“STREAMLINE” ROOF TOP AIR HANDLING UNIT

Smartech Sales & Services Sdn. Bhd.
(829707-K)

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SSOA1004A

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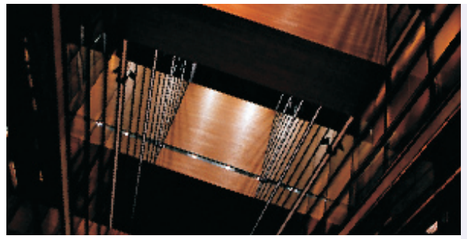
Towards Green, Quality & Reliability Solutions

Smartech
SSOA SERIES



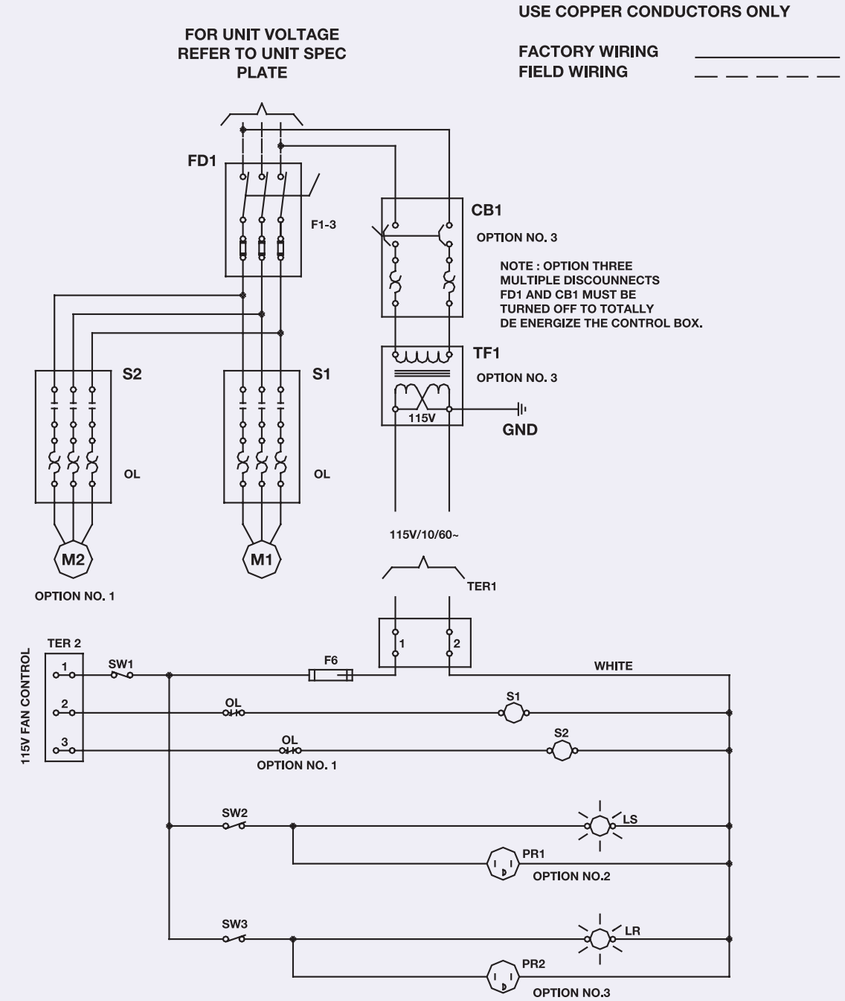
INTRODUCTION

The “Streamline” series of outdoor Central Station Air-Handlers is yet another product developed from culmination of over 20 years of experience in the design, application and manufacturing of Central Station Air-Handling units. The product meets the Industry’s latest design standards and specifications; and incorporates high quality materials and components into its construction.

This low-profile, rugged and aesthetically pleasing Air-handlers are designed, engineered and manufactured for outdoor installations; in particular on rooftops to save valuable building space and reduce installation costs.

The rigid weatherproof casing cabinetry is constructed from heavy duty extruded Aluminium structural members locked together by cast aluminium jointing modules to form a rigid structural framework; onto which, double walled polyurethane insulated panels are locked or screwed on . All joints and mating surfaces are heavily gasketted to ensure air tightness and zero water seepage into the interior of the unit. The structural framework and casing panels incorporate “complete thermal break” feature to eliminate possibility of condensation on outside of casing under all weather conditions. A pitched roof, constructed from heavy gauge galvanized steel sheet, covers over the top of the unit casing and overhangs 2” over its edge to ensure rainwater does not seep into the side panels and access doors. Complete casing cabinetry sits on a heavy duty welded steel base which is designed for mounting over a roof curb. All exposed galvanized steel sheet panels are further coated with oven-baked epoxy polyester paint to protect against corrosion under the most severe weather conditions. This rugged and all weather protected Air-handlers offer customers many years of dependable performance at minimal maintenance costs.

ELECTRICAL CIRCUIT DRAWING



STANDARD	
FD1	FUSED DISCONNECT
F1-3	FUSE-MAIN POWER
F6	FUSE-CONTROL CIRCUIT
M1	MOTOR-SUPPLY FAN
OL	OVERLOAD RELAY
S1	STARTER-SUPPLY FAN
TER 1	TERMINAL BOARD-CONTROL CIRCIUT
TER 2	TERMINAL BOARD-FAN CONTROL
SW1	SWITCH-CONTROL CIRCUIT ON-OFF

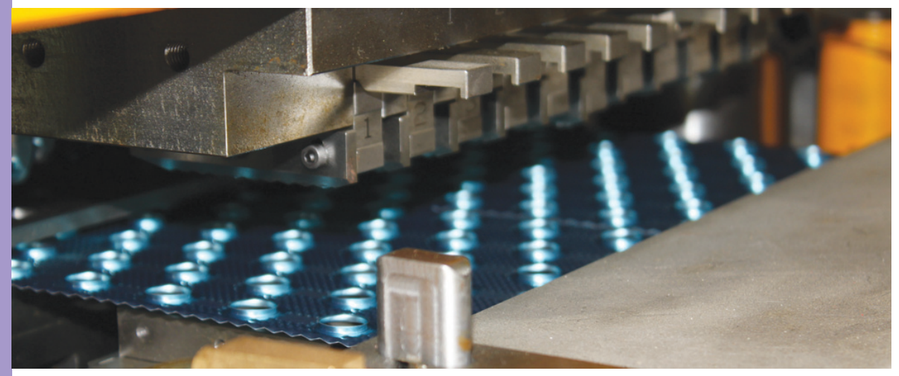
OPTIONAL	
CB1	CIRCUIT BREAKER
LS	LIGHT-SUPPLY FAN
LR	LIGHT-RETURN FAN
M2	MOTOR-RETURN FAN
OL	OVERLOAD RELAY
PR1,2	PLUG RECEPTANGLE
S2	STARTER-RETURN FAN
SW2,3	SWITCH-LIGHT
TF1	TRANSFORMER

FAN PERFORMANCE DATA (Airfoil Blades Plenum Blower)
Quick Selection For Motor Horsepower

Unit Size	Fan Model	cfm	1.0"		1.5"		2.0"		2.5"		3.0"		3.5"		4.0"		5.0"	
			RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
44	ANA 355	2800	2054	1.3	2158	1.5	2274	1.7	2407	2.0	2532	2.4	2639	2.7	2738	3.0	2927	3.6
		3400			2483	2.2	2568	2.5	2656	2.7	2752	3.0	2860	3.4	2970	3.8	3161	4.7
		4000							2971	3.8	3043	4.1	3118	4.4	3199	4.7	3380	5.6
		4600																
		5200																
56	ANA 400	3800			2041	2.1	2129	2.4										
		4500					2390	3.5										
		5200																
		5900																
		6600																
78	ANA 500	5600			1532	2.9	1615	3.5										
		6500			1694	4.1	1766	4.5										
		7300					1909	5.8										
		8100																
		9000																
95	ANA 560	7200			1397	3.9	1469	4.5										
		8200			1526	5.2	1590	5.7										
		9200					1719	7.4										
		10200																
		11200																
127	ANA 630	9000			1237	4.7	1302	5.5										
		10000			1328	5.9	1386	6.6										
		11000					1476	8.1										
		13000																
		15000																
148	ANA 710	10000	957	3.9	1023	4.7	1085	5.8										
		12000			1145	6.7	1200	7.6										
		14000					1326	10.4										
		16000																
		18000																
188	ANA 800	13000	866	5.2	923	6.2	977	7.5										
		16000			1054	9.4	1101	10.5										
		19000					1237	15.3										
		21000																
		23000																
224	ANA 900	13000	671	4.2	731	5.5	784	6.8										
		18000			875	9.2	921	10.7										
		21000					1012	14.2										
		24000																
		27000																
260	ANA 1000	20000	702	7.9	747	9.4	791	11.4	833	13.5	872	15.5	910	17.5	946	19.4	1019	23.2
		23000			816	12.3	856	14.1	894	16.3	932	18.7	967	21.2	1001	23.5	1066	27.9
		26000					924	17.9	959	19.9	994	22.2	1028	24.9	1060	27.7	1122	33.1
		29000					997	22.9	1028	24.7	1060	26.8	1091	29.3	1122	32.1	1181	38.3
		32000							1101	30.8	1130	32.8	1159	35.1	1187	37.6	1243	43.7

INTRODUCTION *cont'd*

The "Streamline" out-door Air-handlers provides Architects and design Engineers with a versatile and flexible choice of air-handling units to fit a vast range of application requirements.



- A wide range of standard model sizes to handle air flowrates from as low as 3,000 cfms to 30,000 cfms. Units that require than 30,000 cfms can be custom-built to suit any application and site constraint requirements;
- A wide choice of accessory sections and components can be selected and arranged in virtually any combination by the specifying engineer to suit any application requirements;
- Different types of blower fans such as forward curved fans, backward inclined flat blades fans, airfoil blade fans and plug fans, can be selected to meet any air flowrates and external static pressures;
- Computer optimized selection of coils to meet any heating or cooling applications.

This Smartech's latest designed outdoor Air-handlers; which are rugged, air-tight and high corrosion, wear & tear resistance; constructed from the Industry's most advanced and high quality materials and components; and incorporates the Industry's latest features in Air-handling units design; will provide building owners with an outdoor Air-handling unit which is superior in performance, low in operating and maintenance costs, space-saving in installation, attractive in appearance and many years of dependable and trouble-free operations.

