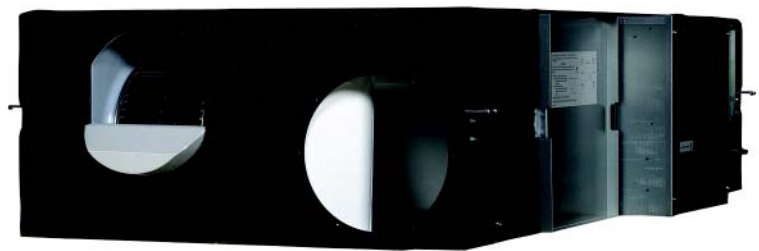




Ventilation Technical Data

Heat reclaim ventilation, humidification and air processing



EEDEN14-205

VKM-GBM

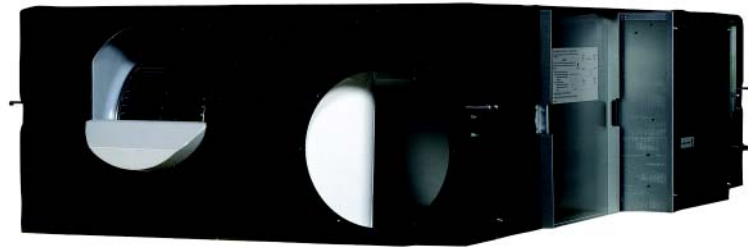
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VKM-GBM

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1 Features

- Energy saving ventilation using indoor heating, cooling and moisture recovery
- Creates a high quality indoor environment by pre conditioning incoming fresh air
- Humidification of the incoming air results in comfortable indoor humidity level, even during heating
- Ideal solution for shops, restaurants or offices requiring maximum floor space for furniture, decorations and fittings
- Free cooling possible when outdoor temperature is below indoor temperature (eg. during nighttime)
- Low energy consumption thanks to DC fan motor
- Prevent energy losses from over-ventilation while maintaining indoor air quality with optional CO2 sensor
- Shorter installation time thanks to easy adjustment of nominal air flow rate, so less need for dampers compared with traditional installation.
- Specially developed heat exchange element with High Efficiency Paper (HEP)
- Can operate in over- and under pressure
- Total solution for fresh air with Daikin supply of both VAM / VKM and electrical heaters



1

2 Specifications

2-1 Technical Specifications					VKM50GBM	VKM80GBM	VKM100GBM
Power input - 50Hz	Heat exchange mode	Nom.	Ultra high	kW	0.270	0.330	0.410
			High	kW	0.230	0.280	0.365
			Low	kW	0.170	0.192	0.230
	Bypass mode	Nom.	Ultra high	kW	0.270	0.330	0.410
			High	kW	0.230	0.280	0.365
			Low	kW	0.170	0.192	0.230
Fresh air conditioning load	Cooling			kW	4.71 (1) / 1.91 (2) / 3.5 (3)	7.46 (1) / 2.96 (2) / 5.6 (3)	9.12 (1) / 3.52 (2) / 7.0 (3)
	Heating			kW	5.58 (1) / 2.38 (2) / 3.5 (3)	8.79 (1) / 3.79 (2) / 5.6 (3)	10.69 (1) / 4.39 (2) / 7.0 (3)
Temperature exchange efficiency - 50Hz	Ultra high			%	76	78	74
	High			%	76	78	74
	Low			%	77.5	79	76.5
Enthalpy exchange efficiency - 50Hz	Cooling	Ultra high		%	64	66	62
		High		%	64	66	62
		Low		%	67	68	66
	Heating	Ultra high		%	67	71	65
		High		%	67	71	65
		Low		%	69	73	69
Operation mode					Heat exchange mode / Bypass mode / Fresh-up mode		
Heat exchange system					Air to air cross flow total heat (sensible + latent heat) exchange		
Heat exchange element					Specially processed non-flammable paper		
Humidifier	System				Natural evaporating type		
	Amount			kg/h	2.7	4.0	5.4
	Feed water pressure			MPa	0.02 ~ 0.49		
	Elements		Quantity		1		2
Connection ratio	Outdoor units	with only ventilation units connected	Minimum	%	50		
			Maximum	%	130		
	Ventilation units	when combined with VRV® indoor units	Maximum	%	130		
Casing	Material				Galvanised steel plate		
Dimensions	Unit	Height		mm	387		
		Width		mm	1,764		
		Depth		mm	832	1,214	
Weight	Unit			kg	100	119	123
Heat exchanger	Type				Cross fin coil		
	Rows	Quantity			2		
	Stages	Quantity			12		
	Fin pitch			mm	2.2		
	Face area			m ²	0.078	0.118	0.165
	Fan	Type				Sirocco fan	
Air flow rate - 50Hz		Heat exchange mode	Ultra high	m ³ /h	500	750	950
			High	m ³ /h	500	750	950
			Low	m ³ /h	440	640	820
		Bypass mode	Ultra high	m ³ /h	500	750	950
			High	m ³ /h	500	750	950
			Low	m ³ /h	440	640	820
External static pressure - 50Hz		Ultra high		Pa	200	205	110
		High		Pa	150	155	70
		Low		Pa	120	105	60

2 Specifications

2-1 Technical Specifications				VKM50GBM	VKM80GBM	VKM100GBM	
Fan motor	Quantity			2			
	Output	50 Hz	W	210			
Sound pressure level - 50Hz	Heat exchange mode	Ultra high	dBA	38	40		
		High	dBA	36	37.5	38	
		Low	dBA	34	35.5	35	
	Bypass mode	Ultra high	dBA	39	41		
		High	dBA	36	38	39	
		Low	dBA	34.5	36	35.5	
Operation range	Around unit		°CDB	0°C~40°CDB, 80% RH or less			
	Supply air		°CDB	-15°C~40°CDB, 80% RH or less			
	Return air		°CDB	0°C~40°CDB, 80% RH or less			
	On coil temperature	Cooling	Max.	°CDB	-15		
		Heating	Min.	°CDB	43 (30)		
Refrigerant	Control			Electronic expansion valve			
	Type			R-410A			
Connection duct diameter			mm	200	250		
Piping connections	Liquid	Type		C1220T (Flare connection)			
		OD	mm	6.35			
	Gas	Type		C1220T (Flare connection)			
		OD	mm	12.7			
	Water supply		mm	6.4			
	Drain			PT3/4 external thread			
Insulation material				Self-extinguishable urethane foam			

Standard Accessories : Water supply piping insulation cover;

Standard Accessories : Sealing material;

Standard Accessories : Operation manual;

Standard Accessories : Clamps;

Standard Accessories : Installation manual;

Standard Accessories : Half union joint (copper piping);

Standard Accessories : Duct connecting flange;

Standard Accessories : M4 tapping screw to connect duct;

Standard Accessories : Flare nut (copper piping joint);

Standard Accessories : Refrigerant piping insulation cover;

Standard Accessories : Water supply piping with strainer;

2-2 Electrical Specifications				VKM50GBM	VKM80GBM	VKM100GBM	
Power supply	Name			V1			
	Phase			1~			
	Frequency	Hz		50			
	Voltage		V	220-240			
Voltage range	Min.	%		-10			
	Max.	%		10			
Current	Minimum circuit amps (MCA)		A	3.25			
	Maximum fuse amps (MFA)		A	15			
	Fan motor rated output		kW	0.210x2			
	Full load amps (FLA)	Fan motor		A	1.3		
		Fan motor 2		A	1.3		
	Normal amps - 50Hz	Heat exchange mode	Ultra high	A	1.66	1.90	2.43
			High	A	1.43	1.63	2.21
			Low	A	1.07	1.16	1.48
		Bypass mode	Ultra high	A	1.73	2.17	2.43
High			A	1.46	1.81	2.21	
Low			A	1.10	1.29	1.48	

2 Specifications

Notes

- (1) Cooling and heating capacities are based on the following conditions. Fan is based on High and Ultra-high
- (2) This value indicates the heat reclaimed from the heat recovery ventilator.
- (3) Use this value to calculate the capacity as indoor unit.
- (4) Cooling: indoor temp. 27°CDB, 19°CWB; outdoor temp. 35°CDB
- (5) Heating: indoor temp. 20°CDB; outdoor temp. 7°CDB, 6°CWB
- (6) Humidifying capacity: indoor temp. 20°CDB, 15°CWB; outdoor temperature 7°CDB, 6°CWB
- (7) Operation sound measured at 1.5m below the center of the unit is converted to that measured in an anechoic chamber, built in accordance with JIS C1502 condition.
- (8) The actual operation sound varies depending on the surrounding conditions (near running unit's sound, reflected sound etc.) and is normally higher than this value.
- (9) For operation in a quiet room, it is required to take measures to lower the sound. For more details, refer to the data book
- (10) The sound level at the air discharge port is about 8-11dB higher than operating sound of the unit. For operation in a quiet room, it is required to take measures to lower the sound, for example install more than 2m soft duct near the air discharge grille.
- (11) Air flow rate can be changed to Low mode or High mode.
- (12) Normal amplitude, input and efficiency depend on the mentioned conditions.
- (13) The specifications, designs and information here are subject to change without notice.
- (14) Temperature Exchange Efficiency is a mean value in cooling and heating
- (15) Efficiency is measured under following condition: ratio of rated external static pressure has been kept as follows: outdoor side to indoor side = 7 to 1
- (16) Feed clean water. If the supply water is hard water, use a water softener because of short life. Life of humidifying element is about 3 years (4,000 hours, under the supply water conditions of hardness: 150mg/l).
- (17) Life of humidifying element is about 1 year (1,500 hours), under the supply water conditions of hardness: 400mg/l.
- (18) Annual operating hours: 10 hours/day x 26 days/month x 5 months = 1300 hours
- (19) In heating operation, freezing of the outdoor unit coil increases, heating capacity decreases and the system goes into defrost operation.
- (20) In defrost operation the fans of the units continue driving (factory settings). Purpose is to maintain the amount of ventilation & humidification.
- (21) When connected to VRV heat recovery outdoor unit, bring the RA (exhaust gas intake) of this unit directly in from the ceiling, connect to BS unit identical to the VRV indoor unit (master unit), and use group-linked operation. See the engineering data for details.
- (22) When connecting the indoor unit directly to the duct, always take the same system on the indoor unit as with the outdoor unit.
- (23) Perform group-linked operation and make the direct duct connection settings from the remote controller. (Mode No. '17 (27)' - first code n°5; second code n°6)
- (24) Also, do not connect to the outlet side of the indoor unit. Depending on the fan strength and static pressure, the unit might back up
- (25) Voltage range: units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits.
- (26) Maximum allowable voltage range variation between phases is 2%.
- (27) MCA/MFA: $MCA = 1.25 \times FLA(FM1) + FLA(FM2)$; $MFA \leq 4 \times FLA$; next lower standard fuse rating: min. 15A
- (28) Select wire size based on the value of MCA
- (29) Instead of a fuse, use a circuit breaker
- (30) At 80% RH
- (31) Specifications measured at fan curve 8 (factory settings)

