GemCool

SA SERIES

LOW HEIGHT
AIR HANDLERS
600 - 7000 CFM

ISO 9001
BUREAU VERITAS
Certification

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GEMCOOL PROFILE

In the ever evolving world of HVAC, GemCool offers tremendous customizability to offer the consumer maximum amount of options. Whether it is our Fan Coil units or our Air Handling Units, all requirements can be fulfilled by our technical personnel. Our computer selection program gives detailed technical information for the Air Handling Unit to allow easy selection and installation of equipment. The same technical selection software can also be used for selecting coil for fan coil units. With the increasing shift to district cooling, a major concern is the capability of the fan coil units to handle high water temperature rise. GemCool alleviates these concerns with the selection program which enables the engineer to select the appropriate units according to design conditions.

All GemCool equipment are manufactured according to strictest international standards to ensure highest quality and performance. The Air Handling Units are assembled in a facility conforming to ISO 9001 standards. Our Air Handling Unit coils are made as per ARI standards and our fans are AMCA certified. The motors conform to the highest international electrical standards available. All our equipment are well insulated to prevent cold bridging.

INTRODUCTION

Our Air Handling Units are ideally suited to provide dehumidification, cooling and air filtration for areas where it is not feasible to provide a large central system and run duct work to all areas to be conditioned. Individual rooms in schools can be air conditioned without giving up space for a central system air handler and necessary duct work. Other typical applications are: Spot air conditioning in factories, shopping malls and apartment air conditioning.

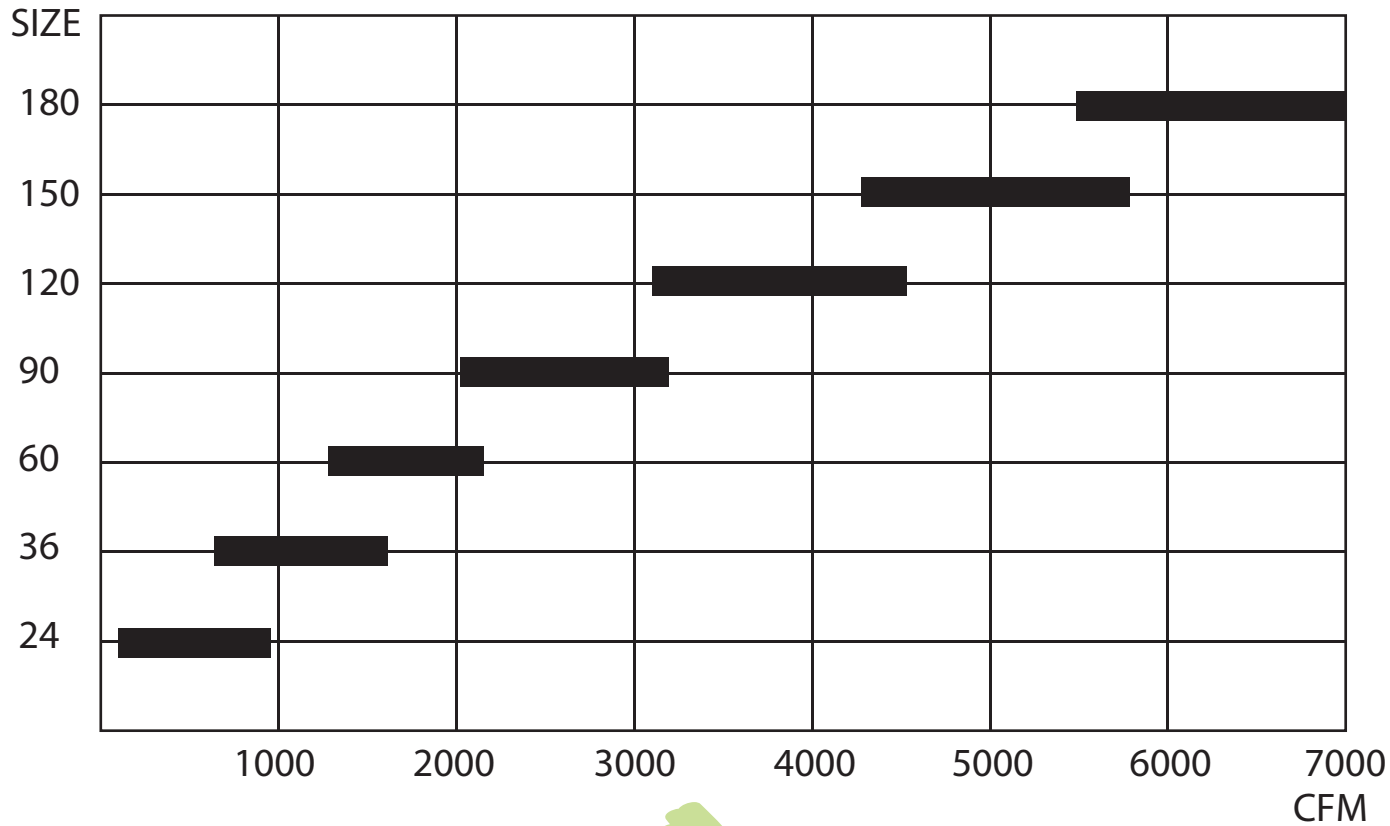
The SA unit is quiet, compact and low in cost yet permits you to offer year-round air conditioning. Coils are available for cooling with direct expansion or chilled water or glycol. All models will take up to 8 rows of cooling. The entire coil assembly slides in and out of the unit. All parts of the Air Handler can be dismantled in case of site accessibility restrictions.

