Refrigerant R410A
INVERTER

AIR CONDITIONER

Cassette type

DESIGN & TECHNICAL MANUAL

INDOOR

RICH09AVFJ
RICH12AVFJ
RICH18AVFJ

OUTDOOR

ROSH09AFCJ
ROSH12AFCJ
ROSH18AVFJ

1. INDOOR UNIT

CASSETTE TYPE :

RICH09AVFJ
RICH12AVFJ
RICH18AVFJ

CONTENTS

1. INDOOR UNIT

1. FEATURES

■ MODEL

RICH09AVFJ / ROSH09AFCJ
RICH12AVFJ / ROSH12AFCJ
RICH18AVFJ / ROSH18AFCJ

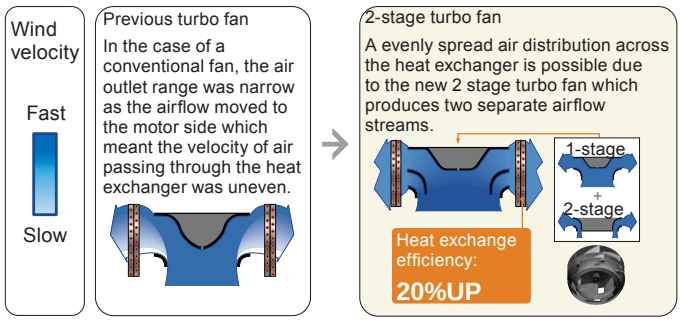
■ FEATURES

● Energy saving

- All DC design
- Heat exchange efficiency increased and larger air flow by adoption of new type turbo fan

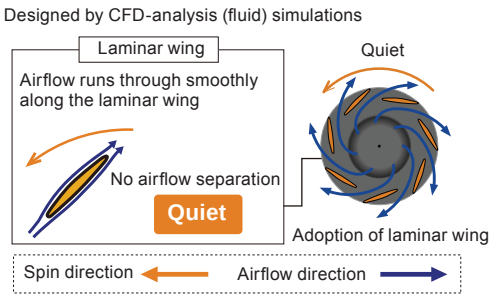
● 2-stage turbo fan

High efficiency design by 2 stage structure



● Quiet quality

Optimization of wing form (laminar wing type) and wing number (7 blades each)



● Easy maintenance

①Maintenance of fan motor and fan

Maintenance of the fan motor and fan can be done easily after taking off the panel as the bell mouth of the fan can be removed easily.

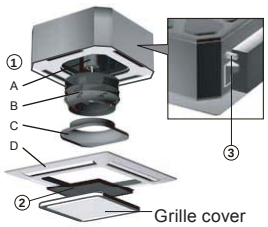
A : Fan motor　B : 2-stage turbo fan
C : Bell-mouth　D : Panel

②Long life filter

: standard equipment

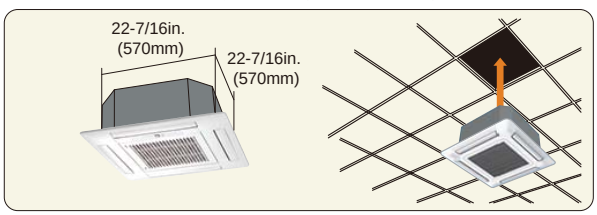
③Adaptation of transparent drainage parts

During installation, maintenance and operation, the drain pump and kit can be checked easily.

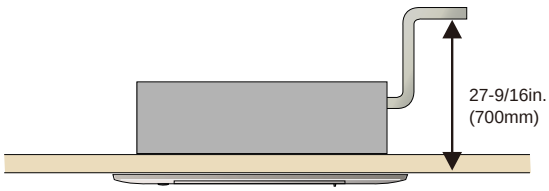


● Compact design

Easy installation by taking off ceiling panel of 23-5/8in. x 23-5/8in.(600mm x 600mm) size

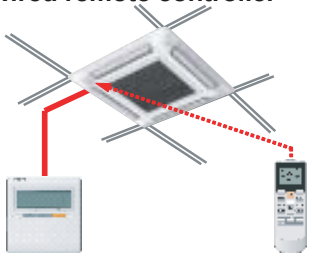


● High lift drain pump



● Easy installation

Easy setting by wireless or wired remote controller

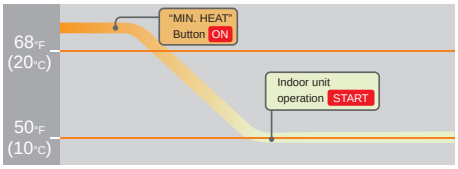


● MIN. HEAT Operation

The room temperature can be set to go no lower than 50°F (10°C), thus ensuring that the room does not get too cold when not occupied.

Caution)

- When the room temperature is higher than 50°F (10°C), "**MIN. HEAT**" operation will not start. Operation starts and maintains the room temperature at 50°F (10°C) when the temperature drops below 50°F (10°C).
- When "**MIN. HEAT**" operation stops, the room set temperature quickly returns to the preset temperature.



● Economy operation

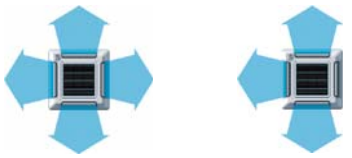
The power consumption can be reduced.

■ FUNCTION SETTING

● Outlet direction selection

- Performs operation matched to the number of outlets when 4 directions are unnecessary and outlets are blocked when the ceiling cassette is installed in a corner, etc.

4-way direction **3-way direction**



4-way direction mode: Set when there are 4 outlets (shipped state).

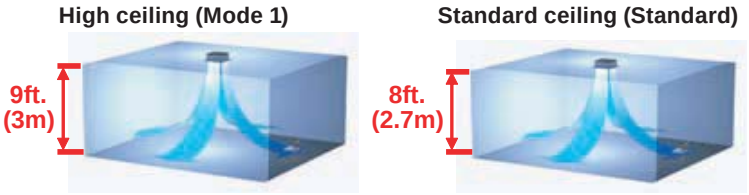
3-way direction mode: Set when there are 3 outlets.

● Ceiling switching function

Air reaches sufficiently up to 9ft. (3m) height, even it is compact cassette type.

Also delivers air to high ceilings by selecting the mode and raising the air flow according to the height of the ceiling.

High ceiling (Mode 1) **Standard ceiling (Standard)**



Standard ...Operates at normal airflow.

Mode 1 ...Airflow becomes greater than normal.

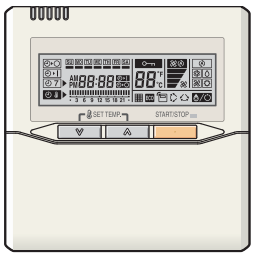
● Auto restart

The unit will restart automatically when the current returns even when there is a power interruption during operation.

2. REMOTE CONTROLLER

WIRED REMOTE CONTROLLER

■ FEATURES



- Various timer setup available (ON/OFF/WEEKLY).
- Equipped with weekly timer as standard function. (Start/Stop function is twice per day for a week)
- When setting up the timer, start/stop and temperature setup can be changed.
- When a failure occurs, the error code is displayed.
- Error history.(Last 16 error codes can be accessed.)
- The room temperature can be controlled by detecting the temperature accurately with Built-in thermo sensor.

● High performance and compact size

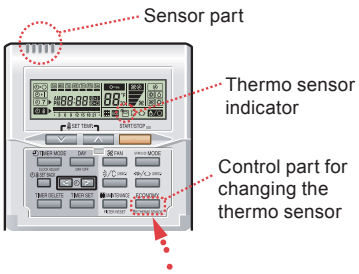
Individual control + Thermo sensor + Weekly timer + Setback timer = Wired remote controller

● Accurate and comfortable

Indoor temperature can be detected accurately by the inclusion of a thermo sensor in the body of the wired controller.

Our system can correspond to various scenes.

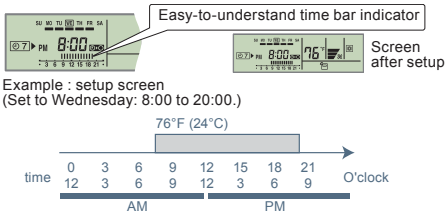
This wired remote controller and the optional remote sensor allows flexibility in sensor location, and suitable for all requirements.



● Built-in timers

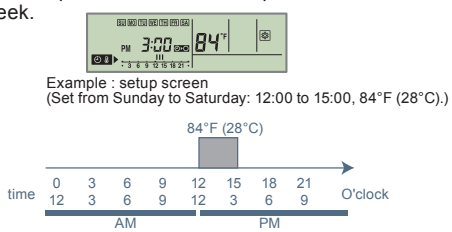
Weekly timer

Possible to set ON/OFF time to operate twice each day of the week.

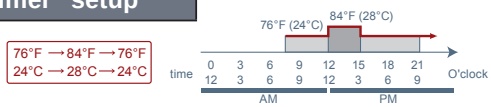


Setback timer

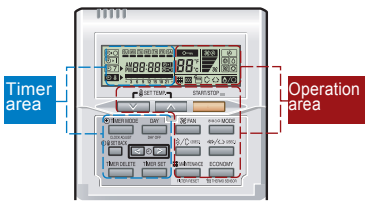
Possible to set temperature for two time spans and for each day of the week.



At "Weekly timer" + "Set back timer" setup



● Easy-to-understand operation

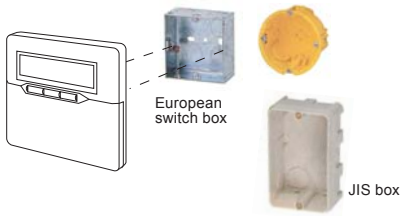


[Variable timer control]

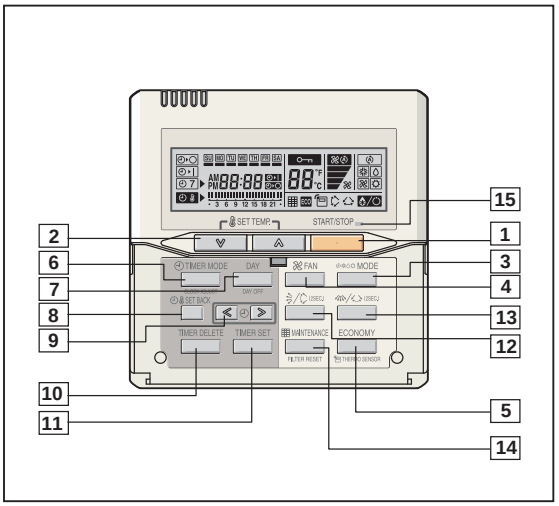
The operation/display sections are zoned according to time and operation, enabling variable programming to match application.

● Simple installation

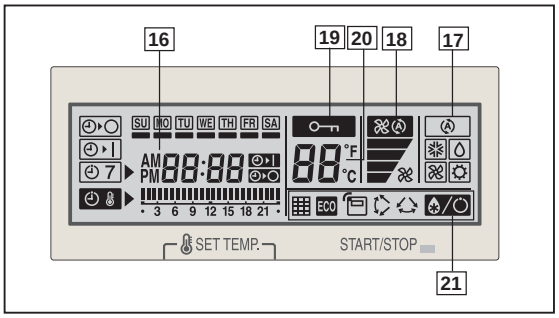
Components are compatible with standard switch boxes. Flat back surface allows equipment to be installed wherever it is needed.



■ FUNCTIONS

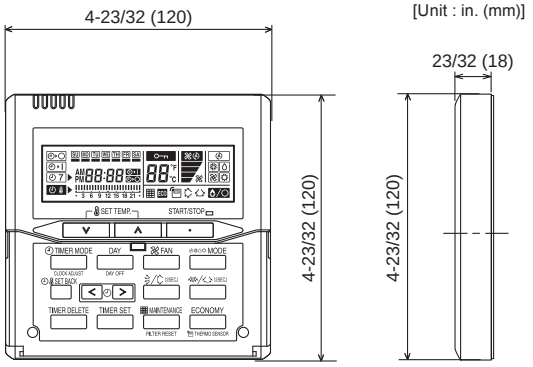


Indicator panel



■ DIMENSION

[Unit : in. (mm)]



Front View　　Side View

■ SPECIFICATION

SIZE	[H x W x D]: in.(mm)	4-23/32 x 4-23/32 x 23/32 (120 x 120 x 18)
WEIGHT	oz. (g)	5.6 (160)
CABLE LENGTH	ft. (m)	33 (10)
POWER	(V)	12

1 START/STOP button
Pressed to start and stop operation.

2 SET TEMP. button
Selects the setting temperature.

3 MODE button
Selects the operating mode (AUTO, HEAT, FAN, COOL, DRY).

4 FAN button
Selects the fan speed (AUTO, QUIET, LOW, MED, HIGH).

5 ECONOMY (THERMO SENSOR) button
Turns the economy efficient mode on and off.

6 TIMER MODE (CLOCK ADJUST) button
Selects the timer mode (OFF TIMER, ON TIMER, WEEKLY TIMER). Sets the current time.

7 DAY (DAY OFF) button
Temporarily cancels one day timer.

8 SET BACK button
Pressed to select the set back timer.

9 Set time button
Pressed to set time.

10 TIMER DELETE button
Deletes the weekly timer schedule.

11 TIMER SET button
Sets the date, hour, minute and on-off time.

12 Vertical airflow direction and swing button
Push for two seconds to change the swing mode.

13 Horizontal airflow direction and swing button
Push for two seconds to change the swing mode.

14 FILTER RESET button

15 Operation lamp
Lights during operation and when the timer is on.

16 Timer and clock indicator

17 Operation mode indicator

18 Fan speed indicator

19 Operation lock indicator

20 Temperature indicator

21 Function indicator

- Defrost indicator
- Thermo sensor indicator
- Economy indicator
- Vertical swing indicator
- Horizontal swing indicator
- Filter indicator

Functions will be different due to type of indoor unit.
For details, please see operation manual.

■ WIRING SPECIFICATIONS

Use	Cable size	Wire type	Remarks
Remote controller cable	22AWG (0.33 mm^2)	Polar 3 core	Use sheathed PVC cable

3. SPECIFICATIONS

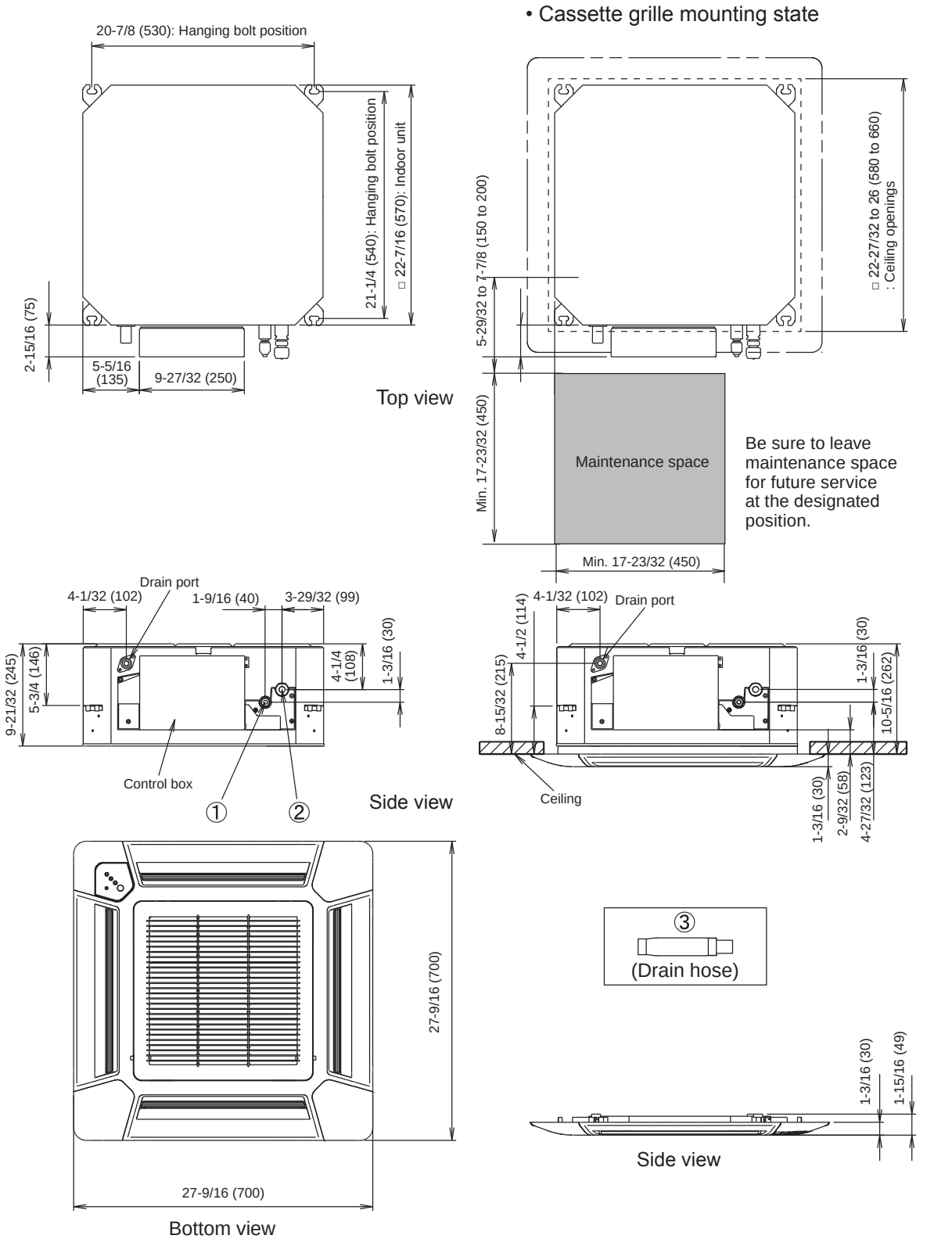
Type					COMPACT CASSETTE MODEL		
					INVERTER HEAT PUMP		
Model name					RICH09AVFJ	RICH12AVFJ	RICH18AVFJ
Power source					208 / 230V ~ 60Hz		
Available boltage range					187 - 253V ~ 60Hz		
Capacity	Cooling	Rated		kW	2.64	3.52	5.28
				Btu/h	9,000	12,000	18,000
		Min - Max		kW	0.90 - 3.60	0.90 - 4.00	0.90 - 5.90
				Btu/h	3,100 - 12,000	3,100 - 13,600	3,100 - 20,100
	Heating	Rated		kW	3.52	4.69	6.33
				Btu/h	12,000	16,000	21,600
		Min - Max		kW	0.90 - 5.28	0.90 - 5.70	0.90 - 7.50
				Btu/h	3,100 - 18,000	3,100 - 19,400	3,100 - 25,600
Input power	Cooling	Rated		kW	0.62	0.94	1.61
		Max			1.40	1.45	2.15
	Heating	Rated			0.89	1.44	1.76
		Max			1.80	2.00	2.60
Current	Cooling	Rated		A	3.0	4.4	7.1
	Heating				4.1	6.7	7.7
EER		Cooling		kW/kW	4.25	3.74	3.28
				Btu/hW	14.5	12.8	11.2
COP		Heating		kW/kW	3.95	3.25	3.59
				Btu/hW	13.5	11.1	12.3
SEER		Cooling		Btu/hW	24.0	21.9	20.1
HSPF		Heating		Btu/hW	13.0	12.2	11.5
Power factor		Cooling		%	90	94	98
		Heating			94	94	99
Moisture removal				pints/h (l/h)	1.3 (0.6)	2.5 (1.2)	4.6 (2.2)
Maximum operating current *1		Cooling		A	9.3	9.4	10.0
		Heating			10.8	10.9	14.0
Fan	Airflow rate	Cooling	High	CFM (m^3/h)	318 (540)	359 (610)	400 (680)
			Med		288 (490)	312 (530)	341 (580)
			Low		259 (440)	277 (470)	288 (490)
			Quiet		230 (390)	241 (410)	241 (410)
		Heating	High		318 (540)	359 (610)	471 (800)
			Med		288 (490)	312 (530)	400 (680)
			Low		259 (440)	277 (470)	341 (580)
			Quiet		230 (390)	241 (410)	265 (450)
	Type × Q'ty				Turbo fan × 1		
	Motor Output			W	54	54	54
Sound pressure level *2		Cooling	High	dB (A)	33	37	40
			Med		32	33	36
			Low		29	31	32
			Quiet		28	28	28
		Heating	High		34	37	44
			Med		32	33	40
			Low		29	31	36
			Quiet		27	28	30
Heat exchanger type		Dimensions (H × W × D)		in. (mm)	8-9/32 × 51-9/16 × 17/32 + 8-9/32 × 49-7/32 × 17/32 (210×1310×13.3 + 210×1250×13.3)		
		Fin pitch		FPI	21		
		Rows × Stages			2 × 10		
		Pipe type			Copper tube		
		Fin type			Aluminum		
Dimensions (H × W × D)	Net			in. (mm)	9-21/32 × 22-7/16 × 22-7/16 (245×570×570)		
	Gross				10-7/16 × 28-3/4 × 24-19/32 (265×730×625)		
Weight	Net			lbs. (kg)	33 (15)		
	Gross				40 (18)		
Connection pipe	Size	Liquid		in. (mm)	Ø1/4 (Ø6.35)		
		Gas			Ø3/8 (Ø9.52)		Ø1/2 (Ø12.7)
	Method				Flare		
Operation range		Cooling		°F (°C)	64 to 90 (18 to 32)		
				%RH	80 or less		
		Heating		°F (°C)	60 to 88 (16 to 30)		
Remote controller type					Wired [Wireless(option)]		
Drain hose	Material				HARD PVC		
	Size			in. (mm)	Ø3/4 (Ø20.7) (I.D.) Ø1-1/16 (Ø26.6) (O.D.)		
Cassette grille	Model name				UTG-CCGF		
	Material				PS		
	Color				WHITE (Approximate color of MUNSELL N9.25 /)		
	Dimensions (H × W × D)	Net		in. (mm)	1-15/16 × 27-9/16 × 27-9/16 (49 × 700 × 700)		
		Gross			4-23/32 × 30-1/8 × 29-23/32 (120 × 765 × 755)		
	Weight	Net		lbs. (kg)	5.7 (2.6)		
		Gross			10 (4.5)		

Note :
*Specifications are based on the following conditions.
Cooling : Indoor temperature of 80°F (26.67°C) DB / 67°F (19.44°C) WB, and outdoor temperature of 95°F (35°C) DB / 75°F (23.9°C) WB.
Heating : Indoor temperature of 70°F (21.11°C) DB / 59°F (15°C) WB, and outdoor temperature of 47°F (8.33°C) DB / 43°F (6.11°C) WB.
Pipe length : 24ft.7in (7.5m), Height difference:0 m. (Outdoor unit-Indoor unit)
• The protective function might work when using it outside the operation range.
*1: The maximum current is the maximum value when operated within the operation range.
*2: These are the measured values in the manufacturer's anechoic chamber.
Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.

