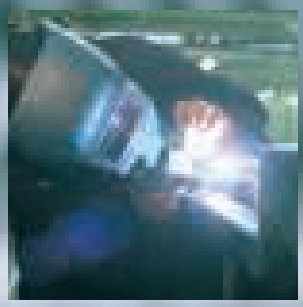
COILS



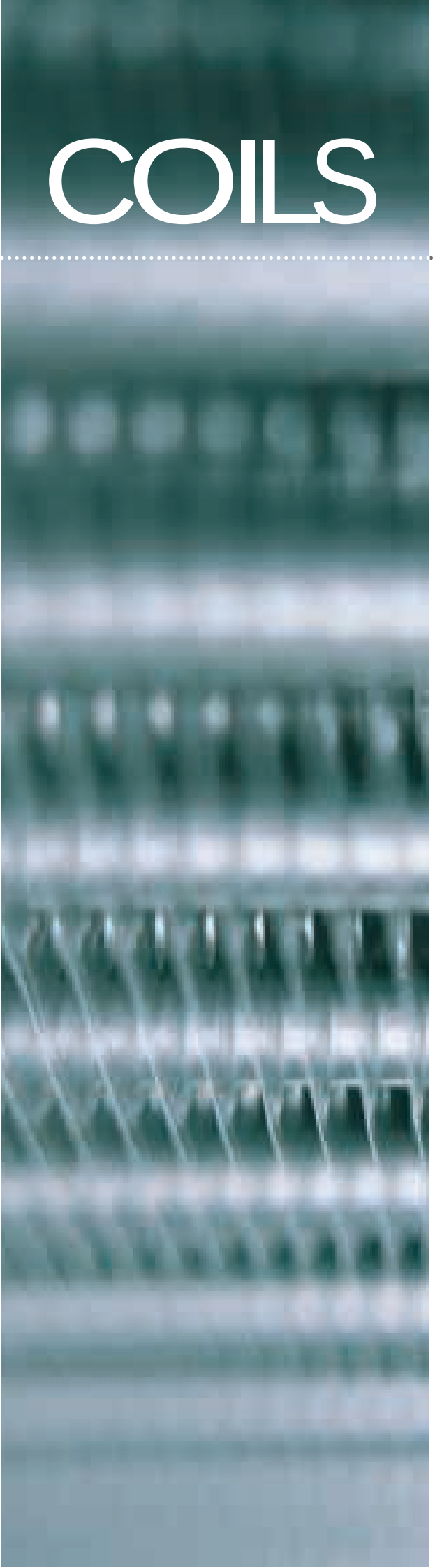
STEAM HEATING COILS

HOT WATER HEATING COILS

CHILLED WATER COOLING COILS

DX COOLING COILS

H & C COILS



COILS

H & C COILS

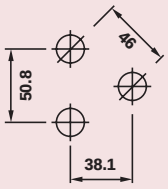
HEATING & COOLING COIL PRODUCTS LTD
Unit 21 Wingate Road, Fort Brockhurst Ind Estate,
Gosport, Hampshire, PO12 4DR
Tel: 02392 501431. Fax: 02392 529272

STEAM HEATING COILS

- INDIVIDUALLY DESIGNED
- CUSTOM BUILT
- FAST TRACK DELIVERY
- COMPETITIVE PRICES

Steam Air Heating Coils for Air Conditioning and Process Heating using Dry Saturated Steam. Coils can be manufactured to suit almost any size of Ducting, Plenum or Air Handling Unit.

TUBE AND FIN CONFIGURATIONS



5/8" o.d. tube,
Fin spacing 10 to 2.1 mm

Types

P.B.T. Plain Bore Tubes. Horizontal or vertical tubes

I.D.T. Internal Distributing Tubes. (Non Freeze Type) Horizontal tubes.

SPECIFICATION

Coils are constructed from Seamless Drawn Copper Tube to BS2871 mechanically expanded into aluminium fins with die formed self spacing collars. Tubular copper headers are silver brazed into the tube ends. Flow and return connections are BSP(M). The coil casing is formed from heavy gauge galvanised sheet steel to BS 2989 to make a rigid assembly. Tube end plates have die formed collared holes to allow expansion and contraction of the tubes without damage.

