

NEXT, SOLENT RETAIL PARK, HAVANT - PROPOSED HVAC, SOIL AND WASTE, AND HOT AND COLD WATER SERVICES SCOPE OF WORKS.

COOLING/HEATING EQUIPMENT ALL R410a SYSTEMS BY
MITSUBISHI

REF.	No	MODEL No.	DESCRIPTION
Ground Floor Womenswear			
P1A,B,C –	12	PLFYP125VBME	Cassettes
P4A,B,C			
P1D – P4D	4	PUHYP350YKBA	Condensing units
P5A	1	PEFYP125VMHE	Ducted unit
P5B, C	2	PLFYP125VBME	Cassettes
P5D	1	PUHYP350YKBA	Condensing unit
Ground Floor Childrenswear			
P6A,B,C	3	PLFYP100VBME	Cassettes
P6D	1	PEFYP100VMHE	Ducted unit
P6E	1	PUHYP350YKBA	Condensing unit
P7A,B,C,D	4	PLFYP100VBME	Cassettes
P7E	1	PUHYP350YKBA	Condensing unit
First Floor Menswear			
P8A,B,C,D –	8	PLFYP100VBME	Cassettes
P9A,B,C,D			
P8E – P9E	2	PUHYP350YKBA	Condensing units
First Floor Home			
P10A,B,C,D	4	PLFYP100VBME	Cassettes
P10E	1	PUHYP350YKBA	Condensing unit
Womenswear Atrium			
P11A,B – P12A,B	4	PEFYP200VMHE	Ducted units
P11C-P12C	2	PUHYP350YKBA	Condensing units

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Childrenswear Atrium

P13A,B	2	PEFYP200VMHE	Ducted units
P13C	1	PUHYP350YKBA	Condensing units

Retail City - Multi

Womenswear

P14A	1	PLFYP125VBME	Cassette
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Womens Fitting Room

P14B	1	PLFYP40VCME	Cassette (600 sq)
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Childrenswear Fitting Room

P14C	1	PLFYP32VCME	Cassette (600 sq)
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Goods-In

P14D	1	PEFYP140VMHE	Ducted unit
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Condensing Unit

P14E	1	PURYP350YLMA	
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Retail City – Multi

Mens Fitting Room

P15A	1	PLFYP25VCME	Cassette (600 sq)
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Café BOH

P15B	1	PLFYP100VBME	Cassette
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Café

P15C	1	PLFYP80VBME	Cassette
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Childrenswear Atrium

P15D	1	PEFYP125VMHE	Ducted unit
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Home

P15E	1	PLFYP63VBME	Cassette
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Condensing Unit

P15F	1	PURYP350YLMA	
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Back of House City – Multi

Workstation

P16A	1	PEFYP140VMHE	Ducted unit
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Staffroom

P16B	1	PLFYP80VBME	Cassette
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Managers Office

P16C	1	PKFYP20VBME	Wall mounted unit
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Cash / Admin Office

P16D	1	PKFYP50 VHME	Wall mounted unit
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Home

P16E	1	PLFYP100VBME	Cassette
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Condensing Unit

P16E	1	PURYP350YLMA	
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Lift Motor Room

P17	1	PKARP50HAL	Wall mounted unit
	1	PUHZZRP5050VKA	Condensing unit

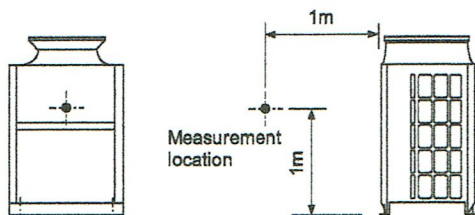
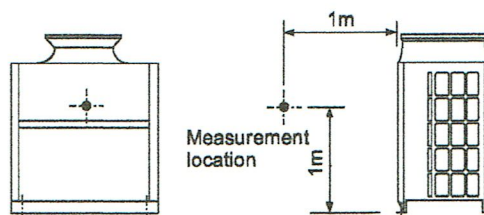
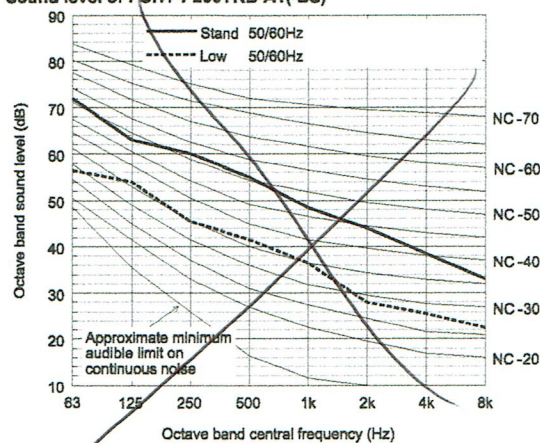
First Floor Cafe

