

Standard Symbols – Ventilation Schematics

Scope

Symbols for equipment and line annotations for mechanical schematics. Symbols may also be used for general arrangement drawings and single line ductwork schemes.

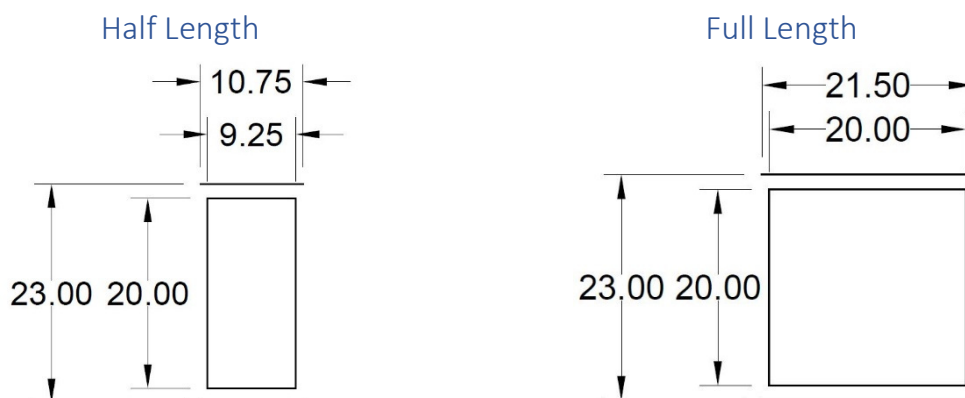
Basic geometry

Dimensions refer to size as shown on a drawing when printed full size. Equipment shown on general arrangements will be sized according to the proposed size of the equipment divided by the scale of the drawing.

Primary Equipment

Air Handling Units

All Air Handling Units (AHUs) should be shown with equal heights, the length of each unit will depend on the number of sections performing functions within the AHU. Each section within an AHU will be of equal length, with the exception of certain sections, which may be shown at half the length of a typical unit. See example below:



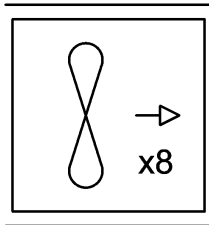
The sections within an AHU should be shown in the proposed order in which they will appear in the actual unit, to demonstrate the order of processes being performed on the air being passed through.

Sound attenuators mounted within the AHU should be shown at the same height as the standard AHU symbols and be one AHU section in length, irrespective of the actual size of the attenuator. Attenuators mounted external to the AHU should be shown as described below.

Fans

Individual Fans should be shown using the same symbology as the fans within an AHU. The fan symbols should be shown in the direction of air flow, with an appropriate symbol for the type of fan specified (e.g. Centrifugal, Axial, etc.), or as a generic fan symbol, to state that the fan type is not specified. The correct number of fans should be shown within each box (e.g. a twin toilet extract fan

would have two fan symbols in a box), or, for higher multiples of fans, a number in the lower right corner indicating the number of fans specified, see below:



Filters

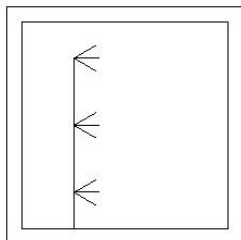
The selection of symbols for filters are based on commonly found filtration mechanisms and filter media. These symbols may be updated in the future to better reflect the construction of the filter unit, the filtration media and the filtration grade.

Humidifiers

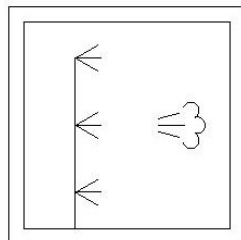
There are two primary methods of increasing the humidity of air, addition of water (adiabatic) or the addition of steam. Each of these methods will alter the psychrometry of the processed air, so it is important to identify which method has been selected.

The methods by which the water or steam are added to the air flow can also vary widely, though this will not affect the psychrometry, but it may aid the procurement of the desired unit if this method is shown.

