



Heat Recovery MVRH Units (Apartments) – Technical Submittal

Project: Angel Meadows, Plots 2 & 3
Project No: MC1120
TSM No: MC1120/TSM012
Revision: As Fitted
Date: 2nd March 2022

Notes:

- 1) With updated calculations appended

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Building Services Engineering

Heat Recovery Units (Apartment MVHRs) Technical Submittal

Project Angel Meadows, Plots 2 & 3
Project No. MC1120
Tech Submittal No. MC1120/TSM012
Revision As Fitted
Date 02/03/2022



Apt. Type	Plot	Qty.	Location	Manufacturer	Model	Handing	Order Code	Height (mm)	Width (mm)	Depth (mm)	Full Weight (kg)	Efficiency (%)	Supply (l/s)	Extract (l/s)	Purge (l/s)	Pres. Drop (Pa)	Efficiency (%) ²
1A	2	19	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	R	438222	630	775	524	24	94	15.6	29.0	28.0	87.0	94
1C	2	19	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	L	438222L	630	775	524	24	94	15.0	29.0	20.0	104.0	94
2A	2	19	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	R	438222	630	775	524	24	94	22.2	37.0	33.0	150.0	94
2B	2	19	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	R	438222	630	775	524	24	94	21.3	37.0	28.0	153.0	94
2C	2	76	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	L	438222L	630	775	524	24	94	22.4	37.0	13.0	125.0	94
2G	2	19	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	L	438222L	630	775	524	24	94	21.0	37.0	28.0	146.0	94
2H	2	19	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	L	438222L	630	775	524	24	94	21.6	37.0	33.0	141.0	94
2J	2	1	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	R	438222	630	775	524	24	94	20.1	37.0	N/A	113.0	94
2K	2	1	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	R	438222	630	775	524	24	94	23.0	37.0	N/A	147.0	94
2L	2	1	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	L	438222L	630	775	524	24	94	19.7	37.0	N/A	113.0	94
2M	2	1	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	R	438222	630	775	524	24	94	22.5	37.0	N/A	139.0	94
3B	2	2	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	L	438222L	630	775	524	24	94	30.0	45.0	N/A	174.0	94
PH1	2	1	Utility Cupboard	Vent-Axia	Sentinel Kinetic High Flow	R	408449	630	775	524	24	94	32.1	45.0	N/A	155.0	94
PH2	2	1	Utility Cupboard	Vent-Axia	Sentinel Kinetic High Flow	L	408451	630	775	524	24	94	38.7	45.0	N/A	152.0	94
PH3	2	1	Utility Cupboard	Vent-Axia	Sentinel Kinetic High Flow	R	408449	630	775	524	24	94	38.7	45.0	N/A	161.0	94
PH4	2	1	Utility Cupboard	Vent-Axia	Sentinel Kinetic High Flow	L	408451	630	775	524	24	94	34.2	45.0	N/A	150.0	94
1B	3	14	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	R	438222	630	775	524	24	94	16.7	29.0	4.0	88.0	94
1D	3	14	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	L	438222L	630	775	524	24	94	15.4	29.0	N/A	113.0	94
2C	3	14	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	L	438222L	630	775	524	24	94	22.4	37.0	13.0	125.0	94
2D	3	14	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	R	438222	630	775	524	24	94	24.8	37.0	11.0	134.0	94
3A	3	14	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	R	438222	630	775	524	24	94	26.7	37.0	14.0	129.0	94
3D	3	14	Utility Cupboard	Vent-Axia	Lo-Carbon Sentinel Kinetic Plus B	L	438222L	630	775	524	24	94	26.3	37.0	14.0	127.0	94
PH5	3	1	Utility Cupboard	Vent-Axia	Sentinel Kinetic High Flow	R	408449	630	775	524	24	94	45.1	45.0	N/A	257.0	94
PH6	3	1	Utility Cupboard	Vent-Axia	Sentinel Kinetic High Flow	R	408449	630	775	524	24	94	39.5	45.0	N/A	205.0	94

Notes:

1) Units to operate on trickle speed, with boost/purge setting activated by WC lights & wall mounted Boost Switch



MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 1A	na	na	na	15.6	29
Total				15.6	29

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	29	-	-	-	-	10.000
Adapter	1	29	-	3.84	-	-	3.840
204 x 60 Flat Duct	0.7	29	2.5	2.2	3.75	-	1.540
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	1	29	2.5	2.2	3.75	-	2.200
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	4.8	29	2.5	2.2	3.75	-	10.560
204 x 60 - Ø125 Adaptor	1	29	2.5	3.84	3.75	-	3.840
Ø125 Flexible Duct	0.5	29	2.5	0.7	3.75	-	0.350
Ø125 Flexible Duct	0.5	29	2.5	0.7	3.75	-	0.350
204 x 60 - Ø125 Adaptor	1	29	2.5	3.84	3.75	-	3.840
204 x 60 Flat Duct	0.25	29	2.5	2.2	3.75	-	0.550
204 x 60 B90	1	29	2.5	7.46	3.75	-	7.460
204 x 60 Flat Duct	2.5	21	1.7	1.3	1.73	-	3.250
Horizontal T Piece	1	21	1.7	-	1.73	1	1.734
204 x 60 Flat Duct	5.7	8	0.8	0.43	0.38	-	2.451
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	-	-	-	15.000
							72.535
							20%
							87





MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 1B	na	na	na	16.7	29
Total				16.7	29

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	29	-	-	-	-	10.000
Adapter	1	29	-	3.84	-	-	3.840
204 x 60 Flat Duct	1.7	29	2.5	2.2	3.75	-	3.740
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	1	29	2.5	2.2	3.75	-	2.200
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	3.5	29	2.5	2.2	3.75	-	7.700
204 x 60 - Ø125 Adaptor	1	29	2.5	3.84	3.75	-	3.840
Ø125 Flexible Duct	0.5	29	2.5	0.7	3.75	-	0.350
Ø125 Flexible Duct	0.5	29	2.5	0.7	3.75	-	0.350
204 x 60 - Ø125 Adaptor	1	29	2.5	3.84	3.75	-	3.840
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	1.1	29	2.5	2.2	3.75	-	2.420
Horizontal T Piece	1	29	2.5	-	3.75	1	3.750
204 x 60 Flat Duct	2.6	21	1.7	1.3	1.73	-	3.380
Horizontal T Piece	1	21	1.7	-	1.73	1	1.734
204 x 60 Flat Duct	5.2	8	0.8	0.43	0.38	-	2.236
204 x 60 B45	1	8	0.8	0.8	0.38	-	0.800
204 x 60 Flat Duct	0.4	8	0.8	0.43	0.38	-	0.172
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	-	-	-	15.000
							73.632
						20%	88



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MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 1C	na	na	na	15.0	29
Total				15.0	29

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	29	-	-	-	-	10.000
Adapter	1	29	-	3.84	-	-	3.840
204 x 60 Flat Duct	0.67	29	2.5	2.2	3.75	-	1.474
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	0.35	29	2.5	2.2	3.75	-	0.770
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	5.1	29	2.5	2.2	3.75	-	11.220
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	3.5	29	2.5	2.2	3.75	-	7.700
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	2.4	29	2.5	2.2	3.75	-	5.280
204 x 60 - Ø125 Adaptor	1	29	2.5	3.84	3.75	-	3.840
Ø125 Flexible Duct	0.5	29	2.5	0.7	3.75	-	0.350
Ø125 Flexible Duct	0.5	29	2.5	0.7	3.75	-	0.350
204 x 60 - Ø125 Adaptor	1	29	2.5	3.84	3.75	-	3.840
204 x 60 Flat Duct	0.8	29	2.5	2.2	3.75	-	1.760
204 x 60 B45	1	21	1.7	1.1	1.73	-	1.100
204 x 60 Flat Duct	0.35	21	1.7	1.3	1.73	-	0.455
204 x 60 B45	1	21	1.7	1.1	1.73	-	1.100
204 x 60 Flat Duct	2.6	21	1.7	1.3	1.73	-	3.380
Horizontal T-Piece	1	21	1.7	-	1.73	1	1.734
204 x 60 Flat Duct	5.2	8	0.8	0.43	0.38	-	2.236
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	-	-	-	15.000
							86.419
						20%	104





MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 1D	na	na	na	15.4	29
Total				15.4	29

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	29	-	-	-	-	10.000
Adapter	1	29	-	3.84	-	-	3.840
204 x 60 Flat Duct	0.6	29	2.5	2.2	3.75	-	1.320
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	0.4	29	2.5	2.2	3.75	-	0.880
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	3.9	29	2.5	2.2	3.75	-	8.580
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	2.4	29	2.5	2.2	3.75	-	5.280
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	3.2	29	2.5	2.2	3.75	-	7.040
204 x 60 B90	1	29	2.5	7.46	3.75	-	7.460
204 x 60 Flat Duct	0.5	29	2.5	2.2	3.75	-	1.100
204 x 60 - Ø125 Adaptor	1	29	2.5	3.84	3.75	-	3.840
Ø125 Flexible Duct	0.5	29	2.5	0.7	3.75	-	0.350
Ø125 Flexible Duct	0.5	29	2.5	0.7	3.75	-	0.350
204 x 60 - Ø125 Adaptor	1	29	2.5	3.84	3.75	-	3.840
204 x 60 Flat Duct	1.2	29	2.5	2.2	3.75	-	2.640
204 x 60 B90	1	21	1.7	4	1.73	-	4.000
204 x 60 Flat Duct	2.8	21	1.7	1.3	1.73	-	3.640
Horizontal T Piece	1	21	1.7	-	1.73	1	1.734
204 x 60 Flat Duct	5	8	0.8	0.43	0.38	-	2.150
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	-	-	-	15.000
							94.034
							20% 113





MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 2A	na	na	na	22.2	37
Total				22.2	37

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	z	Total Pressure drop (pa)
Extract Louvre	1	37	-	-	-	-	10.000
Adapter	1	37	-	3.84	-	-	3.840
204 x 60 Flat Duct	2.1	37	3.2	4.7	6.14	-	9.870
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.7	37	3.2	4.7	6.14	-	3.290
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.7	37	3.2	4.7	6.14	-	3.290
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.4	37	3.2	4.7	6.14	-	1.880
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	3.4	37	3.2	4.7	6.14	-	15.980
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.2	37	3.2	4.7	6.14	-	0.940
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
204 x 60 Flat Duct	0.75	37	3.2	4.7	6.14	-	3.525
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.3	37	3.2	4.7	6.14	-	1.410
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.75	29	2.5	2.2	3.75	-	1.650
204 x 60 Flat Duct	0.85	16	1.5	1.3	1.35	-	1.105
Horizontal T Piece	1	16	1.5	-	1.35	1	1.350
204 x 60 Flat Duct	2.5	8	0.8	0.43	0.38	-	1.075
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	0.3	8	0.8	0.43	0.38	-	0.129
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	0.45	8	0.8	0.43	0.38	-	0.194
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	-	-	-	15.000
							125.138
							20%
							150





MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 2B	na	na	na	21.3	37
Total				21.3	37

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	37	-	-	-	-	10.000
Adapter	1	37	-	3.84	-	-	3.840
204 x 60 Flat Duct	2.6	37	3.2	4.7	6.14	-	12.220
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.45	37	3.2	4.7	6.14	-	2.115
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	1.3	37	3.2	4.7	6.14	-	6.110
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.43	37	3.2	4.7	6.14	-	2.021
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	3	37	3.2	4.7	6.14	-	14.100
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.2	37	3.2	4.7	6.14	-	0.940
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
204 x 60 Flat Duct	0.75	37	3.2	4.7	6.14	-	3.525
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.3	37	3.2	4.7	6.14	-	1.410
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.75	29	2.5	2.2	3.75	-	1.650
204 x 60 Flat Duct	0.75	16	1.5	1.3	1.35	-	0.975
Horizontal T Piece	1	16	1.5	-	1.35	1	1.350
204 x 60 Flat Duct	3	8	0.8	0.43	0.38	-	1.290
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	0.4	8	0.8	0.43	0.38	-	0.172
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							127.328
							20% 153





MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 2C	na	na	na	22.4	37
Total				22.4	37

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	37	-	-	-	-	10.000
Adapter	1	37	-	3.84	-	-	3.840
204 x 60 Flat Duct	0.9	37	3.2	4.7	6.14	-	4.230
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	1.4	37	3.2	4.7	6.14	-	6.580
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	3.7	37	3.2	4.7	6.14	-	17.390
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.2	37	3.2	4.7	6.14	-	0.940
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
204 x 60 Flat Duct	0.7	37	3.2	4.7	6.14	-	3.290
Horizontal T Piece	1	37	3.2	-	6.14	1	6.144
204 x 60 Flat Duct	0.6	29	2.5	2.2	3.75	-	1.320
Horizontal T Piece	1	29	2.5	-	3.75	1	3.750
204 x 60 Flat Duct	0.8	21	1.7	1.3	1.73	-	1.040
204 x 60 Flat Duct	1.9	13	1.2	0.7	0.86	-	1.330
Ø125 Flexible Duct	0.5	13	1.2	0.3	0.86	-	0.150
Extract Valve	1	13	1.2	0.3	0.86	-	15.000
							104.224
						20%	125



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MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 2D	na	na	na	24.8	37
Total				24.8	37

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	z	Total Pressure drop (pa)
Extract Louvre	1	37	-	-	-	-	10.000
Adapter	1	37	-	3.84	-	-	3.840
204 x 60 Flat Duct	0.4	37	3.2	4.7	6.14	-	1.880
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.6	37	3.2	4.7	6.14	-	2.820
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	2.9	37	3.2	4.7	6.14	-	13.630
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	2.7	37	3.2	4.7	6.14	-	12.690
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	2	37	3.2	4.7	6.14	-	9.400
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
204 x 60 Flat Duct	0.3	37	3.2	4.7	6.14	-	1.410
Horizontal T Piece	1	37	3.2	-	6.14	1	6.144
204 x 60 Flat Duct	1.2	16	1.5	1.3	1.35	-	1.560
Horizontal T Piece	1	16	1.5	-	1.35	1	1.350
204 x 60 Flat Duct	2	8	0.8	0.43	0.38	-	0.860
204 x 60 B90	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	1.1	8	0.8	0.43	0.38	-	0.473
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							111.397
							20% 134





MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 2G	na	na	na	21.0	37
Total				21.0	37

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	Σ	Total Pressure drop (pa)
Extract Louvre	1	37	-	-	-	-	10.000
Adapter	1	37	-	3.84	-	-	3.840
204 x 60 Flat Duct	1.6	37	3.2	4.7	6.14	-	7.520
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	1.6	37	3.2	4.7	6.14	-	7.520
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.9	37	3.2	4.7	6.14	-	4.230
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.35	37	3.2	4.7	6.14	-	1.645
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	2.9	37	3.2	4.7	6.14	-	13.630
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.2	37	3.2	4.7	6.14	-	0.940
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.2	37	3.2	4.7	6.14	-	0.940
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
204 x 60 Flat Duct	0.9	37	3.2	4.7	6.14	-	4.230
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	0.7	29	2.5	2.2	3.75	-	1.540
204 x 60 B45	1	29	2.5	2.71	3.75	-	2.710
204 x 60 Flat Duct	0.6	29	2.5	2.2	3.75	-	1.320
Horizontal T Piece	1	16	1.5	-	1.35	1	1.350
204 x 60 Flat Duct	3.3	8	0.8	0.43	0.38	-	1.419
204 x 60 B90	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	0.3	8	0.8	0.43	0.38	-	0.129
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							121.333
							20% 146





MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 2H	na	na	na	21.6	37
Total				21.6	37

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	z	Total Pressure drop (pa)
Extract Louvre	1	37	-	-	-	-	10.000
Adapter	1	37	-	3.84	-	-	3.840
204 x 60 Flat Duct	0.76	37	3.2	4.7	6.14	-	3.572
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.9	37	3.2	4.7	6.14	-	4.230
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.5	37	3.2	4.7	6.14	-	2.350
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.7	37	3.2	4.7	6.14	-	3.290
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	4	37	3.2	4.7	6.14	-	18.800
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.1	37	3.2	4.7	6.14	-	0.470
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
204 x 60 Flat Duct	1.5	37	3.2	4.7	6.14	-	7.050
Horizontal T Piece	1	29	2.5	-	3.75	1	3.750
204 x 60 Flat Duct	1.2	21	1.7	1.3	1.73	-	1.560
Horizontal T Piece	1	21	1.7	-	1.73	1	1.734
204 x 60 Flat Duct	3.3	8	0.8	0.43	0.38	-	1.419
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	0.2	8	0.8	0.43	0.38	-	0.086
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	0.5	8	0.8	0.43	0.38	-	0.215
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							117.656
						20%	141





MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 2J	na	na	na	20.1	37
Total				20.1	37

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	Σ	Total Pressure drop (pa)
Extract Louvre	1	37	-	-	-	-	10.000
Adapter	1	37	-	3.84	-	-	3.840
204 x 60 Flat Duct	5.1	37	3.2	4.7	6.14	-	23.970
204 x 60 B90	1	37	3.2	12.85	6.14	-	12.850
204 x 60 Flat Duct	0.2	37	3.2	4.7	6.14	-	0.940
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
204 x 60 Flat Duct	0.2	37	3.2	4.7	6.14	-	0.940
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.2	37	3.2	4.7	6.14	-	0.940
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.4	37	3.2	4.7	6.14	-	1.880
204 x 60 Flat Duct	0.75	29	2.5	2.2	3.75	-	1.650
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	0.3	8	0.8	0.43	0.38	-	0.129
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	2	8	0.8	0.43	0.38	-	0.860
204 x 60 B90	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	0.5	8	0.8	0.43	0.38	-	0.215
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							93.834
							20%
							113



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MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 2K	na	na	na	23.0	37
Total				23.0	37

