Refrigerant
R410A

INDOOR UNIT

1. DUCT TYPE :

AR＊A12LALU
AR＊F12LALU
AR＊A14LALU
AR＊F14LALU

D2D_AR028E/03
2008.04.08

1. FEATURE

■MODEL :

INDOOR UNIT	OUTDOOR UNIT	
AR∗A12LALU AR∗F12LALU	AO∗A12LACL AO∗A12LALL	AO∗B12LACL AO∗B12LALL
AR∗A14LALU AR∗F14LALU	AO∗A14LACL AO∗A14LALL	AO∗B14LACL AO∗B14LALL

■FEATURES

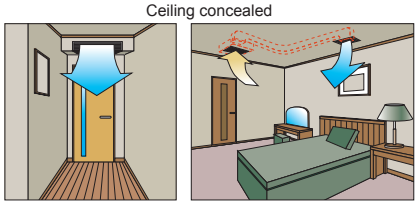
●Energy saving (AO∗A12LACL, AO∗A12LALL, AO∗A14LACL, AO∗A14LALL connection model)

High energy saving was realized by making the indoor unit and outdoor unit fan motor and compressor all DC and optimal design of the refrigerant cycle. Rank A was achieved in European energy rank.

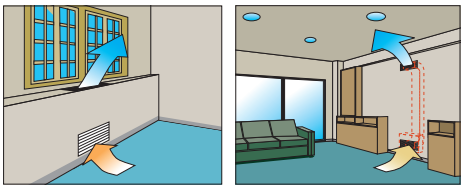
●Universal design indoor unit

Since vertical and horizontal installation is possible, and the intake direction can also be selected from two directions, flexible installation is possible.

Ceiling concealed



Floor concealed



●Thin and compact indoor unit

●Quiet operation

Quiet operation possible by quiet mode.

12 type	14 type
*26 dB(A)	*27 dB(A)

* See our measurement conditions page (01-26).

■FUNCTION SETTING

●Static pressure mode setting

Air flow, noise, etc. can be used under the optimum conditions by selecting the static pressure mode matched to the installation conditions.

●Room temperature adjustment correction

Suitable room temperature control is performed by changing the room temperature correction value by simple remote control operation to match the conditions under which the air conditioner is installed.

●Auto restart

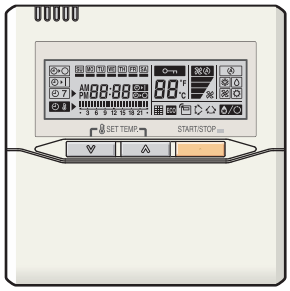
The units restart automatically when the current was returned even when there was a power interruption during operation.

DUCT TYPE
AR✳A12-14L

2. REMOTE CONTROLLER

WIRED REMOTE CONTROLLER

■FEATURES



- ✳ Various timer setup (ON / OFF / WEEKLY) are possible.
- ✳ Equipped with weekly timer as standard function.
  (2 times Start / Stop per day for a week)
- ✳ When setting up a timer, operation mode and a temperature setup can be changed.
- ✳ When a failure occurs,the error code is displayed. (Maximum of 16)
- ✳ Error indication.(A maximum of 16 error histories are memorizable.)
- ✳ Up to 16 indoor units can be simultaneously controlled.
- ✳ Economy operation are possible.
- ✳ Easy installation with a slim shape with no bulge in the back.
- ✳ The room temperature can be controlled by being detected the temperature accurately with built-in thermo sensor.

●Simple function setting

Setting of the air conditioner selection function is performed by remote controller.

●High performance and compact size

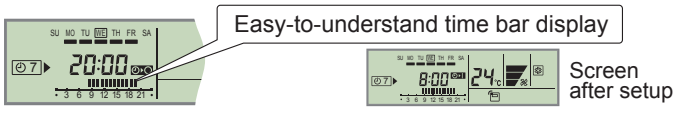
Three functions are combined in one unit.

Wired remote controller + Weekly timer + Setback timer

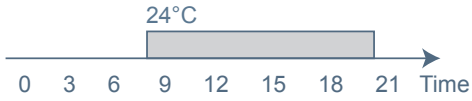
●Built-in timers

Weekly timer

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

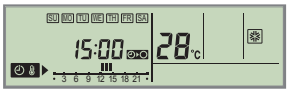


Setup screen example
(Set to Wednesday: 8:00 to 20:00.)

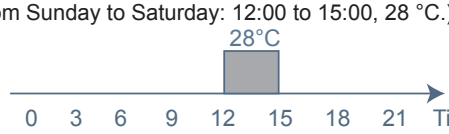


Setback timer

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

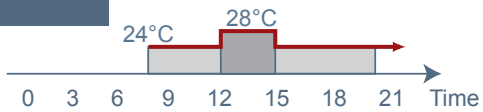


Setup screen example
(Set from Sunday to Saturday: 12:00 to 15:00, 28 °C.)

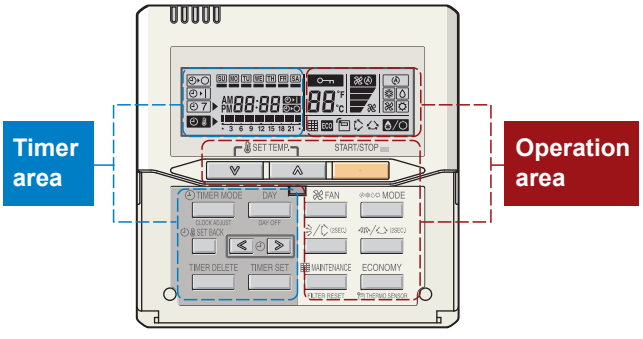


At "Weekly timer" + "Set back timer" setup

24°C→28°C→24°C



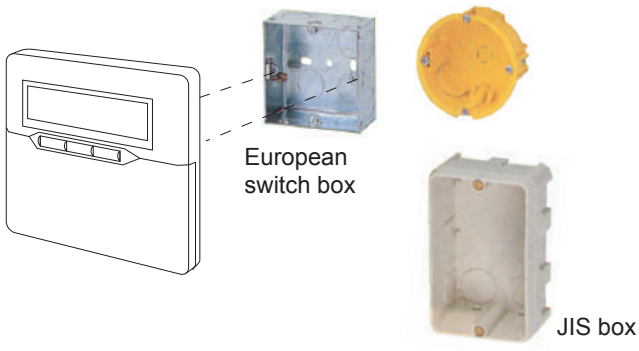
●Easy-to-understand operation



[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 construction allows equipment to be installed wherever it is needed.



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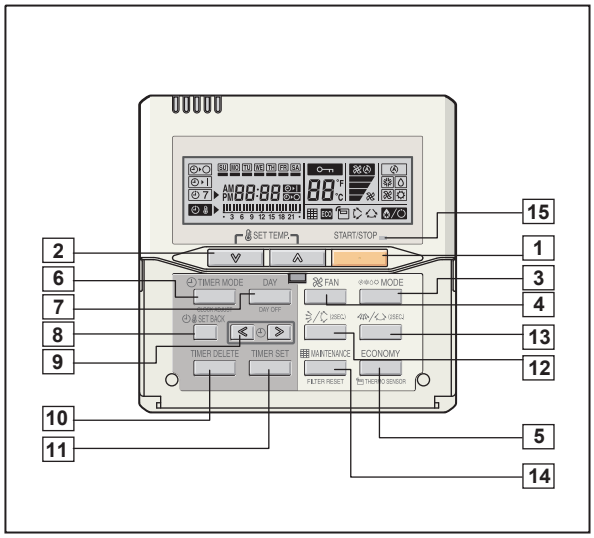
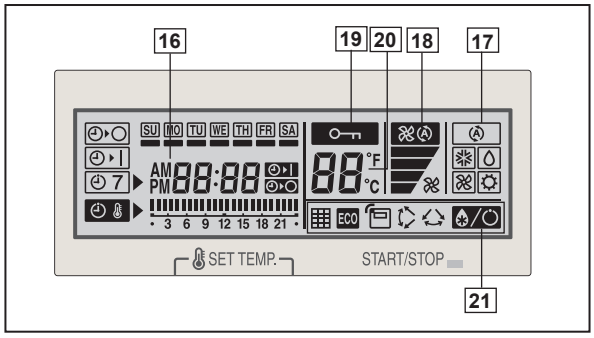
AR✳A12-14L

■FUNCTIONS



Display panel



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

2 Set temperature button
Selects the setting temperature.

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

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

5 Economy 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).
Set the current time.

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

8 Set back button
Pressed to select the set back timer.

9 Set time button
Pressed to set time.

10 Delete button
The schedule of a weekly timer is deleted.

11 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 button*

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

16 Timer and clock display

17 Operation mode display

18 Fan speed display

19 Operation lock display

20 Temperature display

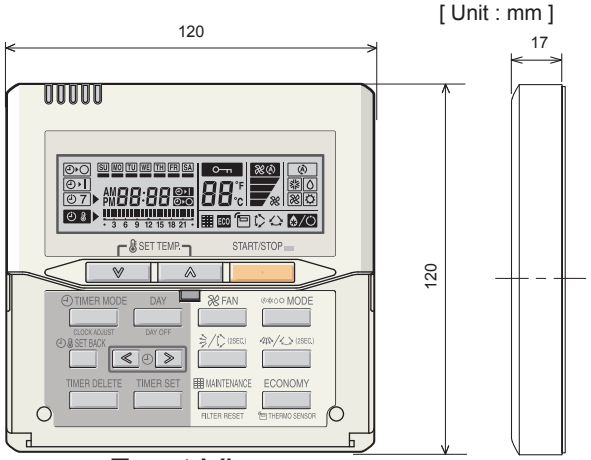
21 Function display

- Defrost display
- Thermo sensor display
- Economy display
- Vertical swing display*
- Horizontal swing display*
- Filter display*

*These functions are not available.

■DIMENSION

[Unit : mm]



Front View

■SPECIFICATION

SIZE (H x W x D mm)	120 x 120 x 17
WEIGHT (g)	160
CABLE LENGTH (m)	10
POWER (V)	12

3. SPECIFICATIONS

Type					DUCTED MODEL	
					INVERTER HEATPUMP	
Model name					AR*A12LALU AR*F12LALU	AR*A14LALU AR*F14LALU
					AO*A12LACL AO*A12LALL	AO*A14LACL AO*A14LALL
Power source					230V～50Hz	
Available voltage range					198-264V～50Hz	
European energy label				Cooling	A	A
				Heating	A	A
Capacity	Cooling	Rated		kW	3.50	4.30
				BTU/h	11950	14650
		Min.-Max.		kW	0.90 - 4.40	0.90 - 5.40
				BTU/h	3100 - 15000	3100 - 18400
	Heating	Rated		kW	4.10	5.00
				BTU/h	14000	17050
		Min.-Max.		kW	0.90 - 5.70	0.90 - 6.50
				BTU/h	3100 - 19400	3100 - 22100
Input power	Cooling	Rated		kW	1.05	1.33
		*Max.			1.73	2.07
	Heating	Rated			1.11	1.34
		*Max.			2.30	2.88
Current	Cooling	Rated		A	4.6	5.8
		*Max.			7.5	9.0
	Heating	Rated			4.9	5.9
		*Max.			10.0	12.5
EER		Cooling		kW/kW	3.33	3.21
COP		Heating			3.69	3.71
Moisture removal				l/h (pints/h)	1.3 (2.3)	1.5 (2.6)
Fan	Airflow rate	Cooling	High	m^3/h	720	870
			Med		630	770
			Low		560	670
			Quiet		480	580
		Heating	High		720	870
			Med		630	770
			Low		560	670
			Quiet		480	580
	Type × Q'ty				Sirocco × 2	
	Motor output			W	60	
Recommended static pressure				Pa	0 to 90	
Sound pressure level		Cooling	High	dB(A)	32	33
			Med		30	31
			Low		28	29
			Quiet		26	27
		Heating	High		32	33
			Med		30	31
			Low		28	29
			Quiet		26	27
Heat exchanger type		Dimensions (H × W × D)		mm	294 × 700 × 26.6	294 × 700 × 26.6
		Fin pitch			1.30	1.30
		Rows x Stages			2 × 14	2 × 14
		Pipe type			Copper	
		Fin type			Aluminium	
Enclosure		Material			Steel	
		Colour			-	-
Dimensions (H×W ×D)	Net			mm	217 × 953 × 595	
	Gross				324 × 1075 × 686	
Weight	Net			kg(lb.)	23 (51)	23 (51)
	Gross				27 (60)	27 (60)
Connection pipe	Size	Liquid		mm	ϕ6.35 (ϕ1 / 4 in.)	
		Gas			ϕ9.52 (ϕ3 / 8 in.)	ϕ12.70 (ϕ1 / 2 in.)
	Method				Flare	
Operation range		Cooling		℃	18 to 32	
				%RH	80 or less	
		Heating		℃	30 or less	
Remote controller type					Wired	
Drain pipe	Material				PS	
	Size			mm	Outer diameter : 26.0 / Inner diameter : 21.5	

Note :
Specifications are based on the following conditions.
Cooling : Indoor temperature of 27 °CDB / 19 °CWB.and outdoor temperature of 35 °CDB/24°CWB.
Heating : Indoor temperature of 20 °CDB / 15 °CWB.and outdoor temperature of 7 °CDB/6 °CWB.
Standard static pressure : 0 Pa
Pipe length : 7.5 m, Height difference : 0 m.(Outdoor unit - Indoor unit)
Sound pressure level : Install a 2m duct to the outlet port and a 1m duct to the suction port and measure.
*The maximum current are the maximum input value and the maximum values when operated within the operation (temperature)range

DUCT TYPE
AR*A12-14L

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AR*A12-14L

Type					DUCTED MODEL	
					INVERTER HEATPUMP	
Model name					AR*A12LALU AR*F12LALU	AR*A14LALU AR*F14LALU
					AO*B12LACL AO*B12LALL	AO*B14LACL AO*B14LALL
Power source					230V～50Hz	
Available voltage range					198-264V～50Hz	
European energy label				Cooling	B	B
				Heating	B	B
Capacity	Cooling	Rated		kW	3.50	4.30
				BTU/h	11950	14650
		Min.-Max.		kW	0.90 - 4.30	0.90 - 5.20
				BTU/h	3100 - 14650	3100 - 17750
	Heating	Rated		kW	4.10	5.00
				BTU/h	14000	17050
		Min.-Max.		kW	0.90 - 5.50	0.90 - 6.30
				BTU/h	3100 - 18750	3100 - 21500
Input power	Cooling	Rated		kW	1.11	1.41
		*Max.			1.73	2.07
	Heating	Rated			1.17	1.42
		*Max.			2.30	2.88
Current	Cooling	Rated		A	4.9	6.2
		*Max.			7.5	9.0
	Heating	Rated			5.1	6.2
		*Max.			10.0	12.5
EER		Cooling		kW/kW	3.15	3.05
COP		Heating			3.50	3.52
Moisture removal				l/h (pints/h)	1.3 (2.3)	1.5 (2.6)
Fan	Airflow rate	Cooling	High	m^3/h	720	870
			Med		630	770
			Low		560	670
			Quiet		480	580
		Heating	High		720	870
			Med		630	770
			Low		560	670
			Quiet		480	580
	Type × Q'ty				Sirocco × 2	
	Motor output			W	60	
Recommended static pressure				Pa	0 to 90	
Sound pressure level	Cooling		High	dB(A)	32	33
			Med		30	31
			Low		28	29
			Quiet		26	27
	Heating		High		32	33
			Med		30	31
			Low		28	29
			Quiet		26	27
Heat exchanger type	Dimensions (H × W × D)			mm	294 × 700 × 26.6	294 × 700 × 26.6
	Fin pitch				1.30	1.30
	Rows x Stages				2 × 14	2 × 14
	Pipe type				Copper	
	Fin type				Aluminium	
Enclosure	Material				Steel	
	Colour				-	-
Dimensions (H×W ×D)	Net			mm	217 × 953 × 595	
	Gross				324 × 1075 × 686	
Weight	Net			kg(lb.)	23 (51)	23 (51)
	Gross				27 (60)	27 (60)
Connection pipe	Size	Liquid		mm	ϕ6.35 (ϕ1 / 4 in.)	
		Gas			ϕ9.52 (ϕ3 / 8 in.)	ϕ12.70 (ϕ1 / 2 in.)
	Method				Flare	
Operation range		Cooling		°C	18 to 32	
				%RH	80 or less	
		Heating		°C	30 or less	
Remote controller type					Wired	
Drain pipe	Material				PS	
	Size			mm	Outer diameter : 26.0 / Inner diameter : 21.5	

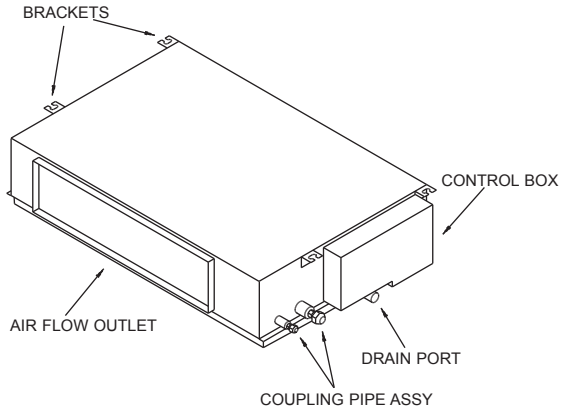
Note :
Specifications are based on the following conditions.
Cooling : Indoor temperature of 27 °CDB / 19 °CWB.and outdoor temperature of 35 °CDB/24°CWB.
Heating : Indoor temperature of 20 °CDB / 15 °CWB.and outdoor temperature of 7 °CDB/6 °CWB.
Standard static pressure : 0 Pa
Pipe length : 7.5 m, Height difference : 0 m.(Outdoor unit - Indoor unit)
Sound pressure level : Install a 2m duct to the outlet port and a 1m duct to the suction port and measure.
*The maximum current are the maximum input value and the maximum values when operated within the operation (temperature)range

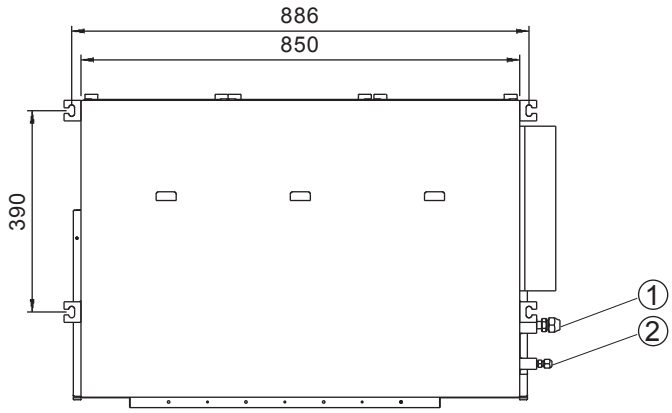
DUCT TYPE
AR∗A12-14L

4. DIMENSIONS

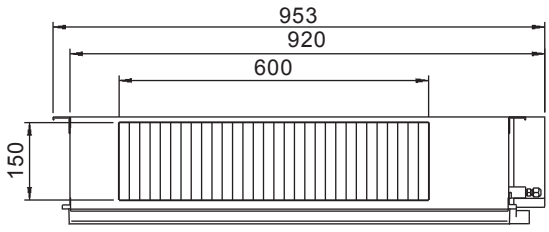
■MODEL : AR∗A12L, AR∗F12L, AR∗A14L, AR∗ F14L

(Unit : mm)

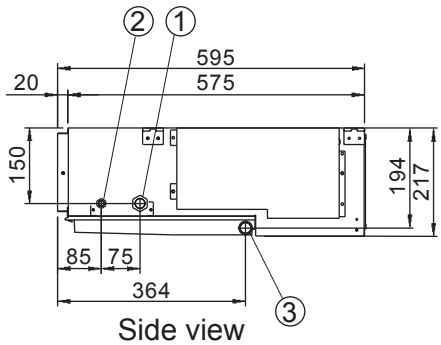




Top view



Front view



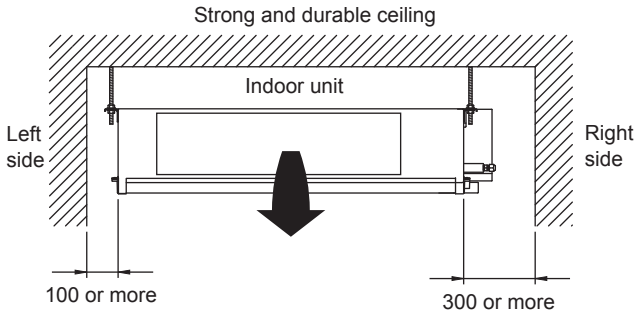
Side view

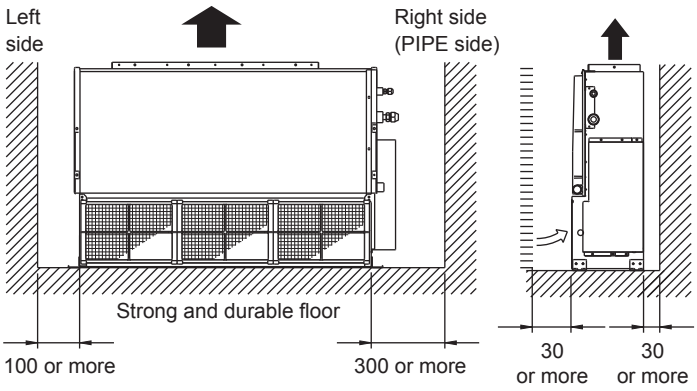
① Refrigerant piping flare connection (Gas)
② Refrigerant piping flare connection (Liquid)
③ Drain piping connection

DUCT TYPE
AR✳A12-14L

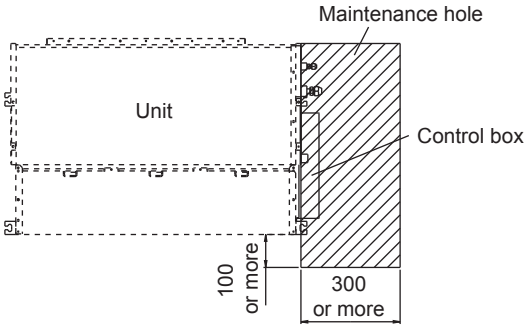
■MOUNTING POSITION

(Unit : mm)

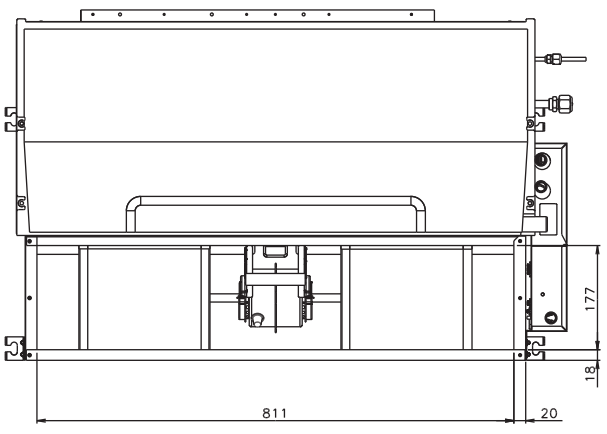




■MAINTENANCE HOLE

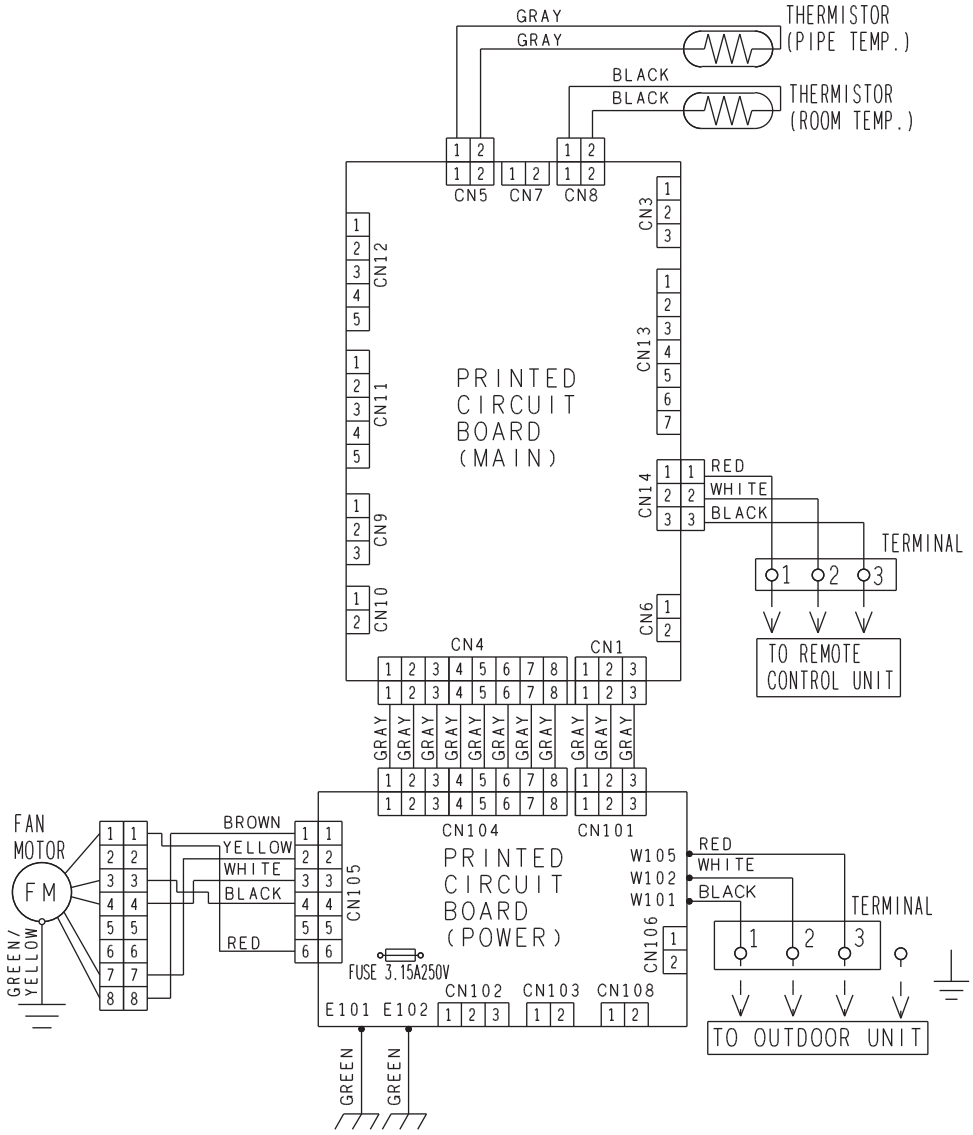


■BOTTOM AIR INTAKE HOLE



5. WIRING DIAGRAMS

■MODEL : AR✳A12L, AR✳F12L, AR✳A14L, AR✳F14L



DUCT TYPE
AR✻A12-14L

6.CAPACITY TABLE

6-1.COOLING CAPACITY

This table is created using the maximum capacity.