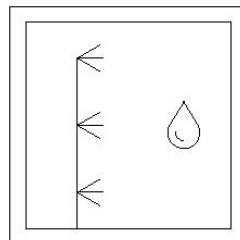
Examples of Humidifier Symbols:



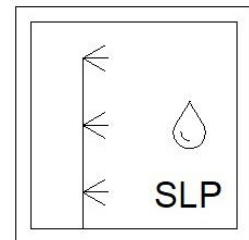
Humidifier



Humidifier – Steam



Humidifier – Water



**Humidifier – Water –
Spray low pressure**

Table of Humidifier Abbreviations:

Humidification type	Abbreviation	Notes
Water types:		
Wetted Media	WM	Also known as evaporative
Spray – High Pressure	SHP	
Spray – Low Pressure	SLP	
Spray – Compressed Air	SCA	
Ultrasonic	US	
Spinning Disk	SD	Also known as centrifugal
Combinations of water types are also possible, for example Low Pressure Spray and Wetted Media (SLP+WM), known as hybrid types.		

Steam types:		
Electrode Boiler	EB	
Resistance Heater	RH	
Gas-fired - Atmospheric	GA	
Infrared	IR	
Steam to Steam - Atmospheric	STS	
High Temperature Hot Water	HTHW	
Direct Injection – Steam Grids	DIG	
Direct Injection – Steam Cups	DIC	
Direct Injection – Steam Separator	DIS	

Secondary Equipment

Fan Coil Units

All Fan Coil Units (FCUs) should be shown at the same size, irrespective of their relative physical size. There is no requirement to show the units mounted within the FCU (e.g. heating coil, filters, etc.), though this may be useful if a mix of unit types is proposed for the scheme.

For Ventilation Schematics, only the ductwork connections to an FCU should be shown.

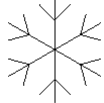
Sound Attenuators

Sound attenuators mounted in duct runs should be shown at the same size throughout the schematic, irrespective of their physical size. The diminishing wave-form pattern should be shown in the direction of the sound attenuation within the unit (i.e. the smaller waves are shown at the quieter end of the attenuator).

Cross-talk attenuators do not have a specific orientation.

Line Re-heat and Cooling Coils

Duct mounted Re-heat and Cooling Coils should be shown using the same symbols as the heating and cooling coils within an AHU. For Heating and Cooling Coils, the method (heating or cooling medium) should be indicated using the symbols in the chart below. If the medium is not being specified, then just showing the coil without the method symbol is suitable.

Medium	Symbol
Electricity	
Gas	
Refrigerant	

Steam	
Water	

The above symbols may be used for any other equipment that includes an external medium, such as humidifiers, which may use Water or Steam to humidify air.

Constant and Variable Air Volume Devices

Constant and Variable Air Volume boxes (CAVs and VAVs) should be shown with a consistent size, irrespective of their physical size.

If additional functions are specified for the CAV or VAV device, such as fan assistance or re-heat, these should be shown as part of the symbol.

Line mounted Equipment

All duct mounted equipment for control or access should be shown at the appropriate project stage on the ventilation schematic. They should all be shown at a consistent size, irrespective of their physical size.

Control Damper symbols should be added to ventilation schematics at the appropriate work stage. A generic control damper may be used at earlier project stages (e.g. Concept Design), if it aids the understanding of the system being described.

Terminal Units

Diffusers, Registers and Grilles

Diffusers, Registers and Grilles should all be shown at the same size, irrespective of their physical size. They should always be shown in the orientation in which they are to be mounted. An arrow indicating air flow should be included as part of the symbol. Different arrows denote forced air and entrained air.

It may not be possible to show all air terminal devices on a schematic, especially for large projects. In this instance a schematic piece of duct should be shown providing air to or from a space, with a typical detail of the air terminal and control devices either on the drawing or the drawing should note that the typical detail exists on another drawing.

