

Engineering Databook

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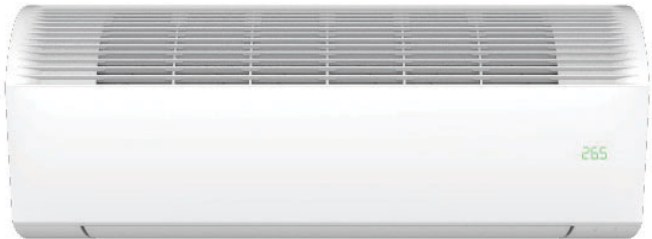


Fig. 1 —Unit Image

NOTE: Carrier is committed to continuously improving its products to ensure the highest quality and reliability standards, and to meet local regulations and market requirements. All features and specifications are subject to change without prior notice.

SPECIFICATIONS

Table 1 — Specifications (Sizes 5K-12K)

Model			45VMW05	45VMW07	45VMW09	45VMW12
Power supply			1 phase, 208/230V, 60Hz			
Cooling ¹	Capacity	kW	1.5	2.2	2.8	3.5
		kBtu/h	5	7.5	9.5	12
	Power input	W	16	16	22	25
Heating ²	Capacity	kW	1.8	2.5	3.2	3.8
		kBtu/h	6.0	8.5	10.9	13
	Power input	W	16	16	22	25
Fan motor	Model		ZKSN-20-8-5L	ZKSN-20-8-5L	ZKSN-20-8-5L	ZKSN-20-8-5L
	Type		DC			
Indoor coil	Number of rows		2&3	2&3	2&3	2&3
	Fin spacing	fins/in.	0.052			
	Fin type		Hydrophilic aluminum			
	Tube OD and type	In.	Φ3/16 Inner-groove			
	Dimensions (L×H×W)	In.	20-7/8×6-11/16×3-3/4			
	Number of circuits		4	4	4	4
Air flow rate ³		cfm	249/241/233/ 225/217/209/201	249/241/233/ 225/217/209/201	320/300/280/ 261/241/221/201	343/319/296/ 272/248/225/201
Sound pressure level ⁴		dB(A)	31/30.6/30/29.6/29.1/ 28.7/28	31.7/31.3/30.7/30.3/ 29.8/29.4/28.7	34.6/33.8/32.6/31.8/ 29.7/28.7/27.4	36.7/35.4/33.9/32.2/ 31.2/30/28.9
Unit	Net dimensions ⁵ (W×H×D)	In.	29-1/2×11-5/8×10-7/16			
	Packed dimensions (W×H×D)	In.	38-3/4×15-3/16×14-3/16			
	Net/Gross weight	Lbs	23/31	23/31	23/31	23/31
Refrigerant type			R454B			
Throttle		Type	Electronic expansion valve			
Design pressure (H/L)		MPa	4.4/2.6			
Pipe connections	Liquid/Gas pipe	In.	Φ1/4/Φ1/2			
	Drain pipe	In.	OD Φ5/8			

NOTES:

- Indoor temperature 80°DB, 67°WB; outdoor temperature 95°DB, 75°WB; equivalent refrigerant piping length 295-1/4in. with zero level difference.
- Indoor temperature 70°DB, 60°WB; outdoor temperature 47°DB, 43°WB; equivalent refrigerant piping length 295-1/4in. with zero level difference.
- Air flow rate are from the highest speed to the lowest speed, total 7 rates for each model.
- Sound pressure level is from highest level to lowest level, total 7 levels for each model. Sound pressure level is measured in an anechoic chamber.
- Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

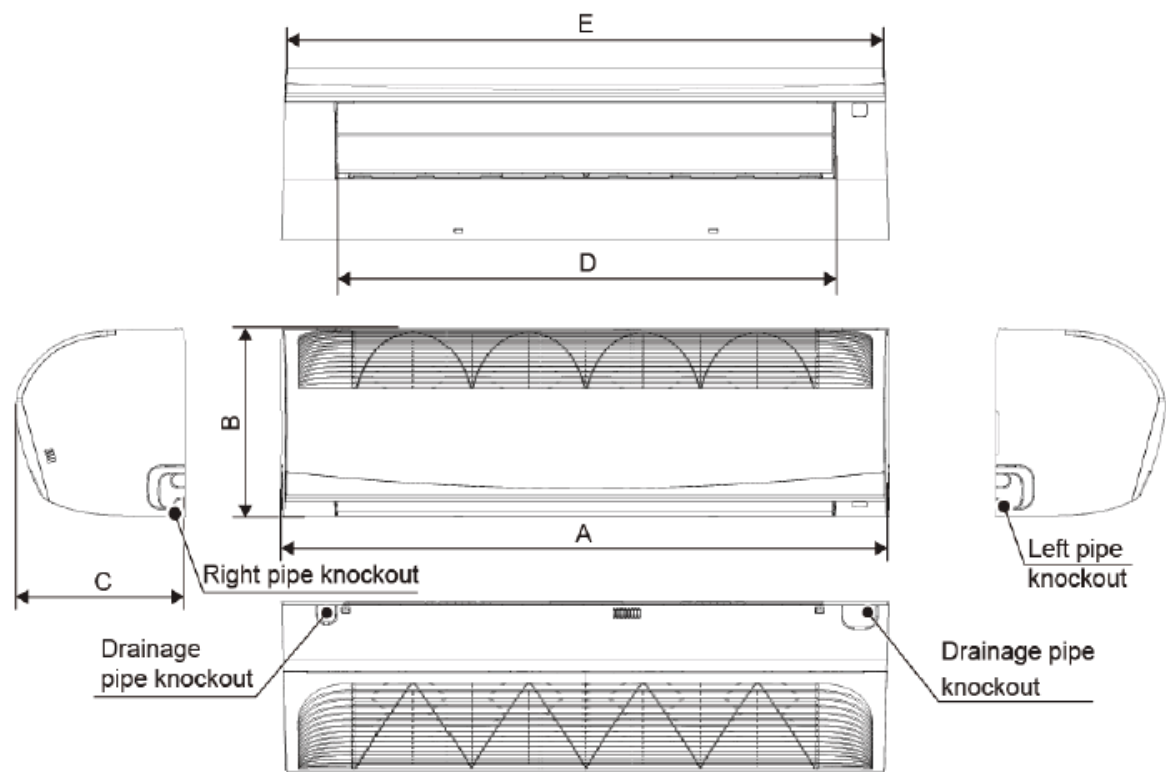
Table 2 — Specifications (Sizes 15K-30K)