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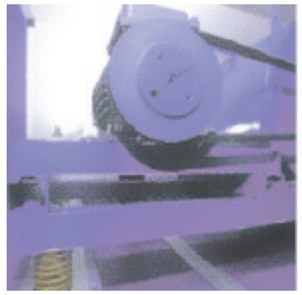
Nomenclature

SSOA	Smartech “Streamline” Outdoor Air-Handler
IDT	IDT-1” Double Wall With Thermal Break DDT-2” Double Wall With Thermal Break
95	Nominal Air Flowrates (X 100 CFMs)
AF	AF – Airfoil Fan BF – Backward Flat Blade Fan CF – Forward Curve Fan PF – Plug Fan
II	II – Class II Fan III – Class III Fan



FAN PERFORMANCE DATA (Backward Airfoil Blower)
Quick Selection For Motor Horsepower

Unit Size	Fan Model	cfm	1.0" RPM	1.0" BHP	1.5" RPM	1.5" BHP	2.0" RPM	2.0" BHP	2.5" RPM	2.5" BHP	3.0" RPM	3.0" BHP	3.5" RPM	3.5" BHP	4.0" RPM	4.0" BHP
56	ADA 315T	4000	2386	2.3	2488	2.6	2607	2.9	2720	3.3	2827	3.7	3029	4.4	3218	5.2
		4500	2552	2.8	2648	3.1	2762	3.5	2871	3.9	2975	4.3	3168	5.1	3350	6.0
		5000	2728	3.4	2816	3.7	2924	4.2	3028	4.6	3128	5.1	3316	6.0	3491	6.9
		5500	2912	4.2	3013	4.6	3112	5.0	3210	5.5	3305	6.0	3487	7.0	3656	8.0
		6500	3295	6.2	3384	6.6	3470	7.1	3555	7.5	3640	8.1	3805	9.2	3965	10.4
78	ADA 355T	5600	2210	3.4	2294	3.8	2397	4.2	2493	4.7	2585	5.2	2757	6.2	2918	7.3
		6500	2429	4.6	2504	5.0	2596	5.5	2687	6.1	2774	6.6	2940	7.7	3093	8.9
		7300	2636	5.8	2703	6.3	2786	6.9	2869	7.5	2951	8.1	3109	9.3	3258	10.5
		8100			2927	8.0	3003	8.7	3078	9.3	3152	10.0	3300	11.3	3442	12.6
		9000					3237	10.8	3306	11.6	3373	12.3	3508	13.8	3641	15.2
95	ADA 400T	7200	2036	4.4	2109	4.8	2195	5.4	2278	6.1	2359	6.7	2510	8.0	2651	9.3
		8200	2214	5.6	2282	6.1	2363	6.8	2441	7.5	2516	8.2	2660	9.6	2796	11.1
		9200	2397	7.2	2461	7.8	2538	8.5	2612	9.2	2683	9.9	2818	11.5	2947	13.1
		10200			2661	9.9	2733	10.6	2802	11.4	2869	12.2	2997	13.8	3119	15.6
		11200					2917	13.1	2983	13.9	3047	14.7	3169	16.4	3286	18.2
127	ADA 500T	9000	1385	4.4	1452	5.0	1528	5.8	1600	6.6	1670	7.4	1803	9.1	1933	11.0
		10000	1458	5.3	1525	5.9	1601	6.8	1671	7.6	1737	8.5	1863	10.3	1983	12.2
		12000	1614	7.3	1673	8.1	1746	9.1	1816	10.0	1881	11.0	2000	13.1	2110	15.2
		14000	1791	10.0	1851	11.1	1914	12.2	1977	13.3	2039	14.4	2157	16.7	2263	19.1
		16000			2033	14.6	2085	15.9	2138	17.1	2192	18.3	2303	20.9	2409	23.4
148	ADA 500T	10000	1458	5.3	1525	5.9	1601	6.8	1671	7.6	1737	8.5	1863	10.3	1983	12.2
		12000	1614	7.3	1673	8.1	1746	9.1	1816	10.0	1881	11.0	2000	13.1	2110	15.2
		14000	1791	10.0	1839	10.9	1901	12.0	1964	13.1	2027	14.2	2146	16.5	2253	18.8
		16000			2033	14.6	2085	15.9	2138	17.1	2192	18.3	2303	20.9	2409	23.4
		18000					2269	20.3	2315	21.7	2362	23.1	2458	25.8	2556	28.7
188	ADA 560T	13000	1332	6.9	1387	7.8	1451	8.9	1513	10.0	1572	11.1	1684	13.4	1789	15.8
		16000	1512	10.3	1560	11.2	1619	12.5	1675	13.8	1729	15.1	1832	17.8	1929	20.6
		19000	1703	14.9	1746	16.0	1799	17.3	1850	18.7	1900	20.2	1995	23.3	2086	26.4
		21000			1886	20.2	1935	21.7	1982	23.2	2029	24.7	2119	28.0	2205	31.4
		23000					2064	26.5	2108	28.1	2152	29.7	2237	33.1	2319	36.7
224	ADA 630T	15000	1129	7.4	1196	8.7	1259	10.0	1318	11.3	1373	12.7	1476	15.5	1575	18.3
		18000	1244	10.3	1293	11.4	1352	12.8	1409	14.2	1463	15.8	1564	19.0	1656	22.2
		21000	1372	14.0	1414	15.2	1466	16.8	1518	18.4	1569	20.0	1666	23.5	1756	27.1
		24000	1509	18.5	1546	20.0	1592	21.8	1637	23.6	1683	25.4	1773	29.1	1860	32.9
		27000					1734	28.1	1775	30.2	1815	32.2	1896	36.3	1977	40.4
260	ADA 710T	20000	1049	10.4	1103	12.1	1153	13.8	1201	15.5	1247	17.2	1335	20.7	1420	23.4
		23000	1138	13.2	1189	15.1	1237	17.0	1283	19.0	1326	20.9	1409	24.9	1487	28.9
		26000	1231	16.9	1279	18.8	1325	20.8	1368	23.0	1410	25.2	1489	29.6	1563	34.1
		29000	1328	21.5	1372	23.4	1415	25.5	1457	27.7	1497	30.1	1573	35.0	1644	39.9
		32000			1460	28.6	1501	30.8	1540	33.0	1579	35.3	1652	40.4	1721	45.8

FAN PERFORMANCE DATA (Backward Flat Blade Blower BF)
Quick Selection For Motor Horsepower

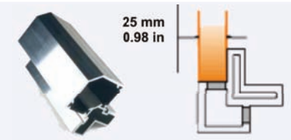
Unit Size	Fan Model	cfm	1.0"		1.5"		2.0"		2.5"		3.0"		3.5"		4.0"	
			RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
56	BDB 315T	4000	2399	2.3	2495	2.6	2609	3.0	2721	3.3	2829	3.7	3037	4.5	3235	5.3
		4500	2574	2.9	2665	3.2	2772	3.6	2876	4.0	2976	4.4	3171	5.3	3357	6.1
		5000	2752	3.5	2841	3.8	2944	4.3	3041	4.7	3136	5.2	3318	6.1	3493	7.0
		5500	2930	4.3	3039	4.7	3139	5.2	3233	5.7	3322	6.2	3493	7.2	3658	8.2
		6500	3297	6.2	3398	6.7	3495	7.2	3586	7.7	3672	8.3	3832	9.4	3981	10.6
78	BDB 355T	5600	2222	3.6	2307	4.0	2409	4.4	2504	4.9	2593	5.4	2759	6.4	2914	7.5
		6500	2443	4.8	2518	5.3	2611	5.8	2702	6.3	2789	6.9	2951	8.0	3099	9.2
		7300	2651	6.2	2719	6.6	2802	7.3	2886	7.9	2968	8.5	3125	9.7	3272	10.9
		8100			2944	8.4	3020	9.1	3095	9.8	3171	10.5	3319	11.8	3460	13.1
		9000					3256	11.4	3325	12.2	3393	12.9	3528	14.4	3662	15.9
95	BDB 400T	7200	2041	4.7	2117	5.2	2209	5.8	2294	6.4	2374	7.0	2521	8.3	2659	9.6
		8200	2219	6.1	2287	6.6	2371	7.3	2453	8.0	2532	8.7	2678	10.1	2810	11.5
		9200	2406	7.8	2468	8.4	2543	9.2	2619	9.9	2693	10.7	2836	12.2	2968	13.7
		10200			2671	10.7	2739	11.5	2808	12.4	2876	13.2	3010	14.9	3139	16.5
		11200					2928	14.1	2991	15.0	3053	15.9	3177	17.7	3300	19.6
127	BDB 500T	9000	1395	4.68	1461	5.3	1539	6.2	1612	7.0	1681	7.9	1813	9.6	1937	11.5
		10000	1473	5.6	1536	6.3	1611	7.2	1682	8.1	1749	9.0	1876	10.9	1994	12.9
		12000	1638	7.8	1695	8.6	1764	9.6	1830	10.6	1894	11.7	2013	13.9	2125	16.1
		14000	1816	10.8	1879	11.9	1941	13.2	2001	14.1	2060	15.3	2172	17.7	2278	20.2
		16000	2002	14.7	2059	15.8	2115	17.0	2169	18.2	2223	19.5	2328	22.1	2428	24.8
148	BDB 500T	10000	1473	5.6	1536	6.3	1611	7.2	1682	8.1	1749	9.0	1876	10.9	1994	12.9
		12000	1638	7.8	1695	8.6	1764	9.6	1830	10.6	1894	11.7	2013	13.9	2125	16.1
		14000	1816	10.8	1866	11.7	1928	12.9	1989	13.9	2048	15.0	2161	17.5	2267	20.0
		16000	2002	14.7	2059	15.8	2115	17.0	2169	18.2	2223	19.5	2328	22.1	2428	24.8
		18000			2246	20.7	2297	22.0	2347	23.4	2396	24.7	2493	27.5	2587	30.4
188	BDB 560T	13000	1345	7.34	1401	8.2	1466	9..3	1526	10.4	1584	11.5	1692	13.9	1795	16.4
		16000	1523	10.8	1573	11.8	1634	13.2	1692	14.6	1748	16.0	1850	18.6	1944	21.4
		19000	1716	15.7	1759	16.9	1812	18.2	1865	19.7	1917	21.3	2016	24.6	2107	27.8
		21000			1900	21.3	1948	22.8	1997	24.4	2045	26.0	2138	29.5	2227	33.2
		23000					2079	28.0	2124	29.6	2168	31.3	2255	34.9	2340	38.8
224	BDB 630T	15000	1133	7.8	1198	9.2	1259	10.5	1316	11.9	1371	13.3	1475	16.1	1572	19.1
		18000	1249	10.6	1298	11.8	1357	13.5	1412	15.1	1464	16.7	1562	19.9	1654	23.2
		21000	1376	14.3	1419	15.6	1473	17.3	1525	19.2	1575	21.1	1669	24.8	1756	28.6
		24000	1512	19.3	1550	20.6	1597	22.3	1644	24.2	1691	26.2	1780	30.5	1865	34.8
		27000			1696	27.3	1738	29.1	1780	3.1	1822	33.0	1905	37.5	1985	42.3
260	BDB 710T	20000	1044	10.9	1100	12.6	1152	14.3	1201	16.0	1248	17.8	1336	21.4	1418	25.1
		23000	1131	14.2	1183	16.0	1232	17.8	1280	19.7	1325	21.7	1410	25.8	1489	29.9
		26000	1223	18.1	1271	20.1	1317	22.1	1362	24.2	1405	26.4	1487	30.8	1563	35.3
		29000	1318	22.9	1363	25.1	1406	27.3	1448	29.5	1489	31.8	1567	36.6	1641	41.5
		32000			1450	30.5	1490	32.9	1530	35.3	1569	37.8	1644	42.8	1715	48.0

MECHANICAL SPECIFICATIONS AND FEATURES

A. UNIT CASING

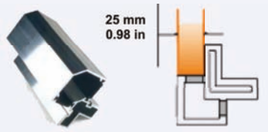
THE CASING FRAMEWORK is constructed from extruded Aluminium structural section, locked together by cast Aluminium or rigid nylon corner jointing modules, to form a rigid framework.

Two sizes of extruded aluminium structural members (suitable for 1" thick and 2" thick insulated panels), with thermal break feature, are used to construct its framework.



