



TO **Lee Parker**
OF **BAM**
lparker@bam.co.uk

CC **As per email distribution**

FROM **Lewis Herd**

DATE **4 March 2021**
FILE REF **(COR)U002/P2008475**

SUBJECT **CHORLTON HIGH SCHOOL SOUTH (CHSS)**
Summary of our assessment of external plant noise break-out at nearest noise sensitive receptors

We are writing to provide a summary of our assessment of external plant noise break-out from the above development at nearest noise sensitive receptors, to allow the discharge of planning condition 26 attached to the development consent:

- *26) Before first occupation of the development any externally mounted ancillary equipment, shall be acoustically insulated in accordance with a scheme submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the equipment. Reason - To safeguard the amenities of the occupiers of nearby residential accommodation, pursuant to policies SP1 and DM1 of the Core Strategy.*

Based on the MCC document '*Planning & Noise – Technical Guidance*' (December 2015) and discussion with Sharon McAndrew at MCC, the following requirements were agreed as suitable in advance of the submitted planning application:

- Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.

1. External plant noise limits at nearest noise sensitive receptors

Based on Manchester City Council requirements, Table 1 presents the limits that apply for plant noise at the nearest/most exposed noise sensitive receptors, NSR 1: residential dwellings off Mauldeth Road, and, NSR 2: residential dwellings beyond the tram line (Weller Gardens)

Pre development background noise measurements have been undertaken and the survey procedure and results have been reported previously within P2008475(REP)U001 Chorlton High School South – Environmental Noise Assessment Report, submitted to the LPA in support of the scheme planning application.

Based on the survey data, the noise limits stated in Table 1 relating to plant noise from CHSS apply. These limits have been set at 5dB below the measured background survey noise levels, as reported within the aforementioned report.

Figure 1: Site plan indicating assessment NSRs and approximate red line site boundary

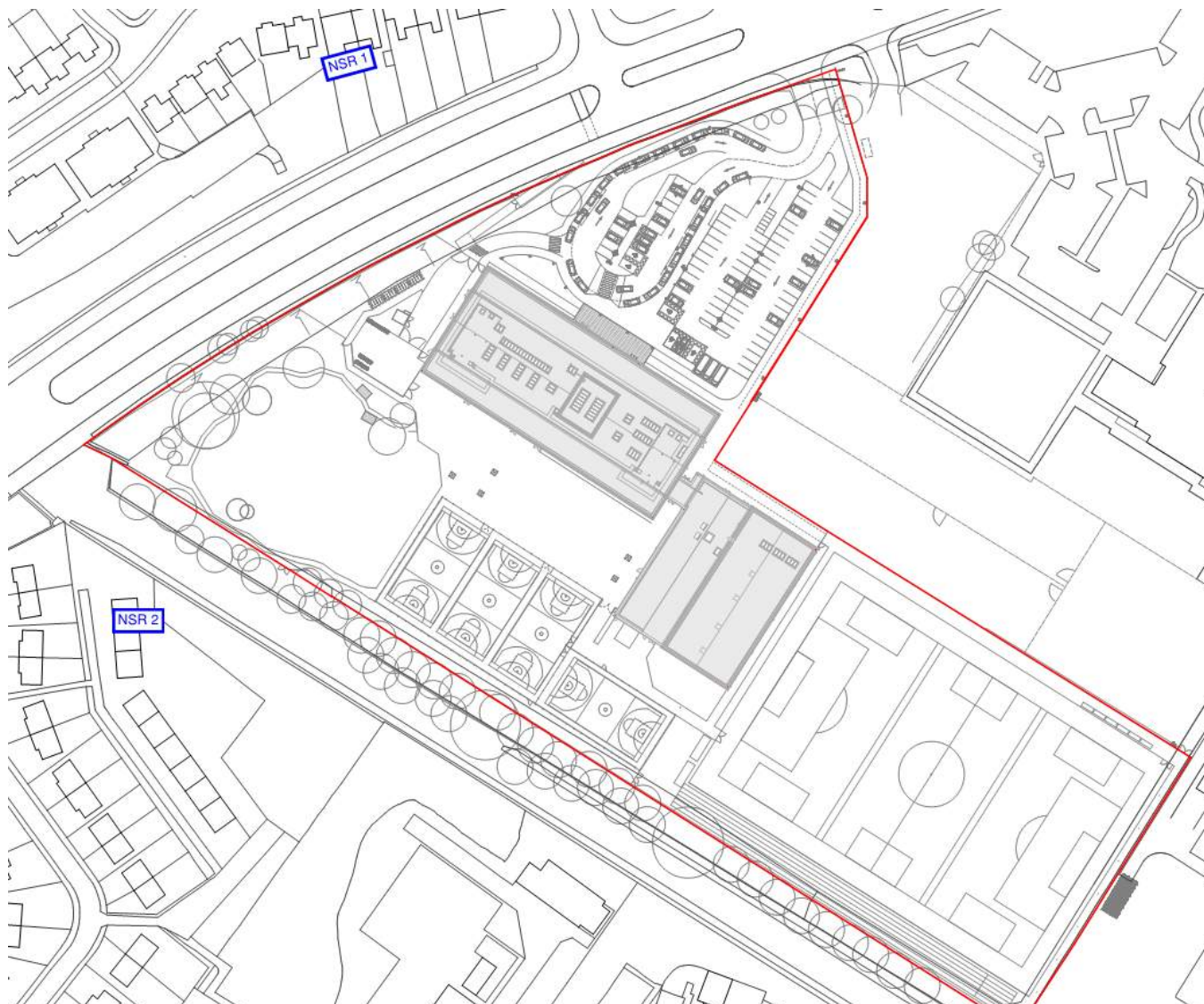


Table 1: External plant noise emission limits

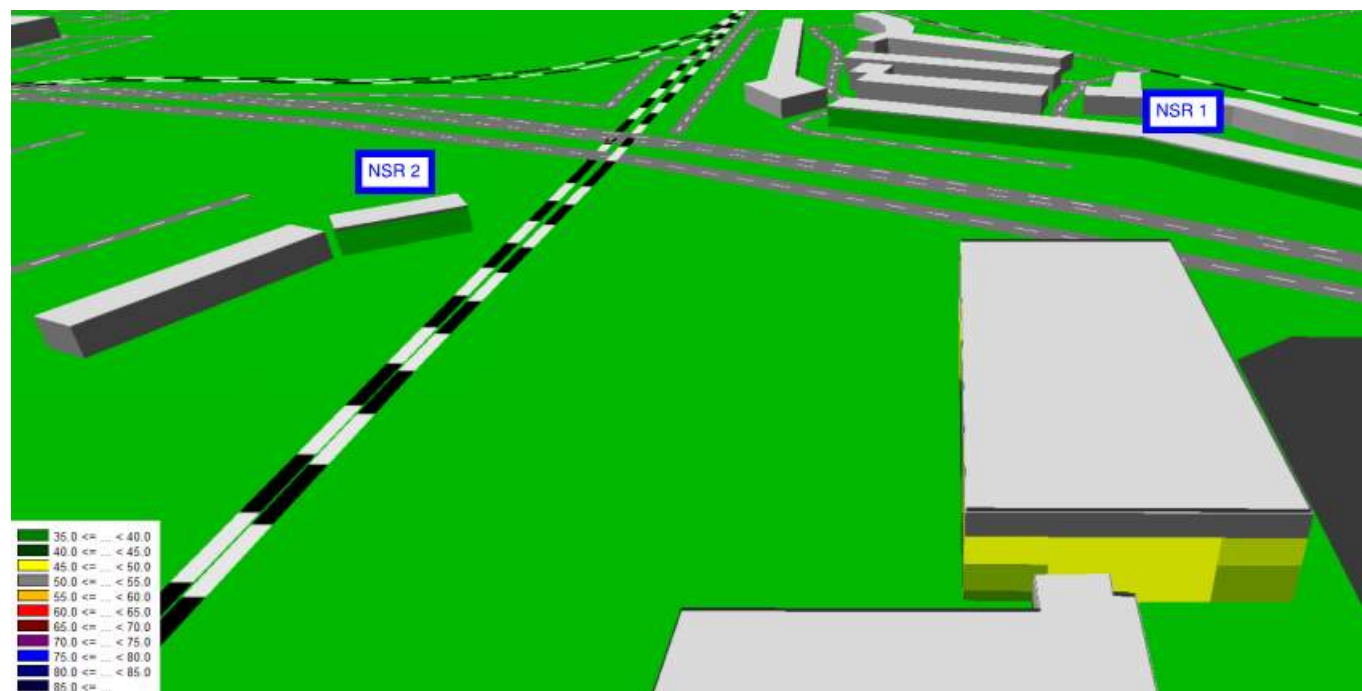
Noise sensitive receptor	Measured representative Background level, $L_{AF90,T}$ (dB)	Cumulative Plant Noise Rating Level Limit, $L_{Ar,Tr}$ (dB)
NSR 1: Residential dwellings off Mauldeth Road Daytime (0700-2300 hrs)	50	45
NSR 1: Residential dwellings off Mauldeth Road Night time (2300-0700 hrs)	40	35
NSR 2: Residential dwellings opposite the tram line Daytime (0700-2300 hrs)	44	39
NSR 2: Residential dwellings opposite the tram line Night time (2300-0700 hrs)	40	35

2. Assessment of plant selections relating to external noise break-out

We have undertaken an assessment of external plant noise break-out using CadnaA noise modelling software to determine if the proposed plant selections and attenuation measures reviewed will allow the external plant noise limit criteria at the nearest noise sensitive receptors to be complied with.

Proposed plant selections and attenuation measures reviewed are appended to this letter.

Figure 2: Indicative 3D noise model screenshot - NSR facade colour indicates predicted incident noise level



3. Calculated results

The modelling undertaken assumes all relevant plant noise sources are in operation, representing a worst case assessment. In reality during the night time period less equipment would be expected to be in operation.

No rating level character corrections have been added to the predicted noise levels as neither intermittency nor tonality is expected to be readily distinctive against the residual acoustic environment at the NSR positions

The results of the noise modelling indicates the following levels attributable to CHSS development plant noise at the NSR positions:

Table 2: Predicted external plant noise emissions

Noise sensitive receptor	Cumulative Plant Noise Rating Level Limit, $L_{Ar,Tr}$ (dB)	Predicted CHSS plant noise level at NSR façade, $L_{Ar,Tr}$ (dB)
NSR 1: Residential dwellings off Mauldeth Road Daytime (0700-2300 hrs)	45	35
NSR 1: Residential dwellings off Mauldeth Road Night time (2300-0700 hrs)	35	35
NSR 2: Residential dwellings opposite the tram line Daytime (0700-2300 hrs)	39	34
NSR 2: Residential dwellings opposite the tram line Night time (2300-0700 hrs)	35	34

As can be seen in the Table above, the plant noise limits are achieved at the NSR locations.

Please do not hesitate to contact us should you have any queries.

Yours sincerely
for BDP Acoustics



Lewis Herd
Senior Acoustic Consultant
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Summary of information received for the review

Item	System Reference	Code	Suffix	DWG	L1	L2/ID	W	H/Dia	Vol	PD	Wt	No.		Performance, dB							
					mm	mm	mm	mm	m ³ /s	Pa	kg	Off.		63	125	250	500	1k	2k	4k	8k
1	ATT/01 AHU01 FAI	SP	G	A02G	600		2400	1050	5.8	20	157	1	IL	5	9	13	17	23	17	14	9
2	ATT/02 AHU01 EXHAUST	SP	G	A02G	900		2400	1050	5.8	20	213	1	IL	8	12	18	24	32	25	20	13
3	ATT/03 AHU01 SUPPLY	SP	G	A02G	1200		2450	1100	5.8	25	317	1	IL	10	17	25	34	43	33	27	19
4	ATT/04 AHU01 RETURN	SP	G	A02G	1200		2450	1100	5.8	25	280	1	IL	8	14	21	29	38	26	22	13
5	ATT/05 AHU02 FAI	SP	G	A02G	600		2400	1050	6	20	157	1	IL	5	9	13	17	23	17	14	9
6	ATT/06 AHU02 EXHAUST	SP	G	A02G	900		2400	1050	6	20	213	1	IL	8	12	18	24	32	25	20	13
7	ATT/07 AHU02 SUPPLY	SP	G	A02G	1200		2450	1100	6	25	317	1	IL	10	17	25	34	43	33	27	19
8	ATT/08 AHU02 RETURN	SP	G	A02G	1200		2450	1100	6	25	280	1	IL	8	14	21	29	38	26	22	13
9	ATT/09 AHU03 FAI	SP	G	A02G	600		1750	800	3.079	20	107	1	IL	5	9	13	17	23	17	14	9
10	ATT/10 AHU03 EXHAUST	SP	G	A02G	900		1750	800	3.129	20	144	1	IL	8	12	18	24	32	25	20	13
11	ATT/11 AHU03 SUPPLY	SP	G	A02G	1500		1750	800	3.079	25	221	1	IL	12	20	30	40	47	40	33	22
12	ATT/12 AHU03 EXTRACT	SP	G	A02G	1500		1750	800	3.129	25	221	1	IL	12	20	30	40	47	40	33	22
13	ATT/13 KSF01 INTAKE	SP	G	A02G	900		800	650	2.91	50	62	1	IL	5	8	16	25	35	28	24	14
14	ATT/14 KSF01 SUPPLY	SP	G	A02G	900		800	650	2.91	50	62	1	IL	5	8	16	25	35	28	24	14
15	ATT/15 KEF01 RETURN	SP	GM	A02G	1500		900	900	2.93	50	134	1	IL	14	24	27	36	38	31	26	19
16	ATT/16 KEF01 EXHAUST	SP	GM	A02G	1200		900	900	2.93	50	112	1	IL	11	20	23	31	35	26	22	16
17	ATT/23 EF03 RETURN	SP	GJ	A02G	1500		570	570	1.02	50	70	1	IL	6	15	26	44	55	55	55	38
18	ATT/24 EF03 EXHAUST	SP	G	A02G	900		570	570	1.02	50	52	1	IL	6	10	18	28	43	36	30	20
19	ATT/25 EF04 RETURN	SL	GJ	A02G	1500		600	450	1.02	50	64	1	IL	12	20	31	42	44	37	32	22
20	ATT/26 EF04 EXHAUST	PL	G	A13G	600	355			0.35	5	12	1	IL	2	3	6	15	19	14	13	10
21																					
22	CTA-00-01 MUSIC PRACTICE RM.00.41 SUP	SL	GE	A18G	900	200	340	255	0.055	15	25	1	IL	8	14	22	32	42	40	33	25
23	CTA-00-02 MUSIC PRACTICE RM.00.39 SUP	SL	GE	A18G	900	200	340	255	0.055	15	25	1	IL	8	14	22	32	42	40	33	25
24	CTA-00-03 MUSIC PRACTICE RM.00.39 EXT	SL	GE	A18G	900	200	340	255	0.055	15	25	1	IL	8	14	22	32	42	40	33	25
25	CTA-00-04 MUSIC PRACTICE RM.00.40 EXT	SL	GE	A18G	900	200	340	255	0.055	15	25	1	IL	8	14	22	32	42	40	33	25
26	CTA-00-05 MUSIC PRACTICE RM.00.40 SUP	SL	GE	A18G	900	200	340	255	0.055	15	25	1	IL	8	14	22	32	42	40	33	25
27	CTA-00-06 MUSIC PRACTICE RM.00.41 EXT	SL	GE	A18G	900	200	340	255	0.055	15	25	1	IL	8	14	22	32	42	40	33	25
28	CTA-00-07 MUSIC PRACTICE RM.00.45 SUP	SL	GE	A18G	1200	250	400	305	0.117	20	35	1	IL	8	14	22	34	41	36	31	20
29	CTA-00-08 MUSIC PRACTICE RM.00.46 SUP	SL	GE	A18G	1500	250	400	305	0.091	15	42	1	IL	9	17	27	39	46	41	36	23
30	CTA-00-09 GENERAL OFFICE RM.00.04 SUP	PL	G	A13G	600	150			0.06	5	6	1	IL	1	2	6	16	23	19	17	12
31	CTA-00-10 GENERAL OFFICE RM.00.04 EXT	PL	G	A13G	600	250			0.1	5	8	1	IL	1	2	6	15	20	15	14	10
32	CTA-00-11 INTERVIEW RM.00.03 EXT	SL	GE	A18G	600	250	400	305	0.03	20	23	1	IL	4	8	13	19	26	22	18	11
33	CTA-00-12 CONFERENCE RM.00.81 EXT	SL	GE	A18G	900	250	400	305	0.1	20	30	1	IL	6	11	18	26	35	30	25	16
34	CTA-00-13 ENTRANCE SUP	PL	G	A13G	600	150			0.06	5	6	1	IL	1	2	6	16	23	19	17	12
35	CTA-00-14 MUSIC PRACTICE RM.00.45 EXT	SL	GE	A18G	900	200	340	255	0.091	20	25	1	IL	8	14	22	32	42	40	33	25
36	CTA-00-15 MUSIC PRACTICE RM.00.46 EXT	SL	GE	A18G	900	200	340	255	0.086	20	25	1	IL	8	14	22	32	42	40	33	25

Item	System Reference	Code	Suffix	DWG	L1	L2/ID	W	H/Dia	Vol	PD	Wt	No.		Performance, dB									
37	CTA-00-16 MUSIC PRACTICE RM.00.47 SUP	SL	GJ	A02G	1200		300	300	0.127	20	29	1	IL	8	16	25	40	51	46	42	31		
38	CTA-00-17 MUSIC PRACTICE RM.00.47 EXT	SL	GJ	A02G	1200		300	300	0.127	20	29	1	IL	8	16	25	40	51	46	42	31		
39	CTA-00-18 CIRCULATION CR.00.03 SUP	PL	G	A13G	600	150			0.03	5	6	1	IL	1	2	6	16	23	19	17	12		
40	CTA-00-19 CIRCULATION CR.00.03 EXT	PL	G	A13G	600	150			0.03	5	6	1	IL	1	2	6	16	23	19	17	12		
41	CTA-00-20 GENERAL OFFICE RM.00.04 SUP	PL	G	A13G	600	150			0.05	5	6	1	IL	1	2	6	16	23	19	17	12		
42	CTA-00-21 SICK RM.00.06 EXT	PL	G	A13G	600	200			0.11	5	7	1	IL	1	2	6	16	23	19	17	12		
43	ATT-00-01 MVHR01 SUP	SL	GE	A18G	900	355	505	410	0.38	20	40	1	IL	7	10	17	22	27	22	18	10		
44	ATT-00-02 MVHR01 EXT	SL	GE	A18G	900	355	505	410	0.4	20	40	1	IL	7	10	17	22	27	22	18	10		
45	ATT-00-03 MVHR01 INTAKE	PL	G	A13G	600	355			0.4	5	12	1	IL	2	3	6	15	19	14	13	10		
46	ATT-00-04 MVHR01 EXHAUST	PL	G	A13G	600	355			0.38	5	12	1	IL	2	3	6	15	19	14	13	10		
47																							
48	CTA-01-01 SMALL GROUP RM.01.28 EXT	SL	GE	A18G	900	200	340	255	0.042	10	24	1	IL	5	9	17	27	39	33	28	17		
49	CTA-01-02 SMALL GROUP RM.01.28 SUP	SL	GE	A18G	900	200	340	255	0.042	10	24	1	IL	5	9	17	27	39	33	28	17		
50	CTA-01-03 ICT WORKROOM RM.01.36 SUP	SL	GE	A18G	900	180	340	255	0.049	10	24	1	IL	5	9	17	27	39	33	28	17		
51	CTA-01-04 ICT WORKROOM RM.01.36 EXT	SL	GE	A18G	900	180	340	255	0.049	10	24	1	IL	5	9	17	27	39	33	28	17		
52	CTA-01-05 SMALL GROUP RM.01.26 SUP	SL	GE	A18G	900	200	340	255	0.04	10	24	1	IL	5	9	17	27	39	33	28	17		
53	CTA-01-06 SMALL GROUP RM.01.26 EXT	SL	GE	A18G	900	150	280	205	0.04	10	19	1	IL	3	8	14	27	39	33	29	18		
54	CTA-01-07 LARGE GROUP RM.01.23 SUP	SL	GE	A18G	900	224	365	280	0.071	10	25	1	IL	5	8	16	25	34	28	24	14		
55	CTA-01-08 LARGE GROUP RM.01.23 EXT	SL	GE	A18G	900	224	365	280	0.071	10	25	1	IL	5	8	16	25	34	28	24	14		
56	CTA-01-09 SMALL GROUP RM.01.22 SUP	SL	GE	A18G	900	200	340	255	0.04	10	24	1	IL	5	9	17	27	39	33	28	17		
57	CTA-01-10 SEN OFFICE RM.01.27 SUP	SL	GE	A18G	900	150	280	205	0.027	10	19	1	IL	3	8	14	27	39	33	29	18		
58	CTA-01-11 SEN OFFICE RM.01.27 EXT	SL	GE	A18G	900	180	340	255	0.027	10	24	1	IL	5	9	17	27	39	33	28	17		
59	CTA-01-12 SMALL GROUP RM.01.24 EXT	SL	GE	A18G	900	180	340	255	0.042	10	24	1	IL	5	9	17	27	39	33	28	17		
60	CTA-01-13 SMALL GROUP RM.01.24 SUP	SL	GE	A18G	900	180	340	255	0.042	10	24	1	IL	5	9	17	27	39	33	28	17		
61	CTA-01-14 SMALL GROUP RM.01.22 EXT	SL	GE	A18G	900	200	340	255	0.04	10	24	1	IL	5	9	17	27	39	33	28	17		
62	CTA-01-15 SEN THERAPY RM.01.19 SUP	SL	GE	A18G	900	200	340	255	0.03	10	24	1	IL	5	9	17	27	39	33	28	17		
63	CTA-01-16 SEN THERAPY RM.01.19 EXT	SL	GE	A18G	900	200	340	255	0.03	10	24	1	IL	5	9	17	27	39	33	28	17		
64	CTA-01-17 OFFICE RM.01.49 SUP	PL	G	A13G	600	180			0.01	5	6	1	IL	1	2	6	16	23	19	17	12		
65	CTA-01-18 OFFICE RM.01.50 SUP	PL	G	A13G	600	180			0.01	5	6	1	IL	1	2	6	16	23	19	17	12		
66	CTA-01-19 OFFICE RM.01.51 SUP	PL	G	A13G	600	180			0.033	5	6	1	IL	1	2	6	16	23	19	17	12		
67	CTA-01-20 MAIN HALL RM.00.28 EXT	SL	GJ	A02G	1200		700	400	1.314	20	52	1	IL	5	10	18	28	36	28	24	14		
68	CTA-01-21 MAIN HALL RM.00.28 SUP	SL	GJZ211	A02G	1800		700	450	1.41	20	86	1	IL	6	12	22	34	41	30	24	14		
69	CTA-01-22 MAIN HALL RM.00.28 EXT	SL	GJ	A02G	1200		900	400	1.373	20	63	1	IL	5	10	18	28	36	28	24	14		
70	CTA-01-23 MAIN HALL RM.00.28 SUP	SP	G	A02G	1200		900	300	1.379	20	62	1	IL	7	12	18	22	28	17	12	8		
71	CTA-01-24 WC EXT	PL	G	A13G	600	200			0.13	5	7	1	IL	1	2	6	16	23	19	17	12		
72	CTA-02-01 GENERAL CLASS RM.02.40 SUP	SL	GJ	A02G	900		400	200	0.25	20	21	1	IL	2	5	11	24	46	42	36	22		
73	CTA-02-02 GENERAL CLASS RM.02.40 EXT	SL	GJ	A02G	900		400	200	0.25	20	21	1	IL	2	5	11	24	46	42	36	22		

Item	System Reference	Code	Suffix	DWG	L1	L2/ID	W	H/Dia	Vol	PD	Wt	No.		Performance, dB							
74	CTA-02-03 GENERAL CLASS RM.02.28 SUP	SL	GJ	A02G	900		400	200	0.25	20	21	1	IL	2	5	11	24	46	42	36	22
75	CTA-02-04 GENERAL CLASS RM.02.28 EXT	SL	GJ	A02G	900		400	200	0.25	20	21	1	IL	2	5	11	24	46	42	36	22

NOTES:

LABEL WITH ITEM NO. & SYSTEM REF.

IL = STATIC INSERTION LOSS (dB)

G - SELF FINISH PRE-GALVANISED STEEL CONSTRUCTION.

M - MELINEX ENCAPSULATED INFILL.

J - SPLITTERS ARRANGED HORIZONTALLY.

E - RECTANGULAR ATTENUATOR SUPPLIED C/W CIRCULAR SPIGOT END CONNECTIONS. SPIGOT SIZE IN L2/D COLUMN ABOVE.

Z - ATTENUATOR SUPPLIED IN MODULAR SECTIONS INDICATED. REFER TO DATA SHEET A09H & A20H.

ATTENUATORS DELIVERED WITH POLYTHENE BLOCKED ENDS

TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	Chorlton High School	Quote No.	AHS 20393
Unit Reference	AHU 01 North	Revision	2
Unit Model	AIR FLEX 103	Date	04 Aug 2020

MECHANICAL STANDARD (BS EN 1886)

CASING		THERMAL	
Strength	D1	Transmittance	T3
Air Leakage	L2	Bridging	TB3

PERFORMANCE DATA

SUPPLY			EXTRACT			ERP Compliance		
Air Volume	5.800	m ³ /s	Air Volume	5.800	m ³ /s	Internal SFP	795.51	W/m ³ /s
Ext. Stat. Pressure	300	Pa	Ext. Stat. Pressure	300	Pa	ERP Compliance	2018	

UNIT CONSTRUCTION

PANEL			GENERAL	
Nom. Thickness	50	mm	Location	External
Outer Material	Goosewing Grey Plastisol		Roof Type	Pitched Roof
Inner Material	Galv Steel		Base Type	Full
Insulation Type	Polyurethane Foam		Base Material	150x75 P.F.C

UNIT DIMENSIONS

BOTTOM DECK			TOP DECK			O/ALL		
Width	2,550	mm	Width	2,550	mm	Width	2,550	mm
Height	1,200	mm	Height	1,200	mm	Height	2,650	mm
Length	3,700	mm	Length	3,700	mm	Length	3,700	mm
Base	150	mm	Base		mm	Weight +/- 10%	2,642	kg

SPECIFIC FAN POWER

SUPPLY FAN			EXTRACT FAN			SFP _v
Filter Condition	Clean		Filter Condition	Clean		1.77 w/l/s
Absorbed Power	5.54	kW	Absorbed Power	4.72	kW	
Drive Efficiency	100	%	Drive Efficiency	100	%	
Inverter Efficiency	100	%	Inverter Efficiency	100	%	
Motor Efficiency	100	%	Motor Efficiency	100	%	

NOTES

AHU will be delivered to site in 1 sections. Should further splits be required additional costs and length will be incurred.

