D1 to D6 Mini Direct Range

Features & Benefits

- Performance range up to 2.25m³/s
- Motor Insulation Class B minimum
- Standard Thermal Overload Protection (S.T.O.P.)
- Anodised Aluminium pentapost frame
- Double skinned panels
- Compact direct drive units
- Internal standard
- Optional external unit
- 1 Year Guarantee

Mini Direct Drive Units

Direct Drive Air Handling Units with neat and compact design. Access can be on the left or right hand side (to be specified at time of ordering).

Mini Direct Drive Unit - Duties from 0.05m³/s to 2.25m³/s

A compact and economical range of units with directly driven centrifugal fans. There are six standard unit sizes. All the fans are speed controllable for added flexibility and incorporate Standard Thermal Overload Protection (S.T.O.P.). The standard unit consists of a rigid inlet connector, 100mm EU4 panel filter, l.p.h.w. or electric heater, direct drive centrifugal fan and rigid outlet connector.

Suitable for internal mounting as standard. Models suitable for external mounting with optional roof canopy, inlet weather cowl and plastic coated panels (colour BS10A05) ar available to order.

Specification

Direct Drive Fans have forward curved centrifugal impellers factory matched to an external rotor motor and statically and dynamically balanced to ISO 1940 as a complete assembly. The external rotor motors have sealed for life ball bearings. They incorporate Standard Thermal Overload Protection (S.T.O.P.) and are fully speed controllable. Insulation is class B and the enclosure IP44 to DIN 40050 with the electrical design corresponding to DIN IEC 38. Motors are suitable for ambient temperatures of up to 40°C and atmospheres up to 95% R.H.

Flexible Connectors

The Flexible Connectors are manufactured from Revertex JPT 20 with ductmate flanges to DW142.

Panel Filters

Panel Filters are manufactured from fire retardant synthetic material with galvanised steel frames. The filter grade is EU4 to Eurovent 4/5.

L.P.H.W. Heater Batteries

L.P.H.W. Heater Batteries are constructed from copper tube, mechanically bonded to aluminium fins with the complete assembly housed in a galvanised steel casing. The coil headers and return bends are totally enclosed within the air handling unit casing. Flow and return connections are located on the same side of the unit and have male B.S.P. thread. L.P.H.W. Heater Batteries are pressure tested under water to 250 p.s.i.

Electric Heater Batteries

Electric Heater Battery elements are constructed from Nichrome 5 spiral resistance wire surrounded by magnesium oxide powder and sheathed in stainless steel. The elements are carried on a galvanised steel frame. All electric heaters incorporate a thermal cut out device. Electrical connections are via a flush mounted terminal box on the outside of the air handling unit casing.

Typical performance for standard unit with panel filter, heater and fan section

Unit Size	0	25	50	75	100	125	150	200	250	300	350	400
D1-A	0.2	0.19	0.18	0.17	0.159	0.148	0.137	0.113	0.088	0.059	-	-
D1-B	0.262	0.258	0.254	0.249	0.244	0.238	0.231	0.215	0.19	0.158	0.116	-
D2-B	0.486	0.478	0.466	0.455	0.442	0.426	0.41	0.37	0.322	0.264	0.188	-
D3-C	0.5	0.48	0.46	0.437	0.412	0.383	0.351	0.279	0.184	-	-	-
D3-D	0.635	0.617	0.597	0.578	0.554	0.526	0.494	0.411	0.286	0.1	-	-
D4-D	0.686	0.671	0.653	0.633	0.612	0.587	0.56	0.481	0.351	0.106	-	-
D4-E	0.873	0.848	0.822	0.79	0.76	0.73	0.695	0.622	0.526	0.405	0.2	-
D5-E	0.965	0.938	0.91	0.88	0.848	0.816	0.78	0.7	0.6	0.468	-	-
D5-G	-	-	-	-	1.21	1.181	1.15	1.088	1.01	0.923	0.797	0.582
D5-H	1.392	1.366	1.34	1.311	1.285	1.257	1.23	1.17	1.1	1.02	0.925	0.755
D6-G	-	-	-	-	-	-	1.21	1.155	1.08	0.99	0.88	0.675
D6-H	1.484	1.45	1.425	1.4	1.395	1.335	1.3	1.245	1.175	1.1	1	0.88
D6-J	2.25	2.2	2.16	2.13	2.08	2	1.98	1.86	1.75	1.61	1.4	0.94

