HSF1	Issue 5a July 2001

Dalair LTD

British Made Ventilation and Air Conditioning Equipment

"A Commitment to Quality"

Certificate No. 890217

HSF RANGE
MODULAR AIR HANDLING UNITS

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Capacity

'HSF' range air handling units are available as standard in 40 different sizes covering air volumes from 0.50m³/s to 102m³/s.

This range of unit is adaptable and flexible in design to suit most ventilation and air conditioning applications. They are of modular construction and suitable for internal or external mounting.

Selection

Selection is generally dependant upon coil face velocities and the duties listed are based upon 2.0m/s and 2.5m/s for cooling coils, 3.0m/s and 3.5m/s for heating coils.

Flexibility

'HSF' range units are flexible in dimensional details to those stated in the tables. This gives the advantage of being able to design units to suit the most stringent space limitations and site conditions. Where this criteria exists details should always be forwarded to one of the Dalair design offices for selection.

Arrangements

The smaller units in this range can be supplied as single package units where all components are housed in a single frame.

Generally units are supplied in modular form offering flexibility in arrangements and ease of installation.

Component housing and section lengths vary and one or more components can be contained within one section.

The component lengths shown on selection tables are generally the maximum and are given for unit selection and planning guidance only.

Unit Framework

HSF range unit framework consists of a robust folded closed pentapost Zintec or Galvanised powder coated, insulated framework with push fit corners to form a perimeter frame.

We also offer a HSFL range of unit framework. This consists of a heavy gauge closed pentapost insulated framework with push fit corners to form a perimeter frame. This type of unit is for use on high pressure applications.

Both ranges can have welded framework upon request.

Casings are very sturdy and can withstand internal pressures in excess of 2500 Pascals.

Panels (Acoustic/Thermal)

Flush mounted cover panels are of the double skin, fully insulated construction with either Plastic coated or natural galvanised outer skins and natural galvanised inner skins.

Concealed stiffeners are fitted at 800mm centres to increase rigidity (Does not apply to foam filled panels).

The insulation sandwiched between the two skins is heavy 45kg/m³ density injected foam offering excellent thermal and acoustic properties.

Alternative types of insulation such as mineral wool can be used.

Access Panels

Access panels, with cam action quick release locks, are fitted to one side of all component sections where access and maintenance is necessary.

Hinged or lift off type access panels are available dependant upon site conditions.

Access panels close against a soft rubber heavy duty seal fitted to the unit framework.

Unit Support/Lifting Points

Units are supplied with channel/purlin base frames running longitudinally.

On large units channel/ purlin cross members are fitted transversely to provide additional support.

Base frames are equipped with four lifting points which should generally be used when hoisting units.

Section to Section Jointing

Normally the component sections are factory assembled on a common base frame. However if due to physical size, transportation or site access restrictions it is not possible to supply single section units, components can be supplied as separate sections with individual base sections for site assembly.

The multi-section modules of the unit are jointed by means of concealed, plated steel, bolted clamps for pentapost frameworks or bolted steel angles for hollow section frameworks.

Sealing strips between the individual sections ensure excellent air tightness.

Weatherproof Units

Fully weatherproofed versions of the HSF unit ranges are available.

Units would be provided with an apex or pitched roof of weather proof plastic coated construction.

Alternative Finishes

Dalair are able to offer alternative enclosure panel finishes to both the inside and outside of the air handling units.

These finishes include :-

- ***Natural galvanised sheet***
- ***Special acoustic finishes***
- ***Plastic coating onto galvanised sheet***
- ***Polyester coating onto galvanised sheet***
- ***Stainless steel in various grades***
- ***Aluminium of various finishes***

The above can be identical to both inner and outer unit skins or can be mixed where varying degrees of finish are required between inner and outer unit surfaces.

The standard would be plastic coated outer skins with natural galvanised inner skins.

Leakage Standards

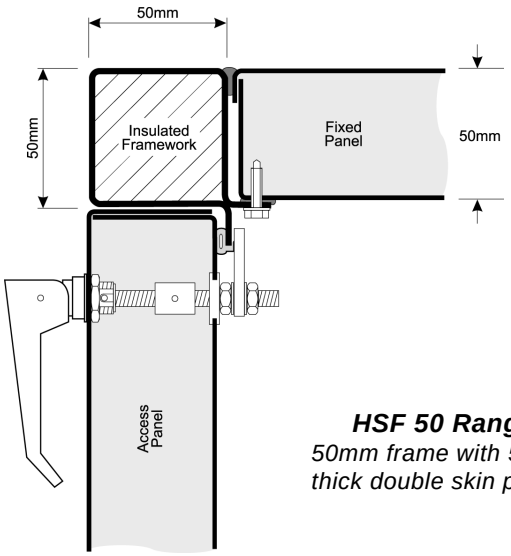
"HSF" Range units are suitable for Class A, B or C air leakage testing as defined by HVCA DW143 and DW144

"HSFL" Range units are suitable for Class A, B, C, D air leakage testing as defined by HVCA DW143 and DW 144.