■MODEL : AR✻A12L, AR✻F12L / AO✻A12L

AFR	12.2

		Indoor temperature																				
	°CDB	18			21			23			25			27			29			32		
	°CWB	12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
	-10	3.52	3.13	0.31	3.92	3.15	0.31	4.05	3.42	0.32	4.32	3.43	0.32	4.46	3.70	0.32	4.72	3.69	0.32	4.99	3.93	0.33
	0	3.33	3.00	0.51	3.71	3.02	0.52	3.84	3.28	0.52	4.09	3.29	0.53	4.22	3.55	0.53	4.47	3.54	0.54	4.73	3.77	0.54
	5	3.33	3.00	0.49	3.71	3.02	0.50	3.84	3.28	0.50	4.09	3.29	0.51	4.22	3.55	0.51	4.47	3.54	0.52	4.73	3.77	0.52
	10	3.33	2.99	0.45	3.71	3.01	0.46	3.84	3.27	0.46	4.09	3.29	0.46	4.21	3.55	0.47	4.47	3.53	0.47	4.72	3.76	0.48
	15	3.22	2.92	0.55	3.59	2.94	0.56	3.71	3.19	0.56	3.95	3.20	0.57	4.08	3.46	0.57	4.32	3.44	0.58	4.57	3.67	0.58
	20	4.20	3.60	1.29	4.68	3.63	1.31	4.84	3.94	1.32	5.16	3.95	1.33	5.32	4.27	1.34	5.64	4.25	1.35	5.95	4.53	1.36
	25	4.03	3.49	1.44	4.49	3.51	1.46	4.64	3.81	1.47	4.95	3.83	1.48	5.10	4.13	1.49	5.41	4.11	1.51	5.71	4.38	1.52
	30	3.80	3.32	1.53	4.23	3.34	1.56	4.37	3.63	1.56	4.66	3.64	1.58	4.81	3.93	1.59	5.09	3.92	1.60	5.38	4.17	1.62
	35	3.48	3.10	1.54	3.88	3.12	1.57	4.01	3.39	1.57	4.27	3.40	1.59	4.40	3.67	1.60	4.67	3.65	1.61	4.93	3.89	1.63
	40	2.93	2.72	1.31	3.26	2.74	1.33	3.37	2.98	1.33	3.59	2.99	1.35	3.70	3.22	1.35	3.93	3.21	1.37	4.15	3.42	1.38
	46	2.16	2.20	1.01	2.40	2.21	1.03	2.48	2.40	1.03	2.65	2.41	1.04	2.73	2.60	1.05	2.89	2.59	1.06	3.06	2.76	1.07

■MODEL : AR✻A12L, AR✻F12L / AO✻B12L

AFR	12.2

		Indoor temperature																				
	°CDB	18			21			23			25			27			29			32		
	°CWB	12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
	-10	3.52	3.13	0.31	3.92	3.15	0.31	4.05	3.42	0.32	4.32	3.43	0.32	4.46	3.70	0.32	4.72	3.69	0.32	4.99	3.93	0.33
	0	3.33	3.00	0.51	3.71	3.02	0.52	3.84	3.28	0.52	4.09	3.29	0.53	4.22	3.55	0.53	4.47	3.54	0.54	4.73	3.77	0.54
	5	3.33	3.00	0.49	3.71	3.02	0.50	3.84	3.28	0.50	4.09	3.29	0.51	4.22	3.55	0.51	4.47	3.54	0.52	4.73	3.77	0.52
	10	3.33	2.99	0.45	3.71	3.01	0.46	3.84	3.27	0.46	4.09	3.29	0.46	4.21	3.55	0.47	4.47	3.53	0.47	4.72	3.76	0.48
	15	3.22	2.92	0.55	3.59	2.94	0.56	3.71	3.19	0.56	3.95	3.20	0.57	4.08	3.46	0.57	4.32	3.44	0.58	4.57	3.67	0.58
	20	4.20	3.60	1.29	4.68	3.63	1.31	4.84	3.94	1.32	5.16	3.95	1.33	5.32	4.27	1.34	5.64	4.25	1.35	5.95	4.53	1.36
	25	4.03	3.49	1.44	4.49	3.51	1.46	4.64	3.81	1.47	4.95	3.83	1.48	5.10	4.13	1.49	5.41	4.11	1.51	5.71	4.38	1.52
	30	3.80	3.32	1.53	4.23	3.34	1.56	4.37	3.63	1.56	4.66	3.64	1.58	4.81	3.93	1.59	5.09	3.92	1.60	5.38	4.17	1.62
	35	3.40	3.01	1.54	3.79	3.03	1.57	3.92	3.29	1.57	4.17	3.30	1.59	4.30	3.57	1.60	4.56	3.55	1.61	4.82	3.79	1.63
	40	2.86	2.65	1.31	3.18	2.67	1.33	3.29	2.90	1.33	3.51	2.91	1.35	3.62	3.14	1.35	3.84	3.13	1.37	4.05	3.33	1.38
	46	2.11	2.15	1.01	2.35	2.16	1.03	2.43	2.35	1.03	2.59	2.35	1.04	2.67	2.54	1.05	2.83	2.53	1.06	2.99	2.70	1.07

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

DUCT TYPE
AR∗A12-14L

■MODEL : AR∗A14L, AR∗F14L / AO∗A14L

AFR	13.7

		Indoor temperature																				
	°CDB	18			21			23			25			27			29			32		
	°CWB	12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
	-10	4.06	3.64	0.36	4.52	3.67	0.36	4.68	3.98	0.36	4.99	4.00	0.37	5.14	4.32	0.37	5.45	4.30	0.37	5.76	4.58	0.38
	0	3.97	3.58	0.42	4.42	3.60	0.43	4.57	3.91	0.43	4.87	3.92	0.43	5.03	4.24	0.44	5.33	4.22	0.44	5.63	4.50	0.44
	5	3.84	3.49	0.53	4.28	3.51	0.54	4.43	3.81	0.54	4.72	3.82	0.54	4.87	4.13	0.55	5.16	4.11	0.55	5.45	4.38	0.56
	10	3.70	3.38	0.63	4.12	3.40	0.64	4.26	3.70	0.64	4.54	3.71	0.65	4.68	4.01	0.65	4.96	3.99	0.66	5.24	4.25	0.67
	15	3.75	3.42	0.55	4.18	3.44	0.56	4.32	3.74	0.56	4.60	3.75	0.57	4.75	4.05	0.57	5.03	4.03	0.58	5.32	4.30	0.58
	20	4.78	4.17	1.20	5.32	4.19	1.22	5.51	4.56	1.22	5.87	4.57	1.24	6.05	4.94	1.24	6.41	4.92	1.26	6.78	5.24	1.27
	25	4.56	4.01	1.35	5.08	4.03	1.37	5.25	4.38	1.38	5.60	4.40	1.39	5.77	4.75	1.40	6.12	4.73	1.41	6.47	5.04	1.43
	30	4.33	3.84	1.50	4.82	3.86	1.52	4.98	4.20	1.53	5.31	4.21	1.55	5.48	4.55	1.55	5.81	4.53	1.57	6.13	4.82	1.59
	35	4.27	3.79	1.78	4.75	3.81	1.81	4.91	4.15	1.82	5.24	4.16	1.84	5.40	4.49	1.85	5.72	4.47	1.87	6.05	4.77	1.88
	40	3.12	2.97	1.27	3.47	2.99	1.29	3.59	3.25	1.29	3.83	3.26	1.31	3.95	3.52	1.31	4.18	3.50	1.33	4.42	3.73	1.34
	46	2.22	2.34	0.96	2.47	2.35	0.98	2.56	2.56	0.98	2.73	2.56	0.99	2.81	2.77	1.00	2.98	2.76	1.01	3.15	2.94	1.02

■MODEL : AR∗A14L, AR∗F14L / AO∗B14L

AFR	13.7

		Indoor temperature																				
	°CDB	18			21			23			25			27			29			32		
	°CWB	12			15			16			18			19			21			23		
Outdoor temperature	°CDB	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
	-10	4.06	3.64	0.36	4.52	3.67	0.36	4.68	3.98	0.36	4.99	4.00	0.37	5.14	4.32	0.37	5.45	4.30	0.37	5.76	4.58	0.38
	0	3.97	3.58	0.42	4.42	3.60	0.43	4.57	3.91	0.43	4.87	3.92	0.43	5.03	4.24	0.44	5.33	4.22	0.44	5.63	4.50	0.44
	5	3.84	3.49	0.53	4.28	3.51	0.54	4.43	3.81	0.54	4.72	3.82	0.54	4.87	4.13	0.55	5.16	4.11	0.55	5.45	4.38	0.56
	10	3.70	3.38	0.63	4.12	3.40	0.64	4.26	3.70	0.64	4.54	3.71	0.65	4.68	4.01	0.65	4.96	3.99	0.66	5.24	4.25	0.67
	15	3.75	3.42	0.55	4.18	3.44	0.56	4.32	3.74	0.56	4.60	3.75	0.57	4.75	4.05	0.57	5.03	4.03	0.58	5.32	4.30	0.58
	20	4.78	4.17	1.20	5.32	4.19	1.22	5.51	4.56	1.22	5.87	4.57	1.24	6.05	4.94	1.24	6.41	4.92	1.26	6.78	5.24	1.27
	25	4.56	4.01	1.35	5.08	4.03	1.37	5.25	4.38	1.38	5.60	4.40	1.39	5.77	4.75	1.40	6.12	4.73	1.41	6.47	5.04	1.43
	30	4.33	3.84	1.50	4.82	3.86	1.52	4.98	4.20	1.53	5.31	4.21	1.55	5.48	4.55	1.55	5.81	4.53	1.57	6.13	4.82	1.59
	35	4.11	3.62	1.78	4.58	3.64	1.81	4.73	3.96	1.82	5.04	3.97	1.84	5.20	4.29	1.85	5.51	4.28	1.87	5.82	4.55	1.88
	40	3.00	2.85	1.27	3.34	2.86	1.29	3.46	3.11	1.29	3.69	3.12	1.31	3.80	3.37	1.31	4.03	3.36	1.33	4.26	3.58	1.34
	46	2.14	2.25	0.96	2.38	2.26	0.98	2.46	2.46	0.98	2.62	2.47	0.99	2.71	2.66	1.00	2.87	2.65	1.01	3.03	2.83	1.02

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

DUCT TYPE
AR*A12-14L

6-2.HEATING CAPACITY

This table is created using the maximum capacity.

■MODEL : AR*A12L, AR*F12L / AO*A12L

AFR	12.2

		Indoor temperature											
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	3.41	1.87	3.32	1.91	3.24	1.95	3.16	1.99	3.08	2.03
	-10	-11	4.16	1.87	4.06	1.91	3.96	1.95	3.86	1.99	3.76	2.03
	-5	-7	4.76	2.15	4.65	2.19	4.53	2.24	4.42	2.28	4.26	2.30
	0	-2	5.43	2.22	5.30	2.27	5.17	2.30	4.92	2.30	4.70	2.30
	5	3	5.91	2.21	5.77	2.26	5.63	2.30	5.37	2.30	5.14	2.30
	7	6	5.99	2.06	5.84	2.10	5.70	2.15	5.56	2.19	5.42	2.23
	10	8	6.20	2.04	6.06	2.08	5.91	2.12	5.76	2.16	5.61	2.21
	15	10	6.39	2.01	6.24	2.05	6.09	2.09	5.93	2.14	5.78	2.18
	20	15	6.42	1.78	6.27	1.81	6.12	1.85	5.96	1.89	5.81	1.92
	24	18	6.46	1.76	6.31	1.79	6.15	1.83	6.00	1.87	5.84	1.90

■MODEL : AR*A12L, AR*F12L / AO*B12L

AFR	12.2

		Indoor temperature											
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	3.41	1.87	3.32	1.91	3.24	1.95	3.16	1.99	3.08	2.03
	-10	-11	4.16	1.87	4.06	1.91	3.96	1.95	3.86	1.99	3.76	2.03
	-5	-7	4.59	2.15	4.49	2.19	4.38	2.24	4.27	2.28	4.16	2.33
	0	-2	5.24	2.22	5.12	2.27	4.99	2.31	4.87	2.36	4.74	2.41
	5	3	5.70	2.21	5.56	2.26	5.43	2.30	5.29	2.35	5.15	2.39
	7	6	5.78	2.06	5.64	2.10	5.50	2.15	5.36	2.19	5.23	2.23
	10	8	5.99	2.04	5.84	2.08	5.70	2.12	5.56	2.16	5.42	2.21
	15	10	6.17	2.01	6.02	2.05	5.87	2.09	5.73	2.14	5.58	2.18
	20	15	6.20	1.78	6.05	1.81	5.90	1.85	5.75	1.89	5.61	1.92
	24	18	6.23	1.76	6.08	1.79	5.94	1.83	5.79	1.87	5.64	1.90

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

DUCT TYPE
AR*A12-14L

■MODEL : AR*A14L, AR*F14L / AO*A14L

AFR	13.7

		Indoor temperature										
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	4.35	2.16	4.25	2.21	4.14	2.25	4.04	2.30	3.94	2.34
	-10	-11	4.92	2.16	4.80	2.21	4.68	2.25	4.56	2.30	4.45	2.34
	-5	-7	5.48	2.39	5.35	2.44	5.22	2.49	5.09	2.54	4.96	2.59
	0	-2	6.29	2.56	6.14	2.61	5.99	2.67	5.84	2.72	5.69	2.77
	5	3	7.04	2.74	6.88	2.80	6.71	2.85	6.46	2.87	6.17	2.87
	7	6	6.83	2.35	6.66	2.40	6.50	2.45	6.34	2.49	6.18	2.54
	10	8	7.08	2.40	6.91	2.45	6.74	2.50	6.57	2.55	6.40	2.60
	15	10	6.71	2.06	6.55	2.10	6.39	2.14	6.23	2.19	6.07	2.23
	20	15	6.28	1.64	6.13	1.67	5.98	1.71	5.83	1.74	5.68	1.78
	24	18	6.47	1.64	6.32	1.68	6.16	1.71	6.01	1.75	5.85	1.78

■MODEL : AR*A14L, AR*F14L / AO*B14L

AFR	13.7

		Indoor temperature										
		°CDB	16		18		20		22		24	
Outdoor temperature	°CDB	°CWB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	-15	-16	4.35	2.16	4.25	2.21	4.14	2.25	4.04	2.30	3.94	2.34
	-10	-11	4.92	2.16	4.80	2.21	4.68	2.25	4.56	2.30	4.45	2.34
	-5	-7	5.48	2.39	5.35	2.44	5.22	2.49	5.09	2.54	4.96	2.59
	0	-2	6.29	2.56	6.14	2.61	5.99	2.67	5.84	2.72	5.69	2.77
	5	3	6.83	2.74	6.66	2.80	6.50	2.85	6.34	2.91	6.18	2.97
	7	6	6.61	2.35	6.46	2.40	6.30	2.45	6.14	2.49	5.98	2.54
	10	8	6.86	2.40	6.69	2.45	6.53	2.50	6.37	2.55	6.20	2.60
	15	10	6.51	2.06	6.35	2.10	6.20	2.14	6.04	2.19	5.89	2.23
	20	15	6.08	1.64	5.94	1.67	5.79	1.71	5.65	1.74	5.50	1.78
	24	18	6.27	1.64	6.12	1.68	5.97	1.71	5.82	1.75	5.67	1.78

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

DUCT TYPE
AR∗A12-14L

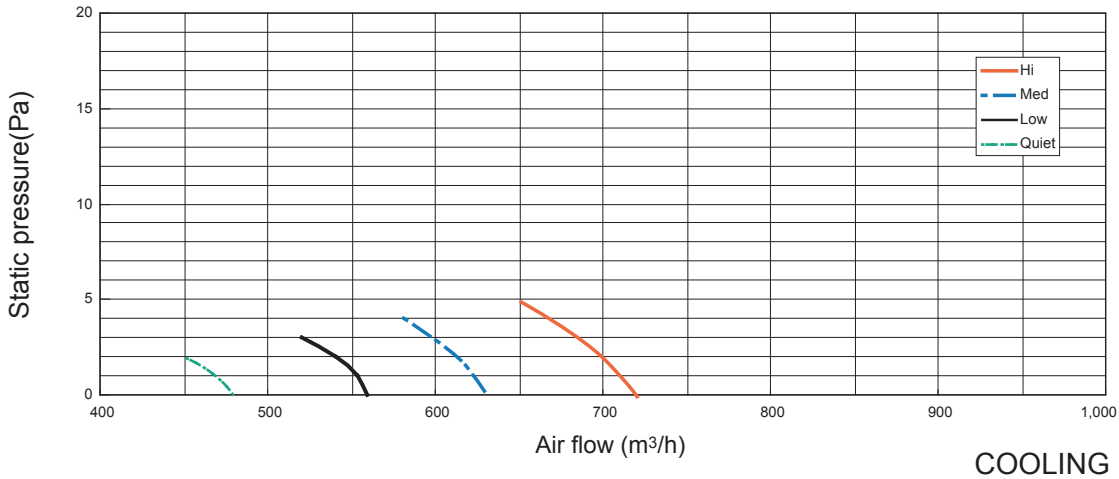
7. FAN PERFORMANCE AND CAPACITY

7-1. NORMAL MODE

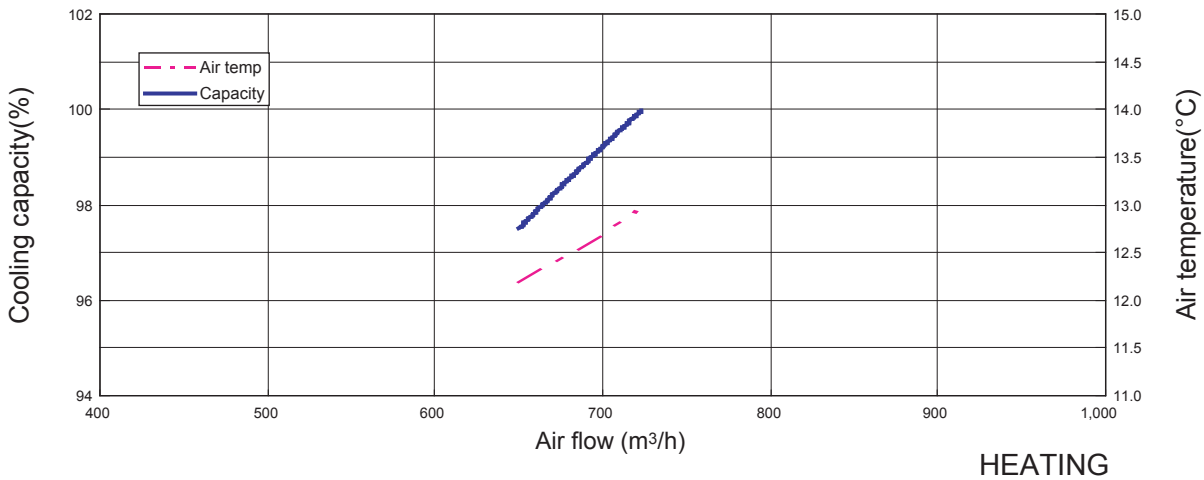
■MODEL : AR∗A12L, AR∗F12L

			Static pressure (Pa)					
			0	1	2	3	4	5
Fan speed	Hi	m^3/h	720	710	700	685	670	650
		l/s	200	197	194	190	186	181
		CFM	424	418	412	403	394	383
	Med	m^3/h	630	623	613	597	580	-
		l/s	175	173	170	166	161	-
		CFM	371	367	361	351	341	-
	Low	m^3/h	560	553	540	520	-	-
		l/s	156	154	150	144	-	-
		CFM	330	325	318	306	-	-
	Quiet	m^3/h	480	470	450	-	-	-
		l/s	133	131	125	-	-	-
		CFM	283	277	265	-	-	-