SA units are the only units in it's range available with a bag filter and that can open an array of possibilities for installation of AHU's in restricted space. In addition, SA units are available in horizontal and vertical discharge configurations.

MODELS

An important consideration to the mechanical engineer is the flexibility of selection permitted by a line of SA equipment. There are 7 sizes of draw-through units. A careful analysis has resulted in an overlapping of air handling capacities to give utmost selection flexibility within the CFM range of the line. This overlaping of capacity is extended by the availablility of different coil configurations of each size unit.

SA Units range form size 024 to size 180 and handle 600 to 7000 CFM of air.



GUIDE SPECIFICATIONS

CONSTRUCTION

Structural frame is composed of extruded anodized aluminum profiles with excellent mechanical characteristics. The outer surface is powder coated to **RAL** 9010 at 50-70 micron. The profile incorporates a **thermal break** to prevent heat transfer and to avoid condensation on the outer surface. The profiles are connected to each other by means of nylon corner pieces. Due to the non conductivity and high strength of nylon, the joint maintains the AHU's thermal break continuity and mechanical strength.

Double skin construction is provided by sandwich type 40mm thick panels. The outer and inner skin of panels are of prepainted galvanized steel painted to the same specification as the structural frame. Panels are injected with environment friendly 40 kg/m3 polyurethane insulation, which adds extra mechanical strength and rigidity to the panels. Polyurethane has excellent heat insulation and noise reduction properties along with meeting the **NFPA-90A** flame speed and smoke generation requirements.

Panels are secured on the frame by means of screws covered by PVC cups for aesthetic appearance and prevention of screw rusting. The service panels are fixed on the frame by special bolts that allow easy removal of panel without use of tools and eliminate air leakage. All panels are completely gasketed to promote an air tight construction and are completely removable for access to components.

The full unit is supported on a 3.0 mm thick galvanized steel frame to ensure unit stability and permit easy lifting and handling. In addition, holes are provided in the base frame to permit simplified hanging of the unit.

FAN MOTOR ASSEMBLY

Units are equipped with double inlet, double width, forward curved **centrifugal** fans. All fans are made from hot dip galvanized steel to prolong longetivity. Fans are statically and dynamically **balanced** to prevent vibration. Selection of fans are done to meet the specified air flow and static pressure at low outlet velocities.

The 3 phase induction motors are of totally enclosed fan cooled type (TEFC) with class F insulation and **IP 54** protection. Transmission is effected via V-belts and pulleys with taper lock bushing.

The whole fan and motor assembly is **isolated** from the unit frame by means of Rubber-in-shear isolators. The fan outlet is connected to the unit panel by means of **flexible** connection with fire retardant properties to insure vibration-free operation. Fan bearings are self-aligning, sealed for life ball bearings requiring no maintenance.

COILS

In order to offer true unit selection, coils are available with three different cooling medium - water, refrigerant and glycol. Standard water cooling coils are available from four, six or eight row series. Circuiting is done by computer selection to keep the cooling media pressure as optimum as possible.
Coils are fabricated of 3/8" OD copper tubes. Fins are made of aluminum and are pressure bonded to the tubes through mechanical expansion. Fins are selected to provide maximum contact area while minimizing air pressure drop. Coils are encased in galvanized steel. Headers are made of seamless steel brazed to the tubes. All headers are covered with anti corrosion paint and are male threaded to allow fast and secure connections. Air vents are provided on each header. Both headers are on the same side as the access for the fan and filter.
The drain pan is made of powder coated hot dip galvanized steel with exterior insulation and drain pipe connection. The whole coil and drain pan assembly slides on rails allowing easy access to the coil. The inlet and outlet headers along with the drain connection are sealed on the casing with neoprene gaskets.

FILTER SECTION

SA units, as a standard, come equipped with 2" panel filters catridges. The filters are in a **W** pattern arrangement with low face velocity. Such a system increases the effciency of the filter and prolongs it's lifetime. Galvanized steel frames in the filter section guide and hold the filters in position. An access door provided on the side of the filters allows easy removal and replacement of the filters. All filters are of conventional size and are easily available. Filters are disposable and are fire resistant.
Along with panel filters, SA units also come equipped with bag filters. The filters are Mini pleat rigid bag filters with high surface area and long clogging time. Different type of efficiencies are available from EU6 to EU9. Like the panel filters, the bag filters can be easily removed and replaced.
In addition, SA units can be fitted with carbon filters to eliminate odours in public places.

