



اصفهان دما  
ISFAHAN DAMA Co.

# AIR HANDLING UNIT



110 - 1395 - 5

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## Introduction :

**ISFAHAN DAMA** air handling units are manufactured for heating ,cooling ,humidifying ,dehumidifying ,air cleaning and ventilating purposes .Air handling units are made in two types:

- 1)Draw thru units.
- 2)Blow thru units.

**ISFAHAN DAMA** air handling units maybe ordered in horizontal , vertical, single zone and multi zone unit types.

### Features :

#### Mixing box :

To compensate the needed air for make up and air change in buildings fresh air is required as noted in codes and standards. Fresh air volume and its ratio to total air will be adjusted by fresh and return air dampers .Fresh air volume should be as much as to respond the building requirements and maximum energy savings. Dampers are manual operated or motorized control according to special orders.

#### Filter :

Aluminum washable filters are mounted in the mixing box in air handling units as standard part in order to prevent particles into building.

Other kinds of filters are optional part of units.

#### Coil :

Heating and cooling coils are used in units to deliver required conditioned air to building. Coils are made of copper tubes and

aluminum fins,8 to 14 F.P.I.For higher efficiency and lower air friction loss. Other kinds of coils such as steam and DX maybe used.

#### Humidifier :

Supply air maybe humidified in the following ways :

- Humidifying by spray nozzles.
- Humidifying by steam.
- Humidifying by electric coil.

#### Fan :

Fans are forward curved blades and DWDI for normal conditions and low static pressure of duct system: , because of efficiency and lower operating noise. Higher static pressure applications ,usually fans of type backward curved blades and DWDI are used. In special applications such as clean rooms and hospital operating rooms .Fans of plug type is recommended.



**Forward Curved**

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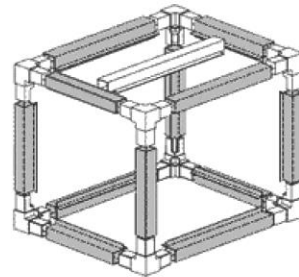
**Backward Curved**



**Plug Fan**

**Structure :**

Air handling units structure is made of anodized Extruded aluminum profiles .The structures are mounted by using special corners and aluminum tee bars. The hygienic special profiles are used for clean rooms



**Note :**

Fan tables and ratings are based on standard air with density of  $0.075 \text{ lb/ft}^3$  equal to  $70^\circ\text{F}$  dry bulb temperature and 29.92 in.Hg. barometric pressure. Fans are directly selected for standard air. For other conditions correction factors should be applied

**Body :**

Panels are made of galvanized steel sheets with proper thickness .they are painted in electro static powder coating and cured to dry .finally the exterior view of the unit is beautiful and resistant to the environmental damages. Access doors are located in required places.

## Selection procedure:

### Example 1:

#### Given :

Air supply	7500	CFM
External S.P.	1.1	In.w.g.
Total cooling load	220000	Btuh
Entering air dry bulb temp.	78	°F
Entering air wet bulb temp.	65	°F
Entering chilled water temp.	45	°F
Leaving chilled water temp.	55	°F
Heating load	340000	Btuh
Entering hot water temp.	180	°F
Leaving hot water temp.	160	°F
Elevation	5000	Ft

#### Solution:

From chart 1 and table 1 air handling unit model ID-AHU-75 is selected.

From table 2, 4 row cooling coil and from table 6, 2 row heating coil is selected.

If entering and leaving conditions of air and water is not those noted in tables ,correction factors should be applied.

Fan RPM and motor HP is selected from table 27.

Where total S.P.=Internal S.P.+ external S.P.

Internal S.P. will be derived from tables

10, 11, 12 and 13.

### Example 2 :

#### Given :

Air supply	18500	CFM
External S.P.	0.8	In.w.g.
Total cooling load	1250000	Btuh
Entering air dry bulb temp.	88	°F
Entering air wet bulb temp.	70	°F
Entering chilled water temp.	45	°F
Leaving chilled water temp.	55	°F
Heating load	1850000	Btuh
Steam pressure	15	Psi
Entering air temp in winter	40	°F
Elevation	Sea	level

#### Solution:

Coil face velocity for cooling process is recommended 450-550 FPM.

So unit model No. ID-AHU-200 from chart 1 is selected.

$$\text{Coil face velocity} = \frac{18500 \text{ CFM}}{40.04 \text{ Ft}^2} = 462 \text{ FPM}$$

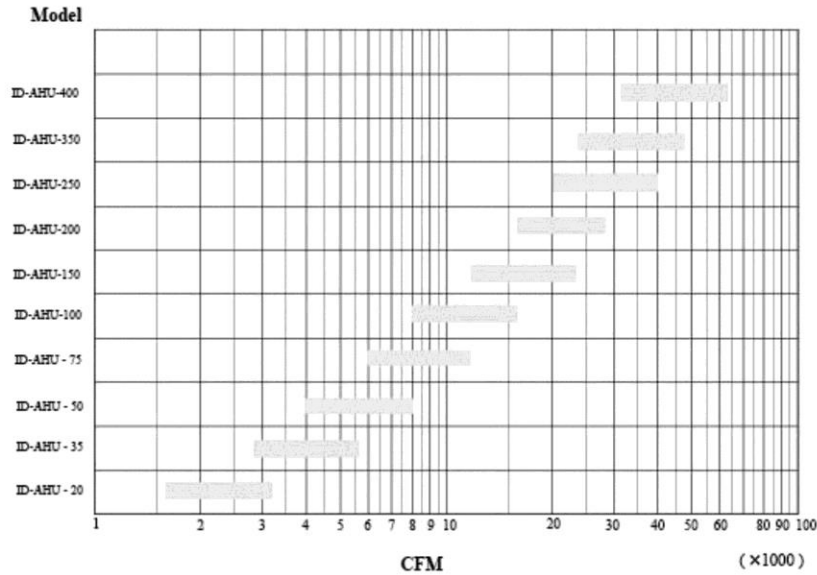
From table 2, 6 row cooling coil and from table 7, 2 row steam coil is selected.

Correction factor from tables 8, 9, 14, 17 should be applied.

Fan size , rpm and motor power is selected from table 27.

### A.H.U. Quick Selection Chart

Chart 1



### GENERAL DATA

Table :1

Model No.	Nominal Air Delivery CFM	Fan		Coil		Filter		Dim. ( Cm )		
		No.	Dia. mm	No.	Face Area Ft <sup>2</sup>	V - Type Ft <sup>2</sup>	Flat Ft <sup>2</sup>	W	L	H
ID - AHU - 20	2000	1	315	1	4.04	6.6	4	120	220	93
ID - AHU - 35	3500	1	400	1	7.23	12	8.2	140	260	108
ID - AHU - 50	5000	1	500	1	10.33	17	10	150	280	135
ID - AHU - 75	7500	1	560	1	15.79	25	15	192	315	152
ID - AHU - 100	10000	1	630	1	20.49	33	20	192	320	162
ID - AHU - 150	15000	1	710	2	31.38	50	30	230	345	209
ID - AHU - 200	20000	1	800	2	40.04	66	40	245	370	211
ID - AHU - 250	25000	2	630	4	50.08	80	50	340	330	211
ID - AHU - 300	30000	2	710	4	59.92	100	60	390	345	213
ID - AHU - 400	40000	2	800	4	80.08	135	80	500	370	213