P18A,B,C	3	PLFYP125VBME	Cassettes
P18D	1	PUHYP350YKBA	Condensing units

Domestic Hot Water

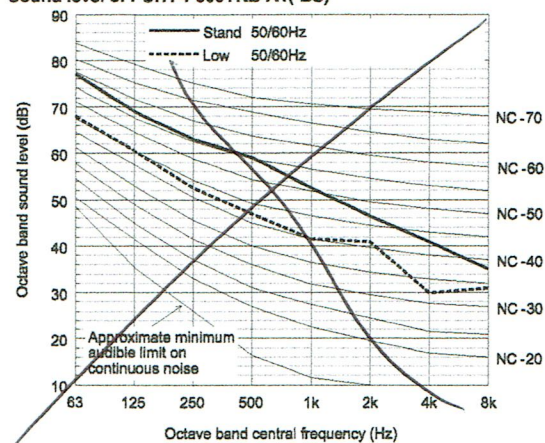
P19	1	EHPT20X-VM2HB	Cylinders
	1	PUHZHW140YHA2	Condensing units

Note! 1) All ducted units to have filters.

Measurement condition
PUHY-P200, 250YKB-A1(-BS)

Measurement condition
PUHY-P300, 350, 400YKB-A1(-BS)

Sound level of PUHY-P200YKB-A1(-BS)


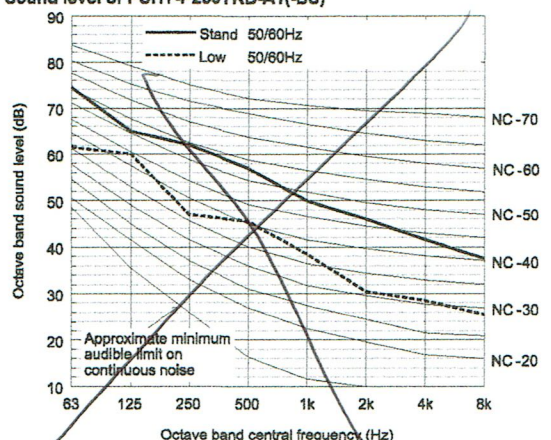
		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	72.0	63.0	60.0	55.0	48.5	44.0	38.5	33.0	57.0
Low noise mode	50/60Hz	66.5	54.0	45.5	41.5	36.5	28.0	25.5	22.5	44.0

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PUHY-P300YKB-A1(-BS)


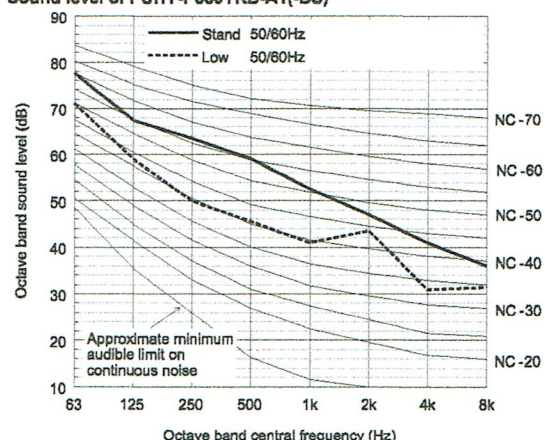
		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	77.0	69.0	63.0	59.0	52.5	46.5	41.0	35.0	61.0
Low noise mode	50/60Hz	68.0	60.5	52.5	47.0	41.5	30.0	31.0	31.0	51.0

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PUHY-P250YKB-A1(-BS)


		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	74.5	65.0	62.0	57.0	50.0	46.0	41.5	37.5	59.0
Low noise mode	50/60Hz	61.5	60.0	47.0	45.5	38.5	30.5	28.5	25.5	48.0

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PUHY-P350YKB-A1(-BS)


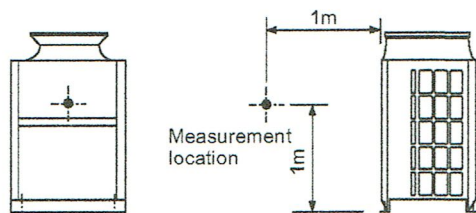
		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	77.5	67.5	63.5	59.0	52.5	47.0	41.0	36.0	61.0
Low noise mode	50/60Hz	71.0	59.0	50.0	45.5	41.0	43.5	31.0	31.5	51.0

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

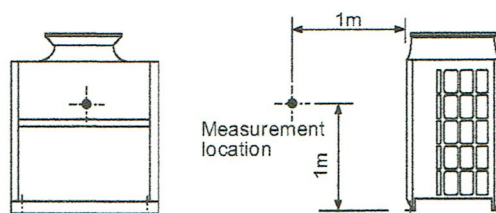
• Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.

