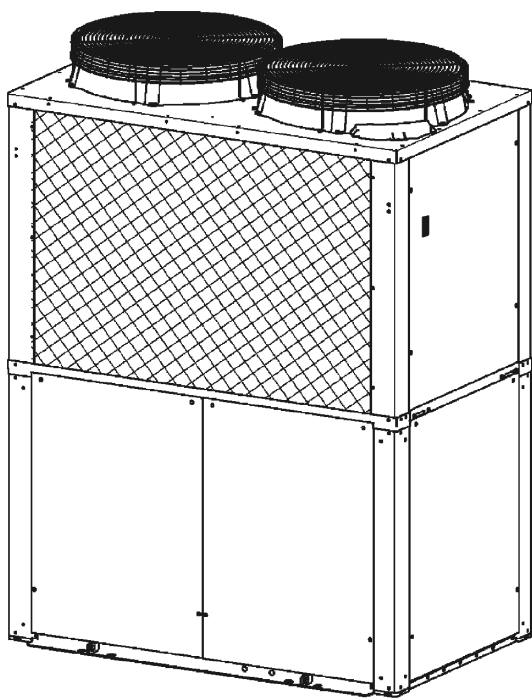


TECHNICAL DATA

**Gas Heat Pump
Air Conditioner**

3-WAY Multi



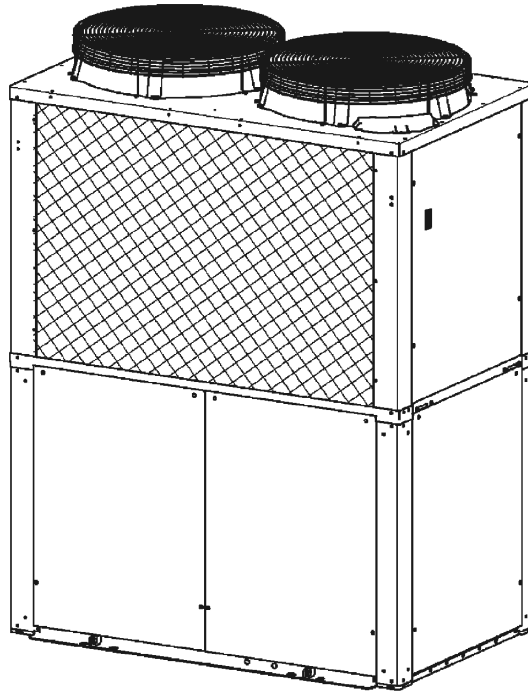
OUTDOOR MODEL No.	PRODUCT CODE No.
U-16GE2E5	182680168
U-20GE2E5	182680169
U-25GE2E5	182680170
U-16GEP2E5	182680171
U-20GEP2E5	182680172
U-25GEP2E5	182680173
U-30GE2E5	182680166
U-16GF2E5	182680174
U-20GF2E5	182680175
U-25GF2E5	182680176

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(1) Outdoor Unit

2-WAY Multi (30 Horsepower)
2-WAY W Multi (16, 20 and 25 Horsepower)
3-WAY Multi (16, 20 and 25 Horsepower)



U-16GE2E5
U-20GE2E5
U-25GE2E5
U-16GEP2E5
U-20GEP2E5
U-25GEP2E5
U-30GE2E5
U-16GF2E5
U-20GF2E5
U-25GF2E5

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(1) Usable Gas

- 1) Depending upon the calorific value of the natural gas, the setting for the gas fuel flow rate adjustment nozzle will differ.

(2) Gas Supply Pressure

Units: mbar

Gas Type	Maximum	Standard	Minimum
P	45	37	25
H, L, E	25	20	17

(3) Applicable Gas Type

Group		P	H	L	E
Gas composition Standard gas Calorific value (MJ/m ³ N)		C ₃ H ₈ 100% G31 95.65	CH ₄ 100% G20 37.78	CH ₄ 86% N ₂ 14% G25 32.49	CH ₄ 100% G20 37.78
Model Name	45.0 kW Type	○	◎	○	○
	56.0 kW Type	○	◎	○	○
	71.0 kW Type	○	◎	○	○
	85.0 kW Type	○	◎	○	○

Applicability ◎ : Standard setting when shipped from the factory
○ : Necessary to change the gas type setting on site

(4) Gas Maximum Flow Volume

Outdoor unit type	Gas Maximum Flow Volume (kW)
45.0 kW	57
56.0 kW	69
71.0 kW	80
85.0 kW	90

The gas maximum flow volume is the quantity of gas consumed after start up and operating at full capacity, with the gas at 40 °C and at standard pressure.

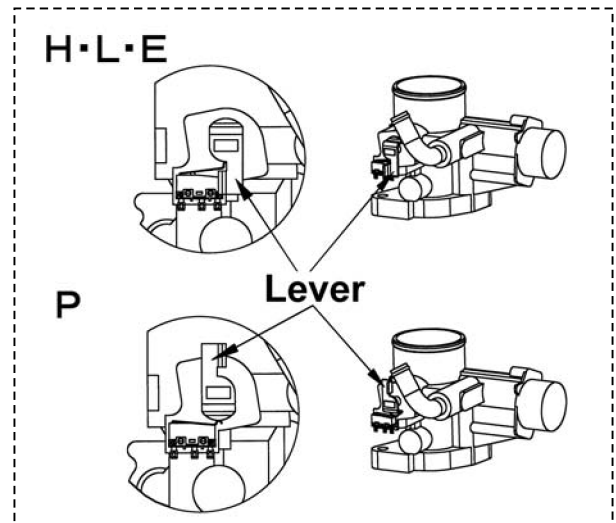
(5) When using Propane

* When using Propane as the gas fuel, it is necessary to adjust the fuel adjustment valve and the gas type setting.

(1) Fuel valve setting

●With the power supply breaker for the outdoor unit OFF

- 1) Move the lever of the P/N switch that is attached to the mixer part of the engine to the position shown in the diagram. Turn it 180 degrees in the clockwise direction (there is a stopper provided). Do not apply unnecessary force to turn it any further.
- 2) In the electrical equipment box, fix the "Gas type setting/Adjustment Completed" label to the prescribed position for the PL NAME.



(2) Fuel Gas Type Setting

●Check that the fuel adjustment valve setting has been set before operating the outdoor control board.

- 1) Press the home key (S004) for longer than one second and the menu item number will be displayed.
[n . 0 0 0 0]
- 2) Next, press the up (S005)/down (S006) key to set the menu item number to [n . 1 0 0 0].
- 3) After displaying [n . 1 0 0 0], [F i r s t] is displayed. When [F i r s t] is displayed press the set (S007) key. The green LED (D053) lights up, and the system address setting is displayed.
(For example: [0 0 1 0 0 1])
- 4) Next operate the down (S006)/up (S005) key, to display the gas type setting. When the gas type setting is displayed, press the set (S007) key for longer than one second.
Note: When setting the gas type, [G A S]** is displayed.(for ** enter 00-05)
- 5) A red LED (D052) lights up, indicating that a forced setting is being carried out. In this condition, press the down (S006)/up (S005) key, and select the gas type.

The relationship between display and gas type is as shown in the following table.

	Status/setting display	Type of gas	Status/setting display	Type of gas
↑ DOWN ↓ UP	[G A S 0 0]	Band P (LPG)	[G A S 0 8]	No Use
	[G A S 0 1]	No Use	[G A S 0 9]	No Use
	[G A S 0 2]	Band H (Natural Gas)	[G A S 0 A]	No Use
	[G A S 0 3]	Band H (Natural Gas)	[G A S 0 B]	No Use
	[G A S 0 4]	Band (Natural Gas)	[G A S 0 C]	No Use
	[G A S 0 5]	No Use	[G A S 0 D]	No Use
	[G A S 0 6]	No Use	[G A S 0 E]	Band LNG (Natural Gas)
	[G A S 0 7]	No Use	[G A S 0 F]	No Use

* When the H/L/E gas type is selected, the oil replacement time warning is not displayed.

- 6) After completing selection of gas type, press the set (S007) key for longer than 1 second. The red LED (D052) will be extinguished.
- 7) Press the home (S004) key to complete the setting.

Note: When using propane, change the setting in accordance with the above procedure to [G A S 0 0]

Model No.	U-16GF2E5	
External dimensions (mm)		
Height	2,273	
Width	1,650	
Depth	1,000 (+80)	
Weight (kg)	775	
Performance (kW)		
Cooling capacity	45.0	
Heating capacity (Standard)	50.0	
Heating capacity (low temp.)	53.0	
Generate electricity power source	220 to 240 V, 50 Hz, Single-phase	
Electrical rating		
Cooling	Running amperes (A)	3.36
	Power input (kW)	0.71
	Power factor (%)	92
Heating	Running amperes (A)	2.87
	Power input (kW)	0.6
	Power factor (%)	91
Starting amperes (A)		30
Gas Type		
Gas Band	P	Propane gas (G31)
	H	Natural gas (G20)
	L	Natural gas (G25)
	E	Natural gas (G20)
Gas consumption (kW)		
Cooling	29.7	
Heating (Standard)	32.5	
Compressor		
Cooling oil (L)	(type)	7.5 (HP-9)
Crankcase heater (W)		30
Paint color (Munsell code)		Silky Shade (1Y8.5/0.5)

Engine		
Displacement (L)		2.488
Rated output (kW)		10.0
Oil	Type	Panasonic Genuine
	Quantity (L)	43
Starter motor		12 V DC, 2.0 kW
Starter type		AC/DC conversion type DC starter
Engine cooling water		
Quantity (L)		24
Concentration, Freezing temperature		50 V/V%, -35°C
Cooling water pump rated output (kW)		0.16
Refrigerant type, Quantity (kg)		HFC [R410A] , 10.5
Air intakes		Front and Rear
Air outlet		Top
Piping		
Refrigerant discharge		ø22.22(brazed)
Refrigerant gas (mm)		(ø25.4) (Note 4)
Refrigerant liquid (mm)		ø28.58(brazed)
Fuel gas		(ø31.75) (Note 4)
Exhaust drain (mm)		ø19.05(brazed)
Hot water supply in/out		(ø22.22) (Note 4)
		R3/4 (Bolt, thread)
		ø25 .Rubber hose (length: 350)
		Rp3/4 (Nut, thread)
Operating noise level dB(A)		57
Ventilation System		
Type		Propeller fans (x2)
Air flow rate (m³/min)		380
Rated output (kW)		0.70x2
Drain heater (W)		40

Notes

1. Cooling and heating capacities in the tables are determined under the test conditions of JIS B 8627.

Operating condition	Cooling	Heating (standard)	Heating (low temp.)
Indoor air intake temp.	27°CDB/19°CWB	20°CDB	20°CDB/15°CWB or less
Outdoor air intake temp.	35°CDB	7°CDB/6°CWB	2°CDB/1°CWB

- Effective heating requires that the outdoor air intake temperature be at least -20°CDB or -21°CWB.
2. Gas consumption is the total (high) calorific value standard.
 3. Outdoor unit operating sound is measured 1 meter from the front and 1.5 meters above the floor (in an anechoic environment). Actual installations may have larger values due to ambient noise and reflections.
 4. Values in parentheses () for refrigerant gas and liquid types are those when the maximum piping length exceeds 90 meters (equivalent length). (Reducers are available locally.)
 5. Specifications are subject to change without notice.
 6. Hot water heating capacity is applicable during cooling operation as in Note 1.