SUPPLY PATH

INLET SECTION

Component 001

Conn. Type	None		Damper	Yes	Face Velocity	2.300	m/s
Conn. Size	N/A	mm	Location	External	Actuator	Motorised	
			Type	Low Loss			
			Size (WxH)	2400 x 1050 mm			
			Material	Galvanised Steel			

INCLUDED OPTIONS / NOTES

Large Damper Operated by 1no. Actuator

FILTER SECTION

Component 002

AIR SIDE

Air Volume	5.800	m ³ /s
Face Velocity	2.50	m/s
Air Pd (Clean)	70	Pa
Air Pd (Average)	122	Pa
Air Pd (Dirty)	175	Pa

SPECIFICATION

Type	Bag
Grade	F7
Withdrawal	Side

DETAILS

Qty	8
Nom. Size (WxHxD)	610x508x520 mm

INCLUDED OPTIONS / NOTES

Minihelic Gauge (0-250Pa)
LED Bulkhead Light c/w Switch

THERMAL WHEEL SECTION

TYPE : (Condensation)

Component 003

WINTER (F/A)

Air Volume	5.800	m ³ /s
Air on (db)	-5.00	°C
RH	100	%
Air off (db)	15.00	°C
RH	52.5	%
Total Duty	197.6	kW
Air Press. Drop	166	Pa
Tot. Efficiency	77	%

WINTER (EXHAUST)

Air Volume	5.800	m ³ /s
Air on (db)	21.00	°C
RH	50	%
Air off (db)	1.00	°C
RH	98.9	%
Total Duty	197.6	kW
Air Press. Drop	183	Pa
Tot. Efficiency	77	%

CONSTRUCTION

Fin Material	Standard
Casing Material	Galv
Control Unit	
Purge Sector	4: Yes

SUMMER (F/A)

Air Volume	5.800	m ³ /s
Air on (db)	29.00	°C
RH	43.8	%
Air off (db)	25.20	°C
RH	54.9	%
Total Duty	27.8	kW
Air Press. Drop	188	Pa
Tot. Efficiency	77	%

SUMMER (EXHAUST)

Air Volume	5.800	m ³ /s
Air on (db)	24.00	°C
RH	50	%
Air off (db)	27.80	°C
RH	39.8	%
Total Duty	27.8	kW
Air Press. Drop	185	Pa
Tot. Efficiency	77	%

INCLUDED OPTIONS / NOTES

Lifting Points Fitted to AHU Base

SUPPLY FAN SECTION

Component 004

DETAILS			FAN			MOTOR		
Air Volume	5.800	m3/s	Type	Plenum-EC		Efficiency	1.00	
Ext. Static Pressure	300	Pa	Impellor	Backward Curved		Qty	SINGLE	
Tot. Static Pressure	765	Pa	Qty	Dual		Power	5.20	kW
Starting Method	Speed Controller		Operation	50	%	Speed	1860	RPM
A. V. Type	N/A		Model	GR56C-ZID.GQ.CR		Pole	N/A	
			Speed	1578	RPM	Full Load Current	8.20	Amp
			Max. Speed	1860	RPM	Electrical Supply	380/3/50	
			Speed Set Value	85	%			
			Absorbed Power	3.20	kW			
			Total Efficiency	76	%			

Sound Power Lw	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Fan Inlet (dB)	79	85	77	75	72	69	66	66
Fan Outlet (dB)	82	90	81	83	80	77	74	69

Note : Fan manufacturer data used in accordance with DIN 463 Part 38 & 39, BS 848 Part 2 & ISO 5136. A correction of +6dB should be applied across all octave bands for unit casing adjustment

INCLUDED OPTIONS / NOTES

Door Guard
LED Bulkhead Light c/w Switch

COOLING COIL SECTION

Component 005

AIR SIDE			REFRIG. SIDE			CONSTRUCTION		
Air Volume	5.800	m3/s	Medium	R410a		Tube Material	Cu - standard	
Air on (db)	25.20	°C	Evap. Temp.	6.00	°C	Fin Material	Al - Standard	
Air on (wb)	18.94	°C	Fluid Press. Drop	NaN	kPa	Casing Material	Galv Steel	
Relative Humid.	55.6	%	Internal Volume	33.46	l	Header Material	Copper	
Air off (db)	20.00	°C	No. of Ind. Circuits	3		Inlet Conn. Size	28	mm
Air off (wb)	17.00	°C				Outlet Conn. Size	28	mm
Relative Humid.	75	%				Coil Drain Tray	No	
Total Duty	42.78	kW				Material	None	
Sens. Duty	37.81	kW				Coil Int. Drain Tray	Yes	
Air Press. Drop	99	Pa				Material	SS 304 Tray	
Face Velocity	2.68	m/s				Eliminator	No	
Sens. Heat Ratio	88	%				Loose Flange	No	
						Dims (WxH)	2460x1040	mm
						Dims (D)	220	mm

INCLUDED OPTIONS / NOTES

Coil has been selected to suit the proposed AHS condensing unit(s) . Coil size and price may change if alternative condensing units are used
Heating Cycle - 14.8°C - 20.0°C (37kW)
Supply only of 3no 28kW Condensers

OUTLET SECTION

Component 006

Conn. Type	40mm Galv Flange		Damper	No	Face Velocity	2.150	m/s
Conn. Size	2450 x 1100	mm	Location	N/A	Actuator	N/A	
			Type	N/A			
			Size (WxH)	N/A			
			Material	N/A			

EXTRACT PATH

INLET SECTION

Component 007

Conn. Type	40mm Galv Flange		Damper	No		Face Velocity	2.150	m/s
Conn. Size	2450 x 1100	mm	Location	N/A		Actuator	N/A	
			Type	N/A				
			Size (WxH)	N/A	mm			
			Material	N/A				

CONTROLS SECTION

Component 008

Controller Type	BACnet IP	
Controls Strategy -	Constant Volume	Constant Temperature

INCLUDED OPTIONS / NOTES

Pre-Wire Motor to External Isolator c/w aux contacts
Single power supply - 70A FLC

FILTER SECTION

Component 009

AIR SIDE			SPECIFICATION		DETAILS		
Air Volume	5.800	m ³ /s	Type	Panel	Qty	8	
Face Velocity	2.44	m/s	Grade	M5	Nom. Size (WxHxD)	610x508x50	mm
Air Pd (Clean)	66	Pa	Withdrawal	Side			
Air Pd (Average)	83	Pa					
Air Pd (Dirty)	100	Pa					

INCLUDED OPTIONS / NOTES

Minihelic Gauge (0-250Pa)
LED Bulkhead Light c/w Switch

EXHAUST FAN SECTION

Component 010

DETAILS			FAN		MOTOR		
Air Volume	5.800	m ³ /s	Type	Plenum-EC	Efficiency	1.00	
Ext. Static Pressure	300	Pa	Impellor	Backward Curved	Qty	SINGLE	
Tot. Static Pressure	588	Pa	Qty	Dual	Power	5.20	kW
Starting Method	Speed Controller		Operation	50 %	Speed	1860	RPM
A. V. Type	N/A		Model	GR56C-ZID.GQ.CR	Pole	N/A	
			Speed	14752	Full Load Current	8.20	Amp
			Max. Speed	1860	Electrical Supply	380/3/50	
			Speed Set Value	78			
			Absorbed Power	2.49			
			Total Efficiency	76			

Sound Power Lw	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Fan Inlet (dB)	82	85	77	5	71	68	65	66
Fan Outlet (dB)	84	90	80	82	79	75	72	68

Note : Fan manufacturer data used in accordance with DIN 463 Part 38 & 39, BS 848 Part 2 & ISO 5136. A correction of +6dB should be applied across all octave bands for unit casing adjustment

INCLUDED OPTIONS / NOTES

Door Guard
LED Bulkhead Light c/w Switch

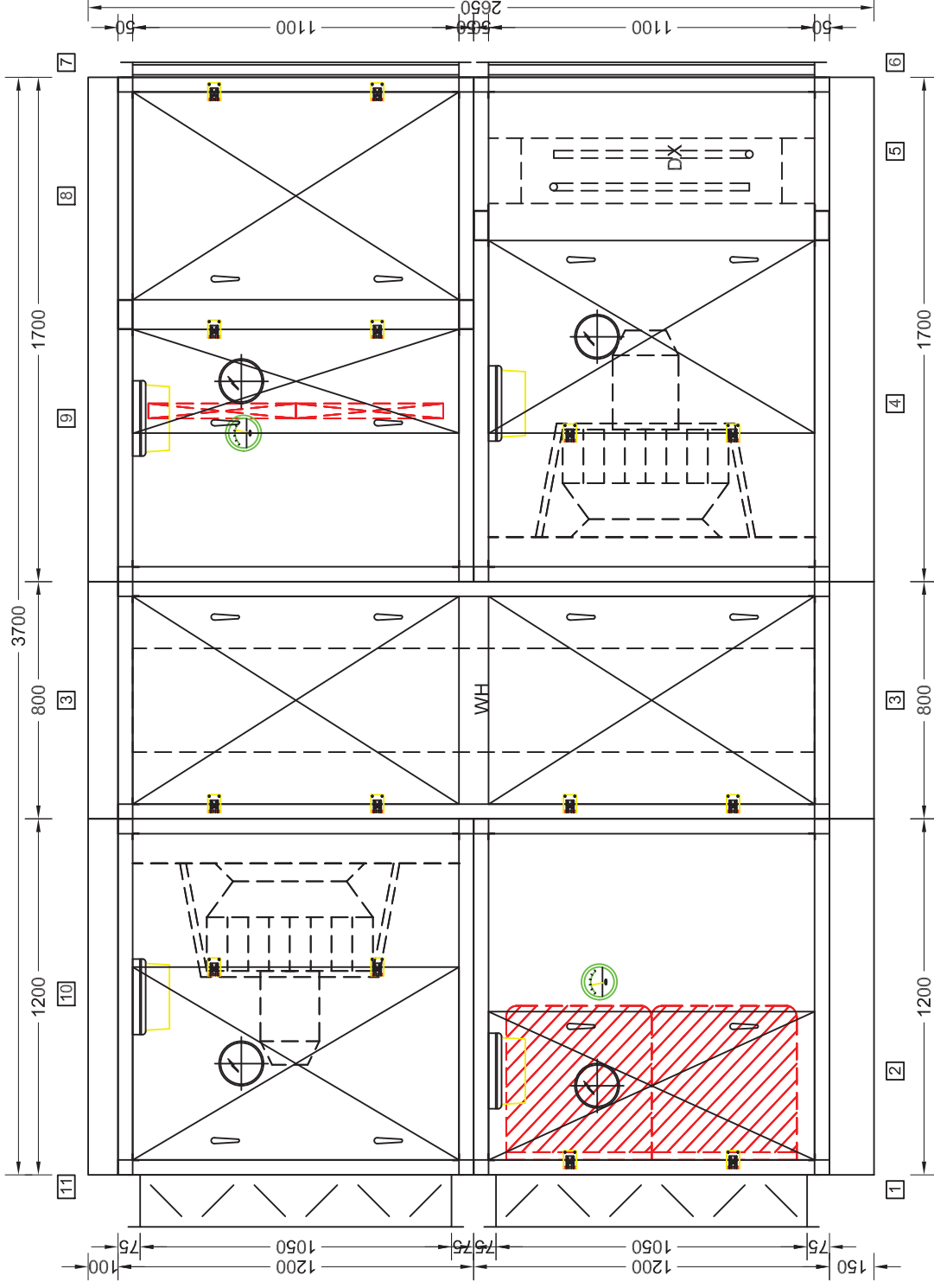
OUTLET SECTION

Component 011

Conn. Type	None	Damper	Yes	Face Velocity	2.300	m/s
Conn. Size	N/A	Location	External	Actuator	Motorised	
		Type	Low Loss			
		Size (WxH)	2400 x 1050 mm			
		Material	Galvanised Steel			

INCLUDED OPTIONS / NOTES

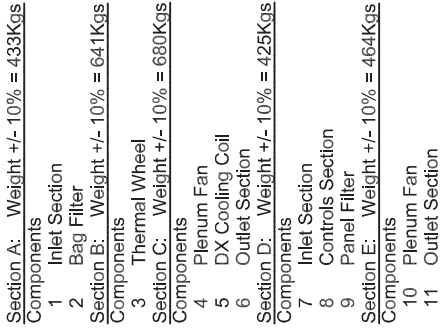
Large Damper Operated by 1no. Actuator



ELEVATION

Customer	BAM	Air flow	m3/s	Not To Scale All Dimensions shown are in mm		This Drawing is property of AHS and should not be re-produced in any form		No.	Revision	Date
				Kg	AHU No.	1				
Project	Chorlton High School	Weight	2642	Pa	Dwg No.	20393-1-0				
Location	AHU 01 North	E.S.P	300 / 300	Nos.						
Model	AIR FLEX 103 / AIR FLEX 103	Quantity	1							

**AIR HANDLING
SYSTEMS LTD.**
3 - 5 HUPNACE INDUSTRIAL ESTATE
SHILDON, COUNTY DURHAM, DL4 1QB

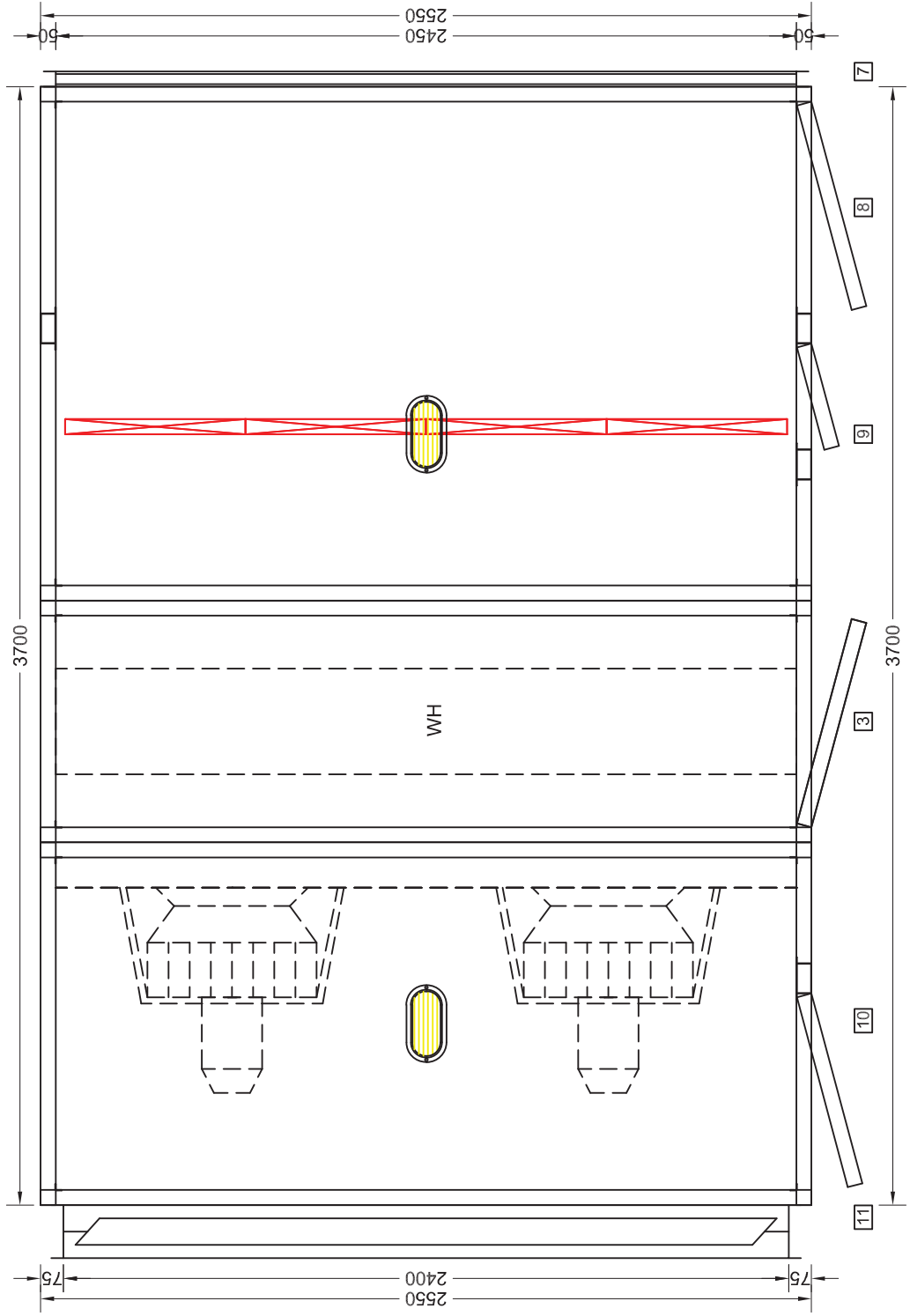


Customer	BAM	Air flow	5.8/5.8	m ³ /s	Not To Scale All Dimensions shown are in mm		This drawing is property of AHS and should not be re-produced in any form
Project	Chorlton High School	Weight	2642	Kg	AHU No. 1		
Location	AHU 01 North	E.S.P	300 / 300	Pa	Dwg No. 20393-1-0		
Model	AIR FLEX 103 / AIR FLEX 103	Quantity	1	Nos.			

AIR HANDLING SYSTEMS LTD. 3 - 5 HURPICE INDUSTRIAL ESTATE SHILDON, COUNTY DURHAM DL4 1QB	No.	Revision	Date

This Drawing is property of AHS and should not be re-produced In any form

- Section A: Weight +/- 10% = 433Kgs
- Components
- 1 Inlet Section
 - 2 Bag Filter
- Section B: Weight +/- 10% = 641Kgs
- Components
- 3 Thermal Wheel
- Section C: Weight +/- 10% = 680Kgs
- Components
- 4 Plenum Fan
 - 5 DX Cooling Coil
 - 6 Outlet Section
- Section D: Weight +/- 10% = 425Kgs
- Components
- 7 Inlet Section
 - 8 Controls Section
 - 9 Panel Filter
- Section E: Weight +/- 10% = 464Kgs
- Components
- 10 Plenum Fan
 - 11 Outlet Section



PLAN UPPER DECK

Customer	BAM	Air flow	5.8/5.8	m3/s	Not To Scale All Dimensions shown are in mm		No.	Revision	Date	
	Project	Chorlton High School	Weight	2642	Kg	AHU No.				1
Location	AHU 01 North	E.S.P	300 / 300	Pa	Dwg No.	20393-1-0				
Model	AIR FLEX 103 / AIR FLEX 103	Quantity	1	Nos.						

AIR HANDLING
SYSTEMS LTD.

3 - 5 HURMAGE INDUSTRIAL ESTATE
SHILDON, COUNTY DURHAM, DL4 1QB

TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	Chorlton High School	Quote No.	AHS 20393
Unit Reference	AHU 02 South	Revision	2
Unit Model	AIR FLEX 103	Date	04 Aug 2020

MECHANICAL STANDARD (BS EN 1886)

CASING

Strength	D1
Air Leakage	L2

THERMAL

Transmittance	T3
Bridging	TB3

PERFORMANCE DATA

SUPPLY

Air Volume	6.000	m ³ /s
Ext. Stat. Pressure	300	Pa

EXTRACT

Air Volume	6.000	m ³ /s
Ext. Stat. Pressure	300	Pa

ERP Compliance

Internal SFP	828.26	W/m ³ /s
ERP Compliance	2018	

UNIT CONSTRUCTION

PANEL

Nom. Thickness	50	mm
Outer Material	Goosewing Grey Plastisol	
Inner Material	Galv Steel	
Insulation Type	Polyurethane Foam	

GENERAL

Location	External
Roof Type	Pitched Roof
Base Type	Full
Base Material	150x75 P.F.C

UNIT DIMENSIONS

BOTTOM DECK

Width	2,550	mm
Height	1,200	mm
Length	3,700	mm
Base	150	mm

TOP DECK

Width	2,550	mm
Height	1,200	mm
Length	3,700	mm
Base		mm

O/ALL

Width	2,550	mm
Height	2,650	mm
Length	3,700	mm
Weight +/- 10%	2,642	kg

SPECIFIC FAN POWER

SUPPLY FAN

	6.000	m ³ /s
Filter Condition	Clean	
Absorbed Power	5.79	kW
Drive Efficiency	100	%
Inverter Efficiency	100	%
Motor Efficiency	100	%

EXTRACT FAN

	6.000	m ³ /s
Filter Condition	Clean	
Absorbed Power	4.97	kW
Drive Efficiency	100	%
Inverter Efficiency	100	%
Motor Efficiency	100	%

SFPv

1.79 w/l/s

NOTES

AHU will be delivered to site in 1 sections. Should further splits be required additional costs and length will be incurred.

SUPPLY PATH

INLET SECTION

Component 001

Conn. Type	None		Damper	Yes	Face Velocity	2.380	m/s
Conn. Size	N/A	mm	Location	External	Actuator	Motorised	
			Type	Low Loss			
			Size (WxH)	2400 x 1050 mm			
			Material	Galvanised Steel			

INCLUDED OPTIONS / NOTES

Large Damper Operated by 1no. Actuator

FILTER SECTION

Component 002

AIR SIDE

Air Volume	6.000	m ³ /s
Face Velocity	2.59	m/s
Air Pd (Clean)	72	Pa
Air Pd (Average)	124	Pa
Air Pd (Dirty)	175	Pa

SPECIFICATION

Type	Bag
Grade	F7
Withdrawal	Side

DETAILS

Qty	8
Nom. Size (WxHxD)	610x508x520 mm

INCLUDED OPTIONS / NOTES

Minihelic Gauge (0-250Pa)
LED Bulkhead Light c/w Switch

THERMAL WHEEL SECTION

TYPE : (Condensation)

Component 003

WINTER (F/A)

Air Volume	6.000	m ³ /s
Air on (db)	-5.00	°C
RH	100	%
Air off (db)	14.90	°C
RH	52.6	%
Total Duty	203	kW
Air Press. Drop	172	Pa
Tot. Efficiency	76.5	%

WINTER (EXHAUST)

Air Volume	6.000	m ³ /s
Air on (db)	21.00	°C
RH	50	%
Air off (db)	1.10	°C
RH	98.9	%
Total Duty	203	kW
Air Press. Drop	190	Pa
Tot. Efficiency	76.5	%

CONSTRUCTION

Fin Material	Standard
Casing Material	Galv
Control Unit	
Purge Sector	4: Yes

SUMMER (F/A)

Air Volume	6.000	m ³ /s
Air on (db)	29.00	°C
RH	43.8	%
Air off (db)	25.20	°C
RH	54.8	%
Total Duty	28.1	kW
Air Press. Drop	195	Pa
Tot. Efficiency	76.5	%

SUMMER (EXHAUST)

Air Volume	6.000	m ³ /s
Air on (db)	24.00	°C
RH	50	%
Air off (db)	27.80	°C
RH	39.9	%
Total Duty	28.1	kW
Air Press. Drop	192	Pa
Tot. Efficiency	76.5	%

INCLUDED OPTIONS / NOTES

Lifting Points Fitted to AHU Base

SUPPLY FAN SECTION

Component 004

DETAILS

Air Volume	6.000	m ³ /s
Ext. Static Pressure	300	Pa
Tot. Static Pressure	778	Pa
Starting Method	Speed Controller	
A. V. Type	N/A	

FAN

Type	Plenum-EC	
Impellor	Backward Curved	
Qty	Dual	
Operation	50	%
Model	GR56C-ZID.GQ.CR	
Speed	1605	RPM
Max. Speed	1860	RPM
Speed Set Value	86	%
Absorbed Power	3.37	kW
Total Efficiency	76	%

MOTOR

Efficiency	1.00	
Qty	SINGLE	
Power	5.20	kW
Speed	1860	RPM
Pole	N/A	
Full Load Current	8.20	Amp
Electrical Supply	380/3/50	

Sound Power Lw	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Fan Inlet (dB)	81	85	78	75	73	69	67	67
Fan Outlet (dB)	84	90	81	83	80	78	74	70

Note : Fan manufacturer data used in accordance with DIN 463 Part 38 & 39, BS 848 Part 2 & ISO 5136. A correction of +6dB should be applied across all octave bands for unit casing adjustment

INCLUDED OPTIONS / NOTES

Door Guard
LED Bulkhead Light c/w Switch

COOLING COIL SECTION

Component 005

AIR SIDE

Air Volume	6.000	m ³ /s
Air on (db)	25.20	°C
Air on (wb)	18.94	°C
Relative Humid.	55.6	%
Air off (db)	20.00	°C
Air off (wb)	17.00	°C
Relative Humid.	75	%
Total Duty	44.14	kW
Sens. Duty	39.12	kW
Air Press. Drop	104	Pa
Face Velocity	2.77	m/s
Sens. Heat Ratio	89	%

REFRIG. SIDE

Medium	R410a	
Evap. Temp.	6.00	°C
Fluid Press. Drop	NaN	kPa
Internal Volume	33.46	l
No. of Ind. Circuits	3	

CONSTRUCTION

Tube Material	Cu - standard	
Fin Material	Al - Standard	
Casing Material	Galv Steel	
Header Material	Copper	
Inlet Conn. Size	28	mm
Outlet Conn. Size	28	mm
Coil Drain Tray	No	
Material	None	
Coil Int. Drain Tray	Yes	
Material	SS 304 Tray	
Eliminator	No	
Loose Flange	No	
Dims (WxH)	2460x1040	mm
Dims (D)	220	mm

INCLUDED OPTIONS / NOTES

Coil has been selected to suit the proposed AHS condensing unit(s) . Coil size and price may change if alternative condensing units are used
Heating Cycle - 14.7°C - 20.0°C (39kW)
Supply only of 3no 28kW Condensers

OUTLET SECTION

Component 006

Conn. Type	40mm Galv Flange		Damper	No	Face Velocity	2.230	m/s
Conn. Size	2450 x 1100	mm	Location	N/A	Actuator	N/A	
			Type	N/A			
			Size (WxH)	N/A			
			Material	N/A			

EXTRACT PATH

INLET SECTION						Component	007
Conn. Type	40mm Galv Flange		Damper	No	Face Velocity	2.230	m/s
Conn. Size	2450 x 1100	mm	Location	N/A	Actuator	N/A	
			Type	N/A			
			Size (WxH)	N/A			mm
			Material	N/A			

CONTROLS SECTION			Component	008
Controller Type	BACnet IP			
Controls Strategy -	Constant Volume	Constant Temperature		

INCLUDED OPTIONS / NOTES

Pre-Wire Motor to External Isolator c/w aux contacts
Single power supply - 70A FLC

FILTER SECTION							Component	009
AIR SIDE			SPECIFICATION		DETAILS			
Air Volume	6.000	m³/s	Type	Panel	Qty	8		
Face Velocity	2.53	m/s	Grade	M5	Nom. Size (WxHxD)	610x508x50	mm	
Air Pd (Clean)	69	Pa	Withdrawal	Side				
Air Pd (Average)	84	Pa						
Air Pd (Dirty)	100	Pa						

INCLUDED OPTIONS / NOTES

Minihelic Gauge (0-250Pa)
LED Bulkhead Light c/w Switch

EXHAUST FAN SECTION						Component	010
DETAILS			FAN			MOTOR	
Air Volume	6.000	m3/s	Type	Plenum-EC		Efficiency	1.00
Ext. Static Pressure	300	Pa	Impellor	Backward Curved		Qty	SINGLE
Tot. Static Pressure	596	Pa	Qty	Dual		Power	5.20 kW
Starting Method	Speed Controller		Operation	50	%	Speed	1860 RPM
A. V. Type	N/A		Model	GR56C-ZID.GQ.CR		Pole	N/A
			Speed	1480	RPM	Full Load Current	8.20 Amp
			Max. Speed	1860	RPM	Electrical Supply	380/3/50
			Speed Set Value	80	%		
			Absorbed Power	2.62	kW		
			Total Efficiency	76	%		

Sound Power Lw	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Fan Inlet (dB)	84	85	78	75	72	68	66	66
Fan Outlet (dB)	86	90	81	83	80	75	72	69

Note : Fan manufacturer data used in accordance with DIN 463 Part 38 & 39, BS 848 Part 2 & ISO 5136. A correction of +6dB should be applied across all octave bands for unit casing adjustment

INCLUDED OPTIONS / NOTES

Door Guard
LED Bulkhead Light c/w Switch

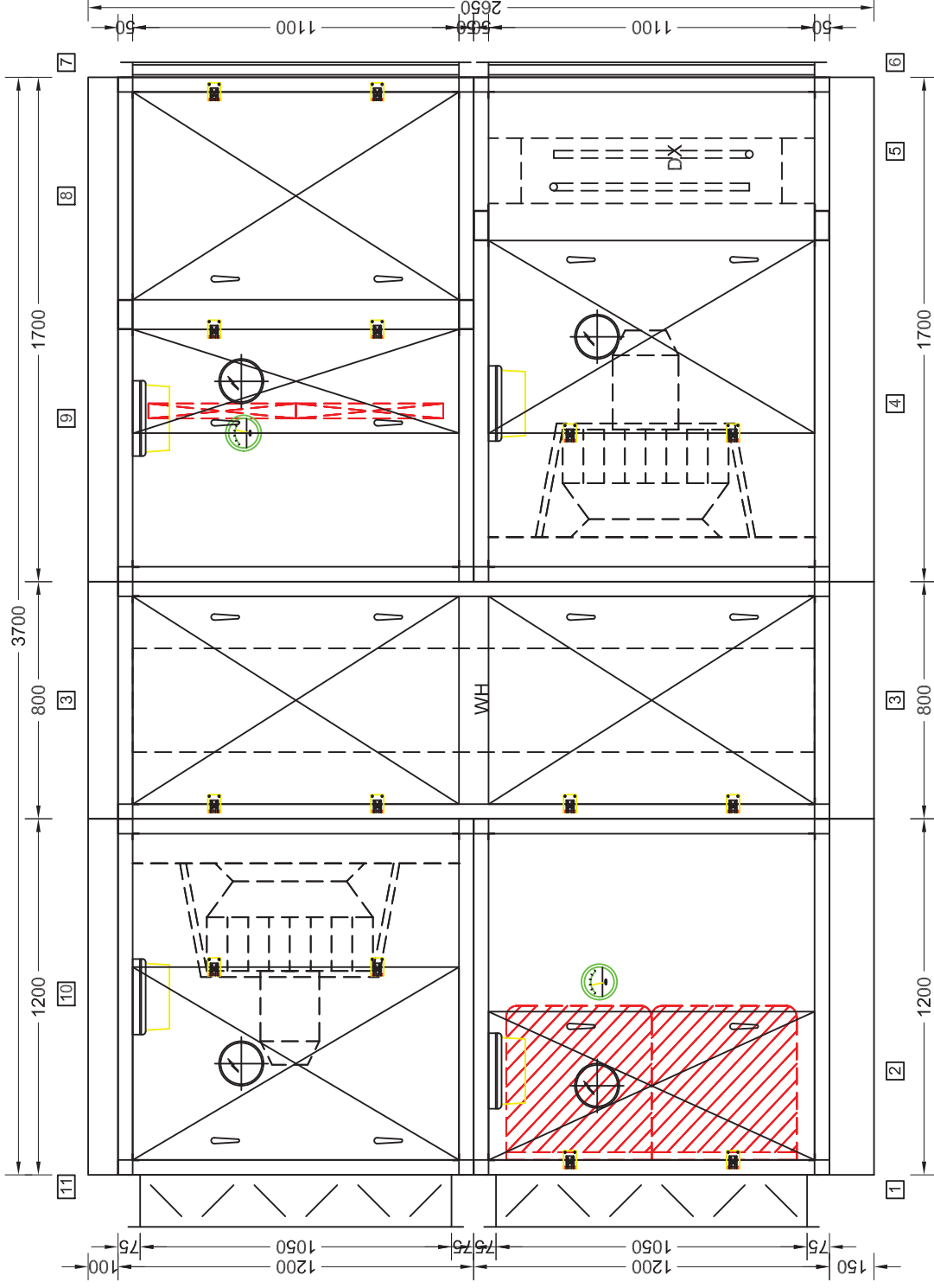
OUTLET SECTION

Component 011

Conn. Type	None	Damper	Yes	Face Velocity	2.380	m/s
Conn. Size	N/A	Location	External	Actuator	Motorised	
		Type	Low Loss			
		Size (WxH)	2400 x 1050 mm			
		Material	Galvanised Steel			

INCLUDED OPTIONS / NOTES

Large Damper Operated by 1no. Actuator



ELEVATION

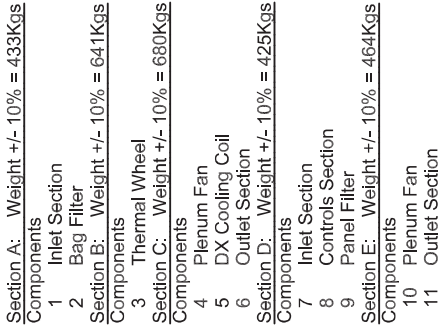
Customer	BAM	Air flow	6/6	m3/s	Not To Scale All Dimensions shown are in mm		This Drawing is property of AHS and should not be re-produced in any form	No.	Revision	Date
Project	Chorlton High School	Weight	2642	Kg	AHU No.	2	AIR HANDLING SYSTEMS LTD. 3 - 5 HUPNACE INDUSTRIAL ESTATE SHILDON, COUNTY DURHAM, DL4 1QB			
Location	AHU 02 South	E.S.P	300 / 300	Pa	Dwg No.	20393-2-0				
Model	AIR FLEX 103 / AIR FLEX 103	Quantity	1	Nos.						