Louvres

All external air louvres (fresh air and exhaust) should be shown at the same size, irrespective of their physical size. An arrow should be included to indicate the direction of air flow. Different arrows are to be used to indicate forced or entrained air.

If extra devices are being specified as part of the louvre construction, such as bird mesh, insect mesh or sand filters, these should be included in a schedule or specification of the louvre, and do not need to be shown on the schematic.

Ductwork

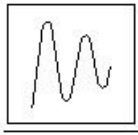
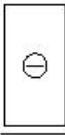
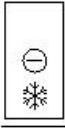
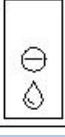
All ductwork is to be shown using the same line type and thickness, irrespective of duct size or function (e.g. supply or extract). Different annotations may be used to indicate fire resisting ductwork or acoustically lined ductwork.

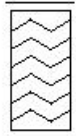
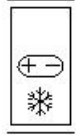
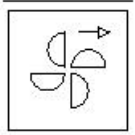
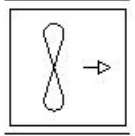
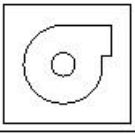
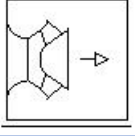
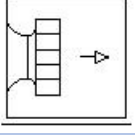
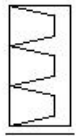
Air flow Arrows

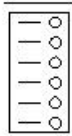
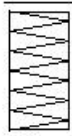
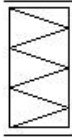
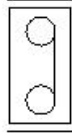
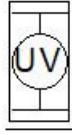
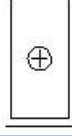
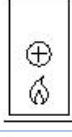
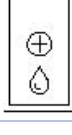
Air flow arrows should be shown with geometry that cannot be confused with dimension arrows and contain suitable symbology to denote the manner in which air is being moved.

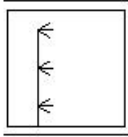
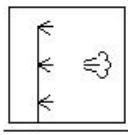
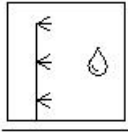
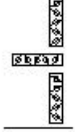
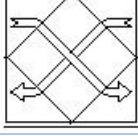
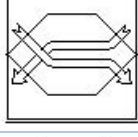
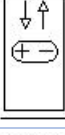
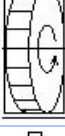
Forced air	Entrained air	Convected air
		

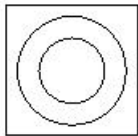
Symbols and Abbreviations

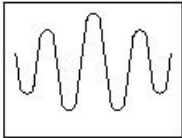
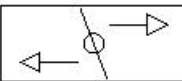
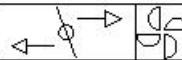
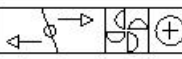
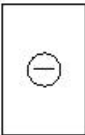
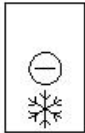
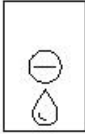
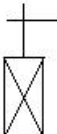
Air Handling Unit Symbols		
Product	Abbreviation	Symbol
Access Panel		
Attenuator	Att	
Blanking Section		
Cooling Coil		
Cooling Coil – Refrigerant		
Cooling Coil - Water		

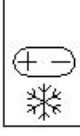
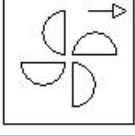
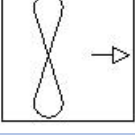
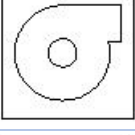
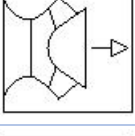
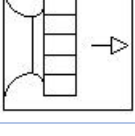
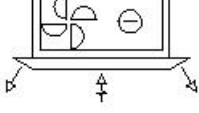
Droplet Eliminator		
DX Coil		
End Cap - Left		
End Cap – Right		
Fan - Generic		
Fan – Axial		
Fan – Centrifugal		
Fan – Cross Flow		
Fan – Mixed Flow		
Fan – Plenum		
Filter - Bag		