Model			45VMW15	45VMW18	45VMW24	45VMW30
Power supply			1 phase, 208/230V, 60Hz			
Cooling ¹	Capacity	kW	4.4	5.3	7	8.8
		kBtu/h	15	18	24	30
	Power input	W	32	37	49	130
Heating ²	Capacity	kW	5.0	5.9	7.9	10
		kBtu/h	17	20	27	34
	Power input	W	32	37	49	130
Fan motor	Model		ZKSN-20-8-5L	ZKSN-20-8-5L	ZKSN-50-8-17L	ZKSN-50-8-17L
	Type		DC			
Indoor coil	Number of rows		2&3			
	Fin spacing	fins/in.	0.052			
	Fin type		Hydrophilic aluminum			
	Tube OD and type	In.	Φ3/16 Inner-groove			
	Dimensions (L×H×W)	In.	20-7/8×6-11/16×3-3/4		38-9/16×6-11/16×3-3/4	
	Number of circuits		6	6	8	8
Air flow rate ³		cfm	426/396/365/ 335/304/274/243	509/465/420/ 376/332/287/243	722/667/612/ 557/501/446/391	941/865/789/ 713/637/561/485
Sound pressure level ⁴		dB(A)	36.9/35.2/33.7/31.9/ 30.2/28.8/27.6	40.6/38.3/36.2/34.1/ 32.3/30.4/28	45.5/43.4/41.4/39.3/ 37.2/34.9/33.1	52.1/49.6/47.1/44.6/ 41.9/38.9/35.7
Unit	Net dimensions ⁵ (WxHxD)	In.	37-3/8×11-5/8×10-7/16		47-1/4×11-5/8×10-7/16	
	Packed dimensions (WxHxD)	In.	46-5/8×15-3/16×14-3/16		56-1/8×15-3/16×14-3/16	
	Net/Gross weight	Lbs	27.5/35		34/43	
Refrigerant type			R454B			
Throttle		Type	Electronic expansion valve			
Design pressure (H/L)		MPa	4.4/2.6			
Pipe connections	Liquid/Gas pipe	In.	Φ1/4/Φ1/2		Φ3/8/Φ5/8	
	Drain pipe	In.	OD Φ5/8			

NOTES:

1. Indoor temperature 80°DB, 67°WB; outdoor temperature 95°DB, 75°WB; equivalent refrigerant piping length 295-1/4in. with zero level difference.
2. Indoor temperature 70°DB, 60°WB; outdoor temperature 47°DB, 43°WB; equivalent refrigerant piping length 295-1/4in. with zero level difference.
3. Air flow rate are from the highest speed to the lowest speed, total 7 rates for each model.
4. Sound pressure level is from highest level to lowest level, total 7 levels for each model. Sound pressure level is measured in an anechoic chamber.
5. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

DIMENSIONS



Capacity (kBtu/h)	A	B	C	D	E
kBtu/h ≤ 12	750(29-1/2)	295(11-5/8)	265(10-7/16)	581(22-7/8)	736(29)
12 < kBtu/h ≤ 18	950(37-3/8)	295(11-5/8)	265(10-7/16)	781(30-3/4)	936(36-7/8)
18 < kBtu/h ≤ 28	1 200(47-1/4)	295(11-5/8)	265(10-7/16)	1 025(40-3/8)	1 186(46-11/16)

Fig. 2 —Dimensions - All Sizes

UNIT PLACEMENT

PLACEMENT CONSIDERATION

Unit placement should take account of the following considerations:

Units should not be installed in the following locations:

- A place filled with mineral oil, fumes or mist, like a kitchen.
- A place where there are corrosive gases, such as acid or alkaline gases.
- A place exposed to combustible gases and using volatile combustible gases such as diluent or gasoline.
- A place where there is equipment emitting electromagnetic radiation.
- A place where there is a high salt content in the air like a coast.
- Do not use the air conditioner in an environment where an explosion may occur.
- Places like in vehicles or cabin rooms.
- Factories with major voltage fluctuations in the power supplies.
- Other special environmental conditions.

Units should be installed in positions where:

- Ensure that the airflow in and out of the IDU is reasonably organized to form an air circulation in the room.
- Ensure IDU maintenance space.
- The nearer the drainage pipe and copper pipe are to the ODU, the lower the pipe cost is.
- Prevent the air conditioner from blowing directly to the human body.
- The closer the wiring to the power cabinet, the lower the wiring cost is.
- Keep the air-conditioning return air away from the setting sun of the room.
- Be careful not to interfere with the light tank, fire pipe, gas pipe and other facilities.
- The IDU should not be lifted in the places like load-bearing beam and columns that affect the structural safety of the house.
- Wired controller and IDU should be in same installation space; otherwise, the sampling point setting of wired controller will need to be changed.

