

# Engineering Data

## Four-way Cassette VRF IDU

### AC 50Hz



MDV-D28Q4/N1-E(B)

MDV-D80Q4/N1-E(B)

MDV-D36Q4/N1-E(B)

MDV-D90Q4/N1-E(B)

MDV-D45Q4/N1-E(B)

MDV-D100Q4/N1-E(B)

MDV-D56Q4/N1-E(B)

MDV-D112Q4/N1-E(B)

MDV-D71Q4/N1-E(B)

MDV-D140Q4/N1-E(B)

# Four-way Cassette

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# The 2<sup>nd</sup> Generation AC Series VRF Indoor Units



## 1 Specifications

### MDV-D28Q4/N1-E(B) / MDV-D36Q4/N1-E(B) / MDV-D45Q4/N1-E(B)

Table 1.1: MDV-D28(36, 45)Q4/N1-E(B) specifications

Model			MDV-D28Q4/N1-E(B)	MDV-D36Q4/N1-E(B)	MDV-D45Q4/N1-E(B)
Power supply			1 phase, 220-240V, 50Hz		
Cooling <sup>1</sup>	Capacity	kW	2.8	3.6	4.5
	Input	W	80	80	88
Heating <sup>2</sup>	Capacity	kW	3.2	4.0	5.0
	Input	W	80	80	88
Indoor fan motor	Type		AC		
	Quantity		1		
Indoor coil	Number of rows		1	1	2
	Tube pitch × row pitch	mm	21×13.37		
	Fin spacing	mm	1.5		
	Fin type		Hydrophilic aluminum		
	Diameter & type	mm	Φ7, inner-groove		
	Dimensions (L×H ×W)	mm	2033×168×13.37		2051×168×26.74
	Number of circuits		4		8
Indoor air flow (H/M/L)		m <sup>3</sup> /h	764/638/554		905/740/651
Sound pressure level (H/M/L) <sup>3</sup>		dB(A)	32/31/30		36/34/33
Indoor unit	Dimensions <sup>4</sup> (W×H×D)	mm	840×230×840		
	Packing (W×H×D)	mm	955×260×955		
	Net/Gross weight	kg	21.5/26.7		23.7/28.9
Panel	Dimensions (W×H×D)	mm	950×70×950		
	Packing(W×H×D)	mm	1035×89×1035		
	Net/Gross weight	kg	5.8/7.9		
Refrigerant type			R410A		
Pipe connections	Liquid pipe	mm	Φ6.35		
	Gas pipe	mm	Φ12.7		
	Drain pipe	mm	OD Φ32		

Notes:

1. Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.
4. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

## MDV-D56Q4/N1-E(B) / MDV-D71Q4/N1-E(B) / MDV-D80Q4/N1-E(B)

Table 1.2: MDV-D56(71, 80)Q4/N1-E(B) specifications

Model			MDV-D56Q4/N1-E(B)	MDV-D71Q4/N1-E(B)	MDV-D80Q4/N1-E(B)
Power supply			1 phase, 220-240V, 50Hz		
Cooling <sup>1</sup>	Capacity	kW	5.6	7.1	8.0
	Input	W	88	88	110
Heating <sup>2</sup>	Capacity	kW	6.3	8.0	9.0
	Input	W	88	88	110
Indoor fan motor	Type		AC		
	Quantity		1		
Indoor coil	Number of rows		2		
	Tube pitch × row pitch	mm	21×13.37		
	Fin spacing	mm	1.5		
	Fin type		Hydrophilic aluminum		
	Diameter & type	mm	Φ7, inner-groove		
	Dimensions (L×H×W)	mm	2051×168×26.74		
	Number of circuits		8		
Indoor air flow (H/M/L)		m <sup>3</sup> /h	905/740/651	950/767/663	1200/1021/789
Sound pressure level (H/M/L) <sup>3</sup>		dB(A)	36/34/33	38/36/35	42/39/37
Indoor unit	Dimensions <sup>4</sup> (W×H×D)		840×230×840		
	Packing (W×H×D)		955×260×955		
	Net/Gross weight		23.7/28.9		
Panel	Dimensions (W×H×D)		950×70×950		
	Packing (W×H×D)		1035×89×1035		
	Net/Gross weight		5.8/7.9		
Refrigerant type			R410A		
Pipe connections	Liquid pipe	mm	Φ9.53		
	Gas pipe	mm	Φ15.9		
	Drain pipe	mm	OD Φ32		

Notes:

1. Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.
4. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

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### MDV-D90Q4/N1-E(B) / MDV-D100Q4/N1-E(B)

Table 1.3: MDV-D90(100)Q4/N1-E(B) specifications

Model			MDV-D90Q4/N1-E(B)	MDV-D100Q4/N1-E(B)
Power supply			1 phase, 220-240V, 50Hz	
Cooling <sup>1</sup>	Capacity	kW	9.0	10.0
	Input	W	140	165
Heating <sup>2</sup>	Capacity	kW	10.0	11.0
	Input	W	140	165
Indoor fan motor	Type		AC motor	
	Number		1	
Indoor coil	Number of rows		2	2
	Tube pitch × row pitch		mm 21×13.37	
	Fin spacing		mm 1.5	
	Fin type		Hydrophilic aluminum	
	Diameter & type		mm Φ7, inner-groove	
	Dimensions (L×H×W)		mm 2051×252×26.74	
	Number of circuits		8	
Indoor air flow (H/M/L)		m <sup>3</sup> /h	1332/1129/908	1651/1304/1127
Sound pressure level (H/M/L) <sup>3</sup>		dB(A)	43/39/38	45/42/40
Indoor unit	Dimensions <sup>4</sup> (W×H×D)		mm 840×300×840	
	Packing (W×H×D)		mm 955×330×955	
	Net/Gross weight		kg 28.7/34.1	
Panel	Dimensions (W×H×D)		mm 950×70×950	
	Packing (W×H×D)		mm 1035×89×1035	
	Net/Gross weight		kg 5.8/7.9	
Refrigerant type			R410A	
Pipe connections	Liquid pipe		mm Φ9.53	
	Gas pipe		mm Φ15.9	
	Drain pipe		mm OD Φ32	