Fan & Motor Data

Unit Size	Speed RPM	Motor kW	FLC Amps	SC Amps	Supply V/Hz/Ph	Speed Controller
D1-A	1700	0.175	0.77	4.4	230/50/1	SPM 5020 / RTRE 20
D1-B	2050	0.3	1.31	6	230/50/1	SPM 5020 / RTRE 20
D2-B	2150	0.35 x 2	1.45 x 2	6 x 2	230/50/1	SPM 5035 / RTRE 35
D3-C	1150	0.44	1.85	7.5	230/50/1	SPM 5035 / RTRE 35
D3-D	1100	0.7	3.05	13	230/50/1	SPM 5035
D4-D	1100	0.7	3.05	13	230/50/1	SPM 5035
D4-E	1100	1.02	4.8	24	230/50/1	SPM 5060 / RTRE 60
D5-E	1100	1.02	4.8	24	230/50/1	SPM 5060 / RTRE 60
D5-G	1120	1.52	7.1	28	230/50/1	SPM 5090 / RTRE 9
D5-H	1185	2	3.7	20	400/50/3	RDTK70
D6-G	1120	1.52	7.1	28	230/50/1	SPM 5090 /RTRE 9
D6-H	1185	2	3.7	20	400/50/3	RDTK70
D6-J	1185	2.0 x 2	3.7 x 2	20 x 2	400/50/3	RD14

Note: Other types of speed controllers are available as are D.O.L. starters and electric heater controllers.

Performance data for standard 1 and 2 row LPHW heaters at 82°C flow 71°C return

Unit	Air on	Leaving Air temp °C @ m³/sec @Pa															
Size	Temp	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	1.2	1.4	1.6	1.8	2	2.4
D1 1 Row	-5°C	21.5	17.5	14.5	-	-	-	-	-	-	-	-	-	-	-	-	-
	0°C	25	21	18	-	-	-	-	-	-	-	-	-	-	-	-	-
D1 2 Row	-5°C	33.5	28.5	24	-	-	-	-	-	-	-	-	-	-	-	-	-
	0°C	36	31.5	27	-	-	-	-	-	-	-	-	-	-	-	-	-
D2 1 Row	-5°C	24	20.5	17.5	15	12.5	-	-	-	-	-	-	-	-	-	-	-
	0°C	27	23.5	21	18.5	16.5	-	-	-	-	-	-	-	-	-	-	-
D2 2 Row	-5°C	N/A	35	31.5	28	N/A	-	-	-	-	-	-	-	-	-	-	-
	0°C	N/A	37.5	34	30.5	27.5	-	-	-	-	-	-	-	-	-	-	-
D3 1 Row	-5°C	27.5	23.5	21.5	19.5	17.5	16	-	-	-	-	-	-	-	-	-	-
	0°C	30	26.5	24.5	22.5	21	19.5	-	-	-	-	-	-	-	-	-	-
D3 2 Row	-5°C	N/A	37	34	31.5	29	27	-	-	-	-	-	-	-	-	-	-
	0°C	N/A	39.5	36.5	34	32	29.5	-	-	-	-	-	-	-	-	-	-
D4 1 Row	-5°C	27.5	24	22	20	19	17.5	16	15	13.5	12.5	-	-	-	-	-	-
	0°C	30.5	27	25	23.5	22	21	19.5	18.5	17.5	16	-	-	-	-	-	-
D4 2 Row	-5°C	N/A	39.5	37	35	33	31	29.5	27.5	25.5	24	-	-	-	-	-	-
	0°C	N/A	N/A	39.5	37.5	35.5	34	32	30.5	28.5	27	-	-	-	-	-	-
D5 1 Row	-5°C	-	-	-	-	23	22	21	20.5	19.5	18.5	17	15.5	-	-	-	-
	0°C	-	-	-	-	26.5	25.5	24.5	23.5	23	22	20.5	19	-	-	-	-
D5 2 Row	-5°C	-	-	-	-	36.5	35	34	33	31.5	30.5	28.5	26.5	-	-	-	-
	0°C	-	-	-	-	39	37.5	36.5	35.5	34.5	33.5	31.5	29.5	-	-	-	-
D6 1 Row	-5°C	-	-	-	-	24	23	22.5	21.5	21	20	19	18	16.5	15.5	14.5	12.5
	0°C	-	-	-	-	27	26.5	25.5	25	24	23.5	22.5	21.5	20	19	18	16
D6 2 Row	-5°C	-	-	-	-	39.5	38.5	37.5	36.5	35.5	34.5	33	31.5	30	28.5	27	25.5
	0°C	-	-	-	-	-	-	39.5	39	38	37	35.5	34	32.5	31	29.5	27

