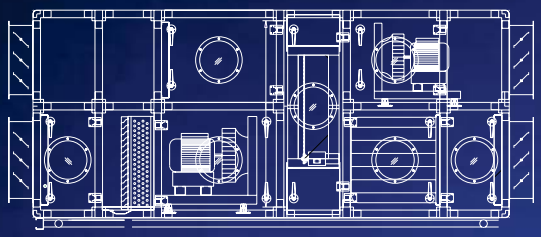
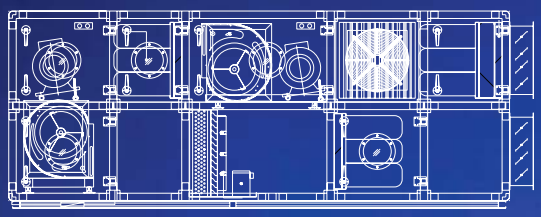
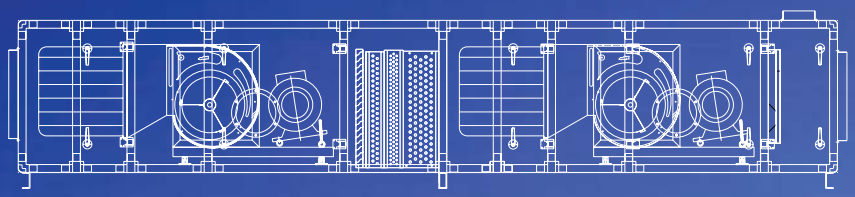
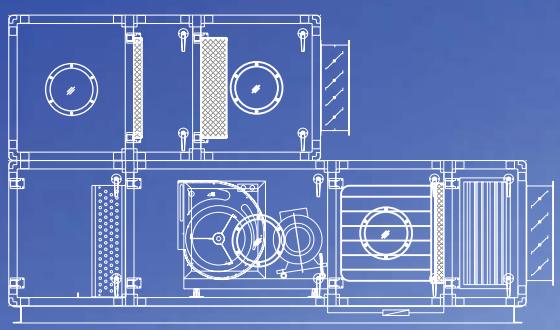
COOLPOINT

DELIVERING. INNOVATION









Classic Series
AIR HANDLING UNIT
Range 1000 CFM to 20000 CFM
472 L/s to 9440 L/s

Company Introduction

Cool Point (Pvt.) Ltd. is the largest manufacturer of customized HVAC/R equipment in Pakistan. We cater the increasing demand of air-conditionig and refrigeration for all industrial sectors. As a subsidiary of WAVES, Cool Point (Pvt.) Ltd. follows the same traditions which are built upon a legacy of innovation and commitment. Since 1971, we have been striving to provide our customers with state-of-the-art technology at competitive prices. With ISO 9001:2008 and 14001:2004 certifications, Cool Point (Pvt.) Ltd. ensures quality in every fact of its process and a promise for a healthy environment.

We have a technical set-up of the largest after-sale network in Pakistan. Comprising more than 250 certified service centers stretched across 17 cities which we pass on to our valued customers with immediate 24-hours response. Our testing lab ensures the performance of equipment is up to the mark with ARI standards. Our product comply and can be found working behind the scenes at all major pharmaceuticals, supplying hygienic air in operation theaters and even providing customized solutions for food preservation.

AIR HANDLING / COIL DESIGNING

- Air Handling Unit cabinet design simnluation / performance calculation is done with AHU Designing Software in accordance with ARI / ASHRAE / EUROVENT Standards.


- Cooling coils (DX / Chilled Water) are designed and performance is calculated by using state of the art software. This software enables the designer to design and select the best performing coil for any specific parameters.


Introduction

Cool Point Classic Series AHU is designed to a high engineering efficiency standards and are ideal, where the requirement of clean, hygiene air are mandatory like hospitals, pharmaceuticals, laboratories, food industry, electronic facilities and clean room applications.

The AHU is constructed of high strength extruded aluminum to form rigid frame. With its new thermal barrier feature which is using three leg-fiber plastic corner pieces, 25 or 50 mm polyurethane (PU) insulation panel and prevent condensation occurring. The new thermal break profile can perform better than the basic profile in terms of providing better insulation and energy saving.

AHU, to optimize the best arrangement and performance for either chilled water system or DX system applications. Standard components can be selected and placed according to customer requirement. Once the unit is defined, optional items and accessories can be selected.