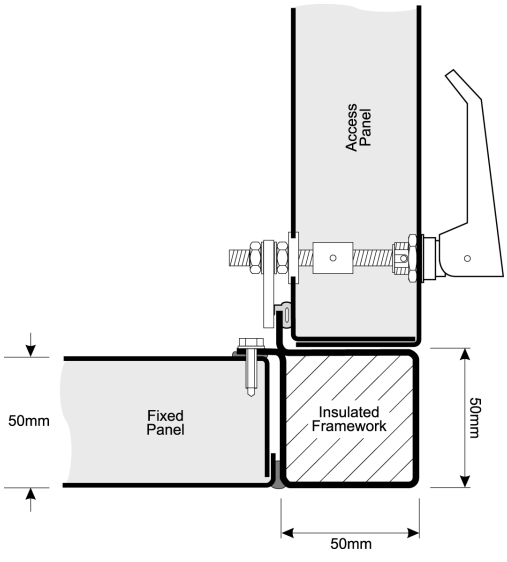
Unit Weights

To determine the approximate weight of an Air Handling Unit the following formula should be used:

Unit Surface Area x Factor 65Kg/m²



HSF 50 Range
50mm frame with 50mm thick double skin panels



HSFL 50 Range
50mm frame with 50mm thick double skin panels

Fans

Fan sections are generally fitted with double inlet, double width, centrifugal fans with either forward or backward curved impellors.

Belt driven fans are fitted as standard, although direct drive fans, axial fans and variable pitch in motion fans are also available.

Fan and motor assemblies are mounted on fabricated or rolled section base frame which is isolated from the unit casing by means of high efficiency spring or rubber anti-vibration mountings.

Flexible connections are fitted internally between the fan outlet and unit casing.

Options :-

- ***Anti spark track***
- ***Fan inlet and or outlet guards***
- ***Drive guards***
- ***Drain plug***
- ***Inspection cover to fan scroll***
- ***Anti corrosive finishes***

Motors

Unless otherwise specified motors would be of the single speed, 4 pole, foot mounted, totally enclosed fan cooled (TEFC) suitable for an electrical supply of 415 Volt, 3 Phase, 50 Hz and mounted within the airstream.

Motors are mounted on specially designed adjustable bases which facilitate easy tensioning of belts without misalignment.

Options :-

- ***Alternative electrical supplies***
- ***Run & stand-by facility***
- ***Two speed options***
- ***Motors out of the airstream***
- ***Motors wired to terminal boxes***
- ***Motors wired to isolators***
- ***Flameproof motors***
- ***Motors suitable for hazardous areas***
- ***Thermistors built into windings***
- ***Motors suitable for inverter control***
- ***Energy efficient motors***

Dampers

Dampers are constructed using either opposed or parallel action blades. They would be suitable for manual operation or supplied with an extended spindle for motorisation (motors normally supplied by others)

Options :-

- ***Aerofoil blades***
- ***Steel, aluminium or stainless steel***
- ***Edge or tip seals or both***
- ***Protective finishes***

Coils

Coils are constructed from seamless copper tubes expanded onto plate type fins to provide good mechanical and thermal bond and housed within a galvanised sheet steel casing.

All coils are inspected and subjected to an air under water pressure test prior to leaving the manufacturers works.

Coils are mounted within the unit upon slide rails for ease of removal if required.

Return bends and headers are fully encased within the unit and top/side baffle plates fitted to prevent air by pass.

Where coil connections penetrate the unit casing, neoprene seals and capping plates are fitted.

Cooling coils are fitted with a fixed drain tray extended under the return bends and headers and terminating with a BSP screwed connection for piping and trapping by others.

Options :-

- ***Plain tube frost coils***
- ***Varying fin spacing***
- ***Screwed or flanged connections***
- ***Aluminium, aluminium/polyester coated, copper,copper electro-tinned, steel or stainless steel fins.***
- ***Stainless, brass or copper coil casing***
- ***Removable drain trays***
- ***Moisture eliminators***
- ***Hospital “wash down” sections***
- ***Various tube and fin thickness***

Electric Heaters

Supplied with open or sheathed incoloy elements and arranged for thyristor or stepped control.

Electric heaters are either “stab-in” or “slide in cassette” type dependant upon application.