Notes:

1. Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.
4. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

## MDV-D112Q4/N1-E(B) / MDV-D140Q4/N1-E(B)

Table 1.4: MDV-D112(140)Q4/N1-E(B) specifications

Model			MDV-D112Q4/N1-E(B)	MDV-D140Q4/N1-E(B)
Power supply			1 phase, 220-240V, 50Hz	
Cooling <sup>1</sup>	Capacity	kW	11.2	14.0
	Input	W	165	176
Heating <sup>2</sup>	Capacity	kW	12.5	16.0
	Input	W	165	176
Indoor fan motor	Type	AC motor		
	Number	1		
Indoor coil	Number of rows	2		3
	Tube pitch × row pitch	mm	21×13.37	
	Fin spacing	mm	1.5	
	Fin type	Hydrophilic aluminum		
	Diameter & type	mm	Φ7, inner-groove	
	Dimensions (L×H×W)	mm	2051×252×26.74	2007×252×40.11
	Number of circuits	8		12
Indoor air flow (H/M/L)	m <sup>3</sup> /h	1651/1304/1127		1658/1335/1130
Sound pressure level (H/M/L) <sup>3</sup>	dB(A)	45/42/40		46/41/39
Indoor unit	Dimensions <sup>4</sup> (W×H×D)	mm	840×300×840	
	Packing (W×H×D)	mm	955×330×955	
	Net/Gross weight	kg	28.7/34.1	30.9/36.3
Panel	Dimensions (W×H×D)	mm	950×70×950	
	Packing (W×H×D)	mm	1035×89×1035	
	Net/Gross weight	kg	5.8/7.9	
Refrigerant type			R410A	
Pipe connections	Liquid pipe	mm	Φ9.53	
	Gas pipe	mm	Φ15.9	
	Drain pipe	mm	OD Φ32	

Notes:

1. Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.
4. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

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## 2 Dimensions

### 2.1 Unit Dimensions

Figure 2.1: Four-way Cassette dimensions (unit: mm)

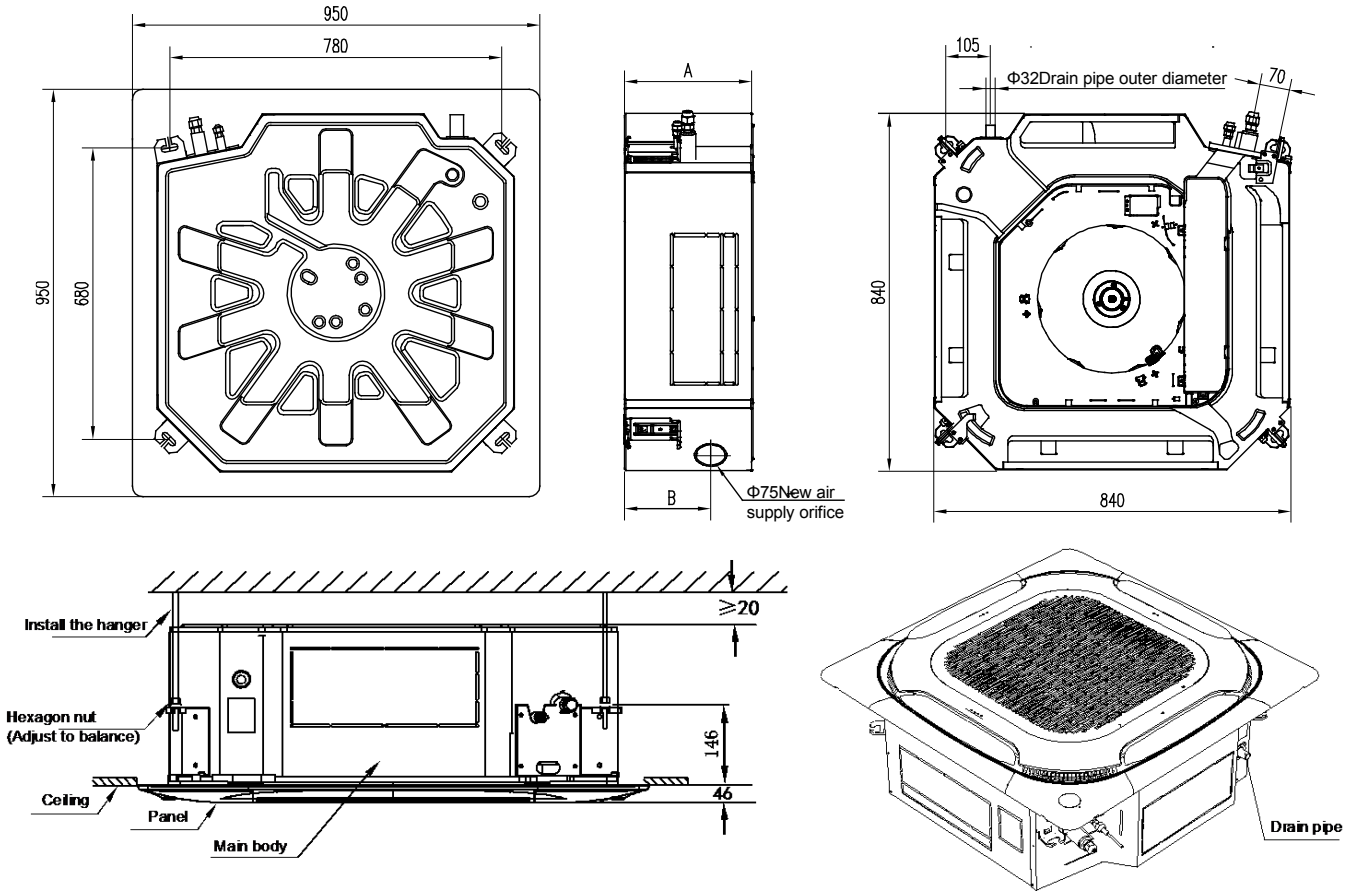


Table 2.1: Four-way Cassette dimensions

Model names	Dimensions (mm)	
	A	B
MDV-D28Q4/N1-E(B) MDV-D36Q4/N1-E(B) MDV-D45Q4/N1-E(B) MDV-D56Q4/N1-E(B) MDV-D71Q4/N1-E(B) MDV-D80Q4/N1-E(B)	230	126
MDV-D90Q4/N1-E(B) MDV-D100Q4/N1-E(B) MDV-D112Q4/N1-E(B) MDV-D140Q4/N1-E(B)	300	197