Model No.	U-20GF2E5	
External dimensions (mm)		
Height	2,273	
Width	1,650	
Depth	1,000 (+80)	
Weight (kg)	775	
Performance (kW)		
Cooling capacity	56.0	
Heating capacity (Standard)	63.0	
Heating capacity (low temp.)	67.0	
Generate electricity power source	220 to 240 V, 50 Hz, Single-phase	
Electrical rating		
Cooling	Running amperes (A)	4.87
	Power input (kW)	1.02
	Power factor (%)	91
Heating	Running amperes (A)	3.02
	Power input (kW)	0.64
	Power factor (%)	92
Starting amperes (A)		30
Gas Type		
Gas Band	P	Propane gas (G31)
	H	Natural gas (G20)
	L	Natural gas (G25)
	E	Natural gas (G20)
Gas consumption (kW)		
Cooling	39.1	
Heating (Standard)	42.5	
Compressor		
Cooling oil (L)	(type)	7.5 (HP-9)
Crankcase heater (W)		30
Paint color (Munsell code)		Silky Shade (1Y8.5/0.5)

Engine		
Displacement (L)		2.488
Rated output (kW)		12.4
Oil	Type	Panasonic Genuine
	Quantity (L)	43
Starter motor		12 V DC, 2.0 kW
Starter type		AC/DC conversion type DC starter
Engine cooling water		
Quantity (L)		24
Concentration, Freezing temperature		50 V/V%, -35°C
Cooling water pump rated output (kW)		0.16
Refrigerant type, Quantity (kg)		HFC [R410A] , 11.5
Air intakes		Front and Rear
Air outlet		Top
Piping		
Refrigerant discharge		ø25.4(brazed)
Refrigerant gas (mm)		(ø28.58) (Note 4)
Refrigerant liquid (mm)		ø28.58(brazed)
Fuel gas		(ø31.75) (Note 4)
Exhaust drain (mm)		ø19.05(brazed)
Hot water supply in/out		(ø22.22) (Note 4)
		R3/4 (Bolt, thread)
		ø25 .Rubber hose (length: 350)
		Rp3/4 (Nut, thread)
Operating noise level dB(A)		58
Ventilation System		
Type		Propeller fans (x2)
Air flow rate (m³/min)		380
Rated output (kW)		0.70x2
Drain heater (W)		40

Notes

1. Cooling and heating capacities in the tables are determined under the test conditions of JIS B 8627.

Operating condition	Cooling	Heating (standard)	Heating (low temp.)
Indoor air intake temp.	27°CDB/19°CWB	20°CDB	20°CDB/15°CWB or less
Outdoor air intake temp.	35°CDB	7°CDB/6°CWB	2°CDB/1°CWB

- Effective heating requires that the outdoor air intake temperature be at least -20°CDB or -21°CWB.
2. Gas consumption is the total (high) calorific value standard.
 3. Outdoor unit operating sound is measured 1 meter from the front and 1.5 meters above the floor (in an anechoic environment). Actual installations may have larger values due to ambient noise and reflections.
 4. Values in parentheses () for refrigerant gas and liquid types are those when the maximum piping length exceeds 90 meters (equivalent length). (Reducers are available locally.)
 5. Specifications are subject to change without notice.
 6. Hot water heating capacity is applicable during cooling operation as in Note 1.

Model No.	U-25GF2E5	
External dimensions (mm)		
Height	2,273	
Width	1,650	
Depth	1,000 (+80)	
Weight (kg)	805	
Performance (kW)		
Cooling capacity	71.0	
Heating capacity (Standard)	80.0	
Heating capacity (low temp.)	78.0	
Generate electricity power source	220 to 240 V, 50 Hz, Single-phase	
Electrical rating		
Cooling	Running amperes (A)	6.22
	Power input (kW)	1.33
	Power factor (%)	93
Heating	Running amperes (A)	3.92
	Power input (kW)	0.83
	Power factor (%)	92
Starting amperes (A)		30
Gas Type		
Gas Band	P H L E	Propane gas (G31) Natural gas (G20) Natural gas (G25) Natural gas (G20)
Gas consumption (kW)		
Cooling	60.4	
Heating (Standard)	53.2	
Compressor		
Cooling oil (L) (type)	7.5 (HP-9)	
Crankcase heater (W)	30	
Paint color (Munsell code)	Silky Shade (1Y8.5/0.5)	

Engine		
Displacement (L)		2.488
Rated output (kW)		15.7
Oil	Type	Panasonic Genuine
	Quantity (L)	43
Starter motor		12 V DC, 2.0 kW
Starter type		AC/DC conversion type DC starter
Engine cooling water		
Quantity (L)		29
Concentration, Freezing temperature		50 V/V%, -35°C
Cooling water pump rated output (kW)		0.16
Refrigerant type, Quantity (kg)		HFC [R410A] , 11.5
Air intakes		Front and Rear
Air outlet		Top
Piping		
Refrigerant discharge		ø25.4(brazed)
Refrigerant gas (mm)		(ø28.58) (Note 4)
Refrigerant liquid (mm)		ø28.58(brazed)
Fuel gas		(ø31.75) (Note 4)
Exhaust drain (mm)		ø19.05(brazed)
Hot water supply in/out		(ø22.22) (Note 4)
		R3/4 (Bolt, thread)
		ø25 .Rubber hose (length: 350)
		Rp3/4 (Nut, thread)
Operating noise level dB(A)		62
Ventilation System		
Type		Propeller fans (x2)
Air flow rate (m³/min)		380
Rated output (kW)		0.70x2
Drain heater (W)		40

Notes

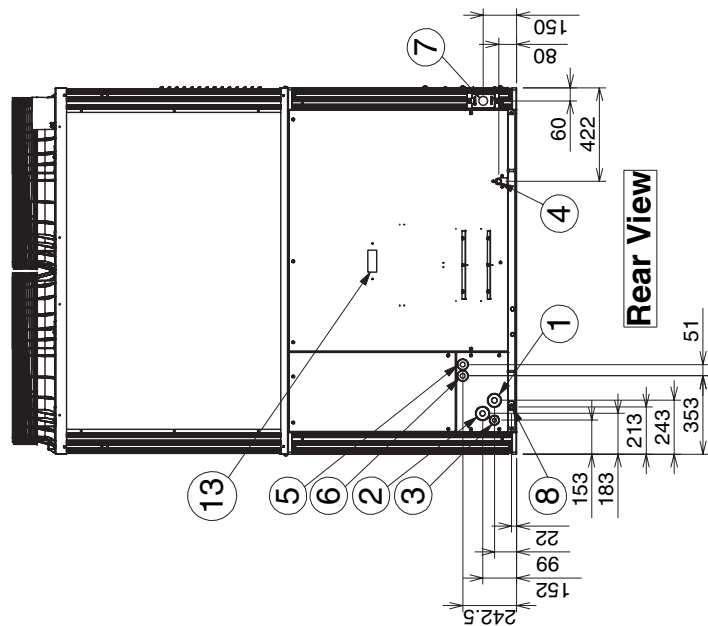
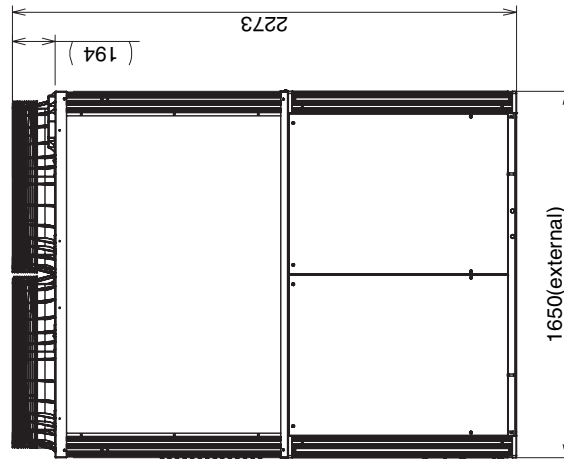
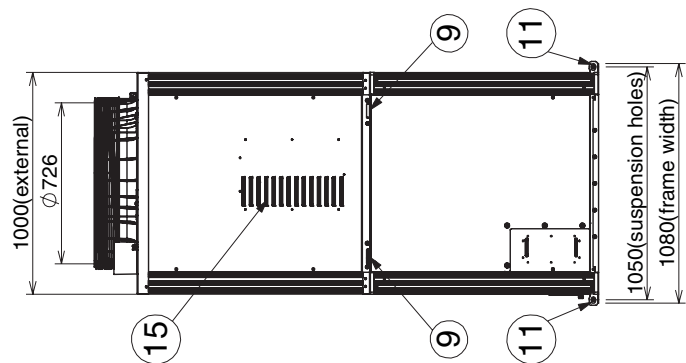
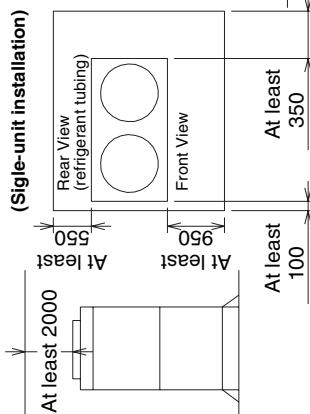
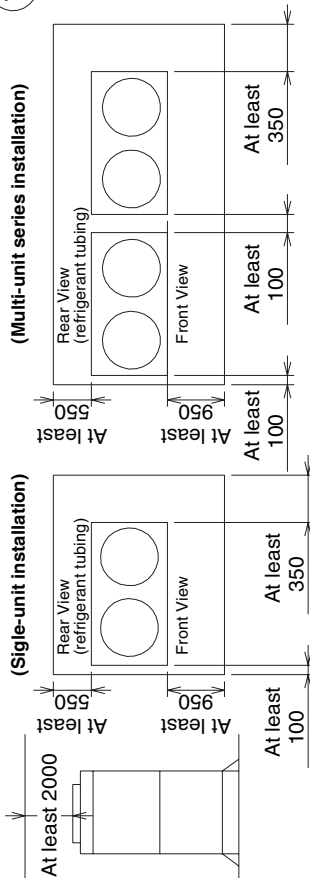
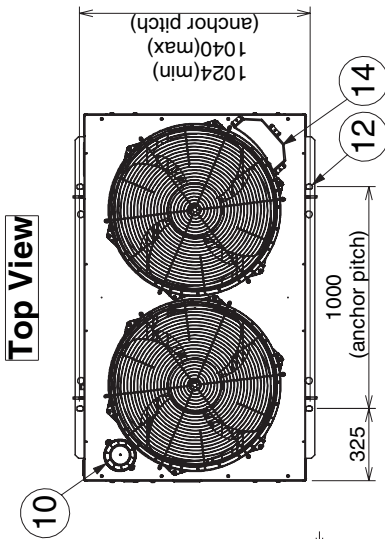
1. Cooling and heating capacities in the tables are determined under the test conditions of JIS B 8627.