TESTING

All coils are pressure tested to 16 bar with dry compressed air under water.

Performance

All coils are selected individually to suit customer requirement using technically advanced computer software to give optimum performance with lowest pressure drop.

Optional features.

Polyester Coated Aluminium Fins are available to give protection in certain aggressive environments. Alternatively, Plain copper or tinned copper fins are available.

For Positive Pressure or High Pressure Ducted Systems Boxed Ends should be specified to enclose headers and return bends and minimise air leakage.

Brass or Stainless Steel Casings are also available.

H & C COILS

STEAM HEATING COILS

Application and Operation

Steam is easily distributed throughout a building, it is therefore a convenient heat transfer medium that can be applied for a variety of tasks at different locations.

The application of steam and finned tube coils for heating air needs care and attention to ensure that coils will not be damaged by water hammer and thermal shock - the common cause of failure.

The Steam is condensed in the coil tubes, as it condenses its volume collapses dramatically and water is formed at its saturation temperature according to the pressure prevailing. Thus steam is induced (not forced) into a coil by the suction caused when it collapses into condensed water.

The problem that steam coils have is one of their regulation to balance varying heat load demands. It is important to realise that when steam condenses it releases latent heat fairly consistently regardless of pressure.

When steam flow is throttled to reduce heat output its condensing temperature rapidly falls to a balancing pressure soon below the system condensate return pressure. At this event condensed water ceases to be drained from the coil and thus flooding and subcooling take place.

Resulting constant re-adjustment by the automatic regulating valve will cause the condensate level to rise and fall. Water hammer and thermal shock will result.

This must be avoided otherwise eventual damage to the tubes will result.

Under these circumstances HEATING & COOLING COIL PRODUCTS LTD will not guarantee the life of the coil.

For example a steam coil designed to operate on full load at 4 Bar pressure with mean air temperature of 20°C will have a **Temperature difference of (153°C - 20°C) 133°C**.

To run the coil at half output the temperature difference must be halved to 66.50C

Thus condensing temperature will be (20 + 66.5) 86.5°C at a pressure of 0.6 BAR ABSOLUTE. This is 0.4 Bar below atmospheric pressure. The coil will flood to approximately 40% of its volume to reduce the active surface area to accomplish the desire load.

To avoid these problems, particularly where varying loads are to be controlled accurately, we suggest that a hot water circulation system be adopted, generated by a local calorifier and pump set. This is economic, particularly when a number of coils are to be installed in one area.

If this is not convenient or practicable then we recommend the use of Face and Bypass dampers to modulate the air volume passing through the coil. In this manner the entire surface of the coil is working, operating with a positive and allowing for condensate removal at all times.

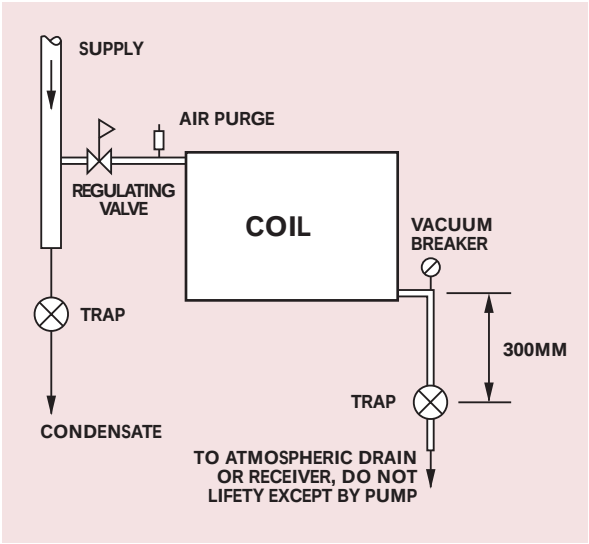
No steam control valve will be necessary since only that steam quantity required to perform the demanded duty will be used. The damper motor controls the output.

The use of I.D.T. coils (Internal distributing tubes) will offer some advantages over plain bore tubes bur their life is still subject to the care and attention required to avoid water hammer and thermal shock stress.