Table 2.2: Four-way Cassette piping connections

Model names	Gas pipe (mm)	Liquid pipe (mm)
MDV-D28Q4/N1-E(B) MDV-D36Q4/N1-E(B) MDV-D45Q4/N1-E(B)	Φ12.7	Φ6.35
MDV-D56Q4/N1-E(B) MDV-D71Q4/N1-E(B) MDV-D80Q4/N1-E(B) MDV-D90Q4/N1-E(B) MDV-D100Q4/N1-E(B) MDV-D112Q4/N1-E(B) MDV-D140Q4/N1-E(B)	Φ15.9	Φ9.53

## 3 Unit Placement

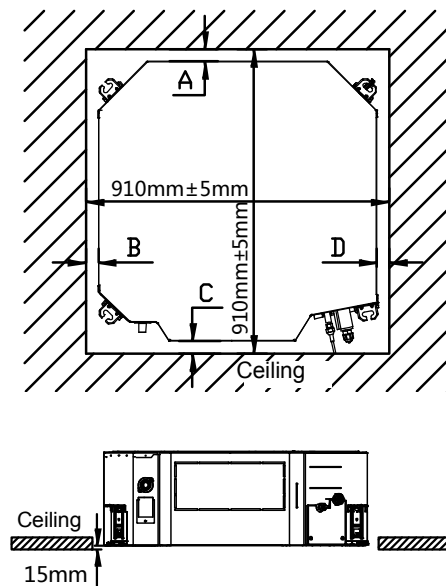
### 3.1 Placement Considerations

Unit placement should take account of the following considerations:

- Units should not be installed in the following locations:
  - Where exposure to direct radiation from a high-temperature heat source or to interference from a source of electromagnetic radiation may occur.
  - Where dust or dirt may affect heat exchangers.
  - Where exposure to oil or to corrosive or harmful gases, such as acidic or alkaline gases, may occur.
  - Where exposure to salinity may occur, such as seaside locations.
  - Where highly flammable materials are present.
  - Where exposure to oily air may occur, such as a kitchen.
  - Where exposure to very high humidity may occur, such as a laundry.
- Units should be installed in positions where:
  - The ceiling is horizontal and is able to bear the unit's weight.
  - There are no obstructions that could impede the airflow into and out of the unit.
  - The airflow out of the unit can reach throughout the room.
  - There is sufficient space for access during installation, servicing and maintenance.
  - The refrigerant piping and drain piping can be easily connected to the refrigerant piping and drain piping systems.
  - Short-circuit ventilation (where outlet air returns quickly to a unit's air inlet) will not occur.

### 3.2 Space Requirements

Figure 3.1: Four-way Cassette space requirements (unit: mm)





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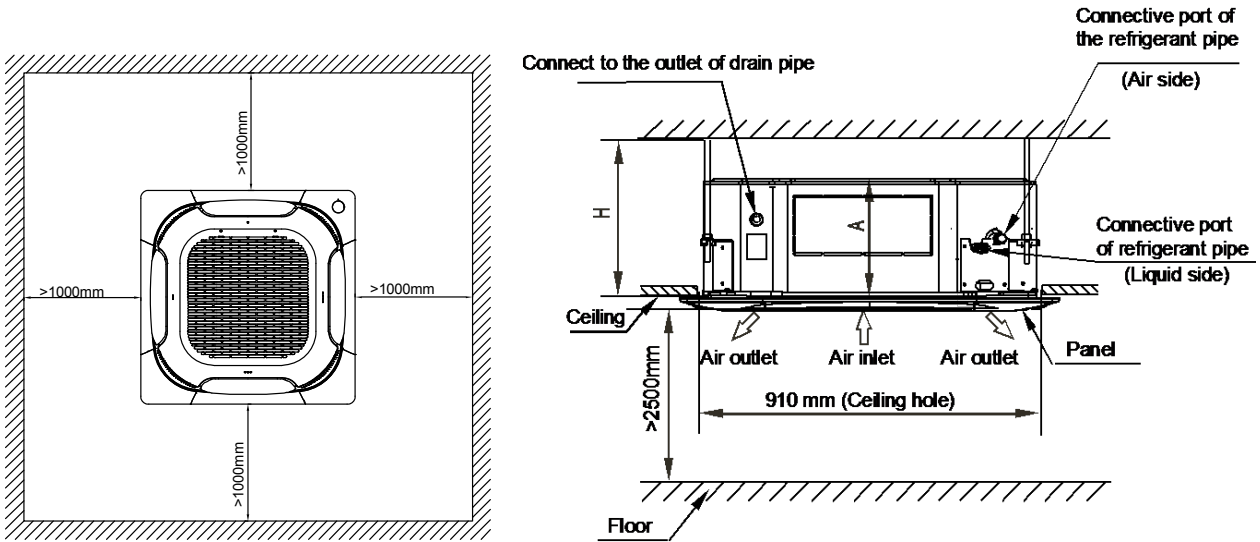
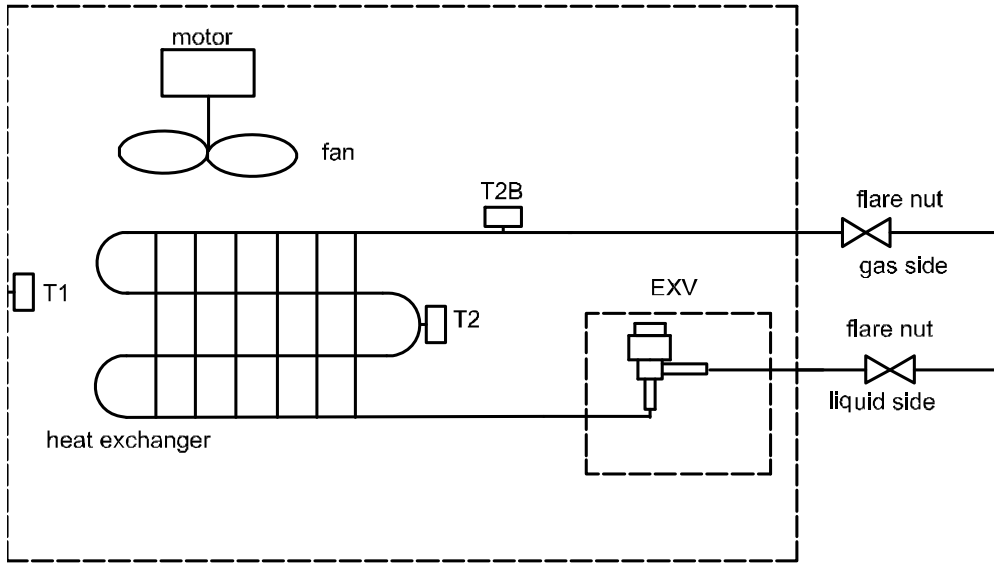