3 Electrical data

3 - 1 Electrical Data

3

VKM-GBM

Model	Power supply					IFM		Input (W)
	Hz	Volts	Voltage range	MCA	MFA	KW	FLA	
VKM50GBM	50	220 ~ 240V	Max. 264W Min. 198V	3.25	15	0.21 x 2	1.3 x 2	270
VKM80GBM				3.25	15	0.21 x 2	1.3 x 2	330
VKM100GBM				3.25	15	0.21 x 2	1.3 x 2	410

SYMBOLS

MCA : Min. Circuit Amps (A)
MFA : Max. Fuse Amps (See note 5)
kW : Fan Motor Rated Output (kW)
FLA : Full Load Amps (A)
IFM : Indoor Fan Motor

NOTES

1. Voltage range
Units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.
2. Maximum allowable voltage unbalance between phases is 2%.
3. MCA/MFA
 $MCA = 1.25 \times FLA_{(FM1)} + FLA_{(FM2)}$
 $MFA \leq 4 \times FLA$
 (Next lower standard fuse rating. Min. 15A)
4. Select wire size based on the MCA.
5. Instead of fuse, use circuit breaker.

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4 Options

4 - 1 Options

VKM-GB(M)			
Member		Applicable model	VKM50, 80, 100GBM VKM50, 80, 100GB
Controlling device	Remote control		BRC1D52/BRC1E52 (**1)
	Centralized controlling device	Central remote control	DCS302CA51/DCS302CA61
		Unified ON/OFF controller	DCS301BA51/DCS301BA61
		Schedule Timer	DST301BA51/DST301BA61
	PC Board Adapter	Wiring adapter for electrical appendices	
For ON signal output			
For heater control kit			

Member		Applicable model	VKM50GBM VKM50GB	VKM80GBM VKM80GB	VKM100GBM VKM100GB
Additional function	Silencer		—	KDDM24B100	
		Nominal pipe diameter (mm)	—	Ø 250 mm	
	Air suction/ Discharge grill	White	K-DGL200C	K-DGL250C	
		Nominal pipe diameter (mm)	Ø 200	Ø 250	
CO ₂ Sensor (**2)			BRYMA65	BRYMA100	

NOTES

** 1 Necessary when operating Heat Reclaim Ventilation(VKM) independently.
When operating interlocked with other air conditioners, use the remote controls of the air conditioners.

** 2 For more info on CO₂ sensor, refer to HRV design guide.

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5 Capacity tables

5 - 1 Cooling Capacity Tables

5

VKM-GB(M)

Model	Outdoor °CWB	Coil inlet air temp													
		14.0°CWB		16.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		22.0°CWB		24.0°CWB	
		20.0°CDB		23.0°CDB		26.0°CDB		27.0°CDB		28.0°CDB		30.0°CDB		32.0°CDB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
50	10.0	1.9	1.5	2.3	1.8	2.6	2.0	2.8	2.0						
	12.0	1.9	1.5	2.3	1.8	2.6	2.0	2.8	2.0						
	14.0	1.9	1.5	2.3	1.8	2.6	2.0	2.8	2.0	3.0	2.0				
	16.0	1.9	1.5	2.3	1.8	2.6	2.0	2.8	2.0	3.0	2.0				
	18.0	1.9	1.5	2.3	1.8	2.6	2.0	2.8	2.0	3.0	2.0				
	20.0	1.9	1.5	2.3	1.8	2.6	2.0	2.8	2.0	3.0	2.0				
	21.0			2.3	1.8	2.6	2.0	2.8	2.0	3.0	2.0				
	23.0			2.3	1.8	2.6	2.0	2.8	2.0	3.0	2.0	3.3	2.1		
	25.0			2.3	1.8	2.6	2.0	2.8	2.0	3.0	2.0	3.3	2.0		
	27.0			2.3	1.8	2.6	2.0	2.8	2.0	3.0	2.0	3.2	2.0		
	29.0			2.3	1.8	2.6	2.0	2.8	2.0	3.0	2.0	3.2	2.0		
	31.0			2.3	1.8	2.6	2.0	2.8	2.0	3.0	2.0	3.1	2.0		
	33.0			2.3	1.8	2.6	2.0	2.8	2.0	3.0	2.0	3.1	2.0	3.1	1.8
	35.0					2.6	2.0	2.8	2.0	3.0	2.0	3.0	1.9	3.1	1.8
37.0					2.6	2.0	2.8	2.0	2.9	2.0	3.0	1.9	3.0	1.8	
39.0					2.6	2.0	2.8	2.0	2.9	2.0	2.9	1.9	3.0	1.8	
80	10.0	3.0	2.7	3.6	3.0	4.2	3.2	4.5	3.2						
	12.0	3.0	2.7	3.6	3.0	4.2	3.2	4.5	3.2						
	14.0	3.0	2.7	3.6	3.0	4.2	3.2	4.5	3.2	4.8	3.3				
	16.0	3.0	2.7	3.6	3.0	4.2	3.2	4.5	3.2	4.8	3.2				
	18.0	3.0	2.7	3.6	3.0	4.2	3.2	4.5	3.2	4.8	3.2				
	20.0	3.0	2.7	3.6	3.0	4.2	3.2	4.5	3.2	4.8	3.2				
	21.0			3.6	3.0	4.2	3.2	4.5	3.2	4.8	3.2				
	23.0			3.6	3.0	4.2	3.2	4.5	3.2	4.8	3.2	5.3	3.2		
	25.0			3.6	3.0	4.2	3.2	4.5	3.2	4.8	3.2	5.2	3.2		
	27.0			3.6	3.0	4.2	3.2	4.5	3.2	4.8	3.2	5.1	3.1		
	29.0			3.6	3.0	4.2	3.2	4.5	3.2	4.8	3.2	5.1	3.1		
	31.0			3.6	3.0	4.2	3.2	4.5	3.2	4.8	3.2	5.0	3.1		
	33.0			3.6	3.0	4.2	3.2	4.5	3.2	4.8	3.2	4.9	3.0	5.0	2.8
	35.0					4.2	3.2	4.5	3.2	4.7	3.2	4.8	3.0	4.9	2.8
37.0					4.2	3.2	4.5	3.2	4.6	3.2	4.8	3.0	4.9	2.8	
39.0					4.2	3.2	4.5	3.2	4.6	3.2	4.7	2.9	4.9	2.7	
100	10.0	3.9	3.2	4.5	3.6	5.2	4.0	5.6	4.0						
	12.0	3.9	3.2	4.5	3.6	5.2	4.0	5.6	4.0						
	14.0	3.9	3.2	4.5	3.6	5.2	4.0	5.6	4.0	6.0	4.0				
	16.0	3.9	3.2	4.5	3.6	5.2	4.0	5.6	4.0	6.0	4.0				
	18.0	3.9	3.2	4.5	3.6	5.2	4.0	5.6	4.0	6.0	4.0				
	20.0	3.9	3.2	4.5	3.6	5.2	4.0	5.6	4.0	6.0	4.0				
	21.0			4.5	3.6	5.2	4.0	5.6	4.0	6.0	4.0				
	23.0			4.5	3.6	5.2	4.0	5.6	4.0	6.0	4.0				
	25.0			4.5	3.6	5.2	4.0	5.6	4.0	6.0	4.0	6.5	4.0		
	27.0			4.5	3.6	5.2	4.0	5.6	4.0	6.0	4.0	6.4	4.0		
	29.0			4.5	3.6	5.2	4.0	5.6	4.0	6.0	4.0	6.3	3.9		
	31.0			4.5	3.6	5.2	4.0	5.6	4.0	6.0	4.0	6.2	3.9		
	33.0			4.5	3.6	5.2	4.0	5.6	4.0	6.0	4.0	6.1	3.8	6.3	3.6
	35.0					5.2	4.0	5.6	4.0	5.9	3.9	6.0	3.8	6.2	3.6
37.0					5.2	4.0	5.6	4.0	5.8	3.9	5.9	3.7	6.1	3.5	
39.0					5.2	4.0	5.6	4.0	5.7	3.9	5.8	3.7	6.0	3.5	

NOTES - HINWEISE - ΣΗΜΕΙΩΣΕΙΣ - NOTAS - REMARQUES - NOTE - OPMERKINGEN - ПРИМЕЧАНИЯ - NOTLAR

1. Cooling and heating capacities are based on the following conditions. Fan is based on High and Ultra-high. The figures in the parenthesis indicate the heat reclaimed from the heat recovery ventilator. When calculating the capacity as indoor units, use the following figures:

Die Kühl- und Heizleistung basiert auf den folgenden Bedingungen. Der Ventilator basiert auf Hoch und Ultra-Hoch. Die Zahlen in Klammern geben die vom Wärmerückgewinnungsventilator rückgewonnene Wärme an. Verwenden Sie bei der Berechnung der Leistung als Innengeräte die folgenden Zahlen:

Οι αποδόσεις ψύξης και θέρμανσης βασίζονται στις ακόλουθες συνθήκες. Ο ανεμιστήρας βασίζεται σε υψηλό και εξαιρετικά υψηλό. Οι αριθμοί στην παρένθεση υποδεικνύουν τη θέρμανση που ανακτάται από τον ανεμιστήρα ανάκτησης θερμότητας. Κατά τον υπολογισμό της απόδοσης των εσωτερικών μονάδων, χρησιμοποιήστε τους ακόλουθους αριθμούς:

Las capacidades de calefacción y refrigeración se basan en las condiciones siguientes. El ventilador está en modo de funcionamiento alto o muy alto. Las cifras entre paréntesis indican el calor recuperado del ventilador de recuperación de calor. Cuando calcule la capacidad en el caso de unidades interiores, utilice las siguientes cifras:

Les puissances frigorifiques et calorifiques sont basées sur les conditions suivantes. Le ventilateur est basé sur Elevé et Très élevé. Les chiffres entre parenthèses indiquent la chaleur récupérée du ventilateur-récupérateur de chaleur. Lors du calcul de la puissance des unités intérieures, utilisez les chiffres suivants :

2. Coil inlet air temp
Schlangeneinlasslufttemp
Θερμ. αέρα εισόδου στοιχείου
Temperatura del aire que entra en la batería
Température de l'air en entrée de bobine
Temp. aria in ingresso nella batteria
Inlaatluichtemp. spoel
Температура поступающего в змеевик воздуха
Serpantin giriş hava sıcaklığı

I valori della capacità di raffrescamento e riscaldamento si basano sulle condizioni descritte di seguito. Il ventilatore fa riferimento ai valori Alta e Altissima. Le cifre tra parentesi indicano il calore recuperato dall'unità di ventilazione a recupero di calore. Per il calcolo della capacità per le unità interne, utilizzare i dati seguenti:

De vermogens voor koelen en verwarmen zijn gebaseerd op de volgende situatie. Ventilatorwaarden op basis van Hoog en Ultrahoog. De cijfers tussen aanhalingstekens duiden op warmte die teruggewonnen is door de warmterugwinventilator. Gebruik voor de berekening van het vermogen voor de binnenunits de volgende cijfers:

Данные производительности по охлаждению и отоплению основаны на следующих условиях. Скорость вращения вентилятора - высокая или очень высокая. Цифры в скобках указывают тепло, полученное от вентилятора рекуперации тепла. При расчете производительности внутренних блоков используйте следующие данные:

Soğutma ve ısıtma kapasiteleri aşağıdaki koşullara bağlıdır. Fan Yüksek ve Ultra-Yüksek konumdadır. Parantez içinde verilen rakamlar ısı geri kazanım ventilatöründen elde edilen ısıyı göstermektedir. İç üniteler için kapasiteyi hesaplamak, aşağıdaki rakamları kullanın:

VKM50GB(M): 3.5kW
VKM80GB(M): 5.6kW
VKM100GB(M): 7.0kW

3. TC: Total capacity; kW - SHC: Sensible heat capacity
TC: Gesamtleistung; kW - SHC: Sensible Wärmekapazität
TC: Συνολική απόδοση; kW - SHC: Απόδοση αισθητής θέρμανσης
TC: Capacidad total; kW - SHC: Capacidad de calor sensible
TC: Puissance totale; kW - SHC: Puissance calorifique sensible
TC: Capacità totale; kW - SHC: Capacità termica sensibile
TC: Totaal vermogen; kW - SHC: Voelbaar verwarmingsvermogen
TC: Общая мощность; кВт - SHC: Производительность по сухому теплу
TC: Toplam kapasite; kW - SHC: Hissedilebilir ısı kapasitesi

5 Capacity tables

5 - 2 Heating Capacity Tables

VKM-GB(M)

Class	Capacity DX-Coil Only	Outdoor		Coil Inlet air temp. °CDB					
		°CDB	°CWB	16.0	18.0	20.0	21.0	22.0	24.0
50	2.8kW index 25	-14.7	-15.0	2.2	2.2	—	—	—	—
		-12.6	-13.0	2.3	2.3	—	—	—	—
		-10.5	-11.0	2.4	2.4	—	—	—	—
		-9.5	-10.0	2.5	2.4	—	—	—	—
		-8.5	-9.1	2.5	2.5	—	—	—	—
		-7.0	-7.6	2.6	2.6	2.7	—	—	—
		-5.0	-5.6	2.7	2.7	2.7	—	—	—
		-3.0	-3.7	2.8	2.8	3.0	3.0	—	—
		0.0	-0.7	3.0	3.0	3.1	3.1	—	—
		3.0	2.2	3.1	3.1	3.2	3.1	3.0	—
		5.0	4.1	3.3	3.2	3.2	3.1	3.0	—
		7.0	6.0	3.4	3.4	3.2	3.1	3.0	—
		9.0	7.9	3.5	3.4	3.2	3.1	3.0	—
		11.0	9.8	3.6	3.4	3.2	3.1	3.0	2.8
		13.0	11.8	3.6	3.4	3.2	3.1	3.0	2.8
15.0	13.7	3.6	3.4	3.2	3.1	3.0	2.8		
80	4.5kW index 40	-14.7	-15.0	3.4	3.4	—	—	—	—
		-12.6	-13.0	3.6	3.6	—	—	—	—
		-10.5	-11.0	3.7	3.7	—	—	—	—
		-9.5	-10.0	3.9	3.7	—	—	—	—
		-8.5	-9.1	3.9	3.9	—	—	—	—
		-7.0	-7.6	4.1	4.1	4.2	—	—	—
		-5.0	-5.6	4.2	4.2	4.2	—	—	—
		-3.0	-3.7	4.4	4.4	4.7	4.6	—	—
		0.0	-0.7	4.7	4.7	4.9	4.9	—	—
		3.0	2.2	4.9	4.9	5.0	4.9	4.7	—
		5.0	4.1	5.2	5.0	5.0	4.9	4.7	—
		7.0	6.0	5.3	5.3	5.0	4.9	4.7	—
		9.0	7.9	5.5	5.3	5.0	4.9	4.7	—
		11.0	9.8	5.7	5.3	5.0	4.9	4.7	4.4
		13.0	11.8	5.7	5.3	5.0	4.9	4.7	4.4
15.0	13.7	5.7	5.3	5.0	4.9	4.7	4.4		
100	5.6kW index 50	-14.7	-15.0	4.4	4.4	—	—	—	—
		-12.6	-13.0	4.6	4.6	—	—	—	—
		-10.5	-11.0	4.8	4.8	—	—	—	—
		-9.5	-10.0	5.0	4.8	—	—	—	—
		-8.5	-9.1	5.0	5.0	—	—	—	—
		-7.0	-7.6	5.2	5.3	—	—	—	—
		-5.0	-5.6	5.4	5.4	5.4	—	—	—
		-3.0	-3.7	5.6	5.6	6.0	—	—	—
		0.0	-0.7	6.0	6.0	6.2	6.2	—	—
		3.0	2.2	6.2	6.2	6.4	6.2	6.0	—
		5.0	4.1	6.6	6.4	6.4	6.2	6.0	—
		7.0	6.0	6.8	6.8	6.4	6.2	6.0	—
		9.0	7.9	7.0	6.8	6.4	6.2	6.0	—
		11.0	9.8	7.2	6.8	6.4	6.2	6.0	5.6
		13.0	11.8	7.2	6.8	6.4	6.2	6.0	5.6
15.0	13.7	7.2	6.8	6.4	6.2	6.0	5.6		

NOTES - HINWEISE - ΣΗΜΕΙΩΣΕΙΣ - NOTAS - REMARQUES - NOTE - OPMERKINGEN - ПРИМЕЧАНИЯ - NOTLAR

1. Cooling and heating capacities are based on the following conditions. Fan is based on High and Ultra-high. The figures in the parenthesis indicate the heat reclaimed from the heat recovery ventilator. When calculating the capacity as indoor units, use the following figures:

Die Kühl- und Heizleistung basiert auf den folgenden Bedingungen. Der Ventilator basiert auf Hoch und Ultra-Hoch. Die Zahlen in Klammern geben die vom Wärmerückgewinnungsventilator rückgewonnene Wärme an. Verwenden Sie bei der Berechnung der Leistung als Innengeräte die folgenden Zahlen:

Οι αποδόσεις ψύξης και θέρμανσης βασίζονται στις ακόλουθες συνθήκες. Ο ανεμιστήρας βασίζεται σε υψηλό και εξαιρετικά υψηλό. Οι αριθμοί στην παρένθεση υποδεικνύουν τη θέρμανση που ανακτάται από τον ανεμιστήρα ανάκτησης θερμότητας. Κατά τον υπολογισμό της απόδοσης των εσωτερικών μονάδων, χρησιμοποιήστε τους ακόλουθους αριθμούς:

Las capacidades de calefacción y refrigeración se basan en las condiciones siguientes. El ventilador está en modo de funcionamiento alto o muy alto. Las cifras entre paréntesis indican el calor recuperado del ventilador de recuperación de calor. Cuando calcule la capacidad en el caso de unidades interiores, utilice las siguientes cifras:

Les puissances frigorifiques et calorifiques sont basées sur les conditions suivantes. Le ventilateur est basé sur Élevé et Très élevé. Les chiffres entre parenthèses indiquent la chaleur récupérée du ventilateur-récupérateur de chaleur. Lors du calcul de la puissance des unités intérieures, utilisez les chiffres suivants :

2. Coil inlet air temp
Schlangeneinlasslufttemp
Θερμ. αέρα εισόδου στοιχείου
Temperatura del aire que entra en la batería
Température de l'air en entrée de bobine

I valori della capacità di raffreddamento e riscaldamento si basano sulle condizioni descritte di seguito. Il ventilatore fa riferimento ai valori Alta e Altissima. Le cifre tra parentesi indicano il calore recuperato dall'unità di ventilazione a recupero di calore. Per il calcolo della capacità per le unità interne, utilizzare i dati seguenti:

De vermogens voor koelen en verwarmen zijn gebaseerd op de volgende situatie. Ventilatorwaarden op basis van Hoog en Ultrahoog. De cijfers tussen aanhalingstekens duiden op warmte die teruggewonnen is door de warmterugwinventilator. Gebruik voor de berekening van het vermogen voor de binneneenheden de volgende cijfers:

Данные производительности по охлаждению и отоплению основаны на следующих условиях. Скорость вращения вентилятора - высокая или очень высокая. Цифры в скобках указывают тепло, полученное от вентилятора рекуперации тепла. При расчете производительности внутренних блоков используйте следующие данные:

Soğutma ve ısıtma kapasiteleri aşağıdaki koşullara bağlıdır. Fan Yüksek ve Ultra-Yüksek konumdadır. Parantez içinde verilen rakamlar ısı geri kazanım vantilatöründen elde edilen ısıyı göstermektedir. İç üniteler için kapasiteyi hesaplarken, aşağıdaki rakamları kullanın:

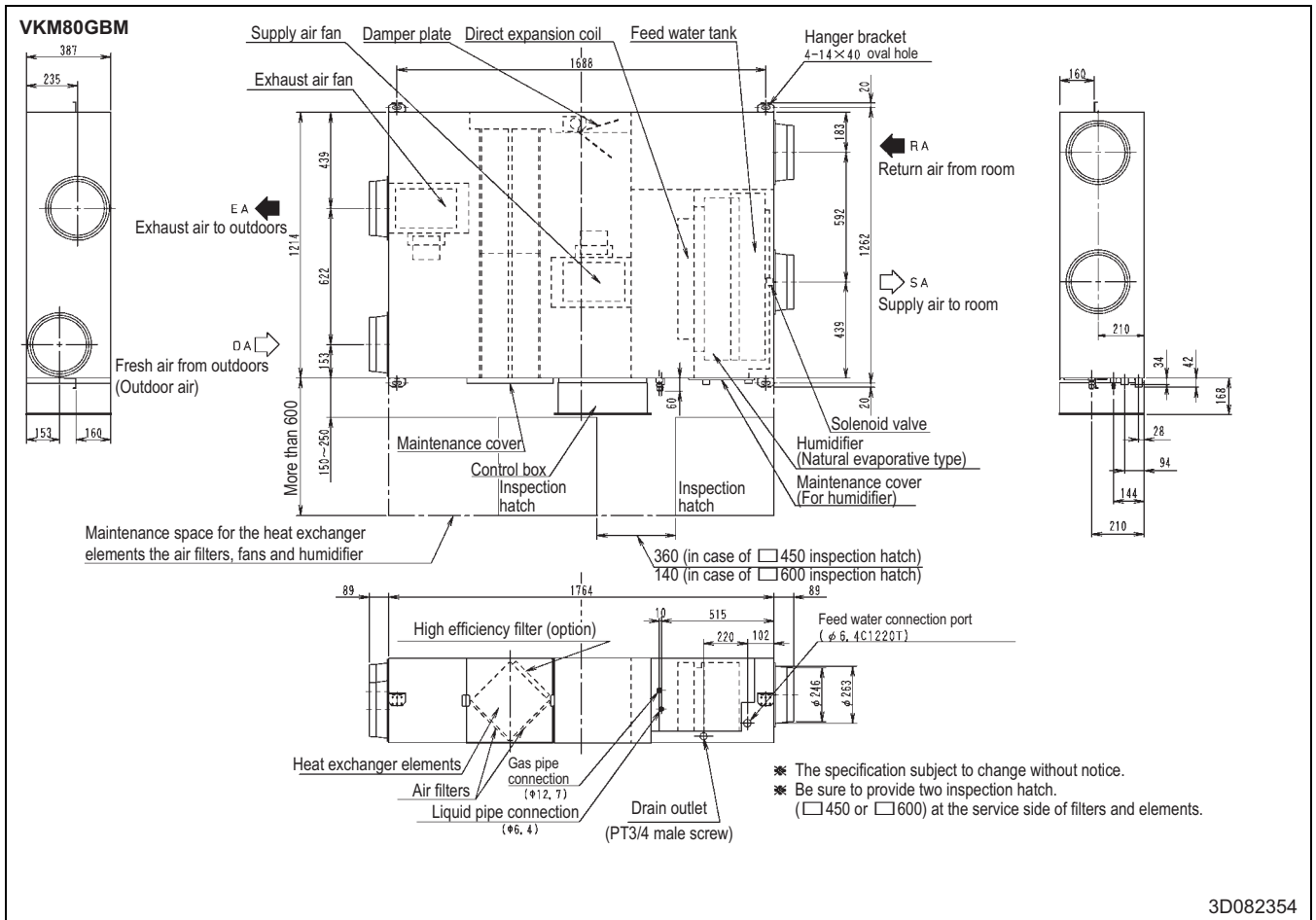
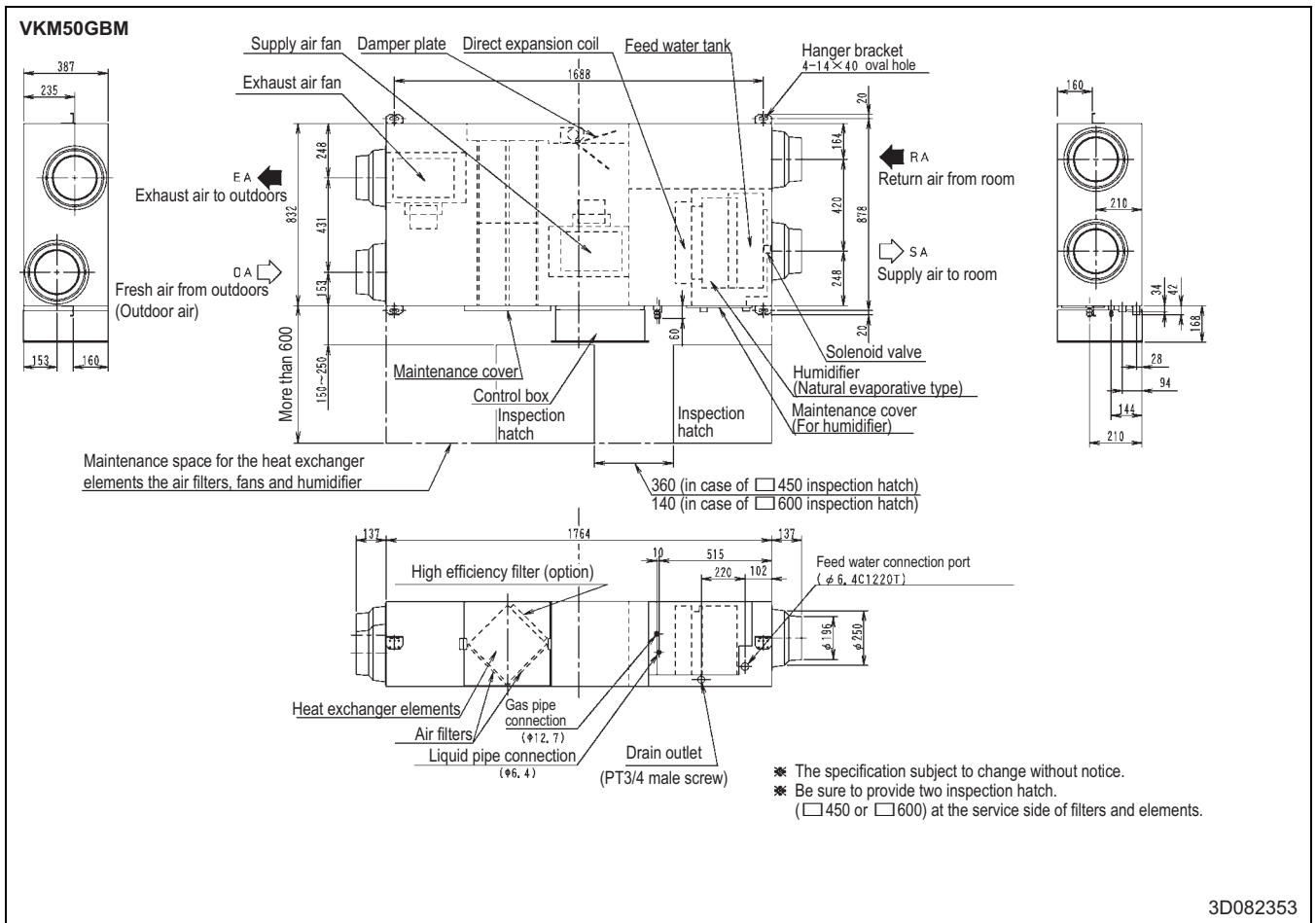
VKM50GB(M): 3.5kW
VKM80GB(M): 5.6kW
VKM100GB(M): 7.0kW

Temp. aria in ingresso nella batteria
Inlaatluchttemp. spoel
Температура поступающего в змеевик воздуха
Serpantin girişi hava sıcaklığı