TECHNICAL DATA

Unit Size			SA 024	SA 036	SA 060	SA 090	SA 120	SA 150	SA 180
Nominal Air Flow		CMH	1,360	2,210	3,400	5,100	6,800	9,350	11,050
		CFM	800	1,300	2,000	3,000	4,000	5,500	6,500
Motor Power		kW	0.17	0.35	1.10	1.50	2.20	3.00	4.00
Electrical Supply			220 / 1 / 50		220 / 1 / 50 OR 400 / 3 / 50	400 / 3 / 50			
Static Pressure		Pa	80	180	250	250	300	350	400
Coil Face Area		m^2	0.19	0.25	0.40	0.56	0.76	0.99	1.19
Chilled Water Coil 4 Rows (Standard Water Temperature)	Total Cooling Capacity (kW)		8.0	12.1	20.3	30.4	40.8	54.8	65.8
	Sensible Cooling Capacity (kW)		6.0	9.1	15.1	22.6	30.2	39.7	47.7
	Water Flow Rate (l/s)		0.34	0.52	0.88	1.32	1.77	2.38	2.85
	Water Pressure Drop (kPa)		11	20	33	25	39	65	65
Chilled Water Coil 6 Rows (Standard Water Temperature)	Total Cooling Capacity (kW)		10.6	15.9	26.2	39.4	51.5	66.2	79.4
	Sensible Cooling Capacity (kW)		7.4	11.1	18.3	27.5	36.2	46.1	55.3
	Water Flow Rate (l/s)		0.46	0.69	1.14	1.71	2.23	2.87	3.44
	Water Pressure Drop (kPa)		29	51	52	62	28	43	43
Chilled Water Coil 4 Rows (District Cooling)	Total Cooling Capacity (kW)		6.0	10.1	19.5	26.8	38.6	50.7	60.8
	Sensible Cooling Capacity (kW)		5.1	8.3	14.7	20.9	29.2	37.4	45.3
	Water Flow Rate (l/s)		0.16	0.27	0.52	0.71	1.02	1.34	1.61
	Water Pressure Drop (kPa)		3	6	12	8	14	22	22
Chilled Water Coil 6 Rows (District Cooling)	Total Cooling Capacity (kW)		9.6	15.8	25.5	37.9	47.9	63.1	75.7
	Sensible Cooling Capacity (kW)		6.9	11.3	18.0	26.8	34.5	44.7	53.6
	Water Flow Rate (l/s)		0.26	0.42	0.67	1.00	1.27	1.67	2.00
	Water Pressure Drop (kPa)		9	20	20	23	10	15	15
Header Diameter		mm	25	25	32	32	40	50	65
		in	1	1	1.25	1.25	1.6	2	2.6
Drain Connection		in	3/4						
Panel Filter Sizes HxW		mm	395 x 386	395 x 386	445 x 386	445 x 519	500 x 608	550 x 530	635 x 530
Bag Filter Sizes HxW		mm	492 x 592	492 x 592	492 x 592	492 x 592	492 x 592	592 x 592	592 x 592
Estimated Weight		kg	140	160	190	240	340	390	440

All capacities are based on entering air temperature of 27 / 19 °C . Standard water temperature is 7°C entering and 12.5°C leaving. District cooling water temperature is 5.5°C entering and 14.5°C leaving.

COOLING DATA - CW & FRESH AIR

Unit Size			SA 024	SA 036	SA 060	SA 090	SA 120	SA 150	SA 180
Nominal Air Flow		CMH	1,360	2,210	3,400	5,100	6,800	9,350	11,050
		CFM	800	1,300	2,000	3,000	4,000	5,500	6,500
Motor Power		kW	0.17	0.35	1.10	1.50	2.20	3.00	4.00
Chilled Water Coil 4 Rows (Standard Water Temperature)	Total Cooling Capacity (kW)		20.7	31.4	47.0	73.7	101.3	139.9	166.1
	Sensible Cooling Capacity (kW)		11.4	17.3	26.5	40.6	55.3	76.1	90.3
	Water Flow Rate (l/s)		0.98	1.50	2.04	3.19	4.39	6.07	7.20
	Water Pressure Drop (kPa)		10	25	5	17	28	49	48
Chilled Water Coil 6 Rows (Standard Water Temperature)	Total Cooling Capacity (kW)		24.9	38.6	62.4	90.4	123.6	171.1	202.1
	Sensible Cooling Capacity (kW)		13.3	20.8	33.3	48.8	66.2	91.3	107.9
	Water Flow Rate (l/s)		1.19	1.84	2.71	3.92	5.36	7.42	8.76
	Water Pressure Drop (kPa)		23	17	36	11	19	33	32
Chilled Water Coil 8 Rows (Standard Water Temperature)	Total Cooling Capacity (kW)		29.3	40.2	70.4	100.5	137.4	170.8	201.9
	Sensible Cooling Capacity (kW)		15.4	21.7	37.0	53.4	72.6	91.6	108.2
	Water Flow Rate (l/s)		1.40	1.91	3.05	4.36	5.96	7.41	8.75
	Water Pressure Drop (kPa)		42	10	26	8	13	19	18
Chilled Water Coil 4 Rows (District Cooling)	Total Cooling Capacity (kW)		16.8	27.1	49.4	76.5	92.9	130.4	155.0
	Sensible Cooling Capacity (kW)		10.1	15.9	27.4	41.8	52.6	73.0	86.6
	Water Flow Rate (l/s)		0.45	0.72	1.31	2.03	2.46	3.46	4.11
	Water Pressure Drop (kPa)		2	6	19	56	9	17	16
Chilled Water Coil 6 Rows (District Cooling)	Total Cooling Capacity (kW)		24.2	37.8	62.3	93.3	124.8	162.1	192.5
	Sensible Cooling Capacity (kW)		13.2	20.6	33.3	50.0	66.6	88.2	104.6
	Water Flow Rate (l/s)		0.64	1.00	1.65	2.47	3.31	4.30	5.10
	Water Pressure Drop (kPa)		7	18	46	38	60	12	11
Chilled Water Coil 8 Rows (District Cooling)	Total Cooling Capacity (kW)		28.4	40.2	68.0	104.2	142.9	182.3	215.5
	Sensible Cooling Capacity (kW)		14.9	21.7	36.2	55.1	75.2	97.6	115.3
	Water Flow Rate (l/s)		0.75	1.06	1.80	2.76	3.79	4.83	5.71
	Water Pressure Drop (kPa)		10	27	9	27	45	8	8

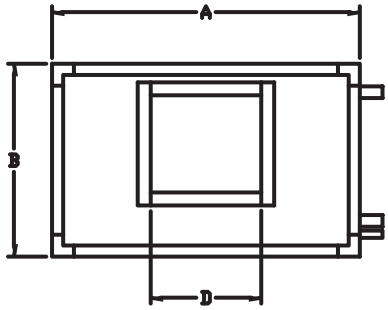
All capacities are based on entering air temperature of 46 / 30°C . Standard water temperature is 7°C entering and 12.5 °C leaving. District cooling water temperature is 5.5 °C entering and 14.5 °C leaving. For additional details and custom coil selections, please contact GemCool.