Table 3.1: Four-way Cassette dimensions and space requirements

Model name	Dimensions / Requirements (mm)	
	A	H
MDV-D28Q4/N1-E(B) MDV-D36Q4/N1-E(B) MDV-D45Q4/N1-E(B) MDV-D56Q4/N1-E(B) MDV-D71Q4/N1-E(B) MDV-D80Q4/N1-E(B)	230	≥260
MDV-D90Q4/N1-E(B) MDV-D100Q4/N1-E(B) MDV-D112Q4/N1-E(B) MDV-D140Q4/N1-E(B)	300	≥330

### 4 Piping Diagram

Figure 4.1: Four-way Cassette piping diagram

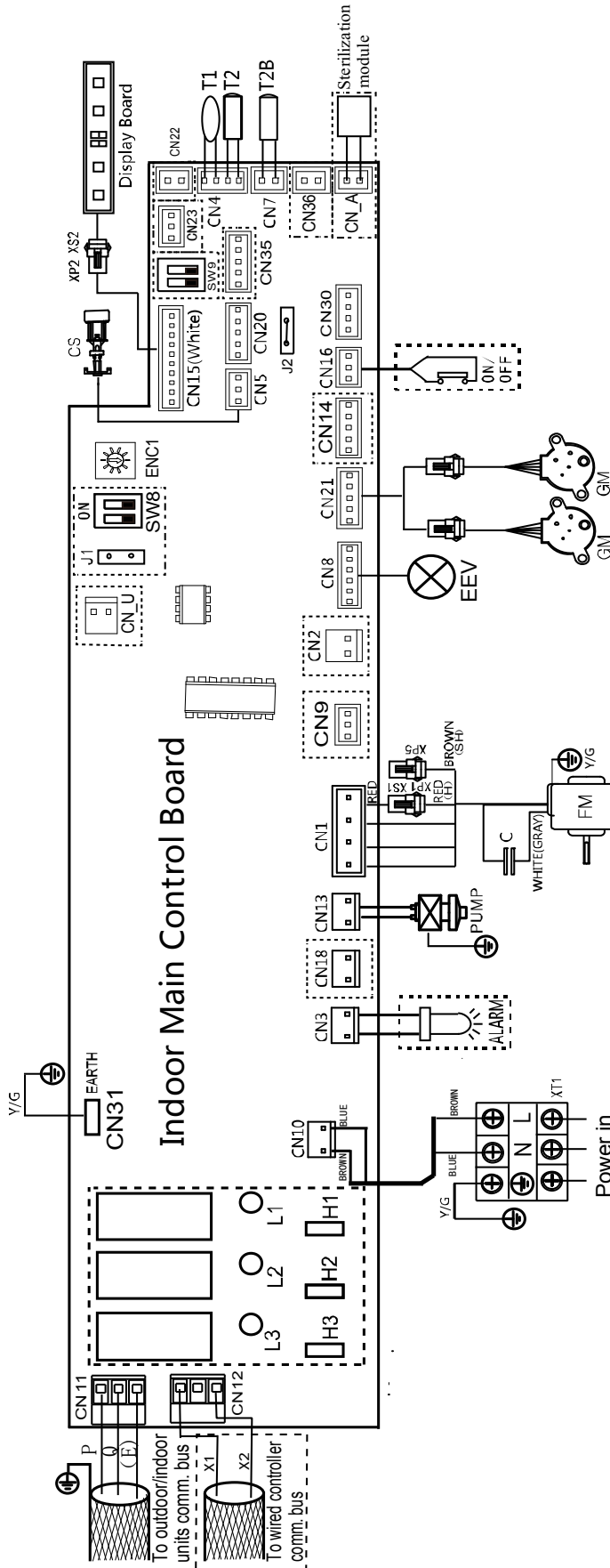


Legend	
T1	Indoor ambient temperature sensor
T2	Indoor heat exchanger mid-point temperature sensor
T2B	Indoor heat exchanger outlet temperature sensor