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	37	-	-	-	-	10.000
Adapter	1	37	-	3.84	-	-	3.840
204 x 60 Flat Duct	2	37	3.2	4.7	6.14	-	9.400
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.35	37	3.2	4.7	6.14	-	1.645
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.6	37	3.2	4.7	6.14	-	2.820
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.3	37	3.2	4.7	6.14	-	1.410
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	2	37	3.2	4.7	6.14	-	9.400
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.3	37	3.2	4.7	6.14	-	1.410
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	1.4	37	3.2	4.7	6.14	-	6.580
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
204 x 60 Flat Duct	0.9	37	3.2	4.7	6.14	-	4.230
Horizontal T Piece	1	37	3.2	-	6.14	1	6.144
204 x 60 Flat Duct	0.85	29	2.5	2.2	3.75	-	1.870
204 x 60 B90	1	16	1.5	2.19	1.35	-	2.190
204 x 60 Flat Duct	3.1	16	1.5	1.3	1.35	-	4.030
204 x 60 Flat Duct	3.1	8	0.8	0.43	0.38	-	1.333
204 x 60 B90	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	0.3	8	0.8	0.43	0.38	-	0.129
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							122.091
						20%	147





MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 2L	na	na	na	19.7	37
Total				19.7	37

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	37	-	-	-	-	10.000
Adapter	1	37	-	3.84	-	-	3.840
204 x 60 Flat Duct	1	37	3.2	4.7	6.14	-	4.700
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	1	37	3.2	4.7	6.14	-	4.700
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	2.5	37	3.2	4.7	6.14	-	11.750
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.1	37	3.2	4.7	6.14	-	0.470
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
204 x 60 Flat Duct	0.7	37	3.2	4.7	6.14	-	3.290
Horizontal T Piece	1	29	2.5	-	3.75	1	3.750
204 x 60 Flat Duct	1.2	13	1.2	0.7	0.86	-	0.840
204 x 60 B90	1	13	1.2	1.57	0.86	-	1.570
204 x 60 Flat Duct	3	13	1.2	0.7	0.86	-	2.100
204 x 60 B90	1	13	1.2	1.57	0.86	-	1.570
204 x 60 Flat Duct	0.8	13	1.2	0.7	0.86	-	0.560
204 x 60 B45	1	13	1.2	0.47	0.86	-	0.470
204 x 60 Flat Duct	0.2	13	1.2	0.7	0.86	-	0.140
Ø125 Flexible Duct	0.5	13	1.2	0.7	0.86	-	0.350
Extract Valve	1	13	1.2	0.7	0.86	-	15.000
							94.320
							20%
							113



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MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 2M	na	na	na	22.5	37
Total				22.5	37

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	37	-	-	-	-	10.000
Adapter	1	37	-	3.84	-	-	3.840
204 x 60 Flat Duct	1.1	37	3.2	4.7	6.14	-	5.170
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.4	37	3.2	4.7	6.14	-	1.880
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	1.3	37	3.2	4.7	6.14	-	6.110
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.3	37	3.2	4.7	6.14	-	1.410
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	2.8	37	3.2	4.7	6.14	-	13.160
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.2	37	3.2	4.7	6.14	-	0.940
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.7	37	3.2	4.7	6.14	-	3.290
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
204 x 60 Flat Duct	1.1	37	3.2	4.7	6.14	-	5.170
Horizontal T Piece	1	29	2.5	-	3.75	1	3.750
204 x 60 Flat Duct	1.7	21	1.7	1.3	1.73	-	2.210
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	0.3	8	0.8	0.43	0.38	-	0.129
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	6.4	8	0.8	0.43	0.38	-	2.752
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	0.25	8	0.8	0.43	0.38	-	0.108
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	0.25	8	0.8	0.43	0.38	-	0.108
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							115.916
							20%
							139



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MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 3A	na	na	na	26.7	37
Total				26.7	37

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	37	-	-	-	-	10.000
Adapter	1	37	-	3.84	-	-	3.840
204 x 60 Flat Duct	1.7	37	3.2	4.7	6.14	-	7.990
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.5	37	3.2	4.7	6.14	-	2.350
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	1.3	37	3.2	4.7	6.14	-	6.110
204 x 60 B90	1	37	3.2	12.85	6.14	-	12.850
204 x 60 Flat Duct	3.5	37	3.2	4.7	6.14	-	16.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
204 x 60 Flat Duct	0.6	37	3.2	4.7	6.14	-	2.820
Horizontal T Piece	1	37	3.2	-	6.14	1	6.144
204 x 60 Flat Duct	0.8	21	1.7	1.3	1.73	-	1.040
Horizontal T Piece	1	21	1.7	-	1.73	1	1.734
204 x 60 Flat Duct	2	8	0.8	0.43	0.38	-	0.860
204 x 60 B90	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	0.4	8	0.8	0.43	0.38	-	0.172
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							107.380
						20%	129





MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 3B	na	na	na	30.0	45
Total				30.0	45

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	45	-	-	-	-	10.000
Adapter	1	45	-	3.84	-	-	3.840
204 x 60 Flat Duct	5.4	45	4	6.89	9.60	-	37.206
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	0.8	45	4	6.89	9.60	-	5.512
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	1.4	45	4	6.89	9.60	-	9.646
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
204 x 60 Flat Duct	0.15	45	4	6.89	9.60	-	1.034
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	0.15	45	4	6.89	9.60	-	1.034
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	1.1	45	4	6.89	9.60	-	7.579
Horizontal T Piece	1	45	4	-	9.60	1	9.600
204 x 60 Flat Duct	0.8	29	2.5	2.2	3.75	-	1.760
204 x 60 Flat Duct	1.2	8	0.8	0.43	0.38	1	0.461
204 x 60 B90	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	0.4	8	0.8	0.43	0.38	-	0.172
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							144.843
							20%
							174



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MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Apartment Type 3D	na	na	na	26.3	37
Total				26.3	37

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	z	Total Pressure drop (pa)
Extract Louvre	1	37	-	-	-	-	10.000
Adapter	1	37	-	3.84	-	-	3.840
204 x 60 Flat Duct	1.3	37	3.2	4.7	6.14	-	6.110
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	0.6	37	3.2	4.7	6.14	-	2.820
204 x 60 B45	1	37	3.2	5.16	6.14	-	5.160
204 x 60 Flat Duct	6.8	37	3.2	4.7	6.14	-	31.960
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
Ø125 Flexible Duct	0.5	37	3.2	0.9	6.14	-	0.450
204 x 60 - Ø125 Adaptor	1	37	3.2	3.84	6.14	-	3.840
204 x 60 Flat Duct	0.8	37	3.2	4.7	6.14	-	3.760
Horizontal T Piece	1	37	3.2	-	6.14	1	6.144
204 x 60 Flat Duct	0.8	29	2.5	2.2	3.75	-	1.760
204 x 60 Flat Duct	0.8	21	1.7	1.3	1.73	-	1.040
Horizontal T Piece	1	21	1.7	-	1.73	1	1.734
204 x 60 Flat Duct	2.4	8	0.8	0.43	0.38	-	1.032
204 x 60 B90	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	0.6	8	0.8	0.43	0.38	-	0.258
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							105.478
						20%	127



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MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Penthouse Type PH1	na	na	na	32.1	45
Total				32.1	45

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	z	Total Pressure drop (pa)
Extract Louvre	1	45	-	-	-	-	10.000
Adapter	1	45	-	3.84	-	-	3.840
204 x 60 Flat Duct	1.2	45	4	6.89	9.60	-	8.268
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	4.8	45	4	6.89	9.60	-	33.072
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	0.5	45	4	6.89	9.60	-	3.445
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
204 x 60 Flat Duct	0.5	45	4	6.89	9.60	-	3.445
Horizontal T Piece	1	45	4	-	9.60	1	9.600
204 x 60 Flat Duct	4.7	24	1.9	2.1	2.17	-	9.870
204 x 60 Flat Duct	1.4	16	1.5	1.3	1.35	-	1.820
Horizontal T Piece	1	16	1.5	-	1.35	1	1.350
204 x 60 Flat Duct	0.9	8	0.8	0.43	0.38	-	0.387
204 x 60 B45	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	3.7	8	0.8	0.43	0.38	-	1.591
204 x 60 B45	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	2.1	8	0.8	0.43	0.38	-	0.903
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							129,561
							20%
							155



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MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Penthouse Type PH2	na	na	na	38.7	45
Total				38.7	45

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	z	Total Pressure drop (pa)
Extract Louvre	1	45	-	-	-	-	10.000
Adapter	1	45	-	3.84	-	-	3.840
204 x 60 Flat Duct	3.6	45	4	6.89	9.60	-	24.804
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	1.5	45	4	6.89	9.60	-	10.335
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	0.8	45	4	6.89	9.60	-	5.512
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
204 x 60 Flat Duct	0.56	45	4	6.89	9.60	-	3.858
Horizontal T Piece	1	45	4	-	9.60	1	9.600
204 x 60 Flat Duct	2.8	24	1.9	2.1	2.17	-	5.880
204 x 60 Flat Duct	5.7	16	1.5	1.3	1.35	-	7.410
Horizontal T Piece	1	16	1.5	-	1.35	1	1.350
204 x 60 Flat Duct	0.8	8	0.8	0.43	0.38	-	0.344
204 x 60 B45	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	3.6	8	0.8	0.43	0.38	-	1.548
204 x 60 B45	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	1.4	8	0.8	0.43	0.38	-	0.602
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							127.053
							20%
							152



