96	10 7/8	31 5/8	23 1/2	4 7/16	50 1/4	50 1/4	5 3/4	54 7/8	121 1/8	93 1/2	22 1/2	157 1/2	25	86 1/2	151 1/8

NOTE: All dimensions are approximate. Certified drawings available on request.

* NOTE: "D" DIMENSION VARIES BASED ON AIRFLOW CONFIGURATION

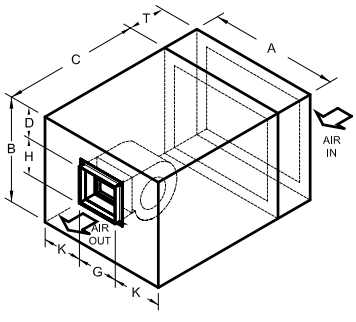


FIG. #1

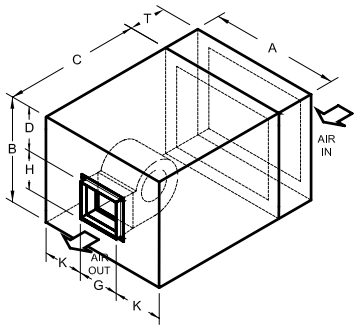


FIG. #2

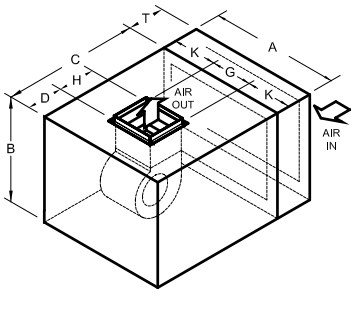


FIG. #3

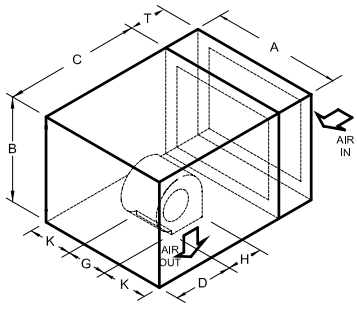
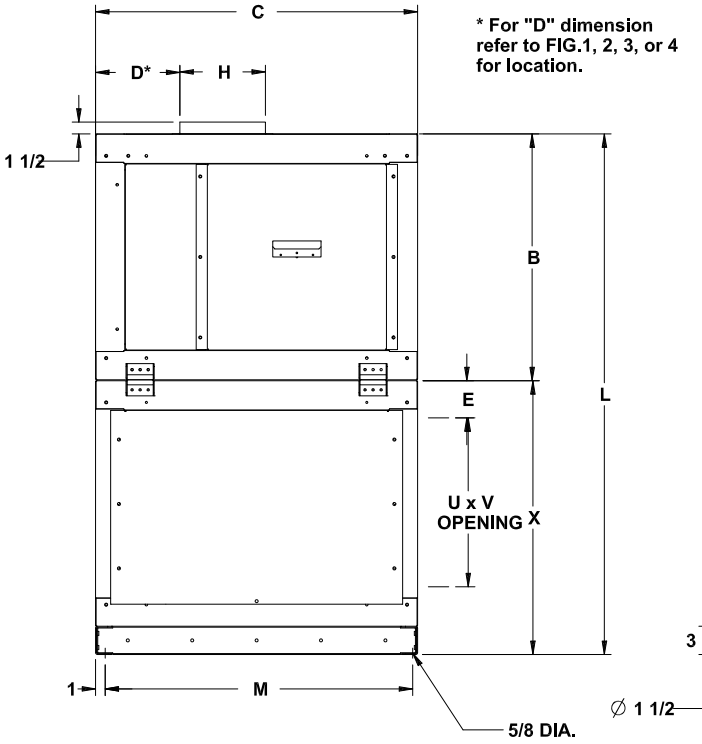


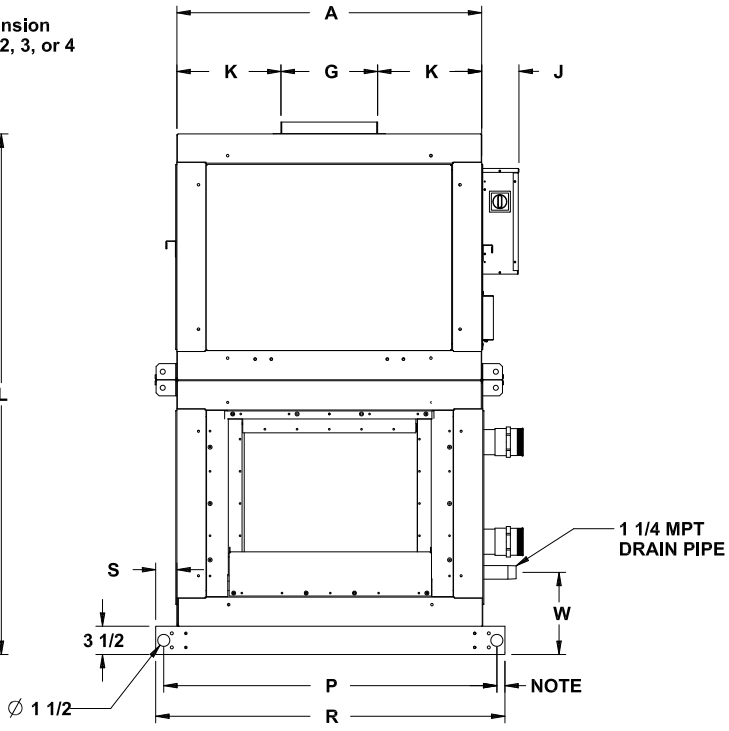
FIG. #4

DIMENSIONAL DATA - VERTICAL COOLING UNITS

SIDE VIEW



END VIEW



NOTE: 103 THRU 108 = 1"
111 THRU 128 = 1 1/2"

DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	C	FIG. #1/2 D*	FIG. #3/4 D*	E	G	H	J	K	L	M	P	R	S	U	V	W	X
103	37 7/8	30 1/2	40	7 1/8	10 3/8	4 7/16	12 1/8	10 3/4	4 1/2	12 7/8	64 1/2	38	41 3/8	43 3/8	2 3/4	21 5/8	29	8 7/8	34
104	43 7/8	33 1/2	45 1/8	8 1/8	11 7/16	4 7/16	13 1/4	11 5/8	4 1/2	15 5/16	70 1/2	43 1/8	47 3/8	49 3/8	2 3/4	24 5/8	35	8 7/8	37
106	53 7/8	37	47	8 7/16	12 7/16	4 7/16	15 7/8	13 3/4	4 1/2	19	77 1/2	45	57 3/8	59 3/8	2 3/4	28 1/8	45	8 7/8	40 1/2
108	51 7/8	44 1/2	53 9/16	12 1/4	6 3/16	4 7/16	19	16 1/4	4 3/4	16 7/16	92 5/8	51 9/16	55 3/8	57 3/8	2 3/4	35 11/16	43	8 7/8	48
111	66 7/8	44 1/2	63 1/8	7 1/2	7 1/4	4 7/16	22 1/4	19 1/4	4 3/4	22 5/16	92 5/8	61 1/8	69 3/4	72 3/4	3	35 11/16	54 1/4	9 1/4	48
114	81 7/8	44 1/2	63 1/8	7 1/2	7 1/2	4 7/16	22 1/4	19 1/4	4 3/4	29 13/16	92 5/8	61 1/8	84 3/4	87 3/4	3	35 11/16	73	9 1/4	48
117	96 7/8	44 1/2	63 1/8	6 7/8	7 1/8	4 7/16	22 1/4	19 1/4	4 3/4	37 5/16	92 5/8	61 1/8	99 3/4	102 3/4	3	35 11/16	88	9 1/4	48
122	100 7/8	50 9/16	69 1/8	6 1/2	6 1/2	4 7/16	25 3/8	25 3/8	4 3/4	37 3/4	104 5/8	67 1/8	103 3/4	106 3/4	3	41 11/16	90 1/2	9 1/4	54
128	123 7/8	53 9/16	73 1/8	5 1/4	6 3/4	4 7/16	28 1/4	28 1/4	4 3/4	47 13/16	110 5/8	71 1/8	126 3/4	129 3/4	3	44 11/16	115	9 1/4	57

NOTE: All dimensions are approximate. Certified drawings available on request.

* NOTE: "D" DIMENSION VARIES BASED ON AIRFLOW CONFIGURATION

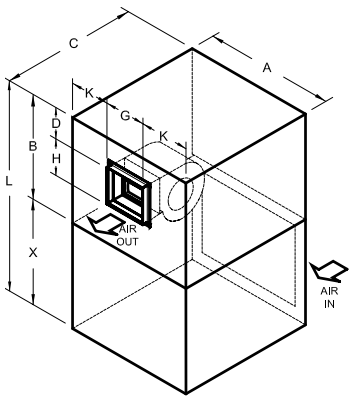


FIG. #1

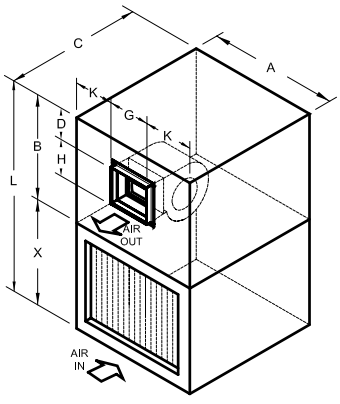


FIG. #2

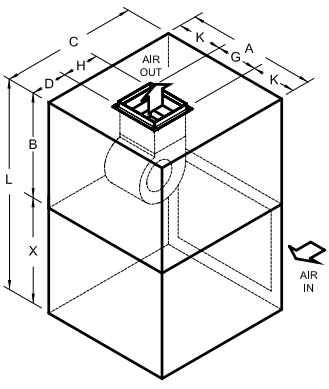


FIG. #3

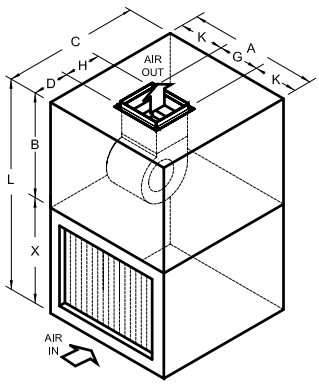


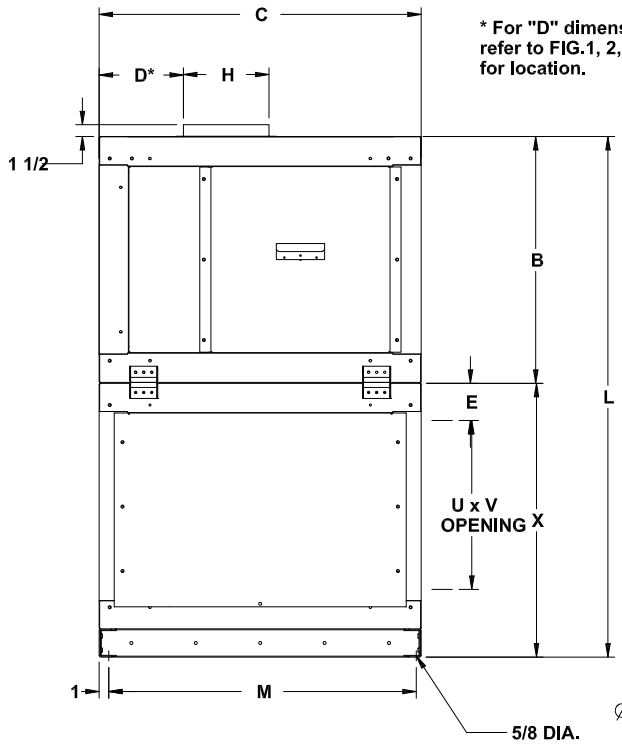
FIG. #4

TAH-V

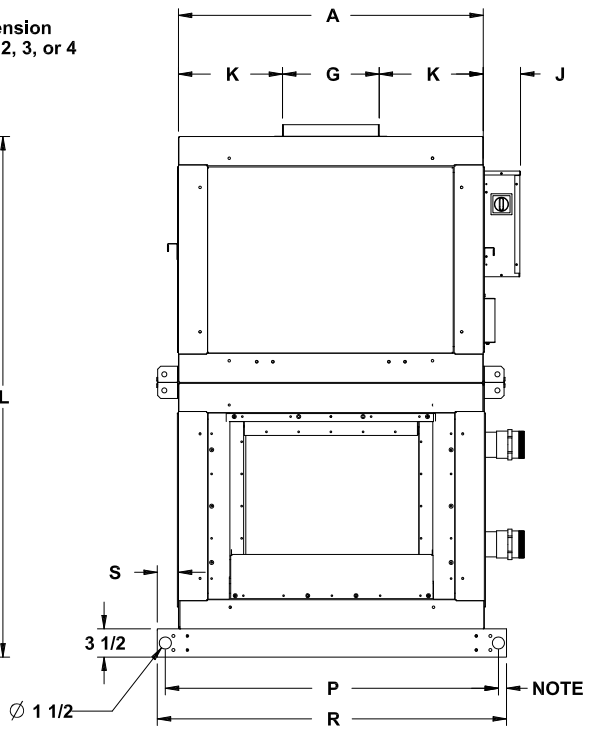
DIMENSIONAL DATA - VERTICAL HEATING UNITS

60Hz

SIDE VIEW



END VIEW



NOTE: 103 THRU 108 = 1"
111 THRU 128 = 1 1/2"

DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	C	FIG. #1/2 D*	FIG. #3/4 D*	E	G	H	J	K	L	M	P	R	S	U	V	X
103	37 7/8	30 1/2	40	7 1/8	10 3/8	4 7/16	12 1/8	10 3/4	4 1/2	12 7/8	64 1/2	38	41 3/8	43 3/8	2 3/4	21 5/8	29	34
104	43 7/8	33 1/2	45 1/8	8 1/8	11 7/16	4 7/16	13 1/4	11 5/8	4 1/2	15 5/16	70 1/2	43 1/8	47 3/8	49 3/8	2 3/4	24 5/8	35	37
106	53 7/8	37	47	8 7/16	12 7/16	4 7/16	15 7/8	13 3/4	4 1/2	19	77 1/2	45	57 3/8	59 3/8	2 3/4	28 1/8	45	40 1/2
108	51 7/8	44 1/2	53 9/16	12 1/4	6 3/16	4 7/16	19	16 1/4	4 3/4	16 7/16	92 5/8	51 9/16	55 3/8	57 3/8	2 3/4	35 11/16	43	48
111	66 7/8	44 1/2	63 1/8	7 1/2	7 1/4	4 7/16	22 1/4	19 1/4	4 3/4	22 5/16	92 5/8	61 1/8	69 3/4	72 3/4	3	35 11/16	54 1/4	48
114	81 7/8	44 1/2	63 1/8	7 1/2	7 1/2	4 7/16	22 1/4	19 1/4	4 3/4	29 13/16	92 5/8	61 1/8	84 3/4	87 3/4	3	35 11/16	73	48
117	96 7/8	44 1/2	63 1/8	6 7/8	7 1/8	4 7/16	22 1/4	19 1/4	4 3/4	37 5/16	92 5/8	61 1/8	99 3/4	102 3/4	3	35 11/16	88	48
122	100 7/8	50 9/16	69 1/8	6 1/2	6 1/2	4 7/16	25 3/8	25 3/8	4 3/4	37 3/4	104 5/8	67 1/8	103 3/4	106 3/4	3	41 11/16	90 1/2	54
128	123 7/8	53 9/16	73 1/8	5 1/4	6 3/4	4 7/16	28 1/4	28 1/4	4 3/4	47 13/16	110 5/8	71 1/8	126 3/4	129 3/4	3	44 11/16	115	57

* NOTE: "D" DIMENSION VARIES BASED ON AIRFLOW CONFIGURATION

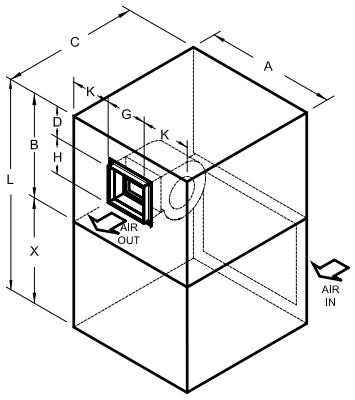


FIG. #1

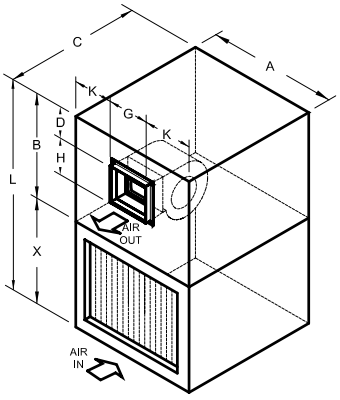


FIG. #2

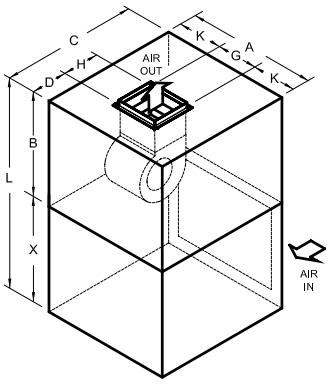


FIG. #3

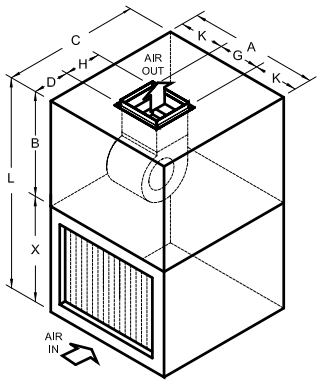
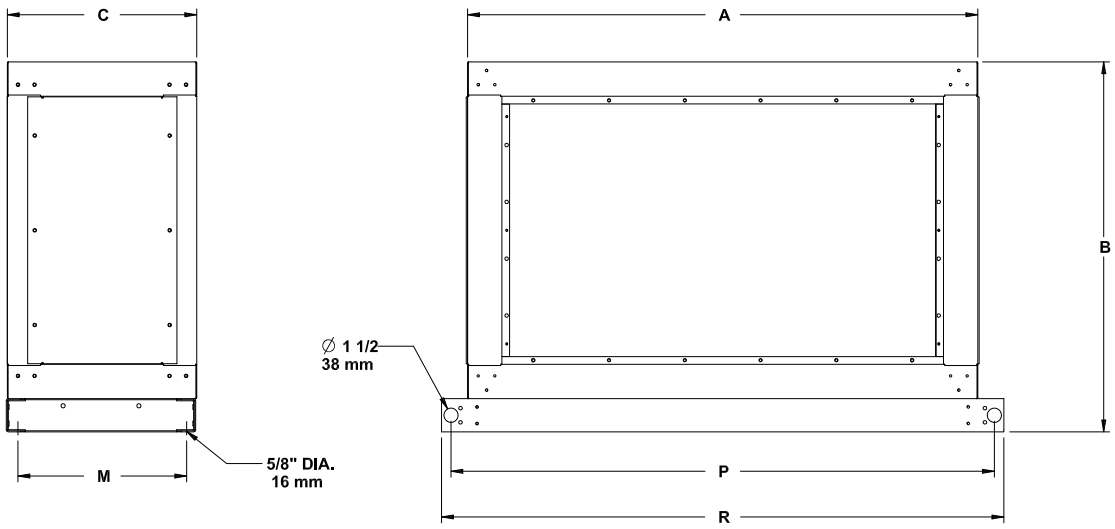