**Table 2: Cooling coil capacity ( chilled water )**

MODEL	AIR FLOW RATE CFM	EDB °F	EWB °F	8 FPI								
				4ROW			6ROW			8ROW		
				TC MBH	LDB °F	LWB °F	TC MBH	LDB °F	LWB °F	TC MBH	LDB °F	LWB °F
ID-AHU-20	2000	78	65	61.02H	57	55.1	70.74H	57	53.3	88.29H	57	49.9
		88	70	84.78H	60	57.3	104.31H	60	53.8	118.52F	60	51.1
		100	75	111.78F	63	59.6	138.51F	63	55	153.99F	63	52.1
		109	80	136.71F	66	62.9	169.47F	66	57.6	190.71F	66	53.8
		115	85	165.96F	70	66.2	206.1F	70	60.1	233.55F	70	55.4
ID-AHU-35	3500	78	65	106.78H	57	55.1	123.79H	57	53.3	154.51H	57	49.9
		88	70	148.36H	60	57.3	182.54F	60	53.8	207.43F	60	51.1
		100	75	195.61F	63	59.6	249.39F	63	55	269.48F	63	52.1
		109	80	239.24F	66	62.9	296.57F	66	57.6	333.74F	66	53.8
		115	85	290.43F	70	66.2	360.67F	70	60.1	408.71F	70	55.4
ID-AHU-50	5000	78	65	167.81H	57	55.1	194.53H	57	53.3	242.79F	57	49.9
		88	70	233.14H	60	57.3	286.85H	60	53.8	325.96F	60	51.1
		100	75	307.39H	63	59.6	380.90F	63	55	423.47F	63	52.1
		109	80	375.95F	66	62.9	466.04D	66	57.6	524.45D	66	53.8
		115	85	456.39F	70	66.2	566.77D	70	60.1	642.26D	70	55.4
ID-AHU-75	7500	78	65	228.83H	57	55.1	265.28F	57	53.3	331.09F	57	49.9
		88	70	317.93H	60	57.3	391.16F	60	53.8	444.49F	60	51.1
		100	75	419.18F	63	59.6	519.41F	63	55	577.46D	63	52.1
		109	80	512.66F	66	62.9	635.51D	66	57.6	715.16D	66	53.8
		115	85	622.35F	70	66.2	772.87D	70	60.1	875.81D	70	55.4
ID-AHU-100	10000	78	65	309.15F	57	55.1	353.7F	57	53.3	441.45F	57	49.9
		88	70	423.9F	60	57.3	521.55D	60	53.8	592.65D	60	51.1
		100	75	558.9D	63	59.6	692.55D	63	55	769.95D	63	52.1
		109	80	683.55D	66	62.9	847.35D	66	57.6	953.55D	66	53.8
		115	85	829.8D	70	66.2	1030.5D	70	60.1	1167.75D	70	55.4
ID-AHU-150	15000	78	65	457.65F	57	55.1	530.55F	57	53.3	662.17D	57	49.9
		88	70	635.85F	60	57.3	782.32F	60	53.8	888.97D	60	51.1
		100	75	838.35D	63	59.6	1038.82D	63	55	1154.93D	63	52.1
		109	80	1025.33D	66	62.9	1271.02D	66	57.6	1430.33D	66	53.8
		115	85	1244.7D	70	66.2	1545.75D	70	60.1	1751.63D	70	55.4
ID-AHU-200	20000	78	65	610.2F	57	55.1	707.4D	57	53.3	882.9F	57	49.9
		88	70	847.8D	60	57.3	1043.1D	60	53.8	1185.3F	60	51.1
		100	75	1117.8D	63	59.6	1385.1D	63	55	1539.9D	63	52.1
		109	80	1367.1D	66	62.9	1694.7D	66	57.6	1907.1D	66	53.8
		115	85	1659.6D	70	66.2	2061D	70	60.1	2335.5D	70	55.4
ID-AHU-250	25000	78	65	762.75H	57	55.1	884.25F	57	53.3	1103.62F	57	49.9
		88	70	1059.75F	60	57.3	1303.87F	60	53.8	1481.62F	60	51.1
		100	75	1397.25F	63	59.6	1731.37F	63	55	1924.87D	63	52.1
		109	80	1708.87D	66	62.9	2118.37F	66	57.6	2383.87D	66	53.8
		115	85	2074.5D	70	66.2	2576.2F	70	60.1	2919.37D	70	55.4
ID-AHU-300	30000	78	65	915.3F	57	55.1	1061.1F	57	53.3	1324.35F	57	49.9
		88	70	1271.7F	60	57.3	1564.65F	60	53.8	1777.95D	60	51.1
		100	75	1676.7F	63	59.6	2077.65F	63	55	2309.85D	63	52.1
		109	80	2050.65D	66	62.9	2542.1F	66	57.6	2860.65D	66	53.8
		115	85	2489.4D	70	66.2	3091.5F	70	60.1	3503.25D	70	55.4
ID-AHU-400	40000	78	65	1220.4F	57	55.1	1414.8F	57	53.3	1765.8F	57	49.9
		88	70	1695.6F	60	57.3	2086.2F	60	53.8	2370.6D	60	51.1
		100	75	2235.6D	63	59.6	2770.2F	63	55	3079.8D	63	52.1
		109	80	2734.2D	66	62.9	3389.4F	66	57.6	3814.2D	66	53.8
		115	85	3339D	70	66.2	4122F	70	60.1	4671D	70	55.4

**Table 3: Cooling coil capacity ( chilled water )**

MODEL	AIR FLOW RATE CFM	EDB °F	EWB °F	14 FPI								
				4ROW			6ROW			8ROW		
				TC MBH	LDB°F	LWB°F	TC MBH	LDB°F	LWB°F	TC MBH	LDB°F	LWB°F
ID-AHU-20	2000	78	65	64.8H	57	54.4	87.3F	57	50.1	91.8F	57	49.2
		88	70	91.71F	60	56.1	114.39F	60	51.9	125.55F	60	49.7
		100	75	120.78F	63	58.1	141.75F	63	53.4	157.41F	63	50.4
		109	80	151.38F	66	60.6	174.6D	66	56.7	203.4D	66	51.4
		115	85	187.11F	70	63.1	206.1D	70	60.1	249.84D	70	52.4
ID-AHU-35	3500	78	65	113.4F	57	54.4	152.78F	57	50.1	160.65F	57	49.2
		88	70	160.49F	60	56.1	200.18F	60	51.9	219.71F	60	49.7
		100	75	211.36F	63	58.1	248.06F	63	53.4	275.47D	63	50.4
		109	80	264.92F	66	60.6	305.55D	66	56.7	355.95D	66	51.4
		115	85	327.44F	70	63.1	360.67D	70	60.1	437.22D	70	52.4
ID-AHU-50	5000	78	65	178.2F	57	54.4	240.07F	57	50.1	252.45F	57	49.2
		88	70	252.20F	60	56.1	314.57F	60	51.9	345.26D	60	49.7
		100	75	332.14F	63	58.1	389.81D	63	53.4	432.87D	63	50.4
		109	80	416.29D	66	60.6	480.15D	66	56.7	559.35D	66	51.4
		115	85	514.55D	70	63.1	566.77D	70	60.1	687.06D	70	52.4
ID-AHU-75	7500	78	65	243F	57	54.4	327.38F	57	50.1	344.25F	57	49.2
		88	70	343.91F	60	56.1	428.96D	60	51.9	470.81D	60	49.7
		100	75	452.93D	63	58.1	531.56D	63	53.4	590.29D	63	50.4
		109	80	567.68D	66	60.6	654.75D	66	56.7	762.75D	66	51.4
		115	85	701.66D	70	63.1	772.87D	70	60.1	936.9D	70	52.4
ID-AHU-100	10000	78	65	324F	57	54.4	436.5F	57	50.1	459D	57	49.2
		88	70	458.55D	60	56.1	571.95D	60	51.9	627.75D	60	49.7
		100	75	603.9D	63	58.1	708.75D	63	53.4	787.05D	63	50.4
		109	80	756.9D	66	60.6	873D	66	56.7	1017D	66	51.4
		115	85	935.55D	70	63.1	1030.5D	70	60.1	1249.2D	70	52.4
ID-AHU-150	15000	78	65	486F	57	54.4	654.75D	57	50.1	688.5D	57	49.2
		88	70	687.83D	60	56.1	857.93D	60	51.9	941.63D	60	49.7
		100	75	905.85D	63	58.1	1063.13D	63	53.4	1180.58D	63	50.4
		109	80	1135.35D	66	60.6	1309.5D	66	56.7	1525.5D	66	51.4
		115	85	1403.33D	70	63.1	1545.75D	70	60.1	1873.8D	70	52.4
ID-AHU-200	20000	78	65	648D	57	54.4	873D	57	50.1	918D	57	49.2
		88	70	917.1D	60	56.1	1143.9D	60	51.9	1255.5D	60	49.7
		100	75	1207.8D	63	58.1	1417.5D	63	53.4	1574.1D	63	50.4
		109	80	1513.8D	66	60.6	1746D	66	56.7	2034D	66	51.4
		115	85	1871.1D	70	63.1	2061D	70	60.1	2498.4D	70	52.4
ID-AHU-250	25000	78	65	810F	57	54.4	1091.25F	57	50.1	1147.5D	57	49.2
		88	70	1446.37D	60	56.1	1429.87F	60	51.9	1569.37D	60	49.7
		100	75	1509.75D	63	58.1	1771.87F	63	53.4	1967.62D	63	50.4
		109	80	1892.25D	66	60.6	2182.5F	66	56.7	2542.5D	66	51.4
		115	85	2338.87D	70	63.1	2576.25F	70	60.1	3123D	70	52.4
ID-AHU-300	30000	78	65	972F	57	54.4	1309.5F	57	50.1	1377D	57	49.2
		88	70	1375.65D	60	56.1	1715.85F	60	51.9	1883.25D	60	49.7
		100	75	1811.7D	63	58.1	2126.25F	63	53.4	2361.15D	63	50.4
		109	80	2270.7D	66	60.6	2619F	66	56.7	3051D	66	51.4
		115	85	2806.65D	70	63.1	3091.5F	70	60.1	3747.6D	70	52.4
ID-AHU-400	40000	78	65	1296F	57	54.4	1746F	57	50.1	1836D	57	49.2
		88	70	1834.2D	60	56.1	2287.8F	60	51.9	2511D	60	49.7
		100	75	2415.6D	63	58.1	2835F	63	53.4	3148.2D	63	50.4
		109	80	3027.6D	66	60.6	3492F	66	56.7	4068D	66	51.4
		115	85	3742.2D	70	63.1	4122F	70	60.1	4996.8D	70	52.4

**Cooling Coil ( DX )  
8 FPI**

Table 4 :

MODEL	AIR FLOW RATE CFM	EDB °F	EWB °F	4 ROW			6 ROW		
				TC MBH	LDB °F	LWB °F	TC MBH	LDB °F	LWB °F
ID-AHU-20	2000	78	65	56.52	57	55.9	69.66	57	53.5
		88	70	74.16	60	59.1	93.96	60	55.7
		100	75	92.97	63	62.6	119.1	63	58.4
		109	80	121.95	66	65.1	150.75	66	60.7
		115	85	158.85	70	67.2	187.74	70	63
ID-AHU-35	3500	78	65	98.91	57	55.9	121.91	57	53.5
		88	70	129.78	60	59.1	164.43	60	55.7
		100	75	162.69	63	62.6	208.37	63	58.4
		109	80	213.41	66	65.1	263.81	66	60.7
		115	85	277.98	70	67.2	328.55	70	63
ID-AHU-50	5000	78	65	155.43	57	55.9	191.65	57	53.5
		88	70	203.94	60	59.1	285.39	60	55.7
		100	75	255.67	63	62.6	327.44	63	58.4
		109	80	335.36	66	65.1	414.56	66	60.7
		115	85	436.8	70	67.2	516.28	70	63
ID-AHU-75	7500	78	65	211.96	57	55.9	261.2	57	53.5
		88	70	278.1	60	59.1	352.35	60	55.7
		100	75	348.64	63	62.6	446.51	63	58.4
		109	80	457.31	66	65.1	565.32	66	60.7
		115	85	595.69	70	67.2	704.03	70	63
ID-AHU-100	10000	78	65	282.6	57	55.9	348.3	57	53.5
		88	70	370.8	60	59.1	469.8	60	55.7
		100	75	464.85	63	62.6	595.35	63	58.4
		109	80	609.75	66	65.1	753.75	66	60.7
		115	85	794.25	70	67.2	938.7	70	63
ID-AHU-150	15000	78	65	423.9	57	55.9	522.45	57	53.5
		88	70	556.2	60	59.1	704.7	60	55.7
		100	75	697.27	63	62.6	893.2	63	58.4
		109	80	914.63	66	65.1	1130.63	66	60.7
		115	85	1191.37	70	67.2	1367.55	70	63
ID-AHU-200	20000	78	65	565.2	57	55.9	696.6	57	53.5
		88	70	741.6	60	59.1	939.6	60	55.7
		100	75	929.7	63	62.6	1190.7	63	58.4
		109	80	1219.5	66	65.1	1507.5	66	60.7
		115	85	1588.5	70	67.2	1877.4	70	63
ID-AHU-250	25000	78	65	706.5	57	55.9	870.75	57	53.5
		88	70	927	60	59.1	1174.5	60	55.7
		100	75	1162.12	63	62.6	1488.37	63	58.4
		109	80	1524.37	66	65.1	1884.37	66	60.7
		115	85	1985.63	70	67.2	2346.75	70	63
ID-AHU-300	30000	77	65	847.8	57	55.9	1044.9	57	53.5
		88	70	1112.4	60	59.1	1409.4	60	55.7
		100	75	1394.6	63	62.6	1786.1	63	58.4
		109	80	1829.3	66	65.1	2261.3	66	60.7
		115	85	2382.8	70	67.2	2816.1	70	63
ID-AHU-400	40000	78	65	1130.4	57	55.9	1393.2	57	53.5
		88	70	1483.2	60	59.1	1879.2	60	55.7
		100	75	1859.4	63	62.6	2381.4	63	58.4
		109	80	2439	66	65.1	3015	66	60.7
		115	85	3177	70	67.2	3754.8	70	63