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## 5 Wiring Diagram

Figure 5.1: Four-way Cassette wiring diagram



Code	Title	Code	Title	Code	Title
FM	Indoor Fan Motor	XP1-8	Connectors	GM	Swing Motor
EEV	Electronic Expansion Valve	XS1-8	Terminal	C	Fan Motor capacitance
T1	Room Temp. Sensor	XT1	Pump Motor	ALARM	Warning Lamp(Optional)
T2B	Outer Pipe Temp. Sensor	PUMP	Water Level Switch	ON/OFF	Remote on/off switch
T2	Middle Pipe Temp. Sensor	CS			

### Notes for installers and service engineers

#### Caution

- All installation, servicing and maintenance must be carried out by competent and suitably qualified, certified and accredited professionals and in accordance with all applicable legislation.
- Units should be grounded in accordance with all applicable legislation. Metal and other conductive components should be insulated in accordance with all applicable legislation.
- Power supply wiring should be securely fastened at the power supply terminals – loose power supply wiring would represent a fire risk.
- After installation, servicing or maintenance, the electric control box cover should be closed. Failing to close the electric control box cover risks fire or electric shock.
- Switch ENC1 (indoor unit capacity setting) is factory-set and its setting should normally not be changed. The only circumstances in which a switch ENC1 might need to be set in the field is when replacing a main PCB. When replacing a main PCB, ensure that the capacity setting on switch ENC1 on the new PCB is consistent with the unit capacity given on the unit's nameplate.

## 6 Capacity Tables

### 6.1 Cooling Capacity Table

Table 6.1: Four-way Cassette cooling capacity

Model	Indoor air temperature (°C WB/DB)													
	14/20		16/23		18/26		19/27		20/28		22/30		24/32	
	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC
MDV-D28Q4/N1-E(B)	2.5	2.5	2.7	2.5	2.8	2.5	2.8	2.4	2.9	2.3	2.9	2.2	3.0	2.1
MDV-D36Q4/N1-E(B)	3.2	3.2	3.4	3.2	3.6	3.2	3.6	3.0	3.7	3.0	3.8	2.8	3.9	2.7
MDV-D45Q4/N1-E(B)	4.0	3.8	4.3	3.9	4.5	3.9	4.5	3.7	4.6	3.6	4.7	3.4	4.8	3.3
MDV-D56Q4/N1-E(B)	5.0	4.8	5.3	4.8	5.6	4.8	5.6	4.6	5.7	4.5	5.8	4.2	6.0	4.1
MDV-D71Q4/N1-E(B)	6.3	6.0	6.7	6.0	7.0	6.0	7.1	5.8	7.2	5.6	7.4	5.4	7.6	5.2
MDV-D80Q4/N1-E(B)	7.1	6.9	7.6	6.9	7.9	6.8	8.0	6.6	8.1	6.4	8.3	6.1	8.5	5.8
MDV-D90Q4/N1-E(B)	8.0	7.6	8.5	7.6	8.9	7.6	9.0	7.3	9.1	7.1	9.4	6.8	9.6	6.5
MDV-D100Q4/N1-E(B)	8.9	8.6	9.5	8.6	9.9	8.5	10.0	8.2	10.1	7.9	10.4	7.6	10.6	7.2
MDV-D112Q4/N1-E(B)	9.9	9.5	10.6	9.6	11.1	9.5	11.2	9.2	11.3	8.9	11.6	8.4	11.9	8.1
MDV-D140Q4/N1-E(B)	12.4	11.6	13.2	11.7	13.8	11.6	14.0	11.3	14.2	11.0	14.5	10.5	14.9	10.1

Abbreviations:

TC: Total capacity (kW)

SC: Sensible capacity (kW)

Notes:

1. Shaded cells indicate rating condition

### 6.2 Heating Capacity Table

Table 6.2: Four-way Cassette heating capacity

Model	Indoor air temperature (°C DB)					
	16	18	20	21	22	24
	TC	TC	TC	TC	TC	TC
MDV-D28Q4/N1-E(B)	3.4	3.4	3.2	3.1	3.0	2.8
MDV-D36Q4/N1-E(B)	4.2	4.2	4.0	3.8	3.8	3.5
MDV-D45Q4/N1-E(B)	5.3	5.3	5.0	4.8	4.7	4.4
MDV-D56Q4/N1-E(B)	6.7	6.6	6.3	6.1	5.9	5.5
MDV-D71Q4/N1-E(B)	8.5	8.4	8.0	7.8	7.5	7.0
MDV-D80Q4/N1-E(B)	9.5	9.5	9.0	8.7	8.5	7.8
MDV-D90Q4/N1-E(B)	10.6	10.5	10.0	9.7	9.4	8.8
MDV-D100Q4/N1-E(B)	11.8	11.7	11.1	10.8	10.4	9.7
MDV-D112Q4/N1-E(B)	13.3	13.1	12.5	12.1	11.8	10.9
MDV-D140Q4/N1-E(B)	17.0	16.8	16.0	15.5	15.0	13.9

Abbreviations:

TC: Total capacity (kW)

Notes:

1. Shaded cells indicate rating condition

## 7 Electrical Characteristics

Table 7.1: Four-way Cassette electrical characteristics

Model	Power supply						Indoor fan motors	
	Hz	Volts	Min. volts	Max. volts	MCA	MFA	Rated motor output (kW)	FLA
MDV-D28Q4/N1-E(B)	50	220-240	198	264	0.3	15	0.026	0.2
MDV-D36Q4/N1-E(B)	50	220-240	198	264	0.3	15	0.026	0.2
MDV-D45Q4/N1-E(B)	50	220-240	198	264	0.4	15	0.026	0.3
MDV-D56Q4/N1-E(B)	50	220-240	198	264	0.4	15	0.026	0.3
MDV-D71Q4/N1-E(B)	50	220-240	198	264	0.4	15	0.03	0.3
MDV-D80Q4/N1-E(B)	50	220-240	198	264	0.5	15	0.037	0.4
MDV-D90Q4/N1-E(B)	50	220-240	198	264	0.7	15	0.05	0.5
MDV-D100Q4/N1-E(B)	50	220-240	198	264	0.7	15	0.065	0.6
MDV-D112Q4/N1-E(B)	50	220-240	198	264	0.7	15	0.065	0.6
MDV-D140Q4/N1-E(B)	50	220-240	198	264	0.8	15	0.065	0.6