Operating condition	Cooling	Heating (standard)	Heating (low temp.)
Indoor air intake temp.	27°CDB/19°CWB	20°CDB	20°CDB/15°CWB or less
Outdoor air intake temp.	35°CDB	7°CDB/6°CWB	2°CDB/1°CWB

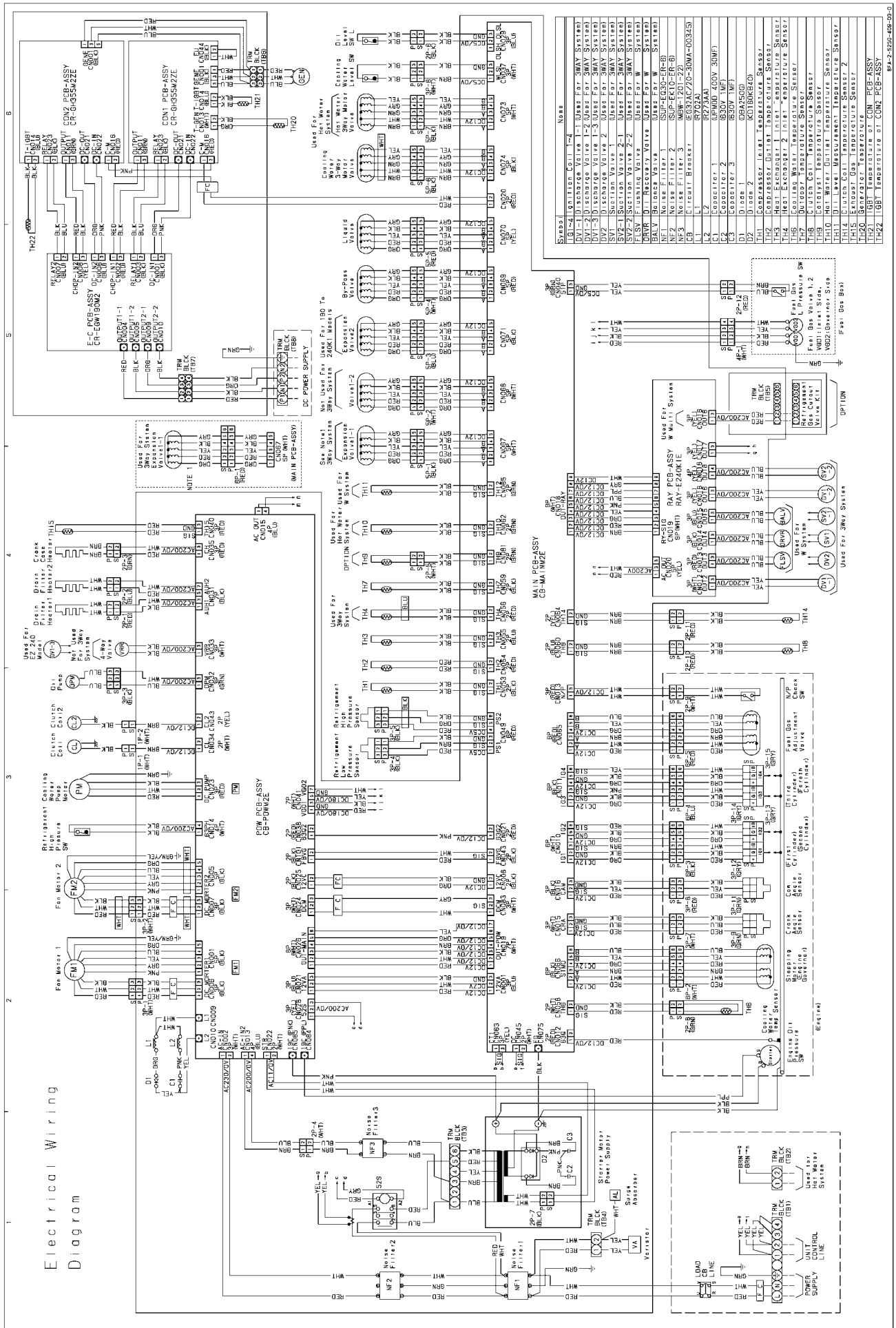
- Effective heating requires that the outdoor air intake temperature be at least -20°CDB or -21°CWB.
2. Gas consumption is the total (high) calorific value standard.
 3. Outdoor unit operating sound is measured 1 meter from the front and 1.5 meters above the floor (in an anechoic environment). Actual installations may have larger values due to ambient noise and reflections.
 4. Values in parentheses () for refrigerant gas and liquid types are those when the maximum piping length exceeds 90 meters (equivalent length). (Reducers are available locally.)
 5. Specifications are subject to change without notice.
 6. Hot water heating capacity is applicable during cooling operation as in Note 1.

Service Clearances for Installation (Units:mm)

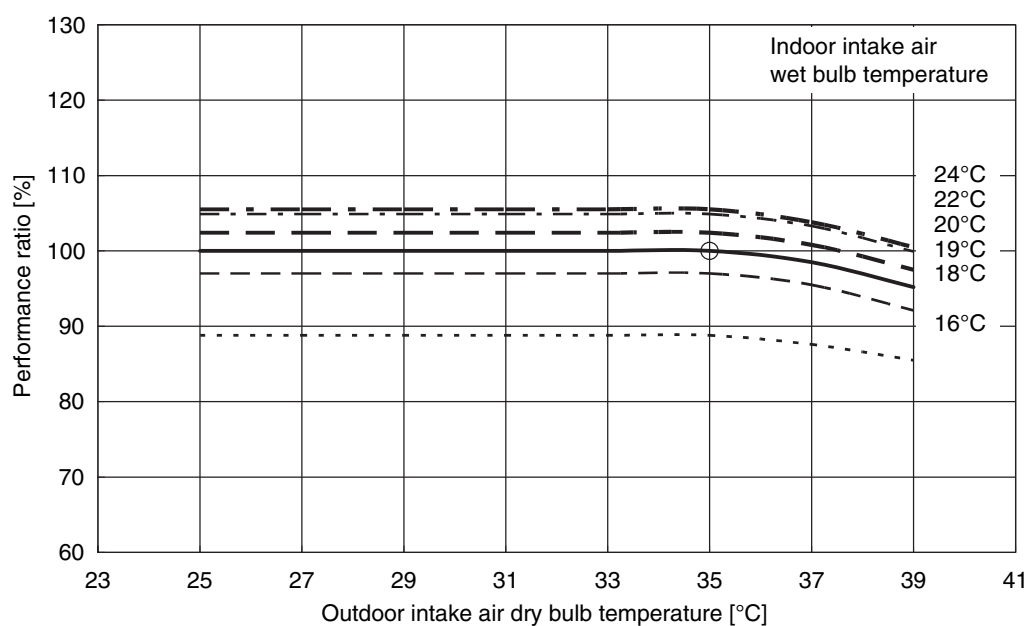
Type	Size (mm)	
	45.0kW	56.0kW 71.0kW
① Suction refrigerant pipe	Ø28.58	Ø28.58
② Discharge refrigerant pipe	Ø22.22	Ø25.4
③ Liquid refrigerant pipe	Ø19.05	Ø19.05
④ Exhaust gas drain port	HOSE OD:Ø25 (accessory)	
⑤ Electrical power supply port	Ø28	Ø28
⑥ Inter-unit cable port	Ø28	Ø28
⑦ Fuel gas port	R3/4	R3/4
⑧ Condensation drain opening	Ø20	Ø20
⑨ Rain and condensation outlet		
⑩ Engine exhaust outlet		
⑪ Suspension holes 4-Ø20×30		
⑫ Anchor holes 4-Ø22×30		
⑬ Segmented display		
⑭ Coolant intake (top)		
⑮ Vent		



