

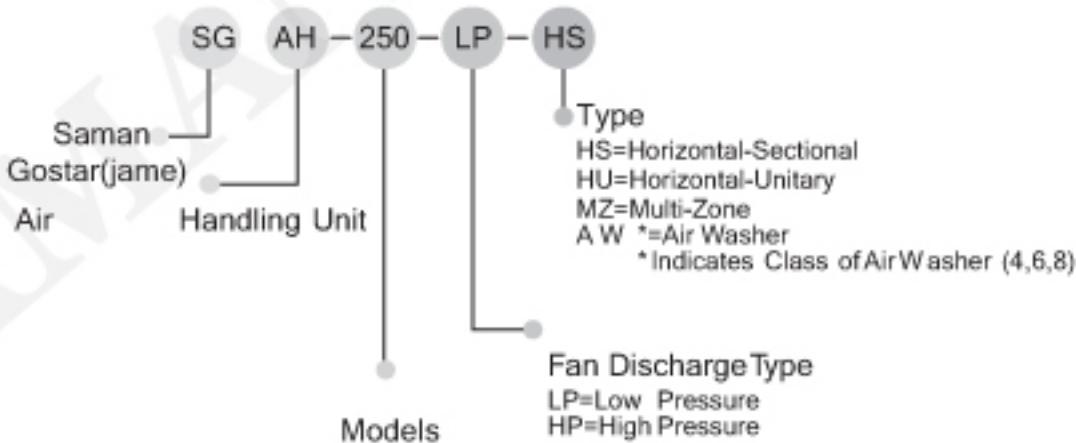


CONTENTS

FEATURES.....	2,4
SELECTION PROCEDURES	5-7
CAPACITY RATINGS (CHILLED WATER , HOT WATER , STEAM RATINGS).....	8-16
CORRECTION FACTOR TABLES	16
DIMENSIONS (HORIZONTAL - AIR WASHER - MULTI ZONE).....	17-20
FAN PERFORMANCE.....	21-22
DIMENSIONS(COIL-FILTERS-DAMPERS).....	23-24
WATER PRESSURE DROP IN TUBES.....	25
COIL CONNECTION	26-27
AIR WASHER FEATURES	28
AIR WASHER SELECTION PROCEDURE	29
AIR WASHER ENGINEERING DATA (CLASS 4,6,8).....	31
HUMIDIFIER.....	32

1

NOMENCLATURE



Please fill in the boxes with the appropriate characters at the time of placing orders.



FEATURES

UNITARY AIR HANDLING UNIT

In all saran air handling units the frames are from aluminium profiles while the chassis and body panels are made from galvanized steel sheets in appropriate thicknesses.
All units are completely painted in the proper thickness.

Blower(S) :

double width-double inlet centrifugal fans with forward curved blades are normally used for low pressure drop requirements as opposed to fans with backward curved blades which are for high pressure drop applications. Fans and housings are made of galvanized steel each set off an plus other related components such as shafts are statically and dynamically balanced, shafts are selected from proper material and size. Other power transmission components such as pulleys and belts are also suitably chosen depending on the required fan speed and electric motor power.

Fan(s) and the corresponding electric motor(s) are installed on an independent chassis which is itself installed on the main chassis using vibration dampers in order to eliminate transfer of vibrations to the structure. To further reduce the effects of vibrations, fan outlet (s) are also connected to the structure via flexible material such as canvous.

All 380V/30/50hz electric motors are selected with insulation class of (f) and ingress protection of (IP-54). Electric motors with ingress protection of (IP-55) are also available upon request.

Coil (S):

Cooling and heating coils or either one of the two depending on the Requirement May be installed. Cooling coils are available in two, types of chilled water and direct expansion (D.X.) As per client's requirements. The chilled water coils are constructed of 5/8" O.D copper tubes plate finned(8,10,12 or 14 fpi) in aluminium or copper upon request.

The D.X.Coils are constructed of 3/8" OD copper tubes also plate finned (10,12 or 14 fpi) in aluminium or copper as required.

The chilled water for cooling coils in to be supplied by a water chiller and in the D.X. coils cooling is provided through the use of refrigerant such as R-22 , R-407c or R-134a.

Chilled water coils may be requested in 4 or 6 rows and as to the D.X. coils, they are available in 4 or 6 row configurations.

Heating coils are available in two types of hot water and steam. The hot water coil similar to chilled water coil is offered in 1 or 2 row configurations. Steam heating coils are constructed of 1/2" seamless steel pipe spiral finned in aluminium or copper. Coils in 1 & 2 row configurations are available upon request.

Mixing box :

fresh and return air streams are mixed In the mixing box .An independent air damper is included for each air stream.

AirDampers are manufactured from aluminium in opposed blade configuration and are air sealed through the use of rubber strip gasket. Damper actuators may be easily installed when required. Washable aluminium filter modules 2inches in thickness are arranged in (V) type configuration inside these boxes .

A housing for pleated type air filters may also big considered In the mixing box.



....Air Handling Unit

FEATURES

SECTIONAL AIR HANDLING UNIT

In all saran air handling units the frames are from aluminium profiles while the chassis and body panels are made from galvanized steel sheets in appropriate thicknesses.

Saran air handling units are manufactured in sections descriptions of which are offered below. All units are completely painted in the proper thickness.

1-Fan section:

In this section double width-double inlet centrifugal fans with forward curved blades are normally used for low pressure drop requirements as opposed to fans with backward curved blades which are for high pressure drop applications. Fans and housings are made of galvanized steel eachset of fan plus other related components such as shafts are statically and daynamically balanced, shafts are selected from proper material and size. Other power transmission components such as pulleys and belts are also suitably chosen depending on the required fan speed and electric motor power. Fan(s) and the corresponding electric motor(s) are installed on an independent chassis which is itself installed on the main chassis using vibration dampers in order to eliminate transfer of vibrations to the structure. To further reduce the effects of vibrations, fan outlet (s) are also connected to the structure via flexible material such as canvous. in cases where an air washer section is included, the blower electric motor is installed outside of this section to prevent adverse effects of moisture. In other cases, blower electric motor is installed in the fan section. All 380V/30/50hz electric motors are selected with insulation class of (f) and ingress protection of (ip-54). Electric motors with ingress protection of (ip-55) are also available upon request.

2-Coil section:

This section may include cooling and heating coils or either one of the two dependingon the Requirement. Cooling coils are available in two, types of chilled water and direct expansion (D.X.) As per client's requirements. The chilled water coils are constructed of 5/8"O.D copper tubes plate finned(8,10,12 or 14 fpi) in aluminium or copper upon request

The D.X.Coils are constructed of 3/8"OD copper tubes also plate finned (10,12 or 14 fpi) in aluminium or copper as required.

The chilled water for cooling coils in to be supplied by a water chiller and in the D.X. coils cooling is provided through the use of refrigerant such as R-22 , R-407c or R-134a.

Chilled water coils may be requested in 4,6 & 8 rows ans as to the D.X. coils, they are available in 4 or 6 rows configurations.

Heating coils are available in two types of hot water and steam. The hot water coil similar to chilled water coil is offered in 1,2,3 & 4-row configurations. Steam heateing coils are constructed of 1/2" seamless steel pipe spiral finned in aluminium or copper. Coils in 1 & 2 .row configurations are available upon request.

3-Mixing box section:

This section is where the fresh and return air streams are mixed in the mixing box. An independent air damper is included for each air stream.

Dampers are manuf actured from aluminium in opposed blade configuration and air sealed through the use of rubber strip gasket. Damper actuators may be easily installed when required.

Washable aluminium filter modules 2inches in thickness are arranged in (V) type configuration inside these boxes.

A Housing for pleated type air filters may also be considered in the mixing box .



....Air Handling Unit

4-Special filter section:

This section may include pleated or bag filter which are installed as per customer requirements. Efficiency and class of special filters are specified by the client.

Notes:

- 1 - Allowable air velocity over the special filter section must
- 2- In cases where only pleated filters are required they are easily installed in the mixing box and not in the special filter section.

5-Multi - Zone Section

In some cases the air conditioning design of a building defines different zones to be air conditioned, each zone requiring its own air flow rate and air temperature. In these cases instead of using a few air handling units, a multi-zone unit is usually chosen.

In the multi-zone air handling unit, cooling and the heating coils are paralleled with each other which means that some of the air passes over the cooling coil and the remainder passes over the heating coil and at the outlet the result is a mixture of the two which has the suitable temperature for each zone.

In multi-zone units the cooling coil area is the same size as that of a regular air handling unit while the size of the heating coil is less.

For each zone two outlet dampers one which is on the cooling coil side and one that is on the heating coil side activate. Of these two outlet dampers as one opens the other one closes the same amount therefore, by adjusting the outlet dampers for each zone, the desired zone temperature is controlled.

Number and the effective area of dampers for each zone are dependent on the number of zones and the air flow rate needed for that zone. These aluminium dampers are located either on top or the back side of this section depending on whether the type of air handling unit is upblast or horizontal blast discharge.

Multi-zone section is usually installed after the fan section and in order to have the proper air flow over the coils an air diffuser is also installed.

Humidifiers are also installed in this section when required.



....Air Handling Unit

SELECTION PROCEDURE

The first parameter to consider in the selection of an air handling unit is the required air flowrate (CFM) therefore, by having the required air flow rate, coil face area and the available nominal air flow rate for the unit, the appropriate model may be chosen.

Note: Allowable air velocity over cooling coil less than 550FPM. In air handling units equipped with airwashers this allowable air velocity must be reduced further to less than 500 FPM.

Considering the cooling and heating loads and the entering air conditions. The number of coil rows, pressure drops on both water and air sides and the required model of fan may be determined using the data available in the catalogue.

Other components and accessories such as air mixing box, special filters, humidifier, etc. May also be selected from the catalogue as needed.

(CHILLED WATER COOLING, HOT WATER HEATING)

Given:

Required air flow rate	10000 CFM
Cooling entering air condition	80 F DB, 67 F WB
Heating entering air condition	60 F DB
Entering chilled water temp.....	45 F
Leaving chilled water temp.....	55 F
Entering hot water temp.....	180 F
Leaving hot water temp.....	160 F
Total cooling load	480 MBH
Total heating load	700 MBH
Cooling & heating coil FPI	14
External static pressure drop.....	0.78 In W. G
Maximum coil face velocity500 FPM
Filter arrangement V - type	

Considering the required airflow rate in cfm and the unit nominal airflow rate, model SGAH - 1000 is chosen. From table 2 @ the given cooling capacity and the chilled water temp. A 6 - Rows coil is chosen. (Cooling capacity of the unit is 498 MBH)

From table 5 @ the given heating capacity and the hotwater temp. A

2 - Rows coil is chosen. (Heating capacity of the unit is 726 MBH).

Note:

In cases where the requirement for number of fin per inch is not specified, a coil with the least number of rows with either 8, 10, 12 or 14 FPI which satisfies the requirement is chosen. Preference is usually given to 14 FPI.

- Determine the actual coil face velocity.

$$F. V. \text{ Actual} = \frac{\text{CFM}}{\text{F.A.}} = \frac{10000}{20} = 500 \text{ F. P. M}$$

....Air Handling Unit

-Knowing the actual coil velocity and the coils chosen, determine the total internal air side pressure drop for the unit. From the table.

$$P.D. \text{ Cooling coil} = P.D. \text{ (Table 10)} \times C.F. \text{ (Table 10A)} = 0.85 \times 1.45 = 1.19 \text{ In W.G}$$

$$P.D. \text{ Heating coil} = P.D. \text{ (Table 10)} \times C.F. \text{ (Table 10A)} = 0.22 \times 1.45 = 0.32 \text{ In W.G}$$

$$P.D. \text{ Filter} = 0.099 \text{ In w.G}$$

$$P.D. \text{ Accessories} = 0.05 + 0.06 = 0.11 \text{ In W.G (damper& mixing box from table 11).}$$

Total internal pressure drop (T.I.P.D)

Total external pressure drop (T.E.P.D)

$$T.I.P.D = P.D. \text{ Cooling coil} + P.D. \text{ Heating coil} + P.D. \text{ Filter} + P.D. \text{ accessories}$$

$$T.I.P.D = 1.19 + 0.32 + 0.099 + 0.11 = 1.719 \text{ In W.G}$$

$$\text{Total static pressure (T.S.P)} = T.I.P.D + T.E.P.D = 1.719 + 0.78 = 2.5 \text{ In W.G}$$

Therefore, by using table 18A and performing interpolation the required fan size is determined as 22° at the speed of 703 RPM and electric motor power requirement of 10 HP.

- Determine the water side P.D. (Cooling Coil):

$$\text{Water flow rate (GPM)} = \frac{\text{Total heating load}}{500 \times \Delta T} = \frac{498000}{500 \times 10} = 99.6 \text{ GPM}$$

$$\text{Water velocity inside the tubes} = \frac{\text{Water Flow Rate (GPM)}}{\text{No. of coils} \times \text{No. of circuits (Table 19)}} \times 1.235$$

$$= \frac{99.6}{1 \times 28} \times 1.235 = 4.39 \text{ Ft/Sec}$$

From table 21 considering the 6 row cooling coil, the water velocity of 4.39 Ft/Sec the pressure drop is given as 10.52 Ft. W.G.