I) 1" thick insulated panels

II) 2" thick insulated panels



THE CASING EXTERNAL PANELS are of galvanised steel sheet construction, degreased, bonderised and coated with oven-baked epoxy polyester paint to provide an aesthetically pleasing finished coating, to prevent corrosion and rust. All joints and mating surfaces are heavily gasketted and sealed for air tightness and water tightness.

THE DOUBLE-WALL CASING PANELS have sandwiched insulation between external heavy gauge galvanised steel sheet and internal galvanised steel liner, to form a durable rigid casing, capable to withstand high working pressures and impact forces. The standard double wall panels are insulated with "formed in place" polyurethane insulation. The polyurethane insulation has ''k'' value of 0.02 watts/m°C and density of 40 kg/m3. Perforated internal galvanised steel liner with 40 % open area and insulated with 1"/3lbs density fiberglass insulation is provided for the Fan Section for good sound attenuation properties. With double-wall construction, it is easy to clean the inner surfaces to reduce risk of dirt and bacteria contamination. There is no erosion of internal insulation material which can contaminate the air stream. The double-wall construction unit is ideal for clean room applications such as Hospital, operating theater, electronic factories, food processing and pharmaceutical factories. 2" thick Double-Wall panels are optional.

A. UNIT CASING *cont'd*

- **Latching Handles** – All access doors are equipped with full sized handles and air-tight screwed compression latch.

- **Hinges** – Heavy duty nylon hinges give long rust-free life and provide rigidity to the RT full size doors.

- **Safety Guard (Optional)** – The expanded open grid metal safety guard is built to conform to OSHA safety standards. This design prevents entry into fan section without first removing the safety guard.

Pitched Roof : Complete casing cabinetry is covered with a pitched roof, constructed from heavy gauge galvanised steel sheet, and over hangs 2" over its top edge, to prevent rain water from seeping into the interior of the unit.

Pitched Roof

FAN PERFORMANCE DATA (Forward Curve Fan)
Quick Selection For Motor Horsepower

Unit Size	Fan Model	cfm	1.0" RPM	1.0" BHP	1.5" RPM	1.5" BHP	2.0" RPM	2.0" BHP	2.5" RPM	2.5" BHP	3.0" RPM	3.0" BHP	3.5" RPM	3.5" BHP	4.0" RPM	4.0" BHP
44	FDA 280T	2800	952	1.1	1090	1.4	1256	1.8	1450	2.3	1629	2.8				
		3400	997	1.6	1120	1.9	1265	2.3	1400	2.7	1540	3.2	1701	3.8	1857	4.5
		4000	1054	2.2	1167	2.5	1299	3.0	1423	3.4	1744	3.9	1656	4.4	1774	5.0
		4600	1119	3.0	1250	3.4	1370	4.0	1484	4.5	1592	5.0	1699	5.5	1802	6.1
		5200			1311	4.5	1425	5.1	1531	5.6	1633	6.2	1731	6.8	1826	7.4
56	FDA 315T	3800	860	1.6	987	2.0	1145	2.6	1296	3.2	1437	3.9				
		4500	889	2.2	1006	2.6	1142	3.2	1276	3.9	1406	4.6	1533	5.3	1655	6.2
		5200	935	2.9	1035	3.4	1162	4.1	1281	4.7	1395	5.4	1511	6.2	1624	7.0
		5900	985	3.9	1102	4.5	1212	5.2	1324	5.9	1429	6.7	1529	7.5	1632	8.3
		6600	1044	5.1	1151	5.8	1252	6.5	1350	7.3	1450	8.1	1548	8.9	1638	9.8
78	FDA 355T	5600	765	2.4	862	2.9	974	3.4	1087	4.1	1208	5.0	1326	5.9	1443	6.9
		6500	803	3.2	892	3.8	996	4.4	1094	5.1	1188	5.8	1289	6.7	1393	7.7
		7300			925	4.7	1022	5.5	1115	6.2	1203	7.0	1286	7.8	1373	8.6
		8100			981	6.1	1072	6.9	1158	7.7	1240	8.6	1320	9.4	1396	10.3
		9000					1110	8.6	1192	9.5	1270	10.4	1344	11.3	1418	12.3
95	FDA 400T	7200	708	3.1	791	3.7	889	4.4	1112	6.1	1200	6.9	1178	7.3	1275	8.4
		8200	740	4.1	820	4.7	910	5.5	997	6.4	1079	7.3	1160	8.2	1245	9.4
		9200	777	5.2	852	6.0	938	6.9	1019	7.8	1096	8.7	1171	9.7	1243	10.8
		10200	819	6.6	904	7.6	986	8.7	1061	9.6	1133	10.6	1203	11.7	1271	12.8
		11200	864	8.3	942	9.3	1018	10.5	1092	11.6	1161	12.7	1226	13.8	1290	14.9
127	FDA 500T	9000	559	3.2	640	4.0	731	5.1	817	6.2	901	7.5	983	9.1		
		10000	570	3.8	648	4.7	736	5.8	817	7.0	894	8.3	930	9.7	1045	11.3
		11000	585	4.6	657	5.5	743	6.7	822	7.9	896	9.3	966	10.6	1035	12.2
		13000	619	6.4	701	7.7	778	9.0	851	10.4	920	11.9	986	13.4	1047	15.0
148	FDA 500T	15000	661	8.8	734	10.2	805	11.7	871	13.2	937	14.8	999	16.5	1059	18.2
		10000	570	3.8	648	4.7	736	5.8	817	7.0	894	8.3	970	9.7	1045	11.3
		12000	601	5.4	670	6.4	752	7.6	829	9.0	900	10.4	968	11.8	1032	13.3
		14000	639	7.6	702	8.6	776	10.0	846	11.5	915	13.0	979	14.6	1041	16.2
		16000	684	10.3	753	11.8	821	13.3	885	14.9	947	16.6	1008	18.3	1066	20.0
188	FDA 560T	18000			795	15.3	856	17.0	917	18.8	974	20.6	1030	22.3	1085	24.2
		13000	505	4.9	571	5.9	646	7.3	716	8.7	786	10.3	855	12.1	922	14.1
		16000	539	7.3	599	8.6	667	11.5	732	11.8	792	13.4	849	15.1	906	17.0
		19000	581	10.7	634	12.1	697	14.5	756	15.7	812	17.6	866	19.6	918	21.6
		21000	612	13.5	672	15.4	732	17.4	788	19.4	840	21.4	891	23.5	941	25.6
224	FDA 630T	23000			702	19.0	756	21.0	811	23.3	861	25.4	909	27.6	956	29.8
		13000	438	4.3	518	5.9	590	7.5	660	9.3	734	11.4	813	14.1	885	16.9
		18000	481	8.2	526	9.2	592	11.1	653	13.1	709	15.3	763	17.5	815	19.7
		21000			562	12.9	609	14.5	666	16.5	721	18.9	772	21.3	820	23.8
		24000					645	19.4	686	21.2	734	23.4	784	25.9	832	28.6
		27000							729	27.9	766	29.8	809	32.3	853	35.0
260	FDA 710T	20000	402	7.5	465	9.4	524	11.4	581	13.6	635	16.0	687	18.8	742	21.8
		23000	421	10.0	468	11.6	522	13.7	575	16.0	625	18.5	674	21.0	721	23.7
		26000			484	14.8	537	17.1	585	19.6	632	22.1	677	24.9	721	27.7
		29000					562	21.7	609	24.4	652	27.1	694	29.9	735	32.9
		32000					583	26.9	624	29.5	667	32.4	706	35.3	744	38.4

PHYSICAL DATA

Description		Unit Size								
		44	56	78	95	127	148	188	224	260
Nominal cfm		4400	5600	7800	9500	12700	14800	18800	22400	26000
S6, S11, S12, S26 F.C BLOWER	MODEL	FDA 280T	FDA 315T	FDA 355T	FDA 400T	FDA 500T	FDA 500T	FDA 560T	FDA 630T	FDA 710T
	DIAMETER inch	11.0	12.4	14.0	15.7	19.7	19.7	22.0	24.8	28.0
	Outlet Area, ft²	1.39	1.76	2.20	2.76	4.38	4.38	5.49	6.90	8.70
	Shaft Size	30 mm	30 mm	35 mm	35 mm	45 mm	45 mm	45 mm	50 mm	55 mm
S6, S11, S12, S26 BACKWARD FLAT BLADE BLOWER	MODEL	N.A.	BDB 315T	BDB 355T	BDB 400T	BDB 500T	BDB 500T	BDB 560T	BDB 630T	BDB 710T
	DIAMETER inch		12.4	14.0	15.7	19.7	19.7	22.0	24.8	28.0
	Outlet Area, ft²		1.76	2.20	2.76	4.38	4.38	5.49	6.90	8.70
	Shaft Size		30 mm	35 mm	35 mm	45 mm	45 mm	45 mm	50 mm	55 mm
S6, S11, S12, S26 BACKWARD AIR FOIL BLOWER	MODEL	N.A.	ADA 315T	ADA 355T	ADA 400T	ADA 500T	ADA 500T	ADA 560T	ADA 630T	ADA 710T
	DIAMETER inch		12.4	14.0	15.7	19.7	19.7	22.0	24.8	28.0
	Outlet Area, ft²		1.76	2.20	2.76	4.38	4.38	5.49	6.90	8.70
	Shaft Size		30 mm	35 mm	35 mm	45 mm	45 mm	45 mm	50 mm	55 mm
S6, S11, S12, S26 BACKWARD PLENUM BLOWER	MODEL	ANA 355	ANA 400	ANA 500	ANA 560	ANA 630	ANA 710	ANA 800	ANA 900	ANA 1000
	DIAMETER inch	15.5	17.2	21.3	23.8	26.5	29.5	33.0	36.7	41.0
	Outlet Area, ft²	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Shaft Size	30	30	35	40	40	50	50	60	60
S8, Heat Recovery Section F.C BLOWER	MODEL	FDA 250T	FDA 280T	FDA 315T	FDA 355T	FDA 400T	FDA 400T	FDA 500T	FDA 560T	FDA 630T
	DIAMETER inch	10	11	12.4	14	15.7	15.7	19.7	22	24.8
	Outlet Area, ft²	1.12	1.39	1.76	2.2	2.76	2.76	4.38	5.49	6.9
	Shaft Size	25 mm	30 mm	30 mm	35 mm	35 mm	35 mm	45 mm	45 mm	50 mm
	2" Flat Filter Qty - Size inch	4 - 20 x 25	6 - 20 x 20	6 - 25 x 20	25 x 20 - 4 25 x 16 - 4	16 x 25 - 8 16 x 20 - 4	4 - 16 x 25 2 - 16 x 20 4 - 20 x 25 2 - 20 x 20	16 - 20 x 20	16 - 20 x 20	16 - 20 x 20
DW COIL DATA										
Full Face Coil	TH X FL (inch)	24 x 42	26 x 50	36 x 50	36 x 61	48 x 61	56 x 61	2 - 32 x 68	2 - 38 x 68	2 - 44 x 68
	Full Face Area, ft²	8.8	11.3	15.6	19.1	25.4	29.7	37.8	44.9	51.9
Reduced Face Area ft²	TH X FL (inch)	20 x 42	22 x 50	30 x 50	30 x 61	42 x 61	48 x 61	56 x 68	2- 32 x 69	2 - 40 x 68
(Internal Bypass Air)	Full Face Area, ft²	5.8	9.5	13.0	15.9	22.2	25.4	29.7	37.8	47.2
FLAT FILTER SECTION	Qty - Size inch	2 - 20 x 25 2 - 16 x 25	3 - 20 x 20 3 - 16 x 20	6 - 25 x 20	4 - 20 x 25 4 - 16 x 25	6 - 20 x 20 6 - 16 x 20	6 - 20 x 25 6 - 16 x 25	16 - 20 x 20	16 - 20 x 20	N.A.
2" or 4"	Filter Area, ft²	12.5	15.0	20.8	25.0	30.0	37.5	44.4	44.4	N.A.
Angle Filter 2" thick	Qty - Size inch	3 - 20 x 20 6 - 16 x 20	9 - 20 x 20	12 - 20 x 20	8 - 20 x 20 8 - 16 x 20	12 - 20 x 20 12 - 16 x 20	14 - 20 x 20 14 - 16 x 20	32 - 20 x 20	32 - 20 x 20	32 - 20 x 20
	Filter Area, ft²	21.7	25.0	33.3	40.0	60.0	70.0	88.9	88.9	88.9

MECHANICAL SPECIFICATIONS AND FEATURES

A. UNIT CASING*cont'd*

Bottom Floor : The entire bottom floor acts as a water tight drain pan. It is of double wall construction and insulated with polyurethane foam. All openings through the bottom floor, such as those for ductwork and field piping are provided with water barrier collar around the perimeter of the opening. Any water that seeps into the unit is directly drained onto the roof through the drain openings provided and is thereby kept out of the conditioned space.

