

CAH Series

Comfort Air Handling Units



Range 900 cfm to 20000 cfm
(425 l/s to 9440 l/s)



*you name it
we cool it*



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Quality
Management
Systems
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Environmental
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Comfort Air Handling Units

CAH Series

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Legend

The following legends are used throughout this manual

Amp	Amperes	lbs	Pounds weight
cfm	Cubic feet per minute	l/s	Litres per second
DBT	Dry Bulb Temperature	LWT	Leaving Water Temp.
EAT	Entering Air Temperature	MBh	1000 Btuh
ESP	External Static Pressure	m/s	Meters per second
EWT	Entering Water Temp.	OD	Outside Diameter
FPI	Fins per inch	Pa	Pascals
fpm	Feet per minute	Ph	Phase
gpm	Gallons per minute	psig	pounds per sq.inch
inwg	inches of Water Gauge	rpm	revolutions per minute
Hz	Hertz	SST	Saturated Suction Temp.
kW	Kilowatts	V	Volts
kg	Kilograms	WBT	Wet Bulb Temperature
kPa	Kilo Pascals		

Nomenclature

H	CAH	-A	040	4	2	X	G	
								Arrangement
								H : Horizontal
								V : Vertical
								CAH series
								Type of Construction
								A : Aluminum profile with 1" panel
								2A: Aluminum profile with 2" panel
								Unit size (nom. x 100 cfm)
								No. Rows for Cooling Coil
								(3, 4 or 6 rows)
								No. Rows for Hot Water Coil
								(1 or 2 rows)
								Type of Cooling Coil
								X : DX
								W : Chilled Water
								Type of Finish
								G : Galvanized
								F : Painted



SKM reserves the right to change, in part or in whole the specifications of its Air Conditioning Equipment at any time in order to add the latest technology. Therefore, the enclosed information may change without any prior notice.

Introduction

SKM **CAH** series air handling units are designed on a high engineering standard to provide the requirements of ventilation, heating, cooling and air distribution to a conditioned space.

This series is applicable for indoor installation only and find a wide range of application in multi room buildings, requiring year round cooling, heating and ventilation. The diversity in use and application makes SKM **CAH** series the ideal solution for air conditioning requirements in schools, offices, laboratories, restaurants, cinemas, department stores, mosques, supermarkets and etc.

available in three different constructions to deliver from 900 cfm (425 l/s) to 20000 cfm (9440 l/s) nominal air flow rate. These units are compact and rigid construction, completely factory assembled and offer easy site handling and maintenance with minimum installation time and labor expense. **CAH** units are economic solution for most applications, available in both horizontal [**HCAH**] and vertical [**VCAH**] arrangement.

SKM **CAH** units are manufactured in a facility registered to ISO 900:2008 manufacturing quality standard and coil performances are certified in accordance with AHRI Standard 410.

CAH units are another premium international quality product, fully justifying SKM slogan:

SKM Air Conditioning Equipment,



You name it.....We cool it.

Comfort Air Handling Units CAH Series

General Features

- Units construction: either self-supporting panels or modular construction.
- Application flexibility.
- Suitable for both duct connection and free discharge application.
- Suitable for both ceiling suspended and floor mounted application.
- Easy installation and maintenance.
- Proper gaskets to ensure excellent leak tight, thermal and acoustical insulation.
- Conformity with applicable European health and safety standards.

Component Features

Casing & Construction

Unit casing shall be constructed of either self-supporting panels in heavy gauge galvanized sheets or extruded Aluminum profiles (modular construction).

CAH units are available in three different series:

- **H/VCAH:** Air flow range from 900 cfm to 8000 cfm against total static pressure up to 3.0 in.wg (750 Pa). Suitable for indoor application only.

Casing and panels are constructed from self-supporting panels in heavy gauge hot dipped galvanized steel conforming to ASTM A653 and JIS G-3302. This type of construction is available only for air flow rate up to 8000 cfm. These models consist of casing, fan, coils, drain pan and filter as standard. Units are provided with removable side panels with handles and latches to facilitate access to interior components; for easy maintenance and service. Standard construction of **HCAH** units are suitable for ceiling suspended application and provision for hanging is provided by hanger channels mounted in such arrangement as to handle the unit weight.

- **HCAH-A:** Modular construction. Air flow range from 900 cfm to 20000 cfm against total static pressure up to 4.0 in.wg (1000 Pa). Suitable for indoor application only.

Unit frame with extruded Aluminum profile and panels with heavy gauge hot dipped galvanized steel suitable for 25mm thick panels.

- **HCAH-2A:** Modular construction. Air flow range from 900 cfm to 20000 cfm against total static pressure up to 5.0 in.wg (1250 Pa). Suitable for indoor application only.

Unit frame with extruded Aluminum profile and panels with heavy gauge hot dipped galvanized steel suitable for 48mm thick panels.

Aluminum profile frames are assembled together using strong nylon corners. All fixed and access panels are constructed from heavy gauge hot dipped galvanized steel conforming to ASTM A653 and JIS G-3302. Access panels are provided with quick release fasteners to facilitate access to all internal components for maintenance and service. Suitable handles are provided for ease of handling. This type of construction gives the possibility of completely dismantling the unit sections and re-assembling at site in case of access difficulty. Removal of any panels shall not effect the structural integrity of the unit.

Units with Aluminum profile construction consist of fan section, coil section, and filter section as standard. Mixing box, heating coil, hot water coil, bag filter, V filter and plenum sections are available upon request.

MODEL		H/VCAH	HCAH-A	HCAH-2A
Air Flow Range (Nominal)	cfm	900-8000	900-20000	900-20000
Total Static Pressure	Pa	750	1000	1250
Construction	Profile	GI/GA No Profiles	40mm Aluminium Profile	50mm Aluminium Profile
	Corner	N/A	Nylon	Nylon
Skinning		Single	Single	Double
Panel Thickness		25 mm	25 mm	48 mm
Insulation		Faced Fiber Glass 32 kg/m ³	Faced Fiber Glass 32 kg/m ³	Polyurethane Foam 40 kg/m ³
Outer Skin	Material	GI/GA	GI/GA	GI/GA
	Thickness	1.0 mm *	1.0 mm *	0.7 mm
Available Sections / Components		Fan, Heater, Coil, Filter (Not in separate sections)	Fan, Heater, Coil, Filter, Mixing Box & Plenum	Fan, Heater, Coil, Filter, Mixing Box & Plenum

* 1.2 mm for units above 2500 cfm

Table 1

Standard construction of **HCAH-A** and **HCAH-2A** units are not suitable for ceiling suspended application but can be an option for sizes up to CAH-80.

Insulation

For best thermal and acoustical performance, all panels are internally insulated. For units with 25mm thick panels and single skin [**H/VCAH & HCAH-A**], panels are insulated with fiber glass insulation of 2 lb/ft³ (32 kg/m³) density and 0.23 BTU. n/ft².F.h. (0.033 W/m².K) thermal conductivity, and it shall be conformed to HH-1-545B Type 1, SMACNA standard for duct liners and ASTM C423 and NFPA90A and 90B standards for fire resistance.

For units with 48mm thick panels and double skin [**HCAH-2A**], panels are insulated with polyurethane foam insulation conforming to density of 2.5 lb/ft³ (40 kg/m³) according to the test standard ASTM D-1622-88 and thermal conductivity of 0.14 BTU.in/ft².F.h. (0.020 W/m².K) according to test standard ASTM C518-56.

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Painting

CAH units are supplied unpainted in a galvanized finish. Baked enamel powder coating in RAL 7032 color scheme can be provided upon request. This finish and coating can pass a 1000-hour, 5% salt spray testing at 95°F (35°C) and 95% relative humidity as per ASTM B117. Specify option **[BEP]** for painted units. Inner skin panels for double skin units are supplied in galvanized finish unless otherwise stated.

Options

- Double skin unit **[DSU]** for **H/VCAH** and **HCAH-A** units.
- Polyurethane **[PU]** foam insulation (mention option **DSU** for **PU** insulation).
- Stainless steel outer skin **[SOS]**.
- Aluminum outer skin **[AOS]**.
- Aluminum inner skin **[AIS]**.
- Stainless steel inner skin **[SIS]**.
- Perforated inner skin **[PIS]** (only with fiber glass insulation).
- Stainless steel fasteners **[SSF]**.

Fan Section

Fan

Double Inlet Double Width (DIDW) centrifugal fans are supplied as standard in SKM **CAH** units. Fans used in SKM **CAH** units are tested in a registered laboratory in accordance with AMCA Standard 210. All fans are statically and dynamically balanced according to ISO 1940 and performance data according to ANSI/AMCA Standard 210 and ASHRAE51-2007. The impellers can have forward curved **[FAT]** or **[FADH]** and backward curved **[FRDH]** depending on the requirement. Backward curved fans are only applicable for units with Aluminum profile construction.

Forward curved fans are generally used for low static pressure applications. Forward curved blades and casing shall be made of hot galvanized steel sheet and fan shaft shall be made of carbon steel with corrosion protection coating. Backward curved fans can handle high static pressure system and show higher efficiency over a broader range of higher system resistance. Backward inclined blades and casing shall be made of hot galvanized steel sheet and fan shaft shall be made of carbon steel with corrosion protection coating.