P1 to P13 & P18 condensing units

Measurement condition
PURY-P200, 250YLM-A1(-BS)

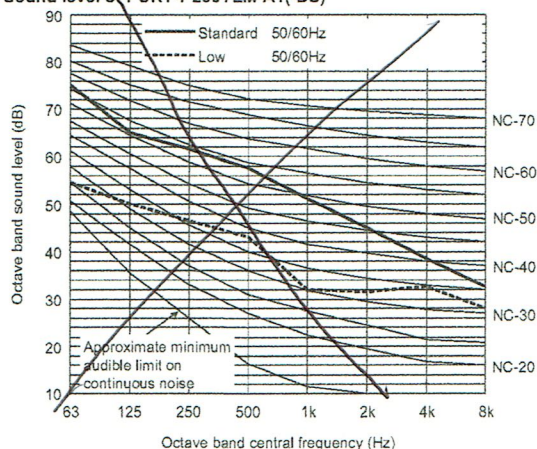


Measurement condition
PURY-P300, 350, 400YLM-A1(-BS)



R2

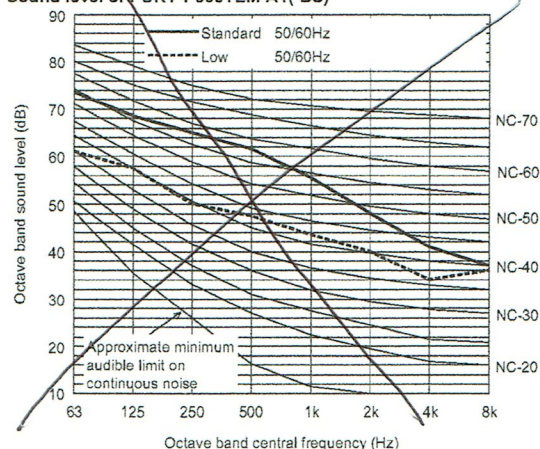
Sound level of PURY-P200YLM-A1(-BS)



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	75.0	65.0	61.5	57.5	51.0	45.0	38.5	32.5	59.0
Low noise mode	50/60Hz	54.5	50.0	46.5	43.0	32.0	31.5	32.5	28.0	44.0

When Low noise mode is set the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

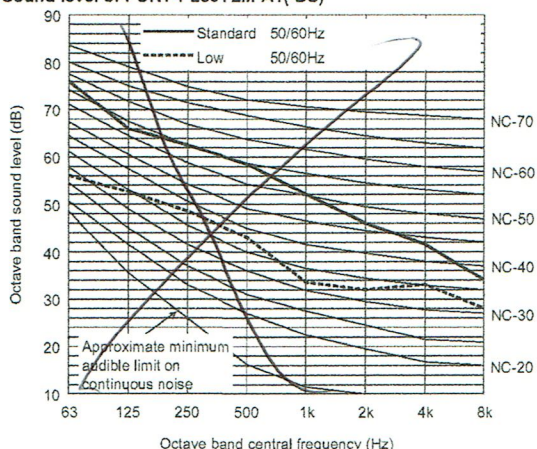
Sound level of PURY-P300YLM-A1(-BS)



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	73.5	68.5	65.0	61.5	55.5	48.0	41.0	37.0	62.5
Low noise mode	50/60Hz	61.0	57.5	50.0	47.5	43.5	40.0	34.0	36.0	50.0

When Low noise mode is set the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

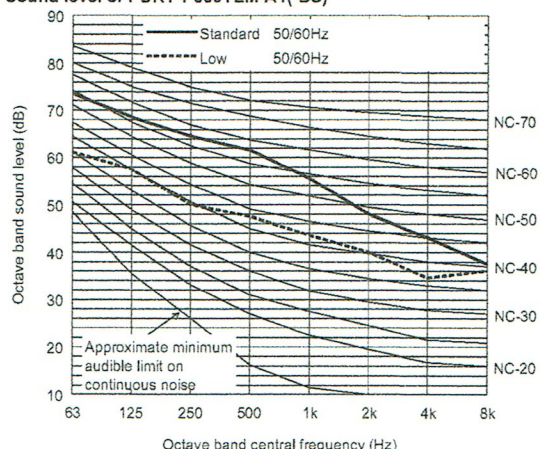
Sound level of PURY-P250YLM-A1(-BS)



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	76.0	66.0	62.5	58.5	52.0	46.0	41.5	34.0	60.0
Low noise mode	50/60Hz	56.0	52.5	48.5	43.0	33.5	32.0	33.0	28.0	45.0