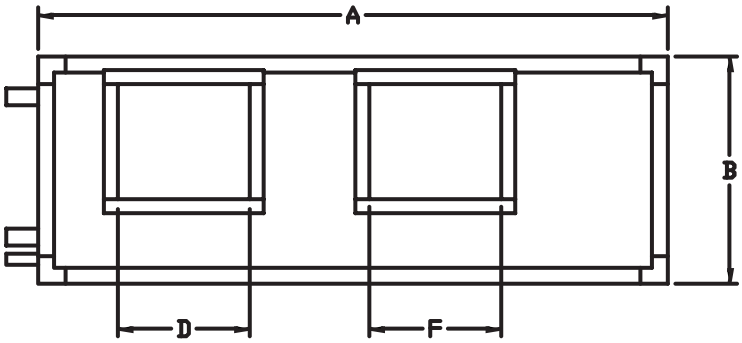
COOLING DATA - DX

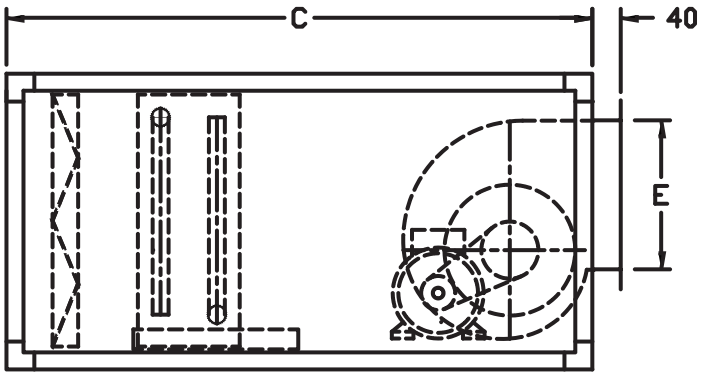
Unit Size			SA 024	SA 036	SA 060	SA 090	SA 120	SA 150	SA 180
Nominal Air Flow		CMH	1,360	2,210	3,400	5,100	6,800	9,350	11,050
		CFM	800	1,300	2,000	3,000	4,000	5,500	6,500
Motor Power		kW	0.17	0.35	1.10	1.50	2.20	3.00	4.00
DX Coil 4 Rows (Standard Room Temperature - 27 / 19 °C)	Total Cooling Capacity (kW)		8.1	12.2	21.2	30.0	41.1	56.9	67.6
	Sensible Cooling Capacity (kW)		6.1	9.3	15.5	22.3	30.2	41.6	49.3
	Leaving Air Temp (°C)		13.5 / 12.7	14.3 / 13.1	13.3 / 12.3	13.8 / 12.8	13.6 / 12.5	13.6 / 12.5	13.5 / 12.5
	Ref Pressure Drop (kPa)		4	8	17	9	13	19	19
DX Coil 6 Rows (Standard Room Temperature - 27 / 19 °C)	Total Cooling Capacity (kW)		10.3	15.8	24.9	38.1	51.9	69.1	82.0
	Sensible Cooling Capacity (kW)		7.3	11.3	17.7	26.8	36.2	48.8	57.8
	Leaving Air Temp (°C)		11.0 / 10.7	11.7 / 11.2	11.4 / 11.0	11.2 / 10.8	11.0 / 10.6	11.3 / 10.9	11.3 / 10.9
	Ref Pressure Drop (kPa)		6	13	6	14	21	13	13
DX Coil 8 Rows (Standard Room Temperature - 27 / 19 °C)	Total Cooling Capacity (kW)		11.6	18.1	28.3	43.2	55.5	76.8	91.1
	Sensible Cooling Capacity (kW)		7.9	12.5	19.4	29.5	38.4	52.9	62.7
	Leaving Air Temp (°C)		9.5 / 9.4	10.1 / 9.9	9.9 / 9.8	9.7 / 9.6	10.1 / 10.0	10.0 / 9.9	10.0 / 9.9
	Ref Pressure Drop (kPa)		8	18	9	19	6	10	9
DX Coil 4 Rows (Fresh Air - 46 / 30 °C)	Total Cooling Capacity (kW)		21.2	29.7	50.7	72.3	98.5	135.3	160.1
	Sensible Cooling Capacity (kW)		11.5	16.5	27.5	39.7	53.7	73.5	87.3
	Leaving Air Temp (°C)		19.1 / 17.4	22.1 / 19.5	20.3 / 18.0	21.1 / 18.8	20.8 / 18.5	20.9 / 18.5	20.8 / 18.4
	Ref Pressure Drop (kPa)		20	9	20	10	14	22	21
DX Coil 6 Rows (Fresh Air - 46 / 30 °C)	Total Cooling Capacity (kW)		26.1	38.2	61.6	88.8	120.5	172.6	196.7
	Sensible Cooling Capacity (kW)		13.8	20.5	32.9	47.8	64.6	88.7	105.1
	Leaving Air Temp (°C)		14.0 / 13.5	16.6 / 15.7	15.5 / 14.7	16.4 / 15.5	16.0 / 15.2	16.0 / 15.2	15.9 / 15.1
	Ref Pressure Drop (kPa)		31	16	14	7	10	15	15
DX Coil 8 Rows (Fresh Air - 46 / 30 °C)	Total Cooling Capacity (kW)		28.9	43.5	68.3	103.3	134.2	184.9	219.2
	Sensible Cooling Capacity (kW)		15.1	23.0	36.1	54.4	71.1	97.8	115.9
	Leaving Air Temp (°C)		11.2 / 11.0	13.3 / 13.0	12.7 / 12.5	12.5 / 12.3	13.2 / 12.9	13.1 / 12.9	13.1 / 12.8
	Ref Pressure Drop (kPa)		40	21	10	22	7	11	11