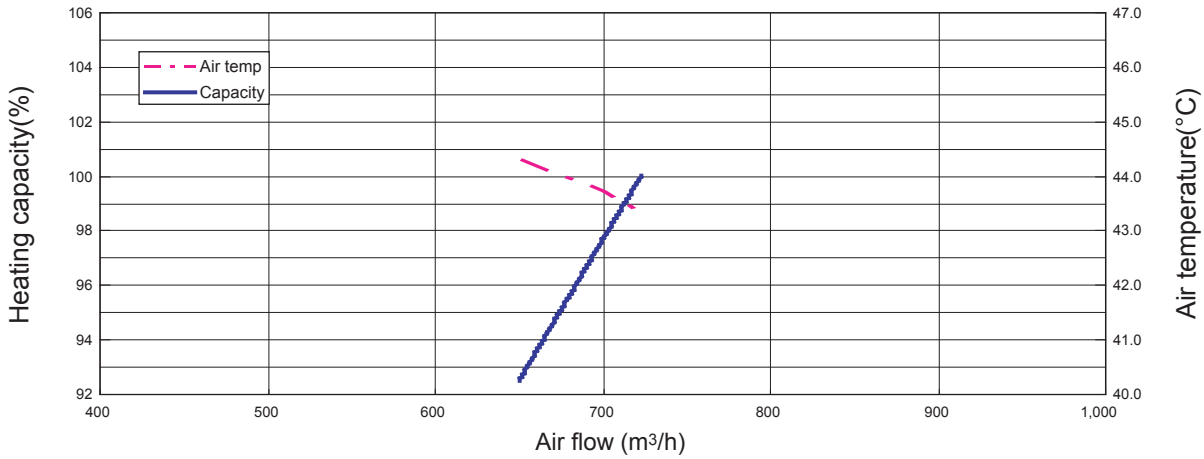
Q-h Characteristic curve



COOLING



HEATING

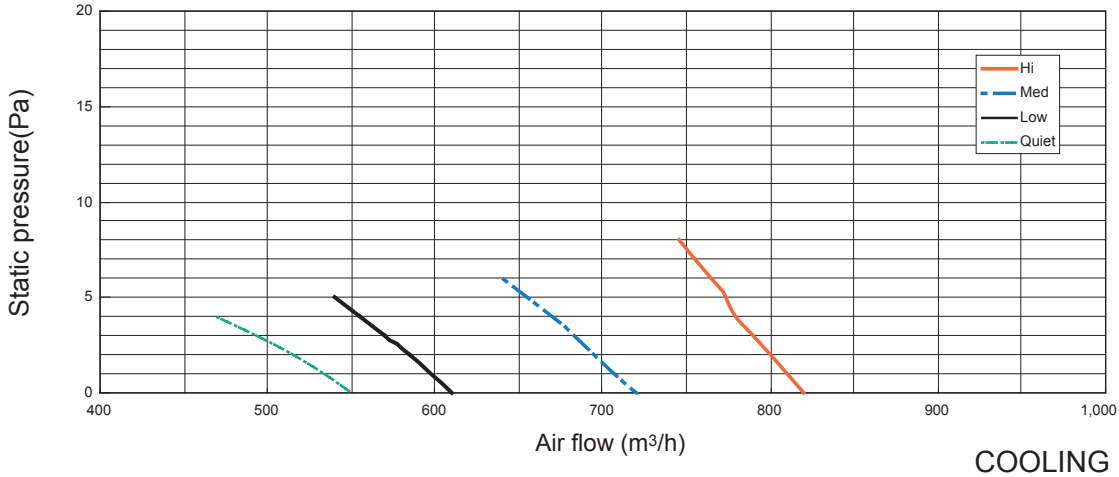


DUCT TYPE
AR*A12-14L

■MODEL : AR*A14L

			Static pressure (Pa)							
			0	2	3	4	5	6	7	8
Fan speed	Hi	m^3/h	820	800	790	780	773	763	754	745
		l/s	228	222	219	217	215	212	209	207
		CFM	483	471	465	459	455	449	444	438
	Med	m^3/h	720	693	683	670	655	640	-	-
		l/s	200	193	190	186	182	178	-	-
		CFM	424	408	402	394	386	377	-	-
	Low	m^3/h	610	584	570	555	540	-	-	-
		l/s	169	162	158	154	150	-	-	-
		CFM	359	344	335	327	318	-	-	-
	Quiet	m^3/h	550	514	493	470	-	-	-	-
		l/s	153	143	137	131	-	-	-	-
		CFM	324	303	290	277	-	-	-	-

Q-h Characteristic curve



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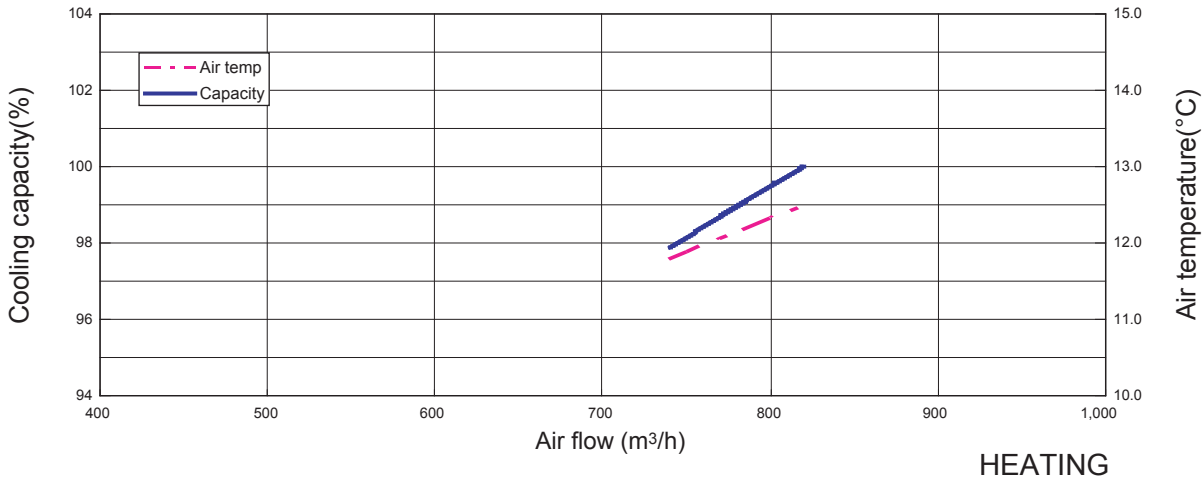
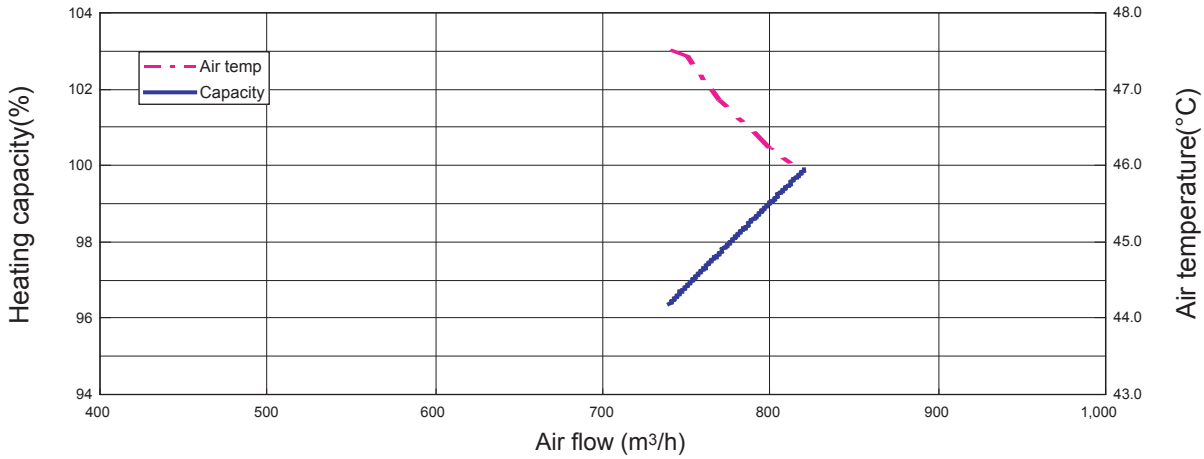


HEATING

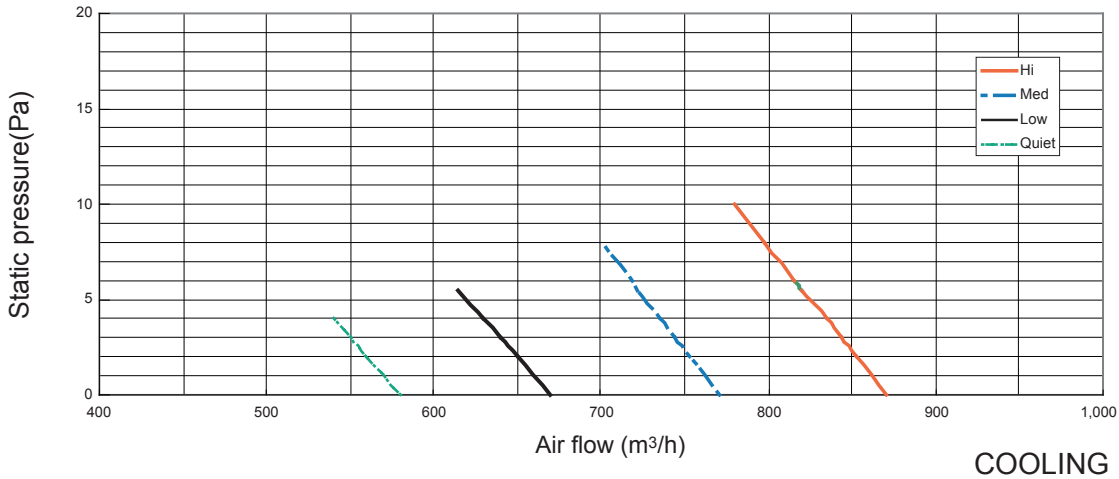


DUCT TYPE
AR*A12-14L

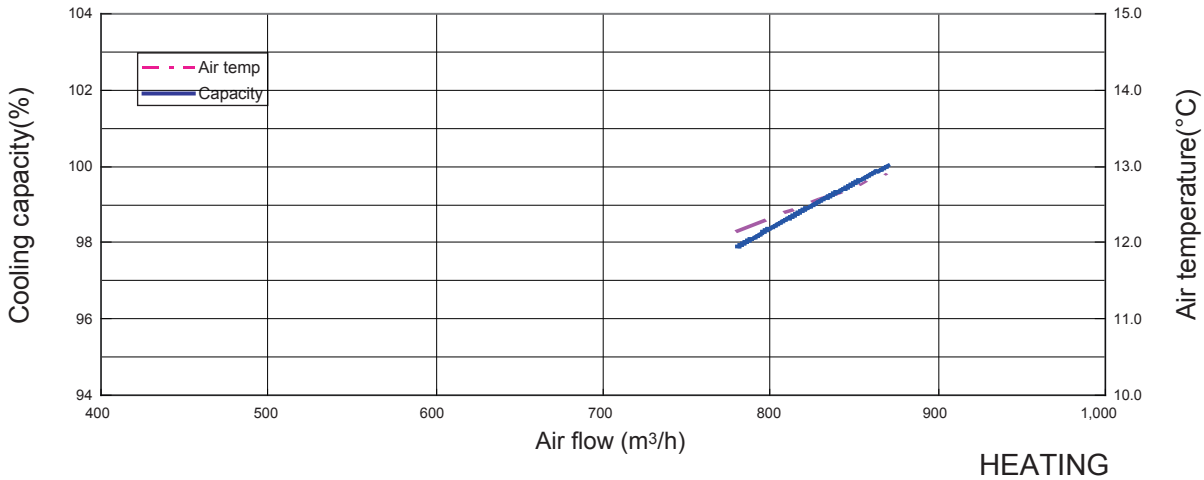
■MODEL : AR*F14L

			Static pressure (Pa)							
			0	2	3	4	5.5	6	8	10
FAN SPEED	Hi	m3/h	870	852	843	834	820	816	798	780
		l/s	242	237	234	232	228	227	222	217
		CFM	512	501	496	491	483	480	470	459
	Med	m3/h	770	753	744	735	722	718	700	-
		l/s	214	209	207	204	201	199	194	-
		CFM	453	443	438	433	425	423	412	-
	Low	m3/h	670	650	640	630	615	-	-	-
		l/s	186	181	178	175	171	-	-	-
		CFM	394	383	377	371	362	-	-	-
	Quiet	m3/h	580	560	550	540	-	-	-	-
		l/s	161	156	153	150	-	-	-	-
		CFM	341	330	324	318	-	-	-	-

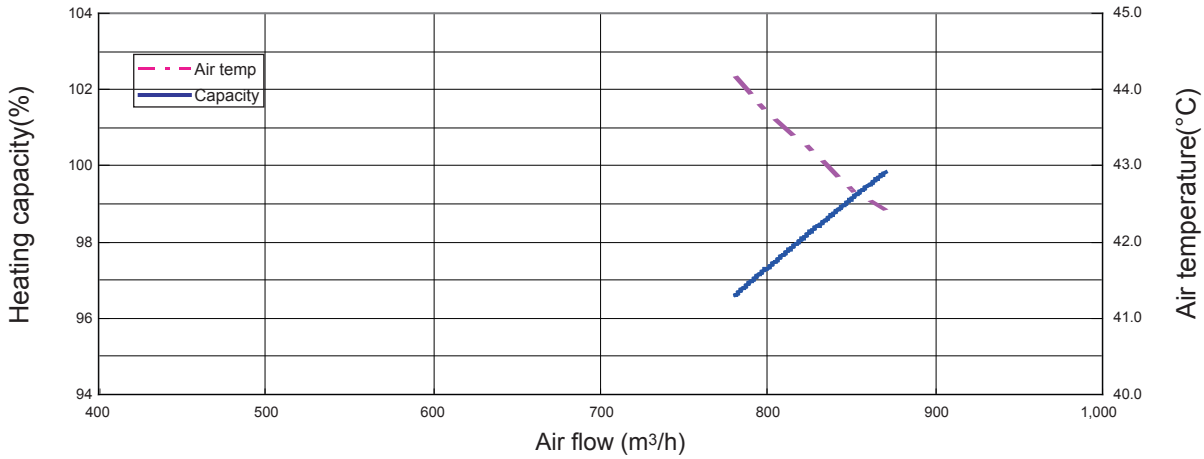
Q-h Characteristic curve



COOLING



HEATING



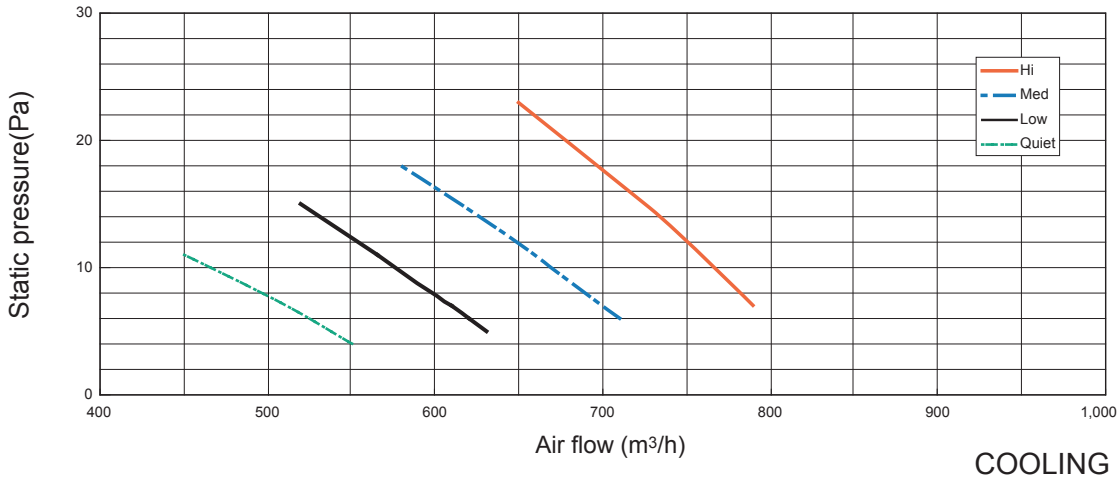
DUCT TYPE
AR*A12-14L

7-2. STATIC PRESSURE MODE 1

■MODEL : AR*A12L, AR*F12L

			Static pressure (Pa)							
			4	5	6	7	11	15	18	23
Fan speed	Hi	m^3/h	-	-	-	790	760	725	700	650
		l/s	-	-	-	219	211	201	194	181
		CFM	-	-	-	465	447	427	412	383
	Med	m^3/h	-	-	710	700	660	615	580	-
		l/s	-	-	197	194	183	171	161	-
		CFM	-	-	418	412	388	362	341	-
	Low	m^3/h	-	630	620	610	565	520	-	-
		l/s	-	175	172	169	157	144	-	-
		CFM	-	371	365	359	333	306	-	-
	Quiet	m^3/h	550	538	524	513	450	-	-	-
		l/s	153	149	146	143	125	-	-	-
		CFM	324	317	308	302	265	-	-	-

Q-h Characteristic curve



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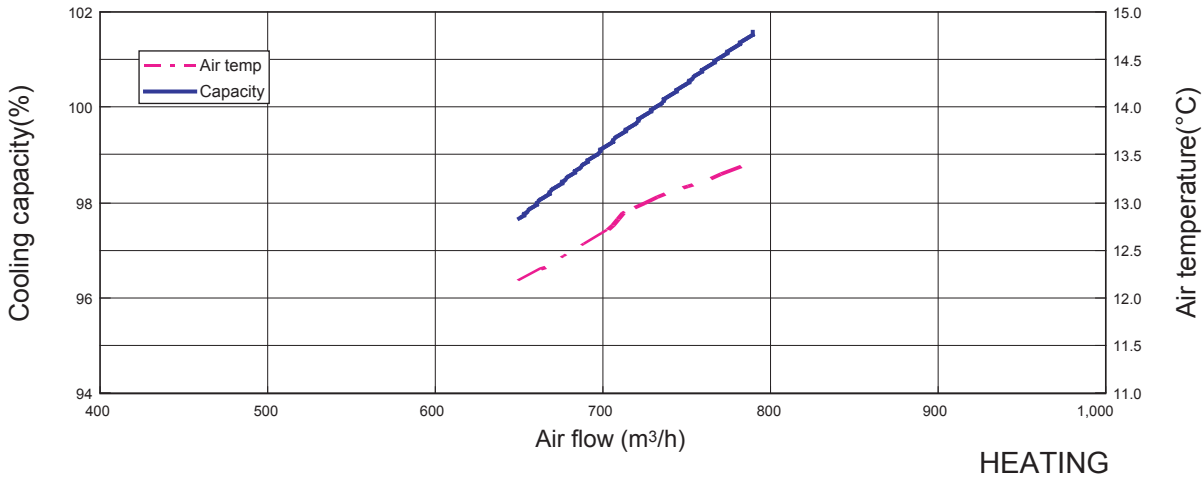

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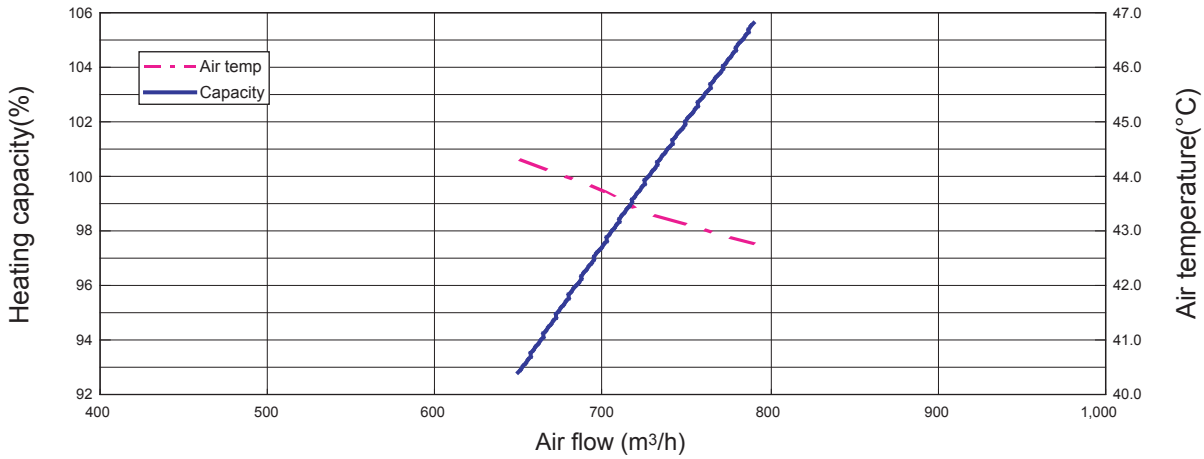
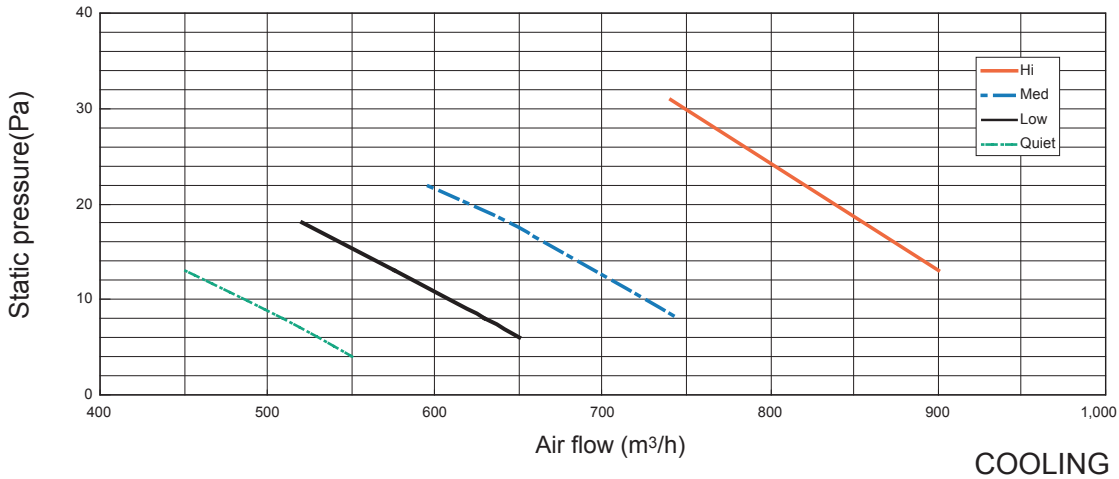


DUCT TYPE
AR*A12-14L

■MODEL : AR*A14L

			Static pressure (Pa)							
			4	6	8	13	18	22	25	31
Fan speed	Hi	m^3/h	-	-	-	900	854	820	795	740
		l/s	-	-	-	250	237	228	221	206
		CFM	-	-	-	530	503	483	468	436
	Med	m^3/h	-	-	745	695	642	595	-	-
		l/s	-	-	207	193	178	165	-	-
		CFM	-	-	438	409	378	350	-	-
	Low	m^3/h	-	650	630	575	520	-	-	-
		l/s	-	181	175	160	144	-	-	-
		CFM	-	383	371	338	306	-	-	-
	Quiet	m^3/h	550	530	508	450	-	-	-	-
		l/s	153	147	141	125	-	-	-	-
		CFM	324	312	299	265	-	-	-	-

Q-h Characteristic curve



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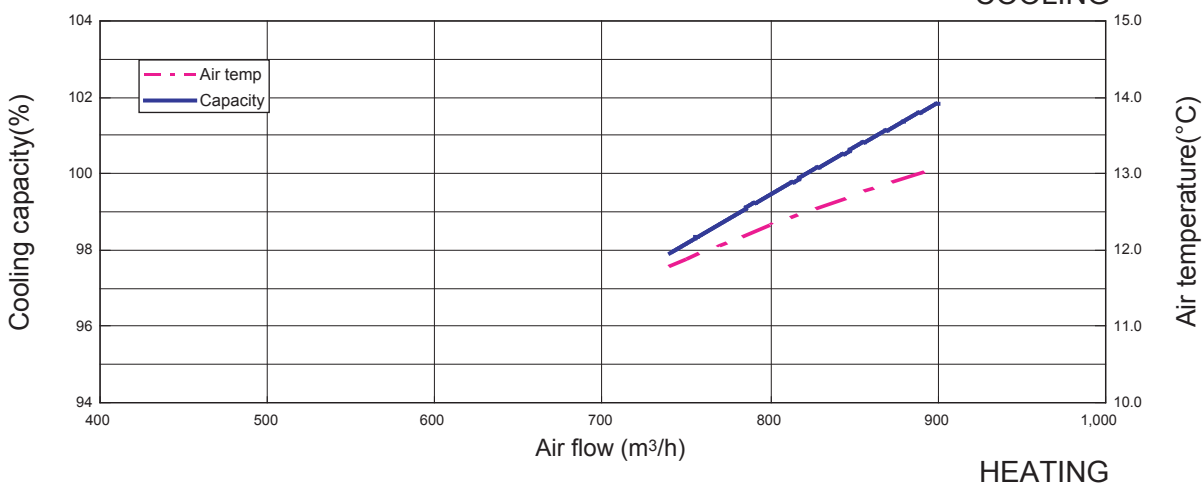