Cool Point can produce high quality, flexible air handling unit which can provide excellent thermal efficiencies and to be airtight. Besides, air handling unit is produced with flexible features to meet the indoor air quality, operating efficiency, sound level and insulation requirement for today's extensive commercial and demanding markets. A comfortable environment can enhance human's life quality.

Cool Point Classic Series AHU available is all capacities to delivery from 1000 CFM to 20000 CFM (nominal air flow rate against total static pressure up to 8.0 IWG (2000 Pa).

Nomenclature

Cool Point Classic Series Air Handling Units are based on standard module sizes.

CSAH 02 03

Height in Module
- 02 = 750 mm
- 03 = 1065 mm
- 04 = 1375 mm
- 05 = 1690 mm
- 06 = 2010 mm

Width in Module
- 02 = 750 mm
- 03 = 1065 mm
- 04 = 1375 mm
- 05 = 1690 mm
- 06 = 2010 mm
- 07 = 2320 mm
- 08 = 2560 mm
- 09 = 2950 mm

Note:
- There is special customized design for non standard AHU upon customer request especially low height unit.
- Width and height are based on the 25mm PU insulation panel.
- Additional 50mm (Height & Width) for AHU with 50mm PU Insulation.

General Features

- Modular construction.
- Application flexibility.
- Perfect Thermal break profile.
- No materials that cause threat to human health.
- No Material which facilitates the growth of harmful micro organisms.
- Internal surfaces of the units are made of wear resistant materials.
- Easy for maintenance.
- Easy for cleaning inside the units and its components.
- Conformity with applicable European health and safely standards.

A typical CSAHU unit consists of a wide choice of a combination but not limited to the following sections, fan, cooling coil, Heat recovery wheel / systems, heating coil, humidifier, filter section, mixing box with dampers, plenums etc.

Fan (Plug + Belt driven), cooling coil DX-CW, Heating coil, Electric heating, Heat Recovery Wheel, Humidifier, Single & Multi Zone, Draw / Blow Through arrangement, Dual Coil, Filtration, VFD, VCD, SS Interior (Optional).

Component Features

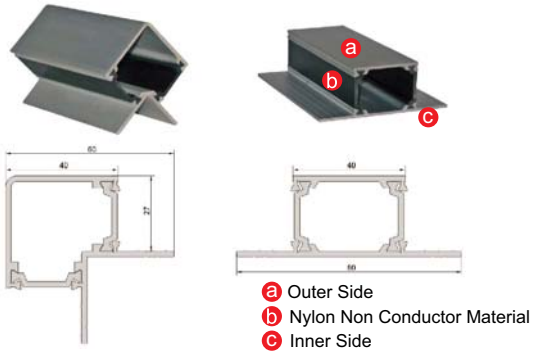
CASING & CONSTRUCTION

Penta Post Frame

- Extruded Aluminum Profile with built in thermal break system.
- Aluminum profile frames are joined by means of strong nylon corners.

Thermal Break Profile

This is a new and high quality thermal break aluminum profile which can enhance performance of an AHU. It is constructed of two parts of extruded aluminum joint together with thermal barrier made out of nylon. The nylons sandwiching the inner and outer layers of extruded aluminum. This design could render the formation of an effectively isolated thermal layer between the inner and outer side of the profiles so that the release of thermal energy via AHU could be ultimately minimized.



Benefit of Thermal Break Profile

- Increased Energy Efficiency - System energy efficiency is improved by lowering the heat loss.
- Unit condensation minimized - Exterior condensation is potentially damaging or creating hazardous conditions.
- Probability of moisture migration into panel interior, which can degrade the insulation, is eliminated in this.
- Cut-off in an attempt to achieve energy conservation.
- Improve sound insulation.

Panels

- Double Skin panels with sandwiched insulation.
- Insulation thickness 25 mm, 50 mm.
- Powder coated hot-dipped galvanized outer skin.
- Galvanized Inner Skin.
- Inside of the units appear smooth without any visible and open adsorptive area.
- Access panels are provided for all sections to facilitate access to all internal components for maintenance and cleaning.
- Removal of any panels shall not affect on structural integrity of the units.

Access Door

- Suitable access doors are provided for all sections to facilitate access to all components for maintenance and cleaning.
- Hinged access door for fan and filter section. Lift off type doors for all other sections.
- For fan section, access doors with Aluminum steel hinges, push fit gaskets and quarter turn locking system with all metal part.