FIG. #4

DIMENSIONAL DATA - ACCESS SECTION



Note:
Models 103 through 128 have 12GA. “C” rails extended as shown.
Curb mount capability.
See Mounting Hole Locations on Page 39

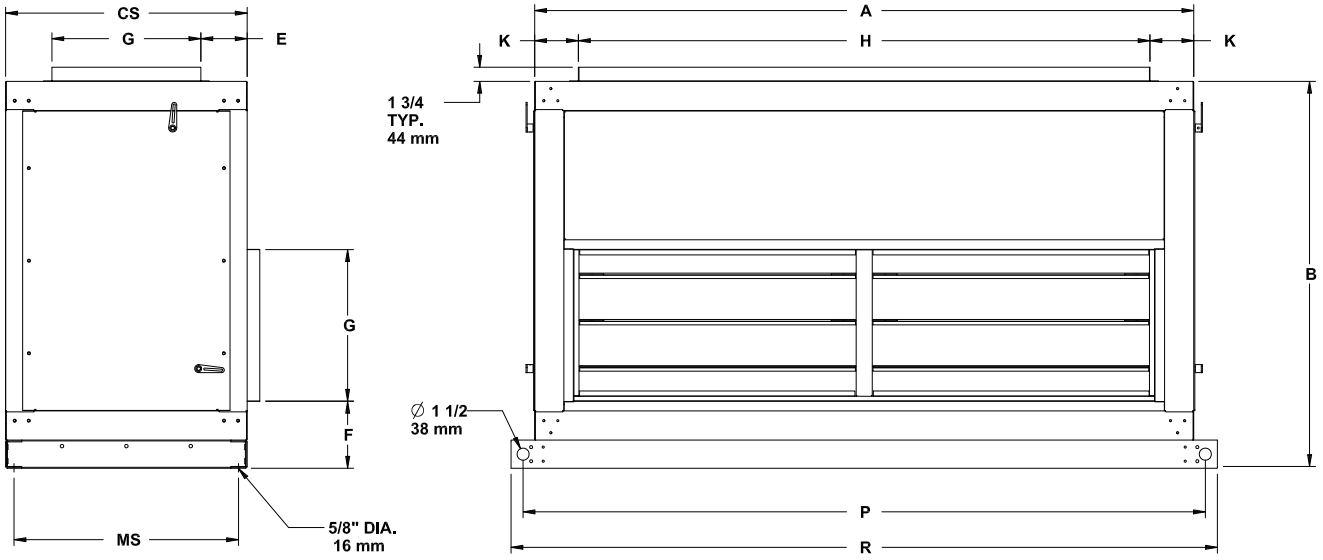
Note:
Models 137 through 182 have 10GA frame structure flush with cabinet.

DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	C	M	P	R
103	37 7/8	34	20	18	41 3/8	43 3/8
104	43 7/8	37	20	18	47 3/8	49 3/8
106	53 7/8	40 1/2	20	18	57 3/8	59 3/8
108	51 7/8	48	20	18	55 3/8	57 3/8
111	66 7/8	48	20	18	69 3/4	72 3/4
114	81 7/8	48	20	18	84 3/4	87 3/4
117	96 7/8	48	20	18	99 3/4	102 3/4
122	100 7/8	54	20	18	103 3/4	106 3/4
128	123 7/8	57	20	18	126 3/4	129 3/4
137	130	61 1/2	20	18	-	130
141	130	67	20	18	-	130
150	130	79 1/2	20	18	-	130
164	130	97 1/2	20	18	-	130
182	160	97 1/2	20	18	-	160

NOTE: C - dimension of 20 can come in various widths - contact factory for desired width.
All dimensions are approximate. Certified drawings available on request.

DIMENSIONAL DATA - STANDARD MIXING BOX



Note:
Models 103 through 128 have 12GA. “C” rails extended as shown.
Curb mount capability.
See Mounting Hole Locations on Page 39

Note:
Models 137 through 182 have 10GA frame structure flush with cabinet.

DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	CS	MS	E	Fig. 1 F	Fig. 2 F	G	H	K	P	R
103	37 7/8	34	25	23	5 3/4	Consult Factory	Consult Factory	12 3/8	27	5 7/16	41 3/8	43 3/8
104	43 7/8	37	25	23	5 3/4			12 3/8	33	5 7/16	47 3/8	49 3/8
106	53 7/8	40 1/2	25	23	5 3/4			12 3/8	43	5 7/16	57 3/8	59 3/8
108	51 7/8	48	30	28	5 3/4			18 5/8	41	5 7/16	55 3/8	57 3/8
111	66 7/8	48	30	28	5 3/4			18 5/8	56	5 7/16	69 3/4	72 3/4
114	81 7/8	48	30	28	5 3/4			18 5/8	71	5 7/16	84 3/4	87 3/4
117	96 7/8	48	30	28	5 3/4			18 5/8	86	5 7/16	99 3/4	102 3/4
122	100 7/8	54	35	33	5 3/4			24 1/8	90	5 7/16	103 3/4	106 3/4
128	123 7/8	57	35	33	5 3/4			24 1/8	113	5 7/16	126 3/4	129 3/4
137	130	61 1/2	45	43	5 3/4			31 7/8	119 1/8	5 7/16	-	130
141	130	70 1/2	55	53	5 3/4			39 5/8	119 1/8	5 7/16	-	130
150	130	79 1/4	55	53	5 3/4			39 5/8	119 1/8	5 7/16	-	130
164	130	97 1/2	60	58	5 3/4			47 5/8	119 1/8	5 7/16	-	130
182	160	97 1/2	60	58	5 3/4			47 5/8	149 1/8	5 7/16	-	160

NOTE: All dimensions are approximate. Certified drawings available on request.

DIMENSIONAL DATA - STANDARD MIXING BOX (cont'd)

FIG. #1 FRONT & TOP AIR ENTRY

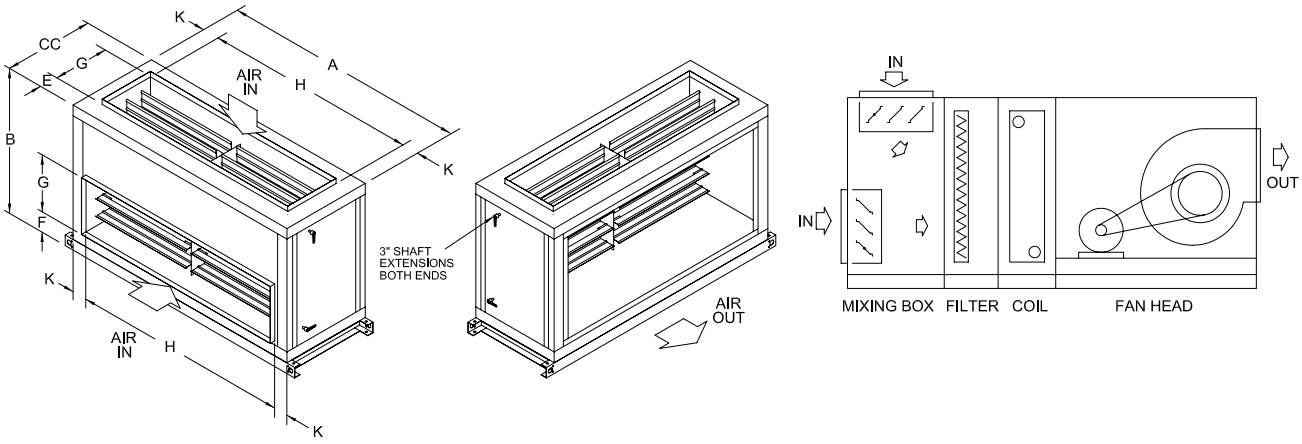
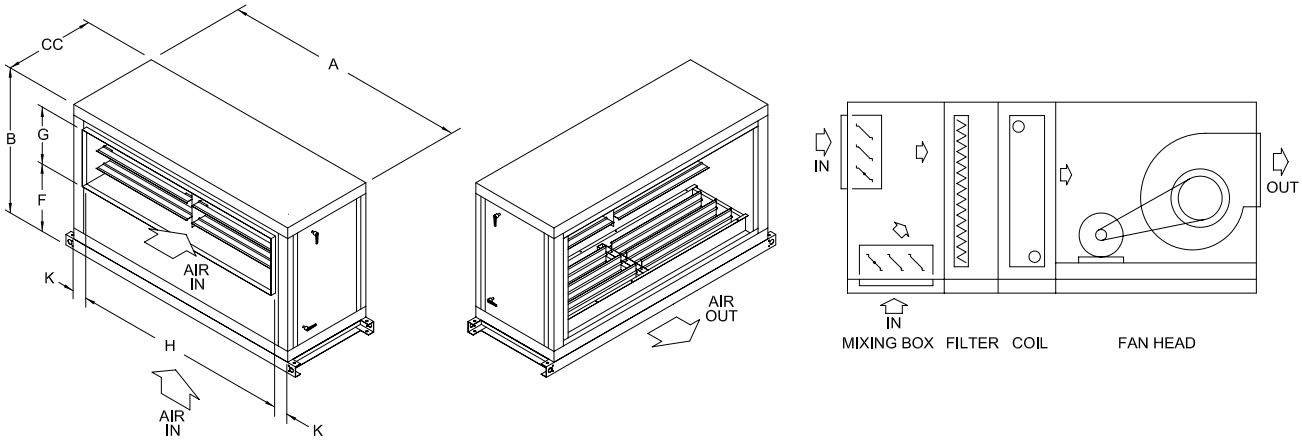
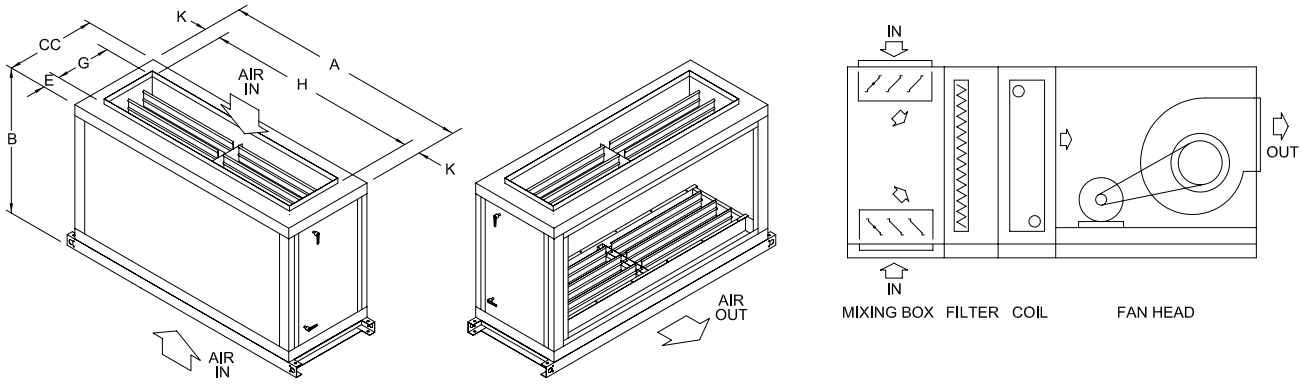


FIG. #2 FRONT & BOTTOM AIR ENTRY



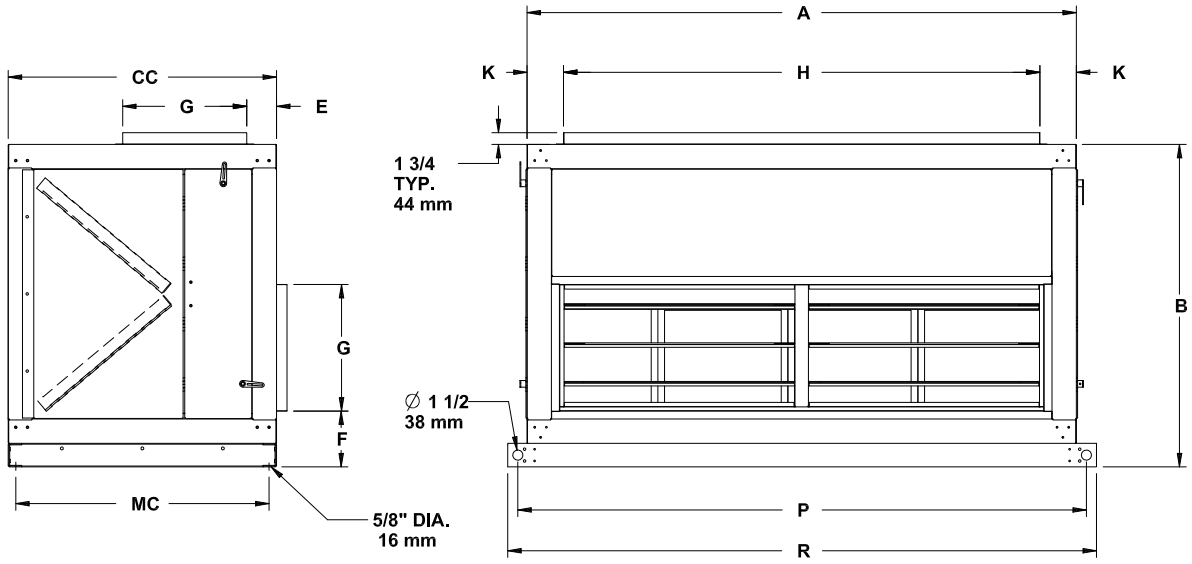
NOTE: BOTTOM INLET DIMENSIONS ARE SAME AS TOP (SEE FIG #1)

FIG. #3 TOP & BOTTOM AIR ENTRY



NOTE: BOTTOM INLET DIMENSIONS ARE SAME AS TOP (SEE FIG #1)

DIMENSIONAL DATA - COMBINATION MIXING BOX & ANGULAR FILTER



Note:
Models 103 through 128 have 12GA. “C” rails extended as shown.
Curb mount capability.
See Mounting Hole Locations on Page 39

Note:
Models 137 through 182 have 10GA frame structure flush with cabinet.

DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	CC	MC	E	Fig. 1 F	Fig. 1 F	G	H	K	P	R
103	37 7/8	34	30	28	5 3/4			12 3/8	27	5 7/16	41 3/8	43 3/8
104	43 7/8	37	30	28	5 3/4			12 3/8	33	5 7/16	47 3/8	49 3/8
106	53 7/8	40 1/2	35	28	5 3/4			12 3/8	43	5 7/16	57 3/8	59 3/8
108	51 7/8	48	40	38	5 3/4			18 5/8	41	5 7/16	55 3/8	57 3/8
111	66 7/8	48	40	38	5 3/4			18 5/8	56	5 7/16	69 3/4	72 3/4
114	81 7/8	48	40	38	5 3/4			18 5/8	71	5 7/16	84 3/4	87 3/4
117	96 7/8	48	40	38	5 3/4	Consult	Consult	18 5/8	86	5 7/16	99 3/4	102 3/4
122	100 7/8	54	45	43	5 3/4	Factory	Factory	24 1/8	90	5 7/16	103 3/4	106 3/4
128	123 7/8	57	45	43	5 3/4			24 1/8	113	5 7/16	126 3/4	129 3/4
137	130	61 1/2	55	53	5 3/4			31 7/8	119 1/8	5 7/16	-	130
141	130	70 1/2	60	58	5 3/4			39 5/8	119 1/8	5 7/16	-	130
150	130	79 1/4	60	58	5 3/4			39 5/8	119 1/8	5 7/16	-	130
164	130	97 1/2	65	63	5 3/4			47 5/8	119 1/8	5 7/16	-	130
182	160	97 1/2	65	63	5 3/4			47 5/8	149 1/8	5 7/16	-	160

NOTE: All dimensions are approximate. Certified drawings available on request.

DIMENSIONAL DATA - COMBINATION MIXING BOX & ANGULAR FILTER

FIG. #1 FRONT & TOP AIR ENTRY

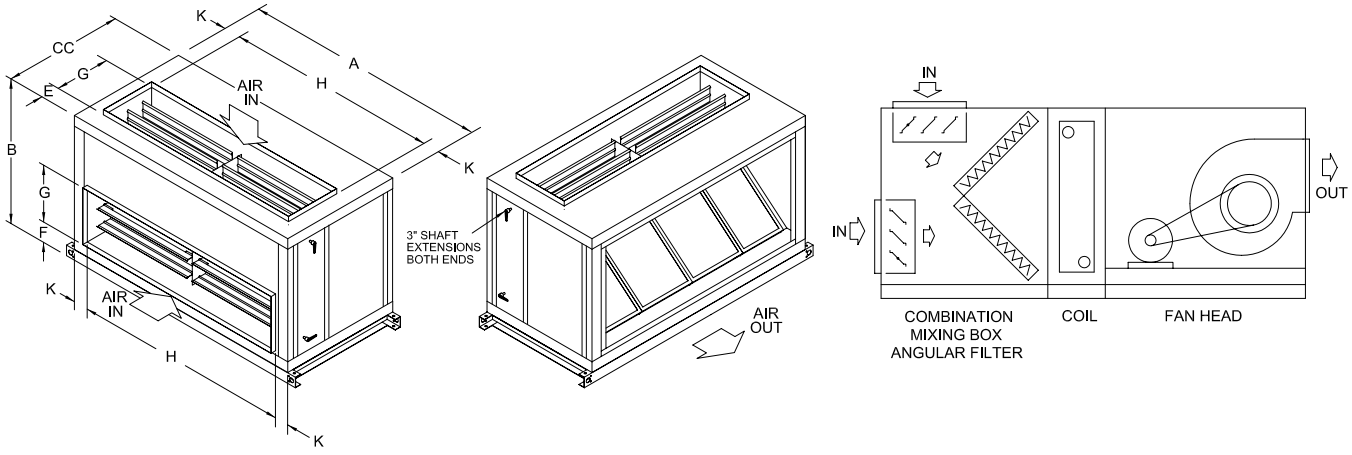
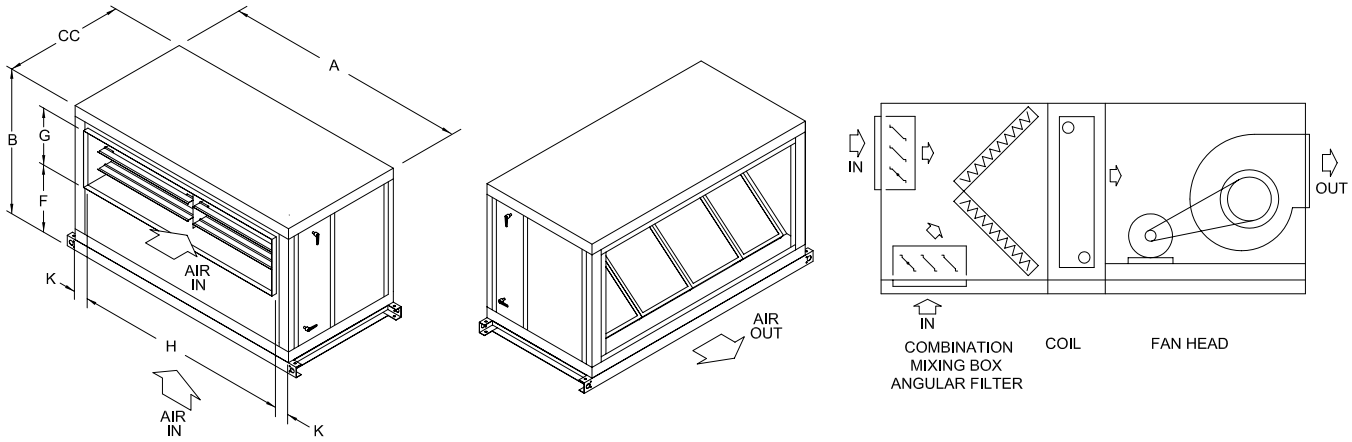
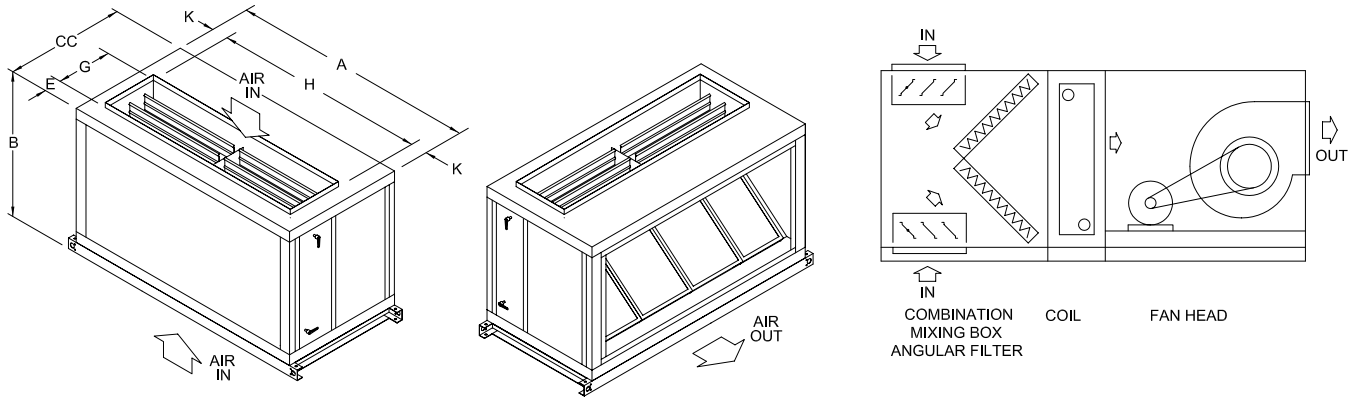