Technical drawing of a three-story building facade. The drawing includes dimensions and labels for various components:

- Overall Dimensions:**
 - Width: 2550 (top and bottom)
 - Height: 3700 (left side)
 - Section Height: 1700 (top section), 800 (middle section), 1200 (bottom section)
- Labels and Components:**
 - 1:** Bottom section, featuring a series of red dashed lines forming a zigzag pattern.
 - 2:** Section 2, featuring a central yellow oval window.
 - 3:** Section 3, featuring a central yellow oval window.
 - 4:** Section 4, featuring two yellow trapezoidal windows.
 - 5:** Section 5, featuring a central yellow oval window.
 - 6:** Section 6, featuring a central yellow oval window.
 - WH:** Label for the middle section.
 - DX:** Label for the top section.
- Other Dimensions:**
 - 75 (bottom left corner)
 - 2400 (bottom left)
 - 2550 (bottom left)
 - 50 (top left)
 - 2450 (top left)
 - 50 (top left)

Customer	BAM	Air flow	6/6	m3/s	With Tr. Scale All dimensions shown are in mm		This Drawing is property of ABE and should not be re-produced in any form
Project	Chorlton High School	Weight	2642	Kg	AHU No. 2		
Location	AHU 02 South	E.S.P	300 / 300	Pa	Dwg No. 20393-2-0		
Model	AIR FLEX 103 / AIR FLEX 103	Quantity	1	Nos.			

AIR HANDLING SYSTEMS LTD. 3 - 5 HURLOCK INDUSTRIAL ESTATE CHILDON, COUNTY DURHAM, DL4 1QB	No.	Revision	Date



Customer	BAM	Air flow	6/6	m ³ /s	Not To Scale All Dimensions shown are in mm		This drawing is property of AHS and should not be re-produced in any form
Project	Chorlton High School	Weight	2642	Kg	AHU No. 2		
Location	AHU 02 South	E.S.P	300 / 300	Pa	Dwg No. 203993-2-0		
Model	AIR FLEX 103 / AIR FLEX 103	Quantity	1	Nos.			

AIR HANDLING SYSTEMS LTD.		No.	Revision	Date
3 - 5 HUNFACE INDUSTRIAL ESTATE SHILDON, COUNTY DURHAM, DL4 1QB				

TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	Chorlton High School	Quote No.	AHS 20393
Unit Reference	AHU 03 Sports Hall	Revision	2
Unit Model	AIR FLEX 76	Date	04 Aug 2020

MECHANICAL STANDARD (BS EN 1886)

CASING

Strength	D1
Air Leakage	L2

THERMAL

Transmittance	T3
Bridging	TB3

PERFORMANCE DATA

SUPPLY

Air Volume	2.500	m ³ /s
Ext. Stat. Pressure	300	Pa

EXTRACT

Air Volume	2.500	m ³ /s
Ext. Stat. Pressure	300	Pa

ERP Compliance

Internal SFP	611.31	W/m ³ /s
ERP Compliance	2018	

UNIT CONSTRUCTION

PANEL

Nom. Thickness	50	mm
Outer Material	Goosewing Grey Plastisol	
Inner Material	Galv Steel	
Insulation Type	Polyurethane Foam	

GENERAL

Location	Internal
Roof Type	None
Base Type	Full
Base Material	100x50 P.F.C

UNIT DIMENSIONS

BOTTOM DECK

Width	1,950	mm
Height	950	mm
Length	3,200	mm
Base	100	mm

TOP DECK

Width	1,950	mm
Height	950	mm
Length	3,200	mm
Base		mm

O/ALL

Width	1,950	mm
Height	2,000	mm
Length	3,200	mm
Weight +/- 10%	1,526	kg

SPECIFIC FAN POWER

SUPPLY FAN

	2.500	m ³ /s
Filter Condition	Clean	
Absorbed Power	2.31	kW
Drive Efficiency	100	%
Inverter Efficiency	100	%
Motor Efficiency	100	%

EXTRACT FAN

	2.500	m ³ /s
Filter Condition	Clean	
Absorbed Power	2.06	kW
Drive Efficiency	100	%
Inverter Efficiency	100	%
Motor Efficiency	100	%

SFPv

1.75 w/l/s

NOTES

AHU will be delivered to site in 1 sections. Should further splits be required additional costs and length will be incurred.

SUPPLY PATH

INLET SECTION						Component	001
Conn. Type	None		Damper	Yes	Face Velocity	1.710	m/s
Conn. Size	N/A	mm	Location	External	Actuator	Motorised	
			Type	Low Loss			
			Size (WxH)	1800 x 810	mm		
			Material	Galvanised Steel			

FILTER SECTION						Component	002
AIR SIDE			SPECIFICATION		DETAILS		
Air Volume	2.500	m ³ /s	Type	Bag	Qty	3	
Face Velocity	1.81	m/s	Grade	F7	Nom. Size (WxHxD)	610x508x520	mm
Air Pd (Clean)	51	Pa	Withdrawal	Side	Qty	3	
Air Pd (Average)	113	Pa			Nom. Size (WxHxD)	610x305x520	mm
Air Pd (Dirty)	175	Pa					

INCLUDED OPTIONS / NOTES

Minihelic Gauge (0-250Pa)
LED Bulkhead Light c/w Switch

THERMAL WHEEL SECTION			TYPE : (Condensation)			Component	003
WINTER (F/A)			WINTER (EXHAUST)			CONSTRUCTION	
Air Volume	2.500	m ³ /s	Air Volume	2.500	m ³ /s	Fin Material	Standard
Air on (db)	-5.00	°C	Air on (db)	21.00	°C	Casing Material	Galv
RH	100	%	RH	50	%	Control Unit	
Air off (db)	15.20	°C	Air off (db)	0.80	°C	Purge Sector	4: Yes
RH	52.7	%	RH	99	%		
Total Duty	86.1	kW	Total Duty	86.1	kW		
Air Press. Drop	114	Pa	Air Press. Drop	125	Pa		
Tot. Efficiency	77.5	%	Tot. Efficiency	77.5	%		
SUMMER (F/A)			SUMMER (EXHAUST)				
Air Volume	2.500	m ³ /s	Air Volume	2.500	m ³ /s		
Air on (db)	29.00	°C	Air on (db)	24.00	°C		
RH	43.8	%	RH	50	%		
Air off (db)	25.10	°C	Air off (db)	27.90	°C		
RH	55.1	%	RH	39.7	%		
Total Duty	12	kW	Total Duty	12	kW		
Air Press. Drop	129	Pa	Air Press. Drop	126	Pa		
Tot. Efficiency	77.5	%	Tot. Efficiency	77.5	%		

INCLUDED OPTIONS / NOTES

Lifting Points Fitted to AHU Base

SUPPLY FAN SECTION

Component 004

DETAILS			FAN			MOTOR		
Air Volume	2.500	m ³ /s	Type	Plenum-EC		Efficiency	1.00	
Ext. Static Pressure	300	Pa	Impellor	Backward Curved		Qty	SINGLE	
Tot. Static Pressure	674	Pa	Qty	Single		Power	5.40	kW
Starting Method	Speed Controller		Operation	100	%	Speed	2130	RPM
A. V. Type	N/A		Model	GR50C-ZID.GL.CR		Pole	N/A	
			Speed	1762	RPM	Full Load Current	6.80	Amp
			Max. Speed	2130	RPM	Electrical Supply	380/3/50	
			Speed Set Value	83	%			
			Absorbed Power	2.72	kW			
			Total Efficiency	68	%			

Sound Power Lw	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Fan Inlet (dB)	81	79	83	80	73	70	66	67
Fan Outlet (dB)	83	83	89	86	84	79	75	72

Note : Fan manufacturer data used in accordance with DIN 463 Part 38 & 39, BS 848 Part 2 & ISO 5136. A correction of +6dB should be applied across all octave bands for unit casing adjustment

INCLUDED OPTIONS / NOTES

Door Guard
LED Bulkhead Light c/w Switch

COOLING COIL SECTION

Component 005

AIR SIDE			REFRIG. SIDE			CONSTRUCTION		
Air Volume	2.500	m ³ /s	Medium	R410a		Tube Material	Cu - standard	
Air on (db)	25.10	°C	Evap. Temp.	6.00	°C	Fin Material	Al - Standard	
Air on (wb)	18.78	°C	Fluid Press. Drop	NaN	kPa	Casing Material	Galv Steel	
Relative Humid.	55.1	%	Internal Volume	18.84	l	Header Material	Copper	
Air off (db)	20.00	°C	No. of Ind. Circuits	2		Inlet Conn. Size	28	mm
Air off (wb)	16.90	°C				Outlet Conn. Size	28	mm
Relative Humid.	73	%				Coil Drain Tray	No	
Total Duty	18.14	kW				Material	None	
Sens. Duty	15.98	kW				Coil Int. Drain Tray	Yes	
Air Press. Drop	68	Pa				Material	SS 304 Tray	
Face Velocity	2.1	m/s				Eliminator	No	
Sens. Heat Ratio	88	%				Loose Flange	No	
						Dims (WxH)	1860x800	mm
						Dims (D)	220	mm

INCLUDED OPTIONS / NOTES

Coil has been selected to suit the proposed AHS condensing unit(s) . Coil size and price may change if alternative condensing units are used
Heating Cycle - 15.2°C - 20.0°C (15kW)
Supply only of 2no 22kW Condensers

OUTLET SECTION

Component 006

Conn. Type	40mm Galv Flange		Damper	No	Face Velocity	1.570	m/s
Conn. Size	1850 x 860	mm	Location	N/A	Actuator	N/A	
			Type	N/A			
			Size (WxH)	N/A			
			Material	N/A			

EXTRACT PATH

INLET SECTION

Component 007

Conn. Type	40mm Galv Flange		Damper	No		Face Velocity	1.570	m/s
Conn. Size	1850 x 860	mm	Location	N/A		Actuator	N/A	
			Type	N/A				
			Size (WxH)	N/A	mm			
			Material	N/A				

CONTROLS SECTION

Component 008

Controller Type	BACnet IP	
Controls Strategy -	Constant Volume	Constant Temperature

INCLUDED OPTIONS / NOTES

Pre-Wire Motor to External Isolator c/w aux contacts
Single power supply - 14A FLC

FILTER SECTION

Component 009

AIR SIDE			SPECIFICATION		DETAILS		
Air Volume	2.500	m ³ /s	Type	Panel	Qty	3	
Face Velocity	1.77	m/s	Grade	M5	Nom. Size (WxHxD)	610x508x50	mm
Air Pd (Clean)	48	Pa	Withdrawal	Side	Qty	3	
Air Pd (Average)	74	Pa			Nom. Size (WxHxD)	610x305x50	mm
Air Pd (Dirty)	100	Pa					

INCLUDED OPTIONS / NOTES

Minihelic Gauge (0-250Pa)
LED Bulkhead Light c/w Switch

EXHAUST FAN SECTION

Component 010

DETAILS			FAN		MOTOR		
Air Volume	2.500	m ³ /s	Type	Plenum-EC	Efficiency	1.00	
Ext. Static Pressure	300	Pa	Impellor	Backward Curved	Qty	SINGLE	
Tot. Static Pressure	528	Pa	Qty	Single	Power	3.50	kW
Starting Method	Speed Controller		Operation	100 %	Speed	1860	RPM
A. V. Type	N/A		Model	GR50C-ZID.GG.CR	Pole	N/A	
			Speed	1660 RPM	Full Load Current	4.40	Amp
			Max. Speed	1860 RPM	Electrical Supply	380/3/50	
			Speed Set Value	89 %			
			Absorbed Power	2.22 kW			
			Total Efficiency	66 %			

Sound Power Lw	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Fan Inlet (dB)	80	79	81	78	72	69	68	69
Fan Outlet (dB)	81	84	86	84	82	77	74	71

Note : Fan manufacturer data used in accordance with DIN 463 Part 38 & 39, BS 848 Part 2 & ISO 5136. A correction of +6dB should be applied across all octave bands for unit casing adjustment

INCLUDED OPTIONS / NOTES

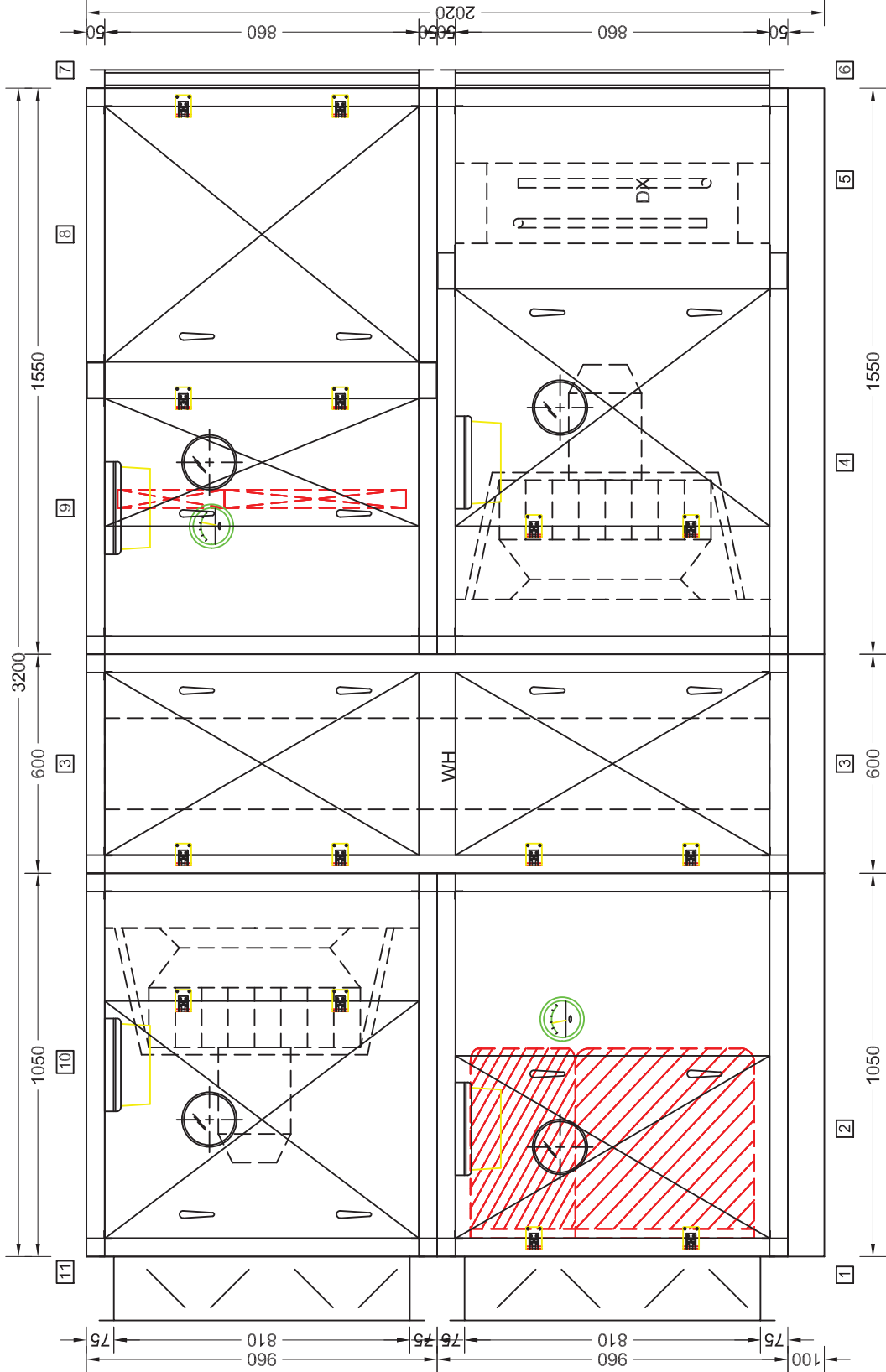
Door Guard
LED Bulkhead Light c/w Switch

OUTLET SECTION

Component 011

Conn. Type	None	Damper	Yes	Face Velocity	1.710	m/s
Conn. Size	N/A	Location	External	Actuator	Motorised	
		Type	Low Loss			
		Size (WxH)	1800 x 810 mm			
		Material	Galvanised Steel			

- Section A: Weight +/- 10% = 256Kgs
Components
1 Inlet Section
2 Bag Filter
- Section B: Weight +/- 10% = 345Kgs
Components
3 Thermal Wheel
- Section C: Weight +/- 10% = 398Kgs
Components
4 Plenum Fan
5 DX Cooling Coil
6 Outlet Section
- Section D: Weight +/- 10% = 280Kgs
Components
7 Inlet Section
8 Controls Section
9 Panel Filter
- Section E: Weight +/- 10% = 249Kgs
Components
10 Plenum Fan
11 Outlet Section

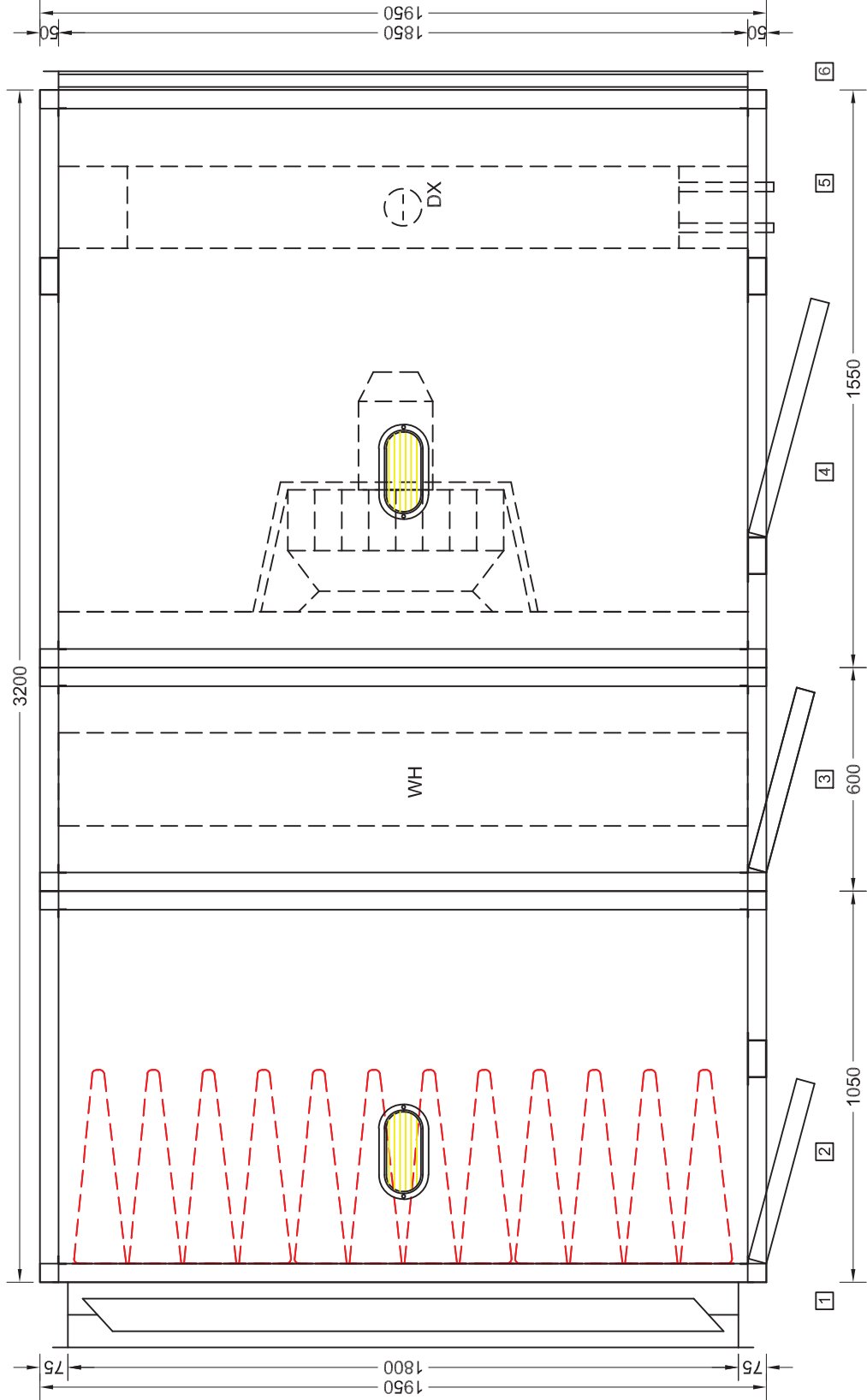


ELEVATION

Customer	BAM	Air flow	2.5/2.5	m3/s	Not To Scale All Dimensions shown are in mm			No.	Revision	Date
Project	Chorlton High School	Weight	1526	Kg	AHU No.	3				
Location	AHU 03 Sports Hall	E.S.P	300 / 300	Pa	Dwg No.	20393-3-0				
Model	AIR FLEX 76 / AIR FLEX 76	Quantity	1	Nos.						

AIR HANDLING
SYSTEMS LTD.
3 - 5 HUPNACE INDUSTRIAL ESTATE
SHILDON, COUNTY DURHAM, DL4 1QB

- Section A: Weight +/- 10% = 256Kgs
Components
1 Inlet Section
2 Bag Filter
- Section B: Weight +/- 10% = 345Kgs
Components
3 Thermal Wheel
- Section C: Weight +/- 10% = 398Kgs
Components
4 Plenum Fan
5 DX Cooling Coil
- Section D: Weight +/- 10% = 280Kgs
Components
6 Outlet Section
- Section E: Weight +/- 10% = 249Kgs
Components
7 Inlet Section
8 Controls Section
9 Panel Filter
- Section F: Weight +/- 10% = 249Kgs
Components
10 Plenum Fan
11 Outlet Section

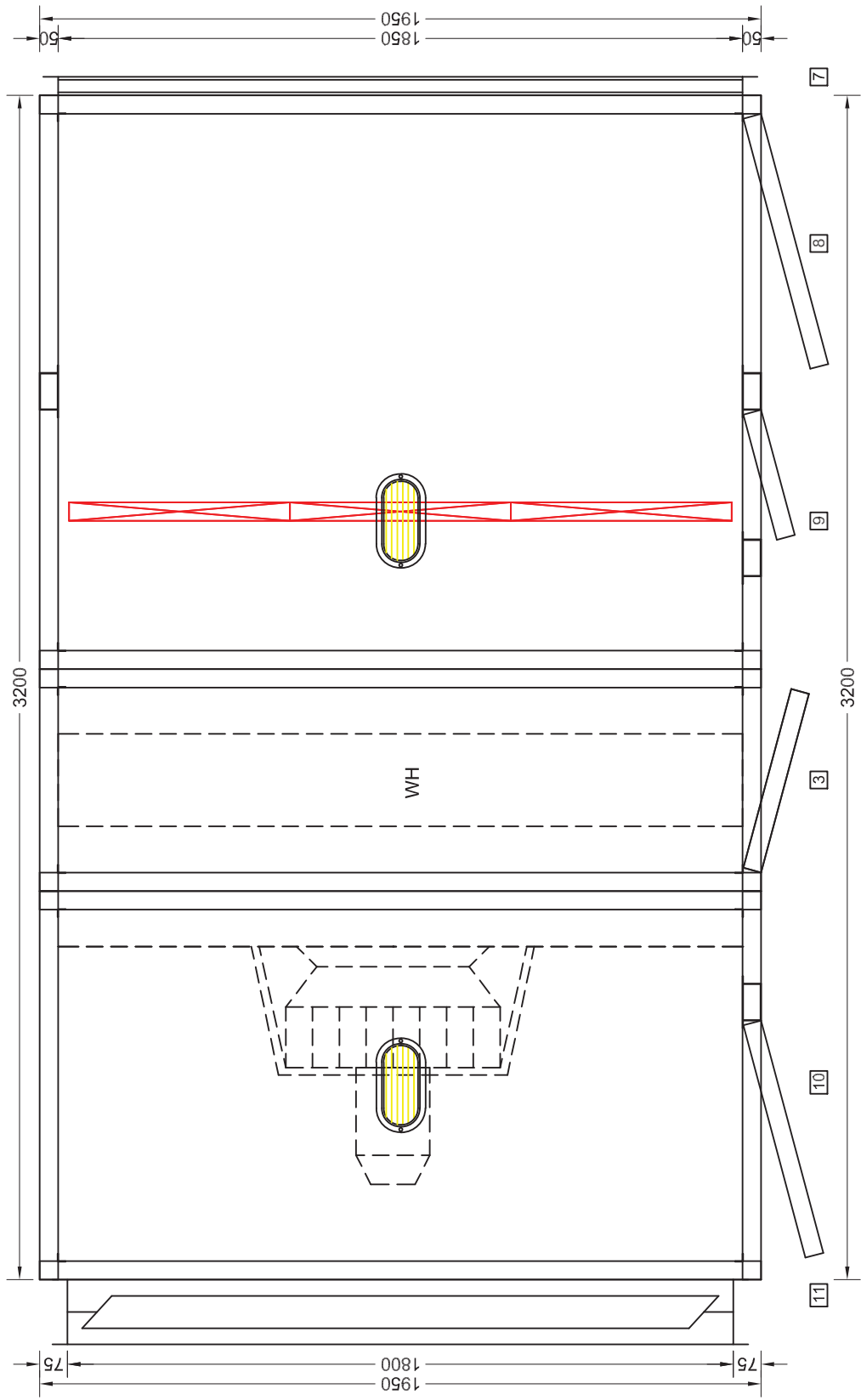


PLAN LOWER DECK

Customer	BAM	Air flow	m3/s		Not To Scale All Dimensions shown are in mm		This Drawing is property of AHS and should not be re-produced in any form		No.	Revision	Date
			Weight	Kg	AHU No.	3					
Project	Chorlton High School										
Location	AHU 03 Sports Hall	E.S.P	300 / 300	Pa	Dwg No.	20393-3-0					
Model	AIR FLEX 76 / AIR FLEX 76	Quantity	1	Nos.							