SKM fans use self-aligned ball or pillow block bearings that are greased for life. Pillow block bearings are provided with re-greasing fittings. Fans are selected for best sound characteristics based on maximum fan efficiency. Different fan positions are available for **HCAH-A** and **HCAH-2A** depending on the requirement.

Motors

Fan motors are totally enclosed fan cooled (TEFC), foot mounted, 4 poles, IP-55 protected and class-F insulated. The motor is mounted on adjustable base, so that belt tension can be easily adjusted. The complete fan motor drive assembly is mounted on floating sub base.

In order to limit transmission of noise and vibration, the complete fan motor sub base assembly is mounted on anti-vibration mounts, for **HCAH-A** and **HCAH-2A**.

Rating & operating characteristics of motors are in accordance with IEC standards.

Motors can be provided on either right or left hand side facing the unit from return air side (see figure 1). Section is sized to accommodate different motor sizes depending on the actual requirement of air flow and static pressure.

All fans are belt-driven by motors, with a set of fixed pitch, variable pitch pulleys and matching belts. SKM provides variable pitch pulley with single/double groove systems.

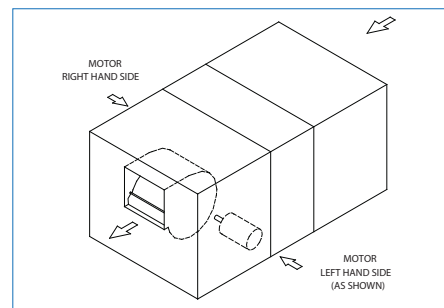


Figure 1: Motor Handling

Options

- Explosion proof motor **[EXM]**
Suitable for zone 1 or zone 2, EEx d IIB T4 (zone to be specified, by the customer).
- Starter Panel Control **[SPC]**
Comprising of contactor, overload and fuse for fan motor. Control to be specified by customer (thermostat, start stop push button, volt free contact from BMS and etc.)
- Stainless steel fan shaft **[SSS]**.
- Extended lubrication fittings **[LFE]**.
- Polyglycoat coating on fans **[PGF]**.
- Horizontal fan discharge **[HFD]** for vertical **[VCAH]** units.

Coil Section

Variety of coils including chilled water **[CCW]**, direct expansion **[CDX]**, and hot water **[CHW]** are available to meet a wide range of application requirements. Coil performance are certified in accordance with AHRI Standard 410. Coils are tested by air pressure while submerged in water to a pressure of 300 psig (2060 kPa).

Coils are constructed from seamless copper tubes 3/8" or 5/8" O.D. and are mechanically expanded into continuous corrugated Aluminum fins to provide continuous compression bond over the entire finned length for maximum heat transfer rates. Coils can be manufactured from 3, 4, or 6 rows for both chilled water and direct expansion coils while, 1 or 2 rows for

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heating coils. The standard number of fins per inch is 12 FPI however, 8 and 10 FPI coils are available upon the customer request or to achieve the determined conditions. Headers are made of seamless copper pipe. Air vents and drain plugs are standard for water coils.

Coils can be provided with moisture eliminator depending on the air condition. Eliminator blades are made of PVC, with shape specially designed to trap water droplets blown off to the coil. Please specify [DXE] for eliminator, as option.

Cooling coil section is provided with insulated drain pan with MPT drain connection, in order to hold and remove the condensate formed during dehumidification.

Drain pan is made of painted, zinc-coated steel sheet insulated from outside for maximum protection against sweating and corrosion. Drain pan is extended to include coil, headers and U-bends. Drain connection can be provided on either side or on both sides as required.

Water coils can be provided with various coil circuiting like half, full or double depending on the water flow rate and water pressure drop through the coil. Direct expansion coils are equipped with a properly sized distributor to ensure equal refrigerant fed to all circuits. The number of circuits is chosen to provide optimum heat transfer and reasonable refrigerant velocity and pressure drop so as not to trap any oil in the coil tubing.

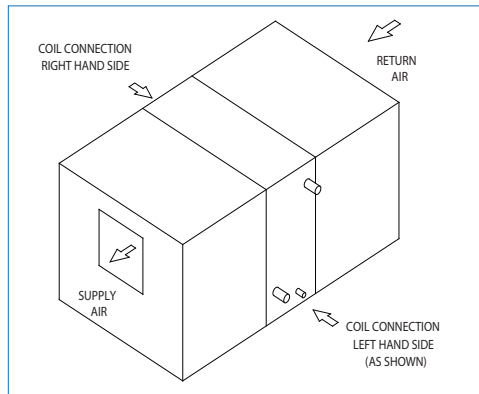


Figure 2: Coil Handling

CAH units can be supplied with Left Hand or Right Hand side coil connections to meet the job site requirements (see figure 2). Inlet and outlet connections are sealed against unit panel by means of flexible closed cell gaskets. SKM provides sweat connections for coils, as standard.

Options

- Electro-tinned coils [EFCT].
- Pre-coated Aluminum fins [EFAP].
- Aeries Guard coil coat [EFAA].
- Copper fins [EFC].
- Stainless steel drain pan [SDP].
- Double skin drain pan [PDI].
- MPT, FPT or flanged coil connectors [PTA].
- 5/8" OD coils [OTD] for unit sizes up to 150.

Filter Section

All CAH units are supplied, as standard, with permanent washable expanded Aluminum flat filter. Filters used in SKM CAH units are in accordance with ASHRAE 52.2 and EN779 standards. Filter thickness is 25mm for H/VCAH and HCAH-A and 50mm for HCAH-2A.

For horizontal units [HCAH], standard filter removal for free return units is from back side while for duct connected units is from sides or bottom. For vertical units [VCAH], standard filter removal is from both sides for all applications. For units with Aluminum profile constructions, standard filter removal is from side.

Options

- 2" (50mm) panel filters with Aluminum washable media [FIP2] EN class: G2 (for H/VCAH and HCAH-A).
- 1" (25mm) [FIS1] or 2" (50mm) [FIS2] fiber glass / synthetic, either disposable or washable media EN Class: G2,G3.
- Vee filters [FIPV]: Filters arranged in a Vee bank to increase the filtration area. Media options and classes are the same as in panel filters.
- Bag Filter [FIBG1]: 21" (540mm) deep, high efficiency bag filters with synthetic media EN Class: F7. Higher EN Class F8 and F9 available upon request. **(This option is only available with Aluminum profile construction).**
- Differential Air Pressure Switch [DPS].
- Manometers [MAF] to monitor air pressure drop across filters.

Accessories and Options

The following accessories can be supplied as an integral part of CAH units upon request.

Electric Heater Section [CEHF]

Electric heater batteries are available in a wide range of capacity (kW) and steps as an integral part of CAH units. It consists of finned type heating elements constructed from 80/20 nickel chrome resistance wire, which is connected to terminal pins and centered in stainless steel grade 304L sheath metal tubes by compressed magnesium oxide. The fins are helical, mild steel galvanized and tightly wound around tubular heating elements. The terminal pins shall be insulated from metal tube by ceramic bushes.

Recommended kW capacity on standard (nominal air flow) rate is given in table 2. Batteries other than this can be supplied upon request.

Standard components included with the heater shall be:

- 3-pole magnetic contactor per stage.
- Primary over temperature protection provided by auto reset high limit safety cut outs.
- Secondary over temperature protection provided by manual reset high limit safety cut-out for positive break.
- Control fuse.

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- Control switch.
- Power fuses/CB per NEC if total load exceeds 48 amperes.
- Factory installed air flow switch.

H/VCAH	Heater kW	Stages
9	3	1
12	3	1
16	4.5	1
20	4.5	1
25	7.5	1
30	9	1
40	12	1
50	15	2
65	18	2
80	24	2
100	30	2
120	36	2
150	48	2
180	60	2
200	72	2

Table 2

Options

- Thyristor controller **[SCR]** that accepts 0-10V DC input signals from temperature controllers to achieve accurate proportional control over heating. 0-10V DC signal to be by others.

Accessories available ONLY for units with Heavy Gauge Galvanised Steel Construction

Discharge plenums **[APDH/APDV]**

Discharge plenums with double deflection supply air grille are available for free discharge applications. For discharge plenums, specify option **[APDH]** for horizontal units, **[APDV]** for vertical units and **[ASG]** for supply grille. Grilles can be painted to match the colour of the unit.

Return Air Plenum **[APRH]**

Return air plenum **[APRH]** is available for horizontal units only. They are supplied along with single deflection return air grill **[ARG]** and filter media. For vertical units **[VCAH]**, return air grill is fixed directly on the basic unit. Grilles can be painted to match the colour of the unit.

Duct Connector **[ADC]**

Duct connector is for ducted return applications. **ADC** is available only for **[VCAH]** units. For horizontal **[HCAH]** units specify accessory **FIP/FIPV** if ducted return is required. Refer to page 14 for more details.

Accessories Available only for units with Aluminium Profile Construction

Mixing Box Section **[BMX]**

Mixing box **[BMX]** with fresh air and return air dampers are available to mix the outside fresh air with recalculated return air. Both the return and fresh air dampers are sized to handle 0% - 100% of the total supply air.

Dampers

CAH units are equipped with multi blade, low leakage dampers to control the air flow rate by introducing resistance to air flow in the system. Dampers are available with parallel blades or opposed blades. Links are provided for either manual or motorized operation. The damper frame, blades, linkage and brackets are constructed from galvanized steel. Bearing are from bronze and shafts are from steel. Aluminum damper blades in airfoil profile are available, as an option.