Drain Pan : Cooling coils are provided with insulated drain pan which drains directly to the outside roof. The drain pan is of double wall galvanised steel construction, coated with oven-baked epoxy paint with sand-wiched 12.7mm thick fire-retardant PE foam insulation between the inner liner and the heavy gauge external galvanised steel casing. The v-shape construction enable condensate to collect at the lowest part of drain pan and drains out at both sides of the units, through 1 1/4'' threaded pipe condensate connectors. The inner galvanised steel liner is coated with mastic compound to protect against corrosion. Stainless steel drain pan is available as an option

Base Frame : The complete casing cabinetry is "seated" onto a welded heavy gauge galvanised steel Base-Frame which is designed for mounting over a suitably constructed roof curb.

B. BLOWER FAN SECTION

FANS

Different types and construction class of FANS can be selected to meet a particular application requirements. FAN type consists of forward curve fans, Backward inclined flat blades fans, Backward inclined airfoil fans and plug fans. All fans used are of either Class II or Class III construction . All fans are constructed and tested in accordance to AMCA 210 - 85 standard. All fan wheels are statically and dynamically balanced to ISO1940 and AMCA 204-G2.5 standard.

Backward Airfoil Blower

Forward Curve Blower

Plug Fan

B. BLOWER FAN SECTION *cont'd*

FAN BEARINGS

All fan bearings are of heavy duty pillow block construction, with deep groove ball type sealed at both sides, self aligning with an eccentric locking collar for clamping onto the shaft and is mounted in rubber Housing. Although the bearings are prelubricated for life and maintenance-free under normal operating condition, periodic inspection and relubrication is recommended whenever necessary. For re-lubrication, it is recommended to use lithium base grease suitable for all temperatures within the operating limits. Bearings are selected for average 200,000 operating hours.

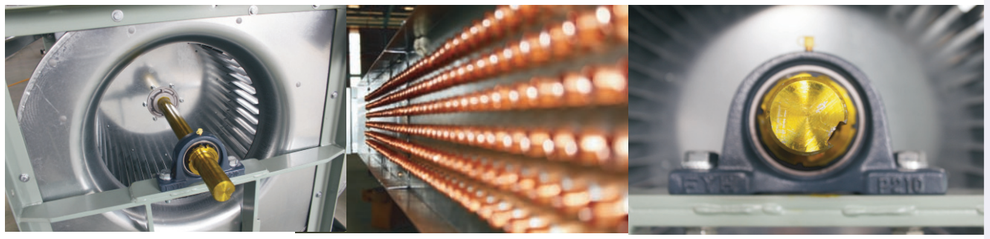
SHAFT

Shaft are manufactured from C45 carbon steel with keyways for mounting of fan pulley. All dimensional tolerances of the shaft are fully checked to ensure a precision fit and then coated with an anticorrosion varnish after assembly.

VIBRATION ISOLATION

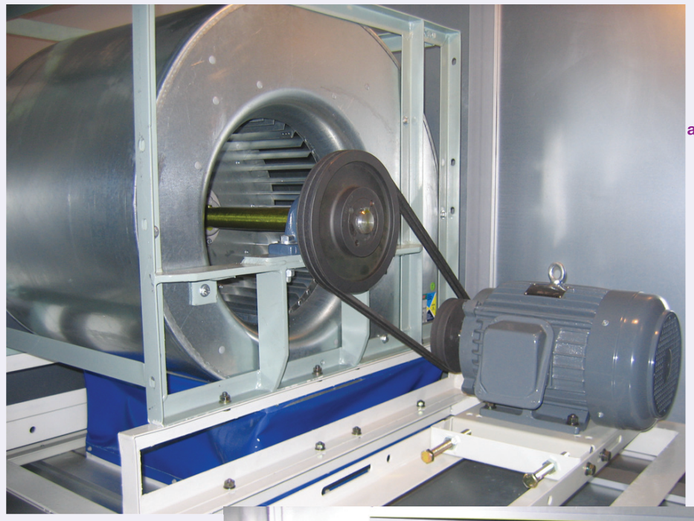
Complete fan, motor and drive assembly is mounted on a rigid steel base frame and isolated from unit casing by Rubber isolators or spring vibration isolators. The blower fan discharge outlet is connected by a fire retardant flexible canvas connector to the fan section outlet duct collar to further reduce vibration of the unit.

Spring Isolator



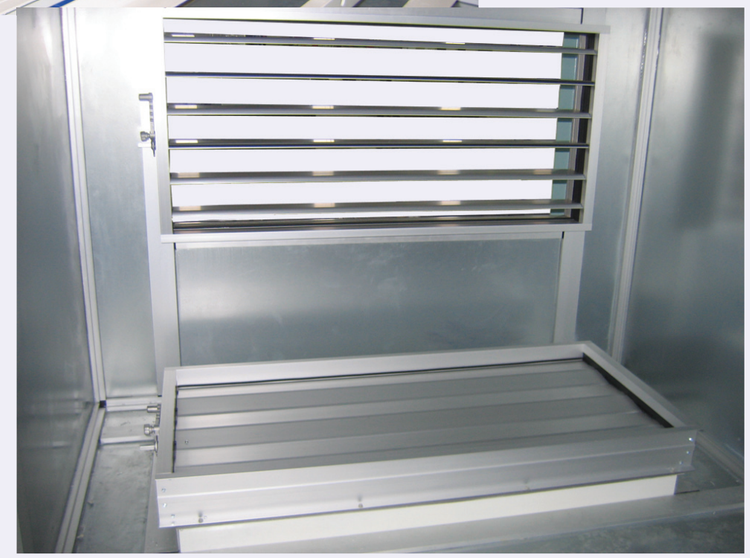
ALTITUDE/TEMPERATURE CORRECTION FACTORS

Air Temp. °F	ALTITUDE (FEET)										
	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
0	1.15	1.10	1.08	1.02	0.99	0.95	0.92	0.88	0.85	0.82	0.79
20	1.11	1.06	1.02	0.98	0.95	0.92	0.88	0.85	0.82	0.79	0.76
40	1.06	1.02	0.98	0.94	0.91	0.88	0.84	0.81	0.78	0.76	0.74
60	1.02	0.98	0.94	0.91	0.88	0.85	0.81	0.79	0.76	0.73	0.71
70	1.00	0.96	0.93	0.89	0.86	0.83	0.80	0.77	0.74	0.71	0.69
80	0.98	0.94	0.91	0.88	0.84	0.81	0.78	0.75	0.72	0.70	0.67
100	0.94	0.91	0.88	0.84	0.81	0.78	0.75	0.72	0.70	0.68	0.65
120	0.92	0.88	0.85	0.81	0.78	0.76	0.72	0.70	0.67	0.65	0.63
140	0.89	0.85	0.82	0.79	0.76	0.73	0.70	0.68	0.65	0.63	0.61
160	0.85	0.82	0.79	0.76	0.74	0.70	0.68	0.65	0.63	0.61	0.59



Photograph shows down-ward fan discharge arrangement through base of unit

Extruded low leak Aluminium dampers.



Estimated Air Pressure Drop Through Accessory Sections (In Wg).

Accessory Sections	Air Velocity Ft./Minute								
	300	350	400	450	500	550	600	800	1000
S1	0.024	0.032	0.041	0.052	0.062	0.078	0.092	0.128	0.152
S2	0.014	0.020	0.027	0.035	0.043	0.052	0.062	0.072	0.085
S3, S4	0.066	0.088	0.114	0.143	0.171	0.212	0.24	0.301	0.425
S5, S6	0.088	0.117	0.150	0.180	0.227	0.280	0.329	0.429	0.632
S7	0.096	0.126	0.159	0.190	0.238	0.293	0.333	0.435	0.650
S8, Supply Fan	0.506	0.640	0.874	0.943	1.011	1.092	1.240	N.A.	N.A.
S8, Exhaust Fan	0.482	0.608	0.833	0.891	0.949	1.014	1.148	N.A.	N.A.
S9	0.029	0.038	0.049	0.062	0.074	0.094	0.110	0.154	0.182
S10, S26	0.044	0.057	0.074	0.093	0.111	0.141	0.165	0.231	0.273
S13	0.073	0.097	0.125	0.157	0.188	0.233	0.264	0.331	0.468
S19	0.024	0.032	0.041	0.052	0.062	0.078	0.092	0.128	0.152

NOTES:

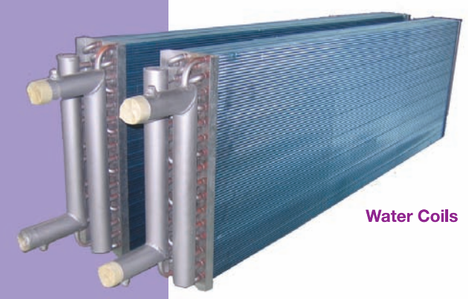
a) The pressure drops through the above sections is based on air velocity through the larger cooling coil face area.
2. Pressure losses through cooling coils, filters, silencer splitters, heating coils, etc have to be added into final total static pressure losses.

Estimated Air Pressure Drops Through Filters (In Wg).