Options :-

- ***Heaters wired to terminal box***
- ***Heaters wired to local isolator***
- ***Flameproof construction***
- ***Suitable for hazardous locations***

Gas Fired Heaters

Supplied with either forced draught or atmospheric type burners with either mild steel, chrome or stainless steel heat exchangers.

Gas burners are fully automatic and meet all the relevant British Standards and Gas Safety Standards.

They are supplied with flame failure protection, overheat protection and gas train for connection by others.

For weatherproof units the gas burner, controls and gas train are mounted within a weatherproof housing.

Heaters are supplied as standard with on/off burners suitable for controlling by others.

Options :-

- ***Direct or indirect firing***
- ***High/low burner***
- ***Modulating or pulse control burner***
- ***On site commissioning***

Filters

A wide choice of filters to suit most applications can be supplied and incorporated into the unit.

Filters are selected to comply generally with the test methods specified with the enquiry e.g. Eurovent, Ashrae etc.

Filters are arranged for front or side withdrawal dependant upon unit size and filter efficiency.

Standard filter sizes are used wherever possible.

A loose, inclined gauge manometer is normally supplied with each filter bank for on site fixing by others.

Options :-

- ***Panel filters***
- ***Multi-pocket bag filters***
- ***Rigid pocket bag filters***
- ***Carbon filters in various grades***
- ***HEPA filters***
- ***Electrostatic filters***
- ***Magnahelic gauge***
- ***Pressure differential switch***

Humidification

Humidifier sections are supplied with either plastic coated steel or stainless steel linings.

A fixed drain tray is fitted within the humidifier section dependant upon the type of humidifier incorporated.

On weatherproof units and where the unit height permits, the humidifier is enclosed within a weatherproofed enclosure. Where unit heights are insufficient to incorporate humidifiers a separate housing can be supplied or alternative arrangements can be made by the client.

Options :-

- ***Direct steam injection***
- ***Electric self generating***
- ***Compressed air/water nozzles***
- ***Evaporative***
- ***Ultrasonic***
- ***Staged or proportional control***

Attenuators

Attenuators can be supplied as an integral part of the unit or as a loose item for duct mounting.

Splitters are generally 300mm thick. The in-fill is inert, non-hygroscopic and both vermin and rot proof; it does not support bacteriological growth and has a “Class 1” rating for surface spread of flames.

Bull nose fairings are fitted where applicable to reduce air pressure drop.

Options :-

- ***Unit mounted***
- ***Loose for duct mounting***
- ***Melinex lined***

Heat Recovery

The saving of energy is every design engineers responsibility and wherever possible should be considered as part of the system. Dalair offer several heat recovery devices which can be incorporated into the air handling unit where high proportions or all the exhaust air is required to be discharged to atmosphere.

Options :-

- ***Run around coils***
- ***Recuperators***
- ***Thermal heat wheels***
- ***Heat pipes***