Plenum Sections **[PEM]**

Empty plenums can be supplied either for future use or for particular applications. Custom sizes to suit a particular requirement can be supplied, as an option.

Supply and Return Air Grille **[ASG/ARG]**

Double deflection supply air grille **[ASG]** is available for free discharge applications and it is available only as part of discharge plenum **[PEM]**. Single deflection return air grille **[ARG]** is available for free return and exposed installation and it is fixed directly on the basic unit. Grilles can be painted to match the colour of the unit.

Options

- Bulk Head Light Fittings **[BLF]**.
- Hinged Access Doors with Latches **[QOL]**.

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Physical Specification

H/VCAH

PHYSICAL SPECIFICATION													
SKM MODEL (H/VCAH)			9	12	16	20	25	30	40	50	65	80	
Unit Construction			Casing and panels are constructed from self-supporting panels in heavy gauge hot dipped galvanized steel										
Insulation			25mm thick, fiberglass insulation										
Nominal air flow, cfm (l/s) @ 500 fpm (2.5 m/s) face velocity			900 (425)	1200 (566)	1600 (755)	2000 (944)	2500 (1180)	3000 (1416)	4000 (1888)	5000 (2360)	6500 (3067)	8000 (3775)	
FAN			Double Inlet Double Width, Forward Curved Centrifugal Fans										
Fan Size			7-7	9-9	9-9	10-10	10-10	12-12	15-15	15-15	18-18	18-18	
Quantity			1	1	1	1	1	1	1	1	1	1	
MOTOR			TEFC, foot mounted, 4-pole, IP55 protected and class F insulated										
Motor Size (kW) *			0.55	0.55	0.75	1.1	1.1	1.5	1.5	2.2	3	4	
Quantity			1	1	1	1	1	1	1	1	1	1	
Drive Type			Belt										
COIL			Copper tubes, Aluminium fins										
Face Area, sq.ft (m²)			1.83 (0.17)	2.44 (0.23)	3.33 (0.31)	4.17 (0.39)	5 (0.46)	6.25 (0.58)	8 (0.74)	10 (0.93)	13.33 (1.24)	16 (1.49)	
Tube Diameter			3/8"										
Fins per inch			12										
Chilled water Coil Connection Size, inch (mm)	Rows	3	7/8 (22)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	
		4	7/8 (22)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)
		6	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)
Hot water Coil Connection Size, inch (mm)	Rows	2	7/8 (22)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)
		3	7/8 (22)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)
		4	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)
Drain Size, inch			3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	1 (25)	1 (25)	1 (25)	1 (25)	
AIR FILTER			25mm thick, Washable Aluminum Mesh Media										
WEIGHT ** (kg) (approximate)	Horizontal Arrangement		75	88	102	117	130	158	194	228	280	312	
	Vertical Arrangement		85	100	145	135	150	180	225	255	320	360	

Table 3

* Motor size is based on nominal air flow and 150Pa ESP. Internal static pressure is based on pressure drops through fan casing, 6 row evaporator coil and 1" thick Aluminum flat filter. For any condition other than this, consult SKM.

** Weight of basic units are provided, (single skin casing + fan + motor + 6 row coil with 12 fpi Aluminum fins + 1" thick flat filter). For units with any additional option, consult SKM for the weight.

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HCAH-A

PHYSICAL SPECIFICATION																	
SKM MODEL (HCAH-A)	9	12	16	20	25	30	40	50	65	80	100	120	150	180	200		
Unit Construction	Modular Construction, 40mm Aluminum Profile																
Insulation	25mm thick, fiber glass insulation																
Nominal air flow, cfm (l/s) @ 500 fpm (2.5 m/s) face velocity	900 (425)	1200 (566)	1600 (755)	2000 (944)	2500 (1180)	3000 (1416)	4000 (1888)	5000 (2360)	6500 (3067)	8000 (3775)	10000 (4720)	12000 (5664)	15000 (7080)	18000 (8495)	20000 (9440)		
FAN	Double Inlet Double Width, Forward Curved Centrifugal Fans																
Fan Size	180	225	250	250	250	250	315	355	400	450	500	560	630	630	710		
Quantity	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
MOTOR	TEFC, foot mounted, 4-pole, IP55 protected and class F insulated																
Motor Size (kW) *	1.1	1.1	1.5	2.2	3	3	4	4	5.5	7.5	11	11	11	15	15		
Quantity	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Drive Type	Belt																
COIL	Copper tubes, Aluminum fins																
Face Area, sq.ft (m²)	1.83 (0.17)	2.44 (0.23)	3.33 (0.31)	4.17 (0.39)	5 (0.46)	6.25 (0.58)	8 (0.74)	10 (0.93)	13.33 (1.24)	16 (1.49)	21 (1.95)	24 (2.23)	30 (2.79)	36 (3.35)	40 (3.72)		
Tube Diameter	3/8"												5/8"				
Fins per inch	12																
Chilled water Coil Connection Size, inch (mm)	Rows	3	7/8 (22)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 5/8 (67)	2 5/8 (67)	
		4	7/8 (22)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 5/8 (67)	2 5/8 (67)
		6	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)	3 1/8 (79)
Hot water Coil Connection Size, inch (mm)	Rows	2	7/8 (22)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 5/8 (67)	2 5/8 (67)	
		3	7/8 (22)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)
		4	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)
Drain Size, inch	3/4 (19)		3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	1 (25)	1 (25)	1 (25)	1 (25)	1 1/4 (32)	1 1/4 (32)	1 1/2 (38)	1 1/2 (38)	1 1/2 (38)	
AIR FILTER	25mm thick, Washable Aluminum Mesh Media																
WEIGHT ** (kg) (approximate)	Horizontal Arrangement	230	245	292	315	344	364	433	500	553	650	754	857	1056	1314	1495	

Table 4

* Motor size may vary with change in air flow and static pressure.

** Weight of basic units are provided, (single skin casing + fan section + coil section 6 rows/12 fpi/Al fins + filter section, 1" thick flat Aluminum Media). For units with any additional option or sections, consult SKM for weight.

Comfort Air Handling Units CAH Series

HCAH-2A

PHYSICAL SPECIFICATION																		
SKM MODEL (HCAH-2A)			9	12	16	20	25	30	40	50	65	80	100	120	150	180	200	
Unit Construction			Modular Construction, 50mm Aluminum Profile															
Insulation			48mm thick, Polyurethane foam insulation															
Nominal air flow, cfm (l/s) @ 500 fpm (2.5 m/s) face velocity			900 (425)	1200 (566)	1600 (755)	2000 (944)	2500 (1180)	3000 (1416)	4000 (1888)	5000 (2360)	6500 (3067)	8000 (3775)	10000 (4720)	12000 (5664)	15000 (7080)	18000 (8495)	20000 (9440)	
FAN			Double Inlet Double Width, Forward Curved Centrifugal Fans															
Fan Size			180	225	250	250	250	250	315	355	400	450	500	560	630	630	710	
Quantity			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
MOTOR			TEFC, foot mounted, 4-pole, IP55 protected and class F insulated															
Motor Size (kW) *			1.1	1.5	2.2	2.2	3	3	4	5.5	7.5	7.5	11	11	15	18.5	18.5	
Quantity			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Drive Type			Belt															
COIL			Copper tubes, Aluminum fins															
Face Area, sq.ft (m²)			1.83 (0.17)	2.44 (0.23)	3.33 (0.31)	4.17 (0.39)	5 (0.46)	6.25 (0.58)	8 (0.74)	10 (0.93)	13.33 (1.24)	16 (1.49)	21 (1.95)	24 (2.23)	30 (2.79)	36 (3.35)	40 (3.72)	
Tube Diameter			3/8"												5/8"			
Fins per inch			12															
Chilled water Coil Connection Size, inch (mm)	Rows	3	7/8 (22)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)	
		4	7/8 (22)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)
		6	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)	3 1/8 (79)	3 1/8 (79)
Hot water Coil Connection Size, inch (mm)	Rows	2	7/8 (22)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)	
		3	7/8 (22)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)
		4	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 1/8 (29)	1 3/8 (35)	1 3/8 (35)	1 5/8 (41)	1 5/8 (41)	2 1/8 (54)	2 1/8 (54)	2 1/8 (54)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)	2 5/8 (67)
Drain Size, inch			3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)	1 (25)	1 (25)	1 (25)	1 (25)	1 1/4 (32)	1 1/4 (32)	1 1/2 (38)	1 1/2 (38)	1 1/2 (38)	
AIR FILTER			50mm thick, Washable Aluminum Mesh Media															
WEIGHT ** (kg) (approximate)		Horizontal Arrangement	256	276	330	352	385	395	467	553	603	700	809	917	1127	1435	1625	

Table 5

* Motor size can vary with change in air flow and static pressure.

** Weight of basic units are provided, (double skin casing + fan section + coil section 6 rows/12 fpi/Al fins + filter section, 2" thick flat Aluminum Media). For units with any additional option or sections, consult SKM for weight.