Description	Air Velocity Ft./Minute								
	200	250	300	350	400	450	500	550	600
Entering Air Sections									
Econ. Sections 5 & 6	–	–	0.064	0.085	0.109	0.138	0.165	0.202	0.237
Sections 3 & 4	–	–	0.043	0.057	0.073	0.092	0.110	0.135	0.158
Fresh Air Hood									
Sections 1 through 6	0.011	0.017	0.024	0.032	0.041	0.052	0.062	0.078	0.092
Filters**									
2" Throwaway	0.054	0.081	0.111	0.146	0.185	–	–	–	–
2" Pleated 35% Eff.	0.075	0.100	0.125	0.160	0.210	0.250	0.300	–	–
2" Perm. High Vel.	0.030	0.044	0.060	0.081	0.130	0.126	0.152	0.180	0.212
4" Pleated 35% Eff.	0.060	0.070	0.100	0.125	0.170	0.200	0.250	0.290	0.340
Filters - Bag 55% - 60% Efficient									
Bag Depth									
20"	0.12	0.14	0.17	0.20	0.24	0.28	0.33	–	–
26"	–	–	–	0.18	0.22	0.26	0.30	0.35	0.39
33"	–	–	–	0.17	0.21	0.24	0.28	0.32	0.37
Filters - Bag 80% - 85% Efficient									
Bag Depth									
20"	0.18	0.20	0.23	0.27	0.31	0.37	0.43	–	–
26"	–	–	–	0.23	0.29	0.35	0.41	0.48	0.54
33"	–	–	–	0.22	0.26	0.30	0.35	0.41	0.47
Filters - Bag 90% - 95% Efficient									
Bag Depth									
20"	0.27	0.35	0.42	0.49	0.56	0.63	0.70	–	–
26"	–	–	–	0.36	0.42	0.49	0.58	0.65	0.74
33"	–	–	–	0.35	0.38	0.42	0.48	0.56	0.65
Cartridge Type 12" Deep									
60% - 65% Eff.	0.16	0.18	0.21	0.26	0.31	0.38	0.45	0.53	0.62
80% - 85% Eff.	0.19	0.21	0.23	0.29	0.35	0.42	0.50	0.58	0.67
90% - 95% Eff.	0.22	0.24	0.27	0.32	0.38	0.46	0.55	0.64	0.74
HEPA	0.45	0.57	0.68	0.80	0.92	1.00	1.60	–	–

****Filter pressure drop is based on the air velocity thru clean filters.**

MECHANICAL SPECIFICATIONS AND FEATURES
cont'd



Water Coils

WATER COILS

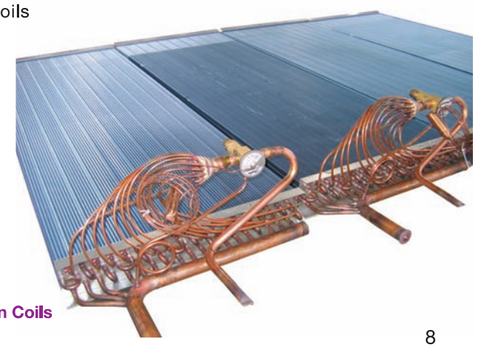
All drainable water coils for both cooling and heating are constructed from 1/2'' OD copper tubes, in staggered rows, mechanically expanded into die-formed corrugated hydrophillic aluminium fins; spaced at either 8, 10, 12 or 14 fins per inch and with rippled edges. The hydrophillic aluminium fins are precoated with a low surface tension substance which speeds up the drainage of condensate, eliminates moisture carry-over, maintains the aluminium surface dry and clean during off cycle, and prevents mould formation. The coating also improves resistance of the aluminium fins and prevent oxidation of the aluminium surface, thus maintaining good heat transfer.

Drainable water coils are offered from 1 Row deep to maximum 10 Rows deep. All drainable water-coils are pressurized to minimum 350 psig and leak tested under water and are suitable for design working pressures up to 250 psig at 200°F. Drainable water coil headers are constructed from thick wall carbon steel pipe with threaded connections. Copper pipe headers with brass connectors are available as option.

DIRECT EXPANSION COILS

Direct expansion coils are offered in both 3/8'' OD copper tubes and 1/2'' OD copper tubes, in staggered rows, mechanically expanded into die-formed corrugated Aluminium fins; spaced at either 8, 10, 12 or 14 fins per inch, and with rippled edges. All coils are computer selected to meet specified performance and circuited to optimize performance and to reduce water or refrigerant side pressure drops. Coil casing is constructed from heavy gauge galvanised steel, with option available for Aluminium or stainless steel casing. The following types of coils are also available;

- Copper fins or tinned copperfins coils
- Anti-corrosion ADSIL coated coils
- Aluminium tubes – Aluminium fins coils to resist organic acids and suitable for oleo-chemical plants



Direct Expansion Coils

MODULAR DESIGN ACCESSORY SECTIONS & CONPONENTS

C. ACCESSORY COMPONENTS

VOLUME CONTROL DAMPERS

Volume control dampers are important components used in the Face & Bypass section and economizer section. To ensure effective and precise control of air flowrates which indirectly control or modulate the air temperatures, Smartech uses a patented superior system of dampers which also has a low static pressure loss and a low air borne noise as it varies the air flowrates through its blades. This system has movement gear coupled to each blade to ensure smooth, reliable and synchronized movement of the blades. The blades are constructed from extruded Aluminium and spaced at 80/100 mm apart. The edge of the blades has thermo-plastic rubber gasket to ensure low air leakage rate or tightness when dampers are fully closed. The frame is also constructed from extruded aluminium section to ensure light weight and rigid construction.

Volume Control Dampers

FREQUENCY INVERTERS

For variable-air-volume control, frequency inverter can be fitted and wired to fan motor to vary its speed of rotation in response to system Air flow requirement, thus giving optimum energy saving. The frequency inverter is mounted in a recessed compartment within the FAN SECTIONS. The frequency inverter can be supplied with EMC filters and Auto-Bypass starting in case of inverter failure

Frequency Inverters

Estimated Air Pressure Drop Through 1/2" Coil (In Wg)
Airside Pressure Drop - Dry Coil

	1 Row				2 Row				3 Row				4 Row				5 Row				6 Row			
	8 fpi	10 fpi	12 fpi	14 fpi	8 fpi	10 fpi	12 fpi	14 fpi	8 fpi	10 fpi	12 fpi	14 fpi	8 fpi	10 fpi	12 fpi	14 fpi	8 fpi	10 fpi	12 fpi	14 fpi	8 fpi	10 fpi	12 fpi	14 fpi
fpm																								
300	0.026	0.030	0.034	0.038	0.050	0.059	0.067	0.076	0.075	0.088	0.100	0.113	0.103	0.121	0.137	0.155	0.129	0.151	0.172	0.194	0.156	0.183	0.208	0.235
350	0.034	0.040	0.045	0.051	0.066	0.077	0.088	0.099	0.100	0.117	0.133	0.150	0.135	0.158	0.180	0.203	0.169	0.198	0.225	0.254	0.206	0.242	0.275	0.311
400	0.043	0.050	0.057	0.064	0.085	0.099	0.113	0.128	0.126	0.148	0.168	0.190	0.173	0.202	0.230	0.260	0.213	0.250	0.284	0.321	0.259	0.304	0.345	0.390
450	0.053	0.062	0.070	0.079	0.103	0.012	0.137	0.155	0.156	0.183	0.208	0.235	0.210	0.246	0.280	0.316	0.263	0.308	0.350	0.396	0.319	0.374	0.425	0.480
500	0.064	0.075	0.085	0.096	0.124	0.145	0.165	0.186	0.188	0.220	0.250	0.283	0.251	0.295	0.335	0.379	0.319	0.374	0.425	0.480	0.383	0.449	0.510	0.576
550	0.075	0.088	0.100	0.113	0.146	0.172	0.195	0.220	0.220	0.258	0.293	0.331	0.296	0.348	0.395	0.446	0.375	0.440	0.500	0.565	0.400	0.528	0.600	0.678
600	0.089	0.104	0.118	0.133	0.171	0.201	0.228	0.258	0.259	0.304	0.345	0.390	0.349	0.409	0.465	0.525	0.435	0.510	0.580	0.655	0.525	0.616	0.700	0.791
700	0.116	0.136	0.155	0.175	0.225	0.264	0.300	0.339	0.338	0.396	0.450	0.509	0.458	0.537	0.610	0.689	0.578	0.678	0.770	0.870	0.690	0.810	0.920	1.040
800	0.142	0.167	0.190	0.214	0.285	0.334	0.380	0.429	0.428	0.502	0.570	0.644	0.570	0.669	0.760	0.859	0.720	0.845	0.960	1.085	0.791	0.928	1.055	1.192
900	0.180	0.211	0.240	0.271	0.349	0.409	0.465	0.525	0.525	0.616	0.700	0.791	0.705	0.827	0.940	1.062	0.788	0.924	1.050	1.187	0.938	1.100	1.250	1.413
1000	0.216	0.253	0.288	0.325	0.420	0.493	0.560	0.633	0.630	0.739	0.840	0.949	0.780	0.915	1.040	1.175	0.938	1.100	1.250	1.413	1.073	1.258	1.430	1.616

Airside Pressure Drop - Wet Coil (inch WG)

	1 Row				2 Row				3 Row				4 Row				5 Row				6 Row			
	8 fpi	10 fpi	12 fpi	14 fpi	8 fpi	10 fpi	12 fpi	14 fpi	8 fpi	10 fpi	12 fpi	14 fpi	8 fpi	10 fpi	12 fpi	14 fpi	8 fpi	10 fpi	12 fpi	14 fpi	8 fpi	10 fpi	12 fpi	14 fpi
fpm																								
300	0.033	0.042	0.051	0.062	0.065	0.082	0.101	0.121	0.097	0.123	0.15	0.181	0.133	0.169	0.206	0.248	0.167	0.212	0.258	0.311	0.202	0.256	0.312	0.376
350	0.044	0.055	0.068	0.081	0.085	0.108	0.132	0.159	0.129	0.164	0.2	0.241	0.175	0.221	0.27	0.326	0.218	0.277	0.338	0.407	0.267	0.338	0.413	0.498
400	0.055	0.07	0.086	0.103	0.11	0.139	0.17	0.205	0.163	0.207	0.252	0.304	0.223	0.283	0.345	0.416	0.275	0.349	0.426	0.514	0.335	0.424	0.518	0.624
450	0.068	0.086	0.105	0.127	0.133	0.169	0.206	0.248	0.202	0.256	0.312	0.376	0.272	0.344	0.42	0.507	0.34	0.431	0.525	0.634	0.412	0.523	0.638	0.769
500	0.082	0.105	0.128	0.154	0.16	0.203	0.248	0.299	0.243	0.308	0.375	0.453	0.325	0.412	0.503	0.606	0.412	0.523	0.638	0.769	0.495	0.627	0.765	0.923
550	0.097	0.123	0.15	0.181	0.189	0.24	0.293	0.353	0.284	0.36	0.44	0.53	0.383	0.486	0.593	0.7158	0.485	0.615	0.75	0.905	0.582	0.738	0.9	1.086
600	0.114	0.145	0.177	0.214	0.221	0.28	0.342	0.413	0.335	0.424	0.518	0.624	0.451	0.572	0.698	0.842	0.563	0.713	0.87	1.05	0.679	0.861	1.05	1.267

WATER COOLING COILS (1/2" OD COPPER TUBES-ALUMINIUM FINS COILS)