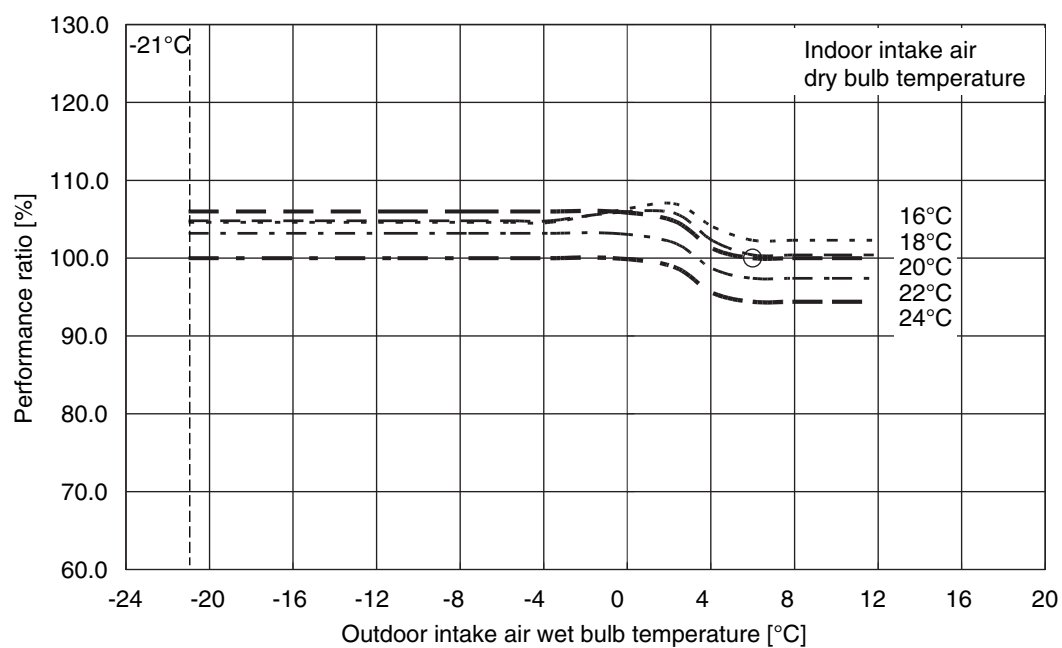
Model Name	External dimensions drawing	Scale
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U-16GF2E5		
U-20GF2E5		
U-25GF2E5		



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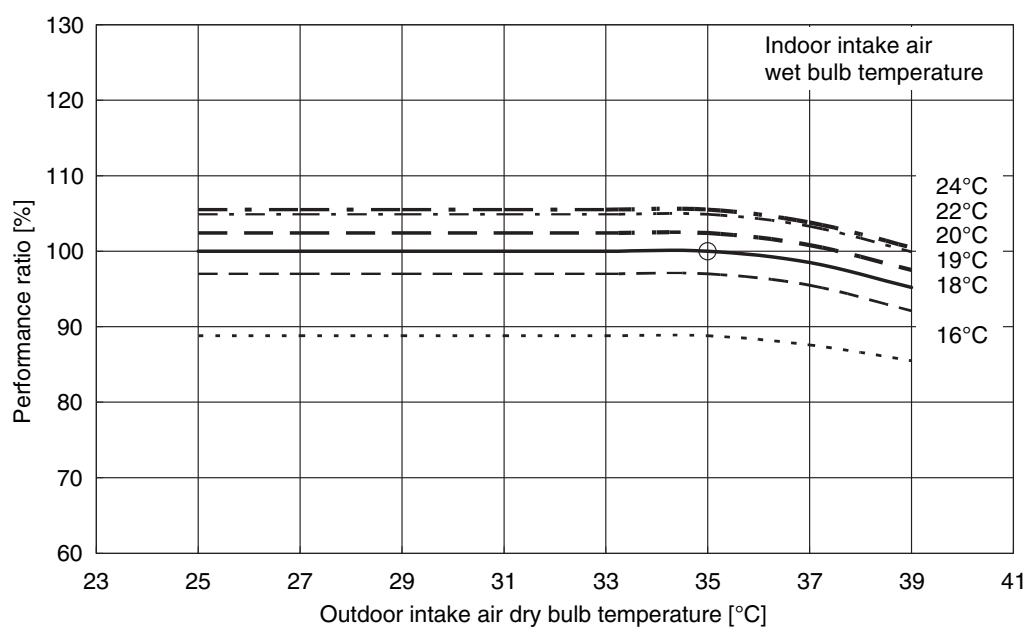


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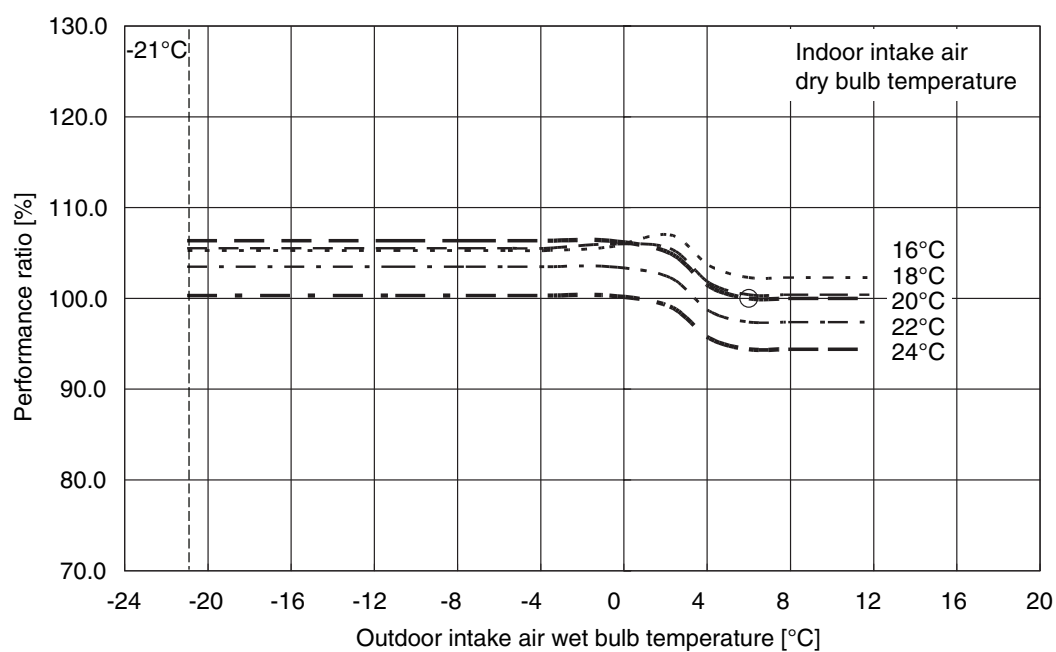


U-16GF2E5

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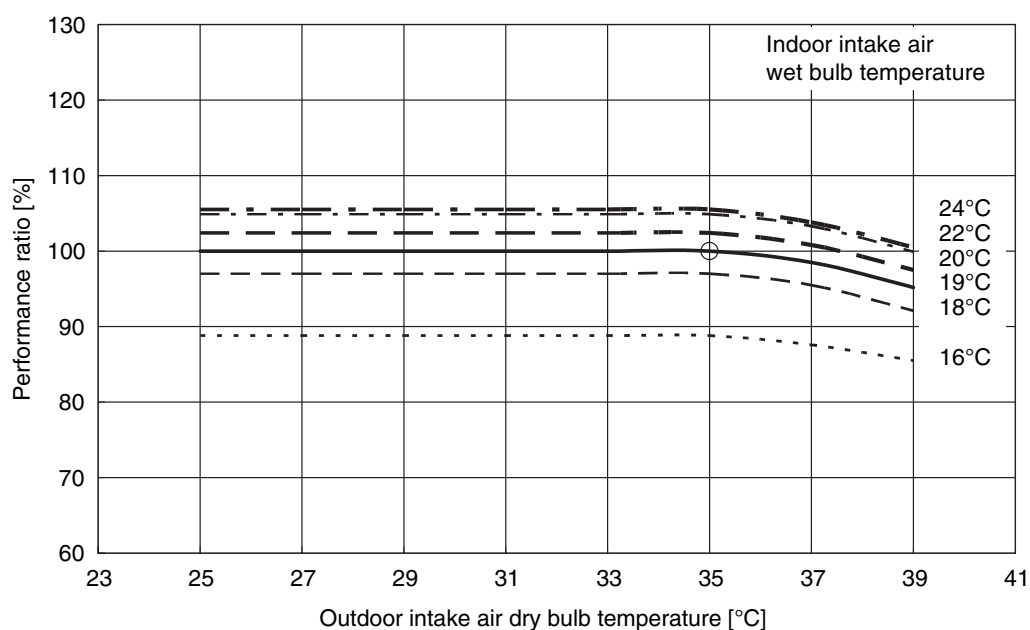


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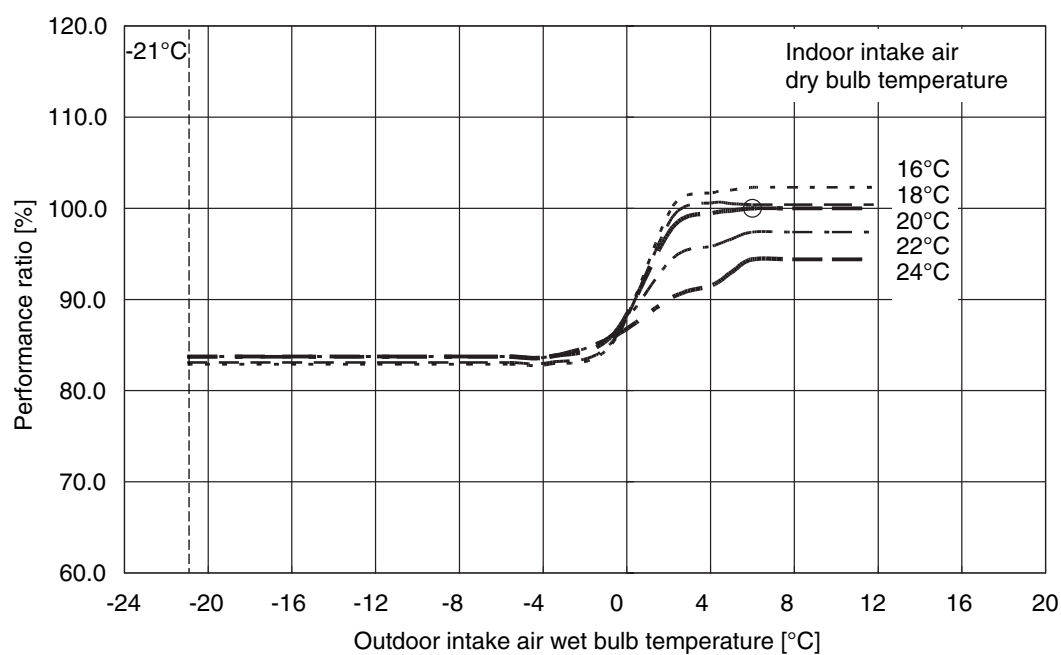