Abbreviations:

MCA: Minimum Circuit Amps

MFA: Maximum Fuse Amps

FLA: Full Load Amps

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## 8 Sound Levels

### 8.1 Overall

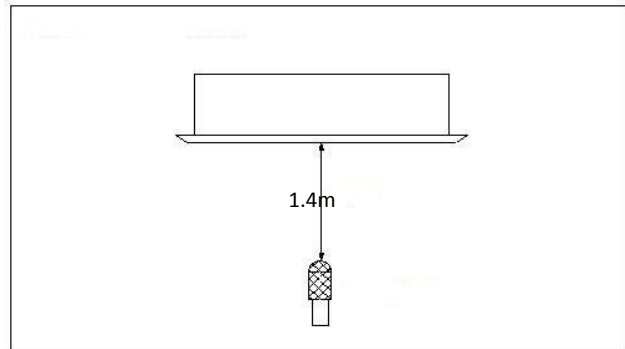
Table 8.1: Four-way Cassette sound pressure levels<sup>1</sup>

Model	Sound pressure levels dB(A)		
	H	M	L
MDV-D28Q4/N1-E(B)	32	31	30
MDV-D36Q4/N1-E(B)	32	31	30
MDV-D45Q4/N1-E(B)	36	34	33
MDV-D56Q4/N1-E(B)	36	34	33
MDV-D71Q4/N1-E(B)	38	36	35
MDV-D80Q4/N1-E(B)	42	39	37
MDV-D90Q4/N1-E(B)	43	39	38
MDV-D100Q4/N1-E(B)	45	42	40
MDV-D112Q4/N1-E(B)	45	42	40
MDV-D140Q4/N1-E(B)	46	41	39

Notes:

1. Sound pressure levels are measured 1.4m below the unit in a semi-anechoic chamber. During in-situ operation, sound pressure levels may be higher as a result of ambient noise.