6 Dimensional drawings

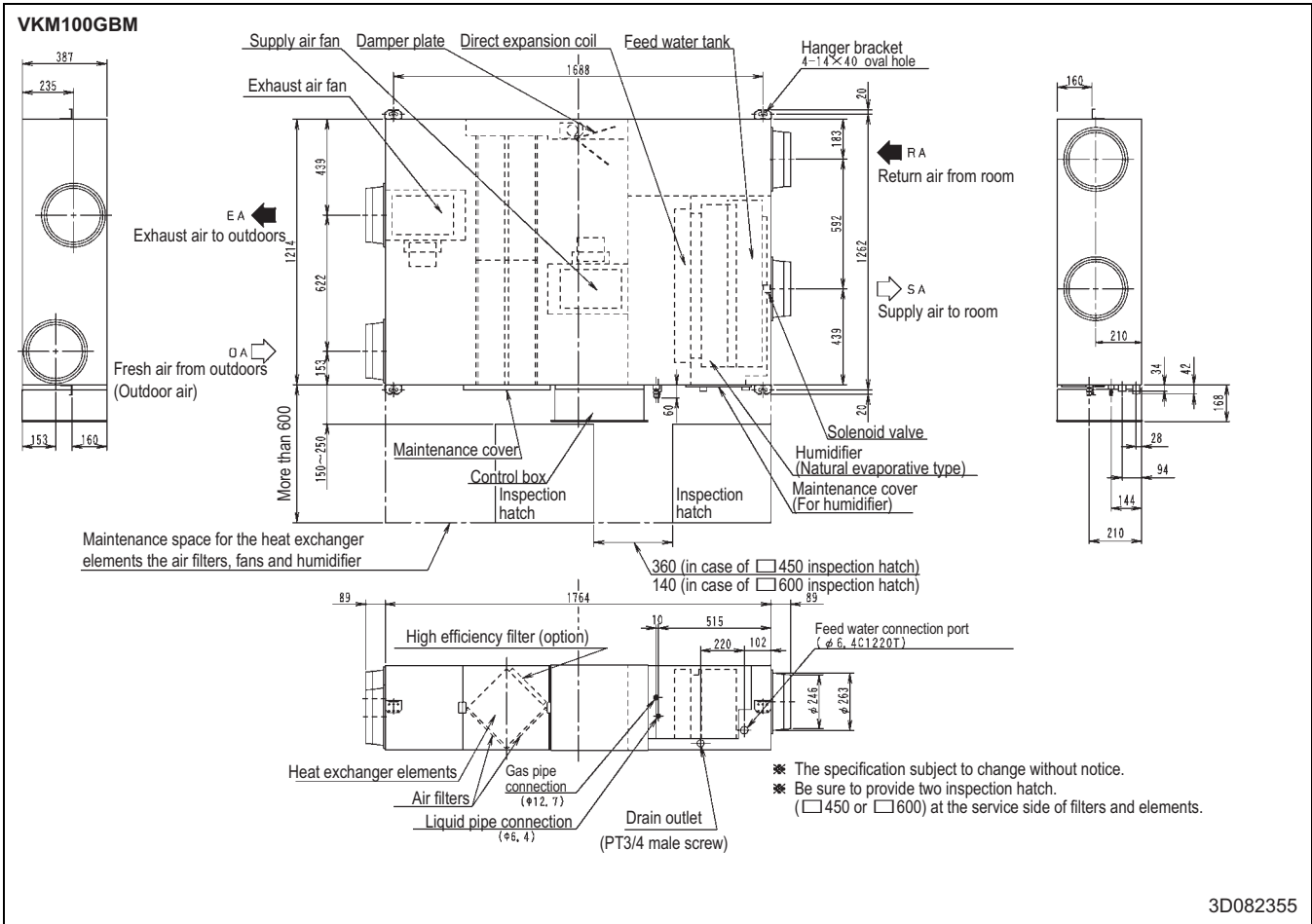
6 - 1 Dimensional Drawings

6



6 Dimensional drawings

6 - 1 Dimensional Drawings

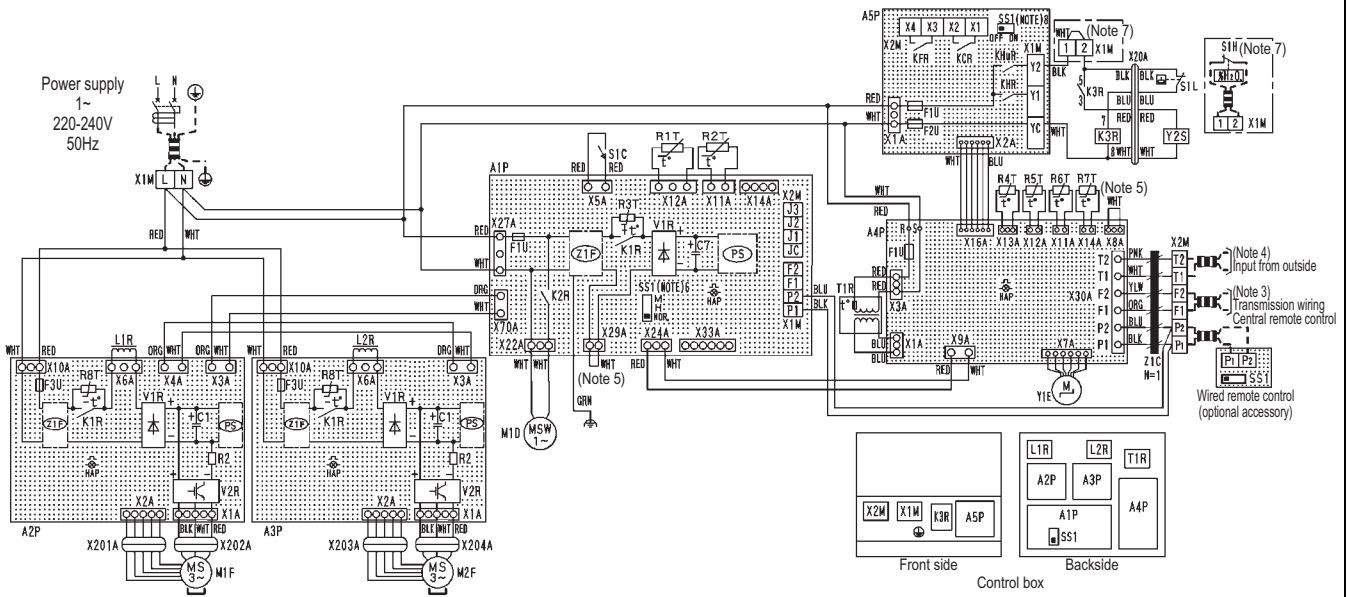


7 Wiring diagrams

7 - 1 Wiring Diagrams - Single Phase

7

VKM-GBM



A1P	Printed circuit board	L2R	Reactor	X1M	Terminal block (power supply)
A2P	Printed circuit board (Exhaust fan)	M1D	Motor (damper motor)	X1M	Terminal block (power supply) (S1H)
A3P	Printed circuit board (Supply fan)	M1F	Motor (exhaust fan)	X2M	Terminal block (operation)
A4P	Printed circuit board	M2F	Motor (supply fan)	X1M, X2M	Terminal block (operation) (A1P)
A5P	Printed circuit board	PS	Switching power supply (A1P, A2P, A3P)	X1M, X2M	Terminal block (operation) (A5P)
C1	Capacitor (A2P, A3P)	R2	Resistor (A2P, A3P)	X20A	Relaying connector
C7	Capacitor (A1P)	R1T	Thermistor (indoor air)	X201A~X204A	Relaying connector
F1U	Fuse T, 6.3A, 250V (A1P)	R2T	Thermistor (outdoor air)	Y1E	Electronic expansion valve
F1U	Fuse Ⓞ, 5A, 250V (A4P)	R3T	Thermistor (PTC) (A1P)	Y2S	Solenoid valve for feed water
F1U, F2U	Fuse Ⓞ, 5A, 250V (A5P)	R4T	Thermistor (coil indoor air)	Z1C	Ferrite core
F3U	Fuse T, 6.3A, 250V (A2P, A3P)	R5T	Thermistor (coil liquid pipe)	Z1F	Noise filter (A1P, A2P, A3P)
HAP	Pilot lamp (service monitor-green) (A1P)	R6T	Thermistor (coil gas pipe)		Remote control
HAP	Pilot lamp (service monitor-green) (A2P, A3P)	R7T	Thermistor (coil outdoor air)	SS1	Selector switch (remote control)
HAP	Pilot lamp (service monitor-green) (A4P)	R8T	Thermistor (NTC) (A2P, A3P)		Local purchase
K1R	Magnetic relay (A1P, A2P, A3P)	S1C	Limit switch (damper motor)	S1H	Humidity controller
K2R	Magnetic relay	S1L	Float switch (humidification)		Connector for option (A1P)
K3R	Magnetic relay (S1L)	SS1	Selector switch (A1P)	X14A	Connector (CO ₂ sensor)
KCR, KFR	Magnetic relay (A5P)	T1R	Transformer (220-240V/22V)	X33A	Connector (adapter for wiring)
KHR, KHuR	Magnetic relay (A5P)	V1R	Diode bridge (A1P, A2P, A3P)		
L1R	Reactor	V2R	Power module (A2P, A3P)		

NOTES

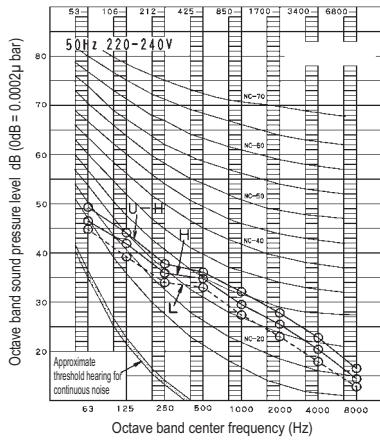
- : connector, : terminal, : short circuit connector
- -- : field wiring
- In case using central remote control, connect it to the unit in accordance with the attached manual.
- When connecting the input wires from outside, forced OFF or ON/OFF control operation can be selected by remote control. In details, refer to the installation manual attached to the unit.
- Do not remove short circuit connector of X8A (A4P), X29A (A1P). If removed, the unit will not work.
- SS1(A1P) has already been set to "NOR". At factory set, the unit will not work if the settings are changed.
- In case attached humidity controller, remove short circuit line of between X1M (1) and X1M(2).
- SS1(A5P) has already been set to "OFF". At factory set, humidifying becomes impossible, if the settings are changed.
- Symbols shown as follows
BLK: BLACK, RED: RED, BLU: BLUE, WHT: WHITE, YLW: YELLOW, ORG: ORANGE, GRN: GREEN.

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8 Sound data

8 - 1 Sound Pressure Spectrum

VKM50GBM

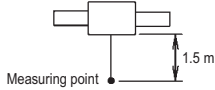


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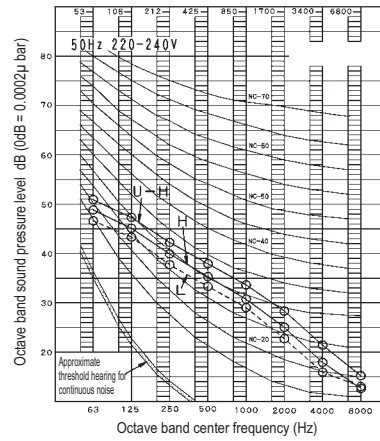
NOTES

- Over All (dB):
(B. G. N is already rectified)
- Operating conditions:
Power source: Single phase 50Hz 220-240V
Model: VKM50GBM
Ventilation mode: total heat exchange
- Measuring place:
Operation noise is measured in an anechoic chamber.
The operation noise level becomes greater than this value depending on the operation conditions, reflected sound, and peripheral noise.
Operation noise differs with operation and ambient conditions.
U-H: Ultra-High, H: High, L: Low
- Location of microphone:

Scale	Air flow rate		
	U-H	H	L
A	38	36	34
C			



VKM80GBM

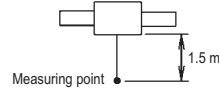


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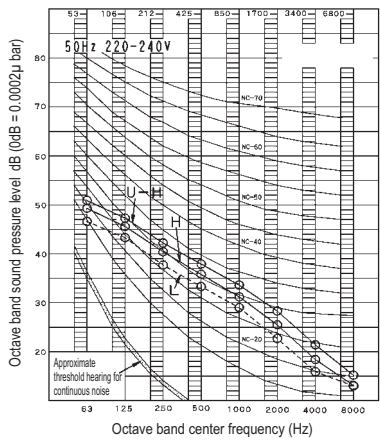
NOTES