FIG. #2 FRONT & BOTTOM AIR ENTRY



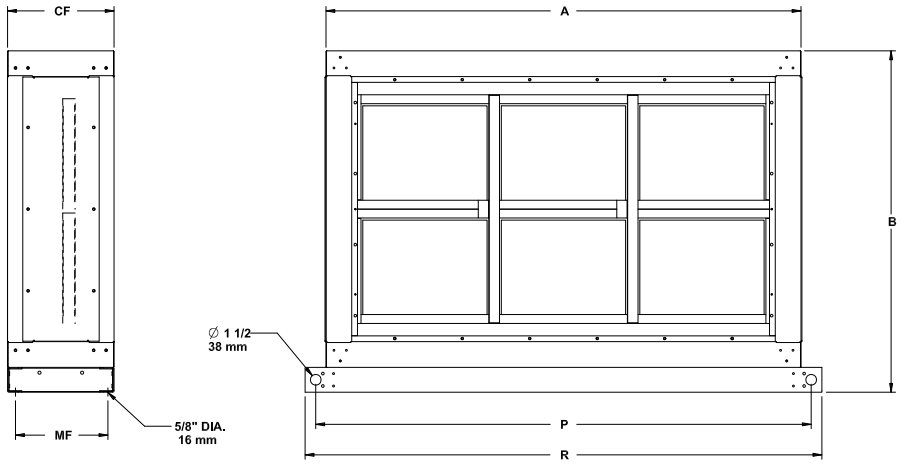
NOTE: BOTTOM INLET DIMENSIONS ARE SAME AS TOP (SEE FIG #1)

FIG. #3 TOP & BOTTOM AIR ENTRY

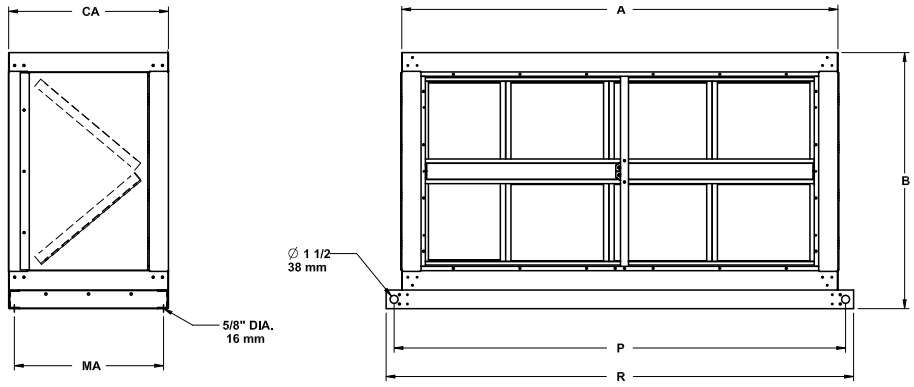


NOTE: BOTTOM INLET DIMENSIONS ARE SAME AS TOP

DIMENSIONAL DATA - ANGULAR & FLAT FILTER SECTIONS



Note: For Inlet Opening, refer to TAF "U" and "V" dimensions on pages 20-21.
Optional Duct Extension Flanges (1-1/2) available.



Note:
Models 103 through 128 have 12GA. "C" rails extended as shown.
Curb mount capability.
See Mounting Hole Locations on Page 39

Note:
Models 137 through 182 have 10GA frame structure flush with cabinet.

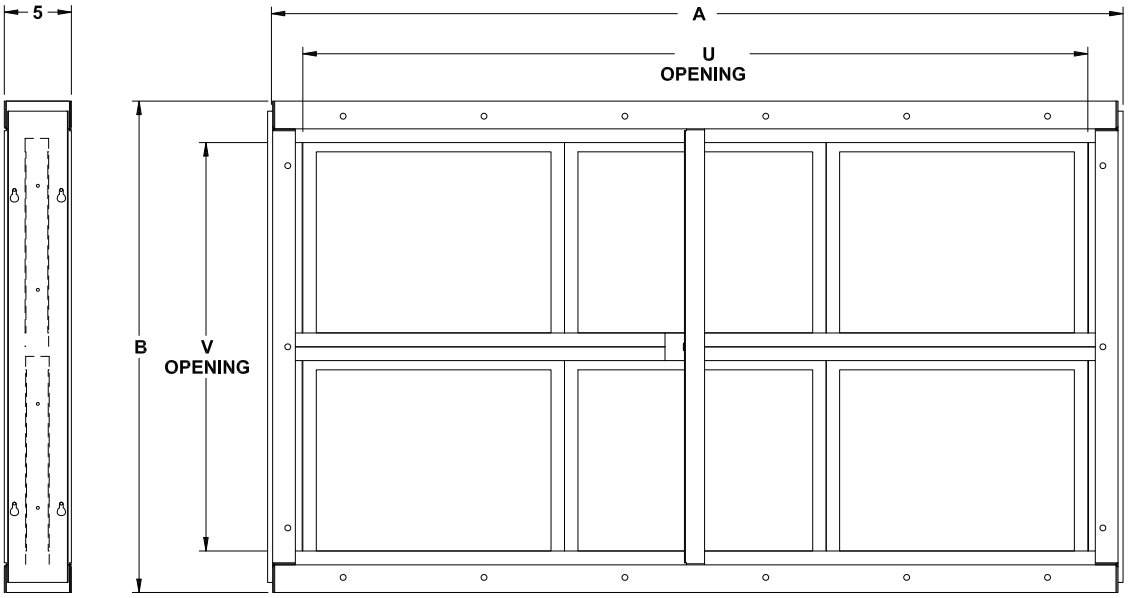
DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	STANDARD WIDTH			STANDARD HEIGHT	ANGULAR FILTER LENGTH		FLAT FILTER LENGTH	
	A	P	R	B	CA	MA	CF	MF
103	37 7/8	41 3/8	43 3/8	34	N/A	N/A	15	13
104	43 7/8	47 3/8	49 3/8	37	N/A	N/A	15	13
106	53 7/8	57 3/8	59 3/8	40 1/2	N/A	N/A	15	13
108	51 7/8	55 3/8	57 3/8	48	N/A	N/A	15	13
111	66 7/8	69 3/4	72 3/4	48	N/A	N/A	15	13
114	81 7/8	84 3/4	87 3/4	48	30	28	15	13
117	96 7/8	99 3/4	102 3/4	48	30	28	15	13

UNIT SIZE	STANDARD WIDTH			STANDARD HEIGHT	ANGULAR FILTER LENGTH		FLAT FILTER LENGTH	
	A	P	R	B	CA	MA	CF	MF
122	100 7/8	103 3/4	106 3/4	54	30	28	15	13
128	123 7/8	126 3/4	129 3/4	57	30	28	15	13
137	130	-	130	61 1/2	30	28	15	13
141	130	-	130	76 1/8	30	28	15	13
150	130	-	130	79 1/4	30	28	15	13
164	130	-	130	97 1/2	35	33	15	13
182	160		160	97 1/2	35	33	15	13

NOTE: All dimensions are approximate. Certified drawings available on request.

DIMENSIONAL DATA - FLAT FILTER BOLT-ON



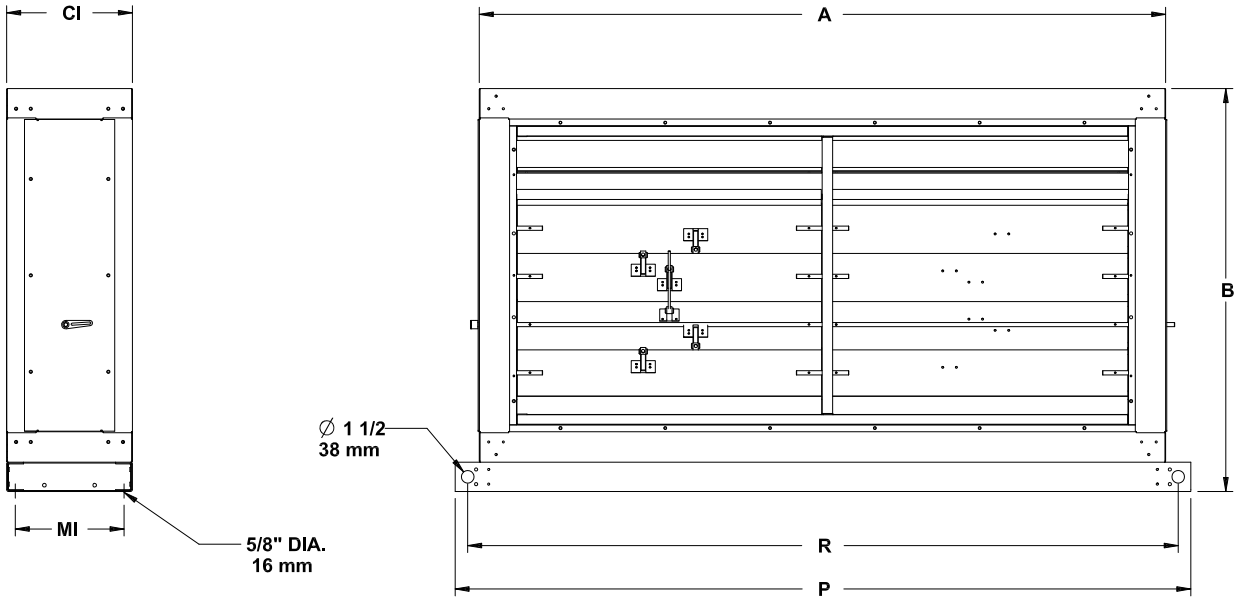
*** AVAILABLE WITH 2” FILTERS ONLY**

DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	INLET OPENING	
			U	V
103	34	21 5/8	30 5/8	17 5/8
104	40	24 5/8	36 5/8	20
106	50	27 5/8	46 5/8	23 1/8
108	48	36 5/8	44 5/8	32 1/2
111	63	36 5/8	59 5/8	32 1/2
114	78	36 5/8	74 5/8	32 1/2
117	93	36 5/8	89 5/8	32 1/2
122	97	43 5/8	93 5/8	40 1/8
128	120	43 5/8	116 5/8	40 1/8
137	119 3/8	55 1/8	116 5/8	50 1/8
141	119 3/8	63 3/8	116 5/8	60 1/8
150	119 3/8	73 1/8	116 5/8	70 1/8
164	119 3/8	91 1/8	116 5/8	85 1/4
182	149 3/8	91 1/8	146 5/8	85 1/4

NOTE: All dimensions are approximate. Certified drawings available on request.

DIMENSIONAL DATA - INTERNAL FACE & BY-PASS DAMPER



Note:
Models 114 through 128 have 12GA. “C” rails extended as shown.
Curb mount capability.
See Mounting Hole Locations on Page 39

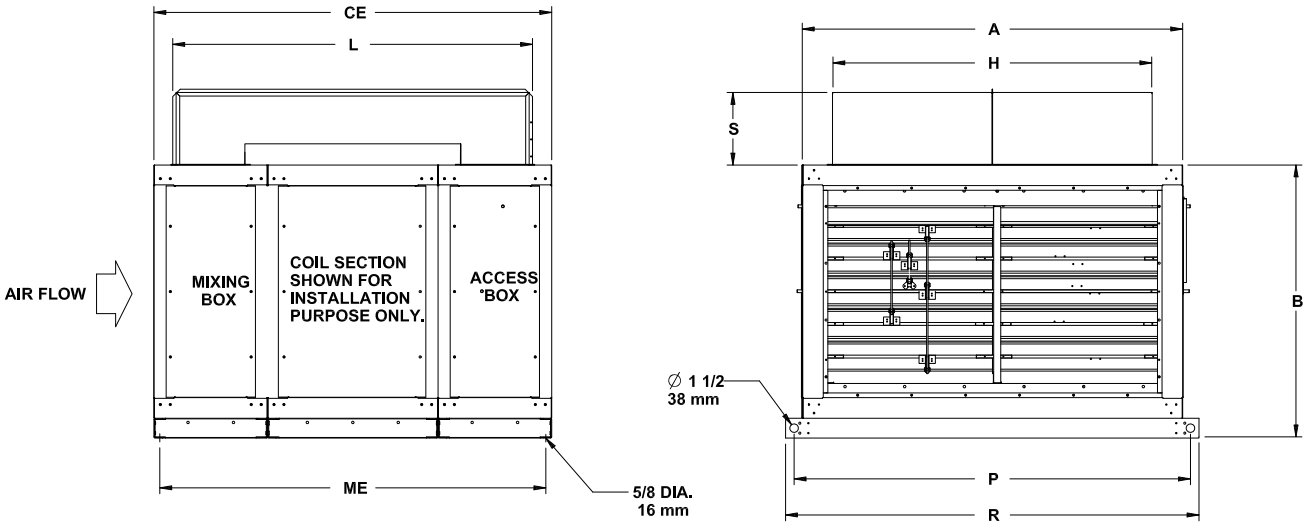
Note:
Models 137 through 182 have 10GA frame structure flush with cabinet.

DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	CI	MI	P	R	R	S
114	81 7/8	48	15	13	84 3/4	87 3/4	72 3/4	15
117	96 7/8	48	15	13	99 3/4	102 3/4	87 3/4	15
122	100 7/8	54	15	13	103 3/4	106 3/4	102 3/4	15
128	123 7/8	57	15	13	126 3/4	129 3/4	106 3/4	18
137	130	61 1/2	15	13	-	130	129 3/4	18
141	130	76 1/8	15	13	-	130	130	22
150	130	79 1/4	15	13	-	130	130	24
164	130	97 1/2	15	13	-	130	130	26
182	160	97 1/2	15	13	-	160	130	30

NOTE: All dimensions are approximate. Certified drawings available on request.

DIMENSIONAL DATA - EXTERNAL FACE & BY-PASS DAMPER



Note:
Models 114 through 128 have 12GA. “C” rails extended as shown.
Curb mount capability.
See Mounting Hole Locations on Page 39

Note:
Models 137 through 182 have 10GA frame structure flush with cabinet.

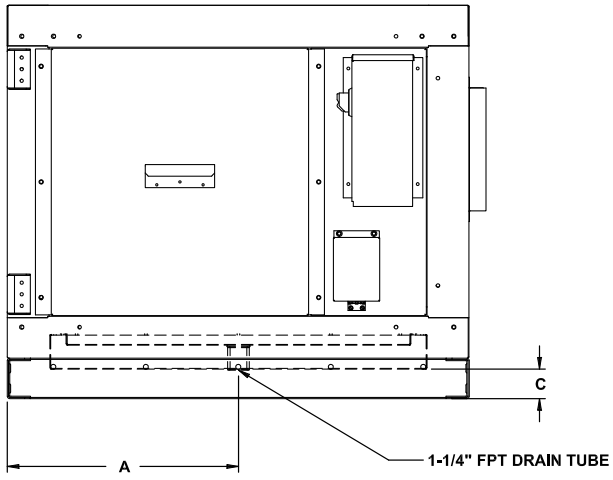
DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	CE	ME	L	P	R	S
114	81 7/8	48	70	68	67 3/8	84 3/4	87 3/4	15
117	96 7/8	48	70	68	67 3/8	99 3/4	102 3/4	15
122	100 7/8	54	70	68	67 3/8	103 3/4	106 3/4	18
128	123 7/8	57	70	68	67 3/8	126 3/4	129 3/4	18
137	130	61 1/2	75	73	72 3/8	-	130	22
141	130	70 1/2	75	73	72 3/8	-	130	24
150	130	79 1/4	75	73	72 3/8	-	130	26
164	130	97 1/2	75	73	72 3/8	-	130	30
182	160	97 1/2	75	73	72 3/8	-	160	30

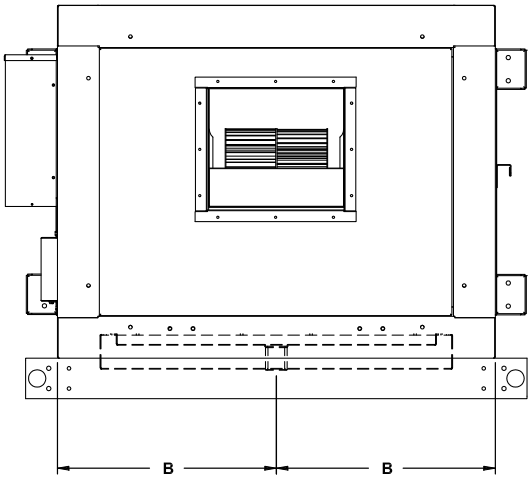
NOTE: All dimensions are approximate. Certified drawings available on request.

