



Wandsworth specification



Specification for “Hi-Velocity” heating and cooling to ground and first floors

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Prepared by **Charles R Stark MCIBS**

On behalf of **Cooling & Heating Sales Ltd**

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Section 1

Design conditions

Ambient Conditions

Maximum Summer Conditions
28°C db 18°C wb

Minimum Winter Conditions
-3°C Saturated

Room Conditions

Internal Design Temperature
23°C ± 1 deg C (Summer)

at the point of control:
21°C ± 1 deg C (Winter)

Cooling and Heating Capacities

System 1

Quick Choice Fiction (G13)
Cooling 14.0 kW total
Heating 20.0 kW

System 2

Adults Library (F2)
Cooling 20.0 kW total
Heating 30.0 kW

System 3

Adult Library/Learning Resources (F8)
Cooling 14.0 kW total
Heating 20.0 kW

System 4

Adult Library (F10)
*Heating 20.0 kW
*Heating only with provision for retrofit,
total cooling 14.0 kW.

Minimum number of HE type supply air
outlets per system would be:-

System 1 — 24
System 2 — 23
System 3 — 24
System 4 — 24



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Section 2

General description

We would supply deliver, install and commission 4 No. Hi-Velocity ducted systems, generally as detailed in manufacturer's literature. Each system would comprise a high velocity high pressure air handling unit incorporating a direct expansion refrigerant based heating/cooling coil, low pressure hot water heating coil fan and air filter. The air would be discharged via insulated and vapour sealed ductwork and 80 mm dia. flexible attenuators 3.5 m long, to ceiling, wall or floor outlets.

The outlets would discharge high velocity air to the treated areas. The high velocity creates a low pressure column which

induces the room air to provide a virtually draft free system with minimal temperature gradient.

The installation would be to Hi-Velocity's recommended specification and standard. The refrigeration and electrical installation would be in accordance with Section 3 "Installation Specification".

Each system would comprise a Hi-Velocity attenuated flexible return air duct to the plenum chamber on the air-handling unit, where fresh air would be introduced. The mixed air would then be filtered heated or cooled at the dictates of a remote temperature sensor and discharged via insulated and vapour sealed Hi-Velocity "snap lock" ductwork to the HE 3.5 metre attenuators and discharged at high velocity via the supply valves. In addition the system serving the Adult Library would

incorporate the existing attenuator.

In the Adult Library/Learning resources (F8), system reference 3, two separate temperature controlled zones would be available via on/off motorised dampers.

Systems 1, 2 and 3 would serve by a heat pump type inverter outdoor unit as manufactured by Messrs Diakin via a purpose made interface panel designed specifically for use with the Hi-Velocity system.

Interconnecting refrigerants and electrical services between the direct expansion coil and the outdoor unit would be in accordance with the equipment and installation specification—Section 3.

The systems would be installed generally as indicated on the drawings as scheduled.



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Section 3

Installation specification

Hi-Velocity Ventilation

General

All components for the air distribution system would be suitable for the air pressures and flow, with joints, supports and hangers in accordance with Hi-Velocity install literature. Operatives installing the systems would have attended a training course supervised by Cooling and Heating Sales Ltd.

Air Handling Unit

Each air handling unit would be Hi-Velocity model HE 101 capable of providing a maximum air flow of 519 l/sec @ 373 pa (external pressure) adjusted to match the specified capacities.

Distribution Ductwork

The distribution ductwork would be manufactured from galvanised sheet steel of the "Snap lock" type insulated and vapour sealed with patented Hi-Velocity insulation.

Outlets

Supply air outlets would be of the standard finish Hi-Velocity type HE either floor, wall, or ceiling mounted. The outlets would incorporate roughing boot and on/off air supply damper.

Attenuators

Supply air attenuators would be of the Hi-Velocity HE type 3.5 metres in length insulated and vapour sealed and constructed to a maximum rated pressure of 2.5 K pa.