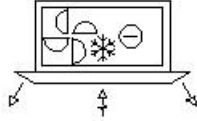
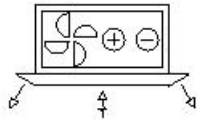
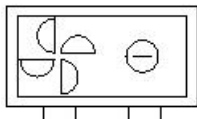
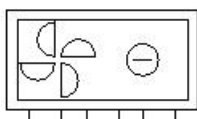
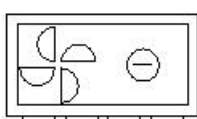
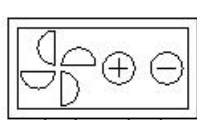
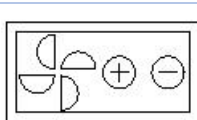
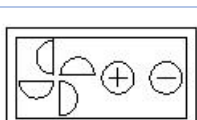
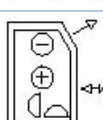
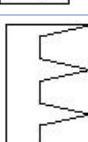
Filter - Electrostatic Precipitation		
Filter – HEPA		
Filter – Panel		
Filter – Scroll		
Filter – UV		
Heating Coil		
Heating Coil – Electric		
Heating Coil – Gas		
Heating Coil – Refrigerant		
Heating Coil – Steam		
Heating Coil – Water		

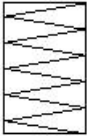
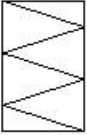
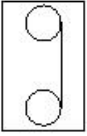
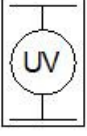
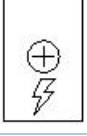
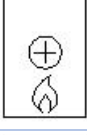
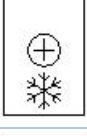
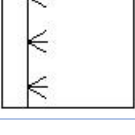
Humidifier		
Humidifier – Steam		
Humidifier – Water		
Mixing Box		
Plate Heat Exchanger – Cross Flow		
Plate Heat Exchanger – Counter Flow		
Run-around Coil		
Thermal Wheel		
Volume Control Damper		

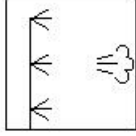
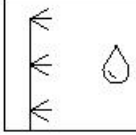
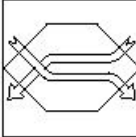
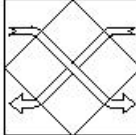
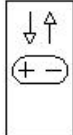
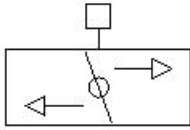
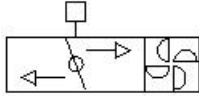
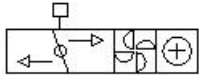
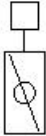
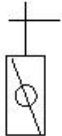
Duct Line Symbols		
Product	Abbreviation	Symbol
Access Panel	AP	

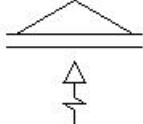
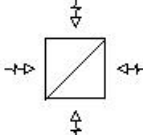
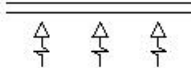
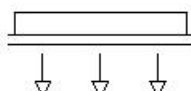
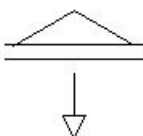
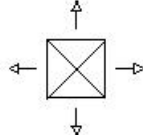
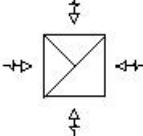
Attenuator	Att	
Attenuator – Cross Talk	Att	
Constant Air Volume Box	CAV	
Constant Air Volume Box – Fan	CAV	
Constant Air Volume Box – Fan and Reheat	CAV	
Cooling Coil	CC	
Cooling Coil – Refrigerant	CC	
Cooling Coil - Water	CC	
Damper – Fire – Manual	FD	
Damper – Fire – Motor	FD	
Damper – Smoke – Manual	SD	