U-20GF2E5

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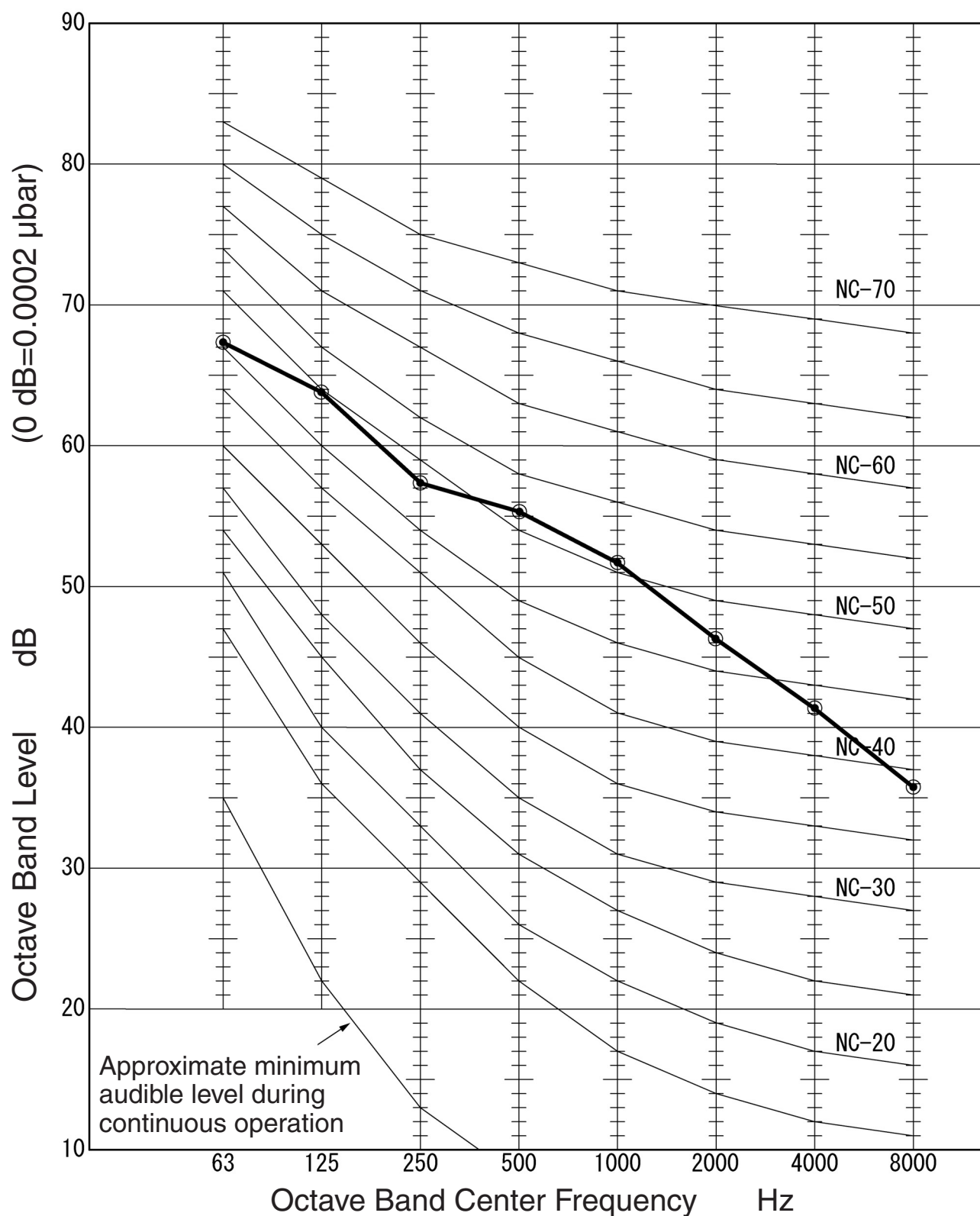
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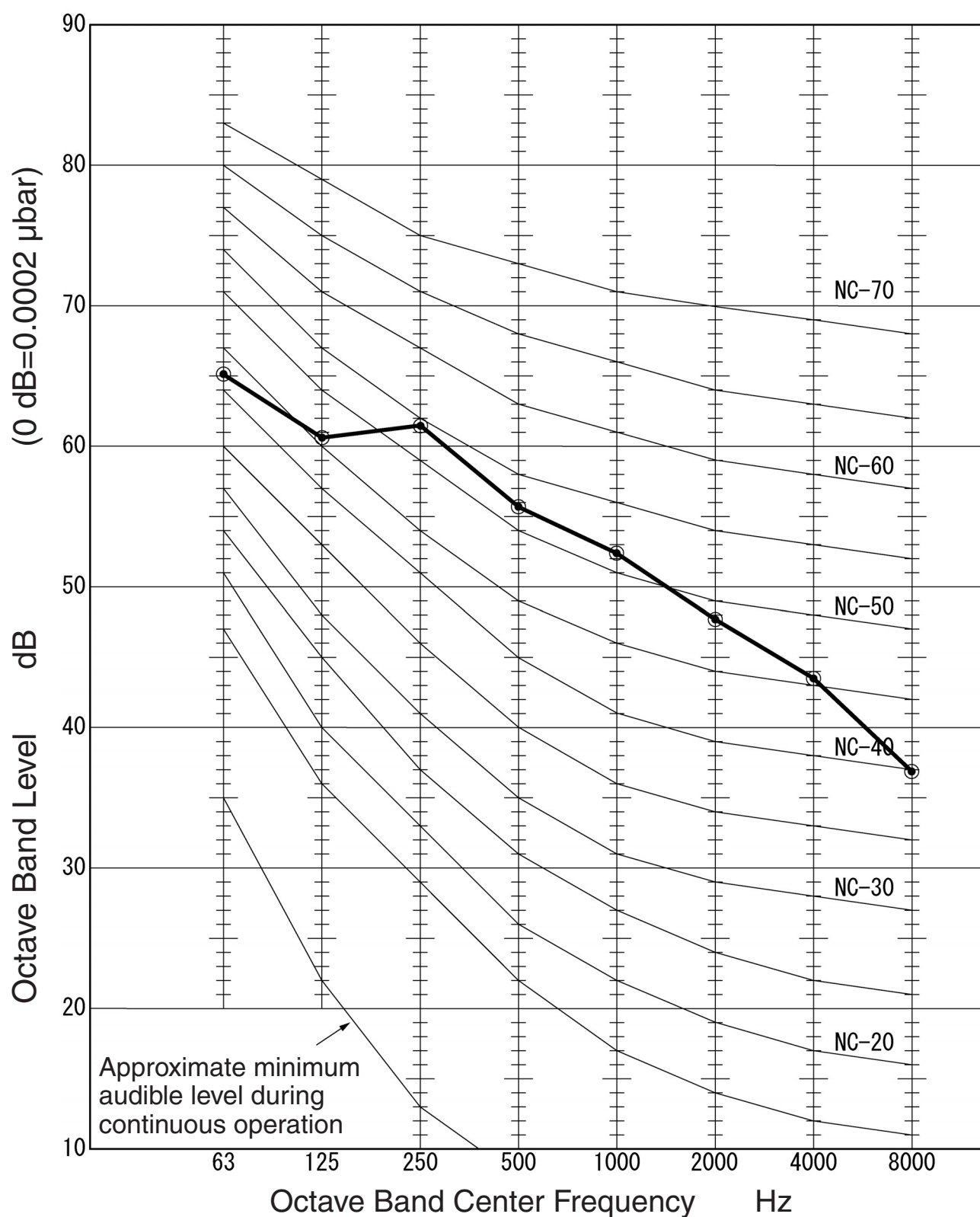
U-25GF2E5