Comfort Air Handling Units CAH Series

Nominal Capacity Rating - Cooling Coils

Fin Spacing: 12 fpi (2.1 mm)						Chilled Water Coils @ 80/67°F (26.7/19.4°C) On-Coil DBT/WBT & 45/55°F (7.2/12.8°C) EWT/LWT								DX Expansion Coils @ 80/67°F (26.7/19.4°C) On-Coil DBT/WBT & 45°F (7.2°C) SST			
Model CAH	Coil Area		Rows	Airflow Rate		Total Capacity		Sensible Capacity		Waterflow Rate		Water Pressure Drop		Total Capacity		Sensible Capacity	
	ft²	m²		cfm	l/s	MBh	kW	MBh	kW	gpm	l/s	ft.wg	kPa	MBh	kW	MBh	kW
9	1.83	0.17	3	900	425	20.02	5.87	16.41	4.81	4.00	0.25	3.41	10.19	23.23	6.81	17.54	5.14
			4			26.04	7.63	19.68	5.77	5.21	0.33	6.03	18.04	28.26	8.28	20.51	6.01
			6			35.21	10.32	24.27	7.11	7.04	0.44	13.25	39.61	34.41	10.09	23.95	7.02
12	2.44	0.23	3	1,200	566	26.70	7.82	21.88	6.41	5.34	0.34	3.41	10.19	30.98	9.08	23.39	6.86
			4			34.72	10.18	26.24	7.69	6.94	0.44	6.03	18.04	37.69	11.05	27.35	8.02
			6			46.94	13.76	32.35	9.48	9.39	0.59	13.25	39.61	45.88	13.45	31.93	9.36
16	3.33	0.31	3	1,600	755	38.96	11.42	30.43	8.92	7.79	0.49	6.86	20.52	41.85	12.27	31.45	9.22
			4			41.68	12.22	33.36	9.78	8.34	0.53	2.24	6.70	50.79	14.89	36.73	10.77
			6			58.93	17.27	41.73	12.23	11.79	0.74	4.44	13.26	61.66	18.07	42.80	12.55
20	4.22	0.39	3	2,000	944	51.37	15.06	39.04	11.44	10.27	0.65	12.33	36.87	52.31	15.33	39.32	11.52
			4			56.42	16.54	43.32	12.70	11.28	0.71	3.57	10.66	63.49	18.61	45.92	13.46
			6			77.39	22.68	53.65	15.73	15.48	0.98	7.55	22.58	77.07	22.59	53.50	15.68
25	5.0	0.46	3	2,500	1,180	59.77	17.52	46.94	13.76	11.95	0.75	6.63	19.82	63.85	18.71	48.38	14.18
			4			72.17	21.15	54.52	15.98	14.43	0.91	5.61	16.77	77.81	22.81	56.64	16.60
			6			97.46	28.57	67.23	19.70	19.49	1.23	12.20	36.48	94.97	27.84	66.23	19.41
30	6.25	0.58	3	3,000	1,416	73.06	21.41	57.06	16.72	14.61	0.92	6.38	19.07	78.46	23.00	58.98	17.29
			4			88.07	25.81	66.18	19.40	17.61	1.11	5.40	16.13	95.24	27.91	68.88	20.19
			6			118.64	34.77	81.46	23.88	23.73	1.50	11.65	34.83	115.61	33.88	80.25	23.52
40	8.0	0.74	3	4,000	1,888	96.93	28.41	75.56	22.15	19.39	1.22	7.82	23.37	102.15	29.94	77.41	22.69
			4			116.78	34.23	87.71	25.71	23.36	1.47	6.56	19.62	124.50	36.49	90.62	26.56
			6			157.24	46.09	108.08	31.68	31.45	1.98	14.33	42.84	151.95	44.54	105.97	31.06
50	10.0	0.93	3	5,000	2,360	126.56	37.09	96.36	28.24	25.31	1.60	13.95	41.69	127.69	37.43	96.77	28.36
			4			152.07	44.57	111.93	32.81	30.41	1.92	11.60	34.69	155.63	45.61	113.27	33.20
			6			191.43	56.11	133.06	39.00	38.29	2.42	8.53	25.51	189.94	55.67	132.47	38.83
65	13.33	1.24	3	6,500	3,068	166.38	48.77	126.28	37.01	33.28	2.10	13.60	40.66	168.48	49.38	127.03	37.23
			4			199.77	58.55	146.59	42.96	39.95	2.52	11.30	33.79	204.82	60.03	148.49	43.52
			6			250.99	73.56	173.99	51.00	50.20	3.17	8.29	24.78	249.14	73.02	173.25	50.78
80	16.0	1.49	3	8,000	3,776	180.78	52.99	146.51	42.94	36.16	2.28	3.49	10.42	204.31	59.88	154.83	45.38
			4			218.10	63.92	169.78	49.76	43.62	2.75	3.01	9.01	249.00	72.98	181.24	53.12
			6			314.48	92.17	216.16	63.36	62.90	3.97	13.56	40.52	303.91	89.08	211.95	62.12
100	21.0	1.95	3	10,000	4,719	230.64	67.60	185.80	54.46	46.13	2.91	3.34	9.98	262.74	77.01	197.18	57.79
			4			277.96	81.47	215.01	63.02	55.59	3.51	2.89	8.65	318.65	93.40	230.18	67.47
			6			399.69	117.15	273.29	80.10	79.94	5.04	12.81	38.29	386.42	113.26	268.00	78.55
120	24.0	2.23	3	12,000	5,663	271.16	79.48	219.76	64.41	54.23	3.42	3.49	10.42	306.46	89.82	232.24	68.07
			4			327.14	95.89	254.67	74.64	65.43	4.13	3.01	9.01	373.50	109.47	271.86	79.68
			6			471.72	138.26	324.24	95.04	94.34	5.95	13.56	40.52	455.86	133.61	317.92	93.18
150	30.0	2.79	3	15,000	7,079	349.86	102.54	278.52	81.63	69.97	4.41	4.55	13.60	383.08	112.28	290.30	85.09
			4			419.86	123.06	322.32	94.47	83.97	5.30	3.85	11.51	466.88	136.84	339.82	99.60
			6			598.41	175.39	408.79	119.82	119.68	7.55	17.73	53.00	569.83	167.02	397.40	116.48
180	36.0	3.34	3	18,000	8,495	476.39	139.63	373.71	109.53	95.28	6.01	7.53	22.50	517.00	151.53	388.54	113.88
			4			564.33	165.40	423.91	124.25	112.87	7.12	6.07	18.14	622.89	182.57	445.97	130.71
			6			696.38	204.11	488.97	143.32	139.28	8.79	4.47	13.36	808.94	237.10	534.60	156.69
200	40.0	3.72	3	20,000	9,439	529.32	155.14	415.23	121.70	105.86	6.68	7.53	22.50	574.44	168.37	431.72	126.54
			4			627.03	183.78	471.01	138.05	125.41	7.91	6.07	18.14	692.10	202.85	495.52	145.24
			6			773.76	226.79	543.30	159.24	154.75	9.76	4.47	13.36	898.83	263.45	594.00	174.10

Table 6

For capacities at different air conditions, please refer to SKM computer selection software.

Comfort Air Handling Units CAH Series

Nominal Capacity Rating - Heating Coils

Fin Spacing: 12 fpi (2.1 mm)						Hot Water Coils @ 70°F (21.1°C) On-Coil EDBT & 180/160°F (82.2/71.1°C) EWT/LWT						
Model CAH	Coil Area		Rows	Airflow Rate		Total Capacity	Waterflow Rate		Water Pressure Drop		Water Velocity	
	ft²	m²		cfm	l/s	MBh	gpm	l/s	ft.wg	kPa	fps	m/s
9	1.83	0.17	1	900	425	29.23	2.92	0.18	2.03	6.06	1.65	0.50
			2			47.91	4.79	0.30	1.32	3.94	1.36	0.41
12	2.44	0.23	1	1,200	566	38.98	3.90	0.25	2.03	6.06	1.65	0.50
			2			63.89	6.39	0.40	1.32	3.94	1.36	0.41
16	3.33	0.31	1	1,600	755	54.33	5.43	0.34	3.24	9.69	2.31	0.70
			2			91.28	9.13	0.58	2.12	6.35	1.94	0.59
20	4.17	0.39	1	2,000	944	69.05	6.91	0.44	5.15	15.40	2.93	0.89
			2			115.38	11.54	0.73	3.28	9.81	2.45	0.75
25	5.0	0.46	1	2,500	1,180	86.10	8.61	0.54	8.50	25.40	3.65	1.11
			2			143.33	14.33	0.90	5.28	15.79	3.04	0.93
30	6.25	0.58	1	3,000	1,416	105.62	10.56	0.67	8.14	24.32	3.58	1.09
			2			175.09	17.51	1.10	5.02	15.01	2.97	0.91
40	8.0	0.74	1	4,000	1,888	138.84	13.88	0.88	10.14	30.30	3.93	1.20
			2			230.56	23.06	1.45	6.24	18.65	3.26	0.99
50	10.0	0.93	1	5,000	2,360	178.95	17.90	1.13	19.40	58.00	5.06	1.54
			2			294.33	29.43	1.86	11.55	34.53	4.16	1.27
65	13.33	1.24	1	6,500	3,068	235.66	23.57	1.49	18.80	56.19	5.00	1.52
			2			386.74	38.67	2.44	11.14	33.30	4.10	1.25
80	16.5	1.53	1	8,000	3,776	269.00	26.90	1.70	5.53	16.53	2.84	0.87
			2			456.27	45.63	2.88	3.49	10.43	2.41	0.73
100	21.0	1.95	1	10,000	4,719	339.66	33.97	2.14	5.46	16.31	2.82	0.86
			2			575.15	57.51	3.63	3.43	10.26	2.39	0.73
120	24.0	2.23	1	12,000	5,663	396.60	39.66	2.50	5.66	16.91	2.88	0.88
			2			674.65	67.47	4.26	3.59	10.73	2.45	0.75
150	30.0	2.79	1	15,000	7,079	500.56	50.06	3.16	7.04	21.06	3.23	0.98
			2			848.48	84.85	5.35	4.46	13.32	2.74	0.83
180	36.0	3.34	1	18,000	8,495	613.14	61.31	3.87	10.97	32.78	3.96	1.21
			2			1,031.91	103.19	6.51	6.81	20.34	3.33	1.02
200	40.0	3.72	1	20,000	9,439	681.27	68.13	4.30	10.97	32.78	3.96	1.21
			2			1,146.57	114.66	7.23	6.81	20.34	3.33	1.02

Table 7

For capacities at different air conditions, please refer to SKM computer selection software.
For units size CAH-080 and above, hot water capacities are based on 5/8" tube O.D.