- Over All (dB):
(B. G. N is already rectified)
- Operating conditions:
Power source: Single phase 50Hz 220-240V
Model: VKM80GBM
Ventilation mode: total heat exchange
- Measuring place:
Operation noise is measured in an anechoic chamber.
The operation noise level becomes greater than this value depending on the operation conditions, reflected sound, and peripheral noise.
Operation noise differs with operation and ambient conditions.
U-H: Ultra-High, H: High, L: Low
- Location of microphone:

Scale	Air flow rate		
	U-H	H	L
A	40	37.5	35.5
C			



VKM100GBM

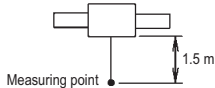


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NOTES

- Over All (dB):
(B. G. N is already rectified)
- Operating conditions:
Power source: Single phase 50Hz 220-240V
Model: VKM100GBM
Ventilation mode: total heat exchange
- Measuring place:
Operation noise is measured in an anechoic chamber.
The operation noise level becomes greater than this value depending on the operation conditions, reflected sound, and peripheral noise.
Operation noise differs with operation and ambient conditions.
U-H: Ultra-High, H: High, L: Low
- Location of microphone:

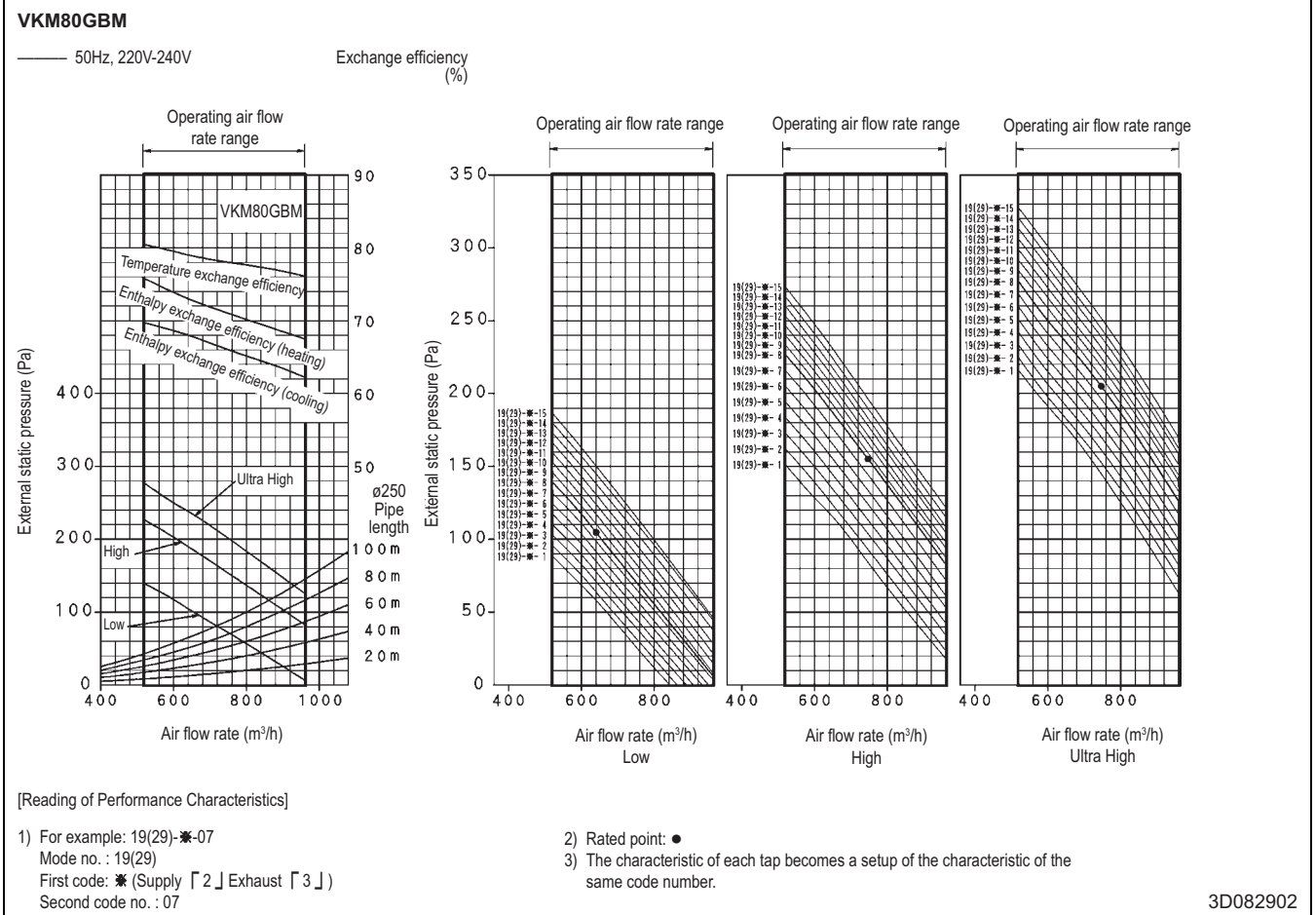
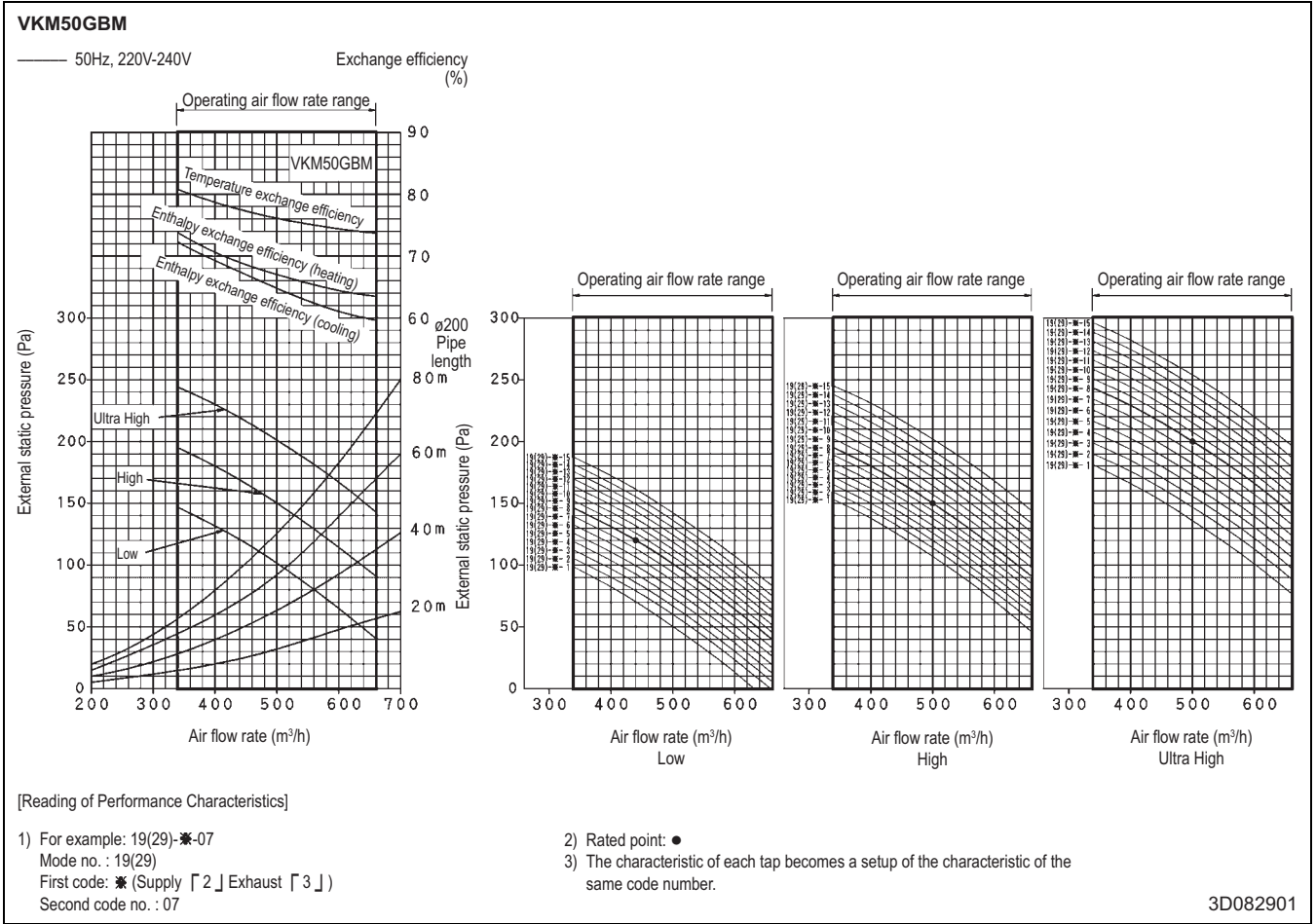
Scale	Air flow rate		
	U-H	H	L
A	40	38	35.5
C			