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MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Penthouse Type PH3	na	na	na	38.7	45
Total				38.7	45

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	45	-	-	-	-	10.000
Adapter	1	45	-	3.84	-	-	3.840
204 x 60 Flat Duct	1.5	45	4	6.89	9.60	-	10.335
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	4.8	45	4	6.89	9.60	-	33.072
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	0.7	45	4	6.89	9.60	-	4.823
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
204 x 60 Flat Duct	0.4	45	4	6.89	9.60	-	2.756
Horizontal T Piece	1	45	4	-	9.60	1	9.600
204 x 60 Flat Duct	3.7	24	1.9	2.1	2.17	-	7.770
204 x 60 Flat Duct	4.3	16	1.5	1.3	1.35	-	5.590
Horizontal T Piece	1	16	1.5	-	1.35	1	1.350
204 x 60 Flat Duct	1	8	0.8	0.43	0.38	-	0.430
204 x 60 B45	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	3.4	8	0.8	0.43	0.38	-	1.462
204 x 60 B45	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	2	8	0.8	0.43	0.38	-	0.860
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							133.858
							20%
							161



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MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Penthouse Type PH4	na	na	na	34.2	45
Total				34.2	45

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	45	-	-	-	-	10.000
Adapter	1	45	-	3.84	-	-	3.840
204 x 60 Flat Duct	3.8	45	4	6.89	9.60	-	26.182
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	1.5	45	4	6.89	9.60	-	10.335
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	0.8	45	4	6.89	9.60	-	5.512
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
204 x 60 Flat Duct	0.8	45	4	6.89	9.60	-	5.512
Horizontal T Piece	1	45	4	-	9.60	1	9.600
204 x 60 Flat Duct	2.2	24	1.9	2.1	2.17	-	4.620
204 x 60 Flat Duct	3.7	16	1.5	1.3	1.35	-	4.810
204 x 60 Flat Duct	1.2	8	0.8	0.43	0.38	-	0.516
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	2.7	8	0.8	0.43	0.38	-	1.161
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	1.3	8	0.8	0.43	0.38	-	0.559
204 x 60 B90	1	8	0.8	0.97	0.38	-	0.970
204 x 60 Flat Duct	1.3	8	0.8	0.43	0.38	-	0.559
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							124.806
						20%	150



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MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Penthouse Type PH5	na	na	na	45.1	45
Total				45.1	45

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	ζ	Total Pressure drop (pa)
Extract Louvre	1	45	-	-	-	-	10.000
Adapter	1	45	-	3.84	-	-	3.840
204 x 60 Flat Duct	0.8	45	4	6.89	9.60	-	5.512
204 x 60 B90	1	45	4	19.03	9.60	-	19.030
204 x 60 Flat Duct	3.2	45	4	6.89	9.60	-	22.048
204 x 60 B90	1	45	4	19.03	9.60	-	19.030
204 x 60 Flat Duct	6.2	45	4	6.89	9.60	-	42.718
204 x 60 B90	1	45	4	19.03	9.60	-	19.030
204 x 60 Flat Duct	1.5	45	4	6.89	9.60	-	10.335
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
204 x 60 Flat Duct	0.3	45	4	6.89	9.60	-	2.067
Horizontal T Piece	1	45	4	-	9.60	1	9.600
204 x 60 Flat Duct	2.7	24	1.9	2.1	2.17	-	5.670
204 x 60 B45	1	24	1.9	1.84	2.17	-	1.840
204 x 60 Flat Duct	1.2	24	1.9	2.1	2.17	-	2.520
204 x 60 B45	1	24	1.9	1.84	2.17	-	1.840
204 x 60 Flat Duct	2.8	24	1.9	2.1	2.17	-	5.880
Horizontal T Piece	1	24	1.9	-	2.17	1	2.166
204 x 60 Flat Duct	1.8	16	1.5	1.3	1.35	-	2.340
Horizontal T Piece	1	16	1.5	-	1.35	1	1.350
204 x 60 Flat Duct	1.1	8	0.8	0.43	0.38	-	0.473
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	3.6	8	0.8	0.43	0.38	-	1.548
204 x 60 B45	1	8	0.8	0.3	0.38	-	0.300
204 x 60 Flat Duct	1.3	8	0.8	0.43	0.38	-	0.559
Ø125 Flexible Duct	0.5	8	0.8	0.3	0.38	-	0.150
Extract Valve	1	8	0.8	0.3	0.38	-	15.000
							214.026
							20% 257





MVHR Fan sizing & pressure drop calculations

Apartment Ventilation Rate & Pressure Drop

Room	Area (m²)	Height (m)	ACH	Supply (l/s)	Extract (l/s)
Penthouse Type PH6	na	na	na	39.5	45
Total				39.5	45

Fan sizing & pressure drop calculations	
Project Name	Angel Meadows Plot 2 & 3
Project Ref	1002-M-AME-DES-57-C006
Date	28.02.22
Revision	B

Item - Extract	Qty	Air Volume (l/s)	Velocity (m/s)	Pressure drop per unit length (pa/m)	Velocity pressure (pa)	z	Total Pressure drop (pa)
Extract Louvre	1	45	-	-	-	-	10.000
Adapter	1	45	-	3.84	-	-	3.840
204 x 60 Flat Duct	0.6	45	4	6.89	9.60	-	4.134
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	0.3	45	4	6.89	9.60	-	2.067
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	6	45	4	6.89	9.60	-	41.340
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	0.3	45	4	6.89	9.60	-	2.067
204 x 60 B45	1	45	4	8	9.60	-	8.000
204 x 60 Flat Duct	3.8	45	4	6.89	9.60	-	26.182
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
Ø125 Flexible Duct	0.5	45	4	1.2	9.60	-	0.600
204 x 60 - Ø125 Adaptor	1	45	4	3.84	9.60	-	3.840
204 x 60 Flat Duct	0.6	45	4	6.89	9.60	-	4.134
Horizontal T Piece	1	45	4	-	9.60	1	9.600
204 x 60 Flat Duct	3	21	1.7	1.3	1.73	-	3.900
204 x 60 B45	1	21	1.7	1.4	1.73	-	1.400
204 x 60 Flat Duct	0.5	21	1.7	1.3	1.73	-	0.650
204 x 60 B45	1	21	1.7	1.4	1.73	-	1.400
204 x 60 Flat Duct	1	13	1.2	0.7	0.86	-	0.700
204 x 60 B45	1	13	1.2	0.43	0.86	-	0.430
204 x 60 Flat Duct	1.5	13	1.2	0.7	0.86	-	1.050
204 x 60 B45	1	13	1.2	0.43	0.86	-	0.430
204 x 60 Flat Duct	1.5	13	1.2	0.7	0.86	-	1.050
Ø125 Flexible Duct	0.5	13	1.2	0.7	0.86	-	0.350
Extract Valve	1	13	1.2	0.7	0.86	-	15.000
							170.604
						20%	205



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Apartment Type/Space	Floor Area (m2)	Ceiling Height (m)	Number of POVs	Free Area/POV (m2)		Total Free Area (m2)	Effective Purge Vent Area (1/20th)	Does POV meet AD Part F	Floor Area to be covered by MVHR	Mechanical Vent Purge Requirement (ACH)	Additional MVHR Flow rate (m3/s)
Type 1A											
Lounge	20	2.5	1	0.55		0.55	11	No	9	4	25
Bedroom 1	12	2.5	1	0.55		0.55	11	No	1	4	3
Type 1B											
Lounge	19	2.5	2	0.55		1.1	22	Yes	-3	4	-8
Bedroom 1	12.5	2.5	1	0.55		0.55	11	No	1.5	4	4
Type 1C											
Lounge	17	2.5	1	0.55		0.55	11	No	6	4	17
Bedroom 1	12	2.5	1	0.55		0.55	11	No	1	4	3
Type 1D											
Lounge	17	2.5	2	0.55		1.1	22	Yes	-5	4	-14
Bedroom 1	11.3	2.5	1	0.55		0.55	11	No	0.3	4	1
Type 2A											
Lounge	18	2.5	1	0.55		0.55	11	No	7	4	19
Bedroom 1	15	2.5	1	0.55		0.55	11	No	4	4	11
Bedroom 2	12.2	2.5	1	0.55		0.55	11	No	1.2	4	3
Type 2B											
Lounge	17	2.5	1	0.55		0.55	11	No	6	4	17
Bedroom 1	12.5	2.5	1	0.55		0.55	11	No	1.5	4	4
Bedroom 2	13.5	2.5	1	0.55		0.55	11	No	2.5	4	7
Type 2C											
Lounge	21	2.5	2	0.55		1.1	22	Yes	-1	4	-3
Bedroom 1	12	2.5	1	0.55		0.55	11	No	1	4	3
Bedroom 2	15.6	2.5	1	0.55		0.55	11	No	4.6	4	13
Type 2D											
Lounge	21	2.5	2	0.55		1.1	22	Yes	-1	4	-3
Bedroom 1	15	2.5	1	0.55		0.55	11	No	4	4	11
Bedroom 2	12	2.5	1	0.55		0.55	11	No	1	4	3
Type 2G											
Lounge	17	2.5	1	0.55		0.55	11	No	6	4	17
Bedroom 1	12	2.5	1	0.55		0.55	11	No	1	4	3
Bedroom 2	14	2.5	1	0.55		0.55	11	No	3	4	8
Type 2H											
Lounge	18	2.5	1	0.55		0.55	11	No	7	4	19
Bedroom 1	14	2.5	1	0.55		0.55	11	No	3	4	8
Bedroom 2	13	2.5	1	0.55		0.55	11	No	2	4	6
Type 2J											
Lounge	26	2.6	2	3.8		7.6	152	Yes	-126	4	-364
Bedroom 1	10	2.6	1	3.8		3.8	76	Yes	-66	4	-191
Bedroom 2	11	2.6	1	0.55		0.55	11	Yes	0	4	0
Type 2K											
Lounge	28	2.6	2	3.8		7.6	152	Yes	-124	4	-358
Bedroom 1	14.5	2.6	1	3.8		3.8	76	Yes	-61.5	4	-178