**Cooling Coil ( DX )  
14 FPI**

**Table 5 :**

MODEL	AIR FLOW RATE CFM	EDB °F	EWB °F	4 ROW			6 ROW		
				TC MBH	LDB °F	LWB °F	TC MBH	LDB °F	LWB °F
ID-AHU-20	2000	78	65	65.1	57	53.6	88.83	57	49.8
		88	70	93.96	60	55.8	116.46	60	51.5
		100	75	116.1	63	58.9	146.61	63	53.5
		109	80	142.56	66	62	181.44	66	55.5
		115	85	173.61	70	65.1	221.67	70	57.5
ID-AHU-35	3500	78	65	113.87	57	53.6	155.45	57	49.8
		88	70	163.33	60	55.8	203.81	60	51.5
		100	75	203.17	63	58.9	256.56	63	53.5
		109	80	249.48	66	62	317.52	66	55.5
		115	85	303.82	70	65.1	387.92	70	57.5
ID-AHU-50	5000	78	65	178.94	57	53.6	244.28	57	49.8
		88	70	256.66	60	55.8	320.26	60	51.5
		100	75	319.04	63	58.9	403.17	63	53.5
		109	80	392.04	66	62	498.96	66	55.5
		115	85	477.43	70	65.1	609.59	70	57.5
ID-AHU-75	7500	78	65	244.01	57	53.6	333.11	57	49.8
		88	70	349.98	60	55.8	436.73	60	51.5
		100	75	435.37	63	58.9	549.78	63	53.5
		109	80	534.6	66	62	680.4	66	55.5
		115	85	651.04	70	65.1	831.26	70	57.5
ID-AHU-100	10000	78	65	325.35	57	53.6	444.15	57	49.8
		88	70	466.56	60	55.8	582.3	60	51.5
		100	75	580.5	63	58.9	733.05	63	53.5
		109	80	712.8	66	62	907.2	66	55.5
		115	85	868.05	70	65.1	1108.35	70	57.5
ID-AHU-150	15000	78	65	488.02	57	53.6	666.23	57	49.8
		88	70	699.97	60	55.8	873.45	60	51.5
		100	75	870.75	63	58.9	1099.58	63	53.5
		109	80	1069.2	66	62	1360.8	66	55.5
		115	85	1302.07	70	65.1	1662.53	70	57.5
ID-AHU-200	20000	78	65	650.7	57	53.6	888.3	57	49.8
		88	70	933.3	60	55.8	1164.6	60	51.5
		100	75	1161	63	58.9	1466.1	63	53.5
		109	80	1425.6	66	62	1814.4	66	55.5
		115	85	1736.1	70	65.1	2216.7	70	57.5
ID-AHU-250	25000	78	65	813.37	57	53.6	1110.37	57	49.8
		88	70	1166.63	60	55.8	1455.75	60	51.5
		100	75	1451.25	63	58.9	1832.63	63	53.5
		109	80	1782	66	62	2268	66	55.5
		115	85	2170.13	70	65.1	2770.87	70	57.5
ID-AHU-300	30000	78	65	976.1	57	53.6	1332.5	57	49.8
		88	70	1400.0	60	55.8	1746.9	60	51.5
		100	75	1741.5	63	58.9	2199.2	63	53.5
		109	80	2138.4	66	62	2721.6	66	55.5
		115	85	2604.2	70	65.1	3325.1	70	57.5
ID-AHU-400	40000	78	65	1301.4	57	53.6	1776.6	57	49.8
		88	70	1866.6	60	55.8	2329.2	60	51.5
		100	75	2322	63	58.9	2932.2	63	53.5
		109	80	2851.2	66	62	3628.8	66	55.5
		115	85	3472.2	70	65.1	4433.4	70	57.5

**Table 6: Heating Coil Capacity ( Hot Water ) ( MBH )**

MODEL	AIR FLOW RATE CFM	EDB °F	8 FPI				14 FPI			
			1ROW	2ROW	3ROW	4ROW	1ROW	2ROW	3ROW	4ROW
ID-AHU-20	2000	0	93H	165F	218F	271F	145H	230H	284F	320F
		16	83H	144F	188F	247F	128H	203H	244H	296F
		32	74H	126F	176F	200F	114H	177H	229H	240H
		64	52H	91F	136F	172F	80H	128H	177H	207H
ID-AHU-35	3500	0	175H	308F	407F	509F	270H	432F	530F	611H
		16	157H	272F	353F	463F	241H	380H	459F	556H
		32	139H	237F	332F	377F	214H	331H	432H	452H
		64	99H	172F	258F	323F	152H	240H	335H	388H
ID-AHU-50	5000	0	258H	451F	597F	746F	398H	630F	777F	895H
		16	227H	393F	517F	679F	353H	543H	672F	815H
		32	204H	347F	486F	552F	314H	486H	632F	662F
		64	144H	252F	379F	474F	223H	353H	488H	569H
ID-AHU-75	7500	0	398H	617F	815F	1018F	621H	865F	1058F	1222F
		16	313H	543F	706F	926F	482H	760F	917F	1112F
		32	278H	473F	663F	753F	428H	663F	857F	904F
		64	167H	344F	513F	646F	302H	480H	667F	776F
ID-AHU-100	10000	0	470H	823F	1086F	1357F	725H	1150F	1412F	1629D
		16	418H	724F	941F	1235F	644H	1014F	1222F	1481F
		32	372H	632F	884F	1004F	573H	885F	1150F	1200F
		64	262H	458F	683F	862F	404H	642H	887F	1035F
ID-AHU-150	15000	0	752H	1317F	1737F	2171D	1158H	1844F	2258F	2605D
		16	668H	1159F	1504F	1975D	1029H	1624F	1956F	2370D
		32	595H	1011F	1414F	1606F	916H	1415F	1838F	1927F
		64	420H	733F	1092F	1379F	647H	1026F	1364F	1655F
ID-AHU-200	20000	0	941H	1646F	2172F	2714D	1449H	2305F	2817F	3258D
		16	825H	1426F	1867F	2412D	1270H	1996F	2478F	2895D
		32	744H	1264F	1768F	2008F	1149H	1777F	1793F	2410D
		64	524H	916F	1365F	1724F	807H	1283F	1311F	2069F
ID-AHU-250	25000	0	1176H	2057F	2726F	3393F	1811H	2880F	3476F	4072D
		16	1045H	1811F	2449F	3087F	1609H	2535F	3120F	3705D
		32	930H	1580F	2045F	2510F	1432H	2212H	2612F	3012D
		64	655H	1145F	1650F	2155H	1010H	1604H	2095F	2586D
ID-AHU-300	30000	0	1412H	2469F	3270F	4072F	2174H	3457F	4170F	4884F
		16	1254H	2173F	2938F	3705F	1932H	3042F	3743F	4446F
		32	1116H	1896F	2454F	3012F	1719H	2654F	3134F	3614F
		64	786H	1374F	1980F	2586F	1211H	1924H	2514F	3104F
ID-AHU-400	40000	0	1882H	3292F	4400F	5508D	2899H	4610F	5610F	6610D
		16	1672H	2897F	3918F	4940D	2576H	4057F	4992F	5928D
		32	1488H	2528F	3274F	4016F	2292H	3539F	4179F	4820F
		64	1209H	2098F	2813F	3529F	1862H	2923F	3574F	4225F

MBH = 1000 BTU / HR  
 in tables 2 & 3 EWT = 45 °F - LWT = 55°F  
 in table 6 EWT = 180 °F - LWT =160°F

**Table 7: Heating Coil Capacity ( STEAM ) ( MBH )**

MODEL	CFM	1 ROW COIL				2 ROW COIL			
		EDB °F				EDB °F			
		0	16	32	64	0	16	32	64
ID-AHU-20	2000	144	140	128	108	264	256	232	200
ID-AHU-35	3500	224	216	192	164	400	384	352	300
ID-AHU-50	5000	304	280	256	216	544	504	470	400
ID-AHU-75	7500	432	392	352	304	760	696	656	560
ID-AHU-100	10000	600	560	512	432	1030	1005	936	800
ID-AHU-150	15000	960	880	816	696	1680	1600	1440	1280
ID-AHU-200	20000	1200	1120	1016	864	2160	2000	1840	1600
ID-AHU-250	25000	1440	1380	1280	1120	2720	2560	2320	2080
ID-AHU-300	30000	1840	1680	1520	1300	3360	3040	2800	2400
ID-AHU-400	40000	2400	2240	2000	1736	4400	4080	3760	3200