By the construction of I.D.T. steam coils, seam is fed into each coil tube via a small bore inner tube such that the steam is condensed in the annular space. On low loads the annular space fills with condensate but is heated by the incoming steam. The tube surfaces are thus more evenly heated as each tube is a miniature calorifier.

H & C COILS

INSTALLATION



Selection

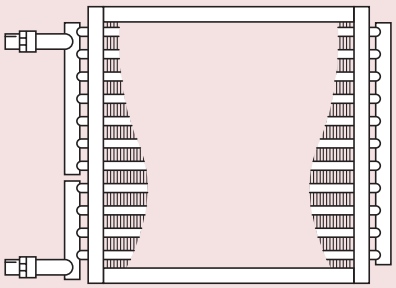
To enable us to make a selection we require the following parameters

Air Side Three of the following values.
Air Volume
Air On Temperature
Air Off Temperature
Duty

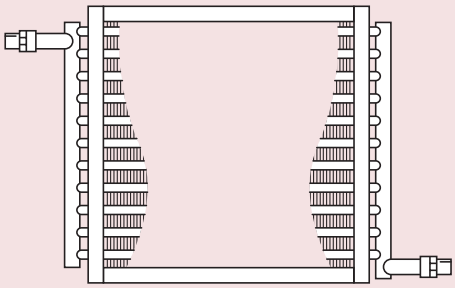
Steam Side One of the following values.
Steam Pressure (gauge or absolute)
Steam Temperature
Mass flow rate

COIL ARRANGEMENTS

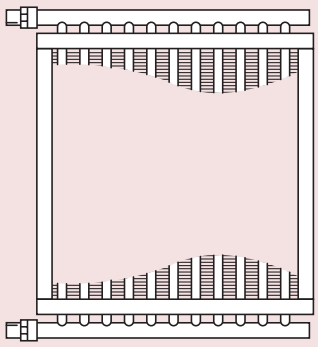
PBT Horizontal Airflow - Same End Connectors



PBT Horizontal Airflow - Opposite End Connectors

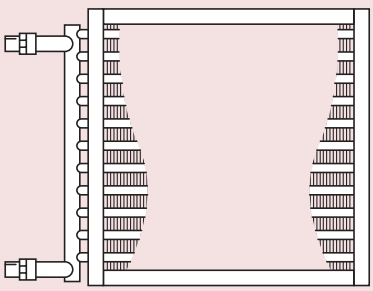


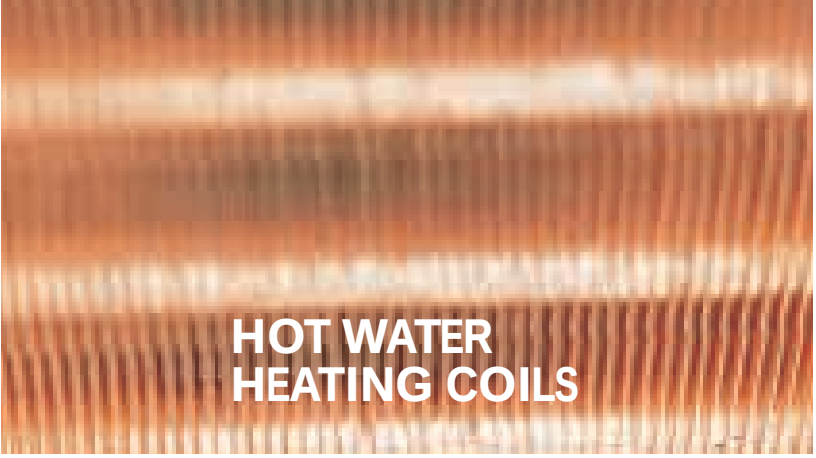
PBT Horizontal Airflow - Vertical Tubes



PBT Vertical Airflow

IDT Horizontal Airflow





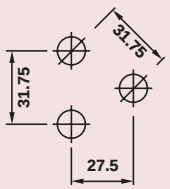
HOT WATER HEATING COILS

- INDIVIDUALLY DESIGNED
- CUSTOM BUILT
- FAST TRACK DELIVERY
- COMPETITIVE PRICES

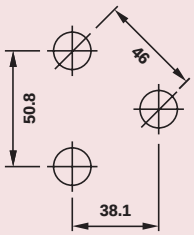
Hot Water Air Heating Coils for Air Conditioning and Process Heating using L.P.H.W., M.P.H.W., H.P.H.W. or Low Grade Hot Water generated from other equipment.