-Determine the water side pressure drop (Heating Coil):

$$\text{Water flow rate (GPM)} = \frac{\text{Total heating load}}{500 \times \Delta t} = \frac{726000}{500 \times 20} = 72.6 \text{ GPM}$$

$$\text{Water velocity inside the tubes} = \frac{\text{Water Flow Rate (GPM)}}{\text{No. of coils} \times \text{No. of circuits (Table 19)}} \times 1.235$$

$$= \frac{72.6}{1 \times 28} \times 1.235 = 3.2 \text{ Ft/Sec}$$

From table 21 considering the 2 row heating coil, the water velocity of 3.2 Ft/Sec, the pressure drop is given 2.62 Ft w.G and a. The average water temp, of 170 F correction factor is 0.77 therefore, the actual P.D. is 2.02 Ft W.G.

....Air Handling Unit

External static pressure drop.	0.5 in W.G
Maximum coil face velocity	500 FPM
Filter arrangement	flat type

Considering the required air flowrate in cfm and the unit available nominal air flow rate, air handling unit model SGAH - 1000 is chosen.

-From table 3 @ the given cooling capacity and the evap.temp. a 6-rows will be chosen (cooling capacity of the units is 471 MBH)

-From table 6 @ the given heating capacity and the steam pressure of 5psig,a 2-rows heating coil is chosen. (Heating capacity of the unit is 980 MBH)

Determine the actual coil face velocity.

$$\text{Actual F.V.} = \frac{\text{CFM}}{\text{F.A.}} = \frac{9500}{20} = 475 \text{ F.P.M}$$

Referring to the correction factors in table 12, the cooling and the heating capacity correction factors are given as 0.97 And 0.98 Respectively.

- Corrected cooling capacity = $471 \times 0.97 = 456.8 \text{ MBH}$
- Corrected heating capacity = $980 \times 0.98 = 960.4 \text{ MBH}$

Therefore, the chosen cooling and heating coils satisfy the requirements.

-Knowing the actual coil face velocity and the coils chosen, determine the total internal air side pressure drop for the unit.

$$\text{P.D. DX coil} = \text{P.D. (Table 10)} \times \text{C.F. (Table 10A)} = 0.79 \times 1.45 = 1.15 \text{ in W.G}$$

$$\text{P.D. Heating coil} = \text{P.D. (Table 10)} \times \text{C.F. (Table 10A)} = 0.21 \times 1 = 0.21 \text{ in W.G}$$

$$\text{P.D. Filter} = 0.09 \text{ in W.G (table 9)}$$

$$\text{P.D. Accessories} = 0.05 \text{ in W.G (table 11)}$$

Total internal pressure drop (T.I.P.D)

Total external pressure drop (T.E.P.D)

$$\begin{aligned} \text{T.I.P.D} &= \text{P.D. DX Coil} + \text{P.D. Heating coil} + \text{P. D. Filter accessories} \\ &= 1.15 + 0.2 + 0.09 + 0.05 = 1.5 \text{ in W.G} \end{aligned}$$

$$\text{Total static pressure (T.S.P)} = \text{T.I.P.D} + \text{T.E.P.D} = 1.5 + 0.5 = 2 \text{ in W.G}$$

Therefore, by using table 18 and performing interpolation the required fan size is determined as 22" at the speed of 629 RPM and electric motor power requirement of 7.5 HP.

....Air Handling Unit

CHILLED WATER RATING “8FPI”

Table 1

Model	Nominal CFM	EDB (°F)	EWB (°F)	4 Rows				6 Rows				8 Rows			
				Total Load (MBH)	Sensible Load (MBH)	LVG D.B. (°F)	LVG W.B. (°F)	Total Load (MBH)	Sensible Load (MBH)	LVG D.B. (°F)	LVG W.B. (°F)	Total Load (MBH)	Sensible Load (MBH)	LVG D.B. (°F)	LVG W.B. (°F)
250	2500	80	67	59	54	61	60	88	68	57	56	110	78	53	53
		90	71	84	76	63	61	120	94	58	57	146	106	54	54
		100	75	111	98	66	63	154	119	59	58	184	133	54	54
350	3500	80	67	82	75	61	60	122	95	57	56	153	108	54	53
		90	71	117	106	64	61	168	131	58	57	204	147	54	54
		100	75	154	136	66	63	215	166	59	58	257	185	54	54
500	5000	80	67	140	116	60	58	198	145	55	55	238	163	52	52
		90	71	193	161	62	60	263	197	56	55	312	220	52	52
		100	75	249	205	64	61	333	248	57	56	388	273	53	53
700	7000	80	67	196	163	60	58	277	203	55	55	334	229	52	52
		90	71	270	226	62	60	369	276	56	55	436	307	52	52
		100	75	348	288	64	61	466	347	57	56	543	383	53	53
1000	10000	80	67	306	242	59	58	420	299	54	54	498	336	51	51
		90	71	414	334	61	59	552	404	55	55	643	448	52	52
		100	75	527	422	63	61	692	506	56	55	796	556	52	52
1250	12500	80	67	378	301	59	58	520	372	55	54	617	418	52	51
		90	71	512	414	62	59	684	502	56	55	798	557	52	52
		100	75	652	523	64	61	857	629	57	56	989	692	52	52
1500	15000	80	67	451	359	59	58	621	445	55	54	737	500	52	52
		90	71	609	494	62	59	816	600	56	55	954	667	52	52
		100	75	776	625	64	61	1023	752	57	56	1182	828	53	52
1750	17500	80	67	545	410	58	57	744	507	53	53	878	568	50	50
		90	71	736	564	60	58	977	684	54	54	1133	756	50	50
		100	75	936	675	62	60	1221	855	55	54	1403	940	50	50
2000	20000	80	67	652	501	58	57	875	614	54	53	1024	684	51	51
		90	71	750	638	62	60	1035	781	56	56	1229	871	53	53
		100	75	970	813	65	62	1310	983	58	57	1535	1088	53	53
2250	25000	80	67	732	540	58	57	983	663	53	52	1152	740	50	50
		90	71	978	738	60	58	1282	890	53	53	1480	982	50	50
		100	75	1239	930	62	60	1600	1111	54	54	1824	1216	50	50
2500	25000	80	67	757	602	59	58	1041	745	55	54	1235	836	52	51
		90	71	1024	828	61	59	1368	1005	56	55	1596	1114	52	52
		100	75	1304	1047	64	61	1715	1258	57	56	1978	1384	52	52
3000	30000	80	67	902	719	59	58	1242	890	55	54	1475	1000	52	52
		90	71	1219	989	62	59	1632	1201	56	55	1908	1334	52	52
		100	75	1553	1251	64	61	2046	1504	57	56	2365	1857	53	52
3500	35000	80	67	1090	820	58	57	1488	1014	53	53	1756	1136	50	50
		90	71	1471	1128	60	58	1954	1368	54	54	2266	1512	50	50
		100	75	1871	1424	62	60	2442	1710	55	54	2806	1880	50	50
4000	40000	80	67	1306	1003	58	57	1750	1228	54	53	2048	1369	51	51
		90	71	1500	1277	62	60	2071	1562	56	56	2458	1743	53	53
		100	75	1941	1627	65	62	2620	1966	58	57	3070	2176	53	53
4500	45000	80	67	1464	1079	58	57	1966	1326	53	52	2304	1480	50	50
		90	71	1957	1475	60	58	2584	1780	53	53	2960	1964	50	50
		100	75	2478	1858	62	60	3200	2222	54	54	3648	2423	50	50

Notes :

- Values based on entering chilled water temperature of 45°F

- E.D.B = Entering air dry bulb temperature

- E.W.B = Entering air wet bulb temperature

- LVG=Leaving air temperature -MBH=1000Btu/hr

....Air Handling Unit

HOT WATER RATING "8FPI"

Table 4

Model	Nominal CFM	E.D.B (°F)	1 Rows		2 Rows		3 Rows		4 Rows	
			Capacity (MBH)	L.V.G DB (°F)	Capacity (MBH)	L.V.G DB (°F)	Capacity (MBH)	L.V.G DB (°F)	Capacity (MBH)	L.V.G DB (°F)
250	2500	0	126	42	211	73	281	100	330	120
		20	109	58	183	85	245	110	289	128
		40	92	73	155	97	209	119	248	135
		60	76	88	127	108	174	127	207	141
350	3500	0	175	42	293	72	391	99	461	119
		20	151	57	254	85	341	109	402	127
		40	128	73	215	97	282	118	345	160
		60	105	88	177	108	243	127	288	160
500	5000	0	262	44	438	76	576	103	673	122
		20	228	60	382	88	504	113	589	130
		40	195	75	326	100	433	122	507	137
		60	161	90	271	111	362	130	425	143
700	7000	0	367	44	614	76	807	103	942	122
		20	320	60	535	88	706	113	825	130
		40	273	75	457	100	606	122	710	137
		60	226	90	379	111	507	130	596	143
1000	10000	0	535	45	893	78	1166	104	1356	124
		20	467	60	781	90	1022	114	1190	131
		40	400	76	669	102	880	123	1025	138
		60	333	91	558	113	738	131	862	144
1250	12500	0	680	44	1104	77	1445	103	1683	122
		20	576	60	965	89	1266	113	1476	130
		40	493	75	827	101	1090	122	1272	137
		60	410	90	690	112	914	131	1070	144
1500	15000	0	784	44	1315	78	1723	102	2009	122
		20	685	60	1150	89	1510	112	1763	130
		40	587	75	986	101	1300	122	1518	137
		60	488	90	822	112	1090	130	1277	143
1750	17500	0	926	48	1549	81	2045	107	2356	124
		20	810	62	1356	91	1769	114	2089	128
		40	694	76	1164	101	1548	121	1782	133
		60	579	90	972	111	1303	128	1500	139
2000	20000	0	1091	46	111	79	2363	106	2739	125
		20	955	61	1593	91	2073	115	2404	132
		40	819	77	1368	103	1786	124	2073	139
		60	684	92	1145	114	1502	133	1746	145
2250	22500	0	1203	49	2014	82	2643	108	3047	124
		20	1053	63	1764	92	2322	115	2675	129
		40	904	77	1516	102	2004	122	2307	134
		60	755	91	1269	112	1688	129	1943	139
2500	25000	0	1320	44	2209	77	2890	103	3386	122
		20	1153	60	1931	89	2533	113	2953	130
		40	987	75	1655	101	2180	122	2544	137
		60	821	90	1381	112	1829	131	2140	144
3000	30000	0	1569	44	2631	76	3446	102	4019	122
		20	1371	60	2300	89	3021	112	3526	130
		40	1174	75	1972	101	2600	122	3037	137
		60	977	90	1645	112	2181	130	2555	143
3500	35000	0	1852	48	3098	81	4090	107	4712	124
		20	1620	62	2712	91	3592	114	4138	128
		40	1388	76	1228	101	3098	121	3584	133
		60	1158	90	1944	111	2606	128	3000	139
4000	40000	0	2183	46	3639	79	4726	106	2479	125
		20	1911	61	3187	91	4147	115	4809	132
		40	1639	77	2737	103	3573	124	4147	139
		60	1368	92	2290	114	3004	133	3492	145
4500	45000	0	2406	49	4028	82	5286	108	6094	124
		20	2106	63	3628	92	4644	115	5350	129
		40	1808	77	3032	102	4008	122	4614	134
		60	1510	91	2638	112	3376	129	3886	139

Notes :

- HotWater Entering@180 °F and leaving@160 °F
- E.D.B = Entering air dry bulb temperature.
- L.V.G = Leaving air temperature.
- MBH = 1000 Btu/hr

....Air Handling Unit

HOT WATER RATING "14FPI"

