

40VMC
Compact 4-Way Cassette Indoor Unit for
Variable Refrigerant Flow (VRF) Systems

Engineering Data Book



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1. Compact 4-Way Cassette Basic information

1. Specifications

Table 1 – Data Table

Model		40VMC007---3	40VMC009---3
Power supply		V/Ph/Hz	
		208/230-1-60	
Cooling capacity *1		Btu/h	
		7,000	9,000
Heating capacity *1		Btu/h	
		8,000	10,000
MCA		A	0.38
MOCP		A	15
Panel / Grille		40VMC001--	
Filter		Installed in Panel / Grille	
Dimensions (H x W x D)		in.	10-1/4 x 24-3/4 x 22-7/16
Dimensions for Panel / Grille (H x W x D)		in.	2 x 25-1/2 x 25-1/2
Net Weight		lbs	40.0
Heat Exchanger		Inner Groove Copper Tube and Hydrophilic Aluminum fin	
Blower / Motor	Fan Type		Centrifugal
	Motor Type		DC motor
	Air Flow Rate (H/M/L)	CFM	306/282/229
	Sound Pressure Level (H/M/L)*2	dBA	40.4/38.5/34.7
	Motor Output	W	37
Min. External Static Pressure (Factory setting)		in. WG	0
Max. External Static Pressure		in. WG	0.04
Piping connections	Gas (Low) Pressure		in. 1/2
	Liquid (High) Pressure		in. 1/4
	Condensate		in. 1
Condensate Lift		in.	23-5/8
Refrigerant Control		Electronic Expansion Valve	
Connectable Outdoor Unit		38VMH – Heat Pump 38VMR – Heat Recovery 38VMH-1P – Single Phase Heat Pump	
Wiring	Power Wiring	AWG	Sized per NEC and Local Codes based on Nameplate Electrical Data
	Control Wiring	AWG	2-core shielded twisted pair cable 16AWG or 18AWG

NOTES:

*1. Rated per AHRI (Air Conditioning, Heating, and Refrigeration Institute) 1230 Standard

Cooling: Indoor 80°F (27°C) db / 67°F (20°C) wb; Outdoor 95°F (35°C) db

Heating: Indoor 70°F (21°C) db; Outdoor 47°F (8°C) db / 43°F (6°C) wb

*2. These values are measured in anechoic chamber at a distance of 4.6 feet below the unit.

Table 2 – Data Table

Model		40VMC012---3	40VMC015---3
Power supply	V/Ph/Hz	208/230-1-60	
Cooling capacity *1	Btu/h	12,000	15,000
Heating capacity *1	Btu/h	13,000	17,000
MCA	A	0.53	
MOCP	A	15	
Panel / Grille		40VMC001---	
Filter		Installed in Panel / Grille	
Dimensions (H x W x D)	in.	10-1/4 x 24-3/4 x 22-7/16	
Dimensions of Panel / Grille (H x W x D)	in.	2 x 25-1/2 x 25-1/2	
Net Weight	lbs	43	
Heat Exchanger		Inner Groove Copper Tube and Hydrophilic Aluminum fin	
Blower / Motor	Fan Type	Centrifugal	
	Motor Type	DC motor	
	Air Flow Rate (H/M/L)	CFM	359/306/253
	Sound Pressure Level (H/M/L)*2	dBA	45.5/42.3/38.1
	Motor Output	W	37
Min. External Static Pressure (Factory setting)	in. WG	0	
Max. External Static Pressure	in. WG	0.04	
Piping connections	Gas (Low) Pressure	in.	1/2
	Liquid (High) Pressure	in.	1/4
	Condensate	in.	1
Condensate Lift	in.	23-5/8	
Refrigerant Control		Electronic Expansion Valve	
Connectable Outdoor Unit		38VMH – Heat Pump 38VMR – Heat Recovery 38VMH-1P – Single Phase Heat Pump	
Wiring	Power Wiring	AWG	Sized per NEC and Local Codes based on Nameplate Electrical Data
	Control Wiring	AWG	2-core shielded twisted pair cable 16AWG or 18AWG

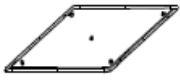












NOTES:

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Cooling: Indoor 80°F (27°C) db / 67°F (20°C) wb; Outdoor 95°F (35°C) db
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- *2. These values are measured in anechoic chamber at a distance of 4.6 feet below the unit.

2. Accessories

Table 3 – Table of Accessories

Name of Accessories	Quantity	Outline	Usage
Construction cover board	1		Used to cover the fan motor
Field wiring guide for conduit	1		
Insulation	2		For covering the coil stub outs
Insulation	1		For covering the condensate drain
Clamp	1		For connecting the drain
Tie rope	5		For insulation
Condensate connection	1		For connecting drain
PQE connection wire	2		To connect outdoor unit, indoor unit, and sub MDC
Copper Nut	1		Connect piping
Conduit	1		For routing power cable
Connection Wire	1		For occupancy sensor
Copper pipe for gas side	1		For connecting refrigerant pipe
Copper pipe for liquid side	1		For connecting refrigerant pipe

Legend:

MDC – Multiport Distribution Controller

2. Piping Diagram

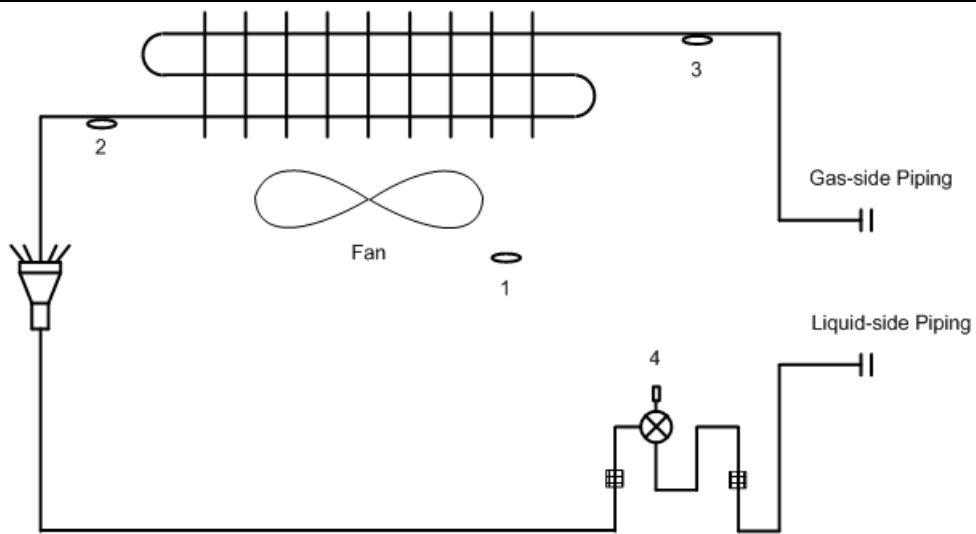


Figure 1 - Piping

Table 4 - Piping

NO.	Symbol	Name
1	T1	Room temperature sensor
2	T2A	Inlet pipe temperature sensor
3	T2B	Outlet pipe temperature sensor
4	EEV	Electronic expansion valve