Motor Data

Rated Power Supply (V/Ph/Hz)			Motor Size; kW												
			0.55	0.75	1.1	1.5	2.2	3	4	5.5	7.5	11	15	18.5	22
380-415/3/50	FLA	Amp	1.6	2.2	2.6	3.6	5.3	6.8	9	12.4	16.6	23.1	31.6	37.9	44.2
	LRA		6	8	13	19	26	36	46	67	106	149	221	284	332
440/3/50	FLA	Amp	1.3	1.7	2.4	3.2	4.5	5.7	7.4	10.4	14	20	27	32.7	38.2
	LRA		5	7	11	17	23	31	40	58	91	128	191	246	286
380/3/60	FLA	Amp	1.5	2.1	2.6	3.5	4.9	6.2	8.4	11.4	15.5	23	31	37.6	44
	LRA		7	9	13	21	27	36	46	74	104	150	218	284	331
220/3/60	FLA	Amp	2.6	3.3	4.5	6.1	8.5	10.8	14.5	19.8	27	40	54	65	76
	LRA		12	15	23	36	47	62	80	127	179	259	377	490	573
460/3/60	FLA	Amp	1.4	1.9	2.2	3.2	4.1	5.2	6.9	9.4	12.8	19	25.5	31	36.5
	LRA		6	7	11	17	23	30	38	61	86	124	180	234	274

Table 8

- CAH starter panel is optional
- Star - Delta starter should be provided for the motors 11kW and above.
- VFD driven motors are optional and to be specified.
- Refer motor terminal box for wiring connection.
- Above data are subjected to minor variation.

FLA: Full Load Ampere
LRA: Locked Rotor Ampere (DOL)

Comfort Air Handling Units CAH Series

Dimensional Data

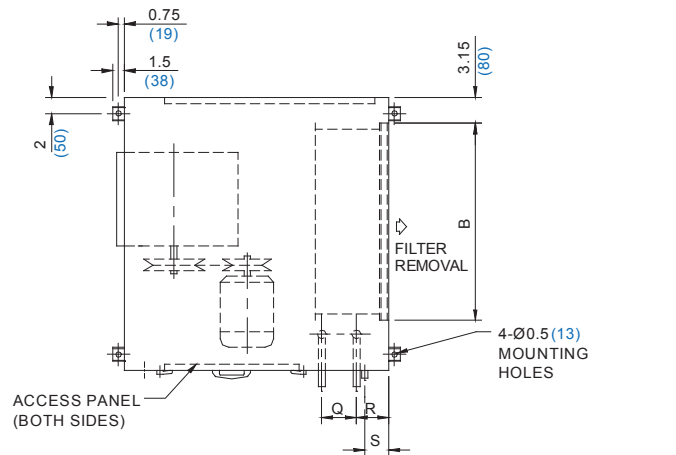
LEGEND

- ① SUPPLY AIR FAN
- ② FAN MOTOR
- ③ COOLING COIL
- ④ FLAT FILTER

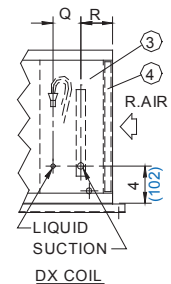
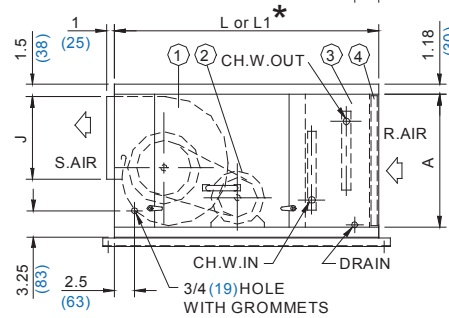
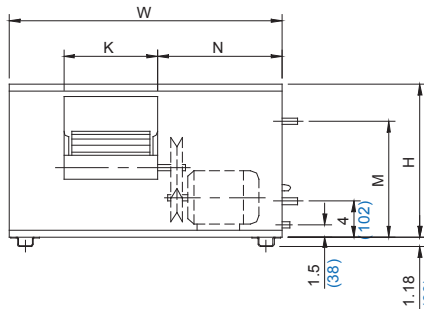
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2.60 (66) FOR 4R
4.33 (110) FOR 6R

R = 4 (102) FOR AFI1
5 (127) FOR AFI2

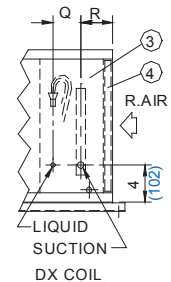
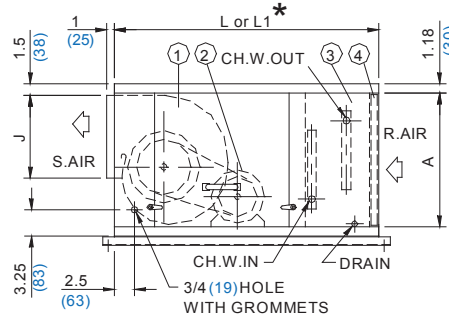
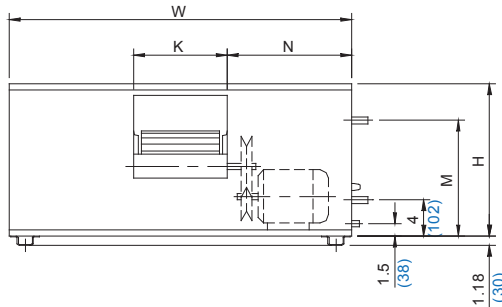
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4 (102) FOR AFI2



MODEL 9 TO 40



MODEL 50 TO 80



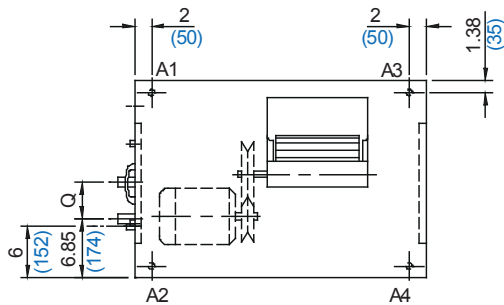
MODEL HCAH	L	L1*	W	H	A	B	J	K	M	N	DRAIN Ø
9	33 (838)	39 (990)	34 (864)	16 (406)	13.64 (346)	23.57 (599)	8.19 (208)	9.13 (232)	11.50 (292)	15.75 (400)	0.75 (19)
12	35 (889)	41 (1041)	34 (864)	20 (508)	17.64 (448)	23.57 (599)	10.31 (262)	11.73 (298)	15.50 (394)	15.75 (400)	0.75 (19)
16	35 (889)	41 (1041)	40 (1016)	20 (508)	17.64 (448)	31.57 (802)	10.31 (262)	11.73 (298)	15.50 (394)	18.03 (458)	0.75 (19)
20	35 (889)	41 (1041)	48 (1219)	20 (508)	17.64 (448)	39.07 (992)	11.38 (289)	13.03 (331)	15.50 (394)	18.03 (458)	0.75 (19)
25	35 (889)	41 (1041)	55 (1397)	20 (508)	17.64 (448)	46.57 (1183)	11.38 (289)	13.03 (331)	15.50 (394)	20.99 (533)	0.75 (19)
30	40 (1016)	46 (1168)	55 (1397)	24 (610)	21.64 (550)	46.57 (1183)	13.43 (341)	15.55 (395)	19.50 (496)	20.99 (533)	0.75 (19)
40	46 (1168)	46 (1168)	58 (1473)	28 (711)	25.64 (651)	49.57 (1259)	15.91 (404)	18.54 (471)	23.50 (597)	20.99 (533)	1 (25)
50	46 (1168)	46 (1168)	70 (1778)	28 (711)	25.64 (651)	61.57 (1564)	15.91 (404)	18.54 (471)	23.50 (597)	25.73 (654)	1 (25)
65	46 (1168)	46 (1168)	70 (1778)	36 (914)	33.64 (854)	61.57 (1564)	18.82 (478)	21.93 (557)	31.50 (800)	24.04 (611)	1 (25)
80	46 (1168)	46 (1168)	82 (2083)	36 (914)	33.64 (854)	73.57 (1869)	18.82 (478)	21.93 (557)	31.5 (800)	30.03 (763)	1 (25)