9 Fan characteristics

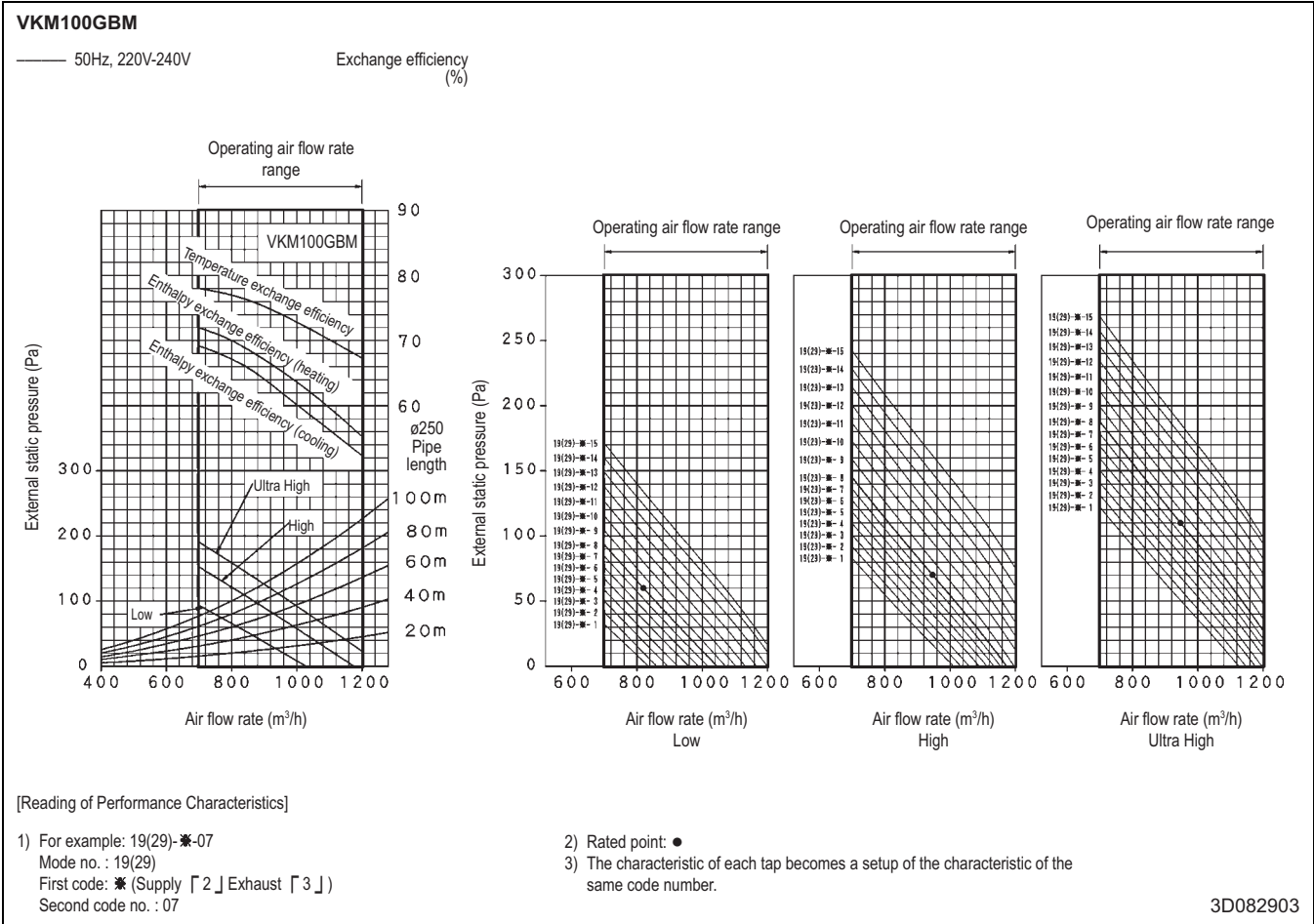
9 - 1 Fan Characteristics

9



9 Fan characteristics

9 - 1 Fan Characteristics

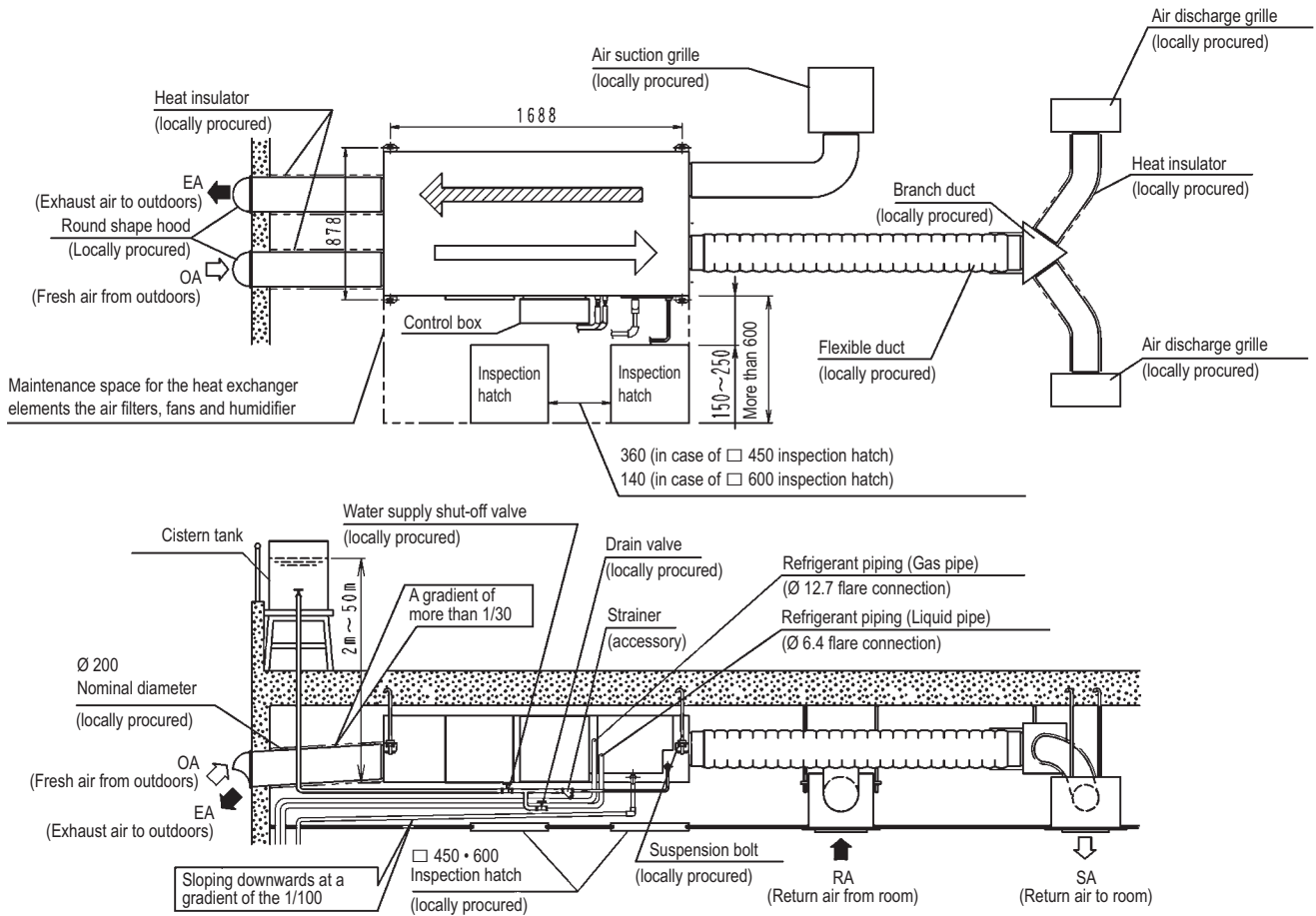


10 Installation

10 - 1 Installation Method

10

VKM50GBM



NOTES

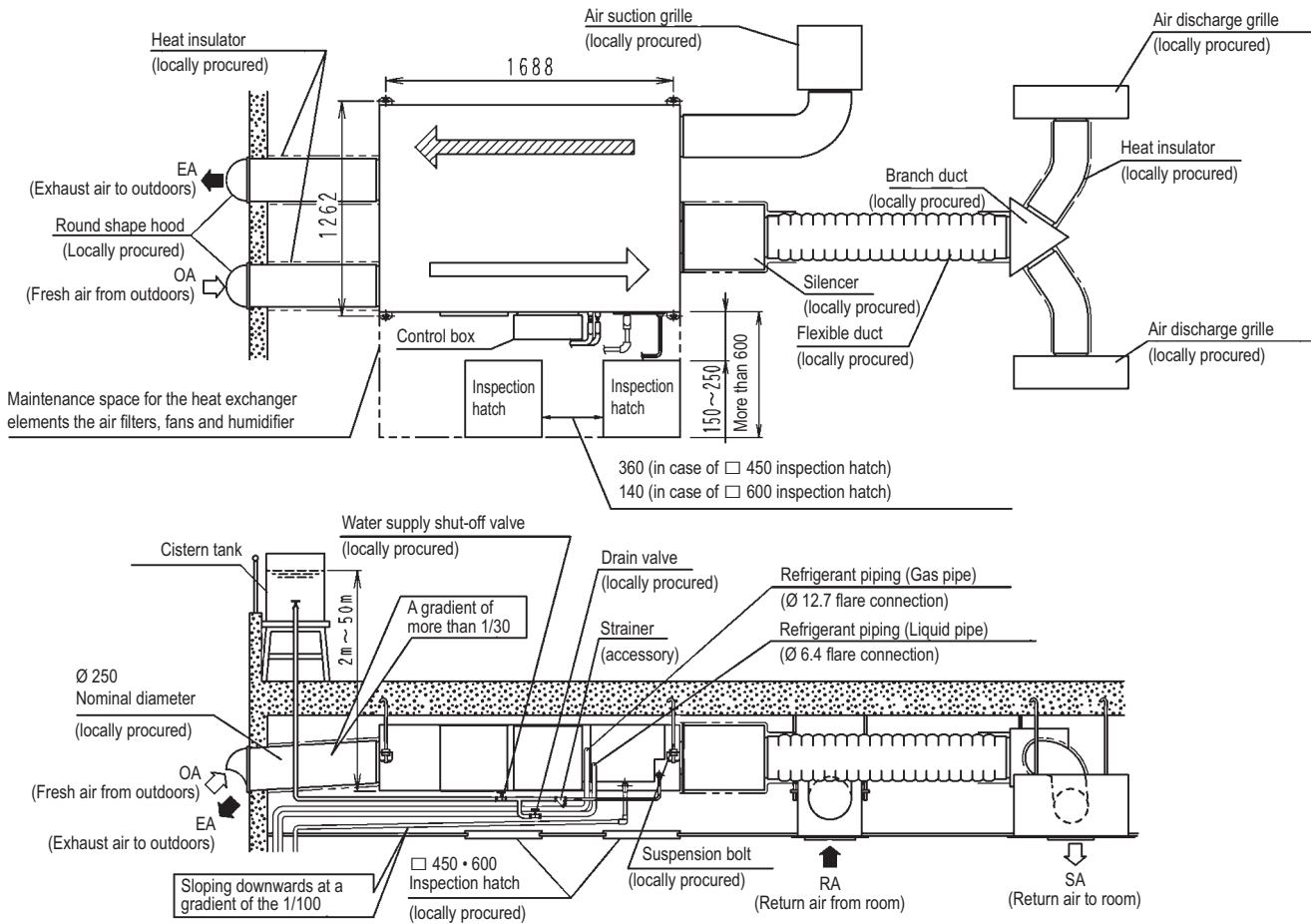
1. Leave space for servicing the unit and include inspection hatch. (Always open a hole on the side of the control box so that the air filters, heat exchange elements, fans, and humidifier elements can easily be inspected and serviced.)
2. Install the two outdoor ducts with down slope (slope of 1/30 or more) to prevent entry of rain water. Also, provide insulation for three ducts (outdoor ducts and indoor supply air duct) to prevent dew condensation. (Material: glass wool of 25mm thick)
3. Do not turn the unit upside down.
4. Use city water or clean water.
Include water supply piping with strainer, a water supply shut-off valve, and a drain valve (both locally procured) somewhere along the water supply piping that can be reached from the inspection.
5. It is impossible to connect the water supply piping directly to public piping. Use a cistern tank (of the approved type), if you need to get your water supply from public piping.
6. Make sure the supply water 0.02MPa to 0.49MPa (0.2 kg/cm² to 5 kg/cm²).
7. Make sure the supply water is between 5 °C and 40 °C in temperature.
8. Insulate the water supply piping to prevent condensation from forming.
9. Make sure to install drain piping, and insulate drain piping to prevent dew condensation.
10. Keep the drain pipe short and sloping downwards at a gradient of at least 1/100 to prevent air from forming.
11. Install in a location where the air around the unit or taken into the humidifier will not drop below 0 °C.
12. Do not use a bent cap or a round hood as the outdoor hood if they might get rained on directly (we recommend using a deep hood) (optional accessory).
13. In areas where freezing may occur, always take steps to prevent the pipes from freezing.
14. Do not place something which shouldn't get wet at the below of this unit. The dew would fall at following case, where humidity is 80% more, or the exit of drain socket is choked up, or the air filter is very dirty.
15. Feed clean water. If the supply water is hard water, use a water softener because of short life.
Life of humidifying element is about 3 years (4,000 hours), under the supply water conditions of hardness: 150 mg/L. (Life of humidifying element is about 1 years (1500 hours), under the supply water conditions of hardness: 400 mg/L.)