(1) Standard Mode

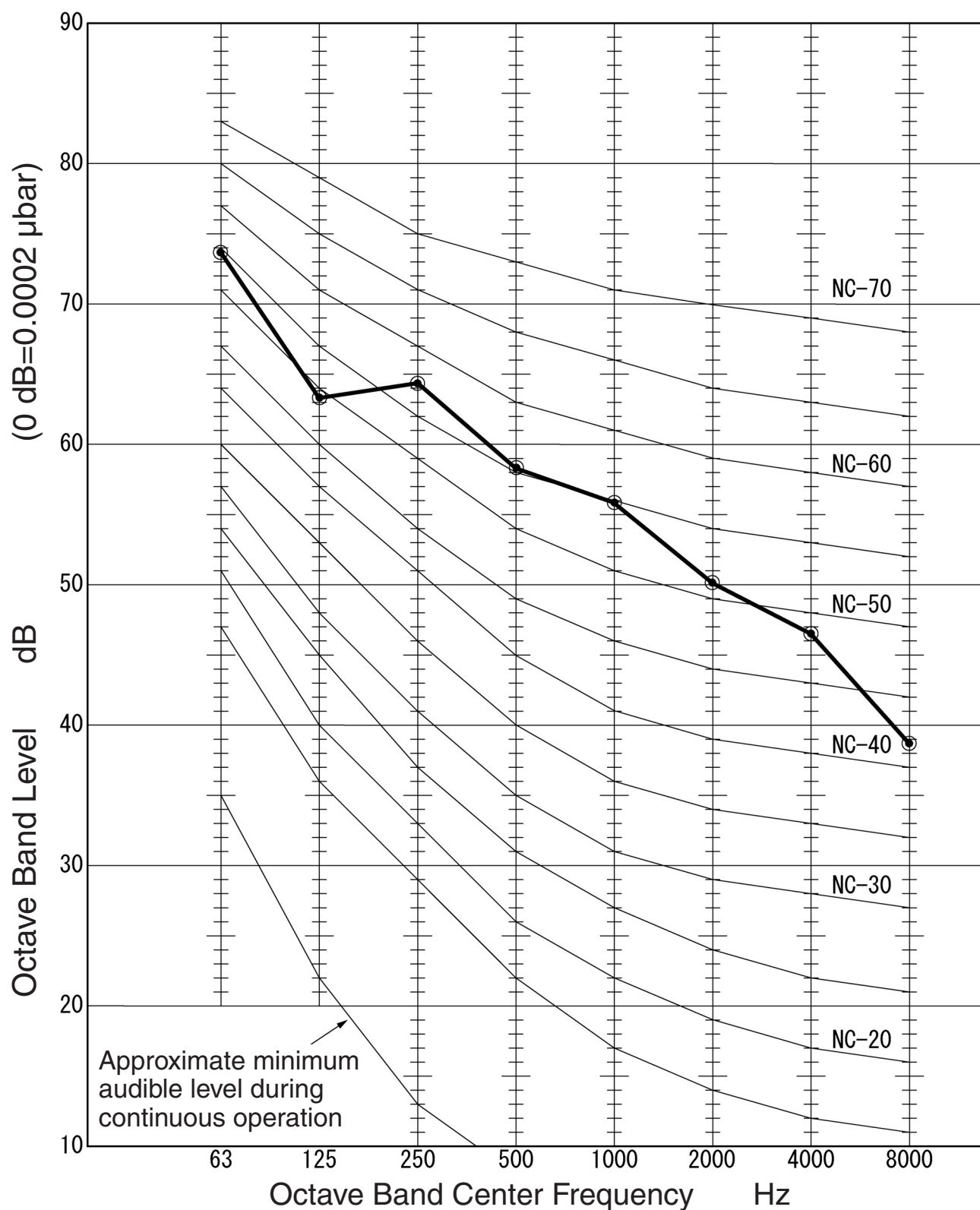
Model name	45.0 kW Type
Operating sound level dB(A)	57
Measurement position	1m from front, 1.5m from bottom



Model name	56.0 kW Type
Operating sound level dB(A)	58
Measurement position	1m from front, 1.5m from bottom

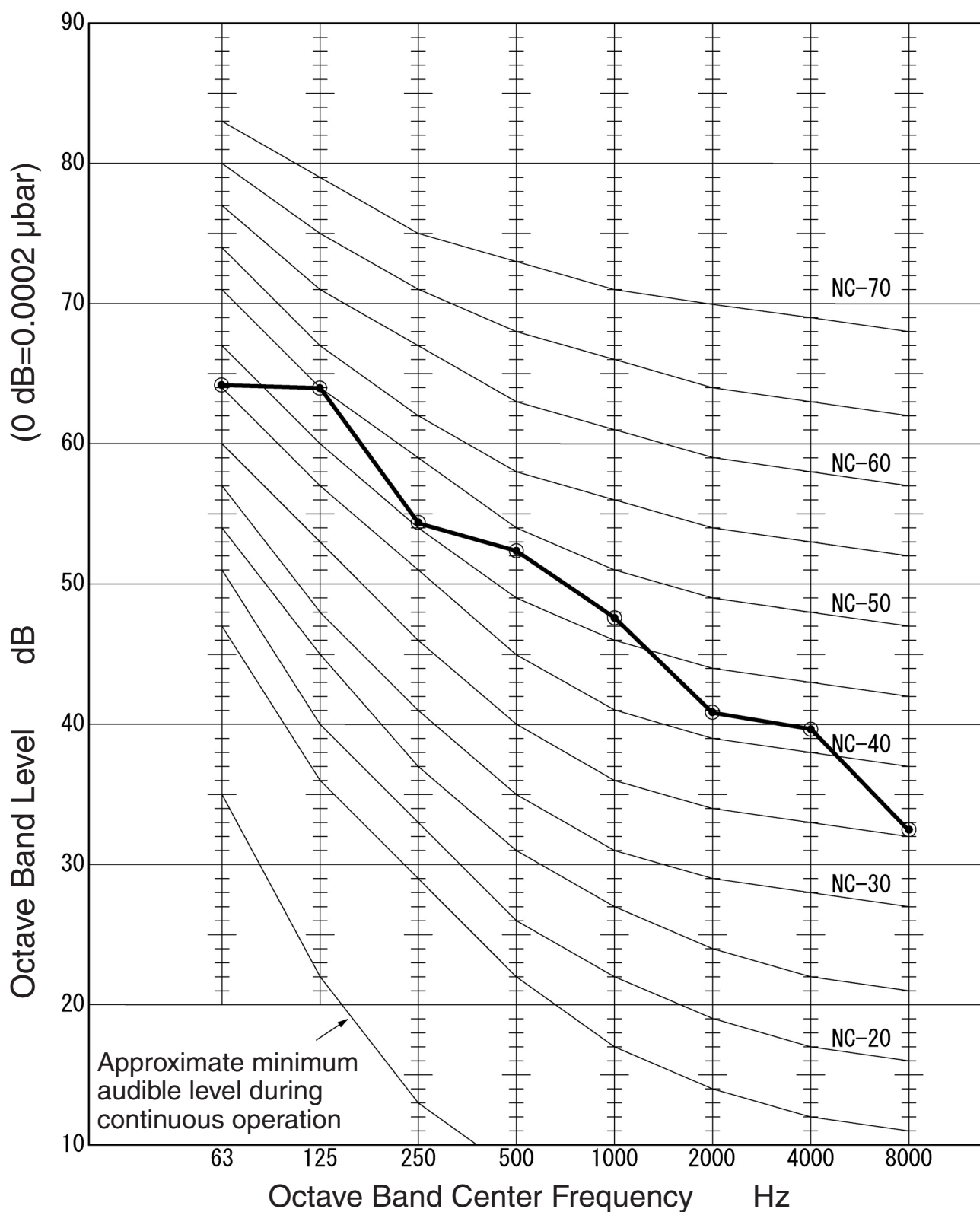


Model name	71.0 kW Type
Operating sound level dB(A)	62
Measurement position	1m from front, 1.5m from bottom