Table 9

L : LENGTH OF THE UNIT WITH ONLY COOLING COIL

L1*: LENGTH OF THE UNIT WITH COOLING COIL + ELIMINATOR OR, COOLING COIL + HEATER

Comfort Air Handling Units CAH Series



LEGEND

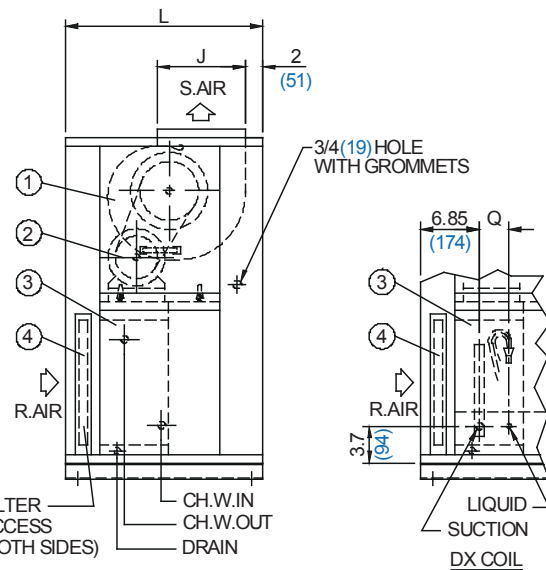
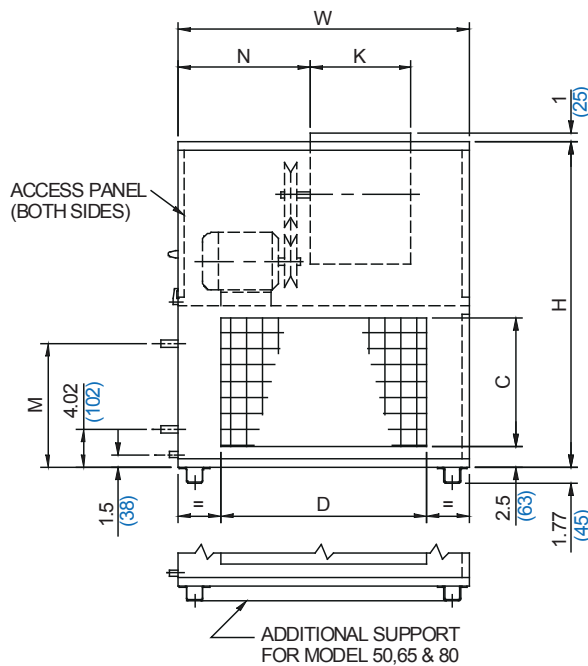
- ① SUPPLY AIR FAN
- ② FAN MOTOR
- ③ COOLING COIL
- ④ FLAT FILTER

A1-A4 ARE LOADING POINTS Ø0.75 (19)

Q = 1.73 (44) FOR 3R

2.60 (66) FOR 4R

4.33 (110) FOR 6R

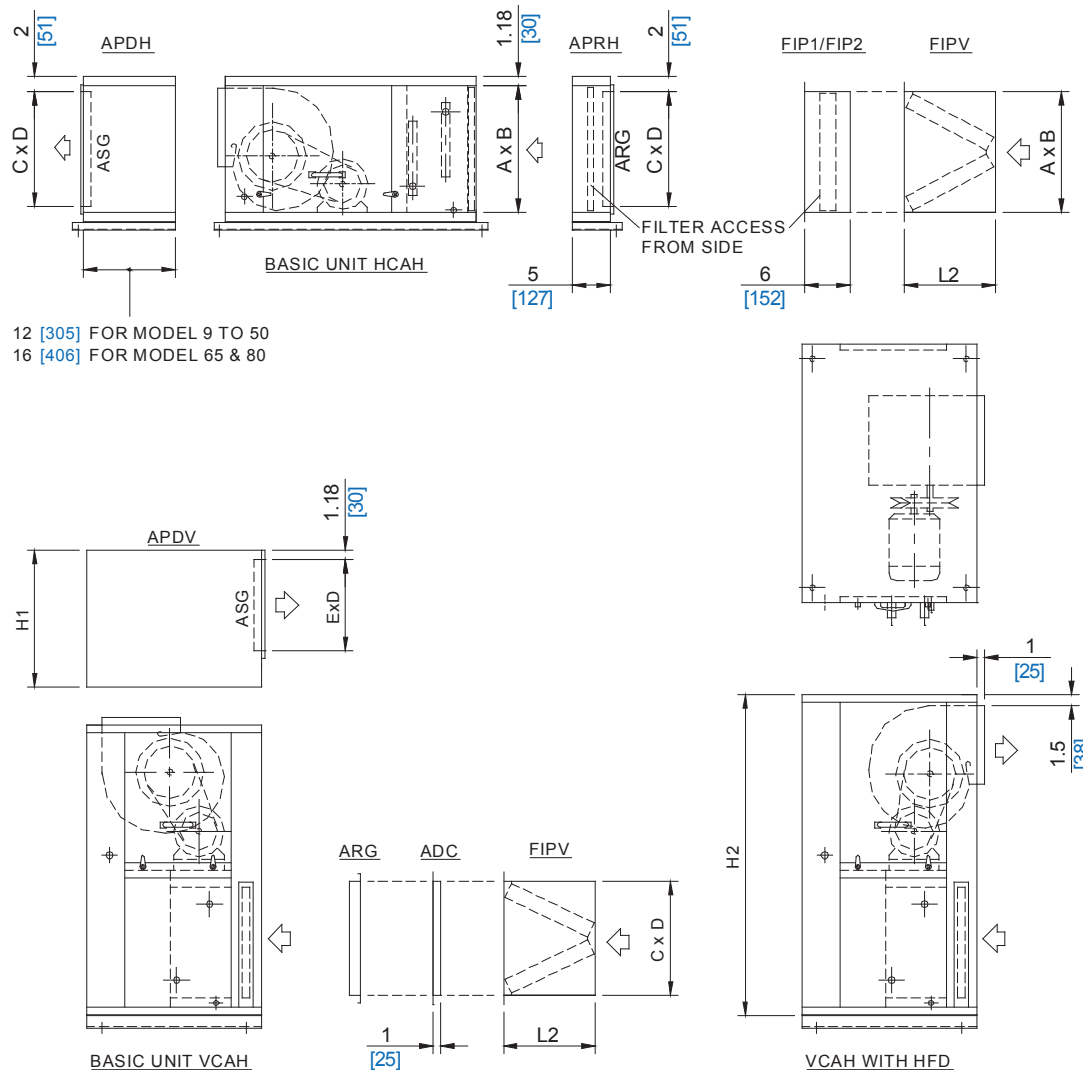


ALL DIMENSIONS ARE IN INCHES (MM)

MODEL VCAH	L	W	H	C	D	J	K	M	N	DRAIN Ø
9	26 (660)	34 (864)	30 (762)	12 (305)	22 (559)	8.19 (208)	9.13 (232)	11.20 (284)	15.75 (400)	0.75 (19)
12	26 (660)	34 (864)	36 (914)	16 (406)	22 (559)	10.31 (262)	11.73 (298)	15.20 (386)	15.75 (400)	0.75 (19)
16	26 (660)	40 (1016)	36 (914)	16 (406)	30 (762)	10.31 (262)	11.73 (298)	15.20 (386)	18.03 (458)	0.75 (19)
20	26 (660)	48 (1219)	38 (965)	16 (406)	37.5 (953)	11.38 (289)	13.03 (331)	15.20 (386)	18.03 (458)	0.75 (19)
25	26 (660)	55 (1397)	38 (965)	16 (406)	45 (1143)	11.38 (289)	13.03 (331)	15.20 (386)	20.99 (533)	0.75 (19)
30	30 (762)	55 (1397)	44 (1118)	20 (508)	45 (1143)	13.43 (341)	15.55 (395)	19.20 (488)	20.99 (533)	0.75 (19)
40	32 (813)	58 (1473)	52 (1321)	24 (610)	48 (1219)	15.91 (404)	18.54 (471)	23.20 (589)	20.99 (533)	1 (25)
50	32 (813)	70 (1778)	52 (1321)	24 (610)	60 (1524)	15.91 (404)	18.54 (471)	23.20 (589)	25.73 (654)	1 (25)
65	36 (914)	70 (1778)	64 (1626)	32 (813)	60 (1524)	18.82 (478)	21.93 (557)	31.20 (792)	24.04 (611)	1 (25)
80	36 (914)	82 (2083)	64 (1626)	32 (813)	72 (1829)	18.82 (478)	21.93 (557)	31.20 (792)	30.03 (763)	1 (25)

Table 10

Comfort Air Handling Units CAH Series



12 [305] FOR MODEL 9 TO 50
16 [406] FOR MODEL 65 & 80

ALL DIMENSIONS ARE IN INCHES [MM]