3D083011

10 Installation

10 - 1 Installation Method

VKM80GBM



NOTES

1. Leave space for servicing the unit and include inspection hatch. (Always open a hole on the side of the control box so that the air filters, heat exchange elements, fans, and humidifier elements can easily be inspected and serviced.)
2. Install the two outdoor ducts with down slope (slope of 1/30 or more) to prevent entry of rain water. Also, provide insulation for three ducts (outdoor ducts and indoor supply air duct) to prevent dew condensation. (Material: glass wool of 25mm thick)
3. Do not turn the unit upside down.
4. Use city water or clean water.
Include water supply piping with strainer, a water supply shut-off valve, and a drain valve (both locally procured) somewhere along the water supply piping that can be reached from the inspection.
5. It is impossible to connect the water supply piping directly to public piping. Use a cistern tank (of the approved type), if you need to get your water supply from public piping.
6. Make sure the supply water 0.02MPa to 0.49MPa (0.2 kg/cm² to 5 kg/cm²).
7. Make sure the supply water is between 5 °C and 40 °C in temperature.
8. Insulate the water supply piping to prevent condensation from forming.
9. Make sure to install drain piping, and insulate drain piping to prevent dew condensation.
10. Keep the drain pipe short and sloping downwards at a gradient of at least 1/100 to prevent air from forming.
11. Install in a location where the air around the unit or taken into the humidifier will not drop below 0 °C.
12. Do not use a bent cap or a round hood as the outdoor hood if they might get rained on directly (we recommend using a deep hood) (optional accessory).
13. In areas where freezing may occur, always take steps to prevent the pipes from freezing.
14. Do not place something which shouldn't get wet at the below of this unit. The dew would fall at following case, where humidity is 80% more, or the exit of drain socket is choked up, or the air filter is very dirty.
15. Feed clean water. If the supply water is hard water, use a water softener because of short life.
Life of humidifying element is about 3 years (4,000 hours), under the supply water conditions of hardness: 150 mg/L. (Life of humidifying element is about 1 years (1500 hours), under the supply water conditions of hardness: 400 mg/L.)

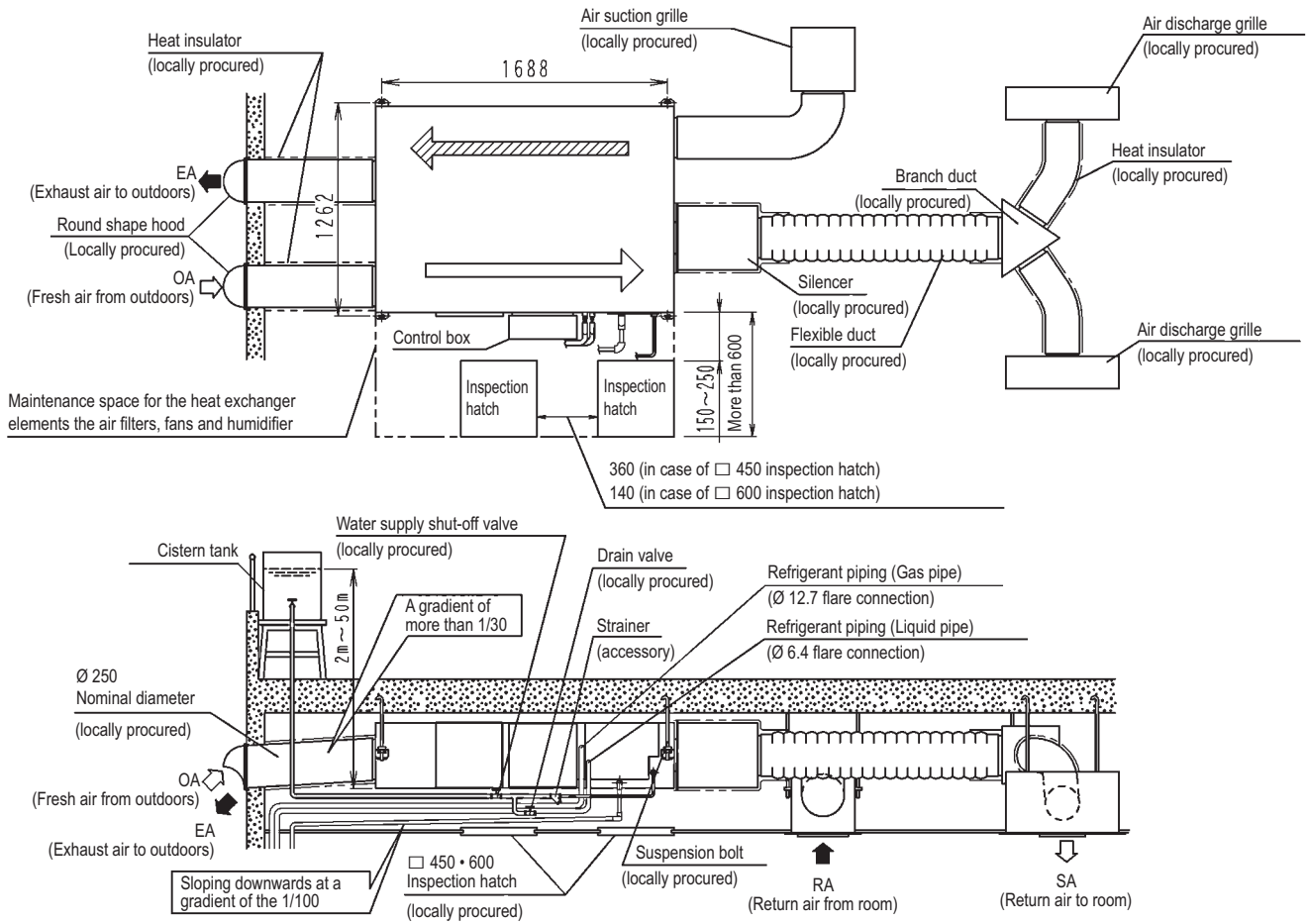
3D083012

10 Installation

10 - 1 Installation Method

10

VKM100GBM



NOTES

1. Leave space for servicing the unit and include inspection hatch. (Always open a hole on the side of the control box so that the air filters, heat exchange elements, fans, and humidifier elements can easily be inspected and serviced.)
2. Install the two outdoor ducts with down slope (slope of 1/30 or more) to prevent entry of rain water. Also, provide insulation for three ducts (outdoor ducts and indoor supply air duct) to prevent dew condensation. (Material: glass wool of 25mm thick)
3. Do not turn the unit upside down.
4. Use city water or clean water.
Include water supply piping with strainer, a water supply shut-off valve, and a drain valve (both locally procured) somewhere along the water supply piping that can be reached from the inspection.
5. It is impossible to connect the water supply piping directly to public piping. Use a cistern tank (of the approved type), if you need to get your water supply from public piping.
6. Make sure the supply water 0.02MPa to 0.49MPa (0.2 kg/cm² to 5 kg/cm²).
7. Make sure the supply water is between 5 °C and 40 °C in temperature.
8. Insulate the water supply piping to prevent condensation from forming.
9. Make sure to install drain piping, and insulate drain piping to prevent dew condensation.
10. Keep the drain pipe short and sloping downwards at a gradient of at least 1/100 to prevent air from forming.
11. Install in a location where the air around the unit or taken into the humidifier will not drop below 0 °C.
12. Do not use a bent cap or a round hood as the outdoor hood if they might get rained on directly (we recommend using a deep hood) (optional accessory).
13. In areas where freezing may occur, always take steps to prevent the pipes from freezing.
14. Do not place something which shouldn't get wet at the below of this unit. The dew would fall at following case, where humidity is 80% more, or the exit of drain socket is choked up, or the air filter is very dirty.
15. Feed clean water. If the supply water is hard water, use a water softener because of short life.
Life of humidifying element is about 3 years (4,000 hours), under the supply water conditions of hardness: 150 mg/L. (Life of humidifying element is about 1 years (1500 hours), under the supply water conditions of hardness: 400 mg/L.)

3D083013



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