CAPACITIES & UNIT SELECTION

MODEL REF.	UNIT W x H (mm)	No. Coils	COIL W x H (mm)	COIL AREA (m^2)	Volume m^3/s Coil Velocity m/s				FILTERS W x H
					2.0	2.5	3.0	3.5	
HSF 1	800 x 800	1	500 x 508	0.25	0.51	0.64	0.76	0.89	1.0 x 1.0
HSF 2	1100 x 800	1	750 x 508	0.38	0.76	0.95	1.14	1.33	1.5 x 1.0
HSF 3	1400 x 800	1	1050 x 508	0.53	1.07	1.33	1.60	1.87	2.0 x 1.0
HSF 4	1100 x 1100	1	750 x 812	0.60	1.22	1.52	1.83	2.13	1.5 x 1.5
HSF 5	1400 x 1100	1	1050 x 812	0.85	1.70	2.13	2.56	2.98	2.0 x 1.5
HSF 6	1700 x 1100	1	1300 x 812	1.05	2.11	2.64	3.17	3.69	2.5 x 1.5
HSF 7	2000 x 1100	1	1600 x 812	1.29	2.60	3.25	3.90	4.55	3.0 x 1.5
HSF 8	1400 x 1400	1	1050 x 1117	1.17	2.35	2.93	3.52	4.11	2.0 x 2.0
HSF 9	1700 x 1400	1	1300 x 1117	1.45	2.90	3.63	4.36	5.08	2.5 x 2.0
HSF 10	2000 x 1400	1	1600 x 1117	1.78	3.57	4.47	5.36	6.25	3.0 x 2.0
HSF 11	2300 x 1400	1	1900 x 1117	2.12	4.24	5.31	6.37	7.43	3.5 x 2.0
HSF 12	2600 x 1400	1	2200 x 1117	2.45	4.91	6.14	7.37	8.60	4.0 x 2.0
HSF 13	1700 x 1700	1	1300 x 1422	1.84	3.70	4.62	5.54	6.47	2.5 x 2.5
HSF 14	2000 x 1700	1	1600 x 1422	2.27	4.55	5.69	6.83	7.96	3.0 x 2.5
HSF 15	2300 x 1700	1	1900 x 1422	2.70	5.40	6.76	8.11	9.46	3.5 x 2.5
HSF 16	2600 x 1700	1	2200 x 1422	3.12	6.26	7.82	9.38	10.95	4.0 x 2.5
HSF 17	3200 x 1700	1	2800 x 1422	3.98	7.96	9.95	11.94	13.93	5.0 x 2.5
HSF 18	2000 x 2000	1	1600 x 1626	2.60	5.20	6.50	7.80	9.10	3.0 x 3.0
HSF 19	2300 x 2000	1	1900 x 1626	3.08	6.18	7.72	9.27	10.81	3.5 x 3.0
HSF 20	2600 x 2000	1	2200 x 1626	3.57	7.15	8.94	10.73	12.52	4.0 x 3.0
HSF 21	3200 x 2000	1	2800 x 1626	4.55	9.11	11.38	13.66	15.94	5.0 x 3.0
HSF 22	3800 x 2300	2	1600 x 1626	5.20	10.41	13.01	15.61	18.21	6.0 x 3.0
HSF 23	2300 x 2300	1	1900 x 1930	3.66	7.33	9.17	11.00	12.83	3.5 x 3.5
HSF 24	2600 x 2300	1	2200 x 1930	4.24	8.49	10.62	12.74	14.86	4.0 x 3.5
HSF 25	3200 x 2300	1	2800 x 1930	5.40	10.81	13.51	16.21	18.91	5.0 x 3.5
HSF 26	3800 x 2300	2	1600 x 1930	6.17	12.35	15.44	18.53	21.62	6.0 x 3.5
HSF 27	2600 x 2600	1	2200 x 2287	5.03	10.08	12.58	15.09	17.61	4.0 x 4.0
HSF 28	3200 x 2600	1	2800 x 2287	6.40	12.81	16.01	19.21	22.41	5.0 x 4.0
HSF 29	3800 x 2600	2	1600 x 2287	7.31	14.64	18.30	21.95	25.61	6.0 x 4.0
HSF 30	3200 x 3200	2	1300 x 2845	7.39	14.79	18.49	22.19	25.89	5.0 x 5.0
HSF 31	3800 x 3200	2	1600 x 2845	9.10	18.21	22.76	27.31	31.86	6.0 x 5.0
HSF 32	4400 x 3200	2	1900 x 2845	10.81	21.62	28.03	32.43	37.84	7.0 x 5.0
HSF 33	5000 x 3200	2	2200 x 2845	12.51	25.04	31.30	37.55	43.81	8.0 x 5.0
HSF 34	3800 x 3800	4	1600 x 1626	10.40	20.81	26.02	31.22	36.42	6.0 x 6.0
HSF 35	5000 x 3800	4	2200 x 1626	14.30	28.62	35.77	42.93	50.08	8.0 x 6.0
HSF 36	5600 x 3800	4	2500 x 1626	16.26	32.52	40.65	48.78	56.90	9.0 x 6.0
HSF 37	6300 x 3800	4	2800 x 1626	18.21	36.42	45.53	54.63	63.74	10.0 x 6.0
HSF 38	7500 x 3800	6	2200 x 1626	21.46	42.93	53.66	64.39	75.12	12.0 x 6.0
HSF 39	8700 x 3800	6	2500 x 1626	24.39	48.78	60.98	73.17	85.37	14.0 x 6.0
HSF 40	10600 x 3800	8	2250 x 1626	29.26	58.54	73.17	87.80	102.44	17.0 x 6.0

NOTES

The above details are subject to change without prior notice and serve as a guide only. Dalair's sales or applications department will be pleased to carry out an accurate selection and provide technical data.

Models stated are from our standard range of units, all of which can be dimensionally modified to suit space limitations or access restrictions. For non-standard units please contact our applications department.

Width and height dimensions shown exclude any items such as pitched roof, base frames or other projections for equipment or components that may be fitted to the unit.

The acoustic requirement for a silencer is determined from the system sound analysis. Selection is made from the appropriate silencer attenuation chart and must give the required attenuation or more in all octave bands. The air velocity through the silencer affects the pressure loss and noise regeneration. To prevent noise regeneration above the background level (as a guide only) do not exceed the maximum velocity stated in the table opposite.