Table 5

Model	Nominal CFM	EDB (°F)	1 Rows		2 Rows		3 Rows		4 Rows	
			Capacity (MBH)	L.V.G DB (°F)	Capacity (MBH)	L.V.G DB (°F)	Capacity (MBH)	L.V.G DB (°F)	Capacity (MBH)	L.V.G DB (°F)
250	2500	0	176	60	274	97	346	127	390	145
		20	152	74	237	107	302	133	340	149
		40	128	87	201	115	258	139	291	153
		60	105	99	185	123	214	144	243	156
		0	245	60	381	97	483	126	544	145
350	3500	20	212	73	330	106	420	132	475	149
		40	179	86	280	115	359	138	407	153
		60	146	99	230	123	299	143	340	156
		0	368	63	571	102	710	130	793	148
		20	320	77	497	111	621	137	694	152
500	5000	40	273	90	424	120	532	142	598	156
		60	225	102	352	128	445	147	500	159
		0	516	63	798	102	995	130	1110	148
		20	449	77	696	111	869	137	971	152
		40	382	90	594	120	746	142	834	156
700	7000	60	316	102	493	128	624	147	700	159.5
		0	752	64	1185	104	1438	132	1599	149
		20	656	78	1017	113	1259	138	1400	154
		40	561	91	871	122	1082	144	1205	157
		60	466	104	726	130	908	149	1013	161
1000	10000	0	929	64	1443	103	1785	131	1989	148
		20	811	77	1261	112	1564	138	1742	153
		40	693	91	1080	121	1344	143	1499	157
		60	576	103	900	129	1128	149	1260	160
		0	1106	63	1722	102	2134	130	2379	148
1250	12500	20	965	77	1504	112	1868	137	2083	152
		40	825	90	1288	121	1606	143	1793	156
		60	686	103	1073	129	1347	148	1507	160
		0	1307	68	2028	106	2531	133	2787	146
		20	1142	80	1773	113	2219	136	2442	148
1500	15000	40	978	91	1520	120	1911	140	2102	150
		60	814	102	1270	126	1608	144	1789	153
		0	1537	66	2373	106	2910	134	3224	151
		20	1343	79	2076	115	2550	140	2824	155
		40	1151	93	1781	124	2195	146	2432	159
1750	17500	60	960	105	1489	132	1845	151	2048	162
		0	1699	69	2539	108	3270	134	3601	147
		20	1485	80	2307	114	2868	137	3156	149
		40	1273	92	1908	118	2472	141	2718	151
		60	1063	103	1657	127	2081	145	2289	153
2000	20000	0	1857	84	2887	103	3573	131	3879	148
		20	1623	77	2522	112	3128	138	3484	153
		40	1388	91	2180	121	2689	143	2998	157
		60	1153	103	1800	129	2256	149	2521	160
		0	2213	63	3444	102	4268	130	4759	148
2500	25000	20	1931	77	3008	112	3736	137	4167	152
		40	1651	90	2576	121	3212	143	3586	156
		60	1372	103	2147	129	2695	148	3015	160
		0	2614	68	4056	106	5062	133	5574	146
		20	2284	80	3546	113	4438	136	4884	148
3000	30000	40	1956	91	3040	120	3822	140	4204	150
		60	1628	102	2540	126	3216	144	3538	153
		0	3074	66	4746	106	5821	134	6448	151
		20	2687	79	4152	115	5101	140	5649	155
		40	2302	93	3562	124	4391	146	4885	159
4000	40000	60	1920	105	2978	132	3690	151	4096	162
		0	3308	69	5278	108	6540	134	7202	147
		20	2970	80	4614	114	5736	137	6312	149
		40	2546	92	3816	118	4944	141	5438	151
		60	2126	103	3314	127	4162	145	4378	153

Notes :

- HotWater Entering@180 °F and leaving@160 °F
- E.D.B = Entering air dry bulb temperature.
- L.V.G = Leaving air temperature.
- MBH = 1000 Btu/hr

STEAM HEATING RATINGS

Table 6

Model	Nominal CFM	EDB (F)	8 FIN Per Inch.			
			1 Row Coil		2 Row Coil	
			Capacity (MBH)	L.V.G.DB (F)	Capacity (MBH)	L.V.G.DB (F)
250	2500	0	184	67.8	326	120.2
		20	168	82	297	129.5
		40	153	96.4	270	139.5
		60	138	110.0	240	148.3
350	3500	0	274	72.2	495	130.3
		20	250	85.8	452	139
		40	227	99.8	410	147.9
		60	202	113.0	365	155.9
500	5000	0	366	67.5	665	122.5
		20	334	81.5	606	131.7
		40	303	95.8	551	141.5
		60	270	109.6	490	150.1
700	7000	0	509	67	923	121.5
		20	464	81	842	130.8
		40	421	95.4	756	139.5
		60	375	109.2	680	149.3
1000	10000	0	726	66.9	1331	122.6
		20	652	81	1213	131.8
		40	601	95.4	1102	141.5
		60	535	109.4	980	150.1
1250	12500	0	907	66.8	1683	122.5
		20	826	80.9	1516	131.7
		40	751	95.4	1378	141.6
		60	668	109.2	1225	150.3
1500	15000	0	1093	67.2	1995	122.6
		20	995	81.2	1819	131.7
		40	905	95.6	1654	141.6
		60	805	109.3	1470	150.1
1750	17500	0	1282	67	2332	122.9
		20	1158	81	2126	132.1
		40	1062	96	1932	141.8
		60	944	109	1718	150.5
2000	20000	0	1470	67.7	2668	122.9
		20	1340	81.7	2433	132.1
		40	1218	96.1	2210	141.8
		60	1083	109.9	1965	150.5
2250	22500	0	1562	64	2997	122
		20	1497	81	2733	132
		40	1657	107	2483	141
		60	1473	120	2208	150
2500	25000	0	1814	66.8	3327	122.6
		20	1654	80.9	3033	131.8
		40	1503	95.4	2756	141.6
		60	1338	109.2	2450	150.3
3000	30000	0	2186	67.1	3992	122.6
		20	1993	81.2	3639	131.8
		40	1811	95.6	3307	141.6
		60	1610	109.2	2940	150.1
3500	35000	0	2564	67	4664	122.9
		20	2336	81	4252	132.1
		40	6796	96	3864	141.8
		60	1888	109	3436	150.5
4000	40000	0	2941	67.7	5337	123
		20	2681	81.7	4865	132
		40	2436	96.1	4421	141.8
		60	2186	109.9	3930	152.5
4500	45000	0	3124	64	5994	122
		20	2994	81	5466	132
		40	3314	107	4966	141
		60	2946	120	4416	150

Notes :

- Values ratings based on steam pressure of 5 PSIG.
- E.D.B = Entering air dry bulb temperature.
- MBH = 1000 Btu/hr

....Air Handling Unit

HOT WATER RATING, MULTI ZONE

Table 7

Model	Nominal CFM	EDB (F)	8 FPI				14 FPI			
			1 Rows		2 Rows		1 Rows		2 Rows	
			Capacity (MBH)	L.V.G D.B.(F)	Capacity (MBH)	L.V.G D.B.(F)	Capacity (MBH)	L.V.G D.B.(F)	Capacity (MBH)	L.V.G D.B.(F)
250	2500	0	110	36	188	64	155	53	249	88
		20	95	53	163	78	134	67	216	98
		40	80	69	138	90	113	81	182	108
		60	66	84	113	103	93	95	150	117
350	3500	0	159	38	270	68	225	54	357	90
		20	138	54	235	80	194	69	309	100
		40	116	70	199	92	164	82	262	110
		60	95	85	164	104	134	98	215	119
500	5000	0	238	39	402	69	335	57	532	94
		20	205	55	350	82	292	71	463	104
		40	175	71	299	95	248	85	395	114
		60	145	87	249	107	205	98	327	123
700	7000	0	328	39	560	69	465	56	740	93
		20	286	55	487	82	405	71	644	104
		40	243	71	417	94	345	85	549	113
		60	201	86	345	106	285	98	455	122
1000	10000	0	478	40	813	70	680	58	1080	96
		20	417	56	711	83	593	72	942	106
		40	357	72	609	96	507	86	808	116
		60	297	87	508	108	421	99	672	124
1250	12500	0	602	40	1023	71	857	58	1357	96
		20	527	56	895	84	748	73	1185	106
		40	450	72	768	96	639	86	1015	116
		60	375	88	640	108	531	100	848	125
1500	15000	0	706	39	1204	69	1007	57	1603	94
		20	617	55	1055	83	878	72	1400	105
		40	528	71	902	95	750	85	1198	115
		60	439	87	753	107	624	99	998	124
1750	17500	0	837	44	1425	75	1193	62	1896	100
		20	732	58	1248	85	1043	75	1657	107
		40	628	73	1070	96	892	88	1420	114
		60	523	87	892	107	744	99	1185	122
2000	20000	0	968	40	1647	71	1380	59	2189	97
		20	847	57	1442	84	1209	73	1915	107
		40	728	72	1239	97	1035	87	1642	117
		60	607	88	1032	109	864	100	1373	126
2250	22500	0	1088	44	1846	75	1547	63	2451	88
		20	950	59	1616	86	1352	75	2142	107
		40	814	73	1387	96	1156	87	1838	115
		60	678	84	1156	107	963	99	1532	122
2500	25000	0	1204	40	2046	71	1714	58	2714	96
		20	1054	56	1790	84	1496	73	2370	106
		40	900	72	1536	96	1278	86	2030	116
		60	750	88	1280	108	1062	100	1692	125
3000	30000	0	1412	39	2408	69	2014	57	3206	94
		20	1234	55	2110	83	1756	72	2800	105
		40	1058	71	1804	95	1500	85	2396	115
		60	878	87	1506	107	1248	99	1996	124
3500	35000	0	1674	44	2850	75	2386	62	3792	100
		20	1464	58	2496	85	2086	75	3314	107
		40	1256	73	2140	96	1784	88	2840	114
		60	1046	87	1784	107	1488	99	2370	122
4000	40000	0	1936	40	3294	71	2760	59	4378	97
		20	1694	57	2884	84	2418	73	3830	107
		40	1456	72	2478	97	2070	87	3284	117
		60	1214	88	2064	109	1728	100	2746	126
4500	45000	0	2172	44	3682	75	3094	63	4902	88
		20	1900	59	3232	86	2704	75	4284	107
		40	1628	73	2774	98	2312	87	3674	115
		60	1356	84	2312	107	1926	99	3064	122

Notes:

-HotWater Entering@180 F and leaving@160 F

- E.D.B = Entering air dry bulb temperature.

- L.V.G = Leaving air temperature.

- MBH = 1000 Btu/hr

STEAM HEATING RATING, MULTI ZONE

Table 8

Model	Nominal CFM	EDB (°F)	8 FIN Per inch.			
			1 Row Coil		2 Row Coil	
			Capacity (MBH)	L.V.G. DB (°F)	Capacity (MBH)	L.V.G. DB (°F)
250	2500	0	165	61	283	108.1
		20	151	75.7	267	118.5
		40	137	90.7	243	129.5
		60	122	105.1	216	139.6
		0	246	65	445	117.3
350	3500	20	225	79.5	406	127.1
		40	204	93.7	369	137.1
		60	181	107.8	328	146.5
		0	329	60.7	598	110.3
		20	300	75.4	545	120.5
500	5000	40	272	90.2	495	131.4
		60	243	104.8	441	141.2
		0	458	60.3	830	109.3
		20	417	74.9	757	119.7
		40	378	89.8	680	129.5
700	7000	60	337	104.4	612	140.5
		0	653	60.2	1197	110.4
		20	585	74.9	1091	120.6
		40	540	89.8	981	131.4
		60	481	104.3	882	141.3
1000	10000	0	816	60.1	1496	110.3
		20	743	74.8	1364	120.6
		40	675	89.8	1240	131.4
		60	601	104.3	1102	141.3
		0	983	60.4	1798	110.3
1250	12500	20	896	75	1637	120.5
		40	814	90	1488	131.4
		60	724	104.5	1323	141.3
		0	1153	60	2099	110
		20	1051	75	1913	120
1500	15000	40	955	90	1739	131
		60	849	104	1546	141
		0	1323	60.9	2401	110.6
		20	1206	75.5	2189	120.9
		40	1096	90.5	1989	131.6
2000	20000	60	974	104.9	1768	141.4
		0	1478	60	2698	110
		20	1347	75	2459	120
		40	1224	90	2235	131
		60	1088	104	1987	141
2250	22500	0	1632	60.1	2994	110.3
		20	1488	74.8	2729	120.6
		40	1352	89.8	2480	131.4
		60	1202	104.3	2205	141.3
		0	1967	60.5	3592	110.3
2500	25000	20	1793	75.1	3275	120.6
		40	1629	90	2976	131.4
		60	1449	104.5	2646	141.3
		0	2306	60	4198	110
		20	2102	75	3826	120
3000	30000	40	1910	90	3478	131
		60	1698	104	3092	141
		0	2646	60.9	4803	110.6
		20	2412	75.5	4378	120.8
		40	2192	90.5	3878	131.6
3500	35000	60	1949	104.9	3537	141.5
		0	2956	60.9	5396	110.6
		20	2694	75.5	4918	120.8
		40	2448	90.5	4470	131.6
		60	2176	104.9	3974	141.5

Notes :

Values ratings based on steam of pressure 5PSIG.

E.D.B. = Entering air dry bulb temperature.

MBH = 1000 BTU/HR

....Air Handling Unit

FILTER AIR PRESSURE DROP (IN.W.G)

Table9

Filters	Face Velocity F.P.M									
	300	350	400	450	500	550	600	650	700	800
Cleanable	0.037	0.050	0.065	0.081	0.099	0.120	0.156	0.182	0.235	0.325

COIL AIR PRESSURE DROP (IN.W.G)

Table10

FIN PerInch	Rows Deep	Coil Face Velocity F.P.M								
		300		400		500		600		
		Dry	Wet	Dry	Wet	Dry	Wet	Dry	Dry	
8	1	0.05	0.07	0.07	0.1	0.10	0.14	0.14	0.19	0.22
	2	0.09	0.14	0.15	0.2	0.22	0.29	0.3	0.39	0.48
	3	0.11	0.2	0.16	0.31	0.28	0.44	0.39	0.5	0.62
	4	0.15	0.25	0.24	0.4	0.35	0.58	0.48	0.61	0.77
	6	0.24	0.39	0.34	0.61	0.52	0.85	0.71	0.92	1.15
	8	0.30	0.5	0.47	0.82	0.71	1.05	0.95	1.18	1.46

P.D. Correction Factor

Table 10A

Coil FPI			
8	10	12	14
1	1.16	1.32	1.45

Notes:

In order to determine air-side coil pressure drop for cases where the number of fins per inch are greater than 8FPI, multiply the values by the corresponding correction factor given in the table above.