4. DIMENSIONS

■MODEL: RICH09AVFJ, RICH12AVFJ, RICH18AVFJ

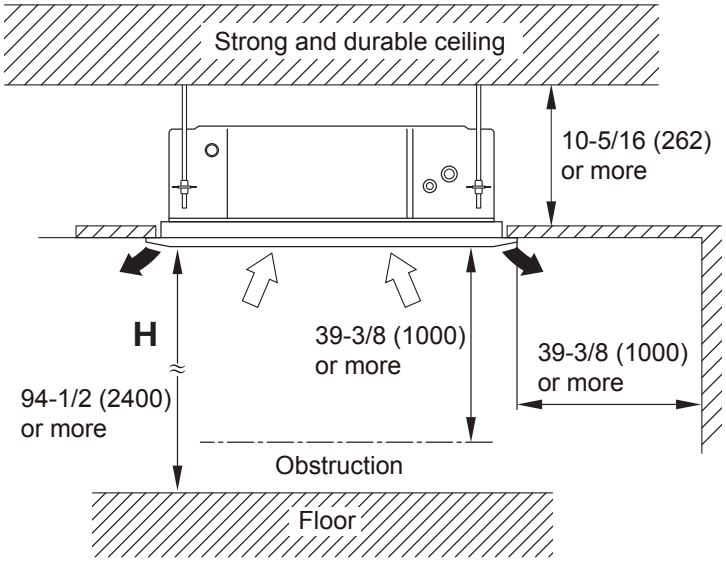
Unit : in.(mm)



			RICH09AVFJ, RICH12AVFJ	RICH18AVFJ
①	Refrigerant pipe flare connection	Liquid	Ø1/4 in. (Ø6.35 mm)	Ø1/4 in. (Ø6.35 mm)
②		Gas	Ø3/8 in. (Ø9.52 mm)	Ø1/2 in. (Ø12.70 mm)
③	Drain hose connection	Drain hose	I.D. Ø3/4 in. , O.D. Ø1-1/16 in.	

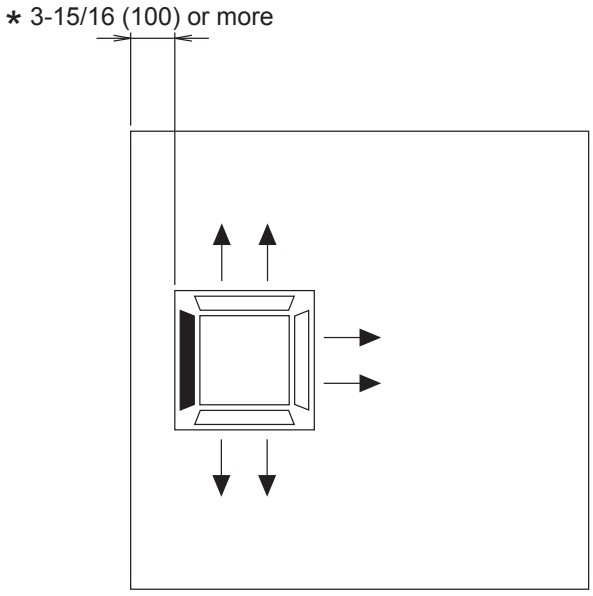
■ INSTALLATION PLACE

Unit : in. (mm)



	H (The maximum height from floor to ceiling) Unit: in. (mm)		
Model name	AUU9	AUU12	AUU18
Standard mode	106-5/16 (2700)	106-5/16 (2700)	106-5/16 (2700)
High Ceiling mode	-	118-1/8 (3000)	118-1/8 (3000)

● **3-way directions setting**

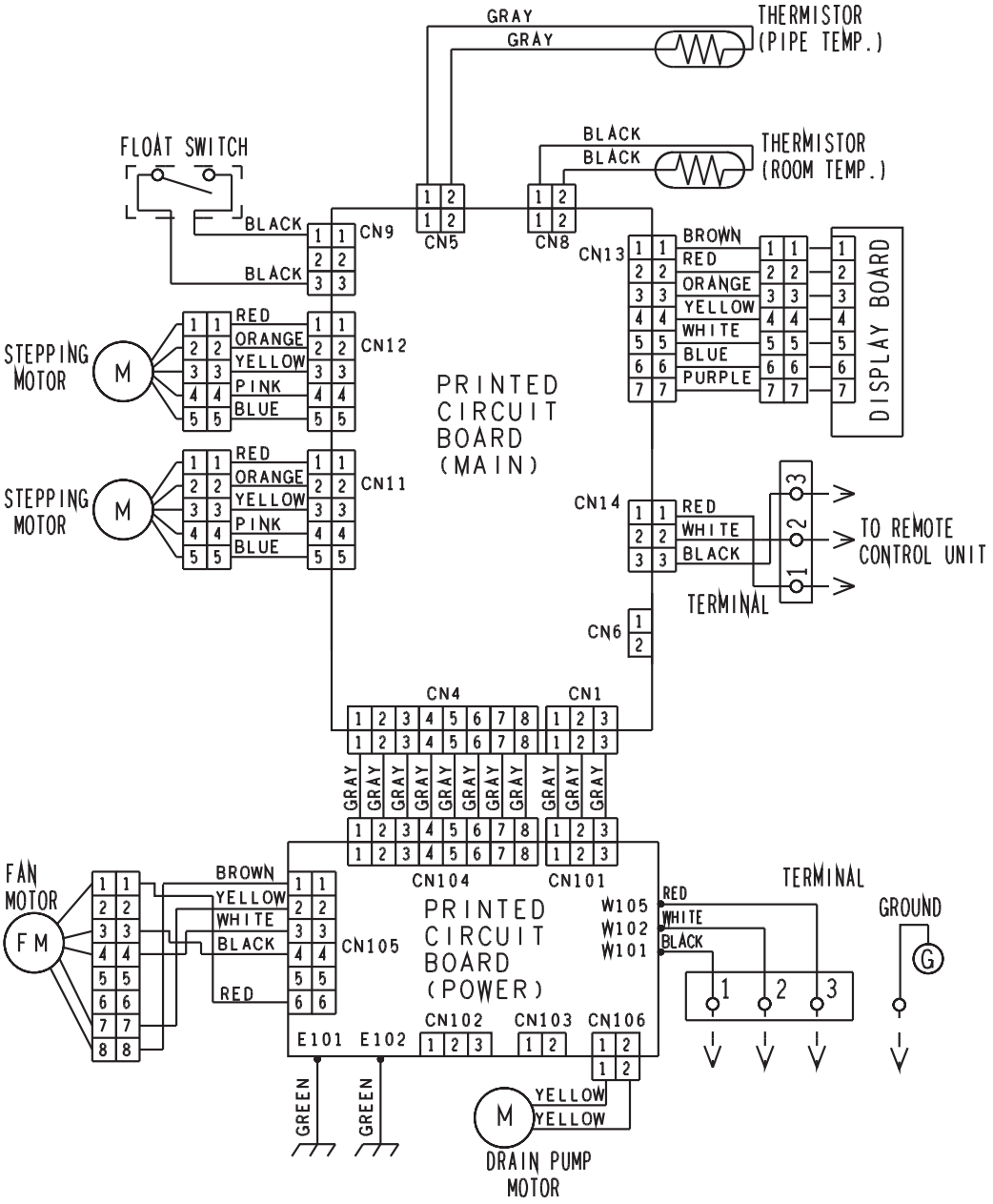


To set “3-way directions”, the air outlet shutter plate (sold separately) must be installed and “outlet-direction” switched to “3-way” by remote controller.

*When installing the indoor unit, be careful about the maintenance space.

5. WIRING DIAGRAMS

■MODEL: RICH09AVFJ, RICH12AVFJ, RICH18AVFJ



6. CAPACITY TABLE

6-1. COOLING CAPACITY

■MODEL: RICH09AVFJ

AFR	318

		Indoor temperature																	
	°FDB	64			70			75			80			85			90		
	°FWB	54			60			63			67			71			73		
Outdoor temperature	°FDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
	15	8.34	6.67	0.22	9.44	7.55	0.22	9.94	7.95	0.22	10.65	8.52	0.22	11.36	9.08	0.23	11.71	9.37	0.23
	23	8.17	6.53	0.24	9.25	7.40	0.25	9.73	7.79	0.25	10.43	8.34	0.25	11.12	8.90	0.26	11.47	9.18	0.26
	32	7.99	6.39	0.25	9.05	7.24	0.26	9.53	7.63	0.26	10.21	8.17	0.26	10.89	8.71	0.26	11.24	8.99	0.27
	41	7.82	6.26	0.27	8.86	7.09	0.27	9.33	7.46	0.27	10.00	8.00	0.28	10.66	8.53	0.28	11.00	8.80	0.28
	50	7.65	6.12	0.25	8.67	6.93	0.25	9.13	7.30	0.26	9.78	7.82	0.26	10.43	8.34	0.26	10.77	8.61	0.26
	59	7.48	5.68	0.30	8.47	6.44	0.31	8.93	6.79	0.31	9.56	7.27	0.31	10.20	7.75	0.31	10.53	8.00	0.32
	67	8.43	6.82	0.47	9.55	6.82	0.48	10.07	7.51	0.49	10.78	7.88	0.49	11.50	8.09	0.50	11.87	8.97	0.50
	77	8.02	6.72	0.53	9.08	6.72	0.54	9.55	7.40	0.55	10.24	7.78	0.55	10.92	7.95	0.56	11.26	8.84	0.56
	87	7.61	6.48	0.60	8.56	6.48	0.61	9.04	7.13	0.61	9.69	7.51	0.62	10.34	7.68	0.62	10.68	8.53	0.63
	95	7.06	6.24	0.60	7.98	6.21	0.61	8.39	6.86	0.61	9.00	7.20	0.62	9.62	7.37	0.63	9.93	8.19	0.63
	104	6.01	5.77	0.51	6.79	5.77	0.52	7.13	6.35	0.52	7.64	6.65	0.53	8.19	6.82	0.53	8.43	7.57	0.54
	115	5.53	5.36	0.51	6.24	5.36	0.52	6.59	5.90	0.52	7.03	6.21	0.53	7.51	6.35	0.54	7.75	7.06	0.54

AFR : Air Flow Rate (CFM)
TC : Total Capacity (kBtu/h)
SHC : Sensible Heat Capacity (kBtu/h)
IP : Input Power (kW)

AFR	540

		Indoor temperature																	
	°CDB	17.8			21.1			23.9			26.7			29.4			32.2		
	°CWB	12.2			15.6			17.2			19.4			21.7			22.8		
Outdoor temperature	°CDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
	-10.0	2.44	1.96	0.22	2.77	2.21	0.22	2.91	2.33	0.22	3.12	2.50	0.22	3.33	2.66	0.23	3.43	2.75	0.23
	-5.0	2.39	1.91	0.24	2.71	2.17	0.25	2.85	2.28	0.25	3.06	2.45	0.25	3.26	2.61	0.26	3.36	2.69	0.26
	0.0	2.34	1.87	0.25	2.65	2.12	0.26	2.79	2.23	0.26	2.99	2.39	0.26	3.19	2.55	0.26	3.29	2.63	0.27
	5.0	2.29	1.83	0.27	2.60	2.08	0.27	2.73	2.19	0.27	2.93	2.34	0.28	3.12	2.50	0.28	3.22	2.58	0.28
	10.0	2.24	1.79	0.25	2.54	2.03	0.25	2.68	2.14	0.26	2.87	2.29	0.26	3.06	2.45	0.26	3.16	2.52	0.26
	15.0	2.19	1.67	0.30	2.48	1.89	0.31	2.62	1.99	0.31	2.80	2.13	0.31	2.99	2.27	0.31	3.09	2.35	0.32
	19.4	2.47	2.00	0.47	2.80	2.00	0.48	2.95	2.20	0.49	3.16	2.31	0.49	3.37	2.37	0.50	3.48	2.63	0.50
	25.0	2.35	1.97	0.53	2.66	1.97	0.54	2.80	2.17	0.55	3.00	2.28	0.55	3.20	2.33	0.56	3.30	2.59	0.56
	30.6	2.23	1.90	0.60	2.51	1.90	0.61	2.65	2.09	0.61	2.84	2.20	0.62	3.03	2.25	0.62	3.13	2.50	0.63
	35.0	2.07	1.83	0.60	2.34	1.82	0.61	2.46	2.01	0.61	2.64	2.11	0.62	2.82	2.16	0.63	2.91	2.40	0.63
	40.0	1.76	1.69	0.51	1.99	1.69	0.52	2.09	1.86	0.52	2.24	1.95	0.53	2.40	2.00	0.53	2.47	2.22	0.54
	46.0	1.62	1.57	0.51	1.83	1.57	0.52	1.93	1.73	0.52	2.06	1.82	0.53	2.20	1.86	0.54	2.27	2.07	0.54

AFR : Air Flow Rate (m^3/h)
TC : Total Capacity (kW)
SHC : Sensible Heat Capacity (kW)
IP : Input Power (kW)

■MODEL: RICH12AVFJ

AFR	359

		Indoor temperature																	
	°FDB	64			70			75			80			85			90		
	°FWB	54			60			63			67			71			73		
Outdoor temperature	°FDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
	15	11.11	8.65	0.33	12.56	9.79	0.34	13.24	10.31	0.34	14.19	11.06	0.34	15.15	11.81	0.35	15.61	12.17	0.35
	23	10.88	8.46	0.38	12.31	9.56	0.39	12.97	10.08	0.39	13.90	10.80	0.40	14.85	11.54	0.40	15.30	11.89	0.40
	32	10.66	8.46	0.42	12.05	9.57	0.43	12.70	10.08	0.43	13.61	10.81	0.43	14.54	11.54	0.44	14.99	11.90	0.44
	41	10.44	7.62	0.44	11.80	8.61	0.45	12.43	9.08	0.45	13.32	9.73	0.46	14.23	10.39	0.46	14.67	10.71	0.47
	50	10.21	7.21	0.44	11.54	8.15	0.45	12.16	8.59	0.45	13.03	9.21	0.46	13.93	9.84	0.47	14.36	10.14	0.47
	59	9.99	7.05	0.45	11.29	7.97	0.46	11.89	8.40	0.47	12.74	9.00	0.47	13.62	9.62	0.48	14.04	9.92	0.48
	67	11.26	8.29	0.72	12.73	8.29	0.73	13.41	9.14	0.74	14.36	9.59	0.75	15.35	9.83	0.75	15.83	10.92	0.76
	77	10.68	8.15	0.81	12.08	8.15	0.82	12.73	9.01	0.83	13.65	9.45	0.84	14.57	9.66	0.85	15.01	10.75	0.85
	87	10.13	7.88	0.90	11.43	7.88	0.92	12.04	8.70	0.93	12.90	9.11	0.94	13.82	9.35	0.95	14.23	10.37	0.95
	95	9.42	7.57	0.91	10.65	7.57	0.92	11.19	8.36	0.93	12.01	8.77	0.94	12.83	8.97	0.95	13.24	9.96	0.96
	104	7.98	6.99	0.77	9.04	6.99	0.79	9.52	7.71	0.79	10.20	8.12	0.80	10.92	8.29	0.81	11.26	9.21	0.81
	115	7.37	6.55	0.78	8.33	6.55	0.79	8.80	7.23	0.80	9.42	7.57	0.80	10.07	7.75	0.81	10.37	8.63	0.82

AFR : Air Flow Rate (CFM)
TC : Total Capacity (kBtu/h)
SHC : Sensible Heat Capacity (kBtu/h)
IP : Input Power (kW)

AFR	610

		Indoor temperature																	
	°CDB	17.8			21.1			23.9			26.7			29.4			32.2		
	°CWB	12.2			15.6			17.2			19.4			21.7			22.8		
Outdoor temperature	°CDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
	-10.0	3.26	2.54	0.33	3.68	2.87	0.34	3.88	3.02	0.34	4.16	3.24	0.34	4.44	3.46	0.35	4.58	3.57	0.35
	-5.0	3.19	2.48	0.38	3.61	2.80	0.39	3.80	2.95	0.39	4.07	3.17	0.40	4.35	3.38	0.40	4.48	3.48	0.40
	0.0	3.12	2.48	0.42	3.53	2.80	0.43	3.72	2.95	0.43	3.99	3.17	0.43	4.26	3.38	0.44	4.39	3.49	0.44
	5.0	3.06	2.23	0.44	3.46	2.52	0.45	3.64	2.66	0.45	3.90	2.85	0.46	4.17	3.05	0.46	4.30	3.14	0.47
	10.0	2.99	2.11	0.44	3.38	2.39	0.45	3.56	2.52	0.45	3.82	2.70	0.46	4.08	2.88	0.47	4.21	2.97	0.47
	15.0	2.93	2.07	0.45	3.31	2.34	0.46	3.49	2.46	0.47	3.73	2.64	0.47	3.99	2.82	0.48	4.12	2.91	0.48
	19.4	3.30	2.43	0.72	3.73	2.43	0.73	3.93	2.68	0.74	4.21	2.81	0.75	4.50	2.88	0.75	4.64	3.20	0.76
	25.0	3.13	2.39	0.81	3.54	2.39	0.82	3.73	2.64	0.83	4.00	2.77	0.84	4.27	2.83	0.85	4.40	3.15	0.85
	30.6	2.97	2.31	0.90	3.35	2.31	0.92	3.53	2.55	0.93	3.78	2.67	0.94	4.05	2.74	0.95	4.17	3.04	0.95
	35.0	2.76	2.22	0.91	3.12	2.22	0.92	3.28	2.45	0.93	3.52	2.57	0.94	3.76	2.63	0.95	3.88	2.92	0.96
	40.0	2.34	2.05	0.77	2.65	2.05	0.79	2.79	2.26	0.79	2.99	2.38	0.80	3.20	2.43	0.81	3.30	2.70	0.81
	46.0	2.16	1.92	0.78	2.44	1.92	0.79	2.58	2.12	0.80	2.76	2.22	0.80	2.95	2.27	0.81	3.04	2.53	0.82

AFR : Air Flow Rate (m^3/h)
TC : Total Capacity (kW)
SHC : Sensible Heat Capacity (kW)
IP : Input Power (kW)