Figure 8.1: Four-way Cassette sound pressure level measurement



### 8.2 Octave Band Levels

Figure 8.2: MDV-D28(36)Q4/N1-E(B) octave band levels

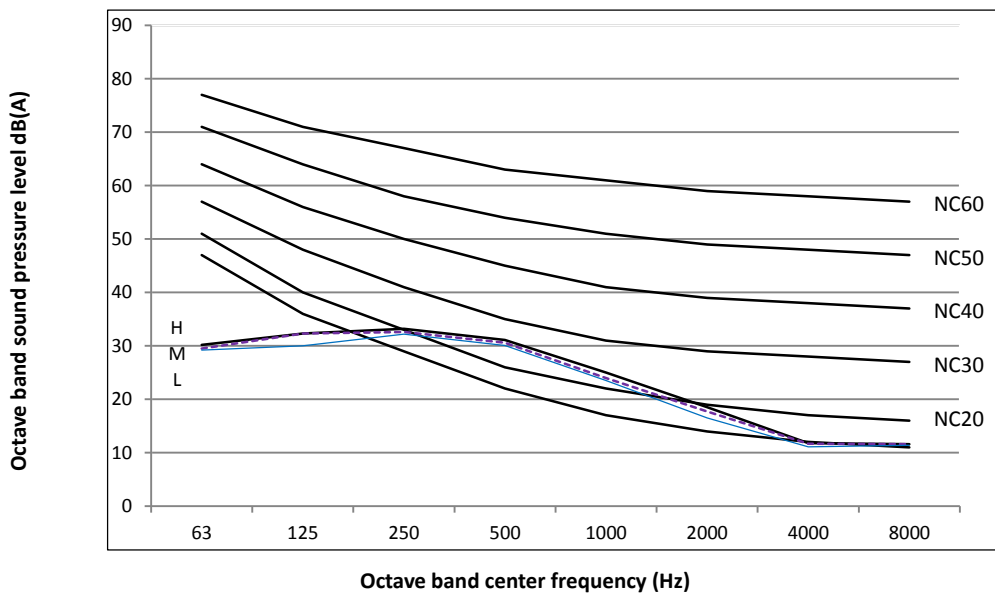


Figure 8.3: MDV-D45(56)Q4/N1-E(B) octave band levels

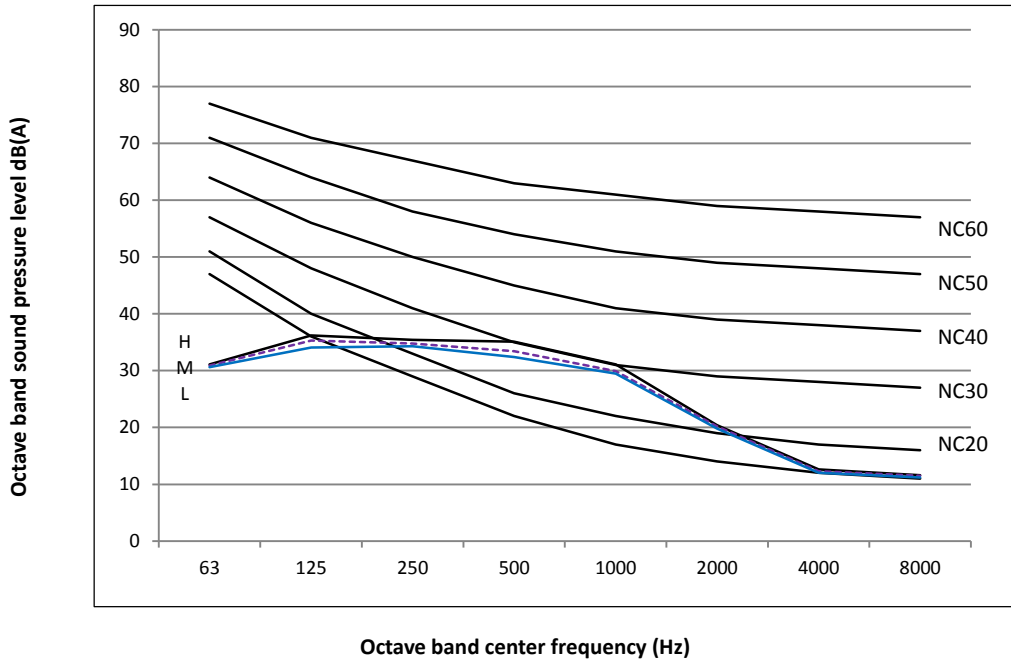
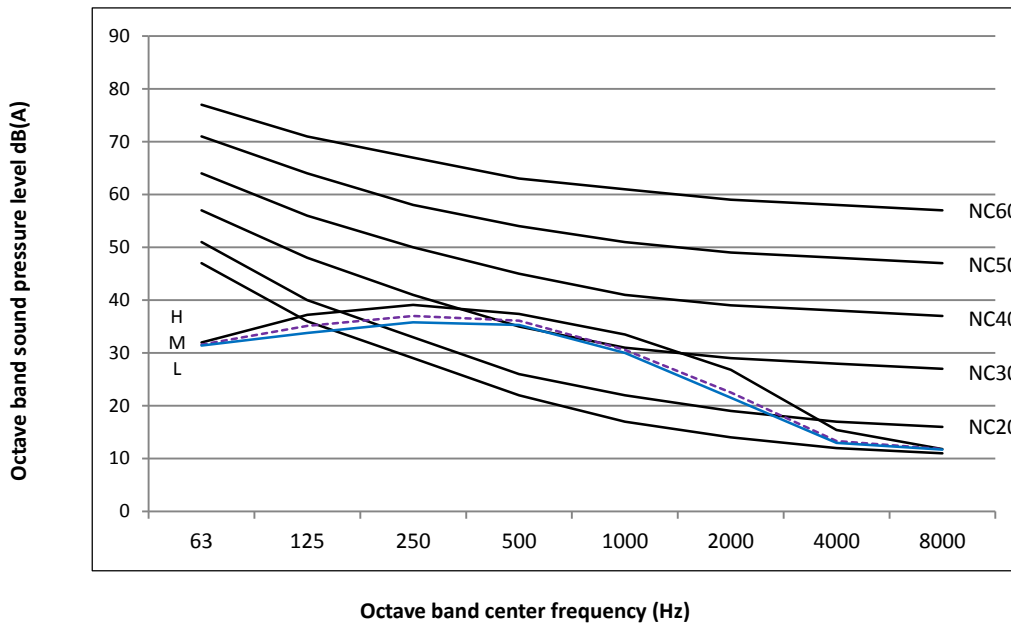


Figure 8.4: MDV-D71Q4/N1-E(B) octave band levels





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Figure 8.5: MDV-D80Q4/N1-E(B) octave band levels