MODEL HCAH-VCAH	A	B	C	D	E	H1	H2	L2	
9	13.64 [346]	23.57 [599]	12 [305]	22 [559]	12 [305]	18 [457]	34 [864]	12 [305]	
12	17.64 [448]		16 [404]				30 [762]	40 [1016]	15 [381]
16		39.07 [992]		37.5 [953]				42 [1067]	
20		46.57 [1183]		45 [1143]					
25		20 [508]		48 [1219]				18 [457]	
30	21.64 [550]	49.57 [1259]	48 [1219]	18 [457]	24 [610]	56 [1422]	20 [508]		
40	25.64 [651]	24 [610]	60 [1524]			68 [1727]	24 [610]		
50	33.64 [854]	61.57 [1564]	72 [1829]						
65		73.57 [1869]							
80									

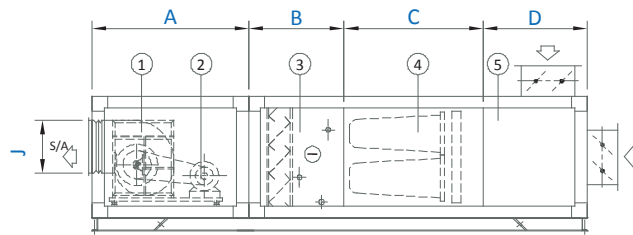
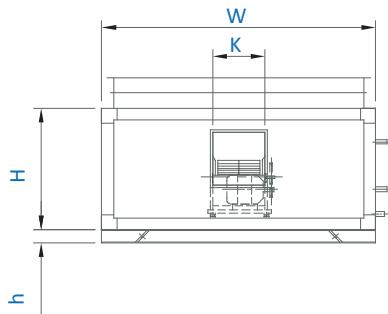
Table 11

LEGEND

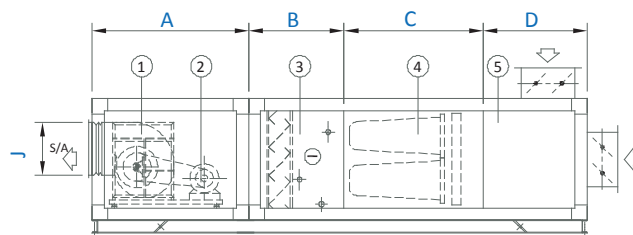
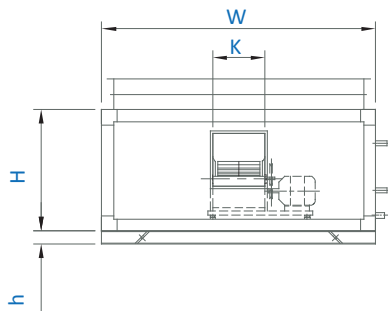
ADC	DUCT CONNECTOR
AFI1	PANEL FILTER 1" THICK
AFI2	PANEL FILTER 2" THICK
APDH	DISCHARGE PLENUM + ASG
APDV	DISCHARGE PLENUM + ASG
APRH	RETURN PLENUM + ARG
	+ (AFI1 or AFI2)
ARG	RETURN GRILL
ASG	SUPPLY GRILL
FIP1/2	PANEL FILTER SECTION
	+ (AFI1 or AFI2)
FIPV	VEE FILTER SECTION
	+ (AFI1 or AFI2)
HFD	HORIZONTAL FAN DISCHARGE

Comfort Air Handling Units CAH Series

For Aluminum profile construction



CAH MODELS 009 ~ 030



CAH MODELS 040 ~ 200

LEGEND

- 1 - SUPPLY AIR FAN
- 2 - FAN MOTOR
- 3 - COIL SECTION
- 4 - FILTER SECTION
- 5 - MIXING BOX

- CCW - CHILLED WATER COIL
- CDX - DIRECT EXPANSION COIL
- CCWE - CHILLED WATER COIL WITH ELIMINATOR
- CDXE - DIRECT EXPANSION COIL WITH ELIMINATOR
- FIPV - FLAT FILTER
- FIPV - VEE FILTER
- FIBG1 - BAG FILTER
- FIPBG1 - FLAT FILTER+BAG FILTER
- CEHF - ELECTRIC HEATER
- CHW - HOT WATER COIL

ALL DIMENSIONS ARE IN INCHES [MM]

AIR FLOW (CFM)	MODEL H/CAH	HEIGHT		WIDTH	BASE FRAME	FAN SECTION					MOTOR LOCATION	HEATING SECTIONS		COIL SECTION**		FILTER SECTION				MIXING BOX D	PLENUM
		A	FAT			FADH/RDH		CEHF	CHW	B		C				BMX					
			J			K	J					K	FIPV	FIBG1	FIPBG1						
900	009	inch mm	25.98 660	36.22 920	2.95 75	42.32 1075	8.18	9.13	8.93	8.93	15.75 400	15.75 400	20.47 520	15.75 400	29.52 750	22 700	29.52 750	16.54	15.75 400		
			28.74	36.22			208	232	227	227								420			
1200	012	inch mm	28.74 730	36.22 920			10.31	11.73	11.29	11.29								16.54			
							262	298	287	287								420			
1600	016	inch mm	30.71 780	46.46 1180			10.31	11.73	12.67	12.67								16.54			
							262	298	322	322								420			
2000	020	inch mm	30.71 780	51.97 1320		11.37	13.03	12.67	12.67	16.54											
						289	331	322	322	420											
2500	025	inch mm	30.71 780	59.06 1500		11.37	13.03	12.67	12.67	16.54											
						289	331	322	322	420											
3000	030	inch mm	31.89 810	59.06 1500		13.42	15.55	12.67	12.67	16.54											
						341	395	322	322	420											
4000	040	inch mm	36.22 920	61.81 1570	3.93 100	46.25 1175	15.91	18.54	15.86	15.87	15.75 400	15.75 400	20.47 520	15.75 400	29.52 750	22 700	29.52 750	22.44	15.75 400		
							404	471	403	403								570			
5000	050	inch mm	39.37 1000	74.02 1880			15.91	18.54	17.71	17.71								22.44			
							404	471	450	450								570			
6500	065	inch mm	44.09 1120	74.02 1880			18.81	21.93	19.96	19.96								22.44			
							478	557	507	507								570			
8000	080	inch mm	46.46 1180	85.83 2180		18.81	21.93	22.48	22.48	28.54											
						478	557	571	571	725											
10000	100	inch mm	53.94 1370	85.83 2180		-	-	25.24	25.24	28.54											
						-	-	641	641	725											
12000	120	inch mm	59.84 1520	85.83 2180		-	-	28.18	28.18	28.54											
						-	-	716	716	725											
15000	150	inch mm	65.75 1670	96.06 2440	66.92 1700	-	-	31.53	31.53	15.75 400	15.75 400	20.47 520	15.75 400	29.52 750	22 700	29.52 750	34.44				
						-	-	801	801								875				
18000	180	inch mm	65.75 1670	112.2 2850		-	-	31.53	31.53								34.44				
						-	-	801	801								875				
20000	200	inch mm	72.05 1830	112.2 2850	81.69 2075	-	-	35.35	35.35	25.98 660					34.44						
						-	-	898	898						875						

Table 12

Dimensions shown above are for HCAH -2A (units with 2" thick panel). For HCAH-A (units with 1" thick panel), reduce 20mm from H, W and from each section.

**Coil + eliminator section length for tube O.D. 3/8" with maximum 6 rows.

For units with tube O.D. 3/8" 8 rows and all 5/8" O.D. tubes, the Coil + eliminator section length will be 25.98 in (660mm).

For vertical construction, consult SKM for dimensions

Ceiling suspended units are optional for model sizes up to CAH-80.

Comfort Air Handling Units CAH Series

GUIDE SPECIFICATIONS

GENERAL FEATURES

- **CAH** series shall be available to deliver from 900 cfm (425 l/s) to 20000 cfm (9440 l/s) nominal air flow.
- SKM **CAH** units shall be manufactured in a facility registered to ISO 900:2008 manufacturing quality standard.
- Coil performances shall be certified in accordance with AHRI standard 410.
- **CAH** units shall be completely factory assembled and offer easy site handling and maintenance, minimum installation time and labor expense.
- Units shall be draw through arrangement, compact and rigid in construction.
- Units shall be suitable for both duct connection and free discharge applications.
- Units shall be suitable for both ceiling suspended and floor mounted application. Ceiling suspended units are only upto size 80.
- Units shall have proper gaskets to ensure excellent leak tight, thermal and acoustical insulation.
- Standard **CAH** units shall consist of at least casing, fan, coil, drain pan and filter.
- Mixing box, heating coil, hot water coil and plenums, shall be available upon request.
- Units shall be horizontal arrangement [**HCAH**]; vertical arrangements [**VCAH**] available upon request.
- Units shall be installed at site as per Installation, Operation & Maintenance Manual.

CASING & CONSTRUCTION

- Unit casing shall be constructed of either self-supporting panels in heavy gauge galvanized sheets or extruded Aluminum profiles (modular construction).
- **CAH** units shall be available in three different series.
- **H/VCAH**: Constructed in self-supporting panels in heavy gauge galvanized sheets, 25mm thick panels, single skin unit and fiber glass insulation. Air flow range: 900 to 8000 cfm against total static pressure up to 3.0 in.wg (750 Pa). **(Suitable for indoor application only).**
- **HCAH-A**: Constructed in extruded Aluminum profiles (modular construction), 25mm thick panels, single skin unit and fiber glass insulation. Air flow range: 900 to 20000 cfm against total static pressure up to 4.0 in.wg (1000Pa).