Two tube and fin configurations are offered which enable coils to be manufactured in almost any size to suit Ducting, Plenums and Air Handling Units.

TUBE AND FIN CONFIGURATIONS



1/2" o.d. tube,
Fin spacing 10 to 2.1 mm



5/8" o.d. tube,
Fin spacing 4.2 to 2.1 mm

SPECIFICATION

Coils are constructed from Seamless Drawn Copper Tube to BS2871 mechanically expanded into aluminium fins with die formed self spacing collars. Copper return bends and tubular copper headers are silver brazed into the tube ends. Flow and return connections are BSP(M). Air vents and drain sockets are provided. The coil casing is formed from heavy gauge galvanised sheet steel to BS 2989 to make a rigid assembly. Tube end plates have die formed collared holes to allow expansion and contraction of the tubes without damage.

TESTING

All coils are pressure tested to 16 bar with dry compressed air under water.

Performance

All coils are selected individually to suit customer requirement using technically advanced computer software to give optimum performance with lowest pressure drop.

Selection

To enable us to make a selection we require the following parameters:

Air Side	Three of the following values. Air volume Air On Temperature Air Off Temperature Duty
Water Side	Two of the following values Water Inlet Temperature Water Outlet Temperature Water Flow Rate

Optional features.

Polyester Coated Aluminium Fins are available to give protection in certain aggressive environments. Alternatively, Plain copper or tinned copper fins are available.

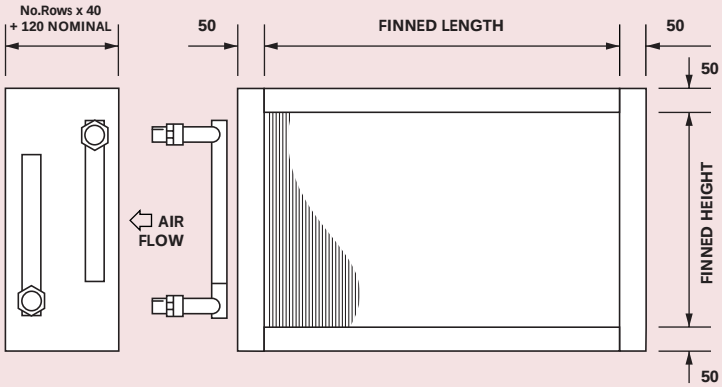
For Positive Pressure or High Pressure Ducted Systems Boxed Ends should be specified to enclose headers and return bends and minimise air leakage.

Brass or Stainless Steel Casings are also available.