ACCESSORIES - DIMENSIONAL DATA - FAN HEAD DRAIN PAN

MODELS "AC" 103 THRU 128



FOR CABINET DIMENSIONS
REF. PAGE 20.



NOTE: NOT AVAILABLE
WITH FIG.4 - DOWNBLAST.

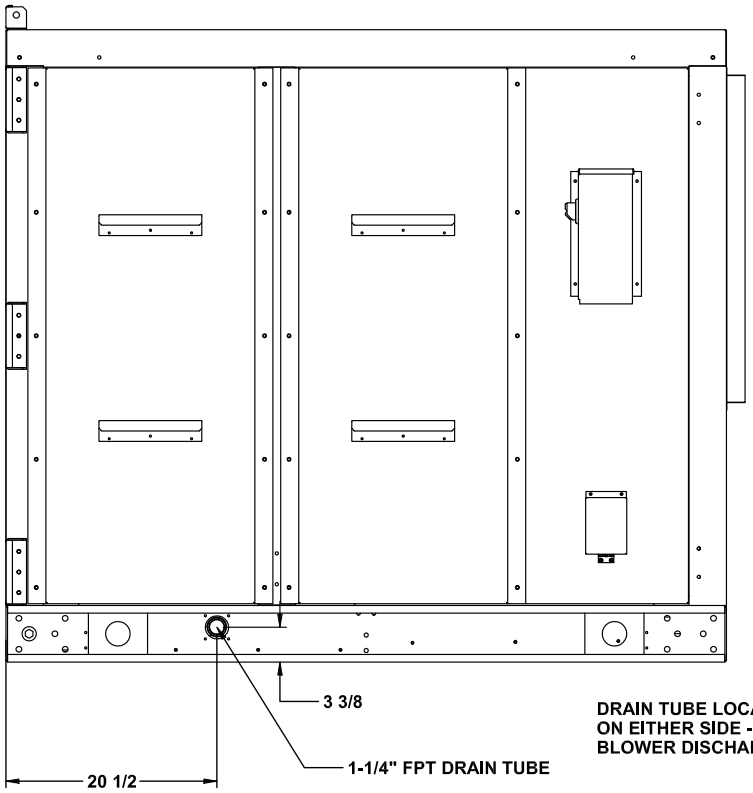
DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	C
103	20	18 15/16	2 1/2
104	22 1/2	21 15/16	2 1/2
106	14 7/8	26 15/16	2
108	18 3/8	25 15/16	2
111	23	33 7/16	2
114	23	40 15/16	2
117	23	48 7/16	2
122	23	50 7/16	2
128	23	61 15/16	2

NOTE: All dimensions are approximate.
Certified drawings available on request.

ACCESSORIES - DIMENSIONAL DATA - FAN HEAD DRAIN PAN

MODELS “AC” 137 THRU 182



DRAIN TUBE LOCATION AVAILABLE ON EITHER SIDE - LH SHOWN FACING BLOWER DISCHARGE.

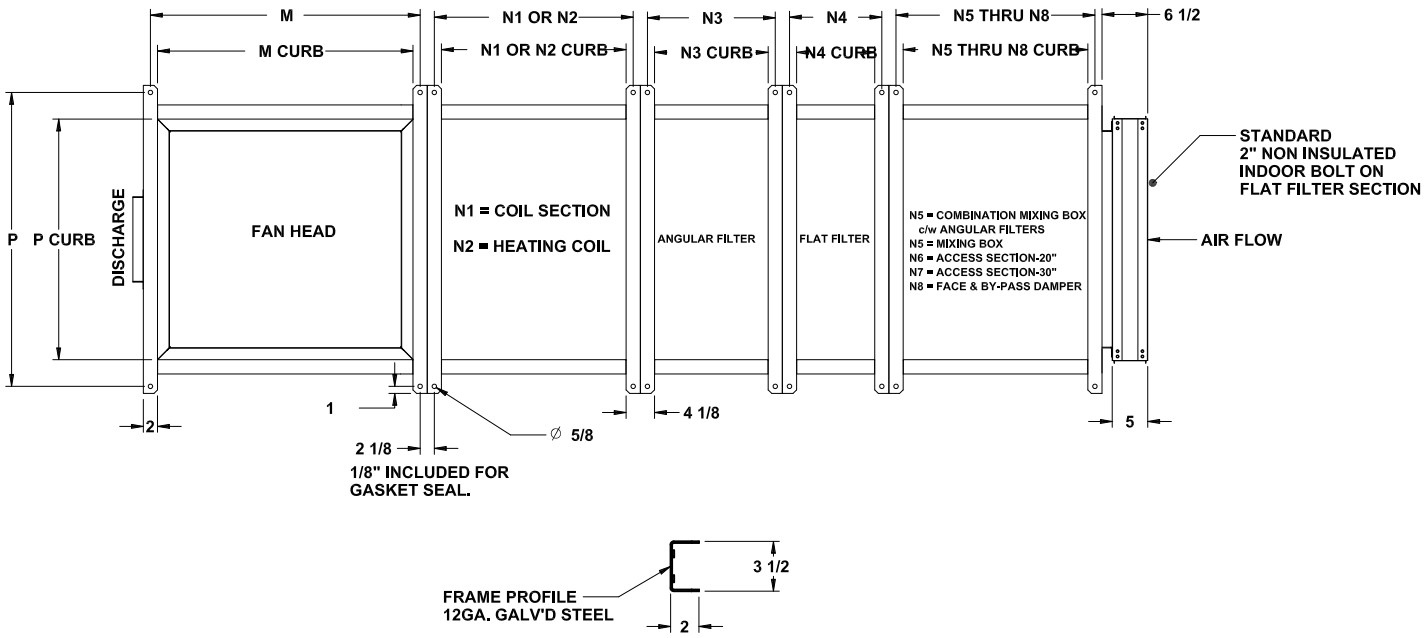
FOR CABINET DIMENSIONS SEE PAGE 20.

NOTE: NOT AVAILABLE WITH FIG.4 - DOWNBLAST.

ACCESSORIES - DIMENSIONAL DATA - MOUNTING HOLES & CURBS

MODELS 103 THRU 128

BOTTOM VIEW



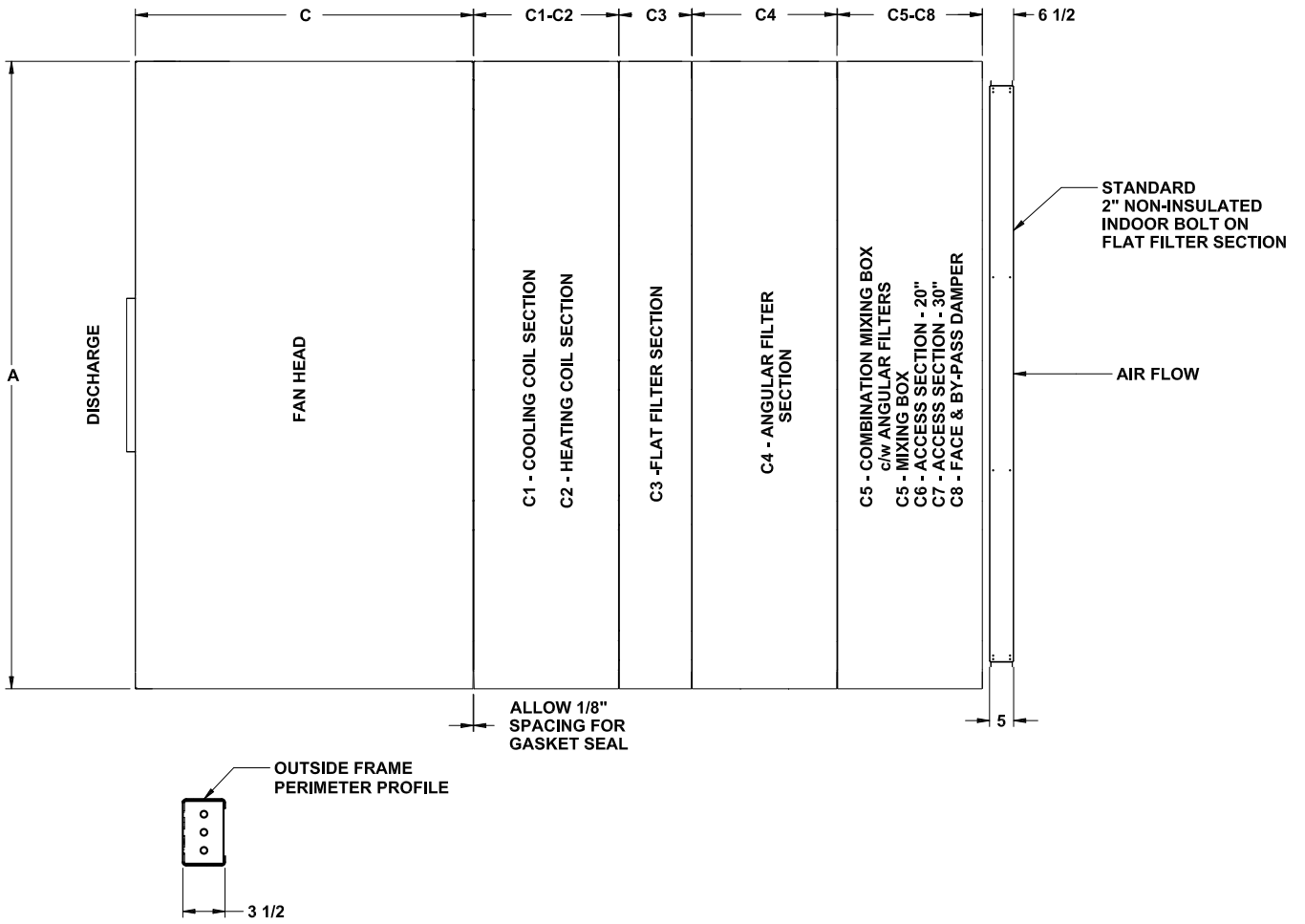
DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	STANDARD WIDTH		FAN HEAD		COOLING COIL		HEATING COIL		ANGULAR FILTER		FLAT FILTER		STANDARD MIXING BOX		COMBINATION MIXING BOX		ACCESS SECTION -20		ACCESS SECTION -30		FACE & BY-PASS DAMPER	
	P	P CURB	M	M CURB	N1	N1 CURB	N2	N2 CURB	N3	N3 CURB	N4	N4 CURB	N5	N5 CURB	N5	N5 CURB	N6	N6 CURB	N7	N7 CURB	N8	N8 CURB
103	41 3/8	33 7/8	38	36	28	26	23	21	28	26	13	11	23	21	28	26	18	16	28	26	13	11
104	47 3/8	39 7/8	43 1/8	41 1/8	28	26	23	21	28	26	13	11	23	21	28	26	18	16	28	26	13	11
106	57 3/8	50	45	43	28	26	23	21	28	26	13	11	23	21	33	31	18	16	28	26	13	11
108	55 3/8	47 7/8	51 9/16	49 9/16	28	26	23	21	28	26	13	11	28	26	38	36	18	16	28	26	13	11
111	69 3/4	62 3/4	61 1/8	59 1/8	28	26	23	21	28	26	13	11	28	26	38	36	18	16	28	26	13	11
114	81 3/4	77 3/4	61 1/8	59 1/8	28	26	23	21	28	26	13	11	28	26	38	36	18	16	28	26	13	11
117	99 3/4	92 3/4	61 1/8	59 1/8	28	26	23	21	28	26	13	11	28	26	38	36	18	16	28	26	13	11
122	103 3/4	96 3/4	67 1/8	59 1/8	28	26	23	21	28	26	13	11	33	31	45	43	18	16	28	26	13	11
128	126 3/4	119 3/4	71 1/8	59 1/8	28	26	23	21	28	26	13	11	33	31	45	43	18	16	28	26	13	11

NOTE: All dimensions are approximate. Certified drawings available on request.
NOTE: SUBTRACT 1/4" (*6mm*) FROM CURB DIMENSIONS TO ALLOW PROPER CLEARANCE.
NOTE: ACCESS SECTION 20" & 30" (*508 mm & 762 mm*) SHOWN. SIZES RANGE FROM 15" TO 50" (*381 mm TO 1270 mm*) IN 5" (*127 mm*) INCREMENTS. FOR SPECIAL LENGTHS CONSULT FACTORY.

ACCESSORIES - DIMENSIONAL DATA - MOUNTING HOLES & CURBS

MODELS 137 THRU 182
BOTTOM VIEW



DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	FAN HEAD		COOLING COIL	HEATING COIL	FLAT FILTER	ANGULAR FILTER	STANDARD MIXING BOX	COMBINATION MIXING BOX	ACCESS SECTION 20"	ACCESS SECTION 30"	FACE & BY-PASS DAMPER
	A	C	C1	C2	C3	C4	C5	C5	C6	C7	C8
137	130	70	35	25	15	30	45	55	20	30	15
141	130	75	35	25	15	30	55	60	20	30	15
150	130	82	35	25	15	30	55	60	20	30	15
164	130	90	35	25	15	35	60	65	20	30	15
182	160	90	35	25	15	35	60	65	20	30	15

NOTE: All dimensions are approximate. Certified drawings available on request.

General
Furnish and install where shown on plans, Type (AF, AH, AC) Central Station Air Handling Units. Sizes and performance shall be as indicated in the Unit Schedule. Each unit shall be complete with factory furnished components as shown on the plans.
Cabinets shall be of sectionalized construction, and all sheet metal parts including accessories shall be fabricated of continuous galvanized steel. The casing panels shall be removable for easy access to the interior of the unit. AC units shall be double wall and insulated with 2" mineral wool. (Optional for AF and AH units.) AF and AH units shall be single wall and no insulation unless otherwise specified.
The drain pan shall be constructed of stainless steel. The drain pan on AC models shall be thermally isolated from the unit casing with mineral wool insulation. Condensate drain connections shall be provided at either end of the drain pan, coil header connection side is standard.

All cooling coils shall be arranged within the coil section in a vertical position with the air passing horizontally through the coil to insure quick removal of the condensate from the coil surface. Where multiple cooling coils are used in a single unit, intermediate drain pans shall be provided to prevent the condensate collected on the upper coil from passing over the finned surface of the bottom coil, and to eliminate unbalanced air flow. Coil headers and refrigerant distributors shall be completely enclosed within the insulated casing with only connections extended through the cabinet.

Fan Assembly
Fans shall be forward curved and designed for Class II operation. Fan ratings shall be based on fan tests conducted in accordance with AMCA Code No. 210. Fan housings and wheels shall be continuous galvanized steel. All fan wheels shall be keyed to the fan shaft.

Bearings and Fan Shaft
The fan shaft shall be solid high carbon steel, fully sized throughout. The maximum rated fan RPM shall be well below the first critical fan shaft speed.
Bearing shall be self-aligning, grease lubricated, ball type (9-9 T2 through 28-28 T2) in pillow block cast iron housings, roller type (32-32 T2 through 40-40 T2) in pillow block split cast iron housings . Lubrication fittings shall be provided, and permanently lubricated bearings will be unacceptable.

Coils - General
Coils shall be constructed with 5/8" O.D. and or 1/2 " O.D. copper tubes and (aluminum) (copper) rippled-corrugated fins spaced (8) (10) (12) per inch. Tubes shall be arranged in a staggered tube pattern with respect to air flow. Fins shall have full drawn collars to provide a continuous secondary surface cover over the entire tube length.
Tubes shall be expanded into fins to provide a continuous primary to secondary compression contact over the entire finned length.
Coil casing shall be of continuous galvanized steel. Coil face velocity shall be as indicated on the unit schedule. The rows of coil shall be as required to produce the capacities as indicated in the performance schedule. All water coils shall be circulated to obtain optimum tube water velocity. No devices shall be used inside the coil tubes which interfere with the drainability or increase water pressure drop. Depending on applications, coils shall be tested with 300, 450 or 650 PSIG air under water.

Direct Expansion Coils
Cooling coils are designed for use with most common refrigerants. Sweat type copper suction connections shall be located at the bottom of the suction headers for gravity oil drainage. (Coils shall be circuited for (face control) (row control) capacity reduction.) Pressure type liquid distributors shall be used.

Chilled Water Coils
Cooling coils shall be designed for use with chilled water. With a vent connection at the highest point, and a drain connection at the lowest point. Headers shall be fabricated of copper tubes, and the connections shall be male pipe threaded with protective caps.

Water Heating Coils
Water heating coils shall be furnished as indicated on the Unit Schedule. **NOTE: Maximum water temperature not to exceed 200°F and air leaving 140°F.**

Condenser / Heat Reclaim Coils
Coils shall be constructed with 1/2"O.D. copper tubes and aluminum (copper) rippled-corrugated fins spaced (8) (10) (12) per inch. Any number of coil circuits shall be available provided the total does not exceed the number of tubes in the coil face. Coils shall be provided with sweat-type connections and shall be circuited for proper refrigerant drainage.

Filter Section
Furnish factory built (flat) (angular) filter section complete with filters as specified herein. The filter area shall be as specified on the Unit Schedule. (Flat and Angular filter sections shall have access doors on both ends.)

Filters
Filters shall be (throwaway) (permanent) (permanent high velocity) type.

Mixing Box
Mixing dampers shall be furnished where shown on plans. Dampers shall be arranged so that the fresh and return air streams merge when entering the mixing box. Blades shall be parallel acting and interconnected. Mixing box openings shall be provided with duct flanges. Damper rods shall rotate in nylon bushings.

Combination Filter Section/Mixing Box
Furnish factory built angular filter section complete with filters as specified herein. The filter area shall be as specified on the Unit Schedule. Angular filter section shall be complete with large, quick opening, access doors on both ends to facilitate changing filters. Mixing dampers shall be furnished where shown on plans. Dampers shall be arranged so that the fresh and return air streams merge when entering the mixing box. Blades shall be parallel acting and interconnected. Mixing box openings shall be provided with duct flanges. Damper rods shall rotate in nylon bushings.

Face and By-Pass Dampers
Face and by-pass dampers shall be furnished where shown on plans. By-pass dampers shall be sized to allow for 100% air by-pass. Air shall be by-passed (externally) (internally). Face dampers shall be opposed acting. By-pass duct shall be factory insulated. Damper rods shall rotate in nylon bushings.

INSTALLATION & ASSEMBLY INSTRUCTIONS

GENERAL

A. The items should be carefully checked against the bills of lading to be sure all crates and cartons have been received. All units should be carefully inspected for damage when received. Visible or concealed damage should be reported immediately to the carrier and a claim filed for damage.

B. Air Handler units are constructed of heavy gauge galvanized steel and are thoroughly inspected before leaving the plant. Care must be taken during installation to prevent damage to units.

C. In order to insure long and trouble-free life, the units should have proper care and maintenance. Enough space should be left around the unit for filter removal, lubrication, and removal of coils if this should become necessary.