ACCESSORIES AIR SIDE PRESSURE DROP (IN.W.G)

(At 500 FPM Velocity)

Table11

Model	Diffuser	Air Washer		Face & By Pass Damper	Damper	Mixing Box Without Filter	Electrical Heater	Eliminatin	Back Draft Damper
		Class 4	Class 6, 8						
250-1250	0.03	0.22	0.4	0.21	0.05	0.06	0.02	0.1	0.2
15004000	0.04	0.25	0.45	0.25					



....Air Handling Unit

STEAM CORRECTION FACTOR

Table 15

Pressure PSIG	2	5	10	15	20	30	40	50	60
Correction Factor	0.95	1	1.07	1.14	1.19	1.28	1.35	1.42	1.48

15

HOT WATER CORRECTION FACTOR

Table 16

Entering Water Temperature °F	160	180	200	220
Correction Factor	0.75	1	1.25	1.5

CHILLED WATER CORRECTION FACTOR

Table 17

Entering Water Temperature °F	42	44	45	46
Correction Factor	1.09	1.04	1	0.97

VELOCITY CORRECTION FACTOR

Table 12

Coil Face Velocity	350	400	450	500	550	600	700	800
Cooling Coil	0.8	0.88	0.94	1.0	1.05	1.11	1.19	1.28
Heating Coil	0.86	0.92	0.96	1.0	1.03	1.06	1.11	1.15

CAPACITY CORRECTION FACTOR

Table 13

No. Of Rows	Fin Per Inch		
	8	10	12
4	1	1.1	1.19
6	1	1.08	1.15
8	1	1.06	1.1

Note:

In order to determine capacity of coils with 10 or 12 FPI, multiply the capacity relative to 8 FPI by the corresponding correction factor given in the table 13.

CORRECTION FACTOR FOR ETHYLENE GLYCOL MIXTURE

Table 14

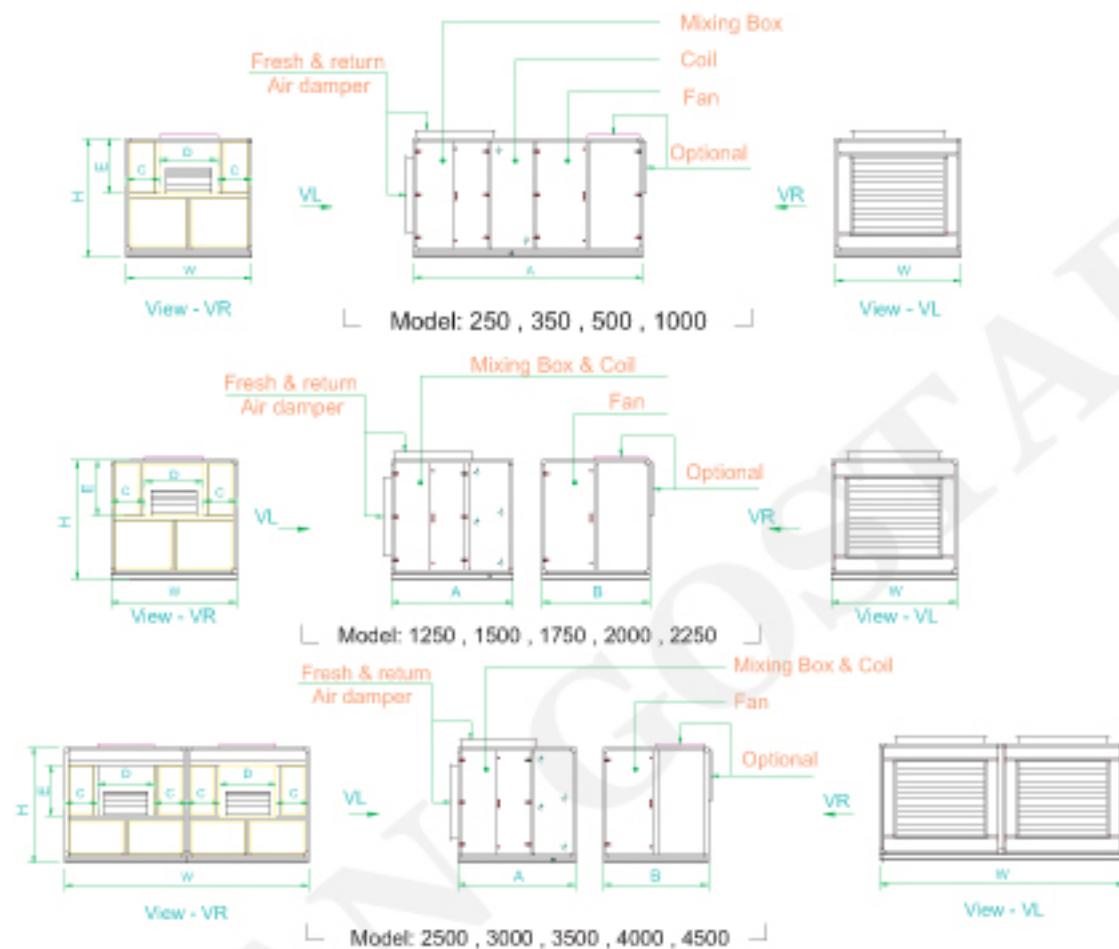
Mixture (By Weight)		Freezing Point	Correction Factor For Cooling
Water	Ethylene Glycol		
100	0	0	1
90	10	- 4	1.02
85	15	- 6.1	1.03
80	20	- 9	1.05
75	25	- 12	1.07
70	30	- 15.6	1.09
65	35	- 19.4	1.11
60	40	- 24	1.14
55	45	- 29.4	1.17
50	50	- 36.1	1.2
45	55	- 45	1.23

$$\text{Flow Rate} = \text{GPM} * \text{Correction Factor (Table 14)}$$



....Air Handling Unit

HORIZONTAL AIR HANDLING UNIT-UNITARY



DIMENSIONS

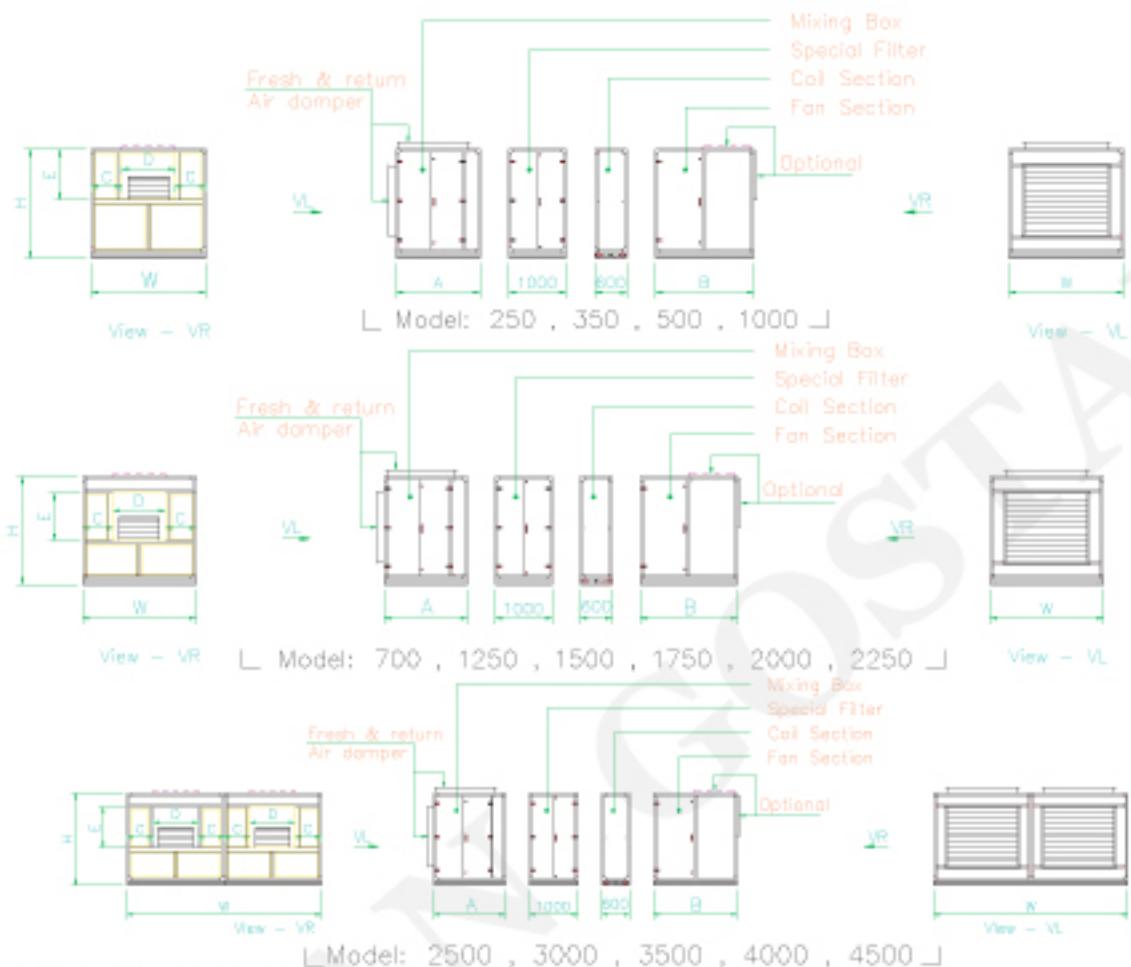
Model	Pos	A	B	C	D	E	H	W
250		2250	---	290	470	470	1050	1050
350		2300	---	290	470	520	1150	1050
500		2550	---	500	500	570	1300	1500
700		2700	---	470	560	615	1400	1500
1000		2900	---	680	640	730	1500	2000
1250		1400	1800	630	740	830	1700	2000
1500		1700	1900	577	845	910	2000	2000
1750		1900	1900	702	845	910	2000	2250
2000		1900	2050	790	920	990	2100	2500
2250		2000	2050	865	920	990	2100	2650
2500		1400	1800	630	740	830	1700	4000
3000		1700	1900	577	845	910	2000	4000
3500		1900	1900	702	845	910	2000	4500
4000		1900	2050	790	920	990	2100	5000
4500		2000	2050	865	920	990	2100	5300

Note: All dimensions in mm.



....Air Handling Unit

HORIZONTAL AIR HANDLING UNIT-SECTIONAL



DIMENSIONS

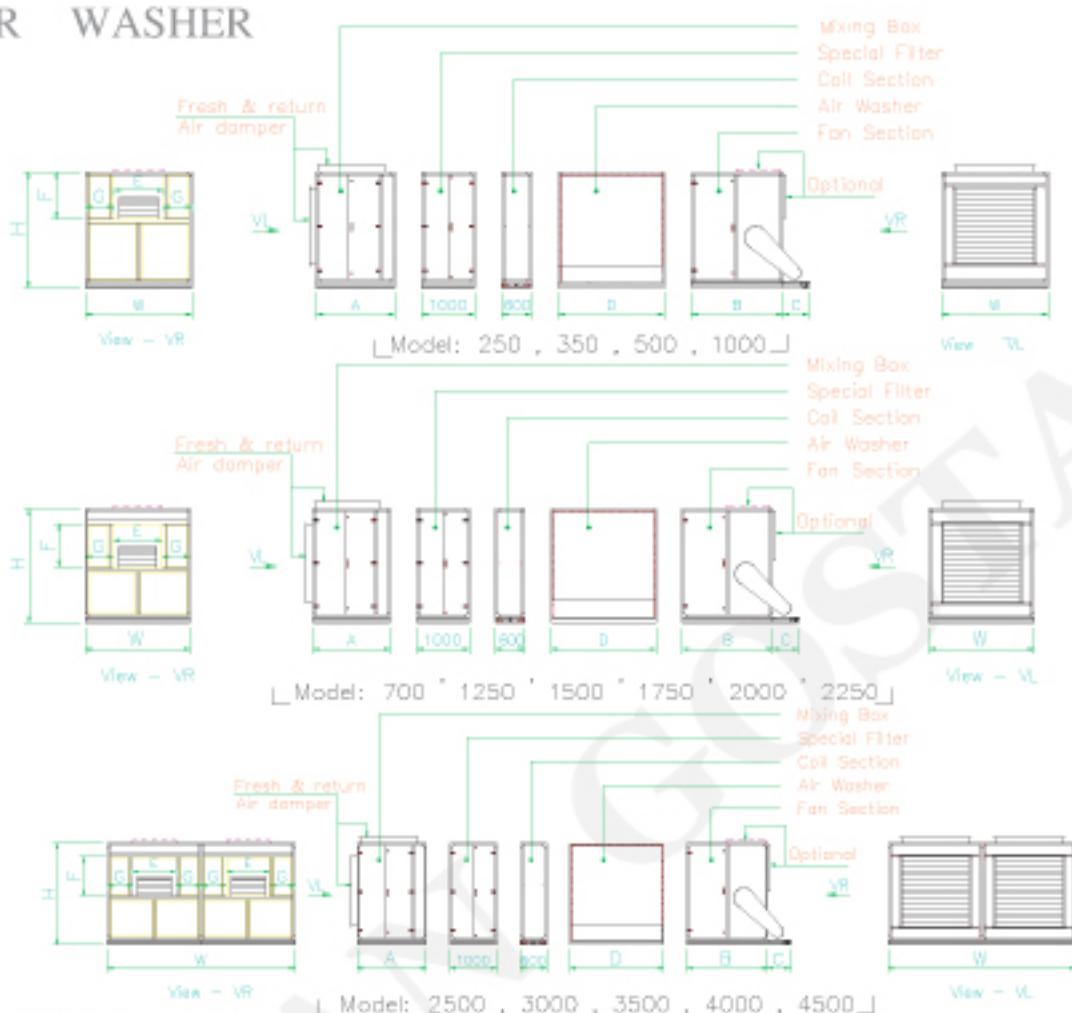
Model	A	B	C	D	E	H	W
250	880	1150	340	470	470	1050	1050
350	880	1200	290	470	520	1150	1050
500	980	1350	500	500	570	1300	1500
700	1070	1400	470	560	615	1400	1500
1000	1070	1600	680	640	730	1500	2000
1250	1070	1800	630	740	830	1700	2000
1500	1270	1900	577	845	910	2000	2000
1750	1470	1900	702	845	910	2000	2250
2000	1470	2050	790	920	990	2100	2500
2250	1570	2050	865	920	990	2100	2650
2500	1040	1800	630	740	830	1700	4000
3000	1270	1900	577	845	910	2000	4000
3500	1470	1900	702	845	910	2000	4500
4000	1470	2050	790	920	990	2100	5000
4500	1570	2050	865	920	990	2100	5300