4 ROWS DEEP

UNIT SIZE	CFM STD. AIR	COIL FACE AREA SQ. FT.	42°F ENTERING WATER TEMP.					44°F ENTERING WATER TEMP.					45°F ENTERING WATER TEMP.				
			NO. OF PASS	MBH		GPM	PD (ft WG)	NO. OF PASS	MBH		GPM	PD (ft WG)	NO. OF PASS	MBH		GPM	PD (ft WG)
				TOTAL	SENS.				TOTAL	SENS.				TOTAL	SENS.		
44	4400	8.8	4	146.7	108.4	29.4	1.7	4	131.0	102.2	26.2	1.4	4	123.3	99.4	24.7	1.2
56	5600	11.3	4	197.9	142.5	39.6	2.8	4	177.1	134.3	35.5	2.2	4	166.9	130.2	33.4	2.0
78	7800	15.6	4	275.2	198.4	55.1	3.1	4	246.2	187.0	49.3	2.5	4	232.0	181.2	46.4	2.2
95	9500	19.1	4	353.4	248.7	70.8	5.2	4	316.7	234.2	63.4	4.2	4	298.8	227.2	59.8	3.8
127	12700	25.4	4	472.0	332.4	94.5	4.6	4	423.1	313.1	84.7	3.8	4	399.1	303.1	79.9	3.4
148	14800	29.7	4	550.2	387.4	110.2	4.9	4	493.2	364.9	98.7	4.0	4	465.2	354.0	93.1	3.6
188	18800	37.8	4	716.9	500.2	143.6	6.7	4	643.6	470.5	128.9	5.5	4	607.7	456.7	121.7	4.9
224	22400	44.9	4	853.3	595.8	170.9	7.0	4	766.0	560.5	153.4	5.8	4	723.8	542.8	144.9	5.2
260	26000	51.9	4	989.7	691.4	198.2	7.3	4	888.4	650.4	177.9	5.9	4	839.4	629.9	168.1	5.3

6 ROWS DEEP

UNIT SIZE	CFM STD. AIR	COIL FACE AREA SQ. FT.	42°F ENTERING WATER TEMP.					44°F ENTERING WATER TEMP.					45°F ENTERING WATER TEMP.				
			NO. OF PASS	MBH		GPM	PD (ft WG)	NO. OF PASS	MBH		GPM	PD (ft WG)	NO. OF PASS	MBH		GPM	PD (ft WG)
				TOTAL	SENS.				TOTAL	SENS.				TOTAL	SENS.		
44	4400	8.8	6	201.6	134.8	40.4	3.8	6	181.9	126.8	36.4	3.1	6	172.1	122.5	34.5	2.8
56	5600	11.3	6	265.9	175.7	53.3	6.0	6	240.7	164.9	48.2	5.0	6	227.9	159.5	45.6	4.5
78	7800	15.6	6	369.9	244.3	74.1	6.5	6	334.7	229.7	67.0	5.4	6	317.0	222.1	63.5	4.9
95	9500	19.1	6	465.0	304.0	93.1	10.8	6	421.9	285.7	84.5	9.0	6	400.1	276.5	80.1	8.2
127	12700	25.4	6	621.3	406.4	124.4	9.9	6	563.6	381.9	112.8	8.3	6	534.5	369.6	107.0	7.5
148	14800	29.7	6	724.2	473.6	145.0	10.2	6	657.0	445.0	131.5	8.6	6	623.0	430.7	124.7	7.8
188	18800	37.8	6	934.3	608.0	187.1	13.9	6	848.7	571.8	169.9	11.6	6	805.4	552.6	161.2	10.5
224	22400	44.9	6	1112.4	724.4	222.8	14.4	6	1010.5	679.9	202.3	12.1	6	958.8	658.3	192.0	11.0
260	26000	51.9	6	1290.5	840.7	258.4	14.8	6	1172.2	789.1	234.7	12.4	6	1112.3	764.0	222.7	11.3

8 ROWS DEEP

UNIT SIZE	CFM STD. AIR	COIL FACE AREA SQ. FT.	42°F ENTERING WATER TEMP.					44°F ENTERING WATER TEMP.					45°F ENTERING WATER TEMP.				
			NO. OF PASS	MBH		GPM	PD (ft WG)	NO. OF PASS	MBH		GPM	PD (ft WG)	NO. OF PASS	MBH		GPM	PD (ft WG)
				TOTAL	SENS.				TOTAL	SENS.				TOTAL	SENS.		
44	4400	8.8	8	236.2	151.3	47.3	6.1	8	215.2	141.8	43.1	5.2	8	204.4	137.2	40.9	4.7
56	5600	11.3	8	308.0	195.8	61.7	9.5	8	281.2	183.8	56.3	8.0	8	267.5	177.9	53.6	7.3
78	7800	15.6	8	428.5	272.7	85.8	10.2	8	391.2	256.0	78.3	8.6	8	372.1	247.4	74.5	7.9
95	9500	19.1	8	533.0	336.6	106.7	16.7	8	487.7	316.7	97.6	14.2	8	464.4	306.3	93.0	12.9
127	12700	25.4	8	712.2	450.0	142.6	15.5	8	651.6	423.4	130.5	13.2	8	620.5	409.4	124.2	12.0
148	14800	29.7	8	830.2	524.4	166.2	15.9	8	759.5	493.4	152.1	13.5	8	723.3	477.1	144.8	12.4
188	18800	37.8	8	1065.5	671.6	213.4	21.4	8	975.7	631.2	195.4	18.2	8	929.8	611.5	186.1	16.6
224	22400	44.9	8	1268.8	800.2	254.1	22.1	8	1161.8	752.0	232.6	18.8	8	1107.1	727.3	221.7	17.2
260	26000	51.9	8	1472.1	928.7	294.8	22.7	8	1348.0	872.9	269.9	19.3	8	1284.5	844.2	257.2	17.6

NOTES:

1. MBH - BTU/HR Capacity in thousands.
2. Sens. - Sensible Capacity.
3. Chilled Water Temperature Rise 10°F
4. All coils are 12 fins per inch. Entering Air Temperature - 80°F DB/67°F WB.

MODULAR DESIGN ACCESSORY SECTIONS & CONPONENTS *cont'd*

The "Streamline" series of Outdoor Central Station Air-Handlers, with its modular design, provides a wide choice of accessory sections and components allows the specifying engineer to select and arrange the sections and components in virtually any combinations to suit any application requirements.

The accessory sections and components can be selected and arranged for draw-through fan, blow-through fan, heating, cooling, dehumidification, humidification, filtration, fresh air intake, exhaust air, heat recovery, clean rooms, face & bypass applications, etc. Access doors can be provided on either one or both sides of each modular section.

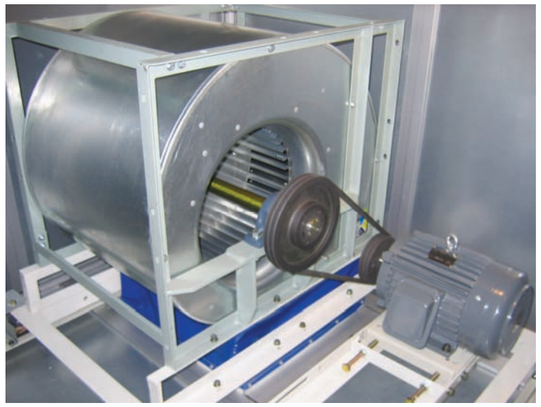
Every combination of accessory sections must include an air entering end section, an air leaving end section, plus any other number of middle sections.

- **Accessory Section, S1**

  This section consists of an outside air intake rain hood, moisture eliminator and a 100% outside air low-leak extruded aluminium dampers.

- **Accessory Section, S2**

  This section consists of a Return Air opening at the base of units and can be supplied with or without filter rack for either 2" thick or 4" thick filters.



MODULAR DESIGN ACCESSORY SECTIONS & CONPONENTS *cont'd*

- **Accessory Section, S3**

  This economizer section consists of an outside Air intake rain hood, moisture eliminator, a 100% outside air extruded aluminium dampers, a return air opening complete with Return Air dampers at the base of section; and can be supplied with or without filter racks suitable for either 2" or 4" thick filters. Access doors can be provided at one or both sides of section.

- **Accessory Section, S4**

  This is similar to S3, except the outside air dampers is selected for approximately 30% outside air intake.

- **Accessory Section, S5**

  This section consists of an outside air intake chamber which includes moisture eliminator, an outside air damper and a intake air rain hood. It also has a Return air chamber which includes a Return air opening at base of unit, a Return Air damper and a gravity-type exhaust dampers.

- **Accessory Section S6 & S7**

  These sections are similar to S5 except with addition of a Return Air Fan which can be of centrifugal type or plenum type fan.

QUICK HEATING COILS SELECTION TABLES.

HEATING (1/2" OD COPPER TUBES-ALUMINIUM FINS COILS) 0°F ENTERING AIR TEMPERATURE

UNIT SIZE	STD. AIR FLOW RATE (CFMS)	COIL FACE AREA (SQ. FT.)	WATER HEATING COILS							
			1 ROW				2 ROW			
			NO. OF PASS	MBH	GPM	PD (ft WG)	NO. OF PASS	MBH	GPM	PD (ft WG)
44	4400	8.8	2	294.0	30.3	3.6	2	492.2	50.7	1.9
56	5600	11.3	2	380.8	39.2	5.3	2	636.3	65.5	2.9
78	7800	15.6	2	529.0	54.4	5.9	2	884.4	91.0	3.2
95	9500	19.1	2	652.1	67.1	9.0	2	1089.2	112.1	5.0
127	12700	25.4	2	870.7	89.6	8.0	2	1454.7	149.7	4.4
148	14800	29.7	2	1015.2	104.5	8.4	2	1696.0	174.6	4.6
188	18800	37.8	2	1298.2	133.6	11.0	2	2167.5	223.1	6.2
224	22400	44.9	2	1544.5	159.0	11.5	2	2579.5	265.5	6.5
260	26000	51.9	2	1790.8	184.3	11.9	2	2991.5	307.9	6.8

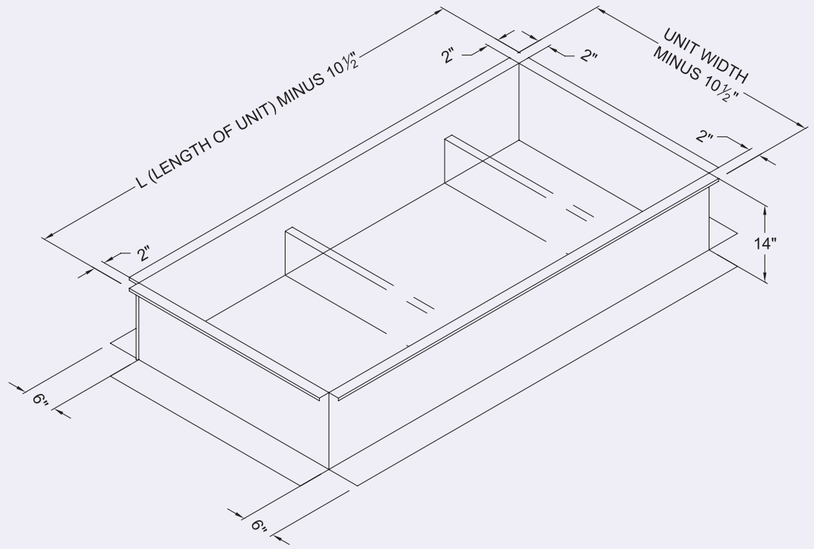
HEATING (1/2" OD COPPER TUBES-ALUMINIUM FINS COILS) 60°F ENTERING AIR TEMPERATURE