Bedroom 2	13.5	2.6	1	3.8		3.8	76	Yes	-62.5	4	-181
Type 2L											
Lounge	22	2.6	1	3.8		3.8	76	Yes	-54	4	-156
Bedroom 1	10	2.6	1	3.8		3.8	76	Yes	-66	4	-191
Bedroom 2	9	2.6	1	3.8		3.8	76	Yes	-67	4	-194
Type 2M											
Lounge	26	2.6	2	3.8		7.6	152	Yes	-126	4	-364
Bedroom 1	15	2.6	1	3.8		3.8	76	Yes	-61	4	-176
Bedroom 2	12.5	2.6	1	3.8		3.8	76	Yes	-63.5	4	-183
Type 3A											
Lounge	20	2.5	2	0.55		1.1	22	Yes	-2	4	-6
Bedroom 1	12	2.5	1	0.55		0.55	11	No	1	4	3
Bedroom 2	12	2.5	1	0.55		0.55	11	No	1	4	3
Bedroom 3	16	2.5	1	0.55		0.55	11	No	5	4	14
Type 3B											
Lounge	18	2.6	1	3.8		3.8	76	Yes	-58	4	-168
Bedroom 1	20	2.6	1	3.8		3.8	76	Yes	-56	4	-162
Bedroom 2	12	2.6	1	3.8		3.8	76	Yes	-64	4	-185
Bedroom 3	7	2.6	1	3.8		3.8	76	Yes	-69	4	-199
Type 3D											
Lounge	20	2.5	2	0.55		1.1	22	Yes	-2	4	-6
Bedroom 1	12	2.5	1	0.55		0.55	11	No	1	4	3
Bedroom 2	12	2.5	1	0.55		0.55	11	No	1	4	3
Bedroom 3	16	2.5	1	0.55		0.55	11	No	5	4	14
Type PH1											
Lounge	28	2.7	1	3.8		3.8	76	Yes	-48	4	-144
Bedroom 1	11	2.7	1	3.8		3.8	76	Yes	-65	4	-195
Bedroom 2	11	2.7	1	3.8		3.8	76	Yes	-65	4	-195
Bedroom 3	18.5	2.7	1	3.8		3.8	76	Yes	-57.5	4	-173
Type PH2											
Lounge	32	2.7	1	3.8		3.8	76	Yes	-44	4	-132
Bedroom 1	14	2.7	1	3.8		3.8	76	Yes	-62	4	-186
Bedroom 2	13	2.7	1	3.8		3.8	76	Yes	-63	4	-189
Bedroom 3	18	2.7	1	3.8		3.8	76	Yes	-58	4	-174
Type PH3											
Lounge	32	2.7	1	3.8		3.8	76	Yes	-44	4	-132
Bedroom 1	11	2.7	1	3.8		3.8	76	Yes	-65	4	-195
Bedroom 2	13.5	2.7	1	3.8		3.8	76	Yes	-62.5	4	-188
Bedroom 3	17.5	2.7	1	3.8		3.8	76	Yes	-58.5	4	-176
Type PH4											
Lounge	28	2.7	1	3.8		3.8	76	Yes	-48	4	-144
Bedroom 1	14.5	2.7	1	3.8		3.8	76	Yes	-61.5	4	-185
Bedroom 2	13.5	2.7	1	3.8		3.8	76	Yes	-62.5	4	-188
Bedroom 3	18	2.7	1	3.8		3.8	76	Yes	-58	4	-174
Type PH5											
Lounge	51	2.7	2	3.8		7.6	152	Yes	-101	4	-303
Bedroom 1	25	2.7	1	3.8		3.8	76	Yes	-51	4	-153

Bedroom 2	12.5	2.7	1	3.8		3.8	76	Yes	-63.5	4	-191
Bedroom 3	16.5	2.7	1	3.8		3.8	76	Yes	-59.5	4	-179
Type PH6											
Lounge	51	2.7	2	3.8		7.6	152	Yes	-101	4	-303
Bedroom 1	16	2.7	1	3.8		3.8	76	Yes	-60	4	-180
Bedroom 2	22	2.7	1	3.8		3.8	76	Yes	-54	4	-162
Bedroom 3	12.5	2.7	1	3.8		3.8	76	Yes	-63.5	4	-191

Lo-Carbon Sentinel Kinetic Plus

- Acoustic Enclosure option for reduced breakout noise
- Acoustic Top Box option for reduced in-duct noise
- Recognised in SAP PCDB
- Horizontal duct option for space-saving installations
- High airflow, ideal for student accommodation clusters
- Unique folding filter for removal when access is restricted
- Integrated digital controller for simple and accurate commissioning
- Lightweight for easy installation
- Plug and play controls; Humidistat, Wireless Remote
- BMS connectivity
- LS inputs (Light Switch)
- Volt-free inputs
- Self diagnosis for simplified fault finding
- Adjustable delay On/delay Off timer



Increased Performance

The Sentinel Kinetic Plus benefits from the latest high efficiency, backward curved impeller design, ensuring the lowest possible energy consumption, ultra quiet operation and an exceptional performance range covering small one bed apartments to the largest of houses.

For scenarios where noise is a critical issue, an Acoustic Enclosure is available to reduce breakout noise and the Acoustic Top Box will reduce in-duct noise at key frequencies.

Care Homes & Student Accommodation

The Sentinel Kinetic Plus is ideal for larger homes and multiple occupancy units such as care homes and student accommodation. Capable of 400m³/hr at 150Pa, the unit can extract from up to ten bathrooms and a communal kitchen while still achieving almost 90% heat recovery. The fully automatic capability of the Kinetic range means that adequate ventilation is always achieved.

The Kinetic's BMS capability is also ideal for those commercial applications where landlords or property managers want to monitor and optimise building performance and maintenance. The Kinetic BMS can provide status information and its self diagnostics can report if any fault is found.

Spigot Options

Spigots may be re-positioned to give horizontal connection or a combination of vertical and horizontal connection.

Optional 180mm/200mm spigots can simplify connection in commercial installations where larger diameter duct work has been used.

Quick Change Filter

As many systems are placed within cupboards the unique filter design folds as you remove it to ensure easy access in restricted spaces.

Integral Humidity Sensor

The integral humidity sensor increases speed in proportion to relative humidity levels, saving energy and reducing noise. The sensor also reacts to small but rapid increases in humidity, even if the normal trigger threshold is not reached. This unique feature ensures adequate ventilation, even for the smallest wet room. The night time relative humidity setback feature suppresses nuisance tripping as humidity gradually increases with falling temperature.