When Low noise mode is set the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PURY-P350YLM-A1(-BS)



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	73.5	68.5	64.5	61.5	55.5	48.0	43.0	37.5	62.5
Low noise mode	50/60Hz	61.0	57.5	50.0	47.5	43.5	40.0	34.5	36.0	50.0

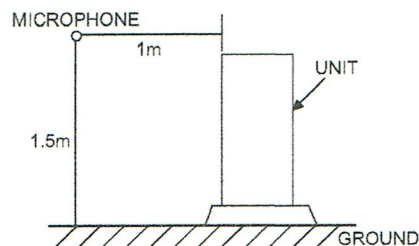
When Low noise mode is set the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

- Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required. For BC controller, it is recommended to be installed in places such as ceilings of corridor, rest rooms and plant rooms.

P14, P15 & P16 condensing units

A.8.5 NOISE CRITERIA CURVES

A.8.5.1 INVERTER MODELS Heat pump type

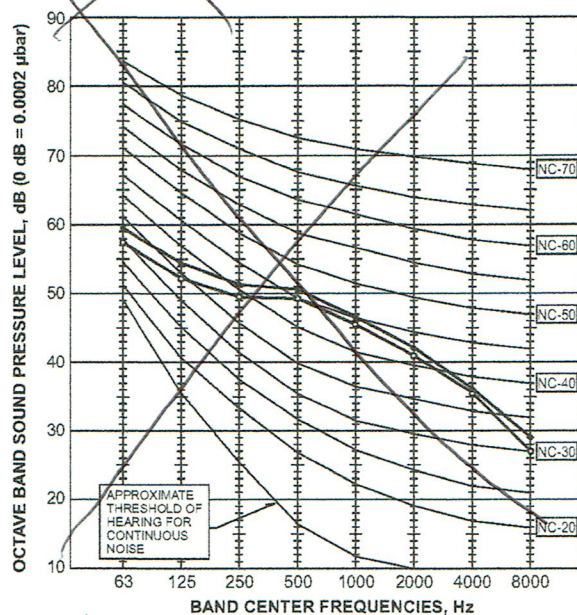


<Notes>

- 1) Sound data is taken when the system is running stably.
- 2) Relatively large noise could be heard transiently in the case 4-way valve, or LEV operates.

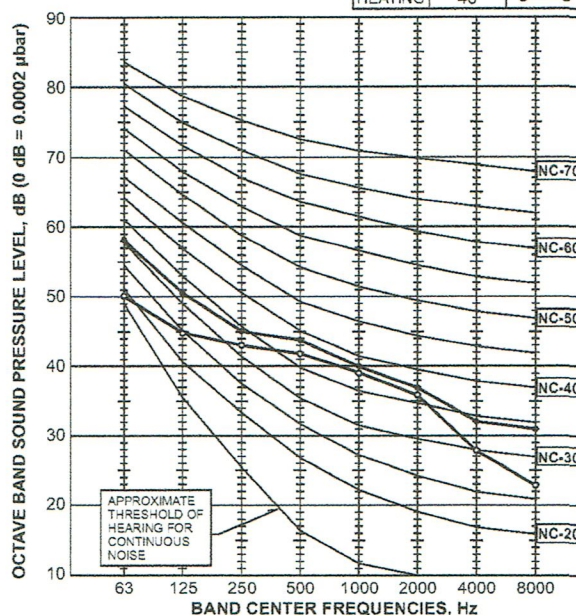
PUHZ-SHW112VHA(-BS)
PUHZ-SHW112YHA(-BS)
PUHZ-SHW140YHA(-BS)