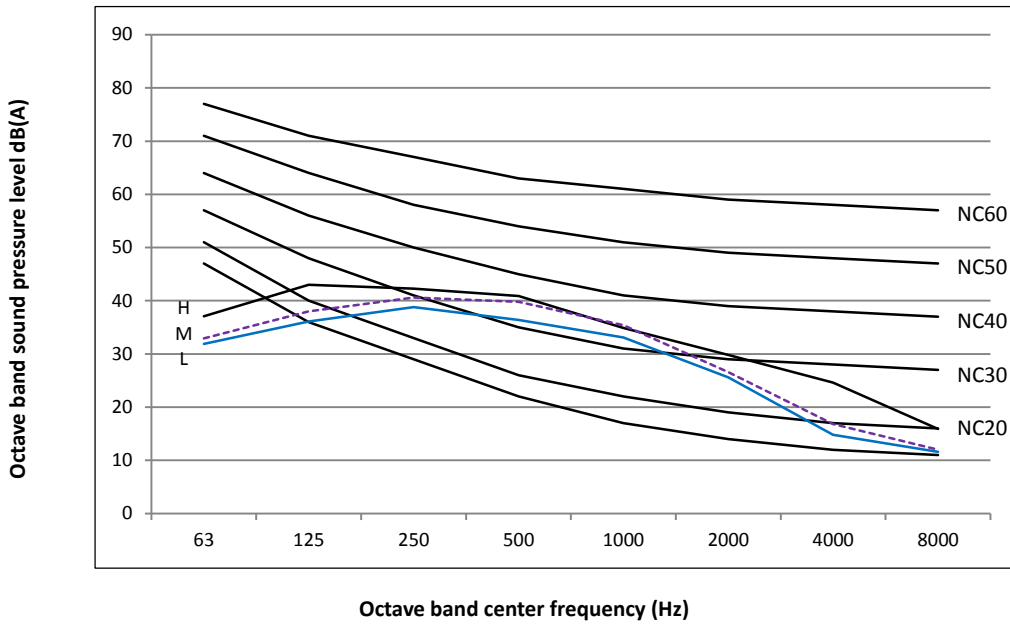


Figure 8.6: MDV-D90Q4/N1-E(B) octave band levels

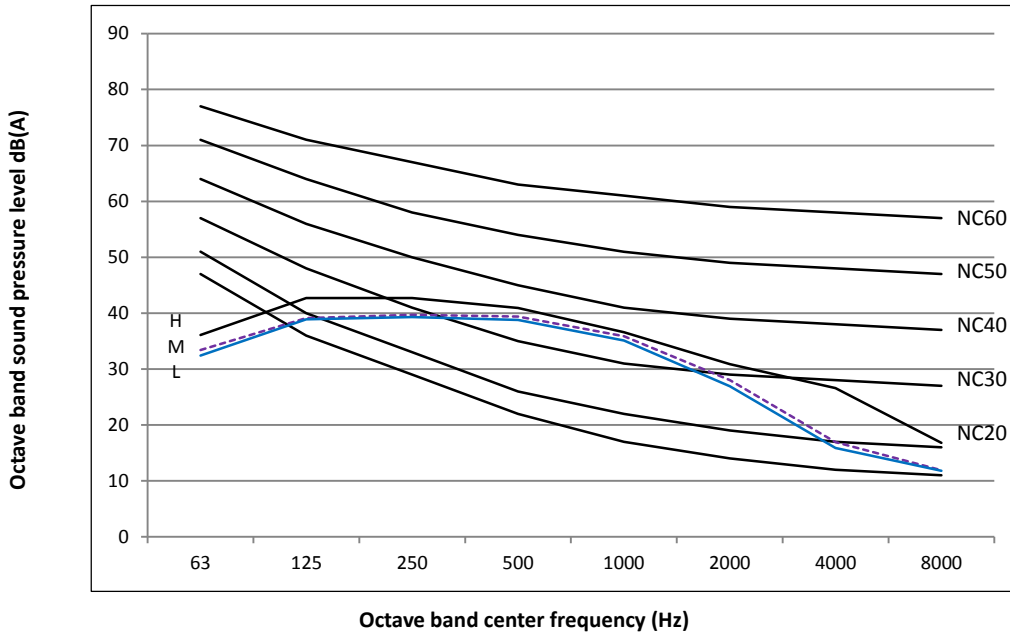


Figure 8.7: MDV-D100(112)Q4/N1-E(B) octave band levels

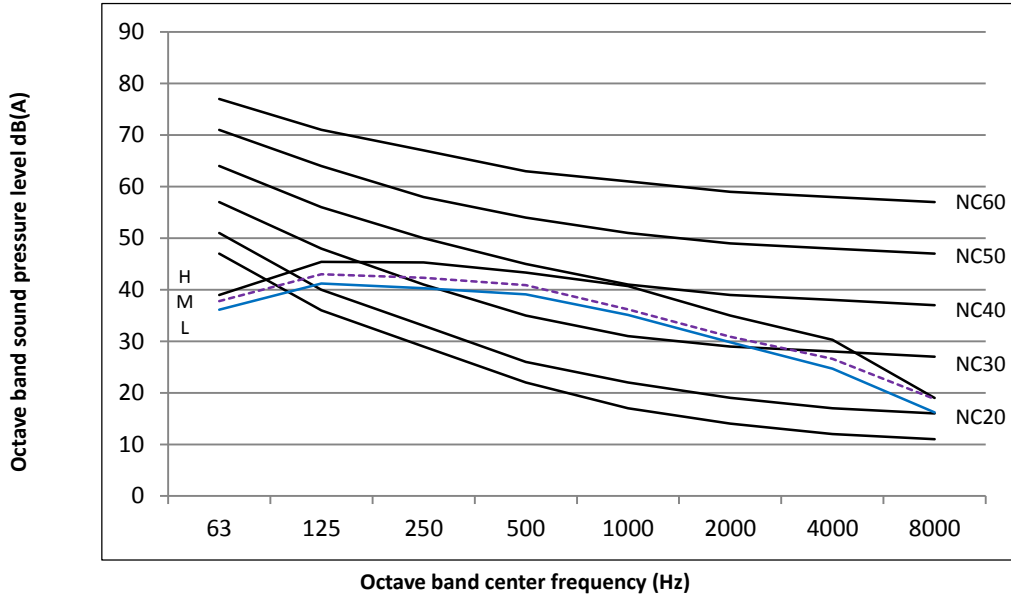
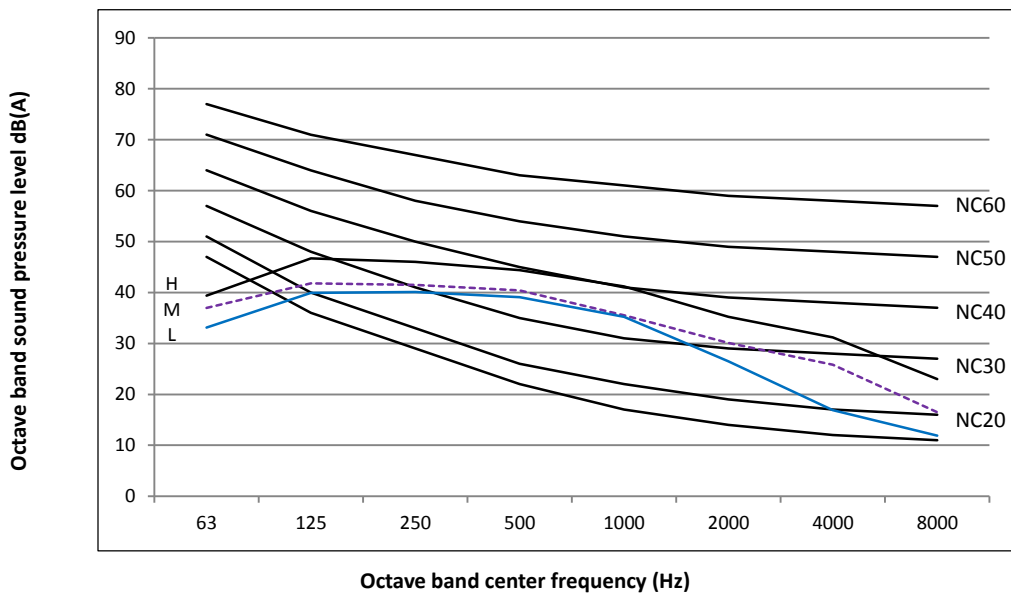


Figure 8.8: MDV-D140Q4/N1-E(B) octave band levels



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Note: Product specifications change from time to time as product improvements and developments are released and may vary from those in this document.