All capacities are based on entering air temperature of 27 / 19 °C and 46 / 30 °C. Evaporating temperature is taken as 7.2 ° C. For further information or custom coil selection, please contact GemCool.

HORIZONTAL CONFIG DIMENSIONS (W/O BAG FILTER)







Model	A	B	C	D	E	F
SA 024	860	550	1150	287	256	-
SA 036	860	550	1150	298	262	-
SA 060	1250	600	1194	331	289	-
SA 090	1650	600	1250	331	289	331
SA 120	1916	650	1350	331	289	331
SA 150	2216	700	1490	309	341	309
SA 180	2216	800	1590	373	404	373

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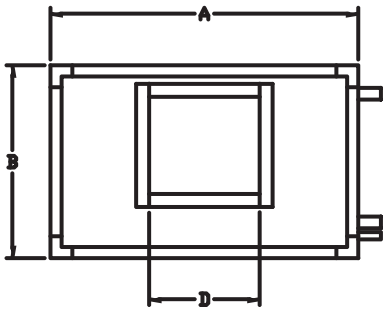
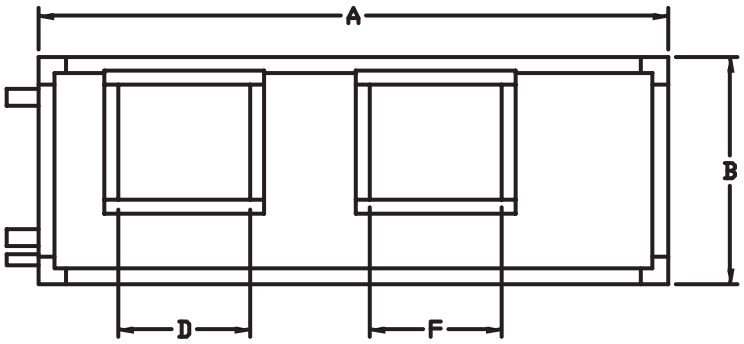
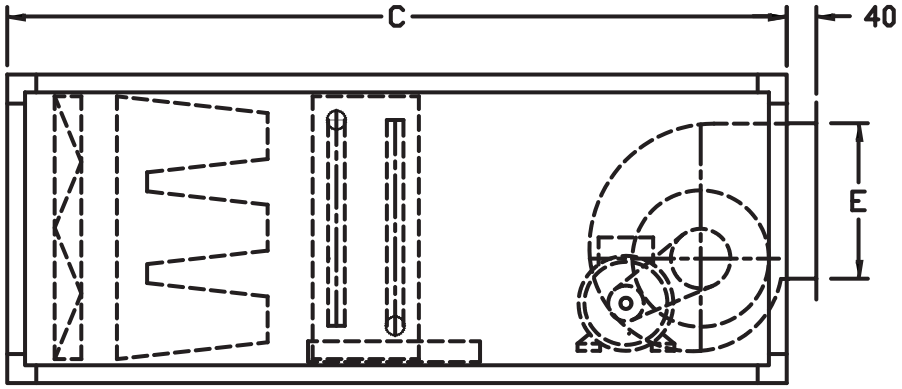
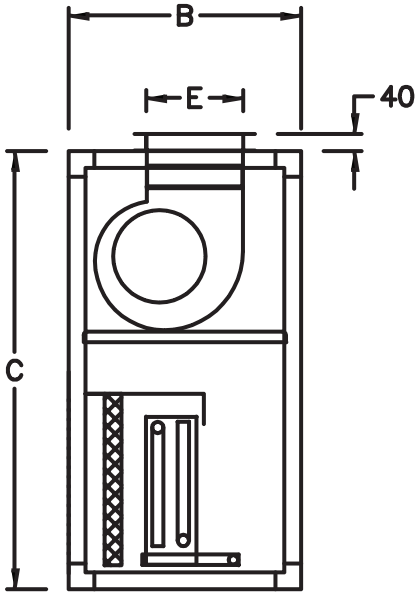