Table 5 - Gas/Liquid Line Sizes

Model	Gas	Liquid
40VMC007/009/012/015---3	1/2	1/4

3. Dimensions

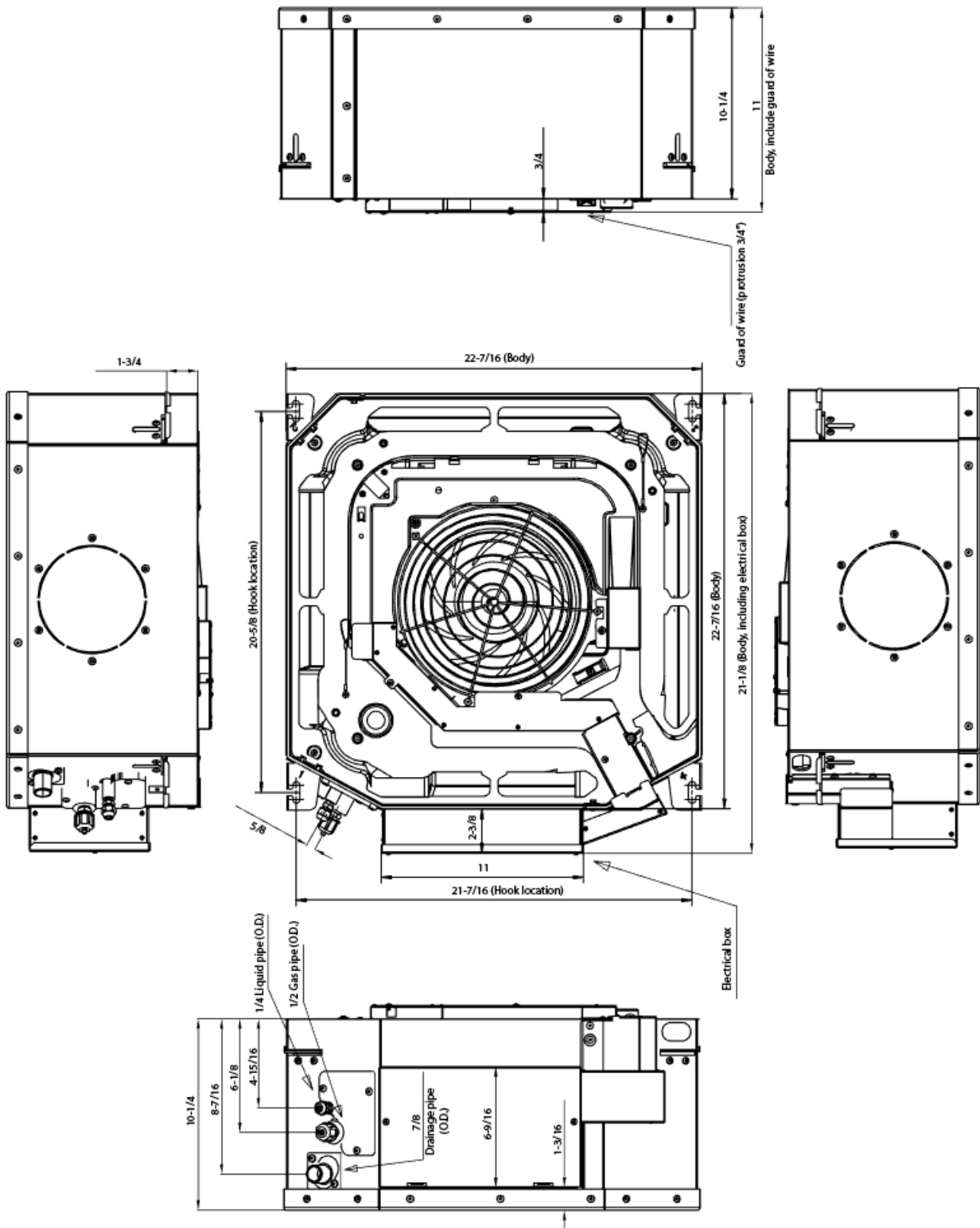


Figure 2 - 40VMC007/009/012/015---3

NOTE: All dimensions are shown in inches.