■MODEL:RICH18AVFJ

AFR	400

		Indoor temperature																	
	°FDB	64			70			75			80			85			90		
	°FWB	54			60			63			67			71			73		
Outdoor temperature	°FDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
	15	15.58	10.90	0.51	17.60	12.32	0.52	18.56	12.99	0.53	19.87	13.91	0.53	21.22	14.85	0.54	21.89	15.33	0.54
	23	15.26	10.68	0.55	17.24	12.07	0.56	18.18	12.72	0.57	19.46	13.62	0.57	20.79	14.55	0.58	21.44	15.01	0.58
	32	14.94	10.46	0.57	16.88	11.82	0.58	17.79	12.46	0.58	19.05	13.34	0.59	20.36	14.25	0.60	20.99	14.70	0.60
	41	14.62	10.23	0.58	16.52	11.56	0.59	17.41	12.19	0.59	18.64	13.05	0.60	19.93	13.95	0.60	20.54	14.38	0.61
	50	14.30	10.01	0.59	16.16	11.31	0.60	17.03	11.92	0.60	18.23	12.76	0.61	19.50	13.65	0.62	20.09	14.06	0.62
	59	13.98	9.15	0.62	15.80	10.33	0.63	16.65	10.89	0.64	17.83	11.66	0.65	19.07	12.47	0.65	19.64	12.85	0.66
	67	15.76	10.47	1.07	17.81	10.47	1.09	18.77	11.57	1.10	20.10	12.11	1.11	21.50	12.42	1.12	22.14	13.78	1.13
	77	14.98	10.37	1.21	16.92	10.34	1.23	17.84	11.40	1.24	19.11	11.98	1.25	20.40	12.25	1.27	21.05	13.61	1.27
	87	14.16	10.20	1.35	15.97	10.20	1.37	16.86	11.23	1.38	18.05	11.81	1.40	19.28	12.08	1.41	19.89	13.41	1.42
	95	14.13	10.27	1.55	15.93	10.27	1.58	16.82	11.33	1.59	18.02	11.87	1.61	19.24	12.15	1.63	19.82	13.51	1.64
	104	10.85	9.01	1.12	12.28	8.97	1.14	12.93	9.93	1.15	13.85	10.41	1.17	14.81	10.65	1.18	15.25	11.84	1.19
	115	10.07	8.33	1.13	11.40	8.33	1.15	12.01	9.18	1.16	12.86	9.66	1.17	13.75	9.86	1.18	14.16	10.95	1.19

AFR : Air Flow Rate (CFM)
TC : Total Capacity (kBtu/h)
SHC : Sensible Heat Capacity (kBtu/h)
IP : Input Power (kW)

AFR	680

		Indoor temperature																	
	°CDB	17.8			21.1			23.9			26.7			29.4			32.2		
	°CWB	12.2			15.6			17.2			19.4			21.7			22.8		
Outdoor temperature	°CDB	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
	-10.0	4.57	3.20	0.51	5.16	3.61	0.52	5.44	3.81	0.53	5.82	4.08	0.53	6.22	4.35	0.54	6.42	4.49	0.54
	-5.0	4.47	3.13	0.55	5.05	3.54	0.56	5.33	3.73	0.57	5.70	3.99	0.57	6.09	4.27	0.58	6.28	4.40	0.58
	0.0	4.38	3.06	0.57	4.95	3.46	0.58	5.21	3.65	0.58	5.58	3.91	0.59	5.97	4.18	0.60	6.15	4.31	0.60
	5.0	4.29	3.00	0.58	4.84	3.39	0.59	5.10	3.57	0.59	5.46	3.82	0.60	5.84	4.09	0.60	6.02	4.21	0.61
	10.0	4.19	2.93	0.59	4.74	3.32	0.60	4.99	3.49	0.60	5.34	3.74	0.61	5.71	4.00	0.62	5.89	4.12	0.62
	15.0	4.10	2.68	0.62	4.63	3.03	0.63	4.88	3.19	0.64	5.22	3.42	0.65	5.59	3.65	0.65	5.76	3.77	0.66
	19.4	4.62	3.07	1.07	5.22	3.07	1.09	5.50	3.39	1.10	5.89	3.55	1.11	6.30	3.64	1.12	6.49	4.04	1.13
	25.0	4.39	3.04	1.21	4.96	3.03	1.23	5.23	3.34	1.24	5.60	3.51	1.25	5.98	3.59	1.27	6.17	3.99	1.27
	30.6	4.15	2.99	1.35	4.68	2.99	1.37	4.94	3.29	1.38	5.29	3.46	1.40	5.65	3.54	1.41	5.83	3.93	1.42
	35.0	4.14	3.01	1.55	4.67	3.01	1.58	4.93	3.32	1.59	5.28	3.48	1.61	5.64	3.56	1.63	5.81	3.96	1.64
	40.0	3.18	2.64	1.12	3.60	2.63	1.14	3.79	2.91	1.15	4.06	3.05	1.17	4.34	3.12	1.18	4.47	3.47	1.19
	46.0	2.95	2.44	1.13	3.34	2.44	1.15	3.52	2.69	1.16	3.77	2.83	1.17	4.03	2.89	1.18	4.15	3.21	1.19

AFR : Air Flow Rate (m^3/h)
TC : Total Capacity (kW)
SHC : Sensible Heat Capacity (kW)
IP : Input Power (kW)

6-2. HEATING CAPACITY

■MODEL : RICH09AVFJ

AFR	318

			Indoor temperature							
		°FDB	60		65		70		75	
	°FDB	°FWB	TC	IP	TC	IP	TC	IP	TC	IP
Outdoor temperature	-5	-7	14.7	1.84	14.3	1.88	14.0	1.92	13.3	1.99
	5	3	16.1	1.79	15.7	1.83	15.4	1.87	14.6	1.94
	14	12	16.8	1.73	16.4	1.76	16.0	1.80	15.2	1.87
	23	19	17.3	1.67	16.9	1.70	16.5	1.74	15.7	1.81
	32	28	17.4	1.61	17.0	1.64	16.6	1.68	15.7	1.74
	41	37	17.4	1.67	17.0	1.71	16.6	1.74	15.8	1.81
	47	43	18.9	1.73	18.5	1.76	18.0	1.80	17.1	1.87
	50	47	20.9	1.75	20.4	1.79	19.9	1.83	18.9	1.90
	59	50	21.6	1.76	21.1	1.80	20.6	1.84	19.6	1.91

AFR : Air Flow Rate (CFM)
TC : Total Capacity (kBtu/h)
IP : Input Power (kW)

AFR	540

			Indoor temperature							
		°CDB	15.6		18.3		21.1		23.9	
	°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP
Outdoor temperature	-20.6	-21.7	4.31	1.84	4.20	1.88	4.10	1.92	3.90	1.99
	-15.0	-16.1	4.73	1.79	4.61	1.83	4.50	1.87	4.28	1.94
	-10.0	-11.1	4.91	1.73	4.80	1.76	4.68	1.80	4.45	1.87
	-5.0	-7.2	5.08	1.67	4.96	1.70	4.84	1.74	4.59	1.81
	0.0	-2.2	5.10	1.61	4.98	1.64	4.86	1.68	4.61	1.74
	5.0	2.8	5.11	1.67	4.99	1.71	4.87	1.74	4.62	1.81
	8.3	6.1	5.54	1.73	5.41	1.76	5.28	1.80	5.01	1.87
	10.0	8.3	6.12	1.75	5.98	1.79	5.83	1.83	5.54	1.90
	15.0	10.0	6.34	1.76	6.19	1.80	6.04	1.84	5.74	1.91

AFR : Air Flow Rate (m^3/h)
TC : Total Capacity (kW)
IP : Input Power (kW)

■MODEL : RICH12AVFJ

AFR	359

			Indoor temperature							
		°FDB	60		65		70		75	
	°FDB	°FWB	TC	IP	TC	IP	TC	IP	TC	IP
Outdoor temperature	-5	-7	15.8	2.23	15.4	2.27	15.0	2.32	14.3	2.36
	5	3	17.6	2.16	17.2	2.21	16.8	2.25	15.9	2.34
	14	12	18.3	2.09	17.8	2.13	17.4	2.17	16.5	2.26
	23	19	19.2	2.01	18.7	2.05	18.2	2.10	17.3	2.18
	32	28	19.5	1.95	19.0	1.99	18.5	2.03	17.6	2.11
	41	37	19.7	1.86	19.2	1.90	18.8	1.94	17.8	2.02
	47	43	20.4	1.92	19.9	1.96	19.4	2.00	18.4	2.08
	50	47	22.5	1.94	22.0	1.98	21.4	2.02	20.4	2.10
	59	50	23.3	1.95	22.8	1.99	22.2	2.03	21.1	2.11

AFR : Air Flow Rate (CFM)
TC : Total Capacity (kBtu/h)
IP : Input Power (kW)

AFR	610

			Indoor temperature							
		°CDB	15.6		18.3		21.1		23.9	
	°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP
Outdoor temperature	-20.6	-21.7	4.63	2.23	4.52	2.27	4.41	2.32	4.19	2.36
	-15.0	-16.1	5.16	2.16	5.03	2.21	4.91	2.25	4.66	2.34
	-10.0	-11.1	5.36	2.09	5.23	2.13	5.10	2.17	4.85	2.26
	-5.0	-7.2	5.61	2.01	5.48	2.05	5.35	2.10	5.08	2.18
	0.0	-2.2	5.70	1.95	5.57	1.99	5.43	2.03	5.16	2.11
	5.0	2.8	5.78	1.86	5.64	1.90	5.50	1.94	5.23	2.02
	8.3	6.1	5.99	1.92	5.84	1.96	5.70	2.00	5.42	2.08
	10.0	8.3	6.60	1.94	6.44	1.98	6.28	2.02	5.97	2.10
	15.0	10.0	6.84	1.95	6.67	1.99	6.51	2.03	6.19	2.11

AFR : Air Flow Rate (m^3/h)
TC : Total Capacity (kW)
IP : Input Power (kW)

■MODEL:RICH18AVFJ

AFR	471

			Indoor temperature							
		°FDB	60		65		70		75	
	°FDB	°FWB	TC	IP	TC	IP	TC	IP	TC	IP
Outdoor temperature	-5	-7	19.3	2.42	18.9	2.47	18.4	2.52	17.5	2.63
	5	3	20.7	2.63	20.2	2.68	19.7	2.74	18.8	2.85
	14	12	22.2	2.68	21.6	2.73	21.1	2.79	20.1	2.90
	23	19	23.1	2.79	22.6	2.85	22.0	2.91	20.9	3.03
	32	28	23.3	3.02	22.8	3.08	22.2	3.14	21.1	3.19
	41	37	25.5	2.67	24.9	2.73	24.3	2.78	23.1	2.90
	47	43	26.9	2.50	26.2	2.55	25.6	2.60	24.3	2.70
	50	47	29.7	2.23	29.0	2.28	28.3	2.32	26.9	2.42
	59	50	30.8	2.24	30.1	2.29	29.3	2.34	27.9	2.43

AFR : Air Flow Rate (CFM)
TC : Total Capacity (kBtu/h)
IP : Input Power (kW)

AFR	800

			Indoor temperature							
		°CDB	15.6		18.3		21.1		23.9	
	°CDB	°CWB	TC	IP	TC	IP	TC	IP	TC	IP
Outdoor temperature	-20.6	-21.7	5.67	2.42	5.53	2.47	5.40	2.52	5.13	2.63
	-15.0	-16.1	6.08	2.63	5.93	2.68	5.79	2.74	5.50	2.85
	-10.0	-11.1	6.50	2.68	6.34	2.73	6.19	2.79	5.88	2.90
	-5.0	-7.2	6.78	2.79	6.62	2.85	6.45	2.91	6.13	3.03
	0.0	-2.2	6.84	3.02	6.68	3.08	6.51	3.14	6.19	3.19
	5.0	2.8	7.47	2.67	7.29	2.73	7.12	2.78	6.76	2.90
	8.3	6.1	7.88	2.50	7.69	2.55	7.50	2.60	7.13	2.70
	10.0	8.3	8.71	2.23	8.50	2.28	8.29	2.32	7.88	2.42
	15.0	10.0	9.02	2.24	8.81	2.29	8.59	2.34	8.16	2.43

AFR : Air Flow Rate (m^3/h)
TC : Total Capacity (kW)
IP : Input Power (kW)

7. FAN PERFORMANCE

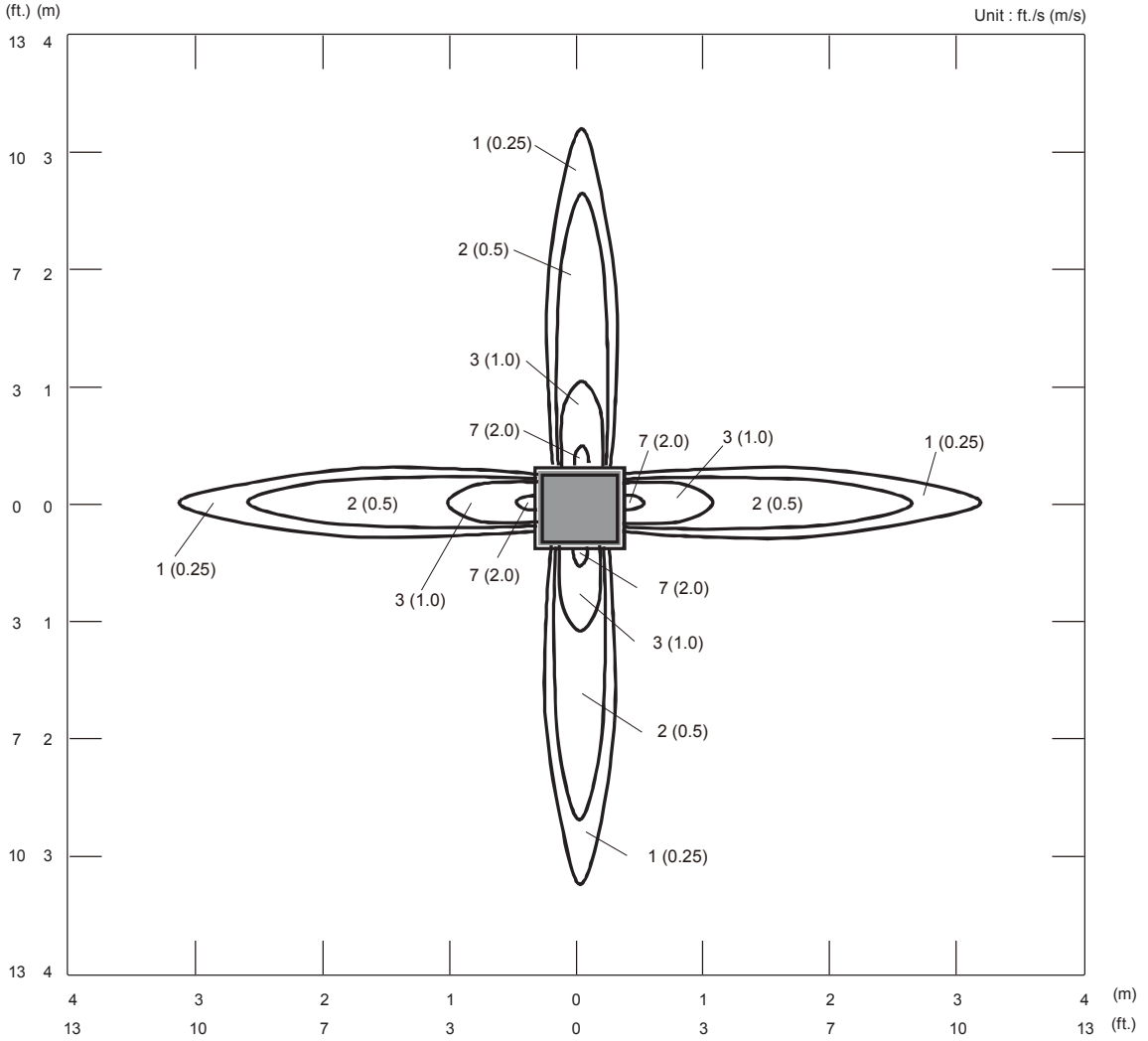
7-1. AIR VELOCITY DISTRIBUTION

Conditions
Fan speed : High
Operation mode : FAN

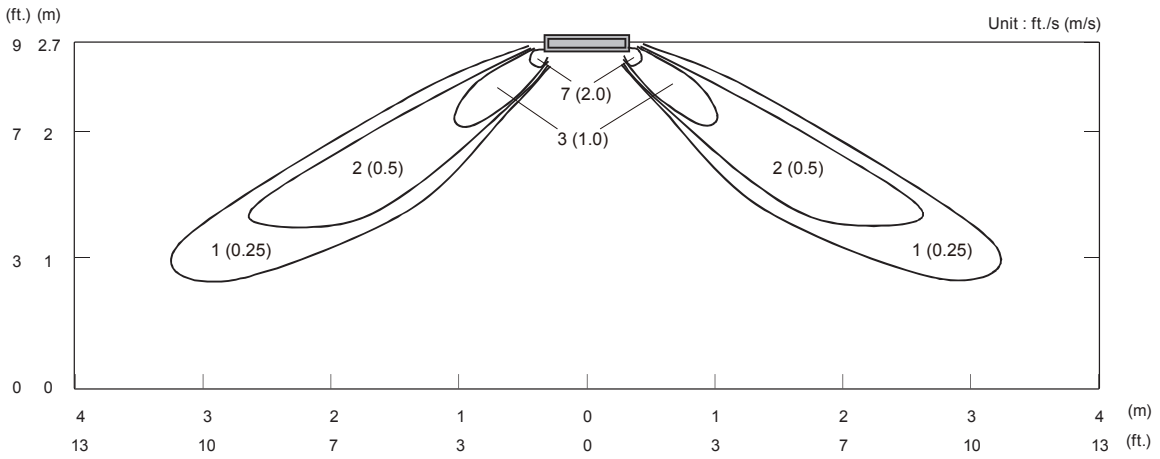
■MODEL: RICH09AVFJ

● Air velocity distribution

Top view
Vertical airflow direction louver : Up



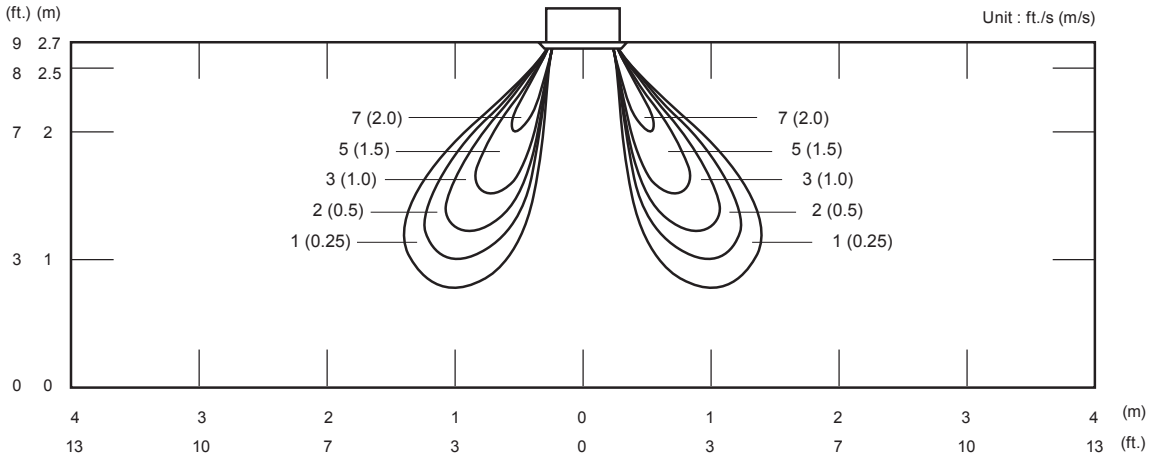
Side view
Vertical airflow direction louver : Up



Note: Reference data
Conditions
Fan speed : High
Operation mode : Heating
Vertical flap: Downward (4Way)