The existing attenuator serving the Adult Library (F8) would be reused on the return

air to the Hi-Velocity unit serving the area. The remaining areas would incorporate flexible Hi-Velocity attenuators.

Controls

An Aprileair controller together with sensors would be supplied and installed for each system/zone. The controller would provide temperature control and incorporate a time switch.

Refrigeration System

Refrigerant Pipe work

All components used for refrigerant pipe work would be suitable for the refrigerant and lubricant concerned, and would be kept free of all contaminants.

Setting Out

Refrigerant pipe work would be run in concealed locations within the building, where possible. The refrigerant pipe work



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would be neatly clipped to cable tray or on approved clip hanging installation system.

Refrigerant pipe work would be so arranged as to avoid gas locking in liquid lines and liquid collection in gas lines. The pipe work would also be arranged so that any oil entrained in the refrigerant and not removed by any separator, will be carried through the system and back to the compressor.

Pipes

Refrigerant pipe work would be run in copper and would be of a refrigeration quality to BS 2871 Part 2.

All copper tube would be fully degreased and cleaned internally.

Pipe Joints

Joints in copper pipes would be brazed. Brazing would be carried out in

accordance with the HVCA Code of Practice – "Brazing and Bronze Welding of Copper Pipe and Sheet". Whilst brazing joints, the inside of the pipe would be flooded with nitrogen to prevent the formation of oxides.

Compression joints and screwed joints would not be used in refrigerant pipe work except at equipment accessories.

Pressure Testing

On completion and before operation, every refrigerant system would be proved tight by pressure testing.

Refrigerant—R410A

Leak tracing would be carried out only with dry nitrogen.

Charging

After testing and before charging, every refrigerant system would be thoroughly

evacuated and dehydrated using a purpose-designed vacuum pump, with all valves in the refrigerant pipe work open.

The charging line would be thoroughly cleaned and the correct quantity (by weight) of clean, dry refrigerant would be admitted.

Insulation

Gas and liquid line pipe work would be insulated using closed cell polymeric insulation such as Insultube by NMC Kenmore Ltd. or equivalent, fitted fully in accordance with the manufactures recommendations. The insulation would be class "O" fire rated.

Drain Lines

Condensate drain lines from the Hi-Velocity units would terminate in tundishes made available by others.



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Electrical

Wiring

All the inter-connecting electrical wiring between the air cooled outdoor units, evaporators and automatic controls of the air conditioning systems would be carried out in accordance with the latest edition of the I.E.E. Wiring Regulations, and relevant British Standard specification or Codes of Practice, except where specified to the contrary.

The electrical supplies scheduled below would be required terminating at isolators adjacent to the units:

1 No.	20amp	415v	50hz	3 phase	Outdoor unit
3 No.	32amp	230v	50hz	1 phase	Outdoor units
4 No.	16amp	230v	50hz	1 phase	Air handling units

Section 4

Warranty

The entire installation would be covered by a 12 months warranty including parts and labour. The foregoing is subject to proper care without misuse and the equipment being under a scheduled maintenance agreement.

Exclusions

The following items are excluded:

- a. Removal of existing equipment.
- b. Negotiations associated with planning approval and landlord's permission and English Heritage where applicable.
- c. Provision of scaffold or hoisting equipment.
- d. Builders work, structure alteration and redecoration.
- e. Mains electrical supplies.

Terms of Payment

50% with order remainder by progress application, payment to be made within 28 days of invoice date.

N.B. Any forms of retention or MCD are excluded unless arrangements are made with written confirmation to proceed.

Delivery

5/6 weeks from receipt of official order to proceed with full working drawings.

The installation period would be 30 working days (one pair of operatives).



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Section 5

Drawing schedule

DS/085035/M5

New ground floor heating, refrigerant and domestic water services

DS/085035/M7

Proposed ground floor ventilation layout

DS/085035/M8

Proposed first floor ventilation layout

DS/085035/M9

New roof area ventilation services

DS/085035/M10

Typical sections and detail layouts

DS/085035/M11

Ventilation, heating typical sections and detail layouts