Single Phase - Electric Heater

kW	1 Step Heater	2 Step Heater	3 Step Heater	4 Step Heater	5 Step Heater	6 Step Heater
0.5	Yes	-	-	-	-	-
0.75	Yes	-	-	-	-	-
1	Yes	Yes	-	-	-	-
1.5	Yes	Yes	Yes	-	-	-
2	Yes	Yes	-	Yes	-	-
2.5	Yes	-	-	-	-	-
3	Yes	Yes	Yes	Yes	-	-
4	Yes	Yes	-	Yes	-	-
4.5	Yes	-	Yes	-	-	-
5	Yes	Yes	-	-	Yes	-
6	Yes	Yes	Yes	Yes	-	Yes
7.5	Yes	-	Yes	-	Yes	-
8	Yes	Yes	-	Yes	-	-
9	Yes	-	Yes	-	-	Yes
10	Yes	Yes	-	Yes	Yes	-
12	Yes	Yes	Yes	Yes	-	Yes

Three Phase - Electric Heater

kW	1 Step Heater	2 Step Heater	3 Step Heater	4 Step Heater	5 Step Heater	6 Step Heater
3	Yes	Yes	-	-	-	-
4.5	Yes	Yes	Yes	-	-	-
6	Yes	Yes	-	Yes	-	-
7.5	Yes	-	-	-	-	-
9	Yes	Yes	Yes	Yes	-	-
12	Yes	Yes	-	Yes	-	-
13.5	Yes	-	Yes	-	-	Yes
15	Yes	Yes	-	-	Yes	-
18	Yes	Yes	Yes	Yes	-	Yes
22.5	Yes	-	Yes	-	Yes	-
24	Yes	Yes	-	Yes	-	-
27	Yes	Yes	Yes	-	-	Yes
30	Yes	-	-	Yes	Yes	-

Sound power levels dBW re 10^{-12}W (at full speed)

The dBA quoted is the mean A weighted sound pressure level measured at a distance of 3m with spherical sound level propagation. It is included for comparative purposes only and the mean sound level experienced will depend on the area being served.

Unit		Octave band mid frequency Hz								dBA
Size		63	125	250	500	1k	2k	4k	8k	@ 3m
D1-A	Outlet	79	77	69	63	64	63	59	55	51
	Breakout	71	69	53	33	30	30	26	22	34
D1-B	Outlet	89	87	79	73	74	73	69	65	61
	Breakout	81	79	63	43	44	40	36	32	44
D2-B	Outlet	92	89	82	76	77	76	72	68	63
	Breakout	84	82	66	46	47	43	39	35	47
D3-C	Outlet	85	82	73	71	70	67	64	64	55
	Breakout	77	74	57	41	40	34	31	31	38
D3-D	Outlet	87	85	77	75	73	70	67	66	57
	Breakout	79	77	61	45	43	37	34	33	40
D4-D	Outlet	87	85	77	75	73	70	67	66	57
	Breakout	79	77	61	45	43	37	34	33	40
D4-E	Outlet	83	81	78	78	75	70	68	60	60
	Breakout	77	75	62	48	45	37	35	29	41
D5-E	Outlet	83	81	78	78	75	70	68	60	60
	Breakout	77	75	62	48	45	37	35	29	41
D5-G	Outlet	90	86	82	79	75	71	69	62	61
	Breakout	84	80	66	49	45	38	36	31	45
D5-H	Outlet	88	86	84	82	78	74	72	64	64
	Breakout	82	80	68	52	48	41	39	33	50
D6-G	Outlet	90	86	82	79	75	71	69	62	61
	Breakout	84	80	66	49	45	38	36	31	45
D6-H	Outlet	88	86	84	82	78	74	72	64	64
	Breakout	82	80	68	52	48	41	39	33	50
D6-J	Outlet	91	89	87	85	81	77	75	67	67
	Breakout	85	83	71	53	51	44	42	36	53