NR50 do not exceed 15m/s in silencer airway
NR40 do not exceed 12m/s in silencer airway
NR35 do not exceed 10m/s in silencer airway
NR30 do not exceed 8m/s in silencer airway
NR25 do not exceed 6m/s in silencer airway
NR20 do not exceed 4m/s in silencer airway

Noise Criteria	Background noise levels (dB) at band centre frequencies (Hz)							
	63	125	250	500	1K	2K	4K	8K
NC70	83	79	75	72	71	70	69	68
NC65	80	75	71	68	66	64	63	62
NC60	77	71	67	63	61	59	58	57
NC55	74	67	62	58	56	54	53	52
NC50	71	64	58	54	51	49	48	47
NC45	67	60	54	49	46	44	43	42
NC40	64	57	50	45	41	39	38	37
NC35	60	52	45	40	36	34	33	32
NC30	5	48	41	35	31	29	28	27
NC25	54	44	37	31	27	24	22	21
NC20	51	40	33	26	22	19	17	16
NC15	47	36	29	22	17	14	12	11

Noise Req't	Background noise levels (dB) at band centre frequencies (Hz)							
	63	125	250	500	1K	2K	4K	8K
NR70	91	83	77	73	70	68	66	64
NR65	87	78	72	68	65	62	61	59
NR60	83	74	68	63	60	57	55	54
NR55	79	70	63	58	55	52	50	49
NR50	75	65	59	53	50	47	45	43
NR45	71	61	54	48	45	42	40	38
NR40	67	57	49	44	40	37	35	33
NR35	63	52	45	39	35	32	30	28
NR30	59	48	40	34	30	27	25	23
NR25	55	44	35	26	25	22	20	18
NR20	51	39	31	24	20	17	14	13
NR15	47	35	26	19	15	12	9	7

Typical noise level requirements

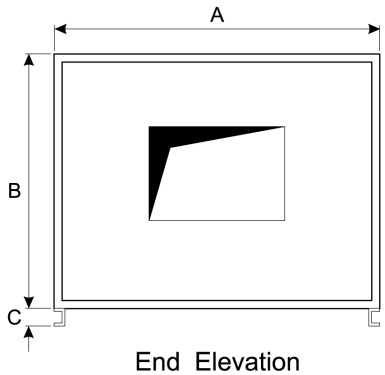
NR Criteria	NC Criteria	Environment
NR55	NC55 - 65	Factories (Heavy Engineering)
NR50	NC45 - 55	Factories (Light Engineering)
NR45	NC40 - 50	Kitchens, Laundries, Computer rooms, Cafeteria, Canteens, Swimming Pools.
NR40	NC35 - 40	Toilets, Receptions, Halls, Offices, Nightclubs, Large Restaurants, Department Stores, Gymnasiums, Laboratories.
NR35	NC30 - 35	Hospital wards, Museums, Libraries, Small Restaurants, Bars, Small Shops, Banks, Court Rooms.
NR30	NC25 - 30	Operating Theatres, Cinemas, Multipurpose Halls, Hotel Bedrooms, Conference & Lecture rooms (25-30 people)
NR25	NC20 - 25	Live Theatres (Upto 500 seats), Large Conference rooms (50+ people), Television Studios.
NR20	NC15 -20	Concert Halls, Opera Halls, Live Theatres (Above 500 seats), Sound Reproduction Studios.

Silencer quick selection guide, lengths in mm (Allow 100mm airways)

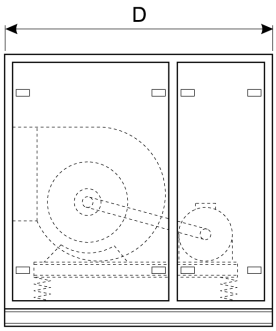
NC Criteria	Static Pressure (Pa)				
	375	750	1000	1250	1500
NR45	900	900	1200	1200	1500
NR40	900	1200	1500	1800	2100
NR35	1200	1500	1800	2100	2400
NR30	1800	2100	2100	2400	2400

NOTE: To be used as a quick selection guide only, for a full acoustic analysis contact Dalair Limited.
Secondary silencers may be required for NR30 or lower noise level.