AIR HANDLING
SYSTEMS LTD.
3 - 5 HUPNACE INDUSTRIAL ESTATE
SHILDON, COUNTY DURHAM, DL4 1QB

- Section A: Weight +/- 10% = 256Kgs
 Components
 1 Inlet Section
 2 Bag Filter
 Section B: Weight +/- 10% = 345Kgs
 Components
 3 Thermal Wheel
 Section C: Weight +/- 10% = 398Kgs
 Components
 4 Plenum Fan
 5 DX Cooling Coil
 6 Outlet Section
 Section D: Weight +/- 10% = 280Kgs
 Components
 7 Inlet Section
 8 Controls Section
 9 Panel Filter
 Section E: Weight +/- 10% = 249Kgs
 Components
 10 Plenum Fan
 11 Outlet Section



PLAN UPPER DECK

Customer	BAM	Air flow	2.5/2.5	m3/s	Not To Scale All Dimensions shown are in mm This Drawing is property of AHS and should not be re-produced in any form			No.	Revision	Date
Project	Chorlton High School	Weight	1526	Kg	AHU No.	3				
Location	AHU 03 Sports Hall	E.S.P	300 / 300	Pa	Dwg No.	20393-3-0				
Model	AIR FLEX 76 / AIR FLEX 76	Quantity	1	Nos.						

AIR HANDLING SYSTEMS LTD.

3 - 5 HURPACE INDUSTRIAL ESTATE

SHILDON, COUNTY DURHAM, DL4 1QB

SUPPLEMENTARY INFO

AHU's will be delivered in a single section fully prewired with BMS controls. Controls are tested at works prior to despatch.
One power supply with all components and ancillaries powered internally.



Lifting eyes for ease of lifting, and shrink wrap for protection during transit



High efficiency IE5 EC type fans with integral speed control, AHU SFP's below 1.8W/l/s



Distech BMS Controller, AHU mounted faceplate with RUN and FAULT lamps.



Toshiba Condensing Units have been paired to the AHU DX coils to provide tempered supply temperatures in Summer and Winter. Each Condensing Unit will be provided with an AHU DX Interface controller to ensure capacity control can be achieved.

DIGITAL INVERTER



Digital Inverter Outdoor

		AHU 3	AHU 1 & 2
Outdoor Unit		SM2246AT8-E	SM2806AT8-E
Cooling Range (Min. - Max.)	kW	4.6 - 22.4	4.6 - 27.0
Heating Range (Min. - Max.)	kW	4.6 - 25.0	4.6 - 31.5
Ambient Operating Range Cooling/Heating	°C	52 to -15/15 to -27	52 to -15/15 to -27
Fan(s)	Motor Power	W	200 + 200
	Standard Air Flow	l/s	2550
	Standard Air Flow	m³/min	153
	Standard Air Flow	m³/h	9180
Sound	Pressure Level C/H	dB(A)	58/60
	Power Level C/H	dB(A)	76/76
Unit	Appearance	Silky Shade (Muncel 1Y 8.5/0.5)	Silky Shade (Muncel 1Y 8.5/0.5)
	Heat Exchanger	Finned tube	Finned tube
	Compressor Type	Hermetic Twin Rotary	Hermetic Twin Rotary
	Compressor Power	kW	5.6
	Height x Width x Depth	mm	1550 x 1010 x 370
	Total Weight	kg	142
	Control	Pulse motor valve	Pulse motor valve
	Gas Type	R410A	R410A
Refrigerant	Base Charge/Chargeless To	kg/m	5.9/30
	Additional Charge Main Liquid Side	g/m	80
	Replacement Technology	Yes	R22, R407C, R417A, R134a, R12
	Min.-Max. Length	m	5-100
Pipe Connections	Height Difference Outdoor To AHU	m	±30
	Gas Side	inch	1-1/8*
	Liquid Side	inch	1/2
	Drain Port Connector Hose Inner Diameter	mm	16
Electrical	Power Supply	V/ph/Hz	380-415/3/50
	Maximum Run Current	A	10.78
	Suggested Fused Supply	A	16



Project Name: CHORLTON HIGH SCHOOL SOUTH

Created Date: 11/08/2020

Client Name:

Prepared By:	Sam Howard
Project Ref No:	Q18712NM_R2
Project Ref Text:	Temperature Control Ltd
Project Revision:	R2



CHORLTON HIGH SCHOOL SOUTH

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CHORLTON HIGH SCHOOL SOUTH

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Activity Studio + Reprographics 30

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Project: CHORLTON HIGH SCHOOL SOUTH

Notes: Equivalent length is calculated by coefficients:
1:ICT 1 – OU01, ICT 2 – OU02 And Server Room-OU03 And ICT Business -OU04, 1.2:Activity Studio + Reprographics, Library
The user is responsible for ensuring that all data entered is correct.
Equipment selections have been based on the Design Guidelines stated within the Toshiba SMMS-e/SHRM-e/SMMS-7/MiNi-SMMS7/MiNi-SMMS-e/Side Blow VRF/MiNi-SMMS Installation Manual.
It is the responsibility of the consultant or contractor, to verify and confirm that the equipment selection and system design is correct before installation.
Please note that in the event of future system expansion being allowed for in the system design or a change in cooling/heating requirements, a re-evaluation of the air conditioning system must be made prior to final installation.

CHORLTON HIGH SCHOOL SOUTH Compliance

ICT 1 – OU01

Rules	Specification	Design	Ok
Outdoor Units	-	1 Unit	✓
Indoor Units (Control Boards)	-	1 Unit	✓
Outdoor Combined Rated Cooling	-	10.00 kW	✓
Outdoor Combined Rated Heating	-	11.20 kW	✓
Indoor Combined Rated Cooling	-	10.00 kW	✓
Indoor Combined Rated Heating	-	11.20 kW	✓
Farthest Piping Real Length	75.00 m	45.00 m	✓
Farthest Piping Equivalent Length	-	45.00 m	✓
Shortest Piping Real Length	3.00 m	45.00 m	✓
Highest Indoor Unit	30.00 m	0.00 m	✓
Lowest Indoor Unit	30.00 m	0.00 m	✓
Greatest Height Between Indoor and Outdoor Units(H1)	-	0.00 m	✓
Limit Density	0.061 kg/m ³	0.000 kg/m ³	✓
Additional Charge	-	0.525 kg	✓
Total Charge	-	3.625 kg	✓
Central Control			✓

Overall	✓
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CHORLTON HIGH SCHOOL SOUTH Compliance

ICT 2 – OU02

Rules	Specification	Design	Ok
Outdoor Units	-	1 Unit	✓
Indoor Units (Control Boards)	-	1 Unit	✓
Outdoor Combined Rated Cooling	-	10.00 kW	✓
Outdoor Combined Rated Heating	-	11.20 kW	✓
Indoor Combined Rated Cooling	-	10.00 kW	✓
Indoor Combined Rated Heating	-	11.20 kW	✓
Farthest Piping Real Length	75.00 m	45.00 m	✓
Farthest Piping Equivalent Length	-	45.00 m	✓
Shortest Piping Real Length	3.00 m	45.00 m	✓
Highest Indoor Unit	30.00 m	0.00 m	✓
Lowest Indoor Unit	30.00 m	0.00 m	✓
Greatest Height Between Indoor and Outdoor Units(H1)	-	0.00 m	✓
Limit Density	0.061 kg/m ³	0.000 kg/m ³	✓
Additional Charge	-	0.525 kg	✓
Total Charge	-	3.625 kg	✓
Central Control			✓

Overall	✓
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CHORLTON HIGH SCHOOL SOUTH Compliance

Server Room-OU03

Rules	Specification	Design	Ok
Outdoor Units	-	1 Unit	✓
Indoor Units (Control Boards)	-	1 Unit	✓
Outdoor Combined Rated Cooling	-	5.00 kW	✓
Outdoor Combined Rated Heating	-	5.60 kW	✓
Indoor Combined Rated Cooling	-	5.00 kW	✓
Indoor Combined Rated Heating	-	5.60 kW	✓
Farthest Piping Real Length	50.00 m	35.00 m	✓
Farthest Piping Equivalent Length	-	35.00 m	✓
Shortest Piping Real Length	3.00 m	35.00 m	✓
Highest Indoor Unit	30.00 m	0.00 m	✓
Lowest Indoor Unit	30.00 m	0.00 m	✓
Greatest Height Between Indoor and Outdoor Units(H1)	-	0.00 m	✓
Limit Density	0.061 kg/m ³	0.000 kg/m ³	✓
Additional Charge	-	0.300 kg	✓
Total Charge	-	1.650 kg	✓
Central Control			✓

Overall	✓
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CHORLTON HIGH SCHOOL SOUTH Compliance

ICT Business -OU04

Rules	Specification	Design	Ok
Outdoor Units	-	1 Unit	✓
Indoor Units (Control Boards)	-	1 Unit	✓
Outdoor Combined Rated Cooling	-	10.00 kW	✓
Outdoor Combined Rated Heating	-	11.20 kW	✓
Indoor Combined Rated Cooling	-	10.00 kW	✓
Indoor Combined Rated Heating	-	11.20 kW	✓
Farthest Piping Real Length	75.00 m	45.00 m	✓
Farthest Piping Equivalent Length	-	45.00 m	✓
Shortest Piping Real Length	3.00 m	45.00 m	✓
Highest Indoor Unit	30.00 m	0.00 m	✓
Lowest Indoor Unit	30.00 m	0.00 m	✓
Greatest Height Between Indoor and Outdoor Units(H1)	-	0.00 m	✓
Limit Density	0.061 kg/m ³	0.000 kg/m ³	✓
Additional Charge	-	0.525 kg	✓
Total Charge	-	3.625 kg	✓
Central Control			✓

Overall

✓

CHORLTON HIGH SCHOOL SOUTH Compliance

Activity Studio + Reprographics

Rules	Specification	Design	Ok
Outdoor Units	-	1 Unit	✓
Indoor Units (Control Boards)	18 Unit	5 Unit	✓
Outdoor Combined Rated HP	-	8 HP	✓
Outdoor Combined Rated Cooling	-	22.40 kW	✓
Outdoor Combined Rated Heating	-	25.00 kW	✓
Indoor Combined Rated Cooling	-	20.00 kW	✓
Indoor Combined Corrected Cooling	-	15.57 kW	✓
Indoor Combined Rated Heating	-	22.30 kW	✓
Indoor Combined Corrected Heating	-	18.44 kW	✓
Indoor Units Combined Capacity Code	-	7.00	✓
Outdoor Combined Capacity Code	-	8	✓
Outdoor DB (Cooling) temperature range	-10.0°C - 46.0°C	29.0°C	✓
Outdoor WB (Heating) temperature range	-20.0°C - 15.5°C	-5.0°C	✓
Indoor DB (Cooling) temperature range	18.0°C - 32.0°C	23.0°C	✓
Indoor WB (Cooling) temperature range	15.0°C - 24.0°C	16.0°C	✓
Indoor RH (Cooling) range	20% - 80%	48%	✓
Indoor DB (Heating) temperature range	15.0°C - 28.0°C	20.0°C	✓
Capacity Ratio	70 - 135%	87.5 %	✓
Total Pipe Length	300.00 m	75.00 m	✓
Farthest Piping Real Length	180.00 m	55.00 m	✓
Farthest Piping Equivalent Length	185.00 m	66.00 m	✓
Farthest Piping From 1st Indoor Branching Real Length	-	15.00 m	✓
Farthest Piping From 1st Indoor Branching Equivalent Length	65.00 m	18.00 m	✓
Farthest Piping Between Outdoor Units Equivalent Length	15.00 m	0.00 m	✓
Main Piping Real Length(L1)	100.00 m	40.00 m	✓
Main Piping Equivalent Length(L1e)	120.00 m	48.00 m	✓
Greatest Indoor Unit Connecting Piping Real Length	30.00 m	0.00 m	✓
Total Real Piping Length Per Branch in One Multi FS Unit (4/6 branch)	50.00 m	15.00 m	✓
Greatest Outdoor Unit Connecting Piping Equivalent Length	10.00 m	0.00 m	✓
Greatest Piping Between Branches Equivalent Length	50.00 m	0.00 m	✓
Highest Outdoor Unit	-	0.00 m	✓
Lowest Outdoor Unit	-	0.00 m	✓
Highest Indoor Unit	30.00 m	0.00 m	✓
Lowest Indoor Unit	70.00 m	0.00 m	✓
Greatest Height Between Indoor and Outdoor Units(H1)	-	0.00 m	✓
Greatest Height Difference Between Indoor Units(H2)	40.00 m	0.00 m	✓
Greatest Height Difference Between Outdoor Units(H3)	5.00 m	0.00 m	✓
Greatest Height Difference Between Indoor Units in One Flow Selector Unit(M	3.00 m	0.00 m	✓
Total Piping Real Length After Multi Flow Selector (6ports)	180.00 m	35.00 m	✓
Lowest Indoor Unit(Sub Condition 1)	-	0	✓
Limit Density	0.390 kg/m³	0.000 kg/m³	✓
Additional Charge	-	8.598 kg	✓
Total Charge	-	19.598 kg	✓
Central Control			✓

Overall

✓

CHORLTON HIGH SCHOOL SOUTH Compliance

Library

Rules	Specification	Design	Ok
Outdoor Units	-	1 Unit	✓
Indoor Units (Control Boards)	12 Unit	2 Unit	✓
Outdoor Combined Rated HP	-	8 HP	✓
Outdoor Combined Rated Cooling	-	22.40 kW	✓
Outdoor Combined Rated Heating	-	22.40 kW	✓
Indoor Combined Rated Cooling	-	28.00 kW	✓
Indoor Combined Corrected Cooling	-	18.08 kW	✓
Indoor Combined Rated Heating	-	32.00 kW	✓
Indoor Combined Corrected Heating	-	16.58 kW	✓
Indoor Units Combined Capacity Code	-	10.00	✓
Outdoor Combined Capacity Code	-	8	✓
Outdoor DB (Cooling) temperature range	-5.0°C - 46.0°C	29.0°C	✓
Outdoor WB (Heating) temperature range	-20.0°C - 15.5°C	-5.0°C	✓
Indoor DB (Cooling) temperature range	18.0°C - 32.0°C	23.0°C	✓
Indoor WB (Cooling) temperature range	15.0°C - 24.0°C	16.0°C	✓
Indoor RH (Cooling) range	20% - 80%	48%	✓
Indoor DB (Heating) temperature range	15.0°C - 28.0°C	20.0°C	✓
Capacity Ratio	80 - 130%	125.0 %	✓
Total Pipe Length	300.00 m	65.00 m	✓
Farthest Piping Real Length	120.00 m	55.00 m	✓
Farthest Piping Equivalent Length	150.00 m	66.00 m	✓
Farthest Piping From 1st Indoor Branching Real Length	40.00 m	10.00 m	✓
Farthest Piping From 1st Indoor Branching Equivalent Length	-	12.00 m	✓
Main Piping Equivalent Length(L1e)	80.00 m	54.00 m	✓
Greatest Indoor Unit Connecting Piping Real Length	15.00 m	10.00 m	✓
Highest Indoor Unit	30.00 m	0.00 m	✓
Lowest Indoor Unit	30.00 m	0.00 m	✓
Greatest Height Between Indoor and Outdoor Units(H1)	-	0.00 m	✓
Greatest Height Difference Between Indoor Units(H2)	15.00 m	0.00 m	✓
Limit Density	0.390 kg/m ³	0.000 kg/m ³	✓
Additional Charge	-	4.975 kg	✓
Total Charge	-	9.375 kg	✓
Central Control			✓

Overall

✓

ICT 1 – OU01

Outdoor Units

Model	Quantity	Description
RAV-GP1101AT-E	1	Super Digital Inverter

Indoor Units

Model	Quantity	Description
RAV-RM1101UTP-E	1	4-way Cassette

Accessories

Model	Quantity	Description
RBC-AMS41E	1	Remote controller with schedule timer(7-day timer function)
RBC-U31PGP(W)-E	1	Ceiling Panel

Piping Length

Pipe Diameter	Total Length	Gas Side	Discharge Side	Liquid Side
9.5mm	45.00 m	0.00 m	0.00 m	45.00 m
15.9mm	45.00 m	45.00 m	0.00 m	0.00 m

Total Refrigerant Charge Amount

Refrigerant (R32)	Amount	Description
Outdoor Unit	3.100 kg	Refrigerant amount charged in factory
Additional Refrigerant	0.525 kg	Amount needed for the pipes at the site
TOTAL:	3.625 kg	

Outdoor Design Temperature

Mode	Description	Temperature
Cooling	Dry Bulb temperature	29.0 °C
Heating	Wet Bulb temperature	-5.0 °C

Electronic Information(OutdoorUnits)

Property	Value	Description
MOCP(A)	0	Maximum Overcurrent Protection
MCA(A)	0	Minimum Circuit Amps
Protection Device Size(A)		Follow applicable local standard as needed
Wire(cable size)(mm²) or AWG(#)		Follow applicable local standard as needed

Electronic Information(IndoorUnits)

Property	Value	Description
Total MCA(A)	0	
Protection Device Size(A)		Follow applicable local standard as needed
Wire(cable size)(mm²) or AWG(#)		Follow applicable local standard as needed

ICT 1 – OU01

Outdoor Unit

Model Name	Cooling (kW)		Heating (kW)		Diversity	
	Rated	Corrected	Rated	Corrected	System	Building
RAV-GP1101AT-E	10.00	7.70	11.20	5.78	0%	0%

Outdoor Unit Combination

Header	Follower1	Follower2	Follower3	Follower4
RAV-GP1101AT-E				

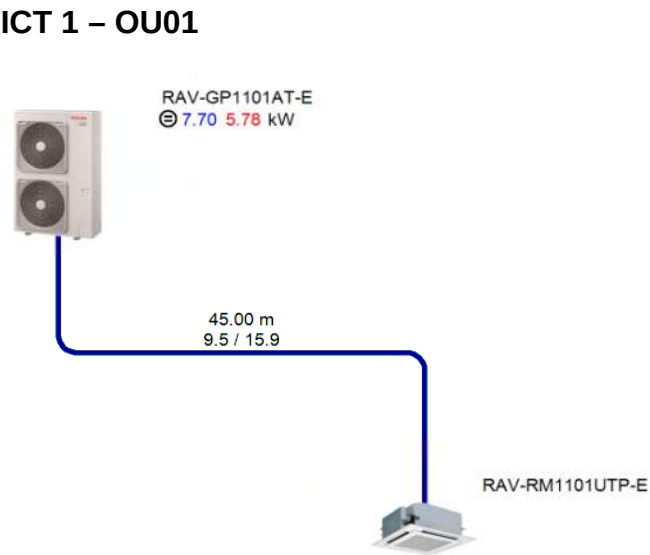
Indoor Units

Model Name	UnitName &Room	Capacity Code	Fan Speed Air flow (m³/h)	Capacity (Total/Sensible) [kW]			
				Mode	Rated	Corrected	Required
RAV-RM1101UTP-E		4	Low 1170	Cooling	10.00/8.40	7.70/7.01	0.00/7.10
				Heating	11.20	5.78	0.00

System information	
Indoor Units	1 of 1
Capacity Ratio	100.0%
Total Pipe Length	45.00 m
Indoor Cap. Tot./Sen.	7.70 kW/7.01 kW
Indoor Cap. Heat.	5.78 kW
Building diversity	0%

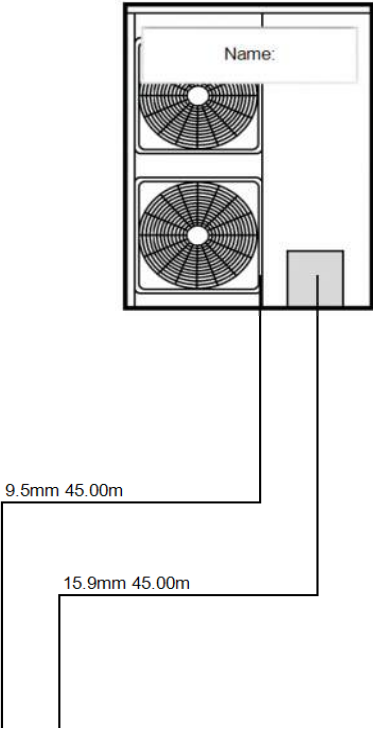
Outdoor/Indoor Legend	
Unit Name	
Model Name	
Room Name	
⊖ Corrected capacity	Tot./Sens./ Heat.

Piping Legend	
Actual Length	
Liquid / Suction Gas diameters	
Note: It is the responsibility of the consultant or contractor, to verify and confirm that the equipment selection and system design is correct before installation.	



ICT 1 – OU01

RAV-GP1101AT-E



Accessories
Header

Follower1

Follower2

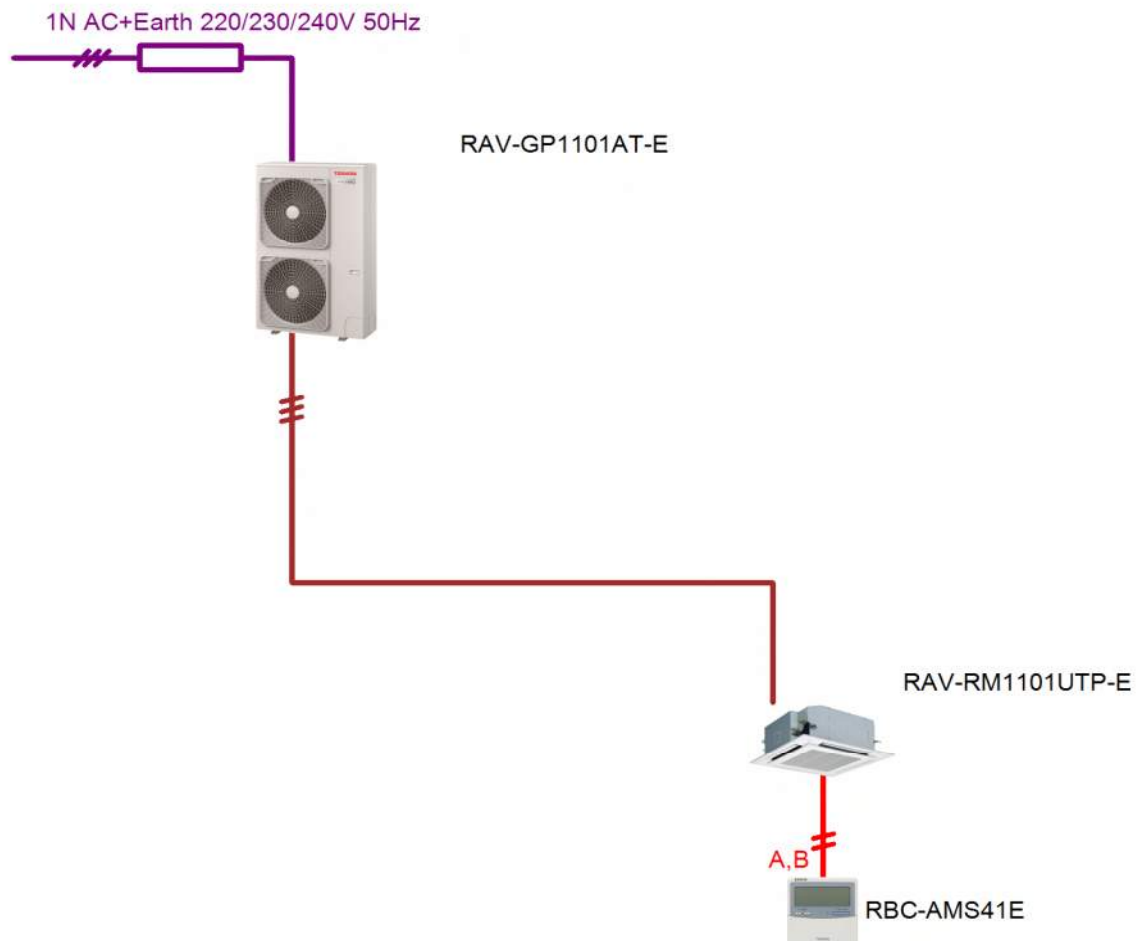
Follower3

Follower4

Electrical Information
Summary: 1N AC+Earth 220/230/240V 50Hz

- Slot 1
- Slot 2
- Slot 3
- Slot 4
- Slot 5

ICT 1 – OU01



ICT 2 – OU02

Outdoor Units

Model	Quantity	Description
RAV-GP1101AT-E	1	Super Digital Inverter

Indoor Units

Model	Quantity	Description
RAV-RM1101UTP-E	1	4-way Cassette

Accessories

Model	Quantity	Description
RBC-AMS41E	1	Remote controller with schedule timer(7-day timer function)
RBC-U31PGP(W)-E	1	Ceiling Panel

Piping Length

Pipe Diameter	Total Length	Gas Side	Discharge Side	Liquid Side
9.5mm	45.00 m	0.00 m	0.00 m	45.00 m
15.9mm	45.00 m	45.00 m	0.00 m	0.00 m

Total Refrigerant Charge Amount

Refrigerant (R32)	Amount	Description
Outdoor Unit	3.100 kg	Refrigerant amount charged in factory
Additional Refrigerant	0.525 kg	Amount needed for the pipes at the site
TOTAL:	3.625 kg	

Outdoor Design Temperature

Mode	Description	Temperature
Cooling	Dry Bulb temperature	29.0 °C
Heating	Wet Bulb temperature	-5.0 °C

Electronic Information(OutdoorUnits)

Property	Value	Description
MOCP(A)	0	Maximum Overcurrent Protection
MCA(A)	0	Minimum Circuit Amps
Protection Device Size(A)		Follow applicable local standard as needed
Wire(cable size)(mm²) or AWG(#)		Follow applicable local standard as needed

Electronic Information(IndoorUnits)

Property	Value	Description
Total MCA(A)	0	
Protection Device Size(A)		Follow applicable local standard as needed
Wire(cable size)(mm²) or AWG(#)		Follow applicable local standard as needed

ICT 2 – OU02

Outdoor Unit

Model Name	Cooling (kW)		Heating (kW)		Diversity	
	Rated	Corrected	Rated	Corrected	System	Building
RAV-GP1101AT-E	10.00	7.70	11.20	5.78	0%	0%

Outdoor Unit Combination

Header	Follower1	Follower2	Follower3	Follower4
RAV-GP1101AT-E				

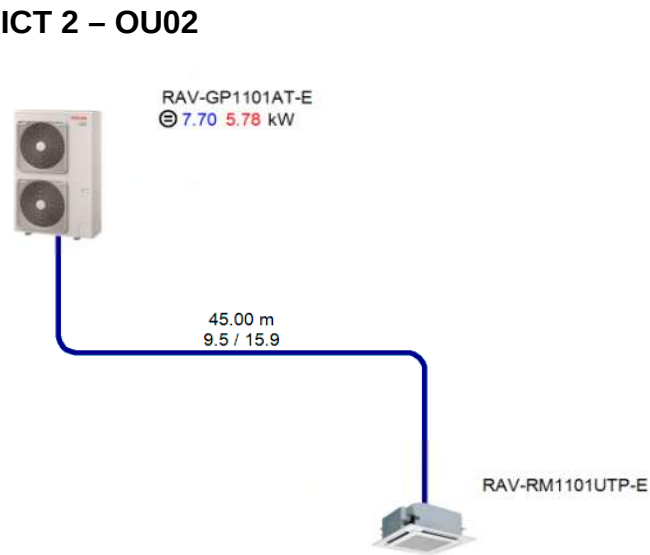
Indoor Units

Model Name	UnitName &Room	Capacity Code	Fan Speed		Capacity (Total/Sensible) [kW]		
			Air flow (m³/h)	Mode	Rated	Corrected	Required
RAV-RM1101UTP-E		4	Low	Cooling	10.00/8.40	7.70/7.01	0.00/7.10
			1170	Heating	11.20	5.78	0.00

System information	
Indoor Units	1 of 1
Capacity Ratio	100.0%
Total Pipe Length	45.00 m
Indoor Cap. Tot./Sen.	7.70 kW/7.01 kW
Indoor Cap. Heat.	5.78 kW
Building diversity	0%

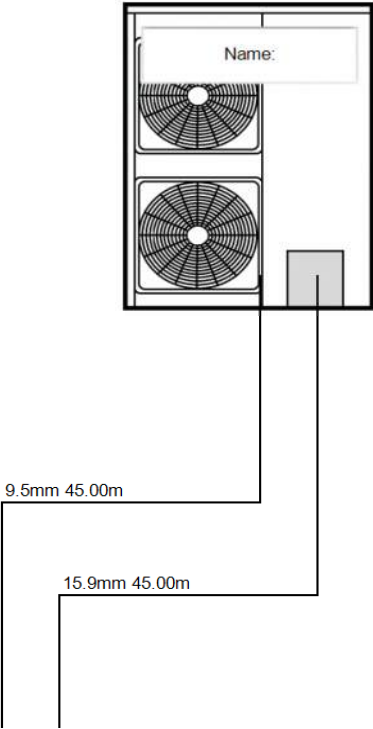
Outdoor/Indoor Legend	
Unit Name	
Model Name	
Room Name	
⊖ Corrected capacity	Tot./Sens./ Heat.