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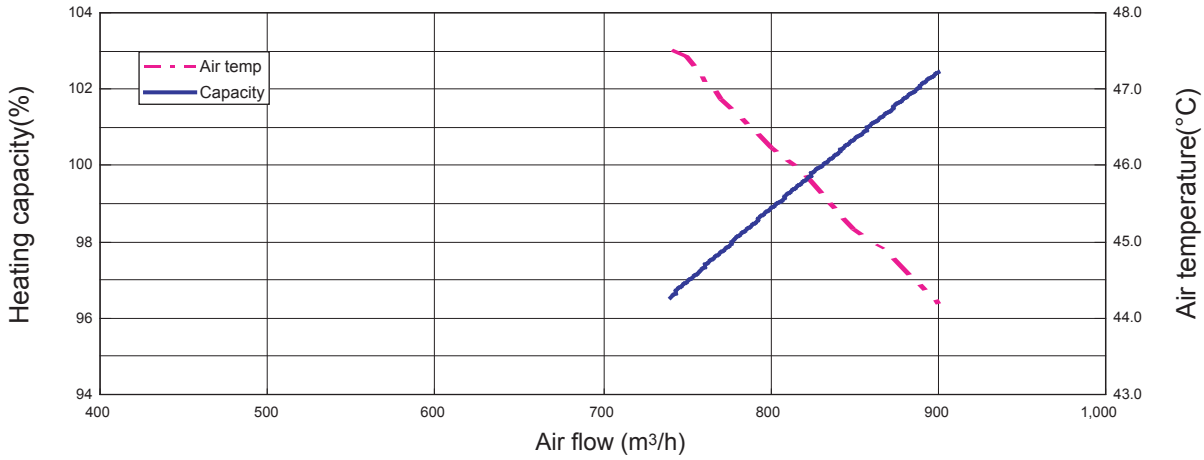
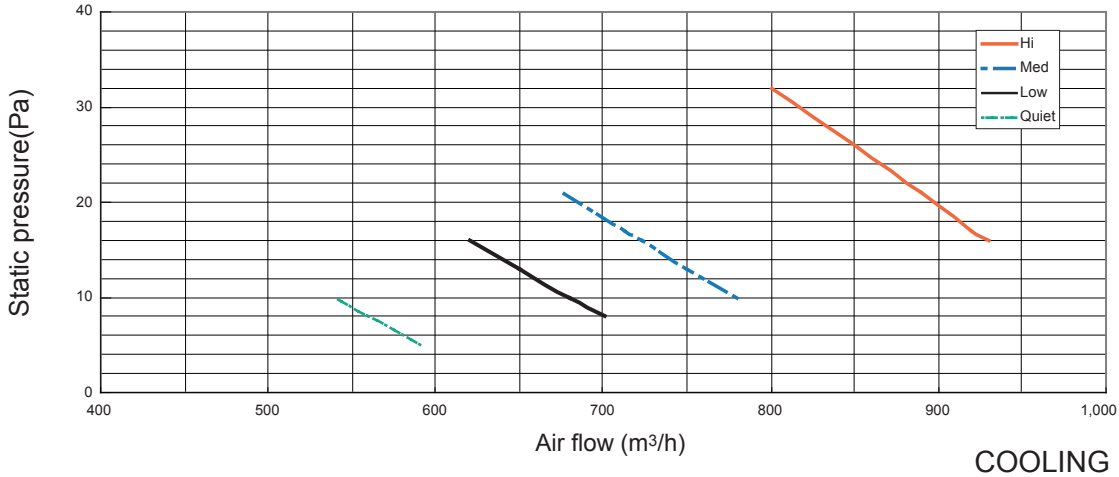


DUCT TYPE
AR*A12-14L

■MODEL : AR*F14L

			Static pressure (Pa)							
			5	8	10	13	16	17	21	32
FAN SPEED	Hi	m3/h	-	-	-	-	930	920	890	800
		l/s	-	-	-	-	258	256	247	222
		CFM	-	-	-	-	547	541	524	471
	Med	m3/h	-	-	780	750	723	713	675	-
		l/s	-	-	217	208	201	198	188	-
		CFM	-	-	459	441	426	420	397	-
	Low	m3/h	-	700	680	650	620	610	-	-
		l/s	-	194	189	181	172	169	-	-
		CFM	-	412	400	383	365	359	-	-
	Quiet	m3/h	590	560	540	-	-	-	-	-
		l/s	164	156	150	-	-	-	-	-
		CFM	347	330	318	-	-	-	-	-

Q-h Characteristic curve



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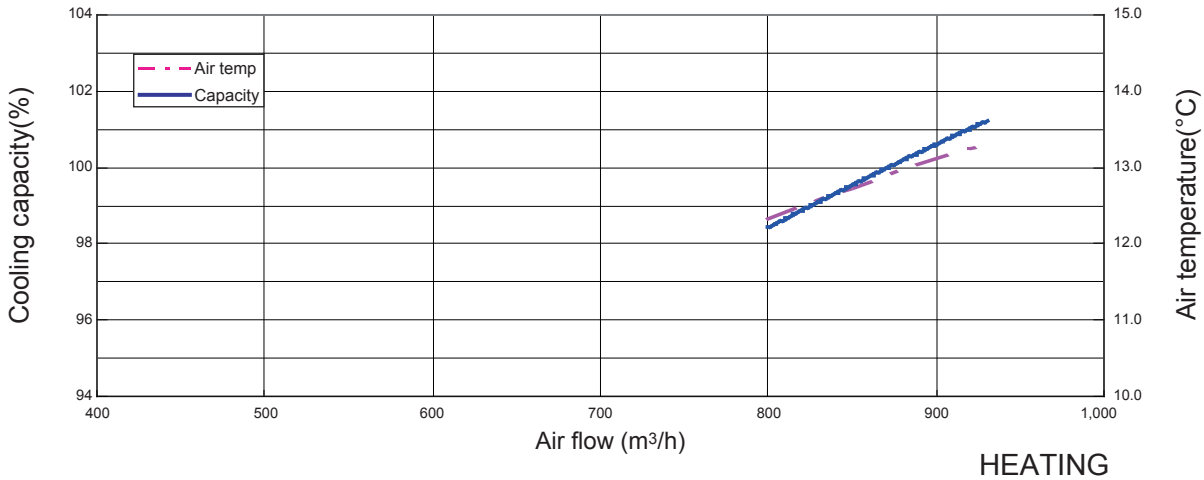

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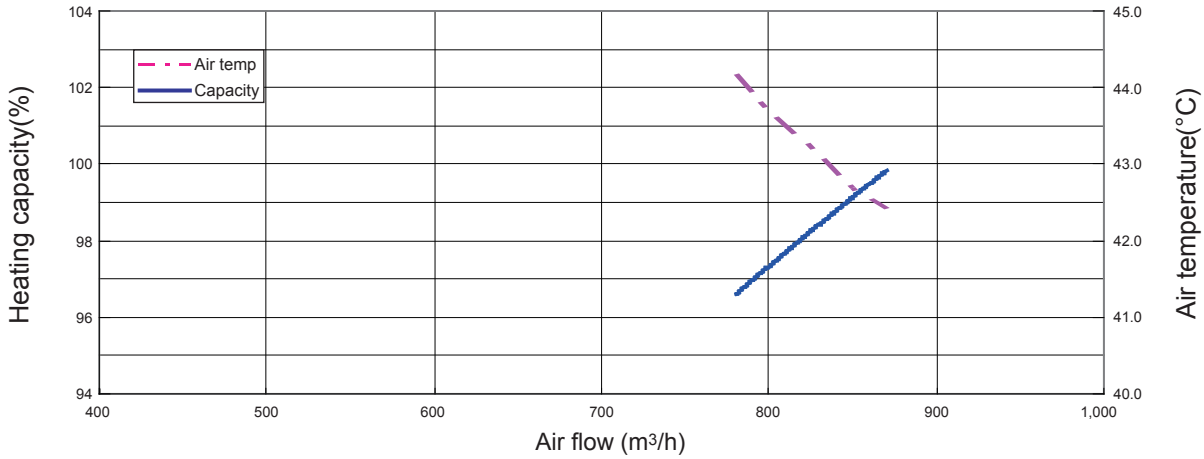


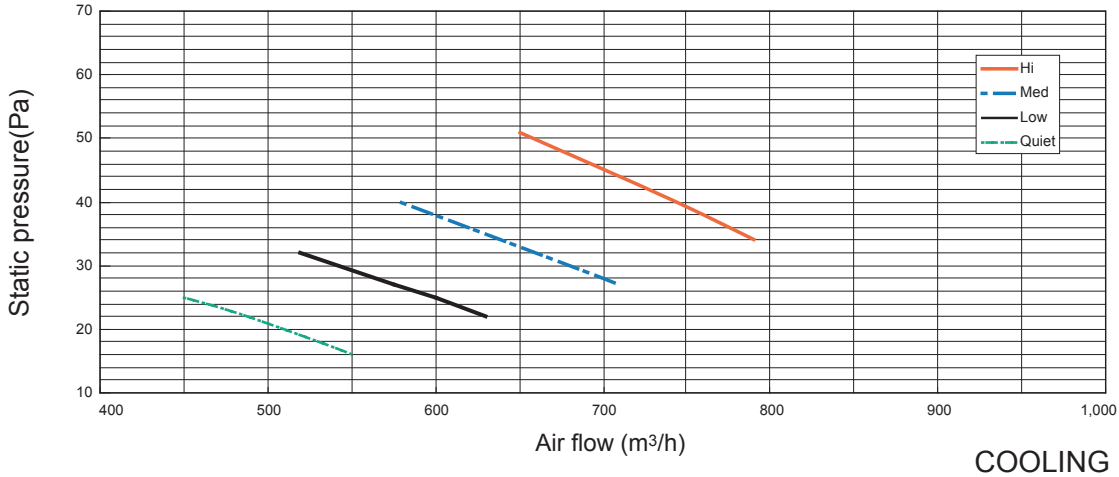
DUCT TYPE
AR∗A12-14L

7-3. STATIC PRESSURE MODE 2

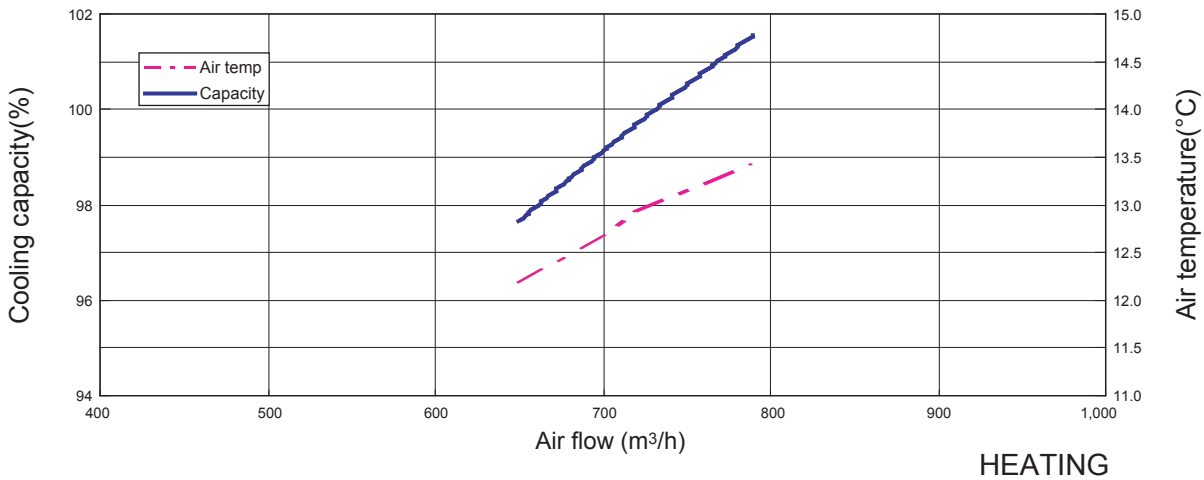
■MODEL : AR∗A12L, AR∗F12L

			Static pressure (Pa)							
			16	22	25	27	32	34	40	51
Fan speed	Hi	m^3/h	-	-	-	-	-	790	745	650
		l/s	-	-	-	-	-	219	207	181
		CFM	-	-	-	-	-	465	438	383
	Med	m^3/h	-	-	-	710	660	640	580	-
		l/s	-	-	-	197	183	178	161	-
		CFM	-	-	-	418	388	377	341	-
	Low	m^3/h	-	630	600	575	520	-	-	-
		l/s	-	175	167	160	144	-	-	-
		CFM	-	371	353	338	306	-	-	-
	Quiet	m^3/h	550	488	450	-	-	-	-	-
		l/s	153	136	125	-	-	-	-	-
		CFM	324	287	265	-	-	-	-	-

Q-h Characteristic curve



COOLING



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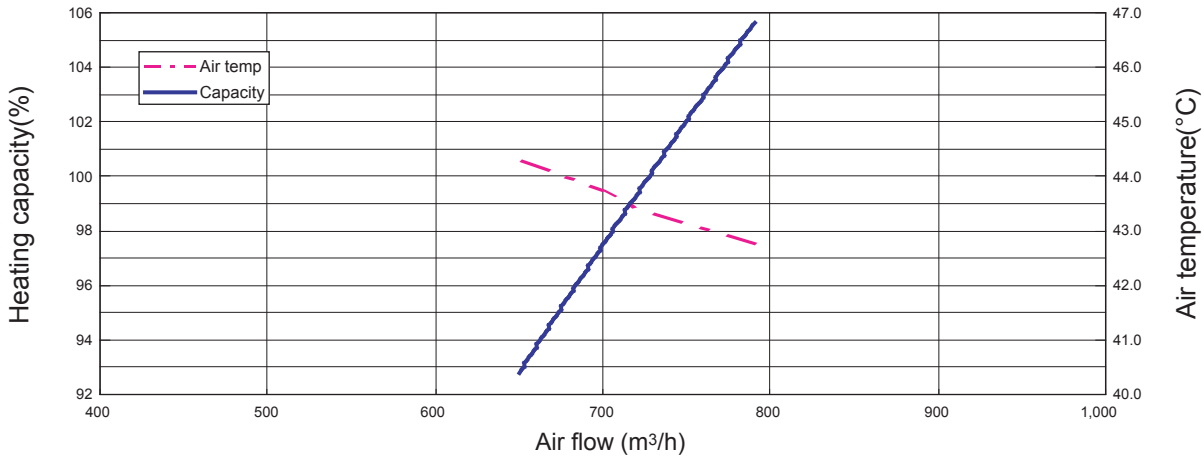
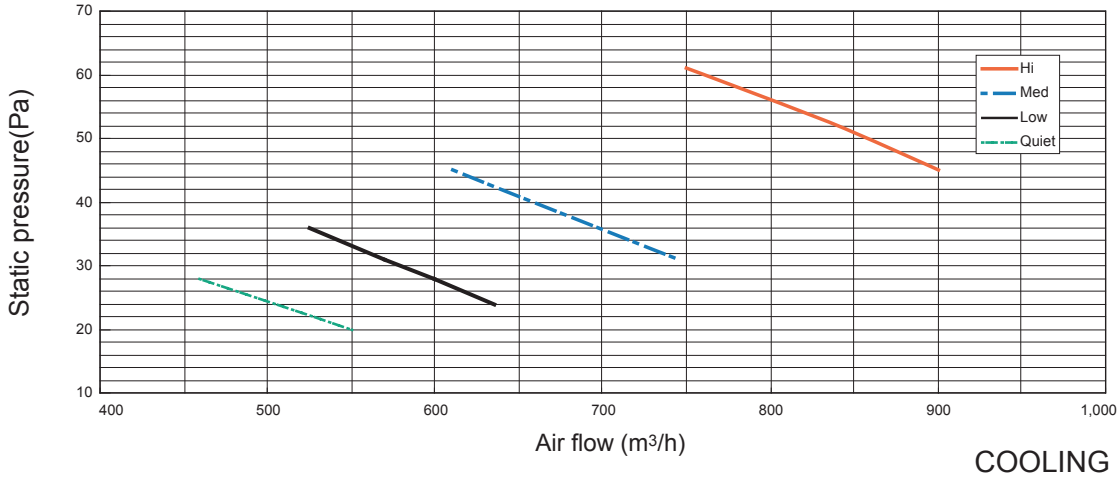


DUCT TYPE
AR*A12-14L

■MODEL : AR*A14L

			Static pressure (Pa)							
			20	24	28	31	36	45	53	61
Fan speed	Hi	m^3/h	-	-	-	-	-	900	830	750
		l/s	-	-	-	-	-	250	231	208
		CFM	-	-	-	-	-	530	489	441
	Med	m^3/h	-	-	-	745	697	610	-	-
		l/s	-	-	-	207	194	169	-	-
		CFM	-	-	-	438	410	359	-	-
	Low	m^3/h	-	635	600	570	525	-	-	-
		l/s	-	176	167	158	146	-	-	-
		CFM	-	374	353	335	309	-	-	-
	Quiet	m^3/h	550	505	460	-	-	-	-	-
		l/s	153	140	128	-	-	-	-	-
		CFM	324	297	271	-	-	-	-	-

Q-h Characteristic curve



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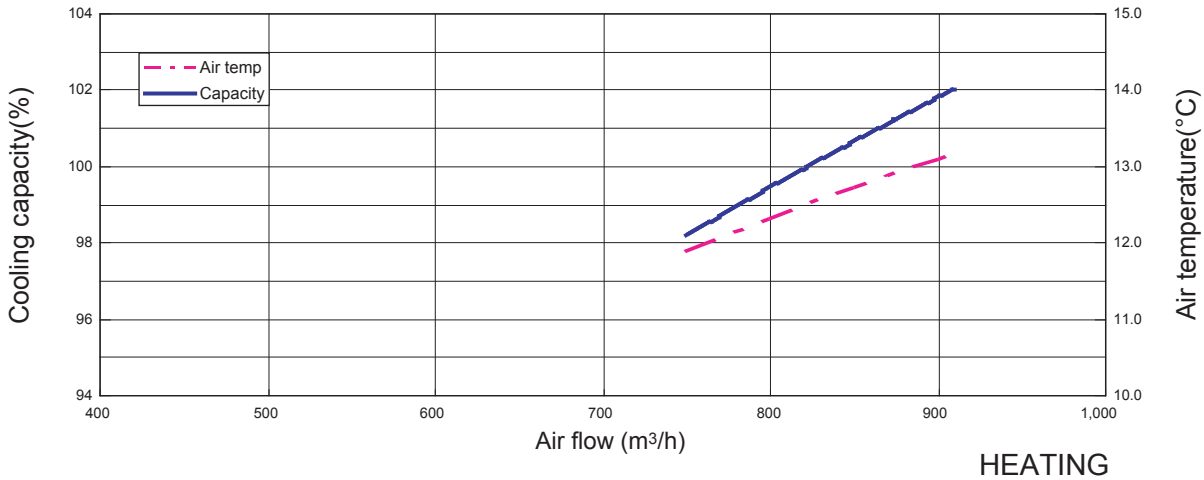

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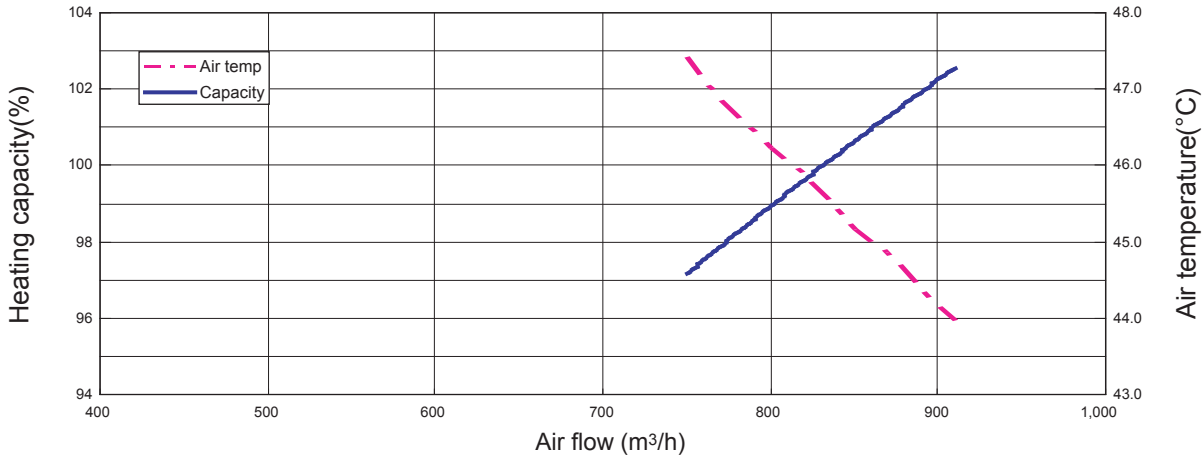
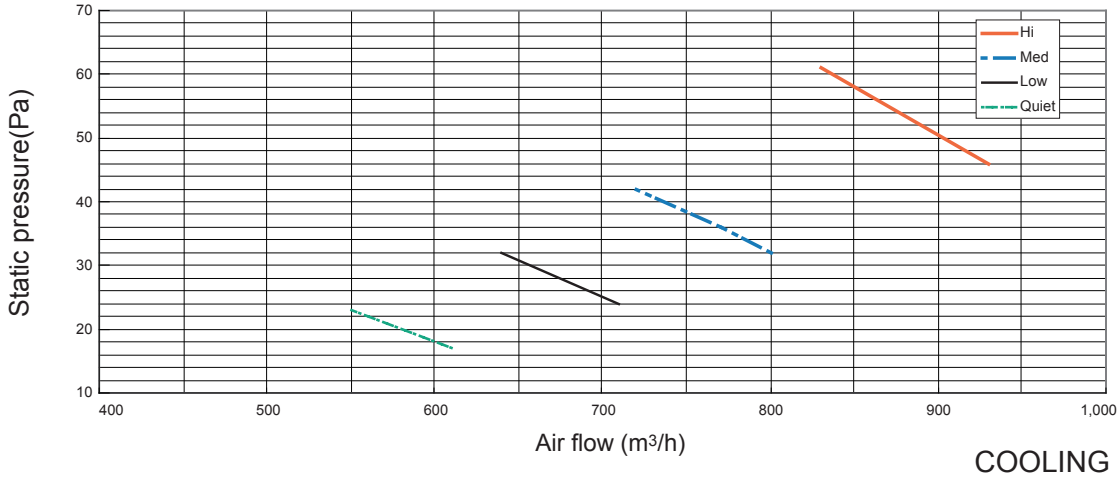


DUCT TYPE
AR*A12-14L

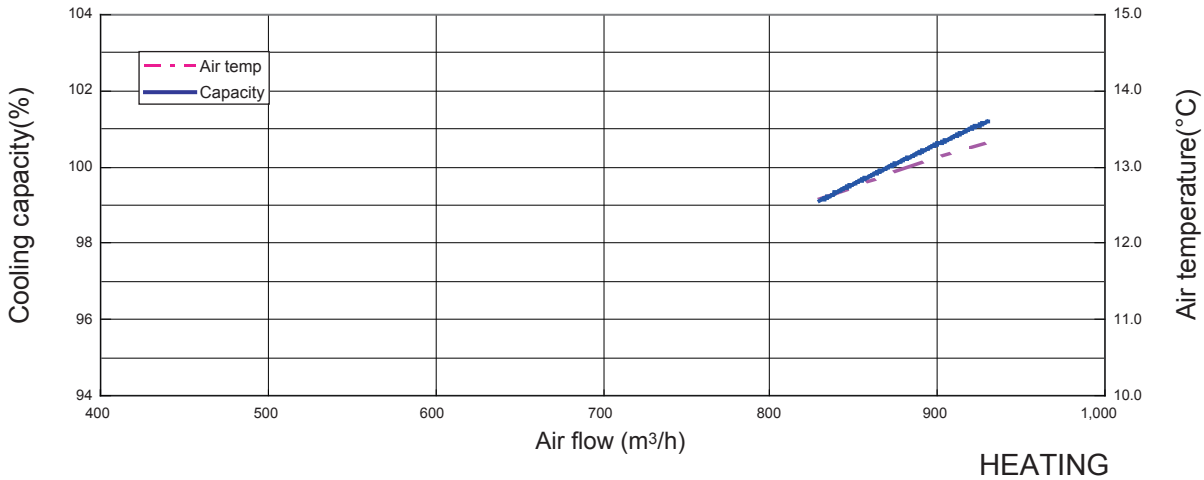
■MODEL : AR*F14L

			Static pressure (Pa)							
			17	23	24	32	36	42	46	61
FAN SPEED	Hi	m3/h	-	-	-	-	-	-	930	830
		l/s	-	-	-	-	-	-	258	231
		CFM	-	-	-	-	-	-	547	489
	Med	m3/h	-	-	-	800	770	720	-	-
		l/s	-	-	-	222	214	200	-	-
		CFM	-	-	-	471	453	424	-	-
	Low	m3/h	-	-	710	640	-	-	-	-
		l/s	-	-	197	178	-	-	-	-
		CFM	-	-	418	377	-	-	-	-
	Quiet	m3/h	610	550	-	-	-	-	-	-
		l/s	169	153	-	-	-	-	-	-
		CFM	359	324	-	-	-	-	-	-