Gaskets

- Specially designed closed cell EPDM gaskets liner between the panel and frame to ensure an excellent leak tight and thermal bridge protection.
- Push-fit type gaskets for hinged access doors gaskets using in classic series AHU are totally closed cell type, and it will not help growth of bacteria or fungus, preventing contamination.
- Gaskets coming in contact with air flow are patterned according to VDI 6022 standards.

Finish

- Standard Colour (Off-white, Blue)

Insulation

- All panels are internally insulated with polyurethane foam insulation with density of 2.5 lb/ft3 (40 kg/m3) and thermal conductivity of 0.14 BTU.in/ft2 F.h (0.02 W/mK).

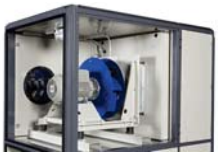
Base Frame and Floor Panel

- Painted Hot dip galvanized sheet metal or structural steel base frame.
- Provision for drainage through floor panels for each section, can be provided on request.

Major Sections and Sub Assemblies

Fan Section

- Direct driven centrifugal fans and belt driven centrifugal fan are supplied as standard in Cool Point Classic Series AHU.
- Fan without scroll, so it can be easily inspected, checked and cleaned. (Optional)
- Centrifugal impeller with backward curved blades of sheet steel, welded and coated, fastened on the shaft of the flange motor, balanced statically and dynamically according to DIN ISO 1940.
- Fan motors are Ip55 / IP54 protected and class F insulated.
- Motor suitable for operation with frequency inverter VFD (Optional).
- A Suitable speed variation system is required for the optimum adjustment of the desired operating point. (Not included in standard supply).
- Access doors for fan section are supplied with internal handles for units with internal height more than 800mm.
- Bulk head light / Marine Light.
- Inspection window.
- Units with standby fans on request.
- Units with belt driven / plug fan.



Performance of all fans have been tested and measured in accordance to AMCA Standard 210. The sound level is measure and rated in accordance with AMCA Standard 300. The fan bearing provided will have a minimum L50 life of 200,000 hours, and are available as high as 1,000,000 hours.

Notes:

Coil Section

- Chilled water / Direct expansion and hot water coils.
- Coil performance are tested in accordance with AHRI standard 410.
- Coils are tested by air pressure while coils are submerged in water to a pressure of 300 psig (2060 kps).
- Coils are constructed from seamless copper tubes 3/8", 1/2" or 5/8" O.D.
- Pre coated aluminum fins / Copper Fins.
- Minium fins per inch: 8
- Maximum fins per inch: 12
- Coils are assembled in slide-in guides for easy removal for maintenance and cleaning.
- Stainless steel coil frame.
- Stainless steel, double skin, insulated condensate drain pan.
- Drain pans are slopped from three sides for a complete drainage.
- DX Coils with matching condensing units are available.
- Coil performance and selection could be provided.
- Coils can be provided with moisture eliminator depending on the air conditions.
- Eliminator frame in stainless steel / G.I.
- Eliminator can be pulled out for cleaning.

Heating Section

- Hot Water Coil.
- Electric Heater.

Filter Section / Options

- Filters are coated with biostatic preservative to inhibit the growth of fungi and bacteria to improve the indoor Air Quality.
- Pre Filter: 2" (50 mm) thick panel filter.
- EN Class: F5 accordance with En779.

Pre Filter EN Class F5

- Fine filters: 12: depth high efficiency extended surface filters. EN class: F9 accordance with EN 779.
- Powder coated hot dip-galvanized filter rack.
- Inspection Windows.
- Bulk head light.
- Manometer across filters.
- HEPA filter: ultra high absolute HEPA (High Efficiency Particulate Air) Filter with efficiency in excess of 99% when measured by using DOP (Di-Octyle Phthalate) Method.
- HEPA filters in Cool Point Hyienic AHU are in accordance with En1882 standards.

Fine Filter EN Class F9

Motor

Motor is internally mounted integral to an isolated fan assembly. Standard motor shall be horizontal foot mounting, induction motor, squirrel, totally enclosed fan-cooled (TEFV or TEFC) with IP55/IP54 protection with class F, Motor capacity is selected to be little oversized for desired running capacity. For the desired operation speed between fan and motor. Motor options are 2, 4 & 6 poles.

Motor Option

- 380-415 Volt / 3 Phase / 50 Hz (Standard)
- Standard Efficiency Motor (Eff2)
- Premium efficiency Motor (Eff1)
- Motor with VFD Arrangement

Spring ISOLATOR

The fan in an AHU can create substantial vibration that can transform to panels casing and consequent widespread generation between the fan compartment and the rest of the AHU to prevent it, two types of isolators are used.