D. Flexible connections should be used on the outlet connections and oil inlet duct connections of' the unit.

E. Special care should be taken when handling the blower section. All fans are dynamically balanced before leaving the plant. Rough handling, however, can cause misalignment of the drives. Sheaves should be carefully inspected before unit installation to make sure this has not happened.

F. Screws, bolts, etc., for assembly of sections are supplied in a cloth bag attached to each section. Gasketing to be used between sections, when assembling, is supplied in rolls in the unit.

G. Drain line from drain pan connection must be adequately pitched and must have a “water seal.”

Some units are shipped in sections and must be assembled on the job.

A. HANDLING OF SECTIONS:

1. Lifting / Isolator rails are supplied for bottom lifting only. Models 103 thru 128.
2. Lifting rails are supplied with 5/8” dia. Holes, suitable for ½” rod.
3. If units are to be moved using just one hoist, a spreader bar should be used to prevent damage to the unit.
4. Models 137 thru 182 come with lifting gussets located in the base frame. Fig.4

B. GASKETING:

The gasketing is supplied with each section that has to be assembled on the job.

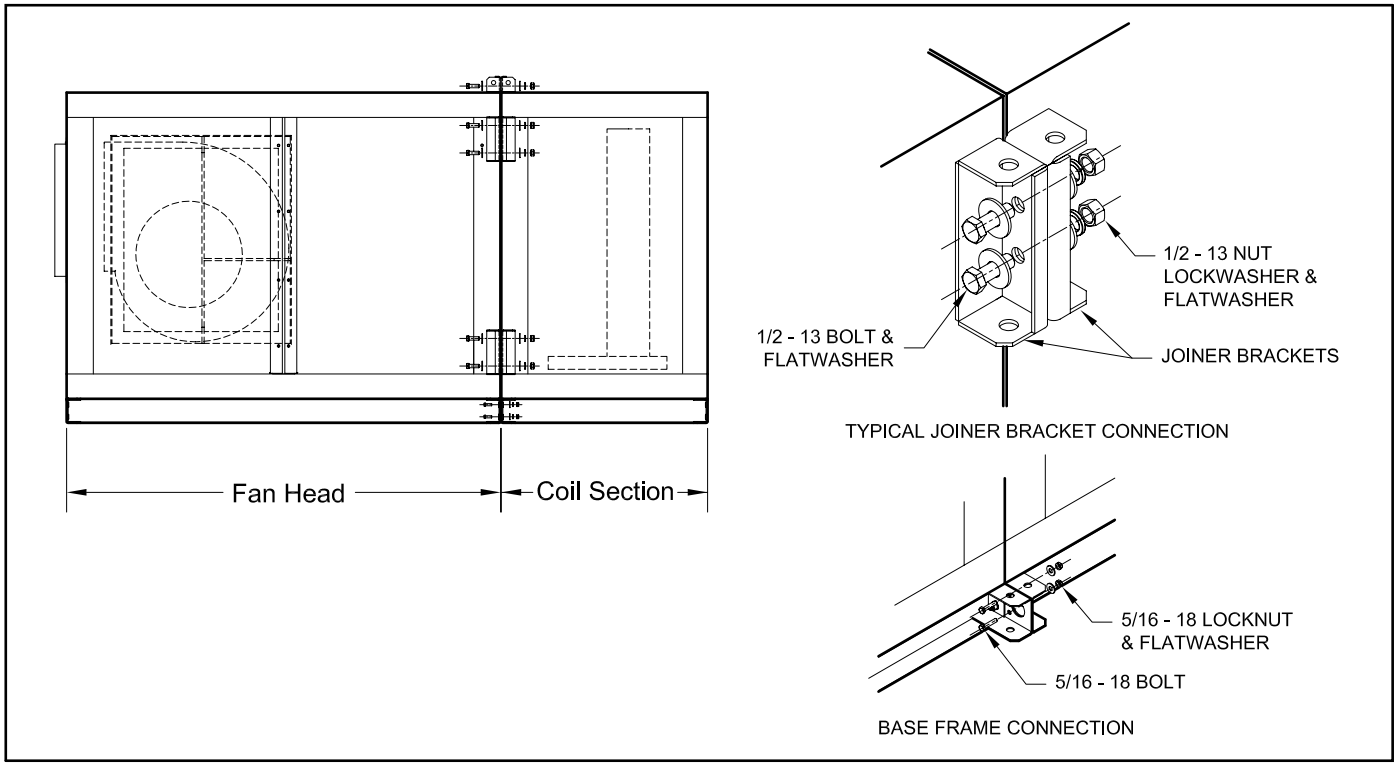
1. Gasket the perimeter of the section when necessary. Join ends tight to avoid air leakage. Fig. 2 & 3

C. FASTENING OF SECTIONS:

1. Figure 1 shows the typical attaching method used for fan head and heating and ventilating coil sections.
2. Accessories sections use the same joiner bracket connections.

Figure 1

TYPICAL ATTACHING METHOD



GENERAL (cont'd)

C. FASTENING OF SECTIONS: (cont'd)

a. Gasket the perimeter of the coil section flange as outlined in "Gasketing". Fig. 2 & 3

b. Align the sections using the mounting brackets a shown in Fig.1.

c. Bolt the 5/16 hardware in the base frame as shown in Fig.1.

d. Bolt the 1/2 hardware in the joiner bracket connections as shown in Fig.1

D. MOUNTING OF SECTION

1. All models are to be moved into position using the bottom lifting rails (103 thru 128) or the base frame (137 thru 182). No units are to be lifted from the top.
2. When crane lifting, proper spreader bars should be used to avoid damage to the cabinet material. See Fig.10, 11, 12.
3. On models 117 thru 128, use top lifting brackets to mount fan head section to coil section only. Use bottom lifting rails only to install complete unit.

Figure 2

HORIZONTAL BLOWER SECTION
Models AC103H - 128H

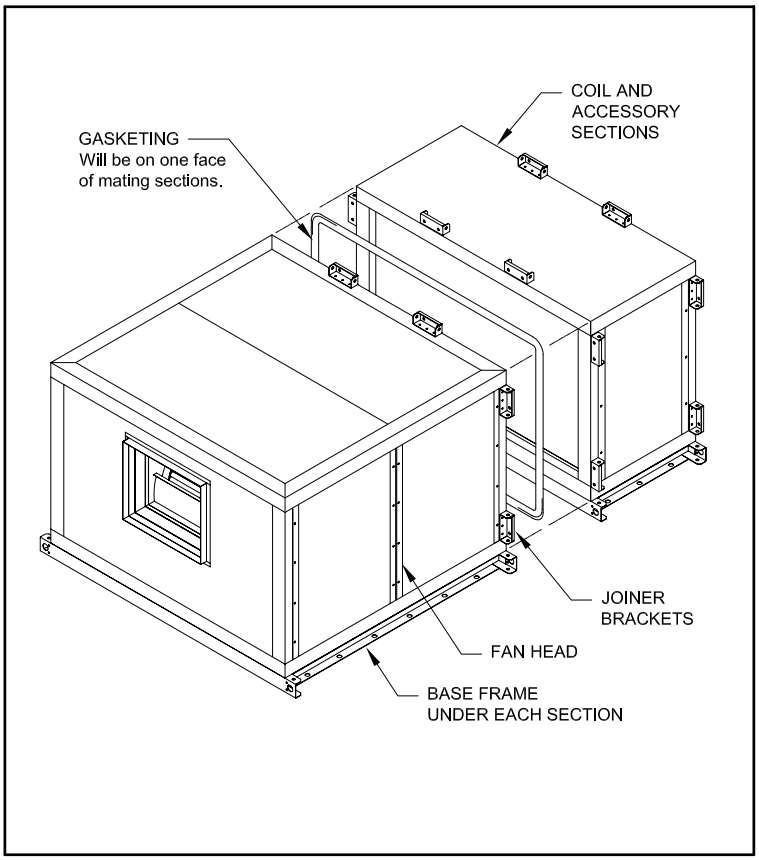


Figure 3

VERTICAL BLOWER SECTION
Models AC103V - 128V

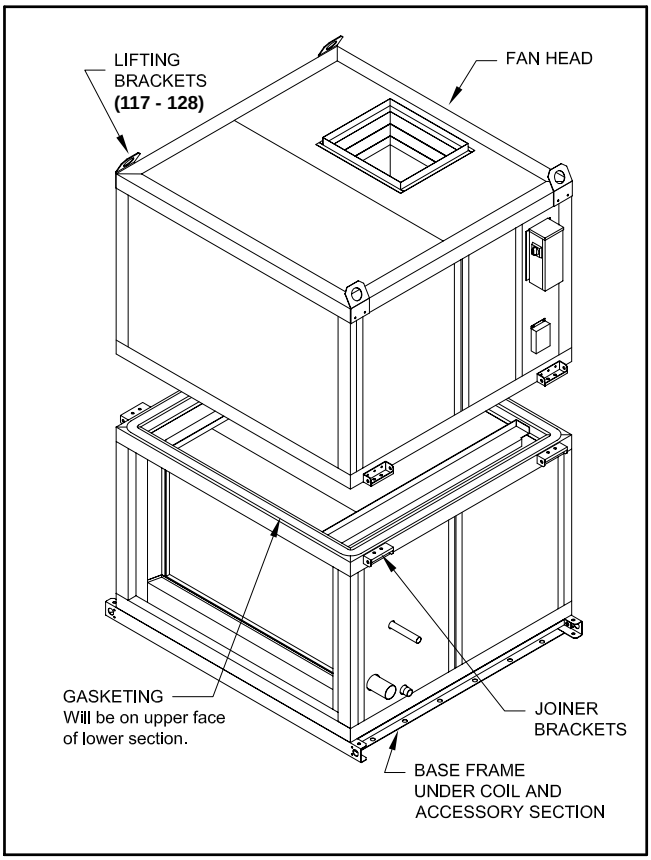


Figure 4
HORIZONTAL BLOWER SECTION
Models AC137H - 182H

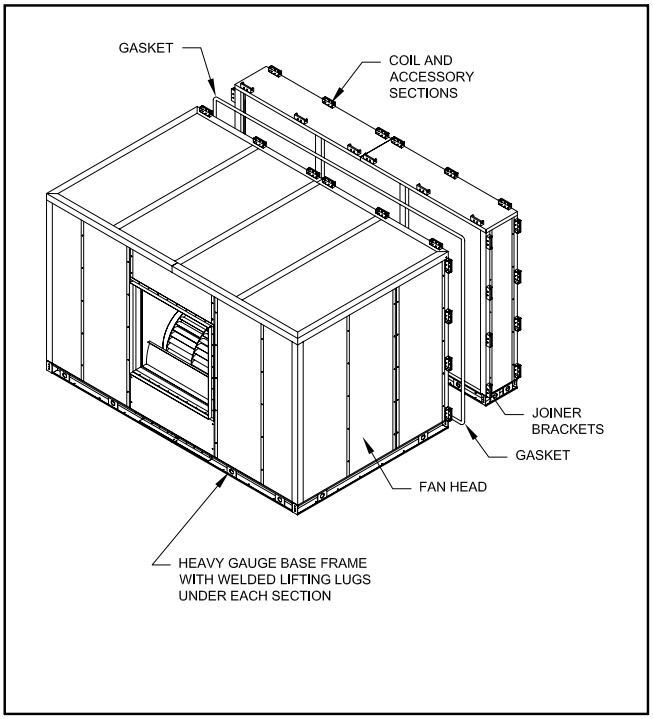


Figure 5
HORIZONTAL BY-PASS DUCT
Models 114 - 128

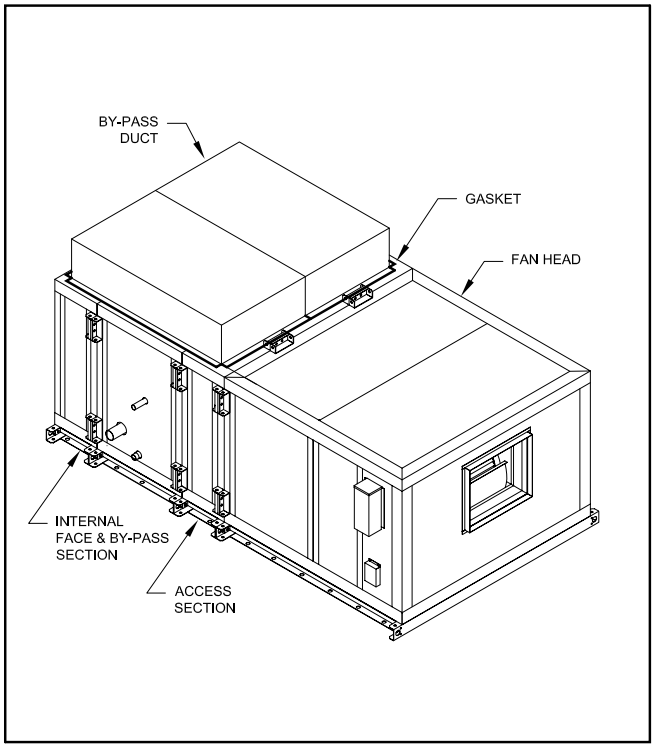


Figure 6
INTERNAL FACE & BY-PASS SECTION
Models AC114H - 182H

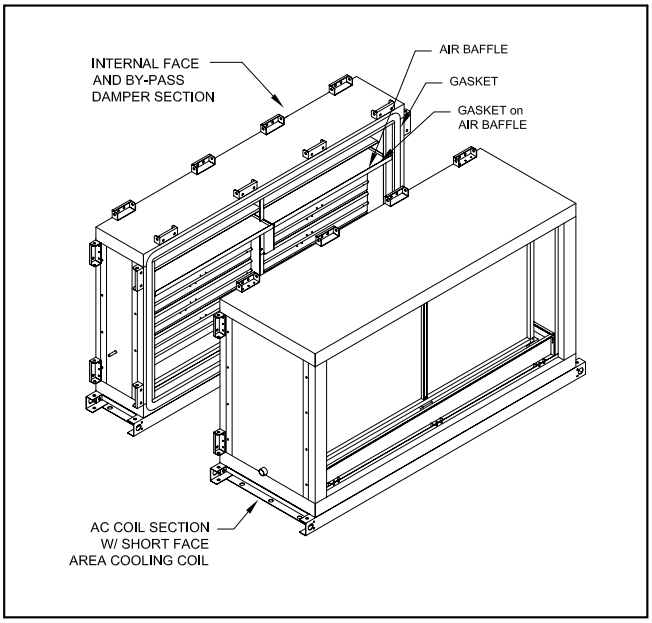


Figure 7
VERTICAL BY-PASS DUCT
Models 114 - 128

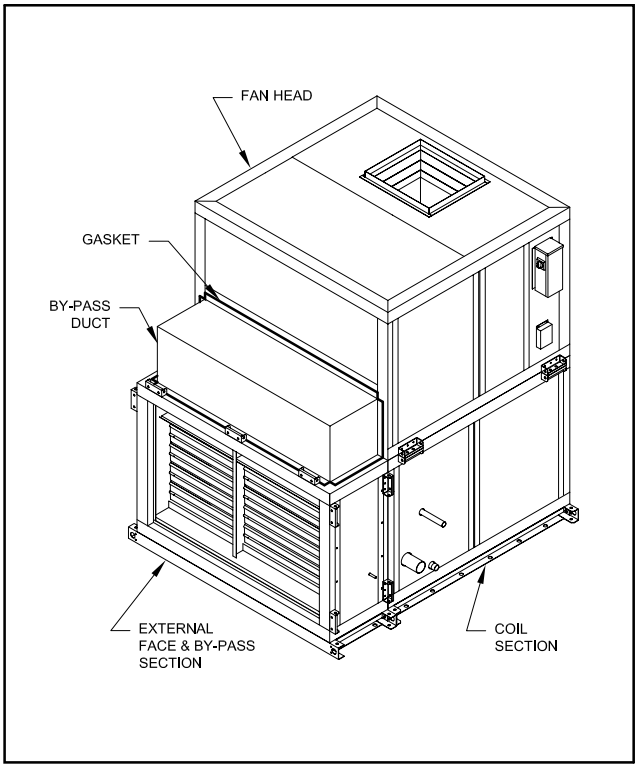
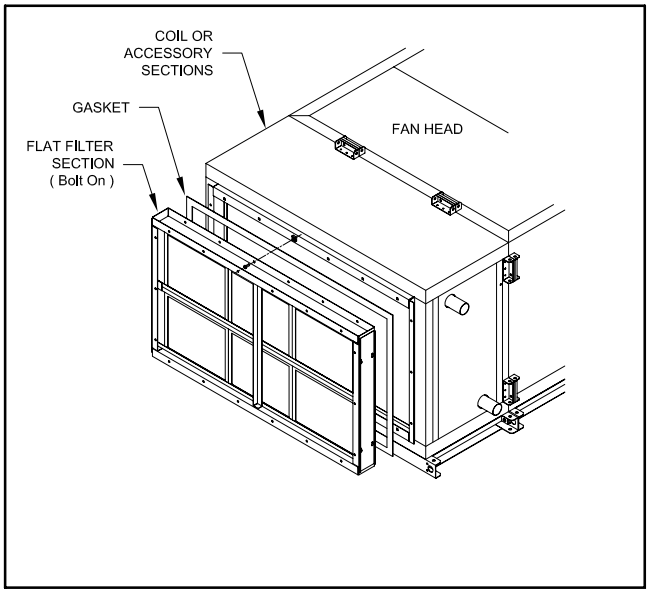


Figure 8

FLAT FILTER (Bolt-On Style) to COIL or ACCESSORY SECTIONS - ALL MODELS



LIFTING INSTRUCTIONS

Air handling units and associated sections are large, heavy, mechanical equipment and must be handled as such. A fully qualified and properly crew with necessary rigging should be engaged to set the components into position. Lifting holes have been provided along base frames for attaching lifting slings.

Spreader bars must be used so that lifting forces are applied vertically.

Note:

- Coil sections and most narrow accessory sections, if shipped seperately, will have base frames installed.
- Lifting lugs are provided on unit base rails
- Ensure that unit top side is stabilized to prevent tipping when lifting sections into place.
- Under no circumstances should coil connections, drains or weather covers be used for lifting.
- Base frames must be securely anchored to the building structure, sleeper, roof curb or concrete pad.
- the weight of the air handling unit and accessory sections alone is not enough to hold in place

DRIVE INSTALLATION

A. All motors are mounted on a heavy duty slide base located inside the cabinet.
B. Drives are pre-set for desired RPM.
C. Belt tension is factory set.

UNIT INSTALLATION

A. Units 103 thru 128 come complete with lifting rails with 5/8" dia. mounting holes. Lifting rails are also designed to mount to roof curbs supplied by others. Lifting rails also allow for ceiling suspension with isolators – holes to allow 1/2 rod.
B. Units 137 thru 182 come complete with 5-1/2" "C" channel designed for bottom mounting only.