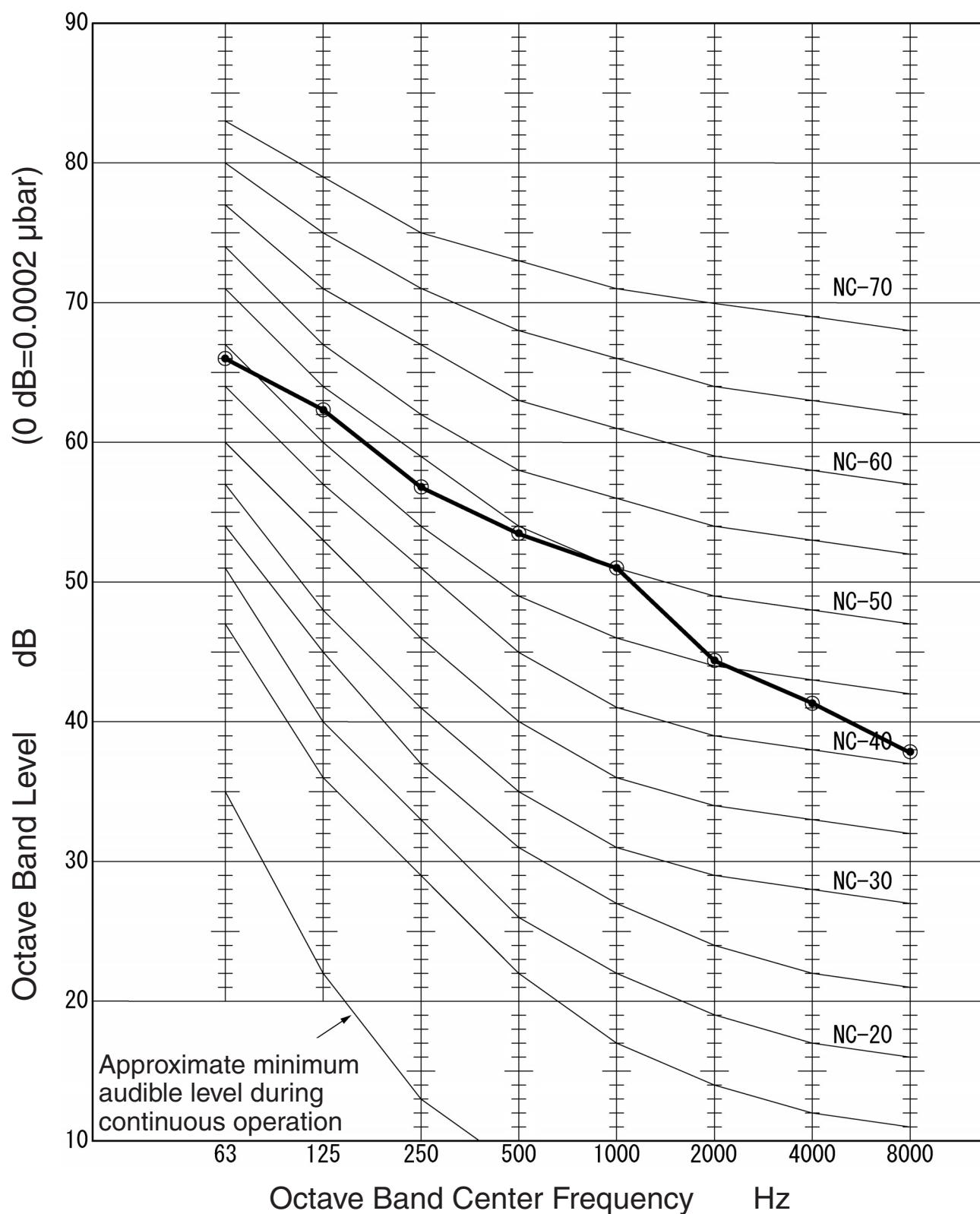


(2) Quiet Mode

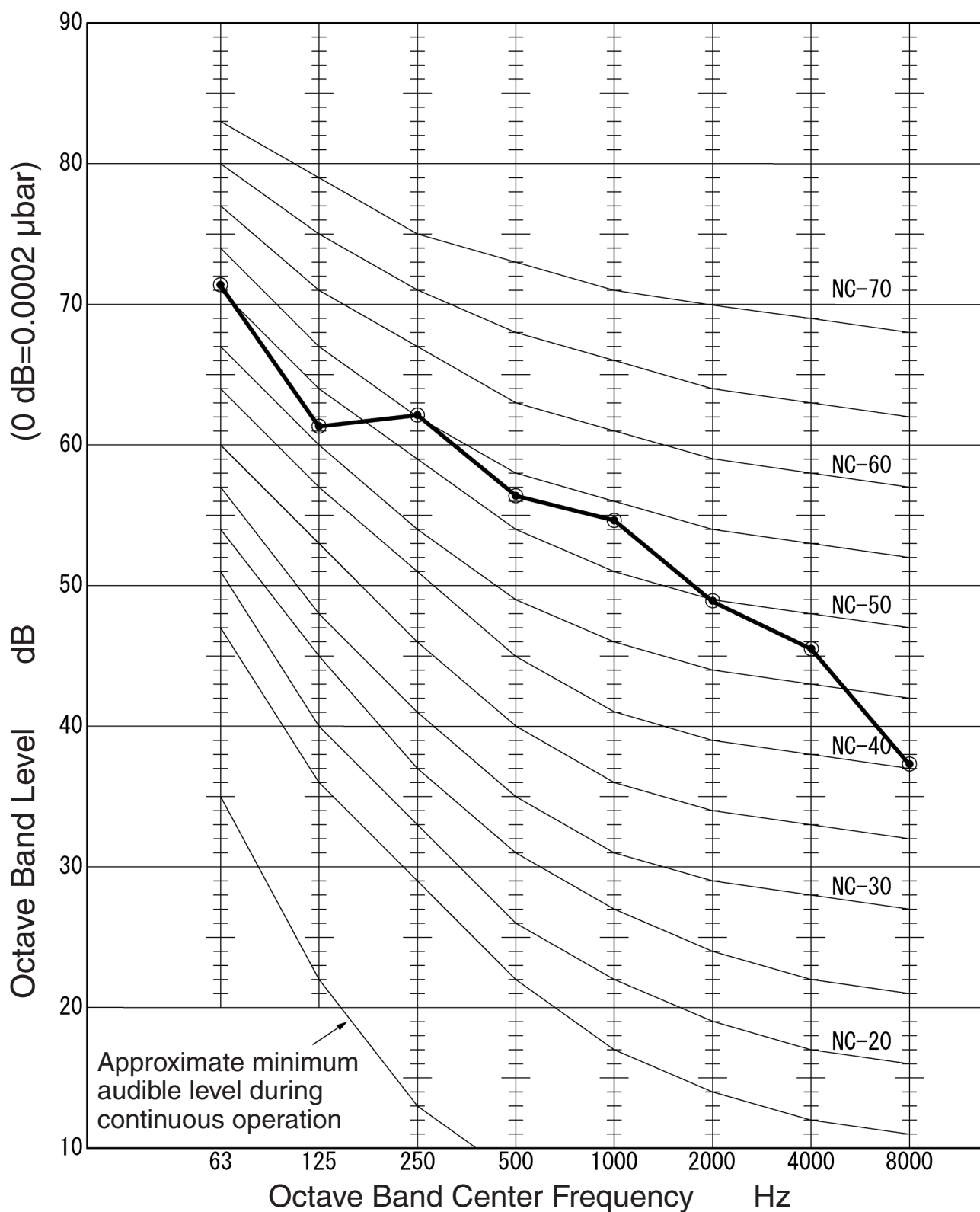
Model name	45.0 kW Type
Operating sound level dB(A)	55 (Quiet Mode)
Measurement position	1m from front, 1.5m from bottom



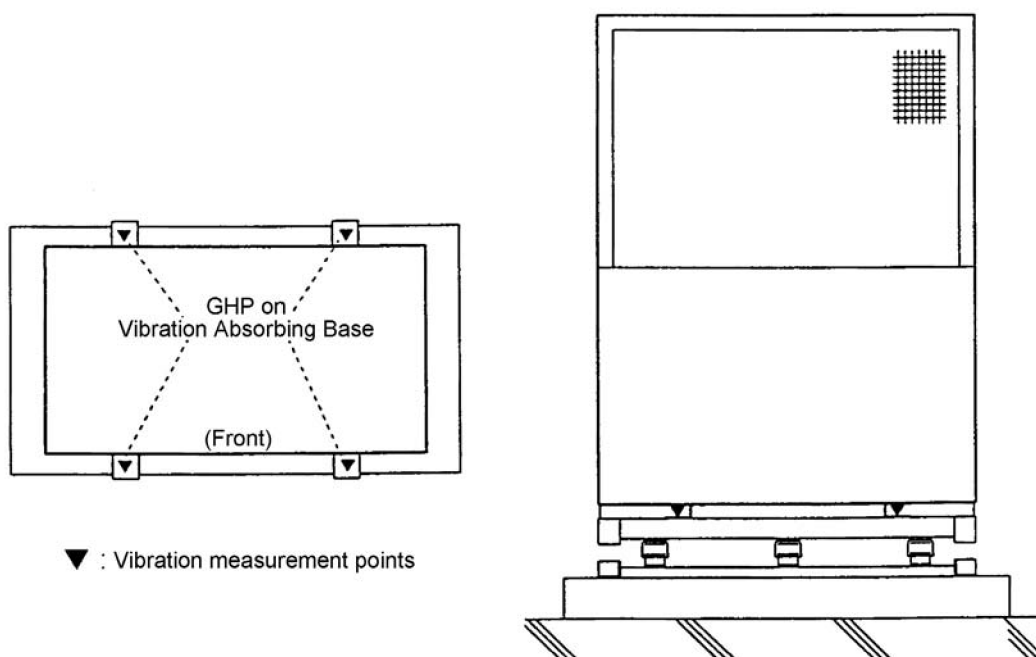
Model name	56.0 kW Type
Operating sound level dB(A)	56 (Quiet Mode)
Measurement position	1m from front, 1.5m from bottom



Model name	71.0 kW Type
Operating sound level dB(A)	60 (Quiet Mode)
Measurement position	1m from front, 1.5m from bottom



(1) Measurement Points



(2) Vibration Force

Maximum vibration force at each frequency is measured over the whole range of engine rotation speeds and loads.

1) Types 45.0 kW to 71.0 kW

Maximum values while changing rotation rate from 800 to 2200 r/min.

1/3rd octave

Frequency (Hz)	3.15	4	5	6.3	8	10	12.5	16	20	25
Vibration force F (N)	1.13	1.66	4.6	5.33	16.8	25.6	39.8	38.4	14.1	15.4
Vibration force level $20\log_{10} \frac{F}{F_0}$	1.06	4.38	13.3	14.5	24.5	28.2	32	31.7	23	23.8
Vibration acceleration (dB)	16.3	27.7	33	36.7	42.5	43.6	45.4	38.4	38.8	41.8

F: Vibration Force (N)

F₀: 1N

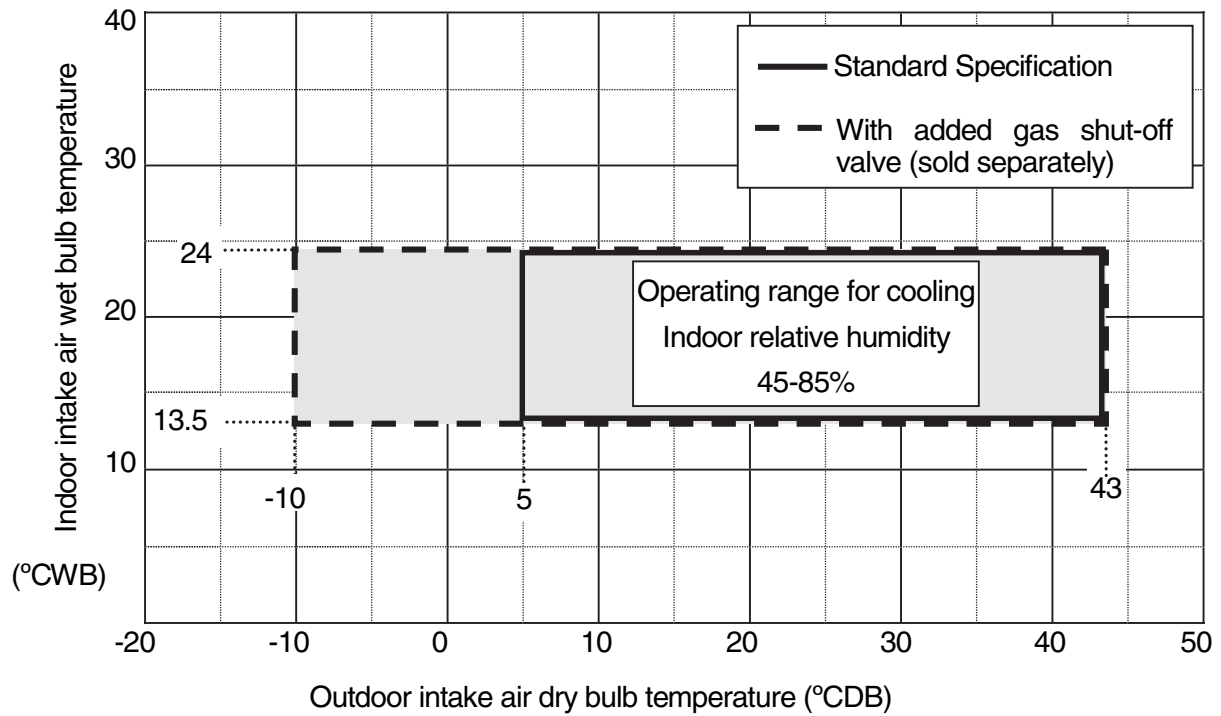
31.5	40	50	63	80	100	125	160	200	250	315	Compound Value
75.9	143	174	155	127	112	155	359	148	109	92.4	555.8
37.6	43.1	44.8	43.8	42.1	41	43.8	51.1	43.4	40.8	39.3	54.9
37.7	33.4	31.8	30.6	25.2	22.2	19.8	25.7	22.9	32.6	26	51.0