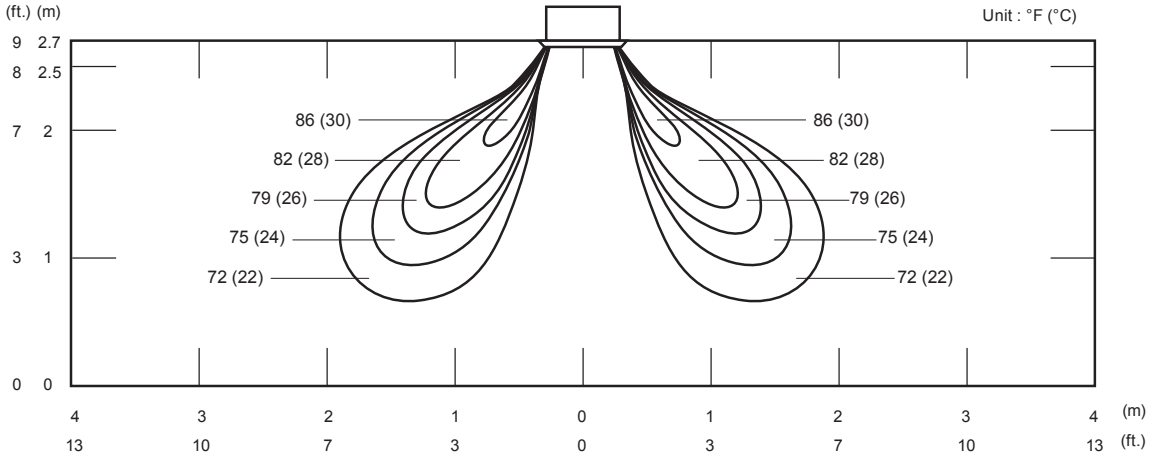
● Air velocity distribution

Side view
Vertical flap : Down



● Air temperature distribution

Side view
Vertical airflow direction louver : Down

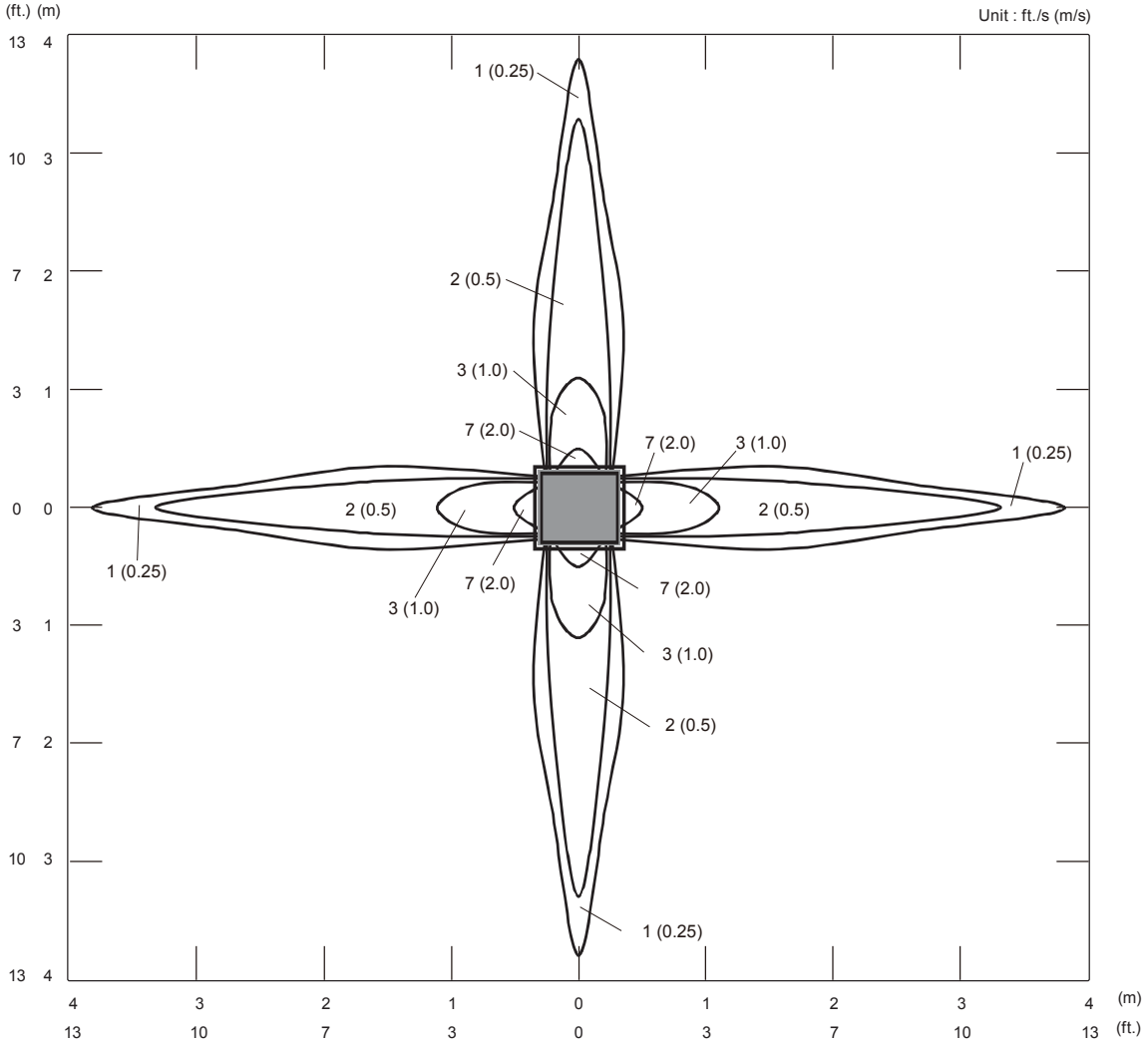


Conditions
Fan speed : High
Operation mode : FAN

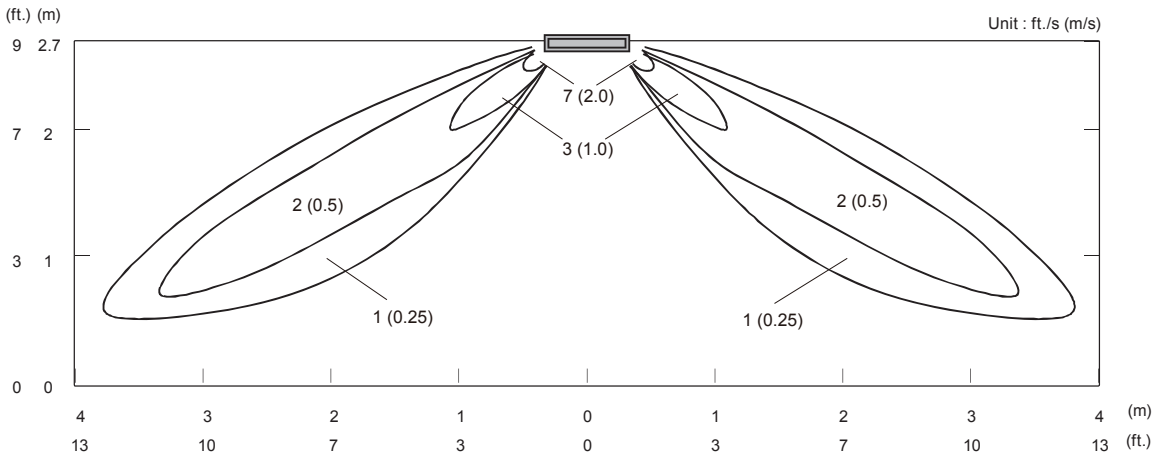
■MODEL : RICH12AVFJ

● Air velocity distribution

Top view
Vertical airflow direction louver : Up

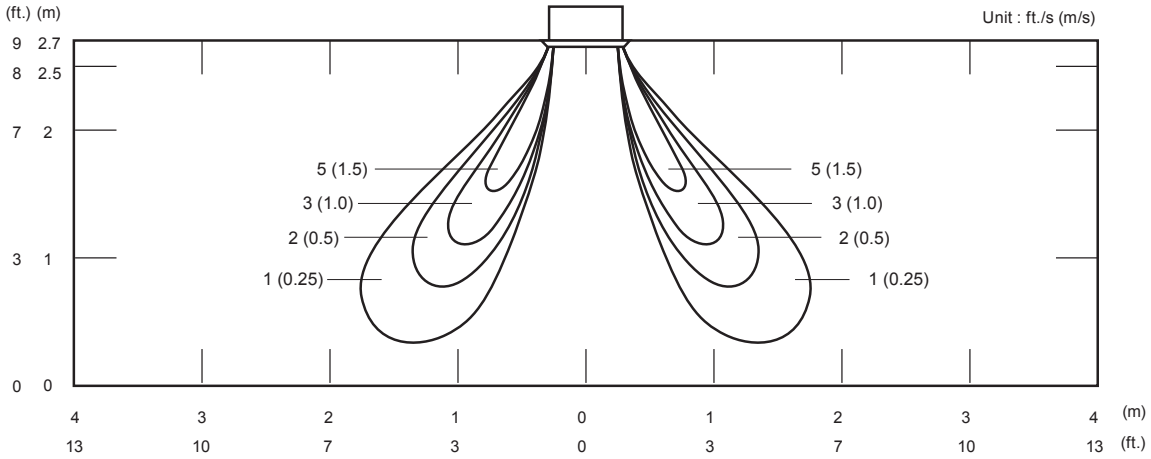


Side view
Vertical airflow direction louver : Up

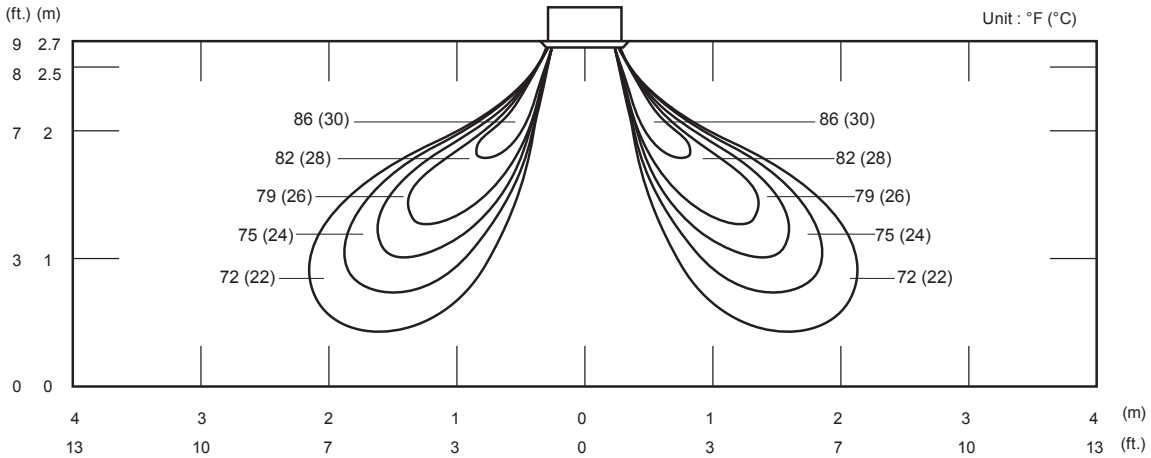


Note: Reference data
Conditions
Fan speed : High
Operation mode : Heating
Vertical flap: Downward (4Way)

● Air velocity distribution



● Air temperature distribution

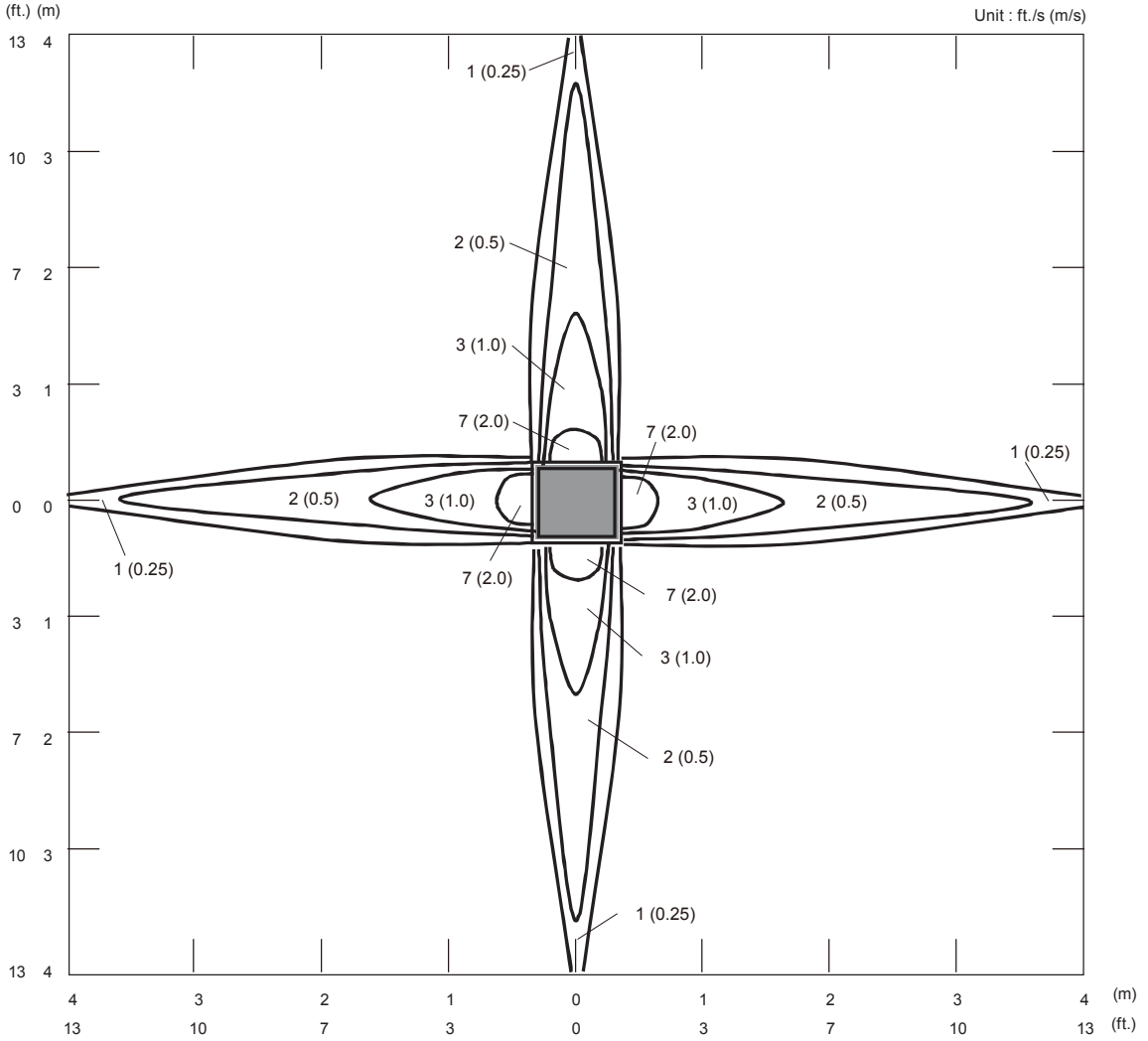


Conditions
Fan speed : High
Operation mode : FAN

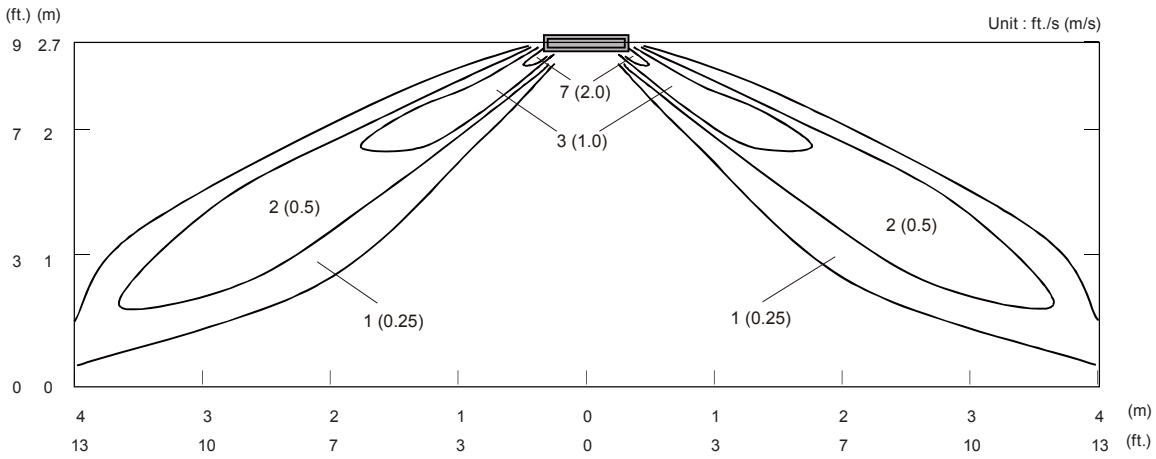
■MODEL: RICH18AVFJ

● Air velocity distribution

Top view
Vertical flap : Up

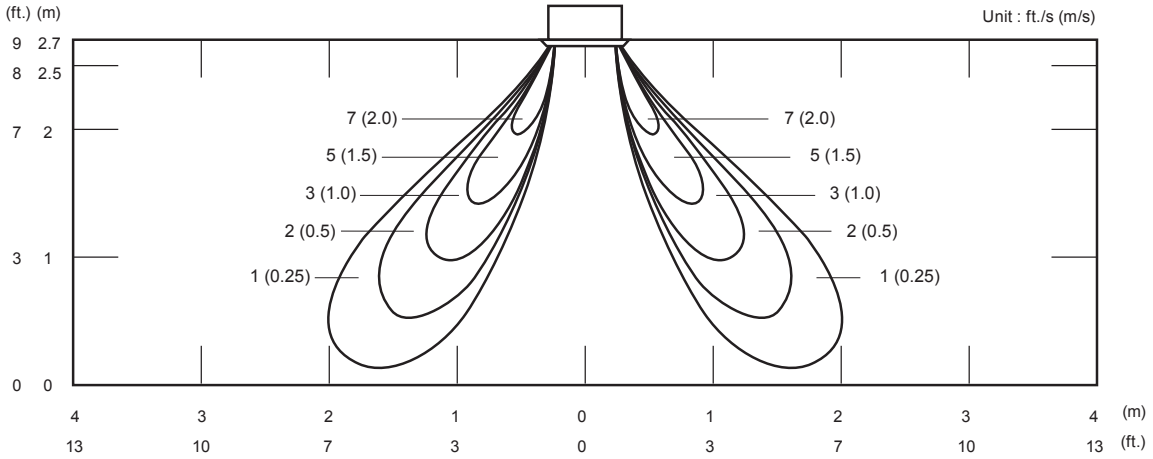


Side view
Vertical flap : Up

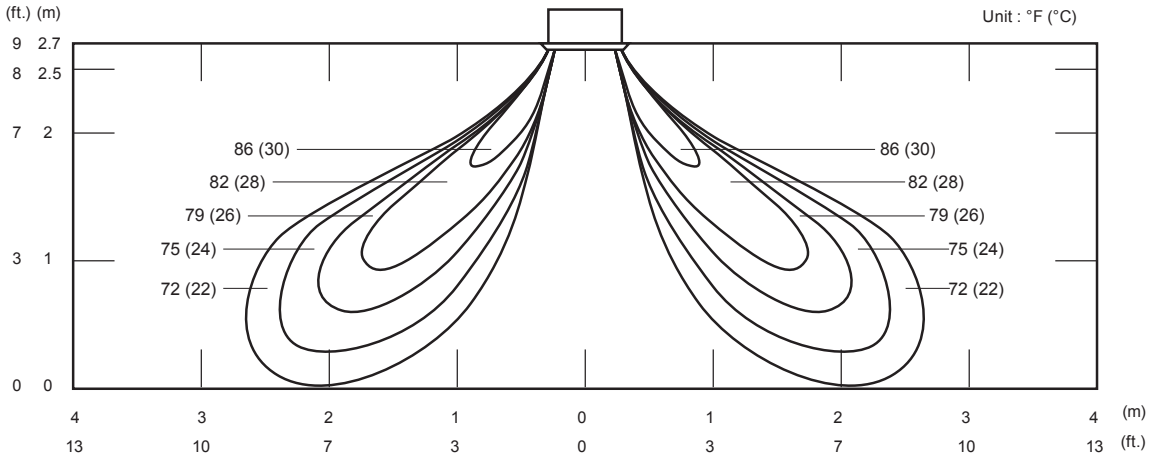


Note: Reference data
Conditions
Fan speed : High
Operation mode : Heating
Vertical flap: Downward (4Way)

● Air velocity distribution



● Air temperature distribution



7-2. AIRFLOW

7-2-1. STANDARD CEILING MODE

■MODEL: RICH12AVFJ

● Cooling

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	590	m^3/h	540
		l/s	150
		CFM	318
MED	540	m^3/h	490
		l/s	136
		CFM	288
LOW	490	m^3/h	440
		l/s	122
		CFM	259
QUIET	440	m^3/h	390
		l/s	108
		CFM	230

● Heating

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	590	m^3/h	540
		l/s	150
		CFM	318
MED	540	m^3/h	490
		l/s	136
		CFM	288
LOW	490	m^3/h	440
		l/s	122
		CFM	259
QUIET	440	m^3/h	390
		l/s	108
		CFM	230

■MODEL: RICH12AVFJ

●Cooling

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	660	m^3/h	610
		l/s	169
		CFM	359
MED	580	m^3/h	530
		l/s	147
		CFM	312
LOW	520	m^3/h	470
		l/s	131
		CFM	277
QUIET	460	m^3/h	410
		l/s	114
		CFM	241

●Heating

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	650	m^3/h	610
		l/s	169
		CFM	359
MED	580	m^3/h	530
		l/s	147
		CFM	312
LOW	520	m^3/h	470
		l/s	131
		CFM	277
QUIET	460	m^3/h	410
		l/s	114
		CFM	241

■MODEL: RICH18AVFJ

●Cooling

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	730	m^3/h	680
		l/s	189
		CFM	400
MED	630	m^3/h	580
		l/s	161
		CFM	341
LOW	540	m^3/h	490
		l/s	138
		CFM	288
QUIET	480	m^3/h	410
		l/s	114
		CFM	241

●Heating

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	830	m^3/h	800
		l/s	222
		CFM	471
MED	730	m^3/h	680
		l/s	189
		CFM	400
LOW	630	m^3/h	580
		l/s	161
		CFM	341
QUIET	500	m^3/h	450
		l/s	125
		CFM	265

7-2-2. HIGH CEILING MODE

■MODEL: RICH09AVFJ

● Cooling

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	690	m^3/h	640
		l/s	178
		CFM	377
MED	640	m^3/h	590
		l/s	164
		CFM	347
LOW	590	m^3/h	540
		l/s	150
		CFM	318
QUIET	440	m^3/h	530
		l/s	108
		CFM	230

● Heating

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	690	m^3/h	640
		l/s	178
		CFM	377
MED	640	m^3/h	590
		l/s	164
		CFM	347
LOW	590	m^3/h	540
		l/s	150
		CFM	318
QUIET	440	m^3/h	530
		l/s	108
		CFM	230