IMPORTANT

Models TAC137H through 182H are suitable for bottom mounting only. In order to suspend equipment from the ceiling, a field installed supporting structure must be provided

Figure 9

VERTICAL UNITS
Models 103H - 128H

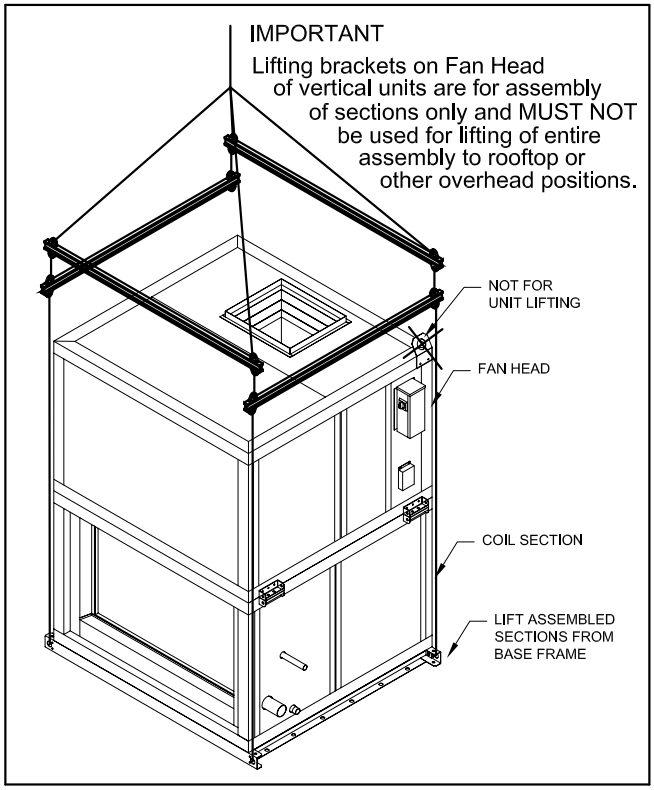


Figure 10
FAN HEAD LIFTING - Models 103H - 128H

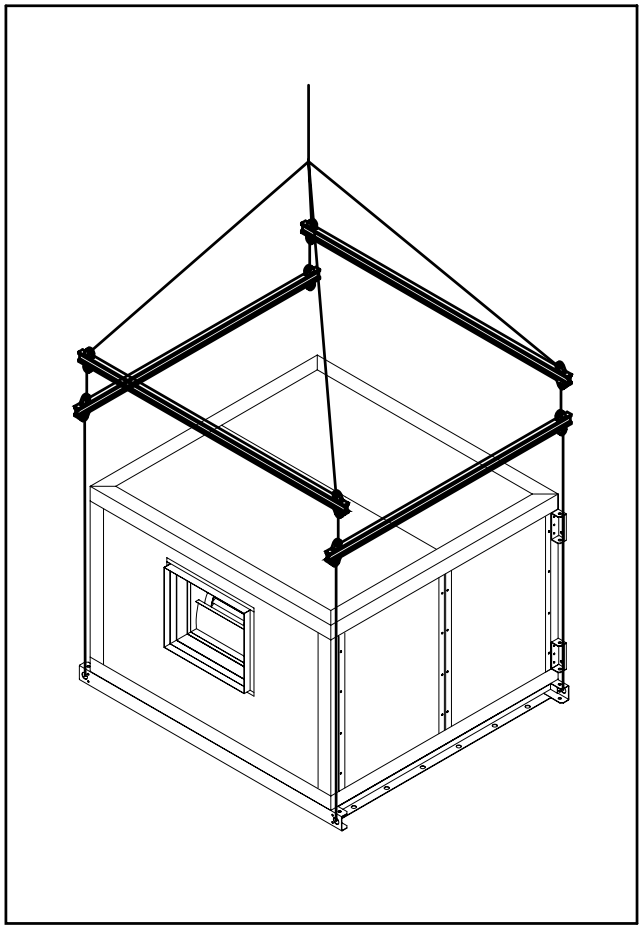


Figure 11
COIL AND ACCESSORY SECTIONS MAY BE SHIPPED SEPERATELY

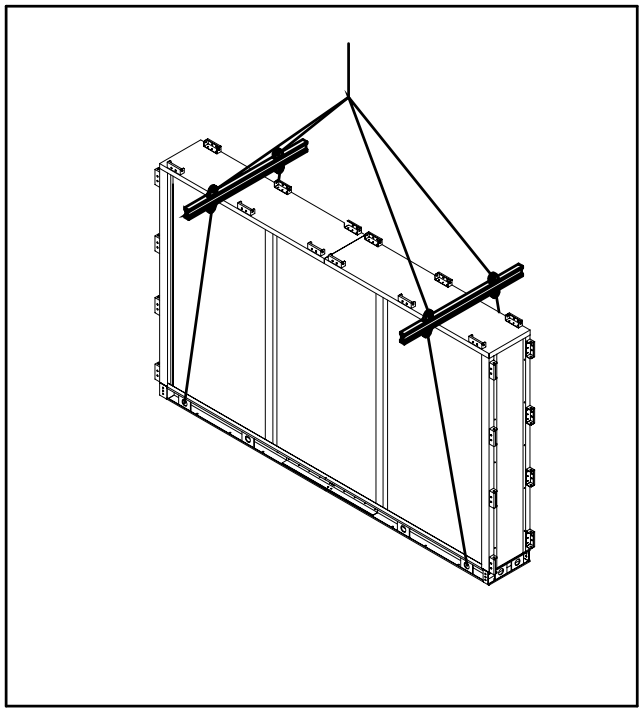
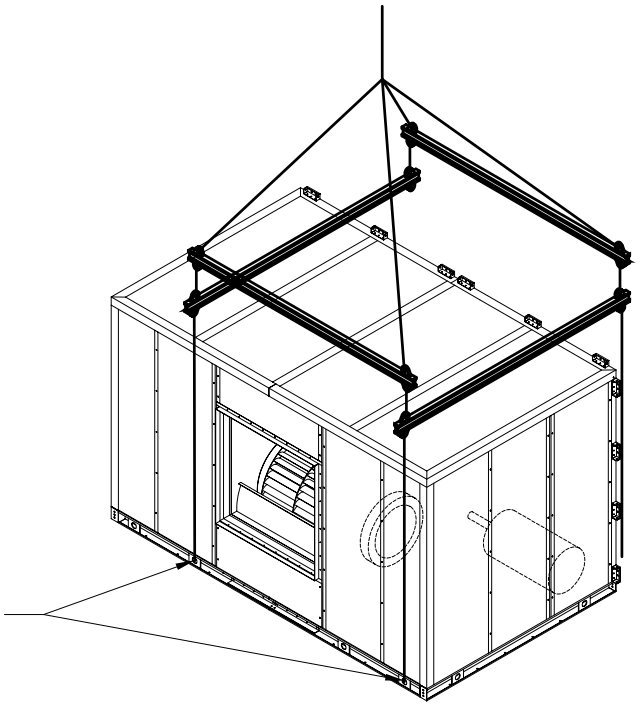


Figure 12
FAN HEAD LIFTING
Models 137H - 182H

On models 137 through 182, motor and drive sizes can greatly off-set the unit centre of gravity. Welded lugs are positioned in base channels to provide available points for lifting units vertcally.

Care must be taked to locate motor postion in unit before determining appropriate lifting points.



FIELD INSTALLATION OR REMOVAL OF COILS

In all cases, the end panel of the coil section is removable. You should have access to both ends of the unit for ease of installation and proper positioning of coil. In all cases, sections or duct work must be disconnected and removed to allow access of coil close- off hardware. The procedure outlined, is for installation of coils. To remove coils, reverse the procedure.

A. Cooling Coils
Models AC 103-182 H & V, Fig. 13
   a. Slide coil through opening in coil section onto bottom coil rests. Coil should be placed against close-offs or existing coil in unit to prevent air bypass.
   b. Attach coil mounting top mounting brackets and bolt header plates to bottom coil rest in drain pan .
   c. Using sheet metal self-drilling screws attach coil to close-offs to prevent air leakage.
   d. Re-attach coil section to appropriate sections or duct work.
   e. Install piping and drain tube. See Fig.15 for proper P-Trap dimension reference.

B. Heating Coils-Water
Models AH 103-182 H & V, Figure 13.
Follow procedure as outlined in A. (Cooling Coils).

C. Heating Coils
Since coils are pitched in units, it is necessary to keep unit level to allow proper condensate drainage.

D. Heating Coils - Water Ventilating Units
Models AH 103 – 182 H & V, Fig.13
   a. Slide coil through opening in coil section onto bottom plate. Align holes in endplates to ensure coil is placed against close-offs.
   b. Using sheet metal self-drilling screws, attach coil to close-offs to avoid air leakage.
   c. Install access doors and re-attach coil section to appropriate section or duct work. Tighten the screws holding the baffles in place. (137 and larger)

E. Locate dimensionally the supply and return connections and drill holes in end panels of unit. Holes should be located very carefully.

F. Attach end panels to unit and slip grommets over connections to prevent air leakage.

Figure 13

AC COOLING COILS

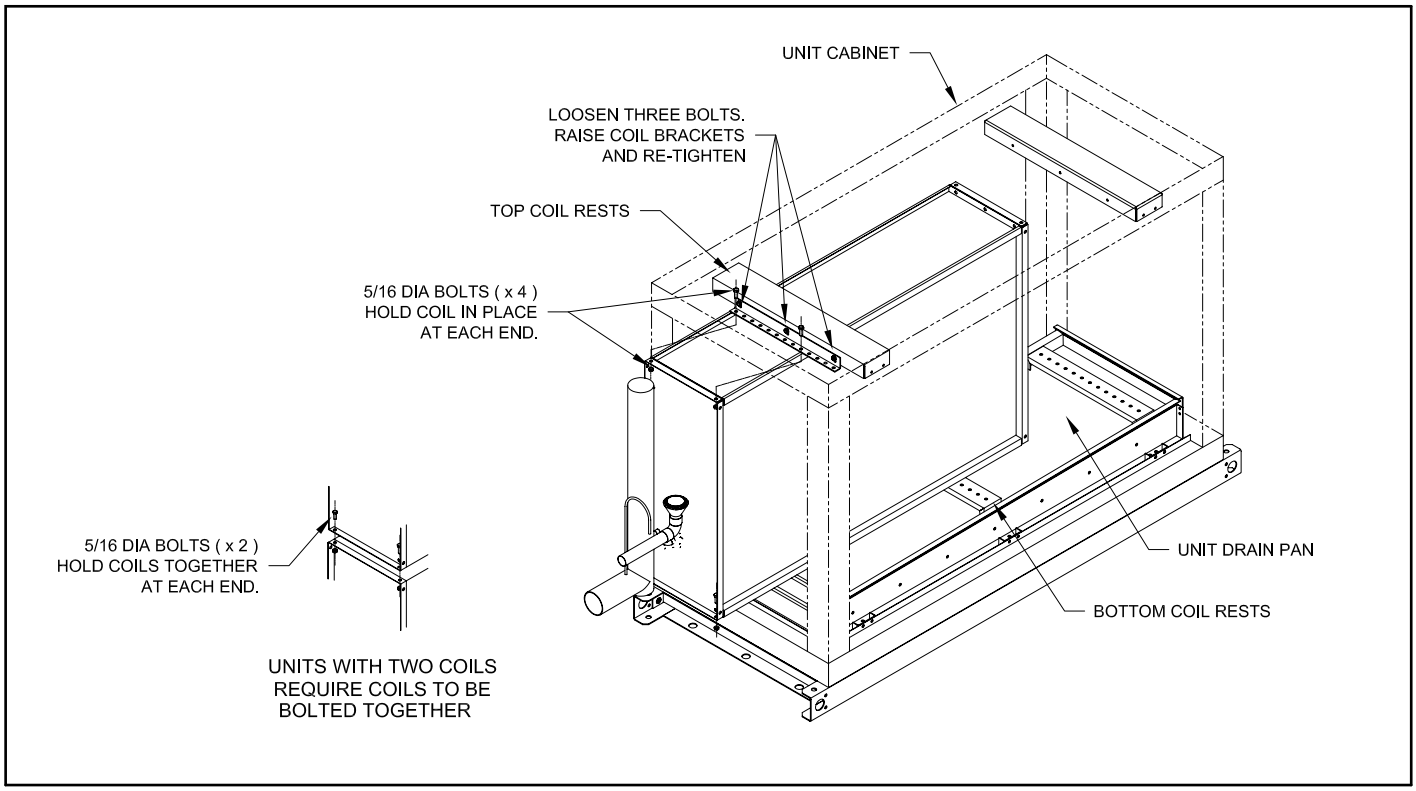


Figure 14

AH HEATING COILS

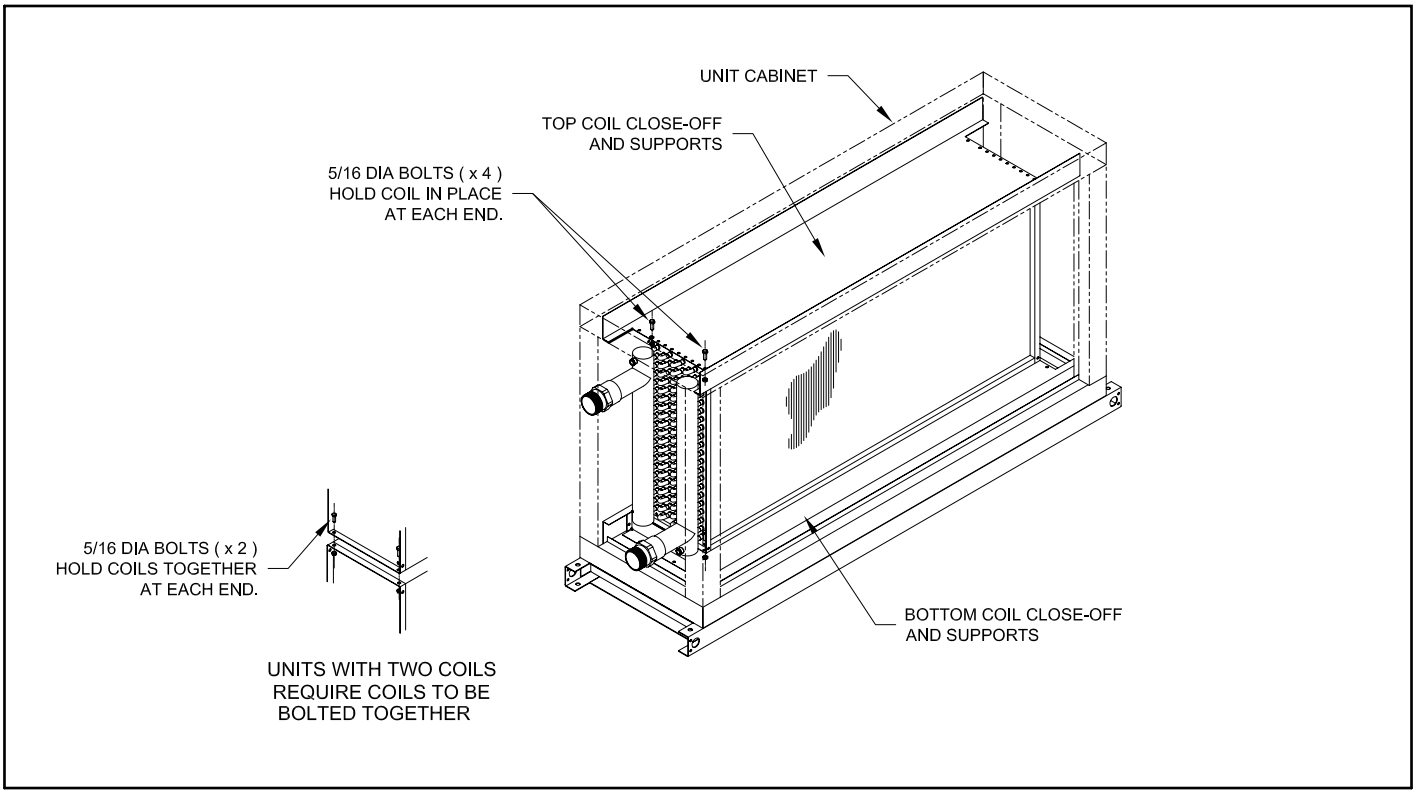
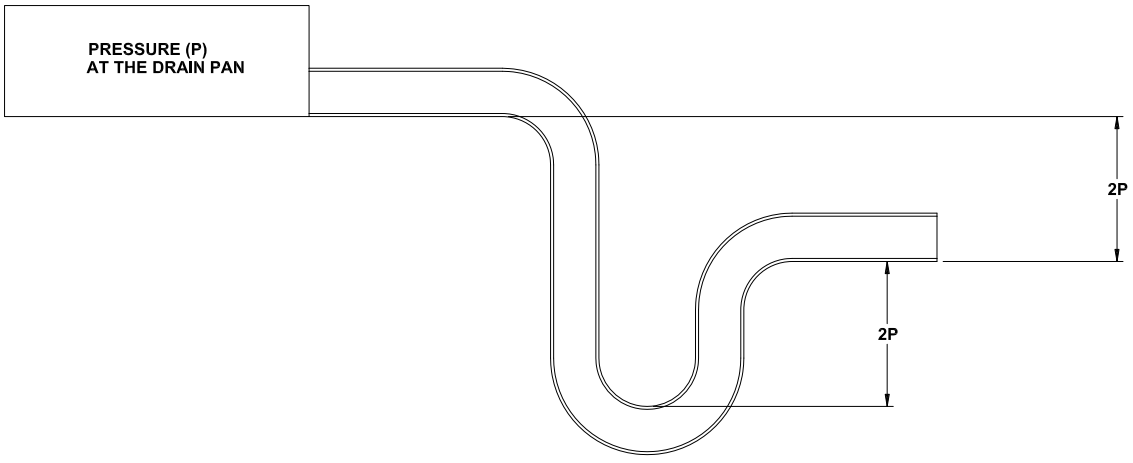


Figure 15

DRAIN PAN TRAPS



Allow adequate distance between trap outlet and drain pan outlet

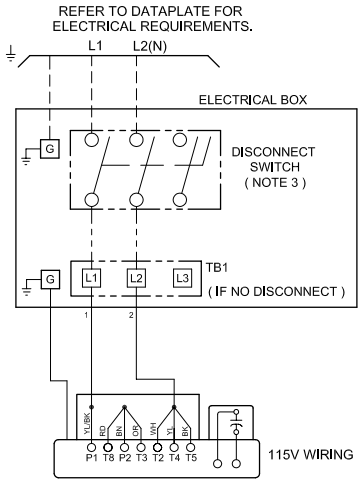
DRAIN PAN TRAPS

Run drain lines full size from the drain pan connection. Install drain pan trap to allow condensate to drain freely. The trap depth and the distance between the trap outlet and the drain pan outlet must be twice the static pressure in the drain pan section under normal operation so the trap remains sealed.