Unit sizes 100 and above shall not be suitable for ceiling suspended application. **(Suitable for indoor application only).**

- **HCAH-2A**: Constructed in extruded Aluminum profiles (modular construction), 50mm thick panels, double skin unit, Polyurethane foam insulation. Air flow range: 900 cfm to 20000 cfm against total static pressure up to 5.0 in.wg (1250 Pa). Unit sizes 100 and above shall not be suitable for ceiling suspended application. **(Suitable for indoor application only).**
- All fixed and access panels shall be constructed from heavy gauge hot dipped galvanized steel conforming to ASTM-A653 and JIS G-3302.
- Fiber glass insulation shall be standard for **H/VCAH** & **HCAH-A**.
- Fiber glass insulation shall be with 2 lb/ft³ (32 kg/m³) density and 0.23BTU.in/ft².F.h.(0.033 W/m °K) thermal conductivity, and it shall be conformed to HH-1-545B Type 1, SMACNA standard for duct liners and ASTM-C423 and NFPA90A and 90B standards for fire resistance.
- Polyurethane insulation shall be standard for **HCAH-2A**.
- Polyurethane foam insulation shall conform to a density of 2.5 lb/ft³ (40 kg/m³) according to the test standard ASTM D-1622-88 and thermal conductivity of 0.14BTU.in/ft².F.h (0.020 W/m °K) according to test standard ASTM C518-56.
- **CAH** units shall be supplied unpainted in a galvanized finish.
- Baked enamel powder coating in RAL 7032 color scheme shall be provided upon request. This finish and coating can pass a 1000 hour, 5% salt spray testing at 95°F (35°C) and 95% relative humidity as per ASTM B117. Specify option [**BEP**] for painted units.
- Inner skin panels for double skin units shall be supplied in galvanized finish unless otherwise stated.

Options

- Double skin unit for **HCAH** and **HCAH-A** units.
- Polyurethane foam insulation. **(Only for double skin units, for HCAH and HCAH-A units).**
- Stainless steel outer skin.
- Aluminum outer skins.
- Aluminum inner skins.
- Stainless steel inner skin.
- Perforated inner skin **(Only with fiber glass insulation).**

GUIDE SPECIFICATIONS

FAN SECTION

- Fans used in SKM **CAH** units shall be tested in a registered laboratory in accordance with AMCA standard 210.
- Double Inlet Double Width, forward curved centrifugal fans shall be standard supply in SKM **CAH**.
- Forward curved blades shall be made of galvanized steel. Fan shaft shall be made of carbon steel and are galvanized for corrosion protection.
- Backward inclined blades shall be made of sheet steel and fan shaft shall be made of carbon steel with corrosion protection coating.
- Fans shall be belt driven; statically and dynamically balanced.
- Fan impeller shall be keyed to fan shaft to prevent slipping.
- SKM fans use self-aligned ball or pillow block bearings that shall be greased for life. Pillow block bearings shall be provided with re-greasing fittings.
- Fan motors shall be totally enclosed fan cooled (TEFC), foot mounted, 4-poles, IP55 protected and class F insulated.
- Motor size and electrical characteristics shall be as indicated on the equipment schedule.
- Rating and operating characteristics of motors shall be in accordance with IEC standards.
- Fan motor sub base assembly shall be mounted on anti-vibration mounts, for **HCAH-A** and **HCAH-2A**.
- Coils shall be constructed from seamless 3/8" or 5/8" O.D. copper tubes and are mechanically expanded into continuous corrugated aluminum fins to provide continuous compression bond over the entire finned length for maximum heat transfer rates.
- For unit sizes, V/HCAH-080 and above standard tube O.D. for hot water shall be 5/8" (15.9mm).
- Chilled water and direct expansion coils shall be available in 3, 4 and 6 rows. More than 6 rows shall be available only for Aluminum profile construction.
- Hot water coils shall be available in 1 and 2 rows.
- All water coils shall be provided with air vents and drain plugs.
- DX coil shall be provided with distributor. Expansion valve shall be provided, if so specified.
- Coil circuiting shall be counter flow. (Direction of coil water/refrigerant flow shall be counter to direction of unit airflow).
- Supply and return water connections of coil section shall be labeled with "WATER IN" & "WATER OUT", respectively.
- DX coil section shall be labeled with "LIQUID" & "SUCTION".
- Coil connections shall be sealed against unit panels by flexible closed cell gasket..
- Coil connections shall be sweat type.

Options

- Starter Panel Control. Comprising of contactor, overload and fuse for fan motor. Controls to be specified by customer [Thermostat, start stop push button, volt free contact from BMS and etc].
- Explosion Proof Motor. Suitable for zone 1 or zone 2, EEx d IIB T4 (zone to be specified, by the customer).
- Stainless steel fan shaft.
- Extended lubrication fittings.
- Polyglycoat coating on fans.
- Horizontal fan discharge for vertical **[VCAH]** units.
- Coils shall be provided with moisture eliminator depending on the air conditions. Eliminator blades are made of PVC, with shape specially designed to trap water droplets blown off the coil.
- Cooling coil shall be provided with insulated drain pan with MPT connection to remove the condensate formed during the dehumidification.
- Drain pan shall be extended to include coil, headers and U-bends. Drain connection can be provided on either side or on both sides, as required.

COIL SECTION

- Coil performance shall be certified in accordance with AHRI standard 410.
- Coils shall be tested by compressed air under water to the pressure of 300 psig (21.09kg/cm²).
- Drain pan shall be constructed from zinc coated steel sheets, painted (irrespective of the type of finish for unit casing), and insulated from outside for **H/VCAH**. The bottom of drain pan shall be plane and drain connection shall be MPT. For units with Aluminum profile construction, drain pan shall be sloped and drain connection shall be MPT.

GUIDE SPECIFICATIONS

Options

- Electro-tinned coils.
- Pre-coated Aluminum fins.
- Aeries Guard coil coat .
- Copper fins.
- Stainless steel drain pan.
- Double skin drain pan.
- MPT, FPT or flanged coil connectors.
- 5/8" O.D. coils (for **HCAH-A** & **HCAH-2A** series only).

FILTER SECTION

- **CAH** units shall be supplied with permanent washable expanded Aluminum flat filter.
- Filters used in **CAH** units shall be in accordance with ASHRAE 52.2 and EN779 standards.
- Filter thickness shall be 25mm for **H/VCAH** & **HCAH-A** while 50mm for **HCAH-2A**.
- For horizontal [**HCAH**] units, standard filter removal from back for free return units and from sides or bottom for duct connected units.
- For vertical [**VCAH**] units, standard filter removal from both sides for all applications.
- For units with Aluminum profile construction [**HCAH-A** & **HCAH-2A**], standard filter removal shall be from filter removal from side.

Options

- 2" (50mm) panel filters with Aluminum washable media, EN class: G2 for **H/VCAH** & **HCAH-A**.
- 1" (25mm) or 2" (50mm) fiberglass / synthetic, either disposable or washable media, EN Class: G3. Vee filters, EN class: G2.
- 21" (540mm) deep high efficiency bag filters with synthetic media, EN Class: F7. Higher EN class F8 and F9 available upon request. (Only for unit with Aluminum profile construction).
- Differential air pressure switch.
- Manometers to monitor air pressure drop across filters.

ELECTRIC HEATER SECTION

- Electric heater capacity and steps shall be as indicated on the equipment schedule.
- Electric heater element shall be constructed from 80/20 nickel chrome resistance wire, which is connected to terminal pins and centered in stainless steel grade 304L sheath metal tubes by compressed magnesium oxide.
- The terminal pins shall be insulated from metal tube by ceramic bushes.
- Helical fins mild steel galvanized shall be tightly wound around tabular heater elements.
- Helical fins stainless steel shall be provided, if so specified.

Standard components included with the heater shall be.

- 3-pole magnetic contactor per stage.
- Primary over temperature protection provided by auto reset high limit safety cut outs.
- Secondary over temperature protection provided by manual reset high limit safety cut out for positive break.
- Control fuse.
- Control switch.
- Power fuses per NEC, if total load exceeds 48 amps.
- Factory installed air flow switch.

Options

- Thyristor controller [**SCR**] that accepts 0-10V DC input signals from temperature controllers to achieve accurate proportional control over heating. 0-10V DC signal to be by others.

DAMPERS

- To control the fresh and return air flow rates in mixing box (Only for unit with Aluminum profile construction), **CAH** units shall be provided with dampers.
- Damper shall be arranged in parallel or opposed blades configuration.

GUIDE SPECIFICATIONS

- Damper frame, shaft, linkages and brackets shall be constructed of galvanized steel.
- Damper blades shall be constructed of galvanized steel or Aluminum in airfoil design.
- Damper blades shall be constructed of stainless steel, if so specified.
- Damper blades shall rotate in bronze bearings which lubrication is not required.

ACCESSORIES AND OPTIONS

In order to meet most application requirements, CAH units shall be supplied with various accessories and options, such as:

- Horizontal fan discharge for VCAH.
- Duct connector for ducted return application.
- Single deflection return air grille and double deflection supply air grille for exposed units.
- Discharge plenum for horizontal and vertical units.
- return air plenum for horizontal units.
- Stainless steel fasteners.
- Bulk headlight fittings. (for Aluminum profile construction only).
- Hinged Access doors with latches. (for Aluminum profile construction only).

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