■MODEL: RICH12AVFJ

●Cooling

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	760	m^3/h	710
		l/s	197
		CFM	418
MED	680	m^3/h	630
		l/s	175
		CFM	371
LOW	620	m^3/h	570
		l/s	158
		CFM	335
QUIET	460	m^3/h	410
		l/s	114
		CFM	241

●Heating

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	750	m^3/h	700
		l/s	194
		CFM	412
MED	680	m^3/h	630
		l/s	175
		CFM	371
LOW	620	m^3/h	570
		l/s	158
		CFM	335
QUIET	460	m^3/h	410
		l/s	114
		CFM	241

■MODEL: RICH18AVFJ

●Cooling

Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	830	m^3/h	800
		l/s	222
		CFM	471
MED	730	m^3/h	680
		l/s	189
		CFM	400
LOW	640	m^3/h	590
		l/s	164
		CFM	347
QUIET	460	m^3/h	410
		l/s	114
		CFM	241

●Heating

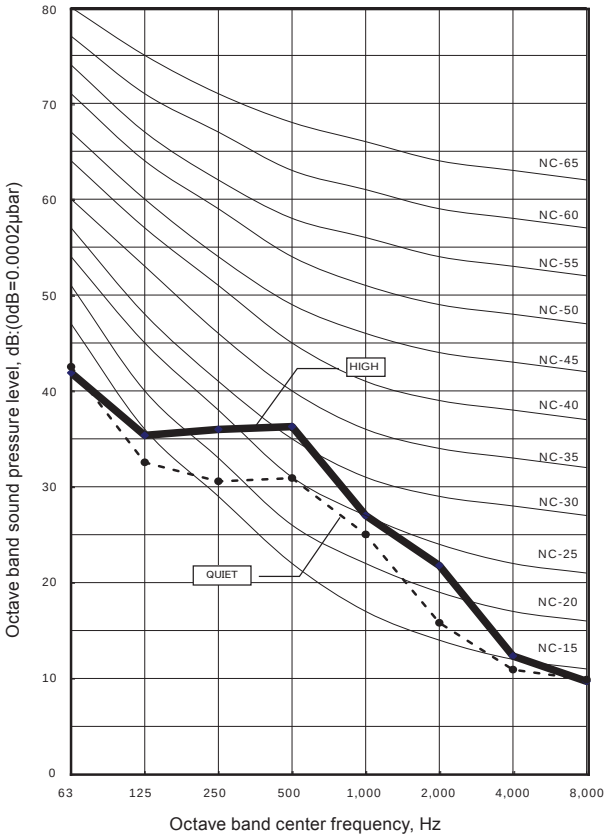
Fan speed	Number of rotations (r.p.m)	Airflow	
HIGH	930	m^3/h	900
		l/s	250
		CFM	530
MED	830	m^3/h	800
		l/s	222
		CFM	471
LOW	730	m^3/h	680
		l/s	189
		CFM	400
QUIET	500	m^3/h	450
		l/s	125
		CFM	265

8. OPERATION NOISE (SOUND PRESSURE)

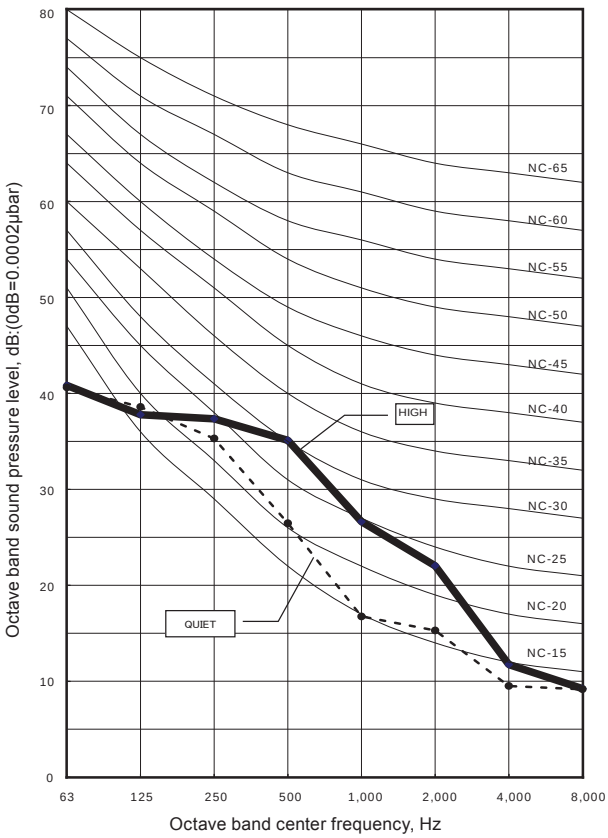
8-1. NOISE LEVEL CURVE

■MODEL : RICH09AVFJ

● Cooling

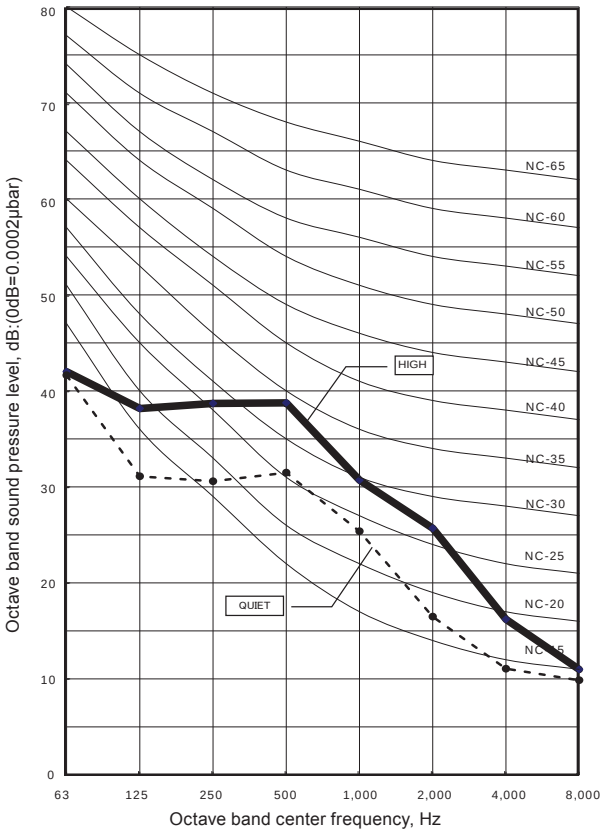


●Heating

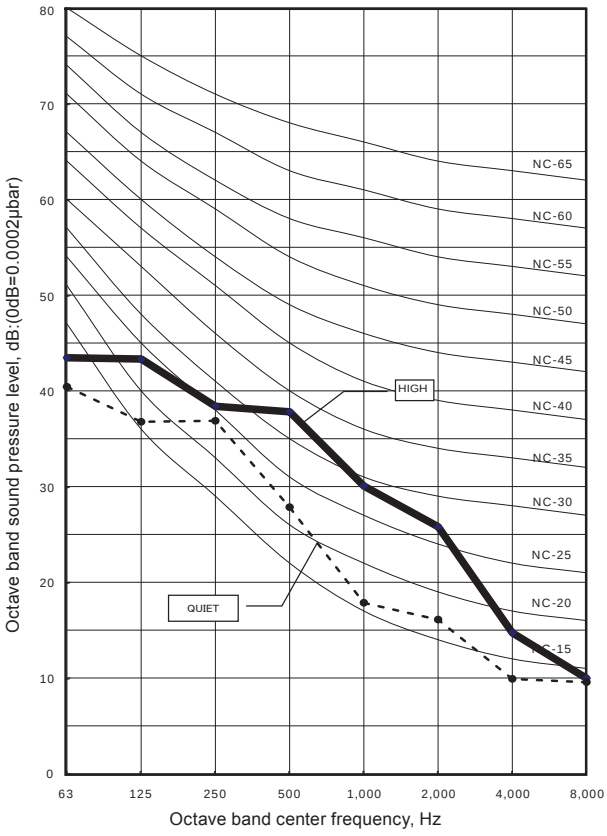


■MODEL : RICH12AVFJ

● Cooling

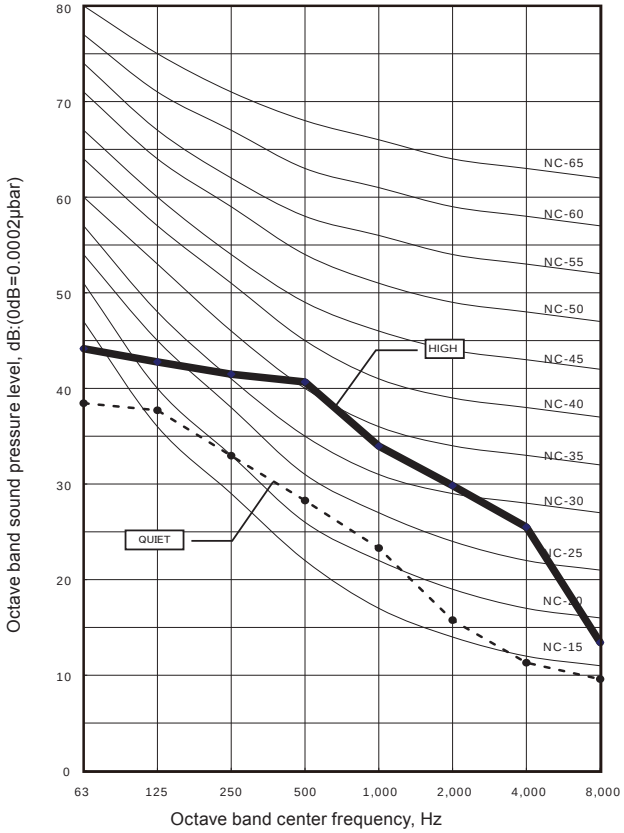


●Heating

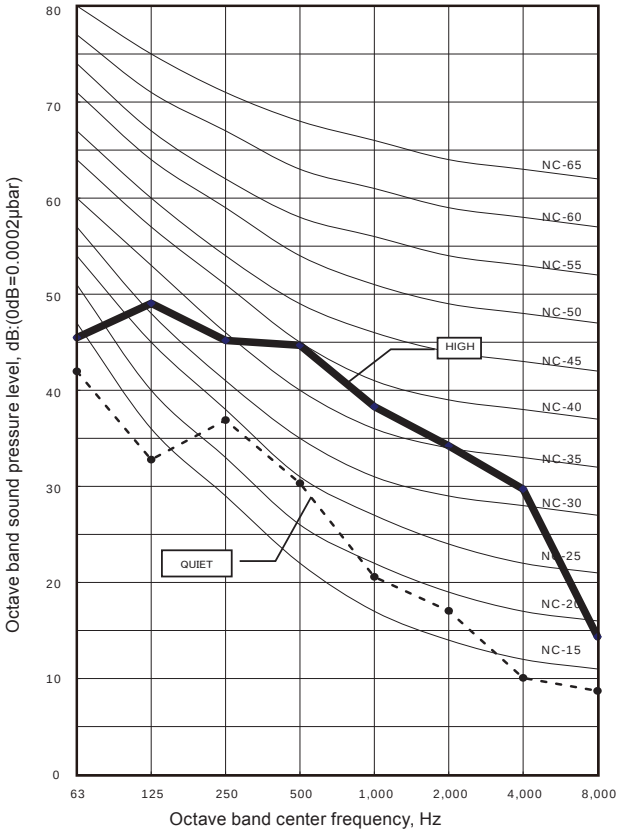


■MODEL: RICH18AVFJ

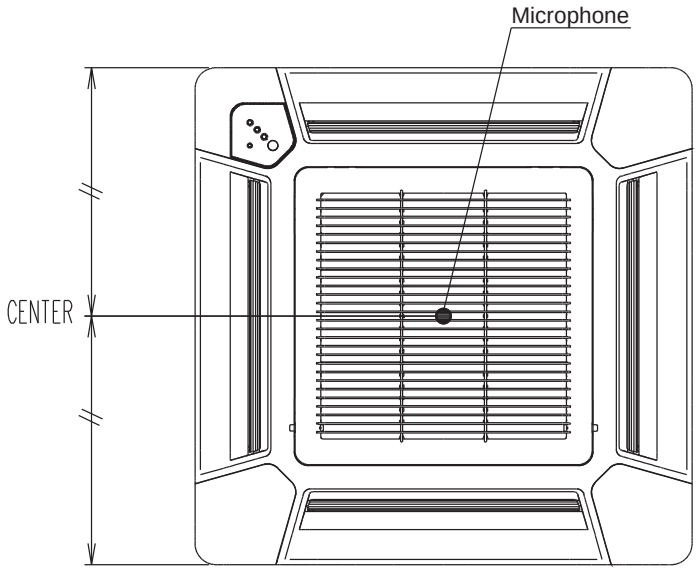
● Cooling

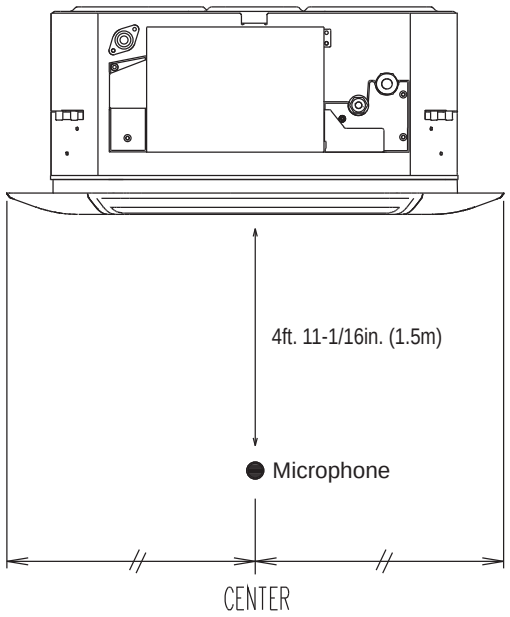


●Heating



8-2. SOUND LEVEL CHECK POINT





9. ELECTRIC CHARACTERISTICS

Model Name			RICH09AVFJ	RICH12AVFJ	RICH18AVFJ
Power Supply	Voltage	V	208/230 ~		
	Frequency	Hz	60		
Max Operating Current		A	0.15	0.19	0.32
*1) Wiring Spec.	Connection Cable	AWG	14		
	Limited wiring length	ft. (m)	85 (26)		

*1) Wiring Spec.
Selected Sample
(Selected based on Japan Electrotechnical Standards and Codes Committee E0005)

10. SAFETY DEVICES

	Protection form	Model		
		RICH09AVFJ	RICH12AVFJ	RICH18AVFJ
Circuit protection	Current fuse (PCB)	250V 3.15A		
Fan motor protection	Thermal protection program	OFF: 268 $^{+30}_{-34}$ °F (131 $^{+17}_{-19}$°C) OFF: 210 $^{+38}_{-34}$ °F (99 $^{+21}_{-19}$°C)		

11. EXTERNAL INPUT & OUTPUT

Connector	INPUT	OUTPUT	REMARKS
CN102	Control input	—	See external input/output settings for details.
CN103	—	Operation status output	
CN6	—	Fresh air control output	

11-1. EXTERNAL INPUT

■ CONTROL INPUT (Operation/Stop or Forced stop)

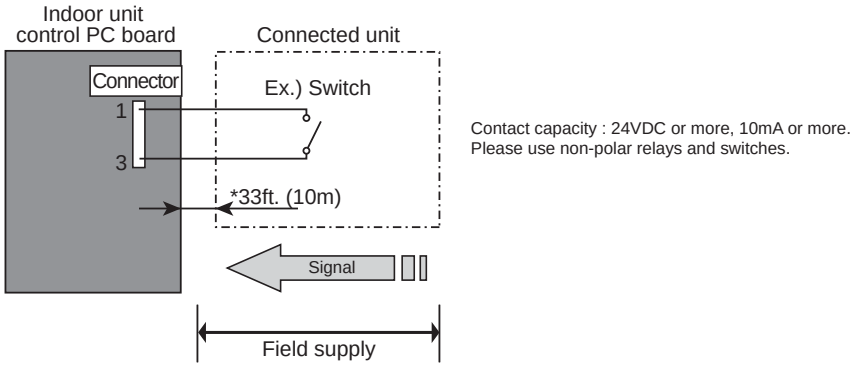
The air conditioner can be remotely operated by means of the following on-site work.

"Operation/Stop" mode or "Forced stop" mode can be selected with function setting of indoor unit.

Unit operation is started at the following contents by adding the contact input of a commercial ON/OFF switch to a connector on the external control PC board and turning it ON.

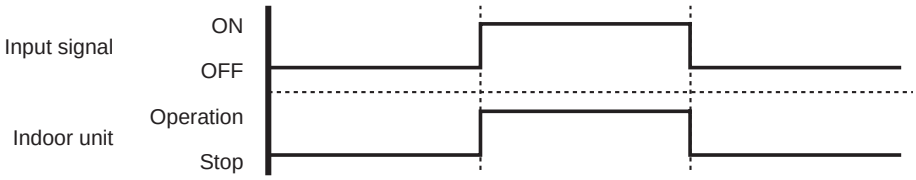
Unit operation	Initial setting after power is ON	Starting mode other than initial setting
Operation mode	Auto changeover	Mode at previous operation
Set temperature	76°F (24°C)	Temperature at previous operation
Air flow mode	AUTO	Mode at previous operation
Air direction (swing)	Standard air direction (swing OFF)	Air direction at previous operation

● Circuit diagram example

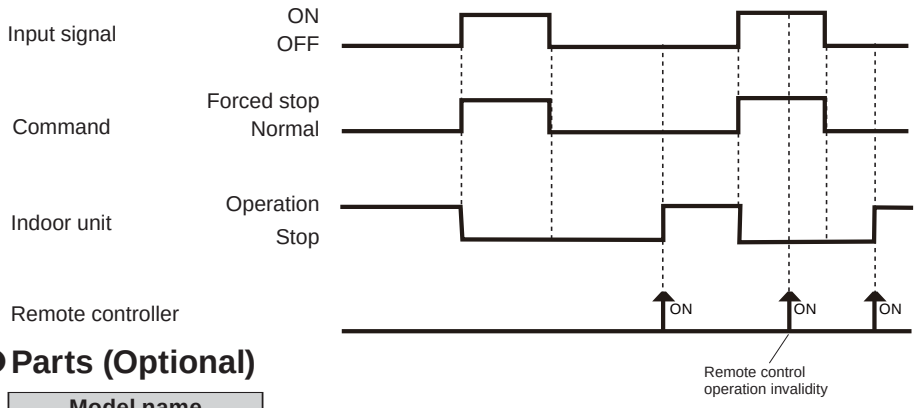


* Make the distance from the PC board to the connected unit within 33ft. (10m).

● When function setting is in "Operation/Stop" mode



● When function setting is in "Forced stop" mode



● Parts (Optional)

Model name
RXXWZX

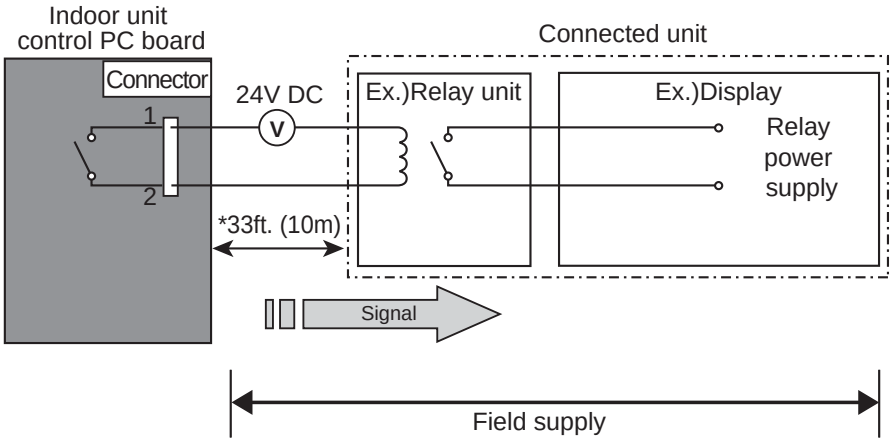
Wire (External input)

11-2. EXTERNAL OUTPUT

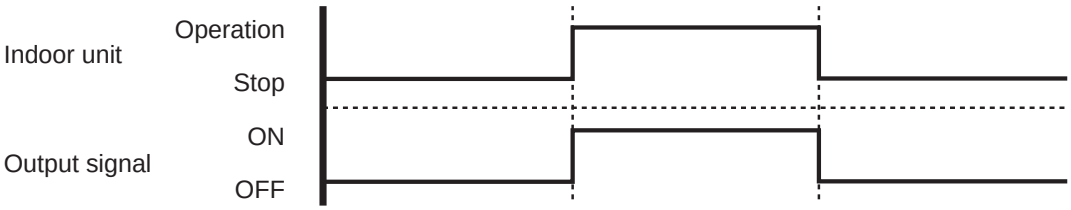
■ OPERATION STATUS OUTPUT

An air conditioner operation status signal can be output.

● Circuit diagram example



* Make the distance from the PC board to the connected unit within 33ft. (10m).
Relay spec. : Max.24VDC, 10mA to less than 500mA.