Q-h Characteristic curve



COOLING



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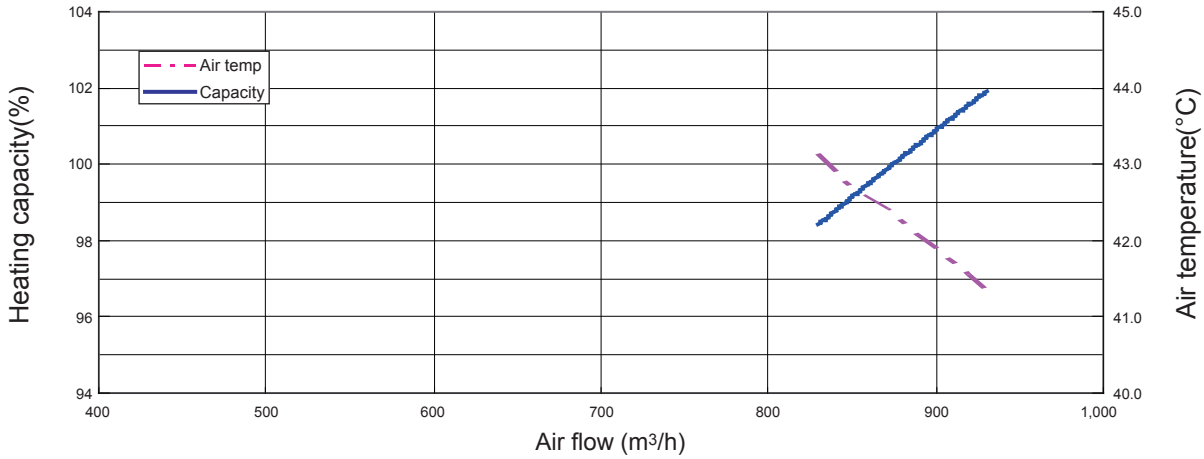


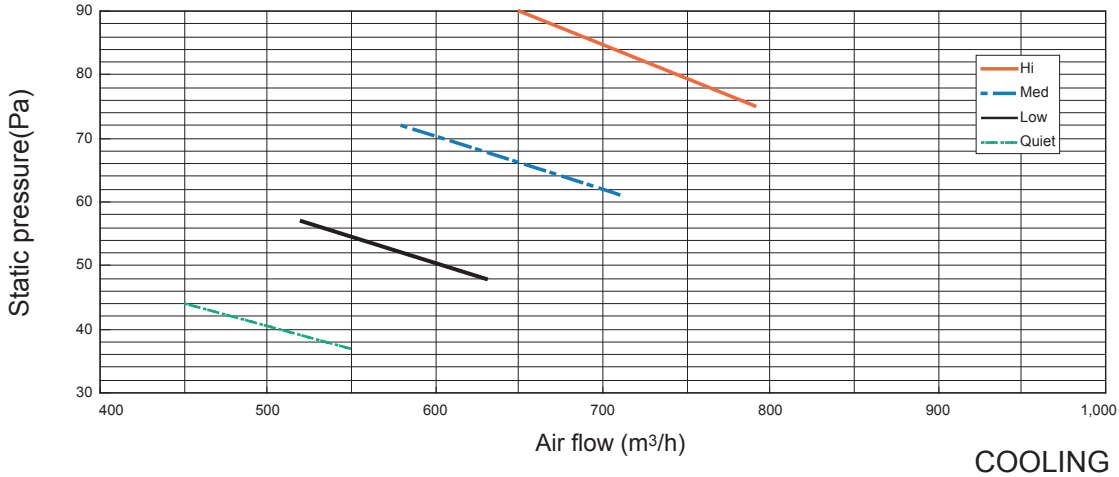
DUCT TYPE
AR∗A12-14L

7-4. STATIC PRESSURE MODE 3

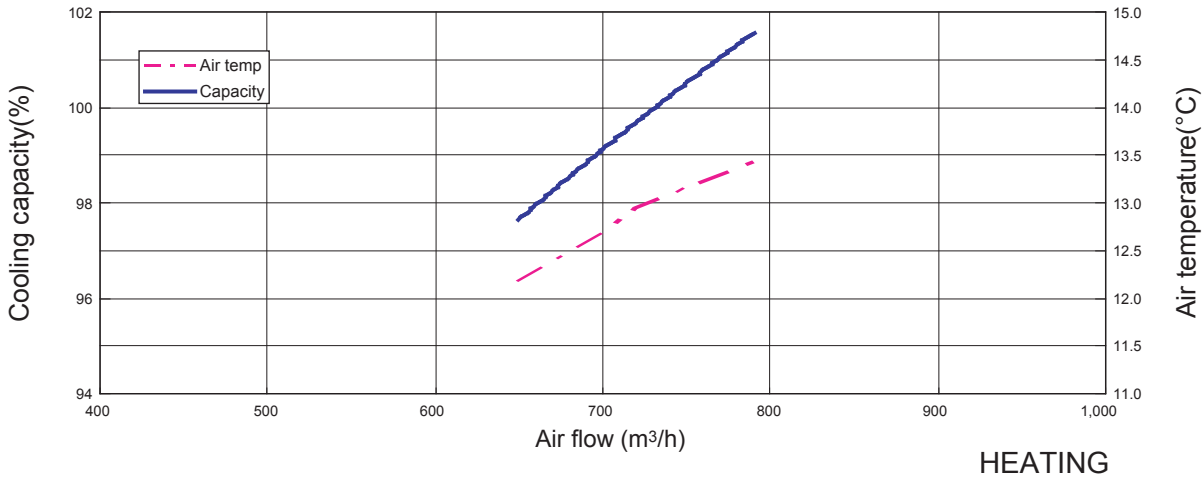
■MODEL : AR∗A12L, AR∗F12L

			Static pressure (Pa)							
			37	44	48	57	61	72	75	90
Fan speed	Hi	m^3/h	-	-	-	-	-	-	790	650
		l/s	-	-	-	-	-	-	219	181
		CFM	-	-	-	-	-	-	465	383
	Med	m^3/h	-	-	-	-	710	580	-	-
		l/s	-	-	-	-	197	161	-	-
		CFM	-	-	-	-	418	341	-	-
	Low	m^3/h	-	-	630	520	-	-	-	-
		l/s	-	-	175	144	-	-	-	-
		CFM	-	-	371	306	-	-	-	-
	Quiet	m^3/h	550	450	-	-	-	-	-	-
		l/s	153	125	-	-	-	-	-	-
		CFM	324	265	-	-	-	-	-	-

Q-h Characteristic curve



COOLING



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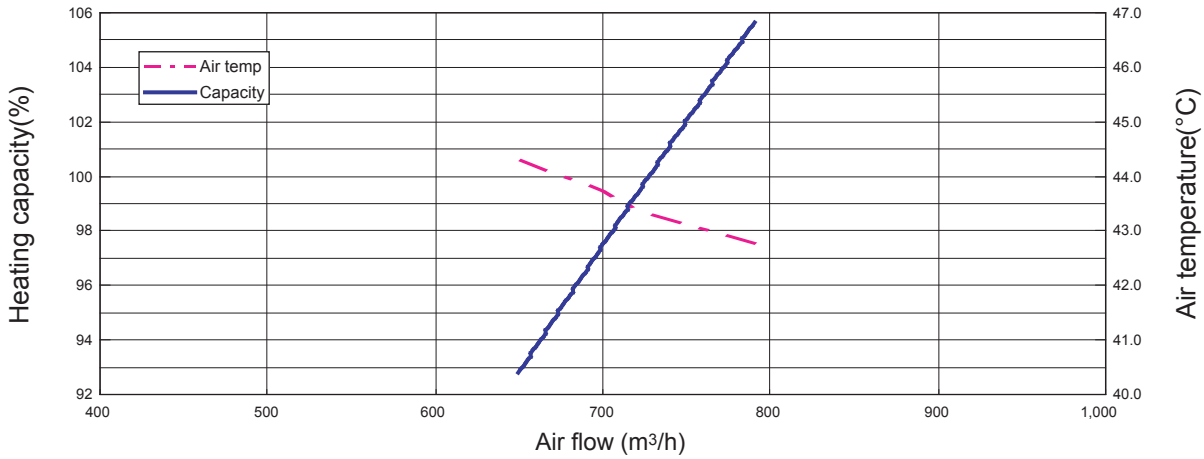
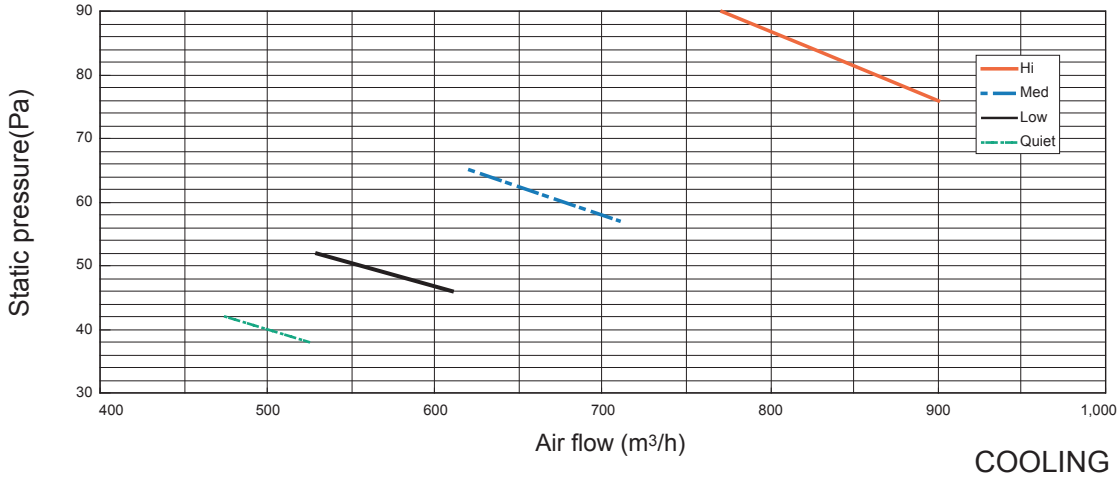


DUCT TYPE
AR*A12-14L

■MODEL : AR*A14L

			Static pressure (Pa)							
			38	42	46	52	57	65	76	90
Fan speed	Hi	m^3/h	-	-	-	-	-	-	900	770
		l/s	-	-	-	-	-	-	250	214
		CFM	-	-	-	-	-	-	530	453
	Med	m^3/h	-	-	-	-	710	620	-	-
		l/s	-	-	-	-	197	172	-	-
		CFM	-	-	-	-	418	365	-	-
	Low	m^3/h	-	-	610	530	-	-	-	-
		l/s	-	-	169	147	-	-	-	-
		CFM	-	-	359	312	-	-	-	-
	Quiet	m^3/h	525	475	-	-	-	-	-	-
		l/s	146	132	-	-	-	-	-	-
		CFM	309	280	-	-	-	-	-	-

Q-h Characteristic curve



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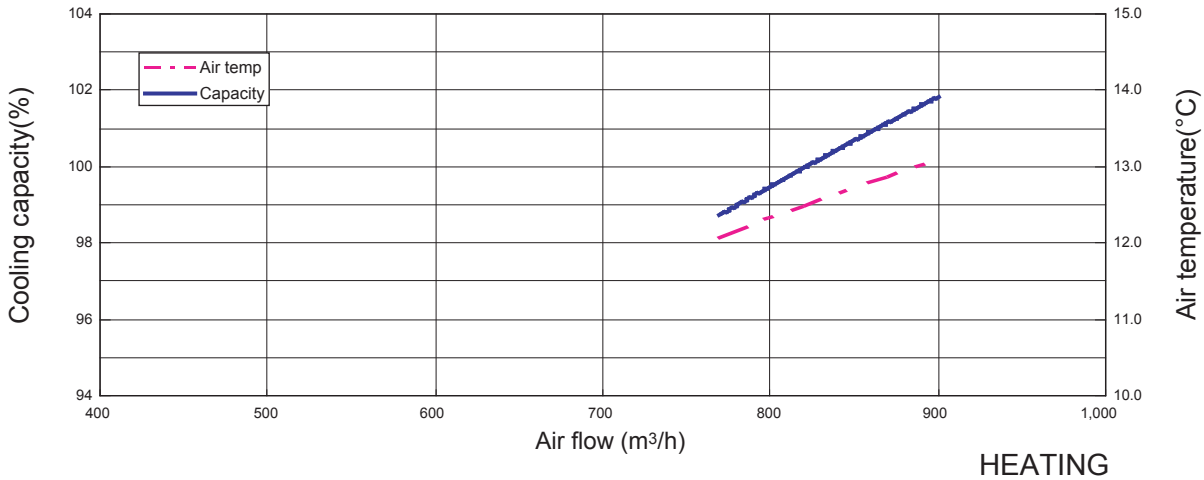

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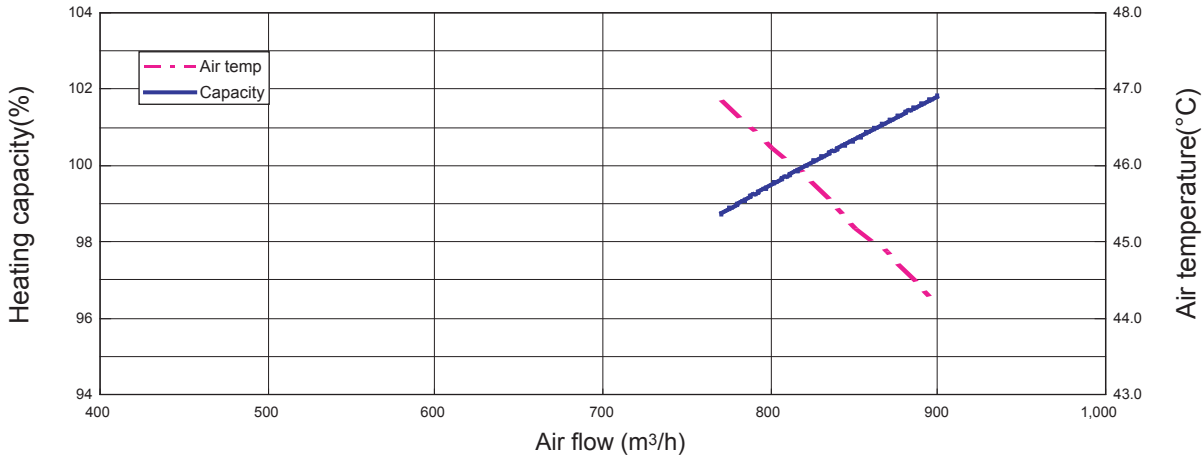
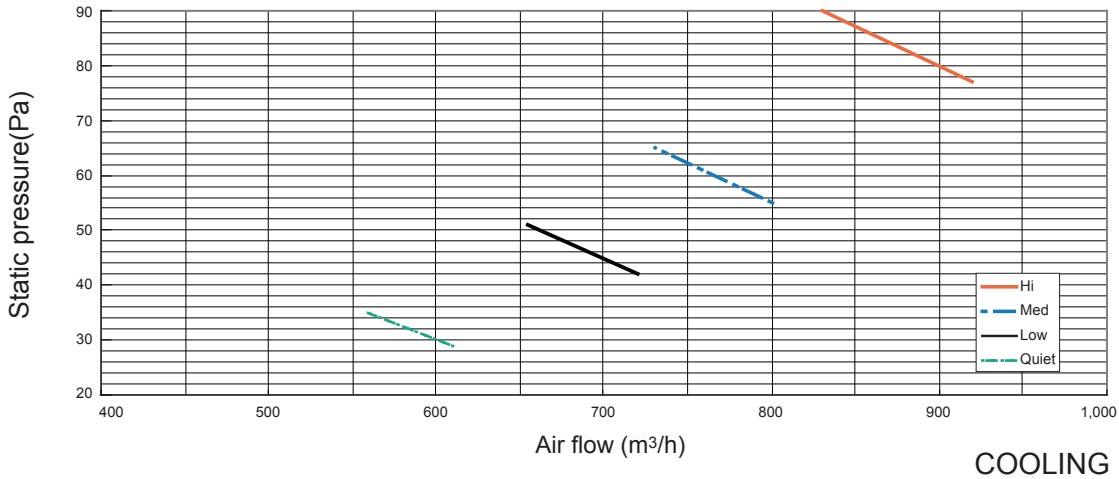


DUCT TYPE
AR*A12-14L

■MODEL : AR*F14L

			Static pressure (Pa)							
			29	35	42	51	55	65	77	90
FAN SPEED	Hi	m3/h	-	-	-	-	-	-	920	830
		l/s	-	-	-	-	-	-	256	231
		CFM	-	-	-	-	-	-	541	489
	Med	m3/h	-	-	-	-	800	730	-	-
		l/s	-	-	-	-	222	203	-	-
		CFM	-	-	-	-	471	430	-	-
	Low	m3/h	-	-	720	655	-	-	-	-
		l/s	-	-	200	182	-	-	-	-
		CFM	-	-	424	386	-	-	-	-
	Quiet	m3/h	610	560	-	-	-	-	-	-
		l/s	169	156	-	-	-	-	-	-
		CFM	359	330	-	-	-	-	-	-

Q-h Characteristic curve



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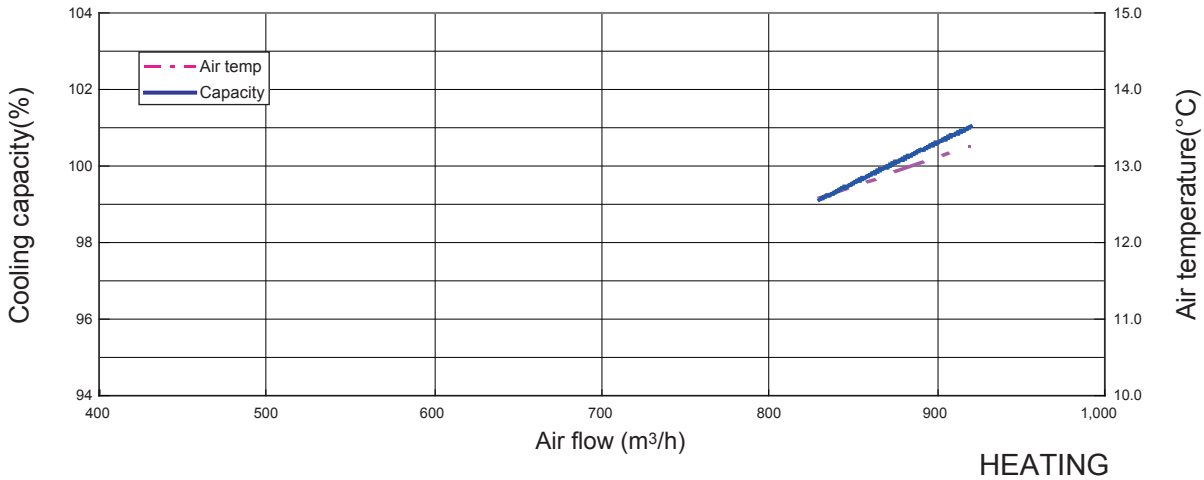

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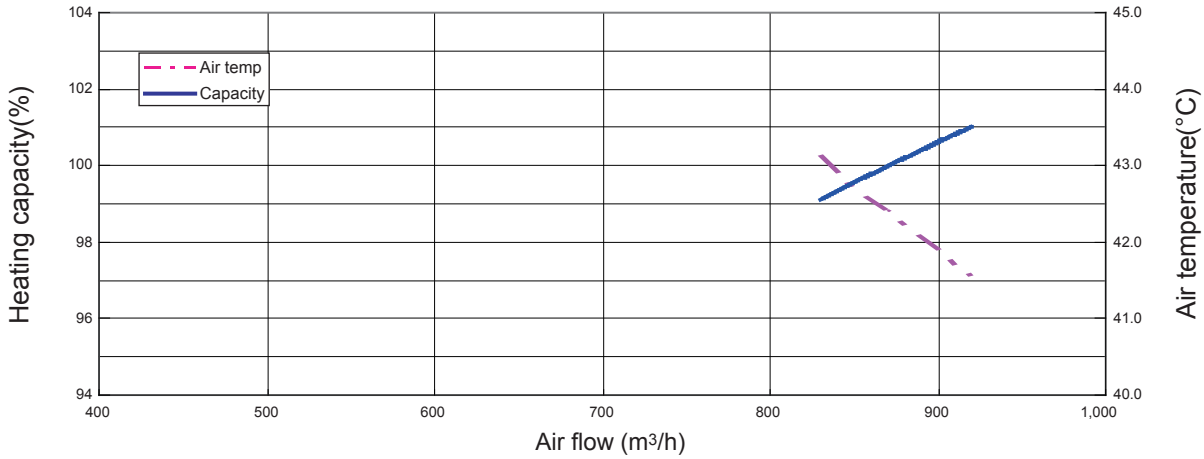