4. Wiring Diagram

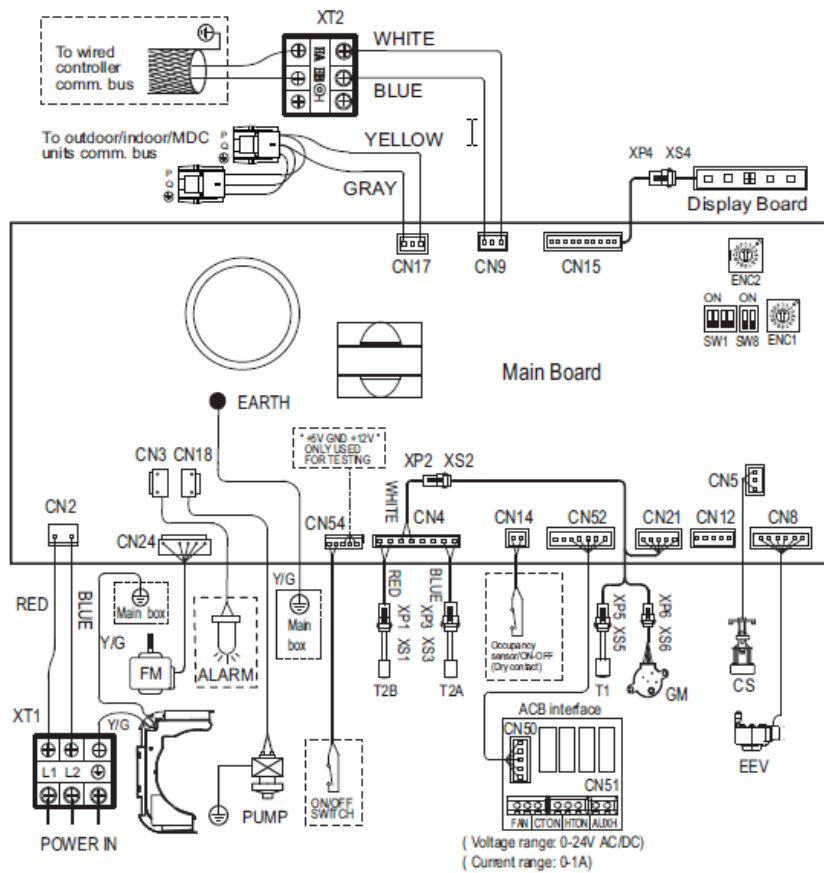


Figure 3 – 40VMC007/009/012/015---3

Legend:

- | | |
|--|---|
| ACB — Auxiliary Control Board | MDC — Multiport Distribution Controller |
| AUXH — Output For Auxiliary Heat | PUMP — Pump Motor |
| CS — Condensate Switch | T1 — Inlet Air Temperature |
| CTON — Output for Cooling Operation | T2A — Coil Temperature |
| EEV — Electronic Expansion Valve | T2B — Evap. Outlet Temperature in Cooling Mode |
| FAN — DC Indoor Fan | XP1-9 — Plug |
| FM — Indoor Fan Motor | XS1-9 — Jack |
| GM — Louver Motor | XT1-2 — Terminal Block |
| HTON — Output For Heating Operation | ----- — Optional Component or Field Wiring |

a. Wiring Diagram Definitions and Settings (40VMC007 to 015---3)

Table 6 – Code / Title

Code	Title
FM	Indoor Fan Motor
T1	Room Temperature Sensor
T2A	Inlet Pipe Temperature Sensor
T2B	Outlet Pipe Temperature Sensor
ALARM	Warning Lamp
EEV	Electronic Extension Valve
XP1-6	Connectors
XS1-6	
XT1-2	Terminal
PUMP	Pump Motor
CS	Condensate Switch
GM	Swing Motor

Table 7 – SW1 Definition





	0 means auto addressing mode (Default)
	1 means factory test mode
	0 means normal mode (Default)
	1 means factory self-checking mode (Reserved)
	Reserved
	0 means standard indoor unit (Default)
	1 means main indoor unit (must be addressed #63)

Table 8 – ENC1 / ENC2



	Reserved		Reserved
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Table 9 – J1 Definition



	Without jumper J1 for auto restart function
	With jumper J1 for manual restart function

Table 10 – SW8 Definition



	Reserved
	Reserved

Table 11 – 0/1 Definition



	Means 0
	Means 1

Table 12 – Error Code / Content

dd	Heating / Cooling Conflict
E1	Communication Error with Outdoor Unit
E2	Temperature Sensor (T1) Error
E4	Temperature Sensor (T2B) Error
E5	Temperature Sensor (T2A) Error
E6	DC Fan Error
E7	EEPROM Error (Data Storage)
UU	MDC Error in Auto System-Check Mode
E9	Communication Error with Wired Controller
Eb	EEV Error
EC	Indoor Fan Error in Auto System-Check Mode
Ed	Outdoor Unit Error
EE	Condensate Error
FE	No Address when Powered On for the First Time

5. Electrical Characteristics

Table 13 – Electrical Characteristics

Model	Power supply				IFM		
	Hz	Volts	Voltage range	MCA	MOCP	KW	FLA
40VMC007---3	60	208/230V	Max.253V Min.187V	0.38	15	0.037	0.30
40VMC009---3				0.38	15	0.037	0.30
40VMC012---3				0.53	15	0.037	0.42
40VMC015---3				0.53	15	0.037	0.42

MCA: Minimum Circuit Amps (A)

MOCP: Maximum Overcurrent Protection (A)

Symbols: KW : Fan Motor Rated Output (KW)

FLA : Full Load Amps (A)