SPACE REQUIREMENTS

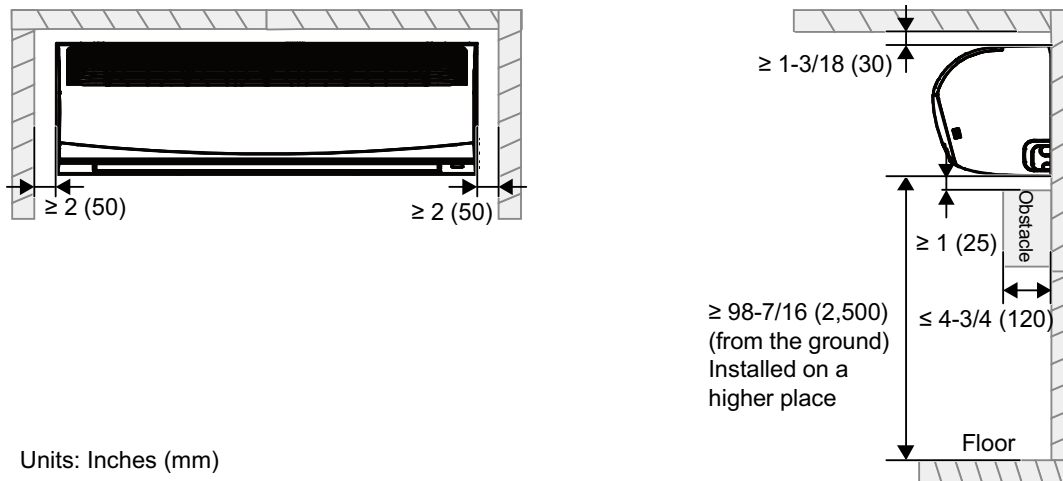


Fig. 3 —Wall-Mount Space Requirements

PIPING DIAGRAM

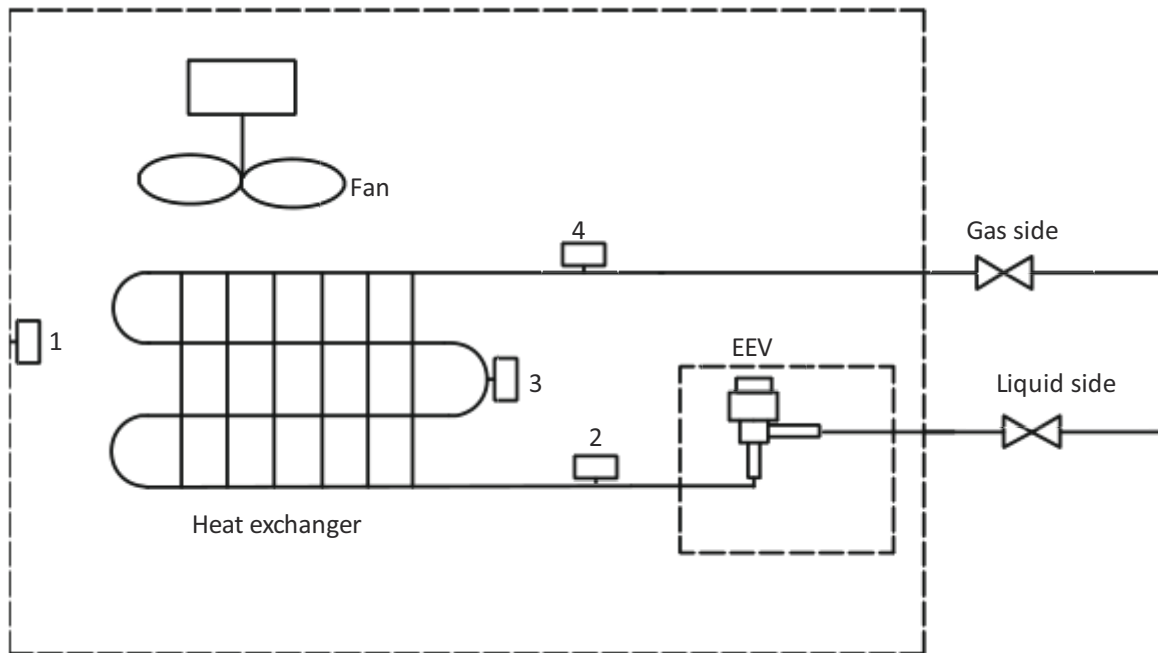


Fig. 4 —High Wall Pressure Duct Piping Diagram

Table 3 — Legend

Legend	Code	Description
1	T1	Inlet Air Temp. Sensor
2	T2A	Liquid Pipe Temp. Sensor
3	T2	Middle Pipe Temp. Sensor
4	T2B	Gas Pipe Temp. Sensor

WIRING DIAGRAM

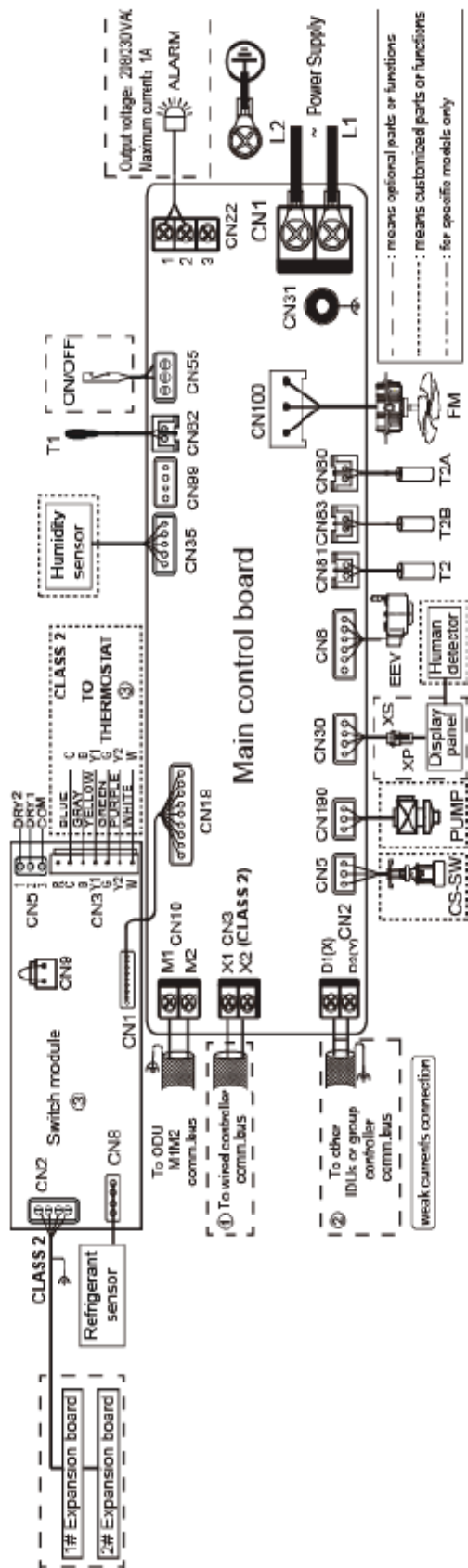


Fig. 5 —Wiring Diagram



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.

D1D2 communication ports are used for group control communication. When connecting the group controller, the D1D2 port of the indoor units that are to be group controlled must be connected in daisy chain, and the group controller must be connected to the X1X2 port of one of the indoor units in the group control, and set to group control mode. In addition, D1D2 communication ports can also be connected to the central controller.