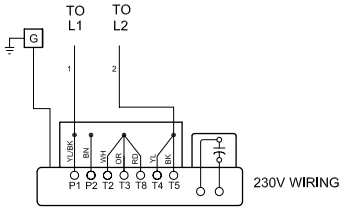
TYPICAL UNIT WIRING DIAGRAM

TYPICAL AIR HANDLING UNIT WIRING DIAGRAMS - 1800 RPM

115 / 230 VOLT, 1 PHASE (1/3 TO 2 HP)

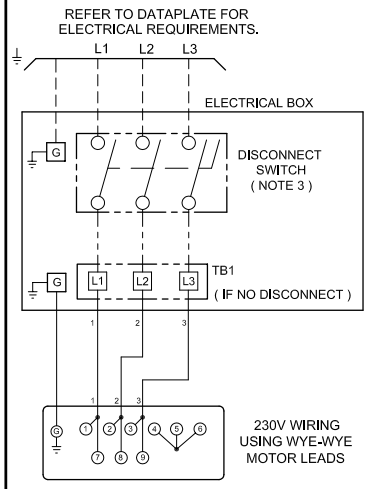


BLOWER MOTOR WITH MANUAL INTERNAL OVERLOAD

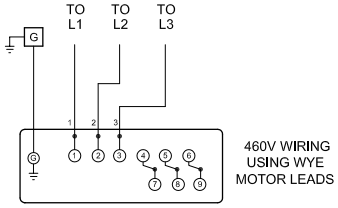


BLOWER MOTOR WITH MANUAL INTERNAL OVERLOAD
ROTATION "CW-OPE"
TO REVERSE EITHER VOLTAGE
INTERCHANGE RED & BLACK LEADS

230 / 460 VOLT, 3 PHASE (9 LEAD MOTOR - 1/3 TO 5 HP)



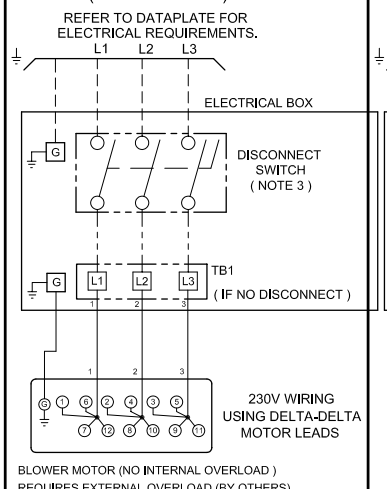
BLOWER MOTOR (NO INTERNAL OVERLOAD)
REQUIRES EXTERNAL OVERLOAD (BY OTHERS)



BLOWER MOTOR (NO INTERNAL OVERLOAD)
REQUIRES EXTERNAL OVERLOAD (BY OTHERS)

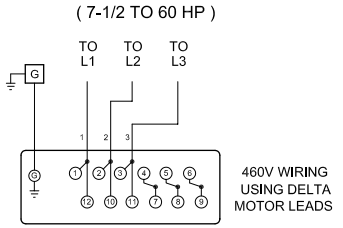
230 / 460 VOLT, 3 PHASE (12 LEAD MOTOR - 3 WIRE)

(7-1/2 TO 25 HP)



BLOWER MOTOR (NO INTERNAL OVERLOAD)
REQUIRES EXTERNAL OVERLOAD (BY OTHERS)

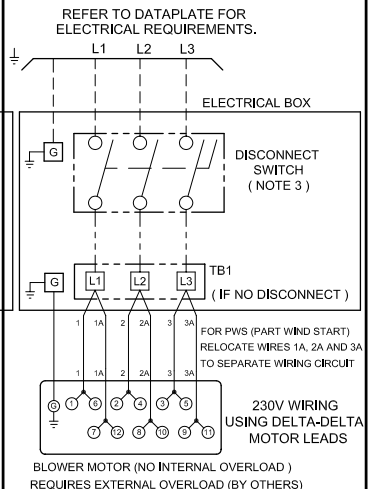
(7-1/2 TO 60 HP)



BLOWER MOTOR (NO INTERNAL OVERLOAD)
REQUIRES EXTERNAL OVERLOAD (BY OTHERS)

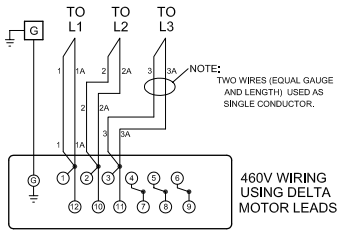
230 / 460 VOLT, 3 PHASE (12 LEAD MOTOR - 6 WIRE)

(30 TO 60 HP)



BLOWER MOTOR (NO INTERNAL OVERLOAD)
REQUIRES EXTERNAL OVERLOAD (BY OTHERS)

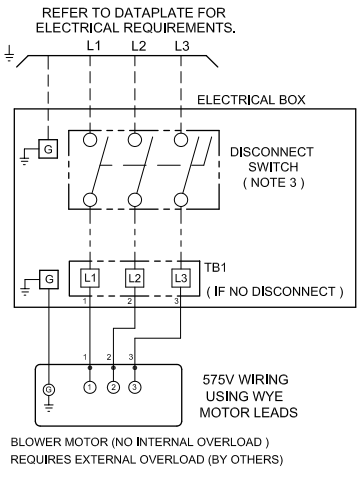
(75 & 100 HP)



BLOWER MOTOR (NO INTERNAL OVERLOAD)
REQUIRES EXTERNAL OVERLOAD (BY OTHERS)

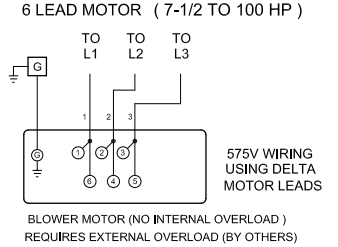
575 VOLT, 3 PHASE

3 LEAD MOTOR (1/3 TO 5 HP)



BLOWER MOTOR (NO INTERNAL OVERLOAD)
REQUIRES EXTERNAL OVERLOAD (BY OTHERS)

6 LEAD MOTOR (7-1/2 TO 100 HP)



BLOWER MOTOR (NO INTERNAL OVERLOAD)
REQUIRES EXTERNAL OVERLOAD (BY OTHERS)

1. USE COPPER CONDUCTORS ONLY
2. USE 75°C WIRE (OR HIGHER)
3. OPTIONAL COMPONENTS -FACTORY OR INSTALLED BY OTHERS

4. CONDUCTORS / WIRNG
   - FACTORY WIRING
   - WIRING BY OTHERS
   - OPTIONAL COMPONENT FACTORY WIRING

   BK=BLACK RD=RED YL=YELLOW
   WH=WHITE BL=BLUE BN=BROWN
   YL/BK=YELLOW WITH BLACK STRIPE
   OR=ORANGE GR=GRAY

5. ALL FIELD WIRING MUST BE DONE IN COMPLIANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES.

REVISIONS		DIAGRAM NUMBER
DATE	LTR	1099106-TYPICAL
-	-	
-	-	MAR. 28/14

ALL 1 PHASE MOTORS c/w MANUAL THERMAL OVERLOAD

ALL 3 PHASE MOTORS ARE NOT INTERNALLY OVERLOAD PROTECTED. EXTERNAL MOTOR OVERLOAD MUST BE PROVIDED.

ELECTRICAL DATA - 3 Phase / 1-100 HP Models

230/460 Volt Models - Motor: Nema Epact Efficiency NEMA 12-11 3 phase TEFC (1800 RPM) Service Factor = 1.15

HP	RPM	FRAME	F1 Part #	F2 Part #	230V					460V					BORE DIA.
					FLA	LRA	MCA	* MOP	DISCONNECT SWITCH SIZE AMPS	FLA	LRA	MCA	* MOP	DISCONNECT SWITCH SIZE AMPS	
1	1740	143T	1093600-1-TRI-F1	1093600-1-TRI-F2	3	30	3.75	15	40	1.5	15	1.88	15	40	7/8
1.5	1740	145T	1093600-1.5-TRI-F1	1093600-1.5-TRI-F2	4.4	40	5.5	15	40	2.2	20	2.75	15	40	7/8
2	1740	145T	1093600-2-TRI-F1	1093600-2-TRI-F2	5.6	50	7	15	40	2.8	25	3.50	15	40	7/8
3	1745	182T	1093600-3-TRI-F1	1093600-3-TRI-F2	8	64	10	15	40	4	32	5.00	15	40	1 1/8
5	1745	184T	1093600-5-TRI-F1	1093600-5-TRI-F2	13	92	16.25	25	40	6.5	46	8.13	15	40	1 1/8
7.5	1750	213T	1093600-7.5-TRI-F1	1093600-7.5-TRI-F2	18.4	126	23	40	40	9.2	63	11.50	20	40	1 3/8
10	1750	215T	1093600-10-TRI-F1	1093600-10-TRI-F2	24	161	30	50	40	12	81	15.00	25	40	1 3/8
15	1750	254T	1093600-15-TRI-F1	1093600-15-TRI-F2	36.4	232	45.5	80	80	18.2	116	22.75	40	40	1 5/8
20	1750	256T	1093600-20-TRI-F1	1093600-20-TRI-F2	48.4	290	60.5	100	80	24.2	145	30.25	50	40	1 5/8
25	1760	284T	1093600-25-TRI-F1	1093600-25-TRI-F2	60	364	75	125	80	30	182	37.50	60	40	1 7/8
30	1760	286T	1093600-30-TRI-F1	1093600-30-TRI-F2	70.6	434	88.25	150	100	35.3	217	44.13	70	80	1 7/8
40	1760	324T	1093600-40-TRI-F1	1093600-40-TRI-F2	93.2	580	116.5	200	200	46.6	290	58.25	100	80	2 1/8
50	1765	326T	1093600-50-TRI-F1	1093600-50-TRI-F2	116.6	724	145.75	250	200	58.3	362	72.88	125	80	2 1/8
60	1780	364T	1093600-60-TRI-F1	1093600-60-TRI-F2	140	870	175	300	200	70	435	87.50	150	100	2 3/8
75	1780	365T	1093600-75-TRI-F1	1093600-75-TRI-F2	N/A	N/A	N/A	N/A	N/A	88.6	542	110.75	175	200	2 3/8
100	1780	405T	1093600-100-TRI-F1	1093600-100-TRI-F2	N/A	N/A	N/A	N/A	N/A	113.5	725	141.88	250	200	2 7/8

*** MOP - NOTE:** MOP value is for circuit wiring protection only. Actual motor protection must not exceed 1.15 x FLA

575 Volt Models - Motor: Nema Epact Efficiency NEMA 12-11 3 phase TEFC (1800 RPM) Service Factor = 1.15

HP	RPM	FRAME	F1 Part #	F2 Part #	575V					BORE DIA.
					FLA	LRA	MCA	* MOP	DISCONNECT SWITCH SIZE AMPS	
1	1740	143T	1093600-1-575-F1	1093600-1-575-F2	1.2	12	1.5	15	40	7/8
1.5	1740	145T	1093600-1.5-575-F1	1093600-1.5-575-F2	1.76	16	2.2	15	40	7/8
2	1740	145T	1093600-2-575-F1	1093600-2-575-F2	2.24	20	2.8	15	40	7/8
3	1745	182T	1093600-3-575-F1	1093600-3-575-F2	3.2	26	4	15	40	1 1/8
5	1745	184T	1093600-5-575-F1	1093600-5-575-F2	5.2	37	6.5	15	40	1 1/8
7.5	1750	213T	1093600-7.5-575-F1	1093600-7.5-575-F2	7.36	50	9.2	15	40	1 3/8
10	1750	215T	1093600-10-575-F1	1093600-10-575-F2	9.6	65	12	20	40	1 3/8
15	1750	254T	1093600-15-575-F1	1093600-15-575-F2	14.56	93	18.2	30	40	1 5/8
20	1750	256T	1093600-20-575-F1	1093600-20-575-F2	19.36	116	24.2	40	40	1 5/8
25	1760	284T	1093600-25-575-F1	1093600-25-575-F2	24	146	30	50	40	1 7/8
30	1760	286T	1093600-30-575-F1	1093600-30-575-F2	28.24	174	35.3	60	40	1 7/8
40	1760	324T	1093600-40-575-F1	1093600-40-575-F2	37.28	232	46.6	80	80	2 1/8
50	1765	326T	1093600-50-575-F1	1093600-50-575-F2	46.64	290	58.3	100	80	2 1/8
60	1780	364T	1093600-60-575-F1	1093600-60-575-F2	56	348	70	125	100	2 3/8
75	1780	365T	1093600-75-575-F1	1093600-75-575-F2	70.88	434	88.6	150	100	2 3/8
100	1780	405T	1093600-100-575-F1	1093600-100-575-F2	90.8	580	113.5	200	200	2 7/8

Maximum Air Over Motor Temperature: 140°F / *60°C*

*** MOP - NOTE:** MOP value is for circuit wiring protection only. Actual motor protection must not exceed 1.15 x FLA

ELECTRICAL DATA - 3 Phase / .33 to .75 HP Models

230/460 Volt Models - Motor: General Purpose 3 phase TEFC (1800 RPM) Service Factor = 1.15

HP	RPM	FRAME	F1 Part #	230V					460V					BORE DIA.
				FLA	LRA	MCA	* MOP	DISCONNECT SWITCH SIZE AMPS	FLA	LRA	MCA	* MOP	DISCONNECT SWITCH SIZE AMPS	
1/3	1725	56HC	1096305-.33-TRI-F1	1.6	8.6	2	15	40	0.8	4.3	1	15	40	5/8
1/2	1725	56HC	1096305-.50-TRI-F1	2	12.4	2.5	15	40	1	6.2	1.25	15	40	5/8
3/4	1725	56HC	1096305-.75-TRI-F1	2.8	19.6	3.5	15	40	1.4	9.8	1.75	15	40	5/8

* **MOP - NOTE:** MOP value is for circuit wiring protection only. Actual motor protection must not exceed 1.15 x FLA

575 Volt Models - Motor: General Purpose 3 phase TEFC (1800 RPM) Service Factor = 1.15

HP	RPM	FRAME	F1 Part #	575V					BORE DIA.
				FLA	LRA	MCA	MOP	DISCONNECT SWITCH SIZE AMPS	
1/3	1725	56HC	1096305-.33-TRI-F1	0.6	3.6	0.75	15	40	5/8
1/2	1725	56HC	1096305-.50-TRI-F1	0.8	4.9	1	15	40	5/8
3/4	1725	56HC	1096305-.75-TRI-F1	1.1	7.8	1.38	15	40	5/8

* **MOP - NOTE:** MOP value is for circuit wiring protection only. Actual motor protection must not exceed 1.15 x FLA

ELECTRICAL DATA - 1 Phase / .33 to 2 HP Models

115/230 Volt Models - Motor: 1 phase TEFC w/ Manual Overload (1800 RPM) Service Factor = 1.15

HP	RPM	FRAME	F1 (CH) Part #	115V					230V					BORE DIA.
				FLA	LRA	MCA	MOP	DISCONNECT SWITCH SIZE AMPS	FLA	LRA	MCA	MOP	DISCONNECT SWITCH SIZE AMPS	
1/3	1725	56HC	1096300-.33-DL-F1	6.6	60	8.25	15	40	3.3	33	4.13	15	40	5/8
1/2	1725	56HC	1096300-.50-DL-F1	8.8	84	11	15	40	4.2	40	5.25	15	40	5/8
3/4	1725	56HC	1096300-.75-DL-F1	11	105	13.75	20	40	5.5	50	6.88	15	40	5/8
1	1725	56HC	1096300-1.0-DL-F1	13.6	125	17	30	40	6.8	65	8.5	15	40	5/8
1.5	1725	56HC	1096300-1.5-DL-F1	15.2	140	19	30	40	7.6	75	9.5	15	40	5/8
2	1725	56HC	1096300-2.0-DL-F1	20	180	25	45	40	10	95	12.5	25	40	5/8

Maximum Air Over Motor Temperature:
140°F / *60°C*

BEFORE START UP CHECKS

A. Check tightness on all bearing, sheave, and fan wheel set screws.
B. If fan wheel set screws are loose, check to be sure wheel is not rubbing on housing.
C. Leak test entire system to make sure all joints are tight.
D. Ball bearings are prelubricated and do not need grease for start up.
E. Rotate shaft by hand to be sure it is free.
F. Check fan and motor for proper rotation and ensure motor overload protection is provided.
G. Check alignment of fan and motor sheave and belt tension.

AFTER FIRST 48 HRS. OF OPERATION

A. Check all points under BEFORE START UP CHECKS (above)
B. Belts have acquired their permanent stretch. readjust motor mount to take up slack in belts.

PERIODIC SERVICE & MAINTENANCE

A. Check all moving parts for wear every six months.
B. Check bearing collar set screws for tightness every six months.

BALL & SLEEVE BEARINGS

A. Ball Bearings

1. Motor bearings - All ball bearings are prelubricated and do not require addition of grease at time of installation. However, periodic cleaning out and renewal of grease is necessary. Please note that extreme care must be exercised to prevent foreign matter from entering the bearing. It is also important to avoid overgreasing. Only a high grade, clean mineral grease having the following characteristics should be used.

   a. Consistency a little stiffer than that of vaseline, maintained over the operating temperature range; melting point preferably over 302°F (*150°C*), freedom from separation of oil and soap under operating and storage conditions; and freedom from abrasive matter, acid, alkali and moisture.

   b. Specific greasing instructions are to be found on a tag attached to the motor and should generally be adhered to.

BALL & SLEEVE BEARINGS (cont'd)

2. Fan Shaft Bearings - All ball bearings are prelubricated and do not require addition of grease at time of installation. However, periodic cleaning out and renewal of grease is necessary. Internal bearings are accessible through access panel in cabinet. Units that are equipped with extended lube lines will have grease fittings for internal bearings on drive end panel of blower section. Apply grease while bearings are running, adding slowly until a slight bleeding of grease from the seals is noted. For greasing units with extended lube lines, remove access door so bearing can be viewed when greasing.

DO NOT OVER LUBRICATE

The lubrication interval varies with the period of operation and temperature of the ambient air. The following interval is recommended using Mobilgrease XHP 222 or equivalent:

Temperature Range (°F)	Continuous Operation	12 Hr./Day Operation
60 - 80	2 years	4 years
81 - 100	1 1/2 years	3 years
101 - 120	1 year	2 years
121 - 140	3/4 year	1 1/4 years

REPLACEMENT PARTS

When replacement parts are required, furnish factory with unit model number and serial number as shown on serial plate on drive end of blower section.

WINTERIZING WATER COILS

Due to air stratification, failure of outdoor air dampers and/or preheat controls, coil freeze up can occur. Routine draining of water cooling coils for winter shutdown cannot be depended on as insurance against freeze-up resulting in severe coil damage. It is recommended that all coils be drained as thoroughly as possible and then treated in the following manner:

Fill each coil independently with an anti-freeze solution using a small circulating pump and again thoroughly drain. Check freezing point of anti-freeze before proceeding to next coil. Due to a small amount of water always remaining in each coil there will be a diluting affect. The small amount of antifreeze solution remaining in coil must always be potent enough to prevent freeze up. Warning: Carefully read instructions for mixing anti-freeze solution used. Some products will have a higher freezing point in its natural state than when mixed with water.