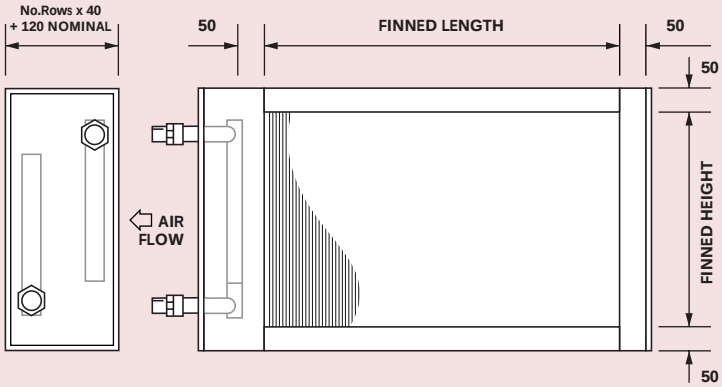
H & C COILS

TYPICAL CASING STYLES

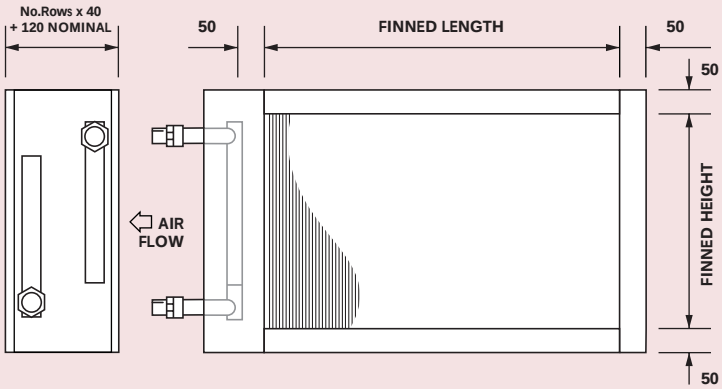
DUCT MOUNTING NEGATIVE DUCT PRESSURE



DUCT MOUNTING POSITIVE DUCT PRESSURE



TYPICAL AIR HANDLING UNIT MOUNTING



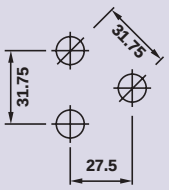
H & C COILS

CHILLED WATER COOLING COILS

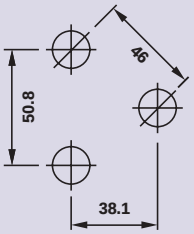
- INDIVIDUALLY DESIGNED
- CUSTOM BUILT
- FAST TRACK DELIVERY
- COMPETITIVE PRICES

Chilled Water Air Cooling Coils for Air Conditioning and Process Cooling which can be used with ethylene or propylene glycol solutions for low temperature applications. Two tube and fin configurations are offered which enable coils to be manufactured in almost any size to suit Ducting, Plenums and Air Handling Units.

TUBE AND FIN CONFIGURATIONS



1/2" o.d. tube,
Fin spacing 10 to 2.1 mm



5/8" o.d. tube,
Fin spacing 4.2 to 2.1 mm

SPECIFICATION

Coils are constructed from Seamless Drawn Copper Tube to BS2871 mechanically expanded into aluminium fins with die formed self spacing collars. Copper return bends and tubular copper headers are silver brazed into the tube ends. Flow and return connections are BSP(M). air vents and drain sockets are provided. The coil casing is formed from heavy gauge galvanised sheet steel to BS 2989 to make a rigid assembly. Tube end plates have die formed collared holes to allow expansion and contraction of the tubes without damage. Drain trays are provided as standard, vee formed with an air baffle to prevent air bypass and a BSP(M) drain connection. Alternatively perforated bottom plates may be provided to allow drainage into customers own draintray.

Performance

All coils are selected individually to suit customer requirement using technically advanced computer software to give optimum performance with modest refrigerant pressure drop.

Selection

To enable us to make a selection we require the following parameters:

Air Side
Three of the following values.
Air Volume
Air On Temperature dry bulb and wet bulb or RH
Air Off Temperature
Duty

Water Side
Two of the following values
Water Inlet Temperature
Water Outlet Temperature
Water Flow Rate

Optional features.

Polyester Coated Aluminium Fins are available to give protection in certain aggressive environments. Alternatively, Plain copper or tinned copper fins are available.

For Positive Pressure or High Pressure Ducted Systems Boxed Ends should be specified to enclose headers and return bends and minimise air leakage.

Brass or Stainless Steel Casings are also available.

Condensed Moisture Entrainment

"Water Carryover" i.e. water blowing off the fins is subject to a variety of causes.

Face velocity, fin spacing, finned height and latent cooling rate (SHR) are all contributory factors and differing combinations will change these affects.

Coils operating with all or high fresh air content are particularly vulnerable.

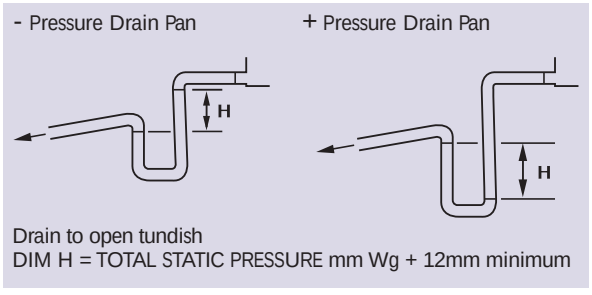
Local high velocities and moisture tracking causing spillage are best avoided by downstream drainage.