Piping Legend	
Actual Length	
Liquid / Suction Gas diameters	
Note: It is the responsibility of the consultant or contractor, to verify and confirm that the equipment selection and system design is correct before installation.	



ICT 2 – OU02

RAV-GP1101AT-E



Accessories
Header

Follower1

Follower2

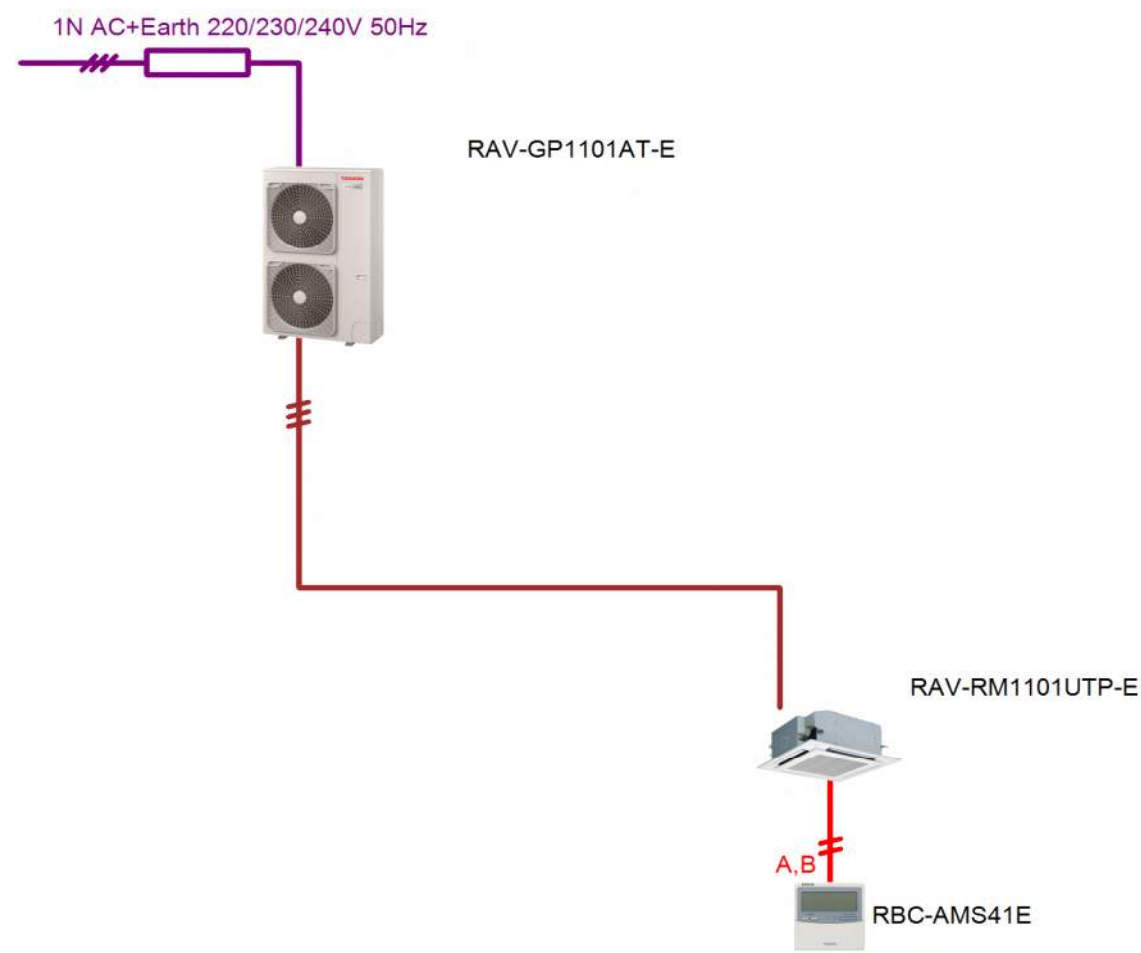
Follower3

Follower4

Electrical Information
Summary: 1N AC+Earth 220/230/240V 50Hz

- Slot 1
- Slot 2
- Slot 3
- Slot 4
- Slot 5

ICT 2 – OU02



Server Room-OU03

Outdoor Units

Model	Quantity	Description
RAV-GP561ATP-E	1	Super Digital Inverter

Indoor Units

Model	Quantity	Description
RAV-RM561KRTP-E	1	High Wall Standard

Accessories

Model	Quantity	Description
RBC-AMS41E	1	Remote controller with schedule timer(7-day timer function)

Piping Length

Pipe Diameter	Total Length	Gas Side	Discharge Side	Liquid Side
6.4mm	35.00 m	0.00 m	0.00 m	35.00 m
12.7mm	35.00 m	35.00 m	0.00 m	0.00 m

Total Refrigerant Charge Amount

Refrigerant (R32)	Amount	Description
Outdoor Unit	1.350 kg	Refrigerant amount charged in factory
Additional Refrigerant	0.300 kg	Amount needed for the pipes at the site
TOTAL:	1.650 kg	

Outdoor Design Temperature

Mode	Description	Temperature
Cooling	Dry Bulb temperature	29.0 °C
Heating	Wet Bulb temperature	-5.0 °C

Electronic Information(OutdoorUnits)

Property	Value	Description
MOCP(A)	0	Maximum Overcurrent Protection
MCA(A)	0	Minimum Circuit Amps
Protection Device Size(A)		Follow applicable local standard as needed
Wire(cable size)(mm²) or AWG(#)		Follow applicable local standard as needed

Electronic Information(IndoorUnits)

Property	Value	Description
Total MCA(A)	0	
Protection Device Size(A)		Follow applicable local standard as needed
Wire(cable size)(mm²) or AWG(#)		Follow applicable local standard as needed

Server Room-OU03

Outdoor Unit

Model Name	Cooling (kW)		Heating (kW)		Diversity	
	Rated	Corrected	Rated	Corrected	System	Building
RAV-GP561ATP-E	5.00	4.78	5.60	3.32	0%	0%

Outdoor Unit Combination

Header	Follower1	Follower2	Follower3	Follower4
RAV-GP561ATP-E				

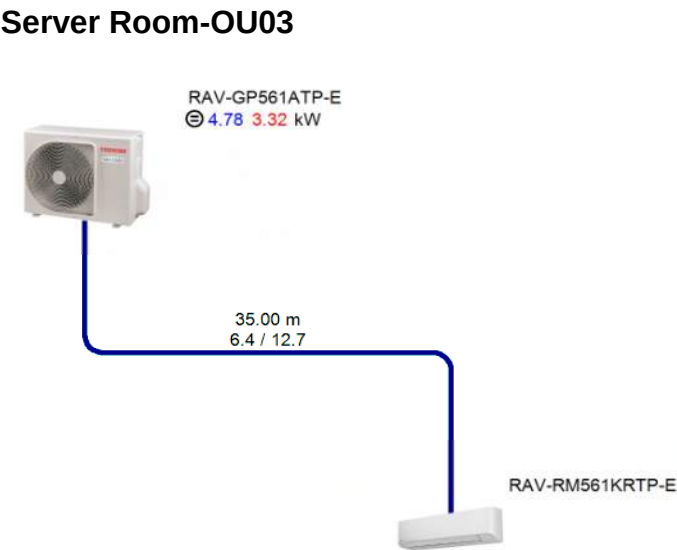
Indoor Units

Model Name	UnitName &Room	Capacity Code	Fan Speed		Capacity (Total/Sensible) [kW]		
			Air flow (m³/h)	Mode	Rated	Corrected	Required
RAV-RM561KRTP-E		2	High	Cooling	5.00/3.65	4.78/2.97	0.00/0.00
			960	Heating	5.60	3.32	0.00

System information	
Indoor Units	1 of 1
Capacity Ratio	100.0%
Total Pipe Length	35.00 m
Indoor Cap. Tot./Sen.	4.78 kW/2.97 kW
Indoor Cap. Heat.	3.32 kW
Building diversity	0%

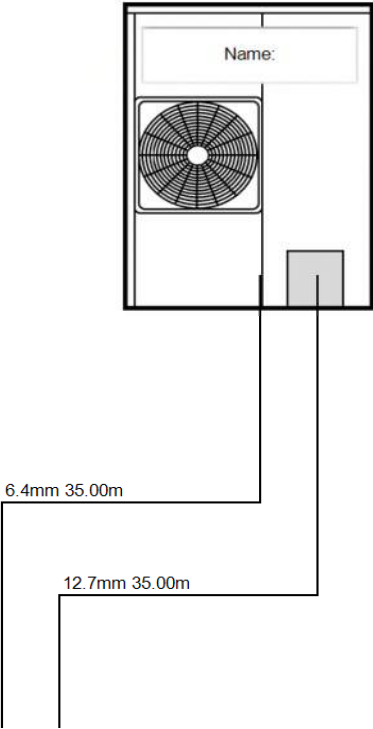
Outdoor/Indoor Legend	
Unit Name	
Model Name	
Room Name	
⊖ Corrected capacity	Tot./Sens./ Heat.

Piping Legend	
Actual Length	
Liquid / Suction Gas diameters	
Note: It is the responsibility of the consultant or contractor, to verify and confirm that the equipment selection and system design is correct before installation.	



Server Room-OU03

RAV-GP561ATP-E



Accessories
Header

Follower1

Follower2

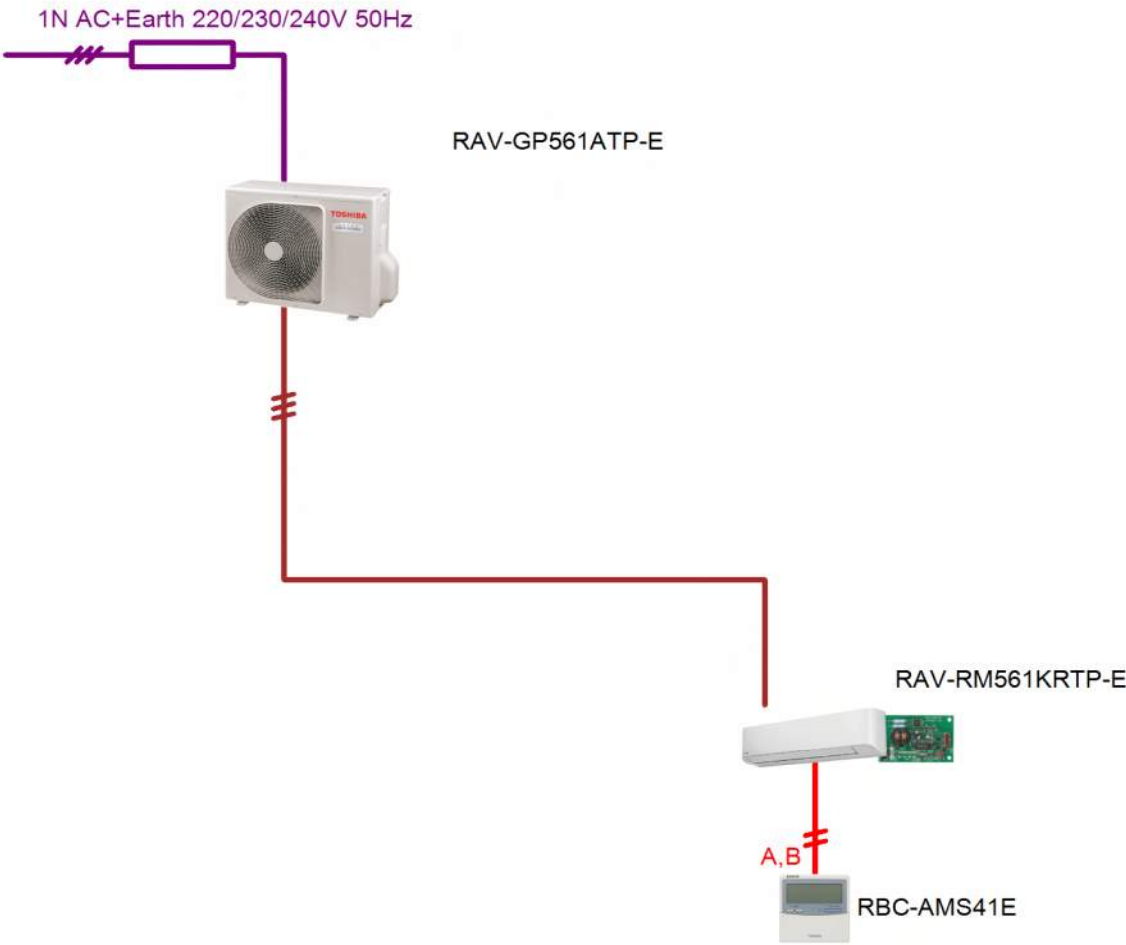
Follower3

Follower4

Electrical Information
Summary: 1N AC+Earth 220/230/240V 50Hz

- Slot 1
- Slot 2
- Slot 3
- Slot 4
- Slot 5

Server Room-OU03



ICT Business -OU04

Outdoor Units

Model	Quantity	Description
RAV-GP1101AT-E	1	Super Digital Inverter

Indoor Units

Model	Quantity	Description
RAV-RM1101UTP-E	1	4-way Cassette

Accessories

Model	Quantity	Description
RBC-AMS41E	1	Remote controller with schedule timer(7-day timer function)
RBC-U31PGP(W)-E	1	Ceiling Panel

Piping Length

Pipe Diameter	Total Length	Gas Side	Discharge Side	Liquid Side
9.5mm	45.00 m	0.00 m	0.00 m	45.00 m
15.9mm	45.00 m	45.00 m	0.00 m	0.00 m

Total Refrigerant Charge Amount

Refrigerant (R32)	Amount	Description
Outdoor Unit	3.100 kg	Refrigerant amount charged in factory
Additional Refrigerant	0.525 kg	Amount needed for the pipes at the site
TOTAL:	3.625 kg	

Outdoor Design Temperature

Mode	Description	Temperature
Cooling	Dry Bulb temperature	29.0 °C
Heating	Wet Bulb temperature	-5.0 °C

Electronic Information(OutdoorUnits)

Property	Value	Description
MOCP(A)	0	Maximum Overcurrent Protection
MCA(A)	0	Minimum Circuit Amps
Protection Device Size(A)		Follow applicable local standard as needed
Wire(cable size)(mm²) or AWG(#)		Follow applicable local standard as needed

Electronic Information(IndoorUnits)

Property	Value	Description
Total MCA(A)	0	
Protection Device Size(A)		Follow applicable local standard as needed
Wire(cable size)(mm²) or AWG(#)		Follow applicable local standard as needed

ICT Business -OU04

Outdoor Unit

Model Name	Cooling (kW)		Heating (kW)		Diversity	
	Rated	Corrected	Rated	Corrected	System	Building
RAV-GP1101AT-E	10.00	7.70	11.20	5.78	0%	0%

Outdoor Unit Combination

Header	Follower1	Follower2	Follower3	Follower4
RAV-GP1101AT-E				

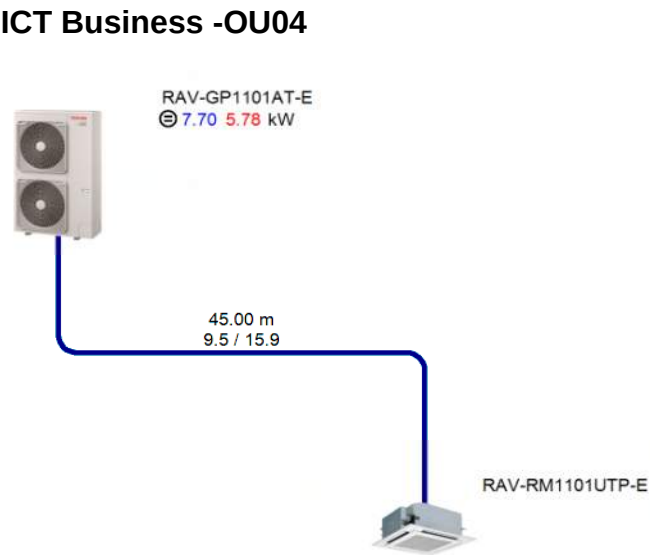
Indoor Units

Model Name	UnitName &Room	Capacity Code	Fan Speed Air flow (m³/h)	Capacity (Total/Sensible) [kW]			
				Mode	Rated	Corrected	Required
RAV-RM1101UTP-E		4	Low 1170	Cooling	10.00/8.40	7.70/7.01	0.00/7.10
				Heating	11.20	5.78	0.00

System information	
Indoor Units	1 of 1
Capacity Ratio	100.0%
Total Pipe Length	45.00 m
Indoor Cap. Tot./Sen.	7.70 kW/7.01 kW
Indoor Cap. Heat.	5.78 kW
Building diversity	0%

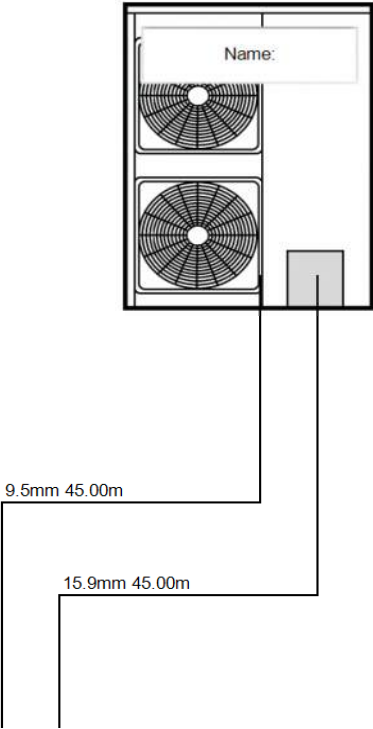
Outdoor/Indoor Legend	
Unit Name	
Model Name	
Room Name	
⊖ Corrected capacity	Tot./Sens./ Heat.

Piping Legend	
Actual Length	
Liquid / Suction Gas diameters	
Note: It is the responsibility of the consultant or contractor, to verify and confirm that the equipment selection and system design is correct before installation.	



ICT Business -OU04

RAV-GP1101AT-E



Accessories
Header

Follower1

Follower2

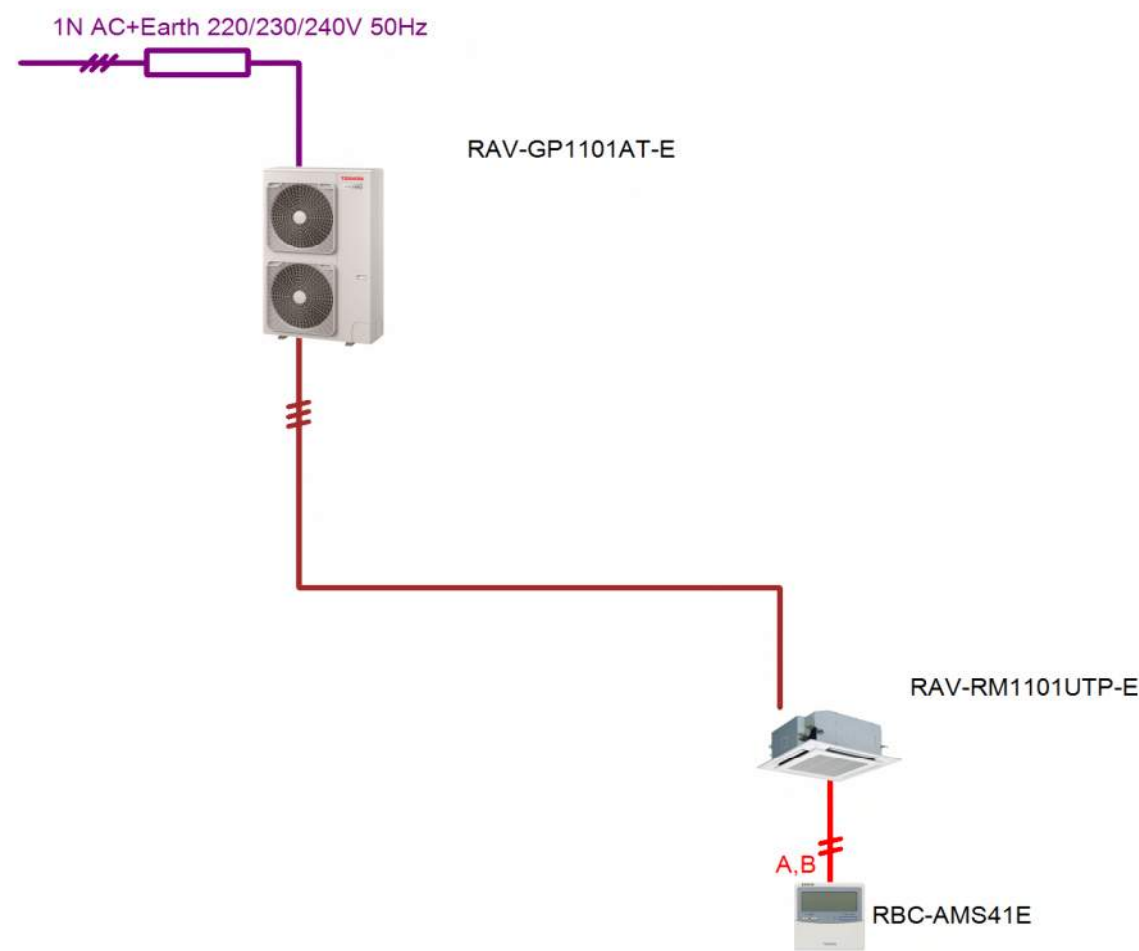
Follower3

Follower4

Electrical Information
Summary: 1N AC+Earth 220/230/240V 50Hz

- Slot 1
- Slot 2
- Slot 3
- Slot 4
- Slot 5

ICT Business -OU04



Activity Studio + Reprographics

Outdoor Units

Model	Quantity	Description
MMY-MAP0806FT8P-E	1	Super Heat Recovery Multi System (SHRM-e)

Indoor Units

Model	Quantity	Description
MMU-AP0124HP1-E	4	1.3HP 4-way Cassette
MMK-AP0187HP-E	1	2.0HP High Wall Standard

Multi Flow Selectors

Model	Quantity	Description
RBM-Y1801F6PE	1	Multi Flow Selector (6way)

Accessories

Model	Quantity	Description
RBC-AMS41E	5	Remote controller with schedule timer(7-day timer function)
RBC-U31PGP(W)-E	4	Ceiling Panel

Piping Length

Pipe Diameter	Total Length	Gas Side	Discharge Side	Liquid Side
6.4mm	35.00 m	0.00 m	0.00 m	35.00 m
9.5mm	20.00 m	20.00 m	0.00 m	0.00 m
12.7mm	55.00 m	15.00 m	0.00 m	40.00 m
19.1mm	40.00 m	0.00 m	40.00 m	0.00 m
22.2mm	40.00 m	40.00 m	0.00 m	0.00 m

Total Refrigerant Charge Amount

Refrigerant (R410A)	Amount	Description
Outdoor Unit	11.000 kg	Refrigerant amount charged in factory
Additional Refrigerant	8.598 kg	Amount needed for the pipes at the site
TOTAL:	19.598 kg	

Outdoor Design Temperature

Mode	Description	Temperature
Cooling	Dry Bulb temperature	29.0 °C
Heating	Wet Bulb temperature	-5.0 °C

Electronic Information(OutdoorUnits)

Property	Value	Description
MOCP(A)	25	Maximum Overcurrent Protection
MCA(A)	21.5	Minimum Circuit Amps
Protection Device Size(A)		Follow applicable local standard as needed
Wire(cable size)(mm²) or AWG(#)		Follow applicable local standard as needed

Electronic Information(IndoorUnits)

Property	Value	Description
Total MCA(A)	3.56	
Protection Device Size(A)		Follow applicable local standard as needed
Wire(cable size)(mm²) or AWG(#)		Follow applicable local standard as needed

Activity Studio + Reprographics

Outdoor Unit

Model Name	Cooling (kW)		Heating (kW)		Diversity	
	Rated	Corrected	Rated	Corrected	System	Building
MMY-MAP0806FT8P-E	22.40	18.76	25.00	18.44	87.5%	0%

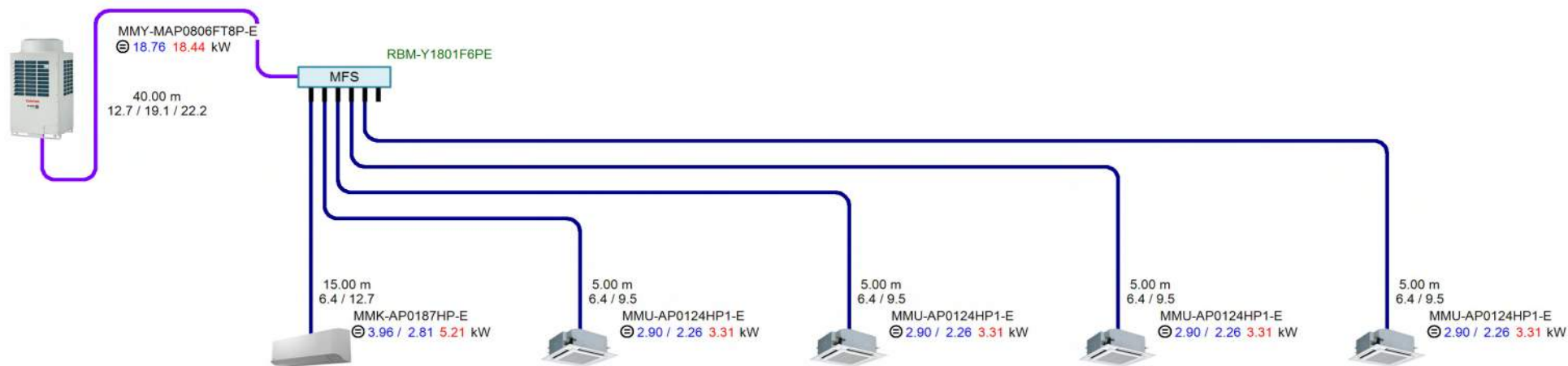
Outdoor Unit Combination

Header	Follower1	Follower2	Follower3	Follower4
MMY-MAP0806FT8P-E				

Indoor Units

Model Name	UnitName &Room	Capacity Code	Fan Speed Air flow (m³/h)	Mode	Capacity (Total/Sensible) [kW]		
					Rated	Corrected	Required
MMK-AP0187HP-E		2	Medium 720	Cooling	5.60/3.90	3.96/2.81	0.00/2.78
				Heating	6.30	5.21	0.00
MMU-AP0124HP1-E		1.25	High 800	Cooling	3.60/2.60	2.90/2.26	0.00/2.31
				Heating	4.00	3.31	0.00
MMU-AP0124HP1-E		1.25	High 800	Cooling	3.60/2.60	2.90/2.26	0.00/2.31
				Heating	4.00	3.31	0.00
MMU-AP0124HP1-E		1.25	High 800	Cooling	3.60/2.60	2.90/2.26	0.00/2.31
				Heating	4.00	3.31	0.00
MMU-AP0124HP1-E		1.25	High 800	Cooling	3.60/2.60	2.90/2.26	0.00/2.31
				Heating	4.00	3.31	0.00

Activity Studio + Reprographics



System information	
Indoor Units	5 of 18
Capacity Ratio	87.5%
Total Pipe Length	75.00 m
Indoor Cap. Tot./Sen.	15.57 kW/11.85 kW
Indoor Cap. Heat.	18.44 kW
Building diversity	0%

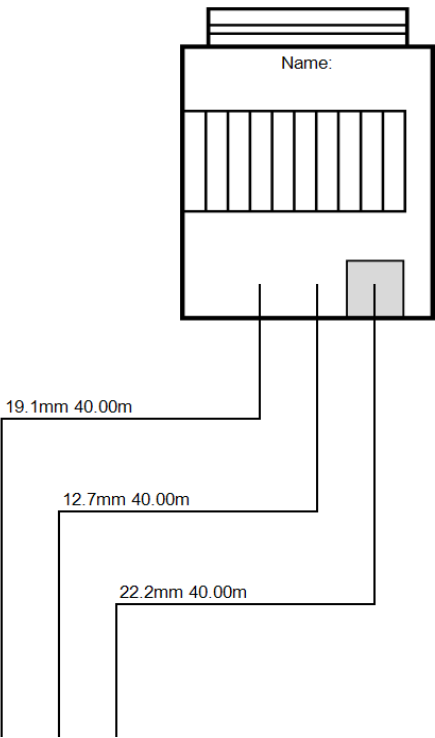
Outdoor/Indoor Legend	
Unit Name	
Model Name	
Room Name	
⊖ Corrected capacity	Tot./Sens./ Heat.