IFM : Indoor Fan Motor

6. Air Throw Charts

1. 40VMC007---3

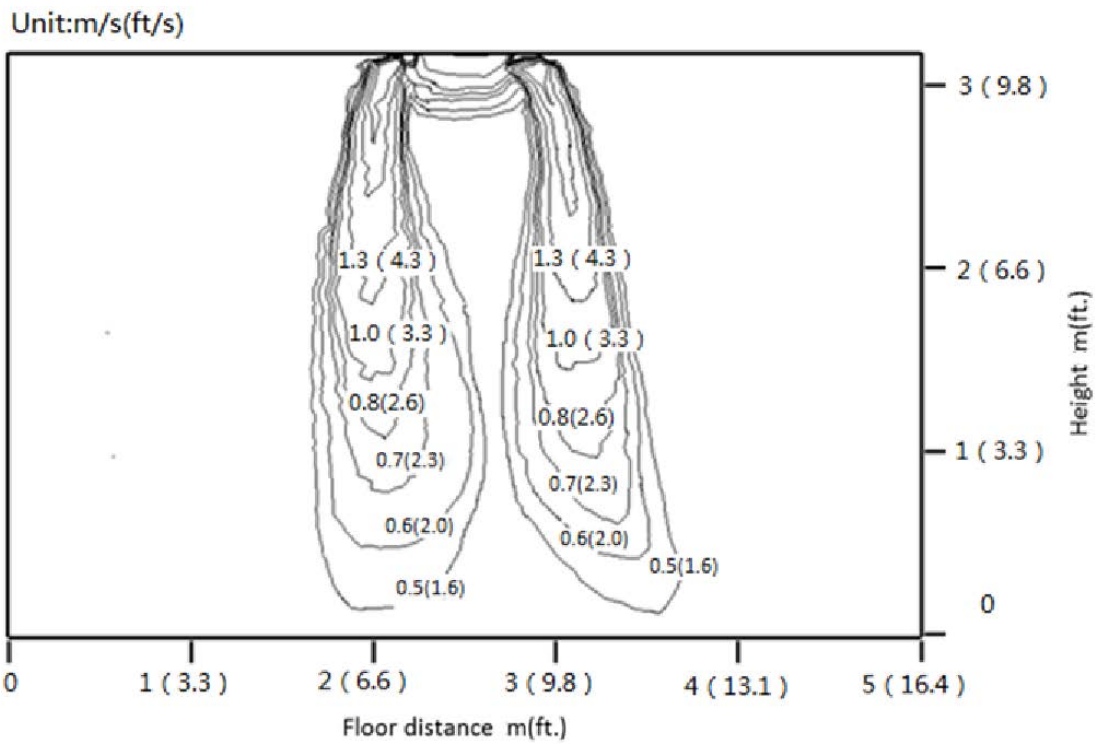


Figure 4 -Cooling mode with 60° swing

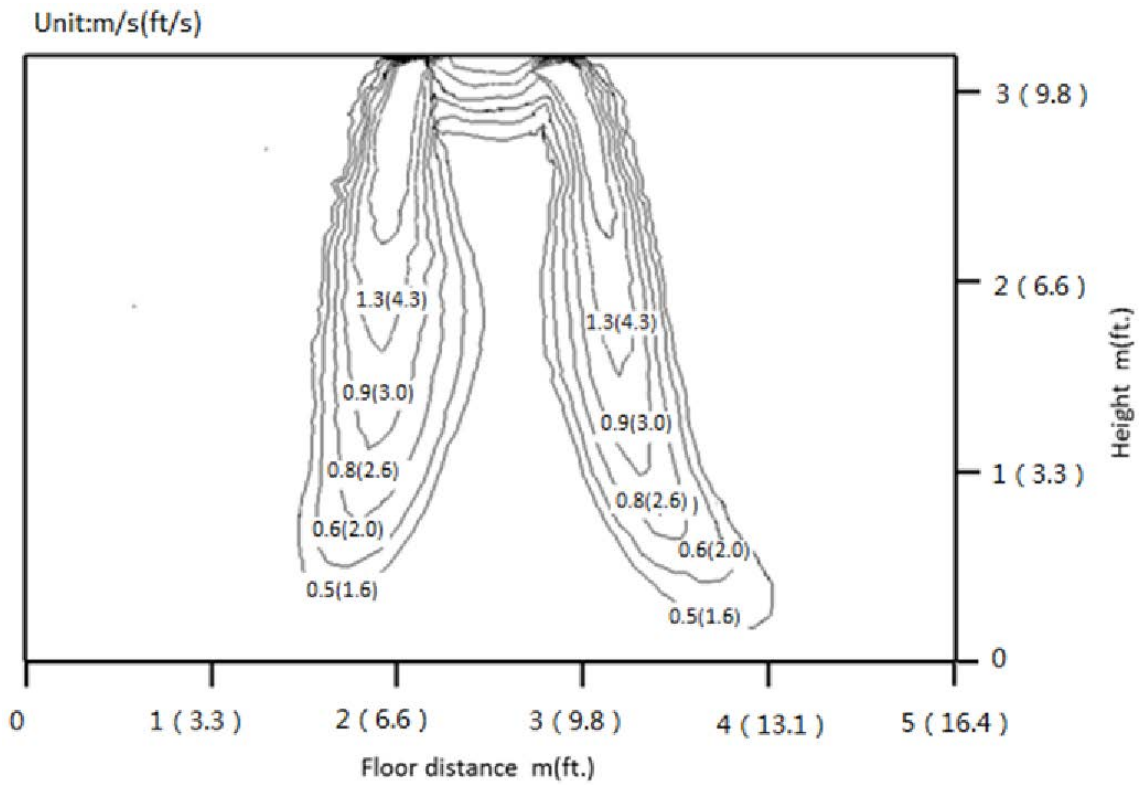


Figure 5 -Heating mode with 60° swing

2. 40VMC009---3

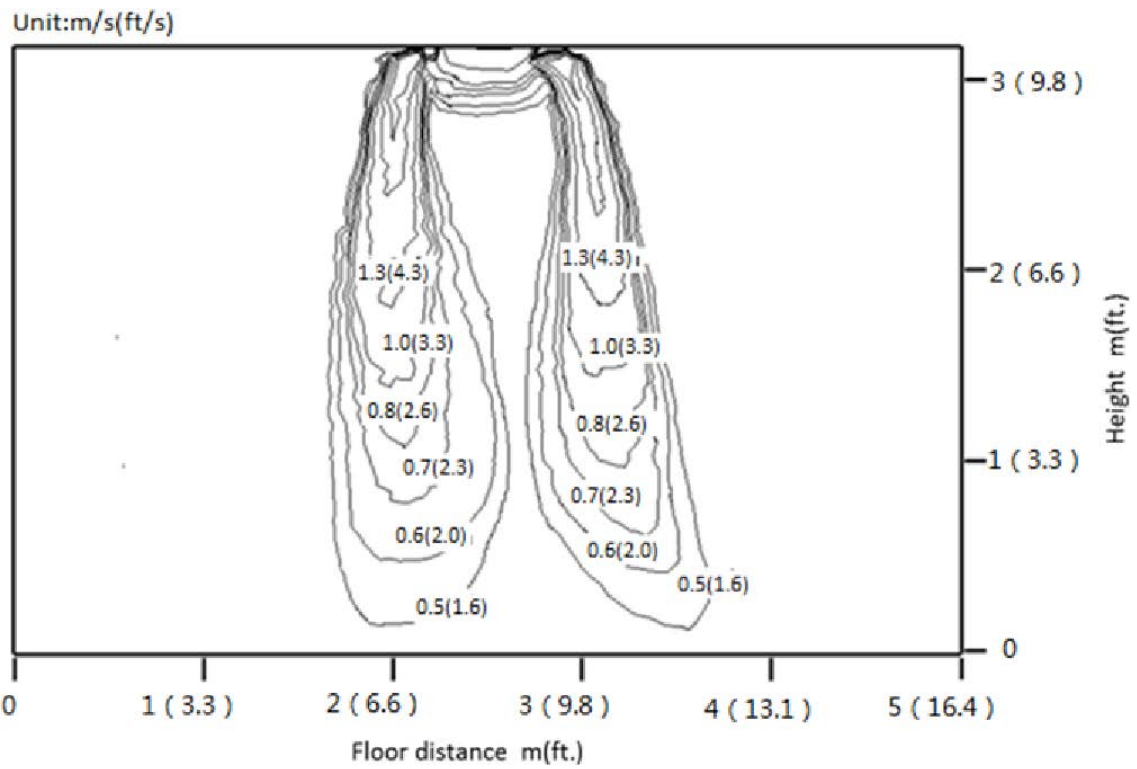