8. OPERATION NOISE

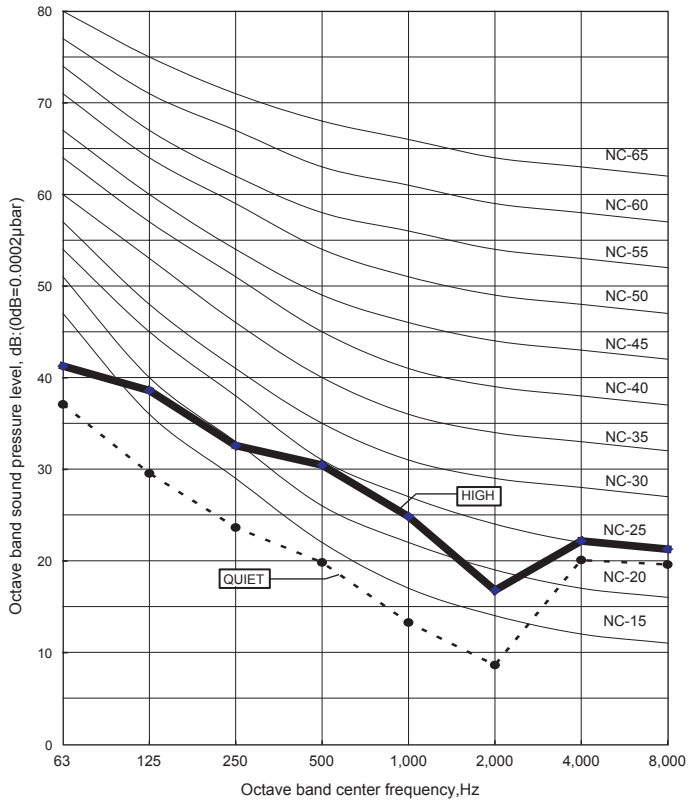
8-1. NOISE LEVEL CURVE

Condition
Static pressure : 0Pa
Static mode : Normal

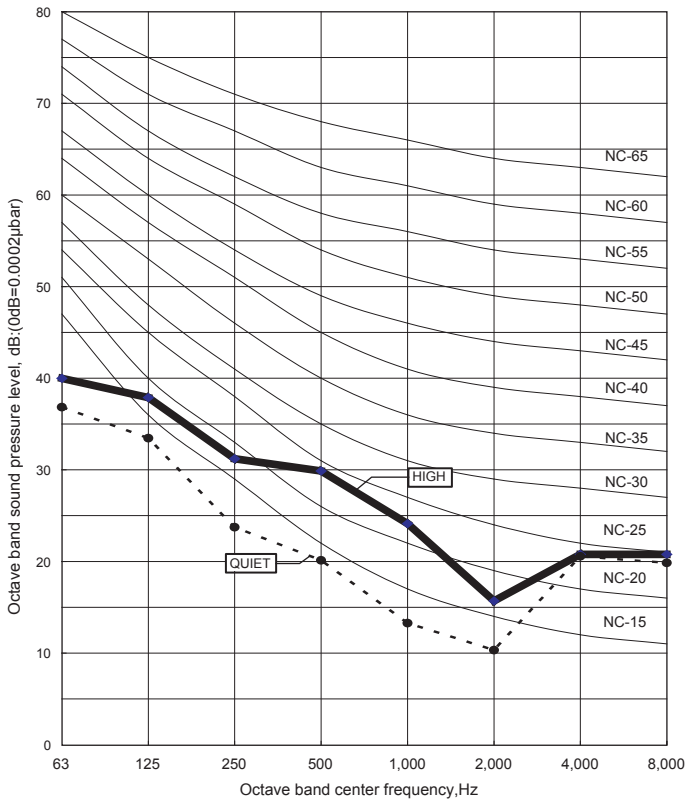
DUCT TYPE
AR✱A12-14L

■MODEL : AR✱A12L, AR✱F12L

●COOLING

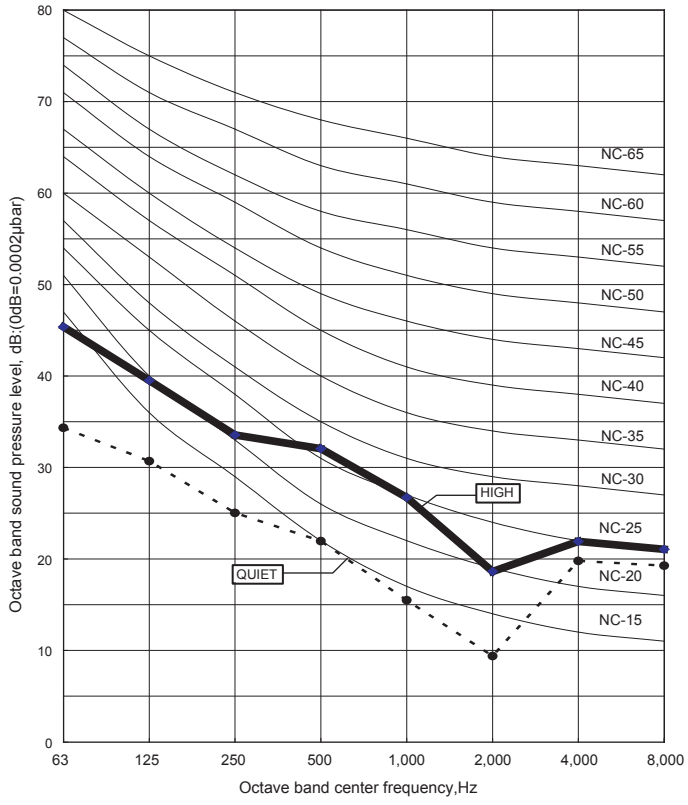


●HEATING



■MODEL : AR✱A14L, AR✱F14L

●COOLING



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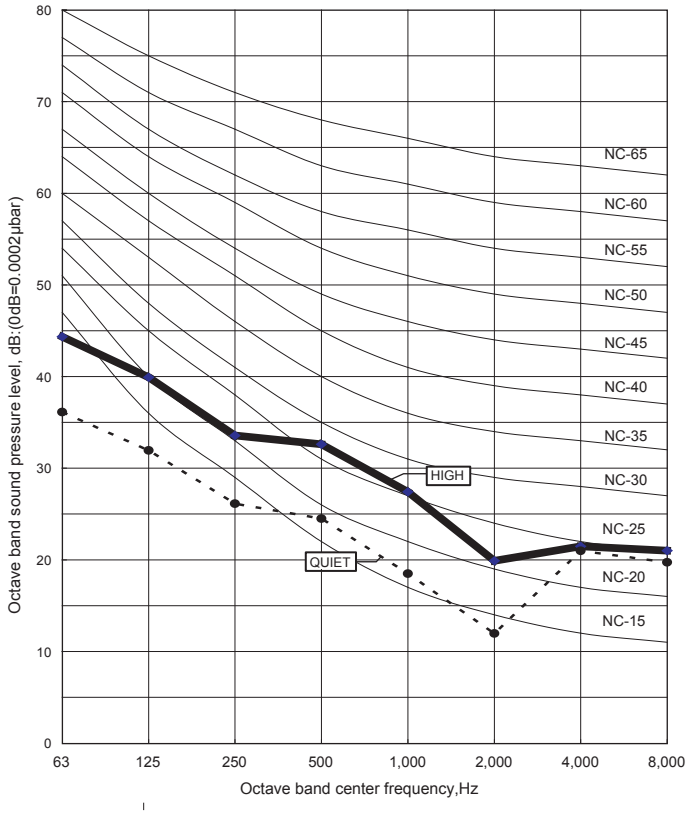
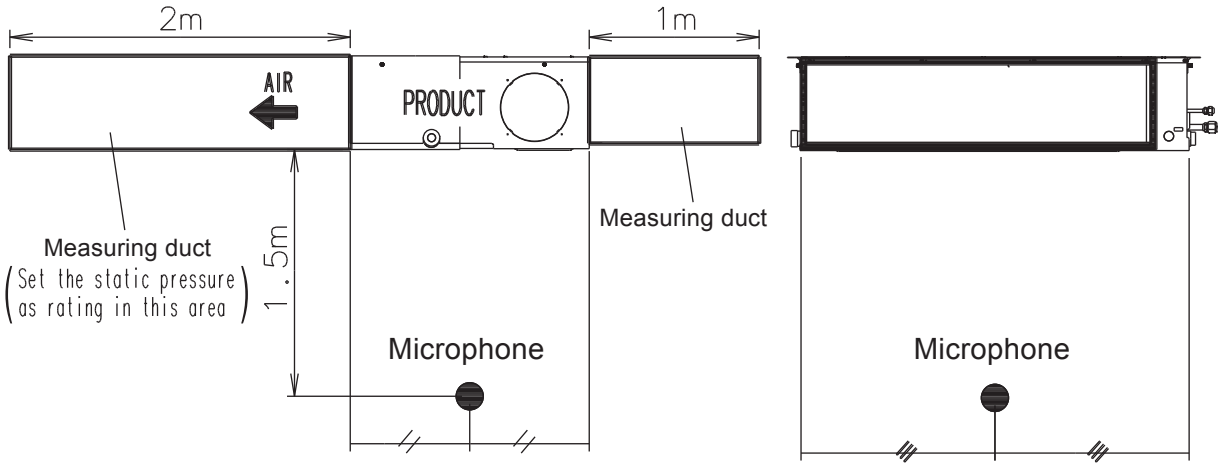


DUCT TYPE
AR✳A12-14L

8-2. SOUND LEVEL CHECK POINT



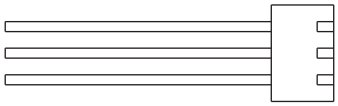
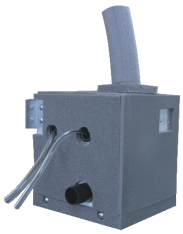
9. ELECTRIC CHARACTERISTICS

Model name			AR ∗ A12L AR ∗ F12L	AR ∗ A14L AR ∗ F14L
Power supply	Voltage	V	230 ～	
	Frequency	Hz	50	
Max. operating current (Indoor unit)		A	0.3	0.5
Wiring spec. (Indoor unit to outdoor unit)	Connection cable	mm^2	1.5 - 2.5	
	Limited wiring length	m	26	

10. SAFETY DEVICES

	Protection form	Model	
		AR ✳ A12L AR ✳ F12L	AR ✳ A14L AR ✳ F14L
Circuit protection	Current fuse (PCB)	3.15A 250V	
Fan motor protection	Thermal protection program	140±20°C OFF 110±20°C ON	

11. OPTIONAL PARTS

Exterior	Parts name	Model No.	Summary
	Remote Sensor	UTD-RS100	New amenity space can be offered by installing the **Remote sensor** in the remote controller.
	External control set	UTD-ECS5A	Use to connect with various peripheral devices and air conditioner PC board.
	IR Receiver unit	UTY-LRH✱1	Unit control is performed by wireless remote controller.
	Drain pump unit	UTZ-PX1BBA	Optional drain lift up mechanism allows more flexible installation.

Refrigerant
R410A

OUTDOOR UNIT

2. SINGLE TYPE :

AO＊A12LACL

AO＊A12LALL

AO＊A14LACL

AO＊A14LALL

D2D_AO010E/03
2008.04.08

1. SPECIFICATIONS

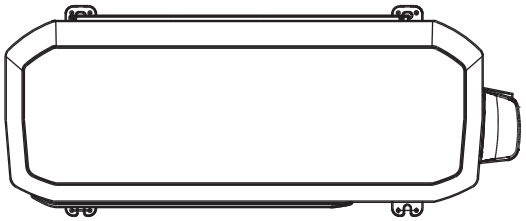
Type					INVERTER HEATPUMP	
Model name					AO ∗ A12LACL AO ∗ A12LALL	AO ∗ A14LACL AO ∗ A14LALL
Power source					230V～ 50Hz	
Available voltage range					198-264V～ 50Hz	
Starting current				A	4.9	5.9
Fan	Airflow rate	Cooling		m^3/h	1780	1910
		Heating			1630	1740
	Type × Q'ty				Propeller × 1	
	Motor output			W	54	
Sound pressure level		Cooling		dB(A)	47	49
		Heating			48	49
Heat exchanger type		Dimensions (H × W × D)		mm	546 × 876 × 18.2 546 × 842 × 18.2	
		Fin pitch			1.30	
		Rows x Stages			2 × 26	
		Pipe type			Copper	
		Fin type			Aluminium	
Compressor	Type × Q'ty				Twin Rotary × 1	
	Motor output			W	1100	
Refrigerant		Type			R410A	
		Charge		g	1150	1250
Refrigerant oil		Type			POE	
Enclosure		Material			Steel sheet	
		Colour			Beige (10YR7.5/1.0NN)	
Dimensions (H × W × D)	Net			mm	578 × 790 × 300	
	Gross				648 × 910 × 380	
Weight	Net			kg(lb.)	40 (88)	40 (88)
	Gross				44 (97)	44 (97)
Connection pipe	Size	Liquid		mm	Φ 6.35 (Φ 1/4 in.)	
		Gas			Φ 9.52 (Φ 3/8 in.)	Φ 12.70 (Φ 1/2 in.)
	Method				Flare	
	Max. length			m	25 (chargeless : 15)	
	Max. height difference				15	
Operation range		Cooling		°C	-10 to 46	
		Heating			-15 to 24	

Note :
Specifications are based on the following conditions.
Cooling : Indoor temperature of 27°CDB/19°CWB. and outdoor temperature of 35°CDB/24°CWB.
Heating : Indoor temperature of 20°CDB/15°CWB. and outdoor temperature of 7°CDB/6°CWB.
Pipe length : 7.5 m, Height difference : 0 m. (Outdoor unit - Indoor unit)

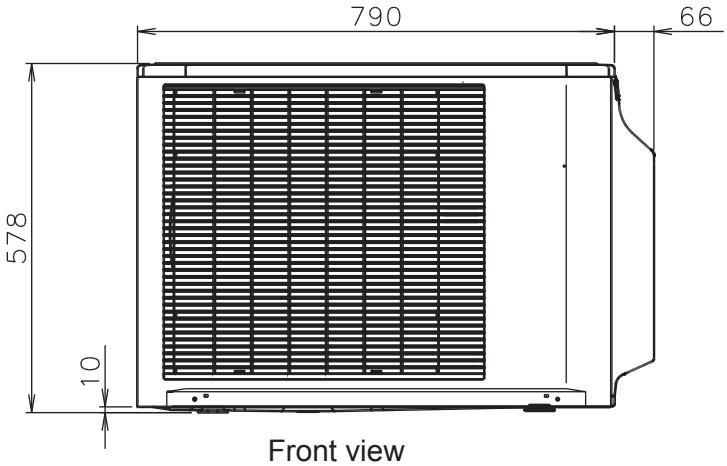
2. DIMENSIONS

■MODEL : AO∗A12L, AO∗A14L

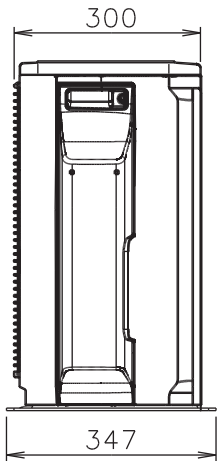
(Unit : mm)



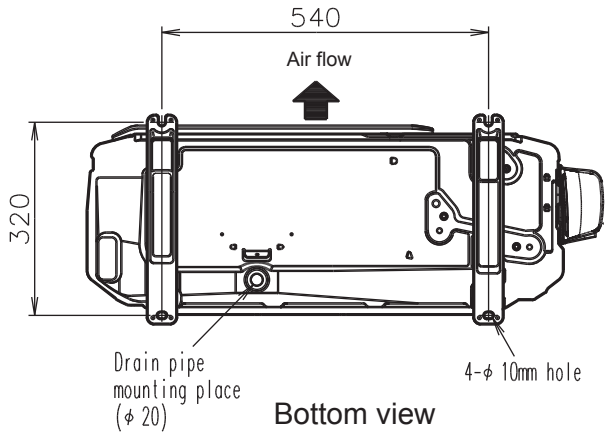
Top view



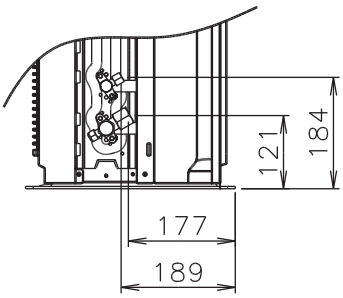
Front view



Side view

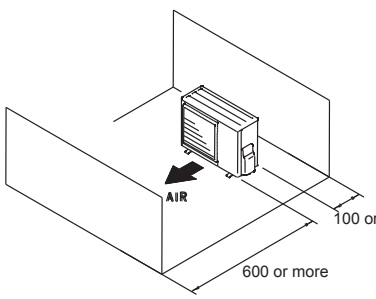


Bottom view

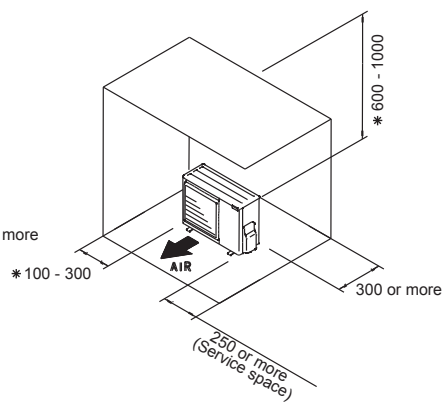


■MOUNTING POSITION

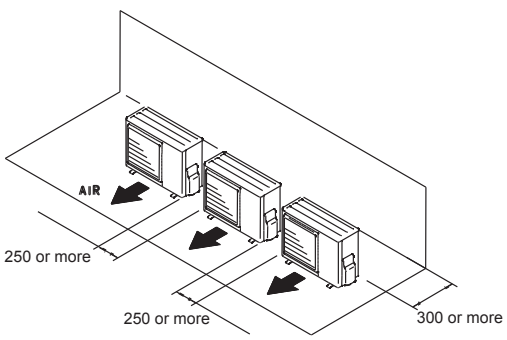
When there are obstacles at the back or front sides.



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



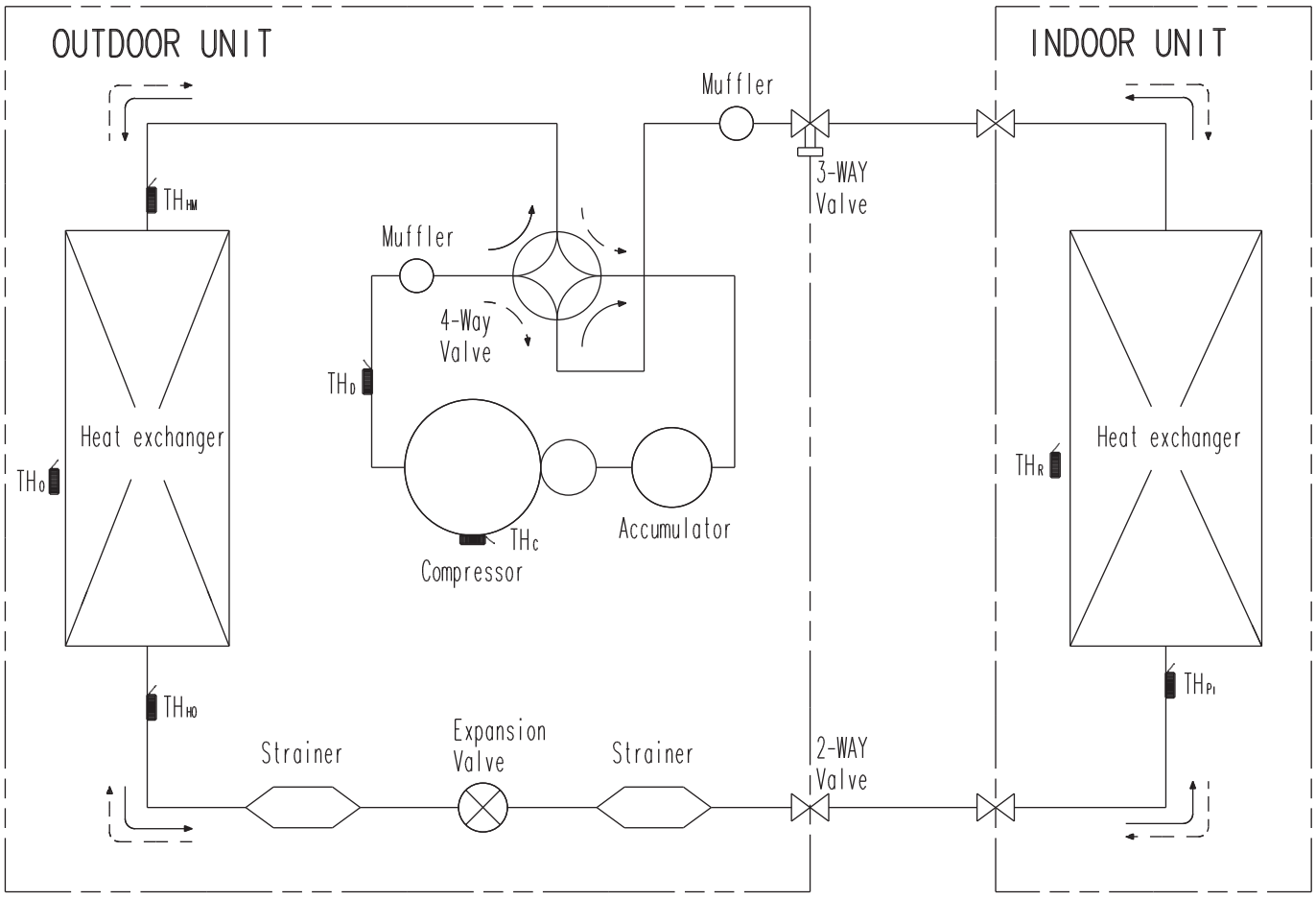
When there are obstacles at the back, side with the installation of more than one unit.



∗If the space is larger that is stated, the condition will be the same as that are no obstacles.

3. REFRIGERANT CIRCUIT

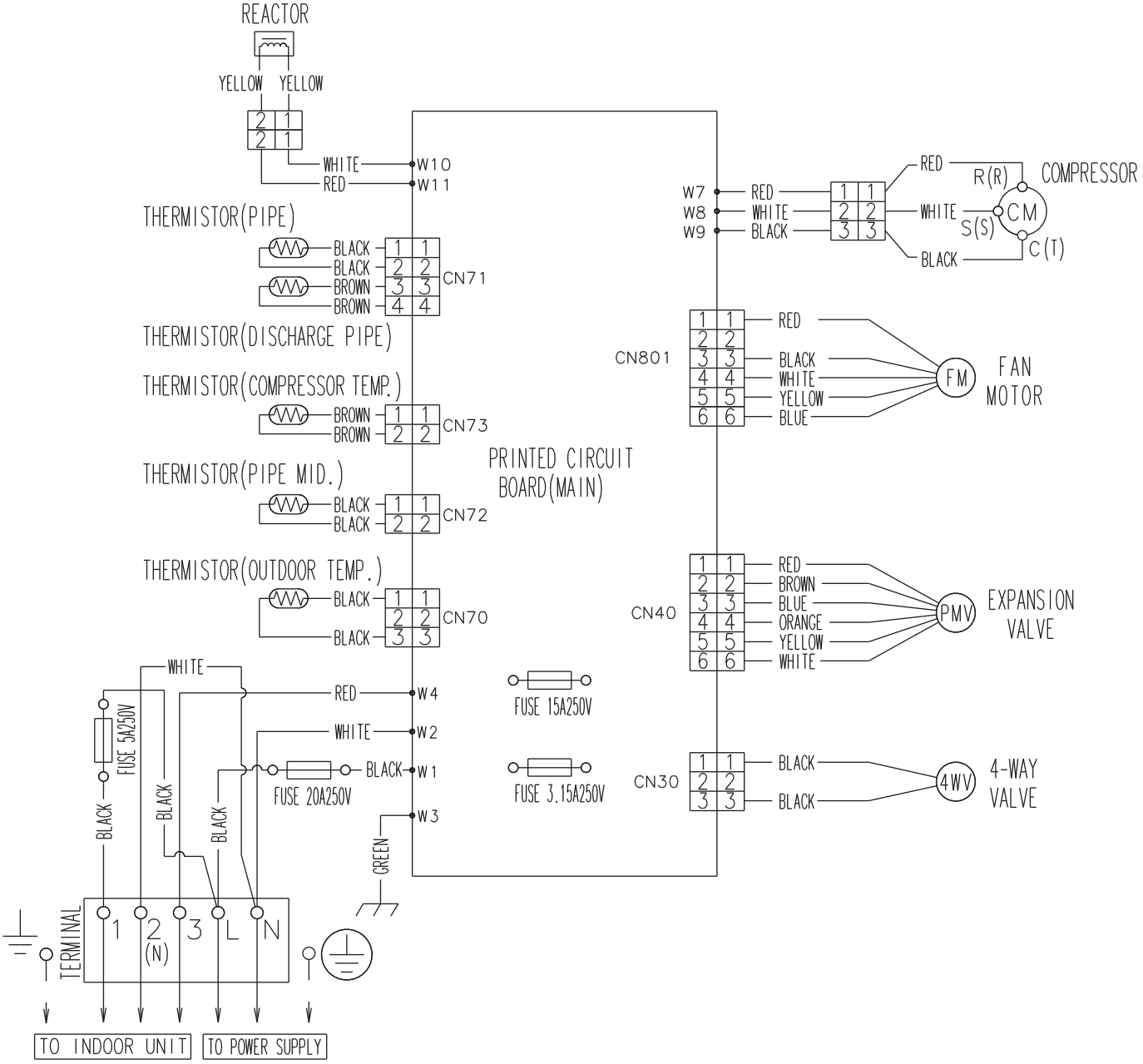
■MODEL : AO*A12L, AO*A14L



OUTDOOR UNIT
AO*A12-14L

4. WIRING DIAGRAMS

■MODEL : AO*A12L, AO*A14L



OUTDOOR UNIT
AO*A12-14L

5. CAPACITY COMPENSATION RATE FOR PIPE LENGTH AND HEIGHT DIFFERENCE

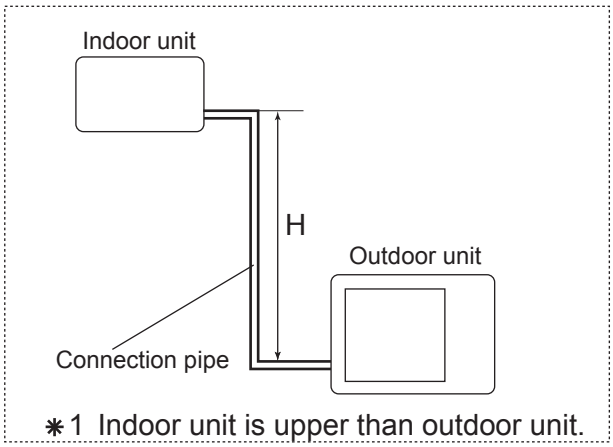
This table is created using the maximum capacity.

■MODEL : AO∗A12L

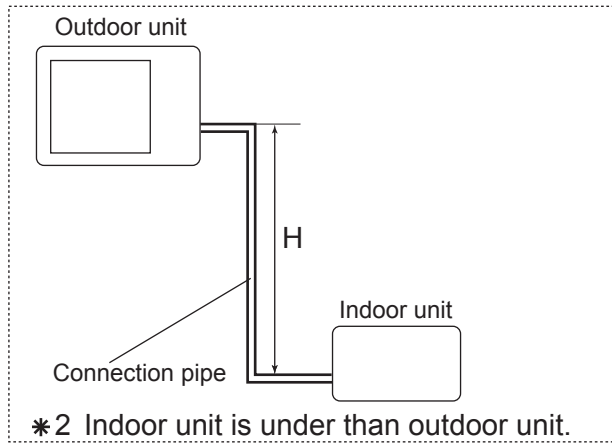
COOLING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.903	0.894	0.867
		10	-	-	0.964	0.918	0.909	0.881
		7.5	-	0.988	0.968	0.922	0.912	0.885
		5	1.018	0.992	0.972	0.925	0.916	0.888
		0	1.026	1.000	0.980	0.933	0.923	0.895
	∗2 Indoor unit is under than outdoor unit	-5	1.026	1.000	0.980	0.933	0.923	0.895
		-7.5	-	1.000	0.980	0.933	0.923	0.895
		-10	-	-	0.980	0.933	0.923	0.895
		-15	-	-	-	0.933	0.923	0.895

HEATING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.943	0.916	0.896
		10	-	-	1.010	0.943	0.916	0.896
		7.5	-	1.000	1.010	0.943	0.916	0.896
		5	0.954	1.000	1.010	0.943	0.916	0.896
		0	0.954	1.000	1.010	0.943	0.916	0.896
	∗2 Indoor unit is under than outdoor unit	-5	0.949	0.995	1.005	0.939	0.912	0.892
		-7.5	-	0.993	1.002	0.936	0.909	0.890
		-10	-	-	0.999	0.934	0.907	0.887
		-15	-	-	-	0.925	0.898	0.878

Height difference H



∗1 Indoor unit is upper than outdoor unit.