● Parts (Optional)

Model name
RXXWZX

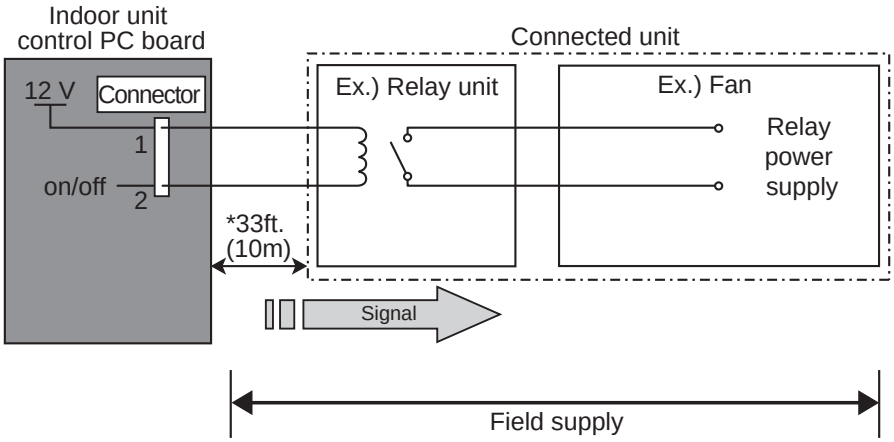
Wire (External output)

■ FRESH AIR CONTROL OUTPUT

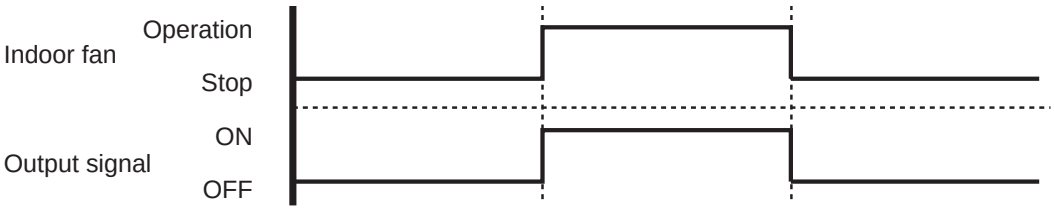
A signal linked to air conditioner indoor fan ON can be output.

* However, signal becomes OFF during cold air prevention control operation.

● Circuit diagram example



* Make the distance from the PC board to the connected unit within 33ft. (10m).
Relay spec. : Rated 12VDC, 50mA or less.



● Parts (Optional)

Model name

Wire (Fresh air output)

Note: This wire is included in Fresh air intake kit

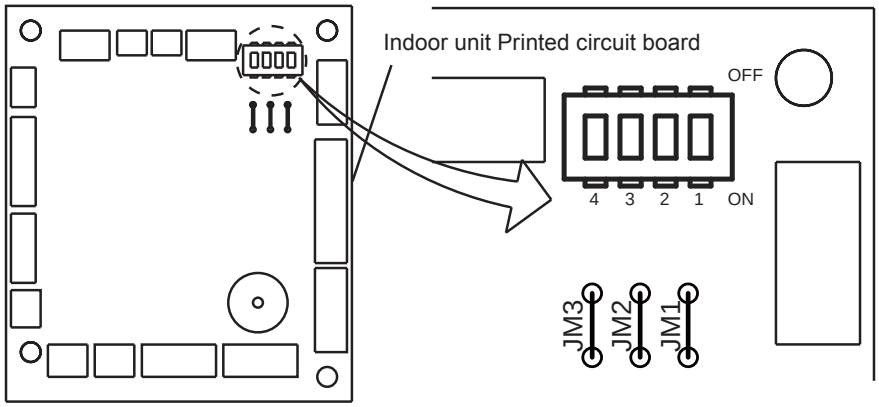
12. FUNCTION SETTINGS

12-1. INDOOR UNIT

INDOOR UNIT		
DIP SW	1	Remote controller address setting
	2	
	3	
	4	
Jumper Wire	JM1	Setting prohibited
	JM2	
	JM3	

■ SWITCH POSITION

MAIN PCB



■ DIP-SW SETTING

● Remote controller address setting

A number of indoor units can be operated at the same time using a wired remote controller.
Set the unit number of each indoor unit using the DIP switches on the indoor unit circuit board.
(See the following table.)

(◆. . .Factory setting)

	Remote controller address setting	DIP switch No.			
		1	2	3	4
◆	00	OFF	OFF	OFF	OFF
	01	ON	OFF	OFF	OFF
	02	OFF	ON	OFF	OFF
	03	ON	ON	OFF	OFF
	04	OFF	OFF	ON	OFF
	05	ON	OFF	ON	OFF
	06	OFF	ON	ON	OFF
	07	ON	ON	ON	OFF
	08	OFF	OFF	OFF	ON
	09	ON	OFF	OFF	ON
	10	OFF	ON	OFF	ON
	11	ON	ON	OFF	ON
	12	OFF	OFF	ON	ON
	13	ON	OFF	ON	ON
	14	OFF	ON	ON	ON
	15	ON	ON	ON	ON

12-2. INDOOR UNIT (Setting by remote controller)

- The function settings of the control of the indoor unit can be changed by this procedure according to the installation conditions. Incorrect settings can cause the indoor unit to malfunction.
- After the power is turned on, perform the Function Setting according to the installation conditions using the remote controller.
- The settings may be selected between the following two: Function Number or Setting Value.
- Settings will not be changed if invalid numbers or setting values are selected.

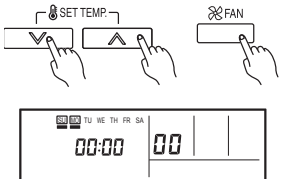
■ PREPARATION

- Turn on the power.
  * Before turning on the power indoor units, make sure the piping air-tight test and vacuuming have been conducted.
  * Also check again to make sure no wiring mistakes were made before turning on the power.

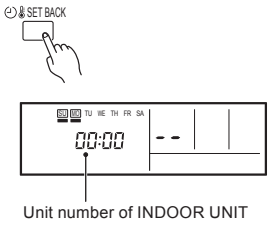
■ FUNCTION SETTING METHOD (for Wired remote controller)

● Setting method

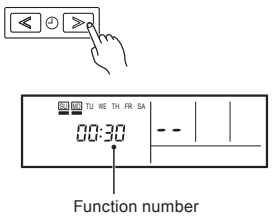
(1) Press the SET TEMP. buttons (∨) (∧) and FAN button simultaneously for more than 5 seconds to enter the function setting mode.



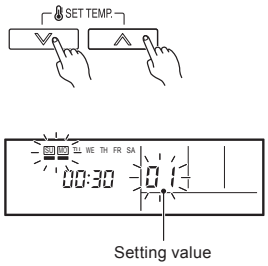
2) Press the SET BACK button to select the indoor unit number.



3) Press the Set time buttons to select the function number.



(4) Press the SET TEMP. buttons (∨) (∧) to select the setting value. The indicator flashes during setting value selection.



(5) Press the TIMER SET button to confirm the setting. Press the TIMER SET button for a few seconds until the setting value stops flashing. If the setting value indicator changes or if "- -" is displayed when the flashing stops, the setting value has not been set correctly. (An invalid setting value may have been selected for the indoor unit.)

(6) Repeat steps 2 to 5 to perform additional settings. Press the SET TEMP. buttons (⩔) (⩓) and FAN button simultaneously again for more than 5 seconds to cancel the function setting mode. In addition, the function setting mode will be automatically canceled after 1 minute if no operation is performed.

(7) After completing the Function Setting, be sure to turn off the power and turn it on again.

⚠CAUTION
• After turning off the power, wait 30 seconds or more before turning it on again. The Function Setting will not become active unless the power is turned off then on again.

■ FUNCTION DETAILS

	Functions
1)	Filter sign
2)	Ceiling height
3)	Outlet directions
4)	Room temperature control for indoor unit sensor
5)	Auto restart
6)	Room temperature sensor switching
7)	Remote controller custom code
8)	External input control
9)	Room temperature sensor switching (Aux.)
10)	Room temperature control for wired remote controller sensor
11)	Heat Insulation condition (building insulation)

1) Filter sign

Select appropriate intervals for displaying the filter sign on the indoor unit according to the estimated amount of dust in the air of the room.
If the indication is not required, select "No indication" (03).

(◆. . .Factory setting)

Function number	Setting value	Setting description	
11	00	Standard (2,500 hours)	
	01	Long interval (4,400 hours)	
	02	Short interval (1,250 hours)	
	03	No indication	◆

2) Ceiling height

Select the appropriate ceiling height according to the place of installation.

(◆. . .Factory setting)

Function number	Setting value	Setting description	
20	00	Standard 8ft. (2.7m)	◆
	01	High ceiling 9ft. (3.0m)	

In case of Cassette type models:
The ceiling height values are for the 4-way outlet.
Do not change this setting in the 3-way outlet mode.
7000, 9000 Btu/h models cannot be installed in high ceilings. Do not change this setting.

3) Outlet directions

Select the appropriate number of outlet directions according to the installation conditions.

(◆. . .Factory setting)

Function number	Setting value	Setting description	
22	00	4-way	◆
	01	3-way	

4) Room temperature control for indoor unit sensor

Refer to Function 95, before performing this setting.

Depending on the installed environment, correction of the room temperature sensor may be required.

Select the appropriate control setting according to the installed environment.

The temperature correction values show the difference from the Standard setting "00" (manufacturer's recommended value).

*When Function 95-01(High insulation) is set, the Standard setting "00" will be the same as No correction "01" [0.0°F (0.0°C)].

(◆. . .Factory setting)

Function number		Setting value	Setting description	
30 (For cooling)	31 (For heating)	00	Standard setting*	◆
		01	No correction 0.0°F 0.0°C	
		02	-1°F (-0.5°C)	More cooling Less heating
		03	-2°F (-1.0°C)	
		04	-3°F (-1.5°C)	
		05	-4°F (-2.0°C)	
		06	-5°F (-2.5°C)	
		07	-6°F (-3.0°C)	
		08	-7°F (-3.5°C)	
		09	-8°F (-4.0°C)	
		10	+1°F (+0.5°C)	Less cooling More heating
		11	+2°F (+1.0°C)	
		12	+3°F (+1.5°C)	
		13	+4°F (+2.0°C)	
		14	+5°F (+2.5°C)	
		15	+6°F (+3.0°C)	
		16	+7°F (+3.5°C)	
		17	+8°F (+4.0°C)	

5) Auto restart

Enable or disable automatic restart after a power interruption.

(◆. . .Factory setting)

Function number	Setting value	Setting description	
40	00	Enable	◆
	01	Disable	

* * Auto restart is an emergency function such as for power outage etc.
Do not attempt to use this function in normal operation.
Be sure to operate the unit by remote controller or external device.

6) Room temperature sensor switching

(Only for Wired remote controller)

When using the Wired remote controller temperature sensor, change the setting to "Both" (01).

(◆. . .Factory setting)

Function number	Setting value	Setting description	
42	00	Indoor unit	◆
	01	Both	

00: Sensor on the indoor unit is active.

01: Sensors on both indoor unit and wired remote controller are active.

*Remote controller sensor must be turned on by using the remote controller.

7) Remote controller custom code

(Only for wireless remote controller)

The indoor unit custom code can be changed. Select the appropriate custom code.

(◆. . .Factory setting)

Function number	Setting value	Setting description	
44	00	A	◆
	01	B	
	02	C	
	03	D	

8) External input control

"Operation/Stop" mode or "Forced stop" mode can be selected.

(◆. . .Factory setting)

Function number	Setting value	Setting description	
46	00	Operation/Stop mode	◆
	01	(Setting prohibited)	
	02	Forced stop mode	

9) Room temperature sensor switching (Aux.)

To use the temperature sensor on the wired remote controller only, change the setting to "Wired remote controller" (01). This function will only work if the function setting 42 is set at "Both" (01).

(◆. . .Factory setting)

Function number	Setting value	Setting description	
48	00	Both	◆
	01	Wired remote controller	

10) Room temperature control for wired remote controller sensor

Refer to Function 95, before performing this setting.

Depending on the installed environment, correction of the wired remote controller temperature sensor may be required.

Select the appropriate control setting according to the installed environment.

To change this setting, set Function 42 to Both "01".

Ensure that the Thermo Sensor icon is displayed on the remote controller screen.

(◆. . .Factory setting)

Function number		Setting value	Setting description		
92 (For cooling)	93 (For heating)	00	No correction 0.0°F 0.0°C	◆	
		01	No correction 0.0°F 0.0°C		
		02	-1°F (-0.5°C)	More cooling Less heating	
		03	-2°F (-1.0°C)		
		04	-3°F (-1.5°C)		
		05	-4°F (-2.0°C)		
		06	-5°F (-2.5°C)		
		07	-6°F (-3.0°C)		
		08	-7°F (-3.5°C)		
		09	-8°F (-4.0°C)		
		10	+1°F (+0.5°C)	Less cooling More heating	
		11	+2°F (+1.0°C)		
		12	+3°F (+1.5°C)		
		13	+4°F (+2.0°C)		
		14	+5°F (+2.5°C)		
		15	+6°F (+3.0°C)		
		16	+7°F (+3.5°C)		
		17	+8°F (+4.0°C)		

11) Heat Insulation condition (building insulation)

Heat insulation conditions differ according to the installed environment.

Standard insulation "00" allows system to rapidly respond to the cooling or heating load changes. High insulation "01" is when the heat insulation structure of the building is high and does not require system to rapidly respond to cooling or heating load changes.

When High insulation "01" is selected;

• Overheating (overcooling) is prevented at the start-up.

• All room temp. control settings (Function 30, 31, 92, 93) will reset to No correction [0.0°F (0.0°C)].

(◆. . .Factory setting)

Function number	Setting value	Setting description	
95	00	Standard insulation	◆
	01	High insulation	

NOTE:

When changing Function 95, perform this setting before other Room temp. control settings (Function 30, 31, 92, 93).

IF Function 95 is not set first, Room temperature control settings (Function 30, 31, 92, 93) will be reset and you must re-do them again.

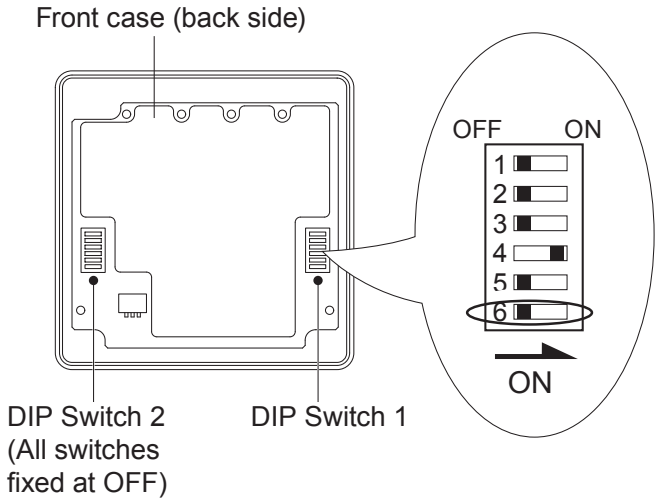
12-3. WIRED REMOTE CONTROLLER

DIP Switch 1	SW1	Prohibited
	SW2	Dual remote controller setting
	SW3	Prohibited
	SW4	°F / °C switch
	SW5	Prohibited
	SW6	Memory backup setting

* Do not use DIP Switch 2

■ SWITCH POSITION

● Wired remote controller



■ DIP SWITCH 1 SETTING

● SW1 setting prohibited

(◆...Factory setting)

	SW1	
◆	OFF	Fixed at OFF
	ON	Setting prohibited

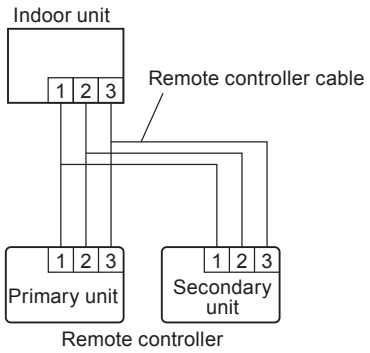
● SW2 setting

● Dual remote controller setting

Set the remote controller SW2 according to the following table.

(◆...Factory setting)

	Number of remote controller	Primary unit	Secondary unit
		SW2	SW2
◆	1 (Normal)	OFF	-
	2 (Dual)	OFF	ON



● SW3 setting prohibited

(◆...Factory setting)

	SW3	
◆	OFF	Fixed at OFF
	ON	Setting prohibited

● SW4 setting

● °F / °C switch

Temperature indicator is Fahrenheit(°F) / Celsius(°C)

(◆...Factory setting)

	SW4	
	OFF	°C
◆	ON	°F

● SW5 setting prohibited

(◆...Factory setting)

	SW5	
◆	OFF	Fixed at OFF
	ON	Setting prohibited

● SW6 setting

●Memory backup setting (Wired remote controller only)

Set to ON to use batteries for the memory backup.

If batteries are not used, all of settings stored in memory will be deleted if there is a power failure.

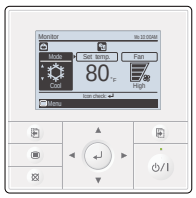
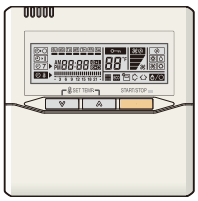
(◆...Factory setting)

	SW6	Memory backup
◆	OFF	Invalidity
	ON	Validity

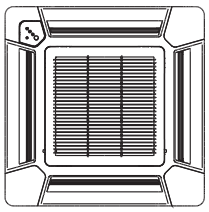
Never turn it ON in the case of simple remote controller.

13. OPTIONAL PARTS

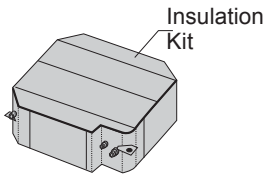
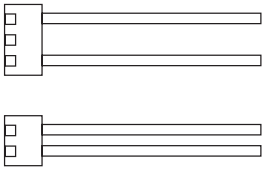
13-1. CONTROLLERS

Exterior	Parts name	Model No.	Summary
	Wired remote controller	RXRVNUM	Large and full-dot liquid crystal screen, wide and large keys easy to press, user-intuitive arrow key.
	Wired remote controller	RXRNNUM	The room temperature can be controlled by detecting the temperature accurately with built-in thermo sensor.
	Simple remote controller	RXRSNUM	Compact remote controller concentrates on the basic functions such as Start/Stop, Fan Control, Temperature Setting and Operation mode.
	Wireless remote controller		Unit control is performed by wireless remote controller

13-2. CASSETTE GRILLE

Exterior	Parts name	Model No.	Summary
	Casette grille	RXCCGF	The form of the grille discharges wind away from the ceiling making it difficult to leave dirt marks.

13-3. OTHERS

Exterior	Parts name	Model No.	Summary
	Air outlet shutter plate		Air outlet shutter plate is installed at the air outlet when 3-way direction is performed.
	Insulation kit for high humidity		Install when the condition under the roof is expected to have humidity of over 80% and temperature of over 86°F(30°C).
	Fresh air intake kit		Enables to take in fresh air of up to 10% of “high” air volume of the indoor unit by attaching the Fresh air intake kit.
	External connect set	RXXWZX	Use to connect with various peripheral devices and air conditioner PC board.