Figure 6 - Cooling mode with 60° swing

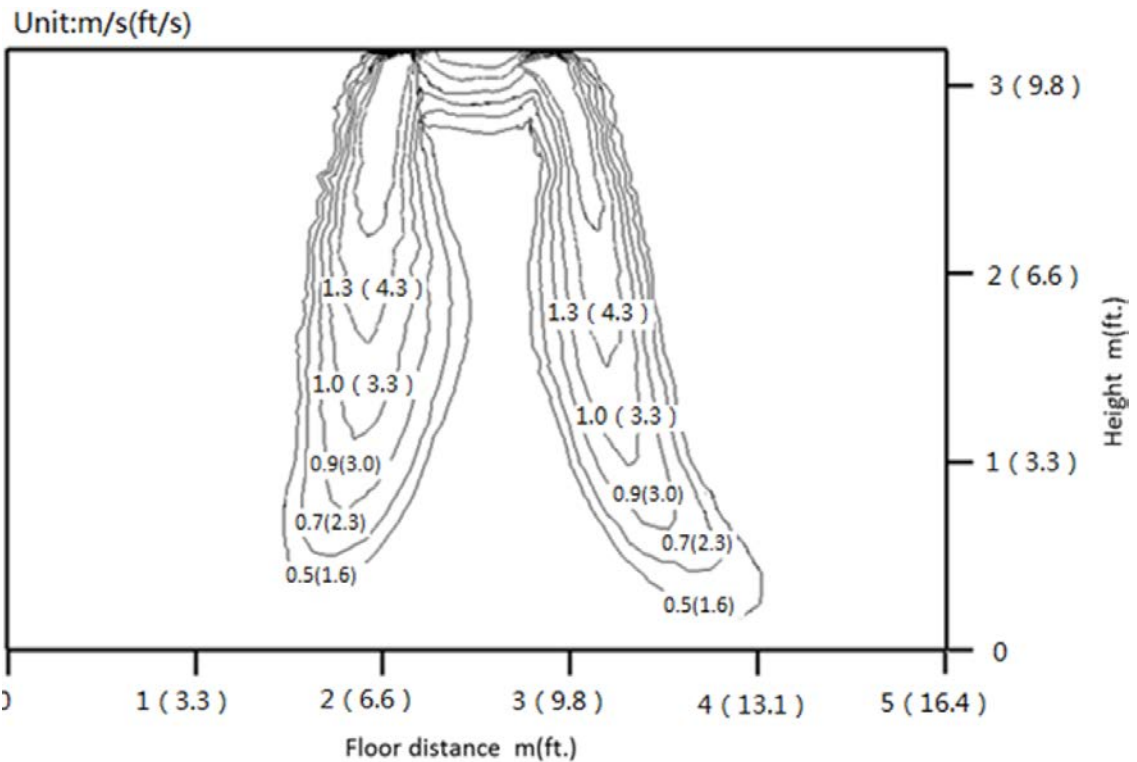


Figure 7 - Heating mode with 60° swing

3. 40VMC012---3

Unit:m/s(ft/s)

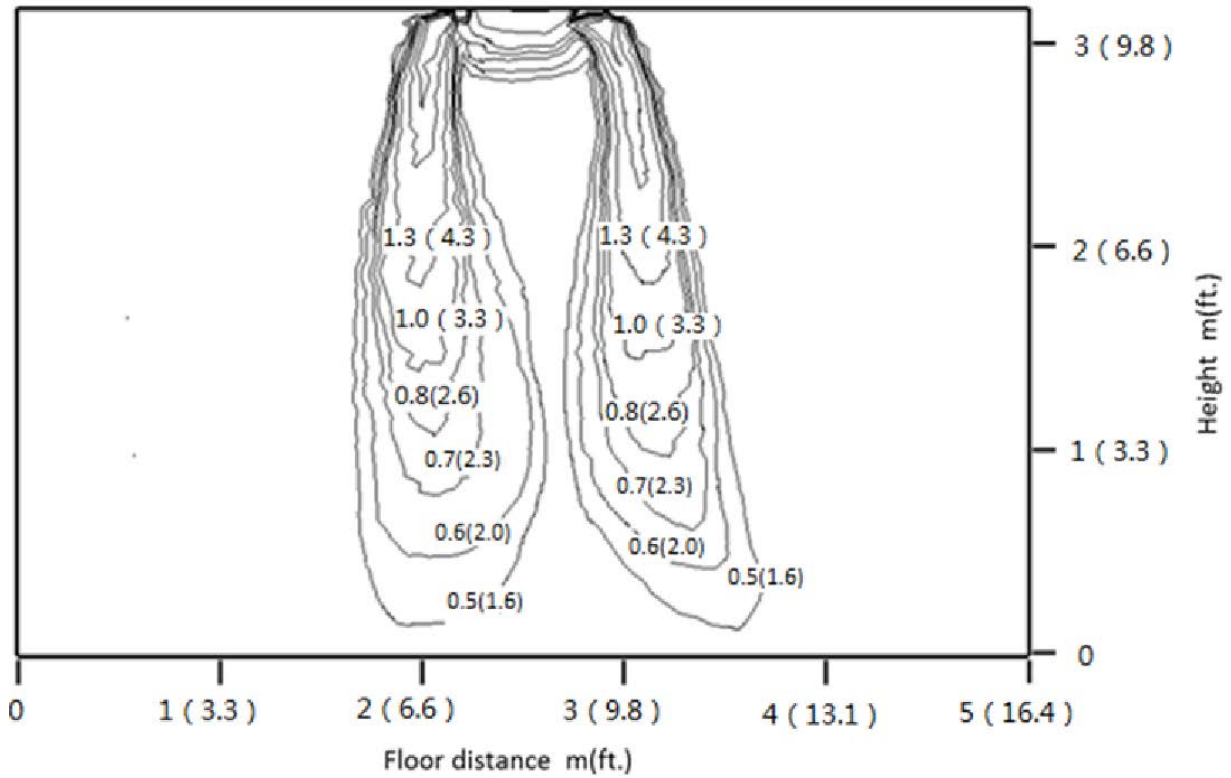


Figure 8 - Cooling mode with 60° swing

Unit:m/s(ft/s)