Contents

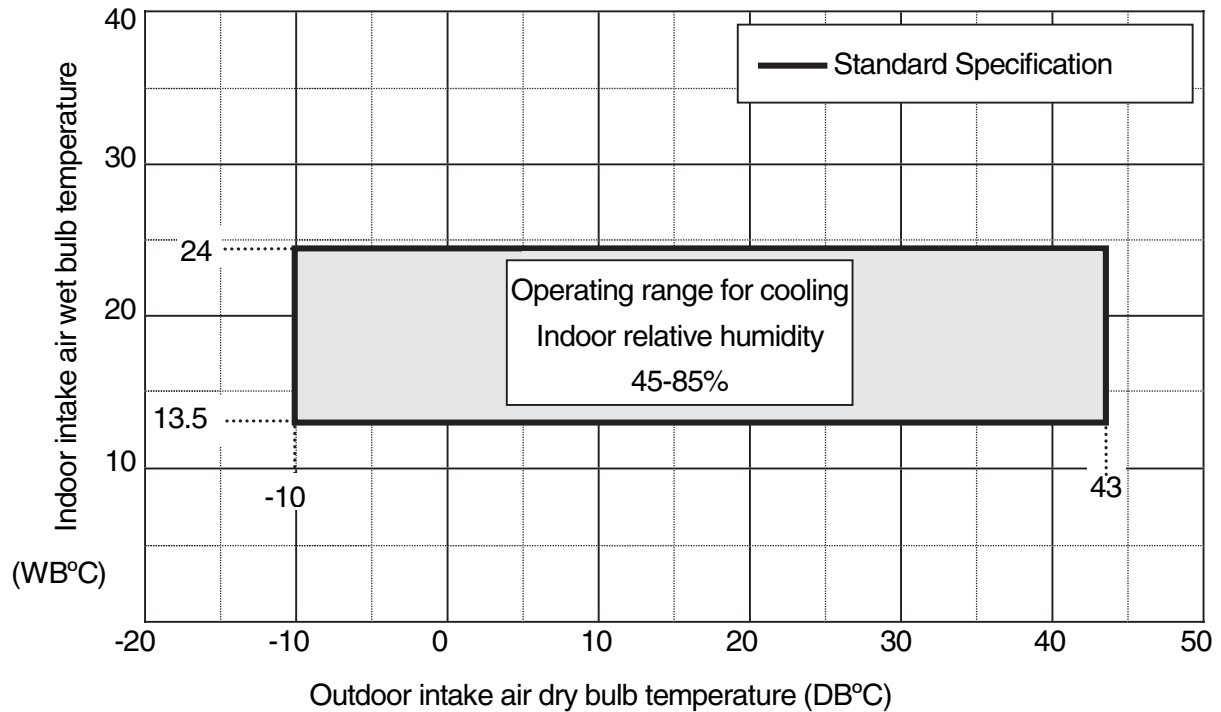
1. System Configuration	
(1) Procedure for selecting model type and calculating performance	D-2
(2) Calculation of actual performance.....	D-3
2. Operating temperature ranges for heating and cooling	D-5

- Cooling

(for 2-WAY W multi)

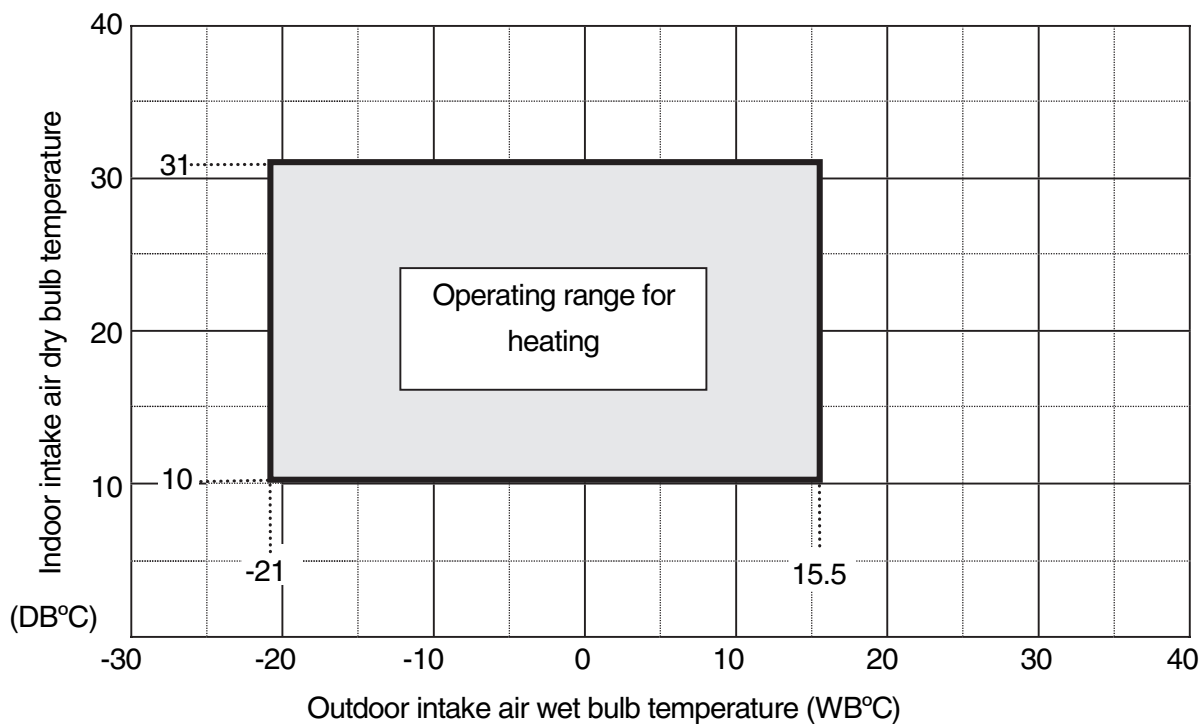


(for 2-WAY multi and 3-WAY multi)

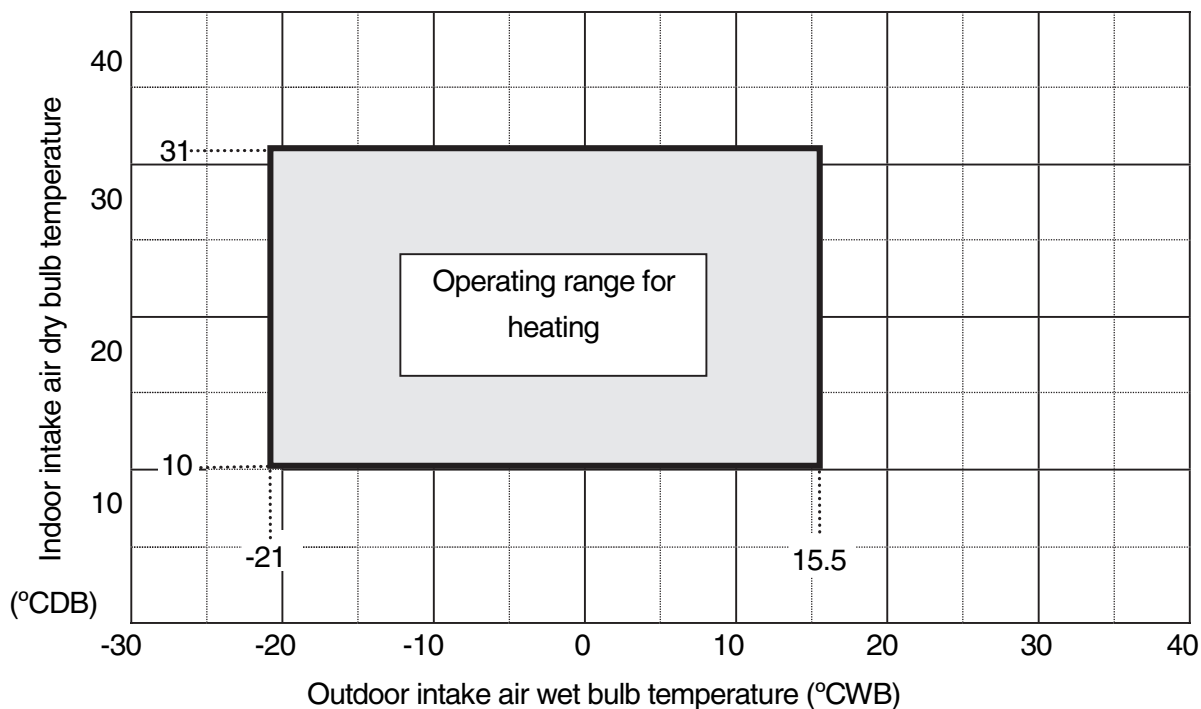


● Heating

(for 2-WAY W multi)



(for 2-WAY multi and 3-WAY multi)



Note 1 : The remote control temperature setting range is as shown in the table below. This is slightly different from the system operating temperature range.

	Upper limit	Lower limit
Cooling	30	18
Heating	26	16

Note 2 : When heating starts (during warm-up), the system can operate even if the indoor temperature is below 10°C.