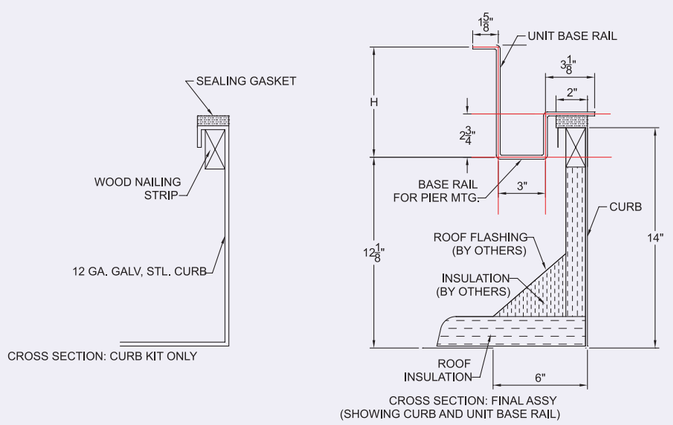
UNIT SIZE	STD. AIR FLOW RATE (CFMS)	COIL FACE AREA (SQ. FT.)	WATER HEATING COILS							
			1 ROW				2 ROW			
			NO. OF PASS	MBH	GPM	PD (ft WG)	NO. OF PASS	MBH	GPM	PD (ft WG)
44	4400	8.8	4	204.9	21.1	6.9	4	344.2	35.4	5.3
56	5600	11.3	4	265.7	27.3	11.5	4	443.9	45.7	8.0
78	7800	15.6	4	367.8	37.9	10.5	4	616.9	63.5	8.8
95	9500	19.1	4	452.2	46.5	16.4	4	758.0	78.0	13.8
127	12700	25.4	4	603.8	62.1	15.9	4	1012.3	104.2	12.4
148	14800	29.7	4	704.0	72.5	16.1	4	1180.2	121.5	12.9
188	18800	37.8	4	899.1	92.5	20.9	4	1506.6	155.1	17.1
224	22400	44.9	4	1069.7	110.1	21.2	4	1793.0	184.5	17.9
260	26000	51.9	4	1240.3	127.7	21.4	4	2079.3	214.0	18.3

NOTES:

1. Coils rated at 200°F Entering Water Temperature, 180°F Leaving Water Temperature.
2. All coils are 12 Fins per Inch.
3. MBH – BTU/HR capacity in thousands

FIELD INSTALLED ROOF CURB





Roof curbs, approved by NRCA, consist of pre-formed 12-gage mill-galvanized steel curb sections, cross members (as required), brackets and braces, plus 2" x 4" wood nailing strips for the entire curb perimeter. The curb top rail fits up into a recessed portion of the unit base which, together with the factory-supplied gasketing, completes the weather-seal. Curbs are shipped disassembled.

The shape of the outdoor air handler base rail permits adaptation to custom curbs by others.

Note : H is 6" for size 44 to size 148. H is 8" for size 188 to 260.

MODULAR DESIGN ACCESSORY SECTIONS & CONPONENTS *cont'd*

- **Accessory Section S8**

  This section incorporates heat recovery Rotary Wheel to pre-cool approximately 30% outside air intake as exhaust air is forced out by a suitably selected Blower fan. The outside air chamber consists of an intake air rain hood, O/A dampers and a 2" thick filter rack. The Return Air-chamber consists of a 2" thick filter rack, an exhaust air dampers, a return air damper and a return air opening at base of unit. The exhaust air chamber consists of a suitably selected centrifugal fan, motor and drive package and an exhaust air rain hood with wire screen to prevent entry of birds or foreign objects.

- **Accessory Section, S9 & S10**

  Either one of these two supply air plenum sections is required to be connected directly or indirectly to sections S26 or S27 (Blow through fan with horizontal discharge) upstream of unit; with or without other middle sections in-between such as S28 and S29 to complete the unit. S9 is for downward discharge, while S10 is for horizontal discharge.

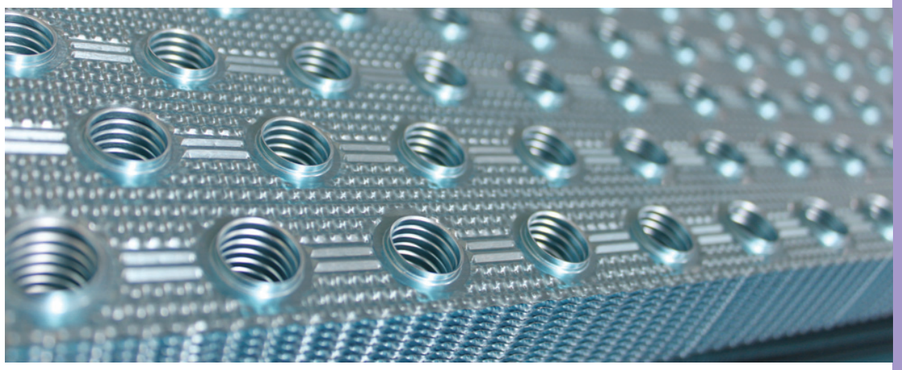
- **Accessory Section S14**

  This section houses either 2" thick filter or 4" thick filter racks which are designed for side loading and unloading of filters.

MODULAR DESIGN ACCESSORY SECTIONS & CONPONENTS *cont'd*

- **Accessory Section S15**

  This section, with additional "walk-in" access space, is designed for front loading of either 2" or 4" flat filters.



- **Accessory Section S16**

  This section houses a 2" thick angle filter rack which is designed for side loading and unloading of filters.

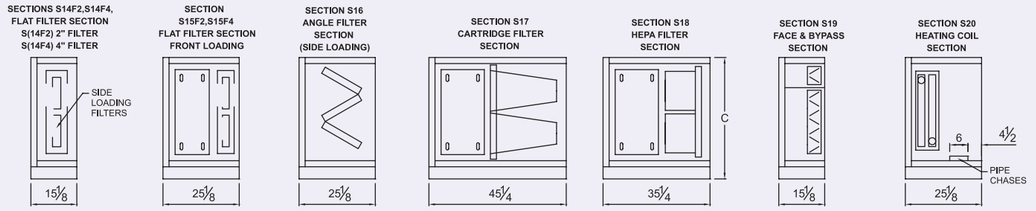
- **Accessory Section S17 & S18**

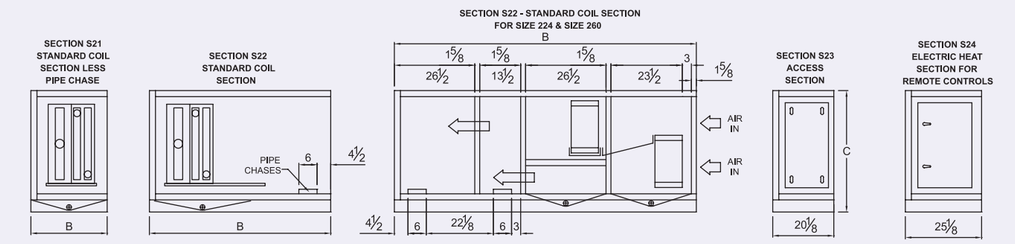
  Section S17 and S18 are designed, with additional "walk-in" access space, for front loading of bag filters and HEPA filters respectively.

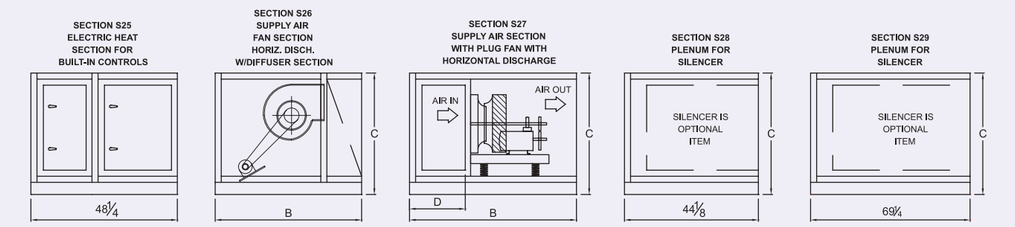
- **Accessory Section S19**

  This section houses a set of face & bypass extruded aluminium dampers complete with linkage (but without controls); and is designed to bypass air through the cooling or heating coils. This section is available with Reduced Face-area

OUTDOOR AIR HANDLERS
MIDDLE SECTIONS







NOTE : HEATING COIL SECTION (S19) AND COIL SECTION (S20) WILL ACCEPT UP TO 13" TOTAL COIL CASING DEPTH. STANDARD COIL SECTION (S21) WILL ACCEPT UP TO 18" TOTAL COIL CASING DEPTH, INCLUDING SPACER(S).

COIL CASTING DEPTH									
ROWS DEEP									
1	2	3	4	5	6	7	8	9	10
3.08	4.16	5.24	6.32	7.40	8.48	9.56	10.64	11.72	12.8

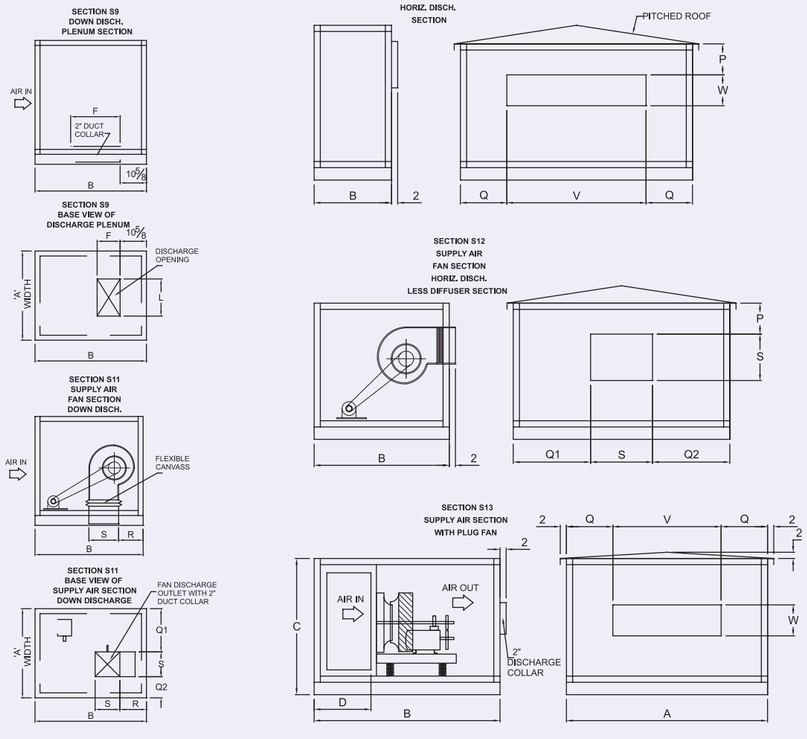
DIMENSIONS - inches

SECTION \ SIZE		44	56	78	95	127	148	188	224	260
S21	B	25-1/8	25-1/8	25-1/8	28-1/8	28-1/8	28-1/8	28-1/8	56-1/4	56-1/4
S22	B	45-1/4	45-1/4	45-1/4	60-3/8	60-3/8	60-3/8	60-3/8	60-3/8	99-1/2
S26	B	43-1/4	52-1/4	57-3/4	64-1/4	78-3/8	78-3/8	81-3/8	112-1/2	112-1/2
S27	B	50-3/8	55-3/8	63-3/8	68-3/8	78-3/8	88-1/2	94-1/2	102-7/8	116-3/8
	D	20-1/8	20-1/8	25-1/8	25-1/8	28-1/8	35-1/4	35-1/4	38-5/8	44-1/8
S28	Max. Internal Length	36	36	36	36	36	36	36	36	36
	Max. Internal Width	50	58	58	71	71	71	78-3/4	78-3/4	78-3/4
	Max. Internal Height	36	41	46-3/4	49	61	64-1/2	73-1/2	84-3/4	84-3/4
S29	Max. Internal Length	60	60	60	60	60	60	60	60	60
	Max. Internal Width	50	58	58	71	71	71	78-3/4	78-3/4	78-3/4
	Max. Internal Height	36	41	46-3/4	49	61	64-1/2	73-1/2	84-3/4	84-3/4

Note:

a) *Recommended maximum outside air is 20000 cfms for S5, S6 and S7 of size 260.
b) *Outside air damper size, K1 x LENGTH is for 100% outside air for lower % of outside air, damper size can be reduced, accordingly.