APPROXIMATE NET WEIGHTS (*without Motor*)

DESCRIPTION	UNIT SIZE													
	103	104	106	108	111	114	117	122	128	137	141	150	164	182
FAN HEAD														
SINGLE WALL - not insulated	360	475	589	646	908	948	973	1156	1590	1650	1801	2059	2532	3162
DOUBLE WALL - insulated	412	530	652	788	1108	1154	1280	1529	2045	2167	2288	2631	3223	4023
COOLING COIL - DOUBLE WALL INSULATED (less coil)														
HORZIZONTAL	233	322	391	395	506	572	622	673	717	922	1141	1188	1461	1798
VERTICAL	409	510	616	623	773	819	975	1275	1685	N/A	N/A	N/A	N/A	N/A
HEATING COIL - DOUBLE WALL INSULATED(less coil)														
8 ROW	248	277	284	289	383	449	515	581	614	697	760	792	974	1192
COOLING COILS ALUMINUM FINS														
3 ROWS	55	78	113	148	202	243	305	375	471	658	727	862	1195	1579
4 ROWS	69	97	138	186	250	307	390	478	595	876	922	1096	1526	1983
5 ROWS	81	116	169	227	305	374	478	585	727	1040	1126	1344	1843	2524
6 ROWS	91	136	198	266	361	439	563	691	857	1211	1331	1587	2160	2937
8 ROWS	125	174	258	349	471	576	736	896	1117	1561	1792	2063	2810	3821
10 ROWS	141	215	324	426	582	708	903	1111	1436	1920	2150	2546	3430	4630
COMBINATION ANGLE FILTER MIXING BOX	273	316	388	437	564	690	816	900	1145	1231	1523	1585	1950	2400
FLAT FILTER SECTION (BOLT ON)	39	49	62	86	118	140	161	189	232	278	303	342	416	520
FLAT FILTER SECTION	140	162	198	237	306	375	443	501	615	685	719	900	937	1153
ANGULAR FILTER SECTION	N/A	N/A	N/A	N/A	N/A	507	600	674	828	899	1113	1159	1426	1755
MIXING BOX	225	261	321	348	448	549	650	726	922	1018	1260	1312	1614	1986
INTERNAL FACE & BYPASS SECTION	N/A	N/A	N/A	N/A	N/A	491	581	635	790	879	1088	1132	1392	1713
EXTERNAL FACE & BYPASS SECTION	N/A	N/A	N/A	N/A	365	447	528	589	752	839	1038	1081	1330	1639
ACCESS SECTION - 30" (ins.)	208	237	293	298	351	449	458	516	586	645	789	821	1010	1243
INLET HOOD	65	75	102	108	174	182	200	240	339	387	583	685	924	1028
OUTDOOR ROOF SECTION	30	38	47	57	84	99	117	135	162	177	189	205	243	327

APPROXIMATE MOTOR WEIGHTS

Motor: Nema Epact Efficiency NEMA 12-11 3 phase TEFC (1800 RPM)

HP	1	1.5	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100
Weight	40	48	51	89	101	136	160	270	306	372	387	521	565	730	774	1063

Motor: General Purpose 3 phase TEFC

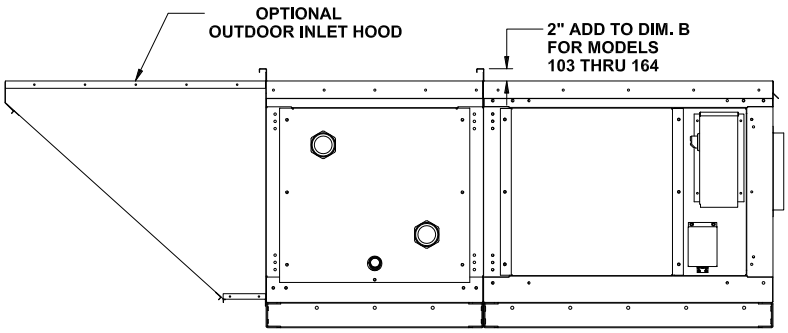
HP	1/3	1/2	3/4
WEIGHT	20	23	25

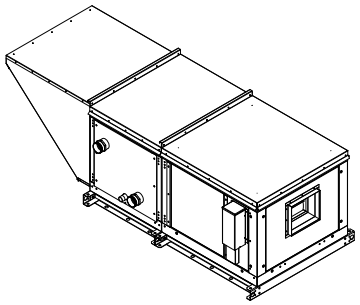
Motor: 1 phase TEFC w/ Manual Overload

HP	1/3	1/2	3/4	1	1.5	2
WEIGHT	24	26	30	33	41	51

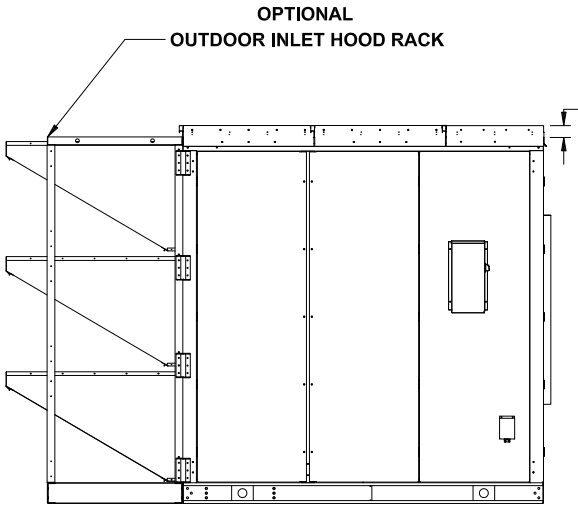
OUTDOOR UNITS
(ROOF SECTION HEIGHT)

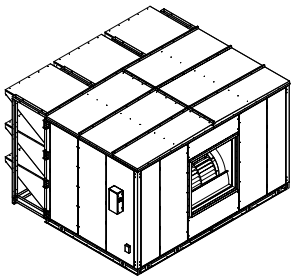
Models 103 through 137



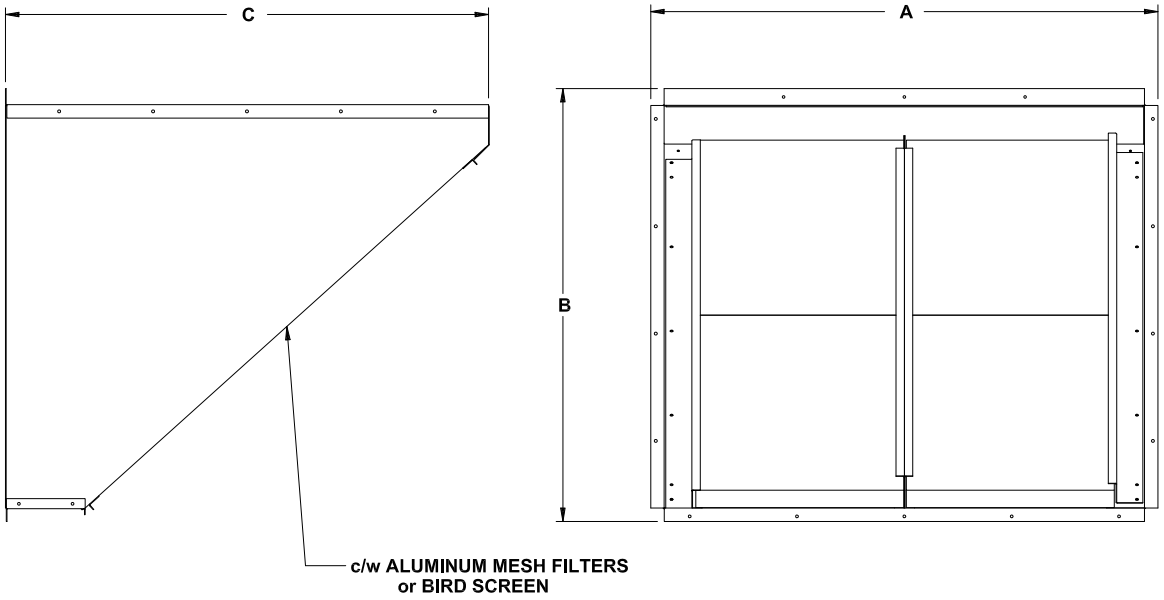


Models 141 through 182





DIMENSIONAL DATA - OUTDOOR INLET HOOD

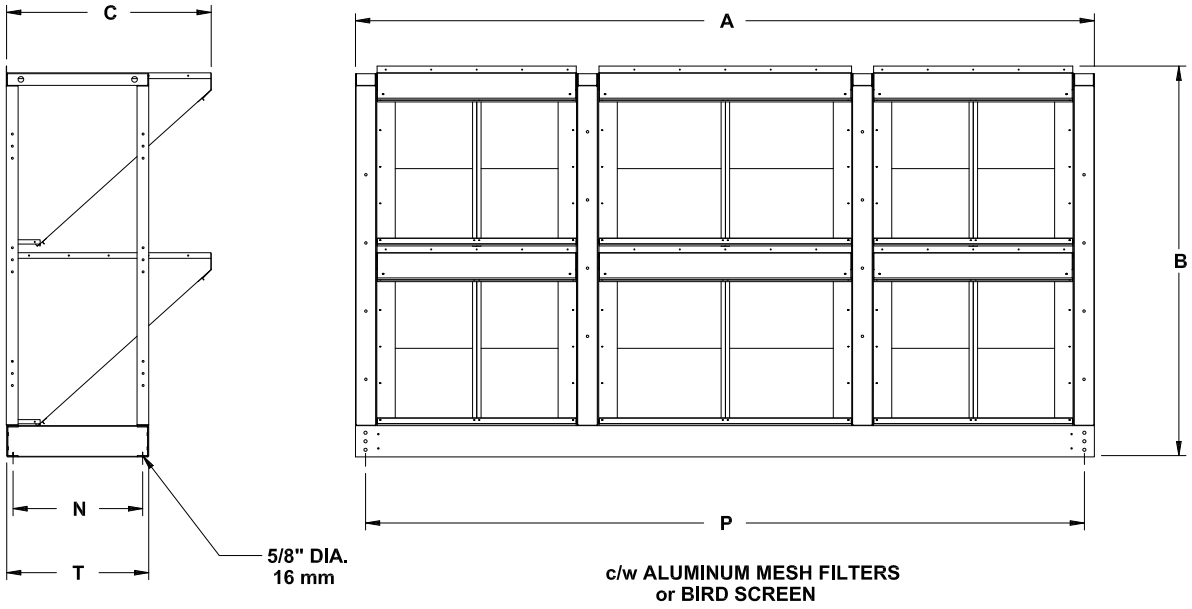


DIMENSIONS - IMPERIAL (inches)

UNIT SIZE	A	B	C	FILTER SIZE	FILTER AREA SQ.FT.
103	37 3/4	32 1/4	36	(4) - 16 X 20 X 2	8.89
104	43 3/4	35 1/4	40	(2) - 20 X 20 X 2 & (2) - 20 X 25 X 2	12.5
106	53 3/4	38 1/4	44 1/2	(6) - 16 X 25 X 2	16.67
108	51 3/4	45 1/4	44 1/2	(6) - 16 X 25 X 2	16.67
111	66	45 1/4	48	(8) - 16 X 25 X 2	22.22
114	79	45 1/4	48	(8) - 20 X 25 X 2	27.78
117	94	45 1/4	48	(4) - 20 X 25 X 2 & (4) 25 X 25 X 2	32.25
122	100	51 1/4	52	(8) 25 x 25 x 2	34.72
128	120	54 1/4	54	(24) 16 X 20 X 2	53.33
137	128	58	60	(24) 16 X 20 X 2	53.33

NOTE: All dimensions are approximate. Certified drawings available on request.

DIMENSIONAL DATA - OUTDOOR INLET HOOD RACK



DIMENSIONS - IMPERIAL (inches)

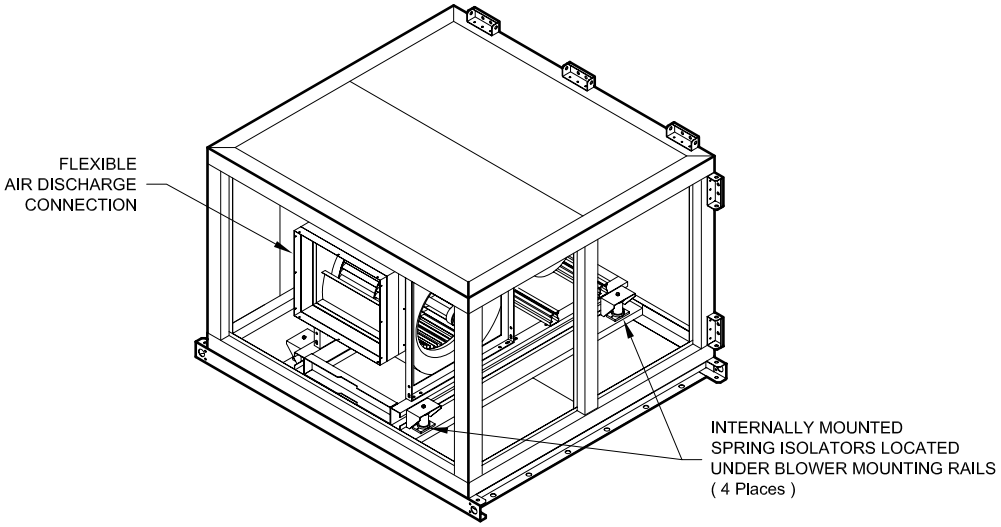
UNIT SIZE	A	B	C	N	P	T	FILTER SIZE	FILTER AREA SQ.FT.
141	130	68 3/4	36	23	126 3/8	25	(16) 16 X 20 X 2 & (8) 20 X 20 X 2	58
150	130	80 1/2	45	34	126 3/8	36	(8) 16 X 25 X 2 & (16) 20 X 25 X 2	78
164	130	97 1/2	47	34	126 3/8	36	(24) 16X25X2 & (6) 20X25X2 & (6) 25X25X2	114
182	160	97 1/2	47	34	156 3/8	36	(12) 20 X 25 X 2 & (24) 25 X 25 X 2	146

NOTE: All dimensions are approximate. Certified drawings available on request.

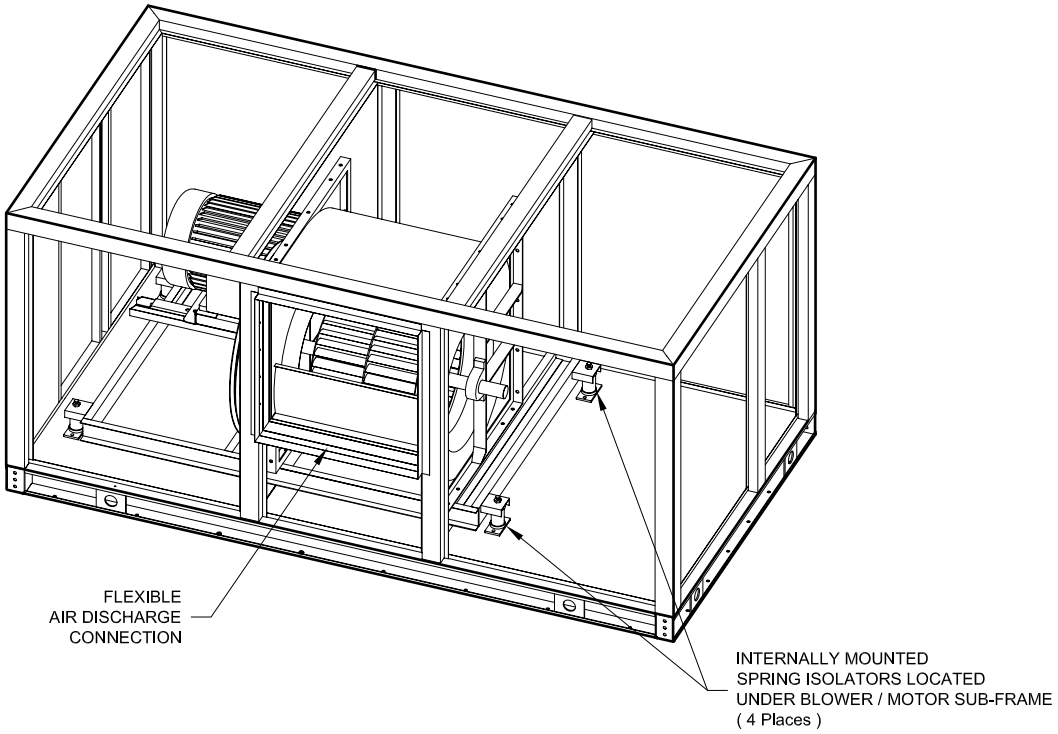
OPTIONAL INTERNAL SPRING ISOLATORS

CONSULT FACTORY FOR PROPER SPRING SELECTION

AF FAN HEAD: Models AF103 - AF128
Note: Rubber isolator style used on Models 103 through 108



AF FAN HEAD: Models AF137 - AF182



NOTES

FINISHED GOODS WARRANTY

The terms and conditions as described below in the General Warranty Policy cover all products manufactured by National Refrigeration.

GENERAL WARRANTY POLICY

Subject to the terms and conditions hereof, the Company warrants all Products, including Service Parts, manufactured by the Company to be free of defects in material or workmanship, under normal use and application for a period of one (1) year from the original date of installation, or eighteen (18) months from the date of shipment from the Company, whichever occurs first. Any replacement part(s) so supplied will be warranted for the balance of the product's original warranty. The part(s) to be replaced must be made available in exchange for the replacement part(s) and reasonable proof of the original installation date of the product must be presented in order to establish the effective date of the warranty, failing which, the effective date will be based upon the date of manufacture plus thirty (30) days. Any labour, material, refrigerant, transportation, freight or other charges incurred in connection with the performance of this warranty will be the responsibility of the owner at the current rates and prices then in effect. This warranty may be transferred to a subsequent owner of the product.

THIS WARRANTY DOES NOT COVER

(a) Damages caused by accident, abuse, negligence, misuse, riot, fire, flood, or Acts of God (b) damages caused by operating the product in a corrosive atmosphere (c) damages caused by any unauthorized alteration or repair of the system affecting the product's reliability or performance (d) damages caused by improper matching or application of the product or the product's components (e) damages caused by failing to provide routine and proper maintenance or service to the product (f) expenses incurred for the erecting, disconnecting, or dismantling the product (g) parts used in connection with normal maintenance, such as filters or belts (h) products no longer at the site of the original installation (i) products installed or operated other than in accordance with the printed instructions, with the local installation or building codes and with good trade practices (j) products lost or stolen.

No one is authorized to change this WARRANTY or to create for or on behalf of the Company any other obligation or liability in connection with the Product(s). There is no other representation, warranty or condition in any respect, expressed or implied, made by or binding upon the Company other than the above or as provided by provincial or state law and which cannot be limited or excluded by such law, nor will we be liable in any way for incidental, consequential, or special damages however caused.

The provisions of this additional written warranty are in addition to and not a modification of or subtraction from the statutory warranties and other rights and remedies provided by Federal, Provincial or State laws.

PROJECT INFORMATION

System	
Model Number	Date of Start-Up
Serial Number	Service Contractor
Refrigerant	Phone
Electrical Supply	Fax

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