Note: All dimensions in mm.



....Air Handling Unit

AIR WASHER



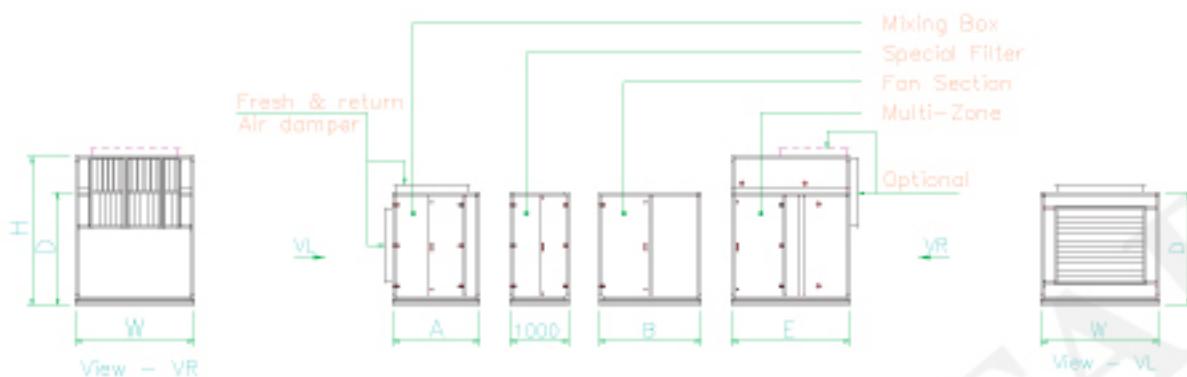
DIMENSIONS

Model	Pos	A	B	C	D	E	F	G	H	W
250	Class 4	880	1150	1000	500	470	470	290	1050	1050
350		880	1200			470	520	290	1150	1050
500		980	1350			500	570	500	1300	1500
700		1070	1400			560	615	470	1400	1500
1000		1070	1600			640	730	680	1500	2000
1250		1070	1800	1755	500	740	830	630	1700	2000
1500		1270	1900			845	910	577	2000	2000
1750		1470	1900			845	910	702	2000	2250
2000		1470	2050			920	990	790	2100	2500
2250		1570	2050			920	990	865	2100	2650
2500	Class 8	1070	1800	2400	500	740	830	630	1700	4000
3000		1270	1900			845	910	577	2000	4000
3500		1470	1900			845	910	702	2000	4500
4000		1470	2050			920	990	790	2100	5000
4500		1570	2050			920	990	865	2100	5300

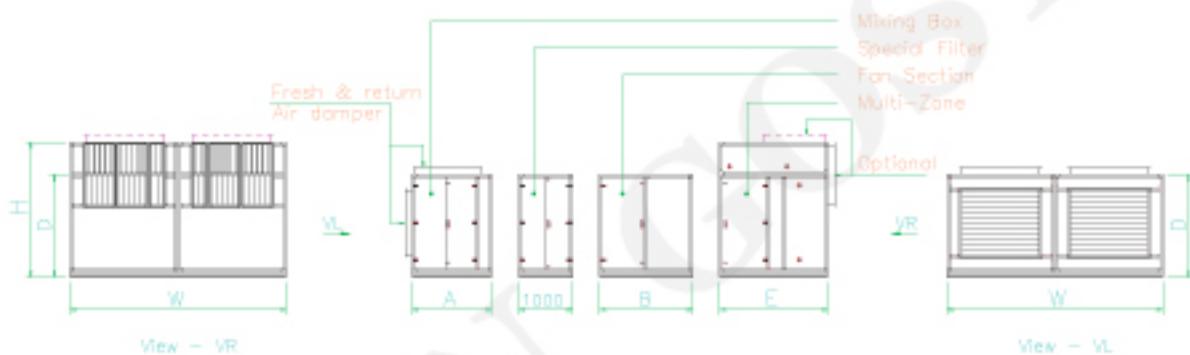
Note: All dimensions in mm.



MULTI ZONE AIR HANDLING UNIT



Model: 250 , 350 , 500 , 700
 L 1000 , 1250 , 1500, 1750 , 2000 , 2250 L



L Model: 2500 , 3000 , 3500, 4000 , 4500 L

DIMENSIONS

Model	Pos	A	B	C	D	H	W
250		880	1150	1150	1050	1500	1050
350		880	1200	1350	1150	1600	1050
500		980	1350	1350	1300	1750	1500
700		1070	1400	1550	1400	1850	1500
1000		1070	1600	1600	1500	1950	2000
1250		1070	1800	1750	1700	2250	2000
1500		1270	1900	2000	2000	2550	2000
1750		1470	1900	2000	2000	2550	2250
2000		1470	2050	2000	2100	2650	2500
2250		1570	2050	2150	2100	2700	2650
2500		1070	1800	1750	1700	2250	4000
3000		1270	1900	2000	2000	2550	4000
3500		1470	1900	2000	2000	2550	4500
4000		1470	2050	2000	2100	2650	5000
4500		1570	2050	2150	2100	2700	5300

Note: All dimensions in mm.



....Air Handling Unit

FAN PERFORMANCE

Table 18

Model	Fan Size	Coil Face Area Sq.ft	C.F.M.	Total Static Pressure in Inches of Water												
				0.5"		0.75"		1"		1.25"		1.5"		2"		
				RPM	H.P.	RPM	H.P.	RPM	H.P.	RPM	H.P.	RPM	H.P.	RPM	H.P.	
250LP	1x13"	5	400	2000	642	0.5	727	0.75	814	0.75	903	1	994	1	—	—
			450	2250	665	0.5	755	0.75	832	1	921	1	920	1	1148	1.5
			500	2500	714	0.75	790	0.75	860	1	929	1	999	1.5	1141	2
			550	2750	763	1	827	1	893	1	956	1.5	1020	1.5	1149	2
			600	3000	761	1	865	1.5	929	1.5	990	1.5	1046	2	1167	2
			700	3500	—	—	943	2	1004	2	1060	2	1112	2	1212	3
			800	4000	—	—	—	—	—	—	1137	2	1186	3	1280	4
			400	2800	570	0.75	640	0.75	705	1	773	1.5	842	1.5	972	2
350LP	1x14"	7	400	3150	695	0.75	755	1	820	1.5	875	1.5	920	1.5	975	2
			500	3500	745	1	860	1.5	925	2	911	2	934	2	976	2
			550	3850	680	1	911	2	995	2	859	2	935	2	972	2
			600	4200	718	1.5	778	2	831	2	890	2	926	3	1015	3
			700	4900	—	—	853	3	904	3	950	3	993	4	1083	4
			800	5600	—	—	—	—	979	4	1023	5.5	1065	5.5	1141	5.5
			400	4000	454	1	515	1	571	1.5	631	1.5	692	2	803	2
			450	4500	478	1.5	539	1.5	592	1.5	641	1.5	693	2	798	2
500LP	1x17"	10	500	5000	935	1.5	965	1.5	610	2	656	2	702	2	798	2
			550	5600	941	1.5	981	2	636	2	682	2	722	2	803	2
			600	6000	—	—	621	2	665	3	720	4	723	2	818	2
			700	7000	—	—	677	3	721	4	757	4	796	5.5	858	5.5
			800	8000	—	—	—	—	778	5.5	818	5.5	848	5.5	914	5.5
			400	5600	414	1.5	474	1.5	530	2	543	3	548	3	700	4
			500	6300	436	1.5	491	1.5	542	3	553	3	545	3	751	4
			550	7200	—	—	512	3	560	4	566	4	561	4	745	5.5
700LP	1x18"	14	600	8400	—	—	557	4	601	4	642	4	681	5.5	757	5.5
			700	9800	—	—	—	—	646	5.5	654	5.5	722	7.5	791	7.5
			800	11200	—	—	—	—	—	—	729	7.5	763	10	888	10
			400	7880	353	2	401	3	448	3	497	4	545	4	637	5.5
			450	8865	373	2	418	3	459	4	502	4	545	4	630	7.5
			500	9850	385	2	436	3	476	4	513	5.5	551	5.5	628	7.5
			550	10835	417	2	457	4	493	5.5	528	5.5	563	7.5	632	7.5
			600	11820	—	—	478	5.5	512	5.5	546	7.5	577	7.5	641	10
1000LP	1x22"	19.7	700	13280	—	—	525	7.5	554	7.5	585	10	614	10	659	15
			800	15790	—	—	—	—	601	10	628	10	655	10	705	15
			400	10220	308	3	347	3	384	4	423	4	462	4	543	7.5
			450	11610	328	3	365	4	407	4	440	5.5	483	5.5	592	10
			500	12900	348	3	381	4	422	5.5	466	5.5	513	7.5	604	10
			550	14190	370	5.5	528	5.5	430	7.5	458	7.5	486	7.5	540	10
			600	15480	376	5.5	422	7.5	449	7.5	476	10	501	10	552	15
			700	18060	—	—	464	10	489	10	513	10	534	10	581	20
1250LP	1x26"	25.8	800	20640	—	—	—	—	535	10	554	10	578	10	616	20
			400	11800	261	3	299	3	336	4	376	5.5	416	5.5	487	10
			450	13275	276	3	310	3	345	5.5	373	5.5	411	5.5	482	10
			500	14750	291	4	323	5.5	353	5.5	382	7.5	413	7.5	475	10
			550	16225	299	5.5	338	5.5	365	7.5	392	7.5	420	10	475	10
			600	17700	329	5.5	353	7.5	380	7.5	409	10	439	10	498	15
			700	20650	342	7.5	386	7.5	410	10	433	10	459	10	498	15
			400	14120	284	4	312	5	345	5.5	379	5.5	412	7.5	479	10
1750LP	1x29"	35.3	450	15880	314	5.5	344	5.5	376	5.5	418	7.5	480	10	515	15
			500	17650	325	5.5	353	7.5	378	7.5	404	10	428	10	489	15
			550	19415	342	7.5	372	10	397	10	421	10	443	10	489	15
			600	21180	—	—	393	10	415	15	438	15	460	15	502	20
			700	24710	—	—	415	15	456	15	476	20	496	20	534	20
			400	16000	306	5.5	336	5.5	364	7.5	391	7.5	419	10	476	15
			450	18000	329	5.5	357	7.5	383	7.5	408	10	432	10	482	15
			500	20000	—	—	379	10	403	10	427	15	449	15	494	15
2000LP	1x32"	40	500	22000	—	—	403	15	425	15	447	15	469	15	509	20
			600	24000	—	—	—	—	448	15	471	20	499	20	537	20
			700	28000	—	—	—	—	—	—	514	20	533	20	567	30
			400	17920	260	5.5	289	5.5	317	7.5	344	10	371	10	429	15
			500	20160	278	5.5	305	7.5	330	7.5	351	10	390	10	445	15
			550	22400	294	5.5	325	10	356	10	383	15	403	15	443	20
			600	26880	—	—	359	15	381	15	400	15	419	20	456	30
			700	31360	—	—	—	—	415	20	436	25	453	25	486	30
2500LP	2x26"	51.6	550	26800	308	2x3	347	2x3	384	2x4	423	2x5.5	462	2x5.5	543	2x7.5
			500	23220	329	2x3	363	2x3	397	2x4	430	2x7.5	494	2x7.5	535	2x10
			550	25800	328	2x3	381	2x3	412	2x4.5	443	2x7.5	473	2x7.5	534	2x10
			600	30960	376	2x5.5	422	2x10	449	2x10	513	2x15	486	2x15	567	—
			700	36120	—	—	—	—	502	2x15	564	2x15	576	2x15	616	2x20
			400	23600	261	2x3	299	2x3	336	2x4	379	2x5.5	412	2x5.5	487	2x10
			450	26550	275	2x3	310	2x3	362	2x4.5	373	2x7.5	411	2x7.5	482	2x10
			500	29160	281	2x3	325	2x3	383	2x5.5	382	2x7.5	413	2x7.5	475	2x10
3000LP	2x29"	59	550	32450	299	2x5.5	338	2x5.5	385	2x7.5	392	2x7.5	420	2x7.5	475</	

....Air Handling Unit

FAN PERFORMANCE

Table 18(Cont.)