CAPACITY TABLES

Table 4 — Cooling Capacity Table

Model	Indoor air temperature (°F WB/DB)													
	57/68		61/73		64/79		66/81		68/82		72/86		75/90	
	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
45VMW05	4.8	4.8	5.1	4.8	5.1	4.8	5.0	4.4	5.5	4.4	5.5	4.1	5.5	3.8
45VMW07	6.8	6.5	7.2	6.8	7.5	6.8	7.5	6.5	7.8	6.5	7.8	5.8	8.2	5.8
45VMW09	8.5	8.2	9.2	8.5	9.6	8.5	9.5	8.2	9.9	8.2	9.9	7.5	10.2	7.2
45VMW12	10.6	10.2	11.3	10.2	11.9	10.6	12.0	10.2	12.3	9.9	12.6	9.6	13.0	8.9
45VMW15	13.3	12.3	14.3	12.6	15.0	13.0	15.0	12.3	15.4	12.3	15.7	11.6	16.0	10.9
45VMW18	16.0	14.7	17.1	15.0	18.1	15.4	18.0	15.0	18.4	14.7	18.8	13.6	19.4	13.3
45VMW24	21.2	19.8	22.5	20.1	24.2	20.8	24.0	19.8	24.2	19.1	24.9	18.1	25.6	17.4
45VMW30	26.6	24.6	28.3	25.2	29.7	25.6	30.0	24.9	30.4	23.9	31.4	22.9	32.1	21.8

ABBREVIATIONS:

TC: Total capacity (kBtu/h)

SC: Sensible capacity (kBtu/h)

NOTE: Shaded cells indicate rating condition.

Table 5 — Heating Capacity Table

Model	Indoor air temperature (°F DB)					
	61	64	68	70	72	75
	SHC	SHC	SHC	SHC	SHC	SHC
45VMW05	6.4	6.4	6.0	5.9	5.8	5.4
45VMW07	9.0	8.9	8.5	8.2	8.0	7.5
45VMW09	11.5	11.4	10.9	10.5	10.3	9.6
45VMW12	13.6	13.5	13.0	12.4	12.2	11.4
45VMW15	18.1	17.9	17.0	16.5	16.0	14.9
45VMW18	21.3	21.1	20.0	19.4	18.9	17.6
45VMW24	28.6	28.3	27.0	26.1	25.3	23.5
45VMW30	36.2	35.8	34.0	33.1	32.1	29.7

ABBREVIATIONS:

SHC: Sensible Heat Capacity (kBtu/h)

NOTE: Shaded cells indicate rating condition.

ELECTRICAL CHARACTERISTICS

Table 6 — Electrical Characteristics

Model	Power supply				Indoor Fan Motor
	Hz	Volts	MCA	MFA	Rated motor output (W)
45VMW05	60	208/230	0.55	15	20
45VMW07	60	208/230	0.55	15	20
45VMW09	60	208/230	0.68	15	20
45VMW12	60	208/230	0.70	15	20
45VMW15	60	208/230	0.74	15	20
45VMW18	60	208/230	0.83	15	20
45VMW24	60	208/230	1.05	15	50
45VMW30	60	208/230	1.44	15	50

SOUND LEVELS OVERALL

Table 7 — Sound Pressure Levels

Model name	Sound pressure levels dB(A)						
	SSH	SH	H	M	L	SL	SSL
45VMW05	31	30.6	30	29.6	29.1	28.7	28
45VMW07	31.7	31.3	30.7	30.3	29.8	29.4	28.7
45VMW09	34.6	33.8	32.6	31.8	29.7	28.7	27.4
45VMW12	36.7	35.4	33.9	32.2	31.2	30	28.9
45VMW15	36.9	35.2	33.7	31.9	30.2	28.8	27.6
45VMW18	40.6	38.3	36.2	34.1	32.3	30.4	28
45VMW24	45.5	43.4	41.4	39.3	37.2	34.9	33.1
45VMW30	52.1	49.6	47.1	44.6	41.9	38.9	35.7