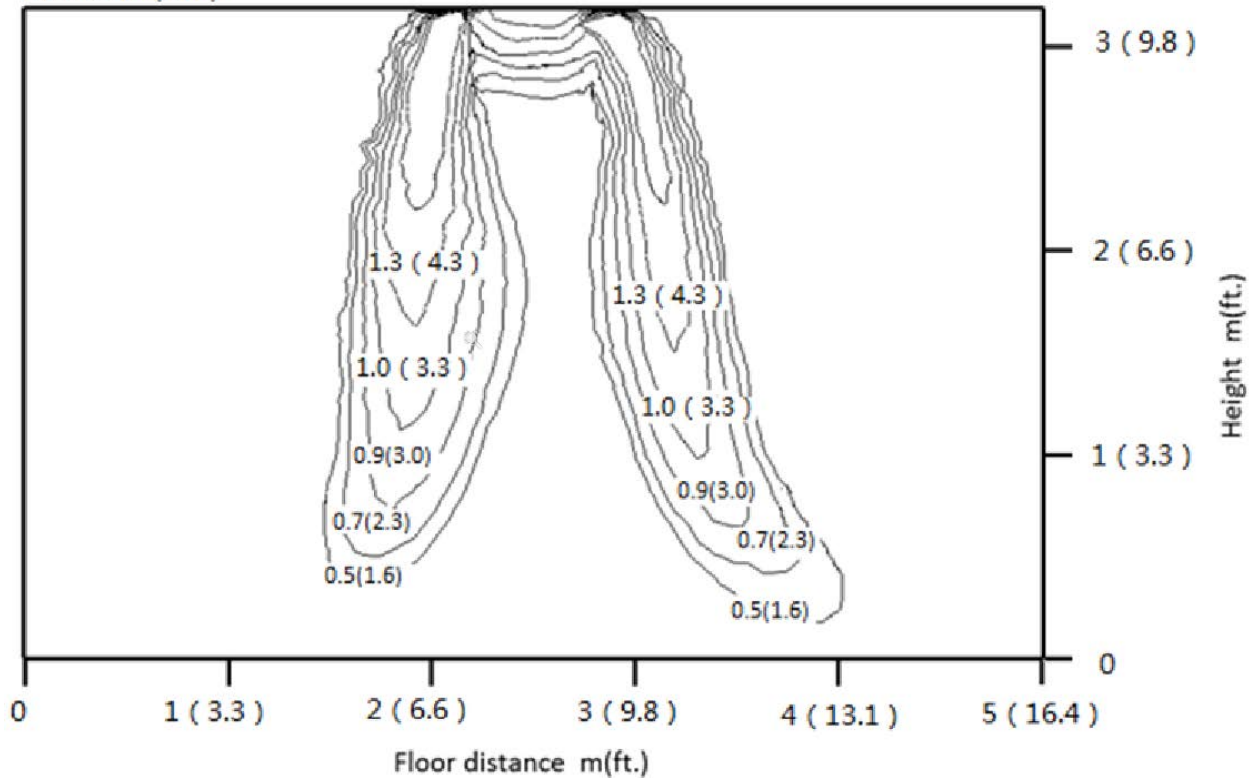
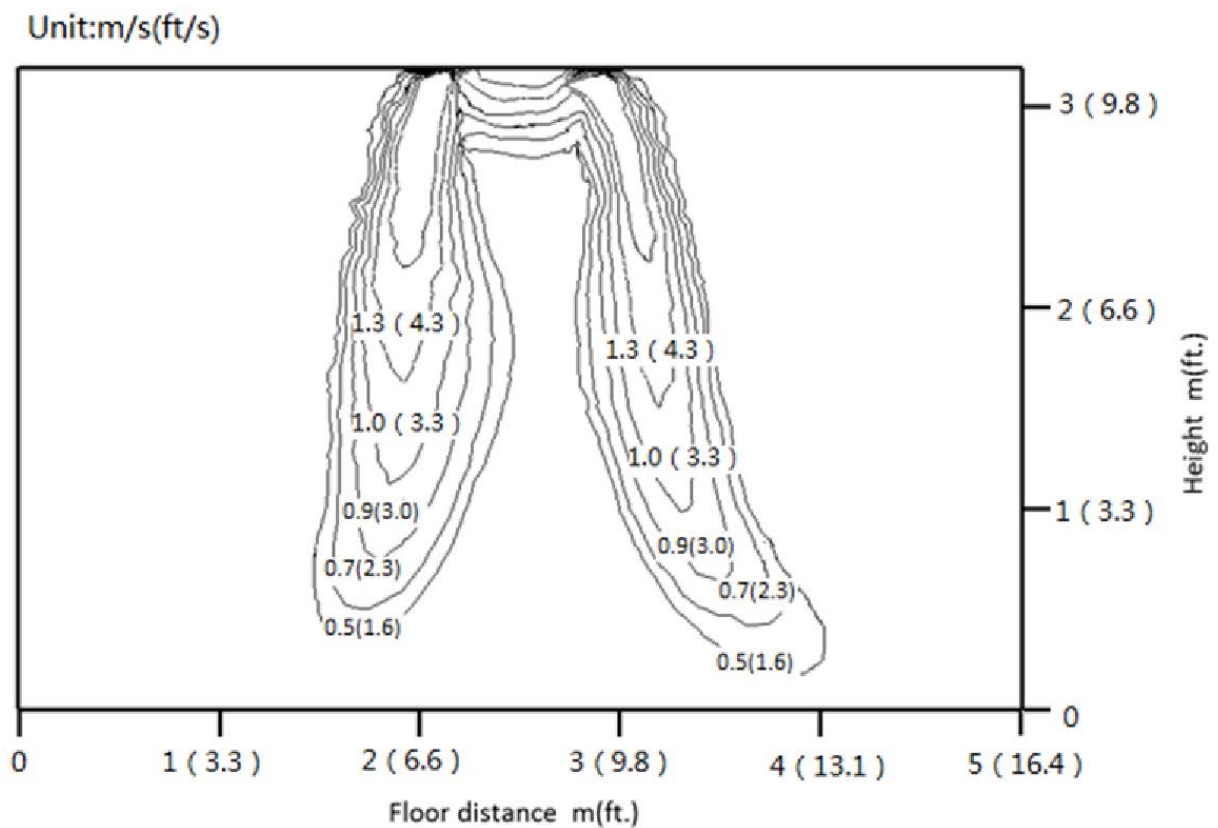
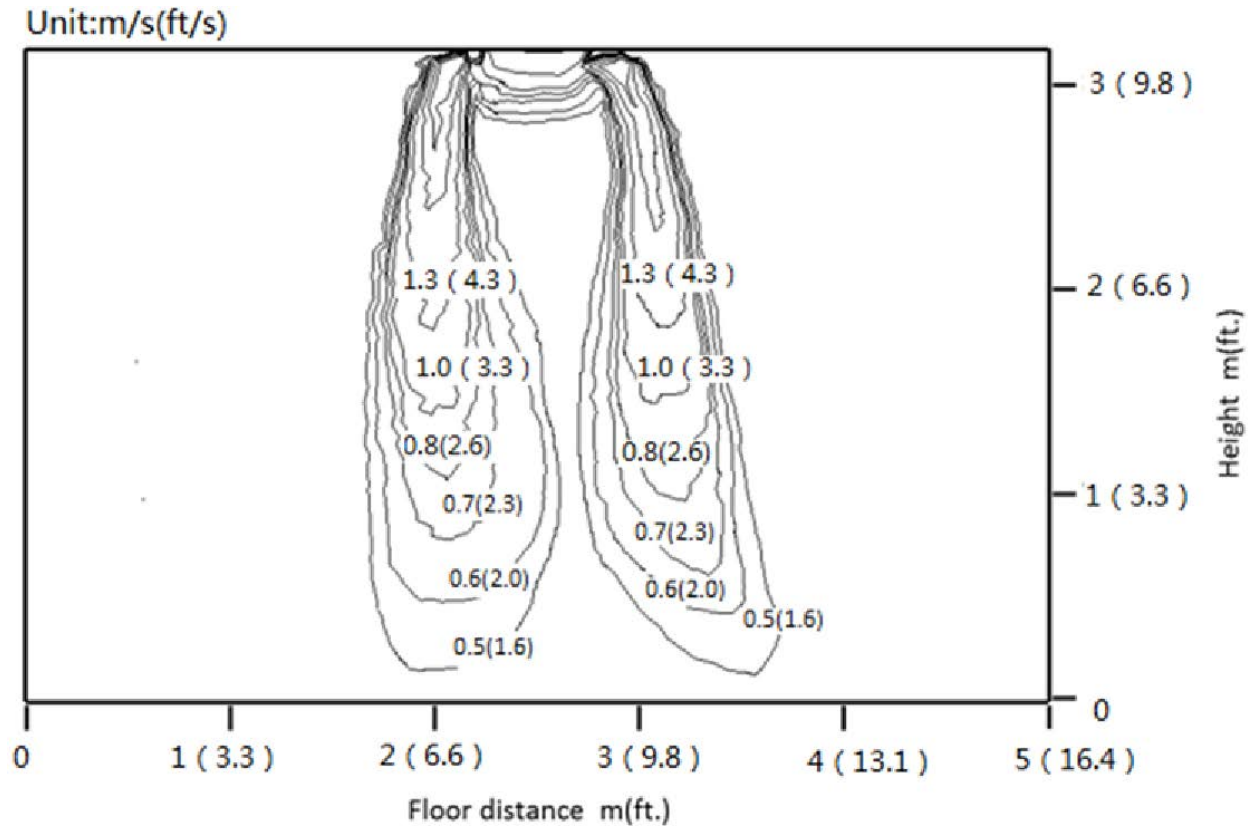