Model	FanSize	Coil Face Area Sqft	Coil Face Vel. F.P.M.	C.R.M.	Total Static Pressure in Inches of Water											
					2.5"		3"		3.5"		4"		5"		6"	
					RPM	H.P.	RPM	H.P.	RPM	H.P.	RPM	H.P.	RPM	H.P.	RPM	H.P.
250HP	1x14"	5	450	2250	—	—	—	—	—	—	—	—	—	—	—	—
			500	2500	1284	2	1422	3	1533	4.0	—	—	—	—	—	—
			550	2750	1275	3	1407	3.0	1518	4.0	1630	4	1817	5.5	1982	10
			600	3000	1229	3	1398	3.0	1510	4.0	1613	5.5	1807	5.5	1962	10
350HP	1x16"	7	400	2800	—	—	—	—	—	—	—	—	—	—	—	—
			450	3150	—	—	—	—	—	—	—	—	—	—	—	—
			500	3500	1085	3.0	—	—	—	—	—	—	—	—	—	—
			550	3850	1090	4.0	1589	4	—	—	—	—	—	—	—	—
500HP	1x17"	10	600	4200	1504	4.0	1594	4	1283	5.5	—	—	—	—	—	—
			650	4500	1549	5.5	1222	4.5	1300	5.5	1379	7.5	1532	10	—	—
			700	4900	1249	5.5	1278	7.5	1344	7.5	1410	7.5	1544	10	1682	15
			750	5600	1211	5.5	—	—	—	—	—	—	—	—	—	—
700HP	1x12"	14	600	8000	1031	9.5	1100	7.5	1169	7.5	1239	10	1383	10	—	—
			650	8400	1085	10	1135	10	1212	10	1282	10	1381	15	—	—
			700	8800	1168	10	1222	10	1277	15	—	—	—	—	—	—
			750	9200	733	7.5	920	7.5	1003	10	1081	15	—	—	—	—
1000HP	1x22"	19.7	600	8400	834	7.5	913	10	993	10	1020	15	1211	15	—	—
			650	8800	853	10	919	10	986	15	1064	15	1190	20	—	—
			700	9200	889	15	945	15	1002	15	1060	15	1178	20	—	—
			750	9600	780	7.5	778	10	839	15	—	—	—	—	—	—
1250HP	1x26"	25.8	400	10320	619	7.5	—	—	—	—	—	—	—	—	—	—
			450	11385	608	10	665	10	719	15	768	20	847	30	935	30
			500	12850	599	15	662	15	714	20	766	25	848	35	925	40
			550	13915	597	15	655	15	710	20	761	25	847	35	925	40
1500HP	1x28"	29.5	600	11800	—	—	—	—	—	—	—	—	—	—	—	—
			650	13275	548	15	597	15	638	15	—	—	—	—	—	—
			700	14750	539	15	592	15	628	25	672	25	758	35	835	35
			750	16225	533	15	582	15	630	25	672	25	758	35	835	35
1750HP	1x29"	35.3	400	14120	643	15	—	—	—	—	—	—	—	—	—	—
			450	15885	533	15	594	15	638	20	677	25	758	35	835	35
			500	17850	531	15	585	20	628	25	675	25	758	35	835	35
			550	19415	535	20	681	20	630	25	677	30	758	35	835	35
2000HP	1x32"	40	600	21180	944	20	984	20	628	25	672	30	758	35	830	50
			650	24710	570	25	905	25	641	30	677	35	758	40	825	50
			700	24000	664	25	601	25	638	30	675	30	758	40	827	50
			750	28800	601	30	633	25	664	30	675	30	758	50	823	50
2250HP	2x32"	50.6	400	17920	485	15	934	20	975	20	613	30	—	—	—	—
			450	20160	479	20	929	20	970	20	613	30	—	—	—	—
			500	23400	478	20	924	20	965	20	608	30	—	—	—	—
			550	24640	483	20	923	20	965	20	608	30	—	—	—	—
2500HP	2x26"	51.6	400	20240	619	2x7.5	—	2x10	—	2x15	—	2x18	—	2x20	—	—
			450	22700	608	2x15	665	2x15	615	714	2x15	720	2x20	2x20	2x20	—
			500	25200	598	2x15	662	2x15	615	714	2x15	720	2x20	2x20	2x20	—
			550	27830	597	2x15	655	2x15	615	714	2x15	720	2x20	2x20	2x20	—
3000HP	2x29"	59	400	23800	—	—	—	—	—	—	—	—	—	—	—	—
			450	26500	548	2x15	597	2x15	638	2x15	672	2x25	759	2x35	—	—
			500	29100	539	2x15	592	2x15	638	2x15	672	2x25	758	2x35	—	—
			550	32450	533	2x15	589	2x15	630	2x15	672	2x25	758	2x35	—	—
3500HP	2x29"	76.8	600	35400	631	2x15	584	2x20	635	2x25	677	2x25	758	2x35	—	—
			700	41300	541	2x20	583	2x20	628	2x25	677	2x25	758	2x35	—	—
			750	42360	544	2x20	584	2x20	628	2x25	672	2x30	758	2x35	800	2x50
			750	49420	570	2x25	605	2x25	681	2x30	677	2x30	750	2x40	820	2x50
4000HP	2x32"	80	400	32000	634	2x15	784	2x15	634	2x20	674	2x20	756	2x35	—	—
			450	36000	532	2x15	784	2x20	634	2x20	674	2x20	756	2x35	—	—
			500	40000	538	2x20	582	2x20	629	2x25	672	2x25	756	2x35	—	—
			550	44000	549	2x20	589	2x20	630	2x25	672	2x30	756	2x35	—	—
4500HP	2x32"	88.8	600	48000	634	2x25	601	2x20	634	2x25	675	2x30	751	2x40	840	2x60
			700	54000	601	2x30	633	2x20	634	2x25	675	2x30	751	2x40	845	2x60
			750	35840	485	2x15	534	2x20	—	—	—	—	—	—	—	—
			750	40320	479	2x20	529	2x20	575	2x25	613	2x30	—	—	—	—
5000HP	2x32"	96.6	400	44800	478	2x20	525	2x20	570	2x25	608	2x30	—	—	—	—
			450	49280	483	2x20	523	2x25	565	2x30	608	2x30	—	—	—	—
			500	53270	518	2x25	528	2x30	565	2x40	611	2x40	675	2x50	741	2x60
			550	53270	518	2x30	549	2x30	580	2x40	611	2x40	675	2x50	741	2x60

Note: Selections in shaded areas not recommended for cooling applications.



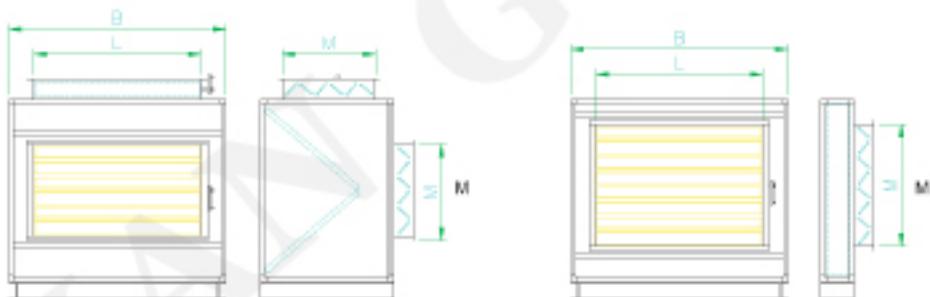
....Air Handling Unit

DIMENSIONS

COILS & FILTERS

Table 19

Model	Nominal CFM	Coils				Filter Face Area	
		No. of Coil Circuits	Face HGT mm	Face LGT mm	Face area (FT)	V Type (FT)	Flat (FT)
250	2500	1x16	600	790	5.1	9.7	6
350	3500	1x22	825	790	7	11.4	8
500	5000	1x20	750	1240	10	17.1	10
700	7000	1x28	1050	1240	14	22	14
1000	10000	1x28	1050	1740	19.7	31	20
1250	12500	2x18	1350	1740	25.8	36	26
1500	15000	2x21	1575	1740	29.5	48.2	30
1750	17500	2x22	1650	1990	35.3	60	40
2000	20000	2x22	1650	2240	40	60	40
2250	22500	2x23	1725	2390	44.8	2x36	2x22
2500	25000	4x18	1350	2x1740	51.6	2x36	2x25
3000	30000	4x21	1575	2x1740	59	2x48.2	2x30
3500	35000	4x22	1650	2x1990	70.6	2x60	2x35
4000	40000	4x22	1650	2x2240	80	2x60	2x40
4500	45000	4x23	1725	2x2390	88.8	2x60	2x44



DAMPERS

Table 20

Model	Nominal CFM	With Mixing Box		WithOut Mixing Box	
		M(Cm)	L(Cm)	M(Cm)	L(Cm)
250	2500	510	910	570	1000
350	3500	510	910	570	1000
500	5000	610	1360	670	1450
700	7000	710	1360	770	1450
1000	10000	710	1860	770	1950
1250	12500	710	1860	770	1950
1500	15000	910	1860	970	1950
1750	17500	1110	1800	1170	1890
2000	20000	1110	2040	1170	2130
2250	22500	1210	2040	1270	2130
2500	25000	710	1860	770	1950
3000	30000	910	1860	970	1950
3500	35000	1110	1800	1170	1950
4000	40000	1110	2040	1170	2130
4500	45000	1210	2040	1270	2130

WATER PRESSURE DROP IN TUBES [FEET WATER]

Table21

Model	Water Velocity Feet Per Sec. 1Row											
	0.5	1	1.5	2	2.5	3	3.5	4	5	6	7	8
250, 350	0.11	0.29	0.53	0.8	1.13	1.44	1.82	2.22	3.04	4	4.95	6.06
500, 700	0.14	0.36	0.65	0.95	1.35	1.75	2.2	2.7	3.7	4.75	5.9	7.3
1000,1250, 1500,2500, 3000	0.16	0.42	0.75	1.02	1.6	2.08	2.62	3.16	4.38	5.73	7.17	8.85
1750,3500	0.17	0.45	0.8	1.2	1.7	2.25	2.8	3.4	4.7	6.2	7.7	9.25
2000,4000	0.2	0.49	0.88	1.3	1.85	2.43	3.03	3.67	5.1	6.68	8.38	10.32
2250,4500	0.18	0.5	0.9	1.35	1.9	2.5	3.15	3.8	5.3	6.9	8.7	10.7

Model	Water Velocity Feet PerSec. 2Rows											
	0.5	1	1.5	2	2.5	3	3.5	4	5	6	7	8
250, 350	0.13	0.34	0.62	0.92	1.31	1.7	2.14	2.61	3.58	4.68	5.82	7.12
500, 700	0.15	0.41	0.75	1.1	1.56	2.04	2.55	3.12	4.3	5.57	6.9	8.54
1000,1250, 1500,2500, 3000	0.18	0.49	0.88	1.29	1.85	2.4	2.96	3.66	5.13	6.7	8.38	10.35
1750,3500	0.2	0.53	0.95	1.42	2.01	2.63	3.3	4	5.55	7.25	9.05	11.2
2000,4000	0.21	0.57	1.02	1.51	2.05	2.83	3.54	4.28	5.97	7.81	9.78	12.07
2250,4500	0.21	0.58	1.05	1.56	2.25	2.95	3.7	4.45	6.2	8.81	10.2	12.06

Model	Water Velocity Feet Per Sec. 3Rows											
	0.5	1	1.5	2	2.5	3	3.5	4	5	6	7	8
250, 350	0.17	0.45	0.82	1.23	1.74	2.26	2.86	3.52	4.82	6.3	7.85	9.66
500, 700	0.21	0.55	1	1.48	2.13	2.8	3.48	4.3	5.9	7.7	9.65	11.95
1000,1250, 1500,2500, 3000	0.24	0.67	1.16	1.8	2.54	3.33	4.21	5.15	7.15	9.37	11.7	14.15
1750,3500	0.26	0.73	1.3	1.95	2.75	3.6	4.55	5.6	7.8	10.2	12.7	15.75
2000,4000	0.28	0.79	1.4	2.07	2.98	3.9	4.93	6.05	8.4	11.05	13.8	16.7
2250,4500	0.29	0.85	1.45	2.15	3.1	4.1	5.15	6.3	8.75	11.5	14.4	17.85

....Air Handling Unit

WATER PRESSURE DROP IN TUBES [FEET WATER]

Table21(Cont.)