Heating & Cooling Coils Ltd Design Engineers will advise whether moisture droplet eliminators are required. When eliminators are fitted an additional depth of 180mm minimum should be allowed.

Intermediate Drain Pans within the coil block are fitted where required to relieve condensate logging at the lower part of the fins.

Trapping

Correct trapping of the condensate drain line is essential to prevent flooding or splashing back into drain pan.



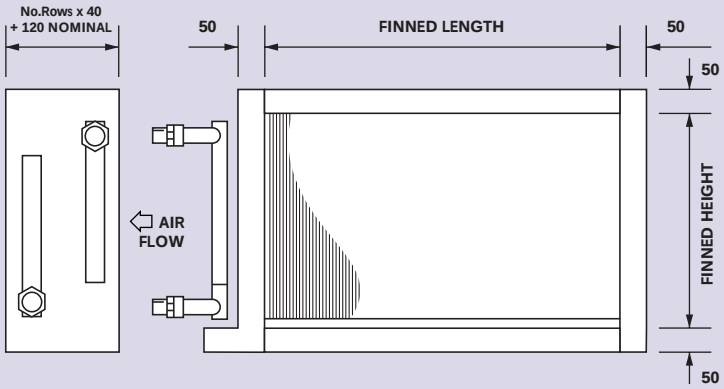
Drain to open tundish
DIM H = TOTAL STATIC PRESSURE mm Wg + 12mm minimum

Stacking

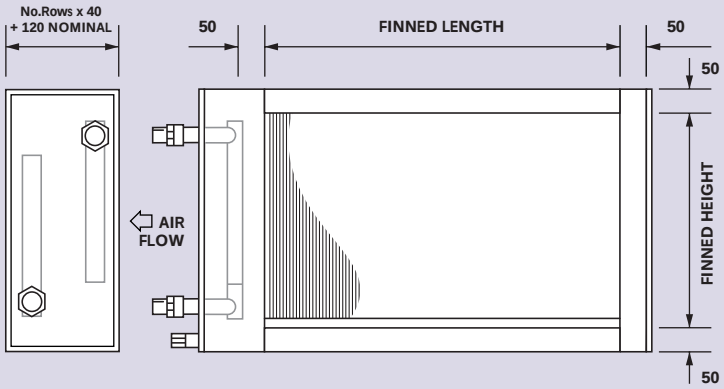
Large installations may require coils to be divided into more easily handled pieces. Each individual coil will have its own drain pan, and facilities can be provided to allow condensate to drain down into bottom main drain pan. Heating & Cooling Coils Ltd will advise on the most economical design.

TYPICAL CASING STYLES

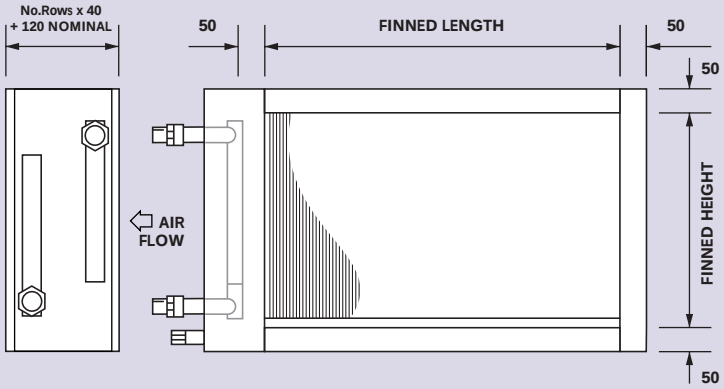
DUCT MOUNTING NEGATIVE DUCT PRESSURE



DUCT MOUNTING POSITIVE DUCT PRESSURE



TYPICAL AIR HANDLING UNIT MOUNTING



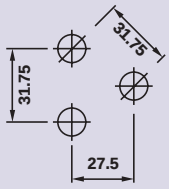
H & C COILS

DX COOLING COILS

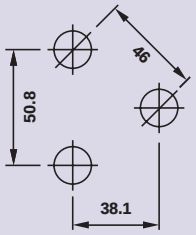
- INDIVIDUALLY DESIGNED
- CUSTOM BUILT
- FAST TRACK DELIVERY
- COMPETITIVE PRICES

Direct Expansion Air Cooling Coils for Air Conditioning and Process Cooling which can be used with HFC and HCFC refrigerants. Two tube and fin configurations are offered which enable coils to be manufactured in almost any size to suit Ducting, Plenums and Air Handling Units.