MODE	SPL(dB)	LINE
COOLING	51	○—○
HEATING	52	●—●



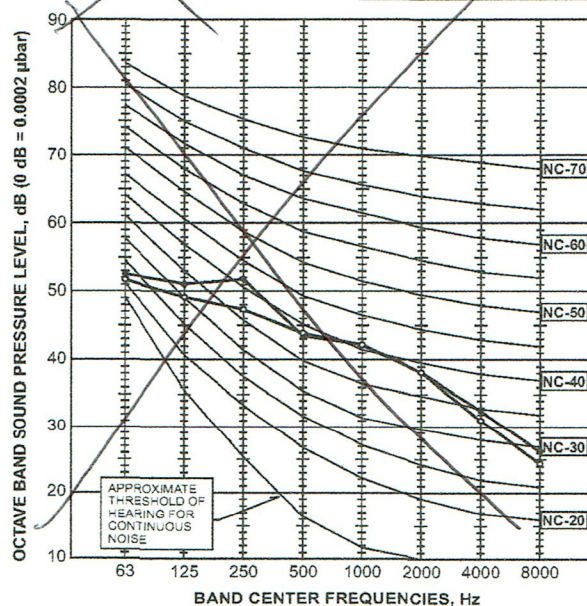
PUHZ-ZRP35VKA
PUHZ-ZRP50VKA

MODE	SPL(dB)	LINE
COOLING	44	○—○
HEATING	46	●—●



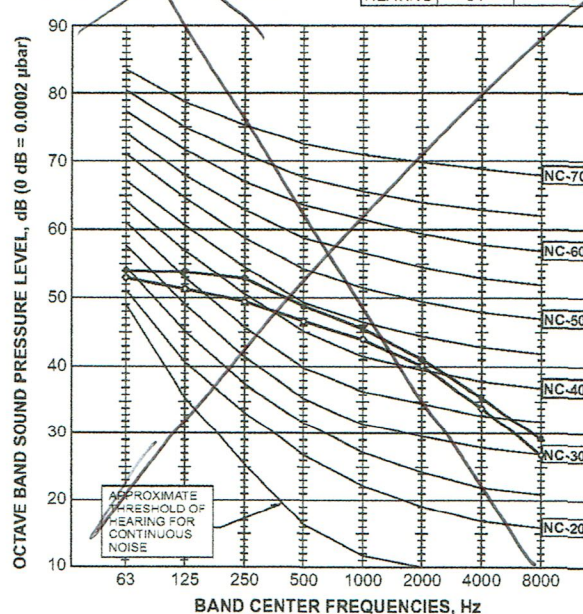
PUHZ-ZRP60VHA
PUHZ-ZRP71VHA

MODE	SPL(dB)	LINE
COOLING	47	○—○
HEATING	48	●—●

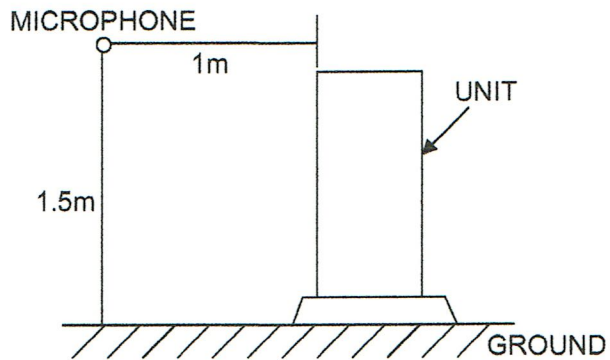


PUHZ-ZRP100VKA2
PUHZ-ZRP100YKA2

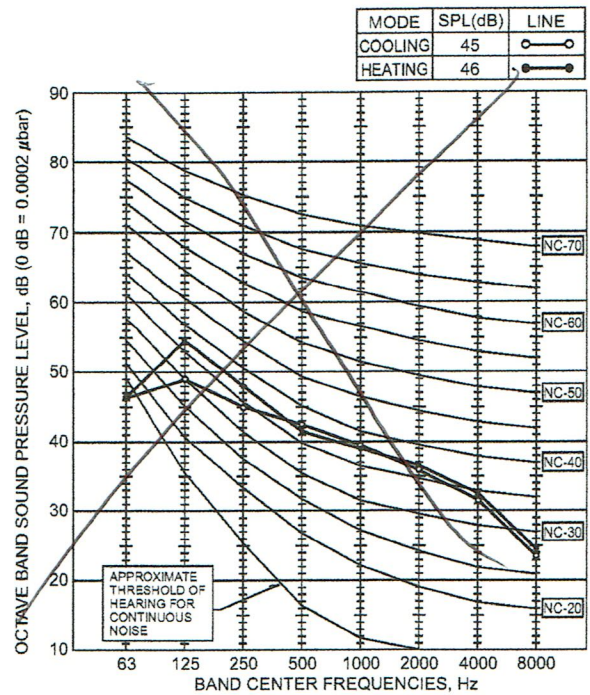
MODE	SPL(dB)	LINE
COOLING	49	○—○
HEATING	51	●—●