Piping Legend
Actual Length
Liquid / Discharge Gas / Suction Gas diameters
Note: It is the responsibility of the consultant or contractor, to verify and confirm that the equipment selection and system design is correct before installation.

Flow Selector Legend
RBM-Y1801F6PE (x1)

Activity Studio + Reprographics

MMY-MAP0806FT8P-E



Accessories
Header

Follower1

Follower2

Follower3

Follower4

Electrical Information
Summary: 3N AC+Earth 380-415V 50Hz

- Slot 1
- Slot 2
- Slot 3
- Slot 4
- Slot 5

[illegible]

Library

Outdoor Units

Model	Quantity	Description
MCY-MHP0806HS8-E	1	MiNi Super Modular Multi System (MiNi-SMMS-e)(8,10HP)

Indoor Units

Model	Quantity	Description
MMU-AP0484HP1-E	2	5.0HP 4-way Cassette

Y Joints

Model	Quantity	Description
RBM-BY105E	1	Y-Joint

Accessories

Model	Quantity	Description
RBC-AMS41E	1	Remote controller with schedule timer(7-day timer function)
RBC-U31PGP(W)-E	2	Ceiling Panel

Piping Length

Pipe Diameter	Total Length	Gas Side	Discharge Side	Liquid Side
9.5mm	65.00 m	0.00 m	0.00 m	65.00 m
15.9mm	20.00 m	20.00 m	0.00 m	0.00 m
19.1mm	45.00 m	45.00 m	0.00 m	0.00 m

Total Refrigerant Charge Amount

Refrigerant (R410A)	Amount	Description
Outdoor Unit	4.400 kg	Refrigerant amount charged in factory
Additional Refrigerant	4.975 kg	Amount needed for the pipes at the site
TOTAL:	9.375 kg	

Outdoor Design Temperature

Mode	Description	Temperature
Cooling	Dry Bulb temperature	29.0 °C
Heating	Wet Bulb temperature	-5.0 °C

Electronic Information(OutdoorUnits)

Property	Value	Description
MOCP(A)	20	Maximum Overcurrent Protection
MCA(A)	17	Minimum Circuit Amps
Protection Device Size(A)		Follow applicable local standard as needed
Wire(cable size)(mm²) or AWG(#)		Follow applicable local standard as needed

Electronic Information(IndoorUnits)

Property	Value	Description
Total MCA(A)	2.88	
Protection Device Size(A)		Follow applicable local standard as needed
Wire(cable size)(mm²) or AWG(#)		Follow applicable local standard as needed

Library

Outdoor Unit

Model Name	Cooling (kW)		Heating (kW)		Diversity	
	Rated	Corrected	Rated	Corrected	System	Building
MCY-MHP0806HS8-E	22.40	20.92	22.40	16.58	125%	0%

Outdoor Unit Combination

Header	Follower1	Follower2	Follower3	Follower4
MCY-MHP0806HS8-E				

Indoor Units

Model Name	UnitName &Room	Capacity Code	Fan Speed		Capacity (Total/Sensible) [kW]		
			Air flow (m³/h)	Mode	Rated	Corrected	Required
MMU-AP0484HP1-E		5	Low	Cooling	14.00/9.80	9.04/6.32	0.00/5.67
			1130	Heating	16.00	8.29	0.00
MMU-AP0484HP1-E		5	Low	Cooling	14.00/9.80	9.04/6.32	0.00/5.67
			1130	Heating	16.00	8.29	0.00

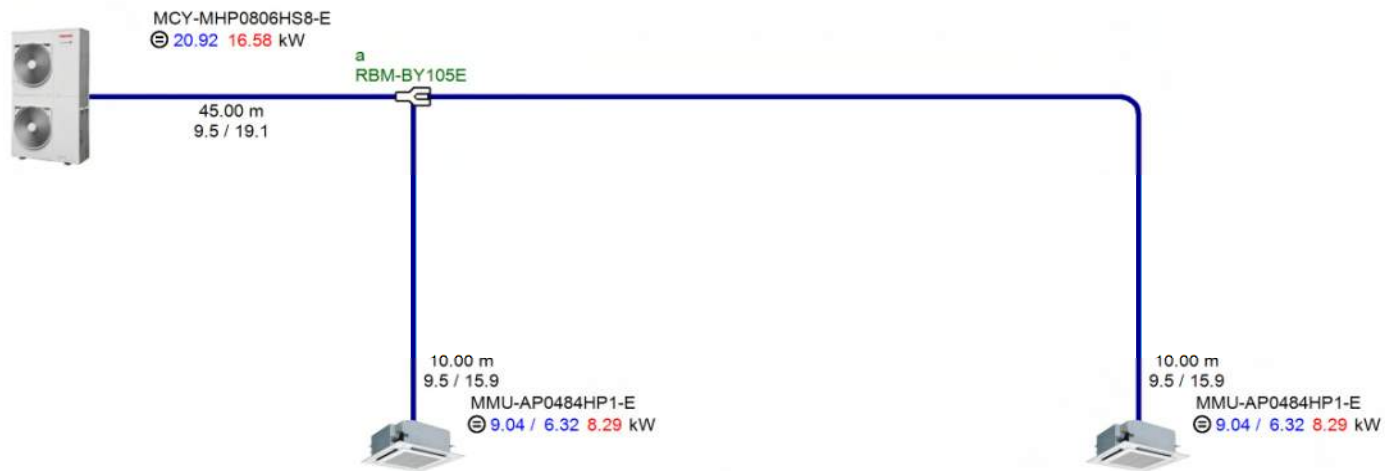
System information	
Indoor Units	2 of 12
Capacity Ratio	125.0%
Total Pipe Length	65.00 m
Indoor Cap. Tot./Sen.	18.08 kW/12.63 kW
Indoor Cap. Heat.	16.58 kW
Building diversity	0%

Outdoor/Indoor Legend	
Unit Name	
Model Name	
Room Name	
⊖ Corrected capacity	Tot./Sens./ Heat.

Piping Legend	
Actual Length	
Liquid / Suction Gas diameters	
Note: It is the responsibility of the consultant or contractor, to verify and confirm that the equipment selection and system design is correct before installation.	

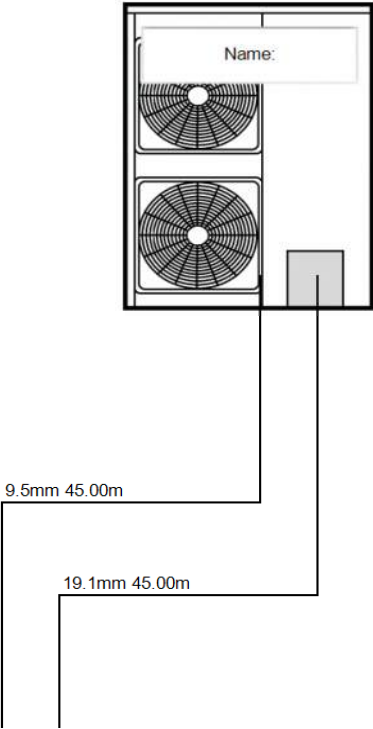
Branches Legend	
a	RBM-BY105E (x1)

Library



Library

MCY-MHP0806HS8-E



Accessories
Header

Follower1

Follower2

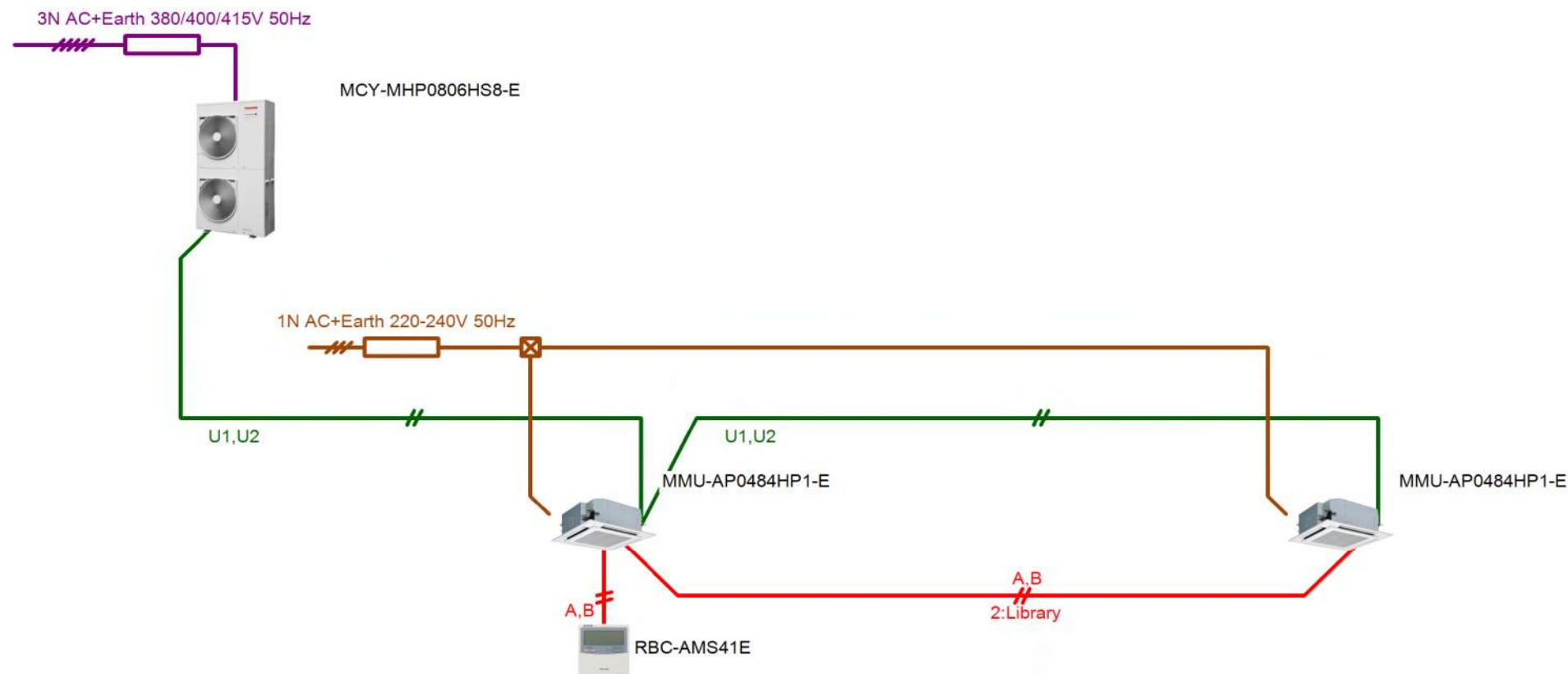
Follower3

Follower4

Electrical Information
Summary: 3N AC+Earth 380/400/415V 50Hz

- Slot 1
- Slot 2
- Slot 3
- Slot 4
- Slot 5

Library



**JOB TITLE: CHORLTON HIGH
SCHOOL SOUTH**

Job No. P2008475

**VRF & DX Split SystemsSchedule
FS0765-BDP-XX-XX-SH-M-10007**

REV	DATE	DESCRIPTION	MADE BY	CHKD BY
P05	Aug-20	RFI response	TB	AM
P04	Mar-20	Final Issue	TB	AM
P03	Feb-20	Design Comments Incorporated	JK	AM
P02	Dec-19	For Final Issue	JK	AM
P01	Oct-19	For Contractor Proposal	JK	AM

BDP.

Building Design Partnership
Architects, Engineers & Cost Consultants
11 Ducie Street, PO Box 85
Piccadilly Basin, Manchester, M60 3JA
Tel +44 (0) 161 828 2200
Fax +44 (0) 161 828 2235
www.bdp.co.uk

PROJECT: **Chorlton High School**
 JOB NO: **FS0765**
 DOC NO: **FS0765-BDP-XX-XX-SH-M-10007**

VRF & DX SPLIT UNITS & COOLING COILS SCHEDULE

BDP.

REF (INDOOR UNIT)	ROOM NAME	ROOM NUMBER	TYPE	MODEL REFERENCE OUTDOOR UNIT	ROOM COOLING LOAD (kW)		HEATING LOAD (kW)	AIR VOLUME (l/s)		ROOM NOISE CRITERIA	NOTES
					SENSIBLE	LATENT		FRESH AIR	TOTAL		
IU01	ICT RICH	1.29	Ceiling Cassette	OU01	7.1	0	1.12			31-32dB	Local controller to be provided for unit.
IU02	ICT RICH	1.55	Ceiling Cassette	OU02	7.1	0	0.53			29-31dB	Local controller to be provided for unit.
IU03	Server Room	1.43	Wall Mounted	OU03	3.6	0	0.25			43dB	Local controller to be provided for unit.
IU04	ICT Business	2.14	Ceiling Cassette	OU04	7.1	0	1.4			31-32dB	Local controller to be provided for unit.
IU05	Library	0.07	Ceiling Cassette	OU06	5.67	0	1.73			30-32dB	Local controller to be provided for unit.
IU06	Library	0.07	Ceiling Cassette	OU06	5.67	0	1.73			30-32dB	Local controller to be provided for unit.
IU07	Reprographics	0.71	Wall Mounted	OU05	2.78	0	0.26			40dB	Local controller to be provided for unit.
IU08	Activity Studio	0.64	Ceiling Cassette	OU05	2.31	0	1.64			34dB	Local controller to be provided for unit.
IU09	Activity Studio	0.64	Ceiling Cassette	OU05	2.31	0	1.64			34dB	Local controller to be provided for unit.
IU10	Activity Studio	0.64	Ceiling Cassette	OU05	2.31	0	1.64			34dB	Local controller to be provided for unit.
IU11	Activity Studio	0.64	Ceiling Cassette	OU05	2.31	0	1.64			34dB	Local controller to be provided for unit.

REF (OUTDOOR UNIT)	LOCATION	ROOM NUMBER	NOISE LEVEL	POWER SUPPLY DETAILS	COOLING MINIMUM EER	HEATING CoP	NOTES
OU01	Roof	N/A	49-51dB	220-240v 50Hz	3.3	3.8	
OU02	Roof	N/A	44-46dB	220-240v 50Hz	4.0	4.2	
OU03	Roof	N/A	44-46dB	220-240v 50Hz	3.7	3.71	
OU04	Roof	N/A	49-51dB	220-240v 50Hz	3.3	3.8	
OU05	01 Roof	N/A	64-70dB	380-415v, 50Hz	4.4	4.35	
OU06	Roof	N/A	64-70dB	380-415v, 50Hz	4.1	4.28	
OU07	01 Roof	N/A	58-59 dB	220-240v 50Hz			for AHU 03 heating and cooling coil
OU08	02 Roof	N/A	58-59 dB	220-240v 50Hz			for AHU 03 heating and cooling coil

Notes

1. Condensor units to be sized suitable for length of pipework installation.
2. All split units and coils to come complete with associated condenser unit.
3. Selections to be Mitsubishi DX and VRF units or equal and approved

REVISION	DATE	MADE	CHECKED	AMENDMENTS
P05	Aug-20	TB	AM	
P04	Mar-20	TB	AM	
P03	Feb-20	JK	AM	
P02	Dec-10	JK	AM	
P01	Oct-19	JK	AM	

Project Title: Chorlton High School South		submission no: TSM-012
Contract No: HNW 0332		
To: Liz Ormerod		Company: Gleeds
Approval of the following equipment is required:		
Equipment: Fans and Accessories		
Designer: BDP		
Description: Extract and supply Fans with controls / accessories		
Specification References: NUAIRE technical submission, for below Fans and accessories, are in accordance with the performance requirements stated in BDP specification and schedule: Proposed Manufacturer – NUAIRE Selections as detailed within the attached NUAIRE Selection Data KEF 01 - Kitchen Extract Design – 2.93 m ³ /s @ 350pa Selection - AXB63M-213A4 Bifurcated Axial 230 DegC (accessories as per tech sheet) KSF 01 - Kitchen Supply Unit Design – 2.91 m ³ /s @ 250pa Selection - AX71P-42A3+0D Long Case. Class F ambient (accessories as per tech sheet) EF 01 - Chem Store Design* – 0.014 m ³ /s @ 68pa (<i>*system reviewed with BDP and revised duty agreed</i>) Selection - ILMEC-100 ILMEC-100. Mixed flow inline fan (accessories as per tech sheet) EF 03 - Food Room 2 Design – 1.016 m ³ /s @ 200pa Selection - AM24ES Nuaire Airmover centrifugal square cased unit (accessories as per tech sheet) EF04 - Kiln Room Design* – 0.35 m ³ /s @ 220pa (<i>*system reviewed with BDP and revised duty agreed</i>) Selection - DE6-ES DE6-ES. Dave extract fan size 6 (accessories as per tech sheet) EF 06 - Kitchen WC Extract Design – 0.075 m ³ /s @ 100pa Selection - DE2-ES DE2-ES. Dave extract fan size 2 (accessories as per tech sheet)		
Notes: Where not detailed controls and control field devices to be provided by BMS		
Attached Detail Documents:		
NUAIRE Selection Data	01. 1652495-CHORLTON HIGH SCHOOL SOUTH-200910	
BDP Design Schedule	02. FS0765-BDP-XX-XX-SH-M-10010 P06	
Planned site delivery: November 2020		
Issued by: Andrew Blurton BAM Construction Ltd.		Date: 11/09/2020
Please return comments by: 25/09/2020		

To be completed and returned by Consultant Design Engineer

Technical submission is ** approved / approved with comments / not approved.
(**delete as appropriate)

Returned by:

Company:

Signature:

Date:



SUMMARY FAN DATA SHEET

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk

UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.

This data sheet produced on 10 Sep 2020 17:04 using software version 4.5.3666.0

Project Details

Location: KEF 01 - Kitchen Extract

Technical Data

AXB - Axus Bifurcated Axial Fans - 230°C

Fan Code: **AXB63M-213A4**
Installation Manual Links: 671221

Required duty: 2.93 m³/s at 350 Pa
Actual duty: 3.27 m³/s at 436 Pa
Actual at required flow: 2.93 m³/s at 543 Pa

When speed controlled to required duty (89.57%):

Fan Input Power: **2.361 kW**
Motor Input Power: **3.007 kW**
Specific Fan Power: **1.0 W/(l/s)**
Velocity at required duty: 9.399 m/s
Fan Total Efficiency: 50%

At full speed:

Fan Input Power: 3.285 kW
Maximum Fan Input Power: 3.301 kW
Motor Input Power: 4.145 kW
Specific Fan Power: 1.3 W/(l/s)
Fan Total Efficiency: 40%

Maximum Fan Speed: 2 pole, 2,905 RPM
Electrical Supply: 400V 3 Phase 50 Hz
Nominal Motor Rating: 4 kW
Motor current (flc): 7.8 A
Motor starting current (sc): 56.16 A (DOL) 18.72 A (SD)
Overload setting: 8.58 A
Motor Efficiency: IE1 / Standard Efficiency

Max. operating temp: 230°C
Weight: 85 kg

Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (89.57%)

Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Induct Inlet	99	94	99	97	97	93	87	83	
Induct Outlet	103	98	93	96	96	93	88	84	
Open Inlet	94	89	97	96	97	93	87	83	
Open Outlet	99	94	91	95	95	93	88	84	
Breakout	82	77	91	79	78	79	76	70	65
For 100% speed:	+1	+1	+2	+2	+3	+3	+3	+3	

dBA is spherical at 3 metres. For hemi-spherical add 3 dBA.

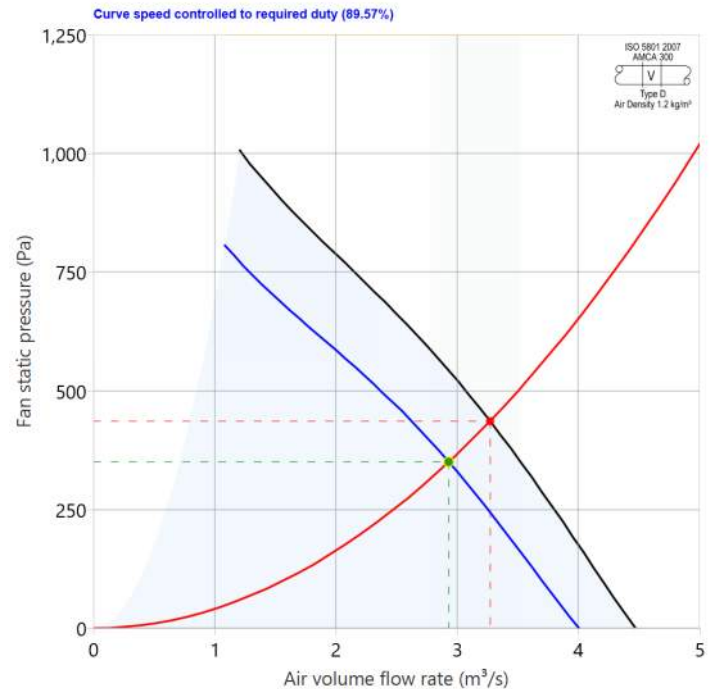
Values shown are for inlet Lw, outlet Lw sound power & breakout levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

CA63S

At all volumes 0 -2 -4 -8 -9 -8 -5 -4

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Selected Ancillaries

1 x NAV5	Anti-vibration mounting kit
1 x CMB63	Mounting bracket (pair)
2 x CMF63	Matching flange
2 x CFCH63	Hi-temp flexible connector
1 x ES-ISC8.8A	Ecosmart Inverter Speed Control
2 x CA63S	Standard silencer
1 x ES-ISC-WPB	Weatherproof Enclosure for Inverter
CMB63 - Mounting bracket (pair)	
Weight:	6.0 kg
CMF63 - Matching flange	
Weight:	4.0 kg
CFCH63 - Hi-temp flexible connector	
Weight:	2.0 kg
ES-ISC8.8A - Ecosmart Inverter Speed Control	
Weight:	12.0 kg
CA63S - Standard silencer	
Size:	630 mm (L) 830 mm (W) 830 mm (H)
Spigot Size:	630 mm
Weight:	30.0 kg



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Specification

Axis circular inline bifurcated axial flow fan manufactured from pre-galvanized mild steel for sizes 315-630 diameter. Sizes 710-1250 diameter are manufactured from mild steel with hot dip galvanized finish. Fan incorporates inlet and outlet flanges with pre-drilled bolt holes. The motor is totally enclosed and protected to IP55, foot mounted class 'F' insulated and has sealed for life ball bearings, wiring direct to the motor terminal box. Blades manufactured from cast aluminium alloy mounted in a die cast aluminium alloy hub as standard. Motor enclosure specially insulated for operation up to 230°C.

NAV5

Resilient rubber anti-vibration mountings, supplied as a set of 4.

CMB63

The mounting brackets are manufactured from heavy gauge galvanized steel and supplied in pairs.

CMF63

The matching flanges are manufactured from galvanized steel and are supplied individually.

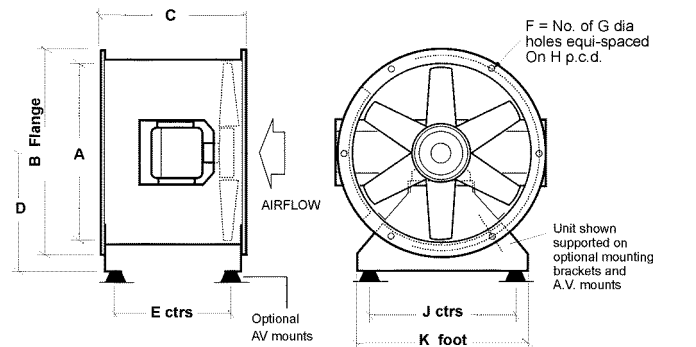
CFCH63

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 400°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

CA63S

Unpadded attenuator shall be rigidly constructed from galvanized steel, internally lined with sound absorbing material not less than 100mm thick retained by galvanized steel perforated sheet. Attenuator 'end faces' shall be drilled and tapped to match the flange details of the associated fan. Attenuator 'sound absorbing material' shall be chemically inert, non-combustible, non-hygroscopic and vermin resistant. Attenuator shall be tested in accordance with BS718:1971 ASTM E 477. Attenuator shall be suitable for internal and external use at any installed angle.

Fan Dimensions



A	B	C	D	E	F	G	H	J
630	740	650	430	550	12	12	690	500
K	kg							
550	85							
Length:		Width:		Height:				
650		740		800				
Duct size:		630						

Drawing is for dimensional purposes only. Dimensions in mm.



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Project Details

Location: KSF 01 - Kitchen Supply Unit

Technical Data

Long Case. Class F ambient, 2.2 kW 4P 400V 3ph 50Hz TEFC IP55, with a PTC. Aluminium impeller. Galvanised steel case. For inverter control only.

Fan Code: **AX71P-42A3+0D**

Installation Manual Links: 671220

Required duty: 2.91 m³/s at 250 Pa

Actual duty: 3.15 m³/s at 293 Pa

Actual at required flow: 2.91 m³/s at 315 Pa

When speed controlled to required duty (92.32%):

Fan Input Power: 1.281 kW

Motor Input Power: 1.634 kW

Specific Fan Power: 0.6 W/(l/s)

Velocity at required duty: 7.35 m/s

Fan Total Efficiency: 64%

At full speed:

Absorbed power: 1.628 kW

Maximum Absorbed power: 1.632 kW

Motor Input Power: 2.063 kW

Specific Fan Power: 0.7 W/(l/s)

Fan Total Efficiency: 55%

Maximum Fan Speed: 4 pole, 1,440 RPM

Electrical Supply: 400V 3 Phase 50 Hz

Motor Rating: 2.2 kW

Motor current (flc): 4.9 A

Motor starting current (sc): 34.3 A

Overload setting: 5.39 A

Motor Efficiency: IE2 / High Efficiency

Starting currents are nominal.