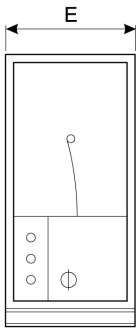
HSF RANGE DIMENSIONS (mm)



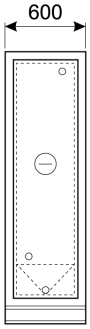
End Elevation
(All sections)



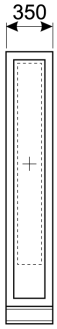
Fan Section



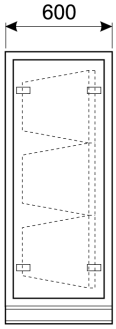
Electric
Self Generating
Humidifier



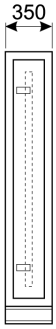
Cooling
Coil



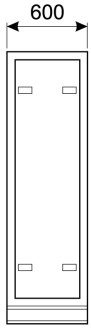
Heating
Coil



Bag
Filter



Panel
Filter

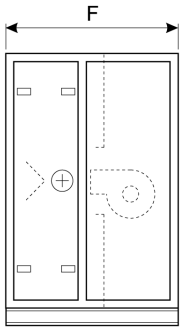


Access
Section

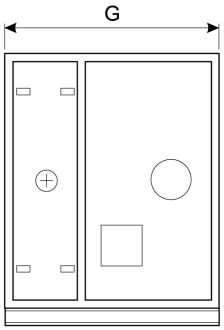
Unit Reference		HSF 1	HSF 2	HSF 3	HSF 4	HSF 5	HSF 6	HSF 7	HSF 8	HSF 9	HSF 10
Unit Dimensions											
A Width		800	1100	1400	1100	1400	1700	2000	1400	1700	2000
B Height		800	800	800	1100	1100	1100	1100	1400	1400	1400
C Base Height		125	125	125	125	125	125	125	125	125	125
Component Lengths											
D Fan Selection		1000	1300	1300	1300	1300	1500	1500	1300	1500	1500
E Electric Humidifier		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
F Direct Gas Heater[Note 1]		2200	2200	2400	2400	2400	2600	2600	2400	2600	2600
G Indirect Gas Heater		1300	1300	1300	1300	1300	1600	1600	1300	1600	1600
Mixing Boxes[Note 2]											
H Type 1	min	500	500	500	500	500	500	500	500	500	600
	max	1500	1900	2300	1900	2100	2600	3100	2300	2600	3100
J Type 2	min	500	500	500	500	500	500	500	500	500	500
	max	1500	1900	2300	1900	2100	2600	3100	2300	2600	3100
K Type 3	min	900	900	900	900	900	900	1000	800	900	1100
	max	2200	2800	3500	2800	3500	4100	4800	3500	4100	4800
L Type 4	min	1100	1200	1300	1200	1300	1500	1600	1400	1500	1600
	max	1600	2000	2400	2000	2400	2700	3200	2400	2700	3200

NOTES
1. A minimum of 1300mm access is required downstream of a direct gas heater prior to any further components.
2. Due to numerous configuration options, typical maximum and minimum mixing box lengths are given.
   The minimum mixing box length is based on an internal unit with dampers fitted on the face of the section.
   Access to the recirculation damper is assumed to be available from adjacent sections.

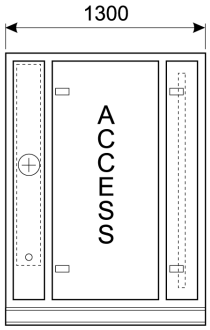
HSF RANGE DIMENSIONS (mm)



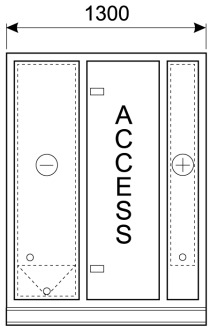
Direct Gas Fired Heater



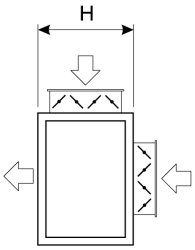
Indirect Gas Fired Heater



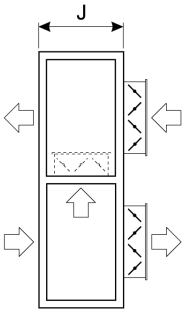
Dual Section (D1) Filter/Access/Heater or Cooler



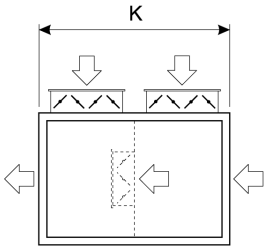
Dual Section (D2) Heater/Access/Cooler



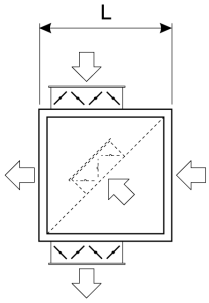
Mixing Box Type 1 (Elevation or Plan)



Mixing Box Type 2 (Elevation or Plan)



Mixing Box Type 3 (Elevation or Plan)

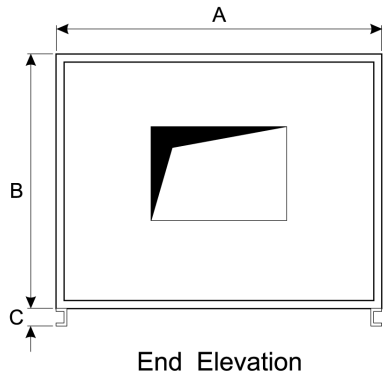


Mixing Box Type 4 (Plan)