∗2 Indoor unit is under than outdoor unit.

OUTDOOR UNIT
AO∗A12-14L

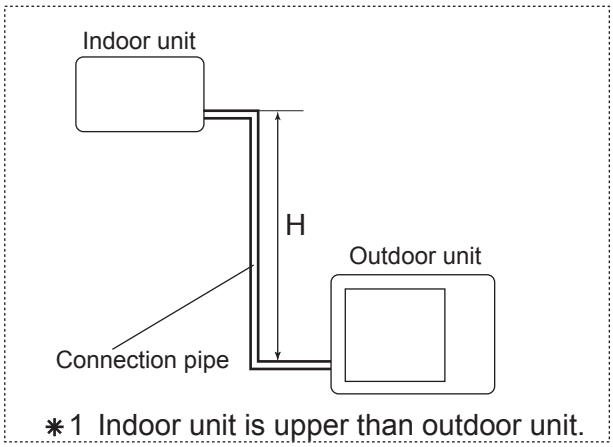
This table is created using the maximum capacity.

■MODEL : AO∗A14L

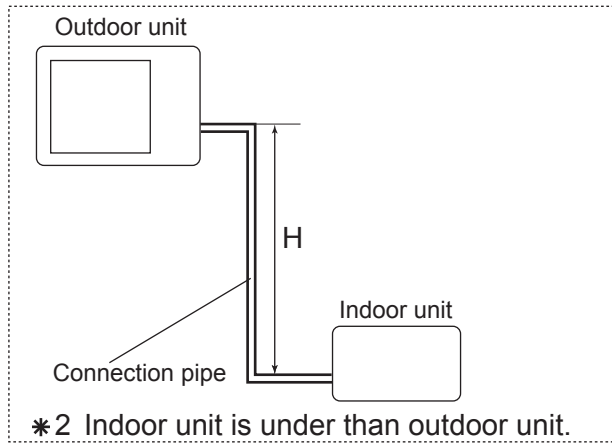
COOLING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.953	0.950	0.947
		10	-	-	0.983	0.968	0.966	0.962
		7.5	-	0.988	0.987	0.972	0.970	0.966
		5	0.992	0.992	0.991	0.976	0.974	0.970
		0	1.000	1.000	0.999	0.984	0.982	0.978
	∗2 Indoor unit is under than outdoor unit	-5	1.000	1.000	0.999	0.984	0.982	0.978
		-7.5	-	1.000	0.999	0.984	0.982	0.978
		-10	-	-	0.999	0.984	0.982	0.978
		-15	-	-	-	0.984	0.982	0.978

HEATING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.918	0.891	0.862
		10	-	-	0.981	0.918	0.891	0.862
		7.5	-	1.000	0.981	0.918	0.891	0.862
		5	0.994	1.000	0.981	0.918	0.891	0.862
		0	0.994	1.000	0.981	0.918	0.891	0.862
	∗2 Indoor unit is under than outdoor unit	-5	0.989	0.995	0.976	0.914	0.886	0.858
		-7.5	-	0.993	0.974	0.912	0.884	0.856
		-10	-	-	0.972	0.909	0.882	0.854
		-15	-	-	-	0.900	0.873	0.845

Height difference H



∗1 Indoor unit is upper than outdoor unit.



∗2 Indoor unit is under than outdoor unit.

6. ADDITIONAL CHARGE CALCULATION

■MODEL : AO∗A12L

Refrigerant type		R410A
Refrigerant amount	g	1150

●REFRIGERANT CHARGE

Pipe length	m	～ 15	20	25	20g/m
Additional charge	g	0 (Chargeless)	+100	+200	

■MODEL : AO∗A14L

Refrigerant type		R410A
Refrigerant amount	g	1250

●REFRIGERANT CHARGE

Pipe length	m	～ 15	20	25	20g/m
Additional charge	g	0 (Chargeless)	+100	+200	

OUTDOOR UNIT
AO∗A12-14L

7. AIR FLOW

■MODEL : AO∗A12L

●COOLING

Number of rotations (r.p.m)	Air flow	
770	m^3/h	1780
	l/s	494
	CFM	1048

●HEATING

Number of rotations (r.p.m)	Air flow	
700	m^3/h	1630
	l/s	453
	CFM	959

■MODEL : AO∗A14L

●COOLING

Number of rotations (r.p.m)	Air flow	
820	m^3/h	1910
	l/s	531
	CFM	1124

●HEATING

Number of rotations (r.p.m)	Air flow	
750	m^3/h	1740
	l/s	483
	CFM	1024

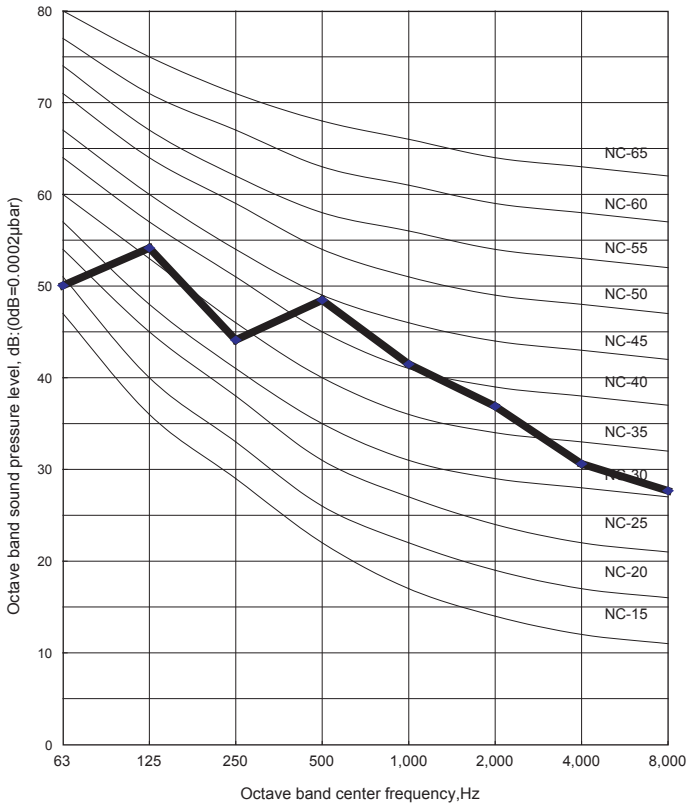
OUTDOOR UNIT
AO∗A12-14L

8. OPERATION NOISE

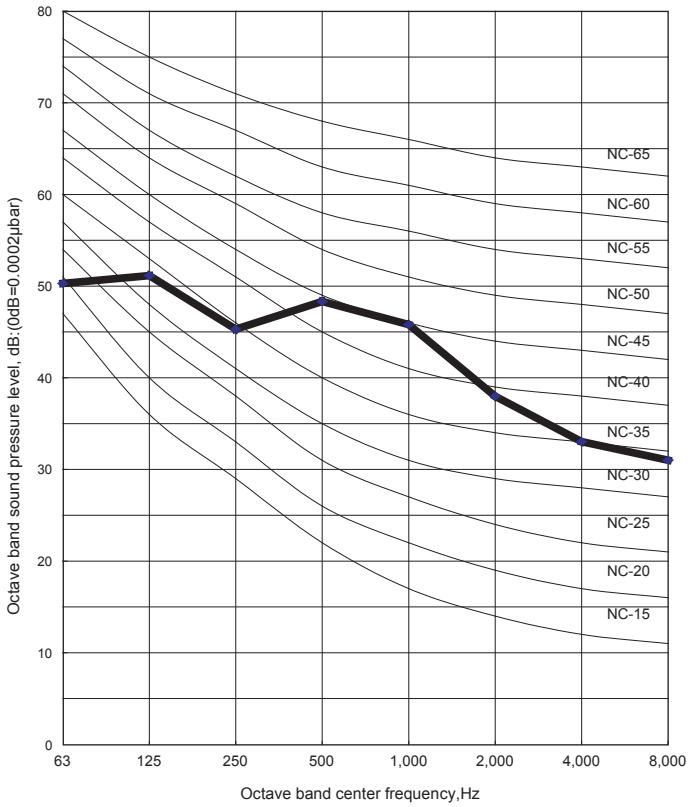
8-1. NOISE LEVEL CURVE

■COOLING

●MODEL : AO*A12L

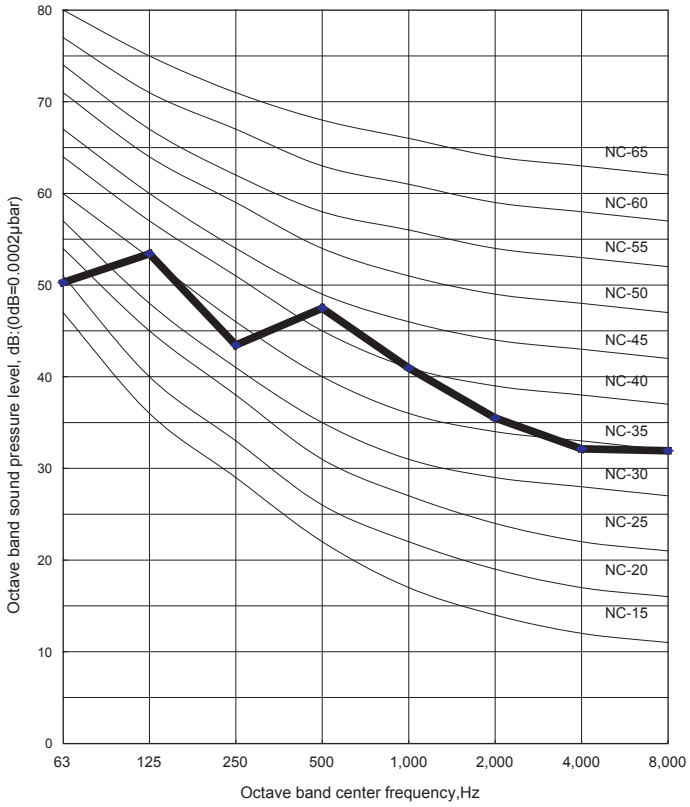


●MODEL : AO*A14L

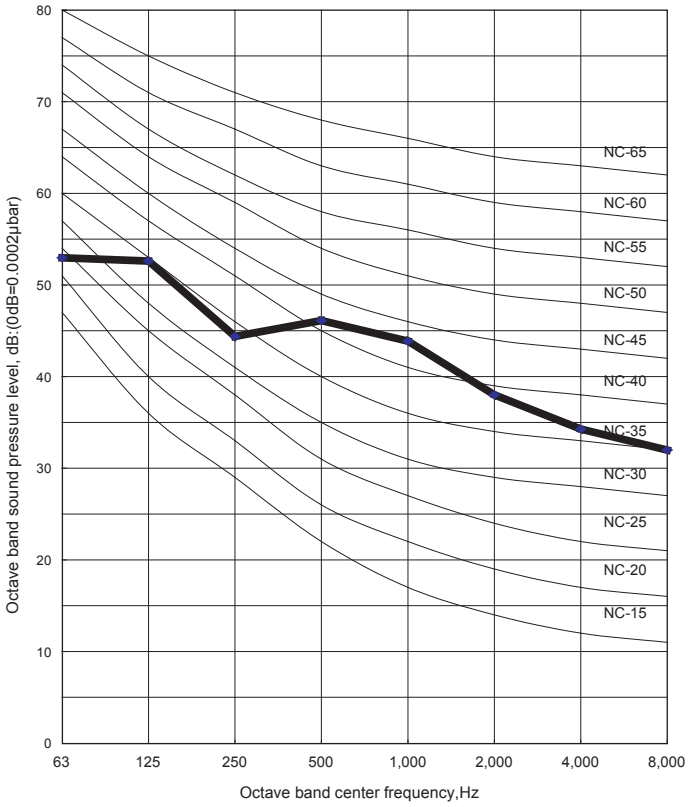


■HEATING

●MODEL : AO*A12L

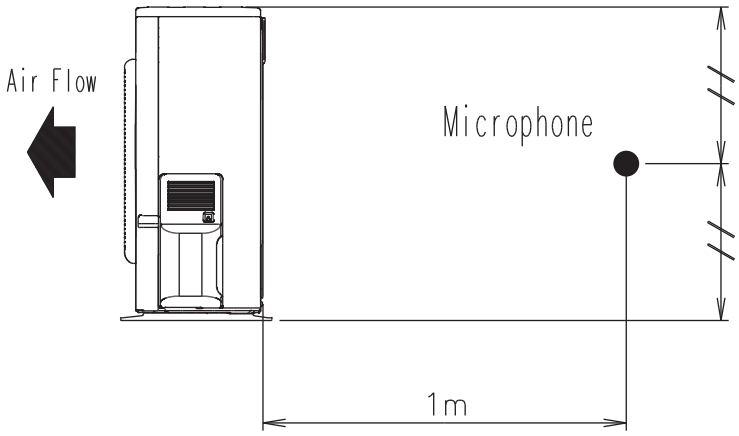


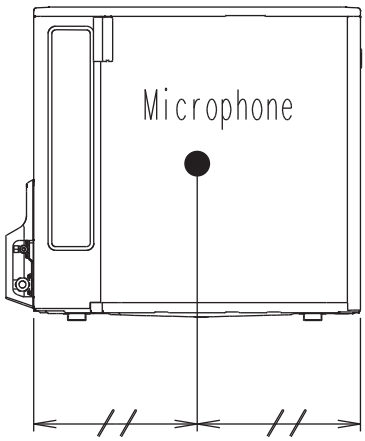
●MODEL : AO*A14L



OUTDOOR UNIT
AO*A12-14L

8-2. SOUND LEVEL CHECK POINT





OUTDOOR UNIT
AO*A12-14L

9. ELECTRIC CHARACTERISTICS

Model Name			AO ∗ A12L	AO ∗ A14L
Power Supply	Voltage	V	230～	
	Frequency	Hz	50	
Max Operating Current		A	10.0	12.5
Starting Current		A	4.9	5.9
*1) Wiring Spec.	Main Fuse (Circuit breaker) Current	A	20	20
	Power Cable	mm^2	4.0	
	*2) Limited wiring length	m	36	28

*1) Wiring Spec.
Selected Sample
(Selected based on Japan Electrotechnical Standard 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.

OUTDOOR UNIT
AO∗A12-14L

10. SAFETY DEVICES

	Protection form	Model	
		AO ∗ A12L	AO ∗ A14L
Circuit protection	Current fuse (NEAR THE TERMINAL)	20A 250V	
		5A 250V	
	Current fuse (MAIN PRINTED CIRCUIT BOARD)	15A 250V	
		3.15A 250V	
Fan motor protection	Thermal protection program	OFF : 100^{+15}_{-10}°C ON : 95^{+15}_{-10}°C	
Compressor protection	Thermal protection program (COMPRESSOR TEMP.)	OFF : 110°C ON : After 40 minutes	
	Thermal protection program (DISCHARGE TEMP.)	OFF : 110°C ON : After 7 minutes	

OUTDOOR UNIT
AO∗A12-14L

Refrigerant
R410A

OUTDOOR UNIT

2. SINGLE TYPE :

AO＊B12LACL

AO＊B12LALL

AO＊B14LACL

AO＊B14LALL

D2D_AO020E/02
2008.04.08

1. SPECIFICATIONS

Type				INVERTER HEATPUMP	
Model name				AO*B12LACL AO*B12LALL	AO*B14LACL AO*B14LALL
Power source				230V ～ 50Hz	
Available voltage range				198-264V ～ 50Hz	
Starting current			A	4.9	5.9
Fan	Airflow rate	Cooling	m^3/h	1780	1910
		Heating		1630	1740
	Type × Q'ty			Propeller × 1	
	Motor output		W	54	
Sound pressure level		Cooling	dB(A)	47	49
		Heating		48	49
Heat exchanger type		Dimensions (H × W × D)	mm	546 × 876 × 18.2 546 × 842 × 18.2	
		Fin pitch		1.30	
		Rows x Stages		2 × 26	
		Pipe type		Copper	
		Fin type		Aluminium	
Compressor	Type × Q'ty			Twin Rotary × 1	
	Motor output		W	1100	
Refrigerant		Type		R410A	
		Charge	g	1150	1250
Refrigerant oil		Type		POE	
Enclosure		Material		Steel sheet	
		Colour		Beige (10YR7.5/1.0NN)	
Dimensions (H×W×D)	Net		mm	578 × 790 × 300	
	Gross			648 × 910 × 380	
Weight	Net		kg(lb.)	40 (88)	40 (88)
	Gross			44 (97)	44 (97)
Connection pipe	Size	Liquid	mm	Φ 6.35 (Φ 1/4 in.)	
		Gas		Φ 9.52 (Φ 3/8 in.)	Φ 12.70 (Φ 1/2 in.)
	Method			Flare	
	Max. length		m	25(chargeless:15)	
	Max. height difference			15	
Operation range		Cooling	°C	-10 to 46	
		Heating		-15 to 24	

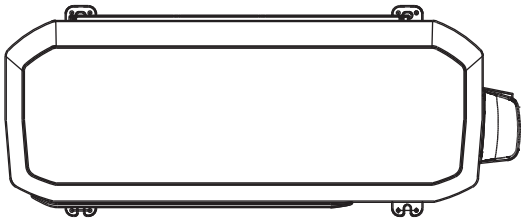
Note :
Specifications are based on the following conditions.
Cooling : Indoor temperature of 27°CDB/19°CWB. and outdoor temperature of 35°CDB/24°CWB.
Heating : Indoor temperature of 20°CDB/15°CWB. and outdoor temperature of 7°CDB/6°CWB.
Pipe length : 7.5 m, Height difference : 0 m. (Outdoor unit - Indoor unit)

OUTDOOR UNIT
AO*B12-14L

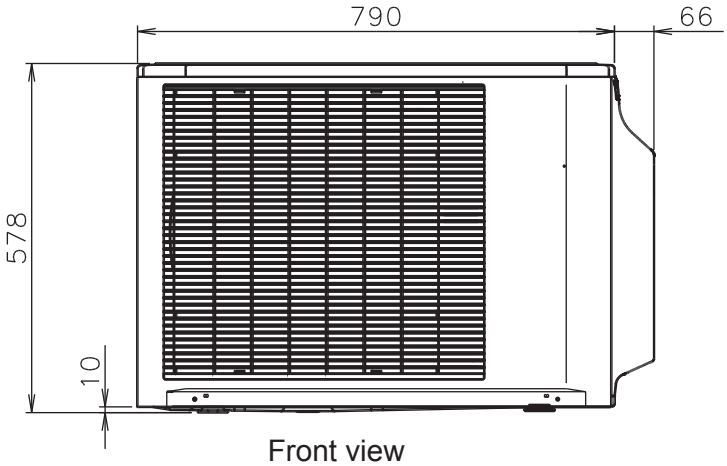
2. DIMENSIONS

■MODEL : AO*B12L, AO*B14L

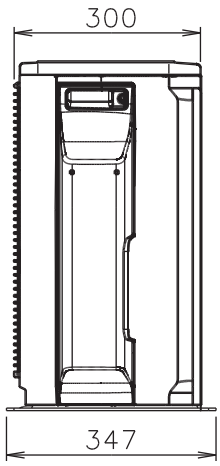
(Unit : mm)



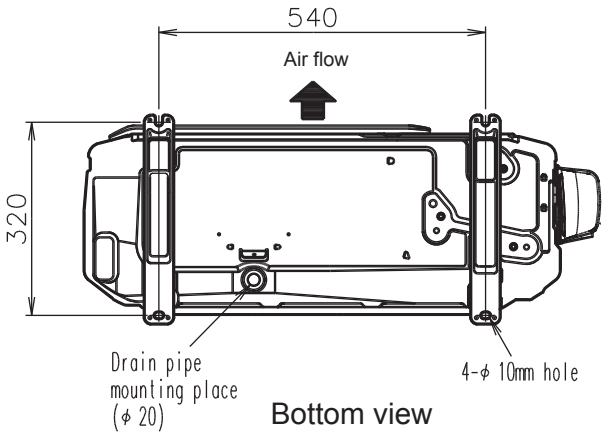
Top view



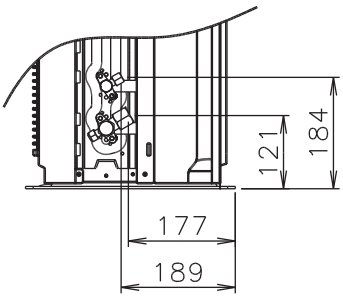
Front view



Side view

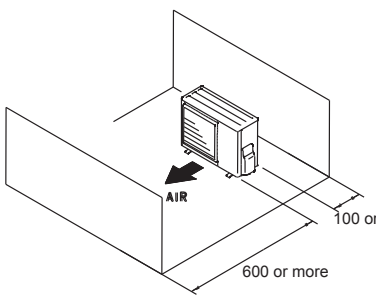


Bottom view

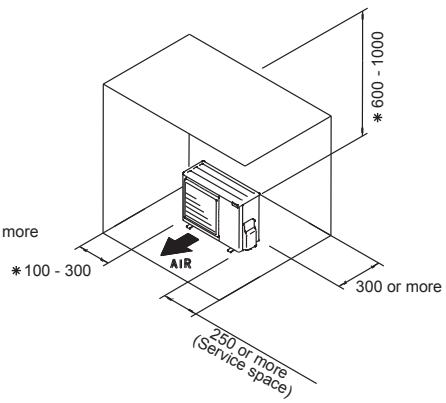


■MOUNTING POSITION

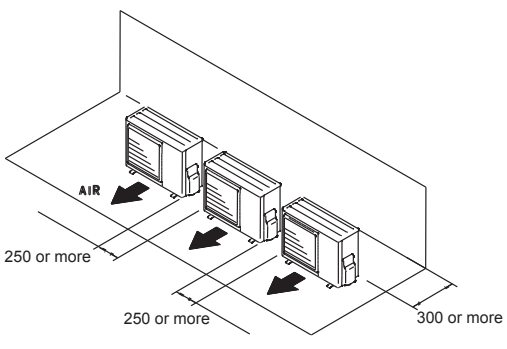
When there are obstacles at the back or front sides.