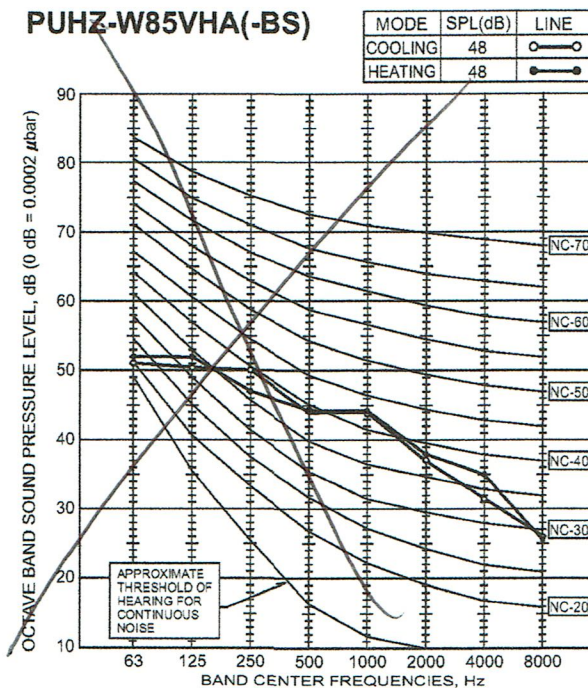
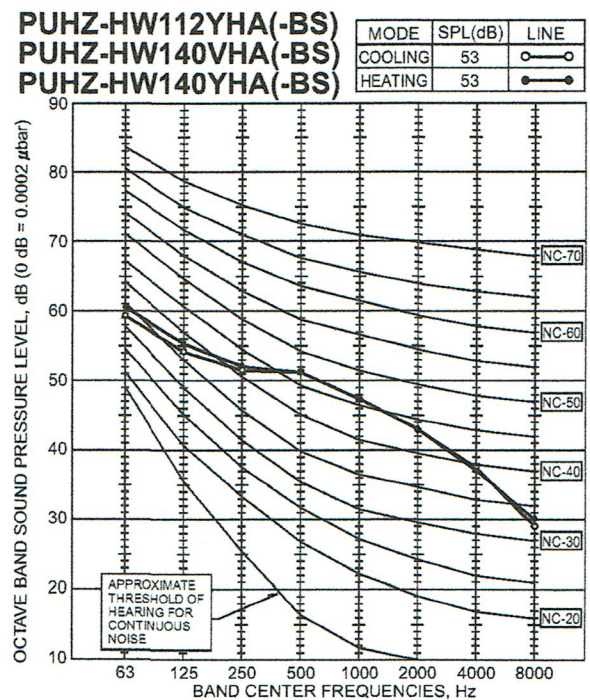
3-1. NOISE CRITERION CURVES



PUHZ-W50VHA(-BS)



PUHZ-W85VHA(-BS)


 PUHZ-HW112YHA(-BS)
 PUHZ-HW140VHA(-BS)
 PUHZ-HW140YHA(-BS)


P19

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HEAT RECOVERY UNITS - MANUFACTURED BY AC&V LTD.

V1	1	VS566/APD-N1-BY/F195 -G4/VS455/F195-G4	Heat recovery unit, supply fan, extract fan, filters, summer-by pass and damper (supply air1.966cu.m/sec@250Pa) (extract air1.222cu.m/sec@200Pa)
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Assuring you of our best attention at all times

Yours sincerely

VI

Mike West

Enclosure to Offer Q6858
Project: NEXT – Havant

Date 02/09/15

Sheet 1

Technical Data, item 1

Fan Unit VS 556 SUPPLY

Equipment requirements:

air volume : **7077 m³/h**
release of external pressure needed : **250Pa**

installation acc. DIN 24163 Part 1

	A
Reference density (ρ_{01})	1.20 kg/m ³
Medium temperature (t)	20 °C
Air flow rate (V)	7077 m ³ /h
Total pressure rise (dp_t)	585 Pa
Dynamic pressure at discharge (pd_2)	14 Pa
Static pressure rise (dp_{st})	571 Pa
Pressure drop (p_v) installed/attached	- Pa
Possible increase to max. speed (f_R)	8 %
Fan speed (n_v)	1097 1/min
Absorbed power of fan system (P_{1S})	1.78 kW
max. current at n_v : Inverter out resp. control unit in (I)	2.8 A
System efficiency (η_{fAS})	63 %
(over all efficiency of fan (static), motor, and inverter/Controller)	
Specific Fan Power (SFP-factor)	907 W/(m ³ /s)
Nozzle calibration factor (K_{10})	303 m ² /s/h
Differential pressure on nozzle (dp_D)	327 Pa
Velocity at discharge area (c)	4.8 m/s
Fan weight	47 kg
A-weighted sound power level discharge/intake $Lw_{A6/5}$	78/74 dB
Unweighted octave sound power level	Octave mid frequencies ¹⁾
	63/125/250/500/1k/2k/4k/8k Hz
	80/74/73/74/76/67/61/53 dB discharge
	LwOkt ₆
	81/76/74/71/70/61/57/48 dB intake LwOkt ₅

¹⁾ The octave sound power levels can be higher at octave bands at or close to blade



passing frequency.

This duty point can only be reached by using an inverter/controller for motor speed control!