Figure 9 -Heating mode with 60° swing

4. 40VMC015---3



7. Sound Data

1. Sound Pressure Levels

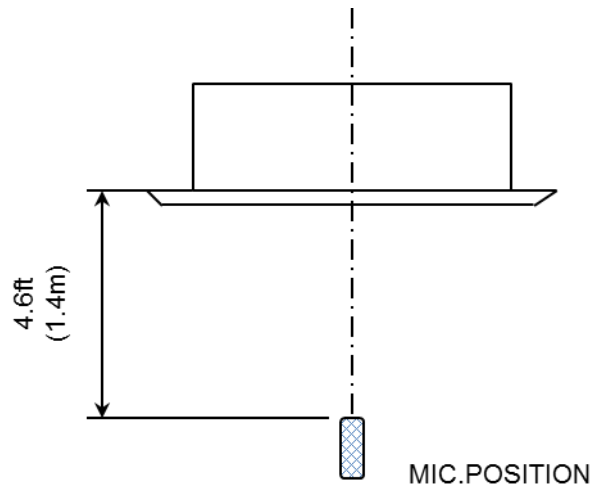


Figure 12 – Overall Sound Levels

Table 14 – Cooling Mode

Model	H	M	L
40VMC007---3	40.1	38.2	34.3
40VMC009---3	40.1	38.2	34.3
40VMC012---3	45.5	42.1	38.1
40VMC015---3	45.5	42.1	38.1

Table 15 – Heating Mode

Model	H	M	L
40VMC007---3	40.4	38.5	34.7
40VMC009---3	40.4	38.5	34.7
40VMC012---3	45.4	42.3	37.6
40VMC015---3	45.4	42.3	37.6

NOTE: Units are dBA.