- Rubber mounting (for blowers)
- 25mm deflection spring (for blowers)

VFD / Frequency Inverter

A VFD provides adjustable speed control of a single fan motor. Normally, an AHU which has been installed by VFD can vary the frequency within 30 to 60 Hz in order to control the motor rotation speed. It also provides protection for the motor operation.

Energy Recovery

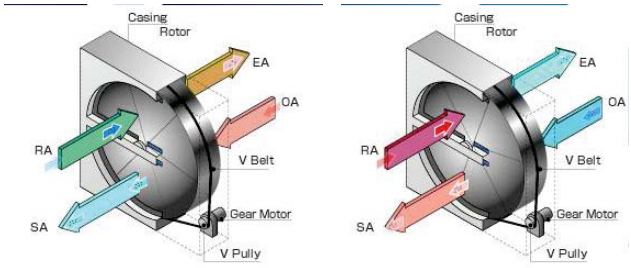
Introducing ventilation from outdoors is essential in maintaining desired indoor air quality. Heat wheel is available as the option to match this requirement. these energy components can recover upto 65% or more of the energy normally exhausted from a building. They are working based on this concept - Capture heat from exhaust air as it passes through the air handling unit and transfer it to the supply air stream. Hence, it is able by transferring energy from a warm air stream to a colder air stream. On the other hand, during the summer, it is used to cool the air.

Heat Recovery Wheel

It is constructed of aluminum coated with heat transfer material (silica gel or others) which is rotated by an electric motor at a constant or variable speed. it is currently known as the most efficient technology.

There are two sections of fan required: exhaust fan and supply fan. The heat wheel rotates at a constant low speed, capturing and transferring both sensible (heat) energy and latent (moisture) energy. The ability to transfer both sensible and latent energy gives the heat wheel several advantages. First, it can reduce the capacity of ventilation equipment. Furthermore, heat wheels can work at lower temperature without frosting occurs. The supply air from the heat wheel is not near saturation level, and moisture in the ductwork is not an issue. The benefit includes recover both latent and sensible heat by allowing reduction in system capacity about 30% to 65%. The most significant benefit is to prevent sick building syndrome.

Summar **Winter**



Mixing Box Section

- Mixing box with fresh air and return air dampers.
- Both return and supply air dampers are sized to handle 0-100% of the total supply.
- Class 4, aluminum dampers, as per DIN en 1751.
- Motorized damper with parallel or opposed blades.
- Dampers close automatically, in the event of a power cut.

Humidifier Section

Ultrasonic / Steam Humidifier

- Steam humidifier consists of immersed electrode steam, generating cylinders, steam distribution pipe and necessary controls.
- The steam distributor passes through the unit casing to inject steam in the air steam to reach the required humidity conditions.
- ON-OFF control for humidifiers.
- Stainless steel condensate tray.
- Inspection windows.
- Bulk head light.
- Droplet separator. (Optional)

Ultrasonic Water Humidifier

- Water supplies to AHU through ultrasonic plates so as to create a mist of very fine droplets, this atomized water is readily absorbed by the air, humidifying and cooling it.
- Atomizing plates are made of stainless steel.
- Stainless steel condensate tray.
- Droplet separator.
- Demineralized water must be used for this type of humidifier.

Sound Attenuator Section (Optional)

- Sound attenuator can be provided in both supply and return air side.
- The standard design is with vertical specially designed splitters consisting of sound absorbing material parallel to the air stream matching unit cross section.
- Two different media depths of 24" (600 mm) and 48" (1200 mm) are available as standard.
- Installation rails in stainless steel.

Drain Connections

- Stainless steel, single / double skin, insulated condensate drain pan for coil, humidifier and mixing box section.
- Drain pans are slopped from three sides for a complete drainage.
- Provision for drainage through floor panels for any section can be provide on customer request.

Plenum (Access) Section

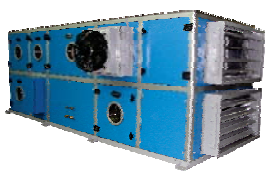
- Empty plenum sections can be provide for applications like access, end vertical assembly etc.
- Custom sizes to suit a particular requirement can be supplied as a option.