Blade angle: 25 °

Max. Operating Temp: 60°C

Sound Data

Noise calculated speed controlled to required duty (92.32%)

Sound Power Levels re 1 pWatts (Hz):

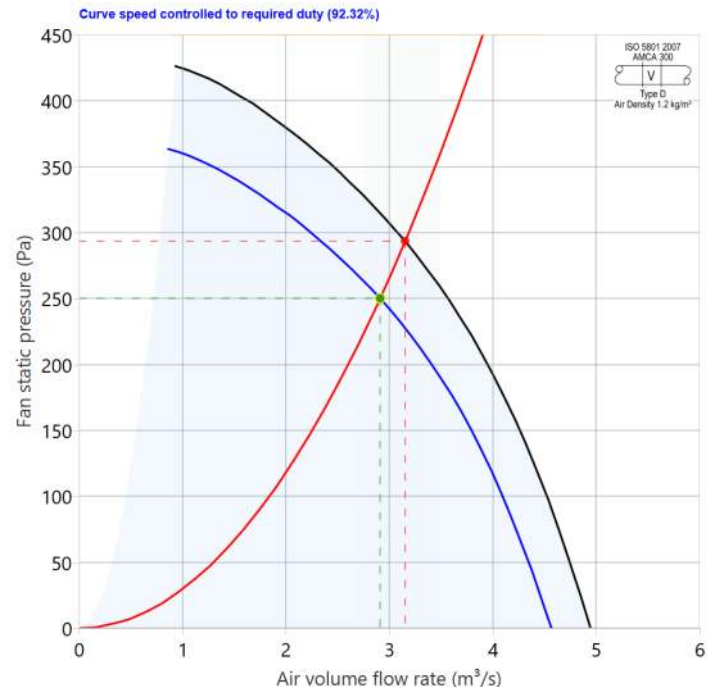
Hz	63	125	250	500	1k	2k	4k	8k	dBa
Induct Inlet	87	88	94	90	85	80	76	70	
Induct Outlet	83	84	91	91	87	83	78	72	
Open Inlet	80	91	95	89	85	80	76	70	
Open Outlet	76	80	90	90	87	83	78	72	
Breakout	63	64	78	67	59	64	58	46	51
For 100% speed:	+1	+1	+1	+2	+2	+2	+2	+2	

dBa is spherical at 3 metres. For hemi-spherical add 3 dBA.

Values shown are for inlet Lw, outlet Lw sound power & breakout levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

ErP Directive 2015 Compliant

The following information confirms compliance with EU 327/2011 as required by ErP Directive 2009/125/EC. Only applicable within EU states.

Efficiency grade:	62
Overall efficiency:	57.6 %
Measurement category:	D
Efficiency category:	Total
Variable speed drive:	A variable speed drive must be installed with this fan
Input power at best point:	1.939 kW
Volume flow at best point:	3.89 m³/s
Pressure at best point:	268 Pa
Speed:	1,440 RPM
Specific ratio:	1.002653

Selected Ancillaries

2 x CFC71	Flexible connector
1 x CMB71	Mounting bracket (pair)
1 x NAV2	Anti-vibration mounting kit
2 x CMF71	Matching flange
1 x ES-ISC5.6A	Ecosmart Inverter Speed Control
1 x ES-ISC-WPB	Weatherproof Enclosure for Inverter
CFC71 - Flexible connector	
Weight:	1.0 kg
CMB71 - Mounting bracket (pair)	
Weight:	8.0 kg
CMF71 - Matching flange	
Weight:	5.0 kg
ES-ISC5.6A - Ecosmart Inverter Speed Control	
Weight:	12.0 kg



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This data sheet produced on 10 Sep 2020 17:04 using software version 4.5.3666.0

Specification

710mm diameter long cased circular axial flow fan manufactured from pre-galvanised mild steel. Fan incorporates inlet and outlet flanges with pre-drilled bolt holes and an external standard safe area terminal box. Impeller blades manufactured from aluminium mounted in a aluminium hub as standard. The motor is 400V three phase, single speed, totally enclosed fan-cooled, protected to IP55, foot mounted, class F insulated, with drain holes and has sealed for life bearings. The motor is fitted with a PTC. Motor efficiency is IE2. Motor efficiency stated is based on the IEC rated output for the motor.

CFC71

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

CMB71

The mounting brackets are manufactured from heavy gauge galvanised steel and supplied in pairs.

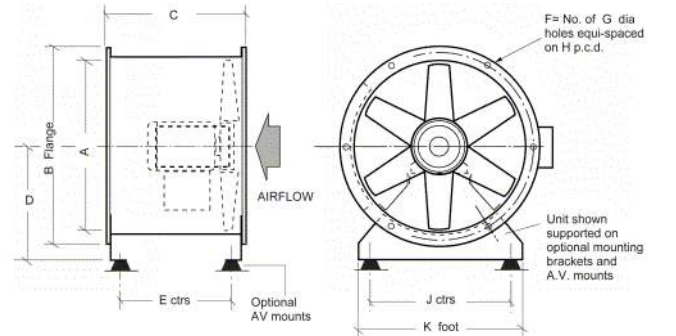
NAV2

Resilient rubber anti-vibration mountings, supplied as a set of 4.

CMF71

The matching flanges are manufactured from galvanised steel and are supplied individually.

Fan Dimensions



A	B	C	D	E	F	G	H	J
710	814	455	470	360	16	12	770	540
K	kg							
600	65							

Length: 455
Width: 814
Height: 814

Drawing is for dimensional purposes only. Dimensions in mm.



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This data sheet produced on 10 Sep 2020 17:04 using software version 4.5.3666.0

Project Details

Location: EF 01 - Chem Store

Technical Data

ILMEC - In-line Mixed Flow with EC Motor

Fan Code: **ILMEC-100**

Required duty: 0.01 m³/s at 68 Pa
Actual duty: 0.02 m³/s at 147 Pa
Actual at required flow: 0.01 m³/s at 161 Pa

When speed controlled to required duty (67.73%):

Motor Input Power: 0.008 kW

Specific Fan Power: 0.5 W/(l/s)

At full speed:

Motor Input Power: 0.025 kW

Specific Fan Power: 1.2 W/(l/s)

Maximum Fan Speed: 2 pole, 3,018 RPM
Electrical Supply: 230V 1 Phase 50 Hz
Nominal Motor Rating: 0.032 kW
Motor current (flc): 0.29 A
Motor starting current (sc): 0.37 A

Max. operating temp: 55°C
Weight: 1.75 kg

Starting currents are nominal. 4 kW and above are for Star Delta, all others are for D.O.L. starting.

Sound Data

Noise calculated speed controlled to required duty (67.73%)

Sound Power Levels re 1 pWatts (Hz):

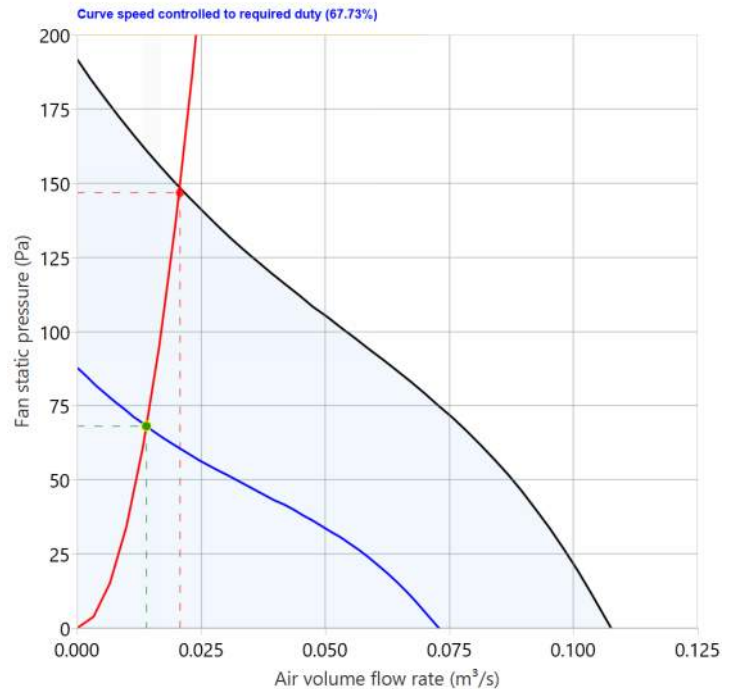
Hz	63	125	250	500	1k	2k	4k	8k	dBA
Induct Inlet	74	70	66	70	58	55	44	39	
Induct Outlet	80	83	76	71	61	56	47	40	
Breakout	68	74	67	66	55	49	35	25	48
For 100% speed:	+3	+3	+5	+6	+9	+9	+9	+9	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Values shown are for inlet Lw, outlet Lw sound power & breakout levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Selected Ancillaries

2 x CFC10 Flexible connector

CFC10 - Flexible connector

Weight: 0.5 kg

Specification

Mixed flow inline fan with high efficiency EC motor. Polypropylene moulded casing. Removable central unit with a motor, impeller and terminal box is attached to the fittings by means of special mounting brackets with integral latches. Unit has flat mounting plate for secure wall mounting but unit can be installed in any angle. The fans are controlled by means of a 0-10V control signal. As the control signal changes the EC fan changes speed accordingly to supply the exact air amount. Suitable for 50Hz and 60Hz (1 phase) networks. A separate speed controller is available as ancillary.

CFC10

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.



SUMMARY FAN DATA SHEET

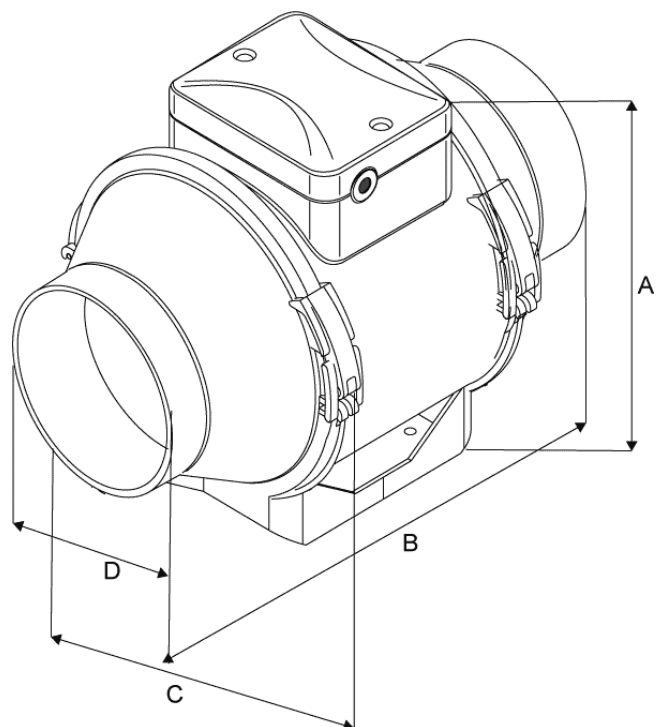
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Fan Dimensions



A	B	C	kg
241	303	192	1
Length:	Width:	Height:	
303	192	241	
Spigot size:	97		

Drawing is for dimensional purposes only. Dimensions in mm.



SUMMARY FAN DATA SHEET

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Project Details

Location: EF 03 - Food Room 2

Technical Data

AM - Airmover

Fan Code: **AM24ES**
Installation Manual Links: 671174
Required duty: 1.02 m³/s at 200 Pa
Actual duty: 2.03 m³/s at 797 Pa
Actual at required flow: 1.02 m³/s at 1938 Pa

When speed controlled to required duty (50.11%):

Fan Input Power: **0.431 kW**
Motor Input Power: **0.557 kW**
Specific Fan Power: **0.5 W/(l/s)**
Velocity at required duty: 3.127 m/s
Fan Total Efficiency: 49%

At full speed:

Fan Input Power: 3.423 kW
Maximum Fan Input Power: 3.985 kW
Motor Input Power: 4.178 kW
Specific Fan Power: 2.1 W/(l/s)
Fan Total Efficiency: 12%

Maximum Fan Speed: 2 pole, 2,890 RPM
Electrical Supply: 400V 3 Phase 50 Hz
Nominal Motor Rating: 4 kW
Motor current (flc): 7.8 A
Motor starting current (sc): 7.8 A
Motor Efficiency: IE2 / High Efficiency

Max. operating temp: 50°C
Weight: 85 kg

All Ecosmart fans feature soft-starting and stepless variable speed control. A switch disconnector is required to isolate the fan from the electrical supply.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (50.11%)

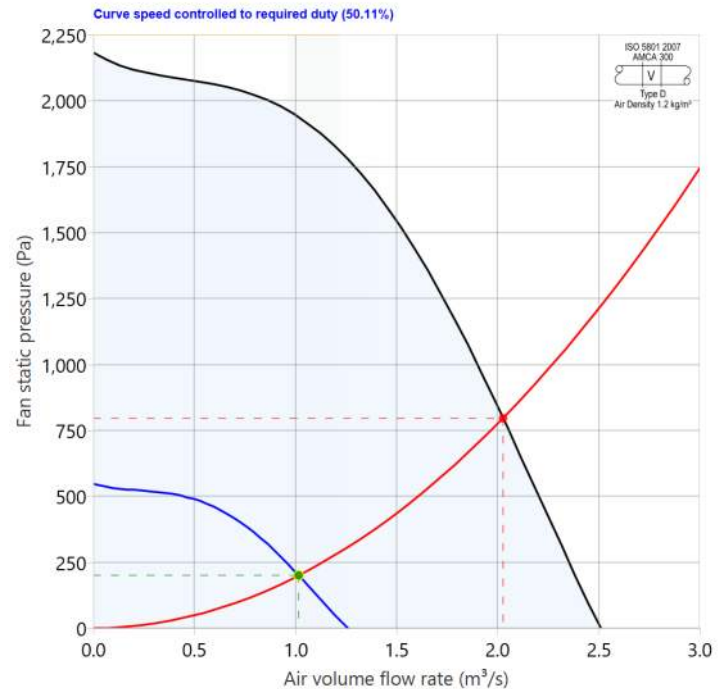
Sound Power Levels re 1 pWatts (Hz):									
Hz	63	125	250	500	1k	2k	4k	8k	dBA
Induct Inlet	97	81	87	76	72	80	68	72	
Induct Outlet	101	79	84	79	77	82	73	67	
Open Inlet	87	76	86	76	72	80	68	72	
Open Outlet	90	75	82	79	77	82	73	67	
Breakout	92	66	74	56	45	51	49	44	48
For 100% speed:	+4	+6	+8	+11	+16	+16	+16	+16	

dBA is spherical at 3 metres. For hemi-spherical add 3 dBA.

Values shown are for inlet Lw, outlet Lw sound power & breakout levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Selected Ancillaries

1 x NAV5 Anti-vibration mounting kit
2 x AMDF3 Quickfit double flanged flexible connector

Specification

The unit casing shall consist of high rigidity Pentapost framework with double skinned infill panels. Panels shall contain inert high density infill. Panel material shall be heavy gauge Aluzinc corrosion resistant steel.

Fans shall be of high efficiency backward curved centrifugal design, manufactured in galvanised steel. Fans shall be direct drive with high efficiency IE2 motors to IEC60034-30:2008 where applicable (e.g. single speed motors, rated at 0.75kW and above). The efficiency rating of other motors will vary by size and type.

If an inverter is supplied with the fan, it needs to be mounted internally within the building unless a weatherproof enclosure is ordered. Unit fitted with full Ecosmart controls, BMS interfaces and commissioning controls. Ecosmart fans incorporate (in a convenient separate enclosure) a control package providing full Ecosmart functionality. The fan shall have the following energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer: integral maximum and minimum speed adjustment/setting; integral adjustable run on timer; integral BMS interfaces, 0-10v and volt free failure indication.

NAV5

Resilient rubber anti-vibration mountings, supplied as a set of 4.

AMDF3

Square double flanged flexible connectors with a pair of quickfit flanges. The flexible duct material is a sound barrier mat with wear resistant skin, designed to improve sound installation. The material is self extinguishing and suitable for operating temperatures between -30°C to +65°C.



SUMMARY FAN DATA SHEET

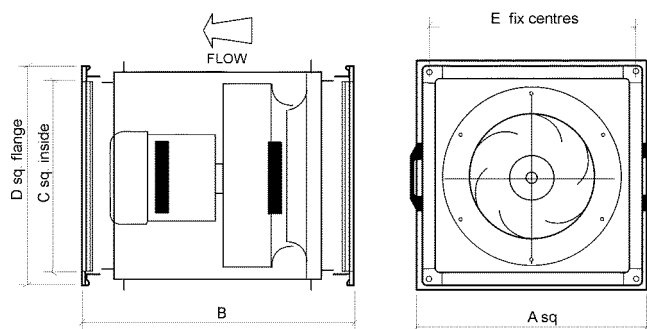
Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk

UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

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This data sheet produced on 10 Sep 2020 17:04 using software version 4.5.3666.0

Fan Dimensions



A	B	C	D	E	kg
642	705	570	635	608	85

Length: 705
Width: 642
Height: 642

Spigot size: 635 x 635

Duct size: 570 x 570

Drawing is for dimensional purposes only. Dimensions in mm.



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This data sheet produced on 10 Sep 2020 17:04 using software version 4.5.3666.0

Project Details

Location: EF04 - Kiln Room

Technical Data

DE - DAVE Extract Fans

Fan Code: **DE6-ES**
Installation Manual Links: **611280**

Required duty: 0.35 m³/s at 220 Pa
Actual duty: 0.49 m³/s at 439 Pa
Actual at required flow: 0.35 m³/s at 525 Pa

When speed controlled to required duty (70.79%):

Motor Input Power: **0.19 kW**
Specific Fan Power: **0.5 W/(l/s)**
Velocity at required duty: 2.785 m/s

At full speed:

Motor Input Power: 0.537 kW
Specific Fan Power: 1.1 W/(l/s)

Maximum Fan Speed: 1,710 RPM
Electrical Supply: 230V 1 Phase 50 Hz
Nominal Motor Rating: 0.45 kW
Motor current (flc): 2.9 A
Motor starting current (sc): 2.9 A

Max. operating temp: 40°C
Weight: 69 kg

All Ecosmart fans feature soft-starting and stepless variable speed control. A switch disconnector is required to isolate the fan from the electrical supply.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (70.79%)

Sound Power Levels re 1 pWatts (Hz):

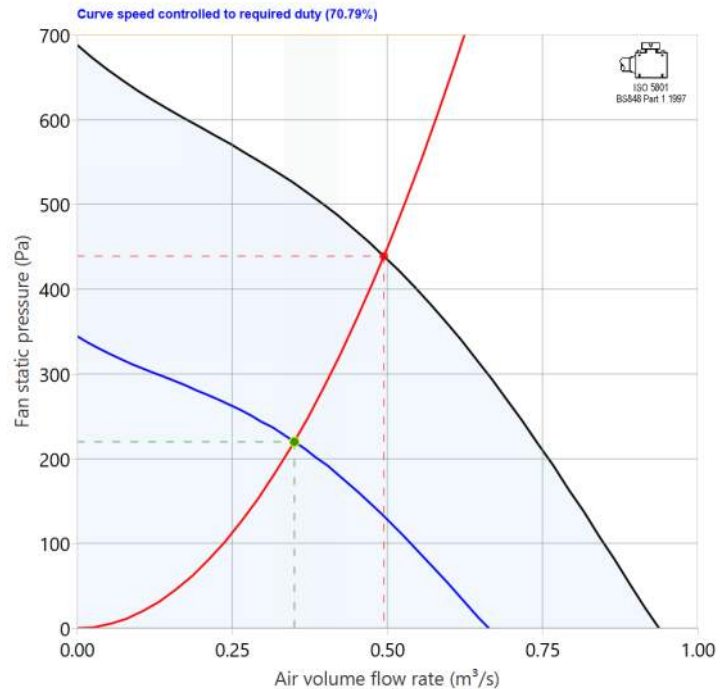
Hz	63	125	250	500	1k	2k	4k	8k	dBA
Induct Inlet	89	85	72	62	59	55	53	46	
Induct Outlet	89	85	72	62	59	54	50	43	
Breakout	73	65	63	47	46	35	30	24	39
For 100% speed:	+2	+3	+4	+6	+8	+8	+8	+8	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Values shown are for inlet Lw, outlet Lw sound power & breakout levels for Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Selected Ancillaries

2 x CFC40 Flexible connector
1 x ES-UCF Ecosmart Fan User Control

CFC40 - Flexible connector

Weight: 0.5 kg

Specification

Dave high performance extract fan, standard case with patented 'Floating fan' construction. Single skin, with infill panels and manufactured from heavy gauge, corrosion resistant Aluzinc steel. The unit is suitable for internal or external mounting, in any orientation and incorporates a full length top or bottom access panel. The fan impeller and EC motors are selected to provide optimum performance and energy efficiency conforming to Part L regulations. Units are suitable for operation in ambient temperatures of up to 60°C (sizes 1-5), 40°C (sizes 6-7) and are Class L2 leakage. The unit shall be controlled by an integrated Ecosmart control mounted externally to the case. The fans shall have the following energy saving and operational functions integrally installed with in it, all components will be pre-wired and fitted by the manufacturer:

- Integral Frequency inverter/speed controller.
- Integral adjustable run-on timer.
- Maximum and minimum speed adjustment/setting (trickle and boost).
- Volt free run & failure/status indication.
- 0-10V BMS interface for remote operation.
- Multiple low voltage sockets for interconnection of sensors or fans.
- Background ventilation/trickle enable switch.

The unit is supplied with circular spigots and set of four mounting brackets. The Fan unit shall have a 5 year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

CFC40

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

ES-UCF

Ventilation user control compatible with Ecosmart system.

- ES-UCF User Control - supplied with a pre-plugged, 10M length of communications cable. The ES-UCF control is used to switch the fan on/off and adjust the fan speed.



SUMMARY FAN DATA SHEET

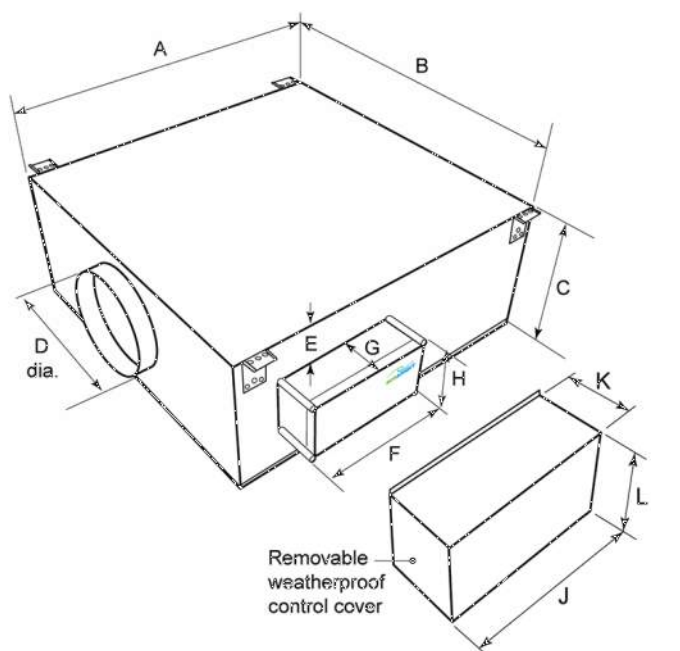
Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk

UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.

This data sheet produced on 10 Sep 2020 17:04 using software version 4.5.3666.0

Fan Dimensions



A	B	C	D	E	F	G	H	J
605	1100	465	400	162	370	96	150	470
K	L	kg						
120	170	69						
Length:	Width:	Height:						
605	1100	465						

Drawing is for dimensional purposes only. Dimensions in mm.



SUMMARY FAN DATA SHEET

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This data sheet produced on 10 Sep 2020 17:04 using software version 4.5.3666.0

Project Details

Location: EF 06 - Kitchen WC Extract

Technical Data

DE - DAVE Extract Fans

Fan Code: **DE2-ES**
Installation Manual Links: **611280**

Required duty: 0.07 m³/s at 100 Pa
Actual duty: 0.12 m³/s at 235 Pa
Actual at required flow: 0.07 m³/s at 359 Pa

When speed controlled to required duty (65.09%):

Motor Input Power: **0.026 kW**
Specific Fan Power: **0.3 W/(l/s)**
Velocity at required duty: 2.387 m/s

At full speed:

Motor Input Power: 0.093 kW
Specific Fan Power: 0.8 W/(l/s)

Maximum Fan Speed: 3,200 RPM
Electrical Supply: 230V 1 Phase 50 Hz
Nominal Motor Rating: 0.088 kW
Motor current (flc): 0.75 A
Motor starting current (sc): 0.75 A

Max. operating temp: 60°C
Weight: 25 kg

All Ecosmart fans feature soft-starting and stepless variable speed control. A switch disconnector is required to isolate the fan from the electrical supply.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (65.09%)

Sound Power Levels re 1 pWatts (Hz):

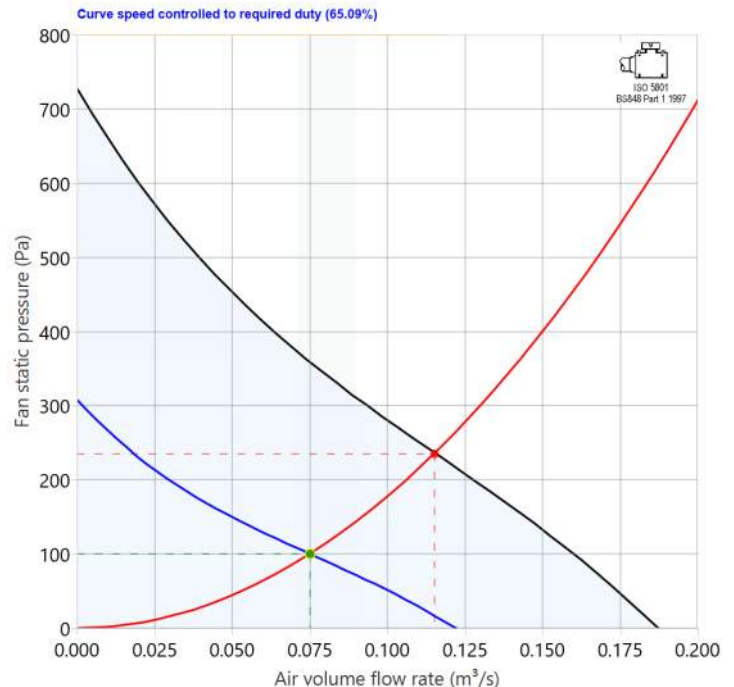
Hz	63	125	250	500	1k	2k	4k	8k	dBA
Induct Inlet	66	62	55	52	44	42	43	42	
Induct Outlet	71	63	61	51	47	48	44	43	
Breakout	52	46	42	35	27	26	23	20	20
For 100% speed:	+3	+4	+5	+7	+10	+10	+10	+10	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Values shown are for inlet Lw, outlet Lw sound power & breakout levels for Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Selected Ancillaries

2 x CFC20 Flexible connector

CFC20 - Flexible connector

Weight: 0.5 kg

Specification

Dave high performance extract fan, standard case with patented 'Floating fan' construction. Single skin, with infill panels and manufactured from heavy gauge, corrosion resistant Aluzinc steel. The unit is suitable for internal or external mounting, in any orientation and incorporates a full length top or bottom access panel. The fan impeller and EC motors are selected to provide optimum performance and energy efficiency conforming to Part L regulations. Units are suitable for operation in ambient temperatures of up to 60°C (sizes 1-5), 40°C (sizes 6-7) and are Class L2 leakage. The unit shall be controlled by an integrated Ecosmart control mounted externally to the case. The fans shall have the following energy saving and operational functions integrally installed with in it, all components will be pre-wired and fitted by the manufacturer:

- Integral Frequency inverter/speed controller.
- Integral adjustable run-on timer.
- Maximum and minimum speed adjustment/setting (trickle and boost).
- Volt free run & failure/status indication.
- 0-10V BMS interface for remote operation.
- Multiple low voltage sockets for interconnection of sensors or fans.
- Background ventilation/trickle enable switch.

The unit is supplied with circular spigots and set of four mounting brackets. The Fan unit shall have a 5 year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

CFC20

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.