TUBE AND FIN CONFIGURATIONS



1/2" o.d. tube,
Fin spacing 10 to 2.1 mm



5/8" o.d. tube,
Fin spacing 4.2 to 2.1 mm

SPECIFICATION

Coils are constructed from Seamless Drawn Copper Tube to BS2871 mechanically expanded into aluminium fins with die formed self spacing collars. Copper return bends, liquid distributor and tubular copper headers are silver brazed into the tube ends. The coil casing is formed from heavy gauge galvanised sheet steel to BS 2989 to make a rigid assembly. Tube end plates have die formed collared holes to allow expansion and contraction of the tubes without damage. Drain trays are provided as standard, vee formed with an air baffle to prevent air bypass and a BSP(M) drain connection. Alternatively perforated bottom plates may be provided to allow drainage into customers own draintray.

Condensed Moisture Entrainment

"Water Carryover" i.e. water blowing off the fins is subject to a variety of causes.

Face velocity, fin spacing, finned height and latent cooling rate (SHR) are all contributory factors and differing combinations will change these affects.

Coils operating with all or high fresh air content are particularly vulnerable.

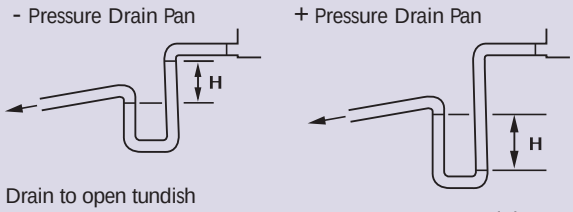
Local high velocities and moisture tracking causing spillage are best avoided by downstream drainage.

Heating & Cooling Coils Ltd Design Engineers will advise whether moisture droplet eliminators are required. When eliminators are fitted an additional depth of 180mm minimum should be allowed.

Intermediate Drain Pans within the coil block are fitted where required to relieve condensate logging at the lower part of the fins.

Trapping

Correct trapping of the condensate drain line is essential to prevent flooding or splashing back into drain pan.



Drain to open tundish
DIM H = TOTAL STATIC PRESSURE mm Wg + 12mm minimum

Stacking

Large installations may require coils to be divided into more easily handled pieces. Each individual coil will have its own drain pan, and facilities can be provided to allow condensate to drain down into bottom main drain pan. Heating & Cooling Coils Ltd will advise on the most economical design.

H & C COILS

Performance

All coils are selected individually to suit customer requirement using technically advanced computer software to give optimum performance with modest refrigerant pressure drop.

Optional features.

Polyester Coated Aluminium Fins are available to give protection in certain aggressive environments. Alternatively, Plain copper or tinned copper fins are available.

For Positive Pressure or High Pressure Ducted Systems Boxed Ends should be specified to enclose headers and return bends and minimise air leakage.

Brass or Stainless Steel Casings are also available.

Defrost

For low temperature applications where frosting of the coil will occur provision for defrosting can be incorporated into the coil.

Multi Sections

To effect capacity control it is sometimes necessary to divide the coil into independent refrigerant sections each with its own distributor and suction header.

There are a number of acceptable methods of achieving this.

Figures 1-3 are suitable for varying loads where air off temperature may rise to meet lower duty.

Figures 4 & 5 are suitable for varying loads where air off temperature is to remain constant with varying air on temperature.

In all cases care must be exercised when specifying number of sections in coil design to prevent freezing under low load.

Heating & Cooling Coils design engineers will advise optimum solution.