Insertion loss for standard silencers

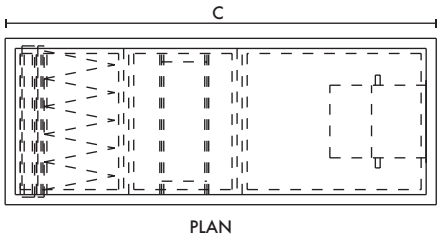
Unit	Octave band mid frequency Hz								Length
Size	63	125	250	500	1k	2k	4k	8k	mm
D1	-4	-6	-12	-20	-27	-27	-20	-16	600
D2	-5	-9	-17	-28	-37	-37	-29	-24	900
D3	-5	-9	-17	-28	-37	-37	-29	-24	900
D4	-5	-9	-17	-28	-37	-37	-29	-24	900
D5	-5	-9	-17	-28	-37	-37	-29	-24	900
D6	-5	-9	-17	-28	-37	-37	-29	-24	900

N.B. For data on other silencer lengths please enquire

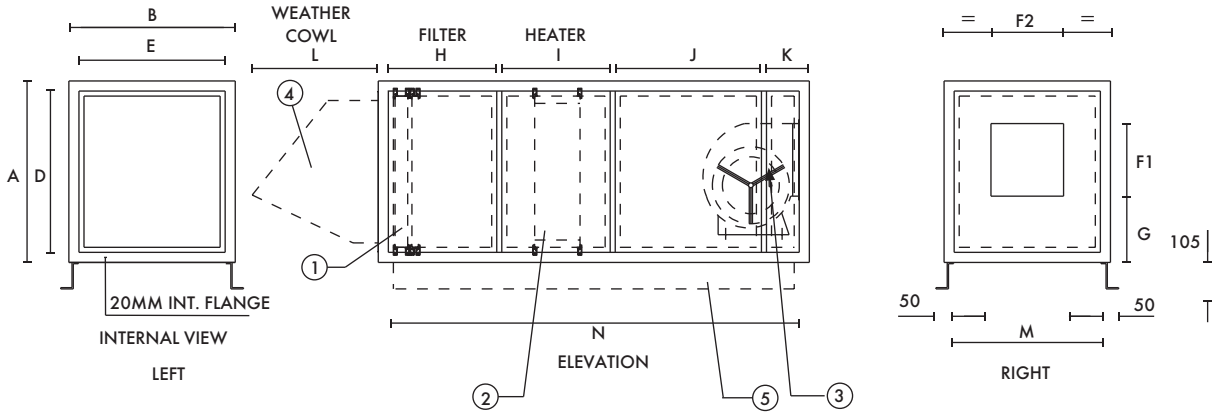
Direct Drive Units

Unit Size	Maximum Electric Heater Size
D1	10.0kW
D2	15.0kW
D3	24.0kW
D4 to D6	30.0kW

Fan Dimensions (mm)



No.	Description
1	100mm Panel Filter (50mm to be fitted with Bag Filter)
2	305 Bag Filter
3	LPHW Heater (1, 2 or 3 row) or Electric Heater Battery
4	Fan
5	Weather Cowl
6	105mm Base (Aluminium)