**Table 8: Steam Coil Correction Factor**

E.A.T °F	Steam Pressure PSIG				
	5	15	30	45	60
0	1	1.11	1.2	1.25	1.3
16	1.02	1.12	1.22	1.28	1.35
32	1.04	1.13	1.24	1.35	1.45
64	1.06	1.14	1.28	1.4	1.5

**Table 9: Coil face velocity Correction Factor**

Coil Face Velocity FPM	350	400	450	500	550	600	700	800
Heating Coil	0.8	0.88	0.94	1	1.05	1.11	1.19	1.28
Cooling Coil	0.86	0.92	0.96	1	1.03	1.06	1.11	1.15

**Table 10: AIR FRICTION LOSS (in.w.g.)**

Velocity	300	400	450	500	550	600	700
Basic Unit	0.08	0.10	0.12	0.13	0.15	0.17	0.19
Mixing Box	0.04	0.05	0.06	0.08	0.10	0.12	0.14
Filter	0.04	0.07	0.09	0.10	0.13	0.15	0.20

**Table 11: Cooling Coil Air Friction Loss ( in.w.g.)**

ROWS DEEP	FACE VELOCITY (FPM) 8 FPI					FACE VELOCITY (FPM) 14 FPI				
	300	400	500	600	700	300	400	500	600	700
1	0.5	0.08	0.11	0.15	0.18	0.08	0.11	0.15	0.21	0.27
2	0.11	0.16	0.23	0.29	0.37	0.15	0.22	0.32	0.41	0.56
3	0.16	0.24	0.34	0.44	0.49	0.22	0.33	0.47	0.62	0.74
4	0.21	0.32	0.45	0.59	0.60	0.28	0.43	0.63	0.83	0.90
5	0.26	0.40	0.57	0.74	0.75	0.35	0.55	0.79	1.04	1.13
6	0.31	0.48	0.68	0.88	0.90	0.42	0.65	0.95	1.23	1.35
8	0.41	0.65	0.87	1.18	1.20	0.55	0.88	1.21	1.65	1.80

**Table 12: Heating Coil Air Friction Loss ( in.w.g.)**

ROWS DEEP	FACE VELOCITY (FPM) 8 FPI						FACE VELOCITY (FPM) 14 FPI					
	300	400	500	600	700	800	300	400	500	600	700	800
1	0.04	0.06	0.08	0.11	0.15	0.18	0.06	0.09	0.12	0.17	0.23	0.27
2	0.07	0.12	0.17	0.23	0.30	0.37	0.11	0.19	0.26	0.34	0.45	0.56
3	0.09	0.15	0.22	0.30	0.39	0.49	0.14	0.20	0.33	0.45	0.59	0.74
4	0.16	0.19	0.27	0.37	0.47	0.60	0.26	0.30	0.41	0.56	0.71	0.90
5	0.17	0.23	0.34	0.46	0.59	0.75	0.27	0.36	0.51	0.69	0.89	1.13
6	0.18	0.27	0.40	0.55	0.71	0.90	0.29	0.42	0.60	0.83	1.10	1.35
8	0.23	0.37	0.55	0.73	0.95	1.20	0.37	0.58	0.89	1.10	1.43	1.80

**Table 13: Air Friction Loss ( in.w.g.)**

Damper			Diffuser	Air washer		
Parallel	Opposed	Face & by pass		Class 4	Class 6	Class 8
0.03	0.05	0.22	0.04	0.22	0.3	0.4

**Table 14: Cooling Coil Correction Factor**

E.W.T °F	Entering Air WB Temp						
	59	63	67	71	75	79	83
35	1	1.2	1.4	1.6	1.8	2	2.2
40	0.8	1	1.2	1.4	1.6	1.8	2
45	0.6	0.8	1	1.2	1.4	1.6	1.8
50	0.4	0.6	0.8	1	1.2	1.4	1.6
55	0.2	0.4	0.6	0.8	1	1.2	1.4

**Table 15: Heating Coil Correction Factor**

E.W.T°F	Entering Air Temp. °F						
	50	55	60	65	70	75	80
100	0.43	0.4	0.35	0.32	0.27	0.23	0.19
110	0.51	0.47	0.43	0.38	0.34	0.30	0.26
120	0.59	0.55	0.51	0.47	0.43	0.38	0.34
130	0.68	0.64	0.6	0.55	0.51	0.47	0.43
140	0.76	0.72	0.68	0.64	0.59	0.55	0.51
150	0.85	0.81	0.77	0.73	0.68	0.64	0.60
160	0.94	0.9	0.86	0.82	0.75	0.73	0.69
170	1.01	0.97	0.93	0.87	0.83	0.80	0.76
180	1.09	1.04	1	0.96	0.90	0.88	0.84

**Table 16: DX Coil Correction Factor**

Compressor Suction Temp°F	Entering Air wet bulb Temp.°F				
	60	65	70	75	80
40	0.8	1.1	1.45	1.73	2
50	0.68	0.98	1.25	1.6	1.8

**Temperature and altitude density ratios**

**Table :17**

Air Temp.	ALTITUDE (FEET)										
	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
0	1.152	1.111	1.071	1.032	0.995	0.959	0.923	0.889	0.856	0.824	0.792
50	1.039	1.003	0.967	0.932	0.897	0.864	0.833	0.801	0.772	0.743	0.715
70	1.000	0.964	0.930	0.896	0.864	0.832	0.801	0.772	0.743	0.714	0.688
100	0.946	0.912	0.880	0.848	0.818	0.787	0.758	0.730	0.703	0.676	0.651
150	0.869	0.838	0.808	0.770	0.751	0.723	0.696	0.671	0.646	0.620	0.598
200	0.803	0.774	0.747	0.720	0.694	0.668	0.643	0.620	0.596	0.573	0.552
250	0.747	0.720	0.694	0.669	0.645	0.622	0.598	0.576	0.555	0.533	0.514
300	0.697	0.672	0.648	0.624	0.604	0.580	0.558	0.538	0.518	0.498	0.480
350	0.654	0.631	0.608	0.586	0.565	0.544	0.524	0.505	0.486	0.467	0.450
400	0.616	0.594	0.573	0.552	0.532	0.513	0.493	0.476	0.458	0.440	0.424
450	0.582	0.561	0.542	0.522	0.503	0.484	0.466	0.449	0.433	0.416	0.401
500	0.552	0.532	0.513	0.495	0.477	0.459	0.442	0.426	0.410	0.394	0.380
550	0.525	0.506	0.488	0.470	0.454	0.437	0.421	0.405	0.390	0.375	0.361
600	0.500	0.482	0.465	0.448	0.432	0.416	0.400	0.386	0.372	0.352	0.344
650	0.477	0.460	0.444	0.427	0.412	0.397	0.382	0.368	0.354	0.341	0.328
700	0.457	0.441	0.425	0.410	0.395	0.380	0.366	0.353	0.340	0.326	0.315
750	0.439	0.423	0.407	0.393	0.379	0.365	0.351	0.338	0.326	0.313	0.303
800	0.420	0.404	0.389	0.375	0.362	0.350	0.336	0.323	0.311	0.300	0.290
850	0.404	0.391	0.376	0.363	0.349	0.336	0.324	0.312	0.300	0.289	0.279
900	0.389	0.376	0.363	0.349	0.336	0.324	0.312	0.300	0.289	0.279	0.268
950	0.376	0.363	0.350	0.337	0.325	0.313	0.301	0.290	0.279	0.269	0.259
1000	0.363	0.350	0.338	0.325	0.314	0.302	0.291	0.280	0.270	0.259	0.250