Model	Water VelocityFeet Per Sec. 4Rows											
	0.5	1	1.5	2	2.5	3	3.5	4	5	6	7	8
250, 350	0.21	0.56	1.02	1.51	2.17	2.83	3.57	4.42	6.05	7.9	9.92	12.2
500, 700	0.26	0.7	1.25	1.87	2.7	3.5	4.4	5.45	7.45	9.8	12.25	15.2
1000, 1250, 1500, 2500, 3000	0.29	0.85	1.51	2.23	3.21	4.22	5.36	6.6	9.15	12	15	18.63
1750, 3500	0.32	0.93	1.65	2.45	3.5	4.6	5.8	7.2	10	13.1	16.4	20.3
2000, 4000	0.35	1.01	1.78	2.62	3.81	4.98	6.32	7.76	10.83	14.24	17.83	22.09
2250, 4500	0.36	1.06	1.85	2.72	3.98	5.22	6.6	8.1	11.3	14.85	18.6	23.1

Model	Water Velocity Feet Per Sec. 6Rows											
	0.5	1	1.5	2	2.5	3	3.5	4	5	6	7	8
250, 350	0.29	0.8	1.44	2.13	3.08	4.03	5.05	6.2	8.54	11.28	14.07	17.35
500, 700	0.36	0.98	1.8	2.65	3.83	5	6.3	7.77	10.7	14.14	17.78	21.93
1000, 1250, 1500, 2500, 3000	0.43	1.18	2.19	3.2	4.7	6.11	7.73	8.8	13.21	17.4	22.9	27.04
1750, 3500	0.48	1.3	2.4	3.5	5.1	7.65	8.4	10.35	14.4	19	24	30
2000, 4000	0.52	1.39	2.56	3.78	5.53	7.25	9.15	11.26	15.66	20.7	26.11	32.2
2250, 4500	0.54	1.45	2.7	3.95	5.8	7.6	9.65	11.8	16.5	21.7	27.44	33.75

Model	Water VelocityFeet Per Sec. 8Rows											
	0.5	1	1.5	2	2.5	3	3.5	4	5	6	7	8
250, 350	0.38	1.04	1.86	2.73	3.97	5.23	6.53	7.98	11.03	14.65	18.22	22.5
500, 700	0.46	1.23	2.28	3.41	4.98	6.57	8.22	10.1	13.96	18.48	23.05	28.6
1000, 1250, 1500, 2500, 3000	0.57	1.51	2.82	4.18	6.1	8	10.1	12.4	17.37	22.81	28.85	35.4
1750, 3500	0.64	1.64	3.1	4.55	6.65	8.7	11	13.55	18.9	24.9	31.5	38.8
2000, 4000	0.69	1.78	3.35	4.95	7.25	9.52	12	14.76	20.5	27.16	34.4	42.31
2250, 4500	0.71	1.85	3.5	5.2	7.65	10	12.7	15.5	21.6	28.6	36.3	44.4

Coil water side pressure drop correction factor for temperature gradient

Table21(Cont.)

Average Water Temperature F	40	50	60	80	100	120	140	150	160	180	200	220
Correction Factor	1.04	1	0.96	0.9	0.86	0.83	0.8	0.78	0.77	0.76	0.74	0.73

- Actual water side P.D. = P.D. (Table 21) x C.F. (Table 21 cont)



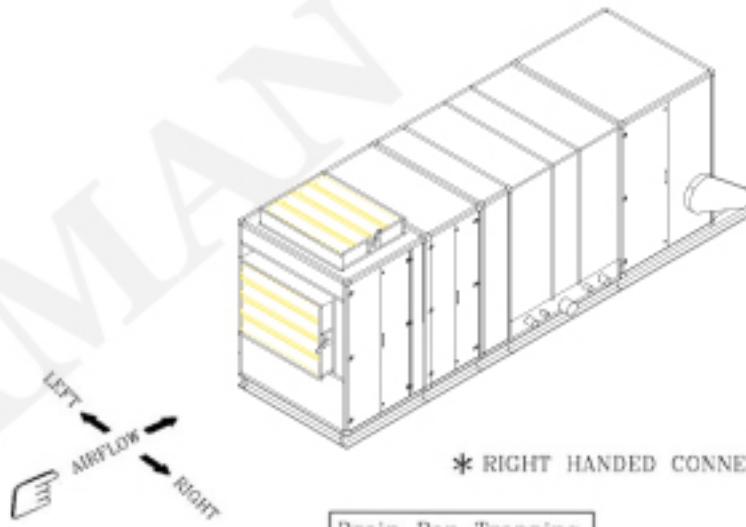
....Air Handling Unit

CONNECTION SIZE

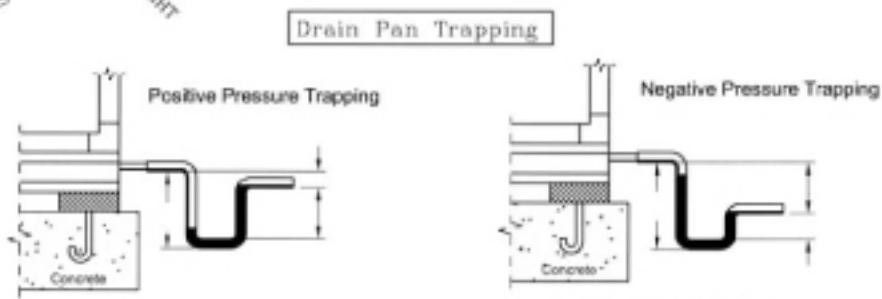
CHILLED & HOT WATER & STEAM COIL CONNECTION

Table22

Model	Chilled Water			Hot Water				Steam			
	4Row	6Row	8Row	1Row	2Row	3Row	4Row	Supply	Condenser	1Row	2Row
250	11/4"	11/2"	11/2"	1"	1"	11/4"	11/4"	11/2"	11/2"	11/4"	11/4"
350	11/2"	2"	2"	11/4"	11/4"	11/2"	11/2"	11/2"	11/2"	11/4"	11/4"
500	11/2"	2"	2"	11/4"	11/4"	11/2"	11/2"	2"	2"	11/2"	11/2"
700	2"	2"	21/2"	11/2"	11/2"	2"	2"	2"	2"	11/2"	11/2"
1000	2"	21/2"	21/2"	11/2"	11/2"	2"	2"	2"	2"	11/2"	11/2"
1250	2*2"	2*2"	2*21/2"	2*11/2"	2*11/2"	2*2"	2*2"	2*2"	2*2"	2*11/2"	2*11/2"
1500	2*2"	2*2"	2*21/2"	2*11/2"	2*11/2"	2*2"	2*2"	2*2"	2*2"	2*11/2"	2*11/2"
1750	2*21/2"	2*21/2"	2*21/2"	2*11/2"	2*11/2"	2*2"	2*21/2"	2*2"	2*2"	2*11/2"	2*11/2"
2000	2*21/2"	2*21/2"	2*21/2"	2*11/2"	2*11/2"	2*2"	2*21/2"	2*2"	2*2"	2*11/2"	2*11/2"
2250	2*21/2"	2*21/2"	2*21/2"	2*11/2"	2*11/2"	2*2"	2*21/2"	2*2"	2*2"	2*11/2"	2*11/2"
2500	4*2"	4*2"	4*21/2"	4*11/2"	4*11/2"	4*2"	4*2"	4*2"	4*2"	4*11/2"	4*11/2"
3000	4*2"	4*2"	4*21/2"	4*11/2"	4*11/2"	4*2"	4*2"	4*2"	4*2"	4*11/2"	4*11/2"
3500	4*21/2"	4*21/2"	4*21/2"	4*11/2"	4*11/2"	4*2"	4*21/2"	4*2"	4*2"	4*11/2"	4*11/2"
4000	4*21/2"	4*21/2"	4*21/2"	4*11/2"	4*11/2"	4*2"	4*21/2"	4*2"	4*2"	4*11/2"	4*11/2"
4500	4*21/2"	4*21/2"	4*21/2"	4*11/2"	4*11/2"	4*2"	4*21/2"	4*2"	4*2"	4*11/2"	4*11/2"



* RIGHT HANDED CONNECTION ARE SHOWN.



EVAPORATIVE COOLING EFFICIENCY (E) / CLASS 4

Table A

Air Velocity	450	475	500	525	550
E	0.594	0.572	0.555	0.536	0.519

EVAPORATIVE COOLING EFFICIENCY (E) / CLASS 6&8

27

Table B

PF.	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.0
E	0.60	0.64	0.68	0.72	0.76	0.80	0.84	0.88	0.92	0.95	1.0

AIR WASHER PERFORMANCE FACTORS (P.F)

Table C

Model	250		350		500		700		1000		1250	
	C6	C8										
PF.	0.525	0.815	0.525	0.815	0.548	0.821	0.548	0.821	0.548	0.821	0.548	0.821

Model	1500		1750		2000		2250		2500		3000	
	C6	C8										
PF.	0.571	0.854	0.571	0.854	0.571	0.854	0.571	0.854	0.548	0.821	0.571	0.854

Model	3500		4000		4500	
	C6	C8	C6	C8	C6	C8
PF.	0.571	0.854	0.571	0.854	0.571	0.854



AIR WASHER SELECTION PROCEDURE

Given:

Entering air D.B temperature = 95°F

Entering air W.B temperature = 63°F

Sensible cooling load = 85 MBH

Design air flow rate = 10000 CFM

Room D.B temperature = 77°F

Determine the required air washer model ,

$$Q = 1.085 \times \text{CFM} \times (\text{D.B.Room.} - \text{D.B. Lvg.})$$

$$\begin{aligned} \text{D.B. Lvg.} &= \text{D.B. Room} - \frac{Q}{1.085 \times \text{CFM}} \\ &= 77 - \frac{85000}{1.085 \times 10000} = 69.16^\circ\text{F} \end{aligned}$$

Considering the required air flow rate in CFM and the unit available nominal airflow rate, air handling unit model SRAH-1000 is chosen .

Evaporative cooling efficiency (E) is determined as,

$$E = \frac{\text{D.B.Ent.} - \text{D.B.Lvg.}}{\text{D.B.Ent.} - \text{W.B.Ent.}} = \frac{95 - 69.16}{95 - 63} = 0.8$$

The coil face area for model 1000 is 20 FT therefore,

$$F.V. = \frac{10000}{20} = 500 \text{ FPM}$$

Considering the air velocity and the values in table (A) the (E) value for class 4 air washer is equal to 0.555 which is less than the calculated value therefore class 4 air washer does not satisfy the requirement. In this case since the (E) value is known, the (P.F.) Value from table (B) is determined as being equal to 0.75. Now, considering the unit model SRAH-1000, the (P.F.) Value and table (C) the (P.F.) value for class 6 air washer is less than the value calculated therefore, class 8 washer satisfies the requirement.

We also notice that the (P.F.) value given is 0.821 therefore, the actual (E) value is 0.856 (Table B) the Lvg. Air D.B. temperature is given as,

$$\text{D.B. Lvg.} = \text{D.B. Ent.} - E \times (\text{D.B. Ent.} - \text{W.B. Ent.}) = 95 - 0.821 \times (95 - 63) = 68.7^\circ\text{F}$$

Therefore, the actual air washer cooling capacity is given as,

$$Q = 1.085 \times \text{CFM} \times (\text{D.B. Room} - \text{D.B. Lvg.}) = 1.085 \times 10000 \times (77 - 68.7) = 90055 \text{ BTU / HR} \approx 90 \text{ MBH}$$

Entering the psychrometric chart with the leaving air D.B. and W.B. temperatures of 68.7°F and 63°F respectively, the relative humidity of the air is determined to be 73%.

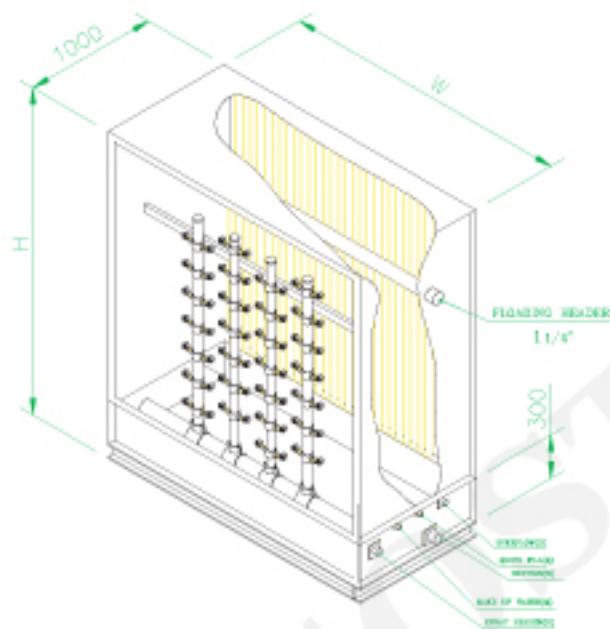
Note :

Abbreviations Ent. and Lvg. denote air Entering and Leaving air washer.