2. OUTDOOR UNIT

SINGLE TYPE :

ROSH09AFCJ
ROSH12AFCJ
ROSH18AFCJ

CONTENTS

2. OUTDOOR UNIT

1. SPECIFICATIONS

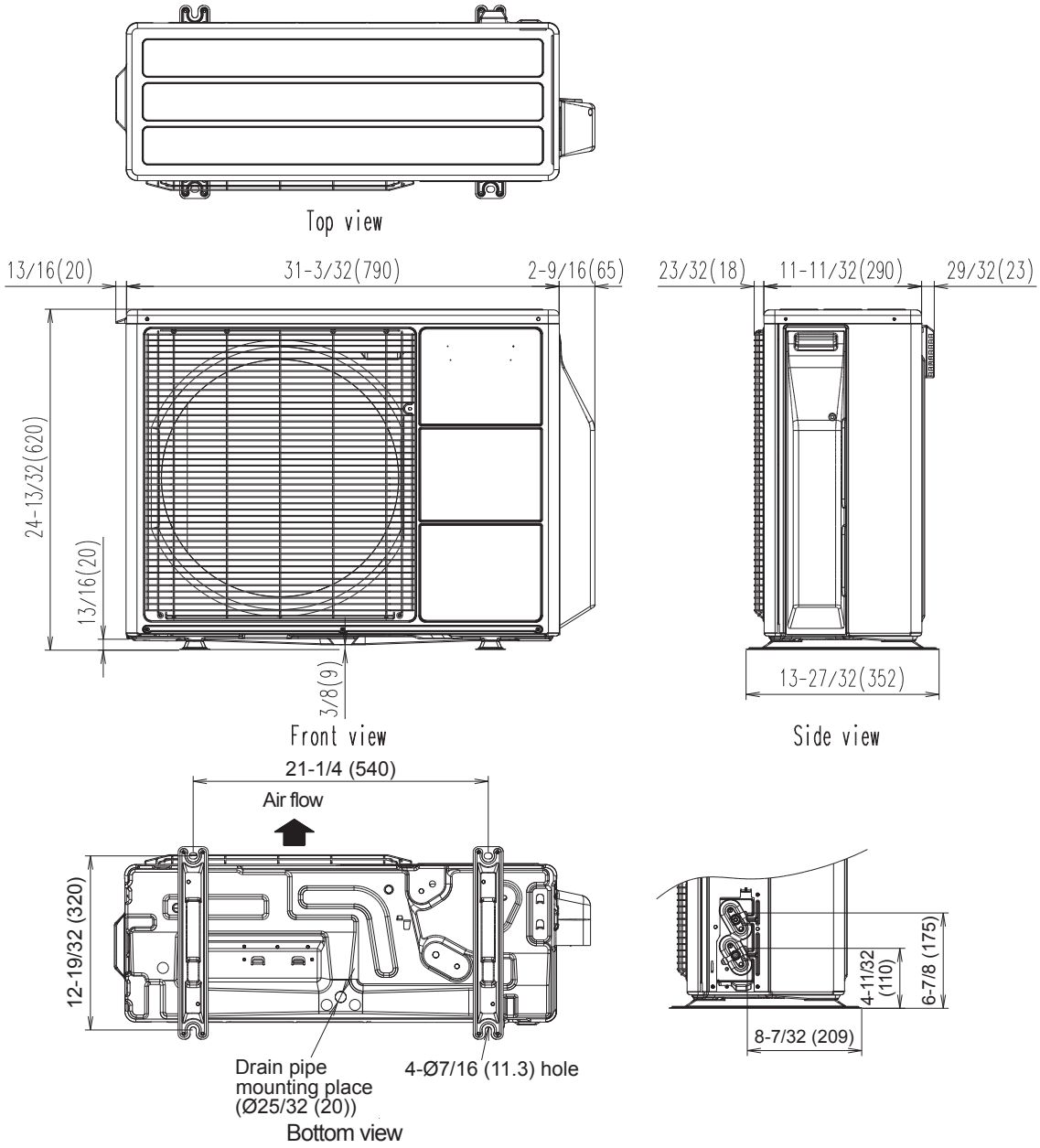
Type				INVERTER HEAT PUMP		
Model name				ROSH09AVFJ	ROSH12AVFJ	ROSH18AVFJ
Power source				208 / 230V ~ 60Hz		
Available voltage range				187 - 253V ~ 60Hz		
Starting current			A	4.1	6.7	7.7
Fan	Airflow rate	Cooling	CFM (m^3/h)	794 (1350)	1206 (2050)	[RIDH18AVFJ 1206 (2050) [RICH18AVFJ 1457 (2475)
		Heating		989 (1680)	1083 (1840)	1407 (2355)
	Type × Q'ty			Propeller fan × 1		
	Motor output		W	115		
Sound pressure level		Cooling	dB (A)	44	49	[RIDH18AVFJ] 52 [RICH18AVFJ] 54
		Heating		49	50	55
Heat exchanger type		Dimensions (H × W × D)	in.	23-5/32 × 34-11/16 × 1-7/16		
			mm	588 × 881 × 36.4		
		Fin pitch	FPI	20		
		Rows × Stages		2 × 28		
		Pipe type		Copper		
		Fin Type		Aluminum		
Compressor	Type × Q'ty			Rotary × 1		
	Motor output		W	850		1000
Refrigerant		Type		R410A		
		Charge	lbs.oz.	2lbs.10oz.		2lbs.14oz.
			kg	1.20		1.30
Refrigerant oil		Type		FREOL α68SZ		
Enclosure		Material		Steel		
		Color		Beige Approximate color of MUNSELL 10YR7.5/1.0		
Dimensions (H × W × D)	Net		in.	24 - 1/2 × 31 - 3/32 × 11 - 11/32		
			mm	620 × 790 × 290		
	Gross		in.	28 - 1/16 × 37-7/32 × 15 - 9/16		
			mm	713 × 945 × 395		
Weight	Net		lbs.(kg)	84 (38)		86 (39)
	Gross			93 (42)		95 (43)
Connenction pipe	Size	Liquid	in. (mm)	Ø 1/4 (Ø 6.35)		
		Gas		Ø 3/8 (Ø 9.52)		Ø 1/2 (Ø 12.7)
	Method			Flare		
	Pre - charge length		ft. (m)	49 (15)		
	Max. length			66 (20)		
	Max. height difference			49 (15)		
Operation range		Cooling	°F (°C)	14 to 115 (-10 to 46)		
		Heating		-5 to 75 (-21 to 24)		

Note :
Specifications are based on the following conditions.
Cooling : Indoor temperature of 80°F (26.67°C) DB / 67°F (19.44°C) WB, and outdoor temperature of 95°F (35°C) DB / 75°F (23.9°C) WB.
Heating : Indoor temperature of 70°F (21.11°C) DB / 59°F (15°C) WB, and outdoor temperature of 47°F (8.33°C) DB / 43°F (6.11°C) WB.
Pipe length : 24ft.7in (7.5m), Height difference:0 m. (Outdoor unit - Indoor unit)
The protective function may work when using it outside the operation range.

2. DIMENSIONS

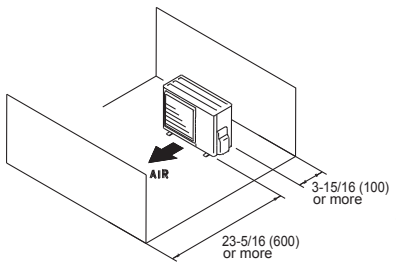
■MODEL: ROSH09AFCJ, ROSH12AFCJ, ROSH18AFCJ

Unit : in. (mm)

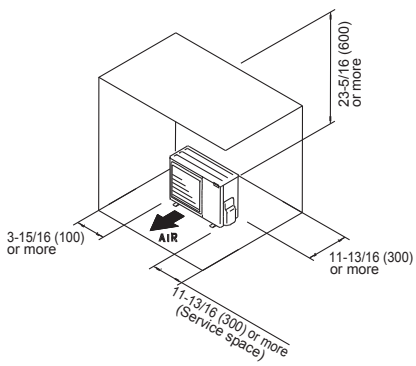


■INSTALLATION PLACE

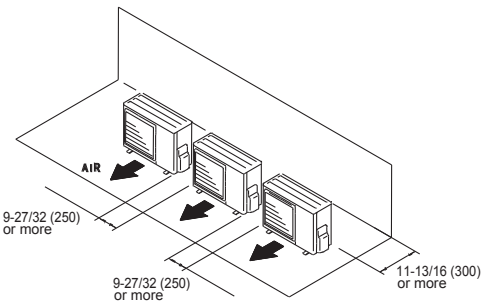
When there are obstacles at the back or front sides.



When there are obstacles at the back, side(s), and top.

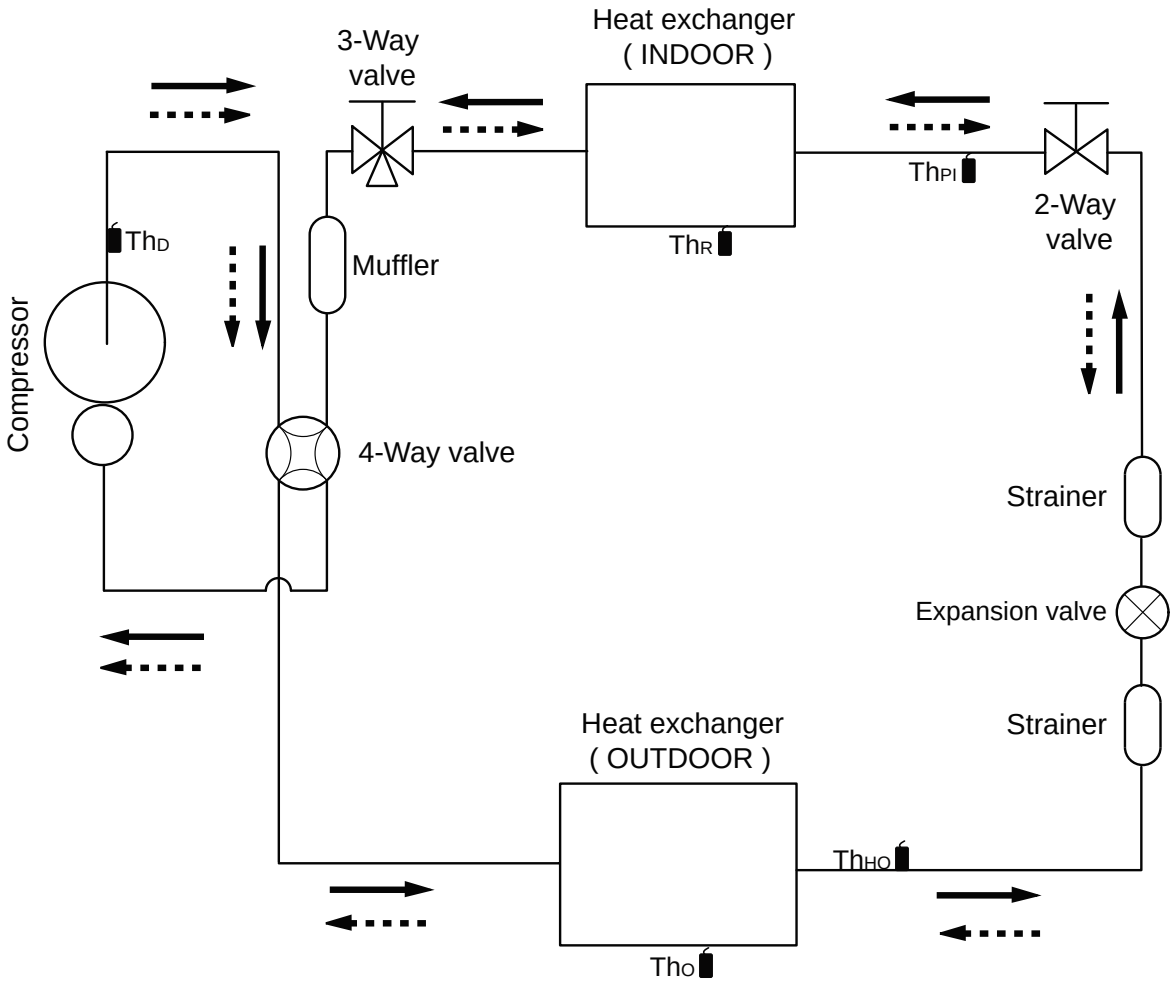


When there are obstacles at the back, side with the installation of more than one unit.



3. REFRIGERANT CIRCUIT

■MODEL: ROSH09AFCJ, ROSH12AFCJ, ROSH18AFCJ



ThD : Thermistor (Discharge Temp.)

ThO : Thermistor (Outdoor Temp.)

ThHO : Thermistor (Heat Exchanger Out Temp.)

ThR : Thermistor (Room Temp.)

ThPI : Thermistor (Pipe Temp.)

Refrigerant pipe diameter

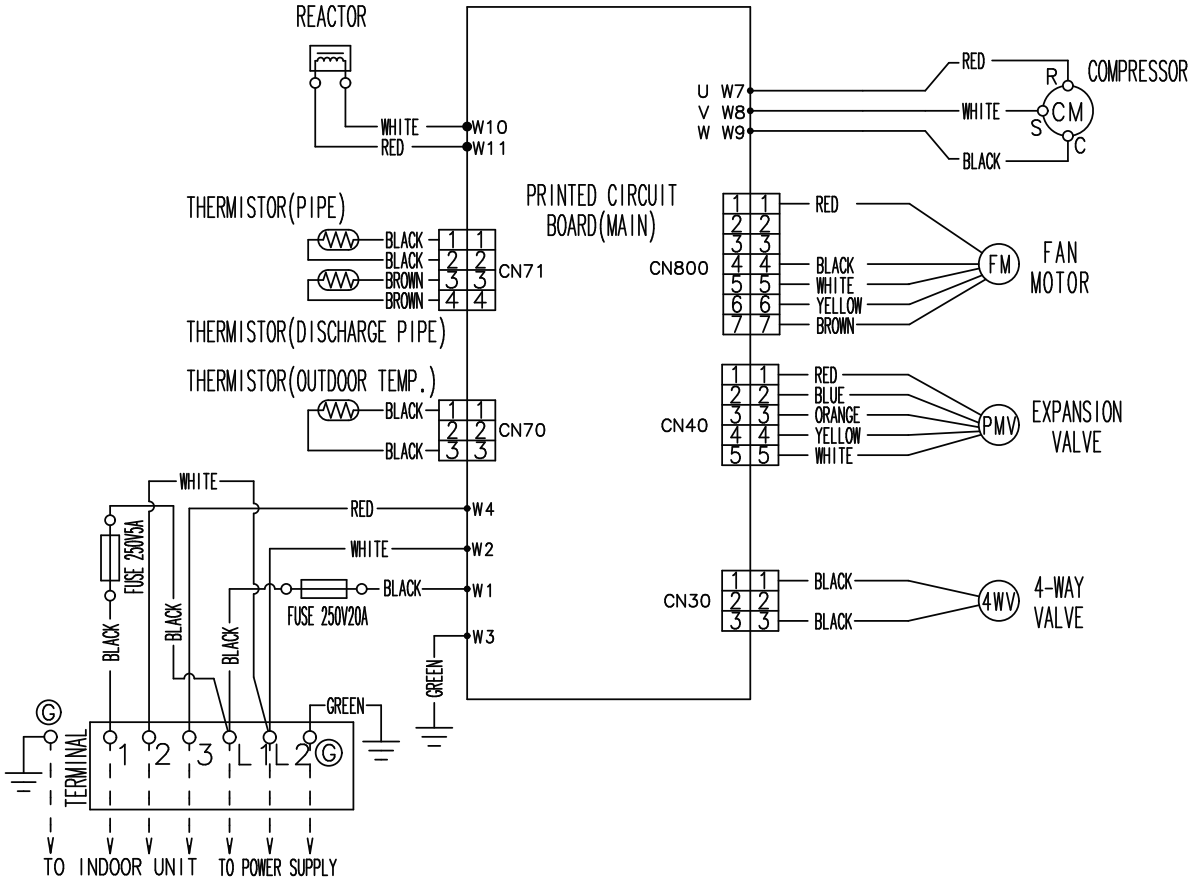
Liquid : 1/4" (6.35 mm)

Gas : 3/8" (9.52 mm) : 9/12RLFC

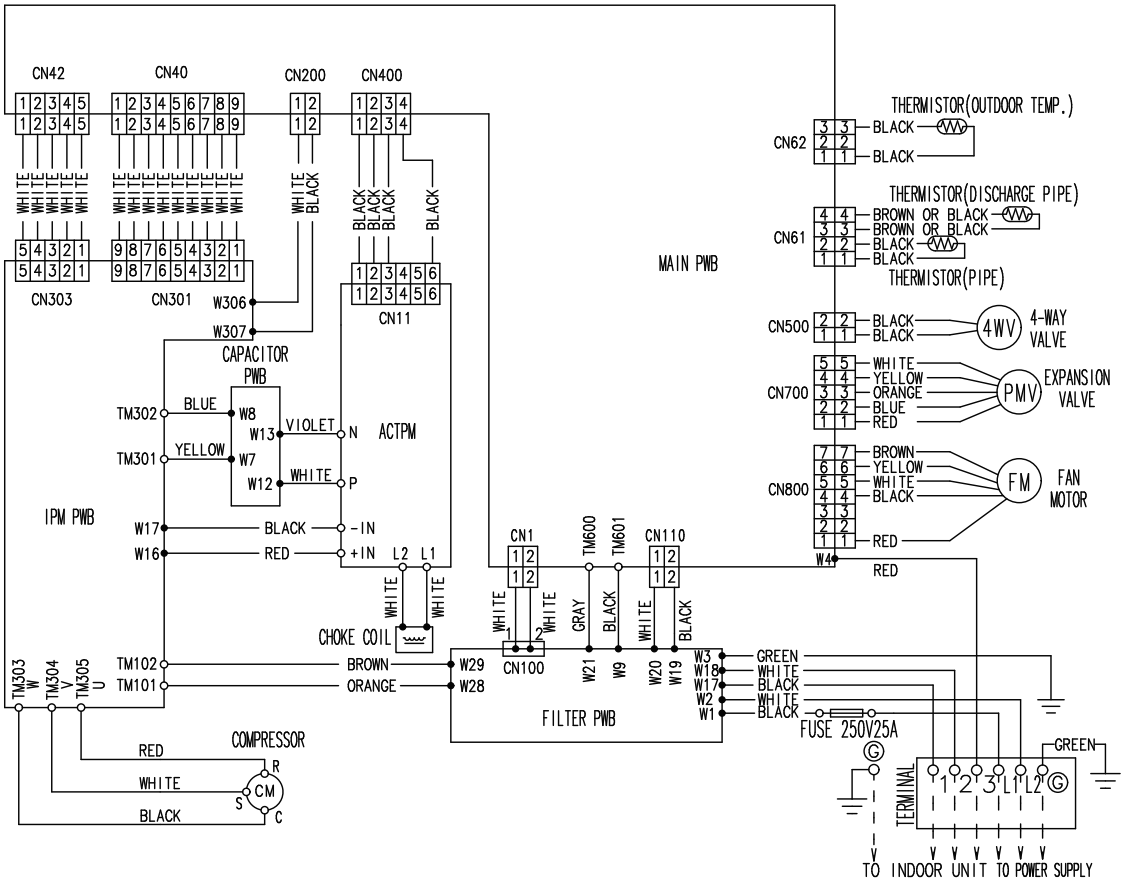
1/2" (12.70 mm) : 18RLFC

4. WIRING DIAGRAMS

■MODEL: ROSH09AFCJ,ROSH12AFCJ



■ MODEL: R O S H 1 8 A F C J



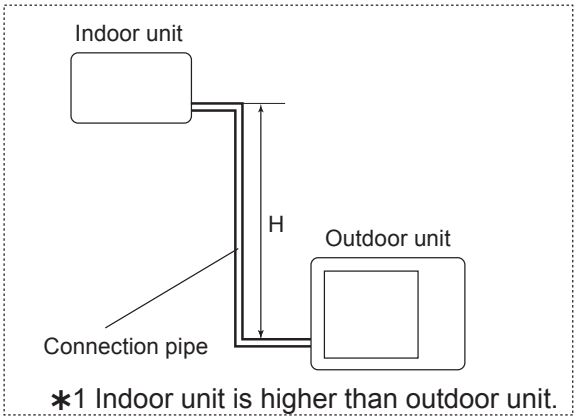
5. CAPACITY COMPENSATION RATE FOR PIPE LENGTH AND HEIGHT DIFFERENCE

■MODEL: ROSH09AFCJ, ROSH12AFCJ

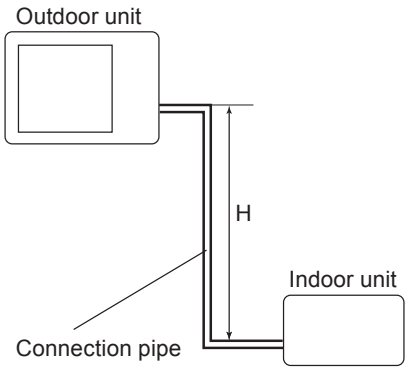
COOLING				Pipe length				
				5m	7.5m	10m	15m	20m
				17ft.	25ft.	33ft.	50ft.	67ft.
Height difference H	∗1 Indoor unit is higher than outdoor unit.	15m	50ft.	-	-	-	0.877	0.874
		10m	33ft.	-	-	0.956	0.891	0.888
		7.5m	25ft.	-	0.988	0.960	0.895	0.892
		5m	17ft.	1.017	0.992	0.964	0.899	0.895
		0m	0ft.	1.025	1.000	0.971	0.906	0.902
	∗2 Indoor unit is lower than outdoor unit	-5m	-17ft.	1.025	1.000	0.971	0.906	0.902
		-7.5m	-25ft.	-	1.000	0.971	0.906	0.902
		-10m	-33ft.	-	-	0.971	0.906	0.902
		-15m	-50ft.	-	-	-	0.906	0.902

HEATING				Pipe length				
				5m	7.5m	10m	15m	20m
				17ft.	25ft.	33ft.	50ft.	67ft.
Height difference H	∗1 Indoor unit is higher than outdoor unit.	15m	50ft.	-	-	-	0.933	0.925
		10m	33ft.	-	-	0.981	0.933	0.925
		7.5m	25ft.	-	1.000	0.981	0.933	0.925
		5m	17ft.	1.017	1.000	0.981	0.933	0.925
		0m	0ft.	1.017	1.000	0.981	0.933	0.925
	∗2 Indoor unit is lower than outdoor unit	-5m	-17ft.	1.012	0.995	0.976	0.928	0.920
		-7.5m	-25ft.	-	0.993	0.974	0.926	0.918
		-10m	-33ft.	-	-	0.971	0.923	0.916
		-15m	-50ft.	-	-	-	0.914	0.906

Height difference H



∗1 Indoor unit is higher than outdoor unit.