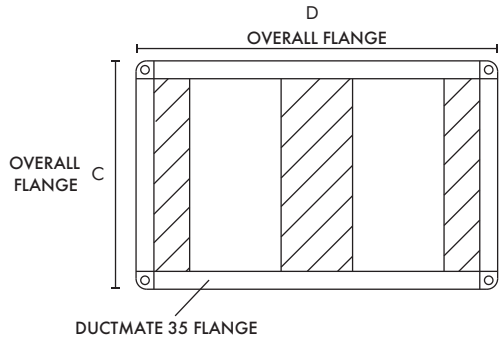


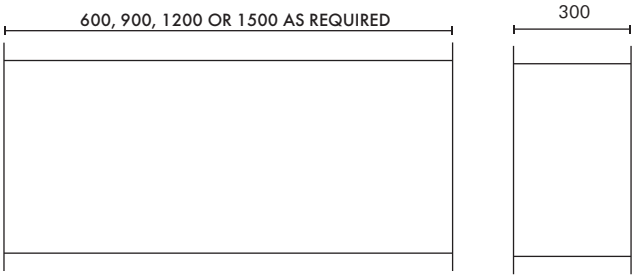
Unit Size	A	B	C	D	E	F1	F2	G	H	I	J	K	L*	M*	N*
D1-A	360	660	1560	280	580	102	168	172	580	430	280	130	200	625	1440
D1-B	360	660	1560	280	580	102	232	172	580	430	280	130	200	625	1440
D2-B	420	660	1560	340	580	232	204	93	580	430	280	130	250	625	1440
D3-C	520	660	1560	440	580	146	287	281	580	430	280	130	300	625	1440
D3-D	520	660	1560	440	580	146	287	281	580	430	280	130	300	625	1440
D4-D	720	660	1560	640	580	146	287	432	580	430	280	130	500	625	1440
D4-E	720	660	1710	640	580	160	365	456	580	430	430	130	500	625	1590
D5-E	720	960	1710	640	880	160	365	456	580	430	430	130	500	925	1590
D5-G	720	960	1710	640	880	188	365	435	580	430	430	130	500	925	1590
D5-H	720	960	1710	640	880	188	365	435	580	430	430	130	500	925	1590
D6-G	720	1260	1710	640	1180	188	365	435	580	430	430	130	500	1225	1590
D6-H	720	1260	1710	640	1180	188	365	435	580	430	430	130	500	1225	1590
D6-J	720	1260	1710	640	1180	188	730	435	580	430	430	130	500	1225	1590

*Dimension relates to weather proof unit

Accessories Dimensions (mm)

Standard silencer (single skinned)



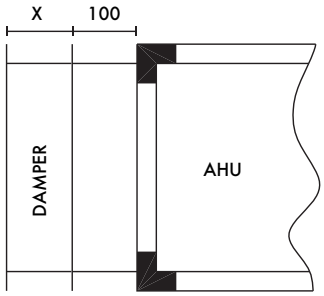


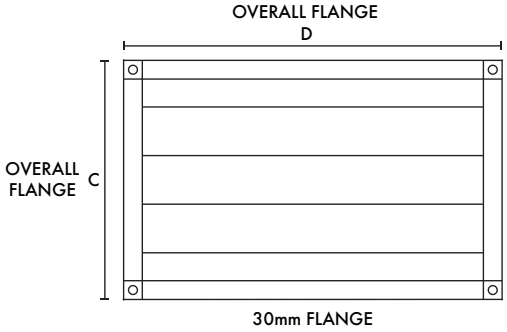
Outlet Diffusers for Connection to Silencer

This item is essential when connecting a silencer directly to the discharge side of a fan section. The flanges at either end match the AHU and silencer dimension.

Unit Size	Diffuser Stock Ref	Dimensions (mm) C	D	Approx Wgt kg
D1	54BC1	360	660	18
D2	54BC2	420	660	21
D3	54BC3	520	660	32
D4	54BC4	720	660	40
D5	54BC5	720	960	46
D6	54BC6	720	1260	50

Inlet Damper





Dampers are supplied with extended spindles suitable for motorisation as standard. When using a damper, a rigid connector will be required.

Unit Size	Inlet Damper Stock Ref.	Rigid Connector Stock Ref	Flexible Connector Stock Ref.	Dimensions (mm) C	D	X	Approx Wgt kg
D1	57CD-66	54MC1	68FC-1	360	660	165	6
D2	57CD-2	54MC2	68FC-2	420	660	165	6.5
D3	57CD-3	54MC3	68FC-3	520	660	165	7
D4	57CD-4	54MC4	68FC-4	720	660	165	9
D5	57CD-5	54MC5	68FC-5	720	960	165	12
D6	57CD-6	54MC6	68FC-6	720	1260	165	25

Standard length silencer resistance (Pa)

Unit Size	Pressure Drop (Pa) Air Volume m^3/sec 0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	1.2	1.4	1.6	1.8	2	2.4
D1	2	8	18	-	-	-	-	-	-	-	-	-	-	-	-	-
D2	1.5	5	12	20	31	-	-	-	-	-	-	-	-	-	-	-
D3	1	4	8	14	21	31	41	54	-	-	-	-	-	-	-	-
D4	1	2	4	7	10	15	20	26	32	40	58	-	-	-	-	-
D5	1	1	2	4	5	7	10	13	16	20	29	39	51	65	80	-
D6	1	1	2	2	3	5	6	8	10	12	18	24	31	29	48	70