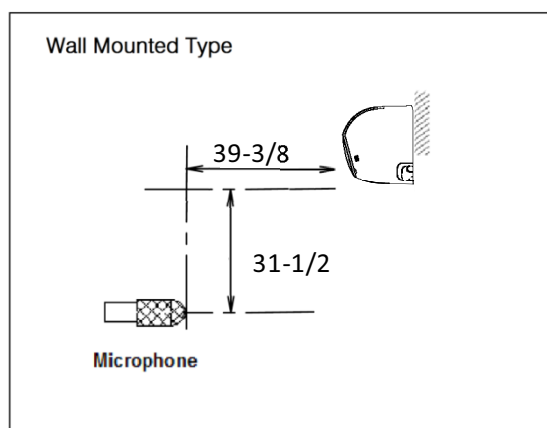


Fig. 6 —Sound Pressure Level Measurement

OCTAVE BAND LEVELS

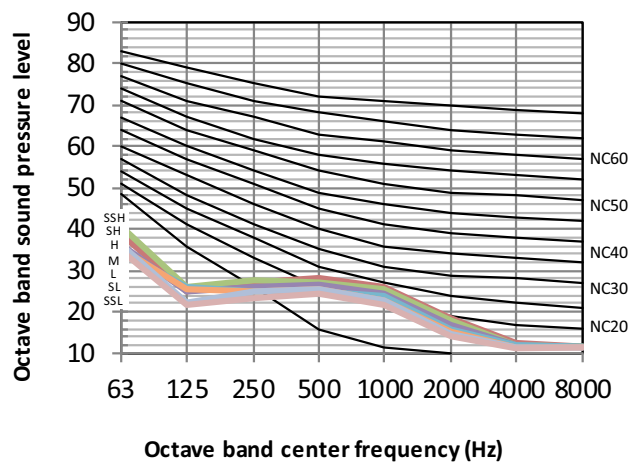


Fig. 7 —45VMW05

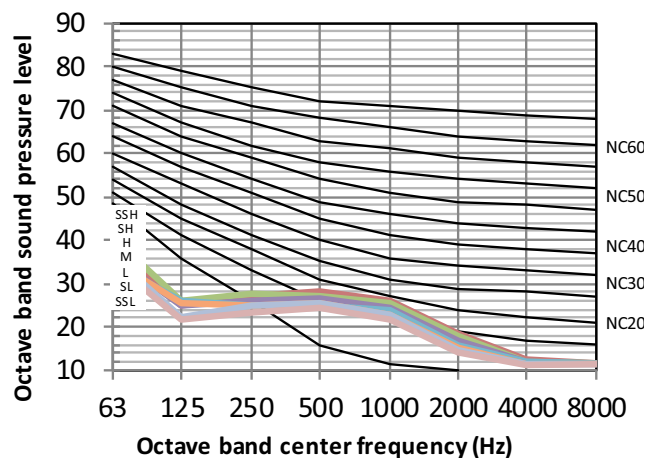


Fig. 10 —45VMW07

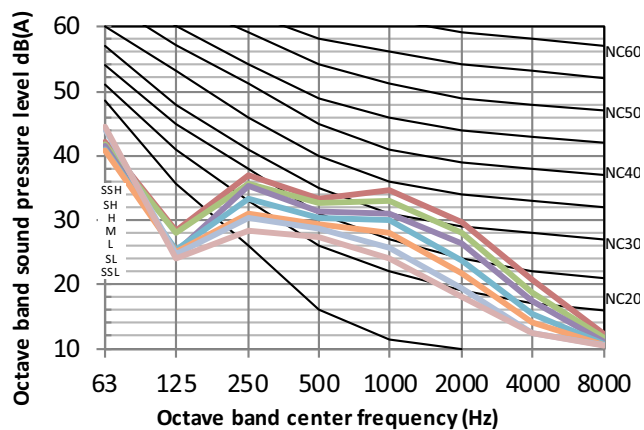


Fig. 8 —445VMW09

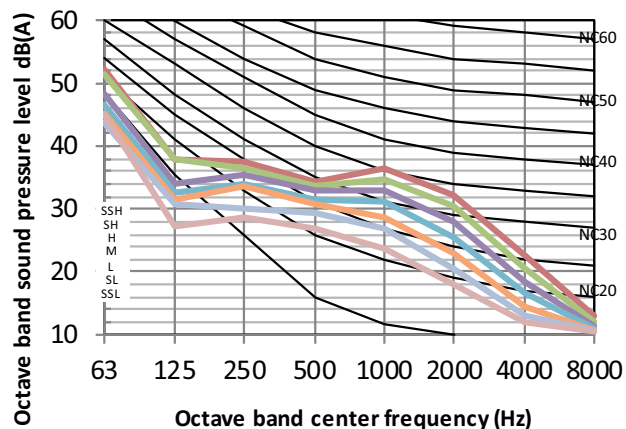


Fig. 11 —45VMW12

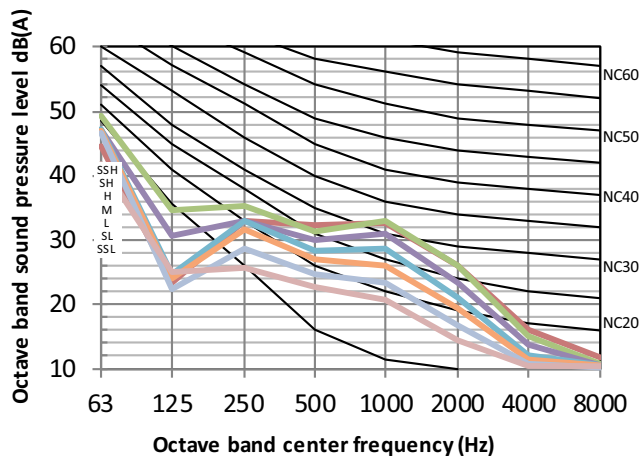


Fig. 9 —45VMW15

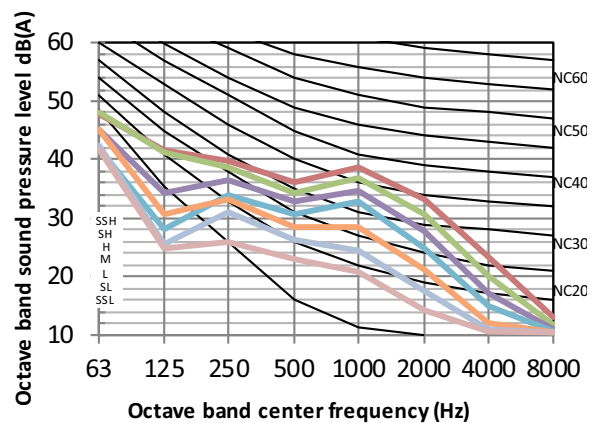


Fig. 12 —45VMW18

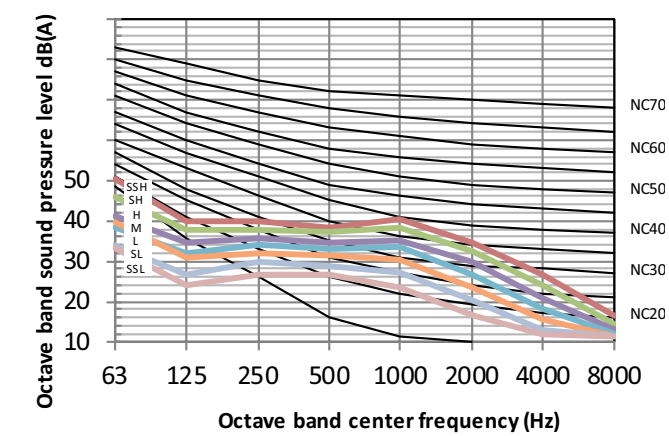


Fig. 13 —45VMW24

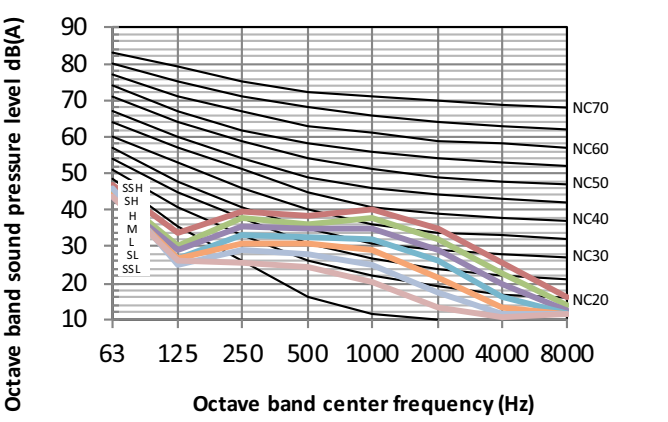
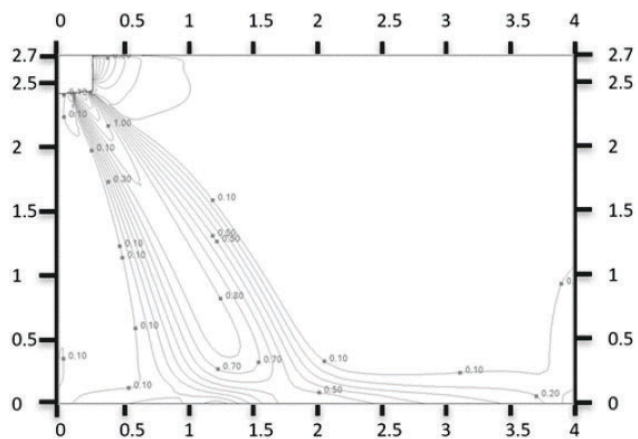
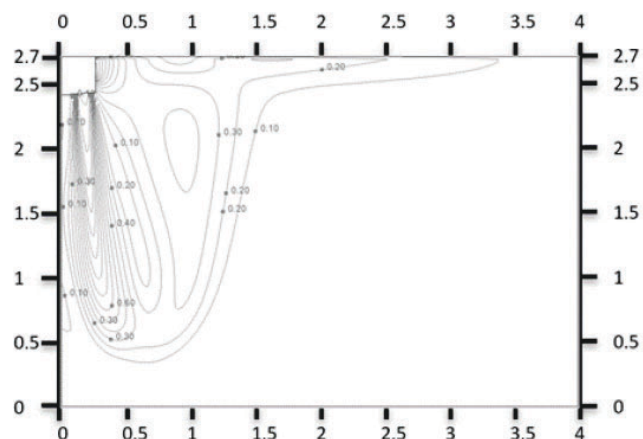
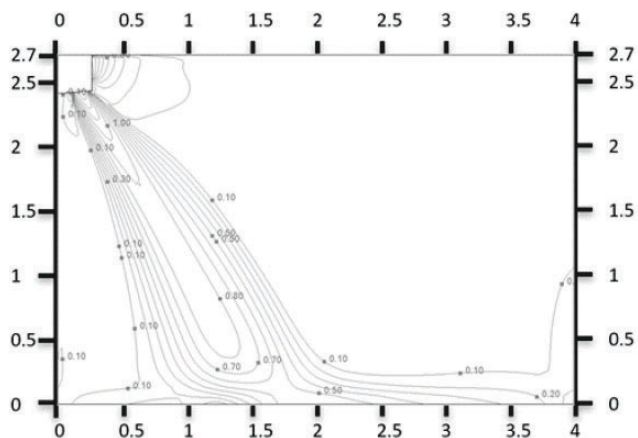
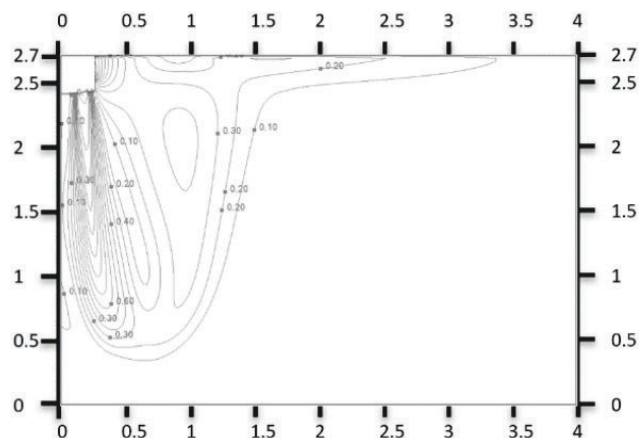
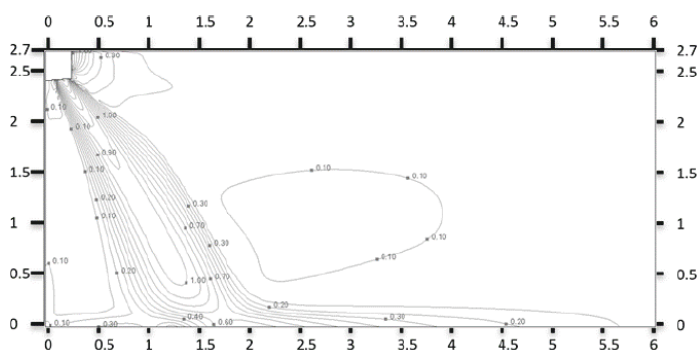