Models

Model	Stock Ref
Sentinel Kinetic Plus Right	443028
Sentinel Kinetic Plus Right with Acoustic Top Box & Enclosure	479538
Sentinel Kinetic Plus Right with Acoustic Top Box	479537
Sentinel Kinetic Plus Right with Acoustic Enclosure	479536
Sentinel Kinetic Plus Left	443028L
Sentinel Kinetic Plus Left with Acoustic Top Box & Enclosure	479541
Sentinel Kinetic Plus Left with Acoustic Top Box	479540
Sentinel Kinetic Plus Left with Acoustic Enclosure	479539

Accessories

Model	Stock Ref
Wired Remote Controller	443283
Wireless Enable Kit	441865
Wireless Transmitter Controller	437827
LED Alarm with 15m cable	448356
Opto-coupler for volt-free bms connection	447340
ISO 45% Coarse (G3) Filter 2pk	443351
ISO ePM10 50% (M5) Filter 2pk	444201
180mm/200mm Spigot Kit (One per pack)	446523
Anti Vibration Mounts	68MP033G
Acoustic Purge Fan	477988
Acoustic Purge Fan XL	479829

SAP PCDB Test Results

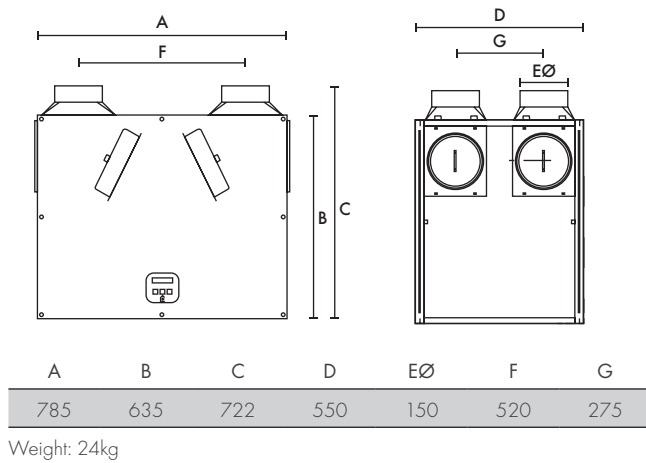
	SAP 2009		SAP 2012	
	Thermal Efficiency %	SFP (W/l/s)	Thermal Efficiency %	SFP (W/l/s)
K+1	91	0.51	91	0.42
K+2	91	0.40	91	0.44
K+3	90	0.41	90	0.52
K+4	90	0.45	90	0.63
K+5	90	0.53	90	0.76
K+6	90	0.60	91	0.90
K+7	90	0.70	91	1.05

SEC Class

Model	SEC Class
Kinetic Plus B	A+

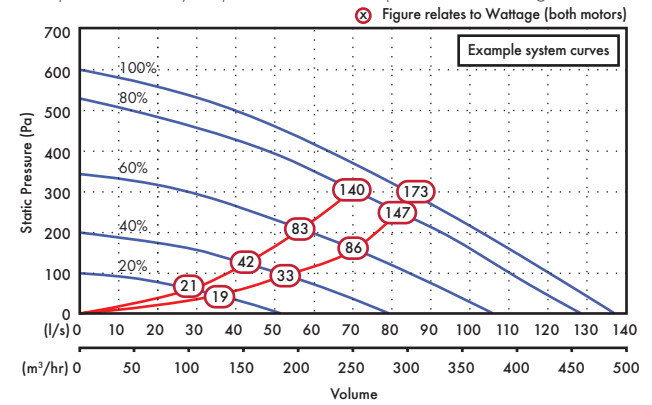
Dimensions (mm)

Unit

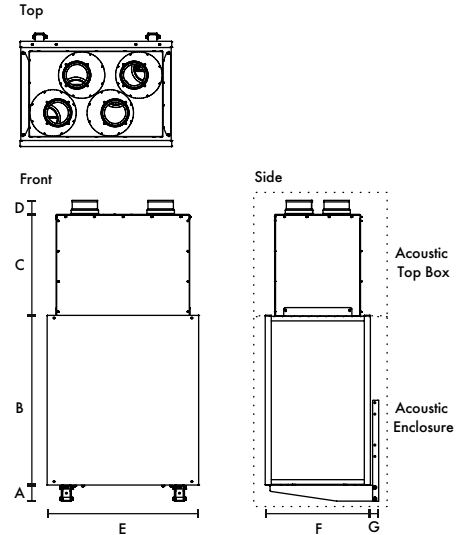


Performance

Fan speeds are fully adjustable within the performance range.



Acoustic Solution



Acoustic Top Box							Acoustic Enclosure		
A	B	C	D	E	F	G	kg	kg	Spigot
80	750	501	71	844	583	40	17	33	150

Sound Data (Unit only)

Unit setting	Test mode	Octave band, Hz, dB SWL										SPL dB(A)	
		63	125	250	500	1k	2k	4k	8k	LwA	at 3m		
20%	Supply	54.4	60.9	50.6	45.9	34.3	23.6	19.1	24.5	51.3	30.8		
	Extract	48.4	56.7	43.7	35.9	21.4	16	18.7	24.5	42.3	24.8		
	Breakout	42.6	40.2	39.6	38	31.1	24.3	19.4	24.6	35.1	17.6		
40%	Supply	61.6	64.6	58.4	55.5	45.9	37.2	24.7	25.1	58.8	38.3		
	Extract	54.9	62.2	51.5	44.8	32.1	24.1	19.7	24.6	48.8	31.3		
	Breakout	51.1	49.3	48.9	45.9	41.3	35.7	26.7	25.6	44.0	26.5		
60%	Supply	67.5	67.5	73.2	62.4	53.4	47.5	33.5	28.3	69.2	48.7		
	Extract	62.5	61.7	60.1	51.1	39.2	32.1	23.2	24.8	54.0	36.5		
	Breakout	54.9	53	58.4	55.1	49.7	43.9	35.4	31.9	52.8	35.3		
80%	Supply	70.5	71.1	73.8	66.5	58.3	53.2	39.7	33.3	71.3	50.8		
	Extract	68.4	65.9	71.8	55.6	43.6	37.1	27.3	25.5	63.8	46.3		
	Breakout	59.2	56.8	63.6	57.3	54.2	49	41	37.5	56.8	39.3		
100%	Supply	72.8	73.1	75.2	70.4	61.6	56.6	44.2	37.6	73.9	53.4		
	Extract	71.7	69	71.8	57.4	45.7	39.9	30.9	26.6	64.1	46.6		
	Breakout	61.2	58.8	67.9	59.6	56.7	52.2	44.4	41.2	60.1	42.6		

Sound Data (Unit with Acoustic Solution)

Unit setting	Test mode	Octave band, Hz, dB SWL										SPL dB(A)	
		63	125	250	500	1k	2k	4k	8k	LwA	at 3m		
20%	Supply	55.7	49.2	36.6	23.6	17.4	14.9	17.8	23.3	36.1	18.6		
	Extract	51.4	42.4	30.3	20.9	16.8	14.9	17.8	23.3	30.8	13.3		
	Breakout	37.4	39.7	30.0	22.7	15.6	14.0	17.9	23.3	28.4	7.9		
40%	Supply	59.7	59.7	45.5	32.2	22.2	15.2	17.9	23.3	45.1	27.6		
	Extract	54.8	55.0	38.0	26.8	18.1	14.9	17.8	23.3	40.2	22.7		
	Breakout	45.7	48.5	39.9	32.8	24.2	17.5	18.0	23.4	36.8	16.3		
60%	Supply	66.1	61.9	53.6	41.0	29.8	18.3	18.0	23.3	49.5	32.0		
	Extract	60.6	55.9	48.4	34.9	23.8	16.3	17.9	23.3	43.8	26.3		
	Breakout	51.1	51.0	52.4	40.9	33.2	26.1	19.7	23.4	44.5	24.0		
80%	Supply	70.0	67.6	68.5	48.1	37.9	25.3	19.4	23.6	60.7	43.2		
	Extract	65.4	59.7	57.2	41.6	31.3	21.8	19.2	23.4	50.4	32.9		
	Breakout	55.6	55.6	57.9	47.9	40.4	34.3	26.1	23.7	51.3	30.8		
100%	Supply	72.1	70.1	66.4	51.6	41.9	29.7	21.7	24.0	60.0	42.5		
	Extract	68.2	62.4	60.6	45.5	36.0	26.6	21.7	23.6	53.8	36.3		
	Breakout	57.6	58.8	63.3	51.0	44.2	38.5	31.0	24.9	56.3	35.8		

Tested according to BS EN 13141-7:2010. Breakout quoted spherical. Supply and Extract quoted hemispherical. For in-duct data, end reflections are added based on the spigot size of the unit.

Consultant's Specification

Operation

The supply and extract ventilation unit shall be as Sentinel Kinetic Plus as manufactured by Vent-Axia and shall be sized as indicated on the drawings and shall be in accordance with the particular specification.

Supply air to the room shall be pre-heated by the extract air via the integrated composite plastic counterflow heat recovery cell. The Sentinel Kinetic Plus shall automatically vary the ventilation rate via EC/DC motors, as it receives signals from one of the optional interconnected sensors.

When a signal is received, the fans shall either vary their speed proportionally or on a trickle and boost principle.

The unit shall have the facility to commission the supply and extract fans individually via in-built minimum and maximum speed adjustment, or alternative wired remote control unit. The fans themselves shall have independent, infinitely variable speed control.

Unit Specification

The unit shall be manufactured with an ABS outer case construction, and incorporate a reversible core to allow for left or right hand mounting.

The unit shall have a high efficiency composite plastic counterflow heat exchanger, supply and extract filters, automatic summer bypass, integral minimum and maximum infinitely variable speed controls with fascia mounted failure indication.

The unit shall have low energy, high efficiency EC/DC fan/motor assemblies with sealed for life bearings. The impellers shall be high efficiency backward curved centrifugal type.

The unit shall have a heat exchanger cell with a thermal efficiency of up to 92% when tested to EN 308. This shall be protected by ISO 45% Coarse (G3) grade synthetic filters on supply and extract. Complete with a condensate drip tray and drain connection.