Hygienic Sealants

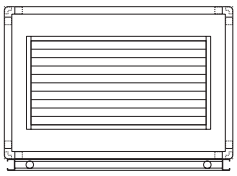
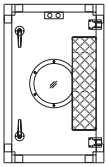
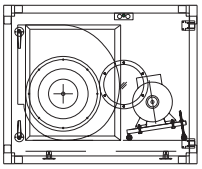
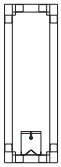
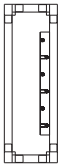
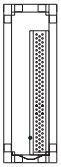
- The sealant, which is used inside the AHU to seal some of the components against the air or water leaks is antibacterial, are non-toxic and doesn't contain dangerous or allergenic components. Sealants used in Classic Series AHU's are patterned according to VDI 6022 standards.

Optional Features & Accessories

- VFD Complete compatible.
- VCD (Manual + Motorized).
- Motorized Valves & Controls.
- SS Inner / Outer.
- Marine Light.
- Ultra Violet lighting for bacteria killing.
- 2" PU Panel thickness can be supplied in sections.
- Flexible design options.
- DX & Chilled Water Coils.
- Filtration Arrangement (All Classes).
- To build at side option.
- Can be customized to the site.
- AHU having fire retardant PU insulation.
- Fire proof motor / Fan assembly.
- Removable / Fixed coil.
- AHU with run around coil heat recovery system.

Dimensional Data

COMMON VIEW						HEPA Filter (FIHP)		Fan Section		Humidifier Section (HSEG)	Heating Section	
											Electric Heater	Hot Water Coil
												
Air Flow	CP Model	W	H		h	L		L		L	L	L1
1000	0202	40”	35”					43”				
1750	0203											
2500	0204	1016	892					1090				
2917	0303	60”	40”		3”			46.75”				11.5”
4167	0304				76							290
5417	0305	1524	1016					1190				
6667	0306	70”	46”					52”				
7583	0405	1778	1168			23.25”		1320		11.5”	11.5”	
9333	0406					590				290	290	
11083	0407	83”	64”		4”			56”				
12000	0506	2108	1626		100			1422				
14250	0507											15.25”
16500	0508											390
18750	0509	130”	70”		5”			58”				
20167	0608	3302	1778		125			1474				
22917	0609											

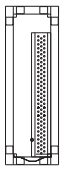
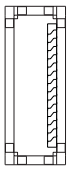
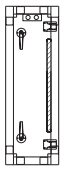
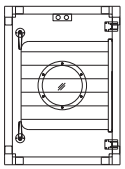
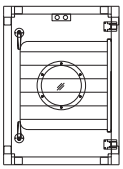
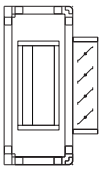
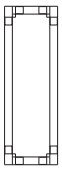
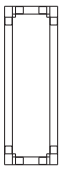
Dimensions are in inches (mm)

Table 1

Notes:

- Nominal air flow at 500fpm coil face velocity.
- Length of eatch separate sections are provided.
- For units without knockdown or knockdown frames with more than one section (please contact Factory).
- Dimensions are subjected to change with out any notice for future improvement.

Dimensional Data

Cooling Section		Filter Section			Mixing Box (BMX)		Plenums (PEM)			
DX / Chilled Water Coil	Eliminator	Flat Filter	Bag Filter (F-6)	Bag Filter (F-9)	Back Return Air & Side Fresh Air		PEM 1	PEM 2	PEM 3	
										
L	L	L	L1	L2	L		L1	L2	L3	CP Model
15.25” 390	2.0” 50	11.5” 290	27.25” 690	27.25” 690	18.25” 465		20” 508	24” 610	30” 762	0202 0203 0204 0303 0304 0305 0306 0405
15.25” 440	4.0” 100				20.25” 515					0406 0407 0506 0507
					24” 610					0508 0509 0608 0609