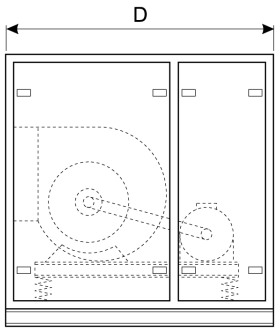
Unit Reference		HSF 11	HSF 12	HSF 13	HSF 14	HSF 15	HSF 16	HSF 17	HSF 18	HSF 19	HSF 20
Unit Dimensions											
A Width		2300	2600	1700	2000	2300	2600	3200	2000	2300	2600
B Height		1400	1400	1700	1700	1700	1700	1700	2000	2000	2000
C Base Height		125	125	125	125	125	125	125	125	125	125
Component Lengths											
D Fan Selection		1500	1500	2000	2000	2000	2000	2000	2000	2000	2000
E Electric Humidifier		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
F Direct Gas Heater[Note 1]		2600	2600	2600	2600	2600	2600	2600	2600	2600	2600
G Indirect Gas Heater		1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Mixing Boxes[Note 2]											
H Type 1	min	600	700	500	600	500	700	800	600	600	700
	max	3500	3900	2600	3100	2100	3900	4800	2900	3300	3700
J Type 2	min	500	500	500	500	500	500	600	500	500	500
	max	3500	3900	2600	3100	2100	3900	4800	2900	3300	3700
K Type 3	min	1200	1300	900	1100	900	1400	1600	1100	1200	1300
	max	5600	6300	4100	4800	3500	6300	7800	4600	5300	6000
L Type 4	min	1700	1900	1500	1600	1300	1900	2200	1600	1700	1900
	max	3600	4000	2700	3200	2400	4000	4900	3000	3400	3800

NOTES Air velocities are limited to 5.0m/s through the air intake and exhaust dampers, and 7.5m/s through the recirculation damper. The maximum mixing box length is based on an external unit with dampers fitted within the section and access provided. Air velocities are limited to 2.5m/s through the air intake, 3.5m/s through the exhaust outlet and 7.5m/s through the recirculation damper.

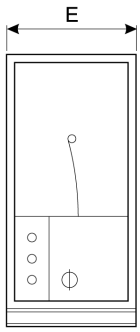
HSF RANGE DIMENSIONS (mm)



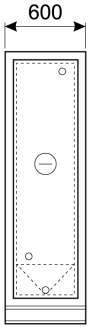
End Elevation
(All sections)



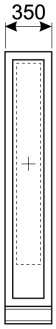
Fan Section



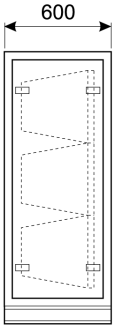
Electric
Self Generating
Humidifier



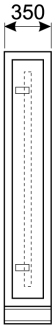
Cooling
Coil



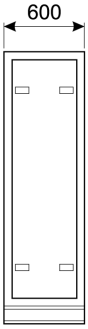
Heating
Coil



Bag
Filter



Panel
Filter



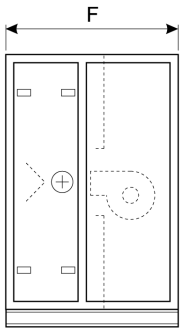
Access
Section

Unit Reference		HSF 21	HSF 22	HSF 23	HSF 24	HSF 25	HSF 26	HSF 27	HSF 28	HSF 29	HSF 30
Unit Dimensions											
A Width		3200	3800	2300	2600	3200	3800	2600	3200	3800	3200
B Height		2000	2000	2300	2300	2300	2300	2600	2600	2600	3200
C Base Height		150	150	125	125	150	150	150	150	150	150
Component Lengths											
D Fan Selection		2000	2000	2000	2500	2500	2500	2500	3000	3000	3000
E Electric Humidifier		1000	1000	1000	1000	1000	1000	1000	1000	1300	1000
F Direct Gas Heater[Note 1]		2000	2600	2600	2600	2600	2600	2600	2600	2600	2600
G Indirect Gas Heater		1600	1600	1600	1600	2400	2400	2400	2400	2400	2400
Mixing Boxes[Note 2]											
H Type 1	min	800	900	600	700	800	900	700	900	900	800
	max	4500	5100	3400	3800	4600	5100	3900	4700	5300	4400
J Type 2	min	600	700	500	500	600	700	500	600	700	600
	max	4500	5100	3400	3800	4600	5100	3900	4700	5300	4400
K Type 3	min	1600	1800	1200	1300	1600	1800	1400	1700	1800	1600
	max	7400	8300	5300	6000	7400	8000	6200	7600	8600	7100
L Type 4	min	2100	2300	1800	1900	2200	2300	1900	2200	2400	2800
	max	4700	5200	3500	3900	4700	5200	4000	4800	5400	4700