To reduce breakout noise, the MVHR unit shall be provided with an Acoustic Enclosure of steel construction lined with class 'O' acoustic foam. To reduce in-duct noise, the top of the MVHR shall be fitted with an Acoustic Top Box to provide attenuation to the 4 ducts of the unit. This Acoustic Top Box shall be of steel construction lined with acoustic class 'O' foam with the MVHR spigots linked to the Top Box via 4 separate attenuated ducts. The acoustic enclosure and top box shall each be independently tested for noise to BS EN 13141-7.

The unit shall be constructed with a removable Core allowing full maintenance access. The removable Core shall provide access to the following:

- ✓ Supply and extract filter
- ✓ Heat exchanger
- ✓ Access to the electrical connections

Access shall be provided for wiring termination and setup/commissioning. The backlit LCD user interface therein may be duplicated for remote mounting if required. Units shall be as manufactured by Vent-Axia Ltd.

Sound tested to BS EN 13141-7:2010

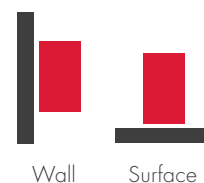
Standard Controls

All Sentinel Kinetic units shall incorporate the following functions integrally mounted, pre-wired and factory fitted by the manufacturer:

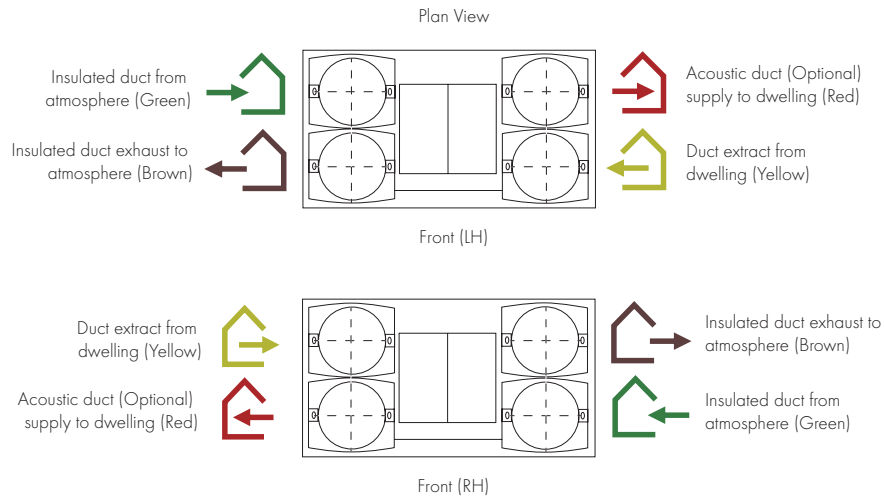
- ✓ Integral infinitely variable fan speed control on supply and extract

- ✓ Integral min/max ventilation control/set point
- ✓ Integral BMS input/output interfaces – control and status indication
- ✓ Heating interlocks
- ✓ 0-10V proportional speed adjustment
- ✓ Volt free contacts
- ✓ 24V sensor supply
- ✓ Integral on/off or trickle boost function from remote switch, e.g. PIR occupancy detector
- ✓ Fully automatic summer bypass
- ✓ Switched Live input with adjustable 'delay-on' feature
- ✓ Fan failure or component failure indicated via individual fault code display
- ✓ Running time counter
- ✓ Control panel PIN number lock
- ✓ Automatic frost protection effective to -20°C
- ✓ The unit shall incorporate an integral humidity sensor with the following features:
 - Ambient Response; Raises the humidity trigger point as dwelling temperature reduces
 - Rapid Response: Monitors the rate of change in humidity and triggers increased airflow even if the humidity trigger threshold is not reached
 - Proportional Response; Incrementally increases the fan speed to reduce noise and reduce energy consumption
- ✓ The unit shall be controlled by the 'Sentinel' control devices (enablers and sensors) as detailed in the schedule or on the drawings.
- ✓ Tool free filter access

Mounting Option

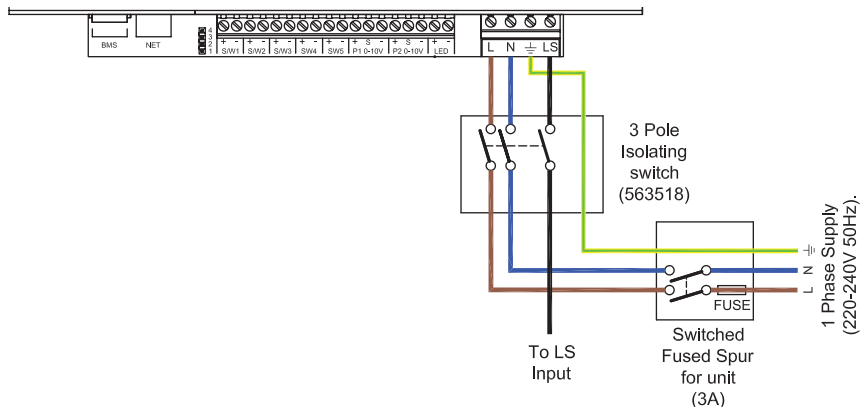


Airflow Direction

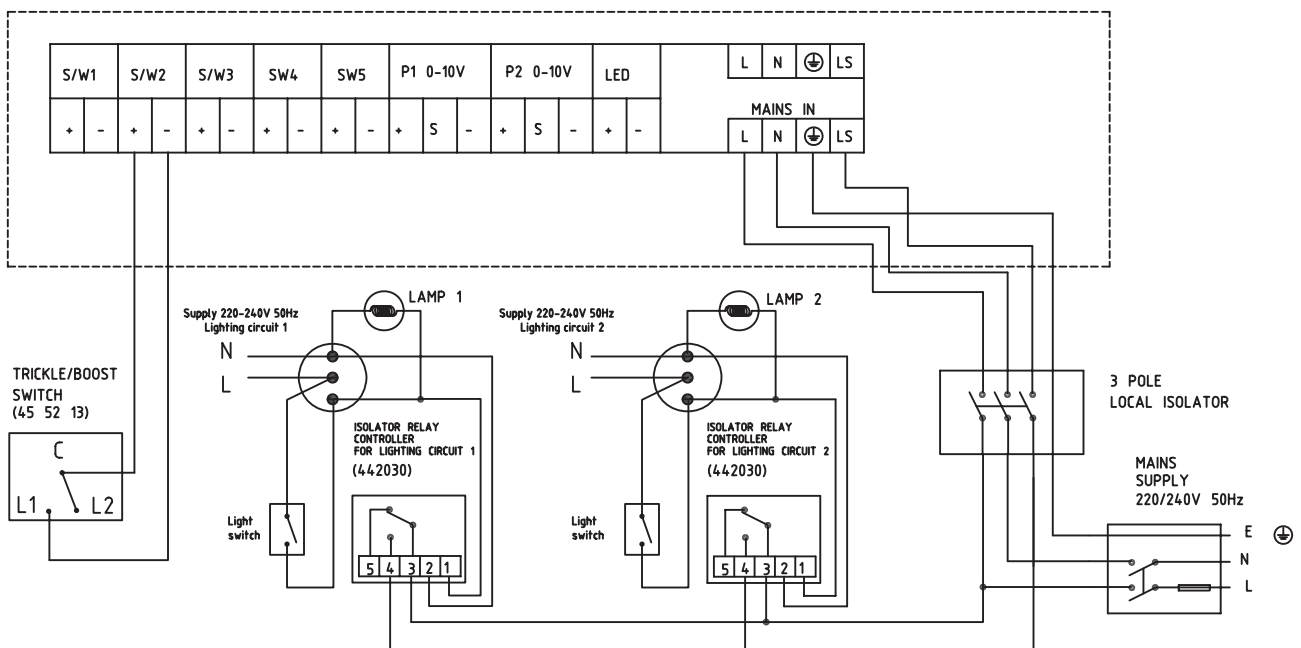


Electrical Connection

Please note: Electrical connection should be carried out by an appropriately qualified person and in accordance with current wiring regulations.



Trickle to Boost by two lighting circuits or Trickle/Boost Switch



Lo-Carbon Sentinel Kinetic High Flow

- Acoustic Enclosure option for reduced breakout noise
- Acoustic Top Box option for reduced in-duct noise
- Recognised in SAP PCDB
- 180mm/200mm spigots
- Horizontal duct option for space-saving installations
- High airflow, ideal for student accommodation clusters
- Unique folding filter for removal when access is restricted
- Integrated digital controller for simple and accurate commissioning
- Plug and play controls; Humidistat, Wireless Remote
- BMS connectivity
- LS inputs (Light Switch)
- Volt-free inputs



Increased Performance

The Sentinel Kinetic High Flow benefits from the latest high efficiency, backward curved impeller design, ensuring the lowest possible energy consumption, and an exceptional performance range covering small one bed apartments to the largest of houses.

For scenarios where noise is a critical issue, an Acoustic Enclosure is available to reduce breakout noise and the Acoustic Top Box will reduce in-duct noise at key frequencies.