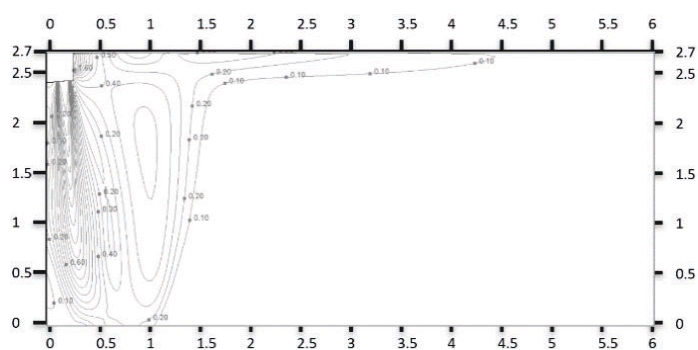


Fig. 14 —45VMW30

TEMPERATURE AND AIRFLOW DISTRIBUTIONS
SIMULATED CONDITIONS

Table 8 — Wall Mounted Simulated Conditions

Model name	Room size (in.)	Ceiling height (in.)	Flow angle (Cooling/Heating)	Placing
45VMW05	157-1/2×157-1/2	106-5/16	58°/88°	Wall mounted
45VMW07	177-3/16×177-3/16			
45VMW09	196-7/8×196-7/8			
45VMW12	216-9/16×216-9/16			
45VMW15	236-1/4×236-1/4			
45VMW18	314-15/16×314-15/16			
45VMW18	314-15/16×314-15/16			
45VMW30	314-15/16×314-15/16			

AIRFLOW DISTRIBUTIONS (unit: m/s)**Fig. 15 —45VMW05 Cooling at 300s****Fig. 18 —45VMW05 Heating at 300s****Fig. 16 —45VMW07 Cooling at 300s****Fig. 19 —45VMW07 Heating at 300s****Fig. 17 —45VMW09 Cooling at 300s****Fig. 20 —45VMW09 Heating at 300s**