....Air Handling Unit

AIR WASHER CLASS 4



ENGINEERING DATA

Model	Nominal CFM	Face Area (Sq.ft)	GPM	Nozzle Head	Pump Head	Weight(Kg)	Dimensions(mm)		Connection(inch)						
							Net.	Oper.	A	B	D	O	S	H	M
SGAW-4 250	2500	5	11	55	59	250	510	1220	1050	1	1	1 1/2	1 1/2	3/4	3/4
SGAW-4 350	3500	7	15	55	60	300	560	1360	1050	1	1	1 1/2	1 1/2	3/4	3/4
SGAW-4 500	5000	10	24	55	60	350	730	1290	1500	1	1	1 1/2	1 1/2	3/4	3/4
SGAW-4 700	7000	14	35	55	61	400	780	1590	1500	1	1	2	2	3/4	3/4
SGAW-4 1000	10000	19.7	44	55	62	500	1025	1600	2000	1	1	2	2	3/4	3/4
SGAW-4 1250	12500	25.3	59	55	62	550	1075	1930	2000	1	1	2	2	3/4	3/4
SGAW-4 1500	15000	29.5	63	55	63	600	1125	2200	2000	1	1	2 1/2	3	3/4	3/4
SGAW-4 1750	17500	35.3	70	55	64	650	1250	2230	2250	1	1	2 1/2	3	3/4	3/4
SGAW-4 2000	20000	40	79	55	64	700	1360	2260	2500	1	1	3	3	3/4	3/4
SGAW-4 2250	22500	44	97	55	64	800	1550	2300	2650	1	1	3	3	3/4	3/4
SGAW-4 2500	25000	50.6	119	55	62	1100	2150	1930	4000	2*1	2*1	2*2	2*2	3/4	3/4
SGAW-4 3000	30000	59	126	55	63	1200	2250	2200	4000	2*1	2*1	2*2 1/2	2*3	3/4	3/4
SGAW-4 3500	35000	70.6	140	55	64	1300	2500	2230	5000	2*1	2*1	2*3	2*3	3/4	3/4
SGAW-4 4000	40000	80	158	55	64	1400	2720	2260	5000	2*1	2*1	2*3	2*3	3/4	3/4
4500	45000	88	194	55	64	1600	3100	2300	5300	2*1	2*1	2*3	2*3	3/4	3/4

Note:

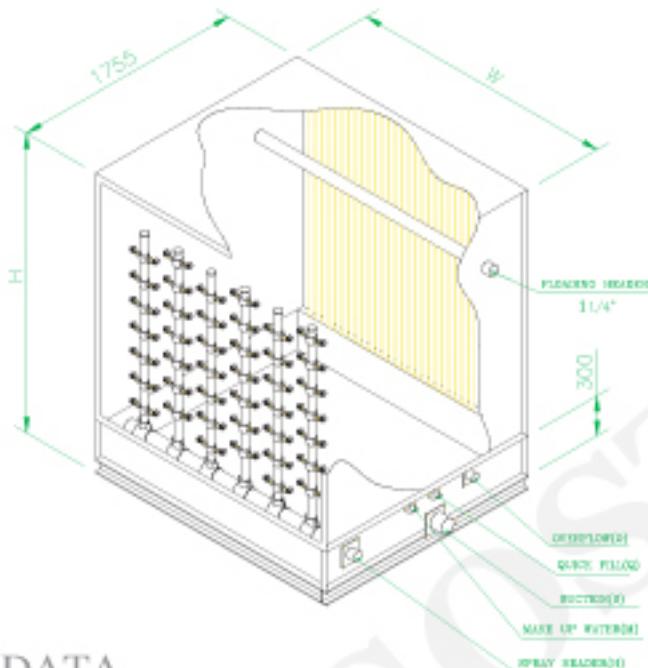
1-Nozzle head and pump head in feet of water

2-Roughing in dimensions and specifications.



....Air Handling Unit

AIR WASHER CLASS 6



ENGINEERING DATA

Model	Nominal CFM	Face Area (Sq.ft)	GPM	Nozzle Head	Pump Head	Weight(Kg)		Dimensions(mm)		Connection(inch)						
						Net.	Oper.	A	B	D	O	S	H	M	Q	
SGAW-6 250	2500	5	15	55	59	450	950	1220	1050	1	1	2	1 1/2	3/4	3/4	
SGAW-6 350	3500	7	22	55	60	500	1000	1360	1050	1	1	2	1 1/2	3/4	3/4	
SGAW-6 500	5000	10	35	55	60	550	1280	1290	1500	1	1	2	1 1/2	3/4	3/4	
SGAW-6 700	7000	14	46	55	61	600	1330	1590	1500	1	1	2	2	3/4	1	
SGAW-6 1000	10000	19.7	62	55	62	720	1700	1600	2000	1	1	2 1/2	2	1	1	
SGAW-6 1250	12500	25.3	79	55	62	825	1800	1930	2000	1 1/2	1 1/2	3	3	1	1	
SGAW-6 1500	15000	29.5	95	55	63	900	1900	2200	2250	1 1/2	1 1/2	3	3	1	1	
SGAW-6 1750	17500	35.3	101	55	64	980	2100	2230	2500	1 1/2	1 1/2	3	3	1	1	
SGAW-6 2000	20000	40	119	55	64	1050	2300	2260	2650	1 1/2	1 1/2	2*2 1/2	3	1	1	
SGAW-6 2250	22500	44	143	55	64	1200	2600	2300	4000	1 1/2	1 1/2	2*2 1/2	3	1	1	
SGAW-6 2500	25000	50.6	158	55	62	1650	3600	1930	4000	2*1 1/2	2*1 1/2	2*3	2*3	1	1	
SGAW-6 3000	30000	59	190	55	63	1800	3800	2200	4000	2*1 1/2	2*1 1/2	2*3	2*3	1	1	
SGAW-6 3500	35000	70.6	202	55	64	1960	4200	2230	4500	2*1 1/2	2*1 1/2	2*3	2*3	1	1	
SGAW-6 4000	40000	80	238	55	64	2100	4600	2260	5000	2*1 1/2	2*1 1/2	2*3	2*3	1	1	
SGAW-6 4500	45000	88	286	55	64	2400	5200	2300	5300	2*1 1/2	2*1 1/2	2*3	2*3	1	1	

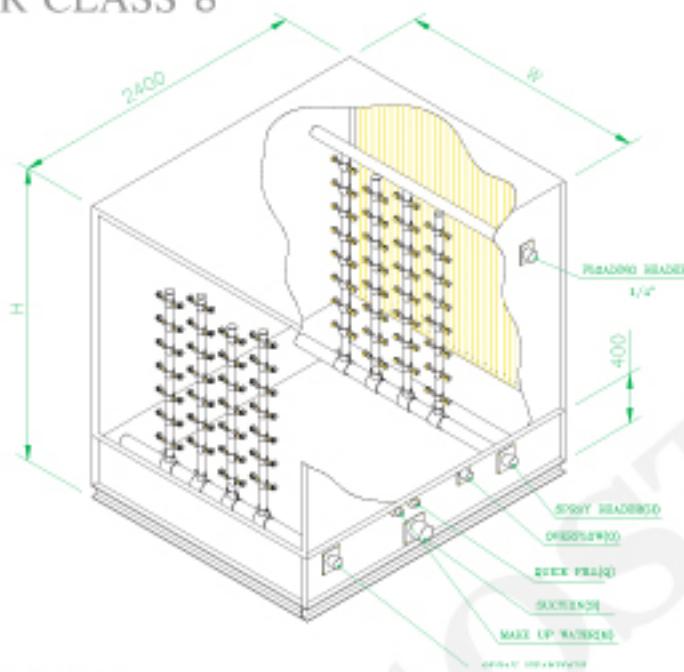
Note:

- 1-Nozzlehead and pump head infeetofwater.
- 2-Roughing indimensionsand specifications.



....Air Handling Unit

AIR WASHER CLASS 8



ENGINEERING DATA

Model	Nominal CFM	Face Area (Sq.ft)	GPM	Nozzle Head	Pump Head	Weight(Kg)		Dimensions(mm)		Connection(inch)					
						Net.	Oper.	A	B	D	O	S	H	M	Q
SGAW-8 250	2500	5	22	55	59	600	1500	1320	1050	2	2	2	2	2+1½	¾
SGAW-8 350	3500	7	30	55	60	650	1550	1460	1050	2	2	2	2	2+1½	¾
SGAW-8 500	5000	10	48	55	60	720	2050	1390	1500	2	2	2	2	2+1½	¾
SGAW-8 700	7000	14	70	55	61	840	2150	1690	1500	2	2	2	2	2+2	¾
SGAW-8 1000	10000	19.7	97	55	62	950	2750	1700	2000	2	2	3	2	2	1
SGAW-8 1250	12500	25.3	119	55	62	1050	2850	2030	2000	2	2	3	2	3	1
SGAW-8 1500	15000	29.5	127	55	63	1200	3000	2300	2000	2	2	4	2	3	1
SGAW-8 1750	17500	35.3	143	55	64	1375	3400	2330	2250	2	2	4	2	3	1
SGAW-8 2000	20000	40	158	55	64	1450	3750	2360	2500	2	2	4	2	3	1
SGAW-8 2250	22500	44	191	55	64	1650	4300	2400	2650	2	2	4	2	3	1
SGAW-8 2500	25000	50.6	238	55	62	2100	5700	2030	4000	2+2	2+2	2+3	4+3	1	1
SGAW-8 3000	30000	59	254	55	63	2400	6000	2300	4000	2+2	2+2	2+4	4+3	1	1
SGAW-8 3500	35000	70.6	286	55	64	2750	6800	2330	4500	2+2	2+2	2+4	4+3	1	1
SGAW-8 4000	40000	80	316	55	64	2900	7500	2360	5000	2+2	2+2	2+4	4+3	1	1
SGAW-8 4500	45000	88	382	55	64	3300	8600	2400	5300	2+2	2+2	2+4	4+3	1	1

Note:

- 1-Nozzlehead and pump head in feet of water.
- 2-Roughing indimensionsand specifications.

....Air Handling Unit

HUMIDIFIERS
Spray Nozzle Humidifier

Model	Nominal CFM	Absorbed Moisture		Header Size (Inch)
		$\Delta W=5$	$\Delta W=10$	
250	2500	8	15	1
350	3500	12	22	1
500	5000	16	31	1
700	7000	23	44	1 $\frac{1}{4}$
1000	10000	33	62	1 $\frac{1}{4}$
1250	12500	42	78	1 $\frac{1}{4}$
1500	15000	50	94	1 $\frac{1}{2}$
1750	17500	58	125	2
2000	20000	66	110	2
2250	22500	75	156	2x1 $\frac{1}{4}$
2500	25000	83	140	2x1 $\frac{1}{4}$
3000	30000	100	188	2x1 $\frac{1}{2}$
3500	35000	116	220	2x2
4000	40000	132	250	2x2
4500	45000	150	280	2x2

HUMIDIFIERS
Electrical Pan Humidifier

Model	Nominal CFM	Absorbed Moisture [Lb/hr]	KW
250	2500	12	4
350	3500	18	6
500	5000	24	8
700	7000	33	10
1000	10000	49	16
1250	12500	60	20
1500	15000	71	24
1750	17500	83	28
2000	20000	95	32
2250	22500	106	36
2500	25000	120	40
3000	30000	142	48
3500	35000	116	56
4000	40000	190	64
4500	45000	212	72

Notes:

- ΔW : Moisture difference between air after and before humidifier [Grain/Lb(of dry air)]
- Drain size = 0.5 inch

Model	Nominal CFM	Steam Capacity[Lb/hr]					
		$\Delta W=10$	$\Delta W=20$	$\Delta W=30$	$\Delta W=40$	$\Delta W=60$	$\Delta W=80$
250	2500	13	32	46	64	97	129
350	3500	18	45	64	89	135	180
500	5000	26	64	92	127	193	257
700	7000	36	89	128	178	271	361
1000	10000	52	128	183	255	387	515
1250	12500	65	160	230	318	481	645
1500	15000	79	192	275	382	581	773
1750	17500	92	223	320	445	677	900
2000	20000	105	256	367	510	775	1030
2250	22500	118	288	412	573	870	1158
2500	25000	130	320	460	636	962	1290
3000	30000	158	384	550	764	1162	1546
3500	35000	184	246	640	890	1354	1800
4000	40000	210	512	734	1020	1550	2060
4500	45000	236	576	824	1146	1740	2316

Notes:

- ΔW : Moisture difference between air after and before humidifier [Grain/Lb(of dry air)]
- Steam humidifier rating at 5 PSI pressure.