Care Homes & Student Accommodation

The Sentinel Kinetic High Flow is ideal for larger homes and multiple occupancy units such as care homes and student accommodation. Capable of 175l/s at 150Pa, the unit can extract from up to fourteen bathrooms and a communal kitchen while still achieving almost 90% heat recovery. The fully automatic capability of the Kinetic range means that adequate ventilation is always achieved.

The Kinetic's BMS capability is also ideal for those commercial applications where landlords or property managers want to monitor and optimise building performance and maintenance. The Kinetic BMS can provide status information and its self diagnostics can report if any fault is found.

Spigot Options

180mm/200mm Spigots may be re-positioned to give horizontal connection or a combination of vertical and horizontal connection.

Quick Change Filter

As many systems are placed within cupboards the unique filter design folds as you remove it to ensure easy access in restricted spaces.

Integral Humidity Sensor

The integral humidity sensor increases speed in proportion to relative humidity levels, saving energy and reducing noise. The sensor also reacts to small but rapid increases in humidity, even if the normal trigger threshold is not reached. This unique feature ensures adequate ventilation, even for the smallest wet room. The night time relative humidity setback feature suppresses nuisance tripping as humidity gradually increases with falling temperature.

Models

Model	Stock Ref
Kinetic High Flow Right	408449
Kinetic High Flow Right with Acoustic Top Box & Enclosure	479544
Kinetic High Flow Right with Acoustic Top Box	479543
Kinetic High Flow Right with Acoustic Enclosure	479542
Kinetic High Flow Left	408451
Kinetic High Flow Left with Acoustic Top Box & Enclosure	479547
Kinetic High Flow Left with Acoustic Top Box	479546
Kinetic High Flow Left with Acoustic Enclosure	479545

For further details, see Sentinel Kinetic Plus.

Accessories

Model	Stock Ref
Wired Remote Controller	443283
Wireless Enable Kit	441865
Wireless Transmitter Controller	437827
LED Alarm with 15m cable	448356
Opto-coupler for volt-free bms connection	447340
ISO 45% Coarse (G3) Filter 2pk	403702
ISO ePM10 50% (M5) Filter 2pk	444201
Anti Vibration Mounts	68MP033G
Acoustic Purge Fan	477988

SAP PCDB Test Results

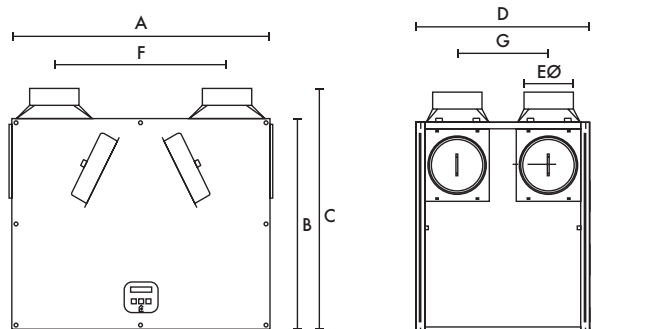
	SAP 2009		SAP 2012	
	Thermal Efficiency %	SFP (W/l/s)	Thermal Efficiency %	SFP (W/l/s)
K + 1	88	0.65	88	0.58
K + 2	88	0.54	90	0.55
K + 3	90	0.52	91	0.60
K + 4	90	0.55	91	0.69
K + 5	91	0.6	90	0.78
K + 6	91	0.66	90	0.92
K + 7	90	0.74	90	1.09

SEC Rating

Model	SEC Class
Kinetic High Flow	A

Dimensions (mm)

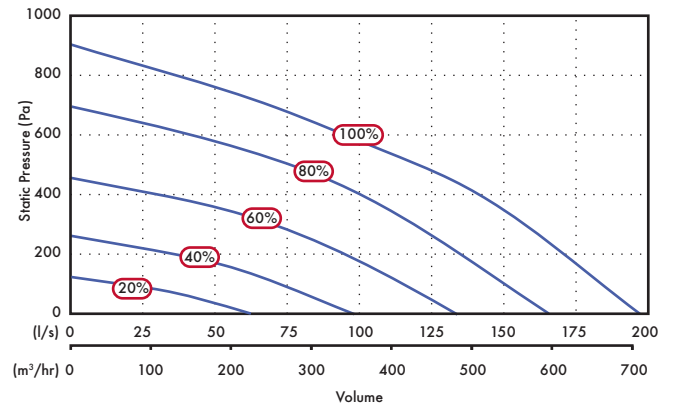
Unit



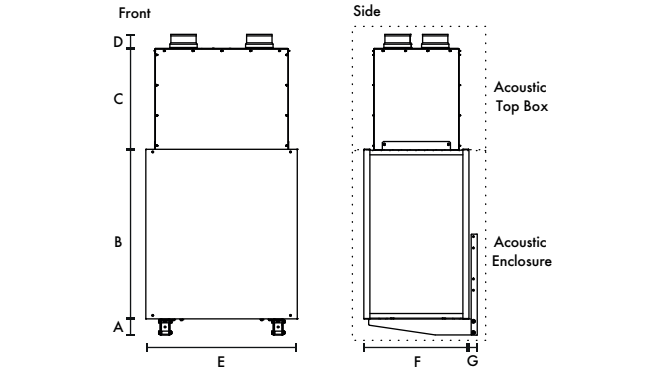
A	B	C	D	EØ	F	G
785	635	722	550	180/200	520	275

Weight: 34kg

Performance



Acoustic Solution



A	B	C	D	E	F	G	kg	kg	Spigot
80	733	501	71	855	583	40	17	33	180

Sound Data (Unit only)

Flow %	Test Mode	Octave band, Hz, dB SWL								SPL dB(A) @ 3m
20	Supply	55.1	65.9	55.2	53.8	44.4	37.4	25.3	24.9	37.4
	Extract	58.2	57.4	48.0	45.6	43.8	34.5	20.0	24.5	31.1
	Breakout	43.3	46.6	44.9	44.7	41.8	30.4	21.6	22.5	25.0
40	Supply	63.1	69.0	67.1	64.0	55.0	51.6	39.7	32.4	46.8
	Extract	58.6	58.4	60.1	53.7	41.9	41.5	31.7	25.1	37.5
	Breakout	55.4	49.6	60.6	53.8	46.5	41.5	33.2	27.4	34.0
60	Supply	70.3	74.3	81.4	71.5	63.6	59.9	49.6	43.1	57.4
	Extract	64.4	64.2	72.6	59.1	48.7	45.7	37.8	29.3	47.6
	Breakout	62.8	54.6	65.7	57.2	55.5	49.2	41.4	36.4	40.5
80	Supply	75.3	77.9	88.1	78.7	68.4	65.1	56.0	50.1	64.0
	Extract	71.1	68.2	73.6	61.8	51.9	49.5	42.7	37.6	49.1
	Breakout	66.2	59.0	73.4	61.8	57.0	54.6	47.3	43.1	47.5
100	Supply	90.9	80.9	84.4	80.1	71.5	68.0	59.3	54.5	63.3
	Extract	92.4	71.8	78.1	67.4	54.9	51.5	44.6	41.4	55.1
	Breakout	69.3	62.9	74.9	67.5	59.2	56.6	49.1	44.7	49.5

Tested according to BS EN 13141-7:2010. Breakout quoted spherical. Supply and Extract quoted hemispherical.

Sound Data (Unit with Acoustic Enclosure)

Flow %	Test Mode	Octave band, Hz, dB SWL								SPL dB(A) @ 3m
20	Supply	55.2	57.0	46.1	38.8	24.0	15.4	18.0	23.2	26.1
	Extract	50.4	53.6	37.0	32.3	18.2	15.1	18.0	23.2	21.2
	Breakout	41.3	51.8	39.2	32.3	20.5	15.8	18.1	23.2	17.2
40	Supply	64.1	59.6	59.7	51.9	35.5	22.8	19.9	23.5	35.8
	Extract	56.6	50.7	49.0	41.9	24.5	17.7	18.1	23.2	25.8
	Breakout	46.7	50.5	53.0	44.8	32.2	22.2	18.5	23.3	25.1
60	Supply	67.3	64.0	67.7	58.6	43.2	30.6	26.5	25.9	43.5
	Extract	61.6	56.7	55.5	49.0	32.2	25.3	19.7	23.4	32.7
	Breakout	53.0	54.4	60.2	48.8	40.6	33.2	23.4	23.4	32.5
80	Supply	70.3	67.7	74.6	61.8	48.5	36.2	33.0	31.4	50.0
	Extract	66.7	60.0	67.2	50.9	38.1	32.8	24.0	24.1	42.2
	Breakout	58.0	58.0	64.7	52.4	45.7	39.9	31.2	24.3	38.2
100	Supply	73.0	70.1	77.1	65.1	51.4	39.5	37.0	36.4	52.6
	Extract	69.6	62.5	67.3	56.2	41.7	37.0	28.1	25.3	43.0
	Breakout	61.0	61.2	65.9	57.7	48.5	43.8	36.3	26.3	40.2