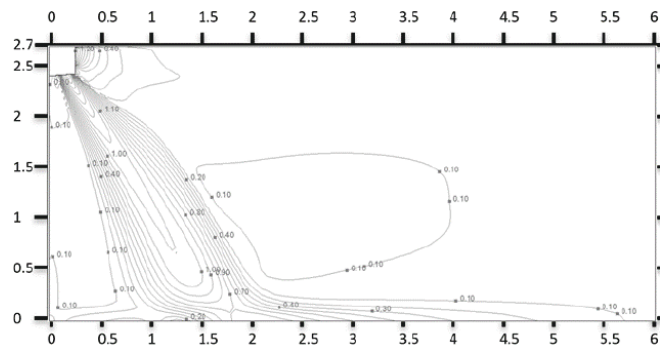


Fig. 21 —45VMW12 Cooling at 300s

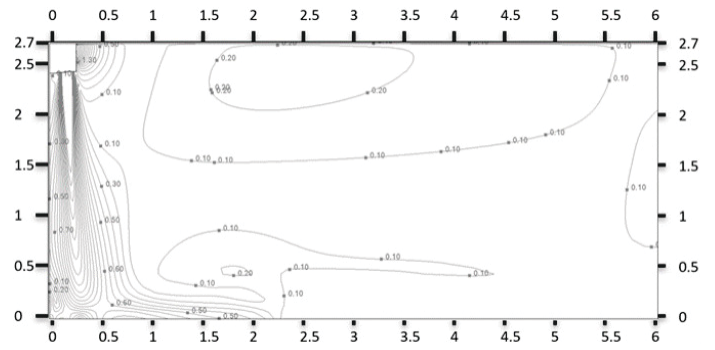


Fig. 26 —45VMW12 Heating at 300s

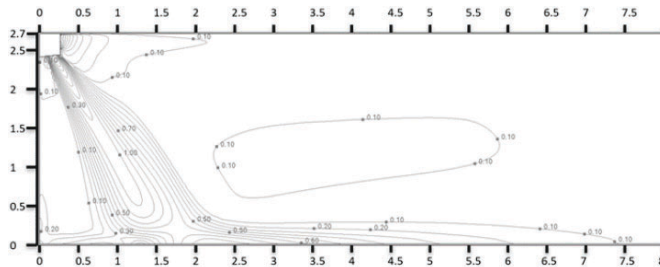


Fig. 22 —45VMW15 Cooling at 300s

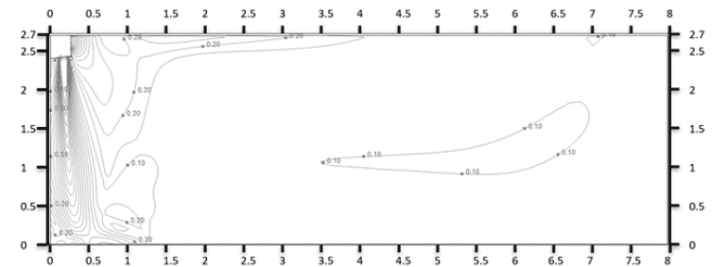


Fig. 27 —45VMW15 Heating at 300s

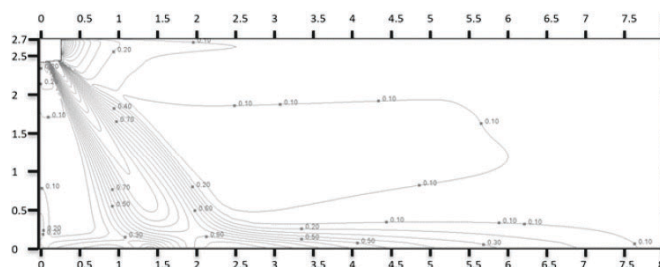


Fig. 23 —45VMW18 Cooling at 300s

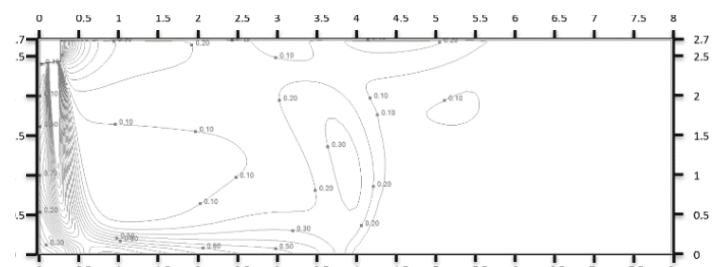


Fig. 28 —45VMW18 Heating at 300s

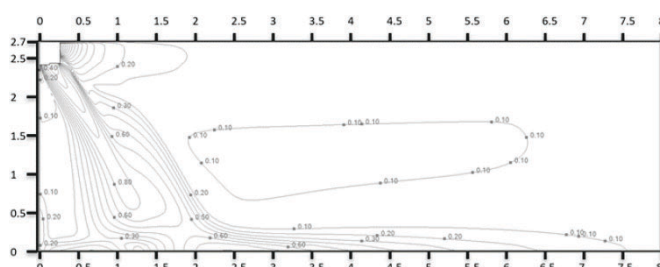


Fig. 24 —45VMW24 Cooling at 300s

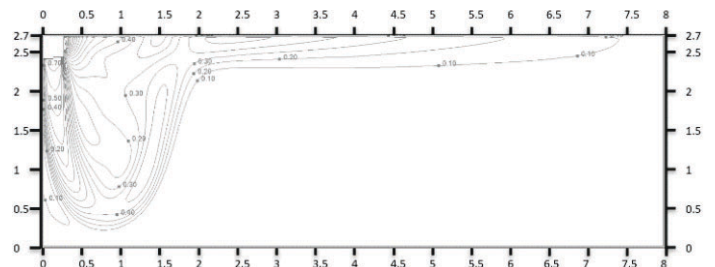


Fig. 29 —45VMW24 Heating at 300s

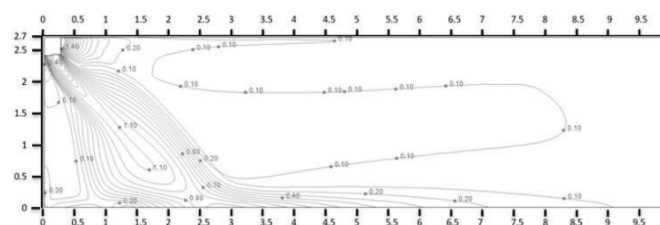