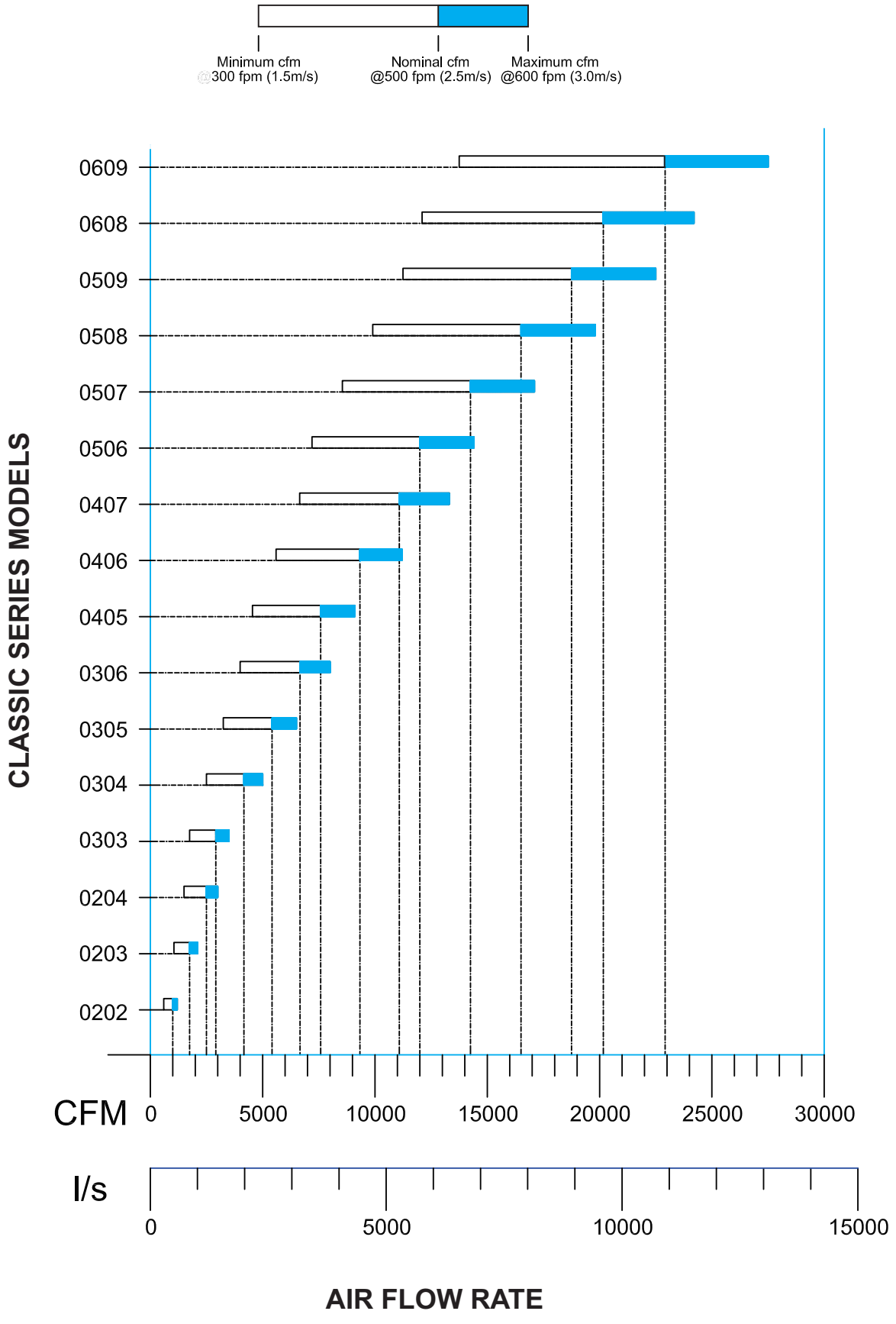
Dimensions are in inches (mm)

Table 2

Notes:

- For mixing box with damper, dampers could be manufactured according to the layout / sight plan provided.
- For mixing box section, dimensions varies according to fresh air & return air percentage.
- Length of each separate sections are provided.
- For units without knockdown or knockdown frames with more than one section (please contact Factory).
- Dimensions are subjected to change with out any notice for future improvement.

Quick Selection



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- Operation & Maintenance

Package Mobile AC Plant

Package Type Unit

Air Handling Units
(Standard / Classic Series)

Cold Chain Equipment

Concealed Type AHU

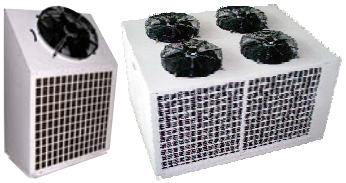
Floor Standing Cabinet (DX/CW)

Air / Water Cooled Chillers
(Screw, Semi Sealed, Scroll)

Reefer Containers

DX / Chilled Water FCU

Pharma / Hospital Grade PAC



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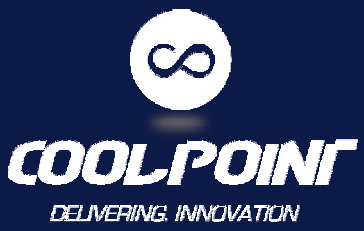

www.coolpoint.net.pk

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