**Table 18: coil Pressure Loss ( Water side ) ( Ft. Water )**

Model No.	ROW	GPM																		
		5	10	20	30	40	50	60	70	80	100	130	150	200	250	300	350	400	450	500
ID-AHU-20	1	0.2	0.4	1.2	2.1	3.6	4.8	5.5	6											
	2	0.2	0.3	1.4	2.8	3.9	5	6.5	6.5											
	4	0.3	0.6	1.7	3.0	5.1	7	7	7.5											
	6	0.4	0.9	2.8	4.8	6.1	11	12	13											
	8	0.5	1.1	3.4	6.0	10	13	14	15											
ID-AHU-35	1		0.2	0.6	1.0	1.6	2.2	2.4	2.8	3.2	3.6	4	4.2							
	2		0.3	0.7	1.2	2.0	2.6	2.8	3.2	4.0	4.3	4.6	4.9							
	4		0.4	1.0	1.7	2.8	3.7	3.8	4.1	5.1	5.6	5.9	6.2							
	6		0.6	1.6	2.8	4.5	6.0	6.4	7.5	8.2	10	11	12							
	8		0.7	2.0	3.4	5.3	7.3	7.8	8.5	9.5	12	13	14							
ID-AHU-50	1			0.6	1.0	1.6	2.1	3	3.5	4.2	6.0	7	8	9						
	2			0.7	1.2	1.9	2.5	3.2	4.1	5	7.0	8	9	10						
	4			1.0	1.7	2.7	3.6	4.2	5.2	7.6	10	11	12	13						
	6			1.6	2.7	4.3	6.0	7.5	10	12	16	17	19	20						
	8			2.0	3	5	7.0	9	13	15	19	21	22	24						
ID-AHU-75	1			0.5	0.8	1.3	2.0	2.5	3.0	3.8	5.2	6.2	8.6	9.5	10					
	2			0.6	1.0	1.5	2.4	3.0	3.5	4.2	6.2	7.5	10	11	12					
	4			0.8	1.4	2.6	3.4	4.0	6.5	7.0	8.8	11	14	17	19					
	6			1.4	2.2	3.5	5.4	6.2	8.1	10	14	17	23	25	27					
	8			1.7	2.6	4.0	7.0	8.5	10	13	18	20	28	30	31					
ID-AHU-100	1			0.4	0.8	1.2	1.6	2.5	3.0	3.5	4.4	5.6	8	10	11					
	2			0.5	1.0	1.4	2.0	3.1	3.8	4.0	5.3	6.8	10	12	13					
	4			0.7	1.4	2.0	2.7	3.2	4.1	4.6	8.0	9.4	14	16	18					
	6			1.2	2.2	3.1	4.3	6.1	7.5	9.0	12	15	22	24	26					
	8			1.4	2.6	4.0	5.3	7.8	8.5	11	13	18	26	28	36					
ID-AHU-150	1			0.4	0.7	1	1.2	1.6	2	2.4	3.4	5.0	6.1	10						
	2			0.7	1	1.3	1.7	1.9	2.4	2.9	4.1	6.0	7.3	12						
	4			1.3	1.7	1.9	2.3	2.7	3.4	4.1	6.0	9.0	10	17						
	6			2.4	3	3.5	4.1	4.3	5.4	6.5	9.2	14	17	27						
	8			3	3.5	4	4.4	4.8	6.0	8.0	11	17	18	33						
ID-AHU-200	1			0.6	0.8	1	1.2	1.7	1.6	3	4.4	5.3	8							
	2			0.8	1	1.2	1.5	2.1	2.6	3.6	5.3	6.4	10							
	4			1.4	1.7	1.9	2.1	3	3.2	5	8	9.0	14							
	6			2.1	2.9	3.1	3.5	5	6	8	12	14	22							
	8			2.8	3.1	3.8	4.0	5.8	7	10	15	18	27							
ID-AHU-250	1					0.3	0.4	0.4	0.7	0.8	1.1	1.3	2.2	3	4	5	5.7	6.4		
	2					0.4	0.5	0.5	0.8	1.0	1.3	1.6	2.6	3.6	5	5.7	7.1	8		
	4					0.6	0.7	0.8	1.2	1.4	2.0	2.2	3.7	5.1	7	9	10	11		
	6					1	1.1	1.2	1.9	2.2	3	3.5	5.3	8.1	11	14	15	18		
	8						1.3	1.5	2.3	2.6	3.6	4.3	7.3	10	13	16	19	21		
ID-AHU-300	1					0.36	0.4	0.7	1	1.4	1.7	2.6	3.6	5	6	7.2	8.5			
	2					0.4	0.5	0.8	1.2	1.7	2.1	3.1	4.3	5.6	7.2	8	10			
	4					0.5	0.7	1.2	1.6	2.4	3	4.5	6.1	8	10	12	15			
	6					0.8	1.1	2	2.5	4.0	4.6	7	10	13	17	20	23			
	8					1	1.3	2.3	3.1	5.0	5.6	9	12	16	20	24	28			
ID-AHU-400	1					0.4	0.5	0.6	0.8	1.2	1.4	2.2	3.1	3.4	5.0	6.1	7.2	8.4		
	2					0.5	0.7	0.7	1.0	1.4	1.7	2.6	4.0	5.0	6.0	7.3	8.6	10		
	4					0.7	0.9	1.0	1.4	2.0	2.4	4.0	5.3	6.6	8.5	10.4	12	14		
	6					1.1	1.4	1.6	2.2	3.2	3.8	6.0	8.4	11	14	16.5	19	23		
	8					1.3	1.7	1.9	3.0	4.0	5.0	7.5	10	13	17	20	24	28		

**Table 19: Coil Pressure Loss Correction Factor (Water Side)**

Avg. Water Temp.	30	40	50	60	70	90	110	130	150	170	190	210	230	250	270
Factor	1.13	1.08	1.04	1.00	0.97	0.91	0.87	0.84	0.82	0.8	0.78	0.77	0.76	0.76	0.75

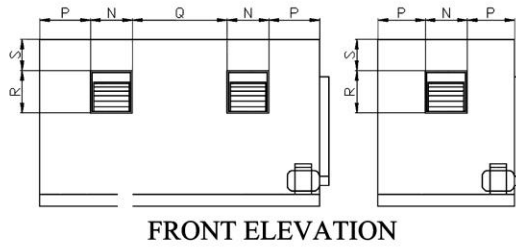
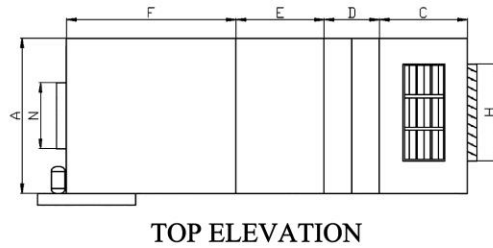
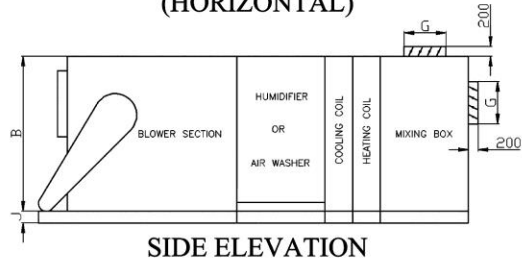
**Table 20: COIL CONNECTIONS**

MODEL	COOLING COIL				HEATING COIL				STEAM COIL			
	SUPPLY		CONDENSATE		SUPPLY		CONDENSATE		SUPPLY		CONDENSATE	
	2 Row	4 Row	6 Row	8 Row	1 Row	2 Row	3 Row	4 Row	1 Row	2 Row	1 Row	2 Row
ID – AHU – 20	1 "	1 1/4"	1 1/4"	1 1/2 "	1 "	1 "	1 1/4 "	1 1/4 "	1 1/2"	2"	1 1/2"	1 1/2"
ID – AHU – 35	1 1/4 "	1 1/2 "	1 1/2 "	2 "	1 1/4 "	1 1/4 "	1 1/2 "	1 1/2 "	1 1/2"	2"	1 1/2"	1 1/2"
ID – AHU – 50	1 1/2 "	2 "	2 "	2 "	1 1/4 "	1 1/2 "	1 1/2 "	2 "	2"	2"	1 1/2"	1 1/2"
ID – AHU – 75	1 1/2 "	2 "	2 "	2 1/2 "	1 1/2 "	1 1/2 "	2 "	2 "	2"	2"	1 1/2"	1 1/2"
ID – AHU – 100	1 1/2 "	2 "	2 1/2 "	2 1/2 "	1 1/2 "	1 1/2 "	2 "	2 1/2 "	2"	2"	1 1/2"	1 1/2"
ID – AHU – 150	2-1 1/2 "	2 - 2 "	2 - 2 "	2-2 1/2 "	2-1 1/2 "	2-1 1/2 "	2 - 2 "	2 - 2 "	2 x 2"	2 x 2"	2 x 1 1/2"	2 x 1 1/2"
ID – AHU – 200	2 - 2 "	2-2 1/2 "	2-2 1/2 "	2-2 1/2 "	2-1 1/2 "	2-1 1/2 "	2 - 2 "	2-2 1/2 "	2 x 2"	2 x 2"	2 x 1 1/2"	2 x 1 1/2"
ID – AHU – 250	4-1 1/2 "	4-2 "	4 - 2 "	4-2 1/2 "	4-1 1/2 "	4-1 1/2 "	4 - 2 "	4-2 1/2 "	4 x 2"	4 x 2"	4 x 1 1/2"	4 x 1 1/2"
ID – AHU – 300	4-1 1/2 "	4-2 "	4- 2 1/2 "	4-2 1/2 "	4-1 1/2 "	4-1 1/2 "	4 - 2 "	4-2 1/2 "	4 x 2"	4 x 2"	4 x 1 1/2"	4 x 1 1/2"
ID – AHU – 400	4 - 2 "	4-2 1/2 "	4-2 1/2 "	4-2 1/2 "	4-1 1/2 "	4-1 1/2 "	4 - 2 "	4-2 1/2 "	4 x 2"	4 x 2"	4 x 1 1/2"	4 x 1 1/2"

**Table 21:**  
Min . Fan Discharge Length  
to any Deflection in Duct

MODEL NO.	CFM	Feet
ID-AHU-20	2000	2
ID-AHU-35	3500	2.7
ID-AHU-50	5000	3.6
ID-AHU-75	7500	4.5
ID-AHU-100	10000	4.8
ID-AHU-150	15000	6.4
ID-AHU-200	20000	7.2
ID-AHU-250	25000	8.9
ID-AHU-300	30000	6.2
ID-AHU-400	40000	7.2