Fig. 25 —45VMW30 Cooling at 300s

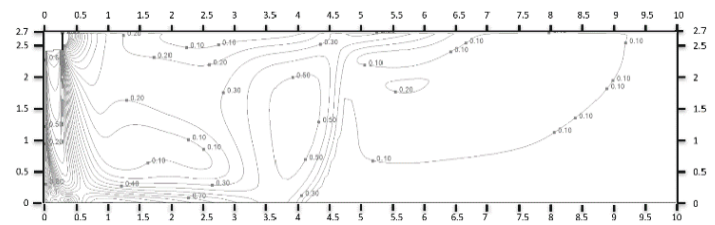
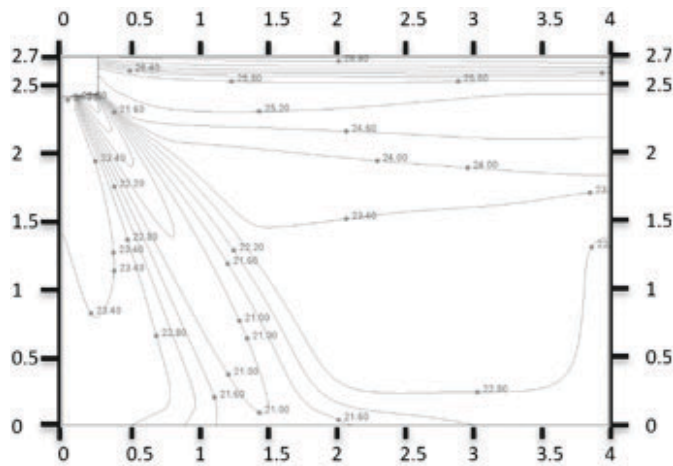
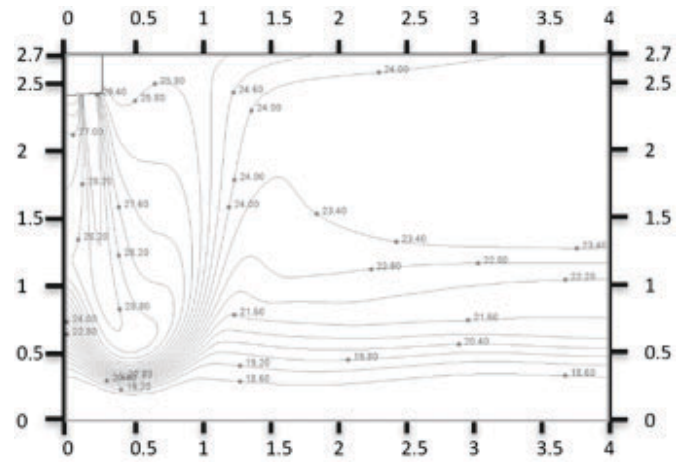
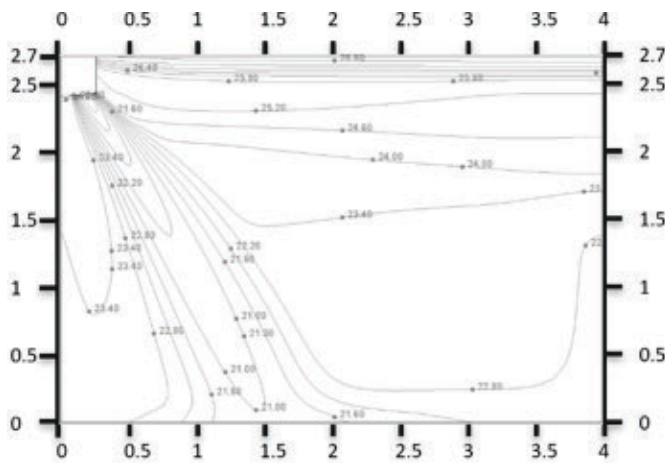
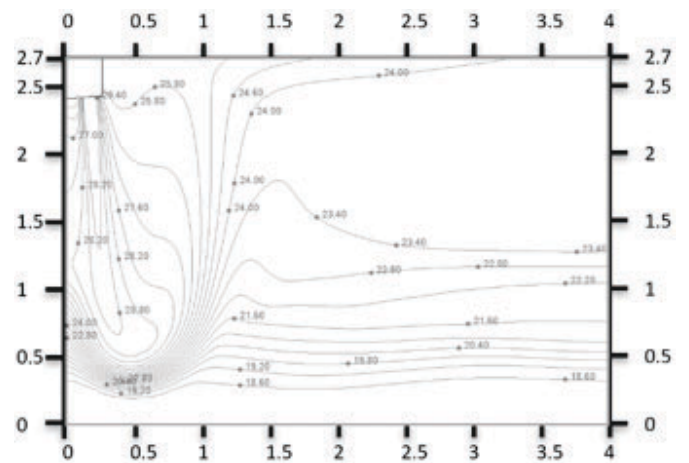
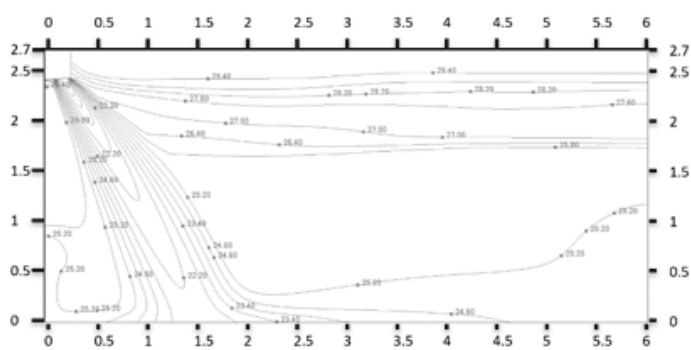
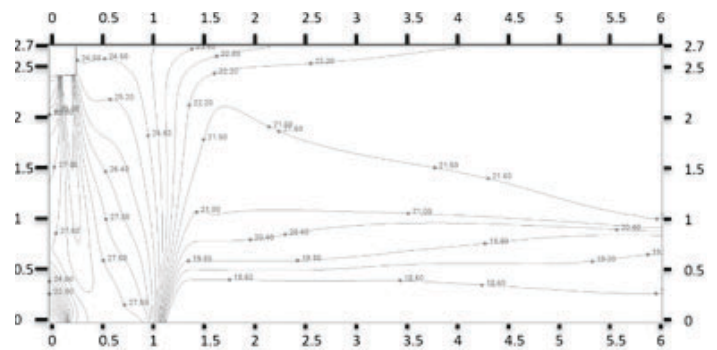


Fig. 30 —45VMW30 Heating at 300s

TEMPERATURE DISTRIBUTIONS (unit: °C)**Fig. 31 —45VMW05 Cooling at 300s****Fig. 34 —45VMW05 Heating at 300s****Fig. 32 —45VMW07 Cooling at 300s****Fig. 35 —45VMW07 Heating at 300s****Fig. 33 —45VMW09 Cooling at 300s****Fig. 36 —45VMW09 Heating at 300s**

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