SUMMARY FAN DATA SHEET

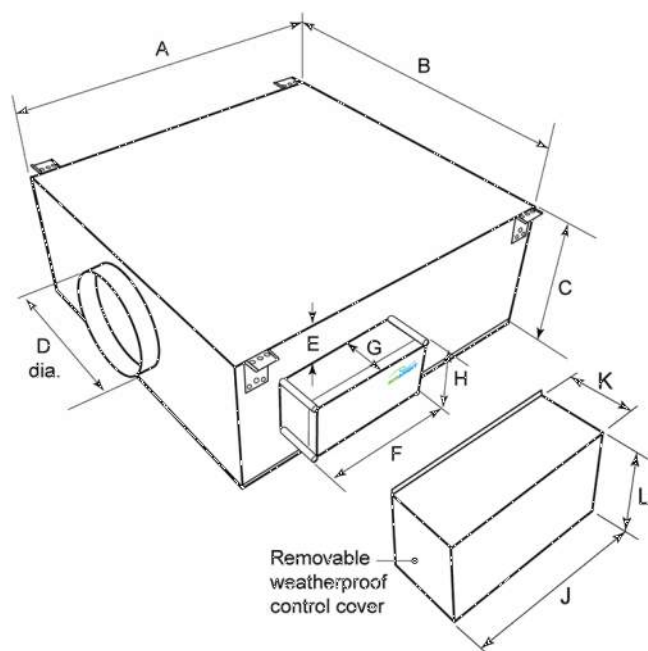
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Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.

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Fan Dimensions

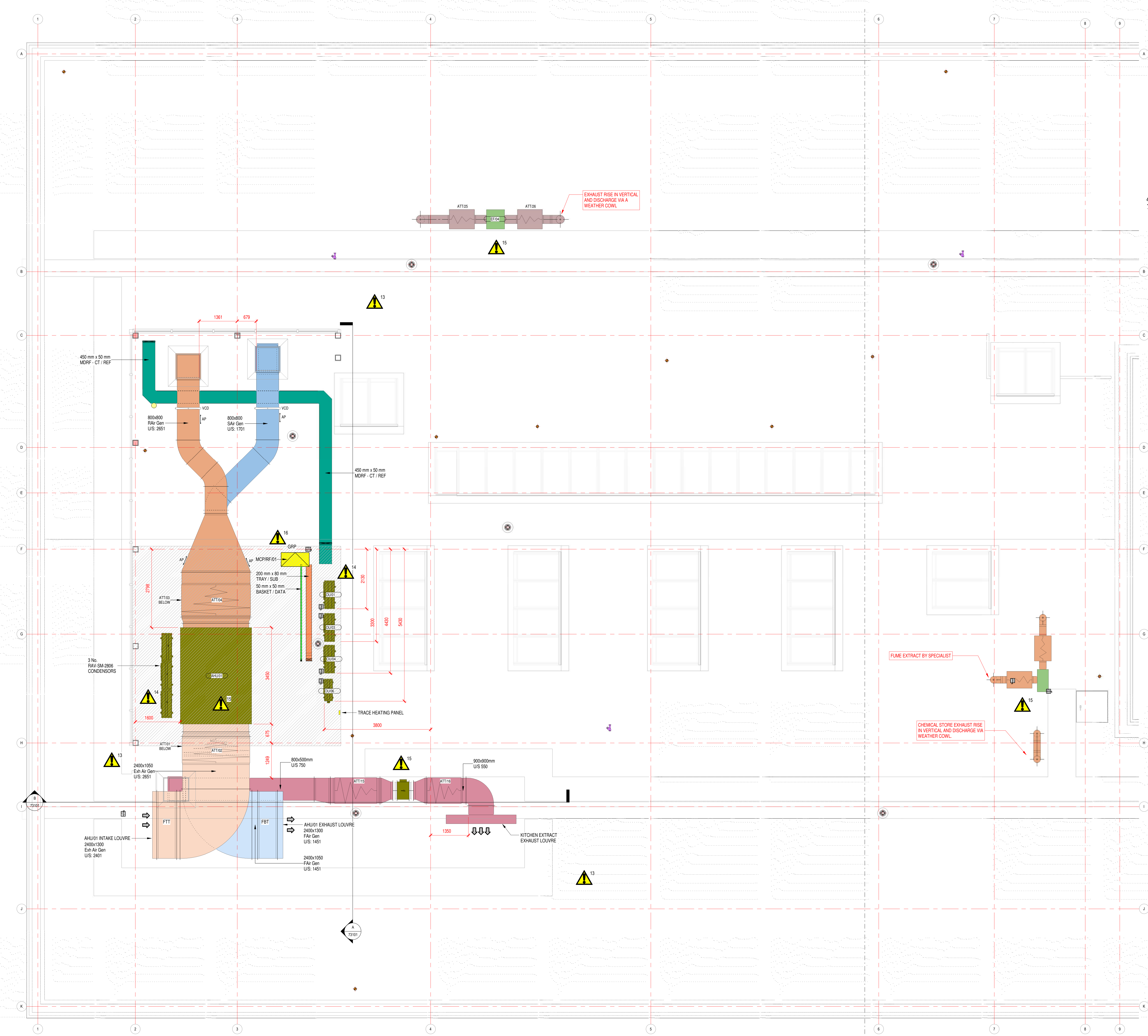


A	B	C	D	E	F	G	H	J
605	703	310	200	85	370	96	150	470

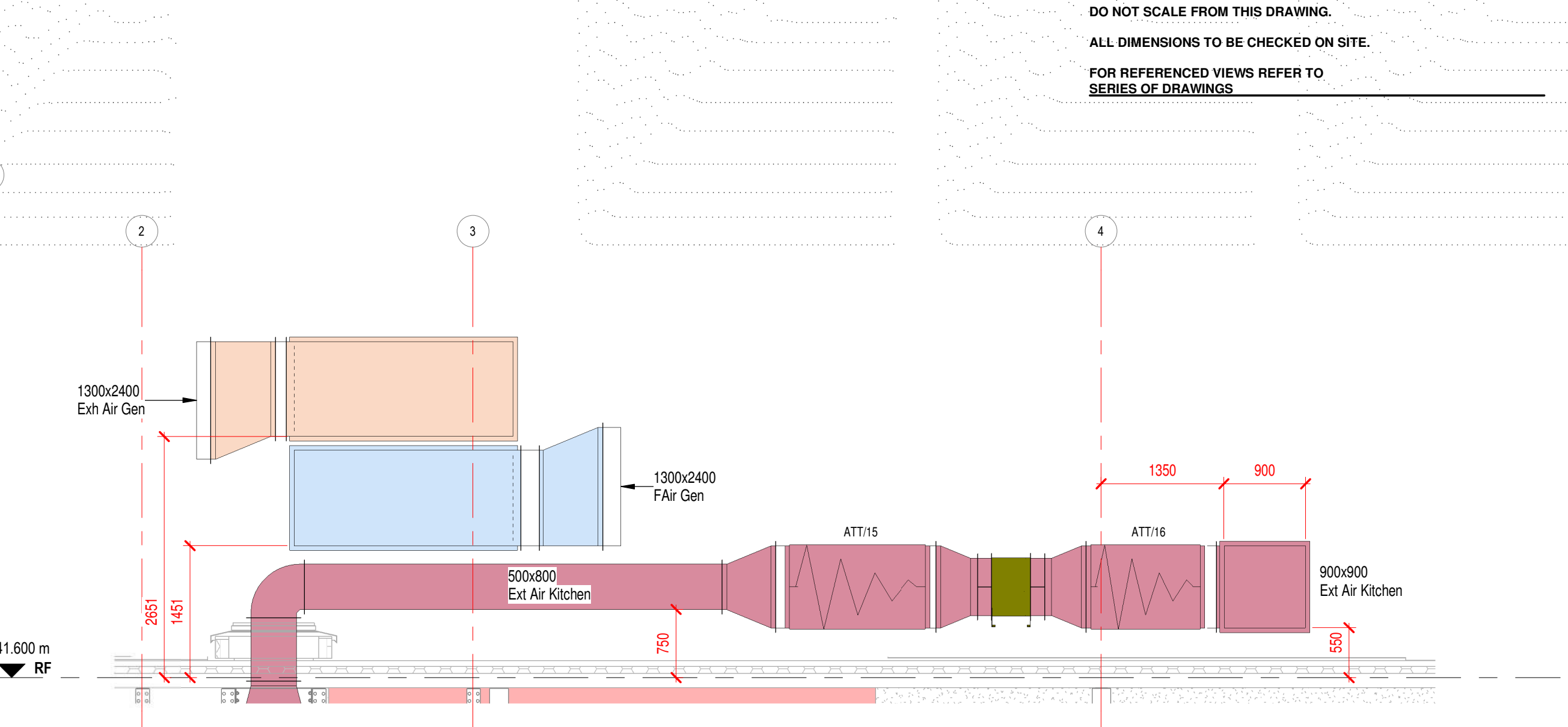
K	L	kg
120	170	25

Length: Width: Height:
605 703 310

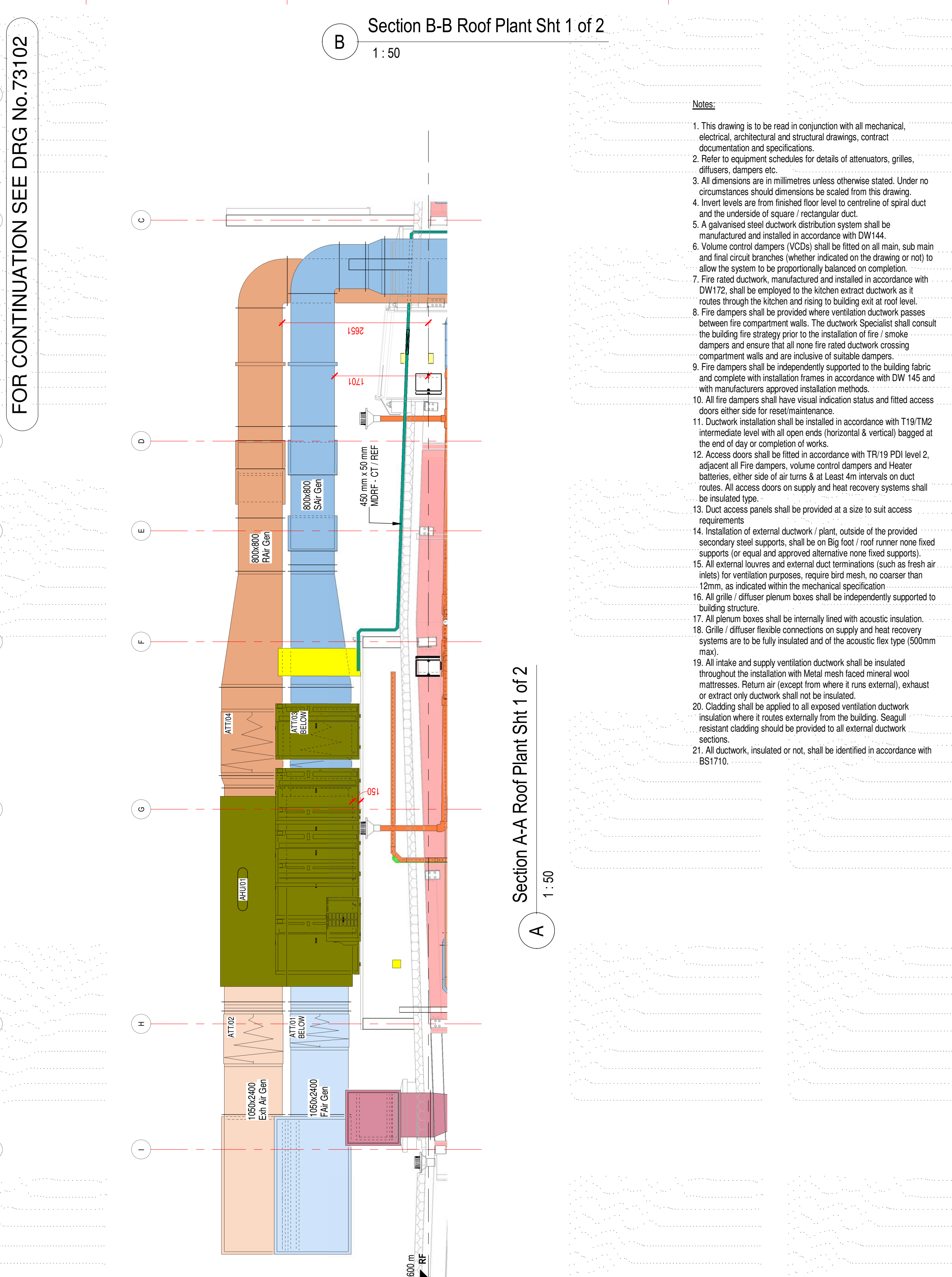
Drawing is for dimensional purposes only. Dimensions in mm.



FOR CONTINUATION SEE DRG No.73102



B Section B-B Roof Plant Sht 1 of 2
1:50



A Section A-A Roof Plant Sht 1 of 2
1:50

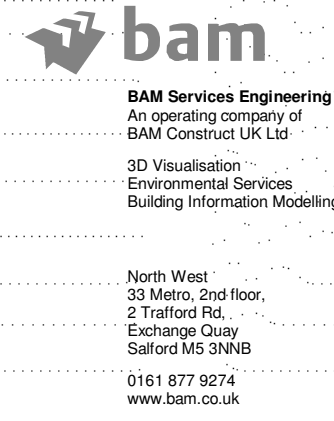
- Notes:
1. This drawing is to be read in conjunction with all mechanical, electrical, architectural and structural drawings, contract documentation and specifications.
 2. Refer to equipment schedules for details of attenuators, grilles, diffusers, dampers etc.
 3. All dimensions are in millimetres unless otherwise stated. Under no circumstances should dimensions be scaled from this drawing.
 4. Level levels are from finished floor level to centreline of spiral duct and the underside of square / rectangular duct.
 5. A galvanneal steel ductwork distribution system shall be manufactured and installed in accordance with DW144.
 6. Volume control dampers (VCDs) shall be fitted on all main, sub main and final circuit branches (whether indicated on the drawing or not) to allow the system to be proportionally balanced on completion.
 7. Fire rated ductwork, manufactured and installed in accordance with DW172, shall be employed to the kitchen exhaust ductwork as it routes through the kitchen and rising to building exit at roof level.
 8. Fire dampers shall be provided where ventilation ductwork passes between fire compartment walls. The ductwork Specialist shall consult the building fire strategy prior to the installation of fire / smoke dampers and ensure that all non fire rated ductwork crossing compartment walls and are inclusive of suitable dampers.
 9. Fire dampers shall be independently supported to the building fabric and complete with installation frames in accordance with DW 145 and with manufacturers approved installation methods.
 10. All fire dampers shall have visual indication status and fitted access doors either side for reset/maintenance.
 11. Ductwork installation shall be installed in accordance with T19/TM2 Intermediate level with all open ends (horizontal & vertical) tagged at the end of day or completion of works.
 12. Access doors shall be fitted in accordance with T19 PDI level 2, adjacent all Fire dampers, volume control dampers and Header batteries, either side of air turns & at Least 4m intervals on duct routes. All access doors on supply and heat recovery systems shall be insulated type.
 13. Duct access panels shall be provided at a size to suit access requirements.
 14. Installation of external ductwork / plant, outside of the provided secondary steel supports, shall be on Big foot / roof runner none fixed supports (or equal and approved alternative none fixed supports).
 15. All external louvres and external duct terminations (such as fresh air inlets) for ventilation purposes, require bird mesh, no coarser than 12mm, as indicated within the mechanical specification.
 16. All grille / diffuser plenum boxes shall be independently supported to building structure.
 17. All plenum boxes shall be internally lined with acoustic insulation.
 18. Grille / diffuser flexible connections on supply and heat recovery systems are to be fully insulated and of the acoustic fire type (500mm max).
 19. All intake and supply ventilation ductwork shall be insulated throughout the installation with Metal mesh faced mineral wool mattresses. Return air (except from where it runs external), exhaust or extract only ductwork shall not be insulated.
 20. Cladding shall be applied to all exposed ventilation ductwork insulation where it routes externally from the building. Seagull resistant cladding should be provided to all external ductwork sections.
 21. All ductwork, insulated or not, shall be identified in accordance with BS1710.

Key Hazard	Risk	Safety Measures
13 Working On Roofs	Environment	Working on roofs can cause heat related illnesses and possible dehydration due to exposure to the elements and the radiant temperature of surroundings when working externally on a roof. Wet/dry weather conditions may lead to dangerous conditions on roof, these additional risks may include high winds and surfaces that become extra slippery when covered in rain, ice or snow.
14 AC Condensor	Refrigerant	Refrigerant can cause severe burns, only qualified service personnel are allowed to perform install or perform maintenance.
15 AHU & Fans	Moving Parts	Do not run the units with guards removed. A minimum period of 2 minutes should be allowed after electrical disconnection before access panels are removed. This will allow the impellers enough time to cease rotating. Care should be taken, even if the fan has stopped and is electrically isolated as airflow can cause the impeller to windmill.
16 LV Panels	Electricity	Electricity at Work Regulations prohibits work on or near live conductors unless stringent conditions are met. This regulation states 'No person shall be engaged in any work activity on or near any live conductor (other than one suitably covered with insulating material so as to prevent danger) that danger may arise unless:' • it is unreasonable in all circumstances for it to be 'dead' • it is reasonable in all circumstances for him/her to be at work on or near it when it is live; and suitable precautions (including where necessary the provision of suitable protective equipment) are taken to prevent injury.

Status Code (as defined in BS1192)	
Shared	
S0 - Work in Progress	S1 - Suitable for Co-ordination
S2 - Suitable for Information	S3 - Suitable for Review
S4 - Suitable for Design Approval	S5 - Suitable for manufacture
S6 - Suitable for PM Authorisation	S7 - Suitable for AM Authorisation
Documentation (Pre-construction)	
D1 - Suitable for Costing	D2 - Suitable for Tender
D3 - Suitable for Contractor Design	D4 - Suitable for manufacture/procurement
Documentation (Contractual)	
A - Issued for construction	CR - As Construction Record Documentation
B - Issued for construction but with comments	

1. Condensate raised floor gullies provided below each AHU support frame.
2. AHU coil drip tray to be provided with glass trap, sized to match AHU static pressure. Associated condensate drainage to run to raised floor gully.
3. AC Condensers to be provided with drip trays, with condensate drainage run to raised floor gullies.

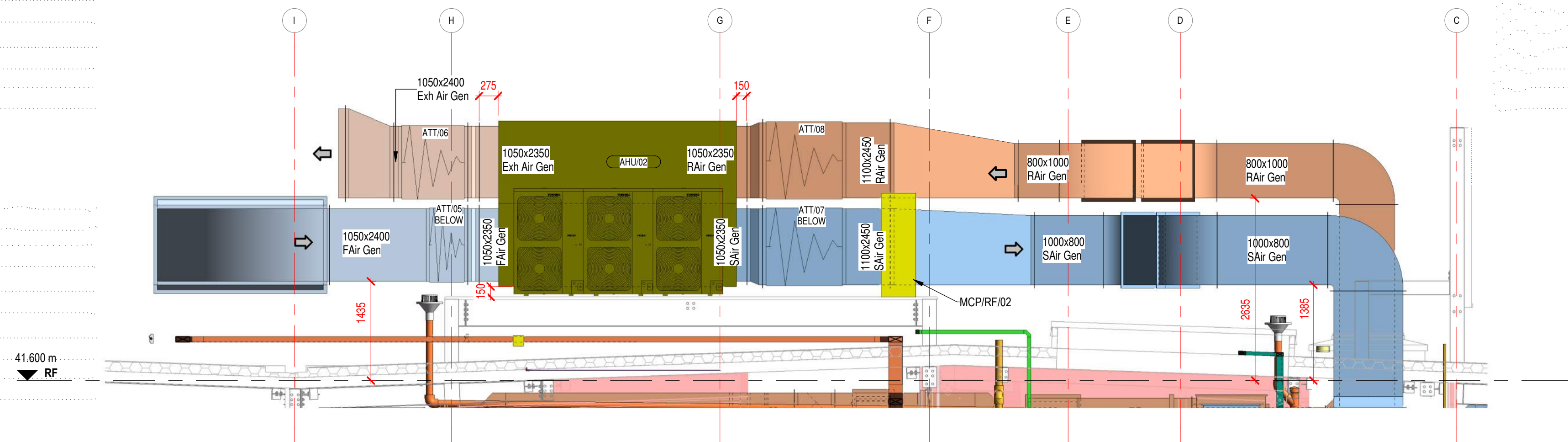
C01 RUH AB 08-01-2021 INTERNAL COMMENTS ADDED AND ISSUED FOR CONSTRUCTION
P01 RUH AB 25-10-2020 ISSUE FOR APPROVAL COMMENT



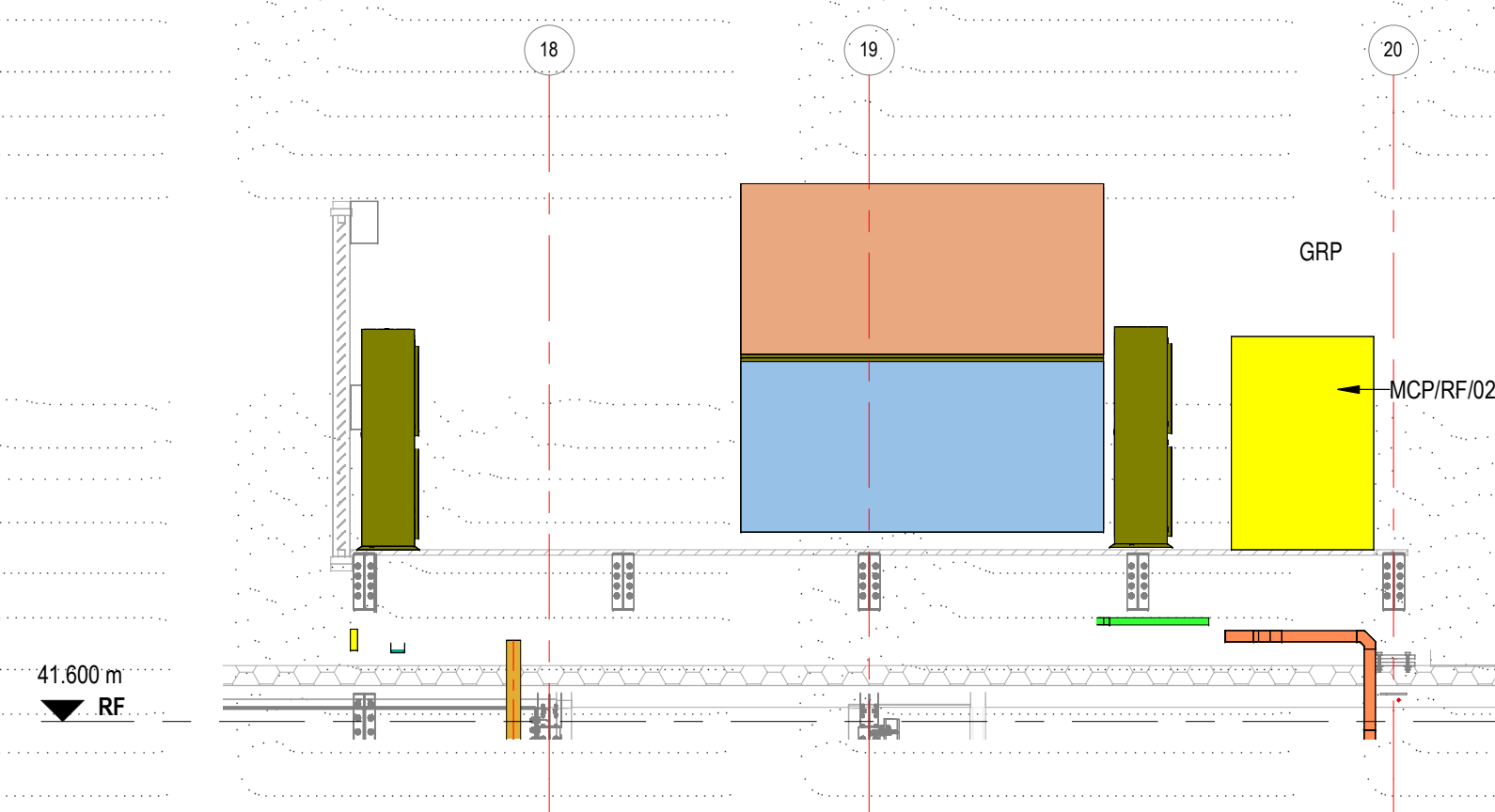
CHS South
M&E COMBINED SERVICES & ROOF PLANT LAYOUT
SHEET 1 OF 2
CONSTRUCTION
22/10/2020
F50765-BAM-Z1-RF-DR-ME-73101 C01

Notes:

- This drawing is to be read in conjunction with all mechanical, electrical, architectural and structural drawings, contract documentation and specifications.
- Refer to equipment schedules for details of attenuators, grilles, diffusers, dampers etc.
- All dimensions are in millimetres unless otherwise stated. Under no circumstances should dimensions be scaled from this drawing.
- Inset levels are from finished floor level to centreline of spiral duct and the underside of square / rectangular duct.
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- Fire rated ductwork, manufactured and installed in accordance with DW172, shall be employed in the kitchen extract ductwork as it routes through the kitchen and rising to building exit at roof level.
- Fire dampers shall be provided where ventilation ductwork passes between fire compartment walls. The ductwork Specialist shall consult the building fire strategy prior to the installation of fire / smoke dampers and ensure that all non fire rated ductwork crossing compartment walls and are inclusive of suitable dampers.
- Fire dampers shall be independently supported to the building fabric and complete with installation frames in accordance with DW 145 and with manufacturers approved installation methods.
- All fire dampers shall have visual indication status and fitted access doors either side for read/maintenance.
- Ductwork installation shall be installed in accordance with T191M2 intermediate level with all open ends (horizontal & vertical) bagged at the end of day or completion of works.
- Access doors shall be fitted in accordance with TR19 PD level 2, adjacent all fire dampers, volume control dampers and Heater batteries, either side of air turns & at least 4m intervals on duct routes. All access doors on supply and heat recovery systems shall be insulated type.
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- All plenum boxes shall be internally lined with acoustic insulation.
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- All intake and supply ventilation ductwork shall be insulated throughout the installation with Metal mesh faced mineral wool mattresses. Return air (except from where it runs external), exhaust or extract only ductwork shall not be insulated.
- Cladding shall be applied to all exposed ventilation ductwork insulation where it routes externally from the building. Seagull resistant cladding should be provided to all external ductwork sections.
- All ductwork, insulated or not, shall be identified in accordance with BS7175.



A Section A-A Roof Plant Sht 2 of 2
1:50



B Section B-B Roof Plant Sht 2 of 2
1:50

- Condensate raised floor gullies provided below each AHU support frame.
- AHU coil drip tray to be provided with glass trap, sized to match AHU static pressure. Associated condensate drainage to run to raised floor gully.
- AC Condensers to be provided with drip trays, with condensate drainage run to raised floor gullies.

Key Hazard	Risk	Safety Measures
 13 Working On Roofs	Environment	Working on roofs can cause heat related illnesses and possible dehydration due to exposure to the elements and the radiant temperature of surroundings when working externally on a roof. Wintery weather conditions may lead to dangerous conditions on roof, these additional risks may include high winds and surfaces that become extra slippery when covered in rain, ice or snow.
 14 AC Condensor	Refrigerant	Refrigerant can cause severe burns, only qualified service personnel are allowed to perform install or perform maintenance.
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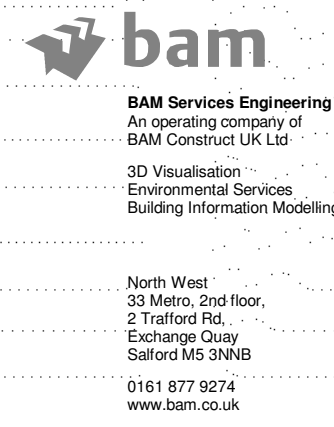
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Documentation (Pre-construction)
D1 - Suitable for Costing
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Documentation (Contractual)
Archive
A - Issued for construction
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CR - As Construction Record Documentation

C01_RUH_AB_08-01-2021_INTERNAL COMMENTS ADDED AND ISSUED FOR CONSTRUCTION
P01_RUH_AB_25-10-2020_ISSUE FOR APPROVAL COMMENT



PROJECT CHS South

M&E COMBINED SERVICES & ROOF PLANT LAYOUT SHEET 2 OF 2 CONSTRUCTION
22/10/2020
F50765-BAM-Z1-RF-DR-ME-73102 C01