Feed data

Main's frequency (f_N)

50/60 Hz

Voltage (U_N)

3~ 400 V

operational limits

Max. fan speed (n_{vmax})

1180 1/min

Max. absorbed power of the system (P_{maxS})

2.30 kW

max. current: Inverter out resp. control unit in (I_{max})

3.4 A

Temperature range for conveying medium ($t_{min} \dots t_{max}$)

-20...40 °C

ErP - Data at optimum efficiency and density 1.20 kg/m³

measurement- / efficiency category

A / static

design status of VSD

VSD is integrated

overall efficiency ($\eta_{A_{opt}}$)

68.9 %

achieved efficiency grade (N_{ist})

75.9

required efficiency grade in 2013 / 2015 (N)

58 / 62

Air flow rate (V_{opt})

9250 m³/h

pressure rise (dp_{opt})

575 Pa

Fan speed (n_{vopt})

1180 min⁻¹

motor power input (P_{1opt})

2.15 kW

specific ratio (d_{dopt})

1.006

Plate Heat Exchanger, Diagonal APD N1 BY

Extract air volume flow	:	4399 m ³ /hr
Supply air volume flow	:	7077 m ³ /hr
Extract air inlet temperature/humidity	:	22 °C / 45% Rh
Supply air inlet temperature/humidity	:	-5 °C / 90% Rh
Supply air temperature	:	12 °C db
Efficiency (extract air)	:	72.7%
Heat Recovery	:	40.2Kw
Condensate quantity	:	15kg/hr
Extract air pressure loss	:	89Pa
Supply air pressure loss	:	196Pa

Sheet 2

Bag Filter Unit, Short F 195-G4

eurovent class	:	G4
clean resistance	:	46 Pa
calculation resistance	:	123 Pa
recommended resistance	:	200 Pa

Fan Unit VS 455 EXTRACT

Equipment requirements:

air volume	:	4399 m ³ /h
release of external pressure needed	:	250Pa



Installation acc. DIN 24163 Part 1

	A
Reference density (ρ_{01})	1.20 kg/m ³
Medium temperature (t)	20 °C
Air flow rate (V)	4399 m ³ /h
Total pressure rise (dp _t)	478 Pa
Dynamic pressure at discharge (pd ₂)	14 Pa
Static pressure rise (dp _{st})	464 Pa
Pressure drop (p _v) installed/attached	- Pa
Possible increase to max. speed (f _R)	35 %
Fan speed (n _v)	1262 1/min
Absorbed power of fan system (P _{1S})	0.90 kW
max. current at n _v : Inverter out resp. control unit in (I)	1.5 A
System efficiency (ETA _{faS})	63 %
(over all efficiency of fan (static), motor, and inverter/Controller)	
Specific Fan Power (SFP-factor)	738 W/(m ³ /s)
Nozzle calibration factor (K ₁₀)	184 m ² /h
Differential pressure on nozzle (dp _D)	343 Pa
Velocity at discharge area (c)	4.8 m/s
Fan weight	32 kg
A-weighted sound power level discharge/intake LwA _{6/5}	77/73 dB
Unweighted octave sound power level	Octave mid frequencies ¹⁾
	63/125/250/500/1k/2k/4k/8k Hz
	75/74/72/72/74/70/61/58 dB discharge
	LwOkt ₆
	76/77/73/72/65/63/59/58 dB intake LwOkt ₅

¹⁾ The octave sound power levels can be higher at octave bands at or close to blade passing frequency.

This duty point can only be reached by using an inverter/controller for motor speed control!

Feed data

Main's frequency (f _N)	50/60 Hz
Voltage (U _N)	3~ 400 V

operational limits

Max. fan speed (n _{vmax})	1700 1/min
Max. absorbed power of the system (P _{maxS})	2.20 kW
max. current: Inverter out resp. control unit in (I _{max})	3.3 A
Temperature range for conveying medium (t _{min} ... t _{max})	-20...40 °C

ErP - Data at optimum efficiency and density 1.20 kg/m³

measurement- / efficiency category	A / static
design status of VSD	VSD is integrated
overall efficiency (ETA _{opt})	69.3 %
achieved efficiency grade (N _{ist})	76.6
required efficiency grade in 2013 / 2015 (N)	58 / 62
Air flow rate (V _{opt})	6477 m ³ /h
pressure rise (dp _{opt})	784 Pa
Fan speed (n _{vopt})	1700 min ⁻¹
motor power input (P _{1opt})	2.04 kW
specific ratio (d _{dopt})	1.008