Selection

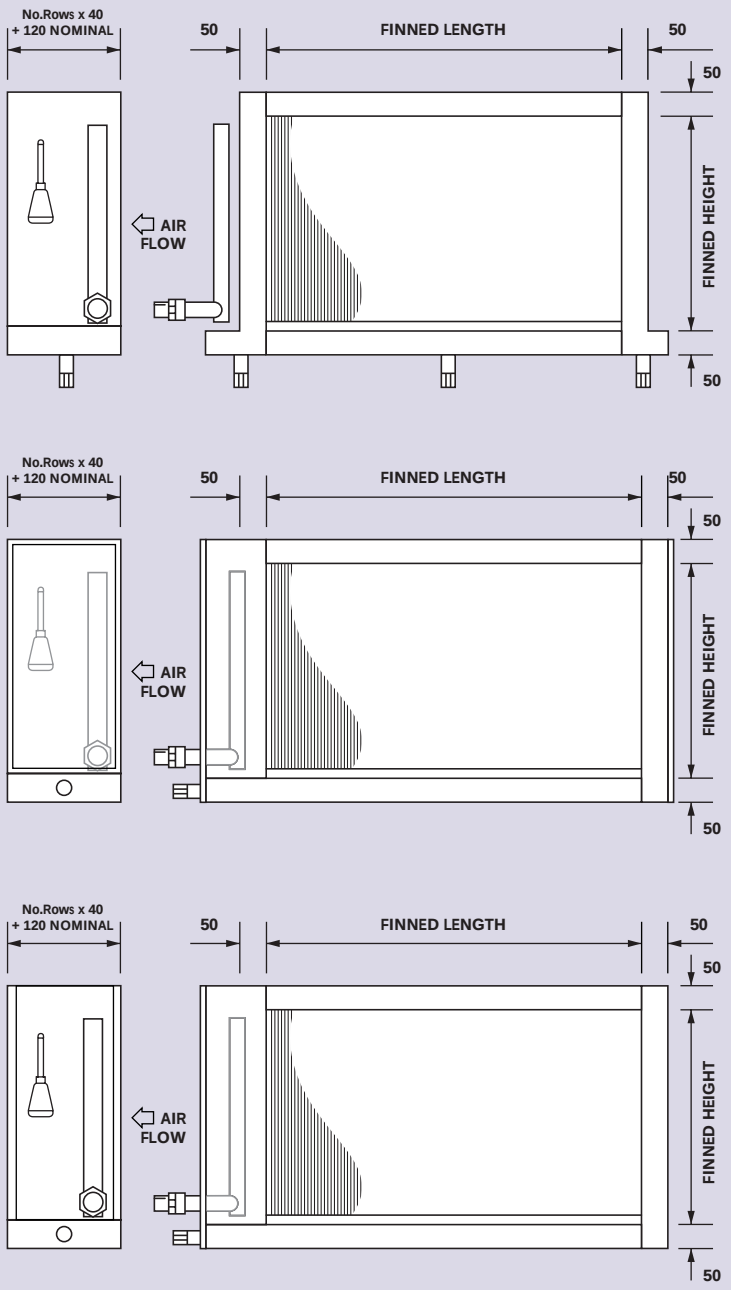
To enable us to make a selection we require the following parameters:

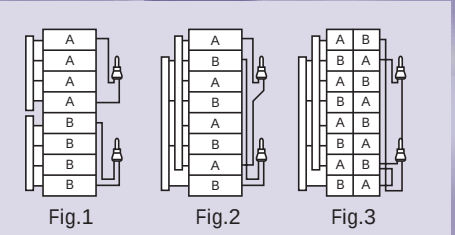
Air Side Three of the following values.
Air Volume
Air On Temperature dry bulb and wet bulb or RH
Air Off Temperature
Duty

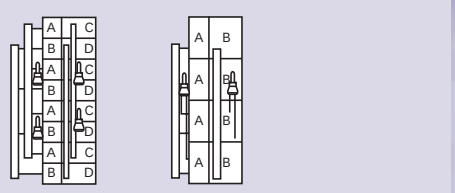
Refrigerant

Evaporting temperature

TYPICAL CASING STYLES







HEATING & COOLING COIL PRODUCTS LTD.

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H & C COILS

Bulletin COIL 1/3/07