### AIR HANDLING UNIT (HORIZONTAL)



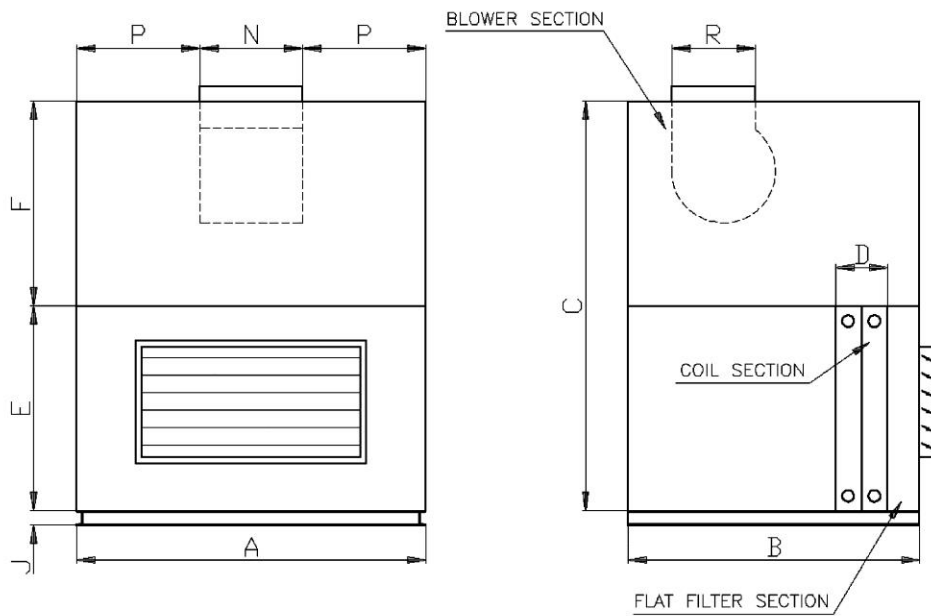
### DIMENSIONS

Table : 22

Model No	A	B	C	F	G	H	J	D	N	P	Q	R		
ID-AHU 20	1200	850	800	1150	410	700	80	NO OF ROWS WIDTH Cm	400	400	-	400		
ID-AHU 35	1400	1000	1000	1350	510	700	80		490	455	-	500		
ID-AHU 50	1500	1250	1050	1500	410	1420	100		640	430	-	640		
ID-AHU 75	1920	1400	1300	1600	610	1320	120		1	9	700	610	-	700
ID-AHU 100	1920	1500	1300	1650	710	1500	120		2	12	800	560	-	800
ID-AHU 150	2300	1970	1400	1800	810	1750	120		3	15	900	700	-	900
ID-AHU 200	2450	1970	1400	2050	910	2350	140		4	20	980	735	-	1000
ID-AHU 250	3400	1970	1400	1650	910	1500	140		6	26	800	660	480	800
ID-AHU 300	3900	1970	1400	1800	810	1750	160		8	32	900	775	550	900
ID-AHU 400	5000	1970	1400	2050	910	2350	160				980	785	1470	1000



### AIR HANDLING UNIT (VERTICAL)

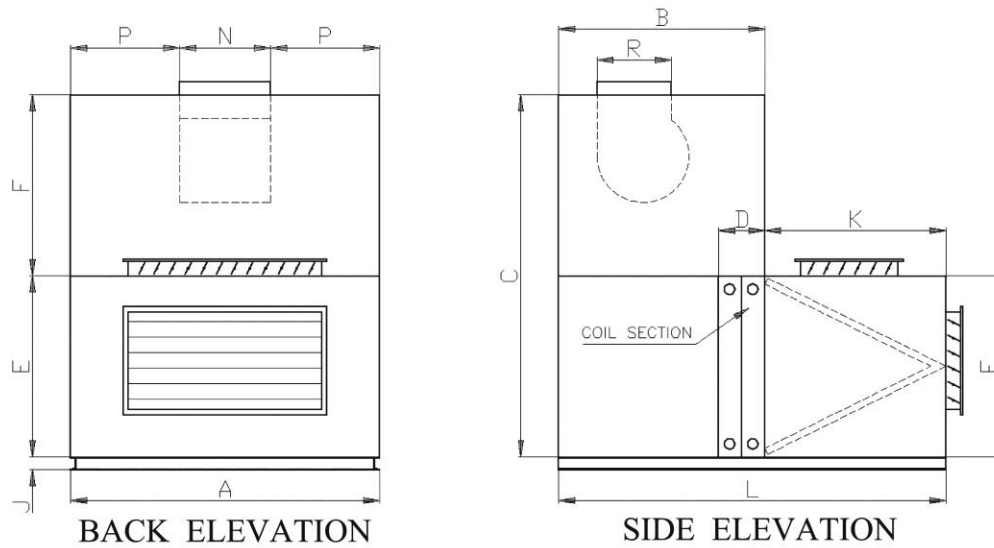


### DIMENSIONS

Table :23

Model No.	A	B	C	E	F	J	N	P
ID - AHU - 20	1200	1150	1700	850	850	80	400	405
ID - AHU - 35	1400	1350	2000	1000	1000	80	490	455
ID - AHU - 50	1500	1500	2500	1250	1250	100	640	440
ID - AHU - 75	1920	1600	2800	1400	1400	120	700	595
ID - AHU - 100	1920	1650	3000	1500	1500	120	800	545
ID - AHU - 150	2300	1800	3940	1970	1970	120	900	685
ID - AHU - 200	2450	2050	3940	1970	1970	140	980	725
ID - AHU - 250	3400	1650	3940	1970	1970	140	800	1285
ID - AHU - 300	3900	1800	3940	1970	1970	160	900	1485
ID - AHU - 400	5000	2050	3940	1970	1970	160	980	2000

## AIR HANDLING UNIT (VERTICAL WITH MIXING BOX)



### DIMENSIONS

Table :24

Model No.	A	B	C	E	F	J	K	L	N	P
ID-AHU-20	1200	1150	1700	850	850	80	800	1950	400	405
ID-AHU-35	1400	1350	2000	1000	1000	80	1000	2350	490	455
ID-AHU-50	1500	1500	2500	1250	1250	100	1050	2550	640	440
ID-AHU-75	1920	1600	2800	1400	1400	120	1300	2900	700	595
ID-AHU-100	1920	1650	3000	1500	1500	120	1300	2950	800	545
ID-AHU-150	2300	1800	3940	1970	1970	120	1400	3200	900	685
ID-AHU-200	2450	2050	3940	1970	1970	140	1400	3450	980	725
ID-AHU-250	3400	1650	3940	1970	1970	140	1400	3050	800	1285
ID-AHU-300	3900	1800	3940	1970	1970	160	1400	3200	900	1485
ID-AHU-400	5000	2050	3940	1970	1970	160	1400	3450	980	2000

### Coil Specifications

Table :25

Model	Height mm	Length mm	F.T.NO.	Face Area Ft <sup>2</sup>	NO.	Total Face Area Ft <sup>2</sup>
ID- AHU -20	477	820	12	4.04	1	4.04
ID- AHU -35	705	953	18	7.23	1	7.23
ID- AHU -50	857	1120	22	10.33	1	10.33
ID- AHU -75	933	1580	24	15.79	1	15.79
ID-AHU -100	1161	1640	30	20.49	1	20.49
ID-AHU -150	857	1700	22	15.69	2	31.38
ID-AHU -200	857	2170	22	20.02	2	40.04
ID-AHU -250	857	1420	22	12.52	4	50.08
ID-AHU -300	857	1700	22	14.98	4	59.92
ID-AHU -400	857	2170	22	20.02	4	80.08

### MIXING BOX

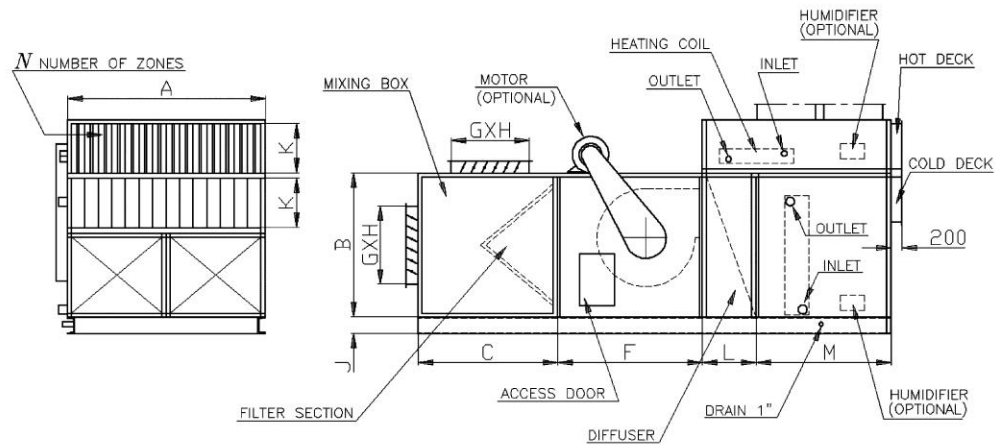
Teble :26

Model No.	Filter							Damper		
	Flat			V - Type				AL.		
	No.	Dimensions		Area Ft <sup>2</sup>	No.	Dimensions		Area Ft <sup>2</sup>	Dimensions	
	W.	L.			W.	L.		W.	L.	
ID- AHU – 20	2	440	440	4	2 2	350 350	870 200	6.6	412	700
ID- AHU – 35	2	870	440	8.2	4	500	630	12	512	700
ID- AHU – 50	2 1	870 870	440 200	10	6	630	440	17	412	1420
ID- AHU – 75	3 1	870 870	440 300	15	8	870	440	25	612	1320
ID- AHU – 100	4 4	630 440	440 440	20	8	870	440	33	712	1500
ID- AHU – 150	5 5	870 440	440 440	30	15	870	440	50	812	1750
ID- AHU – 200	10 2	870 870	440 300	40	15	870	440	66	912	2350
ID- AHU – 250	14	870	440	50	21	870	440	80	912	1500
ID- AHU – 300	16 2	870 870	440 200	60	24 3	870 870	440 200	100	812	1750
ID- AHU – 400	22	870	440	80	33	870	440	135	912	2350

Table 27:

MODEL NO.	NO. OF FAN	SIZE OF FAN	COIL FACE AREA SQ. FT.	COIL FACE VEL. FPM.	C.F.M.	TOTAL STATIC PRESSURE (IN.W.G.)																	
						1/2		3/4		1		1 1/4		1 1/2		2		2 1/2		3			
						R.P.M.	H.P.	R.P.M.	H.P.	R.P.M.	H.P.	R.P.M.	H.P.	R.P.M.	H.P.	R.P.M.	H.P.	R.P.M.	H.P.	R.P.M.	H.P.		
ID - AHU- 20	1	315	4.0		1600	548	0.20	694	0.304	811	0.417	934	0.560	1033	0.680	1194	0.91	1355	1.22	1497	1.61		
					1800	537	0.23	859	0.34	987	0.46	1093	0.60	1211	0.73	1367	0.94	1549	1.05	1715	1.45	1871	1.85
					2000	530	0.26	1024	0.37	1161	0.49	1280	0.63	1411	0.77	1554	0.98	1721	1.10	1907	1.41	2093	1.85
					2200	577	0.31	1177	0.43	1314	0.55	1448	0.68	1596	0.82	1753	1.03	1938	1.13	2138	1.50	2328	1.85
					2400	536	0.35	1336	0.47	1488	0.60	1611	0.74	1770	0.88	1939	1.08	2139	1.20	2356	1.59	2611	1.97
ID - AHU- 35	1	400	7.0		1600	548	0.47	545	0.60	752	0.74	852	0.89	942	1.04	1024	1.394	1279	1.80	1427	2.20		
					1800	558	0.50	619	0.65	826	0.70	926	0.84	1016	0.99	1106	1.28	1206	1.63	1463	2.19		
					2000	525	0.52	700	0.68	789	0.75	878	0.82	967	0.91	1056	1.10	1145	1.33	1234	1.63	1323	2.01
					2200	519	0.55	789	0.72	878	0.79	967	0.86	1056	0.93	1145	1.10	1234	1.33	1323	1.63	1412	1.97
					2400	423	0.40	922	0.57	1011	0.63	1100	0.69	1189	0.76	1278	0.83	1367	0.90	1456	0.97	1545	1.05
ID - AHU- 50	1	500	10.0		1600	423	0.47	518	0.66	603	0.85	694	1.07	771	1.30	852	1.59	933	1.88	1014	2.26		
					1800	434	0.55	613	0.76	703	0.945	799	1.17	889	1.42	979	1.69	1069	1.93	1159	2.35	1249	2.76
					2000	435	0.60	718	0.83	814	1.05	910	1.27	1002	1.50	1094	1.73	1186	2.01	1278	2.35	1370	2.76
					2200	435	0.64	826	0.87	922	1.10	1018	1.32	1114	1.54	1210	1.76	1306	2.01	1402	2.35	1494	2.76
					2400	400	0.84	933	1.01	1030	1.21	1126	1.42	1222	1.63	1318	1.84	1414	2.05	1510	2.35	1606	2.76
ID - AHU- 75	1	560	15.0		1600	442	1.22	524	1.54	586	1.70	653	1.96	725	2.40	798	2.82	872	3.45	946	4.14		
					1800	400	0.69	604	0.94	678	1.23	752	1.50	826	1.76	900	2.01	974	2.28	1048	2.57	1122	3.53
					2000	337	0.46	684	0.78	764	1.01	844	1.24	924	1.47	1004	1.70	1084	1.93	1164	2.16	1244	2.57
					2200	332	0.53	764	0.85	844	1.08	924	1.31	1004	1.54	1084	1.77	1164	1.96	1244	2.16	1324	2.57
					2400	328	0.70	844	1.01	924	1.24	1004	1.47	1084	1.70	1164	1.93	1244	2.16	1324	2.57	1404	2.97
ID - AHU- 100	1	630	20.0		1600	338	0.80	404	1.10	468	1.39	532	1.73	596	2.07	660	2.41	724	2.85	788	3.29		
					1800	338	0.80	404	1.10	468	1.39	532	1.73	596	2.07	660	2.41	724	2.85	788	3.29		
					2000	338	0.80	404	1.10	468	1.39	532	1.73	596	2.07	660	2.41	724	2.85	788	3.29		
					2200	338	0.80	404	1.10	468	1.39	532	1.73	596	2.07	660	2.41	724	2.85	788	3.29		
					2400	338	0.80	404	1.10	468	1.39	532	1.73	596	2.07	660	2.41	724	2.85	788	3.29		
ID - AHU- 150	1	710	30.0		1600	262	0.99	329	1.42	383	1.85	438	2.36	493	2.89	548	3.42	603	4.05	658	4.68		
					1800	262	0.99	329	1.42	383	1.85	438	2.36	493	2.89	548	3.42	603	4.05	658	4.68		
					2000	262	0.99	329	1.42	383	1.85	438	2.36	493	2.89	548	3.42	603	4.05	658	4.68		
					2200	262	0.99	329	1.42	383	1.85	438	2.36	493	2.89	548	3.42	603	4.05	658	4.68		
					2400	262	0.99	329	1.42	383	1.85	438	2.36	493	2.89	548	3.42	603	4.05	658	4.68		
ID - AHU- 200	1	800	40.0		1600	208	1.21	263	1.61	314	2.06	363	2.56	413	3.16	462	3.76	511	4.46	560	5.26		
					1800	208	1.21	263	1.61	314	2.06	363	2.56	413	3.16	462	3.76	511	4.46	560	5.26		
					2000	208	1.21	263	1.61	314	2.06	363	2.56	413	3.16	462	3.76	511	4.46	560	5.26		
					2200	208	1.21	263	1.61	314	2.06	363	2.56	413	3.16	462	3.76	511	4.46	560	5.26		
					2400	208	1.21	263	1.61	314	2.06	363	2.56	413	3.16	462	3.76	511	4.46	560	5.26		
ID - AHU- 250	2	630	50.0		1600	232	1.62	282	2.17	329	2.75	380	3.44	428	4.15	476	4.86	524	5.57	572	6.28		
					1800	232	1.62	282	2.17	329	2.75	380	3.44	428	4.15	476	4.86	524	5.57	572	6.28		
					2000	232	1.62	282	2.17	329	2.75	380	3.44	428	4.15	476	4.86	524	5.57	572	6.28		
					2200	232	1.62	282	2.17	329	2.75	380	3.44	428	4.15	476	4.86	524	5.57	572	6.28		
					2400	232	1.62	282	2.17	329	2.75	380	3.44	428	4.15	476	4.86	524	5.57	572	6.28		
ID - AHU- 300	2	710	60.0		1600	208	2.16	252	3.46	286	4.18	326	5.09	363	6.03	401	6.94	439	7.95	477	8.96		
					1800	208	2.16	252	3.46	286	4.18	326	5.09	363	6.03	401	6.94	439	7.95	477	8.96		
					2000	208	2.16	252	3.46	286	4.18	326	5.09	363	6.03	401	6.94	439	7.95	477	8.96		
					2200	208	2.16	252	3.46	286	4.18	326	5.09	363	6.03	401	6.94	439	7.95	477	8.96		
					2400	208	2.16	252	3.46	286	4.18	326	5.09	363	6.03	401	6.94	439	7.95	477	8.96		
ID - AHU- 400	2	800	80.0		1600	215	3.28	265	4.02	287	4.85	326	5.97	360	6.97	400	8.09	434	9.21	464	10.33		
					1800	215	3.28	265	4.02	287	4.85	326	5.97	360	6.97	400	8.09	434	9.21	464	10.33		
					2000	215	3.28	265	4.02	287	4.85	326	5.97	360	6.97	400	8.09	434	9.21	464	10.33		
					2200	215	3.28	265	4.02	287	4.85	326	5.97	360	6.97	400	8.09	434	9.21	464	10.33		
					2400	215	3.28	265	4.02	287	4.85	326	5.97	360	6.97	400	8.09	434	9.21	464	10.33		

### AIR HANDLING UNIT (MULTIZONE)



### DIMENSIONS

Table :28

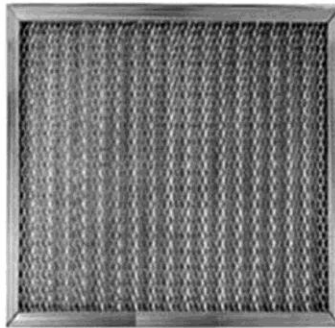
Model No.	A	B	C	F	G	H	J	K	L	M
ID – AHU – 20 MZ	1200	850	800	1150	410	700	80	200	250	600
ID – AHU – 35 MZ	1400	1000	1000	1350	510	700	80	250	250	700
ID – AHU – 50 MZ	1500	1250	1050	1500	410	1420	100	300	250	800
ID – AHU – 75 MZ	1920	1400	1300	1600	610	1320	120	350	250	900
ID – AHU – 100 MZ	1920	1500	1300	1650	710	1500	120	400	300	1000
ID – AHU – 150 MZ	2300	1970	1400	1800	810	1750	120	500	300	1100
ID – AHU – 200 MZ	2450	1970	1400	2050	910	2350	140	550	400	1200
ID – AHU – 250 MZ	3400	1970	1400	1650	910	1500	140	650	400	1200
ID – AHU – 300 MZ	3900	1970	1400	1800	810	1750	160	750	550	1300
ID – AHU – 400 MZ	5000	1970	1400	2050	910	2350	160	850	550	1400

## **Filters :**

Several kinds of filters ,depend on application system maybe installed in air handling units .the usual kinds are described as bellow.

### **Aluminum washable filters :**

Metallic washable and permanent aluminum panel type filters are cleanable, and used as pre filters in air handling unit to arrest particles greater than 1  $\mu\text{m}$  from air stream .usually they are installed at the first stage. In eurovent classification is EU1 and initial pressure drop for 2.5  $\text{m}^3/\text{s}$  air flow is 10-20 pa.



### **Panel (pleated) filters :**

The pad of synthetic nonwoven textiles are framed with protecting nets and frames. The pleated filters are installed in A.H.U units as prefilters.

Usual size :600×600×50 mm.

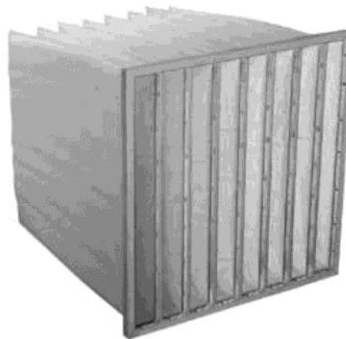
In eurovent classification is EU-3 to EU-9 and initial pressure drop for 3400  $\text{m}^3/\text{s}$  air flow is 30 to 55 pa.

Final pressure drop is recommended 200 to 250 pa.



**Bag filters :**

The media textile is made of synthetic materials with various thickness. They are made in 4 to 12 bags. These are the main filters in A.H.U. units. Usual size :595 ×595 × 600 to 900 mm. In eurovent classification is EU-4 to EU-9 and initial pressure drop for 3400 m<sup>3</sup>/hr air flow is 45 to 140 pa. Final pressure drop is recommended 250 to 300 pa.