OUTDOOR AIR HANDLERS
AIR LEAVING END SECTIONS



DIMENSIONS - inches

SECTION \ SIZE		44	56	78	95	127	148	188	224	260
S9	B	29-3/4	29-3/4	29-3/4	35-1/4	35-1/4	41-7/8	41-7/8	51-7/8	57-7/8
	F	17-1/4	17-1/4	17-1/4	22-3/4	22-3/4	29-3/8	29-3/8	39-3/8	45-3/8
	L	28	36	44	44	57	57	64-3/4	64-3/4	64-3/4
S10	B	16-3/4	16-3/4	21-3/4	21-3/4	26-3/4	26-3/4	26-3/4	29-3/4	29-3/4
	V	30	36	44	50	60	60	68	68	78
	W	24	28	28	30	30	36	42	52	60
	P	11	10	5	7	16	13	13	18	8
	Q	12-5/8	13-5/8	9-5/8	13-1/8	6-1/8	7-7/8	8	8	3
S11 & S12	B	37	37	44-1/8	50-1/4	56-1/4	56-1/4	59-1/4	87-3/4	94-3/8
	S	14-1/4	16	18	20	25-1/4	25-1/4	28-1/4	32	35-1/2
	R	10-5/8	10-5/8	12	13	14-1/2	14-1/2	15-1/2	18-1/4	20-1/4
	P	15-7/8	14-1/8	9-7/8	12-1/8	18-3/8	18-1/8	20-7/8	26-5/8	20-5/8
	Q1	25-5/8	28-5/8	28-5/8	36-1/8	36-1/8	36-1/8	35-3/8	26	24-1/4
	Q2	15-3/8	18-5/8	16-5/8	20-1/8	14-7/8	14-7/8	20-3/8	26	24-1/4
S13	B	52	57	65	70	80	90-1/8	96-1/8	104-1/2	118
	D	20-1/8	20-1/8	25-1/8	25-1/8	28-1/8	35-1/4	35-1/4	38-5/8	44-1/8
	V	30	36	44	50	60	60	68	68	78
	W	24	28	28	30	30	36	42	52	60
	P	9	8-1/8	15-1/8	14-1/8	22-1/8	19-1/8	21-3/8	19	15
	Q	12-5/8	13-5/8	9-5/8	13-1/8	6-1/8	7-7/8	8	8	3

NOTES :

a) *Recommended maximum outside air is 20000 cfms for S5, S6 and S7 of size 260.
b) *Outside air damper size, K1 x LENGTH is for 100% outside air for lower % of outside air, damper size can be reduced, accordingly.

MODULAR DESIGN ACCESSORY SECTIONS & CONPONENTS *cont'd*

- **Accessory Section, S11**

  This downward air fan section is selected when it is required to route the supply air ductwork through the roof curb. This configuration results in minimum ductwork cost with minimum fan brake horsepower.

- **Accessory Section S12 & S13**

  This horizontal discharge supply air fan section is selected for installations in which the supply air ductwork leaves the outdoor air-handler above the roof line. S12 uses Centrifugal forward curved fans or centrifugal backward curved fans while S13 uses plenum fans.

- **Accessory Section S20**

  This heating coil section is suitable for all heating or sensible dry cooling applications requiring no drain pan. A built-in pipe chase is standard.

- **Accessory Section 21**

  This short coil section, less pipe chase, is designed for coil, including spacers, up to 13" depth. This section is ideal when piping enters the unit above the roof.

- **Accessory Section S22**

  This standard coil section complete with pipe chase, is designed with 18" coil space up to size 210. For size 224 and 260, the cooling coils are arranged in "staggered arrangement" with available coil space up to 13 inches.

MODULAR DESIGN ACCESSORY SECTIONS & CONPONENTS *cont'd*

- **Accessory Section S23**

  This access section is provided for easy access to internal components for service.

- **Accessory Section S24 & S25**

  This electric heating coil section is designed with slide-in type electric heating coil assemblies. S24 is built without space for control panel while S25 is built with space for mounting a control panel.

- **Accessory Section S26**

  This horizontal fan section, with Centrifugal DWDI fan, is designed for blow through application. A diffuser plenum section is attached to discharge outlet of the fan, to provide uniform airflow across downstream components such as cooling coils, dampers, filters or silencers.

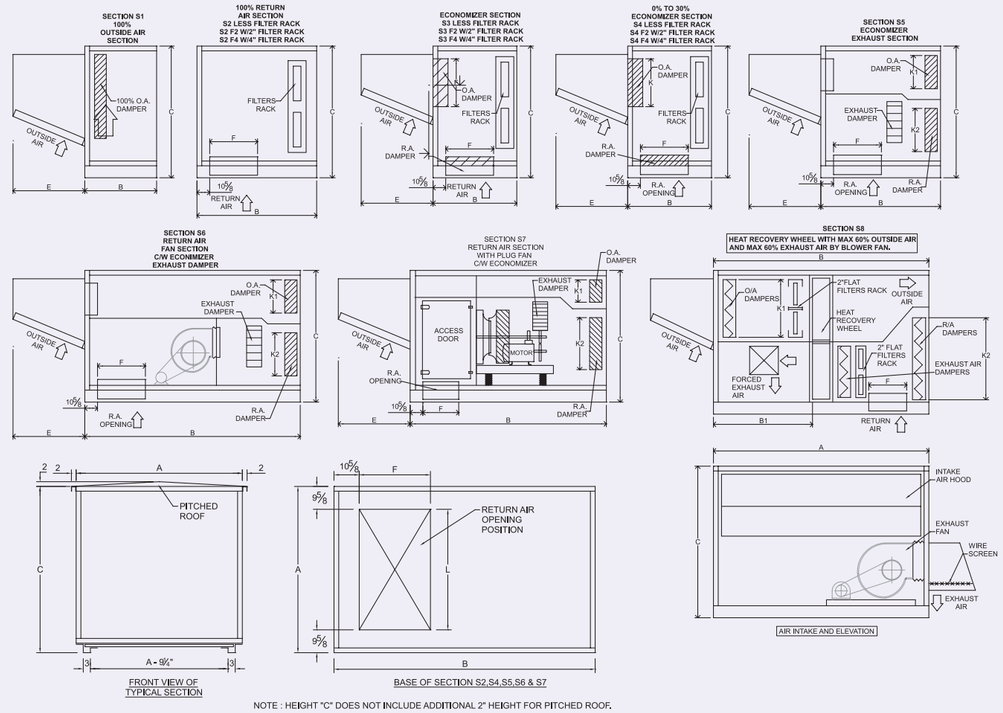
- **Accessory Section S27**

  This horizontal discharge fan section, is provided with a plug fan with airfoil blades.

- **Accessory Section S28 & S29**

  Section S28 & S29 are designed to house silencer splitters to to length of 36" and 60" respectively.

OUTDOOR AIR HANDLERS
AIR ENTERING END SECTIONS



NOTE : HEIGHT "C" DOES NOT INCLUDE ADDITIONAL 2" HEIGHT FOR PITCHED ROOF.

DIMENSIONS - inches

SECTION / SIZE		44	56	78	95	127	148	188	224	260
WIDTH, A		55-1/4	63-1/4	63-1/4	76-1/4	76-1/4	76-1/4	84	84	84
STANDARD HEIGHT, C		50-1/4	53-1/4	66-1/4	71-1/4	80-1/4	88	98	98	98
S1	B	15-1/8	15-1/8	15-1/8	15-1/8	15-1/8	15-1/8	20-1/8	20-1/8	20-1/8
	E	14	16	22	22	26	32	36	44	56
S2	B	44-1/8	44-1/8	44-1/8	44-1/8	48-1/4	53-1/4	59-1/4	69-1/4	72-1/4
	F	18	18	22	22	28	32	36	44	50
	L	36	44	44	57	57	57	64-3/4	64-3/4	64-3/4
S3	B	44-1/8	44-1/8	44-1/8	44-1/8	48-1/4	53-1/4	59-1/4	69-1/4	72-1/4
	F	16.6	16.6	24	24	32	36	40	44	52
	L	36	44	44	57	57	57	64-3/4	64-3/4	64-3/4
	E	14	16	22	22	26	32	36	44	56
S4	B	44-1/8	44-1/8	44-1/8	44-1/8	48-1/4	53-1/4	59-1/4	69-1/4	72-1/4
	F	16.6	16.6	24	24	32	36	40	44	52
	L	24	32	44	52	52	56	56	64-3/4	64-3/4
	K	8.4	8.4	8.4	8.4	12.2	12.2	16.6	16.6	20
	E	10	10	12	12	16	16	22	22	22
S5	B	44-1/8	44-1/8	53-1/4	53-1/4	59-1/4	64-1/4	69-1/4	79-3/8	84-3/8
	F	18	18	22	22	28	32	36	44	50
	L	36	44	44	57	57	57	64-3/4	64-3/4	64-3/4
	K1 x LENGTH	16.6 x 38	16.6 x 44	24 x 44	24 x 60	28 x 62	32 x 62	36 x 70	40 x 70	28 x 70*
	K2 x LENGTH	16.6 x 38	16.6 x 44	24 x 44	24 x 60	28 x 62	32 x 62	36 x 70	40 x 70	52 x 70
	E	14	16	22	22	26	32	36	44	56
S6	B	81-3/8	81-3/8	89-3/8	94-3/8	116-3/8	122-1/2	128-1/2	156-5/8	166-5/8
	F	18	18	22	22	28	32	36	44	50
	L	36	44	44	57	57	57	64-3/4	64-3/4	64-3/4
	K1 x LENGTH	16.6 x 38	16.6 x 44	24 x 44	24 x 60	28 x 62	32 x 62	36 x 70	40 x 70	28 x 70*
	K2 x LENGTH	16.6 x 38	16.6 x 44	24 x 44	24 x 60	28 x 62	32 x 62	36 x 70	40 x 70	52 x 70
	E	14	16	22	22	26	32	36	44	56
S7	B	63-3/8	68-3/8	83-1/2	85-1/2	97-7/8	108-3/8	119-1/2	126-7/8	149
	E	14	16	22	22	26	32	36	44	56
	F	18	18	22	22	28	32	36	44	50
	L	36	44	44	57	57	57	64-3/4	64-3/4	64-3/4
	K1 x LENGTH	16.6 x 38	16.6 x 44	24 x 44	24 x 60	28 x 62	32 x 62	36 x 70	40 x 70	28 x 70*
	K2 x LENGTH	16.6 x 38	16.6 x 44	24 x 44	24 x 60	28 x 62	32 x 62	36 x 70	40 x 70	52 x 70
S8	B	92-3/8	92-3/8	92-3/8	94-3/8	104	107	120-1/2	133-1/2	133-1/2
	B1	28-1/8	28-1/8	28-1/8	30-1/8	33-5/8	33-5/8	44-1/8	44-1/8	50-1/4
	F	18	18	22	22	26	32	36	44	50
	K1	16.8 x 38	16.8 x 44	24 x 44	24 x 60	28 x 62	32 x 62	36 x 70	40 x 70	28 x 70*
	K2	16.6 x 38	16.6 x 44	24 x 44	24 x 60	28 x 62	32 x 62	36 x 70	40 x 70	52 x 70