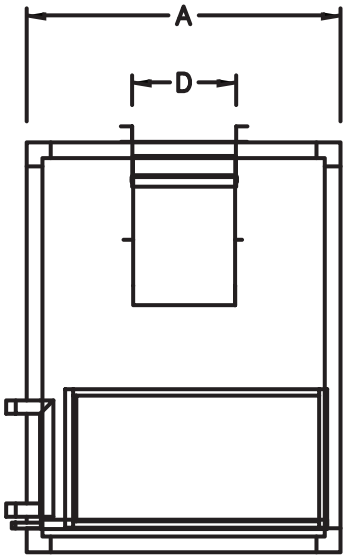


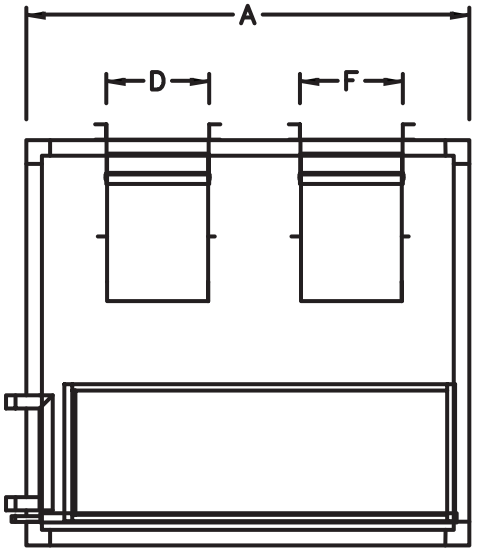


Model	A	B	C	D	E	F
SA 024B	860	625	1550	287	256	-
SA 036B	860	625	1550	298	262	-
SA 060B	1262	625	1600	331	289	-
SA 090B	1650	625	1700	331	289	331
SA 120B	1916	650	1750	331	289	331
SA 150B	2216	725	1840	309	341	309
SA 180B	2216	800	1940	373	404	373

VERTICAL CONFIG
DIMENSIONS (W/O BAG FILTER)

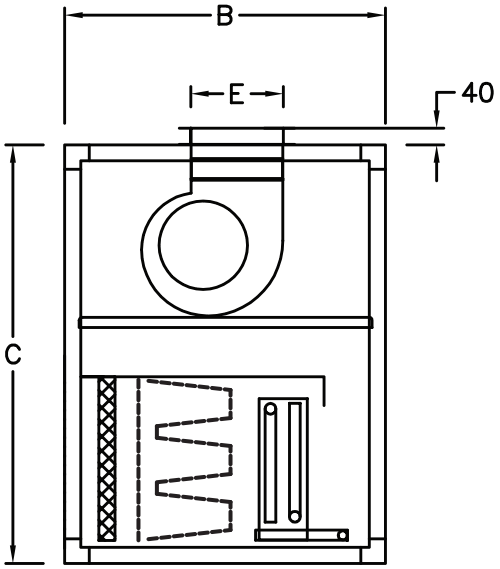


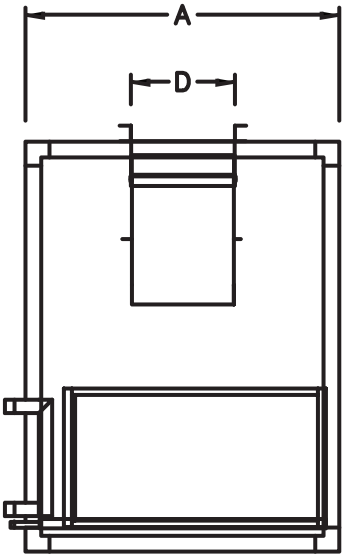


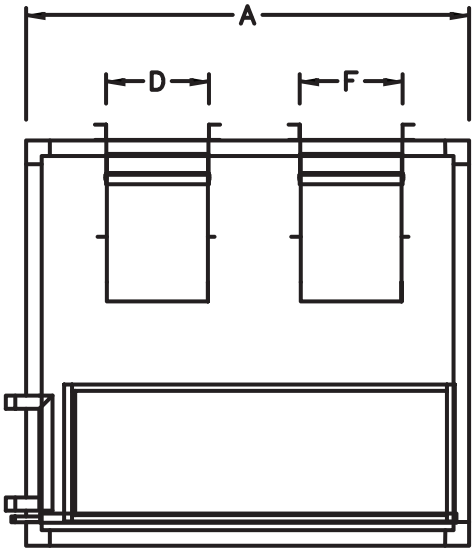


Model	A	B	C	D	E	F
SA 024V	860	650	1250	287	256	-
SA 036V	860	650	1250	298	262	-
SA 060V	1250	700	1294	331	289	-
SA 090V	1650	700	1350	331	289	331
SA 120V	1916	750	1450	331	289	331
SA 150V	2216	800	1590	309	341	309
SA 180V	2216	900	1690	373	404	373

VERTICAL CONFIG
DIMENSIONS (WITH BAG FILTER)