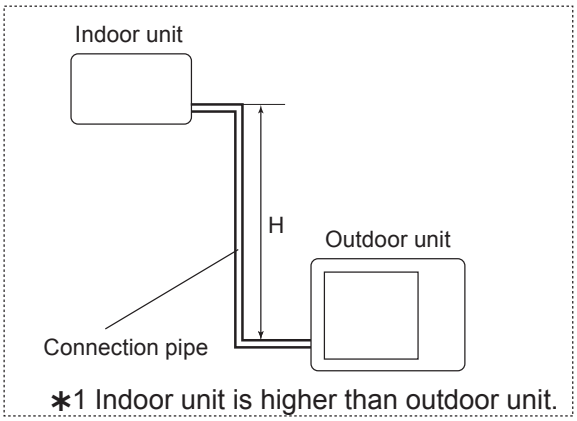
∗2 Indoor unit is lower than outdoor unit.

■MODEL: R O S H A F C J

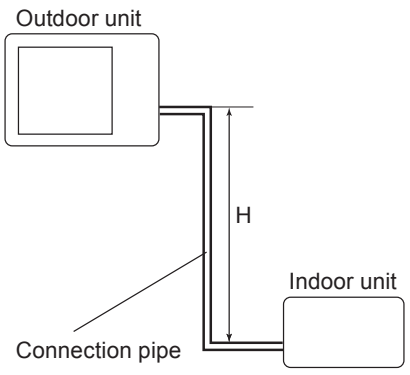
COOLING				Pipe length				
				5m	7.5m	10m	15m	20m
				17ft.	25ft.	33ft.	50ft.	67ft.
Height difference H	∗1 Indoor unit is higher than outdoor unit.	15m	50ft.	-	-	-	0.951	0.950
		10m	33ft.	-	-	0.979	0.967	0.966
		7.5m	25ft.	-	0.988	0.983	0.971	0.970
		5m	17ft.	0.994	0.992	0.987	0.975	0.974
		0m	0ft.	1.002	1.000	0.995	0.983	0.982
	∗2 Indoor unit is lower than outdoor unit	-5m	-17ft.	1.002	1.000	0.995	0.983	0.982
		-7.5m	-25ft.	-	1.000	0.995	0.983	0.982
		-10m	-33ft.	-	-	0.995	0.983	0.982
		-15m	-50ft.	-	-	-	0.983	0.982

HEATING				Pipe length				
				5m	7.5m	10m	15m	20m
				17ft.	25ft.	33ft.	50ft.	67ft.
Height difference H	∗1 Indoor unit is higher than outdoor unit.	15m	50ft.	-	-	-	0.994	0.979
		10m	33ft.	-	-	1.012	0.994	0.979
		7.5m	25ft.	-	1.000	1.012	0.994	0.979
		5m	17ft.	0.969	1.000	1.012	0.994	0.979
		0m	0ft.	0.969	1.000	1.012	0.994	0.979
	∗2 Indoor unit is lower than outdoor unit	-5m	-17ft.	0.964	0.995	1.007	0.989	0.974
		-7.5m	-25ft.	-	0.993	1.004	0.986	0.972
		-10m	-33ft.	-	-	1.002	0.984	0.969
		-15m	-50ft.	-	-	-	0.974	0.959

Height difference H



∗1 Indoor unit is higher than outdoor unit.



∗2 Indoor unit is lower than outdoor unit.

6. ADDITIONAL CHARGE CALCULATION■

MODEL: ROSH09AFCJ, ROSH12AFCJ

Refrigerant type		R410A
Refrigerant amount	lbs. oz.	2lbs.10oz.
	g	1200

● Refrigerant Charge

Total Pipe length	ft.	49 or less	66 (MAX)	0.22oz./ft. (20g/m)
	m	15 or less	20 (MAX)	
Additional charge	oz.	0	3.5	
	g	0	100	

■MODEL: R O S H 1 8 A F C J

Refrigerant type		R410A
Refrigerant amount	lbs. oz.	2lbs.14oz.
	g	1300

● Refrigerant Charge

Total Pipe length	ft.	49 or less	66 (MAX)	0.22oz./ft. (20g/m)
	m	15 or less	20 (MAX)	
Additional charge	oz.	0	3.5	
	g	0	100	

7. AIRFLOW

■MODEL: R O S H 0 9 A F C J

● Cooling

Number of rotations (r.p.m.)	Airflow	
590	m^3/h	1350
	l/s	375
	CFM	794

● Heating

Number of rotations (r.p.m.)	Airflow	
720	m^3/h	1680
	l/s	467
	CFM	989

■MODEL: R O S H 1 2 A F C J

● Cooling

Number of rotations (r.p.m.)	Airflow	
870	m^3/h	2050
	l/s	569
	CFM	1206

● Heating

Number of rotations (r.p.m.)	Airflow	
780	m^3/h	1840
	l/s	511
	CFM	1083

■MODEL: ROSH18AFCJ /RIDH18AVFJ

●Cooling

Number of rotations (r.p.m.)	Airflow	
870	m^3/h	2050
	l/s	569
	CFM	1206

●Heating

Number of rotations (r.p.m.)	Airflow	
1000	m^3/h	2355
	l/s	654
	CFM	1386

■MODEL: ROSH18AFCJ / RICH18AVFJ

●Cooling

Number of rotations (r.p.m.)	Airflow	
1050	m^3/h	2475
	l/s	687
	CFM	1457

●Heating

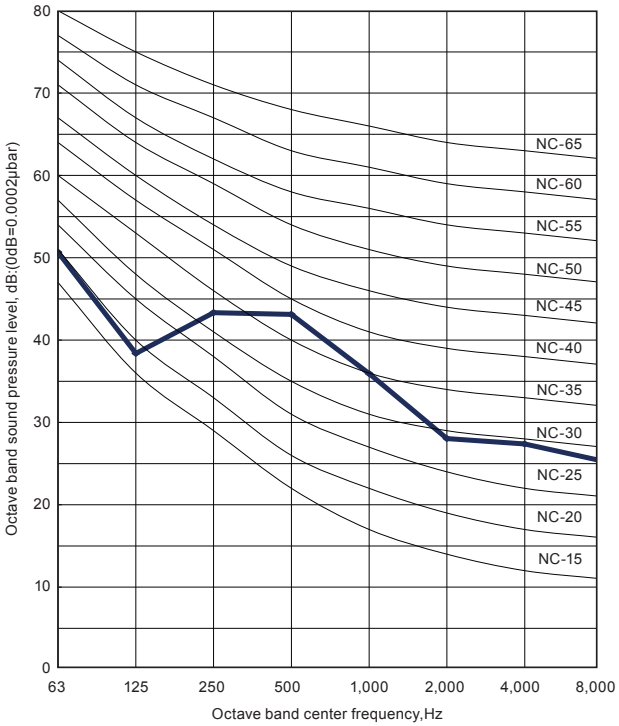
Number of rotations (r.p.m.)	Airflow	
1000	m^3/h	2355
	l/s	654
	CFM	1386

8. OPERATION NOISE (SOUND PRESSURE)

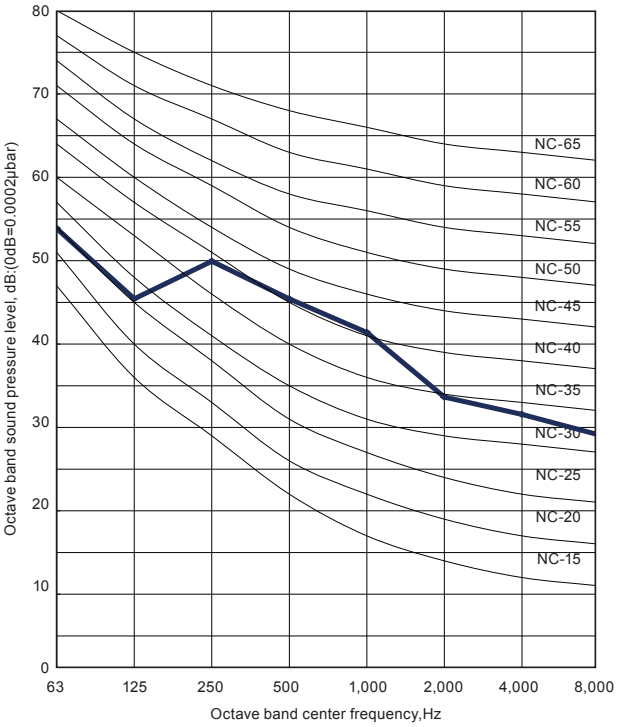
8-1. NOISE LEVEL CURVE

■MODEL: R O S H 0 9 A F C J

● Cooling

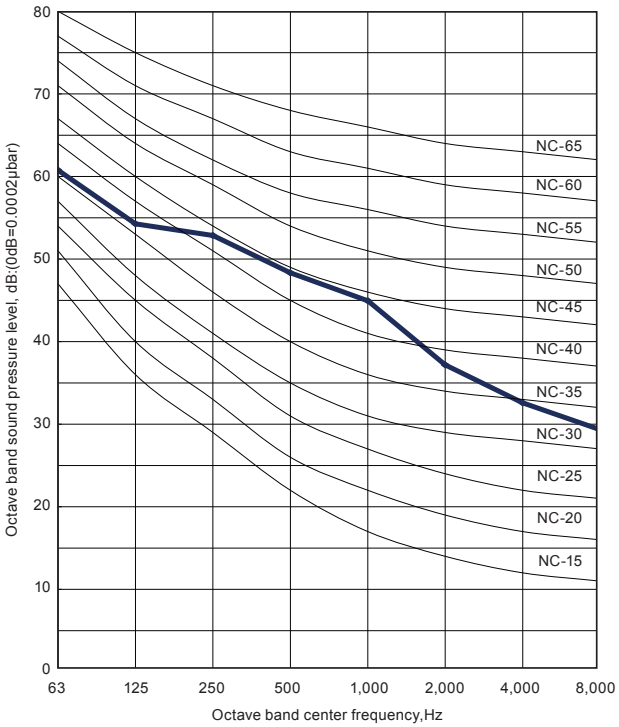


● Heating

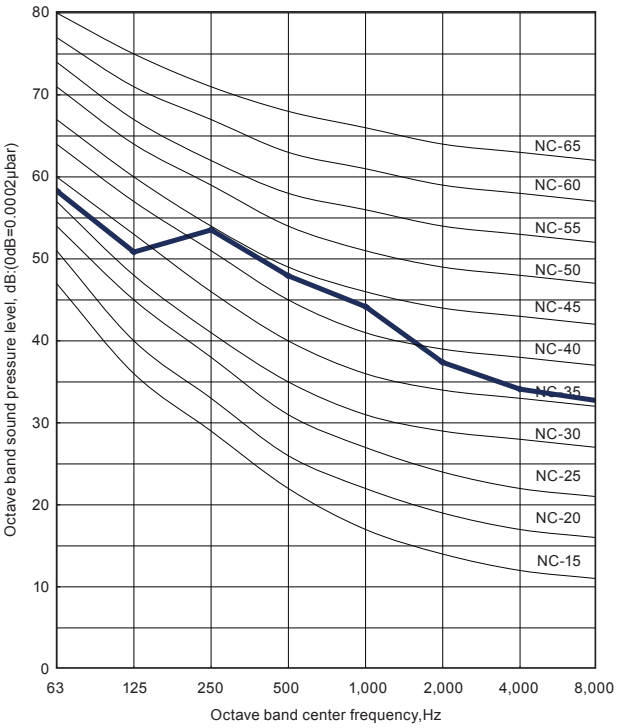


■MODEL: R O S H 1 2 A F C J

● Cooling

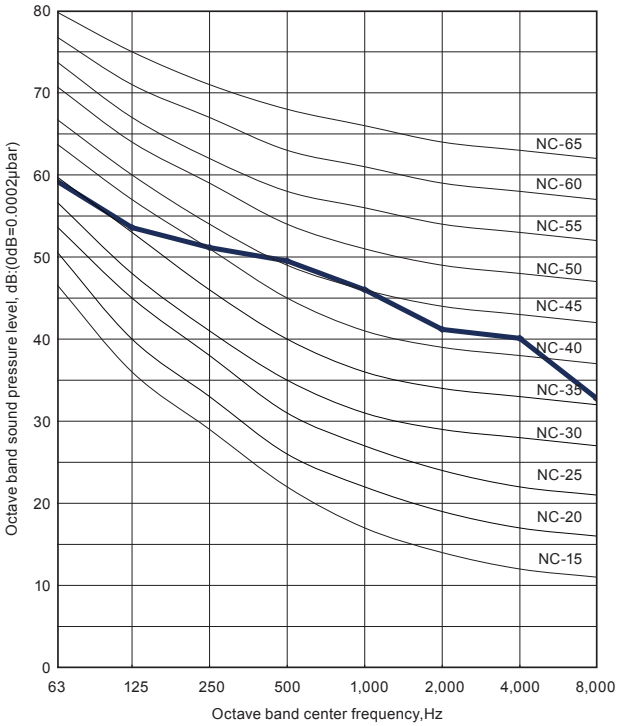


● Heating

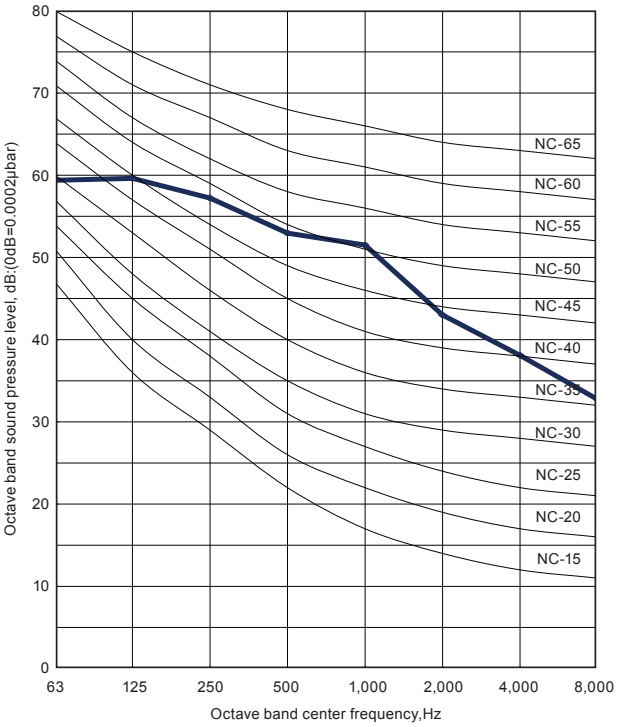


■MODEL: ROSH18AFCJ / RIDH18AVFJ

●Cooling

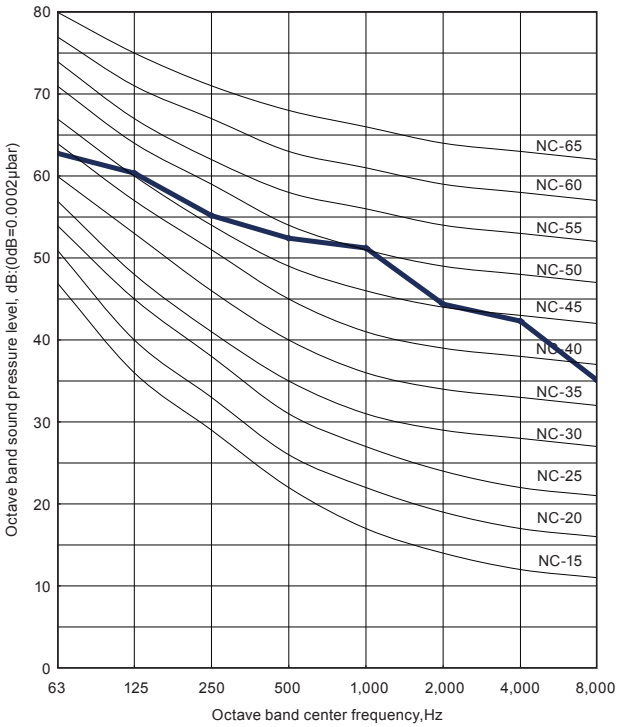


●Heating

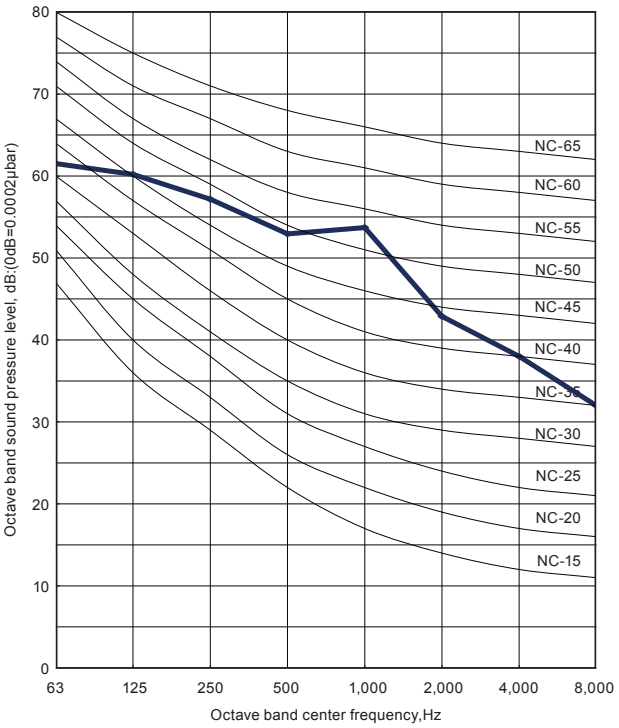


■MODEL: ROSH18AFCJ / RICH18AVFJ

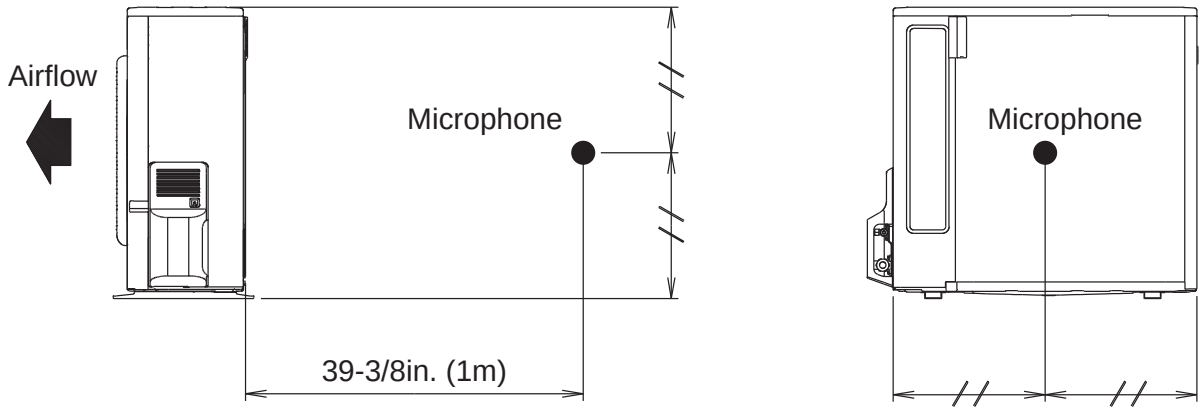
●Cooling



●Heating



8-2. SOUND LEVEL CHECK POINT



9. ELECTRIC CHARACTERISTICS

Model name			ROSH09AFCJ	ROSH12AFCJ	ROSH18AFCJ
Power supply	Voltage	V	208 / 230 ~		
	Frequency	Hz	60		
MCA		A	13.4		17.3
Starting Current		A	4.1	6.7	7.7
*1) Wiring Spec.	MAX CKT BKR	A	15		20
	Power Cable	AWG	14		12
	*2) Limited wiring length	ft. (m)	60 (18)		75 (22)

*1) Wiring Spec.:

Selected Sample
(Selected based on Japan Electrotechnical Standards and Codes Committee E0005)

*2) Limited wiring length :

This is the wiring length in case voltage descent is less than 2%.
When the wiring length becomes long, please select the wiring of a more larger diameter.

MCA : Minimum Circuit Ampacity (Calculation based on UL1995)
MAX CKT BKR : Maximum Circuit Breaker

10. SAFETY DEVICES

<table>
<tr><td rowspan="2"></td><td rowspan="2">Protection form</td><td colspan="3">Model</td></tr>
<tr><td>ROSH09AFCJ</td><td>ROSH12AFCJ</td><td>ROSH18AFCJ</td></tr>
<tr><td rowspan="4">Circuit protection</td><td rowspan="2">Current fuse
(Near the terminal)</td><td colspan="2">250V 20A</td><td rowspan="2">250V 25A</td></tr>
<tr><td colspan="2">250V 5A</td></tr>
<tr><td rowspan="2">Current fuse
(Main printed circuit board)</td><td colspan="2">250V 15A</td><td>250V 10A</td></tr>
<tr><td colspan="3">250V 3.15A</td></tr>
<tr><td>Fan motor protection</td><td>Thermal protection
program</td><td colspan="3">OFF : 212±27 °F (100±15 °C)
ON : 203±18 °F (95±10 °C)</td></tr>
<tr><td>Compressor protection</td><td>Thermal protection
program
(Discharge temp.)</td><td colspan="3">OFF : 230 °F (110 °C)
ON : After 7 minutes</td></tr>
</table>