**Hepa filters :**

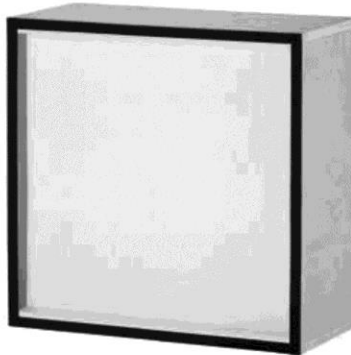
The media is micro fiber glass and corrugated aluminum sheets.

On one side the frames are sealed with rubber to prevent air leakage when installed. Usually they are used in A.H.U. Units for clean rooms. The efficiency for particles size 0.3 μm is %99.997.

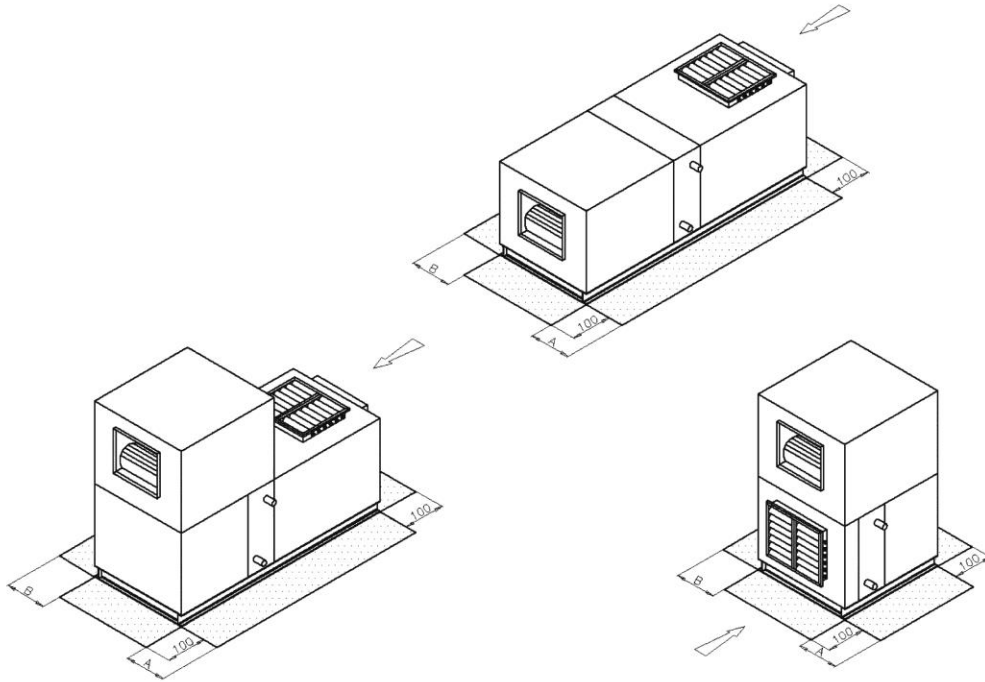
Usual size : 600×600×300 mm

In eurovent classification is EU-12. Initial pressure drop for 3400 m<sup>3</sup>/hr air flow is 220 pa. Final pressure drop is recommended 380 pa.

Other type of filters maybe used in air handling units. Depending on application and customer demands.



### SERVICE AREA REQUIREMENTS



**Table 29:**

MODEL NO	ID - AHU - 20	ID - AHU - 35	ID - AHU - 50	ID - AHU - 75	ID - AHU - 100
A	130	130	160	200	200
B	100	100	100	100	100
MODEL NO	ID - AHU - 150	ID - AHU - 200	ID - AHU - 250	ID - AHU - 300	ID - AHU - 400
A	250	280	180	200	260
B	100	120	180	200	260



## هواساز AIR HANDLING UNIT

گزینش دستگاه :

7500	CFM	مقدار هوا
1.1	In.w.g	افت فشار هوا در خارج دستگاه
220000	BTU/HR	باربرودتی کل
78	°F	دمای خشک هوای ورودی
65	°F	دمای مرطوب هوای ورودی
45	°F	دمای آب سرد ورودی
55	°F	دمای آب سرد خروجی
340000	BTU/HR	بارحرارتی
180	°F	دمای آب گرم ورودی
160	°F	دمای آب گرم خروجی
60	°F	دمای هوای ورودی
5000	Ft	ارتفاع محل از سطح دریا

از جدول ۱ دستگاه هواساز مدل 75-AHU-ID انتخاب می‌گردد.  
 واز جدول ۲ و ۶ باتوجه به بارهای حرارتی و برودتی داده شده کویل سرمایی ROW 4 و کویل گرمایی ROW 2 انتخاب می‌شود.

در صورتیکه شرایط ورودی و خروجی هوا و آب با شرایط داده شده در جدول مطابقت نداشته باشد.

ضرایب تصحیح از جدول مربوطه محاسبه و در ظرفیت‌ها اعمال می‌گردد.  
 (بار حرارتی یا برودتی X ضریب = ظرفیت کویل گرمایی یا سرمایی)  
 ظرفیت جدید مجدداً با جدول مطابقت داده می‌شود.

سرعت هوا در عبور از کویل دستگاه برابر است با:

$$FPM = \frac{CFM}{\text{Face Area}} = \frac{7500}{15} = 500$$

$$\text{Internal S.P.} = 0.13 + 0.08 + 0.1 + 0.45 + 0.17 + 0.03 = 0.96 \text{ In.w.g.}$$

$$\text{Total S.P.} = 1.1 + 0.96 = 2.06 \text{ In.w.g.}$$

انتخاب هوارسان :

جدول و عملکرد هوارسان ها بر مبنای هوای استاندارد با تراکم  $0.075 \frac{\text{lb}}{\text{ft}^3}$  که معادل هوای خشک  $70^\circ\text{F}$  با فشار بارومتريک  $29.92 \text{ In.Hg}$  می‌باشد تنظیم گردیده است .

هوارسان را برای شرایط هوای استاندارد می‌توان مستقیماً از جدول عملکرد انتخاب نمود . برای تمام حالت‌های دیگر باید قبل از مراجعه به جدول عملکرد هوارسان ضرایب تصحیح اعمال گردد.

$(\text{Corrected Air Friction Loss}) = (\text{Calculated Air Friction Loss}) \times \text{Corr.Factor}$   
 از جدول ۱۷ ضرایب تراکم هوا برای ارتفاع 5000 Ft از سطح دریا و  $100^\circ\text{F}$  عدد 1.28 به دست می‌آید.

$$2.06 \times 1.28 = 2.64 \text{ In.w.g}$$

از جدول ۲۷ قسمت هوارسان شامل یک دستگاه فن 560 با دور 749 RPM و موتور به قدرت 5.0 HP انتخاب می‌شود قدرت موتور اصلاح شده در شرایط داده شده برابر است با :

$$5.0 / 1.28 = 3.9 \text{ BHP}$$

مشخصات :

هواسازهای اصفهان دما برای سرد کردن، گرم کردن، رطوبت زنی رطوبت گیری، غبارگیری، تمیز کردن و گردش هوا در دو مدل ساخته می‌شود.

1) Drow Thru Units

2) Blow Thru Units

هواسازهای اصفهان دما در انواع افقی، عمودی، یک منطقه‌ای و چند منطقه‌ای قابل سفارش می‌باشد.

قسمتهای اصلی دستگاه :

۱- کابین مخلوط کننده : (Mixing Box)  
 به منظور جبران و تأمین و تعویض هوای مورد نیاز ساختمان هوای تازه برابر مقدار استاندارد و کدها لازم است. مقدار هوای تازه و درصد آن نسبت به هوای کلی به وسیله دمپره‌های هوای تازه و برگشت قابل تنظیم است. هوای تازه ضمن برآورده ساختن نیازهای ساختمان باید به مقداری باشد که حداکثر صرفه جوئی در انرژی به عمل آید. تنظیم دمپرها می‌تواند دستی و یا در صورت سفارش اتوماتیک باشد.

۲- فیلتر : (Filters)  
 فیلترهای آلومینیومی قابل شستشو در مسیر عبور هوا از دستگاه به منظور جلوگیری از نفوذ ذرات معلق در هوا به ساختمان نصب می‌شود. استفاده از انواع فیلترهای دیگر نیز امکان پذیر است .

۳- کویل : (Coil)  
 کویل‌های گرمایی و سرمایی به منظور تأمین هوای مورد نیاز ساختمان با شرایط مطلوب در دستگاه نصب می‌گردد. این کویل‌ها از لوله‌های مسی و پره های آلومینیومی با تراکم ۸ تا ۱۴ فین در اینچ (8-14 fins/inch) به منظور افزایش بازدهی و کاهش افت فشار هوا در دستگاه ساخته می‌شوند.

انواع کویل‌های آب گرم، آب سرد، DX و بخار در دستگاه قابل نصب است.  
 ۴- رطوبت زن : (Humidifier)  
 رطوبت زدن به جریان هوای عبوری از دستگاه به طرق زیر صورت می‌گیرد:

- رطوبت زدن توسط افشانک های آب

- رطوبت زدن توسط بخار

- رطوبت زدن توسط کویل الکتریکی

۵- هوارسان : (Fan)  
 هوارسان‌ها از ورق گالوانیزه ساخته و بالانس استاتیکی و دینامیکی می‌شوند و در دامنه مناسب هوادهی و فشار استاتیکی به منظور افزایش بازدهی و کاهش سر و صدای دستگاه انتخاب می‌گردند.

۶- بدنه : (Body)  
 بدنه دستگاه از ورق گالوانیزه با ضخامت مناسب ساخته و رنگ آمیزی می‌شود در بدنه دستگاه دریچه‌های بازدید جهت سرویس و تعمیرات در محل‌های مناسب تعبیه می‌گردد.





اصفهان دما  
ISFAHAN DAMA Co.

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