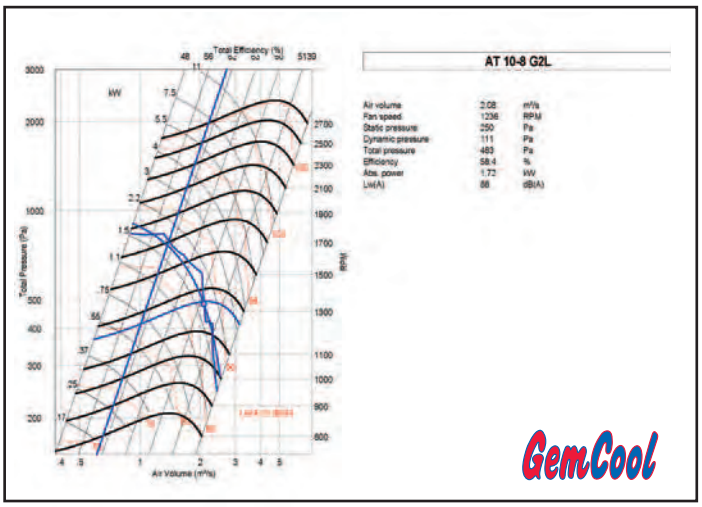


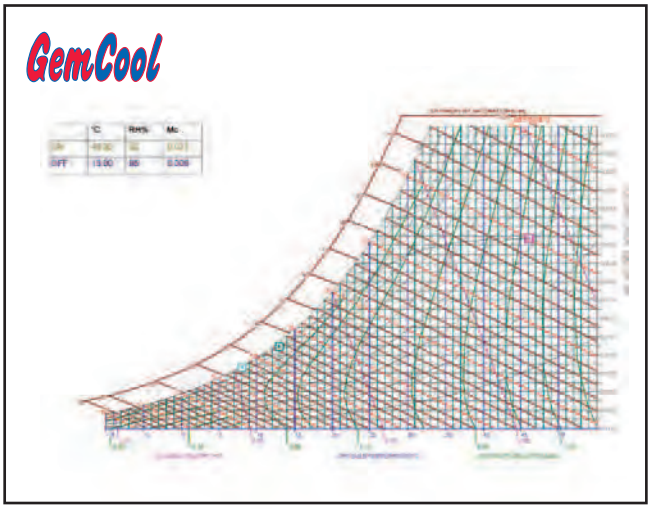


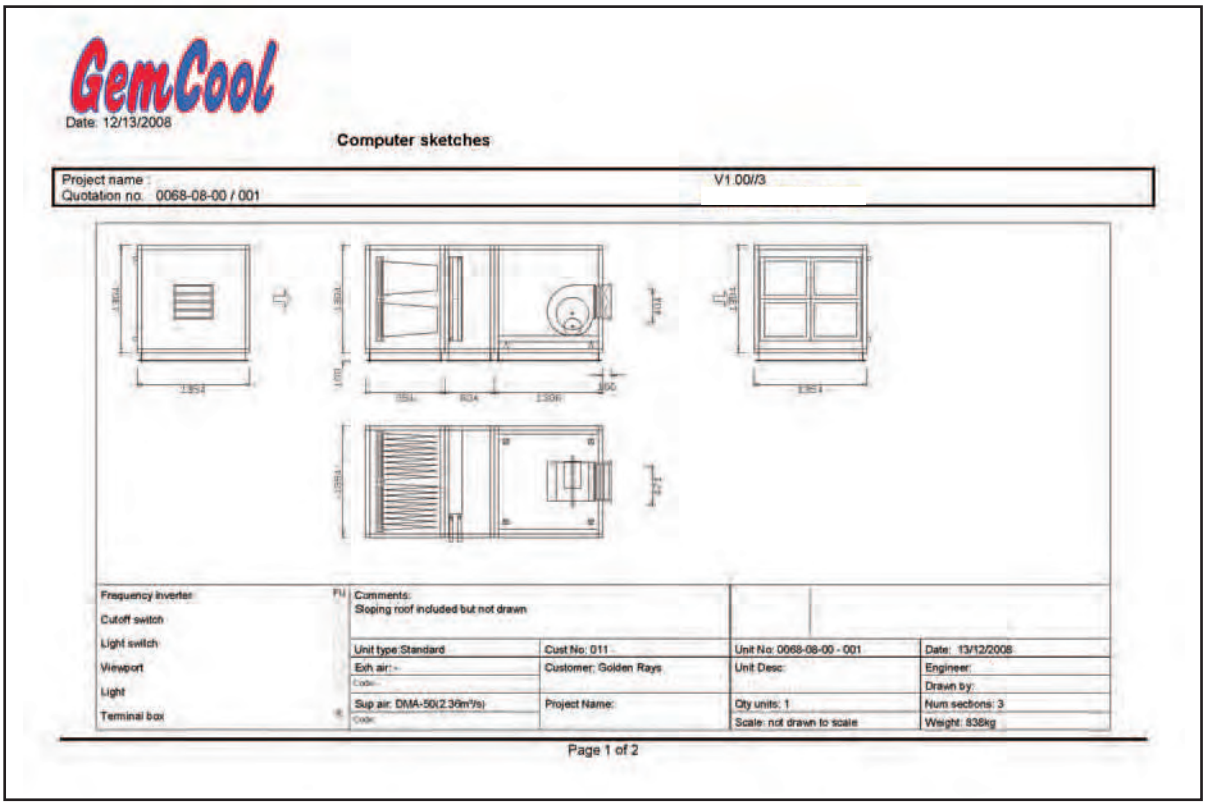
Model	A	B	C	D	E	F
SA 024BV	860	1050	1250	287	256	-
SA 036BV	860	1050	1250	298	262	-
SA 060BV	1250	1100	1294	331	289	-
SA 090BV	1650	1150	1350	331	289	331
SA 120BV	1916	1150	1450	331	289	331
SA 150BV	2216	1150	1590	309	341	309
SA 180BV	2216	1250	1690	373	404	373

SELECTION PROGRAM

To provide our customers with detailed technical information about the unit, Gem-Cool has developed a special selection program. This selection program allows the user to select all characteristics of the unit and change them as per specified requirements. It also allows the user to see technical data associated with each component of the AHU. For example, the user can see the fan curve related to the unit. Or the coil psychrometric chart can be displayed for each coil selection. After each selection of the unit, a printout is generated containing the technical data, a sketch and any other printouts the user requests. The selection program can be used to select the optimum unit and all the relevant data can be sent to GemCool who can start production of the unit.