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



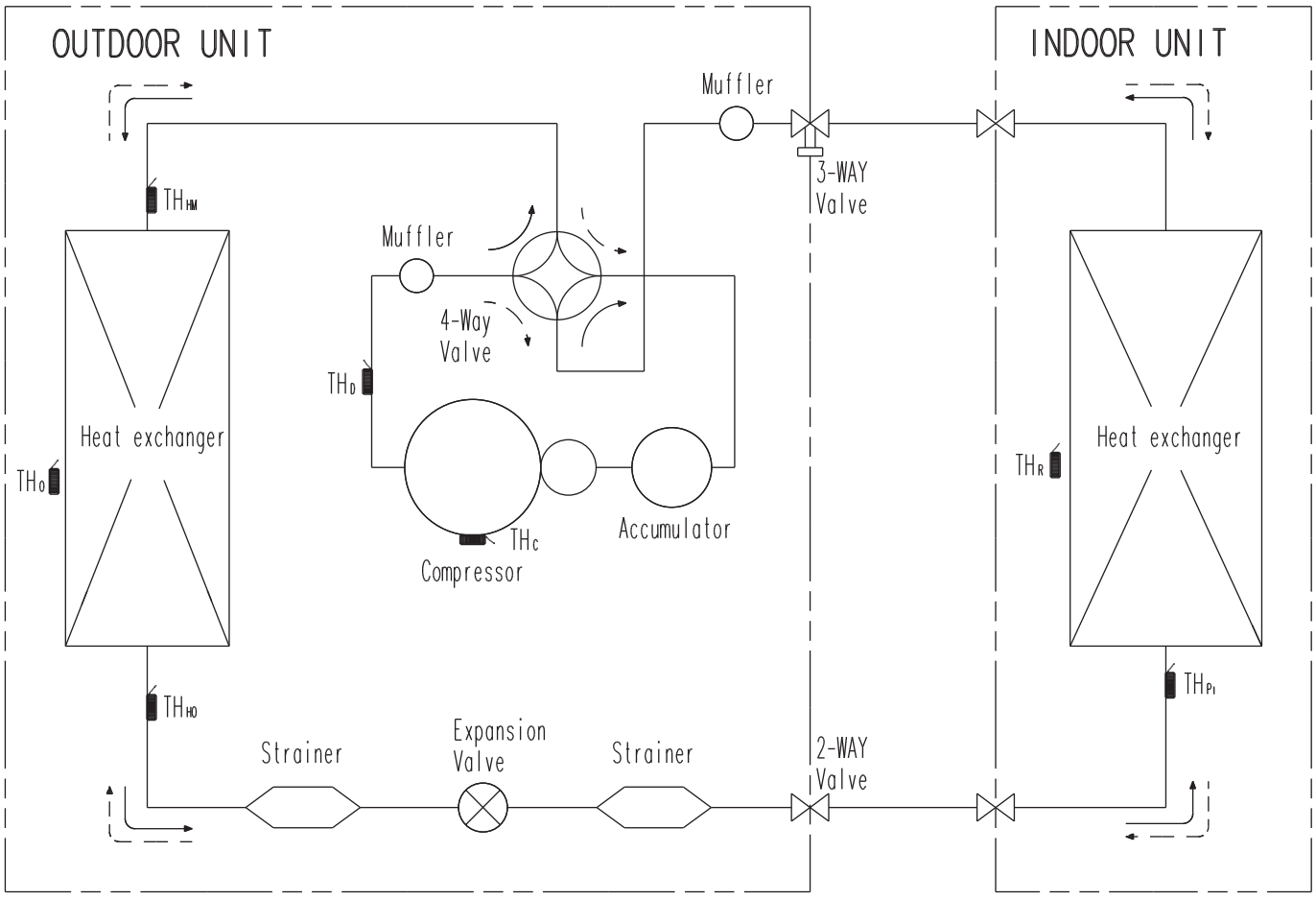
When there are obstacles at the back, side with the installation of more than one unit.



*If the space is larger that is stated, the condition will be the same as that are no obstacles.

3. REFRIGERANT CIRCUIT

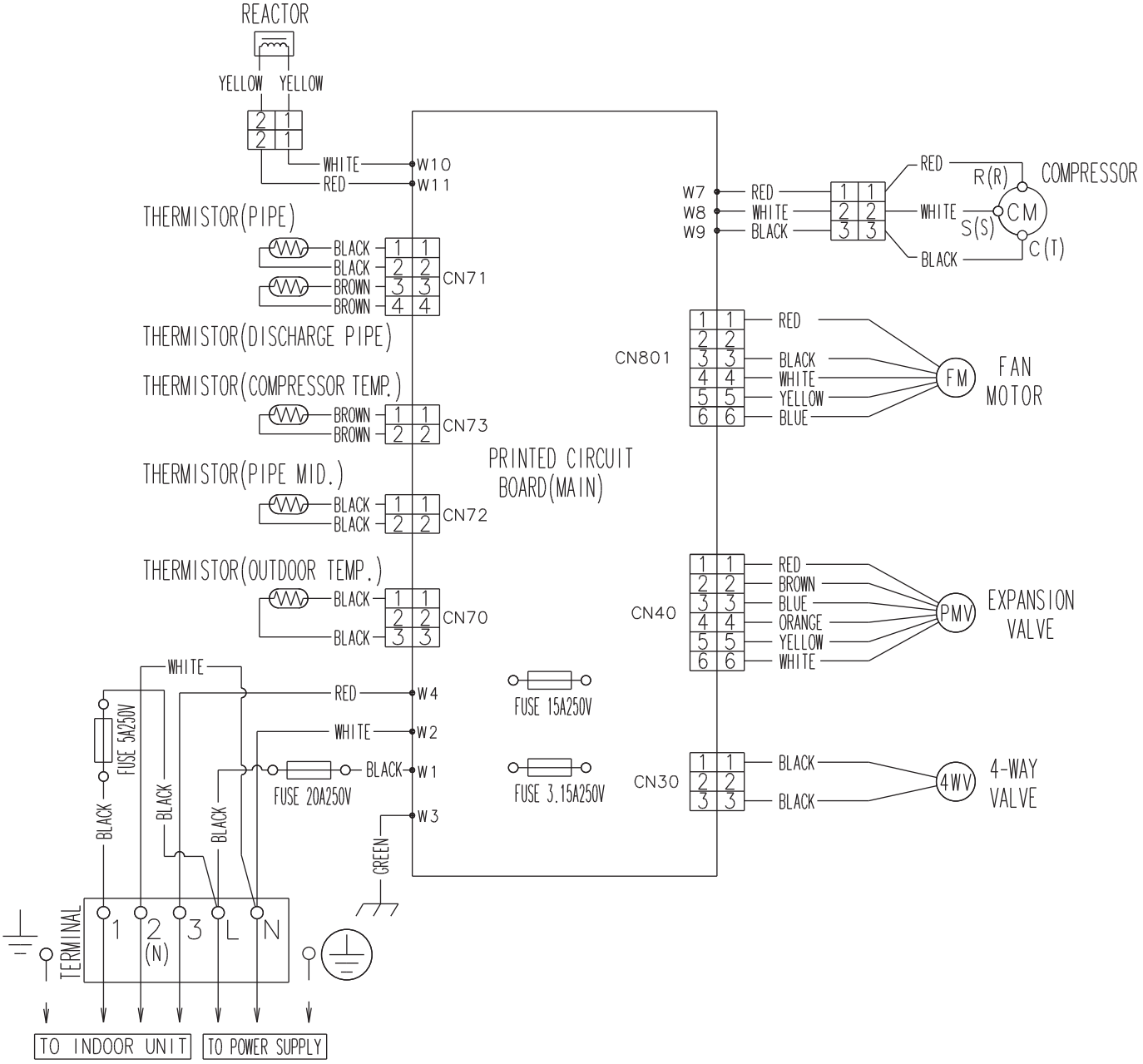
■MODEL : AO*B12L, AO*B14L



OUTDOOR UNIT
AO*B12-14L

4. WIRING DIAGRAMS

■MODEL : AO*B12L, AO*B14L



OUTDOOR UNIT
AO*B12-14L

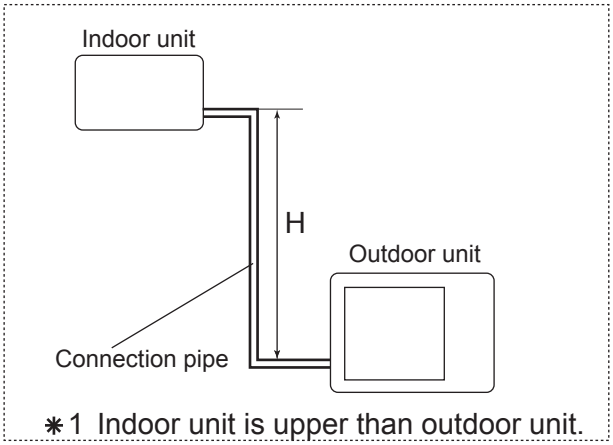
5. CAPACITY COMPENSATION RATE FOR PIPE LENGTH AND HEIGHT DIFFERENCE

■MODEL : AO∗B12L

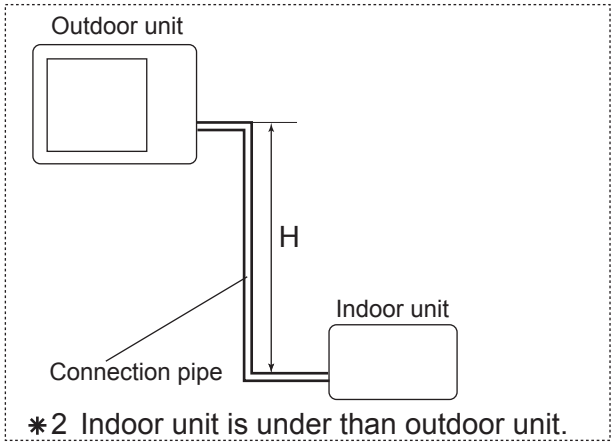
COOLING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.903	0.894	0.867
		10	-	-	0.964	0.918	0.909	0.881
		7.5	-	0.988	0.968	0.922	0.912	0.885
		5	1.018	0.992	0.972	0.925	0.916	0.888
		0	1.026	1.000	0.980	0.933	0.923	0.895
	∗2 Indoor unit is under than outdoor unit	-5	1.026	1.000	0.980	0.933	0.923	0.895
		-7.5	-	1.000	0.980	0.933	0.923	0.895
		-10	-	-	0.980	0.933	0.923	0.895
		-15	-	-	-	0.933	0.923	0.895

HEATING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.943	0.916	0.896
		10	-	-	1.010	0.943	0.916	0.896
		7.5	-	1.000	1.010	0.943	0.916	0.896
		5	0.954	1.000	1.010	0.943	0.916	0.896
		0	0.954	1.000	1.010	0.943	0.916	0.896
	∗2 Indoor unit is under than outdoor unit	-5	0.949	0.995	1.005	0.939	0.912	0.892
		-7.5	-	0.993	1.002	0.936	0.909	0.890
		-10	-	-	0.999	0.934	0.907	0.887
		-15	-	-	-	0.925	0.898	0.878

Height difference H



∗1 Indoor unit is upper than outdoor unit.



∗2 Indoor unit is under than outdoor unit.

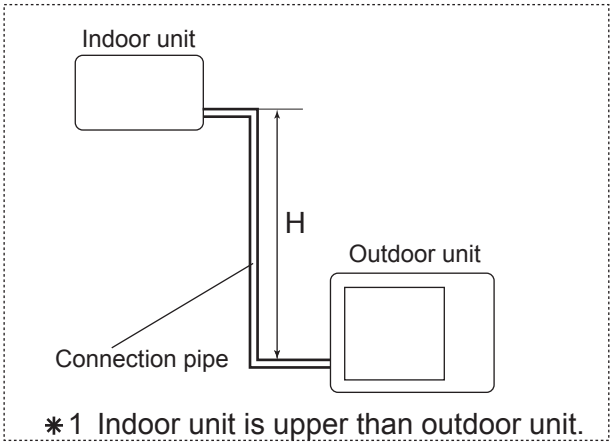
OUTDOOR UNIT
AO∗B12-14L

■MODEL : AO∗B14L

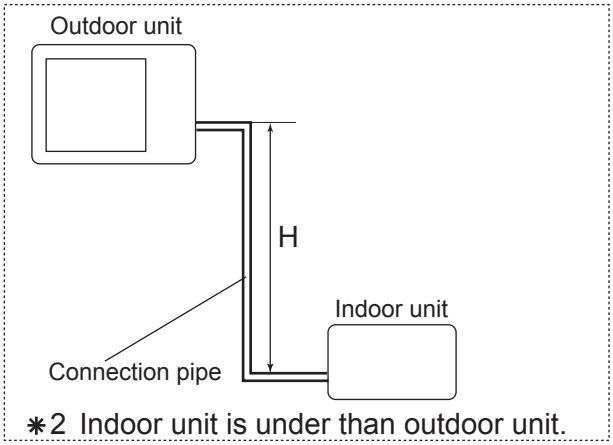
COOLING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.953	0.950	0.947
		10	-	-	0.983	0.968	0.966	0.962
		7.5	-	0.988	0.987	0.972	0.970	0.966
		5	0.992	0.992	0.991	0.976	0.974	0.970
		0	1.000	1.000	0.999	0.984	0.982	0.978
	∗2 Indoor unit is under than outdoor unit	-5	1.000	1.000	0.999	0.984	0.982	0.978
		-7.5	-	1.000	0.999	0.984	0.982	0.978
		-10	-	-	0.999	0.984	0.982	0.978
		-15	-	-	-	0.984	0.982	0.978

HEATING			Pipe length (m)					
			5	7.5	10	15	20	25
Height difference H (m)	∗1 Indoor unit is upper than outdoor unit.	15	-	-	-	0.918	0.891	0.862
		10	-	-	0.981	0.918	0.891	0.862
		7.5	-	1.000	0.981	0.918	0.891	0.862
		5	0.994	1.000	0.981	0.918	0.891	0.862
		0	0.994	1.000	0.981	0.918	0.891	0.862
	∗2 Indoor unit is under than outdoor unit	-5	0.989	0.995	0.976	0.914	0.886	0.858
		-7.5	-	0.993	0.974	0.912	0.884	0.856
		-10	-	-	0.972	0.909	0.882	0.854
		-15	-	-	-	0.900	0.873	0.845

Height difference H



∗1 Indoor unit is upper than outdoor unit.



∗2 Indoor unit is under than outdoor unit.

6. ADDITIONAL CHARGE CALCULATION

■MODEL : AO*B12L

Refrigerant type		R410A
Refrigerant amount	g	1150

●REFRIGERANT CHARGE

Pipe length	m	~ 15	20	25	20g/m
Additional charge	g	0 (Chargeless)	+100	+200	

■MODEL : AO*B14L

Refrigerant type		R410A
Refrigerant amount	g	1250

●REFRIGERANT CHARGE

Pipe length	m	~ 15	20	25	20g/m
Additional charge	g	0 (Chargeless)	+100	+200	

OUTDOOR UNIT
AO*B12-14L

OUTDOOR UNIT
AO∗B12-14L

7. AIR FLOW

■MODEL : AO∗B12L

●COOLING

Number of rotations (r.p.m)	Air flow	
770	m^3/h	1780
	l/s	494
	CFM	1048

●HEATING

Number of rotations (r.p.m)	Air flow	
700	m^3/h	1630
	l/s	453
	CFM	959

■MODEL : AO∗B14L

●COOLING

Number of rotations (r.p.m)	Air flow	
820	m^3/h	1910
	l/s	531
	CFM	1124

●HEATING

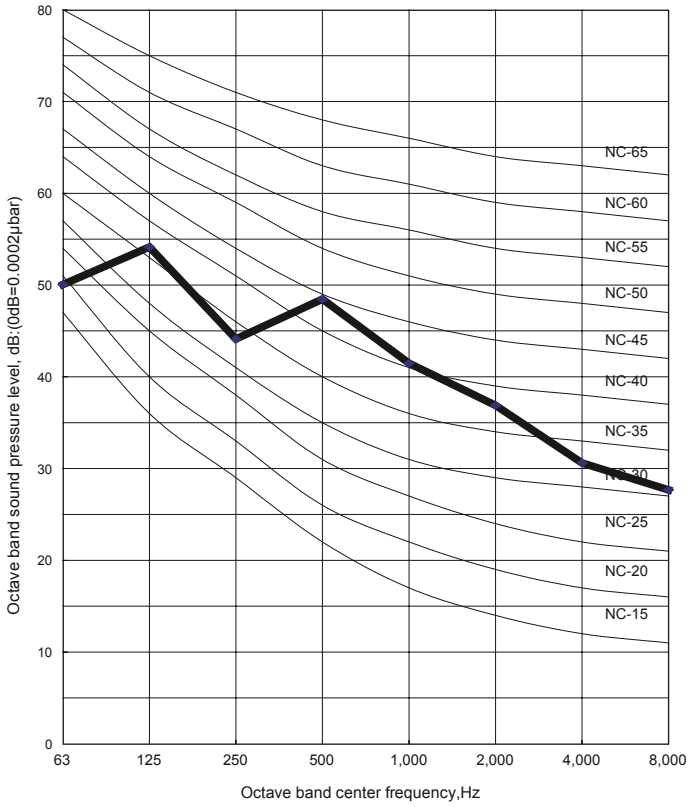
Number of rotations (r.p.m)	Air flow	
750	m^3/h	1740
	l/s	483
	CFM	1024

8. OPERATION NOISE

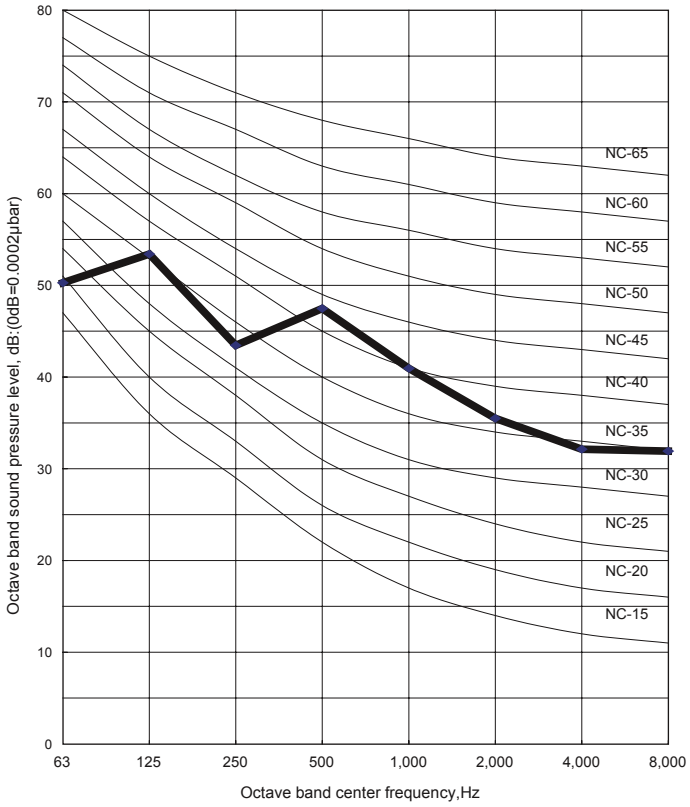
8-1. NOISE LEVEL CURVE

■MODEL : AO*B12L

●COOLING

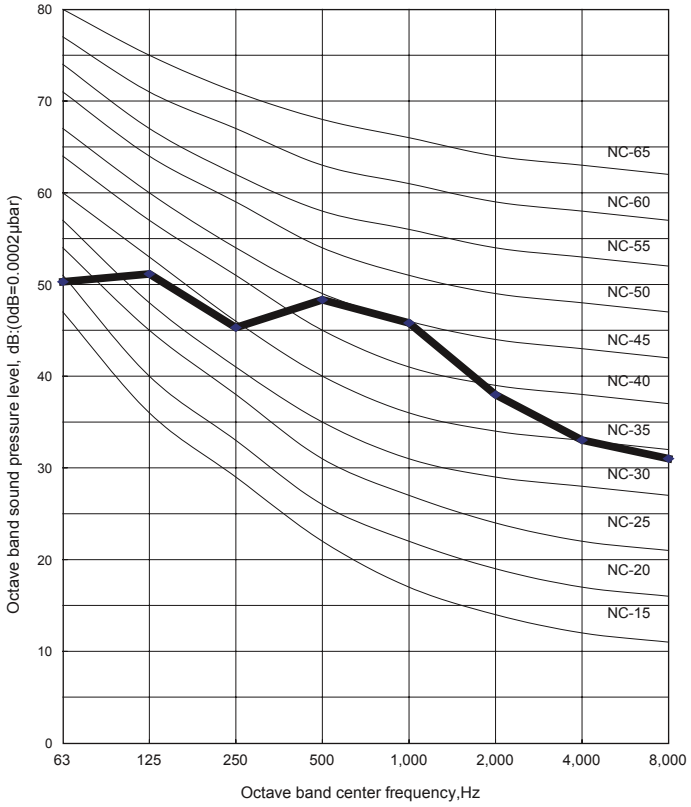


●HEATING

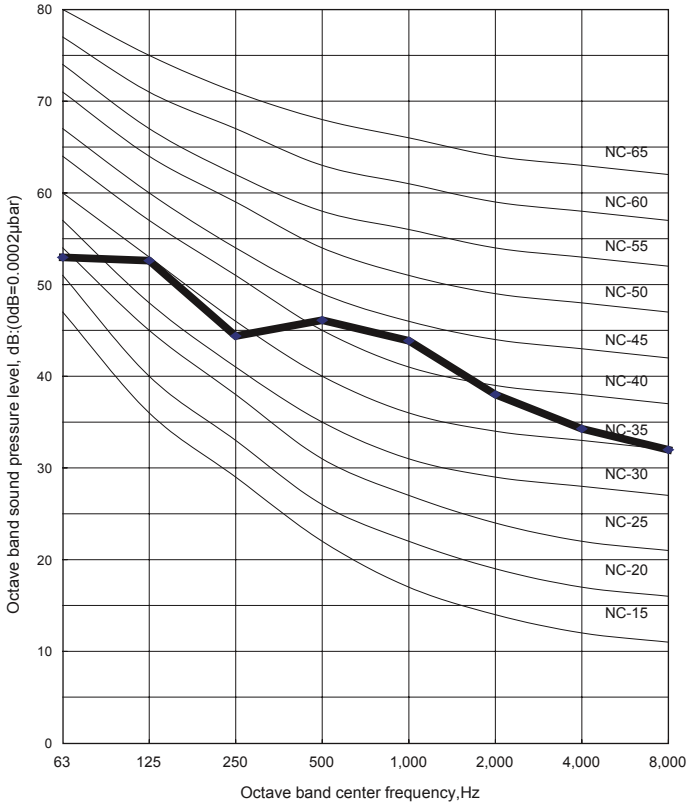


■MODEL : AO*B14L

●COOLING

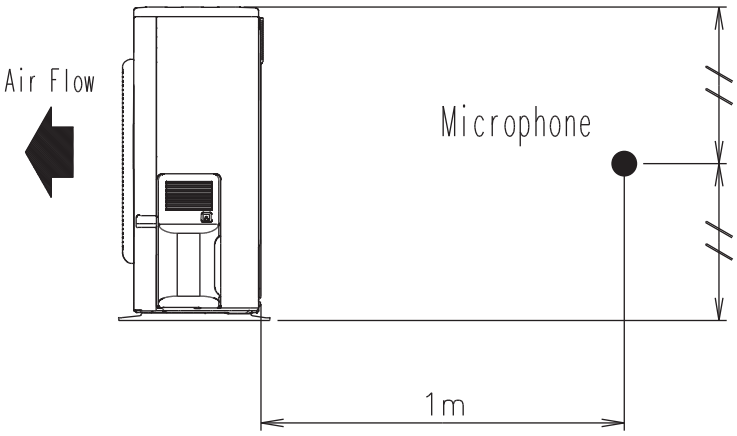


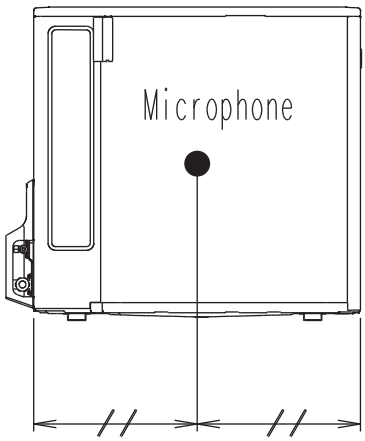
●HEATING



OUTDOOR UNIT
AO*B12-14L

8-2. SOUND LEVEL CHECK POINT





OUTDOOR UNIT
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9. ELECTRIC CHARACTERISTICS

Model name			AO∗B12L	AO∗B14L
Power supply	Voltage	V	230 ～	
	Frequency	Hz	50	
Max. operating current		A	10.0	12.5
Starting current		A	4.9	5.9
*1) Wiring spec.	Main fuse (Circuit breaker) current	A	20	20
	Power cable	mm^2	4.0	
	*2)Limited wiring length	m	36	28

*1) Wiring spec.
Selected sample
(Selected based on Japan Electrotechnical Standard 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.

10. SAFETY DEVICES

	Protection form	Model	
		AO*B12L	AO*B14L
Circuit protection	Current fuse (NEAR THE TERMINAL)	20A 250V	
		5A 250V	
	Current fuse (MAIN PRINTED CIRCUIT BOARD)	15A 250V	
		3.15A 250V	
Fan motor protection	Thermal protection program	OFF : 100^{+15}_{-10}°C ON : 95^{+15}_{-10}°C	
Compressor protection	Thermal protection program (COMPRESSOR TEMP.)	OFF : 110°C ON : After 40 minutes	
	Thermal protection program (DISCHARGE TEMP.)	OFF : 110°C ON : After 7 minutes	

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