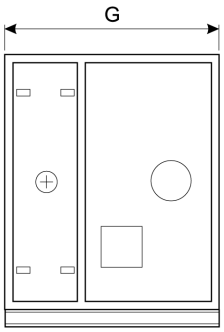
NOTES

1. A minimum of 1300mm access is required downstream of a direct gas heater prior to any further components.
2. Due to numerous configuration options, typical maximum and minimum mixing box lengths are given.
   The minimum mixing box length is based on an internal unit with dampers fitted on the face of the section.
   Access to the recirculation damper is assumed to be available from adjacent sections.

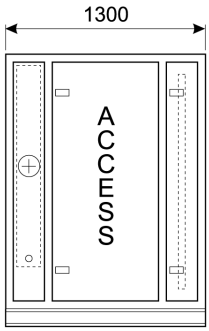
HSF RANGE DIMENSIONS (mm)



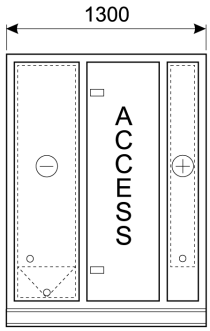
Direct Gas Fired Heater



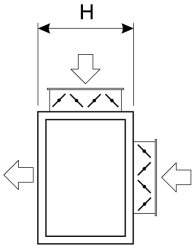
Indirect Gas Fired Heater



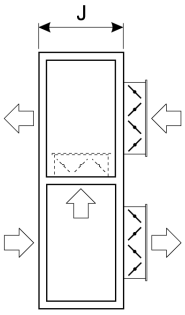
Dual Section (D1) Filter/Access/Heater or Cooler



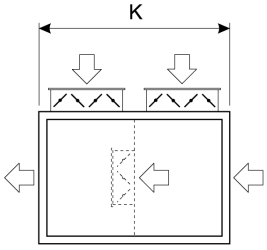
Dual Section (D2) Heater/Access/Cooler



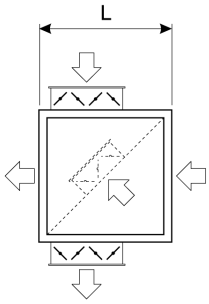
Mixing Box Type 1 (Elevation or Plan)



Mixing Box Type 2 (Elevation or Plan)



Mixing Box Type 3 (Elevation or Plan)



Mixing Box Type 4 (Plan)

Unit Reference		HSF 31	HSF 32	HSF 33	HSF 34	HSF 35	HSF 36	HSF 37	HSF 38	HSF 39	HSF 40
Unit Dimensions											
A Width		3800	4400	5000	3800	5000	5600	6300	7500	8700	10600
B Height		3200	3200	3200	3800	3800	3800	3800	3800	3800	3800
C Base Height		150	200	200	200	250	250	250	250	250	250
Component Lengths											
D Fan Selection		3000	3000	3500	3500	3500	3500	3500	3500	3500	3500
E Electric Humidifier		1300	1300	1300	1300	1300	1300	1300	1500	1500	1500
F Direct Gas Heater[Note 1]		2600	2600	2600	2600	2600	2600	2600	2600	2600	2600
G Indirect Gas Heater		2400	2400	2400	2400	2400	2400	2400	2400	2400	2400
Mixing Boxes[Note 2]											
H Type 1	min	900	1100	1200	900	1200	1300	1400	1700	1900	2200
	max	5200	6000	6800	5000	6500	7300	8100	9400	10600	12500
J Type 2	min	700	800	900	700	800	800	1000	1200	1300	1500
	max	5200	6000	6800	5000	6500	7300	8100	9400	10600	12500
K Type 3	min	1800	2100	2400	1800	2300	2600	2800	3300	3700	4400
	max	8500	9900	11300	8100	10800	12600	13400	15700	17700	21000
L Type 4	min	3100	3400	3700	3000	3500	3800	4100	4600	5600	5700
	max	5500	6400	7300	6000	6900	7700	8500	9900	11100	13100

NOTES Air velocities are limited to 5.0m/s through the air intake and exhaust dampers, and 7.5m/s through the recirculation damper. The maximum mixing box length is based on an external unit with dampers fitted within the section and access provided. Air velocities are limited to 2.5m/s through the air intake, 3.5m/s through the exhaust outlet and 7.5m/s through the recirculation damper.

Wednesbury Head Office

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