Bag Filter Unit, Short F 195-G4

eurovent class	:	G4
clean resistance	:	46 Pa
calculation resistance	:	123 Pa

VI

recommendend resistance

: 200 Pa

AHU Noise Data supply

at	63	125	250	500	1000	2000	4000	8000	Hz	Sum	
housing wall											
Lw	63	61	60	50	40	32	26	15	dB	54	dB(A)
Inlet side											
Lw	77	70	68	65	59	46	42	26	dB	66	dB(A)
Pressure Side											
Lw	80	74	73	74	76	67	61	53	dB	78	dB(A)

AHU Noise Data Extract

at	63	125	250	500	1000	2000	4000	8000	Hz	Sum	
housing wall											
Lw	58	62	59	51	35	34	28	25	dB	53	dB(A)
Inlet side											
Lw	72	71	67	66	54	48	44	36	dB	65	dB(A)
Pressure Side											
Lw	75	74	72	72	74	70	61	58	dB	77	dB(A)

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EXTRACT FANS – MANUFACTURED BY FLAKT WOODS LTD

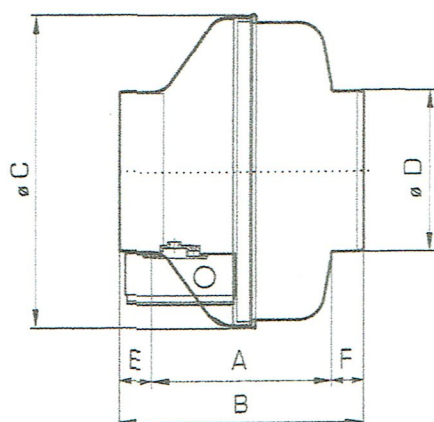
V2	1	ILC-MS355L	Extract fan, speed controller. 0.427cu.m/sec@150Pa
V3	1	ILC-MS355L	Extract fan, speed controller. 0.28cu.m/sed@150Pa

Sound Data

Product Code	Product Number	Sound Power Levels [dB] in Octave Band Centre Frequency - Hz								Total dBA @ 3m
			125	250	500	1K	2K	4K	8K	
ILC - MS100L	TF100012	Casing	36	42	41	42	41	33	26	27
		Inlet Side	45	53	56	57	54	51	41	41
		Outlet Side	44	54	56	57	55	50	40	41
ILC - MS125L	TF125012	Casing	36	42	42	43	43	36	28	28
		Inlet Side	48	53	56	59	56	52	43	42
		Outlet Side	47	55	56	58	56	53	42	42
ILC - MS150L	TF150012	Casing	45	47	47	46	43	39	30	32
		Inlet Side	51	59	63	62	62	54	46	47
		Outlet Side	51	59	59	61	59	53	44	45
ILC - MS160L	TF160012	Casing	45	47	47	46	43	39	30	32
		Inlet Side	51	59	63	62	62	54	46	47
		Outlet Side	51	59	59	61	59	53	44	45
ILC - MS200L	TF200012	Casing	42	49	48	49	46	40	32	33
		Inlet Side	50	61	63	64	62	57	50	48
		Outlet Side	47	57	58	62	62	57	50	46
ILC - MS250L	TF250012	Casing	43	45	47	51	48	44	34	34
		Inlet Side	48	59	65	65	63	58	49	49
		Outlet Side	48	59	59	63	63	58	49	47
ILC - MS315L	TF315012	Casing	41	49	51	51	50	47	38	36
		Inlet Side	47	59	68	69	67	66	61	53
		Outlet Side	46	58	62	68	68	65	63	52
ILC - MS355L	TF355012	Casing	46	56	57	61	58	55	40	44
		Inlet Side	56	69	69	70	65	63	55	54
		Outlet Side	57	60	69	72	70	66	60	55
ILC - MS400LE	TF400011	Casing	48	56	57	56	52	47	39	41
		Inlet Side	57	69	69	67	64	59	52	43
		Outlet Side	56	69	72	74	71	63	55	56

Sound power levels are non-ducted, measured at mid point on the fan characteristic. Sound pressure levels quoted are average dBA at 3m distance over a sphere, under free field conditions and are presented for comparative purposes only.

Drawing and Dimensions



Product Code	Product Number	A	B	C	D	E	F	Weight Kg
100L	TF100012	136	186	242	100	25	25	2.6
125L	TF125012	140	190	242	125	25	25	2.6
150L	TF150012	140	190	341	150	25	25	3.7
160L	TF160012	195	245	341	160	25	25	3.4
200L	TF200012	180	230	341	200	25	25	4.2
250L	TF250012	180	230	341	250	30	30	5.5
315L	TF315012	195	255	402	315	30	30	6
355L	TF355012	320	395	490	355	40	35	14
400LE	TF400011	See below						31

All dimensions shown in mm