Damper – Smoke – Motor	SD	
Damper – Smoke and Fire – Manual	SFD	
Damper – Smoke and Fire – Motor	SFD	
DX Coil		
Fan - Generic		
Fan – Axial		
Fan – Centrifugal		
Fan – Cross Flow		
Fan – Mixed Flow		
Fan – Plenum		
Fan Coil Unit – Cassette – 2 Pipe	FCU	

Fan Coil Unit – Cassette – 2 Pipe – Refrigerant	FCU	
Fan Coil Unit – Cassette – 4 Pipe	FCU	
Fan Coil Unit – Ceiling – 2 Pipe – 2 Outlet	FCU	
Fan Coil Unit – Ceiling – 2 Pipe – 3 Outlet	FCU	
Fan Coil Unit – Ceiling – 2 Pipe – 4 Outlet	FCU	
Fan Coil Unit – Ceiling – 4 Pipe – 2 Outlet	FCU	
Fan Coil Unit – Ceiling – 4 Pipe – 3 Outlet	FCU	
Fan Coil Unit – Ceiling – 4 Pipe – 4 Outlet	FCU	
Fan Coil Unit – Floor – 4 Pipe	FCU	
Filter - Bag		
Filter - Electrostatic Precipitation		

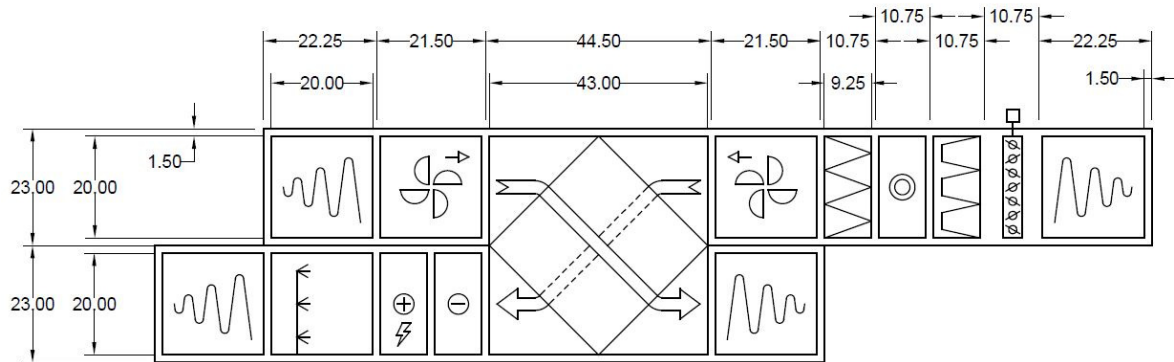
Filter – HEPA		
Filter – Panel		
Filter – Scroll		
Filter – UV		
Heating Coil	HC	
Heating Coil – Electric	HC	
Heating Coil – Gas	HC	
Heating Coil – Refrigerant	HC	
Heating Coil – Steam	HC	
Heating Coil – Water	HC	
Humidifier	HUM	

Humidifier – Steam	HUM	
Humidifier – Water	HUM	
Plate Heat Exchanger – Counter Flow	PHE	
Plate Heat Exchanger – Cross Flow	PHE	
Run-around Coil		
Variable Air Volume Box	VAV	
Variable Air Volume Box – Fan	VAV	
Variable Air Volume Box – Fan and Reheat	VAV	
Volume Control Damper – Motor Control	VCD	
Volume Control Damper – Manual Control	VCD	

Air Terminal Symbols		
Product	Abbreviation	Symbol
Ceiling Grille – Return	RG	
Ceiling Grille – Return – Plan	RG	
Ceiling Slot – Return	RG	
Ceiling Slot – Plenum – Supply	SG	
Ceiling Grille – Supply	SG	
Ceiling Grille – Supply – Plan	SG	
Ceiling Grille – Exhaust – Plan	EG	
External Louvre	EL	
External Louvre – Air In	EL	
External Louvre – Exhaust	EL	

Use examples

AHU Components



Duct Line Components