2. NC Curves

NOTES:

External Static Pressure: 0 in. (0 Pa)

Power source: 208/230V-1Ph-60Hz

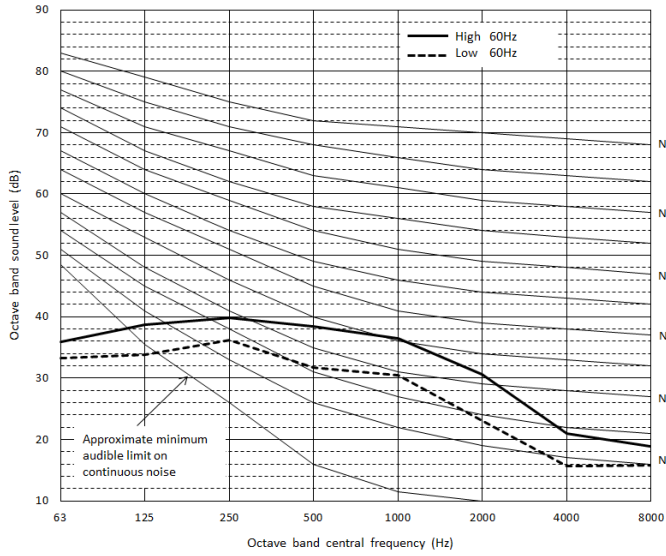


Figure 13 – 40VMC007---3

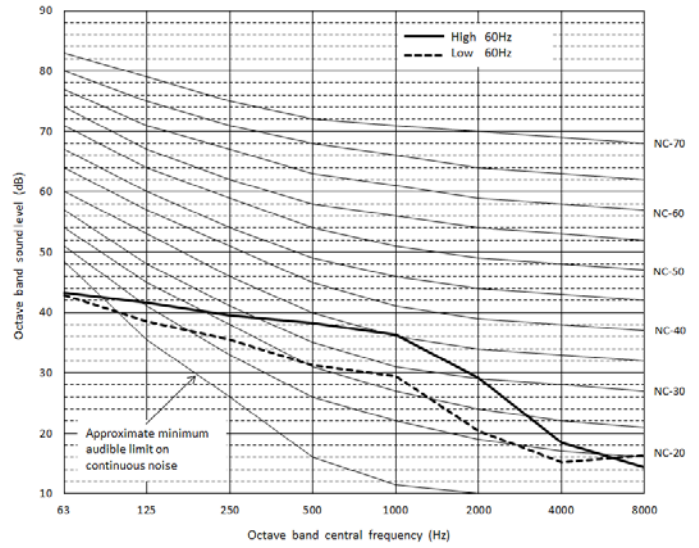


Figure 14 – 40VMC009---3

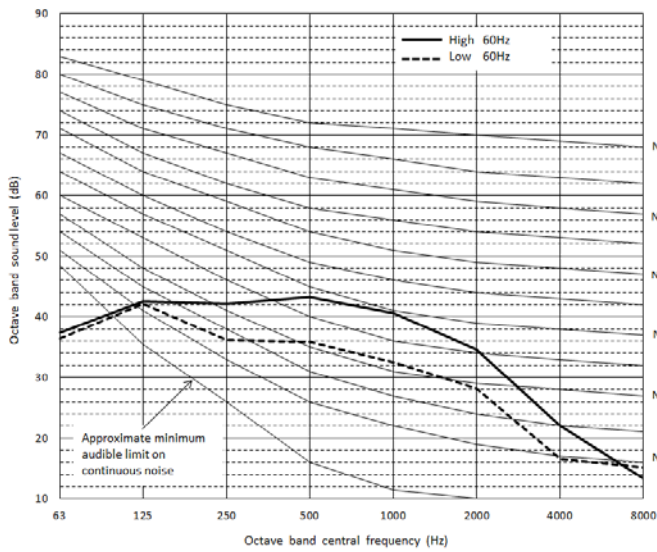


Figure 15 – 40VMC012---3

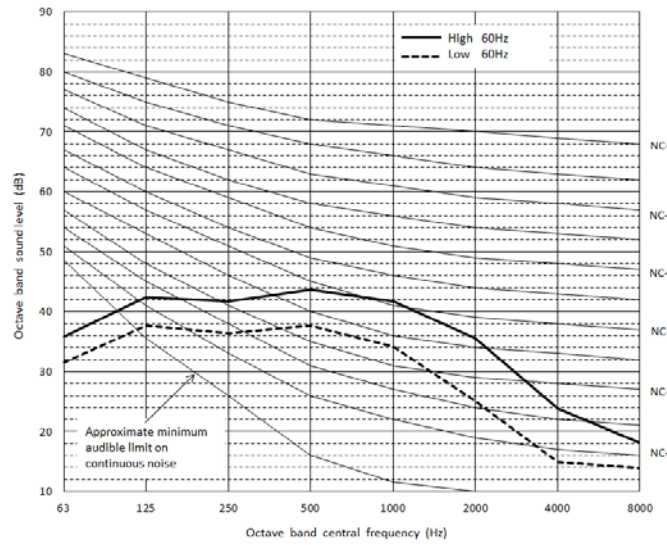


Figure 16 – 40VMC015---3

8. Capacity Data Tables

Table 16 – Cooling Capacity

Model	Unit Size	Indoor air temp.											
		68°F DB / 57°F WB		71°F DB / 60°F WB		75°F DB / 63°F WB		80°F DB / 67°F WB		85°F DB / 71°F WB		90°F DB / 75°F WB	
		TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC
40VMC	7	4.11	4.11	4.98	4.98	5.84	5.56	7.00	6.10	7.46	6.32	7.93	6.52
	9	5.28	5.28	6.40	5.68	7.51	6.29	8.00	6.93	9.60	7.14	10.19	7.32
	12	7.04	6.67	8.53	7.15	10.02	7.93	12.00	8.75	12.79	8.99	13.59	9.19
	15	6.67	7.54	10.66	8.18	12.52	9.10	15.00	10.10	15.99	10.32	16.98	10.49

Rated Condition: Evaporation temperature is 42.8°F with high speed airflow.

Table 17 – Heating Capacity

Model	Unit Size	Indoor air temp.					
		62°F DB	64°F DB	67°F DB	70°F DB	73°F DB	75°F DB
		TC	TC	TC	TC	TC	TC
40VMC	7	8.32	8.21	8.11	8.00	7.46	7.11
	9	10.40	10.27	10.13	10.00	9.33	8.88
	12	13.52	13.35	13.17	13.00	12.13	11.55
	15	17.68	17.46	17.23	17.00	15.86	15.10

Rated Condition: Condensation temperature is 114.8°F.

TC = Total capacity; KBTU/h

SC = Sensible capacity; KBTU/h