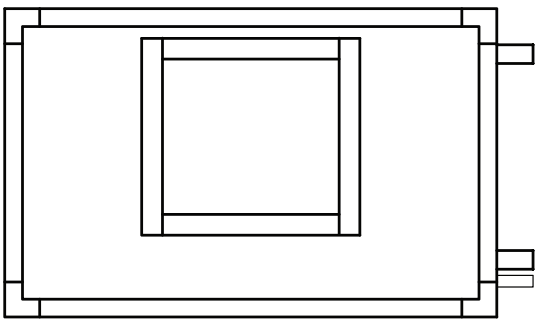
ORDERING INSTRUCTIONS

Before ordering, please take note of the following points:

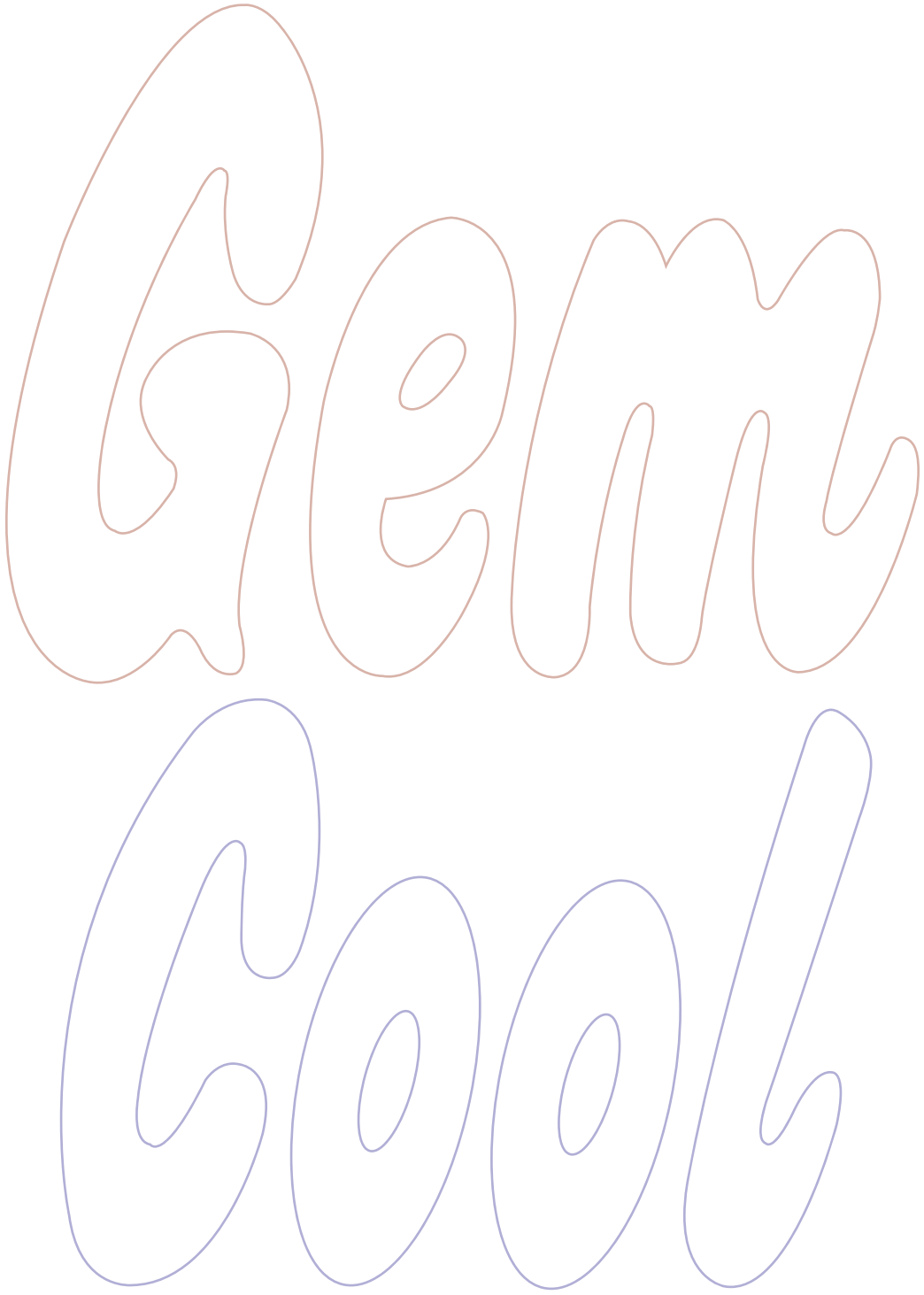
1) Will selected model fit available installation space?
2) Is the unit required in horizontal or vertical discharge configuration?
3) What will be the supply air condition? In case of full fresh air, it is highly recommended that a unit with bag filter be chosen. In case of odour considerations, carbon filters should be chosen ahead of panel filters as primary filters.
4) Check given coil selection for compliance with project specifications. The total and sensible capacities should meet requirements of conditioned space. In case chilled water or glycol is used as cooling media, entering and leaving fluid temperatures, fluid flow and fluid pressure drop should be verified. In case of direct expansion coils, expansion valves are provided preinstalled in the unit. Sizing of the expansion valves should match the condensing unit cooling capacity. Liquid and suction lines of the coil should be taken into note for facilitating refrigerant piping.
5) External static pressure of the unit to be calculated to ensure optimum performance. In case of discrepancy between calculated and actual value, adjustments can easily be made on site to accurately match required air flow.
6) Filter efficiencies should be in compliance with project specifications. A large amount of options are available in SA series according to customer's requirements.
7) Accesss side connection of the unit should be given after project site inspection. Access connection for fan, coil and filter can all be made independent of each other. For viewing convention, please follow the below given guideline. In the below diagram, air is blowing out of the page towards the reader and the unit is right hand side connection type.

Discharge Air View

LEFT HAND SIDE CONNECTION



RIGHT HAND SIDE CONNECTION



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Rev 2 19/09/11